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(171476)\* 1993 RT<sub>4</sub> = 2000 WN<sub>149</sub>

Discovered 1993 Sept. 15 by E. W. Elst at the European Southern Observatory.

Id. M. E. Sansaturio (MPO 9030)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               | Q           |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 80.60139   | (2000.0)           | <i>P</i>      |             |  |
| <i>n</i> | 0.29015030 | $\omega$ 88.72756  | +0.81657699   | +0.57694799 |  |
| <i>a</i> | 2.2597169  | $\Omega$ 236.03597 | -0.53796975   | +0.74918731 |  |
| <i>e</i> | 0.1706871  | <i>i</i> 1.26080   | -0.20926198   | +0.32534502 |  |
| <i>P</i> | 3.40       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 09 15 | 809 | 0.9-  | 1.2+  | 2003 07 05 | 691 | 0.1- | 0.3+ | 2006 05 24 | 691 | 0.0  | 0.1+ |
| 1993 09 15 | 809 | 1.9-  | 1.5-  | 2003 07 24 | 644 | 0.3- | 0.0  | 2006 05 24 | 691 | 0.2+ | 0.1+ |
| 1993 09 15 | 809 | (3.2- | 0.7-) | 2003 07 24 | 644 | 0.1- | 0.1- | 2006 05 24 | 691 | 0.2+ | 0.1+ |
| 1993 09 17 | 809 | (1.2+ | 3.2+) | 2003 07 24 | 644 | 0.1- | 0.2+ | 2006 05 28 | 691 | 0.1- | 0.0  |
| 1993 09 17 | 809 | 0.8-  | 1.6+  | 2003 07 25 | 704 | 0.3- | 0.4- | 2006 05 28 | 691 | 0.1+ | 0.2+ |
| 1993 09 17 | 809 | (1.4- | 2.2+) | 2003 07 25 | 704 | 0.4- | 0.2- | 2006 05 28 | 691 | 0.2+ | 0.1+ |
| 1993 09 18 | 809 | (0.3- | 3.1+) | 2003 07 25 | 704 | 0.1+ | 0.2+ | 2006 06 04 | 691 | 0.2- | 0.5+ |
| 1993 09 18 | 809 | (0.1- | 2.1+) | 2003 07 25 | 704 | 0.5- | 0.2- | 2006 06 04 | 691 | 0.2+ | 0.4+ |
| 1993 09 18 | 809 | (0.1+ | 2.3+) | 2003 08 04 | 704 | 0.5+ | 0.1- | 2006 06 04 | 691 | 0.0  | 0.1- |
| 1993 09 22 | 675 | (0.6+ | 2.8-) | 2003 08 04 | 704 | 0.1- | 0.7- | 2007 11 06 | 691 | 0.6- | 0.2+ |
| 1993 09 22 | 675 | 0.6-  | 0.3-  | 2003 08 04 | 704 | 0.9+ | 0.0  | 2007 11 06 | 691 | 0.7- | 0.0  |
| 1993 09 23 | 809 | 0.6-  | 1.0+  | 2003 08 04 | 704 | 0.5- | 0.7+ | 2007 11 06 | 691 | 0.7- | 0.3+ |
| 1993 09 23 | 809 | 1.1-  | 0.5+  | 2003 08 04 | 704 | 0.2- | 0.2- | 2007 12 04 | G96 | 0.3- | 0.2+ |
| 1993 09 23 | 809 | 0.2+  | 1.6+  | 2003 08 25 | 704 | 0.8+ | 1.0- | 2007 12 04 | G96 | 0.4- | 0.3+ |
| 2000 11 28 | 691 | 0.3+  | 0.1+  | 2003 08 25 | 704 | 1.2+ | 0.3- | 2007 12 04 | G96 | 0.1- | 0.0  |
| 2000 11 28 | 691 | 0.3+  | 0.1-  | 2003 08 25 | 704 | 1.0+ | 1.1- | 2007 12 04 | G96 | 0.2- | 0.1+ |
| 2000 11 28 | 691 | 0.2+  | 0.0   | 2005 01 19 | 691 | 0.8+ | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.0  |
| 2000 12 04 | 691 | 0.5+  | 0.0   | 2005 01 19 | 691 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.0  | 0.5+ |
| 2000 12 04 | 691 | 0.5+  | 0.2+  | 2005 01 19 | 691 | 0.1- | 0.2+ | 2007 12 05 | 704 | 0.6+ | 0.8+ |
| 2000 12 04 | 691 | 0.7+  | 0.2-  | 2006 05 20 | 691 | 0.1- | 0.1+ | 2007 12 05 | 704 | 1.0- | 0.2- |
| 2003 07 05 | 691 | 0.0   | 0.3+  | 2006 05 20 | 691 | 0.2- | 0.1- |            |     |      |      |
| 2003 07 05 | 691 | 0.1-  | 0.1+  | 2006 05 20 | 691 | 0.1- | 0.0  |            |     |      |      |

(171477)\* 1993 YL<sub>1</sub> = 2002 TN<sub>211</sub>

Discovered 1993 Dec. 16 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 39905)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC                |               | Q           |     |      |      |            |     |       |       |
|-----------------------------|------------|--------------------|---------------|-------------|-----|------|------|------------|-----|-------|-------|
| <i>M</i>                    | 11.82733   | (2000.0)           | <i>P</i>      |             |     |      |      |            |     |       |       |
| <i>n</i>                    | 0.21121659 | $\omega$ 323.78944 | +0.81194702   | -0.56056933 |     |      |      |            |     |       |       |
| <i>a</i>                    | 2.7924412  | $\Omega$ 71.09731  | +0.56781592   | +0.69378968 |     |      |      |            |     |       |       |
| <i>e</i>                    | 0.1625158  | <i>i</i> 9.90883   | +0.13537769   | +0.45212598 |     |      |      |            |     |       |       |
| <i>P</i>                    | 4.67       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |     |      |      |            |     |       |       |
| Residuals in seconds of arc |            |                    |               |             |     |      |      |            |     |       |       |
| 1993 12 16                  | 691        | 0.1+               | 0.4-          | 2002 10 29  | 704 | 0.1+ | 1.4+ | 2007 11 06 | D29 | 0.3+  | 0.3-  |
| 1993 12 16                  | 691        | 0.2+               | 0.1+          | 2004 02 11  | 644 | 0.4- | 0.4+ | 2007 11 06 | D29 | 0.4+  | 0.1+  |
| 1993 12 16                  | 691        | 0.2+               | 0.3-          | 2004 02 11  | 644 | 0.5- | 0.3+ | 2007 11 11 | D35 | 0.1-  | 0.4+  |
| 1993 12 17                  | 691        | 0.5+               | 0.2-          | 2004 02 11  | 644 | 0.3- | 1.4+ | 2007 11 11 | D35 | 0.1-  | 0.2+  |
| 1993 12 17                  | 691        | 0.5+               | 0.6-          | 2004 02 14  | 704 | 0.7- | 0.8+ | 2007 11 11 | D35 | 0.1-  | 0.4+  |
| 1993 12 17                  | 691        | 0.5-               | 0.3-          | 2004 02 14  | 704 | 1.1+ | 0.4+ | 2007 11 14 | 704 | 0.4-  | 0.6+  |
| 2002 08 24                  | 644        | 0.0                | 0.3+          | 2004 02 14  | 704 | 0.6+ | 0.5+ | 2007 11 14 | 704 | 0.5+  | 1.1+  |
| 2002 08 24                  | 644        | 0.2-               | 0.6-          | 2004 02 14  | 704 | 0.2+ | 0.7- | 2007 11 14 | 704 | 0.3+  | 0.7+  |
| 2002 08 24                  | 644        | 0.1-               | 0.9+          | 2005 04 07  | 691 | 0.4+ | 0.6+ | 2007 11 14 | 704 | 0.0   | 1.4+  |
| 2002 09 19                  | 644        | 0.0                | 0.7-          | 2005 04 07  | 691 | 0.4- | 0.7- | 2007 11 14 | 704 | (1.9+ | 0.3+) |
| 2002 09 19                  | 644        | 0.2-               | 0.7-          | 2005 04 07  | 691 | 0.4+ | 0.7+ | 2007 11 14 | 704 | (1.6+ | 0.2+) |
| 2002 09 19                  | 644        | 0.0                | 0.5-          | 2007 10 19  | D35 | 0.3+ | 0.1- | 2007 11 19 | 691 | 0.0   | 0.2+  |
| 2002 09 28                  | 608        | (2.0-              | 0.1-)         | 2007 10 19  | D35 | 0.2+ | 0.3+ | 2007 11 19 | 691 | 0.3-  | 0.0   |
| 2002 09 28                  | 608        | (2.6-              | 0.2-)         | 2007 10 19  | D35 | 0.1+ | 0.3+ | 2007 11 19 | 691 | 0.2-  | 0.0   |
| 2002 09 28                  | 608        | (2.6-              | 0.5-)         | 2007 11 03  | 699 | 0.0  | 0.9- | 2007 12 03 | 703 | 0.3+  | 0.3+  |
| 2002 10 05                  | 704        | 0.3+               | 0.2-          | 2007 11 03  | 699 | 0.4+ | 0.4+ | 2007 12 03 | 703 | 1.2+  | 0.9+  |
| 2002 10 05                  | 704        | 0.1+               | 0.8+          | 2007 11 03  | 699 | 0.2- | 0.1- | 2007 12 03 | 703 | 0.1+  | 0.5+  |
| 2002 10 05                  | 704        | 0.2-               | 0.1+          | 2007 11 03  | 699 | 0.7- | 0.2- | 2007 12 03 | 703 | 0.5-  | 1.0+  |
| 2002 10 05                  | 704        | 0.6+               | 0.3-          | 2007 11 04  | 704 | 0.6- | 0.8+ | 2007 12 04 | 699 | 0.3-  | 0.9-  |
| 2002 10 08                  | 608        | 0.5-               | 0.1-          | 2007 11 04  | 704 | 0.1- | 0.6+ | 2007 12 04 | 699 | 0.8+  | 0.1-  |
| 2002 10 08                  | 608        | 0.5-               | 0.0           | 2007 11 04  | 704 | 0.1+ | 0.5+ | 2007 12 04 | 699 | 0.4+  | 0.4-  |
| 2002 10 08                  | 608        | 0.6-               | 0.7-          | 2007 11 04  | 704 | 0.2- | 0.9+ | 2007 12 04 | 699 | 0.3+  | 0.2-  |
| 2002 10 16                  | 644        | 0.1-               | 0.4+          | 2007 11 04  | 704 | 0.4+ | 0.2+ | 2007 12 05 | 704 | 0.2+  | 0.3+  |
| 2002 10 16                  | 644        | 0.5+               | 0.6+          | 2007 11 05  | 691 | 0.2- | 0.2- | 2007 12 05 | 704 | 0.0   | 0.0   |
| 2002 10 16                  | 644        | 0.1+               | 0.3+          | 2007 11 05  | 691 | 0.2- | 0.1- | 2007 12 05 | 704 | 0.0   | 0.2+  |
| 2002 10 29                  | 704        | 1.2-               | 0.5+          | 2007 11 05  | 691 | 0.2- | 0.2- | 2007 12 05 | 704 | 0.2+  | 0.0   |
| 2002 10 29                  | 704        | 0.4-               | 1.1+          | 2007 11 06  | D29 | 0.3+ | 0.4- | 2007 12 05 | 704 | 0.0   | 0.1-  |
| 2002 10 29                  | 704        | 0.8-               | 0.6+          | 2007 11 06  | D29 | 0.3+ | 0.8- |            |     |       |       |

(171478)\* 1994 EG<sub>5</sub> = 2001 CD<sub>10</sub>

Discovered 1994 Mar. 7 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 9033)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 330.19072  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27499699 | $\omega$ | 151.28298 | -0.42310622   | -0.90284308 |
| <i>a</i> | 2.3419849  | $\Omega$ | 323.59745 | +0.80472248   | -0.33562046 |
| <i>e</i> | 0.1213693  | <i>i</i> | 7.40846   | +0.41641668   | -0.26876251 |
| <i>P</i> | 3.58       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 03 07 | 691 | 0.0   | 0.7-  | 2001 02 03 | 704 | 0.2+  | 0.2+  | 2003 10 23 | 291 | 0.0   | 0.3-  |
| 1994 03 07 | 691 | 0.3+  | 0.2+  | 2001 02 03 | 704 | 0.0   | 0.4+  | 2003 10 24 | 291 | 0.1+  | 0.0   |
| 1994 03 07 | 691 | 0.1-  | 0.1+  | 2001 02 19 | 704 | 0.5+  | 0.3+  | 2003 10 24 | 291 | 0.1+  | 0.0   |
| 1994 03 08 | 691 | 0.0   | 0.1-  | 2001 02 19 | 704 | 0.2-  | 0.5+  | 2003 10 24 | 291 | 0.0   | 0.1-  |
| 1994 03 08 | 691 | 0.7-  | 0.5-  | 2001 02 19 | 704 | 0.9+  | 0.4+  | 2003 10 29 | 699 | 0.9-  | 0.9-  |
| 1994 03 08 | 691 | 0.1+  | 0.3-  | 2001 02 19 | 704 | 0.3-  | 0.3+  | 2003 10 29 | 699 | 0.6+  | 0.1-  |
| 1994 03 09 | 691 | 0.7-  | 0.2-  | 2001 02 20 | 704 | 0.2-  | 0.9+  | 2003 10 29 | 699 | (1.9+ | 1.4+) |
| 1994 03 09 | 691 | 1.1-  | 0.3-  | 2001 02 20 | 704 | 0.2-  | 0.6+  | 2003 10 29 | 699 | 0.4-  | 1.5+  |
| 1994 03 09 | 691 | 0.1+  | 0.2-  | 2001 02 20 | 704 | 0.3+  | 0.8+  | 2003 11 19 | 704 | 0.3+  | 0.6-  |
| 1994 03 12 | 691 | 0.3+  | 0.2+  | 2001 02 20 | 704 | 0.0   | 1.1+  | 2003 11 19 | 704 | 0.1-  | 0.4-  |
| 1994 03 12 | 691 | 0.3+  | 0.0   | 2001 02 22 | 699 | 0.3-  | 0.7+  | 2003 11 19 | 704 | (2.2- | 0.6-) |
| 1994 03 12 | 691 | 0.3+  | 0.1-  | 2001 02 22 | 699 | 0.5+  | 0.5+  | 2003 11 19 | 704 | 0.3+  | 0.3-  |
| 1994 03 18 | 691 | 0.1-  | 0.1-  | 2001 02 22 | 704 | (0.8- | 2.3+) | 2007 11 08 | 704 | 0.4+  | 0.4-  |
| 1994 03 18 | 691 | 0.2-  | 0.1-  | 2001 02 22 | 699 | 0.6+  | 0.6+  | 2007 11 08 | 704 | 0.8+  | 0.2-  |
| 1994 03 18 | 691 | 0.4-  | 0.1-  | 2001 02 22 | 704 | (1.9+ | 1.4+) | 2007 11 08 | 704 | 0.5-  | 0.6+  |
| 2001 01 01 | 691 | 0.0   | 0.1-  | 2001 02 22 | 699 | 0.2+  | 0.3+  | 2007 11 08 | 704 | 0.5-  | 0.1+  |
| 2001 01 01 | 691 | 0.2-  | 0.0   | 2001 02 22 | 704 | 1.5+  | 1.1-  | 2007 12 02 | 704 | 1.1-  | 0.9-  |
| 2001 01 01 | 691 | 0.1-  | 0.2-  | 2001 02 22 | 704 | (1.9+ | 0.6-) | 2007 12 02 | 704 | 0.8-  | 0.3+  |
| 2001 01 19 | 704 | 0.3+  | 0.6+  | 2003 09 30 | 704 | 0.8+  | 0.7+  | 2007 12 02 | 704 | 0.4-  | 1.2+  |
| 2001 01 19 | 704 | 1.4+  | 0.2+  | 2003 09 30 | 704 | 0.7-  | 0.6+  | 2007 12 02 | 704 | 1.1-  | 0.0   |
| 2001 01 19 | 704 | 0.4+  | 0.1-  | 2003 09 30 | 704 | 0.1+  | 0.8+  | 2007 12 02 | 704 | 1.1-  | 0.2+  |
| 2001 01 19 | 704 | 1.0+  | 0.8+  | 2003 09 30 | 704 | 0.5+  | 0.6+  | 2007 12 16 | 704 | 0.5-  | 0.1-  |
| 2001 01 19 | 704 | (1.7+ | 0.8+) | 2003 09 30 | 704 | 0.1-  | 1.0-  | 2007 12 16 | 704 | 0.9-  | 0.8-  |
| 2001 02 01 | 699 | 0.5-  | 0.1+  | 2003 09 30 | 691 | 0.2+  | 0.0   | 2007 12 16 | 704 | 0.1-  | 0.1+  |
| 2001 02 01 | 699 | 0.1+  | 0.4+  | 2003 09 30 | 691 | 0.2+  | 0.0   | 2007 12 16 | 704 | 0.4+  | 0.3-  |
| 2001 02 01 | 704 | 0.3+  | 0.2+  | 2003 09 30 | 691 | 0.2+  | 0.0   | 2007 12 16 | 704 | 1.0+  | 0.1-  |
| 2001 02 01 | 699 | 0.0   | 0.5+  | 2003 10 17 | 691 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.2-  | 0.2-  |
| 2001 02 01 | 704 | 0.1+  | 0.5-  | 2003 10 17 | 691 | 0.1-  | 0.1-  | 2007 12 16 | 704 | 0.4+  | 0.5-  |
| 2001 02 01 | 704 | 0.5+  | 1.0+  | 2003 10 17 | 691 | 0.1-  | 0.1+  | 2007 12 16 | 704 | 0.3+  | 0.6-  |
| 2001 02 01 | 704 | 1.2+  | 1.3+  | 2003 10 17 | 699 | 0.8-  | 0.1-  | 2007 12 16 | 704 | 0.4-  | 0.8-  |
| 2001 02 01 | 699 | 0.1-  | 0.3+  | 2003 10 17 | 699 | 0.7-  | 0.7+  | 2007 12 16 | 704 | 0.3+  | 0.3-  |
| 2001 02 01 | 704 | 1.2+  | 0.8+  | 2003 10 17 | 699 | 0.1-  | 0.1+  | 2007 12 16 | 704 | 0.8+  | 1.3-  |
| 2001 02 03 | 704 | 0.4-  | 0.1+  | 2003 10 17 | 699 | 0.3-  | 0.4+  | 2007 12 16 | 704 | 0.5-  | 1.0-  |
| 2001 02 03 | 704 | 0.1+  | 0.2-  | 2003 10 23 | 291 | 0.0   | 0.2-  | 2007 12 16 | 704 | 0.0   | 0.6-  |
| 2001 02 03 | 704 | 0.8+  | 0.6+  | 2003 10 23 | 291 | 0.1-  | 0.2-  |            |     |       |       |

(171479)\* 1994 GP<sub>4</sub> = 2005 CO<sub>59</sub> = 2005 EB<sub>45</sub>

Discovered 1994 Apr. 6 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 84422), A. Doppler (d, *ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 245.09436  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26275848 | $\omega$ | 311.42319 | -0.97586433   | -0.21790640 |
| <i>a</i> | 2.4141536  | $\Omega$ | 215.99751 | +0.20693032   | -0.90173295 |
| <i>e</i> | 0.1290888  | <i>i</i> | 1.39800   | +0.06977580   | -0.37335572 |
| <i>P</i> | 3.75       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 04 06 | 691 | 0.1+ | 0.2- | 2005 03 03 | 703 | 0.5- | 1.4+ | 2007 11 11 | G96 | 0.2+  | 0.5+  |
| 1994 04 06 | 691 | 0.4+ | 0.4- | 2005 03 08 | 704 | 0.6+ | 0.4+ | 2007 11 11 | G96 | 0.4+  | 0.4+  |
| 1994 04 06 | 691 | 0.2+ | 0.1- | 2005 03 08 | 704 | 0.9+ | 0.7+ | 2007 11 11 | G96 | 0.0   | 0.1+  |
| 1994 04 11 | 691 | 0.2- | 0.7+ | 2005 03 08 | 704 | 0.3- | 0.4+ | 2007 11 11 | G96 | 0.2+  | 0.1-  |
| 1994 04 11 | 691 | 0.0  | 0.2- | 2005 03 09 | G96 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.4-  | 0.1+  |
| 1994 04 11 | 691 | 0.0  | 0.2+ | 2005 03 09 | G96 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.2-  | 0.5+  |
| 1994 04 16 | 691 | 0.6- | 0.1- | 2005 03 09 | G96 | 0.2- | 0.2- | 2007 11 11 | G96 | 0.0   | 0.1+  |
| 1994 04 16 | 691 | 0.5- | 0.3+ | 2005 03 09 | G96 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.2+  | 0.1+  |
| 1994 04 16 | 691 | 0.1- | 0.1+ | 2005 03 11 | 704 | 1.5+ | 0.5- | 2007 11 12 | G96 | 0.0   | 0.1+  |
| 1999 09 30 | 691 | 0.1- | 0.3- | 2005 03 11 | 704 | 0.4+ | 0.1- | 2007 11 12 | G96 | (2.2- | 1.3+) |
| 1999 09 30 | 691 | 0.6+ | 0.0  | 2005 03 11 | 704 | 0.4+ | 1.4+ | 2007 11 12 | G96 | 0.2-  | 0.2+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 30 | 691 | 0.6+  | 0.2+  | 2005 05 13 | G96 | (0.1+ | 1.6+) | 2007 11 12 | G96 | 0.1+ | 0.1+ |
| 2000 12 20 | 691 | 0.2+  | 0.1-  | 2005 05 13 | G96 | 0.1+  | 0.3-  | 2007 11 12 | G96 | 0.1+ | 0.3+ |
| 2000 12 20 | 691 | 0.2-  | 0.8-  | 2005 05 13 | G96 | 0.7-  | 0.1+  | 2007 11 12 | G96 | 0.2- | 0.2+ |
| 2000 12 20 | 691 | 0.1+  | 0.3+  | 2005 05 13 | G96 | 0.1-  | 0.1+  | 2007 11 12 | G96 | 0.2- | 0.2+ |
| 2003 09 30 | 691 | 0.4+  | 0.1+  | 2007 10 08 | 691 | 0.5-  | 0.1-  | 2007 11 12 | G96 | 0.0  | 0.2- |
| 2003 09 30 | 691 | 0.3+  | 0.0   | 2007 10 08 | 691 | 0.6-  | 0.2+  | 2007 11 12 | G96 | 0.2- | 0.1- |
| 2003 09 30 | 691 | 0.3+  | 0.1-  | 2007 10 08 | 691 | 0.3-  | 0.1+  | 2007 11 12 | G96 | 0.0  | 0.1- |
| 2005 02 02 | 704 | 0.2+  | 0.3-  | 2007 10 12 | 691 | 0.9-  | 1.1+  | 2007 11 12 | G96 | 0.2+ | 0.3+ |
| 2005 02 02 | 704 | 0.4-  | 0.8+  | 2007 10 12 | 691 | 0.4-  | 0.4-  | 2007 11 12 | G96 | 0.4+ | 0.3+ |
| 2005 02 02 | 704 | 0.1+  | 0.0   | 2007 10 12 | 691 | 0.2+  | 0.5-  | 2007 11 12 | G96 | 0.3- | 0.1- |
| 2005 02 09 | 699 | 0.4+  | 0.6-  | 2007 10 16 | 691 | 0.3-  | 0.3+  | 2007 11 12 | G96 | 0.3+ | 0.2- |
| 2005 02 09 | 699 | 0.8+  | 0.5+  | 2007 10 16 | 691 | 0.3-  | 0.3+  | 2007 11 12 | G96 | 0.3- | 0.1+ |
| 2005 02 09 | 699 | 0.4+  | 0.6-  | 2007 10 16 | 691 | 0.2-  | 0.4+  | 2007 11 12 | G96 | 0.1- | 0.2- |
| 2005 02 09 | 704 | (2.2+ | 0.5+) | 2007 10 30 | G96 | 0.4+  | 0.1+  | 2007 11 17 | G96 | 0.2- | 0.2- |
| 2005 02 09 | 699 | 1.0+  | 0.3-  | 2007 10 30 | G96 | 0.0   | 0.1-  | 2007 11 17 | G96 | 0.3- | 0.1+ |
| 2005 02 09 | 704 | 0.0   | 0.3+  | 2007 10 30 | G96 | 0.6+  | 0.1-  | 2007 11 17 | G96 | 0.1- | 0.1- |
| 2005 02 09 | 704 | 0.3+  | 0.4+  | 2007 10 30 | G96 | 0.3+  | 0.1-  | 2007 11 17 | G96 | 0.3+ | 0.2- |
| 2005 02 09 | 704 | 0.2+  | 0.1+  | 2007 11 09 | G96 | 0.3+  | 0.0   | 2007 12 06 | G96 | 0.7- | 0.0  |
| 2005 03 03 | 703 | 0.4-  | 0.2-  | 2007 11 09 | G96 | 0.4+  | 0.2-  | 2007 12 06 | G96 | 0.4+ | 0.2- |
| 2005 03 03 | 703 | 0.4-  | 0.3-  | 2007 11 09 | G96 | 0.1+  | 0.2-  | 2007 12 06 | G96 | 0.3+ | 0.4- |
| 2005 03 03 | 703 | (0.3+ | 1.7+) | 2007 11 09 | G96 | 0.2+  | 0.2-  | 2007 12 06 | G96 | 0.3+ | 0.3- |

(171480)\* 1995 EW<sub>3</sub> = 2002 GB<sub>126</sub>

Discovered 1995 Mar. 2 by Spacewatch at Kitt Peak.

Id. M. E. Sansaturio (*MPO* 60465)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 240.85585  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29093783 | $\omega$ | 251.55634 | -0.99977014   | -0.01442663 |
| <i>a</i> | 2.2556372  | $\Omega$ | 287.61466 | +0.01958995   | -0.91527981 |
| <i>e</i> | 0.0899186  | <i>i</i> | 0.95344   | -0.00871165   | -0.40256024 |
| <i>P</i> | 3.39       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 02 | 691 | 0.3-  | 0.1+  | 2004 12 18 | G96 | 0.3- | 0.4- | 2005 03 08 | G96 | 0.4- | 0.1+ |
| 1995 03 02 | 691 | 0.1-  | 0.0   | 2004 12 18 | G96 | 0.1- | 0.3- | 2006 06 22 | G96 | 0.5- | 0.5+ |
| 1995 03 02 | 691 | 0.2+  | 0.1-  | 2004 12 18 | G96 | 0.1+ | 0.3- | 2006 06 22 | G96 | 0.1- | 0.1+ |
| 1995 03 08 | 691 | 0.2+  | 0.2-  | 2004 12 19 | G96 | 0.1- | 0.3- | 2006 06 22 | G96 | 0.0  | 0.1+ |
| 1995 03 08 | 691 | 0.3-  | 0.2+  | 2004 12 19 | G96 | 0.1- | 0.1- | 2006 06 22 | G96 | 0.2- | 0.1+ |
| 1995 03 08 | 691 | 0.0   | 0.6-  | 2004 12 19 | G96 | 0.2- | 0.3- | 2007 10 30 | 691 | 0.2- | 0.2- |
| 2002 04 12 | 704 | 0.3+  | 1.0+  | 2004 12 19 | G96 | 0.3- | 0.1- | 2007 10 30 | 691 | 0.1- | 0.7+ |
| 2002 04 12 | 704 | 0.6+  | 0.5+  | 2005 01 15 | 704 | 0.5+ | 1.1- | 2007 10 30 | 691 | 0.2- | 0.0  |
| 2002 04 12 | 704 | (1.5+ | 0.6+) | 2005 01 15 | 704 | 0.0  | 0.6+ | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2002 04 12 | 704 | 0.3+  | 1.2+  | 2005 01 15 | 704 | 0.4+ | 0.2- | 2007 11 14 | 691 | 0.3- | 0.2- |
| 2002 04 14 | 704 | 0.3+  | 1.0+  | 2005 01 15 | 704 | 0.9+ | 0.1+ | 2007 11 14 | 691 | 0.1+ | 0.6+ |
| 2002 04 14 | 704 | 0.8+  | 0.8+  | 2005 01 16 | 691 | 0.3- | 0.3+ | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2002 04 14 | 704 | 0.6-  | 0.5+  | 2005 01 16 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.3+ |
| 2002 04 14 | 704 | (1.1- | 2.5+) | 2005 01 16 | 691 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.2- | 0.3- |
| 2003 08 28 | 644 | 0.2-  | 0.3+  | 2005 01 17 | 704 | 1.1+ | 0.3+ | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2003 08 28 | 644 | 0.6+  | 0.6+  | 2005 01 17 | 704 | 0.6+ | 0.5+ | 2007 12 06 | G96 | 0.9+ | 0.0  |
| 2003 08 28 | 644 | 0.5+  | 0.8+  | 2005 01 17 | 704 | 0.4+ | 0.2+ | 2007 12 06 | G96 | 0.6+ | 0.7- |
| 2004 12 15 | 599 | 0.3+  | 0.1-  | 2005 03 08 | G96 | 0.6- | 0.1- | 2007 12 06 | G96 | 0.7+ | 0.6+ |
| 2004 12 15 | 599 | 0.1-  | 0.2-  | 2005 03 08 | G96 | 0.2- | 0.0  |            |     |      |      |
| 2004 12 18 | G96 | 0.2-  | 0.1-  | 2005 03 08 | G96 | 0.3- | 0.2+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129057

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 09 18 | 691 | 0.7− | 0.2− | 2003 01 31 | 704 | 0.3− | 0.2− | 2006 10 21 | 691 | 0.2− | 0.3− |
| 1995 09 18 | 691 | 0.4− | 0.0  | 2003 01 31 | 704 | 0.0  | 0.8+ | 2006 10 21 | 691 | 0.1+ | 0.0  |
| 1995 09 18 | 691 | 0.4− | 0.4+ | 2003 01 31 | 704 | 0.6+ | 0.7+ | 2006 11 01 | G96 | 0.3+ | 0.6− |
| 1995 09 24 | 691 | 0.4+ | 0.1− | 2003 02 21 | 644 | 0.6+ | 1.2+ | 2006 11 01 | G96 | 0.4+ | 0.6− |
| 1995 09 24 | 691 | 0.1+ | 0.1+ | 2003 02 21 | 644 | 0.8+ | 0.9+ | 2006 11 01 | G96 | 0.0  | 0.2− |
| 1995 09 24 | 691 | 0.3+ | 0.3+ | 2003 02 21 | 644 | 0.8+ | 1.2+ | 2006 11 01 | G96 | 0.2+ | 0.6− |
| 1995 09 29 | 691 | 0.1+ | 0.1+ | 2005 07 12 | G96 | 0.3− | 0.1+ | 2006 11 17 | G96 | 0.3+ | 0.2− |
| 1995 09 29 | 691 | 0.3− | 0.1− | 2005 07 12 | G96 | 0.1+ | 0.0  | 2006 11 17 | G96 | 0.6+ | 0.1− |
| 1995 09 29 | 691 | 0.4+ | 0.8+ | 2005 07 12 | G96 | 0.1− | 0.2+ | 2006 11 17 | G96 | 0.3+ | 0.3− |
| 2001 11 19 | 704 | 0.2− | 0.4+ | 2005 07 12 | G96 | 0.2− | 0.2− | 2006 11 17 | G96 | 0.3+ | 0.3− |
| 2001 11 19 | 704 | 0.3− | 0.6+ | 2006 09 30 | G96 | 0.4+ | 0.6− | 2007 11 12 | G96 | 0.2+ | 0.8− |
| 2001 11 19 | 704 | 1.2− | 0.7+ | 2006 09 30 | G96 | 0.2+ | 0.7− | 2007 11 12 | G96 | 0.1+ | 0.9− |
| 2001 11 19 | 704 | 0.6− | 0.1+ | 2006 09 30 | G96 | 0.3+ | 0.4− | 2007 11 12 | G96 | 0.1− | 0.9− |
| 2001 11 19 | 704 | 0.4+ | 0.9+ | 2006 09 30 | G96 | 0.5+ | 0.3− | 2007 11 12 | G96 | 0.5− | 0.3− |
| 2003 01 27 | 704 | 0.7− | 0.6+ | 2006 10 17 | 691 | 0.1+ | 0.2+ | 2007 12 14 | G96 | 0.4− | 0.1+ |
| 2003 01 27 | 704 | 0.4− | 0.2+ | 2006 10 17 | 691 | 0.2+ | 0.0  | 2007 12 14 | G96 | 0.2+ | 0.3− |
| 2003 01 27 | 704 | 0.7+ | 0.0  | 2006 10 17 | 691 | 0.1− | 0.0  | 2007 12 14 | G96 | 0.2− | 0.0  |
| 2003 01 31 | 704 | 0.2+ | 0.2+ | 2006 10 21 | 691 | 0.4− | 0.0  | 2007 12 14 | G96 | 0.3− | 0.0  |

(171482)\* 1995 SN<sub>34</sub> = 2001 TM<sub>224</sub>

Discovered 1995 Sept. 22 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 28944)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 109.87413  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.17727471 | $\omega$ | 304.20462 | +0.55825631 | +0.82966803 |
| <i>a</i> | 3.1383752  | $\Omega$ | 359.72560 | −0.68411118 | +0.45968925 |
| <i>e</i> | 0.0507377  | <i>i</i> | 11.05236  | −0.46940577 | +0.31675976 |
| <i>P</i> | 5.56       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 09 20 | 809 | 1.2+ | 0.1+ | 2004 03 15 | 691 | 0.3+  | 0.3+  | 2006 09 14 | 703 | (2.3− | 1.2+) |
| 1995 09 22 | 691 | 0.6− | 0.5+ | 2004 03 15 | 691 | 0.3+  | 0.3+  | 2006 09 14 | 703 | (1.1− | 1.7+) |
| 1995 09 22 | 691 | 0.4− | 0.5+ | 2004 03 15 | 691 | 0.4+  | 0.2+  | 2006 09 30 | G96 | 0.1−  | 0.2−  |
| 1995 09 22 | 691 | 0.5− | 0.4+ | 2004 03 16 | 704 | 0.7+  | 0.7+  | 2006 09 30 | G96 | 0.1−  | 0.1−  |
| 1995 09 24 | 691 | 0.0  | 0.2+ | 2004 03 16 | 704 | 0.5+  | 0.3+  | 2006 09 30 | G96 | 0.3−  | 0.0   |
| 1995 09 24 | 691 | 0.3+ | 0.1+ | 2004 03 16 | 704 | 0.1−  | 0.1−  | 2006 09 30 | G96 | 0.5−  | 0.2−  |
| 1995 09 24 | 691 | 0.2+ | 0.1+ | 2004 03 18 | 704 | (1.0− | 1.6+) | 2006 10 20 | G96 | 0.3+  | 0.4−  |
| 1995 09 27 | 691 | 0.3+ | 0.7+ | 2004 03 18 | 704 | 0.8+  | 0.7+  | 2006 10 20 | G96 | 0.3−  | 0.1+  |
| 1995 09 27 | 691 | 0.4− | 0.3+ | 2004 03 18 | 704 | 0.1−  | 0.8−  | 2006 10 20 | G96 | 0.2+  | 0.1+  |
| 1995 09 27 | 691 | 0.6− | 0.4− | 2004 03 18 | 704 | 1.1−  | 0.1−  | 2006 10 20 | G96 | 0.1+  | 0.2−  |
| 2001 10 13 | 699 | 0.4− | 1.1+ | 2004 03 18 | 704 | 0.2+  | 1.4+  | 2006 11 21 | G96 | 0.2+  | 0.1−  |
| 2001 10 13 | 699 | 0.1+ | 0.4+ | 2004 03 23 | 691 | 0.2+  | 0.3+  | 2006 11 21 | G96 | 1.1−  | 0.1+  |
| 2001 10 13 | 699 | 0.3+ | 1.0− | 2004 03 23 | 691 | 0.5+  | 0.2+  | 2006 11 21 | G96 | 0.9+  | 0.6+  |
| 2001 10 13 | 699 | 0.8− | 0.3+ | 2004 03 23 | 691 | 0.2+  | 0.3+  | 2006 11 21 | G96 | 0.4−  | 0.1−  |
| 2001 10 14 | 704 | 0.6− | 0.3+ | 2004 03 27 | 704 | 1.3+  | 0.3+  | 2007 11 09 | 704 | (0.6− | 1.9−) |
| 2001 10 14 | 704 | 0.9− | 0.5+ | 2004 03 27 | 704 | 0.6+  | 0.3−  | 2007 11 09 | 704 | 0.5−  | 0.1+  |
| 2001 10 14 | 704 | 1.4− | 0.6+ | 2004 03 27 | 704 | (1.9+ | 1.7+) | 2007 11 09 | 704 | 1.2−  | 1.3−  |
| 2001 10 20 | 644 | 0.5+ | 0.1− | 2004 03 27 | 704 | 1.4+  | 0.2+  | 2007 11 09 | 704 | 0.1−  | 0.4+  |
| 2001 10 20 | 644 | 0.5+ | 0.3+ | 2004 04 13 | 691 | 0.5+  | 0.5+  | 2007 12 03 | 704 | 0.6+  | 0.1−  |
| 2001 10 20 | 644 | 0.5+ | 0.0  | 2004 04 13 | 691 | 0.9+  | 0.4+  | 2007 12 03 | 704 | 0.9+  | 0.1+  |
| 2004 02 29 | 291 | 1.0− | 0.0  | 2004 04 13 | 691 | 0.6+  | 0.1+  | 2007 12 03 | 704 | 0.4+  | 0.1+  |
| 2004 02 29 | 291 | 1.0− | 0.0  | 2006 09 14 | 703 | 0.3−  | 0.0   | 2007 12 03 | 704 | 0.4+  | 0.2−  |
| 2004 02 29 | 291 | 1.0− | 0.1− | 2006 09 14 | 703 | 1.4+  | 0.8+  |            |     |       |       |

(171483)\* 1995 SO<sub>45</sub> = 1999 TD<sub>71</sub> = 1999 TA<sub>335</sub> = 1999 UJ<sub>64</sub>

Discovered 1995 Sept. 26 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 84433)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 52.43788   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.26049963 | $\omega$ | 137.52077 | +0.96939722 | −0.24544224 |
| <i>a</i> | 2.4280892  | $\Omega$ | 236.68791 | +0.22353187 | +0.89123622 |
| <i>e</i> | 0.1891635  | <i>i</i> | 0.35718   | +0.10150142 | +0.38138709 |
| <i>P</i> | 3.78       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 23 | 327 | 0.8− | 0.6+ | 1999 10 13 | 691 | 0.1− | 0.2− | 2003 12 17 | 691 | 0.2+ | 0.2− |
| 1995 08 23 | 327 | 0.6− | 0.6+ | 1999 10 13 | 691 | 0.1+ | 0.3− | 2003 12 17 | 691 | 0.6+ | 0.3− |
| 1995 08 23 | 327 | 0.0  | 1.1+ | 1999 10 20 | 691 | 0.0  | 0.1+ | 2003 12 17 | 691 | 0.0  | 0.3− |
| 1995 09 26 | 691 | 0.2+ | 0.4− | 1999 10 20 | 691 | 0.1− | 0.1− | 2007 11 11 | G96 | 0.1+ | 0.6− |
| 1995 09 26 | 691 | 0.2+ | 0.2− | 1999 10 20 | 691 | 0.2− | 0.1+ | 2007 11 11 | G96 | 0.4+ | 0.2− |
| 1995 09 26 | 691 | 0.0  | 0.4+ | 2001 05 23 | 807 | 0.1+ | 0.2+ | 2007 11 11 | G96 | 0.3− | 0.2− |
| 1995 10 01 | 691 | 0.4− | 0.4+ | 2001 05 24 | 807 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.6+ | 0.2− |
| 1995 10 01 | 691 | 0.0  | 0.1− | 2003 11 19 | 291 | 0.0  | 0.2+ | 2007 12 03 | 691 | 0.1+ | 0.1+ |
| 1995 10 01 | 691 | 0.1− | 0.2+ | 2003 11 19 | 291 | 0.7− | 0.2− | 2007 12 03 | 691 | 0.0  | 0.0  |
| 1999 10 09 | 691 | 0.4+ | 0.3− | 2003 11 19 | 291 | 0.3− | 0.5+ | 2007 12 03 | 691 | 0.1− | 0.1+ |
| 1999 10 09 | 691 | 0.3+ | 0.2− | 2003 11 26 | 691 | 0.1− | 0.3+ | 2007 12 15 | 691 | 0.0  | 0.1+ |
| 1999 10 09 | 691 | 0.3+ | 0.0  | 2003 11 26 | 691 | 0.1− | 0.2+ | 2007 12 15 | 691 | 0.2+ | 0.3− |
| 1999 10 13 | 691 | 0.1− | 0.1+ | 2003 11 26 | 691 | 0.1+ | 0.1− | 2007 12 15 | 691 | 0.2− | 1.0+ |

(171484)\* 1995 VZ<sub>3</sub> = 2001 XB<sub>121</sub>

Discovered 1995 Nov. 14 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 21979)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 58.26746   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.17001874 | $\omega$ | 290.25255 | +0.96406581 | +0.18476841 |
| <i>a</i> | 3.2270438  | $\Omega$ | 59.53146  | −0.06923620 | +0.86844224 |
| <i>e</i> | 0.1366843  | <i>i</i> | 12.79539  | −0.25648286 | +0.46007469 |
| <i>P</i> | 5.80       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 11 14 | 691 | 0.1+  | 0.1+  | 2001 11 19 | 699 | 0.1−  | 0.4+  | 2006 08 25 | E12 | 0.3− | 0.4+ |
| 1995 11 14 | 691 | 0.4+  | 0.2−  | 2001 11 19 | 699 | 0.1−  | 0.3+  | 2007 10 16 | G96 | 0.5+ | 0.5− |
| 1995 11 14 | 691 | 0.1+  | 0.1+  | 2001 11 20 | 704 | 0.4+  | 0.2+  | 2007 10 16 | G96 | 0.5+ | 0.1− |
| 1995 11 19 | 691 | 0.4−  | 0.2+  | 2001 11 20 | 704 | 0.2−  | 0.7−  | 2007 10 16 | G96 | 0.1− | 0.3− |
| 1995 11 19 | 691 | 0.0   | 0.2−  | 2001 11 20 | 704 | 0.4+  | 0.3−  | 2007 10 16 | G96 | 0.2− | 0.3− |
| 1995 11 19 | 691 | 0.1+  | 0.1−  | 2001 11 20 | 704 | 0.8+  | 0.1−  | 2007 11 02 | 691 | 0.1− | 0.2− |
| 1995 11 25 | 691 | 0.0   | 0.3−  | 2001 11 20 | 704 | (3.8+ | 0.9+) | 2007 11 02 | 691 | 0.1+ | 0.1− |
| 1995 11 25 | 691 | 0.1−  | 0.2−  | 2001 11 21 | 704 | 0.7−  | 1.0−  | 2007 11 02 | 691 | 0.1− | 0.1− |
| 1995 11 25 | 691 | 0.0   | 0.1−  | 2001 11 21 | 704 | 0.0   | 0.1−  | 2007 11 06 | 691 | 0.1− | 0.1− |
| 2001 10 23 | 704 | 0.4+  | 0.5−  | 2001 11 21 | 704 | 0.2−  | 0.6−  | 2007 11 06 | 691 | 0.0  | 0.0  |
| 2001 10 23 | 704 | 0.1−  | 0.2+  | 2001 11 21 | 704 | (1.6− | 0.1−) | 2007 11 06 | 691 | 0.2− | 0.0  |
| 2001 10 23 | 704 | 0.6−  | 0.7+  | 2001 11 21 | 704 | 0.1−  | 1.2+  | 2007 11 17 | 691 | 0.1− | 0.1+ |
| 2001 10 23 | 704 | 1.0−  | 1.0−  | 2001 12 10 | 291 | 0.2−  | 0.2+  | 2007 11 17 | 691 | 0.1+ | 0.2− |
| 2001 10 25 | 644 | 0.0   | 0.3+  | 2001 12 10 | 291 | 0.3+  | 0.4+  | 2007 11 17 | 691 | 0.0  | 0.3− |
| 2001 10 25 | 644 | 0.6−  | 0.2+  | 2001 12 10 | 291 | 0.5+  | 0.3+  | 2007 11 17 | 691 | 0.2+ | 0.2+ |
| 2001 10 25 | 644 | 0.3−  | 0.3+  | 2001 12 14 | 704 | 0.1−  | 0.4−  | 2007 11 17 | 691 | 0.1+ | 0.0  |
| 2001 11 09 | 704 | 0.1−  | 0.8−  | 2001 12 14 | 704 | 0.1+  | 0.4−  | 2007 11 17 | 691 | 0.7− | 0.5+ |
| 2001 11 09 | 704 | 0.2−  | 0.2−  | 2001 12 14 | 704 | 0.5−  | 0.1+  | 2007 12 04 | 699 | 0.0  | 0.7+ |
| 2001 11 09 | 704 | (1.1− | 1.7−) | 2001 12 14 | 704 | 1.1−  | 0.2−  | 2007 12 04 | 699 | 0.4− | 1.3+ |
| 2001 11 09 | 704 | 0.7−  | 0.4−  | 2001 12 17 | 704 | 0.1+  | 0.1−  | 2007 12 04 | 699 | 1.2+ | 0.0  |
| 2001 11 17 | 704 | 0.2+  | 0.1+  | 2001 12 17 | 704 | 0.4+  | 0.2−  | 2007 12 04 | 699 | 0.2+ | 0.5+ |
| 2001 11 17 | 704 | 1.1+  | 0.3+  | 2001 12 17 | 704 | 0.7+  | 0.2−  | 2007 12 10 | 704 | 0.0  | 0.6− |
| 2001 11 17 | 704 | 0.0   | 0.7+  | 2001 12 17 | 704 | 0.5+  | 0.7−  | 2007 12 10 | 704 | 0.0  | 0.4+ |
| 2001 11 17 | 704 | 0.4−  | 0.4+  | 2006 08 25 | E12 | 0.4+  | 0.1+  | 2007 12 10 | 704 | 0.1+ | 0.3+ |
| 2001 11 19 | 699 | 0.3−  | 0.9+  | 2006 08 25 | E12 | 0.5−  | 0.4+  | 2007 12 10 | 704 | 0.5+ | 0.0  |
| 2001 11 19 | 699 | 0.2+  | 0.6+  | 2006 08 25 | E12 | 0.1−  | 0.3+  |            |     |      |      |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 12 26 | 411 | 0.8+ | 0.3- | 2000 01 31 | 704 | 0.2+  | 0.5-  | 2004 01 04 | 704 | 0.5+  | 0.3-  |
| 1995 12 26 | 411 | 0.3+ | 0.1+ | 2000 02 11 | 704 | 0.3-  | 0.4+  | 2004 01 04 | 704 | 0.1-  | 0.1+  |
| 1995 12 27 | 411 | 0.2+ | 0.6- | 2000 02 11 | 704 | 0.2-  | 0.1+  | 2004 01 04 | 704 | 0.4-  | 0.7+  |
| 1995 12 27 | 411 | 0.3- | 0.1- | 2000 02 11 | 704 | 0.4-  | 0.1-  | 2004 01 19 | 704 | 0.8+  | 0.4+  |
| 1995 12 30 | 411 | 0.3- | 1.2- | 2000 02 11 | 704 | 0.1+  | 0.2+  | 2004 01 19 | 704 | (2.3+ | 4.7-) |
| 1995 12 30 | 411 | 0.6- | 0.1- | 2000 02 11 | 704 | 0.3+  | 0.4-  | 2004 01 19 | 704 | (0.5+ | 1.6-) |
| 1996 01 10 | 411 | 0.5+ | 0.0  | 2000 03 04 | 704 | 0.8-  | 0.1-  | 2004 01 19 | 704 | 0.5+  | 0.1-  |
| 1996 01 10 | 411 | 0.2+ | 0.4+ | 2000 03 04 | 704 | 0.5-  | 0.5-  | 2004 01 19 | 704 | 0.5+  | 1.0-  |
| 1996 01 23 | 411 | 0.9- | 0.0  | 2000 03 04 | 704 | 0.2-  | 0.3+  | 2004 02 14 | 704 | 0.2-  | 0.3+  |
| 1996 01 23 | 411 | 0.1- | 0.4+ | 2000 03 04 | 704 | 0.5-  | 0.2-  | 2004 02 14 | 704 | 0.6+  | 0.1-  |
| 1999 11 01 | 704 | 0.5- | 0.6- | 2000 03 04 | 704 | (2.0- | 0.9-) | 2004 02 14 | 704 | 0.1+  | 0.6+  |
| 1999 11 01 | 704 | 0.7- | 0.1- | 2003 11 05 | 704 | 0.6-  | 0.3+  | 2004 02 14 | 704 | 0.4+  | 0.1-  |
| 1999 11 01 | 704 | 0.1- | 0.6- | 2003 11 05 | 704 | 0.5-  | 0.2+  | 2004 02 14 | 704 | 0.4-  | 0.7+  |
| 1999 11 01 | 704 | 0.2- | 0.1+ | 2003 11 05 | 704 | 0.7-  | 0.7+  | 2004 02 17 | 644 | 0.4-  | 0.1+  |
| 1999 11 01 | 704 | 1.2+ | 0.5- | 2003 11 05 | 704 | 0.8-  | 0.5+  | 2004 02 17 | 644 | 0.1-  | 0.1+  |
| 1999 12 13 | 704 | 0.2- | 0.3+ | 2003 11 05 | 704 | 0.4-  | 0.6+  | 2004 02 17 | 644 | 0.0   | 0.3+  |
| 1999 12 13 | 704 | 0.1- | 0.9+ | 2003 11 21 | 704 | 0.3+  | 0.4+  | 2004 03 14 | 704 | 1.1+  | 0.2+  |
| 1999 12 13 | 704 | 0.1+ | 1.3+ | 2003 11 21 | 704 | 0.1+  | 0.8+  | 2004 03 14 | 704 | 0.3+  | 0.5+  |
| 1999 12 15 | 704 | 0.3+ | 0.3- | 2003 11 21 | 704 | 0.7+  | 0.8+  | 2004 03 14 | 704 | 0.6+  | 0.2-  |
| 1999 12 15 | 704 | 0.2+ | 0.9- | 2003 11 21 | 704 | 0.8+  | 0.4+  | 2004 03 19 | 704 | 0.7+  | 0.8+  |
| 1999 12 15 | 704 | 0.8+ | 0.3- | 2003 11 21 | 704 | 0.8+  | 1.1+  | 2004 03 19 | 704 | 0.4+  | 0.8+  |
| 1999 12 15 | 704 | 0.4+ | 0.6- | 2003 11 24 | 704 | (3.7+ | 3.5+) | 2004 03 19 | 704 | (1.8+ | 0.3+) |
| 2000 01 02 | 704 | 0.1- | 0.4- | 2003 11 24 | 704 | (2.6+ | 4.2+) | 2004 03 22 | 704 | 0.2-  | 0.4-  |
| 2000 01 02 | 704 | 0.1+ | 0.6- | 2003 11 24 | 704 | 0.4-  | 0.0   | 2004 03 22 | 704 | 0.4-  | 0.9+  |
| 2000 01 02 | 704 | 0.1+ | 1.0- | 2003 11 24 | 704 | 0.4-  | 0.5+  | 2004 03 22 | 704 | 0.3+  | 0.1+  |
| 2000 01 02 | 704 | 0.6- | 0.9- | 2003 12 04 | 704 | 0.4+  | 0.3-  | 2004 03 22 | 704 | 0.0   | 0.0   |
| 2000 01 02 | 704 | 0.6- | 0.5- | 2003 12 04 | 704 | 0.2+  | 0.2-  | 2006 08 13 | 644 | 0.1+  | 0.0   |
| 2000 01 08 | 704 | 0.4- | 0.3+ | 2003 12 04 | 704 | 0.3-  | 0.3+  | 2006 08 13 | 644 | 0.2+  | 0.3-  |
| 2000 01 08 | 704 | 0.6- | 0.2+ | 2003 12 04 | 704 | (1.0+ | 2.1+) | 2006 08 13 | 644 | 0.2+  | 0.3-  |
| 2000 01 08 | 704 | 0.3- | 0.2- | 2003 12 04 | 704 | 0.2-  | 0.4-  | 2006 09 20 | 703 | 0.1-  | 0.2-  |
| 2000 01 08 | 704 | 0.3- | 0.1+ | 2003 12 05 | 704 | 0.1+  | 0.2-  | 2006 09 20 | 703 | 0.1+  | 0.6-  |
| 2000 01 08 | 704 | 0.2- | 0.3+ | 2003 12 05 | 704 | 0.2-  | 0.2+  | 2006 09 20 | 703 | 1.3+  | 0.2+  |
| 2000 01 29 | 704 | 0.2- | 0.2+ | 2003 12 05 | 704 | 0.3-  | 0.2+  | 2006 09 20 | 703 | 0.1-  | 0.7-  |
| 2000 01 29 | 704 | 0.0  | 0.1- | 2003 12 05 | 704 | (1.2+ | 2.3-) | 2007 10 25 | G96 | (0.2+ | 3.1+) |
| 2000 01 29 | 704 | 0.1- | 0.1+ | 2003 12 15 | 704 | 0.5+  | 0.1+  | 2007 10 25 | G96 | (0.2- | 2.7+) |
| 2000 01 29 | 704 | 0.6- | 0.1+ | 2003 12 15 | 704 | 0.5-  | 0.8-  | 2007 10 25 | G96 | (0.1- | 2.8+) |
| 2000 01 29 | 704 | 1.0- | 0.2+ | 2003 12 15 | 704 | 0.3-  | 1.2-  | 2007 10 25 | G96 | (0.1- | 1.9+) |
| 2000 01 30 | 704 | 0.0  | 0.1- | 2003 12 15 | 704 | 0.2-  | 0.1+  | 2007 11 28 | A77 | 0.2+  | 0.2+  |
| 2000 01 30 | 704 | 0.1- | 0.3+ | 2003 12 15 | 704 | 0.4+  | 0.4-  | 2007 12 01 | A77 | 1.9-  | 1.0+  |
| 2000 01 30 | 704 | 0.5+ | 0.8- | 2003 12 30 | 704 | 1.1+  | 0.5+  | 2007 12 01 | A77 | 0.6+  | 1.7-  |
| 2000 01 30 | 704 | 0.1+ | 0.6- | 2003 12 30 | 704 | 0.6+  | 0.2+  | 2007 12 01 | A77 | 0.5+  | 0.7-  |
| 2000 01 30 | 704 | 0.5+ | 0.4- | 2003 12 30 | 704 | 0.9+  | 0.1+  | 2007 12 03 | A77 | 0.0   | 0.2+  |
| 2000 01 31 | 704 | 0.7- | 0.4+ | 2003 12 30 | 704 | 1.0+  | 0.1+  | 2007 12 03 | A77 | 0.1+  | 0.2-  |
| 2000 01 31 | 704 | 0.3- | 0.4- | 2003 12 30 | 704 | 0.9-  | 0.7+  | 2007 12 03 | A77 | 0.2-  | 0.8+  |

(171486)\* 1996 MO

Discovered 1996 June 23 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 322.44101  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.40997036 | $\omega$ | 4.61862   | -0.98414638 | -0.17528313 |
| <i>a</i> | 1.7946003  | $\Omega$ | 165.20290 | +0.15914216 | -0.94006336 |
| <i>e</i> | 0.5118723  | <i>i</i> | 6.07991   | +0.07829225 | -0.29250077 |
| <i>P</i> | 2.40       | <i>H</i> | 18.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 06 23 | 691 | 0.1- | 0.1+ | 2002 11 06 | 291 | 0.0   | 0.3+  | 2003 05 28 | 704 | 0.1+ | 0.1- |
| 1996 06 23 | 691 | 0.1- | 0.3- | 2002 11 06 | 291 | 0.2+  | 0.2+  | 2003 05 28 | 704 | 0.3+ | 0.0  |
| 1996 06 23 | 691 | 0.6- | 0.4- | 2002 12 18 | 711 | 0.3+  | 0.2+  | 2003 05 28 | 704 | 0.0  | 0.1- |
| 1996 06 24 | 691 | 0.7- | 0.2- | 2002 12 18 | 711 | 0.6+  | 0.5+  | 2003 05 28 | 704 | 0.3- | 0.2+ |
| 1996 06 24 | 691 | 0.2- | 0.1+ | 2002 12 18 | 711 | (2.4+ | 1.4+) | 2003 05 28 | 704 | 0.1+ | 0.0  |
| 1996 06 24 | 691 | 0.8- | 0.1- | 2003 01 02 | 704 | (1.6- | 0.7+) | 2003 06 05 | 560 | 0.1- | 0.3+ |
| 1996 06 25 | 691 | 0.7- | 0.1+ | 2003 01 02 | 704 | (1.6+ | 0.9+) | 2003 06 05 | 560 | 0.9- | 0.6+ |
| 1996 06 25 | 691 | 0.3- | 0.3- | 2003 01 02 | 704 | 0.3-  | 1.4+  | 2003 06 05 | 560 | 0.3- | 0.1+ |
| 1996 07 06 | 658 | 0.5- | 0.3+ | 2003 01 02 | 704 | 0.3-  | 0.0   | 2003 06 14 | 859 | 0.9+ | 0.5- |
| 1996 07 06 | 658 | 0.2+ | 1.5+ | 2003 05 21 | 649 | 0.1+  | 0.8+  | 2003 06 14 | 859 | 0.9+ | 0.7+ |
| 1996 07 06 | 658 | 0.4+ | 0.2- | 2003 05 21 | 649 | 0.0   | 0.6+  | 2003 06 14 | 859 | 0.9+ | 0.7+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 07 07 | 658 | 0.2-  | 0.7-  | 2003 05 21 | 649 | 0.0   | 0.4+  | 2003 06 21 | 941 | 0.2-  | 1.0-  |
| 1996 07 07 | 658 | 0.8-  | 0.1+  | 2003 05 21 | 649 | 0.4+  | 0.0   | 2003 06 21 | 941 | 0.4-  | 0.8-  |
| 1996 07 07 | 658 | 1.0-  | 0.5+  | 2003 05 21 | H59 | 0.5-  | 0.6+  | 2003 06 21 | 941 | 0.4-  | 0.7-  |
| 1996 07 18 | 413 | 1.1+  | 0.1+  | 2003 05 21 | H59 | 0.1+  | 0.1+  | 2003 06 21 | 941 | 0.4-  | 0.7-  |
| 1996 07 18 | 413 | 1.2+  | 0.4+  | 2003 05 21 | H59 | 0.5-  | 0.8+  | 2003 06 21 | 941 | 0.4-  | 0.6-  |
| 1996 07 19 | 413 | 1.6+  | 0.1-  | 2003 05 21 | H59 | (1.0- | 1.9+) | 2007 11 04 | G96 | 0.3+  | 0.0   |
| 1996 07 19 | 413 | (3.6+ | 0.5+) | 2003 05 22 | 560 | 0.1+  | 0.2+  | 2007 11 04 | G96 | 0.5-  | 0.1+  |
| 1996 07 19 | 413 | 0.5+  | 0.2+  | 2003 05 22 | 560 | 0.8-  | 0.2+  | 2007 11 04 | G96 | 0.0   | 0.0   |
| 1996 07 20 | 711 | 1.0+  | 0.3-  | 2003 05 23 | 704 | 0.2+  | 0.2-  | 2007 11 04 | G96 | 0.1+  | 0.2+  |
| 1996 07 20 | 711 | 0.3+  | 0.4+  | 2003 05 23 | 704 | 0.2-  | 0.4-  | 2007 11 19 | 703 | 0.4-  | 0.3+  |
| 1996 07 22 | 711 | 1.9+  | 1.3+  | 2003 05 23 | 704 | 0.0   | 0.1+  | 2007 11 19 | 703 | 1.6-  | 0.2+  |
| 1996 07 22 | 711 | 1.5+  | 1.0+  | 2003 05 23 | 704 | 0.5+  | 0.6+  | 2007 11 19 | 703 | 0.5-  | 0.2-  |
| 2002 10 31 | 696 | 0.5+  | 0.7+  | 2003 05 23 | 704 | 1.0+  | 0.3-  | 2007 11 19 | 703 | (1.7- | 0.6-) |
| 2002 10 31 | 696 | 0.5+  | 0.6+  | 2003 05 27 | 670 | 0.1-  | 0.2+  |            |     |       |       |
| 2002 11 06 | 291 | 0.1-  | 0.5+  | 2003 05 27 | 670 | 0.3-  | 0.5+  |            |     |       |       |

(171487)\* 1996 RA<sub>12</sub> = 2002 XX<sub>5</sub>

Discovered 1996 Sept. 8 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 39917)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 356.11938  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.18213071 | $\omega$ | 258.07215 | +0.95560636 | -0.29112291 |
| <i>a</i> | 3.0823404  | $\Omega$ | 118.83846 | +0.28647804 | +0.88195057 |
| <i>e</i> | 0.1664708  | <i>i</i> | 2.97283   | +0.06889713 | +0.37068942 |
| <i>P</i> | 5.41       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 08 | 691 | 0.2- | 0.2+ | 2002 12 05 | 704 | 0.5- | 0.2- | 2007 09 15 | 704 | 0.5- | 1.0+ |
| 1996 09 08 | 691 | 0.3- | 0.1- | 2002 12 27 | 644 | 0.5+ | 0.7+ | 2007 09 18 | 704 | 1.1+ | 0.5+ |
| 1996 09 08 | 691 | 0.3- | 0.2- | 2002 12 27 | 644 | 0.9+ | 0.6+ | 2007 09 18 | 704 | 0.6+ | 0.3+ |
| 1996 09 11 | 691 | 0.2+ | 0.3- | 2002 12 27 | 644 | 0.2+ | 0.8+ | 2007 09 18 | 704 | 0.4- | 0.5- |
| 1996 09 11 | 691 | 0.1+ | 0.1- | 2005 04 01 | 691 | 0.3- | 0.2+ | 2007 09 18 | 704 | 0.4- | 0.2- |
| 1996 09 17 | 691 | 0.1+ | 0.4+ | 2005 04 01 | 691 | 0.3+ | 1.2+ | 2007 10 04 | 703 | 0.5- | 0.2- |
| 1996 09 17 | 691 | 0.3+ | 0.1- | 2005 04 01 | 691 | 0.1- | 0.6+ | 2007 10 04 | 703 | 1.5- | 0.5- |
| 2001 07 13 | 644 | 0.6+ | 0.1- | 2005 04 12 | 691 | 0.2+ | 0.3- | 2007 10 04 | 703 | 0.4+ | 1.1+ |
| 2001 07 13 | 644 | 0.2+ | 0.1- | 2005 04 12 | 691 | 0.5+ | 0.1+ | 2007 10 04 | 703 | 0.4- | 1.2+ |
| 2001 07 13 | 644 | 0.3+ | 0.1- | 2005 04 12 | 691 | 0.2+ | 0.8+ | 2007 10 13 | 704 | 1.1- | 0.6+ |
| 2002 12 01 | 704 | 0.5- | 0.9+ | 2007 09 11 | D35 | 0.4- | 0.2- | 2007 10 13 | 704 | 0.1- | 0.4- |
| 2002 12 01 | 704 | 0.3+ | 0.2- | 2007 09 11 | D35 | 0.4- | 0.2+ | 2007 10 13 | 704 | 0.7- | 0.1+ |
| 2002 12 01 | 704 | 0.3+ | 0.6- | 2007 09 11 | D35 | 0.2+ | 0.1+ | 2007 10 13 | 704 | 0.4- | 0.1- |
| 2002 12 05 | 704 | 0.4- | 0.3- | 2007 09 15 | 704 | 0.3+ | 0.4+ | 2007 12 04 | 704 | 0.6+ | 1.2+ |
| 2002 12 05 | 704 | 0.1- | 0.3+ | 2007 09 15 | 704 | 0.9- | 0.6+ | 2007 12 04 | 704 | 0.0  | 2.2+ |
| 2002 12 05 | 704 | 0.3- | 0.4- | 2007 09 15 | 704 | 0.8+ | 0.3+ | 2007 12 04 | 704 | 0.2- | 2.2+ |

(171488)\* 1996 TO<sub>16</sub> = 2007 SL<sub>5</sub>

Discovered 1996 Oct. 4 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 127853)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |         |
|----------|---------|
| <i>M</i> | 351.953 |
|----------|---------|



2007 DEC. 24

M.P.O. 129059

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 1996 10 12 691 0.2− 0.4− | 2007 09 11 703 0.5+ 0.3+   | 2007 11 02 704 0.1+ 0.6−   |
| 1996 10 12 691 0.1+ 0.4− | 2007 09 11 703 0.0 0.6+    | 2007 11 03 699 0.3+ 0.4+   |
| 1998 03 22 691 0.1− 0.3− | 2007 09 18 704 1.0− 0.6−   | 2007 11 03 699 0.7− 0.2−   |
| 1998 03 22 691 0.2+ 0.4− | 2007 09 18 704 0.5− 0.2+   | 2007 11 03 699 0.6+ 1.3−   |
| 1998 03 22 691 0.3− 0.4− | 2007 09 18 704 0.6− 0.5+   | 2007 11 03 699 0.5− 0.1−   |
| 2000 12 29 699 0.3− 1.2+ | 2007 09 22 704 0.1+ 0.4−   | 2007 11 07 704 (1.3− 2.6+) |
| 2000 12 29 699 0.4+ 1.0+ | 2007 09 22 704 0.5+ 0.1−   | 2007 11 07 704 0.5− 0.5+   |
| 2000 12 29 699 0.2− 0.9+ | 2007 09 22 704 0.2+ 0.2−   | 2007 11 07 704 1.1− 0.4+   |
| 2000 12 29 699 0.4− 0.1− | 2007 09 22 704 0.0 0.1+    | 2007 11 07 704 0.8− 0.1−   |
| 2003 07 28 599 0.5+ 0.6+ | 2007 10 08 699 0.0 0.0     | 2007 11 07 704 0.0 0.4+    |
| 2003 07 28 599 0.1+ 0.5+ | 2007 10 08 699 0.4+ 0.1−   | 2007 11 12 703 (2.2− 0.2+) |
| 2003 07 28 599 0.1− 0.6+ | 2007 10 08 699 0.0 0.0     | 2007 11 12 703 (2.5− 0.1−) |
| 2005 01 13 703 0.1− 0.5+ | 2007 10 13 703 0.5− 0.4−   | 2007 11 12 703 0.5− 0.4−   |
| 2005 01 13 703 0.1+ 0.1+ | 2007 10 13 703 0.5+ 0.2+   | 2007 11 12 703 0.7− 1.0−   |
| 2005 01 13 703 0.3− 0.7+ | 2007 10 13 703 0.1+ 0.1−   | 2007 11 18 704 0.1+ 0.7+   |
| 2005 01 13 703 1.1+ 0.0  | 2007 10 18 683 0.6− 0.2−   | 2007 11 18 704 0.1− 0.9+   |
| 2006 04 07 691 0.1+ 0.1− | 2007 10 18 683 0.7− 1.3−   | 2007 11 18 704 0.6+ 0.5+   |
| 2006 04 07 691 0.2− 0.3+ | 2007 10 18 683 0.4+ 0.2+   | 2007 11 18 704 0.5− 1.0+   |
| 2006 04 07 691 0.3+ 0.2+ | 2007 10 19 683 (0.2− 3.5−) |                            |

**(171489)\* 1996 TB<sub>27</sub> = 2003 SK<sub>301</sub>**

Discovered 1996 Oct. 7 by Spacewatch at Kitt Peak.

Id. M. E. Sansaturio (*MPO* 60480)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 313.65339  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27506802 | $\omega$ | 86.48241 | −0.30920389 | −0.95037778 |
| $a$ | 2.3415817  | $\Omega$ | 21.62495 | +0.83142422 | −0.28764907 |
| $e$ | 0.0988504  | $i$      | 5.33710  | +0.46165650 | −0.11849091 |
| $P$ | 3.58       | $H$      | 16.7     | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1996 10 07 691 0.0 0.2−    | 2005 03 09 704 0.6+ 1.4+   | 2007 11 13 703 0.9+ 0.5+ |
| 1996 10 07 691 0.1− 0.1−   | 2005 03 12 704 0.5+ 0.2−   | 2007 11 13 703 0.0 0.6−  |
| 1996 10 07 691 0.3− 0.4−   | 2005 03 12 704 0.1− 0.9−   | 2007 11 18 704 0.3+ 0.2+ |
| 1996 10 16 691 0.3+ 0.0    | 2005 03 12 704 0.3− 0.6−   | 2007 11 18 704 0.8+ 0.2+ |
| 1996 10 16 691 0.2+ 0.1−   | 2005 03 12 704 0.9+ 0.4−   | 2007 11 18 704 1.2+ 0.1− |
| 1996 10 16 691 0.3+ 0.1−   | 2005 03 12 704 0.2+ 0.3−   | 2007 11 18 704 1.1+ 0.2+ |
| 2003 09 17 644 0.5− 0.4+   | 2005 03 16 703 0.5− 0.1−   | 2007 11 18 704 0.4+ 0.4+ |
| 2003 09 17 644 0.3− 0.5+   | 2005 03 16 703 1.3− 0.4−   | 2007 11 19 691 0.1− 0.2− |
| 2003 09 17 644 0.2− 0.7+   | 2005 03 16 703 (1.1− 1.6−) | 2007 11 19 691 0.1− 0.1− |
| 2003 09 20 599 0.5− 1.2+   | 2005 03 16 703 0.8− 0.6−   | 2007 11 19 691 0.1− 0.1− |
| 2003 09 20 599 0.0 0.7+    | 2005 03 17 704 0.8+ 0.1+   | 2007 11 20 704 0.2− 0.3− |
| 2003 09 20 599 0.3+ 0.9+   | 2005 03 17 704 0.1+ 0.7+   | 2007 11 20 704 0.7+ 0.5− |
| 2003 09 29 691 0.1− 0.4+   | 2005 03 17 704 0.0 0.4−    | 2007 11 20 704 0.4+ 0.8− |
| 2003 09 29 691 0.5− 0.5+   | 2005 03 17 704 0.5− 0.4+   | 2007 11 20 704 0.1− 0.7− |
| 2003 09 29 691 0.5− 0.5+   | 2005 04 09 691 0.1− 0.1+   | 2007 11 20 691 0.1− 0.3− |
| 2005 02 14 704 0.1− 1.1+   | 2005 04 09 691 0.2− 0.0    | 2007 11 20 691 0.2− 0.2− |
| 2005 02 14 704 1.2+ 0.6+   | 2005 04 09 691 0.6− 0.4+   | 2007 11 20 691 0.0 0.2−  |
| 2005 02 14 704 (1.0+ 1.8+) | 2005 05 11 G96 0.7− 0.4−   | 2007 12 12 704 0.1− 1.5+ |
| 2005 03 03 703 1.1+ 0.2+   | 2005 05 11 G96 0.8− 0.2−   | 2007 12 12 704 0.0 0.1−  |
| 2005 03 03 703 1.4+ 0.3−   | 2005 05 11 G96 0.2− 0.0    | 2007 12 12 704 0.4− 1.2+ |
| 2005 03 03 703 0.7− 0.3+   | 2005 05 11 G96 0.7− 0.3+   | 2007 12 12 704 0.0 0.7+  |
| 2005 03 03 703 0.4+ 0.0    | 2007 11 01 691 0.2− 0.0    | 2007 12 13 704 0.2+ 0.1− |
| 2005 03 04 704 0.7+ 1.3+   | 2007 11 01 691 0.4− 0.1−   | 2007 12 13 704 0.2− 0.1+ |
| 2005 03 04 704 1.2+ 0.7−   | 2007 11 01 691 0.2− 0.0    | 2007 12 13 704 1.4+ 0.3+ |
| 2005 03 04 704 0.6+ 0.3+   | 2007 11 07 704 0.0 0.5+    | 2007 12 13 704 0.4+ 0.3+ |
| 2005 03 04 704 0.6+ 0.5+   | 2007 11 07 704 0.2− 1.0−   | 2007 12 13 704 0.0 0.0   |
| 2005 03 04 704 0.4+ 0.0    | 2007 11 07 704 0.1− 0.4+   | 2007 12 15 704 0.2+ 0.5+ |
| 2005 03 09 704 0.5+ 0.3+   | 2007 11 07 704 0.0 0.2−    | 2007 12 15 704 0.4− 0.3+ |
| 2005 03 09 704 0.0 0.4+    | 2007 11 07 704 0.2− 0.8−   | 2007 12 15 704 0.4− 0.8+ |
| 2005 03 09 704 0.8+ 0.5+   | 2007 11 13 703 0.0 0.4−    | 2007 12 15 704 0.9− 0.4+ |
| 2005 03 09 704 0.0 0.5+    | 2007 11 13 703 0.0 0.6+    | 2007 12 15 704 0.1− 0.5+ |

**(171490)\* 1996 TX<sub>31</sub> = 2007 TO<sub>95</sub>**

Discovered 1996 Oct. 9 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 125784)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 343.59514  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27054765 | $\omega$ | 357.05635 | +0.56283026 | −0.81952504 |
| $a$ | 2.3675920  | $\Omega$ | 58.66762  | +0.76091799 | +0.46281275 |
| $e$ | 0.1147843  | $i$      | 7.24407   | +0.32284039 | +0.33790985 |
| $P$ | 3.64       | $H$      | 16.0      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 1996 10 08 691 0.5+ 0.3+ | 2007 10 07 703 0.4+ 0.3− | 2007 11 03 699 0.5+ 0.0    |
| 1996 10 08 691 0.6+ 0.2+ | 2007 10 07 703 0.8+ 0.1+ | 2007 11 03 699 0.4+ 0.3+   |
| 1996 10 08 691 0.5+ 0.2+ | 2007 10 07 703 0.2+ 0.0  | 2007 11 03 699 1.0+ 0.7−   |
| 1996 10 09 691 0.3− 0.1+ | 2007 10 08 699 0.7+ 0.7− | 2007 11 04 704 0.1+ 0.5+   |
| 1996 10 09 691 0.3− 0.2− | 2007 10 08 699 0.0 0.7+  | 2007 11 04 704 0.2− 0.3+   |
| 1996 10 09 691 0.5− 0.2− | 2007 10 08 699 0.1+ 0.8− | 2007 11 04 704 0.3− 0.2+   |
| 1996 10 12 691 0.5− 0.2− | 2007 10 08 699 0.2+ 0.3+ | 2007 11 04 704 0.5− 0.7+   |
| 1996 10 12 691 0.3− 0.0  | 2007 10 13 704 0.1+ 0.4− | 2007 11 04 704 0.0 0.6+    |
| 1996 10 12 691 0.4− 0.1− | 2007 10 13 704 0.0 0.2−  | 2007 11 07 H55 0.1+ 0.5−   |
| 1996 10 16 566 0.2+ 0.5+ | 2007 10 13 704 0.1− 0.3+ | 2007 11 07 H55 1.0+ 1.5+   |
| 1996 10 16 566 1.6+ 0.8+ | 2007 10 13 704 0.1+ 0.0  | 2007 11 07 H55 0.3+ 0.3+   |
| 1996 10 16 566 0.1+ 0.1+ | 2007 10 13 704 0.8− 0.4+ | 2007 11 09 G96 0.3− 0.4−   |
| 2003 07 08 644 0.5− 0.7+ | 2007 10 15 704 0.8− 0.1− | 2007 11 09 G96 0.5− 0.3−   |
| 2003 07 08 644 0.4− 0.5+ | 2007 10 15 704 1.1− 0.3− | 2007 11 09 G96 0.2− 0.4−   |
| 2003 07 08 644 0.8− 0.2+ | 2007 10 15 704 0.9− 0.1− | 2007 11 09 G96 0.4− 0.3−   |
| 2003 07 25 644 0.7− 0.1− | 2007 10 15 704 0.6− 0.0  | 2007 11 13 699 0.8− 0.0    |
| 2003 07 25 644 0.4− 0.3+ | 2007 10 15 704 0.8− 0.2− | 2007 11 13 699 0.5− 0.1−   |
| 2003 07 25 644 0.2− 0.3− | 2007 10 18 699 1.1+ 0.5− | 2007 11 13 699 0.0 0.2−    |
| 2003 09 19 699 0.5+ 1.3− | 2007 10 18 699 0.8− 0.9− | 2007 11 13 699 0.4− 0.6−   |
| 2003 09 19 699 1.2+ 1.0− | 2007 10 18 699 0.0 0.2−  | 2007 11 14 704 0.0 0.4−    |
| 2003 09 19 699 0.9+ 0.7+ | 2007 10 18 699 0.4+ 0.4+ | 2007 11 14 704 0.0 0.4−    |
| 2003 09 19 699 1.4+ 0.3+ | 2007 10 19 704 0.9+ 0.3+ | 2007 11 14 704 (1.9+ 0.7+) |
| 2003 09 25 644 0.5− 0.2+ | 2007 10 19 704 0.7+ 0.0  | 2007 11 14 704 0.8− 0.4+   |
| 2003 09 25 644 0.6− 0.1− | 2007 10 19 704 0.8+ 0.1+ | 2007 11 14 704 1.0+ 0.1−   |
| 2003 09 25 644 0.4− 0.0  | 2007 10 19 704 0.6+ 0.1+ | 2007 12 05 704 0.3− 0.3+   |
| 2004 12 09 703 0.4+ 0.2− | 2007 10 19 704 0.1+ 0.2− | 2007 12 05 703 0.1− 0.5−   |
| 2004 12 09 703 0.0 0.6+  | 2007 10 20 704 0.7+ 0.5+ | 2007 12 05 704 0.3− 0.5+   |
| 2004 12 09 703 0.3+ 1.3− | 2007 10 20 704 0.4+ 0.2+ | 2007 12 05 703 0.1+ 0.8−   |
| 2004 12 09 703 1.2− 0.1− | 2007 10 20 704 0.0 0.4−  | 2007 12 05 703 0.6− 0.3−   |
| 2005 03 09 703 0.2− 0.5+ | 2007 10 20 704 0.2+ 0.5+ | 2007 12 05 704 0.5− 0.4−   |
| 2005 03 09 703 0.5+ 0.5+ | 2007 10 30 703 0.2+ 0.3− | 2007 12 05 703 0.8− 0.3−   |
| 2005 03 09 703 0.0 0.1−  | 2007 10 30 703 0.2+ 0.0  | 2007 12 05 704 0.1− 1.3+   |
| 2005 03 09 703 0.1+ 0.3+ | 2007 10 30 703 0.3− 0.2+ | 2007 12 05 704 0.2− 1.2+   |
| 2007 10 07 703 0.4+ 0.4− | 2007 10 30 703 0.3+ 0.3− |                            |

**(171491)\* 1996 TT<sub>44</sub> = 2003 SP<sub>227</sub>**

Discovered 1996 Oct. 6 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 52420)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 66.31192   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28110550 | $\omega$ | 57.86466  | +0.99626507 | −0.08353446 |
| $a$ | 2.3079328  | $\Omega$ | 306.91796 | +0.06711074 | +0.90839247 |
| $e$ | 0.1824888  | $i$      | 1.56686   | +0.05433284 | +0.40968904 |
| $P$ | 3.51       | $H$      | 17.6      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1994 01 11 691 0.0 0.5+  | 2003 10 16 691 0.0 0.0   | 2003 10 27 691 0.2− 0.3− |
| 1994 01 11 691 0.4+ 0.1− | 2003 10 16 691 0.1+ 0.2+ | 2003 10 27 691 0.2− 0.2− |
| 1994 01 11 691 0.3− 0.4− | 2003 10 21 699 0.4+ 0.4+ | 2003 10 27 691 0.2− 0.2− |
| 1996 10 06 691 0.1+ 0.3− | 2003 10 21 699 0.7+ 0.5+ | 2003 10 29 704 0.9− 0.3− |
| 1996 10 06 691 0.3+ 0.2− | 2003 10 21 699 0.2− 0.2− | 2003 10 29 704 0.6− 0.2− |
| 1996 10 08 691 0.1− 0.2− | 2003 10 21 644 0.4− 0.1+ | 2003 10 29 704 0.6− 0.1+ |
| 1996 10 08 691 0.1+ 0.4− | 2003 10 21 699 0.7− 0.0  | 2003 10 29 704 1.3− 0.3− |
| 1996 10 08 691 0.1− 0.3− | 2003 10 21 704 0.1− 0.9+ | 2005 03 09 G96 0.3+ 0.0  |
| 1996 10 18 566 0.6− 0.7− | 2003 10 21 704 0.4+ 0.3+ | 2005 03 09 G96 0.3− 0.1− |
| 1996 10 18 566 0.7+ 0.7− | 2003 10 21 644 0.2− 0.2+ | 2005 03 09 G96 0.0 0.1+  |
| 1996 10 18 566 0.2+ 0.2− | 2003 10 21 704 0.2+ 0.9+ | 2005 03 09 G96 0.1+ 0.3− |
| 2001 01 19 691 0.9− 0.3+ | 2003 10 21 704 0.0 1.1+  | 2005 04 09 G96 0.3− 0.0  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 19 | 691 | 0.3+ | 0.2− | 2003 10 21 | 704 | 0.7−  | 0.3+  | 2005 04 09 | G96 | 0.5+ | 0.0  |
| 2001 01 19 | 691 | 0.7+ | 0.0  | 2003 10 21 | 644 | 0.1−  | 0.2+  | 2005 04 09 | G96 | 0.1− | 0.0  |
| 2003 09 16 | 691 | 0.0  | 0.0  | 2003 10 24 | 704 | 0.1−  | 0.1+  | 2005 04 09 | G96 | 0.5− | 0.5+ |
| 2003 09 16 | 691 | 0.1+ | 0.0  | 2003 10 24 | 704 | 0.1−  | 0.3+  | 2007 11 11 | G96 | 0.6− | 0.2− |
| 2003 09 16 | 691 | 0.4+ | 0.0  | 2003 10 24 | 704 | 0.1+  | 0.3+  | 2007 11 11 | G96 | 0.1+ | 0.0  |
| 2003 09 27 | 704 | 1.3− | 0.7+ | 2003 10 24 | 704 | 0.1+  | 0.0   | 2007 11 11 | G96 | 0.6− | 0.3− |
| 2003 09 27 | 704 | 0.1+ | 0.6+ | 2003 10 24 | 704 | 0.2−  | 0.4+  | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2003 09 27 | 704 | 0.4+ | 1.0+ | 2003 10 25 | 704 | 0.7+  | 0.5−  | 2007 12 06 | G96 | 0.4− | 0.0  |
| 2003 09 28 | 691 | 0.2+ | 0.0  | 2003 10 25 | 704 | (1.8+ | 1.5−) | 2007 12 06 | G96 | 0.1− | 0.4+ |
| 2003 09 28 | 691 | 0.1− | 0.0  | 2003 10 25 | 704 | 0.2+  | 0.0   | 2007 12 06 | G96 | 0.1+ | 0.2− |
| 2003 09 28 | 691 | 0.0  | 0.2+ | 2003 10 25 | 704 | 0.0   | 0.3+  | 2007 12 06 | G96 | 0.5+ | 0.5− |
| 2003 10 16 | 691 | 0.1+ | 0.1+ | 2003 10 25 | 704 | 1.0+  | 0.6+  |            |     |      |      |

(171492)\* 1996 VK<sub>1</sub> = 2003 SS<sub>238</sub>

Discovered 1996 Nov. 7 by P. G. Comba at Prescott.

Id. G. V. Williams (MPO 52421)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC      |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> | 16.15600   |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 0.27448876 | <i>ω</i> | 173.44231 |          | +0.61506121 |          | −0.78766627 |
| <i>a</i> | 2.3448749  | <i>Ω</i> | 238.59509 |          | +0.72149694 |          | +0.58054329 |
| <i>e</i> | 0.2237063  | <i>i</i> | 2.40388   |          | +0.31802810 |          | +0.20627977 |
| <i>P</i> | 3.59       | <i>H</i> | 17.5      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 03 07 | 691 | 0.1+ | 0.2− | 2003 09 19 | 691 | 0.1−  | 0.3+  | 2003 11 16 | 645 | 0.0  | 0.1− |
| 1994 03 07 | 691 | 0.4− | 0.2− | 2003 09 19 | 704 | 1.2−  | 1.4+  | 2003 11 16 | 645 | 0.1+ | 0.1− |
| 1994 03 07 | 691 | 0.0  | 0.2+ | 2003 09 19 | 704 | 1.2−  | 1.3+  | 2003 11 19 | 645 | 0.0  | 0.0  |
| 1996 11 07 | 684 | 0.3− | 0.0  | 2003 09 19 | 704 | (1.7− | 2.1+) | 2003 11 19 | 645 | 0.0  | 0.1− |
| 1996 11 07 | 684 | 0.8− | 0.1− | 2003 09 19 | 704 | 0.7−  | 1.4+  | 2005 04 02 | 644 | 0.7+ | 0.7+ |
| 1996 11 07 | 684 | 0.9− | 0.2+ | 2003 09 19 | 704 | 0.4−  | 1.5+  | 2005 04 02 | 644 | 0.8+ | 1.0+ |
| 1996 11 08 | 684 | 0.1− | 0.1+ | 2003 09 27 | 704 | 0.3+  | 0.6+  | 2005 04 02 | 644 | 0.7+ | 1.3+ |
| 1996 11 08 | 684 | 0.4− | 0.2+ | 2003 09 27 | 704 | 1.0+  | 0.0   | 2005 04 02 | 644 | 0.5+ | 0.5+ |
| 1996 11 08 | 684 | 0.4− | 0.1− | 2003 09 27 | 704 | 0.4+  | 1.0+  | 2005 04 02 | 644 | 0.3+ | 0.5+ |
| 1996 11 09 | 684 | 0.0  | 0.2+ | 2003 09 27 | 704 | 0.3+  | 0.5+  | 2005 04 02 | 644 | 0.3− | 0.6+ |
| 1996 11 09 | 684 | 0.1+ | 0.1+ | 2003 09 27 | 704 | 0.3−  | 0.2+  | 2007 11 05 | G96 | 0.2+ | 0.2− |
| 1996 11 17 | 684 | 0.2− | 0.0  | 2003 09 29 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.2− | 0.1− |
| 1996 11 17 | 684 | 0.4− | 0.0  | 2003 09 29 | 691 | 0.2−  | 0.0   | 2007 11 05 | G96 | 0.1− | 0.3− |
| 1996 11 28 | 327 | 0.7+ | 0.1− | 2003 09 29 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.1− | 0.1− |
| 1996 11 28 | 327 | 0.1+ | 0.2+ | 2003 10 20 | 704 | 0.5+  | 0.3+  | 2007 11 14 | 704 | 0.5+ | 0.4+ |
| 1996 11 28 | 327 | 1.0+ | 0.5+ | 2003 10 20 | 704 | 0.3+  | 0.7+  | 2007 11 14 | 704 | 1.2+ | 0.9+ |
| 1996 11 28 | 327 | 0.8+ | 0.8+ | 2003 10 20 | 704 | 1.2+  | 1.2−  | 2007 11 14 | 704 | 1.2+ | 0.2− |
| 1996 12 02 | 684 | 0.5+ | 0.6+ | 2003 10 20 | 704 | 0.3−  | 0.4+  | 2007 11 14 | 704 | 0.3+ | 0.9+ |
| 1996 12 02 | 684 | 0.3+ | 0.3+ | 2003 10 23 | 645 | 0.0   | 0.1−  | 2007 12 04 | G96 | 0.3− | 0.1+ |
| 2003 09 03 | 704 | 0.5+ | 0.3+ | 2003 10 23 | 645 | 0.0   | 0.2−  | 2007 12 04 | G96 | 0.2− | 0.1− |
| 2003 09 03 | 704 | 0.3+ | 0.4+ | 2003 10 24 | 704 | 0.1+  | 0.6+  | 2007 12 04 | G96 | 0.0  | 0.0  |
| 2003 09 03 | 704 | 0.2− | 0.1− | 2003 10 24 | 704 | 1.0−  | 0.4+  | 2007 12 04 | G96 | 0.1+ | 0.1− |
| 2003 09 17 | 644 | 0.1+ | 0.5+ | 2003 10 24 | 704 | 0.1+  | 0.1−  | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2003 09 17 | 644 | 0.0  | 0.7+ | 2003 10 24 | 704 | 0.5−  | 0.1+  | 2007 12 05 | 704 | 0.6− | 0.8+ |
| 2003 09 17 | 644 | 0.1− | 0.5+ | 2003 10 24 | 645 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.3+ | 0.2− |
| 2003 09 19 | 691 | 0.1+ | 0.3+ | 2003 10 24 | 645 | 0.0   | 0.2−  | 2007 12 05 | 704 | 0.9− | 0.2+ |
| 2003 09 19 | 691 | 0.0  | 0.3+ | 2003 10 24 | 704 | 0.2−  | 0.6+  | 2007 12 05 | 704 | 1.1− | 0.7+ |

(171493)\* 1996 VQ<sub>13</sub> = 2001 QK<sub>183</sub>

Discovered 1996 Nov. 5 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 16744)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC      |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> | 24.99892   |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 0.18015761 | <i>ω</i> | 144.63150 |          | +0.97827497 |          | −0.17130826 |
| <i>a</i> | 3.1048048  | <i>Ω</i> | 225.68748 |          | +0.13174958 |          | +0.94856468 |
| <i>e</i> | 0.1974525  | <i>i</i> | 9.39091   |          | +0.16006290 |          | +0.26623021 |
| <i>P</i> | 5.47       | <i>H</i> | 15.8      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 05 | 691 | 0.1+ | 0.1− | 2001 10 14 | 704 | 0.5+ | 1.2+ | 2007 11 05 | G96 | 0.3+ | 0.3− |
| 1996 11 05 | 691 | 0.3+ | 0.2− | 2001 10 14 | 704 | 0.8+ | 1.0+ | 2007 11 05 | G96 | 0.2+ | 0.2− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 11 05 | 691 | 0.0   | 0.2−  | 2001 10 14 | 704 | 0.6+  | 0.1+  | 2007 11 05 | G96 | 0.2+  | 0.2−  |
| 1996 11 10 | 691 | 0.2−  | 0.4−  | 2001 12 10 | 645 | 0.0   | 0.2−  | 2007 11 13 | 699 | 0.4+  | 0.0   |
| 1996 11 10 | 691 | 0.1−  | 0.2−  | 2001 12 10 | 645 | 0.2−  | 0.2−  | 2007 11 13 | 699 | 0.3+  | 0.0   |
| 1996 11 10 | 691 | 0.2−  | 0.1−  | 2005 05 14 | G96 | 0.1+  | 0.1+  | 2007 11 13 | 699 | 0.6−  | 0.3−  |
| 1996 11 18 | 691 | 0.2+  | 0.1+  | 2005 05 14 | G96 | 0.5−  | 0.4−  | 2007 11 13 | 699 | 0.2−  | 0.3−  |
| 1996 11 18 | 691 | 0.0   | 0.2−  | 2005 05 14 | G96 | 0.1−  | 0.2+  | 2007 11 14 | 691 | 1.0−  | 0.3+  |
| 1996 11 18 | 691 | 0.2+  | 0.1+  | 2005 05 14 | G96 | 0.3+  | 0.1−  | 2007 11 14 | 691 | 0.0   | 0.0   |
| 2001 08 24 | 699 | 0.2−  | 0.0   | 2007 09 26 | G96 | 0.3−  | 0.5−  | 2007 11 14 | 691 | 0.1−  | 0.1+  |
| 2001 08 24 | 699 | 0.8−  | 0.5+  | 2007 09 26 | G96 | 0.6+  | 0.3−  | 2007 11 14 | G96 | 0.2+  | 0.2−  |
| 2001 08 24 | 699 | 1.2+  | 1.0+  | 2007 09 26 | G96 | 0.4+  | 0.3−  | 2007 11 14 | G96 | 0.0   | 0.4−  |
| 2001 08 24 | 699 | 0.2−  | 0.7+  | 2007 09 26 | G96 | 0.3+  | 0.6−  | 2007 11 14 | G96 | 0.3+  | 0.3−  |
| 2001 08 24 | 621 | 1.0−  | 0.1+  | 2007 10 09 | D29 | 0.4+  | 0.4−  | 2007 11 14 | G96 | 0.1+  | 0.3−  |
| 2001 08 24 | 621 | 0.9−  | 0.1+  | 2007 10 09 | D29 | 0.8+  | 0.1+  | 2007 11 14 | 704 | 0.7−  | 0.8+  |
| 2001 08 25 | 621 | 0.5+  | 0.3+  | 2007 10 09 | D29 | 0.9+  | 0.3+  | 2007 11 14 | 704 | 0.2+  | 0.3+  |
| 2001 08 25 | 621 | 0.1+  | 0.4−  | 2007 10 09 | D29 | 0.7+  | 0.2−  | 2007 11 14 | 704 | 0.3+  | 0.1+  |
| 2001 08 27 | 621 | 0.1+  | 0.4−  | 2007 10 15 | 691 | 0.1−  | 0.2−  | 2007 11 14 | 704 | 0.4+  | 0.5+  |
| 2001 08 27 | 621 | 0.1+  | 0.3−  | 2007 10 15 | 691 | 0.0   | 0.0   | 2007 11 14 | 704 | 0.5+  | 0.2+  |
| 2001 08 27 | 621 | 0.2+  | 0.1−  | 2007 10 15 | 691 | 0.0   | 0.2−  | 2007 11 18 | 691 | 0.4−  | 0.0   |
| 2001 08 28 | 621 | 0.1+  | 0.1+  | 2007 10 19 | 691 | 0.3−  | 0.2−  | 2007 11 18 | 691 | 0.2+  | 0.2+  |
| 2001 08 28 | 621 | 0.1+  | 0.2+  | 2007 10 19 | 691 | 0.8−  | 0.5−  | 2007 11 18 | 691 | 0.1−  | 0.1−  |
| 2001 08 28 | 621 | 0.0   | 0.0   | 2007 10 19 | 691 | 0.3−  | 0.3+  | 2007 11 19 | A50 | 0.4−  | 0.2+  |
| 2001 09 15 | 644 | 0.2−  | 0.4+  | 2007 10 20 | 703 | (2.2+ | 1.5+) | 2007 11 19 | A50 | 1.0+  | 0.3−  |
| 2001 09 15 | 644 | 0.3−  | 0.2+  | 2007 10 20 | 703 | (1.6+ | 0.8+) | 2007 11 19 | A50 | 0.1+  | 0.5+  |
| 2001 09 15 | 644 | 0.0   | 0.4+  | 2007 10 20 | 703 | 0.5−  | 0.8+  | 2007 11 19 | A50 | 0.1−  | 0.1+  |
| 2001 09 16 | 704 | 0.2+  | 0.0   | 2007 10 20 | 703 | 0.4+  | 1.2+  | 2007 11 20 | 703 | (0.2− | 2.2+) |
| 2001 09 16 | 704 | 0.3−  | 0.0   | 2007 10 30 | 691 | 0.3−  | 0.0   | 2007 11 20 | 703 | 1.3+  | 0.1−  |
| 2001 09 16 | 704 | 0.4−  | 0.2−  | 2007 10 30 | 691 | 0.0   | 0.1+  | 2007 11 20 | 703 | 0.1+  | 0.4+  |
| 2001 09 16 | 704 | 0.1+  | 0.3+  | 2007 10 30 | 691 | 0.1−  | 0.0   | 2007 11 20 | 703 | 0.4+  | 0.5−  |
| 2001 09 16 | 704 | 0.2−  | 0.0   | 2007 10 30 | G96 | 0.3+  | 0.2−  | 2007 12 03 | 703 | 0.3+  | 0.4−  |
| 2001 09 21 | 699 | 0.0   | 0.1−  | 2007 10 30 | G96 | 0.3+  | 0.3−  | 2007 12 03 | 703 | 0.2−  | 0.4−  |
| 2001 09 21 | 699 | 0.9+  | 0.0   | 2007 10 30 | G96 | 0.3+  | 0.3−  | 2007 12 03 | 703 | 1.3−  | 0.3+  |
| 2001 09 21 | 699 | 0.3+  | 0.3+  | 2007 10 30 | G96 | 0.4+  | 0.4−  | 2007 12 03 | 703 | 0.6−  | 0.9+  |
| 2001 09 21 | 699 | 1.3−  | 0.3+  | 2007 11 01 | 291 | 0.7+  | 0.3+  | 2007 12 05 | 704 | 0.7+  | 0.4+  |
| 2001 09 25 | 704 | 1.2+  | 0.6+  | 2007 11 01 | 291 | 0.1−  | 0.1+  | 2007 12 05 | 704 | 0.9+  | 1.1+  |
| 2001 09 25 | 644 | 0.1−  | 0.2−  | 2007 11 01 | 291 | 0.3−  | 0.0   | 2007 12 05 | 704 | 0.4+  | 1.1+  |
| 2001 09 25 | 704 | (1.7+ | 0.7−) | 2007 11 05 | 704 | 0.3+  | 0.5+  | 2007 12 05 | 704 | 0.6−  | 0.4+  |
| 2001 09 25 | 704 | (2.0+ | 1.4−) | 2007 11 05 | 704 | 0.4−  | 0.3−  | 2007 12 05 | 704 | 0.2−  | 0.8+  |
| 2001 09 25 | 644 | 0.8−  | 0.1−  | 2007 11 05 | 704 | 0.1−  | 0.2+  | 2007 12 06 | 691 | 0.5+  | 0.2+  |
| 2001 09 25 | 704 | (2.4+ | 0.8−) | 2007 11 05 | 704 | 0.4+  | 0.3+  | 2007 12 06 | 691 | 0.2−  | 0.1+  |
| 2001 09 25 | 644 | 0.0   | 0.5+  | 2007 11 05 | 704 | 0.3+  | 0.8+  | 2007 12 06 | 691 | 0.2−  | 0.2+  |
| 2001 09 25 | 704 | 1.4+  | 1.0−  | 2007 11 05 | G96 | 0.6+  | 0.2−  |            |     |       |       |

(171494)\* 1996 XS<sub>3</sub> = 2001 VL<sub>52</sub>

Discovered 1996 Dec. 1 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 19281)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 355.88809  |          | (2000.0) | $P$ |             | $Q$ |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $n$ | 0.19195842 | $\omega$ | 99.28812 |     | -0.28449062 |     | -0.95852747 |
| $a$ | 2.9762171  | $\Omega$ | 7.30787  |     | +0.81860016 |     | -0.25213165 |
| $e$ | 0.0253557  | $i$      | 7.69618  |     | +0.49895779 |     | -0.13287107 |
| $P$ | 5.13       | $H$      | 15.4     | $G$ | 0.15        | $U$ | 1           |

## 2007 DEC. 24

## M.P.O. 129061

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 704 | 0.0   | 0.5+  | 2006 09 25 | 691 | 0.2- | 0.3+ | 2006 11 01 | 691 | 0.1+ | 0.0  |
| 2001 09 20 | 704 | (1.9- | 2.3+) | 2006 09 25 | 691 | 0.4- | 0.1- | 2006 11 01 | 691 | 0.1+ | 0.3+ |
| 2001 10 14 | 704 | 0.4-  | 0.9-  | 2006 10 03 | 691 | 0.0  | 0.2+ | 2006 11 01 | 691 | 0.1+ | 0.0  |
| 2001 10 14 | 704 | 0.3+  | 0.7-  | 2006 10 03 | 691 | 0.1+ | 0.2+ | 2007 10 29 | H55 | 0.6- | 0.3- |
| 2001 10 14 | 704 | (0.3+ | 1.8-) | 2006 10 03 | 691 | 0.0  | 0.2+ | 2007 10 29 | H55 | 0.4+ | 0.3- |
| 2001 10 14 | 704 | 0.5-  | 0.2-  | 2006 10 16 | 691 | 0.1+ | 0.4+ | 2007 10 29 | H55 | 1.0+ | 0.4+ |
| 2001 10 14 | 704 | 0.2-  | 0.5+  | 2006 10 16 | 691 | 0.1- | 0.3+ | 2007 12 16 | 704 | 1.0+ | 1.1+ |
| 2001 11 10 | 704 | 1.3-  | 0.7-  | 2006 10 16 | 691 | 0.1- | 0.3+ | 2007 12 16 | 704 | 0.7+ | 0.8+ |
| 2001 11 10 | 704 | 0.1-  | 0.1+  | 2006 10 17 | 703 | 0.3+ | 0.2- | 2007 12 16 | 704 | 0.6- | 0.8+ |

(171495)\* 1996 XD<sub>24</sub>

Discovered 1996 Dec. 5 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.62766   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27130234 | $\omega$ | 297.87975 | +0.99592403   | -0.07975951 |
| <i>a</i> | 2.3631994  | $\Omega$ | 66.72096  | +0.09004999   | +0.90581941 |
| <i>e</i> | 0.1477884  | <i>i</i> | 2.62783   | -0.00513020   | +0.41608847 |
| <i>P</i> | 3.63       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 05 | 691 | 0.4+  | 0.4-  | 2003 09 21 | 699 | 0.1- | 0.1+ | 2003 10 24 | 704 | 0.1- | 0.2+ |
| 1996 12 05 | 691 | 0.3+  | 0.1-  | 2003 09 21 | 699 | 0.4+ | 0.1+ | 2003 10 24 | 704 | 0.0  | 0.4+ |
| 1996 12 05 | 691 | 0.7+  | 0.4-  | 2003 09 22 | 699 | 0.4- | 0.4- | 2003 10 24 | 704 | 0.3- | 0.3+ |
| 1996 12 14 | 691 | 0.0   | 0.2-  | 2003 09 22 | 699 | 0.2- | 0.3- | 2007 11 15 | 704 | 0.9+ | 0.3+ |
| 1996 12 14 | 691 | 0.3+  | 0.3-  | 2003 09 22 | 699 | 1.0- | 0.1- | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 1996 12 14 | 691 | 0.0   | 0.6-  | 2003 09 22 | 699 | 0.6+ | 0.6- | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 1996 12 17 | 691 | 0.1+  | 0.4-  | 2003 09 23 | 608 | 0.6- | 0.1- | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 1996 12 17 | 691 | 0.1+  | 0.3-  | 2003 09 23 | 608 | 0.9- | 0.1- | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 1996 12 17 | 691 | 0.0   | 0.2-  | 2003 09 23 | 608 | 0.4- | 0.6- | 2007 11 17 | 691 | 0.3- | 0.0  |
| 1997 01 10 | 691 | 0.5-  | 0.2-  | 2003 09 24 | 608 | 0.1- | 0.8- | 2007 11 17 | 691 | 0.4- | 0.1+ |
| 1997 01 10 | 691 | 0.2-  | 0.2-  | 2003 09 24 | 608 | 0.1+ | 0.9- | 2007 11 17 | 691 | 0.3- | 0.0  |
| 1997 01 10 | 691 | 0.6-  | 0.1-  | 2003 09 24 | 608 | 0.6- | 0.7- | 2007 12 04 | G96 | 0.3- | 0.1+ |
| 1997 02 03 | 691 | 0.5+  | 0.3-  | 2003 09 28 | 704 | 0.5- | 0.2+ | 2007 12 04 | G96 | 0.2- | 0.2+ |
| 1997 02 03 | 691 | 0.1+  | 0.3-  | 2003 09 28 | 704 | 0.0  | 0.2+ | 2007 12 04 | G96 | 0.1- | 0.0  |
| 1997 02 03 | 691 | 0.2+  | 0.0   | 2003 09 28 | 704 | 0.0  | 0.2- | 2007 12 04 | G96 | 0.3- | 0.2+ |
| 1998 03 02 | 691 | 0.2-  | 0.8+  | 2003 09 28 | 704 | 0.4+ | 0.0  | 2007 12 14 | 704 | 0.4- | 0.2+ |
| 1998 03 02 | 691 | 0.2+  | 0.5+  | 2003 09 28 | 704 | 0.2+ | 0.1- | 2007 12 14 | 704 | 0.3- | 0.5+ |
| 1998 03 02 | 691 | 0.2-  | 0.1+  | 2003 09 29 | 333 | 0.4+ | 0.5+ | 2007 12 14 | 704 | 0.2- | 0.3+ |
| 2002 05 06 | 291 | 0.2+  | 0.1+  | 2003 09 29 | 333 | 0.3+ | 0.1- | 2007 12 14 | 704 | 0.0  | 0.7+ |
| 2002 05 06 | 291 | 0.2+  | 0.1-  | 2003 09 29 | 333 | 0.1- | 0.1- | 2007 12 14 | 704 | 0.3+ | 1.3+ |
| 2002 05 06 | 291 | 0.2+  | 0.2-  | 2003 09 30 | 333 | 0.2- | 0.2+ | 2007 12 15 | 704 | 0.6+ | 1.4+ |
| 2003 09 02 | 704 | 1.2+  | 0.8+  | 2003 09 30 | 333 | 0.2- | 0.2- | 2007 12 15 | 704 | 0.5+ | 0.4+ |
| 2003 09 02 | 704 | 0.5-  | 1.2+  | 2003 09 30 | 333 | 0.1- | 0.1+ | 2007 12 15 | 704 | 0.1- | 0.2+ |
| 2003 09 02 | 704 | 0.3+  | 0.6+  | 2003 10 16 | 699 | 0.3- | 0.5+ | 2007 12 15 | 704 | 0.1- | 0.9+ |
| 2003 09 02 | 704 | (0.2- | 1.7+) | 2003 10 16 | 699 | 0.0  | 0.1- | 2007 12 15 | 704 | 0.4+ | 0.9+ |
| 2003 09 18 | 704 | 0.6+  | 0.3+  | 2003 10 16 | 699 | 0.9- | 1.3+ | 2007 12 16 | 704 | 0.0  | 1.1+ |
| 2003 09 18 | 704 | 0.4-  | 0.1-  | 2003 10 16 | 699 | 0.4- | 0.5+ | 2007 12 16 | 704 | 0.2- | 0.9+ |
| 2003 09 18 | 704 | 0.1+  | 1.0+  | 2003 10 19 | 704 | 0.1+ | 0.2- | 2007 12 16 | 704 | 0.2- | 0.9+ |
| 2003 09 18 | 704 | 0.3-  | 1.0+  | 2003 10 19 | 704 | 0.0  | 0.0  | 2007 12 16 | 704 | 0.1+ | 0.5+ |
| 2003 09 18 | 704 | 0.2+  | 0.4+  | 2003 10 19 | 704 | 0.1- | 0.2- | 2007 12 16 | 704 | 0.1+ | 0.8+ |
| 2003 09 21 | 699 | 0.7+  | 0.7+  | 2003 10 19 | 704 | 0.2- | 0.3+ |            |     |      |      |
| 2003 09 21 | 699 | 0.4-  | 0.0   | 2003 10 24 | 704 | 0.1- | 0.4+ |            |     |      |      |

(171496)\* 1996 XY<sub>29</sub>

Discovered 1996 Dec. 14 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.66858   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26665932 | $\omega$ | 300.02111 | +0.98140827   | -0.18749881 |
| <i>a</i> | 2.3905521  | $\Omega$ | 70.81174  | +0.18763808   | +0.89234766 |
| <i>e</i> | 0.1860846  | <i>i</i> | 2.48884   | +0.04037038   | +0.41056040 |
| <i>P</i> | 3.70       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 05 | 691 | 0.4- | 0.1+ | 2007 10 06 | 691 | 0.0  | 0.1- | 2007 10 30 | 703 | 0.2- | 0.1+ |
| 1996 12 05 | 691 | 0.5- | 0.2- | 2007 10 06 | 691 | 0.1- | 0.2- | 2007 10 30 | 703 | 0.9+ | 0.4+ |
| 1996 12 05 | 691 | 0.3- | 0.1- | 2007 10 09 | G96 | 0.3+ | 0.2- | 2007 11 05 | 704 | 0.1+ | 0.5+ |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 12 14 | 691 | 0.4+  | 0.1-  | 2007 10 09 | G96 | 0.7+ | 0.2- | 2007 11 05 | 704 | 0.5+  | 0.6+  |
| 1996 12 14 | 691 | 0.3+  | 0.1-  | 2007 10 09 | G96 | 0.4+ | 0.1+ | 2007 11 05 | 704 | 0.2+  | 0.7+  |
| 1996 12 14 | 691 | 0.5+  | 0.1-  | 2007 10 09 | G96 | 0.0  | 0.1- | 2007 11 05 | 704 | 0.1-  | 0.7+  |
| 1996 12 17 | 691 | 0.2+  | 0.1-  | 2007 10 10 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.5+  | 0.4+  |
| 1996 12 17 | 691 | 0.1+  | 0.2-  | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 07 | 703 | 0.9-  | 0.5-  |
| 1996 12 17 | 691 | 0.1+  | 0.3-  | 2007 10 10 | 691 | 0.4- | 0.5+ | 2007 11 07 | 703 | 0.3-  | 0.6+  |
| 2003 07 25 | 644 | 0.4+  | 0.3-  | 2007 10 10 | 691 | 0.0  | 1.0+ | 2007 11 07 | 703 | 0.7-  | 0.4+  |
| 2003 07 25 | 644 | 0.3+  | 0.3-  | 2007 10 10 | 691 | 0.0  | 0.3- | 2007 11 09 | G96 | 0.3+  | 0.3-  |
| 2003 07 25 | 644 | 0.5+  | 0.1-  | 2007 10 10 | 691 | 0.0  | 0.3- | 2007 11 09 | G96 | 0.3+  | 0.2-  |
| 2003 08 22 | 608 | 0.2+  | 0.5-  | 2007 10 11 | 704 | 0.1- | 0.9+ | 2007 11 09 | G96 | 0.3+  | 0.2-  |
| 2003 08 22 | 608 | 0.5-  | 1.0-  | 2007 10 11 | 704 | 0.6- | 0.9+ | 2007 11 09 | G96 | 0.4+  | 0.2-  |
| 2003 08 22 | 608 | (0.1- | 1.6-) | 2007 10 11 | 704 | 0.0  | 0.3+ | 2007 11 11 | 699 | 0.4-  | 0.0   |
| 2003 08 23 | 644 | 0.5+  | 0.4-  | 2007 10 11 | 704 | 0.1+ | 0.1- | 2007 11 11 | 699 | (1.8+ | 0.3-) |
| 2003 08 23 | 644 | 0.3+  | 0.4-  | 2007 10 11 | 704 | 0.5- | 0.5- | 2007 11 09 | G96 | 0.3+  | 0.2-  |
| 2003 08 23 | 644 | 0.3+  | 0.7-  | 2007 10 14 | 704 | 0.1+ | 0.4- | 2007 11 11 | 699 | (0.3+ | 1.5+) |
| 2003 08 31 | 704 | 0.6-  | 0.0   | 2007 10 14 | 704 | 1.3- | 1.0+ | 2007 11 14 | 704 | 0.3+  | 0.2+  |
| 2003 08 31 | 704 | 0.0   | 0.3+  | 2007 10 14 | 704 | 1.4+ | 0.1- | 2007 11 14 | 704 | 0.0   | 0.4+  |
| 2003 08 31 | 704 | 0.1+  | 0.5+  | 2007 10 14 | 704 | 0.1+ | 1.1+ | 2007 11 14 | 704 | 0.7+  | 0.3+  |
| 2003 08 31 | 704 | 0.1-  | 0.6-  | 2007 10 14 | 704 | 0.5+ | 1.1+ | 2007 11 14 | 704 | 0.3+  | 0.5+  |
| 2003 08 31 | 704 | 0.1+  | 0.2+  | 2007 10 14 | 691 | 0.2- | 0.1+ | 2007 11 14 | 704 | 0.0   | 0.5+  |
| 2003 10 24 | 695 | 0.0   | 0.3-  | 2007 10 14 | 691 | 0.2- | 0.0  | 2007 11 17 | 703 | 0.3+  | 0.2+  |
| 2003 10 24 | 695 | 0.0   | 0.2-  | 2007 10 14 | 691 | 0.1- | 0.1- | 2007 11 17 | 703 | 0.7-  | 0.6-  |
| 2006 05 24 | 691 | 0.0   | 0.4+  | 2007 10 18 | 691 | 0.2+ | 0.0  | 2007 11 17 | 703 | 0.1-  | 0.1-  |
| 2006 05 24 | 691 | 0.0   | 0.2+  | 2007 10 18 | 691 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.5-  | 0.2-  |
| 2006 05 24 | 691 | 0.3+  | 0.5+  | 2007 10 18 | 691 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.1+  | 0.1-  |
| 2007 10 06 | 704 | 0.3-  | 0.9+  | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 06 | G96 | 0.2+  | 0.1-  |
| 2007 10 06 | 704 | 0.2+  | 0.7-  | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 06 | G96 | 0.3+  | 0.0   |
| 2007 10 06 | 704 | 0.3+  | 0.0   | 2007 10 30 | 691 | 0.2- | 0.2- | 2007 12 06 | G96 | 0.1-  | 0.2+  |
| 2007 10 06 | 704 | 0.0   | 0.3+  | 2007 10 30 | 703 | 0.2+ | 0.3+ |            |     |       |       |
| 2007 10 06 | 691 | 0.3-  | 0.1-  | 2007 10 30 | 703 | 0.2- | 0.3+ |            |     |       |       |

(171497)\* 1997 BY<sub>2</sub>

Discovered 1997 Jan. 30 by T. Kobayashi at Oizumi.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.04121   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27068133 | $\omega$ | 18.18777 | -0.12861871   | -0.98967499 |
| <i>a</i> | 2.3668125  | $\Omega$ | 79.23877 | +0.90168102   | -0.14325725 |
| <i>e</i> | 0.1840769  | <i>i</i> | 3.69142  | +0.41282995   | +0.00455786 |
| <i>P</i> | 3.64       | <i>H</i> | 16.2     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 26 | 691 | 0.1- | 0.3- | 2003 11 23 | 704 | 0.2- | 0.1+ | 2004 01 17 | 644 | 0.1- | 0.3+ |
| 1992 11 26 | 691 | 0.1+ | 0.1- | 2003 11 23 | 704 | 0.7- | 0.1- | 2004 01 17 | 644 | 0.1- | 0.3+ |
| 1992 11 26 | 691 | 0.0  | 0.3- | 2003 11 23 | 704 | 0.1- | 0.1+ | 2004 01 17 | 644 | 0.0  | 0.2+ |
| 1997 01 30 | 411 | 0.3- | 0.2- | 2003 12 19 | 704 | 0.2- | 0.0  | 2004 02 23 | 704 | 0.6- | 0.1- |
| 1997 01 30 | 411 | 0.1+ | 0.6- | 2003 12 19 | 704 | 0.1- | 0.2+ | 2004 02 23 | 704 | 0.5- | 0.3+ |
| 1997 01 31 | 411 | 0.9- | 0.3+ | 2003 12 19 | 704 | 0.0  | 0.5+ | 2004 02 23 | 704 | 0.5- | 0.7+ |
| 1997 01 31 | 411 | 0.4+ | 0.5- | 2003 12 19 | 704 | 0.3- | 0.0  | 2005 06 10 | 691 | 0.4- | 0.3+ |
| 1997 02 06 | 411 | 0.4+ | 0.9- | 2003 12 19 | 704 | 0.2+ | 0.0  | 2005 06 10 | 691 | 0.3+ | 1.2- |
| 1997 02 06 | 411 | 0.9- | 0.5- | 2003 12 21 | 704 | 0.1+ | 0.4+ | 2005 06 10 | 691 | 0.3- | 0.3+ |
| 1997 02 14 | 411 | 0.3+ | 0.0  | 2003 12 21 | 704 | 0.1+ | 0.5+ | 2006 07 19 | F84 | 0.1- | 0.4+ |
| 1997 02 14 | 411 | 0.6+ | 0.2- | 2003 12 21 | 704 | 0.1+ | 0.1+ | 2006 07 19 | F84 | 1.2+ | 0.4+ |
| 1997 02 26 | 411 | 0.4+ | 0.8- | 2003 12 21 | 704 | 0.2+ | 0.2+ | 2006 07 19 | F84 | 0.5- | 0.2+ |
| 1997 02 26 | 411 | 0.1+ | 0.7- | 2003 12 24 | 704 | 0.0  | 0.4+ | 2007 09 25 | G96 | 0.0  | 0.3- |
| 2001 03 20 | 608 | 0.7- | 0.4+ | 2003 12 24 | 704 | 0.3+ | 0.3+ | 2007 09 25 | G96 | 0.0  | 0.1- |
| 2001 03 20 | 608 | 0.4- | 0.6+ | 2003 12 24 | 704 | 0.0  | 0.2+ | 2007 09 25 | G96 | 0.2- | 0.6- |
| 2001 03 20 | 608 | 0.7- | 0.7+ | 2003 12 24 | 704 | 0.2+ | 0.3+ | 2007 09 25 | G96 | 0.2+ | 0.5- |
| 2001 04 17 | 699 | 0.1+ | 0.9+ | 2003 12 24 | 106 | 0.3- | 0.0  | 2007 11 20 | G96 | 0.4- | 0.1- |
| 2001 04 17 | 699 | 1.2+ | 1.2+ | 2003 12 24 | 106 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.6- | 0.2- |
| 2001 04 17 | 699 | 1.2+ | 0.5+ | 2003 12 24 | 106 | 0.3+ | 0.1+ | 2007 11 20 | G96 | 0.4- | 0.2- |
| 2001 04 17 | 699 | 0.6+ | 0.1- | 2003 12 29 | 691 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.0  | 0.0  |
| 2003 11 23 | 704 | 0.0  | 0.6- | 2003 12 29 | 691 | 0.1+ | 0.2+ |            |     |      |      |
| 2003 11 23 | 704 | 0.0  | 0.1+ | 2003 12 29 | 691 | 0.0  | 0.1+ |            |     |      |      |

Id. G. V. Williams (*MPO* 19284)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.98154   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17135594 | $\omega$ | 259.14875 | +0.96718543   | -0.24952619 |
| <i>a</i> | 3.2102334  | $\Omega$ | 115.28662 | +0.24884935   | +0.89237578 |
| <i>e</i> | 0.2393188  | <i>i</i> | 3.03315   | +0.05124783   | +0.37603477 |
| <i>P</i> | 5.75       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 02 02 | 691 | 0.2-  | 0.3-  | 2001 10 25 | 644 | 0.4-  | 0.9+  | 2001 12 14 | 704 | 0.9+  | 0.0   |
| 1997 02 02 | 691 | 0.0   | 0.0   | 2001 11 09 | 704 | 0.2+  | 1.2-  | 2001 12 14 | 704 | 0.2-  | 0.1+  |
| 1997 02 02 | 691 | 0.2+  | 0.2+  | 2001 11 09 | 704 | 1.1-  | 0.5-  | 2001 12 14 | 704 | 0.4-  | 0.4+  |
| 1997 02 03 | 691 | 0.0   | 0.3-  | 2001 11 09 | 704 | (1.6- | 0.1-) | 2001 12 14 | 704 | 0.3-  | 0.1-  |
| 1997 02 03 | 691 | 0.1-  | 0.1-  | 2001 11 09 | 704 | 0.8-  | 0.5+  | 2001 12 14 | 704 | 0.1-  | 0.9-  |
| 1997 02 03 | 691 | 0.2-  | 0.4+  | 2001 11 09 | 704 | 1.0-  | 1.3+  | 2001 12 17 | 704 | 0.3+  | 0.6+  |
| 1997 02 04 | 691 | 1.0-  | 0.3+  | 2001 11 17 | 704 | 0.2-  | 0.4-  | 2001 12 17 | 704 | 0.0   | 0.0   |
| 1997 02 04 | 691 | 0.4-  | 0.8-  | 2001 11 17 | 704 | 0.1-  | 0.1-  | 2001 12 17 | 704 | 0.2+  | 0.6+  |
| 1997 02 04 | 691 | 0.2+  | 0.4+  | 2001 11 17 | 704 | 0.0   | 0.1+  | 2001 12 17 | 704 | 0.1+  | 0.3+  |
| 1997 02 07 | 691 | 0.2+  | 0.5-  | 2001 11 17 | 704 | 0.1-  | 0.2+  | 2001 12 17 | 704 | 0.1+  | 0.2-  |
| 1997 02 07 | 691 | 0.7+  | 0.2+  | 2001 11 18 | 704 | 0.5-  | 0.2-  | 2001 12 18 | 644 | 0.3-  | 0.8-  |
| 1997 02 14 | 691 | 0.2-  | 0.6+  | 2001 11 18 | 704 | 0.2+  | 0.3+  | 2001 12 18 | 644 | 0.3-  | 0.6-  |
| 1997 02 14 | 691 | 0.2+  | 0.4+  | 2001 11 18 | 704 | 0.2-  | 0.0   | 2001 12 18 | 644 | 0.6-  | 0.8-  |
| 1997 02 14 | 691 | 0.1+  | 0.1-  | 2001 11 18 | 704 | 0.7-  | 0.5+  | 2001 12 19 | 644 | 0.2-  | 0.2-  |
| 2001 10 17 | 704 | 0.4+  | 0.5+  | 2001 11 18 | 704 | 0.3+  | 0.3+  | 2001 12 19 | 644 | 0.0   | 0.2+  |
| 2001 10 17 | 704 | 0.6+  | 0.2+  | 2001 11 18 | 704 | 0.7+  | 0.4-  | 2001 12 19 | 644 | 0.3-  | 0.6+  |
| 2001 10 17 | 704 | 0.8+  | 0.1-  | 2001 11 18 | 704 | 0.2+  | 0.2-  | 2005 06 14 | 691 | 0.2+  | 0.6+  |
| 2001 10 17 | 704 | (1.9+ | 0.5+) | 2001 11 18 | 704 | 0.5+  | 0.8+  | 2005 06 14 | 691 | 0.5+  | 0.3+  |
| 2001 10 20 | 704 | 0.1-  | 0.6+  | 2001 11 18 | 704 | 0.4+  | 0.3-  | 2005 06 14 | 691 | 0.6+  | 0.7+  |
| 2001 10 20 | 704 | 0.1+  | 0.3+  | 2001 11 20 | 704 | 0.8+  | 0.4-  | 2006 08 14 | 644 | 0.4-  | 0.1-  |
| 2001 10 20 | 704 | 0.1-  | 0.2+  | 2001 11 20 | 704 | 1.1+  | 0.1+  | 2006 08 14 | 644 | 0.7-  | 0.3-  |
| 2001 10 22 | 704 | 0.0   | 0.6-  | 2001 11 20 | 704 | 0.7+  | 0.3+  | 2006 08 14 | 644 | 0.6-  | 0.1-  |
| 2001 10 22 | 704 | 0.2-  | 0.0   | 2001 11 20 | 704 | 0.5+  | 0.4+  | 2006 08 18 | 644 | 0.0   | 0.1-  |
| 2001 10 22 | 704 | 0.4-  | 0.3-  | 2001 11 20 | 704 | 1.0+  | 0.3+  | 2006 08 18 | 644 | 0.4-  | 0.2-  |
| 2001 10 22 | 704 | 0.1+  | 0.0   | 2001 11 24 | 704 | 0.8-  | 0.0   | 2006 08 18 | 644 | 0.2-  | 0.2-  |
| 2001 10 23 | 704 | 0.6-  | 0.2-  | 2001 11 24 | 704 | (1.1+ | 1.8-) | 2007 11 09 | 691 | 0.1-  | 0.1-  |
| 2001 10 23 | 704 | 0.5-  | 0.2-  | 2001 11 24 | 704 | 0.8+  | 0.1-  | 2007 11 09 | 691 | 0.0   | 0.1-  |
| 2001 10 23 | 704 | 0.5-  | 0.2-  | 2001 11 24 | 704 | 0.3-  | 0.0   | 2007 11 09 | 691 | 0.1-  | 0.0   |
| 2001 10 23 | 704 | 0.1-  | 0.4+  | 2001 11 24 | 704 | 0.0   | 0.6-  | 2007 11 14 | 704 | (0.6+ | 1.8+) |
| 2001 10 24 | 704 | 0.3+  | 0.3-  | 2001 12 08 | 699 | 0.4-  | 0.4+  | 2007 11 14 | 704 | 0.0   | 1.0+  |
| 2001 10 24 | 704 | 0.2+  | 0.0   | 2001 12 08 | 699 | 0.1-  | 0.4+  | 2007 11 14 | 704 | 0.2+  | 0.1-  |
| 2001 10 24 | 704 | 0.1-  | 0.1+  | 2001 12 08 | 699 | 0.2+  | 0.8+  | 2007 11 14 | 704 | 0.2+  | 0.6-  |
| 2001 10 24 | 704 | 0.3-  | 0.5+  | 2001 12 08 | 699 | 0.7+  | 1.0-  | 2007 12 04 | 704 | 0.5+  | 0.4-  |
| 2001 10 24 | 704 | 0.2+  | 0.9+  | 2001 12 10 | 691 | 0.1-  | 0.5+  | 2007 12 04 | 704 | 0.1+  | 0.6-  |
| 2001 10 25 | 644 | 0.4-  | 0.2+  | 2001 12 10 | 691 | 0.1-  | 0.3+  | 2007 12 04 | 704 | 0.2-  | 0.2-  |
| 2001 10 25 | 644 | 0.2-  | 0.8+  | 2001 12 10 | 691 | 0.3+  | 0.4+  | 2007 12 04 | 704 | 0.2-  | 1.1-  |

**(171499)\* 1997 GB<sub>17</sub> = 2001 FD<sub>27</sub>**

Discovered 1997 Apr. 3 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 11485)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 204.34738  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24572799 | $\omega$ | 19.15300  | -0.67288501   | +0.73906592 |
| <i>a</i> | 2.5244472  | $\Omega$ | 208.58365 | -0.68706839   | -0.64029308 |
| <i>e</i> | 0.1459008  | <i>i</i> | 3.80364   | -0.27415834   | -0.20929963 |
| <i>P</i> | 4.01       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 03 11 | 809 | 0.8+ | 0.4+ | 2002 08 28 | 644 | 0.6- | 0.6+ | 2005 04 18 | 608 | 0.2- | 0.2+ |
| 1997 03 11 | 809 | 0.7+ | 0.4- | 2002 08 28 | 644 | 0.2- | 0.7+ | 2005 04 18 | 608 | 0.2- | 0.4+ |
| 1997 03 11 | 809 | 0.2- | 0.2- | 2002 09 05 | 645 | 0.1- | 0.0  | 2005 04 18 | 608 | 0.2- | 0.1+ |
| 1997 03 13 | 809 | 0.8+ | 0.4+ | 2002 09 05 | 645 | 0.1- | 0.0  | 2005 05 02 | 691 | 0.0  | 0.1+ |
| 1997 03 13 | 809 | 0.8+ | 0.8- | 2002 09 14 | 644 | 0.6- | 0.1- | 2005 05 02 | 691 | 0.1- | 0.1+ |
| 1997 03 13 | 809 | 1.0+ | 1.5- | 2002 09 14 | 644 | 0.6- | 0.1- | 2005 05 02 | 691 | 0.1+ | 0.1+ |
| 1997 04 03 | 704 | 0.1- | 0.1+ | 2002 09 14 | 644 | 0.6- | 0.1- | 2005 05 12 | 691 | 0.2+ | 0.1- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 04 03 | 704 | 0.6+  | 0.6-  | 2005 03 03 | 691 | 0.0   | 0.3+  | 2005 05 12 | 691 | 0.0   | 0.1-  |
| 1997 04 04 | 566 | 1.3-  | 0.0   | 2005 03 03 | 691 | 0.1+  | 0.2-  | 2005 05 12 | 691 | 0.3+  | 0.1-  |
| 1997 04 04 | 566 | 1.1-  | 0.2+  | 2005 03 03 | 691 | 0.0   | 0.2+  | 2006 08 15 | 644 | 0.2+  | 0.5+  |
| 1997 04 04 | 566 | 1.3-  | 0.1-  | 2005 03 07 | 704 | 1.1+  | 1.4-  | 2006 08 15 | 644 | 0.1+  | 0.6+  |
| 1997 04 05 | 704 | 1.4+  | 1.2+  | 2005 03 07 | 704 | 0.2-  | 0.3+  | 2006 08 15 | 644 | 0.2+  | 0.4+  |
| 1997 04 05 | 704 | 0.2+  | 1.1-  | 2005 03 07 | 704 | 0.4-  | 0.7+  | 2006 08 28 | 703 | 0.0   | 1.1+  |
| 1997 04 06 | 704 | 0.5+  | 0.6+  | 2005 03 07 | 704 | 0.4-  | 0.5-  | 2006 08 28 | 703 | (0.2- | 1.6+) |
| 1997 04 06 | 704 | 1.3+  | 1.1-  | 2005 03 11 | G96 | 0.4-  | 0.3-  | 2006 08 28 | 703 | 0.2-  | 1.5+  |
| 1997 04 07 | 704 | 0.0   | 1.0+  | 2005 03 11 | G96 | 0.4-  | 0.1-  | 2006 08 28 | 703 | 0.8+  | 0.9+  |
| 1997 04 07 | 704 | 0.4-  | 0.5+  | 2005 03 11 | G96 | 0.3-  | 0.2-  | 2006 08 29 | 691 | 0.0   | 0.5+  |
| 2001 03 18 | 704 | 0.3-  | 0.5-  | 2005 03 11 | G96 | 0.4-  | 0.3-  | 2006 08 29 | 691 | 0.0   | 0.5+  |
| 2001 03 18 | 704 | 0.4-  | 0.2+  | 2005 03 14 | G96 | 0.3-  | 0.1-  | 2006 08 29 | 691 | 0.0   | 0.4+  |
| 2001 03 18 | 704 | 0.2-  | 0.2+  | 2005 03 14 | G96 | 0.4-  | 0.1+  | 2006 08 30 | 704 | 0.4+  | 0.3-  |
| 2001 03 18 | 704 | 0.9-  | 0.4+  | 2005 03 14 | G96 | 0.3-  | 0.2+  | 2006 08 30 | 704 | 0.1-  | 0.3+  |
| 2001 03 18 | 608 | (1.0- | 1.6-) | 2005 03 14 | G96 | 0.7-  | 0.1-  | 2006 08 30 | 704 | 1.0+  | 0.4+  |
| 2001 03 18 | 608 | 0.8-  | 1.1-  | 2005 03 18 | 704 | 0.9+  | 0.5-  | 2006 08 30 | 704 | 0.4+  | 0.3+  |
| 2001 03 18 | 608 | 0.7-  | 0.7-  | 2005 03 18 | 704 | 0.2-  | 0.5+  | 2006 09 11 | 703 | 0.2+  | 0.1-  |
| 2001 03 23 | 699 | 0.4+  | 0.2+  | 2005 03 18 | 704 | 0.7-  | 0.4+  | 2006 09 11 | 703 | (1.9+ | 0.3+) |
| 2001 03 23 | 699 | 0.7+  | 1.2+  | 2005 04 02 | 644 | 0.1-  | 0.2+  | 2006 09 11 | 703 | 0.1+  | 0.4-  |
| 2001 03 23 | 699 | 0.9+  | 0.5+  | 2005 04 02 | 644 | 0.1-  | 0.2+  | 2006 09 11 | 703 | 0.2-  | 0.8-  |
| 2001 03 23 | 704 | 0.3+  | 1.3-  | 2005 04 02 | 644 | 0.2-  | 0.3+  | 2006 09 28 | G96 | 0.0   | 0.1+  |
| 2001 03 23 | 699 | 0.7+  | 0.5+  | 2005 04 04 | 704 | 0.0   | 0.9+  | 2006 09 28 | G96 | 0.3+  | 0.0   |
| 2001 03 23 | 704 | 1.0+  | 0.5+  | 2005 04 04 | 704 | 0.2-  | 0.2-  | 2006 09 28 | G96 | 0.1+  | 0.1+  |
| 2001 03 23 | 704 | 0.6-  | 0.7+  | 2005 04 04 | 704 | 0.2-  | 0.2+  | 2006 09 28 | G96 | 0.4+  | 0.1+  |
| 2001 03 23 | 704 | 0.4-  | 0.8+  | 2005 04 04 | 704 | 0.1-  | 0.2+  | 2006 10 16 | 703 | (2.0+ | 2.5+) |
| 2001 03 25 | 688 | 0.2-  | 0.3+  | 2005 04 04 | 704 | 0.2+  | 0.3+  | 2006 10 16 | 703 | 1.1-  | 1.1-  |
| 2001 03 25 | 688 | 0.3-  | 0.2+  | 2005 04 07 | 704 | 0.3+  | 0.1+  | 2006 10 16 | 703 | 0.9+  | 1.2-  |
| 2001 03 29 | 699 | 0.7-  | 0.9-  | 2005 04 07 | 704 | 0.7+  | 0.4+  | 2006 10 16 | 703 | 1.2-  | 1.1-  |
| 2001 03 29 | 699 | (3.5- | 1.4+) | 2005 04 07 | 704 | 0.1+  | 0.0   | 2007 11 08 | 691 | 0.0   | 0.2+  |
| 2001 03 29 | 699 | 0.4-  | 0.2+  | 2005 04 07 | 704 | (0.1+ | 1.7+) | 2007 11 08 | 691 | 0.4-  | 0.7+  |
| 2001 03 29 | 699 | 0.1+  | 0.6+  | 2005 04 07 | 704 | 1.0+  | 0.5+  | 2007 11 08 | 691 | 0.1-  | 0.3+  |
| 2001 04 01 | 704 | 0.0   | 0.2+  | 2005 04 12 | 704 | 0.8+  | 0.1+  | 2007 12 04 | 704 | 0.0   | 0.9+  |
| 2001 04 01 | 704 | 0.1-  | 0.3+  | 2005 04 12 | 704 | 1.0+  | 0.0   | 2007 12 04 | 704 | 0.7+  | 0.9+  |
| 2001 04 01 | 704 | 0.3+  | 0.0   | 2005 04 12 | 704 | 0.4+  | 0.1-  | 2007 12 04 | 704 | 0.6+  | 0.5+  |
| 2001 04 24 | 699 | 1.1-  | 1.2+  | 2005 04 12 | 704 | 0.7+  | 0.5+  | 2007 12 04 | 704 | 0.3+  | 0.2+  |
| 2001 04 24 | 699 | 0.3+  | 1.1+  | 2005 04 18 | 808 | 0.4-  | 0.3+  | 2007 12 05 | G96 | 0.0   | 0.0   |
| 2001 04 24 | 699 | 0.0   | 1.2+  | 2005 04 18 | 808 | 0.6-  | 0.5-  | 2007 12 05 | G96 | 0.2+  | 0.4+  |
| 2001 04 24 | 699 | 0.6+  | 0.9+  | 2005 04 18 | 808 | 0.1+  | 0.1+  | 2007 12 05 | G96 | 0.1+  | 0.2+  |
| 2002 08 28 | 644 | 0.3-  | 0.4+  | 2005 04 18 | 808 | 0.5-  | 0.4+  | 2007 12 05 | G96 | 0.2-  | 0.3+  |

**(171500)\* 1997 GJ<sub>20</sub> = 1999 XJ<sub>264</sub> = 2003 YB<sub>76</sub>**

Discovered 1997 Apr. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 55820), A. Doppler (*MPO* 71957)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.90842  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26059347 | $\omega$ | 142.66430 | -0.91107757   | -0.41218287 |
| <i>a</i> | 2.4275063  | $\Omega$ | 12.99844  | +0.37084263   | -0.82643511 |
| <i>e</i> | 0.1233823  | <i>i</i> | 1.66939   | +0.18003722   | -0.38354960 |
| <i>P</i> | 3.78       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |           |
|------------|-----|------|------|-----------|
| 1997 04 03 | 704 | 1.0+ | 1.0- | 2003 12 1 |
|------------|-----|------|------|-----------|

2007 DEC. 24

M.P.O. 129063

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 29 | 644 | 0.8− | 0.6+ | 2004 01 22 | 704 | 0.3− | 0.7+ | 2007 11 11 | G96 | 0.2− | 0.1− |
| 2002 08 29 | 644 | 0.0  | 0.3+ | 2006 08 19 | 691 | 0.5+ | 0.4− | 2007 12 15 | G96 | 0.2− | 0.5− |
| 2002 08 29 | 644 | 0.3− | 0.4+ | 2006 08 19 | 691 | 0.1− | 0.5+ | 2007 12 15 | G96 | 0.0  | 0.1− |
| 2003 12 18 | 704 | 0.0  | 0.2+ | 2006 08 19 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2003 12 18 | 704 | 0.4+ | 0.1+ | 2006 09 11 | 705 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.0  |

**(171501)\* 1997 MZ<sub>5</sub> = 2002 TH<sub>182</sub>**

Discovered 1997 June 26 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 37067)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 346.21908  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21704849 | $\omega$ | 183.16343 | +0.48336304 | −0.86199605 |
| $a$ | 2.7421942  | $\Omega$ | 237.98136 | +0.80708417 | +0.50636914 |
| $e$ | 0.0246074  | $i$      | 10.37670  | +0.33908009 | +0.02351808 |
| $P$ | 4.54       | $H$      | 16.3      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 06 26 | 691 | 0.4−  | 0.1+  | 2002 10 07 | 699 | 0.2+ | 1.0+ | 2007 11 04 | 691 | 0.2−  | 0.2+  |
| 1997 06 26 | 691 | 0.1+  | 0.3+  | 2002 10 07 | 699 | 0.5− | 0.6+ | 2007 11 08 | 691 | 0.1−  | 0.0   |
| 1997 06 26 | 691 | 0.1−  | 0.1+  | 2002 10 07 | 699 | 0.1− | 0.4+ | 2007 11 08 | 691 | 0.1−  | 0.0   |
| 1997 07 03 | 691 | 0.1−  | 0.1−  | 2002 10 07 | 699 | 0.8+ | 0.7− | 2007 11 08 | 691 | 0.5−  | 0.2+  |
| 1997 07 03 | 691 | 0.3−  | 0.0   | 2006 06 02 | 691 | 0.1+ | 0.3+ | 2007 11 11 | 699 | 1.1+  | 0.3+  |
| 1997 07 03 | 691 | 0.6−  | 0.2−  | 2006 06 02 | 691 | 0.1+ | 0.1+ | 2007 11 11 | 699 | 1.0+  | 1.0+  |
| 1997 07 08 | 691 | 0.0   | 0.4−  | 2006 06 02 | 691 | 1.1+ | 0.3+ | 2007 11 11 | 699 | 0.2+  | 1.2+  |
| 1997 07 08 | 691 | 0.3−  | 0.1−  | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 11 | 699 | 0.8+  | 1.1+  |
| 1997 07 08 | 691 | 0.1−  | 0.1−  | 2007 10 16 | G96 | 0.4+ | 0.1− | 2007 11 15 | 704 | 0.2−  | 0.7−  |
| 1997 07 13 | 691 | 0.5+  | 0.4−  | 2007 10 16 | G96 | 0.1+ | 0.1− | 2007 11 15 | 704 | 0.6+  | 0.1−  |
| 1997 07 13 | 691 | 0.0   | 0.3−  | 2007 10 16 | G96 | 0.5+ | 0.1− | 2007 11 15 | 704 | 0.2+  | 0.5−  |
| 1997 07 13 | 691 | 0.1−  | 0.8−  | 2007 10 19 | 691 | 0.0  | 0.2+ | 2007 11 15 | 704 | 0.3+  | 1.3−  |
| 1998 12 15 | 691 | (0.3− | 2.1−) | 2007 10 19 | 691 | 0.1− | 0.0  | 2007 11 15 | 704 | 0.1+  | 0.8−  |
| 1998 12 15 | 691 | 0.0   | 1.9−  | 2007 10 19 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.1−  | 0.2+  |
| 1998 12 15 | 691 | 0.1−  | 1.9−  | 2007 10 31 | 691 | 0.5− | 0.2+ | 2007 11 19 | 691 | 0.1−  | 0.1+  |
| 1998 12 22 | 691 | 0.1−  | 0.1+  | 2007 10 31 | G96 | 0.6+ | 0.2− | 2007 11 19 | 691 | 0.4−  | 0.0   |
| 1998 12 22 | 691 | 0.0   | 0.2−  | 2007 10 31 | G96 | 0.5+ | 0.0  | 2007 12 03 | 703 | 0.5+  | 1.3−  |
| 1998 12 22 | 691 | 1.5+  | 0.8+  | 2007 10 31 | 691 | 0.3− | 0.1− | 2007 12 03 | 703 | 0.2−  | 0.1−  |
| 2002 09 03 | 644 | 0.3+  | 0.1+  | 2007 10 31 | G96 | 0.3+ | 0.2− | 2007 12 03 | 703 | (1.2+ | 1.9−) |
| 2002 09 03 | 644 | 0.2+  | 0.3+  | 2007 10 31 | G96 | 0.2+ | 0.1− | 2007 12 03 | 703 | 1.1+  | 0.5−  |
| 2002 09 03 | 644 | 0.4+  | 0.5+  | 2007 10 31 | 691 | 0.4− | 0.1+ | 2007 12 06 | 691 | 0.2−  | 0.2+  |
| 2002 09 12 | 644 | 0.4+  | 0.2+  | 2007 11 02 | D29 | 1.0+ | 0.2− | 2007 12 06 | 691 | 0.8−  | 0.6+  |
| 2002 09 12 | 644 | 0.2+  | 0.4+  | 2007 11 02 | D29 | 0.3+ | 0.4− | 2007 12 06 | 691 | 0.1+  | 0.0   |
| 2002 09 12 | 644 | 0.4+  | 0.3+  | 2007 11 02 | D29 | 0.3+ | 0.3− | 2007 12 13 | A77 | 1.1−  | 0.8+  |
| 2002 10 04 | 644 | 0.1+  | 0.5+  | 2007 11 02 | D29 | 0.2+ | 0.5− | 2007 12 13 | A77 | 0.3+  | 0.7+  |
| 2002 10 04 | 644 | 0.8+  | 0.3+  | 2007 11 04 | 691 | 0.3− | 0.2+ | 2007 12 13 | A77 | 0.1+  | 1.1+  |
| 2002 10 04 | 644 | 0.1+  | 0.1+  | 2007 11 04 | 691 | 0.3− | 0.2+ |            |     |       |       |

**(171502)\* 1997 ND<sub>2</sub> = 2000 AN<sub>180</sub>**

Discovered 1997 July 3 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPC 39182)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |               |               |
|-----|------------|----------|-----------|---------------|---------------|
| $M$ | 238.63218  |          | (2000.0)  | <b>P</b>      | <b>Q</b>      |
| $n$ | 0.23779776 | $\omega$ | 320.57878 | $-0.78194755$ | $+0.58874368$ |
| $a$ | 2.5802644  | $\Omega$ | 256.69167 | $-0.50545383$ | $-0.79113068$ |
| $e$ | 0.2241331  | $i$      | 12.14821  | $-0.36479372$ | $-0.16581052$ |
| $P$ | 4.14       | $H$      | 15.0      | $G$ 0.15      | $U$ 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 07 03 | 691 | 0.0   | 0.4+  | 2001 05 18 | 704 | 0.4+ | 0.6+ | 2003 12 22 | 704 | (1.8− | 0.1−) |
| 1997 07 03 | 691 | 0.2+  | 0.4+  | 2001 05 18 | 704 | 0.5− | 0.6+ | 2003 12 22 | 704 | 0.1+  | 0.4+  |
| 1997 07 03 | 691 | 0.0   | 0.4+  | 2001 06 15 | 704 | 0.2− | 0.2+ | 2003 12 22 | 704 | 0.0   | 0.2+  |
| 1997 07 08 | 691 | 0.4−  | 0.3+  | 2001 06 15 | 704 | 0.9− | 1.2− | 2003 12 22 | 704 | 0.2+  | 0.1+  |
| 1997 07 08 | 691 | 0.4−  | 0.2+  | 2001 06 15 | 704 | 0.5− | 0.3+ | 2003 12 22 | 704 | 0.0   | 0.1+  |
| 1997 07 08 | 691 | 0.3−  | 0.2−  | 2001 06 21 | 704 | 0.5− | 0.8+ | 2006 10 12 | 644 | 0.1−  | 0.3−  |
| 1997 07 09 | 599 | 0.3+  | 0.5−  | 2001 06 21 | 704 | 0.4− | 0.9+ | 2006 10 12 | 644 | 0.1+  | 0.2−  |
| 1997 07 09 | 599 | (3.2− | 2.7+) | 2001 06 21 | 704 | 0.6− | 0.4− | 2006 10 12 | 644 | 0.1+  | 0.1−  |
| 1997 07 10 | 691 | 0.2+  | 0.4−  | 2001 06 24 | 704 | 0.0  | 0.5+ | 2006 10 22 | 644 | 0.1+  | 0.0   |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 07 10 | 691 | 0.1+ | 0.5− | 2001 06 24 | 704 | 0.2+  | 0.0   | 2006 10 22 | 644 | 0.3+  | 0.2−  |
| 1997 07 10 | 691 | 0.2+ | 0.5− | 2001 06 24 | 704 | 0.3−  | 0.1+  | 2006 10 22 | 644 | 0.2−  | 0.3+  |
| 1997 07 13 | 691 | 0.2− | 0.1+ | 2001 06 24 | 704 | 1.1+  | 0.7+  | 2006 10 23 | 644 | 0.1+  | 0.1+  |
| 1997 07 13 | 691 | 0.3+ | 0.2− | 2002 09 21 | 644 | 0.8−  | 0.4+  | 2006 10 23 | 644 | 0.1+  | 0.3+  |
| 1997 07 13 | 691 | 0.0  | 0.2+ | 2002 09 21 | 644 | 0.3−  | 0.3−  | 2006 10 23 | 644 | 0.4+  | 0.3−  |
| 2000 01 07 | 704 | 0.2− | 0.2− | 2002 09 21 | 644 | 0.4−  | 0.4−  | 2006 11 14 | 703 | 0.6+  | 0.4+  |
| 2000 01 07 | 704 | 0.8+ | 0.1+ | 2002 09 21 | 644 | 0.3−  | 0.1−  | 2006 11 14 | 703 | 0.2+  | 0.6−  |
| 2000 01 07 | 704 | 0.2− | 0.4+ | 2002 09 21 | 644 | 0.5−  | 0.4+  | 2006 11 14 | 703 | 0.2+  | 0.2+  |
| 2000 01 07 | 704 | 0.3+ | 0.0  | 2002 09 21 | 644 | 0.0   | 0.0   | 2006 11 14 | 703 | 0.8+  | 0.3−  |
| 2000 01 11 | 704 | 0.5− | 0.2+ | 2003 12 20 | 704 | (0.2− | 1.6+) | 2007 12 05 | 704 | 0.1+  | 0.8+  |
| 2000 01 11 | 704 | 0.1+ | 0.3− | 2003 12 20 | 704 | (0.1+ | 1.6+) | 2007 12 05 | 704 | 0.3+  | 0.4−  |
| 2000 01 11 | 704 | 0.8+ | 0.9+ | 2003 12 20 | 704 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.8+  | 0.2−  |
| 2000 01 11 | 704 | 0.6+ | 0.5+ | 2003 12 21 | 704 | 0.3+  | 1.3+  | 2007 12 05 | 704 | 0.6+  | 1.2+  |
| 2001 05 18 | 704 | 0.6− | 0.7+ | 2003 12 21 | 704 | 0.2+  | 0.8+  | 2007 12 15 | 691 | 0.1−  | 0.0   |
| 2001 05 18 | 704 | 0.1− | 0.6+ | 2003 12 21 | 704 | 0.4+  | 0.3+  | 2007 12 15 | 691 | 0.3−  | 0.0   |
| 2001 05 18 | 704 | 0.9+ | 0.3+ | 2003 12 21 | 704 | 0.7−  | 0.6+  | 2007 12 15 | 691 | (2.8− | 0.3+) |

**(171503)\* 1998 DZ<sub>11</sub> = 2005 CB<sub>53</sub>**

Discovered 1998 Feb. 23 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 74563)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 250.59560  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27748685 | $\omega$ | 155.82649 | -0.99975601 | +0.00457168 |
| $a$ | 2.3279543  | $\Omega$ | 24.46495  | -0.01363264 | -0.89749542 |
| $e$ | 0.1050084  | $i$      | 2.99119   | +0.01738018 | -0.44100008 |
| $P$ | 3.55       | $H$      | 16.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |              |      |            |     |       |       |            |     |       |       |
|------------|-----|--------------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 11 06 | 691 | 0.1+         | 0.0  | 2005 02 02 | 703 | 0.2+  | 0.0   | 2005 03 09 | 704 | 0.2+  | 0.2+  |
| 1996 11 06 | 691 | 0.7+         | 0.1- | 2005 02 02 | 703 | 0.7-  | 0.7-  | 2005 03 09 | 704 | 0.5-  | 0.6-  |
| 1996 11 06 | 691 | 0.5+         | 0.3- | 2005 02 02 | 703 | 0.6-  | 1.3-  | 2005 03 09 | 704 | 0.5+  | 0.2-  |
| 1998 02 23 | 691 | 0.6-         | 0.1+ | 2005 02 02 | 703 | (3.2- | 0.3+) | 2005 03 09 | 704 | 0.2+  | 0.1+  |
| 1998 02 23 | 691 | 0.6-         | 0.1+ | 2005 02 03 | 704 | 0.6+  | 0.7+  | 2005 03 09 | 704 | 0.3+  | 0.5-  |
| 1998 02 26 | 691 | 0.0          | 0.8- | 2005 02 03 | 704 | 0.6-  | 0.7-  | 2005 03 09 | 704 | 0.0   | 0.3-  |
| 1998 02 26 | 691 | 0.1-         | 0.3+ | 2005 02 03 | 704 | 1.0+  | 0.7-  | 2005 03 12 | 704 | 0.5+  | 0.2-  |
| 1998 02 26 | 691 | 0.0          | 0.3- | 2005 02 03 | 704 | 0.2+  | 0.2+  | 2005 03 12 | 704 | 0.4+  | 0.2-  |
| 1998 03 01 | 809 | 1.9+         | 0.1- | 2005 02 03 | 704 | 1.0+  | 0.6+  | 2005 03 12 | 704 | 0.5+  | 0.7-  |
| 1998 03 01 | 809 | 0.9+         | 0.6- | 2005 02 09 | 691 | 0.2-  | 0.1-  | 2005 03 12 | 704 | 0.0   | 1.1+  |
| 1998 03 01 | 809 | 1.8+         | 0.4- | 2005 02 09 | 691 | 0.0   | 0.2-  | 2005 03 12 | 704 | 0.1+  | 0.2+  |
| 1998 03 02 | 809 | 0.8+         | 1.0+ | 2005 02 09 | 691 | 0.0   | 0.1-  | 2005 03 16 | 704 | 0.9-  | 0.9+  |
| 1998 03 02 | 809 | 0.8+         | 0.4+ | 2005 02 14 | 704 | 0.7+  | 0.8+  | 2005 03 16 | 703 | 0.8-  | 0.1-  |
| 1998 03 02 | 809 | 0.2+         | 1.5+ | 2005 02 14 | 704 | 0.7+  | 0.0   | 2005 03 16 | 704 | 1.1+  | 0.9+  |
| 1998 03 22 | 704 | 0.7-         | 0.3+ | 2005 02 14 | 704 | 0.5+  | 0.5+  | 2005 03 16 | 703 | 0.7-  | 1.1-  |
| 1998 03 22 | 704 | 1.7+         | 1.5- | 2005 02 14 | 704 | 0.3+  | 0.1+  | 2005 03 16 | 704 | 0.1+  | 0.7+  |
| 1998 03 22 | 704 | (3.0+, 0.0 ) |      | 2005 02 14 | 704 | 0.9+  | 0.2-  | 2005 03 16 | 703 | 0.0   | 1.0-  |
| 1998 03 22 | 704 | 1.2-         | 0.2+ | 2005 03 02 | 703 | 0.9-  | 0.5-  | 2005 03 16 | 703 | 0.8-  | 0.3-  |
| 1998 03 24 | 704 | 0.2+         | 0.2- | 2005 03 02 | 703 | 0.7-  | 0.4-  | 2005 03 16 | 704 | (0.7- | 1.8+) |
| 1998 03 24 | 704 | 1.5-         | 0.4- | 2005 03 02 | 703 | 0.6-  | 0.3-  | 2005 03 16 | G96 | 0.5-  | 0.2-  |
| 1998 03 24 | 704 | 0.6-         | 0.6+ | 2005 03 02 | 703 | 1.4-  | 0.2-  | 2005 03 16 | G96 | 0.5-  | 0.3-  |
| 1998 03 24 | 704 | 0.9-         | 0.2+ | 2005 03 03 | A35 | 0.6+  | 0.3+  | 2005 03 16 | G96 | 0.3-  | 0.1+  |
| 1998 03 24 | 704 | 0.8+         | 0.8- | 2005 03 03 | A35 | 0.4+  | 0.2+  | 2005 03 16 | G96 | 0.2-  | 0.0   |
| 1998 03 24 | 704 | 1.0-         | 0.3- | 2005 03 04 | 704 | 0.3+  | 0.6+  | 2005 04 02 | 703 | 0.1+  | 0.3-  |
| 1998 03 24 | 704 | 1.0-         | 0.6+ | 2005 03 04 | 704 | (0.1- | 1.6+) | 2005 04 02 | 703 | (1.6- | 0.7+) |
| 1998 03 24 | 704 | 0.5+         | 1.4+ | 2005 03 04 | 704 | 0.1-  | 1.2+  | 2005 04 02 | 703 | 0.7+  | 1.3-  |
| 1998 03 24 | 704 | 1.3-         | 1.3+ | 2005 03 04 | 704 | 0.1+  | 0.8+  | 2005 04 02 | 703 | (1.7- | 0.0 ) |
| 1998 03 24 | 704 | 0.4-         | 0.1- | 2005 03 04 | 704 | 0.6+  | 0.3+  | 2006 08 17 | 644 | 0.7-  | 0.6+  |
| 1998 03 24 | 704 | 0.4-         | 0.2- | 2005 03 07 | 704 | 1.0+  | 0.3+  | 2006 08 17 | 644 | 0.6-  | 0.5+  |
| 1998 03 24 | 704 | 0.2-         | 0.2- | 2005 03 07 | 704 | 0.4+  | 0.2-  | 2006 08 17 | 644 | 0.1+  | 0.9+  |
| 1998 03 24 | 704 | 0.8-         | 0.6- | 2005 03 07 | 704 | 0.3+  | 0.6-  | 2007 11 02 | 691 | 0.2-  | 0.2-  |
| 1998 03 24 | 704 | 0.7+         | 0.2- | 2005 03 07 | 704 | 0.0   | 0.4-  | 2007 11 02 | 691 | 0.2-  | 0.1-  |
| 1998 03 24 | 704 | 1.3+         | 1.1- | 2005 03 07 | 704 | 0.8+  | 0.0   | 2007 11 02 | 691 | 0.0   | 0.2-  |
| 1998 03 24 | 704 | 0.4-         | 0.6- | 2005 03 08 | 699 | 0.7-  | 0.6+  | 2007 11 06 | 691 | 0.2-  | 0.4-  |
| 1998 03 24 | 704 | 0.7+         | 0.4+ | 2005 03 08 | 699 | 0.1-  | 0.8+  | 2007 11 06 | 691 | 0.5-  | 0.3+  |
| 1998 03 24 | 704 | 0.7-         | 0.5- | 2005 03 08 | 699 | 0.8+  | 1.0+  | 2007 11 06 | 691 | 0.3-  | 0.0   |
| 1998 03 24 | 704 | 1.8+         | 0.0  | 2005 03 08 | 699 | 0.9+  | 0.7+  | 2007 11 15 | 704 | 1.0-  | 0.9+  |
| 1998 03 24 | 704 | 0.4-         | 0.1- | 2005 03 08 | 704 | 0.5-  | 1.4+  | 2007 11 15 | 704 | 0.1+  | 1.0+  |
| 1998 03 24 | 704 | 1.0-         | 1.0+ | 2005 03 08 | 704 | 0.2-  | 0.3+  | 2007 11 15 | 704 | 0.1-  | 0.7+  |

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 1998 03 24 | 704 | (1.0– 2.2–) | 2005 03 08 | 704 | 0.5+ 0.3– | 2007 11 18 | 704 | 0.7– 0.9– |
| 1998 03 24 | 704 | (5.4– 2.0+) | 2005 03 08 | 704 | 0.4– 0.1+ | 2007 11 18 | 704 | 0.1+ 0.8+ |
| 1998 03 24 | 704 | 0.2+ 0.0    | 2005 03 08 | 704 | 0.7+ 0.0  | 2007 11 18 | 704 | 0.4– 0.6– |
| 1998 03 29 | 704 | 0.6+ 0.9+   | 2005 03 09 | 699 | 0.6+ 0.1+ | 2007 11 18 | 704 | 0.5– 0.2– |
| 1998 03 29 | 704 | 0.8+ 1.7+   | 2005 03 09 | 699 | 0.5+ 0.1+ | 2007 11 20 | 704 | 0.5+ 0.6– |
| 1998 03 29 | 704 | 0.8– 0.9–   | 2005 03 09 | 699 | 0.7+ 0.7+ | 2007 11 20 | 704 | 0.4+ 0.5– |
| 1998 03 29 | 704 | (2.1– 0.9+) | 2005 03 09 | 699 | 0.8+ 0.5+ | 2007 11 20 | 704 | 1.1+ 0.1+ |
| 1998 03 29 | 704 | 1.3– 0.0    | 2005 03 09 | 704 | 0.3+ 0.6– | 2007 11 20 | 704 | 1.0+ 0.1– |
| 2003 09 30 | 691 | 0.3– 0.3+   | 2005 03 09 | 704 | 0.9+ 0.2– | 2007 12 14 | 704 | 0.3– 1.6+ |
| 2003 09 30 | 691 | 0.0 0.3+    | 2005 03 09 | 704 | 0.3– 0.5+ | 2007 12 14 | 704 | 0.2– 0.1– |
| 2003 09 30 | 691 | 0.0 0.3+    | 2005 03 09 | 704 | 0.6– 0.8+ | 2007 12 14 | 704 | 0.2– 0.3+ |

**(171504)\* 1998 EP<sub>5</sub>**

Discovered 1998 Mar. 1 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 245.77365 |            |          | (2000.0) |  |  | <b>P</b>    |      |  | <b>Q</b>    |   |  |
|--------------------|------------|----------|----------|--|--|-------------|------|--|-------------|---|--|
| <i>n</i>           | 0.26949968 | <i>ω</i> | 77.76115 |  |  | –0.98978966 |      |  | –0.05843119 |   |  |
| <i>a</i>           | 2.3737258  | <i>Ω</i> | 98.78458 |  |  | +0.00533111 |      |  | –0.92664998 |   |  |
| <i>e</i>           | 0.0619445  | <i>i</i> | 7.55927  |  |  | +0.14243597 |      |  | –0.37135644 |   |  |
| <i>P</i>           | 3.66       | <i>H</i> | 16.8     |  |  | <i>G</i>    | 0.15 |  | <i>U</i>    | 1 |  |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1998 03 01 | 691 | 0.4+ 0.1+   | 2001 01 03 | 704 | 0.5+ 0.6+   | 2005 03 16 | 703 | 0.9– 0.3– |
| 1998 03 01 | 691 | 0.4+ 0.1–   | 2001 02 03 | 691 | 0.4– 0.3+   | 2005 03 16 | 703 | 0.3– 0.4+ |
| 1998 03 01 | 691 | 0.2+ 0.2+   | 2001 02 03 | 691 | 0.3– 0.7–   | 2005 03 16 | 703 | 1.2– 0.6+ |
| 1998 03 04 | 691 | 0.2– 0.2–   | 2001 02 03 | 691 | 0.7– 0.0    | 2007 11 09 | 703 | 0.3+ 0.3+ |
| 1998 03 04 | 691 | 0.3– 0.5–   | 2003 09 26 | 645 | 0.1– 0.0    | 2007 11 09 | 703 | 0.9+ 0.0  |
| 1998 03 04 | 691 | 0.1– 0.4–   | 2003 09 26 | 645 | 0.0 0.1+    | 2007 11 09 | 703 | 0.0 0.9+  |
| 1998 04 21 | 704 | 0.4+ 0.6+   | 2003 09 27 | 645 | 0.0 0.0     | 2007 11 09 | 703 | 1.2+ 0.7+ |
| 1998 04 21 | 704 | (2.5+ 1.1+) | 2003 09 27 | 645 | 0.0 0.0     | 2007 11 12 | 704 | 0.5– 1.5+ |
| 1998 04 21 | 704 | (2.4+ 1.6+) | 2003 09 28 | 645 | 0.0 0.1–    | 2007 11 12 | 704 | 0.8– 0.5+ |
| 1998 04 21 | 704 | (4.3– 0.1–) | 2003 09 28 | 645 | 0.0 0.1–    | 2007 11 12 | 704 | 0.6+ 1.4+ |
| 2000 11 22 | 691 | 0.3+ 0.4–   | 2003 09 30 | 645 | 0.1– 0.1–   | 2007 11 12 | 704 | 0.6– 0.6+ |
| 2000 11 22 | 691 | 0.5+ 0.2–   | 2003 09 30 | 645 | 0.0 0.1–    | 2007 11 12 | 704 | 0.0 1.3+  |
| 2000 11 22 | 691 | 0.3+ 0.4–   | 2003 10 16 | 699 | 0.5+ 0.4–   | 2007 12 04 | 704 | 0.4+ 0.3– |
| 2001 01 03 | 704 | 0.0 0.2+    | 2003 10 16 | 699 | 1.0+ 0.4+   | 2007 12 04 | 704 | 1.2+ 0.7– |
| 2001 01 03 | 704 | 0.9+ 0.4+   | 2003 10 16 | 699 | 0.6– 0.6+   | 2007 12 04 | 704 | 0.6+ 0.0  |
| 2001 01 03 | 704 | 0.4– 1.1+   | 2003 10 16 | 699 | (2.2+ 0.9–) | 2007 12 04 | 704 | 0.1+ 0.2– |
| 2001 01 03 | 704 | 0.3– 0.2–   | 2005 03 16 | 703 | 0.4– 0.3+   | 2007 12 04 | 704 | 0.2– 0.9– |

**(171505)\* 1998 HV<sub>35</sub> = 2005 JK<sub>1</sub>**

Discovered 1998 Apr. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 74570)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 277.95907 |            |          | (2000.0)  |  |  | <b>P</b>    |      |  | <b>Q</b>    |   |  |
|--------------------|------------|----------|-----------|--|--|-------------|------|--|-------------|---|--|
| <i>n</i>           | 0.28640315 | <i>ω</i> | 103.42103 |  |  | –0.93594906 |      |  | +0.34945204 |   |  |
| <i>a</i>           | 2.2793841  | <i>Ω</i> | 97.04624  |  |  | –0.33762911 |      |  | –0.85555185 |   |  |
| <i>e</i>           | 0.1506480  | <i>i</i> | 2.50575   |  |  | –0.10002975 |      |  | –0.38198732 |   |  |
| <i>P</i>           | 3.44       | <i>H</i> | 17.0      |  |  | <i>G</i>    | 0.15 |  | <i>U</i>    | 1 |  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 1998 03 25 | 704 | 0.2+ 0.4– | 2005 04 16 | 691 | 0.1– 0.2+ | 2005 05 14 | 644 | 0.1– 0.3+ |
| 1998 03 25 | 704 | 1.0+ 0.6+ | 2005 05 03 | 691 | 0.4+ 0.3+ | 2005 05 14 | 644 | 0.1– 0.3+ |
| 1998 03 25 | 704 | 0.2+ 0.8– | 2005 05 03 | 691 | 0.4+ 0.2+ | 2005 05 16 | 704 | 0.1+ 0.1+ |
| 1998 03 25 | 704 | 1.7– 1.2+ | 2005 05 03 | 691 | 0.2+ 1.1+ | 2005 05 16 | 704 | 0.4+ 0.7+ |
| 1998 03 29 | 704 | 0.8– 0.9– | 2005 05 03 | 704 | 1.0– 1.0+ | 2005 05 16 | 704 | 0.2+ 0.5– |
| 1998 03 29 | 704 | 0.1– 0.7+ | 2005 05 03 | 704 | 0.3+ 0.1– | 2005 05 16 | 704 | 0.1– 0.7– |
| 1998 03 29 | 704 | 1.8– 0.8– | 2005 05 03 | 704 | 0.6– 0.5– | 2005 05 30 | 699 | 0.2– 0.4+ |
| 1998 03 29 | 704 | 1.5– 1.9+ | 2005 05 03 | 704 | 0.7– 0.3+ | 2005 05 30 | 699 | 0.2+ 0.2+ |
| 1998 03 29 | 704 | 0.2– 0.5– | 2005 05 04 | 699 | 0.2– 0.1+ | 2005 05 30 | 699 | 0.1+ 0.4– |
| 1998 04 20 | 704 | 1.0+ 0.8– | 2005 05 04 | 699 | 0.1+ 0.3+ | 2005 05 30 | 699 | 0.4– 0.2+ |
| 1998 04 20 | 704 | 0.1+ 0.8– | 2005 05 04 | 699 | 0.2+ 0.8+ | 2005 06 04 | 703 | 0.5– 0.8+ |
| 1998 04 20 | 704 | 1.8– 0.7– | 2005 05 04 | 699 | 0.2+ 0.7+ | 2005 06 04 | 703 | 1.3– 0.1– |
| 1998 04 20 | 704 | 0.2+ 0.6– | 2005 05 08 | 699 | 0.5+ 0.2+ | 2005 06 04 | 703 | 1.1– 1.1+ |

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1998 04 20 | 704 | 1.7– 0.5–   | 2005 05 08 | 699 | 0.6+ 1.1+   | 2005 06 04 | 703 | 0.6+ 1.1– |
| 1998 04 21 | 704 | 1.1+ 1.8–   | 2005 05 08 | 699 | 0.1+ 0.5–   | 2005 06 27 | 644 | 0.4– 0.4– |
| 1998 04 21 | 704 | 0.6+ 0.5–   | 2005 05 08 | 704 | 0.6+ 0.6–   | 2005 06 27 | 644 | 0.1+ 0.1– |
| 1998 04 21 | 704 | 0.7– 0.8–   | 2005 05 08 | 704 | (1.9– 0.3–) | 2005 06 27 | 644 | 0.2+ 0.0  |
| 1998 04 21 | 704 | 1.2+ 0.5–   | 2005 05 08 | 704 | 0.3+ 0.3+   | 2006 09 18 | 691 | 0.3– 0.1+ |
| 1998 04 22 | 704 | 0.2– 1.9–   | 2005 05 09 | 699 | (1.5+ 0.2–) | 2006 09 18 | 691 | 0.4– 0.2+ |
| 1998 04 22 | 704 | 0.3+ 1.1–   | 2005 05 09 | 699 | 0.4+ 0.3–   | 2006 09 18 | 691 | 0.0 0.1–  |
| 1998 04 22 | 704 | 0.7– 0.2–   | 2005 05 09 | 699 | 0.4+ 0.3+   | 2006 09 26 | 691 | 0.1– 0.1+ |
| 1998 04 22 | 704 | 0.3– 0.6+   | 2005 05 09 | 704 | 0.5+ 0.5+   | 2006 09 26 | 691 | 0.2– 0.2+ |
| 1998 04 22 | 704 | (0.1+ 2.9–) | 2005 05 09 | 704 | 0.5+ 0.5+   | 2006 09 26 | 691 | 0.3– 0.1+ |
| 2000 12 28 | 691 | 0.2+ 0.5+   | 2005 05 09 | 699 | 1.0+ 0.3+   | 2006 09 30 | 691 | 0.0 0.1+  |
| 2000 12 28 | 691 | 0.0 0.5+    | 2005 05 09 | 704 | 0.5+ 0.2+   | 2006 09 30 | 691 | 0.1+ 0.4+ |
| 2000 12 28 | 691 | 0.2+ 0.7+   | 2005 05 09 | 704 | 0.5+ 0.5+   | 2006 09 30 | 691 | 0.2– 0.1+ |
| 2002 07 17 | 644 | 0.0 0.5–    | 2005 05 13 | 691 | 0.3+ 0.3+   | 2007 11 08 | G96 | 0.1+ 0.1+ |
| 2002 07 17 | 644 | 0.2+ 0.1–   | 2005 05 13 | 691 | 0.2+ 0.2+   | 2007 11 08 | G96 | 1.1– 0.0  |
| 2002 07 17 | 644 | 0.3– 0.1+   | 2005 05 13 | 691 | 0.3+ 0.2+   | 2007 11 08 | G96 | 0.8– 0.2+ |
| 2003 12 22 | 691 | 0.3+ 0.3+   | 2005 05 14 | G96 | 0.4– 0.0    | 2007 11 08 | G96 | 0.4– 0.3+ |
| 2003 12 22 | 691 | 0.5+ 0.7+   | 2005 05 14 | G96 | 0.5– 0.2+   | 2007 12 14 | G96 | 0.2+ 0.0  |
| 2003 12 22 | 691 | 0.1– 0.5+   | 2005 05 14 | G96 | 0.5– 0.1+   | 2007 12 14 | G96 | 0.2+ 0.2+ |
| 2005 04 16 | 691 | 0.1+ 0.2+   | 2005 05 14 | G96 | 0.4– 0.0    | 2007 12 14 | G96 | 0.6– 0.1+ |
| 2005 04 16 | 691 | 0.0 0.2+    | 2005 05 14 | 644 | 0.0 0.0     | 2007 12 14 | G96 | 0.5– 0.2+ |

**(171506)\* 1998 HC<sub>44</sub> = 2003 US<sub>284</sub>**

Discovered 1998 Apr. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 55827)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 269.25207 |            |          | (2000.0)  |  |  | <b>P</b>    |      |  | <b>Q</b>    |   |  |
|--------------------|------------|----------|-----------|--|--|-------------|------|--|-------------|---|--|
| <i>n</i>           | 0.27906804 | <i>ω</i> | 129.46134 |  |  | –0.99925187 |      |  | –0.01440010 |   |  |
| <i>a</i>           | 2.3191525  | <i>Ω</i> | 49.74433  |  |  | –0.00223102 |      |  | –0.90508668 |   |  |
| <i>e</i>           | 0.1633407  | <i>i</i> | 2.69574   |  |  | +0.03860997 |      |  | –0.42498323 |   |  |
| <i>P</i>           | 3.53       | <i>H</i> | 16.4      |  |  | <i>G</i>    | 0.15 |  | <i>U</i>    | 1 |  |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 1998 03 25 | 704 | 0.4– 0.8+   | 2005 03 11 | 704 | 1.4+ 0.4– | 2005 04 13 | 704 | 0.4+ 0.2–   |
| 1998 03 25 | 704 | 0.8+ 1.8+   | 2005 03 11 | 704 | 1.3+ 0.6+ | 2005 04 13 | 699 | 0.3+ 0.3–   |
| 1998 03 25 | 704 | 0.4– 1.0+   | 2005 03 11 | 704 | 0.5+ 0.6+ | 2005 04 13 | 704 | 0.0 0.5+    |
| 1998 03 25 | 704 | (1.6– 2.0+) | 2005 03 11 | 704 | 0.7+ 0.1+ | 2005 04 14 | 704 | 0.6+ 0.0    |
| 1998 03 25 | 704 | 0.2+ 0.7–   | 2005 03 13 | 703 | 0.3– 0.3+ | 2005 04 14 | 704 | 0.0 0.1+    |
| 1998 03 29 | 704 | 0.3+ 0.2–   | 2005 03 13 | 703 | 1.1– 0.4– | 2005 04 14 | 704 | 0.1+ 0.4+   |
| 1998 03 29 | 704 | 1.2+ 0.6+   | 2005 03 13 | 703 | 0.8– 0.0  | 2005 04 14 | 704 | 0.2– 0.2–   |
| 1998 03 29 | 704 | 0.6+ 0.8+   | 2005 03 13 | 703 | 0.8– 0.3– | 2005 04 14 | 704 | 0.1– 0.1+   |
| 1998 03 29 | 704 | 1.4– 1.0+   | 2005 03 31 | 699 | 0.0 0.1–  | 2005 04 18 | 703 | 0.3– 0.3–   |
| 1998 03 29 | 704 | 1.6– 0.7–   | 2005 03 31 | 699 | 0.1– 0.0  | 2005 04 18 | 703 | 0.8– 0.3–   |
| 1998 04 20 | 704 | 1.7– 0.7+   | 2005 03 31 | 699 | 0.4– 0.3– | 2005 04 18 | 703 | 0.5– 0.5–   |
| 1998 04 20 | 704 | 0.8– 0.6–   | 2005 03 31 | 699 | 0.8– 0.5– | 2005 04 18 | 703 | 0.7– 0.1–   |
| 1998 04 20 | 704 | 0.7+ 0.3–   | 2005 04 04 | 703 | 0.4– 0.4– | 2005 04 18 | 704 | 0.4– 0.5–   |
| 1998 04 20 | 704 | 0.0 0.7+    | 2005 04 04 | 703 | 0.5– 0.6– | 2005 04 18 | 704 | 0.2+ 0.1+   |
| 1998 04 21 | 704 | 0.9+ 0.0    | 2005 04 04 | 703 | 0.5– 0.0  | 2005 04 18 | 704 | 0.4– 1.1+   |
| 1998 04 21 | 704 | 0.8+ 0.2+   | 2005 04 04 | 703 | 0.2– 0.1– | 2005 04 18 | 704 | 1.1+ 1.5–   |
| 1998 04 21 | 704 | 0.0 0.2+    | 2005 04 04 | 704 | 0.5+ 0.1+ | 2005 05 04 | 644 | 0.2– 0.0    |
| 1998 04 21 | 704 | 0.9+ 1.6–   | 2005 04 04 | 704 | 0.2– 0.2– | 2005 05 04 | 644 | 0.1– 0.2+   |
| 1998 04 21 | 704 | 0.1– 1.9–   | 2005 04 04 | 704 | 0.1+ 0.3+ | 2005 05 04 | 644 | 0.2– 0.1+   |
| 1998 04 22 | 704 | 0.1+ 0.1–   | 2005 04 04 | 704 | 0.4+ 0.5+ | 2005 05 04 | 644 | 0.1– 0.2+   |
| 1998 04 22 | 704 | 0.4+ 0.4+   | 2005 04 04 | 704 | 0.2+ 0.4+ | 2005 05 04 | 644 | 0.2– 0.2+   |
| 1998 04 22 | 704 | (0.1– 2.0–) | 2005 04 05 | 704 | 1.3+ 0.0  | 2005 05 04 | 644 | 0.3– 0.2+   |
| 1998 04 22 | 704 | 0.0 0.4–    | 2005 04 05 | 704 | 1.2+ 0.0  | 2005 05 12 | G96 | 0.2– 0.2–   |
| 1998 04 22 | 704 | 1.1– 0.5–   | 2005 04 05 | 704 | 0.5+ 1.3+ | 2005 05 12 | G96 | 0.2– 0.2–   |
| 2003 09 22 | 691 | 0.1– 0.4+   | 2005 04 05 | 704 | 0.6+ 0.6+ | 2005 05 12 | G96 | 0.3– 0.1–   |
| 2003 09 22 | 691 | 0.0 0.2+    | 2005 04 05 | 704 | 0.1+ 0.4+ | 2005 05 12 | G96 | 0.3– 0.1–   |
| 2003 09 22 | 691 | 0.4– 0.4+   | 2005 04 05 | G96 | 0.4– 0.3– | 2005 05 13 | 699 | 0.8+ 0.6+   |
| 2003 09 29 | 333 | 0.2– 0.5+   | 2005 04 05 | G96 | 0.3– 0.2– | 2005 05 13 | 699 | 0.0 0.3+    |
| 2003 09 29 | 333 | 0.3+ 0.1+   | 2005 04 05 | G96 | 0.4– 0.3– | 2005 05 13 | 699 | 1.1– 0.4+   |
| 2003 09 29 | 333 | 0.8– 0.8+   | 2005 04 05 | G96 | 0.6– 0.0  | 2005 05 13 | 699 | (0.3– 2.2+) |
| 2003 10 16 | 691 | 0.1– 0.6+   | 2005 04 06 | 704 | 0.5+ 0.4+ | 2005 05 15 | 644 | 0.0 0.3+    |
| 2003 10 16 | 691 | 0.2+ 0.4+   | 2005 04 06 | 704 | 0.8+ 0.9+ | 2005 05 15 | 644 | 0.2+ 0.1+   |

2007 DEC. 24

M.P.O. 129065

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 16 | 691 | 0.0   | 0.6+  | 2005 04 06 | 704 | 0.1-  | 0.7+  | 2005 05 15 | 644 | 0.1+ | 0.2+ |
| 2003 10 21 | 699 | (0.8+ | 1.7+) | 2005 04 06 | 704 | 0.9+  | 1.4+  | 2005 05 22 | 644 | 0.0  | 0.1+ |
| 2003 10 21 | 699 | (1.9+ | 0.1-) | 2005 04 07 | 704 | 0.3+  | 0.7+  | 2005 05 22 | 644 | 0.2+ | 0.4+ |
| 2003 10 21 | 699 | 1.3+  | 1.0+  | 2005 04 07 | 704 | 0.0   | 0.4+  | 2005 05 22 | 644 | 0.2- | 0.3+ |
| 2003 10 21 | 699 | 0.5+  | 0.4+  | 2005 04 07 | 704 | 0.1-  | 0.7+  | 2006 08 28 | 691 | 0.5- | 0.6+ |
| 2003 10 22 | 695 | 0.1-  | 0.2+  | 2005 04 07 | 704 | 0.1-  | 0.4+  | 2006 08 28 | 691 | 0.4- | 0.4+ |
| 2003 10 22 | 695 | 0.5+  | 1.0+  | 2005 04 07 | 704 | 0.1+  | 0.3-  | 2006 08 28 | 691 | 0.4- | 0.7+ |
| 2003 11 24 | 691 | 0.2-  | 0.1+  | 2005 04 12 | 704 | 0.2+  | 0.2+  | 2007 12 05 | 691 | 0.2- | 0.4+ |
| 2003 11 24 | 691 | 0.2+  | 0.4+  | 2005 04 12 | 704 | 0.6+  | 0.1-  | 2007 12 05 | 691 | 0.3- | 0.2- |
| 2003 11 24 | 691 | 0.4-  | 0.2-  | 2005 04 12 | 704 | 0.2+  | 0.1+  | 2007 12 05 | 691 | 0.0  | 0.1- |
| 2005 03 04 | 704 | 0.1-  | 0.7+  | 2005 04 12 | 704 | 0.1+  | 0.2-  | 2007 12 10 | 704 | 0.5+ | 0.1+ |
| 2005 03 04 | 704 | 1.0+  | 1.1+  | 2005 04 12 | 704 | 0.1+  | 0.1+  | 2007 12 10 | 704 | 0.8+ | 0.0  |
| 2005 03 04 | 704 | 1.5+  | 1.2+  | 2005 04 13 | 699 | 0.8+  | 0.1-  | 2007 12 10 | 704 | 0.5+ | 0.3- |
| 2005 03 04 | 704 | 1.1-  | 0.1+  | 2005 04 13 | 704 | 0.1+  | 0.2-  | 2007 12 16 | 691 | 0.1- | 0.0  |
| 2005 03 08 | 699 | 1.1+  | 0.5+  | 2005 04 13 | 699 | 0.6+  | 0.3+  | 2007 12 16 | 691 | 0.4- | 0.0  |
| 2005 03 08 | 699 | 0.8+  | 0.8+  | 2005 04 13 | 704 | 0.3+  | 0.1+  | 2007 12 16 | 691 | 0.0  | 0.3- |
| 2005 03 08 | 699 | 0.5+  | 0.1+  | 2005 04 13 | 704 | (2.0+ | 2.3+) |            |     |      |      |
| 2005 03 11 | 704 | 0.8+  | 0.9+  | 2005 04 13 | 699 | 0.1+  | 0.5+  |            |     |      |      |

(171507)\* 1998 HC<sub>111</sub> = 2006 QY<sub>41</sub>

Discovered 1998 Apr. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 107753)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M | 205.16072  |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.26929821 | $\omega$ | 145.67915 | -0.70206450 | +0.70307622 |
| a | 2.3749095  | $\Omega$ | 79.43114  | -0.67643646 | -0.60879154 |
| e | 0.1561613  | i        | 6.60601   | -0.22257394 | -0.36750061 |
| P | 3.66       | H        | 16.1      | G           | 0.15        |
|   |            |          |           | U           | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 04 21 | 704 | 0.7+ | 0.6- | 2005 02 01 | 703 | 0.3+ | 1.1+ | 2006 08 24 | 644 | 0.2+  | 0.3+  |
| 1998 04 21 | 704 | 0.5- | 0.5+ | 2005 02 01 | 703 | 0.7+ | 0.5+ | 2006 09 26 | 703 | (0.3- | 1.6-) |
| 1998 04 21 | 704 | 1.0+ | 1.1- | 2005 02 01 | 703 | 0.1+ | 0.6- | 2006 09 26 | 703 | (2.0- | 0.2+) |
| 1998 04 21 | 704 | 0.1- | 1.1- | 2005 03 01 | 703 | 0.0  | 0.4- | 2006 09 26 | 703 | 0.3-  | 0.5-  |
| 1998 04 21 | 704 | 0.2+ | 1.3- | 2005 03 01 | 703 | 0.5- | 0.7- | 2006 09 26 | 703 | 0.4+  | 0.6+  |
| 1998 04 23 | 704 | 0.8+ | 0.2+ | 2005 03 01 | 703 | 0.2- | 0.4+ | 2007 11 02 | 691 | 0.3-  | 0.1+  |
| 1998 04 23 | 704 | 0.1- | 0.4+ | 2005 03 01 | 703 | 0.2+ | 0.4+ | 2007 11 02 | 691 | 0.1+  | 0.2+  |
| 1998 04 23 | 704 | 0.6+ | 1.2- | 2005 03 09 | 703 | 0.1- | 0.1- | 2007 11 02 | 691 | 0.7-  | 0.1-  |
| 1998 04 23 | 704 | 0.5+ | 0.4+ | 2005 03 09 | 703 | 0.2- | 0.0  | 2007 12 04 | G96 | 0.5+  | 0.4-  |
| 1998 04 23 | 704 | 0.5+ | 0.1- | 2005 03 09 | 703 | 0.5+ | 0.7+ | 2007 12 04 | G96 | 0.8+  | 0.2+  |
| 1998 04 24 | 704 | 0.5- | 0.5+ | 2005 03 09 | 703 | 0.5- | 0.3+ | 2007 12 04 | G96 | 0.3+  | 0.4-  |
| 1998 04 24 | 704 | 0.9- | 1.0+ | 2006 08 17 | 644 | 0.2- | 0.2- | 2007 12 04 | G96 | 0.1+  | 0.2-  |
| 1998 04 24 | 704 | 1.4- | 0.9+ | 2006 08 17 | 644 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.6+  | 0.3-  |
| 1998 04 24 | 704 | 1.4- | 0.6+ | 2006 08 17 | 644 | 0.3- | 0.1+ | 2007 12 15 | G96 | 0.5+  | 0.3-  |
| 1998 04 24 | 704 | 0.2+ | 0.0  | 2006 08 24 | 644 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.4+  | 0.3-  |
| 2005 02 01 | 703 | 0.2+ | 0.1- | 2006 08 24 | 644 | 0.0  | 0.4+ | 2007 12 15 | G96 | 0.5+  | 0.0   |

(171508)\* 1998 MY<sub>13</sub> = 2003 SJ<sub>296</sub>

Discovered 1998 June 19 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (MPO 52432)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M | 340.82371  |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.22489656 | $\omega$ | 103.92939 | +0.97211133 | -0.14652985 |
| a | 2.6780222  | $\Omega$ | 264.73332 | +0.06858858 | +0.92427774 |
| e | 0.0894952  | i        | 10.59610  | +0.22426583 | +0.35247647 |
| P | 4.38       | H        | 15.5      | G           | 0.15        |
|   |            |          |           | U           | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 06 19 | 910 | 0.1+ | 0.1- | 2003 10 17 | 699 | 0.9-  | 0.3-  | 2005 02 04 | 703 | 1.4+ | 0.2+ |
| 1998 06 19 | 910 | 0.2+ | 0.4- | 2003 10 20 | 644 | 0.1-  | 0.1+  | 2005 02 04 | 703 | 0.9- | 0.0  |
| 1998 06 19 | 910 | 0.0  | 0.5- | 2003 10 20 | 644 | 0.2-  | 0.3+  | 2005 02 05 | 644 | 0.5+ | 0.1+ |
| 1998 06 27 | 910 | 0.6+ | 0.4- | 2003 10 20 | 644 | 0.1-  | 0.1+  | 2005 02 05 | 644 | 0.5+ | 0.2+ |
| 1998 06 27 | 910 | 0.3+ | 0.0  | 2003 10 22 | 704 | (1.4- | 1.8+) | 2005 02 05 | 644 | 0.4+ | 0.1+ |
| 1998 06 27 | 910 | 0.1+ | 0.3- | 2003 10 22 | 704 | 0.4+  | 0.0   | 2005 02 14 | 703 | 0.2- | 0.3- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 07 06 | 910 | 0.5-  | 0.0   | 2003 10 22 | 704 | 0.6-  | 0.1+  | 2005 02 14 | 703 | 0.5+  | 0.6+  |
| 1998 07 06 | 910 | 0.1-  | 0.0   | 2003 10 22 | 704 | (1.3+ | 1.7-) | 2005 02 14 | 703 | 0.7-  | 0.2+  |
| 1998 07 06 | 910 | 0.1-  | 0.1-  | 2003 10 22 | 704 | 0.5-  | 0.6-  | 2005 02 14 | 703 | 0.1-  | 0.1-  |
| 2003 09 29 | 699 | 0.2-  | 0.7-  | 2003 10 22 | 704 | 1.1+  | 0.2-  | 2007 08 13 | 699 | 0.7-  | 0.5+  |
| 2003 09 29 | 699 | 0.1-  | 0.1+  | 2003 10 22 | 704 | 0.5-  | 0.7+  | 2007 08 13 | 699 | (1.8- | 1.9+) |
| 2003 09 29 | 699 | 0.1+  | 0.1+  | 2003 10 22 | 704 | (2.3+ | 2.1-) | 2007 08 13 | 699 | 1.0+  | 0.0   |
| 2003 09 29 | 699 | 0.0   | 0.3+  | 2003 11 19 | 704 | 0.5-  | 0.1-  | 2007 08 13 | 699 | 0.7-  | 0.0   |
| 2003 09 30 | 699 | (1.6- | 0.2-) | 2003 11 19 | 704 | 0.6+  | 0.1-  | 2007 08 22 | 699 | 0.0   | 0.4+  |
| 2003 09 30 | 699 | 0.1-  | 0.9-  | 2003 11 19 | 704 | 0.1+  | 0.2+  | 2007 08 22 | 699 | 0.6-  | 0.2+  |
| 2003 09 30 | 699 | 0.1+  | 0.9+  | 2003 11 19 | 704 | 0.1-  | 0.2+  | 2007 08 22 | 699 | 0.9-  | 0.5+  |
| 2003 09 30 | 699 | 0.1-  | 0.2-  | 2003 11 19 | 704 | 0.5+  | 0.8-  | 2007 08 22 | 699 | 0.8+  | 1.5+  |
| 2003 10 02 | 691 | 0.2+  | 0.1-  | 2005 01 18 | 703 | 0.7-  | 0.0   | 2007 12 05 | G96 | 0.2-  | 0.2+  |
| 2003 10 02 | 691 | 0.2+  | 0.2-  | 2005 01 18 | 703 | 0.4+  | 0.9-  | 2007 12 05 | G96 | 0.1-  | 0.1-  |
| 2003 10 02 | 691 | 0.1+  | 0.1-  | 2005 01 18 | 703 | 0.3+  | 0.5-  | 2007 12 05 | G96 | 0.1-  | 0.2-  |
| 2003 10 17 | 699 | 0.2+  | 0.1-  | 2005 01 18 | 703 | 0.6-  | 0.2-  | 2007 12 05 | G96 | 0.1+  | 0.0   |
| 2003 10 17 | 699 | 0.5-  | 0.4-  | 2005 02 04 | 703 | 0.4-  | 0.7+  |            |     |       |       |
| 2003 10 17 | 699 | 0.2-  | 0.9+  | 2005 02 04 | 703 | 0.0   | 0.8+  |            |     |       |       |

(171509)\* 1998 QV<sub>18</sub> = 1990 TX<sub>13</sub> = 2002 NP<sub>8</sub>

Discovered 1998 Aug. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 33026), A. Doppler (MPO 93724)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M | 78.99130   |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.23641129 | $\omega$ | 97.58240  | +0.78061768 | +0.62337685 |
| a | 2.5903428  | $\Omega$ | 223.86868 | -0.59604815 | +0.72077426 |
| e | 0.2281375  | i        | 3.73442   | -0.18804955 | +0.30312666 |
| P | 4.17       | H        | 15.2      | G           | 0.15        |
|   |            |          |           | U           | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1990 10 14 | 033 | 0.4-  | 0.2+  | 2002 05 21 | 704 | 0.1- | 0.3+ | 2002 09 06 | 704 | 0.1-  | 0.9+  |
| 1990 10 14 | 033 | 0.4-  | 0.9+  | 2002 06 05 | 704 | 0.4- | 0.4- | 2002 09 06 | 704 | 0.3+  | 0.3-  |
| 1998 08 04 | 699 | 0.2+  | 0.1-  | 2002 06 05 | 704 | 0.6+ | 0.4+ | 2002 09 06 | 704 | 0.8+  | 0.2-  |
| 1998 08 04 | 699 | 0.1-  | 0.3+  | 2002 06 05 | 704 | 0.1+ | 1.3+ | 2002 10 04 | 704 | 0.5-  | 0.8+  |
| 1998 08 04 | 699 | 0.8+  | 1.1+  | 2002 06 11 | 644 | 0.5+ | 0.1+ | 2002 10 04 | 704 | 0.4-  | 0.5+  |
| 1998 08 17 | 704 | 0.2-  | 0.2-  | 2002 06 11 | 644 | 0.5+ | 0.1+ | 2002 10 04 | 704 | 1.1-  | 0.3+  |
| 1998 08 17 | 704 | 0.3+  | 0.1-  | 2002 06 11 | 644 | 0.5+ | 0.2+ | 2002 10 04 | 704 | 0.4-  | 0.9+  |
| 1998 08 17 | 704 | 0.0   | 0.6-  | 2002 06 18 | 704 | 1.1+ | 0.7- | 2002 10 04 | 704 | 0.3-  | 0.1+  |
| 1998 08 17 | 704 | 0.5-  | 0.1-  | 2002 06 18 | 704 | 0.3- | 0.4+ | 2005 03 03 | 703 | 0.1-  | 1.0+  |
| 1998 08 17 | 704 | 0.5-  | 0.3-  | 2002 06 18 | 704 | 0.3+ | 0.8- | 2005 03 03 | 703 | 0.1-  | 0.2-  |
| 1998 08 23 | 704 | 0.2+  | 0.2+  | 2002 06 18 | 704 | 0.4+ | 0.3+ | 2005 03 03 | 703 | 1.2+  | 0.0   |
| 1998 08 23 | 704 | 0.5+  | 0.3-  | 2002 06 18 | 704 | 0.9+ | 1.4+ | 2005 03 03 | 703 | 0.3+  | 0.7+  |
| 1998 08 23 | 704 | 0.2+  | 0.4+  | 2002 07 01 | 644 | 0.5- | 0.0  | 2005 03 10 | 699 | 0.3+  | 0.4+  |
| 1998 08 23 | 704 | 1.3-  | 0.0   | 2002 07 01 | 644 | 0.4- | 0.0  | 2005 03 10 | 699 | (0.8- | 2.1+) |
| 1998 08 23 | 704 | 0.4+  | 0.8-  | 2002 07 01 | 644 | 0.5- | 0.1+ | 2005 03 10 | 699 | 0.5+  | 0.1+  |
| 1998 08 30 | 327 | 0.3+  | 0.4-  | 2002 07 05 | 704 | 1.2- | 0.3- | 2005 03 10 | 699 | 0.0   | 0.0   |
| 1998 08 30 | 327 | 0.3+  | 0.3-  | 2002 07 05 | 704 | 0.0  | 0.3- | 2005 03 17 | 703 | (1.2- | 1.6+) |
| 1998 08 30 | 327 | 0.3+  | 0.4-  | 2002 07 05 | 704 | 0.1- | 0.6+ | 2005 03 17 | 703 | 0.0   | 0.2-  |
| 1998 08 31 | 327 | 0.3+  | 0.5-  | 2002 07 05 | 704 | 0.1- | 0.5- | 2005 03 17 | 703 | 0.6-  | 1.0+  |
| 1998 08 31 | 327 | 0.5+  | 0.2-  | 2002 07 05 | 704 | 0.9- | 0.5+ | 2005 03 17 | 703 | 0.5-  | 0.3+  |
| 1998 08 31 | 327 | 0.4+  | 0.4-  | 2002 07 14 | 704 | 0.0  | 0.4- | 2007 11 14 | 704 | 0.9-  | 0.5+  |
| 1998 10 11 | 699 | (0.9- | 2.3+) | 2002 07 14 | 704 | 0.4- | 0.3- | 2007 11 14 | 704 | 0.2-  | 0.4+  |
| 1998 10 11 | 699 | 0.6-  | 1.9+  | 2002 07 14 | 704 | 0.2+ | 0.1- | 2007 11 14 | 704 | 0.2-  | 0.4+  |
| 1998 10 11 | 699 | 0.7-  | 1.3+  | 2002 07 14 | 704 | 0.1+ | 0.4- | 2007 12 05 | 704 | 0.4+  | 0.4+  |
| 2002 05 16 | 608 | (0.2+ | 1.8-) | 2002 07 14 | 704 | 0.2+ | 0.2- | 2007 12 05 | 704 | 0.1-  | 0.7-  |
| 2002 05 16 | 608 | 0.5+  | 1.4-  | 2002 08 14 | 704 | 0.1- | 0.6- | 2007 12 05 | 704 | 0.6+  | 0.3-  |
| 2002 05 16 | 608 | 0.3-  | 0.9-  | 2002 08 14 | 704 | 0.4+ | 0.2- | 2007 12 05 | 704 | 0.2+  | 0.1-  |
| 2002 05 21 | 704 | 0.7-  | 1.3+  | 2002 08 14 | 704 | 0.1+ | 0.6- | 2007 12 05 | 704 | 0.4+  | 0.0   |
| 2002 05 21 | 704 | 0.6-  | 1.1+  | 2002 08 14 | 704 | 0.3- | 0.3+ |            |     |       |       |
| 2002 05 21 | 704 | 0.2+  | 1.1+  | 2002 09 06 | 704 | 0.1- | 0.2+ |            |     |       |       |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                |       | MPC         |                |             |       |  |
|-----------------------------------------|------------|----------|----------------|-------|-------------|----------------|-------------|-------|--|
| $M$                                     | 83.36773   |          | (2000.0)       |       | <b>P</b>    |                | <b>Q</b>    |       |  |
| $n$                                     | 0.23997704 | $\omega$ | 218.64938      |       | +0.88762278 |                | +0.45228040 |       |  |
| $a$                                     | 2.5646194  | $\Omega$ | 114.25163      |       | -0.39530921 |                | +0.84506053 |       |  |
| $e$                                     | 0.2596934  | $i$      | 5.47527        |       | -0.23633965 |                | +0.28515811 |       |  |
| $P$                                     | 4.11       | $H$      | 15.0           |       | $G$         | 0.15           | $U$         | 1     |  |
| Residuals in seconds of arc             |            |          |                |       |             |                |             |       |  |
| 1998 07 04 699                          | 0.0        | 0.0      | 2002 06 16 644 | 0.1+  | 0.4+        | 2003 12 17 691 | 0.2+        | 0.5+  |  |
| 1998 07 04 699                          | 0.2-       | 0.5-     | 2002 06 16 644 | 0.0   | 0.3+        | 2003 12 17 691 | 0.1+        | 0.3+  |  |
| 1998 07 04 699                          | 0.2+       | 0.5-     | 2002 06 16 644 | 0.0   | 0.3+        | 2003 12 19 704 | 0.0         | 0.3+  |  |
| 1998 07 31 699                          | 0.1-       | 0.4+     | 2002 06 25 644 | 0.1-  | 0.4+        | 2003 12 19 704 | 0.1+        | 0.3+  |  |
| 1998 07 31 699                          | 0.6-       | 0.5+     | 2002 06 25 644 | 0.2-  | 0.4+        | 2003 12 19 704 | 0.2+        | 0.3+  |  |
| 1998 07 31 699                          | 0.6-       | 0.1+     | 2002 06 25 644 | 0.0   | 0.3+        | 2003 12 19 704 | 0.0         | 0.1+  |  |
| 1998 08 17 704                          | 0.0        | 0.2+     | 2002 07 04 644 | 0.0   | 0.4+        | 2003 12 24 608 | 0.5+        | 0.7-  |  |
| 1998 08 17 704                          | 0.1+       | 0.4-     | 2002 07 04 644 | 0.2-  | 0.3+        | 2003 12 24 608 | 1.1+        | 0.1-  |  |
| 1998 08 17 704                          | 0.1+       | 0.2+     | 2002 07 04 644 | 0.0   | 0.3+        | 2003 12 24 608 | 0.1-        | 0.6+  |  |
| 1998 08 17 704                          | 0.3+       | 0.3+     | 2002 07 05 704 | 0.0   | 0.1+        | 2003 12 29 691 | 0.1+        | 0.0   |  |
| 1998 08 17 704                          | 0.2+       | 0.0      | 2002 07 05 704 | 0.0   | 0.3+        | 2003 12 29 691 | (1.0+       | 1.6-) |  |
| 1998 08 23 704                          | 0.0        | 0.3-     | 2002 07 05 704 | 0.1-  | 0.3+        | 2003 12 29 691 | 0.1-        | 0.0   |  |
| 1998 08 23 704                          | 0.6+       | 0.0      | 2002 07 05 704 | 0.1+  | 0.0         | 2003 12 30 704 | 0.2-        | 1.4+  |  |
| 1998 08 23 704                          | 0.1+       | 0.7+     | 2002 07 05 704 | 0.2-  | 0.1+        | 2003 12 30 704 | 0.3+        | 0.5-  |  |
| 1998 08 23 704                          | 0.5+       | 1.0+     | 2002 07 14 644 | 0.7-  | 0.5-        | 2003 12 30 704 | 0.0         | 0.1+  |  |
| 1998 08 23 704                          | 0.1-       | 0.2-     | 2002 07 14 644 | 0.5-  | 0.4-        | 2003 12 30 704 | 0.3+        | 0.2+  |  |
| 1998 09 14 704                          | 0.1-       | 0.0      | 2002 07 14 644 | 0.6-  | 0.4-        | 2003 12 30 704 | 0.5+        | 0.4+  |  |
| 1998 09 14 704                          | 0.2-       | 1.0+     | 2002 07 22 644 | 0.0   | 0.0         | 2003 12 30 704 | 0.0         | 0.5+  |  |
| 1998 09 14 704                          | 0.5-       | 0.1+     | 2002 07 22 644 | 0.0   | 0.1-        | 2003 12 30 704 | 0.2-        | 0.6-  |  |
| 1998 09 14 704                          | 0.2+       | 0.4+     | 2002 07 22 644 | 0.1+  | 0.2-        | 2003 12 30 704 | 0.4-        | 0.1+  |  |
| 1998 09 14 704                          | 0.2+       | 0.5+     | 2002 07 22 608 | 0.6+  | 0.7-        | 2003 12 30 704 | 1.3-        | 1.4+  |  |
| 1998 09 18 704                          | (3.1+      | 1.1-)    | 2002 07 22 608 | 0.2+  | 0.7-        | 2004 01 21 704 | 0.7+        | 0.1-  |  |
| 1998 09 18 704                          | 1.0+       | 1.8+     | 2002 07 22 608 | 1.3-  | 0.8+        | 2004 01 21 704 | 0.4+        | 0.2-  |  |
| 1998 09 18 704                          | 0.7-       | 1.4+     | 2002 08 08 644 | 0.4-  | 0.3-        | 2004 01 21 704 | 0.1+        | 0.5+  |  |
| 1998 09 18 704                          | 1.1-       | 0.8+     | 2002 08 08 644 | 0.3+  | 0.1+        | 2004 01 21 704 | 0.8+        | 0.3+  |  |
| 1998 10 17 699                          | 0.7-       | 0.6-     | 2002 08 08 644 | 0.1-  | 0.1-        | 2004 01 27 691 | 0.1-        | 0.1+  |  |
| 1998 10 17 699                          | 1.7-       | 0.9+     | 2002 08 08 644 | 0.2+  | 0.1+        | 2004 01 27 691 | 0.1+        | 0.2+  |  |
| 1998 10 17 699                          | 0.8-       | 0.3-     | 2002 08 08 644 | 0.2-  | 0.2-        | 2004 01 27 691 | 0.0         | 0.0   |  |
| 2002 05 16 644                          | 0.1-       | 0.7+     | 2002 08 08 644 | 0.2+  | 0.1+        | 2005 03 03 703 | 0.2-        | 0.2-  |  |
| 2002 05 16 644                          | 0.4-       | 0.7+     | 2002 08 13 704 | 0.4+  | 0.1-        | 2005 03 03 703 | 0.1-        | 0.5+  |  |
| 2002 05 16 644                          | 0.3-       | 0.6+     | 2002 08 13 704 | 0.5+  | 0.2-        | 2005 03 03 703 | 0.0         | 0.3-  |  |
| 2002 05 24 644                          | 0.1+       | 1.2+     | 2002 08 13 704 | 0.5+  | 0.6-        | 2005 03 03 703 | 1.1-        | 0.4+  |  |
| 2002 05 24 644                          | 0.2+       | 1.0+     | 2002 08 13 704 | 0.2+  | 1.0-        | 2005 03 04 704 | (0.3-       | 1.6+) |  |
| 2002 05 24 644                          | 0.4+       | 1.1+     | 2002 08 13 704 | 0.2-  | 1.0-        | 2005 03 04 704 | 0.1-        | 1.0+  |  |
| 2002 06 05 704                          | 0.5-       | 1.0+     | 2002 08 18 644 | 0.2+  | 0.1-        | 2005 03 04 704 | 0.4+        | 0.5+  |  |
| 2002 06 05 704                          | 0.9+       | 0.3+     | 2002 08 18 644 | 0.1-  | 0.1-        | 2005 03 09 704 | 0.3+        | 1.4+  |  |
| 2002 06 05 704                          | 0.5-       | 1.2+     | 2002 08 18 644 | 0.1-  | 0.0         | 2005 03 09 704 | (2.4+       | 1.5+) |  |
| 2002 06 05 704                          | 0.3-       | 0.0      | 2002 09 23 608 | 0.7+  | 0.4-        | 2005 03 09 704 | 0.9+        | 0.3+  |  |
| 2002 06 05 704                          | 0.4-       | 0.5+     | 2002 09 23 608 | 1.1+  | 0.3-        | 2005 03 09 704 | 0.0         | 1.4+  |  |
| 2002 06 06 704                          | (3.5-      | 0.4+)    | 2002 09 23 608 | 0.9+  | 0.1-        | 2005 03 12 704 | (1.7+       | 0.6-) |  |
| 2002 06 06 704                          | (3.1-      | 0.6+)    | 2002 09 26 704 | 0.4-  | 0.7-        | 2005 03 12 704 | 0.0         | 0.4-  |  |
| 2002 06 06 704                          | (3.1-      | 0.9+)    | 2002 09 26 704 | 0.3-  | 0.6-        | 2005 03 12 704 | (2.4+       | 0.5+) |  |
| 2002 06 06 704                          | (2.6-      | 0.7+)    | 2002 09 26 704 | 0.4-  | 0.6-        | 2005 03 12 704 | 0.4+        | 0.0   |  |
| 2002 06 08 704                          | (1.1+      | 3.5+)    | 2002 09 26 704 | 0.2-  | 0.3-        | 2007 10 08 704 | 0.1-        | 1.2-  |  |
| 2002 06 08 704                          | (1.5+      | 4.3+)    | 2002 09 26 704 | 0.5-  | 1.0-        | 2007 10 08 704 | 0.8+        | 1.1-  |  |
| 2002 06 08 704                          | (1.9+      | 4.1+)    | 2002 10 03 704 | 0.3-  | 0.0         | 2007 10 08 704 | 1.0+        | 0.1+  |  |
| 2002 06 08 704                          | (3.0+      | 3.2+)    | 2002 10 03 704 | 0.8+  | 0.1-        | 2007 12 05 704 | 0.2+        | 0.3+  |  |
| 2002 06 09 608                          | (1.2-      | 2.6+)    | 2002 10 03 704 | 0.1+  | 0.2+        | 2007 12 05 704 | 0.0         | 0.0   |  |
| 2002 06 09 608                          | (1.0-      | 2.6+)    | 2002 10 03 704 | 0.2-  | 0.3+        | 2007 12 05 704 | 0.1-        | 0.4+  |  |
| 2002 06 09 608                          | (1.4-      | 2.3+)    | 2002 10 26 608 | (1.1- | 1.8+)       | 2007 12 05 704 | 0.6-        | 0.4-  |  |
| 2002 06 10 333                          | 0.9+       | 0.9+     | 2002 10 26 608 | (1.8- | 1.2+)       | 2007 12 16 691 | 0.0         | 0.2+  |  |
| 2002 06 10 333                          | 0.5+       | 0.5+     | 2002 10 26 608 | 1.2-  | 1.2+        | 2007 12 16 691 | 0.3-        | 0.0   |  |
| 2002 06 10 333                          | 0.7+       | 0.4+     | 2003 12 17 691 | 0.1-  | 0.4+        | 2007 12 16 691 | 0.4-        | 0.0   |  |

**(171511)\* 1998 QY<sub>83</sub> = 2002 LQ<sub>58</sub>**

Discovered 1998 Aug. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.  
Id. G. V. Williams (*MPO* 33031)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                               |       |                |           | MPC         |                |             |      |  |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------|-------|----------------|-----------|-------------|----------------|-------------|------|--|
| <i>M</i>                                | 74.61730                                                                                                      |       | (2000.0)       |           | <b>P</b>    |                | <b>Q</b>    |      |  |
| <i>n</i>                                | 0.23420520                                                                                                    |       | $\omega$       | 71.74862  | +0.76632300 |                | +0.61362945 |      |  |
| <i>a</i>                                | 2.6065838                                                                                                     |       | $\Omega$       | 249.95509 | −0.63891661 |                | +0.69686280 |      |  |
| <i>e</i>                                | 0.2762517                                                                                                     |       | <i>i</i>       | 11.68633  | −0.06733960 |                | +0.37126962 |      |  |
| <i>P</i>                                | 4.21 <th><i>H</i></th> <td>15.7</td> <th><i>G</i></th> <td>0.15</td> <th><i>U</i></th> <td colspan="2">1</td> |       | <i>H</i>       | 15.7      | <i>G</i>    | 0.15           | <i>U</i>    | 1    |  |
| Residuals in seconds of arc             |                                                                                                               |       |                |           |             |                |             |      |  |
| 1998 08 19 704                          | 0.2−                                                                                                          | 0.2−  | 2002 06 05 704 | 1.0+      | 0.5−        | 2006 06 14 644 | 0.0         | 0.1+ |  |
| 1998 08 19 704                          | (2.3+                                                                                                         | 0.9−) | 2002 06 05 704 | 0.1−      | 0.2+        | 2006 06 15 E12 | 0.2−        | 0.2− |  |
| 1998 08 19 704                          | 0.9+                                                                                                          | 1.1−  | 2002 06 05 704 | 0.2+      | 0.3−        | 2006 06 15 E12 | 0.8+        | 0.6+ |  |
| 1998 08 19 704                          | (0.4−                                                                                                         | 2.1+) | 2002 06 05 704 | (2.2+     | 0.8+)       | 2006 06 15 E12 | 0.1+        | 0.7+ |  |
| 1998 08 19 704                          | 1.7−                                                                                                          | 0.9−  | 2002 06 13 704 | 0.3−      | 0.2−        | 2006 06 15 E12 | 0.5+        | 0.4+ |  |
| 1998 08 24 704                          | 0.9+                                                                                                          | 0.6−  | 2002 06 13 704 | 0.2−      | 0.2+        | 2006 06 16 644 | 0.1+        | 0.1− |  |
| 1998 08 24 704                          | (2.3+                                                                                                         | 0.1+) | 2002 06 13 704 | 1.1−      | 1.3+        | 2006 06 16 644 | 0.3−        | 0.0  |  |
| 1998 08 24 704                          | 0.7+                                                                                                          | 0.2+  | 2002 06 13 704 | 0.4−      | 0.2−        | 2006 06 16 644 | 0.4−        | 0.1+ |  |
| 1998 08 24 704                          | 0.7+                                                                                                          | 0.4−  | 2002 07 09 704 | 0.4+      | 1.0−        | 2006 06 20 644 | 0.0         | 0.1+ |  |
| 1998 08 24 704                          | 0.5+                                                                                                          | 0.4−  | 2002 07 09 704 | (0.6+     | 1.6−)       | 2006 06 20 644 | 0.1−        | 0.2+ |  |
| 1998 08 27 704                          | 0.4−                                                                                                          | 0.3−  | 2002 07 09 704 | 0.3+      | 0.9−        | 2006 06 20 644 | 0.1+        | 0.1+ |  |
| 1998 08 27 704                          | 0.2−                                                                                                          | 0.0   | 2002 10 05 704 | 0.4+      | 0.8+        | 2006 08 14 E12 | 0.0         | 0.2− |  |
| 1998 08 27 704                          | 1.1+                                                                                                          | 0.3+  | 2002 10 05 704 | 0.0       | 0.5+        | 2006 08 14 E12 | 0.5+        | 0.9− |  |
| 1998 08 27 704                          | 0.3+                                                                                                          | 0.9+  | 2002 10 05 704 | 0.8+      | 0.4+        | 2006 08 14 E12 | 0.1+        | 0.7+ |  |
| 1998 08 27 704                          | 0.5+                                                                                                          | 0.4+  | 2006 05 20 E12 | 0.4+      | 0.5+        | 2006 08 14 E12 | 0.5−        | 0.0  |  |
| 1998 09 19 704                          | 0.3+                                                                                                          | 0.9−  | 2006 05 20 E12 | 0.7+      | 0.5+        | 2007 11 01 691 | 0.1−        | 0.2+ |  |
| 1998 09 19 704                          | 0.3+                                                                                                          | 1.1+  | 2006 05 20 E12 | 0.1+      | 0.9+        | 2007 11 01 691 | 0.0         | 0.2+ |  |
| 1998 09 19 704                          | 0.7−                                                                                                          | 1.1−  | 2006 05 25 568 | 0.7−      | 1.2+        | 2007 11 01 691 | 0.1+        | 0.1+ |  |
| 1998 09 19 704                          | 1.4−                                                                                                          | 0.2−  | 2006 05 25 568 | 0.7−      | 1.2+        | 2007 12 04 691 | 0.1−        | 0.1− |  |
| 1998 09 19 704                          | 0.2−                                                                                                          | 0.3−  | 2006 05 25 568 | 0.6−      | 1.0+        | 2007 12 04 691 | 0.0         | 0.0  |  |
| 1998 09 23 704                          | 0.3−                                                                                                          | 0.3−  | 2006 05 26 568 | 0.7−      | 1.2+        | 2007 12 04 691 | 0.0         | 0.1+ |  |
| 1998 09 23 704                          | 0.6+                                                                                                          | 0.2−  | 2006 05 27 704 | 0.8+      | 0.1+        | 2007 12 04 G96 | 0.5+        | 0.1− |  |
| 1998 09 23 704                          | 1.3−                                                                                                          | 0.8+  | 2006 05 27 704 | 0.0       | 0.4+        | 2007 12 04 G96 | 0.1+        | 0.1+ |  |
| 1998 09 23 704                          | 0.7+                                                                                                          | 0.2+  | 2006 05 27 704 | 0.4+      | 0.4+        | 2007 12 04 G96 | 0.3+        | 0.1− |  |
| 1998 10 16 699                          | 1.0−                                                                                                          | 1.1+  | 2006 05 27 704 | 0.6−      | 0.3−        | 2007 12 04 G96 | 0.6+        | 0.2− |  |
| 1998 10 16 699                          | 1.0−                                                                                                          | 1.0+  | 2006 05 27 704 | 0.0       | 0.2+        | 2007 12 05 704 | 0.7+        | 1.2+ |  |
| 1998 10 16 699                          | 0.2−                                                                                                          | 1.5+  | 2006 05 29 608 | (0.5+     | 2.3−)       | 2007 12 05 704 | 0.0         | 0.2− |  |
| 1998 10 18 699                          | (0.4+                                                                                                         | 2.1+) | 2006 05 29 608 | (0.8+     | 3.0−)       | 2007 12 05 704 | 0.6+        | 1.0+ |  |
| 1998 10 18 699                          | 0.0                                                                                                           | 0.3+  | 2006 05 29 608 | (0.3+     | 2.8−)       | 2007 12 05 704 | 0.6+        | 1.5+ |  |
| 1998 10 18 699                          | 0.1+                                                                                                          | 0.8+  | 2006 06 04 704 | 0.4+      | 0.0         | 2007 12 05 704 | 1.0+        | 0.0  |  |
| 2002 06 02 644                          | 0.4−                                                                                                          | 0.6+  | 2006 06 04 704 | 0.5+      | 0.7−        | 2007 12 16 691 | 0.3−        | 0.2+ |  |
| 2002 06 02 644                          | 0.9−                                                                                                          | 0.1+  | 2006 06 04 704 | 0.0       | 0.5+        | 2007 12 16 691 | 0.3−        | 0.2+ |  |
| 2002 06 02 644                          | 0.3−                                                                                                          | 0.5+  | 2006 06 14 644 | 0.1−      | 0.0         | 2007 12 16 691 | 0.2−        | 0.3+ |  |
| 2002 06 05 704                          | 0.0                                                                                                           | 0.2−  | 2006 06 14 644 | 0.3−      | 0.1+        |                |             |      |  |

**(171512)\* 1998 RP<sub>20</sub>**

Discovered 1998 Sept. 14 by L. Šarounová at Ondřejov.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                                       |      |          |            |          |             |                                                     |             |     | MPC  |      |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|------------|----------|-------------|-----------------------------------------------------|-------------|-----|------|------|
| $M$                                     | 75.86908                                                                                                                                              |      | (2000.0) |            | <b>P</b> |             | <b>Q</b>                                            |             |     |      |      |
| $n$                                     | 0.22514391                                                                                                                                            |      | $\omega$ | 82.15479   |          | +0.86753029 |                                                     | +0.46353094 |     |      |      |
| $a$                                     | 2.6760604                                                                                                                                             |      | $\Omega$ | 250.07578  |          | −0.49731225 |                                                     | +0.80219180 |     |      |      |
| $e$                                     | 0.1968373                                                                                                                                             |      | $i$      | 11.06045   |          | −0.00846940 |                                                     | +0.37633415 |     |      |      |
| $P$                                     | 4.38 <th><math>H</math></th> <td colspan="2">15.9</td> <th><math>G</math></th> <td colspan="2">0.15<th><math>U</math></th><td colspan="2">1</td></td> |      | $H$      | 15.9       |          | $G$         | 0.15 <th><math>U</math></th> <td colspan="2">1</td> |             | $U$ | 1    |      |
| Residuals in seconds of arc             |                                                                                                                                                       |      |          |            |          |             |                                                     |             |     |      |      |
| 1998 09 14                              | 557                                                                                                                                                   | 0.9+ | 0.1−     | 2002 08 04 | 704      | 0.1−        | 0.1−                                                | 2002 10 06  | 704 | 0.3+ | 0.7+ |
| 1998 09 14                              | 557                                                                                                                                                   | 1.0+ | 0.1−     | 2002 08 04 | 704      | 0.1−        | 0.3+                                                | 2002 10 06  | 704 | 0.3+ | 0.7+ |
| 1998 09 22                              | 557                                                                                                                                                   | 0.6− | 1.4+     | 2002 08 04 | 704      | 0.6−        | 0.2+                                                | 2002 10 06  | 704 | 0.6+ | 0.2+ |
| 1998 09 22                              | 557                                                                                                                                                   | 1.0− | 0.9+     | 2002 08 30 | 557      | 0.3−        | 0.2−                                                | 2002 10 06  | 704 | 0.3+ | 0.2− |
| 1998 09 22                              | 557                                                                                                                                                   | 0.2− | 0.5−     | 2002 08 30 | 557      | 0.8+        | 0.5+                                                | 2002 10 06  | 704 | 0.2+ | 0.4− |
| 1998 09 24                              | 557                                                                                                                                                   | 0.3+ | 0.5+     | 2002 08 30 | 557      | 0.9+        | 0.1+                                                | 2002 10 09  | 704 | 0.2− | 0.7+ |
| 1998 09 24                              | 557                                                                                                                                                   | 0.5+ | 0.3+     | 2002 09 02 | 557      | 0.5−        | 0.0                                                 | 2002 10 09  | 704 | 0.0  | 0.2+ |
| 1998 09 24                              | 557                                                                                                                                                   | 0.4+ | 0.0      | 2002 09 02 | 557      | 0.0         | 0.0                                                 | 2002 10 09  | 704 | 0.0  | 0.4+ |
| 1998 10 13                              | 557                                                                                                                                                   | 0.5− | 0.4−     | 2002 09 02 | 557      | 0.0         | 0.1−                                                | 2002 10 09  | 704 | 0.1+ | 0.9+ |
| 1998 10 13                              | 557                                                                                                                                                   | 0.4+ | 0.6−     | 2002 09 03 | 644      | 0.0         | 0.0                                                 | 2002 10 09  | 704 | 0.7− | 0.2− |
| 1998 11 11                              | 557                                                                                                                                                   | 0.2+ | 0.5−     | 2002 09 03 | 644      | 0.2−        | 0.1+                                                | 2007 11 09  | 691 | 0.2− | 0.1− |
| 1998 11 12                              | 557                                                                                                                                                   | 0.2+ | 0.3−     | 2002 09 03 | 644      | 0.0         | 0.1+                                                | 2007 11 09  | 691 | 0.2− | 0.2− |
| 1998 11 23                              | 557                                                                                                                                                   | 0.1+ | 0.1−     | 2002 09 11 | 644      | 0.1−        | 0.1+                                                | 2007 11 09  | 691 | 0.2− | 0.0  |



2007 DEC. 24

M.P.O. 129067

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 23 | 557 | 0.0  | 0.2- | 2002 09 11 | 644 | 0.1- | 0.1+ | 2007 11 17 | 691 | 0.3- | 0.5- |
| 1998 12 11 | 557 | 0.6- | 0.5- | 2002 09 11 | 644 | 0.0  | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.0  |
| 1998 12 11 | 557 | 1.0- | 0.0  | 2002 09 14 | 699 | 0.2- | 0.0  | 2007 11 17 | 691 | 0.1- | 0.1+ |
| 2000 02 08 | 645 | 0.1+ | 0.2+ | 2002 09 14 | 699 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.6+ | 0.0  |
| 2000 02 08 | 645 | 0.1+ | 0.1+ | 2002 09 14 | 699 | 0.5- | 0.4- | 2007 12 04 | 704 | 0.8+ | 0.1+ |
| 2002 07 13 | 704 | 0.9+ | 0.5- | 2002 09 14 | 699 | 0.6- | 0.3- | 2007 12 04 | 704 | 1.2+ | 0.4- |
| 2002 07 13 | 704 | 0.2+ | 0.2+ | 2002 10 04 | 644 | 0.4- | 0.0  | 2007 12 04 | 704 | 0.1- | 0.1- |
| 2002 07 13 | 704 | 0.0  | 0.6+ | 2002 10 04 | 644 | 0.0  | 0.1- |            |     |      |      |
| 2002 08 04 | 704 | 0.5- | 0.4+ | 2002 10 04 | 644 | 0.1- | 0.1+ |            |     |      |      |

(171513)\* 1998 RJ<sub>63</sub> = 2006 QX<sub>24</sub>

Discovered 1998 Sept. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 103145)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.12406885 | $\omega$ | 257.70234 | +0.97932656 | +0.18921362 |
| <i>a</i> | 3.9813242  | $\Omega$ | 91.35891  | -0.14634434 | +0.90686269 |
| <i>e</i> | 0.2445929  | <i>i</i> | 4.10349   | -0.13965251 | +0.37656110 |
| <i>P</i> | 7.94       | <i>H</i> | 14.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 04 13 | 691 | 0.4-  | 0.3-  | 2006 09 16 | 704 | 0.4+  | 0.9+  | 2006 09 30 | 704 | 0.2+  | 0.4+  |
| 1996 04 13 | 691 | 0.0   | 0.2-  | 2006 09 16 | 704 | 1.3-  | 0.0   | 2006 09 30 | 704 | 0.8-  | 1.5-  |
| 1996 04 13 | 691 | 0.2+  | 0.7+  | 2006 09 16 | 704 | 0.1-  | 0.1+  | 2006 10 02 | G96 | 0.1-  | 0.0   |
| 1998 09 14 | 704 | 0.0   | 0.3+  | 2006 09 18 | 703 | 0.9-  | 1.0-  | 2006 10 02 | G96 | 0.4+  | 0.1+  |
| 1998 09 14 | 704 | 1.0-  | 1.6-  | 2006 09 18 | 703 | 0.9+  | 0.2-  | 2006 10 02 | G96 | 0.2+  | 0.0   |
| 1998 09 14 | 704 | 0.3+  | 0.3-  | 2006 09 18 | 703 | 0.5+  | 0.7+  | 2006 10 02 | G96 | 0.2+  | 0.1+  |
| 1998 09 18 | 704 | 0.8-  | 0.6+  | 2006 09 18 | 703 | (0.3- | 1.7+) | 2006 10 16 | 703 | 0.2-  | 0.0   |
| 1998 09 18 | 704 | 0.2-  | 1.0+  | 2006 09 18 | 699 | 0.4+  | 0.6+  | 2006 10 16 | 703 | 0.4+  | 0.8-  |
| 1998 09 18 | 704 | 0.9+  | 0.0   | 2006 09 18 | 699 | 1.4-  | 0.2+  | 2006 10 16 | 703 | 0.2-  | 0.1+  |
| 1998 09 18 | 704 | (2.4+ | 0.0 ) | 2006 09 18 | 699 | 0.0   | 0.5+  | 2006 10 16 | 703 | 0.0   | 0.1-  |
| 1998 09 18 | 704 | (2.4+ | 2.7+) | 2006 09 18 | 699 | 0.1-  | 0.1-  | 2006 10 17 | 106 | 0.2-  | 1.1-  |
| 1998 09 24 | 699 | 0.5+  | 0.9+  | 2006 09 19 | 012 | 0.0   | 0.7-  | 2006 10 17 | 106 | 0.1-  | 0.1-  |
| 1998 09 24 | 699 | 0.5+  | 0.2+  | 2006 09 19 | 012 | 0.5+  | 0.2+  | 2006 10 18 | 106 | 0.3+  | 0.5-  |
| 1998 09 24 | 699 | 0.1-  | 0.4+  | 2006 09 19 | 012 | 0.0   | 0.2+  | 2006 10 18 | 106 | (2.3+ | 0.5+) |
| 1999 12 05 | 691 | 0.1-  | 0.7-  | 2006 09 19 | 012 | 0.4+  | 0.2+  | 2006 10 20 | 644 | 0.0   | 0.5+  |
| 1999 12 05 | 691 | 0.9-  | 0.4-  | 2006 09 19 | 012 | 0.8+  | 0.4+  | 2006 10 20 | 644 | 0.0   | 0.2+  |
| 1999 12 05 | 691 | 0.1+  | 0.7-  | 2006 09 19 | 012 | 0.3+  | 0.4+  | 2006 10 20 | 644 | 0.1+  | 0.1+  |
| 2000 01 02 | 691 | 0.3+  | 0.2+  | 2006 09 19 | 703 | 0.1+  | 0.1+  | 2006 11 23 | G96 | 0.1+  | 0.0   |
| 2000 01 02 | 691 | 0.3+  | 0.2-  | 2006 09 19 | 703 | 0.1+  | 0.3+  | 2006 11 23 | G96 | 0.1-  | 0.0   |
| 2000 01 02 | 691 | 0.3+  | 0.3-  | 2006 09 19 | 703 | 0.1-  | 0.2+  | 2006 11 23 | G96 | 0.2-  | 0.1-  |
| 2001 02 17 | 691 | 0.3+  | 0.6+  | 2006 09 19 | 703 | (3.4- | 2.1-) | 2006 11 23 | G96 | 0.1+  | 0.0   |
| 2001 02 17 | 691 | 0.2+  | 0.2+  | 2006 09 22 | 704 | 0.3+  | 0.2-  | 2006 12 13 | 704 | 0.2+  | 0.3+  |
| 2001 02 17 | 691 | 0.2+  | 0.3+  | 2006 09 22 | 704 | 1.0+  | 0.9-  | 2006 12 13 | 704 | 0.5-  | 0.6-  |
| 2006 08 17 | 644 | 0.2+  | 0.3+  | 2006 09 22 | 704 | 0.0   | 0.5-  | 2006 12 13 | 704 | 0.7-  | 0.3+  |
| 2006 08 17 | 644 | 0.4+  | 0.5+  | 2006 09 22 | 704 | 0.5-  | 0.3-  | 2006 12 13 | 704 | 0.7+  | 1.3-  |
| 2006 08 17 | 644 | 0.0   | 0.0   | 2006 09 22 | 704 | 0.6-  | 0.7-  | 2006 12 26 | G96 | 0.2-  | 0.4-  |
| 2006 08 22 | 644 | 0.1+  | 0.4+  | 2006 09 24 | 608 | 0.7+  | 1.4-  | 2006 12 26 | G96 | 0.2-  | 0.4-  |
| 2006 08 22 | 644 | 0.1+  | 0.6+  | 2006 09 24 | 608 | (0.6+ | 1.6-) | 2006 12 26 | G96 | 0.2-  | 0.1-  |
| 2006 08 22 | 644 | 0.3+  | 0.2+  | 2006 09 24 | 608 | (0.9+ | 1.8-) | 2006 12 26 | G96 | 0.1-  | 0.3+  |
| 2006 08 28 | 705 | 0.3+  | 0.3+  | 2006 09 26 | 704 | 0.2-  | 0.6-  | 2007 11 09 | 691 | 0.1+  | 0.4+  |
| 2006 08 28 | 705 | 0.2+  | 0.2+  | 2006 09 26 | 704 | 0.1+  | 0.6+  | 2007 11 09 | 691 | 0.2-  | 0.2+  |
| 2006 09 01 | 106 | 0.2-  | 0.4+  | 2006 09 26 | 704 | 0.5+  | 0.3-  | 2007 11 09 | 691 | 0.1+  | 0.1+  |
| 2006 09 01 | 106 | 0.2-  | 1.2+  | 2006 09 26 | 704 | 0.1+  | 0.4-  | 2007 12 05 | 291 | (1.6- | 0.6+) |
| 2006 09 01 | 106 | 0.4+  | 0.4-  | 2006 09 28 | 704 | 0.3-  | 1.1+  | 2007 12 05 | 291 | 0.1-  | 0.4+  |
| 2006 09 01 | 106 | 0.1+  | 0.4+  | 2006 09 28 | 704 | 0.1-  | 0.1+  | 2007 12 05 | 291 | 0.1-  | 0.5+  |
| 2006 09 12 | 703 | 0.6-  | 0.0   | 2006 09 28 | 704 | (1.7- | 0.5-) | 2007 12 05 | 704 | 0.1-  | 0.2+  |
| 2006 09 12 | 703 | 0.1-  | 0.0   | 2006 09 28 | 704 | 0.1-  | 0.7+  | 2007 12 05 | 704 | (1.8+ | 0.1-) |
| 2006 09 12 | 703 | 0.2-  | 0.6+  | 2006 09 30 | 703 | 0.8-  | 0.3-  | 2007 12 05 | 704 | 0.0   | 0.1-  |
| 2006 09 12 | 703 | 0.3-  | 0.4-  | 2006 09 30 | 703 | 0.3-  | 0.8+  | 2007 12 05 | 704 | 0.7+  | 0.3-  |
| 2006 09 13 | 644 | 0.1-  | 0.2+  | 2006 09 30 | 703 | 0.3-  | 0.5-  | 2007 12 05 | 704 | 0.1+  | 0.2-  |
| 2006 09 13 | 644 | 0.0   | 0.1+  | 2006 09 30 | 703 | 0.2+  | 0.6+  | 2007 12 15 | 691 | 0.1+  | 0.1+  |
| 2006 09 13 | 644 | 0.1+  | 0.1-  | 2006 09 30 | 704 | 0.2-  | 0.3-  | 2007 12 15 | 691 | 0.3-  | 0.1-  |
| 2006 09 16 | 704 | 0.1+  | 0.5-  | 2006 09 30 | 704 | 0.8-  | 1.0+  | 2007 12 15 | 691 | 0.0   | 0.1+  |

(171514)\* 1998 SG<sub>23</sub> = 2002 OB<sub>14</sub>

Discovered 1998 Sept. 17 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 33042)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.23273545 | $\omega$ | 152.34472 | +0.72865158 | +0.68242191 |
| <i>a</i> | 2.6175462  | $\Omega$ | 164.18661 | -0.66110676 | +0.72295651 |
| <i>e</i> | 0.1888270  | <i>i</i> | 12.29478  | -0.17889862 | +0.10786205 |
| <i>P</i> | 4.23       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 08 02 | 699 | 0.2-  | 0.8+  | 2002 08 12 | 704 | 0.3-  | 0.3+  | 2002 10 11 | 704 | (1.6- | 0.5+) |
| 1998 08 02 | 699 | 0.0   | 0.2-  | 2002 08 12 | 704 | 0.0   | 0.4+  | 2002 10 11 | 704 | 0.3+  | 0.2-  |
| 1998 08 02 | 699 | 0.6+  | 0.6-  | 2002 08 12 | 704 | 0.3+  | 0.2-  | 2002 10 11 | 704 | 0.9-  | 0.6+  |
| 1998 09 14 | 704 | 0.7+  | 0.9-  | 2002 08 12 | 704 | 0.1+  | 0.1+  | 2002 10 11 | 704 | 0.6-  | 0.4+  |
| 1998 09 14 | 704 | 0.4+  | 1.9-  | 2002 08 13 | 704 | 0.0   | 0.6+  | 2002 10 11 | 704 | 1.2-  | 0.4+  |
| 1998 09 14 | 704 | (0.5+ | 2.5-) | 2002 08 13 | 704 | 0.1-  | 0.0   | 2005 03 03 | 703 | (1.5- | 0.4-) |
| 1998 09 17 | 699 | 0.1+  | 0.6-  | 2002 08 13 | 704 | 0.1+  | 0.2+  | 2005 03 03 | 703 | 1.2-  | 0.2-  |
| 1998 09 17 | 699 | 0.5+  | 0.3-  | 2002 08 13 | 704 | 0.0   | 0.6+  | 2005 03 03 | 703 | 1.1-  | 0.4+  |
| 1998 09 17 | 699 | 0.2+  | 0.5-  | 2002 08 13 | 704 | 0.2+  | 0.2+  | 2005 03 03 | 703 | 0.6-  | 0.3-  |
| 1998 09 18 | 704 | (0.2- | 4.9-) | 2002 08 13 | 704 | 0.7-  | 1.1+  | 2005 03 08 | 699 | (3.6+ | 0.5-) |
| 1998 09 18 | 704 | 0.1+  | 0.2+  | 2002 08 13 | 704 | 0.0   | 1.0+  | 2005 03 08 | 699 | (1.5+ | 1.9+) |
| 1998 09 18 | 704 | 0.7+  | 0.9+  | 2002 08 13 | 704 | 0.3-  | 0.3+  | 2005 03 08 | 699 | (1.3+ | 2.1+) |
| 1998 09 18 | 704 | 0.4+  | 0.3+  | 2002 08 13 | 704 | 1.1+  | 0.5+  | 2005 03 08 | 699 | (1.9+ | 0.8+) |
| 1998 09 18 | 704 | 0.7+  | 0.4-  | 2002 08 13 | 704 | 0.5-  | 1.3+  | 2005 03 08 | 704 | 0.3+  | 1.1+  |
| 1998 09 24 | 699 | 0.3-  | 1.1+  | 2002 08 26 | 644 | 0.2-  | 0.0   | 2005 03 08 | 704 | (2.1+ | 1.4+) |
| 1998 09 24 | 699 | 0.7+  | 1.7+  | 2002 08 26 | 644 | 0.1-  | 0.0   | 2005 03 08 | 704 | 0.7+  | 0.6+  |
| 1998 09 24 | 699 | 0.1+  | 1.1+  | 2002 08 26 | 644 | 0.1-  | 0.1+  | 2005 03 08 | 704 | (1.9+ | 0.5+) |
| 1998 09 26 | 704 | 0.2+  | 1.0+  | 2002 09 01 | 608 | (0.4- | 2.2+) | 2005 03 08 | 704 | 0.1-  | 0.2+  |
| 1998 09 26 | 704 | 0.5-  | 0.8-  | 2002 09 01 | 608 | (0.4- | 2.3+) | 2005 03 09 | 699 | (0.9- | 2.0+) |
| 1998 09 26 | 704 | 0.2-  | 0.1+  | 2002 09 01 | 608 | (0.3- | 2.5+) | 2005 03 09 | 699 | 0.6+  | 0.4+  |
| 1998 09 26 | 704 | 1.0-  | 0.3+  | 2002 09 05 | 699 | 0.7+  | 0.3-  | 2005 03 09 | 699 | 0.5+  | 0.6+  |
| 1998 09 26 | 704 | 0.3-  | 1.2-  | 2002 09 05 | 699 | 0.6+  | 0.7+  | 2005 03 09 | 699 | (0.8+ | 1.8+) |
| 1998 09 27 | 704 | 0.0   | 0.5+  | 2002 09 05 | 699 | 0.9+  | 0.8+  | 2005 04 04 | 691 | 0.0   | 0.4+  |
| 1998 09 27 | 704 | 1.1-  | 0.6-  | 2002 09 05 | 699 | 0.8+  | 0.2+  | 2005 04 04 | 691 | 0.0   | 0.4+  |
| 1998 09 27 | 704 | 0.4-  | 1.2+  | 2002 09 06 | 704 | 0.5+  | 0.2-  | 2005 04 04 | 691 | 0.1+  | 0.4+  |
| 1998 09 27 | 704 | 0.8-  | 1.2-  | 2002 09 06 | 704 | 0.5-  | 0.3-  | 2005 04 06 | 699 | 1.3-  | 0.8+  |
| 1998 09 27 | 704 | 1.1-  | 0.2-  | 2002 09 06 | 704 | 0.2-  | 0.4+  | 2005 04 06 | 699 | 1.1-  | 0.3+  |
| 2002 06 10 | 704 | 0.1+  | 1.3+  | 2002 09 06 | 704 | 0.1-  | 0.9+  | 2005 04 06 | 699 | (1.6+ | 1.2+) |
| 2002 06 10 | 704 | (0.0  | 1.8+) | 2002 09 13 | 704 | 0.5+  | 1.4+  | 2005 04 06 | 699 | 1.5+  | 0.6-  |
| 2002 06 10 | 704 | 0.0   | 1.5+  | 2002 09 13 | 704 | 1.5+  | 0.2+  | 2005 04 12 | 691 | 0.4+  | 0.4+  |
| 2002 06 10 | 704 | (0.4- | 1.8+) | 2002 09 13 | 704 | 0.3+  | 0.2-  | 2005 04 12 | 691 | 0.3+  | 0.6+  |
| 2002 07 09 | 704 | 0.0   | 0.2-  | 2002 09 15 | 608 | 0.3-  | 0.7-  | 2005 04 12 | 691 | 0.2+  | 0.4+  |
| 2002 07 09 | 704 | 0.7+  | 0.7-  | 2002 09 15 | 608 | 0.1-  | 0.6-  | 2006 06 04 | 704 | 0.4-  | 0.1-  |
| 2002 07 09 | 704 | 0.4+  | 0.4-  | 2002 09 15 | 608 | 0.1+  | 0.7-  | 2006 06 19 | 704 | 1.0+  | 0.2-  |
| 2002 07 09 | 704 | 0.5+  | 0.2-  | 2002 10 03 | 704 | 0.4+  | 0.0   | 2006 06 19 | 704 | 0.2+  | 0.7-  |
| 2002 07 09 | 704 | 0.7-  | 0.1-  | 2002 10 03 | 704 | 0.6-  | 0.0   | 2006 06 19 | 704 | 0.8+  | 0.5-  |
| 2002 07 18 | 704 | 0.0   | 0.5-  | 2002 10 03 | 704 | 0.8+  | 0.1+  | 2006 06 24 | 704 | 1.1-  | 0.4+  |
| 2002 07 18 | 704 | 0.1-  | 0.5-  | 2002 10 03 | 704 | 0.6+  | 0.6+  | 2006 06 24 | 704 | 0.1-  | 0.5-  |
| 2002 07 18 | 704 | 0.4-  | 0.6-  | 2002 10 03 | 704 | 0.7+  | 1.4-  | 2006 06 24 | 704 | 0.6+  | 0.6-  |
| 2002 07 18 | 704 | 0.1+  | 0.5-  | 2002 10 05 | 704 | 0.5-  | 0.7+  | 2006 07 17 | 224 | 0.6-  | 0.1+  |
| 2002 07 18 | 704 | 0.2-  | 0.5-  | 2002 10 05 | 704 | (2.1- | 0.7-) | 2006 07 17 | 224 | 0.4-  | 0.4-  |
| 2002 07 20 | 644 | 0.2-  | 0.2+  | 2002 10 05 | 704 | 1.3-  | 1.1-  | 2006 07 17 | 224 | 1.1-  | 0.1+  |
| 2002 07 20 | 644 | 0.1-  | 0.1+  | 2002 10 07 | 704 | 0.2+  | 0.1+  | 2007 11 15 | 703 | 0.6+  | 0.4+  |
| 2002 07 20 | 644 | 0.2-  | 0.2+  | 2002 10 07 | 704 | 0.1+  | 1.1+  | 2007 11 15 | 703 | 0.6-  | 0.6+  |
| 2002 07 21 | 644 | 0.2-  | 0.3-  | 2002 10 07 | 704 | 1.3+  | 0.4+  | 2007 11 15 | 703 | 0.4+  | 0.6+  |
| 2002 07 21 | 644 | 0.3-  | 0.1-  | 2002 10 09 | 704 | 0.5-  | 0.4+  | 2007 11 15 | 703 | 1.5-  | 0.4+  |
| 2002 07 21 | 644 | (1.1- | 2.0-) | 2002 10 09 | 704 | 1.4-  | 0.6+  | 2007 11 20 | 703 | 0.1+  | 0.4+  |
| 2002 08 05 | 644 | 0.3-  | 0.2-  | 2002 10 09 | 704 | 0.2-  | 1.2+  | 2007 11 20 | 703 | 0.2+  | 0.1+  |
| 2002 08 05 | 644 | 0.2-  | 0.1-  | 2002 10 09 | 704 | 0.9-  | 0.8+  | 2007 11 20 | 703 | 0.8+  | 0.1+  |
| 2002 08 05 | 644 | 0.2-  | 0.1-  | 2002 10 09 | 704 | 0.5+  | 1.2+  | 2007 11 20 | 703 | 0.3+  | 0.7-  |
| 2002 08 12 | 704 | 0.2+  | 0.1+  | 2002 10 11 | 704 | 0.6-  | 0.2+  |            |     |       |       |

Id. G. V. Williams (*MPO* 37102)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 216.37964  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23535233 | $\omega$ | 216.39653 | −0.73038860 |          |          | +0.68297775 |
| <i>a</i> | 2.5981071  | $\Omega$ | 6.70027   | −0.60799572 |          |          | −0.64436384 |
| <i>e</i> | 0.1969327  | <i>i</i> | 4.22497   | −0.31124540 |          |          | −0.34400092 |
| <i>P</i> | 4.19       | <i>H</i> | 16.3      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 21 | 691 | 0.3+  | 0.2−  | 2005 03 14 | G96 | 0.2+ | 0.1− | 2005 06 05 | E12 | 0.6− | 0.3+ |
| 1998 09 21 | 691 | 0.1+  | 0.1+  | 2005 03 14 | G96 | 0.1+ | 0.2− | 2005 06 05 | E12 | 0.2− | 0.8+ |
| 1998 09 21 | 691 | 0.4+  | 0.1−  | 2005 04 18 | 703 | 0.3− | 0.3+ | 2005 06 05 | E12 | 0.3− | 0.2− |
| 1998 09 27 | 691 | 0.2−  | 0.0   | 2005 04 18 | 703 | 0.5+ | 0.0  | 2005 06 05 | E12 | 0.0  | 0.3+ |
| 1998 09 27 | 691 | 0.1−  | 0.3−  | 2005 04 18 | 703 | 0.7− | 0.2+ | 2006 09 16 | 691 | 0.0  | 0.4+ |
| 1998 09 27 | 691 | 0.4−  | 0.3−  | 2005 04 18 | 703 | 0.6− | 0.4+ | 2006 09 16 | 691 | 0.4− | 0.4+ |
| 1998 09 30 | 691 | 0.4+  | 0.5−  | 2005 04 28 | 428 | 0.4− | 0.1+ | 2006 09 16 | 691 | 0.2− | 0.3+ |
| 1998 09 30 | 691 | 0.5+  | 0.0   | 2005 04 28 | 428 | 0.2+ | 0.0  | 2006 09 25 | G96 | 0.0  | 0.1− |
| 1998 09 30 | 691 | 0.2+  | 0.3−  | 2005 04 28 | 428 | 0.3− | 0.1+ | 2006 09 25 | G96 | 0.2+ | 0.2− |
| 1998 10 01 | 691 | 0.2−  | 0.1−  | 2005 04 30 | 428 | 0.7− | 0.6− | 2006 09 25 | G96 | 0.2− | 0.3− |
| 1998 10 01 | 691 | 0.2−  | 0.2−  | 2005 04 30 | 428 | 0.3+ | 0.8− | 2006 09 25 | G96 | 0.4+ | 0.1− |
| 1998 10 01 | 691 | 0.3−  | 0.5−  | 2005 05 08 | E12 | 0.0  | 0.1− | 2006 10 16 | G96 | 0.2− | 0.0  |
| 1998 10 15 | 910 | 0.8+  | 0.3−  | 2005 05 08 | E12 | 0.5+ | 0.0  | 2006 10 16 | G96 | 0.2− | 0.1− |
| 1998 10 15 | 910 | 1.0+  | 0.3−  | 2005 05 08 | E12 | 0.2+ | 0.1+ | 2006 10 16 | G96 | 0.1− | 0.1+ |
| 1998 10 15 | 910 | 1.2+  | 0.0   | 2005 05 08 | E12 | 0.3+ | 0.0  | 2006 10 16 | G96 | 0.5+ | 0.6− |
| 2002 10 05 | 644 | 0.2−  | 1.0+  | 2005 05 12 | 703 | 0.4− | 0.9+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2002 10 05 | 644 | 0.0   | 0.3+  | 2005 05 12 | 703 | 0.2− | 0.2− | 2007 11 18 | G96 | 0.6+ | 0.0  |
| 2002 10 05 | 644 | 0.2−  | 0.5+  | 2005 05 12 | 703 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.1+ |
| 2002 10 06 | 644 | 0.6−  | 0.3+  | 2005 05 12 | 703 | 0.9+ | 0.6− | 2007 11 18 | G96 | 0.1− | 0.0  |
| 2002 10 06 | 644 | 0.6−  | 0.5+  | 2005 05 19 | 644 | 0.7+ | 0.2+ | 2007 11 20 | 691 | 0.9− | 0.4+ |
| 2002 10 06 | 644 | 0.5−  | 0.6+  | 2005 05 19 | 644 | 0.6+ | 0.2+ | 2007 11 20 | 691 | 0.6+ | 0.4− |
| 2005 01 21 | 809 | (4.8+ | 1.3−) | 2005 05 19 | 644 | 0.5+ | 0.1+ | 2007 11 20 | 691 | 0.5− | 0.3+ |
| 2005 01 21 | 809 | (2.2+ | 1.1−) | 2005 06 03 | 703 | 0.1+ | 1.2− | 2007 12 13 | 704 | 0.1− | 0.5+ |
| 2005 01 21 | 809 | 0.4+  | 0.1+  | 2005 06 03 | 703 | 0.5+ | 0.4− | 2007 12 13 | 704 | 0.8+ | 0.2+ |
| 2005 03 14 | G96 | 0.0   | 0.3−  | 2005 06 03 | 703 | 1.2− | 0.1+ | 2007 12 13 | 704 | 0.1+ | 0.2+ |
| 2005 03 14 | G96 | 0.3−  | 0.2−  | 2005 06 03 | 703 | 0.2− | 0.7− | 2007 12 13 | 704 | 0.7+ | 0.7+ |

(171516)\* 1998 SQ<sub>92</sub>

Discovered 1998 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.74503   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23444672 | $\omega$ | 23.98041  | +0.97510059 |          |          | −0.22169613 |
| <i>a</i> | 2.6047934  | $\Omega$ | 348.82415 | +0.19865063 |          |          | +0.88412801 |
| <i>e</i> | 0.2270757  | <i>i</i> | 1.61027   | +0.09857366 |          |          | +0.41130097 |
| <i>P</i> | 4.20       | <i>H</i> | 16.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 02 | 691 | 0.8− | 0.6− | 1998 10 19 | 699 | 1.2+ | 0.6+ | 2002 10 10 | 291 | 0.2− | 0.2+ |
| 1998 09 02 | 691 | 0.8− | 0.3− | 2000 03 04 | 691 | 0.2+ | 0.1+ | 2002 10 10 | 291 | 0.4+ | 0.1+ |
| 1998 09 02 | 691 | 0.9− | 0.6− | 2000 03 04 | 691 | 0.1− | 0.2+ | 2002 10 10 | 291 | 0.2− | 0.2+ |
| 1998 09 13 | 691 | 0.2+ | 0.1− | 2000 03 04 | 691 | 0.1+ | 0.3+ | 2004 01 28 | 691 | 0.3+ | 0.4+ |
| 1998 09 13 | 691 | 0.2+ | 0.0  | 2002 08 08 | 644 | 0.3− | 0.1+ | 2004 01 28 | 691 | 0.1+ | 0.4+ |
| 1998 09 13 | 691 | 0.4+ | 0.5+ | 2002 08 08 | 644 | 0.1− | 0.0  | 2004 01 28 | 691 | 0.2+ | 0.4+ |
| 1998 09 15 | 699 | 1.3+ | 0.2− | 2002 08 08 | 644 | 0.4− | 0.0  | 2007 10 15 | G96 | 0.8+ | 0.4− |
| 1998 09 15 | 699 | 0.2+ | 0.3+ | 2002 08 14 | 704 | 0.5+ | 0.1+ | 2007 10 15 | G96 | 0.3+ | 0.3− |
| 1998 09 15 | 699 | 0.3+ | 0.1− | 2002 08 14 | 704 | 0.7+ | 0.2− | 2007 10 15 | G96 | 0.3+ | 0.8+ |
| 1998 09 26 | 704 | 0.1+ | 0.8+ | 2002 08 14 | 704 | 0.6+ | 0.7− | 2007 10 15 | G96 | 0.3+ | 0.2− |
| 1998 09 26 | 704 | 0.9− | 0.2− | 2002 08 29 | 644 | 0.4− | 0.7− | 2007 11 07 | G96 | 0.3+ | 0.1− |
| 1998 09 26 | 704 | 0.2+ | 0.8− | 2002 08 29 | 644 | 0.1− | 0.8+ | 2007 11 07 | G96 | 0.2− | 0.4+ |
| 1998 09 26 | 704 | 0.0  | 0.1− | 2002 08 29 | 644 | 0.4− | 0.6− | 2007 11 07 | G96 | 0.0  | 0.3+ |
| 1998 09 26 | 704 | 0.5− | 1.0− | 2002 08 29 | 644 | 0.2+ | 0.7+ | 2007 11 07 | G96 | 0.6+ | 0.5− |
| 1998 09 27 | 704 | 0.0  | 0.5− | 2002 08 29 | 644 | 0.7− | 0.7− | 2007 12 04 | 691 | 0.1− | 0.1+ |
| 1998 09 27 | 704 | 0.0  | 0.9− | 2002 08 29 | 644 | 0.1− | 0.6+ | 2007 12 04 | 691 | 0.1− | 0.0  |
| 1998 09 27 | 704 | 1.8+ | 0.5+ | 2002 09 05 | 704 | 0.2− | 0.3+ | 2007 12 04 | 691 | 0.0  | 0.2+ |
| 1998 10 14 | 699 | 0.3+ | 0.5+ | 2002 09 05 | 704 | 0.3− | 0.4+ | 2007 12 17 | 691 | 0.1− | 1.0− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 14 | 699 | 1.0+ | 0.9+ | 2002 09 05 | 704 | 0.7− | 1.1+ | 2007 12 17 | 691 | 0.1− | 0.1+ |
| 1998 10 14 | 699 | 1.3+ | 1.1+ | 2002 09 15 | 644 | 0.2− | 1.3+ | 2007 12 17 | 691 | 0.3− | 0.1+ |
| 1998 10 19 | 699 | 1.0+ | 0.4+ | 2002 09 15 | 644 | 0.2− | 1.4+ |            |     |      |      |
| 1998 10 19 | 699 | 0.1− | 0.4+ | 2002 09 15 | 644 | 0.2+ | 1.3+ |            |     |      |      |

(171517)\* 1998 SQ<sub>155</sub> = 2002 PJ<sub>63</sub>

Discovered 1998 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 34743)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.72825   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.22613374 | $\omega$ | 262.16241 | +0.97278958 |          |          | −0.21668525 |
| <i>a</i> | 2.6682456  | $\Omega$ | 110.32324 | +0.23161344 |          |          | +0.90036182 |
| <i>e</i> | 0.1225308  | <i>i</i> | 5.01803   | +0.00597119 |          |          | +0.37735406 |
| <i>P</i> | 4.36       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 12 01 | 691 | 0.2+  | 0.1+  | 2005 03 11 | 691 | 0.5+  | 0.5+  | 2007 11 12 | G96 | 0.0   | 0.2−  |
| 1994 12 01 | 691 | 0.1+  | 0.5+  | 2005 03 11 | 691 | 0.1+  | 0.6+  | 2007 11 12 | G96 | 0.1+  | 0.5−  |
| 1994 12 01 | 691 | 0.3+  | 0.5−  | 2005 03 11 | 691 | 0.4+  | 0.4+  | 2007 11 12 | G96 | 0.1+  | 0.2−  |
| 1998 09 21 | 699 | 0.4+  | 1.4+  | 2005 03 18 | 703 | 0.8−  | 1.1+  | 2007 11 12 | 704 | 0.7+  | 0.7+  |
| 1998 09 21 | 699 | (0.5− | 2.0+) | 2005 03 18 | 703 | 0.3−  | 0.6+  | 2007 11 12 | G96 | 0.2+  | 0.2−  |
| 1998 09 21 | 699 | 0.6+  | 1.7+  | 2005 03 18 | 703 | 1.0−  | 0.2−  | 2007 11 12 | 704 | 0.0   | 1.1+  |
| 1998 09 26 | 704 | 0.6−  | 0.2−  | 2005 03 18 | 703 | (0.5− | 2.2−) | 2007 11 12 | 704 | 0.1−  | 0.1−  |
| 1998 09 26 | 704 | (2.1− | 1.0+) | 2007 10 09 | D29 | 0.6+  | 0.3+  | 2007 11 12 | 704 | 0.1+  | 0.3+  |
| 1998 09 26 | 704 | 0.1−  | 0.4+  | 2007 10 09 | D29 | (1.1− | 1.5+) | 2007 11 12 | 704 | 0.3+  | 0.4+  |
| 1998 09 26 | 704 | 1.6−  | 0.3−  | 2007 10 10 | 699 | 0.5+  | 1.0+  | 2007 11 15 | 699 | 0.2+  | 0.0   |
| 1998 09 26 | 704 | 1.0−  | 1.7−  | 2007 10 10 | 699 | 0.4−  | 0.1+  | 2007 11 15 | 699 | 0.5+  | 0.2+  |
| 1998 09 27 | 704 | 0.2−  | 0.1+  | 2007 10 10 | 699 | 1.3+  | 0.1−  | 2007 11 15 | 699 | 0.3−  | 0.2−  |
| 1998 09 27 | 704 | 1.2−  | 0.6−  | 2007 10 10 | 699 | 0.1+  | 0.3+  | 2007 11 15 | 699 | 0.8+  | 0.5−  |
| 1998 09 27 | 704 | 0.2−  | 1.8−  | 2007 10 12 | G96 | 0.1−  | 0.1−  | 2007 11 16 | 704 | 0.1+  | 0.5+  |
| 2002 07 29 | 644 | 0.1+  | 0.2+  | 2007 10 12 | G96 | 0.1+  | 0.2−  | 2007 11 16 | 704 | 0.2−  | 0.3+  |
| 2002 07 29 | 644 | 0.4+  | 0.5+  | 2007 10 12 | G96 | 0.2+  | 0.2−  | 2007 11 16 | 704 | 0.4−  | 0.1+  |
| 2002 07 29 | 644 | 0.1+  | 0.4+  | 2007 10 12 | G96 | 0.0   | 0.2−  | 2007 11 16 | 704 | 0.2−  | 0.3+  |
| 2002 08 08 | 644 | 0.1+  | 0.3+  | 2007 10 12 | G96 | 0.1+  | 0.1−  | 2007 11 17 | 703 | 0.0   | 0.6−  |
| 2002 08 08 | 644 | 0.2+  | 0.4+  | 2007 10 12 | G96 | 0.1−  | 0.1−  | 2007 11 17 | 703 | 0.0   | 0.3+  |
| 2002 08 08 | 644 | 0.3+  | 0.3+  | 2007 10 12 | G96 | 0.3+  | 0.2−  | 2007 11 17 | 703 | 0.1+  | 0.1−  |
| 2002 08 12 | 608 | 0.4+  | 0.5−  | 2007 10 12 | G96 | 0.1+  | 0.2−  | 2007 11 17 | 703 | 0.9−  | 0.6+  |
| 2002 08 12 | 608 | 0.1+  | 1.2−  | 2007 10 13 | 704 | (1.6+ | 1.4+) | 2007 11 20 | 703 | 0.7+  | 0.7+  |
| 2002 08 12 | 608 | 0.3+  | 0.7−  | 2007 10 13 | 704 | (1.7+ | 0.7−) | 2007 11 20 | 703 | 0.3−  | 0.0   |
| 2002 08 15 | 644 | 0.3−  | 0.9+  | 2007 10 13 | 704 | 0.9+  | 0.6+  | 2007 11 20 | 703 | 1.1+  | 0.4−  |
| 2002 08 15 | 644 | 0.3−  | 0.9+  | 2007 10 13 | 704 | (0.4− | 1.9+) | 2007 11 20 | 703 | 0.1+  | 0.3+  |
| 2002 08 15 | 644 | 0.0   | 0.8+  | 2007 10 13 | 704 | 1.1+  | 0.6−  | 2007 11 20 | G96 | 0.2−  | 0.2−  |
| 2002 08 18 | 644 | 0.0   | 0.1−  | 2007 10 31 | 703 | 0.3−  | 0.5−  | 2007 11 20 | G96 | 0.1+  | 0.3−  |
| 2002 08 18 | 644 | 0.3+  | 0.0   | 2007 10 31 | 703 | 0.6−  | 0.0   | 2007 11 20 | G96 | 0.4−  | 0.2−  |
| 2002 08 18 | 644 | 0.3+  | 0.2+  | 2007 10 31 | 703 | 0.2−  | 0.4+  | 2007 11 20 | G96 | 0.1−  | 0.3−  |
| 2002 08 29 | 644 | 0.0   | 0.0   | 2007 10 31 | 703 | 1.5−  | 0.1+  | 2007 11 29 | 704 | 0.3+  | 1.3−  |
| 2002 08 29 | 644 | 0.2+  | 0.1−  | 2007 11 03 | 699 | 1.1+  | 0.1+  | 2007 11 29 | 704 | 0.1−  | 0.2−  |
| 2002 08 29 | 644 | 0.1+  | 0.2+  | 2007 11 03 | 699 | 0.1+  | 0.7+  | 2007 11 29 | 704 | 0.6−  | 1.3+  |
| 2002 08 31 | 704 | (3.2− | 3.1+) | 2007 11 03 | 699 | 0.3+  | 0.4−  | 2007 12 04 | 704 | 1.0−  | 1.2+  |
| 2002 08 31 | 704 | (3.2− | 3.2+) | 2007 11 03 | 699 | 0.2−  | 0.2−  | 2007 12 04 | 704 | 0.8−  | 0.8+  |
| 2002 08 31 | 704 | (3.0− | 2.5+) | 2007 11 04 | 704 | 0.5−  | 0.5+  | 2007 12 04 | 704 | (1.4− | 1.8+) |
| 2002 09 05 | 704 | 0.4+  | 0.5+  | 2007 11 04 | 704 | 0.3−  | 0.1−  | 2007 12 04 | 704 | 1.1−  | 0.8+  |
| 2002 09 05 | 704 | 0.6+  | 1.2+  | 2007 11 04 | 704 | 0.1−  | 0.1−  | 2007 12 05 | 699 | 0.2−  | 0.1−  |
| 2002 09 05 | 704 | 1.0−  | 0.6+  | 2007 11 04 | 704 | 0.5−  | 0.3+  | 2007 12 05 | 699 | 0.4−  | 0.1+  |
| 2002 09 05 | 704 | 0.3−  | 0.0   | 2007 11 09 | 703 | (0.8− | 1.8+) | 2007 12 05 | 699 | 0.5−  | 0.1+  |
| 2003 12 19 | 704 | 0.4+  | 0.7−  | 2007 11 09 | 703 | (0.3+ | 2.0+) | 2007 12 05 | 699 | 0.2−  | 0.6−  |
| 2003 12 19 | 704 | 0.2−  | 0.3−  | 2007 11 09 | 703 | 0.6−  | 0.2+  |            |     |       |       |
| 2003 12 19 | 704 | 0.4+  | 0.0   | 2007 11 09 | 703 | 0.1+  | 0.2−  |            |     |       |       |

2007 DEC. 24

M.P.O. 129069

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                      |          |                                                                                                  |             |                                                               | MPC      |       |            |     |       |       |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------|----------|-------|------------|-----|-------|-------|
| $M$                                     | 48.27688                                                                                                                             |          | (2000.0)                                                                                         | <b>P</b>    |                                                               | <b>Q</b> |       |            |     |       |       |
| $n$                                     | 0.22916742                                                                                                                           | $\omega$ | 225.29449                                                                                        | +0.98060452 | +0.05688220                                                   |          |       |            |     |       |       |
| $a$                                     | 2.6446455                                                                                                                            | $\Omega$ | 130.49571                                                                                        | -0.01070419 | +0.97107441                                                   |          |       |            |     |       |       |
| $e$                                     | 0.1578854                                                                                                                            | $i$      | 14.27898                                                                                         | -0.19570434 | +0.23190279                                                   |          |       |            |     |       |       |
| $P$                                     | 4.30 <th><math>H</math></th> <td>15.6<th><math>G</math></th><td>0.15<th><math>U</math></th><td>1</td><td colspan="3"></td></td></td> | $H$      | 15.6 <th><math>G</math></th> <td>0.15<th><math>U</math></th><td>1</td><td colspan="3"></td></td> | $G$         | 0.15 <th><math>U</math></th> <td>1</td> <td colspan="3"></td> | $U$      | 1     |            |     |       |       |
| Residuals in seconds of arc             |                                                                                                                                      |          |                                                                                                  |             |                                                               |          |       |            |     |       |       |
| 1998 10 10                              | 683                                                                                                                                  | 0.5+     | 0.9+                                                                                             | 2002 07 14  | 644                                                           | 0.0      | 0.1+  | 2002 08 29 | 644 | 0.0   | 0.1+  |
| 1998 10 10                              | 683                                                                                                                                  | 0.3+     | 0.1+                                                                                             | 2002 07 14  | 644                                                           | 0.0      | 0.1-  | 2002 08 29 | 644 | 0.1-  | 0.2+  |
| 1998 10 10                              | 683                                                                                                                                  | 0.2+     | 0.7-                                                                                             | 2002 07 14  | 644                                                           | 0.1+     | 0.3+  | 2005 04 02 | 703 | 0.9+  | 0.2-  |
| 1998 10 11                              | 683                                                                                                                                  | 0.0      | 0.8-                                                                                             | 2002 07 23  | 644                                                           | 0.0      | 0.1-  | 2005 04 02 | 703 | (2.8- | 0.5-) |
| 1998 10 11                              | 683                                                                                                                                  | 0.1+     | 0.7+                                                                                             | 2002 07 23  | 644                                                           | 0.5-     | 0.2+  | 2005 04 02 | 703 | 0.8+  | 0.1+  |
| 1998 10 11                              | 683                                                                                                                                  | 0.3+     | 0.8+                                                                                             | 2002 07 23  | 644                                                           | 0.6-     | 0.2-  | 2005 04 02 | 703 | (1.8- | 0.2+) |
| 1998 10 17                              | 683                                                                                                                                  | 0.2-     | 0.9-                                                                                             | 2002 08 08  | 644                                                           | 0.0      | 0.1+  | 2007 11 15 | 703 | 0.7+  | 0.4+  |
| 1998 10 17                              | 683                                                                                                                                  | 0.4+     | 0.9-                                                                                             | 2002 08 08  | 644                                                           | 0.2+     | 0.0   | 2007 11 15 | 703 | 0.3+  | 0.6+  |
| 1998 10 17                              | 683                                                                                                                                  | 0.6-     | 0.8-                                                                                             | 2002 08 08  | 644                                                           | 0.2+     | 0.2+  | 2007 11 15 | 703 | 0.9-  | 0.2+  |
| 1998 10 18                              | 683                                                                                                                                  | 0.2+     | 0.9+                                                                                             | 2002 08 12  | 608                                                           | 0.1-     | 0.1+  | 2007 11 15 | 703 | 0.2-  | 0.2-  |
| 1998 10 18                              | 683                                                                                                                                  | 0.2+     | 0.0                                                                                              | 2002 08 12  | 608                                                           | 0.2-     | 0.5-  | 2007 11 20 | 703 | 0.2-  | 0.4-  |
| 1998 10 18                              | 683                                                                                                                                  | 0.0      | 0.3+                                                                                             | 2002 08 12  | 608                                                           | 0.2-     | 0.1-  | 2007 11 20 | 703 | 0.5-  | 0.4+  |
| 2000 01 13                              | 691                                                                                                                                  | 0.1-     | 0.2-                                                                                             | 2002 08 14  | 704                                                           | 0.3-     | 0.0   | 2007 11 20 | 703 | 0.0   | 0.4-  |
| 2000 01 13                              | 691                                                                                                                                  | 0.2+     | 0.1-                                                                                             | 2002 08 14  | 704                                                           | 0.1+     | 1.2-  | 2007 11 20 | 703 | 0.7+  | 0.2+  |
| 2000 01 13                              | 691                                                                                                                                  | 0.0      | 0.1-                                                                                             | 2002 08 14  | 704                                                           | (1.8+    | 0.4-) | 2007 12 05 | 703 | 0.1+  | 0.1+  |
| 2000 01 16                              | 691                                                                                                                                  | 0.0      | 0.3-                                                                                             | 2002 08 14  | 704                                                           | 0.8+     | 0.7-  | 2007 12 05 | 703 | 0.1-  | 0.7+  |
| 2000 01 16                              | 691                                                                                                                                  | 0.3-     | 0.0                                                                                              | 2002 08 15  | 644                                                           | 0.2-     | 0.1-  | 2007 12 05 | 703 | 0.9+  | 0.4-  |
| 2000 01 16                              | 691                                                                                                                                  | 0.4-     | 0.0                                                                                              | 2002 08 15  | 644                                                           | 0.1-     | 0.2-  | 2007 12 05 | 703 | 0.8-  | 0.3-  |
| 2001 03 30                              | 682                                                                                                                                  | 0.0      | 0.5-                                                                                             | 2002 08 15  | 644                                                           | 0.3-     | 0.0   |            |     |       |       |
| 2001 03 30                              | 682                                                                                                                                  | 0.0      | 0.4-                                                                                             | 2002 08 29  | 644                                                           | 0.2-     | 0.0   |            |     |       |       |

(171519)\* 1998 US<sub>19</sub>

Discovered 1998 Oct. 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                                     |          |                                                                                                                  |            |             | MPC                                                                 |       |             |                       |      |      |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------|------------|-------------|---------------------------------------------------------------------|-------|-------------|-----------------------|------|------|
| $M$                                     | 25.22405                                                                                                                                            |          | (2000.0)                                                                                                         |            | <b>P</b>    |                                                                     |       | <b>Q</b>    |                       |      |      |
| $n$                                     | 0.22991839                                                                                                                                          | $\omega$ | 1.03501                                                                                                          |            | +0.73051704 |                                                                     |       | -0.65853503 |                       |      |      |
| $a$                                     | 2.6388836                                                                                                                                           | $\Omega$ | 42.07287                                                                                                         |            | +0.62458912 |                                                                     |       | +0.53728797 |                       |      |      |
| $e$                                     | 0.1593319                                                                                                                                           | $i$      | 15.65060                                                                                                         |            | +0.27610376 |                                                                     |       | +0.52692813 |                       |      |      |
| $P$                                     | 4.29 <th><math>H</math></th> <td>15.5<th></th><th><math>G</math></th><td>0.15<th></th><th><math>U</math></th><td>1<th></th><th></th></td></td></td> | $H$      | 15.5 <th></th> <th><math>G</math></th> <td>0.15<th></th><th><math>U</math></th><td>1<th></th><th></th></td></td> |            | $G$         | 0.15 <th></th> <th><math>U</math></th> <td>1<th></th><th></th></td> |       | $U$         | 1 <th></th> <th></th> |      |      |
| Residuals in seconds of arc             |                                                                                                                                                     |          |                                                                                                                  |            |             |                                                                     |       |             |                       |      |      |
| 1998 10 11                              | 699                                                                                                                                                 | 0.7-     | 0.5+                                                                                                             | 1998 11 11 | 704         | 0.3-                                                                | 0.0   | 2007 11 09  | 704                   | 0.8+ | 0.1- |
| 1998 10 11                              | 699                                                                                                                                                 | 1.2-     | 0.1+                                                                                                             | 1998 11 11 | 704         | (1.1-                                                               | 2.1-) | 2007 11 09  | 704                   | 1.0+ | 0.6+ |
| 1998 10 11                              | 699                                                                                                                                                 | 0.5+     | 1.5+                                                                                                             | 2002 12 07 | 291         | 1.1-                                                                | 0.8-  | 2007 11 09  | 704                   | 0.3+ | 0.4- |
| 1998 10 20                              | 699                                                                                                                                                 | 0.5+     | 0.3+                                                                                                             | 2002 12 07 | 291         | 0.5+                                                                | 0.5+  | 2007 11 09  | 704                   | 0.1+ | 0.6- |
| 1998 10 20                              | 699                                                                                                                                                 | 0.2-     | 0.5+                                                                                                             | 2002 12 07 | 291         | 0.5+                                                                | 0.3+  | 2007 11 09  | 704                   | 0.8+ | 0.1- |
| 1998 10 20                              | 699                                                                                                                                                 | 0.4+     | 0.9+                                                                                                             | 2005 04 16 | 691         | 0.4+                                                                | 0.1+  | 2007 11 16  | 704                   | 0.4- | 0.2+ |
| 1998 10 28                              | 704                                                                                                                                                 | 0.2-     | 0.4+                                                                                                             | 2005 04 16 | 691         | 0.4+                                                                | 0.0   | 2007 11 16  | 704                   | 0.1+ | 0.2+ |
| 1998 10 28                              | 704                                                                                                                                                 | 0.8+     | 1.3+                                                                                                             | 2005 04 16 | 691         | 0.3+                                                                | 0.3+  | 2007 11 16  | 704                   | 0.3- | 0.6+ |
| 1998 10 28                              | 704                                                                                                                                                 | 0.9-     | 1.8-                                                                                                             | 2005 05 07 | G96         | 0.3-                                                                | 0.3+  | 2007 11 16  | 704                   | 0.4- | 0.2- |
| 1998 10 28                              | 704                                                                                                                                                 | 2.0-     | 0.6-                                                                                                             | 2005 05 07 | G96         | 0.2-                                                                | 0.3+  | 2007 11 16  | 704                   | 0.2- | 0.0  |
| 1998 10 29                              | 704                                                                                                                                                 | 0.7+     | 0.1-                                                                                                             | 2005 05 07 | G96         | 0.2-                                                                | 0.2+  | 2007 12 03  | 704                   | 0.1+ | 0.0  |
| 1998 10 29                              | 704                                                                                                                                                 | 0.2+     | 0.1+                                                                                                             | 2005 05 07 | G96         | 0.4-                                                                | 0.2+  | 2007 12 03  | 704                   | 0.5- | 1.1+ |
| 1998 10 29                              | 704                                                                                                                                                 | 0.1-     | 0.4-                                                                                                             | 2005 05 14 | 644         | 0.1+                                                                | 0.5+  | 2007 12 03  | 704                   | 0.1- | 0.6+ |
| 1998 10 29                              | 704                                                                                                                                                 | 0.8-     | 0.1-                                                                                                             | 2005 05 14 | 644         | 0.4+                                                                | 0.4+  | 2007 12 03  | 704                   | 0.1- | 1.3+ |
| 1998 11 10                              | 704                                                                                                                                                 | 0.9+     | 0.9-                                                                                                             | 2005 05 14 | 644         | 0.4+                                                                | 0.4+  | 2007 12 03  | 704                   | 1.5+ | 0.9- |
| 1998 11 10                              | 704                                                                                                                                                 | 1.1-     | 1.3+                                                                                                             | 2005 06 01 | G96         | 0.5-                                                                | 0.1-  | 2007 12 17  | 703                   | 0.8- | 0.8- |
| 1998 11 10                              | 704                                                                                                                                                 | 1.4+     | 0.1+                                                                                                             | 2005 06 01 | G96         | 0.7-                                                                | 0.3-  | 2007 12 17  | 703                   | 0.3- | 0.4- |
| 1998 11 10                              | 704                                                                                                                                                 | 0.0      | 0.9-                                                                                                             | 2005 06 01 | G96         | 0.6-                                                                | 0.6-  | 2007 12 17  | 703                   | 0.5- | 0.0  |
| 1998 11 11                              | 704                                                                                                                                                 | 1.0+     | 0.1-                                                                                                             | 2005 06 01 | G96         | 0.6-                                                                | 0.1-  | 2007 12 17  | 703                   | 0.5- | 0.4- |

(171520)\* 1999 AR<sub>19</sub>

Discovered 1999 Jan. 13 by Spacewatch at Kitt Peak.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                             |       |          |            |          |                                               | MPC      |             |     |       |       |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------|-------|----------|------------|----------|-----------------------------------------------|----------|-------------|-----|-------|-------|
| <i>M</i>                                | 70.40282                                                                                                    |       |          | (2000.0)   |          | <b>P</b>                                      | <b>Q</b> |             |     |       |       |
| <i>n</i>                                | 0.22376281                                                                                                  |       | $\omega$ | 91.38705   |          | +0.57683764                                   |          | −0.81642233 |     |       |       |
| <i>a</i>                                | 2.6870605                                                                                                   |       | $\Omega$ | 323.34263  |          | +0.73054546                                   |          | +0.53023454 |     |       |       |
| <i>e</i>                                | 0.0713393                                                                                                   |       | <i>i</i> | 2.56327    |          | +0.36546091                                   |          | +0.22870488 |     |       |       |
| <i>P</i>                                | 4.40 <th><i>H</i></th> <td>15.7</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td colspan="3">1</td></td> |       | <i>H</i> | 15.7       | <i>G</i> | 0.15 <th><i>U</i></th> <td colspan="3">1</td> | <i>U</i> | 1           |     |       |       |
| Residuals in seconds of arc             |                                                                                                             |       |          |            |          |                                               |          |             |     |       |       |
| 1999 01 13                              | 691                                                                                                         | 0.8−  | 0.6−     | 2006 10 12 | 644      | 0.2+                                          | 0.2+     | 2006 11 19  | 704 | 0.3+  | 1.3+  |
| 1999 01 13                              | 691                                                                                                         | 0.5+  | 0.1−     | 2006 10 22 | 644      | 0.3−                                          | 0.7+     | 2006 11 19  | 704 | 0.2−  | 0.3+  |
| 1999 01 15                              | 691                                                                                                         | 0.4+  | 0.3−     | 2006 10 22 | 644      | 0.2−                                          | 0.6+     | 2006 11 22  | 704 | 0.6−  | 0.1+  |
| 1999 01 15                              | 691                                                                                                         | 0.3+  | 0.5+     | 2006 10 22 | 644      | 0.0                                           | 0.5+     | 2006 11 22  | 704 | (0.1− | 1.6+) |
| 1999 01 15                              | 691                                                                                                         | 0.9+  | 0.0      | 2006 10 27 | 703      | 0.6−                                          | 0.1−     | 2006 11 22  | 704 | 1.1−  | 0.6+  |
| 1999 01 18                              | 691                                                                                                         | 0.4−  | 0.1+     | 2006 10 27 | 703      | 0.5+                                          | 0.3−     | 2006 11 22  | 704 | 0.4−  | 0.1−  |
| 1999 01 18                              | 691                                                                                                         | 0.7−  | 0.0      | 2006 10 27 | 703      | 0.4+                                          | 0.3−     | 2006 11 22  | 704 | 0.6−  | 0.6+  |
| 1999 01 18                              | 691                                                                                                         | 0.8−  | 0.1−     | 2006 10 27 | 703      | 0.4+                                          | 0.3+     | 2006 11 27  | 185 | 0.0   | 0.1−  |
| 1999 01 23                              | 691                                                                                                         | 0.2−  | 0.3+     | 2006 11 01 | G96      | 0.1+                                          | 0.0      | 2006 11 27  | 185 | 0.7+  | 0.4−  |
| 1999 01 23                              | 691                                                                                                         | 0.3+  | 0.9−     | 2006 11 01 | G96      | 0.0                                           | 0.1−     | 2006 11 27  | 185 | 1.5−  | 0.8−  |
| 1999 01 23                              | 691                                                                                                         | 0.0   | 0.0      | 2006 11 01 | G96      | 0.3+                                          | 0.1+     | 2006 12 15  | 644 | 0.2−  | 0.5+  |
| 2001 08 13                              | 621                                                                                                         | 0.2+  | 0.2−     | 2006 11 01 | G96      | 0.1+                                          | 0.0      | 2006 12 15  | 644 | 0.1+  | 0.4+  |
| 2001 08 13                              | 621                                                                                                         | 0.5+  | 0.4−     | 2006 11 01 | G96      | 0.2+                                          | 0.1−     | 2006 12 15  | 644 | 0.1−  | 0.5+  |
| 2001 08 13                              | 621                                                                                                         | 0.2−  | 0.6+     | 2006 11 01 | G96      | 0.2+                                          | 0.2−     | 2007 02 19  | G96 | 0.6−  | 0.2−  |
| 2001 08 27                              | 699                                                                                                         | 0.2+  | 1.1−     | 2006 11 01 | G96      | 0.2+                                          | 0.0      | 2007 02 19  | G96 | 1.1+  | 0.7+  |
| 2001 08 27                              | 699                                                                                                         | 0.5−  | 1.3−     | 2006 11 01 | G96      | 0.2+                                          | 0.2−     | 2007 02 19  | G96 | 0.4−  | 0.4+  |
| 2001 08 27                              | 699                                                                                                         | 0.1+  | 0.4−     | 2006 11 11 | 703      | 0.6+                                          | 1.2+     | 2007 02 19  | G96 | 0.1+  | 0.1−  |
| 2001 08 27                              | 699                                                                                                         | 0.0   | 0.0      | 2006 11 11 | 703      | 1.2−                                          | 1.3−     | 2007 11 13  | G96 | 0.6+  | 0.4+  |
| 2001 09 07                              | 704                                                                                                         | 0.1+  | 0.6+     | 2006 11 11 | 703      | 0.3−                                          | 0.7−     | 2007 11 13  | G96 | 0.5+  | 0.2−  |
| 2001 09 07                              | 704                                                                                                         | 0.7+  | 0.7+     | 2006 11 11 | 703      | 0.1−                                          | 0.0      | 2007 11 13  | G96 | 0.0   | 0.3−  |
| 2001 09 07                              | 704                                                                                                         | (0.2+ | 1.8+)    | 2006 11 16 | 704      | (0.1+                                         | 1.5+)    | 2007 11 13  | G96 | 0.0   | 0.2+  |
| 2001 09 07                              | 704                                                                                                         | 0.9+  | 0.1+     | 2006 11 16 | 704      | 0.1+                                          | 0.7+     | 2007 11 14  | G96 | 0.4−  | 0.4−  |
| 2001 09 21                              | 704                                                                                                         | 0.6−  | 0.0      | 2006 11 16 | 704      | 0.1−                                          | 0.1−     | 2007 11 14  | G96 | 0.2−  | 0.3−  |
| 2001 09 21                              | 704                                                                                                         | 0.4+  | 0.1+     | 2006 11 16 | 704      | (0.0                                          | 1.5+)    | 2007 11 14  | G96 | 0.5−  | 0.3−  |
| 2001 09 21                              | 704                                                                                                         | 0.8−  | 0.4−     | 2006 11 18 | G96      | 0.3+                                          | 0.0      | 2007 11 14  | G96 | 0.1−  | 0.2−  |
| 2001 09 21                              | 704                                                                                                         | 0.7−  | 0.2+     | 2006 11 18 | G96      | 0.0                                           | 0.1+     | 2007 12 14  | G96 | 0.0   | 0.1+  |
| 2004 04 13                              | 691                                                                                                         | 0.3+  | 0.5+     | 2006 11 18 | G96      | 0.0                                           | 0.0      | 2007 12 14  | G96 | 1.0+  | 0.3−  |
| 2004 04 13                              | 691                                                                                                         | 0.1+  | 0.4+     | 2006 11 18 | G96      | 0.2+                                          | 0.1+     | 2007 12 14  | G96 | 1.2−  | 1.0+  |
| 2004 04 13                              | 691                                                                                                         | 0.3+  | 0.4+     | 2006 11 19 | 704      | 0.5+                                          | 0.6−     | 2007 12 14  | G96 | 0.3−  | 0.0   |
| 2006 10 12                              | 644                                                                                                         | 0.1+  | 0.3+     | 2006 11 19 | 704      | 0.1−                                          | 1.0+     |             |     |       |       |
| 2006 10 12                              | 644                                                                                                         | 0.2+  | 0.1+     | 2006 11 19 | 704      | 0.1−                                          | 0.2+     |             |     |       |       |

(171521)\* 1999 CH<sub>3</sub> = 2002 SD<sub>57</sub>

Discovered 1999 Feb. 7 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. G. V. Williams (*MPO* 37164)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                                         |       |          |            |     |             |      |             |     | MPC   |       |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|------------|-----|-------------|------|-------------|-----|-------|-------|
| $M$                                     | 11.66831                                                                                                                                                |       |          | (2000.0)   |     | <b>P</b>    |      | <b>Q</b>    |     |       |       |
| $n$                                     | 0.22290135                                                                                                                                              |       | $\omega$ | 31.84280   |     | −0.13398212 |      | −0.98169623 |     |       |       |
| $a$                                     | 2.6939793                                                                                                                                               |       | $\Omega$ | 66.16425   |     | +0.87532879 |      | −0.18127160 |     |       |       |
| $e$                                     | 0.3559254                                                                                                                                               |       | $i$      | 8.50974    |     | +0.46459476 |      | +0.05842190 |     |       |       |
| $P$                                     | 4.42 <th><math>H</math></th> <td colspan="2">15.4</td> <th><math>G</math></th> <td colspan="2">0.15</td> <th><math>U</math></th> <td colspan="2">0</td> |       | $H$      | 15.4       |     | $G$         | 0.15 |             | $U$ | 0     |       |
| Residuals in seconds of arc             |                                                                                                                                                         |       |          |            |     |             |      |             |     |       |       |
| 1998 12 21                              | 704                                                                                                                                                     | 0.0   | 0.5+     | 2002 10 04 | 645 | 0.1+        | 0.1− | 2003 01 08  | 608 | 0.4+  | 0.1+  |
| 1998 12 21                              | 704                                                                                                                                                     | 0.3−  | 0.3−     | 2002 10 07 | 608 | 0.0         | 0.2− | 2003 01 08  | 608 | 0.1−  | 0.0   |
| 1998 12 21                              | 704                                                                                                                                                     | 0.2+  | 0.7−     | 2002 10 07 | 608 | 0.2+        | 0.4− | 2003 01 08  | 608 | 0.1−  | 0.2+  |
| 1998 12 21                              | 704                                                                                                                                                     | 0.1−  | 0.8−     | 2002 10 07 | 608 | 0.0         | 0.3− | 2003 01 27  | 704 | (0.3− | 1.8+) |
| 1998 12 21                              | 704                                                                                                                                                     | (0.2− | 2.3−)    | 2002 10 09 | 699 | 0.4+        | 0.3+ | 2003 01 27  | 704 | (0.1− | 1.8+) |
| 1999 02 07                              | 905                                                                                                                                                     | 1.2−  | 0.7+     | 2002 10 09 | 699 | 0.2+        | 0.3+ | 2003 01 27  | 704 | 0.1−  | 0.6+  |
| 1999 02 07                              | 905                                                                                                                                                     | (2.4− | 0.2−)    | 2002 10 09 | 699 | 0.2+        | 0.7+ | 2003 01 31  | 704 | 0.0   | 0.0   |
| 1999 02 07                              | 905                                                                                                                                                     | 1.1+  | 0.4−     | 2002 10 09 | 699 | 0.2+        | 0.6+ | 2003 01 31  | 704 | 0.2−  | 0.5+  |
| 1999 02 08                              | 905                                                                                                                                                     | 0.0   | 0.3+     | 2002 10 11 | 645 | 0.0         | 0.2− | 2003 01 31  | 704 | 0.6−  | 0.8+  |
| 1999 02 08                              | 905                                                                                                                                                     | 1.0+  | 1.4−     | 2002 10 11 | 645 | 0.0         | 0.2− | 2003 01 31  | 704 | 0.3+  | 0.2+  |
| 1999 02 10                              | 704                                                                                                                                                     | 0.9−  | 0.1+     | 2002 10 15 | 644 | 0.2−        | 0.1− | 2003 01 31  | 704 | 0.1+  | 0.5+  |
| 1999 02 10                              | 704                                                                                                                                                     | 0.4−  | 0.5−     | 2002 10 15 | 644 | 0.0         | 0.0  | 2004 04 19  | 704 | 0.3+  | 1.2+  |
| 1999 02 10                              | 704                                                                                                                                                     | 1.0−  | 0.1+     | 2002 10 15 | 644 | 0.0         | 0.0  | 2004 04 19  | 704 | 0.1−  | 0.8+  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 02 10 | 704 | 1.0− | 1.0+ | 2002 10 30 | 704 | 0.3−  | 0.4+  | 2004 04 19 | 704 | 0.8+  | 1.2+  |
| 1999 02 10 | 704 | 0.7+ | 1.1+ | 2002 10 30 | 704 | 0.3−  | 0.1+  | 2004 04 22 | 704 | 1.4+  | 0.4−  |
| 1999 02 10 | 888 | 0.6− | 0.1− | 2002 10 30 | 704 | 0.5−  | 0.4+  | 2004 04 22 | 704 | 0.4+  | 1.4+  |
| 1999 02 10 | 888 | 0.0  | 0.0  | 2002 10 30 | 704 | 0.8−  | 0.3+  | 2004 04 22 | 704 | 0.3+  | 0.7+  |
| 1999 02 10 | 888 | 0.8− | 0.1+ | 2002 10 30 | 704 | 0.1−  | 0.3+  | 2004 04 22 | 704 | (0.8− | 1.7+) |
| 1999 02 13 | 704 | 0.4− | 0.4− | 2002 11 05 | 704 | 0.4−  | 0.9+  | 2004 05 12 | 699 | 0.0   | 0.6+  |
| 1999 02 13 | 704 | 0.1+ | 0.3− | 2002 11 05 | 704 | 1.1−  | 0.4+  | 2004 05 12 | 699 | 0.4+  | 0.2−  |
| 1999 02 13 | 704 | 0.2− | 0.3+ | 2002 11 05 | 704 | 0.6−  | 1.1+  | 2004 05 12 | 699 | 0.0   | 0.8+  |
| 1999 02 13 | 704 | 1.1+ | 0.2+ | 2002 11 05 | 704 | 1.1−  | 0.6+  | 2004 05 12 | 699 | 0.2−  | 1.3+  |
| 1999 02 13 | 704 | 0.1+ | 0.9+ | 2002 11 05 | 704 | 0.7−  | 0.8+  | 2004 05 15 | 704 | 0.5+  | 0.2+  |
| 1999 02 13 | 385 | 0.1− | 0.3− | 2002 11 05 | 704 | 0.7−  | 0.3+  | 2004 05 15 | 704 | 0.0   | 1.1+  |
| 1999 02 13 | 385 | 0.3− | 0.4− | 2002 11 05 | 704 | 0.8−  | 1.0+  | 2004 05 15 | 704 | 0.3+  | 0.7+  |
| 1999 02 13 | 888 | 0.2− | 0.5− | 2002 11 05 | 704 | 0.8−  | 0.4+  | 2004 05 15 | 704 | (2.0+ | 0.3+) |
| 1999 02 14 | 385 | 0.3− | 0.6− | 2002 11 05 | 704 | 1.0−  | 0.9+  | 2004 05 15 | 704 | (0.6+ | 1.7+) |
| 1999 02 14 | 385 | 0.5− | 0.6− | 2002 11 07 | 704 | 0.7−  | 0.4+  | 2004 05 21 | 704 | 0.6+  | 0.1+  |
| 1999 02 14 | 886 | 0.6− | 1.6− | 2002 11 07 | 704 | 0.7−  | 0.3−  | 2004 05 21 | 704 | 0.3+  | 0.5−  |
| 1999 02 14 | 886 | 0.4+ | 0.3+ | 2002 11 07 | 645 | 0.2+  | 0.1−  | 2004 05 21 | 704 | 1.3+  | 0.4+  |
| 1999 02 15 | 385 | 0.4− | 0.4− | 2002 11 07 | 645 | 0.1+  | 0.1−  | 2004 05 21 | 704 | (0.2+ | 2.0+) |
| 1999 02 15 | 385 | 0.0  | 0.5− | 2002 11 07 | 704 | 0.9−  | 0.8+  | 2006 08 28 | E12 | 0.3−  | 0.6−  |
| 1999 02 17 | 886 | 0.6− | 0.5− | 2002 11 07 | 704 | 0.9−  | 0.6+  | 2006 08 28 | E12 | 0.5+  | 0.2−  |
| 1999 02 17 | 886 | 1.2− | 0.3+ | 2002 11 07 | 704 | 0.7−  | 0.8+  | 2006 08 28 | E12 | 0.6−  | 0.4+  |
| 1999 02 25 | 886 | 1.4+ | 0.9− | 2002 11 11 | 704 | 0.3+  | 0.4+  | 2006 08 28 | E12 | 0.3−  | 0.2−  |
| 1999 02 25 | 886 | 0.4+ | 0.5− | 2002 11 11 | 704 | 0.0   | 0.1+  | 2006 08 28 | E12 | 1.1+  | 0.0   |
| 1999 02 25 | 888 | 0.1− | 0.1+ | 2002 11 11 | 704 | 0.1+  | 0.2−  | 2006 08 28 | E12 | 0.5−  | 0.0   |
| 1999 02 25 | 888 | 0.3+ | 0.2+ | 2002 11 11 | 704 | 0.9−  | 1.3+  | 2006 09 26 | 703 | 1.4−  | 0.4−  |
| 1999 04 07 | 385 | 0.4+ | 0.4− | 2002 11 20 | 644 | 0.0   | 0.5+  | 2006 09 26 | 703 | (2.2− | 0.2+) |
| 1999 04 07 | 385 | 1.8+ | 0.3+ | 2002 11 20 | 644 | 0.2−  | 0.4+  | 2006 09 26 | 703 | 0.0   | 0.5+  |
| 1999 04 14 | 385 | 0.2− | 0.3+ | 2002 11 20 | 644 | 0.0   | 0.3+  | 2006 09 26 | 703 | 0.3−  | 0.1+  |
| 1999 04 14 | 385 | 0.6+ | 0.5+ | 2002 11 30 | 704 | 0.0   | 0.1−  | 2007 11 07 | 703 | 0.7−  | 0.5−  |
| 2002 08 25 | 644 | 0.1− | 0.5+ | 2002 11 30 | 704 | 0.0   | 0.2+  | 2007 11 07 | 703 | 0.2−  | 0.5+  |
| 2002 08 25 | 644 | 0.1− | 0.5+ | 2002 11 30 | 704 | 0.0   | 0.4+  | 2007 11 07 | 703 | 0.2−  | 1.1+  |
| 2002 08 25 | 644 | 0.3− | 0.4+ | 2003 01 04 | 704 | 0.4−  | 0.9+  | 2007 11 07 | 703 | 0.1+  | 0.9+  |
| 2002 09 30 | 704 | 0.2+ | 0.6+ | 2003 01 04 | 704 | 0.6−  | 0.4+  | 2007 11 07 | 691 | 0.0   | 0.3+  |
| 2002 09 30 | 704 | 0.2− | 0.5+ | 2003 01 04 | 704 | 0.6−  | 0.6+  | 2007 11 07 | 691 | 0.0   | 0.2+  |
| 2002 09 30 | 704 | 0.3− | 0.8+ | 2003 01 04 | 704 | 0.2−  | 0.9+  | 2007 11 07 | 691 | 0.1−  | 0.2+  |
| 2002 10 04 | 704 | 0.6+ | 0.1− | 2003 01 04 | 704 | (1.7− | 5.6+) | 2007 12 16 | 704 | 0.6+  | 0.2+  |
| 2002 10 04 | 704 | 0.3+ | 0.2+ | 2003 01 08 | 704 | 0.0   | 0.5+  | 2007 12 16 | 704 | 0.5+  | 0.0   |
| 2002 10 04 | 704 | 0.8+ | 0.3+ | 2003 01 08 | 704 | 0.1−  | 1.5+  | 2007 12 16 | 704 | 0.8+  | 0.5+  |
| 2002 10 04 | 704 | 0.1− | 0.2+ | 2003 01 08 | 704 | 0.4−  | 1.0+  | 2007 12 16 | 704 | 0.7+  | 0.1+  |
| 2002 10 04 | 704 | 0.8+ | 0.2+ | 2003 01 08 | 704 | 0.5−  | 0.5+  | 2007 12 16 | 704 | 0.7+  | 0.7+  |
| 2002 10 04 | 645 | 0.1+ | 0.1− | 2003 01 08 | 704 | 0.6+  | 0.8+  |            |     |       |       |

**(171522)\* 1999 CY<sub>5</sub>**

Discovered 1999 Feb. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 178.86162  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.41865999 | $\omega$ | 98.82543  | -0.71043604 | +0.63776248 |
| $a$ | 1.7696814  | $\Omega$ | 121.41368 | -0.70006874 | -0.68369041 |
| $e$ | 0.1491962  | $i$      | 20.40541  | +0.07200273 | -0.35472023 |
| $P$ | 2.35       | $H$      | 16.2      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 01 10 | 699 | 0.5+ | 0.2+ | 2004 04 11 | 703 | 0.6− | 0.8− | 2005 12 06 | 704 | 0.1+  | 1.2+  |
| 1999 01 10 | 699 | 1.2+ | 0.2− | 2004 04 11 | 703 | 0.1+ | 0.2+ | 2005 12 06 | 704 | 0.3−  | 0.8+  |
| 1999 01 10 | 699 | 0.6+ | 0.7− | 2004 04 11 | 703 | 0.3+ | 0.1+ | 2005 12 06 | 704 | 0.5−  | 0.6+  |
| 1999 01 22 | 691 | 0.5− | 0.2− | 2004 04 11 | 703 | 0.0  | 0.2− | 2006 01 02 | 704 | 0.4−  | 0.9+  |
| 1999 01 22 | 691 | 0.8− | 0.2− | 2004 04 14 | 704 | 0.1− | 0.4− | 2006 01 02 | 704 | (0.4− | 1.8+) |
| 1999 01 22 | 691 | 0.3− | 0.4− | 2004 04 14 | 704 | 0.1+ | 0.1+ | 2006 01 02 | 704 | 0.4+  | 0.3+  |
| 1999 02 10 | 704 | 1.5+ | 0.2+ | 2004 04 14 | 704 | 0.2+ | 0.6− | 2006 01 02 | 704 | 0.2−  | 0.1−  |
| 1999 02 10 | 704 | 0.4+ | 0.1− | 2004 04 14 | 704 | 0.1− | 0.5− | 2006 01 03 | 704 | 0.4−  | 0.4+  |
| 1999 02 10 | 704 | 0.3− | 0.3− | 2004 04 14 | 704 | 0.1+ | 0.4+ | 2006 01 03 | 704 | 0.1−  | 0.4+  |
| 1999 02 10 | 704 | 0.1− | 0.0  | 2004 04 28 | 703 | 0.0  | 0.0  | 2006 01 03 | 704 | 0.1+  | 0.8−  |
| 1999 02 12 | 699 | 0.9+ | 1.0− | 2004 04 28 | 703 | 0.3− | 1.0+ | 2006 01 23 | 704 | 0.8+  | 0.3+  |
| 1999 02 12 | 699 | 1.0+ | 0.3− | 2004 04 28 | 703 | 0.1+ | 1.0+ | 2006 01 23 | 704 | (1.8+ | 0.7−) |
| 1999 02 12 | 699 | 1.1+ | 0.8− | 2004 04 28 | 703 | 0.4+ | 0.2+ | 2006 01 23 | 704 | 0.2+  | 0.6+  |
| 1999 02 13 | 704 | 0.9− | 1.2+ | 2004 05 01 | 699 | 0.4+ | 0.3+ | 2006 01 23 | 704 | 0.4+  | 1.1+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 02 13 | 704 | 0.9−  | 1.1−  | 2004 05 01 | 699 | 0.3−  | 0.1−  | 2006 01 23 | 185 | (2.1− | 0.2+) |
| 1999 02 13 | 704 | 1.1+  | 0.7−  | 2004 05 01 | 699 | 0.2−  | 0.3−  | 2006 01 23 | 185 | (1.3+ | 2.4+) |
| 1999 02 13 | 704 | 1.3+  | 0.5+  | 2004 05 01 | 699 | 0.8−  | 0.2+  | 2006 01 23 | 185 | 0.1−  | 0.0   |
| 2004 01 29 | 704 | 0.2−  | 0.3−  | 2004 05 12 | 704 | 0.1+  | 0.4−  | 2006 02 04 | 704 | (1.9+ | 0.1−) |
| 2004 01 29 | 704 | 0.6+  | 0.2−  | 2004 05 12 | 704 | 0.0   | 1.2−  | 2006 02 04 | 704 | 0.0   | 0.5+  |
| 2004 01 29 | 704 | (1.5+ | 0.4−) | 2004 05 12 | 704 | 0.5−  | 0.3−  | 2006 02 04 | 704 | 0.2+  | 0.9−  |
| 2004 01 30 | 704 | 0.1+  | 0.1−  | 2004 05 12 | 704 | 0.3−  | 0.1−  | 2006 02 04 | 704 | (1.7+ | 1.7−) |
| 2004 01 30 | 704 | 0.6+  | 0.2+  | 2004 05 12 | 704 | 0.5−  | 0.2+  | 2006 02 04 | 704 | 0.8+  | 0.5−  |
| 2004 01 30 | 704 | 0.1+  | 0.6+  | 2004 05 28 | A35 | 0.2+  | 0.3+  | 2006 02 20 | 704 | 0.8−  | 0.1−  |
| 2004 01 30 | 704 | 0.3−  | 0.0   | 2004 05 28 | A35 | 0.1−  | 0.1+  | 2006 02 20 | 704 | 0.0   | 0.1−  |
| 2004 01 30 | 704 | 0.8+  | 1.4+  | 2004 05 28 | A35 | 0.1−  | 0.2+  | 2006 02 20 | 704 | 0.3+  | 0.9+  |
| 2004 01 30 | 704 | 0.9−  | 0.1−  | 2004 05 29 | 703 | 0.0   | 0.6+  | 2006 02 20 | 704 | 0.1−  | 0.1+  |
| 2004 01 30 | 704 | 0.5+  | 0.2−  | 2004 05 29 | 703 | 0.4+  | 0.4+  | 2006 02 20 | 704 | 0.4−  | 0.6+  |
| 2004 01 30 | 673 | 0.1+  | 0.2+  | 2004 05 29 | 703 | 0.2−  | 0.2+  | 2006 02 22 | 704 | 0.7−  | 0.2−  |
| 2004 01 30 | 673 | 0.3+  | 0.2+  | 2004 05 29 | 703 | 0.3−  | 0.1+  | 2006 02 22 | 704 | 1.3+  | 0.7−  |
| 2004 01 30 | 673 | 0.4+  | 0.4+  | 2004 06 09 | 704 | 0.1+  | 0.5+  | 2006 02 22 | 704 | 1.1−  | 1.5+  |
| 2004 01 30 | 673 | 0.1+  | 0.2+  | 2004 06 09 | 704 | 0.1+  | 0.4+  | 2006 02 22 | 704 | 0.3−  | 0.1+  |
| 2004 01 31 | 704 | 0.4+  | 0.2+  | 2004 06 09 | 704 | 0.3+  | 0.0   | 2006 02 28 | 704 | 0.0   | 0.1−  |
| 2004 01 31 | 704 | 0.4−  | 0.1+  | 2004 06 09 | 704 | 0.3+  | 0.1+  | 2006 02 28 | 704 | 0.4+  | 0.6+  |
| 2004 01 31 | 704 | 0.7+  | 1.2+  | 2004 06 09 | 704 | 0.6+  | 0.1+  | 2006 02 28 | 704 | 0.5+  | 1.0+  |
| 2004 01 31 | 704 | 0.7+  | 0.2+  | 2004 06 22 | 704 | 0.1+  | 0.5+  | 2006 02 28 | 704 | 0.2−  | 0.0   |
| 2004 02 17 | 704 | 0.6+  | 0.0   | 2004 06 22 | 704 | (1.8+ | 0.8−) | 2007 10 12 | 703 | 0.2−  | 1.2+  |
| 2004 02 17 | 704 | 0.5+  | 0.3−  | 2004 06 22 | 704 | 0.0   | 0.3+  | 2007 10 12 | 703 | 0.8−  | 0.7+  |
| 2004 02 17 | 704 | 0.6+  | 0.0   | 2004 06 22 | 704 | 0.5+  | 0.3+  | 2007 10 12 | 703 | 0.6−  | 1.1+  |
| 2004 02 17 | 704 | 0.5+  | 0.3−  | 2004 06 22 | 704 | 0.0   | 0.4+  | 2007 10 12 | 703 | 0.2−  | 0.3−  |
| 2004 02 17 | 704 | 0.8+  | 0.5−  | 2004 07 09 | 699 | 0.6−  | 0.3+  | 2007 11 04 | 703 | 0.7+  | 0.2+  |
| 2004 03 30 | 704 | 0.1+  | 0.4+  | 2004 07 09 | 699 | 0.3−  | 0.1+  | 2007 11 04 | 703 | 0.4−  | 0.0   |
| 2004 03 30 | 704 | 0.1+  | 0.0   | 2004 07 09 | 699 | 0.4+  | 0.6+  | 2007 11 04 | 703 | (0.7− | 1.6+) |
| 2004 03 30 | 704 | 0.2−  | 0.2+  | 2004 07 09 | 699 | 0.9+  | 0.3−  | 2007 11 04 | 703 | 0.2+  | 0.5+  |
| 2004 03 30 | 704 | 0.2+  | 0.2+  | 2004 07 11 | 644 | 0.2+  | 0.1−  | 2007 11 19 | 703 | 0.4−  | 0.3+  |
| 2004 03 30 | 703 | 1.1−  | 1.5+  | 2004 07 11 | 644 | 0.4+  | 0.1+  | 2007 11 19 | 703 | 0.5+  | 0.9+  |
| 2004 03 30 | 703 | 0.6−  | 0.4−  | 2004 07 11 | 644 | 0.4+  | 0.0   | 2007 11 19 | 703 | 0.7−  | 0.8+  |
| 2004 03 30 | 703 | 0.5−  | 0.1+  | 2005 12 06 | 704 | 0.2+  | 0.4+  | 2007 11 19 | 703 | 2.0−  | 0.0   |
| 2004 03 30 | 703 | 0.2−  | 0.6+  | 2005 12 06 | 704 | 1.4−  | 1.1+  |            |     |       |       |

**(171523)\* 1999 CE<sub>83</sub> = 2002 RT<sub>50</sub>**

Discovered 1999 Feb. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 34762)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 22.46393   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22456971 | $\omega$ | 53.80016 | +0.36576896 | -0.92987257 |
| $a$ | 2.6806201  | $\Omega$ | 14.89552 | +0.79717998 | +0.29118083 |
| $e$ | 0.3327246  | $i$      | 8.81011  | +0.48033025 | +0.22483489 |
| $P$ | 4.39       | $H$      | 15.9     | $G$ 0.15    | $U$ 1       |

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2002 09 05 | 704 | (1.2– 1.5+) | 2002 10 11 | 704 | 0.7– 0.4–   | 2003 01 28 | 704 | (1.5– 1.6+) |
| 2002 09 05 | 704 | 0.3– 0.7+   | 2002 10 11 | 704 | 0.8– 0.6–   | 2003 01 28 | 704 | (2.0– 1.1+) |
| 2002 09 05 | 704 | (1.5– 0.9+) | 2002 10 11 | 704 | 0.4– 0.8–   | 2003 01 28 | 704 | (1.6– 1.6+) |
| 2002 09 05 | 645 | 0.1+ 0.1–   | 2002 10 22 | 608 | (1.7+ 1.3+) | 2003 01 28 | 704 | (0.9– 2.9+) |
| 2002 09 05 | 645 | 0.1+ 0.1–   | 2002 10 22 | 608 | (1.4+ 1.7+) | 2006 08 14 | 644 | 0.2– 0.6+   |
| 2002 09 06 | 704 | (2.1– 0.5–) | 2002 10 22 | 608 | 1.1+ 1.2+   | 2006 08 14 | 644 | 0.1– 0.6+   |
| 2002 09 06 | 704 | (2.1– 0.7–) | 2002 10 30 | 704 | 0.7+ 0.4+   | 2006 08 14 | 644 | 0.3+ 0.7+   |
| 2002 09 06 | 704 | 0.8– 0.5+   | 2002 10 30 | 704 | 0.5+ 0.4+   | 2007 11 08 | 704 | (0.2+ 2.1+) |
| 2002 09 13 | 608 | 1.0– 0.5–   | 2002 10 30 | 645 | 0.1+ 0.3–   | 2007 11 08 | 704 | (0.0 1.6+)  |
| 2002 09 13 | 608 | 1.0– 0.2–   | 2002 10 30 | 645 | 0.2+ 0.3–   | 2007 11 08 | 704 | 0.1+ 0.1+   |
| 2002 09 13 | 608 | 1.4– 0.3–   | 2002 10 30 | 704 | 0.0 0.3+    | 2007 11 17 | 704 | 1.2+ 0.1–   |
| 2002 09 17 | 608 | 0.8– 0.9–   | 2002 10 30 | 704 | 0.1– 0.4+   | 2007 11 17 | 704 | 0.4+ 0.5+   |
| 2002 09 17 | 608 | 1.4– 0.0    | 2002 10 30 | 704 | 0.2+ 0.6+   | 2007 11 17 | 704 | 0.8+ 1.3+   |
| 2002 09 17 | 608 | 0.9– 0.4–   | 2002 11 05 | 699 | 0.3+ 0.6+   | 2007 11 17 | 704 | 1.0+ 1.4+   |
| 2002 09 26 | 644 | 1.0– 0.2+   | 2002 11 05 | 699 | 0.8– 0.4+   | 2007 12 16 | 704 | (0.3– 1.7+) |
| 2002 09 26 | 644 | 0.9– 0.3+   | 2002 11 05 | 699 | 0.8– 0.0    | 2007 12 16 | 704 | 0.2+ 0.4+   |
| 2002 09 26 | 644 | 0.9– 0.3+   | 2002 11 05 | 699 | 1.1– 0.4+   | 2007 12 16 | 704 | 0.5– 0.5+   |
| 2002 10 02 | 704 | 0.4– 0.2+   | 2002 11 06 | 704 | 0.4+ 0.0    | 2007 12 16 | 704 | (0.1+ 1.9+) |
| 2002 10 02 | 704 | 0.3+ 0.3+   | 2002 11 06 | 704 | 0.0 0.3+    | 2007 12 16 | 704 | 0.5+ 1.3+   |
| 2002 10 02 | 704 | 0.7+ 0.3+   | 2002 11 06 | 704 | 0.1+ 0.4+   |            |     |             |

(171524)\* 1999 CP<sub>111</sub> = 2005 GJ<sub>3</sub>

Discovered 1999 Feb. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 74600)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | (2000.0) |           | P           | Q           |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18224981 | $\omega$ | 321.00248 | –0.62479186 | –0.77939700 |
| <i>a</i> | 3.0809974  | $\Omega$ | 167.43128 | +0.75924412 | –0.62040158 |
| <i>e</i> | 0.1301954  | <i>i</i> | 12.37653  | +0.18216336 | –0.08741964 |
| <i>P</i> | 5.41       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 1999 02 12 | 704 | 0.0 1.7+    | 2005 04 01 | 699 | 0.9+ 0.8+   | 2005 05 18 | 644 | 0.2+ 0.4–   |
| 1999 02 12 | 704 | (1.1+ 2.3–) | 2005 04 01 | 699 | 0.9+ 0.2+   | 2005 05 18 | 644 | 0.1– 0.0    |
| 1999 02 12 | 699 | 0.7– 0.2–   | 2005 04 01 | 699 | 0.4+ 0.2–   | 2007 08 23 | 691 | 0.1– 0.2+   |
| 1999 02 12 | 704 | 0.5+ 1.0+   | 2005 04 01 | 691 | 0.5+ 0.3+   | 2007 08 23 | 691 | 0.1– 0.1+   |
| 1999 02 12 | 699 | 0.1+ 0.9+   | 2005 04 01 | 699 | 1.0+ 0.6–   | 2007 08 23 | 691 | 0.3– 0.7+   |
| 1999 02 12 | 704 | 1.5– 0.6–   | 2005 04 01 | 691 | 0.1– 0.1+   | 2007 09 12 | G96 | 0.1+ 0.0    |
| 1999 02 12 | 699 | 0.2+ 1.4+   | 2005 04 01 | 691 | 0.1+ 0.2+   | 2007 09 12 | G96 | 0.2+ 0.0    |
| 1999 02 16 | 704 | 0.7+ 1.2+   | 2005 04 02 | 691 | 0.1– 0.3+   | 2007 09 12 | G96 | 0.2+ 0.2+   |
| 1999 02 16 | 704 | 0.4– 0.1+   | 2005 04 02 | 691 | 0.2+ 0.2+   | 2007 09 12 | G96 | 0.2+ 0.0    |
| 1999 02 16 | 704 | 0.2– 1.4–   | 2005 04 02 | 691 | 0.1+ 0.3+   | 2007 09 13 | G96 | 0.1– 0.6+   |
| 1999 02 16 | 704 | 0.3– 0.4+   | 2005 04 04 | 703 | 0.5– 0.6+   | 2007 09 13 | G96 | 0.3– 0.2+   |
| 1999 02 20 | 699 | 0.9+ 0.8+   | 2005 04 04 | 703 | 0.0 0.1–    | 2007 09 13 | G96 | 0.1+ 0.7+   |
| 1999 02 20 | 699 | 1.0+ 0.3–   | 2005 04 04 | 703 | 1.1– 0.1–   | 2007 09 13 | G96 | 0.2– 0.6+   |
| 1999 02 20 | 699 | 0.2– 0.5+   | 2005 04 04 | 703 | 0.6– 0.1–   | 2007 09 19 | 704 | 0.4– 0.4+   |
| 2002 09 05 | 645 | 0.0 1.1+    | 2005 04 13 | 703 | 1.1+ 0.6–   | 2007 09 19 | 704 | 0.6– 0.1–   |
| 2002 09 05 | 645 | 0.1+ 0.1+   | 2005 04 13 | 703 | 1.3– 0.7+   | 2007 09 19 | 704 | 1.0– 0.1+   |
| 2002 09 28 | 608 | 1.4– 1.1–   | 2005 04 13 | 703 | 0.9– 0.2+   | 2007 09 19 | 704 | (0.7– 2.1+) |
| 2002 09 28 | 608 | 1.4– 1.0–   | 2005 04 13 | 703 | 0.4– 0.1+   | 2007 10 08 | G96 | 0.0 1.1–    |
| 2002 09 28 | 608 | (1.6– 0.9–) | 2005 04 15 | 699 | (2.1– 0.6–) | 2007 10 08 | G96 | 0.0 0.0     |
| 2002 10 08 | 699 | 1.1+ 0.8+   | 2005 04 15 | 699 | 0.5– 0.5–   | 2007 10 08 | G96 | 0.2+ 0.1+   |
| 2002 10 08 | 699 | 0.2– 0.3+   | 2005 04 15 | 699 | 0.1+ 0.4–   | 2007 10 08 | G96 | 0.4+ 0.0    |
| 2002 10 08 | 699 | 0.7+ 0.1+   | 2005 04 15 | 699 | 0.7+ 1.3–   | 2007 10 19 | G96 | 0.2+ 0.3+   |
| 2002 10 08 | 699 | (0.8– 2.9+) | 2005 05 11 | 703 | 0.7– 0.5–   | 2007 10 19 | G96 | 0.2+ 0.2+   |
| 2005 03 10 | 699 | 1.0+ 0.3+   | 2005 05 11 | 703 | 0.1– 0.2–   | 2007 10 19 | G96 | 0.4+ 0.1–   |
| 2005 03 10 | 699 | 0.4– 0.5–   | 2005 05 11 | 703 | 0.9– 0.4+   | 2007 10 19 | G96 | 0.0 0.1–    |
| 2005 03 10 | 699 | 1.0+ 0.3+   | 2005 05 11 | 703 | 0.9– 0.1–   |            |     |             |
| 2005 03 10 | 699 | 0.1– 0.2–   | 2005 05 18 | 644 | 0.2+ 0.0    |            |     |             |

(171525)\* 1999 CW<sub>111</sub> = 2002 XR<sub>47</sub>

Discovered 1999 Feb. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 40009)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | (2000.0) |           | P           | Q           |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21388015 | $\omega$ | 209.08044 | –0.85228475 | –0.48574227 |
| <i>a</i> | 2.7692090  | $\Omega$ | 300.58097 | +0.51285163 | –0.70297075 |
| <i>e</i> | 0.1661591  | <i>i</i> | 13.02816  | +0.10292667 | –0.51950608 |
| <i>P</i> | 4.61       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 1999 01 15 | 699 | 0.5– 0.9+   | 2002 12 11 | 704 | 0.1– 0.3+ | 2004 04 24 | E12 | 0.7+ 0.6– |
| 1999 01 15 | 699 | 0.2+ 1.1+   | 2002 12 11 | 704 | 0.4– 0.2– | 2004 04 24 | E12 | 0.5+ 1.2– |
| 1999 01 15 | 699 | 0.2+ 0.9–   | 2002 12 11 | 704 | 0.2+ 0.1– | 2004 04 24 | E12 | 0.5+ 0.4– |
| 1999 02 12 | 704 | 1.3– 0.6–   | 2002 12 12 | 644 | 0.5+ 1.3+ | 2004 04 24 | E12 | 0.8+ 0.1– |
| 1999 02 12 | 704 | (2.4– 0.6–) | 2002 12 12 | 644 | 0.6+ 1.3+ | 2005 07 06 | 599 | 0.1– 0.4+ |
| 1999 02 12 | 704 | 0.4+ 1.0–   | 2002 12 12 | 644 | 0.3+ 1.2+ | 2005 07 06 | 599 | 0.0 0.4+  |
| 1999 02 12 | 704 | 1.6– 1.6–   | 2004 03 25 | E12 | 0.7+ 0.5+ | 2005 07 07 | 599 | 0.1– 1.3+ |
| 1999 02 12 | 704 | (4.5– 1.0–) | 2004 03 25 | E12 | 1.1+ 0.4+ | 2005 07 07 | 599 | 0.0 1.4+  |
| 1999 02 16 | 704 | 0.1+ 0.3+   | 2004 03 25 | E12 | 1.5+ 0.4+ | 2005 07 30 | E12 | 0.4– 0.2+ |
| 1999 02 16 | 704 | 0.6– 2.0–   | 2004 03 25 | E12 | 1.0+ 0.6+ | 2005 07 30 | E12 | 0.7+ 0.4+ |
| 1999 02 16 | 704 | 0.7– 0.4–   | 2004 04 15 | E12 | 0.6– 1.2+ | 2007 11 18 | 704 | 0.3+ 1.3+ |
| 1999 02 16 | 704 | 0.4– 1.6–   | 2004 04 15 | E12 | 1.4– 1.1+ | 2007 11 18 | 704 | 0.4+ 0.2+ |
| 1999 02 16 | 704 | 1.4+ 0.4–   | 2004 04 15 | E12 | 0.5– 1.3+ | 2007 11 18 | 704 | 1.0+ 0.8+ |
| 1999 02 21 | 699 | 0.1+ 0.6+   | 2004 04 15 | E12 | 0.0 1.4+  | 2007 12 04 | 699 | 0.9– 0.3– |
| 1999 02 21 | 699 | 0.6+ 0.4+   | 2004 04 19 | 699 | 1.4+ 0.4+ | 2007 12 04 | 699 | 0.5– 0.1– |
| 1999 02 21 | 699 | 0.2– 0.2+   | 2004 04 19 | 699 | 1.1– 0.2– | 2007 12 04 | 699 | 0.2+ 0.6– |
| 2002 12 10 | 704 | 0.8– 0.4+   | 2004 04 19 | 699 | 0.6+ 0.5– | 2007 12 04 | 699 | 0.2– 0.5– |
| 2002 12 10 | 704 | 0.6– 0.4+   | 2004 04 19 | 699 | 0.1+ 0.9+ | 2007 12 15 | 704 | 0.8+ 0.9+ |
| 2002 12 10 | 704 | 0.2– 0.6+   | 2004 04 21 | E12 | 1.0– 1.0+ | 2007 12 15 | 704 | 0.2+ 0.2+ |
| 2002 12 10 | 704 | 1.5– 0.3+   | 2004 04 21 | E12 | 1.1– 0.2+ | 2007 12 15 | 704 | 0.6+ 1.0+ |
| 2002 12 10 | 704 | 1.0– 0.4+   | 2004 04 21 | E12 | 1.1– 1.0+ | 2007 12 15 | 704 | 0.6+ 1.1+ |
| 2002 12 11 | 704 | 1.0+ 0.3–   | 2004 04 21 | E12 | 0.4– 1.2+ | 2007 12 15 | 704 | 0.5+ 0.2+ |

(171526)\* 1999 HO<sub>7</sub> = 2001 RN<sub>141</sub>

Discovered 1999 Apr. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 16983)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | (2000.0) |          | P           | Q           |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.18194614 | $\omega$ | 8.26204  | +0.70150161 | –0.70255319 |
| <i>a</i> | 3.0844246  | $\Omega$ | 37.32791 | +0.64206397 | +0.55017986 |
| <i>e</i> | 0.1170725  | <i>i</i> | 11.37963 | +0.30927229 | +0.45135479 |
| <i>P</i> | 5.42       | <i>H</i> | 15.4     | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 1993 03 19 | 691 | 0.2– 0.1+   | 2001 09 19 | 704 | 0.7– 0.1+ | 2004 03 20 | 704 | 0.8+ 1.3+   |
| 1993 03 19 | 691 | 0.2– 0.3–   | 2001 09 19 | 704 | 0.4– 0.9+ | 2004 03 20 | 704 | 0.1+ 0.2+   |
| 1993 03 19 | 691 | 0.4– 0.1+   | 2001 09 19 | 704 | 1.1– 1.0+ | 2004 03 20 | 704 | 0.6+ 1.3+   |
| 1996 12 15 | 691 | 0.2– 0.2–   | 2001 09 21 | 704 | 0.3+ 0.3– | 2004 03 20 | 704 | 0.2– 0.4+   |
| 1996 12 15 | 691 | 0.1– 0.2+   | 2001 09 21 | 704 | 1.0– 0.2+ | 2004 03 21 | 691 | 0.1– 0.3+   |
| 1996 12 15 | 691 | 0.3– 0.2–   | 2001 09 21 | 704 | 0.5– 0.5– | 2004 03 21 | 691 | 0.0 0.5+    |
| 1999 04 09 | 691 | (1.7– 2.0+) | 2001 09 21 | 704 | 1.0– 0.4– | 2004 03 21 | 691 | 0.1– 0.3+   |
| 1999 04 09 | 691 | 0.3– 0.2+   | 2001 09 21 | 704 | 0.6– 0.3+ | 2004 03 28 | 691 | 0.1+ 0.6+   |
| 1999 04 09 | 691 | 0.1+ 0.1+   | 2001 09 25 | 644 | 0.1– 0.7+ | 2004 03 28 | 691 | 0.1– 0.7+   |
| 1999 04 16 | 691 | 0.3– 0.2–   | 2001 09 25 | 644 | 0.4– 0.9+ | 2004 03 28 | 691 | 0.3+ 0.3+   |
| 1999 04 16 | 691 | 0.3+ 1.4–   | 2001 09 25 | 644 | 0.1+ 0.8+ | 2006 08 28 | E12 | (2.0– 0.2+) |
| 1999 04 19 | 691 | 0.1+ 0.0    | 2001 10 16 | 644 | 1.0– 0.5+ | 2006 08 28 | E12 | 1.4– 0.6–   |
| 1999 04 19 | 691 | 0.3+ 0.2–   | 2001 10 16 | 644 | 1.1– 0.7+ | 2006 08 28 | E12 | 0.2– 0.4+   |
| 1999 04 19 | 691 | 0.2+ 0.3–   | 2001 10 16 | 644 | 0.9– 0.5+ | 2006 08 28 | E12 | 0.9– 0.2+   |
| 1999 04 21 | 691 | 0.3+ 0.7+   | 2001 10 24 | 644 | 0.2+ 0.5+ | 2007 11 17 | 704 | 0.7– 0.1–   |
| 1999 04 21 | 691 | 0.5+ 0.1–   | 2001 10 24 | 644 | 0.0 0.3+  | 2007 11 17 | 704 | 0.2– 1.0–   |
| 1999 04 21 | 691 | 0.7+ 0.3+   | 2001 10 24 | 644 | 0.3+ 0.3+ | 2007 11 17 | 704 | 0.2+ 0.8+   |
| 1999 05 18 | 691 | 0.0 0.0     | 2001 12 10 | 645 | 0.0 0.1+  | 2007 11 17 | 704 | 0.1+ 0.2–   |
| 1999 05 18 | 691 | 0.1– 0.2–   | 2001 12 10 | 645 | 0.1+ 0.1+ | 2007 11 17 | 704 | (0.7+ 1.9+) |
| 1999 05 18 | 691 | 0.3+ 0.1–   | 2003 01 13 | 704 | 0.3+ 0.4+ | 2007 11 20 | 704 | 0.6+ 0.7–   |
| 2001 09 12 | 704 | 0.1+ 0.3+   | 2003 01 13 | 704 | 0.5+ 0.6– | 2007 11 20 | 704 | 0.4+ 1.2+   |
| 2001 09 12 | 704 | 0.3+ 0.4+   | 2003 01 13 | 704 | 1.1+ 0.8+ | 2007 11 20 | 704 | (1.9+ 0.9+) |
| 2001 09 12 | 704 | 0.9+ 0.7+   | 2003 01 13 | 704 | 1.4+ 0.2+ | 2007 11 20 | 704 | 1.5+ 0.6+   |
| 2001 09 18 | 699 | (2.4– 0.4–) | 2003 01 13 | 704 | 0.3+ 0.6– | 2007 12 16 | 704 | 0.3– 0.1+   |

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 09 18 699 (3.2– 1.0+) | 2004 03 14 691 0.0 0.1+  | 2007 12 16 704 0.2+ 0.4– |
| 2001 09 18 699 (1.9– 1.1+) | 2004 03 14 691 0.1– 0.3+ | 2007 12 16 704 0.2– 0.0  |
| 2001 09 18 699 (1.9– 0.1–) | 2004 03 14 691 0.1– 0.2+ | 2007 12 16 704 0.1+ 0.2+ |
| 2001 09 19 704 (0.8– 2.0+) | 2004 03 20 704 0.4+ 1.3+ | 2007 12 16 704 0.3– 0.7– |

**(171527)\* 1999 HT<sub>9</sub>**

Discovered 1999 Apr. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 224.61618  |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.30309877 | $\omega$ | 346.28110 | –0.89496622 | +0.44325073 |
| <i>a</i> | 2.1948925  | $\Omega$ | 220.15409 | –0.40155501 | –0.84979058 |
| <i>e</i> | 0.1463443  | <i>i</i> | 4.50397   | –0.19439404 | –0.28528014 |
| <i>P</i> | 3.25       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1997 11 20 691 0.2+ 0.0    | 2002 02 06 644 0.3+ 0.4+   | 2002 03 12 704 0.3+ 0.5+   |
| 1997 11 20 691 0.1– 0.4–   | 2002 02 06 644 0.6+ 0.3+   | 2002 03 12 704 0.4+ 0.0    |
| 1997 11 20 691 0.2– 0.1+   | 2002 02 06 644 (1.7+ 0.6+) | 2002 03 16 704 1.4+ 0.2+   |
| 1999 04 07 704 1.1+ 0.6–   | 2002 02 07 644 0.4+ 1.2+   | 2002 03 16 704 0.4+ 0.5+   |
| 1999 04 07 704 1.9+ 0.9–   | 2002 02 07 644 0.4+ 1.1+   | 2002 03 16 704 0.7+ 0.5+   |
| 1999 04 07 704 0.4+ 0.4–   | 2002 02 07 644 0.7+ 1.1+   | 2002 03 16 704 0.1+ 0.6+   |
| 1999 04 07 704 0.7+ 0.4–   | 2002 02 08 704 0.0 0.2+    | 2002 03 16 704 0.3+ 0.7+   |
| 1999 04 09 699 0.5– 0.1–   | 2002 02 08 704 0.5+ 0.5+   | 2003 09 17 599 0.1+ 0.2+   |
| 1999 04 09 699 (3.8+ 0.1–) | 2002 02 08 704 0.4– 0.7+   | 2003 09 17 599 0.2+ 0.3+   |
| 1999 04 09 699 0.9+ 0.3–   | 2002 02 08 704 0.1– 1.2+   | 2003 09 17 599 0.2+ 0.2+   |
| 1999 04 15 704 0.0 0.2+    | 2002 02 11 704 0.3+ 1.3+   | 2006 07 21 703 0.0 0.1+    |
| 1999 04 15 704 0.1– 0.4+   | 2002 02 11 704 0.0 0.0     | 2006 07 21 703 0.2– 0.3–   |
| 1999 04 15 704 1.0+ 0.5+   | 2002 02 11 704 0.1– 0.6+   | 2006 07 21 703 0.4– 0.1–   |
| 1999 04 15 704 0.7+ 0.5+   | 2002 02 11 704 0.2– 0.8+   | 2006 07 21 703 0.5+ 0.0    |
| 1999 04 15 704 0.4– 0.5+   | 2002 02 11 704 0.3– 0.6+   | 2007 11 05 704 (1.4+ 2.1+) |
| 1999 04 17 704 0.3+ 0.9+   | 2002 02 11 608 0.1+ 0.3–   | 2007 11 05 704 0.4+ 0.1+   |
| 1999 04 17 704 0.1– 0.6+   | 2002 02 11 608 0.0 0.2–    | 2007 11 05 704 (1.7+ 0.4+) |
| 1999 04 17 704 0.0 0.8+    | 2002 02 11 608 0.1+ 0.6–   | 2007 11 05 704 (1.8– 0.5+) |
| 1999 04 17 704 0.4+ 1.0+   | 2002 02 16 644 0.3+ 0.4+   | 2007 11 18 G96 0.3+ 0.2–   |
| 1999 04 17 704 0.1+ 0.4+   | 2002 02 16 644 0.2+ 0.2+   | 2007 11 18 G96 0.2+ 0.0    |
| 1999 04 18 704 1.0– 1.2+   | 2002 02 16 644 0.3+ 0.4+   | 2007 11 18 G96 0.1+ 0.1–   |
| 1999 04 18 704 1.7– 0.3+   | 2002 03 05 645 0.1– 0.2–   | 2007 11 18 G96 0.5+ 0.3–   |
| 1999 04 18 704 (0.9+ 2.4+) | 2002 03 05 645 0.1– 0.1–   | 2007 11 19 691 0.0 0.0     |
| 1999 05 12 704 1.3– 1.3+   | 2002 03 05 699 (1.8+ 0.5–) | 2007 11 19 691 0.1+ 0.0    |
| 1999 05 12 704 1.0– 0.8+   | 2002 03 05 699 0.5+ 0.3+   | 2007 11 19 691 0.1– 0.1+   |
| 1999 05 12 704 0.4– 0.3+   | 2002 03 05 699 0.1– 1.1+   | 2007 12 03 703 0.3+ 0.1+   |
| 1999 05 12 704 0.1– 0.2–   | 2002 03 05 699 1.3+ 0.2–   | 2007 12 03 703 1.7– 1.0+   |
| 1999 05 12 704 0.4– 0.4–   | 2002 03 06 644 0.4+ 0.0    | 2007 12 03 703 0.6– 0.7+   |
| 1999 05 17 699 0.8+ 0.1–   | 2002 03 06 644 0.2+ 0.0    | 2007 12 03 703 0.4– 0.3+   |
| 1999 05 17 699 0.3+ 0.5+   | 2002 03 06 644 0.5+ 0.2+   | 2007 12 04 704 0.2– 0.7+   |
| 1999 05 17 699 (0.2+ 2.2+) | 2002 03 12 645 0.1– 0.2–   | 2007 12 04 704 0.0 0.7+    |
| 2000 10 04 704 0.5+ 1.0+   | 2002 03 12 645 0.2– 0.2–   | 2007 12 04 704 0.1+ 0.4+   |
| 2000 10 04 704 0.3– 1.4+   | 2002 03 12 704 1.2+ 1.3–   |                            |
| 2000 10 04 704 1.0– 0.3+   | 2002 03 12 704 0.0 0.4–    |                            |

**(171528)\* 1999 JH<sub>28</sub> = 2004 EV<sub>7</sub>**

Discovered 1999 May 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 60531)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 170.02667  |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17564420 | $\omega$ | 25.44913  | –0.43339356 | +0.89462627 |
| <i>a</i> | 3.1577677  | $\Omega$ | 219.12514 | –0.85348796 | –0.44617465 |
| <i>e</i> | 0.1713914  | <i>i</i> | 9.91858   | –0.28935847 | –0.02391694 |
| <i>P</i> | 5.61       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1999 05 07 699 0.5– 0.2+ | 2001 11 16 691 0.4+ 0.5+ | 2006 09 17 703 0.1– 0.7+ |
| 1999 05 07 699 0.2– 1.1+ | 2001 11 16 691 0.3+ 0.2+ | 2006 09 17 703 0.5– 0.3+ |

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1999 05 07 699 0.5– 0.6–   | 2001 11 20 704 0.9– 0.6–   | 2006 09 19 699 0.2+ 0.6+   |
| 1999 05 10 704 0.8– 0.2+   | 2001 11 20 704 (1.8– 0.7+) | 2006 09 19 699 (1.8+ 0.1–) |
| 1999 05 10 704 1.5+ 0.1+   | 2001 11 20 704 (1.8– 0.8+) | 2006 09 19 699 0.3+ 1.0+   |
| 1999 05 10 704 0.3+ 0.8+   | 2001 11 20 704 (1.7– 0.9+) | 2006 09 19 699 0.5+ 1.1+   |
| 1999 05 10 704 0.7+ 0.3+   | 2001 11 20 704 (1.6– 0.7+) | 2006 09 25 704 0.7– 0.7+   |
| 1999 05 13 704 1.6– 1.6+   | 2001 11 21 704 0.4+ 1.1+   | 2006 09 25 704 0.4– 0.8+   |
| 1999 05 13 704 0.9+ 0.6–   | 2001 11 21 704 0.8– 0.0    | 2006 09 25 704 0.2– 0.9+   |
| 1999 05 13 704 0.7– 0.8+   | 2001 11 21 704 0.3– 0.9+   | 2006 09 25 704 (0.9+ 1.7+) |
| 1999 05 13 704 0.5– 0.8–   | 2001 11 21 704 0.1– 0.1+   | 2006 09 25 704 0.6+ 1.0+   |
| 1999 05 17 699 0.2– 1.0+   | 2004 02 17 703 0.3– 1.0–   | 2006 09 27 703 0.7+ 1.0–   |
| 1999 05 17 699 0.6– 0.6+   | 2004 02 17 703 0.0 0.7–    | 2006 09 27 703 (0.4+ 2.8–) |
| 1999 05 17 699 0.2+ 0.8+   | 2004 02 17 703 (2.1+ 0.3+) | 2006 09 27 703 0.0 1.1–    |
| 1999 05 18 704 0.9+ 0.2+   | 2004 02 17 703 0.7– 0.1+   | 2006 09 27 703 0.3– 0.5–   |
| 1999 05 18 704 0.4– 0.1–   | 2004 02 19 704 0.4+ 0.9+   | 2006 09 25 704 0.6+ 1.0+   |
| 1999 05 18 704 1.2– 1.4–   | 2004 02 19 704 0.2+ 0.2–   | 2006 10 23 G96 0.1– 0.4–   |
| 1999 05 19 704 1.4+ 1.4–   | 2004 02 19 704 0.1+ 0.3+   | 2006 10 23 G96 0.2– 0.1–   |
| 1999 05 19 704 0.7+ 1.8+   | 2004 02 19 704 0.6+ 0.4–   | 2006 10 23 G96 0.2+ 0.2–   |
| 1999 05 19 704 0.3– 0.8+   | 2004 02 19 704 0.6+ 0.4+   | 2007 11 08 691 0.3– 0.2+   |
| 1999 05 19 704 1.6– 0.4–   | 2004 03 13 644 1.1+ 0.8+   | 2007 11 08 691 0.3+ 0.1+   |
| 2000 09 03 704 0.4+ 0.0    | 2004 03 13 644 1.1+ 0.7+   | 2007 11 08 691 0.2– 0.4+   |
| 2000 09 03 704 0.6+ 0.6+   | 2004 03 13 644 1.1+ 0.5+   | 2007 11 20 691 0.6– 0.3–   |
| 2000 09 03 704 0.2+ 0.5–   | 2004 03 15 703 0.5– 1.4+   | 2007 11 20 691 0.8– 0.5–   |
| 2001 10 22 704 (0.4+ 1.7+) | 2004 03 15 703 0.6+ 0.1–   | 2007 11 20 691 0.1– 0.1–   |
| 2001 10 22 704 (0.2– 2.2+) | 2004 03 15 703 0.8+ 0.0    | 2007 12 04 704 0.8– 0.3+   |
| 2001 10 22 704 (0.9+ 1.9+) | 2004 03 15 703 0.8+ 0.1–   | 2007 12 04 704 0.3– 0.4–   |
| 2001 10 22 704 (1.6+ 2.0+) | 2006 09 17 703 0.0 0.6+    | 2007 12 04 704 0.6+ 0.9–   |
| 2001 11 16 691 0.3+ 0.4+   | 2006 09 17 703 0.8+ 0.8+   | 2007 12 04 704 0.9– 0.3–   |

**(171529)\* 1999 JK<sub>70</sub> = 1999 KV<sub>20</sub> = 2004 FT<sub>115</sub>**

Discovered 1999 May 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (d, *MPO* 38538), G. V. Williams (*MPO* 60532)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 219.13943  |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18578895 | $\omega$ | 151.72827 | –0.79500230 | +0.59374943 |
| <i>a</i> | 3.0417449  | $\Omega$ | 65.23259  | –0.57914262 | –0.68199803 |
| <i>e</i> | 0.1128949  | <i>i</i> | 7.86354   | –0.18045821 | –0.42701322 |
| <i>P</i> | 5.30       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1999 05 09 699 0.5+ 0.8+   | 2004 03 28 703 0.2+ 0.1–   | 2006 11 25 G96 0.5– 0.2+   |
| 1999 05 09 699 0.8+ 0.8+   | 2004 03 28 703 0.6+ 0.2+   | 2006 11 25 G96 0.1+ 0.2+   |
| 1999 05 09 699 0.4+ 1.3+   | 2004 03 28 703 0.2– 0.2–   | 2006 11 25 G96 0.0 0.2+    |
| 1999 05 12 704 1.3+ 0.2+   | 2004 04 15 644 0.2+ 0.7+   | 2006 11 25 G96 0.1+ 0.3+   |
| 1999 05 12 704 0.8– 0.1–   | 2004 04 15 704 0.2– 0.8+   | 2007 11 09 691 0.4– 0.0    |
| 1999 05 12 704 0.8– 1.3+   | 2004 04 15 644 0.2– 0.5+   | 2007 11 09 691 0.5– 0.2+   |
| 1999 05 13 704 0.1+ 1.7–   | 2004 04 15 704 0.5– 1.3+   | 2007 11 09 691 0.4– 0.0    |
| 1999 05 13 704 0.8– 0.5–   | 2004 04 15 644 0.0 0.4+    | 2007 11 13 691 0.3– 0.2–   |
| 1999 05 13 704 1.9+ 0.3–   | 2004 04 15 704 1.1+ 1.2+   | 2007 11 13 691 0.3– 0.1+   |
| 1999 05 15 703 0.4– 0.1–   | 2004 04 15 704 1.4+ 1.2+   | 2007 11 13 691 0.1+ 0.6+   |
| 1999 05 15 703 0.4+ 0.4–   | 2004 04 23 704 0.3+ 0.3–   | 2007 11 15 704 0.2+ 0.2+   |
| 1999 05 15 703 0.1– 0.8–   | 2004 04 23 704 0.2+ 0.5+   | 2007 11 15 704 0.5+ 1.1+   |
| 1999 05 15 703 0.4– 0.9+   | 2004 04 23 704 0.5– 0.7+   | 2007 11 15 704 (1.5+ 1.8+) |
| 1999 05 18 704 1.1– 0.3–   | 2004 04 23 704 0.6– 0.3+   | 2007 12 06 G96 0.2+ 0.1+   |
| 1999 05 18 704 (2.9– 0.2–) | 2005 07 06 E12 0.2+ 0.1+   | 2007 12 06 G96 0.2+ 0.1+   |
| 2004 03 15 704 0.3+ 0.1+   | 2005 07 06 E12 0.0 1.3+    | 2007 12 06 G96 0.4– 0.1–   |
| 2004 03 15 704 1.0+ 0.2–   | 2005 07 06 E12 0.1– 0.8–   | 2007 12 06 G96 0.0 0.0     |
| 2004 03 15 704 0.4– 0.1+   | 2005 07 06 E12 0.7– 0.4+   | 2007 12 14 704 (0.7+ 3.7–) |
| 2004 03 15 704 0.7+ 0.1–   | 2006 10 02 G96 0.3– 0.2+   | 2007 12 14 704 1.6+ 0.3–   |
| 2004 03 15 704 0.8+ 0.2–   | 2006 10 02 G96 0.3– 0.2+   | 2007 12 14 704 2.5+ 2.5+   |
| 2004 03 23 704 0.3– 0.6–   | 2006 10 02 G96 0.1– 0.5+   | 2007 12 15 G96 0.3+ 0.1–   |
| 2004 03 23 704 0.3– 0.6–   | 2006 10 02 G96 0.1– 0.5+   | 2007 12 15 G96 0.1+ 0.1–   |
| 2004 03 23 704 0.4– 0.3–   | 2006 10 17 703 0.4– 0.3+   | 2007 12 15 G96 0.1– 0.0    |
| 2004 03 23 704 0.1– 0.5–   | 2006 10 17 703 0.7– 1.4+   | 2007 12 15 G96 0.2+ 0.1–   |
| 2004 03 23 704 0.3– 0.2–   | 2006 10 17 703 0.2+ 1.3+   |                            |
| 2004 03 28 703 0.2+ 0.0    | 2006 10 17 703 (2.2– 1.4+) |                            |

2007 DEC. 24

M.P.O. 129073

(171530)\* 1999 JN<sub>102</sub> = 2002 EU<sub>16</sub>

Discovered 1999 May 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 29037)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 204.64384  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.30151599 | $\omega$ | 158.94824 | −0.56619004 |      | +0.81707485 |   |
| <i>a</i> | 2.2025671  | $\Omega$ | 76.41439  | −0.77133859 |      | −0.47869985 |   |
| <i>e</i> | 0.1764657  | <i>i</i> | 6.42126   | −0.29062970 |      | −0.32130225 |   |
| <i>P</i> | 3.27       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 05 09 | 699 | 0.2−  | 0.4+  | 2002 03 09 | 704 | 0.1+  | 0.6+  | 2005 02 04 | G96 | 0.3+ | 0.4− |
| 1999 05 09 | 699 | 0.3−  | 0.2−  | 2002 03 09 | 704 | 0.4+  | 0.2−  | 2005 02 04 | G96 | 0.4+ | 0.1− |
| 1999 05 09 | 699 | 0.5+  | 1.5+  | 2002 03 21 | 644 | 0.4+  | 0.2+  | 2006 08 16 | E12 | 0.5+ | 0.7+ |
| 1999 05 12 | 699 | 0.9+  | 0.3+  | 2002 03 21 | 644 | 0.4+  | 0.4+  | 2006 08 16 | E12 | 0.2+ | 0.3+ |
| 1999 05 12 | 699 | 0.7+  | 0.7−  | 2002 03 21 | 644 | 0.4+  | 0.1+  | 2006 08 16 | E12 | 0.2+ | 0.2+ |
| 1999 05 12 | 699 | 1.0+  | 0.4+  | 2002 04 16 | 704 | 0.7+  | 0.7+  | 2006 08 16 | E12 | 0.1− | 0.4+ |
| 1999 05 13 | 704 | 0.1−  | 0.7−  | 2002 04 16 | 704 | 0.6+  | 0.9+  | 2006 08 20 | 644 | 0.2− | 0.6+ |
| 1999 05 13 | 704 | 0.8−  | 0.1−  | 2002 04 16 | 704 | 0.1+  | 0.6+  | 2006 08 20 | 644 | 0.0  | 0.6+ |
| 1999 05 13 | 704 | 0.5−  | 0.6+  | 2002 04 16 | 704 | 0.7+  | 0.6+  | 2006 08 20 | 644 | 0.1− | 0.6+ |
| 1999 05 13 | 704 | 0.4+  | 1.6+  | 2002 04 16 | 704 | 0.1−  | 0.7+  | 2006 08 23 | 644 | 0.1− | 0.3+ |
| 1999 05 14 | 703 | 1.0+  | 0.9+  | 2003 09 20 | 644 | 0.1−  | 0.8+  | 2006 08 23 | 644 | 0.0  | 0.5+ |
| 1999 05 14 | 703 | 0.1−  | 0.1+  | 2003 09 20 | 644 | 0.2−  | 0.9+  | 2006 08 23 | 644 | 0.1+ | 0.3+ |
| 1999 05 14 | 703 | 1.3−  | 0.4+  | 2003 09 20 | 644 | 0.2−  | 1.1+  | 2006 08 24 | 644 | 0.3− | 0.5+ |
| 1999 05 14 | 703 | 1.1−  | 0.4−  | 2003 09 22 | 699 | 0.8−  | 0.1+  | 2006 08 24 | 644 | 0.3− | 0.3+ |
| 1999 05 17 | 704 | 0.6−  | 1.7+  | 2003 09 22 | 699 | 0.9+  | 0.4+  | 2006 08 24 | 644 | 0.1+ | 0.2+ |
| 1999 05 17 | 704 | 0.5+  | 0.3−  | 2003 09 22 | 699 | (1.5− | 1.4+) | 2006 08 28 | E12 | 1.3− | 0.3+ |
| 1999 05 17 | 704 | 0.5+  | 1.5+  | 2003 09 22 | 699 | 0.9+  | 0.6+  | 2006 08 28 | E12 | 1.2− | 0.4+ |
| 1999 05 17 | 704 | 0.2−  | 0.2−  | 2005 01 06 | 703 | 0.1−  | 0.5+  | 2006 08 28 | E12 | 0.4− | 0.8+ |
| 1999 05 17 | 704 | 1.2−  | 1.1+  | 2005 01 06 | 703 | (2.6− | 1.9+) | 2006 08 28 | E12 | 0.2+ | 0.6+ |
| 1999 05 19 | 704 | 0.1−  | 0.6−  | 2005 01 06 | 703 | 0.5+  | 0.2+  | 2007 12 03 | 691 | 0.3− | 0.3+ |
| 1999 05 19 | 704 | (3.3+ | 1.8+) | 2005 01 06 | 703 | 0.6−  | 0.9+  | 2007 12 03 | 691 | 0.1− | 0.2+ |
| 1999 05 19 | 704 | 1.4+  | 1.2−  | 2005 01 07 | 704 | 0.3+  | 0.3−  | 2007 12 03 | 691 | 0.3− | 0.2+ |
| 1999 05 19 | 704 | (0.4− | 2.3−) | 2005 01 07 | 704 | 0.5+  | 0.2+  | 2007 12 05 | 691 | 0.1− | 0.1+ |
| 2002 03 06 | 704 | 0.8+  | 0.2−  | 2005 01 07 | 704 | 0.7+  | 0.5+  | 2007 12 05 | 691 | 0.2− | 0.3+ |
| 2002 03 06 | 704 | (0.0  | 1.7+) | 2005 01 11 | 097 | 0.1+  | 0.3−  | 2007 12 05 | 691 | 0.0  | 0.1+ |
| 2002 03 06 | 704 | (0.2+ | 1.6+) | 2005 01 11 | 097 | 0.2+  | 0.2−  | 2007 12 16 | 691 | 0.0  | 0.1+ |
| 2002 03 09 | 704 | 0.2−  | 0.9+  | 2005 01 11 | 097 | 0.1−  | 0.1−  | 2007 12 16 | 691 | 0.2− | 0.2+ |
| 2002 03 09 | 704 | 0.3+  | 0.2−  | 2005 02 04 | G96 | 0.3+  | 0.3−  | 2007 12 16 | 691 | 0.4− | 0.3+ |
| 2002 03 09 | 704 | 0.1−  | 0.4+  | 2005 02 04 | G96 | 0.5+  | 0.3−  |            |     |      |      |

(171531)\* 1999 JR<sub>114</sub> = 2004 XU<sub>138</sub>

Discovered 1999 May 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 71979)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 174.71350  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.28933350 | $\omega$ | 341.48787 | −0.61038538 |      | +0.78801406 |   |
| <i>a</i> | 2.2639678  | $\Omega$ | 250.81599 | −0.71556785 |      | −0.59208658 |   |
| <i>e</i> | 0.2102917  | <i>i</i> | 4.88310   | −0.33969448 |      | −0.16872263 |   |
| <i>P</i> | 3.41       | <i>H</i> | 17.3      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 05 13 | 704 | 0.3−  | 1.0+  | 2002 02 11 | 704 | 1.0+ | 0.4+ | 2003 10 22 | 691 | 0.1− | 0.1+ |
| 1999 05 13 | 704 | 0.2−  | 1.3−  | 2002 02 11 | 704 | 0.6− | 0.6+ | 2003 10 22 | 691 | 0.1− | 0.4+ |
| 1999 05 13 | 704 | 0.7+  | 0.8+  | 2002 02 11 | 704 | 1.3+ | 0.5+ | 2003 11 16 | 645 | 0.0  | 0.0  |
| 1999 05 13 | 704 | (2.1+ | 1.7−) | 2002 03 06 | 644 | 0.6+ | 0.0  | 2003 11 16 | 645 | 0.0  | 0.1+ |
| 1999 05 18 | 704 | 0.7+  | 1.2−  | 2002 03 06 | 644 | 0.4+ | 0.8+ | 2004 12 13 | 691 | 0.2+ | 0.2+ |
| 1999 05 18 | 704 | (2.2− | 0.3+) | 2002 03 06 | 644 | 0.5+ | 0.4+ | 2004 12 13 | 691 | 0.3+ | 0.1+ |
| 1999 05 18 | 704 | 0.6−  | 1.3+  | 2003 08 28 | 644 | 0.5− | 0.9+ | 2004 12 13 | 691 | 0.2+ | 0.1+ |
| 1999 05 18 | 704 | 0.2−  | 1.2+  | 2003 08 28 | 644 | 0.3− | 0.7+ | 2004 12 18 | 691 | 0.0  | 0.3+ |
| 1999 06 15 | 704 | 0.4−  | 1.0−  | 2003 08 28 | 644 | 0.2+ | 0.3+ | 2004 12 18 | 691 | 0.2+ | 0.1+ |
| 1999 06 15 | 704 | 1.1−  | 0.0   | 2003 09 18 | 691 | 0.1+ | 0.4+ | 2004 12 18 | 691 | 0.1− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 06 15 | 704 | 0.1− | 0.3+ | 2003 09 18 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.9− | 0.9− |
| 1999 06 15 | 704 | 0.3− | 0.2+ | 2003 09 18 | 691 | 0.3+ | 0.3+ | 2007 11 04 | 691 | 0.6− | 0.0  |
| 1999 06 15 | 704 | 0.3− | 0.7+ | 2003 09 30 | 691 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.1− | 0.0  |
| 2000 11 30 | 645 | 0.1− | 0.0  | 2003 09 30 | 691 | 0.2+ | 0.1+ | 2007 12 05 | 691 | 0.1+ | 0.3− |
| 2000 11 30 | 645 | 0.0  | 0.0  | 2003 09 30 | 691 | 0.0  | 0.3+ | 2007 12 05 | 691 | 0.0  | 0.2− |
| 2002 02 11 | 704 | 0.8+ | 0.7+ | 2003 10 22 | 691 | 0.3+ | 0.2+ | 2007 12 05 | 691 | 0.1− | 0.1− |

(171532)\* 1999 JB<sub>134</sub> = 2004 FE<sub>96</sub>

Discovered 1999 May 15 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 60534)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 212.11070  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18189972 | $\omega$ | 166.36176 | −0.88153986 |      | +0.45499921 |   |
| <i>a</i> | 3.0849493  | $\Omega$ | 41.46164  | −0.44903418 |      | −0.72568003 |   |
| <i>e</i> | 0.1633974  | <i>i</i> | 10.96571  | −0.14579365 |      | −0.51610485 |   |
| <i>P</i> | 5.42       | <i>H</i> | 15.4      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 17 | 691 | 0.1− | 0.3− | 2004 02 16 | 704 | 0.3+  | 0.6−  | 2006 10 02 | 703 | 0.4+ | 0.8+ |
| 1996 10 17 | 691 | 0.3+ | 0.4− | 2004 02 16 | 704 | 0.3+  | 0.5−  | 2007 10 07 | 691 | 0.3− | 0.1− |
| 1996 10 17 | 691 | 0.2+ | 0.1− | 2004 02 16 | 704 | 0.4+  | 0.5−  | 2007 10 07 | 691 | 0.3− | 0.1+ |
| 1999 05 07 | 699 | 0.0  | 0.4+ | 2004 02 27 | 704 | 0.7+  | 0.1−  | 2007 10 07 | 691 | 0.1− | 0.7+ |
| 1999 05 07 | 699 | 0.1− | 1.0+ | 2004 02 27 | 704 | 0.0   | 0.5−  | 2007 10 11 | 691 | 0.6− | 0.4+ |
| 1999 05 07 | 699 | 0.4− | 0.6+ | 2004 02 27 | 704 | 0.6+  | 0.1+  | 2007 10 11 | 691 | 0.1− | 0.1− |
| 1999 05 12 | 699 | 0.1+ | 1.6+ | 2004 02 27 | 704 | 1.4+  | 0.4+  | 2007 10 11 | 691 | 0.2+ | 0.2+ |
| 1999 05 12 | 699 | 1.4+ | 0.7+ | 2004 03 10 | 703 | 0.3−  | 0.6+  | 2007 10 15 | 691 | 0.0  | 0.0  |
| 1999 05 12 | 699 | 1.2+ | 0.5+ | 2004 03 10 | 703 | 1.1−  | 1.4+  | 2007 10 15 | 691 | 0.0  | 0.1− |
| 1999 05 15 | 703 | 0.6+ | 0.5+ | 2004 03 10 | 703 | 1.1−  | 0.4−  | 2007 10 15 | 691 | 0.0  | 0.1+ |
| 1999 05 15 | 703 | 0.3+ | 0.9+ | 2004 03 10 | 703 | 0.5−  | 0.0   | 2007 11 04 | J87 | 0.3+ | 0.3− |
| 1999 05 15 | 703 | 0.1+ | 1.0+ | 2004 03 14 | 704 | 0.4−  | 0.6−  | 2007 11 04 | J87 | 0.2+ | 0.3− |
| 1999 05 15 | 703 | 0.4+ | 1.2+ | 2004 03 14 | 704 | 0.6−  | 0.7−  | 2007 11 04 | J87 | 0.1+ | 0.1+ |
| 1999 05 18 | 704 | 1.8− | 1.4− | 2004 03 14 | 704 | 1.0−  | 0.6−  | 2007 11 04 | 691 | 0.2+ | 0.1− |
| 1999 05 18 | 704 | 1.8− | 0.4− | 2004 03 14 | 704 | 0.8−  | 0.9−  | 2007 11 04 | 691 | 0.2− | 0.2− |
| 1999 05 18 | 704 | 0.9+ | 0.5+ | 2004 03 23 | 704 | 0.6+  | 0.3+  | 2007 11 04 | 691 | 0.0  | 0.0  |
| 1999 05 18 | 704 | 1.9− | 1.7+ | 2004 03 23 | 704 | 0.8+  | 0.5+  | 2007 11 08 | 691 | 0.1− | 0.3+ |
| 1999 05 18 | 691 | 0.3+ | 0.2− | 2004 03 23 | 704 | 0.9+  | 0.9+  | 2007 11 08 | 691 | 0.7− | 0.3+ |
| 1999 05 18 | 691 | 0.4+ | 0.0  | 2004 03 23 | 704 | 0.9+  | 1.1+  | 2007 11 08 | 691 | 0.0  | 0.3+ |
| 1999 05 18 | 699 | 0.6+ | 0.6− | 2004 03 23 | 704 | 0.5+  | 0.7+  | 2007 11 18 | 704 | 0.0  | 0.1− |
| 1999 05 18 | 691 | 0.4+ | 0.1− | 2004 03 25 | 704 | 1.0+  | 0.8+  | 2007 11 18 | 704 | 0.2+ | 0.9− |
| 1999 05 18 | 699 | 0.7+ | 0.3+ | 2004 03 25 | 704 | 0.6+  | 1.0+  | 2007 11 18 | 704 | 0.7+ | 1.0+ |
| 1999 05 18 | 699 | 0.8+ | 1.0+ | 2004 03 25 | 704 | (0.4+ | 1.8+) | 2007 11 18 | 704 | 0.5+ | 0.7+ |
| 2001 10 18 | 291 | 0.5+ | 0.3+ | 2004 03 25 | 704 | 0.0   | 0.5+  | 2007 11 18 | 704 | 0.1− | 0.3+ |
| 2001 10 18 | 291 | 0.2− | 0.3+ | 2004 03 26 | 703 | 0.4+  | 0.6+  | 2007 11 20 | 704 | 0.8+ | 0.5+ |
| 2001 10 18 | 291 | 0.9− | 0.3+ | 2004 03 26 | 703 | 0.0   | 0.5+  | 2007 11 20 | 704 | 0.5+ | 1.0+ |
| 2004 01 28 | 645 | 0.1− | 0.2− | 2004 03 26 | 703 | 0.1−  | 0.3+  | 2007 11 20 | 704 | 0.1+ | 1.3+ |
| 2004 01 28 | 645 | 0.2− | 0.1− | 2004 03 26 | 703 | 0.5−  | 0.2−  | 2007 11 20 | 704 | 0.6+ | 1.1+ |
| 2004 02 02 | 699 | 0.2+ | 1.1+ | 2004 04 09 | 644 | 0.4+  | 0.2+  | 2007 12 06 | 691 | 0.2− | 0.0  |
| 2004 02 02 | 699 | 1.1− | 0.8+ | 2004 04 09 | 644 | 0.2+  | 0.1+  | 2007 12 06 | 691 | 0.0  | 0.2− |
| 2004 02 02 | 699 | 0.7+ | 0.6+ | 2004 04 09 | 644 | 0.6+  | 0.6+  | 2007 12 06 | 691 | 0.2− | 0.0  |
| 2004 02 02 | 699 | 0.6+ | 0.3− | 2006 10 02 | 703 | 0.7+  | 0.3−  | 2007 12 15 | 704 | 0.1− | 0.8+ |
| 2004 02 16 | 704 | 0.4+ | 0.1− | 2006 10 02 | 703 | 0.4−  | 0.6−  | 2007 12 15 | 704 | 0.8+ | 0.9+ |
| 2004 02 16 | 704 | 0.3+ | 0.5− | 2006 10 02 | 703 | 0.5−  | 0.1+  | 2007 12 15 | 704 | 0.6+ | 0.3+ |

(171533)\* 1999 KC<sub>10</sub>

Discovered 1999 May 18 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 05 09 | 699 | 0.5−  | 0.7+  | 1999 06 15 | 704 | 0.7+  | 0.4−  | 2003 08 23 | 704 | (0.5− | 1.9+) |
| 1999 05 09 | 699 | 0.2−  | 0.8+  | 1999 06 15 | 704 | 0.2−  | 0.6+  | 2003 08 23 | 704 | 1.3+  | 1.1+  |
| 1999 05 09 | 699 | 0.3+  | 0.3+  | 2002 03 09 | 699 | 0.8+  | 0.5+  | 2003 09 18 | 704 | 0.3+  | 1.1+  |
| 1999 05 10 | 704 | 0.5+  | 0.5+  | 2002 03 09 | 699 | 0.5+  | 0.3+  | 2003 09 18 | 704 | (0.2− | 1.8+) |
| 1999 05 10 | 704 | 1.4−  | 1.1−  | 2002 03 09 | 699 | 0.8+  | 1.2+  | 2003 09 18 | 704 | 0.8−  | 0.2+  |
| 1999 05 10 | 704 | 0.1+  | 1.1+  | 2002 03 09 | 699 | 0.2−  | 0.1+  | 2003 09 18 | 704 | 0.6−  | 0.2−  |
| 1999 05 10 | 704 | (2.2+ | 1.0−) | 2002 03 11 | 644 | 1.2+  | 0.2+  | 2003 09 22 | 691 | 0.0   | 0.4+  |
| 1999 05 10 | 704 | (3.3− | 0.0)  | 2002 03 11 | 644 | 1.0+  | 0.4−  | 2003 09 22 | 691 | 0.3−  | 0.1+  |
| 1999 05 18 | 704 | 0.0   | 0.5−  | 2002 03 11 | 644 | 0.9+  | 0.2+  | 2003 09 22 | 691 | 0.0   | 0.3+  |
| 1999 05 18 | 704 | 0.9−  | 0.1+  | 2002 03 17 | 608 | 1.3−  | 0.3+  | 2003 09 23 | 608 | 0.1+  | 0.6+  |
| 1999 05 18 | 704 | 0.0   | 0.6+  | 2002 03 17 | 608 | 1.1−  | 0.0   | 2003 09 23 | 608 | 0.3−  | 1.0+  |
| 1999 05 18 | 704 | 0.3+  | 0.1−  | 2002 03 17 | 608 | 0.4−  | 0.0   | 2003 09 23 | 608 | 0.6−  | 1.3+  |
| 1999 05 18 | 699 | 0.6+  | 0.2+  | 2002 03 20 | 704 | 0.4+  | 0.9+  | 2007 11 19 | G96 | 0.4−  | 0.1+  |
| 1999 05 18 | 704 | 0.4+  | 0.2+  | 2002 03 20 | 704 | 0.2−  | 0.2+  | 2007 11 19 | G96 | 0.1−  | 0.1+  |
| 1999 05 18 | 699 | 0.4+  | 0.2−  | 2002 03 20 | 704 | 0.1+  | 0.1−  | 2007 11 19 | G96 | 0.4−  | 0.2+  |
| 1999 05 18 | 699 | 0.8−  | 0.7−  | 2002 03 20 | 704 | 0.1−  | 0.5+  | 2007 11 19 | G96 | 0.1−  | 0.2+  |
| 1999 05 19 | 704 | 0.1+  | 0.9+  | 2002 03 20 | 704 | 0.2+  | 0.5+  | 2007 11 20 | 691 | 0.5−  | 0.1+  |
| 1999 05 19 | 704 | 1.2+  | 1.2−  | 2002 04 01 | 644 | 0.5+  | 0.1−  | 2007 11 20 | 691 | 0.8−  | 0.0   |
| 1999 05 19 | 704 | 0.7+  | 1.1+  | 2002 04 01 | 644 | 0.4+  | 0.1−  | 2007 11 20 | 691 | 0.2−  | 0.4−  |
| 1999 05 19 | 704 | 1.0−  | 0.6−  | 2002 04 01 | 644 | 0.9+  | 0.1+  | 2007 12 15 | 704 | 1.0+  | 0.5−  |
| 1999 05 19 | 704 | 0.7−  | 1.4+  | 2002 04 02 | 644 | 0.4+  | 0.4+  | 2007 12 15 | 704 | 0.2+  | 1.0+  |
| 1999 06 15 | 704 | 0.1+  | 0.5+  | 2002 04 02 | 644 | 0.5+  | 0.4+  | 2007 12 15 | 704 | 0.5+  | 1.0+  |
| 1999 06 15 | 704 | 0.2+  | 0.1−  | 2002 04 02 | 644 | 0.5+  | 0.1+  | 2007 12 15 | 704 | 0.9+  | 0.1+  |
| 1999 06 15 | 704 | 0.5−  | 0.2+  | 2003 08 23 | 704 | (0.4− | 2.2+) | 2007 12 15 | 704 | 0.2+  | 0.5+  |

(171534)\* 1999 NC<sub>48</sub> = 1988 RG<sub>14</sub> = 1992 WH<sub>10</sub>

Discovered 1999 July 13 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 52463)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26552186 | <i>ω</i> | 74.05811  | +0.86871158 | +0.48498678 |          |   |
| <i>a</i> | 2.3973744  | <i>Ω</i> | 256.83640 | −0.48473547 | +0.79064310 |          |   |
| <i>e</i> | 0.2735986  | <i>i</i> | 5.93233   | −0.10184159 | +0.37372627 |          |   |
| <i>P</i> | 3.71       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1988 09 11 | 675 | 0.9− | 1.7− | 2003 10 19 | A35 | 0.2+ | 0.3+ | 2003 11 24 | 704 | 0.7−  | 0.6−  |
| 1992 11 25 | 691 | 0.3+ | 0.1− | 2003 10 20 | 644 | 0.1− | 0.2+ | 2003 11 27 | 703 | (3.1− | 1.3−) |
| 1992 11 25 | 691 | 0.4+ | 0.4+ | 2003 10 20 | 644 | 0.1− | 0.2+ | 2003 11 27 | 703 | 0.7−  | 0.3−  |
| 1992 11 25 | 691 | 0.1− | 0.1− | 2003 10 20 | 644 | 0.0  | 0.4+ | 2003 11 27 | 703 | 1.0−  | 0.6−  |
| 1999 06 15 | 704 | 0.6− | 0.3− | 2003 10 22 | 704 | 0.3− | 0.2+ | 2003 11 27 | 703 | (2.0− | 0.4+) |
| 1999 06 15 | 704 | 0.4− | 0.1− | 2003 10 22 | 704 | 0.7− | 0.0  | 2003 12 01 | 704 | 1.1−  | 0.8+  |
| 1999 06 15 | 704 | 0.1+ | 0.2+ | 2003 10 22 | 704 | 0.5− | 0.5+ | 2003 12 01 | 704 | 0.1+  | 0.2+  |
| 1999 06 15 | 704 | 0.3+ | 0.1+ | 2003 10 22 | 704 | 0.4− | 0.7+ | 2003 12 01 | 704 | 0.6+  | 0.2+  |
| 1999 06 15 | 704 | 0.0  | 0.1− | 2003 10 22 | 704 | 0.0  | 0.4+ | 2003 12 01 | 704 | 0.5+  | 0.2+  |
| 1999 07 13 | 704 | 0.1− | 0.2− | 2003 10 23 | 608 | 0.0  | 0.8− | 2003 12 22 | 704 | 1.2+  | 1.0+  |
| 1999 07 13 | 704 | 0.2− | 0.1− | 2003 10 23 | 608 | 0.1− | 0.6− | 2003 12 22 | 704 | 0.1+  | 0.9+  |
| 1999 07 13 | 704 | 0.1− | 0.2+ | 2003 10 23 | 608 | 0.2+ | 0.7− | 2003 12 22 | 704 | 0.4−  | 0.2+  |
| 1999 07 13 | 704 | 0.1+ | 0.4+ | 2003 10 29 | 699 | 0.2− | 0.4− | 2003 12 22 | 704 | 0.6−  | 0.1+  |
| 1999 07 13 | 704 | 0.0  | 0.1+ | 2003 10 29 | 699 | 0.0  | 0.4− | 2003 12 22 | 704 | 0.7−  | 0.3−  |
| 1999 07 19 | 704 | 0.3+ | 0.4+ | 2003 10 29 | 699 | 0.3+ | 0.2− | 2007 11 09 | 691 | 0.1−  | 0.4−  |
| 1999 07 19 | 704 | 0.2+ | 0.6+ | 2003 10 29 | 699 | 0.3+ | 0.3+ | 2007 11 09 | 691 | 0.0   | 0.2−  |
| 1999 07 19 | 704 | 0.4− | 0.5− | 2003 10 30 | 704 | 0.1− | 0.1+ | 2007 11 09 | 691 | 0.1−  | 0.2−  |
| 1999 09 13 | 704 | 0.3+ | 1.0− | 2003 10 30 | 704 | 0.2− | 0.3+ | 2007 11 15 | 704 | 0.6+  | 0.5−  |
| 1999 09 13 | 704 | 0.4+ | 0.1− | 2003 10 30 | 704 | 0.4+ | 0.0  | 2007 11 15 | 704 | 0.4+  | 0.4+  |
| 1999 09 13 | 704 | 0.6+ | 0.3− | 2003 11 02 | 704 | 0.2+ | 0.1+ | 2007 11 15 | 704 | 0.0   | 1.0−  |
| 1999 09 13 | 704 | 0.5+ | 0.0  | 2003 11 02 | 704 | 0.0  | 0.1+ | 2007 11 15 | 704 | 0.3−  | 1.5−  |
| 1999 09 13 | 704 | 0.4+ | 0.4− | 2003 11 02 | 704 | 0.3+ | 0.2+ | 2007 11 15 | 704 | 0.2+  | 0.5−  |
| 2003 09 20 | 644 | 0.1− | 0.1− | 2003 11 02 | 691 | 0.3+ | 0.3− | 2007 11 15 | 704 | 0.3−  | 0.6−  |
| 2003 09 20 | 644 | 0.1+ | 0.0  | 2003 11 02 | 704 | 0.4+ | 0.1− | 2007 11 15 | 704 | 0.3−  | 0.1−  |
| 2003 09 20 | 644 | 0.0  | 0.0  | 2003 11 02 | 704 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.4−  | 0.6−  |
| 2003 09 22 | 704 | 0.5+ | 0.2+ | 2003 11 02 | 691 | 0.2+ | 0.2− | 2007 12 04 | 691 | 0.3+  | 0.1+  |
| 2003 09 22 | 704 | 0.3− | 0.6− | 2003 11 02 | 691 | 0.4+ | 0.2− | 2007 12 04 | 691 | 0.2−  | 0.0   |
| 2003 09 22 | 704 | 0.3− | 1.0− | 2003 11 18 | 644 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.1−  | 0.2−  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 22 | 704 | 0.7− | 0.0  | 2003 11 18 | 644 | 0.2−  | 0.0   | 2007 12 04 | G96 | 0.1+ | 0.2+ |
| 2003 09 22 | 704 | 0.9− | 0.2− | 2003 11 18 | 644 | 0.2+  | 0.0   | 2007 12 04 | G96 | 0.1− | 0.2+ |
| 2003 09 30 | 704 | 0.2+ | 0.5+ | 2003 11 20 | 704 | 0.6−  | 0.7+  | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2003 09 30 | 704 | 0.5+ | 0.6+ | 2003 11 20 | 704 | 0.3+  | 0.4+  | 2007 12 04 | G96 | 0.0  | 0.1+ |
| 2003 09 30 | 704 | 0.5+ | 0.5+ | 2003 11 20 | 704 | 0.0   | 0.4+  | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2003 09 30 | 704 | 0.4+ | 1.0+ | 2003 11 20 | 704 | 0.4+  | 0.2−  | 2007 12 05 | 704 | 0.4+ | 0.2+ |
| 2003 09 30 | 704 | 0.4+ | 0.5+ | 2003 11 20 | 704 | 0.2−  | 0.0   | 2007 12 05 | 704 | 0.4+ | 0.4+ |
| 2003 10 15 | 699 | 0.4+ | 0.4+ | 2003 11 21 | 699 | 0.2−  | 0.2+  | 2007 12 05 | 704 | 0.3+ | 0.5+ |
| 2003 10 15 | 699 | 0.3− | 0.4+ | 2003 11 21 | 699 | 0.7−  | 0.2−  | 2007 12 05 | 704 | 0.4+ | 0.5+ |
| 2003 10 15 | 699 | 0.8− | 0.1− | 2003 11 21 | 699 | 1.0−  | 0.1+  | 2007 12 05 | 703 | 0.6− | 0.1+ |
| 2003 10 15 | 699 | 0.5+ | 0.9+ | 2003 11 21 | 699 | 1.2−  | 0.8+  | 2007 12 05 | 703 | 0.7− | 0.1+ |
| 2003 10 17 | 691 | 0.0  | 0.0  | 2003 11 24 | 704 | (1.2− | 1.9+) | 2007 12 05 | 703 | 1.3− | 0.7− |
| 2003 10 17 | 691 | 0.1+ | 0.0  | 2003 11 24 | 704 | 0.0   | 0.6+  | 2007 12 05 | 703 | 1.4− | 0.3+ |
| 2003 10 17 | 691 | 0.0  | 0.0  | 2003 11 24 | 704 | 0.2+  | 0.1−  |            |     |      |      |
| 2003 10 19 | A35 | 0.2+ | 0.0  | 2003 11 24 | 704 | 0.0   | 0.2−  |            |     |      |      |

(171535)\* 1999 RZ<sub>11</sub>

Discovered 1999 Sept. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26924614 | <i>ω</i> | 337.92424 | +0.90389279 | +0.42771595 |          |   |
| <i>a</i> | 2.3752157  | <i>Ω</i> | 356.73399 | −0.37479501 | +0.78505049 |          |   |
| <i>e</i> | 0.1655519  | <i>i</i> | 6.12084   | −0.20617113 | +0.44805670 |          |   |
| <i>P</i> | 3.66       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 08 13 | 699 | 0.6− | 0.4+ | 2002 06 06 | 644 | 0.3+ | 0.4+ | 2003 11 24 | 691 | 0.1+  | 0.2−  |
| 1999 08 13 | 699 | 0.1+ | 0.2+ | 2002 06 06 | 644 | 0.4+ | 0.8+ | 2003 11 24 | 691 | 0.0   | 0.3−  |
| 1999 08 13 | 699 | 0.6− | 0.3+ | 2002 06 06 | 644 | 0.6+ | 0.9+ | 2003 12 28 | 704 | 0.1+  | 0.3+  |
| 1999 09 06 | 699 | 0.8− | 0.3+ | 2003 10 22 | 704 | 0.2− | 0.3+ | 2003 12 28 | 704 | 0.1−  | 0.3+  |
| 1999 09 06 | 699 | 0.1+ | 0.7+ | 2003 10 22 | 704 | 0.2+ | 0.6+ | 2003 12 28 | 704 | 0.8+  | 1.3−  |
| 1999 09 06 | 699 | 0.1+ | 0.1− | 2003 10 22 | 704 | 0.2− | 0.6+ | 2005 03 16 | G96 | 0.1−  | 0.2−  |
| 1999 09 07 | 704 | 0.1− | 1.0− | 2003 10 22 | 704 | 0.2− | 0.2− | 2005 03 16 | G96 | 0.3+  | 0.2−  |
| 1999 09 07 | 704 | 0.3+ | 0.6− | 2003 10 22 | 704 | 0.3+ | 0.1+ | 2005 03 16 | G96 | 0.0   | 0.5−  |
| 1999 09 07 | 704 | 0.3− | 0.6− | 2003 10 23 | 691 | 0.0  | 0.1+ | 2005 03 16 | G96 | 0.4−  | 0.0   |
| 1999 09 08 | 704 | 0.2+ | 0.3− | 2003 10 23 | 691 | 0.1− | 0.1+ | 2005 03 16 | G96 | 0.1+  | 0.4−  |
| 1999 09 08 | 704 | 1.0+ | 0.5− | 2003 10 23 | 691 | 0.2− | 0.2+ | 2005 03 16 | G96 | 0.2−  | 0.1−  |
| 1999 09 08 | 704 | 1.5+ | 0.0  | 2003 10 30 | 704 | 1.0− | 0.1− | 2005 03 16 | G96 | 0.1−  | 0.4−  |
| 1999 09 13 | 704 | 0.2+ | 0.1− | 2003 10 30 | 704 | 1.0+ | 0.0  | 2005 03 16 | G96 | 1.0−  | 0.0   |
| 1999 09 13 | 704 | 0.1− | 0.3− | 2003 10 30 | 704 | 0.7− | 0.3+ | 2007 11 17 | 704 | 0.3+  | 0.4+  |
| 1999 09 13 | 704 | 0.2− | 0.2− | 2003 11 18 | 644 | 0.1− | 0.1+ | 2007 11 17 | 704 | 0.6−  | 0.0   |
| 1999 09 13 | 704 | 0.3+ | 0.4+ | 2003 11 18 | 644 | 0.2− | 0.0  | 2007 11 17 | 704 | 0.4−  | 0.7−  |
| 1999 09 13 | 704 | 0.6− | 0.4+ | 2003 11 18 | 644 | 0.3− | 0.1+ | 2007 11 20 | 704 | 0.5+  | 0.5+  |
| 2002 04 08 | 644 | 0.0  | 0.1+ | 2003 11 19 | 704 | 0.2− | 0.4+ | 2007 11 20 | 704 | 0.4−  | 0.3+  |
| 2002 04 08 | 644 | 0.3+ | 0.1+ | 2003 11 19 | 704 | 0.0  | 0.4+ | 2007 11 20 | 704 | (1.7− | 0.4−) |
| 2002 04 08 | 644 | 0.4+ | 0.2+ | 2003 11 19 | 704 | 0.6− | 0.9+ | 2007 12 16 | 704 | 0.5+  | 0.8+  |
| 2002 05 17 | 644 | 0.4+ | 0.5+ | 2003 11 19 | 704 | 0.5+ | 0.5+ | 2007 12 16 | 704 | 0.3+  | 0.3+  |
| 2002 05 17 | 644 | 0.1+ | 0.5+ | 2003 11 19 | 704 | 0.0  | 0.2+ | 2007 12 16 | 704 | 0.3+  | 0.4+  |
| 2002 05 17 | 644 | 0.0  | 0.8+ | 2003 11 24 | 691 | 0.1+ | 0.2− |            |     |       |       |



2007 DEC. 24

M.P.O. 129075

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 08 22 | 703 | 1.1−  | 0.2−  | 2003 11 19 | 704 | 0.2+  | 0.1+  | 2004 02 17 | 644 | 0.1+  | 0.4+  |
| 1999 08 22 | 703 | 0.1−  | 0.1−  | 2003 11 19 | 704 | 0.0   | 0.3+  | 2004 02 17 | 644 | 0.0   | 0.3+  |
| 1999 08 22 | 703 | 1.1−  | 0.1−  | 2003 11 19 | 704 | 0.1+  | 0.3+  | 2004 02 17 | 644 | 0.0   | 0.4+  |
| 1999 08 22 | 703 | 0.3−  | 0.9−  | 2003 11 20 | 704 | (1.7+ | 1.0+) | 2006 08 14 | 644 | 0.1+  | 0.3+  |
| 1999 09 04 | 699 | 0.1+  | 0.1−  | 2003 11 20 | 704 | (1.6+ | 0.8+) | 2006 08 14 | 644 | 0.0   | 0.4+  |
| 1999 09 04 | 699 | 0.3−  | 1.7+  | 2003 11 20 | 704 | (1.7+ | 1.2+) | 2006 08 14 | 644 | 0.1−  | 0.1+  |
| 1999 09 04 | 699 | 0.7−  | 0.3+  | 2003 11 20 | 704 | (1.9+ | 0.9+) | 2006 08 15 | 644 | 0.5+  | 0.2+  |
| 1999 09 07 | 704 | 0.2−  | 0.5+  | 2003 11 20 | 704 | (1.8+ | 0.5+) | 2006 08 15 | 644 | 0.1−  | 0.4+  |
| 1999 09 07 | 704 | 0.9+  | 1.0+  | 2003 11 21 | 704 | 0.5+  | 0.5+  | 2006 08 15 | 644 | 0.2+  | 0.4+  |
| 1999 09 07 | 704 | 0.6+  | 0.4+  | 2003 11 21 | 704 | 1.0+  | 1.1+  | 2006 10 19 | G96 | 0.1+  | 0.2−  |
| 1999 09 07 | 704 | 1.2+  | 0.7−  | 2003 11 21 | 704 | (1.0+ | 4.7+) | 2006 10 19 | G96 | 0.1+  | 0.8−  |
| 1999 09 09 | 704 | 0.3+  | 0.0   | 2003 11 21 | 704 | 1.3−  | 0.9−  | 2006 10 19 | G96 | 0.2−  | 0.8−  |
| 1999 09 09 | 704 | 0.1−  | 0.8+  | 2003 12 03 | 704 | 0.2−  | 0.4+  | 2006 10 19 | G96 | 0.7−  | 0.8−  |
| 1999 09 09 | 704 | 0.8+  | 0.3−  | 2003 12 03 | 704 | 0.0   | 0.6−  | 2006 10 28 | G96 | 0.0   | 0.3+  |
| 1999 09 09 | 704 | 1.1−  | 0.5−  | 2003 12 03 | 704 | 0.3−  | 0.1−  | 2006 10 28 | G96 | (1.0− | 1.9−) |
| 1999 09 09 | 704 | 0.7+  | 0.1+  | 2003 12 03 | 704 | 0.4−  | 0.0   | 2006 10 28 | G96 | 0.2+  | 0.5−  |
| 2003 09 30 | 704 | 0.1+  | 0.7−  | 2003 12 03 | 704 | 0.2−  | 0.2−  | 2006 10 28 | G96 | 0.2−  | 0.2−  |
| 2003 09 30 | 704 | 0.7+  | 0.8−  | 2003 12 17 | 704 | 0.0   | 0.1+  | 2007 10 09 | 691 | 0.2−  | 0.3+  |
| 2003 09 30 | 704 | 0.1−  | 0.3−  | 2003 12 17 | 704 | 0.1−  | 0.5−  | 2007 10 09 | 691 | 0.2−  | 0.1−  |
| 2003 09 30 | 704 | (0.8+ | 1.7−) | 2003 12 17 | 704 | 0.3+  | 0.1−  | 2007 10 09 | 691 | 0.2−  | 0.0   |
| 2003 09 30 | 704 | 0.3+  | 0.8−  | 2003 12 17 | 704 | 0.0   | 0.2−  | 2007 11 18 | 704 | 1.1+  | 0.3−  |
| 2003 10 06 | 704 | 0.3+  | 0.1−  | 2003 12 17 | 704 | 0.1−  | 0.2+  | 2007 11 18 | 704 | 1.5+  | 0.9−  |
| 2003 10 06 | 704 | 0.4−  | 0.4+  | 2003 12 29 | 704 | 0.2+  | 0.3+  | 2007 11 18 | 704 | 1.0−  | 0.9−  |
| 2003 10 06 | 704 | 0.1−  | 0.3−  | 2003 12 29 | 704 | 0.4+  | 0.0   | 2007 11 18 | 704 | 0.0   | 0.2−  |
| 2003 10 06 | 704 | 0.2+  | 0.8+  | 2003 12 29 | 704 | (1.8+ | 0.0 ) | 2007 12 14 | 704 | 0.3−  | 0.8+  |
| 2003 10 06 | 704 | 1.1+  | 0.6+  | 2003 12 29 | 704 | 0.1+  | 0.9−  | 2007 12 14 | 704 | 1.0+  | 1.7+  |
| 2003 11 03 | 704 | 0.4−  | 0.2−  | 2003 12 29 | 704 | 0.0   | 0.3−  | 2007 12 14 | 704 | 0.7−  | 0.3+  |
| 2003 11 03 | 704 | 0.2−  | 0.2−  | 2004 01 17 | 644 | 0.1−  | 0.4+  | 2007 12 14 | 704 | 1.2+  | 0.9+  |
| 2003 11 03 | 704 | 0.2+  | 0.0   | 2004 01 17 | 644 | 0.1+  | 0.5+  |            |     |       |       |
| 2003 11 03 | 704 | 0.4−  | 0.4−  | 2004 01 17 | 644 | 0.2+  | 0.2+  |            |     |       |       |

(171537)\* 1999 RZ<sub>65</sub> = 2003 WM<sub>81</sub>

Discovered 1999 Sept. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 55875)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |                    |                         |
|-----------------------------|------------|--------------------|-------------------------|
| <i>M</i>                    | 49.99497   | (2000.0)           |                         |
| <i>n</i>                    | 0.26889903 | $\omega$ 73.08698  | +0.90443685 −0.42550183 |
| <i>a</i>                    | 2.3772593  | $\Omega$ 312.08376 | +0.37397750 +0.82542288 |
| <i>e</i>                    | 0.1986023  | <i>i</i> 2.37035   | +0.20526768 +0.37097879 |
| <i>P</i>                    | 3.67       | <i>H</i>           | 17.4                    |
| Residuals in seconds of arc |            |                    |                         |
| <i>G</i>                    | 0.15       | <i>U</i>           | 1                       |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 05 | 699 | 0.5+ | 1.0+ | 2003 10 05 | 704 | 0.2−  | 0.3+  | 2003 12 18 | 704 | 0.3− | 0.1− |
| 1999 09 05 | 699 | 0.8+ | 0.5+ | 2003 10 05 | 704 | 0.4−  | 0.6−  | 2003 12 18 | 704 | 0.4− | 0.1+ |
| 1999 09 05 | 699 | 0.8− | 1.1+ | 2003 10 05 | 704 | 1.1−  | 0.6+  | 2003 12 18 | 704 | 0.4− | 0.1+ |
| 1999 09 07 | 704 | 1.0− | 0.3− | 2003 10 25 | 704 | 0.1+  | 0.2+  | 2003 12 18 | 704 | 0.2+ | 0.1+ |
| 1999 09 07 | 704 | 0.6− | 1.3+ | 2003 10 25 | 704 | 0.3+  | 0.7+  | 2003 12 18 | 704 | 0.3− | 0.1+ |
| 1999 09 07 | 704 | 1.1− | 0.7− | 2003 10 25 | 704 | 0.1−  | 0.4+  | 2003 12 22 | 704 | 0.6+ | 1.0+ |
| 1999 09 07 | 704 | 0.6− | 0.5+ | 2003 10 25 | 704 | 0.4+  | 0.3+  | 2003 12 22 | 704 | 0.5− | 0.1+ |
| 1999 09 07 | 704 | 0.6− | 0.7+ | 2003 10 25 | 704 | 0.8−  | 0.0   | 2003 12 22 | 704 | 0.5− | 0.3− |
| 1999 09 09 | 704 | 0.3− | 1.3− | 2003 11 20 | 704 | 0.1+  | 0.3+  | 2003 12 22 | 704 | 0.2+ | 0.5+ |
| 1999 09 09 | 704 | 0.6− | 1.3− | 2003 11 20 | 704 | 0.2−  | 0.3+  | 2003 12 22 | 704 | 0.8+ | 0.0  |
| 1999 09 09 | 704 | 0.8− | 0.6− | 2003 11 20 | 704 | 0.1−  | 0.0   | 2007 10 15 | G96 | 0.6+ | 0.0  |
| 1999 10 06 | 704 | 1.8+ | 0.5− | 2003 11 20 | 704 | 0.4+  | 0.1+  | 2007 10 15 | G96 | 0.0  | 0.5− |
| 1999 10 06 | 704 | 1.6+ | 0.1+ | 2003 11 20 | 704 | (0.7+ | 2.5+) | 2007 10 15 | G96 | 0.4+ | 0.6− |
| 1999 10 06 | 704 | 1.2+ | 0.8− | 2003 11 20 | 691 | 0.2+  | 0.0   | 2007 10 15 | G96 | 0.2− | 0.2− |
| 1999 10 06 | 704 | 0.9+ | 0.4− | 2003 11 20 | 691 | 0.0   | 0.1−  | 2007 11 11 | G96 | 0.1− | 0.3− |
| 1999 10 06 | 704 | 0.9+ | 0.1− | 2003 11 20 | 691 | 0.0   | 0.1−  | 2007 11 11 | G96 | 0.1− | 0.4− |
| 2001 02 20 | 645 | 0.0  | 0.1+ | 2003 11 21 | 644 | 0.0   | 0.1+  | 2007 11 11 | G96 | 0.1− | 0.2− |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2003 11 21 | 644 | 0.1+  | 0.1+  | 2007 11 11 | G96 | 0.2− | 0.3− |
| 2003 09 27 | 704 | 0.1+ | 0.5+ | 2003 11 21 | 644 | 0.1+  | 0.2+  | 2007 12 14 | G96 | 0.1+ | 0.5− |
| 2003 09 27 | 704 | 0.4− | 0.1− | 2003 11 24 | 704 | 0.2+  | 0.1−  | 2007 12 14 | G96 | 0.2− | 0.4− |
| 2003 09 27 | 704 | 1.2− | 0.4− | 2003 11 24 | 704 | 0.4+  | 0.2+  | 2007 12 14 | G96 | 0.1− | 0.5− |
| 2003 09 27 | 704 | 0.2+ | 0.2− | 2003 11 24 | 704 | 0.1+  | 0.2−  | 2007 12 14 | G96 | 0.6− | 0.2− |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 704 | 0.2+ | 1.2+ | 2003 11 24 | 704 | 0.2+ | 0.1− |
| 2003 10 05 | 704 | 0.4− | 0.3− | 2003 11 24 | 704 | 0.0  | 0.2− |

(171538)\* 1999 RY<sub>66</sub> = 2003 SV<sub>261</sub>

Discovered 1999 Sept. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 52470)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                   |                         |
|----------|------------|-------------------|-------------------------|
| <i>M</i> | 18.26475   | (2000.0)          |                         |
| <i>n</i> | 0.26090388 | $\omega$ 34.10740 | +0.81922174 −0.57347383 |
| <i>a</i> | 2.4255805  | $\Omega$ 0.89196  | +0.49569292 +0.70646125 |
| <i>e</i> | 0.2013475  | <i>i</i> 6.90452  | +0.28838215 +0.41477737 |
| <i>P</i> | 3.78       | <i>H</i>          | 16.0                    |
| <i>G</i> | 0.15       | <i>U</i>          | 2                       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 04 | 699 | 0.8+ | 0.6+ | 2003 10 17 | 691 | 0.0  | 0.2− | 2003 12 19 | 704 | 0.2+ | 0.0  |
| 1999 09 04 | 699 | 0.3− | 0.1+ | 2003 10 17 | 691 | 0.2+ | 0.2− | 2003 12 19 | 704 | 0.2+ | 0.1+ |
| 1999 09 04 | 699 | 1.5+ | 0.9+ | 2003 10 17 | 691 | 0.1+ | 0.1− | 2003 12 19 | 704 | 0.3+ | 0.5+ |
| 1999 09 07 | 704 | 0.0  | 0.0  | 2003 10 21 | 704 | 1.1+ | 0.7− | 2003 12 19 | 704 | 1.4+ | 0.4− |
| 1999 09 07 | 704 | 0.3− | 0.8+ | 2003 10 21 | 704 | 0.0  | 0.4+ | 2003 12 23 | 704 | 0.6+ | 0.2+ |
| 1999 09 07 | 704 | 0.6− | 0.0  | 2003 10 21 | 704 | 0.4+ | 0.2+ | 2003 12 23 | 704 | 0.4− | 0.2+ |
| 1999 09 07 | 704 | 0.1− | 0.2+ | 2003 10 21 | 704 | 0.3− | 0.1− | 2003 12 23 | 704 | 0.3+ | 0.1− |
| 1999 09 07 | 704 | 0.1+ | 0.3− | 2003 10 21 | 704 | 0.1+ | 0.4+ | 2003 12 23 | 704 | 0.5+ | 1.2+ |
| 1999 09 09 | 704 | 0.6− | 0.5+ | 2003 10 23 | 608 | 0.0  | 0.5− | 2003 12 23 | 704 | 0.5+ | 0.4+ |
| 1999 09 09 | 704 | 0.1− | 0.5+ | 2003 10 23 | 608 | 0.2+ | 0.8− | 2003 12 28 | 704 | 0.0  | 0.3+ |
| 1999 09 09 | 704 | 0.3+ | 0.2− | 2003 10 23 | 608 | 0.7+ | 1.3− | 2003 12 28 | 704 | 0.1− | 0.2− |
| 1999 09 09 | 704 | 0.1− | 0.1− | 2003 10 29 | 699 | 0.1− | 0.1+ | 2003 12 28 | 704 | 0.2+ | 0.4+ |
| 1999 09 09 | 704 | 1.0+ | 0.3+ | 2003 10 29 | 699 | 0.1− | 0.3+ | 2003 12 28 | 704 | 0.4+ | 0.5+ |
| 2003 09 05 | 704 | 0.6+ | 0.2− | 2003 10 29 | 699 | 0.0  | 0.2+ | 2003 12 29 | 704 | 0.8− | 0.5− |
| 2003 09 05 | 704 | 0.6− | 0.6− | 2003 10 29 | 699 | 0.3− | 0.7− | 2003 12 29 | 704 | 0.2+ | 0.5− |
| 2003 09 05 | 704 | 0.2− | 0.3+ | 2003 10 30 | 704 | 0.3− | 0.1+ | 2003 12 29 | 704 | 0.9− | 0.4− |
| 2003 09 21 | 704 | 0.4+ | 0.9+ | 2003 10 30 | 704 | 0.0  | 0.1− | 2003 12 29 | 704 | 0.0  | 0.3+ |
| 2003 09 21 | 704 | 0.6+ | 0.1− | 2003 10 30 | 704 | 0.0  | 0.2− | 2005 03 04 | G96 | 0.0  | 0.3+ |
| 2003 09 21 | 704 | 1.4− | 1.0+ | 2003 11 02 | 691 | 0.1− | 0.1+ | 2005 03 04 | G96 | 0.1− | 0.2+ |
| 2003 09 21 | 704 | 0.7− | 0.7− | 2003 11 02 | 704 | 0.2− | 0.1+ | 2005 03 04 | G96 | 0.1− | 0.0  |
| 2003 09 21 | 699 | 0.4− | 0.4− | 2003 11 02 | 691 | 0.0  | 0.1+ | 2005 03 04 | G96 | 0.3− | 0.2+ |
| 2003 09 21 | 704 | 0.6+ | 0.4+ | 2003 11 02 | 704 | 0.2− | 0.3+ | 2005 03 12 | 691 | 0.2+ | 0.3+ |
| 2003 09 21 | 699 | 0.6− | 0.3− | 2003 11 02 | 704 | 0.1− | 0.2+ | 2005 03 12 | 691 | 0.0  | 0.5+ |
| 2003 09 21 | 699 | 0.1− | 0.4− | 2003 11 02 | 704 | 0.0  | 0.1+ | 2005 03 12 | 691 | 0.1+ | 0.3+ |
| 2003 09 21 | 699 | 0.5− | 1.0− | 2003 11 02 | 691 | 0.1− | 0.1− | 2007 10 12 | 704 | 0.6+ | 0.0  |
| 2003 09 27 | 704 | 0.1− | 0.3+ | 2003 11 02 | 704 | 0.3+ | 0.1+ | 2007 10 12 | 704 | 0.4− | 0.5− |
| 2003 09 27 | 704 | 0.1− | 0.0  | 2003 11 19 | 704 | 0.2− | 0.1+ | 2007 10 12 | 704 | 1.0− | 0.8+ |
| 2003 09 27 | 704 | 0.7− | 0.4+ | 2003 11 19 | 704 | 0.2− | 0.0  | 2007 11 17 | 704 | 0.2+ | 0.6− |
| 2003 09 27 | 704 | 0.4− | 0.1+ | 2003 11 19 | 704 | 0.3− | 0.3− | 2007 11 17 | 704 | 0.9+ | 0.1− |
| 2003 09 27 | 704 | 0.5− | 0.4+ | 2003 11 19 | 704 | 0.6− | 0.9+ | 2007 11 17 | 704 | 1.1+ | 0.2+ |
| 2003 09 30 | 691 | 0.2− | 0.1− | 2003 11 19 | 704 | 1.2− | 0.0  | 2007 11 17 | 704 | 0.8+ | 0.5− |
| 2003 09 30 | 691 | 0.2− | 0.0  | 2003 11 21 | 699 | 0.3− | 0.9+ | 2007 11 17 | 704 | 0.9+ | 0.3+ |
| 2003 09 30 | 691 | 0.1− | 0.0  | 2003 11 21 | 699 | 0.1+ | 0.3+ | 2007 12 02 | 704 | 0.4− | 0.3+ |
| 2003 10 05 | 608 | 0.5− | 0.1− | 2003 11 21 | 699 | 0.0  | 0.3+ | 2007 12 02 | 704 | 0.4− | 0.3+ |
| 2003 10 05 | 608 | 0.2− | 0.2− | 2003 11 21 | 699 | 0.2+ | 0.3+ | 2007 12 02 | 704 | 0.4+ | 0.3− |
| 2003 10 05 | 608 | 0.1− | 0.2+ | 2003 12 19 | 704 | 0.2− | 0.9+ | 2007 12 02 | 704 | 0.6+ | 1.5− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 05 | 699 | 0.8–  | 0.1+  | 2003 10 30 | 704 | 0.1+  | 0.6–  | 2003 12 22 | 691 | 0.3+  | 0.3+  |
| 1999 09 07 | 704 | 0.7+  | 0.2+  | 2003 11 02 | 704 | 0.1+  | 0.1–  | 2003 12 22 | 691 | 0.0   | 0.0   |
| 1999 09 07 | 704 | 0.1+  | 0.0   | 2003 11 02 | 704 | 0.6–  | 0.2–  | 2004 01 21 | 704 | 0.2–  | 0.5+  |
| 1999 09 07 | 704 | 0.0   | 0.3–  | 2003 11 02 | 704 | 0.3–  | 0.6–  | 2004 01 21 | 704 | 0.4–  | 0.4–  |
| 1999 09 07 | 704 | 0.3–  | 0.5–  | 2003 11 02 | 704 | 0.6–  | 0.7–  | 2004 01 21 | 704 | 0.0   | 0.6–  |
| 1999 09 07 | 704 | 0.4–  | 0.5–  | 2003 11 02 | 704 | 0.1–  | 0.4–  | 2004 01 24 | 704 | 0.1+  | 0.7–  |
| 1999 09 14 | 704 | 0.3–  | 0.0   | 2003 11 05 | 699 | 0.1–  | 0.1+  | 2004 01 24 | 704 | (0.2– | 2.7+) |
| 1999 09 14 | 704 | 0.5+  | 0.2+  | 2003 11 05 | 699 | 0.3–  | 0.1+  | 2004 01 24 | 704 | (1.1– | 1.7+) |
| 1999 09 14 | 704 | 0.3–  | 1.3+  | 2003 11 05 | 699 | 0.3+  | 0.0   | 2005 03 11 | 691 | 0.1+  | 0.3+  |
| 1999 09 14 | 704 | 0.2+  | 0.1+  | 2003 11 05 | 699 | 0.7–  | 0.2+  | 2005 03 11 | 691 | 0.2+  | 0.2+  |
| 1999 09 14 | 704 | 0.1–  | 0.1–  | 2003 11 15 | 644 | 0.1+  | 0.0   | 2005 03 11 | 691 | 0.3+  | 0.3+  |
| 1999 09 30 | 704 | 0.8–  | 0.6–  | 2003 11 15 | 644 | 0.1–  | 0.3+  | 2007 11 02 | G96 | 0.4+  | 0.0   |
| 1999 09 30 | 704 | 0.6+  | 1.0–  | 2003 11 15 | 644 | 0.3–  | 0.0   | 2007 11 02 | G96 | 0.3+  | 0.2–  |
| 1999 09 30 | 704 | 1.0–  | 0.6–  | 2003 11 16 | 703 | 0.1–  | 0.3+  | 2007 11 02 | G96 | 0.2–  | 0.0   |
| 1999 09 30 | 704 | 0.0   | 0.2–  | 2003 11 16 | 703 | (1.1– | 1.7–) | 2007 11 02 | G96 | 0.4–  | 0.2–  |
| 1999 10 01 | 704 | 0.9–  | 0.9+  | 2003 11 16 | 703 | 0.2+  | 1.1–  | 2007 11 11 | G96 | 0.3–  | 0.3–  |
| 1999 10 01 | 704 | 0.3–  | 0.5+  | 2003 11 16 | 703 | 0.1+  | 1.0–  | 2007 11 11 | G96 | 0.1–  | 0.1–  |
| 1999 10 01 | 704 | 0.4–  | 0.2+  | 2003 11 19 | 699 | 0.5–  | 0.6+  | 2007 11 11 | G96 | 0.4–  | 0.1–  |
| 1999 10 01 | 704 | 0.6–  | 0.8+  | 2003 11 19 | 699 | 0.7–  | 0.5+  | 2007 11 11 | G96 | 0.1–  | 0.0   |
| 1999 10 08 | 704 | 0.1+  | 0.1+  | 2003 11 19 | 699 | 0.3+  | 0.5+  | 2007 11 19 | D35 | 0.2+  | 0.2+  |
| 1999 10 08 | 704 | 0.2+  | 0.7+  | 2003 11 19 | 699 | 0.0   | 0.5+  | 2007 11 19 | D35 | 0.2+  | 0.1+  |
| 1999 10 08 | 704 | 0.1–  | 0.6+  | 2003 11 21 | 704 | 0.1+  | 0.9–  | 2007 11 19 | D35 | 0.1–  | 0.1–  |
| 2003 09 29 | 333 | 0.9+  | 0.0   | 2003 11 21 | 704 | 0.7+  | 0.9–  | 2007 12 04 | 699 | 0.9–  | 0.1–  |
| 2003 09 29 | 333 | 0.9+  | 0.0   | 2003 11 21 | 704 | 0.0   | 0.8–  | 2007 12 04 | 699 | 0.3–  | 0.7–  |
| 2003 09 29 | 333 | 1.4+  | 0.5+  | 2003 11 21 | 704 | 0.9+  | 0.9–  | 2007 12 04 | 699 | 0.9–  | 0.0   |
| 2003 10 18 | 699 | (1.4+ | 2.3+) | 2003 11 21 | 704 | 0.3+  | 0.9–  | 2007 12 04 | 699 | 0.0   | 0.5–  |
| 2003 10 18 | 699 | (1.3+ | 2.6+) | 2003 11 23 | 704 | 0.3–  | 0.0   | 2007 12 04 | G96 | 0.0   | 0.3–  |
| 2003 10 18 | 699 | 0.8–  | 1.0–  | 2003 11 23 | 704 | 0.1+  | 0.1–  | 2007 12 04 | G96 | 0.0   | 0.2–  |
| 2003 10 18 | 699 | 0.1+  | 0.1–  | 2003 11 23 | 704 | 0.1–  | 0.1–  | 2007 12 04 | G96 | 0.0   | 0.2–  |
| 2003 10 21 | 704 | 0.2–  | 0.1+  | 2003 11 24 | 699 | 0.5+  | 1.2+  | 2007 12 04 | G96 | 0.0   | 0.2–  |
| 2003 10 21 | 704 | 1.4+  | 0.3–  | 2003 11 24 | 703 | 0.4–  | 1.3–  | 2007 12 05 | 691 | 0.5–  | 0.3+  |
| 2003 10 21 | 704 | 0.2+  | 1.0+  | 2003 11 24 | 699 | 0.2+  | 0.4+  | 2007 12 05 | 691 | 0.3–  | 0.0   |
| 2003 10 21 | 704 | 0.3–  | 0.1+  | 2003 11 24 | 703 | 0.7+  | 0.0   | 2007 12 05 | 691 | 0.7–  | 0.0   |
| 2003 10 23 | 608 | 0.6–  | 1.4+  | 2003 11 24 | 699 | 0.0   | 0.1–  | 2007 12 06 | 704 | 1.3+  | 0.1–  |
| 2003 10 23 | 608 | 0.6–  | 1.3+  | 2003 11 24 | 703 | 0.4–  | 0.6–  | 2007 12 06 | 704 | 0.5+  | 1.2+  |
| 2003 10 23 | 608 | 0.4–  | 1.1+  | 2003 11 24 | 704 | 0.1+  | 0.4–  | 2007 12 06 | 704 | 0.9+  | 0.3–  |
| 2003 10 24 | 704 | 0.1–  | 0.3+  | 2003 11 24 | 699 | 0.3–  | 1.4+  | 2007 12 06 | 704 | 0.6+  | 0.3+  |
| 2003 10 24 | 704 | 0.5+  | 0.2+  | 2003 11 24 | 703 | 0.5+  | 0.7+  | 2007 12 06 | 704 | 0.2+  | 0.3+  |
| 2003 10 24 | 704 | 0.0   | 0.1+  | 2003 11 24 | 704 | 0.0   | 0.2–  | 2007 12 10 | 704 | 0.1–  | 0.4+  |
| 2003 10 24 | 704 | 0.1–  | 0.1–  | 2003 11 24 | 704 | 0.2+  | 0.1–  | 2007 12 10 | 704 | 0.3+  | 0.6+  |
| 2003 10 24 | 704 | 0.2+  | 0.8+  | 2003 11 29 | 691 | 0.0   | 0.0   | 2007 12 10 | 704 | 0.3+  | 0.4+  |
| 2003 10 28 | 608 | 0.4+  | 0.3–  | 2003 11 29 | 691 | 0.2–  | 0.0   | 2007 12 14 | 704 | 0.7+  | 0.2+  |
| 2003 10 28 | 608 | 0.4+  | 0.2+  | 2003 11 29 | 691 | 0.1–  | 0.0   | 2007 12 14 | 704 | 0.7+  | 0.4+  |
| 2003 10 28 | 608 | 0.8+  | 0.9–  | 2003 12 18 | 703 | 0.3–  | 1.1+  | 2007 12 14 | 704 | 0.0   | 0.4–  |
| 2003 10 30 | 704 | 0.3–  | 0.3–  | 2003 12 18 | 703 | (0.6+ | 1.6–) | 2007 12 14 | 704 | 0.8+  | 0.4+  |
| 2003 10 30 | 704 | 0.1–  | 0.5–  | 2003 12 18 | 703 | 1.0+  | 0.3–  | 2007 12 14 | 704 | 0.7+  | 0.3–  |

**(171540)\* 1999 RX<sub>86</sub>**

Discovered 1999 Sept. 7 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |            | (2000.0) |           | $P$         |             | $Q$ |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.26126082 | $\omega$ | 312.37765 | +0.77852809 | +0.62754109 |     |   |
| $a$ | 2.4233707  | $\Omega$ | 8.76744   | –0.55644082 | +0.69701214 |     |   |
| $e$ | 0.1564729  | $i$      | 3.49205   | –0.29028886 | +0.34693840 |     |   |
| $P$ | 3.77       | $H$      | 16.5      | $G$         | 0.15        | $U$ | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 11 | 691 | 0.2–  | 0.6–  | 2003 10 23 | 699 | 0.3– | 0.5– | 2003 11 20 | 704 | 0.3– | 0.0  |
| 1994 03 11 | 691 | 0.0   | 0.3+  | 2003 10 23 | 699 | 0.3+ | 0.8+ | 2003 11 20 | 704 | 0.9– | 0.4– |
| 1994 03 11 | 691 | (4.2+ | 0.6+) | 2003 10 23 | 699 | 0.5+ | 0.3– | 2003 11 24 | 704 | 0.9– | 0.3+ |
| 1999 09 07 | 704 | 0.2+  | 0.1+  | 2003 10 23 | 699 | 0.7+ | 0.2– | 2003 11 24 | 704 | 0.3– | 0.7+ |
| 1999 09 07 | 704 | 0.5+  | 0.8–  | 2003 10 24 | 704 | 0.3+ | 0.4+ | 2003 11 24 | 704 | 0.3– | 0.5+ |
| 1999 09 07 | 704 | 0.1+  | 2.0–  | 2003 10 24 | 704 | 0.5+ | 0.3+ | 2003 11 24 | 704 | 0.2+ | 0.4+ |
| 1999 09 14 | 704 | 0.4–  | 1.1–  | 2003 10 24 | 704 | 0.8– | 0.6+ | 2005 02 09 | G96 | 0.1– | 0.3– |
| 1999 09 14 | 704 | 1.4–  | 1.0–  | 2003 10 24 | 704 | 0.5+ | 0.7+ | 2005 02 09 | G96 | 0.1– | 0.5– |
| 1999 09 14 | 704 | 0.9–  | 0.1–  | 2003 10 24 | 704 | 0.2+ | 0.6+ | 2005 02 09 | G96 | 0.1– | 0.5– |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 14 | 704 | 0.3+  | 0.9–  | 2003 10 29 | 704 | 0.4–  | 0.6–  | 2005 02 09 | G96 | 0.3–  | 0.7–  |
| 1999 09 14 | 704 | 0.4–  | 1.0–  | 2003 10 29 | 704 | 0.1–  | 0.0   | 2007 10 24 | G96 | 0.3+  | 1.2–  |
| 1999 10 08 | 691 | 0.1+  | 0.2+  | 2003 10 29 | 704 | 0.3+  | 0.1–  | 2007 10 24 | G96 | 0.6+  | 0.4–  |
| 1999 10 08 | 691 | 0.2+  | 0.3+  | 2003 10 29 | 704 | 0.1–  | 0.1+  | 2007 10 24 | G96 | 0.3+  | 0.2–  |
| 1999 10 08 | 691 | 0.4+  | 0.1+  | 2003 10 30 | 704 | 0.3+  | 0.3–  | 2007 10 24 | G96 | 0.2+  | 0.5–  |
| 1999 11 06 | 691 | 0.1+  | 0.2–  | 2003 10 30 | 704 | 0.8–  | 0.6–  | 2007 11 18 | 704 | (1.7– | 0.6+) |
| 1999 11 06 | 691 | 0.2+  | 0.3–  | 2003 10 30 | 704 | 0.5–  | 0.6–  | 2007 11 18 | 704 | 0.4–  | 0.8+  |
| 1999 11 06 | 691 | 0.1+  | 0.1–  | 2003 10 30 | 704 | 0.7+  | 0.3–  | 2007 11 18 | 704 | (0.3– | 1.8+) |
| 2002 04 14 | 704 | 0.7+  | 1.3+  | 2003 11 01 | 704 | 0.5+  | 0.1–  | 2007 11 20 | 691 | 0.3–  | 0.1–  |
| 2002 04 14 | 704 | 0.6+  | 0.8+  | 2003 11 01 | 704 | 0.6+  | 0.8+  | 2007 11 20 | 691 | 0.1–  | 0.1–  |
| 2002 04 14 | 704 | (2.2+ | 1.7+) | 2003 11 01 | 704 | (1.5– | 0.5+) | 2007 11 20 | 691 | 0.3–  | 0.2–  |
| 2003 10 02 | 691 | 0.2–  | 0.1+  | 2003 11 01 | 704 | 0.0   | 0.5+  | 2007 12 13 | 704 | (1.6+ | 0.5–) |
| 2003 10 02 | 691 | 0.2–  | 0.2+  | 2003 11 02 | 704 | 1.3+  | 0.4+  | 2007 12 13 | 704 | 1.5+  | 0.7–  |
| 2003 10 02 | 691 | 0.2–  | 0.2+  | 2003 11 02 | 704 | (0.2+ | 1.7+) | 2007 12 13 | 704 | 0.1–  | 0.0   |
| 2003 10 21 | 691 | 0.2–  | 0.3+  | 2003 11 02 | 704 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.2–  | 0.0   |
| 2003 10 21 | 691 | 0.2+  | 0.2+  | 2003 11 02 | 704 | 0.1+  | 0.6+  | 2007 12 15 | 704 | 1.2–  | 0.0   |
| 2003 10 21 | 691 | 0.1–  | 0.3+  | 2003 11 20 | 704 | 0.3+  | 1.3+  | 2007 12 15 | 704 | 0.0   | 0.7–  |

**(171541)\* 1999 RY<sub>108</sub> = 2003 UR<sub>109</sub>**

Discovered 1999 Sept. 8 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 52473)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |            | (2000.0) |           | $P$         |             | $Q$ |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.26324176 | $\omega$ | 22.87327  | +0.78671906 | +0.61095166 |     |   |
| $a$ | 2.4111979  | $\Omega$ | 299.16875 | –0.58087000 | +0.68418829 |     |   |
| $e$ | 0.1310198  | $i$      | 5.80922   | –0.20895733 | +0.39827685 |     |   |
| $P$ | 3.74       | $H$      | 16.3      | $G$         | 0.15        | $U$ | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 08 | 704 | 0.2–  | 0.2+  | 2003 10 21 | 644 | 0.4–  | 0.6+  | 2005 03 10 | 703 | 0.0  | 1.2+ |
| 1999 09 08 | 704 | 0.4+  | 1.0+  | 2003 10 21 | 644 | 0.1–  | 0.6+  | 2005 03 17 | G96 | 0.0  | 0.0  |
| 1999 09 08 | 704 | 0.3+  | 1.1–  | 2003 10 24 | 691 | 0.2+  | 0.2+  | 2005 03 17 | G96 | 0.1– | 0.4– |
| 1999 09 09 | 704 | 0.1+  | 0.1–  | 2003 10 24 | 691 | 0.3+  | 0.2+  | 2005 03 17 | G96 | 0.1+ | 0.3– |
| 1999 09 09 | 704 | 0.7–  | 0.2–  | 2003 10 24 | 691 | 0.1–  | 0.1+  | 2005 03 17 | G96 | 0.1+ | 0.9+ |
| 1999 09 09 | 704 | 1.2+  | 0.9–  | 2003 11 19 | 704 | 0.4+  | 0.4+  | 2007 11 07 | 691 | 0.1– | 0.2– |
| 1999 09 09 | 704 | 0.1+  | 0.2+  | 2003 11 19 | 704 | 0.6+  | 0.1+  | 2007 11 07 | 691 | 0.3– | 0.2+ |
| 1999 09 09 | 704 | 0.2–  | 1.1–  | 2003 11 19 | 704 | 0.1+  | 0.4+  | 2007 11 07 | 691 | 0.3– | 0.3– |
| 1999 09 18 | 703 | 0.1–  | 0.3–  | 2003 11 19 | 704 | 0.6+  | 0.2–  | 2007 11 20 | 691 | 0.3– | 0.1– |
| 1999 09 18 | 703 | 0.4–  | 0.1+  | 2003 11 19 | 704 | (1.6– | 1.6+) | 2007 11 20 | 691 | 0.2– | 0.0  |
| 1999 09 18 | 703 | 0.4+  | 0.4–  | 2003 11 23 | 691 | 0.2–  | 0.0   | 2007 11 20 | 691 | 0.1– | 0.1+ |
| 1999 09 18 | 703 | 0.8+  | 0.7–  | 2003 11 23 | 691 | 0.4–  | 0.2+  | 2007 12 13 | 704 | 0.0  | 0.9– |
| 1999 10 03 | 703 | 0.3–  | 0.4+  | 2003 11 23 | 691 | 0.2–  | 0.1–  | 2007 12 13 | 704 | 0.9+ | 0.4– |
| 1999 10 03 | 703 | (2.3– | 1.9–) | 2003 11 24 | 699 | 0.2–  | 0.3+  | 2007 12 13 | 704 | 1.0+ | 0.6+ |
| 1999 10 03 | 703 | 1.0+  | 0.2+  | 2003 11 24 | 699 | 0.8–  | 0.6+  | 2007 12 13 | 704 | 0.3+ | 0.6– |
| 1999 10 03 | 703 | 1.6–  | 1.1+  | 2003 11 24 | 699 | 0.8+  | 0.3–  | 2007 12 15 | 704 | 0.3+ | 0.7– |
| 2003 10 19 | 644 | 0.4–  | 0.1+  | 2003 11 24 | 699 | 0.4+  | 0.5–  | 2007 12 15 | 704 | 0.9+ | 0.1– |
| 2003 10 19 | 644 | 0.4–  | 0.0   | 2005 03 10 | 703 | 0.2+  | 0.3+  | 2007 12 15 | 704 | 0.1+ | 1.0– |
| 2003 10 19 | 644 | 0.5–  | 0.2+  | 2005 03 10 | 703 | 0.5–  | 0.4+  | 2007 12 15 | 704 | 1.2+ | 0.2– |
| 2003 10 21 | 644 | 0.6–  | 0.3+  | 2005 03 10 | 703 | 0.7+  | 1.0–  | 2007 12 15 | 704 | 0.6+ | 0.2– |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 09 26 | 010 | (3.7+ | 0.1+) | 2003 09 17 | 699 | 0.4-  | 0.5-  | 2007 08 16 | 704 | 0.5-  | 0.2-  |
| 1999 08 22 | 699 | 0.3+  | 0.2+  | 2003 09 17 | 699 | 1.0-  | 0.7+  | 2007 08 16 | 704 | 0.2-  | 0.4-  |
| 1999 08 22 | 699 | 1.1+  | 0.3+  | 2003 09 17 | 704 | 0.0   | 0.6+  | 2007 08 16 | 704 | 0.7-  | 0.5+  |
| 1999 08 22 | 699 | 0.7+  | 1.2+  | 2003 09 17 | 704 | 0.4-  | 0.1-  | 2007 08 21 | 699 | 0.1-  | 0.6-  |
| 1999 09 05 | 699 | 0.4+  | 1.0+  | 2003 09 17 | 704 | 0.8-  | 0.7+  | 2007 08 21 | 699 | 0.6+  | 0.1-  |
| 1999 09 05 | 699 | 0.7-  | 1.0+  | 2003 09 17 | 704 | 0.1-  | 0.0   | 2007 08 21 | 699 | 0.1-  | 0.4-  |
| 1999 09 05 | 699 | 0.0   | 0.6+  | 2003 09 17 | 704 | 0.8-  | 0.0   | 2007 08 21 | 699 | 0.2+  | 0.1-  |
| 1999 09 07 | 704 | 0.8-  | 0.5-  | 2003 09 18 | 699 | 0.0   | 0.2+  | 2007 08 22 | 699 | 0.0   | 0.1-  |
| 1999 09 07 | 704 | 0.8-  | 0.5-  | 2003 09 18 | 699 | 0.4-  | 0.3+  | 2007 08 22 | 704 | 0.1+  | 0.6-  |
| 1999 09 07 | 704 | 0.0   | 0.6-  | 2003 09 18 | 699 | 0.1-  | 0.3-  | 2007 08 22 | 704 | 0.3-  | 0.0   |
| 1999 09 07 | 704 | 0.6-  | 0.4-  | 2003 09 18 | 699 | 0.4-  | 1.2-  | 2007 08 22 | 699 | 0.1-  | 0.3-  |
| 1999 09 07 | 704 | 0.3-  | 0.5-  | 2003 09 21 | 608 | 0.5+  | 0.8-  | 2007 08 22 | 704 | 0.2-  | 0.2-  |
| 1999 09 09 | 704 | 0.0   | 0.6-  | 2003 09 21 | 608 | 0.9+  | 0.9-  | 2007 08 22 | 704 | 0.3-  | 0.7+  |
| 1999 09 09 | 704 | 0.1+  | 0.1-  | 2003 09 21 | 608 | 1.3+  | 0.7-  | 2007 08 22 | 699 | 0.1+  | 0.2-  |
| 1999 09 09 | 704 | 0.1-  | 0.1+  | 2003 09 24 | 644 | 0.3-  | 0.3+  | 2007 08 22 | 704 | 0.6+  | 0.1+  |
| 1999 09 09 | 704 | 0.8-  | 0.0   | 2003 09 24 | 644 | 0.3-  | 0.4+  | 2007 08 22 | 699 | 0.6-  | 0.4-  |
| 1999 09 09 | 704 | 0.6-  | 0.2-  | 2003 09 24 | 644 | 0.3-  | 0.2+  | 2007 09 03 | 703 | 0.0   | 0.1-  |
| 1999 09 14 | 704 | 0.4-  | 0.3-  | 2003 09 29 | 704 | 0.4+  | 0.1-  | 2007 09 03 | 703 | 0.1-  | 0.3-  |
| 1999 09 14 | 704 | 0.2-  | 0.2-  | 2003 09 29 | 704 | 1.4-  | 0.7+  | 2007 09 03 | 703 | 0.7-  | 0.4-  |
| 1999 09 14 | 704 | 0.1+  | 0.8-  | 2003 09 29 | 704 | 0.7-  | 0.8+  | 2007 09 03 | 703 | 0.2-  | 0.1-  |
| 1999 09 14 | 704 | 0.7-  | 0.3+  | 2003 10 03 | 608 | (0.2- | 2.0+) | 2007 09 06 | 704 | 0.1+  | 0.8+  |
| 1999 09 14 | 704 | 0.0   | 0.2-  | 2003 10 03 | 608 | 0.5+  | 1.1+  | 2007 09 06 | 704 | 0.7+  | 1.1+  |
| 2002 03 15 | 691 | 0.2+  | 0.4+  | 2003 10 03 | 608 | 0.3+  | 0.8+  | 2007 09 06 | 704 | 0.4+  | 0.0   |
| 2002 03 15 | 691 | 0.1+  | 0.2-  | 2003 10 23 | 704 | 0.2+  | 0.4+  | 2007 09 06 | 704 | 0.5-  | 1.0+  |
| 2002 03 15 | 691 | 0.2-  | 0.4-  | 2003 10 23 | 704 | 0.4+  | 0.5+  | 2007 09 13 | 704 | 0.7-  | 1.1+  |
| 2002 03 16 | 704 | 0.5+  | 0.1+  | 2003 10 23 | 704 | 0.4-  | 1.1+  | 2007 09 13 | 704 | 0.8-  | 0.5+  |
| 2002 03 16 | 704 | 0.3+  | 0.8+  | 2003 10 23 | 704 | 0.6+  | 0.9+  | 2007 09 13 | 704 | 0.8+  | 0.4+  |
| 2002 03 16 | 704 | 1.0+  | 0.1+  | 2006 01 27 | G96 | 0.4-  | 0.3-  | 2007 09 13 | 704 | 0.1+  | 0.4+  |
| 2002 04 14 | 644 | 0.2+  | 0.2+  | 2006 01 27 | G96 | 0.7+  | 0.3+  | 2007 09 13 | G96 | 0.0   | 0.3-  |
| 2002 04 14 | 644 | 0.1+  | 0.2+  | 2006 01 27 | G96 | 0.4-  | 0.4-  | 2007 09 13 | G96 | 0.1+  | 0.0   |
| 2002 04 14 | 644 | 0.3+  | 0.1-  | 2006 01 27 | G96 | 0.4-  | 0.1+  | 2007 09 13 | G96 | 0.2+  | 0.2-  |
| 2003 08 01 | 704 | 0.3+  | 0.0   | 2006 02 24 | 691 | 0.5-  | 0.4+  | 2007 09 13 | G96 | 0.3-  | 0.1-  |
| 2003 08 01 | 704 | 0.5+  | 0.2-  | 2006 02 24 | 691 | 0.3-  | 0.0   | 2007 09 16 | 704 | 1.0-  | 0.2+  |
| 2003 08 01 | 704 | 0.4+  | 0.9+  | 2006 02 24 | 691 | 0.4-  | 0.4+  | 2007 09 16 | 704 | 0.0   | 0.2+  |
| 2003 08 01 | 704 | 0.9+  | 0.6-  | 2006 03 02 | 691 | 0.2+  | 0.3+  | 2007 09 16 | 704 | 0.4-  | 0.2+  |
| 2003 08 01 | 704 | 0.4+  | 0.7-  | 2006 03 02 | 691 | 0.1+  | 0.3+  | 2007 09 16 | 704 | 0.3-  | 0.1-  |
| 2003 08 01 | 704 | 0.8+  | 0.5+  | 2006 03 02 | 691 | 0.2-  | 0.3+  | 2007 09 16 | 704 | 0.5+  | 0.6+  |
| 2003 08 01 | 704 | 0.4-  | 0.8-  | 2006 03 06 | 691 | 0.4+  | 0.1+  | 2007 09 19 | 704 | 0.4+  | 1.1+  |
| 2003 08 01 | 704 | 0.8+  | 0.1-  | 2006 03 06 | 691 | 0.2+  | 0.2+  | 2007 09 19 | 704 | 1.3+  | 0.4+  |
| 2003 08 05 | 704 | 0.3+  | 0.3+  | 2006 03 06 | 691 | 0.2+  | 0.2+  | 2007 09 19 | 704 | (2.0+ | 0.1-) |
| 2003 08 05 | 704 | 0.1-  | 0.5-  | 2006 03 24 | G96 | 0.4-  | 0.1-  | 2007 10 09 | G96 | 0.2-  | 0.1+  |
| 2003 08 05 | 704 | 0.4+  | 0.4-  | 2006 03 24 | G96 | 0.3-  | 0.1-  | 2007 10 09 | G96 | 0.1+  | 0.0   |
| 2003 08 05 | 704 | 0.0   | 0.2+  | 2006 03 24 | G96 | 0.0   | 0.0   | 2007 10 09 | G96 | 0.2-  | 0.0   |
| 2003 08 05 | 704 | 0.4-  | 0.0   | 2006 03 24 | G96 | 0.6-  | 0.2-  | 2007 10 09 | G96 | 0.1+  | 0.1-  |
| 2003 08 24 | 704 | 0.2-  | 0.4-  | 2006 03 26 | 699 | 0.4-  | 0.2+  | 2007 10 12 | 699 | 0.4+  | 0.0   |
| 2003 08 24 | 704 | 0.1-  | 1.3+  | 2006 03 26 | 699 | 1.4+  | 0.6-  | 2007 10 12 | 699 | 1.3+  | 0.7+  |
| 2003 08 24 | 704 | 0.9+  | 0.3-  | 2006 03 26 | 699 | 0.1-  | 0.2-  | 2007 10 12 | 699 | 0.2+  | 0.3-  |
| 2003 08 24 | 704 | 0.7+  | 0.2-  | 2006 03 26 | 699 | 0.5+  | 0.3-  | 2007 10 12 | 699 | 0.7-  | 0.1+  |
| 2003 08 24 | 704 | 0.5+  | 0.4+  | 2007 08 06 | A50 | 0.3+  | 0.1+  | 2007 10 19 | G96 | 0.3+  | 0.1-  |
| 2003 08 29 | 704 | 0.1-  | 0.0   | 2007 08 06 | A50 | 0.5+  | 0.2-  | 2007 10 19 | G96 | 0.3-  | 0.3-  |
| 2003 08 29 | 704 | 0.0   | 0.2-  | 2007 08 13 | 704 | 0.4-  | 0.4+  | 2007 10 19 | G96 | 0.1-  | 0.1-  |
| 2003 08 29 | 704 | 0.4-  | 0.2+  | 2007 08 13 | 704 | 0.8+  | 0.0   | 2007 10 19 | G96 | 0.1-  | 0.1-  |
| 2003 08 29 | 704 | 0.2-  | 0.5+  | 2007 08 13 | 704 | 0.0   | 1.0-  | 2007 11 03 | 701 | 0.5-  | 0.3+  |
| 2003 08 31 | 691 | 0.1+  | 0.0   | 2007 08 13 | 704 | 0.3-  | 0.6-  | 2007 11 03 | 701 | 0.2+  | 0.1+  |
| 2003 08 31 | 691 | 0.0   | 0.1-  | 2007 08 13 | 704 | 0.4-  | 0.9+  | 2007 11 03 | 701 | 0.5-  | 0.1+  |
| 2003 08 31 | 691 | 0.1+  | 0.2-  | 2007 08 14 | 704 | 0.3-  | 0.0   | 2007 11 03 | 701 | 0.2+  | 0.2-  |
| 2003 09 01 | 704 | 0.4+  | 0.2-  | 2007 08 14 | 704 | 0.2-  | 0.0   | 2007 11 05 | 701 | 0.0   | 0.6+  |
| 2003 09 01 | 704 | 0.1-  | 0.0   | 2007 08 14 | 704 | 0.1-  | 0.2-  | 2007 11 05 | 701 | 0.6-  | 0.2+  |
| 2003 09 01 | 704 | 0.2+  | 0.4-  | 2007 08 14 | 704 | 0.4+  | 1.1-  | 2007 11 05 | 701 | (1.7+ | 0.5+) |
| 2003 09 01 | 704 | 0.5-  | 0.3-  | 2007 08 16 | 704 | 0.3+  | 0.3-  | 2007 12 05 | 704 | 0.8+  | 0.9+  |
| 2003 09 01 | 704 | 0.5+  | 0.7-  | 2007 08 16 | 704 | (0.5+ | 1.8-) | 2007 12 05 | 704 | 0.8+  | 1.6+  |
| 2003 09 13 | 608 | 0.8+  | 0.1+  | 2007 08 16 | 704 | 0.0   | 0.8-  | 2007 12 05 | 704 | 1.6-  | 0.1+  |
| 2003 09 13 | 608 | 0.7+  | 0.3-  | 2007 08 16 | 704 | 0.7-  | 0.6+  | 2007 12 05 | 704 | 1.6+  | 0.4-  |
| 2003 09 13 | 608 | 1.0+  | 0.2+  | 2007 08 16 | 704 | 0.5-  | 0.3-  |            |     |       |       |

**(171543)\* 1999 RM<sub>134</sub>**

Discovered 1999 Sept. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 73.76115   |          | (2000.0)  |            | <i>P</i>    |       | <i>Q</i>    |            |     |       |       |
|-----------------------------|------------|----------|-----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| <i>n</i>                    | 0.27079096 | $\omega$ | 67.42006  |            | +0.99133898 |       | +0.10522244 |            |     |       |       |
| <i>a</i>                    | 2.3661736  | $\Omega$ | 286.46860 |            | -0.12858060 |       | +0.89941622 |            |     |       |       |
| <i>e</i>                    | 0.1158927  | <i>i</i> | 4.70035   |            | +0.02672167 |       | +0.42423897 |            |     |       |       |
| <i>P</i>                    | 3.64       | <i>H</i> | 15.9      |            | <i>G</i>    | 0.15  | <i>U</i>    |            | 1   |       |       |
| Residuals in seconds of arc |            |          |           |            |             |       |             |            |     |       |       |
| 1999 08 08                  | 699        | (0.2-    | 3.1+)     | 2003 10 22 | 704         | 0.6-  | 0.7+        | 2003 11 24 | 699 | 0.1+  | 0.5+  |
| 1999 08 08                  | 699        | 1.9+     | 1.1-      | 2003 10 22 | 704         | 0.6-  | 0.9+        | 2003 11 24 | 704 | 0.7-  | 1.4-  |
| 1999 08 08                  | 699        | 0.3+     | 0.4-      | 2003 10 22 | 704         | 0.5-  | 0.2+        | 2003 11 24 | 704 | 0.0   | 0.5+  |
| 1999 08 22                  | 699        | (0.1-    | 2.7+)     | 2003 10 23 | 699         | 0.1-  | 0.4+        | 2003 11 24 | 704 | 0.2+  | 0.4+  |
| 1999 08 22                  | 699        | 0.8-     | 1.4+      | 2003 10 23 | 699         | 0.2-  | 0.5-        | 2003 11 24 | 704 | 0.3-  | 0.4-  |
| 1999 08 22                  | 699        | 0.9-     | 0.9+      | 2003 10 23 | 699         | 0.1-  | 0.3+        | 2003 11 24 | 699 | 0.4-  | 0.3-  |
| 1999 09 07                  | 704        | 0.1-     | 0.1+      | 2003 10 23 | 699         | 0.1+  | 0.0         | 2003 11 24 | 704 | 0.5+  | 0.1+  |
| 1999 09 07                  | 704        | 0.4-     | 1.3+      | 2003 10 30 | 704         | 1.1-  | 0.6+        | 2003 11 24 | 704 | 0.4-  | 0.4-  |
| 1999 09 07                  | 704        | (2.9-    | 0.0)      | 2003 10 30 | 704         | (2.7+ | 0.4-)       | 2003 11 24 | 704 | 0.1-  | 0.3+  |
| 1999 09 09                  | 704        | 0.9+     | 0.7+      | 2003 10 30 | 704         | 0.2+  | 0.3-        | 2003 11 24 | 704 | 0.8-  | 0.4-  |
| 1999 09 09                  | 704        | 0.2+     | 1.4+      | 2003 10 30 | 704         | 0.0   | 0.1+        | 2003 11 24 | 704 | 0.2+  | 0.1+  |
| 1999 09 09                  | 704        | 0.1+     | 0.2-      | 2003 10 30 | 704         | 0.2+  | 0.9+        | 2003 12 15 | 703 | 0.7-  | 0.7-  |
| 1999 09 09                  | 704        | 0.5+     | 0.4+      | 2003 11 02 | 704         | 0.2+  | 0.9+        | 2003 12 15 | 703 | 0.3+  | 0.8-  |
| 1999 09 09                  | 704        | 0.1+     | 0.6+      | 2003 11 02 | 704         | 0.3+  | 0.3-        | 2003 12 15 | 703 | (0.2- | 1.7-) |
| 1999 09 14                  | 704        | 0.4-     | 0.2+      | 2003 11 02 | 704         | 1.3+  | 0.2+        | 2003 12 15 | 703 | 1.5-  | 1.3-  |
| 1999 09 14                  | 704        | 0.6-     | 0.4+      | 2003 11 02 | 704         | 1.2+  | 0.2-        | 2005 03 04 | 703 | 0.9+  | 0.1-  |
| 1999 09 14                  | 704        | 0.0      | 0.5+      | 2003 11 02 | 704         | 0.7+  | 0.7+        | 2005 03 04 | 703 | 0.6+  | 0.3+  |
| 1999 09 14                  | 704        | 0.9-     | 0.6-      | 2003 11 14 | 644         | 0.4-  | 0.1-        | 2005 03 04 | 703 | 0.1-  | 1.0-  |
| 1999 09 14                  | 704        | 0.0      | 1.0-      | 2003 11 14 | 644         | 0.1-  | 0.1-        | 2005 03 04 | 703 | 0.4+  | 0.6+  |
| 2001 01 21                  | 704        | 0.9+     | 0.1-      | 2003 11 14 | 644         | 0.2-  | 0.0         | 2005 03 08 | 691 | 0.2+  | 0.1+  |
| 2001 01 21                  | 704        | 0.1-     | 1.0+      | 2003 11 18 | 644         | 0.4+  | 0.0         | 2005 03 08 | 691 | 0.1-  | 0.3+  |
| 2001 01 21                  | 704        | 0.3-     | 0.6+      | 2003 11 18 | 644         | 0.5+  | 0.0         | 2005 03 08 | 691 | 0.1+  | 0.3+  |
| 2002 06 05                  | 644        | 0.2-     | 1.5+      | 2003 11 18 | 644         | 0.5+  | 0.0         | 2005 03 10 | 703 | 0.4+  | 0.0   |
| 2002 06 05                  | 644        | (0.2-    | 1.7+)     | 2003 11 19 | 699         | 0.4-  | 0.4-        | 2005 03 10 | 703 | 0.9-  | 0.3+  |
| 2002 06 05                  | 644        | 0.2-     | 1.4+      | 2003 11 19 | 699         | (0.1- | 2.5-)       | 2005 03 10 | 703 | 0.7+  | 0.5+  |
| 2003 10 05                  | 704        | 0.0      | 1.2-      | 2003 11 19 | 699         | 0.4-  | 0.5-        | 2005 03 10 | 703 | 1.3-  | 0.3+  |
| 2003 10 05                  | 704        | 0.4+     | 1.0-      | 2003 11 19 | 699         | 0.4+  | 0.9-        | 2007 12 03 | 691 | 0.9-  | 0.2-  |
| 2003 10 05                  | 704        | (0.2+    | 1.6-)     | 2003 11 20 | 704         | 0.8-  | 0.6+        | 2007 12 03 | 691 | 0.0   | 0.1-  |
| 2003 10 05                  | 704        | (0.4+    | 1.7-)     | 2003 11 20 | 704         | 0.2+  | 0.3+        | 2007 12 03 | 691 | 0.2-  | 0.2-  |
| 2003 10 19                  | 644        | 0.3-     | 0.1-      | 2003 11 20 | 704         | 0.1-  | 0.6+        | 2007 12 10 | 704 | 1.3+  | 0.2-  |
| 2003 10 19                  | 644        | 0.3-     | 0.0       | 2003 11 20 | 704         | 0.3+  | 0.1-        | 2007 12 10 | 704 | 0.3+  | 0.2-  |
| 2003 10 19                  | 644        | 0.2-     | 0.1-      | 2003 11 20 | 704         | 0.0   | 0.1-        | 2007 12 10 | 704 | 0.6+  | 1.7+  |
| 2003 10 21                  | 644        | 0.1+     | 0.2+      | 2003 11 23 | 691         | 0.4-  | 0.2+        | 2007 12 10 | 704 | 1.5+  | 0.4+  |
| 2003 10 21                  | 644        | 0.3+     | 0.0       | 2003 11 23 | 691         | 0.1+  | 0.0         | 2007 12 14 | 704 | 0.5+  | 0.3-  |
| 2003 10 21                  | 644        | 0.1+     | 0.0       | 2003 11 23 | 691         | 0.0   | 0.3+        | 2007 12 14 | 704 | 0.9+  | 0.3+  |
| 2003 10 22                  | 704        | 0.3-     | 0.4+      | 2003 11 24 | 699         | 0.6+  | 0.4-        | 2007 12 14 | 704 | 0.8+  | 0.2+  |
| 2003 10 22                  | 704        | 0.1+     | 0.0       | 2003 11 24 | 699         | 0.2+  | 0.4+        | 2007 12 14 | 704 | 1.1+  | 0.4+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 08 | 704 | 0.9–  | 0.4–  | 2003 10 22 | 704 | 0.0   | 0.0   | 2003 12 28 | 704 | (1.7+ | 0.3–) |
| 1999 09 08 | 699 | 1.0+  | 0.3–  | 2003 10 22 | 704 | 0.2+  | 0.1+  | 2003 12 28 | 704 | 0.5+  | 0.0   |
| 1999 09 08 | 704 | 0.0   | 0.2–  | 2003 10 29 | 699 | 0.3–  | 0.8–  | 2005 03 03 | 703 | 0.7+  | 0.3+  |
| 1999 09 08 | 704 | 0.2–  | 0.6+  | 2003 10 29 | 699 | 0.8+  | 0.7–  | 2005 03 03 | 703 | 0.3+  | 0.3+  |
| 1999 09 09 | 704 | 0.4+  | 0.4+  | 2003 10 29 | 699 | 0.3–  | 0.3+  | 2005 03 03 | 703 | 0.6+  | 0.7+  |
| 1999 09 09 | 704 | 0.8+  | 0.4–  | 2003 10 29 | 699 | 0.1–  | 0.6–  | 2005 03 03 | 703 | 0.7–  | 0.6+  |
| 1999 09 09 | 704 | 0.4–  | 0.2–  | 2003 10 30 | 704 | (1.6– | 1.0+) | 2007 11 07 | 704 | 0.1+  | 0.2+  |
| 1999 09 09 | 704 | 0.6–  | 0.1+  | 2003 10 30 | 704 | 0.1–  | 0.6+  | 2007 11 07 | 704 | 0.5+  | 0.4+  |
| 1999 09 09 | 704 | 0.1–  | 0.2–  | 2003 10 30 | 704 | 0.8–  | 0.8+  | 2007 11 07 | 704 | 0.2+  | 0.6+  |
| 1999 09 14 | 704 | 0.7–  | 1.3+  | 2003 11 02 | 704 | 0.7–  | 0.2+  | 2007 11 07 | 704 | 0.5+  | 0.3+  |
| 1999 09 14 | 704 | 0.4+  | 0.2–  | 2003 11 02 | 704 | 0.3–  | 0.4+  | 2007 11 07 | 704 | 0.1–  | 0.1–  |
| 1999 09 14 | 704 | 0.3+  | 0.2+  | 2003 11 02 | 704 | 0.5–  | 0.6+  | 2007 11 18 | 704 | 0.2+  | 0.0   |
| 1999 09 14 | 704 | 0.1+  | 0.3–  | 2003 11 02 | 704 | 0.5–  | 0.4+  | 2007 11 18 | 704 | 0.8–  | 0.4+  |
| 1999 09 14 | 704 | 0.1–  | 0.4+  | 2003 11 02 | 704 | 1.1–  | 0.4+  | 2007 11 18 | 704 | 0.2–  | 0.4–  |
| 1999 10 01 | 703 | 0.1–  | 1.0+  | 2003 11 18 | 699 | 0.4–  | 0.7+  | 2007 11 18 | 704 | 0.1–  | 0.0   |
| 1999 10 01 | 703 | 0.2+  | 0.5+  | 2003 11 18 | 699 | 0.2+  | 0.7+  | 2007 11 19 | G96 | 0.0   | 0.3–  |
| 1999 10 01 | 703 | 0.3–  | 0.4+  | 2003 11 18 | 699 | 0.2–  | 0.8–  | 2007 11 19 | G96 | 0.4+  | 0.4–  |
| 1999 10 01 | 703 | 0.3–  | 0.0   | 2003 11 18 | 699 | 0.7+  | 0.4+  | 2007 11 19 | G96 | 0.2+  | 1.0–  |
| 1999 10 09 | 704 | 0.7+  | 0.2–  | 2003 11 20 | 704 | 0.5–  | 0.1+  | 2007 11 19 | G96 | 0.1+  | 0.4–  |
| 1999 10 09 | 704 | 0.0   | 0.1+  | 2003 11 20 | 704 | 0.2–  | 0.1+  | 2007 11 20 | 704 | 0.0   | 0.4–  |
| 1999 10 09 | 704 | 1.0+  | 0.3–  | 2003 11 20 | 704 | 0.7–  | 0.2–  | 2007 11 20 | 704 | 0.1–  | 0.0   |
| 1999 10 09 | 704 | 0.0   | 0.3–  | 2003 11 20 | 704 | 0.0   | 0.1–  | 2007 11 20 | 704 | 0.6+  | 0.2–  |
| 1999 10 09 | 704 | 0.4+  | 1.1–  | 2003 11 20 | 704 | 0.7–  | 0.1–  | 2007 11 20 | 704 | 0.2+  | 0.0   |
| 1999 10 16 | 645 | 0.1–  | 0.0   | 2003 11 20 | 704 | 0.1+  | 0.1–  | 2007 11 20 | 704 | 0.4+  | 0.2–  |
| 1999 10 16 | 645 | 0.1–  | 0.1–  | 2003 11 20 | 704 | 0.8–  | 0.2+  | 2007 11 20 | 691 | 0.3–  | 0.4–  |
| 2003 08 24 | 704 | (1.6– | 0.0 ) | 2003 11 20 | 704 | 0.4–  | 0.8+  | 2007 11 20 | 691 | 0.2–  | 0.1–  |
| 2003 08 24 | 704 | 0.2–  | 0.1+  | 2003 11 20 | 704 | 0.4–  | 0.1+  | 2007 11 20 | 691 | 0.4–  | 0.4–  |
| 2003 08 24 | 704 | 0.2–  | 0.0   | 2003 11 20 | 704 | 0.2+  | 0.5–  | 2007 12 06 | D35 | 0.3+  | 0.1–  |
| 2003 08 24 | 704 | 0.8–  | 0.4+  | 2003 11 22 | 691 | 0.1+  | 0.0   | 2007 12 06 | D35 | 0.7+  | 0.0   |
| 2003 09 03 | 608 | 0.3+  | 1.0–  | 2003 11 22 | 691 | 0.1–  | 0.1+  | 2007 12 06 | D35 | 0.3+  | 0.1–  |
| 2003 09 03 | 608 | 0.5–  | 0.6–  | 2003 11 22 | 691 | 0.1+  | 0.0   | 2007 12 10 | 704 | 0.7–  | 0.7+  |
| 2003 09 03 | 608 | 0.1+  | 0.8–  | 2003 11 24 | 704 | 0.4+  | 0.5+  | 2007 12 10 | 704 | 0.3–  | 0.4+  |
| 2003 09 22 | 704 | (2.3+ | 1.3–) | 2003 11 24 | 704 | 0.5–  | 0.0   | 2007 12 10 | 704 | 1.2+  | 1.2+  |
| 2003 09 22 | 704 | 0.3+  | 0.4–  | 2003 11 24 | 704 | 0.4+  | 0.6+  | 2007 12 15 | 704 | 0.1–  | 0.2+  |
| 2003 09 22 | 704 | 0.7–  | 1.5–  | 2003 11 24 | 704 | 0.1+  | 0.4+  | 2007 12 15 | 704 | 0.2–  | 0.6+  |
| 2003 09 22 | 704 | 0.0   | 0.4–  | 2003 11 24 | 704 | 0.1–  | 0.7+  | 2007 12 15 | 704 | 0.0   | 0.5+  |
| 2003 09 30 | 704 | 0.4+  | 0.2+  | 2003 12 01 | 704 | 0.3+  | 0.8+  | 2007 12 15 | 704 | 0.2+  | 0.7+  |
| 2003 09 30 | 704 | 0.1–  | 0.4+  | 2003 12 01 | 704 | 0.3–  | 0.9+  | 2007 12 15 | 704 | 0.2–  | 0.1+  |
| 2003 09 30 | 704 | 0.4–  | 0.2+  | 2003 12 01 | 704 | 1.0+  | 0.9+  |            |     |       |       |
| 2003 09 30 | 704 | 0.2–  | 0.3+  | 2003 12 01 | 704 | 0.1–  | 0.9+  |            |     |       |       |

**(171545)\* 1999 RR<sub>145</sub>**

Discovered 1999 Sept. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 83.05762   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27627374 | $\omega$ | 68.58646  | +0.98673135 | -0.14989512 |
| $a$ | 2.3347640  | $\Omega$ | 299.98678 | +0.10898792 | +0.89633402 |
| $e$ | 0.2094794  | $i$      | 4.13081   | +0.12034480 | +0.41727302 |
| $P$ | 3.57       | $H$      | 17.0      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 10 25 | 691 | 1.1– | 0.1+ | 2003 12 18 | 704 | 0.7+  | 0.1+  | 2006 08 15 | 644 | 0.4– | 0.2+ |
| 1992 10 25 | 691 | 1.1– | 0.4– | 2003 12 18 | 704 | 0.4–  | 0.3+  | 2006 08 15 | 644 | 0.3– | 0.1– |
| 1992 10 25 | 691 | 1.0+ | 0.2– | 2003 12 18 | 704 | 0.2+  | 0.5+  | 2006 08 15 | 644 | 0.0  | 0.0  |
| 1999 08 08 | 699 | 0.4– | 1.0– | 2003 12 18 | 704 | 1.4–  | 0.1–  | 2006 08 16 | 644 | 0.5– | 0.2+ |
| 1999 08 08 | 699 | 1.0– | 0.1– | 2003 12 18 | 704 | (1.6+ | 0.7+) | 2006 08 16 | 644 | 0.3– | 0.1– |
| 1999 08 08 | 699 | 0.2– | 0.5– | 2004 01 13 | 691 | 0.2–  | 0.2+  | 2006 08 16 | 644 | 0.5– | 0.0  |
| 1999 09 05 | 699 | 0.6– | 1.4+ | 2004 01 13 | 691 | 0.1–  | 0.0   | 2006 08 24 | 644 | 0.1– | 0.4+ |
| 1999 09 05 | 699 | 0.6– | 1.6+ | 2004 01 13 | 691 | 0.1+  | 0.1+  | 2006 08 24 | 644 | 0.2– | 0.0  |
| 1999 09 05 | 699 | 0.0  | 1.4+ | 2006 06 03 | G96 | 0.5–  | 0.1–  | 2006 08 24 | 644 | 0.4– | 0.1+ |
| 1999 09 07 | 704 | 1.3+ | 0.4+ | 2006 06 03 | G96 | 0.4–  | 0.1–  | 2006 10 22 | G96 | 0.5– | 0.2– |
| 1999 09 07 | 704 | 0.7+ | 0.5+ | 2006 06 03 | G96 | 0.2–  | 0.1–  | 2006 10 22 | G96 | 0.8– | 0.2– |
| 1999 09 07 | 704 | 1.6+ | 0.2+ | 2006 06 03 | G96 | 0.1–  | 0.1–  | 2006 10 22 | G96 | 0.3– | 0.1+ |
| 1999 09 07 | 704 | 1.2+ | 0.9+ | 2006 07 18 | D35 | 0.6+  | 0.3+  | 2006 10 22 | G96 | 0.0  | 0.0  |
| 1999 09 07 | 704 | 0.9+ | 1.0+ | 2006 07 18 | D35 | 0.2–  | 0.3–  | 2007 11 19 | G96 | 0.2+ | 0.6– |
| 1999 09 09 | 704 | 1.5+ | 0.7– | 2006 07 18 | D35 | 0.0   | 0.2+  | 2007 11 19 | G96 | 0.2+ | 0.2– |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 09 | 704 | 1.2+ | 0.2– | 2006 07 21 | G96 | 0.2– | 0.0  | 2007 11 19 | G96 | 0.3+ | 0.1– |
| 1999 09 09 | 704 | 1.1+ | 0.7– | 2006 07 21 | G96 | 0.4– | 0.2+ | 2007 11 19 | G96 | 0.8+ | 1.2– |
| 1999 09 09 | 704 | 1.3+ | 0.6– | 2006 07 21 | G96 | 0.1– | 0.1– | 2007 12 04 | G96 | 0.9+ | 0.4– |
| 1999 09 09 | 704 | 0.4+ | 0.0  | 2006 07 21 | G96 | 0.4– | 0.0  | 2007 12 04 | G96 | 0.4+ | 0.0  |
| 1999 09 14 | 704 | 1.0+ | 0.4– | 2006 08 12 | 644 | 0.8– | 0.2– | 2007 12 04 | G96 | 0.1– | 0.4– |
| 1999 09 14 | 704 | 0.3+ | 0.5– | 2006 08 12 | 644 | 0.7– | 0.0  | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 1999 09 14 | 704 | 0.6+ | 1.0– | 2006 08 12 | 644 | 0.7– | 0.0  |            |     |      |      |

**(171546)\* 1999 RA<sub>154</sub>**

Discovered 1999 Sept. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 45.69800   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26735728 | $\omega$ | 150.81667 | +0.92835956 | −0.36922797 |
| $a$ | 2.3863897  | $\Omega$ | 230.91448 | +0.32946761 | +0.87059814 |
| $e$ | 0.1464486  | $i$      | 3.14998   | +0.17204541 | +0.32516086 |
| $P$ | 3.69       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 11 27 | 691 | 0.6+  | 0.9–  | 2003 10 29 | 703 | 1.2–  | 0.8+  | 2003 11 30 | 703 | 0.7+  | 0.9–  |
| 1992 11 27 | 691 | 0.1–  | 0.8–  | 2003 10 29 | 704 | 0.3+  | 0.6+  | 2003 11 30 | 703 | 0.0   | 0.9–  |
| 1992 11 27 | 691 | 0.2–  | 0.3–  | 2003 10 29 | 704 | 0.2+  | 0.5+  | 2003 12 01 | 704 | 0.3–  | 0.5+  |
| 1999 09 07 | 704 | 1.5–  | 0.1+  | 2003 11 02 | 704 | 0.6+  | 0.0   | 2003 12 01 | 704 | 0.1–  | 0.5–  |
| 1999 09 07 | 704 | 0.8–  | 0.3–  | 2003 11 02 | 704 | 0.3–  | 0.7+  | 2003 12 01 | 704 | 0.2+  | 0.0   |
| 1999 09 07 | 704 | 1.5–  | 0.5–  | 2003 11 02 | 704 | 0.3–  | 0.4–  | 2003 12 01 | 704 | 0.1+  | 0.0   |
| 1999 09 07 | 704 | 0.5–  | 0.3–  | 2003 11 02 | 704 | 0.0   | 0.4+  | 2003 12 01 | 704 | 0.2–  | 0.4+  |
| 1999 09 07 | 704 | 1.0–  | 0.6–  | 2003 11 02 | 704 | 0.1+  | 0.2–  | 2003 12 11 | 703 | (0.2+ | 2.2+) |
| 1999 09 09 | 704 | 0.0   | 0.6–  | 2003 11 15 | 644 | 0.0   | 0.2+  | 2003 12 11 | 703 | 0.9–  | 0.4+  |
| 1999 09 09 | 704 | 0.0   | 0.2–  | 2003 11 15 | 644 | 0.3+  | 0.1+  | 2003 12 11 | 703 | 0.1+  | 0.6+  |
| 1999 09 09 | 704 | 0.3–  | 0.5+  | 2003 11 15 | 644 | 0.7+  | 0.4+  | 2003 12 11 | 703 | 0.8+  | 0.4–  |
| 1999 09 09 | 704 | 0.3–  | 0.4+  | 2003 11 16 | 691 | 0.1+  | 0.1+  | 2005 03 04 | 703 | (1.8+ | 1.8–) |
| 1999 09 09 | 704 | 0.3–  | 1.4+  | 2003 11 16 | 691 | 0.2+  | 0.2+  | 2005 03 04 | 703 | (0.6– | 2.0–) |
| 1999 09 14 | 704 | 0.2–  | 0.5+  | 2003 11 16 | 691 | 0.1+  | 0.1+  | 2005 03 04 | 703 | 0.4–  | 0.7–  |
| 1999 09 14 | 704 | 1.2–  | 0.2+  | 2003 11 17 | 703 | 1.2+  | 0.4+  | 2005 03 04 | 703 | 0.8–  | 1.1–  |
| 1999 09 14 | 704 | 0.5–  | 0.3+  | 2003 11 17 | 703 | 0.1–  | 1.2+  | 2005 03 08 | 691 | 0.2+  | 0.2+  |
| 1999 09 14 | 704 | 0.6–  | 0.4+  | 2003 11 17 | 703 | 0.5+  | 1.2+  | 2005 03 08 | 691 | 0.3+  | 0.3+  |
| 1999 09 14 | 704 | 0.7–  | 0.2+  | 2003 11 17 | 703 | 0.8+  | 0.6+  | 2005 03 08 | 691 | 0.1+  | 0.4+  |
| 1999 10 13 | 704 | (2.2+ | 0.7+) | 2003 11 18 | 703 | 0.6+  | 0.4–  | 2005 03 13 | 691 | 0.3+  | 0.4+  |
| 1999 10 13 | 704 | 1.8+  | 0.3+  | 2003 11 18 | 703 | 0.4–  | 0.3+  | 2005 03 13 | 691 | 0.4+  | 0.3+  |
| 1999 10 13 | 704 | 1.9+  | 0.1–  | 2003 11 18 | 703 | 0.5–  | 0.6+  | 2005 03 13 | 691 | 0.4+  | 0.2+  |
| 1999 10 30 | 691 | 0.7+  | 0.2–  | 2003 11 18 | 703 | 0.2+  | 0.1+  | 2005 03 17 | 691 | 0.1–  | 0.5+  |
| 1999 10 30 | 691 | 0.4+  | 0.5–  | 2003 11 18 | 644 | 0.2+  | 0.4+  | 2005 03 17 | 691 | 0.1+  | 0.4+  |
| 1999 10 30 | 691 | 0.6+  | 0.0   | 2003 11 18 | 644 | 0.0   | 0.2+  | 2005 03 17 | 691 | 0.3+  | 0.4+  |
| 2003 10 16 | 699 | 0.2–  | 0.2+  | 2003 11 18 | 644 | 1.1–  | 0.0   | 2005 03 17 | 703 | 0.1+  | 0.3–  |
| 2003 10 16 | 699 | 1.3+  | 0.5+  | 2003 11 21 | 704 | 0.0   | 0.9+  | 2005 03 17 | 703 | 0.6–  | 0.7–  |
| 2003 10 16 | 699 | 0.4+  | 0.4+  | 2003 11 21 | 704 | 0.1+  | 0.9+  | 2005 03 17 | 703 | 0.0   | 0.4+  |
| 2003 10 16 | 699 | 0.5–  | 0.6+  | 2003 11 21 | 704 | 0.1+  | 1.3+  | 2005 03 17 | 703 | 1.2–  | 0.4–  |
| 2003 10 20 | 644 | 0.4+  | 0.1+  | 2003 11 21 | 704 | (0.2+ | 1.6–) | 2005 04 04 | 703 | (0.1– | 2.0–) |
| 2003 10 20 | 644 | 0.3+  | 0.4+  | 2003 11 21 | 704 | 0.3+  | 0.7+  | 2005 04 04 | 703 | 0.4+  | 0.2+  |
| 2003 10 20 | 644 | 0.5+  | 0.4+  | 2003 11 21 | 608 | 1.2+  | 0.6–  | 2005 04 04 | 703 | 0.9+  | 1.1–  |
| 2003 10 22 | 704 | 0.5+  | 0.1+  | 2003 11 21 | 608 | 1.4+  | 0.9–  | 2005 04 04 | 703 | 1.2–  | 0.7–  |
| 2003 10 22 | 704 | 0.3+  | 0.3+  | 2003 11 21 | 608 | 0.1–  | 0.5+  | 2007 12 04 | 704 | 0.7+  | 0.1+  |
| 2003 10 22 | 704 | 1.1+  | 0.3+  | 2003 11 23 | 291 | 0.8–  | 0.2–  | 2007 12 04 | 704 | 0.7+  | 0.7+  |
| 2003 10 22 | 704 | 0.3+  | 0.1–  | 2003 11 23 | 291 | 0.6–  | 0.0   | 2007 12 04 | 704 | 0.2–  | 0.1+  |
| 2003 10 22 | 704 | 0.5+  | 0.2+  | 2003 11 23 | 291 | 0.9–  | 0.1–  | 2007 12 04 | 704 | 0.3+  | 0.2+  |
| 2003 10 29 | 704 | 0.3+  | 0.8+  | 2003 11 24 | 699 | 0.1+  | 0.4+  | 2007 12 04 | 704 | 0.3–  | 0.1–  |
| 2003 10 29 | 703 | 1.5–  | 0.3–  | 2003 11 24 | 699 | 0.5–  | 0.2+  | 2007 12 16 | 691 | 0.3–  | 0.3–  |
| 2003 10 29 | 704 | 0.0   | 0.9+  | 2003 11 24 | 699 | 0.1–  | 0.1+  | 2007 12 16 | 691 | 0.5–  | 0.3–  |
| 2003 10 29 | 703 | 0.8–  | 0.3+  | 2003 11 24 | 699 | 0.3–  | 0.1+  | 2007 12 16 | 691 | 0.6–  | 0.4–  |
| 2003 10 29 | 703 | 0.1+  | 0.1+  | 2003 11 30 | 703 | 0.4–  | 0.5–  |            |     |       |       |
| 2003 10 29 | 704 | 0.1–  | 0.6+  | 2003 11 30 | 703 | 0.0   | 0.2–  |            |     |       |       |

2007 DEC. 24

M.P.O. 129079

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 46.09001   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26114340 | $\omega$ | 36.69565  | +0.99781400 | +0.03167133 |
| <i>a</i> | 2.4240971  | $\Omega$ | 321.36531 | -0.05497775 | +0.88484217 |
| <i>e</i> | 0.1668199  | <i>i</i> | 5.33036   | +0.03666966 | +0.46481315 |
| <i>P</i> | 3.77       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 05 | 699 | 0.6- | 0.4+ | 2003 10 17 | 691 | 0.3+  | 0.1+  | 2003 11 19 | 704 | 1.0-  | 0.7+  |
| 1999 09 05 | 699 | 0.9+ | 0.2- | 2003 10 17 | 699 | 0.8-  | 0.1-  | 2003 11 19 | 704 | 0.3-  | 0.1-  |
| 1999 09 05 | 699 | 0.1- | 0.1- | 2003 10 17 | 644 | 0.8+  | 0.5+  | 2003 11 19 | 704 | 1.1-  | 0.0   |
| 1999 09 07 | 704 | 0.3- | 0.3+ | 2003 10 17 | 699 | 0.4-  | 0.3-  | 2003 11 19 | 704 | 0.2-  | 0.3+  |
| 1999 09 07 | 704 | 0.1- | 0.5+ | 2003 10 17 | 691 | 0.0   | 0.0   | 2005 02 02 | 691 | 0.1+  | 0.0   |
| 1999 09 07 | 704 | 0.2- | 0.7+ | 2003 10 17 | 644 | 0.8+  | 0.4+  | 2005 02 02 | 691 | 0.1+  | 0.1+  |
| 1999 09 07 | 704 | 0.4- | 0.9+ | 2003 10 18 | 735 | 0.3-  | 0.2-  | 2005 02 02 | 691 | 0.3+  | 0.3+  |
| 1999 09 09 | 704 | 0.1- | 0.8+ | 2003 10 18 | 735 | 1.4+  | 0.3+  | 2005 03 03 | 703 | 0.1-  | 0.1+  |
| 1999 09 09 | 704 | 1.2- | 0.5+ | 2003 10 18 | 735 | (1.8- | 0.1-) | 2005 03 03 | 703 | 0.8-  | 0.2-  |
| 1999 09 09 | 704 | 0.8+ | 0.4+ | 2003 10 20 | 735 | 0.3+  | 0.0   | 2005 03 03 | 703 | 0.2-  | 0.1+  |
| 1999 09 09 | 704 | 0.4- | 0.1+ | 2003 10 20 | 735 | 0.3+  | 0.3-  | 2005 03 03 | 703 | 0.7+  | 0.9+  |
| 1999 09 09 | 704 | 0.0  | 0.3+ | 2003 10 20 | 735 | 0.3+  | 0.5-  | 2007 11 02 | 704 | 0.4+  | 0.7-  |
| 1999 09 14 | 704 | 0.2- | 0.3+ | 2003 10 20 | 644 | 0.0   | 0.3-  | 2007 11 02 | 704 | 0.4-  | 0.3-  |
| 1999 09 14 | 704 | 0.2- | 0.0  | 2003 10 20 | 644 | 0.1+  | 0.0   | 2007 11 02 | 704 | 0.1-  | 0.3-  |
| 1999 09 14 | 704 | 0.4- | 0.5- | 2003 10 20 | 644 | 0.3+  | 0.0   | 2007 11 02 | 704 | 0.2+  | 0.3-  |
| 1999 09 14 | 704 | 0.5- | 0.5+ | 2003 10 21 | 735 | 0.4+  | 0.1-  | 2007 11 08 | 704 | 0.0   | 0.7+  |
| 1999 09 14 | 704 | 0.1- | 0.5+ | 2003 10 21 | 735 | 0.2+  | 0.2-  | 2007 11 08 | 704 | 0.3+  | 0.3+  |
| 2003 09 03 | 608 | 0.1+ | 1.1- | 2003 10 21 | 735 | 0.0   | 0.0   | 2007 11 08 | 704 | 0.7-  | 0.9+  |
| 2003 09 03 | 608 | 0.1+ | 0.8- | 2003 10 22 | 704 | 0.1-  | 0.4-  | 2007 11 08 | 704 | 0.3-  | 0.6-  |
| 2003 09 03 | 608 | 0.2+ | 0.9- | 2003 10 22 | 704 | 0.1-  | 0.2-  | 2007 11 08 | 704 | 0.2+  | 0.2+  |
| 2003 09 21 | 699 | 0.5- | 0.2+ | 2003 10 22 | 704 | 0.4+  | 0.3-  | 2007 11 17 | 704 | 0.4+  | 0.4+  |
| 2003 09 21 | 699 | 0.0  | 0.4- | 2003 10 22 | 704 | 0.1+  | 0.1-  | 2007 11 17 | 704 | 0.2+  | 0.5+  |
| 2003 09 21 | 699 | 0.1- | 0.3- | 2003 10 22 | 704 | 0.1+  | 0.2+  | 2007 11 17 | 704 | 0.4+  | 0.1-  |
| 2003 09 21 | 699 | 0.3+ | 0.4- | 2003 10 23 | 608 | 0.3-  | 0.5-  | 2007 11 17 | 704 | 0.8+  | 0.6-  |
| 2003 09 22 | 704 | 0.3+ | 1.0- | 2003 10 23 | 608 | 0.4-  | 0.7-  | 2007 11 17 | 704 | 0.2+  | 1.4+  |
| 2003 09 22 | 704 | 0.5+ | 0.5+ | 2003 10 23 | 608 | 0.5-  | 0.8-  | 2007 11 20 | 704 | 0.3+  | 0.0   |
| 2003 09 22 | 704 | 1.0+ | 0.3+ | 2003 10 29 | 735 | 0.1+  | 0.1+  | 2007 11 20 | 704 | 0.2-  | 0.1-  |
| 2003 09 22 | 704 | 0.1+ | 0.3+ | 2003 10 29 | 735 | 0.2+  | 0.4-  | 2007 11 20 | 704 | 0.0   | 0.2-  |
| 2003 09 22 | 704 | 1.0- | 0.3+ | 2003 10 29 | 735 | 0.2+  | 0.1+  | 2007 11 20 | 704 | 0.1-  | 0.1+  |
| 2003 09 25 | 608 | 0.4- | 1.0+ | 2003 10 30 | 704 | 1.1+  | 0.8-  | 2007 11 20 | 704 | 0.3-  | 0.3-  |
| 2003 09 25 | 608 | 0.3+ | 0.5+ | 2003 10 30 | 704 | 0.8+  | 0.2-  | 2007 12 13 | 704 | 0.2-  | 0.9+  |
| 2003 09 25 | 608 | 0.1+ | 0.1+ | 2003 10 30 | 704 | 0.3-  | 0.5-  | 2007 12 13 | 704 | 0.4-  | 1.4+  |
| 2003 09 30 | 704 | 0.1+ | 0.8+ | 2003 11 02 | 704 | 0.3+  | 0.3+  | 2007 12 13 | 704 | 0.2-  | 1.1+  |
| 2003 09 30 | 704 | 0.4+ | 0.5+ | 2003 11 02 | 704 | 0.0   | 0.2+  | 2007 12 13 | 704 | (0.8- | 1.7+) |
| 2003 09 30 | 704 | 0.1+ | 0.0  | 2003 11 02 | 704 | 0.1+  | 0.2-  | 2007 12 13 | 704 | 0.2-  | 1.0+  |
| 2003 09 30 | 704 | 0.2- | 0.3+ | 2003 11 02 | 704 | 0.0   | 1.1-  | 2007 12 16 | 704 | 0.6-  | 0.2-  |
| 2003 09 30 | 704 | 0.6- | 0.1+ | 2003 11 02 | 704 | 0.0   | 0.3-  | 2007 12 16 | 704 | 0.2+  | 0.4-  |
| 2003 10 17 | 644 | 0.6+ | 0.2+ | 2003 11 18 | 644 | 0.3-  | 0.2+  | 2007 12 16 | 704 | 0.2-  | 0.6-  |
| 2003 10 17 | 691 | 0.2- | 0.0  | 2003 11 18 | 644 | 0.5+  | 0.3-  | 2007 12 16 | 704 | 0.0   | 0.3-  |
| 2003 10 17 | 699 | 0.8- | 0.2- | 2003 11 18 | 644 | 0.0   | 0.4-  | 2007 12 16 | 704 | 0.5-  | 0.6-  |
| 2003 10 17 | 699 | 0.0  | 0.2- | 2003 11 19 | 704 | 1.0-  | 0.5+  |            |     |       |       |

(171548)\* 1999 RS<sub>161</sub> = 2003 SO<sub>207</sub>

Discovered 1999 Sept. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 52477)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.00025   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26085237 | $\omega$ | 40.10801  | +0.90145524 | -0.43279010 |
| <i>a</i> | 2.4258998  | $\Omega$ | 345.52983 | +0.38799889 | +0.81649417 |
| <i>e</i> | 0.2040286  | <i>i</i> | 1.93482   | +0.19192526 | +0.38213872 |
| <i>P</i> | 3.78       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 09 04 | 699 | 0.2+ | 0.2+ | 2003 10 21 | 699 | 0.4- | 0.0  | 2003 11 20 | 704 | 0.0   | 0.0   |
| 1999 09 04 | 699 | 0.6- | 0.5+ | 2003 10 21 | 704 | 0.1+ | 0.1+ | 2003 11 24 | 704 | 1.0+  | 0.5+  |
| 1999 09 04 | 699 | 0.4- | 0.2+ | 2003 10 21 | 704 | 0.2+ | 0.4+ | 2003 11 24 | 704 | (0.9+ | 1.7-) |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 07 | 704 | 0.6-  | 0.4+  | 2003 10 21 | 704 | 0.0   | 0.7+  | 2003 11 24 | 704 | 0.6+  | 0.4+  |
| 1999 09 07 | 704 | 0.6-  | 0.2+  | 2003 10 21 | 704 | 0.2+  | 0.1+  | 2003 11 24 | 704 | 0.5+  | 0.2-  |
| 1999 09 07 | 704 | 0.6-  | 0.1-  | 2003 10 23 | 291 | 0.2+  | 0.0   | 2003 12 10 | 644 | 0.5+  | 0.4-  |
| 1999 09 07 | 704 | 0.7-  | 0.2-  | 2003 10 23 | 291 | 0.2+  | 0.0   | 2003 12 10 | 644 | 0.3+  | 0.3-  |
| 1999 09 07 | 704 | 0.7-  | 0.7-  | 2003 10 23 | 291 | 0.1+  | 0.1-  | 2003 12 10 | 644 | 0.3+  | 0.2-  |
| 1999 09 09 | 704 | 1.3-  | 0.3+  | 2003 10 24 | 704 | 0.3+  | 0.2+  | 2003 12 17 | 699 | 0.6-  | 0.0   |
| 1999 09 09 | 704 | 1.0+  | 0.0   | 2003 10 24 | 704 | 0.1+  | 0.1+  | 2003 12 17 | 699 | (0.6- | 1.9+) |
| 1999 09 09 | 704 | 0.8+  | 0.8+  | 2003 10 24 | 704 | 0.2-  | 0.2+  | 2003 12 17 | 699 | 0.6+  | 0.4-  |
| 1999 09 13 | 704 | 1.5+  | 0.7+  | 2003 10 24 | 704 | 0.1-  | 0.0   | 2003 12 17 | 699 | 0.5-  | 0.9-  |
| 1999 09 13 | 704 | 0.0   | 0.0   | 2003 10 24 | 704 | 0.3+  | 0.1-  | 2003 12 22 | 704 | 0.0   | 0.9+  |
| 1999 09 13 | 704 | 0.1+  | 0.3+  | 2003 10 25 | 691 | 0.2+  | 0.1-  | 2003 12 22 | 704 | 0.3-  | 0.1+  |
| 1999 09 13 | 704 | 0.6+  | 0.7-  | 2003 10 25 | 691 | 0.0   | 0.1+  | 2003 12 22 | 704 | 0.4-  | 0.3+  |
| 1999 09 13 | 704 | 0.1+  | 1.1-  | 2003 10 25 | 691 | 0.0   | 0.1-  | 2003 12 22 | 704 | 0.7-  | 0.3-  |
| 2003 08 25 | 704 | 0.5-  | 0.6+  | 2003 10 27 | 704 | 0.2+  | 0.4+  | 2003 12 22 | 704 | 0.3-  | 0.1+  |
| 2003 08 25 | 704 | 1.0-  | 0.2-  | 2003 10 27 | 704 | 0.3+  | 0.4+  | 2003 12 29 | 704 | 0.0   | 0.3-  |
| 2003 08 25 | 704 | 0.4-  | 0.4-  | 2003 10 27 | 704 | 1.1+  | 0.2-  | 2003 12 29 | 704 | 0.0   | 0.0   |
| 2003 09 26 | 704 | 0.8+  | 0.2+  | 2003 10 27 | 704 | 0.2+  | 0.0   | 2003 12 29 | 704 | 0.2-  | 0.3+  |
| 2003 09 26 | 704 | 0.2-  | 0.3-  | 2003 10 27 | 704 | 0.1-  | 0.1+  | 2003 12 29 | 704 | 0.8-  | 0.3+  |
| 2003 09 26 | 704 | 0.1-  | 0.4+  | 2003 10 29 | 704 | 1.0+  | 1.2+  | 2003 12 29 | 704 | 0.4-  | 0.5+  |
| 2003 09 26 | 704 | (0.6- | 1.6-) | 2003 10 29 | 704 | (0.8+ | 1.6+) | 2003 12 29 | 704 | 0.3-  | 0.4-  |
| 2003 09 27 | 691 | 0.1-  | 0.1+  | 2003 10 29 | 704 | (0.6+ | 1.9+) | 2003 12 29 | 704 | 0.3-  | 0.0   |
| 2003 09 27 | 691 | 0.2-  | 0.1+  | 2003 10 29 | 704 | (0.8+ | 2.1+) | 2003 12 29 | 704 | 0.3-  | 0.2-  |
| 2003 09 27 | 691 | 0.0   | 0.0   | 2003 10 29 | 704 | (0.4+ | 2.0+) | 2003 12 29 | 704 | 0.5-  | 0.1+  |
| 2003 09 29 | 704 | 0.0   | 0.5+  | 2003 10 30 | 704 | 0.2+  | 0.0   | 2005 03 13 | 691 | 0.2+  | 0.3+  |
| 2003 09 29 | 704 | 0.0   | 0.6+  | 2003 10 30 | 704 | 0.6+  | 0.6-  | 2005 03 13 | 691 | 0.3+  | 0.5+  |
| 2003 09 29 | 704 | 0.2-  | 0.8+  | 2003 10 30 | 704 | 0.7-  | 0.3-  | 2005 03 13 | 691 | 0.0   | 0.1+  |
| 2003 09 29 | 704 | 0.1-  | 0.7+  | 2003 10 30 | 704 | 0.3-  | 0.4+  | 2007 11 06 | 691 | 0.0   | 0.2-  |
| 2003 09 29 | 704 | 0.6-  | 0.0   | 2003 11 01 | 704 | 0.2+  | 0.1+  | 2007 11 06 | 691 | 0.2-  | 0.4-  |
| 2003 10 14 | 699 | 0.3-  | 0.2+  | 2003 11 01 | 704 | 0.1-  | 0.3-  | 2007 11 06 | 691 | 0.1-  | 0.3-  |
| 2003 10 14 | 699 | 0.9+  | 0.1+  | 2003 11 01 | 704 | 0.3+  | 0.1+  | 2007 11 20 | 704 | 0.8+  | 0.2+  |
| 2003 10 14 | 699 | 1.0-  | 0.2-  | 2003 11 01 | 704 | 0.1-  | 0.4-  | 2007 11 20 | 704 | (2.2+ | 0.2+) |
| 2003 10 14 | 699 | 0.6+  | 0.2-  | 2003 11 18 | 644 | 0.6+  | 0.3+  | 2007 11 20 | 704 | 0.8+  | 0.7+  |
| 2003 10 16 | 691 | 0.1-  | 0.2-  | 2003 11 18 | 644 | 0.3+  | 0.2+  | 2007 11 20 | 704 | (1.8+ | 0.4-) |
| 2003 10 16 | 691 | 0.1+  | 0.3-  | 2003 11 18 | 644 | 0.2+  | 0.1+  | 2007 12 10 | 704 | 0.3+  | 0.1+  |
| 2003 10 16 | 691 | 0.1-  | 0.3-  | 2003 11 18 | 699 | 1.2-  | 0.5-  | 2007 12 10 | 704 | 1.2-  | 1.5+  |
| 2003 10 21 | 699 | 0.0   | 0.1+  | 2003 11 18 | 699 | 0.9-  | 0.2+  | 2007 12 10 | 704 | 0.7+  | 0.7-  |
| 2003 10 21 | 699 | 0.1-  | 0.0   | 2003 11 18 | 699 | 0.3-  | 0.4+  | 2007 12 10 | 704 | 0.3+  | 0.5-  |
| 2003 10 21 | 699 | 1.1-  | 0.1+  | 2003 11 18 | 699 | 0.7-  | 0.3+  | 2007 12 14 | 704 | 1.6-  | 0.5-  |
| 2003 10 21 | 699 | 0.4-  | 0.7-  | 2003 11 20 | 704 | 0.2+  | 0.7+  | 2007 12 14 | 704 | 0.3+  | 0.8+  |
| 2003 10 21 | 699 | 0.2-  | 0.0   | 2003 11 20 | 704 | 0.6+  | 0.3-  | 2007 12 14 | 704 | 0.5+  | 0.1+  |
| 2003 10 21 | 699 | 0.7-  | 0.1-  | 2003 11 20 | 704 | 0.1+  | 0.4+  | 2007 12 14 | 704 | 0.2-  | 0.3-  |
| 2003 10 21 | 699 | 0.1+  | 0.1-  | 2003 11 20 | 704 | 0.4-  | 0.2+  |            |     |       |       |

(171549)\* 1999 RE<sub>209</sub> = 2003 WG<sub>117</sub>

Discovered 1999 Sept. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 55892)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 75.13047   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26678402 | $\omega$ | 53.63472  | +0.99724572 | -0.00225604 |
| $a$ | 2.3898071  | $\Omega$ | 306.37834 | -0.03114621 | +0.89439416 |
| $e$ | 0.1527390  | $i$      | 5.28320   | +0.06731180 | +0.44727396 |
| $P$ | 3.69       | $H$      | 16.5      | $G$ 0.15    | $U$ 1       |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 18 | 704 | 1.3+  | 0.9+  | 1999 10 29 | 703 | 0.3-  | 0.4-  | 2006 10 21 | G96 | 0.0  | 0.5- |
| 1999 09 30 | 703 | 0.2-  | 0.1+  | 1999 11 04 | 704 | 1.2+  | 0.4+  | 2006 10 21 | G96 | 0.4- | 0.1+ |
| 1999 09 30 | 703 | (4.2+ | 1.2-) | 1999 11 04 | 704 | 0.9+  | 0.2+  | 2006 10 21 | G96 | 0.3+ | 0.1- |
| 1999 09 30 | 703 | 0.1-  | 0.7+  | 1999 11 04 | 704 | 0.4+  | 0.3-  | 2006 10 21 | G96 | 0.2- | 0.1- |
| 1999 09 30 | 703 | 0.4+  | 0.6+  | 1999 11 04 | 704 | 0.1-  | 1.2-  | 2007 09 15 | G96 | 0.4+ | 0.1- |
| 1999 10 03 | 704 | 0.6-  | 0.5-  | 2003 11 20 | 704 | 0.9+  | 0.2+  | 2007 09 15 | G96 | 0.0  | 0.2+ |
| 1999 10 03 | 704 | 1.4-  | 0.1-  | 2003 11 20 | 704 | 0.3+  | 0.8+  | 2007 09 15 | G96 | 0.2+ | 0.5+ |
| 1999 10 03 | 704 | 1.0-  | 0.5+  | 2003 11 20 | 704 | 0.6-  | 0.4-  | 2007 09 15 | G96 | 0.3+ | 0.4+ |
| 1999 10 03 | 704 | 0.8-  | 0.3-  | 2003 11 20 | 704 | 0.1+  | 0.5+  | 2007 11 07 | G96 | 0.4- | 0.3- |
| 1999 10 03 | 704 | 0.3-  | 0.6-  | 2003 11 20 | 704 | 0.3+  | 0.2+  | 2007 11 07 | G96 | 0.0  | 0.2- |
| 1999 10 09 | 703 | 0.4-  | 0.2+  | 2003 11 24 | 704 | (1.7+ | 0.4+) | 2007 11 07 | G96 | 0.2- | 0.0  |
| 1999 10 09 | 703 | 0.4-  | 0.8+  | 2003 11 24 | 704 | 1.2+  | 0.1+  | 2007 11 07 | G96 | 0.1+ | 0.0  |
| 1999 10 09 | 703 | 0.3-  | 1.6+  | 2003 11 24 | 704 | 1.0+  | 0.7+  | 2007 12 06 | G96 | 0.2+ | 0.4- |
| 1999 10 09 | 703 | 0.2+  | 0.6+  | 2003 11 24 | 704 | 0.2-  | 0.3+  | 2007 12 06 | G96 | 0.6- | 0.1+ |
| 1999 10 10 | 704 | 0.3+  | 0.4+  | 2003 11 24 | 704 | 0.6+  | 0.3-  | 2007 12 06 | G96 | 0.1- | 0.4- |
| 1999 10 10 | 704 | 0.5-  | 0.1-  | 2003 12 04 | 704 | 0.1+  | 0.0   | 2007 12 06 | G96 | 0.5- | 0.5- |

**(171550)\* 1999 SK<sub>15</sub>**

Discovered 1999 Sept. 30 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.61965   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.25804205 | $\omega$ | 54.61052  | +0.64668197 | +0.73650535 |
| <i>a</i> | 2.4434815  | $\Omega$ | 256.94358 | -0.74908217 | +0.56418921 |
| <i>e</i> | 0.2254737  | <i>i</i> | 11.75133  | -0.14379962 | +0.37316270 |
| <i>P</i> | 3.82       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 08 11 | 704 | 0.3- | 0.1+ | 2003 10 18 | 644 | 0.1+  | 0.1-  | 2007 11 09 | 704 | 0.8- | 0.0  |
| 1999 08 11 | 704 | 0.2+ | 0.3+ | 2003 10 18 | 644 | 0.1+  | 0.0   | 2007 11 09 | 704 | 0.4- | 0.4+ |
| 1999 08 11 | 704 | 0.0  | 0.7- | 2003 10 22 | 704 | 0.0   | 0.3-  | 2007 11 09 | G96 | 0.1+ | 0.4- |
| 1999 08 11 | 704 | 0.0  | 0.6- | 2003 10 22 | 704 | 0.2+  | 0.6+  | 2007 11 09 | G96 | 0.6+ | 0.4- |
| 1999 09 06 | 703 | 0.8- | 1.0- | 2003 10 22 | 704 | 0.4+  | 0.4+  | 2007 11 09 | G96 | 0.3- | 0.8- |
| 1999 09 06 | 703 | 0.1- | 1.0+ | 2003 10 22 | 704 | 0.3+  | 0.3+  | 2007 11 09 | G96 | 0.7+ | 0.0  |
| 1999 09 06 | 703 | 0.2+ | 1.0+ | 2003 10 28 | A35 | 1.1+  | 0.2-  | 2007 11 17 | 704 | 0.4- | 0.1+ |
| 1999 09 06 | 703 | 0.3- | 0.7+ | 2003 10 28 | A35 | 0.4+  | 0.3+  | 2007 11 17 | 704 | 1.0- | 0.6+ |
| 1999 09 30 | 703 | 0.5- | 0.2- | 2003 10 28 | A35 | 1.0+  | 0.5-  | 2007 11 17 | 704 | 0.4+ | 0.0  |
| 1999 09 30 | 703 | 0.9- | 0.5+ | 2003 10 29 | 699 | 0.6+  | 0.5+  | 2007 11 17 | 704 | 0.1+ | 0.8+ |
| 1999 09 30 | 703 | 0.4+ | 0.9+ | 2003 10 29 | 699 | 0.9+  | 0.5-  | 2007 11 17 | 704 | 0.5- | 0.3- |
| 1999 09 30 | 703 | 0.1+ | 0.2+ | 2003 10 29 | 699 | 0.5+  | 0.2+  | 2007 11 20 | 704 | 0.1+ | 0.8+ |
| 1999 10 03 | 704 | 0.7- | 0.9- | 2003 10 29 | 699 | 0.5+  | 0.0   | 2007 11 20 | 704 | 1.4+ | 0.5- |
| 1999 10 03 | 704 | 0.1+ | 1.2- | 2003 11 19 | 704 | 0.6+  | 0.6+  | 2007 11 20 | 704 | 1.2- | 0.5- |
| 1999 10 03 | 704 | 0.3- | 0.5- | 2003 11 19 | 704 | 0.1-  | 0.2+  | 2007 11 20 | 704 | 0.4+ | 1.0+ |
| 1999 10 03 | 704 | 0.2+ | 0.2+ | 2003 11 19 | 704 | 0.1+  | 0.3-  | 2007 11 20 | 704 | 0.7+ | 0.1+ |
| 1999 10 03 | 704 | 0.7+ | 0.1+ | 2003 11 19 | 704 | (0.1- | 2.2-) | 2007 12 06 | 691 | 0.2+ | 0.1- |
| 1999 10 10 | 704 | 0.6- | 0.0  | 2006 03 25 | E12 | 0.3+  | 0.6+  | 2007 12 06 | 691 | 0.2- | 0.2- |
| 1999 10 10 | 704 | 0.3- | 0.4- | 2006 03 25 | E12 | (0.5+ | 2.1+) | 2007 12 06 | 691 | 0.5- | 0.1- |
| 1999 10 10 | 704 | 0.2+ | 0.2- | 2006 03 25 | E12 | 1.3+  | 0.7+  | 2007 12 13 | 704 | 0.0  | 0.3+ |
| 1999 10 10 | 704 | 0.2- | 0.4+ | 2006 03 25 | E12 | 0.7-  | 0.6+  | 2007 12 13 | 704 | 1.0+ | 0.5+ |
| 1999 10 10 | 704 | 0.3- | 0.7+ | 2007 11 08 | 704 | 0.1+  | 0.0   | 2007 12 13 | 704 | 0.2+ | 0.5+ |
| 2003 10 05 | 704 | 0.2+ | 0.6+ | 2007 11 08 | 704 | 0.2+  | 0.9-  | 2007 12 13 | 704 | 0.0  | 0.7+ |
| 2003 10 05 | 704 | 0.7+ | 0.8- | 2007 11 08 | 704 | 0.4-  | 0.1-  | 2007 12 13 | 704 | 0.0  | 0.1+ |
| 2003 10 05 | 704 | 0.8- | 0.2- | 2007 11 09 | 704 | 0.8-  | 0.6-  | 2007 12 15 | 691 | 0.3- | 0.1+ |
| 2003 10 05 | 704 | 0.3- | 0.6+ | 2007 11 09 | 704 | 0.7-  | 0.1-  | 2007 12 15 | 691 | 0.2- | 0.1+ |
| 2003 10 18 | 644 | 0.0  | 0.1- | 2007 11 09 | 704 | 0.0   | 0.3+  | 2007 12 15 | 691 | 0.3- | 0.0  |

**(171551)\* 1999 TK<sub>7</sub>**

Discovered 1999 Oct. 7 by S. Donati at Monte Agliale.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.15198   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.26468098 | $\omega$ | 51.26359 | +0.46039606 | -0.88766373 |
| <i>a</i> | 2.4024492  | $\Omega$ | 11.33509 | +0.79888348 | +0.40968022 |
| <i>e</i> | 0.2115421  | <i>i</i> | 2.74446  | +0.38706673 | +0.21027415 |
| <i>P</i> | 3.72       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 04 | 704 | 1.2+ | 1.0- | 1999 10 16 | 704 | 0.8- | 0.1- | 2003 11 24 | 704 | 0.6+ | 0.1- |
| 1999 10 04 | 704 | 0.5+ | 0.2+ | 1999 10 16 | 704 | 0.2- | 0.5- | 2003 11 24 | 704 | 0.4+ | 0.5+ |
| 1999 10 04 | 704 | 0.1- | 0.6+ | 1999 10 16 | 704 | 0.6- | 0.1+ | 2003 11 24 | 704 | 0.2- | 0.5+ |
| 1999 10 07 | 704 | 0.1+ | 0.1+ | 1999 10 19 | 704 | 0.1- | 0.6- | 2003 11 24 | 704 | 0.4+ | 0.4+ |
| 1999 10 07 | 704 | 0.6+ | 0.1- | 1999 10 19 | 704 | 0.2- | 0.3- | 2003 11 24 | 704 | 0.8+ | 0.2- |
| 1999 10 07 | 704 | 0.5+ | 0.3- | 1999 10 19 | 704 | 0.1- | 0.1- | 2003 12 04 | 704 | 0.5+ | 0.4+ |
| 1999 10 07 | 704 | 0.1+ | 0.5+ | 1999 10 19 | 704 | 0.1- | 0.3+ | 2003 12 04 | 704 | 0.4- | 0.6+ |
| 1999 10 07 | 704 | 0.8+ | 0.0  | 1999 10 19 | 704 | 0.2+ | 0.1- | 2003 12 04 | 704 | 0.2- | 0.1+ |
| 1999 10 07 | 159 | 0.3+ | 0.3- | 1999 11 01 | 699 | 1.6- | 1.8+ | 2003 12 04 | 704 | 0.3- | 0.4+ |
| 1999 10 07 | 159 | 0.0  | 0.4- | 1999 11 01 | 699 | 0.9- | 0.9+ | 2003 12 04 | 704 | 0.1- | 0.1- |
| 1999 10 07 | 159 | 0.0  | 0.6- | 1999 11 01 | 699 | 0.0  | 0.5+ | 2003 12 18 | 704 | 0.1+ | 0.0  |
| 1999 10 07 | 159 | 0.7+ | 0.6- | 1999 11 01 | 159 | 0.6+ | 0.1- | 2003 12 18 | 704 | 0.1+ | 0.2+ |
| 1999 10 08 | 159 | 0.4+ | 0.2+ | 1999 11 01 | 159 | 0.0  | 0.0  | 2003 12 18 | 704 | 0.1+ | 0.1- |
| 1999 10 08 | 159 | 0.4+ | 0.4+ | 1999 11 01 | 159 | 0.0  | 0.1- | 2003 12 18 | 704 | 0.6+ | 0.3+ |
| 1999 10 08 | 159 | 0.2- | 0.2+ | 1999 11 01 | 159 | 0.1+ | 0.4- | 2003 12 18 | 704 | 0.8+ | 0.4+ |
| 1999 10 08 | 159 | 0.1+ | 0.0  | 1999 11 05 | 704 | 0.8+ | 0.1- | 2003 12 22 | 704 | 0.1+ | 0.1- |
| 1999 10 08 | 159 | 0.4+ | 0.1+ | 1999 11 05 | 704 | 0.2+ | 0.2- | 2003 12 22 | 704 | 0.2+ | 0.2- |
| 1999 10 08 | 159 | 0.1+ | 0.4+ | 1999 11 05 | 704 | 0.1- | 0.8+ | 2003 12 22 | 704 | 0.6+ | 0.7+ |
| 1999 10 08 | 159 | 0.1- | 0.3- | 1999 11 05 | 704 | 0.2+ | 0.5+ | 2003 12 22 | 704 | 0.3+ | 0.7+ |
| 1999 10 09 | 704 | 0.2+ | 0.0  | 1999 11 05 | 704 | 0.0  | 0.0  | 2003 12 27 | 704 | 0.3+ | 0.0  |
| 1999 10 09 | 704 | 0.7+ | 0.4- | 1999 11 14 | 704 | 0.6+ | 0.1- | 2003 12 27 | 704 | 0.1+ | 0.3- |
| 1999 10 09 | 704 | 0.1+ | 0.6- | 1999 11 14 | 704 | 0.0  | 0.4+ | 2003 12 27 | 704 | 0.0  | 0.3- |
| 1999 10 09 | 704 | 0.5+ | 0.1- | 1999 11 14 | 704 | 0.4+ | 0.2+ | 2003 12 27 | 704 | 0.0  | 0.1- |
| 1999 10 09 | 704 | 0.8+ | 0.6- | 1999 11 14 | 704 | 0.3- | 0.1- | 2003 12 27 | 704 | 0.2+ | 0.0  |
| 1999 10 11 | 159 | 0.2+ | 0.1- | 1999 12 07 | 704 | 1.6+ | 0.8+ | 2004 01 19 | 691 | 0.4- | 0.4- |
| 1999 10 11 | 159 | 0.3+ | 0.3- | 1999 12 07 | 704 | 0.8+ | 0.4- | 2004 01 19 | 691 | 0.3- | 0.5- |
| 1999 10 11 | 159 | 0.3+ | 0.0  | 1999 12 07 | 704 | 0.3- | 0.0  | 2004 01 19 | 691 | 0.3- | 0.5- |
| 1999 10 11 | 159 | 0.1+ | 0.0  | 2003 10 29 | 704 | 0.1- | 0.6+ | 2005 05 16 | G96 | 0.3- | 0.1- |
| 1999 10 11 | 159 | 0.1+ | 0.2- | 2003 10 29 | 704 | 0.3+ | 0.6+ | 2005 05 16 | G96 | 0.4+ | 0.3+ |
| 1999 10 11 | 159 | 0.1+ | 0.1- | 2003 10 29 | 704 | 0.1+ | 0.5+ | 2005 05 16 | G96 | 0.0  | 0.2+ |
| 1999 10 15 | 704 | 0.2+ | 0.3- | 2003 10 29 | 704 | 0.4- | 0.0  | 2005 05 16 | G96 | 0.3- | 0.3- |
| 1999 10 15 | 704 | 0.3- | 1.0- | 2003 10 29 | 704 | 0.6- | 0.1+ | 2007 10 20 | 691 | 0.0  | 0.1- |
| 1999 10 15 | 704 | 1.1- | 0.4- | 2003 11 03 | 704 | 0.3+ | 0.7+ | 2007 10 20 | 691 | 0.1- | 0.1+ |
| 1999 10 15 | 704 | 1.5- | 0.2+ | 2003 11 03 | 704 | 0.2- | 0.3+ | 2007 10 20 | 691 | 0.4- | 0.0  |
| 1999 10 15 | 704 | 1.8- | 1.5- | 2003 11 03 | 704 | 0.0  | 0.3+ | 2007 11 19 | G96 | 0.2+ | 0.2- |
| 1999 10 16 | 704 | 0.8- | 0.2+ | 2003 11 03 | 704 | 0.4+ | 0.4+ | 2007 11 19 | G96 | 0.2+ | 0.0  |
| 1999 10 16 | 704 | 0.1+ | 0.9+ | 2003 11 03 | 704 | 0.2+ | 0.3+ | 2007 11 19 | G96 | 0.1+ | 0.2- |
| 1999 10 16 | 704 | 0.4- | 0.4- | 2003 11 20 | 704 | 0.5- | 0.0  | 2007 11 19 | G96 | 0.2+ | 0.1- |
| 1999 10 16 | 704 | 0.4- | 0.1+ | 2003 11 20 | 704 | 0.2- | 0.3+ | 2007 12 06 | 703 | 1.1+ | 0.2+ |
| 1999 10 16 | 704 | 0.0  | 0.3- | 2003 11 20 | 704 | 0.5- | 0.2+ | 2007 12 06 | 703 | 1.2+ | 0.5- |
| 1999 10 16 | 704 | 0.7- | 0.1+ | 2003 11 20 | 704 | 0.6- | 0.0  | 2007 12 06 | 703 | 0.1- | 1.5- |
| 1999 10 16 | 704 | 0.5- | 0.4- | 2003 11 20 | 704 | 0.2- | 0.3+ | 2007 12 06 | 703 | 1.9- | 0.4- |

**(171552)\* 1999 TD<sub>12</sub> = 2002 KV<sub>4</sub>**

Discovered 1999 Oct. 10 by S. Sposetti at Gnosca.

Id. G. V. Williams (*MPO* 31274)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 73.09533   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.26202325 | $\omega$ | 245.39441 | +0.99687236 | +0.05796850 |
| $a$ | 2.4186675  | $\Omega$ | 111.24536 | -0.03343674 | +0.92521950 |
| $e$ | 0.1966496  | $i$      | 3.30381   | -0.07160650 | +0.37497805 |
| $P$ | 3.76       | $H$      | 15.7      | $G$ 0.15    | $U$ 1       |

2007 DEC. 24

M.P.O. 129081

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 10 10 | 143 | 0.1+ | 0.2- | 1999 10 31 | 143 | 0.0  | 0.1+ | 2003 12 21 | 704 | (0.4+ | 1.7+) |
| 1999 10 10 | 143 | 0.6- | 0.1+ | 1999 10 31 | 143 | 0.1- | 0.1+ | 2003 12 21 | 704 | 0.8+  | 0.9+  |
| 1999 10 10 | 143 | 0.5- | 0.0  | 1999 10 31 | 143 | 0.1- | 0.1- | 2003 12 21 | 704 | 0.6+  | 0.3-  |
| 1999 10 10 | 704 | 0.1- | 0.1- | 1999 11 05 | 704 | 0.2+ | 0.7+ | 2003 12 21 | 704 | 1.1+  | 1.0+  |
| 1999 10 10 | 704 | 0.4- | 0.0  | 1999 11 05 | 704 | 0.8+ | 0.3- | 2003 12 21 | 704 | 0.8+  | 0.1-  |
| 1999 10 10 | 704 | 0.3- | 0.2- | 1999 11 05 | 704 | 0.1+ | 0.1- | 2003 12 21 | 704 | 0.5+  | 0.2+  |
| 1999 10 10 | 704 | 0.5- | 0.2- | 1999 11 05 | 704 | 0.1+ | 0.1- | 2003 12 22 | 704 | 0.8-  | 0.9-  |
| 1999 10 10 | 704 | 0.1- | 0.1- | 1999 11 05 | 704 | 1.0+ | 0.0  | 2003 12 22 | 704 | 0.7+  | 0.4+  |
| 1999 10 10 | 143 | 0.4- | 0.1+ | 1999 11 14 | 699 | 0.2- | 0.8+ | 2003 12 22 | 704 | 0.1-  | 0.3-  |
| 1999 10 11 | 143 | 0.2- | 0.1- | 1999 11 14 | 699 | 0.6- | 1.3+ | 2003 12 22 | 704 | 0.3-  | 0.2-  |
| 1999 10 11 | 143 | 0.0  | 0.4+ | 1999 11 14 | 699 | 0.2- | 0.4- | 2003 12 22 | 704 | 0.2+  | 0.6-  |
| 1999 10 11 | 143 | 0.6- | 0.3+ | 1999 11 17 | 704 | 0.3+ | 0.3+ | 2003 12 23 | 704 | 0.0   | 0.5+  |
| 1999 10 11 | 143 | 0.2+ | 0.1+ | 1999 11 17 | 704 | 0.1+ | 0.2- | 2003 12 23 | 704 | 0.1-  | 0.2+  |
| 1999 10 11 | 143 | 0.7+ | 0.4+ | 1999 11 17 | 704 | 0.2+ | 0.5- | 2003 12 23 | 704 | (2.1+ | 0.6+) |
| 1999 10 12 | 143 | 0.0  | 0.4+ | 1999 11 17 | 704 | 0.5+ | 0.3+ | 2003 12 23 | 704 | 0.8-  | 0.9-  |
| 1999 10 12 | 143 | 0.1- | 0.1- | 1999 11 17 | 704 | 0.4+ | 0.5+ | 2005 03 11 | 691 | 0.1+  | 0.8+  |
| 1999 10 12 | 143 | 1.1+ | 0.5+ | 1999 11 25 | 143 | 0.2+ | 0.9+ | 2005 03 11 | 691 | 0.0   | 0.8+  |
| 1999 10 12 | 699 | 0.1- | 0.1- | 1999 11 26 | 143 | 0.3- | 0.4- | 2005 03 11 | 691 | 0.0   | 0.6+  |
| 1999 10 12 | 699 | 0.4+ | 0.5+ | 1999 11 26 | 143 | 0.3+ | 0.3+ | 2007 11 11 | G96 | 0.1+  | 0.2-  |
| 1999 10 12 | 699 | 0.6- | 0.3- | 1999 12 04 | 699 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.1+  | 0.2-  |
| 1999 10 15 | 704 | 0.0  | 0.1+ | 1999 12 04 | 699 | 0.0  | 0.3- | 2007 11 11 | G96 | 0.0   | 0.2-  |
| 1999 10 15 | 704 | 0.3+ | 0.3- | 1999 12 04 | 699 | 0.2+ | 0.7+ | 2007 12 01 | D35 | 0.2+  | 0.2-  |
| 1999 10 15 | 704 | 0.0  | 0.2+ | 2002 05 16 | 704 | 0.0  | 0.2+ | 2007 12 01 | D35 | 0.3+  | 0.5-  |
| 1999 10 15 | 704 | 0.6- | 0.4+ | 2002 05 16 | 704 | 0.4+ | 0.1+ | 2007 12 01 | D35 | 0.7+  | 0.7+  |
| 1999 10 19 | 699 | 1.4- | 0.2- | 2002 05 16 | 704 | 1.5+ | 0.5+ | 2007 12 03 | 691 | 0.3-  | 0.1-  |
| 1999 10 19 | 699 | 0.5+ | 0.1- | 2002 05 21 | 704 | 0.1+ | 0.6+ | 2007 12 03 | 691 | 0.3-  | 0.1-  |
| 1999 10 19 | 699 | 0.6- | 1.7+ | 2002 05 21 | 704 | 0.5- | 0.4+ | 2007 12 03 | 691 | 0.3-  | 0.1-  |
| 1999 10 20 | 704 | 0.4- | 0.7+ | 2002 05 21 | 704 | 0.6- | 0.3+ | 2007 12 03 | 691 | 0.4-  | 0.0   |
| 1999 10 20 | 704 | 0.8- | 1.5+ | 2002 06 10 | 704 | 0.3+ | 0.9+ |            |     |       |       |

(171553)\* 1999 TG<sub>39</sub>

Discovered 1999 Oct. 3 by the Catalina Sky Survey.

|                                         |            |                    |
|-----------------------------------------|------------|--------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    |
| <i>M</i>                                | 334.39156  | (2000.0)           |
| <i>n</i>                                | 0.24126113 | $\omega$ 304.69224 |
| <i>a</i>                                | 2.5555113  | $\Omega$ 108.22438 |
| <i>e</i>                                | 0.2503846  | <i>i</i> 6.13193   |
| <i>P</i>                                | 4.09       | <i>H</i> 16.4      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 01 14 | 691 | 0.2- | 0.0  | 2003 09 18 | 704 | 0.5+ | 0.1+ | 2003 12 22 | 704 | 0.7+ | 0.2+ |
| 1996 01 14 | 691 | 0.2- | 0.2- | 2003 09 18 | 704 | 0.2+ | 0.3- | 2003 12 23 | 704 | 0.1+ | 0.9- |
| 1996 01 14 | 691 | 0.1+ | 0.1+ | 2003 09 18 | 704 | 0.1+ | 0.1+ | 2003 12 23 | 704 | 1.3+ | 0.5+ |
| 1999 10 03 | 703 | 0.0  | 0.5+ | 2003 10 16 | 644 | 0.4- | 0.1+ | 2003 12 23 | 704 | 0.6+ | 1.0- |
| 1999 10 03 | 703 | 0.5- | 0.2+ | 2003 10 16 | 644 | 0.5- | 0.0  | 2003 12 23 | 704 | 1.3- | 0.3+ |
| 1999 10 03 | 703 | 0.5- | 0.7+ | 2003 10 16 | 699 | 0.7- | 0.9+ | 2007 09 05 | 703 | 0.9- | 0.4+ |
| 1999 10 03 | 703 | 0.2+ | 0.5+ | 2003 10 16 | 699 | 0.0  | 0.8+ | 2007 09 05 | 703 | 0.3- | 1.3+ |
| 1999 10 07 | 703 | 0.4- | 0.0  | 2003 10 16 | 644 | 0.4- | 0.0  | 2007 09 05 | 703 | 0.3+ | 1.0+ |
| 1999 10 07 | 703 | 0.3- | 0.7- | 2003 10 16 | 699 | 0.3+ | 0.1+ | 2007 09 05 | 703 | 0.5+ | 1.1+ |
| 1999 10 07 | 703 | 0.3+ | 0.3+ | 2003 10 16 | 699 | 0.1+ | 0.3+ | 2007 09 11 | D29 | 0.2+ | 0.8- |
| 1999 10 07 | 703 | 0.1- | 0.1- | 2003 10 18 | 699 | 0.3+ | 0.0  | 2007 09 11 | D29 | 0.2+ | 0.9- |
| 1999 10 09 | 704 | 0.1+ | 0.7- | 2003 10 18 | 699 | 0.0  | 0.1+ | 2007 09 11 | D29 | 0.3+ | 0.3- |
| 1999 10 09 | 704 | 0.0  | 0.2- | 2003 10 18 | 699 | 0.0  | 0.2- | 2007 09 11 | D29 | 0.1+ | 0.7- |
| 1999 10 09 | 704 | 1.0+ | 0.3- | 2003 10 18 | 699 | 0.3- | 0.4- | 2007 09 14 | 703 | 0.2- | 0.5- |
| 1999 10 09 | 704 | 0.3+ | 0.2+ | 2003 10 19 | 704 | 1.3+ | 0.4- | 2007 09 14 | 703 | 0.2- | 0.7- |
| 1999 10 09 | 704 | 0.5+ | 0.3- | 2003 10 19 | 704 | 0.3+ | 1.4+ | 2007 09 14 | 703 | 0.6- | 0.3- |
| 1999 11 03 | 703 | 0.2- | 0.9+ | 2003 10 19 | 704 | 0.0  | 1.5+ | 2007 09 14 | 703 | 0.6- | 0.1- |
| 1999 11 03 | 703 | 1.0- | 0.6- | 2003 10 19 | 704 | 0.2- | 0.3+ | 2007 09 15 | 699 | 0.3+ | 0.2- |
| 1999 11 03 | 703 | 0.4- | 0.6- | 2003 10 19 | 704 | 0.9+ | 0.9+ | 2007 09 15 | 699 | 0.3- | 0.2+ |
| 1999 11 03 | 703 | 0.8- | 0.7+ | 2003 10 22 | 608 | 0.0  | 1.2- | 2007 09 15 | 699 | 1.4- | 0.6+ |
| 1999 11 06 | 704 | 0.1+ | 0.3- | 2003 10 22 | 608 | 0.2+ | 0.7- | 2007 09 15 | 699 | 0.8+ | 0.5+ |
| 1999 11 06 | 704 | 0.3- | 0.2+ | 2003 10 22 | 608 | 0.1+ | 0.7- | 2007 10 04 | 703 | 0.5- | 0.5- |
| 1999 11 06 | 704 | 0.4+ | 0.3- | 2003 10 29 | 699 | 0.2+ | 0.1+ | 2007 10 04 | 703 | 0.8+ | 0.3+ |
| 1999 11 06 | 704 | 0.0  | 0.4- | 2003 10 29 | 699 | 0.9- | 0.5- | 2007 10 04 | 703 | 0.7- | 0.1+ |
| 1999 11 06 | 704 | 0.4+ | 0.8- | 2003 10 29 | 699 | 0.7- | 0.1+ | 2007 10 04 | 703 | 0.5- | 0.6+ |
| 1999 11 13 | 699 | 1.0- | 0.9+ | 2003 10 29 | 699 | 0.4- | 0.1+ | 2007 10 11 | 703 | 0.1+ | 0.4+ |
| 1999 11 13 | 699 | 0.2- | 0.2- | 2003 11 19 | 703 | 0.7- | 0.1- | 2007 10 11 | 703 | 0.0  | 1.1- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 13 | 699 | 0.2+  | 0.1-  | 2003 11 19 | 703 | 0.1+  | 1.0-  | 2007 10 11 | 703 | 0.1-  | 0.1+  |
| 1999 12 14 | 704 | 1.1+  | 0.5-  | 2003 11 19 | 703 | 0.8-  | 0.9-  | 2007 10 11 | 703 | 0.1-  | 0.2-  |
| 1999 12 14 | 704 | 1.4+  | 0.4+  | 2003 11 19 | 703 | (2.5- | 0.7-) | 2007 10 18 | 703 | 0.3+  | 0.2+  |
| 1999 12 14 | 704 | 1.9+  | 0.0   | 2003 11 23 | 699 | 0.2-  | 0.5-  | 2007 10 18 | 703 | 0.2+  | 0.6-  |
| 2001 04 16 | 645 | 0.1+  | 0.3+  | 2003 11 23 | 699 | 0.0   | 0.4-  | 2007 10 18 | 703 | (0.4- | 1.6-) |
| 2001 04 16 | 645 | 0.1+  | 0.2+  | 2003 11 23 | 699 | 0.3-  | 0.1-  | 2007 10 18 | 703 | 0.1+  | 0.4+  |
| 2003 08 26 | 704 | 0.7-  | 0.8-  | 2003 11 23 | 699 | 0.2-  | 0.5-  | 2007 10 20 | G96 | 0.3-  | 0.1-  |
| 2003 08 26 | 704 | 0.5-  | 0.7+  | 2003 11 24 | 644 | 0.2+  | 0.7+  | 2007 10 20 | G96 | 0.1-  | 0.5-  |
| 2003 08 26 | 704 | 0.2-  | 0.4-  | 2003 11 24 | 644 | 0.0   | 0.7+  | 2007 10 20 | G96 | 0.1+  | 0.5-  |
| 2003 08 26 | 704 | 1.2-  | 0.1+  | 2003 11 24 | 644 | 0.0   | 0.5+  | 2007 10 20 | G96 | 0.2+  | 0.4-  |
| 2003 08 26 | 704 | 0.2-  | 0.4+  | 2003 12 13 | 704 | 0.9-  | 0.9+  | 2007 11 11 | 704 | 0.9+  | 0.8+  |
| 2003 09 02 | 704 | 0.7+  | 0.2+  | 2003 12 13 | 704 | 0.4-  | 0.7+  | 2007 11 11 | 704 | 1.3+  | 0.8+  |
| 2003 09 02 | 704 | 1.3+  | 0.1+  | 2003 12 13 | 704 | 0.1+  | 1.2+  | 2007 11 11 | 704 | (1.7+ | 1.3+) |
| 2003 09 02 | 704 | (1.8+ | 0.9+) | 2003 12 16 | 644 | 0.4+  | 0.4+  | 2007 12 05 | 704 | 0.8-  | 0.1-  |
| 2003 09 02 | 704 | 0.7+  | 1.1+  | 2003 12 16 | 644 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.4-  | 0.6+  |
| 2003 09 02 | 704 | (2.1+ | 0.6+) | 2003 12 16 | 644 | 0.1+  | 0.7+  | 2007 12 05 | 704 | 0.1-  | 0.1+  |
| 2003 09 18 | 704 | 0.0   | 0.2+  | 2003 12 22 | 704 | 0.6+  | 0.1+  | 2007 12 05 | 704 | 0.7-  | 1.0+  |
| 2003 09 18 | 704 | 0.1+  | 0.1+  | 2003 12 22 | 704 | 0.5+  | 0.8+  | 2007 12 05 | 704 | 0.6-  | 0.4+  |

(171554)\* 1999 TR<sub>57</sub> = 2005 GQ<sub>16</sub>

Discovered 1999 Oct. 6 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 84502)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| MPC      |            | P                  |               | Q           |  |
| <i>M</i> | 98.28161   | (2000.0)           |               |             |  |
| <i>n</i> | 0.26432887 | $\omega$ 150.42702 | +0.84904231   | +0.52832401 |  |
| <i>a</i> | 2.4045823  | $\Omega$ 177.68005 | -0.48921201   | +0.78686275 |  |
| <i>e</i> | 0.1852960  | <i>i</i> 1.34252   | -0.19949627   | +0.31893692 |  |
| <i>P</i> | 3.73       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 06 | 691 | 0.1+  | 0.0   | 2002 06 16 | 644 | 0.2+  | 0.3+  | 2005 04 04 | 691 | 0.6+ | 0.1- |
| 1999 10 06 | 691 | 0.0   | 0.1-  | 2003 11 21 | 704 | 0.5+  | 0.5+  | 2005 04 04 | 691 | 0.1+ | 0.3+ |
| 1999 10 06 | 691 | 0.1-  | 0.0   | 2003 11 21 | 704 | 0.1+  | 0.3+  | 2005 04 04 | 691 | 0.2+ | 0.0  |
| 1999 10 10 | 704 | 0.6+  | 0.3+  | 2003 11 21 | 704 | 0.0   | 0.4+  | 2005 05 13 | G96 | 0.2- | 0.6- |
| 1999 10 10 | 704 | 1.3-  | 0.5-  | 2003 11 21 | 704 | 0.8+  | 0.4+  | 2005 05 13 | G96 | 0.8- | 0.4+ |
| 1999 10 10 | 704 | 0.6-  | 0.6+  | 2003 12 19 | 704 | 0.3-  | 0.3+  | 2005 05 13 | G96 | 0.2- | 0.1+ |
| 1999 10 10 | 704 | 0.1+  | 0.4-  | 2003 12 19 | 704 | 0.4-  | 0.5+  | 2005 05 13 | G96 | 0.2- | 0.2- |
| 1999 10 10 | 704 | 0.8+  | 0.0   | 2003 12 19 | 704 | (2.1- | 1.1+) | 2006 06 09 | 644 | 0.0  | 0.1- |
| 1999 10 11 | 691 | 0.0   | 0.1+  | 2003 12 19 | 691 | 0.1-  | 0.1+  | 2006 06 09 | 644 | 0.2+ | 0.0  |
| 1999 10 11 | 691 | 0.0   | 0.0   | 2003 12 19 | 691 | 0.1-  | 0.1+  | 2006 06 09 | 644 | 0.0  | 0.1+ |
| 1999 10 11 | 691 | 0.1+  | 0.1+  | 2003 12 19 | 691 | 0.4-  | 0.1+  | 2007 11 19 | G96 | 0.1+ | 0.1+ |
| 2002 06 08 | 291 | 0.1+  | 0.1+  | 2005 03 08 | G96 | 0.3-  | 0.0   | 2007 11 19 | G96 | 0.2- | 0.1- |
| 2002 06 08 | 291 | 0.1+  | 0.3+  | 2005 03 08 | G96 | 0.3-  | 0.0   | 2007 11 19 | G96 | 0.2+ | 0.2- |
| 2002 06 08 | 291 | (1.0+ | 2.8+) | 2005 03 08 | G96 | 0.3-  | 0.3+  | 2007 11 19 | G96 | 0.0  | 0.2- |
| 2002 06 11 | 644 | 0.3-  | 0.1-  | 2005 03 08 | G96 | 0.2-  | 0.1+  | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2002 06 11 | 644 | 0.5-  | 0.7+  | 2005 04 02 | G96 | 0.2-  | 0.0   | 2007 12 04 | G96 | 0.1+ | 0.2- |
| 2002 06 11 | 644 | 0.1-  | 0.3+  | 2005 04 02 | G96 | 0.0   | 0.3-  | 2007 12 04 | G96 | 0.1+ | 0.2+ |
| 2002 06 16 | 644 | 0.6+  | 0.2+  | 2005 04 02 | G96 | 0.2+  | 0.5-  | 2007 12 04 | G96 | 0.4- | 0.4- |
| 2002 06 16 | 644 | 0.2+  | 0.4+  | 2005 04 02 | G96 | 0.5-  | 0.2-  |            |     |      |      |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 09 14 | 704 | 1.3+  | 0.3+  | 1999 10 15 | 691 | 0.2- | 0.2- | 2003 11 19 | 291 | 0.0   | 0.2+  |
| 1999 09 14 | 704 | 0.2+  | 0.4+  | 1999 10 15 | 691 | 0.1- | 0.3- | 2003 11 19 | 291 | 0.0   | 0.2+  |
| 1999 09 14 | 704 | 1.1+  | 0.4-  | 1999 10 16 | 645 | 0.1+ | 0.0  | 2005 03 08 | G96 | 0.1+  | 0.3+  |
| 1999 09 14 | 704 | 1.5+  | 0.7+  | 1999 10 16 | 645 | 0.2+ | 0.0  | 2005 03 08 | G96 | 0.1+  | 0.2-  |
| 1999 09 14 | 703 | 1.0-  | 0.0   | 1999 11 05 | 691 | 0.0  | 0.1- | 2005 03 08 | G96 | 0.2+  | 0.2-  |
| 1999 09 14 | 703 | 0.8+  | 0.5+  | 1999 11 05 | 691 | 0.1+ | 0.1+ | 2005 03 08 | G96 | 0.1-  | 0.1-  |
| 1999 09 14 | 703 | 0.1+  | 0.9+  | 1999 11 05 | 691 | 0.3- | 0.2+ | 2007 11 04 | H82 | 0.9+  | 0.1-  |
| 1999 09 14 | 703 | 0.7+  | 1.4+  | 1999 11 17 | 691 | 0.1- | 0.3+ | 2007 11 04 | H82 | 0.8-  | 1.3-  |
| 1999 10 07 | 691 | 0.2-  | 0.1-  | 1999 11 17 | 691 | 0.3- | 0.1+ | 2007 11 04 | H82 | 0.6-  | 0.1+  |
| 1999 10 07 | 691 | 0.1-  | 0.6-  | 1999 11 17 | 691 | 0.4- | 0.3+ | 2007 11 06 | 691 | 0.4-  | 0.5-  |
| 1999 10 07 | 691 | 0.1-  | 0.2-  | 2003 10 02 | 691 | 0.1- | 0.3+ | 2007 11 06 | 691 | 0.4-  | 0.2-  |
| 1999 10 08 | 704 | 0.0   | 1.2-  | 2003 10 02 | 691 | 0.0  | 0.5+ | 2007 11 06 | 691 | 0.2-  | 0.7-  |
| 1999 10 08 | 704 | 0.6-  | 0.5-  | 2003 10 02 | 691 | 0.1- | 0.4+ | 2007 11 15 | 704 | 1.2+  | 0.2+  |
| 1999 10 08 | 704 | (0.9- | 2.3+) | 2003 10 22 | 291 | 0.0  | 0.2+ | 2007 11 15 | 704 | (2.3+ | 0.1-) |
| 1999 10 09 | 704 | 1.1-  | 0.4+  | 2003 10 22 | 291 | 0.0  | 0.3+ | 2007 11 15 | 704 | (2.1+ | 1.0-) |
| 1999 10 09 | 704 | 0.3-  | 0.2+  | 2003 10 22 | 291 | 0.1- | 0.2+ | 2007 11 15 | 704 | 1.0+  | 1.0-  |
| 1999 10 09 | 704 | 0.9-  | 0.2+  | 2003 10 23 | 704 | 0.0  | 0.3+ | 2007 11 15 | 704 | (2.2+ | 0.6-) |
| 1999 10 09 | 704 | 0.8-  | 1.5+  | 2003 10 23 | 704 | 0.5+ | 0.3+ | 2007 12 03 | 703 | 0.3+  | 0.1-  |
| 1999 10 09 | 704 | 1.0+  | 0.8+  | 2003 10 23 | 704 | 0.0  | 0.3+ | 2007 12 03 | 703 | 0.2-  | 0.8+  |
| 1999 10 09 | 704 | 0.6+  | 0.5+  | 2003 10 23 | 291 | 0.3- | 0.0  | 2007 12 03 | 703 | 0.6-  | 0.2+  |
| 1999 10 09 | 704 | 0.2-  | 0.4+  | 2003 10 23 | 704 | 1.0+ | 0.6+ | 2007 12 03 | 703 | 1.0-  | 0.6+  |
| 1999 10 09 | 704 | 1.4-  | 1.2+  | 2003 10 23 | 704 | 0.4+ | 0.5+ | 2007 12 04 | G96 | 0.4+  | 0.5-  |
| 1999 10 10 | 691 | 0.3+  | 0.3-  | 2003 10 23 | 291 | 0.2- | 0.0  | 2007 12 04 | G96 | 0.1+  | 0.4-  |
| 1999 10 10 | 691 | 0.2+  | 0.2-  | 2003 10 23 | 291 | 0.4- | 0.1+ | 2007 12 04 | G96 | 0.3+  | 0.3-  |
| 1999 10 10 | 691 | 0.1+  | 0.2-  | 2003 10 29 | 704 | 0.9- | 0.7+ | 2007 12 04 | G96 | 0.1-  | 0.2-  |
| 1999 10 13 | 691 | 0.1-  | 0.5-  | 2003 10 29 | 704 | 1.3- | 0.5+ | 2007 12 05 | 704 | 0.3+  | 0.5-  |
| 1999 10 13 | 691 | 0.1-  | 0.4-  | 2003 10 29 | 704 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.6+  | 0.2-  |
| 1999 10 13 | 691 | 0.1-  | 0.7-  | 2003 10 29 | 704 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.4-  | 0.5+  |
| 1999 10 14 | 691 | 0.3-  | 0.3-  | 2003 10 29 | 703 | 0.3- | 0.3+ | 2007 12 05 | 704 | 0.1+  | 0.2+  |
| 1999 10 14 | 691 | 0.2-  | 0.2-  | 2003 10 29 | 703 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.2+  | 0.1+  |
| 1999 10 14 | 691 | 0.2-  | 0.2-  | 2003 10 29 | 703 | 1.2+ | 1.1- | 2007 12 15 | G96 | 0.4+  | 0.4-  |
| 1999 10 14 | 691 | 0.4-  | 0.2-  | 2003 10 29 | 703 | 0.1- | 0.2+ | 2007 12 15 | G96 | 0.3+  | 0.5-  |
| 1999 10 14 | 691 | 0.0   | 0.0   | 2003 10 30 | 704 | 0.6+ | 0.5+ | 2007 12 15 | G96 | 0.2-  | 0.7-  |
| 1999 10 14 | 691 | 0.1-  | 0.1-  | 2003 10 30 | 704 | 0.4+ | 0.3- | 2007 12 15 | G96 | 0.1+  | 0.4-  |
| 1999 10 15 | 704 | 0.3-  | 0.5-  | 2003 10 30 | 704 | 0.5+ | 0.4+ |            |     |       |       |

**(171556)\* 1999 TW<sub>129</sub> = 2003 UY<sub>129</sub>**

Discovered 1999 Oct. 6 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 55916)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 357.30468  |          | (2000.0)  | $P$         | $Q$         |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.26406151 | $\omega$ | 85.83850  | +0.07477568 | -0.99720032 |
| $a$ | 2.4062051  | $\Omega$ | 359.87159 | +0.84170698 | +0.06330416 |
| $e$ | 0.1890595  | $i$      | 8.98679   | +0.53473168 | +0.03980085 |
| $P$ | 3.73       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 14 | 704 | (0.9- | 2.2+) | 2001 03 23 | 699 | 0.2+ | 0.8+ | 2003 11 20 | 704 | 0.2- | 0.4+ |
| 1999 09 14 | 704 | 0.1-  | 0.4+  | 2003 10 05 | 704 | 0.3- | 0.7+ | 2003 11 20 | 704 | 0.2+ | 0.2- |
| 1999 09 14 | 704 | 1.0-  | 1.1+  | 2003 10 05 | 704 | 1.2+ | 0.1+ | 2003 11 20 | 704 | 0.3+ | 0.6- |
| 1999 09 14 | 704 | 0.1+  | 0.2-  | 2003 10 05 | 704 | 0.2+ | 0.7+ | 2003 11 20 | 704 | 0.2+ | 0.9+ |
| 1999 09 14 | 703 | 0.8+  | 0.3+  | 2003 10 05 | 704 | 1.1+ | 0.4- | 2003 11 22 | 704 | 0.8+ | 0.1+ |
| 1999 09 14 | 703 | 1.1-  | 0.5+  | 2003 10 05 | 704 | 0.4- | 0.1- | 2003 11 22 | 704 | 0.6- | 0.2+ |
| 1999 09 14 | 703 | 1.5-  | 0.1+  | 2003 10 18 | 644 | 0.1+ | 0.1- | 2003 11 22 | 704 | 0.7- | 0.1- |
| 1999 09 14 | 703 | 1.3+  | 0.0   | 2003 10 18 | 644 | 0.2+ | 0.1- | 2007 11 09 | 704 | 0.0  | 0.5+ |
| 1999 10 06 | 704 | 0.1-  | 0.5-  | 2003 10 18 | 644 | 0.1+ | 0.1+ | 2007 11 09 | 704 | 0.7+ | 0.1- |
| 1999 10 06 | 704 | 0.2-  | 0.3-  | 2003 10 22 | 704 | 0.8- | 0.4+ | 2007 11 09 | 704 | 0.9- | 0.6+ |
| 1999 10 06 | 704 | 0.6-  | 0.1+  | 2003 10 22 | 704 | 0.1+ | 0.4- | 2007 11 09 | 704 | 0.1+ | 0.1- |
| 1999 10 06 | 704 | 0.3-  | 0.1-  | 2003 10 22 | 704 | 0.2- | 0.4+ | 2007 11 20 | 703 | 0.7- | 1.5- |
| 1999 10 06 | 704 | 0.3-  | 0.1-  | 2003 10 22 | 704 | 0.1- | 0.2- | 2007 11 20 | 703 | 1.0- | 0.1+ |
| 1999 10 07 | 704 | 0.1+  | 0.6+  | 2003 10 22 | 704 | 0.2+ | 1.2+ | 2007 11 20 | 703 | 0.4- | 0.3+ |
| 1999 10 07 | 704 | 1.0-  | 0.7-  | 2003 10 25 | 691 | 0.1- | 0.2- | 2007 11 20 | 703 | 1.2- | 0.1+ |
| 1999 10 07 | 704 | 0.2+  | 0.2+  | 2003 10 25 | 691 | 0.1+ | 0.2- | 2007 12 03 | 704 | 1.0+ | 0.1+ |
| 1999 10 15 | 704 | 0.0   | 0.4+  | 2003 10 25 | 691 | 0.0  | 0.3- | 2007 12 03 | 704 | 1.0- | 1.4+ |
| 1999 10 15 | 704 | 0.4+  | 0.1-  | 2003 11 05 | 699 | 0.3- | 0.3- | 2007 12 03 | 704 | 0.2+ | 0.2+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 15 | 704 | 0.1- | 0.0  | 2003 11 05 | 699 | 0.0   | 0.0   | 2007 12 03 | 704 | 0.8+ | 0.2+ |
| 1999 10 15 | 704 | 0.1+ | 1.1+ | 2003 11 05 | 699 | (1.6- | 0.2-) | 2007 12 05 | 699 | 1.6+ | 0.7- |
| 1999 10 16 | 645 | 0.0  | 0.1- | 2003 11 05 | 699 | 0.4+  | 0.4-  | 2007 12 05 | 699 | 0.2+ | 0.1+ |
| 1999 10 16 | 645 | 0.0  | 0.0  | 2003 11 19 | 644 | 0.1-  | 0.0   | 2007 12 05 | 699 | 0.0  | 0.6- |
| 2001 03 23 | 699 | 0.1- | 0.8+ | 2003 11 19 | 644 | 0.2-  | 0.1-  | 2007 12 05 | 699 | 0.4+ | 0.2+ |
| 2001 03 23 | 699 | 1.1+ | 0.4+ | 2003 11 19 | 644 | 0.1+  | 0.1-  |            |     |      |      |
| 2001 03 23 | 699 | 0.3+ | 0.5+ | 2003 11 20 | 704 | 0.4-  | 0.7+  |            |     |      |      |

**(171557)\* 1999 TO<sub>140</sub> = 2003 SV<sub>155</sub> = 2003 UP<sub>200</sub>**

Discovered 1999 Oct. 6 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. M. E. Sansaturio (*MPO* 55919)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $M$ | 41.84146   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
| $n$ | 0.23811628 | $\omega$ | 302.44865 | +0.68915295  | +0.72438701  |     |   |
| $a$ | 2.5779628  | $\Omega$ | 11.17171  | -0.62927471  | +0.61075022  |     |   |
| $e$ | 0.1439050  | $i$      | 5.39357   | -0.35927921  | +0.31976182  |     |   |
| $P$ | 4.14       | $H$      | 15.9      | $G$          | 0.15         | $U$ | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 06 | 704 | 0.1+ | 0.7- | 2003 09 29 | 704 | 0.2-  | 0.6+  | 2007 09 19 | 704 | 0.2+  | 0.2+  |
| 1999 10 06 | 704 | 0.0  | 0.3- | 2003 09 29 | 704 | 0.5+  | 0.2+  | 2007 09 19 | 704 | 1.3+  | 0.5+  |
| 1999 10 06 | 704 | 0.5+ | 0.2+ | 2003 09 29 | 704 | 0.4-  | 0.3+  | 2007 09 19 | 704 | 1.3+  | 0.2-  |
| 1999 10 10 | 704 | 0.2- | 0.3- | 2003 09 29 | 704 | 0.7+  | 0.8+  | 2007 09 19 | 704 | 0.6+  | 0.4+  |
| 1999 10 10 | 704 | 0.0  | 0.4- | 2003 10 19 | 691 | 0.0   | 0.1-  | 2007 09 19 | 704 | 0.1+  | 0.2+  |
| 1999 10 10 | 704 | 0.7+ | 0.6+ | 2003 10 19 | 691 | 0.2-  | 0.2-  | 2007 10 06 | 704 | 0.9-  | 0.4+  |
| 1999 10 10 | 704 | 0.7- | 0.2+ | 2003 10 19 | 691 | 0.1+  | 0.1-  | 2007 10 06 | 704 | 0.1-  | 0.9+  |
| 1999 10 13 | 704 | 0.3+ | 1.1- | 2003 10 21 | 704 | (1.6+ | 1.0-) | 2007 10 06 | 704 | 0.3-  | 0.2+  |
| 1999 10 13 | 704 | 0.1- | 0.6- | 2003 10 21 | 704 | 1.1-  | 0.4+  | 2007 10 06 | 704 | 0.3-  | 0.5+  |
| 1999 10 13 | 704 | 0.5+ | 0.4+ | 2003 10 21 | 704 | 0.1+  | 0.5+  | 2007 10 06 | 704 | 0.1-  | 0.4+  |
| 1999 10 13 | 704 | 0.1+ | 0.2- | 2003 10 21 | 704 | 0.8+  | 0.4+  | 2007 10 11 | 704 | (0.0  | 1.6+) |
| 1999 10 13 | 704 | 1.2- | 0.3+ | 2003 10 24 | 704 | 0.2-  | 0.3+  | 2007 10 11 | 704 | 0.8+  | 1.0+  |
| 1999 10 15 | 704 | 0.0  | 0.3+ | 2003 10 24 | 704 | 0.1+  | 0.2+  | 2007 10 11 | 704 | 0.1+  | 1.1+  |
| 1999 10 15 | 704 | 0.6+ | 0.1+ | 2003 10 24 | 704 | 0.0   | 0.2+  | 2007 10 12 | G96 | 0.1-  | 0.3-  |
| 1999 10 15 | 704 | 0.8+ | 0.5+ | 2003 10 24 | 704 | 0.1-  | 0.5+  | 2007 10 12 | G96 | 0.1-  | 0.2-  |
| 2002 04 14 | 704 | 0.1- | 0.7- | 2003 10 24 | 704 | 0.5-  | 0.1+  | 2007 10 12 | G96 | 0.2-  | 0.3-  |
| 2002 04 14 | 704 | 0.9- | 0.5- | 2007 08 22 | 704 | 0.9+  | 0.5+  | 2007 10 12 | G96 | 0.2-  | 0.3-  |
| 2002 04 14 | 704 | 0.3- | 0.1+ | 2007 08 22 | 704 | 0.3-  | 0.5+  | 2007 10 14 | 704 | 0.1+  | 0.3-  |
| 2002 05 18 | 644 | 0.6+ | 0.5+ | 2007 08 22 | 704 | (1.4- | 1.7+) | 2007 10 14 | 704 | 0.3+  | 0.0   |
| 2002 05 18 | 644 | 0.6+ | 0.6+ | 2007 08 22 | 704 | 0.2-  | 0.3-  | 2007 10 14 | 704 | 0.1+  | 0.6-  |
| 2002 05 18 | 644 | 0.3+ | 0.6+ | 2007 09 11 | D29 | 0.2+  | 0.1-  | 2007 10 14 | 704 | 0.4-  | 0.2-  |
| 2003 09 19 | 699 | 0.1- | 0.5- | 2007 09 11 | D29 | 0.5+  | 0.9-  | 2007 10 15 | 703 | 0.2+  | 0.0   |
| 2003 09 19 | 699 | 1.0+ | 0.2- | 2007 09 11 | D29 | 0.9-  | 0.2-  | 2007 10 15 | 703 | 0.9+  | 0.5-  |
| 2003 09 19 | 699 | 0.3- | 0.8- | 2007 09 11 | D29 | 0.4+  | 0.5-  | 2007 10 15 | 703 | 0.5+  | 0.7+  |
| 2003 09 19 | 699 | 1.2+ | 0.7+ | 2007 09 13 | 704 | 0.4+  | 0.3-  | 2007 10 15 | 703 | 0.0   | 1.1+  |
| 2003 09 20 | 704 | 0.1- | 0.2- | 2007 09 13 | 704 | 0.3-  | 0.5-  | 2007 10 18 | 704 | 0.1+  | 0.6+  |
| 2003 09 20 | 704 | 0.6+ | 1.1- | 2007 09 13 | 704 | 0.5-  | 0.3-  | 2007 10 18 | 704 | 0.7-  | 0.8+  |
| 2003 09 20 | 704 | 0.3+ | 0.3+ | 2007 09 13 | 704 | 0.5+  | 0.7-  | 2007 10 18 | 704 | (1.8- | 0.8+) |
| 2003 09 20 | 704 | 0.7- | 0.2- | 2007 09 13 | 704 | (1.1+ | 1.6-) | 2007 10 18 | 704 | 0.9-  | 0.7+  |
| 2003 09 20 | 704 | 0.9- | 0.2- | 2007 09 13 | G96 | 0.0   | 0.4-  | 2007 10 18 | 704 | 0.4-  | 0.8+  |
| 2003 09 21 | 644 | 0.8- | 0.4- | 2007 09 13 | G96 | 0.2-  | 0.3-  | 2007 11 17 | G96 | 0.4-  | 0.6-  |
| 2003 09 21 | 644 | 0.7- | 0.3- | 2007 09 13 | G96 | 0.2-  | 0.3-  | 2007 11 17 | G96 | 0.3+  | 0.1-  |
| 2003 09 21 | 644 | 0.8- | 0.3- | 2007 09 13 | G96 | 0.2+  | 0.3-  | 2007 11 17 | G96 | 0.5+  | 0.2-  |
| 2003 09 26 | 704 | 0.1+ | 0.7+ | 2007 09 16 | 704 | 0.6-  | 0.7-  | 2007 11 17 | G96 | 0.1+  | 0.3-  |
| 2003 09 26 | 704 | 0.0  | 0.7+ | 2007 09 16 | 704 | 0.1+  | 0.1+  | 2007 12 04 | G96 | 0.2+  | 0.5-  |
| 2003 09 26 | 704 | 0.7- | 0.1+ | 2007 09 16 | 704 | (0.6- | 1.5+) | 2007 12 04 | G96 | 0.1-  | 0.3-  |
| 2003 09 26 | 704 | 0.3- | 0.0  | 2007 09 16 | 704 | 0.0   | 0.0   | 2007 12 04 | G96 | 0.5-  | 0.9-  |
| 2003 09 26 | 704 | 0.0  | 0.3+ | 2007 09 16 | 704 | 0.9-  | 0.7-  | 2007 12 04 | G96 | 0.2-  | 0.0   |



2007 DEC. 24

M.P.O. 129083

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                 |          |           |            |             | MPC      |       |             |     |      |      |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------|-----------|------------|-------------|----------|-------|-------------|-----|------|------|
| <i>M</i>                                | 134.80268                                                                                                                       |          | (2000.0)  |            | <b>P</b>    |          |       | <b>Q</b>    |     |      |      |
| <i>n</i>                                | 0.28011636                                                                                                                      | $\omega$ | 177.72030 |            | +0.85202362 |          |       | +0.52239443 |     |      |      |
| <i>a</i>                                | 2.3133627                                                                                                                       | $\Omega$ | 150.70699 |            | −0.48139955 |          |       | +0.80739931 |     |      |      |
| <i>e</i>                                | 0.2090948                                                                                                                       | <i>i</i> | 3.99130   |            | −0.20569450 |          |       | +0.27424517 |     |      |      |
| <i>P</i>                                | 3.52 <th><i>H</i></th> <td>16.6</td> <th><i>G</i></th> <td>0.15</td> <th><i>U</i></th> <td>1</td> <th></th> <th></th> <th></th> | <i>H</i> | 16.6      | <i>G</i>   | 0.15        | <i>U</i> | 1     |             |     |      |      |
| Residuals in seconds of arc             |                                                                                                                                 |          |           |            |             |          |       |             |     |      |      |
| 1998 03 18                              | 691                                                                                                                             | 0.8+     | 0.5−      | 2005 03 12 | 691         | (3.8+    | 4.2+) | 2006 09 26  | 704 | 0.5− | 0.2− |
| 1998 03 18                              | 691                                                                                                                             | 0.3−     | 0.3−      | 2006 07 21 | G96         | 0.4+     | 0.4−  | 2006 09 26  | 704 | 0.7− | 0.2+ |
| 1998 03 18                              | 691                                                                                                                             | 0.1−     | 0.1+      | 2006 07 21 | G96         | 0.5+     | 0.1−  | 2006 09 28  | 704 | 0.5− | 0.2+ |
| 1999 09 09                              | 704                                                                                                                             | 0.2−     | 0.1−      | 2006 07 21 | G96         | 0.0      | 0.2−  | 2006 09 28  | 704 | 0.6− | 0.6+ |
| 1999 09 09                              | 704                                                                                                                             | 0.2+     | 0.3−      | 2006 07 21 | G96         | 0.0      | 0.1−  | 2006 09 28  | 704 | 0.5− | 0.0  |
| 1999 09 09                              | 704                                                                                                                             | 1.2+     | 0.3+      | 2006 08 24 | 644         | 0.2−     | 0.2+  | 2006 09 28  | 704 | 0.6− | 0.4− |
| 1999 09 09                              | 704                                                                                                                             | 0.1−     | 0.2+      | 2006 08 24 | 644         | 0.2+     | 0.1+  | 2006 09 28  | 704 | 0.1+ | 0.6+ |
| 1999 09 09                              | 704                                                                                                                             | 0.1+     | 0.6−      | 2006 08 24 | 644         | 0.0      | 0.0   | 2006 09 30  | 704 | 0.1− | 0.2+ |
| 1999 10 02                              | 703                                                                                                                             | 0.6−     | 0.2−      | 2006 08 25 | 704         | 1.3+     | 1.5+  | 2006 09 30  | 704 | 0.3− | 0.0  |
| 1999 10 02                              | 703                                                                                                                             | 0.9−     | 0.6+      | 2006 08 25 | 704         | 0.9+     | 1.1+  | 2006 09 30  | 704 | 0.4− | 0.2− |
| 1999 10 02                              | 703                                                                                                                             | 0.4+     | 0.5−      | 2006 08 25 | 704         | 0.6+     | 0.9−  | 2006 09 30  | 704 | 0.2− | 0.4+ |
| 1999 10 02                              | 703                                                                                                                             | 0.7−     | 0.4+      | 2006 09 12 | 703         | (2.7+    | 1.6+) | 2006 09 30  | 704 | 0.3+ | 0.0  |
| 1999 10 07                              | 704                                                                                                                             | 0.1−     | 0.6−      | 2006 09 12 | 703         | (0.4+    | 2.0+) | 2006 10 09  | 644 | 0.3− | 0.1+ |
| 1999 10 07                              | 704                                                                                                                             | 0.1+     | 0.2+      | 2006 09 12 | 703         | (1.3+    | 2.5+) | 2006 10 09  | 644 | 0.2− | 0.0  |
| 1999 10 07                              | 704                                                                                                                             | 0.2−     | 0.2−      | 2006 09 12 | 703         | (1.2+    | 3.7+) | 2006 10 09  | 644 | 0.0  | 0.0  |
| 1999 10 07                              | 704                                                                                                                             | 0.3−     | 0.2−      | 2006 09 16 | 704         | (1.8+    | 0.5−) | 2006 10 09  | 644 | 0.2− | 0.2+ |
| 1999 10 07                              | 704                                                                                                                             | 0.4−     | 0.4+      | 2006 09 16 | 704         | 0.7+     | 0.2−  | 2006 10 09  | 644 | 0.0  | 0.3+ |
| 1999 10 09                              | 704                                                                                                                             | 0.5−     | 0.2+      | 2006 09 16 | 704         | 0.1−     | 0.3+  | 2006 10 09  | 644 | 0.1− | 0.2+ |
| 1999 10 09                              | 704                                                                                                                             | 0.9+     | 0.6−      | 2006 09 16 | 704         | 0.9−     | 1.1+  | 2006 10 10  | 644 | 0.1+ | 0.0  |
| 1999 10 09                              | 704                                                                                                                             | 0.6+     | 0.9+      | 2006 09 18 | 703         | 1.0+     | 0.8+  | 2006 10 10  | 644 | 0.1+ | 0.1− |
| 1999 10 09                              | 704                                                                                                                             | 0.2+     | 0.2−      | 2006 09 18 | 703         | 0.0      | 0.7+  | 2006 10 10  | 644 | 0.1+ | 0.2+ |
| 1999 10 09                              | 704                                                                                                                             | 1.1+     | 0.6+      | 2006 09 18 | 703         | 0.6+     | 1.2+  | 2006 10 12  | 644 | 0.2− | 0.2+ |
| 2001 02 27                              | 691                                                                                                                             | 0.1−     | 0.6+      | 2006 09 18 | 703         | (0.7+    | 1.8+) | 2006 10 12  | 644 | 0.2+ | 0.2− |
| 2001 02 27                              | 691                                                                                                                             | 0.4−     | 0.4+      | 2006 09 18 | 699         | 0.3−     | 0.4+  | 2006 10 12  | 644 | 0.1− | 0.1− |
| 2001 02 27                              | 691                                                                                                                             | 0.2−     | 0.4+      | 2006 09 18 | 699         | 0.3−     | 0.3+  | 2006 10 20  | 644 | 0.2− | 0.0  |
| 2002 06 02                              | 644                                                                                                                             | 0.6−     | 0.7+      | 2006 09 18 | 705         | 0.3+     | 0.0   | 2006 10 20  | 644 | 0.1− | 0.2+ |
| 2002 06 02                              | 644                                                                                                                             | 0.6−     | 0.6+      | 2006 09 18 | 705         | 0.3+     | 0.0   | 2006 10 20  | 644 | 0.4− | 0.3+ |
| 2002 06 02                              | 699                                                                                                                             | 0.3−     | 0.2+      | 2006 09 18 | 699         | 0.7+     | 0.1−  | 2006 10 21  | 644 | 0.0  | 0.1+ |
| 2002 06 02                              | 644                                                                                                                             | 0.5−     | 0.4+      | 2006 09 18 | 699         | 0.0      | 0.8+  | 2006 10 21  | 644 | 0.1− | 0.1+ |
| 2002 06 02                              | 699                                                                                                                             | 0.1+     | 0.2+      | 2006 09 19 | 704         | 0.1+     | 0.4−  | 2006 10 21  | 644 | 0.2− | 0.2+ |
| 2002 06 02                              | 699                                                                                                                             | 0.0      | 0.3+      | 2006 09 19 | 704         | 0.1+     | 0.2+  | 2006 10 22  | 703 | 0.1+ | 0.3− |
| 2002 06 02                              | 699                                                                                                                             | 0.3−     | 1.5−      | 2006 09 19 | 704         | 0.2+     | 0.3−  | 2006 10 22  | 703 | 0.2− | 0.3− |
| 2002 06 09                              | 704                                                                                                                             | 0.5−     | 0.9−      | 2006 09 19 | 704         | 0.5−     | 0.1−  | 2006 10 22  | 703 | 0.1− | 0.6− |
| 2002 06 09                              | 704                                                                                                                             | (1.0−    | 1.9−)     | 2006 09 19 | 704         | 0.1−     | 0.4−  | 2006 10 22  | 703 | 0.0  | 0.0  |
| 2002 06 09                              | 704                                                                                                                             | (0.3+    | 1.7−)     | 2006 09 20 | 691         | 0.1+     | 0.0   | 2006 11 23  | G96 | 0.1+ | 0.1− |
| 2002 06 09                              | 704                                                                                                                             | 0.4−     | 0.1+      | 2006 09 20 | 691         | 0.2+     | 0.0   | 2006 11 23  | G96 | 0.1+ | 0.1+ |
| 2002 06 09                              | 608                                                                                                                             | 0.3−     | 0.7+      | 2006 09 20 | 691         | 0.2−     | 0.2−  | 2006 11 23  | G96 | 0.2+ | 0.0  |
| 2002 06 09                              | 608                                                                                                                             | 0.4−     | 0.5+      | 2006 09 22 | 704         | 0.6+     | 0.3−  | 2006 11 23  | G96 | 0.3+ | 0.0  |
| 2002 06 09                              | 608                                                                                                                             | 0.0      | 0.5+      | 2006 09 22 | 704         | 0.0      | 0.4+  | 2007 11 20  | G96 | 0.7+ | 0.4− |
| 2002 06 10                              | 704                                                                                                                             | 0.5−     | 1.4+      | 2006 09 22 | 704         | (0.2−    | 2.2+) | 2007 11 20  | G96 | 0.3+ | 0.2+ |
| 2002 06 10                              | 704                                                                                                                             | 0.0      | 0.4+      | 2006 09 22 | 704         | (0.1−    | 2.0−) | 2007 11 20  | G96 | 0.4+ | 0.3− |
| 2002 06 10                              | 704                                                                                                                             | 0.6+     | 0.5+      | 2006 09 22 | 704         | 0.8−     | 0.3−  | 2007 11 20  | G96 | 0.5+ | 0.0  |
| 2002 06 10                              | 704                                                                                                                             | 0.1+     | 0.2+      | 2006 09 24 | 608         | (0.3−    | 2.1−) | 2007 11 21  | G96 | 0.5+ | 0.3− |
| 2002 06 13                              | 291                                                                                                                             | 0.2+     | 0.1−      | 2006 09 24 | 608         | (1.0−    | 2.2−) | 2007 11 21  | G96 | 0.1− | 0.6+ |
| 2002 06 13                              | 291                                                                                                                             | 0.4+     | 0.1−      | 2006 09 24 | 608         | (0.7−    | 1.7−) | 2007 11 21  | G96 | 0.2− | 0.4+ |
| 2002 06 13                              | 291                                                                                                                             | 0.1+     | 0.2+      | 2006 09 26 | 704         | 0.5−     | 0.1−  | 2007 11 21  | G96 | 0.7+ | 0.6+ |
| 2005 03 12                              | 691                                                                                                                             | 0.2+     | 0.5+      | 2006 09 26 | 704         | 0.4−     | 0.1−  |             |     |      |      |
| 2005 03 12                              | 691                                                                                                                             | 0.5+     | 0.5+      | 2006 09 26 | 704         | 0.8−     | 0.4−  |             |     |      |      |

(171559)\* 1999 TU<sub>147</sub> = 2003 WU<sub>123</sub>

Discovered 1999 Oct. 7 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.  
Id. G. V. Williams (MPO 55920)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |      | MPC         |       |            |             |       |       |
|-----------------------------------------|------------|----------|-----------|------------|------|-------------|-------|------------|-------------|-------|-------|
| <i>M</i> 33.53228                       |            |          | (2000.0)  |            |      | <b>P</b>    |       |            | <b>Q</b>    |       |       |
| <i>n</i>                                | 0.27038160 | $\omega$ | 137.20970 |            |      | +0.41425560 |       |            | −0.90782332 |       |       |
| <i>a</i>                                | 2.3685613  | $\Omega$ | 288.22205 |            |      | +0.81541578 |       |            | +0.40199675 |       |       |
| <i>e</i>                                | 0.1022048  | <i>i</i> | 3.93511   |            |      | +0.40433822 |       |            | +0.11939608 |       |       |
| <i>P</i>                                | 3.65       | <i>H</i> | 16.3      | <i>G</i>   | 0.15 | <i>U</i>    | 1     |            |             |       |       |
| Residuals in seconds of arc             |            |          |           |            |      |             |       |            |             |       |       |
| 1999 10 01                              | 703        | 0.6−     | 0.2−      | 2003 12 18 | 704  | 0.3−        | 0.0   | 2006 08 28 | 699         | 0.4−  | 0.0   |
| 1999 10 01                              | 703        | 0.1−     | 0.5−      | 2003 12 18 | 704  | 0.1−        | 0.3−  | 2006 08 28 | 703         | 0.2+  | 0.1−  |
| 1999 10 01                              | 703        | 0.6+     | 0.6−      | 2003 12 22 | 704  | (2.1+       | 0.1−) | 2006 08 30 | 704         | 0.4−  | 0.1−  |
| 1999 10 01                              | 703        | 0.4−     | 1.2+      | 2003 12 22 | 704  | 0.5+        | 0.5+  | 2006 08 30 | 704         | 0.5+  | 0.6+  |
| 1999 10 07                              | 704        | 2.0+     | 0.9−      | 2003 12 22 | 704  | (1.6+       | 0.2+) | 2006 08 30 | 704         | 0.5−  | 0.1−  |
| 1999 10 07                              | 704        | 0.1−     | 0.1−      | 2003 12 22 | 704  | 1.4+        | 0.0   | 2006 08 30 | 704         | 0.9−  | 0.9+  |
| 1999 10 07                              | 704        | 1.3+     | 0.6−      | 2003 12 22 | 704  | 1.4+        | 0.1+  | 2006 09 14 | 703         | 0.2−  | 1.0−  |
| 1999 10 10                              | 704        | 0.6−     | 0.2−      | 2003 12 25 | 691  | 0.1−        | 0.1+  | 2006 09 14 | 703         | 1.2−  | 1.2+  |
| 1999 10 10                              | 704        | 0.1−     | 0.2−      | 2003 12 25 | 691  | 0.0         | 0.1+  | 2006 09 14 | 703         | 0.1−  | 0.3−  |
| 1999 10 10                              | 704        | 0.1−     | 0.4+      | 2003 12 25 | 691  | 0.0         | 0.1+  | 2006 09 14 | 703         | 1.0−  | 0.8−  |
| 1999 10 10                              | 704        | 0.2−     | 0.2−      | 2003 12 27 | 704  | 0.2+        | 0.4+  | 2006 09 26 | 691         | 0.4+  | 0.3+  |
| 1999 10 10                              | 704        | 0.7+     | 0.4+      | 2003 12 27 | 704  | 0.9+        | 0.4+  | 2006 09 26 | 691         | 0.1+  | 0.1−  |
| 1999 10 20                              | 704        | 0.6−     | 1.0−      | 2003 12 27 | 704  | 0.1−        | 0.3+  | 2006 09 26 | 691         | 0.0   | 0.3+  |
| 1999 10 20                              | 704        | 0.5+     | 1.1−      | 2003 12 27 | 704  | 0.0         | 0.2−  | 2006 09 28 | 691         | 0.3+  | 0.1+  |
| 1999 10 20                              | 704        | 1.3−     | 0.3−      | 2003 12 27 | 704  | 0.2−        | 0.1+  | 2006 09 28 | 691         | 0.2+  | 0.2+  |
| 1999 10 20                              | 704        | 0.7+     | 0.3−      | 2003 12 29 | 691  | 0.1+        | 0.1+  | 2006 09 28 | 691         | 0.1+  | 0.3+  |
| 2003 11 20                              | 704        | 0.1−     | 0.0       | 2003 12 29 | 691  | 0.1−        | 0.0   | 2007 11 08 | G96         | 0.2−  | 0.1+  |
| 2003 11 20                              | 704        | 0.2−     | 0.8−      | 2003 12 29 | 691  | 0.0         | 0.0   | 2007 11 08 | G96         | 0.2−  | 0.1−  |
| 2003 11 20                              | 704        | 0.2−     | 0.1−      | 2006 07 25 | 644  | 0.4+        | 0.0   | 2007 11 08 | G96         | 0.8−  | 0.2+  |
| 2003 11 20                              | 704        | 0.2−     | 0.0       | 2006 07 25 | 644  | 0.0         | 0.1−  | 2007 11 08 | G96         | 0.2−  | 0.1+  |
| 2003 11 24                              | 704        | 0.5−     | 0.6−      | 2006 07 25 | 644  | 0.5+        | 0.3−  | 2007 11 18 | G96         | 0.2−  | 0.4−  |
| 2003 11 24                              | 704        | 0.7−     | 0.2−      | 2006 08 19 | 691  | 0.4−        | 0.1+  | 2007 11 18 | G96         | 0.7−  | 0.2−  |
| 2003 11 24                              | 704        | 0.1−     | 0.3−      | 2006 08 19 | 691  | 0.0         | 0.2+  | 2007 11 18 | G96         | 0.3−  | 0.1−  |
| 2003 11 24                              | 704        | 0.3−     | 0.0       | 2006 08 19 | 691  | 0.1−        | 0.1+  | 2007 11 18 | G96         | 0.8−  | 0.4−  |
| 2003 11 24                              | 704        | 0.5−     | 0.5−      | 2006 08 21 | 644  | 0.5−        | 0.1+  | 2007 12 03 | 703         | 0.9+  | 0.7+  |
| 2003 12 04                              | 704        | 0.1−     | 0.1−      | 2006 08 21 | 644  | 0.3−        | 0.0   | 2007 12 03 | 703         | 0.2+  | 0.3+  |
| 2003 12 04                              | 704        | 0.4+     | 0.0       | 2006 08 21 | 644  | 0.1−        | 0.1+  | 2007 12 03 | 703         | 1.2+  | 0.7+  |
| 2003 12 04                              | 704        | 0.0      | 0.5−      | 2006 08 28 | 699  | 0.6−        | 0.5−  | 2007 12 03 | 703         | (3.6+ | 0.1−) |
| 2003 12 04                              | 704        | 0.9−     | 1.4+      | 2006 08 28 | 699  | 0.2+        | 0.7−  | 2007 12 06 | H55         | 0.7−  | 0.4+  |
| 2003 12 04                              | 704        | 0.4+     | 0.0       | 2006 08 28 | 703  | 0.0         | 0.5+  | 2007 12 06 | H55         | 0.7−  | 0.6+  |
| 2003 12 18                              | 704        | 0.3−     | 0.3+      | 2006 08 28 | 699  | 0.1−        | 0.4+  | 2007 12 06 | H55         | 0.6−  | 0.3+  |
| 2003 12 18                              | 704        | 0.1−     | 0.1+      | 2006 08 28 | 703  | 0.7−        | 0.2−  |            |             |       |       |
| 2003 12 18                              | 704        | 0.0      | 0.2+      | 2006 08 28 | 703  | 0.8+        | 0.2−  |            |             |       |       |

(171560)\* 1999 TX<sub>161</sub>

Discovered 1999 Oct. 9 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                        |      |          |            |             |                                                               |             |            |     | MPC   |       |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------|----------|------------|-------------|---------------------------------------------------------------|-------------|------------|-----|-------|-------|
| $M$                                     | 59.90621                                                                                                                               |      | (2000.0) |            | <b>P</b>    |                                                               | <b>Q</b>    |            |     |       |       |
| $n$                                     | 0.26535850                                                                                                                             |      | $\omega$ | 296.69339  | +0.92318976 |                                                               | −0.38009278 |            |     |       |       |
| $a$                                     | 2.3983582                                                                                                                              |      | $\Omega$ | 85.69144   | +0.36981909 |                                                               | +0.83808047 |            |     |       |       |
| $e$                                     | 0.1653935                                                                                                                              |      | $i$      | 3.27748    | +0.10466379 |                                                               | +0.39134461 |            |     |       |       |
| $P$                                     | 3.71 <th><math>H</math></th> <td>16.5</td> <th><math>G</math></th> <td>0.15<th><math>U</math></th><td>1</td><td colspan="2"></td></td> |      | $H$      | 16.5       | $G$         | 0.15 <th><math>U</math></th> <td>1</td> <td colspan="2"></td> | $U$         | 1          |     |       |       |
| Residuals in seconds of arc             |                                                                                                                                        |      |          |            |             |                                                               |             |            |     |       |       |
| 1999 10 09                              | 704                                                                                                                                    | 0.0  | 1.0−     | 1999 11 02 | 703         | 1.0−                                                          | 1.5+        | 2003 12 24 | 704 | 0.4−  | 0.4+  |
| 1999 10 09                              | 704                                                                                                                                    | 0.3+ | 0.2−     | 1999 11 06 | 704         | 0.6+                                                          | 0.4+        | 2003 12 24 | 704 | 0.8+  | 0.6+  |
| 1999 10 09                              | 704                                                                                                                                    | 0.1− | 0.2+     | 1999 11 06 | 704         | 0.2+                                                          | 0.2−        | 2003 12 24 | 704 | 0.7+  | 1.4+  |
| 1999 10 09                              | 704                                                                                                                                    | 1.1+ | 0.0      | 1999 11 06 | 704         | 0.1+                                                          | 0.3−        | 2003 12 24 | 704 | 0.5−  | 0.2+  |
| 1999 10 09                              | 704                                                                                                                                    | 0.4+ | 0.0      | 1999 11 06 | 704         | 0.4+                                                          | 0.0         | 2003 12 24 | 704 | 0.7+  | 0.0   |
| 1999 10 10                              | 327                                                                                                                                    | 0.4+ | 0.6−     | 1999 11 07 | 704         | (1.4−                                                         | 2.2+)       | 2003 12 24 | 704 | 1.3+  | 0.6−  |
| 1999 10 10                              | 327                                                                                                                                    | 0.2− | 0.5−     | 1999 11 07 | 704         | 1.1+                                                          | 0.8+        | 2003 12 29 | 704 | 0.7−  | 1.0−  |
| 1999 10 10                              | 327                                                                                                                                    | 0.3− | 0.1+     | 1999 11 07 | 704         | 1.6+                                                          | 1.1−        | 2003 12 29 | 704 | 0.8−  | 0.4+  |
| 1999 10 11                              | 704                                                                                                                                    | 0.4− | 0.3−     | 1999 11 15 | 704         | 0.4+                                                          | 0.8+        | 2003 12 29 | 704 | 0.9−  | 0.3+  |
| 1999 10 11                              | 704                                                                                                                                    | 0.4− | 0.7−     | 1999 11 15 | 704         | 0.2+                                                          | 0.1−        | 2003 12 29 | 704 | 0.2−  | 0.7+  |
| 1999 10 11                              | 704                                                                                                                                    | 0.4− | 0.6−     | 1999 11 15 | 704         | 0.4−                                                          | 1.3+        | 2003 12 29 | 704 | 0.9+  | 0.5+  |
| 1999 10 11                              | 704                                                                                                                                    | 0.7− | 0.5−     | 1999 11 15 | 704         | 0.4−                                                          | 0.3+        | 2003 12 29 | 704 | 0.6−  | 0.9+  |
| 1999 10 11                              | 704                                                                                                                                    | 0.4− | 0.5−     | 1999 11 15 | 704         | 0.0                                                           | 0.1+        | 2003 12 29 | 704 | (1.6+ | 1.2+) |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 11 | 704 | 0.7+ | 0.6− | 2003 11 21 | 704 | 0.2+  | 0.3+  | 2005 04 01 | 691 | 0.1−  | 0.0   |
| 1999 10 11 | 704 | 0.8− | 0.1− | 2003 11 21 | 704 | 0.1+  | 0.5+  | 2005 04 01 | 691 | 0.1−  | 0.3−  |
| 1999 10 11 | 704 | 0.2+ | 0.7− | 2003 11 21 | 704 | 0.5−  | 0.3+  | 2005 04 01 | 691 | 0.1−  | 0.5−  |
| 1999 10 11 | 704 | 0.7− | 0.8− | 2003 12 18 | 704 | 0.1+  | 0.5+  | 2006 06 03 | G96 | 0.1−  | 0.6+  |
| 1999 10 11 | 704 | 0.4− | 0.8− | 2003 12 18 | 704 | 0.0   | 0.2−  | 2006 06 03 | G96 | 0.1+  | 0.2+  |
| 1999 10 11 | 704 | 0.6− | 0.3− | 2003 12 18 | 704 | 0.3−  | 0.0   | 2006 06 03 | G96 | 0.7+  | 1.2+  |
| 1999 10 11 | 704 | 0.7− | 1.0− | 2003 12 18 | 947 | 0.1−  | 0.0   | 2006 06 03 | G96 | (0.5+ | 1.5+) |
| 1999 10 15 | 704 | 0.3− | 0.2− | 2003 12 19 | 704 | 0.3+  | 0.4−  | 2006 06 21 | 691 | 0.0   | 0.1+  |
| 1999 10 15 | 704 | 0.1− | 0.5− | 2003 12 19 | 704 | 0.3+  | 0.4−  | 2006 06 21 | 691 | 0.1−  | 0.1+  |
| 1999 10 15 | 704 | 0.1+ | 0.1− | 2003 12 19 | 704 | 0.5+  | 0.2+  | 2006 06 21 | 691 | 0.0   | 0.4−  |
| 1999 10 15 | 704 | 0.7− | 0.5+ | 2003 12 19 | 704 | 1.2+  | 0.1−  | 2007 11 11 | G96 | 0.2−  | 0.0   |
| 1999 10 15 | 704 | 0.3− | 0.4+ | 2003 12 20 | 704 | 0.4−  | 0.2−  | 2007 11 11 | G96 | 0.1−  | 0.1+  |
| 1999 10 19 | 704 | 0.2+ | 0.8+ | 2003 12 20 | 704 | 0.2−  | 1.2−  | 2007 11 11 | G96 | 0.1−  | 0.2−  |
| 1999 10 19 | 704 | 1.1+ | 0.3− | 2003 12 20 | 704 | 0.1−  | 0.5−  | 2007 11 11 | G96 | 0.4−  | 0.3−  |
| 1999 10 19 | 704 | 0.6+ | 0.2− | 2003 12 20 | 704 | 0.1+  | 0.1−  | 2007 12 14 | G96 | 0.6−  | 0.3−  |
| 1999 10 19 | 704 | 0.2+ | 0.3− | 2003 12 20 | 704 | 0.6−  | 0.1+  | 2007 12 14 | G96 | 0.7−  | 0.2−  |
| 1999 10 19 | 704 | 0.4+ | 0.0  | 2003 12 21 | 704 | 0.5+  | 0.5+  | 2007 12 14 | G96 | 0.7−  | 0.4−  |
| 1999 11 02 | 703 | 1.4− | 0.8+ | 2003 12 21 | 704 | (2.3+ | 1.1+) | 2007 12 14 | G96 | 0.7−  | 0.3−  |
| 1999 11 02 | 703 | 0.9+ | 0.1+ | 2003 12 21 | 704 | 0.5+  | 0.3−  |            |     |       |       |
| 1999 11 02 | 703 | 0.1+ | 1.0+ | 2003 12 21 | 704 | 0.4+  | 0.0   |            |     |       |       |

**(171561)\* 1999 TT<sub>169</sub> = 2003 WT<sub>135</sub>**

Discovered 1999 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 55925)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 7.14280    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26361315 | $\omega$ | 172.69820 | +0.11859986 | −0.99242450 |
| <i>a</i> | 2.4089327  | $\Omega$ | 270.48673 | +0.90937817 | +0.12152595 |
| <i>e</i> | 0.1560208  | <i>i</i> | 1.83714   | +0.39870467 | +0.01802928 |
| <i>P</i> | 3.74       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 04 07 | 691 | 0.4− | 0.3− | 2003 11 23 | 704 | 1.5+ | 0.1+ | 2005 05 16 | G96 | 0.0   | 0.4+  |
| 1997 04 07 | 691 | 0.3− | 0.3− | 2003 11 23 | 704 | 0.4+ | 0.3− | 2005 05 16 | G96 | 0.2+  | 0.1+  |
| 1997 04 07 | 691 | 0.1+ | 0.8− | 2003 11 23 | 704 | 0.6+ | 0.5− | 2005 05 16 | G96 | 0.3−  | 0.1−  |
| 1999 09 30 | 691 | 0.2− | 0.4− | 2003 12 14 | 691 | 0.1− | 0.1+ | 2005 05 16 | G96 | 0.2+  | 0.5+  |
| 1999 09 30 | 691 | 0.0  | 0.3− | 2003 12 14 | 691 | 0.1− | 0.0  | 2005 05 16 | G96 | 0.1−  | 0.3+  |
| 1999 09 30 | 691 | 0.1− | 0.3− | 2003 12 14 | 691 | 0.1− | 0.0  | 2005 05 16 | G96 | 0.2−  | 0.1+  |
| 1999 10 10 | 704 | 0.7+ | 0.2+ | 2003 12 19 | 704 | 0.8− | 0.2− | 2005 05 16 | G96 | 0.2+  | 0.6+  |
| 1999 10 10 | 704 | 0.6+ | 1.0− | 2003 12 19 | 704 | 0.7− | 0.4+ | 2007 10 07 | G96 | 0.6+  | 0.3−  |
| 1999 10 10 | 704 | 0.2− | 0.1+ | 2003 12 19 | 704 | 0.9− | 0.4+ | 2007 10 07 | G96 | 0.2+  | 0.6−  |
| 1999 10 10 | 704 | 0.2+ | 0.4− | 2003 12 19 | 704 | 0.7− | 0.0  | 2007 10 07 | G96 | 0.3−  | 0.0   |
| 1999 10 10 | 704 | 0.2− | 1.0+ | 2003 12 19 | 704 | 0.5− | 0.2+ | 2007 10 07 | G96 | 0.4−  | 0.0   |
| 1999 10 13 | 704 | 0.2− | 0.3+ | 2003 12 19 | 691 | 0.1− | 0.2+ | 2007 11 08 | G96 | 0.2+  | 0.1−  |
| 1999 10 13 | 704 | 0.7+ | 0.5+ | 2003 12 19 | 691 | 0.2− | 0.2+ | 2007 11 08 | G96 | 0.6+  | 1.0−  |
| 1999 10 13 | 704 | 0.8+ | 0.6+ | 2003 12 19 | 691 | 0.1− | 0.1+ | 2007 11 08 | G96 | 0.1−  | 0.2−  |
| 1999 10 13 | 704 | 0.1+ | 0.5− | 2003 12 21 | 704 | 0.3+ | 0.3+ | 2007 11 08 | G96 | 0.2+  | 0.2−  |
| 1999 10 15 | 704 | 0.8+ | 0.6− | 2003 12 21 | 704 | 0.2+ | 0.4+ | 2007 11 16 | H55 | 0.8−  | 0.3+  |
| 1999 10 15 | 704 | 0.1− | 0.8− | 2003 12 21 | 704 | 0.2+ | 0.3+ | 2007 11 16 | H55 | (2.0− | 1.3+) |
| 1999 10 15 | 704 | 0.0  | 0.1− | 2003 12 21 | 704 | 0.6+ | 0.3+ | 2007 12 06 | G96 | 0.2−  | 0.2+  |
| 2003 11 21 | 704 | 0.1+ | 0.1− | 2003 12 21 | 704 | 0.4+ | 0.0  | 2007 12 06 | G96 | 0.2+  | 0.1−  |
| 2003 11 21 | 704 | 1.4+ | 0.5+ | 2005 01 20 | 809 | 1.0+ | 0.3+ | 2007 12 06 | G96 | 0.0   | 0.0   |
| 2003 11 21 | 704 | 0.1− | 0.2+ | 2005 01 20 | 809 | 0.1− | 0.1+ | 2007 12 06 | G96 | 0.1−  | 0.2−  |
| 2003 11 21 | 704 | 0.0  | 0.1+ | 2005 01 20 | 809 | 0.1+ | 0.3+ |            |     |       |       |
| 2003 11 23 | 704 | 0.1+ | 0.2− | 2005 05 16 | G96 | 0.0  | 0.0  |            |     |       |       |

**(171562)\* 1999 TZ<sub>177</sub>**

Discovered 1999 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 8.30065    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.12558405 | $\omega$ | 190.11423 | +0.81821156 | −0.57465843 |
| <i>a</i> | 3.9492358  | $\Omega$ | 204.98578 | +0.53028782 | +0.76594612 |
| <i>e</i> | 0.2878089  | <i>i</i> | 2.34041   | +0.22209158 | +0.28826068 |
| <i>P</i> | 7.85       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 08 | 691 | 0.0  | 0.1+ | 2006 07 25 | 644 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.3+ | 0.2+ |
| 1991 10 08 | 691 | 0.1− | 0.3− | 2006 08 16 | 644 | 0.1− | 0.4+ | 2007 11 05 | 704 | 0.2+ | 0.1− |
| 1999 10 10 | 704 | 0.2− | 0.5− | 2006 08 16 | 644 | 0.5− | 0.7+ | 2007 11 05 | 704 | 0.2+ | 0.2− |
| 1999 10 10 | 704 | 0.1+ | 0.3− | 2006 08 16 | 644 | 0.1+ | 0.5+ | 2007 11 05 | 704 | 0.2− | 0.8− |
| 1999 10 10 | 704 | 0.3+ | 0.1− | 2006 10 22 | G96 | 0.0  | 0.1− | 2007 11 08 | 691 | 0.1− | 0.0  |
| 1999 10 10 | 704 | 0.8+ | 0.0  | 2006 10 22 | G96 | 0.0  | 0.2+ | 2007 11 08 | 691 | 0.0  | 0.0  |
| 1999 10 15 | 704 | 0.4+ | 0.0  | 2006 10 22 | G96 | 0.5+ | 0.1− | 2007 11 08 | 691 | 0.1+ | 0.1+ |
| 1999 10 15 | 704 | 0.6+ | 0.6+ | 2006 10 22 | G96 | 0.2− | 0.0  | 2007 11 14 | 704 | 0.3+ | 0.2+ |
| 1999 10 15 | 704 | 0.4− | 0.2− | 2007 09 10 | G96 | 0.3+ | 0.2− | 2007 11 14 | 704 | 0.1+ | 0.2+ |
| 1999 10 15 | 704 | 0.3− | 0.7− | 2007 09 10 | G96 | 0.1+ | 0.3− | 2007 11 14 | 704 | 0.4− | 0.0  |
| 1999 10 20 | 704 | 0.6− | 0.3− | 2007 09 10 | G96 | 0.5+ | 0.3− | 2007 11 14 | 704 | 0.0  | 0.8+ |
| 1999 10 20 | 704 | 0.4− | 0.7− | 2007 09 10 | G96 | 0.3+ | 0.3− | 2007 11 14 | 704 | 0.2− | 0.0  |
| 1999 10 20 | 704 | 0.4− | 0.3+ | 2007 09 18 | G96 | 0.3+ | 0.4− | 2007 11 17 | A13 | 0.3− | 0.3− |
| 1999 11 09 | 704 | 0.6+ | 0.5− | 2007 09 18 | G96 | 0.0  | 0.3− | 2007 11 17 | A13 | 0.1− | 0.0  |
| 1999 11 09 | 704 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.4+ | 0.3− | 2007 11 19 | 691 | 0.4− | 0.0  |
| 1999 11 09 | 704 | 0.8+ | 0.4− | 2007 09 18 | G96 | 0.3+ | 0.3− | 2007 11 19 | 691 | 0.4− | 0.2+ |
| 1999 11 09 | 704 | 0.7+ | 0.6+ | 2007 10 16 | 691 | 0.1+ | 0.1− | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 1999 11 09 | 704 | 0.9+ | 0.5− | 2007 10 16 | 691 | 0.1− | 0.1− | 2007 12 03 | 703 | 0.7+ | 1.1+ |
| 1999 11 12 | 704 | 1.5− | 1.9− | 2007 10 16 | 691 | 0.1+ | 0.0  | 2007 12 03 | 703 | 0.3− | 0.1+ |
| 1999 11 12 | 704 | 1.0+ | 0.8− | 2007 10 30 | G96 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.9+ | 0.7+ |
| 1999 11 12 | 704 | 1.2+ | 0.6− | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 12 03 | 703 | 0.0  | 1.2+ |
| 1999 11 14 | 691 | 0.2+ | 1.1+ | 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 1999 11 14 | 691 | 0.1− | 0.3− | 2007 10 30 | G96 | 0.1− | 0.0  | 2007 12 05 | 704 | 0.4+ | 0.8+ |
| 1999 11 14 | 691 | 0.3− | 0.2− | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.1+ | 0.7+ |
| 2006 07 25 | 644 | 0.6− | 0.8+ | 2007 10 31 | 691 | 0.2− | 0.1+ | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2006 07 25 | 644 | 0.0  | 0.2+ | 2007 10 31 | 691 | 0.1− | 0.1− | 2007 12 05 | 704 | 0.3− | 0.7+ |

**(171563)\* 1999 TR<sub>178</sub> = 2003 WE<sub>76</sub>**

Discovered 1999 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 55929)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 20.92718   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.25403072 | $\omega$ | 24.08233 | +0.85498689 | −0.51847149 |
| <i>a</i> | 2.4691372  | $\Omega$ | 7.19272  | +0.45649408 | +0.73982685 |
| <i>e</i> | 0.1387522  | <i>i</i> | 6.23177  | +0.24619214 | +0.42876980 |
| <i>P</i> | 3.88       | <i>H</i> | 17.1     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 04 | 691 | 0.2− | 0.3− | 2003 11 05 | 699 | 0.5−  | 0.9−  | 2005 04 02 | G96 | 0.5−  | 0.2−  |
| 1999 10 04 | 691 | 0.0  | 0.4− | 2003 11 05 | 699 | (2.0+ | 1.7+) | 2005 04 02 | G96 | 0.3−  | 0.1−  |
| 1999 10 04 | 691 | 0.0  | 0.7− | 2003 11 05 | 699 | 1.5+  | 1.1−  | 2005 04 04 | G96 | 0.6−  | 0.3−  |
| 1999 10 10 | 704 | 0.1+ | 1.2+ | 2003 11 05 | 699 | 0.5−  | 1.1+  | 2005 04 04 | G96 | 0.3−  | 0.5−  |
| 1999 10 10 | 704 | 0.6− | 0.0  | 2003 11 19 | 703 | 0.4+  | 0.5+  | 2005 04 04 | G96 | 0.4−  | 0.4−  |
| 1999 10 10 | 704 | 0.7− | 0.0  | 2003 11 19 | 703 | 0.3−  | 0.2+  | 2005 04 04 | G96 | 0.5−  | 0.3−  |
| 1999 10 10 | 704 | 0.4+ | 1.0+ | 2003 11 19 | 704 | (1.4− | 1.8+) | 2007 11 07 | 704 | 0.6−  | 0.8+  |
| 1999 10 11 | 691 | 0.1+ | 0.1− | 2003 11 19 | 703 | (1.5− | 0.5−) | 2007 11 07 | 704 | 0.2+  | 0.8+  |
| 1999 10 11 | 691 | 0.1− | 0.2− | 2003 11 19 | 704 | (1.6+ | 2.5+) | 2007 11 07 | 704 | 0.6+  | 1.1+  |
| 1999 10 11 | 691 | 0.1− | 0.0  | 2003 11 19 | 703 | 0.8+  | 0.6−  | 2007 11 07 | 704 | (1.0− | 2.0+) |
| 1999 10 13 | 704 | 0.6+ | 0.2+ | 2003 11 19 | 704 | 1.4+  | 1.4+  | 2007 11 07 | 704 | (0.2− | 1.6+) |
| 1999 10 13 | 704 | 0.1+ | 1.0+ | 2003 11 19 | 704 | (2.0+ | 1.6+) | 2007 11 17 | 704 | 0.2+  | 1.2−  |
| 1999 10 13 | 704 | 0.8− | 1.0+ | 2003 11 21 | 644 | 0.2+  | 0.4+  | 2007 11 17 | 704 | 0.1+  | 0.1−  |
| 1999 10 13 | 704 | 0.7− | 0.8+ | 2003 11 21 | 644 | 0.1−  | 0.2+  | 2007 11 17 | 704 | 0.5+  | 0.1−  |
| 1999 10 14 | 645 | 0.1+ | 0.0  | 2003 11 21 | 644 | 0.3+  | 0.1+  | 2007 11 17 | 704 | 0.1−  | 0.2+  |
| 1999 10 14 | 645 | 0.1+ | 0.1+ | 2003 12 01 | 691 | 0.0   | 0.2−  | 2007 11 20 | 704 | 0.7+  | 0.7−  |
| 1999 10 15 | 704 | 0.1+ | 0.7+ | 2003 12 01 | 691 | 0.1+  | 0.1−  | 2007 11 20 | 704 | 0.1+  | 0.9−  |
| 1999 10 15 | 704 | 1.1− | 0.8+ | 2003 12 01 | 691 | 0.2−  | 0.2−  | 2007 11 20 | 704 | 0.4+  | 0.4−  |

2007 DEC. 24

M.P.O. 129085

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 15 | 704 | 0.4+ | 0.1+ | 2005 03 12 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 704 | 0.9- | 0.0  |
| 1999 10 15 | 704 | 0.3+ | 0.2- | 2005 03 12 | 691 | 0.3+ | 0.1- | 2007 11 20 | 704 | 0.5- | 0.2- |
| 1999 10 18 | 691 | 0.3- | 0.0  | 2005 03 12 | 691 | 0.1+ | 0.1- | 2007 12 06 | 735 | 0.2- | 0.4- |
| 1999 10 18 | 691 | 0.5- | 0.2+ | 2005 03 16 | 691 | 0.0  | 0.2+ | 2007 12 06 | 735 | 0.3- | 0.8- |
| 1999 10 18 | 691 | 0.3- | 0.0  | 2005 03 16 | 691 | 0.4+ | 0.2+ | 2007 12 06 | 735 | 0.1- | 0.8- |
| 2001 03 20 | 691 | 0.0  | 0.1+ | 2005 03 16 | 691 | 0.3+ | 0.4+ | 2007 12 16 | 704 | 1.0- | 0.2- |
| 2001 03 20 | 691 | 0.1- | 0.3+ | 2005 04 02 | G96 | 0.3- | 0.2- | 2007 12 16 | 704 | 0.5+ | 0.9+ |
| 2001 03 20 | 691 | 0.2+ | 0.0  | 2005 04 02 | G96 | 0.7- | 0.1- | 2007 12 16 | 704 | 0.6- | 0.5+ |

**(171564)\* 1999 TX<sub>219</sub> = 2006 QZ<sub>62</sub>**

Discovered 1999 Oct. 1 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 103158)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |           |           | MPC         |             |          |   |
|----------|------------|-----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | 146.17771 |           | (2000.0)    |             |          |   |
|          |            |           |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.27663138 | $\omega$  | 11.72944  | +0.65332210 | +0.75191189 |          |   |
| <i>a</i> | 2.3327512  | $\Omega$  | 299.13199 | -0.70252673 | +0.55863000 |          |   |
| <i>e</i> | 0.1206829  | <i>i</i>  | 5.80249   | -0.28218154 | +0.35008719 |          |   |
| <i>P</i> | 3.56       | <i>H</i>  | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 04 19 | 704 | 0.2-  | 0.5-  | 2006 08 18 | 644 | 0.1+  | 0.2-  | 2006 09 20 | 699 | 0.1- | 0.2- |
| 1998 04 19 | 704 | 0.3-  | 0.7+  | 2006 08 24 | 704 | 0.0   | 1.2+  | 2006 09 20 | 699 | 0.9- | 0.0  |
| 1998 04 19 | 704 | 1.4-  | 1.9+  | 2006 08 24 | 704 | 1.1+  | 0.5+  | 2006 09 20 | 699 | 0.0  | 0.1+ |
| 1998 04 19 | 704 | (2.8- | 0.8+) | 2006 08 24 | 704 | 0.3-  | 1.0+  | 2006 09 23 | 958 | 0.2- | 0.5+ |
| 1999 10 01 | 703 | 0.0   | 1.3+  | 2006 08 27 | 699 | 0.2+  | 0.3+  | 2006 09 23 | 958 | 0.4- | 0.2- |
| 1999 10 01 | 703 | 0.9-  | 0.1+  | 2006 08 27 | 699 | 0.2+  | 0.8-  | 2006 09 23 | 958 | 0.2+ | 0.1- |
| 1999 10 01 | 703 | 0.2-  | 1.1-  | 2006 08 27 | 699 | 0.3+  | 0.7+  | 2006 09 29 | 699 | 0.9+ | 0.9+ |
| 1999 10 01 | 703 | 0.0   | 0.1-  | 2006 08 27 | 699 | 0.3-  | 0.2+  | 2006 09 29 | 699 | 0.7+ | 0.8+ |
| 1999 10 03 | 704 | 0.3-  | 0.0   | 2006 08 28 | 704 | 0.2+  | 1.2+  | 2006 09 29 | 699 | 0.4+ | 0.3- |
| 1999 10 03 | 704 | 0.7+  | 1.1+  | 2006 08 28 | 704 | 0.4-  | 0.9+  | 2006 10 01 | 704 | 0.1- | 1.0+ |
| 1999 10 03 | 704 | 0.8+  | 0.5-  | 2006 08 28 | 704 | (1.0- | 1.6+) | 2006 10 01 | 704 | 0.5- | 0.3+ |
| 1999 10 03 | 704 | 1.5+  | 0.9+  | 2006 08 29 | 703 | 0.4+  | 0.7-  | 2006 10 01 | 704 | 0.7- | 1.3+ |
| 1999 10 09 | 703 | 0.4-  | 0.8+  | 2006 08 29 | 703 | 0.4-  | 0.1-  | 2006 10 01 | 704 | 0.1+ | 0.3+ |
| 1999 10 09 | 703 | 0.0   | 0.2-  | 2006 08 29 | 703 | 0.7-  | 0.3-  | 2006 10 01 | 704 | 0.4+ | 0.5+ |
| 1999 10 09 | 703 | 0.8+  | 0.4-  | 2006 08 29 | 703 | 0.8-  | 1.2-  | 2006 10 11 | 644 | 0.1- | 0.0  |
| 1999 10 09 | 703 | 0.1-  | 0.5-  | 2006 08 30 | 704 | 0.0   | 0.4+  | 2006 10 11 | 644 | 0.7- | 0.0  |
| 1999 10 10 | 704 | 0.0   | 0.7-  | 2006 08 30 | 704 | 0.2-  | 0.6-  | 2006 10 11 | 644 | 0.0  | 0.3- |
| 1999 10 10 | 704 | 0.4-  | 0.2+  | 2006 08 30 | 704 | 0.3-  | 0.2-  | 2006 10 18 | 691 | 0.1+ | 0.0  |
| 1999 10 10 | 704 | 0.1+  | 0.3-  | 2006 08 30 | 704 | 0.3-  | 0.6+  | 2006 10 18 | 691 | 0.0  | 0.1+ |
| 1999 10 10 | 704 | 0.2+  | 0.8-  | 2006 09 14 | 703 | 0.4-  | 0.4-  | 2006 10 18 | 691 | 0.1- | 0.1+ |
| 1999 10 10 | 704 | 0.0   | 0.9+  | 2006 09 14 | 703 | 0.4-  | 0.5-  | 2006 10 20 | 691 | 0.1- | 0.1+ |
| 2003 12 14 | 644 | 0.4-  | 0.3+  | 2006 09 14 | 703 | 0.2-  | 0.2+  | 2006 10 20 | 691 | 0.0  | 0.0  |
| 2003 12 14 | 644 | 0.5-  | 0.3+  | 2006 09 14 | 703 | 0.7-  | 0.4-  | 2006 10 20 | 691 | 0.1- | 0.1+ |
| 2003 12 14 | 644 | 0.4-  | 0.5+  | 2006 09 15 | 704 | 0.8+  | 0.1+  | 2007 11 11 | G96 | 0.3- | 0.1- |
| 2005 03 03 | 691 | 0.4+  | 0.5+  | 2006 09 15 | 704 | 0.1-  | 0.2-  | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2005 03 03 | 691 | 1.2+  | 1.2+  | 2006 09 15 | 704 | 0.1-  | 0.6+  | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2005 03 03 | 691 | 0.4+  | 0.5+  | 2006 09 15 | 704 | 0.0   | 0.4+  | 2007 11 11 | G96 | 0.7- | 0.2+ |
| 2005 03 13 | 703 | 0.4+  | 0.8-  | 2006 09 15 | 704 | 0.7-  | 0.1+  | 2007 12 14 | G96 | 0.0  | 0.1- |
| 2005 03 13 | 703 | 0.3-  | 0.1+  | 2006 09 19 | 703 | 0.3-  | 0.3+  | 2007 12 14 | G96 | 0.2- | 0.0  |
| 2005 03 13 | 703 | (0.9- | 1.7+) | 2006 09 19 | 703 | 0.1-  | 0.3+  | 2007 12 14 | G96 | 0.3- | 0.4+ |
| 2005 03 13 | 703 | 0.5+  | 0.1-  | 2006 09 19 | 703 | (2.5- | 1.6+) | 2007 12 14 | G96 | 0.3- | 0.1+ |
| 2006 08 18 | 644 | 0.2-  | 0.1-  | 2006 09 19 | 703 | 0.6-  | 0.6-  |            |     |      |      |
| 2006 08 18 | 644 | 0.1+  | 0.1-  | 2006 09 20 | 699 | 0.2-  | 0.3+  |            |     |      |      |

**(171565)\* 1999 TD<sub>227</sub>**

Discovered 1999 Oct. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | 57.85364 |           | (2000.0)    |             |          |   |
|          |            |          |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.26261482 | $\omega$ | 60.67592  | +0.95296661 | -0.27528707 |          |   |
| <i>a</i> | 2.4150339  | $\Omega$ | 314.96924 | +0.17613139 | +0.84344175 |          |   |
| <i>e</i> | 0.2208399  | <i>i</i> | 10.32255  | +0.24664218 | +0.46132748 |          |   |
| <i>P</i> | 3.75       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 01 25 | 691 | 0.3+ | 0.5+ | 1999 11 10 | 699 | 0.2+  | 0.4+  | 2003 12 26 | 106 | 0.3-  | 0.9-  |
| 1993 01 25 | 691 | 0.1+ | 0.0  | 1999 12 10 | 704 | 0.9+  | 0.1+  | 2003 12 26 | 106 | 0.4-  | 0.5-  |
| 1999 09 21 | 699 | 0.9- | 0.5- | 1999 12 10 | 704 | 0.1-  | 0.2-  | 2003 12 28 | 704 | 1.3+  | 0.1+  |
| 1999 09 21 | 699 | 0.2- | 0.0  | 1999 12 10 | 704 | 1.4+  | 0.1-  | 2003 12 28 | 704 | 1.1+  | 0.8+  |
| 1999 09 21 | 699 | 0.6+ | 0.4- | 2000 01 03 | 704 | 0.4-  | 0.0   | 2003 12 28 | 704 | (0.0  | 2.1+) |
| 1999 10 05 | 704 | 0.1- | 0.1- | 2000 01 03 | 704 | 0.3+  | 1.0-  | 2003 12 29 | 704 | 1.2+  | 1.2-  |
| 1999 10 05 | 704 | 0.1- | 0.2+ | 2000 01 03 | 704 | 0.5-  | 1.2-  | 2003 12 29 | 704 | 0.5+  | 0.3-  |
| 1999 10 05 | 704 | 0.0  | 0.1- | 2001 03 18 | 699 | 0.4-  | 0.3+  | 2003 12 29 | 704 | 0.3+  | 0.5-  |
| 1999 10 05 | 704 | 0.3- | 0.5+ | 2001 03 18 | 699 | 0.7-  | 0.3+  | 2003 12 29 | 704 | 0.3-  | 0.2-  |
| 1999 10 05 | 704 | 0.2+ | 0.1+ | 2001 03 18 | 699 | 0.0   | 0.3+  | 2003 12 29 | 704 | (1.3- | 1.6-) |
| 1999 10 05 | 704 | 0.8- | 0.2+ | 2001 03 18 | 699 | 0.2-  | 0.2-  | 2003 12 30 | 704 | 0.0   | 1.1-  |
| 1999 10 05 | 704 | 0.7+ | 1.3- | 2003 09 30 | 704 | (1.8- | 0.2+) | 2003 12 30 | 704 | 0.3-  | 0.3+  |
| 1999 10 05 | 704 | 0.2- | 0.2- | 2003 09 30 | 704 | 0.6-  | 0.3+  | 2003 12 30 | 704 | 0.4-  | 0.1-  |
| 1999 10 05 | 704 | 0.9- | 0.1+ | 2003 09 30 | 704 | 0.2+  | 0.1-  | 2003 12 30 | 704 | 0.1+  | 0.2+  |
| 1999 10 06 | 699 | 0.1- | 0.4- | 2003 09 30 | 704 | 0.3+  | 0.3-  | 2005 04 14 | 703 | 0.2-  | 1.4-  |
| 1999 10 06 | 699 | 0.3+ | 0.7+ | 2003 09 30 | 704 | 0.1+  | 0.2+  | 2005 04 14 | 703 | (0.9+ | 1.7-) |
| 1999 10 06 | 699 | 0.4+ | 0.5+ | 2003 10 06 | 704 | 1.1+  | 1.0+  | 2005 04 14 | 703 | 0.4+  | 0.0   |
| 1999 10 28 | 703 | 0.2+ | 0.8- | 2003 10 06 | 704 | (2.0+ | 1.0+) | 2005 04 14 | 703 | 0.3-  | 0.3-  |
| 1999 10 28 | 703 | 0.1- | 0.2- | 2003 10 06 | 704 | (1.7+ | 0.8+) | 2006 06 09 | 644 | 0.2-  | 0.7+  |
| 1999 10 28 | 703 | 0.2- | 0.3- | 2003 10 06 | 704 | 0.7+  | 1.1+  | 2006 06 09 | 644 | 0.2-  | 0.4+  |
| 1999 10 28 | 703 | 0.2- | 0.0  | 2003 10 06 | 704 | (1.5+ | 1.6+) | 2006 06 09 | 644 | 0.4+  | 0.6+  |
| 1999 10 28 | 703 | 0.0  | 0.0  | 2003 12 17 | 704 | 0.9+  | 1.5+  | 2007 10 26 | G96 | 0.2+  | 0.4-  |
| 1999 10 28 | 703 | 0.1+ | 0.3+ | 2003 12 17 | 704 | 0.5+  | 1.0+  | 2007 10 26 | G96 | 0.4+  | 0.3+  |
| 1999 10 28 | 703 | 0.2+ | 0.4- | 2003 12 17 | 704 | 0.3+  | 1.2+  | 2007 10 26 | G96 | 0.6-  | 0.1-  |
| 1999 10 28 | 703 | 0.5- | 0.0  | 2003 12 17 | 704 | 1.4+  | 0.9+  | 2007 10 26 | G96 | 0.0   | 0.2+  |
| 1999 11 10 | 703 | 0.0  | 0.1+ | 2003 12 17 | 704 | 0.2+  | 0.4-  | 2007 11 20 | 704 | (0.8- | 1.7+) |
| 1999 11 10 | 703 | 0.1+ | 0.3+ | 2003 12 18 | 704 | 1.2-  | 1.2-  | 2007 11 20 | 704 | (0.2+ | 2.3+) |
| 1999 11 10 | 703 | 0.0  | 0.1+ | 2003 12 18 | 704 | 1.2-  | 0.7-  | 2007 11 20 | 704 | 1.5-  | 0.7+  |
| 1999 11 10 | 703 | 0.2+ | 0.2+ | 2003 12 18 | 704 | 0.4+  | 1.2+  | 2007 11 20 | 704 | 0.0   | 1.1+  |
| 1999 11 10 | 699 | 0.2- | 1.4+ | 2003 12 18 | 704 | 1.4-  | 1.1-  | 2007 11 20 | 704 | 0.1-  | 0.9+  |
| 1999 11 10 | 699 | 0.5- | 0.4- | 2003 12 18 | 704 | 0.9-  | 1.1-  |            |     |       |       |

**(171566)\* 1999 TG<sub>272</sub> = 2002 JK<sub>37</sub>**

Discovered 1999 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 31291)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | 34.40606 |           | (2000.0)    |             |          |   |
|          |            |          |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.24610070 | $\omega$ | 97.94470  | +0.90750886 | +0.38163814 |          |   |
| <i>a</i> | 2.5218978  | $\Omega$ | 239.77423 | -0.41832702 | +0.85881197 |          |   |
| <i>e</i> | 0.1820983  | <i>i</i> | 11.71519  | +0.03781767 | +0.34175186 |          |   |
| <i>P</i> | 4.00       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 03 | 704 | 0.0   | 0.6-  | 2003 11 02 | 704 | 0.1+  | 0.1-  | 2007 10 12 | 699 | 0.1+  | 0.1-  |
| 1999 10 03 | 704 | 0.7-  | 0.9+  | 2003 11 02 | 704 | 0.6+  | 0.2+  | 2007 10 12 | 699 | 0.5+  | 0.6-  |
| 1999 10 03 | 704 | 0.4-  | 0.9+  | 2003 11 02 | 704 | 0.2+  | 0.5+  | 2007 10 14 | 703 | 0.1-  | 0.0   |
| 1999 10 12 | 704 | 0.3+  | 0.0   | 2003 11 19 | 704 | 0.2-  | 0.3+  | 2007 10 14 | 703 | 0.5-  | 0.2+  |
| 1999 10 12 | 704 | 1.0+  | 0.2+  | 2003 11 19 | 704 | 0.2+  | 0.2+  | 2007 10 14 | 703 | 0.3-  | 0.2-  |
| 1999 10 12 | 704 | 1.2+  | 0.5-  | 2003 11 19 | 704 | 0.2+  | 0.2-  | 2007 10 14 | 703 | 0.2-  | 0.1+  |
| 1999 10 12 | 704 | 0.9+  | 0.6-  | 2003 11 19 | 704 | 0.2+  | 0.3+  | 2007 10 22 | 704 | 0.6+  | 0.1+  |
| 1999 10 28 | 703 | 0.0   | 0.4+  | 2003 11 19 | 704 | 0.3+  | 0.1+  | 2007 10 22 | 704 | 0.1+  | 0.2+  |
| 1999 10 28 | 703 | 0.2+  | 0.5+  | 2003 11 21 | 699 | 0.0   | 0.2+  | 2007 10 22 | 704 | 1.5+  | 0.2+  |
| 1999 10 28 | 703 | 0.5+  | 0.7+  | 2003 11 21 | 699 | 1.1-  | 0.1-  | 2007 10 22 | 704 | 0.6+  | 0.9-  |
| 1999 10 28 | 703 | 0.1-  | 0.2-  | 2003 11 21 | 699 | 0.9-  | 0.0   | 2007 10 22 | 704 | (2.9- | 0.3+) |
| 1999 11 04 | 704 | 0.5-  | 0.5+  | 2003 11 21 | 699 | 0.5-  | 0.1-  | 2007 10 30 | 703 | 0.3-  | 0.7-  |
| 1999 11 04 | 704 | 0.1+  | 0.4-  | 2003 11 24 | 704 | 0.0   | 1.0+  | 2007 10 30 | 703 | 0.5-  | 0.3-  |
| 1999 11 04 | 704 | 0.7+  | 0.3-  | 2003 11 24 | 704 | 0.0   | 0.5+  | 2007 10 30 | 703 | 0.4-  | 0.3+  |
| 1999 11 04 | 704 | (2.2+ | 1.2-) | 2003 11 24 | 704 | 0.4+  | 0.7+  | 2007 10 30 | 703 | 0.0   | 0.0   |
| 1999 11 11 | 703 | 1.5-  | 0.4+  | 2003 11 24 | 704 | 0.5+  | 0.4+  | 2007 11 03 | 704 | 0.2+  | 0.1+  |
| 1999 11 11 | 703 | 0.9-  | 0.8+  | 2003 11 24 | 704 | 0.0   | 0.0   | 2007 11 03 | 704 | 1.5+  | 1.0-  |
| 1999 11 11 | 703 | (2.3- | 0.3-) | 2003 12 22 | 704 | 0.9-  | 1.2-  | 2007 11 03 | 704 | (2.0+ | 2.0-) |
| 1999 11 11 | 703 | (2.8- | 1.1+) | 2003 12 22 | 704 | (0.3+ | 1.6+) | 2007 11 07 | 699 | 0.7-  | 0.7-  |
| 2002 05 07 | 644 | 0.2-  | 0.8+  | 2003 12 22 | 704 | 0.1+  | 0.5-  | 2007 11 07 | 699 | 0.1-  | 0.8-  |
| 2002 05 07 | 644 | 0.0   | 0.6+  | 2003 12 22 | 704 | 0.2+  | 0.0   | 2007 11 07 | 699 | 0.3-  | 0.1-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 05 07 | 644 | 0.2− | 0.7+ | 2003 12 22 | 704 | 0.3−  | 0.5−  | 2007 11 07 | 699 | 0.4− | 0.6− |
| 2002 05 10 | 644 | 0.1+ | 0.8+ | 2004 02 13 | 695 | 0.0   | 0.9+  | 2007 11 08 | 704 | 0.0  | 0.2+ |
| 2002 05 10 | 644 | 0.1+ | 1.2+ | 2004 02 13 | 695 | 0.7−  | 0.3−  | 2007 11 08 | 704 | 0.6− | 0.4+ |
| 2002 05 10 | 644 | 0.3− | 1.1+ | 2006 05 20 | 699 | 0.5+  | 0.3−  | 2007 11 08 | 704 | 0.7− | 0.2+ |
| 2003 09 29 | 699 | 0.3− | 0.5+ | 2006 05 20 | 699 | 1.0+  | 1.1−  | 2007 11 08 | 704 | 0.1− | 0.2− |
| 2003 09 29 | 699 | 0.4− | 0.4− | 2006 05 20 | 699 | (1.7− | 2.0+) | 2007 11 08 | 704 | 0.4− | 0.1− |
| 2003 09 29 | 699 | 0.2− | 0.1+ | 2006 05 20 | 699 | 0.3−  | 0.4+  | 2007 11 08 | 703 | 0.9+ | 0.1+ |
| 2003 09 29 | 699 | 0.8− | 0.1+ | 2007 09 20 | 703 | 0.8−  | 0.1−  | 2007 11 08 | 703 | 0.3+ | 0.0  |
| 2003 10 17 | 699 | 0.2− | 0.4− | 2007 09 20 | 703 | 1.2−  | 0.1+  | 2007 11 08 | 703 | 0.6+ | 0.8+ |
| 2003 10 17 | 699 | 1.2− | 0.2− | 2007 09 20 | 703 | 0.3−  | 0.3−  | 2007 11 08 | 703 | 0.0  | 0.2+ |
| 2003 10 17 | 699 | 0.2− | 0.4− | 2007 10 08 | 703 | 0.8−  | 0.3+  | 2007 11 11 | 699 | 0.7− | 0.0  |
| 2003 10 17 | 699 | 0.8− | 0.2+ | 2007 10 08 | 703 | 0.5−  | 0.1−  | 2007 11 11 | 699 | 0.0  | 0.1+ |
| 2003 10 20 | 644 | 0.0  | 0.0  | 2007 10 08 | 703 | 0.2−  | 0.6−  | 2007 11 11 | 699 | 0.2+ | 0.4− |
| 2003 10 20 | 644 | 0.1− | 0.0  | 2007 10 08 | 703 | 0.3−  | 0.2−  | 2007 11 11 | 699 | 0.2+ | 0.0  |
| 2003 10 20 | 644 | 0.1+ | 0.1+ | 2007 10 08 | 703 | 0.3+  | 0.0   | 2007 11 17 | 704 | 0.4− | 0.3+ |
| 2003 10 22 | 704 | 0.9+ | 0.3+ | 2007 10 08 | 703 | 0.5−  | 0.2−  | 2007 11 17 | 704 | 0.2− | 0.2+ |
| 2003 10 22 | 704 | 0.3+ | 0.2+ | 2007 10 08 | 703 | 0.1+  | 0.4−  | 2007 11 17 | 704 | 0.2− | 0.4+ |
| 2003 10 22 | 704 | 0.7+ | 0.5+ | 2007 10 08 | 703 | 0.2+  | 0.3−  | 2007 11 17 | 704 | 0.2− | 0.4+ |
| 2003 10 22 | 704 | 0.2+ | 0.1− | 2007 10 09 | 703 | 0.7+  | 0.8+  | 2007 11 17 | 704 | 0.7+ | 0.3+ |
| 2003 10 29 | 699 | 0.0  | 0.3− | 2007 10 09 | 703 | 0.2+  | 0.4+  | 2007 12 13 | 704 | 0.8+ | 1.0+ |
| 2003 10 29 | 699 | 0.3+ | 0.4− | 2007 10 09 | 703 | 0.6+  | 0.2−  | 2007 12 13 | 704 | 0.1− | 0.4− |
| 2003 10 29 | 699 | 0.2− | 0.0  | 2007 10 09 | 703 | 0.0   | 0.8+  | 2007 12 13 | 704 | 0.4− | 0.6+ |
| 2003 10 29 | 699 | 0.4− | 0.1+ | 2007 10 12 | 699 | 0.6+  | 0.6−  | 2007 12 13 | 704 | 1.6+ | 1.7+ |
| 2003 11 02 | 704 | 0.0  | 0.4+ | 2007 10 12 | 699 | 0.3+  | 0.7−  | 2007 12 13 | 704 | 1.1+ | 0.1+ |

(171567)\* 1999 TF<sub>284</sub> = 2003 WK<sub>139</sub>

Discovered 1999 Oct. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 55943)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 32.63124   | <i>P</i> | <i>Q</i>  |
| (2000.0) |            |          |           |
| <i>n</i> | 0.26123676 | $\omega$ | 330.66412 |
| <i>a</i> | 2.4235195  | $\Omega$ | 80.83769  |
| <i>e</i> | 0.1284236  | <i>i</i> | 7.69884   |
| <i>P</i> | 3.77       | <i>H</i> | 16.1      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 09 | 704 | 0.9+  | 0.3+  | 2003 11 21 | 704 | 0.7+ | 0.3+ | 2007 10 15 | G96 | 0.3− | 0.3− |
| 1999 10 09 | 704 | 0.8+  | 0.1+  | 2003 11 21 | 704 | 0.3− | 0.3− | 2007 10 15 | G96 | 0.4− | 0.4− |
| 1999 10 09 | 704 | 0.4+  | 0.0   | 2003 11 23 | 704 | 0.3− | 0.8+ | 2007 11 12 | G96 | 0.6− | 0.0  |
| 1999 10 09 | 704 | 1.2+  | 0.3−  | 2003 11 23 | 704 | 0.2− | 0.5+ | 2007 11 12 | G96 | 0.3− | 0.3− |
| 1999 10 09 | 704 | 0.2+  | 0.2+  | 2003 11 23 | 704 | 0.2− | 0.4+ | 2007 11 12 | G96 | 0.4− | 0.5− |
| 1999 10 19 | 704 | 0.3+  | 0.0   | 2003 11 23 | 704 | 0.6− | 0.9− | 2007 11 12 | G96 | 0.1− | 0.1− |
| 1999 10 19 | 704 | 0.2+  | 0.0   | 2003 12 18 | 704 | 0.0  | 0.0  | 2007 11 13 | G96 | 0.1− | 0.1− |
| 1999 10 19 | 704 | 0.0   | 0.2−  | 2003 12 18 | 704 | 0.3+ | 0.0  | 2007 11 13 | G96 | 0.4− | 0.0  |
| 1999 10 19 | 704 | 0.1−  | 0.4−  | 2003 12 18 | 704 | 0.2− | 0.1− | 2007 11 13 | G96 | 0.3− | 0.0  |
| 1999 10 30 | 703 | 0.5−  | 0.7+  | 2003 12 18 | 704 | 0.2− | 0.1− | 2007 11 13 | G96 | 0.1− | 0.0  |
| 1999 10 30 | 703 | 0.1−  | 1.1+  | 2003 12 18 | 704 | 0.4− | 0.2− | 2007 11 13 | G96 | 0.2− | 0.4− |
| 1999 10 30 | 703 | 0.4−  | 0.1−  | 2003 12 21 | 704 | 0.3− | 0.4+ | 2007 11 13 | G96 | 0.2+ | 0.1− |
| 1999 10 30 | 703 | 0.6−  | 0.5+  | 2003 12 21 | 704 | 0.4− | 0.0  | 2007 11 13 | G96 | 0.0  | 0.2− |
| 1999 11 05 | 704 | 0.1−  | 0.3+  | 2003 12 21 | 704 | 0.5− | 0.3− | 2007 11 13 | G96 | 0.1− | 0.1− |
| 1999 11 05 | 704 | 0.8+  | 0.8−  | 2003 12 21 | 704 | 0.7− | 0.1+ | 2007 12 13 | 704 | 0.8+ | 0.4+ |
| 1999 11 05 | 704 | 0.1−  | 1.0−  | 2003 12 21 | 704 | 0.6− | 0.4+ | 2007 12 13 | 704 | 0.6+ | 0.9+ |
| 1999 11 05 | 704 | 0.3−  | 0.2−  | 2006 08 26 | E12 | 0.5− | 0.9+ | 2007 12 13 | 704 | 0.4− | 0.1+ |
| 1999 11 05 | 704 | (2.4− | 0.8−) | 2006 08 26 | E12 | 0.6− | 0.5+ | 2007 12 13 | 704 | 0.5+ | 0.4+ |
| 2001 03 19 | 699 | 0.8+  | 1.2+  | 2006 08 26 | E12 | 0.3− | 1.3+ | 2007 12 13 | 704 | 0.4+ | 0.9+ |
| 2001 03 19 | 699 | 0.4−  | 0.5−  | 2006 08 26 | E12 | 0.2+ | 1.1+ | 2007 12 15 | 704 | 0.8+ | 0.3+ |
| 2001 03 19 | 699 | 0.6−  | 0.2−  | 2007 09 24 | 691 | 0.2− | 0.7− | 2007 12 15 | 704 | 0.4+ | 0.4+ |
| 2001 03 19 | 699 | 0.2−  | 0.3+  | 2007 09 24 | 691 | 0.4+ | 0.4− | 2007 12 15 | 704 | 1.8+ | 0.4+ |
| 2003 11 21 | 704 | 0.1−  | 0.3+  | 2007 09 24 | 691 | 0.0  | 0.8− | 2007 12 15 | 704 | 1.3+ | 1.3+ |
| 2003 11 21 | 704 | 0.7−  | 0.9+  | 2007 10 15 | G96 | 0.4− | 0.4− | 2007 12 15 | 704 | 0.1+ | 1.0+ |
| 2003 11 21 | 704 | 0.2+  | 0.4+  | 2007 10 15 | G96 | 0.1+ | 0.1− |            |     |      |      |

(171568)\* 1999 TJ<sub>286</sub> = 2002 LA<sub>16</sub>

Discovered 1999 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 31291)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 131.77937  | <i>P</i> | <i>Q</i>  |
| (2000.0) |            |          |           |
| <i>n</i> | 0.27286514 | $\omega$ | 16.69674  |
| <i>a</i> | 2.3541674  | $\Omega$ | 294.57471 |
| <i>e</i> | 0.1579613  | <i>i</i> | 4.88921   |
| <i>P</i> | 3.61       | <i>H</i> | 16.9      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 01 | 703 | 0.1+ | 1.1− | 2003 11 24 | 704 | 0.2−  | 0.1−  | 2006 08 30 | 704 | 1.2−  | 0.9+  |
| 1999 10 01 | 703 | 0.2− | 0.1− | 2003 11 24 | 704 | 0.5+  | 0.5−  | 2006 08 30 | 704 | 0.2−  | 1.0+  |
| 1999 10 01 | 703 | 0.5+ | 0.3+ | 2003 11 24 | 704 | 1.5+  | 1.0+  | 2006 08 30 | 704 | 0.9+  | 0.3−  |
| 1999 10 01 | 703 | 0.7− | 0.2− | 2003 11 24 | 704 | 1.1+  | 0.0   | 2006 08 30 | 704 | 0.7−  | 0.1−  |
| 1999 10 10 | 704 | 1.0+ | 1.1− | 2003 11 24 | 704 | 0.5−  | 0.0   | 2006 08 30 | 704 | 0.5+  | 0.4+  |
| 1999 10 10 | 704 | 0.2− | 0.3− | 2003 12 25 | 691 | 0.0   | 0.1+  | 2006 08 30 | 704 | 0.4−  | 0.3−  |
| 1999 10 10 | 704 | 0.4− | 1.1+ | 2003 12 25 | 691 | 1.4+  | 1.1+  | 2006 08 30 | 704 | 0.1−  | 0.4−  |
| 1999 10 10 | 704 | 0.1+ | 0.7+ | 2003 12 25 | 691 | 0.2+  | 0.3−  | 2006 09 12 | 699 | 0.3−  | 0.3−  |
| 1999 10 10 | 704 | 0.5+ | 0.3− | 2005 03 08 | 691 | 0.1−  | 0.3+  | 2006 09 12 | 699 | 0.9−  | 0.1−  |
| 1999 10 13 | 704 | 1.9− | 1.3+ | 2005 03 08 | 691 | 0.0   | 0.2+  | 2006 09 12 | 699 | 0.2+  | 0.5−  |
| 1999 10 13 | 704 | 0.1+ | 0.7+ | 2005 03 08 | 691 | 0.2+  | 0.0   | 2006 09 12 | 699 | 1.2−  | 0.0   |
| 1999 10 13 | 704 | 0.5+ | 0.4− | 2006 08 16 | 644 | 0.3−  | 0.2−  | 2006 09 19 | 691 | 0.0   | 0.0   |
| 1999 10 14 | 645 | 0.1− | 0.2− | 2006 08 16 | 644 | 0.2−  | 0.2−  | 2006 09 19 | 691 | 0.3+  | 0.2+  |
| 1999 10 14 | 645 | 0.0  | 0.1− | 2006 08 16 | 644 | 0.2−  | 0.1−  | 2006 09 19 | 691 | (1.8− | 1.5+) |
| 1999 10 20 | 704 | 0.2− | 0.0  | 2006 08 24 | 704 | 1.0+  | 1.5+  | 2006 09 25 | 691 | 0.5+  | 0.2+  |
| 1999 10 20 | 704 | 0.3+ | 0.0  | 2006 08 24 | 704 | 1.0+  | 0.2+  | 2006 09 25 | 691 | 0.1+  | 0.0   |
| 1999 10 20 | 704 | 0.7− | 0.3− | 2006 08 24 | 704 | 0.6+  | 0.6+  | 2006 09 25 | 691 | 0.1+  | 0.1+  |
| 1999 10 20 | 704 | 1.0+ | 1.1− | 2006 08 24 | 704 | 1.1−  | 0.6+  | 2006 09 27 | 691 | 0.4−  | 0.7+  |
| 2002 06 06 | 704 | 0.1− | 0.2− | 2006 08 29 | 691 | 0.1−  | 0.2+  | 2006 09 27 | 691 | 0.1+  | 0.0   |
| 2002 06 06 | 704 | 0.1+ | 0.4− | 2006 08 29 | 691 | 0.2−  | 0.0   | 2006 09 27 | 691 | 0.2+  | 0.0   |
| 2002 06 06 | 704 | 0.4+ | 0.6− | 2006 08 29 | 703 | 0.3−  | 0.8−  | 2007 11 07 | G96 | 0.5+  | 0.0   |
| 2002 06 06 | 704 | 0.6+ | 0.4+ | 2006 08 29 | 703 | 0.3−  | 0.4−  | 2007 11 07 | G96 | 0.2+  | 0.0   |
| 2002 06 08 | 704 | 0.3− | 1.4+ | 2006 08 29 | 703 | 0.0   | 0.7−  | 2007 11 07 | G96 | 0.3+  | 0.2−  |
| 2002 06 08 | 704 | 0.4− | 0.1+ | 2006 08 29 | 691 | 0.3−  | 0.1+  | 2007 11 07 | G96 | 0.4+  | 0.1−  |
| 2002 06 08 | 704 | 0.0  | 0.3+ | 2006 08 29 | 703 | 0.5−  | 0.1+  | 2007 12 15 | 691 | 0.6−  | 0.3−  |
| 2002 06 08 | 704 | 1.3+ | 0.6− | 2006 08 30 | 704 | (2.4+ | 2.3−) | 2007 12 15 | 691 | 0.9−  | 0.9+  |
| 2002 06 08 | 704 | 0.2+ | 0.1− | 2006 08 30 | 704 | (1.8− | 1.0+) | 2007 12 15 | 691 | 0.0   | 0.4+  |

(171569)\* 1999 UD<sub>3</sub>

Discovered 1999 Oct. 16 by W. Bickel at Bergisch Gladbach.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |
|----------|------------|----------|----------|
| <i>M</i> | 319.70267  | <i>P</i> | <i>Q</i> |
| (2000.0) |            |          |          |
| <i>n</i> | 0.23694468 | $\omega$ | 43.20167 |
| <i>a</i> | 2.5864539  | $\Omega$ | 21.37858 |
| <i>e</i> | 0.2017911  | <i>i</i> | 4.82854  |
| <i>P</i> | 4.16       | <i>H</i> | 17.4     |
|          |            | <i>G</i> | 0.15     |
|          |            | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 16 | 621 | 0.3− | 0.0  | 1999 11 01 | 621 | 0.5− | 0.8− | 2005 03 10 | G96 | 0.1− | 0.4− |
| 1999 10 16 | 621 | 0.1+ | 0.2− | 1999 11 01 | 621 | 0.1− | 0.3− | 2005 03 10 | G96 | 0.1+ | 0.1+ |
| 1999 10 16 | 621 | 0.5+ | 0.4− | 1999 11 01 | 621 | 0.3+ | 0.0  | 2005 03 10 | G96 | 0.1+ | 0.6+ |
| 1999 10 16 | 621 | 0.2− | 0.2− | 1999 11 04 | 621 | 0.2− | 0.1+ | 2005 03 10 | G96 | 0.1+ | 0.0  |
| 1999 10 17 | 621 | 0.8+ | 0.1− | 1999 11 04 | 621 | 0.0  | 0.2+ | 2005 04 04 | G96 | 0.8+ | 0.2+ |
| 1999 10 17 | 621 | 0.3− | 0.9+ | 1999 11 12 | 621 | 0.5− | 0.2− | 2005 04 04 | G96 | 0.1− | 0.4− |
| 1999 10 17 | 621 | 0.5+ | 0.1− | 1999 11 12 | 621 | 0.2− | 0.1+ | 2005 04 04 | G96 | 0.2− | 0.3− |
| 1999 10 17 | 621 | 0.5− | 0.3− | 1999 11 15 | 621 | 0.0  | 0.2+ | 2005 04 04 | G96 | 0.1− | 0.8+ |
| 1999 10 18 | 621 | 0.2+ | 0.1− | 1999 11 15 | 621 | 0.1− | 0.2+ | 2007 09 10 | 691 | 0.1− | 0.1+ |
| 1999 10 18 | 621 | 0.0  | 0.2− | 1999 11 15 | 621 | 0.3− | 0.2+ | 2007 09 10 | 691 | 0.0  | 0.2+ |
| 1999 10 18 | 621 | 0.7− | 0.7+ | 2003 09 16 | 691 | 0.1+ | 0.3+ | 2007 09 10 | 691 | 0.0  | 0.2+ |
| 1999 10 18 | 621 | 0.2+ | 0.1− | 2003 09 16 | 691 | 0.1+ | 0.1+ | 2007 09 14 | 691 | 0.0  | 0.1− |
| 1999 10 19 | 621 | 0.0  | 0.3+ | 2003 09 16 | 691 | 0.0  | 0.2+ | 2007 09 14 | 691 | 0.2+ | 0.1− |
| 1999 10 19 | 621 | 0.4+ | 0.2+ | 2003 09 28 | 691 | 0.1+ | 0.1− | 2007 09 14 | 691 | 0.2− | 0.1+ |
| 1999 10 19 | 621 | 0.1+ | 0.0  | 2003 09 28 | 691 | 0.3+ | 0.2− | 2007 09 20 | 691 | 0.3− | 0.1− |
| 1999 10 19 | 621 | 0.9− | 0.2+ | 2003 09 28 | 691 | 0.3+ | 0.1− | 2007 09 20 | 691 | 0.2− | 0.1+ |
| 1999 10 20 | 621 | 0.1+ | 0.2+ | 2003 10 16 | 691 | 0.1+ | 0.1− | 2007 09 20 | 691 | 0.1− | 0.0  |
| 1999 10 20 | 621 | 0.0  | 0.2+ | 2003 10 16 | 691 | 0.2+ | 0.1− | 2007 12 06 | G96 | 0.1+ | 0.4− |
| 1999 10 20 | 621 | 0.1− | 0.2− | 2003 10 16 | 691 | 0.0  | 0.1− | 2007 12 06 | G96 | 0.6+ | 2.0− |

2007 DEC. 24

M.P.O. 129087

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 20 | 621 | 0.3- | 0.4+ | 2003 10 21 | 644 | 0.3- | 0.2+ | 2007 12 06 | G96 | 0.5+ | 0.6- |
| 1999 10 20 | 621 | 0.9+ | 0.3+ | 2003 10 21 | 644 | 0.3- | 0.1+ | 2007 12 06 | G96 | 0.2- | 0.4- |
| 1999 10 31 | 621 | 0.3- | 0.1+ | 2003 10 21 | 644 | 0.2- | 0.1+ | 2007 12 06 | G96 | 0.7+ | 0.6- |
| 1999 10 31 | 621 | 0.0  | 0.1- | 2003 10 23 | 704 | 0.4+ | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.5+ |
| 1999 10 31 | 621 | 0.3+ | 0.0  | 2003 10 23 | 704 | 1.0- | 0.2+ | 2007 12 06 | G96 | 0.0  | 0.2+ |
| 1999 10 31 | 621 | 0.0  | 0.2- | 2003 10 23 | 704 | 0.2- | 0.0  | 2007 12 06 | G96 | 0.5+ | 0.3- |
| 1999 10 31 | 621 | 0.4- | 0.0  | 2003 10 23 | 704 | 1.2- | 0.1+ |            |     |      |      |
| 1999 10 31 | 621 | 0.0  | 0.1- | 2003 10 23 | 704 | 0.2- | 1.1+ |            |     |      |      |

**(171570)\* 1999 UK<sub>28</sub> = 2003 WZ<sub>64</sub>**

Discovered 1999 Oct. 31 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 55950)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 16.46235   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.26221742 | $\omega$ | 259.83201 | +0.49177094 |      | -0.87068547 |   |
| <i>a</i> | 2.4174733  | $\Omega$ | 160.70427 | +0.80833716 |      | +0.45299079 |   |
| <i>e</i> | 0.1518918  | <i>i</i> | 1.43157   | +0.32365472 |      | +0.19158850 |   |
| <i>P</i> | 3.76       | <i>H</i> | 17.6      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 02 10 | 691 | 0.2- | 0.2- | 2003 11 21 | 704 | 0.9- | 0.3- | 2006 07 21 | G96 | 0.1+ | 0.1- |
| 1997 02 10 | 691 | 0.1- | 0.6- | 2003 11 21 | 704 | 0.8- | 0.5- | 2006 07 21 | G96 | 0.2+ | 0.3+ |
| 1997 02 10 | 691 | 0.2- | 0.0  | 2003 11 21 | 704 | 1.1+ | 0.8+ | 2006 07 21 | G96 | 0.5- | 0.6- |
| 1999 10 09 | 704 | 0.5- | 1.2- | 2003 11 23 | 704 | 0.6- | 0.9+ | 2006 07 21 | G96 | 0.2- | 0.3+ |
| 1999 10 09 | 704 | 0.6- | 0.0  | 2003 11 23 | 704 | 0.6+ | 0.3+ | 2006 07 21 | G96 | 0.2- | 0.5+ |
| 1999 10 09 | 704 | 0.7+ | 0.6+ | 2003 11 23 | 704 | 0.4- | 1.0+ | 2006 07 21 | G96 | 0.2- | 0.2- |
| 1999 10 09 | 704 | 0.9- | 0.3- | 2003 11 23 | 704 | 0.1- | 1.0+ | 2006 07 21 | G96 | 0.0  | 0.2+ |
| 1999 10 19 | 691 | 0.2+ | 0.1- | 2003 12 19 | 691 | 0.1+ | 0.1+ | 2006 07 21 | G96 | 0.2+ | 0.2+ |
| 1999 10 19 | 691 | 0.1+ | 0.1- | 2003 12 19 | 691 | 0.1+ | 0.1+ | 2007 11 05 | G96 | 0.6+ | 0.4- |
| 1999 10 19 | 691 | 0.1+ | 0.2- | 2003 12 19 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.4- |
| 1999 10 31 | 691 | 0.2+ | 0.3- | 2003 12 21 | 691 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.1- | 0.3- |
| 1999 10 31 | 691 | 0.4- | 0.6- | 2003 12 21 | 691 | 0.1+ | 0.2+ | 2007 11 05 | G96 | 0.7+ | 0.1- |
| 1999 10 31 | 691 | 0.3+ | 0.1- | 2003 12 21 | 691 | 0.3+ | 0.2+ | 2007 12 04 | 691 | 0.2- | 0.0  |
| 1999 11 05 | 691 | 0.1+ | 0.2- | 2005 04 06 | G96 | 0.4- | 0.0  | 2007 12 04 | G96 | 0.2- | 0.5- |
| 1999 11 05 | 691 | 0.1- | 0.1- | 2005 04 06 | G96 | 0.1+ | 0.2- | 2007 12 04 | G96 | 0.1+ | 0.3- |
| 1999 11 05 | 691 | 0.2+ | 0.2- | 2005 04 06 | G96 | 1.3- | 0.1- | 2007 12 04 | 691 | 0.5- | 0.1+ |
| 2003 11 19 | 691 | 0.2+ | 0.3+ | 2005 04 06 | G96 | 0.8- | 0.4- | 2007 12 04 | G96 | 0.1- | 0.4- |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2005 04 10 | 691 | 0.4+ | 0.0  | 2007 12 04 | G96 | 0.2- | 0.1- |
| 2003 11 19 | 691 | 0.1+ | 0.2+ | 2005 04 10 | 691 | 0.4+ | 0.3- | 2007 12 04 | 691 | 0.3- | 0.2- |
| 2003 11 21 | 704 | 0.5+ | 1.2+ | 2005 04 10 | 691 | 0.2+ | 0.4+ |            |     |      |      |

**(171571)\* 1999 US<sub>38</sub>**

Discovered 1999 Oct. 29 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 67.29814   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.25699608 | $\omega$ | 55.23383  | +0.94134923 |      | +0.33116056 |   |
| <i>a</i> | 2.4501070  | $\Omega$ | 285.35153 | -0.32736913 |      | +0.84976583 |   |
| <i>e</i> | 0.1469155  | <i>i</i> | 3.85087   | -0.08179901 |      | +0.41015938 |   |
| <i>P</i> | 3.84       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 04 21 | 704 | 0.5+ | 0.3+ | 2003 10 19 | 644 | 0.2- | 0.4+ | 2003 11 20 | 704 | 0.7-  | 0.0   |
| 1998 04 21 | 704 | 1.2- | 0.2- | 2003 10 19 | 644 | 0.2- | 0.5+ | 2003 11 21 | 644 | 0.1+  | 0.1-  |
| 1998 04 21 | 704 | 1.3+ | 0.3- | 2003 10 22 | 704 | 0.7- | 0.2+ | 2003 11 21 | 644 | 0.0   | 0.1+  |
| 1998 04 21 | 704 | 0.3- | 0.5- | 2003 10 22 | 704 | 0.1- | 1.3+ | 2003 11 21 | 644 | 0.1-  | 0.1+  |
| 1999 10 03 | 704 | 0.3- | 0.6- | 2003 10 22 | 704 | 0.3- | 0.3+ | 2003 11 24 | 704 | 0.0   | 0.4-  |
| 1999 10 03 | 704 | 0.1+ | 1.1- | 2003 10 25 | 704 | 0.3+ | 0.8+ | 2003 11 24 | 704 | 0.0   | 0.6-  |
| 1999 10 03 | 704 | 0.7+ | 0.5- | 2003 10 25 | 704 | 1.1+ | 1.2+ | 2003 11 24 | 704 | 0.1-  | 0.2-  |
| 1999 10 03 | 704 | 0.1- | 0.3- | 2003 10 25 | 704 | 0.3- | 0.8+ | 2003 11 24 | 704 | 0.3-  | 0.6-  |
| 1999 10 10 | 704 | 0.4+ | 0.8- | 2003 10 25 | 704 | 0.5+ | 0.3+ | 2003 11 24 | 704 | 0.5-  | 0.7-  |
| 1999 10 10 | 704 | 0.7+ | 0.0  | 2003 10 25 | 704 | 0.7+ | 0.8+ | 2003 12 13 | 703 | 0.4-  | 0.5+  |
| 1999 10 10 | 704 | 0.0  | 0.7- | 2003 10 29 | 699 | 0.1+ | 0.3+ | 2003 12 13 | 703 | 1.1+  | 1.0+  |
| 1999 10 10 | 704 | 0.0  | 0.1- | 2003 10 29 | 699 | 0.2+ | 0.2- | 2003 12 13 | 703 | (0.1+ | 1.7+) |
| 1999 10 10 | 704 | 0.1- | 0.6- | 2003 10 29 | 699 | 0.7- | 0.0  | 2003 12 13 | 703 | 0.2-  | 0.6-  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 10 21 | 704 | 0.2- | 0.2- | 2003 10 29 | 699 | 0.4- | 0.1- | 2003 12 19 | 704 | 0.2+  | 1.0+  |
| 1999 10 21 | 704 | 0.3- | 0.3- | 2003 10 30 | 704 | 0.1- | 0.7- | 2003 12 19 | 704 | 0.3-  | 0.2-  |
| 1999 10 21 | 704 | 0.2+ | 0.1+ | 2003 10 30 | 704 | 0.3+ | 0.0  | 2003 12 19 | 704 | 0.8-  | 0.1+  |
| 1999 10 21 | 704 | 0.0  | 0.2- | 2003 10 30 | 704 | 0.1+ | 0.1+ | 2003 12 19 | 704 | 0.0   | 0.6-  |
| 1999 10 29 | 699 | 0.3- | 0.8- | 2003 10 30 | 704 | 0.1+ | 0.2+ | 2003 12 19 | 704 | 0.3+  | 0.3-  |
| 1999 10 29 | 699 | 0.8+ | 0.6+ | 2003 10 30 | 704 | 0.4- | 0.4+ | 2003 12 22 | 691 | 0.3+  | 0.0   |
| 1999 10 29 | 699 | 0.7- | 1.1+ | 2003 11 02 | 704 | 0.7+ | 0.0  | 2003 12 22 | 691 | 0.1-  | 0.1-  |
| 1999 10 30 | 703 | 0.0  | 0.2+ | 2003 11 02 | 704 | 0.4+ | 0.1+ | 2003 12 22 | 691 | 0.2+  | 0.2-  |
| 1999 10 30 | 703 | 0.4+ | 0.1+ | 2003 11 02 | 704 | 1.4+ | 1.2- | 2005 03 10 | 703 | 0.3-  | 0.5-  |
| 1999 10 30 | 703 | 0.6- | 0.4+ | 2003 11 02 | 704 | 0.6+ | 0.1- | 2005 03 10 | 703 | 0.2-  | 0.0   |
| 1999 10 30 | 703 | 0.2- | 1.0+ | 2003 11 05 | 699 | 0.5+ | 0.2+ | 2005 03 10 | 703 | (1.8- | 0.1+) |
| 1999 11 01 | 699 | 0.2- | 0.9- | 2003 11 05 | 699 | 0.9+ | 0.2+ | 2005 03 10 | 703 | (0.2+ | 1.9-) |
| 1999 11 01 | 699 | 0.9- | 0.0  | 2003 11 05 | 699 | 1.2- | 0.3+ | 2007 11 07 | 691 | 0.4-  | 0.2-  |
| 1999 11 01 | 699 | 0.3- | 0.6+ | 2003 11 05 | 699 | 0.9+ | 0.3+ | 2007 11 07 | 691 | 0.2-  | 0.1-  |
| 1999 11 04 | 704 | 0.4- | 0.2- | 2003 11 14 | 644 | 0.0  | 0.1- | 2007 11 07 | 691 | 0.7-  | 0.3-  |
| 1999 11 04 | 704 | 0.2- | 0.5+ | 2003 11 14 | 644 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.3+  | 0.6+  |
| 1999 11 04 | 704 | 0.3- | 0.3- | 2003 11 14 | 644 | 0.1+ | 0.0  | 2007 11 20 | 704 | 0.1-  | 0.0   |
| 1999 11 04 | 704 | 0.5+ | 0.1- | 2003 11 16 | 691 | 0.3+ | 0.1- | 2007 11 20 | 704 | 0.3+  | 0.1+  |
| 1999 11 04 | 704 | 0.2+ | 0.4- | 2003 11 16 | 691 | 0.2+ | 0.1- | 2007 11 20 | 704 | 0.3-  | 0.2-  |
| 1999 11 11 | 703 | 0.2+ | 0.5+ | 2003 11 16 | 691 | 0.3+ | 0.1- | 2007 11 20 | 704 | 0.1-  | 0.5+  |
| 1999 11 11 | 703 | 1.3- | 1.0+ | 2003 11 19 | 699 | 0.0  | 0.7- | 2007 11 20 | 691 | 0.0   | 0.2-  |
| 1999 11 11 | 703 | 0.7- | 0.2- | 2003 11 19 | 699 | 0.5- | 0.3- | 2007 11 20 | 691 | 0.1-  | 0.1-  |
| 1999 11 11 | 703 | 0.2- | 0.8+ | 2003 11 19 | 699 | 0.0  | 0.2- | 2007 11 20 | 691 | 0.1-  | 0.1-  |
| 2002 06 09 | 704 | 0.3- | 0.6+ | 2003 11 19 | 699 | 0.3- | 0.3+ | 2007 11 20 | 704 | 0.2+  | 0.4+  |
| 2002 06 09 | 704 | 0.0  | 0.4- | 2003 11 19 | 703 | 0.7+ | 0.1+ | 2007 12 10 | 704 | 0.2+  | 0.4+  |
| 2002 06 09 | 704 | 0.7- | 0.7- | 2003 11 19 | 703 | 0.3+ | 0.5- | 2007 12 10 | 704 | 0.4+  | 0.3+  |
| 2002 06 09 | 704 | 0.2+ | 1.0- | 2003 11 19 | 703 | 0.4- | 0.2- | 2007 12 10 | 704 | 0.0   | 0.0   |
| 2002 06 09 | 704 | 0.1- | 0.4- | 2003 11 19 | 703 | 0.8+ | 0.5- | 2007 12 14 | 704 | 0.1-  | 0.2+  |
| 2003 10 17 | 185 | 0.7+ | 0.6- | 2003 11 20 | 704 | 0.5- | 0.1- | 2007 12 14 | 704 | 0.5+  | 0.5+  |
| 2003 10 17 | 185 | 0.9+ | 0.4- | 2003 11 20 | 704 | 0.7- | 0.1+ | 2007 12 14 | 704 | 0.1-  | 0.1+  |
| 2003 10 17 | 185 | 1.0+ | 0.1- | 2003 11 20 | 704 | 0.2- | 0.2+ | 2007 12 14 | 704 | 0.2+  | 0.7+  |
| 2003 10 19 | 644 | 0.3- | 0.4+ | 2003 11 20 | 704 | 0.5- | 0.2- |            |     |       |       |

**(171572)\* 1999 UJ<sub>42</sub>**

Discovered 1999 Oct. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 328.12232  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.37063095 | $\omega$ | 212.53732 | +0.38078867 |      | -0.89302757 |   |
| <i>a</i> | 1.9194417  | $\Omega$ | 216.74228 | +0.91073760 |      | +0.40705929 |   |
| <i>e</i> | 0.1227035  | <i>i</i> | 23.63133  | +0.15986564 |      | -0.19184499 |   |
| <i>P</i> | 2.66       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 11 27 | 691 | 0.3+ | 0.7- | 2006 04 30 | 703 | 0.2+  | 0.0   | 2007 11 01 | 704 | 0.3-  | 0.1-  |
| 1991 11 27 | 691 | 0.3+ | 0.5- | 2006 04 30 | 703 | 0.2+  | 0.4+  | 2007 11 01 | 704 | 0.4-  | 0.2+  |
| 1991 11 27 | 691 | 0.1+ | 0.4- | 2006 05 26 | 699 | (2.5+ | 0.7+) | 2007 11 01 | 704 | 0.9-  | 0.0   |
| 1999 10 12 | 704 | 0.0  | 0.2- | 2006 05 26 | 699 | (0.1+ | 2.5+) | 2007 11 01 | 704 | 0.3-  | 0.2-  |
| 1999 10 12 | 704 | 0.2- | 0.0  | 2006 05 26 | 699 | 0.4+  | 0.9+  | 2007 11 01 | 704 | 0.4-  | 0.1+  |
| 1999 10 12 | 704 | 0.0  | 0.1- | 2006 05 26 | 699 | (2.2+ | 0.8+) | 2007 11 03 | 699 | 0.3+  | 0.4-  |
| 1999 10 12 | 704 | 0.2- | 0.3- | 2007 09 13 | 703 | 0.5+  | 0.3+  | 2007 11 03 | 699 | 0.6+  | 0.4-  |
| 1999 10 12 | 704 | 0.4- | 0.2- | 2007 09 13 | 703 | 0.5+  | 0.2+  | 2007 11 03 | 699 | 0.5+  | 0.0   |
| 1999 10 21 | 704 | 1.0+ | 0.3- | 2007 09 13 | 703 | 0.1+  | 0.1+  | 2007 11 03 | 699 | 0.5+  | 0.0   |
| 1999 10 21 | 704 | 0.0  | 0.1+ | 2007 09 13 | 703 | 0.1+  | 0.3+  | 2007 11 05 | 691 | 0.3-  | 0.1+  |
| 1999 10 21 | 704 | 0.4+ | 0.4- | 2007 09 20 | 703 | 1.1+  | 0.0   | 2007 11 05 | 691 | 0.3-  | 0.0   |
| 1999 10 21 | 704 | 0.4+ | 0.5- | 2007 09 20 | 703 | 0.2+  | 0.2+  | 2007 11 05 | 691 | 0.2-  | 0.0   |
| 1999 10 22 | 704 | 0.0  | 0.6- | 2007 09 20 | 703 | 0.1+  | 0.0   | 2007 11 06 | 704 | 0.4-  | 1.5+  |
| 1999 10 22 | 704 | 0.0  | 0.0  | 2007 09 20 | 703 | 0.6+  | 0.4-  | 2007 11 06 | 704 | 0.2-  | 0.1+  |
| 1999 10 22 | 704 | 0.3- | 0.2- | 2007 10 07 | 106 | 0.6+  | 0.1-  | 2007 11 06 | 704 | (0.1- | 1.5+) |
| 1999 11 01 | 699 | 0.5- | 0.6+ | 2007 10 07 | 106 | 0.2+  | 0.2-  | 2007 11 06 | 704 | 0.0   | 0.8+  |
| 1999 11 01 | 699 | 0.1+ | 0.0  | 2007 10 07 | 106 | 0.1-  | 0.4-  | 2007 11 06 | 704 | (0.2- | 1.8+) |
| 1999 11 01 | 699 | 0.6+ | 0.3+ | 2007 10 07 | 106 | 0.3-  | 0.3+  | 2007 11 09 | 691 | 0.3-  | 0.1+  |
| 1999 11 05 | 704 | 1.1- | 0.0  | 2007 10 08 | 703 | 0.3+  | 0.3+  | 2007 11 09 | 691 | 0.3-  | 0.1+  |
| 1999 11 05 | 704 | 0.0  | 0.7- | 2007 10 08 | 703 | 0.0   | 0.1-  | 2007 11 09 | 691 | 0.1-  | 0.0   |
| 1999 11 05 | 704 | 0.2+ | 0.8- | 2007 10 08 | 703 | 0.3+  | 0.1-  | 2007 11 13 | 699 | 0.9-  | 0.3-  |
| 1999 11 05 | 704 | 0.8- | 0.8- | 2007 10 08 | 703 | 0.7+  | 0.2-  | 2007 11 13 | 699 | 0.2-  | 0.2-  |
| 1999 11 05 | 704 | 0.4- | 0.9- | 2007 10 12 | 699 | 0.4+  | 0.1+  | 2007 11 13 | 699 | 0.1+  | 0.3-  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 14 | 704 | 0.2+ | 0.4− | 2007 10 12 | 699 | 0.4+ | 0.3− | 2007 11 14 | 704 | 0.3−  | 0.7+  |
| 1999 11 14 | 704 | 0.3− | 0.3+ | 2007 10 12 | 699 | 0.3+ | 0.3+ | 2007 11 14 | 704 | 0.1−  | 0.7+  |
| 1999 11 14 | 704 | 0.2+ | 0.3− | 2007 10 14 | 703 | 0.0  | 0.3− | 2007 11 14 | 704 | 0.1−  | 0.5+  |
| 1999 11 14 | 704 | 0.3+ | 0.0  | 2007 10 14 | 703 | 0.1− | 0.1− | 2007 11 14 | 704 | 0.0   | 0.6+  |
| 1999 11 14 | 704 | 0.1+ | 0.3− | 2007 10 14 | 703 | 0.3− | 0.3− | 2007 11 14 | 704 | 0.3−  | 0.7+  |
| 1999 11 16 | 704 | 1.1− | 0.1+ | 2007 10 14 | 703 | 0.1− | 0.1+ | 2007 11 19 | G96 | 0.1−  | 0.4−  |
| 1999 11 16 | 704 | 1.7− | 1.3+ | 2007 10 22 | 704 | 0.4+ | 0.9+ | 2007 11 19 | G96 | 0.0   | 0.2−  |
| 1999 11 16 | 704 | 0.2− | 1.1− | 2007 10 22 | 704 | 0.6+ | 1.1+ | 2007 11 19 | G96 | 0.0   | 0.2−  |
| 1999 11 16 | 704 | 1.7+ | 0.3+ | 2007 10 22 | 704 | 0.4+ | 0.8+ | 2007 11 29 | 704 | 0.3−  | 0.2+  |
| 1999 11 17 | 704 | 0.6− | 1.3− | 2007 10 22 | 704 | 0.7+ | 1.0+ | 2007 11 29 | 704 | 0.0   | 0.6+  |
| 1999 11 17 | 704 | 0.7− | 0.8− | 2007 10 22 | 704 | 0.8+ | 0.3+ | 2007 11 29 | 704 | (0.3+ | 3.0+) |
| 1999 11 17 | 704 | 0.1− | 0.3− | 2007 10 30 | 704 | 1.1+ | 0.1− | 2007 11 29 | 704 | 0.2−  | 0.0   |
| 1999 11 17 | 704 | 0.8− | 1.3+ | 2007 10 30 | 704 | 0.6+ | 0.1− | 2007 11 29 | 704 | 0.4−  | 1.2+  |
| 2001 06 16 | 645 | 0.0  | 0.1+ | 2007 10 30 | 704 | 0.9+ | 0.1+ | 2007 12 04 | 704 | 0.5+  | 0.0   |
| 2001 06 16 | 645 | 0.0  | 0.1+ | 2007 10 30 | 704 | 0.8+ | 0.1− | 2007 12 04 | 704 | 0.9−  | 0.2+  |
| 2001 06 18 | 644 | 1.4− | 0.5− | 2007 10 30 | 704 | 0.7+ | 0.4− | 2007 12 04 | 704 | 1.3−  | 1.1+  |
| 2001 06 18 | 644 | 0.8− | 0.3− | 2007 10 30 | 703 | 0.3+ | 0.1+ | 2007 12 04 | 704 | 0.2+  | 0.0   |
| 2001 06 18 | 644 | 0.9− | 0.2− | 2007 10 30 | 703 | 0.5+ | 0.1− | 2007 12 04 | 704 | (1.7− | 4.1+) |
| 2006 04 30 | 703 | 0.7+ | 0.4+ | 2007 10 30 | 703 | 0.2+ | 0.1− |            |     |       |       |
| 2006 04 30 | 703 | 0.7+ | 0.9− | 2007 10 30 | 703 | 1.0+ | 0.5− |            |     |       |       |

**(171573)\* 1999 UH<sub>43</sub>**

Discovered 1999 Oct. 28 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.03599   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25609352 | $\omega$ 133.87933 | +0.55107161   | −0.83021786 |
| <i>a</i> | 2.4558603  | $\Omega$ 282.50068 | +0.73880882   | +0.53223051 |
| <i>e</i> | 0.2285093  | <i>i</i> 4.93665   | +0.38791958   | +0.16573769 |
| <i>P</i> | 3.85       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 09 12 | 703 | 0.8− | 0.2− | 2003 11 03 | 704 | 0.0  | 0.2− | 2004 01 17 | 644 | 0.2+  | 0.2+  |
| 1999 09 12 | 703 | 0.4+ | 0.4+ | 2003 11 20 | 704 | 0.0  | 0.1− | 2004 01 17 | 644 | 0.1+  | 0.1+  |
| 1999 09 12 | 703 | 0.5− | 0.3+ | 2003 11 20 | 704 | 0.4− | 0.3+ | 2004 01 21 | 704 | 0.2+  | 0.2+  |
| 1999 09 12 | 703 | 0.7+ | 0.7+ | 2003 11 20 | 704 | 0.2− | 0.1+ | 2004 01 21 | 704 | 0.2+  | 1.4+  |
| 1999 10 03 | 704 | 0.0  | 0.0  | 2003 11 20 | 704 | 0.7− | 0.4+ | 2004 01 21 | 704 | 1.0−  | 1.1+  |
| 1999 10 03 | 704 | 0.1− | 0.5− | 2003 11 20 | 704 | 0.3− | 0.0  | 2004 01 21 | 704 | (1.5+ | 0.4+) |
| 1999 10 03 | 704 | 0.6− | 0.3− | 2003 11 24 | 704 | 0.2+ | 0.3+ | 2004 01 24 | 704 | 0.6+  | 1.0+  |
| 1999 10 12 | 704 | 0.2+ | 0.3+ | 2003 11 24 | 704 | 0.2+ | 0.8+ | 2004 01 24 | 704 | 0.5+  | 0.2+  |
| 1999 10 12 | 704 | 1.3− | 0.2+ | 2003 11 24 | 704 | 0.1+ | 0.5+ | 2004 01 24 | 704 | 0.2+  | 0.5+  |
| 1999 10 12 | 704 | 0.3− | 0.3− | 2003 11 24 | 704 | 0.0  | 0.4+ | 2004 01 24 | 704 | 0.5+  | 0.4+  |
| 1999 10 12 | 704 | 0.2− | 1.0− | 2003 11 24 | 704 | 0.1− | 0.5+ | 2004 01 24 | 704 | 0.8+  | 0.1−  |
| 1999 10 12 | 704 | 0.3− | 0.3− | 2003 11 26 | 704 | 0.4− | 0.3− | 2005 04 12 | 691 | 0.1−  | 0.0   |
| 1999 10 28 | 703 | 0.6+ | 0.6+ | 2003 11 26 | 704 | 0.7− | 0.5− | 2005 04 12 | 691 | 0.2−  | 0.4+  |
| 1999 10 28 | 703 | 0.3+ | 0.5+ | 2003 11 26 | 704 | 0.5− | 0.3− | 2005 04 12 | 691 | 0.0   | 0.0   |
| 1999 10 28 | 703 | 0.4− | 0.5+ | 2003 11 26 | 704 | 0.6− | 0.9− | 2005 04 16 | 691 | 0.2+  | 0.1−  |
| 1999 10 28 | 703 | 0.5− | 0.1− | 2003 11 26 | 704 | 0.5− | 0.4+ | 2005 04 16 | 691 | 0.2+  | 0.1−  |
| 1999 11 03 | 704 | 0.5+ | 1.2− | 2003 12 04 | 704 | 0.4− | 0.0  | 2005 04 16 | 691 | 0.2+  | 0.1+  |
| 1999 11 03 | 704 | 0.3+ | 1.1− | 2003 12 04 | 704 | 0.2− | 0.1+ | 2007 11 02 | G96 | 0.3+  | 0.3−  |
| 1999 11 03 | 704 | 0.6+ | 1.0− | 2003 12 04 | 704 | 0.7− | 0.4− | 2007 11 02 | G96 | 0.3+  | 0.5−  |
| 1999 11 03 | 704 | 0.7+ | 0.9− | 2003 12 04 | 704 | 0.5− | 0.1+ | 2007 11 02 | G96 | 0.2+  | 0.5−  |
| 1999 11 03 | 704 | 0.6+ | 1.0− | 2003 12 04 | 704 | 0.6− | 0.2+ | 2007 11 02 | G96 | 0.1+  | 0.5−  |
| 1999 11 11 | 703 | 0.5− | 0.7+ | 2003 12 18 | 704 | 0.4− | 0.1+ | 2007 11 11 | G96 | 0.7+  | 0.4−  |
| 1999 11 11 | 703 | 0.3+ | 0.3− | 2003 12 18 | 704 | 0.1+ | 0.2+ | 2007 11 11 | G96 | 0.1−  | 0.1−  |
| 1999 11 11 | 703 | 0.1+ | 0.7+ | 2003 12 18 | 704 | 0.3+ | 0.2+ | 2007 11 11 | G96 | 0.1+  | 0.6−  |
| 1999 11 11 | 703 | 0.0  | 0.4− | 2003 12 18 | 704 | 0.5− | 0.1+ | 2007 11 11 | G96 | 0.1−  | 0.4−  |
| 1999 12 03 | 699 | 0.5− | 0.5+ | 2003 12 18 | 704 | 0.1+ | 0.7+ | 2007 11 15 | 704 | 0.7−  | 0.2+  |
| 1999 12 03 | 699 | 0.3− | 0.0  | 2003 12 22 | 704 | 0.6+ | 0.5+ | 2007 11 15 | 704 | 0.2−  | 0.3−  |
| 1999 12 03 | 699 | 0.5+ | 1.4+ | 2003 12 22 | 704 | 0.3+ | 1.1+ | 2007 11 15 | 704 | 0.3−  | 0.2−  |
| 2003 09 27 | 704 | 1.2+ | 0.7+ | 2003 12 22 | 704 | 0.3+ | 0.4+ | 2007 12 06 | 704 | (0.2− | 2.8+) |
| 2003 09 27 | 704 | 0.6+ | 0.4+ | 2003 12 22 | 704 | 0.1+ | 0.3+ | 2007 12 06 | 704 | (1.1+ | 1.7+) |
| 2003 09 27 | 704 | 0.5+ | 0.9+ | 2003 12 22 | 704 | 0.4+ | 0.1+ | 2007 12 06 | 704 | (0.5+ | 1.9+) |
| 2003 09 27 | 704 | 0.2+ | 1.0+ | 2003 12 27 | 691 | 0.2+ | 0.1− | 2007 12 10 | 704 | 0.4+  | 0.1−  |
| 2003 09 27 | 704 | 0.4− | 0.0  | 2003 12 27 | 691 | 0.0  | 0.2− | 2007 12 10 | 704 | 0.7+  | 0.3+  |
| 2003 10 05 | 704 | 0.4+ | 0.4+ | 2003 12 27 | 691 | 0.1+ | 0.1− | 2007 12 10 | 704 | 0.1−  | 0.2+  |
| 2003 10 05 | 704 | 0.1− | 0.3+ | 2003 12 27 | 704 | 0.0  | 0.2+ | 2007 12 10 | 704 | 0.5+  | 0.6+  |
| 2003 10 05 | 704 | 0.5+ | 1.0+ | 2003 12 27 | 704 | 0.4+ | 0.2− | 2007 12 15 | 691 | 0.6−  | 0.2+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 05 | 704 | 0.6+ | 0.0  | 2003 12 27 | 704 | 0.3− | 0.3− | 2007 12 15 | 691 | 0.1− | 0.0  |
| 2003 10 05 | 704 | 0.1+ | 0.0  | 2003 12 27 | 704 | 0.3− | 1.4− | 2007 12 15 | 691 | 0.5− | 0.9− |
| 2003 11 03 | 704 | 0.7+ | 0.1+ | 2004 01 12 | 644 | 0.1− | 0.3+ | 2007 12 16 | 701 | 0.1+ | 0.2− |
| 2003 11 03 | 704 | 0.2− | 0.8− | 2004 01 12 | 644 | 0.2+ | 0.2+ | 2007 12 16 | 701 | 0.1+ | 0.3− |
| 2003 11 03 | 704 | 0.6+ | 0.0  | 2004 01 12 | 644 | 0.2+ | 0.0  | 2007 12 16 | 701 | 0.4+ | 0.5− |
| 2003 11 03 | 704 | 0.4− | 0.1− | 2004 01 17 | 644 | 0.1+ | 0.1+ | 2007 12 16 | 701 | 0.1− | 0.3− |

**(171574)\* 1999 VS<sub>4</sub> = 2003 SD<sub>202</sub>**

Discovered 1999 Nov. 5 by K. Korlević at Višnjan.

Id. G. V. Williams (*MPO* 52528)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.38847  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24357964 | $\omega$ 344.35163 | +0.81795670   | −0.57426631 |
| <i>a</i> | 2.5392691  | $\Omega$ 50.74737  | +0.53242548   | +0.73322004 |
| <i>e</i> | 0.1589397  | <i>i</i> 2.52632   | +0.21787598   | +0.36415187 |
| <i>P</i> | 4.05       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 10 | 704 | 0.0   | 0.4−  | 2003 10 24 | 704 | 0.0   | 0.1+  | 2007 10 08 | 699 | 0.1−  | 0.1+  |
| 1999 10 10 | 704 | 0.2+  | 0.5+  | 2003 10 24 | 704 | 0.1−  | 0.1−  | 2007 10 11 | 704 | 0.1+  | 0.2+  |
| 1999 10 10 | 704 | 0.5+  | 0.3+  | 2003 10 24 | 704 | 0.3+  | 0.2+  | 2007 10 11 | 704 | 0.2+  | 0.3+  |
| 1999 10 10 | 704 | 0.4+  | 0.3−  | 2003 10 24 | 704 | 0.2−  | 0.4+  | 2007 10 11 | 704 | 0.1+  | 0.5+  |
| 1999 10 29 | 703 | 0.6−  | 0.3+  | 2003 10 24 | 704 | 0.1+  | 0.7+  | 2007 10 11 | 699 | 0.3−  | 0.1+  |
| 1999 10 29 | 703 | 0.3+  | 0.4+  | 2003 10 25 | 691 | 0.2−  | 0.2+  | 2007 10 11 | 704 | 0.2+  | 0.4+  |
| 1999 10 29 | 703 | 0.9−  | 0.4+  | 2003 10 25 | 691 | 0.0   | 0.1+  | 2007 10 11 | 704 | 0.1−  | 0.5+  |
| 1999 10 29 | 703 | 1.2−  | 0.0   | 2003 10 25 | 691 | 0.0   | 0.1+  | 2007 10 11 | 699 | 0.6+  | 0.2+  |
| 1999 11 04 | 704 | 0.3+  | 0.6−  | 2003 10 26 | 703 | (1.7− | 0.1+) | 2007 10 11 | 699 | 1.1+  | 0.1−  |
| 1999 11 04 | 704 | 0.1+  | 1.0+  | 2003 10 26 | 703 | 0.5+  | 0.0   | 2007 10 11 | 699 | 1.1+  | 0.3+  |
| 1999 11 04 | 704 | (0.4+ | 2.2−) | 2003 10 26 | 703 | 1.1−  | 0.0   | 2007 10 12 | 704 | 0.0   | 0.1+  |
| 1999 11 04 | 704 | 0.8+  | 0.2−  | 2003 10 26 | 703 | 0.2+  | 0.5+  | 2007 10 12 | 704 | 0.0   | 0.1+  |
| 1999 11 04 | 704 | 1.4+  | 0.7−  | 2003 10 28 | 704 | (0.1− | 1.5+) | 2007 10 12 | 704 | 0.4−  | 0.6+  |
| 1999 11 05 | 120 | 0.1+  | 0.0   | 2003 10 28 | 704 | 0.2−  | 0.8+  | 2007 10 12 | 704 | 0.1+  | 0.4+  |
| 1999 11 05 | 120 | 1.0−  | 0.1−  | 2003 10 28 | 704 | 0.3−  | 0.0   | 2007 10 12 | 704 | 0.2+  | 0.3+  |
| 1999 11 07 | 120 | 1.4+  | 0.3−  | 2003 10 28 | 704 | 0.3−  | 1.3+  | 2007 10 14 | 704 | 0.5−  | 0.4+  |
| 1999 11 07 | 120 | 1.4+  | 0.6−  | 2003 10 28 | 704 | 0.0   | 0.5+  | 2007 10 14 | 704 | 0.5−  | 0.6−  |
| 1999 11 09 | 704 | 0.3+  | 0.4−  | 2003 10 28 | 608 | 0.0   | 0.1+  | 2007 10 14 | 704 | 0.4−  | 0.6+  |
| 1999 11 09 | 704 | 0.9+  | 0.2+  | 2003 10 28 | 608 | 0.0   | 0.3+  | 2007 10 14 | 704 | 0.3−  | 0.1+  |
| 1999 11 09 | 704 | 0.1+  | 0.0   | 2003 10 28 | 608 | 0.1−  | 0.1+  | 2007 10 18 | 683 | 0.0   | 0.2−  |
| 1999 11 09 | 704 | 0.6+  | 0.1−  | 2003 11 01 | 704 | 0.5−  | 0.0   | 2007 10 18 | 683 | 1.2+  | 1.0−  |
| 1999 11 12 | 704 | 0.0   | 0.3+  | 2003 11 01 | 704 | 0.5+  | 0.2−  | 2007 10 18 | 683 | (1.6− | 1.0−) |
| 1999 11 12 | 704 | 0.2+  | 0.1−  | 2003 11 01 | 704 | 0.4−  | 0.3+  | 2007 10 19 | 683 | 0.4−  | 0.0   |
| 1999 11 12 | 704 | 0.4+  | 0.8−  | 2003 11 01 | 704 | 0.1−  | 0.4+  | 2007 10 19 | 704 | 0.0   | 0.9+  |
| 1999 11 12 | 704 | 0.2+  | 0.5−  | 2003 11 01 | 704 | 0.2+  | 0.4+  | 2007 10 19 | 683 | 0.8−  | 1.0−  |
| 1999 11 12 | 704 | 0.2−  | 1.4−  | 2003 11 18 | 699 | 0.7−  | 0.3−  | 2007 10 19 | 704 | 0.3−  | 0.1−  |
| 1999 11 12 | 120 | 0.7+  | 0.5+  | 2003 11 18 | 699 | 0.7+  | 1.1−  | 2007 10 19 | 704 | 0.2−  | 0.1−  |
| 1999 11 12 | 120 | 1.1−  | 0.6−  | 2003 11 18 | 699 | 1.3−  | 0.1−  | 2007 10 19 | 683 | 0.5+  | 0.7+  |
| 1999 11 13 | 120 | 1.2+  | 1.9−  | 2003 11 18 | 699 | 0.7+  | 0.2+  | 2007 10 19 | 704 | 0.3−  | 0.6+  |
| 1999 11 13 | 120 | 0.0   | 0.7+  | 2003 11 19 | 644 | 0.2+  | 0.2+  | 2007 10 19 | 704 | 0.1+  | 0.5+  |
| 1999 11 13 | 120 | 0.7+  | 1.6−  | 2003 11 19 | 644 | 0.2+  | 0.1+  | 2007 10 20 | 703 | 1.1+  | 0.4+  |
| 1999 11 15 | 691 | 0.3−  | 0.1−  | 2003 11 19 | 644 | 0.0   | 0.3+  | 2007 10 20 | 703 | 0.8+  | 0.9+  |
| 1999 11 15 | 691 | 0.3−  | 0.2−  | 2003 11 24 | 691 | 0.1−  | 0.0   | 2007 10 20 | 703 | 0.3−  | 0.2+  |
| 1999 11 15 | 691 | 0.3−  | 0.2−  | 2003 11 24 | 691 | 0.1−  | 0.1+  | 2007 10 20 | 703 | 0.0   | 0.6+  |
| 1999 11 16 | 704 | 1.2+  | 1.3−  | 2003 11 24 | 691 | 0.1−  | 0.1+  | 2007 10 21 | 683 | 0.6+  | 1.0−  |
| 1999 11 16 | 704 | 0.1−  | 0.1+  | 2003 11 26 | 699 | 0.2−  | 0.7+  | 2007 10 21 | 683 | 0.2+  | 1.2+  |
| 1999 11 16 | 704 | 0.1+  | 0.8−  | 2003 11 26 | 699 | 0.6−  | 0.5+  | 2007 10 21 | 683 | (1.5+ | 0.5+) |
| 1999 11 26 | 120 | 0.4+  | 0.7−  | 2003 11 26 | 699 | 0.2−  | 0.7−  | 2007 11 01 | 691 | 0.3−  | 0.1+  |
| 1999 11 26 | 120 | 1.1+  | 0.1+  | 2003 11 26 | 699 | 0.0   | 0.5−  | 2007 11 01 | 691 | 0.2−  | 0.2+  |
| 2001 02 20 | 645 | 0.1+  | 0.1+  | 2005 03 16 | G96 | 0.3+  | 0.1−  | 2007 11 01 | 691 | 0.1−  | 0.1+  |
| 2001 02 20 | 645 | 0.0   | 0.1+  | 2005 03 16 | G96 | 0.1+  | 0.2+  | 2007 11 02 | 699 | 0.3+  | 0.7−  |
| 2003 09 19 | 599 | 0.7+  | 1.0+  | 2005 03 16 | G96 | 0.1+  | 0.0   | 2007 11 02 | 699 | 0.6−  | 0.0   |
| 2003 09 19 | 599 | 0.1−  | 0.0   | 2005 03 16 | G96 | 0.3−  | 0.3−  | 2007 11 02 | 699 | 1.2+  | 0.2−  |
| 2003 09 19 | 599 | 0.1−  | 0.5−  | 2007 09 13 | 704 | 0.7+  | 1.1+  | 2007 11 02 | 699 | 0.3+  | 0.5−  |
| 2003 09 19 | 599 | 0.4−  | 0.2+  | 2007 09 13 | 704 | 0.4+  | 0.4−  | 2007 11 05 | 704 | 0.4+  | 0.1−  |
| 2003 09 25 | 608 | 0.4−  | 0.3+  | 2007 09 13 | 704 | 0.6−  | 0.1+  | 2007 11 05 | 704 | 0.1−  | 0.3−  |
| 2003 09 25 | 608 | 0.3−  | 0.4+  | 2007 09 16 | 704 | 0.0   | 0.2+  | 2007 11 05 | 704 | 0.0   | 0.1+  |
| 2003 09 25 | 608 | 0.7−  | 0.5+  | 2007 09 16 | 704 | 0.4−  | 0.5−  | 2007 11 05 | 704 | 0.4+  | 0.1−  |
| 2003 09 26 | 704 | 0.3+  | 0.8+  | 2007 09 16 | 704 | 0.3−  | 0.2+  | 2007 11 05 | G96 | 0.1−  | 0.3−  |

2007 DEC. 24

M.P.O. 129089

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 26 | 704 | 0.5-  | 0.2+  | 2007 09 16 | 704 | (0.5- | 1.5+) | 2007 11 05 | G96 | 0.4+  | 0.3-  |
| 2003 09 26 | 704 | 0.1+  | 0.3+  | 2007 09 17 | D29 | 0.2+  | 0.9-  | 2007 11 05 | G96 | 0.2+  | 0.4-  |
| 2003 09 26 | 704 | 0.1+  | 0.1+  | 2007 09 17 | D29 | 0.2+  | 0.1-  | 2007 11 05 | 704 | 0.5-  | 0.6-  |
| 2003 09 26 | 704 | 0.1-  | 0.1-  | 2007 09 17 | D29 | 0.2+  | 0.7-  | 2007 11 05 | G96 | 0.3+  | 0.3-  |
| 2003 09 27 | 691 | 0.1+  | 0.1-  | 2007 09 17 | D29 | 0.3+  | 1.2-  | 2007 11 14 | 704 | (1.8+ | 0.4+) |
| 2003 09 27 | 691 | 0.0   | 0.1+  | 2007 09 18 | 699 | 0.2-  | 0.7-  | 2007 11 14 | 704 | 0.3+  | 0.3+  |
| 2003 09 27 | 691 | 0.0   | 0.1+  | 2007 09 18 | 699 | 0.8-  | 0.6+  | 2007 11 14 | 704 | 0.1+  | 0.4+  |
| 2003 09 29 | 704 | 0.6-  | 0.8+  | 2007 09 18 | 699 | 0.1-  | 0.6+  | 2007 11 14 | 704 | 0.3-  | 0.4+  |
| 2003 09 29 | 704 | 0.3-  | 0.0   | 2007 09 18 | 699 | 0.4+  | 0.8-  | 2007 11 14 | 704 | 1.0-  | 1.4+  |
| 2003 09 29 | 704 | 0.4-  | 0.2+  | 2007 09 19 | 704 | 0.2-  | 0.7-  | 2007 11 28 | 106 | 0.2-  | 0.3-  |
| 2003 09 29 | 704 | 0.5-  | 0.0   | 2007 09 19 | 704 | 0.1-  | 0.5-  | 2007 11 28 | 106 | 0.4-  | 0.2+  |
| 2003 09 29 | 704 | 0.0   | 0.1+  | 2007 09 19 | 704 | 0.4+  | 0.6+  | 2007 11 28 | 106 | 0.1-  | 0.1-  |
| 2003 10 21 | 699 | 0.9-  | 0.9+  | 2007 09 19 | 704 | 0.5-  | 0.3+  | 2007 11 28 | 106 | 0.5+  | 0.5+  |
| 2003 10 21 | 699 | 0.5-  | 0.7-  | 2007 09 19 | 704 | 0.5-  | 0.3+  | 2007 11 14 | 704 | 0.1-  | 0.6-  |
| 2003 10 21 | 699 | 0.1+  | 0.1+  | 2007 10 04 | 703 | 0.5-  | 0.5-  | 2007 12 05 | 704 | 0.3+  | 0.8-  |
| 2003 10 21 | 644 | 0.2+  | 0.2+  | 2007 10 04 | 703 | 0.4-  | 0.3+  | 2007 12 05 | 704 | 0.5+  | 0.9+  |
| 2003 10 21 | 704 | 0.5-  | 1.2+  | 2007 10 04 | 703 | 0.4-  | 0.0   | 2007 12 05 | 704 | 0.4-  | 0.5+  |
| 2003 10 21 | 699 | 0.4+  | 0.6+  | 2007 10 04 | 703 | 0.5-  | 0.1-  | 2007 12 05 | 704 | 0.4+  | 1.0+  |
| 2003 10 21 | 704 | 0.5+  | 0.4+  | 2007 10 06 | 704 | 0.3-  | 1.0-  | 2007 12 05 | 106 | 1.0+  | 0.3-  |
| 2003 10 21 | 704 | 0.0   | 0.6+  | 2007 10 06 | 704 | 0.1+  | 0.6-  | 2007 12 05 | 106 | 0.2-  | 0.8-  |
| 2003 10 21 | 644 | 0.3+  | 0.2+  | 2007 10 06 | 704 | 0.1+  | 0.1-  | 2007 12 05 | 106 | 1.0+  | 0.7+  |
| 2003 10 21 | 704 | 0.1+  | 0.8+  | 2007 10 06 | 704 | 0.8-  | 0.1+  | 2007 12 05 | 106 | 0.0   | 0.3+  |
| 2003 10 21 | 704 | 0.3-  | 0.3+  | 2007 10 06 | 704 | 0.6+  | 0.1+  | 2007 12 06 | G96 | 0.0   | 0.5-  |
| 2003 10 21 | 644 | 0.3+  | 0.0   | 2007 10 08 | 704 | 0.2+  | 0.3+  | 2007 12 06 | G96 | 0.1-  | 0.1-  |
| 2003 10 23 | 704 | 0.1-  | 0.0   | 2007 10 08 | 704 | 0.4+  | 0.7-  | 2007 12 06 | G96 | 0.5+  | 0.1-  |
| 2003 10 23 | 704 | 0.5-  | 0.0   | 2007 10 08 | 704 | 0.3-  | 0.7-  | 2007 12 06 | G96 | 0.3+  | 0.1-  |
| 2003 10 23 | 704 | (1.8- | 0.1+) | 2007 10 08 | 704 | 0.8-  | 0.3+  | 2007 12 06 | G96 | 0.4+  | 0.2-  |
| 2003 10 23 | 704 | 0.3-  | 1.0+  | 2007 10 08 | 704 | 0.2+  | 0.2+  | 2007 12 06 | G96 | 0.2+  | 0.2-  |
| 2003 10 23 | 608 | 0.4-  | 1.2-  | 2007 10 08 | 699 | 0.0   | 0.4-  | 2007 12 06 | G96 | 0.4+  | 0.2-  |
| 2003 10 23 | 608 | 0.3-  | 1.3-  | 2007 10 08 | 699 | 0.0   | 0.5-  | 2007 12 06 | G96 | 0.2+  | 0.3-  |
| 2003 10 23 | 608 | 0.4-  | 0.9-  | 2007 10 08 | 699 | 0.3-  | 0.3-  |            |     |       |       |

(171575)\* 1999 VM<sub>5</sub>

|                                                          |     |            |      |            |     |           |      |             |     |             |       |
|----------------------------------------------------------|-----|------------|------|------------|-----|-----------|------|-------------|-----|-------------|-------|
| Discovered 1999 Nov. 6 by C. W. Juels at Fountain Hills. |     |            |      |            |     |           |      |             |     |             |       |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5                  |     |            |      |            |     |           |      |             |     |             |       |
| MPC                                                      |     |            |      |            |     |           |      |             |     |             |       |
| <i>M</i>                                                 |     | 56.40931   |      | (2000.0)   |     | <b>P</b>  |      | <b>Q</b>    |     |             |       |
| <i>n</i>                                                 |     | 0.26186852 |      | $\omega$   |     | 48.36861  |      | +0.93631063 |     | −0.35057304 |       |
| <i>a</i>                                                 |     | 2.4196201  |      | $\Omega$   |     | 332.13544 |      | +0.30773408 |     | +0.84723739 |       |
| <i>e</i>                                                 |     | 0.1956929  |      | <i>i</i>   |     | 2.51597   |      | +0.16918081 |     | +0.39910819 |       |
| <i>P</i>                                                 |     | 3.76       |      | <i>H</i>   |     | 15.5      |      | <i>G</i>    |     | 0.15        |       |
|                                                          |     |            |      |            |     |           |      | <i>U</i>    |     | 1           |       |
| Residuals in seconds of arc                              |     |            |      |            |     |           |      |             |     |             |       |
| 1999 10 03                                               | 704 | 1.0+       | 0.1− | 1999 11 11 | 703 | 0.3−      | 0.3+ | 2003 12 19  | 704 | 0.4−        | 0.3+  |
| 1999 10 03                                               | 704 | 0.1+       | 0.7+ | 1999 11 13 | 620 | 1.3+      | 0.4− | 2003 12 19  | 704 | 0.1+        | 0.4−  |
| 1999 10 03                                               | 704 | 0.7+       | 0.7+ | 1999 11 13 | 620 | 0.1+      | 1.0− | 2003 12 22  | 704 | 0.7−        | 0.7+  |
| 1999 10 03                                               | 704 | 0.3−       | 0.9+ | 1999 11 14 | 620 | 0.2−      | 0.9− | 2003 12 22  | 704 | 0.2−        | 0.0   |
| 1999 10 09                                               | 699 | 0.0        | 0.7+ | 1999 11 14 | 620 | 0.2−      | 0.3− | 2003 12 22  | 704 | 0.1−        | 0.4−  |
| 1999 10 09                                               | 699 | 0.1−       | 0.8+ | 1999 11 16 | 704 | 0.7+      | 0.3− | 2003 12 22  | 704 | 0.0         | 0.1−  |
| 1999 10 09                                               | 699 | 0.5+       | 1.3+ | 1999 11 16 | 704 | 0.8+      | 0.9− | 2003 12 22  | 704 | 0.1+        | 0.5−  |
| 1999 10 12                                               | 704 | 0.1+       | 0.1+ | 1999 11 16 | 704 | 0.7+      | 0.2− | 2003 12 27  | 704 | 0.9+        | 0.0   |
| 1999 10 12                                               | 704 | 0.5+       | 0.3− | 1999 11 16 | 704 | 0.5+      | 0.3− | 2003 12 27  | 704 | 0.1+        | 0.5+  |
| 1999 10 12                                               | 704 | 0.1+       | 0.3− | 1999 11 16 | 704 | 0.4+      | 0.1+ | 2003 12 27  | 704 | 0.5+        | 0.3+  |
| 1999 10 12                                               | 704 | 0.4+       | 0.5− | 1999 11 28 | 678 | 0.5−      | 1.1− | 2003 12 27  | 704 | 0.2+        | 0.0   |
| 1999 10 12                                               | 704 | 0.1−       | 0.6− | 1999 11 28 | 678 | 0.9−      | 0.2− | 2004 01 22  | 704 | (1.5+       | 0.6−) |
| 1999 10 13                                               | 704 | 0.2+       | 0.2+ | 1999 12 04 | 703 | 0.6−      | 0.4− | 2004 01 22  | 704 | (1.9+       | 0.2−) |
| 1999 10 13                                               | 704 | 0.6+       | 0.0  | 1999 12 04 | 703 | 0.5−      | 0.4+ | 2004 01 22  | 704 | 0.2+        | 0.3−  |
| 1999 10 13                                               | 704 | 0.1+       | 0.3+ | 1999 12 04 | 703 | 0.6−      | 0.5+ | 2004 01 22  | 704 | 1.5+        | 0.7−  |
| 1999 10 13                                               | 704 | 0.3+       | 0.0  | 1999 12 04 | 703 | 0.1−      | 0.4+ | 2004 01 22  | 704 | 1.5+        | 1.0−  |
| 1999 10 13                                               | 704 | 0.3+       | 0.0  | 2000 01 04 | 704 | 0.3−      | 0.0  | 2005 03 12  | G96 | 0.4+        | 1.0−  |
| 1999 10 15                                               | 704 | 0.5+       | 0.4− | 2000 01 04 | 704 | 0.6−      | 0.6− | 2005 03 12  | G96 | 0.6+        | 0.4−  |
| 1999 10 15                                               | 704 | 0.8−       | 1.7− | 2000 01 04 | 704 | 0.7−      | 0.1+ | 2005 03 12  | G96 | 0.2+        | 0.4−  |
| 1999 10 15                                               | 704 | 0.0        | 0.1+ | 2000 01 04 | 704 | 0.0       | 0.1+ | 2005 03 12  | G96 | 0.1−        | 0.3−  |
| 1999 10 15                                               | 704 | 0.0        | 0.1+ | 2000 01 06 | 704 | 0.3−      | 0.2− | 2005 03 13  | 691 | 0.3−        | 0.2+  |
| 1999 10 15                                               | 704 | 0.3−       | 0.2+ | 2000 01 06 | 704 | 0.9+      | 1.3− | 2005 03 13  | 691 | 0.1−        | 0.1+  |
| 1999 10 22                                               | 704 | 0.1−       | 0.3+ | 2000 01 06 | 704 | 0.3+      | 0.1− | 2005 03 13  | 691 | 0.0         | 0.0   |
| 1999 10 22                                               | 704 | 0.3−       | 0.3+ | 2003 10 24 | 704 | 0.1−      | 0.9+ | 2005 03 17  | 691 | 0.1+        | 0.1−  |
| 1999 10 22                                               | 704 | 0.1−       | 0.3+ | 2003 10 24 | 704 | 0.7−      | 1.0+ | 2005 03 17  | 691 | 0.1+        | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 10 22 | 704 | 0.3- | 0.3+ | 2003 10 24 | 704 | 0.2- | 1.3+ | 2005 03 17 | 691 | 0.1+  | 0.1-  |
| 1999 10 22 | 704 | 0.1- | 0.1- | 2003 10 24 | 704 | 0.2+ | 0.3+ | 2005 05 02 | 691 | 0.3+  | 0.4+  |
| 1999 10 29 | 703 | 0.0  | 0.4+ | 2003 10 24 | 704 | 0.1- | 1.0+ | 2005 05 02 | 691 | 0.3+  | 0.3+  |
| 1999 10 29 | 703 | 0.1- | 0.4+ | 2003 10 29 | 704 | 0.3- | 0.4- | 2005 05 02 | 691 | 0.2+  | 0.3+  |
| 1999 10 29 | 703 | 0.4- | 0.5+ | 2003 10 29 | 704 | 0.5- | 0.2- | 2005 05 10 | 691 | 0.4+  | 0.3+  |
| 1999 10 29 | 703 | 0.4+ | 0.8+ | 2003 10 29 | 704 | 0.3+ | 0.3+ | 2005 05 10 | 691 | 0.2-  | 0.6+  |
| 1999 11 01 | 699 | 0.5+ | 0.7+ | 2003 11 24 | 704 | 0.1- | 0.4+ | 2005 05 10 | 691 | 0.1+  | 0.7+  |
| 1999 11 01 | 699 | 0.1- | 0.7+ | 2003 11 24 | 704 | 0.4+ | 0.7+ | 2005 05 14 | G96 | 0.1-  | 0.0   |
| 1999 11 01 | 699 | 0.0  | 1.0+ | 2003 11 24 | 704 | 0.2- | 0.2+ | 2005 05 14 | G96 | 0.4-  | 0.1+  |
| 1999 11 03 | 704 | 0.0  | 0.2+ | 2003 11 24 | 704 | 0.0  | 0.4+ | 2005 05 14 | G96 | 0.1+  | 0.1+  |
| 1999 11 03 | 704 | 0.3+ | 0.3- | 2003 11 24 | 704 | 0.2+ | 1.0+ | 2005 05 14 | G96 | 0.4-  | 0.0   |
| 1999 11 03 | 704 | 0.1+ | 0.1- | 2003 12 04 | 704 | 0.5- | 0.3+ | 2006 11 01 | G96 | 0.0   | 0.2+  |
| 1999 11 03 | 704 | 0.2+ | 0.4- | 2003 12 04 | 704 | 0.5- | 0.0  | 2006 11 01 | G96 | 0.2+  | 0.0   |
| 1999 11 06 | 678 | 1.8+ | 0.5+ | 2003 12 04 | 704 | 0.0  | 0.2+ | 2006 11 01 | G96 | 0.1+  | 0.3+  |
| 1999 11 06 | 678 | 0.7- | 0.6+ | 2003 12 04 | 704 | 0.6+ | 0.9- | 2006 11 01 | G96 | 0.4-  | 0.4+  |
| 1999 11 06 | 678 | 1.3- | 0.2+ | 2003 12 04 | 704 | 0.2- | 0.8- | 2007 11 03 | 703 | 0.7-  | 0.2-  |
| 1999 11 08 | 678 | 0.0  | 0.5+ | 2003 12 18 | 704 | 0.2+ | 0.1- | 2007 11 03 | 703 | (2.0- | 0.2+) |
| 1999 11 08 | 678 | 1.1- | 0.4- | 2003 12 18 | 704 | 0.1+ | 0.2- | 2007 11 03 | 703 | 0.8-  | 1.2+  |
| 1999 11 08 | 620 | 1.6- | 0.7+ | 2003 12 18 | 704 | 0.0  | 0.5- | 2007 11 03 | 703 | 0.0   | 0.6+  |
| 1999 11 08 | 620 | 1.5- | 0.2+ | 2003 12 18 | 704 | 0.1- | 0.3- | 2007 12 16 | 699 | 0.0   | 0.6-  |
| 1999 11 08 | 620 | 1.4- | 0.8- | 2003 12 18 | 704 | 0.4- | 0.2- | 2007 12 16 | 699 | 0.5+  | 0.5-  |
| 1999 11 11 | 703 | 0.0  | 0.9+ | 2003 12 19 | 704 | 0.0  | 0.2+ | 2007 12 16 | 699 | 0.9-  | 1.1-  |
| 1999 11 11 | 703 | 0.2+ | 0.1- | 2003 12 19 | 704 | 0.2+ | 0.1- | 2007 12 16 | 699 | 0.1+  | 0.1-  |
| 1999 11 11 | 703 | 0.1- | 0.1+ | 2003 12 19 | 704 | 0.1- | 0.1+ |            |     |       |       |

(171576)\* 1999 VP<sub>11</sub>

Discovered 1999 Nov. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                                                                                                               |           |            |             |      | MPC         |            |     |       |       |
|-----------------------------------------|------------|---------------------------------------------------------------------------------------------------------------|-----------|------------|-------------|------|-------------|------------|-----|-------|-------|
| $M$                                     | 103.68499  |                                                                                                               | (2000.0)  |            | $P$         |      | $Q$         |            |     |       |       |
| $n$                                     | 0.87278655 | $\omega$                                                                                                      | 61.52525  |            | -0.02356656 |      | +0.98979899 |            |     |       |       |
| $a$                                     | 1.0844196  | $\Omega$ <td>208.20088</td> <td></td> <td>-0.98929109</td> <td></td> <td>-0.04339935</td> <td></td> <td></td> | 208.20088 |            | -0.98929109 |      | -0.04339935 |            |     |       |       |
| $e$                                     | 0.5835159  | $i$ <td>17.29740</td> <td></td> <td>-0.14404079</td> <td></td> <td>+0.13571904</td> <td></td> <td></td>       | 17.29740  |            | -0.14404079 |      | +0.13571904 |            |     |       |       |
| $P$                                     | 1.13       | $H$                                                                                                           | 18.7      | $G$        | 0.15        | $U$  | 3           |            |     |       |       |
| Residuals in seconds of arc             |            |                                                                                                               |           |            |             |      |             |            |     |       |       |
| 1999 11 07                              | 704        | 0.3-                                                                                                          | 1.3+      | 1999 11 10 | 704         | 1.4- | 0.5-        | 1999 11 29 | 046 | 0.3-  | 0.0   |
| 1999 11 07                              | 704        | 0.2-                                                                                                          | 0.1+      | 1999 11 10 | 474         | 0.3+ | 0.3-        | 1999 11 29 | 046 | 0.8+  | 0.1-  |
| 1999 11 07                              | 704        | 0.8-                                                                                                          | 0.2+      | 1999 11 10 | 474         | 0.4+ | 0.2-        | 1999 12 02 | 587 | 0.2+  | 1.3+  |
| 1999 11 07                              | 704        | 0.0                                                                                                           | 0.2+      | 1999 11 10 | 474         | 0.4+ | 0.3+        | 1999 12 02 | 587 | 0.3+  | 0.6+  |
| 1999 11 07                              | 704        | 0.3+                                                                                                          | 0.2+      | 1999 11 10 | 474         | 0.3+ | 0.3+        | 1999 12 07 | 360 | 0.2-  | 0.1-  |
| 1999 11 07                              | 704        | 0.4-                                                                                                          | 0.2-      | 1999 11 10 | 474         | 0.1- | 0.3-        | 1999 12 07 | 360 | 0.4+  | 0.1+  |
| 1999 11 07                              | 704        | 0.6-                                                                                                          | 0.2-      | 1999 11 11 | 853         | 0.7+ | 0.1-        | 1999 12 07 | 360 | 0.1+  | 0.4-  |
| 1999 11 07                              | 704        | 1.0-                                                                                                          | 0.1+      | 1999 11 11 | 853         | 0.3+ | 0.2+        | 1999 12 18 | 413 | 1.1+  | 1.1+  |
| 1999 11 07                              | 704        | 0.1-                                                                                                          | 0.3-      | 1999 11 11 | 853         | 0.2+ | 0.2-        | 1999 12 18 | 413 | 0.4+  | 0.6+  |
| 1999 11 08                              | 704        | 0.8-                                                                                                          | 0.3-      | 1999 11 12 | 474         | 0.1+ | 0.1+        | 1999 12 18 | 413 | 0.5+  | 1.4-  |
| 1999 11 08                              | 704        | 1.6-                                                                                                          | 0.9-      | 1999 11 12 | 474         | 0.9+ | 0.1+        | 2000 01 09 | 691 | 0.2-  | 0.6+  |
| 1999 11 08                              | 704        | 1.3-                                                                                                          | 0.1+      | 1999 11 12 | 474         | 0.4+ | 0.3+        | 2000 01 09 | 691 | 1.1-  | 0.5+  |
| 1999 11 08                              | 704        | (2.1-                                                                                                         | 0.1+)     | 1999 11 12 | 474         | 0.5+ | 0.2-        | 2000 01 09 | 691 | 0.7+  | 0.2+  |
| 1999 11 08                              | 704        | 1.6-                                                                                                          | 0.9-      | 1999 11 12 | 474         | 0.3- | 1.2-        | 2000 11 23 | 696 | 0.2+  | 0.9+  |
| 1999 11 08                              | 704        | 0.7-                                                                                                          | 0.7+      | 1999 11 13 | 474         | 0.5+ | 0.1-        | 2000 11 23 | 696 | 0.3+  | 0.8+  |
| 1999 11 08                              | 704        | 1.2-                                                                                                          | 0.8-      | 1999 11 13 | 474         | 0.4+ | 0.2-        | 2000 12 02 | 413 | 0.6+  | 0.3+  |
| 1999 11 08                              | 704        | 1.8-                                                                                                          | 0.1+      | 1999 11 13 | 474         | 0.2+ | 0.2-        | 2000 12 02 | 413 | 0.6+  | 0.2+  |
| 1999 11 08                              | 704        | 1.6-                                                                                                          | 0.8-      | 1999 11 13 | 402         | 0.3+ | 0.5-        | 2000 12 03 | 413 | 0.1+  | 0.1+  |
| 1999 11 08                              | 704        | 1.2+                                                                                                          | 0.9-      | 1999 11 13 | 402         | 0.8+ | 0.0         | 2000 12 03 | 413 | 0.9+  | 0.1+  |
| 1999 11 08                              | 704        | 0.9-                                                                                                          | 1.3-      | 1999 11 13 | 402         | 0.3+ | 0.3+        | 2004 12 03 | 291 | (1.9- | 0.4+) |
| 1999 11 09                              | 853        | 0.4+                                                                                                          | 0.2+      | 1999 11 16 | 360         | 0.3+ | 0.1+        | 2004 12 03 | 291 | 1.0-  | 0.9+  |
| 1999 11 09                              | 853        | 0.3+                                                                                                          | 0.1+      | 1999 11 16 | 360         | 0.3+ | 0.1-        | 2004 12 03 | 291 | 0.2+  | 0.7-  |
| 1999 11 09                              | 853        | 0.4+                                                                                                          | 0.4+      | 1999 11 16 | 360         | 0.2+ | 0.0         | 2005 12 25 | E17 | 0.1+  | 0.5-  |
| 1999 11 09                              | 704        | 0.5-                                                                                                          | 0.4-      | 1999 11 17 | 474         | 0.2+ | 0.4+        | 2005 12 25 | E17 | 0.2+  | 0.4+  |
| 1999 11 09                              | 704        | 1.0-                                                                                                          | 0.5+      | 1999 11 17 | 474         | 0.1+ | 0.6+        | 2005 12 25 | E17 | 1.2-  | 0.3+  |
| 1999 11 09                              | 704        | 1.1-                                                                                                          | 0.3-      | 1999 11 17 | 474         | 1.5+ | 1.2+        | 2006 03 03 | 291 | 0.3+  | 0.4-  |
| 1999 11 09                              | 402        | 0.4+                                                                                                          | 0.4-      | 1999 11 17 | 474         | 1.3+ | 0.1+        | 2006 03 03 | 291 | 0.2+  | 0.1-  |
| 1999 11 09                              | 402        | 0.7+                                                                                                          | 0.0       | 1999 11 19 | 587         | 0.5+ | 0.0         | 2006 03 03 | 291 | 0.3+  | 0.1-  |
| 1999 11 09                              | 402        | 0.4+                                                                                                          | 0.1+      | 1999 11 19 | 587         | 0.6+ | 1.0-        | 2006 03 25 | 448 | 0.6+  | 0.6-  |
| 1999 11 09                              | 402        | 0.1-                                                                                                          | 0.2-      | 1999 11 26 | 046         | 0.4+ | 0.5+        | 2006 03 25 | 448 | 0.6+  | 0.1-  |
| 1999 11 10                              | 853        | 0.6+                                                                                                          | 0.2+      | 1999 11 26 | 046         | 1.0- | 1.0+        | 2006 03 25 | 448 | 0.9+  | 0.5-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 10 | 853 | 0.5+ | 0.0  | 1999 11 26 | 046 | 0.2+ | 0.4+ | 2007 09 30 | H55 | 1.0+ | 0.9- |
| 1999 11 10 | 853 | 0.3+ | 0.5- | 1999 11 26 | 046 | 0.5- | 0.2+ | 2007 09 30 | H55 | 1.0+ | 0.9- |
| 1999 11 10 | 853 | 0.5+ | 0.5+ | 1999 11 26 | 046 | 0.2+ | 0.5+ | 2007 09 30 | H55 | 0.7+ | 1.1- |
| 1999 11 10 | 704 | 0.8- | 0.4- | 1999 11 28 | 587 | 2.0+ | 0.7- | 2007 12 03 | 291 | 0.2+ | 0.1+ |
| 1999 11 10 | 704 | 1.0- | 0.0  | 1999 11 28 | 587 | 0.5+ | 1.4- | 2007 12 03 | 291 | 0.2+ | 0.2+ |
| 1999 11 10 | 704 | 0.8- | 0.5- | 1999 11 28 | 587 | 0.4+ | 0.5+ | 2007 12 03 | 291 | 0.1+ | 0.2+ |
| 1999 11 10 | 704 | 1.5- | 0.3- | 1999 11 29 | 046 | 0.1+ | 0.6+ |            |     |      |      |

(171577)\* 1999 VW<sub>14</sub> = 2001 DS<sub>40</sub>

Discovered 1999 Nov. 2 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 10484)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.72991   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26751374 | $\omega$ | 67.14125  | +0.50536950   | -0.86276368 |
| <i>a</i> | 2.3854592  | $\Omega$ | 352.44669 | +0.74214716   | +0.44374628 |
| <i>e</i> | 0.0910190  | <i>i</i> | 6.77535   | +0.44024909   | +0.24233874 |
| <i>P</i> | 3.68       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 09 14 | 703 | 0.3-  | 0.7+  | 1999 11 15 | 691 | 0.2- | 0.5- | 2003 11 19 | 691 | 0.0   | 0.0   |
| 1999 09 14 | 703 | 0.1+  | 1.3+  | 1999 11 15 | 691 | 0.3- | 0.0  | 2003 11 19 | 691 | 0.3+  | 0.2+  |
| 1999 09 14 | 703 | 0.9+  | 1.1+  | 2001 02 19 | 704 | 0.9+ | 1.2+ | 2003 12 18 | 703 | 0.4+  | 0.4+  |
| 1999 09 14 | 703 | 1.3+  | 1.9+  | 2001 02 19 | 704 | 0.5- | 0.2- | 2003 12 18 | 703 | 0.3+  | 0.4-  |
| 1999 10 06 | 704 | 0.4-  | 0.2-  | 2001 02 19 | 704 | 0.1- | 0.2+ | 2003 12 18 | 703 | (0.4- | 1.6-) |
| 1999 10 06 | 704 | 0.7+  | 0.7+  | 2001 02 19 | 704 | 0.2- | 0.2+ | 2003 12 18 | 703 | 1.1-  | 1.1-  |
| 1999 10 06 | 704 | 0.7+  | 1.4+  | 2001 02 19 | 704 | 1.1+ | 1.1+ | 2005 03 13 | 691 | 0.1+  | 0.1-  |
| 1999 10 06 | 704 | 0.7-  | 1.0+  | 2001 02 20 | 704 | 0.6- | 1.1- | 2005 03 13 | 691 | 0.1-  | 0.1+  |
| 1999 10 07 | 691 | 0.1+  | 0.0   | 2001 02 20 | 704 | 0.6- | 0.2- | 2005 03 13 | 691 | 0.1+  | 0.3+  |
| 1999 10 07 | 691 | 0.2+  | 0.0   | 2001 02 20 | 704 | 0.3+ | 0.6+ | 2005 03 17 | 691 | 0.1+  | 0.1+  |
| 1999 10 07 | 691 | 0.0   | 0.1+  | 2001 02 20 | 704 | 0.3+ | 0.8+ | 2005 03 17 | 691 | 0.1+  | 0.3+  |
| 1999 10 15 | 704 | 0.6-  | 0.6-  | 2001 02 20 | 704 | 0.4+ | 0.5- | 2005 03 17 | 691 | 0.3+  | 0.2+  |
| 1999 10 15 | 704 | 0.6-  | 0.5-  | 2003 11 03 | 704 | 0.3+ | 1.0- | 2006 08 20 | 644 | 0.4-  | 0.6+  |
| 1999 10 15 | 704 | (2.0- | 0.5-) | 2003 11 03 | 704 | 0.3+ | 0.0  | 2006 08 20 | 644 | 0.3-  | 1.0+  |
| 1999 10 16 | 645 | 0.1+  | 0.2+  | 2003 11 03 | 704 | 1.0+ | 0.4+ | 2006 08 20 | 644 | 0.2-  | 0.6+  |
| 1999 10 16 | 645 | 0.0   | 0.1+  | 2003 11 03 | 704 | 0.2+ | 0.2+ | 2007 11 08 | 704 | 0.9-  | 0.3-  |
| 1999 10 19 | 691 | 0.1-  | 0.2-  | 2003 11 03 | 704 | 0.3+ | 0.2- | 2007 11 08 | 704 | 1.3+  | 0.3+  |
| 1999 10 19 | 691 | 0.0   | 0.1-  | 2003 11 14 | 644 | 0.1+ | 0.3+ | 2007 11 08 | 704 | 0.0   | 0.7+  |
| 1999 10 19 | 691 | 0.2-  | 0.2-  | 2003 11 14 | 644 | 0.3+ | 0.3+ | 2007 11 08 | 704 | 0.4-  | 0.3+  |
| 1999 11 02 | 691 | 0.1-  | 0.1-  | 2003 11 14 | 644 | 0.0  | 0.6+ | 2007 11 08 | 704 | 0.0   | 0.1-  |
| 1999 11 02 | 691 | 0.3-  | 0.5-  | 2003 11 19 | 704 | 0.2- | 0.5+ | 2007 12 16 | 704 | 0.4+  | 1.1+  |
| 1999 11 02 | 691 | 0.2-  | 0.1-  | 2003 11 19 | 704 | 0.2+ | 1.4+ | 2007 12 16 | 704 | 0.5-  | 0.6-  |
| 1999 11 03 | 691 | 0.1-  | 0.7-  | 2003 11 19 | 704 | 1.3- | 0.5+ | 2007 12 16 | 704 | 0.8-  | 0.2-  |
| 1999 11 03 | 691 | 0.1-  | 0.5-  | 2003 11 19 | 704 | 0.0  | 0.0  | 2007 12 16 | 704 | 0.5-  | 0.7-  |
| 1999 11 03 | 691 | 0.1-  | 0.4-  | 2003 11 19 | 704 | 0.8- | 0.9+ |            |     |       |       |
| 1999 11 15 | 691 | 0.3-  | 0.4-  | 2003 11 19 | 691 | 0.1- | 0.0  |            |     |       |       |

(171578)\* 1999 VW<sub>21</sub>

Discovered 1999 Nov. 12 by K. Korlević at Višnjan.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 31.15580   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25590742 | $\omega$ | 334.96847 | +0.74551000   | -0.66636356 |
| <i>a</i> | 2.4570508  | $\Omega$ | 66.82516  | +0.61388937   | +0.67881691 |
| <i>e</i> | 0.2174917  | <i>i</i> | 0.82321   | +0.25952781   | +0.30849183 |
| <i>P</i> | 3.85       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 09 17 | 691 | 0.1+ | 0.1- | 1999 11 16 | 704 | 0.5- | 1.9- | 2003 12 22 | 704 | 0.1+ | 0.8+ |
| 1995 09 17 | 691 | 0.2- | 0.2+ | 1999 11 16 | 704 | 0.6+ | 0.2- | 2003 12 22 | 704 | 0.4- | 0.3+ |
| 1995 09 17 | 691 | 0.1+ | 0.3+ | 1999 11 16 | 704 | 0.3+ | 0.5- | 2005 04 02 | G96 | 0.0  | 0.3- |
| 1997 03 02 | 691 | 0.2- | 0.6- | 1999 11 16 | 704 | 0.8- | 0.2- | 2005 04 02 | G96 | 0.1- | 0.3+ |
| 1997 03 02 | 691 | 0.1- | 0.9- | 1999 12 05 | 703 | 0.0  | 0.9+ | 2005 04 02 | G96 | 0.4+ | 0.5- |
| 1997 03 02 | 691 | 0.2- | 1.4- | 1999 12 05 | 703 | 0.2- | 0.1+ | 2005 04 02 | G96 | 1.1+ | 0.2- |
| 1999 11 03 | 704 | 0.5- | 0.6+ | 1999 12 05 | 703 | 0.1- | 0.5+ | 2005 05 08 | G96 | 0.1+ | 0.1+ |
| 1999 11 03 | 704 | 1.2+ | 0.7+ | 1999 12 05 | 703 | 0.4- | 1.1+ | 2005 05 08 | G96 | 0.4- | 0.0  |
| 1999 11 03 | 704 | 0.5+ | 1.4+ | 1999 12 07 | 691 | 0.3+ | 0.2- | 2005 05 08 | G96 | 0.0  | 1.0- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 03 | 704 | 0.9+  | 0.3+  | 1999 12 07 | 691 | 0.2+ | 0.2- | 2005 05 08 | G96 | 0.3+ | 0.3+ |
| 1999 11 09 | 704 | 0.0   | 0.2-  | 1999 12 07 | 691 | 0.2+ | 0.2- | 2007 11 04 | G96 | 0.1+ | 0.0  |
| 1999 11 09 | 704 | 0.8-  | 0.3-  | 1999 12 08 | 704 | 0.6+ | 0.1+ | 2007 11 04 | G96 | 0.1- | 0.3+ |
| 1999 11 09 | 704 | 0.6-  | 0.1-  | 1999 12 08 | 704 | 0.4- | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.3- |
| 1999 11 09 | 704 | 0.7-  | 0.1-  | 1999 12 08 | 704 | 1.3- | 0.5- | 2007 11 04 | G96 | 0.4+ | 0.5- |
| 1999 11 09 | 704 | 0.9-  | 0.3-  | 1999 12 13 | 691 | 0.0  | 0.3+ | 2007 11 08 | G96 | 0.0  | 0.3- |
| 1999 11 12 | 704 | (2.1- | 0.2-) | 1999 12 13 | 691 | 0.0  | 0.4+ | 2007 11 08 | G96 | 0.4+ | 0.1+ |
| 1999 11 12 | 704 | 0.1+  | 0.7-  | 1999 12 13 | 691 | 0.0  | 0.4+ | 2007 11 08 | G96 | 0.2- | 0.2+ |
| 1999 11 12 | 704 | 0.8-  | 0.9-  | 2001 03 29 | 691 | 0.3- | 1.2+ | 2007 11 08 | G96 | 0.3+ | 0.1+ |
| 1999 11 12 | 120 | 0.1+  | 0.4-  | 2001 03 29 | 691 | 0.2- | 1.3+ | 2007 11 21 | G96 | 0.0  | 0.2+ |
| 1999 11 12 | 120 | 0.8+  | 0.6-  | 2001 03 29 | 691 | 0.7+ | 1.3+ | 2007 11 21 | G96 | 0.0  | 0.1- |
| 1999 11 13 | 120 | 1.4-  | 0.7-  | 2003 11 21 | 695 | 0.0  | 0.3+ | 2007 11 21 | G96 | 0.5+ | 0.2- |
| 1999 11 13 | 120 | 0.2-  | 0.2+  | 2003 11 21 | 695 | 0.0  | 0.3+ | 2007 11 21 | G96 | 0.2+ | 0.3- |
| 1999 11 16 | 704 | 0.6+  | 0.5-  | 2003 12 22 | 704 | 0.1- | 0.6+ |            |     |      |      |

(171579)\* 1999 VD<sub>23</sub> = 2002 MV<sub>1</sub>

Discovered 1999 Nov. 12 by S. Sposetti at Gnosca.

Id. G. V. Williams (*MPO* 31296)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 99.36173   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26388026 | $\omega$ | 218.59673 | +0.92910214   | +0.36689329 |
| <i>a</i> | 2.4073068  | $\Omega$ | 119.81919 | -0.32463071   | +0.86928338 |
| <i>e</i> | 0.2278807  | <i>i</i> | 3.06967   | -0.17715565   | +0.33126384 |
| <i>P</i> | 3.74       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 21 | 704 | 0.2+  | 0.7+  | 2002 06 18 | 704 | 0.7-  | 0.5+  | 2006 09 19 | 704 | 0.0   | 0.3-  |
| 1999 10 21 | 704 | 0.2-  | 0.0   | 2002 06 18 | 704 | 0.5-  | 0.4+  | 2006 09 19 | 704 | 0.1-  | 0.2+  |
| 1999 10 21 | 704 | 0.4-  | 0.1-  | 2002 06 18 | 704 | 0.4-  | 0.1+  | 2006 09 19 | 704 | 1.1+  | 0.2-  |
| 1999 10 21 | 704 | 1.1-  | 0.2+  | 2005 03 01 | 691 | 0.0   | 0.1-  | 2006 09 19 | 704 | 0.8+  | 0.6+  |
| 1999 11 04 | 704 | 0.9+  | 0.7+  | 2005 03 01 | 691 | 0.6+  | 0.1+  | 2006 09 22 | 704 | 0.3-  | 1.1+  |
| 1999 11 04 | 704 | 0.1+  | 0.7-  | 2005 03 01 | 691 | 0.3+  | 0.0   | 2006 09 22 | 704 | 0.3+  | 0.1+  |
| 1999 11 04 | 704 | 0.1+  | 0.5-  | 2006 05 25 | G96 | 0.1-  | 0.1+  | 2006 09 22 | 704 | 0.2+  | 0.2+  |
| 1999 11 12 | 143 | 0.5-  | 0.2-  | 2006 05 25 | G96 | 0.0   | 0.1+  | 2006 09 22 | 704 | 0.4-  | 0.2-  |
| 1999 11 12 | 143 | 0.0   | 0.3-  | 2006 05 25 | G96 | 0.1+  | 0.0   | 2006 09 26 | 704 | (1.7+ | 0.9-) |
| 1999 11 12 | 143 | 0.8-  | 0.2-  | 2006 05 25 | G96 | 0.2+  | 0.0   | 2006 09 26 | 704 | 1.0-  | 0.1-  |
| 1999 11 12 | 143 | 0.6-  | 0.2-  | 2006 06 04 | G96 | 1.3-  | 0.1-  | 2006 09 26 | 704 | 0.7+  | 0.9-  |
| 1999 11 13 | 143 | (1.1+ | 3.5+) | 2006 06 04 | G96 | 0.2+  | 0.0   | 2006 09 26 | 704 | 0.3+  | 0.1+  |
| 1999 11 15 | 704 | 0.2-  | 0.5-  | 2006 06 04 | G96 | 0.0   | 0.2-  | 2006 09 28 | 704 | 0.3-  | 0.1+  |
| 1999 11 15 | 704 | 0.1-  | 0.2-  | 2006 06 10 | 644 | 0.2-  | 0.1+  | 2006 09 28 | 704 | 0.3-  | 0.4-  |
| 1999 11 15 | 704 | 0.1+  | 0.3-  | 2006 06 10 | 644 | 0.1+  | 0.4+  | 2006 09 28 | 704 | 0.8+  | 0.1-  |
| 1999 11 15 | 704 | 0.3-  | 0.2-  | 2006 06 10 | 644 | 0.3+  | 0.1-  | 2006 10 13 | E12 | 0.5-  | 0.4+  |
| 1999 11 15 | 704 | 1.1+  | 0.1+  | 2006 07 19 | 644 | 0.3-  | 0.2+  | 2006 10 13 | E12 | 0.4+  | 0.3+  |
| 1999 11 17 | 704 | 1.1-  | 0.6-  | 2006 07 19 | 644 | 0.1-  | 0.2+  | 2006 10 13 | E12 | 0.2-  | 0.5+  |
| 1999 11 17 | 704 | 0.3+  | 0.3+  | 2006 07 19 | 644 | 0.1-  | 0.2+  | 2006 10 13 | E12 | 0.6+  | 0.5+  |
| 1999 11 17 | 704 | 1.0-  | 0.2+  | 2006 07 19 | D35 | 0.1+  | 0.1+  | 2006 10 23 | G96 | 0.6-  | 0.5-  |
| 1999 11 17 | 704 | 1.6+  | 0.9-  | 2006 07 19 | D35 | 0.3-  | 0.2+  | 2006 10 23 | G96 | 0.1+  | 0.2+  |
| 1999 11 19 | 143 | 1.9+  | 0.5+  | 2006 07 19 | D35 | 0.1-  | 0.1+  | 2006 10 23 | G96 | 0.0   | 0.2+  |
| 1999 11 19 | 143 | 1.1+  | 0.4+  | 2006 07 21 | 704 | 0.5+  | 0.5+  | 2006 10 23 | G96 | 0.4-  | 0.1-  |
| 1999 12 04 | 703 | (2.2+ | 0.7-) | 2006 07 21 | 704 | 0.3-  | 0.6+  | 2006 11 11 | 703 | (0.7- | 2.4+) |
| 1999 12 04 | 703 | 1.1-  | 0.9+  | 2006 07 21 | 704 | 0.2+  | 0.8+  | 2007 11 08 | G96 | 0.4+  | 0.0   |
| 1999 12 04 | 703 | 0.5-  | 1.1-  | 2006 07 21 | 704 | 0.0   | 0.8+  | 2007 11 08 | G96 | 0.4+  | 0.1+  |
| 1999 12 04 | 703 | (2.4- | 0.2+) | 2006 07 21 | 704 | 0.2-  | 0.3+  | 2007 11 08 | G96 | 0.5+  | 0.1-  |
| 1999 12 05 | 703 | 0.1-  | 1.3+  | 2006 07 26 | 104 | 0.1-  | 0.1+  | 2007 11 08 | G96 | 0.5+  | 0.1-  |
| 1999 12 05 | 703 | 0.1-  | 1.2+  | 2006 07 26 | 104 | 0.1+  | 0.3+  | 2007 12 06 | H55 | 0.6+  | 0.0   |
| 1999 12 05 | 703 | 0.7+  | 1.3+  | 2006 07 26 | 104 | 0.2-  | 0.1+  | 2007 12 06 | H55 | 0.5+  | 0.2+  |
| 1999 12 05 | 703 | 0.9-  | 0.8+  | 2006 08 20 | 644 | 0.1+  | 0.0   | 2007 12 06 | H55 | 0.5+  | 0.1+  |
| 2001 02 23 | 691 | 0.4+  | 0.1-  | 2006 08 20 | 644 | 0.0   | 0.1+  | 2007 12 15 | 291 | 0.6-  | 0.3+  |
| 2001 02 23 | 691 | 0.5+  | 0.2+  | 2006 08 20 | 644 | 0.1+  | 0.1+  | 2007 12 15 | 291 | 0.4-  | 0.4+  |
| 2001 02 23 | 691 | 0.4+  | 0.2+  | 2006 09 17 | 704 | (1.3+ | 1.9-) | 2007 12 15 | 291 | 0.3-  | 0.1+  |
| 2002 06 16 | 644 | 0.5-  | 0.3+  | 2006 09 17 | 704 | 0.7+  | 0.4+  | 2007 12 16 | 291 | 0.2-  | 0.3+  |
| 2002 06 16 | 644 | 0.4-  | 0.4+  | 2006 09 17 | 704 | 0.3-  | 0.2+  | 2007 12 16 | 291 | 0.2-  | 0.3+  |
| 2002 06 16 | 644 | 0.6-  | 0.5+  | 2006 09 17 | 704 | 1.3+  | 0.5-  | 2007 12 16 | 291 | 0.3-  | 0.3+  |
| 2002 06 18 | 704 | 1.1-  | 0.8+  | 2006 09 17 | 704 | 0.2-  | 0.2+  |            |     |       |       |



2007 DEC. 24

M.P.O. 129091

(171580)\* 1999 VW<sub>42</sub>

Discovered 1999 Nov. 4 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.77017  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26591818 | $\omega$ | 143.89115 | −0.32194103 | −0.94659412 |          |   |
| <i>a</i> | 2.3949918  | $\Omega$ | 324.87948 | −0.86126046 | −0.28504924 |          |   |
| <i>e</i> | 0.1658664  | <i>i</i> | 1.76379   | +0.39317222 | −0.15068676 |          |   |
| <i>P</i> | 3.71       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 09 29 | 691 | 0.0  | 0.0  | 2003 11 23 | 704 | 0.9+  | 0.4+  | 2006 08 19 | 691 | 0.1− | 0.3+ |
| 1995 09 29 | 691 | 0.1+ | 0.2− | 2003 11 23 | 704 | 0.5−  | 0.1+  | 2006 08 19 | 691 | 0.1+ | 0.4+ |
| 1995 09 29 | 691 | 0.8− | 2.1+ | 2003 11 23 | 704 | 0.1−  | 0.1+  | 2006 08 27 | 691 | 0.2+ | 0.2+ |
| 1999 10 13 | 704 | 0.3− | 0.3+ | 2003 12 18 | 704 | 0.2−  | 0.8+  | 2006 08 27 | 691 | 0.0  | 0.1+ |
| 1999 10 13 | 704 | 1.1− | 0.3− | 2003 12 18 | 704 | 0.3−  | 0.6+  | 2006 08 27 | 691 | 0.1− | 0.3+ |
| 1999 10 13 | 704 | 0.1− | 0.8− | 2003 12 18 | 704 | 0.1−  | 1.2+  | 2006 09 27 | G96 | 0.0  | 0.5− |
| 1999 10 13 | 704 | 0.6− | 0.1+ | 2003 12 22 | 704 | 0.0   | 0.5+  | 2006 09 27 | G96 | 0.3− | 0.3− |
| 1999 11 04 | 691 | 0.2+ | 0.3− | 2003 12 22 | 704 | 0.2+  | 0.6+  | 2006 09 27 | G96 | 0.3+ | 0.1− |
| 1999 11 04 | 691 | 0.2+ | 0.3− | 2003 12 22 | 704 | 0.1+  | 0.4+  | 2006 09 27 | G96 | 0.4− | 0.8− |
| 1999 11 04 | 691 | 0.5+ | 0.3− | 2003 12 22 | 704 | 0.4+  | 0.7+  | 2007 10 16 | 691 | 0.4− | 0.1+ |
| 1999 11 11 | 691 | 0.1+ | 0.2− | 2003 12 22 | 704 | 0.6+  | 0.5+  | 2007 10 16 | 691 | 0.2− | 0.3+ |
| 1999 11 11 | 691 | 0.1+ | 0.4− | 2003 12 27 | 704 | 1.0+  | 0.7+  | 2007 10 16 | 691 | 0.4− | 0.5+ |
| 1999 11 11 | 691 | 0.1− | 0.2− | 2003 12 27 | 704 | (2.0+ | 0.5−) | 2007 11 07 | G96 | 0.6− | 0.1− |
| 1999 11 13 | 691 | 0.0  | 0.4− | 2003 12 27 | 704 | 1.1+  | 0.1+  | 2007 11 07 | G96 | 0.1− | 0.0  |
| 1999 11 13 | 691 | 0.0  | 0.2− | 2003 12 27 | 704 | (2.5+ | 1.4+) | 2007 11 07 | G96 | 0.2+ | 0.2− |
| 1999 11 13 | 691 | 0.1− | 0.4− | 2004 01 21 | 704 | 0.6+  | 0.7+  | 2007 11 07 | G96 | 0.4− | 0.0  |
| 1999 11 14 | 704 | 0.4+ | 1.6− | 2004 01 21 | 704 | 0.1+  | 0.3+  | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 1999 11 14 | 704 | 0.4− | 1.5− | 2004 01 21 | 704 | 0.0   | 0.5+  | 2007 12 05 | G96 | 0.3+ | 0.1+ |
| 1999 11 14 | 704 | 0.6+ | 0.4+ | 2004 01 21 | 704 | 0.3+  | 0.8+  | 2007 12 05 | G96 | 0.1− | 0.1+ |
| 1999 11 14 | 704 | 0.1− | 0.5+ | 2004 01 21 | 704 | 0.1−  | 0.6+  | 2007 12 05 | G96 | 0.0  | 0.2− |
| 1999 11 14 | 704 | 0.1+ | 0.1+ | 2006 08 19 | 691 | 0.2−  | 0.2+  |            |     |      |      |

(171581)\* 1999 VE<sub>57</sub>

Discovered 1999 Nov. 4 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 286.61045  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23393611 | $\omega$ | 220.90171 | +0.13691958 | −0.98205354 |          |   |
| <i>a</i> | 2.6085823  | $\Omega$ | 221.71180 | +0.95203624 | +0.16663011 |          |   |
| <i>e</i> | 0.1507891  | <i>i</i> | 11.24094  | +0.27364216 | −0.08834729 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 10 | 704 | 0.3+ | 0.7+ | 1999 11 12 | 704 | 0.3−  | 0.0   | 2003 10 21 | 644 | 0.1+ | 0.1+ |
| 1999 10 10 | 704 | 0.0  | 0.1− | 2003 09 18 | 644 | 0.0   | 0.2+  | 2003 10 21 | 704 | 0.2+ | 1.2− |
| 1999 10 10 | 704 | 1.3− | 0.4− | 2003 09 18 | 644 | 0.1+  | 0.1+  | 2003 10 21 | 704 | 0.4+ | 0.6+ |
| 1999 10 13 | 704 | 0.5− | 0.8− | 2003 09 18 | 644 | 0.0   | 0.1+  | 2003 10 21 | 704 | 0.1− | 0.2− |
| 1999 10 13 | 704 | 0.5+ | 0.3− | 2003 09 21 | 699 | 0.2+  | 0.1+  | 2005 03 07 | 704 | 0.6− | 0.4+ |
| 1999 10 13 | 704 | 0.1− | 0.6− | 2003 09 21 | 699 | 0.3−  | 0.6−  | 2005 03 07 | 704 | 0.5− | 0.9+ |
| 1999 10 13 | 704 | 0.2+ | 0.3+ | 2003 09 21 | 699 | 0.1+  | 0.0   | 2005 03 07 | 704 | 0.0  | 0.4+ |
| 1999 10 13 | 704 | 0.2− | 0.3+ | 2003 09 21 | 699 | 0.7+  | 0.1+  | 2005 03 13 | 703 | 0.6+ | 0.5− |
| 1999 10 15 | 704 | 1.6+ | 1.0− | 2003 09 30 | 704 | 0.4+  | 0.3+  | 2005 03 13 | 703 | 0.3+ | 0.1− |
| 1999 10 15 | 704 | 0.5+ | 0.5− | 2003 09 30 | 704 | 0.3−  | 0.6+  | 2005 03 13 | 703 | 0.5+ | 0.5+ |
| 1999 10 15 | 704 | 0.6− | 1.0− | 2003 09 30 | 704 | 0.0   | 0.5+  | 2005 03 13 | 703 | 0.2+ | 0.3+ |
| 1999 10 21 | 704 | 1.3− | 0.7+ | 2003 09 30 | 704 | 0.2−  | 0.0   | 2006 06 04 | G96 | 0.5− | 0.3+ |
| 1999 10 21 | 704 | 0.1− | 0.0  | 2003 09 30 | 704 | (1.8+ | 0.9+) | 2006 06 04 | G96 | 0.7+ | 0.2+ |
| 1999 10 21 | 704 | 0.2− | 1.2+ | 2003 09 30 | 704 | 0.3+  | 0.2+  | 2006 06 04 | G96 | 0.2+ | 0.2− |
| 1999 10 21 | 704 | 0.8+ | 1.2+ | 2003 09 30 | 704 | 0.7−  | 0.0   | 2006 06 04 | G96 | 0.2− | 0.2+ |
| 1999 11 04 | 704 | 0.5− | 0.0  | 2003 09 30 | 704 | 0.0   | 1.0+  | 2007 09 03 | G96 | 0.4− | 1.0+ |
| 1999 11 04 | 704 | 1.8+ | 0.3− | 2003 09 30 | 704 | 0.1−  | 0.4+  | 2007 09 03 | G96 | 0.1− | 0.4− |
| 1999 11 04 | 704 | 0.6+ | 0.5− | 2003 10 17 | 699 | 0.6+  | 1.0+  | 2007 09 03 | G96 | 0.2− | 0.1− |
| 1999 11 04 | 704 | 0.5+ | 0.6− | 2003 10 17 | 699 | 0.1−  | 0.8−  | 2007 09 03 | G96 | 0.1+ | 0.3− |
| 1999 11 12 | 704 | 0.0  | 0.3+ | 2003 10 17 | 699 | 0.6−  | 0.0   | 2007 12 06 | G96 | 0.0  | 0.0  |
| 1999 11 12 | 704 | 0.8− | 0.2+ | 2003 10 17 | 699 | 0.6−  | 0.4+  | 2007 12 06 | G96 | 0.4− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 12 | 704 | 0.5− | 0.1− | 2003 10 21 | 644 | 0.0  | 0.2− | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 1999 11 12 | 704 | 0.6− | 0.2+ | 2003 10 21 | 644 | 0.1− | 0.0  | 2007 12 06 | G96 | 0.1+ | 0.4− |

(171582)\* 1999 VX<sub>80</sub> = 2004 DL<sub>66</sub>

Discovered 1999 Nov. 4 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 103163)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.44068  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26433893 | $\omega$ | 23.70541  | −0.56258056 | −0.82496099 |          |   |
| <i>a</i> | 2.4045213  | $\Omega$ | 100.57078 | +0.74942369 | −0.53657298 |          |   |
| <i>e</i> | 0.1214312  | <i>i</i> | 3.16325   | +0.34909489 | −0.17756352 |          |   |
| <i>P</i> | 3.73       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 01 26 | 691 | 0.2−  | 0.4−  | 2001 04 16 | 699 | 0.5− | 1.3+ | 2005 06 04 | 704 | (0.4+ | 1.8+) |
| 1993 01 26 | 691 | 0.3+  | 0.2−  | 2002 08 17 | 644 | 0.1+ | 1.1+ | 2005 06 04 | 704 | 0.4−  | 0.7+  |
| 1993 01 26 | 691 | 0.1−  | 0.1−  | 2002 08 17 | 644 | 0.0  | 1.0+ | 2006 09 14 | 703 | 0.7+  | 0.5−  |
| 1999 11 04 | 704 | 0.5+  | 1.3−  | 2002 08 17 | 644 | 0.2+ | 1.1+ | 2006 09 14 | 703 | 0.3−  | 0.3+  |
| 1999 11 04 | 704 | 0.4+  | 0.2−  | 2003 12 21 | 704 | 0.4− | 0.3+ | 2006 09 14 | 703 | 0.8−  | 0.5−  |
| 1999 11 04 | 704 | 0.2+  | 1.0−  | 2003 12 21 | 704 | 0.2− | 0.3+ | 2006 09 14 | 703 | 0.7−  | 0.8+  |
| 1999 11 04 | 704 | 0.4+  | 0.2−  | 2003 12 21 | 704 | 0.3− | 0.6+ | 2007 11 07 | G96 | 0.2−  | 0.3−  |
| 1999 11 05 | 704 | 0.7+  | 0.6−  | 2004 01 21 | 704 | 0.3− | 0.9+ | 2007 11 07 | G96 | 0.6−  | 0.5−  |
| 1999 11 05 | 704 | 0.2−  | 0.4+  | 2004 01 21 | 704 | 0.0  | 0.4+ | 2007 11 07 | G96 | 0.1−  | 0.1−  |
| 1999 11 05 | 704 | 1.6+  | 0.1+  | 2004 01 21 | 704 | 0.7− | 0.3+ | 2007 11 07 | G96 | 0.2+  | 0.5−  |
| 1999 11 05 | 704 | 0.3−  | 1.3+  | 2004 01 21 | 704 | 0.5− | 0.9+ | 2007 11 18 | G96 | 0.0   | 0.2−  |
| 1999 12 07 | 704 | 0.3−  | 0.3+  | 2004 01 21 | 704 | 0.4− | 0.8+ | 2007 11 18 | G96 | 0.1+  | 0.2−  |
| 1999 12 07 | 704 | 0.1+  | 1.0+  | 2004 02 26 | 695 | 0.3− | 0.1− | 2007 11 18 | G96 | 0.1−  | 0.3−  |
| 1999 12 07 | 704 | 1.5−  | 0.1−  | 2004 02 26 | 695 | 0.3− | 0.3+ | 2007 11 18 | G96 | 0.4−  | 0.5−  |
| 2001 04 16 | 699 | 0.3+  | 0.9+  | 2004 02 27 | 695 | 0.4− | 0.1− | 2007 12 14 | 704 | 1.6+  | 1.4+  |
| 2001 04 16 | 699 | 0.5−  | 0.2−  | 2004 02 27 | 695 | 0.2− | 0.2− | 2007 12 14 | 704 | 1.6+  | 1.6+  |
| 2001 04 16 | 699 | (0.4− | 1.8−) | 2005 06 04 | 704 | 0.6+ | 0.2+ | 2007 12 14 | 704 | 1.9+  | 0.6+  |

(171583)\* 1999 VQ<sub>88</sub> = 2002 JY<sub>15</sub>

Discovered 1999 Nov. 4 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 29173)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 100.50252  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26030589 | $\omega$ | 134.62978 | +0.69281364 | +0.72111652 |          |   |
| <i>a</i> | 2.4292938  | $\Omega$ | 179.22301 | −0.67102465 | +0.64492591 |          |   |
| <i>e</i> | 0.2240919  | <i>i</i> | 1.98375   | −0.26407420 | +0.25310379 |          |   |
| <i>P</i> | 3.79       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 20 | 704 | 0.2−  | 0.1−  | 2002 05 11 | 333 | 0.3−  | 1.4+  | 2003 11 30 | 691 | 0.2+  | 0.1+  |
| 1999 10 20 | 704 | 1.1−  | 0.3+  | 2002 05 11 | 333 | 0.2+  | 0.9+  | 2003 11 30 | 691 | 0.1+  | 0.2+  |
| 1999 10 20 | 704 | 0.6+  | 0.1+  | 2002 05 11 | 333 | 1.3+  | 0.4−  | 2003 11 30 | 691 | 0.1+  | 0.1+  |
| 1999 10 30 | 703 | 0.3−  | 1.0+  | 2002 05 11 | 333 | 0.5−  | 0.8−  | 2003 12 14 | 691 | 0.1+  | 0.1+  |
| 1999 10 30 | 703 | (3.2− | 2.8+) | 2002 05 11 | 333 | 0.0   | 0.8+  | 2003 12 14 | 691 | 0.3−  | 0.2+  |
| 1999 10 30 | 703 | 0.2−  | 0.1+  | 2002 05 11 | 333 | 0.2+  | 1.4+  | 2003 12 14 | 691 | 0.0   | 0.1+  |
| 1999 10 30 | 703 | 0.5−  | 0.5+  | 2002 05 11 | 333 | 0.1−  | 0.2−  | 2003 12 21 | 704 | (0.6+ | 2.6+) |
| 1999 11 04 | 704 | 0.7−  | 0.9+  | 2002 05 14 | 699 | 0.2+  | 0.6+  | 2003 12 21 | 704 | 0.1−  | 0.1+  |
| 1999 11 04 | 704 | 0.2−  | 0.9+  | 2002 05 14 | 699 | 0.9−  | 0.0   | 2003 12 21 | 704 | 1.3−  | 0.6−  |
| 1999 11 04 | 704 | 0.1−  | 0.7−  | 2002 05 14 | 699 | 0.4+  | 1.0+  | 2003 12 21 | 704 | (0.3+ | 2.4+) |
| 1999 11 04 | 704 | 0.2−  | 0.4+  | 2002 05 14 | 699 | 0.2+  | 1.4+  | 2003 12 21 | 704 | (1.9− | 3.1+) |
| 1999 11 09 | 704 | 0.1+  | 0.4−  | 2002 05 19 | 644 | 0.3+  | 0.2+  | 2003 12 27 | 691 | 0.1−  | 0.3+  |
| 1999 11 09 | 704 | 0.3+  | 1.0−  | 2002 05 19 | 644 | 0.0   | 0.4+  | 2003 12 27 | 691 | 0.2−  | 0.2+  |
| 1999 11 09 | 704 | 0.0   | 0.7−  | 2002 05 19 | 644 | 0.2+  | 0.2+  | 2003 12 27 | 691 | 0.0   | 0.1+  |
| 1999 11 09 | 704 | 0.0   | 0.0   | 2002 05 30 | 699 | (1.7+ | 0.7+) | 2004 12 20 | G96 | 0.6−  | 0.4−  |
| 1999 11 15 | 704 | 0.0   | 0.5+  | 2002 05 30 | 699 | 1.0+  | 0.1+  | 2004 12 20 | G96 | 0.0   | 0.9−  |
| 1999 11 15 | 704 | 0.2+  | 0.5−  | 2002 05 30 | 699 | 0.6+  | 0.9+  | 2004 12 20 | G96 | 0.5−  | 0.8−  |
| 1999 11 15 | 704 | 0.4+  | 0.8+  | 2002 05 30 | 699 | 0.6+  | 0.1−  | 2004 12 20 | G96 | 0.6+  | 0.1−  |
| 1999 11 15 | 704 | 0.0   | 1.3+  | 2002 06 05 | 704 | (2.9− | 0.2+) | 2005 03 09 | G96 | 0.1−  | 0.3−  |
| 1999 11 15 | 704 | 0.2+  | 0.3+  | 2002 06 05 | 704 | 0.5−  | 0.2+  | 2005 03 09 | G96 | 0.2−  | 0.5−  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 05 06 | 333 | 0.2− | 0.4+ | 2002 06 05 | 704 | 1.3+  | 1.3+  | 2005 03 09 | G96 | 0.0  | 0.6− |
| 2002 05 06 | 333 | 0.5− | 0.4− | 2002 06 06 | 704 | 0.5+  | 1.5+  | 2005 03 09 | G96 | 0.3− | 0.5− |
| 2002 05 06 | 333 | 0.5+ | 1.0+ | 2002 06 06 | 704 | (0.4+ | 1.7+) | 2005 04 02 | G96 | 0.0  | 0.3− |
| 2002 05 09 | 333 | 0.4− | 1.4+ | 2002 06 06 | 704 | 1.5+  | 0.9+  | 2005 04 02 | G96 | 0.0  | 1.0− |
| 2002 05 09 | 333 | 0.8− | 0.2− | 2002 06 06 | 704 | (0.6+ | 2.1+) | 2005 04 02 | G96 | 0.3− | 0.6− |
| 2002 05 09 | 333 | 0.2− | 0.2+ | 2002 06 08 | 704 | (0.5+ | 1.7+) | 2005 04 02 | G96 | 0.2− | 0.8− |
| 2002 05 10 | 704 | 0.1+ | 0.1− | 2002 06 08 | 704 | 0.5+  | 1.4+  | 2007 12 04 | 691 | 0.3− | 0.1+ |
| 2002 05 10 | 704 | 0.8− | 0.2− | 2002 06 08 | 704 | (0.8+ | 1.9+) | 2007 12 04 | 691 | 0.2− | 0.0  |
| 2002 05 10 | 704 | 0.2+ | 0.1+ | 2003 11 23 | 704 | 0.7+  | 0.9+  | 2007 12 04 | 691 | 0.3− | 0.0  |
| 2002 05 10 | 704 | 0.3+ | 0.2+ | 2003 11 23 | 704 | 1.0+  | 0.3−  | 2007 12 15 | 691 | 0.3+ | 1.8+ |
| 2002 05 11 | 333 | 1.4− | 0.0  | 2003 11 23 | 704 | (1.6+ | 0.6−) | 2007 12 15 | 691 | 0.6+ | 0.5+ |
| 2002 05 11 | 333 | 0.6+ | 0.0  | 2003 11 23 | 704 | 0.7+  | 0.5+  | 2007 12 15 | 691 | 0.4− | 0.1− |

**(171584)\* 1999 VF<sub>96</sub>**

Discovered 1999 Nov. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 300.38423  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24233920 | $\omega$ | 234.26162 | −0.12377253   | −0.99058693 |
| <i>a</i> | 2.5479267  | $\Omega$ | 222.96600 | +0.93587858   | −0.09694596 |
| <i>e</i> | 0.1584921  | <i>i</i> | 4.92073   | +0.32986610   | −0.09663861 |
| <i>P</i> | 4.07       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 06 | 704 | 1.2+ | 0.3− | 2003 09 28 | 691 | 0.0   | 0.0   | 2005 04 02 | 644 | 0.2+  | 0.7+  |
| 1999 10 06 | 704 | 1.1+ | 1.2− | 2003 10 16 | 691 | 0.4−  | 0.1+  | 2005 04 02 | 644 | 0.1−  | 0.5+  |
| 1999 10 06 | 704 | 0.6+ | 0.1− | 2003 10 16 | 691 | 0.3−  | 0.0   | 2005 04 02 | 644 | 0.2+  | 0.7+  |
| 1999 10 06 | 704 | 0.6+ | 0.3+ | 2003 10 16 | 691 | 0.1−  | 0.2+  | 2007 10 07 | G96 | 0.2+  | 0.4−  |
| 1999 10 06 | 704 | 0.5+ | 0.9+ | 2003 10 21 | 699 | 0.8+  | 0.8−  | 2007 10 07 | G96 | 0.2+  | 0.3+  |
| 1999 10 15 | 704 | 0.8+ | 0.6+ | 2003 10 21 | 699 | 1.0−  | 0.3+  | 2007 10 07 | 703 | 0.2+  | 0.9+  |
| 1999 10 15 | 704 | 0.9+ | 0.4+ | 2003 10 21 | 699 | 0.2+  | 0.8−  | 2007 10 07 | 703 | 0.6−  | 0.0   |
| 1999 10 15 | 704 | 0.1+ | 0.9+ | 2003 10 21 | 699 | 1.0+  | 0.1+  | 2007 10 07 | G96 | 0.2+  | 0.3+  |
| 1999 10 15 | 704 | 0.6− | 1.1+ | 2003 10 21 | 644 | 0.1−  | 0.2+  | 2007 10 07 | 703 | 0.2+  | 0.7+  |
| 1999 11 05 | 704 | 0.0  | 0.1− | 2003 10 21 | 704 | 0.4+  | 0.7+  | 2007 10 07 | G96 | 0.2+  | 0.2−  |
| 1999 11 05 | 704 | 1.4− | 0.0  | 2003 10 21 | 704 | 0.8−  | 0.4−  | 2007 10 07 | 703 | 0.5+  | 0.2+  |
| 1999 11 05 | 704 | 0.5+ | 1.5+ | 2003 10 21 | 644 | 0.3−  | 0.1+  | 2007 10 09 | 704 | 0.5+  | 1.3+  |
| 1999 11 06 | 704 | 0.1− | 0.3− | 2003 10 21 | 704 | (2.3− | 0.5+) | 2007 10 09 | 704 | 1.0−  | 0.8−  |
| 1999 11 06 | 704 | 0.2+ | 0.5+ | 2003 10 21 | 704 | 0.2+  | 0.8+  | 2007 10 09 | 704 | 1.0+  | 0.6−  |
| 1999 11 06 | 704 | 0.4+ | 0.0  | 2003 10 21 | 704 | 0.9−  | 0.4+  | 2007 10 09 | 704 | 0.5−  | 0.1+  |
| 1999 11 06 | 704 | 0.3− | 1.6+ | 2003 10 21 | 644 | 0.2−  | 0.2+  | 2007 10 12 | 704 | (1.8+ | 0.5+) |
| 1999 11 06 | 704 | 0.8+ | 1.7+ | 2003 10 24 | 704 | 0.2−  | 0.3−  | 2007 10 12 | 704 | 1.1+  | 0.5+  |
| 1999 11 09 | 704 | 0.4− | 0.5+ | 2003 10 24 | 704 | 0.3−  | 0.3+  | 2007 10 12 | 704 | 0.7+  | 0.1+  |
| 1999 11 09 | 704 | 0.5− | 0.5+ | 2003 10 24 | 704 | 0.1+  | 0.4+  | 2007 10 12 | 704 | 1.0+  | 0.3+  |
| 1999 11 09 | 704 | 0.3+ | 0.6− | 2003 10 24 | 704 | 0.3−  | 0.0   | 2007 10 12 | 704 | 1.0+  | 0.1−  |
| 1999 11 10 | 691 | 0.0  | 0.4− | 2003 10 24 | 704 | 0.5−  | 0.4+  | 2007 10 13 | 703 | 0.4−  | 0.5+  |
| 1999 11 10 | 691 | 0.1+ | 0.4− | 2003 10 24 | 704 | 0.3+  | 0.2+  | 2007 10 13 | 703 | 0.8−  | 0.2+  |
| 1999 11 10 | 691 | 0.0  | 0.4− | 2003 10 24 | 704 | 0.2−  | 0.1+  | 2007 10 13 | 703 | 0.8−  | 0.0   |
| 1999 11 12 | 704 | 0.8− | 0.2− | 2003 10 24 | 704 | 0.2−  | 0.5−  | 2007 10 13 | 703 | 0.7−  | 0.8+  |
| 1999 11 12 | 704 | 0.3+ | 0.4+ | 2003 11 01 | 704 | 0.2−  | 0.2+  | 2007 10 15 | 704 | 0.8+  | 0.9+  |
| 1999 11 12 | 704 | 0.2− | 0.1+ | 2003 11 01 | 704 | 1.0−  | 1.2−  | 2007 10 15 | 704 | 0.5+  | 0.7+  |
| 1999 11 12 | 704 | 0.4+ | 0.0  | 2003 11 01 | 704 | 0.8−  | 0.9−  | 2007 10 15 | 704 | 0.0   | 0.4−  |
| 1999 11 12 | 704 | 0.8− | 0.1+ | 2003 11 19 | 644 | 0.2−  | 0.1−  | 2007 10 20 | 703 | 0.3+  | 0.2+  |
| 1999 11 14 | 691 | 0.1− | 0.2− | 2003 11 19 | 644 | 0.1−  | 0.2+  | 2007 10 20 | 703 | (0.0  | 1.7−) |
| 1999 11 14 | 691 | 0.1+ | 0.5− | 2003 11 19 | 644 | 0.3+  | 0.2−  | 2007 10 20 | 703 | 0.1+  | 0.2−  |
| 1999 11 14 | 691 | 0.0  | 0.3− | 2003 11 21 | 704 | 0.8−  | 1.1−  | 2007 10 20 | 703 | 0.8−  | 0.4−  |
| 2003 09 18 | 691 | 0.0  | 0.1+ | 2003 11 21 | 704 | 1.0−  | 1.1−  | 2007 12 06 | G96 | 0.3−  | 0.1−  |
| 2003 09 18 | 691 | 0.1+ | 0.1+ | 2003 11 21 | 704 | 1.0−  | 0.3−  | 2007 12 06 | G96 | 0.2+  | 0.3−  |
| 2003 09 18 | 691 | 0.2+ | 0.2+ | 2005 03 03 | 691 | 0.0   | 0.1+  | 2007 12 06 | G96 | 0.1+  | 0.2−  |
| 2003 09 28 | 691 | 0.0  | 0.2+ | 2005 03 03 | 691 | 0.1−  | 0.2+  | 2007 12 06 | G96 | 0.0   | 0.2−  |
| 2003 09 28 | 691 | 0.1+ | 0.2+ | 2005 03 03 | 691 | 0.5+  | 0.6+  |            |     |       |       |

**(171585)\* 1999 VG<sub>104</sub> = 2006 SO<sub>287</sub>**

Discovered 1999 Nov. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. F. N. Bowman (*MPO* 107807), G. V. Williams (*ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 55.60172   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.12432675 | $\omega$ | 106.62328 | +0.95460275   | +0.26986490 |
| <i>a</i> | 3.9758165  | $\Omega$ | 237.88118 | −0.29666453   | +0.89952232 |
| <i>e</i> | 0.1632102  | <i>i</i> | 8.56391   | +0.02690252   | +0.34355863 |
| <i>P</i> | 7.93       | <i>H</i> | 14.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 09 | 704 | 0.6−  | 0.3−  | 2006 09 29 | 699 | 0.8−  | 0.8−  | 2007 11 05 | 704 | 0.4−  | 0.8+  |
| 1999 11 09 | 704 | 0.6−  | 0.1−  | 2006 09 29 | 699 | 0.1−  | 1.0+  | 2007 11 05 | 704 | 0.0   | 0.5+  |
| 1999 11 09 | 704 | 0.0   | 0.1+  | 2006 09 29 | 699 | 0.3−  | 0.3+  | 2007 11 05 | 704 | (0.2− | 2.1+) |
| 1999 11 12 | 704 | 0.3+  | 0.7−  | 2006 10 01 | 704 | 0.5−  | 1.0+  | 2007 11 07 | 691 | 0.1−  | 0.2+  |
| 1999 11 12 | 704 | 0.4+  | 0.1−  | 2006 10 01 | 704 | 0.3−  | 0.9+  | 2007 11 07 | 691 | 0.2−  | 0.1+  |
| 1999 11 12 | 704 | 0.1−  | 0.7−  | 2006 10 01 | 704 | 0.3−  | 0.9+  | 2007 11 07 | 691 | 0.1+  | 0.1−  |
| 1999 11 12 | 704 | 0.6+  | 0.7−  | 2006 10 11 | 644 | 0.4−  | 0.1−  | 2007 11 14 | 704 | 0.5+  | 0.7+  |
| 1999 11 12 | 704 | 0.2+  | 0.1+  | 2006 10 11 | 644 | 0.3−  | 0.2−  | 2007 11 14 | 704 | 0.0   | 0.5+  |
| 1999 11 14 | 704 | 0.8−  | 0.4−  | 2006 10 11 | 644 | 0.2−  | 0.2−  | 2007 11 14 | 704 | 1.2+  | 0.4+  |
| 1999 11 14 | 704 | 0.0   | 0.4−  | 2006 11 22 | 291 | 0.6+  | 0.4+  | 2007 11 14 | 704 | 0.2+  | 0.7+  |
| 1999 11 14 | 704 | 0.5+  | 1.8−  | 2006 11 22 | 291 | 0.7+  | 0.3+  | 2007 11 14 | 704 | 0.2+  | 0.8+  |
| 1999 11 14 | 704 | 0.2−  | 0.7−  | 2006 11 22 | 291 | 0.4+  | 0.2+  | 2007 11 18 | 691 | 0.3−  | 0.1−  |
| 1999 11 14 | 704 | 0.9+  | 2.0−  | 2007 08 24 | 691 | 0.3−  | 0.1+  | 2007 11 18 | 691 | 0.0   | 0.1−  |
| 1999 11 29 | 691 | 0.0   | 0.5−  | 2007 08 24 | 691 | 0.0   | 0.1+  | 2007 11 18 | 691 | 1.3−  | 0.9+  |
| 1999 11 29 | 691 | 0.0   | 0.4−  | 2007 08 24 | 691 | 0.0   | 0.1+  | 2007 12 03 | 703 | 0.8+  | 1.4+  |
| 1999 11 29 | 691 | 0.1+  | 0.4−  | 2007 09 14 | G96 | 0.3+  | 0.4−  | 2007 12 03 | 703 | 1.2−  | 1.3+  |
| 2003 03 31 | 691 | 0.7+  | 0.4+  | 2007 09 14 | G96 | 0.2−  | 0.2−  | 2007 12 03 | 703 | 0.3−  | 1.0+  |
| 2003 03 31 | 691 | 0.7+  | 0.0   | 2007 09 14 | G96 | 0.2−  | 0.4−  | 2007 12 03 | 703 | 0.7+  | 1.2+  |
| 2003 03 31 | 691 | 0.1−  | 0.6+  | 2007 09 14 | G96 | 0.1−  | 0.1−  | 2007 12 05 | 704 | 0.7+  | 0.0   |
| 2004 05 19 | 691 | 0.1+  | 0.1−  | 2007 10 16 | G96 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.4+  | 0.3+  |
| 2004 05 19 | 691 | 0.5−  | 0.1+  | 2007 10 16 | G96 | 0.1−  | 0.1+  | 2007 12 05 | 704 | (0.8+ | 1.6+) |
| 2004 05 19 | 691 | 0.5−  | 0.1+  | 2007 10 16 | G96 | 0.1+  | 0.1+  | 2007 12 05 | 704 | 0.8−  | 0.2−  |
| 2006 09 14 | 703 | 0.6−  | 0.7−  | 2007 10 16 | G96 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.2+  | 0.1+  |
| 2006 09 14 | 703 | 0.6−  | 0.2+  | 2007 10 30 | 691 | 0.3−  | 0.1+  | 2007 12 06 | G96 | 0.1+  | 0.3−  |
| 2006 09 14 | 703 | 0.4+  | 0.5−  | 2007 10 30 | 691 | 0.1+  | 0.0   | 2007 12 06 | G96 | 0.4+  | 0.1+  |
| 2006 09 14 | 703 | 0.1−  | 0.3−  | 2007 10 30 | 691 | 0.1−  | 0.0   | 2007 12 06 | G96 | 0.1−  | 0.3−  |
| 2006 09 22 | 703 | 0.0   | 0.6+  | 2007 11 03 | 691 | 0.1−  | 0.1+  | 2007 12 06 | G96 | 0.6+  | 0.1−  |
| 2006 09 22 | 703 | 0.4−  | 1.3+  | 2007 11 03 | 691 | 0.1−  | 0.1+  | 2007 12 15 | G96 | 0.3+  | 0.1−  |
| 2006 09 22 | 703 | (1.1− | 2.0+) | 2007 11 03 | 691 | 0.9+  | 0.2−  | 2007 12 15 | G96 | 0.1+  | 0.4−  |
| 2006 09 22 | 703 | 1.3−  | 0.4−  | 2007 11 05 | 704 | (0.7+ | 1.6+) | 2007 12 15 | G96 | 0.4+  | 0.3−  |
| 2006 09 29 | 699 | 0.6+  | 0.1+  | 2007 11 05 | 704 | 0.4+  | 0.4+  | 2007 12 15 | G96 | 0.2+  | 0.3−  |

**(171586)\* 1999 VR<sub>164</sub>**

Discovered 1999 Nov. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 348.51157  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26658747 | $\omega$ | 246.02018 | −0.71283501   | −0.69773816 |
| <i>a</i> | 2.3909816  | $\Omega$ | 249.64665 | +0.66781509   | −0.64440941 |
| <i>e</i> | 0.1668485  | <i>i</i> | 4.33732   | +0.21421778   | −0.31288651 |
| <i>P</i> | 3.70       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 04 11 | 691 | 0.5+ | 0.4+ | 2003 12 19 | 704 | 0.7+ | 0.7+ | 2004 01 24 | 704 | 1.3+ | 0.7− |
| 1997 04 11 | 691 | 0.1+ | 0.7+ | 2003 12 19 | 704 | 0.4+ | 0.7+ | 2004 01 24 | 704 | 0.9+ | 0.3− |
| 1997 04 11 | 691 | 0.1+ | 0.4+ | 2003 12 19 | 049 | 0.1− | 0.3− | 2004 01 30 | 704 | 0.5+ | 0.6+ |

2007 DEC. 24

M.P.O. 129093

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 16 | 704 | 0.3+  | 0.8-  | 2003 12 27 | 704 | 0.6- | 0.6- | 2006 10 01 | 691 | 0.1+ | 0.3+ |
| 1999 11 16 | 704 | 0.1+  | 1.1-  | 2003 12 27 | 704 | 0.7- | 0.9- | 2006 10 01 | 691 | 0.2+ | 0.1+ |
| 1999 11 16 | 704 | 0.0   | 1.9-  | 2003 12 28 | 704 | 0.5+ | 0.1+ | 2006 10 11 | 644 | 0.5- | 0.0  |
| 1999 11 16 | 704 | 0.5+  | 0.2-  | 2003 12 28 | 704 | 0.5- | 0.7- | 2006 10 11 | 644 | 0.3- | 0.3+ |
| 1999 11 16 | 704 | 0.2+  | 0.1+  | 2003 12 28 | 704 | 0.1+ | 0.5- | 2006 10 11 | 644 | 0.5- | 0.0  |
| 1999 12 07 | 704 | 0.6-  | 0.5+  | 2003 12 28 | 704 | 0.1- | 0.2- | 2006 10 23 | G96 | 0.6+ | 0.1+ |
| 1999 12 07 | 704 | 1.4-  | 0.3-  | 2003 12 29 | 704 | 0.3- | 0.1+ | 2006 10 23 | G96 | 0.2- | 0.2+ |
| 1999 12 07 | 704 | 0.2+  | 0.9-  | 2003 12 29 | 704 | 0.2- | 0.3- | 2006 10 23 | G96 | 0.3- | 0.7- |
| 1999 12 07 | 704 | 0.1+  | 0.1+  | 2003 12 29 | 704 | 0.2+ | 0.3+ | 2006 10 23 | G96 | 0.3+ | 0.3- |
| 2002 08 28 | 644 | 0.6-  | 0.1-  | 2003 12 29 | 704 | 0.1+ | 0.2- | 2007 01 17 | 291 | 0.4- | 0.2- |
| 2002 08 28 | 644 | 0.1-  | 0.1-  | 2004 01 18 | 644 | 0.9- | 0.0  | 2007 01 17 | 291 | 0.4- | 0.1- |
| 2002 08 28 | 644 | 0.2-  | 0.1+  | 2004 01 18 | 644 | 0.8- | 0.0  | 2007 01 17 | 291 | 0.4- | 0.0  |
| 2003 11 21 | 704 | (0.3+ | 1.5+) | 2004 01 18 | 644 | 0.6- | 0.1+ | 2007 10 17 | G96 | 0.3+ | 0.3- |
| 2003 11 21 | 704 | 0.7+  | 0.7+  | 2004 01 21 | 704 | 0.6+ | 0.4- | 2007 10 17 | G96 | 0.6+ | 0.6- |
| 2003 11 21 | 704 | 0.3-  | 1.4+  | 2004 01 21 | 704 | 0.4- | 0.0  | 2007 10 17 | G96 | 0.1- | 0.3+ |
| 2003 11 21 | 704 | 0.3-  | 1.1+  | 2004 01 21 | 704 | 0.6- | 1.1- | 2007 10 17 | G96 | 0.4- | 0.5- |
| 2003 12 19 | 704 | 0.6+  | 0.1-  | 2004 01 21 | 704 | 0.6+ | 1.3- | 2007 12 04 | 291 | 0.1- | 0.2+ |
| 2003 12 19 | 704 | 0.1+  | 1.0+  | 2004 01 24 | 704 | 1.2+ | 0.4- | 2007 12 04 | 291 | 0.6- | 0.2+ |
| 2003 12 19 | 704 | 0.1+  | 0.6+  | 2004 01 24 | 704 | 0.9+ | 0.5- | 2007 12 04 | 291 | 0.1- | 0.1+ |

(171587)\* 1999 VU<sub>168</sub>

Discovered 1999 Nov. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.23120878 | $\omega$ | 110.15275 | +0.98820435 | -0.05506688 |          |   |
| <i>a</i>                                | 2.6290560  | $\Omega$ | 253.21598 | +0.00096286 | +0.93532890 |          |   |
| <i>e</i>                                | 0.2053481  | <i>i</i> | 8.58382   | +0.15313799 | +0.34946744 |          |   |
| <i>P</i>                                | 4.26       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 04 | 704 | (2.8+ | 1.6-) | 2003 09 21 | 644 | 0.4- | 0.1- | 2003 11 19 | 704 | 0.1-  | 1.0+  |
| 1999 11 04 | 704 | (1.8+ | 2.9-) | 2003 09 21 | 699 | 0.4+ | 0.0  | 2003 11 19 | 704 | 0.9-  | 0.5+  |
| 1999 11 04 | 704 | (0.7- | 3.2-) | 2003 09 21 | 699 | 0.3+ | 0.7- | 2003 11 19 | 704 | 0.5+  | 0.1+  |
| 1999 11 14 | 704 | 0.6+  | 0.6-  | 2003 09 21 | 699 | 0.5+ | 0.8- | 2003 11 19 | 704 | 1.0-  | 0.4+  |
| 1999 11 14 | 704 | 0.1+  | 0.7-  | 2003 09 21 | 644 | 0.5- | 0.1- | 2005 02 12 | 809 | 0.1-  | 0.1+  |
| 1999 11 14 | 704 | 0.3-  | 0.4+  | 2003 09 21 | 644 | 0.4- | 0.1- | 2005 02 12 | 809 | 0.2+  | 0.4+  |
| 1999 11 14 | 704 | 0.3-  | 0.8-  | 2003 09 22 | 704 | 0.2+ | 0.4+ | 2007 08 12 | 704 | 0.1+  | 0.1-  |
| 1999 11 14 | 704 | 0.4-  | 0.2-  | 2003 09 22 | 704 | 0.7- | 0.9+ | 2007 08 12 | 704 | 0.1+  | 0.6+  |
| 1999 11 16 | 704 | 1.3+  | 0.3+  | 2003 09 22 | 704 | 0.1+ | 0.1+ | 2007 08 12 | 704 | 0.3-  | 0.3+  |
| 1999 11 16 | 704 | 0.7-  | 0.6-  | 2003 09 22 | 704 | 0.7- | 0.1- | 2007 08 12 | 704 | 0.7-  | 0.0   |
| 1999 11 16 | 704 | 0.6-  | 0.2+  | 2003 09 30 | 704 | 0.4+ | 0.2+ | 2007 08 13 | 699 | 0.7-  | 0.3-  |
| 1999 11 16 | 704 | 0.9+  | 0.2+  | 2003 09 30 | 704 | 0.4- | 0.2+ | 2007 08 13 | 699 | 0.6+  | 0.2-  |
| 1999 12 04 | 703 | 0.6+  | 0.4-  | 2003 09 30 | 704 | 0.3- | 0.3+ | 2007 08 13 | 699 | 0.7-  | 0.1-  |
| 1999 12 04 | 703 | 0.4-  | 0.9+  | 2003 09 30 | 704 | 0.8+ | 0.7+ | 2007 08 15 | 106 | 0.3-  | 0.5-  |
| 1999 12 04 | 703 | 0.8-  | 1.3+  | 2003 10 17 | 699 | 0.5- | 0.1+ | 2007 08 15 | 106 | 0.2-  | 0.5+  |
| 1999 12 04 | 703 | 0.6+  | 0.1+  | 2003 10 17 | 699 | 0.3- | 0.1+ | 2007 08 15 | 106 | 0.1-  | 0.9+  |
| 1999 12 07 | 704 | 0.1+  | 0.8-  | 2003 10 17 | 699 | 0.3- | 0.8+ | 2007 08 15 | 106 | 0.1+  | 0.4+  |
| 1999 12 07 | 704 | 0.3-  | 0.6+  | 2003 10 17 | 699 | 0.3- | 0.6- | 2007 08 22 | 699 | (1.7+ | 1.7+) |
| 1999 12 07 | 704 | 0.2+  | 0.3+  | 2003 10 20 | 644 | 0.0  | 0.1- | 2007 08 22 | 699 | (0.3+ | 1.7+) |
| 1999 12 07 | 704 | 0.5-  | 0.6-  | 2003 10 20 | 644 | 0.3- | 0.1- | 2007 08 22 | 699 | 0.7+  | 0.6+  |
| 2003 09 17 | 644 | 0.0   | 0.3+  | 2003 10 20 | 644 | 0.1- | 0.1- | 2007 08 22 | 699 | 0.7+  | 0.6-  |
| 2003 09 17 | 644 | 0.2-  | 0.0   | 2003 10 22 | 704 | 0.5+ | 0.6+ | 2007 12 05 | G96 | 0.6+  | 0.2-  |
| 2003 09 17 | 644 | 0.2+  | 0.1+  | 2003 10 22 | 704 | 0.0  | 0.3- | 2007 12 05 | G96 | 0.9+  | 0.6-  |
| 2003 09 18 | 608 | 0.4+  | 0.6-  | 2003 10 22 | 704 | 0.4+ | 0.1- | 2007 12 05 | G96 | 0.2-  | 0.1-  |
| 2003 09 18 | 608 | 0.1+  | 1.2-  | 2003 10 22 | 704 | 0.4+ | 0.1+ | 2007 12 05 | G96 | 0.0   | 0.1+  |
| 2003 09 18 | 608 | 1.1+  | 1.4-  | 2003 10 22 | 704 | 0.1+ | 0.1- |            |     |       |       |
| 2003 09 21 | 699 | 0.0   | 0.5-  | 2003 11 19 | 704 | 0.1- | 0.2+ |            |     |       |       |

(171588)\* 1999 WG<sub>1</sub>

Discovered 1999 Nov. 26 at Kleť.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| 35.14477 |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.25428655 | $\omega$ | 3.31842  | +0.94817852 | -0.31754378 |          |   |
| <i>a</i> | 2.4674809  | $\Omega$ | 15.21023 | +0.29053522 | +0.85231386 |          |   |
| <i>e</i> | 0.2011226  | <i>i</i> | 2.42718  | +0.12863432 | +0.41560442 |          |   |
| <i>P</i> | 3.88       | <i>H</i> | 16.2     | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 09 08 | 691 | 0.2- | 0.4+ | 1999 11 26 | 046 | 0.1+ | 0.0  | 2003 11 24 | 704 | 0.3-  | 0.1+  |
| 1991 09 08 | 691 | 0.2- | 0.1- | 1999 11 26 | 046 | 0.3+ | 0.5+ | 2003 11 24 | 704 | 0.1+  | 0.6-  |
| 1991 09 08 | 691 | 0.4- | 0.1+ | 1999 11 26 | 046 | 0.5- | 0.3+ | 2003 11 24 | 704 | 0.1+  | 0.1-  |
| 1995 10 21 | 691 | 0.1- | 0.0  | 1999 11 26 | 557 | 0.2+ | 0.2- | 2003 11 24 | 704 | 0.2-  | 0.1-  |
| 1995 10 21 | 691 | 0.1- | 0.0  | 1999 11 26 | 557 | 0.4- | 0.6+ | 2003 11 24 | 704 | 1.1-  | 0.2+  |
| 1995 10 21 | 691 | 0.2- | 0.2- | 1999 11 27 | 046 | 0.0  | 0.3+ | 2003 12 01 | 691 | 0.3+  | 0.2-  |
| 1999 10 02 | 691 | 0.1+ | 0.1+ | 1999 11 27 | 046 | 0.2- | 0.0  | 2003 12 01 | 691 | 0.3+  | 0.2-  |
| 1999 10 02 | 691 | 0.1+ | 0.1+ | 1999 11 27 | 046 | 0.9+ | 0.0  | 2003 12 01 | 691 | 0.2+  | 0.2-  |
| 1999 10 02 | 691 | 0.2+ | 0.1+ | 1999 11 27 | 046 | 0.5+ | 0.3- | 2003 12 14 | 691 | 0.2+  | 0.3-  |
| 1999 10 06 | 704 | 0.6+ | 0.1- | 1999 11 27 | 046 | 0.7- | 0.5+ | 2003 12 14 | 691 | 0.0   | 0.2-  |
| 1999 10 06 | 704 | 0.7+ | 0.1+ | 1999 11 27 | 046 | 0.2- | 0.3+ | 2003 12 14 | 691 | 0.0   | 0.3-  |
| 1999 10 06 | 704 | 0.0  | 0.0  | 1999 11 28 | 046 | 0.3+ | 0.2- | 2003 12 15 | 703 | 0.3-  | 0.2+  |
| 1999 10 06 | 704 | 0.4+ | 0.1- | 1999 11 28 | 046 | 0.2+ | 0.3+ | 2003 12 15 | 703 | 0.1-  | 0.1+  |
| 1999 10 06 | 704 | 0.4- | 0.6- | 1999 11 28 | 046 | 0.6- | 0.5+ | 2003 12 15 | 703 | (1.9- | 1.1+) |
| 1999 10 10 | 704 | 0.3+ | 0.6+ | 1999 11 28 | 046 | 0.2- | 0.6+ | 2003 12 15 | 703 | (0.9+ | 1.8+) |
| 1999 10 10 | 704 | 0.4+ | 0.0  | 1999 11 28 | 046 | 0.1- | 0.1+ | 2003 12 18 | 704 | 0.1-  | 0.1+  |
| 1999 10 10 | 704 | 0.6+ | 1.0+ | 1999 11 28 | 557 | 0.4+ | 0.1+ | 2003 12 18 | 704 | 0.0   | 0.1-  |
| 1999 10 10 | 704 | 0.1- | 0.3+ | 1999 11 28 | 557 | 0.2- | 0.2- | 2003 12 18 | 704 | 0.5+  | 0.2-  |
| 1999 10 10 | 704 | 1.3+ | 0.5- | 1999 11 29 | 046 | 0.6- | 0.3+ | 2003 12 18 | 704 | 0.0   | 0.7-  |
| 1999 10 10 | 691 | 0.2+ | 0.3+ | 1999 11 29 | 046 | 0.2- | 0.3+ | 2003 12 18 | 704 | 0.2-  | 0.8-  |
| 1999 10 10 | 691 | 0.2+ | 0.3+ | 1999 11 29 | 046 | 0.2- | 0.5+ | 2003 12 22 | 704 | 0.1+  | 0.8-  |
| 1999 10 10 | 691 | 0.4+ | 0.2+ | 1999 11 29 | 046 | 0.1- | 0.6+ | 2003 12 22 | 704 | 0.2+  | 0.4-  |
| 1999 10 15 | 704 | 0.0  | 0.0  | 1999 11 30 | 046 | 0.6- | 0.7- | 2003 12 22 | 704 | 0.2+  | 0.3-  |
| 1999 10 15 | 704 | 0.4+ | 0.2+ | 1999 11 30 | 046 | 0.6- | 0.2- | 2003 12 22 | 704 | 0.4+  | 0.3-  |
| 1999 10 15 | 704 | 0.0  | 0.2- | 1999 11 30 | 046 | 0.5- | 0.3- | 2003 12 22 | 704 | 0.2+  | 0.3-  |
| 1999 10 15 | 704 | 0.2+ | 0.2- | 1999 11 30 | 046 | 1.4- | 0.4+ | 2003 12 27 | 691 | 0.0   | 0.0   |
| 1999 10 15 | 704 | 0.2- | 0.2- | 1999 11 30 | 046 | 0.5- | 0.4+ | 2003 12 27 | 691 | 0.1+  | 0.2-  |
| 1999 10 16 | 691 | 0.3+ | 0.1- | 1999 12 04 | 699 | 1.2- | 0.6- | 2003 12 27 | 704 | 0.2-  | 0.4+  |
| 1999 10 16 | 691 | 0.4+ | 0.0  | 1999 12 04 | 699 | 0.7- | 0.3- | 2003 12 27 | 691 | 0.2+  | 0.0   |
| 1999 10 16 | 691 | 0.4+ | 0.1- | 1999 12 04 | 699 | 0.1+ | 0.4+ | 2003 12 27 | 704 | 0.5+  | 0.7+  |
| 1999 10 21 | 704 | 0.8+ | 1.0+ | 2001 03 18 | 691 | 0.3+ | 0.9+ | 2003 12 27 | 704 | 0.6-  | 0.8+  |
| 1999 10 21 | 704 | 0.1+ | 0.0  | 2001 03 18 | 691 | 0.3+ | 0.9+ | 2003 12 27 | 704 | 0.3-  | 0.8+  |
| 1999 10 21 | 704 | 0.2+ | 0.9+ | 2001 03 18 | 691 | 0.4+ | 0.8+ | 2003 12 27 | 704 | 0.1+  | 0.5+  |
| 1999 10 21 | 704 | 0.4+ | 0.2- | 2003 09 26 | 704 | 0.0  | 0.9- | 2004 01 12 | 644 | 0.2+  | 0.2+  |
| 1999 10 21 | 704 | 0.2- | 1.0- | 2003 09 26 | 704 | 0.0  | 1.0+ | 2004 01 12 | 644 | 0.0   | 0.3+  |
| 1999 10 29 | 703 | 0.8- | 0.1- | 2003 09 26 | 704 | 0.0  | 1.2+ | 2004 01 12 | 644 | 0.4+  | 0.2+  |
| 1999 10 29 | 703 | 0.5+ | 0.2+ | 2003 09 26 | 704 | 1.0- | 0.2+ | 2004 01 22 | 704 | 1.1+  | 0.8-  |
| 1999 10 29 | 703 | 0.9- | 0.3- | 2003 09 29 | 704 | 0.9- | 0.3- | 2004 01 22 | 704 | 1.2+  | 0.2+  |
| 1999 10 29 | 703 | 0.4- | 0.2+ | 2003 09 29 | 704 | 1.1- | 0.7+ | 2004 01 22 | 704 | 0.2-  | 0.9-  |
| 1999 11 04 | 704 | 0.6- | 0.2+ | 2003 09 29 | 704 | 0.5- | 0.4- | 2004 01 22 | 704 | 0.6+  | 0.0   |
| 1999 11 04 | 704 | 0.2- | 0.6+ | 2003 09 29 | 704 | 0.3+ | 0.0  | 2005 03 04 | G96 | 0.1-  | 0.4-  |
| 1999 11 04 | 704 | 0.3+ | 0.5+ | 2003 09 29 | 704 | 0.7- | 0.4+ | 2005 03 04 | G96 | 0.4-  | 0.4-  |
| 1999 11 04 | 704 | 0.9+ | 0.4+ | 2003 10 24 | 704 | 0.3+ | 0.6- | 2005 03 04 | G96 | 0.3-  | 0.4-  |
| 1999 11 04 | 704 | 0.1+ | 0.2+ | 2003 10 24 | 704 | 0.8- | 0.3+ | 2005 03 04 | G96 | 0.0   | 0.3-  |
| 1999 11 07 | 704 | 0.7+ | 0.7- | 2003 10 24 | 704 | 0.5- | 0.3- | 2005 03 12 | 691 | 0.2+  | 0.2+  |
| 1999 11 07 | 704 | 1.2+ | 0.8+ | 2003 10 24 | 704 | 1.4- | 0.7+ | 2005 03 12 | 691 | 0.6+  | 0.0   |
| 1999 11 07 | 704 | 0.8+ | 0.4- | 2003 10 29 | 704 | 0.3- | 0.1+ | 2005 03 12 | 691 | 0.3+  | 0.2+  |
| 1999 11 07 | 704 | 1.5+ | 1.4- | 2003 10 29 | 704 | 0.1- | 0.1+ | 2005 04 02 | G96 | 0.4-  | 0.3-  |
| 1999 11 07 | 704 | 1.0+ | 0.0  | 2003 10 29 | 704 | 0.0  | 0.2+ | 2005 04 02 | G96 | 0.0   | 0.4-  |
| 1999 11 11 | 703 | 0.1- | 0.9+ | 2003 10 29 | 704 | 0.2- | 0.1+ | 2005 04 02 | G96 | 0.3-  | 0.6-  |
| 1999 11 11 | 703 | 0.9- | 0.4+ | 2003 11 18 | 644 | 0.0  | 0.1- | 2005 04 02 | G96 | 0.2-  | 0.2-  |
| 1999 11 11 | 703 | 0.4- | 0.8+ | 2003 11 18 | 644 | 0.5- | 0.9- | 2007 11 20 | 704 | 1.1+  | 0.1-  |
| 1999 11 11 | 703 | 1.2- | 0.4+ | 2003 11 18 | 644 | 0.4+ | 1.0- | 2007 11 20 | 704 | 0.9+  | 0.2-  |
| 1999 11 12 | 699 | 0.4+ | 0.3- | 2003 11 19 | 691 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.7+  | 0.0   |
| 1999 11 12 | 699 | 0.9+ | 0.0  | 2003 11 19 | 691 | 0.1+ | 0.0  | 2007 11 20 | 704 | 0.0   | 0.8-  |
| 1999 11 12 | 699 | 0.8- | 0.3+ | 2003 11 19 | 691 | 0.1- | 0.1- | 2007 11 20 | 704 | 0.9+  | 0.3+  |
| 1999 11 14 | 704 | 0.7- | 0.4+ | 2003 11 20 | 704 | 0.0  | 0.1+ | 2007 12 14 | 704 | 0.8-  | 0.7+  |
| 1999 11 14 | 704 | 0.9- | 0.5- | 2003 11 20 | 704 | 0.1- | 0.1+ | 2007 12 14 | 704 | 0.2+  | 0.7+  |
| 1999 11 14 | 704 | 0.8- | 0.3- | 2003 11 20 | 704 | 0.0  | 0.1+ | 2007 12 14 | 704 | 0.6+  | 0.5+  |

## M.P.O. 129094

2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 14 | 704 | 1.2− | 0.0  | 2003 11 20 | 704 | 0.2− | 0.5+ | 2007 12 14 | 704 | 0.4− | 1.2+ |
| 1999 11 14 | 704 | 0.6− | 0.2+ | 2003 11 20 | 704 | 0.2− | 0.3− | 2007 12 14 | 704 | 0.1− | 0.2+ |
| 1999 11 16 | 704 | 0.6− | 0.6+ | 2003 11 21 | 704 | 0.2+ | 0.0  | 2007 12 16 | 691 | 0.1− | 0.1+ |
| 1999 11 16 | 704 | 0.5− | 0.5+ | 2003 11 21 | 704 | 0.5− | 0.2− | 2007 12 16 | 691 | 1.4− | 1.2− |
| 1999 11 16 | 704 | 0.7− | 0.2+ | 2003 11 21 | 704 | 0.4+ | 0.1− | 2007 12 16 | 691 | 0.2− | 0.2+ |
| 1999 11 16 | 704 | 1.2− | 0.3+ | 2003 11 21 | 704 | 0.4+ | 0.2+ |            |     |      |      |
| 1999 11 26 | 046 | 0.4− | 0.1+ | 2003 11 21 | 704 | 0.4− | 0.4− |            |     |      |      |

(171589)\* 1999 WP<sub>5</sub> = 2004 RG<sub>2</sub>

Discovered 1999 Nov. 28 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 68611)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 163.84713  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.36813345 | <i>ω</i> | 2.66276   | −0.46470880 | +0.83784668 |
| <i>a</i> | 1.9281132  | <i>Ω</i> | 239.79263 | −0.81839950 | −0.52991931 |
| <i>e</i> | 0.0394159  | <i>i</i> | 19.35796  | −0.33803550 | +0.13114294 |
| <i>P</i> | 2.68       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 11 12 | 704 | 0.4+  | 0.5−  | 2004 09 07 | 704 | 0.4−  | 0.3+  | 2007 11 07 | 704 | 0.7− | 0.3− |
| 1999 11 12 | 704 | 0.2−  | 0.8−  | 2004 09 07 | 704 | 0.1+  | 0.5−  | 2007 11 07 | 704 | 0.3+ | 0.2− |
| 1999 11 12 | 704 | 0.4+  | 0.2+  | 2004 09 07 | 704 | 0.4−  | 0.1+  | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 1999 11 12 | 704 | 0.1−  | 0.3+  | 2004 09 07 | 704 | 0.1+  | 0.1−  | 2007 11 13 | 691 | 0.3− | 0.1− |
| 1999 11 14 | 704 | 0.2+  | 0.5−  | 2004 09 07 | 704 | 0.4+  | 0.3−  | 2007 11 13 | 691 | 0.1− | 0.0  |
| 1999 11 14 | 704 | 0.2+  | 0.4−  | 2004 09 07 | 704 | 0.1−  | 0.6−  | 2007 11 13 | 699 | 0.5− | 0.1− |
| 1999 11 14 | 704 | 0.5+  | 1.0−  | 2004 09 07 | 704 | 0.2+  | 0.2−  | 2007 11 13 | 699 | 0.1+ | 0.3− |
| 1999 11 14 | 704 | 1.2−  | 0.9−  | 2004 09 09 | 704 | 0.2+  | 0.6+  | 2007 11 13 | 699 | 0.9+ | 1.0+ |
| 1999 11 28 | 049 | 1.5+  | 1.8+  | 2004 09 09 | 704 | 0.6−  | 0.9+  | 2007 11 13 | 699 | 0.7+ | 0.6− |
| 1999 11 28 | 049 | (1.7+ | 2.4+) | 2004 09 09 | 704 | 0.0   | 0.6+  | 2007 12 03 | 703 | 0.7− | 0.2− |
| 1999 11 28 | 049 | (2.3+ | 1.9+) | 2004 09 09 | 704 | 0.1−  | 1.4+  | 2007 12 03 | 703 | 0.7− | 0.5+ |
| 1999 11 28 | 691 | 0.3−  | 0.1+  | 2004 09 15 | 704 | (2.0− | 1.5−) | 2007 12 03 | 703 | 0.3− | 0.8− |
| 1999 11 28 | 691 | 0.2−  | 0.0   | 2004 09 15 | 704 | 0.9−  | 0.4−  | 2007 12 03 | 703 | 0.7+ | 0.5− |
| 1999 11 28 | 691 | 0.0   | 0.1−  | 2004 09 15 | 704 | 1.4+  | 0.6+  | 2007 12 04 | 691 | 0.1− | 0.4+ |
| 1999 11 30 | 691 | 0.0   | 0.2−  | 2004 09 15 | 704 | 0.3−  | 0.0   | 2007 12 04 | 691 | 0.1− | 0.1+ |
| 1999 11 30 | 691 | 0.0   | 0.1−  | 2004 09 23 | 704 | 0.8+  | 0.1+  | 2007 12 04 | 691 | 0.2− | 0.2− |
| 1999 11 30 | 691 | 0.3−  | 0.1−  | 2004 09 23 | 704 | 1.2−  | 0.5−  | 2007 12 05 | 691 | 0.4− | 0.3− |
| 1999 12 07 | 704 | 0.5+  | 0.4+  | 2004 09 23 | 704 | 0.6+  | 0.3−  | 2007 12 05 | 691 | 0.1− | 0.0  |
| 1999 12 07 | 704 | 0.2+  | 0.4+  | 2004 09 23 | 704 | 0.9−  | 0.2−  | 2007 12 05 | 691 | 0.1− | 0.1− |
| 1999 12 07 | 704 | 0.0   | 0.5−  | 2006 04 25 | E12 | 0.1+  | 1.0+  | 2007 12 06 | 691 | 0.4+ | 0.3− |
| 2004 08 03 | 644 | 0.4−  | 0.1+  | 2006 04 25 | E12 | 0.4+  | 0.5+  | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2004 08 03 | 644 | 0.3+  | 0.9+  | 2006 04 25 | E12 | 0.2−  | 0.0   | 2007 12 06 | 691 | 0.2− | 0.2+ |
| 2004 08 03 | 644 | 0.2−  | 0.1+  | 2006 04 25 | E12 | 0.4+  | 0.4+  | 2007 12 14 | 691 | 0.3+ | 0.1− |
| 2004 09 06 | 704 | 0.3−  | 0.2−  | 2007 10 16 | 703 | 1.0+  | 0.3+  | 2007 12 14 | 691 | 0.1+ | 0.6+ |
| 2004 09 06 | 704 | 0.9−  | 1.2+  | 2007 10 16 | 703 | (2.8+ | 0.2+) | 2007 12 14 | 691 | 0.4+ | 0.2+ |
| 2004 09 06 | 704 | 0.6+  | 0.1+  | 2007 10 16 | 703 | 0.5+  | 1.2+  | 2007 12 16 | 691 | 0.2− | 0.0  |
| 2004 09 06 | 704 | 0.9+  | 0.6−  | 2007 10 16 | 703 | 0.5+  | 1.1+  | 2007 12 16 | 691 | 0.1+ | 0.5+ |
| 2004 09 07 | 704 | 0.7+  | 0.9−  | 2007 11 07 | 704 | 0.1−  | 0.5+  | 2007 12 16 | 691 | 0.5+ | 0.1− |
| 2004 09 07 | 704 | 0.4+  | 0.7−  | 2007 11 07 | 704 | 0.4−  | 0.1+  |            |     |      |      |
| 2004 09 07 | 704 | 0.2+  | 0.4−  | 2007 11 07 | 704 | 1.2+  | 0.8+  |            |     |      |      |

(171590)\* 1999 WH<sub>7</sub>

Discovered 1999 Nov. 28 by K. Korlević at Višnjan.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.23043  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23733813 | <i>ω</i> | 164.89484 | +0.33183131 | −0.94294022 |
| <i>a</i> | 2.5835947  | <i>Ω</i> | 265.71923 | +0.86262144 | +0.31507309 |
| <i>e</i> | 0.1648132  | <i>i</i> | 1.57550   | +0.38180130 | +0.10766931 |
| <i>P</i> | 4.15       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 06 | 704 | 0.5− | 0.2+ | 2003 11 01 | 704 | 0.2+ | 0.3+ | 2007 09 21 | 704 | 0.3+ | 0.3+ |
| 1999 10 06 | 704 | 0.1− | 0.2+ | 2003 11 02 | 704 | 0.9− | 0.3− | 2007 09 21 | 704 | 0.2− | 0.0  |
| 1999 10 06 | 704 | 0.4+ | 0.3− | 2003 11 02 | 704 | 0.1− | 0.5+ | 2007 10 04 | 691 | 0.1− | 0.0  |
| 1999 10 06 | 704 | 0.0  | 0.9− | 2003 11 02 | 704 | 0.8− | 0.2− | 2007 10 04 | 691 | 1.1+ | 0.9− |
| 1999 11 09 | 704 | 0.1+ | 0.1− | 2003 11 02 | 704 | 0.1+ | 0.2− | 2007 10 04 | 691 | 0.1− | 0.1− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 09 | 704 | 0.3−  | 0.2−  | 2003 11 02 | 704 | 0.8−  | 0.1+  | 2007 10 08 | 704 | 0.9+  | 0.5−  |
| 1999 11 09 | 704 | 0.1−  | 0.2−  | 2003 11 02 | 704 | (1.7− | 0.3+) | 2007 10 08 | 704 | 0.0   | 0.0   |
| 1999 11 09 | 704 | 0.0   | 0.2−  | 2003 11 02 | 704 | 0.0   | 0.4−  | 2007 10 08 | 704 | (1.6+ | 0.7+) |
| 1999 11 09 | 704 | 0.2−  | 0.3+  | 2003 11 02 | 704 | 1.3−  | 0.4+  | 2007 10 08 | 704 | 0.1+  | 1.3−  |
| 1999 11 12 | 704 | 0.2−  | 0.2−  | 2003 11 02 | 704 | 0.9+  | 0.6−  | 2007 10 09 | 704 | 1.3+  | 0.6+  |
| 1999 11 12 | 704 | 0.4−  | 0.3−  | 2003 11 03 | 704 | 0.9−  | 0.7+  | 2007 10 09 | 704 | 1.3+  | 0.6+  |
| 1999 11 12 | 704 | 0.3+  | 0.3+  | 2003 11 03 | 704 | 0.3−  | 0.4+  | 2007 10 09 | 704 | (1.6+ | 0.4−) |
| 1999 11 16 | 704 | 0.6−  | 0.5−  | 2003 11 03 | 704 | 0.6−  | 0.5+  | 2007 10 09 | 704 | 1.3+  | 0.4+  |
| 1999 11 16 | 704 | 0.1−  | 1.1−  | 2003 11 03 | 704 | 0.3−  | 0.3+  | 2007 10 09 | 699 | 0.3+  | 0.7−  |
| 1999 11 16 | 704 | 0.1+  | 1.2−  | 2003 11 18 | 644 | 0.1−  | 0.3+  | 2007 10 09 | 704 | (1.7+ | 0.5+) |
| 1999 11 16 | 704 | 0.0   | 1.5−  | 2003 11 18 | 644 | 0.2−  | 0.6+  | 2007 10 09 | 699 | 0.1+  | 0.2−  |
| 1999 11 28 | 120 | 0.2+  | 1.1+  | 2003 11 18 | 644 | 0.2−  | 0.4+  | 2007 10 09 | 699 | 0.1+  | 0.4−  |
| 1999 11 28 | 120 | 0.9−  | 0.0   | 2003 11 21 | 704 | 0.3−  | 0.3+  | 2007 10 09 | 699 | 0.3−  | 0.5−  |
| 1999 11 29 | 120 | 0.5−  | 0.4−  | 2003 11 21 | 704 | 0.4−  | 0.2−  | 2007 10 12 | 704 | 0.1+  | 0.6+  |
| 1999 11 29 | 120 | 0.3+  | 0.4−  | 2003 11 21 | 704 | 0.0   | 0.2+  | 2007 10 12 | 704 | 0.4+  | 0.2+  |
| 1999 12 07 | 704 | 0.9+  | 0.4+  | 2003 11 21 | 704 | 0.0   | 0.2+  | 2007 10 12 | 704 | 0.5−  | 0.2+  |
| 1999 12 07 | 704 | 0.2−  | 0.2−  | 2003 11 21 | 704 | 0.2−  | 0.3+  | 2007 10 12 | 704 | 0.0   | 0.2−  |
| 1999 12 07 | 704 | 0.1−  | 0.2+  | 2003 11 21 | 699 | 0.1+  | 0.2+  | 2007 10 12 | 704 | 0.3−  | 0.3+  |
| 1999 12 07 | 704 | 0.0   | 0.2−  | 2003 11 21 | 699 | 0.2−  | 0.5+  | 2007 10 13 | 703 | (1.7− | 1.5+) |
| 1999 12 08 | 704 | 0.5+  | 0.6−  | 2003 11 21 | 699 | 0.3−  | 0.3−  | 2007 10 13 | 703 | (0.7− | 1.9+) |
| 1999 12 08 | 704 | 0.8+  | 1.6−  | 2003 11 21 | 699 | 0.8+  | 0.5+  | 2007 10 13 | 703 | 0.4−  | 0.2+  |
| 1999 12 08 | 704 | 1.2+  | 0.9−  | 2003 11 30 | 691 | 0.1−  | 0.1+  | 2007 10 13 | 703 | 1.1−  | 0.5−  |
| 1999 12 08 | 704 | 0.6+  | 0.6−  | 2003 11 30 | 691 | 0.0   | 0.2+  | 2007 10 15 | 691 | 0.2−  | 0.1+  |
| 1999 12 08 | 704 | 1.3+  | 0.9−  | 2003 11 30 | 691 | 0.1−  | 0.1−  | 2007 10 15 | 691 | 0.4−  | 0.0   |
| 2003 10 20 | 704 | 1.3+  | 1.4−  | 2003 12 01 | 704 | 0.6−  | 1.0+  | 2007 10 15 | 691 | 0.1+  | 0.2−  |
| 2003 10 20 | 704 | (0.4+ | 1.6−) | 2003 12 01 | 704 | 1.1−  | 0.8+  | 2007 10 15 | 704 | 0.6+  | 0.6+  |
| 2003 10 20 | 704 | (3.0+ | 3.6−) | 2003 12 01 | 704 | (0.6− | 1.8+) | 2007 10 15 | 704 | 1.3−  | 0.6+  |
| 2003 10 21 | 704 | 0.0   | 0.3−  | 2005 03 11 | G96 | 0.3−  | 0.0   | 2007 10 15 | 704 | 0.9−  | 1.3+  |
| 2003 10 21 | 704 | (2.2− | 0.1−) | 2005 03 11 | G96 | 0.2−  | 0.1+  | 2007 10 15 | 704 | 0.3+  | 0.7+  |
| 2003 10 21 | 704 | 0.9−  | 1.0−  | 2005 03 11 | G96 | 0.4−  | 0.2+  | 2007 10 15 | 704 | 0.8+  | 0.4+  |
| 2003 10 21 | 704 | 1.0+  | 0.0   | 2005 03 11 | G96 | 0.3−  | 0.1+  | 2007 10 16 | G96 | 0.3−  | 0.3−  |
| 2003 10 21 | 704 | 0.7−  | 0.3+  | 2005 03 17 | 691 | 0.2+  | 0.5+  | 2007 10 16 | G96 | 0.0   | 0.5−  |
| 2003 10 23 | 699 | 1.1−  | 0.6−  | 2005 03 17 | 691 | 0.5+  | 0.5+  | 2007 10 16 | G96 | 0.3+  | 0.3−  |
| 2003 10 23 | 699 | 0.0   | 0.4+  | 2005 03 17 | 691 | 0.4+  | 0.5+  | 2007 10 16 | G96 | 0.0   | 0.4−  |
| 2003 10 23 | 699 | 0.1−  | 0.4+  | 2005 04 12 | G96 | 0.2−  | 0.2+  | 2007 10 20 | 703 | 0.1−  | 0.2+  |
| 2003 10 23 | 699 | 0.4−  | 0.0   | 2005 04 12 | G96 | 0.2−  | 0.3+  | 2007 10 20 | 703 | (1.6+ | 0.3−) |
| 2003 10 24 | 704 | 0.3+  | 0.6+  | 2005 04 12 | G96 | 0.1−  | 0.4+  | 2007 10 20 | 703 | 0.1+  | 0.2−  |
| 2003 10 24 | 704 | 1.1+  | 0.5+  | 2005 04 12 | G96 | 0.3−  | 0.3+  | 2007 10 20 | 703 | 0.4−  | 0.6+  |
| 2003 10 24 | 704 | 0.2−  | 0.6+  | 2005 04 13 | 699 | 0.2+  | 1.2+  | 2007 10 20 | 704 | 0.2+  | 0.1+  |
| 2003 10 24 | 704 | 0.3+  | 1.0+  | 2005 04 13 | 699 | 0.4+  | 0.1+  | 2007 10 20 | 704 | 0.8+  | 0.3+  |
| 2003 10 24 | 704 | 0.1+  | 0.8+  | 2005 04 13 | 699 | (0.1+ | 1.8+) | 2007 10 20 | 704 | 0.4+  | 0.9+  |
| 2003 10 25 | 106 | 0.3−  | 0.2−  | 2005 04 13 | 699 | 0.9+  | 0.1+  | 2007 10 31 | 703 | 0.8−  | 0.2+  |
| 2003 10 25 | 106 | 0.1+  | 0.7−  | 2007 09 11 | 703 | 1.0+  | 0.9+  | 2007 10 31 | 703 | 1.0−  | 0.8−  |
| 2003 10 25 | 106 | 0.8+  | 0.4−  | 2007 09 11 | 703 | 0.3−  | 0.5+  | 2007 10 31 | 703 | 0.0   | 0.1−  |
| 2003 10 26 | 608 | 0.1−  | 0.6−  | 2007 09 11 | 703 | 0.9−  | 0.3+  | 2007 10 31 | 703 | 0.2−  | 0.2−  |
| 2003 10 26 | 608 | 0.6−  | 0.6−  | 2007 09 11 | 703 | 1.1−  | 1.4−  | 2007 11 01 | G96 | 0.2+  | 0.3−  |
| 2003 10 26 | 608 | 0.1−  | 0.2−  | 2007 09 14 | 704 | 0.5+  | 0.2−  | 2007 11 01 | G96 | 0.1−  | 0.5−  |
| 2003 10 29 | 704 | 0.2−  | 1.0+  | 2007 09 14 | 704 | 0.2−  | 0.8+  | 2007 11 01 | G96 | 0.1+  | 0.2−  |
| 2003 10 29 | 704 | 0.1+  | 0.6+  | 2007 09 14 | 704 | 0.0   | 0.6+  | 2007 11 01 | G96 | 0.2+  | 0.6−  |
| 2003 10 29 | 704 | 0.1+  | 0.8+  | 2007 09 14 | 704 | 0.6+  | 0.6+  | 2007 11 06 | 704 | 0.0   | 0.2+  |
| 2003 10 29 | 704 | 0.9+  | 0.8+  | 2007 09 14 | 704 | 0.5+  | 0.3+  | 2007 11 06 | 704 | 0.5−  | 0.0   |
| 2003 10 29 | 704 | 0.8−  | 0.7+  | 2007 09 15 | 699 | 0.3−  | 0.2+  | 2007 11 06 | 704 | 0.2+  | 0.2−  |
| 2003 10 30 | 704 | 0.5−  | 1.0+  | 2007 09 15 | 699 | 0.5+  | 0.3+  | 2007 11 06 | 704 | 1.5−  | 0.2+  |
| 2003 10 30 | 704 | 0.8+  | 0.4+  | 2007 09 15 | 691 | 0.2−  | 0.0   | 2007 12 05 | 703 | 1.5−  | 1.0+  |
| 2003 10 30 | 704 | 0.2+  | 1.0+  | 2007 09 15 | 699 | (2.3+ | 0.1−) | 2007 12 05 | 703 | 0.9+  | 0.3+  |
| 2003 10 30 | 704 | 0.3−  | 1.2+  | 2007 09 15 | 691 | 0.2−  | 0.2+  | 2007 12 05 | 703 | 0.4−  | 1.2+  |
| 2003 10 30 | 704 | 0.9+  | 1.1+  | 2007 09 15 | 699 | (2.5+ | 0.5−) | 2007 12 05 | 703 | 0.9+  | 0.7+  |
| 2003 11 01 | 704 | 0.2+  | 0.4−  | 2007 09 15 | 691 | 0.2−  | 0.0   | 2007 12 06 | G96 | 0.1−  | 0.3−  |
| 2003 11 01 | 704 | 0.1−  | 0.1−  | 2007 09 21 | 704 | 0.2−  | 0.3+  | 2007 12 06 | G96 | 0.5+  | 0.2−  |
| 2003 11 01 | 704 | 0.4−  | 0.3−  | 2007 09 21 | 704 | 0.2+  | 0.3+  | 2007 12 06 | G96 | 0.1−  | 0.2−  |
| 2003 11 01 | 704 | 0.5−  | 0.5−  | 2007 09 21 | 704 | 0.1−  | 0.4+  | 2007 12 06 | G96 | 0.0   | 0.1−  |

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M.P.O. 129095

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 299.03463  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.24186455 | $\omega$ | 29.36362 | -0.31971504 | -0.94493430 |
| <i>a</i> | 2.5512592  | $\Omega$ | 79.35582 | +0.85487209 | -0.31947040 |
| <i>e</i> | 0.0896681  | <i>i</i> | 4.07663  | +0.40862698 | -0.07097763 |
| <i>P</i> | 4.08       | <i>H</i> | 17.2     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 12 | 704 | 0.5+ | 0.4+ | 1999 12 05 | 691 | 0.4+  | 0.2-  | 2005 03 10 | 703 | 0.1-  | 0.9+  |
| 1999 11 12 | 704 | 0.7- | 1.0- | 1999 12 05 | 691 | 0.2+  | 0.0   | 2005 03 10 | 703 | 0.2-  | 0.8+  |
| 1999 11 12 | 704 | 0.1- | 0.2- | 1999 12 06 | 691 | 0.2+  | 0.2-  | 2005 03 18 | 703 | 1.0-  | 0.6+  |
| 1999 11 15 | 704 | 0.4- | 0.4+ | 1999 12 06 | 691 | 0.4+  | 0.5-  | 2005 03 18 | 703 | (0.4- | 1.7-) |
| 1999 11 15 | 704 | 0.8+ | 0.5+ | 1999 12 06 | 691 | 0.3+  | 0.6-  | 2005 03 18 | 703 | 0.9-  | 0.5-  |
| 1999 11 15 | 704 | 1.1- | 0.7- | 1999 12 12 | 691 | 0.3+  | 0.3+  | 2005 03 18 | 703 | (0.2+ | 2.0+) |
| 1999 11 15 | 704 | 0.6- | 0.1+ | 1999 12 12 | 691 | 0.5+  | 0.2+  | 2005 04 01 | 683 | (1.1+ | 2.5+) |
| 1999 11 15 | 704 | 0.7- | 0.7- | 1999 12 12 | 691 | 0.6+  | 0.5+  | 2005 04 01 | 683 | (0.1- | 3.4+) |
| 1999 11 15 | 704 | 0.0  | 0.3+ | 2000 01 05 | 691 | 0.1-  | 0.4+  | 2005 04 01 | 683 | (3.6+ | 0.8+) |
| 1999 11 15 | 704 | 0.9+ | 0.2- | 2000 01 05 | 691 | 0.6-  | 0.6+  | 2005 05 02 | 691 | 0.4+  | 0.3-  |
| 1999 11 28 | 691 | 0.9- | 0.0  | 2000 01 05 | 691 | 0.2-  | 0.3+  | 2005 05 02 | 691 | 0.2+  | 0.0   |
| 1999 11 28 | 691 | 0.5- | 0.0  | 2000 01 11 | 691 | 0.1+  | 0.3+  | 2005 05 02 | 691 | 0.2+  | 0.0   |
| 1999 11 28 | 691 | 0.6- | 0.4+ | 2000 01 11 | 691 | 0.5+  | 0.0   | 2007 10 08 | G96 | 0.3-  | 0.0   |
| 1999 12 02 | 691 | 0.1- | 0.3- | 2000 01 11 | 691 | 0.0   | 0.1+  | 2007 10 08 | G96 | 0.2+  | 0.0   |
| 1999 12 02 | 691 | 0.1- | 0.3- | 2003 10 20 | 691 | 0.2-  | 0.4+  | 2007 10 08 | G96 | 0.2+  | 0.3-  |
| 1999 12 02 | 691 | 0.0  | 0.4- | 2003 10 20 | 691 | 0.0   | 0.2+  | 2007 10 08 | G96 | 0.1+  | 0.1-  |
| 1999 12 03 | 691 | 0.3- | 0.5- | 2003 10 20 | 691 | 0.1-  | 0.2+  | 2007 10 13 | 691 | 0.0   | 0.2+  |
| 1999 12 03 | 691 | 0.1+ | 0.1- | 2003 11 19 | 699 | 0.7-  | 0.5-  | 2007 10 13 | 691 | 0.4-  | 0.1+  |
| 1999 12 03 | 691 | 0.1- | 0.3- | 2003 11 19 | 699 | 0.6+  | 0.3-  | 2007 10 13 | 691 | 0.3-  | 0.3+  |
| 1999 12 04 | 691 | 0.3+ | 0.1- | 2003 11 19 | 699 | 0.3-  | 0.9-  | 2007 12 05 | 704 | 0.3+  | 0.5+  |
| 1999 12 04 | 691 | 0.1+ | 0.4- | 2003 11 19 | 699 | (0.1+ | 2.3+) | 2007 12 05 | 704 | 1.0-  | 1.3+  |
| 1999 12 04 | 691 | 0.1+ | 0.1- | 2005 03 10 | 703 | 0.6-  | 1.0+  | 2007 12 05 | 704 | 0.9+  | 1.3+  |
| 1999 12 05 | 691 | 0.2+ | 0.2- | 2005 03 10 | 703 | 0.8+  | 1.0+  | 2007 12 05 | 704 | 0.2+  | 2.6+  |

(171592)\* 1999 WN<sub>14</sub> = 1995 VN<sub>12</sub> = 1999 VW<sub>72</sub>

Discovered 1999 Nov. 28 by Spacewatch at Kitt Peak.

Id. A. Doppler (d, MPO 11681), T. B. Spahr (MPO 2190)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 295.18306  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.25526217 | $\omega$ | 92.46816 | -0.93412307 | -0.34463690 |
| <i>a</i> | 2.4611896  | $\Omega$ | 67.38453 | +0.27420576 | -0.85953947 |
| <i>e</i> | 0.2109032  | <i>i</i> | 5.77899  | +0.22852854 | -0.37738217 |
| <i>P</i> | 3.86       | <i>H</i> | 16.2     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 11 15 | 691 | 0.2-  | 0.1+  | 2001 05 17 | 704 | 1.0+ | 1.1- | 2003 12 19 | 704 | 0.2-  | 0.1+  |
| 1995 11 15 | 691 | 0.0   | 0.2-  | 2001 05 24 | 704 | 0.1- | 0.7- | 2003 12 19 | 704 | 0.4-  | 0.3-  |
| 1995 11 15 | 691 | 0.2+  | 0.1-  | 2001 05 24 | 704 | 0.1- | 1.2+ | 2003 12 21 | 704 | (0.8- | 1.9+) |
| 1995 11 20 | 691 | 0.2-  | 0.2-  | 2001 05 24 | 704 | 0.3+ | 0.7+ | 2003 12 21 | 704 | 0.1-  | 0.3-  |
| 1995 11 20 | 691 | 0.2+  | 0.1-  | 2001 05 24 | 704 | 0.4+ | 0.9+ | 2003 12 21 | 704 | 1.0-  | 1.2-  |
| 1995 11 20 | 691 | 0.6-  | 0.1+  | 2001 06 01 | 691 | 0.2- | 0.2+ | 2007 12 10 | 704 | 0.3+  | 0.3+  |
| 1999 10 02 | 691 | 0.1+  | 0.1+  | 2001 06 01 | 691 | 0.1+ | 0.3+ | 2007 12 10 | 704 | 0.1+  | 0.1+  |
| 1999 10 02 | 691 | 0.3-  | 0.3+  | 2001 06 01 | 691 | 0.1- | 0.5+ | 2007 12 10 | 704 | 0.7+  | 0.4+  |
| 1999 10 02 | 691 | 0.5-  | 0.4+  | 2003 11 19 | 691 | 0.1+ | 0.2+ | 2007 12 10 | 704 | 0.4-  | 0.8+  |
| 1999 10 09 | 691 | 0.3-  | 0.3+  | 2003 11 19 | 691 | 0.2+ | 0.3+ | 2007 12 10 | 704 | 0.5+  | 0.4+  |
| 1999 10 09 | 691 | 0.4-  | 0.1+  | 2003 11 19 | 691 | 0.2+ | 0.2+ | 2007 12 14 | 704 | 0.4+  | 0.2+  |
| 1999 10 09 | 691 | 0.6-  | 0.0   | 2003 11 21 | 704 | 0.6+ | 0.4- | 2007 12 14 | 691 | 0.4-  | 0.2-  |
| 1999 11 12 | 704 | (2.5+ | 2.0-) | 2003 11 21 | 704 | 0.3+ | 0.1+ | 2007 12 14 | 704 | 0.3+  | 0.4-  |
| 1999 11 12 | 704 | 0.1+  | 0.6-  | 2003 11 21 | 704 | 0.1- | 0.6+ | 2007 12 14 | 691 | 0.3-  | 0.2-  |
| 1999 11 12 | 704 | 0.6+  | 0.7-  | 2003 11 21 | 704 | 0.7+ | 0.1+ | 2007 12 14 | 704 | 0.5+  | 0.7-  |
| 1999 11 28 | 691 | 0.4+  | 0.1+  | 2003 11 21 | 704 | 0.3- | 0.3+ | 2007 12 14 | 704 | 0.6+  | 1.1+  |
| 1999 11 28 | 691 | 0.3+  | 0.0   | 2003 11 23 | 704 | 0.0  | 0.3- | 2007 12 14 | 691 | 0.0   | 0.7-  |
| 1999 11 28 | 691 | 0.6+  | 0.1+  | 2003 11 23 | 704 | 0.2- | 0.6+ | 2007 12 14 | 704 | 0.8+  | 0.6-  |
| 1999 12 05 | 691 | 0.4+  | 0.1-  | 2003 11 23 | 704 | 1.1- | 0.3+ | 2007 12 15 | 704 | 0.2+  | 0.2+  |
| 1999 12 05 | 691 | 0.4+  | 0.2+  | 2003 11 23 | 704 | 0.4- | 0.3- | 2007 12 15 | 704 | 0.7+  | 0.1+  |
| 1999 12 05 | 691 | 0.2+  | 0.2+  | 2003 11 23 | 704 | 0.6- | 0.1+ | 2007 12 15 | 704 | 0.9+  | 0.1-  |
| 1999 12 12 | 691 | 0.3+  | 0.1-  | 2003 12 01 | 691 | 0.1- | 0.2+ | 2007 12 15 | 704 | 0.7+  | 0.4+  |
| 1999 12 12 | 691 | 0.1-  | 0.4-  | 2003 12 01 | 691 | 0.2- | 0.1+ | 2007 12 15 | 704 | 1.1+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 12 | 691 | 0.0  | 0.2- | 2003 12 01 | 691 | 0.0  | 0.1+ | 2007 12 16 | 704 | 1.3- | 1.0+ |
| 2001 04 29 | 704 | 1.0+ | 0.6+ | 2003 12 17 | 644 | 0.1- | 0.0  | 2007 12 16 | 704 | 0.4- | 0.9+ |
| 2001 04 29 | 704 | 0.3+ | 0.7+ | 2003 12 17 | 644 | 0.2- | 0.3+ | 2007 12 16 | 704 | 2.2- | 1.5+ |
| 2001 04 29 | 704 | 1.0- | 0.8- | 2003 12 17 | 644 | 0.2+ | 0.5+ | 2007 12 16 | 704 | 0.0  | 0.5+ |
| 2001 05 17 | 704 | 0.5+ | 0.5+ | 2003 12 19 | 704 | 0.3+ | 0.2+ | 2007 12 16 | 704 | 1.2- | 0.2+ |
| 2001 05 17 | 704 | 0.0  | 0.8+ | 2003 12 19 | 704 | 0.3+ | 0.6- |            |     |      |      |
| 2001 05 17 | 704 | 0.6+ | 0.4- | 2003 12 19 | 704 | 0.4- | 0.4- |            |     |      |      |

(171593)\* 1999 XK<sub>40</sub>

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.99470  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24099596 | $\omega$ | 350.97913 | +0.91715979 | -0.39703425 |
| <i>a</i> | 2.5573856  | $\Omega$ | 32.48170  | +0.36951104 | +0.81492090 |
| <i>e</i> | 0.1800318  | <i>i</i> | 3.67012   | +0.14926324 | +0.42221764 |
| <i>P</i> | 4.09       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 10 | 704 | 0.6+  | 0.5-  | 2003 10 28 | 704 | 0.1-  | 0.1+  | 2007 10 04 | 703 | 0.2- | 0.8+ |
| 1999 10 10 | 704 | 0.0   | 0.1-  | 2003 10 28 | 704 | 0.3+  | 0.0   | 2007 10 04 | 703 | 0.8- | 0.3+ |
| 1999 10 10 | 704 | 0.6+  | 0.0   | 2003 10 28 | 704 | 0.9+  | 0.7+  | 2007 10 04 | 703 | 0.3+ | 0.2+ |
| 1999 10 10 | 704 | 0.2-  | 0.4+  | 2003 10 28 | 704 | 0.1+  | 0.1+  | 2007 10 04 | 703 | 0.4- | 0.1+ |
| 1999 11 01 | 703 | 0.1-  | 0.4-  | 2003 10 28 | 608 | 0.7+  | 0.5+  | 2007 10 06 | 704 | 0.1+ | 0.5- |
| 1999 11 01 | 703 | 1.6-  | 0.4-  | 2003 10 28 | 608 | 0.7+  | 0.4+  | 2007 10 06 | 704 | 0.8- | 0.3- |
| 1999 11 01 | 703 | 0.5-  | 0.6+  | 2003 10 28 | 608 | 0.3+  | 0.5+  | 2007 10 06 | 704 | 0.4- | 0.2- |
| 1999 11 01 | 703 | 1.3-  | 1.0+  | 2003 11 01 | 704 | 0.7-  | 0.5+  | 2007 10 06 | 704 | 0.7- | 0.1+ |
| 1999 11 04 | 704 | 1.2-  | 0.0   | 2003 11 01 | 704 | 0.5-  | 0.5+  | 2007 10 06 | 704 | 0.6- | 0.1- |
| 1999 11 04 | 704 | 0.3-  | 1.4-  | 2003 11 01 | 704 | 0.8-  | 0.2-  | 2007 10 08 | 704 | 0.1+ | 0.3- |
| 1999 11 04 | 704 | 1.6-  | 0.2+  | 2003 11 01 | 704 | 0.1-  | 0.2+  | 2007 10 08 | 704 | 0.0  | 0.1+ |
| 1999 11 04 | 704 | 0.3-  | 0.8-  | 2003 11 01 | 704 | 0.4-  | 0.2+  | 2007 10 08 | 704 | 0.3- | 0.4+ |
| 1999 11 04 | 704 | 0.1+  | 0.4-  | 2003 11 01 | 704 | 0.1-  | 0.3-  | 2007 10 08 | 704 | 0.4- | 0.6+ |
| 1999 11 14 | 704 | 0.0   | 0.0   | 2003 11 01 | 704 | 0.5-  | 0.4-  | 2007 10 08 | 704 | 0.8- | 0.3- |
| 1999 11 14 | 704 | 0.2-  | 0.1-  | 2003 11 01 | 704 | 0.9+  | 0.7+  | 2007 10 08 | G96 | 0.3+ | 0.3- |
| 1999 11 14 | 704 | 0.2-  | 0.4+  | 2003 11 01 | 704 | 0.9-  | 0.2+  | 2007 10 08 | G96 | 0.2+ | 0.5- |
| 1999 11 14 | 704 | 0.5+  | 0.7+  | 2003 11 01 | 704 | 0.1+  | 0.1-  | 2007 10 08 | G96 | 0.1- | 0.4- |
| 1999 11 14 | 704 | 0.1+  | 0.3+  | 2003 11 02 | 704 | 0.9-  | 0.5-  | 2007 10 08 | G96 | 0.3+ | 0.3- |
| 1999 11 15 | 704 | 0.1+  | 0.3+  | 2003 11 02 | 704 | 0.5-  | 0.3+  | 2007 10 09 | 704 | 0.1- | 0.2+ |
| 1999 11 15 | 704 | 0.4+  | 0.2-  | 2003 11 02 | 704 | 0.4-  | 0.4+  | 2007 10 09 | 704 | 0.4+ | 0.0  |
| 1999 11 15 | 704 | 0.0   | 0.0   | 2003 11 02 | 704 | 0.3-  | 0.1-  | 2007 10 09 | 704 | 0.1- | 0.7+ |
| 1999 11 15 | 704 | 0.6+  | 0.4-  | 2003 11 02 | 704 | 0.8-  | 0.2+  | 2007 10 09 | 704 | 0.1- | 0.8+ |
| 1999 11 15 | 704 | 0.2+  | 0.3-  | 2003 11 16 | 291 | 0.1-  | 0.3-  | 2007 10 09 | 704 | 0.1+ | 0.4+ |
| 1999 12 07 | 691 | 0.2+  | 0.2-  | 2003 11 16 | 291 | 1.0+  | 0.2+  | 2007 10 09 | 704 | 0.0  | 0.3+ |
| 1999 12 07 | 691 | 0.2+  | 0.3-  | 2003 11 16 | 291 | 0.1-  | 0.3-  | 2007 10 09 | 704 | 0.2+ | 0.0  |
| 1999 12 07 | 691 | 0.1+  | 0.3-  | 2003 11 18 | 644 | 0.1-  | 0.1+  | 2007 10 09 | 704 | 0.3+ | 0.2+ |
| 1999 12 07 | 704 | 0.2+  | 0.1-  | 2003 11 18 | 644 | 0.4-  | 0.1+  | 2007 10 09 | 704 | 0.2+ | 0.3+ |
| 1999 12 07 | 704 | 1.2+  | 0.3+  | 2003 11 18 | 644 | 0.2+  | 0.4-  | 2007 10 09 | 704 | 0.5+ | 0.4- |
| 1999 12 07 | 704 | 1.4+  | 1.6-  | 2003 11 18 | 644 | 0.3+  | 0.3-  | 2007 10 11 | 704 | 0.5+ | 0.8+ |
| 1999 12 07 | 704 | 1.0+  | 0.9-  | 2003 11 18 | 644 | 0.1+  | 0.0   | 2007 10 11 | 704 | 0.1- | 0.1- |
| 1999 12 08 | 704 | 1.2+  | 0.9+  | 2003 11 18 | 644 | 0.1+  | 0.0   | 2007 10 11 | 704 | 0.2- | 0.1- |
| 1999 12 08 | 704 | 0.2-  | 0.6-  | 2003 11 21 | 704 | 0.1-  | 0.2+  | 2007 10 11 | 704 | 0.3- | 0.6- |
| 1999 12 08 | 704 | 0.6+  | 0.0   | 2003 11 21 | 704 | 0.3-  | 0.7+  | 2007 10 11 | 704 | 0.5+ | 0.7+ |
| 1999 12 08 | 704 | 0.6+  | 0.8-  | 2003 11 21 | 704 | 0.0   | 0.8+  | 2007 10 11 | 704 | 0.1+ | 0.2+ |
| 2001 02 20 | 645 | 0.1-  | 0.1+  | 2003 11 21 | 704 | 0.2-  | 0.2+  | 2007 10 11 | 704 | 0.1+ | 1.1+ |
| 2001 02 20 | 645 | 0.0   | 0.1+  | 2003 11 21 | 704 | 0.7-  | 0.2-  | 2007 10 11 | 704 | 0.1- | 0.2+ |
| 2001 03 20 | 691 | 0.7+  | 0.9+  | 2003 11 24 | 691 | 0.2-  | 0.0   | 2007 10 11 | 704 | 0.1+ | 0.1- |
| 2001 03 20 | 691 | 0.4+  | 0.3+  | 2003 11 24 | 691 | 0.1-  | 0.1-  | 2007 10 11 | 704 | 0.2+ | 0.5+ |
| 2001 03 20 | 691 | 0.8+  | 0.8+  | 2003 11 24 | 691 | 0.2-  | 0.2-  | 2007 10 11 | 704 | 0.4+ | 0.2+ |
| 2003 09 22 | 691 | 0.1-  | 0.3-  | 2003 11 26 | 699 | (2.4+ | 2.6+) | 2007 10 11 | 704 | 0.5+ | 0.6+ |
| 2003 09 22 | 691 | 0.0   | 0.0   | 2003 11 26 | 699 | 0.1-  | 0.0   | 2007 10 11 | 704 | 0.2+ | 0.3+ |
| 2003 09 22 | 691 | 0.1-  | 0.2-  | 2003 11 26 | 699 | 0.9+  | 0.2+  | 2007 10 11 | 704 | 0.2+ | 0.5+ |
| 2003 09 25 | 608 | (0.2+ | 1.6-) | 2003 11 26 | 699 | 0.3+  | 0.2+  | 2007 10 14 | 704 | 1.0- | 0.6+ |
| 2003 09 25 | 608 | 0.2+  | 1.4-  | 2007 09 08 | 699 | 0.0   | 0.2-  | 2007 10 14 | 704 | 0.8- | 0.5+ |
| 2003 09 25 | 608 | 0.1-  | 1.1-  | 2007 09 08 | 699 | 0.4-  | 0.1-  | 2007 10 14 | 704 | 0.8- | 0.7+ |
| 2003 09 27 | 691 | 0.1-  | 0.1+  | 2007 09 08 | 699 | 0.4-  | 0.3-  | 2007 10 14 | 704 | 0.9- | 0.6+ |
| 2003 09 27 | 691 | 0.1-  | 0.0   | 2007 09 08 | 699 | 0.2+  | 0.3-  | 2007 10 14 | 704 | 1.2- | 0.6+ |
| 2003 09 27 | 691 | 0.1-  | 0.0   | 2007 09 11 | 703 | 0.1-  | 0.1-  | 2007 10 17 | 699 | 0.1+ | 0.6- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 29 | 704 | 1.0+  | 1.1+  | 2007 09 11 | 703 | 0.4−  | 0.1+  | 2007 10 17 | 699 | 0.8−  | 0.7−  |
| 2003 09 29 | 704 | 0.6+  | 0.8+  | 2007 09 11 | 703 | 0.4+  | 0.2+  | 2007 10 17 | 699 | (2.0− | 0.3−) |
| 2003 09 29 | 704 | 0.0   | 0.7+  | 2007 09 11 | 703 | 0.7+  | 0.3+  | 2007 10 17 | 699 | 0.7−  | 0.1−  |
| 2003 09 29 | 704 | 0.1−  | 0.4+  | 2007 09 13 | 704 | 0.5−  | 0.5+  | 2007 10 18 | G96 | 0.5+  | 0.1−  |
| 2003 09 29 | 704 | 0.8+  | 0.1−  | 2007 09 13 | 704 | 0.2+  | 0.2−  | 2007 10 18 | G96 | 0.5+  | 0.2−  |
| 2003 10 16 | 691 | 0.0   | 0.1−  | 2007 09 13 | 704 | 0.4+  | 0.2−  | 2007 10 18 | G96 | 0.6+  | 0.6−  |
| 2003 10 16 | 691 | (1.7− | 0.2+) | 2007 09 13 | 704 | 0.3−  | 1.0+  | 2007 10 19 | 704 | 0.3+  | 0.3+  |
| 2003 10 16 | 691 | 0.1−  | 0.1−  | 2007 09 13 | 704 | 1.3+  | 0.7−  | 2007 10 19 | 704 | 0.7−  | 0.8+  |
| 2003 10 21 | 699 | 0.3−  | 0.1+  | 2007 09 13 | 699 | 0.6+  | 1.0−  | 2007 10 19 | 704 | 0.4−  | 0.9+  |
| 2003 10 21 | 699 | 0.3−  | 0.2+  | 2007 09 13 | 699 | 1.2−  | 0.7+  | 2007 10 19 | 704 | 0.8−  | 0.8+  |
| 2003 10 21 | 699 | 0.1−  | 0.1−  | 2007 09 13 | 699 | 0.2−  | 0.3−  | 2007 10 19 | 704 | 0.5−  | 1.0+  |
| 2003 10 21 | 699 | 0.5−  | 0.1−  | 2007 09 13 | 699 | 0.5−  | 0.1+  | 2007 11 05 | G96 | 0.8+  | 0.1−  |
| 2003 10 21 | 704 | 0.3+  | 0.9+  | 2007 09 13 | G96 | 0.3+  | 0.3−  | 2007 11 05 | G96 | 0.6+  | 0.1−  |
| 2003 10 21 | 704 | 0.1−  | 0.9+  | 2007 09 13 | G96 | 0.5−  | 0.4−  | 2007 11 05 | 704 | 0.8+  | 0.3−  |
| 2003 10 21 | 704 | 0.6+  | 0.2+  | 2007 09 13 | G96 | 0.0   | 0.2−  | 2007 11 05 | G96 | 0.4+  | 0.2−  |
| 2003 10 21 | 704 | 0.5−  | 0.0   | 2007 09 13 | G96 | 0.2−  | 0.3−  | 2007 11 05 | G96 | 0.3+  | 0.1−  |
| 2003 10 21 | 704 | 0.8+  | 0.4+  | 2007 09 14 | 699 | 0.2−  | 0.3−  | 2007 11 05 | 704 | 0.6+  | 0.3+  |
| 2003 10 23 | 704 | 0.2+  | 0.3+  | 2007 09 14 | 699 | 0.4−  | 0.3−  | 2007 11 05 | 704 | 0.3−  | 0.1−  |
| 2003 10 23 | 704 | 0.1+  | 0.5+  | 2007 09 14 | 699 | (1.8− | 0.2−) | 2007 11 05 | 704 | 0.4+  | 0.9+  |
| 2003 10 23 | 704 | 0.0   | 0.6+  | 2007 09 16 | 704 | 0.6−  | 0.2−  | 2007 11 05 | 704 | 0.4−  | 0.8+  |
| 2003 10 23 | 704 | 0.2+  | 0.3+  | 2007 09 16 | 704 | 0.6−  | 0.2−  | 2007 12 04 | G96 | 0.0   | 1.5−  |
| 2003 10 23 | 704 | 0.1+  | 0.3+  | 2007 09 16 | 704 | 0.7−  | 0.0   | 2007 12 04 | G96 | 0.0   | 0.2−  |
| 2003 10 23 | 608 | 0.2+  | 0.5−  | 2007 09 19 | 704 | 0.1−  | 0.2−  | 2007 12 04 | G96 | 0.7+  | 0.2−  |
| 2003 10 23 | 608 | 0.1−  | 0.7−  | 2007 09 19 | 704 | 0.2−  | 0.3+  | 2007 12 04 | G96 | 0.1−  | 0.2−  |
| 2003 10 23 | 608 | 0.1+  | 0.3−  | 2007 09 19 | 704 | 0.3−  | 0.2−  | 2007 12 05 | 704 | 0.3−  | 1.2−  |
| 2003 10 24 | 291 | 0.0   | 0.1−  | 2007 09 19 | 704 | 0.2−  | 0.4+  | 2007 12 05 | 704 | 0.2−  | 0.3+  |
| 2003 10 24 | 291 | 0.1+  | 0.1+  | 2007 09 19 | 704 | 0.2+  | 0.0   | 2007 12 05 | 704 | 0.4+  | 0.7+  |
| 2003 10 24 | 291 | 0.1−  | 0.0   | 2007 09 21 | 704 | 0.2+  | 0.1−  | 2007 12 05 | 704 | 0.2+  | 0.7+  |
| 2003 10 25 | 691 | 0.1+  | 0.2−  | 2007 09 21 | 704 | 0.2+  | 0.6+  | 2007 12 06 | G96 | 0.5+  | 0.0   |
| 2003 10 25 | 691 | 0.0   | 0.1−  | 2007 09 21 | 704 | 0.4+  | 0.8+  | 2007 12 06 | G96 | 0.3+  | 0.2−  |
| 2003 10 25 | 691 | 0.1−  | 0.0   | 2007 09 21 | 704 | 0.2+  | 0.4+  | 2007 12 06 | G96 | 0.6+  | 0.3−  |
| 2003 10 28 | 704 | 0.4−  | 0.3+  | 2007 09 21 | 704 | 0.7+  | 0.9+  | 2007 12 06 | G96 | 0.2+  | 0.3−  |

(171594)\* 1999 XZ<sub>40</sub>

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 347.15202  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.23958096 | <i>ω</i> | 150.01746 | +0.83116285 |      | −0.52521152 |   |
| <i>a</i> | 2.5674452  | <i>Ω</i> | 242.77618 | +0.46058256 |      | +0.83424599 |   |
| <i>e</i> | 0.1804729  | <i>i</i> | 11.84593  | +0.31149964 |      | +0.16788832 |   |
| <i>P</i> | 4.11       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 12 | 704 | 0.2+ | 0.7− | 2003 10 22 | 704 | 0.7−  | 1.3+  | 2007 10 08 | 703 | 0.8−  | 0.2−  |
| 1999 10 12 | 704 | 1.0+ | 0.8− | 2003 10 22 | 704 | 0.2−  | 0.1−  | 2007 10 08 | 703 | 0.4+  | 0.1+  |
| 1999 10 12 | 704 | 0.1+ | 1.1− | 2003 10 22 | 704 | 0.7−  | 0.0   | 2007 10 08 | 703 | 0.4−  | 0.2−  |
| 1999 10 12 | 704 | 0.4+ | 1.8− | 2003 10 29 | 699 | 0.6+  | 0.3+  | 2007 10 08 | 703 | 0.1−  | 0.3−  |
| 1999 10 12 | 704 | 0.5− | 0.8− | 2003 10 29 | 699 | 0.4+  | 0.4+  | 2007 10 08 | 703 | 0.1−  | 0.4+  |
| 1999 10 13 | 704 | 0.1− | 0.8− | 2003 10 29 | 699 | 0.8+  | 0.5+  | 2007 10 08 | 703 | 0.1−  | 0.8+  |
| 1999 10 13 | 704 | 1.0− | 1.0− | 2003 10 29 | 699 | (0.3+ | 2.4−) | 2007 10 08 | 703 | 0.3−  | 0.3+  |
| 1999 10 13 | 704 | 0.2− | 1.1− | 2003 11 02 | 704 | 0.1+  | 0.7+  | 2007 10 08 | 703 | 0.2+  | 0.2+  |
| 1999 10 13 | 704 | 0.8+ | 1.9− | 2003 11 02 | 704 | 0.6+  | 0.6+  | 2007 10 10 | 699 | 0.6−  | 1.2−  |
| 1999 10 13 | 704 | 0.4− | 1.8− | 2003 11 02 | 691 | 0.0   | 0.0   | 2007 10 10 | 699 | 0.2−  | 0.0   |
| 1999 11 03 | 704 | 1.0+ | 0.4+ | 2003 11 02 | 704 | 0.4+  | 0.5+  | 2007 10 10 | 699 | (1.6− | 0.5−) |
| 1999 11 03 | 704 | 0.4+ | 0.1− | 2003 11 02 | 704 | 0.6+  | 0.3+  | 2007 10 14 | 703 | 0.1+  | 0.2−  |
| 1999 11 03 | 704 | 0.1− | 0.6− | 2003 11 02 | 704 | 0.3+  | 0.8+  | 2007 10 14 | 703 | 0.6−  | 0.1+  |
| 1999 11 03 | 704 | 0.4+ | 0.2+ | 2003 11 02 | 691 | 0.2−  | 0.0   | 2007 10 14 | 703 | 0.3+  | 0.5−  |
| 1999 11 03 | 704 | 0.3+ | 0.7− | 2003 11 02 | 691 | 0.3−  | 0.1−  | 2007 10 14 | 703 | 0.4−  | 0.3−  |
| 1999 11 16 | 704 | 0.0  | 0.1+ | 2003 11 19 | 704 | 0.2−  | 1.0+  | 2007 10 21 | 704 | 0.2+  | 0.8+  |
| 1999 11 16 | 704 | 0.2− | 0.2− | 2003 11 19 | 704 | 0.0   | 0.5+  | 2007 10 21 | 704 | 0.1+  | 0.6+  |
| 1999 11 16 | 704 | 0.6+ | 0.1− | 2003 11 19 | 704 | 0.3+  | 0.8+  | 2007 10 21 | 704 | 0.2+  | 0.3+  |
| 1999 11 16 | 704 | 0.1+ | 0.3+ | 2003 11 19 | 704 | 0.1+  | 0.8+  | 2007 10 21 | 704 | 0.1−  | 0.4+  |
| 1999 11 16 | 704 | 0.2− | 0.2+ | 2003 11 19 | 704 | 0.1+  | 0.9+  | 2007 11 01 | G96 | 0.0   | 0.3−  |
| 1999 12 07 | 704 | 0.3+ | 0.3− | 2003 11 21 | 699 | 0.3−  | 0.1+  | 2007 11 01 | G96 | 0.5+  | 0.4−  |
| 1999 12 07 | 704 | 0.2− | 0.1+ | 2003 11 21 | 699 | 0.7−  | 0.1−  | 2007 11 01 | G96 | 0.4+  | 0.3−  |
| 1999 12 07 | 704 | 0.3+ | 0.2− | 2003 11 21 | 699 | 0.7−  | 0.2+  | 2007 11 03 | 704 | 0.1+  | 0.7+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 07 | 704 | 0.3+ | 0.1+ | 2003 11 21 | 699 | 0.5−  | 0.5+  | 2007 11 03 | 699 | 1.3+ | 0.3+ |
| 1999 12 07 | 704 | 0.8+ | 0.1− | 2003 11 22 | 695 | 0.2−  | 0.1+  | 2007 11 03 | 704 | 0.1+ | 0.4+ |
| 1999 12 08 | 704 | 0.0  | 0.4− | 2003 11 22 | 695 | 0.3−  | 0.1+  | 2007 11 03 | 699 | 0.6+ | 0.8+ |
| 1999 12 08 | 704 | 0.1+ | 0.7− | 2003 11 27 | 703 | 1.1−  | 0.2−  | 2007 11 03 | 704 | 0.2+ | 0.0  |
| 1999 12 08 | 704 | 0.1+ | 0.1+ | 2003 11 27 | 703 | 0.4−  | 0.1−  | 2007 11 03 | 704 | 0.2− | 0.1− |
| 1999 12 08 | 704 | 0.0  | 0.2+ | 2003 11 27 | 703 | 0.2−  | 0.7−  | 2007 11 03 | 699 | 0.6+ | 0.3+ |
| 1999 12 08 | 704 | 0.4− | 0.2+ | 2003 11 27 | 703 | 1.1−  | 0.2+  | 2007 11 03 | 699 | 0.8+ | 0.1+ |
| 1999 12 12 | 703 | 0.2+ | 0.5− | 2003 12 17 | 699 | 0.9−  | 0.3−  | 2007 11 08 | 703 | 1.1+ | 1.0+ |
| 1999 12 12 | 703 | 1.0− | 0.1+ | 2003 12 17 | 699 | 0.3−  | 0.4−  | 2007 11 08 | 703 | 0.2− | 0.2+ |
| 1999 12 12 | 703 | 0.2− | 1.1+ | 2003 12 17 | 699 | 0.1+  | 0.7+  | 2007 11 08 | 703 | 0.6+ | 0.3+ |
| 1999 12 12 | 703 | 0.1− | 0.5− | 2003 12 17 | 699 | 0.4+  | 0.2−  | 2007 11 08 | 703 | 0.3− | 0.1− |
| 2003 09 17 | 644 | 0.4− | 0.0  | 2003 12 20 | 704 | 0.0   | 0.8+  | 2007 11 09 | 704 | 0.8− | 0.5− |
| 2003 09 17 | 644 | 0.1+ | 0.1+ | 2003 12 20 | 704 | 0.1+  | 1.4+  | 2007 11 09 | 704 | 0.5− | 0.2− |
| 2003 09 17 | 644 | 0.0  | 0.1+ | 2003 12 20 | 704 | 0.2+  | 0.2+  | 2007 11 09 | 704 | 0.3− | 0.2+ |
| 2003 09 19 | 644 | 0.0  | 0.1+ | 2003 12 22 | 704 | 0.9+  | 0.6+  | 2007 11 09 | 704 | 0.3+ | 0.6+ |
| 2003 09 19 | 644 | 0.1+ | 0.2+ | 2003 12 22 | 704 | 0.6+  | 1.0+  | 2007 11 09 | 704 | 0.2− | 0.5+ |
| 2003 09 19 | 644 | 0.2− | 0.1+ | 2003 12 22 | 704 | 0.4+  | 0.5+  | 2007 11 16 | 703 | 0.0  | 0.6− |
| 2003 09 29 | 699 | 1.2+ | 0.3− | 2003 12 27 | 704 | 0.6−  | 0.5+  | 2007 11 16 | 703 | 0.3− | 0.2− |
| 2003 09 29 | 699 | 0.8− | 0.1+ | 2003 12 27 | 704 | 0.1+  | 0.4+  | 2007 11 16 | 703 | 0.1+ | 0.7− |
| 2003 09 29 | 699 | 0.0  | 0.1+ | 2003 12 27 | 704 | 0.3+  | 0.2+  | 2007 11 16 | 703 | 1.1+ | 0.9+ |
| 2003 09 29 | 699 | 0.6− | 0.5− | 2003 12 27 | 704 | 1.1−  | 0.7+  | 2007 12 02 | 704 | 0.6− | 0.5− |
| 2003 10 05 | 704 | 0.5− | 0.8− | 2003 12 27 | 704 | 0.2+  | 0.8+  | 2007 12 02 | 704 | 0.1− | 0.5− |
| 2003 10 05 | 704 | 1.3− | 0.4− | 2004 01 21 | 704 | 0.4+  | 0.3−  | 2007 12 02 | 704 | 0.5− | 0.7− |
| 2003 10 05 | 704 | 0.8− | 0.0  | 2004 01 21 | 704 | 1.2+  | 1.1+  | 2007 12 02 | 704 | 0.2− | 0.1− |
| 2003 10 05 | 704 | 0.9− | 0.4+ | 2004 01 21 | 704 | (0.9+ | 2.2+) | 2007 12 16 | 704 | 0.0  | 0.9− |
| 2003 10 05 | 704 | 0.7− | 0.4− | 2006 06 04 | G96 | 0.2+  | 0.3+  | 2007 12 16 | 704 | 0.4+ | 0.3− |
| 2003 10 15 | 644 | 0.2+ | 0.1− | 2006 06 04 | G96 | 0.1−  | 0.0   | 2007 12 16 | 704 | 0.7+ | 0.4− |
| 2003 10 15 | 644 | 0.2+ | 0.1+ | 2006 06 04 | G96 | 0.3+  | 0.1−  | 2007 12 16 | 704 | 0.3+ | 0.6− |
| 2003 10 15 | 644 | 0.2+ | 0.1+ | 2006 06 04 | G96 | 0.4−  | 0.3−  | 2007 12 16 | 704 | 0.0  | 0.4− |
| 2003 10 17 | 699 | 0.2− | 0.4− | 2007 09 13 | 703 | 0.1−  | 0.1+  | 2007 12 16 | 704 | 1.1+ | 1.2− |
| 2003 10 17 | 699 | 0.4− | 0.3+ | 2007 09 13 | 703 | 0.0   | 0.4−  | 2007 12 16 | 704 | 0.3+ | 0.2+ |
| 2003 10 17 | 699 | 0.1− | 0.3− | 2007 09 13 | 703 | 0.3−  | 0.4−  | 2007 12 16 | 704 | 0.3+ | 0.3− |
| 2003 10 17 | 699 | 0.3− | 0.1− | 2007 09 13 | 703 | 0.3+  | 0.3−  | 2007 12 16 | 704 | 0.2+ | 0.4+ |

(171595)\* 1999 XM<sub>44</sub>

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 338.45835  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24614798 | $\omega$ | 169.68593 | +0.24755680 | -0.96795659 |
| $a$ | 2.5215749  | $\Omega$ | 265.97166 | +0.88588833 | +0.24375041 |
| $e$ | 0.1282886  | $i$      | 2.42107   | +0.39232321 | +0.06038029 |
| $P$ | 4.00       | $H$      | 15.7      | $G$ 0.15    | $U$ 2       |

2007 DEC. 24

M.P.O. 129097

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 05 | 704 | 0.3+  | 0.1-  | 2003 11 21 | 704 | 0.1-  | 0.1+  | 2007 09 14 | 704 | 1.3+  | 0.2+  |
| 1999 11 05 | 704 | 0.3+  | 0.8+  | 2003 11 21 | 704 | 0.2-  | 1.3+  | 2007 09 14 | 704 | 0.1-  | 1.0+  |
| 1999 11 05 | 704 | 1.2-  | 0.2+  | 2003 11 21 | 704 | 0.1-  | 0.4+  | 2007 09 19 | 704 | 0.6-  | 0.3+  |
| 1999 11 09 | 703 | 1.7-  | 0.4+  | 2003 11 21 | 704 | 0.4+  | 0.3+  | 2007 09 19 | 704 | 1.4-  | 0.5-  |
| 1999 11 09 | 703 | 1.5-  | 1.3+  | 2003 11 24 | 704 | 0.8-  | 0.0   | 2007 09 19 | 704 | 0.7-  | 0.3+  |
| 1999 11 09 | 703 | 0.9-  | 0.6+  | 2003 11 24 | 699 | 0.3-  | 0.5+  | 2007 10 11 | 691 | 0.2-  | 0.1-  |
| 1999 11 09 | 703 | 0.9-  | 0.2+  | 2003 11 24 | 704 | (1.8- | 0.5+) | 2007 10 11 | 691 | 0.2-  | 0.1-  |
| 1999 11 14 | 704 | 0.1+  | 0.5-  | 2003 11 24 | 704 | 0.2+  | 0.0   | 2007 10 11 | 691 | 0.3-  | 0.0   |
| 1999 11 14 | 704 | 0.3+  | 0.7-  | 2003 11 24 | 699 | 0.0   | 0.5-  | 2007 10 19 | 699 | 0.8+  | 0.2-  |
| 1999 11 14 | 704 | 0.1-  | 0.1-  | 2003 11 24 | 704 | 0.2-  | 0.0   | 2007 10 19 | 699 | 0.9-  | 0.2+  |
| 1999 11 14 | 704 | 0.3+  | 1.0-  | 2003 11 24 | 703 | 0.0   | 0.2+  | 2007 10 19 | 699 | 0.8+  | 1.0+  |
| 1999 11 14 | 704 | 0.2-  | 0.6-  | 2003 11 24 | 699 | 0.8-  | 0.3-  | 2007 10 19 | 699 | 0.3+  | 0.3+  |
| 1999 11 16 | 704 | 1.7+  | 1.0-  | 2003 11 24 | 703 | 0.6-  | 0.6+  | 2007 10 23 | 704 | 0.5+  | 0.1-  |
| 1999 11 16 | 704 | 0.1+  | 1.2-  | 2003 11 24 | 699 | 0.6+  | 0.2+  | 2007 10 23 | 704 | (2.1+ | 0.7-) |
| 1999 11 16 | 704 | 0.7+  | 1.3-  | 2003 11 24 | 703 | 0.4-  | 0.2-  | 2007 10 23 | 704 | 0.2-  | 0.0   |
| 1999 11 16 | 704 | 0.8-  | 1.3-  | 2003 11 24 | 703 | (0.3- | 1.7+) | 2007 10 23 | 704 | 0.1-  | 0.1+  |
| 1999 11 16 | 704 | 0.3+  | 0.1-  | 2003 11 26 | 704 | 0.2+  | 0.9+  | 2007 10 31 | 691 | 0.0   | 0.0   |
| 1999 12 05 | 703 | 0.5-  | 0.5-  | 2003 11 26 | 704 | 0.2+  | 1.0+  | 2007 10 31 | 691 | 0.3-  | 0.1-  |
| 1999 12 05 | 703 | 0.4-  | 0.3+  | 2003 11 26 | 704 | 0.0   | 0.7+  | 2007 10 31 | 691 | 0.2-  | 0.1-  |
| 1999 12 05 | 703 | 1.2-  | 0.5-  | 2003 12 01 | 704 | 0.0   | 0.5+  | 2007 11 06 | 704 | (5.7- | 0.6+) |
| 1999 12 05 | 703 | 0.5+  | 0.0   | 2003 12 01 | 704 | 0.3-  | 0.6+  | 2007 11 06 | 704 | 1.4-  | 0.6-  |
| 1999 12 07 | 704 | 0.2+  | 0.1-  | 2003 12 01 | 704 | 0.0   | 0.1-  | 2007 11 06 | 704 | 0.4+  | 0.2-  |
| 1999 12 07 | 704 | 0.0   | 0.5-  | 2003 12 01 | 704 | 0.4+  | 0.4+  | 2007 11 06 | 704 | 0.0   | 0.0   |
| 1999 12 07 | 704 | 0.5+  | 1.1+  | 2003 12 10 | 644 | 0.0   | 0.1+  | 2007 11 11 | A24 | 0.6+  | 0.4+  |
| 1999 12 07 | 704 | 0.8+  | 0.3-  | 2003 12 10 | 644 | 0.3+  | 0.1+  | 2007 11 11 | A24 | 0.2+  | 0.5+  |
| 1999 12 07 | 704 | 0.6+  | 0.1-  | 2003 12 10 | 644 | 0.3+  | 0.0   | 2007 11 12 | A24 | 0.3+  | 0.5+  |
| 1999 12 08 | 704 | 0.6+  | 0.1+  | 2003 12 11 | 703 | 0.3-  | 0.6-  | 2007 11 12 | A24 | 0.3+  | 0.2+  |
| 1999 12 08 | 704 | 0.6-  | 0.0   | 2003 12 11 | 703 | 0.6-  | 1.0+  | 2007 11 15 | 704 | 0.5+  | 0.1-  |
| 1999 12 08 | 704 | 0.3+  | 0.0   | 2003 12 11 | 703 | 0.5-  | 0.2+  | 2007 11 15 | 704 | 0.1+  | 0.4+  |
| 1999 12 08 | 704 | 0.6+  | 0.4-  | 2003 12 11 | 703 | 0.1-  | 1.0+  | 2007 11 15 | 704 | 0.5+  | 0.2+  |
| 1999 12 08 | 704 | 0.3+  | 0.2+  | 2003 12 16 | 291 | 0.1-  | 0.2-  | 2007 11 15 | 704 | 0.1+  | 0.2+  |
| 1999 12 12 | 703 | 0.1+  | 0.1+  | 2003 12 16 | 291 | 0.2+  | 0.1-  | 2007 11 15 | 704 | 0.0   | 0.0   |
| 1999 12 12 | 703 | 1.5-  | 0.3-  | 2003 12 16 | 291 | 0.7-  | 0.2-  | 2007 11 19 | 691 | 0.3-  | 0.1+  |
| 1999 12 12 | 703 | 0.6+  | 0.4-  | 2003 12 17 | 703 | 0.2-  | 1.0-  | 2007 11 19 | 691 | 0.3-  | 0.0   |
| 1999 12 12 | 703 | 0.5+  | 0.7-  | 2003 12 17 | 703 | 0.6-  | 0.1+  | 2007 11 19 | 691 | 0.2-  | 0.2+  |
| 2003 09 26 | 704 | 0.8-  | 0.6+  | 2003 12 17 | 703 | 1.5-  | 0.6+  | 2007 11 20 | 704 | 0.1+  | 0.2+  |
| 2003 09 26 | 704 | 0.1-  | 0.2-  | 2003 12 17 | 703 | 0.6-  | 0.1-  | 2007 11 20 | 704 | 1.0+  | 0.2-  |
| 2003 09 26 | 704 | 0.4+  | 0.3+  | 2003 12 19 | 704 | 0.1-  | 0.1+  | 2007 11 20 | 704 | 0.1+  | 0.1+  |
| 2003 09 26 | 704 | 0.6+  | 0.1-  | 2003 12 19 | 704 | 0.6-  | 0.2+  | 2007 11 20 | 704 | 0.5+  | 0.1+  |
| 2003 10 18 | 699 | 0.4+  | 0.4+  | 2003 12 19 | 704 | 0.6-  | 0.2-  | 2007 11 20 | 704 | 0.6+  | 0.1+  |
| 2003 10 18 | 699 | 0.5-  | 0.7+  | 2003 12 19 | 704 | 0.1+  | 0.6-  | 2007 12 05 | 691 | 0.1+  | 0.1-  |
| 2003 10 18 | 699 | 0.7+  | 0.2+  | 2003 12 19 | 704 | 0.4-  | 0.1-  | 2007 12 05 | 691 | 0.1+  | 0.1-  |
| 2003 10 18 | 699 | 0.2-  | 0.7-  | 2003 12 19 | 608 | 0.8+  | 0.1+  | 2007 12 05 | 691 | 0.0   | 0.2-  |
| 2003 10 18 | 691 | 0.3+  | 0.2-  | 2003 12 19 | 608 | 0.1-  | 0.0   | 2007 12 10 | 704 | 1.1+  | 0.4+  |
| 2003 10 18 | 691 | 0.2+  | 0.2-  | 2003 12 19 | 608 | 0.2+  | 0.6-  | 2007 12 10 | 704 | 0.0   | 0.3-  |
| 2003 10 18 | 691 | 0.2+  | 0.0   | 2003 12 22 | 704 | 1.0+  | 0.4+  | 2007 12 10 | 704 | 0.6-  | 0.1-  |
| 2003 10 24 | 704 | (0.3+ | 1.7+) | 2003 12 22 | 704 | 0.2+  | 0.1+  | 2007 12 14 | 704 | 0.2-  | 0.1-  |
| 2003 10 24 | 704 | 0.6+  | 1.3+  | 2003 12 22 | 704 | 0.4+  | 0.3+  | 2007 12 14 | 704 | 0.1-  | 0.4-  |
| 2003 10 24 | 704 | (0.2+ | 1.6+) | 2003 12 22 | 704 | 0.0   | 0.3-  | 2007 12 14 | 704 | 0.4-  | 0.3+  |
| 2003 10 24 | 704 | 0.5+  | 1.0+  | 2004 01 13 | 699 | 0.8+  | 0.7+  | 2007 12 14 | 704 | 0.1-  | 0.9+  |
| 2003 10 24 | 704 | (0.3+ | 1.6+) | 2004 01 13 | 699 | 0.8-  | 0.1-  | 2007 12 14 | 704 | 0.1-  | 0.1-  |
| 2003 10 29 | 704 | 0.2+  | 0.1+  | 2004 01 13 | 699 | 0.2-  | 0.8+  | 2007 12 15 | 691 | 0.2+  | 0.2-  |
| 2003 10 29 | 704 | 0.1+  | 0.4+  | 2004 01 13 | 699 | 1.2+  | 0.4-  | 2007 12 15 | 691 | 0.1+  | 0.1-  |
| 2003 10 29 | 699 | 0.2-  | 0.6+  | 2004 01 21 | 704 | 0.3+  | 0.1+  | 2007 12 15 | 691 | 0.0   | 0.1-  |
| 2003 10 29 | 704 | 0.3+  | 0.2+  | 2004 01 21 | 704 | 0.2-  | 1.3+  |            |     |       |       |
| 2003 10 29 | 704 | 0.0   | 0.0   | 2004 01 21 | 704 | 0.6-  | 0.6+  |            |     |       |       |

(171596)\* 1999 XN<sub>47</sub>

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.25740833 | $\omega$ | 348.29327 | +0.80954850 | -0.58639422 |
| <i>a</i> | 2.4474903  | $\Omega$ | 47.64452  | +0.54160172 | +0.72776023 |
| <i>e</i> | 0.1893172  | <i>i</i> | 2.15623   | +0.22649239 | +0.35567805 |
| <i>P</i> | 3.83       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 02 26 | 691 | 0.1+ | 0.6+ | 1999 12 07 | 704 | 0.0   | 0.4+  | 2005 04 05 | G96 | 0.3+ | 0.7- |
| 1993 02 26 | 691 | 0.4+ | 0.1+ | 1999 12 07 | 704 | 1.1-  | 0.5-  | 2005 04 05 | G96 | 0.2+ | 0.2- |
| 1993 02 26 | 691 | 0.3- | 0.1- | 1999 12 07 | 704 | 0.6-  | 0.9-  | 2005 04 05 | G96 | 0.4- | 0.4- |
| 1995 09 22 | 691 | 0.9- | 1.1+ | 1999 12 07 | 704 | 0.3-  | 0.4-  | 2005 04 06 | G96 | 0.1- | 0.5- |
| 1995 09 22 | 691 | 0.1+ | 0.1- | 1999 12 08 | 704 | 0.4-  | 0.2+  | 2005 04 06 | G96 | 0.1+ | 0.1- |
| 1995 09 22 | 691 | 0.1- | 0.1- | 1999 12 08 | 704 | 0.4+  | 0.3+  | 2005 04 06 | G96 | 0.5- | 0.5- |
| 1999 11 09 | 704 | 0.1- | 0.5+ | 1999 12 08 | 704 | 0.4+  | 0.5-  | 2005 04 06 | G96 | 0.5+ | 0.2+ |
| 1999 11 09 | 704 | 0.6+ | 0.5- | 1999 12 08 | 704 | 0.3-  | 0.1-  | 2007 10 15 | G96 | 0.6- | 0.8- |
| 1999 11 09 | 704 | 0.4+ | 0.1- | 1999 12 13 | 703 | 0.3-  | 0.4+  | 2007 10 15 | G96 | 0.8- | 0.4- |
| 1999 11 09 | 704 | 1.2+ | 0.1+ | 1999 12 13 | 703 | 0.4+  | 0.4+  | 2007 10 15 | G96 | 0.2- | 0.2+ |
| 1999 11 09 | 704 | 0.3+ | 0.0  | 1999 12 13 | 703 | 0.5-  | 0.5+  | 2007 10 15 | G96 | 0.6- | 0.2+ |
| 1999 11 12 | 704 | 0.5+ | 0.2+ | 1999 12 13 | 703 | 0.0   | 0.1-  | 2007 11 04 | G96 | 0.2- | 0.3- |
| 1999 11 12 | 704 | 0.5+ | 0.3- | 2003 12 18 | 704 | 0.1+  | 0.0   | 2007 11 04 | G96 | 0.1- | 0.1+ |
| 1999 11 12 | 704 | 0.4+ | 0.2- | 2003 12 18 | 704 | 0.3+  | 0.6+  | 2007 11 04 | G96 | 0.0  | 0.1- |
| 1999 11 16 | 704 | 0.5- | 1.8- | 2003 12 18 | 704 | 0.4+  | 0.5+  | 2007 11 04 | G96 | 0.5- | 0.2- |
| 1999 11 16 | 704 | 0.6+ | 0.2- | 2003 12 18 | 704 | 0.8-  | 0.6+  | 2007 11 12 | G96 | 0.1+ | 0.3- |
| 1999 11 16 | 704 | 1.8+ | 1.3- | 2003 12 22 | 704 | 0.8+  | 0.1+  | 2007 11 12 | G96 | 0.1- | 0.4+ |
| 1999 12 03 | 691 | 0.1+ | 0.3- | 2003 12 22 | 704 | (2.0+ | 0.3-) | 2007 11 12 | G96 | 0.2- | 0.1+ |
| 1999 12 03 | 691 | 0.3+ | 0.4- | 2003 12 22 | 704 | 0.9+  | 0.2+  | 2007 11 12 | G96 | 0.2- | 0.1+ |
| 1999 12 03 | 691 | 0.1+ | 0.7- | 2003 12 22 | 704 | 0.1-  | 1.4+  | 2007 12 14 | G96 | 0.2+ | 0.4- |
| 1999 12 05 | 703 | 0.8- | 0.2+ | 2003 12 27 | 704 | 0.9-  | 0.5+  | 2007 12 14 | G96 | 0.1+ | 0.4- |
| 1999 12 05 | 703 | 0.4+ | 0.3+ | 2003 12 27 | 704 | 0.3-  | 0.8+  | 2007 12 14 | G96 | 0.1- | 0.6+ |
| 1999 12 05 | 703 | 0.7- | 1.2+ | 2003 12 27 | 704 | 0.1-  | 0.3+  | 2007 12 14 | G96 | 0.5- | 0.2- |
| 1999 12 05 | 703 | 0.1+ | 1.0+ | 2005 04 05 | G96 | 0.1+  | 0.2-  |            |     |      |      |

(171597)\* 1999 XV<sub>53</sub>

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.23350472 | $\omega$ | 239.21554 | -0.28665509 | -0.95651329 |
| <i>a</i> | 2.6117942  | $\Omega$ | 227.54380 | +0.90207775 | -0.25051837 |
| <i>e</i> | 0.1964722  | <i>i</i> | 4.19383   | +0.32262144 | -0.14940840 |
| <i>P</i> | 4.22       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 09 | 704 | 0.1+ | 0.0  | 1999 12 31 | 691 | 0.0  | 0.1+ | 2003 10 29 | 704 | (1.1- | 1.9+) |
| 1999 11 09 | 704 | 0.6+ | 0.1- | 2003 09 02 | 621 | 0.0  | 0.1- | 2003 10 29 | 704 | 0.3+  | 0.9+  |
| 1999 11 09 | 704 | 0.3+ | 0.1- | 2003 09 02 | 621 | 0.1- | 0.1- | 2003 10 29 | 704 | 0.5+  | 0.5+  |
| 1999 11 09 | 704 | 1.1+ | 0.4- | 2003 09 02 | 621 | 0.0  | 0.1- | 2003 11 16 | 291 | 0.1-  | 0.7-  |
| 1999 11 09 | 704 | 0.4- | 0.9- | 2003 09 04 | 621 | 0.0  | 0.4+ | 2003 11 16 | 291 | 0.2-  | 0.9-  |
| 1999 11 12 | 704 | 0.6+ | 0.5- | 2003 09 04 | 621 | 0.5- | 0.4- | 2003 11 16 | 291 | 0.1+  | 0.8-  |
| 1999 11 12 | 704 | 0.1+ | 0.5- | 2003 09 04 | 621 | 0.3+ | 0.1+ | 2003 11 21 | 704 | (0.4- | 1.6+) |
| 1999 11 12 | 704 | 0.8+ | 0.3- | 2003 09 21 | 621 | 0.1+ | 0.8- | 2003 11 21 | 704 | (2.1- | 1.4+) |
| 1999 11 12 | 704 | 0.6+ | 0.3- | 2003 09 21 | 621 | 0.4- | 0.1- | 2003 11 21 | 704 | 0.2+  | 0.7+  |
| 1999 11 12 | 704 | 0.2+ | 1.0- | 2003 09 21 | 621 | 0.2- | 0.2- | 2003 11 21 | 704 | 0.9-  | 1.1+  |
| 1999 11 15 | 049 | 0.8+ | 0.1+ | 2003 09 21 | 621 | 0.2- | 0.5- | 2003 11 24 | 691 | 0.5-  | 0.3+  |
| 1999 11 15 | 049 | 0.3+ | 0.7+ | 2003 09 22 | 691 | 0.1- | 0.1+ | 2003 11 24 | 691 | 0.2-  | 0.2+  |
| 1999 11 15 | 049 | 0.6+ | 0.0  | 2003 09 22 | 691 | 0.2- | 0.0  | 2003 11 24 | 691 | 0.3-  | 0.3+  |
| 1999 11 17 | 704 | 0.2- | 0.4- | 2003 09 22 | 691 | 0.1- | 0.1+ | 2005 03 17 | G96 | 0.4-  | 0.3+  |
| 1999 11 17 | 704 | 1.0- | 1.4- | 2003 10 16 | 691 | 0.0  | 0.1+ | 2005 03 17 | G96 | 0.3-  | 0.3+  |
| 1999 11 17 | 704 | 0.6+ | 0.2- | 2003 10 16 | 691 | 0.0  | 0.3+ | 2005 03 17 | G96 | 0.3-  | 0.4+  |
| 1999 11 17 | 704 | 0.8- | 0.2- | 2003 10 16 | 691 | 0.0  | 0.0  | 2005 03 17 | G96 | 0.3-  | 0.4+  |
| 1999 11 17 | 704 | 1.6+ | 1.3- | 2003 10 21 | 699 | 0.5+ | 0.5+ | 2005 04 04 | 691 | 0.4+  | 0.2+  |
| 1999 12 04 | 703 | 0.7+ | 0.1+ | 2003 10 21 | 699 | 1.2- | 0.3- | 2005 04 04 | 691 | 0.1+  | 0.8+  |
| 1999 12 04 | 703 | 1.0- | 0.3+ | 2003 10 21 | 699 | 0.7- | 0.9+ | 2005 04 04 | 691 | 0.4+  | 0.5+  |
| 1999 12 04 | 703 | 0.0  | 0.9+ | 2003 10 21 | 699 | 0.4- | 0.0  | 2005 04 14 | 703 | (2.2- | 1.7+) |
| 1999 12 04 | 703 | 0.8+ | 0.3- | 2003 10 21 | 704 | 0.2- | 0.3+ | 2005 04 14 | 703 | 0.4+  | 0.3-  |
| 1999 12 07 | 704 | 0.5- | 0.5+ | 2003 10 21 | 704 | 0.6+ | 0.8+ | 2005 04 14 | 703 | (1.6- | 1.7+) |
| 1999 12 07 | 704 | 0.5+ | 0.8+ | 2003 10 21 | 704 | 0.1- | 1.0- | 2005 04 14 | 703 | 0.3-  | 0.4+  |
| 1999 12 07 | 704 | 0.4+ | 0.7- | 2003 10 24 | 704 | 0.4- | 0.4+ | 2007 10 12 | 704 | 0.6+  | 1.4+  |
| 1999 12 07 | 704 | 0.7- | 0.2- | 2003 10 24 | 704 | 0.1- | 0.3+ | 2007 10 12 | 704 | (2.0- | 1.8-) |
| 1999 12 07 | 704 | 0.5+ | 0.2+ | 2003 10 24 | 704 | 0.1- | 0.4+ | 2007 10 12 | 704 | (0.3+ | 2.3+) |
| 1999 12 08 | 704 | 0.5- | 0.2- | 2003 10 24 | 704 | 0.1- | 0.6+ | 2007 10 12 | 704 | (1.9- | 1.1+) |
| 1999 12 08 | 704 | 0.1+ | 0.0  | 2003 10 25 | 704 | 0.4- | 1.2+ | 2007 10 15 | 704 | (1.8- | 0.8+) |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 12 08 | 704 | 0.9− | 0.1− | 2003 10 25 | 704 | 0.1− | 1.4+ | 2007 10 15 | 704 | (2.5− | 0.2−) |
| 1999 12 08 | 704 | 0.0  | 0.2+ | 2003 10 25 | 704 | 0.2+ | 1.2+ | 2007 10 15 | 704 | (2.1− | 0.5−) |
| 1999 12 08 | 704 | 0.1+ | 0.6+ | 2003 10 25 | 704 | 0.6− | 1.3+ | 2007 11 11 | G96 | 0.1−  | 0.0   |
| 1999 12 12 | 691 | 0.1− | 0.0  | 2003 10 25 | 704 | 0.3− | 0.9+ | 2007 11 11 | G96 | 0.2−  | 0.3−  |
| 1999 12 12 | 691 | 0.0  | 0.4− | 2003 10 25 | 291 | 0.3+ | 0.1− | 2007 11 11 | G96 | 0.1−  | 0.1+  |
| 1999 12 12 | 691 | 0.0  | 0.1− | 2003 10 25 | 291 | 0.2+ | 0.0  | 2007 11 11 | G96 | 0.2−  | 0.1+  |
| 1999 12 17 | 691 | 0.3− | 0.1+ | 2003 10 25 | 291 | 0.4+ | 0.0  | 2007 12 04 | G96 | 0.5−  | 0.3−  |
| 1999 12 17 | 691 | 0.5− | 0.1+ | 2003 10 26 | 291 | 0.1+ | 0.4+ | 2007 12 04 | G96 | 0.2+  | 0.1−  |
| 1999 12 17 | 691 | 0.6− | 0.1+ | 2003 10 26 | 291 | 0.2+ | 0.4+ | 2007 12 04 | G96 | 0.2−  | 0.2−  |
| 1999 12 31 | 691 | 0.1+ | 0.1+ | 2003 10 26 | 291 | 0.3+ | 0.3+ | 2007 12 04 | G96 | 0.5−  | 0.0   |
| 1999 12 31 | 691 | 0.0  | 0.1+ | 2003 10 29 | 704 | 1.4+ | 0.1+ |            |     |       |       |

**(171598)\* 1999 XN<sub>57</sub> = 2001 EG<sub>22</sub>**

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 14799)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 75.96106   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.24357237 | $\omega$ | 115.89247 | +0.79185472  | +0.61024447  |
| $a$ | 2.5393196  | $\Omega$ | 206.52044 | −0.57767740  | +0.73579639  |
| $e$ | 0.1077870  | $i$      | 3.05901   | −0.19812853  | +0.29360749  |
| $P$ | 4.05       | $H$      | 15.7      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 07 | 704 | 0.8+  | 0.1+  | 2003 11 24 | 699 | 0.5−  | 0.0   | 2007 10 10 | G96 | 0.2+  | 0.2−  |
| 1999 12 07 | 704 | 0.6+  | 0.3−  | 2003 11 24 | 699 | 0.1+  | 0.0   | 2007 10 10 | G96 | 0.2+  | 0.3−  |
| 1999 12 07 | 704 | 1.3−  | 0.1+  | 2003 12 21 | 691 | 0.3−  | 0.0   | 2007 10 10 | D29 | 0.4+  | 0.3−  |
| 1999 12 07 | 704 | 0.9+  | 0.1+  | 2003 12 21 | 691 | 0.1−  | 0.1−  | 2007 10 10 | D29 | 0.1−  | 0.1−  |
| 1999 12 07 | 704 | 0.1+  | 0.2+  | 2003 12 21 | 691 | 0.1−  | 0.0   | 2007 10 10 | D29 | 0.1+  | 0.1−  |
| 1999 12 08 | 704 | 0.2+  | 0.5−  | 2003 12 21 | 704 | 1.2−  | 0.3−  | 2007 10 10 | D29 | 0.3−  | 0.4−  |
| 1999 12 08 | 704 | 0.4+  | 0.0   | 2003 12 21 | 704 | 0.2−  | 0.6−  | 2007 10 15 | 703 | (2.0+ | 1.1+) |
| 1999 12 08 | 704 | 0.1−  | 1.4+  | 2003 12 21 | 704 | 0.2+  | 1.2−  | 2007 10 15 | 703 | (0.5− | 1.6+) |
| 2000 01 04 | 691 | 0.0   | 0.4−  | 2005 02 02 | 691 | 0.1+  | 0.3+  | 2007 10 15 | 703 | (1.6+ | 0.9+) |
| 2000 01 04 | 691 | 0.2+  | 0.4−  | 2005 02 02 | 691 | 0.1+  | 0.1+  | 2007 10 15 | 703 | (0.4+ | 1.5+) |
| 2000 01 04 | 691 | 0.1+  | 0.5−  | 2005 02 02 | 691 | 0.1+  | 0.0   | 2007 10 20 | 703 | 0.8+  | 0.2−  |
| 2000 12 23 | 645 | 0.1−  | 0.2−  | 2005 02 09 | 704 | 0.1−  | 1.2+  | 2007 10 20 | 703 | 0.5−  | 0.7+  |
| 2000 12 23 | 645 | 0.2−  | 0.3−  | 2005 02 09 | 704 | 1.2+  | 0.2−  | 2007 10 20 | 703 | 0.4−  | 0.1−  |
| 2001 01 26 | 704 | (2.0+ | 0.8−) | 2005 02 09 | 704 | 1.1+  | 0.3−  | 2007 10 20 | 703 | 0.2+  | 0.8+  |
| 2001 01 26 | 704 | 1.3+  | 0.3+  | 2005 03 08 | 699 | (3.4+ | 0.8+) | 2007 11 05 | 704 | 0.3+  | 0.3+  |
| 2001 01 26 | 704 | 0.1−  | 0.8+  | 2005 03 08 | 699 | 0.1+  | 0.3+  | 2007 11 05 | 704 | 0.3−  | 0.7+  |
| 2001 03 15 | 699 | 0.2−  | 0.7−  | 2005 03 08 | 699 | 0.7+  | 0.0   | 2007 11 05 | 704 | 0.3−  | 0.1−  |
| 2001 03 15 | 699 | 0.3−  | 0.1+  | 2005 03 08 | 699 | 0.0   | 0.9−  | 2007 11 05 | 704 | 0.2−  | 0.2+  |
| 2001 03 15 | 699 | 0.1+  | 1.5+  | 2005 03 08 | 704 | 1.1−  | 0.3+  | 2007 11 05 | 704 | 0.0   | 0.7+  |
| 2001 03 15 | 699 | 0.7+  | 0.8+  | 2005 03 08 | 704 | (2.2− | 2.0+) | 2007 11 05 | D29 | 0.1+  | 1.2−  |
| 2001 03 18 | 704 | 0.1−  | 1.3+  | 2005 03 08 | 704 | 0.7+  | 0.1+  | 2007 11 05 | D29 | 0.0   | 0.1+  |
| 2001 03 18 | 704 | 1.3+  | 0.4−  | 2005 03 08 | 704 | 0.6+  | 1.0+  | 2007 11 05 | D29 | 0.6+  | 0.5+  |
| 2001 03 18 | 704 | 0.1+  | 0.3−  | 2005 03 09 | 699 | (0.3+ | 1.7−) | 2007 11 05 | D29 | 0.5−  | 0.3+  |
| 2001 03 18 | 704 | 0.9−  | 0.0   | 2005 03 09 | 699 | 0.1−  | 0.2+  | 2007 11 06 | A13 | 0.4−  | 0.6−  |
| 2003 11 19 | 691 | 0.1+  | 0.0   | 2005 03 09 | 699 | 0.6−  | 0.1−  | 2007 11 06 | A13 | 0.2−  | 0.4−  |
| 2003 11 19 | 691 | 0.1+  | 0.0   | 2005 03 09 | 704 | 0.5−  | 0.5−  | 2007 11 13 | 699 | 0.3−  | 0.0   |
| 2003 11 19 | 691 | 0.0   | 0.2+  | 2005 03 09 | 699 | 0.5+  | 0.0   | 2007 11 13 | 699 | 0.4+  | 0.2−  |
| 2003 11 21 | 704 | 0.1−  | 0.1−  | 2005 03 09 | 704 | 0.1−  | 0.1−  | 2007 11 13 | 699 | 0.6+  | 0.3−  |
| 2003 11 21 | 704 | 0.6−  | 0.8−  | 2005 03 09 | 704 | 0.5+  | 0.1+  | 2007 11 13 | 699 | (1.3− | 1.6+) |
| 2003 11 21 | 704 | 0.2+  | 1.1+  | 2005 03 09 | 704 | 1.1+  | 0.1−  | 2007 11 14 | 704 | 0.3−  | 0.0   |
| 2003 11 21 | 704 | 0.0   | 0.4+  | 2005 03 17 | G96 | 0.3−  | 0.1+  | 2007 11 14 | 704 | 0.6−  | 0.1−  |
| 2003 11 21 | 704 | 0.0   | 0.9+  | 2005 03 17 | G96 | 0.4−  | 0.1−  | 2007 11 14 | 704 | 0.1−  | 0.2−  |
| 2003 11 23 | 704 | 0.4−  | 0.6+  | 2005 03 17 | G96 | 0.3−  | 0.1+  | 2007 11 14 | 704 | 0.3−  | 0.3+  |
| 2003 11 23 | 704 | 0.0   | 1.2+  | 2005 03 17 | 703 | (1.8− | 0.9+) | 2007 11 14 | 704 | 0.1+  | 0.1+  |
| 2003 11 23 | 704 | 0.2−  | 0.3−  | 2005 03 17 | G96 | 0.4−  | 0.1−  | 2007 11 17 | A13 | 0.2−  | 0.6−  |
| 2003 11 23 | 704 | 0.2−  | 0.8+  | 2005 03 17 | 703 | 0.7+  | 0.4+  | 2007 11 17 | A13 | 0.2+  | 0.4−  |
| 2003 11 23 | 704 | 0.9−  | 1.3+  | 2005 03 17 | 703 | 0.5−  | 0.5+  | 2007 11 17 | A13 | 0.1−  | 0.1+  |
| 2003 11 23 | 704 | 0.2+  | 0.8+  | 2005 03 17 | 703 | 1.0−  | 0.9+  | 2007 12 03 | 703 | 0.6+  | 0.4+  |
| 2003 11 23 | 704 | 0.5−  | 0.6−  | 2007 09 09 | G96 | 0.1−  | 0.1−  | 2007 12 03 | 703 | 0.3+  | 0.6+  |
| 2003 11 23 | 704 | 0.2+  | 0.2−  | 2007 09 09 | G96 | 0.2−  | 0.1−  | 2007 12 03 | 703 | 0.5+  | 0.6+  |
| 2003 11 23 | 704 | 0.9+  | 0.6+  | 2007 09 09 | G96 | 0.0   | 0.2−  | 2007 12 03 | 703 | 0.4−  | 0.0   |
| 2003 11 24 | 704 | 0.5+  | 0.3+  | 2007 09 18 | G96 | 0.0   | 0.2−  | 2007 12 05 | 704 | 0.0   | 0.2−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 704 | 0.4− | 0.5+ | 2007 09 18 | G96 | 0.2− | 0.1− | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2003 11 24 | 704 | 0.2− | 1.0+ | 2007 09 18 | G96 | 0.1− | 0.0  | 2007 12 05 | 704 | 0.6+ | 0.4− |
| 2003 11 24 | 704 | 0.0  | 0.2+ | 2007 09 18 | G96 | 0.2+ | 0.3− | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2003 11 24 | 699 | 0.3− | 0.7− | 2007 10 10 | G96 | 0.0  | 0.2− | 2007 12 05 | 704 | 0.3− | 0.1+ |
| 2003 11 24 | 699 | 0.4+ | 1.2− | 2007 10 10 | G96 | 0.1+ | 0.3− |            |     |      |      |

**(171599)\* 1999 XJ<sub>63</sub> = 2003 XX<sub>24</sub>**

Discovered 1999 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 68619)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 286.80672  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24187535 | $\omega$ | 48.76731 | -0.69080085 | -0.70592598 |
| $a$ | 2.5511832  | $\Omega$ | 85.66636 | +0.60757119 | -0.68400369 |
| $e$ | 0.1374286  | $i$      | 9.02434  | +0.39198398 | -0.18386807 |
| $P$ | 4.07       | $H$      | 16.0     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 15 | 704 | 0.9+  | 0.2−  | 2003 12 01 | 703 | 1.3+ | 0.9+ | 2007 11 09 | 703 | 0.7−  | 0.2−  |
| 1999 11 15 | 704 | 1.2−  | 1.0−  | 2003 12 01 | 704 | 0.5+ | 0.1− | 2007 11 09 | 703 | 1.1+  | 0.7−  |
| 1999 11 15 | 704 | (0.1− | 2.2−) | 2003 12 01 | 704 | 0.3+ | 0.6+ | 2007 11 09 | 703 | 0.3−  | 0.0   |
| 1999 12 07 | 704 | 1.1+  | 1.1−  | 2003 12 01 | 704 | 0.4− | 0.2+ | 2007 11 09 | 703 | 0.7−  | 0.7−  |
| 1999 12 07 | 704 | 1.2−  | 0.2+  | 2003 12 01 | 704 | 0.1− | 0.1− | 2007 11 13 | G96 | 0.1+  | 0.4−  |
| 1999 12 07 | 704 | 0.0   | 1.0−  | 2003 12 21 | 691 | 0.2− | 0.2+ | 2007 11 13 | G96 | 0.2+  | 0.1−  |
| 1999 12 08 | 704 | 0.2−  | 0.5−  | 2003 12 21 | 704 | 0.1− | 0.5+ | 2007 11 13 | G96 | 0.3−  | 0.3−  |
| 1999 12 08 | 704 | 0.5−  | 0.7−  | 2003 12 21 | 691 | 0.1+ | 0.1+ | 2007 11 13 | G96 | 0.4+  | 0.3−  |
| 1999 12 08 | 704 | 0.3+  | 0.2−  | 2003 12 21 | 704 | 0.0  | 0.6+ | 2007 11 14 | 704 | 0.4−  | 1.1+  |
| 1999 12 08 | 704 | 0.8+  | 1.4−  | 2003 12 21 | 704 | 0.5+ | 0.2+ | 2007 11 14 | 704 | 0.0   | 0.4−  |
| 1999 12 08 | 704 | 0.3+  | 0.2+  | 2003 12 21 | 691 | 0.1− | 0.1+ | 2007 11 14 | 704 | 0.9−  | 0.3+  |
| 2003 10 29 | 704 | 0.4−  | 1.2−  | 2003 12 21 | 704 | 0.4+ | 0.8+ | 2007 11 14 | 704 | 0.4+  | 0.4+  |
| 2003 10 29 | 704 | 0.6−  | 0.4−  | 2003 12 21 | 704 | 0.3+ | 0.3+ | 2007 11 14 | 704 | (0.2− | 2.1−) |
| 2003 10 29 | 704 | 0.2−  | 1.1−  | 2005 04 07 | 699 | 0.5− | 0.2+ | 2007 11 15 | 704 | 0.1+  | 1.0+  |
| 2003 10 29 | 704 | 0.3+  | 1.0+  | 2005 04 07 | 699 | 0.3− | 0.3+ | 2007 11 15 | 704 | 0.2−  | 0.0   |
| 2003 11 19 | 699 | 0.2−  | 0.9+  | 2005 04 07 | 699 | 0.8+ | 0.9− | 2007 11 15 | 704 | 0.6−  | 1.1+  |
| 2003 11 19 | 699 | 0.2−  | 0.4−  | 2005 04 07 | 699 | 0.4− | 0.6+ | 2007 11 15 | 704 | 0.6+  | 0.3−  |
| 2003 11 19 | 699 | 1.0−  | 0.4+  | 2005 04 09 | 704 | 0.2− | 0.1− | 2007 11 15 | 704 | 0.7+  | 0.3+  |
| 2003 11 19 | 699 | 0.5−  | 1.0−  | 2005 04 09 | 704 | 0.1+ | 0.8− | 2007 11 15 | 704 | 0.2+  | 0.3+  |
| 2003 11 24 | 699 | 0.0   | 1.3−  | 2005 04 09 | 704 | 0.2+ | 1.0+ | 2007 11 15 | 704 | 1.0−  | 0.5−  |
| 2003 11 24 | 699 | 0.6+  | 0.3+  | 2005 04 09 | 704 | 0.0  | 0.4+ | 2007 11 15 | 704 | 0.1−  | 0.3+  |
| 2003 11 24 | 699 | 0.8+  | 0.7−  | 2005 04 16 | G92 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.7−  | 0.5+  |
| 2003 11 24 | 699 | 0.2−  | 0.1+  | 2005 04 16 | G92 | 0.6+ | 0.2− | 2007 11 15 | 704 | 0.8+  | 0.9+  |
| 2003 12 01 | 703 | 0.4−  | 0.1−  | 2005 04 16 | G92 | 0.1− | 0.2+ | 2007 12 04 | 704 | 0.4−  | 0.0   |
| 2003 12 01 | 703 | 0.7+  | 1.1+  | 2005 04 17 | G92 | 0.3− | 0.2+ | 2007 12 04 | 704 | 0.9−  | 0.1+  |
| 2003 12 01 | 703 | 0.3+  | 1.0+  | 2005 04 17 | G92 | 0.7+ | 0.8+ | 2007 12 04 | 704 | 0.1−  | 0.5+  |
| 2003 12 01 | 704 | 0.4+  | 0.1+  | 2005 04 17 | G92 | 0.4+ | 0.1+ | 2007 12 04 | 704 | 0.3−  | 0.1+  |

**(171600)\* 1999 XN<sub>122</sub>**

Discovered 1999 Dec. 7 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |
|----------|
|----------|



2007 DEC. 24

M.P.O. 129099

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 13 | 704 | 0.7-  | 0.3+  | 2006 09 19 | 699 | 0.1+ | 0.0  | 2007 11 08 | 703 | 0.4- | 0.1+ |
| 1999 10 13 | 704 | 0.1+  | 0.2-  | 2006 09 19 | 699 | 0.3- | 0.5+ | 2007 11 09 | G96 | 0.3+ | 0.2- |
| 1999 10 13 | 704 | 0.2+  | 0.1+  | 2006 09 19 | 699 | 0.4+ | 0.0  | 2007 11 09 | G96 | 0.0  | 0.2- |
| 1999 10 13 | 704 | 0.2+  | 0.6-  | 2006 09 19 | 703 | 0.6- | 0.2+ | 2007 11 09 | G96 | 0.4+ | 0.2- |
| 1999 10 13 | 704 | 0.0   | 0.1-  | 2006 09 19 | 699 | 0.1- | 0.1- | 2007 11 09 | G96 | 0.2+ | 0.3- |
| 1999 12 07 | 703 | 0.0   | 0.9+  | 2006 09 19 | 703 | 0.0  | 0.6+ | 2007 11 11 | A24 | 0.1- | 0.0  |
| 1999 12 07 | 703 | 0.1-  | 1.5+  | 2006 09 19 | 703 | 0.4- | 0.1- | 2007 11 11 | A24 | 0.4- | 0.6+ |
| 1999 12 07 | 703 | 0.5-  | 0.5+  | 2006 09 19 | 703 | 0.2- | 0.3+ | 2007 11 11 | A24 | 0.2- | 0.4+ |
| 1999 12 07 | 703 | 1.0-  | 0.1-  | 2006 09 25 | 704 | 0.4+ | 0.0  | 2007 11 11 | A24 | 0.2- | 0.5+ |
| 1999 12 13 | 703 | 1.0-  | 0.5+  | 2006 09 25 | 704 | 0.0  | 0.1+ | 2007 11 11 | A24 | 0.1+ | 0.3+ |
| 1999 12 13 | 703 | 0.2+  | 0.5+  | 2006 09 25 | 704 | 0.3+ | 0.2+ | 2007 11 11 | A24 | 0.4- | 0.6+ |
| 1999 12 13 | 703 | 0.1+  | 0.5+  | 2006 09 25 | 704 | 0.2+ | 0.7- | 2007 11 11 | A24 | 0.4+ | 0.2- |
| 1999 12 13 | 703 | 0.4-  | 0.5+  | 2006 09 25 | 704 | 0.3+ | 0.3- | 2007 11 12 | A24 | 0.2- | 1.2- |
| 2002 01 13 | 704 | 0.4-  | 0.2+  | 2006 09 29 | 699 | 0.3- | 0.2+ | 2007 11 15 | 699 | 0.6- | 0.5+ |
| 2002 01 13 | 704 | 0.3-  | 0.3+  | 2006 09 29 | 704 | 0.1+ | 0.2- | 2007 11 15 | 699 | 0.3+ | 0.8+ |
| 2002 01 13 | 704 | 0.7+  | 0.1-  | 2006 09 29 | 699 | 0.1+ | 0.5- | 2007 11 15 | 699 | 0.2+ | 0.1- |
| 2002 01 13 | 704 | 0.2+  | 0.1-  | 2006 09 29 | 704 | 0.1+ | 0.0  | 2007 11 15 | 699 | 0.4+ | 0.2- |
| 2006 08 18 | 704 | 0.5-  | 0.6+  | 2006 09 29 | 704 | 0.8+ | 0.5+ | 2007 11 17 | A24 | 0.3- | 0.3- |
| 2006 08 18 | 699 | 0.2-  | 0.3-  | 2006 09 29 | 699 | 0.1- | 0.4+ | 2007 11 17 | A24 | 0.4- | 0.1+ |
| 2006 08 18 | 704 | 0.5-  | 0.8+  | 2006 09 29 | 704 | 0.6+ | 0.1- | 2007 11 17 | A24 | 0.3- | 0.2- |
| 2006 08 18 | 699 | 0.1-  | 0.5-  | 2006 09 29 | 704 | 1.3- | 0.1+ | 2007 11 17 | A24 | 0.8- | 1.2- |
| 2006 08 18 | 704 | 0.2+  | 0.9+  | 2006 09 29 | 699 | 1.1- | 0.4+ | 2007 11 17 | A24 | 0.6- | 0.4- |
| 2006 08 18 | 699 | 0.1+  | 0.0   | 2006 10 02 | G96 | 0.1+ | 0.2- | 2007 11 17 | 704 | 0.4+ | 0.3+ |
| 2006 08 18 | 704 | 0.3-  | 0.3+  | 2006 10 02 | G96 | 0.3+ | 0.3- | 2007 11 17 | 704 | 0.1- | 0.3- |
| 2006 08 18 | 699 | 1.4-  | 0.2-  | 2006 10 02 | G96 | 0.2- | 0.3- | 2007 11 17 | 704 | 0.4- | 0.4+ |
| 2006 08 24 | 704 | 0.7-  | 0.5-  | 2006 10 02 | G96 | 0.0  | 0.1- | 2007 11 17 | 704 | 0.3- | 0.5+ |
| 2006 08 24 | 704 | 0.4-  | 0.2-  | 2006 10 10 | 644 | 0.0  | 0.0  | 2007 11 17 | 704 | 0.1- | 0.1- |
| 2006 08 24 | 704 | 0.5-  | 0.1+  | 2006 10 10 | 644 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.1+ | 0.4- |
| 2006 08 24 | 704 | 1.1-  | 0.2+  | 2006 10 10 | 644 | 0.2+ | 0.1+ | 2007 11 20 | G96 | 0.1+ | 0.4- |
| 2006 08 24 | 704 | 1.3-  | 0.3+  | 2006 11 22 | 704 | 0.7- | 0.2+ | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 2006 08 26 | 704 | 0.1+  | 0.6+  | 2006 11 22 | 704 | 1.2+ | 0.7+ | 2007 11 20 | G96 | 0.3+ | 0.4- |
| 2006 08 26 | 704 | 0.2-  | 0.2-  | 2006 11 22 | 704 | 0.2- | 0.0  | 2007 12 02 | 704 | 0.3+ | 0.1- |
| 2006 08 26 | 704 | 0.3+  | 0.8-  | 2006 11 22 | 704 | 0.4- | 0.2+ | 2007 12 02 | 704 | 0.1+ | 0.2- |
| 2006 08 28 | 699 | 0.5+  | 0.8+  | 2006 11 22 | 704 | 1.4+ | 0.8- | 2007 12 02 | 704 | 0.1+ | 0.1- |
| 2006 08 28 | 699 | 0.6+  | 0.9+  | 2007 10 10 | 699 | 0.6+ | 0.4- | 2007 12 02 | 704 | 0.2- | 0.5- |
| 2006 08 28 | 699 | 0.1-  | 0.2+  | 2007 10 10 | 699 | 1.3+ | 0.8- | 2007 12 02 | 704 | 0.3- | 0.1+ |
| 2006 08 28 | 699 | 0.1-  | 0.2-  | 2007 10 10 | 699 | 0.1+ | 0.7- | 2007 12 04 | G96 | 0.2+ | 0.2+ |
| 2006 08 29 | 703 | 0.3+  | 0.0   | 2007 10 10 | 699 | 0.2+ | 0.3- | 2007 12 04 | G96 | 0.1+ | 0.2- |
| 2006 08 29 | 703 | 0.1+  | 0.4+  | 2007 10 16 | 703 | 0.4- | 0.4- | 2007 12 04 | G96 | 0.1+ | 0.1- |
| 2006 08 29 | 703 | 0.1-  | 0.0   | 2007 10 16 | 703 | 0.3+ | 0.3+ | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2006 08 29 | 703 | 0.3+  | 0.8-  | 2007 10 16 | 703 | 0.5+ | 0.6+ | 2007 12 16 | 704 | 0.8+ | 0.6+ |
| 2006 09 01 | 704 | (0.8- | 2.6+) | 2007 10 16 | 703 | 0.3- | 0.3+ | 2007 12 16 | 704 | 0.3+ | 0.4+ |
| 2006 09 01 | 704 | 0.4+  | 0.2+  | 2007 10 24 | 704 | 0.2- | 0.5- | 2007 12 16 | 704 | 0.1- | 0.4+ |
| 2006 09 01 | 704 | 0.0   | 0.2-  | 2007 10 24 | 704 | 0.1+ | 0.1+ | 2007 12 16 | 704 | 0.4+ | 1.2+ |
| 2006 09 11 | 703 | 0.5+  | 0.4+  | 2007 10 24 | 704 | 0.5- | 0.0  | 2007 12 16 | 704 | 0.1+ | 0.2+ |
| 2006 09 11 | 703 | 1.0+  | 0.8+  | 2007 11 02 | 704 | 0.2- | 0.8- |            |     |      |      |
| 2006 09 11 | 703 | 0.3+  | 0.4-  | 2007 11 02 | 704 | 0.1+ | 0.3+ |            |     |      |      |

(171601)\* 1999 XQ<sub>164</sub>

Discovered 1999 Dec. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 310.84228  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.36750978 | $\omega$ | 197.56753 | -0.73440694 | -0.62569000 |
| <i>a</i> | 1.9302940  | $\Omega$ | 300.75071 | +0.65365007 | -0.54772311 |
| <i>e</i> | 0.0737433  | <i>i</i> | 17.81859  | +0.18272394 | -0.55543805 |
| <i>P</i> | 2.68       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 08 | 704 | 1.3+ | 1.3+ | 2000 02 04 | 704 | 0.2+  | 0.7+  | 2004 12 10 | 704 | 1.3- | 0.6- |
| 1999 12 08 | 704 | 0.1+ | 0.2+ | 2000 02 12 | 704 | (4.0- | 0.0 ) | 2004 12 10 | 704 | 0.7- | 0.6- |
| 1999 12 08 | 704 | 0.6+ | 1.6+ | 2000 02 12 | 704 | 0.3+  | 0.5-  | 2004 12 10 | 704 | 0.4- | 0.3- |
| 1999 12 08 | 704 | 0.3- | 0.1- | 2000 02 12 | 704 | 0.0   | 0.7+  | 2004 12 10 | 704 | 0.5+ | 0.6- |
| 1999 12 08 | 704 | 0.5- | 0.3- | 2000 02 12 | 704 | 1.6+  | 1.1+  | 2004 12 10 | 704 | 0.6- | 0.0  |
| 1999 12 15 | 704 | 0.7- | 0.3- | 2000 02 28 | 703 | 0.7+  | 0.1-  | 2004 12 16 | 704 | 0.3+ | 0.7- |
| 1999 12 15 | 704 | 1.2- | 0.8+ | 2000 02 28 | 703 | 0.9+  | 1.1+  | 2004 12 16 | 704 | 0.2+ | 0.1+ |
| 1999 12 15 | 704 | 0.8- | 1.4+ | 2000 02 28 | 703 | 1.8-  | 0.4+  | 2004 12 16 | 704 | 0.3+ | 0.5- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 15 | 704 | 0.2- | 0.0  | 2000 02 28 | 703 | 0.8-  | 0.6-  | 2004 12 16 | 704 | 0.0  | 0.2+ |
| 1999 12 15 | 704 | 0.2- | 0.2+ | 2000 03 06 | 704 | 0.0   | 0.4-  | 2007 11 04 | 703 | 0.4+ | 0.4- |
| 2000 01 04 | 704 | 0.2- | 0.0  | 2000 03 06 | 704 | 0.2+  | 0.7-  | 2007 11 04 | 703 | 0.8- | 0.1+ |
| 2000 01 04 | 704 | 0.4- | 0.3+ | 2000 03 06 | 704 | 0.5+  | 0.4+  | 2007 11 04 | 703 | 0.8- | 0.9+ |
| 2000 01 04 | 704 | 0.1+ | 0.0  | 2000 03 06 | 704 | 0.1-  | 0.1-  | 2007 11 04 | 703 | 0.6- | 0.1- |
| 2000 01 04 | 704 | 0.3+ | 0.1- | 2000 05 05 | 645 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 1.1+ | 1.5- |
| 2000 01 05 | 699 | 1.3+ | 1.0+ | 2000 05 05 | 645 | 0.1-  | 0.0   | 2007 11 09 | 704 | 0.6- | 0.1+ |
| 2000 01 05 | 699 | 0.1- | 1.2+ | 2001 05 23 | 807 | 0.6-  | 0.0   | 2007 11 09 | 704 | 0.6+ | 0.6+ |
| 2000 01 05 | 699 | 0.7+ | 0.1- | 2001 05 23 | 807 | 0.0   | 0.2+  | 2007 11 09 | 704 | 0.6+ | 0.3- |
| 2000 01 06 | 704 | 0.6- | 0.2+ | 2001 10 17 | 704 | 0.3+  | 0.5+  | 2007 11 09 | 704 | 0.8+ | 0.5+ |
| 2000 01 06 | 704 | 0.1+ | 0.3- | 2001 10 17 | 704 | 0.6+  | 0.5+  | 2007 11 16 | 704 | 1.3+ | 0.3+ |
| 2000 01 06 | 704 | 0.3+ | 0.4- | 2001 10 17 | 704 | 0.4+  | 0.1-  | 2007 11 16 | 704 | 0.1- | 1.2+ |
| 2000 01 06 | 704 | 0.3+ | 0.6- | 2001 10 17 | 704 | 0.9-  | 0.6-  | 2007 11 16 | 704 | 0.6- | 0.1- |
| 2000 01 06 | 704 | 0.4+ | 0.4- | 2004 09 15 | 704 | 0.6-  | 0.9+  | 2007 11 19 | 699 | 0.7+ | 0.5- |
| 2000 01 10 | 120 | 0.3- | 0.2+ | 2004 09 15 | 704 | 0.7+  | 1.0+  | 2007 11 19 | 699 | 0.8- | 0.1+ |
| 2000 01 10 | 120 | 0.2+ | 1.6- | 2004 09 15 | 704 | 0.1-  | 0.5+  | 2007 11 19 | 699 | 0.6- | 0.7- |
| 2000 01 11 | 691 | 0.2- | 0.4- | 2004 09 15 | 704 | 0.7+  | 0.5+  | 2007 11 19 | 699 | 0.3- | 0.2- |
| 2000 01 11 | 691 | 0.3- | 0.4- | 2004 09 15 | 704 | 0.4+  | 0.4+  | 2007 12 02 | 704 | 0.1- | 0.7+ |
| 2000 01 11 | 691 | 0.2- | 0.5- | 2004 10 25 | 704 | 0.3-  | 0.3-  | 2007 12 02 | 704 | 0.4+ | 0.0  |
| 2000 01 13 | 699 | 0.7+ | 0.2+ | 2004 10 25 | 704 | 0.1+  | 0.1-  | 2007 12 02 | 704 | 0.5+ | 0.5+ |
| 2000 01 13 | 699 | 0.5+ | 0.8+ | 2004 10 25 | 704 | 0.1+  | 0.4-  | 2007 12 02 | 704 | 1.0+ | 0.0  |
| 2000 01 13 | 699 | 0.3+ | 0.6+ | 2004 10 25 | 704 | 0.3-  | 0.1+  | 2007 12 02 | 704 | 0.2+ | 0.4+ |
| 2000 02 02 | 704 | 0.3+ | 0.3+ | 2004 10 25 | 704 | 0.0   | 0.4-  | 2007 12 16 | 704 | 0.1+ | 0.6+ |
| 2000 02 02 | 704 | 0.5+ | 0.7- | 2004 11 03 | 704 | 0.5+  | 1.3+  | 2007 12 16 | 704 | 0.4+ | 0.4- |
| 2000 02 02 | 704 | 0.1- | 0.5- | 2004 11 03 | 704 | 0.6+  | 0.2-  | 2007 12 16 | 704 | 0.0  | 0.1+ |
| 2000 02 02 | 704 | 0.1+ | 0.4- | 2004 11 03 | 704 | 0.2+  | 0.0   | 2007 12 16 | 704 | 0.1- | 0.3+ |
| 2000 02 02 | 704 | 0.0  | 0.2- | 2004 11 03 | 704 | 0.4-  | 0.0   | 2007 12 16 | 704 | 0.2- | 0.4+ |
| 2000 02 04 | 704 | 0.0  | 0.0  | 2004 12 01 | 704 | 0.2+  | 0.5-  | 2007 12 16 | 699 | 0.2- | 0.4- |
| 2000 02 04 | 704 | 0.1- | 0.1+ | 2004 12 01 | 704 | (1.8+ | 0.3-) | 2007 12 16 | 699 | 0.1- | 0.5- |
| 2000 02 04 | 704 | 0.2+ | 0.5+ | 2004 12 01 | 704 | 0.4-  | 0.0   | 2007 12 16 | 699 | 0.8- | 0.7- |
| 2000 02 04 | 704 | 0.3- | 0.5- | 2004 12 01 | 704 | 1.0+  | 0.7-  |            |     |      |      |

(171602)\* 1999 XP<sub>172</sub> = 2001 FM<sub>179</sub>

Discovered 1999 Dec. 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 17106)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 61.88624   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24086543 | $\omega$ | 275.07495 | +0.95876111 | +0.16467262 |
| <i>a</i> | 2.5583094  | $\Omega$ | 75.59124  | -0.04743974 | +0.89633303 |
| <i>e</i> | 0.1894389  | <i>i</i> | 13.83753  | -0.28022598 | +0.41166738 |
| <i>P</i> | 4.09       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |        |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|--------|
| 1999 12 10 | 704 | 0.2+  | 0.1-  | 2003 12 18 | 704 | 0.3+  | 0.1-  | 2005 04 02 | 703 | 0.1-  | 0.4+   |
| 1999 12 10 | 704 | 0.4+  | 0.3-  | 2003 12 18 | 704 | 0.1-  | 0.2+  | 2005 04 02 | 703 | 0.3-  | 0.2+   |
| 1999 12 10 | 704 | 0.4+  | 0.3+  | 2003 12 18 | 704 | 0.1+  | 0.3+  | 2005 04 02 | 703 | 0.4-  | 0.4-   |
| 1999 12 10 | 704 | 0.5-  | 0.0   | 2003 12 18 | 704 | 0.5-  | 0.3-  | 2007 10 06 | 704 | 0.2-  | 0.0    |
| 1999 12 10 | 704 | 0.7+  | 0.5+  | 2003 12 18 | 704 | 0.2+  | 0.3-  | 2007 10 06 | 704 | 0.5-  | 0.0    |
| 1999 12 15 | 704 | 0.4-  | 0.3-  | 2003 12 21 | 704 | 0.2+  | 0.0   | 2007 10 06 | 704 | (1.6- | (0.4-) |
| 1999 12 15 | 704 | 0.0   | 0.6-  | 2003 12 21 | 704 | 0.1+  | 0.1+  | 2007 10 06 | 704 | 0.4+  | 0.2-   |
| 1999 12 15 | 704 | 0.3-  | 1.7-  | 2003 12 21 | 704 | 0.3-  | 0.1+  | 2007 10 11 | 704 | (2.1- | (0.3-) |
| 1999 12 15 | 704 | (0.3- | 2.3-) | 2003 12 21 | 704 | 0.3+  | 0.7+  | 2007 10 11 | 704 | 0.1-  | 0.5+   |
| 2000 01 02 | 704 | 0.6-  | 1.4-  | 2003 12 21 | 704 | 0.6+  | 0.6+  | 2007 10 11 | 704 | 0.1-  | 0.1+   |
| 2000 01 02 | 704 | 0.0   | 1.1-  | 2003 12 23 | 704 | 0.5-  | 0.5+  | 2007 10 11 | 704 | 0.4-  | 0.1+   |
| 2000 01 02 | 704 | 0.8-  | 0.3+  | 2003 12 23 | 704 | 0.4-  | 0.5+  | 2007 10 11 | 704 | 0.3+  | 0.3-   |
| 2000 01 02 | 704 | 0.1-  | 0.3-  | 2003 12 23 | 704 | 0.4-  | 0.4+  | 2007 10 14 | 704 | 0.2-  | 1.1+   |
| 2000 01 29 | 704 | 0.3-  | 0.3+  | 2003 12 23 | 704 | 0.3-  | 0.5+  | 2007 10 14 | 704 | 0.5+  | 0.6+   |
| 2000 01 29 | 704 | 0.1-  | 0.0   | 2003 12 23 | 704 | 0.4-  | 0.5+  | 2007 10 14 | 704 | 0.6+  | 1.0-   |
| 2000 01 29 | 704 | 0.7+  | 1.2+  | 2003 12 27 | 704 | 0.3+  | 0.4+  | 2007 10 14 | 704 | 0.8+  | 0.3+   |
| 2000 01 29 | 704 | 0.8-  | 0.3+  | 2003 12 27 | 704 | 1.0+  | 0.5+  | 2007 11 05 | 704 | 0.2+  | 0.3-   |
| 2001 03 20 | 699 | 0.4-  | 0.9+  | 2003 12 27 | 704 | 0.1+  | 0.3+  | 2007 11 05 | 704 | 0.6+  | 0.5+   |
| 2001 03 20 | 699 | 0.3+  | 0.9+  | 2003 12 27 | 704 | 1.4+  | 0.5+  | 2007 11 05 | 704 | 0.6+  | 1.0+   |
| 2001 03 20 | 699 | 0.2+  | 0.6-  | 2003 12 28 | 704 | (1.8+ | 0.1-) | 2007 11 05 | 704 | 0.4+  | 0.3+   |
| 2001 03 20 | 699 | 0.5-  | 0.6+  | 2003 12 28 | 704 | (1.8- | 0.2-) | 2007 11 05 | 704 | 0.3-  | 0.0    |
| 2001 03 23 | 608 | 0.7+  | 0.2+  | 2003 12 28 | 704 | 0.4+  | 0.5-  | 2007 11 15 | 704 | 0.2+  | 0.0    |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 23 | 608 | 1.0+  | 0.7+  | 2003 12 28 | 704 | (2.3+ | 0.7−) | 2007 11 15 | 704 | 0.1+ | 0.3+ |
| 2001 03 23 | 608 | 0.8+  | 0.6+  | 2003 12 28 | 704 | 1.0−  | 0.1−  | 2007 11 15 | 704 | 0.0  | 0.1+ |
| 2003 10 29 | 704 | 0.0   | 0.9−  | 2003 12 29 | 704 | 0.5−  | 0.7−  | 2007 11 15 | 704 | 0.0  | 0.1+ |
| 2003 10 29 | 704 | 0.0   | 0.1−  | 2003 12 29 | 704 | 0.6−  | 0.4−  | 2007 11 15 | 704 | 0.2+ | 0.7+ |
| 2003 10 29 | 704 | 0.3+  | 0.8−  | 2003 12 29 | 704 | 0.1+  | 0.9−  | 2007 12 10 | 704 | 0.1+ | 0.4− |
| 2003 10 29 | 704 | 0.1−  | 0.8−  | 2003 12 29 | 704 | 0.1+  | 0.2−  | 2007 12 10 | 704 | 0.3− | 0.3+ |
| 2003 10 29 | 704 | 0.9+  | 0.1−  | 2003 12 29 | 704 | 0.6−  | 1.5−  | 2007 12 10 | 704 | 0.1− | 0.2+ |
| 2003 11 20 | 704 | (2.2− | 1.1−) | 2003 12 30 | 704 | 0.0   | 0.1+  | 2007 12 10 | 704 | 0.1+ | 0.0  |
| 2003 11 20 | 704 | 0.7−  | 0.3−  | 2003 12 30 | 704 | 0.0   | 0.4−  | 2007 12 10 | 704 | 0.1+ | 0.2− |
| 2003 11 20 | 704 | 0.2+  | 0.3−  | 2003 12 30 | 704 | 0.2−  | 0.6+  | 2007 12 14 | 704 | 0.4− | 0.1− |
| 2003 11 20 | 704 | 0.5+  | 0.3−  | 2005 04 02 | 699 | 0.2−  | 0.1+  | 2007 12 14 | 704 | 0.6− | 0.3− |
| 2003 11 20 | 704 | 0.0   | 0.2−  | 2005 04 02 | 703 | 0.9−  | 1.1−  | 2007 12 14 | 704 | 0.3− | 0.4− |
| 2003 12 04 | 704 | 1.0+  | 0.7−  | 2005 04 02 | 703 | 0.1−  | 0.1−  | 2007 12 14 | 704 | 0.4− | 0.4− |
| 2003 12 04 | 704 | 1.3+  | 0.2−  | 2005 04 02 | 699 | 0.5+  | 1.1−  | 2007 12 14 | 704 | 0.2− | 0.0  |
| 2003 12 04 | 704 | 0.7+  | 0.3−  | 2005 04 02 | 703 | 0.1−  | 0.6+  | 2007 12 16 | 691 | 0.4− | 0.1− |
| 2003 12 04 | 704 | 0.7+  | 0.5+  | 2005 04 02 | 703 | 0.0   | 0.3−  | 2007 12 16 | 691 | 0.2+ | 0.9+ |
| 2003 12 17 | 644 | 0.3−  | 0.1+  | 2005 04 02 | 699 | 1.1+  | 0.5−  | 2007 12 16 | 691 | 0.5− | 0.2− |
| 2003 12 17 | 644 | 0.5−  | 0.2−  | 2005 04 02 | 699 | 0.7−  | 0.8−  |            |     |      |      |
| 2003 12 17 | 644 | 0.2−  | 0.2+  | 2005 04 02 | 703 | 0.1−  | 0.3+  |            |     |      |      |

**(171603)\* 1999 XA<sub>180</sub> = 2003 WU<sub>130</sub>**

Discovered 1999 Dec. 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 56030)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 301.34367  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24110479 | $\omega$ | 66.14169 | −0.79356852   | −0.56480500 |
| <i>a</i> | 2.5566159  | $\Omega$ | 78.72245 | +0.43962281   | −0.78940563 |
| <i>e</i> | 0.1456426  | <i>i</i> | 13.34589 | +0.42069086   | −0.24048714 |
| <i>P</i> | 4.09       | <i>H</i> | 15.7     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 10 | 704 | 0.1−  | 0.5+  | 2003 12 18 | 704 | (1.7+ | 2.4−) | 2004 01 19 | 704 | (3.4− | 0.5−) |
| 1999 12 10 | 704 | 0.9−  | 0.3+  | 2003 12 18 | 704 | 0.0   | 0.5−  | 2004 01 19 | 704 | (3.4− | 0.5−) |
| 1999 12 10 | 704 | 0.6+  | 0.7−  | 2003 12 18 | 704 | 0.2−  | 0.1−  | 2005 06 11 | 703 | 0.2−  | 1.4+  |
| 1999 12 15 | 704 | 0.3+  | 1.7−  | 2003 12 18 | 704 | 0.4−  | 0.1−  | 2005 06 11 | 703 | 0.2−  | 0.6+  |
| 1999 12 15 | 704 | 1.1−  | 0.5−  | 2003 12 23 | 704 | 0.1+  | 0.1+  | 2005 06 11 | 703 | 0.3+  | 0.1+  |
| 1999 12 15 | 704 | 0.2−  | 1.1−  | 2003 12 23 | 704 | 0.3+  | 0.1−  | 2005 06 11 | 703 | 0.6−  | 0.2+  |
| 1999 12 31 | 699 | 0.2−  | 0.6+  | 2003 12 23 | 704 | 0.0   | 0.3−  | 2005 06 16 | G96 | 0.4−  | 0.1−  |
| 1999 12 31 | 699 | 0.6+  | 0.7−  | 2003 12 23 | 704 | 0.2−  | 0.3−  | 2005 06 16 | G96 | 0.3+  | 0.4+  |
| 1999 12 31 | 699 | 0.2+  | 0.2+  | 2003 12 23 | 704 | 0.1−  | 0.4+  | 2005 06 16 | G96 | 0.6+  | 0.2+  |
| 2000 01 02 | 704 | 0.2−  | 0.3+  | 2003 12 27 | 704 | 0.5−  | 1.0+  | 2005 06 28 | G96 | 0.2+  | 0.3+  |
| 2000 01 02 | 704 | 0.2+  | 0.9−  | 2003 12 27 | 704 | 0.0   | 0.6+  | 2005 06 28 | G96 | 0.5+  | 0.0   |
| 2000 01 02 | 704 | 0.8−  | 0.6−  | 2003 12 27 | 704 | 0.4+  | 0.5−  | 2005 06 28 | G96 | 0.4+  | 0.2+  |
| 2000 01 02 | 704 | 0.7−  | 0.1+  | 2003 12 27 | 704 | 0.0   | 0.3+  | 2005 06 28 | G96 | 0.7+  | 0.0   |
| 2000 01 29 | 704 | 0.1−  | 0.4+  | 2003 12 27 | 704 | (1.5− | 0.6−) | 2007 11 05 | 704 | 0.1−  | 0.5+  |
| 2000 01 29 | 704 | 0.3−  | 0.2+  | 2003 12 28 | 704 | 0.5+  | 0.2+  | 2007 11 05 | 704 | 0.6+  | 0.5+  |
| 2000 01 29 | 704 | 0.7−  | 0.5+  | 2003 12 28 | 704 | 0.2−  | 0.3−  | 2007 11 05 | 704 | 0.2−  | 0.3−  |
| 2000 01 29 | 704 | 0.2−  | 0.1−  | 2003 12 28 | 704 | 0.0   | 0.2+  | 2007 11 05 | 704 | 0.5+  | 0.5+  |
| 2000 01 29 | 704 | 0.6−  | 0.8+  | 2003 12 28 | 704 | 0.9+  | 0.5−  | 2007 11 05 | 704 | 0.5+  | 0.1+  |
| 2000 04 04 | 645 | 0.0   | 0.0   | 2003 12 28 | 704 | 0.0   | 0.4+  | 2007 11 19 | D29 | 0.5+  | 0.5−  |
| 2000 04 04 | 645 | 0.0   | 0.1−  | 2003 12 28 | 704 | 0.3+  | 0.1−  | 2007 11 19 | D29 | 0.2+  | 0.6−  |
| 2000 04 05 | 645 | 0.1+  | 0.0   | 2003 12 28 | 704 | 0.2+  | 0.1−  | 2007 11 19 | D29 | 0.5+  | 0.0   |
| 2000 04 05 | 645 | 0.1+  | 0.0   | 2003 12 28 | 704 | 0.7+  | 0.6−  | 2007 11 19 | D29 | 0.5+  | 0.4−  |
| 2003 11 21 | 704 | (2.0+ | 0.9+) | 2003 12 28 | 704 | 0.4+  | 0.5−  | 2007 12 03 | 691 | 0.4−  | 0.1−  |
| 2003 11 21 | 704 | (2.4+ | 0.8+) | 2003 12 29 | 704 | 0.5+  | 0.2+  | 2007 12 03 | 691 | 0.2+  | 0.1+  |
| 2003 11 21 | 704 | 1.2+  | 0.3−  | 2003 12 29 | 704 | 0.2+  | 0.0   | 2007 12 03 | 691 | 0.5−  | 0.1−  |
| 2003 11 21 | 704 | 1.4+  | 0.6+  | 2003 12 29 | 704 | 0.9+  | 0.4+  | 2007 12 10 | 704 | 0.0   | 0.7+  |
| 2003 11 24 | 704 | 0.3+  | 0.3−  | 2003 12 29 | 704 | 0.0   | 0.1+  | 2007 12 10 | 704 | 0.4+  | 1.1+  |
| 2003 11 24 | 704 | 0.0   | 0.7+  | 2003 12 29 | 704 | 0.5+  | 0.6+  | 2007 12 10 | 704 | 0.6+  | 0.6+  |
| 2003 11 24 | 704 | 0.3+  | 0.5+  | 2003 12 30 | 704 | 0.3+  | 0.5+  | 2007 12 14 | 704 | 0.2+  | 0.1+  |
| 2003 11 24 | 704 | 0.1−  | 0.2+  | 2003 12 30 | 704 | 0.6−  | 0.3+  | 2007 12 14 | 704 | 0.6+  | 0.9+  |
| 2003 11 24 | 704 | (0.7+ | 1.6+) | 2003 12 30 | 704 | 0.6−  | 0.0   | 2007 12 14 | 704 | 0.5+  | 0.3+  |
| 2003 12 04 | 704 | (0.2− | 2.8−) | 2004 01 16 | 691 | 0.1+  | 0.1+  | 2007 12 14 | 704 | 0.4+  | 0.2+  |
| 2003 12 04 | 704 | 1.2−  | 0.8+  | 2004 01 16 | 691 | 0.1−  | 0.1+  | 2007 12 14 | 704 | 0.3−  | 0.1+  |
| 2003 12 04 | 704 | 0.8+  | 0.9+  | 2004 01 16 | 691 | 0.2+  | 0.1+  | 2007 12 16 | 691 | 0.4−  | 0.2−  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 04 | 704 | 0.2− | 0.0  | 2004 01 19 | 704 | (3.3− | 0.2+) | 2007 12 16 | 691 | 0.4− | 0.0  |
| 2003 12 04 | 704 | 0.7+ | 0.3+ | 2004 01 19 | 704 | (3.7− | 0.5−) | 2007 12 16 | 691 | 0.9− | 0.6− |
| 2003 12 18 | 704 | 0.1+ | 0.7− | 2004 01 19 | 704 | (3.6− | 0.1−) |            |     |      |      |

**(171604)\* 1999 XC<sub>218</sub> = 2000 AL<sub>246</sub>**

Discovered 1999 Dec. 13 by Spacewatch at Kitt Peak.

Id. A. Doppler (d, *MPO* 24064)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 316.15206  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23815234 | $\omega$ | 191.12002 | −0.41020724   | −0.89705996 |
| <i>a</i> | 2.5777026  | $\Omega$ | 283.26731 | +0.84915773   | −0.30995470 |
| <i>e</i> | 0.2184331  | <i>i</i> | 9.72182   | +0.33265772   | −0.31497861 |
| <i>P</i> | 4.14       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 11 19 | 691 | 0.1+ | 0.1− | 2003 11 20 | 704 | 0.0   | 0.2+  | 2007 11 03 | 704 | 0.2+ | 0.9+ |
| 1995 11 19 | 691 | 0.1+ | 0.1+ | 2003 11 24 | 704 | 0.1+  | 0.2+  | 2007 11 09 | 704 | 0.3− | 0.5+ |
| 1995 11 19 | 691 | 0.3− | 0.0  | 2003 11 24 | 704 | 0.4+  | 0.4+  | 2007 11 09 | 704 | 0.2− | 0.6+ |
| 1999 12 05 | 691 | 0.4+ | 0.3− | 2003 11 24 | 704 | 0.1−  | 0.0   | 2007 11 09 | 704 | 0.0  | 0.8+ |
| 1999 12 05 | 691 | 0.2+ | 0.4− | 2003 11 24 | 704 | 0.0   | 0.1+  | 2007 11 16 | 704 | 0.3− | 0.2+ |
| 1999 12 05 | 691 | 0.4+ | 0.4− | 2003 12 04 | 704 | 0.1+  | 0.6+  | 2007 11 16 | 704 | 0.6− | 0.3+ |
| 1999 12 13 | 691 | 0.0  | 0.0  | 2003 12 04 | 704 | 0.5+  | 0.1+  | 2007 11 16 | 704 | 0.0  | 0.3+ |
| 1999 12 13 | 691 | 0.0  | 0.3+ | 2003 12 04 | 704 | 0.3+  | 0.4+  | 2007 11 16 | 704 | 0.3− | 0.5+ |
| 1999 12 13 | 691 | 0.1+ | 0.1+ | 2003 12 04 | 704 | 0.2−  | 0.2+  | 2007 11 20 | G96 | 0.6− | 1.4− |
| 1999 12 16 | 691 | 0.0  | 0.2+ | 2003 12 04 | 704 | 0.4+  | 0.6−  | 2007 11 20 | G96 | 0.2− | 1.0− |
| 1999 12 16 | 691 | 0.1− | 0.1+ | 2003 12 17 | A35 | 0.1−  | 0.3+  | 2007 11 20 | G96 | 0.7+ | 0.9− |
| 1999 12 16 | 691 | 0.0  | 0.2+ | 2003 12 17 | A35 | 0.3−  | 0.1−  | 2007 11 20 | G96 | 1.2+ | 0.3− |
| 2000 01 04 | 704 | 0.3+ | 0.3− | 2003 12 17 | A35 | 0.3−  | 0.1+  | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2000 01 04 | 704 | 0.2+ | 0.2− | 2003 12 19 | H72 | (3.9− | 1.2−) | 2007 11 20 | G96 | 0.6+ | 0.1+ |
| 2000 01 04 | 704 | 0.4− | 0.5− | 2003 12 19 | H72 | (2.9− | 0.9−) | 2007 11 20 | G96 | 0.0  | 0.4− |
| 2000 01 04 | 704 | 0.2− | 1.1− | 2003 12 19 | H72 | (1.6− | 1.3+) | 2007 11 20 | G96 | 0.5+ | 0.2+ |
| 2000 01 04 | 704 | 0.3− | 0.5− | 2003 12 22 | 704 | 0.9−  | 0.3−  | 2007 11 21 | 703 | 0.7− | 0.2− |
| 2000 01 05 | 704 | 0.1− | 0.6− | 2003 12 22 | 704 | 0.6−  | 0.0   | 2007 11 21 | 703 | 0.7− | 0.0  |
| 2000 01 05 | 704 | 0.6− | 0.1− | 2003 12 22 | 704 | 0.3−  | 0.3−  | 2007 11 21 | 703 | 0.3− | 0.1− |
| 2000 01 05 | 704 | 0.0  | 0.1+ | 2003 12 22 | 704 | 0.5−  | 0.2−  | 2007 11 21 | 703 | 0.1+ | 0.3+ |
| 2000 01 05 | 704 | 0.3− | 0.5− | 2003 12 22 | 704 | 0.7−  | 0.3−  | 2007 11 21 | 703 | 0.3− | 0.1− |
| 2000 01 05 | 704 | 0.8− | 0.4− | 2003 12 27 | 704 | 0.0   | 0.2−  | 2007 11 21 | 703 | 0.1+ | 0.5+ |
| 2000 01 05 | 704 | 0.4− | 0.6+ | 2003 12 27 | 704 | 0.6+  | 0.0   | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 2000 01 05 | 704 | 0.2− | 0.4− | 2003 12 27 | 704 | 0.8−  | 0.1−  | 2007 11 21 | G96 | 0.2+ | 0.1− |
| 2000 01 05 | 704 | 0.3− | 0.2+ | 2003 12 27 | 704 | 0.2−  | 0.1+  | 2007 11 21 | G96 | 0.2− | 0.3− |
| 2000 01 05 | 704 | 0.2− | 0.7+ | 2003 12 27 | 704 | 0.2−  | 0.2−  | 2007 11 21 | G96 | 0.1− | 0.2− |
| 2000 01 05 | 704 | 0.1− | 0.6+ | 2004 01 22 | 704 | 0.4−  | 0.5+  | 2007 11 21 | G96 | 0.2+ | 0.3− |
| 2000 02 03 | 704 | 0.7+ | 0.3+ | 2004 01 22 | 704 | 0.1−  | 0.2+  | 2007 11 21 | G96 | 0.0  | 0.4− |
| 2000 02 03 | 704 | 0.1+ | 0.4+ | 2004 01 22 | 704 | 0.1−  | 0.4+  | 2007 11 21 | G96 | 0.1− | 0.3− |
| 2000 02 03 | 704 | 0.6+ | 0.1− | 2004 01 22 | 704 | 0.3−  | 0.1−  | 2007 11 21 | G96 | 0.2+ | 0.3− |
| 2000 02 03 | 704 | 0.1− | 1.2+ | 2004 02 15 | 704 | 0.8+  | 1.3+  | 2007 12 16 | 704 | 0.8+ | 0.1− |
| 2000 02 03 | 704 | 0.7+ | 0.6+ | 2004 02 15 | 704 | 1.1+  | 0.4−  | 2007 12 16 | 704 | 0.6+ | 0.3− |
| 2003 11 20 | 704 | 0.2+ | 0.3+ | 2004 02 15 | 704 | 0.2−  | 0.5−  | 2007 12 16 | 704 | 0.4+ | 0.3− |
| 2003 11 20 | 704 | 0.4− | 0.1+ | 2007 11 03 | 704 | 0.2−  | 1.3+  | 2007 12 16 | 704 | 0.1+ | 0.0  |
| 2003 11 20 | 704 | 0.3+ | 0.6+ | 2007 11 03 | 704 | 0.4+  | 0.5+  | 2007 12 16 | 704 | 0.5+ | 0.0  |

2007 DEC. 24

M.P.O. 129101

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 05 | 704 | 0.3+  | 0.4-  | 2003 11 30 | 703 | 1.0+  | 0.1+  | 2007 10 20 | 703 | 0.3+ | 0.4- |
| 1999 12 05 | 704 | 0.1+  | 0.3+  | 2003 11 30 | 704 | 0.8-  | 0.9+  | 2007 10 21 | 704 | 0.2- | 0.0  |
| 1999 12 14 | 704 | 1.2+  | 1.2-  | 2003 11 30 | 703 | 0.7+  | 0.4+  | 2007 10 21 | 704 | 0.7- | 0.6+ |
| 1999 12 14 | 704 | 0.6-  | 0.5-  | 2003 11 30 | 704 | 0.4-  | 0.3-  | 2007 10 21 | 704 | 0.2+ | 0.6- |
| 1999 12 14 | 704 | 0.2-  | 0.9-  | 2003 11 30 | 703 | (0.3+ | 1.6-) | 2007 10 30 | 703 | 0.8- | 0.5+ |
| 1999 12 14 | 704 | 1.0+  | 0.5-  | 2003 12 11 | 703 | 0.1-  | 0.5+  | 2007 10 30 | 703 | 0.4- | 0.1+ |
| 2000 01 08 | 704 | 0.8-  | 1.0+  | 2003 12 11 | 703 | 0.0   | 0.8+  | 2007 10 30 | 703 | 0.7- | 0.6+ |
| 2000 01 08 | 704 | 0.6+  | 1.3+  | 2003 12 11 | 703 | 0.6-  | 0.3-  | 2007 10 30 | 703 | 0.1+ | 0.1+ |
| 2000 01 08 | 704 | 1.1-  | 0.5-  | 2003 12 11 | 703 | 1.0-  | 0.0   | 2007 11 01 | 704 | 0.9+ | 0.3+ |
| 2000 01 08 | 704 | 1.0-  | 0.6+  | 2003 12 12 | 644 | 0.1-  | 0.1-  | 2007 11 01 | 704 | 0.2+ | 0.6+ |
| 2001 04 26 | 691 | 0.2+  | 0.4+  | 2003 12 12 | 644 | 0.5+  | 0.1+  | 2007 11 01 | 704 | 0.3+ | 0.4+ |
| 2001 04 26 | 691 | 0.1+  | 0.6+  | 2003 12 12 | 644 | 0.7+  | 0.2+  | 2007 11 01 | 704 | 1.1+ | 0.2+ |
| 2001 04 26 | 691 | 0.2-  | 0.3+  | 2005 04 14 | 703 | 0.1+  | 0.4-  | 2007 11 01 | 704 | 1.1+ | 0.1- |
| 2003 10 18 | 699 | 0.6-  | 0.1+  | 2005 04 14 | 703 | 0.1+  | 1.4+  | 2007 11 04 | 104 | 0.5+ | 0.1+ |
| 2003 10 18 | 699 | 1.0+  | 0.1+  | 2005 04 14 | 703 | (1.2- | 1.6+) | 2007 11 04 | 104 | 0.2- | 0.8+ |
| 2003 10 18 | 699 | 0.1-  | 0.4+  | 2005 04 14 | 703 | (1.0+ | 2.3+) | 2007 11 06 | 704 | 0.6- | 0.0  |
| 2003 10 18 | 699 | 0.4+  | 1.0+  | 2007 10 09 | 106 | 0.2+  | 0.3-  | 2007 11 06 | 704 | 0.2- | 0.9+ |
| 2003 10 23 | 608 | 0.4-  | 0.7-  | 2007 10 09 | 106 | 0.3+  | 0.7-  | 2007 11 06 | 704 | 0.3- | 0.6+ |
| 2003 10 23 | 608 | 0.6-  | 0.5-  | 2007 10 09 | 106 | 0.1-  | 0.5-  | 2007 11 06 | 704 | 0.5- | 0.6+ |
| 2003 10 23 | 608 | 0.5-  | 0.6-  | 2007 10 09 | 106 | 0.5-  | 1.0-  | 2007 11 06 | 704 | 0.1- | 0.1+ |
| 2003 10 24 | 704 | 0.2-  | 0.3+  | 2007 10 09 | 704 | 0.1-  | 0.9+  | 2007 11 06 | 104 | 0.1+ | 0.8+ |
| 2003 10 24 | 704 | 0.6-  | 0.3+  | 2007 10 09 | 704 | 0.3+  | 0.3-  | 2007 11 06 | 104 | 0.6+ | 0.2+ |
| 2003 10 24 | 704 | 0.6-  | 0.1+  | 2007 10 09 | 704 | 0.1+  | 0.1+  | 2007 11 06 | 104 | 0.3+ | 0.4- |
| 2003 10 24 | 704 | 0.2-  | 0.3-  | 2007 10 09 | 704 | 0.7+  | 0.6+  | 2007 11 06 | 104 | 0.4+ | 0.4+ |
| 2003 10 24 | 704 | 0.3-  | 0.5+  | 2007 10 10 | 691 | 0.7-  | 0.1+  | 2007 11 12 | 703 | 0.1+ | 0.4+ |
| 2003 10 29 | 699 | 0.2+  | 1.0+  | 2007 10 10 | 691 | 0.1-  | 0.1-  | 2007 11 12 | 703 | 1.3- | 0.5+ |
| 2003 10 29 | 699 | (0.7+ | 1.6-) | 2007 10 10 | 691 | 0.6-  | 0.1+  | 2007 11 12 | 703 | 1.1- | 0.6+ |
| 2003 10 29 | 699 | 0.9-  | 0.7+  | 2007 10 12 | 704 | 0.1+  | 0.3+  | 2007 11 12 | 703 | 0.9- | 0.5+ |
| 2003 10 29 | 699 | 0.1+  | 0.4-  | 2007 10 12 | 704 | 0.2+  | 0.8+  | 2007 11 13 | 699 | 0.2- | 0.5- |
| 2003 11 15 | 644 | 0.1-  | 0.3+  | 2007 10 12 | 704 | 0.4+  | 0.6+  | 2007 11 13 | 699 | 0.4+ | 1.3- |
| 2003 11 15 | 644 | 0.0   | 0.1+  | 2007 10 12 | 704 | 0.3+  | 0.4+  | 2007 11 13 | 699 | 0.5- | 0.2+ |
| 2003 11 15 | 644 | 0.2-  | 0.2+  | 2007 10 12 | 704 | 0.8+  | 0.5+  | 2007 11 13 | 699 | 0.8- | 1.2- |
| 2003 11 18 | 703 | 0.1-  | 0.8-  | 2007 10 12 | A77 | 0.2+  | 0.5+  | 2007 11 15 | 704 | 1.1+ | 0.1- |
| 2003 11 18 | 703 | 1.3-  | 0.5-  | 2007 10 13 | A77 | 1.3+  | 0.5+  | 2007 11 15 | 704 | 0.4+ | 0.5+ |
| 2003 11 18 | 703 | 0.3-  | 0.5+  | 2007 10 13 | A77 | (1.9+ | 0.2+) | 2007 11 15 | 704 | 0.2+ | 0.3+ |
| 2003 11 18 | 703 | 1.3-  | 0.5+  | 2007 10 15 | 704 | 0.5+  | 0.6+  | 2007 11 15 | 704 | 0.3+ | 0.3- |
| 2003 11 19 | 703 | 0.1+  | 0.6-  | 2007 10 15 | 704 | 1.1+  | 0.8+  | 2007 11 15 | 704 | 0.2- | 0.6+ |
| 2003 11 19 | 703 | 0.5+  | 1.1-  | 2007 10 15 | 704 | 0.4+  | 0.7+  | 2007 11 17 | G96 | 0.2+ | 0.3- |
| 2003 11 19 | 703 | 0.9-  | 0.7-  | 2007 10 15 | 704 | 0.5+  | 1.0+  | 2007 11 17 | G96 | 0.1+ | 0.3- |
| 2003 11 19 | 703 | 0.8+  | 0.8-  | 2007 10 15 | G96 | 0.1+  | 0.5-  | 2007 11 17 | G96 | 0.2- | 0.4- |
| 2003 11 19 | 699 | 0.4-  | 0.4-  | 2007 10 15 | G96 | 0.2+  | 0.4-  | 2007 11 17 | G96 | 0.3+ | 0.3- |
| 2003 11 19 | 699 | 0.1+  | 0.3+  | 2007 10 15 | 704 | 0.3+  | 0.5+  | 2007 12 05 | 704 | 0.1- | 0.1+ |
| 2003 11 19 | 699 | 0.1+  | 0.0   | 2007 10 15 | G96 | 0.1+  | 0.6-  | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2003 11 19 | 699 | 0.6-  | 0.1-  | 2007 10 15 | G96 | 0.1+  | 0.5-  | 2007 12 05 | 704 | 0.3- | 0.1+ |
| 2003 11 21 | 691 | 0.2+  | 0.1+  | 2007 10 20 | 691 | 0.3-  | 0.1-  | 2007 12 05 | 704 | 0.6+ | 0.2- |
| 2003 11 21 | 691 | 0.3+  | 0.0   | 2007 10 20 | 691 | 0.1-  | 0.3-  | 2007 12 05 | 704 | 0.4- | 0.7- |
| 2003 11 21 | 691 | 0.2+  | 0.2+  | 2007 10 20 | 691 | 0.1-  | 0.3-  |            |     |      |      |

(171606)\* 1999 YT<sub>16</sub> = 2006 PH<sub>34</sub>Discovered 1999 Dec. 31 by Spacewatch at Kitt Peak.  
Id. G. V. Williams (MPO 103168)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 2.65846    |          | (2000.0)  |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23943608 | $\omega$ | 121.75848 | +0.33967484 | -0.93948013 |          |   |
| <i>a</i> | 2.5684808  | $\Omega$ | 308.31844 | +0.84251640 | +0.32505436 |          |   |
| <i>e</i> | 0.0379739  | <i>i</i> | 3.26610   | +0.41807550 | +0.10824392 |          |   |
| <i>P</i> | 4.12       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.0  | 0.1- | 2003 12 27 | 704 | 1.1-  | 0.0   | 2006 09 27 | G96 | 0.1+ | 0.2- |
| 1998 09 19 | 645 | 0.0  | 0.1- | 2003 12 27 | 704 | 0.8-  | 0.1-  | 2006 09 27 | G96 | 0.3- | 0.0  |
| 1999 12 31 | 691 | 0.0  | 0.8- | 2003 12 27 | 704 | (2.0- | 1.0+) | 2006 09 27 | G96 | 0.2+ | 0.4- |
| 1999 12 31 | 691 | 0.1- | 0.8- | 2005 05 01 | 644 | 0.1+  | 0.0   | 2006 10 21 | G96 | 0.1- | 0.2- |
| 1999 12 31 | 691 | 0.4- | 0.7- | 2005 05 01 | 644 | 0.1-  | 0.0   | 2006 10 21 | G96 | 0.1- | 0.2- |
| 2000 01 06 | 691 | 0.3+ | 0.3+ | 2005 05 01 | 644 | 0.2+  | 0.2+  | 2006 10 21 | G96 | 0.3+ | 0.3+ |
| 2000 01 06 | 691 | 0.4+ | 0.2+ | 2005 05 19 | 644 | 0.0   | 0.1+  | 2006 10 21 | G96 | 0.2- | 0.3- |
| 2000 01 06 | 691 | 1.0+ | 0.4+ | 2005 05 19 | 644 | 0.0   | 0.0   | 2006 11 17 | G96 | 0.1+ | 0.3- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 11 | 691 | 0.2-  | 0.2+  | 2005 05 19 | 644 | 0.1-  | 0.2+  | 2006 11 17 | G96 | 0.0   | 0.3-  |
| 2000 01 11 | 691 | 0.3-  | 0.2+  | 2006 07 18 | G96 | 0.1-  | 0.6-  | 2006 11 17 | G96 | 0.3+  | 0.2-  |
| 2000 01 11 | 691 | 0.9-  | 0.6-  | 2006 07 18 | G96 | 0.1-  | 0.6-  | 2006 11 17 | G96 | 0.0   | 0.1-  |
| 2002 09 05 | 704 | 0.1+  | 0.2+  | 2006 07 18 | G96 | 0.2-  | 0.1-  | 2007 12 10 | 704 | (0.7+ | 1.5+) |
| 2002 09 05 | 704 | 0.6+  | 0.5+  | 2006 07 18 | G96 | 0.2-  | 0.5-  | 2007 12 10 | 704 | 1.5+  | 0.7+  |
| 2002 09 05 | 704 | 0.5-  | 1.0+  | 2006 08 15 | 644 | 0.3+  | 0.3+  | 2007 12 10 | 704 | 0.4+  | 0.7+  |
| 2002 09 05 | 704 | (0.2- | 2.0+) | 2006 08 15 | 644 | 0.2+  | 0.1-  | 2007 12 10 | 704 | 0.8+  | 0.3+  |
| 2002 09 14 | 644 | 0.3+  | 0.8+  | 2006 08 15 | 644 | 0.2-  | 0.1+  | 2007 12 14 | 704 | 0.9-  | 0.2-  |
| 2002 09 14 | 644 | 0.3+  | 0.8+  | 2006 08 16 | 644 | 0.0   | 0.3-  | 2007 12 14 | 704 | 0.0   | 0.3-  |
| 2002 09 14 | 644 | 0.2-  | 0.5+  | 2006 08 16 | 644 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.2+  | 0.1+  |
| 2002 09 14 | 644 | 0.3-  | 0.7+  | 2006 08 16 | 644 | 0.6+  | 0.4+  | 2007 12 14 | 704 | 0.1+  | 0.4-  |
| 2002 09 14 | 644 | 0.2+  | 0.7+  | 2006 08 28 | 703 | 0.2-  | 0.6+  | 2007 12 14 | 704 | 0.1+  | 0.1-  |
| 2002 09 14 | 644 | 0.1-  | 0.5+  | 2006 08 28 | 703 | 0.2-  | 0.8-  | 2007 12 16 | 691 | 0.2-  | 0.3+  |
| 2003 12 22 | 704 | (1.9+ | 0.9+) | 2006 08 28 | 703 | 0.0   | 0.1+  | 2007 12 16 | 691 | 0.1-  | 0.4+  |
| 2003 12 22 | 704 | (2.8+ | 1.5+) | 2006 08 28 | 703 | (1.7+ | 0.9-) | 2007 12 16 | 691 | 0.0   | 0.5+  |
| 2003 12 22 | 704 | (2.1+ | 0.0)  | 2006 09 27 | G96 | 0.3-  | 0.0   |            |     |       |       |

(171607)\* 2000 AU<sub>13</sub>Discovered 2000 Jan. 3 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 274.11427  |          | (2000.0) |             | <i>P</i>    |          | <i>Q</i> |
|----------|------------|----------|----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.23872917 | $\omega$ | 77.48330 | -0.91285679 | -0.34141275 |          |          |
| <i>a</i> | 2.5735487  | $\Omega$ | 82.21477 | +0.22744458 | -0.88066353 |          |          |
| <i>e</i> | 0.2244526  | <i>i</i> | 13.06050 | +0.33905964 | -0.32843427 |          |          |
| <i>P</i> | 4.13       | <i>H</i> | 15.1     | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 07 | 704 | 0.1+  | 0.8+  | 2003 12 23 | 704 | 0.6-  | 0.3+  | 2007 11 02 | G96 | 0.2+  | 0.4-  |
| 1999 12 07 | 704 | 0.2+  | 0.8-  | 2004 01 12 | 644 | 0.4-  | 0.3+  | 2007 11 02 | G96 | 0.1+  | 0.2-  |
| 1999 12 07 | 704 | 0.3-  | 1.0-  | 2004 01 12 | 644 | 0.3-  | 0.1+  | 2007 11 02 | G96 | 0.3+  | 0.2-  |
| 1999 12 07 | 704 | 0.4-  | 0.3-  | 2004 01 12 | 644 | 0.3-  | 0.1+  | 2007 11 02 | G96 | 0.2+  | 0.2-  |
| 2000 01 03 | 704 | 0.3-  | 0.3+  | 2004 01 13 | 699 | 0.2+  | 0.2+  | 2007 11 09 | 703 | 0.4-  | 0.7-  |
| 2000 01 03 | 704 | 0.1-  | 0.7-  | 2004 01 13 | 699 | 0.8-  | 0.7+  | 2007 11 09 | 703 | 0.3+  | 0.0   |
| 2000 01 03 | 704 | 0.5-  | 0.3-  | 2004 01 13 | 699 | 0.5-  | 0.5+  | 2007 11 09 | 703 | 1.0+  | 0.9-  |
| 2000 01 03 | 704 | 0.0   | 0.2-  | 2004 01 13 | 699 | 0.7-  | 0.8-  | 2007 11 09 | 703 | 0.4-  | 0.7-  |
| 2000 01 03 | 704 | 0.3-  | 0.5-  | 2004 01 21 | 704 | (1.7+ | 0.1+) | 2007 11 11 | 704 | 0.2-  | 0.2+  |
| 2000 01 04 | 704 | 0.7-  | 0.3-  | 2004 01 21 | 704 | 1.3+  | 0.2+  | 2007 11 11 | 704 | 0.2-  | 0.4+  |
| 2000 01 04 | 704 | 0.7+  | 0.2-  | 2004 01 21 | 704 | 1.0+  | 0.3+  | 2007 11 11 | 704 | 1.2+  | 0.5+  |
| 2000 01 04 | 704 | 0.3-  | 0.5+  | 2004 01 21 | 704 | 1.5+  | 0.3-  | 2007 11 11 | 704 | 0.1-  | 1.4+  |
| 2000 02 11 | 704 | 0.2+  | 0.9-  | 2004 01 21 | 704 | 0.7+  | 0.0   | 2007 11 15 | G96 | 0.1-  | 0.1+  |
| 2000 02 11 | 704 | 0.1-  | 0.2+  | 2005 05 03 | 704 | (1.6+ | 2.0+) | 2007 11 15 | G96 | 0.1-  | 0.0   |
| 2000 02 11 | 704 | 0.7-  | 0.5+  | 2005 05 03 | 704 | 0.5+  | 0.8+  | 2007 11 15 | G96 | 0.2-  | 0.0   |
| 2003 12 01 | 704 | 0.4+  | 1.0-  | 2005 05 03 | 704 | 0.3+  | 0.6+  | 2007 11 15 | G96 | 0.1-  | 0.1-  |
| 2003 12 01 | 704 | 0.4+  | 0.5-  | 2005 05 20 | G96 | 0.2+  | 0.4+  | 2007 11 15 | 699 | 0.0   | 0.5+  |
| 2003 12 01 | 704 | 0.3+  | 0.5-  | 2005 05 20 | G96 | 0.7+  | 0.6-  | 2007 11 15 | 699 | 0.9+  | 0.3+  |
| 2003 12 01 | 704 | 0.4+  | 0.3-  | 2005 05 20 | G96 | 0.1+  | 0.2+  | 2007 11 15 | 699 | 0.4-  | 0.1-  |
| 2003 12 01 | 704 | 0.0   | 0.1-  | 2005 05 22 | 644 | 0.3+  | 0.5+  | 2007 11 15 | 699 | 0.1-  | 0.2-  |
| 2003 12 04 | 703 | 0.7+  | 0.8-  | 2005 05 22 | 644 | 0.1-  | 0.3+  | 2007 11 15 | G96 | 0.1+  | 0.1-  |
| 2003 12 04 | 703 | 0.4+  | 0.1+  | 2005 05 22 | 644 | 0.1-  | 0.5+  | 2007 11 15 | G96 | 0.2+  | 0.3-  |
| 2003 12 04 | 703 | 0.2+  | 0.0   | 2005 05 30 | E12 | 0.0   | 0.6+  | 2007 11 15 | G96 | 0.5+  | 0.1-  |
| 2003 12 04 | 703 | 0.1+  | 0.5+  | 2005 05 30 | E12 | 0.5+  | 0.2-  | 2007 11 15 | G96 | 0.3+  | 0.2-  |
| 2003 12 14 | 691 | 0.0   | 0.2+  | 2005 05 30 | E12 | 0.1+  | 0.1-  | 2007 11 17 | 704 | 1.1-  | 1.1+  |
| 2003 12 14 | 691 | 0.1-  | 0.1+  | 2005 05 30 | E12 | 0.2-  | 0.1+  | 2007 11 17 | 704 | 0.6-  | 0.3+  |
| 2003 12 14 | 691 | 0.1-  | 0.0   | 2005 06 05 | 704 | 1.3-  | 0.3+  | 2007 11 17 | 704 | 0.2-  | 0.6+  |
| 2003 12 17 | 699 | 0.9-  | 0.3-  | 2005 06 05 | 704 | 0.1+  | 0.7+  | 2007 11 17 | 704 | (1.8+ | 1.0+) |
| 2003 12 17 | 699 | 0.0   | 0.9+  | 2005 06 05 | 704 | 0.4+  | 0.8+  | 2007 11 17 | 703 | 0.4-  | 0.4-  |
| 2003 12 17 | 699 | 0.3+  | 0.3+  | 2005 06 05 | 704 | 0.0   | 0.7+  | 2007 11 17 | 703 | 0.2-  | 0.2-  |
| 2003 12 17 | 699 | 0.4+  | 0.7+  | 2005 06 11 | 703 | 0.2-  | 0.1+  | 2007 11 17 | 704 | (0.3+ | 1.6+) |
| 2003 12 19 | 704 | 0.8+  | 0.7+  | 2005 06 11 | 703 | 0.3-  | 1.0-  | 2007 11 17 | 703 | 0.2-  | 0.4+  |
| 2003 12 19 | 704 | 1.4+  | 0.1+  | 2005 06 11 | 703 | 0.2+  | 0.1+  | 2007 11 17 | G96 | 0.4+  | 0.7-  |
| 2003 12 19 | 704 | (1.9+ | 1.0+) | 2005 06 11 | 703 | 0.5-  | 0.3+  | 2007 11 17 | 703 | 0.0   | 0.0   |
| 2003 12 19 | 704 | 0.9+  | 0.3+  | 2005 06 27 | G96 | 0.1+  | 0.0   | 2007 11 17 | G96 | 0.2+  | 0.7-  |
| 2003 12 19 | 704 | 0.8+  | 0.2+  | 2005 06 27 | G96 | 0.1+  | 0.2-  | 2007 11 17 | G96 | 0.1+  | 0.5-  |
| 2003 12 21 | 704 | 0.6-  | 0.7+  | 2005 06 27 | G96 | 0.2+  | 0.1-  | 2007 11 17 | G96 | 0.1+  | 0.7-  |
| 2003 12 21 | 704 | 0.1-  | 0.4+  | 2005 06 27 | G96 | 0.1+  | 0.1-  | 2007 11 19 | 291 | 0.3-  | 0.1+  |
| 2003 12 21 | 704 | 0.4-  | 0.7+  | 2005 07 04 | 644 | 0.2+  | 0.2-  | 2007 11 19 | 291 | 0.4-  | 0.0   |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 704 | 0.2− | 0.2+ | 2005 07 04 | 644 | 0.4+ | 0.3− | 2007 11 19 | 291 | 0.5− | 0.1+ |
| 2003 12 21 | 704 | 0.4− | 0.2+ | 2005 07 04 | 644 | 0.1− | 0.2− | 2007 12 06 | 703 | 0.3+ | 0.2+ |
| 2003 12 23 | 704 | 0.3+ | 0.3+ | 2007 10 30 | 703 | 0.2+ | 0.6− | 2007 12 06 | 703 | 1.1− | 0.3− |
| 2003 12 23 | 704 | 0.2+ | 0.9+ | 2007 10 30 | 703 | 0.1− | 0.9+ | 2007 12 06 | 703 | 0.4− | 0.1− |
| 2003 12 23 | 704 | 0.1+ | 0.8+ | 2007 10 30 | 703 | 0.5+ | 0.3+ | 2007 12 06 | 703 | 0.7− | 0.1+ |
| 2003 12 23 | 704 | 0.2+ | 0.5+ | 2007 10 30 | 703 | 0.2+ | 0.0  |            |     |      |      |

**(171608)\* 2000 AO<sub>62</sub>**

Discovered 2000 Jan. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.23407702 | $\omega$ | 58.93194 | −0.92141001 | −0.38122065 |          |   |
| <i>a</i> | 2.6075353  | $\Omega$ | 98.56681 | +0.32550833 | −0.86306791 |          |   |
| <i>e</i> | 0.1234074  | <i>i</i> | 4.36895  | +0.21224495 | −0.33133758 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 15.3     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 01 04 | 704 | 0.1+ | 0.3− | 2003 12 19 | 704 | (0.9− | 1.6+) | 2004 01 31 | 691 | 0.1+ | 0.1− |
| 2000 01 04 | 704 | 0.1+ | 0.8− | 2003 12 19 | 704 | 0.6−  | 0.8+  | 2005 06 23 | 644 | 0.1+ | 0.0  |
| 2000 01 04 | 704 | 0.1+ | 0.2− | 2003 12 19 | 704 | 0.8−  | 0.9+  | 2005 06 23 | 644 | 0.3+ | 0.2+ |
| 2000 01 04 | 704 | 0.5− | 0.9+ | 2003 12 19 | 704 | 0.1+  | 0.8+  | 2005 06 23 | 644 | 0.3+ | 0.1− |
| 2000 01 04 | 704 | 0.8− | 0.4− | 2003 12 19 | 704 | 0.8−  | 0.5+  | 2005 06 30 | 691 | 0.2+ | 0.4+ |
| 2000 01 06 | 704 | 0.0  | 0.8− | 2003 12 21 | 704 | 0.6+  | 1.4+  | 2005 06 30 | 691 | 0.0  | 0.5+ |
| 2000 01 06 | 704 | 0.3+ | 0.1− | 2003 12 21 | 704 | (1.3+ | 1.5+) | 2005 06 30 | 691 | 0.0  | 0.5+ |
| 2000 01 06 | 704 | 0.1+ | 0.3− | 2003 12 21 | 704 | (0.8+ | 1.7+) | 2006 08 17 | 644 | 0.1− | 0.6+ |
| 2000 01 06 | 704 | 0.4− | 0.5+ | 2003 12 21 | 704 | 0.3+  | 0.7+  | 2006 08 17 | 644 | 0.3− | 0.7+ |
| 2000 01 30 | 704 | 0.0  | 1.9+ | 2003 12 22 | 704 | 0.0   | 0.3+  | 2006 08 17 | 644 | 0.2− | 0.7+ |
| 2000 01 30 | 704 | 0.2− | 0.2+ | 2003 12 22 | 704 | 0.2−  | 0.1+  | 2006 08 22 | 644 | 0.2− | 0.4+ |
| 2000 01 30 | 704 | 1.3+ | 1.6+ | 2003 12 22 | 704 | 0.2+  | 0.5+  | 2006 08 22 | 644 | 0.1− | 0.7+ |
| 2000 01 30 | 704 | 0.6+ | 0.4− | 2003 12 22 | 704 | 0.1−  | 0.1+  | 2006 08 22 | 644 | 0.3− | 0.6+ |
| 2000 02 03 | 704 | 0.2− | 0.1+ | 2003 12 22 | 704 | 0.4−  | 0.5+  | 2007 11 14 | 704 | 0.7− | 0.4+ |
| 2000 02 03 | 704 | 0.3− | 0.3+ | 2004 01 21 | 704 | 0.4+  | 1.1−  | 2007 11 14 | 704 | 0.6+ | 0.2− |
| 2000 02 03 | 704 | 0.3− | 0.2− | 2004 01 21 | 704 | 0.3+  | 1.0−  | 2007 11 14 | 704 | 0.1− | 0.1− |
| 2000 02 03 | 704 | 0.5− | 0.3+ | 2004 01 21 | 704 | 0.1−  | 0.7−  | 2007 11 14 | 704 | 0.1+ | 0.9− |
| 2000 02 03 | 704 | 0.1+ | 0.1+ | 2004 01 21 | 704 | (1.7+ | 0.0 ) | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2000 02 11 | 704 | 0.1− | 0.1+ | 2004 01 24 | 704 | 0.0   | 0.7−  | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2000 02 11 | 704 | 0.1+ | 0.4+ | 2004 01 24 | 704 | 0.3+  | 0.8−  | 2007 12 04 | 691 | 0.3− | 0.0  |
| 2000 02 11 | 704 | 0.1+ | 0.9+ | 2004 01 24 | 704 | 0.1−  | 0.1+  | 2007 12 05 | 704 | 0.5+ | 0.5− |
| 2000 02 11 | 704 | 0.1+ | 0.1+ | 2004 01 30 | 704 | 0.1+  | 0.6−  | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2000 02 11 | 704 | 0.2− | 0.8− | 2004 01 30 | 704 | (1.6+ | 0.3+) | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2000 03 04 | 704 | 0.4− | 0.1− | 2004 01 30 | 704 | 1.0+  | 0.2+  | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2000 03 04 | 704 | 0.8− | 0.4+ | 2004 01 30 | 704 | 1.0+  | 0.4+  | 2007 12 05 | 704 | 0.7+ | 0.1+ |
| 2000 03 04 | 704 | 0.2+ | 0.3+ | 2004 01 30 | 704 | 1.4+  | 0.8+  | 2007 12 16 | 691 | 0.2− | 0.1+ |
| 2000 03 04 | 704 | 0.2+ | 0.0  | 2004 01 31 | 691 | 0.1+  | 0.1−  | 2007 12 16 | 691 | 0.1− | 0.1+ |
| 2000 03 04 | 704 | 0.5+ | 0.1+ | 2004 01 31 | 691 | 0.2+  | 0.0   | 2007 12 16 | 691 | 0.2− | 0.2+ |

**(171609)\* 2000 AS<sub>86</sub>**

Discovered 2000 Jan. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.23960857 | $\omega$ | 297.93975 | +0.39834014 | −0.91451937 |          |   |
| <i>a</i> | 2.5672479  | $\Omega$ | 128.40998 | +0.87002389 | +0.35235179 |          |   |
| <i>e</i> | 0.1896709  | <i>i</i> | 5.16673   | +0.29048848 | +0.19875244 |          |   |
| <i>P</i> | 4.11       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 11 19 | 691 | 0.1+ | 0.3− | 2000 02 12 | 691 | 0.2− | 0.4+ | 2007 11 08 | G96 | 0.0  | 0.2− |
| 1995 11 19 | 691 | 0.3+ | 0.7− | 2001 04 15 | 691 | 0.2− | 0.4+ | 2007 11 08 | G96 | 0.5− | 0.2+ |
| 1995 11 19 | 691 | 0.2+ | 0.5+ | 2001 04 15 | 691 | 0.1− | 0.0  | 2007 11 08 | G96 | 0.0  | 0.0  |
| 1995 11 29 | 691 | 0.7− | 0.2+ | 2001 04 15 | 691 | 0.3+ | 0.0  | 2007 11 08 | G96 | 0.1− | 0.1− |
| 1995 11 29 | 691 | 0.3− | 0.1− | 2003 12 19 | 704 | 0.5+ | 0.1− | 2007 11 12 | 704 | 0.4+ | 0.7+ |
| 1995 11 29 | 691 | 0.5− | 0.1− | 2003 12 19 | 704 | 0.1− | 0.5+ | 2007 11 12 | 704 | 0.4− | 0.7+ |
| 2000 01 05 | 704 | 0.4+ | 0.1− | 2003 12 19 | 704 | 0.0  | 1.2+ | 2007 11 12 | 704 | 0.2+ | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 05 | 704 | 0.6− | 0.3− | 2003 12 23 | 704 | 0.2− | 1.0+ | 2007 11 12 | 704 | 0.6+ | 1.3+ |
| 2000 01 05 | 704 | 1.1+ | 1.5− | 2003 12 23 | 704 | 0.1− | 0.2+ | 2007 11 12 | 704 | 0.6+ | 0.5+ |
| 2000 01 05 | 704 | 1.0+ | 0.7− | 2003 12 23 | 704 | 0.3− | 1.0+ | 2007 12 04 | 704 | 0.1+ | 0.2+ |
| 2000 01 06 | 704 | 1.1+ | 0.2− | 2003 12 23 | 704 | 1.4+ | 1.3+ | 2007 12 04 | 704 | 1.1− | 0.2− |
| 2000 01 06 | 704 | 1.1+ | 0.4− | 2003 12 23 | 704 | 0.5− | 0.2+ | 2007 12 04 | 704 | 0.1− | 0.2− |
| 2000 01 06 | 704 | 1.1− | 0.8− | 2004 01 30 | 691 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.2− | 0.5+ |
| 2000 02 02 | 691 | 0.1− | 0.5− | 2004 01 30 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.4− | 0.6+ |
| 2000 02 02 | 691 | 0.0  | 0.4− | 2004 01 30 | 691 | 0.1− | 0.1+ | 2007 12 05 | G96 | 0.2+ | 0.1− |
| 2000 02 02 | 691 | 0.1+ | 0.4− | 2005 04 15 | 691 | 0.2+ | 0.2+ | 2007 12 05 | G96 | 0.2+ | 0.1− |
| 2000 02 12 | 691 | 0.1+ | 0.1+ | 2005 04 15 | 691 | 0.0  | 0.4+ | 2007 12 05 | G96 | 0.7− | 0.0  |
| 2000 02 12 | 691 | 0.1− | 0.3+ | 2005 04 15 | 691 | 0.3+ | 0.4+ | 2007 12 05 | G96 | 0.0  | 0.3− |

**(171610)\* 2000 AL<sub>93</sub> = 2001 LL<sub>17</sub>**

Discovered 2000 Jan. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 14184)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.37123708 | $\omega$ | 277.60453 | +0.74028959 | −0.56970641 |          |   |
| <i>a</i> | 1.9173518  | $\Omega$ | 117.82223 | +0.65485365 | +0.73119195 |          |   |
| <i>e</i> | 0.1287745  | <i>i</i> | 23.80313  | −0.15211186 | +0.37522384 |          |   |
| <i>P</i> | 2.65       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 18 | 691 | 0.1+ | 0.2− | 2001 07 18 | 608 | 0.5+  | 0.4+  | 2006 05 13 | 644 | 0.2−  | 0.1+  |
| 1999 12 18 | 691 | 0.0  | 0.1+ | 2001 07 18 | 608 | 0.0   | 0.4+  | 2006 05 25 | 704 | 0.3+  | 0.4+  |
| 1999 12 18 | 691 | 0.0  | 0.4+ | 2001 07 21 | 644 | 0.2−  | 0.4−  | 2006 05 25 | 704 | 0.0   | 1.0+  |
| 2000 01 04 | 704 | 0.1+ | 0.5− | 2001 07 21 | 644 | 0.3−  | 0.3−  | 2006 05 25 | 704 | 0.5+  | 0.2+  |
| 2000 01 04 | 704 | 0.1+ | 0.3− | 2001 07 21 | 644 | 0.3−  | 0.4−  | 2006 05 25 | 704 | 0.5+  | 0.7+  |
| 2000 01 04 | 704 | 0.2− | 0.0  | 2004 10 06 | 704 | 0.7−  | 0.0   | 2006 05 25 | 704 | 1.5−  | 0.3+  |
| 2000 01 04 | 704 | 0.0  | 0.1+ | 2004 10 06 | 704 | 0.1−  | 0.4−  | 2006 05 26 | 691 | 0.1−  | 0.1+  |
| 2000 01 04 | 704 | 0.2− | 0.6− | 2004 10 06 | 704 | 0.9+  | 0.0   | 2006 05 26 | 691 | 0.1−  | 0.0   |
| 2000 01 08 | 704 | 0.6+ | 0.2+ | 2004 10 06 | 704 | 0.6−  | 0.4−  | 2006 05 26 | 691 | 0.0   | 0.1+  |
| 2000 01 08 | 704 | 0.3+ | 0.6+ | 2004 12 10 | 703 | 0.7−  | 0.8+  | 2006 05 30 | 704 | 0.5+  | 0.4+  |
| 2000 01 08 | 704 | 0.7− | 0.8− | 2004 12 10 | 703 | 1.0−  | 0.5+  | 2006 05 30 | 704 | 1.2+  | 0.3+  |
| 2000 01 08 | 704 | 0.1− | 0.8+ | 2004 12 10 | 703 | 0.5−  | 0.3+  | 2006 05 30 | 704 | 0.6−  | 0.1+  |
| 2001 06 15 | 704 | 0.2+ | 0.2− | 2004 12 10 | 703 | 0.4−  | 0.5+  | 2006 05 30 | 704 | 0.4+  | 0.3−  |
| 2001 06 15 | 704 | 0.6+ | 0.4− | 2004 12 11 | 704 | 0.8+  | 0.2−  | 2006 05 30 | 691 | 0.1−  | 0.2+  |
| 2001 06 15 | 704 | 0.1+ | 0.3+ | 2004 12 11 | 704 | (2.0+ | 0.0 ) | 2006 05 30 | 691 | 0.1+  | 0.1+  |
| 2001 06 15 | 704 | 0.9+ | 0.0  | 2004 12 11 | 704 | 0.8+  | 0.4−  | 2006 05 30 | 691 | 0.1−  | 0.0   |
| 2001 06 16 | 691 | 0.1+ | 0.1+ | 2004 12 11 | 704 | 0.9+  | 0.1+  | 2007 11 14 | 704 | 0.5−  | 1.0+  |
| 2001 06 16 | 691 | 0.1+ | 0.4+ | 2004 12 21 | 703 | 0.6−  | 1.0+  | 2007 11 14 | 704 | 0.3−  | 0.8+  |
| 2001 06 16 | 691 | 0.3+ | 0.5+ | 2004 12 21 | 703 | 0.7−  | 0.1+  | 2007 11 14 | 704 | (1.6+ | 0.1−) |
| 2001 06 28 | 644 | 0.1+ | 1.1+ | 2004 12 21 | 703 | 0.3−  | 0.3+  | 2007 12 04 | G96 | 0.4−  | 0.0   |
| 2001 06 28 | 644 | 0.2+ | 1.3+ | 2004 12 21 | 703 | 1.0−  | 0.4+  | 2007 12 04 | G96 | 0.4−  | 0.3−  |
| 2001 06 28 | 644 | 0.1+ | 1.3+ | 2005 01 16 | 703 | 0.8−  | 0.5+  | 2007 12 04 | G96 | 0.5−  | 0.0   |
| 2001 07 16 | 699 | 0.0  | 0.3− | 2005 01 16 | 703 | 0.3−  | 0.2+  | 2007 12 04 | G96 | 0.1+  | 0.4+  |
| 2001 07 16 | 699 | 0.3− | 0.9− | 2005 01 16 | 703 | 0.5−  | 0.9+  | 2007 12 05 | 704 | 1.5+  | 0.9+  |
| 2001 07 16 | 699 | 0.5− | 0.6− | 2005 01 16 | 703 | 0.7−  | 0.7+  | 2007 12 05 | 704 | 2.2+  | 0.1+  |
| 2001 07 16 | 699 | 0.2+ | 0.1− | 2006 05 13 | 644 | 0.1−  | 0.2+  | 2007 12 05 | 704 | 1.0+  | 0.5+  |
| 2001 07 18 | 608 | 0.4+ | 0.4+ | 2006 05 13 | 644 | 0.1−  | 0.4+  | 2007 12 05 | 704 | 1.6+  | 1.1+  |

2007 DEC. 24

M.P.O. 129103

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2000 01 05 704 1.1− 0.6− | 2005 05 12 644 0.1+ 0.4+   | 2006 09 22 691 0.1+ 0.2− |
| 2000 01 05 704 0.7+ 1.3− | 2005 05 12 644 0.2+ 0.2+   | 2006 09 22 691 0.1− 0.2+ |
| 2000 01 05 704 0.4+ 0.0  | 2005 06 03 703 1.1− 0.7−   | 2006 09 25 691 0.2+ 0.1+ |
| 2000 01 07 704 0.7+ 0.6+ | 2005 06 03 703 0.4+ 0.9+   | 2006 09 25 691 0.2− 0.2+ |
| 2000 01 07 704 0.4− 0.5− | 2005 06 03 703 (1.2− 2.1+) | 2006 09 25 691 0.1− 0.3− |
| 2000 01 07 704 0.1− 0.2− | 2005 06 03 703 0.4− 0.1−   | 2006 09 27 691 0.0 0.0   |
| 2000 01 07 704 0.5− 1.2− | 2006 08 27 699 1.5+ 0.6+   | 2006 09 27 691 0.1+ 0.0  |
| 2000 02 02 704 0.3+ 0.1+ | 2006 08 27 699 0.7+ 0.0    | 2006 09 27 691 0.0 0.0   |
| 2000 02 02 704 0.8+ 0.5+ | 2006 08 27 699 (1.6+ 2.6+) | 2006 09 30 691 0.3− 0.2+ |
| 2000 02 02 704 0.6+ 0.5+ | 2006 08 27 699 (2.7− 2.0+) | 2006 09 30 691 0.0 0.4+  |
| 2002 09 04 644 0.1+ 0.3+ | 2006 08 29 703 (1.7+ 1.0+) | 2006 09 30 691 0.0 0.1+  |
| 2002 09 04 644 0.2− 0.2+ | 2006 08 29 703 0.5− 0.6−   | 2007 11 15 704 0.3+ 1.1+ |
| 2002 09 04 644 0.3− 0.3+ | 2006 08 29 703 0.2+ 0.1−   | 2007 11 15 704 1.2+ 0.5− |
| 2002 09 12 644 0.1− 0.3+ | 2006 08 29 703 0.4+ 0.3−   | 2007 11 15 704 0.1+ 0.8− |
| 2002 09 12 644 0.1+ 0.3+ | 2006 09 15 691 0.1+ 0.1−   | 2007 12 05 704 0.8+ 0.2+ |
| 2002 09 12 644 0.3− 0.1− | 2006 09 15 691 0.4− 0.3−   | 2007 12 05 704 0.9+ 0.1+ |
| 2002 10 31 645 0.1− 0.1− | 2006 09 15 691 0.1+ 0.1+   | 2007 12 05 704 1.0+ 0.3− |
| 2002 10 31 645 0.1− 0.1− | 2006 09 17 691 0.1+ 0.3+   | 2007 12 05 704 0.7+ 1.2+ |
| 2003 12 19 704 0.6− 1.2+ | 2006 09 17 691 0.0 0.0     | 2007 12 05 704 0.3− 0.6+ |
| 2003 12 19 704 0.1+ 0.8+ | 2006 09 17 691 0.2+ 0.0    | 2007 12 15 691 0.6− 0.3− |
| 2003 12 19 704 0.8+ 0.1+ | 2006 09 19 691 0.0 0.1−    | 2007 12 15 691 0.3− 0.0  |
| 2003 12 19 704 0.3− 0.2− | 2006 09 19 691 0.1+ 0.0    | 2007 12 15 691 0.5− 0.1+ |
| 2003 12 19 704 0.1+ 0.2− | 2006 09 19 691 0.2+ 0.1+   |                          |
| 2005 05 12 644 0.0 0.2+  | 2006 09 22 691 0.2+ 0.0    |                          |

(171612)\* 2000 AS<sub>241</sub>

Discovered 2000 Jan. 7 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 332.82225  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23766307 | $\omega$ 271.42805 | −0.14800183   | −0.98861749 |
| <i>a</i> | 2.5812392  | $\Omega$ 187.25276 | +0.97102108   | −0.14007200 |
| <i>e</i> | 0.1463817  | <i>i</i> 12.36558  | +0.18765267   | −0.05491174 |
| <i>P</i> | 4.15       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1998 09 30 691 0.4− 0.1+   | 2000 03 06 704 0.9+ 0.9+   | 2006 05 06 691 0.5+ 0.4+ |
| 1998 09 30 691 0.1− 0.3+   | 2002 08 15 644 0.5+ 0.2+   | 2006 05 06 691 0.3− 0.2+ |
| 1998 09 30 691 0.1− 0.2+   | 2002 08 15 644 0.0 0.0     | 2006 05 06 691 0.1− 0.4+ |
| 2000 01 07 699 0.4+ 0.1+   | 2002 08 15 644 0.3+ 0.2+   | 2006 08 16 644 0.0 0.1−  |
| 2000 01 07 699 0.1+ 0.6+   | 2004 01 29 704 0.9+ 1.0−   | 2006 08 16 644 0.2+ 0.2− |
| 2000 01 07 699 0.5+ 0.5+   | 2004 01 29 704 0.1+ 0.8−   | 2006 08 16 644 0.4+ 0.1− |
| 2000 01 11 704 0.5− 0.1−   | 2004 01 29 704 0.6+ 0.4−   | 2007 11 14 699 0.3+ 0.3+ |
| 2000 01 11 704 0.8− 0.5+   | 2004 01 29 704 1.1+ 0.8−   | 2007 11 14 699 0.4+ 0.3+ |
| 2000 01 11 704 (0.1− 2.1+) | 2004 02 18 704 0.7− 0.9+   | 2007 11 14 699 0.3+ 0.0  |
| 2000 01 11 704 0.4− 1.2+   | 2004 02 18 704 0.8− 0.2+   | 2007 11 14 699 0.2− 0.9− |
| 2000 02 06 704 0.2+ 0.9+   | 2004 02 18 704 0.2− 1.4+   | 2007 11 14 683 0.1− 0.3− |
| 2000 02 06 704 1.0+ 0.4+   | 2005 05 06 703 0.2− 0.6+   | 2007 11 14 683 0.2− 0.4− |
| 2000 02 06 704 0.1+ 0.3−   | 2005 05 06 703 1.0− 0.0    | 2007 11 14 683 0.1− 0.4+ |
| 2000 02 06 704 0.0 0.2+    | 2005 05 06 703 0.1+ 0.8−   | 2007 11 20 703 0.3− 0.0  |
| 2000 02 06 704 0.7− 1.2−   | 2005 05 06 703 (5.2− 1.6−) | 2007 11 20 703 0.3− 0.0  |
| 2000 03 06 704 0.3+ 0.7+   | 2005 05 15 644 0.1+ 0.2+   | 2007 11 20 703 0.7− 0.3+ |
| 2000 03 06 704 0.6− 0.7+   | 2005 05 15 644 0.1+ 0.4+   |                          |
| 2000 03 06 704 0.3+ 0.1−   | 2005 05 15 644 0.1+ 0.3+   |                          |

(171613)\* 2000 AZ<sub>257</sub>

Discovered 2000 Jan. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 258.98938  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23003023 | $\omega$ 1.00097   | −0.99988296   | −0.01318271 |
| <i>a</i> | 2.6380282  | $\Omega$ 178.18822 | +0.01176718   | −0.98698446 |
| <i>e</i> | 0.1950260  | <i>i</i> 14.21661  | +0.00977785   | −0.16027441 |
| <i>P</i> | 4.28       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1996 04 21 691 0.5+ 0.2−   | 2002 10 01 699 0.8− 0.6− | 2006 09 28 G96 0.1− 0.0    |
| 1996 04 21 691 0.8+ 1.2+   | 2002 10 05 645 0.2− 0.0  | 2006 09 28 G96 0.2+ 0.4−   |
| 1996 04 21 691 0.4− 0.2−   | 2002 10 05 645 0.1− 0.1+ | 2006 09 28 G96 0.1+ 0.2+   |
| 2000 01 11 704 0.4− 0.8−   | 2002 10 06 644 0.5− 0.2+ | 2006 10 19 G96 0.0 0.2+    |
| 2000 01 11 704 (2.3− 1.2−) | 2002 10 06 644 0.7− 0.4+ | 2006 10 19 G96 0.4− 0.1−   |
| 2000 01 11 704 0.7− 1.2−   | 2002 10 06 644 0.7− 0.4+ | 2006 10 19 G96 0.3+ 0.3−   |
| 2000 01 11 704 0.6− 0.9−   | 2005 05 14 704 0.7− 0.5− | 2006 10 19 G96 0.1+ 0.2+   |
| 2000 01 11 704 0.0 1.3−    | 2005 05 14 704 0.3+ 0.2− | 2006 10 27 G96 0.2− 0.1+   |
| 2000 02 05 703 0.0 0.6+    | 2005 05 14 704 0.6− 0.9+ | 2006 10 27 G96 0.1− 0.9+   |
| 2000 02 05 703 1.1+ 0.8+   | 2005 05 14 704 1.0− 0.9+ | 2006 10 27 G96 0.6− 0.0    |
| 2000 02 05 703 0.4+ 0.4+   | 2005 06 30 644 0.3− 0.0  | 2006 10 27 G96 0.1+ 0.1−   |
| 2000 02 05 703 0.1+ 0.9+   | 2005 06 30 644 0.0 0.0   | 2007 11 15 703 (1.7+ 1.6+) |
| 2000 02 08 645 0.1− 0.0    | 2005 06 30 644 0.2− 0.3+ | 2007 11 15 703 (2.8+ 0.9+) |
| 2000 02 08 645 0.1− 0.0    | 2006 08 29 691 0.3+ 0.3+ | 2007 11 15 703 0.3+ 1.3+   |
| 2000 02 28 703 0.7+ 0.6+   | 2006 08 29 691 0.1+ 0.2+ | 2007 11 15 703 1.5+ 0.3+   |
| 2000 02 28 703 0.1+ 0.8+   | 2006 08 29 691 0.2+ 0.3+ | 2007 12 05 703 1.4+ 0.6+   |
| 2000 02 28 703 0.5− 0.8+   | 2006 09 19 703 0.1+ 0.4− | 2007 12 05 703 0.6− 0.2−   |
| 2000 02 28 703 0.3+ 0.0    | 2006 09 19 703 0.8+ 0.7+ | 2007 12 05 703 0.3+ 0.4+   |
| 2002 10 01 699 0.5+ 0.6−   | 2006 09 19 703 0.4+ 0.2− | 2007 12 05 703 0.6+ 0.5+   |
| 2002 10 01 699 0.5− 0.5−   | 2006 09 19 703 1.1+ 0.3− |                            |
| 2002 10 01 699 0.4+ 0.2+   | 2006 09 28 G96 0.0 0.2+  |                            |

(171614)\* 2000 BU<sub>6</sub> = 2003 YQ<sub>7</sub>

Discovered 2000 Jan. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. K. E. Smalley (*MPO* 56080)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 31.31808   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23775394 | $\omega$ 274.50352 | +0.94690778   | −0.30795131 |
| <i>a</i> | 2.5805814  | $\Omega$ 103.45308 | +0.31955606   | +0.86990122 |
| <i>e</i> | 0.2104790  | <i>i</i> 5.44976   | +0.03534940   | +0.38527634 |
| <i>P</i> | 4.15       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1998 06 29 691 0.0 0.5+    | 2003 12 19 704 0.3+ 0.0    | 2005 04 04 703 0.2+ 0.4+   |
| 1998 06 29 691 0.5− 0.8+   | 2003 12 19 704 0.2+ 0.0    | 2005 04 04 703 0.5− 1.1+   |
| 1998 06 29 691 0.6− 0.7+   | 2003 12 19 704 0.5− 0.0    | 2005 04 04 703 1.2− 0.7−   |
| 2000 01 06 704 (0.3+ 2.2−) | 2003 12 19 704 1.1+ 0.6+   | 2005 04 04 703 0.3− 0.2−   |
| 2000 01 06 704 1.5+ 1.1−   | 2003 12 20 460 (0.7− 1.6+) | 2005 05 06 460 (0.9+ 2.0+) |
| 2000 01 06 704 0.4+ 0.2+   | 2003 12 20 460 0.6+ 0.4−   | 2005 05 06 460 0.5− 1.1+   |
| 2000 01 27 704 0.1− 0.5+   | 2003 12 20 460 0.4− 0.3+   | 2007 11 12 704 0.3+ 0.5+   |
| 2000 01 27 704 0.2+ 0.4+   | 2003 12 21 460 0.4+ 0.2−   | 2007 11 12 704 0.1+ 0.2−   |
| 2000 01 27 704 0.7− 0.1+   | 2003 12 21 460 0.6− 0.0    | 2007 11 12 704 0.0 0.3−    |
| 2000 01 27 704 0.1− 0.6+   | 2003 12 21 704 1.5− 1.2+   | 2007 11 12 704 0.0 0.3+    |
| 2000 01 30 704 0.1− 0.3+   | 2003 12 21 704 (1.8− 0.5+) | 2007 11 12 704 0.2− 0.1+   |
| 2000 01 30 704 0.7− 0.4+   | 2003 12 21 704 (1.7− 0.7+) | 2007 11 20 691 0.2− 0.1−   |
| 2000 01 30 704 0.0 0.1−    | 2003 12 21 704 (2.1− 0.9+) | 2007 11 20 691 0.1− 0.3−   |
| 2000 02 01 691 0.3+ 0.0    | 2004 01 30 691 0.2− 0.2+   | 2007 11 20 691 0.5− 0.2+   |
| 2000 02 01 691 0.4− 0.2−   | 2004 01 30 691 0.1− 0.2+   | 2007 12 04 704 0.4+ 0.5+   |
| 2000 02 01 691 0.1+ 0.2−   | 2004 01 30 691 0.0 0.2+    | 2007 12 04 704 0.6+ 0.5+   |
| 2002 07 05 704 0.7+ 0.7−   | 2004 01 30 704 0.0 0.6+    | 2007 12 04 704 0.7+ 0.2+   |
| 2002 07 05 704 0.7+ 0.4−   | 2004 01 30 704 0.5+ 0.4+   | 2007 12 04 704 0.7− 0.4−   |
| 2002 07 05 704 1.4+ 1.4−   | 2004 01 30 704 0.3+ 0.5+   | 2007 12 04 704 0.2− 0.1+   |
| 2002 07 05 704 0.6+ 0.0    | 2005 03 10 703 (2.7+ 1.5+) | 2007 12 05 G96 0.1− 0.2−   |
| 2003 12 19 460 1.1+ 0.2+   | 2005 03 10 703 0.6+ 0.0    | 2007 12 05 G96 0.0 0.2−    |
| 2003 12 19 460 0.3+ 0.0    | 2005 03 10 703 0.2+ 0.9+   | 2007 12 05 G96 0.4+ 0.2−   |
| 2003 12 19 704 0.6+ 0.0    | 2005 03 10 703 0.3+ 0.3−   | 2007 12 05 G96 0.3+ 0.3−   |

**(171615)\* 2000 BE<sub>9</sub>**

Discovered 2000 Jan. 26 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22645386 | $\omega$ | 17.27273  | −0.94950043 | −0.31194724 |          |   |
| <i>a</i> | 2.6657305  | $\Omega$ | 144.49419 | +0.28057957 | −0.89227377 |          |   |
| <i>e</i> | 0.0160923  | <i>i</i> | 3.32961   | +0.14044228 | −0.32639920 |          |   |
| <i>P</i> | 4.35       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 12 02 | 691 | 0.1+ | 0.4− | 2005 04 14 | 691 | 0.0  | 0.5+ | 2007 11 12 | 704 | 0.9+ | 1.2+ |
| 1994 12 02 | 691 | 0.3+ | 0.7− | 2005 05 04 | 691 | 0.0  | 0.3− | 2007 11 12 | 704 | 1.4+ | 0.5+ |
| 1994 12 02 | 691 | 0.1+ | 0.7− | 2005 05 04 | 691 | 0.0  | 0.1+ | 2007 11 12 | 704 | 0.2− | 1.3− |
| 1996 03 11 | 691 | 0.3− | 0.1− | 2005 05 04 | 691 | 0.3− | 0.2− | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 1996 03 11 | 691 | 0.5− | 0.1− | 2006 05 26 | G96 | 0.1+ | 0.2+ | 2007 11 13 | 691 | 0.8− | 0.2+ |
| 1996 03 11 | 691 | 0.6− | 0.1− | 2006 05 26 | G96 | 0.1+ | 0.6+ | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2000 01 26 | 691 | 0.2− | 0.1+ | 2006 05 26 | G96 | 0.5+ | 0.1− | 2007 11 18 | G96 | 0.6+ | 0.1+ |
| 2000 01 26 | 691 | 0.0  | 0.1− | 2006 05 26 | G96 | 0.0  | 0.7+ | 2007 11 18 | G96 | 1.0+ | 0.0  |
| 2000 01 26 | 691 | 0.3+ | 0.2+ | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 11 18 | G96 | 0.7+ | 0.1− |
| 2000 01 29 | 691 | 0.2+ | 0.3− | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 11 18 | G96 | 0.8+ | 0.2− |
| 2000 01 29 | 691 | 0.1+ | 0.3− | 2007 11 01 | 691 | 0.3− | 0.2− | 2007 11 20 | 691 | 0.6− | 0.5+ |
| 2000 01 29 | 691 | 0.2+ | 0.2− | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.4− | 0.1+ |
| 2000 03 04 | 691 | 0.4+ | 0.0  | 2007 11 02 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2000 03 04 | 691 | 0.4+ | 0.1− | 2007 11 02 | 691 | 0.1− | 0.0  | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2000 03 04 | 691 | 0.3+ | 0.2− | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.1− | 0.2− |
| 2002 08 12 | 807 | 0.6+ | 0.4+ | 2007 11 05 | 691 | 0.2− | 0.2+ | 2007 11 20 | 691 | 0.3− | 0.2+ |
| 2002 08 12 | 807 | 0.5+ | 0.3+ | 2007 11 05 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 1.9+ | 0.7+ |
| 2005 03 11 | 691 | 0.6+ | 0.6+ | 2007 11 09 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.4+ | 1.3+ |
| 2005 03 11 | 691 | 0.1+ | 0.5+ | 2007 11 09 | 691 | 0.2− | 0.2+ | 2007 12 05 | 704 | 0.6+ | 1.8+ |
| 2005 03 11 | 691 | 0.5+ | 0.3+ | 2007 11 09 | 691 | 0.2− | 0.2+ | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2005 04 14 | 691 | 0.1+ | 0.7+ | 2007 11 12 | 704 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 0.9− | 1.1+ |
| 2005 04 14 | 691 | 0.1+ | 0.3+ | 2007 11 12 | 704 | 1.1+ | 1.3+ |            |     |      |      |

**(171616)\* 2000 BL<sub>22</sub> = 2002 TU<sub>373</sub>**

Discovered 2000 Jan. 30 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 74718)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22912181 | $\omega$ | 73.70817  | −0.98759160 | +0.15373276 |          |   |
| <i>a</i> | 2.6449965  | $\Omega$ | 115.12589 | −0.15419400 | −0.91048338 |          |   |
| <i>e</i> | 0.0894425  | <i>i</i> | 2.03052   | −0.02978337 | −0.38390918 |          |   |
| <i>P</i> | 4.30       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 01 30 | 691 | 0.4− | 0.1+ | 2004 01 31 | 291 | 0.1− | 0.3+ | 2006 08 28 | 691 | 0.3+  | 0.4+  |
| 2000 01 30 | 691 | 0.1− | 0.2+ | 2004 01 31 | 291 | 0.1+ | 0.3+ | 2006 08 28 | 691 | 0.7−  | 1.1−  |
| 2000 01 30 | 691 | 0.0  | 0.1+ | 2005 05 08 | G96 | 0.3− | 0.3− | 2006 08 28 | 691 | 0.3+  | 0.3+  |
| 2000 02 01 | 691 | 0.2+ | 0.1− | 2005 05 08 | G96 | 0.3− | 0.4− | 2007 11 19 | 691 | 0.1+  | 0.3+  |
| 2000 02 01 | 691 | 0.1+ | 0.1− | 2005 05 08 | G96 | 0.2− | 0.2− | 2007 11 19 | 691 | 0.1−  | 0.2+  |
| 2000 02 01 | 691 | 0.1+ | 0.3− | 2005 05 08 | G96 | 0.2− | 0.2+ | 2007 11 19 | 691 | 1.0−  | 0.9−  |
| 2000 02 02 | 691 | 0.0  | 0.1− | 2005 05 18 | 644 | 0.3− | 0.3+ | 2007 12 05 | 704 | (2.2+ | 0.6+) |
| 2000 02 02 | 691 | 0.0  | 0.2− | 2005 05 18 | 644 | 0.1+ | 0.3− | 2007 12 05 | 704 | 0.3+  | 0.1−  |
| 2000 02 02 | 691 | 0.2+ | 0.1− | 2005 05 18 | 644 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.1−  | 0.6+  |
| 2000 03 03 | 704 | 0.2− | 0.8+ | 2005 06 04 | 691 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.2+  | 0.2+  |
| 2000 03 03 | 704 | 0.2− | 0.8+ | 2005 06 04 | 691 | 0.1− | 0.3+ | 2007 12 05 | G96 | 0.4+  | 0.4+  |
| 2000 03 03 | 704 | 0.2+ | 1.3+ | 2005 06 04 | 691 | 0.1− | 0.1+ | 2007 12 05 | G96 | 0.6+  | 0.0   |
| 2000 03 03 | 704 | 0.8+ | 0.4+ | 2005 06 10 | 691 | 0.1− | 0.1+ | 2007 12 05 | G96 | 0.1+  | 0.1+  |
| 2002 10 10 | 645 | 0.0  | 0.1− | 2005 06 10 | 691 | 0.3+ | 0.1+ | 2007 12 15 | 704 | 1.3+  | 0.4+  |
| 2002 10 10 | 645 | 0.1− | 0.1− | 2005 06 10 | 691 | 0.4+ | 0.0  | 2007 12 15 | 704 | 1.0−  | 0.2+  |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2006 08 21 | 691 | 0.0  | 0.6+ | 2007 12 15 | 704 | 1.2+  | 0.4+  |
| 2002 10 31 | 645 | 0.1− | 0.0  | 2006 08 21 | 691 | 0.4+ | 0.6+ | 2007 12 15 | 704 | 0.2+  | 0.5+  |
| 2004 01 31 | 291 | 0.4+ | 0.2+ | 2006 08 21 | 691 | 0.2+ | 0.7+ | 2007 12 15 | 704 | 0.8−  | 0.6+  |

**(171617)\* 2000 BY<sub>31</sub>**

Discovered 2000 Jan. 30 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

*M* 321.85668

(2000.0)

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23676757 | $\omega$ | 228.01297 | −0.31513795 | −0.94851622 |
| <i>a</i> | 2.5877436  | $\Omega$ | 240.38213 | +0.88115949 | −0.28002565 |
| <i>e</i> | 0.2256562  | <i>i</i> | 2.08989   | +0.35248549 | −0.14799532 |
| <i>P</i> | 4.16       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 03 25 | 691 | 0.3+ | 0.3+ | 2003 12 23 | 704 | 0.1−  | 0.6+  | 2007 11 16 | 704 | 0.1− | 0.3+ |
| 1992 03 25 | 691 | 0.2− | 0.0  | 2005 05 04 | G96 | 0.5−  | 0.3+  | 2007 11 16 | 704 | 0.7+ | 0.1− |
| 1999 12 07 | 704 | 0.6− | 0.5− | 2005 05 04 | G96 | 0.7+  | 0.7+  | 2007 11 16 | 704 | 0.3+ | 0.1+ |
| 1999 12 07 | 704 | 0.4− | 0.5+ | 2005 05 04 | G96 | 0.4−  | 0.6+  | 2007 11 17 | 704 | 0.0  | 0.2+ |
| 1999 12 07 | 704 | 0.0  | 0.3+ | 2005 05 04 | G96 | 0.1+  | 0.2+  | 2007 11 17 | 704 | 0.5+ | 0.3+ |
| 2000 01 07 | 704 | 0.4− | 0.8− | 2005 06 13 | G96 | 0.1+  | 0.5+  | 2007 11 17 | 704 | 0.4− | 0.0  |
| 2000 01 07 | 704 | 0.3+ | 0.0  | 2005 06 13 | G96 | 0.2+  | 0.2+  | 2007 11 17 | 704 | 0.4+ | 0.6+ |
| 2000 01 07 | 704 | 0.2− | 0.6− | 2005 06 13 | G96 | 0.3+  | 0.7+  | 2007 11 17 | 704 | 0.2+ | 0.4+ |
| 2000 01 07 | 704 | 0.1+ | 0.1− | 2005 06 13 | G96 | 0.1−  | 0.5+  | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2000 01 07 | 704 | 0.6+ | 0.8− | 2007 09 09 | G96 | 0.3+  | 0.1−  | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2000 01 30 | 703 | 0.3+ | 0.0  | 2007 09 09 | G96 | 0.2+  | 0.1−  | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2000 01 30 | 703 | 0.7− | 0.9+ | 2007 09 09 | G96 | 0.2+  | 0.0   | 2007 12 03 | 703 | 0.2− | 0.0  |
| 2000 01 30 | 703 | 0.7− | 0.4− | 2007 09 09 | G96 | 0.5+  | 0.0   | 2007 12 03 | 703 | 0.7− | 0.8+ |
| 2000 01 30 | 703 | 0.1− | 1.0+ | 2007 11 03 | 691 | 0.1−  | 0.1−  | 2007 12 03 | 703 | 0.0  | 0.6+ |
| 2000 02 02 | 704 | 1.7+ | 0.3− | 2007 11 03 | 691 | 0.0   | 0.2−  | 2007 12 03 | 703 | 0.3− | 0.2− |
| 2000 02 02 | 704 | 0.4+ | 0.5+ | 2007 11 03 | 691 | 0.1−  | 0.1−  | 2007 12 04 | G96 | 0.0  | 0.3− |
| 2000 02 02 | 704 | 0.3+ | 0.4− | 2007 11 05 | 704 | (0.6+ | 1.6+) | 2007 12 04 | G96 | 0.1+ | 0.4− |
| 2000 02 02 | 704 | 0.2− | 0.5− | 2007 11 05 | 704 | (1.6+ | 0.4+) | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 2000 02 02 | 704 | 0.2− | 0.3− | 2007 11 05 | 704 | (1.1+ | 1.9+) | 2007 12 04 | G96 | 0.4+ | 0.3− |
| 2000 02 03 | 704 | 0.4− | 0.1− | 2007 11 05 | 704 | 0.6+  | 1.3+  | 2007 12 05 | 704 | 0.4+ | 0.6+ |
| 2000 02 03 | 704 | 0.6+ | 0.7− | 2007 11 05 | 704 | 1.2+  | 0.2−  | 2007 12 05 | 704 | 0.0  | 0.4+ |
| 2000 02 03 | 704 | 0.4+ | 0.4− | 2007 11 06 | 704 | 0.2+  | 0.4−  | 2007 12 05 | 704 | 0.4+ | 0.5+ |
| 2000 02 03 | 704 | 1.0− | 0.7− | 2007 11 06 | 704 | 0.2−  | 0.2−  | 2007 12 05 | 704 | 0.4− | 0.4+ |
| 2003 12 19 | 704 | 0.2− | 0.1− | 2007 11 06 | 704 | 0.2+  | 0.1+  | 2007 12 05 | 704 | 0.4− | 0.2+ |
| 2003 12 19 | 704 | 0.4− | 0.2− | 2007 11 06 | 704 | (1.9+ | 1.2−) | 2007 12 12 | A77 | 0.7+ | 0.5− |
| 2003 12 19 | 704 | 0.4− | 0.1− | 2007 11 07 | 691 | 0.3−  | 0.2−  | 2007 12 12 | A77 | 0.6+ | 0.3+ |
| 2003 12 19 | 704 | 0.4− | 0.3− | 2007 11 07 | 691 | 0.0   | 0.1−  | 2007 12 12 | A77 | 0.0  | 0.6+ |
| 2003 12 19 | 704 | 0.5− | 0.3+ | 2007 11 07 | 691 | 1.5−  | 0.0   | 2007 12 14 | 704 | 2.6+ | 0.5+ |
| 2003 12 21 | 704 | 0.2− | 0.2+ | 2007 11 14 | 691 | 0.2+  | 0.1−  | 2007 12 14 | 704 | 0.5+ | 0.6+ |
| 2003 12 21 | 704 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.1+  | 0.1−  | 2007 12 14 | 704 | 2.0+ | 0.1+ |
| 2003 12 21 | 704 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.0   | 0.2−  | 2007 12 14 | 704 | 0.6+ | 1.4+ |
| 2003 12 21 | 704 | 0.7− | 0.0  | 2007 11 15 | 704 | 1.5−  | 0.2+  | 2007 12 14 | 704 | 0.5+ | 0.4+ |
| 2003 12 21 | 704 | 0.3− | 0.2+ | 2007 11 15 | 704 | 1.4−  | 0.0   | 2007 12 15 | G96 | 0.8+ | 0.3− |
| 2003 12 23 | 704 | 0.7+ | 0.6+ | 2007 11 15 | 704 | 1.4−  | 0.3+  | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2003 12 23 | 704 | 0.6+ | 0.9+ | 2007 11 15 | 704 | (1.6− | 0.1+) | 2007 12 15 | G96 | 0.2− | 0.2− |
| 2003 12 23 | 704 | 0.3+ | 0.7+ | 2007 11 15 | 704 | (2.1− | 0.1+) | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2003 12 23 | 704 | 0.5+ | 0.6+ | 2007 11 16 | 704 | 0.2+  | 0.0   |            |     |      |      |

**(171618)\* 2000 BB<sub>37</sub> = 2002 SS<sub>70</sub>**

Discovered 2000 Jan. 30 by Spacewatch at Kitt Peak.

Id. T. B. Spahr (*MPO* 121537)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 40.20411   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $n$ | 0.22335012 | $\omega$ | 4.32629   | +0.99999669  | −0.00243138  |     |   |
| $a$ | 2.6903694  | $\Omega$ | 355.81275 | +0.00187790  | +0.91287328  |     |   |
| $e$ | 0.0689760  | $i$      | 0.65671   | +0.00175655  | +0.40823580  |     |   |
| $P$ | 4.41       | $H$      | 16.4      | $G$          | 0.15         | $U$ | 0 |

2007 DEC. 24

M.P.O. 129105

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 17 | 644 | 0.4+ | 0.8+ | 2005 04 04 | G96 | 0.0  | 0.1- | 2007 11 15 | 704 | 0.1+ | 0.5+ |
| 2002 08 17 | 644 | 0.1+ | 0.1+ | 2005 04 04 | G96 | 0.5- | 0.4+ | 2007 11 15 | 704 | 0.4+ | 0.6+ |
| 2002 08 18 | 644 | 0.1- | 0.4+ | 2005 04 04 | G96 | 0.1- | 0.0  | 2007 11 20 | G96 | 1.0+ | 0.8- |
| 2002 08 18 | 644 | 0.0  | 0.3+ | 2005 04 04 | G96 | 0.1- | 0.2- | 2007 11 20 | G96 | 1.0+ | 1.2- |
| 2002 08 18 | 644 | 0.1+ | 0.3+ | 2005 05 13 | G96 | 0.1- | 0.3+ | 2007 11 20 | G96 | 0.3+ | 0.3- |
| 2002 09 04 | 644 | 0.3+ | 0.3+ | 2005 05 13 | G96 | 0.4- | 0.1- | 2007 11 20 | G96 | 0.2+ | 0.2- |
| 2002 09 04 | 644 | 0.0  | 0.3+ | 2005 05 13 | G96 | 0.8- | 0.1- | 2007 12 06 | 691 | 0.3- | 0.2+ |
| 2002 09 04 | 644 | 0.2- | 0.1+ | 2005 05 13 | G96 | 0.0  | 0.4+ | 2007 12 06 | 691 | 0.2- | 0.0  |
| 2002 09 14 | 644 | 0.3- | 0.2- | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.3- | 0.6+ |

(171619)\* 2000 CX<sub>2</sub>

Discovered 2000 Feb. 2 by A. Galád and P. Kolény at the Astronomical and Geophysical Observatory, Modra.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23020937 | <i>ω</i> | 352.57794 | -0.06757318 | -0.99581843 |          |   |
| <i>a</i> | 2.6366595  | <i>Ω</i> | 101.28236 | +0.91857605 | -0.08614588 |          |   |
| <i>e</i> | 0.1321707  | <i>i</i> | 3.59418   | +0.38942510 | +0.03040618 |          |   |
| <i>P</i> | 4.28       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 02 | 118 | 0.5+  | 0.5-  | 2003 12 21 | 704 | 0.4- | 0.6- | 2007 11 03 | 699 | 0.0   | 0.2+  |
| 2000 02 02 | 118 | 0.4+  | 0.1+  | 2003 12 21 | 704 | 0.7+ | 0.8- | 2007 11 03 | 699 | 0.6-  | 0.4+  |
| 2000 02 02 | 118 | 0.2+  | 0.6-  | 2003 12 21 | 704 | 0.2- | 0.6- | 2007 11 03 | 699 | 0.3-  | 0.7+  |
| 2000 02 03 | 704 | 0.5-  | 0.4+  | 2003 12 24 | 704 | 0.6+ | 0.1+ | 2007 11 04 | 704 | 0.3+  | 0.7+  |
| 2000 02 03 | 704 | 1.2-  | 0.4-  | 2003 12 24 | 704 | 0.5+ | 0.1- | 2007 11 04 | 704 | 0.0   | 0.7+  |
| 2000 02 03 | 704 | 0.0   | 0.7+  | 2003 12 24 | 704 | 0.6+ | 0.1+ | 2007 11 04 | 704 | 0.7+  | 1.1+  |
| 2000 02 03 | 704 | 1.0-  | 0.4-  | 2005 04 11 | 691 | 0.3+ | 0.3+ | 2007 11 04 | 704 | (0.8+ | 1.5+) |
| 2000 02 03 | 704 | 0.7-  | 0.2+  | 2005 04 11 | 691 | 0.0  | 0.4+ | 2007 11 04 | 704 | 0.2+  | 0.2+  |
| 2000 02 05 | 118 | 0.6-  | 0.5-  | 2005 04 11 | 691 | 0.2+ | 0.4+ | 2007 11 07 | 704 | (1.7- | 0.5-) |
| 2000 02 05 | 118 | 0.1-  | 0.9-  | 2005 04 30 | 599 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.1-  | 0.1-  |
| 2000 02 05 | 118 | 0.8-  | 0.9-  | 2005 04 30 | 599 | 0.4+ | 1.1+ | 2007 11 07 | 704 | 0.2-  | 0.0   |
| 2000 02 06 | 118 | 1.7-  | 0.1+  | 2005 04 30 | 599 | 0.2+ | 0.6+ | 2007 11 07 | 704 | 0.2-  | 0.2+  |
| 2000 02 06 | 118 | 1.2-  | 0.9+  | 2005 04 30 | 599 | 0.0  | 0.1- | 2007 11 07 | 704 | 0.0   | 0.1-  |
| 2000 02 07 | 118 | 0.3-  | 0.5+  | 2007 10 09 | D29 | 0.0  | 0.1+ | 2007 11 12 | 703 | (1.8- | 0.2-) |
| 2000 02 07 | 118 | 0.6+  | 0.5+  | 2007 10 09 | D29 | 0.7+ | 0.1- | 2007 11 12 | 703 | 0.7-  | 0.3-  |
| 2000 02 07 | 118 | 0.3+  | 0.2+  | 2007 10 09 | D29 | 0.4+ | 0.2- | 2007 11 12 | 703 | 0.2-  | 0.6-  |
| 2000 02 10 | 118 | 0.0   | 0.0   | 2007 10 09 | D29 | 0.7+ | 0.4+ | 2007 11 12 | 704 | 0.3+  | 0.7+  |
| 2000 02 10 | 118 | 0.5+  | 0.5+  | 2007 10 10 | 691 | 0.2- | 0.4+ | 2007 11 12 | 703 | 0.6-  | 0.3-  |
| 2000 02 10 | 118 | 0.2-  | 0.2+  | 2007 10 10 | G96 | 0.0  | 0.1- | 2007 11 12 | 704 | 0.1+  | 0.4+  |
| 2000 02 11 | 704 | 0.1+  | 0.9-  | 2007 10 10 | G96 | 0.5+ | 0.0  | 2007 11 12 | 704 | 0.2+  | 0.4+  |
| 2000 02 11 | 704 | 0.2-  | 0.4-  | 2007 10 10 | 691 | 0.4- | 0.2+ | 2007 11 12 | 704 | 0.7+  | 0.6+  |
| 2000 02 11 | 704 | 0.7+  | 0.9+  | 2007 10 10 | G96 | 0.0  | 0.2+ | 2007 11 12 | 704 | 0.3+  | 0.3+  |
| 2000 02 27 | 118 | 0.5+  | 0.5+  | 2007 10 10 | G96 | 0.3+ | 0.0  | 2007 11 18 | G96 | 0.1+  | 0.4-  |
| 2000 02 27 | 118 | 0.2+  | 0.1-  | 2007 10 10 | 691 | 0.2- | 0.2+ | 2007 11 18 | G96 | 0.0   | 0.2-  |
| 2000 02 27 | 118 | 0.1-  | 0.6-  | 2007 10 13 | 704 | 0.1+ | 0.3+ | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2000 03 04 | 704 | (0.4- | 2.1+) | 2007 10 13 | 704 | 0.2+ | 0.1+ | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2000 03 04 | 704 | (0.8+ | 2.2+) | 2007 10 13 | 704 | 0.9+ | 0.4- | 2007 11 20 | 691 | 0.5-  | 0.2+  |
| 2000 03 04 | 704 | 0.2-  | 1.3+  | 2007 10 13 | 704 | 0.4+ | 1.2+ | 2007 11 20 | 691 | 0.2-  | 0.1+  |
| 2000 03 04 | 704 | 1.1+  | 0.4+  | 2007 10 20 | 703 | 0.7- | 0.6+ | 2007 11 20 | 691 | 0.2-  | 0.1-  |
| 2000 03 04 | 704 | 1.5+  | 1.5+  | 2007 10 20 | 703 | 0.4+ | 0.1- | 2007 11 20 | G96 | 0.1+  | 0.1-  |
| 2000 03 04 | 118 | 0.8+  | 0.1-  | 2007 10 20 | 703 | 0.2- | 0.3+ | 2007 11 20 | G96 | 0.4+  | 0.1-  |
| 2000 03 04 | 118 | 1.3+  | 0.5-  | 2007 10 20 | 703 | 1.3+ | 0.2+ | 2007 11 20 | G96 | 0.2+  | 0.0   |
| 2000 04 10 | 695 | 0.0   | 0.4-  | 2007 10 21 | 704 | 0.1+ | 1.3- | 2007 11 20 | G96 | 0.6+  | 0.0   |
| 2000 04 10 | 695 | 0.2-  | 0.0   | 2007 10 21 | 704 | 0.7+ | 0.1- | 2007 12 05 | 704 | 0.2-  | 0.3-  |
| 2002 08 30 | 644 | (0.0  | 1.7+) | 2007 10 21 | 704 | 0.4- | 1.0+ | 2007 12 05 | 704 | 0.4-  | 1.5-  |
| 2002 08 30 | 644 | (0.1+ | 1.7+) | 2007 10 21 | 704 | 0.6+ | 1.3+ | 2007 12 05 | 704 | 0.5-  | 0.1-  |
| 2002 08 30 | 644 | (0.3+ | 1.7+) | 2007 11 02 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.5-  | 0.0   |
| 2003 12 19 | 704 | 0.1+  | 0.2-  | 2007 11 02 | 691 | 0.3- | 0.2- | 2007 12 05 | 704 | 0.1+  | 0.3+  |
| 2003 12 19 | 704 | 0.0   | 0.3-  | 2007 11 02 | 691 | 0.1- | 0.0  |            |     |       |       |
| 2003 12 19 | 704 | 0.1+  | 0.4-  | 2007 11 03 | 699 | 0.0  | 0.1- |            |     |       |       |

(171620)\* 2000 CG<sub>40</sub>

Discovered 2000 Feb. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.37293235 | <i>ω</i> | 49.92904  | +0.86213425 | -0.49243000 |          |   |
| <i>a</i> | 1.9115369  | <i>Ω</i> | 338.71996 | +0.30343355 | +0.69037744 |          |   |
| <i>e</i> | 0.1406696  | <i>i</i> | 19.19422  | +0.40577410 | +0.52999216 |          |   |
| <i>P</i> | 2.64       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 02 01 | 703 | 0.7-  | 0.1+  | 2001 08 19 | 704 | 0.0   | 0.6+  | 2001 11 11 | 644 | 0.2+  | 1.2+  |
| 2000 02 01 | 703 | (2.0- | 0.2-) | 2001 08 19 | 704 | 0.5-  | 0.7+  | 2001 11 11 | 644 | 0.2+  | 1.2+  |
| 2000 02 01 | 703 | 0.0   | 0.2+  | 2001 08 19 | 704 | 0.5-  | 0.7+  | 2001 11 18 | 704 | 0.1+  | 0.5-  |
| 2000 02 01 | 703 | 0.3-  | 0.3+  | 2001 08 19 | 704 | 0.2-  | 0.6+  | 2001 11 18 | 704 | 0.4+  | 0.0   |
| 2000 02 04 | 704 | 0.4+  | 0.3+  | 2001 08 19 | 704 | 0.0   | 0.5+  | 2001 11 18 | 704 | 0.1+  | 0.5-  |
| 2000 02 04 | 704 | 0.4+  | 0.6+  | 2001 08 24 | 608 | 0.6-  | 0.7+  | 2001 11 18 | 704 | 0.2+  | 0.4+  |
| 2000 02 04 | 704 | 0.3+  | 0.5+  | 2001 08 24 | 608 | 0.7-  | 1.0+  | 2001 12 11 | 704 | 0.3+  | 0.9+  |
| 2000 02 04 | 704 | 0.1+  | 0.8+  | 2001 08 24 | 608 | 0.7-  | 0.9+  | 2001 12 11 | 704 | 0.7+  | 1.2+  |
| 2000 02 04 | 704 | 0.0   | 0.7+  | 2001 08 24 | 608 | (1.7- | 1.2+) | 2001 12 11 | 704 | (1.7+ | 0.7+) |
| 2000 02 06 | 704 | 0.6+  | 0.6-  | 2001 08 24 | 608 | 0.1-  | 1.3+  | 2001 12 11 | 704 | 1.1+  | 0.4-  |
| 2000 02 06 | 704 | 0.2+  | 1.1+  | 2001 08 24 | 608 | 0.0   | 1.2+  | 2004 09 11 | 704 | 0.1+  | 0.4+  |
| 2000 02 06 | 704 | 0.3+  | 0.9+  | 2001 08 25 | 704 | 1.2-  | 0.1+  | 2004 09 11 | 704 | 1.1+  | 0.7+  |
| 2000 02 06 | 704 | 0.6+  | 0.8+  | 2001 08 25 | 704 | 0.8-  | 0.5+  | 2004 09 11 | 704 | 0.0   | 0.6+  |
| 2000 02 06 | 704 | 0.3+  | 0.6+  | 2001 08 25 | 704 | 0.8-  | 0.1-  | 2004 09 14 | 704 | 0.4-  | 0.2-  |
| 2000 02 08 | 704 | 0.4+  | 0.5+  | 2001 08 25 | 704 | 0.6-  | 0.4+  | 2004 09 14 | 704 | 0.0   | 0.2+  |
| 2000 02 08 | 704 | 0.1+  | 0.5+  | 2001 08 25 | 704 | 1.1-  | 0.1+  | 2004 09 14 | 704 | 0.1+  | 0.3-  |
| 2000 02 08 | 704 | 0.3+  | 0.0   | 2001 08 27 | 699 | 0.3+  | 0.3+  | 2004 09 14 | 704 | 0.6+  | 0.5+  |
| 2000 02 08 | 704 | 0.0   | 0.4+  | 2001 08 27 | 699 | 0.5+  | 0.1+  | 2004 10 16 | 704 | 0.6-  | 0.3+  |
| 2000 02 08 | 704 | 0.2+  | 0.3+  | 2001 08 27 | 644 | 0.1-  | 1.0+  | 2004 10 16 | 704 | 0.3-  | 0.4-  |
| 2000 02 11 | 704 | 0.5+  | 0.4-  | 2001 08 27 | 644 | 0.1-  | 0.8+  | 2004 10 16 | 704 | 0.4+  | 0.1-  |
| 2000 02 11 | 704 | 0.5+  | 0.0   | 2001 08 27 | 699 | 0.3+  | 0.4+  | 2004 10 16 | 704 | 0.2+  | 0.1-  |
| 2000 02 11 | 704 | 0.5+  | 0.3+  | 2001 08 27 | 644 | 0.2-  | 0.7+  | 2004 10 16 | 704 | 0.3-  | 0.0   |
| 2000 02 11 | 704 | 0.7+  | 0.4+  | 2001 08 27 | 699 | 0.6+  | 0.1+  | 2004 10 25 | 704 | 1.2-  | 0.3+  |
| 2000 02 11 | 704 | 0.1+  | 0.1-  | 2001 09 06 | 644 | 0.3+  | 0.0   | 2004 10 25 | 704 | 0.7-  | 0.5-  |
| 2000 02 11 | 704 | 0.5+  | 0.3-  | 2001 09 06 | 644 | 0.5+  | 0.1-  | 2004 10 25 | 704 | 0.4+  | 0.4+  |
| 2000 02 11 | 704 | 1.1+  | 0.8-  | 2001 09 06 | 644 | 0.5+  | 0.1-  | 2004 10 25 | 704 | 0.2+  | 0.1-  |
| 2000 02 11 | 704 | 0.2+  | 0.0   | 2001 09 07 | 704 | 0.5-  | 1.1+  | 2004 11 10 | 704 | 0.3-  | 0.2+  |
| 2000 02 11 | 704 | 1.2+  | 0.2-  | 2001 09 07 | 704 | 0.7-  | 0.9+  | 2004 11 10 | 704 | 0.0   | 0.0   |
| 2000 02 11 | 704 | 0.3-  | 0.3+  | 2001 09 07 | 704 | 0.5-  | 0.9+  | 2004 11 10 | 704 | 0.3-  | 0.4+  |
| 2000 02 29 | 704 | 1.9-  | 1.8+  | 2001 09 07 | 704 | 0.5-  | 0.9+  | 2004 11 10 | 704 | 0.0   | 0.3-  |
| 2000 02 29 | 704 | 0.5+  | 0.4-  | 2001 09 07 | 704 | 0.6-  | 0.6+  | 2004 12 04 | 699 | 0.4+  | 0.5+  |
| 2000 02 29 | 704 | 0.1-  | 0.1-  | 2001 09 12 | 704 | 0.2+  | 0.3+  | 2004 12 04 | 699 | 0.3+  | 0.2+  |
| 2000 02 29 | 704 | 0.7+  | 0.4-  | 2001 09 12 | 704 | 0.2+  | 0.1+  | 2004 12 04 | 699 | 0.6+  | 0.7+  |
| 2000 02 29 | 704 | 0.1+  | 0.3-  | 2001 09 12 | 704 | 0.1+  | 0.0   | 2004 12 04 | 699 | 0.5+  | 0.5+  |
| 2000 03 03 | 704 | 0.4+  | 0.8+  | 2001 09 12 | 704 | 0.3+  | 0.6+  | 2004 12 19 | 704 | 0.1-  | 0.7-  |
| 2000 03 03 | 704 | 0.2+  | 0.4+  | 2001 09 12 | 695 | 0.6-  | 0.4+  | 2004 12 19 | 704 | 0.5+  | 0.7-  |
| 2000 03 03 | 704 | 0.5+  | 0.9+  | 2001 09 12 | 695 | 1.1+  | 0.2-  | 2004 12 19 | 704 | (0.5+ | 1.7-) |
| 2000 03 03 | 704 | 0.4+  | 1.6+  | 2001 09 20 | 704 | 0.9-  | 0.7-  | 2004 12 19 | 704 | 0.3+  | 0.6-  |
| 2000 03 03 | 704 | 0.2+  | 1.5+  | 2001 09 20 | 704 | 0.7-  | 0.7-  | 2004 12 19 | 704 | 0.4+  | 0.3-  |
| 2000 03 05 | 704 | 0.8+  | 0.5+  | 2001 09 20 | 704 | 0.5-  | 0.7-  | 2004 12 21 | 704 | 0.1-  | 0.3+  |
| 2000 03 05 | 704 | 0.9+  | 0.7+  | 2001 09 20 | 704 | 1.0-  | 0.5-  | 2004 12 21 | 704 | 0.3-  | 0.1-  |
| 2000 03 05 | 704 | 1.3+  | 1.2+  | 2001 09 20 | 704 | 1.1-  | 0.4-  | 2004 12 21 | 704 | 0.2+  | 0.1+  |
| 2000 03 05 | 704 | 1.3+  | 0.9+  | 2001 09 22 | 704 | 0.1-  | 0.4+  | 2004 12 21 | 704 | 0.2-  | 0.5-  |
| 2000 03 05 | 704 | 1.2+  | 1.6+  | 2001 09 22 | 704 | 0.0   | 0.2+  | 2004 12 21 | 704 | 0.1-  | 0.2-  |
| 2000 03 09 | 704 | 0.2+  | 0.5+  | 2001 09 22 | 704 | (1.6- | 0.9-) | 2005 01 19 | 704 | 0.3-  | 0.3+  |
| 2000 03 09 | 704 | 0.5+  | 0.0   | 2001 09 22 | 704 | 0.5-  | 0.2-  | 2005 01 19 | 704 | 0.3-  | 0.2+  |
| 2000 03 09 | 704 | 1.0+  | 0.9+  | 2001 09 22 | 704 | (0.4+ | 2.0-) | 2005 01 19 | 704 | 0.3-  | 0.3+  |
| 2000 03 09 | 704 | 0.7+  | 0.5+  | 2001 09 23 | 704 | 0.1-  | 0.4+  | 2005 01 19 | 704 | 0.8-  | 0.3+  |
| 2000 03 11 | 704 | 0.1+  | 0.9+  | 2001 09 23 | 704 | 0.2-  | 0.7+  | 2005 01 19 | 704 | 0.8-  | 0.1-  |
| 2000 03 11 | 704 | 1.3-  | 0.5+  | 2001 09 23 | 704 | 0.0   | 0.6+  | 2005 02 14 | 704 | 0.4+  | 0.0   |
| 2000 03 11 | 704 | 0.2+  | 0.3-  | 2001 10 03 | 644 | 0.3-  | 0.5+  | 2005 02 14 | 704 | 1.0+  | 0.5-  |
| 2000 03 11 | 704 | 0.5+  | 0.0   | 2001 10 03 | 644 | 0.4-  | 0.6+  | 2005 02 14 | 704 | 0.3+  | 0.4+  |
| 2000 03 11 | 704 | 0.6+  | 0.3-  | 2001 10 03 | 644 | 0.1-  | 0.7+  | 2005 02 14 | 704 | 0.1-  | 0.2+  |
| 2000 03 11 | 699 | 0.4-  | 0.6+  | 2001 10 11 | 704 | 0.1+  | 0.3+  | 2005 02 14 | 704 | 0.4+  | 0.3+  |
| 2000 03 11 | 699 | 0.5+  | 0.8+  | 2001 10 11 | 704 | 0.0   | 0.1-  | 2005 03 01 | 704 | 0.5+  | 0.1+  |
| 2000 03 11 | 699 | 1.3+  | 0.3+  | 2001 10 11 | 704 | 0.3-  | 0.4+  | 2005 03 01 | 704 | 0.5+  | 0.5+  |
| 2000 03 11 | 699 | 0.5+  | 0.2+  | 2001 10 11 | 704 | 0.3-  | 0.2-  | 2005 03 01 | 704 | 0.7+  | 0.7+  |
| 2001 07 19 | 699 | 0.3-  | 0.5-  | 2001 10 11 | 704 | 0.2+  | 0.4+  | 2005 03 01 | 704 | 1.0+  | 0.4+  |
| 2001 07 19 | 699 | 0.2-  | 0.3-  | 2001 10 14 | 699 | 0.2-  | 0.0   | 2006 05 25 | E12 | 0.5+  | 1.1+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 19 | 699 | 0.5−  | 0.4−  | 2001 10 14 | 704 | (1.9− | 0.5+) | 2006 05 25 | E12 | 1.0+ | 0.4+ |
| 2001 07 19 | 699 | 0.2−  | 0.2−  | 2001 10 14 | 704 | (1.6− | 0.4+) | 2006 05 25 | E12 | 0.3+ | 0.9+ |
| 2001 07 30 | 704 | 0.9+  | 0.2+  | 2001 10 14 | 699 | 0.3−  | 0.1−  | 2006 05 25 | E12 | 0.0  | 1.4+ |
| 2001 07 30 | 704 | 1.3+  | 1.1−  | 2001 10 14 | 704 | (1.9− | 0.1+) | 2007 11 18 | 691 | 0.6− | 1.2+ |
| 2001 07 30 | 704 | (0.4+ | 2.3−) | 2001 10 14 | 699 | 0.2+  | 0.1+  | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2001 08 16 | 704 | 1.0−  | 0.3−  | 2001 10 14 | 704 | (2.0− | 0.4+) | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2001 08 16 | 704 | 0.9−  | 0.2−  | 2001 10 14 | 704 | (2.0− | 0.1+) | 2007 12 03 | 703 | 0.7+ | 0.8+ |
| 2001 08 16 | 704 | 0.9−  | 0.0   | 2001 10 14 | 699 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.1+ | 0.1− |
| 2001 08 16 | 704 | 0.8−  | 0.3+  | 2001 10 21 | 704 | 0.0   | 0.4−  | 2007 12 03 | 703 | 1.0− | 0.9− |
| 2001 08 16 | 704 | 1.0−  | 0.0   | 2001 10 21 | 704 | 0.0   | 0.9−  | 2007 12 03 | 703 | 0.4+ | 0.0  |
| 2001 08 18 | 704 | 0.4−  | 0.3+  | 2001 10 21 | 704 | 0.2−  | 1.1−  | 2007 12 06 | 703 | 1.0− | 0.3− |
| 2001 08 18 | 704 | 0.7−  | 0.6+  | 2001 10 21 | 704 | 0.4+  | 0.7−  | 2007 12 06 | 703 | 1.5− | 1.1+ |
| 2001 08 18 | 704 | 0.1−  | 0.4+  | 2001 10 21 | 704 | 0.6−  | 1.1−  | 2007 12 06 | 703 | 0.1+ | 0.4− |
| 2001 08 18 | 704 | 0.6−  | 0.4+  | 2001 11 11 | 644 | 0.2−  | 1.1+  | 2007 12 06 | 703 | 0.1+ | 0.2− |

(171621)\* 2000 CR<sub>58</sub> = 2001 OS<sub>81</sub> = 2004 RG<sub>249</sub> = 2004 TE<sub>365</sub>

Discovered 2000 Feb. 2 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 15676), A. Doppler (*MPO* 74724), T. B. Spahr (d, *MPO* 93801)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 40.10756   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.36671485 | $\omega$ | 98.09254  | +0.71992824  | −0.64793218  |
| $a$ | 1.9330825  | $\Omega$ | 302.69277 | +0.46098580  | +0.71435310  |
| $e$ | 0.1055711  | $i$      | 17.19357  | +0.51884047  | +0.26435494  |
| $P$ | 2.69       | $H$      | 16.2      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 07 | 704 | 1.3−  | 0.5−  | 2001 08 25 | 704 | 0.3+ | 0.6+ | 2004 10 25 | 704 | 0.7+ | 0.2− |
| 2000 01 07 | 704 | 0.9−  | 1.0−  | 2001 08 25 | 704 | 0.1+ | 0.3+ | 2004 11 03 | 704 | 0.2+ | 0.1+ |
| 2000 01 07 | 704 | 1.4+  | 0.9−  | 2001 08 25 | 704 | 0.0  | 0.6+ | 2004 11 03 | 704 | 0.3− | 0.2+ |
| 2000 01 07 | 704 | 0.4−  | 0.9−  | 2001 08 25 | 704 | 0.2+ | 1.1+ | 2004 11 03 | 704 | 0.8+ | 0.6− |
| 2000 02 02 | 704 | 0.3+  | 0.3+  | 2001 09 10 | 699 | 0.5− | 0.3+ | 2004 11 03 | 704 | 0.3+ | 0.1+ |
| 2000 02 02 | 704 | 0.5+  | 0.6+  | 2001 09 10 | 699 | 1.0− | 0.3+ | 2004 11 03 | 704 | 0.4− | 0.0  |
| 2000 02 02 | 704 | 0.6+  | 0.0   | 2001 09 10 | 699 | 0.3− | 0.1− | 2004 12 01 | 704 | 0.4+ | 0.0  |
| 2000 02 02 | 704 | 0.6+  | 0.1+  | 2001 09 10 | 699 | 1.2− | 0.2− | 2004 12 01 | 704 | 0.1+ | 0.2− |
| 2000 02 02 | 704 | 0.2+  | 0.7−  | 2001 09 12 | 704 | 0.0  | 0.2− | 2004 12 01 | 704 | 0.4− | 0.2− |
| 2000 02 06 | 704 | 0.3+  | 1.6+  | 2001 09 12 | 704 | 0.5− | 0.1+ | 2004 12 01 | 704 | 0.2+ | 0.0  |
| 2000 02 06 | 704 | 1.1+  | 0.2−  | 2001 09 12 | 704 | 0.0  | 0.3+ | 2004 12 01 | 704 | 0.1− | 0.4+ |
| 2000 02 06 | 704 | (2.2− | 2.1−) | 2001 09 12 | 704 | 0.1+ | 0.1+ | 2004 12 16 | 704 | 0.2− | 0.3+ |
| 2000 02 08 | 704 | 0.2+  | 0.4+  | 2001 11 18 | 704 | 0.2+ | 0.2− | 2004 12 16 | 704 | 0.3+ | 1.3+ |
| 2000 02 08 | 704 | 0.2+  | 1.1+  | 2001 11 18 | 704 | 1.0− | 0.5+ | 2004 12 16 | 704 | 0.5+ | 0.7+ |
| 2000 02 08 | 704 | 0.1−  | 0.5+  | 2001 11 18 | 704 | 0.5− | 0.3+ | 2004 12 19 | 699 | 1.2+ | 0.3+ |
| 2000 02 08 | 704 | 0.7+  | 0.8+  | 2004 09 12 | 704 | 0.2+ | 0.3− | 2004 12 19 | 699 | 0.2+ | 0.3− |
| 2000 02 10 | 704 | 0.7+  | 0.8+  | 2004 09 12 | 704 | 0.4− | 0.6+ | 2004 12 19 | 699 | 0.2+ | 0.3− |
| 2000 02 10 | 704 | 0.3−  | 0.5+  | 2004 09 12 | 704 | 0.4+ | 0.1+ | 2004 12 19 | 699 | 0.9+ | 0.2+ |
| 2000 02 10 | 704 | 0.5−  | 0.7+  | 2004 09 12 | 704 | 0.5− | 0.1− | 2007 09 27 | G96 | 0.1+ | 0.4− |
| 2000 02 11 | 704 | 0.0   | 0.9+  | 2004 09 12 | 704 | 0.2− | 0.0  | 2007 09 27 | G96 | 0.3− | 0.5− |
| 2000 02 11 | 704 | 0.4+  | 0.8+  | 2004 09 15 | 704 | 0.6− | 0.1− | 2007 09 27 | G96 | 0.2− | 0.1+ |
| 2000 02 11 | 704 | 0.0   | 0.2+  | 2004 09 15 | 704 | 0.7− | 0.1− | 2007 09 27 | G96 | 0.0  | 0.5− |
| 2000 02 11 | 704 | 0.1+  | 1.2+  | 2004 09 15 | 704 | 0.6− | 0.1+ | 2007 11 08 | 704 | 0.5+ | 0.1− |
| 2000 02 11 | 704 | 0.1+  | 0.6+  | 2004 09 15 | 704 | 0.6− | 0.2+ | 2007 11 08 | 704 | 0.1+ | 0.4− |
| 2001 06 28 | 699 | (0.1+ | 1.9+) | 2004 09 15 | 704 | 0.8− | 0.3− | 2007 11 08 | 704 | 0.6+ | 0.0  |
| 2001 06 28 | 699 | 0.4−  | 0.3−  | 2004 10 12 | 704 | 0.2− | 0.9− | 2007 11 08 | 704 | 1.2+ | 0.6+ |
| 2001 06 28 | 699 | 1.4+  | 0.6+  | 2004 10 12 | 704 | 0.1− | 0.3+ | 2007 11 08 | 704 | 1.0+ | 0.7− |
| 2001 06 28 | 699 | 0.5−  | 0.1−  | 2004 10 12 | 704 | 0.1− | 0.1+ | 2007 12 06 | 703 | 0.5− | 0.8− |
| 2001 07 16 | 699 | 0.2+  | 0.1−  | 2004 10 12 | 704 | 0.2− | 0.3+ | 2007 12 06 | 703 | 0.6+ | 0.6+ |
| 2001 07 16 | 699 | 0.1+  | 0.5+  | 2004 10 13 | 704 | 0.6− | 0.7− | 2007 12 06 | 703 | 0.7+ | 0.4+ |
| 2001 07 16 | 699 | 0.7−  | 0.9+  | 2004 10 13 | 704 | 0.2− | 0.0  | 2007 12 06 | 703 | 0.4+ | 0.6− |
| 2001 07 16 | 699 | 1.1−  | 0.5−  | 2004 10 13 | 704 | 0.2− | 0.4− | 2007 12 13 | 704 | 0.9− | 0.2+ |
| 2001 07 26 | 608 | 0.2−  | 0.5+  | 2004 10 13 | 704 | 0.5− | 0.2+ | 2007 12 13 | 704 | 0.4− | 0.4+ |
| 2001 07 26 | 608 | 0.8−  | 0.2+  | 2004 10 13 | 704 | 0.2− | 0.1− | 2007 12 13 | 704 | 0.2− | 0.3+ |
| 2001 07 26 | 608 | 0.7−  | 0.2+  | 2004 10 17 | 704 | 0.1− | 0.1− | 2007 12 13 | 704 | 0.8− | 0.6+ |
| 2001 08 02 | 608 | 0.1+  | 0.5+  | 2004 10 17 | 704 | 0.0  | 0.7− | 2007 12 13 | 704 | 1.2− | 1.4+ |
| 2001 08 02 | 608 | 0.0   | 0.2+  | 2004 10 17 | 704 | 0.0  | 0.1+ | 2007 12 16 | 699 | 0.9+ | 1.0− |
| 2001 08 02 | 608 | 0.3+  | 1.1+  | 2004 10 17 | 704 | 0.1+ | 0.1+ | 2007 12 16 | 699 | 0.1− | 0.8+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 20 | 704 | 0.0   | 0.8+  | 2004 10 25 | 704 | 0.3− | 0.4+ | 2007 12 16 | 699 | 1.6+ | 0.2+ |
| 2001 08 20 | 704 | 0.0   | 0.6+  | 2004 10 25 | 704 | 0.1+ | 0.1− | 2007 12 16 | 699 | 0.1+ | 0.2+ |
| 2001 08 20 | 704 | 0.3+  | 0.7+  | 2004 10 25 | 704 | 0.1− | 0.5− |            |     |      |      |
| 2001 08 20 | 704 | (1.9+ | 1.2+) | 2004 10 25 | 704 | 0.1+ | 0.2− |            |     |      |      |

(171622)\* 2000 CJ<sub>96</sub> = 2002 NU<sub>62</sub>

Discovered 2000 Feb. 11 by Spacewatch at Kitt Peak.

Id. T. B. Spahr (*MPO* 113745)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 1.72416    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23538699 | $\omega$ | 285.37113 | +0.59144142 | −0.80437912 |
| $a$ | 2.5978520  | $\Omega$ | 128.23090 | +0.76458287 | +0.53725328 |
| $e$ | 0.1323764  | $i$      | 4.11105   | +0.25614466 | +0.25363978 |
| $P$ | 4.19       | $H$      | 16.3      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 03 | 704 | 0.5+ | 0.0  | 2002 08 29 | 644 | 0.2− | 1.3+ | 2007 11 12 | 704 | 0.4+  | 0.0   |
| 2000 02 03 | 704 | 0.2+ | 0.0  | 2002 08 29 | 644 | 0.1− | 1.1+ | 2007 11 20 | A50 | 0.2−  | 0.3−  |
| 2000 02 03 | 704 | 0.6+ | 0.1+ | 2002 08 29 | 644 | 0.1− | 1.3+ | 2007 11 20 | A50 | 0.2−  | 0.3−  |
| 2000 02 11 | 691 | 0.2− | 0.0  | 2005 04 02 | 691 | 0.2+ | 0.2+ | 2007 11 20 | A50 | 0.5−  | 0.5−  |
| 2000 02 11 | 691 | 0.2− | 0.2− | 2005 04 02 | 691 | 0.1+ | 0.1− | 2007 11 20 | A50 | 0.2+  | 0.7+  |
| 2000 02 11 | 691 | 0.2− | 0.0  | 2005 04 02 | 691 | 0.2+ | 0.2+ | 2007 11 29 | 704 | (0.5− | 1.8+) |
| 2000 02 12 | 691 | 1.2+ | 0.2+ | 2005 05 03 | 691 | 0.5+ | 0.4+ | 2007 11 29 | 704 | 1.0−  | 0.9+  |
| 2000 02 12 | 691 | 0.6− | 0.0  | 2005 05 03 | 691 | 0.0  | 0.6+ | 2007 11 29 | 704 | 1.3−  | 1.1+  |
| 2000 02 12 | 691 | 0.4− | 0.0  | 2005 05 03 | 691 | 0.4− | 0.2+ | 2007 12 04 | 704 | 0.4−  | 0.3+  |
| 2002 07 14 | 644 | 0.3− | 0.8+ | 2007 11 04 | 704 | 0.1+ | 0.3− | 2007 12 04 | 704 | 0.5+  | 0.1+  |
| 2002 07 14 | 644 | 0.1+ | 0.5+ | 2007 11 04 | 704 | 0.4+ | 0.1− | 2007 12 04 | 704 | 0.5−  | 0.4+  |
| 2002 07 14 | 644 | 0.2− | 0.5+ | 2007 11 04 | 704 | 0.2+ | 0.4+ | 2007 12 04 | 704 | 0.2−  | 0.4+  |
| 2002 08 08 | 644 | 0.0  | 0.8− | 2007 11 04 | 704 | 0.0  | 0.5+ | 2007 12 04 | 704 | 0.9−  | 0.5+  |
| 2002 08 08 | 644 | 0.1+ | 0.5− | 2007 11 04 | 704 | 0.1− | 0.8+ | 2007 12 05 | 699 | 0.3+  | 0.5+  |
| 2002 08 08 | 644 | 0.3+ | 0.3− | 2007 11 12 | 704 | 0.3+ | 0.2− | 2007 12 05 | 699 | 0.8+  | 0.4−  |
| 2002 08 17 | 644 | 0.2− | 0.6+ | 2007 11 12 | 704 | 0.1+ | 0.3− | 2007 12 05 | 699 | 1.1+  | 0.3+  |
| 2002 08 17 | 644 | 0.1− | 0.5− | 2007 11 12 | 704 | 0.4− | 0.1− | 2007 12 05 | 699 | 0.1+  | 0.8+  |
| 2002 08 17 | 644 | 0.3− | 0.4+ | 2007 11 12 | 704 | 0.2+ | 0.2+ |            |     |       |       |

(171623)\* 2000 CL<sub>98</sub>

Discovered 2000 Feb. 8 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 288.45643  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.22857223 | $\omega$ | 237.15900 | −0.70758725 | −0.70654072 |
| $a$ | 2.6492345  | $\Omega$ | 257.88414 | +0.65201112 | −0.64683075 |
| $e$ | 0.1031876  | $i$      | 0.64329   | +0.27240004 | −0.28707176 |
| $P$ | 4.31       | $H$      | 16.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 20 | 691 | 0.9+ | 0.9+ | 2000 03 09 | 691 | 0.3− | 0.1+ | 2007 10 17 | G96 | 0.4+ | 0.0  |
| 1998 10 20 | 691 | 0.4+ | 0.1+ | 2005 04 11 | G96 | 0.1− | 0.4+ | 2007 10 17 | G96 | 0.6+ | 0.2− |
| 1998 10 20 | 691 | 0.5+ | 0.4− | 2005 04 11 | G96 | 0.1− | 0.5+ | 2007 10 17 | G96 | 0.3+ | 0.1− |
| 1998 10 29 | 691 | 0.1− | 0.4− | 2005 04 11 | G96 | 0.1− | 0.4+ | 2007 11 03 | 691 | 0.5− | 0.3+ |
| 1998 10 29 | 691 | 0.9− | 0.4− | 2005 04 11 | G96 | 0.2− | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 1998 10 29 | 691 | 0.7− | 0.2− | 2005 05 09 | G96 | 0.0  | 0.3+ | 2007 11 03 | 691 | 0.1− | 0.0  |
| 2000 02 03 | 691 | 0.1− | 0.2+ | 2005 05 09 | G96 | 0.1+ | 0.2+ | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2000 02 03 | 691 | 0.5+ | 0.8+ | 2005 05 09 | G96 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.1− | 0.1+ |
| 2000 02 03 | 691 | 0.2+ | 0.2+ | 2005 05 09 | G96 | 0.2− | 0.0  | 2007 11 07 | 691 | 0.2− | 0.1− |
| 2000 02 08 | 691 | 0.3+ | 0.2− | 2005 05 11 | 691 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.3− | 0.4+ |
| 2000 02 08 | 691 | 0.2+ | 0.3− | 2005 05 11 | 691 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.5− | 0.0  |
| 2000 02 08 | 691 | 0.3+ | 0.3− | 2005 05 11 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2000 02 14 | 691 | 0.7+ | 0.3− | 2005 05 16 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.7+ | 1.9+ |
| 2000 02 14 | 691 | 0.4+ | 0.8− | 2005 05 16 | 691 | 0.0  | 0.4+ | 2007 12 05 | 704 | 0.3+ | 1.8+ |
| 2000 02 14 | 691 | 0.2+ | 0.4− | 2005 05 16 | 691 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.1+ | 0.8+ |
| 2000 03 03 | 691 | 0.8− | 0.2+ | 2005 06 14 | G96 | 0.5+ | 0.7+ | 2007 12 05 | 704 | 0.7+ | 0.7+ |
| 2000 03 03 | 691 | 0.9− | 0.4+ | 2005 06 14 | G96 | 0.4+ | 0.8+ | 2007 12 06 | G96 | 0.4+ | 0.1− |
| 2000 03 03 | 691 | 1.1− | 0.1− | 2005 06 14 | G96 | 0.2− | 0.2− | 2007 12 06 | G96 | 0.1+ | 0.3− |
| 2000 03 09 | 691 | 0.0  | 0.6− | 2005 06 14 | G96 | 0.3+ | 0.6+ | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2000 03 09 | 691 | 0.0  | 0.6+ | 2007 10 17 | G96 | 0.7+ | 0.3− | 2007 12 06 | G96 | 0.4+ | 0.1− |



2007 DEC. 24

M.P.O. 129107

(171624)\* 2000 CT<sub>106</sub> = 2002 PB<sub>134</sub>

Discovered 2000 Feb. 5 by M. W. Buie at Kitt Peak.

Id. G. V. Williams (MPO 33208)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 59.73246   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22875500 | $\omega$ | 32.95617  |     | +0.97811586 |     | +0.20127259 |
| $a$ | 2.6478232  | $\Omega$ | 315.33528 |     | -0.20341385 |     | +0.87182119 |
| $e$ | 0.1614394  | $i$      | 4.30054   |     | -0.04372839 |     | +0.44656149 |
| $P$ | 4.31       | $H$      | 15.6      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 16 | 691 | 0.2-  | 0.0   | 2002 08 14 | 704 | 0.1+ | 1.1+ | 2003 12 29 | 691 | 0.1- | 0.3+ |
| 2000 01 16 | 691 | 0.1+  | 0.1-  | 2002 08 14 | 704 | 1.0+ | 1.1+ | 2004 01 21 | 691 | 0.1+ | 0.0  |
| 2000 01 16 | 691 | 0.2+  | 0.3+  | 2002 08 17 | 644 | 0.1- | 0.3+ | 2004 01 21 | 691 | 0.0  | 0.2+ |
| 2000 02 04 | 691 | 0.1-  | 0.1+  | 2002 08 17 | 644 | 0.1- | 0.4+ | 2004 01 21 | 691 | 0.1+ | 0.0  |
| 2000 02 04 | 691 | 0.0   | 0.0   | 2002 08 17 | 644 | 0.1- | 0.3+ | 2004 01 22 | 704 | 0.7- | 0.7+ |
| 2000 02 04 | 691 | 0.1-  | 0.1+  | 2002 08 19 | 644 | 0.1- | 0.6- | 2004 01 22 | 704 | 0.7- | 0.6- |
| 2000 02 05 | 695 | 0.3+  | 0.4+  | 2002 08 19 | 644 | 0.1- | 0.6- | 2004 01 22 | 704 | 0.3- | 0.7- |
| 2000 02 05 | 695 | 0.0   | 0.2+  | 2002 08 19 | 644 | 0.0  | 0.6- | 2004 02 27 | 695 | 0.3- | 0.1+ |
| 2000 02 08 | 691 | 0.2+  | 0.1-  | 2002 08 27 | 644 | 0.2+ | 1.1+ | 2004 02 27 | 695 | 0.2- | 0.0  |
| 2000 02 08 | 691 | 0.2+  | 0.1-  | 2002 08 27 | 644 | 0.5- | 0.5+ | 2005 03 17 | 691 | 0.5+ | 0.6+ |
| 2000 02 08 | 691 | 0.4+  | 0.0   | 2002 08 27 | 644 | 0.0  | 1.0+ | 2005 03 17 | 691 | 0.0  | 0.6+ |
| 2002 07 23 | 644 | 0.2-  | 0.7-  | 2002 08 27 | 644 | 0.6- | 0.6+ | 2005 03 17 | 691 | 0.3+ | 0.5+ |
| 2002 07 23 | 644 | 0.5-  | 0.7-  | 2002 08 27 | 644 | 0.2- | 1.0+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2002 07 23 | 644 | 0.2-  | 0.5-  | 2002 08 27 | 644 | 0.6- | 0.5+ | 2007 11 18 | G96 | 0.1- | 0.2- |
| 2002 07 30 | 608 | 1.2+  | 1.2-  | 2002 09 05 | 704 | 0.1- | 0.2- | 2007 11 18 | G96 | 0.3- | 0.9- |
| 2002 07 30 | 608 | (0.9+ | 1.9-) | 2002 09 05 | 704 | 0.0  | 0.4+ | 2007 11 18 | G96 | 0.7- | 0.7- |
| 2002 07 30 | 608 | 0.2+  | 1.2-  | 2002 09 05 | 704 | 0.3- | 0.2- | 2007 12 13 | 704 | 0.0  | 0.1+ |
| 2002 08 09 | 608 | (0.5- | 1.5+) | 2002 09 05 | 704 | 0.4- | 0.6- | 2007 12 13 | 704 | 0.7+ | 0.1+ |
| 2002 08 09 | 608 | 0.3-  | 0.7+  | 2002 09 05 | 704 | 0.2- | 0.0  | 2007 12 13 | 704 | 0.2+ | 0.9+ |
| 2002 08 09 | 608 | 0.3-  | 0.5+  | 2002 09 14 | 644 | 0.5- | 0.4+ | 2007 12 13 | 704 | 0.3+ | 0.1- |
| 2002 08 13 | 699 | 0.4-  | 0.5+  | 2002 09 14 | 644 | 0.4- | 0.2+ | 2007 12 13 | 704 | 1.0+ | 0.7+ |
| 2002 08 13 | 699 | 0.6-  | 0.6+  | 2002 09 14 | 644 | 0.6- | 0.3+ | 2007 12 15 | 704 | 0.3- | 0.9+ |
| 2002 08 13 | 699 | 0.1-  | 0.7+  | 2003 12 18 | 704 | 0.2- | 0.3- | 2007 12 15 | 704 | 0.6+ | 1.1+ |
| 2002 08 13 | 699 | 0.4-  | 0.6+  | 2003 12 18 | 704 | 1.0- | 0.2+ | 2007 12 15 | 704 | 1.6- | 0.9+ |
| 2002 08 14 | 704 | 1.0+  | 1.0+  | 2003 12 18 | 704 | 0.9+ | 0.5- | 2007 12 15 | 704 | 0.7+ | 0.6- |
| 2002 08 14 | 704 | 0.3+  | 0.4+  | 2003 12 29 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.4+ | 0.3+ |
| 2002 08 14 | 704 | 0.4+  | 0.3+  | 2003 12 29 | 691 | 0.1- | 0.1+ |            |     |      |      |

(171625)\* 2000 CW<sub>112</sub> = 1996 FP<sub>7</sub>

Discovered 2000 Feb. 7 by Spacewatch at Kitt Peak.

Id. T. B. Spahr (MPO 380)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 320.29111  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.23241718 | $\omega$ | 4.62882   |     | -0.60202567  |     | -0.79596814  |
| $a$ | 2.6199353  | $\Omega$ | 122.40003 |     | +0.73016259  |     | -0.58084498  |
| $e$ | 0.2035433  | $i$      | 4.29574   |     | +0.32315272  |     | -0.17045185  |
| $P$ | 4.24       | $H$      | 15.4      | $G$ | 0.15         | $U$ | 2            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 03 18 | 691 | 0.5+ | 0.1+ | 2004 01 13 | 699 | 0.1- | 1.0- | 2004 03 26 | 704 | 0.1+ | 0.3+ |
| 1996 03 18 | 691 | 0.7+ | 0.0  | 2004 01 13 | 699 | 0.6+ | 0.1+ | 2004 03 26 | 704 | 0.1- | 0.6+ |
| 1996 03 18 | 691 | 0.6+ | 0.0  | 2004 01 13 | 699 | 0.1- | 0.3+ | 2004 03 26 | 704 | 0.5+ | 0.5- |
| 1996 03 24 | 691 | 0.9- | 0.8- | 2004 01 13 | 699 | 0.8- | 1.0- | 2004 03 26 | 704 | 0.1+ | 0.3+ |
| 1996 03 24 | 691 | 0.5- | 0.3- | 2004 01 13 | 644 | 0.3- | 0.0  | 2004 03 26 | 704 | 0.2+ | 0.2- |
| 1996 03 24 | 691 | 0.5- | 0.7- | 2004 01 13 | 644 | 0.4- | 0.0  | 2004 03 26 | 704 | 0.2+ | 0.7+ |
| 2000 02 07 | 691 | 0.0  | 0.3+ | 2004 01 13 | 644 | 0.1- | 0.1- | 2004 03 26 | 704 | 0.0  | 1.0+ |
| 2000 02 07 | 691 | 0.1+ | 0.3+ | 2004 01 16 | 644 | 0.1- | 0.1+ | 2004 03 26 | 704 | 0.7+ | 0.1+ |
| 2000 02 07 | 691 | 0.1+ | 0.4+ | 2004 01 16 | 644 | 0.4- | 0.1+ | 2004 03 26 | 704 | 1.1+ | 0.0  |
| 2000 02 11 | 704 | 0.1- | 0.4- | 2004 01 16 | 644 | 0.3- | 0.1+ | 2004 03 26 | 704 | 0.1+ | 0.5+ |
| 2000 02 11 | 704 | 0.0  | 0.2- | 2004 01 17 | 644 | 0.2- | 0.0  | 2004 03 26 | 704 | 0.7+ | 0.2- |
| 2000 02 11 | 704 | 0.7+ | 0.4+ | 2004 01 17 | 644 | 0.2- | 0.1- | 2004 03 26 | 704 | 0.7+ | 0.9- |
| 2000 02 11 | 704 | 0.9+ | 0.5+ | 2004 01 17 | 644 | 0.1- | 0.1- | 2004 03 26 | 704 | 0.7+ | 0.0  |
| 2000 02 11 | 704 | 0.0  | 1.2+ | 2004 01 20 | 608 | 0.4+ | 1.1+ | 2004 03 26 | 704 | 0.9+ | 0.6- |
| 2000 03 12 | 703 | 0.5- | 0.1- | 2004 01 20 | 608 | 0.4+ | 0.8+ | 2004 03 26 | 704 | 1.2- | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 12 | 703 | 0.0  | 1.0+ | 2004 01 20 | 608 | 0.4+  | 0.7+  | 2004 03 26 | 704 | 0.9+ | 0.7+ |
| 2000 03 12 | 703 | 0.2- | 0.2- | 2004 01 24 | 704 | 0.0   | 0.2-  | 2004 03 26 | 704 | 0.8+ | 0.4+ |
| 2000 03 12 | 703 | 0.3+ | 0.1+ | 2004 01 24 | 704 | 0.0   | 0.1+  | 2004 03 26 | 704 | 0.6+ | 1.5+ |
| 2000 03 12 | 704 | 0.3+ | 0.7+ | 2004 01 24 | 704 | 0.6+  | 0.1-  | 2004 03 28 | 704 | 0.3+ | 0.1+ |
| 2000 03 12 | 704 | 0.0  | 0.5- | 2004 01 24 | 704 | 0.1-  | 0.3+  | 2004 03 28 | 704 | 0.1- | 0.1- |
| 2000 03 12 | 704 | 0.1+ | 0.3+ | 2004 01 24 | 704 | 0.8+  | 0.0   | 2004 03 28 | 704 | 0.3+ | 0.5+ |
| 2000 03 12 | 704 | 0.0  | 1.3+ | 2004 01 26 | 699 | 0.6+  | 0.1-  | 2004 03 28 | 704 | 0.8+ | 1.1- |
| 2000 03 12 | 704 | 0.9+ | 1.0+ | 2004 01 26 | 699 | 0.6+  | 0.0   | 2004 04 12 | 703 | 0.5+ | 0.0  |
| 2000 03 26 | 699 | 0.1+ | 0.4+ | 2004 01 26 | 699 | 0.1-  | 0.1-  | 2004 04 12 | 703 | 0.3- | 0.4- |
| 2000 03 26 | 699 | 0.0  | 0.3+ | 2004 01 26 | 699 | 0.9+  | 0.1+  | 2004 04 12 | 699 | 1.2- | 0.6- |
| 2000 03 26 | 699 | 0.8+ | 0.5+ | 2004 01 28 | 691 | 0.2+  | 0.1-  | 2004 04 12 | 703 | 0.3+ | 0.4- |
| 2000 03 26 | 699 | 0.3+ | 0.0  | 2004 01 28 | 691 | 0.1+  | 0.1-  | 2004 04 12 | 699 | 0.7- | 0.5+ |
| 2000 03 28 | 704 | 0.2- | 1.1+ | 2004 01 28 | 691 | 0.0   | 0.1-  | 2004 04 12 | 703 | 0.8- | 0.2+ |
| 2000 03 28 | 704 | 0.2- | 0.1+ | 2004 01 30 | 704 | 0.1-  | 0.3-  | 2004 04 12 | 699 | 0.3- | 0.9+ |
| 2000 03 28 | 704 | 0.4- | 0.0  | 2004 01 30 | 704 | (0.9- | 1.8-) | 2004 04 12 | 699 | 0.6- | 0.0  |
| 2000 04 07 | 699 | 0.0  | 0.5- | 2004 01 30 | 704 | 0.3-  | 0.2-  | 2004 04 19 | 704 | 0.0  | 0.5- |
| 2000 04 07 | 699 | 0.1+ | 0.3- | 2004 01 30 | 704 | 0.4-  | 0.4-  | 2004 04 19 | 704 | 0.2- | 0.6+ |
| 2000 04 07 | 699 | 0.3+ | 0.6- | 2004 01 30 | 704 | 0.1-  | 0.3-  | 2004 04 19 | 704 | 0.3+ | 0.1+ |
| 2000 04 07 | 699 | 0.4+ | 0.4- | 2004 02 10 | 644 | 0.3-  | 0.0   | 2004 04 19 | 704 | 0.1+ | 0.7+ |
| 2000 04 08 | 704 | 0.5- | 0.2- | 2004 02 10 | 644 | 0.1-  | 0.2-  | 2004 04 19 | 704 | 0.1- | 0.0  |
| 2000 04 08 | 704 | 0.5+ | 0.7+ | 2004 02 10 | 644 | 0.1-  | 0.1-  | 2004 04 22 | 704 | 0.1+ | 0.2+ |
| 2000 04 08 | 704 | 0.3- | 0.3+ | 2004 02 11 | 691 | 0.0   | 0.1+  | 2004 04 22 | 704 | 0.0  | 0.2+ |
| 2000 04 08 | 704 | 0.3- | 1.1+ | 2004 02 11 | 691 | 0.1+  | 0.1+  | 2004 04 22 | 704 | 0.8- | 0.2- |
| 2000 04 08 | 704 | 0.2- | 0.4+ | 2004 02 11 | 691 | 0.0   | 0.1+  | 2004 04 22 | 704 | 0.1+ | 0.9- |
| 2000 04 10 | 608 | 0.1- | 0.3- | 2004 02 11 | 699 | 0.1-  | 0.4+  | 2004 04 22 | 704 | 0.1+ | 0.5- |
| 2000 04 10 | 608 | 0.1+ | 0.4- | 2004 02 11 | 699 | 0.6-  | 0.0   | 2004 05 21 | 704 | 0.1- | 0.5+ |
| 2000 04 10 | 608 | 0.1- | 0.1- | 2004 02 11 | 699 | 0.2-  | 0.2+  | 2004 05 21 | 704 | 0.0  | 0.1+ |
| 2003 11 21 | 704 | 0.0  | 0.3+ | 2004 02 11 | 699 | 0.3-  | 0.2-  | 2004 05 21 | 704 | 0.2+ | 0.6+ |
| 2003 11 21 | 704 | 0.2+ | 0.3+ | 2004 02 14 | 691 | 0.0   | 0.3-  | 2006 08 18 | 644 | 0.3- | 0.7+ |
| 2003 11 21 | 704 | 0.3+ | 0.1+ | 2004 02 14 | 691 | 0.1-  | 0.2-  | 2006 08 18 | 644 | 0.5- | 0.6+ |
| 2003 11 21 | 704 | 0.9+ | 0.2+ | 2004 02 14 | 691 | 0.2-  | 0.1-  | 2006 08 18 | 644 | 0.4- | 0.5+ |
| 2003 11 21 | 704 | 0.9+ | 0.6+ | 2004 02 16 | 704 | 0.5-  | 0.0   | 2006 08 28 | 691 | 0.3- | 0.8+ |
| 2003 12 01 | 704 | 0.3+ | 0.7+ | 2004 02 16 | 704 | 0.8-  | 0.5+  | 2006 08 28 | 691 | 0.2- | 0.8+ |
| 2003 12 01 | 704 | 1.1+ | 0.2+ | 2004 02 16 | 704 | 0.6-  | 0.7+  | 2006 08 28 | 691 | 0.4- | 0.9+ |
| 2003 12 01 | 704 | 0.1+ | 0.7+ | 2004 02 16 | 704 | 0.4-  | 0.3+  | 2007 11 11 | A24 | 0.3+ | 0.7+ |
| 2003 12 01 | 704 | 0.1+ | 0.2+ | 2004 02 16 | 704 | 0.7-  | 0.7+  | 2007 11 11 | A24 | 0.2+ | 0.6+ |
| 2003 12 01 | 704 | 0.2- | 0.5+ | 2004 02 17 | 644 | 0.0   | 0.1-  | 2007 11 11 | A24 | 0.2+ | 0.6+ |
| 2003 12 16 | 699 | 0.3- | 0.8+ | 2004 02 17 | 644 | 0.1-  | 0.2-  | 2007 11 19 | D29 | 0.2+ | 1.4- |
| 2003 12 16 | 699 | 0.6- | 0.3- | 2004 02 17 | 644 | 0.1+  | 0.3-  | 2007 11 19 | D29 | 0.2+ | 1.1- |
| 2003 12 16 | 699 | 0.8- | 0.0  | 2004 02 23 | 704 | (0.2- | 1.7+) | 2007 11 19 | D29 | 0.3+ | 0.7- |
| 2003 12 16 | 699 | 0.0  | 0.1+ | 2004 02 23 | 704 | (2.7- | 1.5+) | 2007 11 19 | D29 | 0.0  | 1.2- |
| 2003 12 18 | 644 | 0.1+ | 0.1- | 2004 02 23 | 704 | (0.6- | 1.7+) | 2007 12 04 | 704 | 0.7- | 0.0  |
| 2003 12 18 | 644 | 0.1+ | 0.2- | 2004 02 23 | 704 | (1.3- | 1.6+) | 2007 12 04 | 704 | 0.5+ | 0.0  |
| 2003 12 18 | 644 | 0.1+ | 0.1- | 2004 02 23 | 704 | (0.9- | 1.9+) | 2007 12 04 | 704 | 0.7+ | 0.0  |
| 2004 01 04 | 699 | 0.4- | 0.2+ | 2004 02 23 | 608 | 0.3-  | 0.4+  | 2007 12 04 | 704 | 0.0  | 1.4- |
| 2004 01 04 | 699 | 0.2- | 0.6+ | 2004 02 23 | 608 | 0.3-  | 0.5+  | 2007 12 04 | 704 | 0.0  | 0.0  |
| 2004 01 04 | 699 | 0.2+ | 0.4- | 2004 02 23 | 608 | 0.2-  | 0.4+  |            |     |      |      |
| 2004 01 04 | 699 | 1.1- | 0.3- | 2004 03 26 | 704 | (0.6- | 2.0+) |            |     |      |      |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 11 | 704 | 0.7+ | 0.3+ | 2003 12 21 | 704 | 0.3+ | 0.5+ | 2006 08 14 | 644 | 0.3+ | 0.3+ |
| 2000 02 11 | 704 | 1.2+ | 0.6+ | 2003 12 21 | 704 | 0.4+ | 0.0  | 2007 11 12 | 704 | 0.5+ | 0.0  |
| 2000 02 12 | 691 | 0.0  | 0.1- | 2003 12 23 | 704 | 0.1- | 0.4- | 2007 11 12 | 704 | 0.2- | 0.8+ |
| 2000 02 12 | 691 | 0.3- | 0.0  | 2003 12 23 | 704 | 0.1+ | 0.6+ | 2007 11 12 | 704 | 0.3- | 0.0  |
| 2000 02 12 | 691 | 0.2- | 0.2- | 2003 12 23 | 704 | 0.7- | 0.2- | 2007 11 12 | 704 | 0.2+ | 0.3+ |
| 2001 05 22 | 691 | 0.4- | 0.0  | 2003 12 23 | 704 | 0.6- | 0.3+ | 2007 12 04 | 704 | 0.3- | 1.0+ |
| 2001 05 22 | 691 | 0.4- | 0.6+ | 2004 01 21 | 704 | 0.3- | 0.9+ | 2007 12 04 | 704 | 0.1- | 0.7+ |
| 2001 05 22 | 691 | 0.4- | 0.9- | 2004 01 21 | 704 | 0.2- | 0.9+ | 2007 12 04 | 704 | 0.0  | 0.2+ |
| 2001 06 16 | 691 | 0.5- | 0.2- | 2004 01 21 | 704 | 0.1- | 0.3- | 2007 12 04 | 704 | 0.1- | 0.5+ |
| 2001 06 16 | 691 | 0.6- | 0.0  | 2005 05 13 | 691 | 0.4+ | 0.7+ | 2007 12 05 | G96 | 0.3+ | 0.1- |
| 2001 06 16 | 691 | 1.5+ | 0.1- | 2005 05 13 | 691 | 0.1+ | 0.3+ | 2007 12 05 | G96 | 0.0  | 0.2- |
| 2002 08 27 | 644 | 0.0  | 0.3+ | 2005 05 13 | 691 | 0.4+ | 0.4+ | 2007 12 05 | G96 | 0.2+ | 0.1- |
| 2002 08 27 | 644 | 0.2+ | 0.4+ | 2005 05 14 | G96 | 0.2- | 0.2+ |            |     |      |      |

**(171627)\* 2000 CS<sub>135</sub> = 1996 GJ<sub>16</sub>**

Discovered 2000 Feb. 4 by Spacewatch at Kitt Peak.

Id. T. B. Spahr (*MPO* 3514)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 328.19187  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22476322 | $\omega$ | 304.30269 | +0.11887119 | -0.99081040 |
| <i>a</i> | 2.6790812  | $\Omega$ | 138.71952 | +0.94009619 | +0.09139601 |
| <i>e</i> | 0.0583577  | <i>i</i> | 5.61328   | +0.31951336 | +0.09970716 |
| <i>P</i> | 4.39       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 04 14 | 691 | 0.0  | 0.5- | 2002 09 05 | 704 | 0.2-  | 0.7+  | 2007 11 13 | G96 | 0.2+ | 0.8- |
| 1996 04 14 | 691 | 0.1+ | 0.2+ | 2007 10 13 | 704 | 0.7-  | 0.4+  | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 1996 04 14 | 691 | 0.1+ | 0.1- | 2007 10 13 | 704 | 0.2-  | 0.1+  | 2007 11 13 | G96 | 0.5+ | 0.4- |
| 1996 04 22 | 691 | 0.1+ | 0.3- | 2007 10 13 | 704 | 0.3+  | 0.2+  | 2007 11 13 | G96 | 0.4+ | 0.4- |
| 1996 04 22 | 691 | 0.4- | 0.7+ | 2007 10 13 | 704 | (0.2+ | 1.7+) | 2007 11 15 | 699 | 1.0- | 0.6- |
| 1996 04 22 | 691 | 0.0  | 0.2- | 2007 10 30 | 703 | 0.7+  | 0.2+  | 2007 11 15 | 699 | 0.0  | 0.4+ |
| 2000 02 04 | 691 | 0.0  | 0.0  | 2007 10 30 | 703 | 1.3-  | 0.4-  | 2007 11 15 | 699 | 0.3- | 0.7- |
| 2000 02 04 | 691 | 0.1+ | 0.2+ | 2007 10 30 | 703 | 1.0+  | 0.2+  | 2007 11 15 | 699 | 0.1+ | 0.2- |
| 2000 02 04 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.2+  | 0.6+  | 2007 11 17 | 703 | 0.2+ | 0.3+ |
| 2000 02 08 | 691 | 0.3- | 0.3+ | 2007 11 02 | G96 | 0.4+  | 0.7-  | 2007 11 17 | 703 | 0.2- | 0.2+ |
| 2000 02 08 | 691 | 0.2- | 0.1+ | 2007 11 02 | G96 | 0.1+  | 0.4-  | 2007 11 17 | 703 | 0.3- | 0.3+ |
| 2000 02 08 | 691 | 0.1- | 0.2+ | 2007 11 02 | G96 | 0.2+  | 0.3-  | 2007 11 17 | 703 | 0.2- | 0.9+ |
| 2000 03 03 | 704 | 0.9+ | 0.2+ | 2007 11 02 | G96 | 0.1-  | 0.3-  | 2007 11 17 | 703 | 1.2+ | 0.5- |
| 2000 03 03 | 704 | 0.4+ | 0.1+ | 2007 11 09 | 703 | 0.7-  | 1.0-  | 2007 11 17 | 703 | 0.8- | 0.1+ |
| 2000 03 03 | 704 | 1.0+ | 0.6- | 2007 11 09 | 703 | 0.4-  | 0.5+  | 2007 11 17 | 703 | 0.6+ | 0.4- |
| 2002 08 29 | 644 | 0.0  | 0.0  | 2007 11 09 | 703 | (1.6+ | 0.7+) | 2007 11 17 | 703 | 0.2+ | 0.1- |
| 2002 08 29 | 644 | 0.0  | 0.4+ | 2007 11 09 | 703 | 1.0+  | 1.1+  | 2007 12 04 | 704 | 0.4- | 0.5+ |
| 2002 08 29 | 644 | 0.5+ | 0.4+ | 2007 11 11 | 704 | 0.6-  | 0.2+  | 2007 12 04 | 704 | 0.0  | 0.0  |
| 2002 09 05 | 704 | 0.4- | 0.1+ | 2007 11 11 | 704 | 0.1-  | 0.2+  | 2007 12 04 | 704 | 0.2+ | 0.3- |
| 2002 09 05 | 704 | 0.7- | 1.3+ | 2007 11 11 | 704 | 0.1-  | 0.1-  |            |     |      |      |

**(171628)\* 2000 DE<sub>25</sub> = 2005 GU<sub>26</sub>**

Discovered 2000 Feb. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 74734)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 180.48157  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22087981 | $\omega$ | 70.90921  | -0.50900750 | +0.86057126 |
| <i>a</i> | 2.7103916  | $\Omega$ | 168.44136 | -0.81983119 | -0.47828003 |
| <i>e</i> | 0.1060792  | <i>i</i> | 5.18962   | -0.26227503 | -0.17511517 |
| <i>P</i> | 4.46       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 02 29 | 704 | 0.2- | 0.2- | 2005 04 13 | 704 | 0.1-  | 0.3+  | 2006 08 18 | 699 | (2.1+ | 0.4+) |
| 2000 02 29 | 704 | 0.4+ | 0.1- | 2005 04 13 | 699 | (1.9+ | 0.1-) | 2006 08 18 | 699 | 0.6+  | 0.3+  |
| 2000 02 29 | 704 | 0.8+ | 0.1- | 2005 04 13 | 704 | 0.1+  | 0.4-  | 2006 08 25 | 704 | 0.4+  | 0.2+  |
| 2000 02 29 | 704 | 0.3+ | 0.2- | 2005 04 13 | 704 | 0.2+  | 0.6+  | 2006 08 25 | 704 | 1.0+  | 0.0   |
| 2000 02 29 | 704 | 0.4- | 0.0  | 2005 04 14 | 691 | 0.0   | 0.2+  | 2006 08 25 | 704 | 0.6+  | 0.4+  |
| 2000 03 03 | 704 | 0.2+ | 0.5+ | 2005 04 14 | 691 | 0.1+  | 0.2+  | 2006 08 25 | 704 | 0.6+  | 0.6+  |
| 2000 03 03 | 704 | 0.8+ | 0.4+ | 2005 04 14 | 691 | 0.1-  | 0.1+  | 2006 08 25 | 704 | 0.6+  | 0.6+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 03 | 704 | 0.2+  | 1.4+  | 2005 04 18 | 691 | 0.2+  | 0.3+  | 2006 08 28 | 703 | 0.1-  | 0.5+  |
| 2000 03 03 | 704 | 0.3+  | 0.9+  | 2005 04 18 | 691 | 0.1+  | 0.1+  | 2006 08 28 | 703 | 0.5-  | 0.3+  |
| 2000 03 05 | 704 | 1.1-  | 1.4+  | 2005 04 18 | 691 | 0.0   | 0.2+  | 2006 08 28 | 703 | 0.2-  | 0.7+  |
| 2000 03 05 | 704 | 0.3+  | 0.0   | 2005 04 19 | 704 | 0.3-  | 0.6+  | 2006 08 28 | 703 | 1.0-  | 0.4+  |
| 2000 03 05 | 704 | 0.6+  | 0.1-  | 2005 04 19 | 704 | 0.9+  | 0.6+  | 2006 09 14 | 703 | 0.1+  | 0.2-  |
| 2000 03 11 | 704 | 0.2+  | 1.5+  | 2005 04 19 | 704 | 0.3+  | 0.5-  | 2006 09 14 | 703 | 0.4-  | 0.1+  |
| 2000 03 11 | 704 | 0.3+  | 1.3+  | 2005 04 19 | 704 | (2.7+ | 0.4-) | 2006 09 14 | 703 | 1.0-  | 0.1-  |
| 2000 03 11 | 704 | 1.0+  | 0.1+  | 2005 04 19 | 704 | 1.3+  | 1.0+  | 2006 09 14 | 703 | 0.4-  | 0.4-  |
| 2002 10 06 | 608 | 0.0   | 0.8+  | 2005 05 01 | 695 | 0.5-  | 0.0   | 2006 09 17 | 704 | (0.5+ | 1.8+) |
| 2002 10 06 | 608 | 0.6-  | 0.7+  | 2005 05 01 | 695 | 0.5-  | 0.1+  | 2006 09 17 | 704 | (0.6+ | 2.6+) |
| 2002 10 06 | 608 | 0.7-  | 0.8+  | 2005 05 03 | 704 | 0.2+  | 0.8+  | 2006 09 17 | 704 | 0.6+  | 0.6+  |
| 2002 10 15 | 704 | 1.3-  | 0.5+  | 2005 05 03 | 704 | 0.6+  | 0.7+  | 2006 09 18 | 699 | 0.5+  | 1.3+  |
| 2002 10 15 | 704 | 0.8-  | 1.3+  | 2005 05 03 | 704 | 0.1+  | 0.7+  | 2006 09 18 | 699 | 0.0   | 0.4+  |
| 2002 10 15 | 704 | 0.6-  | 0.1+  | 2005 05 03 | 704 | 0.7+  | 0.6+  | 2006 09 18 | 699 | 0.0   | 0.5+  |
| 2002 10 31 | 704 | 0.3+  | 1.1+  | 2005 05 03 | 704 | 0.4+  | 0.7+  | 2006 09 18 | 699 | 0.2-  | 0.9+  |
| 2002 10 31 | 704 | 0.3-  | 0.2-  | 2005 05 08 | 704 | 0.1-  | 0.4+  | 2006 09 20 | 704 | 1.0+  | 0.4-  |
| 2002 10 31 | 704 | 0.3-  | 1.4+  | 2005 05 08 | 704 | 1.1+  | 0.7-  | 2006 09 20 | 704 | 0.0   | 0.1+  |
| 2002 10 31 | 704 | 0.9-  | 0.7+  | 2005 05 08 | 704 | 0.5-  | 0.1-  | 2006 09 20 | 704 | 0.4-  | 1.0+  |
| 2002 10 31 | 704 | (0.2- | 1.5+) | 2005 05 08 | 703 | 1.1-  | 0.3+  | 2006 09 25 | G96 | 0.2-  | 0.2+  |
| 2005 04 02 | 699 | 0.1-  | 0.1+  | 2005 05 08 | 703 | 0.9-  | 0.5-  | 2006 09 25 | G96 | 0.0   | 0.1+  |
| 2005 04 02 | 699 | 0.1+  | 0.1+  | 2005 05 08 | 703 | 1.2-  | 0.2-  | 2006 09 25 | G96 | 0.1+  | 0.1+  |
| 2005 04 02 | 699 | 0.1-  | 0.2+  | 2005 05 08 | 703 | 0.3-  | 0.1-  | 2006 09 25 | G96 | 0.2-  | 0.2+  |
| 2005 04 02 | 699 | 0.7-  | 0.4+  | 2005 05 09 | 699 | (1.8+ | 1.0+) | 2006 10 27 | G96 | 0.4-  | 0.0   |
| 2005 04 05 | 704 | 0.5+  | 0.3-  | 2005 05 09 | 699 | 0.2-  | 0.3+  | 2006 10 27 | G96 | 0.1+  | 0.1+  |
| 2005 04 05 | 704 | 0.7+  | 0.5+  | 2005 05 09 | 699 | 0.7-  | 0.3+  | 2006 10 27 | G96 | 0.2-  | 0.4+  |
| 2005 04 05 | 704 | 0.8+  | 0.2+  | 2005 05 09 | 699 | 0.3-  | 0.3+  | 2006 10 27 | G96 | 0.3-  | 0.4-  |
| 2005 04 05 | 703 | 0.0   | 1.1-  | 2005 05 12 | 699 | 0.4-  | 0.6+  | 2006 11 16 | G96 | 0.5-  | 0.2-  |
| 2005 04 05 | 704 | 0.7+  | 1.0+  | 2005 05 12 | 699 | 0.7-  | 0.3+  | 2006 11 16 | G96 | 0.1+  | 0.2+  |
| 2005 04 05 | 703 | 0.7-  | 0.0   | 2005 05 12 | 699 | 0.4-  | 0.3+  | 2006 11 16 | G96 | 0.5-  | 0.0   |
| 2005 04 05 | 704 | 0.9+  | 1.5+  | 2006 06 20 | 703 | 0.4-  | 0.4+  | 2006 11 16 | G96 | 0.6-  | 0.1-  |
| 2005 04 05 | 703 | 0.2-  | 0.8-  | 2006 06 20 | 703 | (0.7+ | 2.3+) | 2007 11 12 | 704 | 0.1-  | 1.4+  |
| 2005 04 05 | 703 | 0.1+  | 0.1-  | 2006 06 20 | 703 | 0.6+  | 0.1+  | 2007 11 12 | 704 | 0.1-  | 0.1-  |
| 2005 04 06 | 691 | 0.0   | 0.1+  | 2006 06 20 | 703 | (1.7+ | 0.6+) | 2007 11 12 | 704 | 0.7+  | 0.0   |
| 2005 04 06 | 691 | 0.2-  | 0.3+  | 2006 07 25 | 644 | 0.2-  | 0.4+  | 2007 11 12 | 704 | 0.5+  | 0.7+  |
| 2005 04 06 | 691 | 0.1-  | 0.1+  | 2006 07 25 | 644 | 0.7-  | 0.9+  | 2007 12 04 | 704 | 0.6-  | 1.1+  |
| 2005 04 13 | 699 | 1.0+  | 0.9+  | 2006 07 25 | 644 | 0.1-  | 0.3+  | 2007 12 04 | 704 | 0.7-  | 0.4+  |
| 2005 04 13 | 699 | 0.7+  | 0.6+  | 2006 08 18 | A50 | 0.3+  | 0.0   | 2007 12 04 | 704 | 0.6+  | 1.1+  |
| 2005 04 13 | 704 | 0.5+  | 0.8-  | 2006 08 18 | A50 | 0.1+  | 0.1+  | 2007 12 04 | 704 | 0.1-  | 0.7+  |
| 2005 04 13 | 699 | (1.3+ | 1.8+) | 2006 08 18 | 699 | (0.6- | 1.7+) | 2007 12 04 | 704 | 0.7-  | 0.5+  |
| 2005 04 13 | 704 | 0.3+  | 1.0-  | 2006 08 18 | 699 | 0.6-  | 0.6+  |            |     |       |       |

**(171629)\* 2000 DH<sub>73</sub>**

Discovered 2000 Feb. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 267.78567  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21821940 | $\omega$ | 354.39684 | -0.85356574 | -0.52052430 |
| <i>a</i> | 2.7323761  | $\Omega$ | 154.19888 | +0.47992817 | -0.80196623 |
| <i>e</i> | 0.0821253  | <i>i</i> | 2.88520   | +0.20271771 | -0.29309490 |
| <i>P</i> | 4.52       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 29 | 704 | 0.4+ | 0.1+ | 2000 04 06 | 704 | 0.8+ | 0.6+ | 2007 10 10 | G96 | 0.2+  | 0.2-  |
| 2000 02 29 | 704 | 0.3- | 0.3- | 2002 10 05 | 645 | 0.0  | 0.1+ | 2007 10 10 | G96 | 0.3+  | 0.1-  |
| 2000 02 29 | 704 | 0.2+ | 0.9+ | 2002 10 05 | 645 | 0.1- | 0.1+ | 2007 10 10 | 691 | 0.0   | 0.2-  |
| 2000 02 29 | 704 | 0.6+ | 0.8+ | 2003 12 29 | 691 | 0.1+ | 0.1- | 2007 10 10 | G96 | 0.5+  | 0.1-  |
| 2000 03 03 | 704 | 0.5+ | 0.2- | 2003 12 29 | 691 | 0.1+ | 0.2- | 2007 10 10 | G96 | 0.2+  | 0.2-  |
| 2000 03 03 | 704 | 0.1+ | 0.0  | 2003 12 29 | 691 | 0.1+ | 0.1- | 2007 10 10 | 691 | 0.3-  | 0.4+  |
| 2000 03 03 | 704 | 0.1- | 0.2+ | 2004 01 16 | 644 | 0.4- | 0.3- | 2007 11 02 | 691 | 0.6+  | 0.1-  |
| 2000 03 03 | 704 | 0.6+ | 0.0  | 2004 01 16 | 644 | 0.3- | 0.0  | 2007 11 02 | 691 | 0.4-  | 0.0   |
| 2000 03 03 | 704 | 0.7+ | 0.5- | 2004 01 16 | 644 | 0.2- | 0.0  | 2007 11 02 | 691 | 0.2-  | 0.0   |
| 2000 03 11 | 704 | 0.4- | 0.4+ | 2005 05 11 | G96 | 0.2- | 0.2+ | 2007 11 04 | 704 | 1.4+  | 1.2+  |
| 2000 03 11 | 699 | 1.2- | 0.3- | 2005 05 11 | G96 | 0.1- | 0.4+ | 2007 11 04 | 704 | 0.4+  | 0.3+  |
| 2000 03 11 | 704 | 0.1- | 0.8+ | 2005 05 11 | G96 | 0.1- | 0.1+ | 2007 11 04 | 704 | 0.9-  | 1.2+  |
| 2000 03 11 | 704 | 0.3+ | 0.1+ | 2005 05 11 | G96 | 0.0  | 0.2+ | 2007 11 04 | 704 | 0.5+  | 0.0   |
| 2000 03 11 | 699 | 0.8- | 0.2- | 2005 05 13 | 691 | 0.2+ | 0.4+ | 2007 11 04 | 704 | 0.2+  | 0.4+  |
| 2000 03 11 | 704 | 0.2- | 0.2+ | 2005 05 13 | 691 | 0.1+ | 0.5+ | 2007 11 14 | 704 | (1.8- | 1.7+) |

2007 DEC. 24

M.P.O. 129109

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 11 | 699 | 0.6− | 0.1− | 2005 05 13 | 691 | 0.5+ | 0.1+ | 2007 11 14 | 704 | (0.3+ | 2.0+) |
| 2000 03 11 | 704 | 0.5− | 0.0  | 2005 05 14 | G96 | 0.1− | 0.1+ | 2007 11 14 | 704 | (1.7+ | 0.9+) |
| 2000 03 11 | 699 | 0.5+ | 0.1− | 2005 05 14 | G96 | 0.3− | 0.3+ | 2007 11 18 | G96 | 0.1−  | 0.0   |
| 2000 04 05 | 704 | 0.9+ | 0.6+ | 2005 05 14 | G96 | 0.5− | 0.2+ | 2007 11 18 | G96 | 0.1+  | 0.1−  |
| 2000 04 05 | 704 | 0.5+ | 0.2− | 2005 05 14 | G96 | 0.2− | 0.2+ | 2007 11 18 | G96 | 0.2+  | 0.1−  |
| 2000 04 05 | 704 | 0.1− | 0.3+ | 2006 09 26 | G96 | 0.2− | 0.1+ | 2007 11 18 | G96 | 0.4+  | 0.1−  |
| 2000 04 05 | 704 | 0.1+ | 0.4+ | 2006 09 26 | G96 | 0.2+ | 0.1− | 2007 12 03 | 704 | 0.9+  | 2.3+  |
| 2000 04 05 | 704 | 0.5− | 0.6+ | 2006 09 26 | G96 | 0.1− | 0.2+ | 2007 12 03 | 704 | 0.4−  | 1.2+  |
| 2000 04 06 | 704 | 0.1− | 0.9+ | 2006 09 26 | G96 | 0.3− | 0.1− | 2007 12 03 | 704 | 0.1+  | 0.3−  |
| 2000 04 06 | 704 | 0.8+ | 1.1+ | 2007 10 10 | 691 | 0.2− | 0.0  | 2007 12 03 | 704 | 0.7+  | 1.0+  |

**(171630)\* 2000 DB<sub>81</sub>**

Discovered 2000 Feb. 28 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 327.77658  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.23493851 | $\omega$ | 16.75578 | -0.29416799  | -0.95130934  |
| $a$ | 2.6011570  | $\Omega$ | 90.42528 | +0.86599087  | -0.30605651  |
| $e$ | 0.1344125  | $i$      | 5.28249  | +0.40438225  | -0.03660549  |
| $P$ | 4.20       | $H$      | 16.0     | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 03 | 704 | 0.5− | 0.4− | 2003 12 22 | 704 | 1.1+ | 0.0  | 2005 05 14 | G96 | 0.3− | 0.1+ |
| 2000 02 03 | 704 | 0.7− | 0.5+ | 2003 12 22 | 704 | 0.4+ | 0.4− | 2005 05 14 | G96 | 0.4− | 0.4− |
| 2000 02 03 | 704 | 0.5− | 0.0  | 2003 12 22 | 704 | 0.2− | 0.5+ | 2005 05 14 | G96 | 0.3− | 0.2+ |
| 2000 02 03 | 704 | 0.3− | 0.1− | 2003 12 25 | 608 | 0.3− | 0.1+ | 2005 05 14 | G96 | 0.4− | 0.3+ |
| 2000 02 03 | 704 | 0.5+ | 0.1+ | 2003 12 25 | 608 | 0.4− | 0.4+ | 2005 06 14 | 691 | 0.1+ | 0.0  |
| 2000 02 11 | 704 | 0.7− | 0.4− | 2003 12 25 | 608 | 0.6− | 0.1+ | 2005 06 14 | 691 | 0.5+ | 0.3+ |
| 2000 02 11 | 704 | 0.8− | 1.1− | 2003 12 27 | 704 | 0.4− | 0.0  | 2005 06 14 | 691 | 0.0  | 0.5+ |
| 2000 02 11 | 704 | 0.4− | 0.1− | 2003 12 27 | 704 | 0.2− | 0.6− | 2007 11 14 | 704 | 0.4+ | 0.2− |
| 2000 02 28 | 704 | 1.8+ | 0.4+ | 2003 12 27 | 704 | 0.8− | 0.9− | 2007 11 14 | 704 | 0.4+ | 0.2− |
| 2000 02 28 | 704 | 1.6+ | 1.0+ | 2003 12 27 | 704 | 0.1− | 0.3− | 2007 11 14 | 704 | 0.7+ | 0.2+ |
| 2000 02 28 | 704 | 0.1+ | 0.1− | 2003 12 27 | 704 | 0.0  | 0.4− | 2007 11 14 | 704 | 0.2+ | 0.6+ |
| 2000 02 28 | 704 | 0.1+ | 0.0  | 2003 12 27 | 704 | 0.5+ | 0.1− | 2007 11 17 | 691 | 0.2− | 0.1− |
| 2000 02 28 | 704 | 0.3− | 0.7+ | 2003 12 27 | 704 | 0.0  | 0.1− | 2007 11 17 | 691 | 0.2− | 0.1+ |
| 2000 03 04 | 704 | 0.8− | 1.0+ | 2003 12 27 | 704 | 0.6+ | 0.6+ | 2007 11 17 | 691 | 0.2− | 0.0  |
| 2000 03 04 | 704 | 0.0  | 0.9+ | 2003 12 28 | 691 | 0.1+ | 0.2− | 2007 12 04 | 691 | 0.5− | 0.0  |
| 2000 03 04 | 704 | 0.9+ | 0.3− | 2003 12 28 | 691 | 0.2+ | 0.0  | 2007 12 04 | 691 | 0.2− | 0.0  |
| 2002 08 30 | 644 | 0.3− | 1.1+ | 2003 12 28 | 691 | 0.4+ | 0.1+ | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2002 08 30 | 644 | 0.5− | 0.9+ | 2003 12 29 | 699 | 0.9− | 0.2+ | 2007 12 05 | 704 | 0.6+ | 0.2+ |
| 2002 08 30 | 644 | 0.4− | 1.1+ | 2003 12 29 | 699 | 0.3+ | 0.3+ | 2007 12 05 | 704 | 0.7+ | 0.5+ |
| 2003 12 22 | 704 | 0.4+ | 0.1+ | 2003 12 29 | 699 | 0.5− | 0.5+ | 2007 12 05 | 704 | 0.9+ | 0.2+ |
| 2003 12 22 | 704 | 0.3+ | 0.8+ | 2003 12 29 | 699 | 0.6− | 0.5+ | 2007 12 05 | 704 | 0.9+ | 0.3+ |

**(171631)\* 2000 DT<sub>97</sub>**

Discovered 2000 Feb. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 17.69911   |          | (2000.0) | $P$         | $Q$         |
|-----|------------|----------|----------|-------------|-------------|
| $n$ | 0.24298251 | $\omega$ | 43.80723 | +0.23278124 | -0.97136568 |
| $a$ | 2.5434276  | $\Omega$ | 32.81714 | +0.86637377 | +0.18490876 |
| $e$ | 0.1695906  | $i$      | 5.03412  | +0.44182507 | +0.14918937 |
| $P$ | 4.06       | $H$      | 16.1     | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 02 03 | 704 | 0.3− | 0.2+ | 2002 08 30 | 644 | 0.4+  | 0.2+  | 2004 02 13 | 691 | 0.2+ | 0.1+ |
| 2000 02 03 | 704 | 0.6+ | 0.2− | 2002 08 30 | 644 | 0.4−  | 0.3−  | 2004 02 13 | 691 | 0.2+ | 0.3− |
| 2000 02 03 | 704 | 0.4− | 0.5+ | 2002 08 30 | 644 | 0.1+  | 0.5+  | 2004 02 13 | 691 | 0.1+ | 0.3− |
| 2000 02 06 | 703 | 0.5+ | 0.9− | 2003 12 19 | 704 | 0.8+  | 0.6+  | 2004 02 15 | 704 | 0.8+ | 0.3+ |
| 2000 02 06 | 703 | 0.1− | 0.4+ | 2003 12 19 | 704 | 0.3+  | 0.1+  | 2004 02 15 | 704 | 0.2+ | 0.3+ |
| 2000 02 06 | 703 | 0.6− | 0.5+ | 2003 12 19 | 704 | 0.8+  | 0.5+  | 2004 02 15 | 704 | 0.4+ | 0.3+ |
| 2000 02 06 | 703 | 0.9+ | 0.0  | 2004 01 13 | 699 | (2.1− | 0.6+) | 2004 02 15 | 704 | 0.3+ | 1.0+ |
| 2000 02 11 | 704 | 0.2+ | 0.4− | 2004 01 13 | 699 | (1.5− | 0.8−) | 2004 02 20 | 608 | 0.8− | 0.7+ |
| 2000 02 11 | 704 | 0.9+ | 0.5− | 2004 01 13 | 699 | 0.0   | 0.1−  | 2004 02 20 | 608 | 0.2− | 1.1+ |
| 2000 02 11 | 704 | 0.1+ | 0.1+ | 2004 01 13 | 699 | 1.0−  | 1.1−  | 2004 02 20 | 608 | 1.0− | 0.2+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 02 11 | 704 | 0.6+ | 0.6+ | 2004 01 23 | 704 | 0.5+  | 0.2+  | 2004 02 27 | 608 | 0.2+  | 0.4−  |
| 2000 02 29 | 704 | 0.6− | 0.5+ | 2004 01 23 | 704 | 0.7+  | 0.4−  | 2004 02 27 | 608 | 0.2+  | 0.4−  |
| 2000 02 29 | 704 | 0.2+ | 0.2+ | 2004 01 23 | 704 | 0.1−  | 0.1−  | 2004 02 27 | 608 | 0.1+  | 0.1+  |
| 2000 02 29 | 704 | 0.6− | 0.6+ | 2004 01 23 | 704 | 0.2+  | 0.2−  | 2004 03 10 | 703 | (1.8− | 1.8+) |
| 2000 02 29 | 704 | 0.0  | 0.0  | 2004 01 23 | 704 | 0.2+  | 0.0   | 2004 03 10 | 703 | 0.6−  | 0.7+  |
| 2000 02 29 | 704 | 1.8− | 0.4− | 2004 01 30 | 704 | 0.0   | 0.1−  | 2004 03 10 | 703 | (0.5+ | 1.7+) |
| 2000 03 05 | 704 | 0.0  | 0.2+ | 2004 01 30 | 704 | (2.6− | 0.2+) | 2004 03 10 | 703 | 0.0   | 0.4+  |
| 2000 03 05 | 704 | 0.3− | 1.1+ | 2004 01 30 | 704 | 0.2−  | 0.5−  | 2006 08 24 | 644 | 0.8−  | 0.3+  |
| 2000 03 05 | 704 | 0.4− | 0.8+ | 2004 01 30 | 704 | 0.2+  | 1.1+  | 2006 08 24 | 644 | 0.5−  | 0.5+  |
| 2002 08 19 | 644 | 0.2− | 0.8+ | 2004 02 10 | 644 | 0.0   | 0.1+  | 2006 08 24 | 644 | 0.5−  | 0.5+  |
| 2002 08 19 | 644 | 0.1+ | 0.6+ | 2004 02 10 | 644 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 0.4+  | 0.1+  |
| 2002 08 19 | 644 | 0.0  | 0.5+ | 2004 02 10 | 644 | 0.2+  | 0.4+  | 2007 11 18 | 704 | 0.5−  | 0.8−  |
| 2002 08 26 | 644 | 0.4− | 0.1+ | 2004 02 11 | 644 | 0.2+  | 0.1+  | 2007 11 18 | 704 | 0.2−  | 0.3+  |
| 2002 08 26 | 644 | 0.1− | 0.7+ | 2004 02 11 | 644 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 0.8+  | 0.4−  |
| 2002 08 26 | 644 | 0.1+ | 0.8+ | 2004 02 11 | 644 | 0.4+  | 0.0   | 2007 12 03 | 703 | 0.8−  | 0.2−  |
| 2002 08 30 | 644 | 0.3− | 0.1+ | 2004 02 11 | 333 | 0.2−  | 0.1+  | 2007 12 03 | 703 | 0.7−  | 0.2−  |
| 2002 08 30 | 644 | 0.3+ | 0.1− | 2004 02 11 | 333 | 0.4+  | 0.0   | 2007 12 03 | 703 | 1.3−  | 0.2−  |
| 2002 08 30 | 644 | 0.2− | 0.0  | 2004 02 11 | 333 | 0.3+  | 0.4−  | 2007 12 03 | 703 | 0.1−  | 0.4−  |

**(171632)\* 2000 DJ<sub>100</sub>**

Discovered 2000 Feb. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 307.36862  |          | (2000.0) | $\mathbf{P}$  | $\mathbf{Q}$  |
|-----|------------|----------|----------|---------------|---------------|
| $n$ | 0.23344306 | $\omega$ | 58.60496 | $-0.73523712$ | $-0.67219214$ |
| $a$ | 2.6122540  | $\Omega$ | 79.00233 | $+0.58786237$ | $-0.69634112$ |
| $e$ | 0.1881153  | $i$      | 5.08975  | $+0.33740808$ | $-0.25152888$ |
| $P$ | 4.22       | $H$      | 16.8     | $G$ 0.15      | $U$ 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 04 22 | 691 | 0.5+  | 1.3−  | 2000 04 03 | 699 | 0.1−  | 0.4+  | 2004 01 31 | 704 | 0.2−  | 0.3−  |
| 1996 04 23 | 691 | 0.7−  | 0.7−  | 2003 11 24 | 704 | (1.5− | 0.7−) | 2004 01 31 | 704 | 0.5−  | 0.2+  |
| 1996 04 23 | 691 | 0.7−  | 0.7−  | 2003 11 24 | 704 | 0.3−  | 0.3+  | 2004 01 31 | 704 | 0.1−  | 0.3−  |
| 1996 04 23 | 691 | 0.6−  | 0.6−  | 2003 11 24 | 704 | 0.1−  | 0.7+  | 2004 01 31 | 704 | 0.6−  | 0.0   |
| 1996 04 23 | 381 | 0.2+  | 0.1−  | 2003 12 16 | 699 | 1.1−  | 1.1−  | 2004 01 31 | 704 | 0.7−  | 1.0−  |
| 1996 04 23 | 381 | 0.1−  | 0.2−  | 2003 12 16 | 699 | 0.2+  | 0.3+  | 2004 02 11 | 699 | 0.1+  | 0.4−  |
| 1996 04 23 | 381 | 0.2+  | 0.0   | 2003 12 16 | 699 | 0.4−  | 0.2−  | 2004 02 11 | 699 | 0.2−  | 0.1−  |
| 1996 04 23 | 381 | 0.0   | 0.2−  | 2003 12 16 | 699 | 0.1−  | 0.3+  | 2004 02 11 | 699 | 0.0   | 0.1−  |
| 1998 09 19 | 645 | 0.0   | 0.0   | 2003 12 17 | 691 | 0.1−  | 0.1−  | 2004 02 11 | 699 | 0.7−  | 0.0   |
| 1998 09 19 | 645 | 0.0   | 0.0   | 2003 12 17 | 691 | 0.0   | 0.0   | 2004 02 14 | 704 | 0.5+  | 1.0−  |
| 2000 02 04 | 704 | 0.4−  | 0.2−  | 2003 12 17 | 691 | 0.1−  | 0.2−  | 2004 02 14 | 704 | 0.6−  | 1.0+  |
| 2000 02 04 | 704 | 0.7−  | 0.4−  | 2003 12 18 | 704 | 0.2−  | 0.3+  | 2004 02 14 | 704 | 0.1−  | 0.9+  |
| 2000 02 04 | 704 | 0.2−  | 0.1+  | 2003 12 18 | 704 | 0.1−  | 0.0   | 2004 02 14 | 704 | 0.5−  | 1.2+  |
| 2000 02 04 | 704 | 0.6−  | 1.8+  | 2003 12 18 | 704 | 0.1−  | 0.1+  | 2004 04 20 | 704 | 0.7+  | 0.1−  |
| 2000 02 11 | 704 | 1.1+  | 1.9+  | 2003 12 19 | 691 | 0.1−  | 0.1+  | 2004 04 20 | 704 | 0.1+  | 0.8+  |
| 2000 02 11 | 704 | 1.3+  | 0.7−  | 2003 12 19 | 691 | 0.0   | 0.0   | 2004 04 20 | 704 | 0.5+  | 0.8−  |
| 2000 02 11 | 704 | 0.6−  | 1.4+  | 2003 12 19 | 691 | 0.1−  | 0.0   | 2004 04 20 | 704 | 0.2+  | 0.3−  |
| 2000 02 11 | 704 | 0.0   | 0.5−  | 2003 12 21 | 691 | 0.1+  | 0.1+  | 2007 11 05 | 704 | (0.2+ | 2.4+) |
| 2000 02 29 | 704 | 0.6+  | 0.1−  | 2003 12 21 | 691 | 0.9+  | 0.6+  | 2007 11 05 | 704 | (0.4+ | 2.2+) |
| 2000 02 29 | 704 | 0.3+  | 0.4+  | 2003 12 21 | 691 | 0.1−  | 0.1+  | 2007 11 05 | 704 | (0.8+ | 2.0+) |
| 2000 02 29 | 704 | 0.3−  | 1.0+  | 2003 12 21 | 608 | 0.3+  | 0.7+  | 2007 11 05 | 704 | (0.7− | 2.1+) |
| 2000 02 29 | 704 | 0.8−  | 0.8+  | 2003 12 21 | 608 | 0.1+  | 1.0+  | 2007 12 04 | 691 | 0.3+  | 0.7−  |
| 2000 02 29 | 704 | 0.9+  | 0.4+  | 2003 12 21 | 608 | 0.2+  | 0.7+  | 2007 12 04 | 691 | 0.1−  | 0.2−  |
| 2000 03 05 | 704 | 0.1+  | 0.8+  | 2003 12 22 | 704 | 0.9+  | 1.2−  | 2007 12 04 | 691 | 0.2−  | 0.2−  |
| 2000 03 05 | 704 | 0.9+  | 0.4+  | 2003 12 22 | 704 | 1.2+  | 0.2+  | 2007 12 04 | G96 | 0.1−  | 0.4−  |
| 2000 03 05 | 704 | 0.7+  | 0.4+  | 2003 12 22 | 704 | 0.7+  | 0.5−  | 2007 12 04 | G96 | 0.2+  | 0.4−  |
| 2000 03 05 | 704 | 1.0−  | 1.7+  | 2003 12 22 | 704 | 0.9+  | 1.0−  | 2007 12 04 | G96 | 1.2+  | 1.4−  |
| 2000 03 05 | 704 | 0.4+  | 0.7+  | 2003 12 22 | 704 | 0.9+  | 0.9−  | 2007 12 04 | G96 | 1.2+  | 0.9−  |
| 2000 03 12 | 704 | 0.8+  | 0.8+  | 2003 12 27 | 704 | 0.5−  | 0.0   | 2007 12 05 | 704 | 0.3−  | 0.6+  |
| 2000 03 12 | 704 | 0.6+  | 1.2+  | 2003 12 27 | 704 | 0.4−  | 0.1+  | 2007 12 05 | 704 | 0.5−  | 0.6+  |
| 2000 03 12 | 704 | 0.8+  | 0.9+  | 2003 12 27 | 704 | 0.4+  | 0.0   | 2007 12 05 | 704 | 0.3+  | 0.5+  |
| 2000 03 12 | 704 | 0.7+  | 1.2+  | 2003 12 27 | 704 | 0.4−  | 0.2−  | 2007 12 05 | 704 | 0.1−  | 0.4+  |
| 2000 03 12 | 704 | (2.8+ | 2.0+) | 2003 12 27 | 704 | 0.2−  | 0.1+  | 2007 12 05 | 704 | 0.1−  | 0.1+  |
| 2000 04 03 | 699 | 1.4−  | 1.4−  | 2004 01 18 | 691 | 0.1+  | 0.2−  | 2007 12 16 | 691 | 0.1−  | 0.4−  |
| 2000 04 03 | 699 | 0.1+  | 0.4+  | 2004 01 18 | 691 | 0.2+  | 0.3−  | 2007 12 16 | 691 | 0.2−  | 0.4−  |
| 2000 04 03 | 699 | 0.9−  | 0.6+  | 2004 01 18 | 691 | 0.0   | 0.3−  | 2007 12 16 | 691 | 0.1−  | 0.4−  |

**(171633)\* 2000 DQ<sub>108</sub> = 2002 RE<sub>160</sub>**

Discovered 2000 Feb. 29 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. A. Doppler (*MPO* 37377)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 306.94115  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |          |  |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|--|
| <i>n</i> | 0.22523698 | $\omega$ | 114.64831 | −0.30704671 | −0.95167210 |          |          |  |
| <i>a</i> | 2.6753232  | $\Omega$ | 353.22316 | +0.85196423 | −0.27181020 |          |          |  |
| <i>e</i> | 0.0625181  | <i>i</i> | 3.16823   | +0.42412176 | −0.14296654 |          |          |  |
| <i>P</i> | 4.38       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | <i>0</i> |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 06 | 703 | 0.4+ | 0.9+ | 2005 03 17 | G96 | 0.1− | 0.1+ | 2007 11 13 | 691 | 0.2−  | 0.1−  |
| 2000 02 06 | 703 | 0.0  | 0.3+ | 2005 04 14 | 691 | 0.0  | 0.5+ | 2007 11 17 | 691 | 0.1−  | 0.1+  |
| 2000 02 06 | 703 | 0.7+ | 1.1+ | 2005 04 14 | 691 | 0.5+ | 0.8+ | 2007 11 17 | 691 | 0.1−  | 0.0   |
| 2000 02 06 | 703 | 0.9+ | 1.8+ | 2005 04 14 | 691 | 0.6+ | 0.5+ | 2007 11 17 | 691 | 0.2+  | 0.1−  |
| 2000 02 29 | 704 | 0.9− | 0.2− | 2005 05 01 | 644 | 0.0  | 0.6+ | 2007 11 18 | A77 | 0.7+  | 0.2−  |
| 2000 02 29 | 704 | 0.2+ | 0.2− | 2005 05 01 | 644 | 0.0  | 0.4+ | 2007 11 18 | A77 | 0.4+  | 0.3−  |
| 2000 02 29 | 704 | 0.2− | 0.8− | 2005 05 01 | 644 | 0.0  | 0.7+ | 2007 11 18 | A77 | 0.7+  | 0.1−  |
| 2000 02 29 | 704 | 1.2+ | 0.0  | 2005 05 19 | 644 | 0.1+ | 0.5+ | 2007 11 18 | 704 | 0.4+  | 0.5−  |
| 2000 03 03 | 704 | 0.5− | 0.1+ | 2005 05 19 | 644 | 0.4+ | 0.7+ | 2007 11 18 | 704 | 0.3+  | 0.0   |
| 2000 03 03 | 704 | 0.2+ | 0.1− | 2005 05 19 | 644 | 0.0  | 0.2+ | 2007 11 18 | 704 | 0.8+  | 1.2+  |
| 2000 03 03 | 704 | 0.6+ | 0.1+ | 2007 11 01 | 691 | 0.3− | 0.0  | 2007 11 18 | 704 | (1.6+ | 0.1+) |
| 2002 09 12 | 644 | 0.1− | 0.6+ | 2007 11 01 | 691 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.3−  | 0.7+  |
| 2002 09 12 | 644 | 0.1− | 0.6+ | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 11 20 | 704 | 1.0+  | 0.2−  |
| 2002 09 12 | 644 | 0.0  | 0.8+ | 2007 11 05 | 691 | 0.2− | 0.3− | 2007 11 20 | 704 | 0.2+  | 0.4+  |
| 2002 09 14 | 608 | 0.8− | 0.5− | 2007 11 05 | 691 | 0.1+ | 0.1− | 2007 11 20 | 704 | 0.3+  | 0.8+  |
| 2002 09 14 | 608 | 0.6− | 0.6− | 2007 11 05 | 691 | 0.4− | 0.1− | 2007 11 20 | 704 | 0.6+  | 0.9+  |
| 2002 09 14 | 608 | 0.7− | 0.6+ | 2007 11 05 | 691 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.6−  | 0.2−  |
| 2002 09 15 | 644 | 0.4− | 0.4+ | 2007 11 05 | 691 | 0.2− | 0.1− | 2007 12 04 | 691 | 0.2−  | 0.3+  |
| 2002 09 15 | 699 | 0.2+ | 0.5+ | 2007 11 05 | 691 | 0.0  | 0.3+ | 2007 12 04 | 691 | 0.1−  | 0.0   |
| 2002 09 15 | 699 | 1.1+ | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.3+  | 0.4+  |
| 2002 09 15 | 699 | 1.3− | 0.8+ | 2007 11 07 | 691 | 0.1− | 0.0  | 2007 12 06 | 691 | 0.2+  | 0.2−  |
| 2002 09 15 | 699 | 0.1− | 1.5+ | 2007 11 07 | 691 | 0.0  | 0.3+ | 2007 12 06 | 691 | 0.1−  | 0.1+  |
| 2002 09 15 | 644 | 0.1− | 0.7+ | 2007 11 07 | 704 | 0.5− | 0.5+ | 2007 12 06 | 691 | 0.0   | 0.1−  |
| 2002 09 15 | 644 | 0.3− | 0.6+ | 2007 11 07 | 704 | 0.9+ | 0.9+ | 2007 12 10 | 704 | (0.7− | 1.7+) |
| 2002 09 16 | 644 | 0.1+ | 1.0+ | 2007 11 07 | 704 | 0.3+ | 1.4+ | 2007 12 10 | 704 | 0.2−  | 0.1−  |
| 2002 09 16 | 644 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.3+ | 0.5− | 2007 12 10 | 704 | 0.8+  | 0.1+  |
| 2002 09 16 | 644 | 0.9− | 0.6+ | 2007 11 09 | 691 | 0.3− | 0.1− | 2007 12 10 | 704 | 0.2+  | 0.4+  |
| 2003 12 18 | 704 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.1− | 2007 12 15 | 704 | 0.5−  | 0.0   |
| 2003 12 18 | 704 | 0.2+ | 0.6− | 2007 11 09 | 691 | 0.2− | 0.1− | 2007 12 15 | 704 | 0.2+  | 1.3+  |
| 2003 12 18 | 704 | 1.2− | 0.2− | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 12 15 | 704 | 0.7+  | 0.7+  |
| 2003 12 18 | 704 | 1.1− | 0.0  | 2007 11 09 | 691 | 0.2− | 0.0  | 2007 12 15 | 704 | 0.5+  | 0.7+  |
| 2005 03 17 | G96 | 0.6− | 0.4+ | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 12 15 | 704 | 1.3−  | 1.6+  |
| 2005 03 17 | G96 | 0.3− | 0.4+ | 2007 11 13 | 691 | 0.1− | 0.1+ |            |     |       |       |
| 2005 03 17 | G96 | 0.1+ | 0.3+ | 2007 11 13 | 691 | 0.2+ | 0.4− |            |     |       |       |

**(171634)\* 2000 EQ<sub>10</sub>**

Discovered 2000 Mar. 3 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 93.99435   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |          |  |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|--|
| <i>n</i> | 0.20521986 | $\omega$ | 309.83119 | +0.54821160 | +0.83597442 |          |          |  |
| <i>a</i> | 2.8465783  | $\Omega$ | 353.27457 | −0.68831857 | +0.43420272 |          |          |  |
| <i>e</i> | 0.1408873  | <i>i</i> | 12.18302  | −0.47505957 | +0.33558124 |          |          |  |
| <i>P</i> | 4.80       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        | <i>U</i> | <i>1</i> |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 704 | 0.4+ | 0.3+ | 2000 04 05 | 704 | 0.3+ | 0.1+ | 2006 06 10 | 644 | 0.1+ | 0.6+ |
| 2000 03 03 | 704 | 0.1+ | 0.4+ | 2000 04 05 | 704 | 0.6− | 0.5+ | 2006 07 26 | E12 | 0.1− | 0.3+ |
| 2000 03 03 | 704 | 0.5+ | 0.2− | 2002 10 05 | 704 | 0.2− | 0.6+ | 2006 07 26 | E12 | 0.4− | 0.9+ |
| 2000 03 03 | 704 | 0.7+ | 0.1− | 2002 10 05 | 704 | 0.4− | 0.3+ | 2006 07 26 | E12 | 0.0  | 0.5+ |
| 2000 03 03 | 704 | 0.4+ | 0.0  | 2002 10 05 | 704 | 0.6+ | 0.4+ | 2006 07 26 | E12 | 0.6+ | 0.2+ |
| 2000 03 05 | 704 | 1.1+ | 0.3+ | 2002 10 05 | 704 | 1.0− | 0.4+ | 2006 08 26 | E12 | 1.0− | 0.6+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 05 | 704 | 0.8− | 0.4− | 2002 10 05 | 704 | 0.3− | 0.2+ | 2006 08 26 | E12 | 0.4−  | 1.0+  |
| 2000 03 05 | 704 | 0.3− | 0.1− | 2002 11 07 | 704 | 0.3− | 0.2− | 2006 08 26 | E12 | 0.3−  | 0.8+  |
| 2000 03 05 | 704 | 0.9+ | 0.1+ | 2002 11 07 | 704 | 1.3− | 0.0  | 2006 08 26 | E12 | 0.2−  | 0.3+  |
| 2000 03 11 | 704 | 0.3+ | 0.5+ | 2002 11 07 | 704 | 0.5+ | 0.2+ | 2006 10 10 | E12 | 0.2−  | 0.8+  |
| 2000 03 11 | 699 | 0.1+ | 0.8+ | 2002 11 14 | 644 | 0.7− | 0.7+ | 2006 10 10 | E12 | 0.3−  | 0.0   |
| 2000 03 11 | 704 | 0.2+ | 0.2+ | 2002 11 14 | 644 | 0.5− | 0.7+ | 2006 10 10 | E12 | 0.4+  | 0.1−  |
| 2000 03 11 | 704 | 0.5+ | 0.0  | 2002 11 14 | 644 | 0.2− | 0.5+ | 2006 10 10 | E12 | (1.7− | 0.4−) |
| 2000 03 11 | 699 | 0.4+ | 1.1+ | 2003 12 30 | 704 | 0.2+ | 1.1− | 2007 11 08 | 703 | 0.1+  | 0.3+  |
| 2000 03 11 | 704 | 0.8+ | 0.1+ | 2003 12 30 | 704 | 0.1− | 0.2+ | 2007 11 08 | 703 | 0.2−  | 0.8+  |
| 2000 03 11 | 699 | 0.3+ | 0.9− | 2003 12 30 | 704 | 0.1+ | 0.4+ | 2007 11 08 | 703 | 1.5−  | 0.3+  |
| 2000 03 11 | 704 | 0.6+ | 0.1+ | 2005 03 03 | 691 | 0.2+ | 0.0  | 2007 11 08 | 703 | 0.5−  | 0.7+  |
| 2000 03 11 | 699 | 1.6− | 0.1+ | 2005 03 03 | 691 | 0.1+ | 0.2− | 2007 11 21 | 703 | 0.7+  | 0.1+  |
| 2000 04 05 | 704 | 0.7+ | 0.7+ | 2005 03 03 | 691 | 0.3− | 1.1+ | 2007 11 21 | 703 | 1.2+  | 0.1−  |
| 2000 04 05 | 704 | 0.2+ | 0.2− | 2006 06 10 | 644 | 0.1+ | 0.1− | 2007 11 21 | 703 | 0.0   | 0.1−  |
| 2000 04 05 | 704 | 0.0  | 0.5+ | 2006 06 10 | 644 | 0.0  | 0.1+ | 2007 11 21 | 703 | 0.8+  | 0.1−  |

**(171635)\* 2000 EA<sub>46</sub> = 2003 YK<sub>94</sub>**

Discovered 2000 Mar. 9 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 56119)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 339.45841  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |          |  |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|--|
| <i>n</i> | 0.23873859 | $\omega$ | 132.82208 | −0.60129509 | −0.79898508 |          |          |  |
| <i>a</i> | 2.5734810  | $\Omega$ | 354.12338 | +0.70777884 | −0.52784354 |          |          |  |
| <i>e</i> | 0.2545059  | <i>i</i> | 4.58759   | +0.37080094 | −0.28810422 |          |          |  |
| <i>P</i> | 4.13       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | <i>2</i> |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 09 | 704 | 0.9− | 0.7+ | 2003 12 21 | 704 | 0.0   | 0.6+  | 2004 03 16 | 704 | 0.2+ | 0.3+ |
| 2000 03 09 | 704 | 0.9+ | 0.4+ | 2003 12 21 | 704 | 0.2+  | 0.1+  | 2004 03 17 | 704 | 0.6+ | 0.1− |
| 2000 03 09 | 704 | 1.2+ | 0.2+ | 2003 12 21 | 704 | 0.2−  | 0.5+  | 2004 03 17 | 704 | 1.2+ | 0.2+ |
| 2000 03 09 | 704 | 0.8− | 0.1+ | 2003 12 22 | 704 | 0.5+  | 0.3−  | 2004 03 17 | 704 | 1.0− | 1.3− |
| 2000 03 10 | 704 | 0.9− | 0.7− | 2003 12 22 | 704 | 0.1−  | 0.2−  | 2004 03 17 | 704 | 0.2− | 1.2− |
| 2000 03 10 | 704 | 0.2+ | 0.3+ | 2003 12 22 | 704 | 0.1+  | 0.1+  | 2004 03 17 | 704 | 0.4+ | 0.2+ |
| 2000 03 10 | 704 | 0.6− | 0.2− | 2003 12 27 | 704 | 0.6+  | 0.2+  | 2004 03 18 | 704 | 0.3+ | 0.5+ |
| 2000 03 10 | 704 | 0.7+ | 0.5− | 2003 12 27 | 704 | 0.5−  | 0.1+  | 2004 03 18 | 704 | 0.4− | 0.6+ |
| 2000 03 10 | 704 | 1.0− | 0.4+ | 2003 12 27 | 704 | 0.1−  | 0.0   | 2004 03 18 | 704 | 0.1+ | 0.6+ |
| 2000 03 11 | 704 | 0.2− | 0.1− | 2004 02 11 | 644 | 0.3+  | 0.0   | 2004 03 18 | 704 | 0.0  | 0.9+ |
| 2000 03 11 | 704 | 1.0+ | 0.4− | 2004 02 11 | 644 | 0.0   | 0.0   | 2004 03 18 | 704 | 0.1+ | 0.7+ |
| 2000 03 11 | 704 | 0.5+ | 0.3+ | 2004 02 11 | 644 | 0.4+  | 0.2+  | 2004 03 18 | 704 | 0.1− | 1.2+ |
| 2000 03 11 | 704 | 0.4+ | 0.9+ | 2004 02 19 | 608 | 1.5+  | 0.7+  | 2004 03 18 | 704 | 0.5+ | 0.5+ |
| 2000 03 11 | 704 | 0.8+ | 0.5+ | 2004 02 19 | 608 | 1.0+  | 0.3+  | 2004 03 18 | 704 | 0.5+ | 0.9+ |
| 2000 03 27 | 699 | 0.4− | 0.3− | 2004 02 19 | 608 | (2.0+ | 0.3+) | 2004 03 18 | 704 | 0.0  | 0.7+ |
| 2000 03 27 | 699 | 0.1− | 0.3+ | 2004 02 22 | 695 | 0.0   | 0.3−  | 2004 03 18 | 704 | 0.4+ | 1.0+ |
| 2000 03 27 | 699 | 0.0  | 0.4− | 2004 02 22 | 695 | 0.1−  | 0.3−  | 2004 03 29 | 691 | 0.3− | 0.0  |
| 2000 03 27 | 699 | 1.5− | 0.0  | 2004 02 22 | 695 | 0.0   | 0.3−  | 2004 03 29 | 691 | 0.6− | 0.1− |
| 2000 04 02 | 706 | 1.5− | 0.3+ | 2004 02 22 | 695 | 0.3+  | 0.5−  | 2004 03 29 | 691 | 0.3− | 0.1− |
| 2000 04 02 | 706 | 0.9+ | 0.0  | 2004 03 11 | 644 | 0.0   | 0.1+  | 2007 10 26 | G96 | 0.0  | 0.2+ |
| 2000 04 07 | 699 | 0.4+ | 0.1− | 2004 03 11 | 644 | 0.2−  | 0.1+  | 2007 10 26 | G96 | 0.1− | 0.9− |
| 2000 04 07 | 699 | 0.1− | 0.1− | 2004 03 11 | 644 | 0.1−  | 0.0   | 2007 10 26 | G96 | 0.0  | 0.1− |
| 2000 04 07 | 699 | 0.1+ | 0.4+ | 2004 03 15 | 704 | 1.0+  | 0.3+  | 2007 10 26 | G96 | 0.5− | 0.0  |
| 2000 04 07 | 704 | 0.4− | 0.9− | 2004 03 15 | 704 | 0.8+  | 0.6+  | 2007 11 20 | 704 | 0.1+ | 1.1− |
| 2000 04 07 | 699 | 0.3+ | 0.9+ | 2004 03 15 | 704 | 0.9+  | 0.8+  | 2007 11 20 | 704 | 1.2+ | 0.2+ |
| 2000 04 07 | 704 | 0.2+ | 0.3− | 2004 03 15 | 704 | 0.9+  | 0.5+  | 2007 11 20 | 704 | 0.4− | 0.9+ |
| 2000 04 07 | 704 | 0.1− | 0.5+ | 2004 03 15 | 704 | 0.6+  | 0.9+  | 2007 11 20 | 704 | 0.7+ | 0.6− |
| 2000 04 07 | 704 | 0.9− | 0.2− | 2004 03 16 | 704 | 0.9+  | 1.0+  | 2007 12 06 | 703 | 0.5− | 0.5+ |
| 2002 09 05 | 645 | 0.1− | 0.3+ | 2004 03 16 | 704 | 0.3−  | 0.0   | 2007 12 06 | 703 | 1.3− | 0.8− |
| 2002 09 05 | 645 | 0.2− | 0.3+ | 2004 03 16 | 704 | 0.6+  | 1.4−  | 2007 12 06 | 703 | 1.7− | 0.6− |
| 2003 12 21 | 704 | 1.3+ | 1.0+ | 2004 03 16 | 704 | 0.8+  | 0.1−  | 2007 12 06 | 703 | 1.1− | 0.5− |

2007 DEC. 24

M.P.O. 129111

|                                         |            |          |           |             |      |          |       |             |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|----------|-------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |          |       |             |     |      |      |
| <i>M</i>                                | 76.52236   |          | (2000.0)  | <b>P</b>    |      |          |       | <b>Q</b>    |     |      |      |
| <i>n</i>                                | 0.30690798 | $\omega$ | 39.95392  | −0.33706746 |      |          |       | +0.94131239 |     |      |      |
| <i>a</i>                                | 2.1766934  | $\Omega$ | 210.36001 | −0.87253382 |      |          |       | −0.31942574 |     |      |      |
| <i>e</i>                                | 0.1286604  | <i>i</i> | 2.01719   | −0.35365273 |      |          |       | −0.10907879 |     |      |      |
| <i>P</i>                                | 3.21       | <i>H</i> | 17.4      | <i>G</i>    | 0.15 | <i>U</i> |       | 1           |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |          |       |             |     |      |      |
| 1998 11 14                              | 691        | 0.2−     | 0.4+      | 2004 09 09  | 704  | 0.1−     | 1.4+  | 2006 01 09  | G96 | 0.1− | 0.2− |
| 1998 11 14                              | 691        | 0.1−     | 0.1+      | 2004 09 09  | 704  | 0.2+     | 0.6+  | 2006 01 09  | G96 | 0.2− | 0.1+ |
| 1998 11 14                              | 691        | 0.1−     | 0.1+      | 2004 09 09  | 699  | (1.7+    | 1.3+) | 2006 01 09  | G96 | 0.2− | 0.3+ |
| 2000 03 10                              | 704        | 1.0+     | 0.1+      | 2004 09 09  | 699  | 1.4+     | 0.4−  | 2006 01 09  | G96 | 0.3+ | 0.0  |
| 2000 03 10                              | 704        | 0.1−     | 0.7+      | 2004 09 09  | 699  | 0.0      | 0.2+  | 2006 01 23  | G96 | 0.0  | 0.3+ |
| 2000 03 10                              | 704        | 0.9+     | 0.8+      | 2004 09 09  | 699  | (1.1+    | 1.7+) | 2006 01 23  | G96 | 0.2+ | 0.2+ |
| 2000 03 10                              | 704        | 0.6+     | 0.7+      | 2004 09 14  | 699  | 0.0      | 0.8+  | 2006 01 23  | G96 | 0.1+ | 0.1+ |
| 2000 03 10                              | 704        | 1.1+     | 0.9+      | 2004 09 14  | 699  | 0.8+     | 0.7−  | 2006 01 23  | G96 | 0.7+ | 0.6− |
| 2000 03 11                              | 704        | 0.2+     | 1.1+      | 2004 09 14  | 699  | (0.2+    | 1.9+) | 2006 02 03  | G96 | 0.3− | 0.1− |
| 2000 03 11                              | 704        | (0.9+    | 2.6+)     | 2004 09 14  | 699  | (1.7−    | 0.9+) | 2006 02 03  | G96 | 0.4− | 0.4− |
| 2000 03 11                              | 704        | 0.3−     | 1.0+      | 2004 09 22  | 691  | 0.0      | 0.3+  | 2006 02 03  | G96 | 0.1− | 0.5− |
| 2000 03 11                              | 704        | 0.4+     | 1.0+      | 2004 09 22  | 691  | 0.6−     | 0.1+  | 2006 02 03  | G96 | 0.3+ | 0.6− |
| 2000 04 05                              | 704        | 0.9+     | 0.9−      | 2004 09 22  | 691  | 0.4−     | 0.0   | 2007 08 18  | 699 | 0.7+ | 0.9+ |
| 2000 04 05                              | 704        | 0.4−     | 0.0       | 2004 10 11  | 691  | 0.2−     | 0.4+  | 2007 08 18  | 699 | 1.3− | 0.5+ |
| 2000 04 05                              | 704        | 1.0−     | 1.2+      | 2004 10 11  | 691  | 0.3+     | 0.2−  | 2007 08 18  | 699 | 0.2+ | 0.1− |
| 2000 04 05                              | 704        | 0.5−     | 0.5−      | 2004 10 11  | 691  | 0.2+     | 0.1+  | 2007 08 18  | 699 | 0.4− | 0.7+ |
| 2003 02 22                              | 644        | 0.3+     | 0.9+      | 2006 01 02  | G96  | 0.5−     | 0.1+  | 2007 10 12  | G96 | 0.6− | 0.1− |
| 2003 02 22                              | 644        | 0.5+     | 0.5+      | 2006 01 02  | G96  | 0.5−     | 0.1−  | 2007 10 12  | G96 | 0.0  | 0.1− |
| 2003 02 22                              | 644        | 0.4+     | 1.0+      | 2006 01 02  | G96  | 0.3−     | 0.2−  | 2007 10 12  | G96 | 0.5− | 0.4+ |
| 2004 09 09                              | 704        | 0.7+     | 0.5+      | 2006 01 02  | G96  | 0.2+     | 0.4−  | 2007 10 12  | G96 | 0.3− | 0.6− |

(171637)\* 2000 ES<sub>80</sub>

Discovered 2000 Mar. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |             |            |             |             |             |     |            |      |
|-----------------------------------------|------------|-------------|------------|-------------|-------------|-------------|-----|------------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |            | MPC         |             |             |     |            |      |
| <i>M</i>                                | 312.24556  |             | (2000.0)   | <b>P</b>    |             | <b>Q</b>    |     |            |      |
| <i>n</i>                                | 0.23276520 | $\omega$    | 114.76372  | −0.62476730 |             | −0.78045519 |     |            |      |
| <i>a</i>                                | 2.6173231  | $\Omega$    | 13.97824   | +0.67650941 |             | −0.55613578 |     |            |      |
| <i>e</i>                                | 0.2095455  | <i>i</i>    | 5.59949    | +0.38987284 |             | −0.28566184 |     |            |      |
| <i>P</i>                                | 4.23       | <i>H</i>    | 16.3       | <i>G</i>    | 0.15        | <i>U</i>    | 1   |            |      |
| Residuals in seconds of arc             |            |             |            |             |             |             |     |            |      |
| 1998 09 17                              | 691        | (3.7+ 0.0 ) | 2003 12 18 | 704         | (1.6− 0.4+) | 2004 01 27  | 703 | 0.0        | 0.3− |
| 1998 09 17                              | 691        | 0.6− 0.2−   | 2003 12 27 | 704         | 0.2− 0.2−   | 2004 02 14  | 704 | 1.1+ 0.5−  |      |
| 1998 09 17                              | 691        | 0.7− 0.5−   | 2003 12 27 | 704         | 0.9+ 0.8+   | 2004 02 14  | 704 | 0.1+ 0.4+  |      |
| 1998 10 24                              | 691        | 0.4+ 0.2+   | 2003 12 27 | 704         | 0.3+ 0.0    | 2004 02 14  | 704 | 0.3+ 1.0+  |      |
| 1998 10 24                              | 691        | 0.1− 0.5+   | 2003 12 27 | 704         | 0.7+ 0.2−   | 2004 02 14  | 704 | 0.4+ 0.3+  |      |
| 1998 10 24                              | 691        | 0.6+ 0.7+   | 2003 12 27 | 704         | 0.4− 0.1−   | 2007 11 02  | 704 | 0.8+ 0.5−  |      |
| 2000 02 11                              | 704        | 0.3+ 0.2−   | 2003 12 29 | 704         | 0.8− 0.8+   | 2007 11 02  | 704 | 0.9+ 0.7−  |      |
| 2000 02 11                              | 704        | 0.0         | 2003 12 29 | 704         | 0.6− 0.8+   | 2007 11 02  | 704 | (2.0+ 0.4− |      |
| 2000 02 11                              | 704        | 1.0+ 0.2+   | 2003 12 29 | 704         | 0.2− 0.8+   | 2007 11 02  | 704 | 1.1+ 0.2−  |      |
| 2000 02 11                              | 704        | 0.4− 0.1−   | 2003 12 29 | 704         | 0.4− 1.4+   | 2007 11 04  | 691 | 0.4− 0.3−  |      |
| 2000 03 02                              | 703        | 0.7− 0.2+   | 2003 12 29 | 704         | 0.7+ 0.3+   | 2007 11 04  | 691 | 0.3− 0.1−  |      |
| 2000 03 02                              | 703        | 0.8+ 0.5+   | 2003 12 30 | 704         | 0.3− 1.1+   | 2007 11 04  | 691 | 0.3− 0.1−  |      |
| 2000 03 02                              | 703        | 1.0− 0.5+   | 2003 12 30 | 704         | 0.2− 1.3+   | 2007 11 07  | 704 | 0.6+ 0.0   |      |
| 2000 03 02                              | 703        | 0.7+ 0.0    | 2003 12 30 | 704         | 0.3+ 0.0    | 2007 11 07  | 704 | 0.7+ 1.1+  |      |
| 2000 03 05                              | 704        | 0.6+ 0.7+   | 2003 12 30 | 704         | 0.6− 0.6+   | 2007 11 07  | 704 | 0.3+ 0.4+  |      |
| 2000 03 05                              | 704        | 0.4+ 0.4−   | 2003 12 30 | 704         | 1.1+ 0.2−   | 2007 11 08  | 691 | (0.3− 1.7− |      |
| 2000 03 05                              | 704        | 0.7+ 1.1+   | 2003 12 30 | 704         | (1.0− 1.6+) | 2007 11 08  | 691 | 0.3− 0.1+  |      |
| 2000 03 05                              | 704        | 0.5+ 0.3−   | 2003 12 30 | 704         | 0.8+ 0.3+   | 2007 11 08  | 691 | 0.3− 0.1−  |      |
| 2000 03 05                              | 704        | 0.4+ 0.4−   | 2003 12 30 | 704         | 0.9− 1.4+   | 2007 11 18  | 704 | 0.5+ 1.4+  |      |
| 2000 03 12                              | 704        | 1.2− 0.6+   | 2003 12 30 | 704         | 1.0+ 0.0    | 2007 11 18  | 704 | 0.5+ 1.1+  |      |
| 2000 03 12                              | 704        | 0.5+ 1.2−   | 2004 01 11 | 699         | 1.2− 0.1+   | 2007 11 18  | 704 | 0.8+ 0.4−  |      |
| 2000 03 12                              | 704        | 1.0− 0.8−   | 2004 01 11 | 699         | 0.5− 1.2−   | 2007 11 18  | 704 | 0.0 0.7−   |      |
| 2000 03 12                              | 704        | 1.1− 0.0    | 2004 01 11 | 699         | 0.6− 0.3+   | 2007 11 20  | 704 | 0.3− 0.3−  |      |
| 2000 03 12                              | 704        | 1.0− 1.4−   | 2004 01 11 | 699         | 0.1− 1.0−   | 2007 11 20  | 704 | 0.4+ 0.0   |      |
| 2000 03 28                              | 704        | (2.1+ 2.0+) | 2004 01 16 | 691         | 0.0 0.2−    | 2007 11 20  | 704 | 0.5− 0.7+  |      |
| 2000 03 28                              | 704        | 0.5+ 1.1+   | 2004 01 16 | 691         | 0.0 0.2−    | 2007 11 20  | 704 | 0.9+ 0.7−  |      |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 28 | 704 | (1.0+ | 2.3+) | 2004 01 16 | 691 | 0.1+  | 0.2-  | 2007 12 13 | 704 | 0.3+ | 0.5- |
| 2003 12 17 | 703 | 0.1+  | 0.2-  | 2004 01 19 | 704 | 0.8+  | 0.6-  | 2007 12 13 | 704 | 0.7- | 0.2- |
| 2003 12 17 | 703 | 0.3-  | 0.3+  | 2004 01 19 | 704 | (1.7+ | 0.1-) | 2007 12 13 | 704 | 0.4+ | 1.5- |
| 2003 12 17 | 703 | 0.7+  | 1.3-  | 2004 01 19 | 704 | 0.7+  | 0.5-  | 2007 12 13 | 704 | 0.7+ | 0.5- |
| 2003 12 17 | 703 | 0.3+  | 0.9-  | 2004 01 19 | 704 | 0.9+  | 1.1+  | 2007 12 16 | 704 | 0.1- | 0.3- |
| 2003 12 18 | 704 | 0.1-  | 0.3-  | 2004 01 19 | 704 | 0.4+  | 0.8+  | 2007 12 16 | 704 | 0.0  | 0.2- |
| 2003 12 18 | 704 | 0.6-  | 0.2-  | 2004 01 27 | 703 | 0.7-  | 0.6-  | 2007 12 16 | 704 | 0.4- | 0.1+ |
| 2003 12 18 | 704 | 0.4-  | 0.0   | 2004 01 27 | 703 | 0.9-  | 0.2+  |            |     |      |      |
| 2003 12 18 | 704 | 0.4-  | 0.3+  | 2004 01 27 | 703 | 0.9-  | 0.1-  |            |     |      |      |

(171638)\* 2000 ED<sub>88</sub> = 2002 RG<sub>131</sub>

Discovered 2000 Mar. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 34922)

|                                         |            |          |           |             |      |             |   |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |      |             |   |  |  |  |
| <i>M</i>                                | 325.22282  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |
| <i>n</i>                                | 0.22757191 | $\omega$ | 177.15515 | -0.15006262 |      | -0.96692882 |   |  |  |  |
| <i>a</i>                                | 2.6569922  | $\Omega$ | 281.41231 | +0.90288882 |      | -0.04903837 |   |  |  |  |
| <i>e</i>                                | 0.1421217  | <i>i</i> | 12.14505  | +0.40283122 |      | -0.25028763 |   |  |  |  |
| <i>P</i>                                | 4.33       | <i>H</i> | 15.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |

| Residuals in seconds of arc |     |      |      |            |     |       |       |            |     |      |      |
|-----------------------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 03                  | 703 | 0.4- | 1.1+ | 2003 10 29 | 704 | 0.3-  | 0.5+  | 2004 01 24 | 704 | 0.4+ | 0.3+ |
| 2000 03 03                  | 703 | 0.6+ | 0.0  | 2003 10 29 | 704 | 0.0   | 0.6+  | 2004 01 24 | 704 | 0.5+ | 0.4+ |
| 2000 03 03                  | 703 | 0.2+ | 1.1+ | 2003 10 29 | 704 | 0.9-  | 0.5+  | 2004 01 24 | 704 | 0.6+ | 0.6- |
| 2000 03 03                  | 703 | 0.1- | 0.9+ | 2003 10 29 | 704 | 0.1-  | 0.6+  | 2004 01 24 | 704 | 0.2+ | 0.0  |
| 2000 03 09                  | 704 | 0.6+ | 0.5+ | 2003 10 29 | 704 | 0.2+  | 0.6+  | 2004 01 30 | 704 | 1.1+ | 0.0  |
| 2000 03 09                  | 704 | 1.2+ | 0.5+ | 2003 11 21 | 704 | (1.4+ | 1.9+) | 2004 01 30 | 704 | 0.6- | 0.3- |
| 2000 03 09                  | 704 | 0.5+ | 0.6+ | 2003 11 21 | 704 | (0.5+ | 2.0+) | 2004 01 30 | 704 | 0.0  | 0.1+ |
| 2000 03 09                  | 704 | 0.1+ | 0.3- | 2003 11 21 | 704 | (0.3+ | 2.2+) | 2004 01 30 | 704 | 0.1- | 0.1- |
| 2000 03 13                  | 704 | 0.6+ | 0.3+ | 2003 11 21 | 704 | (1.9- | 0.9+) | 2004 01 30 | 704 | 0.3- | 0.2- |
| 2000 03 13                  | 704 | 0.3+ | 0.4+ | 2003 12 16 | 699 | 0.9-  | 0.2-  | 2004 03 19 | 704 | 0.4+ | 0.3+ |
| 2000 03 13                  | 704 | 0.3- | 0.6+ | 2003 12 16 | 699 | 0.6-  | 0.6-  | 2004 03 19 | 704 | 0.2+ | 0.0  |
| 2000 04 04                  | 699 | 0.3+ | 0.4- | 2003 12 16 | 699 | 0.2+  | 0.4+  | 2004 03 19 | 704 | 0.3+ | 0.6+ |
| 2000 04 04                  | 699 | 0.9+ | 0.3+ | 2003 12 16 | 699 | 0.2-  | 0.4+  | 2007 11 03 | 704 | 0.5+ | 0.4+ |
| 2000 04 04                  | 699 | 0.1- | 0.1- | 2003 12 19 | 704 | 0.5-  | 0.5+  | 2007 11 03 | 704 | 0.9+ | 0.4- |
| 2000 04 04                  | 699 | 0.1- | 0.3+ | 2003 12 19 | 704 | 0.1-  | 0.6+  | 2007 11 03 | 704 | 0.5+ | 0.3+ |
| 2002 08 27                  | 644 | 0.2- | 1.0+ | 2003 12 19 | 704 | 0.6-  | 0.1+  | 2007 11 03 | 704 | 0.0  | 0.3+ |
| 2002 08 27                  | 644 | 0.0  | 0.9+ | 2003 12 19 | 704 | 0.0   | 0.0   | 2007 11 03 | 704 | 0.2- | 0.5- |
| 2002 08 27                  | 644 | 0.1- | 0.7+ | 2003 12 19 | 704 | 0.1-  | 0.7+  | 2007 11 09 | 704 | 0.0  | 0.8+ |
| 2002 09 04                  | 644 | 0.4+ | 0.8+ | 2003 12 19 | 691 | 0.1-  | 0.0   | 2007 11 09 | 704 | 0.4+ | 0.2- |
| 2002 09 04                  | 644 | 1.0- | 0.1+ | 2003 12 19 | 691 | 0.1-  | 0.2-  | 2007 11 09 | 704 | 0.2+ | 0.4+ |
| 2002 09 04                  | 644 | 0.4+ | 0.8+ | 2003 12 19 | 691 | 0.3-  | 0.1-  | 2007 11 09 | 704 | 0.5+ | 0.3- |
| 2002 09 04                  | 644 | 0.2- | 0.2- | 2003 12 21 | 704 | 0.3+  | 0.1+  | 2007 11 16 | 704 | 0.9- | 0.0  |
| 2002 09 04                  | 644 | 0.0  | 0.7+ | 2003 12 21 | 704 | 0.3-  | 0.2-  | 2007 11 16 | 704 | 0.6- | 0.5- |
| 2002 09 04                  | 644 | 0.2- | 0.3+ | 2003 12 21 | 704 | 0.0   | 0.0   | 2007 11 16 | 704 | 0.8- | 0.5- |
| 2002 09 11                  | 644 | 0.2- | 0.1- | 2003 12 21 | 704 | 0.1-  | 0.3-  | 2007 11 16 | 704 | 1.2- | 0.3- |
| 2002 09 11                  | 644 | 0.6- | 0.1- | 2003 12 21 | 704 | 0.2+  | 0.0   | 2007 11 21 | G96 | 0.2+ | 0.6- |
| 2002 09 11                  | 644 | 0.3- | 0.0  | 2003 12 25 | 608 | (0.1+ | 1.8+) | 2007 11 21 | G96 | 0.4+ | 0.5- |
| 2002 09 12                  | 644 | 0.8- | 0.1- | 2003 12 25 | 608 | (0.0  | 1.9+) | 2007 11 21 | G96 | 0.6+ | 0.6- |
| 2002 09 12                  | 644 | 0.5- | 0.1+ | 2003 12 25 | 608 | (0.1- | 1.7+) | 2007 11 21 | G96 | 0.4+ | 0.5- |
| 2002 09 12                  | 644 | 0.5- | 0.2+ | 2003 12 27 | 691 | 0.0   | 0.3+  | 2007 12 16 | 704 | 0.0  | 0.2+ |
| 2002 10 08                  | 644 | 0.1- | 1.2+ | 2003 12 27 | 691 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.0  | 0.3+ |
| 2002 10 08                  | 644 | 0.0  | 1.3+ | 2003 12 27 | 691 | (0.1- | 2.0+) | 2007 12 16 | 704 | 0.0  | 0.7+ |
| 2002 10 08                  | 644 | 0.1- | 0.9+ | 2004 01 21 | 704 | 0.3+  | 0.9-  | 2007 12 16 | 704 | 0.0  | 0.6+ |
| 2002 10 13                  | 644 | 0.2- | 0.8- | 2004 01 21 | 704 | 0.4+  | 1.1-  | 2007 12 16 | 704 | 0.0  | 1.0+ |
| 2002 10 13                  | 644 | 0.1+ | 0.6- | 2004 01 21 | 704 | 0.1+  | 1.0-  |            |     |      |      |
| 2002 10 13                  | 644 | 0.3+ | 0.5- | 2004 01 24 | 704 | 0.0   | 0.2+  |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 284.12432  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20288262 | $\omega$ | 204.41011 | +0.08544084   | -0.99620019 |
| <i>a</i> | 2.8683985  | $\Omega$ | 240.69240 | +0.91728032   | +0.08526483 |
| <i>e</i> | 0.0377744  | <i>i</i> | 1.10939   | +0.38896874   | +0.01775061 |
| <i>P</i> | 4.86       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 08 12 | 691 | 0.1-  | 0.2-  | 2003 12 19 | 291 | 0.8-  | 0.6-  | 2005 04 05 | G96 | 0.2- | 0.4+ |
| 1997 08 12 | 691 | 0.2+  | 0.1-  | 2003 12 19 | 291 | 0.3+  | 0.2+  | 2005 04 12 | G96 | 0.0  | 0.2- |
| 1997 08 12 | 691 | (0.2+ | 6.5-) | 2003 12 19 | 291 | 0.1+  | 0.2+  | 2005 04 12 | G96 | 0.1- | 0.1- |
| 2000 03 03 | 704 | 0.6+  | 0.1+  | 2005 03 03 | 926 | 0.0   | 0.5+  | 2005 04 12 | G96 | 0.0  | 0.1+ |
| 2000 03 03 | 704 | 1.2+  | 0.9+  | 2005 03 03 | 926 | 0.1+  | 0.8+  | 2005 04 12 | G96 | 0.2- | 0.0  |
| 2000 03 03 | 704 | 0.7+  | 1.2+  | 2005 03 03 | 926 | 0.3+  | 0.3+  | 2007 09 15 | D35 | 0.2+ | 0.3+ |
| 2000 03 03 | 704 | 1.4+  | 0.8+  | 2005 03 03 | 926 | 0.1+  | 0.5+  | 2007 09 15 | D35 | 0.1+ | 0.1+ |
| 2000 03 03 | 704 | 0.8+  | 0.7+  | 2005 03 11 | G96 | 0.0   | 0.1-  | 2007 09 15 | D35 | 0.3+ | 0.3+ |
| 2000 03 10 | 691 | 0.5-  | 0.3+  | 2005 03 11 | G96 | 0.2-  | 0.1+  | 2007 09 16 | D35 | 0.5+ | 0.6+ |
| 2000 03 10 | 691 | 0.3-  | 0.1-  | 2005 03 11 | G96 | 0.7-  | 0.1-  | 2007 09 16 | D35 | 0.1+ | 0.9+ |
| 2000 03 10 | 691 | 1.1+  | 0.2+  | 2005 03 11 | G96 | 0.6+  | 0.7-  | 2007 09 16 | D35 | 0.6+ | 0.6+ |
| 2000 03 11 | 704 | 0.8+  | 0.7+  | 2005 03 13 | 703 | 0.1-  | 0.3+  | 2007 09 19 | 704 | 0.2- | 0.1- |
| 2000 03 11 | 704 | 0.2-  | 1.2+  | 2005 03 13 | 703 | 0.6-  | 0.5+  | 2007 09 19 | 704 | 0.5- | 0.2+ |
| 2000 03 11 | 704 | 0.1-  | 0.2+  | 2005 03 13 | 703 | 0.9-  | 1.2-  | 2007 09 19 | 704 | 0.3+ | 0.6+ |
| 2000 03 11 | 704 | 1.0+  | 0.6+  | 2005 03 13 | 703 | 1.1-  | 0.5+  | 2007 09 19 | 704 | 0.4+ | 0.8+ |
| 2000 03 11 | 704 | 0.2+  | 1.1+  | 2005 03 17 | G96 | 0.3-  | 0.1-  | 2007 10 14 | 704 | 0.3- | 0.8+ |
| 2002 09 05 | 704 | 0.4-  | 0.1-  | 2005 03 17 | G96 | 0.2-  | 0.0   | 2007 10 14 | 704 | 0.2- | 0.3+ |
| 2002 09 05 | 704 | 0.7-  | 0.7+  | 2005 03 17 | G96 | 0.1-  | 0.1-  | 2007 10 14 | 704 | 0.0  | 0.0  |
| 2002 09 05 | 704 | (2.2+ | 0.4+) | 2005 03 17 | G96 | 0.1-  | 0.1+  | 2007 12 06 | G96 | 0.1- | 0.1- |
| 2002 09 07 | 704 | 0.2-  | 0.7+  | 2005 04 04 | 703 | 1.1+  | 1.0+  | 2007 12 06 | G96 | 0.3- | 0.4+ |
| 2002 09 07 | 704 | 1.0-  | 0.9+  | 2005 04 04 | 703 | 0.0   | 0.7-  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2002 09 07 | 704 | 1.3-  | 1.3+  | 2005 04 04 | 703 | (1.8- | 0.5+) | 2007 12 06 | G96 | 0.1+ | 0.2- |
| 2002 09 07 | 704 | 0.2-  | 1.1+  | 2005 04 04 | 703 | 0.9+  | 0.4+  | 2007 12 06 | G96 | 0.4+ | 0.7+ |
| 2002 09 14 | 644 | 0.9-  | 0.7+  | 2005 04 05 | G96 | 0.3-  | 0.0   | 2007 12 06 | G96 | 0.4- | 0.1+ |
| 2002 09 14 | 644 | 0.3-  | 0.8+  | 2005 04 05 | G96 | 0.3-  | 0.1+  | 2007 12 06 | G96 | 0.0  | 0.4+ |
| 2002 09 14 | 644 | 0.4-  | 0.5+  | 2005 04 05 | G96 | 0.1+  | 0.1+  | 2007 12 06 | G96 | 0.2- | 0.4+ |

(171640)\* 2000 EZ<sub>125</sub>

Discovered 2000 Mar. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.10303  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24349800 | $\omega$ | 341.65869 | -0.66478084   | -0.74177557 |
| <i>a</i> | 2.5398366  | $\Omega$ | 149.81755 | +0.70554520   | -0.66237407 |
| <i>e</i> | 0.1851699  | <i>i</i> | 10.14069  | +0.24550440   | -0.10502192 |
| <i>P</i> | 4.05       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 11 | 704 | 0.1+ | 0.9- | 2002 10 07 | 608 | 0.2- | 0.6+ | 2004 03 19 | 644 | 0.0   | 0.3-  |
| 2000 02 11 | 704 | 1.0+ | 0.8+ | 2002 10 07 | 608 | 0.4- | 1.2+ | 2004 03 20 | 704 | 1.1+  | 0.0   |
| 2000 02 11 | 704 | 0.2+ | 0.7- | 2004 02 18 | 704 | 0.0  | 0.2- | 2004 03 20 | 704 | 0.0   | 0.1-  |
| 2000 02 11 | 704 | 0.7+ | 0.4- | 2004 02 18 | 704 | 0.3- | 0.3- | 2004 03 20 | 704 | 0.4+  | 0.3-  |
| 2000 03 02 | 703 | 0.4- | 1.2+ | 2004 02 18 | 704 | 0.4- | 1.0- | 2004 03 20 | 704 | 0.2-  | 0.4+  |
| 2000 03 02 | 703 | 0.6- | 0.3+ | 2004 02 18 | 704 | 0.0  | 0.1- | 2004 03 20 | 704 | 0.1+  | 0.5+  |
| 2000 03 02 | 703 | 0.0  | 0.3- | 2004 02 19 | 608 | 1.0+ | 0.1- | 2004 03 22 | 704 | 0.0   | 0.0   |
| 2000 03 02 | 703 | 0.4+ | 1.1+ | 2004 02 19 | 608 | 0.8+ | 0.1- | 2004 03 22 | 704 | 0.3-  | 0.2+  |
| 2000 03 11 | 699 | 0.6+ | 0.6- | 2004 02 19 | 608 | 0.7+ | 0.5- | 2004 03 22 | 704 | 0.0   | 0.0   |
| 2000 03 11 | 699 | 0.3- | 0.5+ | 2004 02 23 | 704 | 0.2+ | 0.3+ | 2004 03 22 | 704 | 0.3+  | 1.3+  |
| 2000 03 11 | 699 | 0.0  | 0.1- | 2004 02 23 | 704 | 0.3+ | 0.5+ | 2004 03 22 | 704 | 1.0-  | 0.1-  |
| 2000 03 11 | 699 | 0.2+ | 0.5+ | 2004 02 23 | 704 | 0.4+ | 0.4+ | 2004 03 26 | 703 | 0.1-  | 0.0   |
| 2000 03 12 | 704 | 0.2- | 0.1+ | 2004 02 23 | 704 | 0.2+ | 0.3+ | 2004 03 26 | 703 | 0.0   | 0.4-  |
| 2000 03 12 | 704 | 0.0  | 1.1+ | 2004 02 23 | 704 | 0.5+ | 0.1+ | 2004 03 26 | 703 | 0.1-  | 0.5+  |
| 2000 03 12 | 704 | 0.1- | 0.2- | 2004 03 10 | 644 | 0.0  | 0.3- | 2004 03 26 | 703 | 0.1+  | 0.4-  |
| 2000 03 12 | 704 | 0.3- | 0.2- | 2004 03 10 | 644 | 0.2- | 0.3- | 2006 09 26 | 703 | 0.4-  | 0.6+  |
| 2000 03 12 | 704 | 0.9- | 0.2- | 2004 03 10 | 644 | 0.1- | 0.2- | 2006 09 26 | 703 | 0.1+  | 0.1-  |
| 2000 04 03 | 704 | 0.9+ | 0.8+ | 2004 03 15 | 704 | 0.4- | 0.5+ | 2006 09 26 | 703 | 0.5-  | 0.1-  |
| 2000 04 03 | 704 | 0.2+ | 0.3+ | 2004 03 15 | 704 | 0.1- | 0.6+ | 2006 09 26 | 703 | (1.8- | 0.3-) |
| 2000 04 03 | 704 | 0.2- | 0.0  | 2004 03 15 | 703 | 1.4- | 0.3+ | 2007 11 12 | 704 | 0.9+  | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 09 | 599 | 0.4+ | 0.3+ | 2004 03 15 | 704 | 0.1+ | 1.1+ | 2007 11 12 | 704 | 0.5+ | 1.1- |
| 2002 09 09 | 599 | 0.0  | 0.2+ | 2004 03 15 | 703 | 0.9- | 0.2+ | 2007 11 12 | 704 | 1.0+ | 0.4- |
| 2002 09 09 | 599 | 0.2+ | 0.2+ | 2004 03 15 | 704 | 0.0  | 0.6+ | 2007 11 12 | 704 | 0.3+ | 0.0  |
| 2002 10 01 | 699 | 0.8+ | 1.5+ | 2004 03 15 | 703 | 0.6- | 0.5+ | 2007 11 19 | 703 | 0.4- | 1.3- |
| 2002 10 01 | 699 | 0.3+ | 0.2- | 2004 03 15 | 704 | 0.2- | 0.9+ | 2007 11 19 | 703 | 0.7- | 0.7- |
| 2002 10 01 | 699 | 1.0- | 0.1- | 2004 03 15 | 703 | 0.8- | 0.2- | 2007 11 19 | 703 | 0.9- | 0.9+ |
| 2002 10 01 | 699 | 0.3- | 1.0+ | 2004 03 19 | 644 | 0.2+ | 0.4- | 2007 11 19 | 703 | 0.4+ | 1.4- |
| 2002 10 07 | 608 | 0.6- | 1.3+ | 2004 03 19 | 644 | 0.2+ | 0.3- |            |     |      |      |

(171641)\* 2000 EE<sub>134</sub> = 1998 TW<sub>35</sub>

Discovered 2000 Mar. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPC 40199)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 286.84905  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22367570 | $\omega$ | 117.24900 | -0.83076926   | -0.54394566 |
| <i>a</i> | 2.6877581  | $\Omega$ | 30.23628  | +0.39057959   | -0.72083905 |
| <i>e</i> | 0.2018442  | <i>i</i> | 13.56271  | +0.39657284   | -0.42955114 |
| <i>P</i> | 4.41       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 10 15 | 691 | 0.1-  | 0.4-  | 2000 04 25 | 699 | 0.7+  | 0.2+  | 2007 11 02 | 704 | 0.6+  | 0.5+  |
| 1998 10 15 | 691 | 0.4-  | 0.4-  | 2000 04 25 | 699 | 1.5+  | 0.3+  | 2007 11 08 | 704 | 0.2-  | 0.6+  |
| 1998 10 15 | 691 | 0.1-  | 0.0   | 2000 04 27 | 699 | 0.2-  | 0.2-  | 2007 11 08 | 704 | 0.6-  | 0.4+  |
| 1998 10 21 | 910 | 1.5+  | 0.3+  | 2000 04 27 | 699 | 0.3-  | 0.4+  | 2007 11 08 | 704 | 0.1-  | 0.9+  |
| 1998 10 21 | 910 | 1.7+  | 0.2+  | 2000 04 27 | 699 | 1.0-  | 0.6+  | 2007 11 08 | 704 | 0.4-  | 1.1+  |
| 1998 10 21 | 910 | (2.5+ | 0.8+) | 2000 04 27 | 699 | 0.1+  | 0.8+  | 2007 11 08 | 704 | 0.2+  | 1.2+  |
| 1998 10 29 | 691 | 0.0   | 0.1-  | 2000 05 05 | 645 | 0.0   | 0.0   | 2007 11 09 | G96 | (2.0+ | 0.1-) |
| 1998 10 29 | 691 | 0.0   | 0.2+  | 2000 05 05 | 645 | 0.0   | 0.0   | 2007 11 09 | G96 | 0.2-  | 0.2-  |
| 1998 10 29 | 691 | 0.1+  | 0.0   | 2003 12 17 | 699 | 0.5-  | 0.3-  | 2007 11 09 | G96 | 0.5-  | 0.3-  |
| 2000 03 11 | 699 | 0.2-  | 0.4-  | 2003 12 17 | 699 | (2.0+ | 0.5-) | 2007 11 17 | 704 | 0.2-  | 0.6+  |
| 2000 03 11 | 699 | 0.5+  | 0.1+  | 2003 12 17 | 699 | 0.2+  | 0.3+  | 2007 11 17 | 704 | 0.1+  | 0.5+  |
| 2000 03 11 | 699 | 0.1+  | 1.2-  | 2003 12 17 | 699 | 0.2+  | 0.5+  | 2007 11 17 | 704 | 0.2+  | 1.4+  |
| 2000 03 11 | 699 | 0.9-  | 0.4+  | 2004 01 30 | 703 | 1.3-  | 1.1-  | 2007 11 17 | 704 | 0.6+  | 0.7+  |
| 2000 03 12 | 703 | 1.6+  | 0.4+  | 2004 01 30 | 703 | 1.1-  | 0.8-  | 2007 11 17 | 704 | 0.5-  | 0.1-  |
| 2000 03 12 | 703 | 0.5+  | 0.2-  | 2004 01 30 | 703 | 1.0-  | 0.9-  | 2007 11 20 | G96 | 0.3-  | 0.3-  |
| 2000 03 12 | 703 | 0.5+  | 0.7+  | 2004 01 30 | 703 | 0.1+  | 0.6-  | 2007 11 20 | G96 | 0.1-  | 0.2-  |
| 2000 03 12 | 703 | 0.3+  | 0.7+  | 2004 01 31 | 699 | 0.2+  | 0.1-  | 2007 11 20 | G96 | 0.1-  | 0.3-  |
| 2000 03 29 | 704 | 0.3+  | 0.5-  | 2004 01 31 | 699 | 0.1+  | 0.2-  | 2007 11 20 | G96 | 0.0   | 0.3-  |
| 2000 03 29 | 704 | 0.3+  | 0.2-  | 2004 01 31 | 699 | 0.3-  | 0.6+  | 2007 12 02 | 704 | 0.7-  | 0.1+  |
| 2000 03 29 | 704 | 0.0   | 0.5+  | 2004 01 31 | 699 | 0.4+  | 0.2+  | 2007 12 02 | 704 | 0.4-  | 1.0+  |
| 2000 03 29 | 704 | 0.3-  | 0.4+  | 2004 01 31 | 699 | 0.6+  | 1.0-  | 2007 12 02 | 704 | 0.3-  | 0.7+  |
| 2000 03 29 | 704 | 0.0   | 0.6+  | 2004 01 31 | 699 | 0.6+  | 0.4-  | 2007 12 02 | 704 | 0.5+  | 0.0   |
| 2000 04 08 | 704 | 0.0   | 0.3-  | 2004 01 31 | 699 | 0.3+  | 0.3-  | 2007 12 02 | 704 | 0.1-  | 0.5+  |
| 2000 04 08 | 704 | 0.7+  | 0.6-  | 2004 01 31 | 699 | 0.5+  | 0.6-  | 2007 12 04 | G96 | 0.4-  | 0.3-  |
| 2000 04 08 | 704 | 0.0   | 0.6+  | 2007 11 02 | 704 | 0.5+  | 0.7+  | 2007 12 04 | G96 | 0.5-  | 0.4-  |
| 2000 04 08 | 704 | 0.4+  | 0.3+  | 2007 11 02 | 704 | 0.1+  | 0.3+  | 2007 12 04 | G96 | 0.0   | 0.6-  |
| 2000 04 25 | 699 | 0.3+  | 1.0+  | 2007 11 02 | 704 | 0.6-  | 0.7-  | 2007 12 04 | G96 | 0.1-  | 0.2-  |
| 2000 04 25 | 699 | 0.2-  | 0.1-  | 2007 11 02 | 704 | 0.3-  | 0.5+  |            |     |       |       |

(171642)\* 2000 EK<sub>157</sub> = 1998 VV<sub>4</sub>

Discovered 2000 Mar. 11 by the Catalina Sky Survey.

Id. G. V. Williams (MPC 40214)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 286.53563 |  | (2000.0) | <b>P</b> | < |
|----------|-----------|--|----------|----------|---|
|----------|-----------|--|----------|----------|---|

2007 DEC. 24

M.P.O. 129113

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 11 | 703 | 0.7−  | 0.8+  | 2003 12 18 | 704 | 0.5−  | 0.7−  | 2004 03 23 | 703 | (1.5− | 0.2−) |
| 2000 03 11 | 703 | 0.4−  | 0.5+  | 2003 12 18 | 704 | 0.0   | 0.1+  | 2004 03 23 | 703 | 0.9−  | 0.1−  |
| 2000 03 11 | 703 | 0.5+  | 0.2+  | 2003 12 18 | 704 | 0.2−  | 0.4−  | 2004 03 23 | 703 | 0.5−  | 0.2+  |
| 2000 03 11 | 703 | 0.5−  | 0.4−  | 2003 12 18 | 704 | 0.2+  | 0.3−  | 2004 03 25 | 704 | 0.9+  | 0.5−  |
| 2000 03 12 | 699 | 0.4+  | 0.1−  | 2003 12 27 | 704 | 0.3+  | 0.1+  | 2004 03 25 | 704 | (1.7+ | 0.2−) |
| 2000 03 12 | 699 | 0.3+  | 0.0   | 2003 12 27 | 704 | 0.5+  | 0.0   | 2004 03 25 | 704 | (1.9+ | 0.5−) |
| 2000 03 12 | 699 | 0.8+  | 0.1−  | 2003 12 27 | 704 | 0.2+  | 0.1−  | 2004 04 12 | 704 | 0.1+  | 0.0   |
| 2000 03 12 | 699 | 0.8+  | 0.1−  | 2003 12 27 | 704 | 0.7+  | 0.3+  | 2004 04 12 | 704 | 0.1−  | 0.4+  |
| 2000 04 03 | 704 | 0.0   | 0.2−  | 2003 12 27 | 704 | 0.2+  | 0.2+  | 2004 04 12 | 704 | 0.6−  | 0.1−  |
| 2000 04 03 | 704 | 0.3+  | 0.2+  | 2003 12 29 | 704 | 0.2+  | 0.2+  | 2004 04 12 | 704 | (1.7− | 1.1−) |
| 2000 04 03 | 704 | 0.3+  | 0.4+  | 2003 12 29 | 704 | 0.1−  | 0.3−  | 2004 04 13 | 703 | 1.0+  | 0.7−  |
| 2000 04 03 | 704 | 0.1+  | 0.8+  | 2003 12 29 | 704 | 0.4+  | 0.8−  | 2004 04 13 | 703 | (1.2+ | 1.5+) |
| 2000 04 08 | 704 | 0.6−  | 0.3+  | 2003 12 29 | 704 | 0.2−  | 0.6−  | 2004 04 13 | 703 | 0.8+  | 1.5+  |
| 2000 04 08 | 704 | 0.8+  | 0.2−  | 2003 12 29 | 704 | 0.2+  | 0.1+  | 2004 04 13 | 703 | 0.1−  | 1.3−  |
| 2000 04 08 | 704 | 1.1−  | 0.2−  | 2004 01 18 | 703 | 0.0   | 0.4−  | 2007 11 04 | 704 | 0.3+  | 0.7+  |
| 2000 04 08 | 704 | 0.5−  | 0.1−  | 2004 01 18 | 703 | 0.3+  | 0.7−  | 2007 11 04 | 704 | 0.5−  | 0.8+  |
| 2000 04 08 | 704 | 0.1+  | 0.0   | 2004 01 18 | 703 | 0.2+  | 0.9−  | 2007 11 04 | 704 | 0.9−  | 0.7+  |
| 2000 04 10 | 608 | 0.4+  | 0.3+  | 2004 01 18 | 703 | 0.3+  | 0.3−  | 2007 11 12 | 704 | 0.1−  | 0.6+  |
| 2000 04 10 | 608 | 0.3+  | 0.2+  | 2004 01 19 | 704 | 1.1−  | 0.3+  | 2007 11 12 | 704 | 0.7−  | 0.6+  |
| 2000 04 10 | 608 | 0.4+  | 0.3+  | 2004 01 19 | 704 | 1.1−  | 0.6+  | 2007 11 12 | 704 | 0.6−  | 0.8+  |
| 2000 04 28 | 699 | 0.2−  | 0.4−  | 2004 01 19 | 704 | 1.3−  | 0.3−  | 2007 11 12 | 704 | 1.1−  | 0.2+  |
| 2000 04 28 | 699 | 0.5+  | 0.5+  | 2004 01 19 | 704 | 1.4−  | 0.2−  | 2007 11 12 | 704 | 0.5−  | 0.9+  |
| 2000 04 28 | 699 | 0.5+  | 0.1+  | 2004 01 30 | 699 | 0.2−  | 0.7+  | 2007 11 21 | 703 | 0.6−  | 0.4+  |
| 2000 04 28 | 699 | 0.3+  | 0.3−  | 2004 01 30 | 699 | 0.2+  | 0.6−  | 2007 11 21 | 703 | 0.5+  | 0.3+  |
| 2000 06 02 | 699 | (0.9− | 2.3+) | 2004 01 30 | 699 | (0.2− | 1.6−) | 2007 11 21 | 703 | (1.7− | 3.0+) |
| 2000 06 02 | 699 | 0.4−  | 0.2+  | 2004 01 30 | 699 | 0.6−  | 0.3−  | 2007 11 21 | 703 | (0.6− | 1.9+) |
| 2000 06 02 | 699 | 0.4+  | 1.9+  | 2004 02 02 | 704 | 0.2+  | 0.2+  | 2007 12 04 | 704 | 0.4+  | 0.1−  |
| 2000 06 02 | 699 | 0.3−  | 0.4+  | 2004 02 02 | 704 | 0.2−  | 0.0   | 2007 12 04 | 704 | 0.1+  | 0.2−  |
| 2003 11 20 | 704 | 1.3−  | 0.6+  | 2004 02 02 | 704 | 0.1+  | 0.0   | 2007 12 04 | 704 | 0.2+  | 0.0   |
| 2003 11 20 | 704 | 0.7−  | 0.7+  | 2004 02 02 | 704 | 0.2−  | 0.3+  | 2007 12 04 | 704 | 0.0   | 0.2−  |
| 2003 11 20 | 704 | 0.1+  | 1.5+  | 2004 02 10 | 644 | 0.2+  | 0.4−  | 2007 12 04 | 704 | 0.8+  | 0.0   |
| 2003 11 21 | 644 | 0.3+  | 0.1+  | 2004 02 10 | 644 | 0.1+  | 0.3−  | 2007 12 05 | G96 | 0.2+  | 0.0   |
| 2003 11 21 | 644 | 0.2+  | 0.2+  | 2004 02 10 | 644 | 0.2+  | 0.3−  | 2007 12 05 | G96 | 0.1−  | 0.2−  |
| 2003 11 21 | 644 | 0.3+  | 0.1+  | 2004 02 11 | 704 | 0.5+  | 0.2−  | 2007 12 05 | G96 | 0.2+  | 0.1−  |
| 2003 12 17 | 699 | 1.5+  | 0.3−  | 2004 02 11 | 704 | 0.2+  | 0.2−  | 2007 12 05 | G96 | 0.2+  | 0.0   |

**(171643)\* 2000 EX<sub>171</sub>**

Discovered 2000 Mar. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |     |          |          |      |             |   |             |  |     |  |
|-----------------------------------------|------------|-----|----------|----------|------|-------------|---|-------------|--|-----|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |     |          |          |      |             |   |             |  | MPC |  |
| $M$                                     | 327.08288  |     | (2000.0) |          |      | $P$         |   | $Q$         |  |     |  |
| $n$                                     | 0.23651085 |     | $\omega$ | 53.50713 |      | −0.71774693 |   | −0.68046805 |  |     |  |
| $a$                                     | 2.5896158  |     | $\Omega$ | 83.09699 |      | +0.58179307 |   | −0.70257993 |  |     |  |
| $e$                                     | 0.1717551  |     | $i$      | 8.55363  |      | +0.38256524 |   | −0.20819383 |  |     |  |
| $P$                                     | 4.17       | $H$ | 15.4     | $G$      | 0.15 | $U$         | 2 |             |  |     |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 04 08 | 691 | 0.2− | 0.4− | 2003 12 29 | 704 | 0.2− | 0.8+ | 2007 10 07 | G96 | 0.4+  | 0.4−  |
| 1992 04 08 | 691 | 0.3− | 0.6− | 2003 12 29 | 704 | 0.2− | 0.5+ | 2007 10 07 | G96 | 0.2−  | 0.5−  |
| 1992 04 08 | 691 | 0.1+ | 0.4− | 2004 01 28 | 703 | 0.3− | 0.1− | 2007 10 14 | 704 | (1.2+ | 1.6+) |
| 2000 03 05 | 704 | 0.6− | 0.2+ | 2004 01 28 | 703 | 0.8− | 0.2− | 2007 10 14 | 704 | 0.6+  | 0.5−  |
| 2000 03 05 | 704 | 0.7− | 0.2− | 2004 01 28 | 703 | 0.4− | 0.5+ | 2007 10 14 | 704 | 1.1−  | 0.6−  |
| 2000 03 05 | 704 | 0.1− | 0.0  | 2004 01 28 | 703 | 0.7− | 0.6+ | 2007 11 05 | G96 | 0.3+  | 0.7−  |
| 2000 03 12 | 704 | 0.4+ | 0.2+ | 2004 01 30 | 699 | 0.3− | 0.6− | 2007 11 05 | G96 | 0.4+  | 0.7−  |
| 2000 03 12 | 704 | 0.0  | 0.5+ | 2004 01 30 | 699 | 1.0− | 0.5− | 2007 11 05 | G96 | 0.0   | 0.7−  |
| 2000 03 12 | 704 | 0.8+ | 1.2+ | 2004 01 30 | 699 | 0.4− | 0.2− | 2007 11 05 | G96 | 0.1+  | 0.6−  |
| 2000 03 12 | 704 | 0.5+ | 0.2− | 2004 01 30 | 699 | 0.2− | 0.7− | 2007 11 07 | G96 | 0.2+  | 0.8−  |
| 2000 03 29 | 704 | 0.1+ | 0.2− | 2004 01 30 | 704 | 0.2+ | 0.1+ | 2007 11 07 | G96 | 0.1+  | 0.6−  |
| 2000 03 29 | 704 | 0.1− | 0.1+ | 2004 01 30 | 704 | 0.1+ | 0.1− | 2007 11 07 | G96 | 0.0   | 0.4−  |
| 2000 03 29 | 704 | 0.1+ | 0.1+ | 2004 01 30 | 704 | 0.0  | 0.3− | 2007 11 07 | G96 | 0.2−  | 0.2−  |
| 2000 03 29 | 704 | 0.3− | 0.1− | 2004 01 30 | 704 | 0.2− | 0.1− | 2007 11 07 | 703 | 0.3−  | 0.3−  |
| 2000 03 29 | 704 | 0.2+ | 0.6− | 2004 01 30 | 704 | 0.4+ | 0.3− | 2007 11 07 | 703 | 0.0   | 0.8−  |
| 2000 04 08 | 704 | 0.3− | 0.0  | 2004 02 10 | 644 | 0.1− | 0.3− | 2007 11 07 | 703 | (1.8− | 0.7+) |
| 2000 04 08 | 704 | 0.0  | 0.1+ | 2004 02 10 | 644 | 0.1− | 0.2− | 2007 11 07 | 703 | 0.7−  | 1.2−  |
| 2000 04 08 | 704 | 0.0  | 1.1+ | 2004 02 10 | 644 | 0.3− | 0.2− | 2007 11 15 | 704 | 0.0   | 0.1+  |
| 2000 04 08 | 704 | 0.2+ | 0.2− | 2004 02 13 | 644 | 0.1− | 0.0  | 2007 11 15 | 704 | (1.3− | 3.8−) |
| 2000 04 08 | 704 | 0.1− | 0.0  | 2004 02 13 | 644 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.1−  | 0.1+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 28 | 699 | (2.4+ | 1.5+) | 2004 02 13 | 644 | 0.3+  | 0.1−  | 2007 11 15 | 704 | 0.5+ | 0.1− |
| 2000 04 28 | 699 | 0.0   | 0.6+  | 2004 02 15 | 704 | 0.4+  | 0.7+  | 2007 11 15 | 704 | 0.3− | 1.0+ |
| 2000 04 28 | 699 | 0.8−  | 0.6+  | 2004 02 15 | 704 | 0.2+  | 0.8+  | 2007 12 06 | 704 | 0.9+ | 1.2− |
| 2000 04 28 | 699 | 0.7+  | 0.3+  | 2004 02 15 | 704 | 0.5+  | 0.3+  | 2007 12 06 | 704 | 0.1− | 0.3− |
| 2003 11 20 | 704 | 0.2−  | 0.2−  | 2004 02 15 | 704 | 0.1+  | 0.5+  | 2007 12 06 | 704 | 0.3+ | 0.2+ |
| 2003 11 20 | 704 | 0.6+  | 0.4+  | 2004 02 15 | 704 | 0.2+  | 0.8+  | 2007 12 06 | 704 | 0.5+ | 1.1− |
| 2003 11 20 | 704 | 0.8−  | 0.1−  | 2004 02 27 | 704 | (1.6+ | 0.3+) | 2007 12 06 | 704 | 0.4+ | 0.7+ |
| 2003 11 21 | 699 | 0.7+  | 0.1−  | 2004 02 27 | 704 | 0.2−  | 0.4+  | 2007 12 10 | 704 | 1.1− | 0.1+ |
| 2003 11 21 | 699 | (1.6+ | 0.8−) | 2004 02 27 | 704 | 0.2−  | 0.6−  | 2007 12 10 | 704 | 1.0− | 0.6+ |
| 2003 11 21 | 699 | 0.2+  | 0.0   | 2004 03 14 | 704 | 0.7+  | 0.6−  | 2007 12 10 | 704 | 1.0− | 0.6+ |
| 2003 11 21 | 699 | (2.3− | 1.5+) | 2004 03 14 | 704 | 0.3−  | 0.3−  | 2007 12 10 | 704 | 0.7− | 0.9+ |
| 2003 12 19 | 704 | 0.4+  | 0.8−  | 2004 03 14 | 704 | 0.5+  | 1.2+  | 2007 12 13 | 704 | 0.0  | 0.0  |
| 2003 12 19 | 704 | 0.0   | 0.1+  | 2004 03 14 | 704 | 0.1−  | 0.1−  | 2007 12 13 | 704 | 0.7+ | 0.2− |
| 2003 12 19 | 704 | 0.7−  | 0.0   | 2004 03 18 | 644 | 0.3+  | 0.0   | 2007 12 13 | 704 | 0.6+ | 0.4+ |
| 2003 12 19 | 704 | 0.7+  | 0.2−  | 2004 03 18 | 644 | 0.2+  | 0.1−  | 2007 12 13 | 704 | 0.8+ | 0.0  |
| 2003 12 27 | 704 | 0.1+  | 0.1+  | 2004 03 18 | 644 | 0.4+  | 0.0   | 2007 12 13 | 704 | 0.3− | 0.7+ |
| 2003 12 27 | 704 | 0.8+  | 0.3+  | 2004 03 23 | 704 | 1.0+  | 0.2−  | 2007 12 15 | 704 | 0.6+ | 0.7− |
| 2003 12 27 | 704 | 0.1+  | 0.0   | 2004 03 23 | 704 | 0.5+  | 1.0−  | 2007 12 15 | 704 | 0.1− | 0.0  |
| 2003 12 27 | 704 | 0.1−  | 0.1+  | 2004 03 23 | 704 | (0.9+ | 1.7−) | 2007 12 15 | 704 | 0.2− | 0.4+ |
| 2003 12 27 | 704 | 0.9+  | 0.3+  | 2004 03 23 | 704 | 0.5−  | 0.6+  | 2007 12 15 | 704 | 0.1+ | 0.8+ |
| 2003 12 29 | 704 | 0.7−  | 0.6+  | 2004 03 23 | 704 | 0.2+  | 1.1−  | 2007 12 15 | 704 | 0.1− | 0.2+ |
| 2003 12 29 | 704 | 0.2−  | 0.2−  | 2007 10 07 | G96 | 0.0   | 0.7−  |            |     |      |      |
| 2003 12 29 | 704 | 0.1−  | 0.5+  | 2007 10 07 | G96 | 0.0   | 0.6−  |            |     |      |      |

**(171644)\* 2000 FJ<sub>7</sub> = 2004 BX<sub>144</sub>**

Discovered 2000 Mar. 29 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 68651)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |             |   |
|-----|------------|----------|-----------|-----|-------------|-------------|---|
| $M$ | 208.27042  |          | (2000.0)  |     | <b>P</b>    | <b>Q</b>    |   |
| $n$ | 0.21275281 | $\omega$ | 129.17133 |     | −0.83264486 | +0.55377141 |   |
| $a$ | 2.7789827  | $\Omega$ | 84.45567  |     | −0.51004217 | −0.76235789 |   |
| $e$ | 0.0155537  | $i$      | 0.36302   |     | −0.21577657 | −0.33488457 |   |
| $P$ | 4.63       | $H$      | 17.0      | $G$ | 0.15        | $U$         | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 29 | 691 | 0.5+ | 0.1+ | 2004 02 14 | 691 | 0.3− | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.0  |
| 2000 03 29 | 691 | 0.6+ | 0.1+ | 2005 04 11 | G96 | 0.7− | 0.2+ | 2007 11 09 | 691 | 0.2+ | 0.0  |
| 2000 03 29 | 691 | 0.2+ | 0.5+ | 2005 04 11 | G96 | 0.7− | 0.4+ | 2007 11 18 | 691 | 0.2− | 0.2+ |
| 2000 03 30 | 691 | 0.2− | 0.2− | 2005 04 11 | G96 | 0.4− | 0.1− | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2000 03 30 | 691 | 0.1− | 0.5− | 2005 04 11 | G96 | 0.1+ | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2000 03 30 | 691 | 0.0  | 0.1− | 2005 05 11 | 691 | 0.1− | 0.2+ | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2000 04 06 | 691 | 0.6− | 0.3− | 2005 05 11 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 691 | 0.3− | 0.3− |
| 2000 04 06 | 691 | 0.3− | 0.4− | 2005 05 11 | 691 | 0.5+ | 0.0  | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2000 04 06 | 691 | 0.3− | 0.2+ | 2005 05 13 | G96 | 0.5− | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2004 01 19 | 691 | 0.4+ | 0.1− | 2005 05 13 | G96 | 0.1− | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.3− |
| 2004 01 19 | 691 | 0.3+ | 0.1− | 2005 05 13 | G96 | 0.3+ | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2004 01 19 | 691 | 0.1+ | 0.0  | 2005 05 13 | G96 | 0.1− | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.5− |
| 2004 01 30 | 691 | 0.5− | 0.2− | 2007 11 05 | G96 | 0.8+ | 0.2− | 2007 12 15 | G96 | 0.2+ | 0.4− |
| 2004 01 30 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.3− | 2007 12 15 | G96 | 0.4+ | 0.1− |
| 2004 01 30 | 691 | 0.2− | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2004 02 14 | 691 | 0.2+ | 0.4+ | 2007 11 05 | G96 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.4+ | 0.1+ |
| 2004 02 14 | 691 | 0.1+ | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.1− |            |     |      |      |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 07 22 | 691 | 0.2+  | 0.6-  | 2006 06 18 | 691 | 0.0  | 0.0  | 2007 09 21 | A50 | 0.1-  | 0.8+  |
| 1995 07 22 | 691 | 0.1+  | 0.4-  | 2006 06 18 | 691 | 0.0  | 0.0  | 2007 09 21 | A50 | 0.4+  | 0.5+  |
| 1995 07 22 | 691 | 0.0   | 0.4-  | 2006 06 18 | 691 | 0.2+ | 0.1- | 2007 09 21 | A50 | 0.8+  | 0.7+  |
| 1995 07 28 | 691 | 0.1+  | 0.6+  | 2007 09 07 | 704 | 0.4- | 0.0  | 2007 09 21 | A50 | 0.2-  | 0.2+  |
| 1995 07 28 | 691 | 0.5-  | 0.1-  | 2007 09 07 | 704 | 0.5+ | 0.1- | 2007 09 21 | A50 | 0.5+  | 0.2+  |
| 1995 07 28 | 691 | 0.2+  | 0.2-  | 2007 09 07 | 704 | 0.9+ | 0.0  | 2007 09 21 | A50 | 0.7+  | 0.8+  |
| 2000 03 29 | 691 | 0.3+  | 0.3+  | 2007 09 07 | 704 | 0.3- | 1.0- | 2007 09 21 | A50 | 0.5-  | 0.2+  |
| 2000 03 29 | 691 | 0.1+  | 0.2+  | 2007 09 12 | 699 | 0.4+ | 0.4+ | 2007 09 22 | A50 | 0.3+  | 0.1+  |
| 2000 03 29 | 691 | 0.1+  | 0.4+  | 2007 09 12 | 699 | 0.2+ | 0.8+ | 2007 09 22 | A50 | 0.6+  | 0.2+  |
| 2000 03 30 | 691 | 0.3-  | 0.1-  | 2007 09 12 | 699 | 0.3+ | 0.0  | 2007 09 22 | A50 | 0.0   | 0.2-  |
| 2000 03 30 | 691 | 0.3-  | 0.2+  | 2007 09 12 | 699 | 0.6- | 0.4- | 2007 09 22 | A50 | 0.3+  | 0.6+  |
| 2000 03 30 | 691 | 0.4-  | 0.1+  | 2007 09 14 | 704 | 0.3+ | 0.1+ | 2007 10 10 | 691 | 0.3-  | 0.1+  |
| 2000 04 03 | 691 | 0.2-  | 0.1+  | 2007 09 14 | 704 | 0.4+ | 0.4+ | 2007 10 10 | 691 | 0.4-  | 0.0   |
| 2000 04 03 | 691 | 0.2-  | 0.4-  | 2007 09 14 | 704 | 0.3- | 0.7+ | 2007 10 10 | 691 | 0.2-  | 0.1+  |
| 2000 04 03 | 691 | 0.1-  | 0.0   | 2007 09 14 | 704 | 0.6- | 0.5+ | 2007 10 12 | 691 | (3.8- | 0.2-) |
| 2000 04 05 | 704 | 0.5-  | 1.1+  | 2007 09 14 | 704 | 0.2- | 0.4+ | 2007 10 12 | 691 | 0.5-  | 0.4+  |
| 2000 04 05 | 704 | 0.4+  | 0.1-  | 2007 09 15 | H55 | 0.1- | 0.1- | 2007 10 12 | 691 | 0.2-  | 0.1+  |
| 2000 04 05 | 704 | (2.1+ | 0.3-) | 2007 09 15 | H55 | 0.3+ | 0.5+ | 2007 10 12 | 704 | 0.8+  | 0.4+  |
| 2000 04 05 | 704 | 0.2-  | 0.4+  | 2007 09 15 | H55 | 0.0  | 0.3- | 2007 10 12 | 704 | 0.1+  | 0.6+  |
| 2000 04 05 | 704 | 1.3+  | 0.4+  | 2007 09 15 | G96 | 0.4+ | 0.5- | 2007 10 12 | 704 | 0.0   | 0.3-  |
| 2000 04 06 | 704 | 0.4-  | 1.1+  | 2007 09 15 | 704 | 0.2- | 0.2+ | 2007 10 12 | 704 | 0.3-  | 0.3-  |
| 2000 04 06 | 704 | 1.2+  | 0.9-  | 2007 09 15 | G96 | 0.5+ | 0.7- | 2007 11 07 | G96 | 0.1-  | 0.4-  |
| 2000 04 06 | 704 | 0.3+  | 0.9+  | 2007 09 15 | 704 | 0.1- | 0.4+ | 2007 11 07 | G96 | 0.1-  | 0.2-  |
| 2000 04 06 | 704 | 1.3+  | 0.6+  | 2007 09 15 | 704 | 0.2- | 0.8+ | 2007 11 07 | G96 | 0.0   | 0.4-  |
| 2000 04 10 | 704 | 1.9+  | 0.8+  | 2007 09 15 | G96 | 0.1+ | 0.7- | 2007 11 07 | G96 | 0.5-  | 0.6-  |
| 2000 04 10 | 704 | 0.2+  | 0.6+  | 2007 09 15 | G96 | 0.2+ | 0.8- | 2007 11 17 | G96 | 0.5+  | 0.6-  |
| 2000 04 10 | 704 | 0.1+  | 0.0   | 2007 09 15 | 704 | 0.6- | 0.7+ | 2007 11 17 | G96 | 0.3+  | 0.2-  |
| 2002 10 31 | 704 | 0.6-  | 0.5+  | 2007 09 15 | 704 | 0.1- | 0.3+ | 2007 11 17 | G96 | 0.0   | 0.4-  |
| 2002 10 31 | 704 | 0.1-  | 0.7-  | 2007 09 17 | 704 | 0.3+ | 0.4+ | 2007 11 17 | G96 | 0.5+  | 0.2-  |
| 2002 10 31 | 704 | 0.1-  | 0.3+  | 2007 09 17 | 704 | 0.4- | 0.2- | 2007 12 06 | G96 | 0.5+  | 0.0   |
| 2006 05 20 | 703 | 1.1-  | 0.4-  | 2007 09 17 | 704 | 0.7- | 0.1- | 2007 12 06 | G96 | 0.5+  | 0.3-  |
| 2006 05 20 | 703 | 0.5-  | 0.9+  | 2007 09 17 | 704 | 1.1+ | 1.0+ | 2007 12 06 | G96 | 0.4+  | 0.5-  |
| 2006 05 20 | 703 | 0.5-  | 0.8+  | 2007 09 20 | A50 | 0.0  | 0.1+ | 2007 12 06 | G96 | 0.0   | 0.1-  |
| 2006 05 20 | 703 | 0.6+  | 0.1+  | 2007 09 20 | A50 | 0.2- | 0.0  |            |     |       |       |

(171646)\* 2000 FL<sub>14</sub> = 2002 TM<sub>213</sub>

Discovered 2000 Mar. 30 by Spacewatch at Kitt Peak.

Id. M. E. Sansaturio (MPO 40076)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.38807    |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.21417375 | $\omega$ | 33.04225 | +0.55836812 | -0.82924467 |
| <i>a</i> | 2.7666776  | $\Omega$ | 23.04257 | +0.74719064 | +0.49009942 |
| <i>e</i> | 0.0830339  | <i>i</i> | 3.52240  | +0.36045969 | +0.26861838 |
| <i>P</i> | 4.60       | <i>H</i> | 16.3     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 30 | 691 | 0.2+ | 0.0  | 2002 10 07 | 644 | 0.4+ | 1.1+ | 2005 05 16 | G96 | 0.3+ | 0.4+ |
| 2000 03 30 | 691 | 0.0  | 0.0  | 2002 10 07 | 644 | 0.5+ | 1.2+ | 2005 05 16 | G96 | 0.9+ | 0.9+ |
| 2000 03 30 | 691 | 0.1+ | 0.1+ | 2002 10 11 | 704 | 0.4+ | 1.0+ | 2005 05 16 | G96 | 0.5- | 0.5+ |
| 2000 04 03 | 691 | 0.6- | 0.1+ | 2002 10 11 | 704 | 0.4- | 0.2+ | 2007 08 24 | 691 | 0.0  | 0.1+ |
| 2000 04 03 | 691 | 0.3- | 0.1- | 2002 10 11 | 704 | 0.2- | 0.3+ | 2007 08 24 | 691 | 0.3- | 0.2- |
| 2000 04 03 | 691 | 0.2- | 0.1- | 2002 10 11 | 704 | 0.2+ | 1.4+ | 2007 08 24 | 691 | 0.1- | 0.1- |
| 2000 04 05 | 704 | 0.6+ | 0.5+ | 2002 10 11 | 704 | 0.1- | 0.3+ | 2007 11 02 | 691 | 0.1- | 0.2- |
| 2000 04 05 | 704 | 0.8- | 0.0  | 2004 02 11 | 691 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.0  | 0.2- |
| 2000 04 05 | 704 | 0.7+ | 0.8+ | 2004 02 11 | 691 | 0.0  | 0.2+ | 2007 11 02 | 691 | 0.3- | 0.3- |
| 2000 04 05 | 704 | 0.1+ | 1.3+ | 2004 02 11 | 691 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2000 04 05 | 704 | 0.9+ | 0.2+ | 2004 02 23 | 704 | 0.3+ | 0.8+ | 2007 11 17 | 691 | 0.1- | 0.1- |
| 2000 04 06 | 691 | 0.3- | 0.1- | 2004 02 23 | 704 | 0.5+ | 0.1+ | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2000 04 06 | 691 | 0.2- | 0.1- | 2004 02 23 | 704 | 0.4- | 0.0  | 2007 12 10 | 704 | 0.3- | 0.6- |
| 2000 04 06 | 691 | 0.1+ | 0.2- | 2004 02 29 | 691 | 0.3+ | 0.3+ | 2007 12 10 | 704 | 0.8+ | 0.2+ |
| 2002 10 03 | 704 | 1.1- | 0.1+ | 2004 02 29 | 691 | 0.1+ | 0.3+ | 2007 12 10 | 704 | 0.8+ | 0.2+ |
| 2002 10 03 | 704 | 0.1+ | 0.9+ | 2004 02 29 | 691 | 0.6+ | 0.2- | 2007 12 10 | 704 | 0.5+ | 0.2- |
| 2002 10 03 | 704 | 1.3- | 0.1+ | 2005 05 07 | 691 | 0.6+ | 0.3+ | 2007 12 13 | A77 | 0.8- | 0.3+ |
| 2002 10 03 | 704 | 1.3- | 1.1+ | 2005 05 07 | 691 | 0.2+ | 0.7+ | 2007 12 13 | A77 | 0.3- | 1.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 03 | 704 | 0.7- | 1.1+ | 2005 05 07 | 691 | 0.0  | 0.2+ | 2007 12 13 | A77 | 0.3+ | 0.9+ |
| 2002 10 07 | 644 | 0.4+ | 0.9+ | 2005 05 16 | G96 | 0.1+ | 0.1+ |            |     |      |      |

(171647)\* 2000 FU<sub>14</sub>

Discovered 2000 Mar. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 290.11480  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22662180 | $\omega$ | 135.96093 | -0.90115026 | -0.42567634 |
| <i>a</i> | 2.6644133  | $\Omega$ | 19.31496  | +0.29636432 | -0.74302573 |
| <i>e</i> | 0.2146813  | <i>i</i> | 14.35828  | +0.31638016 | -0.51644208 |
| <i>P</i> | 4.35       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 08 | 704 | 0.4-  | 0.4+  | 2000 04 10 | 704 | 0.2-  | 1.4+  | 2004 02 10 | 704 | 1.3+  | 0.6+  |
| 2000 03 08 | 704 | 0.1-  | 0.3+  | 2000 04 10 | 704 | 0.2-  | 0.3-  | 2004 02 10 | 704 | 0.3-  | 0.2+  |
| 2000 03 08 | 704 | 0.3+  | 1.1+  | 2000 04 10 | 704 | 0.6+  | 0.0   | 2004 02 10 | 704 | (1.5+ | 1.0-) |
| 2000 03 08 | 704 | 0.2+  | 0.6+  | 2000 04 10 | 704 | 0.4-  | 0.6-  | 2004 02 14 | 703 | 0.1-  | 0.7-  |
| 2000 03 08 | 704 | 0.2+  | 0.6+  | 2000 04 10 | 704 | 0.8+  | 1.0-  | 2004 02 14 | 703 | 0.7-  | 0.7-  |
| 2000 03 29 | 704 | 0.0   | 0.6+  | 2000 04 10 | 704 | 0.5-  | 0.0   | 2004 02 14 | 703 | 0.8-  | 0.6-  |
| 2000 03 29 | 704 | 0.6+  | 0.8+  | 2000 04 10 | 704 | 1.1+  | 0.0   | 2004 02 14 | 703 | 1.0-  | 0.9-  |
| 2000 03 29 | 704 | (0.1- | 2.3+) | 2000 04 12 | 691 | 0.3+  | 0.7-  | 2004 02 16 | 201 | 0.1-  | 0.6-  |
| 2000 03 29 | 704 | 0.5+  | 0.9+  | 2000 04 12 | 691 | 0.0   | 0.8-  | 2004 02 16 | 201 | 0.2+  | 0.3-  |
| 2000 04 03 | 704 | 0.0   | 0.8+  | 2000 04 12 | 691 | 0.3-  | 0.4+  | 2004 02 16 | 201 | 0.2+  | 0.7-  |
| 2000 04 03 | 704 | 0.5-  | 0.7+  | 2000 04 25 | 699 | 0.7+  | 0.4+  | 2004 03 25 | 704 | 0.2+  | 0.5+  |
| 2000 04 03 | 704 | 0.2-  | 1.0+  | 2000 04 25 | 699 | 1.0+  | 0.6+  | 2004 03 25 | 704 | 0.2-  | 0.8+  |
| 2000 04 03 | 704 | 0.5-  | 1.4+  | 2000 04 25 | 699 | 0.1+  | 0.1+  | 2004 03 25 | 704 | 0.0   | 0.7+  |
| 2000 04 03 | 704 | 0.2-  | 1.8+  | 2000 04 25 | 699 | 1.5+  | 0.8+  | 2004 03 25 | 704 | 0.4-  | 0.3+  |
| 2000 04 05 | 704 | 0.4+  | 0.8+  | 2002 10 05 | 645 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 0.4-  | 0.7+  |
| 2000 04 05 | 704 | 0.0   | 0.1+  | 2002 10 05 | 645 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 0.2-  | 0.7+  |
| 2000 04 05 | 704 | 0.5+  | 0.5+  | 2002 10 10 | 645 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 0.7-  | 0.4+  |
| 2000 04 05 | 704 | 0.4+  | 0.7+  | 2002 10 10 | 645 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 0.1-  | 0.1+  |
| 2000 04 05 | 704 | 0.6+  | 0.1+  | 2002 10 31 | 645 | 0.1-  | 0.1+  | 2007 11 21 | 703 | (2.2- | 1.4+) |
| 2000 04 06 | 699 | 0.4-  | 0.1-  | 2002 10 31 | 645 | 0.1-  | 0.2+  | 2007 11 21 | 703 | 0.4-  | 1.3+  |
| 2000 04 06 | 699 | 0.8+  | 1.1+  | 2003 12 17 | 704 | 0.3-  | 0.0   | 2007 11 21 | 703 | 1.2-  | 0.1+  |
| 2000 04 06 | 699 | 0.1+  | 0.5+  | 2003 12 17 | 704 | 0.0   | 0.6-  | 2007 11 21 | 703 | 0.7+  | 0.6-  |
| 2000 04 06 | 699 | 0.1+  | 1.3+  | 2003 12 17 | 704 | 0.7+  | 0.2-  | 2007 12 03 | 704 | 0.0   | 0.4+  |
| 2000 04 08 | 704 | (2.5+ | 1.3+) | 2003 12 17 | 704 | 0.2+  | 0.6-  | 2007 12 03 | 704 | 0.2-  | 0.2+  |
| 2000 04 08 | 704 | 0.2+  | 0.9+  | 2003 12 29 | 703 | 1.3-  | 0.2-  | 2007 12 03 | 704 | 0.0   | 1.0+  |
| 2000 04 08 | 704 | 1.8+  | 0.0   | 2003 12 29 | 703 | (2.4- | 0.7-) | 2007 12 03 | 704 | 0.2+  | 0.1-  |
| 2000 04 08 | 704 | 1.9+  | 0.2-  | 2003 12 29 | 703 | (0.5- | 3.2-) | 2007 12 03 | 704 | 0.8+  | 0.4+  |
| 2000 04 10 | 704 | 0.5+  | 0.3+  | 2003 12 29 | 703 | (1.9- | 0.3-) |            |     |       |       |
| 2000 04 10 | 704 | 0.0   | 0.3+  | 2004 02 10 | 704 | 1.0+  | 0.0   |            |     |       |       |

(171648)\* 2000 FS<sub>27</sub> = 1997 TE<sub>15</sub>

Discovered 2000 Mar. 27 by the Lowell Observatory Near-Earth Object Search

at the Anderson Mesa Station.

Id. A. Doppler (MPO 2442)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 198.72227  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.21048852 | $\omega$ | 25.90002  | -0.80571787 | +0.59052926 |
| $a$ | 2.7988767  | $\Omega$ | 190.66251 | -0.57728017 | -0.80022732 |
| $e$ | 0.0561647  | $i$      | 14.31868  | -0.13253795 | -0.10445775 |
| $P$ | 4.68       | $H$      | 15.4      | $G$ 0.15    | $U$ 1       |



2007 DEC. 24

M.P.O. 129115

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 27 | 699 | 0.6+ | 0.8+ | 2002 10 31 | 704 | 0.8−  | 1.3+  | 2006 09 18 | 691 | 0.4− | 0.4+ |
| 2000 03 27 | 699 | 0.3+ | 0.3+ | 2002 10 31 | 704 | 1.2−  | 0.6+  | 2006 09 18 | 691 | 0.4+ | 0.2+ |
| 2000 03 27 | 699 | 0.3− | 0.4− | 2005 04 18 | 691 | 0.4+  | 0.2+  | 2007 11 14 | G96 | 0.1+ | 0.2+ |
| 2000 03 27 | 699 | 0.1− | 0.5+ | 2005 04 18 | 691 | 0.2−  | 0.2+  | 2007 11 14 | G96 | 0.1+ | 0.6+ |
| 2000 04 02 | 699 | 0.8− | 0.3− | 2005 04 18 | 691 | 0.1−  | 0.1+  | 2007 11 14 | G96 | 0.1+ | 0.1+ |
| 2000 04 02 | 699 | 0.3+ | 0.1+ | 2005 05 06 | 703 | 1.3−  | 0.3+  | 2007 11 14 | G96 | 0.0  | 0.2+ |
| 2000 04 02 | 699 | 0.3+ | 0.0  | 2005 05 06 | 703 | (2.9− | 1.5−) | 2007 11 20 | 703 | 0.5− | 0.3+ |
| 2000 04 02 | 699 | 0.6+ | 1.0+ | 2005 05 06 | 703 | 0.1−  | 0.6−  | 2007 11 20 | 703 | 1.0+ | 0.0  |
| 2000 04 05 | 704 | 0.7+ | 0.3− | 2005 05 06 | 703 | 0.6−  | 0.2+  | 2007 11 20 | 703 | 0.4+ | 0.4− |
| 2000 04 05 | 699 | 0.3+ | 0.7− | 2005 06 07 | 699 | 0.1+  | 0.1+  | 2007 11 20 | 703 | 0.8+ | 0.9+ |
| 2000 04 05 | 704 | 0.2+ | 0.3− | 2005 06 07 | 699 | (1.7+ | 0.1+) | 2007 12 05 | 703 | 0.7− | 0.2+ |
| 2000 04 05 | 699 | 0.4− | 0.4− | 2005 06 07 | 699 | 0.0   | 0.2+  | 2007 12 05 | 703 | 0.6+ | 0.7+ |
| 2000 04 05 | 699 | 0.3− | 0.4+ | 2005 06 07 | 699 | 0.5+  | 1.5+  | 2007 12 05 | 703 | 1.2− | 0.9+ |
| 2000 04 05 | 704 | 0.1+ | 0.3+ | 2006 08 17 | 644 | 0.1−  | 0.4+  | 2007 12 05 | 703 | 0.7+ | 0.8+ |
| 2000 04 05 | 704 | 0.5− | 0.1+ | 2006 08 17 | 644 | 0.1+  | 0.1+  |            |     |      |      |

(171649)\* 2000 FQ<sub>63</sub> = 2002 RL<sub>112</sub>

Discovered 2000 Mar. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 34941)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.22817720 | <i>ω</i> | 82.34956 | −0.30061187 | −0.94919595 |          |   |
| <i>a</i> | 2.6522913  | <i>Ω</i> | 25.74624 | +0.76863157 | −0.29887475 |          |   |
| <i>e</i> | 0.1243826  | <i>i</i> | 12.37011 | +0.56465743 | −0.09849334 |          |   |
| <i>P</i> | 4.32       | <i>H</i> | 15.8     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 10 15 | 691 | 0.1− | 0.1− | 2002 09 06 | 599 | 0.1−  | 0.7+  | 2004 02 11 | 704 | 0.2− | 0.3− |
| 1998 10 15 | 691 | 0.1+ | 0.2+ | 2002 09 06 | 599 | 0.4−  | 0.8+  | 2004 02 11 | 704 | 1.2+ | 0.5+ |
| 1998 10 15 | 691 | 0.1+ | 0.1+ | 2002 09 08 | 599 | 0.0   | 0.6+  | 2004 02 11 | 704 | 0.4+ | 0.2− |
| 1998 10 20 | 691 | 0.2+ | 0.0  | 2002 09 08 | 599 | 0.4−  | 0.9+  | 2004 02 11 | 704 | 0.8+ | 0.2+ |
| 1998 10 20 | 691 | 0.2+ | 0.1+ | 2002 09 08 | 599 | 0.5−  | 1.0+  | 2004 02 11 | 704 | 0.7+ | 0.1− |
| 1998 10 20 | 691 | 0.1− | 0.5− | 2002 09 29 | 608 | 0.6−  | 0.2+  | 2004 02 17 | 703 | 0.1+ | 0.2− |
| 2000 03 29 | 704 | 0.2− | 0.2+ | 2002 09 29 | 608 | 1.6−  | 0.8+  | 2004 02 17 | 703 | 0.9+ | 1.1+ |
| 2000 03 29 | 704 | 0.4− | 0.7+ | 2002 09 29 | 608 | 1.3−  | 0.9+  | 2004 02 17 | 703 | 0.1− | 0.5− |
| 2000 03 29 | 704 | 0.2− | 0.1− | 2002 10 01 | 699 | (1.9− | 1.8+) | 2004 02 17 | 703 | 1.1− | 0.1− |
| 2000 04 07 | 699 | 0.7+ | 0.0  | 2002 10 01 | 699 | (1.5− | 2.1+) | 2004 03 25 | 704 | 0.7− | 0.1+ |
| 2000 04 07 | 699 | 0.6− | 0.2+ | 2002 10 01 | 699 | 1.0−  | 0.8+  | 2004 03 25 | 704 | 0.3+ | 1.1+ |
| 2000 04 07 | 699 | 1.7− | 0.1+ | 2002 10 01 | 699 | (0.2− | 1.9+) | 2004 03 25 | 704 | 0.1− | 0.1+ |
| 2000 04 07 | 699 | 0.5+ | 1.0+ | 2003 12 30 | 704 | 0.7−  | 0.8+  | 2007 11 09 | 704 | 1.0− | 0.5− |
| 2000 04 08 | 704 | 0.8+ | 0.2+ | 2003 12 30 | 704 | 0.2+  | 0.2+  | 2007 11 09 | 704 | 1.5− | 1.1− |
| 2000 04 08 | 704 | 1.1+ | 0.3− | 2003 12 30 | 704 | 0.3−  | 0.1+  | 2007 11 09 | 704 | 0.1− | 0.1− |
| 2000 04 08 | 704 | 0.4+ | 0.8+ | 2003 12 30 | 704 | 1.1+  | 0.6+  | 2007 11 09 | 704 | 0.4− | 0.1+ |
| 2000 05 03 | 704 | 0.4− | 0.0  | 2004 01 17 | 644 | 0.0   | 0.0   | 2007 12 03 | 704 | 0.7+ | 0.2− |
| 2000 05 03 | 704 | 1.2+ | 1.0+ | 2004 01 17 | 644 | 0.3−  | 0.0   | 2007 12 03 | 704 | 1.2+ | 0.2+ |
| 2000 05 03 | 704 | 1.4+ | 0.1− | 2004 01 17 | 644 | 0.1−  | 0.0   | 2007 12 03 | 704 | 0.9+ | 0.2+ |
| 2000 05 03 | 704 | 1.1+ | 1.2+ | 2004 02 09 | 644 | 0.6−  | 0.4+  | 2007 12 03 | 704 | 0.5+ | 0.2− |
| 2002 09 05 | 599 | 0.2− | 0.8+ | 2004 02 09 | 644 | 0.2−  | 0.3+  |            |     |      |      |
| 2002 09 06 | 599 | 0.4− | 0.8+ | 2004 02 09 | 644 | 0.4−  | 0.1+  |            |     |      |      |

(171650)\* 2000 FW<sub>71</sub>

Discovered 2000 Mar. 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.22349198 | <i>ω</i> | 123.72131 | −0.90553633 | +0.33155404 |          |   |
| <i>a</i> | 2.6892309  | <i>Ω</i> | 76.88286  | −0.41931970 | −0.79441915 |          |   |
| <i>e</i> | 0.0915666  | <i>i</i> | 15.77203  | +0.06461378 | −0.50889109 |          |   |
| <i>P</i> | 4.41       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 15 | 704 | 0.3+ | 0.5+ | 2000 05 02 | 704 | 0.4+ | 0.0  | 2004 01 31 | 699 | 0.2− | 0.2+ |
| 2000 03 15 | 704 | 0.3+ | 0.2− | 2002 10 05 | 645 | 0.0  | 0.0  | 2004 01 31 | 699 | 0.5+ | 0.3− |
| 2000 03 15 | 704 | 0.5+ | 0.5+ | 2002 10 05 | 645 | 0.0  | 0.1− | 2004 01 31 | 699 | 0.7− | 0.7+ |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 15 | 704 | 0.8+  | 0.8+  | 2002 10 10 | 644 | 0.3− | 0.8+ | 2004 01 31 | 699 | 0.9−  | 0.7−  |
| 2000 03 15 | 704 | 0.5+  | 1.3+  | 2002 10 10 | 644 | 0.2− | 0.6+ | 2006 09 22 | 703 | (2.0− | 1.3−) |
| 2000 03 27 | 699 | 0.2+  | 0.3−  | 2002 10 10 | 644 | 0.1+ | 0.2+ | 2006 09 22 | 703 | 0.7−  | 0.2+  |
| 2000 03 27 | 699 | 0.4−  | 1.0−  | 2002 10 11 | 645 | 0.0  | 0.1+ | 2006 09 22 | 703 | 0.3−  | 1.1+  |
| 2000 03 27 | 699 | 0.5+  | 0.4+  | 2002 10 11 | 645 | 0.1− | 0.1+ | 2006 09 22 | 703 | 1.0−  | 0.5−  |
| 2000 03 27 | 699 | 0.3+  | 0.2−  | 2002 10 31 | 704 | 0.4− | 0.2− | 2007 12 13 | 704 | 0.1−  | 0.1−  |
| 2000 04 04 | 704 | 0.3−  | 0.1+  | 2002 10 31 | 704 | 0.3− | 0.2+ | 2007 12 13 | 704 | 0.1−  | 0.9−  |
| 2000 04 04 | 704 | 0.1−  | 0.4+  | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.1−  | 0.1−  |
| 2000 04 04 | 704 | 0.4+  | 0.3−  | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.5−  | 0.6+  |
| 2000 04 30 | 699 | 1.8−  | 1.1+  | 2002 10 31 | 704 | 0.9− | 0.2+ | 2007 12 15 | 704 | 0.3−  | 0.0   |
| 2000 04 30 | 699 | 0.0   | 0.4+  | 2002 10 31 | 704 | 1.0− | 0.5− | 2007 12 15 | 704 | 0.4−  | 0.3+  |
| 2000 04 30 | 699 | (2.4+ | 0.2+) | 2002 11 07 | 645 | 0.1+ | 0.0  | 2007 12 15 | 704 | 0.9+  | 0.2−  |
| 2000 04 30 | 699 | 0.3−  | 0.3+  | 2002 11 07 | 645 | 0.1+ | 0.1+ | 2007 12 16 | 691 | 0.2+  | 0.0   |
| 2000 05 02 | 704 | 0.7+  | 0.0   | 2004 01 02 | 704 | 0.2+ | 0.2+ | 2007 12 16 | 691 | 0.2+  | 0.1−  |
| 2000 05 02 | 704 | 0.4+  | 0.6+  | 2004 01 02 | 704 | 0.2− | 0.3+ | 2007 12 16 | 691 | 0.2+  | 0.3−  |
| 2000 05 02 | 704 | 1.0+  | 0.6+  | 2004 01 02 | 704 | 0.0  | 0.2+ |            |     |       |       |

(171651)\* 2000 GK<sub>24</sub> = 2002 TB<sub>153</sub>

Discovered 2000 Apr. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 37464)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.21865677 | <i>ω</i> | 142.12689 | −0.84270595 | −0.53826833 |          |   |
| <i>a</i> | 2.7287313  | <i>Ω</i> | 5.34021   | +0.46170681 | −0.73275326 |          |   |
| <i>e</i> | 0.1168826  | <i>i</i> | 6.58427   | +0.27689981 | −0.41634104 |          |   |
| <i>P</i> | 4.51       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 29 | 691 | 0.5+ | 0.1− | 2003 12 27 | 704 | 0.3−  | 0.1+  | 2004 02 17 | 691 | 0.1+  | 0.4−  |
| 2000 03 29 | 691 | 0.2− | 0.2− | 2003 12 27 | 704 | 1.0+  | 1.3+  | 2004 02 17 | 691 | 0.1+  | 0.4−  |
| 2000 03 29 | 691 | 0.3− | 0.1− | 2003 12 27 | 704 | 0.2+  | 0.5+  | 2007 11 02 | 691 | 0.1−  | 0.1−  |
| 2000 04 05 | 699 | 1.2− | 0.4+ | 2003 12 27 | 704 | 0.1+  | 0.0   | 2007 11 02 | 691 | 0.0   | 0.1+  |
| 2000 04 05 | 704 | 0.1+ | 0.3− | 2003 12 27 | 704 | 0.7−  | 0.9+  | 2007 11 02 | 691 | 0.0   | 0.1−  |
| 2000 04 05 | 699 | 0.5− | 0.4+ | 2003 12 29 | 704 | 1.5−  | 0.2−  | 2007 11 06 | 691 | 0.1−  | 0.3−  |
| 2000 04 05 | 704 | 0.1+ | 0.1+ | 2003 12 29 | 704 | 0.6−  | 0.6−  | 2007 11 06 | 691 | 0.0   | 0.0   |
| 2000 04 05 | 699 | 0.6− | 1.4+ | 2003 12 29 | 704 | 1.2−  | 0.6+  | 2007 11 06 | 691 | 0.6−  | 0.1−  |
| 2000 04 05 | 704 | 0.4+ | 0.2+ | 2003 12 29 | 704 | (1.6− | 1.1−) | 2007 11 07 | 704 | 0.4+  | 0.1+  |
| 2000 04 05 | 699 | 0.1− | 1.1+ | 2004 01 17 | 644 | 0.2+  | 0.3−  | 2007 11 07 | 704 | (1.6− | 0.0 ) |
| 2000 04 05 | 704 | 0.4+ | 0.5+ | 2004 01 17 | 644 | 0.6+  | 0.1+  | 2007 11 07 | 704 | 0.1+  | 1.3−  |
| 2000 04 05 | 704 | 0.3+ | 1.3+ | 2004 01 17 | 644 | 0.0   | 0.1−  | 2007 11 07 | 704 | (1.9+ | 1.4+) |
| 2000 04 06 | 699 | 0.2+ | 0.7+ | 2004 01 31 | 704 | 0.5−  | 0.9+  | 2007 11 07 | 704 | 0.1−  | 0.3−  |
| 2000 04 06 | 699 | 1.4+ | 0.4− | 2004 01 31 | 704 | 0.5−  | 0.5+  | 2007 11 13 | 703 | 0.4−  | 0.3−  |
| 2000 04 06 | 699 | 1.7+ | 0.0  | 2004 01 31 | 704 | 0.2+  | 0.2+  | 2007 11 13 | 703 | 0.9+  | 0.7+  |
| 2000 04 06 | 699 | 0.7+ | 0.1+ | 2004 01 31 | 704 | 0.7+  | 0.1−  | 2007 11 13 | 703 | 0.7+  | 0.9+  |
| 2000 04 07 | 704 | 0.5+ | 0.3+ | 2004 01 31 | 704 | 0.9+  | 0.7+  | 2007 11 13 | 703 | 0.9−  | 0.8+  |
| 2000 04 07 | 704 | 0.1+ | 0.1+ | 2004 02 13 | 699 | 0.6−  | 0.2−  | 2007 11 19 | 691 | 0.1−  | 0.3+  |
| 2000 04 07 | 704 | 0.2+ | 0.6+ | 2004 02 13 | 699 | 0.9+  | 0.7−  | 2007 11 19 | 691 | 0.2−  | 0.1+  |
| 2000 04 07 | 704 | 0.1− | 1.7+ | 2004 02 13 | 699 | 0.1−  | 0.6−  | 2007 11 19 | 691 | 0.1−  | 0.1−  |
| 2002 10 05 | 644 | 0.4− | 0.8+ | 2004 02 13 | 699 | 0.4−  | 0.6−  | 2007 11 20 | 704 | 0.6−  | 0.2−  |
| 2002 10 05 | 644 | 0.5− | 0.6+ | 2004 02 14 | 704 | (0.6+ | 1.7+) | 2007 11 20 | 704 | 0.9+  | 0.4+  |
| 2002 10 05 | 644 | 0.7− | 0.8+ | 2004 02 14 | 704 | 0.3+  | 0.3+  | 2007 11 20 | 704 | 0.7+  | 0.6+  |
| 2002 10 06 | 644 | 0.3− | 1.0+ | 2004 02 14 | 704 | 0.3+  | 0.1+  | 2007 12 16 | 704 | 0.1−  | 0.8+  |
| 2002 10 06 | 644 | 0.4− | 0.4+ | 2004 02 14 | 704 | 0.1−  | 0.4−  | 2007 12 16 | 704 | 0.9+  | 0.8+  |
| 2002 10 06 | 644 | 0.2− | 0.6+ | 2004 02 17 | 691 | 0.1−  | 0.4−  | 2007 12 16 | 704 | 0.7+  | 0.6+  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.91813  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22350761 | $\omega$ | 297.15557 | -0.73561807   | -0.67731826 |
| <i>a</i> | 2.6891055  | $\Omega$ | 200.21545 | +0.63156927   | -0.68027691 |
| <i>e</i> | 0.1527262  | <i>i</i> | 1.70754   | +0.24492101   | -0.28011301 |
| <i>P</i> | 4.41       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 15 | 691 | 0.2+  | 0.3-  | 2000 04 13 | 691 | 0.9-  | 0.2+  | 2004 02 11 | 699 | 0.2+  | 0.4+  |
| 1998 11 15 | 691 | 0.2+  | 0.1-  | 2000 04 13 | 691 | 0.9-  | 0.1-  | 2004 02 11 | 699 | 0.4-  | 0.1-  |
| 1998 11 15 | 691 | 0.3+  | 0.4-  | 2000 04 13 | 691 | 0.7-  | 0.1-  | 2004 02 11 | 644 | 0.3+  | 0.5+  |
| 1998 11 21 | 691 | 0.8+  | 0.4-  | 2000 04 29 | 704 | 0.3+  | 0.3+  | 2004 02 11 | 691 | 0.6+  | 0.0   |
| 1998 11 21 | 691 | 0.2+  | 0.0   | 2000 04 29 | 704 | 0.6+  | 0.1-  | 2004 02 14 | 333 | 0.3+  | 0.3-  |
| 1998 11 21 | 691 | 0.4+  | 0.7-  | 2000 04 29 | 704 | 0.9+  | 0.9+  | 2004 02 14 | 333 | 0.2+  | 0.3-  |
| 1998 11 27 | 691 | 0.9-  | 0.4-  | 2000 04 29 | 704 | 0.7+  | 0.0   | 2004 02 14 | 333 | 0.0   | 0.2-  |
| 1998 11 27 | 691 | 0.8-  | 0.1-  | 2000 04 29 | 704 | 0.5+  | 0.1+  | 2004 02 17 | 704 | 0.5+  | 1.1+  |
| 1998 11 27 | 691 | 1.0-  | 0.2-  | 2002 11 06 | 291 | 0.1+  | 0.7+  | 2004 02 17 | 704 | 0.1+  | 1.1+  |
| 1998 12 07 | 910 | 1.3+  | 0.8+  | 2002 11 06 | 291 | 0.2-  | 0.4+  | 2004 02 17 | 704 | 0.1-  | 0.8+  |
| 1998 12 07 | 910 | 1.5+  | 0.8+  | 2002 11 06 | 291 | 0.1+  | 0.4+  | 2004 02 17 | 704 | 0.1+  | 0.1+  |
| 1998 12 07 | 910 | 1.0+  | 1.4+  | 2004 01 26 | 699 | 0.2-  | 0.3+  | 2004 02 17 | 704 | 0.5+  | 1.1+  |
| 2000 04 05 | 704 | 0.3+  | 0.0   | 2004 01 26 | 699 | 0.2-  | 0.5-  | 2004 02 29 | 691 | 0.2+  | 0.2+  |
| 2000 04 05 | 704 | 1.1+  | 0.4+  | 2004 01 26 | 699 | 0.1-  | 0.4-  | 2004 02 29 | 691 | 0.1+  | 0.2-  |
| 2000 04 05 | 704 | 0.4+  | 0.0   | 2004 01 26 | 699 | (2.3+ | 0.5+) | 2004 02 29 | 691 | 0.1+  | 0.1-  |
| 2000 04 05 | 704 | 0.2+  | 0.2+  | 2004 01 29 | 704 | 0.5+  | 0.3-  | 2004 03 10 | 644 | 0.3+  | 0.2-  |
| 2000 04 06 | 704 | 0.4+  | 0.0   | 2004 01 29 | 704 | 0.1-  | 0.1-  | 2004 03 10 | 644 | 0.7+  | 0.3+  |
| 2000 04 06 | 699 | 1.4-  | 1.4+  | 2004 01 29 | 704 | 0.0   | 0.0   | 2004 03 10 | 644 | 0.3+  | 0.1+  |
| 2000 04 06 | 704 | 0.8+  | 0.6+  | 2004 01 29 | 704 | 0.9+  | 0.0   | 2006 08 27 | 691 | 0.1-  | 0.8+  |
| 2000 04 06 | 704 | 0.0   | 1.7-  | 2004 01 29 | 704 | 0.4+  | 0.2+  | 2006 08 27 | 691 | 0.2+  | 0.7+  |
| 2000 04 06 | 699 | (3.4+ | 0.7+) | 2004 02 03 | 608 | 0.2-  | 0.8+  | 2006 08 27 | 691 | 0.1-  | 0.7+  |
| 2000 04 06 | 704 | 0.5-  | 0.1-  | 2004 02 03 | 608 | 0.4+  | 0.7+  | 2007 11 02 | 691 | 0.2-  | 0.2-  |
| 2000 04 06 | 704 | 0.2+  | 0.3+  | 2004 02 03 | 608 | 0.3+  | 0.0   | 2007 11 02 | 691 | 0.0   | 0.0   |
| 2000 04 06 | 704 | 0.4+  | 0.6-  | 2004 02 11 | 703 | 0.2+  | 0.3-  | 2007 11 02 | 691 | 0.1-  | 0.0   |
| 2000 04 06 | 699 | 0.3+  | 0.4-  | 2004 02 11 | 699 | 0.3-  | 0.2+  | 2007 12 05 | 704 | (1.9- | 1.1+) |
| 2000 04 06 | 704 | 0.2-  | 0.5+  | 2004 02 11 | 703 | 0.3+  | 0.5+  | 2007 12 05 | 704 | 1.5-  | 1.0+  |
| 2000 04 06 | 704 | 0.2+  | 0.1+  | 2004 02 11 | 644 | 0.3+  | 0.0   | 2007 12 05 | 704 | 0.4-  | 0.9+  |
| 2000 04 06 | 699 | 0.5-  | 0.4+  | 2004 02 11 | 691 | 0.1+  | 0.1+  | 2007 12 05 | 704 | 1.3-  | 0.9+  |
| 2000 04 06 | 704 | 0.3+  | 0.4-  | 2004 02 11 | 703 | 0.1-  | 0.3+  | 2007 12 05 | 704 | 1.2-  | 1.1+  |
| 2000 04 07 | 704 | 0.2-  | 0.1+  | 2004 02 11 | 699 | 0.4+  | 0.2+  | 2007 12 16 | 691 | 0.3-  | 0.8-  |
| 2000 04 07 | 704 | 0.0   | 0.9+  | 2004 02 11 | 703 | 0.0   | 0.6+  | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2000 04 07 | 704 | 0.7+  | 0.1-  | 2004 02 11 | 644 | 0.2+  | 0.2+  | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2000 04 07 | 704 | 0.3-  | 0.9-  | 2004 02 11 | 691 | 0.3+  | 0.0   |            |     |       |       |

**(171653)\* 2000 GV<sub>60</sub> = 2004 BX<sub>30</sub>**

Discovered 2000 Apr. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 60654)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 314.36355  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22121832 | $\omega$ | 59.84736 | -0.54704089   | -0.83617069 |
| <i>a</i> | 2.7076259  | $\Omega$ | 63.36872 | +0.75200588   | -0.51163927 |
| <i>e</i> | 0.1105556  | <i>i</i> | 2.53633  | +0.36774096   | -0.19759514 |
| <i>P</i> | 4.46       | <i>H</i> | 16.0     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 05 | 704 | 0.1- | 0.2+ | 2004 02 13 | 691 | 0.3+  | 0.1+  | 2007 11 18 | 691 | 1.0-  | 0.0   |
| 2000 04 05 | 704 | 0.4+ | 1.2- | 2004 02 13 | 691 | 0.2+  | 0.1+  | 2007 11 18 | 691 | 0.0   | 0.2+  |
| 2000 04 05 | 704 | 0.4+ | 1.4- | 2004 02 13 | 691 | 0.0   | 0.1-  | 2007 12 05 | 704 | 1.1-  | 1.3-  |
| 2000 04 06 | 704 | 1.5+ | 1.7+ | 2004 02 16 | 704 | 0.3+  | 1.0+  | 2007 12 05 | 704 | 1.5-  | 1.0-  |
| 2000 04 06 | 704 | 0.6+ | 0.2- | 2004 02 16 | 704 | 0.1-  | 1.4+  | 2007 12 05 | 704 | 1.1-  | 0.9-  |
| 2000 04 06 | 704 | 0.2+ | 1.1+ | 2004 02 16 | 704 | (0.3- | 1.6+) | 2007 12 05 | 704 | (1.5- | 0.9-) |
| 2000 04 06 | 704 | 1.4- | 0.6+ | 2004 02 16 | 704 | 0.3-  | 1.4+  | 2007 12 06 | G96 | 0.4+  | 0.2-  |
| 2000 04 29 | 704 | 0.9+ | 0.2+ | 2004 02 23 | 704 | 0.3+  | 0.6-  | 2007 12 06 | G96 | 0.3+  | 0.4-  |
| 2000 04 29 | 704 | 0.1- | 1.2+ | 2004 02 23 | 704 | 0.1+  | 0.2-  | 2007 12 06 | G96 | 0.1+  | 0.3-  |
| 2000 04 29 | 704 | 0.5+ | 0.5+ | 2004 02 23 | 704 | 0.0   | 0.5+  | 2007 12 06 | G96 | 0.5+  | 0.1-  |
| 2000 04 29 | 704 | 0.3- | 1.0+ | 2004 02 23 | 704 | 0.6+  | 0.6+  | 2007 12 14 | 704 | 0.6+  | 0.1+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 29 | 704 | (0.0  | 2.0+) | 2004 02 23 | 704 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 1.4+ | 0.2+ |
| 2002 10 12 | 704 | 0.2-  | 0.7+  | 2005 06 16 | G96 | 0.7- | 0.4+ | 2007 12 14 | 704 | 0.9+ | 0.0  |
| 2002 10 12 | 704 | 0.5-  | 0.7-  | 2005 06 16 | G96 | 0.1- | 0.5+ | 2007 12 14 | 704 | 2.0+ | 0.4+ |
| 2002 10 12 | 704 | 0.5-  | 1.1-  | 2005 06 16 | G96 | 0.6- | 0.5+ | 2007 12 14 | 704 | 1.0+ | 1.7+ |
| 2004 01 18 | 644 | 0.1+  | 0.2-  | 2005 06 16 | G96 | 0.6- | 0.1+ | 2007 12 15 | 691 | 0.0  | 0.0  |
| 2004 01 18 | 644 | 0.0   | 0.0   | 2006 08 28 | 691 | 0.1- | 0.7+ | 2007 12 15 | 691 | 0.1+ | 0.2- |
| 2004 01 18 | 644 | 0.0   | 0.1+  | 2006 08 28 | 691 | 0.1- | 0.7+ | 2007 12 15 | 691 | 0.0  | 0.0  |
| 2004 01 22 | 704 | 1.0-  | 0.1-  | 2006 08 28 | 691 | 0.0  | 0.9+ | 2007 12 16 | 291 | 0.3- | 0.0  |
| 2004 01 22 | 704 | (0.1- | 1.7+) | 2007 11 14 | 691 | 0.1- | 0.2+ | 2007 12 16 | 291 | 0.2- | 0.0  |
| 2004 01 22 | 704 | 0.2-  | 0.9+  | 2007 11 14 | 691 | 0.7+ | 1.1+ | 2007 12 16 | 291 | 0.1- | 0.1- |
| 2004 01 22 | 704 | 0.3-  | 0.7-  | 2007 11 14 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2004 01 22 | 704 | 0.3+  | 0.1+  | 2007 11 18 | 691 | 0.2- | 0.1+ |            |     |      |      |

**(171654)\* 2000 GO<sub>132</sub> = 2004 GP<sub>10</sub>**

Discovered 2000 Apr. 11 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 60664)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 293.61256  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21525061 | $\omega$ | 98.75794 | -0.67383045   | -0.73754528 |
| <i>a</i> | 2.7574425  | $\Omega$ | 33.74238 | +0.64252261   | -0.61462124 |
| <i>e</i> | 0.0499115  | <i>i</i> | 4.59423  | +0.36485234   | -0.27976364 |
| <i>P</i> | 4.58       | <i>H</i> | 16.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 04 05 | 704 | 0.3- | 1.0+ | 2002 11 25 | 291 | 0.1+ | 0.7+ | 2005 02 10 | 809 | 0.1+  | 0.0   |
| 2000 04 05 | 704 | 0.8- | 0.4+ | 2004 01 16 | 644 | 0.5+ | 0.1+ | 2005 02 10 | 809 | 0.3+  | 0.3+  |
| 2000 04 05 | 704 | 0.3+ | 0.8+ | 2004 01 16 | 644 | 0.2+ | 0.1+ | 2007 11 06 | 691 | 0.0   | 0.1+  |
| 2000 04 05 | 704 | 0.2+ | 1.1+ | 2004 01 16 | 644 | 0.1+ | 0.0  | 2007 11 06 | 691 | 0.1-  | 0.1+  |
| 2000 04 05 | 704 | 0.5- | 1.1+ | 2004 02 17 | 644 | 0.1- | 0.4+ | 2007 11 06 | 691 | 0.0   | 0.0   |
| 2000 04 11 | 691 | 0.4+ | 0.2+ | 2004 02 17 | 644 | 0.1+ | 0.7+ | 2007 11 13 | 703 | 0.0   | 0.6+  |
| 2000 04 11 | 691 | 0.3+ | 0.1- | 2004 02 17 | 644 | 0.0  | 0.3+ | 2007 11 13 | 703 | 0.0   | 0.0   |
| 2000 04 11 | 691 | 0.5+ | 0.1+ | 2004 03 18 | 645 | 0.1- | 0.2- | 2007 11 13 | 703 | 0.0   | 0.1+  |
| 2000 04 12 | 691 | 0.2- | 0.1- | 2004 03 18 | 645 | 0.1- | 0.2- | 2007 11 13 | 703 | 0.6-  | 0.1+  |
| 2000 04 12 | 691 | 0.5- | 0.4- | 2004 04 13 | 291 | 0.4+ | 0.2+ | 2007 11 17 | 691 | 0.5-  | 0.2-  |
| 2000 04 12 | 691 | 0.3- | 0.4+ | 2004 04 13 | 291 | 0.6+ | 0.3+ | 2007 11 17 | 691 | 0.1-  | 0.1+  |
| 2000 04 29 | 704 | 0.0  | 1.1- | 2004 04 13 | 291 | 0.7+ | 0.4+ | 2007 11 17 | 691 | 0.6-  | 0.1-  |
| 2000 04 29 | 704 | 0.6+ | 0.1- | 2004 04 14 | 291 | 0.1- | 0.3+ | 2007 12 13 | 704 | 0.9+  | 0.1+  |
| 2000 04 29 | 704 | 0.7- | 0.5- | 2004 04 14 | 291 | 0.3- | 0.5+ | 2007 12 13 | 704 | 0.5+  | 0.6+  |
| 2000 04 29 | 704 | 0.0  | 0.3- | 2004 04 14 | 291 | 0.2- | 0.7+ | 2007 12 13 | 704 | (1.5+ | 0.3+) |
| 2000 04 29 | 704 | 1.4+ | 0.5+ | 2004 04 16 | 645 | 0.1- | 0.1- | 2007 12 13 | 704 | 0.8-  | 0.2-  |
| 2002 10 10 | 644 | 0.6- | 0.2+ | 2004 04 16 | 645 | 0.0  | 0.1- | 2007 12 13 | 704 | 0.8+  | 0.3-  |
| 2002 10 10 | 644 | 0.4- | 0.4+ | 2004 04 25 | 291 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.5+  | 0.5+  |
| 2002 10 10 | 644 | 0.3- | 0.5+ | 2004 04 25 | 291 | 0.3+ | 0.1- | 2007 12 15 | 704 | 0.2-  | 0.0   |
| 2002 11 25 | 291 | 0.0  | 0.0  | 2004 04 25 | 291 | 0.5+ | 0.1- | 2007 12 15 | 704 | 0.9+  | 0.1+  |
| 2002 11 25 | 291 | 0.0  | 0.3- | 2005 02 10 | 809 | 0.3+ | 0.3+ | 2007 12 15 | 704 | 1.9+  | 0.1-  |

**(171655)\* 2000 GW<sub>140</sub>**

Discovered 2000 Apr. 4 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 271.37349  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22655183 | $\omega$ | 114.14082 | -0.91274873   | +0.32797265 |
| <i>a</i> | 2.6649619  | $\Omega$ | 85.75580  | -0.40277207   | -0.82214209 |
| <i>e</i> | 0.2029024  | <i>i</i> | 14.13659  | +0.06829649   | -0.46531315 |
| <i>P</i> | 4.35       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 04 | 699 | 0.4- | 0.6+ | 2004 01 30 | 699 | 1.2- | 0.4+ | 2007 10 19 | G96 | 0.0  | 0.0  |
| 2000 04 04 | 699 | 1.2- | 0.2+ | 2004 01 31 | 704 | 0.4- | 0.3- | 2007 10 19 | G96 | 0.0  | 0.3- |
| 2000 04 04 | 699 | 0.1- | 0.2+ | 2004 01 31 | 704 | 0.5- | 0.4- | 2007 10 19 | G96 | 0.4- | 0.0  |
| 2000 04 04 | 699 | 0.1- | 0.4- | 2004 01 31 | 704 | 0.1+ | 1.0+ | 2007 11 11 | G96 | 0.2- | 0.4- |
| 2000 04 09 | 699 | 0.4+ | 0.9+ | 2004 01 31 | 704 | 0.1- | 0.7+ | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2000 04 09 | 699 | 1.2+ | 0.5- | 2004 01 31 | 704 | 0.2+ | 1.0+ | 2007 11 11 | G96 | 0.2+ | 0.5- |
| 2000 04 09 | 699 | 0.2+ | 1.6+ | 2004 02 11 | 644 | 0.4+ | 0.0  | 2007 11 11 | G96 | 0.4- | 0.1- |
| 2000 04 09 | 699 | 1.5+ | 0.1+ | 2004 02 11 | 644 | 0.5- | 0.8+ | 2007 12 05 | 691 | 0.3- | 0.0  |

2007 DEC. 24

M.P.O. 129117

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 28 | 699 | 0.1− | 0.3+ | 2004 02 11 | 644 | 0.3+  | 0.1+  | 2007 12 05 | 691 | 0.5−  | 0.1−  |
| 2000 04 28 | 699 | 0.3+ | 0.6+ | 2004 02 14 | 704 | 1.2+  | 0.4−  | 2007 12 05 | 691 | 0.4−  | 0.0   |
| 2000 04 28 | 699 | 0.8− | 0.2+ | 2004 02 14 | 704 | (1.6+ | 0.1−) | 2007 12 10 | 704 | 0.5+  | 0.5+  |
| 2000 04 28 | 699 | 0.2+ | 0.7+ | 2004 02 14 | 704 | 1.2+  | 0.3−  | 2007 12 10 | 704 | 0.5+  | 0.5+  |
| 2000 05 04 | 704 | 0.6+ | 0.2+ | 2004 02 14 | 704 | (2.1+ | 0.3+) | 2007 12 10 | 704 | 0.7−  | 1.0−  |
| 2000 05 04 | 704 | 1.1− | 0.6+ | 2004 02 14 | 704 | (1.7+ | 0.3−) | 2007 12 10 | 704 | 0.1+  | 0.1−  |
| 2000 05 04 | 704 | 2.0+ | 0.2− | 2004 03 18 | 645 | 0.0   | 0.1−  | 2007 12 13 | 704 | 1.0+  | 0.8+  |
| 2000 05 04 | 704 | 0.6− | 0.2+ | 2004 03 18 | 645 | 0.0   | 0.1−  | 2007 12 13 | 704 | 1.1+  | 0.4+  |
| 2000 06 04 | 608 | 0.5− | 1.3− | 2004 03 24 | 703 | 0.3+  | 0.6−  | 2007 12 13 | 704 | 1.1+  | 1.4+  |
| 2000 06 04 | 608 | 0.2+ | 0.8− | 2004 03 24 | 703 | 0.4+  | 0.2+  | 2007 12 13 | 704 | 0.1+  | 0.5+  |
| 2000 06 04 | 608 | 0.2− | 1.2− | 2004 03 24 | 703 | 0.3−  | 0.5−  | 2007 12 13 | 704 | (2.2+ | 0.3+) |
| 2004 01 19 | 691 | 0.0  | 0.3− | 2004 03 24 | 703 | 0.4−  | 0.3−  | 2007 12 15 | 704 | 0.7+  | 0.3−  |
| 2004 01 19 | 691 | 0.0  | 0.3− | 2005 07 10 | E12 | 0.5+  | 0.9−  | 2007 12 15 | 704 | 0.1−  | 1.3+  |
| 2004 01 19 | 691 | 0.0  | 0.2− | 2005 07 10 | E12 | 0.8−  | 0.8+  | 2007 12 15 | 704 | 0.4+  | 0.7+  |
| 2004 01 30 | 699 | 1.3− | 0.7+ | 2005 07 10 | E12 | 0.2−  | 0.2+  | 2007 12 15 | 704 | 0.2−  | 0.2+  |
| 2004 01 30 | 699 | 0.3+ | 0.7+ | 2005 07 10 | E12 | 0.1+  | 0.6+  | 2007 12 15 | 704 | 0.7+  | 0.3−  |
| 2004 01 30 | 699 | 0.3+ | 0.1− | 2007 10 19 | G96 | 0.1−  | 0.3−  |            |     |       |       |

(171656)\* 2000 GW<sub>167</sub> = 2001 SL<sub>188</sub>

Discovered 2000 Apr. 4 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. M. E. Sansaturio (*MPO* 19642)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 224.68112  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22253448 | <i>ω</i> 106.02111 | −0.48478233   | +0.87390397 |
| <i>a</i> | 2.6969393  | <i>Ω</i> 134.92380 | −0.82052893   | −0.44026065 |
| <i>e</i> | 0.1452633  | <i>i</i> 2.89403   | −0.30285042   | −0.20606410 |
| <i>P</i> | 4.43       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 04 | 699 | 0.0   | 0.3−  | 2004 02 12 | 291 | 0.2+ | 0.4+ | 2006 10 28 | 691 | 0.3+ | 0.4+ |
| 2000 04 04 | 699 | 0.1−  | 0.2+  | 2004 02 29 | 691 | 0.2+ | 0.2+ | 2006 10 28 | 691 | 0.1+ | 0.2+ |
| 2000 04 04 | 699 | 0.6−  | 1.4+  | 2004 02 29 | 691 | 0.2+ | 0.2+ | 2006 11 01 | G96 | 0.4+ | 0.2− |
| 2000 04 04 | 699 | (0.7+ | 2.2+) | 2004 02 29 | 691 | 0.4+ | 0.1+ | 2006 11 01 | G96 | 0.1+ | 0.0  |
| 2000 04 07 | 704 | 0.3+  | 1.0+  | 2005 06 12 | 691 | 0.2+ | 0.4+ | 2006 11 01 | G96 | 0.3+ | 0.3− |
| 2000 04 07 | 704 | 1.1+  | 0.4+  | 2005 06 12 | 691 | 0.0  | 0.0  | 2006 11 01 | G96 | 0.4+ | 0.1− |
| 2000 04 07 | 704 | 0.1+  | 0.5+  | 2005 06 12 | 691 | 0.1+ | 0.2+ | 2006 11 11 | 691 | 0.3+ | 0.0  |
| 2000 04 07 | 704 | 0.2+  | 0.9+  | 2005 06 15 | G96 | 0.2− | 0.1− | 2006 11 11 | 691 | 0.1− | 0.2+ |
| 2000 04 07 | 704 | (2.3− | 0.3+) | 2005 06 15 | G96 | 0.0  | 0.1− | 2006 11 11 | 691 | 0.2− | 0.2− |
| 2000 04 08 | 704 | 0.2−  | 0.7+  | 2005 06 15 | G96 | 0.2+ | 0.1− | 2006 11 16 | G96 | 0.3+ | 1.1− |
| 2000 04 08 | 704 | 1.1+  | 0.3+  | 2005 06 15 | G96 | 0.2− | 0.2− | 2006 11 16 | G96 | 0.4− | 0.4− |
| 2000 04 08 | 704 | 0.6−  | 0.7+  | 2005 06 16 | 691 | 0.1+ | 0.2+ | 2006 11 16 | G96 | 0.7+ | 0.1− |
| 2000 04 08 | 704 | 0.5+  | 1.6+  | 2005 06 16 | 691 | 0.7− | 0.7− | 2006 11 16 | G96 | 0.5− | 0.2− |
| 2001 09 19 | 704 | 0.2−  | 0.1+  | 2005 06 16 | 691 | 0.4+ | 0.1− | 2007 12 04 | G96 | 0.2− | 0.1+ |
| 2001 09 19 | 291 | 1.3−  | 1.3+  | 2006 10 02 | G96 | 0.0  | 0.3− | 2007 12 04 | G96 | 0.4+ | 0.5− |
| 2001 09 19 | 704 | 0.8+  | 0.4+  | 2006 10 02 | G96 | 0.4+ | 0.1− | 2007 12 04 | G96 | 0.7+ | 0.3− |
| 2001 09 19 | 704 | 0.1−  | 0.2−  | 2006 10 02 | G96 | 0.2+ | 0.1− | 2007 12 04 | 691 | 0.4− | 0.2+ |
| 2001 09 19 | 291 | (1.7− | 1.6+) | 2006 10 02 | G96 | 0.1+ | 0.4− | 2007 12 04 | G96 | 0.0  | 0.7− |
| 2001 09 19 | 704 | 0.0   | 0.7−  | 2006 10 19 | 691 | 0.1− | 0.5+ | 2007 12 04 | G96 | 0.5+ | 0.5+ |
| 2001 09 19 | 291 | 0.2+  | 0.8+  | 2006 10 19 | 691 | 0.1− | 0.1+ | 2007 12 04 | 691 | 0.4− | 0.2− |
| 2001 09 21 | 704 | 0.4−  | 0.7+  | 2006 10 19 | 691 | 0.2− | 0.2+ | 2007 12 15 | 691 | 0.7− | 0.6− |
| 2001 09 21 | 704 | (0.8+ | 1.5+) | 2006 10 22 | 691 | 0.0  | 0.2+ | 2007 12 15 | 691 | 0.2+ | 0.0  |
| 2001 09 21 | 704 | 0.0   | 0.9+  | 2006 10 22 | 691 | 0.1− | 0.1+ | 2007 12 15 | 691 | 0.1− | 0.3+ |
| 2004 02 12 | 291 | 0.3+  | 0.4+  | 2006 10 22 | 691 | 0.3− | 0.4+ |            |     |      |      |
| 2004 02 12 | 291 | 0.2+  | 0.3+  | 2006 10 28 | 691 | 0.0  | 0.2+ |            |     |      |      |

(171657)\* 2000 GH<sub>176</sub> = 2002 TU<sub>322</sub>

Discovered 2000 Apr. 2 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 49798)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 337.92637  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23542364 | <i>ω</i> 118.20498 | −0.60521010   | −0.79591623 |
| <i>a</i> | 2.5975824  | <i>Ω</i> 9.08693   | +0.69184257   | −0.53546385 |
| <i>e</i> | 0.2474611  | <i>i</i> 5.60684   | +0.39379511   | −0.28248154 |
| <i>P</i> | 4.19       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 02 | 699 | 1.0+  | 0.5+  | 2004 02 23 | 704 | 0.0   | 0.4+  | 2004 03 22 | 704 | 0.3+  | 0.9+  |
| 2000 04 02 | 699 | 0.9+  | 0.4+  | 2004 02 23 | 704 | 0.2+  | 0.3+  | 2004 03 22 | 704 | 0.0   | 1.3+  |
| 2000 04 02 | 699 | 0.9+  | 0.1+  | 2004 02 25 | 704 | 0.2+  | 0.7+  | 2004 03 22 | 704 | 0.0   | 1.2+  |
| 2000 04 02 | 699 | 0.6+  | 1.7+  | 2004 02 25 | 704 | 0.6+  | 0.5+  | 2004 03 22 | 704 | (0.0  | 1.6+) |
| 2000 04 05 | 704 | 0.0   | 0.3+  | 2004 02 25 | 704 | 0.3+  | 0.4+  | 2004 03 28 | 704 | 0.9+  | 0.1+  |
| 2000 04 05 | 704 | 0.4+  | 0.3+  | 2004 02 25 | 704 | 0.1+  | 0.7+  | 2004 03 28 | 704 | 0.4+  | 0.1−  |
| 2000 04 05 | 704 | 0.3+  | 0.5+  | 2004 02 25 | 704 | 0.2−  | 0.6+  | 2004 03 28 | 704 | 0.6−  | 0.2+  |
| 2000 04 05 | 704 | 0.1−  | 0.3+  | 2004 02 26 | 704 | 0.4+  | 0.2+  | 2004 03 28 | 704 | 0.1+  | 0.3+  |
| 2000 04 05 | 704 | 0.2+  | 0.7+  | 2004 02 26 | 704 | 0.5+  | 0.2+  | 2004 03 28 | 704 | 0.3+  | 0.0   |
| 2000 04 13 | 608 | 0.2−  | 0.1−  | 2004 02 26 | 704 | 0.5+  | 0.4+  | 2004 04 12 | 691 | 0.2−  | 0.3−  |
| 2000 04 13 | 608 | 0.6−  | 0.5+  | 2004 02 26 | 704 | 0.6+  | 0.4+  | 2004 04 12 | 691 | 0.1−  | 0.1−  |
| 2000 04 13 | 608 | 0.4−  | 0.4−  | 2004 02 26 | 704 | 0.2+  | 0.3+  | 2004 04 12 | 691 | 0.2−  | 0.1−  |
| 2002 10 05 | 645 | 0.1−  | 0.3+  | 2004 02 27 | 704 | 0.8+  | 0.6+  | 2004 04 12 | 703 | 0.2+  | 0.4+  |
| 2002 10 05 | 645 | 0.1−  | 0.3+  | 2004 02 27 | 704 | 0.5+  | 0.2−  | 2004 04 12 | 703 | 0.5+  | 0.8+  |
| 2002 10 11 | 645 | 0.2−  | 0.2+  | 2004 02 27 | 704 | 0.5+  | 0.3+  | 2004 04 12 | 703 | 0.6−  | 0.7+  |
| 2002 10 11 | 645 | 0.2−  | 0.2+  | 2004 02 27 | 704 | 0.5+  | 0.6+  | 2004 04 12 | 703 | 1.0−  | 0.9−  |
| 2003 12 22 | 704 | 1.1−  | 0.0   | 2004 02 27 | 704 | 0.5+  | 0.1+  | 2004 04 14 | 699 | (1.7+ | 0.5−) |
| 2003 12 22 | 704 | 0.7−  | 0.5−  | 2004 02 29 | 691 | 0.2−  | 0.0   | 2004 04 14 | 699 | 0.7−  | 0.7−  |
| 2003 12 22 | 704 | 0.5−  | 0.2+  | 2004 02 29 | 691 | 0.3−  | 0.1+  | 2004 04 14 | 699 | 0.5−  | 0.2+  |
| 2003 12 22 | 704 | 0.4−  | 0.5+  | 2004 02 29 | 691 | 0.2−  | 0.1+  | 2004 04 14 | 699 | 0.6−  | 0.9−  |
| 2003 12 22 | 704 | 0.2−  | 0.5−  | 2004 03 10 | 608 | (0.2− | 2.5+) | 2004 04 24 | 691 | 0.2+  | 0.2+  |
| 2003 12 28 | 704 | (1.6+ | 0.2−) | 2004 03 10 | 608 | (0.2− | 1.8+) | 2004 04 24 | 691 | 0.1+  | 0.2+  |
| 2003 12 28 | 704 | 0.7+  | 0.5−  | 2004 03 10 | 608 | 0.0   | 1.4+  | 2004 04 24 | 691 | 0.1+  | 0.2+  |
| 2003 12 28 | 704 | 0.6+  | 0.2−  | 2004 03 11 | 644 | 0.0   | 0.1+  | 2006 10 02 | G96 | 0.8−  | 0.2+  |
| 2003 12 28 | 704 | 0.8+  | 0.1−  | 2004 03 11 | 644 | 0.0   | 0.2+  | 2006 10 02 | G96 | 0.1−  | 0.1−  |
| 2003 12 28 | 704 | 0.3−  | 0.3−  | 2004 03 11 | 644 | 0.1+  | 0.1+  | 2006 10 02 | G96 | 0.0   | 0.0   |
| 2004 02 15 | 703 | 0.1+  | 0.5−  | 2004 03 15 | 704 | 0.3+  | 0.1+  | 2006 10 02 | G96 | 0.5−  | 0.1+  |
| 2004 02 15 | 703 | 0.2−  | 0.1−  | 2004 03 15 | 704 | 0.4+  | 0.1−  | 2006 10 20 | G96 | 0.3−  | 0.2+  |
| 2004 02 15 | 703 | 0.1+  | 0.3+  | 2004 03 15 | 704 | 0.0   | 0.3−  | 2006 10 20 | G96 | 0.0   | 0.4+  |
| 2004 02 15 | 703 | 0.9−  | 0.3−  | 2004 03 15 | 704 | 0.3+  | 0.1+  | 2006 10 20 | G96 | 0.3+  | 0.1+  |
| 2004 02 18 | 704 | 0.7+  | 0.0   | 2004 03 15 | 704 | 0.4+  | 0.2+  | 2006 10 20 | G96 | 0.1+  | 0.7+  |
| 2004 02 18 | 704 | 0.2+  | 0.6+  | 2004 03 19 | 704 | 0.3+  | 0.5+  | 2007 10 25 | G96 | 1.1−  | 0.3−  |
| 2004 02 18 | 704 | 0.2+  | 0.2+  | 2004 03 19 | 704 | 0.1+  | 0.1−  | 2007 10 25 | G96 | 0.3−  | 0.7+  |
| 2004 02 18 | 704 | 0.7+  | 0.1+  | 2004 03 19 | 704 | 0.0   | 0.2+  | 2007 10 25 | G96 | 0.0   | 0.1−  |
| 2004 02 18 | 704 | 0.2+  | 0.4+  | 2004 03 19 | 704 | 0.2−  | 0.2+  | 2007 10 25 | G96 | 0.6+  | 0.1+  |
| 2004 02 21 | 608 | 0.7+  | 0.1−  | 2004 03 19 | 704 | 0.0   | 0.0   | 2007 12 16 | 699 | 0.9+  | 0.5−  |
| 2004 02 21 | 608 | 1.0+  | 1.4−  | 2004 03 20 | 599 | 0.2−  | 0.1+  | 2007 12 16 | 699 | 0.2+  | 0.7−  |
| 2004 02 21 | 608 | 0.9+  | 0.7−  | 2004 03 20 | 599 | 0.1−  | 0.2+  | 2007 12 16 | 699 | 0.1+  | 0.7−  |
| 2004 02 23 | 704 | 0.0   | 0.2+  | 2004 03 20 | 599 | 0.2+  | 0.6−  | 2007 12 16 | 699 | 0.7−  | 0.8−  |
| 2004 02 23 | 704 | 0.1+  | 0.5+  | 2004 03 20 | 599 | 0.5+  | 0.1+  |            |     |       |       |
| 2004 02 23 | 704 | 0.0   | 0.3+  | 2004 03 22 | 704 | 0.4+  | 1.5+  |            |     |       |       |

(171658)\* 2000 HK<sub>84</sub>

Discovered 2000 Apr. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 288.63689  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23578956 | <i>ω</i> 98.97613 | −0.92190777   | −0.10822087 |
| <i>a</i> | 2.5948943  | <i>Ω</i> 75.47903 | −0.07977278   | −0.88658521 |
| <i>e</i> | 0.1875329  | <i>i</i> 22.59792 | +0.37910733   | −0.44972759 |
| <i>P</i> | 4.18       | <i>H</i> 14.8     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 10 | 699 | 1.0+ | 0.2+ | 2003 12 17 | 704 | 0.3+  | 0.1-  | 2007 11 18 | 704 | 0.2-  | 0.3-  |
| 2000 04 10 | 699 | 0.1- | 0.1+ | 2004 01 27 | 703 | 0.5-  | 0.0   | 2007 11 18 | 704 | (1.4+ | 2.0+) |
| 2000 04 10 | 699 | 0.6+ | 0.4+ | 2004 01 27 | 703 | 0.5-  | 0.4-  | 2007 11 18 | 704 | 0.5-  | 0.5-  |
| 2000 04 10 | 699 | 0.3+ | 0.1+ | 2004 01 27 | 703 | 0.2-  | 0.2-  | 2007 11 18 | 704 | (1.4+ | 2.4+) |
| 2000 04 30 | 704 | 0.3- | 0.4+ | 2004 01 27 | 703 | 0.5-  | 0.3+  | 2007 11 18 | 704 | 0.1+  | 0.4-  |
| 2000 04 30 | 704 | 0.5+ | 0.1- | 2004 01 31 | 699 | 0.5-  | 0.5-  | 2007 11 18 | 704 | 0.7+  | 1.3+  |
| 2000 04 30 | 704 | 0.2+ | 0.4+ | 2004 01 31 | 699 | 0.0   | 0.6-  | 2007 11 20 | 704 | 0.1+  | 0.2+  |
| 2000 04 30 | 704 | 0.2- | 0.1- | 2004 01 31 | 699 | 0.4+  | 0.6+  | 2007 11 20 | 704 | 0.2+  | 0.3+  |
| 2000 04 30 | 704 | 0.3+ | 0.1- | 2004 01 31 | 699 | 0.2-  | 0.2-  | 2007 11 20 | 704 | 0.1+  | 0.3-  |
| 2000 05 04 | 699 | 0.1- | 0.5+ | 2004 02 07 | 699 | 0.4+  | 0.2-  | 2007 11 20 | 704 | 0.1-  | 0.3+  |
| 2000 05 04 | 699 | 0.5- | 0.3- | 2004 02 07 | 699 | 0.1-  | 0.7-  | 2007 11 20 | 704 | 0.0   | 0.5+  |
| 2000 05 04 | 699 | 0.9- | 0.4+ | 2004 02 07 | 699 | 1.1-  | 0.2+  | 2007 12 02 | 704 | 0.0   | 0.2-  |
| 2000 05 04 | 699 | 0.2- | 0.5+ | 2004 02 07 | 699 | 0.7-  | 0.6-  | 2007 12 02 | 704 | (1.8+ | 0.4-) |
| 2002 10 08 | 644 | 0.7- | 0.7+ | 2004 02 10 | 704 | 0.8+  | 0.4-  | 2007 12 02 | 704 | 0.5+  | 0.6+  |
| 2002 10 08 | 644 | 0.8- | 0.9+ | 2004 02 10 | 704 | 0.2-  | 0.2-  | 2007 12 02 | 704 | 0.2+  | 0.2+  |
| 2002 10 08 | 644 | 0.9- | 0.8+ | 2004 02 10 | 704 | 0.3+  | 0.1+  | 2007 12 02 | 704 | 0.2-  | 0.1+  |
| 2003 11 23 | 699 | 0.6- | 1.0- | 2004 02 10 | 704 | 0.3-  | 0.1+  | 2007 12 16 | 704 | 0.6-  | 0.1-  |
| 2003 11 23 | 699 | 0.7- | 0.4- | 2004 02 10 | 704 | 0.0   | 0.1+  | 2007 12 16 | 704 | 0.1-  | 0.1+  |
| 2003 11 23 | 699 | 0.3+ | 0.3- | 2004 02 18 | 703 | 0.2+  | 0.6+  | 2007 12 16 | 704 | 0.1-  | 0.1+  |
| 2003 11 23 | 699 | 0.4- | 0.9- | 2004 02 18 | 703 | 0.7+  | 0.5+  | 2007 12 16 | 704 | 0.3-  | 0.2+  |
| 2003 12 03 | 704 | 0.6+ | 0.1+ | 2004 02 18 | 703 | (1.6+ | 0.8-) | 2007 12 16 | 704 | 0.5-  | 0.2-  |
| 2003 12 03 | 704 | 0.1+ | 0.0  | 2004 02 18 | 703 | 0.8+  | 1.1-  |            |     |       |       |
| 2003 12 03 | 704 | 1.0+ | 0.0  | 2004 05 09 | 704 | 0.6-  | 0.3+  |            |     |       |       |

(171659)\* 2000 HR<sub>94</sub> = 2001 RK<sub>14</sub>

Discovered 2000 Apr. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 19693)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17832952 | <i>ω</i> | 80.96145  | +0.64546179 | +0.72514476 |          |   |
| <i>a</i> | 3.1259874  | <i>Ω</i> | 232.06703 | -0.76378329 | +0.61124644 |          |   |
| <i>e</i> | 0.2166123  | <i>i</i> | 17.70637  | -0.00376374 | +0.31708496 |          |   |
| <i>P</i> | 5.53       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 29 | 704 | 1.2-  | 0.8-  | 2001 10 23 | 699 | 1.1+  | 0.3+  | 2007 10 31 | 691 | 0.3- | 0.1- |
| 2000 04 29 | 704 | 0.2-  | 0.7-  | 2001 10 23 | 699 | 1.0-  | 0.4-  | 2007 10 31 | 691 | 0.0  | 0.0  |
| 2000 04 29 | 704 | 0.1+  | 0.2+  | 2001 11 11 | 644 | 0.1-  | 0.1+  | 2007 11 03 | 699 | 0.5+ | 0.7- |
| 2000 04 29 | 704 | 0.2+  | 0.2+  | 2001 11 11 | 644 | 0.1+  | 0.0   | 2007 11 03 | 699 | 0.0  | 0.4+ |
| 2000 04 29 | 704 | 0.1+  | 0.3+  | 2001 11 11 | 644 | 0.4+  | 0.1-  | 2007 11 03 | 699 | 0.8+ | 0.0  |
| 2000 05 07 | 704 | 0.1-  | 0.5-  | 2001 12 11 | 704 | 0.1-  | 0.1+  | 2007 11 03 | 699 | 0.9- | 0.2+ |
| 2000 05 07 | 704 | 0.2+  | 0.2+  | 2001 12 11 | 704 | 0.6+  | 0.4-  | 2007 11 11 | G96 | 0.3+ | 0.1- |
| 2000 05 07 | 704 | 0.6-  | 0.7+  | 2001 12 11 | 704 | 0.6+  | 0.2-  | 2007 11 11 | G96 | 0.2+ | 0.1- |
| 2000 05 07 | 704 | 0.2+  | 0.3+  | 2001 12 11 | 704 | 0.0   | 0.9-  | 2007 11 11 | G96 | 0.0  | 0.4- |
| 2000 05 07 | 704 | 0.2-  | 0.0   | 2005 04 02 | 644 | 0.4+  | 0.1-  | 2007 11 11 | G96 | 0.3+ | 0.3- |
| 2000 05 10 | 704 | (1.6- | 2.5+) | 2005 04 02 | 644 | 0.1+  | 0.4+  | 2007 11 13 | 699 | 0.2+ | 0.1+ |
| 2000 05 10 | 704 | 0.9-  | 0.7+  | 2005 04 02 | 644 | 0.4+  | 0.3+  | 2007 11 13 | 699 | 0.0  | 0.2- |
| 2000 05 10 | 704 | 0.8-  | 0.1+  | 2006 08 29 | 704 | 0.4-  | 0.5+  | 2007 11 13 | 699 | 0.4- | 0.4+ |
| 2000 05 10 | 704 | 0.2+  | 1.1-  | 2006 08 29 | 704 | 0.5-  | 0.1+  | 2007 11 13 | 699 | 0.2+ | 0.1+ |
| 2000 05 28 | 704 | 0.2+  | 0.4+  | 2006 08 29 | 704 | 0.2+  | 0.4-  | 2007 11 14 | 691 | 0.2- | 0.1+ |
| 2000 05 28 | 704 | 0.4+  | 1.4+  | 2006 08 29 | 704 | 0.2+  | 0.6+  | 2007 11 14 | 691 | 0.3- | 0.2+ |
| 2000 05 28 | 704 | 0.4+  | 1.0+  | 2006 08 29 | 704 | 0.2+  | 0.2-  | 2007 11 14 | 691 | 0.2- | 0.3+ |
| 2000 05 28 | 704 | 0.9+  | 0.8+  | 2007 10 09 | D29 | 0.2+  | 0.1-  | 2007 11 18 | 691 | 0.4- | 0.2- |
| 2000 05 28 | 704 | 0.3+  | 1.8+  | 2007 10 09 | D29 | 0.5+  | 0.2-  | 2007 11 18 | 691 | 0.3- | 0.0  |
| 2001 09 10 | 704 | 0.3-  | 0.4-  | 2007 10 09 | D29 | 0.0   | 0.3-  | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2001 09 10 | 704 | 0.0   | 0.4-  | 2007 10 09 | D29 | 0.7+  | 0.1-  | 2007 11 18 | 704 | 1.1+ | 0.1+ |
| 2001 09 10 | 704 | 0.1-  | 0.4-  | 2007 10 11 | 691 | 0.2-  | 0.1-  | 2007 11 18 | 704 | 0.6+ | 0.3+ |
| 2001 09 10 | 704 | 0.6-  | 0.1-  | 2007 10 11 | 691 | 0.2-  | 0.1-  | 2007 11 18 | 704 | 0.6+ | 0.2- |
| 2001 09 10 | 704 | 1.1-  | 0.4-  | 2007 10 11 | 691 | 0.5-  | 0.2-  | 2007 11 18 | 704 | 0.0  | 0.8+ |
| 2001 09 11 | 704 | 0.2-  | 0.2-  | 2007 10 12 | 704 | 0.6+  | 0.7+  | 2007 11 18 | 704 | 0.2+ | 0.4+ |
| 2001 09 11 | 704 | 0.5-  | 0.1-  | 2007 10 12 | 704 | 0.0   | 0.3+  | 2007 11 18 | 704 | 1.2+ | 0.9+ |
| 2001 09 11 | 704 | 0.2-  | 0.1+  | 2007 10 12 | 704 | 0.4-  | 0.3+  | 2007 11 18 | 704 | 1.3+ | 0.2+ |
| 2001 09 11 | 704 | 0.4-  | 0.2-  | 2007 10 12 | 704 | 0.1+  | 0.6+  | 2007 11 18 | 704 | 0.7+ | 0.2+ |
| 2001 09 11 | 704 | 0.5-  | 0.3-  | 2007 10 12 | 704 | 0.3+  | 0.3+  | 2007 11 18 | 704 | 1.4+ | 0.2+ |
| 2001 09 12 | 704 | 0.2+  | 0.1-  | 2007 10 15 | 704 | (2.1+ | 1.3+) | 2007 11 18 | 704 | 0.5+ | 0.6+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 12 | 704 | 0.9+ | 0.9+ | 2007 10 15 | 704 | (1.6+ | 0.3+) | 2007 11 19 | A50 | 0.4- | 0.4+ |
| 2001 09 12 | 704 | 0.0  | 0.1+ | 2007 10 15 | 704 | 0.1+  | 1.1+  | 2007 11 19 | A50 | 0.8- | 0.1+ |
| 2001 09 12 | 704 | 0.8+ | 0.2+ | 2007 10 15 | 703 | 0.8+  | 0.4+  | 2007 11 19 | A50 | 0.3- | 0.1+ |
| 2001 09 12 | 704 | 0.0  | 0.2+ | 2007 10 15 | 703 | 1.3+  | 0.4+  | 2007 11 19 | A50 | 0.7- | 0.7- |
| 2001 09 12 | 704 | 0.3- | 0.6+ | 2007 10 15 | 703 | 0.2-  | 0.4-  | 2007 12 03 | 703 | 0.9+ | 0.3+ |
| 2001 09 12 | 704 | 0.2+ | 0.2- | 2007 10 15 | 703 | 1.0+  | 0.0   | 2007 12 03 | 703 | 0.5- | 0.1- |
| 2001 09 12 | 704 | 0.8+ | 0.5- | 2007 10 15 | 691 | 0.1+  | 0.1-  | 2007 12 03 | 703 | 0.6- | 0.4+ |
| 2001 09 12 | 704 | 0.1- | 0.1+ | 2007 10 15 | 691 | 0.1-  | 0.2-  | 2007 12 03 | 703 | 0.8- | 0.3+ |
| 2001 09 12 | 704 | 0.2- | 0.8+ | 2007 10 15 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.1- | 0.3+ |
| 2001 09 29 | 644 | 0.3- | 0.3+ | 2007 10 19 | 691 | 0.5+  | 0.3-  | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2001 09 29 | 644 | 0.2- | 0.3+ | 2007 10 19 | 691 | 0.0   | 0.2-  | 2007 12 05 | 704 | 0.6+ | 0.2+ |
| 2001 09 29 | 644 | 0.3- | 0.2+ | 2007 10 19 | 691 | 0.2-  | 0.2-  | 2007 12 05 | 704 | 0.0  | 0.6+ |
| 2001 10 06 | 644 | 0.5+ | 0.9+ | 2007 10 20 | 703 | 0.6+  | 0.2-  | 2007 12 05 | 704 | 0.8+ | 0.2+ |
| 2001 10 06 | 644 | 0.3+ | 1.1+ | 2007 10 20 | 703 | 0.0   | 0.2+  | 2007 12 06 | 691 | 0.1+ | 0.6+ |
| 2001 10 06 | 644 | 0.6+ | 1.1+ | 2007 10 20 | 703 | 0.0   | 1.0+  | 2007 12 06 | 691 | 0.1- | 0.0  |
| 2001 10 12 | 608 | 0.5+ | 1.3- | 2007 10 20 | 703 | 0.0   | 0.4-  | 2007 12 06 | 691 | 0.4- | 0.2- |
| 2001 10 12 | 608 | 0.3+ | 1.2- | 2007 10 30 | G96 | 0.3+  | 0.2-  | 2007 12 14 | 691 | 0.1- | 0.2- |
| 2001 10 12 | 608 | 0.2+ | 0.9- | 2007 10 30 | G96 | 0.1+  | 0.1-  | 2007 12 14 | 691 | 0.1- | 0.1- |
| 2001 10 18 | 704 | 0.8- | 0.2- | 2007 10 30 | G96 | 0.2+  | 0.3-  | 2007 12 14 | 691 | 0.2- | 0.3+ |
| 2001 10 18 | 704 | 0.1- | 0.3- | 2007 10 30 | G96 | 0.5+  | 0.2-  | 2007 12 16 | 691 | 0.1- | 0.1- |
| 2001 10 18 | 704 | 0.1- | 0.5+ | 2007 10 30 | G96 | 0.0   | 0.3-  | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2001 10 18 | 704 | 0.2- | 0.7+ | 2007 10 30 | G96 | 0.4+  | 0.1-  | 2007 12 16 | 691 | 0.0  | 0.2+ |
| 2001 10 23 | 699 | 0.0  | 0.3+ | 2007 10 30 | G96 | 0.4+  | 0.4-  |            |     |      |      |
| 2001 10 23 | 699 | 0.5+ | 0.3- | 2007 10 31 | 691 | 0.0   | 0.1-  |            |     |      |      |

(171660)\* 2000 JH<sub>13</sub> = 2001 RP<sub>143</sub> = 2001 SJ<sub>188</sub>

Discovered 2000 May 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. M. E. Sansaturio (*MPO* 19701), G. V. Williams (d, *ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21395360 | <i>ω</i> | 267.32901 | +0.36656503 | +0.93027394 |          |   |
| <i>a</i> | 2.7685751  | <i>Ω</i> | 24.19147  | -0.83857424 | +0.33726077 |          |   |
| <i>e</i> | 0.0673507  | <i>i</i> | 2.07658   | -0.40301778 | +0.14437998 |          |   |
| <i>P</i> | 4.61       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |                 |      |      |            |     |      |      |            |     |      |      |
|------------|-----------------|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 10 02 | 691             | 0.0  | 0.2- | 2001 09 21 | 704 | 0.2- | 0.2- | 2006 10 27 | G96 | 0.1+ | 0.3- |
| 1992 10 02 | 691             | 0.3+ | 0.8- | 2004 02 23 | 704 | 0.7+ | 0.7+ | 2006 10 31 | 691 | 0.1- | 0.1+ |
| 1992 10 02 | 691             | 0.4+ | 0.1- | 2004 02 23 | 704 | 0.3+ | 0.2- | 2006 10 31 | 691 | 0.1- | 0.2+ |
| 2000 05 06 | 704             | 0.2+ | 0.8+ | 2004 02 23 | 704 | 0.5+ | 0.8+ | 2006 10 31 | 691 | 0.1- | 0.1+ |
| 2000 05 06 | 704             | 0.3- | 0.3- | 2004 02 23 | 704 | 0.4+ | 0.8+ | 2006 11 09 | 644 | 0.1- | 0.2+ |
| 2000 05 06 | 704             | 0.3+ | 1.2- | 2006 07 21 | G96 | 0.3- | 0.0  | 2006 11 09 | 644 | 0.1+ | 0.1+ |
| 2000 05 07 | 704             | 0.6- | 0.3+ | 2006 07 21 | G96 | 0.3+ | 0.1- | 2006 11 09 | 644 | 0.2- | 0.2+ |
| 2000 05 07 | 704             | 0.6- | 0.2- | 2006 07 21 | G96 | 0.2- | 0.0  | 2006 11 11 | 691 | 0.1+ | 0.4+ |
| 2000 05 07 | 704             | 0.1+ | 0.0  | 2006 07 21 | G96 | 0.2- | 0.3- | 2006 11 11 | 691 | 0.3- | 0.5+ |
| 2000 05 07 | 704             | 0.3+ | 0.2- | 2006 09 18 | 691 | 0.1+ | 0.2+ | 2006 11 11 | 691 | 0.0  | 0.1- |
| 2000 05 10 | 704             | 1.7+ | 0.2+ | 2006 09 18 | 691 | 0.1+ | 0.4+ | 2006 11 19 | 691 | 0.1+ | 0.1- |
| 2000 05 10 | 704             | 1.1+ | 0.9+ | 2006 09 18 | 691 | 0.1+ | 0.3+ | 2006 11 19 | 691 | 0.4+ | 0.0  |
| 2000 05 10 | 704             | 0.2+ | 0.9+ | 2006 09 25 | G96 | 0.3+ | 0.2- | 2006 11 19 | 691 | 0.0  | 0.2+ |
| 2000 05 10 | 704             | 0.4+ | 1.2+ | 2006 09 25 | G96 | 0.4+ | 0.0  | 2006 12 17 | G96 | 0.0  | 0.4- |
| 2000 05 29 | 704 (0.5+ 2.4+) |      |      | 2006 09 25 | G96 | 0.2+ | 0.2- | 2006 12 17 | G96 | 0.1+ | 0.5- |
| 2000 05 29 | 704             | 0.3+ | 0.9+ | 2006 09 25 | G96 | 0.0  | 0.5- | 2006 12 17 | G96 | 0.2- | 0.1- |
| 2000 05 29 | 704             | 0.8- | 0.4- | 2006 09 28 | 691 | 0.0  | 0.1+ | 2006 12 17 | G96 | 0.1- | 0.5+ |
| 2000 05 29 | 704             | 0.4+ | 0.8+ | 2006 09 28 | 691 | 0.1- | 0.1+ | 2007 01 09 | G96 | 1.3+ | 0.5+ |
| 2000 05 29 | 704             | 1.8- | 1.2- | 2006 09 28 | 691 | 0.3- | 0.1+ | 2007 01 09 | G96 | 0.2+ | 0.1+ |
| 2001 09 12 | 704             | 0.4+ | 0.6+ | 2006 10 02 | 691 | 0.3- | 0.2+ | 2007 01 09 | G96 | 0.4- | 0.2+ |
| 2001 09 12 | 704             | 0.8+ | 0.1- | 2006 10 02 | 691 | 0.3+ | 0.1+ | 2007 01 09 | G96 | 0.3+ | 0.7+ |
| 2001 09 12 | 704             | 0.2+ | 1.5- | 2006 10 02 | 691 | 0.1- | 0.0  | 2007 02 06 | G96 | 0.1- | 0.1+ |
| 2001 09 19 | 704             | 0.7+ | 0.2- | 2006 10 20 | 703 | 0.3+ | 0.7+ | 2007 02 06 | G96 | 0.0  | 0.0  |
| 2001 09 19 | 704             | 0.4+ | 0.2- | 2006 10 20 | 703 | 0.7- | 0.0  | 2007 02 06 | G96 | 0.0  | 0.2+ |
| 2001 09 19 | 704             | 0.2- | 0.5+ | 2006 10 20 | 703 | 0.7- | 0.0  | 2007 02 06 | G96 | 0.4- | 0.0  |
| 2001 09 19 | 704             | 0.6+ | 0.1- | 2006 10 20 | 703 | 0.4+ | 0.0  | 2007 11 07 | G96 | 0.1- | 0.3- |
| 2001 09 19 | 645             | 0.0  | 0.1- | 2006 10 21 | 644 | 0.1- | 0.2+ | 2007 11 07 | G96 | 0.3+ | 0.2- |
| 2001 09 19 | 645             | 0.0  | 0.1- | 2006 10 21 | 644 | 0.1+ | 0.5+ | 2007 11 07 | G96 | 0.7- | 0.3- |
| 2001 09 20 | 691             | 0.1- | 0.4+ | 2006 10 21 | 644 | 0.1+ | 0.4+ | 2007 11 07 | G96 | 0.3- | 0.2- |

2007 DEC. 24

M.P.O. 129119

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 691 | 0.2− | 0.3+ | 2006 10 27 | 691 | 0.0  | 0.4− | 2007 12 06 | G96 | 0.7− | 0.6− |
| 2001 09 20 | 691 | 0.2− | 0.2+ | 2006 10 27 | 691 | 0.3− | 0.3− | 2007 12 06 | G96 | 0.0  | 0.7− |
| 2001 09 21 | 704 | 0.8− | 0.3+ | 2006 10 27 | 691 | 0.2− | 0.1− | 2007 12 06 | G96 | 0.8− | 0.4− |
| 2001 09 21 | 704 | 0.9+ | 0.5+ | 2006 10 27 | G96 | 0.2− | 0.2− | 2007 12 06 | G96 | 0.1− | 0.1+ |
| 2001 09 21 | 704 | 1.0− | 0.8+ | 2006 10 27 | G96 | 0.3+ | 0.1− |            |     |      |      |
| 2001 09 21 | 704 | 0.3− | 0.1+ | 2006 10 27 | G96 | 0.1− | 0.3− |            |     |      |      |

(171661)\* 2000 JZ<sub>17</sub> = 2001 VL<sub>56</sub>

Discovered 2000 May 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 19705)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |  |            |  | MPC      |  |           |  |
|----------|--|------------|--|----------|--|-----------|--|
| <i>M</i> |  | 83.34166   |  | (2000.0) |  | <i>P</i>  |  |
| <i>n</i> |  | 0.17837298 |  | $\omega$ |  | 75.80647  |  |
| <i>a</i> |  | 3.1254796  |  | $\Omega$ |  | 235.79543 |  |
| <i>e</i> |  | 0.3345671  |  | <i>i</i> |  | 24.56182  |  |
| <i>P</i> |  | 5.53       |  | <i>H</i> |  | 15.1      |  |
|          |  |            |  | <i>G</i> |  | 0.15      |  |
|          |  |            |  | <i>U</i> |  | 1         |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|-------|
| 2000 05 09 | 704 | 0.1− | 1.3+ | 2000 06 02 | 691 | 0.3−  | 0.2+  | 2001 12 18 | 704 | 0.1+ | 0.9+  |
| 2000 05 09 | 704 | 0.2− | 0.9+ | 2001 08 25 | 704 | 0.2+  | 0.7+  | 2001 12 18 | 704 | 0.3− | 1.2+  |
| 2000 05 09 | 704 | 0.0  | 0.9− | 2001 08 25 | 704 | 1.0+  | 0.7+  | 2001 12 19 | 704 | 0.7+ | 0.5+  |
| 2000 05 11 | 699 | 0.3− | 0.4+ | 2001 08 25 | 704 | 0.2+  | 1.0+  | 2001 12 19 | 704 | 0.7+ | 0.6+  |
| 2000 05 11 | 699 | 0.4− | 0.2+ | 2001 09 25 | 704 | (0.4− | 1.6+) | 2001 12 19 | 704 | 0.4+ | 0.3−  |
| 2000 05 11 | 699 | 0.3− | 0.1− | 2001 09 25 | 704 | (0.4− | 1.6+) | 2001 12 19 | 704 | 0.9+ | 0.5+  |
| 2000 05 11 | 704 | 1.2+ | 0.9− | 2001 09 25 | 704 | 0.1−  | 1.4+  | 2001 12 19 | 704 | 0.5+ | 0.3+  |
| 2000 05 11 | 699 | 0.2+ | 0.5− | 2001 10 15 | 704 | 0.4−  | 1.4−  | 2006 07 30 | H82 | 0.6+ | 1.0−  |
| 2000 05 11 | 704 | 0.4+ | 0.1+ | 2001 10 15 | 704 | 0.0   | 0.1+  | 2006 07 30 | H82 | 0.0  | 0.2+  |
| 2000 05 11 | 704 | 0.6+ | 0.3− | 2001 10 15 | 704 | 1.0−  | 0.6+  | 2006 07 30 | H82 | 0.1− | 0.8−  |
| 2000 05 25 | 699 | 0.7− | 0.5+ | 2001 11 10 | 704 | 0.7+  | 0.2+  | 2006 07 30 | H82 | (0.0 | 1.8−) |
| 2000 05 25 | 699 | 0.5− | 1.2+ | 2001 11 10 | 704 | 0.7+  | 0.2+  | 2007 11 08 | G96 | 0.3+ | 0.1+  |
| 2000 05 25 | 699 | 0.0  | 0.2+ | 2001 11 10 | 704 | 1.0+  | 0.1−  | 2007 11 08 | G96 | 0.4+ | 0.1+  |
| 2000 05 25 | 699 | 0.2+ | 0.2+ | 2001 11 10 | 704 | 0.6+  | 0.5+  | 2007 11 08 | G96 | 0.5+ | 0.0   |
| 2000 05 28 | 704 | 0.2+ | 0.7+ | 2001 11 10 | 704 | 0.7+  | 0.5+  | 2007 11 08 | G96 | 0.5− | 0.7−  |
| 2000 05 28 | 704 | 0.3+ | 1.1+ | 2001 11 12 | 704 | 1.4−  | 0.5−  | 2007 11 15 | G96 | 0.3+ | 0.5−  |
| 2000 05 28 | 704 | 0.3+ | 0.9+ | 2001 11 12 | 704 | 0.5−  | 0.2+  | 2007 11 15 | G96 | 0.3+ | 0.0   |
| 2000 05 28 | 704 | 0.3− | 0.1+ | 2001 11 12 | 704 | 0.9−  | 0.5+  | 2007 11 15 | G96 | 0.4+ | 0.3−  |
| 2000 05 28 | 704 | 0.0  | 0.5+ | 2001 11 12 | 704 | 1.0−  | 0.7+  | 2007 11 15 | G96 | 0.1+ | 0.5−  |
| 2000 05 29 | 704 | 0.2+ | 0.6+ | 2001 11 12 | 704 | 0.1−  | 0.8+  | 2007 12 05 | 703 | 0.0  | 0.3+  |
| 2000 05 29 | 704 | 0.4+ | 0.8+ | 2001 11 24 | 704 | 0.1+  | 0.2−  | 2007 12 05 | 703 | 0.1− | 0.6+  |
| 2000 05 29 | 704 | 0.7+ | 1.1+ | 2001 11 24 | 704 | 0.6−  | 0.2+  | 2007 12 05 | 703 | 0.2− | 0.7+  |
| 2000 05 29 | 704 | 0.5− | 1.3+ | 2001 11 24 | 704 | 0.2−  | 0.9+  | 2007 12 05 | 703 | 0.7− | 1.7+  |
| 2000 06 02 | 691 | 0.3− | 0.2+ | 2001 11 24 | 704 | 0.2+  | 0.8+  |            |     |      |       |
| 2000 06 02 | 691 | 0.3− | 0.0  | 2001 12 18 | 704 | 0.1−  | 0.3+  |            |     |      |       |

(171662)\* 2000 JF<sub>30</sub>

Discovered 2000 May 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |  |            |  | MPC      |  |           |  |
|----------|--|------------|--|----------|--|-----------|--|
| <i>M</i> |  | 264.28151  |  | (2000.0) |  | <i>P</i>  |  |
| <i>n</i> |  | 0.21509615 |  | $\omega$ |  | 289.03437 |  |
| <i>a</i> |  | 2.7587624  |  | $\Omega$ |  | 242.19912 |  |
| <i>e</i> |  | 0.2334553  |  | <i>i</i> |  | 11.68907  |  |
| <i>P</i> |  | 4.58       |  | <i>H</i> |  | 15.5      |  |
|          |  |            |  | <i>G</i> |  | 0.15      |  |
|          |  |            |  | <i>U</i> |  | 1         |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 16 | 691 | 0.4− | 0.2− | 2000 05 09 | 704 | 0.7+ | 0.5+ | 2007 11 04 | 691 | 0.3+ | 0.1− |
| 1993 10 16 | 691 | 0.0  | 0.1+ | 2000 05 23 | 699 | 0.3− | 0.0  | 2007 11 04 | 691 | 0.1+ | 0.2− |
| 1993 10 16 | 691 | 0.5− | 0.3− | 2000 05 23 | 699 | 0.0  | 0.6+ | 2007 11 04 | 691 | 0.1+ | 0.2− |
| 1993 11 21 | 691 | 0.3+ | 0.6+ | 2000 05 23 | 699 | 0.6+ | 0.6+ | 2007 11 08 | 691 | 0.2+ | 0.4+ |
| 1993 11 21 | 691 | 0.0  | 0.1+ | 2000 05 23 | 699 | 0.1+ | 0.1− | 2007 11 08 | 691 | 0.1− | 0.1− |
| 1993 11 21 | 691 | 0.5+ | 0.2+ | 2003 12 26 | 608 | 0.2− | 0.1+ | 2007 11 08 | 691 | 0.2− | 0.4− |
| 2000 04 28 | 704 | 0.7+ | 1.8− | 2003 12 26 | 608 | 0.4+ | 0.6− | 2007 11 15 | 704 | 0.1− | 0.0  |
| 2000 04 28 | 704 | 1.0− | 0.0  | 2003 12 26 | 608 | 0.3− | 0.3+ | 2007 11 15 | 704 | 0.7+ | 0.7+ |
| 2000 04 28 | 704 | 0.3+ | 1.0+ | 2004 01 12 | 644 | 0.1− | 0.1+ | 2007 11 15 | 704 | 1.0+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 28 | 704 | 0.6− | 0.5+ | 2004 01 12 | 644 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.1− | 0.3+ |
| 2000 05 07 | 704 | 0.2− | 0.3+ | 2004 01 12 | 644 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.6+ | 0.1+ |
| 2000 05 07 | 704 | 0.6− | 0.2+ | 2004 01 29 | 704 | 0.1− | 0.4+ | 2007 11 19 | 691 | 0.2− | 0.3+ |
| 2000 05 07 | 704 | 1.1− | 1.0− | 2004 01 29 | 704 | 0.2− | 0.2− | 2007 11 19 | 691 | 1.0− | 0.5− |
| 2000 05 07 | 704 | 0.5+ | 0.1− | 2004 01 29 | 704 | 0.3+ | 0.2+ | 2007 11 19 | 691 | 0.1+ | 0.3+ |
| 2000 05 07 | 704 | 0.6− | 0.5+ | 2004 01 29 | 704 | 0.1+ | 0.4− | 2007 12 15 | G96 | 0.2+ | 0.4− |
| 2000 05 09 | 704 | 0.0  | 0.4− | 2004 01 29 | 704 | 0.0  | 0.5+ | 2007 12 15 | G96 | 0.4+ | 0.6− |
| 2000 05 09 | 704 | 0.8+ | 0.9− | 2004 02 19 | 704 | 0.3− | 0.3+ | 2007 12 15 | G96 | 0.4+ | 0.2− |
| 2000 05 09 | 704 | 0.0  | 0.2− | 2004 02 19 | 704 | 0.5+ | 0.4+ | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2000 05 09 | 704 | 0.9+ | 0.5+ | 2004 02 19 | 704 | 0.0  | 0.8− |            |     |      |      |

(171663)\* 2000 JS<sub>41</sub>

Discovered 2000 May 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |  |            |  | MPC      |  |           |  |
|----------|--|------------|--|----------|--|-----------|--|
| <i>M</i> |  | 98.82845   |  | (2000.0) |  | <i>P</i>  |  |
| <i>n</i> |  | 0.18594111 |  | $\omega$ |  | 234.32640 |  |
| <i>a</i> |  | 3.0400853  |  | $\Omega$ |  | 46.50672  |  |
| <i>e</i> |  | 0.1350833  |  | <i>i</i> |  | 10.62315  |  |
| <i>P</i> |  | 5.30       |  | <i>H</i> |  | 15.3      |  |
|          |  |            |  | <i>G</i> |  | 0.15      |  |
|          |  |            |  | <i>U</i> |  | 0         |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 29 | 704 | 0.2+  | 0.2+  | 2001 08 25 | 699 | 0.7−  | 0.4−  | 2006 07 29 | E12 | 1.2+ | 0.5− |
| 2000 04 29 | 704 | 0.5+  | 0.2−  | 2001 08 25 | 699 | 1.0−  | 0.5−  | 2006 07 29 | E12 | 0.2− | 0.4+ |
| 2000 04 29 | 704 | 0.4+  | 0.0   | 2001 09 11 | 704 | 0.5+  | 1.2−  | 2007 10 10 | 691 | 0.0  | 0.6+ |
| 2000 04 29 | 704 | 0.2−  | 0.1−  | 2001 09 11 | 704 | (0.1+ | 2.4−) | 2007 10 10 | 691 | 0.6− | 0.0  |
| 2000 04 29 | 704 | 0.2+  | 0.6+  | 2001 09 11 | 704 | (0.1− | 2.1−) | 2007 10 10 | 691 | 0.1+ | 0.1+ |
| 2000 05 07 | 704 | 0.3+  | 0.9+  | 2005 04 04 | 703 | 1.0−  | 0.6−  | 2007 10 23 | 691 | 0.0  | 0.2+ |
| 2000 05 07 | 704 | 0.2+  | 1.1+  | 2005 04 04 | 703 | 0.6−  | 0.3−  | 2007 10 23 | 691 | 0.2+ | 0.4+ |
| 2000 05 07 | 704 | (0.6+ | 2.3+) | 2005 04 04 | 703 | 0.3+  | 0.3+  | 2007 10 23 | 691 | 0.4− | 0.3+ |
| 2000 05 07 | 704 | 0.3+  | 1.3+  | 2005 04 04 | 703 | 0.2+  | 0.1+  | 2007 11 07 | G96 | 0.3− | 0.0  |
| 2000 05 10 | 704 | 0.3+  | 0.0   | 2006 06 26 | E12 | 0.5−  | 0.4+  | 2007 11 07 | G96 | 0.1+ | 0.1− |
| 2000 05 10 | 704 | 0.1+  | 0.7+  | 2006 06 26 | E12 | 0.6+  | 0.1−  | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2000 05 10 | 704 | 1.5+  | 1.0+  | 2006 06 26 | E12 | 0.6−  | 0.2+  | 2007 11 07 | G96 | 0.0  | 0.0  |
| 2000 05 10 | 704 | (0.2+ | 2.3+) | 2006 06 26 | E12 | 0.2−  | 0.5−  | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2001 08 17 | 644 | 0.2+  | 0.2−  | 2006 07 20 | E12 | 0.8−  | 0.3+  | 2007 12 05 | G96 | 0.3− | 0.0  |
| 2001 08 17 | 644 | 0.1+  | 0.2−  | 2006 07 20 | E12 | 0.0   | 0.0   | 2007 12 05 | G96 | 0.3+ | 0.4+ |
| 2001 08 17 | 644 | 0.2+  | 0.3−  | 2006 07 20 | E12 | 0.7+  | 0.2+  | 2007 12 05 | G96 | 0.3− | 0.5− |
| 2001 08 25 | 699 | 0.3+  | 0.2+  | 2006 07 29 | E12 | 0.1−  | 0.3+  |            |     |      |      |
| 2001 08 25 | 699 | 0.7+  | 0.4+  | 2006 07 29 | E12 | 0.1−  | 0.1−  |            |     |      |      |

(171664)\* 2000 KW = 2005 GU<sub>20</sub>

Discovered 2000 May 24 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 74785)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|--|--|

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.0  | 0.1+ | 2005 05 09 | 701 | 0.7+ | 1.0+ | 2007 11 14 | 691 | 0.4- | 0.5+ |
| 2005 04 02 | G96 | 0.5- | 0.2+ | 2005 05 09 | 701 | 0.2+ | 1.2+ | 2007 12 15 | G96 | 0.9+ | 0.2- |
| 2005 04 02 | G96 | 0.3- | 0.3+ | 2006 08 15 | 644 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.5+ | 0.2- |
| 2005 04 02 | G96 | 0.2- | 0.1- | 2006 08 15 | 644 | 0.1- | 0.5+ | 2007 12 15 | G96 | 0.2+ | 0.3- |
| 2005 04 04 | G96 | 0.8+ | 0.3- | 2006 08 15 | 644 | 0.3- | 0.2+ | 2007 12 15 | G96 | 0.4+ | 0.6- |
| 2005 04 04 | G96 | 0.1+ | 0.2- | 2006 08 17 | 644 | 0.1+ | 0.3+ |            |     |      |      |

**(171665)\* 2000 KK<sub>23</sub> = 2003 GH<sub>47</sub>**

Discovered 2000 May 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 46405)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 72.00863   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.30575209 | $\omega$ | 230.09050 |     | +0.58116424 |     | +0.81005953 |
| $a$ | 2.1821759  | $\Omega$ | 75.61113  |     | -0.71998730 |     | +0.55637823 |
| $e$ | 0.2658431  | $i$      | 4.60649   |     | -0.37929727 |     | +0.18505898 |
| $P$ | 3.22       | $H$      | 17.0      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 12 08 | 691 | 0.1+  | 0.3+  | 2003 05 01 | 704 | 1.2+  | 0.7+  | 2007 11 14 | 691 | 0.5-  | 0.0   |
| 1991 12 08 | 691 | 0.5+  | 1.2-  | 2003 05 02 | 691 | 0.1-  | 0.2+  | 2007 11 14 | 691 | 0.2-  | 0.0   |
| 1991 12 08 | 691 | 0.3-  | 0.8-  | 2003 05 02 | 691 | 0.4+  | 0.2+  | 2007 11 14 | 691 | 0.3-  | 0.1+  |
| 2000 05 28 | 704 | 0.1-  | 0.1+  | 2003 05 02 | 691 | 0.3+  | 0.1+  | 2007 11 14 | 704 | (1.3+ | 1.7+) |
| 2000 05 28 | 704 | 0.2-  | 0.5+  | 2004 12 11 | 691 | 0.1+  | 0.0   | 2007 11 14 | 704 | 1.5+  | 0.5+  |
| 2000 05 28 | 704 | 0.1-  | 0.4+  | 2004 12 11 | 691 | 0.4+  | 0.0   | 2007 11 14 | 704 | 1.4+  | 0.9+  |
| 2000 05 28 | 704 | 0.0   | 0.4+  | 2004 12 11 | 691 | 0.2+  | 0.1-  | 2007 11 14 | 704 | 1.2+  | 1.2+  |
| 2000 05 28 | 704 | 0.1+  | 0.7+  | 2006 03 03 | 703 | (1.9- | 0.2-) | 2007 11 14 | 704 | 0.7+  | 0.6+  |
| 2000 05 29 | 704 | 0.0   | 0.6+  | 2006 03 03 | 703 | (1.5- | 1.1-) | 2007 11 20 | 703 | 0.3+  | 0.6+  |
| 2000 05 29 | 704 | 0.4+  | 0.3-  | 2006 03 03 | 703 | 0.9-  | 1.1-  | 2007 11 20 | 703 | 0.5-  | 1.4+  |
| 2000 05 29 | 704 | 0.5-  | 0.5-  | 2006 03 03 | 703 | 1.4-  | 1.4-  | 2007 11 20 | 703 | 0.8-  | 1.1+  |
| 2000 05 29 | 704 | 0.3+  | 0.3+  | 2006 03 04 | 691 | 0.3-  | 0.3-  | 2007 11 20 | 703 | 0.0   | 0.3-  |
| 2000 05 29 | 704 | 0.4-  | 0.0   | 2006 03 04 | 691 | 0.3-  | 0.1-  | 2007 12 04 | 691 | 0.3-  | 0.4+  |
| 2000 06 24 | 704 | 0.8-  | 1.0+  | 2006 03 04 | 691 | 0.7-  | 0.3-  | 2007 12 04 | 691 | 0.4-  | 0.4+  |
| 2000 06 24 | 704 | 0.3-  | 0.3+  | 2006 03 08 | 691 | 0.5-  | 0.1+  | 2007 12 04 | 691 | 0.5-  | 0.4+  |
| 2000 06 24 | 704 | 0.0   | 0.5+  | 2006 03 08 | 691 | 0.1+  | 0.2-  | 2007 12 05 | 704 | 0.7+  | 0.4+  |
| 2000 06 24 | 704 | 0.9+  | 0.9+  | 2006 03 08 | 691 | 0.5-  | 0.2+  | 2007 12 05 | 704 | 0.4-  | 0.4+  |
| 2003 04 07 | 691 | (0.8- | 2.8+) | 2007 10 15 | D35 | 0.5-  | 0.0   | 2007 12 05 | 704 | 0.6+  | 0.8+  |
| 2003 04 07 | 691 | (0.4- | 2.7+) | 2007 10 15 | D35 | 0.4+  | 0.2-  | 2007 12 05 | 704 | 0.1-  | 1.2+  |
| 2003 04 07 | 691 | (0.4- | 2.6+) | 2007 10 15 | D35 | 0.5+  | 0.0   | 2007 12 06 | 691 | 0.2-  | 0.5+  |
| 2003 04 11 | 691 | 0.0   | 0.5+  | 2007 11 04 | 704 | 0.7+  | 0.9+  | 2007 12 06 | 691 | 0.1+  | 0.3+  |
| 2003 04 11 | 691 | 0.3+  | 0.4+  | 2007 11 04 | 704 | 0.0   | 1.0+  | 2007 12 06 | 691 | 0.2-  | 0.0   |
| 2003 04 11 | 691 | 0.1+  | 0.2+  | 2007 11 04 | 704 | (0.1+ | 1.6+) | 2007 12 14 | 691 | 0.0   | 0.3-  |
| 2003 04 21 | 691 | 0.6+  | 0.5+  | 2007 11 04 | 704 | 0.3+  | 1.2+  | 2007 12 14 | 691 | 0.2-  | 0.3+  |
| 2003 04 21 | 691 | 1.0+  | 0.1+  | 2007 11 12 | 703 | 0.2+  | 0.5-  | 2007 12 14 | 691 | 0.1+  | 0.5+  |
| 2003 04 21 | 691 | 0.6+  | 0.7+  | 2007 11 12 | 703 | 0.2+  | 0.4+  | 2007 12 16 | 691 | 0.4-  | 0.2+  |
| 2003 05 01 | 704 | (1.9+ | 0.7+) | 2007 11 12 | 703 | (0.1+ | 1.5+) | 2007 12 16 | 691 | 0.4-  | 0.1-  |
| 2003 05 01 | 704 | 1.0+  | 0.7+  | 2007 11 12 | 703 | (0.1+ | 1.5+) | 2007 12 16 | 691 | 0.2-  | 0.4+  |

**(171666)\* 2000 KD<sub>51</sub> = 2001 XD<sub>103</sub>**

Discovered 2000 May 30 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 29219)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 87.92016   |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.32401131 | $\omega$ | 63.58245  |     | +0.72724485  |     | +0.68533863  |
| $a$ | 2.0994036  | $\Omega$ | 253.12921 |     | -0.64296133  |     | +0.66095548  |
| $e$ | 0.1297503  | $i$      | 2.26143   |     | -0.24024083  |     | +0.30569399  |
| $P$ | 3.04       | $H$      | 17.3      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 07 | 704 | 1.3- | 0.2- | 2002 01 14 | 291 | 0.1- | 0.2- | 2007 11 02 | 691 | 0.0  | 0.4+ |
| 2000 05 07 | 704 | 0.8+ | 0.1- | 2003 04 26 | 691 | 0.1+ | 0.2- | 2007 12 03 | 703 | 0.0  | 0.3+ |
| 2000 05 07 | 704 | 0.5+ | 0.2- | 2003 04 26 | 691 | 0.4+ | 0.2+ | 2007 12 03 | 703 | 0.3- | 0.8+ |
| 2000 05 07 | 704 | 0.3- | 0.3+ | 2003 04 26 | 691 | 0.1+ | 0.1- | 2007 12 03 | 703 | 0.0  | 0.0  |
| 2000 05 30 | 691 | 0.3- | 0.7- | 2003 05 22 | 691 | 0.1+ | 0.4+ | 2007 12 03 | 703 | 0.4+ | 0.5+ |
| 2000 05 30 | 691 | 0.1- | 0.7- | 2003 05 22 | 691 | 0.2+ | 0.7+ | 2007 12 03 | 291 | 0.6- | 0.2+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 05 30 | 691 | 0.1- | 0.6- | 2003 05 22 | 691 | 0.3+  | 0.1+  | 2007 12 03 | 291 | 0.4-  | 0.0   |
| 2000 06 06 | 691 | 0.3- | 0.4- | 2003 06 06 | 691 | 0.1+  | 0.5+  | 2007 12 03 | 291 | 0.2-  | 0.8-  |
| 2000 06 06 | 691 | 0.4- | 0.6- | 2003 06 06 | 691 | 0.1-  | 0.2+  | 2007 12 04 | G96 | 0.2+  | 0.1-  |
| 2000 06 06 | 691 | 0.1- | 0.8- | 2003 06 06 | 691 | 0.1+  | 0.6+  | 2007 12 04 | G96 | 0.3+  | 0.1-  |
| 2001 12 14 | 704 | 0.5+ | 0.3+ | 2004 12 14 | 704 | (2.0- | 1.5+) | 2007 12 04 | G96 | 0.4+  | 0.1-  |
| 2001 12 14 | 704 | 1.1+ | 0.1+ | 2004 12 14 | 704 | 0.2-  | 0.5-  | 2007 12 04 | G96 | 0.4+  | 0.2+  |
| 2001 12 14 | 704 | 0.5+ | 0.3+ | 2004 12 14 | 704 | 0.2+  | 0.2+  | 2007 12 05 | 704 | 1.0+  | 0.1+  |
| 2001 12 14 | 704 | 0.6+ | 0.5+ | 2004 12 14 | 704 | 0.7+  | 0.6-  | 2007 12 05 | 704 | (2.2+ | 0.4-) |
| 2001 12 17 | 704 | 0.5- | 0.1+ | 2006 04 30 | 699 | 0.5+  | 0.3+  | 2007 12 05 | 704 | 1.1+  | 0.1+  |
| 2001 12 17 | 704 | 0.1+ | 0.2- | 2006 04 30 | 699 | 1.1-  | 0.9+  | 2007 12 05 | 704 | 1.3+  | 0.3-  |
| 2001 12 17 | 704 | 0.3- | 0.2- | 2006 04 30 | 699 | 0.3-  | 0.0   | 2007 12 15 | G96 | 0.1+  | 0.2-  |
| 2001 12 17 | 704 | 0.4- | 0.3- | 2006 04 30 | 699 | 0.0   | 0.5+  | 2007 12 15 | G96 | 0.3+  | 0.1-  |
| 2002 01 14 | 291 | 0.4- | 0.2- | 2007 11 02 | 691 | 0.6-  | 0.2-  | 2007 12 15 | G96 | 0.1-  | 0.4-  |
| 2002 01 14 | 291 | 0.1- | 0.2- | 2007 11 02 | 691 | 0.5+  | 0.2-  | 2007 12 15 | G96 | 0.5+  | 0.0   |

**(171667)\* 2000 NU<sub>14</sub>**

Discovered 2000 July 5 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 39.66474   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.29541724 | $\omega$ | 234.09270 |     | +0.99191603 |     | +0.10340909 |
| $a$ | 2.2327777  | $\Omega$ | 119.86622 |     | -0.07056567 |     | +0.93120676 |
| $e$ | 0.2506058  | $i$      | 4.86513   |     | -0.10546596 |     | +0.34951471 |
| $P$ | 3.34       | $H$      | 16.9      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 07 05 | 699 | 0.6-  | 0.5+  | 2000 09 02 | 704 | 0.4+  | 0.5+  | 2007 11 04 | 704 | 0.1+ | 0.5+ |
| 2000 07 05 | 699 | 0.3-  | 1.3+  | 2000 09 04 | 704 | 0.5-  | 1.0-  | 2007 11 04 | 704 | 0.2- | 0.5+ |
| 2000 07 05 | 699 | 0.7+  | 1.0+  | 2000 09 04 | 704 | (0.1- | 3.0-) | 2007 11 04 | 704 | 0.2- | 0.1- |
| 2000 07 05 | 699 | 0.5+  | 0.1+  | 2000 09 04 | 704 | 0.5-  | 0.6-  | 2007 11 12 | 704 | 1.3- | 0.8+ |
| 2000 07 06 | 699 | (2.3+ | 0.1-) | 2000 09 05 | 704 | 0.6-  | 0.0   | 2007 11 12 | 704 | 0.3- | 0.0  |
| 2000 07 06 | 699 | (2.5+ | 1.0+) | 2000 09 05 | 704 | 0.8+  | 1.0+  | 2007 11 12 | 704 | 0.1- | 0.3+ |
| 2000 07 06 | 699 | 0.6+  | 0.3+  | 2000 09 05 | 704 | 1.3-  | 0.5+  | 2007 11 12 | 704 | 0.3- | 0.7+ |
| 2000 07 06 | 699 | (2.2+ | 0.5+) | 2000 09 05 | 704 | 1.4-  | 0.1-  | 2007 11 12 | 704 | 0.7- | 0.8+ |
| 2000 08 01 | 704 | 0.6+  | 0.6+  | 2004 12 20 | G96 | 0.3+  | 0.0   | 2007 11 21 | 703 | 0.7- | 0.4- |
| 2000 08 01 | 704 | 0.8+  | 0.5+  | 2004 12 20 | G96 | 0.0   | 0.2-  | 2007 11 21 | 703 | 0.5+ | 0.2- |
| 2000 08 01 | 704 | 0.5+  | 0.4+  | 2004 12 20 | G96 | 0.0   | 0.0   | 2007 11 21 | 703 | 0.9- | 0.6- |
| 2000 08 01 | 704 | 0.4-  | 0.4+  | 2004 12 20 | G96 | 0.2+  | 0.1-  | 2007 11 21 | 703 | 0.7+ | 0.3+ |
| 2000 08 01 | 704 | 0.5+  | 1.1+  | 2005 01 13 | G92 | 0.3-  | 0.2+  | 2007 12 04 | 704 | 0.3- | 0.1+ |
| 2000 08 26 | 704 | 0.3+  | 0.4-  | 2005 01 13 | 691 | 0.1+  | 0.2+  | 2007 12 04 | 704 | 0.3- | 0.0  |
| 2000 08 26 | 704 | 0.1-  | 0.2+  | 2005 01 13 | G92 | 0.2+  | 0.3+  | 2007 12 04 | 704 | 0.4+ | 0.3- |
| 2000 08 26 | 704 | 0.3+  | 0.4+  | 2005 01 13 | 691 | 0.3-  | 0.0   | 2007 12 04 | 704 | 0.2+ | 0.3+ |
| 2000 08 26 | 704 | 0.3+  | 0.0   | 2005 01 13 | 691 | 0.3+  | 0.0   | 2007 12 05 | 699 | 0.4- | 0.0  |
| 2000 08 26 | 704 | 0.2+  | 0.1+  | 2005 01 13 | G92 | 0.1+  | 0.1+  | 2007 12 05 | 699 | 0.2- | 0.7- |
| 2000 09 02 | 704 | 0.9+  | 0.4-  | 2006 05 05 | 691 | 0.6+  | 0.6+  | 2007 12 05 | 699 | 0.5+ | 0.3+ |
| 2000 09 02 | 704 | 0.1+  | 0.2-  | 2006 05 05 | 691 | 0.3+  | 0.6+  | 2007 12 05 | 699 | 0.1- | 0.7- |
| 2000 09 02 | 704 | 1.1-  | 0.2-  | 2006 05 05 | 691 | 0.5-  | 0.3+  | 2007 12 15 | 704 | 1.2+ | 1.1+ |
| 2000 09 02 | 704 | 1.2-  | 0.2-  | 2007 10 13 | 704 | (2.1+ | 1.7+) | 2007 12 15 | 704 | 0.4- | 0.0  |
| 2000 09 02 | 704 | 0.1-  | 0.4-  | 2007 10 13 | 704 | (2.7+ | 1.1+) | 2007 12 15 | 704 | 1.0+ | 1.7+ |
| 2000 09 02 | 704 | 0.1-  | 0.4-  | 2007 10 13 | 704 | 1.1+  | 0.3+  | 2007 12 15 | 704 | 0.8- | 0.8+ |
| 2000 09 02 | 704 | 0.1+  | 0.6-  | 2007 11 04 | 704 | 0.3+  | 0.4+  | 2007 12 15 | 704 | 0.0  | 0.3- |
| 2000 09 02 | 704 | 0.1-  | 0.3-  | 2007 11 04 | 704 | 0.2+  | 0.3+  |            |     |      |      |

**(171668)\* 2000 NZ<sub>17</sub>**

Discovered 2000 July 5 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 91.90356 |  | (2000.0) |  |
|----------|----------|--|----------|--|
|----------|----------|--|----------|--|

2007 DEC. 24

M.P.O. 129121

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 02 15 | 691 | 0.4+ | 0.6+ | 2000 09 04 | 704 | 0.2-  | 0.6+  | 2006 04 30 | 703 | 1.0+  | 1.1+  |
| 1996 02 15 | 691 | 0.6+ | 0.3+ | 2000 09 05 | 704 | 0.3+  | 1.7+  | 2007 10 16 | 703 | 0.5-  | 0.2+  |
| 1996 02 15 | 691 | 0.2+ | 0.6+ | 2000 09 05 | 704 | 0.2+  | 1.2+  | 2007 10 16 | 703 | 0.1-  | 0.5-  |
| 2000 07 05 | 699 | 0.3+ | 0.5- | 2000 09 05 | 704 | 0.2+  | 1.3+  | 2007 10 16 | 703 | 0.6+  | 0.1-  |
| 2000 07 05 | 699 | 0.6- | 0.5- | 2000 09 05 | 704 | 0.9-  | 1.5+  | 2007 10 16 | 703 | 0.4-  | 0.7+  |
| 2000 07 05 | 699 | 0.2- | 0.5- | 2000 09 18 | 699 | 0.9+  | 1.2-  | 2007 11 02 | 704 | 0.4+  | 0.7+  |
| 2000 07 05 | 699 | 0.1+ | 0.9- | 2000 09 18 | 699 | 0.2+  | 0.5+  | 2007 11 02 | 704 | 0.6+  | 0.3+  |
| 2000 07 06 | 699 | 0.6- | 0.5+ | 2000 09 18 | 699 | 0.5-  | 0.1-  | 2007 11 02 | 704 | (1.7+ | 1.1-) |
| 2000 07 06 | 699 | 0.3- | 0.4+ | 2000 09 18 | 699 | 0.7+  | 0.2-  | 2007 11 02 | 704 | (1.2+ | 4.0-) |
| 2000 07 06 | 699 | 0.6- | 0.7+ | 2000 09 20 | 704 | 0.4+  | 0.1+  | 2007 11 02 | 704 | 0.4-  | 0.4-  |
| 2000 07 06 | 699 | 1.0- | 0.0  | 2000 09 20 | 704 | 0.1-  | 0.3+  | 2007 11 02 | 703 | 0.4+  | 0.6-  |
| 2000 08 01 | 704 | 0.1- | 0.2+ | 2000 09 20 | 704 | 0.5+  | 0.2+  | 2007 11 02 | 703 | 0.1-  | 0.7+  |
| 2000 08 01 | 704 | 0.2- | 0.6- | 2000 09 20 | 704 | 0.0   | 0.4+  | 2007 11 02 | 703 | 0.1-  | 0.6-  |
| 2000 08 01 | 704 | 0.3- | 0.8- | 2000 09 20 | 704 | 0.4-  | 0.8+  | 2007 11 02 | 703 | 0.2+  | 0.1-  |
| 2000 08 01 | 704 | 0.4- | 0.0  | 2000 09 21 | 704 | 1.4+  | 0.5+  | 2007 11 08 | 704 | 0.1+  | 0.6+  |
| 2000 08 01 | 704 | 0.2+ | 0.3- | 2000 09 21 | 704 | 0.1+  | 1.3+  | 2007 11 08 | 704 | 0.1-  | 0.4+  |
| 2000 08 24 | 704 | 0.8- | 0.1+ | 2000 09 21 | 704 | 0.7-  | 0.4+  | 2007 11 08 | 704 | 0.2-  | 0.4+  |
| 2000 08 24 | 704 | 0.1- | 0.8- | 2000 09 21 | 704 | 0.2-  | 0.4-  | 2007 11 08 | 704 | 0.1+  | 0.2+  |
| 2000 08 24 | 704 | 0.1- | 0.1- | 2000 09 24 | 704 | 0.4-  | 0.1-  | 2007 11 08 | 704 | 0.6-  | 0.1+  |
| 2000 08 24 | 704 | 0.5- | 0.1- | 2000 09 24 | 704 | 0.3+  | 0.5+  | 2007 11 08 | 703 | 0.6+  | 0.5+  |
| 2000 08 26 | 704 | 0.4+ | 0.4+ | 2000 09 24 | 704 | 0.5-  | 1.0+  | 2007 11 08 | 703 | 0.1+  | 0.4+  |
| 2000 08 26 | 704 | 0.1+ | 0.2+ | 2000 09 24 | 704 | 0.1-  | 0.3-  | 2007 11 08 | 703 | 0.1+  | 0.2+  |
| 2000 08 26 | 704 | 0.0  | 0.2+ | 2000 09 24 | 704 | 1.8-  | 0.2-  | 2007 11 08 | 703 | 0.6-  | 0.5-  |
| 2000 08 26 | 704 | 0.1- | 0.5+ | 2001 12 20 | 645 | 0.1-  | 0.0   | 2007 12 04 | G96 | 0.4+  | 0.0   |
| 2000 09 02 | 699 | 0.3+ | 0.1- | 2001 12 20 | 645 | 0.0   | 0.0   | 2007 12 04 | G96 | 0.3+  | 0.1-  |
| 2000 09 02 | 699 | 0.8+ | 0.8+ | 2006 03 25 | 644 | 0.0   | 0.3+  | 2007 12 04 | G96 | 0.1+  | 0.0   |
| 2000 09 02 | 699 | 1.0+ | 0.2- | 2006 03 25 | 644 | 0.1+  | 0.4+  | 2007 12 16 | 704 | 1.3-  | 0.2+  |
| 2000 09 02 | 699 | 0.7+ | 0.8+ | 2006 03 25 | 644 | 0.1+  | 0.3+  | 2007 12 16 | 704 | 0.3+  | 0.4+  |
| 2000 09 04 | 704 | 0.3+ | 0.3- | 2006 04 30 | 703 | 0.4+  | 1.2+  | 2007 12 16 | 704 | 0.8-  | 0.6+  |
| 2000 09 04 | 704 | 0.3- | 0.0  | 2006 04 30 | 703 | 1.1+  | 0.9+  | 2007 12 16 | 704 | 0.2+  | 0.8+  |
| 2000 09 04 | 704 | 0.3- | 0.1+ | 2006 04 30 | 703 | (0.5+ | 1.6+) |            |     |       |       |

(171669)\* 2000 OM<sub>54</sub>

Discovered 2000 July 29 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 84.89121   | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.18142923 | $\omega$ | 53.40661  | +0.95447751 | +0.26599684 |
| <i>a</i> | 3.0902803  | $\Omega$ | 290.81978 | -0.29826833 | +0.84665281 |
| <i>e</i> | 0.0849902  | <i>i</i> | 8.30280   | -0.00294704 | +0.46089555 |
| <i>P</i> | 5.43       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 02 | 691 | 0.3- | 0.0  | 2003 01 31 | 704 | 0.3+ | 1.0+ | 2006 09 27 | 703 | 0.4- | 0.1- |
| 2000 07 02 | 691 | 0.4- | 0.4+ | 2003 01 31 | 704 | 0.6- | 0.2+ | 2006 09 27 | 703 | 1.1+ | 0.3+ |
| 2000 07 02 | 691 | 0.0  | 0.1+ | 2004 03 14 | 644 | 0.3+ | 0.4+ | 2006 09 29 | 699 | 0.9+ | 0.3- |
| 2000 07 29 | 699 | 0.5- | 0.4+ | 2004 03 14 | 644 | 0.3+ | 0.8+ | 2006 09 29 | 699 | 0.1- | 1.0+ |
| 2000 07 29 | 699 | 0.8- | 0.6+ | 2004 03 14 | 644 | 0.4+ | 0.6+ | 2006 09 29 | 699 | 0.3- | 0.5+ |
| 2000 07 29 | 699 | 0.6+ | 0.2+ | 2006 08 29 | 699 | 0.4+ | 0.5+ | 2006 09 29 | 699 | 0.2+ | 0.9+ |
| 2000 07 29 | 699 | 1.0- | 0.1- | 2006 08 29 | 699 | 0.6+ | 0.6+ | 2006 10 03 | 703 | 0.6- | 1.1- |
| 2000 08 01 | 704 | 1.0+ | 1.2+ | 2006 08 29 | 699 | 1.1+ | 0.9- | 2006 10 03 | 703 | 0.0  | 0.0  |
| 2000 08 01 | 704 | 0.6+ | 0.4+ | 2006 08 29 | 699 | 0.0  | 0.2- | 2006 10 03 | 703 | 0.9- | 0.8- |
| 2000 08 01 | 704 | 0.3+ | 0.3+ | 2006 09 15 | 704 | 0.2+ | 1.1- | 2006 10 03 | 703 | 0.7- | 0.4- |
| 2000 08 01 | 704 | 0.0  | 0.7+ | 2006 09 15 | 704 | 0.2- | 0.4+ | 2006 10 17 | 691 | 0.6+ | 0.1- |
| 2001 11 12 | 704 | 0.2- | 1.3+ | 2006 09 15 | 704 | 0.7- | 0.3+ | 2006 10 17 | 691 | 0.2+ | 0.1- |
| 2001 11 12 | 704 | 0.4- | 0.5+ | 2006 09 15 | 704 | 0.3+ | 0.5- | 2006 10 17 | 691 | 0.3+ | 0.1- |
| 2001 11 12 | 704 | 0.2+ | 0.5+ | 2006 09 16 | 644 | 0.3- | 0.1+ | 2006 10 20 | 691 | 0.1- | 0.2+ |
| 2001 11 12 | 704 | 0.9- | 0.5+ | 2006 09 16 | 644 | 0.0  | 0.2+ | 2006 10 20 | 691 | 0.2- | 0.2+ |
| 2001 11 12 | 704 | 1.0- | 0.1+ | 2006 09 16 | 644 | 0.2+ | 0.1+ | 2006 10 20 | 691 | 0.1- | 0.0  |
| 2001 12 10 | 704 | 0.9- | 0.1+ | 2006 09 17 | 703 | 0.1+ | 0.2- | 2006 10 22 | 691 | 0.0  | 0.5- |
| 2001 12 10 | 704 | 0.6+ | 0.9+ | 2006 09 17 | 703 | 0.3- | 0.4+ | 2006 10 22 | 691 | 0.1+ | 0.3- |
| 2001 12 10 | 704 | 0.6+ | 0.1- | 2006 09 17 | 703 | 1.0- | 0.4+ | 2006 10 22 | 691 | 0.1+ | 0.3- |
| 2001 12 10 | 704 | 0.9+ | 0.5+ | 2006 09 17 | 703 | 0.2+ | 0.3+ | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2003 01 27 | 704 | 0.3+ | 0.1+ | 2006 09 21 | 699 | 0.6+ | 0.5+ | 2007 12 05 | 691 | 0.0  | 0.4+ |
| 2003 01 27 | 704 | 0.4+ | 0.1+ | 2006 09 21 | 699 | 0.8+ | 0.1- | 2007 12 05 | 691 | 0.0  | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 27 | 704 | 0.8+ | 0.6- | 2006 09 21 | 699 | 0.0  | 0.3+ | 2007 12 15 | 704 | 1.1+ | 0.3+ |
| 2003 01 27 | 704 | 0.6- | 0.2+ | 2006 09 21 | 699 | 0.5- | 0.0  | 2007 12 15 | 704 | 0.2+ | 0.3+ |
| 2003 01 31 | 704 | 0.3+ | 0.5+ | 2006 09 27 | 703 | 1.5- | 0.2- | 2007 12 15 | 704 | 0.4- | 0.2- |

(171670)\* 2000 OX<sub>59</sub> = 2002 AU<sub>113</sub>

Discovered 2000 July 29 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 22272)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 34.94185   | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.28720394 | $\omega$ | 26.35728  | +0.78757629 | +0.61145391 |
| <i>a</i> | 2.2751452  | $\Omega$ | 295.73673 | -0.57930160 | +0.69236545 |
| <i>e</i> | 0.1543384  | <i>i</i> | 4.86979   | -0.21007912 | +0.38308512 |
| <i>P</i> | 3.43       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 07 19 | 809 | 0.5+ | 1.1- | 2002 01 09 | 704 | 0.6-  | 0.5+  | 2007 09 12 | 699 | 0.7-  | 0.0   |
| 1993 07 19 | 809 | 0.2+ | 0.8- | 2002 01 09 | 704 | 0.2+  | 1.1+  | 2007 09 13 | 704 | (0.7- | 1.9-) |
| 1993 07 19 | 809 | 1.7+ | 0.3- | 2002 01 09 | 704 | 1.1+  | 1.0+  | 2007 09 13 | 704 | 0.2+  | 0.2-  |
| 2000 07 05 | 699 | 1.7+ | 0.8- | 2002 01 14 | 704 | 0.2+  | 0.3+  | 2007 09 13 | 704 | 1.1+  | 0.6+  |
| 2000 07 05 | 699 | 0.6- | 0.9+ | 2002 01 14 | 704 | 0.7+  | 0.5+  | 2007 09 13 | 704 | 0.7-  | 0.9+  |
| 2000 07 05 | 699 | 0.3- | 0.2+ | 2002 01 14 | 704 | 0.6+  | 0.2-  | 2007 09 14 | 704 | 1.4-  | 0.1-  |
| 2000 07 05 | 699 | 0.5- | 1.0+ | 2002 01 14 | 704 | 0.3+  | 0.3+  | 2007 09 14 | 704 | 1.4-  | 0.1+  |
| 2000 07 29 | 699 | 0.6- | 0.2- | 2002 01 14 | 704 | 1.0-  | 0.3-  | 2007 09 14 | 704 | 0.3+  | 0.0   |
| 2000 07 29 | 699 | 0.7- | 0.5+ | 2002 01 21 | 704 | (0.6- | 2.0+) | 2007 09 14 | 704 | 0.9-  | 0.2+  |
| 2000 07 29 | 699 | 1.0- | 0.0  | 2002 01 21 | 704 | 0.2+  | 0.1+  | 2007 09 17 | 704 | 0.3-  | 0.4+  |
| 2000 07 29 | 699 | 0.4+ | 0.5- | 2002 01 21 | 704 | 0.1-  | 0.0   | 2007 09 17 | 704 | 0.8-  | 0.6-  |
| 2000 07 30 | 807 | 0.2- | 0.1- | 2004 12 14 | 703 | 0.4-  | 0.1-  | 2007 09 17 | 704 | 0.2-  | 0.2+  |
| 2000 07 30 | 807 | 0.0  | 0.0  | 2004 12 14 | 703 | 0.6+  | 0.4-  | 2007 09 17 | 704 | 0.0   | 0.0   |
| 2000 08 02 | 704 | 0.8- | 0.2+ | 2004 12 14 | 703 | 0.2+  | 0.7-  | 2007 09 17 | 704 | 0.0   | 0.1+  |
| 2000 08 02 | 704 | 0.5- | 0.4+ | 2004 12 14 | 703 | 0.1+  | 0.5-  | 2007 09 17 | 704 | 0.5-  | 0.3+  |
| 2000 08 02 | 704 | 0.3+ | 0.6+ | 2007 08 13 | 704 | 0.4+  | 1.1+  | 2007 09 19 | 683 | 0.2+  | 0.3-  |
| 2000 08 02 | 704 | 0.7- | 0.2+ | 2007 08 13 | 704 | 0.8+  | 0.1+  | 2007 09 19 | 683 | 0.3+  | 0.3-  |
| 2000 08 02 | 704 | 0.4- | 1.0+ | 2007 08 13 | 704 | 0.3+  | 0.8+  | 2007 09 19 | 683 | 1.4+  | 0.4+  |
| 2000 08 21 | 699 | 0.5- | 0.3+ | 2007 08 13 | 704 | 0.2-  | 0.9+  | 2007 09 20 | 683 | 0.5+  | 0.5-  |
| 2000 08 21 | 699 | 0.4- | 0.1+ | 2007 08 14 | 704 | 0.5+  | 0.6-  | 2007 09 20 | 683 | 0.6+  | 0.0   |
| 2000 08 21 | 699 | 0.4+ | 0.6+ | 2007 08 14 | 704 | 0.3+  | 0.0   | 2007 09 20 | 683 | 0.1+  | 0.5-  |
| 2000 08 21 | 699 | 0.4- | 0.4+ | 2007 08 14 | 704 | 0.2-  | 0.3-  | 2007 10 07 | 703 | 0.2+  | 0.7-  |
| 2000 08 29 | 704 | 0.0  | 0.4+ | 2007 08 16 | 704 | 1.5+  | 0.1+  | 2007 10 07 | 703 | 0.2+  | 0.4-  |
| 2000 08 29 | 704 | 0.3- | 0.5+ | 2007 08 16 | 704 | 0.2-  | 0.2+  | 2007 10 07 | 703 | 0.4-  | 1.0-  |
| 2000 08 29 | 704 | 0.8- | 0.1+ | 2007 08 16 | 704 | 0.1+  | 0.4+  | 2007 10 07 | 703 | 0.0   | 0.5-  |
| 2000 09 02 | 699 | 0.5- | 1.3+ | 2007 08 16 | 704 | 0.2+  | 0.8+  | 2007 10 12 | 704 | 0.6+  | 0.1+  |
| 2000 09 02 | 699 | 0.4- | 0.9+ | 2007 08 16 | 704 | 0.2-  | 0.4+  | 2007 10 12 | 704 | 0.4+  | 0.0   |
| 2000 09 02 | 699 | 0.3- | 0.7+ | 2007 08 16 | 704 | (0.9+ | 1.6+) | 2007 10 12 | 704 | 0.9+  | 0.2-  |
| 2000 09 02 | 699 | 0.1- | 0.7+ | 2007 09 07 | 704 | 0.6+  | 0.6+  | 2007 10 12 | 704 | 0.4+  | 0.2+  |
| 2000 09 03 | 704 | 0.7- | 0.2+ | 2007 09 07 | 704 | 0.8-  | 0.7-  | 2007 10 12 | 704 | 0.1+  | 0.4-  |
| 2000 09 03 | 704 | 0.7- | 0.2- | 2007 09 07 | 704 | 0.2-  | 0.5+  | 2007 10 15 | 704 | 0.7+  | 0.0   |
| 2000 09 03 | 704 | 0.3+ | 0.2+ | 2007 09 07 | 704 | 0.4-  | 1.0+  | 2007 10 15 | 704 | 0.7+  | 1.1-  |
| 2000 09 03 | 704 | 1.3+ | 1.0- | 2007 09 07 | 704 | 0.3+  | 0.1+  | 2007 10 15 | 704 | 0.1-  | 0.1+  |
| 2001 12 24 | 691 | 0.4- | 0.0  | 2007 09 11 | 703 | 0.1-  | 0.1-  | 2007 10 15 | 704 | 0.1+  | 0.5-  |
| 2001 12 24 | 691 | 1.1- | 0.4+ | 2007 09 11 | 703 | 0.2-  | 0.5-  | 2007 10 15 | 704 | 0.4+  | 0.9-  |
| 2001 12 24 | 691 | 0.2- | 0.1+ | 2007 09 11 | 703 | 0.2+  | 0.3-  | 2007 12 15 | G96 | 0.2+  | 0.4-  |
| 2002 01 08 | 291 | 0.6+ | 0.4+ | 2007 09 11 | 703 | 0.5-  | 0.9-  | 2007 12 15 | G96 | 0.2+  | 0.5-  |
| 2002 01 08 | 291 | 0.6+ | 0.2+ | 2007 09 12 | 699 | 0.3-  | 0.1+  | 2007 12 15 | G96 | 0.7-  | 0.0   |
| 2002 01 08 | 291 | 0.6+ | 0.4+ | 2007 09 12 | 699 | 0.1-  | 0.4+  | 2007 12 15 | G96 | 0.4+  | 0.4-  |
| 2002 01 09 | 704 | 0.9+ | 0.8+ | 2007 09 12 | 699 | 0.2+  | 0.4-  |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 54.48657   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29159365 | $\omega$ 230.94408 | +0.77589869   | +0.61891824 |
| <i>a</i> | 2.2522539  | $\Omega$ 90.47371  | −0.53448700   | +0.74778934 |
| <i>e</i> | 0.3112825  | <i>i</i> 7.01663   | −0.33511917   | +0.24031502 |
| <i>P</i> | 3.38       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1990 11 10 | 691 | 0.1− | 0.5+ | 2000 09 26 | 608 | 0.5− | 0.3− | 2007 11 04 | 704 | (0.3− | 1.5+) |
| 1990 11 10 | 691 | 0.2− | 0.5+ | 2000 10 02 | 699 | 0.5+ | 0.1+ | 2007 11 12 | 704 | 0.1−  | 0.4−  |
| 1990 11 10 | 691 | 0.1− | 0.3+ | 2000 10 02 | 699 | 0.2+ | 0.0  | 2007 11 12 | 704 | 0.7−  | 0.3−  |
| 2000 08 01 | 704 | 0.8− | 0.4+ | 2000 10 02 | 699 | 0.2+ | 0.0  | 2007 11 12 | 704 | 0.3+  | 0.3−  |
| 2000 08 01 | 704 | 0.4+ | 0.6+ | 2000 10 02 | 699 | 0.4− | 0.2+ | 2007 11 12 | 704 | 0.9−  | 0.3−  |
| 2000 08 01 | 704 | 0.0  | 0.1+ | 2003 03 31 | 691 | 1.0+ | 0.7+ | 2007 11 12 | 704 | 0.5+  | 0.8+  |
| 2000 08 01 | 704 | 0.1+ | 1.3− | 2003 03 31 | 691 | 0.7+ | 0.3+ | 2007 11 20 | 703 | 0.3−  | 1.4+  |
| 2000 08 10 | 704 | 0.8+ | 0.9+ | 2003 03 31 | 691 | 0.7+ | 0.9+ | 2007 11 20 | 691 | 0.6−  | 0.0   |
| 2000 08 10 | 704 | 0.3+ | 0.8+ | 2003 04 30 | 691 | 0.2− | 0.1+ | 2007 11 20 | 703 | 0.3+  | 0.2+  |
| 2000 08 10 | 704 | 0.0  | 0.7− | 2003 04 30 | 691 | 0.4+ | 0.4+ | 2007 11 20 | 703 | 0.4+  | 0.6+  |
| 2000 08 10 | 704 | 0.3− | 0.7+ | 2003 04 30 | 691 | 0.7+ | 0.3+ | 2007 11 20 | 703 | 0.9+  | 0.8+  |
| 2000 08 10 | 704 | 0.4+ | 0.8− | 2003 05 11 | 691 | 0.6− | 0.4+ | 2007 11 20 | 691 | 0.5−  | 0.1−  |
| 2000 08 26 | 704 | 0.1+ | 0.5+ | 2003 05 11 | 691 | 0.8− | 0.2+ | 2007 11 20 | 691 | 0.4−  | 0.0   |
| 2000 08 26 | 704 | 0.5− | 0.5+ | 2003 05 11 | 691 | 0.7− | 0.2+ | 2007 11 20 | 703 | 0.8+  | 0.3+  |
| 2000 08 26 | 704 | 0.5− | 0.2+ | 2003 05 27 | 691 | 0.4+ | 0.4+ | 2007 11 20 | 703 | 0.2+  | 0.5+  |
| 2000 08 26 | 704 | 0.4+ | 0.3+ | 2003 05 27 | 691 | 0.0  | 0.7+ | 2007 11 20 | 703 | 0.7+  | 0.0   |
| 2000 08 26 | 704 | 0.2− | 0.6+ | 2003 05 27 | 691 | 0.1− | 0.5+ | 2007 11 20 | 703 | 0.0   | 2.4+  |
| 2000 09 20 | 704 | 1.0+ | 0.1− | 2003 05 28 | 291 | 0.1− | 0.2+ | 2007 11 21 | G96 | 0.1+  | 0.1−  |
| 2000 09 20 | 704 | 0.4− | 0.2+ | 2003 05 28 | 291 | 0.4+ | 0.1− | 2007 11 21 | G96 | 0.2−  | 0.1−  |
| 2000 09 20 | 704 | 0.2− | 0.2+ | 2003 05 28 | 291 | 0.5+ | 0.2− | 2007 11 21 | G96 | 0.0   | 0.0   |
| 2000 09 20 | 704 | 0.2− | 0.4+ | 2006 03 23 | G96 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.3−  | 0.1−  |
| 2000 09 20 | 704 | 0.0  | 0.5+ | 2006 03 23 | G96 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.4−  | 0.8+  |
| 2000 09 24 | 699 | 1.0− | 0.1− | 2006 03 23 | G96 | 0.5+ | 0.1+ | 2007 12 04 | 704 | 1.3+  | 0.6+  |
| 2000 09 24 | 699 | 0.2− | 0.0  | 2006 03 23 | G96 | 0.0  | 0.4+ | 2007 12 04 | 704 | 0.2−  | 0.8+  |
| 2000 09 24 | 699 | 0.6− | 0.1− | 2007 11 04 | 704 | 0.8+ | 1.1+ | 2007 12 04 | 704 | 0.3+  | 0.4+  |
| 2000 09 24 | 699 | 0.5− | 0.0  | 2007 11 04 | 704 | 0.4+ | 0.5+ | 2007 12 04 | 704 | 0.1−  | 1.1+  |
| 2000 09 26 | 608 | 0.4− | 0.0  | 2007 11 04 | 704 | 0.1+ | 0.5+ |            |     |       |       |
| 2000 09 26 | 608 | 0.6− | 0.2− | 2007 11 04 | 704 | 0.3− | 0.3+ |            |     |       |       |

(171672)\* 2000 QL<sub>13</sub>

Discovered 2000 Aug. 24 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 36.55812   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30325458 | $\omega$ 61.02439  | +0.96107391   | −0.27426646 |
| <i>a</i> | 2.1941407  | $\Omega$ 314.87120 | +0.23426104   | +0.87297280 |
| <i>e</i> | 0.1375887  | <i>i</i> 2.70042   | +0.14648788   | +0.40335642 |
| <i>P</i> | 3.25       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 10 03 | 691 | 0.2+  | 0.1−  | 2002 02 14 | 291 | 0.1− | 0.2+ | 2007 11 07 | 691 | 1.0−  | 0.5−  |
| 1997 10 03 | 691 | 0.0   | 0.2−  | 2002 02 14 | 291 | 0.1− | 0.0  | 2007 11 07 | 691 | 0.2+  | 0.6−  |
| 1997 10 03 | 691 | 0.1−  | 0.1−  | 2002 02 14 | 291 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.3−  | 0.2+  |
| 2000 08 07 | 608 | 1.7−  | 0.8−  | 2002 03 10 | 291 | 0.1− | 0.3+ | 2007 11 18 | 704 | (0.9− | 1.8+) |
| 2000 08 07 | 608 | 1.9−  | 1.0−  | 2002 03 10 | 291 | 0.2+ | 0.3+ | 2007 11 18 | 704 | 0.2−  | 0.2+  |
| 2000 08 07 | 608 | (2.4− | 0.9−) | 2002 03 10 | 291 | 0.2+ | 0.4+ | 2007 11 18 | 704 | 0.0   | 0.9+  |
| 2000 08 24 | 704 | 0.7+  | 0.3+  | 2005 01 06 | 704 | 0.2+ | 0.1+ | 2007 11 18 | 704 | 0.0   | 0.2−  |
| 2000 08 24 | 704 | 0.2−  | 1.3+  | 2005 01 06 | 704 | 0.9+ | 1.0− | 2007 11 20 | 704 | 0.7−  | 0.0   |
| 2000 08 24 | 704 | 0.3−  | 0.6+  | 2005 01 06 | 704 | 0.2+ | 1.4− | 2007 11 20 | 704 | 0.6+  | 0.8+  |
| 2000 08 24 | 704 | 0.1−  | 0.0   | 2005 01 17 | 704 | 0.2− | 0.4+ | 2007 11 20 | 704 | 0.3+  | 0.7+  |
| 2000 08 24 | 704 | 0.0   | 0.2+  | 2005 01 17 | 704 | 0.8+ | 0.8+ | 2007 12 10 | 704 | 0.1+  | 0.2+  |
| 2000 08 26 | 704 | 0.2+  | 0.5+  | 2005 01 17 | 704 | 0.2+ | 1.5− | 2007 12 10 | 704 | 0.0   | 0.3−  |
| 2000 08 26 | 704 | 0.8−  | 0.2+  | 2005 01 17 | 704 | 0.1+ | 0.7+ | 2007 12 10 | 704 | 0.2−  | 0.2−  |
| 2000 08 26 | 704 | 0.5+  | 1.3+  | 2005 01 18 | 691 | 0.1+ | 0.3+ | 2007 12 10 | 704 | 0.9+  | 0.8−  |
| 2000 08 26 | 704 | 0.2+  | 1.0+  | 2005 01 18 | 691 | 0.2− | 0.2+ | 2007 12 15 | 704 | 0.8+  | 0.6+  |
| 2000 08 26 | 704 | 0.2−  | 1.2+  | 2005 01 18 | 691 | 0.1− | 0.2+ | 2007 12 15 | 704 | 0.2+  | 0.5+  |
| 2000 08 29 | 704 | 0.2+  | 0.6+  | 2005 02 02 | 704 | 0.5− | 0.2+ | 2007 12 15 | 704 | 0.4+  | 1.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 29 | 704 | 0.3+ | 1.8+ | 2005 02 02 | 704 | 0.4+ | 0.1+ | 2007 12 15 | 704 | 0.4+ | 0.5+ |
| 2000 08 29 | 704 | 0.4+ | 0.9+ | 2005 02 02 | 704 | 0.3+ | 1.4+ | 2007 12 15 | 704 | 0.6+ | 0.5+ |

(171673)\* 2000 QB<sub>33</sub>

Discovered 2000 Aug. 26 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 111.26941  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30568077 | $\omega$ 216.04778 | +0.32587108   | +0.93915255 |
| <i>a</i> | 2.1825154  | $\Omega$ 73.19124  | −0.83867154   | +0.34020129 |
| <i>e</i> | 0.2400363  | <i>i</i> 6.51588   | −0.43639213   | +0.04749288 |
| <i>P</i> | 3.22       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 08 01 | 704 | 0.6−  | 1.6+  | 2000 09 24 | 699 | 1.4+  | 0.1−  | 2006 05 01 | 703 | 0.3−  | 0.7+  |
| 2000 08 01 | 704 | 0.8−  | 0.1−  | 2000 09 24 | 699 | 0.3+  | 0.2−  | 2006 05 01 | 703 | 0.5−  | 0.1+  |
| 2000 08 01 | 704 | 1.1−  | 0.2−  | 2000 10 01 | 704 | 0.6−  | 0.3−  | 2006 05 01 | 703 | 0.5−  | 0.3+  |
| 2000 08 01 | 704 | 0.5−  | 0.8−  | 2000 10 01 | 704 | 1.4−  | 1.0−  | 2006 05 19 | 699 | 0.6+  | 1.1+  |
| 2000 08 01 | 704 | 0.6−  | 0.1−  | 2000 10 01 | 704 | 0.6−  | 0.0   | 2006 05 19 | 699 | 0.9+  | 0.3+  |
| 2000 08 10 | 704 | 0.1−  | 0.5+  | 2000 10 01 | 704 | 0.8−  | 0.6−  | 2006 05 19 | 699 | (1.8+ | 0.7−) |
| 2000 08 10 | 704 | 0.4−  | 0.7+  | 2000 10 01 | 704 | 0.1+  | 0.6+  | 2006 05 19 | 703 | 0.1−  | 0.3+  |
| 2000 08 10 | 704 | 0.5−  | 0.1+  | 2000 10 05 | 608 | 0.3−  | 0.8+  | 2006 05 19 | 703 | 0.0   | 0.3+  |
| 2000 08 10 | 704 | 0.4−  | 0.4+  | 2000 10 05 | 608 | 0.4+  | 1.0+  | 2006 05 19 | 699 | (0.1− | 1.6+) |
| 2000 08 10 | 704 | 0.0   | 0.7+  | 2000 10 05 | 608 | 0.0   | 0.8+  | 2006 05 19 | 703 | 1.1−  | 0.0   |
| 2000 08 26 | 704 | 0.3+  | 0.1−  | 2003 06 03 | 704 | (0.7− | 1.7−) | 2006 05 19 | 703 | 0.4−  | 0.3+  |
| 2000 08 26 | 704 | 0.2+  | 0.2−  | 2003 06 03 | 704 | 0.1−  | 0.9−  | 2007 11 19 | 691 | 0.7−  | 0.1+  |
| 2000 08 26 | 704 | 0.8+  | 0.6−  | 2003 06 03 | 704 | (0.3− | 1.8−) | 2007 11 19 | 691 | 0.2−  | 0.1−  |
| 2000 08 26 | 704 | 0.3+  | 0.3−  | 2003 06 03 | 704 | (0.7+ | 3.1−) | 2007 11 19 | 691 | 0.2−  | 0.8+  |
| 2000 08 26 | 704 | 0.4+  | 0.1−  | 2006 04 09 | G96 | 0.3−  | 0.0   | 2007 12 04 | G96 | 0.0   | 0.1−  |
| 2000 08 28 | 704 | 0.2+  | 0.3−  | 2006 04 09 | G96 | 0.4+  | 0.2−  | 2007 12 04 | G96 | 0.2+  | 0.2−  |
| 2000 08 28 | 704 | 0.1+  | 0.2−  | 2006 04 09 | G96 | 0.1+  | 0.0   | 2007 12 04 | G96 | 0.2+  | 0.2−  |
| 2000 08 28 | 704 | 0.0   | 0.4−  | 2006 04 09 | G96 | 0.2+  | 0.2+  | 2007 12 04 | G96 | 0.3+  | 0.2−  |
| 2000 08 28 | 704 | 0.6+  | 0.3+  | 2006 04 19 | 703 | 0.1−  | 0.0   | 2007 12 14 | 704 | 0.5+  | 0.9+  |
| 2000 08 28 | 704 | 0.2+  | 0.3+  | 2006 04 19 | 703 | 0.3−  | 0.7−  | 2007 12 14 | 704 | 0.6+  | 0.5+  |
| 2000 09 20 | 704 | 0.1+  | 0.1+  | 2006 04 19 | 703 | 0.0   | 0.2−  | 2007 12 14 | 704 | 1.1+  | 0.1+  |
| 2000 09 20 | 704 | 0.1+  | 0.0   | 2006 04 19 | 703 | 0.3+  | 0.5+  | 2007 12 15 | G96 | 0.5+  | 0.4−  |
| 2000 09 20 | 704 | 0.3+  | 0.2−  | 2006 04 20 | 699 | (1.6+ | 0.2−) | 2007 12 15 | G96 | 0.6+  | 0.4−  |
| 2000 09 20 | 704 | 0.1+  | 0.1+  | 2006 04 20 | 699 | 0.6+  | 0.4−  | 2007 12 15 | G96 | 0.2−  | 0.4−  |
| 2000 09 20 | 704 | 0.3+  | 0.0   | 2006 04 20 | 699 | 0.5+  | 0.5+  | 2007 12 15 | G96 | 0.3+  | 0.3−  |
| 2000 09 24 | 699 | 1.0+  | 0.2−  | 2006 04 20 | 699 | 1.3+  | 0.1−  |            |     |       |       |
| 2000 09 24 | 699 | (2.2+ | 0.6−) | 2006 05 01 | 703 | 0.1−  | 0.4+  |            |     |       |       |

(171674)\* 2000 QA<sub>37</sub>

Discovered 2000 Aug. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.91797   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29833575 | $\omega$ 180.29287 | +0.98734607   | −0.15841142 |
| <i>a</i> | 2.2181923  | $\Omega$ 188.83196 | +0.14559143   | +0.92380217 |
| <i>e</i> | 0.2159514  | <i>i</i> 2.73225   | +0.06285603   | +0.34856187 |
| <i>P</i> | 3.30       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 04 | 704 | 0.1−  | 0.5−  | 2000 09 02 | 704 | 0.5− | 0.3+ | 2000 10 19 | 704 | 1.1+ | 0.1+ |
| 1997 12 04 | 704 | 0.4+  | 0.2+  | 2000 09 03 | 704 | 0.2− | 0.2− | 2000 10 19 | 704 | 0.4− | 0.7− |
| 1997 12 04 | 704 | 0.6−  | 0.6−  | 2000 09 03 | 704 | 0.4+ | 0.2+ | 2000 10 19 | 704 | 0.0  | 0.1+ |
| 1997 12 04 | 704 | 0.6−  | 1.8+  | 2000 09 03 | 704 | 0.2+ | 0.1− | 2000 10 19 | 704 | 0.2+ | 0.1+ |
| 1997 12 04 | 704 | 0.0   | 1.2+  | 2000 09 03 | 704 | 0.5− | 0.1− | 2002 02 11 | 704 | 0.1− | 0.9+ |
| 2000 07 06 | 699 | (0.3− | 2.5−) | 2000 09 03 | 704 | 0.7− | 0.1− | 2002 02 11 | 704 | 0.7− | 0.3+ |
| 2000 07 06 | 699 | 0.8+  | 0.6+  | 2000 09 03 | 704 | 0.8− | 0.7+ | 2002 02 11 | 704 | 0.3− | 0.9+ |
| 2000 07 06 | 699 | 0.7+  | 0.6+  | 2000 09 03 | 704 | 0.1− | 0.4+ | 2002 02 11 | 704 | 1.0+ | 0.9+ |
| 2000 07 06 | 699 | 1.2+  | 0.4+  | 2000 09 03 | 704 | 0.1− | 0.2+ | 2002 02 11 | 704 | 0.4+ | 0.9+ |
| 2000 07 29 | 699 | 0.7+  | 0.9+  | 2000 09 03 | 704 | 0.3− | 0.4+ | 2002 03 21 | 691 | 0.1− | 0.2+ |
| 2000 07 29 | 699 | 1.1−  | 0.4+  | 2000 09 03 | 704 | 0.1− | 0.7+ | 2002 03 21 | 691 | 0.1+ | 0.3+ |
| 2000 07 29 | 699 | 0.6−  | 0.9+  | 2000 09 03 | 704 | 0.1+ | 0.1− | 2002 03 21 | 691 | 0.7+ | 0.4+ |



|                                                                                                 |            |          |            |          |             |            |             |     |  |
|-------------------------------------------------------------------------------------------------|------------|----------|------------|----------|-------------|------------|-------------|-----|--|
| <b>(171675)* 2000 QN<sub>58</sub></b>                                                           |            |          |            |          |             |            |             |     |  |
| Discovered 2000 Aug. 26 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro. |            |          |            |          |             |            |             |     |  |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5                                                         |            |          |            |          | MPC         |            |             |     |  |
| <i>M</i>                                                                                        | 55.99806   |          | (2000.0)   |          | <b>P</b>    |            | <b>Q</b>    |     |  |
| <i>n</i>                                                                                        | 0.29926531 | <i>ω</i> | 326.51834  |          | +0.95773938 |            | +0.28585619 |     |  |
| <i>a</i>                                                                                        | 2.2135965  | <i>Ω</i> | 16.95920   |          | −0.23396410 |            | +0.83883747 |     |  |
| <i>e</i>                                                                                        | 0.2055099  | <i>i</i> | 6.29066    |          | −0.16732029 |            | +0.46329033 |     |  |
| <i>P</i>                                                                                        | 3.29       | <i>H</i> | 16.6       |          | <i>G</i>    | 0.15       | <i>U</i>    | 1   |  |
| Residuals in seconds of arc                                                                     |            |          |            |          |             |            |             |     |  |
| 2000 08 01                                                                                      | 704 1.4+   | 0.5−     | 2000 08 29 | 704 0.0  | 0.0         | 2006 04 09 | 691 0.1+    | 0.0 |  |
| 2000 08 01                                                                                      | 704 0.7+   | 0.9−     | 2000 09 04 | 704 0.4− | 0.1+        | 2006 04 09 | 691 0.4+    | 0.0 |  |
| 2000 08 01                                                                                      | 704 0.8−   | 0.7−     | 2000 09 04 | 704 0.6− | 0.2−        | 2006 05 09 | G96 0.2−    | 0.0 |  |
| 2000 08 01                                                                                      | 704 0.2−   | 0.0      | 2000 09 04 | 704 0.5− | 0.1−        | 2006 05 09 | G96 0.2−    | 0.0 |  |
| 2000 08 01                                                                                      | 704 0.8+   | 0.3−     | 2000 09 04 | 704 0.1− | 0.2−        | 2006 05 09 | G96 0.3−    | 0.0 |  |
| 2000 08 21                                                                                      | 699 0.1−   | 0.6+     | 2000 09 20 | 704 0.8− | 0.0         | 2006 05 09 | G96 0.3−    | 0.0 |  |
| 2000 08 21                                                                                      | 699 0.4−   | 0.2+     | 2000 09 20 | 704 0.4− | 0.1+        | 2007 11 07 | 704 0.9−    | 0.0 |  |
| 2000 08 21                                                                                      | 699 0.1−   | 0.1+     | 2000 09 20 | 704 0.4− | 0.0         | 2007 11 07 | 704 0.3−    | 0.0 |  |
| 2000 08 21                                                                                      | 699 0.3+   | 0.1+     | 2000 09 20 | 704 0.4− | 0.7+        | 2007 11 07 | 704 0.9−    | 0.0 |  |
| 2000 08 26                                                                                      | 704 0.3+   | 0.4+     | 2000 09 20 | 704 0.4+ | 0.9+        | 2007 11 20 | 704 1.1+    | 0.0 |  |
| 2000 08 26                                                                                      | 704 0.6+   | 0.2+     | 2005 02 04 | 621 0.1− | 0.1−        | 2007 11 20 | 704 0.9+    | 0.0 |  |
| 2000 08 26                                                                                      | 704 0.3−   | 0.7+     | 2005 02 04 | 621 0.3− | 0.2+        | 2007 11 20 | 704 0.7−    | 0.0 |  |
| 2000 08 26                                                                                      | 704 0.3−   | 0.5+     | 2005 02 04 | 621 0.3+ | 0.3−        | 2007 11 20 | 704 0.7−    | 1.0 |  |
| 2000 08 26                                                                                      | 704 0.2+   | 0.0      | 2006 03 26 | 691 0.0  | 0.4+        | 2007 12 16 | 704 0.4+    | 0.0 |  |
| 2000 08 29                                                                                      | 704 0.1−   | 0.3+     | 2006 03 26 | 691 0.0  | 0.3+        | 2007 12 16 | 704 0.0     | 0.0 |  |
| 2000 08 29                                                                                      | 704 0.3+   | 0.8+     | 2006 03 26 | 691 0.4+ | 0.4+        | 2007 12 16 | 704 0.1+    | 0.0 |  |
| 2000 08 29                                                                                      | 704 0.5−   | 0.6+     | 2006 04 09 | 691 0.2+ | 0.1+        | 2007 12 16 | 704 0.3+    | 0.0 |  |

|                                         |            |      |      |                    |     |               |      |             |     |      |      |
|-----------------------------------------|------------|------|------|--------------------|-----|---------------|------|-------------|-----|------|------|
| Id. G. V. Williams ( <i>MPO</i> 22392)  |            |      |      |                    |     |               |      |             |     |      |      |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |                    |     |               |      |             |     |      |      |
|                                         |            |      |      | MPC                |     |               |      |             |     |      |      |
| <i>M</i>                                | 85.78979   |      |      | (2000.0)           |     | <b>P</b>      |      | <b>Q</b>    |     |      |      |
| <i>n</i>                                | 0.17687422 |      |      | $\omega$ 159.69679 |     | +0.98650684   |      | +0.16370761 |     |      |      |
| <i>a</i>                                | 3.1431108  |      |      | $\Omega$ 190.88163 |     | −0.15164735   |      | +0.90904613 |     |      |      |
| <i>e</i>                                | 0.1635613  |      |      | <i>i</i> 0.61260   |     | −0.06170363   |      | +0.38319048 |     |      |      |
| <i>P</i>                                | 5.57       |      |      | <i>H</i> 15.3      |     | <i>G</i> 0.15 |      | <i>U</i>    |     | 0    |      |
| Residuals in seconds of arc             |            |      |      |                    |     |               |      |             |     |      |      |
| 1993 04 21                              | 691        | 0.1+ | 0.6+ | 2006 09 17         | 704 | 0.4+          | 0.7− | 2006 09 22  | 568 | 0.1+ | 0.1+ |
| 1993 04 21                              | 691        | 0.8+ | 0.6+ | 2006 09 17         | 568 | 0.1−          | 0.1+ | 2006 09 22  | 568 | 0.1+ | 0.1+ |
| 1993 04 21                              | 691        | 0.2+ | 0.8+ | 2006 09 17         | 568 | 0.1−          | 0.1+ | 2006 09 25  | G96 | 0.2+ | 0.2− |
| 1995 10 02                              | 691        | 0.0  | 0.4− | 2006 09 17         | 568 | 0.2−          | 0.1+ | 2006 09 25  | G96 | 0.1− | 0.3− |
| 1995 10 02                              | 691        | 0.0  | 0.4− | 2006 09 17         | 568 | 0.2−          | 0.1+ | 2006 09 25  | G96 | 0.2+ | 0.3− |
| 1995 10 02                              | 691        | 0.1− | 0.5− | 2006 09 17         | 568 | 0.2−          | 0.1+ | 2006 09 25  | G96 | 0.0  | 0.2− |
| 2000 08 21                              | 699        | 0.6+ | 0.0  | 2006 09 17         | 568 | 0.1−          | 0.1+ | 2006 09 26  | G91 | 0.2+ | 0.1− |
| 2000 08 21                              | 699        | 0.2+ | 0.3+ | 2006 09 17         | 568 | 0.1−          | 0.1+ | 2006 09 26  | 691 | 0.1+ | 0.2+ |
| 2000 08 21                              | 699        | 0.2− | 0.0  | 2006 09 17         | 568 | 0.2−          | 0.1+ | 2006 09 26  | 691 | 0.1+ | 0.0  |
| 2000 08 21                              | 699        | 0.1− | 1.2+ | 2006 09 17         | 568 | 0.1−          | 0.1+ | 2006 09 29  | 704 | 1.3+ | 0.3− |
| 2000 08 29                              | 704        | 0.7− | 0.1− | 2006 09 17         | 568 | 0.0           | 0.1+ | 2006 09 29  | 704 | 0.1− | 0.3+ |
| 2000 08 29                              | 704        | 0.4− | 0.6+ | 2006 09 18         | 699 | 1.1+          | 0.1+ | 2006 09 29  | 704 | 0.5− | 0.2+ |
| 2000 08 29                              | 704        | 0.7− | 0.9+ | 2006 09 18         | 699 | 0.0           | 0.0  | 2006 09 29  | 704 | 0.5+ | 0.4+ |
| 2000 08 29                              | 704        | 0.3− | 0.6− | 2006 09 18         | 699 | 0.1−          | 0.5+ | 2006 09 29  | 704 | 0.7+ | 0.9+ |
| 2000 09 02                              | 704        | 0.1+ | 0.3+ | 2006 09 18         | 699 | 0.3−          | 0.3− | 2006 09 30  | 691 | 0.0  | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 02 | 704 | 0.6+  | 0.8+  | 2006 09 19 | 691 | 0.2- | 0.0  | 2006 09 30 | 691 | 0.0  | 0.1+ |
| 2000 09 02 | 704 | 0.4-  | 0.5+  | 2006 09 19 | 691 | 0.4- | 0.1+ | 2006 09 30 | 691 | 0.1+ | 0.1+ |
| 2000 09 02 | 704 | 0.3-  | 1.5-  | 2006 09 19 | 691 | 1.3- | 0.1- | 2006 10 10 | 644 | 0.2- | 0.2+ |
| 2000 09 02 | 691 | 0.1+  | 0.3-  | 2006 09 20 | 704 | 0.3+ | 0.2+ | 2006 10 10 | 644 | 0.1+ | 0.0  |
| 2000 09 02 | 691 | 0.0   | 0.4-  | 2006 09 20 | 704 | 0.1- | 0.7+ | 2006 10 10 | 644 | 0.1- | 0.2+ |
| 2000 09 02 | 691 | 0.0   | 0.5-  | 2006 09 20 | 704 | 0.2+ | 0.4- | 2006 10 12 | 644 | 0.1- | 0.0  |
| 2000 09 05 | 704 | 0.3-  | 1.3+  | 2006 09 20 | 704 | 0.4- | 0.1+ | 2006 10 12 | 644 | 0.4- | 0.4+ |
| 2000 09 05 | 704 | 0.6+  | 0.7-  | 2006 09 20 | 568 | 0.0  | 0.2+ | 2006 10 12 | 644 | 0.2- | 0.2+ |
| 2000 09 05 | 704 | 0.6+  | 0.0   | 2006 09 20 | 568 | 0.0  | 0.2+ | 2006 10 16 | G96 | 0.0  | 0.2- |
| 2001 11 20 | 704 | 0.6+  | 0.4+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 16 | G96 | 0.1+ | 0.2- |
| 2001 11 20 | 704 | 1.0+  | 0.3+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 16 | G96 | 0.1- | 0.1- |
| 2001 11 20 | 704 | 0.4-  | 0.3+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 16 | G96 | 0.1+ | 0.3- |
| 2001 11 20 | 704 | 0.1+  | 0.1-  | 2006 09 20 | 568 | 0.1+ | 0.1+ | 2006 10 19 | 644 | 0.1+ | 0.4+ |
| 2001 11 20 | 704 | 0.3-  | 0.0   | 2006 09 20 | 568 | 0.0  | 0.2+ | 2006 10 19 | 644 | 0.1- | 0.2- |
| 2001 11 21 | 704 | 0.2+  | 0.5+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 19 | 644 | 0.1- | 0.4+ |
| 2001 11 21 | 704 | 0.7+  | 0.5+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 20 | 644 | 0.1- | 0.5- |
| 2001 11 21 | 704 | 0.1+  | 0.4+  | 2006 09 20 | 568 | 0.0  | 0.2+ | 2006 10 20 | 644 | 0.1+ | 0.0  |
| 2001 11 21 | 704 | 0.2+  | 1.3+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 20 | 644 | 0.0  | 0.0  |
| 2001 11 21 | 704 | 0.4-  | 0.7+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 21 | 644 | 0.0  | 0.1+ |
| 2001 12 17 | 704 | 0.3+  | 0.1-  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 21 | 644 | 0.0  | 0.2- |
| 2001 12 17 | 704 | 0.6-  | 0.2+  | 2006 09 20 | 568 | 0.1+ | 0.1+ | 2006 10 21 | 644 | 0.1+ | 0.1- |
| 2001 12 17 | 704 | 0.0   | 0.1+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 27 | G96 | 0.0  | 0.3- |
| 2001 12 17 | 704 | 0.4-  | 0.5+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 10 27 | G96 | 0.2- | 0.2- |
| 2001 12 18 | 691 | 0.2+  | 0.1+  | 2006 09 20 | 568 | 0.1+ | 0.1+ | 2006 10 27 | G96 | 0.1+ | 0.4- |
| 2001 12 18 | 691 | 0.2-  | 0.3-  | 2006 09 20 | 568 | 0.0  | 0.2+ | 2006 10 27 | G96 | 0.2+ | 0.2- |
| 2001 12 18 | 691 | 0.1+  | 0.2+  | 2006 09 20 | 568 | 0.0  | 0.1+ | 2006 11 02 | G96 | 0.1+ | 0.2+ |
| 2001 12 20 | 704 | 0.6+  | 0.8+  | 2006 09 20 | 568 | 0.0  | 0.2+ | 2006 11 02 | G96 | 0.2- | 0.5+ |
| 2001 12 20 | 704 | 0.7+  | 0.9+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 11 02 | G96 | 0.1+ | 0.1+ |
| 2001 12 20 | 704 | 0.8-  | 0.1+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 11 02 | G96 | 0.0  | 0.0  |
| 2001 12 20 | 704 | (1.5+ | 1.7+) | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 11 02 | G96 | 0.0  | 0.3- |
| 2001 12 20 | 704 | 0.4-  | 0.8+  | 2006 09 20 | 568 | 0.1+ | 0.2+ | 2006 11 02 | G96 | 0.1+ | 0.3- |
| 2001 12 20 | 704 | 0.3+  | 0.3+  | 2006 09 20 | 568 | 0.1+ | 0.1+ | 2006 11 02 | G96 | 0.1- | 0.2- |
| 2001 12 20 | 704 | 0.9+  | 0.2+  | 2006 09 20 | 568 | 0.1+ | 0.1+ | 2006 11 02 | G96 | 0.1+ | 0.4- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.2+ | 2006 11 11 | G96 | 0.2+ | 0.8- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.1+ | 2006 11 11 | G96 | 0.2- | 0.5- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.2+ | 2006 11 11 | G96 | 0.0  | 0.6- |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 21 | 568 | 0.1+ | 0.2+ | 2006 11 11 | G96 | 0.1+ | 0.4- |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.2+ | 2006 12 16 | G96 | 0.0  | 0.3- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.1+ | 2006 12 16 | G96 | 0.1- | 0.1- |
| 2006 09 14 | 703 | 0.4-  | 0.5+  | 2006 09 21 | 568 | 0.0  | 0.2+ | 2006 12 16 | G96 | 0.7+ | 0.6+ |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.2+ | 2006 12 16 | G96 | 1.0+ | 0.7+ |
| 2006 09 14 | 703 | 0.6-  | 0.2-  | 2006 09 21 | 568 | 0.1+ | 0.2+ | 2007 01 08 | G96 | 0.2- | 0.6- |
| 2006 09 14 | 703 | 0.9-  | 0.0   | 2006 09 21 | 568 | 0.1+ | 0.2+ | 2007 01 08 | G96 | 1.2+ | 0.6- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 21 | 568 | 0.0  | 0.2+ | 2007 01 08 | G96 | 0.1- | 0.2+ |
| 2006 09 14 | 703 | 0.0   | 0.2+  | 2006 09 21 | 568 | 0.1+ | 0.1+ | 2007 01 08 | G96 | 0.0  | 0.2- |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 21 | 568 | 0.1+ | 0.1+ | 2007 02 06 | G96 | 0.0  | 0.4- |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 02 06 | G96 | 0.2- | 0.1- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 02 06 | G96 | 0.1+ | 0.7- |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 02 06 | G96 | 1.2- | 0.4- |
| 2006 09 14 | 568 | 0.1-  | 0.1+  | 2006 09 22 | 568 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.2- | 0.2+ |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 22 | 568 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.1+ |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.2+ | 2007 10 19 | G96 | 0.1+ | 0.2- |
| 2006 09 14 | 568 | 0.1+  | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 10 19 | G96 | 0.1+ | 0.3+ |
| 2006 09 14 | 568 | 0.0   | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.5- | 0.5- |
| 2006 09 15 | 691 | 0.1-  | 0.2+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.7- |
| 2006 09 15 | 691 | 0.1-  | 0.1+  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.4- | 0.8- |
| 2006 09 15 | 691 | 0.3-  | 0.2+  | 2006 09 22 | 568 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.4+ | 1.2- |
| 2006 09 17 | 704 | 0.7+  | 1.3-  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.4- | 0.0  |
| 2006 09 17 | 704 | 0.2+  | 0.3-  | 2006 09 22 | 568 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.2- | 0.1+ |
| 2006 09 17 | 704 | 0.3+  | 0.1-  | 2006 09 22 | 568 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.3- | 0.0  |

(171678)\* 2000 QD<sub>170</sub>

Discovered 2000 Aug. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$                         | 132.99787  |          | (2000.0)  |            | $P$         |      | $Q$         |            |     |       |       |
|-----------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|-------|-------|
| $n$                         | 0.17821994 | $\omega$ | 1.96260   |            | +0.62163043 |      | +0.77913127 |            |     |       |       |
| $a$                         | 3.1272686  | $\Omega$ | 306.48289 |            | -0.72003569 |      | +0.52774733 |            |     |       |       |
| $e$                         | 0.1659885  | $i$      | 5.76820   |            | -0.30842212 |      | +0.33828570 |            |     |       |       |
| $P$                         | 5.53       | $H$      | 15.1      | $G$        | 0.15        | $U$  | 1           |            |     |       |       |
| Residuals in seconds of arc |            |          |           |            |             |      |             |            |     |       |       |
| 2000 08 30                  | 691        | 0.0      | 0.2+      | 2001 12 17 | 704         | 0.5- | 0.0         | 2006 10 22 | 644 | 0.2-  | 0.2+  |
| 2000 08 30                  | 691        | 0.1+     | 0.1-      | 2001 12 17 | 704         | 0.7- | 0.5+        | 2006 10 22 | 644 | 0.0   | 0.2+  |
| 2000 08 30                  | 691        | 0.0      | 0.1-      | 2003 01 26 | 291         | 0.1+ | 0.3+        | 2006 10 22 | 644 | 0.0   | 0.1-  |
| 2000 08 31                  | 704        | 0.2+     | 0.4+      | 2003 01 26 | 291         | 0.6- | 0.7+        | 2006 10 27 | 703 | 0.4-  | 0.2-  |
| 2000 08 31                  | 704        | 0.7-     | 1.0+      | 2003 01 26 | 291         | 0.8- | 0.0         | 2006 10 27 | 703 | 0.2-  | 0.4+  |
| 2000 08 31                  | 704        | 0.3-     | 0.7-      | 2003 03 08 | 291         | 0.6+ | 0.4+        | 2006 10 27 | 703 | 1.1-  | 0.3+  |
| 2000 08 31                  | 704        | 0.5+     | 0.4+      | 2003 03 08 | 291         | 0.2+ | 0.3+        | 2006 10 27 | 703 | 0.3+  | 0.9-  |
| 2000 09 03                  | 704        | 0.1-     | 1.4+      | 2003 03 08 | 291         | 1.1+ | 0.8+        | 2006 11 14 | 703 | 0.4+  | 0.3-  |
| 2000 09 03                  | 704        | 0.1+     | 0.1-      | 2006 10 11 | 644         | 0.2- | 0.1+        | 2006 11 14 | 703 | 0.9-  | 1.1-  |
| 2000 09 03                  | 704        | 0.4-     | 0.4-      | 2006 10 11 | 644         | 0.4- | 0.2+        | 2006 11 14 | 703 | 0.3+  | 0.5-  |
| 2000 09 03                  | 704        | 0.3+     | 0.3+      | 2006 10 11 | 644         | 0.0  | 0.2+        | 2006 11 14 | 703 | (0.9+ | 2.2-) |
| 2000 09 03                  | 704        | 0.4-     | 0.1+      | 2006 10 19 | 703         | 0.3- | 0.9+        | 2007 11 19 | G96 | 0.2-  | 0.4-  |
| 2000 09 23                  | 704        | 0.2+     | 0.0       | 2006 10 19 | 703         | 0.1+ | 0.7+        | 2007 11 19 | G96 | 0.2-  | 0.4-  |
| 2000 09 23                  | 704        | 0.6+     | 0.3-      | 2006 10 19 | 703         | 0.1- | 1.3+        | 2007 11 19 | G96 | 0.0   | 0.2-  |
| 2000 09 23                  | 704        | 0.5+     | 0.2-      | 2006 10 19 | 703         | 1.0+ | 0.5-        | 2007 12 05 | 691 | 0.2-  | 0.2-  |
| 2000 09 23                  | 704        | 0.1+     | 0.9+      | 2006 10 19 | A50         | 0.2- | 0.2+        | 2007 12 05 | 691 | 0.2-  | 0.4-  |
| 2000 09 23                  | 704        | 0.0      | 0.6+      | 2006 10 20 | 644         | 0.0  | 0.5+        | 2007 12 05 | 691 | 0.8+  | 1.0-  |
| 2000 10 01                  | 699        | 0.9-     | 0.7-      | 2006 10 20 | 644         | 0.0  | 0.3+        | 2007 12 15 | 704 | 0.1-  | 0.9-  |
| 2000 10 01                  | 699        | 0.5-     | 0.4-      | 2006 10 20 | 644         | 0.1- | 0.0         | 2007 12 15 | 704 | 0.5+  | 0.3+  |
| 2000 10 01                  | 699        | 0.4-     | 0.4+      | 2006 10 22 | 644         | 0.0  | 0.2-        | 2007 12 15 | 704 | 1.3-  | 0.6-  |
| 2000 10 01                  | 699        | 0.6+     | 0.1-      | 2006 10 22 | 644         | 0.4- | 0.2+        |            |     |       |       |
| 2001 12 17                  | 704        | 0.5+     | 0.2-      | 2006 10 22 | 644         | 0.1+ | 0.1+        |            |     |       |       |

(171679)\* 2000 QN<sub>226</sub> = 2001 VP<sub>96</sub> = 2004 HP<sub>75</sub>

Discovered 2000 Aug. 31 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 19860), A. Doppler (*MPO* 84580)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$                         | 70.78495   |          | (2000.0)  |            | $P$         |      | $Q$         |            |     |       |       |
|-----------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|-------|-------|
| $n$                         | 0.17409061 | $\omega$ | 163.50797 |            | +0.98570270 |      | +0.16610403 |            |     |       |       |
| $a$                         | 3.1765265  | $\Omega$ | 187.11291 |            | -0.16847706 |      | +0.96925149 |            |     |       |       |
| $e$                         | 0.1074728  | $i$      | 13.20119  |            | -0.00238248 |      | +0.18155167 |            |     |       |       |
| $P$                         | 5.66       | $H$      | 15.1      | $G$        | 0.15        | $U$  | 0           |            |     |       |       |
| Residuals in seconds of arc |            |          |           |            |             |      |             |            |     |       |       |
| 2000 08 21                  | 699        | 0.0      | 1.1+      | 2004 04 11 | 644         | 0.0  | 0.4+        | 2006 08 29 | 703 | 0.6-  | 0.0   |
| 2000 08 21                  | 699        | 0.0      | 0.0       | 2004 04 23 | 691         | 0.0  | 0.5+        | 2006 08 29 | 703 | 0.3-  | 0.4+  |
| 2000 08 21                  | 699        | 0.5-     | 1.5+      | 2004 04 23 | 691         | 0.2- | 0.6+        | 2006 08 30 | 704 | 0.2-  | 0.0   |
| 2000 08 21                  | 699        | 0.3+     | 0.2+      | 2004 04 23 | 691         | 0.0  | 0.4+        | 2006 08 30 | 704 | 0.5-  | 0.7+  |
| 2000 08 31                  | 691        | 0.1+     | 0.4-      | 2005 07 11 | 691         | 0.4- | 0.2+        | 2006 08 30 | 704 | 0.1+  | 0.4+  |
| 2000 08 31                  | 691        | 0.4-     | 0.2-      | 2005 07 11 | 691         | 0.2- | 0.0         | 2006 09 12 | 703 | (2.5+ | 1.6-) |
| 2000 08 31                  | 691        | 0.4+     | 0.6-      | 2005 07 11 | 691         | 0.2+ | 0.2+        | 2006 09 12 | 703 | 0.0   | 1.0+  |
| 2000 09 03                  | 704        | 1.0-     | 0.0       | 2006 08 18 | 644         | 0.7+ | 0.0         | 2006 09 12 | 703 | 1.3-  | 0.5-  |
| 2000 09 03                  | 704        | 0.6-     | 0.8+      | 2006 08 18 | 644         | 0.2+ | 0.5+        | 2006 09 12 | 703 | 0.6-  | 0.6-  |
| 2000 09 03                  | 704        | 0.3+     | 0.0       | 2006 08 18 | 644         | 0.1+ | 0.3+        | 2006 09 16 | 699 | 0.1+  | 0.5+  |
| 2000 09 03                  | 704        | 1.3+     | 0.5-      | 2006 08 21 | 691         | 0.4+ | 0.3+        | 2006 09 16 | 699 | 0.5+  | 0.2+  |
| 2001 11 15                  | 704        | 0.9-     | 1.1+      | 2006 08 21 | 691         | 0.3+ | 0.4+        | 2006 09 16 | 699 | 0.1-  | 1.4+  |
| 2001 11 15                  | 704        | (0.3+    | 2.0+)     | 2006 08 21 | 691         | 0.3+ | 0.4+        | 2006 09 16 | 699 | 0.3+  | 1.5+  |
| 2001 11 15                  | 704        | 0.1-     | 1.4+      | 2006 08 24 | 704         | 0.2+ | 0.0         | 2006 11 21 | G96 | 0.1-  | 0.2-  |
| 2001 11 18                  | 704        | 0.0      | 0.2+      | 2006 08 24 | 704         | 0.1- | 0.9-        | 2006 11 21 | G96 | 0.5+  | 0.1+  |
| 2001 11 18                  | 704        | 0.1+     | 0.2+      | 2006 08 24 | 704         | 0.4+ | 0.7+        | 2006 11 21 | G96 | 0.1+  | 0.2+  |
| 2001 11 18                  | 704        | 0.3+     | 1.2+      | 2006 08 24 | 704         | 0.3- | 0.9+        | 2006 11 21 | G96 | 0.2-  | 0.3-  |
| 2004 03 18                  | 704        | 0.6+     | 0.0       | 2006 08 26 | 704         | 0.3- | 0.4-        | 2007 11 20 | 703 | 0.5-  | 0.3+  |
| 2004 03 18                  | 704        | 1.5+     | 1.1-      | 2006 08 26 | 704         | 0.6+ | 0.3+        | 2007 11 20 | 703 | 0.8-  | 1.1+  |
| 2004 03 18                  | 704        | 1.2+     | 0.1+      | 2006 08 26 | 704         | 0.2+ | 0.1+        | 2007 11 20 | 703 | 0.0   | 0.4+  |
| 2004 03 18                  | 704        | (2.2+    | 1.6-)     | 2006 08 26 | 704         | 0.6- | 0.2-        | 2007 11 20 | 703 | 1.3-  | 0.8+  |
| 2004 03 27                  | 704        | 0.3+     | 0.7+      | 2006 08 29 | 703         | 0.0  | 0.1+        | 2007 12 06 | 703 | 0.9+  | 1.9-  |
| 2004 03 27                  | 704        | 0.4+     | 1.3+      | 2006 08 29 | 703         | 0.3- | 0.5-        | 2007 12 06 | 703 | 0.1+  | 0.3-  |
| 2004 03 27                  | 704        | 0.4+     | 0.6+      | 2006 08 29 | 703         | 0.4- | 0.6-        | 2007 12 06 | 703 | 0.3+  | 0.9+  |

2007 DEC. 24

M.P.O. 129125

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 27 | 704 | 0.1- | 1.0+ | 2006 08 29 | 703 | 1.2- | 0.5- | 2007 12 06 | 703 | 0.4+ | 0.1- |
| 2004 04 11 | 644 | 0.1+ | 0.3+ | 2006 08 29 | 703 | 0.2- | 0.5- |            |     |      |      |
| 2004 04 11 | 644 | 0.1- | 0.4+ | 2006 08 29 | 703 | 0.5- | 0.0  |            |     |      |      |

**(171680)\* 2000 RS<sub>21</sub>**

Discovered 2000 Sept. 1 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 55.99567   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.30223736 | $\omega$ | 121.60186 | +0.98692046 | -0.15828045 |
| <i>a</i> | 2.1990611  | $\Omega$ | 247.52064 | +0.13441335 | +0.91267561 |
| <i>e</i> | 0.1485385  | <i>i</i> | 1.89671   | +0.08900036 | +0.37678976 |
| <i>P</i> | 3.26       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 01 | 704 | 0.2- | 0.5+ | 2000 10 01 | 699 | 0.7+  | 0.4+  | 2005 03 16 | 691 | 0.3+ | 0.5+ |
| 2000 09 01 | 704 | 0.1- | 0.0  | 2000 10 01 | 699 | 0.4+  | 0.7+  | 2005 03 16 | 691 | 0.1+ | 0.2+ |
| 2000 09 01 | 704 | 0.1- | 0.1+ | 2000 10 01 | 699 | 0.4+  | 0.3+  | 2005 03 16 | 691 | 0.0  | 0.5+ |
| 2000 09 01 | 704 | 0.4+ | 0.2+ | 2000 10 01 | 699 | 0.3+  | 0.2+  | 2005 04 06 | G96 | 0.3+ | 0.0  |
| 2000 09 01 | 704 | 0.4- | 0.4+ | 2000 10 02 | 704 | 1.0+  | 0.3+  | 2005 04 06 | G96 | 0.2- | 0.5- |
| 2000 09 03 | 704 | 0.2+ | 0.1+ | 2000 10 02 | 704 | 0.0   | 0.1+  | 2005 04 06 | G96 | 0.2- | 0.3+ |
| 2000 09 03 | 704 | 0.7- | 0.7+ | 2000 10 02 | 704 | 0.0   | 0.7+  | 2005 04 06 | G96 | 0.1- | 0.2- |
| 2000 09 03 | 704 | 0.3- | 1.1+ | 2000 10 02 | 704 | 0.0   | 0.6+  | 2007 10 14 | G96 | 0.2+ | 0.4- |
| 2000 09 03 | 704 | 0.5- | 0.9+ | 2000 10 02 | 704 | 0.4+  | 0.6+  | 2007 10 14 | G96 | 0.1- | 0.4- |
| 2000 09 21 | 699 | 0.5- | 0.0  | 2000 10 27 | 691 | 0.4-  | 0.5-  | 2007 10 14 | G96 | 0.1+ | 0.5+ |
| 2000 09 21 | 699 | 0.6- | 0.6+ | 2000 10 27 | 691 | 0.2-  | 0.5-  | 2007 10 14 | G96 | 0.1- | 0.3- |
| 2000 09 21 | 699 | 0.8- | 0.1+ | 2000 10 27 | 691 | 0.3-  | 0.7-  | 2007 11 05 | G96 | 0.1- | 0.6- |
| 2000 09 21 | 699 | 0.4- | 0.1+ | 2003 07 22 | 608 | 0.1+  | 1.0-  | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2000 09 24 | 704 | 0.1+ | 0.1+ | 2003 07 22 | 608 | 0.5+  | 1.1-  | 2007 11 05 | G96 | 0.2+ | 0.5- |
| 2000 09 24 | 704 | 0.4- | 0.0  | 2003 07 22 | 608 | 0.0   | 0.8-  | 2007 11 05 | G96 | 0.2- | 0.2- |
| 2000 09 24 | 704 | 0.3+ | 0.5+ | 2005 02 02 | 703 | (0.9- | 1.6+) | 2007 12 04 | G96 | 0.1+ | 0.5- |
| 2000 09 24 | 704 | 0.1- | 0.6+ | 2005 02 02 | 703 | 0.5+  | 0.5+  | 2007 12 04 | G96 | 0.1+ | 0.5- |
| 2000 09 24 | 704 | 0.2+ | 1.5+ | 2005 02 02 | 703 | 0.1+  | 0.2-  | 2007 12 04 | G96 | 0.1+ | 0.5- |
| 2000 09 26 | 704 | 0.1- | 0.1+ | 2005 02 02 | 703 | 0.2-  | 0.2-  | 2007 12 04 | G96 | 0.3- | 0.7- |
| 2000 09 26 | 704 | 1.0+ | 0.4- | 2005 03 09 | G96 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2000 09 26 | 704 | 0.1+ | 0.4- | 2005 03 09 | G96 | 0.1-  | 0.2-  | 2007 12 05 | 704 | 0.6- | 0.0  |
| 2000 09 26 | 704 | 0.5+ | 0.4- | 2005 03 09 | G96 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.1- | 0.0  |
| 2000 09 26 | 704 | 0.3+ | 0.3- | 2005 03 09 | G96 | 0.2-  | 0.0   |            |     |      |      |

**(171681)\* 2000 RK<sub>23</sub>**

Discovered 2000 Sept. 1 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 89.38723   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.29638744 | $\omega$ | 334.38976 | +0.59835349 | +0.79861577 |
| <i>a</i> | 2.2279025  | $\Omega$ | 332.22294 | -0.70918151 | +0.49030254 |
| <i>e</i> | 0.1741967  | <i>i</i> | 7.98012   | -0.37287356 | +0.34902188 |
| <i>P</i> | 3.33       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 01 | 704 | 0.3- | 0.3+ | 2000 10 03 | 704 | 0.2-  | 0.4-  | 2006 03 25 | 644 | 0.3+ | 0.4+ |
| 2000 09 01 | 704 | 0.5- | 0.7+ | 2000 10 03 | 704 | 0.5+  | 0.2+  | 2006 04 06 | E12 | 0.3- | 1.2+ |
| 2000 09 01 | 704 | 0.3- | 0.6- | 2000 10 06 | 704 | 0.4-  | 0.4+  | 2006 04 06 | E12 | 0.0  | 1.5+ |
| 2000 09 01 | 704 | 0.5- | 0.9- | 2000 10 06 | 704 | 0.3+  | 0.9+  | 2006 04 06 | E12 | 1.2+ | 1.3+ |
| 2000 09 01 | 704 | 0.3- | 0.3- | 2000 10 06 | 704 | 0.1-  | 0.1+  | 2006 04 06 | E12 | 1.0- | 0.6+ |
| 2000 09 03 | 704 | 0.3+ | 0.2- | 2000 10 06 | 704 | 0.2+  | 0.2+  | 2006 04 21 | 644 | 0.7+ | 1.0+ |
| 2000 09 03 | 704 | 0.2- | 0.5+ | 2000 10 25 | 704 | 1.0+  | 0.5+  | 2006 04 21 | 644 | 1.1+ | 0.5+ |
| 2000 09 03 | 704 | 0.0  | 0.0  | 2000 10 25 | 704 | 0.6-  | 1.0-  | 2006 04 21 | 644 | 0.7+ | 0.8+ |
| 2000 09 03 | 704 | 0.1- | 0.2- | 2000 10 25 | 704 | 0.4+  | 0.3+  | 2006 05 05 | 699 | 1.1+ | 0.1+ |
| 2000 09 03 | 704 | 0.4+ | 1.2+ | 2000 10 25 | 704 | 0.4-  | 0.8-  | 2006 05 05 | 699 | 0.2+ | 0.2- |
| 2000 09 21 | 608 | 0.8- | 0.5+ | 2002 01 05 | 691 | 0.3+  | 0.1+  | 2006 05 05 | 699 | 1.0+ | 0.3+ |
| 2000 09 21 | 608 | 0.7- | 0.5+ | 2002 01 05 | 691 | 0.0   | 0.5+  | 2006 05 05 | 699 | 0.5- | 0.2+ |
| 2000 09 21 | 608 | 0.5- | 0.7+ | 2002 01 05 | 691 | 0.1-  | 0.4+  | 2006 05 24 | 644 | 0.2+ | 0.4+ |
| 2000 09 22 | 699 | 0.5- | 0.0  | 2002 01 14 | 704 | (0.2+ | 3.0-) | 2006 05 24 | 644 | 0.1- | 0.3+ |
| 2000 09 22 | 699 | 0.6- | 0.6+ | 2002 01 14 | 704 | 0.4-  | 1.5-  | 2006 05 24 | 644 | 0.1- | 0.1+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 22 | 699 | 0.0  | 0.3+ | 2002 01 14 | 704 | 0.5-  | 1.4-  | 2007 11 09 | 704 | 0.0  | 0.2- |
| 2000 09 22 | 699 | 1.2- | 0.3+ | 2002 02 07 | 704 | 0.2-  | 1.2+  | 2007 11 09 | 704 | 0.8- | 0.2- |
| 2000 09 27 | 704 | 0.3+ | 0.1+ | 2002 02 07 | 704 | 0.8+  | 1.0+  | 2007 11 09 | 704 | 0.4- | 0.6- |
| 2000 09 27 | 704 | 0.2- | 0.3- | 2002 02 07 | 704 | 0.8+  | 0.1+  | 2007 11 09 | 704 | 0.9- | 0.1- |
| 2000 09 27 | 704 | 0.2- | 0.1+ | 2002 02 10 | 704 | (0.3+ | 1.8+) | 2007 11 09 | 704 | 0.3- | 0.1- |
| 2000 09 27 | 704 | 0.0  | 0.1+ | 2002 02 10 | 704 | (0.3- | 1.8+) | 2007 11 16 | 704 | 0.2+ | 0.3+ |
| 2000 09 27 | 704 | 0.2+ | 0.1+ | 2002 02 10 | 704 | (0.3- | 1.8+) | 2007 11 16 | 704 | 0.2+ | 0.4+ |
| 2000 10 03 | 704 | 0.3+ | 0.3+ | 2002 02 10 | 704 | 0.5-  | 0.3+  | 2007 11 16 | 704 | 0.5- | 0.7+ |
| 2000 10 03 | 704 | 0.0  | 0.4+ | 2002 02 10 | 704 | (2.4- | 0.4+) | 2007 11 16 | 704 | 0.1+ | 0.2- |
| 2000 10 03 | 704 | 0.4+ | 0.2+ | 2002 02 12 | 704 | 0.6+  | 0.8-  | 2007 11 16 | 704 | 0.5- | 1.3+ |
| 2000 10 03 | 704 | 0.0  | 0.4+ | 2002 02 12 | 704 | 0.9-  | 0.5-  | 2007 12 03 | 704 | 0.5+ | 0.8+ |
| 2000 10 03 | 704 | 0.4+ | 0.2+ | 2002 02 12 | 704 | 0.2+  | 0.4-  | 2007 12 03 | 704 | 0.1+ | 0.1+ |
| 2000 10 03 | 704 | 0.2- | 0.4+ | 2002 02 12 | 704 | 0.3-  | 0.4+  | 2007 12 03 | 704 | 0.4+ | 1.4+ |
| 2000 10 03 | 704 | 0.2+ | 0.5+ | 2006 03 25 | 644 | 0.6+  | 0.7+  | 2007 12 03 | 704 | 0.4+ | 0.0  |
| 2000 10 03 | 704 | 0.5+ | 0.5+ | 2006 03 25 | 644 | 0.0   | 0.7+  | 2007 12 03 | 704 | 0.3+ | 0.6+ |

**(171682)\* 2000 RL<sub>31</sub> = 3059 P-L**

Discovered 2000 Sept. 1 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. M. E. Sansaturio (*MPO* 5904)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 57.80593   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.29568420 | $\omega$ | 56.41161  | +0.97312430 | +0.22036560 |
| <i>a</i> | 2.2314336  | $\Omega$ | 290.78012 | -0.22778038 | +0.87845879 |
| <i>e</i> | 0.1837606  | <i>i</i> | 4.09984   | -0.03384082 | +0.42396834 |
| <i>P</i> | 3.33       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1960 09 25 | 675 | 0.1- | 0.1- | 2000 09 28 | 704 | 0.6+  | 0.4-  | 2004 12 18 | G96 | 0.4- | 0.4- |
| 1960 09 27 | 675 | 0.5- | 0.7- | 2000 09 28 | 704 | 0.0   | 0.7-  | 2004 12 18 | G96 | 0.1- | 0.4- |
| 1960 09 28 | 675 | 0.7+ | 0.3- | 2000 09 28 | 704 | 0.0   | 0.8-  | 2004 12 18 | G96 | 0.3- | 0.1- |
| 1960 09 29 | 675 | 0.4+ | 0.2- | 2000 09 28 | 704 | 0.3+  | 1.0-  | 2004 12 18 | G96 | 0.0  | 0.0  |
| 2000 09 01 | 704 | 0.1+ | 0.4- | 2000 10 03 | 704 | 0.9+  | 0.5-  | 2005 01 13 | 691 | 0.0  | 0.2+ |
| 2000 09 01 | 704 | 0.5- | 0.2+ | 2000 10 03 | 704 | 0.2-  | 0.5-  | 2005 01 13 | 691 | 0.1- | 0.4+ |
| 2000 09 01 | 704 | 0.1- | 0.4- | 2000 10 03 | 704 | 0.3+  | 0.1-  | 2005 01 13 | 691 | 0.0  | 0.4+ |
| 2000 09 01 | 704 | 0.4- | 0.5- | 2000 10 03 | 704 | 0.8-  | 0.2+  | 2005 01 16 | 568 | 0.3+ | 0.2- |
| 2000 09 01 | 704 | 0.9- | 0.0  | 2000 10 03 | 704 | 0.9+  | 0.3+  | 2005 01 16 | 568 | 0.4+ | 0.2- |
| 2000 09 02 | 699 | 1.6- | 0.4+ | 2000 10 06 | 608 | (1.4- | 2.0-) | 2005 01 16 | 568 | 0.4+ | 0.2- |
| 2000 09 02 | 699 | 1.1- | 0.3+ | 2000 10 06 | 608 | (1.2- | 2.4-) | 2005 01 17 | 568 | 0.2+ | 0.0  |
| 2000 09 02 | 699 | 0.6- | 0.1+ | 2000 10 06 | 608 | (1.2- | 2.1-) | 2005 01 19 | 691 | 0.0  | 0.3+ |
| 2000 09 02 | 699 | 1.1- | 0.1- | 2000 10 07 | 704 | 0.7-  | 1.1-  | 2005 01 19 | 691 | 0.1+ | 0.2+ |
| 2000 09 03 | 704 | 0.1- | 0.2- | 2000 10 07 | 704 | 1.0-  | 0.4+  | 2005 01 19 | 691 | 0.1+ | 0.2+ |
| 2000 09 03 | 704 | 0.2- | 0.3+ | 2000 10 07 | 704 | 0.2-  | 0.4+  | 2005 01 19 | 691 | 0.0  | 0.2+ |
| 2000 09 03 | 704 | 0.5- | 0.2+ | 2000 10 07 | 704 | 0.2-  | 0.2-  | 2005 01 19 | 691 | 0.1- | 0.1+ |
| 2000 09 03 | 704 | 0.0  | 0.6- | 2000 10 25 | 704 | 0.1-  | 0.2-  | 2005 01 19 | 691 | 0.1+ | 1.0- |
| 2000 09 03 | 704 | 0.7- | 0.8+ | 2000 10 25 | 704 | 0.3+  | 0.4+  | 2007 11 07 | 691 | 0.1+ | 1.0+ |
| 2000 09 22 | 699 | 0.6+ | 0.8+ | 2000 10 25 | 704 | 1.4-  | 1.1+  | 2007 11 07 | 691 | 0.2+ | 0.3- |
| 2000 09 22 | 699 | 0.4+ | 0.3+ | 2000 10 25 | 704 | (0.2- | 2.6+) | 2007 11 07 | 691 | 0.3- | 0.4- |
| 2000 09 22 | 699 | 0.4- | 1.5+ | 2000 10 31 | 704 | 1.2+  | 0.6+  | 2007 11 19 | 691 | 0.4- | 0.3- |
| 2000 09 22 | 699 | 0.6+ | 1.0+ | 2000 10 31 | 704 | 0.8+  | 0.1-  | 2007 11 19 | 691 | 0.3- | 0.3- |
| 2000 09 23 | 704 | 0.1- | 0.0  | 2000 10 31 | 704 | 0.5+  | 0.2+  | 2007 11 19 | 691 | 0.3+ | 0.2- |
| 2000 09 23 | 704 | 0.4+ | 0.1+ | 2000 10 31 | 704 | 0.6+  | 0.9-  | 2007 11 20 | 704 | 0.3+ | 0.1+ |
| 2000 09 23 | 704 | 0.0  | 0.0  | 2000 10 31 | 704 | 0.1+  | 0.5-  | 2007 11 20 | 704 | 0.6+ | 0.2- |
| 2000 09 23 | 704 | 0.4+ | 0.4- | 2000 11 03 | 704 | 0.3+  | 1.5+  | 2007 11 20 | 704 | 0.4+ | 0.0  |
| 2000 09 26 | 699 | 0.8+ | 0.0  | 2000 11 03 | 704 | 0.0</ |       |            |     |      |      |

| Epoch                       | 2007 Oct. 27.0 | TT = JDT 2454400.5 | MPC       |             |      |      |      |             |     |       |       |
|-----------------------------|----------------|--------------------|-----------|-------------|------|------|------|-------------|-----|-------|-------|
| <i>M</i>                    | 30.09628       |                    | (2000.0)  | <b>P</b>    |      |      |      | <b>Q</b>    |     |       |       |
| <i>n</i>                    | 0.28949628     | $\omega$           | 46.86774  | +0.99095337 |      |      |      | -0.10557938 |     |       |       |
| <i>a</i>                    | 2.2631190      | $\Omega$           | 318.98599 | +0.05288134 |      |      |      | +0.87457595 |     |       |       |
| <i>e</i>                    | 0.1482849      | <i>i</i>           | 7.25304   | +0.12334903 |      |      |      | +0.47325458 |     |       |       |
| <i>P</i>                    | 3.40           | <i>H</i>           | 16.6      | <i>G</i>    | 0.15 |      |      | <i>U</i>    | 2   |       |       |
| Residuals in seconds of arc |                |                    |           |             |      |      |      |             |     |       |       |
| 1993 08 15                  | 691            | 0.2+               | 0.2+      | 2000 09 28  | 704  | 0.1- | 0.2- | 2005 02 01  | 703 | 1.3-  | 0.1-  |
| 1993 08 15                  | 691            | 0.5-               | 0.5+      | 2000 09 28  | 704  | 0.5- | 1.1+ | 2005 02 01  | 703 | (0.2+ | 2.0+) |
| 1993 08 15                  | 691            | (2.1-              | 3.0+)     | 2000 09 28  | 704  | 0.7- | 0.1- | 2005 02 01  | 703 | 1.1-  | 0.7+  |
| 1995 02 19                  | 104            | 0.1+               | 0.9-      | 2000 10 03  | 704  | 0.2+ | 0.1+ | 2007 10 16  | 703 | 0.5-  | 0.3+  |
| 1995 02 19                  | 104            | 0.3+               | 0.1+      | 2000 10 03  | 704  | 0.1+ | 0.1- | 2007 10 16  | 703 | 0.6-  | 0.0   |
| 1995 02 19                  | 104            | 0.8+               | 0.3+      | 2000 10 03  | 704  | 0.0  | 0.1- | 2007 10 16  | 703 | 0.4+  | 1.1+  |
| 2000 09 01                  | 704            | 0.1+               | 0.6+      | 2000 10 03  | 704  | 0.4+ | 0.2- | 2007 10 16  | 703 | 0.1-  | 0.1+  |
| 2000 09 01                  | 704            | 1.3+               | 1.1-      | 2000 10 07  | 704  | 0.4- | 0.6+ | 2007 11 08  | 703 | 0.3+  | 0.6-  |
| 2000 09 01                  | 704            | 0.9-               | 0.6+      | 2000 10 07  | 704  | 0.3+ | 0.0  | 2007 11 08  | 703 | 0.2-  | 0.2+  |
| 2000 09 01                  | 704            | 0.7+               | 0.2+      | 2000 10 07  | 704  | 0.3+ | 0.2- | 2007 11 08  | 703 | 0.4-  | 0.0   |
| 2000 09 03                  | 704            | 0.3-               | 0.2+      | 2000 10 07  | 704  | 1.1- | 0.4- | 2007 11 08  | 703 | 0.2-  | 0.5-  |
| 2000 09 03                  | 704            | 0.4+               | 0.3-      | 2000 11 01  | 704  | 0.2+ | 0.5+ | 2007 11 09  | 704 | 0.1+  | 0.1+  |
| 2000 09 03                  | 704            | 0.7+               | 0.3-      | 2000 11 01  | 704  | 0.1+ | 0.4- | 2007 11 09  | 704 | 0.1+  | 0.1-  |
| 2000 09 05                  | 699            | 1.1-               | 0.4-      | 2000 11 01  | 704  | 1.3- | 0.1- | 2007 11 09  | 704 | 0.5+  | 0.9+  |
| 2000 09 05                  | 699            | (3.2-              | 1.6-)     | 2002 01 22  | 691  | 0.5+ | 0.3+ | 2007 11 09  | 704 | 0.5+  | 0.5+  |
| 2000 09 05                  | 699            | 1.5-               | 0.6+      | 2002 01 22  | 691  | 0.4+ | 0.8+ | 2007 11 09  | 704 | 0.1+  | 0.4+  |
| 2000 09 05                  | 699            | 0.6-               | 0.3-      | 2002 01 22  | 691  | 0.1+ | 0.5+ | 2007 11 20  | G96 | 0.1+  | 0.3-  |
| 2000 09 22                  | 699            | 1.1-               | 0.2+      | 2005 01 16  | 704  | 0.3- | 0.3- | 2007 11 20  | G96 | 0.2+  | 0.3-  |
| 2000 09 22                  | 699            | 0.8+               | 0.2+      | 2005 01 16  | 704  | 0.3+ | 0.1- | 2007 11 20  | G96 | 0.1+  | 0.3-  |
| 2000 09 22                  | 699            | 0.1+               | 0.5+      | 2005 01 16  | 704  | 0.2+ | 0.3+ | 2007 11 20  | G96 | 0.2-  | 0.5-  |
| 2000 09 22                  | 699            | 0.4+               | 0.0       | 2005 01 16  | 704  | 0.6- | 0.7+ | 2007 12 03  | 704 | 0.6+  | 0.0   |
| 2000 09 23                  | 704            | 0.7+               | 0.0       | 2005 01 16  | 704  | 0.7- | 0.8- | 2007 12 03  | 704 | 0.4+  | 0.7+  |
| 2000 09 23                  | 704            | 0.4+               | 0.4+      | 2005 01 17  | 704  | 0.9+ | 0.3- | 2007 12 03  | 704 | 0.5+  | 1.4-  |
| 2000 09 23                  | 704            | 1.0-               | 0.4-      | 2005 01 17  | 704  | 0.3+ | 0.6+ | 2007 12 03  | 704 | 0.2+  | 0.5-  |
| 2000 09 23                  | 704            | 0.6+               | 0.1-      | 2005 01 17  | 704  | 0.1+ | 0.4- | 2007 12 03  | 704 | 0.4+  | 0.4-  |
| 2000 09 28                  | 704            | 0.5+               | 0.1+      | 2005 01 17  | 704  | 1.2+ | 0.5+ |             |     |       |       |
| 2000 09 28                  | 704            | 0.5-               | 1.0+      | 2005 02 01  | 703  | 1.1- | 0.2+ |             |     |       |       |

**(171684)\* 2000 RN<sub>53</sub>**

Discovered 2000 Sept. 7 by A. J. Cecce at Collins Observatory, Corning Community College.

|                                         |            |             |            |             |           |             |     |             |  |  |  |
|-----------------------------------------|------------|-------------|------------|-------------|-----------|-------------|-----|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |             |            |             |           |             |     |             |  |  |  |
| $M$                                     | 53.71744   |             | (2000.0)   | <b>P</b>    |           | <b>Q</b>    |     |             |  |  |  |
| $n$                                     | 0.29269450 | $\omega$    | 112.39764  | +0.98925812 |           | +0.12422249 |     |             |  |  |  |
| $a$                                     | 2.2466030  | $\Omega$    | 240.54165  | -0.14368637 |           | +0.92326246 |     |             |  |  |  |
| $e$                                     | 0.1907519  | $i$         | 5.07697    | +0.02688107 |           | +0.36353156 |     |             |  |  |  |
| $P$                                     | 3.37       | $H$         | 15.8       | $G$         | 0.15      | $U$         | 1   |             |  |  |  |
| Residuals in seconds of arc             |            |             |            |             |           |             |     |             |  |  |  |
| 2000 08 04                              | 608        | (2.1+ 0.5+) | 2000 11 03 | 704         | 0.5- 0.6- | 2005 01 13  | 704 | (1.9+ 0.4-) |  |  |  |
| 2000 08 04                              | 608        | (2.0+ 0.5+) | 2000 11 03 | 704         | 0.5- 0.5- | 2005 01 13  | 704 | (2.7+ 1.0+) |  |  |  |
| 2000 08 04                              | 608        | 1.9+ 0.6+   | 2000 11 07 | 557         | 0.1+ 0.4- | 2005 02 02  | 703 | 0.6+ 0.2-   |  |  |  |
| 2000 09 03                              | 704        | 0.1- 0.6-   | 2000 11 07 | 557         | 0.2- 0.1- | 2005 02 02  | 703 | 1.2+ 1.2+   |  |  |  |
| 2000 09 03                              | 704        | 0.1- 0.4-   | 2000 11 07 | 557         | 0.2- 0.1- | 2005 02 02  | 703 | 0.4- 0.0    |  |  |  |
| 2000 09 03                              | 704        | 0.8- 0.2-   | 2000 11 07 | 557         | 0.1+ 0.4- | 2005 02 02  | 703 | 0.0 0.0     |  |  |  |
| 2000 09 03                              | 704        | 0.0 0.7-    | 2000 11 20 | 704         | 0.0 0.6+  | 2006 04 20  | G96 | 0.1- 0.1+   |  |  |  |
| 2000 09 03                              | 704        | 0.3+ 0.9-   | 2000 11 20 | 704         | 0.4+ 0.1+ | 2006 04 20  | G96 | 0.0 0.1+    |  |  |  |
| 2000 09 07                              | 911        | 0.7- 0.5-   | 2000 11 20 | 704         | 0.1+ 0.6+ | 2006 04 20  | G96 | 0.1- 0.4+   |  |  |  |
| 2000 09 07                              | 911        | 0.3- 0.2+   | 2000 11 20 | 704         | 0.7+ 0.5+ | 2006 04 20  | G96 | 0.0 0.5+    |  |  |  |
| 2000 09 08                              | 911        | 0.1- 0.8-   | 2000 11 20 | 704         | 0.1+ 0.5+ | 2006 04 25  | 644 | 0.1- 0.2-   |  |  |  |
| 2000 09 08                              | 911        | 0.8- 0.4-   | 2000 11 27 | 704         | 0.0 0.4+  | 2006 04 25  | 644 | 0.1- 0.1+   |  |  |  |
| 2000 09 08                              | 911        | 0.3- 0.0    | 2000 11 27 | 704         | 0.2- 0.3+ | 2006 04 25  | 644 | 0.5+ 0.5-   |  |  |  |
| 2000 09 14                              | 911        | 0.1- 1.0-   | 2000 11 27 | 704         | 0.6- 1.3+ | 2006 05 05  | 691 | 0.6- 0.6+   |  |  |  |
| 2000 09 14                              | 911        | 0.5- 0.9+   | 2000 11 27 | 704         | 0.3- 0.2+ | 2006 05 05  | 691 | 0.3- 0.0    |  |  |  |
| 2000 09 20                              | 911        | 0.1+ 0.2-   | 2000 11 27 | 704         | 0.4- 0.1- | 2006 05 05  | 691 | 0.2- 0.2+   |  |  |  |
| 2000 09 20                              | 911        | 0.2- 0.1-   | 2000 11 27 | 704         | 0.2- 0.1+ | 2006 05 09  | E12 | 0.3- 0.3-   |  |  |  |
| 2000 09 20                              | 911        | 0.2- 0.5-   | 2000 11 27 | 704         | 0.0 0.2+  | 2006 05 09  | E12 | 0.5+ 0.6+   |  |  |  |
| 2000 09 30                              | 704        | (2.1- 0.2-) | 2000 11 27 | 704         | 0.3+ 0.4- | 2006 05 09  | E12 | 0.2+ 0.1+   |  |  |  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 30 | 704 | 0.6-  | 0.0   | 2000 11 27 | 704 | 0.1- | 0.4+ | 2006 05 09 | E12 | 0.5- | 0.6- |
| 2000 09 30 | 704 | 0.0   | 0.1+  | 2000 11 27 | 704 | 0.2- | 0.2+ | 2006 05 18 | 644 | 0.0  | 0.1+ |
| 2000 10 03 | 704 | 0.3-  | 0.1-  | 2003 06 26 | 704 | 0.1+ | 0.3+ | 2006 05 18 | 644 | 0.0  | 0.2+ |
| 2000 10 03 | 704 | 0.4-  | 0.5+  | 2003 06 26 | 704 | 0.2- | 0.2- | 2006 05 18 | 644 | 0.2+ | 0.1+ |
| 2000 10 03 | 704 | 0.2-  | 0.3+  | 2003 06 26 | 704 | 0.5+ | 0.8+ | 2006 05 20 | 691 | 0.6+ | 0.7+ |
| 2000 10 03 | 704 | 0.6-  | 0.0   | 2003 06 26 | 704 | 0.2+ | 0.4+ | 2006 05 20 | 691 | 0.1+ | 0.0  |
| 2000 10 03 | 704 | 0.4-  | 0.3+  | 2003 06 26 | 704 | 0.2+ | 0.5- | 2006 05 20 | 691 | 0.2+ | 0.1+ |
| 2000 10 25 | 704 | 1.5+  | 1.0+  | 2003 06 28 | 704 | 0.1+ | 0.1- | 2006 06 14 | 644 | 0.2+ | 0.2- |
| 2000 10 25 | 704 | (2.0+ | 0.0 ) | 2003 06 28 | 704 | 0.8+ | 0.7+ | 2006 06 14 | 644 | 0.0  | 0.3+ |
| 2000 10 25 | 704 | 0.0   | 0.1-  | 2003 06 28 | 704 | 0.1- | 0.1- | 2006 06 14 | 644 | 0.1+ | 0.6+ |
| 2000 10 25 | 704 | 0.1+  | 0.4-  | 2003 06 28 | 704 | 0.3+ | 0.1+ | 2007 11 14 | 704 | 0.2+ | 0.1- |
| 2000 10 25 | 704 | 0.1+  | 0.2-  | 2003 06 28 | 704 | 0.2+ | 0.1+ | 2007 11 14 | 704 | 0.5+ | 0.1+ |
| 2000 10 26 | 699 | 1.1+  | 0.7+  | 2003 07 01 | 704 | 0.2+ | 0.2+ | 2007 11 14 | 704 | 0.4+ | 0.3+ |
| 2000 10 26 | 699 | 0.5+  | 1.2+  | 2003 07 01 | 704 | 1.2- | 0.8+ | 2007 11 14 | 704 | 1.0+ | 0.8+ |
| 2000 10 26 | 699 | 0.9+  | 1.0+  | 2003 07 01 | 704 | 0.4- | 0.6+ | 2007 12 04 | 691 | 0.1+ | 0.1+ |
| 2000 10 26 | 699 | 0.8+  | 0.3-  | 2003 07 01 | 704 | 0.0  | 0.6+ | 2007 12 04 | 691 | 0.6- | 0.0  |
| 2000 11 01 | 704 | 0.2+  | 0.2+  | 2003 07 01 | 704 | 0.4- | 0.3+ | 2007 12 04 | 691 | 0.0  | 0.3+ |
| 2000 11 01 | 704 | 0.3-  | 0.1+  | 2005 01 07 | 703 | 0.3+ | 0.3+ | 2007 12 04 | 704 | 0.3- | 0.5+ |
| 2000 11 01 | 704 | 0.3-  | 0.4+  | 2005 01 07 | 703 | 0.2+ | 0.7- | 2007 12 04 | 704 | 0.1+ | 0.1- |
| 2000 11 01 | 704 | 0.3-  | 0.8+  | 2005 01 07 | 703 | 0.9- | 0.0  | 2007 12 04 | 704 | 0.4- | 0.3+ |
| 2000 11 01 | 704 | 0.4+  | 0.6+  | 2005 01 07 | 703 | 0.7- | 0.6- | 2007 12 04 | 704 | 0.8+ | 0.2+ |
| 2000 11 03 | 704 | 0.8-  | 0.0   | 2005 01 13 | 704 | 0.8+ | 1.0+ | 2007 12 04 | 704 | 0.1+ | 0.1+ |
| 2000 11 03 | 704 | 0.3-  | 0.1+  | 2005 01 13 | 704 | 1.2+ | 0.8+ |            |     |      |      |
| 2000 11 03 | 704 | 0.0   | 0.1-  | 2005 01 13 | 704 | 0.7- | 0.0  |            |     |      |      |

**(171685)\* 2000 RV<sub>90</sub>**

Discovered 2000 Sept. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |      |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |      |      |             |            |     |      |      |
| <i>M</i>                                | 64.33523   |          | (2000.0)  | <b>P</b>    |      |      | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.29425593 | $\omega$ | 90.09320  | +0.91372716 |      |      | +0.39769318 |            |     |      |      |
| <i>a</i>                                | 2.2386485  | $\Omega$ | 246.47314 | -0.39950433 |      |      | +0.84186552 |            |     |      |      |
| <i>e</i>                                | 0.1630618  | <i>i</i> | 5.21412   | -0.07415501 |      |      | +0.36483226 |            |     |      |      |
| <i>P</i>                                | 3.35       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 |      | <i>U</i>    | 1          |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |      |             |            |     |      |      |
| 1990 10 09                              | 691        | 0.0      | 0.4-      | 2000 10 07  | 704  | 0.6- | 0.1+        | 2007 11 10 | D29 | 0.8+ | 0.4- |
| 1990 10 09                              | 691        | 0.1-     | 0.5-      | 2000 10 07  | 704  | 0.2+ | 0.4+        | 2007 11 10 | D29 | 0.1+ | 0.2+ |
| 1990 10 09                              | 691        | 0.3+     | 0.6-      | 2000 10 07  | 704  | 0.1- | 0.2+        | 2007 11 10 | D29 | 0.7+ | 0.1+ |
| 2000 08 05                              | 608        | 1.9+     | 0.0       | 2000 10 25  | 704  | 0.1+ | 0.0         | 2007 11 10 | D29 | 0.4- | 0.1+ |
| 2000 08 05                              | 608        | 1.7+     | 0.4+      | 2000 10 25  | 704  | 0.0  | 0.8-        | 2007 11 13 | 691 | 0.1- | 0.2- |
| 2000 08 05                              | 608        | 1.2+     | 0.2-      | 2000 10 25  | 704  | 0.5+ | 0.0         | 2007 11 13 | 691 | 0.1- | 0.1- |
| 2000 09 03                              | 704        | 1.3+     | 0.5+      | 2000 10 25  | 704  | 0.2+ | 0.3-        | 2007 11 13 | 691 | 0.1- | 0.1- |
| 2000 09 03                              | 704        | 1.6+     | 0.8-      | 2000 10 25  | 704  | 0.2- | 0.9-        | 2007 11 14 | 704 | 0.6+ | 0.6+ |
| 2000 09 03                              | 704        | 0.9+     | 0.5+      | 2000 10 31  | 704  | 0.0  | 0.5+        | 2007 11 14 | 691 | 0.3- | 0.2- |
| 2000 09 03                              | 704        | 0.7+     | 0.3+      | 2000 10 31  | 704  | 0.3+ | 0.0         | 2007 11 14 | 704 | 0.2+ | 0.4+ |
| 2000 09 03                              | 704        | 1.0+     | 0.6+      | 2000 10 31  | 704  | 0.4+ | 0.2+        | 2007 11 14 | 691 | 0.2- | 0.2- |
| 2000 09 04                              | 699        | 1.6-     | 0.0       | 2000 10 31  | 704  | 0.1- | 0.5+        | 2007 11 14 | 704 | 0.4- | 0.4+ |
| 2000 09 04                              | 699        | 1.5-     | 0.9+      | 2000 10 31  | 704  | 0.3- | 0.4-        | 2007 11 14 | 691 | 0.2- | 0.1- |
| 2000 09 04                              | 699        | 1.4-     | 0.1+      | 2000 11 25  | 691  | 0.5- | 0.0         | 2007 11 14 | 704 | 0.5- | 0.0  |
| 2000 09 04                              | 699        | 0.6-     | 0.5+      | 2000 11 25  | 691  | 0.5- | 0.1-        | 2007 11 15 | 704 | 0.4- | 0.7+ |
| 2000 09 23                              | 704        | 0.0      | 0.4+      | 2000 11 25  | 691  | 0.6- | 0.1-        | 2007 11 15 | 704 | 0.5+ | 0.8+ |
| 2000 09 23                              | 704        | 0.2-     | 0.2+      | 2002 03 06  | 644  | 0.3+ | 0.7+        | 2007 11 15 | 704 | 0.1- | 1.2+ |
| 2000 09 23                              | 704        | 0.0      | 1.2+      | 2002 03 06  | 644  | 0.5+ | 0.8+        | 2007 11 15 | 704 | 0.3- | 0.8+ |
| 2000 09 23                              | 704        | 0.1-     | 0.5+      | 2002 03 06  | 644  | 0.4+ | 0.9+        | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 2000 09 23                              | 704        | 0.3+     | 1.1+      | 2003 11 16  | 691  | 0.2+ | 0.2+        | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2000 09 26                              | 699        | 0.4-     | 0.2+      | 2003 11 16  | 691  | 0.1- | 0.2-        | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2000 09 26                              | 699        | 0.3-     | 0.4+      | 2003 11 16  | 691  | 0.1+ | 0.0         | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2000 09 26                              | 699        | 0.2-     | 0.1-      | 2005 01 13  | 704  | 0.7+ | 0.0         | 2007 12 03 | 703 | 0.6+ | 0.3- |
| 2000 09 26                              | 699        | 0.7-     | 0.5+      | 2005 01 13  | 704  | 1.2+ | 0.3+        | 2007 12 03 | 703 | 0.2- | 0.2+ |
| 2000 09 28                              | 704        | 0.3-     | 0.0       | 2005 01 13  | 704  | 0.2- | 0.3-        | 2007 12 03 | 703 | 0.0  | 0.3+ |
| 2000 09 28                              | 704        | 0.1-     | 0.4-      | 2005 01 13  | 704  | 1.4+ | 0.1-        | 2007 12 03 | 703 | 0.3- | 0.5+ |
| 2000 09 28                              | 704        | 0.2-     | 0.0       | 2006 05 20  | 699  | 0.8+ | 0.4+        | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2000 09 28                              | 704        | 0.1+     | 0.2+      | 2006 05 20  | 699  | 0.6+ | 0.6+        | 2007 12 04 | G96 | 0.6+ | 0.2- |
| 2000 09 28                              | 704        | 0.2-     | 0.0       | 2006 05 20  | 699  | 0.2- | 0.9+        | 2007 12 04 | G96 | 0.2+ | 0.1- |
| 2000 10 02                              | 649        | 0.3-     | 0.1-      | 2006 05 20  | 699  | 0.5+ | 0.4+        | 2007 12 04 | G96 | 0.2+ | 0.2- |
| 2000 10 02                              | 649        | 1.4-     | 0.7+      | 2006 06 01  | G96  | 0.8- | 0.5+        | 2007 12 05 | 704 | 0.3- | 0.9+ |

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M.P.O. 129127

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 02 | 649 | 0.6+ | 0.3- | 2006 06 01 | G96 | 0.4- | 0.5+ | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2000 10 03 | 704 | 0.3- | 0.5+ | 2006 06 01 | G96 | 0.4- | 0.4+ | 2007 12 05 | 704 | 0.6+ | 0.3+ |
| 2000 10 03 | 704 | 0.8+ | 0.4+ | 2006 06 01 | G96 | 0.6- | 0.4+ | 2007 12 05 | 704 | 0.7+ | 0.6+ |
| 2000 10 03 | 704 | 0.2+ | 0.7+ | 2007 11 06 | 691 | 0.2- | 0.1- | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2000 10 03 | 704 | 0.3+ | 0.3+ | 2007 11 06 | 691 | 0.0  | 0.1- |            |     |      |      |
| 2000 10 03 | 704 | 1.4+ | 1.2+ | 2007 11 06 | 691 | 0.1+ | 0.1- |            |     |      |      |

**(171686)\* 2000 SZ<sub>12</sub> = 2000 QH<sub>115</sub>**

Discovered 2000 Sept. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (d, *MPO* 11071)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.23750   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29860580 | $\omega$ | 137.04392 | +0.78999751   | +0.61308159 |
| <i>a</i> | 2.2168547  | $\Omega$ | 185.15374 | -0.57883700   | +0.74262582 |
| <i>e</i> | 0.2179935  | <i>i</i> | 3.77026   | -0.20211791   | +0.26951411 |
| <i>P</i> | 3.30       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 05 21 | 691 | 0.0   | 0.7+  | 2000 09 24 | 704 | 0.1+  | 1.1+  | 2006 04 30 | 691 | 0.2+ | 0.5+ |
| 1993 05 21 | 691 | 0.6-  | 0.2+  | 2000 10 02 | 704 | 0.7+  | 0.5+  | 2006 05 03 | 691 | 0.9+ | 0.7+ |
| 1993 05 21 | 691 | 0.7+  | 0.1+  | 2000 10 02 | 704 | 0.3-  | 0.0   | 2006 05 03 | 691 | 0.2+ | 0.6+ |
| 2000 08 03 | 704 | 0.4-  | 0.3+  | 2000 10 02 | 704 | 0.6+  | 0.5+  | 2006 05 03 | 691 | 0.2+ | 0.8+ |
| 2000 08 03 | 704 | 0.7+  | 0.8+  | 2000 10 02 | 704 | 0.1+  | 0.0   | 2006 05 19 | G96 | 0.1- | 0.3- |
| 2000 08 03 | 704 | 0.5-  | 0.1-  | 2000 10 02 | 704 | 0.4-  | 0.3-  | 2006 05 19 | G96 | 0.3- | 0.4+ |
| 2000 08 03 | 704 | 0.4-  | 0.7-  | 2003 05 30 | 704 | 0.6-  | 0.7-  | 2006 05 19 | G96 | 0.6- | 0.0  |
| 2000 08 25 | 704 | 0.5+  | 0.6+  | 2003 05 30 | 704 | 0.7-  | 0.2-  | 2006 05 19 | G96 | 0.2+ | 0.0  |
| 2000 08 25 | 704 | 0.5-  | 0.2+  | 2003 05 30 | 704 | 0.9-  | 0.6-  | 2007 10 30 | 691 | 0.1- | 0.2+ |
| 2000 08 25 | 704 | 0.9-  | 0.5+  | 2003 05 30 | 704 | (1.6- | 0.1-) | 2007 10 30 | 691 | 0.4- | 0.1- |
| 2000 08 31 | 704 | 0.5-  | 0.0   | 2003 05 30 | 704 | 0.2-  | 0.1-  | 2007 10 30 | 691 | 0.3- | 0.3+ |
| 2000 08 31 | 704 | 0.3-  | 0.6+  | 2006 03 23 | G96 | 0.3-  | 0.4+  | 2007 11 03 | 691 | 0.3- | 0.4+ |
| 2000 08 31 | 704 | 0.1-  | 0.0   | 2006 03 23 | G96 | 0.7-  | 0.3+  | 2007 11 03 | 691 | 0.6+ | 0.9+ |
| 2000 08 31 | 704 | 0.4-  | 0.4+  | 2006 03 23 | G96 | 1.0-  | 0.1+  | 2007 11 03 | 691 | 0.1- | 0.5+ |
| 2000 08 31 | 704 | 0.1+  | 0.3-  | 2006 03 23 | G96 | 0.2-  | 0.1-  | 2007 11 07 | 691 | 0.1- | 0.5+ |
| 2000 09 21 | 704 | (2.2+ | 0.4+) | 2006 03 24 | G96 | 0.0   | 0.1+  | 2007 11 07 | 691 | 0.3- | 0.2+ |
| 2000 09 21 | 704 | 0.1+  | 0.5+  | 2006 03 24 | G96 | 0.6-  | 0.1+  | 2007 11 07 | 691 | 0.4- | 0.6+ |
| 2000 09 21 | 704 | 0.0   | 0.3-  | 2006 03 24 | G96 | 0.1+  | 0.2+  | 2007 11 12 | 704 | 0.8+ | 0.7+ |
| 2000 09 21 | 704 | 0.7+  | 0.7+  | 2006 03 24 | G96 | 0.1-  | 0.6+  | 2007 11 12 | 704 | 0.4+ | 0.1+ |
| 2000 09 21 | 704 | 0.7+  | 0.3+  | 2006 03 25 | 691 | 0.1+  | 0.3+  | 2007 11 12 | 704 | 0.6+ | 0.5- |
| 2000 09 23 | 699 | 0.1-  | 0.7+  | 2006 03 25 | 691 | 0.3+  | 0.3+  | 2007 11 12 | 704 | 0.6+ | 0.3+ |
| 2000 09 23 | 699 | 0.6-  | 1.5+  | 2006 03 25 | 691 | 0.2+  | 0.3+  | 2007 11 12 | 704 | 0.6+ | 0.8+ |
| 2000 09 23 | 699 | 0.3-  | 1.2+  | 2006 04 24 | 691 | (0.4+ | 1.8+) | 2007 12 04 | 704 | 0.4+ | 0.2+ |
| 2000 09 23 | 699 | 0.8-  | 0.9+  | 2006 04 24 | 691 | 0.5+  | 0.1+  | 2007 12 04 | 704 | 0.3- | 0.8+ |
| 2000 09 24 | 704 | 0.1+  | 0.9+  | 2006 04 24 | 691 | 0.4+  | 0.4+  | 2007 12 04 | 704 | 0.3- | 0.1- |
| 2000 09 24 | 704 | 0.0   | 0.4+  | 2006 04 30 | 691 | 0.2+  | 0.4+  | 2007 12 04 | 704 | 0.6- | 0.7+ |
| 2000 09 24 | 704 | 0.0   | 0.6+  | 2006 04 30 | 691 | 0.3+  | 0.3+  |            |     |      |      |

**(171687)\* 2000 SO<sub>18</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 186.52119  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18133589 | $\omega$ | 328.74952 | +0.21105994   | +0.96657886 |
| <i>a</i> | 3.0913407  | $\Omega$ | 312.99065 | -0.85074371   | +0.10833316 |
| <i>e</i> | 0.0899677  | <i>i</i> | 11.47598  | -0.48134068   | +0.23235585 |
| <i>P</i> | 5.44       | <i>H</i> | 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 05 | 699 | 0.4+  | 0.2-  | 2003 02 12 | 608 | 0.9+ | 0.2- | 2006 10 29 | 703 | 0.9- | 0.1+ |
| 2000 09 05 | 699 | (0.6- | 2.1+) | 2003 02 12 | 608 | 0.3+ | 0.3- | 2006 10 29 | 703 | 0.2+ | 0.0  |
| 2000 09 05 | 699 | 0.8-  | 0.1-  | 2003 02 12 | 608 | 0.4+ | 0.2- | 2006 10 29 | 703 | 0.4+ | 1.1- |
| 2000 09 05 | 699 | 0.8-  | 1.3+  | 2003 02 22 | 644 | 0.4+ | 0.1+ | 2006 12 14 | 703 | 0.7+ | 0.9- |
| 2000 09 22 | 699 | 1.2-  | 0.9-  | 2003 02 22 | 644 | 0.1+ | 0.2+ | 2006 12 14 | 703 | 0.1- | 0.4+ |
| 2000 09 22 | 699 | 0.1-  | 0.8-  | 2003 02 22 | 644 | 0.2+ | 0.4+ | 2006 12 14 | 703 | 0.2+ | 1.2- |
| 2000 09 22 | 699 | 0.3-  | 0.2+  | 2005 06 17 | G96 | 0.3- | 0.4+ | 2006 12 14 | 703 | 0.5- | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 22 | 699 | 1.5- | 0.3- | 2005 06 17 | G96 | 0.1+ | 0.4+ | 2007 03 09 | G96 | 0.2+ | 0.3- |
| 2000 09 23 | 704 | 0.6+ | 0.5+ | 2005 06 17 | G96 | 0.4- | 0.4+ | 2007 03 09 | G96 | 0.5+ | 0.6- |
| 2000 09 23 | 704 | 0.1- | 0.8- | 2005 06 17 | G96 | 0.2+ | 0.5+ | 2007 03 09 | G96 | 0.8+ | 0.6- |
| 2000 09 23 | 704 | 0.4+ | 0.8+ | 2005 07 30 | 644 | 0.4- | 0.0  | 2007 03 09 | G96 | 0.3+ | 0.6- |
| 2000 09 23 | 704 | 0.1- | 0.1+ | 2005 07 30 | 644 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.1+ | 0.1- |
| 2000 09 23 | 704 | 1.0+ | 0.1+ | 2005 07 30 | 644 | 0.2- | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.2- |
| 2000 09 24 | 704 | 0.4- | 0.3+ | 2005 08 06 | 644 | 0.1- | 0.1+ | 2007 11 18 | G96 | 0.2- | 0.2- |
| 2000 09 24 | 704 | 0.6+ | 0.1- | 2005 08 06 | 644 | 0.1- | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.7- |
| 2000 09 24 | 704 | 0.3- | 0.4+ | 2005 08 06 | 644 | 0.2- | 0.1+ | 2007 12 15 | 704 | 1.5+ | 0.8+ |
| 2000 09 24 | 704 | 0.2- | 0.3+ | 2005 08 24 | 644 | 0.3- | 0.3+ | 2007 12 15 | 704 | 0.5+ | 2.0+ |
| 2000 09 24 | 704 | 0.5+ | 0.4+ | 2005 08 24 | 644 | 0.1- | 0.3+ | 2007 12 15 | 704 | 0.2+ | 1.1+ |
| 2002 12 07 | 645 | 0.1- | 0.0  | 2005 08 24 | 644 | 0.1- | 0.3+ | 2007 12 15 | 704 | 0.0  | 1.8+ |
| 2002 12 07 | 645 | 0.1- | 0.0  | 2006 10 29 | 703 | 1.0- | 0.1- | 2007 12 15 | 704 | 1.3+ | 1.1+ |

**(171688)\* 2000 SP<sub>18</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.69998  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18160512 | $\omega$ | 44.15804  | +0.98711300   | -0.03097741 |
| <i>a</i> | 3.0882847  | $\Omega$ | 316.86592 | -0.05969908   | +0.83897071 |
| <i>e</i> | 0.0805728  | <i>i</i> | 13.27511  | +0.14847202   | +0.54329416 |
| <i>P</i> | 5.43       | <i>H</i> | 14.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 06 | 704 | 0.4- | 0.3+ | 2000 10 02 | 704 | 0.9-  | 0.8-  | 2005 08 06 | 644 | 0.3+ | 0.1+ |
| 2000 09 06 | 704 | 0.8+ | 0.0  | 2000 10 02 | 704 | 0.1+  | 0.0   | 2005 08 06 | 644 | 0.3+ | 0.1- |
| 2000 09 06 | 704 | 0.3+ | 0.3- | 2000 10 02 | 704 | 0.3-  | 0.2+  | 2005 08 06 | 644 | 0.1+ | 0.0  |
| 2000 09 06 | 704 | 0.3+ | 1.6- | 2000 10 02 | 704 | 1.4-  | 0.0   | 2006 12 12 | 704 | 0.1- | 0.8+ |
| 2000 09 23 | 704 | 0.7- | 0.8- | 2000 10 03 | 704 | 0.2-  | 0.0   | 2006 12 12 | 704 | 0.1+ | 0.5+ |
| 2000 09 23 | 704 | 1.2+ | 0.7- | 2000 10 03 | 704 | 0.1-  | 0.8-  | 2006 12 12 | 704 | 0.0  | 0.3+ |
| 2000 09 23 | 704 | 0.6+ | 0.2+ | 2000 10 03 | 704 | 0.3-  | 0.0   | 2006 12 12 | 704 | 0.1- | 0.3+ |
| 2000 09 23 | 704 | 0.5+ | 0.3- | 2000 10 03 | 704 | 0.7-  | 0.0   | 2007 03 09 | G96 | 0.5- | 0.7+ |
| 2000 09 23 | 704 | 0.7+ | 0.2+ | 2001 12 09 | 704 | 0.2-  | 0.1+  | 2007 03 09 | G96 | 0.2+ | 0.1+ |
| 2000 09 24 | 704 | 1.0+ | 0.0  | 2001 12 09 | 704 | 0.6-  | 0.3+  | 2007 03 09 | G96 | 0.1+ | 0.4+ |
| 2000 09 24 | 704 | 0.3+ | 0.4+ | 2001 12 09 | 704 | 0.6-  | 0.5+  | 2007 03 09 | G96 | 0.1- | 0.3- |
| 2000 09 24 | 704 | 0.7- | 0.7+ | 2001 12 09 | 704 | (1.7- | 1.0+) | 2007 11 07 | G96 | 0.0  | 0.1- |
| 2000 09 24 | 704 | 0.2- | 0.9+ | 2001 12 22 | 704 | 0.3+  | 0.4-  | 2007 11 07 | G96 | 0.1- | 0.3+ |
| 2000 09 24 | 704 | 0.5+ | 0.1+ | 2001 12 22 | 704 | 0.4+  | 0.6-  | 2007 11 07 | G96 | 0.2- | 0.2+ |
| 2000 09 25 | 704 | 1.0- | 0.1- | 2001 12 22 | 704 | 0.3+  | 0.9-  | 2007 11 07 | G96 | 0.1+ | 0.2+ |
| 2000 09 25 | 704 | 0.3+ | 0.2- | 2001 12 22 | 704 | 0.1-  | 0.6-  | 2007 12 05 | G96 | 0.1+ | 0.1+ |
| 2000 09 25 | 704 | 0.6- | 0.1+ | 2001 12 22 | 704 | 1.1+  | 0.6-  | 2007 12 05 | G96 | 0.8- | 0.1+ |
| 2000 09 25 | 704 | 1.3+ | 1.0+ | 2005 07 29 | 644 | 0.1+  | 0.2+  | 2007 12 05 | G96 | 0.0  | 0.1- |
| 2000 09 25 | 704 | 0.2- | 0.5- | 2005 07 29 | 644 | 0.1-  | 0.0   | 2007 12 05 | G96 | 0.9- | 1.0- |
| 2000 10 02 | 704 | 0.3- | 0.1- | 2005 07 29 | 644 | 0.0   | 0.2+  |            |     |      |      |

**(171689)\* 2000 SQ<sub>28</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.00563   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29170775 | $\omega$ | 122.31513 | +0.99169996   | -0.11211343 |
| <i>a</i> | 2.2516665  | $\Omega$ | 244.18994 | +0.08126467   | +0.92591993 |
| <i>e</i> | 0.1338671  | <i>i</i> | 4.00924   | +0.09963552   | +0.36069775 |
| <i>P</i> | 3.38       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 03 | 704 | 0.8- | 0.3- | 2006 05 05 | 691 | 0.5+ | 0.5- | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2000 09 03 | 704 | 0.3+ | 0.7+ | 2006 05 20 | 691 | 0.1+ | 0.0  | 2007 11 13 | 699 | 0.2+ | 1.3+ |
| 2000 09 03 | 704 | 1.2- | 0.4+ | 2006 05 20 | 691 | 0.1- | 0.2+ | 2007 11 13 | 699 | 0.6- | 0.7- |
| 2000 09 03 | 704 | 0.7+ | 0.4+ | 2006 05 20 | 691 | 0.1- | 0.0  | 2007 11 13 | 699 | 1.1+ | 0.5- |
| 2000 09 03 | 704 | 0.3+ | 0.5+ | 2006 05 28 | 691 | 0.1- | 0.3+ | 2007 11 13 | 699 | 0.0  | 0.3- |
| 2000 09 23 | 704 | 0.4+ | 0.1+ | 2006 05 28 | 691 | 0.3+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2000 09 23 | 704 | 0.0  | 0.1- | 2006 05 28 | 691 | 0.0  | 0.8+ | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2000 09 23 | 704 | 0.0  | 0.2- | 2007 10 14 | G96 | 0.4+ | 0.6- | 2007 11 14 | 691 | 0.1- | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 23 | 704 | 0.5+ | 0.4- | 2007 10 14 | G96 | 0.9+ | 0.6- | 2007 11 15 | 704 | 0.3+ | 0.5+ |
| 2000 09 25 | 704 | 0.4+ | 1.1+ | 2007 10 14 | G96 | 0.4+ | 0.5- | 2007 11 15 | 704 | 0.2+ | 0.2+ |
| 2000 09 25 | 704 | 0.2+ | 1.1+ | 2007 10 14 | G96 | 0.3+ | 0.6- | 2007 11 15 | 704 | 0.5+ | 0.3+ |
| 2000 09 25 | 704 | 0.6+ | 0.5+ | 2007 10 19 | 699 | 0.2- | 0.3+ | 2007 11 15 | 704 | 0.6+ | 0.8+ |
| 2000 09 25 | 704 | 0.3- | 0.2+ | 2007 10 19 | 699 | 0.4- | 0.3- | 2007 11 15 | 704 | 0.1+ | 0.8+ |
| 2000 09 25 | 704 | 0.2+ | 1.1+ | 2007 10 19 | 699 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2000 09 27 | 704 | 0.7- | 0.2- | 2007 10 19 | 699 | 0.1- | 0.4+ | 2007 11 18 | 691 | 1.2- | 0.9- |
| 2000 09 27 | 704 | 0.7- | 0.4+ | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2000 09 27 | 704 | 0.3- | 0.5+ | 2007 10 30 | 691 | 0.3- | 0.4- | 2007 12 04 | 699 | 0.4+ | 0.5- |
| 2000 09 27 | 704 | 0.0  | 1.0+ | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 12 04 | 699 | 0.1- | 0.3- |
| 2000 09 27 | 704 | 0.4- | 0.5+ | 2007 11 01 | 734 | 0.2+ | 0.4- | 2007 12 04 | 699 | 0.6- | 0.2- |
| 2000 10 03 | 704 | 0.2- | 0.7+ | 2007 11 01 | 734 | 0.3+ | 0.3- | 2007 12 04 | 699 | 1.0+ | 0.1+ |
| 2000 10 03 | 704 | 0.2- | 0.1+ | 2007 11 01 | 734 | 0.4+ | 0.2- | 2007 12 05 | H07 | 1.0- | 1.4+ |
| 2000 10 03 | 704 | 0.6- | 0.2+ | 2007 11 03 | 734 | 0.6+ | 0.0  | 2007 12 05 | H07 | 1.2- | 0.0  |
| 2000 10 03 | 704 | 0.6- | 0.1+ | 2007 11 03 | 734 | 0.3+ | 0.2- | 2007 12 05 | H07 | 0.4- | 0.7+ |
| 2000 10 03 | 704 | 0.2- | 0.2+ | 2007 11 03 | 734 | 0.4+ | 0.1- | 2007 12 05 | 704 | 0.2+ | 0.6+ |
| 2000 10 25 | 704 | 0.2- | 0.6- | 2007 11 03 | 734 | 0.4+ | 0.4- | 2007 12 05 | 704 | 0.3- | 0.9+ |
| 2000 10 25 | 704 | 0.6- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.0  | 2007 12 05 | 704 | 0.2+ | 1.4+ |
| 2000 10 25 | 704 | 0.2- | 1.5- | 2007 11 03 | 691 | 0.2- | 0.1+ | 2007 12 05 | 704 | 0.1- | 0.7+ |
| 2000 10 25 | 704 | 0.3+ | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 12 05 | 704 | 0.0  | 0.6- |
| 2000 10 25 | 704 | 0.6+ | 0.3- | 2007 11 05 | D29 | 1.1+ | 0.5- | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2005 01 18 | 703 | 0.7+ | 0.2+ | 2007 11 05 | D29 | 0.5+ | 0.2- | 2007 12 06 | G96 | 0.2+ | 0.2- |
| 2005 01 18 | 703 | 1.4+ | 0.5+ | 2007 11 05 | D29 | 0.3+ | 0.3+ | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2005 01 18 | 703 | 0.7- | 1.3+ | 2007 11 05 | D29 | 0.5+ | 0.3- | 2007 12 06 | G96 | 0.2- | 0.0  |
| 2005 01 18 | 703 | 0.7+ | 0.6- | 2007 11 05 | D29 | 0.4+ | 0.1- | 2007 12 15 | G96 | 0.3+ | 0.2+ |
| 2005 01 19 | 691 | 0.1+ | 0.4+ | 2007 11 05 | D29 | 0.8+ | 0.0  | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2005 01 19 | 691 | 0.1- | 0.4+ | 2007 11 05 | D29 | 0.0  | 0.4+ | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2005 01 19 | 691 | 0.1- | 0.4+ | 2007 11 05 | D29 | 0.3+ | 0.2- | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2006 05 05 | 691 | 0.2- | 0.2+ | 2007 11 07 | 691 | 0.1- | 0.1- |            |     |      |      |
| 2006 05 05 | 691 | 0.0  | 0.4+ | 2007 11 07 | 691 | 0.1- | 0.0  |            |     |      |      |

**(171690)\* 2000 SF<sub>41</sub> = 2003 NY<sub>4</sub>**

Discovered 2000 Sept. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 74816)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M         |            | (2000.0) |           | P           |             | Q        |   |
|-----------|------------|----------|-----------|-------------|-------------|----------|---|
| 108.78900 |            |          |           |             |             |          |   |
| <i>n</i>  | 0.29563393 | $\omega$ | 220.90979 | +0.27604252 | +0.95866162 |          |   |
| <i>a</i>  | 2.2316866  | $\Omega$ | 65.21705  | -0.86083612 | +0.27855057 |          |   |
| <i>e</i>  | 0.1476845  | <i>i</i> | 4.36205   | -0.42750637 | +0.05811604 |          |   |
| <i>P</i>  | 3.33       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 2000 09 24 | 704 | 0.2+  | 0.0   | 2006 03 25 | 691 | 0.2+  | 0.1+  | 2007 10 10 | G96 | 0.1+ | 0.1+  |
| 2000 09 24 | 704 | 0.7+  | 0.1-  | 2006 04 25 | A50 | 0.1+  | 0.0   | 2007 10 10 | G96 | 0.8+ | 0.0   |
| 2000 09 24 | 704 | 0.0   | 0.3+  | 2006 04 25 | A50 | 0.2+  | 0.3+  | 2007 10 10 | G96 | 0.4+ | 0.3+  |
| 2000 09 25 | 704 | 0.3-  | 0.7-  | 2006 04 26 | A50 | 0.2+  | 0.3+  | 2007 10 10 | G96 | 0.1+ | 0.0   |
| 2000 09 25 | 704 | 0.3-  | 0.7-  | 2006 04 26 | A50 | 0.3+  | 0.5+  | 2007 10 31 | 691 | 0.2- | 0.2+  |
| 2000 09 25 | 704 | 0.8+  | 1.0-  | 2006 04 27 | 704 | 0.5+  | 0.6-  | 2007 10 31 | 691 | 0.2- | 0.1+  |
| 2000 10 02 | 704 | 0.5-  | 0.4+  | 2006 04 27 | 704 | 0.4+  | 0.1-  | 2007 10 31 | 691 | 0.1+ | 0.0   |
| 2000 10 02 | 704 | 1.0+  | 1.0-  | 2006 04 27 | 704 | 0.7+  | 0.7+  | 2007 11 08 | 691 | 0.1- | 0.0   |
| 2000 10 02 | 704 | 0.3+  | 0.7+  | 2006 04 27 | 704 | 0.6+  | 0.3+  | 2007 11 08 | 691 | 0.2+ | 0.0   |
| 2000 10 02 | 704 | 0.1-  | 1.3+  | 2006 05 16 | 644 | 0.1-  | 0.2+  | 2007 11 08 | 691 | 0.1+ | 0.1+  |
| 2000 10 02 | 704 | 0.4+  | 1.3+  | 2006 05 16 | 644 | 0.0   | 0.1+  | 2007 11 14 | 704 | 0.4+ | 0.8+  |
| 2002 01 22 | 291 | 0.3-  | 0.4-  | 2006 05 16 | 644 | 0.1+  | 0.1+  | 2007 11 14 | 704 | 0.8- | 1.7+) |
| 2002 01 22 | 291 | 0.3-  | 0.2-  | 2006 05 19 | G96 | 0.2-  | 0.3+  | 2007 11 14 | 704 | 0.1+ | 1.0+  |
| 2002 01 22 | 291 | 0.1+  | 0.2-  | 2006 05 19 | G96 | 0.3-  | 0.3+  | 2007 11 14 | 704 | (0.0 | 2.8+) |
| 2003 07 04 | 428 | 0.0   | 0.1-  | 2006 05 19 | G96 | 0.3-  | 0.3+  | 2007 12 04 | 691 | 0.3- | 0.1+  |
| 2003 07 04 | 428 | 0.8-  | 0.2+  | 2006 05 19 | G96 | 0.1+  | 0.2+  | 2007 12 04 | 691 | 0.3- | 0.2+  |
| 2003 07 05 | 428 | 1.3-  | 0.0   | 2006 05 19 | 703 | 1.2+  | 0.0   | 2007 12 04 | 691 | 0.5- | 0.3+  |
| 2003 07 05 | 428 | (3.3- | 0.8-) | 2006 05 19 | 703 | 0.0   | 1.0+  | 2007 12 06 | 691 | 0.3- | 0.7+  |
| 2006 03 25 | 691 | 0.2+  | 0.2+  | 2006 05 19 | 703 | 0.6-  | 0.6+  | 2007 12 06 | 691 | 0.1- | 0.1+  |
| 2006 03 25 | 691 | 0.2+  | 0.3+  | 2006 05 19 | 703 | (1.8- | 0.9-) | 2007 12 06 | 691 | 0.1+ | 0.1-  |

**(171691)\* 2000 SG<sub>49</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| 79.14811 |            |          |           |             |             |          |   |
| <i>n</i> | 0.29956045 | $\omega$ | 70.57741  | +0.81515673 | +0.57562769 |          |   |
| <i>a</i> | 2.2121423  | $\Omega$ | 254.22840 | -0.55343923 | +0.74107826 |          |   |
| <i>e</i> | 0.1667288  | <i>i</i> | 3.84858   | -0.17095182 | +0.34562375 |          |   |
| <i>P</i> | 3.29       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 22 | 645 | 0.1+ | 0.2+ | 2000 10 01 | 699 | 0.0  | 0.5+ | 2006 05 31 | G96 | 0.2+ | 0.1+ |
| 1999 03 22 | 645 | 0.1+ | 0.2+ | 2000 10 01 | 699 | 0.3+ | 0.5- | 2007 11 01 | 691 | 0.4- | 0.3+ |
| 2000 09 05 | 699 | 0.9- | 0.2+ | 2000 10 01 | 699 | 0.5+ | 0.6+ | 2007 11 01 | 691 | 0.0  | 0.1- |
| 2000 09 05 | 699 | 1.2- | 0.9+ | 2000 10 01 | 699 | 0.1- | 0.7+ | 2007 11 01 | 691 | 0.1- | 0.1+ |
| 2000 09 05 | 699 | 1.1- | 0.7- | 2000 10 03 | 704 | 0.1- | 0.4- | 2007 11 13 | 691 | 0.1- | 0.3- |
| 2000 09 05 | 699 | 0.7- | 0.5+ | 2000 10 03 | 704 | 1.3+ | 1.1- | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2000 09 21 | 699 | 0.0  | 0.6+ | 2000 10 03 | 704 | 0.1+ | 0.2- | 2007 11 13 | 691 | 0.3+ | 0.3- |
| 2000 09 21 | 699 | 0.5+ | 0.3+ | 2000 10 03 | 704 | 1.8- | 0.3+ | 2007 11 17 | 691 | 0.4- | 0.6- |
| 2000 09 21 | 699 | 1.0- | 0.9+ | 2000 10 30 | 691 | 0.2+ | 0.2- | 2007 11 17 | 691 | 0.1+ | 0.1+ |
| 2000 09 21 | 699 | 0.2- | 0.3+ | 2000 10 30 | 691 | 0.5+ | 0.4- | 2007 11 17 | 691 | 0.1- | 0.3- |
| 2000 09 23 | 704 | 0.4+ | 0.6+ | 2000 10 30 | 691 | 0.3+ | 0.3- | 2007 12 04 | 691 | 0.5- | 0.1- |
| 2000 09 23 | 704 | 0.2- | 1.2+ | 2006 04 07 | 691 | 0.0  | 0.6- | 2007 12 04 | 691 | 0.1+ | 0.1+ |
| 2000 09 23 | 704 | 1.0- | 1.0+ | 2006 04 07 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.0  | 0.0  |
| 2000 09 23 | 704 | 0.3+ | 0.5+ | 2006 04 07 | 691 | 0.3+ | 0.1+ | 2007 12 14 | 704 | 0.8+ | 0.2- |
| 2000 09 23 | 704 | 0.2+ | 0.4+ | 2006 05 04 | G96 | 0.3- | 0.1+ | 2007 12 14 | 704 | 0.9+ | 0.8+ |
| 2000 09 26 | 704 | 0.2- | 0.8+ | 2006 05 04 | G96 | 0.2- | 0.3+ | 2007 12 14 | 704 | 0.6+ | 0.3+ |
| 2000 09 26 | 704 | 0.0  | 0.4+ | 2006 05 04 | G96 | 0.1- | 0.9+ | 2007 12 14 | 704 | 0.7+ | 1.6+ |
| 2000 09 26 | 704 | 0.4- | 0.8+ | 2006 05 04 | G96 | 0.1- | 0.5+ | 2007 12 16 | 691 | 0.1- | 0.2+ |
| 2000 09 26 | 704 | 0.6- | 0.5+ | 2006 05 31 | G96 | 0.6- | 0.9+ | 2007 12 16 | 691 | 0.0  | 0.2+ |
| 2000 09 26 | 704 | 0.2+ | 0.0  | 2006 05 31 | G96 | 0.8+ | 0.0  | 2007 12 16 | 691 | 0.1+ | 0.7+ |

**(171692)\* 2000 SN<sub>55</sub> = 2000 QU<sub>249</sub> = 2002 EL<sub>71</sub>**

Discovered 2000 Sept. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. M. E. Sansaturio (d, *MPO* 12345), G. V. Williams (*MPO* 29325)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| 26.73913 |            |          |           |             |             |          |   |
| <i>n</i> | 0.29617019 | $\omega$ | 50.44240  | +0.88261313 | -0.46956305 |          |   |
| <i>a</i> | 2.2289919  | $\Omega$ | 337.53623 | +0.41126926 | +0.79442233 |          |   |
| <i>e</i> | 0.1404361  | <i>i</i> | 3.37034   | +0.22770959 | +0.38523203 |          |   |
| <i>P</i> | 3.33       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 01 29 | 691 | 0.4-  | 0.2-  | 2000 10 02 | 704 | 0.4- | 0.5+ | 2005 03 13 | 691 | 0.1+ | 0.3+ |
| 1995 01 29 | 691 | 0.0   | 0.7-  | 2002 03 13 | 704 | 1.2+ | 0.9+ | 2005 03 13 | 691 | 0.1+ | 0.3+ |
| 2000 08 31 | 704 | 0.7+  | 0.5+  | 2002 03 13 | 704 | 0.8+ | 0.8+ | 2005 04 09 | G96 | 0.5- | 0.2- |
| 2000 08 31 | 704 | 0.7-  | 0.1-  | 2002 03 13 | 704 | 0.5+ | 0.8+ | 2005 04 09 | G96 | 0.0  | 0.1- |
| 2000 08 31 | 704 | 0.4-  | 1.2+  | 2002 03 13 | 704 | 1.2+ | 0.4+ | 2005 04 09 | G96 | 0.5- | 0.6- |
| 2000 08 31 | 704 | 0.3+  | 0.5-  | 2002 03 13 | 644 | 0.6+ | 1.0+ | 2005 04 09 | G96 | 0.0  | 0.2- |
| 2000 08 31 | 704 | 0.3-  | 1.0+  | 2002 03 13 | 644 | 0.5+ | 1.0+ | 2007 11 07 | 691 | 0.3+ | 0.5- |
| 2000 09 24 | 699 | 0.7-  | 0.3+  | 2002 03 13 | 644 | 0.1+ | 1.3+ | 2007 11 07 | 691 | 0.3- | 0.3+ |
| 2000 09 24 | 704 | 0.1+  | 0.4+  | 2002 03 15 | 704 | 0.4+ | 1.1+ | 2007 11 07 | 691 | 0.2+ | 0.5- |
| 2000 09 24 | 699 | 0.2+  | 0.8+  | 2002 03 15 | 704 | 0.7- | 0.8+ | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2000 09 24 | 704 | 0.3-  | 0.7+  | 2002 03 15 | 704 | 0.0  | 0.5- | 2007 11 07 | 691 | 0.1+ | 0.2- |
| 2000 09 24 | 704 | 0.3-  | 0.7+  | 2005 01 06 | 703 | 0.6+ | 0.8+ | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2000 09 24 | 704 | 0.2+  | 0.0   | 2005 01 06 | 703 | 0.2+ | 0.1+ | 2007 11 18 | 704 | 0.2+ | 0.5- |
| 2000 09 24 | 699 | 0.3-  | 0.1+  | 2005 01 06 | 703 | 0.5- | 0.2+ | 2007 11 18 | 704 | 1.1+ | 0.2+ |
| 2000 09 24 | 704 | 0.5-  | 0.4+  | 2005 01 06 | 703 | 0.9- | 0.7+ | 2007 11 18 | 704 | 0.0  | 0.1- |
| 2000 09 24 | 704 | 0.0   | 0.5+  | 2005 01 16 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.2- | 0.0  |
| 2000 09 24 | 704 | 0.4-  | 0.4+  | 2005 01 16 | 691 | 0.1- | 0.0  | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2000 09 24 | 704 | 0.2+  | 0.5+  | 2005 01 16 | 691 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2000 09 24 | 699 | (1.1- | 2.2+) | 2005 02 02 | 704 | 0.6+ | 0.1- | 2007 11 20 | 704 | 0.3+ | 0.2+ |
| 2000 09 24 | 704 | 0.5-  | 0.2+  | 2005 02 02 | 704 | 0.7+ | 0.3- | 2007 11 20 | 704 | 0.0  | 0.2+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 24 | 704 | 0.7+ | 0.9+ | 2005 02 02 | 704 | 0.8+  | 0.1−  | 2007 11 20 | 704 | 0.4+  | 0.1+  |
| 2000 09 26 | 704 | 0.5− | 0.5+ | 2005 02 02 | 704 | (1.9+ | 1.1+) | 2007 11 20 | 704 | 0.1−  | 0.3+  |
| 2000 09 26 | 704 | 0.4− | 0.3+ | 2005 02 04 | 699 | (1.7+ | 0.3−) | 2007 12 13 | 704 | 0.1−  | 1.2+  |
| 2000 09 26 | 704 | 0.4− | 0.2+ | 2005 02 04 | 699 | 0.7+  | 1.4+  | 2007 12 13 | 704 | 0.0   | 0.3−  |
| 2000 09 26 | 704 | 0.2− | 0.2+ | 2005 02 04 | 699 | 0.9+  | 0.9+  | 2007 12 13 | 704 | 0.0   | 0.2+  |
| 2000 09 26 | 704 | 0.1+ | 0.1+ | 2005 02 04 | 699 | 0.5+  | 0.2−  | 2007 12 13 | 704 | (0.6− | 1.7+) |
| 2000 10 02 | 704 | 0.4− | 0.3+ | 2005 03 03 | 691 | 0.2+  | 0.3+  | 2007 12 13 | 704 | 0.3+  | 0.3+  |
| 2000 10 02 | 704 | 0.7− | 0.4+ | 2005 03 03 | 691 | 0.4+  | 0.5+  | 2007 12 15 | 704 | 0.0   | 0.5−  |
| 2000 10 02 | 704 | 0.1− | 0.0  | 2005 03 03 | 691 | 1.2−  | 0.2+  | 2007 12 15 | 704 | 0.2−  | 0.3−  |
| 2000 10 02 | 704 | 0.9− | 0.5+ | 2005 03 13 | 691 | 0.2+  | 0.2+  | 2007 12 15 | 704 | 0.2+  | 0.4−  |

**(171693)\* 2000 SB<sub>98</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.74125    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28692013 | $\omega$ | 100.97938 | +0.85738481 | −0.51311117 |
| <i>a</i> | 2.2766453  | $\Omega$ | 289.90279 | +0.45398612 | +0.79069104 |
| <i>e</i> | 0.1610650  | <i>i</i> | 2.44441   | +0.24246214 | +0.33395301 |
| <i>P</i> | 3.44       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 02 | 699 | 0.0   | 0.2−  | 2004 12 19 | G96 | 0.4−  | 0.4−  | 2007 10 19 | 691 | 0.1−  | 0.3−  |
| 2000 09 02 | 699 | 0.9−  | 0.4−  | 2005 01 16 | 691 | 0.7+  | 0.6+  | 2007 10 19 | 691 | 0.1−  | 0.2−  |
| 2000 09 02 | 699 | 0.7−  | 0.1+  | 2005 01 16 | 691 | 0.0   | 0.0   | 2007 10 19 | 691 | 0.1−  | 0.2−  |
| 2000 09 02 | 699 | 0.2−  | 0.2−  | 2005 01 16 | 691 | 0.2+  | 0.2+  | 2007 10 22 | 704 | 1.0+  | 0.2+  |
| 2000 09 23 | 704 | 0.9+  | 0.6+  | 2005 01 19 | 691 | 0.1−  | 0.1+  | 2007 10 22 | 704 | 1.0+  | 0.5+  |
| 2000 09 23 | 704 | 0.2−  | 0.1+  | 2005 01 19 | 691 | 0.2−  | 0.2+  | 2007 10 22 | 704 | (2.8− | 0.5+) |
| 2000 09 23 | 704 | 1.3−  | 1.2+  | 2005 01 19 | 691 | 0.1+  | 0.0   | 2007 11 01 | 704 | 0.6+  | 0.1+  |
| 2000 09 26 | 699 | 0.6+  | 0.5−  | 2005 01 19 | 691 | 0.1−  | 0.2+  | 2007 11 01 | 704 | 0.2−  | 0.0   |
| 2000 09 26 | 699 | 0.1−  | 0.7+  | 2005 01 19 | 691 | 0.1−  | 0.2+  | 2007 11 01 | 704 | 0.2−  | 0.0   |
| 2000 09 27 | 704 | 0.8−  | 1.3+  | 2005 01 19 | 691 | 0.1−  | 0.1+  | 2007 11 01 | 704 | 0.0   | 0.1−  |
| 2000 09 27 | 704 | 0.1+  | 0.4−  | 2006 06 01 | G96 | 0.3+  | 0.2+  | 2007 11 01 | 106 | 0.3+  | 0.6+  |
| 2000 09 27 | 704 | 0.2+  | 0.0   | 2006 06 01 | G96 | 0.0   | 0.2+  | 2007 11 01 | 106 | 0.5+  | 0.6+  |
| 2000 09 27 | 704 | 0.3−  | 0.6+  | 2006 06 01 | G96 | 0.2+  | 0.5+  | 2007 11 01 | 106 | 0.8+  | 0.1−  |
| 2000 09 27 | 704 | 0.9−  | 0.6−  | 2006 06 01 | G96 | 0.1−  | 0.2+  | 2007 11 01 | 106 | 0.3+  | 0.7+  |
| 2000 09 28 | 704 | 0.3+  | 0.1+  | 2007 10 10 | 699 | 0.8−  | 0.9−  | 2007 11 07 | 704 | 0.8+  | 0.5−  |
| 2000 09 28 | 704 | 0.3+  | 0.5−  | 2007 10 10 | 699 | 0.9−  | 0.1−  | 2007 11 07 | 704 | 0.3+  | 0.5−  |
| 2000 09 28 | 704 | 0.4−  | 0.5−  | 2007 10 10 | 699 | 0.2−  | 0.3+  | 2007 11 07 | 704 | 0.6+  | 0.7−  |
| 2000 09 28 | 704 | 0.7−  | 0.4+  | 2007 10 10 | 699 | (1.6+ | 0.8+) | 2007 11 07 | 704 | 0.4+  | 0.9−  |
| 2000 09 28 | 704 | 0.2−  | 0.3+  | 2007 10 11 | 691 | 0.1−  | 0.2−  | 2007 11 07 | 704 | 0.4+  | 0.5−  |
| 2000 10 01 | 699 | (0.2+ | 2.8+) | 2007 10 11 | 691 | 0.2−  | 0.0   | 2007 11 08 | G96 | 0.4+  | 0.4−  |
| 2000 10 01 | 699 | 0.1+  | 1.0+  | 2007 10 11 | 691 | 1.1−  | 0.3+  | 2007 11 08 | G96 | 0.7+  | 0.2−  |
| 2000 10 01 | 699 | 0.3+  | 0.4−  | 2007 10 12 | 704 | 0.3−  | 0.1−  | 2007 11 08 | G96 | 1.0+  | 0.3−  |
| 2000 10 01 | 699 | 0.1+  | 0.4+  | 2007 10 12 | 704 | 0.1−  | 0.4+  | 2007 11 08 | G96 | 0.9+  | 0.3−  |
| 2000 10 03 | 704 | 0.0   | 0.2+  | 2007 10 12 | 704 | 0.7−  | 0.3−  | 2007 11 12 | 703 | 0.9+  | 0.3−  |
| 2000 10 03 | 704 | 0.1+  | 0.6+  | 2007 10 12 | 704 | 0.0   | 0.6+  | 2007 11 12 | 703 | 0.3−  | 0.7+  |
| 2000 10 03 | 704 | 0.2−  | 0.4+  | 2007 10 15 | 704 | (2.1+ | 0.8+) | 2007 11 12 | 703 | 0.4+  | 0.0   |
| 2000 10 03 | 704 | 0.6+  | 0.2+  | 2007 10 15 | 704 | 0.2−  | 0.4+  | 2007 11 12 | 703 | 0.2−  | 0.6−  |
| 2000 10 03 | 704 | 0.7+  | 1.4+  | 2007 10 15 | 691 | 0.6−  | 0.9−  | 2007 11 18 | 704 | 0.6−  | 0.5+  |
| 2002 04 06 | 807 | 0.8+  | 0.5+  | 2007 10 15 | 704 | 0.9+  | 0.1+  | 2007 11 18 | 704 | 0.4+  | 0.0   |
| 2002 04 06 | 807 | 0.3+  | 0.6+  | 2007 10 15 | 691 | 0.2−  | 0.2−  | 2007 11 18 | 704 | 0.3+  | 0.6+  |
| 2004 12 18 | G96 | 0.1−  | 0.5−  | 2007 10 15 | 704 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 0.3+  | 0.7+  |
| 2004 12 18 | G96 | 0.0   | 0.1−  | 2007 10 15 | 704 | 0.6+  | 0.4+  | 2007 11 18 | 704 | 0.2−  | 0.6+  |
| 2004 12 18 | G96 | 0.5−  | 0.6−  | 2007 10 15 | 691 | 0.1−  | 0.2−  | 2007 12 13 | A77 | 0.8+  | 0.8+  |
| 2004 12 18 | G96 | 0.3−  | 0.5−  | 2007 10 18 | 699 | 0.0   | 0.7+  | 2007 12 13 | A77 | 1.0+  | 0.0   |
| 2004 12 19 | G96 | 0.5−  | 0.1−  | 2007 10 18 | 699 | 0.4+  | 0.1−  | 2007 12 13 | A77 | 0.3+  | 0.3+  |
| 2004 12 19 | G96 | 0.2+  | 0.5−  | 2007 10 18 | 699 | 0.1−  | 0.6+  |            |     |       |       |
| 2004 12 19 | G96 | 0.5−  | 0.6−  | 2007 10 18 | 699 | 0.3+  | 0.4+  |            |     |       |       |

**(171694)\* 2000 SQ<sub>102</sub>**

Discovered 2000 Sept. 24 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.69626   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29340121 | $\omega$ | 172.60621 | +0.93894703 | −0.34279232 |
| <i>a</i> | 2.2429940  | $\Omega$ | 207.49805 | +0.31230648 | +0.88515382 |
| <i>e</i> | 0.1936387  | <i>i</i> | 3.66670   | +0.14437153 | +0.31463651 |
| <i>P</i> | 3.36       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 04 | 699 | 1.1+ | 0.4+ | 2000 10 01 | 704 | 0.1−  | 0.1+  | 2002 03 20 | 691 | 0.1−  | 0.7+  |
| 2000 09 04 | 699 | 0.2− | 0.2+ | 2000 10 01 | 704 | 0.1−  | 0.2+  | 2002 03 20 | 691 | 0.4+  | 0.5+  |
| 2000 09 04 | 699 | 0.4+ | 1.3+ | 2000 10 01 | 704 | 0.1+  | 0.4+  | 2002 03 20 | 691 | 0.5+  | 0.5+  |
| 2000 09 04 | 699 | 0.3+ | 0.4+ | 2000 10 01 | 704 | 0.2+  | 0.7+  | 2004 12 19 | G96 | 0.1−  | 0.0   |
| 2000 09 22 | 691 | 0.3+ | 0.2− | 2000 10 02 | 704 | 0.7−  | 0.1−  | 2004 12 19 | G96 | 0.5−  | 0.1+  |
| 2000 09 22 | 699 | 0.0  | 0.1+ | 2000 10 02 | 704 | 0.4+  | 0.1+  | 2004 12 19 | G96 | 0.7−  | 0.3−  |
| 2000 09 22 | 691 | 0.3+ | 0.7− | 2000 10 02 | 704 | 0.2+  | 0.2+  | 2004 12 19 | G96 | 0.5−  | 0.1−  |
| 2000 09 22 | 699 | 0.1− | 0.3+ | 2000 10 02 | 704 | 0.3+  | 0.8+  | 2005 02 02 | 704 | 0.2+  | 0.0   |
| 2000 09 22 | 691 | 0.2+ | 0.1− | 2000 10 02 | 704 | 0.6+  | 0.8+  | 2005 02 02 | 704 | 0.3+  | 0.2+  |
| 2000 09 22 | 699 | 0.5+ | 0.1− | 2000 10 24 | 704 | 0.5−  | 0.0   | 2005 02 02 | 704 | (0.3+ | 1.6−) |
| 2000 09 22 | 699 | 0.2− | 0.7+ | 2000 10 24 | 704 | (2.2− | 1.3+) | 2005 03 13 | G96 | 0.2−  | 0.1−  |
| 2000 09 24 | 704 | 0.1− | 0.3+ | 2000 10 24 | 704 | 0.6+  | 1.0−  | 2005 03 13 | G96 | 0.4−  | 0.1−  |
| 2000 09 24 | 704 | 0.6− | 0.2+ | 2000 10 24 | 704 | 0.2+  | 0.6−  | 2005 03 13 | G96 | 0.2−  | 0.2−  |
| 2000 09 24 | 704 | 0.6− | 0.3+ | 2000 11 02 | 704 | 0.7+  | 0.8−  | 2005 03 13 | G96 | 0.6−  | 0.3−  |
| 2000 09 24 | 704 | 0.4− | 0.0  | 2000 11 02 | 704 | 0.8+  | 0.1−  | 2007 08 10 | 691 | 1.1−  | 0.1−  |
| 2000 09 24 | 704 | 0.4− | 0.3+ | 2000 11 02 | 704 | 0.3−  | 0.2−  | 2007 08 10 | 691 | 0.2−  | 0.0   |
| 2000 09 26 | 699 | 0.6+ | 0.4+ | 2000 11 02 | 704 | 0.7+  | 0.3−  | 2007 08 10 | 691 | 0.2−  | 0.2+  |
| 2000 09 26 | 699 | 0.1− | 0.1+ | 2000 11 02 | 704 | 0.3−  | 1.3+  | 2007 11 12 | 704 | 0.5+  | 0.4−  |
| 2000 09 26 | 699 | 0.0  | 0.6+ | 2000 11 18 | 699 | 0.5−  | 0.1−  | 2007 11 12 | 704 | 0.5+  | 1.0−  |
| 2000 09 26 | 699 | 0.3+ | 0.3+ | 2000 11 18 | 699 | 1.6−  | 0.9−  | 2007 11 12 | 704 | 0.5+  | 0.2−  |
| 2000 09 27 | 704 | 1.2− | 0.1+ | 2000 11 18 | 699 | 0.1−  | 0.2−  | 2007 11 12 | 704 | 0.4+  | 0.6−  |
| 2000 09 27 | 704 | 0.2− | 0.1− | 2000 11 18 | 699 | 1.2−  | 0.6+  | 2007 12 04 | 704 | 0.4−  | 0.6−  |
| 2000 09 27 | 704 | 0.6− | 0.1− | 2000 11 21 | 704 | 0.5−  | 0.7+  | 2007 12 04 | 704 | 0.4+  | 0.3−  |
| 2000 09 27 | 704 | 0.4− | 0.2+ | 2000 11 21 | 704 | 0.7−  | 0.6+  | 2007 12 04 | 704 | 1.8+  | 1.1+  |
| 2000 09 27 | 704 | 0.6− | 0.3− | 2000 11 21 | 704 | 0.5−  | 1.1+  |            |     |       |       |
| 2000 10 01 | 704 | 0.1− | 0.0  | 2000 11 21 | 704 | 0.9−  | 0.8+  |            |     |       |       |

**(171695)\* 2000 SE<sub>113</sub> = 1997 UH<sub>14</sub>**

Discovered 2000 Sept. 24 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. M. E. Sansaturio (*MPO* 5978)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 134.51488  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.31192985 | $\omega$ | 134.89784 | +0.61041051 | +0.79205950 |
| <i>a</i> | 2.1532680  | $\Omega$ | 172.71311 | −0.74017171 | +0.57325577 |
| <i>e</i> | 0.1913693  | <i>i</i> | 2.88552   | −0.28203698 | +0.20980842 |
| <i>P</i> | 3.16       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 25 | 691 | 0.1− | 0.4− | 2003 07 04 | 691 | 0.1− | 0.4+ | 2003 09 04 | 106 | 0.2− | 0.2− |
| 1997 10 25 | 691 | 0.0  | 0.6− | 2003 07 04 | 691 | 0.1− | 0.2+ | 2003 09 04 | 106 | 0.3− | 0.3− |
| 1997 10 25 | 691 | 0.2+ | 0.3− | 2003 07 04 | 691 | 0.2− | 0.1+ | 2003 09 04 | 106 | 0.3− | 0.4− |
| 1997 11 01 | 691 | 0.1− | 0.8− | 2003 07 11 | 608 | 0.1+ | 0.4− | 2003 09 17 | 291 | 0.5+ | 0.3+ |
| 1997 11 01 | 691 | 0.3− | 0.6− | 2003 07 11 | 608 | 0.3+ | 0.3− | 2003 09 17 | 291 | 0.3+ | 0.3+ |
| 1997 11 01 | 691 | 0.0  | 0.4− | 2003 07 11 | 608 | 0.4− | 0.1− | 2003 09 17 | 291 | 0.4+ | 0.4+ |
| 2000 09 23 | 699 | 0.2− | 0.4− | 2003 08 04 | 704 | 0.8+ | 0.4+ | 2003 09 17 | 699 | 0.7− | 0.0  |
| 2000 09 23 | 699 | 1.0+ | 0.5+ | 2003 08 04 | 704 | 0.3− | 0.0  | 2003 09 17 | 699 | 0.1− | 0.1− |
| 2000 09 23 | 699 | 0.3+ | 1.6+ | 2003 08 04 | 704 | 0.4− | 0.3− | 2003 09 17 | 699 | 0.1+ | 0.2− |
| 2000 09 23 | 699 | 0.7+ | 0.5+ | 2003 08 04 | 704 | 0.2+ | 0.3+ | 2003 09 17 | 699 | 0.6− | 0.2− |
| 2000 09 24 | 704 | 0.6− | 0.6+ | 2003 08 04 | 704 | 0.5− | 0.9− | 2003 09 17 | 704 | 0.6+ | 0.3− |
| 2000 09 24 | 704 | 0.4− | 0.3+ | 2003 08 22 | 704 | 0.5+ | 0.4+ | 2003 09 17 | 704 | 0.7+ | 0.5− |
| 2000 09 24 | 704 | 0.2+ | 0.9+ | 2003 08 22 | 704 | 0.1+ | 0.2+ | 2003 09 17 | 704 | 0.2+ | 0.3− |
| 2000 09 24 | 704 | 0.5− | 0.3− | 2003 08 22 | 704 | 0.0  | 0.2− | 2003 09 17 | 704 | 0.3+ | 0.3− |
| 2000 09 24 | 704 | 0.0  | 1.9+ | 2003 08 22 | 704 | 0.0  | 0.2+ | 2003 09 17 | 704 | 0.5+ | 0.2− |
| 2000 09 27 | 704 | 0.9+ | 0.9+ | 2003 08 23 | 644 | 0.4− | 0.4+ | 2003 09 17 | 608 | 0.6− | 1.1− |
| 2000 09 27 | 704 | 0.9+ | 0.3− | 2003 08 23 | 644 | 0.2− | 0.3+ | 2003 09 17 | 608 | 0.4− | 0.7− |
| 2000 09 27 | 704 | 0.8+ | 0.1+ | 2003 08 23 | 644 | 0.1− | 0.4+ | 2003 09 17 | 608 | 0.0  | 0.5− |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 27 | 704 | 1.1+  | 0.3+  | 2003 08 24 | 704 | 0.8− | 0.3− | 2003 09 18 | 699 | 1.0+  | 0.6−  |
| 2000 10 01 | 704 | 0.0   | 0.2+  | 2003 08 24 | 704 | 0.0  | 1.0− | 2003 09 18 | 699 | 0.2−  | 0.9+  |
| 2000 10 01 | 704 | 0.2−  | 0.1−  | 2003 08 24 | 704 | 0.5− | 1.3− | 2003 09 18 | 699 | 0.2−  | 0.1+  |
| 2000 10 01 | 704 | 0.5−  | 0.4+  | 2003 08 24 | 704 | 0.3− | 1.0− | 2003 09 18 | 699 | 0.3−  | 0.1+  |
| 2000 10 01 | 704 | 0.1−  | 0.4+  | 2003 08 24 | 704 | 0.3− | 1.4− | 2003 09 22 | 461 | 0.2−  | 0.2+  |
| 2000 10 01 | 704 | 0.6−  | 0.5+  | 2003 08 25 | 704 | 0.1+ | 1.0+ | 2003 09 24 | 644 | 0.0   | 0.1+  |
| 2000 10 02 | 704 | 0.8−  | 0.0   | 2003 08 25 | 704 | 0.7+ | 0.1− | 2003 09 24 | 644 | 0.1+  | 0.2+  |
| 2000 10 02 | 704 | 0.0   | 0.5+  | 2003 08 25 | 704 | 0.6+ | 0.8+ | 2003 09 24 | 644 | 0.1+  | 0.1+  |
| 2000 10 02 | 704 | 0.1−  | 0.1+  | 2003 08 25 | 704 | 1.0− | 0.8− | 2003 09 29 | 291 | 0.1+  | 0.1+  |
| 2000 10 02 | 704 | 0.3−  | 0.3+  | 2003 08 25 | 704 | 0.1− | 0.5+ | 2003 09 29 | 291 | 0.1+  | 0.3+  |
| 2000 10 02 | 704 | 0.2+  | 0.4+  | 2003 08 25 | 704 | 0.2− | 0.6− | 2003 09 29 | 291 | 0.1+  | 0.2+  |
| 2000 10 30 | 704 | 1.0−  | 0.8+  | 2003 08 25 | 704 | 0.3− | 0.9+ | 2003 10 01 | 699 | (1.8+ | 0.9+) |
| 2000 10 30 | 704 | 0.1−  | 0.4+  | 2003 08 25 | 704 | 1.3− | 1.1+ | 2003 10 01 | 699 | 0.2+  | 0.6+  |
| 2000 10 30 | 704 | (2.1− | 0.9+) | 2003 08 25 | 704 | 0.2− | 0.5− | 2003 10 01 | 699 | 0.2+  | 1.0−  |
| 2002 02 10 | 704 | 0.6+  | 0.2+  | 2003 08 29 | 704 | 0.2− | 0.5+ | 2003 10 01 | 699 | 0.6+  | 0.4−  |
| 2002 02 10 | 704 | 0.3−  | 0.2+  | 2003 08 29 | 704 | 0.0  | 0.9+ | 2003 10 24 | 704 | 0.4+  | 0.6−  |
| 2002 02 10 | 704 | 0.2+  | 0.5+  | 2003 08 29 | 704 | 0.0  | 0.2+ | 2003 10 24 | 704 | 0.1−  | 0.5−  |
| 2002 02 10 | 704 | 1.0+  | 0.2+  | 2003 08 29 | 704 | 0.1− | 0.7+ | 2003 10 24 | 704 | 0.4+  | 0.4+  |
| 2002 02 10 | 704 | 0.5+  | 1.2+  | 2003 08 31 | 106 | 0.1+ | 0.4+ | 2003 10 24 | 704 | (1.7+ | 0.2−) |
| 2002 02 11 | 704 | (0.5+ | 2.0+) | 2003 08 31 | 106 | 0.7− | 0.3− | 2003 10 24 | 704 | 1.0+  | 0.4+  |
| 2002 02 11 | 704 | (0.4+ | 1.5+) | 2003 08 31 | 106 | 0.1− | 0.0  | 2005 01 17 | 691 | 0.6+  | 0.7+  |
| 2002 02 11 | 704 | 1.0+  | 1.4+  | 2003 09 01 | 704 | 0.1− | 0.3+ | 2005 01 17 | 691 | 0.3+  | 0.5+  |
| 2002 02 11 | 704 | (0.6+ | 1.9+) | 2003 09 01 | 704 | 0.2+ | 0.0  | 2005 01 17 | 691 | 0.3−  | 0.9+  |
| 2002 02 11 | 704 | (0.9+ | 2.1+) | 2003 09 01 | 704 | 0.4+ | 0.1+ | 2007 12 06 | 691 | 0.4+  | 0.1+  |
| 2003 06 27 | 699 | (2.2− | 1.9+) | 2003 09 01 | 704 | 0.2+ | 0.1+ | 2007 12 06 | 691 | 0.1−  | 0.1+  |
| 2003 06 27 | 699 | 0.3+  | 0.3+  | 2003 09 01 | 704 | 0.4+ | 0.1+ | 2007 12 06 | 691 | 0.6−  | 0.2+  |
| 2003 06 27 | 699 | 0.3−  | 0.9+  | 2003 09 03 | 106 | 0.7− | 0.5− | 2007 12 15 | G96 | 0.3−  | 0.1+  |
| 2003 06 27 | 699 | 0.5−  | 0.6+  | 2003 09 03 | 106 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.0   | 0.1−  |
| 2003 07 02 | 704 | 0.4+  | 0.4−  | 2003 09 03 | 106 | 0.0  | 0.2− | 2007 12 15 | G96 | 0.3+  | 0.1+  |
| 2003 07 02 | 704 | 0.7+  | 0.1+  | 2003 09 04 | 691 | 0.3− | 0.1+ | 2007 12 15 | G96 | 0.0   | 0.2+  |
| 2003 07 02 | 704 | 0.2+  | 0.0   | 2003 09 04 | 691 | 0.4− | 0.1+ |            |     |       |       |
| 2003 07 02 | 704 | 0.3+  | 0.4−  | 2003 09 04 | 691 | 0.5− | 0.1+ |            |     |       |       |

**(171696)\* 2000 SK<sub>137</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 17.98852   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29835540 | $\omega$ | 107.89622 | +0.57530166 | −0.81514657 |
| <i>a</i> | 2.2180948  | $\Omega$ | 306.79250 | +0.71488952 | +0.54123530 |
| <i>e</i> | 0.1532465  | <i>i</i> | 4.83934   | +0.39744304 | +0.20639871 |
| <i>P</i> | 3.30       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 03 | 704 | 0.1+ | 0.6+ | 2003 07 25 | 704 | 0.6+  | 1.0−  | 2005 03 30 | 644 | 0.6+  | 0.7+  |
| 2000 09 03 | 704 | 1.1− | 0.3+ | 2003 07 26 | 644 | 0.1−  | 0.6+  | 2005 03 30 | 644 | 0.0   | 0.6+  |
| 2000 09 03 | 704 | 0.7− | 0.2+ | 2003 07 26 | 644 | 0.2−  | 0.5+  | 2005 03 30 | 644 | 0.1−  | 0.7+  |
| 2000 09 03 | 704 | 0.3− | 0.1+ | 2003 07 26 | 644 | 0.3−  | 0.5+  | 2005 03 31 | 644 | 1.1+  | 0.8+  |
| 2000 09 03 | 704 | 0.3− | 0.3+ | 2003 08 04 | 704 | 1.2−  | 0.2−  | 2005 03 31 | 644 | 0.2+  | 0.6+  |
| 2000 09 23 | 704 | 0.5− | 0.1+ | 2003 08 04 | 704 | 0.1−  | 1.3+  | 2005 03 31 | 644 | 0.5+  | 1.2+  |
| 2000 09 23 | 704 | 0.2+ | 0.0  | 2003 08 04 | 704 | 0.2−  | 0.7+  | 2007 11 07 | 704 | 0.7−  | 1.3−  |
| 2000 09 23 | 704 | 1.4− | 1.8+ | 2003 08 04 | 704 | (0.6− | 1.7+) | 2007 11 07 | 704 | (1.7− | 3.3−) |
| 2000 09 23 | 704 | 0.3− | 1.0+ | 2003 08 25 | 704 | 0.2+  | 0.5+  | 2007 11 07 | 704 | 0.5−  | 0.4−  |
| 2000 09 25 | 608 | 0.5+ | 0.4+ | 2003 08 25 | 704 | 0.6+  | 0.5+  | 2007 11 07 | 704 | 0.2−  | 0.4+  |
| 2000 09 25 | 608 | 0.7+ | 0.5+ | 2003 08 25 | 704 | 0.8+  | 1.1+  | 2007 11 07 | 704 | 0.5+  | 0.8−  |
| 2000 09 25 | 608 | 0.6+ | 1.0+ | 2003 08 25 | 704 | 1.4−  | 0.3−  | 2007 11 12 | G96 | 0.1+  | 0.5−  |
| 2000 09 28 | 704 | 0.3− | 0.3− | 2003 08 25 | 704 | 0.2+  | 0.3−  | 2007 11 12 | G96 | 0.2−  | 0.4−  |
| 2000 09 28 | 704 | 1.0− | 0.3− | 2003 08 26 | 807 | 0.1−  | 0.1+  | 2007 11 12 | G96 | 0.0   | 0.5−  |
| 2000 09 28 | 704 | 0.6− | 0.2− | 2003 08 26 | 807 | 0.4−  | 0.1+  | 2007 11 12 | G96 | 0.7−  | 0.5−  |
| 2000 09 28 | 704 | 0.5+ | 0.3+ | 2005 03 03 | 703 | 0.2−  | 0.7+  | 2007 11 18 | 704 | (0.1+ | 3.4+) |
| 2000 10 03 | 704 | 0.0  | 0.4− | 2005 03 03 | 703 | 1.0−  | 0.2+  | 2007 11 18 | 704 | (0.8+ | 1.6+) |
| 2000 10 03 | 704 | 0.7− | 0.2+ | 2005 03 03 | 703 | 0.5−  | 0.0   | 2007 11 18 | 704 | 0.7+  | 0.7+  |
| 2000 10 03 | 704 | 0.4+ | 0.2+ | 2005 03 03 | 703 | 0.5+  | 0.1−  | 2007 12 05 | 691 | 0.5−  | 0.0   |
| 2000 10 03 | 704 | 0.3− | 0.3− | 2005 03 10 | 699 | 0.3+  | 0.8−  | 2007 12 05 | 691 | 0.3−  | 0.0   |
| 2000 10 03 | 704 | 0.3− | 0.0  | 2005 03 10 | 699 | 1.3+  | 1.3−  | 2007 12 05 | 691 | 0.5−  | 0.1−  |
| 2000 10 25 | 704 | 0.1+ | 0.1− | 2005 03 10 | 703 | 0.0   | 0.6+  | 2007 12 13 | 704 | 0.6+  | 0.8+  |
| 2000 10 25 | 704 | 0.2+ | 0.4+ | 2005 03 10 | 699 | 0.1+  | 0.2−  | 2007 12 13 | 704 | 0.7+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 25 | 704 | 0.2− | 0.3− | 2005 03 10 | 703 | 0.3− | 0.4+ | 2007 12 13 | 704 | 0.8+ | 0.4+ |
| 2000 10 25 | 704 | 1.4+ | 1.2− | 2005 03 10 | 703 | 0.2− | 0.5− | 2007 12 13 | 704 | 1.3+ | 0.2+ |
| 2000 10 25 | 704 | 0.4+ | 0.2− | 2005 03 10 | 699 | 0.2+ | 0.1− | 2007 12 14 | D29 | 0.3− | 0.4− |
| 2000 10 31 | 704 | 0.0  | 0.7− | 2005 03 10 | 703 | 1.0− | 0.3+ | 2007 12 14 | D29 | 0.2+ | 1.1− |
| 2000 10 31 | 704 | 0.1− | 0.2− | 2005 03 12 | 704 | 0.2+ | 0.6+ | 2007 12 14 | D29 | 0.3− | 1.0− |
| 2000 10 31 | 704 | 0.9− | 0.2+ | 2005 03 12 | 704 | 0.1+ | 0.9− | 2007 12 14 | D29 | 0.3+ | 0.7− |
| 2000 10 31 | 704 | 1.2+ | 0.8− | 2005 03 12 | 704 | 0.9+ | 0.4+ | 2007 12 15 | 704 | 0.8+ | 1.3+ |
| 2000 10 31 | 704 | 0.1+ | 0.4+ | 2005 03 12 | 704 | 0.5+ | 0.9+ | 2007 12 15 | 704 | 0.4+ | 1.6+ |
| 2000 11 03 | 704 | 0.5+ | 0.9+ | 2005 03 12 | 704 | 0.2+ | 0.9+ | 2007 12 15 | 704 | 0.4+ | 1.4+ |
| 2000 11 03 | 704 | 0.6+ | 0.1− | 2005 03 17 | 703 | 0.5+ | 1.1+ | 2007 12 15 | 704 | 0.9+ | 1.4+ |
| 2000 11 03 | 704 | 0.4− | 0.4+ | 2005 03 17 | 703 | 0.6− | 0.0  | 2007 12 15 | 704 | 0.4+ | 0.9+ |
| 2003 07 25 | 704 | 0.5+ | 0.3− | 2005 03 17 | 703 | 0.5+ | 0.3− |            |     |      |      |
| 2003 07 25 | 704 | 0.0  | 0.2+ | 2005 03 17 | 703 | 0.3− | 0.5+ |            |     |      |      |

**(171697)\* 2000 SG<sub>138</sub>**

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.37030   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.30278289 | $\omega$ | 74.11864  | +0.88663912 | +0.45839058 |
| <i>a</i> | 2.1964189  | $\Omega$ | 258.56428 | −0.44460489 | +0.80846218 |
| <i>e</i> | 0.1873999  | <i>i</i> | 3.58163   | −0.12726966 | +0.36914358 |
| <i>P</i> | 3.26       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2000 09 04 | 699 | 0.2− | 0.7− | 2000 10 31 | 704 | 0.5−        | 0.1− | 2006 05 24 | 644 | 0.0  | 0.4+ |
| 2000 09 04 | 699 | 0.7− | 0.1+ | 2000 10 31 | 704 | 0.0         | 0.3− | 2006 05 24 | 644 | 0.2+ | 0.2+ |
| 2000 09 04 | 699 | 1.1− | 0.4+ | 2000 10 31 | 704 | 0.7+        | 0.4+ | 2006 05 24 | 644 | 0.0  | 0.4+ |
| 2000 09 04 | 699 | 1.0− | 0.2+ | 2000 10 31 | 704 | 0.7+        | 0.3− | 2006 06 02 | G96 | 0.1− | 0.3− |
| 2000 09 21 | 608 | 0.5+ | 0.6− | 2002 03 13 | 704 | 0.4+        | 0.5+ | 2006 06 02 | G96 | 0.4+ | 0.2+ |
| 2000 09 21 | 608 | 0.4+ | 0.6− | 2002 03 13 | 704 | 1.2+        | 1.4+ | 2006 06 02 | G96 | 0.1+ | 0.1+ |
| 2000 09 21 | 608 | 0.6+ | 0.4− | 2002 03 13 | 704 | (0.5+ 1.5+) |      | 2006 06 02 | G96 | 0.0  | 0.1− |
| 2000 09 23 | 704 | 0.6− | 0.4+ | 2002 03 13 | 704 | (0.5+ 1.9+) |      | 2006 06 04 | G96 | 0.0  | 0.4+ |
| 2000 09 23 | 704 | 0.4+ | 0.1+ | 2003 05 29 | 291 | 0.5−        | 0.0  | 2006 06 04 | G96 | 0.4− | 0.3− |
| 2000 09 23 | 704 | 0.0  | 0.4+ | 2003 05 29 | 291 | 0.5−        | 0.0  | 2006 06 04 | G96 | 0.4− | 0.1− |
| 2000 09 25 | 699 | 0.4− | 0.2+ | 2003 05 29 | 291 | 0.7−        | 0.2− | 2006 06 04 | G96 | 0.5− | 0.0  |
| 2000 09 25 | 699 | 0.2+ | 0.5+ | 2003 06 26 | 704 | (2.0+ 0.7+) |      | 2006 07 21 | G96 | 0.5− | 0.1− |
| 2000 09 25 | 699 | 0.6− | 0.0  | 2003 06 26 | 704 | 1.1+        | 0.3+ | 2006 07 21 | G96 | 0.4+ | 0.4− |
| 2000 09 25 | 699 | 0.3− | 0.2− | 2003 06 26 | 704 | 0.2+        | 1.2+ | 2006 07 21 | G96 | 0.2+ | 0.1+ |
| 2000 09 28 | 704 | 0.0  | 0.1− | 2003 06 26 | 704 | 0.1−        | 0.5+ | 2006 07 21 | G96 | 0.1+ | 0.0  |
| 2000 09 28 | 704 | 0.3− | 0.3− | 2003 07 01 | 704 | 0.2−        | 1.3+ | 2007 11 19 | G96 | 0.2+ | 0.1− |
| 2000 09 28 | 704 | 0.5+ | 0.1− | 2003 07 01 | 704 | 0.0         | 0.5+ | 2007 11 19 | G96 | 0.6+ | 0.2− |
| 2000 09 28 | 704 | 0.2− | 0.5− | 2003 07 01 | 704 | 0.1+        | 0.1+ | 2007 11 19 | G96 | 0.3+ | 0.2− |
| 2000 09 28 | 704 | 0.2− | 0.1+ | 2003 07 01 | 704 | 1.2+        | 0.9+ | 2007 11 19 | G96 | 0.1+ | 0.0  |
| 2000 10 03 | 704 | 0.2− | 0.5+ | 2003 07 25 | 704 | 0.7+        | 0.5+ | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2000 10 03 | 704 | 0.0  | 0.4+ | 2003 07 25 | 704 | (1.8+ 0.4+) |      | 2007 12 04 | 691 | 0.1+ | 0.1+ |
| 2000 10 03 | 704 | 0.2+ | 0.8+ | 2003 07 25 | 704 | 0.0         | 0.5− | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2000 10 03 | 704 | 0.2+ | 0.5+ | 2003 07 25 | 704 | 0.9+        | 1.0− | 2007 12 04 | G96 | 0.1+ | 0.1− |
| 2000 10 03 | 704 | 0.3− | 0.2− | 2003 07 25 | 704 | 0.9+        | 0.3− | 2007 12 04 | G96 | 0.1− | 0.1+ |
| 2000 10 25 | 704 | 0.9+ | 0.2+ | 2003 08 01 | 608 | (2.1+ 2.2+) |      | 2007 12 04 | 691 | 0.3− | 0.3− |
| 2000 10 25 | 704 | 0.3− | 0.1− | 2003 08 01 | 608 | (2.0+ 2.1+) |      | 2007 12 04 | 691 | 0.1+ | 0.3+ |
| 2000 10 25 | 704 | 0.2+ | 0.2+ | 2003 08 01 | 608 | (2.0+ 2.0+) |      | 2007 12 16 | 691 | 0.2− | 0.4+ |
| 2000 10 25 | 704 | 0.3+ | 0.3+ | 2003 10 24 | 704 | 0.5−        | 0.5− | 2007 12 16 | 691 | 0.1+ | 0.3+ |
| 2000 10 25 | 704 | 0.0  | 0.2− | 2003 10 24 | 704 | 0.4+        | 0.2+ | 2007 12 16 | 691 | 0.1− | 0.3+ |
| 2000 10 31 | 704 | 0.8− | 0.3+ | 2003 10 24 | 704 | 0.2−        | 0.5+ |            |     |      |      |



2007 DEC. 24

M.P.O. 129131

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.06693   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26523919 | $\omega$ | 49.95156  | -0.41309002 | +0.90109318 |
| <i>a</i> | 2.3990774  | $\Omega$ | 197.14067 | -0.91043825 | -0.41202941 |
| <i>e</i> | 0.1705950  | <i>i</i> | 26.57815  | -0.02142024 | +0.13514009 |
| <i>P</i> | 3.72       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 23 | 704 | 0.4- | 0.1+ | 1999 05 12 | 704 | 1.7+ | 1.8- | 2003 06 22 | 704 | 0.3+ | 0.2+ |
| 1999 03 23 | 704 | 0.6- | 0.3+ | 1999 05 12 | 704 | 1.6+ | 0.7- | 2003 06 22 | 704 | 0.5+ | 0.3- |
| 1999 03 23 | 704 | 0.5- | 0.5+ | 1999 05 12 | 704 | 1.7- | 0.5+ | 2003 06 22 | 704 | 0.8+ | 0.3+ |
| 1999 03 23 | 704 | 0.4- | 0.5+ | 2000 09 24 | 704 | 0.1- | 0.3+ | 2003 06 22 | 704 | 0.1+ | 0.8- |
| 1999 03 23 | 704 | 0.5- | 0.7- | 2000 09 24 | 704 | 0.5+ | 0.6- | 2003 06 22 | 704 | 0.7+ | 0.1- |
| 1999 04 07 | 704 | 0.4+ | 0.6+ | 2000 09 24 | 704 | 0.1- | 0.6+ | 2003 06 22 | 704 | 0.4+ | 0.1- |
| 1999 04 07 | 704 | 1.3+ | 0.5- | 2000 09 24 | 704 | 0.1+ | 0.2- | 2003 06 22 | 704 | 0.5+ | 0.2+ |
| 1999 04 07 | 704 | 0.3+ | 0.9+ | 2000 10 01 | 704 | 0.1- | 0.1- | 2003 07 28 | 704 | 0.6- | 0.4- |
| 1999 04 07 | 704 | 0.5+ | 0.0  | 2000 10 01 | 704 | 0.4+ | 0.3+ | 2003 07 28 | 704 | 0.5+ | 0.3+ |
| 1999 04 12 | 704 | 0.7+ | 0.3+ | 2000 10 01 | 704 | 0.2- | 0.4- | 2003 07 28 | 704 | 0.4+ | 0.3- |
| 1999 04 12 | 704 | 0.4+ | 0.7+ | 2000 10 01 | 704 | 0.4+ | 0.4- | 2003 07 28 | 704 | 0.6- | 0.5- |
| 1999 04 12 | 704 | 1.7+ | 0.7- | 2000 10 01 | 704 | 0.4+ | 0.7- | 2003 07 28 | 704 | 0.1- | 0.0  |
| 1999 04 12 | 704 | 0.2+ | 0.3+ | 2000 10 02 | 704 | 0.4- | 1.0+ | 2007 09 19 | H82 | 0.1+ | 0.0  |
| 1999 04 12 | 704 | 0.5+ | 0.2- | 2000 10 02 | 704 | 0.0  | 0.5+ | 2007 09 19 | H82 | 0.2- | 0.4+ |
| 1999 04 16 | 704 | 1.1- | 0.3+ | 2000 10 02 | 704 | 0.3- | 0.4+ | 2007 09 19 | H82 | 0.2- | 0.6+ |
| 1999 04 16 | 704 | 0.2- | 1.2+ | 2000 10 02 | 704 | 0.5- | 0.8+ | 2007 09 19 | H82 | 0.5+ | 0.3- |
| 1999 04 16 | 704 | 1.0- | 1.1- | 2000 10 02 | 704 | 0.1- | 0.3- | 2007 10 02 | H82 | 0.1+ | 0.6- |
| 1999 04 16 | 704 | 1.7+ | 1.1+ | 2003 06 07 | 704 | 0.0  | 0.8+ | 2007 10 02 | H82 | 1.4- | 0.1- |
| 1999 04 16 | 704 | 0.2- | 0.4- | 2003 06 07 | 704 | 0.1- | 0.6- | 2007 10 02 | H82 | 0.5- | 0.4+ |
| 1999 04 19 | 704 | 0.5- | 1.3- | 2003 06 07 | 704 | 0.1- | 0.5+ | 2007 12 05 | G96 | 0.6+ | 0.2- |
| 1999 04 19 | 704 | 1.4- | 0.9- | 2003 06 21 | 704 | 0.2- | 0.1- | 2007 12 05 | G96 | 0.2+ | 0.1- |
| 1999 04 19 | 704 | 1.2- | 0.5+ | 2003 06 21 | 704 | 0.5- | 0.1+ | 2007 12 05 | G96 | 0.1+ | 0.6- |
| 1999 04 19 | 704 | 1.4- | 0.8- | 2003 06 21 | 704 | 0.8- | 0.6+ | 2007 12 05 | G96 | 0.6+ | 0.2- |
| 1999 04 19 | 704 | 0.9- | 1.1+ | 2003 06 21 | 704 | 0.0  | 0.3+ |            |     |      |      |
| 1999 05 12 | 704 | 0.7+ | 0.2+ | 2003 06 21 | 704 | 0.4- | 0.4+ |            |     |      |      |

(171699)\* 2000 SD<sub>169</sub>

Discovered 2000 Sept. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.06818   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29714050 | $\omega$ | 116.64210 | +0.91917058 | -0.37828422 |
| <i>a</i> | 2.2241367  | $\Omega$ | 265.75331 | +0.31082745 | +0.86771246 |
| <i>e</i> | 0.1176233  | <i>i</i> | 6.31343   | +0.24189200 | +0.32245329 |
| <i>P</i> | 3.32       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 23 | 704 | 0.2- | 0.5+ | 2000 11 01 | 704 | 0.6- | 0.3+ | 2003 09 24 | 644 | 0.0  | 0.7+ |
| 2000 09 23 | 704 | 0.2- | 0.2+ | 2000 11 19 | 704 | 1.0- | 0.1- | 2003 09 24 | 644 | 0.1+ | 0.5+ |
| 2000 09 23 | 704 | 1.1- | 0.3+ | 2000 11 19 | 704 | 0.2+ | 0.3- | 2003 11 20 | 691 | 0.4+ | 0.0  |
| 2000 09 30 | 704 | 0.4+ | 0.3- | 2000 11 19 | 704 | 0.4+ | 0.3- | 2003 11 20 | 691 | 0.5+ | 0.1- |
| 2000 09 30 | 704 | 0.8+ | 0.1+ | 2000 11 19 | 704 | 0.4+ | 1.1- | 2003 11 20 | 691 | 0.1+ | 0.2+ |
| 2000 09 30 | 704 | 0.1- | 0.9- | 2000 11 19 | 704 | 1.4- | 0.9- | 2005 02 14 | 703 | 0.0  | 0.3+ |
| 2000 09 30 | 704 | 0.1+ | 0.4- | 2000 11 30 | 645 | 0.0  | 0.1- | 2005 02 14 | 703 | 0.7- | 0.3- |
| 2000 10 03 | 704 | 0.0  | 0.1- | 2000 11 30 | 645 | 0.0  | 0.1- | 2005 02 14 | 703 | 0.8+ | 0.5- |
| 2000 10 03 | 704 | 0.2+ | 0.3+ | 2003 06 25 | 644 | 0.1+ | 0.2+ | 2005 02 14 | 703 | 0.4+ | 0.1- |
| 2000 10 03 | 704 | 0.4- | 0.2- | 2003 06 25 | 644 | 0.1+ | 0.4+ | 2007 11 02 | G96 | 0.2+ | 0.3- |
| 2000 10 03 | 704 | 0.2+ | 0.1+ | 2003 06 25 | 644 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.2- | 0.1- |
| 2000 10 03 | 704 | 0.1+ | 0.6- | 2003 07 24 | 644 | 0.3- | 0.1+ | 2007 11 02 | G96 | 0.0  | 0.4- |
| 2000 10 25 | 704 | 0.1+ | 0.7+ | 2003 07 24 | 644 | 0.2- | 0.0  | 2007 11 02 | G96 | 0.1+ | 0.1+ |
| 2000 10 25 | 704 | 0.5+ | 0.1+ | 2003 07 24 | 644 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.3- | 0.2+ |
| 2000 10 25 | 704 | 0.1+ | 0.4+ | 2003 08 17 | 608 | 0.4- | 0.2+ | 2007 12 04 | 691 | 0.3- | 0.2+ |
| 2000 10 25 | 704 | 0.3+ | 0.2+ | 2003 08 17 | 608 | 0.1+ | 0.3- | 2007 12 04 | 691 | 0.3- | 0.1+ |
| 2000 10 25 | 704 | 0.4+ | 0.6+ | 2003 08 17 | 608 | 0.7- | 0.3- | 2007 12 05 | 704 | 0.6+ | 0.7+ |
| 2000 11 01 | 704 | 0.5+ | 0.0  | 2003 08 20 | 644 | 0.6- | 0.4+ | 2007 12 05 | 704 | 1.2+ | 0.6+ |
| 2000 11 01 | 704 | 0.7- | 0.2+ | 2003 08 20 | 644 | 0.6- | 0.5+ | 2007 12 05 | 704 | 1.5+ | 1.8+ |
| 2000 11 01 | 704 | 1.1+ | 0.2+ | 2003 08 20 | 644 | 0.7- | 0.3+ | 2007 12 05 | 704 | 0.6+ | 0.7+ |
| 2000 11 01 | 704 | 0.3+ | 0.5+ | 2003 09 24 | 644 | 0.2+ | 0.7+ |            |     |      |      |

(171700)\* 2000 SA<sub>211</sub> = 2004 XE<sub>67</sub>

Discovered 2000 Sept. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 72164)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.36674   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27951453 | $\omega$ | 268.03868 | +0.92698568 | +0.35542514 |
| <i>a</i> | 2.3166822  | $\Omega$ | 71.12583  | -0.27358111 | +0.85929034 |
| <i>e</i> | 0.1402852  | <i>i</i> | 7.27830   | -0.25661434 | +0.36782207 |
| <i>P</i> | 3.53       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 10 11 | 809 | 1.1-  | 0.9+  | 2004 12 17 | 704 | 0.4+  | 0.7+  | 2007 09 16 | 704 | 1.4-  | 0.1+  |
| 1993 10 11 | 809 | 1.4-  | 0.0   | 2004 12 17 | 704 | 0.2+  | 0.8+  | 2007 10 11 | 703 | 0.3-  | 0.3-  |
| 1993 10 11 | 809 | 1.5-  | 0.2-  | 2004 12 17 | 704 | (1.6+ | 0.8+) | 2007 10 11 | 703 | 0.5-  | 0.2-  |
| 1993 10 21 | 809 | (4.2+ | 2.6-) | 2006 04 19 | 703 | 1.3+  | 0.4+  | 2007 10 11 | 703 | 0.5-  | 0.1-  |
| 1993 10 21 | 809 | 1.8+  | 1.3-  | 2006 04 19 | 703 | (0.6+ | 3.2+) | 2007 10 11 | 703 | 0.5-  | 0.2-  |
| 1993 10 21 | 809 | 2.0+  | 1.4-  | 2006 04 19 | 703 | 0.4+  | 0.8+  | 2007 10 15 | 699 | 1.2+  | 0.7-  |
| 2000 09 23 | 699 | 0.2-  | 0.8-  | 2006 04 19 | 703 | (3.3+ | 2.0-) | 2007 10 15 | 699 | 0.1+  | 0.8-  |
| 2000 09 23 | 699 | 1.0-  | 0.2-  | 2006 04 26 | 699 | (3.2- | 0.0)  | 2007 10 15 | 699 | (2.1+ | 1.1-) |
| 2000 09 23 | 699 | 0.5+  | 0.6-  | 2006 04 26 | 699 | 0.3-  | 0.1+  | 2007 10 15 | 699 | 0.9+  | 0.3+  |
| 2000 09 23 | 699 | 0.5-  | 0.2-  | 2006 04 26 | 699 | 1.1-  | 1.2+  | 2007 10 19 | 703 | 0.3+  | 0.4-  |
| 2000 09 25 | 704 | 0.0   | 0.6-  | 2006 04 26 | 699 | 0.0   | 1.6-  | 2007 10 19 | 703 | 0.2-  | 0.4+  |
| 2000 09 25 | 704 | 0.7-  | 0.7+  | 2007 09 05 | 703 | 1.4+  | 1.2+  | 2007 10 19 | 703 | 0.1-  | 0.6-  |
| 2000 09 25 | 704 | 0.5-  | 0.1+  | 2007 09 05 | 703 | 0.7+  | 0.0   | 2007 10 19 | 703 | 0.4-  | 0.1-  |
| 2000 09 25 | 704 | 1.8-  | 0.1+  | 2007 09 05 | 703 | 0.6+  | 1.2+  | 2007 11 02 | 703 | 0.2-  | 0.1-  |
| 2000 10 01 | 704 | 0.0   | 0.5+  | 2007 09 05 | 703 | 0.1+  | 0.4+  | 2007 11 02 | 703 | 0.5+  | 0.9-  |
| 2000 10 01 | 704 | 0.1-  | 0.1-  | 2007 09 12 | 703 | 0.4+  | 0.3-  | 2007 11 02 | 703 | 0.3-  | 0.0   |
| 2000 10 01 | 704 | 0.8+  | 0.3+  | 2007 09 12 | 703 | 0.1+  | 0.6+  | 2007 11 02 | 703 | 0.0   | 0.1-  |
| 2000 10 01 | 704 | 0.4-  | 0.1-  | 2007 09 12 | 703 | 0.2+  | 0.2+  | 2007 11 11 | 704 | (1.7+ | 1.0+) |
| 2000 10 01 | 704 | 0.1+  | 1.0+  | 2007 09 12 | 703 | 0.2-  | 0.7+  | 2007 11 11 | 704 | 0.5+  | 1.1+  |
| 2004 12 03 | 691 | 0.3-  | 0.1+  | 2007 09 15 | 699 | 0.3-  | 0.4+  | 2007 11 11 | 704 | 0.6+  | 0.7+  |
| 2004 12 03 | 691 | 0.0   | 0.5-  | 2007 09 15 | 699 | 0.4-  | 0.0   | 2007 12 04 | 704 | 0.6+  | 0.6-  |
| 2004 12 03 | 691 | 0.0   | 0.1-  | 2007 09 15 | 699 | 1.0-  | 1.5+  | 2007 12 04 | 704 | 0.2-  | 0.2+  |
| 2004 12 14 | 691 | 0.1-  | 0.3+  | 2007 09 15 | 699 | 1.0-  | 0.3+  | 2007 12 04 | 704 | 0.1+  | 0.7+  |
| 2004 12 14 | 691 | 0.0   | 0.1+  | 2007 09 16 | 704 | 1.0-  | 0.0   | 2007 12 04 | 704 | 0.4-  | 1.2+  |
| 2004 12 14 | 691 | 0.0   | 0.3+  | 2007 09 16 | 704 | 0.2-  | 0.4-  |            |     |       |       |
| 2004 12 17 | 704 | 0.7+  | 0.8+  | 2007 09 16 | 704 | 0.2-  | 0.1-  |            |     |       |       |

(171701)\* 2000 SU<sub>262</sub>

Discovered 2000 Sept. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 327.39982  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.29166138 | $\omega$ | 12.45153 | -0.09191341 | -0.99257372 |
| <i>a</i> | 2.2519052  | $\Omega$ | 82.86192 | +0.90657277 | -0.11651458 |
| <i>e</i> | 0.1522997  | <i>i</i> | 4.60610  | +0.41191957 | +0.03495371 |
| <i>P</i> | 3.38       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 25 | 704 | 0.0  | 0.6+ | 2002 04 21 | 691 | 0.0   | 1.0+  | 2007 11 03 | D35 | 0.1+ | 0.2- |
| 2000 09 25 | 704 | 1.0+ | 0.5+ | 2002 04 21 | 691 | 0.2+  | 1.0+  | 2007 11 03 | D35 | 0.3+ | 0.5+ |
| 2000 09 25 | 704 | 0.3- | 0.2- | 2004 12 09 | 703 | (2.0+ | 2.7-) | 2007 11 04 | 704 | 0.4+ | 0.7+ |
| 2000 09 25 | 704 | 0.5- | 0.6+ | 2004 12 09 | 703 | (0.8+ | 2.0-) | 2007 11 04 | 704 | 0.3+ | 0.8+ |
| 2000 10 02 | 704 | 0.7- | 0.2- | 2004 12 09 | 703 | 0.6+  | 1.3-  | 2007 11 04 | 704 | 0.3+ | 0.2+ |
| 2000 10 02 | 691 | 0.0  | 0.2- | 2004 12 09 | 703 | (2.0- | 0.0)  | 2007 11 04 | 704 | 0.2+ | 0.6+ |
| 2000 10 02 | 704 | 0.3+ | 0.4- | 2005 01 12 | 704 | 0.2+  | 0.1+  | 2007 11 04 | 704 | 0.6+ | 0.9+ |
| 2000 10 02 | 691 | 0.1- | 0.3- | 2005 01 12 | 704 | 0.7+  | 0.3-  | 2007 11 04 | 691 | 0.2- | 0.1- |
| 2000 10 02 | 704 | 0.4+ | 0.8+ | 2005 01 12 | 704 | 0.5-  | 0.5+  | 2007 11 04 | 691 | 0.5- | 0.4+ |
| 2000 10 02 | 704 | 1.5- | 0.3+ | 2005 01 17 | 703 | 1.5-  | 0.8+  | 2007 11 04 | 691 | 0.4- | 0.2+ |
| 2000 10 02 | 691 | 0.2- | 0.3- | 2005 01 17 | 703 | 0.7-  | 0.2-  | 2007 11 14 | 704 | 0.1- | 0.2+ |
| 2000 10 04 | 704 | 0.0  | 0.5+ | 2005 01 17 | 703 | 0.3-  | 0.0   | 2007 11 14 | 704 | 0.6- | 0.0  |
| 2000 10 04 | 704 | 0.0  | 0.3+ | 2005 01 17 | 703 | 0.7-  | 0.4-  | 2007 11 14 | 704 | 0.3- | 0.1- |
| 2000 10 04 | 704 | 0.7- | 0.3- | 2005 01 20 | 699 | 1.1-  | 0.2+  | 2007 11 14 | 704 | 0.4- | 0.0  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 04 | 704 | 0.2+  | 1.1+  | 2005 01 20 | 699 | 1.2+  | 1.1+  | 2007 11 14 | 704 | 0.0  | 0.1+ |
| 2000 10 04 | 704 | 0.6+  | 0.9+  | 2005 01 20 | 699 | 0.1+  | 0.6+  | 2007 11 18 | 699 | 0.4+ | 0.6- |
| 2000 10 04 | 704 | 0.8-  | 0.9+  | 2005 01 20 | 699 | 0.5-  | 0.1-  | 2007 11 18 | 699 | 0.1+ | 0.5+ |
| 2000 10 04 | 704 | 0.1+  | 1.1+  | 2005 02 01 | 644 | 0.5+  | 0.2+  | 2007 11 18 | 699 | 0.5+ | 0.5- |
| 2000 10 04 | 704 | 0.1-  | 1.2+  | 2005 02 01 | 644 | 0.5+  | 0.1-  | 2007 11 18 | 699 | 0.3- | 0.4- |
| 2000 10 04 | 704 | 0.1+  | 0.9+  | 2005 02 01 | 644 | 0.4+  | 0.1+  | 2007 11 20 | G96 | 0.2+ | 0.1- |
| 2000 10 25 | 704 | 0.2-  | 0.2-  | 2005 02 04 | 699 | (2.4+ | 0.0 ) | 2007 11 20 | G96 | 0.4+ | 0.1- |
| 2000 10 25 | 704 | 0.2-  | 1.8+  | 2005 02 04 | 699 | 0.4+  | 0.4+  | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2000 10 25 | 704 | 0.2+  | 0.9+  | 2005 02 04 | 699 | 0.7+  | 0.0   | 2007 11 20 | G96 | 0.1+ | 0.1- |
| 2000 10 25 | 704 | 0.0   | 0.6+  | 2005 02 04 | 699 | 0.6-  | 1.0-  | 2007 11 20 | G96 | 0.2+ | 0.1- |
| 2000 10 25 | 704 | 0.4-  | 0.4+  | 2005 02 09 | 699 | 0.8+  | 0.8+  | 2007 11 20 | G96 | 0.6+ | 0.1- |
| 2000 10 25 | 704 | 0.2+  | 0.3-  | 2005 02 09 | 699 | 0.7+  | 0.5+  | 2007 11 20 | G96 | 0.5+ | 0.0  |
| 2000 10 25 | 704 | 0.6-  | 0.0   | 2005 02 09 | 699 | 0.5+  | 0.2+  | 2007 11 20 | G96 | 0.4+ | 0.1- |
| 2000 10 25 | 704 | 0.4-  | 0.9+  | 2005 02 09 | 699 | 0.5+  | 0.3+  | 2007 12 03 | 703 | 0.5- | 0.2+ |
| 2002 04 08 | 644 | 0.2+  | 1.3+  | 2005 03 09 | 703 | 0.3+  | 0.3-  | 2007 12 03 | 703 | 0.8- | 0.3+ |
| 2002 04 08 | 644 | 0.9+  | 0.9+  | 2005 03 09 | 703 | 0.1-  | 0.4-  | 2007 12 03 | 703 | 0.1- | 0.2+ |
| 2002 04 08 | 644 | (0.4+ | 1.6+) | 2005 03 09 | 703 | 0.1+  | 0.4-  | 2007 12 03 | 703 | 0.4- | 0.1+ |
| 2002 04 10 | 704 | 1.1+  | 1.0+  | 2005 03 09 | 703 | 0.2-  | 1.3-  | 2007 12 04 | 699 | 0.1- | 0.2- |
| 2002 04 10 | 704 | 0.7+  | 0.6+  | 2005 03 10 | 699 | 1.2+  | 0.3-  | 2007 12 04 | 699 | 0.5+ | 0.1- |
| 2002 04 10 | 704 | (0.5- | 1.7+) | 2005 03 10 | 699 | 1.0-  | 0.6+  | 2007 12 04 | 699 | 0.3- | 0.6+ |
| 2002 04 14 | 644 | 0.7+  | 0.2+  | 2005 03 10 | 699 | 0.5+  | 0.0   | 2007 12 04 | 699 | 0.5+ | 0.1+ |
| 2002 04 14 | 644 | 0.5+  | 0.3+  | 2005 03 10 | 699 | 0.7+  | 0.4+  | 2007 12 05 | 704 | 0.1- | 0.4- |
| 2002 04 14 | 644 | 0.2+  | 0.4+  | 2005 03 16 | 703 | 0.4-  | 0.3+  | 2007 12 05 | 704 | 0.6- | 0.6- |
| 2002 04 16 | 704 | 0.0   | 0.3-  | 2005 03 16 | 703 | 0.9-  | 1.0-  | 2007 12 05 | 704 | 0.1- | 0.5- |
| 2002 04 16 | 704 | 0.3+  | 0.2+  | 2005 03 16 | 703 | 0.6-  | 0.3-  | 2007 12 05 | 704 | 0.1- | 0.1- |
| 2002 04 16 | 704 | 0.7-  | 0.9+  | 2005 03 16 | 703 | 0.5-  | 0.3-  | 2007 12 05 | 704 | 0.2- | 0.6+ |
| 2002 04 21 | 691 | 0.2+  | 0.5+  | 2007 11 03 | D35 | 0.5+  | 0.3+  |            |     |      |      |

**(171702)\* 2000 SH<sub>280</sub>**

Discovered 2000 Sept. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 69.64033   | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.29881937 | $\omega$ | 98.05835  | +0.98796462              |
| <i>a</i> | 2.2157983  | $\Omega$ | 253.69206 | +0.91124607              |
| <i>e</i> | 0.2113204  | <i>i</i> | 3.41533   | -0.00276095              |
| <i>P</i> | 3.30       | <i>H</i> | 16.7      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 12 29 | 327 | 0.0  | 1.8+ | 2000 11 03 | 704 | 0.5- | 0.1- | 2003 07 30 | 704 | 0.5+  | 0.4+  |
| 1997 12 29 | 327 | 0.8+ | 0.8+ | 2000 11 03 | 704 | 0.7- | 0.2+ | 2003 07 30 | 704 | 0.9-  | 0.9+  |
| 1997 12 29 | 327 | 0.1+ | 1.5+ | 2000 11 20 | 699 | 0.9- | 0.2+ | 2003 07 30 | 704 | 1.0+  | 0.3-  |
| 2000 09 30 | 704 | 0.8- | 0.0  | 2000 11 20 | 699 | 0.2+ | 0.8- | 2003 07 30 | 704 | 0.4+  | 0.3+  |
| 2000 09 30 | 704 | 0.3+ | 0.1- | 2000 11 20 | 699 | 0.9+ | 0.7- | 2003 08 05 | 704 | 0.0   | 0.0   |
| 2000 09 30 | 704 | 0.1+ | 0.9+ | 2000 11 20 | 699 | 0.1+ | 0.7+ | 2003 08 05 | 704 | 0.0   | 0.4+  |
| 2000 09 30 | 704 | 0.3- | 0.3+ | 2000 11 20 | 704 | 0.9- | 0.6+ | 2003 08 05 | 704 | 0.2+  | 0.2+  |
| 2000 10 05 | 704 | 0.4- | 0.2+ | 2000 11 20 | 704 | 0.4- | 0.3+ | 2003 08 05 | 704 | 0.2+  | 0.0   |
| 2000 10 05 | 704 | 0.0  | 0.5+ | 2000 11 20 | 704 | 0.1+ | 0.5- | 2003 08 05 | 704 | 0.3-  | 0.6+  |
| 2000 10 05 | 704 | 1.1- | 1.3+ | 2000 11 20 | 704 | 0.5- | 0.5- | 2003 08 05 | 704 | 0.7+  | 0.0   |
| 2000 10 05 | 704 | 0.6- | 0.2+ | 2000 12 04 | 691 | 0.1+ | 0.5- | 2003 08 05 | 704 | 1.3+  | 1.2+  |
| 2000 10 05 | 704 | 0.6- | 0.2+ | 2000 12 04 | 691 | 0.1+ | 0.2- | 2003 08 05 | 704 | 0.4+  | 0.6+  |
| 2000 10 05 | 704 | 0.1+ | 0.1- | 2000 12 04 | 691 | 0.3+ | 0.3- | 2006 06 04 | G96 | 0.7+  | 0.0   |
| 2000 10 05 | 704 | 0.0  | 0.3+ | 2003 05 29 | 291 | 1.0- | 0.1- | 2006 06 04 | G96 | 0.2+  | 0.1-  |
| 2000 10 05 | 704 | 0.6- | 0.1- | 2003 05 29 | 291 | 1.0- | 0.3- | 2006 06 04 | G96 | 0.4-  | 0.1-  |
| 2000 10 25 | 704 | 0.1- | 1.0- | 2003 05 29 | 291 | 0.7- | 0.3- | 2006 06 04 | G96 | 0.7+  | 0.3-  |
| 2000 10 25 | 704 | 0.7+ | 0.2- | 2003 06 26 | 704 | 0.1+ | 0.8+ | 2007 11 05 | G96 | 0.0   | 0.1+  |
| 2000 10 25 | 704 | 0.6- | 0.1- | 2003 06 26 | 704 | 0.1- | 0.9+ | 2007 11 05 | G96 | 0.5-  | 0.0   |
| 2000 10 25 | 704 | 0.6+ | 0.3- | 2003 06 26 | 704 | 0.7- | 0.5- | 2007 11 05 | G96 | 0.4-  | 0.1-  |
| 2000 10 25 | 704 | 0.7+ | 0.2- | 2003 06 26 | 704 | 0.2+ | 0.1- | 2007 11 05 | G96 | 0.3+  | 0.2+  |
| 2000 11 01 | 704 | 0.8+ | 0.6- | 2003 07 25 | 704 | 0.5+ | 0.6- | 2007 12 05 | 704 | 0.1+  | 1.1+  |
| 2000 11 01 | 704 | 1.4+ | 0.7+ | 2003 07 25 | 704 | 0.5+ | 0.5+ | 2007 12 05 | 704 | (0.7+ | 1.9+) |
| 2000 11 01 | 704 | 0.4- | 0.2- | 2003 07 25 | 704 | 0.7+ | 0.2- | 2007 12 05 | 704 | 1.0+  | 1.3+  |
| 2000 11 01 | 704 | 0.6+ | 0.4- | 2003 07 25 | 704 | 1.1+ | 0.1- | 2007 12 14 | D29 | 0.6-  | 0.8-  |
| 2000 11 01 | 704 | 0.6+ | 0.8- | 2003 07 29 | 704 | 0.5+ | 0.0  | 2007 12 14 | D29 | 0.9-  | 0.3+  |
| 2000 11 03 | 704 | 0.0  | 0.6+ | 2003 07 29 | 704 | 0.0  | 0.2- | 2007 12 14 | D29 | 0.3+  | 0.6+  |
| 2000 11 03 | 704 | 0.4+ | 0.4- | 2003 07 29 | 704 | 0.3+ | 0.1+ | 2007 12 14 | D29 | 0.3+  | 0.3-  |
| 2000 11 03 | 704 | 0.2+ | 0.6+ | 2003 07 29 | 704 | 0.3- | 0.4- |            |     |       |       |

**(171703)\* 2000 SC<sub>293</sub>**

Discovered 2000 Sept. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 66.20964   | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.29645866 | $\omega$ | 52.97848  | +0.99559069              |
| <i>a</i> | 2.2275457  | $\Omega$ | 306.97511 | -0.04106553              |
| <i>e</i> | 0.1502805  | <i>i</i> | 6.74061   | +0.08433740              |
| <i>P</i> | 3.32       | <i>H</i> | 15.9      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 27 | 704 | 1.3-  | 0.0   | 2003 07 25 | 704 | 0.4- | 0.1- | 2003 10 19 | 699 | 1.2-  | 0.5+  |
| 2000 09 27 | 704 | 0.3+  | 0.1-  | 2003 07 25 | 704 | 0.3- | 0.0  | 2004 12 13 | 599 | 0.1+  | 0.1+  |
| 2000 09 27 | 704 | 0.2+  | 0.0   | 2003 07 25 | 704 | 0.5- | 0.4+ | 2004 12 13 | 599 | 0.1-  | 0.3-  |
| 2000 09 27 | 704 | 0.5+  | 0.3+  | 2003 07 25 | 704 | 0.8- | 0.2- | 2004 12 13 | 599 | 1.5+  | 0.0   |
| 2000 09 27 | 704 | 0.4+  | 0.6-  | 2003 07 25 | 704 | 0.5- | 0.1- | 2004 12 13 | 599 | 0.2+  | 0.9+  |
| 2000 10 03 | 704 | 0.3+  | 0.1+  | 2003 08 04 | 704 | 0.6- | 0.2+ | 2005 01 19 | 691 | 0.2+  | 0.1+  |
| 2000 10 03 | 704 | 0.7-  | 0.0   | 2003 08 04 | 704 | 0.4- | 0.7+ | 2005 01 19 | 691 | 0.0   | 0.0   |
| 2000 10 03 | 704 | 0.3+  | 0.4-  | 2003 08 04 | 704 | 0.2- | 0.5+ | 2005 01 19 | 691 | 0.2+  | 0.2+  |
| 2000 10 03 | 704 | 0.1-  | 0.3-  | 2003 08 04 | 704 | 0.6- | 0.7+ | 2005 02 02 | 704 | 0.4+  | 0.9+  |
| 2000 10 25 | 704 | 0.4+  | 0.4-  | 2003 08 04 | 704 | 0.3- | 0.8+ | 2005 02 02 | 704 | 0.2+  | 0.2-  |
| 2000 10 25 | 704 | 0.2-  | 0.5+  | 2003 08 21 | 106 | 0.4- | 0.2- | 2005 02 02 | 704 | 0.4+  | 1.1+  |
| 2000 10 25 | 704 | 0.0   | 0.1+  | 2003 08 21 | 106 | 0.2+ | 0.4- | 2005 02 02 | 704 | 0.8+  | 0.5+  |
| 2000 10 25 | 704 | 0.6-  | 0.0   | 2003 08 21 | 106 | 0.3- | 0.5- | 2005 02 03 | 704 | 1.3+  | 0.3+  |
| 2000 10 25 | 704 | 0.5-  | 0.2+  | 2003 08 22 | 704 | 0.6- | 0.8+ | 2005 02 03 | 704 | 0.9+  | 0.8+  |
| 2000 11 19 | 704 | 0.4-  | 0.5+  | 2003 08 22 | 704 | 0.1+ | 0.4+ | 2005 02 03 | 704 | 0.3-  | 0.6+  |
| 2000 11 19 | 704 | 0.0   | 1.0-  | 2003 08 22 | 704 | 0.5- | 0.3+ | 2005 03 03 | 703 | (0.9+ | 1.6+) |
| 2000 11 19 | 704 | 0.3+  | 0.6-  | 2003 08 22 | 704 | 0.3- | 1.1+ | 2005 03 03 | 703 | (0.1- | 2.1+) |
| 2000 11 19 | 704 | 0.1-  | 0.4-  | 2003 08 24 | 704 | 1.1+ | 0.4- | 2005 03 03 | 703 | 0.1+  | 1.4+  |
| 2000 11 19 | 704 | 0.1+  | 0.7-  | 2003 08 24 | 704 | 0.2+ | 0.5+ | 2005 03 03 | 703 | 0.2+  | 0.9+  |
| 2000 11 29 | 704 | 0.4+  | 0.5+  | 2003 08 24 | 704 | 0.4- | 0.1+ | 2005 03 13 | G96 | 0.2-  | 0.2+  |
| 2000 11 29 | 704 | 0.0   | 0.3+  | 2003 08 24 | 704 | 0.2- | 0.3- | 2005 03 13 | G96 | 0.1-  | 0.2+  |
| 2000 11 29 | 704 | 0.3+  | 0.2-  | 2003 08 24 | 704 | 0.2+ | 0.7- | 2005 03 13 | G96 | 0.2-  | 0.1+  |
| 2000 11 29 | 704 | 0.7-  | 0.4+  | 2003 09 01 | 704 | 0.6+ | 0.3+ | 2005 03 13 | G96 | 0.4-  | 0.5+  |
| 2000 11 29 | 704 | 0.0   | 0.2-  | 2003 09 01 | 704 | 0.4+ | 0.3- | 2005 03 16 | 703 | 1.1-  | 0.4+  |
| 2000 12 04 | 704 | 0.6+  | 0.5-  | 2003 09 01 | 704 | 0.3+ | 0.2+ | 2005 03 16 | 703 | 0.2+  | 0.7-  |
| 2000 12 04 | 704 | 0.8-  | 0.9+  | 2003 09 14 | 699 | 0.6+ | 0.3- | 2005 03 16 | 703 | 0.2-  | 0.0   |
| 2000 12 04 | 704 | 0.7+  | 1.2+  | 2003 09 14 | 699 | 0.3+ | 1.1+ | 2005 03 16 | 703 | (1.2+ | 1.8+) |
| 2000 12 04 | 704 | 0.5+  | 0.5+  | 2003 09 14 | 699 | 0.7- | 0.2+ | 2007 11 12 | G96 | 0.0   | 0.1-  |
| 2000 12 04 | 704 | 0.1+  | 0.4-  | 2003 09 14 | 699 | 0.2+ | 0.8- | 2007 11 12 | G96 | 0.3-  | 0.3-  |
| 2003 06 22 | 699 | (1.1- | 1.5-) | 2003 09 15 | 699 | 1.2+ | 0.2- | 2007 11 12 | G96 | 0.1-  | 0.0   |
| 2003 06 22 | 699 | 0.6-  | 0.8-  | 2003 09 15 | 699 | 0.6- | 0.5+ | 2007 11 12 | G96 | 0.3-  | 0.1-  |
| 2003 06 22 | 699 | 0.6-  | 0.7+  | 2003 09 15 | 699 | 0.3+ | 0.5- | 2007 12 05 | 699 | (0.4- | 1.9+) |
| 2003 06 22 | 699 | 0.3+  | 0.2+  | 2003 09 15 | 699 | 0.7+ | 0.4+ | 2007 12 05 | 699 | 0.7+  | 0.2-  |
| 2003 07 07 | 691 | 0.0   | 0.0   | 2003 09 17 | 704 | 0.1+ | 0.5- | 2007 12 05 | 699 | 0.2-  | 0.1-  |
| 2003 07 07 | 691 | 0.1-  | 0.1+  | 2003 09 17 | 704 | 0.0  | 0.5- | 2007 12 05 | 699 | 0.1-  | 0.9-  |
| 2003 07 07 | 691 | 0.1-  | 0.1+  | 2003 09 17 | 704 | 0.2- | 0.5+ | 2007 12 13 | 704 | 0.1-  | 0.4+  |

2007 DEC. 24

M.P.O. 129133

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 286.92645  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27040663 | $\omega$ 239.26670 | -0.32088137   | -0.89888346 |
| <i>a</i> | 2.3684151  | $\Omega$ 232.50761 | +0.94537087   | -0.28484125 |
| <i>e</i> | 0.2706988  | <i>i</i> 22.09164  | +0.05752442   | -0.33297746 |
| <i>P</i> | 3.64       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 27 | 704 | 0.5+ | 0.0  | 2000 11 27 | 704 | 0.2- | 0.4+ | 2002 06 10 | 644 | 0.2+  | 1.2+  |
| 2000 09 27 | 704 | 0.0  | 0.3+ | 2000 11 27 | 704 | 0.2- | 0.2+ | 2002 06 10 | 644 | 0.3-  | 1.5+  |
| 2000 09 27 | 704 | 0.5+ | 0.2+ | 2000 11 27 | 704 | 0.4+ | 0.6+ | 2002 06 10 | 644 | (0.3- | 1.6+) |
| 2000 09 27 | 704 | 0.6+ | 0.8- | 2000 11 27 | 704 | 0.7- | 0.4+ | 2004 12 03 | 644 | 0.5+  | 0.6+  |
| 2000 10 03 | 704 | 1.4+ | 0.4+ | 2000 11 27 | 704 | 0.0  | 0.1+ | 2004 12 03 | 644 | 0.0   | 0.5+  |
| 2000 10 03 | 704 | 0.0  | 0.3+ | 2000 11 27 | 704 | 0.8- | 0.6+ | 2004 12 03 | 644 | 0.5+  | 0.4+  |
| 2000 10 03 | 704 | 0.6+ | 0.1+ | 2000 11 27 | 704 | 0.2+ | 0.1+ | 2005 01 13 | 423 | 0.2+  | 0.4+  |
| 2000 10 03 | 704 | 0.7+ | 0.1- | 2000 11 27 | 704 | 0.3- | 0.2+ | 2005 01 13 | 423 | 0.2-  | 0.9+  |
| 2000 10 03 | 704 | 0.0  | 0.1+ | 2000 11 27 | 704 | 1.6+ | 0.3+ | 2005 01 18 | 423 | 0.0   | 0.6+  |
| 2000 10 06 | 704 | 1.6+ | 0.4- | 2000 11 29 | 691 | 0.3- | 0.2- | 2005 01 18 | 423 | 0.2+  | 0.4+  |
| 2000 10 06 | 704 | 0.6- | 0.6+ | 2000 11 29 | 691 | 0.9- | 0.5- | 2005 01 18 | 423 | 0.6-  | 0.3+  |
| 2000 10 06 | 704 | 0.5+ | 0.7- | 2000 11 29 | 691 | 0.3- | 0.2- | 2005 01 31 | 423 | 0.4-  | 0.5+  |
| 2000 10 06 | 704 | 0.7+ | 0.4+ | 2000 11 29 | 106 | 0.4+ | 0.4+ | 2005 04 03 | 704 | 0.3+  | 0.2+  |
| 2000 10 25 | 704 | 0.4- | 0.2- | 2000 11 29 | 106 | 0.2+ | 0.5+ | 2005 04 03 | 704 | 0.1+  | 0.5+  |
| 2000 10 25 | 704 | 0.3- | 0.8- | 2000 11 29 | 106 | 0.3+ | 0.1+ | 2005 04 03 | 704 | 0.7+  | 0.1+  |
| 2000 10 25 | 704 | 0.1- | 0.0  | 2000 12 19 | 699 | 0.0  | 0.2- | 2005 04 03 | 704 | 0.8+  | 0.3+  |
| 2000 10 25 | 704 | 0.1- | 0.4- | 2000 12 19 | 699 | 0.4+ | 0.1- | 2007 10 09 | 703 | 0.5+  | 0.2-  |
| 2000 10 25 | 704 | 0.0  | 0.5- | 2000 12 19 | 699 | 0.5+ | 0.2- | 2007 10 09 | 703 | 0.1-  | 0.4+  |
| 2000 11 03 | 704 | 0.5+ | 0.0  | 2000 12 19 | 699 | 0.4- | 0.2+ | 2007 10 09 | 703 | 0.2-  | 0.1-  |
| 2000 11 03 | 704 | 0.1+ | 0.1+ | 2000 12 28 | 704 | 0.5- | 0.2+ | 2007 10 09 | 703 | 0.3-  | 0.1-  |
| 2000 11 03 | 704 | 0.4+ | 0.3+ | 2000 12 28 | 704 | 0.2- | 0.0  | 2007 10 14 | 703 | 0.6+  | 1.1+  |
| 2000 11 03 | 704 | 0.4+ | 0.6+ | 2000 12 28 | 704 | 0.1+ | 0.6- | 2007 10 14 | 703 | 0.6-  | 0.9+  |
| 2000 11 18 | 699 | 0.1+ | 0.2+ | 2000 12 28 | 704 | 0.0  | 0.4- | 2007 10 14 | 703 | (1.0+ | 2.0+) |
| 2000 11 18 | 699 | 0.1+ | 0.5+ | 2000 12 28 | 704 | 0.3+ | 0.5- | 2007 10 14 | 703 | 0.6+  | 0.6+  |
| 2000 11 18 | 699 | 0.1+ | 0.6+ | 2001 01 19 | 704 | 0.1+ | 0.6+ | 2007 10 18 | 703 | 0.1-  | 0.2-  |
| 2000 11 18 | 699 | 0.6- | 0.7+ | 2001 01 19 | 704 | 0.3- | 0.0  | 2007 10 18 | 703 | (1.6- | 0.9+) |
| 2000 11 20 | 704 | 0.2- | 0.2- | 2001 01 19 | 704 | 0.4- | 0.9+ | 2007 10 18 | 703 | 0.5+  | 1.2+  |
| 2000 11 20 | 704 | 0.4- | 0.1- | 2001 01 26 | 704 | 1.3+ | 0.4- | 2007 10 18 | 703 | 0.5-  | 0.0   |
| 2000 11 20 | 704 | 0.2- | 0.1- | 2001 01 26 | 704 | 0.9+ | 0.1- | 2007 12 03 | 704 | 0.7-  | 1.4+  |
| 2000 11 20 | 704 | 0.2- | 0.5- | 2001 01 26 | 704 | 0.7+ | 0.1+ | 2007 12 03 | 704 | 0.7+  | 0.7+  |
| 2000 11 20 | 704 | 0.4- | 0.5- | 2001 01 26 | 704 | 0.6+ | 0.6+ | 2007 12 03 | 704 | 0.6-  | 0.4-  |
| 2000 11 21 | 704 | 1.0- | 0.2+ | 2002 05 09 | 704 | 0.0  | 0.8+ | 2007 12 03 | 704 | 0.3-  | 0.9-  |
| 2000 11 21 | 704 | 0.7- | 0.2- | 2002 05 09 | 704 | 0.5- | 1.3+ | 2007 12 05 | 704 | 0.6-  | 0.4+  |
| 2000 11 21 | 704 | 0.2- | 0.2+ | 2002 05 09 | 704 | 0.2+ | 0.1- | 2007 12 05 | 704 | 0.5-  | 0.7+  |
| 2000 11 21 | 704 | 0.2+ | 0.4- | 2002 06 09 | 704 | 0.4- | 0.3- | 2007 12 05 | 704 | 0.8-  | 1.3+  |
| 2000 11 21 | 704 | 0.3+ | 0.5- | 2002 06 09 | 704 | 1.0- | 0.3+ |            |     |       |       |
| 2000 11 27 | 704 | 0.2- | 0.3+ | 2002 06 09 | 704 | 0.9+ | 0.9+ |            |     |       |       |

(171705)\* 2000 SC<sub>302</sub>

Discovered 2000 Sept. 28 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.76378  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29080141 | $\omega$ 100.24669 | +0.07354257   | -0.99708061 |
| <i>a</i> | 2.2563426  | $\Omega$ 345.48816 | +0.87992020   | +0.07456580 |
| <i>e</i> | 0.1094119  | <i>i</i> 4.70105   | +0.46939528   | +0.01643799 |
| <i>P</i> | 3.39       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 28 | 704 | 0.6- | 1.0+ | 2002 04 09 | 807 | 0.5+ | 0.5+ | 2005 03 10 | G96 | 0.3- | 0.3- |
| 2000 09 28 | 704 | 1.0+ | 0.1+ | 2002 04 09 | 807 | 0.1+ | 0.4+ | 2005 03 10 | G96 | 0.3- | 0.3- |
| 2000 09 28 | 704 | 0.9- | 0.1+ | 2005 02 01 | 691 | 0.1- | 0.3+ | 2005 03 10 | G96 | 0.2- | 0.4- |
| 2000 10 03 | 704 | 1.6+ | 0.9- | 2005 02 01 | 691 | 0.1- | 0.3- | 2005 03 10 | G96 | 0.3- | 0.3- |
| 2000 10 03 | 704 | 0.9- | 0.1+ | 2005 02 01 | 691 | 0.1- | 0.3- | 2005 04 04 | G96 | 0.0  | 0.3- |
| 2000 10 03 | 704 | 0.9- | 0.8+ | 2005 02 02 | 703 | 0.5- | 0.1- | 2005 04 04 | G96 | 0.0  | 0.3- |
| 2000 10 03 | 704 | 0.2+ | 0.1+ | 2005 02 02 | 703 | 0.2- | 0.0  | 2005 04 04 | G96 | 0.2- | 0.2- |
| 2000 10 03 | 704 | 0.8+ | 1.9+ | 2005 02 02 | 703 | 0.7+ | 0.6- | 2005 04 04 | G96 | 0.1+ | 0.1- |
| 2000 10 03 | 704 | 0.1- | 0.0  | 2005 02 02 | 703 | 0.8- | 0.2- | 2005 04 12 | 568 | 0.4- | 0.5+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 03 | 704 | 0.2-  | 0.2-  | 2005 02 03 | 704 | 0.7+  | 0.2+  | 2005 04 12 | 568 | 0.6- | 0.5+ |
| 2000 10 03 | 704 | 0.3+  | 0.9+  | 2005 02 03 | 704 | 0.0   | 0.3-  | 2005 04 12 | 568 | 0.5- | 0.5+ |
| 2000 10 03 | 704 | 0.2-  | 0.6+  | 2005 02 03 | 704 | 1.0+  | 0.5+  | 2007 11 02 | 704 | 0.5- | 0.7+ |
| 2000 10 03 | 704 | 0.8+  | 0.2-  | 2005 02 03 | 704 | 0.9+  | 0.5+  | 2007 11 02 | 704 | 0.5- | 1.0+ |
| 2000 10 03 | 704 | 1.2-  | 1.1+  | 2005 02 03 | 704 | 0.7+  | 0.1-  | 2007 11 02 | 704 | 0.5+ | 1.3+ |
| 2000 10 03 | 704 | 1.6+  | 0.9+  | 2005 02 04 | 704 | 0.1-  | 0.4-  | 2007 11 08 | 704 | 0.1+ | 0.6- |
| 2000 10 03 | 704 | (0.5- | 2.2+) | 2005 02 04 | 704 | 0.9-  | 0.3+  | 2007 11 08 | 704 | 0.3- | 0.2- |
| 2000 10 03 | 704 | 0.2+  | 0.4+  | 2005 02 04 | 704 | 0.3-  | 0.3+  | 2007 11 08 | 704 | 0.4- | 0.6- |
| 2000 10 06 | 608 | 1.7-  | 1.9-  | 2005 02 04 | 704 | 0.6-  | 0.2+  | 2007 11 08 | 704 | 0.3+ | 0.1+ |
| 2000 10 06 | 608 | 1.5-  | 1.4-  | 2005 02 04 | G96 | 0.3-  | 0.4-  | 2007 11 08 | 704 | 0.4+ | 0.2+ |
| 2000 10 06 | 608 | 1.7-  | 1.6-  | 2005 02 04 | G96 | 0.5-  | 0.5-  | 2007 11 13 | 703 | 0.1+ | 0.2+ |
| 2000 10 07 | 699 | 0.1-  | 0.3-  | 2005 02 04 | G96 | 0.5-  | 0.5-  | 2007 11 13 | 703 | 0.8+ | 0.7- |
| 2000 10 07 | 699 | 0.8-  | 1.6+  | 2005 02 04 | G96 | 0.6-  | 0.5-  | 2007 11 13 | 703 | 0.9+ | 0.0  |
| 2000 10 07 | 699 | 1.1-  | 0.8+  | 2005 02 09 | 699 | 1.1+  | 0.8+  | 2007 11 17 | 704 | 0.4- | 0.6- |
| 2000 10 07 | 699 | 0.1+  | 1.1+  | 2005 02 09 | 699 | 0.2+  | 0.2+  | 2007 11 17 | 704 | 0.0  | 0.7- |
| 2000 10 25 | 704 | 0.2-  | 0.6+  | 2005 02 09 | 699 | 0.1+  | 0.8+  | 2007 11 17 | 704 | 0.1- | 1.0- |
| 2000 10 25 | 704 | 0.2-  | 0.0   | 2005 02 09 | 699 | 1.4+  | 0.1+  | 2007 11 17 | 704 | 0.3- | 0.9- |
| 2000 10 25 | 704 | 0.3+  | 0.4-  | 2005 02 14 | 704 | 0.3+  | 0.4+  | 2007 11 20 | 704 | 0.3- | 0.6+ |
| 2000 10 25 | 704 | 0.9+  | 0.2-  | 2005 02 14 | 704 | 0.2+  | 0.4+  | 2007 11 20 | 704 | 0.0  | 0.8+ |
| 2000 10 25 | 704 | 1.1-  | 0.1+  | 2005 02 14 | 704 | 0.5+  | 0.3+  | 2007 11 20 | 704 | 0.2+ | 0.7+ |
| 2000 11 01 | 704 | 0.7+  | 1.6-  | 2005 02 14 | 704 | 0.2+  | 0.2+  | 2007 11 20 | 704 | 0.0  | 1.0+ |
| 2000 11 01 | 704 | 0.4+  | 0.1-  | 2005 02 14 | 704 | 0.1-  | 0.8+  | 2007 11 20 | 704 | 0.5- | 0.6+ |
| 2000 11 01 | 704 | 0.8+  | 0.4-  | 2005 03 08 | 704 | 0.2+  | 0.4+  | 2007 12 02 | 704 | 0.0  | 0.3- |
| 2000 11 01 | 704 | 0.2+  | 0.4+  | 2005 03 08 | 704 | 0.3+  | 0.4+  | 2007 12 02 | 704 | 0.1+ | 0.4- |
| 2000 11 01 | 704 | 0.6+  | 0.9-  | 2005 03 08 | 704 | 0.2+  | 0.2-  | 2007 12 02 | 704 | 0.4+ | 0.4- |
| 2000 11 01 | 704 | 0.2+  | 0.3-  | 2005 03 08 | 704 | 0.3-  | 0.2-  | 2007 12 16 | 704 | 0.1- | 0.9- |
| 2000 11 01 | 704 | 1.7+  | 0.6-  | 2005 03 08 | 704 | 0.8+  | 0.3+  | 2007 12 16 | 704 | 0.1- | 0.6- |
| 2000 11 03 | 704 | 0.0   | 0.1+  | 2005 03 09 | 704 | 0.7+  | 0.1+  | 2007 12 16 | 704 | 0.1- | 0.3- |
| 2000 11 03 | 704 | 0.1+  | 0.6+  | 2005 03 09 | 704 | (0.3- | 1.7+) | 2007 12 16 | 704 | 0.2+ | 0.1- |
| 2000 11 03 | 704 | 0.5-  | 0.7+  | 2005 03 09 | 704 | 0.1+  | 0.9+  |            |     |      |      |
| 2000 11 03 | 704 | 0.1-  | 0.0   | 2005 03 09 | 704 | (1.6- | 1.3+) |            |     |      |      |

(171706)\* 2000 SE<sub>308</sub>

Discovered 2000 Sept. 30 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.07218   | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.29076785 | $\omega$ 23.94393 | +0.88735977   | -0.46103173 |
| <i>a</i> | 2.2565162  | $\Omega$ 3.53014  | +0.40412693   | +0.77088127 |
| <i>e</i> | 0.1900528  | <i>i</i> 6.06898  | +0.22197761   | +0.43953590 |
| <i>P</i> | 3.39       | <i>H</i> 16.2     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 30 | 704 | 0.2+  | 0.3-  | 2000 11 19 | 704 | 0.9- | 0.7- | 2002 04 14 | 704 | 0.9+  | 1.2+  |
| 2000 09 30 | 704 | 0.1-  | 0.0   | 2000 11 19 | 704 | 0.9- | 0.0  | 2002 04 14 | 704 | 0.3+  | 0.4+  |
| 2000 09 30 | 704 | 0.2-  | 0.4-  | 2000 11 24 | 699 | 0.1- | 0.3- | 2002 04 14 | 704 | 0.9-  | 1.3+  |
| 2000 09 30 | 704 | 0.4-  | 0.0   | 2000 11 24 | 699 | 0.1+ | 1.0+ | 2002 04 14 | 704 | 0.4-  | 0.9+  |
| 2000 09 30 | 704 | 0.7-  | 0.2-  | 2000 11 24 | 699 | 0.1- | 0.6+ | 2003 07 07 | 644 | 0.1-  | 0.5+  |
| 2000 10 03 | 704 | 0.6-  | 0.7-  | 2000 11 24 | 699 | 1.1+ | 0.2+ | 2003 07 07 | 644 | 0.1+  | 0.7+  |
| 2000 10 03 | 704 | 0.7+  | 0.2+  | 2000 11 29 | 704 | 0.4- | 0.5+ | 2003 07 07 | 644 | 0.2+  | 0.7+  |
| 2000 10 03 | 704 | 0.4-  | 0.1+  | 2000 11 29 | 704 | 0.0  | 0.2- | 2005 02 09 | 691 | 0.3+  | 0.1-  |
| 2000 10 25 | 704 | 0.1-  | 0.4-  | 2000 11 29 | 704 | 0.1- | 0.0  | 2005 02 09 | 691 | 0.5+  | 0.0   |
| 2000 10 25 | 704 | 0.0   | 0.4-  | 2000 11 29 | 704 | 0.3+ | 0.3- | 2005 02 09 | 691 | 0.1+  | 0.2-  |
| 2000 10 25 | 704 | 0.1+  | 0.4-  | 2000 11 29 | 704 | 0.6- | 0.7- | 2005 04 11 | G96 | 0.1+  | 0.1-  |
| 2000 10 25 | 704 | 0.8-  | 0.1-  | 2000 11 30 | 699 | 0.1- | 0.6+ | 2005 04 11 | G96 | 0.0   | 0.1+  |
| 2000 10 25 | 704 | 0.4-  | 1.0+  | 2000 11 30 | 699 | 0.7- | 0.5+ | 2005 04 11 | G96 | 0.1-  | 0.0   |
| 2000 11 03 | 704 | 0.8+  | 0.3+  | 2000 11 30 | 699 | 1.2- | 1.0+ | 2005 04 11 | G96 | 0.2-  | 0.1+  |
| 2000 11 03 | 704 | 0.9+  | 0.7+  | 2000 11 30 | 699 | 0.0  | 0.5+ | 2007 12 02 | 704 | (2.3- | 0.4+) |
| 2000 11 03 | 704 | 0.8+  | 0.3-  | 2000 12 04 | 704 | 0.1- | 0.0  | 2007 12 02 | 704 | 1.6-  | 0.2-  |
| 2000 11 03 | 704 | 0.8+  | 0.0   | 2000 12 04 | 704 | 0.9+ | 0.2+ | 2007 12 02 | 704 | 0.9-  | 1.3-  |
| 2000 11 05 | 704 | (2.2- | 0.4-) | 2000 12 04 | 704 | 0.9+ | 0.2+ | 2007 12 05 | 699 | 0.1-  | 0.4-  |
| 2000 11 05 | 704 | 0.3+  | 0.1+  | 2000 12 04 | 704 | 0.2+ | 0.7+ | 2007 12 05 | 699 | 0.3+  | 0.2+  |
| 2000 11 05 | 704 | 0.1+  | 0.1-  | 2000 12 04 | 704 | 0.5- | 1.2+ | 2007 12 05 | 699 | 0.2-  | 0.1+  |
| 2000 11 05 | 704 | 0.4+  | 0.1-  | 2000 12 30 | 704 | 0.5+ | 0.3+ | 2007 12 05 | 699 | 0.4-  | 0.2-  |
| 2000 11 05 | 704 | 0.2-  | 0.5-  | 2000 12 30 | 704 | 0.6- | 0.3- | 2007 12 16 | 704 | 0.4+  | 0.1-  |
| 2000 11 19 | 704 | 0.4-  | 0.4-  | 2000 12 30 | 704 | 0.7+ | 0.9+ | 2007 12 16 | 704 | 0.2-  | 0.5-  |

2000 11 19 704 0.4− 0.0 2002 03 20 695 0.5− 0.2+ 2007 12 16 704 0.8+ 0.0  
 2000 11 19 704 0.6− 0.1− 2002 03 20 695 0.4− 0.1+

**(171707)\* 2000 SV<sub>327</sub>**

Discovered 2000 Sept. 30 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.37188  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|------|-------------|
| <i>n</i> | 0.28957585 | $\omega$ | 179.53251 | +0.40824692 |      | −0.90591544 |
| <i>a</i> | 2.2627044  | $\Omega$ | 246.36918 | +0.83714429 |      | +0.42066423 |
| <i>e</i> | 0.0709267  | <i>i</i> | 7.05226   | +0.36403830 |      | +0.04856777 |
| <i>P</i> | 3.40       | <i>H</i> | 16.1      | <i>G</i>    | 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2000 09 30 704 1.1+ 0.5− | 2000 11 27 704 0.1− 0.0  | 2007 11 13 703 0.5+ 0.1− |
| 2000 09 30 704 0.8− 0.3− | 2003 08 20 644 0.4− 0.3+ | 2007 11 13 703 0.1+ 0.1− |
| 2000 09 30 704 0.7+ 1.5+ | 2003 08 20 644 0.4− 0.3+ | 2007 11 13 703 0.4− 0.2− |
| 2000 09 30 704 0.9+ 0.0  | 2003 08 20 644 0.1− 0.2+ | 2007 11 15 704 0.3− 1.0+ |
| 2000 10 06 608 0.4+ 0.3− | 2003 09 23 644 0.0 0.5+  | 2007 11 15 704 0.1− 0.2+ |
| 2000 10 06 608 0.5+ 1.1− | 2003 09 23 644 0.2+ 0.2+ | 2007 11 15 704 0.1− 0.1+ |
| 2000 10 06 608 0.2+ 0.7− | 2003 09 23 644 0.2+ 0.3+ | 2007 11 15 704 0.2+ 0.1+ |
| 2000 10 25 704 0.6+ 0.6− | 2005 01 13 703 0.6− 0.2− | 2007 11 18 691 0.0 0.0   |
| 2000 10 25 704 0.4+ 1.0+ | 2005 01 13 703 0.3− 0.5− | 2007 11 18 691 0.1− 0.0  |
| 2000 10 25 704 0.1+ 0.4− | 2005 01 13 703 0.2+ 0.7+ | 2007 11 18 691 0.2− 0.0  |
| 2000 10 25 704 0.8− 0.2+ | 2005 01 13 703 0.8− 0.1+ | 2007 12 03 703 0.0 0.2+  |
| 2000 10 25 704 0.7− 0.6+ | 2005 02 04 644 1.1+ 0.3+ | 2007 12 03 703 0.2+ 0.6+ |
| 2000 11 01 704 0.7− 0.9+ | 2005 02 04 644 0.6+ 0.2+ | 2007 12 03 703 0.6− 0.0  |
| 2000 11 01 704 0.7− 0.0  | 2005 02 04 644 0.9+ 0.0  | 2007 12 03 703 0.4− 0.2− |
| 2000 11 01 704 0.0 0.1+  | 2005 02 14 703 0.2− 0.2+ | 2007 12 04 G96 0.1+ 0.2− |
| 2000 11 01 704 0.1+ 0.1+ | 2005 02 14 703 0.7+ 0.0  | 2007 12 04 G96 0.1− 0.2− |
| 2000 11 03 704 0.8+ 0.1− | 2005 02 14 703 0.2+ 0.5+ | 2007 12 04 G96 0.1+ 0.1− |
| 2000 11 03 704 0.4+ 0.1+ | 2005 02 14 703 0.1+ 0.1+ | 2007 12 04 G96 0.3+ 0.2− |
| 2000 11 03 704 0.7− 0.1− | 2005 03 17 703 0.1− 0.6− | 2007 12 05 704 0.5+ 1.1− |
| 2000 11 03 704 0.8− 0.1+ | 2005 03 17 703 0.3− 1.2+ | 2007 12 05 704 0.8+ 0.9− |
| 2000 11 27 704 0.5− 0.2− | 2005 03 17 703 1.0− 0.5− | 2007 12 05 704 0.1+ 0.2− |
| 2000 11 27 704 0.1− 0.1− | 2005 03 17 703 0.0 0.7+  | 2007 12 05 704 0.3+ 0.1− |
| 2000 11 27 704 0.3− 0.1+ | 2007 11 13 703 0.1− 1.0+ | 2007 12 05 704 0.3+ 0.1− |

**(171708)\* 2000 TL<sub>24</sub> = 2002 GB<sub>122</sub>**

Discovered 2000 Oct. 2 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. G. V. Williams (*MPO* 31341)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.69936   |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |
|----------|------------|----------|----------|-------------|------|-------------|
| <i>n</i> | 0.30520919 | $\omega$ | 13.43319 | +0.52210979 |      | −0.84891718 |
| <i>a</i> | 2.1847629  | $\Omega$ | 45.16732 | +0.77141284 |      | +0.42898667 |
| <i>e</i> | 0.1004177  | <i>i</i> | 6.64829  | +0.36376310 |      | +0.30872328 |
| <i>P</i> | 3.23       | <i>H</i> | 16.5     | <i>G</i>    | 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 1997 11 29 704 1.2− 0.8− | 2000 10 03 704 0.7+ 0.0    | 2005 03 02 703 (0.9+ 1.6+) |
| 1997 11 29 704 0.2− 0.0  | 2000 10 03 704 0.4+ 0.7−   | 2005 03 02 703 1.0− 0.2+   |
| 1997 11 29 704 0.6+ 0.8− | 2000 10 04 704 0.1+ 0.6+   | 2005 03 11 703 0.0 1.3−    |
| 1997 11 29 704 1.4+ 1.5− | 2000 10 04 704 0.2− 0.3−   | 2005 03 11 703 0.7− 0.3−   |
| 2000 09 24 704 1.3− 1.4+ | 2000 10 04 704 0.0 0.1+    | 2005 03 11 703 0.3+ 0.2+   |
| 2000 09 24 704 0.1− 0.8+ | 2000 10 04 704 0.9− 0.3−   | 2005 03 11 703 0.1− 0.6−   |
| 2000 09 24 704 0.8− 0.2+ | 2000 10 04 704 0.4− 0.1−   | 2005 03 16 703 0.9− 1.0+   |
| 2000 09 24 704 0.7− 0.5+ | 2000 10 07 704 0.5+ 0.2+   | 2005 03 16 703 0.5− 0.1−   |
| 2000 09 24 704 0.6− 1.9+ | 2000 10 07 704 0.2− 0.4+   | 2005 03 16 703 0.0 0.2−    |
| 2000 10 01 699 0.0 1.5+  | 2000 10 07 704 0.2− 0.9−   | 2005 03 16 703 0.1+ 0.5+   |
| 2000 10 01 699 0.6+ 1.1+ | 2002 04 10 704 1.0+ 1.4+   | 2005 04 06 644 0.9+ 1.4+   |
| 2000 10 01 699 0.5+ 1.0+ | 2002 04 10 704 (0.5+ 3.1+) | 2005 04 06 644 0.5+ 1.1+   |
| 2000 10 01 699 0.1− 1.9+ | 2002 04 10 704 0.4+ 1.4+   | 2005 04 06 644 1.0+ 0.6+   |
| 2000 10 02 704 0.3+ 0.3+ | 2002 04 10 704 (0.6+ 2.7+) | 2006 07 29 E12 (0.2− 1.6−) |
| 2000 10 02 704 0.5+ 0.3− | 2002 04 14 644 1.2+ 1.0+   | 2006 07 29 E12 0.1+ 0.2+   |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2000 10 02 704 0.2+ 0.1− | 2002 04 14 644 1.3+ 0.6+ | 2006 07 29 E12 0.2− 0.1+ |
| 2000 10 02 704 0.6− 0.3+ | 2002 04 14 644 0.6+ 1.3+ | 2006 07 29 E12 0.7+ 0.9+ |
| 2000 10 03 704 0.4− 0.6+ | 2003 08 23 644 0.7− 0.1+ | 2007 10 26 G96 0.3+ 0.6+ |
| 2000 10 03 704 0.3+ 0.9+ | 2003 08 23 644 0.4− 0.1+ | 2007 10 26 G96 0.6+ 0.1− |
| 2000 10 03 704 0.2− 0.4− | 2003 08 23 644 0.2− 0.3− | 2007 10 26 G96 0.4+ 0.1+ |
| 2000 10 03 704 0.0 0.6+  | 2003 08 31 608 0.3− 0.5− | 2007 10 26 G96 0.0 0.0   |
| 2000 10 03 704 0.4− 0.9− | 2003 08 31 608 0.3− 0.3− | 2007 12 16 699 1.9+ 1.1+ |
| 2000 10 03 704 0.4− 0.3+ | 2003 08 31 608 0.1− 0.3− | 2007 12 16 699 0.1− 0.2− |
| 2000 10 03 704 0.4− 0.2+ | 2005 03 02 703 1.3+ 0.9+ | 2007 12 16 699 0.5+ 1.3+ |
| 2000 10 03 704 0.3− 0.1− | 2005 03 02 703 1.1− 0.3+ | 2007 12 16 699 0.8− 1.1+ |

**(171709)\* 2000 TC<sub>45</sub>**

Discovered 2000 Oct. 1 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.99997   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|------|-------------|
| <i>n</i> | 0.29282488 | $\omega$ | 275.93527 | +0.98699415 |      | −0.13188979 |
| <i>a</i> | 2.2459361  | $\Omega$ | 91.66885  | +0.15767520 |      | +0.90564336 |
| <i>e</i> | 0.1730962  | <i>i</i> | 5.27580   | −0.03132210 |      | +0.40300767 |
| <i>P</i> | 3.37       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 2000 08 28 704 0.5+ 0.6+ | 2000 10 02 699 0.3+ 0.0    | 2007 11 04 704 0.2+ 1.4+   |
| 2000 08 28 704 0.1− 1.1+ | 2000 10 02 699 0.4+ 0.1+   | 2007 11 04 704 0.8+ 0.7+   |
| 2000 08 28 704 0.6+ 0.6+ | 2005 01 18 691 0.3+ 0.3+   | 2007 11 07 691 0.2− 0.0    |
| 2000 09 10 699 0.0 0.7−  | 2005 01 18 691 0.3+ 0.4+   | 2007 11 07 691 0.1+ 0.2+   |
| 2000 09 10 699 0.7− 0.2+ | 2005 01 18 691 0.3− 0.2−   | 2007 11 07 691 (0.2+ 2.4+) |
| 2000 09 10 699 0.0 0.6−  | 2006 05 02 G96 0.7− 0.6+   | 2007 11 18 G96 0.5+ 0.1−   |
| 2000 09 10 699 1.2− 0.9− | 2006 05 02 G96 0.3− 0.4+   | 2007 11 18 G96 0.4+ 0.1−   |
| 2000 09 21 704 0.1− 0.2+ | 2006 05 02 G96 0.3− 0.5+   | 2007 11 18 G96 0.5+ 0.1−   |
| 2000 09 21 704 0.3+ 0.4+ | 2006 05 02 G96 0.7− 0.5+   | 2007 11 18 G96 0.6+ 0.1−   |
| 2000 09 21 704 0.0 0.3+  | 2006 05 06 691 0.3+ 0.3+   | 2007 11 19 691 0.4− 0.1+   |
| 2000 09 23 699 0.3− 0.4+ | 2006 05 06 691 0.0 0.3+    | 2007 11 19 691 0.5− 0.3+   |
| 2000 09 23 699 0.3− 0.5− | 2006 05 06 691 0.1+ 0.0    | 2007 11 19 691 0.3− 0.1+   |
| 2000 09 23 699 0.1− 0.7+ | 2006 05 22 691 0.2+ 1.0+   | 2007 12 04 704 0.5+ 0.5+   |
| 2000 09 23 699 0.6− 0.2− | 2006 05 22 691 0.9+ 0.7+   | 2007 12 04 704 1.3+ 0.3+   |
| 2000 10 01 704 0.1+ 0.3− | 2006 05 22 691 0.2+ 0.5+   | 2007 12 04 704 0.7+ 0.3+   |
| 2000 10 01 704 0.3+ 0.5− | 2007 10 30 691 0.2− 0.2+   | 2007 12 04 704 0.1+ 0.6+   |
| 2000 10 01 704 0.6− 1.2+ | 2007 10 30 691 0.3− 0.0    | 2007 12 15 G96 0.1− 0.5+   |
| 2000 10 01 704 0.8− 0.3+ | 2007 10 30 691 0.3− 0.1+   | 2007 12 15 G96 0.0 0.5+    |
| 2000 10 02 699 0.9+ 0.6+ | 2007 11 04 704 0.4+ 0.9+   | 2007 12 15 G96 0.0 0.1+    |
| 2000 10 02 699 0.2− 0.5+ | 2007 11 04 704 (0.6− 1.9+) | 2007 12 15 G96 0.0 0.4+    |

**(171710)\* 2000 TD<sub>51</sub>**

Discovered 2000 Oct. 1 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 104.21819  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|------|-------------|
| <i>n</i> | 0.29633454 | $\omega$ | 222.53990 | +0.58744186 |      | +0.79425673 |
| <i>a</i> | 2.2281677  | $\Omega$ | 84.02073  | −0.69420412 |      | +0.59309916 |
| <i>e</i> | 0.1573960  | <i>i</i> | 8.97412   | −0.41592390 |      | +0.13186973 |
| <i>P</i> | 3.33       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2000 10 01 704 1.3+ 1.0+   | 2006 05 18 644 0.2− 0.3+   | 2006 06 16 644 0.2− 0.1+ |
| 2000 10 01 704 1.3+ 0.9+   | 2006 05 18 644 0.0 0.2+    | 2006 06 16 691 0.2+ 0.3+ |
| 2000 10 01 704 (2.2+ 2.0+) | 2006 05 19 703 0.0 0.3+    | 2006 06 16 644 0.1− 0.2+ |
| 2000 10 01 645 0.0 0.1−    | 2006 05 19 703 0.7− 0.8+   | 2006 06 16 691 0.0 0.2+  |
| 2000 10 01 704 1.9+ 1.8+   | 2006 05 19 703 (1.7− 0.4+) | 2006 06 16 691 0.1+ 0.3+ |
| 2000 10 01 645 0.1− 0.1−   | 2006 05 19 703 0.9− 0.2−   | 2006 06 26 E12 0.4− 0.2− |
| 2000 10 01 704 (1.8+ 2.4+) | 2006 05 26 704 0.4− 0.6−   | 2006 06 26 E12 0.3− 0.6+ |
| 2000 10 02 699 1.4− 0.1+   | 2006 05 26 704 0.4+ 0.8−   | 2006 06 26 E12 0.3+ 0.5+ |
| 2000 10 02 699 0.9+ 0.3−   | 2006 05 26 704 0.0 0.8+    | 2006 06 26 E12 0.1− 0.6+ |
| 2000 10 02 699 0.8− 0.6+   | 2006 05 26 704 0.2− 1.2−   | 2006 07 21 G96 0.3− 0.1− |
| 2000 10 02 699 0.2+ 0.2+   | 2006 05 26 704 0.1− 0.2−   | 2006 07 21 G96 0.1− 0.0  |

2007 DEC. 24

M.P.O. 129135

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 29 | 704 | 0.6+ | 1.2+ | 2006 05 28 | 704 | 0.7+ | 0.1- | 2006 07 21 | G96 | 0.1+  | 0.0   |
| 2000 10 29 | 704 | 0.1+ | 0.1+ | 2006 05 28 | 704 | 0.1- | 0.4- | 2006 07 21 | G96 | 0.3-  | 0.1-  |
| 2000 10 29 | 704 | 0.4+ | 0.5- | 2006 05 28 | 704 | 0.3+ | 0.0  | 2007 11 09 | 691 | 0.2-  | 0.0   |
| 2000 11 27 | 704 | 1.7- | 0.4- | 2006 05 28 | 704 | 1.2+ | 0.3- | 2007 11 09 | 691 | 0.1+  | 0.3-  |
| 2000 11 27 | 704 | 0.7- | 0.7+ | 2006 05 28 | 703 | 1.1- | 0.0  | 2007 11 09 | 691 | 0.2-  | 0.0   |
| 2000 11 27 | 704 | 0.9- | 1.2+ | 2006 05 28 | 703 | 1.2- | 0.4- | 2007 12 04 | 691 | 0.2-  | 0.1+  |
| 2002 02 10 | 704 | 0.2- | 1.0+ | 2006 05 28 | 704 | 0.2- | 0.2- | 2007 12 04 | 691 | 0.3-  | 0.2+  |
| 2002 02 10 | 704 | 0.3+ | 0.6+ | 2006 05 28 | 703 | 0.4- | 0.2- | 2007 12 04 | 691 | 0.2-  | 0.1+  |
| 2002 02 10 | 704 | 0.7+ | 0.7- | 2006 05 28 | 703 | 1.0- | 0.3+ | 2007 12 05 | 704 | (1.7+ | 0.7+) |
| 2002 03 21 | 644 | 0.4- | 0.6+ | 2006 05 29 | 691 | 0.2+ | 0.3+ | 2007 12 05 | 704 | 0.9+  | 0.1-  |
| 2002 03 21 | 644 | 0.1- | 0.6+ | 2006 05 29 | 691 | 0.7+ | 0.4- | 2007 12 05 | 704 | 0.8+  | 0.2+  |
| 2002 03 21 | 644 | 0.1- | 0.6+ | 2006 05 29 | 691 | 0.1+ | 0.3+ | 2007 12 05 | 704 | (2.3+ | 0.6+) |
| 2003 07 10 | 608 | 0.3- | 0.3+ | 2006 06 02 | 691 | 0.3+ | 0.3+ | 2007 12 16 | 691 | 1.3+  | 1.7+  |
| 2003 07 10 | 608 | 0.6- | 0.4+ | 2006 06 02 | 691 | 0.2+ | 0.3+ | 2007 12 16 | 691 | 0.4-  | 0.3-  |
| 2003 07 10 | 608 | 0.2- | 0.4+ | 2006 06 02 | 691 | 0.2+ | 0.3+ | 2007 12 16 | 691 | 0.8-  | 0.1-  |
| 2006 05 18 | 644 | 0.1- | 0.2+ | 2006 06 16 | 644 | 0.3+ | 0.2+ |            |     |       |       |

(171711)\* 2000 TR<sub>63</sub> = 2002 ED<sub>16</sub>

Discovered 2000 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 29436)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 336.36128  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.29465073 | $\omega$ | 185.66701 | +0.07522548  | -0.99249383  |
| $a$ | 2.2366483  | $\Omega$ | 260.04566 | +0.91868468  | +0.10658156  |
| $e$ | 0.0720961  | $i$      | 5.61799   | +0.38776227  | -0.05996979  |
| $P$ | 3.35       | $H$      | 16.5      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 22 | 608 | 0.2- | 1.2+ | 2005 01 07 | 703 | 0.3- | 0.6+ | 2007 11 09 | 691 | 0.0   | 0.1+  |
| 2000 09 22 | 608 | 0.3- | 0.6+ | 2005 01 07 | 703 | 0.2- | 0.7+ | 2007 11 10 | D29 | 0.0   | 0.3+  |
| 2000 09 22 | 608 | 0.0  | 0.6+ | 2005 01 07 | 703 | 0.3+ | 0.6+ | 2007 11 10 | D29 | 0.4+  | 0.0   |
| 2000 10 03 | 704 | 0.3+ | 0.8+ | 2005 01 13 | 704 | 0.2+ | 0.2+ | 2007 11 10 | D29 | 0.2+  | 0.1-  |
| 2000 10 03 | 704 | 0.1+ | 0.2+ | 2005 01 13 | 704 | 0.8+ | 0.7+ | 2007 11 10 | D29 | 0.4-  | 0.3-  |
| 2000 10 03 | 704 | 0.3+ | 1.4+ | 2005 01 13 | 703 | 0.3+ | 0.0  | 2007 11 13 | 691 | 0.1-  | 0.1+  |
| 2000 10 03 | 704 | 1.1+ | 0.4+ | 2005 01 13 | 703 | 0.1+ | 0.4+ | 2007 11 13 | 691 | 0.5-  | 0.1+  |
| 2000 10 03 | 704 | 0.4+ | 0.1- | 2005 01 13 | 704 | 1.3+ | 0.5- | 2007 11 13 | 691 | 0.0   | 0.0   |
| 2000 10 06 | 608 | 0.9- | 0.1- | 2005 01 13 | 703 | 0.3- | 0.8- | 2007 11 15 | 704 | 0.3-  | 0.0   |
| 2000 10 06 | 608 | 0.7- | 0.4- | 2005 01 13 | 703 | 0.6- | 0.7- | 2007 11 15 | 704 | 0.2+  | 0.1-  |
| 2000 10 06 | 608 | 0.8- | 0.8- | 2005 01 13 | 704 | 0.2+ | 0.8- | 2007 11 15 | 704 | 0.2+  | 0.1-  |
| 2000 10 25 | 704 | 1.2- | 0.5- | 2005 01 18 | 703 | 0.0  | 0.9+ | 2007 11 15 | 704 | 0.4-  | 0.2+  |
| 2000 10 25 | 704 | 0.2- | 0.4+ | 2005 01 18 | 703 | 0.6+ | 0.7- | 2007 11 15 | 704 | 0.2-  | 0.2-  |
| 2000 10 25 | 704 | 1.0+ | 0.1- | 2005 01 18 | 703 | 0.1+ | 0.4+ | 2007 11 27 | D29 | (0.6- | 1.5-) |
| 2002 03 06 | 644 | 0.3- | 0.2- | 2005 01 18 | 703 | 0.4- | 0.3- | 2007 11 27 | D29 | 1.2+  | 0.9-  |
| 2002 03 06 | 644 | 0.2- | 0.2+ | 2005 02 02 | 703 | 0.5- | 0.3+ | 2007 11 27 | D29 | 0.1-  | 0.0   |
| 2002 03 06 | 644 | 0.3- | 0.4+ | 2005 02 02 | 703 | 0.8- | 0.2- | 2007 11 27 | D29 | 0.4+  | 0.3-  |
| 2002 03 06 | 644 | 0.2- | 0.2+ | 2005 02 02 | 703 | 0.8- | 0.9+ | 2007 12 04 | G96 | 0.2+  | 0.3-  |
| 2002 03 06 | 644 | 0.1+ | 0.4+ | 2005 02 02 | 703 | 0.6- | 0.3+ | 2007 12 04 | G96 | 0.2+  | 0.5-  |
| 2002 03 06 | 644 | 0.2- | 0.1+ | 2005 02 09 | 704 | 0.2+ | 0.4+ | 2007 12 04 | G96 | 0.2+  | 0.3-  |
| 2002 03 09 | 644 | 0.2- | 0.1- | 2005 02 09 | 704 | 0.1+ | 0.3- | 2007 12 04 | G96 | 0.2-  | 0.3-  |
| 2002 03 09 | 644 | 0.2+ | 0.0  | 2005 02 09 | 704 | 0.6+ | 0.3+ | 2007 12 14 | 704 | 0.1+  | 0.1+  |
| 2002 03 09 | 644 | 0.4+ | 0.0  | 2007 11 02 | 691 | 0.2- | 0.1+ | 2007 12 14 | 704 | 0.4+  | 0.2-  |
| 2002 03 09 | 644 | 0.5+ | 0.0  | 2007 11 02 | 691 | 0.1- | 0.0  | 2007 12 14 | 704 | 0.0   | 0.1-  |
| 2002 03 09 | 644 | 0.2+ | 0.2- | 2007 11 02 | 691 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.4-  | 0.0   |
| 2002 03 09 | 644 | 0.2+ | 0.1+ | 2007 11 06 | 691 | 0.3- | 0.1+ | 2007 12 15 | G96 | 0.4+  | 0.1-  |
| 2002 03 09 | 644 | 0.3+ | 0.1+ | 2007 11 06 | 691 | 0.1- | 0.0  | 2007 12 15 | G96 | 0.4+  | 0.3-  |
| 2002 03 09 | 644 | 0.2- | 0.3- | 2007 11 06 | 691 | 0.7+ | 0.5- | 2007 12 15 | G96 | 0.3+  | 0.2-  |
| 2002 03 09 | 644 | 0.4+ | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.0   | 0.4-  |
| 2005 01 07 | 703 | 0.1- | 0.8+ | 2007 11 09 | 691 | 0.1- | 0.2+ |            |     |       |       |

(171712)\* 2000 UO<sub>8</sub>

Discovered 2000 Oct. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 57.20459   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.29432804 | $\omega$ | 321.75861 | +0.98535362 | -0.14553196 |
| $a$ | 2.2382828  | $\Omega$ | 46.85667  | +0.17031970 | +0.86540638 |
| $e$ | 0.1718127  | $i$      | 6.99629   | -0.00833275 | +0.47947080 |
| $P$ | 3.35       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 30 | 704 | 0.4- | 0.3+ | 2000 11 05 | 704 | 0.4- | 0.1+ | 2003 09 19 | 644 | 0.4-  | 0.7+  |
| 2000 09 30 | 704 | 0.4+ | 0.5+ | 2000 11 05 | 704 | 0.0  | 0.5- | 2003 09 19 | 644 | 0.4-  | 0.2+  |
| 2000 09 30 | 704 | 0.6- | 0.5+ | 2000 11 05 | 704 | 0.6+ | 0.3- | 2003 09 19 | 644 | 0.2-  | 0.0   |
| 2000 10 24 | 704 | 0.1- | 0.3- | 2000 11 21 | 704 | 0.8+ | 0.0  | 2003 09 26 | 644 | 0.2+  | 0.2-  |
| 2000 10 24 | 704 | 0.2+ | 0.5- | 2000 11 21 | 704 | 0.6- | 0.0  | 2003 09 26 | 644 | 0.2+  | 0.2+  |
| 2000 10 24 | 704 | 0.0  | 0.1- | 2000 11 21 | 704 | 0.3+ | 0.2+ | 2003 09 26 | 644 | 0.2+  | 0.1+  |
| 2000 10 24 | 704 | 0.4- | 0.3+ | 2000 11 21 | 704 | 0.8- | 0.4- | 2007 11 12 | G96 | 0.4-  | 0.4-  |
| 2000 10 24 | 704 | 0.2+ | 0.7+ | 2000 11 21 | 704 | 0.5- | 0.3- | 2007 11 12 | G96 | 0.1+  | 0.3-  |
| 2000 10 26 | 704 | 0.1- | 0.5- | 2000 11 28 | 704 | 0.1- | 0.2- | 2007 11 12 | G96 | 0.0   | 0.1-  |
| 2000 10 26 | 704 | 0.1+ | 0.0  | 2000 11 28 | 704 | 0.2- | 0.3+ | 2007 11 12 | G96 | 0.0   | 0.1-  |
| 2000 10 26 | 704 | 0.9+ | 0.9- | 2000 11 28 | 704 | 0.4- | 0.2- | 2007 12 02 | 704 | 0.1-  | 0.0   |
| 2000 11 01 | 704 | 0.4+ | 0.4+ | 2000 11 28 | 704 | 0.0  | 0.4+ | 2007 12 02 | 704 | (1.5- | 2.2-) |
| 2000 11 01 | 704 | 0.1- | 0.1+ | 2001 01 04 | 704 | 0.8- | 0.1+ | 2007 12 02 | 704 | 0.8+  | 0.5-  |
| 2000 11 01 | 704 | 0.0  | 0.9+ | 2001 01 04 | 704 | 0.1- | 0.6- | 2007 12 02 | 704 | 0.2-  | 1.0-  |
| 2000 11 01 | 704 | 0.1+ | 0.3+ | 2001 01 04 | 704 | 0.6+ | 0.2+ | 2007 12 02 | 704 | 0.1-  | 0.2-  |
| 2000 11 01 | 704 | 0.5- | 0.3+ | 2002 04 12 | 644 | 0.1+ | 0.4+ | 2007 12 16 | 704 | 0.2+  | 0.7+  |
| 2000 11 02 | 704 | 0.3+ | 0.7+ | 2002 04 12 | 644 | 0.1+ | 0.5+ | 2007 12 16 | 704 | 0.5+  | 0.3+  |
| 2000 11 02 | 704 | 0.3+ | 0.3+ | 2002 04 12 | 644 | 0.6+ | 0.7+ | 2007 12 16 | 704 | 0.8-  | 0.3+  |
| 2000 11 02 | 704 | 0.4+ | 0.6- | 2003 07 07 | 644 | 0.1+ | 0.3- | 2007 12 16 | 704 | 0.3-  | 0.4+  |
| 2000 11 02 | 704 | 0.3+ | 0.3- | 2003 07 07 | 644 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.4+  | 0.5+  |
| 2000 11 05 | 704 | 0.1- | 0.2+ | 2003 07 07 | 644 | 0.0  | 0.2+ |            |     |       |       |
| 2000 11 05 | 704 | 0.1- | 0.1- | 2003 08 29 | 428 | 0.1+ | 0.2- |            |     |       |       |

(171713)\* 2000 UC<sub>20</sub>

Discovered 2000 Oct. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 349.04057  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.29684474 | $\omega$ | 56.75139 | -0.17128446  | -0.98406911  |
| $a$ | 2.2256138  | $\Omega$ | 43.19186 | +0.87918932  | -0.17449371  |
| $e$ | 0.1633591  | $i$      | 3.99128  | +0.44462092  | -0.03405766  |
| $P$ | 3.32       | $H$      | 16.8     | $G$          | 0.15         |
|     |            |          |          | $U$          | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 02 23 | 327 | 0.5+ | 0.2- | 2005 03 11 | 691 | 0.2+ | 0.2+ | 2005 05 09 | G96 | 0.2-  | 0.3-  |
| 1998 02 23 | 327 | 0.5- | 0.5- | 2005 03 11 | 691 | 0.5+ | 0.1+ | 2005 05 09 | G96 | 0.0   | 0.2-  |
| 1998 02 23 | 327 | 0.0  | 0.8- | 2005 03 11 | 691 | 0.3+ | 0.2+ | 2007 11 03 | G96 | 0.2-  | 0.0   |
| 2000 10 19 | 691 | 0.2- | 0.1- | 2005 03 13 | 703 | 0.2- | 0.5+ | 2007 11 03 | G96 | 0.2+  | 0.1-  |
| 2000 10 19 | 691 | 0.2- | 0.0  | 2005 03 13 | 703 | 0.5- | 0.3+ | 2007 11 03 | G96 | 0.2+  | 0.1-  |
| 2000 10 19 | 691 | 0.1- | 0.2- | 2005 03 13 | 703 | 0.8- | 0.9+ | 2007 11 03 | G96 | 0.1+  | 0.2-  |
| 2000 10 24 | 704 | 0.2+ | 0.9+ | 2005 03 13 | 703 | 0.6- | 1.2+ | 2007 11 18 | G96 | 0.1-  | 0.2-  |
| 2000 10 24 | 704 | 0.6- | 0.3+ | 2005 04 02 | 224 | 1.0+ | 0.6- | 2007 11 18 | G96 | 0.3-  | 0.4-  |
| 2000 10 24 | 704 | 0.1+ | 0.9+ | 2005 04 02 | 224 | 1.5+ | 0.4+ | 2007 11 18 | G96 | 0.0   | 0.3-  |
| 2000 10 31 | 704 | 0.3+ | 1.0+ | 2005 04 02 | 224 | 0.1- | 0.4- | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2000 10 31 | 704 | 0.6+ | 0.1- | 2005 04 04 | 703 | 0.2- | 0.6+ | 2007 12 13 | 704 | 1.2-  | 0.2-  |
| 2000 10 31 | 704 | 0.2+ | 0.8+ | 2005 04 04 | 703 | 0.7- | 0.2- | 2007 12 13 | 704 | (0.1- | 1.8+) |
| 2000 10 31 | 704 | 0.5+ | 0.0  | 2005 04 04 | 703 | 0.0  | 0.5- | 2007 12 13 | 704 | (1.3+ | 2.5+) |
| 2000 11 02 | 704 | 0.7+ | 1.8+ | 2005 04 04 | 703 | 0.4- | 0.3- | 2007 12 15 | 704 | 0.8+  | 0.4-  |
| 2000 11 02 | 704 | 1.2- | 0.4- | 2005 04 05 | G96 | 0.4- | 0.2- | 2007 12 15 | 704 | 0.4+  | 1.1+  |
| 2000 11 02 | 704 | 0.2- | 1.0+ | 2005 04 05 | G96 | 0.2- | 0.1- | 2007 12 15 | 704 | 0.9+  | 1.4+  |
| 2000 11 02 | 704 | 0.2- | 0.9- | 2005 04 05 | G96 | 0.3- | 0.0  | 2007 12 16 | 699 | 0.7-  | 0.2-  |
| 2000 11 24 | 691 | 0.2+ | 0.0  | 2005 04 05 | G96 | 0.0  | 0.1+ | 2007 12 16 | 699 | 0.5-  | 0.5-  |
| 2000 11 24 | 691 | 0.1- | 0.2- | 2005 05 09 | G96 | 0.0  | 0.1- | 2007 12 16 | 699 | 0.1+  | 0.2+  |
| 2000 11 24 | 691 | 0.0  | 0.2- | 2005 05 09 | G96 | 0.3- | 0.1- | 2007 12 16 | 699 | 0.3+  | 0.5-  |

(171714)\* 2000 UW<sub>42</sub>

Discovered 2000 Oct. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          | (2000.0)  |  |          | <b>P</b>    |  |          | <b>Q</b>    |  |  |
|----------|------------|----------|-----------|--|----------|-------------|--|----------|-------------|--|--|
| <i>n</i> | 0.29449576 | $\omega$ | 264.74474 |  |          | +0.94841763 |  |          | +0.31112882 |  |  |
| <i>a</i> | 2.2374329  | $\Omega$ | 77.11749  |  |          | -0.26049182 |  |          | +0.87420385 |  |  |
| <i>e</i> | 0.1922361  | <i>i</i> | 3.57886   |  |          | -0.18068763 |  |          | +0.37278208 |  |  |
| <i>P</i> | 3.35       | <i>H</i> | 16.6      |  | <i>G</i> | 0.15        |  | <i>U</i> | 1           |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 24 | 704 | 0.7+ | 0.5+ | 2003 07 05 | 691 | 0.3- | 0.2+ | 2005 03 13 | 691 | 0.1+ | 0.1+ |
| 2000 10 24 | 704 | 1.1+ | 1.4+ | 2003 07 05 | 691 | 0.4- | 0.1+ | 2006 05 06 | G96 | 0.2+ | 0.9+ |
| 2000 10 24 | 704 | 1.3+ | 0.9+ | 2003 07 05 | 691 | 0.3- | 0.2+ | 2006 05 06 | G96 | 0.0  | 0.6+ |
| 2000 10 24 | 704 | 1.0+ | 0.0  | 2003 07 23 | 704 | 0.1- | 0.5- | 2006 05 06 | G96 | 0.1- | 0.5+ |
| 2000 11 01 | 704 | 0.4+ | 0.1- | 2003 07 23 | 704 | 0.4+ | 0.9+ | 2006 05 06 | G96 | 0.6+ | 0.5+ |
| 2000 11 01 | 704 | 0.1- | 1.2+ | 2003 07 23 | 704 | 0.4+ | 0.0  | 2006 05 19 | G96 | 0.2+ | 0.2+ |
| 2000 11 01 | 704 | 0.2+ | 0.2+ | 2003 07 23 | 704 | 0.5+ | 0.0  | 2006 05 19 | G96 | 0.1+ | 0.2+ |
| 2000 11 01 | 704 | 0.1- | 0.2+ | 2003 08 23 | 704 | 0.1+ | 0.4+ | 2006 05 19 | G96 | 0.3+ | 0.2+ |
| 2000 11 01 | 704 | 0.0  | 0.9+ | 2003 08 23 | 704 | 0.5- | 1.1+ | 2006 05 19 | 644 | 0.6+ | 0.6+ |
| 2000 11 02 | 704 | 0.2- | 0.7+ | 2003 08 23 | 704 | 0.5- | 0.3+ | 2006 05 19 | G96 | 0.3+ | 0.4+ |
| 2000 11 02 | 704 | 0.2+ | 1.0+ | 2003 09 28 | 704 | 0.0  | 0.8- | 2006 05 19 | 644 | 0.3+ | 0.4+ |
| 2000 11 02 | 704 | 1.0- | 0.0  | 2003 09 28 | 704 | 0.8+ | 1.1- | 2006 05 19 | 644 | 0.2+ | 0.2+ |
| 2000 11 02 | 704 | 0.9- | 0.5+ | 2003 09 28 | 704 | 0.5+ | 0.6- | 2006 05 20 | E12 | 0.3+ | 0.7+ |
| 2000 11 02 | 704 | 1.2- | 0.9- | 2003 09 28 | 704 | 0.4+ | 0.4- | 2006 05 20 | E12 | 0.4+ | 0.9+ |
| 2000 11 21 | 704 | 1.0+ | 0.0  | 2005 01 19 | 691 | 0.3- | 0.1- | 2006 05 20 | E12 | 0.0  | 0.0  |
| 2000 11 21 | 704 | 0.4- | 1.1+ | 2005 01 19 | 691 | 0.0  | 0.3+ | 2006 05 20 | E12 | 0.4- | 0.4+ |
| 2000 11 21 | 704 | 1.0- | 0.6+ | 2005 01 19 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.2- | 0.4- |
| 2000 11 21 | 704 | 0.7- | 0.7+ | 2005 02 03 | 704 | 1.0+ | 0.8+ | 2007 11 02 | G96 | 0.6+ | 0.5- |
| 2000 11 27 | 704 | 0.2- | 0.2- | 2005 02 03 | 704 | 1.1+ | 1.2+ | 2007 11 02 | G96 | 0.2+ | 0.5- |
| 2000 11 27 | 704 | 0.6- | 0.2+ | 2005 02 03 | 704 | 1.1+ | 0.4+ | 2007 11 02 | G96 | 0.4+ | 0.3- |
| 2000 11 27 | 704 | 0.4- | 0.4+ | 2005 02 03 | 704 | 0.3- | 0.8- | 2007 12 03 | 691 | 0.8- | 0.3- |
| 2000 11 27 | 704 | 1.2- | 0.2- | 2005 02 18 | 809 | 0.2- | 0.3+ | 2007 12 03 | 691 | 0.3- | 0.2- |
| 2000 11 27 | 704 | 0.6- | 0.0  | 2005 02 18 | 809 | 0.3- | 0.2+ | 2007 12 03 | 691 | 0.1- | 0.2- |
| 2000 11 27 | 704 | 0.2- | 0.4+ | 2005 02 18 | 809 | 0.0  | 0.4+ | 2007 12 15 | 691 | 2.4+ | 0.1+ |
| 2000 11 27 | 704 | 0.8- | 0.1+ | 2005 03 13 | 691 | 0.1- | 0.3+ | 2007 12 15 | 691 | 0.4- | 0.4+ |
| 2000 11 27 | 704 | 1.6+ | 1.0- | 2005 03 13 | 691 | 0.3- | 0.2+ | 2007 12 15 | 691 | 1.2- | 0.3+ |

(171715)\* 2000 UD<sub>43</sub> = 1993 TP<sub>32</sub>

Discovered 2000 Oct. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (*MPO* 7251)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          | (2000.0)  |  |          | <b>P</b>    |  |          | <b>Q</b>    |  |  |
|----------|------------|----------|-----------|--|----------|-------------|--|----------|-------------|--|--|
| <i>n</i> | 0.28466390 | $\omega$ | 297.92724 |  |          | +0.99250411 |  |          | -0.10308846 |  |  |
| <i>a</i> | 2.2886591  | $\Omega$ | 68.05254  |  |          | +0.12121185 |  |          | +0.89890336 |  |  |
| <i>e</i> | 0.2397433  | <i>i</i> | 4.05803   |  |          | -0.01559720 |  |          | +0.42584682 |  |  |
| <i>P</i> | 3.46       | <i>H</i> | 16.5      |  | <i>G</i> | 0.15        |  | <i>U</i> | 1           |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 10 09 | 809 | (0.6- | 2.4-) | 2000 11 27 | 704 | 0.1- | 0.4+ | 2007 10 14 | G96 | 0.1-  | 0.5-  |
| 1993 10 09 | 809 | 0.9-  | 2.0-  | 2000 11 27 | 704 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.1-  | 0.1-  |
| 1993 10 09 | 809 | 0.8-  | 1.1-  | 2000 11 27 | 704 | 0.0  | 0.3+ | 2007 11 05 | 704 | 0.7+  | 0.3+  |
| 1993 10 11 | 809 | (3.2+ | 0.3+) | 2000 11 27 | 704 | 0.5+ | 0.1- | 2007 11 05 | 704 | 0.3+  | 0.0   |
| 1993 10 11 | 809 | (3.5+ | 0.3-) | 2000 11 27 | 704 | 0.4- | 0.5+ | 2007 11 05 | 704 | 0.2+  | 0.3+  |
| 1993 10 11 | 809 | (2.6+ | 0.4+) | 2000 11 27 | 704 | 1.5+ | 0.1- | 2007 11 05 | 704 | 0.0   | 0.5+  |
| 1993 10 21 | 809 | (2.5+ | 1.0+) | 2000 11 27 | 704 | 1.5+ | 0.4+ | 2007 11 13 | 691 | (2.7+ | 0.4-) |
| 1993 10 21 | 809 | (2.8+ | 1.5+) | 2000 12 30 | 699 | 1.1- | 0.9+ | 2007 11 13 | 691 | (2.8+ | 1.0+) |
| 1993 10 21 | 809 | (2.9+ | 1.2+) | 2000 12 30 | 699 | 1.1- | 0.8- | 2007 11 13 | 691 | 0.2-  | 0.3-  |
| 2000 10 24 | 704 | 0.5+  | 0.2-  | 2000 12 30 | 699 | 0.7+ | 0.1+ | 2007 11 14 | 704 | 0.2+  | 0.3-  |
| 2000 10 24 | 704 | 0.6+  | 0.2-  | 2000 12 30 | 699 | 0.2+ | 0.6+ | 2007 11 14 | 691 | 0.3-  | 0.3-  |
| 2000 10 24 | 704 | 0.3+  | 0.1+  | 2005 01 15 | 691 | 0.0  | 0.2- | 2007 11 14 | 704 | 0.4-  | 0.1+  |
| 2000 10 24 | 704 | 0.0   | 0.4+  | 2005 01 15 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | 0.1+  | 0.1-  |
| 2000 10 24 | 704 | 0.1+  | 0.5-  | 2005 01 15 | 691 | 0.1+ | 0.1- | 2007 11 14 | 691 | 0.2-  | 0.2-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 01 | 704 | 0.5+ | 0.3+ | 2005 01 19 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 704 | 0.1- | 0.0  |
| 2000 11 01 | 704 | 0.0  | 0.1+ | 2005 01 19 | 691 | 0.2- | 0.1+ | 2007 11 14 | 691 | 0.3- | 0.3- |
| 2000 11 01 | 704 | 0.4+ | 0.5+ | 2005 01 19 | 691 | 0.2+ | 0.0  | 2007 11 14 | 704 | 0.2+ | 0.0  |
| 2000 11 01 | 704 | 0.4+ | 0.0  | 2006 05 23 | G96 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2000 11 01 | 704 | 0.1+ | 0.6+ | 2006 05 23 | G96 | 0.3+ | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2000 11 02 | 704 | 0.1+ | 0.8+ | 2006 05 23 | G96 | 0.6+ | 0.4+ | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2000 11 02 | 704 | 0.1+ | 0.3+ | 2006 05 23 | G96 | 0.3- | 0.2+ | 2007 12 03 | 703 | 0.9+ | 0.2+ |
| 2000 11 02 | 704 | 0.3+ | 0.3+ | 2006 05 25 | G96 | 0.1- | 0.3- | 2007 12 03 | 703 | 0.2+ | 0.8- |
| 2000 11 02 | 704 | 0.3- | 0.3+ | 2006 05 25 | G96 | 0.2- | 0.0  | 2007 12 03 | 703 | 0.1- | 0.1+ |
| 2000 11 02 | 704 | 0.8- | 0.4+ | 2006 05 25 | G96 | 0.4+ | 0.2- | 2007 12 03 | 703 | 0.4- | 0.0  |
| 2000 11 18 | 691 | 0.1+ | 0.0  | 2006 05 25 | G96 | 0.1- | 0.1+ | 2007 12 04 | 699 | 0.2+ | 0.4- |
| 2000 11 18 | 691 | 0.1+ | 0.2- | 2007 10 06 | 704 | 0.3+ | 1.2+ | 2007 12 04 | 699 | 0.2+ | 0.5- |
| 2000 11 18 | 691 | 0.0  | 0.0  | 2007 10 06 | 704 | 0.1- | 0.0  | 2007 12 04 | 699 | 0.1+ | 0.3- |
| 2000 11 18 | 699 | 0.4- | 0.0  | 2007 10 06 | 704 | 0.3+ | 1.3+ | 2007 12 04 | 699 | 0.0  | 0.1- |
| 2000 11 18 | 699 | 1.7+ | 0.6- | 2007 10 06 | 704 | 0.2+ | 1.0+ | 2007 12 05 | 704 | 0.2+ | 0.5+ |
| 2000 11 18 | 699 | 0.0  | 0.1+ | 2007 10 06 | 704 | 0.4- | 0.5+ | 2007 12 05 | 704 | 0.1- | 0.2+ |
| 2000 11 18 | 699 | 0.6- | 0.6+ | 2007 10 11 | 704 | 0.3- | 1.4+ | 2007 12 05 | 704 | 0.0  | 0.3+ |
| 2000 11 21 | 704 | 0.3- | 0.0  | 2007 10 11 | 704 | 0.3+ | 0.6+ | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2000 11 21 | 704 | 0.0  | 0.5- | 2007 10 11 | 704 | 0.4+ | 0.7+ | 2007 12 05 | 704 | 0.0  | 0.3+ |
| 2000 11 21 | 704 | 0.0  | 0.4- | 2007 10 11 | 704 | 0.2- | 1.0+ | 2007 12 14 | 704 | 0.7- | 0.2- |
| 2000 11 21 | 704 | 0.5+ | 0.3+ | 2007 10 11 | 704 | 0.4+ | 0.9+ | 2007 12 14 | 704 | 1.0- | 0.3- |
| 2000 11 27 | 704 | 0.1- | 0.3+ | 2007 10 14 | G96 | 0.2- | 0.4- | 2007 12 14 | 704 | 0.2+ | 0.2- |
| 2000 11 27 | 704 | 0.5- | 0.4+ | 2007 10 14 | G96 | 0.0  | 0.4- | 2007 12 14 | 704 | 0.3+ | 0.1- |
| 2000 11 27 | 704 | 0.1+ | 0.6+ | 2007 10 14 | G96 | 0.2+ | 0.5- | 2007 12 14 | 704 | 0.7- | 0.0  |

(171716)\* 2000 UD<sub>57</sub>

Discovered 2000 Oct. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          | (2000.0)  |  |          | <b>P</b>    |  |          | <b>Q</b>    |  |  |
|----------|------------|----------|-----------|--|----------|-------------|--|----------|-------------|--|--|
| <i>n</i> | 0.29135191 | $\omega$ | 140.25839 |  |          | +0.81512937 |  |          | -0.57743325 |  |  |
| <i>a</i> | 2.2534995  | $\Omega$ | 255.07149 |  |          | +0.51857639 |  |          | +0.76293339 |  |  |
| <i>e</i> | 0.1176943  | <i>i</i> | 2.74091   |  |          | +0.25815237 |  |          | +0.29069483 |  |  |
| <i>P</i> | 3.38       | <i>H</i> | 16.8      |  | <i>G</i> | 0.15        |  | <i>U</i> | 1           |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 30 | 704 | 0.3- | 0.1+ | 2000 11 20 | 704 | 0.3-  | 0.3+  | 2003 07 24 | 644 | 0.2- | 0.2+ |
| 2000 09 30 | 704 | 0.6- | 0.1+ | 2000 11 20 | 704 | 0.5+  | 0.3+  | 2003 07 24 | 644 | 0.0  | 0.5+ |
| 2000 09 30 | 704 | 0.1- | 1.7+ | 2000 11 20 | 704 | 0.5+  | 0.2-  | 2003 07 25 | 704 | 0.2+ | 0.4+ |
| 2000 10 25 | 704 | 0.0  | 0.2+ | 2000 11 27 | 704 | 0.6+  | 0.0   | 2003 07 25 | 704 | 1.4- | 0.1+ |
| 2000 10 25 | 704 | 1.2- | 0.0  | 2000 11 27 | 704 | 0.4+  | 0.4+  | 2003 07 25 | 704 | 0.0  | 0.4+ |
| 2000 10 25 | 704 | 0.2+ | 0.3- | 2000 11 27 | 704 | 0.9+  | 0.2-  | 2003 09 24 | 644 | 0.3+ | 0.0  |
| 2000 10 25 | 704 | 0.5- | 0.5+ | 2000 11 27 | 704 | 0.3+  | 0.1-  | 2003 09 24 | 644 | 0.1- | 0.2+ |
| 2000 10 25 | 704 | 0.8- | 0.1+ | 2000 11 27 | 704 | 0.8-  | 1.0+  | 2003 09 24 | 644 | 0.2- | 0.5+ |
| 2000 10 25 | 704 | 0.1+ | 0.8- | 2000 11 27 | 704 | 0.5-  | 0.0   | 2005 02 04 | 699 | 0.5+ | 0.6+ |
| 2000 10 25 | 704 | 0.2+ | 0.6- | 2000 11 27 | 704 | 0.9-  | 0.3+  | 2005 02 04 | 699 | 0.6+ | 0.0  |
| 2000 10 25 | 704 | 0.2- | 0.4- | 2000 11 27 | 704 | 0.0   | 0.3-  | 2005 02 04 | 699 | 0.0  | 0.9+ |
| 2000 10 25 | 704 | 0.1+ | 0.1- | 2000 11 27 | 704 | 0.2+  | 0.6+  | 2005 02 04 | 699 | 0.2+ | 0.1- |
| 2000 10 25 | 704 | 0.1+ | 0.3- | 2000 11 27 | 704 | 0.4-  | 0.4+  | 2005 02 14 | 691 | 0.0  | 0.5+ |
| 2000 11 01 | 704 | 0.1+ | 0.2- | 2000 11 28 | 704 | 0.0   | 1.2-  | 2005 02 14 | 691 | 0.0  | 0.3+ |
| 2000 11 01 | 704 | 0.7- | 0.4+ | 2000 11 28 | 704 | 0.2+  | 0.8+  | 2005 02 14 | 691 | 0.3+ | 0.4+ |
| 2000 11 01 | 704 | 0.2- | 0.3+ | 2000 11 28 | 704 | 0.4-  | 0.6+  | 2007 12 04 | 691 | 0.1- | 0.1+ |
| 2000 11 01 | 704 | 0.2- | 0.3+ | 2000 11 30 | 645 | 0.1+  | 0.1-  | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2000 11 01 | 704 | 0.0  | 0.2- | 2000 11 30 | 645 | 0.1+  | 0.1-  | 2007 12 04 | 691 | 0.3+ | 1.2- |
| 2000 11 03 | 704 | 0.1- | 0.2- | 2002 03 23 | 704 | (1.7- | 1.4-) | 2007 12 05 | 704 | 0.9- | 0.0  |
| 2000 11 03 | 704 | 0.2- | 0.7+ | 2002 03 23 | 704 | 0.4-  | 1.3-  | 2007 12 05 | 704 | 0.3+ | 0.3+ |
| 2000 11 03 | 704 | 0.2+ | 0.9+ | 2002 03 23 | 704 | 0.2-  | 0.4+  | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2000 11 03 | 704 | 0.3- | 0.6+ | 2003 07 06 | 691 | 0.1+  | 0.2+  | 2007 12 15 | 691 | 0.3+ | 0.1- |
| 2000 11 03 | 704 | 0.2- | 0.6+ | 2003 07 06 | 691 | 0.1+  | 0.1+  | 2007 12 15 | 691 | 0.2- | 0.3+ |
| 2000 11 20 | 704 | 1.0+ | 0.3+ | 2003 07 06 | 691 | 0.0   | 0.0   | 2007 12 15 | 691 | 0.0  | 0.3+ |
| 2000 11 20 | 704 | 0.2- | 0.0  | 2003 07 24 | 644 | 0.3-  | 0.2+  |            |     |      |      |

2007 DEC. 24

M.P.O. 129137

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |      |                |       |       |  |  |
|-----------------------------------------|------------|----------|----------------|-------------|------|----------------|-------|-------|--|--|
| $M$                                     | 29.47530   | (2000.0) |                | <b>P</b>    |      | <b>Q</b>       |       |       |  |  |
| $n$                                     | 0.29965940 | $\omega$ | 124.85422      | +0.60680234 |      | -0.78946680    |       |       |  |  |
| $a$                                     | 2.2116553  | $\Omega$ | 287.52138      | +0.69398715 |      | +0.58286996    |       |       |  |  |
| $e$                                     | 0.0894983  | $i$      | 5.55891        | +0.38752129 |      | +0.19236629    |       |       |  |  |
| $P$                                     | 3.29       | $H$      | 16.5           | $G$         | 0.15 | $U$            | 1     |       |  |  |
| Residuals in seconds of arc             |            |          |                |             |      |                |       |       |  |  |
| 2000 09 22 699                          | 0.4+       | 0.9+     | 2003 08 05 704 | 0.4+        | 0.7+ | 2003 09 27 704 | 0.7+  | 0.2+  |  |  |
| 2000 09 22 699                          | 0.6+       | 0.4+     | 2003 08 05 704 | 0.2-        | 0.8+ | 2003 09 27 704 | 0.5+  | 0.2+  |  |  |
| 2000 09 22 699                          | 0.1+       | 0.2-     | 2003 08 05 704 | 0.2+        | 0.0  | 2003 09 29 691 | 0.1-  | 0.3-  |  |  |
| 2000 09 22 699                          | 0.5-       | 1.8+     | 2003 08 05 704 | 0.2-        | 0.4+ | 2003 09 29 691 | 0.0   | 0.2-  |  |  |
| 2000 10 02 704                          | 0.8-       | 0.2+     | 2003 08 22 644 | 0.3-        | 0.0  | 2003 09 29 691 | 0.0   | 0.2-  |  |  |
| 2000 10 02 704                          | 0.6-       | 1.2+     | 2003 08 22 644 | 0.0         | 0.2- | 2005 03 10 699 | (1.5+ | 2.1+) |  |  |
| 2000 10 02 704                          | 0.9-       | 0.0      | 2003 08 22 644 | 0.2+        | 0.1+ | 2005 03 10 699 | 1.2+  | 0.4-  |  |  |
| 2000 10 02 704                          | 0.5-       | 0.3-     | 2003 08 28 704 | 0.1-        | 1.3- | 2005 03 10 699 | (1.5+ | 1.5+) |  |  |
| 2000 10 02 704                          | 0.8-       | 0.0      | 2003 08 28 704 | 0.4-        | 1.1- | 2005 03 10 703 | 0.2-  | 0.1-  |  |  |
| 2000 10 25 704                          | 0.5+       | 1.0+     | 2003 08 28 704 | 1.4+        | 0.2- | 2005 03 10 703 | 0.1-  | 0.2+  |  |  |
| 2000 10 25 704                          | 0.7-       | 0.1-     | 2003 09 16 699 | 0.6+        | 0.4- | 2005 03 10 703 | 0.5+  | 1.4+  |  |  |
| 2000 10 25 704                          | 0.6+       | 0.5+     | 2003 09 16 699 | 1.2+        | 1.5- | 2005 03 10 699 | 0.8+  | 0.6+  |  |  |
| 2000 10 25 704                          | 0.1-       | 0.3+     | 2003 09 16 699 | 0.1-        | 0.5+ | 2005 03 10 703 | 0.0   | 0.2-  |  |  |
| 2000 10 25 704                          | 0.4+       | 0.8+     | 2003 09 16 699 | 0.8-        | 0.1- | 2005 03 17 703 | 0.7-  | 0.5+  |  |  |
| 2000 11 01 704                          | 0.1+       | 1.5-     | 2003 09 18 644 | 0.2-        | 0.3+ | 2005 03 17 703 | 0.4-  | 0.6+  |  |  |
| 2000 11 01 704                          | 0.9+       | 1.1-     | 2003 09 18 644 | 0.3-        | 0.4+ | 2005 03 17 703 | 1.1-  | 0.5+  |  |  |
| 2000 11 01 704                          | 0.4+       | 0.1+     | 2003 09 18 644 | 0.3-        | 0.4+ | 2005 03 17 703 | 0.8-  | 0.2+  |  |  |
| 2000 11 01 704                          | 0.3+       | 0.6-     | 2003 09 19 691 | 0.2-        | 0.1+ | 2006 06 22 G96 | 0.3-  | 0.0   |  |  |
| 2000 11 01 704                          | 0.1-       | 0.2-     | 2003 09 19 691 | 0.2-        | 0.1+ | 2006 06 22 G96 | 0.0   | 0.1+  |  |  |
| 2000 11 19 704                          | 0.2-       | 0.9-     | 2003 09 19 691 | 0.2-        | 0.2+ | 2006 06 22 G96 | 0.0   | 0.3-  |  |  |
| 2000 11 19 704                          | 0.4+       | 0.5-     | 2003 09 23 644 | 0.3-        | 0.2+ | 2006 06 22 G96 | 0.1-  | 0.4-  |  |  |
| 2000 11 19 704                          | 0.0        | 0.0      | 2003 09 23 644 | 0.2-        | 0.2+ | 2007 11 21 G96 | 0.2+  | 0.2-  |  |  |
| 2000 11 19 704                          | 0.0        | 0.5-     | 2003 09 23 644 | 0.3-        | 0.2+ | 2007 11 21 G96 | (1.6+ | 0.1-) |  |  |
| 2000 11 19 704                          | 0.0        | 0.2-     | 2003 09 27 699 | 0.5-        | 0.5- | 2007 11 21 G96 | 0.5+  | 0.1+  |  |  |
| 2002 04 09 704                          | 0.6+       | 0.8-     | 2003 09 27 704 | 0.2+        | 0.2- | 2007 11 21 G96 | 0.3+  | 0.6+  |  |  |
| 2002 04 09 704                          | 0.4+       | 1.0-     | 2003 09 27 699 | 0.4-        | 1.0+ | 2007 12 06 G96 | 0.2+  | 0.6-  |  |  |
| 2002 04 09 704                          | (1.7+      | 0.5-)    | 2003 09 27 704 | 0.5+        | 0.1+ | 2007 12 06 G96 | 0.2+  | 0.8-  |  |  |
| 2003 07 04 691                          | 0.0        | 0.3+     | 2003 09 27 699 | 0.8+        | 0.1+ | 2007 12 06 G96 | 0.3-  | 0.2-  |  |  |
| 2003 07 04 691                          | 0.1-       | 0.1+     | 2003 09 27 704 | 0.6+        | 0.4- | 2007 12 06 G96 | 0.2-  | 0.1-  |  |  |
| 2003 07 04 691                          | 0.1+       | 0.2-     | 2003 09 27 699 | 0.2+        | 0.3- |                |       |       |  |  |

(171718)\* 2000 UQ<sub>69</sub>

Discovered 2000 Oct. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |                |             |       |                |      |      |
|-----------------------------------------|------------|----------|----------------|-------------|-------|----------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                | MPC         |       |                |      |      |
| $M$                                     | 46.95368   | (2000.0) |                | <b>P</b>    |       | <b>Q</b>       |      |      |
| $n$                                     | 0.29517325 | $\omega$ | 118.60215      | +0.92274242 |       | -0.38114416    |      |      |
| $a$                                     | 2.2340080  | $\Omega$ | 263.85134      | +0.33045691 |       | +0.85881120    |      |      |
| $e$                                     | 0.1237301  | $i$      | 3.29998        | +0.19835488 |       | +0.34230461    |      |      |
| $P$                                     | 3.34       | $H$      | 16.4           | $G$         | 0.15  | $U$            | 1    |      |
| Residuals in seconds of arc             |            |          |                |             |       |                |      |      |
| 2000 08 04 608                          | (2.4+      | 0.5+)    | 2003 07 24 644 | 0.6-        | 0.2+  | 2005 03 03 703 | 0.5- | 0.1+ |
| 2000 08 04 608                          | 1.6+       | 0.3+     | 2003 07 24 644 | 0.5-        | 0.2+  | 2005 03 03 703 | 0.2- | 0.6+ |
| 2000 08 04 608                          | (2.0+      | 0.2-)    | 2003 08 01 608 | 0.7-        | 1.2-  | 2005 03 03 703 | 0.8- | 0.1+ |
| 2000 09 09 699                          | 1.2-       | 0.2-     | 2003 08 01 608 | 0.6-        | 1.0-  | 2005 03 03 703 | 0.3+ | 0.1- |
| 2000 09 09 699                          | 0.7+       | 1.3+     | 2003 08 01 608 | 1.0-        | 0.2-  | 2005 03 10 703 | 0.7- | 0.6- |
| 2000 09 09 699                          | 0.3-       | 0.1-     | 2003 08 05 704 | 0.4-        | 0.6+  | 2005 03 10 703 | 0.1- | 0.1+ |
| 2000 09 09 699                          | 0.8-       | 1.0+     | 2003 08 05 704 | 0.4-        | 0.5+  | 2005 03 10 703 | 0.4+ | 0.2+ |
| 2000 10 25 704                          | 0.9-       | 0.4+     | 2003 08 05 704 | (0.8-       | 1.6+) | 2005 03 10 703 | 1.3+ | 0.1- |
| 2000 10 25 704                          | 0.4-       | 0.0      | 2003 08 09 106 | 0.5-        | 0.8+  | 2005 03 13 G96 | 0.2- | 0.2+ |
| 2000 10 25 704                          | 0.5-       | 0.1-     | 2003 08 09 106 | 0.5-        | 0.6+  | 2005 03 13 G96 | 0.1- | 0.0  |
| 2000 10 25 704                          | 0.1+       | 0.1-     | 2003 08 09 106 | 0.5+        | 0.2+  | 2005 03 13 G96 | 0.2- | 0.0  |
| 2000 10 25 704                          | 0.5+       | 0.2+     | 2003 08 24 704 | 0.5-        | 0.9+  | 2005 03 13 G96 | 0.0  | 0.1+ |
| 2000 11 01 704                          | 0.2-       | 0.1+     | 2003 08 24 704 | 0.1+        | 0.0   | 2005 03 17 G96 | 0.1- | 0.3+ |
| 2000 11 01 704                          | 0.2+       | 0.2+     | 2003 08 24 704 | 0.8+        | 0.5+  | 2005 03 17 G96 | 0.1- | 0.3+ |
| 2000 11 01 704                          | 0.1+       | 0.3+     | 2003 08 24 704 | 0.1-        | 0.3-  | 2005 03 17 G96 | 0.2- | 0.2+ |
| 2000 11 01 704                          | 0.9+       | 0.6-     | 2003 08 24 704 | 0.8-        | 0.5-  | 2005 03 17 G96 | 0.2- | 0.2+ |

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2000 11 01 704 | 0.1- | 0.3+ | 2003 08 28 608 | 0.6- | 0.6+ | 2005 03 17 703 | 0.2-  | 0.3+  |
| 2000 11 03 704 | 0.7- | 0.3- | 2003 08 28 608 | 0.3- | 0.0  | 2005 03 17 703 | (0.5+ | 1.8+) |
| 2000 11 03 704 | 0.6+ | 0.6+ | 2003 08 28 608 | 0.6- | 0.1+ | 2005 03 17 703 | (0.2+ | 2.4+) |
| 2000 11 03 704 | 0.6- | 0.1- | 2003 09 01 704 | 0.2- | 0.3- | 2005 03 17 703 | 0.7+  | 0.4+  |
| 2000 11 03 704 | 0.6- | 0.1- | 2003 09 01 704 | 0.3- | 0.0  | 2007 11 05 G96 | 0.2+  | 0.5-  |
| 2000 11 03 704 | 0.4- | 0.1+ | 2003 09 01 704 | 0.4- | 0.1+ | 2007 11 05 G96 | 0.2+  | 0.2-  |
| 2000 11 18 699 | 1.1- | 0.4+ | 2003 09 01 704 | 0.8+ | 0.8+ | 2007 11 05 G96 | 0.1+  | 0.4-  |
| 2000 11 18 699 | 1.4+ | 0.1- | 2003 09 01 704 | 0.8- | 0.3+ | 2007 11 05 G96 | 0.0   | 0.1-  |
| 2000 11 18 699 | 1.6+ | 0.8- | 2003 09 15 699 | 1.4+ | 0.2+ | 2007 12 04 G96 | 0.4+  | 0.2-  |
| 2000 11 18 699 | 0.8+ | 0.1+ | 2003 09 15 699 | 0.6+ | 0.9- | 2007 12 04 G96 | 0.1+  | 0.1-  |
| 2000 11 20 704 | 0.1- | 0.0  | 2003 09 15 699 | 0.5+ | 0.4- | 2007 12 04 G96 | 0.3+  | 0.1-  |
| 2000 11 20 704 | 0.2- | 0.1- | 2003 09 15 699 | 0.0  | 0.1+ | 2007 12 04 G96 | 0.2+  | 0.3-  |
| 2000 11 20 704 | 0.1- | 0.2- | 2003 09 22 699 | 0.7- | 0.2+ | 2007 12 04 691 | 0.2-  | 0.0   |
| 2000 11 20 704 | 0.0  | 0.3+ | 2003 09 22 699 | 0.8- | 0.4+ | 2007 12 04 691 | 0.2-  | 0.0   |
| 2000 11 20 704 | 0.3- | 0.1+ | 2003 09 22 699 | 0.7- | 0.6- | 2007 12 04 691 | 0.2-  | 0.1+  |
| 2000 11 27 704 | 0.7- | 0.6- | 2003 09 22 699 | 0.5- | 0.7- | 2007 12 05 704 | 0.5+  | 0.7+  |
| 2000 11 27 704 | 0.5- | 0.5+ | 2003 09 24 644 | 0.6- | 0.2+ | 2007 12 05 704 | 0.5+  | 0.1+  |
| 2000 11 27 704 | 0.8+ | 0.3- | 2003 09 24 644 | 0.7- | 0.2+ | 2007 12 05 704 | 0.7+  | 0.2-  |
| 2002 04 04 644 | 0.6+ | 0.6+ | 2003 09 24 644 | 0.5- | 0.0  | 2007 12 05 704 | 0.9+  | 0.5-  |
| 2002 04 04 644 | 0.9+ | 0.5+ | 2003 10 02 291 | 0.9+ | 0.1+ | 2007 12 16 691 | 0.2+  | 0.2+  |
| 2002 04 04 644 | 0.7+ | 0.5+ | 2003 10 02 291 | 0.8+ | 0.0  | 2007 12 16 691 | 0.3-  | 0.1+  |
| 2003 07 24 644 | 0.6- | 0.1+ | 2003 10 02 291 | 0.9+ | 0.0  | 2007 12 16 691 | 0.2-  | 0.1+  |

(171719)\* 2000 UN<sub>85</sub>

Discovered 2000 Oct. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |      | MPC         |          |             |          |      |      |
|-----------------------------------------|------------|----------|-----------|------------|------|-------------|----------|-------------|----------|------|------|
| <i>M</i> 43.52479                       |            |          | (2000.0)  |            |      | <b>P</b>    |          |             | <b>Q</b> |      |      |
| <i>n</i>                                | 0.28659755 | $\omega$ | 227.79030 |            |      | +0.97328079 |          | +0.22448947 |          |      |      |
| <i>a</i>                                | 2.2783533  | $\Omega$ | 119.18410 |            |      | -0.19100840 |          | +0.90818758 |          |      |      |
| <i>e</i>                                | 0.2405897  | <i>i</i> | 3.16872   |            |      | -0.12743742 |          | +0.35327014 |          |      |      |
| <i>P</i>                                | 3.44       | <i>H</i> | 17.1      | <i>G</i>   | 0.15 |             | <i>U</i> | 1           |          |      |      |
| Residuals in seconds of arc             |            |          |           |            |      |             |          |             |          |      |      |
| 2000 09 30                              | 699        | 0.6-     | 0.9+      | 2004 12 18 | G96  | 0.1+        | 0.9-     | 2007 11 03  | 691      | 0.1- | 0.1+ |
| 2000 09 30                              | 699        | 0.1+     | 0.0       | 2004 12 18 | G96  | 0.1-        | 0.4-     | 2007 11 04  | 704      | 0.1+ | 0.9+ |
| 2000 09 30                              | 699        | 1.3-     | 0.7+      | 2004 12 19 | G96  | 0.2+        | 0.6-     | 2007 11 04  | 704      | 1.0- | 0.4- |
| 2000 09 30                              | 699        | 0.8-     | 0.2-      | 2004 12 19 | G96  | 0.3-        | 0.2+     | 2007 11 04  | 704      | 0.5- | 1.1- |
| 2000 10 02                              | 704        | 0.3+     | 0.1-      | 2004 12 19 | G96  | 0.2-        | 0.5-     | 2007 11 04  | 704      | 0.4- | 0.0  |
| 2000 10 02                              | 704        | 0.0      | 0.1-      | 2004 12 19 | G96  | 0.8-        | 0.3-     | 2007 11 04  | 704      | 0.3+ | 0.6- |
| 2000 10 02                              | 704        | 0.6-     | 0.6+      | 2005 01 15 | 691  | 0.0         | 0.1+     | 2007 11 07  | 691      | 0.0  | 0.0  |
| 2000 10 02                              | 704        | 0.2+     | 0.7+      | 2005 01 15 | 691  | 0.2+        | 0.2+     | 2007 11 07  | 691      | 0.0  | 0.1+ |
| 2000 10 02                              | 704        | 0.1-     | 0.6+      | 2005 01 15 | 691  | 0.3+        | 0.1+     | 2007 11 07  | 691      | 0.0  | 0.2+ |
| 2000 10 31                              | 704        | 1.1+     | 0.1-      | 2006 04 02 | 691  | 0.3+        | 0.2+     | 2007 11 08  | 691      | 0.1- | 0.0  |
| 2000 10 31                              | 704        | 0.1-     | 0.3-      | 2006 04 02 | 691  | 0.1+        | 0.2-     | 2007 11 08  | 691      | 0.0  | 0.1+ |
| 2000 10 31                              | 704        | 0.4-     | 0.1+      | 2006 04 02 | 691  | 0.1+        | 0.2+     | 2007 11 08  | 691      | 0.2- | 0.0  |
| 2000 10 31                              | 704        | 0.5+     | 0.1+      | 2006 04 02 | G96  | 0.1-        | 0.4+     | 2007 11 20  | G96      | 0.2+ | 0.2- |
| 2000 10 31                              | 704        | 0.6-     | 0.1-      | 2006 04 02 | G96  | 0.5-        | 0.3+     | 2007 11 20  | G96      | 0.2+ | 0.3- |
| 2000 11 02                              | 704        | 0.0      | 0.3-      | 2006 04 02 | G96  | 0.0         | 0.7+     | 2007 11 20  | G96      | 0.2+ | 0.2- |
| 2000 11 02                              | 704        | 0.5-     | 0.4+      | 2006 04 02 | G96  | 0.4-        | 0.7+     | 2007 11 20  | G96      | 0.5+ | 0.2- |
| 2000 11 02                              | 704        | 0.9+     | 0.4+      | 2006 04 07 | 691  | 0.0         | 0.4+     | 2007 12 04  | 704      | 0.4+ | 0.1- |
| 2000 11 02                              | 704        | 0.5+     | 0.2-      | 2006 04 07 | 691  | 0.2+        | 0.1+     | 2007 12 04  | 704      | 0.4+ | 0.6+ |
| 2000 11 02                              | 704        | 0.0      | 0.1+      | 2006 04 07 | 691  | 0.0         | 0.4+     | 2007 12 04  | 704      | 0.2- | 0.3+ |
| 2004 12 18                              | G96        | 0.3-     | 0.4-      | 2007 11 03 | 691  | 0.1+        | 0.2+     | 2007 12 04  | 704      | 0.4+ | 0.8- |
| 2004 12 18                              | G96        | 0.4-     | 0.2+      | 2007 11 03 | 691  | 0.1+        | 0.4+     |             |          |      |      |

|                                         |            |                    |                |             |
|-----------------------------------------|------------|--------------------|----------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    | MPC            |             |
| <i>M</i>                                | 61.95459   | (2000.0)           | <b>P</b>       | <b>Q</b>    |
| <i>n</i>                                | 0.29249095 | $\omega$ 114.68989 | +0.96475461    | +0.25146435 |
| <i>a</i>                                | 2.2476452  | $\Omega$ 230.84205 | -0.26273101    | +0.90379029 |
| <i>e</i>                                | 0.1415754  | <i>i</i> 5.73995   | -0.01486443    | +0.34630735 |
| <i>P</i>                                | 3.37       | <i>H</i> 16.7      | <i>G</i> 0.15  | <i>U</i> 1  |
| Residuals in seconds of arc             |            |                    |                |             |
| 2000 09 22 699                          | 0.6-       | 0.2-               | 2003 07 01 704 | 0.5- 0.0    |
| 2000 09 22 699                          | 0.9-       | 1.0-               | 2003 07 25 644 | 0.3- 0.0    |
| 2000 09 22 699                          | 0.3-       | 0.1+               | 2003 07 25 644 | 0.1- 0.0    |
| 2000 09 22 699                          | 0.3-       | 0.6+               | 2003 07 25 644 | 0.2- 0.1-   |
| 2000 10 25 704                          | 0.3+       | 0.2+               | 2003 07 26 704 | 0.1+ 0.0    |
| 2000 10 25 704                          | 0.4-       | 1.2-               | 2003 07 26 704 | 0.7+ 0.5-   |
| 2000 10 25 704                          | 0.5+       | 0.2-               | 2003 07 26 704 | 0.8- 0.2-   |
| 2000 10 25 704                          | 1.1+       | 0.0                | 2003 11 20 691 | 1.3+ 0.1+   |
| 2000 11 03 704                          | 0.4-       | 1.2-               | 2003 11 20 691 | 0.5- 0.3-   |
| 2000 11 03 704                          | 0.1-       | 0.8-               | 2003 11 20 691 | 0.2- 0.2-   |
| 2000 11 03 704                          | 0.8+       | 0.2-               | 2006 04 20 G96 | 0.1+ 0.3-   |
| 2000 11 03 704                          | 0.7-       | 0.7+               | 2006 04 20 G96 | 0.5- 0.3+   |
| 2000 11 03 704                          | 0.9+       | 0.3+               | 2006 04 20 G96 | 0.0 0.3+    |
| 2000 11 20 699                          | 0.1-       | 1.0-               | 2006 04 20 G96 | 0.1+ 0.1+   |
| 2000 11 20 699                          | 0.8+       | 0.5+               | 2006 05 19 G96 | 0.2- 0.3-   |
| 2000 11 20 699                          | 0.2+       | 1.1+               | 2006 05 19 G96 | 0.3- 0.5-   |
| 2000 11 20 699                          | 0.6-       | 0.3+               | 2006 05 19 G96 | 0.7- 0.3-   |
| 2003 06 05 691                          | 0.5-       | 0.0                | 2006 05 19 G96 | 0.4- 0.3-   |
| 2003 06 05 691                          | 0.0        | 0.4+               | 2006 05 20 691 | 0.1- 0.1-   |
| 2003 06 05 691                          | 0.0        | 0.1+               | 2006 05 20 691 | 0.2- 0.1-   |
| 2003 07 01 704                          | 0.2-       | 1.0+               | 2006 05 20 691 | 0.2- 0.1-   |
| 2003 07 01 704                          | 0.5+       | 0.3+               | 2006 05 20 E12 | 0.2+ 0.2+   |
| 2003 07 01 704                          | 0.4+       | 1.3+               | 2006 05 20 E12 | 0.4- 0.5+   |

**(171721)\* 2000 UW<sub>93</sub> = 2003 MH<sub>11</sub>**

Discovered 2000 Oct. 25 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 49836)

|                                         |            |                    |               |             |
|-----------------------------------------|------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    | MPC           |             |
| <i>M</i>                                | 88.33526   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.29756545 | $\omega$ 68.47240  | +0.90078072   | +0.42054281 |
| <i>a</i>                                | 2.2220187  | $\Omega$ 266.52200 | -0.42768334   | +0.81576081 |
| <i>e</i>                                | 0.1736761  | <i>i</i> 6.23123   | -0.07537277   | +0.39708695 |
| <i>P</i>                                | 3.31       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |             |      |
|----------------|------|------|----------------|------|------|----------------|-------------|------|
| 2000 10 25 704 | 0.2- | 0.2- | 2003 07 23 644 | 0.4- | 0.3- | 2003 10 19 699 | 1.1+        | 0.3- |
| 2000 10 25 704 | 0.2- | 0.3+ | 2003 07 23 644 | 0.3- | 0.3- | 2003 10 19 699 | 0.5+        | 0.2+ |
| 2000 10 25 704 | 0.0  | 0.6+ | 2003 08 01 704 | 0.3+ | 0.1+ | 2003 10 19 699 | 1.4-        | 0.9+ |
| 2000 10 25 704 | 0.2+ | 0.0  | 2003 08 01 704 | 0.3- | 0.2- | 2005 02 02 703 | 0.5-        | 1.3- |
| 2000 10 25 704 | 0.6+ | 0.6+ | 2003 08 01 704 | 0.1+ | 0.3+ | 2005 02 02 703 | 0.7+        | 0.3- |
| 2000 11 03 704 | 0.3+ | 0.5- | 2003 08 01 704 | 0.1+ | 0.2+ | 2005 02 02 703 | (3.3- 1.4-) |      |
| 2000 11 03 704 | 0.0  | 0.6+ | 2003 08 01 704 | 0.1- | 0.0  | 2005 02 02 703 | (2.0- 0.0)  |      |
| 2000 11 03 704 | 0.4- | 0.1- | 2003 08 15 608 | 0.8+ | 0.4+ | 2006 06 07 E12 | 0.4-        | 1.2- |
| 2000 11 03 704 | 0.4- | 1.1+ | 2003 08 15 608 | 0.6+ | 0.3- | 2006 06 07 E12 | 0.2-        | 0.6+ |
| 2000 11 03 704 | 0.7+ | 0.8+ | 2003 08 15 608 | 0.6+ | 0.0  | 2006 06 07 E12 | (2.1- 0.4-) |      |
| 2000 11 05 704 | 0.3- | 0.6- | 2003 08 23 106 | 0.5+ | 0.5- | 2006 06 07 E12 | 0.6-        | 0.1+ |
| 2000 11 05 704 | 0.7+ | 0.2+ | 2003 08 23 106 | 0.2- | 0.4- | 2006 07 05 E12 | (1.0- 1.6-) |      |
| 2000 11 05 704 | 0.1- | 0.4+ | 2003 08 23 106 | 0.3- | 0.2- | 2006 07 05 E12 | 0.1+        | 0.2+ |
| 2000 11 05 704 | 0.0  | 0.2+ | 2003 08 25 704 | 0.8+ | 1.3- | 2006 07 05 E12 | 0.4+        | 0.9+ |
| 2000 11 05 704 | 0.0  | 0.3+ | 2003 08 25 704 | 0.7- | 0.3- | 2006 07 05 E12 | 0.1-        | 0.2- |
| 2000 11 18 699 | 0.4- | 0.5- | 2003 08 25 704 | 0.0  | 0.8- | 2007 11 19 G96 | 0.2+        | 0.1- |
| 2000 11 18 699 | 0.5+ | 0.5- | 2003 09 16 699 | 0.1+ | 0.3- | 2007 11 19 G96 | 0.4+        | 0.2+ |
| 2000 11 18 699 | 0.0  | 0.2- | 2003 09 16 699 | 0.0  | 0.2+ | 2007 11 19 G96 | 0.4+        | 0.2+ |
| 2000 11 18 699 | 0.2+ | 0.1+ | 2003 09 16 699 | 0.1- | 0.3+ | 2007 11 19 G96 | 0.2+        | 0.1+ |
| 2000 11 20 704 | 0.7- | 0.3+ | 2003 09 16 699 | 0.2+ | 0.3- | 2007 12 04 G96 | 0.3+        | 0.0  |
| 2000 11 20 704 | 0.2- | 0.5- | 2003 09 18 644 | 0.1- | 0.0  | 2007 12 04 691 | 0.1-        | 0.0  |

|                |      |      |                |             |      |                |      |      |
|----------------|------|------|----------------|-------------|------|----------------|------|------|
| 2000 11 20 704 | 0.8- | 0.1- | 2003 09 18 644 | 0.0         | 0.1- | 2007 12 04 G96 | 0.1+ | 0.1- |
| 2000 11 20 704 | 0.2- | 0.7+ | 2003 09 18 644 | 0.0         | 0.2- | 2007 12 04 G96 | 0.5+ | 0.1- |
| 2000 11 20 704 | 1.2- | 0.7+ | 2003 09 23 644 | 0.2-        | 0.1- | 2007 12 04 G96 | 0.4+ | 0.2- |
| 2003 06 26 704 | 1.5+ | 1.4+ | 2003 09 23 644 | 0.2-        | 0.2- | 2007 12 04 691 | 0.0  | 0.0  |
| 2003 06 26 704 | 0.1+ | 0.9+ | 2003 09 23 644 | 0.2-        | 0.3- | 2007 12 04 691 | 1.1- | 0.1- |
| 2003 06 26 704 | 0.6+ | 0.3+ | 2003 09 30 704 | 0.0         | 0.4- | 2007 12 05 704 | 0.9+ | 0.6- |
| 2003 06 26 704 | 0.3- | 0.9+ | 2003 09 30 704 | 1.0+        | 0.7+ | 2007 12 05 704 | 0.6+ | 0.6- |
| 2003 07 01 704 | 0.4- | 0.0  | 2003 09 30 704 | 0.0         | 0.6- | 2007 12 05 704 | 0.3- | 1.5- |
| 2003 07 01 704 | 1.3- | 0.5- | 2003 09 30 704 | (0.2- 1.6-) |      | 2007 12 05 704 | 0.2+ | 0.1- |
| 2003 07 01 704 | 0.2- | 0.1- | 2003 09 30 704 | 0.8+        | 0.8- |                |      |      |
| 2003 07 23 644 | 0.3- | 0.3- | 2003 10 19 699 | (2.2- 0.4+) |      |                |      |      |

**(171722)\* 2000 UH<sub>109</sub> = 2002 GZ<sub>160</sub>**

Discovered 2000 Oct. 31 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 31346)

|                                         |            |                    |               |             |
|-----------------------------------------|------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    | MPC           |             |
| <i>M</i>                                | 4.89045    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.28719996 | $\omega$ 325.46475 | +0.52667894   | -0.83713412 |
| <i>a</i>                                | 2.2751662  | $\Omega$ 92.33351  | +0.80945458   | +0.44082718 |
| <i>e</i>                                | 0.1168430  | <i>i</i> 8.50085   | +0.25960080   | +0.32384851 |
| <i>P</i>                                | 3.43       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |             |      |                |             |      |
|----------------|------|------|----------------|-------------|------|----------------|-------------|------|
| 2000 10 31 704 | 1.3+ | 0.0  | 2002 04 15 843 | 0.6+        | 0.1+ | 2005 03 09 703 | 0.3-        | 0.2- |
| 2000 10 31 704 | 0.3- | 0.4+ | 2002 04 16 704 | 0.3+        | 0.7+ | 2005 03 09 703 | 0.4-        | 0.1- |
| 2000 10 31 704 | 0.4+ | 1.4+ | 2002 04 16 704 | 0.5+        | 0.6+ | 2007 11 08 691 | 0.2-        | 0.0  |
| 2000 11 03 704 | 0.5- | 0.7- | 2002 04 16 704 | 1.3+        | 0.3+ | 2007 11 08 691 | 0.0         | 0.3- |
| 2000 11 03 704 | 0.3- | 0.0  | 2003 08 24 843 | 1.5-        | 0.3- | 2007 11 08 691 | 0.4-        | 0.4+ |
| 2000 11 03 704 | 0.7+ | 0.8- | 2003 08 24 843 | (1.2- 1.8+) |      | 2007 11 12 704 | 1.1+        | 0.0  |
| 2000 11 03 704 | 0.1+ | 0.7+ | 2003 08 24 843 | 1.4-        | 0.6- | 2007 11 12 704 | 0.3+        | 0.2+ |
| 2000 11 03 704 | 0.0  | 1.5+ | 2003 09 19 644 | 0.5+        | 0.0  | 2007 11 12 704 | 0.1-        | 0.1- |
| 2000 11 03 704 | 0.5- | 0.1+ | 2003 09 19 644 | 0.9+        | 0.2+ | 2007 11 12 704 | 0.4+        | 0.3+ |
| 2000 11 20 704 | 0.1- | 0.2+ | 2003 09 19 644 | 0.7+        | 0.3+ | 2007 11 12 704 | 0.9+        | 0.4+ |
| 2000 11 20 704 | 0.7- | 0.6+ | 2005 03 02 703 | 0.8-        | 0.3- | 2007 12 04 704 | (1.8+ 1.0+) |      |
| 2000 11 20 704 | 0.5- | 1.1- | 2005 03 02 703 | (2.9+ 0.4-) |      | 2007 12 04 704 | 0.0         | 0.2- |
| 2002 04 10 704 | 0.5+ | 0.8+ | 2005 03 02 703 | 0.2-        | 0.7+ | 2007 12 04 704 | 0.7+        | 0.1+ |
| 2002 04 10 704 | 0.8+ | 0.4+ | 2005 03 02 703 | 0.1+        | 0.4- | 2007 12 15 691 | 0.3-        | 0.1+ |
| 2002 04 10 704 | 0.3- | 0.5- | 2005 03 09 703 | 0.0         | 0.1- | 2007 12 15 691 | 0.3+        | 0.3- |
| 2002 04 15 843 | 0.3- | 0.2+ | 2005 03 09 703 | 0.7-        | 0.2- | 2007 12 15 691 | 0.0         | 0.1+ |

**(171723)\* 2000 VG<sub>13</sub>**

Discovered 2000 Nov. 1 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

|                                         |            |                   |               |             |
|-----------------------------------------|------------|-------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                   | MPC           |             |
| <i>M</i>                                | 354.19210  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.28944935 | $\omega$ 18.18249 | +0.16215677   | -0.97907514 |
| <i>a</i>                                | 2.2633636  | $\Omega$ 62.64032 | +0.88728784   | +0.09015287 |
| <i>e</i>                                | 0.2041611  | <i>i</i> 7.95742  | +0.43177017   | +0.18243992 |
| <i>P</i>                                | 3.41       | <i>H</i> 16.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |             |      |
|----------------|------|------|----------------|------|------|----------------|-------------|------|
| 1990 12 11 691 | 0.4+ | 0.3- | 2000 11 27 704 | 0.9- | 0.3- | 2007 10 11 704 | 1.2+        | 0.0  |
| 1990 12 11 691 | 0.2+ | 0.4- | 2000 11 27 704 | 1.5- | 0.0  | 2007 10 11 704 | 0.7+        | 0.5+ |
| 1990 12 11 691 | 0.7- | 0.4- | 2000 12 04 691 | 0.4+ | 0.5- | 2007 10 11 704 | 0.4+        | 0.5+ |
| 2000 09 25 699 | 0.7- | 1.1+ | 2000 12 04 691 | 0.4+ | 0.4- | 2007 10 23 704 | 0.0         | 0.7+ |
| 2000 09 25 699 | 1.3- | 0.1+ | 2000 12 04 691 | 0.5+ | 0.3- | 2007 10 23 704 | 1.1-        | 0.8+ |
| 2000 09 25 699 | 0.6- | 0.2- | 2000 12 30 704 | 0.4+ | 0.3+ | 2007 10 23 704 | 0.3-        | 0.8+ |
| 2000 09 25 699 | 0.9- | 0.1- | 2000 12 30 704 | 0.6- | 0.1- | 2007 10 23 704 | 0.9-        | 0.4+ |
| 2000 10 24 704 | 0.8- | 0.4+ | 2000 12 30 704 | 0.7+ | 0.7- | 2007 11 18 704 | 0.3+        | 0.2+ |
| 2000 10 24 704 | 0.6+ | 0.6- | 2000 12 30 704 | 1.5- | 0.0  | 2007 11 18 704 | 0.6+        | 0.1- |
| 2000 10 24 704 | 0.5+ | 0.1+ | 2000 12 30 704 | 0.4- | 0.7+ | 2007 11 18 704 | 0.0         | 0.2+ |
| 2000 10 24 704 | 0.2+ | 0.2- | 2001 01 19 704 | 0.5+ | 0.2+ | 2007 11 18 704 | 0.6+        | 0.3+ |
| 2000 10 24 704 | 0.4+ | 0.4+ | 2001 01 19 704 | 0.3- | 0.2- | 2007 11 18 704 | 0.9+        | 0.3- |
| 2000 11 01 704 | 0.4- | 0.6+ | 2001 01 19 704 | 0.4+ | 0.2+ | 2007 11 20 704 | (0.3+ 2.1+) |      |



|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 01 | 704 | 0.2− | 0.3+ | 2001 01 19 | 704 | 0.0   | 1.1+  | 2007 11 20 | 704 | 0.9− | 0.5− |
| 2000 11 01 | 704 | 0.1+ | 0.0  | 2001 01 19 | 704 | 0.0   | 0.9+  | 2007 11 20 | 704 | 0.6+ | 0.2− |
| 2000 11 01 | 704 | 0.5+ | 0.2+ | 2002 05 17 | 644 | 0.1+  | 0.3+  | 2007 11 20 | 704 | 0.2+ | 0.4+ |
| 2000 11 01 | 704 | 0.6− | 0.5− | 2002 05 17 | 644 | 0.6+  | 0.5+  | 2007 11 20 | 704 | 0.3− | 0.3+ |
| 2000 11 02 | 704 | 0.2+ | 0.1+ | 2002 05 17 | 644 | 0.5+  | 0.4+  | 2007 12 05 | 699 | 0.3− | 0.1− |
| 2000 11 02 | 704 | 0.1− | 0.4+ | 2005 03 18 | 703 | 0.2−  | 0.0   | 2007 12 05 | 699 | 0.6− | 0.3− |
| 2000 11 02 | 704 | 0.4− | 0.1− | 2005 03 18 | 703 | 0.2+  | 1.0+  | 2007 12 05 | 699 | 0.2+ | 0.2− |
| 2000 11 02 | 704 | 0.2− | 0.1+ | 2005 03 18 | 703 | 0.5−  | 0.2+  | 2007 12 05 | 691 | 0.4− | 0.1− |
| 2000 11 02 | 704 | 0.7− | 0.2− | 2005 03 18 | 703 | 0.4−  | 1.1−  | 2007 12 05 | 699 | 0.0  | 0.4− |
| 2000 11 21 | 704 | 0.5− | 0.4+ | 2005 03 30 | 703 | 0.3−  | 0.7+  | 2007 12 05 | 691 | 0.4− | 0.1− |
| 2000 11 21 | 704 | 0.7− | 1.2− | 2005 03 30 | 703 | 0.6−  | 0.5−  | 2007 12 05 | 691 | 0.3− | 0.2− |
| 2000 11 21 | 704 | 0.0  | 0.5+ | 2005 03 30 | 703 | 0.3−  | 0.3−  | 2007 12 13 | 704 | 0.3+ | 0.3− |
| 2000 11 21 | 704 | 0.1+ | 0.4+ | 2005 03 30 | 703 | 0.3+  | 0.0   | 2007 12 13 | 704 | 0.8+ | 0.7+ |
| 2000 11 21 | 704 | 0.0  | 0.7+ | 2005 04 06 | 703 | 0.2−  | 0.3+  | 2007 12 13 | 704 | 0.2− | 0.3+ |
| 2000 11 27 | 704 | 0.3− | 0.3+ | 2005 04 06 | 703 | 0.1−  | 0.2+  | 2007 12 13 | 704 | 0.1+ | 0.1+ |
| 2000 11 27 | 704 | 0.1− | 0.3+ | 2005 04 06 | 703 | 0.1−  | 0.0   | 2007 12 13 | 704 | 0.3+ | 0.5+ |
| 2000 11 27 | 704 | 0.1+ | 0.9+ | 2005 04 06 | 703 | 0.0   | 0.9+  | 2007 12 16 | 704 | 0.5+ | 0.3+ |
| 2000 11 27 | 704 | 0.0  | 0.7+ | 2005 04 08 | 704 | 1.2+  | 1.2+  | 2007 12 16 | 704 | 0.5+ | 0.3+ |
| 2000 11 27 | 704 | 0.5+ | 0.6+ | 2005 04 08 | 704 | 1.1+  | 0.5+  | 2007 12 16 | 704 | 0.5+ | 0.0  |
| 2000 11 27 | 704 | 0.1− | 0.8+ | 2005 04 08 | 704 | 1.1+  | 0.6+  | 2007 12 16 | 704 | 0.3+ | 0.3+ |
| 2000 11 27 | 704 | 1.0+ | 0.6+ | 2007 10 11 | 704 | (2.3− | 0.9+) | 2007 12 16 | 704 | 0.2+ | 0.3+ |

(171724)\* 2000 WG = 1984 BK<sub>3</sub> = 2005 EY<sub>27</sub>

Discovered 2000 Nov. 16 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 74854), A. Doppler (*MPO* 107889)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 306.49195  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28445217 | $\omega$ | 288.38357 | −0.60566458 | −0.79568415 |
| $a$ | 2.2897947  | $\Omega$ | 198.89914 | +0.73858588 | −0.55861648 |
| $e$ | 0.1067102  | $i$      | 1.33733   | +0.29607654 | −0.23416738 |
| $P$ | 3.46       | $H$      | 17.5      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1984 01 25 | 675 | 2.0−  | 0.1+  | 2005 03 08 | 699 | 0.1−  | 1.1+  | 2005 04 01 | 699 | 0.7+  | 0.6+  |
| 1984 01 26 | 675 | 1.2−  | 0.8+  | 2005 03 08 | 704 | 0.6+  | 0.4+  | 2005 04 10 | 691 | 0.0   | 0.5+  |
| 2000 11 16 | 691 | 0.7+  | 0.3−  | 2005 03 08 | 699 | 0.4−  | 0.2+  | 2005 04 10 | 691 | 0.2+  | 0.3+  |
| 2000 11 16 | 691 | 0.5+  | 0.0   | 2005 03 08 | 704 | 0.5+  | 0.2−  | 2005 04 10 | 691 | 0.1+  | 0.2+  |
| 2000 11 16 | 691 | 0.3+  | 0.0   | 2005 03 08 | 704 | 0.6+  | 0.8+  | 2005 05 13 | G96 | 0.1−  | 0.5+  |
| 2000 11 17 | 691 | 0.8+  | 0.5−  | 2005 03 08 | 699 | 0.1+  | 0.7+  | 2005 05 13 | G96 | 0.2+  | 0.2+  |
| 2000 11 17 | 691 | 0.3+  | 0.7−  | 2005 03 08 | 704 | 0.6+  | 0.2−  | 2005 05 13 | G96 | 0.3+  | 0.1+  |
| 2000 11 17 | 691 | 0.4+  | 0.5−  | 2005 03 08 | 704 | 0.5+  | 0.1−  | 2005 05 13 | G96 | 0.3−  | 0.0   |
| 2000 11 19 | 691 | 0.6+  | 0.8−  | 2005 03 09 | 699 | (1.8+ | 0.2−) | 2006 06 05 | G96 | (3.6− | 0.7+) |
| 2000 11 19 | 691 | 0.3+  | 0.9−  | 2005 03 09 | 699 | 0.8+  | 0.2+  | 2006 06 05 | G96 | 0.6−  | 0.1+  |
| 2000 11 19 | 691 | 0.5+  | 0.8−  | 2005 03 09 | 699 | (1.7+ | 0.2+) | 2006 06 05 | G96 | 0.3+  | 0.1+  |
| 2002 06 07 | 291 | 0.1+  | 0.3−  | 2005 03 09 | G96 | 0.3−  | 0.1−  | 2006 06 05 | G96 | 1.3+  | 0.0   |
| 2002 06 07 | 291 | 0.1−  | 0.1+  | 2005 03 09 | 699 | 1.0−  | 0.1+  | 2007 11 17 | 691 | 0.3−  | 0.5+  |
| 2002 06 07 | 291 | 0.1+  | 0.1+  | 2005 03 09 | G96 | 0.5−  | 0.0   | 2007 11 17 | 691 | 0.3−  | 0.3+  |
| 2003 09 17 | 691 | 0.0   | 0.6+  | 2005 03 09 | G96 | 0.5−  | 0.0   | 2007 11 17 | 691 | 0.4−  | 0.4+  |
| 2003 09 17 | 691 | 0.0   | 0.5+  | 2005 03 09 | G96 | 0.1−  | 0.1+  | 2007 12 04 | G96 | 0.2−  | 0.3+  |
| 2003 09 17 | 691 | 0.4−  | 0.6+  | 2005 03 14 | 704 | 1.0+  | 0.2+  | 2007 12 04 | G96 | 0.1+  | 0.2+  |
| 2003 09 26 | 645 | 0.1−  | 0.1+  | 2005 03 14 | 704 | 1.0+  | 0.3+  | 2007 12 04 | G96 | 0.1−  | 0.3+  |
| 2003 09 26 | 645 | 0.1−  | 0.1+  | 2005 03 14 | 704 | 0.7+  | 0.9+  | 2007 12 04 | G96 | 0.2−  | 0.3+  |
| 2003 09 28 | 645 | 0.2−  | 0.2+  | 2005 03 14 | 704 | 0.2+  | 0.3+  | 2007 12 05 | 704 | 0.4+  | 0.7+  |
| 2003 09 28 | 645 | 0.2−  | 0.2+  | 2005 03 14 | 704 | 0.9+  | 0.6+  | 2007 12 05 | 704 | 0.0   | 1.0+  |
| 2005 03 03 | 704 | (1.8+ | 0.4+) | 2005 03 30 | 703 | (2.0− | 2.4+) | 2007 12 05 | 704 | 0.0   | 0.8+  |
| 2005 03 03 | 704 | 1.4+  | 0.8+  | 2005 03 30 | 703 | 1.3−  | 0.6+  | 2007 12 05 | 704 | 0.9−  | 1.4+  |
| 2005 03 03 | 704 | 0.5+  | 0.9−  | 2005 03 30 | 703 | (0.9+ | 2.4+) | 2007 12 16 | 691 | 0.5−  | 0.5+  |
| 2005 03 04 | 691 | 0.1+  | 0.3+  | 2005 03 30 | 703 | (2.3+ | 0.9−) | 2007 12 16 | 691 | 0.5−  | 0.5+  |
| 2005 03 04 | 691 | 0.0   | 0.3+  | 2005 04 01 | 699 | (2.4+ | 0.5+) | 2007 12 16 | 691 | 0.6−  | 0.5+  |
| 2005 03 04 | 691 | 0.0   | 0.4+  | 2005 04 01 | 699 | 0.2−  | 0.1−  |            |     |       |       |
| 2005 03 08 | 699 | 0.2+  | 0.2+  | 2005 04 01 | 699 | 0.6+  | 0.4+  |            |     |       |       |

(171725)\* 2000 WW<sub>15</sub>

Discovered 2000 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 316.51472  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28548603 | $\omega$ | 48.48679 | −0.42730529 | −0.89823829 |
| $a$ | 2.2842632  | $\Omega$ | 67.08353 | +0.79268767 | −0.42692255 |
| $e$ | 0.1092950  | $i$      | 6.41121  | +0.43480622 | −0.10442752 |
| $P$ | 3.45       | $H$      | 16.4     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 02 | 704 | 0.8−  | 0.2+  | 2002 05 17 | 644 | 0.4+  | 0.6+  | 2005 04 06 | 644 | 1.0+  | 0.8+  |
| 2000 11 02 | 704 | 0.0   | 0.6+  | 2002 05 17 | 644 | 0.3+  | 0.6+  | 2005 04 06 | 644 | 0.5+  | 0.3+  |
| 2000 11 02 | 704 | 0.4+  | 0.9+  | 2002 05 17 | 644 | 0.4+  | 0.6+  | 2007 11 06 | 691 | 0.1−  | 0.8−  |
| 2000 11 02 | 704 | 0.4+  | 0.5−  | 2003 10 17 | 644 | 0.6−  | 0.8+  | 2007 11 06 | 691 | 0.1−  | 0.1+  |
| 2000 11 02 | 704 | 0.9+  | 0.5−  | 2003 10 17 | 644 | 0.1−  | 0.3+  | 2007 11 06 | 691 | 0.1−  | 0.0   |
| 2000 11 21 | 704 | 1.2−  | 0.3+  | 2003 10 17 | 644 | 0.4−  | 0.4+  | 2007 11 13 | 691 | 0.1−  | 0.1+  |
| 2000 11 21 | 704 | 0.5+  | 0.5+  | 2005 01 16 | 703 | (3.1+ | 0.5+) | 2007 11 13 | 691 | 0.1−  | 0.0   |
| 2000 11 21 | 704 | 0.1−  | 0.3+  | 2005 01 16 | 703 | (1.9+ | 0.5+) | 2007 11 13 | 691 | 0.0   | 0.1−  |
| 2000 11 24 | 699 | 0.5−  | 0.3+  | 2005 01 16 | 703 | 1.0+  | 0.4+  | 2007 11 15 | 704 | (1.9+ | 0.3−) |
| 2000 11 24 | 699 | 0.4−  | 0.4+  | 2005 01 16 | 703 | (2.3+ | 0.9+) | 2007 11 15 | 704 | 0.3−  | 1.1+  |
| 2000 11 24 | 699 | 0.8−  | 0.2−  | 2005 03 11 | 703 | 0.1−  | 0.6−  | 2007 11 15 | 704 | (1.3+ | 2.0+) |
| 2000 11 24 | 699 | 1.0−  | 0.4+  | 2005 03 11 | 703 | 1.1−  | 0.9−  | 2007 11 15 | 704 | 0.3+  | 1.3+  |
| 2000 11 25 | 704 | 0.1+  | 0.1+  | 2005 03 11 | 703 | 0.4−  | 0.7−  | 2007 12 10 | 704 | 0.4+  | 0.4+  |
| 2000 11 25 | 704 | 0.8+  | 0.3+  | 2005 03 11 | 703 | 0.8−  | 0.7−  | 2007 12 10 | 704 | 0.5+  | 0.9+  |
| 2000 11 25 | 704 | 0.9+  | 0.3−  | 2005 03 16 | 703 | 0.2+  | 0.2−  | 2007 12 10 | 704 | 0.4+  | 0.5+  |
| 2000 11 25 | 704 | 0.0   | 0.7−  | 2005 03 16 | 703 | 0.6−  | 0.2−  | 2007 12 10 | 704 | 0.4+  | 0.6+  |
| 2000 11 26 | 704 | 0.8−  | 0.8−  | 2005 03 16 | 703 | 0.3−  | 0.0   | 2007 12 10 | 704 | 0.4+  | 0.2+  |
| 2000 11 26 | 704 | 0.0   | 0.1−  | 2005 03 16 | 703 | 0.4−  | 0.9+  | 2007 12 14 | 704 | 0.3+  | 0.1−  |
| 2000 11 26 | 704 | 0.8−  | 0.1−  | 2005 04 02 | 699 | (1.6+ | 0.8+) | 2007 12 14 | 704 | 0.4+  | 0.0   |
| 2000 11 26 | 704 | 0.5+  | 0.3−  | 2005 04 02 | 699 | 1.0+  | 0.1−  | 2007 12 14 | 704 | 0.4+  | 0.3+  |
| 2000 11 26 | 704 | 0.3−  | 1.0−  | 2005 04 02 | 699 | 0.5+  | 1.0+  | 2007 12 14 | 704 | 0.5+  | 0.2+  |
| 2000 12 22 | 691 | 0.2+  | 0.1−  | 2005 04 02 | 703 | 0.0   | 0.4+  | 2007 12 14 | 704 | 0.4+  | 0.3−  |
| 2000 12 22 | 691 | 0.2+  | 0.0   | 2005 04 02 | 703 | 0.1+  | 0.7+  | 2007 12 16 | 291 | 0.2−  | 0.1+  |
| 2000 12 22 | 691 | 0.4+  | 0.0   | 2005 04 02 | 703 | 0.1−  | 0.7−  | 2007 12 16 | 291 | 0.2−  | 0.1+  |
| 2002 05 12 | 704 | 0.2+  | 0.3+  | 2005 04 02 | 699 | (3.6+ | 0.6+) | 2007 12 16 | 291 | 0.2−  | 0.1+  |
| 2002 05 12 | 704 | 0.3+  | 0.6+  | 2005 04 02 | 703 | 1.1−  | 0.4+  |            |     |       |       |
| 2002 05 12 | 704 | (0.3− | 2.0+) | 2005 04 06 | 644 | 0.5+  | 0.1−  |            |     |       |       |

(171726)\* 2000 WO<sub>21</sub>

Discovered 2000 Nov. 21 at George Observatory, Needville.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 7.39006    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28080391 | $\omega$ | 254.59645 | +0.82281463 | −0.56828588 |
| $a$ | 2.3095850  | $\Omega$ | 140.03394 | +0.52448062 | +0.75578877 |
| $e$ | 0.2327015  | $i$      | 0.46557   | +0.21885192 | +0.32532214 |
| $P$ | 3.51       | $H$      | 17.3      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 21 | 735 | 1.0−  | 0.1+  | 2005 04 02 | G96 | 0.2− | 0.0  | 2007 11 05 | D29 | 0.1+ | 0.4− |
| 2000 11 21 | 735 | 0.4−  | 0.4−  | 2005 04 02 | G96 | 0.3− | 0.0  | 2007 11 05 | D29 | 0.0  | 0.2− |
| 2000 11 21 | 735 | 0.2−  | 0.3−  | 2005 04 02 | G96 | 0.3− | 0.3− | 2007 11 05 | D29 | 0.4− | 0.1− |
| 2000 11 26 | 735 | (2.7+ | 1.5+) | 2007 09 10 | G96 | 0.3+ | 0.1+ | 2007 11 05 | D29 | 0.0  | 0.1+ |
| 2000 11 26 | 735 | (1.4+ | 2.1+) | 2007 09 10 | G96 | 0.0  | 0.1+ | 2007 11 05 | D29 | 0.5− | 0.2− |
| 2000 11 26 | 735 | 1.9+  | 1.7+  | 2007 09 10 | G96 | 0.3− | 0.0  | 2007 11 05 | D29 | 0.2+ | 0.2+ |
| 2000 11 27 | 735 | 0.5+  | 0.1−  | 2007 09 10 | G96 | 0.0  | 0.1− | 2007 11 05 | D29 | 0.3+ | 0.0  |
| 2000 11 27 | 735 | 0.4+  | 0.0   | 2007 09 18 | G96 | 1.1− | 0.7− | 2007 11 05 | D29 | 0.0  | 0.1− |
| 2000 11 27 | 735 | 0.3−  | 0.6+  | 2007 09 18 | G96 | 0.2− | 0.3− | 2007 11 14 | 704 | 0.1+ | 0.2+ |
| 2000 11 30 | 699 | 0.9+  | 0.6+  | 2007 09 18 | G96 | 0.3− | 0.4− | 2007 11 14 | 704 | 0.2+ | 0.3− |
| 2000 11 30 | 699 | 0.1−  | 0.2+  | 2007 09 18 | G96 | 0.0  | 0.3− | 2007 11 14 | 704 | 0.3+ | 0.3− |
| 2000 11 30 | 699 | 0.5+  | 0.2−  | 2007 10 31 | 691 | 0.2− | 0.1− | 2007 11 14 | 704 | 0.2+ | 0.0  |
| 2000 11 30 | 699 | 0.8+  | 1.0+  | 2007 10 31 | 691 | 0.4− | 0.1− | 2007 11 14 | 704 | 1.0+ | 1.0+ |
| 2000 12 20 | 691 | 0.2−  | 0.4−  | 2007 10 31 | 691 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.5+ | 0.4− |
| 2000 12 20 | 691 | 0.2−  | 0.4−  | 2007 10 31 | 703 | 0.5+ | 0.2+ | 2007 12 04 | G96 | 0.4+ | 0.1− |
| 2000 12 20 | 691 | 0.3−  | 0.4−  | 2007 10 31 | 703 | 0.1+ | 0.6+ | 2007 12 04 | G96 | 0.0  | 0.4− |
| 2002 04 08 | 291 | 0.0   | 0.1+  | 2007 10 31 | 703 | 0.9− | 1.0+ | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2002 04 08 | 291 | 0.0   | 0.2+  | 2007 10 31 | 703 | 0.7− | 1.5+ | 2007 12 05 | 704 | 0.6− | 0.2+ |
| 2002 04 08 | 291 | 0.2+  | 0.1−  | 2007 11 03 | 699 | 0.7+ | 0.2+ | 2007 12 05 | 704 | 0.6− | 0.2+ |
| 2005 02 01 | 691 | 0.4+  | 0.1+  | 2007 11 03 | 699 | 0.6+ | 0.1− | 2007 12 05 | 704 | 0.6− | 0.1+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.3+ | 0.6+ | 2007 11 03 | 699 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 1.2- | 0.6+ |
| 2005 02 01 | 691 | 0.0  | 0.1- | 2007 11 03 | 699 | 0.3-  | 0.7-  | 2007 12 12 | A77 | 1.0+ | 0.2+ |
| 2005 03 04 | G96 | 0.2- | 0.3+ | 2007 11 05 | 704 | 1.4+  | 1.5+  | 2007 12 12 | A77 | 1.2+ | 0.3- |
| 2005 03 04 | G96 | 0.5- | 0.4- | 2007 11 05 | 704 | (1.8+ | 0.1+) | 2007 12 12 | A77 | 0.5+ | 0.4- |
| 2005 03 04 | G96 | 1.2- | 0.7- | 2007 11 05 | 704 | 0.3-  | 0.6+  | 2007 12 15 | G96 | 0.4- | 0.3- |
| 2005 03 04 | G96 | 0.0  | 0.4- | 2007 11 05 | 704 | (0.2- | 1.7+) | 2007 12 15 | G96 | 0.3- | 0.5- |
| 2005 04 02 | G96 | 0.0  | 0.1- | 2007 11 05 | 704 | 0.9+  | 0.5+  | 2007 12 15 | G96 | 0.3+ | 0.4- |

**(171727)\* 2000 WT<sub>24</sub>**

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 17.89156   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28528864 | $\omega$ | 111.79378 | +0.68011504 | -0.73117038 |
| $a$ | 2.2853167  | $\Omega$ | 295.23972 | +0.64900487 | +0.63427126 |
| $e$ | 0.1236700  | $i$      | 3.37369   | +0.34093432 | +0.25117693 |
| $P$ | 3.45       | $H$      | 16.1      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 20 | 704 | 0.3-  | 0.5-  | 2003 08 05 | 704 | 0.2-  | 1.3-  | 2003 09 27 | 691 | 0.1+  | 0.0   |
| 2000 11 20 | 704 | 0.2-  | 0.4-  | 2003 08 05 | 704 | (1.7- | 0.7+) | 2003 09 27 | 691 | 0.1+  | 0.2-  |
| 2000 11 20 | 704 | 0.4+  | 0.1-  | 2003 08 23 | 644 | 0.5-  | 0.3+  | 2003 09 27 | 704 | 0.2-  | 0.7+  |
| 2000 11 20 | 704 | 0.3-  | 0.4+  | 2003 08 23 | 644 | 0.2-  | 0.0   | 2003 09 27 | 704 | 0.4-  | 0.8+  |
| 2000 11 20 | 704 | 0.6+  | 0.3+  | 2003 08 23 | 644 | 0.3-  | 0.2+  | 2003 09 27 | 704 | 0.2-  | 0.2+  |
| 2000 11 26 | 704 | 0.2-  | 0.2+  | 2003 08 24 | 704 | 0.0   | 0.5+  | 2003 09 27 | 691 | 0.1+  | 0.3-  |
| 2000 11 26 | 704 | 0.1-  | 0.2+  | 2003 08 24 | 704 | 0.2+  | 0.5+  | 2003 09 27 | 704 | 1.0-  | 0.7-  |
| 2000 11 26 | 704 | 0.2+  | 0.2+  | 2003 08 24 | 704 | 0.1-  | 0.5+  | 2003 09 27 | 704 | 0.7-  | 0.2+  |
| 2000 11 30 | 704 | 0.0   | 0.7+  | 2003 08 28 | 704 | 0.2+  | 0.9+  | 2003 10 03 | 608 | 0.4-  | 0.7+  |
| 2000 11 30 | 704 | 0.2+  | 0.4+  | 2003 08 28 | 704 | 0.4-  | 1.4+  | 2003 10 03 | 608 | 0.1+  | 0.4+  |
| 2000 11 30 | 704 | 0.1-  | 0.7+  | 2003 08 28 | 704 | 0.5+  | 0.6+  | 2003 10 03 | 608 | 0.4-  | 0.8+  |
| 2000 11 30 | 704 | 0.1+  | 0.6+  | 2003 08 28 | 644 | 0.3+  | 0.3-  | 2005 03 04 | 704 | 0.8+  | 0.9+  |
| 2000 11 30 | 704 | 0.5+  | 0.1+  | 2003 08 28 | 704 | 0.0   | 1.3+  | 2005 03 04 | 704 | 1.1+  | 0.5+  |
| 2000 12 22 | 691 | 0.1-  | 0.2-  | 2003 08 28 | 704 | 0.2-  | 1.1+  | 2005 03 04 | 704 | 1.0+  | 1.0+  |
| 2000 12 22 | 691 | 0.1+  | 0.1-  | 2003 08 28 | 644 | 0.4+  | 0.4-  | 2005 03 04 | 704 | (1.6+ | 1.3+) |
| 2000 12 22 | 691 | 0.0   | 0.4-  | 2003 08 28 | 644 | 0.3+  | 0.1-  | 2005 03 10 | 699 | 1.1+  | 0.4+  |
| 2000 12 30 | 704 | 0.9-  | 0.3+  | 2003 09 02 | 704 | 0.8-  | 0.3+  | 2005 03 10 | 699 | 1.1+  | 1.0+  |
| 2000 12 30 | 704 | 0.1+  | 0.3+  | 2003 09 02 | 704 | 0.4-  | 0.1+  | 2005 03 10 | 703 | 0.1-  | 0.6+  |
| 2000 12 30 | 704 | 0.5-  | 0.1+  | 2003 09 02 | 704 | 0.3-  | 0.4-  | 2005 03 10 | 699 | 0.3+  | 0.7+  |
| 2000 12 30 | 704 | 0.2-  | 0.1-  | 2003 09 02 | 704 | 0.2+  | 0.0   | 2005 03 10 | 703 | (2.6- | 1.2+) |
| 2000 12 30 | 704 | 0.2+  | 1.2+  | 2003 09 02 | 704 | 0.5-  | 0.7-  | 2005 03 10 | 703 | 0.1+  | 0.6+  |
| 2002 04 09 | 704 | (1.1- | 2.8+) | 2003 09 16 | 699 | 0.1+  | 0.3+  | 2005 03 10 | 699 | 0.4+  | 0.5+  |
| 2002 04 09 | 704 | 0.5-  | 1.4+  | 2003 09 16 | 699 | 0.0   | 0.8-  | 2005 03 10 | 703 | 0.4-  | 0.1+  |
| 2002 04 09 | 704 | 1.1+  | 0.5+  | 2003 09 16 | 699 | 0.2-  | 0.8+  | 2007 12 10 | 704 | 0.3-  | 0.5+  |
| 2002 04 18 | 644 | 0.7-  | 0.1-  | 2003 09 16 | 699 | 1.1+  | 0.6+  | 2007 12 10 | 704 | 0.6-  | 0.2+  |
| 2002 04 18 | 644 | 0.7-  | 0.1+  | 2003 09 18 | 644 | 0.0   | 0.2+  | 2007 12 10 | 704 | 0.3+  | 0.1-  |
| 2002 04 18 | 644 | 0.3-  | 0.0   | 2003 09 18 | 704 | 0.6+  | 0.8-  | 2007 12 10 | 704 | 0.2-  | 0.3+  |
| 2003 08 01 | 704 | 0.7-  | 0.2-  | 2003 09 18 | 644 | 0.1-  | 0.2+  | 2007 12 14 | 691 | 0.1+  | 0.3-  |
| 2003 08 01 | 704 | 0.1-  | 0.0   | 2003 09 18 | 704 | 0.1-  | 1.1+  | 2007 12 14 | 704 | 0.2+  | 0.5+  |
| 2003 08 01 | 704 | 0.2+  | 0.5+  | 2003 09 18 | 644 | 0.2-  | 0.2-  | 2007 12 14 | 704 | 0.3+  | 0.8+  |
| 2003 08 01 | 704 | 0.6-  | 0.0   | 2003 09 18 | 704 | 0.0   | 0.4+  | 2007 12 14 | 691 | 0.2-  | 0.3-  |
| 2003 08 05 | 704 | 0.8+  | 0.9-  | 2003 09 23 | 644 | 0.1-  | 0.1+  | 2007 12 14 | 691 | 0.1-  | 0.3-  |
| 2003 08 05 | 704 | 0.5+  | 0.0   | 2003 09 23 | 644 | 0.3-  | 0.2+  | 2007 12 14 | 704 | 0.3+  | 0.3+  |
| 2003 08 05 | 704 | (0.5- | 1.7+) | 2003 09 23 | 644 | 0.0   | 0.1+  |            |     |       |       |

**(171728)\* 2000 WX<sub>25</sub> = 2003 SC<sub>14</sub>**

Discovered 2000 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 52700)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 8.89472    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.29281542 | $\omega$ | 266.74997 | +0.28460653 | -0.95853582 |
| $a$ | 2.2459845  | $\Omega$ | 166.68769 | +0.90255107 | +0.26284966 |
| $e$ | 0.0645270  | $i$      | 3.59288   | +0.32311095 | +0.11008697 |
| $P$ | 3.37       | $H$      | 16.5      | $G$         | 0.15        |
|     |            |          |           | $U$         | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 09 18 | 691 | 0.3-  | 0.3-  | 2003 09 20 | 699 | 0.5- | 0.3- | 2005 03 08 | G96 | 0.4-  | 0.1+  |
| 1993 09 18 | 691 | 0.1+  | 0.1-  | 2003 09 26 | 704 | 0.0  | 0.1+ | 2005 03 14 | 704 | 0.9+  | 1.0+  |
| 1993 09 18 | 691 | 0.0   | 0.3+  | 2003 09 26 | 704 | 0.2- | 0.1- | 2005 03 14 | 704 | 0.1-  | 1.2+  |
| 2000 11 01 | 704 | 0.5-  | 0.3-  | 2003 09 26 | 704 | 0.4- | 0.3- | 2005 03 14 | 704 | 1.0+  | 0.6-  |
| 2000 11 01 | 704 | 0.9+  | 1.2-  | 2003 09 26 | 704 | 0.1- | 0.8+ | 2005 03 14 | 704 | 0.4+  | 0.6+  |
| 2000 11 01 | 704 | 0.3-  | 0.9+  | 2003 09 26 | 704 | 0.5- | 0.1+ | 2005 03 17 | 704 | 0.7+  | 0.0   |
| 2000 11 01 | 704 | 0.2-  | 0.0   | 2003 09 27 | 691 | 0.1- | 0.3+ | 2005 03 17 | 704 | (0.7+ | 1.7+) |
| 2000 11 21 | 704 | 0.8+  | 0.3-  | 2003 09 27 | 691 | 0.1- | 0.3+ | 2005 03 17 | 704 | (0.1- | 1.6-) |
| 2000 11 21 | 704 | (2.6+ | 1.6-) | 2003 09 27 | 691 | 0.2- | 0.4+ | 2005 03 17 | 704 | 0.8+  | 0.6+  |
| 2000 11 21 | 704 | 1.1+  | 0.2-  | 2003 09 29 | 704 | 0.1+ | 0.4+ | 2005 04 04 | G96 | 0.3-  | 0.2+  |
| 2000 11 21 | 704 | 0.0   | 0.1+  | 2003 09 29 | 704 | 0.6+ | 0.9+ | 2005 04 04 | G96 | 0.4-  | 0.1+  |
| 2000 11 26 | 704 | 0.7-  | 0.3-  | 2003 09 29 | 704 | 0.2+ | 0.1+ | 2005 04 04 | G96 | 0.2-  | 0.1+  |
| 2000 11 26 | 704 | 0.1-  | 0.7+  | 2003 09 29 | 704 | 0.5- | 0.0  | 2005 04 04 | G96 | 0.4-  | 0.2+  |
| 2000 11 26 | 704 | 0.9+  | 0.6+  | 2003 09 29 | 704 | 0.8+ | 0.4+ | 2005 05 10 | G96 | 0.4-  | 0.3+  |
| 2000 11 26 | 704 | 0.6-  | 0.6-  | 2005 03 03 | 703 | 0.3- | 0.3- | 2005 05 10 | G96 | 0.7-  | 0.4+  |
| 2000 11 27 | 704 | 0.5-  | 0.2+  | 2005 03 03 | 703 | 0.4- | 0.7- | 2005 05 10 | G96 | 0.8-  | 0.3+  |
| 2000 11 27 | 704 | 0.4+  | 0.2+  | 2005 03 03 | 703 | 0.1+ | 0.6- | 2005 05 10 | G96 | 0.5-  | 0.3+  |
| 2000 11 27 | 704 | 0.4+  | 0.7+  | 2005 03 03 | 703 | 0.5- | 0.1- | 2006 06 19 | G96 | 0.7-  | 0.4+  |
| 2000 11 27 | 704 | 0.3-  | 1.7+  | 2005 03 04 | 691 | 0.2+ | 0.8+ | 2006 06 19 | G96 | 0.2-  | 0.5+  |
| 2000 11 30 | 699 | 0.7+  | 0.9-  | 2005 03 04 | 691 | 0.4+ | 0.5+ | 2006 06 19 | G96 | 0.2+  | 0.3-  |
| 2000 11 30 | 699 | 0.2-  | 0.1-  | 2005 03 04 | 691 | 0.2+ | 0.6+ | 2006 06 19 | G96 | 0.2-  | 0.0   |
| 2000 11 30 | 699 | 0.2-  | 1.1+  | 2005 03 04 | G96 | 0.3- | 0.2+ | 2006 06 19 | 691 | 0.1-  | 0.4+  |
| 2000 11 30 | 699 | 1.8-  | 0.4+  | 2005 03 04 | G96 | 0.2- | 0.3+ | 2006 06 19 | 691 | 0.0   | 0.5+  |
| 2002 04 13 | 644 | 0.2+  | 0.7+  | 2005 03 04 | G96 | 0.2- | 0.2- | 2006 06 19 | 691 | 0.1-  | 0.6+  |
| 2002 04 13 | 644 | 0.1-  | 0.7+  | 2005 03 04 | G96 | 0.3- | 0.0  | 2007 11 04 | 704 | 0.1+  | 0.0   |
| 2002 04 13 | 644 | 0.4+  | 0.9+  | 2005 03 08 | 699 | 0.1- | 0.6+ | 2007 11 04 | 704 | 0.0   | 1.0+  |
| 2003 09 17 | 691 | 0.2-  | 0.3+  | 2005 03 08 | 699 | 0.4+ | 0.2+ | 2007 11 04 | 704 | 0.1-  | 0.6+  |
| 2003 09 17 | 691 | 0.1-  | 0.4+  | 2005 03 08 | 704 | 0.6+ | 0.3+ | 2007 12 04 | 704 | 0.5-  | 0.1+  |
| 2003 09 17 | 691 | 0.0   | 0.5+  | 2005 03 08 | 699 | 0.7+ | 0.4+ | 2007 12 04 | 704 | 0.4-  | 0.5+  |
| 2003 09 18 | 704 | 0.6+  | 0.6+  | 2005 03 08 | 704 | 0.6+ | 0.1+ | 2007 12 04 | 704 | 0.9-  | 0.6+  |
| 2003 09 18 | 704 | 0.8-  | 0.8+  | 2005 03 08 | 704 | 0.7+ | 0.1+ | 2007 12 06 | H55 | 0.3+  | 0.3+  |
| 2003 09 18 | 704 | 0.1-  | 0.0   | 2005 03 08 | 699 | 1.2+ | 1.1+ | 2007 12 06 | H55 | 0.1+  | 0.1-  |
| 2003 09 18 | 704 | (0.0  | 1.8+) | 2005 03 08 | 704 | 0.4+ | 0.6+ | 2007 12 06 | H55 | 0.0   | 0.0   |
| 2003 09 18 | 704 | (1.5+ | 0.9+) | 2005 03 08 | G96 | 0.1- | 0.2+ | 2007 12 06 | 691 | 0.3+  | 0.1+  |
| 2003 09 20 | 699 | 0.5+  | 0.2+  | 2005 03 08 | 704 | 0.9+ | 0.5- | 2007 12 06 | 691 | 0.1-  | 0.1-  |
| 2003 09 20 | 699 | 0.7-  | 0.0   | 2005 03 08 | G96 | 0.4- | 0.1+ | 2007 12 06 | 691 | 0.1-  | 0.2-  |
| 2003 09 20 | 699 | 0.4+  | 0.0   | 2005 03 08 | G96 | 0.3- | 0.0  |            |     |       |       |

**(171729)\* 2000 WE<sub>31</sub>**

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 40.78558   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.28804976 | $\omega$ | 275.24166 | +0.91137595  | -0.39081021  |
| $a$ | 2.2706893  | $\Omega$ | 107.81326 | +0.41042191  | +0.83951257  |
| $e$ | 0.1145040  | $i$      | 7.79206   | +0.03078543  | +0.37747322  |
| $P$ | 3.42       | $H$      | 16.0      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 31 | 704 | 0.4+ | 0.1+ | 2001 01 03 | 704 | 0.2+ | 0.8+ | 2003 09 16 | 704 | 0.8- | 0.7- |
| 2000 10 31 | 704 | 0.4+ | 1.0+ | 2001 01 03 | 704 | 0.3- | 0.1+ | 2003 09 19 | 699 | 0.4+ | 0.8+ |
| 2000 10 31 | 704 | 0.3- | 0.5+ | 2001 01 03 | 704 | 0.1+ | 0.1+ | 2003 09 19 | 699 | 0.7- | 0.1+ |
| 2000 10 31 | 704 | 0.0  | 0.6+ | 2001 01 03 | 704 | 0.5- | 0.6+ | 2003 09 19 | 699 | 0.2+ | 0.7+ |
| 2000 11 20 | 704 | 0.6- | 0.1+ | 2002 04 12 | 644 | 0.3+ | 0.4+ | 2003 09 19 | 699 | 0.6- | 0.0  |
| 2000 11 20 | 704 | 0.1+ | 0.3- | 2002 04 12 | 644 | 0.5+ | 0.4+ | 2003 09 22 | 608 | 0.4- | 0.0  |
| 2000 11 20 | 704 | 0.9+ | 0.2- | 2002 04 12 | 644 | 0.5+ | 0.4+ | 2003 09 22 | 608 | 0.4- | 0.1- |
| 2000 11 20 | 704 | 1.2- | 0.3+ | 2002 04 16 | 704 | 0.8- | 0.7+ | 2003 09 22 | 608 | 0.2- | 0.4+ |
| 2000 11 27 | 704 | 0.7+ | 0.1- | 2002 04 16 | 704 | 0.7- | 0.3+ | 2005 03 02 | 703 | 0.2+ | 0.5- |
| 2000 11 27 | 704 | 0.1- | 0.1- | 2002 04 16 | 704 | 0.3- | 0.0  | 2005 03 02 | 703 | 0.4+ | 0.3- |
| 2000 11 27 | 704 | 0.5- | 0.0  | 2002 04 16 | 704 | 0.4- | 0.5- | 2005 03 02 | 703 | 0.1+ | 0.9- |
| 2000 11 27 | 704 | 0.3- | 0.4- | 2003 08 23 | 644 | 0.3- | 0.2+ | 2005 03 02 | 703 | 0.4- | 0.3+ |
| 2000 11 27 | 704 | 0.9- | 0.8- | 2003 08 23 | 644 | 0.3- | 0.2+ | 2005 03 09 | 703 | 0.3+ | 0.1- |
| 2000 11 27 | 704 | 0.9- | 0.2+ | 2003 08 23 | 644 | 0.3- | 0.2+ | 2005 03 09 | 703 | 0.9+ | 0.0  |
| 2000 11 27 | 704 | 0.6+ | 0.3+ | 2003 08 31 | 704 | 0.0  | 1.3- | 2005 03 09 | 703 | 0.4+ | 0.1+ |
| 2000 11 27 | 704 | 0.6+ | 0.5+ | 2003 08 31 | 704 | 0.4- | 1.0- | 2005 03 09 | 703 | 0.9+ | 0.2+ |

2007 DEC. 24

M.P.O. 129141

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 27 | 704 | 0.5+ | 0.3- | 2003 08 31 | 704 | 0.2-  | 0.8-  | 2005 03 16 | 703 | 0.7- | 0.8+ |
| 2000 11 30 | 699 | 0.2- | 0.0  | 2003 08 31 | 704 | 0.1-  | 1.3-  | 2005 03 16 | 703 | 0.4- | 0.0  |
| 2000 11 30 | 699 | 0.1- | 0.0  | 2003 08 31 | 704 | 0.2-  | 1.0-  | 2005 03 16 | 703 | 0.3+ | 0.4+ |
| 2000 11 30 | 699 | 0.2- | 0.3- | 2003 09 05 | 608 | (0.6+ | 1.6+) | 2005 03 16 | 703 | 0.1- | 0.2- |
| 2000 11 30 | 699 | 0.8+ | 0.2+ | 2003 09 05 | 608 | 0.7+  | 1.1+  | 2007 12 04 | 704 | 0.9- | 0.6+ |
| 2000 12 04 | 608 | 0.5+ | 0.5- | 2003 09 05 | 608 | 0.7+  | 0.7+  | 2007 12 04 | 704 | 1.2- | 0.1+ |
| 2000 12 04 | 608 | 0.6+ | 0.3- | 2003 09 13 | 608 | 0.9+  | 0.8+  | 2007 12 04 | 704 | 0.0  | 0.7+ |
| 2000 12 04 | 608 | 0.3+ | 0.1+ | 2003 09 13 | 608 | 0.9+  | 0.6+  | 2007 12 16 | 691 | 0.3+ | 0.2- |
| 2000 12 17 | 699 | 0.4- | 0.0  | 2003 09 13 | 608 | 1.2+  | 0.4+  | 2007 12 16 | 691 | 0.2+ | 0.1+ |
| 2000 12 17 | 699 | 0.4- | 0.2- | 2003 09 16 | 704 | 0.6-  | 0.1-  | 2007 12 16 | 691 | 0.1- | 0.3- |
| 2000 12 17 | 699 | 0.0  | 0.5- | 2003 09 16 | 704 | (0.9+ | 2.0-) |            |     |      |      |
| 2000 12 17 | 699 | 0.0  | 0.7- | 2003 09 16 | 704 | 0.7+  | 1.2+  |            |     |      |      |

(171730)\* 2000 WX<sub>50</sub> = 2002 OV<sub>15</sub>

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 33309)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC       |            |          |           |
|-----------|------------|----------|-----------|
| M         |            | P        | Q         |
| 356.54578 |            | (2000.0) |           |
| <i>n</i>  | 0.41710727 | $\omega$ | 137.01831 |
| <i>a</i>  | 1.7740705  | $\Omega$ | 282.74895 |
| <i>e</i>  | 0.1942286  | <i>i</i> | 12.88515  |
| <i>P</i>  | 2.36       | <i>H</i> | 17.2      |
|           |            | <i>G</i> | 0.15      |
|           |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 20 | 704 | 0.3+ | 0.0  | 2001 01 21 | 704 | 0.0   | 0.2+  | 2002 08 12 | 704 | 0.4+  | 0.7+  |
| 2000 11 20 | 704 | 0.9+ | 0.2+ | 2001 01 21 | 704 | 0.2+  | 0.1-  | 2002 08 13 | 683 | 1.0-  | 1.2+  |
| 2000 11 20 | 704 | 0.2- | 1.2+ | 2001 01 21 | 704 | 0.3-  | 0.1+  | 2002 08 13 | 683 | 0.6+  | 1.0+  |
| 2000 11 20 | 704 | 0.1+ | 1.3+ | 2001 01 21 | 608 | 0.5-  | 0.2-  | 2002 08 13 | 683 | (3.1- | 2.9+) |
| 2000 11 28 | 704 | 0.9- | 0.7+ | 2001 01 21 | 608 | 0.2-  | 1.0-  | 2002 08 15 | 683 | (3.8- | 3.0+) |
| 2000 11 28 | 704 | 0.5- | 0.4+ | 2001 01 21 | 608 | 0.6-  | 1.1-  | 2002 08 15 | 683 | 0.8+  | 1.2-  |
| 2000 11 28 | 704 | 0.1+ | 0.2+ | 2001 01 25 | 608 | (1.2+ | 2.2+) | 2002 08 15 | 683 | (4.1- | 2.0+) |
| 2000 11 28 | 704 | 0.6- | 0.6+ | 2001 01 25 | 608 | (1.0+ | 2.2+) | 2002 08 24 | 644 | 0.3-  | 0.2+  |
| 2000 11 28 | 704 | 0.4- | 0.5+ | 2001 01 25 | 608 | (0.7+ | 2.1+) | 2002 08 24 | 644 | 0.3-  | 0.2+  |
| 2000 12 21 | 704 | 0.9- | 0.8- | 2001 01 26 | 704 | 0.1-  | 0.1+  | 2002 08 24 | 644 | 0.4-  | 0.1-  |
| 2000 12 21 | 704 | 0.5+ | 0.8+ | 2001 01 26 | 704 | 0.1-  | 0.2+  | 2002 09 01 | 644 | 0.2-  | 0.5+  |
| 2000 12 21 | 704 | 0.2- | 0.3- | 2001 01 26 | 704 | 0.1+  | 0.4-  | 2002 09 01 | 644 | 0.2-  | 0.3+  |
| 2000 12 21 | 704 | 0.1+ | 0.5- | 2001 01 26 | 704 | 0.0   | 0.1+  | 2002 09 01 | 644 | 0.2+  | 0.2+  |
| 2000 12 21 | 704 | 0.0  | 0.7- | 2001 01 26 | 704 | 0.1+  | 0.1-  | 2006 04 19 | 644 | 0.5+  | 0.6+  |
| 2000 12 23 | 699 | 0.7+ | 0.3+ | 2001 02 22 | 704 | 0.0   | 0.9+  | 2006 04 19 | 644 | 0.3+  | 0.7+  |
| 2000 12 23 | 699 | 0.4+ | 0.1+ | 2001 02 22 | 704 | 0.0   | 0.1-  | 2006 04 19 | 644 | 0.6+  | 0.7+  |
| 2000 12 23 | 699 | 0.3+ | 0.6- | 2001 02 22 | 704 | 0.0   | 1.2+  | 2006 04 25 | E12 | 0.4+  | 0.3-  |
| 2000 12 23 | 699 | 0.3+ | 0.1- | 2001 02 22 | 704 | 1.1+  | 0.3-  | 2006 04 25 | E12 | 1.0-  | 0.0   |
| 2000 12 30 | 704 | 0.4+ | 0.2+ | 2001 02 22 | 704 | 0.1+  | 0.2-  | 2006 04 25 | E12 | 0.5-  | 1.3+  |
| 2000 12 30 | 704 | 0.3+ | 0.3+ | 2002 07 12 | 644 | 0.4-  | 1.0+  | 2006 04 25 | E12 | 1.3+  | 0.7+  |
| 2000 12 30 | 704 | 0.7+ | 0.3- | 2002 07 12 | 644 | 0.7-  | 1.1+  | 2007 11 03 | 704 | 1.1+  | 1.2-  |
| 2000 12 30 | 704 | 0.6+ | 0.0  | 2002 07 12 | 644 | 0.3-  | 1.1+  | 2007 11 03 | 704 | 0.6+  | 0.0   |
| 2001 01 02 | 704 | 0.2+ | 0.1- | 2002 07 18 | 704 | 0.1+  | 0.3+  | 2007 11 03 | 704 | (2.1+ | 0.1-) |
| 2001 01 02 | 704 | 0.3- | 0.3+ | 2002 07 18 | 704 | 0.2-  | 0.1-  | 2007 11 03 | 704 | (2.4+ | 0.3-) |
| 2001 01 02 | 704 | 0.1+ | 0.1+ | 2002 07 18 | 704 | 0.0   | 0.1+  | 2007 11 12 | 704 | 0.6-  | 0.6+  |
| 2001 01 02 | 704 | 0.3+ | 0.6+ | 2002 07 18 | 704 | (1.2+ | 1.6+) | 2007 11 12 | 704 | 0.0   | 0.5+  |
| 2001 01 02 | 704 | 0.0  | 0.2+ | 2002 07 20 | 644 | 0.3-  | 0.3+  | 2007 11 12 | 704 | 0.4-  | 0.5+  |
| 2001 01 03 | 704 | 0.4+ | 0.5+ | 2002 07 20 | 644 | 0.1-  | 0.3+  | 2007 11 12 | 704 | 0.1-  | 0.2+  |
| 2001 01 03 | 704 | 0.2- | 0.2- | 2002 07 20 | 644 | 0.4-  | 0.5+  | 2007 11 12 | 704 | 0.2-  | 0.0   |
| 2001 01 03 | 704 | 0.3+ | 0.3+ | 2002 08 04 | 644 | 0.4-  | 0.7-  | 2007 12 03 | 704 | 1.0-  | 0.0   |
| 2001 01 03 | 704 | 0.3- | 0.3+ | 2002 08 04 | 644 | 0.3-  | 0.8-  | 2007 12 03 | 704 | 0.2+  | 0.1-  |
| 2001 01 03 | 704 | 0.1+ | 0.4+ | 2002 08 04 | 644 | 0.5-  | 0.5-  | 2007 12 03 | 704 | 0.2+  | 0.1-  |
| 2001 01 17 | 608 | 0.0  | 0.3+ | 2002 08 12 | 704 | 0.4+  | 0.1-  | 2007 12 03 | 704 | 0.3+  | 0.1-  |
| 2001 01 17 | 608 | 0.2- | 0.3+ | 2002 08 12 | 704 | 0.9+  | 0.3-  | 2007 12 03 | 704 | 0.2+  | 0.1+  |
| 2001 01 17 | 608 | 0.3- | 0.1+ | 2002 08 12 | 704 | 0.1-  | 0.2+  |            |     |       |       |
| 2001 01 21 | 704 | 0.3+ | 0.1+ | 2002 08 12 | 704 | 0.1-  | 0.7+  |            |     |       |       |

(171731)\* 2000 WD<sub>56</sub>

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$                         | 322.44215  |       |       | $\omega$   | (2000.0) |       |       | $P$        | $Q$         |       |       |
|-----------------------------|------------|-------|-------|------------|----------|-------|-------|------------|-------------|-------|-------|
| $n$                         | 0.27088789 |       |       | $\Omega$   | 17.84191 |       |       |            | -0.28902353 |       |       |
| $a$                         | 2.3656091  |       |       | $\omega$   | 89.12260 |       |       |            | -0.94792389 |       |       |
| $e$                         | 0.1586489  |       |       | $i$        | 7.69085  |       |       |            | +0.86120936 |       |       |
| $P$                         | 3.64       |       |       | $H$        | 15.6     |       |       | $G$        | +0.41807156 |       |       |
|                             |            |       |       |            |          |       |       |            | -0.00076410 |       |       |
|                             |            |       |       |            |          |       |       |            | 0.15        |       |       |
|                             |            |       |       |            |          |       |       |            | 1           |       |       |
| Residuals in seconds of arc |            |       |       |            |          |       |       |            |             |       |       |
| 2000 11 20                  | 704        | 0.6+  | 0.6-  | 2001 02 16 | 704      | 0.0   | 1.3-  | 2005 04 06 | 703         | 0.3-  | 0.2-  |
| 2000 11 20                  | 704        | 0.5+  | 0.5+  | 2001 02 16 | 704      | 0.4-  | 0.5-  | 2005 04 08 | 704         | 0.2+  | 0.4+  |
| 2000 11 20                  | 704        | 0.1+  | 0.5+  | 2001 02 16 | 704      | 0.5-  | 0.8-  | 2005 04 08 | 704         | 0.5+  | 0.3+  |
| 2000 11 28                  | 704        | 0.7-  | 0.6-  | 2001 02 21 | 699      | 1.0+  | 0.3+  | 2005 04 08 | 704         | 0.7+  | 0.4+  |
| 2000 11 28                  | 704        | 0.2-  | 0.1-  | 2001 02 21 | 699      | 1.1+  | 0.2-  | 2005 04 08 | 704         | 1.0+  | 0.7+  |
| 2000 11 28                  | 704        | 0.1+  | 0.1+  | 2001 02 21 | 704      | 0.0   | 0.8-  | 2005 04 08 | 704         | 0.5+  | 0.4+  |
| 2000 11 28                  | 704        | 0.4-  | 0.3-  | 2001 02 21 | 699      | (1.6+ | 0.2-) | 2005 04 16 | 703         | 0.7-  | 0.9-  |
| 2000 11 28                  | 704        | 0.2-  | 0.5+  | 2001 02 21 | 704      | 0.4-  | 0.1+  | 2005 04 16 | 703         | 0.4+  | 0.5+  |
| 2000 12 19                  | 691        | 0.6-  | 0.4-  | 2001 02 21 | 704      | 0.4-  | 0.1+  | 2005 04 16 | 703         | 0.9-  | 0.1-  |
| 2000 12 19                  | 691        | 0.4-  | 0.5-  | 2001 02 21 | 704      | 0.1-  | 0.4+  | 2005 04 16 | 703         | 0.8-  | 0.5+  |
| 2000 12 19                  | 691        | 0.6-  | 0.3-  | 2001 02 21 | 699      | 0.9+  | 0.5+  | 2005 05 03 | 703         | 0.4-  | 1.1+  |
| 2000 12 22                  | 699        | 0.6+  | 0.1+  | 2001 02 21 | 704      | 0.8-  | 0.1+  | 2005 05 03 | 703         | 0.2-  | 0.3+  |
| 2000 12 22                  | 699        | 1.1+  | 0.3-  | 2003 09 18 | 704      | 1.2-  | 0.2-  | 2005 05 03 | 703         | (1.5- | 0.2-) |
| 2000 12 22                  | 699        | 0.4+  | 0.1+  | 2003 09 18 | 704      | 0.2+  | 0.0   | 2005 05 03 | 703         | 0.2+  | 1.2+  |
| 2000 12 22                  | 699        | 0.8+  | 0.6-  | 2003 09 18 | 704      | (1.9- | 1.7+) | 2007 11 04 | 704         | 0.5+  | 0.2+  |
| 2000 12 29                  | 608        | (0.2+ | 2.2+) | 2003 09 18 | 704      | 0.2-  | 0.4-  | 2007 11 04 | 704         | 0.0   | 0.5+  |
| 2000 12 29                  | 608        | (0.0  | 2.2+) | 2003 09 25 | 608      | 1.0-  | 0.2-  | 2007 11 04 | 704         | 0.2+  | 0.3+  |
| 2000 12 29                  | 608        | (0.1- | 2.5+) | 2003 09 25 | 608      | 0.8-  | 0.0   | 2007 11 04 | 704         | 0.2+  | 0.3+  |
| 2001 01 04                  | 704        | 0.2+  | 0.0   | 2003 09 25 | 608      | 1.1-  | 0.2+  | 2007 11 04 | 704         | 0.2+  | 0.4+  |
| 2001 01 04                  | 704        | 0.2-  | 0.1-  | 2003 11 19 | 291      | 0.4+  | 0.3+  | 2007 11 12 | 703         | (1.3- | 1.6-) |
| 2001 01 04                  | 704        | 0.2+  | 0.6+  | 2003 11 19 | 291      | 0.2+  | 0.1+  | 2007 11 12 | 703         | 0.5+  | 0.3+  |
| 2001 01 04                  | 704        | 0.1-  | 0.7+  | 2003 11 19 | 291      | 0.3+  | 0.3+  | 2007 11 12 | 703         | 0.2-  | 0.2-  |
| 2001 01 04                  | 704        | 0.0   | 0.4+  | 2005 03 18 | 704      | 0.2-  | 0.1+  | 2007 11 12 | 704         | 0.4+  | 0.9-  |
| 2001 01 18                  | 704        | 0.9-  | 0.0   | 2005 03 18 | 704      | 0.4+  | 0.2-  | 2007 11 12 | 704         | 0.8+  | 0.3+  |
| 2001 01 18                  | 704        | 0.2+  | 0.0   | 2005 03 18 | 704      | 0.2+  | 0.1+  | 2007 11 12 | 704         | 0.6+  | 0.6+  |
| 2001 01 18                  | 704        | 0.1+  | 0.0   | 2005 03 18 | 703      | 0.1+  | 0.4+  | 2007 11 12 | 704         | (1.9+ | 3.7+) |
| 2001 01 18                  | 704        | 0.4+  | 0.7+  | 2005 03 18 | 704      | 0.9+  | 0.0   | 2007 11 13 | G96         | 0.0   | 0.1-  |
| 2001 01 18                  | 704        | 0.5+  | 0.5+  | 2005 03 18 | 703      | 0.6-  | 0.2-  | 2007 11 13 | G96         | 0.1-  | 0.2-  |
| 2001 01 19                  | 699        | 0.1-  | 1.0-  | 2005 03 18 | 703      | 0.3-  | 0.8+  | 2007 11 13 | G96         | 0.2-  | 0.1-  |
| 2001 01 19                  | 699        | 0.0   | 0.1+  | 2005 03 18 | 703      | 0.2-  | 0.3+  | 2007 11 13 | G96         | 0.4-  | 0.2+  |
| 2001 01 19                  | 699        | 0.1-  | 0.1+  | 2005 04 01 | 699      | 0.1+  | 0.4+  | 2007 11 19 | 691         | 0.4-  | 0.2+  |
| 2001 01 19                  | 699        | 1.1+  | 0.0   | 2005 04 01 | 699      | 0.4+  | 0.3+  | 2007 11 19 | 691         | 0.4-  | 0.2+  |
| 2001 02 01                  | 699        | 0.5+  | 0.1-  | 2005 04 01 | 699      | 0.4+  | 0.7+  | 2007 11 19 | 691         | 0.4-  | 0.3+  |
| 2001 02 01                  | 699        | 0.6+  | 0.1+  | 2005 04 05 | 699      | 0.3+  | 0.2+  | 2007 12 04 | 699         | 0.2+  | 0.1-  |
| 2001 02 01                  | 699        | 0.6+  | 0.2+  | 2005 04 05 | 699      | 0.5+  | 0.0   | 2007 12 04 | 704         | 0.1-  | 0.8+  |
| 2001 02 01                  | 699        | 0.4+  | 0.2+  | 2005 04 05 | 699      | 0.4+  | 0.3+  | 2007 12 04 | 704         | 0.0   | 0.2+  |
| 2001 02 03                  | 704        | 0.1-  | 0.7-  | 2005 04 05 | 699      | 0.8+  | 0.4-  | 2007 12 04 | 699         | 0.4+  | 0.2-  |
| 2001 02 03                  | 704        | 0.7-  | 0.5+  | 2005 04 05 | 644      | 0.1+  | 0.0   | 2007 12 04 | 704         | 0.3+  | 0.2-  |
| 2001 02 03                  | 704        | (1.9- | 0.4-) | 2005 04 05 | 644      | 0.3+  | 0.1+  | 2007 12 04 | 704         | 0.2-  | 0.2+  |
| 2001 02 03                  | 704        | 0.6-  | 0.1+  | 2005 04 05 | 644      | (1.6+ | 0.1-) | 2007 12 04 | 699         | 0.6+  | 0.1+  |
| 2001 02 03                  | 704        | 0.1+  | 0.1-  | 2005 04 06 | 703      | 0.6+  | 1.1+  | 2007 12 04 | 704         | 0.1-  | 0.6+  |
| 2001 02 16                  | 704        | 0.3+  | 0.0   | 2005 04 06 | 703      | 0.6-  | 0.5-  | 2007 12 04 | 699         | 0.2+  | 0.3+  |
| 2001 02 16                  | 704        | 0.1+  | 0.0   | 2005 04 06 | 703      | 0.7-  | 0.4-  |            |             |       |       |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 29 | 691 | 0.5+  | 0.5−  | 2005 03 04 | 704 | 0.1−  | 0.9−  | 2007 11 13 | 699 | 0.1+  | 0.6+  |
| 2000 11 29 | 691 | 0.4+  | 0.5−  | 2005 03 12 | 704 | 0.2+  | 0.6+  | 2007 11 13 | 699 | 0.2+  | 0.5+  |
| 2000 11 29 | 691 | 0.3+  | 0.6−  | 2005 03 12 | 704 | 0.7+  | 0.4+  | 2007 11 13 | 699 | 0.4+  | 0.2−  |
| 2000 11 30 | 691 | 0.4−  | 0.7−  | 2005 03 12 | 704 | 0.5+  | 1.5+  | 2007 11 14 | 691 | 0.3−  | 0.5+  |
| 2000 11 30 | 691 | 0.6−  | 0.9−  | 2005 03 12 | 704 | 0.8+  | 0.2+  | 2007 11 14 | 691 | 0.3−  | 0.5+  |
| 2000 11 30 | 691 | 0.6−  | 0.8−  | 2005 03 16 | 703 | (1.7− | 0.0 ) | 2007 11 14 | 691 | 0.4−  | 0.5+  |
| 2000 12 03 | 691 | 0.3+  | 0.9−  | 2005 03 16 | 703 | 0.8−  | 0.1−  | 2007 11 15 | 704 | (0.1+ | 1.7+) |
| 2000 12 03 | 691 | 0.5+  | 1.0−  | 2005 03 16 | 703 | 0.6−  | 0.8−  | 2007 11 15 | 704 | (0.4+ | 2.1+) |
| 2000 12 03 | 691 | 0.3+  | 1.0−  | 2005 03 16 | 703 | (2.0− | 0.7+) | 2007 11 15 | 704 | 0.4+  | 1.4+  |
| 2000 12 16 | 691 | 0.2+  | 0.4−  | 2007 09 10 | G96 | 0.1+  | 0.1+  | 2007 11 15 | 704 | (1.0+ | 2.9+) |
| 2000 12 16 | 691 | 0.3+  | 0.4−  | 2007 09 10 | G96 | 0.1−  | 0.2+  | 2007 11 15 | 704 | 0.2−  | 1.4+  |
| 2000 12 16 | 691 | 0.6+  | 0.2−  | 2007 09 10 | G96 | 0.4−  | 0.4+  | 2007 11 20 | G96 | 0.0   | 0.2+  |
| 2002 05 08 | 291 | 0.1+  | 0.3+  | 2007 09 10 | G96 | (0.4+ | 2.2+) | 2007 11 20 | G96 | 0.1+  | 0.2+  |
| 2002 05 08 | 291 | 0.0   | 0.2+  | 2007 10 20 | 703 | 1.2+  | 0.4+  | 2007 11 20 | G96 | 0.3+  | 0.1+  |
| 2002 05 08 | 291 | 0.1−  | 0.6+  | 2007 10 20 | 703 | 1.3+  | 0.6+  | 2007 11 20 | G96 | 0.3+  | 0.2+  |
| 2003 08 24 | 807 | 0.2+  | 0.7+  | 2007 10 20 | 703 | (1.6+ | 0.8+) | 2007 12 03 | 703 | 0.0   | 1.0+  |
| 2003 08 24 | 807 | 0.3+  | 0.8+  | 2007 10 20 | 703 | 0.5−  | 1.1−  | 2007 12 03 | 703 | 0.0   | 1.1+  |
| 2005 02 03 | 704 | 1.3+  | 0.3+  | 2007 10 30 | 691 | 0.3−  | 0.5+  | 2007 12 03 | 703 | 1.1−  | 0.7+  |
| 2005 02 03 | 704 | 1.1+  | 1.1+  | 2007 10 30 | 691 | 0.2−  | 0.5+  | 2007 12 03 | 703 | 0.4−  | 0.1−  |
| 2005 02 03 | 704 | 0.9+  | 1.4+  | 2007 10 30 | 691 | 0.2−  | 0.4+  | 2007 12 05 | 691 | 0.0   | 0.3+  |
| 2005 02 09 | 691 | 0.1+  | 0.1−  | 2007 11 03 | 691 | 0.1−  | 0.5+  | 2007 12 05 | 691 | 0.5−  | 0.7+  |
| 2005 02 09 | 691 | 0.0   | 0.1+  | 2007 11 03 | 691 | 0.2−  | 0.6+  | 2007 12 05 | 691 | 0.1−  | 0.6+  |
| 2005 02 09 | 691 | 0.0   | 0.0   | 2007 11 03 | 691 | 0.4−  | 0.5+  | 2007 12 05 | 704 | 0.1+  | 0.5+  |
| 2005 02 09 | 704 | 0.3−  | 1.1+  | 2007 11 03 | D29 | 0.3−  | 0.6+  | 2007 12 05 | 704 | 0.1−  | 0.5−  |
| 2005 02 09 | 704 | 0.9+  | 1.1+  | 2007 11 03 | D29 | 0.4−  | 0.5+  | 2007 12 05 | 704 | 0.0   | 0.8+  |
| 2005 02 09 | 704 | 0.9+  | 1.2+  | 2007 11 03 | D29 | 0.1−  | 1.2+  | 2007 12 05 | 704 | 0.4+  | 0.4+  |
| 2005 02 09 | 704 | (1.8+ | 3.8+) | 2007 11 03 | D29 | 0.2−  | 0.8+  | 2007 12 05 | 704 | 0.0   | 0.3−  |
| 2005 02 14 | 704 | 0.2+  | 0.4−  | 2007 11 05 | 704 | 0.0   | 0.5−  | 2007 12 13 | A77 | 1.1−  | 0.9+  |
| 2005 02 14 | 704 | 0.5+  | 0.6+  | 2007 11 05 | 704 | 0.4−  | 0.0   | 2007 12 13 | A77 | 0.3−  | 0.2+  |
| 2005 02 14 | 704 | 0.2−  | 0.6+  | 2007 11 05 | 704 | 0.2−  | 0.6+  | 2007 12 13 | A77 | 0.3−  | 0.8+  |
| 2005 02 14 | 704 | 0.8+  | 0.3−  | 2007 11 05 | 704 | 0.5−  | 0.7−  | 2007 12 15 | G96 | 0.2−  | 0.5+  |
| 2005 03 02 | 703 | 0.7−  | 0.0   | 2007 11 05 | 704 | 0.0   | 0.2−  | 2007 12 15 | G96 | 0.1+  | 0.4+  |
| 2005 03 02 | 703 | 0.3−  | 1.1+  | 2007 11 07 | 704 | 0.4+  | 0.2+  | 2007 12 15 | G96 | 0.2+  | 0.5+  |
| 2005 03 02 | 703 | 0.4−  | 0.0   | 2007 11 07 | 704 | 0.6−  | 1.5+  | 2007 12 15 | G96 | 0.2+  | 0.5+  |
| 2005 03 02 | 703 | 0.3−  | 0.5−  | 2007 11 07 | 704 | 0.7+  | 0.3−  |            |     |       |       |

**(171733)\* 2000 WD<sub>71</sub>**

Discovered 2000 Nov. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 45.23859   | (2000.0) |           |
| <i>n</i>                    | 0.28838183 | $\omega$ | 88.08106  |
| <i>a</i>                    | 2.2689458  | $\Omega$ | 278.78327 |
| <i>e</i>                    | 0.1348454  | <i>i</i> | 5.94401   |
| <i>P</i>                    | 3.42       | <i>H</i> | 16.1      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 0         |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 10 25 | 704 | 0.2− | 0.4+ | 2003 08 22 | 106 | 0.3−  | 0.1+  | 2005 03 02 | 699 | 0.0   | 1.2+  |
| 2000 10 25 | 704 | 0.5− | 0.1+ | 2003 08 23 | 106 | 0.4−  | 0.1−  | 2007 11 07 | 704 | 0.2−  | 0.1+  |
| 2000 10 25 | 704 | 0.1+ | 0.4− | 2003 08 24 | 704 | 0.0   | 0.3+  | 2007 11 07 | 704 | 0.3−  | 0.1−  |
| 2000 10 25 | 704 | 0.2+ | 0.1− | 2003 08 24 | 704 | 0.4+  | 0.5+  | 2007 11 07 | 704 | 0.5−  | 0.4−  |
| 2000 10 25 | 704 | 0.3− | 0.8− | 2003 08 24 | 704 | 1.1−  | 0.3−  | 2007 11 07 | 704 | 0.8−  | 0.4−  |
| 2000 11 05 | 704 | 0.2− | 0.0  | 2003 08 24 | 704 | (0.8− | 1.7+) | 2007 11 07 | 691 | 0.1−  | 0.0   |
| 2000 11 05 | 704 | 0.2+ | 0.6− | 2003 08 24 | 106 | 0.2−  | 0.1−  | 2007 11 07 | 691 | 0.2−  | 0.1−  |
| 2000 11 05 | 704 | 0.7+ | 0.3+ | 2003 08 24 | 106 | 0.3−  | 0.1−  | 2007 11 07 | 691 | 0.1−  | 0.1−  |
| 2000 11 05 | 704 | 0.1− | 0.1+ | 2003 08 24 | 106 | 0.4−  | 0.9+  | 2007 11 18 | 704 | (1.6+ | 0.8−) |
| 2000 11 05 | 704 | 0.2+ | 0.6− | 2003 08 26 | 106 | 0.1+  | 0.4+  | 2007 11 18 | 704 | 0.2+  | 0.1+  |
| 2000 11 19 | 704 | 0.4+ | 0.2+ | 2003 08 26 | 106 | 0.2−  | 0.0   | 2007 11 18 | 704 | 1.4+  | 0.4−  |
| 2000 11 19 | 704 | 0.2− | 0.1+ | 2003 08 26 | 106 | 0.1−  | 0.1−  | 2007 11 18 | 704 | 1.0+  | 0.6+  |
| 2000 11 19 | 704 | 0.4+ | 0.1− | 2003 08 30 | 691 | 0.0   | 0.4+  | 2007 11 19 | 691 | 0.1−  | 0.5−  |
| 2000 11 19 | 704 | 0.5− | 0.3+ | 2003 08 30 | 691 | 0.3+  | 0.3+  | 2007 11 19 | 691 | 0.3−  | 0.0   |
| 2000 11 19 | 704 | 0.4+ | 0.5− | 2003 08 30 | 691 | 0.1+  | 0.4+  | 2007 11 19 | 691 | 0.2−  | 0.0   |
| 2000 11 29 | 704 | 0.1− | 0.1− | 2005 01 13 | 691 | 0.2+  | 0.0   | 2007 11 20 | 704 | 0.1−  | 0.1−  |
| 2000 11 29 | 704 | 0.2− | 0.1− | 2005 01 13 | 691 | 0.1−  | 0.1+  | 2007 11 20 | 704 | 0.1−  | 0.2+  |
| 2000 11 29 | 704 | 0.1− | 0.4− | 2005 01 13 | 691 | 0.1+  | 0.3+  | 2007 11 20 | 704 | 0.4−  | 0.9+  |
| 2000 11 29 | 704 | 0.2− | 0.1+ | 2005 02 02 | 704 | 0.0   | 0.1−  | 2007 11 20 | 704 | 0.3−  | 0.3+  |
| 2000 11 29 | 704 | 0.3− | 0.3+ | 2005 02 02 | 704 | 0.7+  | 0.8+  | 2007 11 20 | 704 | 0.2+  | 0.2+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 20 | 704 | 0.6− | 0.9+ | 2005 02 02 | 704 | 0.3+  | 0.4+  | 2007 12 10 | 704 | 1.0+ | 0.4+ |
| 2000 12 20 | 704 | 0.2− | 1.0+ | 2005 02 04 | 699 | 0.9−  | 1.1+  | 2007 12 10 | 704 | 0.0  | 0.7+ |
| 2000 12 20 | 704 | 0.5+ | 0.0  | 2005 02 04 | 699 | 0.2−  | 0.2+  | 2007 12 10 | 704 | 0.8+ | 0.5+ |
| 2003 07 24 | 644 | 0.4− | 0.4+ | 2005 02 04 | 699 | 0.7+  | 0.1+  | 2007 12 10 | 704 | 0.5+ | 0.0  |
| 2003 07 24 | 644 | 0.2− | 0.6+ | 2005 02 04 | 699 | (0.4+ | 1.7+) | 2007 12 14 | 704 | 0.3+ | 0.5+ |
| 2003 07 24 | 644 | 0.2− | 0.6+ | 2005 02 09 | 699 | (1.9+ | 0.4+) | 2007 12 14 | 704 | 0.5+ | 0.0  |
| 2003 08 05 | 704 | 0.2+ | 0.1+ | 2005 02 09 | 699 | 0.2+  | 0.7+  | 2007 12 14 | 704 | 0.3+ | 0.8+ |
| 2003 08 05 | 704 | 0.4− | 0.2+ | 2005 02 09 | 699 | (2.0+ | 0.5+) | 2007 12 14 | 704 | 0.3+ | 0.1+ |
| 2003 08 05 | 704 | 0.3− | 0.1− | 2005 02 09 | 699 | 1.3+  | 1.0+  | 2007 12 15 | 691 | 0.0  | 0.0  |
| 2003 08 05 | 704 | 0.4− | 0.0  | 2005 03 02 | 699 | 1.4+  | 0.3+  | 2007 12 15 | 691 | 0.1− | 0.1− |
| 2003 08 05 | 704 | 0.0  | 0.6+ | 2005 03 02 | 699 | (1.0− | 1.5+) | 2007 12 15 | 691 | 0.2− | 0.1+ |
| 2003 08 22 | 106 | 0.6− | 0.6− | 2005 03 02 | 699 | 0.7−  | 0.3+  |            |     |      |      |

**(171734)\* 2000 WY<sub>76</sub>**

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 308.99356  | (2000.0) |           |
| <i>n</i>                    | 0.27782470 | $\omega$ | 200.88534 |
| <i>a</i>                    | 2.3260666  | $\Omega$ | 259.43940 |
| <i>e</i>                    | 0.1062843  | <i>i</i> | 6.02253   |
| <i>P</i>                    | 3.55       | <i>H</i> | 16.5      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 1         |

| Residuals in seconds of arc |     |       |       |            |     |      |      |            |     |       |       |
|-----------------------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 25                  | 704 | 1.1−  | 0.6+  | 2005 02 14 | 703 | 0.1− | 0.5+ | 2007 11 04 | G96 | 0.4−  | 1.2−  |
| 2000 10 25                  | 704 | 0.2−  | 0.3−  | 2007 09 25 | G96 | 0.1+ | 0.1+ | 2007 11 04 | 704 | 0.4−  | 0.6+  |
| 2000 10 25                  | 704 | 0.3−  | 0.1−  | 2007 09 25 | G96 | 0.1+ | 0.1− | 2007 11 04 | 704 | 0.0   | 0.3−  |
| 2000 10 25                  | 704 | 1.1+  | 1.0+  | 2007 09 25 | G96 | 0.3− | 0.2− | 2007 11 04 | 704 | 0.5+  | 1.0−  |
| 2000 11 05                  | 704 | 0.8−  | 1.4+  | 2007 09 25 | G96 | 0.2+ | 0.1− | 2007 11 04 | 704 | (1.0+ | 1.9−) |
| 2000 11 05                  | 704 | 1.0−  | 0.7+  | 2007 10 06 | D29 | 0.4+ | 0.3− | 2007 11 07 | 704 | 0.1+  | 0.0   |
| 2000 11 05                  | 704 | 0.3+  | 0.5−  | 2007 10 06 | D29 | 0.5+ | 0.2− | 2007 11 07 | 704 | 0.3+  | 0.4+  |
| 2000 11 20                  | 704 | 0.6−  | 0.3−  | 2007 10 06 | D29 | 0.9+ | 0.1+ | 2007 11 07 | 704 | 0.1−  | 0.1+  |
| 2000 11 20                  | 704 | 1.1+  | 0.5−  | 2007 10 06 | D29 | 0.8+ | 0.3− | 2007 11 07 | 704 | 0.2+  | 0.2+  |
| 2000 11 20                  | 704 | 0.1+  | 0.2−  | 2007 10 08 | 703 | 1.3− | 1.1− | 2007 11 07 | 704 | 0.4+  | 0.2+  |
| 2000 11 20                  | 704 | 0.1+  | 0.1+  | 2007 10 08 | 703 | 1.2− | 0.1− | 2007 11 07 | 703 | 0.4−  | 0.4+  |
| 2000 11 20                  | 704 | 0.0   | 0.2−  | 2007 10 08 | 703 | 0.4+ | 0.1− | 2007 11 07 | 703 | 0.5+  | 0.4+  |
| 2000 11 29                  | 704 | 0.2−  | 0.6−  | 2007 10 08 | 703 | 0.0  | 0.3− | 2007 11 07 | 703 | 0.3+  | 0.0   |
| 2000 11 29                  | 704 | 0.3−  | 1.1+  | 2007 10 12 | 704 | 0.1+ | 0.3+ | 2007 11 07 | 703 | 0.0   | 0.0   |
| 2000 11 29                  | 704 | 0.4−  | 0.6+  | 2007 10 12 | 704 | 0.4+ | 0.4− | 2007 11 12 | 703 | (1.3− | 1.9+) |
| 2000 11 29                  | 704 | 0.4−  | 0.6+  | 2007 10 12 | 704 | 0.3+ | 0.5+ | 2007 11 12 | 703 | 0.3+  | 0.0   |
| 2000 11 29                  | 704 | 1.0−  | 0.1+  | 2007 10 12 | 704 | 0.2− | 0.5+ | 2007 11 12 | 703 | 0.1−  | 0.5−  |
| 2000 11 30                  | 704 | 0.1−  | 1.2−  | 2007 10 15 | 704 | 0.5+ | 0.3+ | 2007 11 12 | 703 | 0.0   | 0.1+  |
| 2000 11 30                  | 704 | 1.1−  | 0.7+  | 2007 10 15 | 704 | 0.3+ | 0.2− | 2007 11 13 | 699 | 1.1+  | 0.9+  |
| 2000 11 30                  | 704 | 0.8+  | 0.1−  | 2007 10 15 | 704 | 0.3− | 0.2+ | 2007 11 13 | 699 | 0.9+  | 0.6+  |
| 2000 12 16                  | 691 | 0.2+  | 0.4−  | 2007 10 15 | 704 | 0.5+ | 1.2− | 2007 11 13 | 699 | 0.5+  | 0.1−  |
| 2000 12 16                  | 691 | 0.5+  | 0.3−  | 2007 10 15 | 704 | 0.9− | 0.1+ | 2007 11 13 | 699 | 0.7+  | 0.5−  |
| 2000 12 16                  | 691 | 0.3+  | 0.2−  | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.3−  | 0.0   |
| 2002 05 07                  | 644 | 0.6−  | 0.7+  | 2007 10 16 | G96 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.2−  | 0.2+  |
| 2002 05 07                  | 644 | 0.2−  | 0.1+  | 2007 10 16 | G96 | 0.2+ | 0.4− | 2007 11 14 | 691 | 0.4−  | 0.2+  |
| 2002 05 07                  | 644 | 0.3+  | 0.1+  | 2007 10 16 | G96 | 0.1− | 0.4− | 2007 11 18 | 691 | 0.6−  | 0.1+  |
| 2003 09 29                  | 691 | 0.0   | 0.3+  | 2007 10 18 | 699 | 0.5+ | 0.5− | 2007 11 18 | 691 | 0.3−  | 0.0   |
| 2003 09 29                  | 691 | 0.0   | 0.3+  | 2007 10 18 | 699 | 1.4− | 0.5− | 2007 11 18 | 691 | 0.3−  | 0.1+  |
| 2003 09 29                  | 691 | 0.0   | 0.3+  | 2007 10 18 | 699 | 0.3− | 0.5− | 2007 11 18 | 704 | 0.1−  | 0.5+  |
| 2005 01 13                  | 704 | 0.2+  | 0.1−  | 2007 10 18 | 699 | 0.1+ | 0.7+ | 2007 11 18 | 704 | 0.9−  | 0.3+  |
| 2005 01 13                  | 704 | 1.2+  | 0.4−  | 2007 10 21 | 703 | 0.1− | 0.0  | 2007 11 18 | 704 | 0.3−  | 0.3+  |
| 2005 01 13                  | 703 | 1.0+  | 0.0   | 2007 10 21 | 703 | 0.7+ | 0.3− | 2007 11 18 | 704 | 0.3−  | 0.2−  |
| 2005 01 13                  | 703 | 0.6+  | 0.8−  | 2007 10 21 | 703 | 0.4− | 0.2− | 2007 12 12 | 704 | 1.0+  | 0.1+  |
| 2005 01 13                  | 704 | 0.6−  | 0.2−  | 2007 10 21 | 703 | 1.0+ | 1.2+ | 2007 12 12 | 704 | 0.7+  | 0.1−  |
| 2005 01 13                  | 703 | 0.1−  | 0.9+  | 2007 10 21 | 703 | 0.2− | 0.4− | 2007 12 12 | 704 | 0.2+  | 0.1−  |
| 2005 01 13                  | 704 | 0.2−  | 0.8+  | 2007 10 21 | 703 | 0.5− | 0.8+ | 2007 12 12 | 704 | 0.4−  | 0.8−  |
| 2005 01 13                  | 703 | 0.1+  | 0.5+  | 2007 10 21 | 703 | 0.8+ | 0.7+ | 2007 12 13 | 704 | 0.1+  | 0.4+  |
| 2005 01 13                  | 704 | (0.1+ | 2.1+) | 2007 10 21 | 703 | 0.4− | 0.1+ | 2007 12 13 | 704 | 0.5+  | 0.4+  |
| 2005 02 14                  | 703 | 0.3+  | 0.7+  | 2007 11 04 | G96 | 0.2+ | 0.3− | 2007 12 13 | 704 | 0.3+  | 0.1+  |
| 2005 02 14                  | 703 | 0.2−  | 0.3+  | 2007 11 04 | G96 | 0.2+ | 0.4− | 2007 12 13 | 704 | 0.6+  | 1.2−  |
| 2005 02 14                  | 703 | 0.3−  | 0.6+  | 2007 11 04 | G96 | 0.1+ | 0.4− | 2007 12 13 | 704 | 0.1+  | 0.2+  |

2007 DEC. 24

M.P.O. 129143

**(171735)\* 2000 WT<sub>94</sub>**

Discovered 2000 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 359.97820  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.28788560 | $\omega$ | 43.58356 | +0.12331433  | -0.99195128  |
| $a$ | 2.2715524  | $\Omega$ | 39.35896 | +0.89759833  | +0.09913834  |
| $e$ | 0.1479495  | $i$      | 2.59785  | +0.42321486  | +0.07876708  |
| $P$ | 3.42       | $H$      | 17.2     | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.3- | 0.5- | 2003 10 17 | 691 | 0.1-  | 0.4+  | 2007 10 12 | 291 | 0.4- | 0.2+ |
| 2000 11 21 | 704 | 0.4- | 0.3- | 2003 10 17 | 691 | 0.1-  | 0.1+  | 2007 10 12 | 291 | 0.5- | 0.2+ |
| 2000 11 21 | 704 | 0.2+ | 0.2- | 2005 03 10 | G96 | 0.4+  | 0.0   | 2007 10 12 | 291 | 0.6- | 0.2+ |
| 2000 11 21 | 704 | 0.8- | 0.8- | 2005 03 10 | G96 | 0.0   | 0.1+  | 2007 11 07 | G96 | 0.6+ | 0.5- |
| 2000 11 29 | 704 | 0.1- | 0.2+ | 2005 03 10 | G96 | 0.1-  | 0.0   | 2007 11 07 | G96 | 0.3+ | 0.3- |
| 2000 11 29 | 704 | 0.4- | 0.2+ | 2005 03 10 | G96 | 0.3-  | 0.0   | 2007 11 07 | G96 | 0.5+ | 0.4- |
| 2000 11 29 | 704 | 0.0  | 0.0  | 2005 04 04 | 703 | 1.6-  | 1.1+  | 2007 11 07 | G96 | 0.5+ | 0.3- |
| 2000 11 29 | 704 | 0.0  | 0.0  | 2005 04 04 | 703 | 0.9+  | 0.5+  | 2007 11 21 | G96 | 0.3+ | 0.4- |
| 2000 12 20 | 704 | 0.3+ | 0.1- | 2005 04 04 | 703 | 0.1-  | 1.2+  | 2007 11 21 | G96 | 0.6+ | 0.3- |
| 2000 12 20 | 704 | 0.2+ | 0.1- | 2005 04 04 | 703 | (2.0- | 2.3-) | 2007 11 21 | G96 | 0.4+ | 0.7- |
| 2000 12 20 | 704 | 0.1- | 0.7+ | 2005 05 06 | G96 | 0.4+  | 0.3-  | 2007 11 21 | G96 | 0.7+ | 0.4- |
| 2000 12 21 | 691 | 0.0  | 0.1+ | 2005 05 06 | G96 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 1.2+ | 0.2- |
| 2000 12 21 | 691 | 0.2+ | 0.0  | 2005 05 06 | G96 | 0.2+  | 0.1-  | 2007 12 15 | 704 | 1.1+ | 0.8- |
| 2000 12 21 | 691 | 0.1+ | 0.0  | 2005 05 06 | G96 | 0.4+  | 0.1-  | 2007 12 15 | 704 | 1.6+ | 1.2+ |
| 2003 08 26 | 807 | 0.1+ | 0.3- | 2007 10 12 | 291 | 0.7-  | 0.3+  | 2007 12 15 | 704 | 0.5+ | 0.2+ |
| 2003 08 26 | 807 | 0.3- | 0.2- | 2007 10 12 | 291 | 0.3-  | 0.1+  |            |     |      |      |
| 2003 10 17 | 691 | 0.2+ | 0.3+ | 2007 10 12 | 291 | 0.4-  | 0.3-  |            |     |      |      |

**(171736)\* 2000 WQ<sub>97</sub>**

Discovered 2000 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 46.97966   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28062207 | $\omega$ | 103.61793 | +0.99393897 | -0.09530679 |
| $a$ | 2.3105826  | $\Omega$ | 261.87161 | +0.06656683 | +0.91841082 |
| $e$ | 0.1556956  | $i$      | 3.17271   | +0.08748820 | +0.38397680 |
| $P$ | 3.51       | $H$      | 15.9      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 21 | 704 | 0.4- | 0.0  | 2003 08 28 | 704 | 0.0   | 0.5+  | 2003 09 27 | 691 | 0.0   | 0.1-  |
| 2000 11 21 | 704 | 0.1+ | 0.5- | 2003 08 28 | 704 | 0.4-  | 0.7+  | 2003 09 27 | 704 | 0.5+  | 0.3+  |
| 2000 11 21 | 704 | 0.4- | 0.3- | 2003 08 28 | 704 | 0.4-  | 0.3+  | 2003 09 27 | 704 | (0.6- | 1.7-) |
| 2000 11 21 | 704 | 0.3- | 0.5- | 2003 08 28 | 704 | 0.2-  | 0.8+  | 2003 10 25 | 704 | 1.2-  | 0.4-  |
| 2000 11 29 | 704 | 0.3+ | 0.4- | 2003 08 28 | 704 | 0.2-  | 0.3+  | 2003 10 25 | 704 | 0.5+  | 0.5-  |
| 2000 11 29 | 704 | 0.1+ | 0.6+ | 2003 09 02 | 704 | (1.0- | 1.7+) | 2003 10 25 | 704 | 0.2-  | 0.2+  |
| 2000 11 29 | 704 | 0.2- | 0.6- | 2003 09 02 | 704 | 0.2-  | 0.8+  | 2003 10 25 | 704 | 0.5-  | 0.0   |
| 2000 11 29 | 704 | 0.5+ | 0.1- | 2003 09 02 | 704 | 0.2+  | 0.4+  | 2003 10 25 | 704 | 0.3-  | 0.1+  |
| 2000 12 21 | 704 | 0.1+ | 0.3+ | 2003 09 02 | 704 | 0.2+  | 1.4+  | 2005 02 14 | 691 | 0.2+  | 0.8+  |
| 2000 12 21 | 704 | 0.0  | 0.2+ | 2003 09 02 | 704 | 0.6-  | 1.1+  | 2005 02 14 | 691 | 0.2+  | 0.6+  |
| 2000 12 21 | 704 | 0.1- | 1.2+ | 2003 09 16 | 699 | 0.3-  | 0.5-  | 2005 02 14 | 691 | 0.3+  | 0.6+  |
| 2000 12 21 | 704 | 0.2- | 1.5+ | 2003 09 16 | 699 | 0.3+  | 0.1+  | 2005 03 03 | 703 | 0.5+  | 0.1+  |
| 2000 12 30 | 704 | 0.3+ | 0.7+ | 2003 09 16 | 699 | 0.6-  | 0.7+  | 2005 03 03 | 703 | 0.2-  | 0.5-  |
| 2000 12 30 | 704 | 0.7+ | 0.2+ | 2003 09 16 | 699 | 0.1-  | 0.5+  | 2005 03 03 | 703 | 0.4-  | 0.1-  |
| 2000 12 30 | 704 | 0.1+ | 0.2+ | 2003 09 18 | 704 | 0.0   | 0.2-  | 2005 03 03 | 703 | (2.1- | 1.1-) |
| 2000 12 30 | 704 | 0.4+ | 0.0  | 2003 09 18 | 644 | 0.0   | 0.4+  | 2005 03 17 | G96 | 0.2+  | 0.2+  |
| 2000 12 30 | 704 | 0.2+ | 0.6- | 2003 09 18 | 704 | 0.8-  | 0.8-  | 2005 03 17 | G96 | 0.5-  | 0.0   |
| 2001 01 04 | 704 | 0.1- | 0.0  | 2003 09 18 | 704 | 0.7-  | 0.1+  | 2005 03 17 | G96 | 0.3-  | 0.3+  |
| 2001 01 04 | 704 | 0.2+ | 0.1+ | 2003 09 18 | 644 | 0.1-  | 0.3+  | 2005 03 17 | G96 | 0.0   | 0.2+  |
| 2001 01 04 | 704 | 0.2+ | 0.5+ | 2003 09 18 | 704 | 1.4-  | 0.5+  | 2006 06 22 | 644 | 0.1+  | 0.4+  |
| 2001 01 04 | 704 | 0.7+ | 0.6- | 2003 09 18 | 644 | 0.1-  | 0.1+  | 2006 06 22 | 644 | 0.5+  | 0.3+  |
| 2001 01 05 | 704 | 0.6- | 0.3- | 2003 09 21 | 608 | 0.3-  | 0.3-  | 2006 06 22 | 644 | 0.1+  | 0.4+  |
| 2001 01 05 | 704 | 0.1- | 0.1- | 2003 09 21 | 608 | 0.7-  | 0.1-  | 2007 12 05 | 704 | 0.1-  | 0.6-  |
| 2001 01 05 | 704 | 1.3- | 0.3+ | 2003 09 21 | 608 | 0.4-  | 0.4-  | 2007 12 05 | 704 | 0.3+  | 0.6-  |
| 2003 08 05 | 704 | 0.4+ | 0.7- | 2003 09 23 | 644 | 0.2+  | 0.0   | 2007 12 05 | 704 | 0.3-  | 0.0   |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 05 | 704 | 0.1-  | 0.3+  | 2003 09 23 | 644 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.3- | 0.2- |
| 2003 08 05 | 704 | 0.3+  | 0.3+  | 2003 09 23 | 644 | 0.1- | 0.1+ | 2007 12 14 | 704 | 0.1+ | 0.5- |
| 2003 08 24 | 704 | (2.9+ | 3.2-) | 2003 09 27 | 691 | 0.1+ | 0.1- | 2007 12 14 | 704 | 0.0  | 0.4- |
| 2003 08 24 | 704 | 1.1+  | 0.5-  | 2003 09 27 | 691 | 0.0  | 0.2- | 2007 12 14 | 704 | 0.0  | 0.6- |
| 2003 08 24 | 704 | 0.4+  | 0.1+  | 2003 09 27 | 704 | 0.5+ | 0.4+ | 2007 12 14 | 704 | 0.8+ | 0.5+ |
| 2003 08 24 | 704 | 1.3+  | 0.7+  | 2003 09 27 | 704 | 0.4+ | 0.3+ | 2007 12 14 | 704 | 0.4- | 0.3- |

**(171737)\* 2000 WA<sub>98</sub>**

Discovered 2000 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 307.70292  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.29339803 | $\omega$ | 91.14569 | -0.96082817 | -0.25508415 |
| $a$ | 2.2430102  | $\Omega$ | 74.08300 | +0.18750922 | -0.88623213 |
| $e$ | 0.0812618  | $i$      | 6.46968  | +0.20408213 | -0.38668423 |
| $P$ | 3.36       | $H$      | 15.9     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 21 | 704 | 0.1+  | 0.5-  | 2003 11 01 | 704 | 0.5-  | 0.8+  | 2005 05 03 | 704 | 0.1+  | 0.7+  |
| 2000 11 21 | 704 | 0.5-  | 0.7-  | 2003 11 01 | 704 | 1.2+  | 1.0+  | 2005 05 03 | 704 | 0.2-  | 0.3-  |
| 2000 11 21 | 704 | 0.1-  | 0.8-  | 2003 11 30 | 704 | 1.0-  | 0.8+  | 2005 05 03 | 704 | 0.6+  | 0.8-  |
| 2000 11 21 | 704 | 0.5-  | 0.0   | 2003 11 30 | 704 | (1.6- | 1.3+) | 2005 05 03 | 704 | 0.2+  | 0.2-  |
| 2000 11 29 | 704 | 0.7-  | 0.2-  | 2003 11 30 | 704 | (0.8- | 1.5+) | 2005 05 08 | 703 | 1.1-  | 0.0   |
| 2000 11 29 | 704 | 0.1-  | 0.2+  | 2003 11 30 | 704 | 1.3-  | 0.7+  | 2005 05 08 | 703 | 0.6-  | 0.1-  |
| 2000 11 29 | 704 | 0.0   | 0.3-  | 2005 04 01 | 699 | 0.6-  | 0.0   | 2005 05 08 | 703 | 1.0-  | 0.6-  |
| 2000 11 29 | 704 | 0.0   | 0.5-  | 2005 04 01 | 699 | 0.3-  | 0.4+  | 2005 05 08 | 703 | (1.6- | 0.0 ) |
| 2000 12 21 | 704 | 0.4-  | 0.6-  | 2005 04 01 | 699 | (0.8- | 1.7+) | 2005 05 11 | 699 | 0.5+  | 0.0   |
| 2000 12 21 | 704 | 0.4+  | 0.3-  | 2005 04 01 | 699 | 0.5-  | 0.3-  | 2005 05 11 | 699 | 0.3+  | 0.6+  |
| 2000 12 21 | 704 | 0.6+  | 0.5+  | 2005 04 02 | 644 | 0.1+  | 0.3+  | 2005 05 11 | 699 | 0.2-  | 0.5+  |
| 2000 12 21 | 704 | 0.5+  | 1.3+  | 2005 04 02 | 644 | 0.1+  | 0.4+  | 2005 05 11 | 699 | 0.1-  | 1.0+  |
| 2001 01 04 | 704 | 0.6-  | 0.7-  | 2005 04 02 | 644 | 0.1-  | 0.3+  | 2005 05 12 | 691 | 0.0   | 0.4+  |
| 2001 01 04 | 704 | 0.6+  | 0.4-  | 2005 04 05 | 703 | 0.7-  | 0.1+  | 2005 05 12 | 691 | 0.7+  | 1.0-  |
| 2001 01 04 | 704 | 0.1+  | 0.2-  | 2005 04 05 | 703 | 0.3-  | 0.1+  | 2005 05 12 | 691 | 0.0   | 0.4+  |
| 2001 01 04 | 704 | 0.1+  | 1.0+  | 2005 04 05 | 704 | (1.0+ | 1.7+) | 2006 08 30 | 699 | (0.3+ | 2.2+) |
| 2001 01 04 | 704 | 0.3+  | 0.0   | 2005 04 05 | 703 | 0.1+  | 0.4+  | 2006 08 30 | 699 | (1.2- | 1.6+) |
| 2001 01 19 | 704 | 0.7+  | 0.0   | 2005 04 05 | 704 | (1.8+ | 1.3+) | 2006 08 30 | 699 | 1.2-  | 0.4+  |
| 2001 01 19 | 704 | 0.2+  | 0.2+  | 2005 04 05 | 703 | 0.0   | 0.4+  | 2006 08 30 | 699 | 0.3-  | 1.4+  |
| 2001 01 19 | 704 | 0.0   | 0.5+  | 2005 04 05 | 704 | 0.4+  | 0.2-  | 2006 09 15 | 703 | (0.8+ | 1.8+) |
| 2001 01 19 | 704 | (1.7+ | 1.0+) | 2005 04 05 | 704 | 1.3+  | 1.1+  | 2006 09 15 | 703 | (1.1- | 2.0-) |
| 2003 10 23 | 699 | 0.2+  | 1.2+  | 2005 04 07 | 699 | 0.2+  | 0.6+  | 2006 09 15 | 703 | 0.6-  | 0.5-  |
| 2003 10 23 | 699 | 0.8-  | 1.2+  | 2005 04 07 | 699 | 0.2-  | 1.1+  | 2006 09 15 | 703 | 0.3-  | 0.3-  |
| 2003 10 23 | 699 | (1.5+ | 2.4+) | 2005 04 07 | 699 | 0.0   | 0.8+  | 2006 10 02 | 703 | (0.1+ | 1.7+) |
| 2003 10 23 | 699 | 1.2-  | 0.2+  | 2005 04 07 | 699 | 0.1-  | 1.1+  | 2006 10 02 | 703 | 0.2+  | 1.5+  |
| 2003 10 23 | 691 | 0.1-  | 0.0   | 2005 04 09 | 704 | 0.4-  | 0.1-  | 2006 10 02 | 703 | (2.8- | 1.0-) |
| 2003 10 23 | 691 | 0.2-  | 0.2+  | 2005 04 09 | 704 | (1.5+ | 0.2-) | 2006 10 02 | 703 | 0.9+  | 1.3+  |
| 2003 10 23 | 691 | 0.3-  | 0.1+  | 2005 04 09 | 704 | 0.8+  | 0.2+  | 2007 10 18 | 691 | 0.1+  | 0.4+  |
| 2003 10 25 | 704 | 0.7+  | 0.3+  | 2005 04 09 | 704 | 0.8+  | 0.1-  | 2007 10 18 | 691 | 0.2-  | 0.1-  |
| 2003 10 25 | 704 | 0.1-  | 0.4+  | 2005 04 09 | 704 | 0.5+  | 0.2+  | 2007 10 18 | 691 | 0.6-  | 0.3-  |
| 2003 10 25 | 704 | (0.1+ | 1.8+) | 2005 04 13 | 704 | 0.0   | 0.1+  | 2007 11 20 | 704 | 0.3+  | 0.5+  |
| 2003 10 29 | 704 | 0.1-  | 0.3+  | 2005 04 13 | 704 | 0.0   | 0.2+  | 2007 11 20 | 704 | 0.5-  | 0.7+  |
| 2003 10 29 | 704 | 0.6+  | 0.2-  | 2005 04 13 | 704 | 0.5+  | 0.8+  | 2007 11 20 | 704 | 1.0-  | 0.1+  |
| 2003 10 29 | 704 | 0.2-  | 0.2+  | 2005 04 13 | 704 | 0.5-  | 0.1+  | 2007 12 13 | 704 | 1.4+  | 0.3+  |
| 2003 10 29 | 704 | 0.1-  | 0.1+  | 2005 04 13 | 704 | 1.1+  | 1.4+  | 2007 12 13 | 704 | 1.2+  | 0.7+  |
| 2003 10 29 | 704 | 0.1+  | 1.0+  | 2005 04 19 | 704 | 0.1+  | 1.1+  | 2007 12 13 | 704 | 1.2+  | 1.5-  |
| 2003 11 01 | 704 | 0.2+  | 0.7+  | 2005 04 19 | 704 | 0.9+  | 0.2+  | 2007 12 13 | 704 | 0.3+  | 0.3-  |
| 2003 11 01 | 704 | 0.3-  | 0.5+  | 2005 04 19 | 704 | 0.1+  | 0.5+  |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.92739  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28056319 | $\omega$ | 126.12783 | +0.48642736 | -0.87002653 |
| <i>a</i> | 2.3109059  | $\Omega$ | 294.57799 | +0.77059379 | +0.47049568 |
| <i>e</i> | 0.0904400  | <i>i</i> | 5.06354   | +0.41179320 | +0.14726726 |
| <i>P</i> | 3.51       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 20 | 704 | 0.2+  | 0.1-  | 2005 02 02 | 644 | 0.7+  | 0.6+  | 2007 11 15 | 699 | 1.1+ | 1.4+ |
| 2000 11 20 | 704 | 0.1-  | 0.0   | 2005 02 02 | 703 | 0.4-  | 0.9-  | 2007 11 15 | 699 | 0.4+ | 0.2- |
| 2000 11 20 | 704 | 0.3-  | 0.1-  | 2005 02 02 | 644 | 0.5+  | 0.5+  | 2007 11 15 | 699 | 0.6+ | 0.2+ |
| 2000 11 20 | 704 | 0.1+  | 0.2-  | 2005 02 09 | 699 | 0.1+  | 1.4+  | 2007 11 15 | 699 | 0.9+ | 0.1+ |
| 2000 11 20 | 704 | 0.5-  | 0.3-  | 2005 02 09 | 699 | (1.9+ | 1.1+) | 2007 11 18 | 704 | 0.1+ | 0.1- |
| 2000 11 30 | 704 | 0.0   | 0.5+  | 2005 02 09 | 699 | (2.6+ | 0.4-) | 2007 11 18 | 704 | 0.1- | 0.3- |
| 2000 11 30 | 704 | 0.1+  | 0.2+  | 2005 02 09 | 699 | 0.9+  | 0.1+  | 2007 11 18 | 704 | 0.1+ | 0.1+ |
| 2000 11 30 | 704 | 0.2+  | 0.0   | 2005 03 10 | 703 | 0.6-  | 0.1+  | 2007 11 18 | 704 | 0.3- | 0.4- |
| 2000 11 30 | 704 | (0.8+ | 2.0+) | 2005 03 10 | 703 | 1.4-  | 0.6+  | 2007 11 18 | 704 | 0.1+ | 0.3+ |
| 2000 12 01 | 704 | 0.9-  | 1.0+  | 2005 03 10 | 703 | 0.5-  | 0.8-  | 2007 11 19 | 691 | 0.2- | 0.1- |
| 2000 12 01 | 704 | 0.1+  | 0.4-  | 2005 03 10 | 703 | 0.8+  | 0.8+  | 2007 11 19 | 691 | 0.2- | 0.2- |
| 2000 12 01 | 704 | 0.1+  | 0.2+  | 2005 03 11 | 699 | 0.1+  | 0.4+  | 2007 11 19 | 691 | 0.2- | 0.1- |
| 2000 12 01 | 704 | 0.7+  | 0.4-  | 2005 03 11 | 699 | 1.2+  | 0.2-  | 2007 11 20 | 704 | 0.5+ | 0.6- |
| 2000 12 01 | 704 | 0.1+  | 0.6+  | 2005 03 11 | 699 | 1.2+  | 0.8-  | 2007 11 20 | 704 | 0.4- | 0.0  |
| 2003 08 22 | 644 | 0.3-  | 0.5+  | 2005 03 11 | 699 | (1.5+ | 0.1-) | 2007 11 20 | 704 | 0.2+ | 0.3- |
| 2003 08 22 | 644 | 0.3-  | 0.2+  | 2005 03 17 | G96 | 0.3-  | 0.1+  | 2007 11 20 | 704 | 0.3+ | 0.4+ |
| 2003 08 22 | 644 | 0.3-  | 0.5+  | 2005 03 17 | G96 | 0.1-  | 0.0   | 2007 11 20 | 704 | 0.6+ | 0.2+ |
| 2003 09 23 | 644 | 0.1-  | 0.4+  | 2005 03 17 | G96 | 0.2-  | 0.1-  | 2007 11 20 | 691 | 0.3- | 0.0  |
| 2003 09 23 | 644 | 0.2-  | 0.6+  | 2005 03 17 | G96 | 0.5-  | 0.1-  | 2007 11 20 | 691 | 0.3- | 0.1- |
| 2003 09 23 | 644 | 0.0   | 0.3+  | 2007 11 02 | 691 | 0.1-  | 0.2-  | 2007 11 20 | 691 | 0.2- | 0.1- |
| 2005 01 17 | 703 | 1.1-  | 0.6+  | 2007 11 02 | 691 | 0.0   | 0.1-  | 2007 12 12 | 704 | 0.2- | 0.4+ |
| 2005 01 17 | 703 | 0.8+  | 0.4-  | 2007 11 02 | 691 | 0.0   | 0.3-  | 2007 12 12 | 704 | 0.4- | 0.5+ |
| 2005 01 17 | 703 | 1.3-  | 0.8-  | 2007 11 07 | 704 | 0.7+  | 0.4+  | 2007 12 12 | 704 | 0.2+ | 1.0+ |
| 2005 01 17 | 703 | 0.6-  | 0.3-  | 2007 11 07 | 704 | 0.1+  | 0.2-  | 2007 12 12 | 704 | 0.2- | 0.4+ |
| 2005 02 01 | 644 | 0.0   | 0.5+  | 2007 11 07 | 704 | 0.8+  | 0.6+  | 2007 12 12 | 704 | 0.1- | 0.8+ |
| 2005 02 01 | 644 | 0.4+  | 0.4+  | 2007 11 07 | 704 | 0.9+  | 0.1-  | 2007 12 15 | 704 | 0.0  | 0.5+ |
| 2005 02 01 | 644 | 1.2+  | 0.9+  | 2007 11 07 | 704 | 0.3+  | 0.1-  | 2007 12 15 | 704 | 0.1+ | 0.4+ |
| 2005 02 02 | 644 | 0.5+  | 0.5+  | 2007 11 13 | 703 | 0.4-  | 0.1-  | 2007 12 15 | 704 | 0.1- | 0.3- |
| 2005 02 02 | 703 | (0.7- | 1.6-) | 2007 11 13 | 703 | 0.0   | 1.0-  | 2007 12 15 | 704 | 0.1+ | 0.2+ |
| 2005 02 02 | 703 | 0.8-  | 0.4-  | 2007 11 13 | 703 | 0.8-  | 0.1-  | 2007 12 15 | 704 | 0.7+ | 0.5- |
| 2005 02 02 | 703 | 0.3+  | 0.9-  | 2007 11 13 | 703 | 0.2-  | 0.4-  |            |     |      |      |

(171739)\* 2000 WG<sub>115</sub>

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.47598    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29186608 | $\omega$ | 151.93314 | -0.08570865 | -0.99296477 |
| <i>a</i> | 2.2508521  | $\Omega$ | 302.87586 | +0.89493440 | -0.04068710 |
| <i>e</i> | 0.1080682  | <i>i</i> | 5.58257   | +0.43788862 | -0.11120040 |
| <i>P</i> | 3.38       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 20 | 704 | 1.2- | 1.6+ | 2003 09 17 | 246 | 0.1- | 0.1- | 2003 11 24 | 704 | 0.1- | 1.3+ |
| 2000 11 20 | 704 | 0.1+ | 0.3+ | 2003 09 18 | 644 | 0.4- | 0.3+ | 2003 11 24 | 704 | 0.2+ | 0.6+ |
| 2000 11 20 | 704 | 0.2- | 0.5+ | 2003 09 18 | 644 | 0.4- | 0.0  | 2003 11 24 | 704 | 0.0  | 0.8+ |
| 2000 11 20 | 704 | 0.1+ | 1.2+ | 2003 09 18 | 644 | 0.1- | 0.3+ | 2003 11 24 | 704 | 0.7- | 1.1+ |
| 2000 11 20 | 704 | 0.4+ | 0.8+ | 2003 09 18 | 608 | 0.1- | 0.6- | 2005 04 05 | 644 | 0.5+ | 0.9+ |
| 2000 11 30 | 704 | 0.5- | 0.2+ | 2003 09 18 | 608 | 0.1- | 0.3- | 2005 04 05 | 644 | 0.5+ | 0.6+ |
| 2000 11 30 | 704 | 0.4+ | 0.5- | 2003 09 18 | 608 | 0.4+ | 0.9- | 2005 04 05 | 644 | 0.2+ | 0.4+ |
| 2000 11 30 | 704 | 0.2+ | 0.1+ | 2003 09 24 | 608 | 0.7+ | 0.1+ | 2005 04 14 | 703 | 0.2- | 0.0  |
| 2000 11 30 | 704 | 0.8- | 0.5- | 2003 09 24 | 608 | 0.3+ | 0.2+ | 2005 04 14 | 703 | 0.6+ | 0.8- |
| 2000 12 20 | 704 | 1.0+ | 0.3- | 2003 09 24 | 608 | 0.3+ | 0.1+ | 2005 04 14 | 703 | 0.3- | 0.3+ |
| 2000 12 20 | 704 | 0.0  | 0.0  | 2003 09 30 | 704 | 0.2+ | 0.6+ | 2005 04 14 | 703 | 0.5- | 0.0  |
| 2000 12 20 | 704 | 0.4+ | 0.9+ | 2003 09 30 | 704 | 0.6+ | 0.4+ | 2006 07 25 | 644 | 0.2- | 0.1- |
| 2000 12 20 | 704 | 0.2+ | 0.3+ | 2003 09 30 | 704 | 0.4+ | 0.3+ | 2006 07 25 | 644 | 0.5- | 0.1+ |
| 2001 01 04 | 704 | 0.0  | 0.7- | 2003 09 30 | 704 | 0.6+ | 0.3+ | 2006 07 25 | 644 | 0.2- | 0.4+ |
| 2001 01 04 | 704 | 0.5- | 0.4- | 2003 09 30 | 704 | 0.1+ | 0.1+ | 2006 08 14 | E12 | 0.1+ | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.7- | 1.0- | 2003 10 17 | 699 | 0.7-  | 0.2+  | 2006 08 14 | E12 | 0.1- | 0.5+ |
| 2001 01 04 | 704 | 0.3+ | 0.9- | 2003 10 17 | 699 | 0.5-  | 0.6-  | 2006 08 14 | E12 | 0.5- | 0.2+ |
| 2001 01 04 | 704 | 0.0  | 1.2- | 2003 10 17 | 699 | 0.7+  | 0.3-  | 2006 08 14 | E12 | 0.1- | 0.1+ |
| 2001 01 19 | 704 | 0.8+ | 0.2+ | 2003 10 17 | 699 | 0.0   | 0.2+  | 2006 08 14 | E12 | 0.6+ | 0.1- |
| 2001 01 19 | 704 | 0.4+ | 0.4+ | 2003 10 18 | 691 | 0.1+  | 0.3-  | 2007 11 12 | G96 | 0.2- | 0.4- |
| 2001 01 19 | 704 | 0.1- | 0.5+ | 2003 10 18 | 691 | 0.2+  | 0.3-  | 2007 11 12 | G96 | 0.2- | 0.3- |
| 2001 01 19 | 704 | 0.2- | 0.3+ | 2003 10 18 | 691 | 0.1+  | 0.4-  | 2007 11 12 | G96 | 0.0  | 0.3- |
| 2001 01 19 | 704 | 0.0  | 0.1- | 2003 10 21 | 704 | (2.3+ | 1.0+) | 2007 11 12 | G96 | 0.1+ | 0.1- |
| 2003 09 16 | 644 | 0.2- | 0.1+ | 2003 10 21 | 704 | (1.6+ | 0.8+) | 2007 12 03 | 703 | 0.7+ | 0.3- |
| 2003 09 16 | 644 | 0.0  | 0.0  | 2003 10 21 | 704 | 0.2+  | 0.3+  | 2007 12 03 | 703 | 0.9- | 0.4+ |
| 2003 09 16 | 644 | 0.2- | 0.2+ | 2003 10 21 | 704 | (1.7+ | 0.0 ) | 2007 12 03 | 703 | 0.5- | 0.3+ |
| 2003 09 17 | 246 | 0.2- | 0.0  | 2003 10 21 | 704 | 0.5-  | 0.0   | 2007 12 03 | 703 | 0.6- | 0.9+ |
| 2003 09 17 | 246 | 0.5- | 0.2- | 2003 10 21 | 704 | 1.0+  | 0.3+  | 2007 12 14 | G96 | 0.7+ | 0.3- |
| 2003 09 17 | 246 | 0.5- | 0.2- | 2003 10 21 | 704 | 0.2-  | 0.1-  | 2007 12 14 | G96 | 0.6+ | 0.1- |
| 2003 09 17 | 246 | 0.6- | 0.3+ | 2003 10 21 | 704 | (1.6+ | 0.1-) | 2007 12 14 | G96 | 0.7- | 0.4- |
| 2003 09 17 | 246 | 0.8- | 0.2- | 2003 10 21 | 704 | 0.1+  | 0.1-  | 2007 12 14 | G96 | 0.4+ | 0.1+ |

(171740)\* 2000 WH<sub>115</sub>

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.04325   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28835812 | $\omega$ | 310.81219 | +0.99438040 | -0.03917582 |
| <i>a</i> | 2.2690701  | $\Omega$ | 51.66500  | +0.08080215 | +0.88109221 |
| <i>e</i> | 0.1263618  | <i>i</i> | 7.20292   | -0.06840051 | +0.47131919 |
| <i>P</i> | 3.42       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 20 | 704 | 0.2-  | 0.1+  | 2002 04 17 | 704 | 0.0   | 1.0+  | 2003 10 18 | 704 | 0.9+  | 0.5+  |
| 2000 11 20 | 704 | 0.4-  | 0.5-  | 2003 08 31 | 608 | 0.7+  | 1.4+  | 2003 10 18 | 704 | 0.4+  | 0.3+  |
| 2000 11 20 | 704 | 0.1+  | 0.3+  | 2003 08 31 | 608 | 1.0+  | 1.4+  | 2003 10 18 | 704 | 0.3+  | 1.1+  |
| 2000 11 20 | 704 | 0.1+  | 0.1-  | 2003 08 31 | 608 | 0.6+  | 0.8+  | 2003 10 18 | 704 | 0.2+  | 0.4+  |
| 2000 11 20 | 704 | 0.4+  | 0.1+  | 2003 09 01 | 704 | 0.3+  | 1.1+  | 2003 10 18 | 704 | (0.5- | 1.8+) |
| 2000 11 30 | 704 | 0.4-  | 0.5+  | 2003 09 01 | 704 | 0.8-  | 0.6-  | 2003 10 27 | 699 | 0.7-  | 0.2+  |
| 2000 11 30 | 704 | 0.0   | 0.1-  | 2003 09 01 | 704 | 0.5-  | 0.2+  | 2003 10 27 | 704 | 0.5+  | 0.0   |
| 2000 11 30 | 704 | 0.2+  | 0.4-  | 2003 09 01 | 704 | 0.2-  | 0.8+  | 2003 10 27 | 704 | 0.8+  | 0.2+  |
| 2000 11 30 | 704 | 0.6+  | 0.2+  | 2003 09 01 | 704 | 0.2-  | 0.8+  | 2003 10 27 | 704 | 0.8-  | 0.0   |
| 2000 12 20 | 704 | 0.7+  | 0.1-  | 2003 09 05 | 608 | 0.5-  | 0.7-  | 2003 10 27 | 699 | 0.5-  | 0.3+  |
| 2000 12 20 | 704 | 0.0   | 0.8-  | 2003 09 05 | 608 | 0.3-  | 0.3-  | 2003 10 27 | 704 | 0.6-  | 1.2-  |
| 2000 12 20 | 704 | 0.5+  | 0.1+  | 2003 09 05 | 608 | 0.3-  | 0.3-  | 2003 10 27 | 699 | 0.4-  | 0.6-  |
| 2000 12 20 | 704 | 0.4-  | 0.1-  | 2003 09 09 | 608 | 0.3+  | 0.6-  | 2003 10 27 | 699 | 0.4-  | 0.0   |
| 2000 12 20 | 704 | 0.6-  | 0.1-  | 2003 09 09 | 608 | 0.1-  | 0.2-  | 2003 12 13 | 704 | 0.6-  | 0.7+  |
| 2002 04 04 | 608 | 0.7-  | 0.0   | 2003 09 09 | 608 | 0.0   | 0.3+  | 2003 12 13 | 704 | 0.2-  | 0.2+  |
| 2002 04 04 | 608 | 0.8-  | 0.2+  | 2003 09 17 | 704 | (2.3+ | 0.5-) | 2003 12 13 | 704 | 1.2-  | 0.9+  |
| 2002 04 04 | 608 | 0.7-  | 0.3-  | 2003 09 17 | 704 | 0.8+  | 0.7-  | 2003 12 13 | 704 | 0.2-  | 0.7+  |
| 2002 04 10 | 704 | 0.7+  | 0.5+  | 2003 09 17 | 704 | 0.0   | 0.4-  | 2003 12 21 | 704 | 0.0   | 0.2-  |
| 2002 04 10 | 704 | 0.8+  | 0.5+  | 2003 09 17 | 704 | 0.1-  | 0.4-  | 2003 12 21 | 704 | 0.3+  | 0.3-  |
| 2002 04 10 | 704 | (1.6+ | 1.0+) | 2003 09 17 | 704 | 0.4+  | 0.2-  | 2003 12 21 | 704 | 0.1+  | 0.6-  |
| 2002 04 10 | 704 | 0.8+  | 0.0   | 2003 09 17 | 608 | 0.4-  | 0.7+  | 2003 12 21 | 704 | 0.9-  | 0.4-  |
| 2002 04 10 | 704 | 1.0+  | 1.2+  | 2003 09 17 | 608 | 0.5-  | 0.3+  | 2007 11 12 | G96 | 0.5+  | 0.5-  |
| 2002 04 11 | 704 | 0.0   | 0.0   | 2003 09 17 | 608 | 0.1-  | 0.7+  | 2007 11 12 | G96 | 0.3+  | 0.4-  |
| 2002 04 11 | 704 | 0.3-  | 0.5+  | 2003 09 20 | 644 | 0.5-  | 0.1+  | 2007 11 12 | G96 | 0.3+  | 0.2-  |
| 2002 04 11 | 704 | 0.5+  | 0.9+  | 2003 09 20 | 644 | 0.4-  | 0.2+  | 2007 11 12 | G96 | 0.1+  | 0.4-  |
| 2002 04 11 | 704 | 0.2+  | 0.9+  | 2003 09 20 | 644 | 0.0   | 0.6+  | 2007 11 18 | 704 | 0.9-  | 0.2+  |
| 2002 04 12 | 608 | 0.7-  | 0.0   | 2003 09 22 | 644 | 0.3-  | 0.2-  | 2007 11 18 | 704 | 0.3+  | 0.8+  |
| 2002 04 12 | 608 | 0.6-  | 0.3-  | 2003 09 22 | 644 | 0.2-  | 0.1-  | 2007 11 18 | 704 | 0.4-  | 0.1+  |
| 2002 04 12 | 608 | 0.8-  | 0.2+  | 2003 09 22 | 644 | 0.1-  | 0.2+  | 2007 11 18 | 704 | 1.2+  | 0.9+  |
| 2002 04 15 | 644 | 0.8+  | 0.4+  | 2003 09 24 | 644 | 0.7-  | 0.4-  | 2007 12 16 | 704 | 0.3+  | 0.5+  |
| 2002 04 15 | 644 | 0.7+  | 0.5+  | 2003 09 24 | 644 | 0.0   | 0.1+  | 2007 12 16 | 704 | 1.0-  | 0.1+  |
| 2002 04 15 | 644 | 0.6+  | 0.6+  | 2003 09 24 | 644 | 0.4+  | 0.5+  | 2007 12 16 | 704 | 0.0   | 0.9+  |
| 2002 04 17 | 704 | 0.4-  | 0.9-  | 2003 10 16 | 699 | 0.5-  | 0.1+  | 2007 12 16 | 704 | 0.3-  | 1.1+  |
| 2002 04 17 | 704 | 1.1+  | 0.1-  | 2003 10 16 | 699 | 0.7+  | 0.1+  | 2007 12 16 | 704 | 0.7+  | 0.8+  |
| 2002 04 17 | 704 | 0.1-  | 0.9+  | 2003 10 16 | 699 | 0.3-  | 0.1-  |            |     |       |       |
| 2002 04 17 | 704 | 1.4+  | 1.2+  | 2003 10 16 | 699 | 0.6-  | 0.4-  |            |     |       |       |

2007 DEC. 24

M.P.O. 129145

(171741)\* 2000 WX<sub>119</sub>

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 334.26275 |            |          | (2000.0) |             |             | <b>P</b> |  |  | <b>Q</b> |  |  |
|--------------------|------------|----------|----------|-------------|-------------|----------|--|--|----------|--|--|
| <i>n</i>           | 0.28171820 | $\omega$ | 57.56456 | −0.26142137 | −0.96243957 |          |  |  |          |  |  |
| <i>a</i>           | 2.3045853  | $\Omega$ | 47.77201 | +0.84903408 | −0.26539838 |          |  |  |          |  |  |
| <i>e</i>           | 0.1191883  | <i>i</i> | 5.67894  | +0.45912961 | −0.05721696 |          |  |  |          |  |  |
| <i>P</i>           | 3.50       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        | <i>U</i> |  |  | 1        |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 20 | 704 | 0.7+ | 0.4− | 2003 10 16 | 699 | 1.4+  | 0.4+  | 2005 04 04 | 703 | 0.6−  | 0.5+  |
| 2000 11 20 | 704 | 0.8− | 0.3− | 2003 10 16 | 644 | 0.5−  | 0.4+  | 2005 04 04 | 703 | 0.1−  | 0.0   |
| 2000 11 20 | 704 | 0.2− | 0.5− | 2003 10 16 | 699 | 0.2−  | 1.0−  | 2005 04 05 | 699 | 0.1−  | 0.1−  |
| 2000 11 20 | 704 | 0.8− | 0.3− | 2003 10 16 | 699 | 1.3+  | 1.0+  | 2005 04 05 | 699 | 0.7−  | 0.8+  |
| 2000 11 30 | 704 | 0.1+ | 0.2− | 2003 10 18 | 699 | 0.0   | 0.2+  | 2005 04 05 | 699 | 0.8−  | 1.4+  |
| 2000 11 30 | 704 | 1.4+ | 0.0  | 2003 10 18 | 699 | 0.1−  | 0.1−  | 2005 04 05 | 699 | 0.7+  | 0.7+  |
| 2000 11 30 | 704 | 0.4+ | 0.0  | 2003 10 18 | 699 | 0.7−  | 0.8−  | 2005 04 08 | 704 | 0.5−  | 0.3−  |
| 2000 12 20 | 704 | 0.1− | 0.2+ | 2003 10 18 | 699 | 0.6+  | 0.6+  | 2005 04 08 | 704 | 1.2+  | 0.4+  |
| 2000 12 20 | 704 | 0.7+ | 0.1− | 2003 10 25 | 704 | 0.8−  | 0.3+  | 2005 04 08 | 704 | (2.0+ | 0.4−) |
| 2000 12 20 | 704 | 0.6− | 0.2− | 2003 10 25 | 704 | 0.3−  | 1.0+  | 2005 04 08 | 704 | 0.9+  | 0.3+  |
| 2000 12 22 | 704 | 0.1− | 0.5+ | 2003 10 25 | 704 | 0.3−  | 0.3+  | 2005 04 13 | 704 | 0.2+  | 0.5+  |
| 2000 12 22 | 704 | 0.3− | 0.5+ | 2003 10 25 | 704 | 1.4−  | 0.2+  | 2005 04 13 | 704 | 0.2+  | 0.2+  |
| 2000 12 22 | 704 | 1.3− | 1.6+ | 2005 03 03 | 703 | 0.9+  | 0.5+  | 2005 04 13 | 704 | 0.7+  | 0.1−  |
| 2000 12 22 | 704 | 0.4+ | 0.1− | 2005 03 03 | 703 | 1.0−  | 0.5+  | 2005 04 13 | 704 | 0.9+  | 1.1+  |
| 2003 09 18 | 644 | 0.1− | 0.3+ | 2005 03 03 | 703 | 0.2−  | 1.2+  | 2005 05 04 | 644 | 0.1+  | 0.3+  |
| 2003 09 18 | 644 | 0.2+ | 0.1+ | 2005 03 03 | 703 | 0.3−  | 0.7−  | 2005 05 04 | 644 | 0.1+  | 0.4+  |
| 2003 09 18 | 644 | 0.5− | 0.3+ | 2005 03 08 | 699 | 0.6+  | 0.3+  | 2005 05 04 | 644 | 0.2+  | 0.4+  |
| 2003 09 22 | 699 | 0.6+ | 0.3+ | 2005 03 08 | 683 | (0.4+ | 2.2−) | 2006 08 14 | 644 | 0.5−  | 0.5+  |
| 2003 09 22 | 699 | 0.9+ | 0.7+ | 2005 03 08 | 699 | 0.6+  | 1.1+  | 2006 08 14 | 644 | 0.3−  | 0.3+  |
| 2003 09 22 | 699 | 0.7+ | 0.2− | 2005 03 08 | 683 | 1.1+  | 0.7+  | 2006 08 14 | 644 | 0.5−  | 0.2+  |
| 2003 09 22 | 699 | 0.6+ | 0.0  | 2005 03 08 | 699 | 1.1+  | 0.5+  | 2006 08 14 | 644 | 0.2−  | 0.2+  |
| 2003 09 28 | 704 | 0.8− | 0.6+ | 2005 03 08 | 683 | 0.7−  | 0.1−  | 2006 08 14 | 644 | 0.5−  | 0.0   |
| 2003 09 28 | 704 | 0.4− | 0.3+ | 2005 03 08 | 699 | 0.8+  | 1.4+  | 2006 08 14 | 644 | 0.2−  | 0.5+  |
| 2003 09 28 | 704 | 0.1− | 0.2+ | 2005 03 10 | 683 | (0.3− | 1.6+) | 2007 12 13 | 704 | 0.2+  | 0.0   |
| 2003 09 28 | 704 | 0.4− | 0.5+ | 2005 03 10 | 683 | (0.8+ | 2.0+) | 2007 12 13 | 704 | 0.3−  | 0.1+  |
| 2003 09 30 | 691 | 0.5− | 0.3+ | 2005 03 10 | 683 | (2.5− | 1.3+) | 2007 12 13 | 704 | 0.4−  | 0.0   |
| 2003 09 30 | 691 | 0.5− | 0.3+ | 2005 03 16 | 683 | (1.1+ | 1.7−) | 2007 12 13 | 704 | 0.2−  | 0.3+  |
| 2003 09 30 | 691 | 0.4− | 0.3+ | 2005 03 16 | 683 | 0.8+  | 0.6−  | 2007 12 13 | 704 | 0.0   | 0.2−  |
| 2003 10 06 | 699 | 0.1+ | 0.3+ | 2005 03 16 | 683 | 0.2+  | 0.0   | 2007 12 15 | 704 | 0.1−  | 0.2+  |
| 2003 10 06 | 699 | 0.8+ | 1.0+ | 2005 03 18 | 703 | 0.4−  | 0.7+  | 2007 12 15 | 704 | 0.1+  | 0.3−  |
| 2003 10 06 | 699 | 0.4+ | 0.8− | 2005 03 18 | 703 | 0.2−  | 0.0   | 2007 12 15 | 704 | 0.1+  | 0.1+  |
| 2003 10 06 | 699 | 0.1− | 1.2+ | 2005 03 18 | 703 | 0.1−  | 1.3+  | 2007 12 15 | 704 | 0.3+  | 0.5−  |
| 2003 10 16 | 644 | 0.6− | 0.4+ | 2005 03 18 | 703 | 1.0+  | 0.0   | 2007 12 15 | 704 | 0.4+  | 0.3+  |
| 2003 10 16 | 644 | 0.5− | 0.2+ | 2005 04 04 | 703 | 0.5+  | 0.1+  |            |     |       |       |
| 2003 10 16 | 699 | 0.6+ | 1.1+ | 2005 04 04 | 703 | 0.0   | 1.0−  |            |     |       |       |

(171742)\* 2000 WF<sub>177</sub> = 2002 GU<sub>111</sub>

Discovered 2000 Nov. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 31362)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 297.99347 |            |          | (2000.0) |             |             | <b>P</b> |  |  | <b>Q</b> |  |  |
|--------------------|------------|----------|----------|-------------|-------------|----------|--|--|----------|--|--|
| <i>n</i>           | 0.28403403 | $\omega$ | 33.25954 | −0.55071014 | −0.82643192 |          |  |  |          |  |  |
| <i>a</i>           | 2.2920414  | $\Omega$ | 90.41591 | +0.73798464 | −0.54766805 |          |  |  |          |  |  |
| <i>e</i>           | 0.0159430  | <i>i</i> | 6.72893  | +0.38999617 | −0.13065216 |          |  |  |          |  |  |
| <i>P</i>           | 3.47       | <i>H</i> | 16.7     | <i>G</i>    | 0.15        | <i>U</i> |  |  | 1        |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 27 | 704 | 0.8− | 0.5− | 2002 04 16 | 704 | 0.2− | 0.5+ | 2007 10 30 | 691 | 0.4− | 0.2+ |
| 2000 11 27 | 704 | 0.2+ | 1.0+ | 2002 04 16 | 704 | 1.1− | 0.0  | 2007 10 30 | 691 | 0.4− | 0.6+ |
| 2000 11 27 | 704 | 0.1+ | 1.0+ | 2002 04 16 | 704 | 0.7+ | 0.2− | 2007 10 30 | 691 | 0.2− | 0.1+ |
| 2000 12 01 | 691 | 0.1− | 0.2− | 2002 04 16 | 704 | 0.1+ | 1.1+ | 2007 11 12 | 704 | 0.1− | 0.7+ |
| 2000 12 01 | 691 | 0.3− | 0.3− | 2002 05 07 | 644 | 0.4+ | 0.3+ | 2007 11 12 | 704 | 0.6+ | 0.9+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 12 01 | 691 | 0.1− | 0.1− | 2002 05 07 | 644 | 0.5− | 0.0  | 2007 11 12 | 704 | 0.4+  | 0.6+  |
| 2000 12 28 | 691 | 0.4+ | 0.2− | 2002 05 07 | 644 | 0.1− | 0.1− | 2007 11 12 | 704 | (1.4+ | 1.7+) |
| 2000 12 28 | 691 | 0.2+ | 0.2− | 2005 02 01 | 703 | 0.2+ | 0.3− | 2007 12 03 | 703 | 0.9+  | 0.7−  |
| 2000 12 28 | 691 | 0.3+ | 0.0  | 2005 02 01 | 703 | 1.4+ | 0.2+ | 2007 12 03 | 703 | 0.5−  | 0.1−  |
| 2002 04 10 | 704 | 0.1+ | 0.1+ | 2005 02 01 | 703 | 1.3− | 0.3− | 2007 12 03 | 703 | 0.3−  | 1.8−  |
| 2002 04 10 | 704 | 0.6+ | 0.7− | 2005 02 01 | 703 | 0.1− | 0.4+ | 2007 12 04 | 704 | 0.3+  | 1.0+  |
| 2002 04 10 | 704 | 0.4+ | 0.2− | 2005 03 01 | 703 | 0.2− | 0.5+ | 2007 12 04 | 704 | 0.4+  | 0.3+  |
| 2002 04 13 | 644 | 0.2+ | 0.5+ | 2005 03 01 | 703 | 0.6− | 1.1− | 2007 12 04 | 704 | 0.8+  | 0.7+  |
| 2002 04 13 | 644 | 0.1− | 0.7+ | 2005 03 01 | 703 | 0.2− | 0.5+ |            |     |       |       |
| 2002 04 13 | 644 | 0.5+ | 0.4+ | 2005 03 01 | 703 | 0.9+ | 0.5− |            |     |       |       |

(171743)\* 2000 WD<sub>184</sub> = 1998 BH<sub>17</sub>

Discovered 2000 Nov. 30 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. T. B. Spahr (MPO 9445)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 354.36793 |            |          | (2000.0)  |             |             | <b>P</b> |  |  | <b>Q</b> |  |  |
|--------------------|------------|----------|-----------|-------------|-------------|----------|--|--|----------|--|--|
| <i>n</i>           | 0.28559358 | $\omega$ | 318.82930 | +0.32828042 | −0.94406681 |          |  |  |          |  |  |
| <i>a</i>           | 2.2836897  | $\Omega$ | 111.98537 | +0.87519245 | +0.29159708 |          |  |  |          |  |  |
| <i>e</i>           | 0.1308239  | <i>i</i> | 1.92461   | +0.35534511 | +0.15397730 |          |  |  |          |  |  |
| <i>P</i>           | 3.45       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> |  |  | 1        |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 01 22 | 691 | 0.3− | 0.2− | 2000 12 06 | 691 | 0.1−  | 0.2−  | 2005 04 04 | 691 | 0.5+ | 0.4+ |
| 1998 01 22 | 691 | 0.5− | 0.1+ | 2003 08 23 | 644 | 0.1−  | 0.8+  | 2005 04 04 | 691 | 0.1+ | 0.3+ |
| 1998 01 22 | 691 | 0.0  | 0.2− | 2003 08 23 | 644 | 0.2+  | 0.6+  | 2005 04 04 | 691 | 0.0  | 0.8+ |
| 1998 01 28 | 691 | 0.4+ | 0.4− | 2003 08 23 | 644 | 0.3+  | 0.9+  | 2005 04 11 | G96 | 0.5− | 0.1+ |
| 1998 01 28 | 691 | 0.1+ | 0.0  | 2003 09 01 | 704 | 1.0−  | 0.5−  | 2005 04 11 | G96 | 0.3− | 0.1− |
| 1998 01 28 | 691 | 0.1− | 0.2− | 2003 09 01 | 704 | 0.5−  | 1.2+  | 2005 04 11 | G96 | 0.2− | 0.1− |
| 1998 02 02 | 691 | 0.3+ | 0.2+ | 2003 09 01 | 704 | 0.0   | 1.3+  | 2005 04 11 | G96 | 0.2− | 0.1− |
| 1998 02 02 | 691 | 0.0  | 0.3− | 2005 03 03 | 691 | 0.0   | 0.2+  | 2007 11 09 | 691 | 0.0  | 0.0  |
| 1998 02 02 | 691 | 0.3+ | 0.1+ | 2005 03 03 | 691 | 0.2−  | 0.1+  | 2007 11 09 | 691 | 0.1− | 0.1+ |
| 2000 11 21 | 704 | 0.7− | 0.3− | 2005 03 03 | 691 | 0.1−  | 0.1+  | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 2000 11 21 | 704 | 0.0  | 0.3+ | 2005 03 09 | 704 | 0.1−  | 0.9+  | 2007 11 14 | 704 | 0.6− | 0.2+ |
| 2000 11 21 | 704 | 0.2− | 0.2− | 2005 03 09 | 704 | 0.1−  | 0.7+  | 2007 11 14 | 704 | 0.1+ | 0.2− |
| 2000 11 21 | 704 | 1.2− | 1.1+ | 2005 03 09 | 704 | 0.7+  | 0.4+  | 2007 11 14 | 704 | 0.6+ | 1.0− |
| 2000 11 21 | 608 | 0.0  | 0.8+ | 2005 03 09 | 704 | 0.1−  | 0.5−  | 2007 12 05 | 704 | 0.2− | 0.4− |
| 2000 11 21 | 608 | 0.6+ | 0.0  | 2005 03 12 | 704 | (2.9+ | 0.4−) | 2007 12 05 | 704 | 0.2− | 0.2+ |
| 2000 11 21 | 608 | 0.2+ | 0.4− | 2005 03 12 | 704 | 1.1+  | 0.5+  | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2000 11 30 | 699 | 0.7− | 0.0  | 2005 03 12 | 704 | (1.2+ | 1.8+) | 2007 12 05 | 704 | 0.1− | 0.0  |
| 2000 11 30 | 699 | 0.4− | 1.9+ | 2005 03 12 | 704 | (1.4+ | 1.6+) | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2000 11 30 | 699 | 0.0  | 0.4+ | 2005 03 16 | G96 | 0.3−  | 0.1−  | 2007 12 15 | 691 | 0.1+ | 0.1+ |
| 2000 11 30 | 699 | 0.1+ | 0.5+ | 2005 03 16 | G96 | 0.4−  | 0.3−  | 2007 12 15 | 691 | 0.0  | 0.1+ |
| 2000 12 06 | 691 | 0.1+ | 0.2− | 2005 03 16 | G96 | 0.2−  | 0.2−  | 2007 12 15 | 691 | 0.3+ | 0.1+ |
| 2000 12 06 | 691 | 0.1+ | 0.2− | 2005 03 16 | G96 | 0.0   | 0.2−  |            |     |      |      |

(171744)\* 2000 WU<sub>195</sub>

Discovered 2000 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 14.59630 |            |          | (2000.0)  |             |             | <b>P</b> |  |  | <b>Q</b> |  |  |
|-------------------|------------|----------|-----------|-------------|-------------|----------|--|--|----------|--|--|
| <i>n</i>          | 0.27794440 | $\omega$ | 65.94095  | +0.74306512 | −0.66862265 |          |  |  |          |  |  |
| <i>a</i>          | 2.3253987  | $\Omega$ | 335.98907 | +0.58602039 | +0.67048930 |          |  |  |          |  |  |
| <i>e</i>          | 0.2560686  | <i>i</i> | 3.98077   | +0.32316300 | +0.32153982 |          |  |  |          |  |  |
| <i>P</i>          | 3.55       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> |  |  | 1        |  |  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 03 | 699 | 0.3−  | 0.8+  | 2003 08 25 | 704 | 0.0  | 0.5+ | 2007 09 14 | 704 | 0.5−  | 0.4+  |
| 2001 01 04 | 704 | 0.3−  | 0.0   | 2003 08 25 | 704 | 0.0  | 1.3+ | 2007 11 07 | 704 | (0.7+ | 2.3+) |
| 2001 01 04 | 704 | 0.6−  | 0.5+  | 2003 08 28 | 608 | 0.5+ | 0.1− | 2007 11 07 | 704 | 0.4−  | 0.0   |
| 2001 01 04 | 704 | 0.1−  | 0.1−  | 2003 08 28 | 608 | 0.0  | 0.3− | 2007 11 07 | 704 | 0.1−  | 0.2−  |
| 2001 01 04 | 704 | 0.4−  | 0.0   | 2003 08 28 | 608 | 0.6− | 0.3+ | 2007 12 13 | 704 | 0.4−  | 0.0   |
| 2001 01 04 | 704 | 0.5−  | 0.6+  | 2003 08 31 | 704 | 1.3+ | 0.5+ | 2007 12 13 | 704 | 0.1−  | 0.0   |
| 2001 01 19 | 704 | 0.1+  | 0.5+  | 2003 08 31 | 704 | 0.3+ | 0.1− | 2007 12 13 | 704 | 0.3+  | 0.1+  |
| 2001 01 19 | 704 | 0.5+  | 0.1+  | 2003 08 31 | 704 | 0.3+ | 0.0  | 2007 12 13 | 704 | 0.4+  | 0.1+  |
| 2001 01 19 | 704 | 0.1−  | 0.0   | 2003 10 23 | 704 | 0.8− | 0.6+ | 2007 12 15 | 704 | 0.1+  | 0.1+  |
| 2001 01 19 | 704 | (2.2+ | 1.2+) | 2003 10 23 | 704 | 1.4+ | 0.7+ | 2007 12 15 | 704 | 0.1−  | 0.0   |
| 2003 07 25 | 704 | 1.0−  | 0.3−  | 2003 10 23 | 704 | 0.1+ | 0.9+ | 2007 12 15 | 704 | 0.0   | 0.2+  |
| 2003 07 25 | 644 | 0.3−  | 0.5+  | 2005 03 04 | 691 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.2+  | 0.0   |
| 2003 07 25 | 704 | 0.8−  | 0.1+  | 2005 03 04 | 691 | 0.4− | 0.0  | 2007 12 15 | 704 | 0.2+  | 0.2+  |
| 2003 07 25 | 704 | 0.2+  | 0.2−  | 2005 03 04 | 691 | 0.0  | 0.2+ |            |     |       |       |
| 2003 07 25 | 644 | 0.2−  | 0.4+  | 2005 03 09 | 691 | 0.4+ | 0.3+ |            |     |       |       |

**(171745)\* 2000 XU = 2006 VC<sub>104</sub>**

Discovered 2000 Dec. 1 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 112201)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 94.03548   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.15597527 | $\omega$ | 97.39667  | +0.92575789 | +0.37082119 |
| <i>a</i> | 3.4179488  | $\Omega$ | 240.86194 | −0.37164557 | +0.85634463 |
| <i>e</i> | 0.1280280  | <i>i</i> | 4.85467   | −0.06965561 | +0.35939604 |
| <i>P</i> | 6.32       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 09 16 | 691 | 0.2− | 0.3− | 2005 06 10 | 691 | 0.2−  | 0.1+  | 2006 11 13 | 691 | 0.1− | 0.6+ |
| 1993 09 16 | 691 | 0.2+ | 0.2+ | 2005 06 10 | 691 | 0.0   | 0.1−  | 2006 11 13 | 691 | 0.1− | 0.6+ |
| 1993 09 16 | 691 | 0.2+ | 0.1+ | 2005 06 10 | 691 | 0.2−  | 0.2+  | 2006 11 17 | G96 | 0.1− | 0.5− |
| 2000 10 25 | 691 | 0.5− | 0.2− | 2006 09 28 | 699 | 1.1−  | 1.2−  | 2006 11 17 | G96 | 0.1− | 0.3− |
| 2000 10 25 | 691 | 0.4− | 0.1+ | 2006 09 28 | 699 | 0.4−  | 0.6+  | 2006 11 17 | G96 | 0.2− | 0.1− |
| 2000 10 25 | 691 | 1.2− | 0.1+ | 2006 09 28 | 699 | 0.2+  | 0.6+  | 2006 11 17 | G96 | 0.1+ | 0.3− |
| 2000 12 01 | 691 | 0.6+ | 0.0  | 2006 09 28 | 699 | 0.1−  | 0.5+  | 2006 11 27 | G96 | 0.2+ | 0.2+ |
| 2000 12 01 | 691 | 0.4+ | 0.1− | 2006 10 17 | 691 | 0.4+  | 0.3+  | 2006 11 27 | G96 | 0.4+ | 0.2− |
| 2000 12 01 | 691 | 0.1+ | 0.5− | 2006 10 17 | 691 | 0.3+  | 0.0   | 2006 11 27 | G96 | 0.2+ | 0.1+ |
| 2000 12 03 | 691 | 0.2+ | 0.1− | 2006 10 17 | 691 | 0.2+  | 0.4+  | 2006 11 27 | G96 | 0.0  | 0.7− |
| 2000 12 03 | 691 | 0.4+ | 0.1− | 2006 10 17 | 703 | 0.5−  | 0.1+  | 2007 12 04 | 691 | 0.1+ | 0.1+ |
| 2000 12 03 | 691 | 0.2+ | 0.1+ | 2006 10 17 | 703 | 0.4−  | 0.8+  | 2007 12 04 | 691 | 0.0  | 0.3− |
| 2004 05 14 | 691 | 0.3+ | 0.3+ | 2006 10 17 | 703 | 0.2−  | 1.2−  | 2007 12 04 | 691 | 0.4+ | 0.6+ |
| 2004 05 14 | 691 | 0.0  | 0.3+ | 2006 10 17 | 703 | (0.1− | 1.7+) | 2007 12 16 | 691 | 0.3− | 0.1+ |
| 2004 05 14 | 691 | 0.3+ | 0.5+ | 2006 10 20 | 644 | 0.1+  | 0.4+  | 2007 12 16 | 691 | 0.2+ | 0.3+ |
| 2004 05 23 | 691 | 0.1+ | 0.2+ | 2006 10 20 | 644 | 0.2−  | 0.3+  | 2007 12 16 | 691 | 0.2− | 0.3+ |
| 2004 05 23 | 691 | 0.2− | 0.1+ | 2006 10 20 | 644 | 0.5−  | 0.0   |            |     |      |      |
| 2004 05 23 | 691 | 0.2+ | 0.5+ | 2006 11 13 | 691 | 0.5−  | 0.5+  |            |     |      |      |

**(171746)\* 2000 XT<sub>18</sub>**

Discovered 2000 Dec. 4 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 55.58117   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.28609009 | $\omega$ | 28.97060  | +0.98497234 | −0.16416720 |
| <i>a</i> | 2.2810467  | $\Omega$ | 340.26039 | +0.11126029 | +0.84072463 |
| <i>e</i> | 0.0583646  | <i>i</i> | 9.14047   | +0.13210087 | +0.51597600 |
| <i>P</i> | 3.45       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 06 | 704 | 0.1− | 0.7− | 2003 09 22 | 699 | 0.0  | 0.6+ | 2005 02 03 | 704 | 0.3− | 0.6+ |
| 2000 11 06 | 704 | 0.2− | 0.4+ | 2003 09 22 | 699 | 0.2+ | 0.6+ | 2005 02 03 | 704 | 0.5+ | 0.4+ |
| 2000 11 06 | 704 | 0.7− | 0.6− | 2003 09 22 | 699 | 0.3+ | 0.6+ | 2005 02 03 | 704 | 0.4− | 0.4+ |
| 2000 11 19 | 704 | 0.3− | 0.4− | 2003 09 25 | 608 | 0.4− | 1.5+ | 2005 02 03 | 704 | 0.4+ | 0.2+ |
| 2000 11 19 | 704 | 0.2+ | 0.1+ | 2003 09 25 | 608 | 0.6− | 0.9+ | 2005 02 04 | G96 | 0.0  | 0.2− |
| 2000 11 19 | 704 | 0.3− | 1.1− | 2003 09 25 | 608 | 0.2− | 1.0+ | 2005 02 04 | G96 | 0.2− | 0.1− |
| 2000 11 19 | 704 | 0.6− | 0.7+ | 2003 09 27 | 704 | 0.3+ | 0.4+ | 2005 02 04 | G96 | 0.1− | 0.1− |
| 2000 11 19 | 704 | 0.0  | 0.4+ | 2003 09 27 | 704 | 0.1+ | 0.4+ | 2005 02 04 | G96 | 0.1− | 0.2− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 04 | 704 | 0.3+  | 0.4−  | 2003 09 27 | 704 | 0.2+  | 0.2+  | 2005 02 09 | 691 | 0.3+  | 0.4+  |
| 2000 12 04 | 704 | 0.1+  | 0.6−  | 2003 09 27 | 704 | 0.2+  | 0.2+  | 2005 02 09 | 699 | 0.3−  | 0.7−  |
| 2000 12 04 | 704 | 0.1+  | 1.2−  | 2003 09 27 | 704 | 0.1+  | 0.5+  | 2005 02 09 | 691 | 0.1+  | 0.4+  |
| 2000 12 04 | 704 | 0.3−  | 0.6+  | 2003 09 28 | 691 | 0.1−  | 0.3+  | 2005 02 09 | 699 | 1.0−  | 0.3−  |
| 2000 12 06 | 704 | 0.6+  | 0.1+  | 2003 09 28 | 691 | 0.1−  | 0.5+  | 2005 02 09 | 691 | 0.1+  | 0.2+  |
| 2000 12 06 | 704 | 0.4−  | 0.4+  | 2003 09 28 | 691 | 0.1−  | 0.5+  | 2005 02 09 | 699 | 1.3−  | 0.1+  |
| 2000 12 06 | 704 | 0.5+  | 0.2−  | 2003 09 28 | 645 | 0.1+  | 0.0   | 2005 02 09 | 699 | 0.4+  | 0.1−  |
| 2000 12 06 | 704 | 0.8+  | 0.3+  | 2003 09 28 | 645 | 0.1+  | 0.0   | 2005 02 14 | 704 | (1.6+ | 0.0 ) |
| 2000 12 17 | 682 | 0.4−  | 0.6−  | 2003 09 29 | 645 | 0.1−  | 0.1−  | 2005 02 14 | 704 | 1.3+  | 0.3−  |
| 2000 12 17 | 682 | 0.1−  | 0.2−  | 2003 09 29 | 645 | 0.0   | 0.1−  | 2005 02 14 | 704 | 0.5+  | 0.1+  |
| 2000 12 17 | 682 | 0.7−  | 0.6−  | 2003 10 12 | 699 | 0.3+  | 1.5+  | 2005 02 14 | 704 | 0.1+  | 0.2−  |
| 2000 12 19 | 704 | 0.4+  | 0.1−  | 2003 10 12 | 699 | 0.3+  | 1.1+  | 2005 02 14 | 704 | 0.2−  | 0.1+  |
| 2000 12 19 | 704 | 0.8+  | 0.7−  | 2003 10 12 | 699 | 0.2−  | 0.0   | 2005 03 02 | 703 | 0.5+  | 0.2+  |
| 2000 12 19 | 704 | 0.8+  | 0.7−  | 2003 10 12 | 699 | 0.2+  | 0.6+  | 2005 03 02 | 703 | (2.3− | 0.4−) |
| 2000 12 19 | 704 | 0.0   | 0.2+  | 2003 10 15 | 699 | 0.1−  | 0.1−  | 2005 03 02 | 703 | (2.1− | 2.5+) |
| 2000 12 19 | 704 | 0.4+  | 1.3+  | 2003 10 15 | 699 | 0.3+  | 0.7+  | 2005 03 02 | 703 | (3.0+ | 2.1+) |
| 2003 08 19 | 599 | 0.3−  | 0.3+  | 2003 10 15 | 699 | 0.2−  | 0.3+  | 2005 03 08 | 704 | 0.0   | 0.5+  |
| 2003 08 19 | 599 | 0.2−  | 0.6+  | 2003 10 15 | 699 | 0.2+  | 0.6+  | 2005 03 08 | 704 | 0.0   | 0.4−  |
| 2003 08 19 | 599 | 0.2−  | 0.3+  | 2003 10 19 | 645 | 0.0   | 0.1−  | 2005 03 08 | 704 | 0.7+  | 0.3−  |
| 2003 08 22 | 704 | 0.4−  | 0.6+  | 2003 10 19 | 645 | 0.0   | 0.1−  | 2005 03 08 | 704 | 0.2−  | 1.4+  |
| 2003 08 22 | 704 | 0.4−  | 0.0   | 2003 10 21 | 699 | 0.4−  | 0.4+  | 2005 03 08 | 704 | 0.7−  | 0.2−  |
| 2003 08 22 | 704 | 0.8−  | 0.8−  | 2003 10 21 | 699 | 0.8+  | 0.2+  | 2005 03 16 | 703 | 0.7+  | 0.0   |
| 2003 08 22 | 704 | 0.8−  | 0.0   | 2003 10 21 | 699 | 1.0+  | 0.1−  | 2005 03 16 | 703 | 0.2+  | 0.1−  |
| 2003 08 22 | 704 | 0.0   | 0.9+  | 2003 10 21 | 699 | 0.2+  | 0.2+  | 2005 03 16 | 703 | 0.4+  | 0.3−  |
| 2003 08 22 | 608 | 0.7−  | 0.4+  | 2003 10 22 | 645 | 0.0   | 0.1−  | 2005 03 16 | 703 | 0.7−  | 1.0−  |
| 2003 08 22 | 608 | 0.5−  | 0.0   | 2003 10 22 | 645 | 0.0   | 0.1−  | 2005 03 17 | 704 | 0.1−  | 0.6+  |
| 2003 08 22 | 608 | 0.0   | 0.0   | 2003 10 24 | 645 | 0.0   | 0.2−  | 2005 03 17 | 704 | 0.9+  | 0.4−  |
| 2003 08 25 | 704 | 0.6+  | 0.7+  | 2003 10 24 | 645 | 0.1−  | 0.3−  | 2005 03 17 | 704 | 0.8+  | 0.8+  |
| 2003 08 25 | 704 | 1.2+  | 0.3−  | 2003 11 20 | 704 | 1.0−  | 0.7−  | 2005 03 17 | 704 | 0.1+  | 0.8+  |
| 2003 08 25 | 704 | 1.2−  | 0.1−  | 2003 11 20 | 704 | 0.1−  | 0.1+  | 2005 04 02 | G96 | 0.3−  | 0.0   |
| 2003 08 25 | 704 | (1.8− | 0.9+) | 2003 11 20 | 704 | 1.0−  | 0.5+  | 2005 04 02 | G96 | 0.2−  | 0.1−  |
| 2003 09 02 | 704 | 0.7+  | 0.6+  | 2003 11 20 | 704 | 0.3−  | 0.4+  | 2005 04 02 | G96 | 0.3−  | 0.1−  |
| 2003 09 02 | 704 | 0.0   | 0.5+  | 2003 11 20 | 704 | (1.6− | 1.1−) | 2005 04 02 | G96 | 0.2−  | 0.1+  |
| 2003 09 02 | 704 | 0.6+  | 0.3+  | 2003 11 24 | 704 | 0.2+  | 0.9+  | 2007 11 03 | 704 | 0.7−  | 0.3−  |
| 2003 09 02 | 704 | 0.0   | 0.1+  | 2003 11 24 | 704 | 0.9+  | 0.7+  | 2007 11 03 | 704 | 0.2−  | 0.4+  |
| 2003 09 15 | 699 | 0.0   | 0.4+  | 2003 11 24 | 704 | (0.1− | 1.6+) | 2007 11 03 | 704 | 0.9+  | 0.5−  |
| 2003 09 15 | 699 | 0.3−  | 0.8+  | 2005 01 17 | 703 | 0.6+  | 0.0   | 2007 11 03 | 704 | 1.0+  | 0.4−  |
| 2003 09 15 | 699 | 0.1−  | 0.4+  | 2005 01 17 | 703 | 1.0+  | 0.2−  | 2007 11 09 | 704 | 0.3+  | 0.1+  |
| 2003 09 15 | 699 | 0.1+  | 0.3−  | 2005 01 17 | 703 | 0.2−  | 0.6−  | 2007 11 09 | 704 | 0.8+  | 0.3+  |
| 2003 09 19 | 704 | 0.7−  | 0.3−  | 2005 01 17 | 703 | 0.2−  | 0.2+  | 2007 11 09 | 704 | 1.5+  | 0.1−  |
| 2003 09 19 | 704 | 0.2+  | 0.1−  | 2005 02 01 | 691 | 0.1+  | 0.4+  | 2007 11 09 | 704 | 0.4+  | 0.6+  |
| 2003 09 19 | 704 | 0.7−  | 0.2−  | 2005 02 01 | 691 | 0.1+  | 0.3+  | 2007 11 09 | 704 | 0.8+  | 0.0   |
| 2003 09 19 | 704 | (0.9− | 1.8+) | 2005 02 01 | 691 | 0.1+  | 0.3+  | 2007 12 03 | 704 | 1.5−  | 0.3+  |
| 2003 09 19 | 704 | (0.1− | 1.8+) | 2005 02 02 | 703 | 0.6−  | 0.5−  | 2007 12 03 | 704 | 0.1−  | 0.3−  |
| 2003 09 21 | 291 | 0.1−  | 0.3+  | 2005 02 02 | 703 | 0.0   | 0.4−  | 2007 12 03 | 704 | 0.8−  | 0.4−  |
| 2003 09 21 | 291 | 0.1−  | 0.3+  | 2005 02 02 | 703 | 0.1−  | 0.6+  | 2007 12 03 | 704 | 1.3−  | 0.8+  |
| 2003 09 21 | 291 | 0.1−  | 0.3+  | 2005 02 02 | 703 | 0.7+  | 0.5−  | 2007 12 03 | 704 | 0.0   | 0.4+  |
| 2003 09 22 | 699 | 0.7+  | 0.1+  | 2005 02 03 | 704 | 0.0   | 0.2+  |            |     |       |       |



|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 04 | 704 | 0.6+ | 0.2+ | 2005 03 08 | 704 | 0.2+  | 0.6+  | 2005 04 06 | 699 | 1.2+ | 0.6+ |
| 2000 12 04 | 704 | 0.6+ | 0.6+ | 2005 03 08 | 704 | 0.4+  | 0.4+  | 2005 04 06 | 699 | 1.4- | 1.2+ |
| 2000 12 04 | 704 | 0.2+ | 0.3- | 2005 03 08 | 704 | 0.1-  | 0.4+  | 2005 04 06 | 699 | 1.0+ | 0.0  |
| 2000 12 06 | 704 | 0.9- | 0.8- | 2005 03 08 | 704 | 0.9+  | 0.2+  | 2005 04 06 | 699 | 0.8- | 0.8- |
| 2000 12 06 | 704 | 0.6+ | 0.9+ | 2005 03 08 | 704 | 0.4+  | 0.0   | 2005 05 04 | G96 | 0.1- | 0.3- |
| 2000 12 06 | 704 | 0.4+ | 0.1+ | 2005 03 09 | 699 | 0.9+  | 1.2+  | 2005 05 04 | G96 | 0.5- | 0.1- |
| 2000 12 06 | 704 | 0.1+ | 0.2+ | 2005 03 09 | 699 | 1.0+  | 0.3+  | 2005 05 04 | G96 | 0.5- | 0.2+ |
| 2003 08 23 | 644 | 0.6- | 0.5+ | 2005 03 09 | 699 | 0.6+  | 1.2+  | 2005 05 04 | G96 | 0.2- | 0.1+ |
| 2003 08 23 | 644 | 0.6- | 0.2+ | 2005 03 09 | 699 | 0.1+  | 0.1+  | 2007 11 17 | 704 | 0.0  | 0.1+ |
| 2003 08 23 | 644 | 0.3- | 0.4+ | 2005 03 10 | G96 | 0.3-  | 0.1-  | 2007 11 17 | 704 | 0.0  | 0.6+ |
| 2003 09 01 | 704 | 0.7- | 0.8+ | 2005 03 10 | G96 | 0.4-  | 0.0   | 2007 11 17 | 704 | 0.2+ | 0.0  |
| 2003 09 01 | 704 | 0.6+ | 0.7+ | 2005 03 10 | G96 | 0.0   | 0.0   | 2007 11 17 | 704 | 0.0  | 0.1- |
| 2003 09 01 | 704 | 0.1- | 0.7+ | 2005 03 10 | G96 | 0.4-  | 0.0   | 2007 11 17 | 704 | 0.0  | 0.2- |
| 2003 09 04 | 691 | 0.1- | 0.3+ | 2005 03 14 | 704 | 0.3+  | 0.0   | 2007 12 02 | 704 | 0.4- | 0.4- |
| 2003 09 04 | 691 | 0.1- | 0.3+ | 2005 03 14 | 704 | 0.4+  | 0.0   | 2007 12 02 | 704 | 0.2- | 0.0  |
| 2003 09 04 | 691 | 0.3- | 0.4+ | 2005 03 14 | 704 | 0.0   | 0.2-  | 2007 12 02 | 704 | 0.1- | 0.4- |
| 2005 03 03 | 691 | 0.0  | 0.6+ | 2005 03 14 | 704 | 1.4+  | 0.6-  | 2007 12 16 | 704 | 0.4+ | 0.3+ |
| 2005 03 03 | 691 | 0.3- | 0.5+ | 2005 03 14 | 704 | 1.2+  | 1.0-  | 2007 12 16 | 704 | 0.4+ | 0.0  |
| 2005 03 03 | 691 | 0.1+ | 0.1- | 2005 03 15 | 947 | 0.4-  | 0.4-  | 2007 12 16 | 704 | 0.0  | 0.0  |
| 2005 03 03 | 703 | 1.3- | 1.0- | 2005 03 15 | 947 | 0.4+  | 0.8-  | 2007 12 16 | 704 | 0.1- | 0.1- |
| 2005 03 03 | 703 | 0.3- | 0.4+ | 2005 03 15 | 947 | 0.3-  | 0.1-  | 2007 12 16 | 704 | 0.1- | 0.4- |
| 2005 03 03 | 703 | 0.3- | 0.3+ | 2005 04 03 | 469 | (1.2- | 2.0+) |            |     |      |      |

**(171748)\* 2000 YM<sub>2</sub>**

Discovered 2000 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 280.42153  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.27047391 | $\omega$ | 190.37056 | -0.75703408              |
| <i>a</i> | 2.3680223  | $\Omega$ | 308.96051 | +0.60928295              |
| <i>e</i> | 0.1499019  | <i>i</i> | 8.26473   | +0.23595273              |
| <i>P</i> | 3.64       | <i>H</i> | 15.7      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 06 | 704 | 1.0-  | 1.1-  | 2001 02 17 | 704 | 0.5- | 0.6+ | 2005 03 10 | 699 | 0.4+ | 0.5- |
| 2000 12 06 | 704 | 0.2-  | 1.2-  | 2001 02 17 | 704 | 0.4- | 0.1- | 2005 03 17 | 703 | 0.2- | 0.6- |
| 2000 12 06 | 704 | 0.1+  | 0.2-  | 2003 09 04 | 599 | 0.4- | 0.5+ | 2005 03 17 | 703 | 0.4- | 0.0  |
| 2000 12 06 | 704 | 0.3-  | 0.6-  | 2003 09 04 | 599 | 0.8- | 1.3+ | 2005 03 17 | 703 | 0.0  | 0.2- |
| 2000 12 06 | 704 | 0.2-  | 1.1-  | 2003 09 04 | 599 | 0.1+ | 0.5+ | 2005 03 17 | 703 | 0.1+ | 0.2+ |
| 2000 12 19 | 704 | 1.0-  | 0.4-  | 2003 09 04 | 599 | 0.7+ | 0.4+ | 2005 04 04 | 703 | 0.4- | 0.4+ |
| 2000 12 19 | 704 | 0.5-  | 0.6-  | 2003 09 20 | 704 | 0.3+ | 0.7- | 2005 04 04 | 703 | 0.2- | 0.1+ |
| 2000 12 19 | 704 | 1.9-  | 0.4+  | 2003 09 20 | 704 | 0.1- | 0.1+ | 2005 04 04 | 703 | 0.1+ | 0.1+ |
| 2000 12 19 | 704 | 1.0-  | 1.1-  | 2003 09 20 | 704 | 0.4- | 0.2- | 2005 04 04 | 703 | 0.8- | 0.1- |
| 2000 12 20 | 704 | 0.6-  | 0.8-  | 2003 09 20 | 704 | 0.4- | 0.3+ | 2007 10 09 | 703 | 1.1- | 0.5+ |
| 2000 12 20 | 704 | 0.0   | 0.2-  | 2003 09 29 | 699 | 0.7- | 0.1+ | 2007 10 09 | 703 | 0.2+ | 0.6+ |
| 2000 12 20 | 704 | 0.5+  | 0.4+  | 2003 09 29 | 699 | 0.1+ | 0.1+ | 2007 10 09 | 703 | 0.6+ | 0.2- |
| 2000 12 20 | 704 | 1.0+  | 0.0   | 2003 09 29 | 699 | 0.8+ | 0.4+ | 2007 10 09 | 703 | 0.9- | 0.1+ |
| 2000 12 20 | 704 | 0.2+  | 1.4+  | 2003 09 29 | 699 | 0.2+ | 0.0  | 2007 11 09 | 704 | 0.2+ | 0.1+ |
| 2000 12 28 | 704 | 0.9+  | 1.1+  | 2003 10 15 | 644 | 0.3- | 0.1+ | 2007 11 09 | 704 | 0.5+ | 0.1+ |
| 2000 12 28 | 704 | 0.0   | 0.1-  | 2003 10 15 | 644 | 0.4- | 0.0  | 2007 11 09 | 704 | 0.3+ | 0.1- |
| 2000 12 28 | 704 | 0.3+  | 0.2+  | 2003 10 15 | 644 | 0.2- | 0.3+ | 2007 11 09 | 704 | 0.1- | 0.1+ |
| 2000 12 28 | 704 | 0.2+  | 0.7-  | 2004 12 12 | 703 | 0.5- | 0.6+ | 2007 11 09 | 704 | 0.0  | 0.3- |
| 2001 01 04 | 704 | 0.3+  | 0.8-  | 2004 12 12 | 703 | 0.4- | 1.1+ | 2007 11 09 | 703 | 0.5- | 0.2+ |
| 2001 01 04 | 704 | 0.6-  | 1.1-  | 2004 12 12 | 703 | 1.3+ | 0.2+ | 2007 11 09 | 703 | 0.4+ | 0.2+ |
| 2001 01 04 | 704 | 0.7-  | 0.2-  | 2004 12 12 | 703 | 1.4+ | 1.5+ | 2007 11 09 | 703 | 0.6- | 0.8+ |
| 2001 01 04 | 704 | 0.8+  | 1.4-  | 2005 01 06 | 704 | 0.3- | 0.1+ | 2007 11 09 | 703 | 0.7- | 0.4- |
| 2001 01 06 | 704 | 0.1-  | 0.0   | 2005 01 06 | 704 | 0.9- | 0.5- | 2007 12 03 | 704 | 0.2+ | 0.8+ |
| 2001 01 06 | 704 | 0.5+  | 0.5+  | 2005 01 06 | 704 | 0.1+ | 0.2- | 2007 12 03 | 704 | 0.8+ | 0.3+ |
| 2001 01 06 | 704 | 0.3+  | 0.2+  | 2005 01 13 | 704 | 0.7+ | 0.6+ | 2007 12 03 | 704 | 0.0  | 0.6+ |
| 2001 01 06 | 704 | 1.2+  | 1.0+  | 2005 01 13 | 704 | 0.3+ | 1.3+ | 2007 12 03 | 704 | 0.5+ | 0.3+ |
| 2001 01 19 | 704 | 0.0   | 0.0   | 2005 01 13 | 704 | 1.0+ | 0.1+ | 2007 12 03 | 704 | 0.4+ | 0.3+ |
| 2001 01 19 | 704 | 0.2+  | 0.2+  | 2005 03 04 | 703 | 0.2+ | 0.7+ | 2007 12 16 | 699 | 0.2+ | 0.7+ |
| 2001 01 19 | 704 | 0.4+  | 0.2+  | 2005 03 04 | 703 | 0.0  | 0.8+ | 2007 12 16 | 699 | 1.2- | 0.7- |
| 2001 01 19 | 704 | 1.1+  | 0.4+  | 2005 03 04 | 703 | 0.7+ | 0.7+ | 2007 12 16 | 699 | 0.5+ | 0.5- |
| 2001 01 19 | 704 | (1.1+ | 1.6-) | 2005 03 10 | 699 | 0.1+ | 0.1+ | 2007 12 16 | 699 | 1.1- | 0.1+ |
| 2001 02 17 | 704 | 0.0   | 0.1-  | 2005 03 10 | 699 | 0.7+ | 0.2- |            |     |      |      |
| 2001 02 17 | 704 | 0.2-  | 0.1-  | 2005 03 10 | 699 | 0.7+ | 0.1+ |            |     |      |      |

**(171749)\* 2000 YG<sub>5</sub> = 1996 NK<sub>1</sub>**

Discovered 2000 Dec. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 9462)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 83.94613   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.29167487 | $\omega$ | 50.25703  | +0.99361002              |
| <i>a</i> | 2.2518357  | $\Omega$ | 304.52205 | -0.11060652              |
| <i>e</i> | 0.2397264  | <i>i</i> | 4.82090   | +0.02247925              |
| <i>P</i> | 3.38       | <i>H</i> | 15.5      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 07 14 | 566 | 0.3+  | 0.2-  | 2003 08 24 | 704 | 0.1+  | 0.4-  | 2003 11 19 | 704 | (1.1- | 2.1+) |
| 1996 07 14 | 566 | 0.2-  | 0.5-  | 2003 08 24 | 704 | 0.0   | 1.1-  | 2003 11 19 | 704 | (0.8+ | 2.7+) |
| 1996 07 14 | 566 | 0.1-  | 0.1-  | 2003 08 24 | 704 | 0.1+  | 1.0-  | 2003 11 19 | 704 | (1.1+ | 2.2+) |
| 1996 07 22 | 566 | 0.3-  | 1.2+  | 2003 08 24 | 704 | (0.4+ | 1.6-) | 2003 11 19 | 704 | 1.0+  | 1.2+  |
| 1996 07 22 | 566 | 0.3-  | 1.2+  | 2003 08 24 | 704 | (0.4+ | 1.7-) | 2003 11 19 | 704 | 1.4+  | 0.5-  |
| 1996 07 22 | 566 | 0.3-  | 1.3+  | 2003 08 28 | 704 | 0.6-  | 0.5-  | 2003 12 10 | 644 | 0.1+  | 0.2+  |
| 2000 11 20 | 704 | 0.4+  | 0.0   | 2003 08 28 | 704 | 1.2+  | 0.3-  | 2003 12 10 | 644 | 0.2+  | 0.3+  |
| 2000 11 20 | 704 | 0.4+  | 0.3-  | 2003 08 28 | 704 | (2.9+ | 1.0-) | 2003 12 10 | 644 | 0.1+  | 0.2+  |
| 2000 11 20 | 704 | 0.6+  | 0.4-  | 2003 08 28 | 704 | 0.2+  | 0.4+  | 2003 12 17 | 703 | 0.5+  | 0.8+  |
| 2000 11 20 | 704 | 0.3+  | 0.6-  | 2003 08 28 | 704 | 1.0+  | 0.3-  | 2003 12 17 | 703 | 1.3-  | 0.3+  |
| 2000 11 20 | 704 | 0.5-  | 0.4+  | 2003 09 16 | 644 | 0.0   | 0.3-  | 2003 12 17 | 703 | 0.2-  | 0.3-  |
| 2000 11 29 | 704 | 0.3+  | 0.6-  | 2003 09 16 | 644 | 0.1-  | 0.2-  | 2003 12 17 | 703 | 0.8+  | 0.8+  |
| 2000 11 29 | 704 | 0.5+  | 0.6-  | 2003 09 16 | 644 | 0.2-  | 0.1-  | 2003 12 18 | 644 | 0.2+  | 0.5+  |
| 2000 11 29 | 704 | 0.7+  | 0.6-  | 2003 09 21 | 699 | 0.2-  | 0.2-  | 2003 12 18 | 644 | 0.2+  | 0.5+  |
| 2000 11 29 | 704 | 0.1+  | 0.4+  | 2003 09 21 | 704 | 1.1+  | 0.1+  | 2003 12 18 | 644 | 0.3+  | 0.3+  |
| 2000 11 29 | 704 | 0.1+  | 0.6+  | 2003 09 21 | 699 | 0.4-  | 0.1-  | 2003 12 20 | 704 | 0.4-  | 0.3+  |
| 2000 12 20 | 704 | 0.5-  | 0.1+  | 2003 09 21 | 704 | 0.1+  | 0.0   | 2003 12 20 | 704 | 0.4-  | 0.1+  |
| 2000 12 20 | 704 | 0.6-  | 0.1-  | 2003 09 21 | 699 | 0.3-  | 0.1-  | 2003 12 20 | 704 | 0.4-  | 0.4-  |
| 2000 12 20 | 704 | 0.6-  | 0.1+  | 2003 09 21 | 704 | 0.1+  | 0.2-  | 2003 12 20 | 704 | 0.6-  | 0.2+  |
| 2000 12 20 | 704 | 0.7-  | 0.3+  | 2003 09 21 | 699 | 0.4+  | 0.1+  | 2003 12 20 | 704 | 0.1-  | 0.2-  |
| 2000 12 22 | 704 | 0.2-  | 0.0   | 2003 09 21 | 704 | 0.4+  | 0.3-  | 2003 12 23 | 704 | 0.5-  | 0.4+  |
| 2000 12 22 | 704 | 0.7-  | 0.3+  | 2003 09 21 | 704 | 0.7-  | 0.2+  | 2003 12 23 | 704 | 0.0   | 0.7+  |
| 2000 12 22 | 704 | 0.2-  | 0.1+  | 2003 09 30 | 704 | 0.7+  | 1.0+  | 2003 12 23 | 704 | 0.1+  | 0.7+  |
| 2000 12 22 | 704 | 1.1-  | 0.1+  | 2003 09 30 | 704 | 0.2+  | 0.3+  | 2003 12 23 | 704 | 0.2-  | 0.3+  |
| 2000 12 30 | 704 | 0.1-  | 0.2+  | 2003 09 30 | 704 | 0.3+  | 0.8+  | 2003 12 23 | 704 | 0.5-  | 0.2+  |
| 2000 12 30 | 704 | 0.5+  | 0.1+  | 2003 09 30 | 704 | 0.3+  | 0.0   | 2003 12 24 | 608 | 0.6-  | 0.1-  |
| 2000 12 30 | 704 | 0.5+  | 0.3+  | 2003 09 30 | 704 | 0.2+  | 0.4-  | 2003 12 24 | 608 | 0.3-  | 0.2-  |
| 2000 12 30 | 704 | 0.6+  | 0.8+  | 2003 10 06 | 608 | 0.5-  | 0.6-  | 2003 12 24 | 608 | 0.4-  | 0.5-  |
| 2001 01 04 | 704 | 0.0   | 0.0   | 2003 10 06 | 608 | 0.4-  | 0.8-  | 2003 12 28 | 704 | 0.1-  | 0.0   |
| 2001 01 04 | 704 | 0.1+  | 0.4+  | 2003 10 06 | 608 | 0.6-  | 1.0-  | 2003 12 28 | 704 | 0.0   | 0.5+  |
| 2001 01 04 | 704 | 0.4+  | 0.5+  | 2003 10 14 | 644 | 0.0   | 0.4-  | 2003 12 28 | 704 | 0.6-  | 0.0   |
| 2001 01 04 | 704 | 1.2+  | 0.7+  | 2003 10 14 | 644 | 0.0   | 0.3-  | 2005 03 03 | 703 | 0.6+  | 0.2+  |
| 2001 01 20 | 704 | 0.4-  | 0.3-  | 2003 10 14 | 644 | 0.0   | 0.2-  | 2005 03 03 | 703 | 0.4-  | 0.6+  |
| 2001 01 20 | 704 | 0.0   | 0.8-  | 2003 10 17 | 699 | 0.0   | 0.4-  | 2005 03 03 | 703 | (0.5+ | 2.0+) |
| 2001 01 20 | 704 | 0.5-  | 0.4-  | 2003 10 17 | 699 | 0.0   | 0.4-  | 2005 03 03 | 703 | 0.0   | 1.1+  |
| 2001 01 20 | 704 | (1.4- | 1.7-) | 2003 10 17 | 699 | 0.0   | 0.4-  | 2005 03 08 | 699 | 0.9+  | 0.7+  |
| 2001 01 21 | 704 | 0.4-  | 0.1-  | 2003 10 17 | 699 | 0.3-  | 0.2-  | 2005 03 08 | 699 | 0.5+  | 0.3-  |
| 2001 01 21 | 704 | 0.5-  | 0.4-  | 2003 10 21 | 704 | 0.5-  | 0.6+  | 2005 03 08 | 699 | 0.3+  | 0.7+  |
| 2001 01 21 | 704 | 0.4-  | 0.1+  | 2003 10 21 | 704 | 0.4-  | 0.1+  | 2005 03 08 | 699 | 0.7-  | 1.0+  |
| 2001 01 21 | 704 | 0.4+  | 0.0   | 2003 10 21 | 704 | 0.2-  | 0.0   | 2005 03 10 | 699 | 0.8+  | 0.1+  |
| 2003 06 29 | 704 | 0.2+  | 0.3-  | 2003 10 21 | 704 | 0.2-  | 0.6+  | 2005 03 10 | 699 | 1.3+  | 0.6+  |
| 2003 06 29 | 704 | 0.6-  | 0.3+  | 2003 10 21 | 704 | 0.4-  | 0.5+  | 2005 03 10 | 699 | 1.1+  | 1.0+  |
| 2003 06 29 | 704 | 0.3-  | 0.0   | 2003 10 22 | 691 | 0.1+  | 0.0   | 2005 03 10 | 699 | 1.3+  | 0.7+  |
| 2003 07 29 | 704 | 0.3-  | 0.6+  | 2003 10 22 | 691 | 0.1+  | 0.0   | 2007 11 09 | G96 | 0.6-  | 0.1-  |
| 2003 07 29 | 704 | 0.5-  | 1.0+  | 2003 10 22 | 691 | 0.1+  | 0.1+  | 2007 11 09 | G96 | 0.1+  | 0.4-  |
| 2003 07 29 | 704 | 1.1-  | 0.6+  | 2003 10 26 | 691 | 0.0   | 0.0   | 2007 11 09 | G96 | 0.3-  | 0.2-  |
| 2003 07 29 | 704 | 1.3-  | 0.6+  | 2003 10 26 | 691 | 0.3-  | 0.0   | 2007 11 09 | G96 | 0.1+  | 0.3-  |
| 2003 07 29 | 704 | 1.4-  | 0.8+  | 2003 10 26 | 691 | 0.1-  | 0.1+  | 2007 12 14 | G96 | 0.7-  | 0.3+  |
| 2003 08 05 | 704 | 0.4-  | 1.0+  | 2003 11 01 | 704 | 0.9+  | 0.3+  | 2007 12 14 | G96 | 0.7-  | 0.5+  |
| 2003 08 05 | 704 | 0.2-  | 0.3+  | 2003 11 01 | 704 | 1.0+  | 0.3+  | 2007 12 14 | G96 | 0.2-  | 0.2+  |
| 2003 08 05 | 704 | 0.7-  | 0.5+  | 2003 11 01 | 704 | 0.7+  | 0.1+  | 2007 12 14 | G96 | 0.3-  | 0.1+  |
| 2003 08 05 | 704 | 0.3-  | 0.6+  | 2003 11 01 | 704 | 0.8+  | 0.0   |            |     |       |       |
| 2003 08 05 | 704 | 0.4-  | 0.9+  | 2003 11 01 | 704 | 1.0+  | 0.5-  |            |     |       |       |

**(171750)\* 2000 YS<sub>10</sub>**

Discovered 2000 Dec. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | <i>P</i> |           | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| 19.16324 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.27959231 | $\omega$ | 275.61597 | +0.81461122 | -0.57037527 |
| <i>a</i> | 2.3162525  | $\Omega$ | 119.20392 | +0.56836872 | +0.74883322 |
| <i>e</i> | 0.1272058  | <i>i</i> | 6.92634   | +0.11560952 | +0.33752163 |
| <i>P</i> | 3.53       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 27 | 704 | 0.9-  | 0.1+  | 2003 08 23 | 704 | (0.1+ | 3.0+) | 2005 03 11 | 699 | (1.0+ | 1.8+) |
| 2000 11 27 | 704 | 0.7-  | 0.7+  | 2003 08 26 | 704 | (0.4+ | 2.4+) | 2005 03 11 | 699 | (0.8- | 1.9+) |
| 2000 11 27 | 704 | 0.7-  | 0.1+  | 2003 08 26 | 704 | 0.2+  | 0.2+  | 2005 03 11 | 699 | 0.5-  | 0.4+  |
| 2000 12 22 | 704 | (2.7- | 1.5+) | 2003 08 26 | 704 | 0.3+  | 0.2+  | 2005 03 11 | 699 | 0.6+  | 0.1-  |
| 2000 12 22 | 704 | 0.8-  | 0.1-  | 2003 08 31 | 704 | 0.1+  | 0.2-  | 2005 03 12 | 704 | 1.1+  | 0.4+  |
| 2000 12 22 | 704 | 0.2+  | 0.6+  | 2003 08 31 | 704 | (0.5+ | 2.1+) | 2005 03 12 | 704 | 0.9+  | 0.4-  |
| 2000 12 22 | 704 | 0.1-  | 0.3-  | 2003 08 31 | 704 | (0.5+ | 1.7+) | 2005 03 12 | 704 | 0.6+  | 0.2-  |
| 2000 12 22 | 704 | 0.1+  | 0.1+  | 2003 08 31 | 704 | (0.7+ | 1.8+) | 2005 03 12 | 704 | (0.5+ | 1.8+) |
| 2000 12 23 | 704 | 1.1-  | 0.3+  | 2003 08 31 | 704 | (1.1+ | 3.0+) | 2007 11 11 | 704 | 0.4+  | 0.7-  |
| 2000 12 23 | 704 | 0.9+  | 0.1-  | 2003 09 13 | 608 | 0.5-  | 0.0   | 2007 11 11 | 704 | 0.8+  | 0.3-  |
| 2000 12 23 | 704 | 0.6+  | 0.3-  | 2003 09 13 | 608 | 0.3+  | 0.2-  | 2007 11 11 | 704 | 0.0   | 0.1+  |
| 2000 12 23 | 704 | 0.6-  | 0.4+  | 2003 09 13 | 608 | 0.1-  | 0.1-  | 2007 11 11 | 704 | 0.1-  | 0.1-  |
| 2000 12 30 | 704 | 0.3+  | 0.6+  | 2003 09 25 | 644 | 0.0   | 0.4+  | 2007 11 15 | G96 | 0.2-  | 0.5-  |
| 2000 12 30 | 704 | 0.0   | 0.0   | 2003 09 25 | 644 | 0.3-  | 0.4+  | 2007 11 15 | G96 | 0.1-  | 0.4-  |
| 2000 12 30 | 704 | 0.2+  | 0.2-  | 2003 09 25 | 644 | 0.2-  | 0.1-  | 2007 11 15 | G96 | 0.4-  | 0.5-  |
| 2000 12 30 | 704 | 0.2-  | 0.3-  | 2005 03 02 | 703 | 1.0-  | 0.6+  | 2007 11 15 | G96 | 0.1+  | 0.5-  |
| 2000 12 30 | 704 | 0.2+  | 1.0+  | 2005 03 02 | 703 | 0.1-  | 0.5-  | 2007 11 20 | 703 | 0.1+  | 0.2-  |
| 2001 01 03 | 704 | 0.1-  | 0.4-  | 2005 03 02 | 703 | 0.8-  | 0.7+  | 2007 11 20 | 703 | 0.3+  | 0.2+  |
| 2001 01 03 | 704 | 1.3+  | 0.3+  | 2005 03 02 | 703 | 0.3-  | 0.8-  | 2007 11 20 | 703 | 0.9+  | 1.0+  |
| 2001 01 03 | 704 | 0.7+  | 0.9+  | 2005 03 04 | 704 | 0.4+  | 0.6+  | 2007 12 05 | 699 | 0.5-  | 0.3-  |
| 2003 08 23 | 704 | 0.5-  | 0.8+  | 2005 03 04 | 704 | 0.5-  | 0.1+  | 2007 12 05 | 699 | 0.2-  | 0.2-  |
| 2003 08 23 | 704 | 0.0   | 0.9+  | 2005 03 04 | 704 | 0.3-  | 1.0+  | 2007 12 05 | 699 | 0.2+  | 0.7-  |
| 2003 08 23 | 704 | (0.2- | 1.9+) | 2005 03 04 | 704 | 0.4+  | 0.2-  | 2007 12 05 | 699 | 0.7-  | 0.2-  |

**(171751)\* 2000 YB<sub>17</sub>**

Discovered 2000 Dec. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 292.40416 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.27832815 | $\omega$ | 256.78143 | -0.80857745 | -0.46903394 |
| <i>a</i>  | 2.3232608  | $\Omega$ | 254.23382 | +0.57039793 | -0.77301534 |
| <i>e</i>  | 0.2360121  | <i>i</i> | 21.66308  | -0.14439082 | -0.42714686 |
| <i>P</i>  | 3.54       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 21 | 704 | 0.6+ | 0.0  | 2003 10 22 | 704 | 1.3+ | 0.8+ | 2007 11 13 | 703 | 0.2+  | 0.4+  |
| 2000 11 21 | 704 | 0.6- | 0.2- | 2003 10 22 | 704 | 0.9+ | 0.3- | 2007 11 13 | 703 | 0.2+  | 0.3+  |
| 2000 11 21 | 704 | 0.1+ | 0.1- | 2003 10 22 | 704 | 0.4- | 0.5+ | 2007 11 13 | 703 | 0.2-  | 0.5+  |
| 2000 11 21 | 704 | 0.2- | 0.2+ | 2003 10 22 | 704 | 0.3- | 0.2+ | 2007 11 13 | 703 | 0.2-  | 0.3+  |
| 2000 11 21 | 704 | 0.7+ | 0.2+ | 2005 04 17 | E12 | 0.0  | 0.3+ | 2007 11 17 | 704 | 0.1+  | 0.4+  |
| 2000 12 22 | 704 | 0.1+ | 0.2- | 2005 04 17 | E12 | 0.1+ | 0.5+ | 2007 11 17 | 704 | 0.2+  | 0.3+  |
| 2000 12 22 | 704 | 0.3- | 0.4- | 2005 04 17 | E12 | 0.1+ | 0.4+ | 2007 11 17 | 704 | 0.5+  | 0.3+  |
| 2000 12 22 | 704 | 0.1- | 0.1- | 2005 04 17 | E12 | 0.5+ | 1.3+ | 2007 11 17 | 704 | 0.6+  | 0.3+  |
| 2000 12 22 | 704 | 0.2- | 0.5- | 2005 05 02 | E12 | 0.1+ | 0.2+ | 2007 11 17 | 704 | 0.2+  | 0.3+  |
| 2000 12 22 | 704 | 0.7- | 0.7- | 2005 05 02 | E12 | 0.0  | 0.1+ | 2007 11 19 | G96 | 0.1+  | 0.2-  |
| 2000 12 28 | 704 | 0.1- | 0.3- | 2005 05 02 | E12 | 0.1+ | 0.1- | 2007 11 19 | G96 | 0.1+  | 0.2-  |
| 2000 12 28 | 704 | 0.4+ | 0.1- | 2005 05 02 | E12 | 0.4+ | 0.2- | 2007 11 19 | G96 | 0.3-  | 0.1-  |
| 2000 12 28 | 704 | 0.8- | 0.4+ | 2005 05 09 | E12 | 0.0  | 0.3+ | 2007 11 19 | G96 | 0.3-  | 0.1-  |
| 2000 12 28 | 704 | 0.2+ | 0.3+ | 2005 05 09 | E12 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.2+  | 0.0   |
| 2000 12 28 | 704 | 0.6+ | 0.9- | 2005 05 09 | E12 | 0.1- | 0.5+ | 2007 11 20 | 704 | 0.4+  | 0.2+  |
| 2000 12 30 | 704 | 0.4- | 0.0  | 2005 05 09 | E12 | 0.3- | 0.4- | 2007 11 20 | 704 | 0.1+  | 0.1-  |
| 2000 12 30 | 704 | 0.5+ | 0.2- | 2007 11 02 | 704 | 0.6- | 0.6+ | 2007 11 20 | 704 | 0.2+  | 0.3+  |
| 2000 12 30 | 704 | 0.2+ | 0.0  | 2007 11 02 | 704 | 0.6- | 0.5- | 2007 11 20 | 704 | (1.5- | 1.6-) |
| 2000 12 30 | 704 | 0.4- | 0.2+ | 2007 11 02 | 704 | 0.8- | 0.5- | 2007 12 04 | 699 | 0.9+  | 0.2-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 30 | 704 | 1.0- | 0.8+ | 2007 11 02 | 704 | 0.8-  | 0.0   | 2007 12 04 | 699 | 0.0  | 0.8- |
| 2001 01 04 | 704 | 0.9+ | 0.4+ | 2007 11 02 | 704 | 1.1-  | 0.1+  | 2007 12 04 | 699 | 0.3+ | 0.0  |
| 2001 01 04 | 704 | 0.8- | 0.1+ | 2007 11 08 | 704 | 0.2-  | 0.3+  | 2007 12 10 | 704 | 0.5- | 0.5- |
| 2001 01 04 | 704 | 0.2+ | 0.2- | 2007 11 08 | 704 | 0.4-  | 0.6+  | 2007 12 10 | 704 | 0.2+ | 0.4+ |
| 2001 01 04 | 704 | 0.3- | 1.3+ | 2007 11 08 | 704 | 0.4-  | 0.5+  | 2007 12 10 | 704 | 0.0  | 0.2- |
| 2001 01 21 | 704 | 0.1+ | 0.2- | 2007 11 08 | 704 | (0.7- | 1.8+) | 2007 12 10 | 704 | 0.7+ | 1.1- |
| 2001 01 21 | 704 | 0.1- | 0.2+ | 2007 11 08 | 703 | 0.4-  | 0.0   | 2007 12 14 | 704 | 0.3+ | 0.3- |
| 2001 01 21 | 704 | 0.5+ | 0.2+ | 2007 11 08 | 704 | 0.7-  | 0.1+  | 2007 12 14 | 704 | 0.6+ | 0.0  |
| 2001 01 21 | 704 | 1.2+ | 0.2+ | 2007 11 08 | 703 | 0.4+  | 0.6-  | 2007 12 14 | 704 | 0.1+ | 0.0  |
| 2003 09 29 | 645 | 0.0  | 0.0  | 2007 11 08 | 703 | 0.1+  | 0.2+  | 2007 12 14 | 704 | 0.2+ | 1.0+ |
| 2003 09 29 | 645 | 0.0  | 0.1+ | 2007 11 08 | 703 | 0.1-  | 0.1+  | 2007 12 14 | 704 | 0.1+ | 0.8- |

**(171752)\* 2000 YZ<sub>21</sub>**

Discovered 2000 Dec. 29 by W. K. Y. Yeung at Desert Beaver Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |          | <i>Q</i>    |             |
|-----------|------------|----------|----------|-------------|-------------|
| 308.91905 |            | (2000.0) |          |             |             |
| <i>n</i>  | 0.27411631 | $\omega$ | 53.47679 | -0.60597343 | -0.78919732 |
| <i>a</i>  | 2.3469984  | $\Omega$ | 74.12335 | +0.69264760 | -0.58517344 |
| <i>e</i>  | 0.1715600  | <i>i</i> | 5.95674  | +0.39119753 | -0.18638571 |
| <i>P</i>  | 3.60       | <i>H</i> | 16.2     | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 18 | 699 | 0.6-  | 0.6+  | 2005 03 10 | 703 | 0.8-  | 0.5+  | 2005 04 19 | 704 | 0.9+  | 1.2+  |
| 2000 12 18 | 699 | 0.7-  | 0.7+  | 2005 03 10 | 703 | 0.4-  | 0.4-  | 2005 05 08 | 691 | 0.3+  | 0.3+  |
| 2000 12 18 | 699 | 0.1+  | 0.5+  | 2005 03 10 | 703 | 0.4-  | 1.1-  | 2005 05 08 | 691 | 0.3+  | 0.2+  |
| 2000 12 18 | 699 | 0.4+  | 0.7+  | 2005 03 10 | 703 | 0.4-  | 0.3-  | 2005 05 08 | 691 | 0.2+  | 0.2+  |
| 2000 12 22 | 725 | 0.3+  | 1.1+  | 2005 03 18 | 703 | 0.8-  | 0.1+  | 2005 05 08 | 703 | 0.0   | 0.8+  |
| 2000 12 22 | 725 | 0.3-  | 1.4+  | 2005 03 18 | 703 | 0.7-  | 0.2+  | 2005 05 08 | 703 | 0.2+  | 0.0   |
| 2000 12 22 | 725 | 0.8+  | 0.8+  | 2005 03 18 | 703 | 1.0-  | 0.4+  | 2005 05 08 | 703 | 0.7-  | 0.8-  |
| 2000 12 27 | 699 | 0.4+  | 0.4+  | 2005 03 18 | 703 | 0.5-  | 0.3+  | 2005 05 08 | 703 | 0.4-  | 0.4+  |
| 2000 12 27 | 699 | 1.3+  | 0.5+  | 2005 04 01 | 699 | 0.4-  | 0.5+  | 2005 05 15 | 644 | 0.5+  | 0.3+  |
| 2000 12 27 | 699 | 0.0   | 0.7-  | 2005 04 01 | 699 | 0.4+  | 0.6+  | 2005 05 15 | 644 | 0.3+  | 0.1+  |
| 2000 12 27 | 699 | 0.2-  | 0.4+  | 2005 04 01 | 699 | 0.0   | 0.8+  | 2005 05 15 | 644 | 0.4+  | 0.3+  |
| 2000 12 29 | 919 | 0.6-  | 1.2-  | 2005 04 01 | 699 | 0.0   | 0.4+  | 2005 06 13 | G96 | 0.1+  | 0.2+  |
| 2000 12 29 | 919 | 0.7-  | 0.7-  | 2005 04 02 | 138 | 0.5+  | 0.3+  | 2005 06 13 | G96 | 0.5-  | 0.0   |
| 2000 12 30 | 919 | 0.6-  | 1.7-  | 2005 04 02 | 138 | 0.2-  | 0.2-  | 2005 06 13 | G96 | 0.5+  | 0.4+  |
| 2000 12 30 | 919 | 0.2+  | 0.6-  | 2005 04 03 | 138 | 0.3-  | 0.8+  | 2005 06 13 | G96 | 0.2-  | 0.1+  |
| 2001 01 01 | 919 | (2.3- | 0.3+) | 2005 04 04 | 703 | 1.1-  | 0.2+  | 2007 11 01 | 691 | 0.3-  | 0.2+  |
| 2001 01 01 | 919 | 0.0   | 1.1-  | 2005 04 04 | 703 | 0.4+  | 0.3-  | 2007 11 01 | 691 | 0.4-  | 0.1+  |
| 2001 01 03 | 919 | 1.1-  | 1.4-  | 2005 04 04 | 703 | 0.2-  | 0.4-  | 2007 11 01 | 691 | 0.2-  | 0.1+  |
| 2001 01 03 | 919 | 0.8-  | 0.7-  | 2005 04 04 | 703 | 0.2+  | 0.5-  | 2007 11 05 | 704 | (0.5+ | 2.0+) |
| 2001 01 04 | 704 | 0.5+  | 0.0   | 2005 04 05 | 704 | 0.5+  | 0.7-  | 2007 11 05 | 704 | (1.8+ | 0.3+) |
| 2001 01 04 | 704 | 0.1+  | 0.1+  | 2005 04 05 | 704 | 0.6+  | 0.2-  | 2007 11 05 | 704 | 0.8+  | 1.2-  |
| 2001 01 04 | 704 | 0.7+  | 0.1-  | 2005 04 05 | 704 | (1.9+ | 1.1+) | 2007 11 05 | 704 | 0.6-  | 0.7+  |
| 2001 01 04 | 704 | 0.6+  | 0.5-  | 2005 04 05 | 704 | 1.0-  | 1.2+  | 2007 11 14 | 704 | 0.1+  | 0.2+  |
| 2001 01 04 | 704 | 0.8+  | 0.1+  | 2005 04 05 | 704 | 1.2+  | 0.3-  | 2007 11 14 | 704 | 0.5-  | 0.7+  |
| 2001 01 06 | 704 | 0.3-  | 0.3-  | 2005 04 09 | 699 | 0.3+  | 0.5+  | 2007 11 14 | 704 | 0.2-  | 0.4+  |
| 2001 01 06 | 704 | 1.0-  | 0.2+  | 2005 04 09 | 699 | 0.3+  | 0.4+  | 2007 11 14 | 704 | 0.2-  | 0.6-  |
| 2001 01 06 | 704 | 0.2+  | 0.4+  | 2005 04 09 | 699 | 0.4+  | 1.2+  | 2007 11 14 | 704 | 0.3+  | 0.6+  |
| 2001 01 19 | 704 | 0.4+  | 0.2+  | 2005 04 13 | 704 | 0.6+  | 0.0   | 2007 11 14 | 691 | 0.3-  | 0.0   |
| 2001 01 19 | 704 | 0.5+  | 0.8+  | 2005 04 13 | 704 | 0.4+  | 0.8+  | 2007 11 14 | 691 | 0.3-  | 0.3+  |
| 2001 01 19 | 704 | 0.3-  | 0.3-  | 2005 04 13 | 704 | 0.5+  | 0.3+  | 2007 11 14 | 691 | 0.3-  | 0.3+  |
| 2001 01 19 | 704 | 0.2+  | 0.6+  | 2005 04 13 | 704 | 1.1+  | 0.5+  | 2007 11 19 | 691 | 0.2-  | 0.1+  |
| 2001 01 19 | 704 | 0.1-  | 0.7+  | 2005 04 13 | 704 | 0.6+  | 1.2+  | 2007 11 19 | 691 | 0.4-  | 0.0   |
| 2001 01 26 | 645 | 0.0   | 0.2-  | 2005 04 14 | 704 | 1.2+  | 0.8-  | 2007 11 19 | 691 | 0.3-  | 0.1+  |
| 2001 01 26 | 645 | 0.0   | 0.1-  | 2005 04 14 | 704 | 0.2-  | 1.2+  | 2007 12 03 | 703 | 0.6+  | 0.3+  |
| 2001 01 31 | 919 | (1.1- | 2.5-) | 2005 04 14 | 704 | 1.1+  | 0.0   | 2007 12 03 | 703 | 0.1-  | 0.7+  |
| 2001 01 31 | 919 | 1.2-  | 0.9-  | 2005 04 14 | 704 | 0.5+  | 1.1+  | 2007 12 03 | 703 | 1.1+  | 0.4+  |
| 2001 02 13 | 704 | 0.2-  | 0.0   | 2005 04 14 | 704 | 0.5+  | 0.3+  | 2007 12 03 | 703 | 0.8+  | 0.2+  |
| 2001 02 13 | 704 | 0.4+  | 0.1+  | 2005 04 15 | 699 | 0.6-  | 0.0   | 2007 12 04 | G96 | 0.0   | 0.0   |
| 2001 02 13 | 704 | 0.3+  | 0.5+  | 2005 04 15 | 699 | 0.5+  | 0.4+  | 2007 12 04 | G96 | 0.1+  | 0.1-  |
| 2001 02 13 | 704 | 0.5-  | 0.9+  | 2005 04 15 | 699 | 0.1-  | 1.4-  | 2007 12 04 | G96 | 0.1-  | 0.1-  |
| 2001 02 13 | 704 | 0.5+  | 0.1+  | 2005 04 15 | 699 | 0.4+  | 0.2-  | 2007 12 04 | G96 | 0.6+  | 0.1+  |
| 2003 09 19 | 644 | 0.7-  | 0.6+  | 2005 04 18 | 703 | 0.8-  | 0.5+  | 2007 12 05 | 704 | 0.0   | 0.5+  |
| 2003 09 19 | 644 | 0.3-  | 0.6+  | 2005 04 18 | 703 | 0.2-  | 0.3-  | 2007 12 05 | 704 | 0.1+  | 0.0   |
| 2003 09 19 | 644 | 0.0   | 0.8+  | 2005 04 18 | 703 | 0.4-  | 0.0   | 2007 12 05 | 704 | 0.4+  | 1.0+  |
| 2003 09 28 | 699 | 0.5-  | 0.8+  | 2005 04 18 | 703 | 0.5-  | 0.1+  | 2007 12 05 | 704 | 0.6+  | 0.8+  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 699 | 0.2− | 0.9+ | 2005 04 18 | 704 | 0.5+ | 0.2− | 2007 12 05 | 704 | 0.4+ | 0.6+ |
| 2003 09 28 | 699 | 0.6− | 1.0+ | 2005 04 18 | 704 | 0.0  | 1.0+ | 2007 12 14 | 704 | 0.8+ | 0.0  |
| 2003 09 28 | 699 | 0.3+ | 1.2+ | 2005 04 18 | 704 | 0.2+ | 1.3+ | 2007 12 14 | 704 | 2.2+ | 0.2− |
| 2003 10 02 | 691 | 0.2− | 0.3+ | 2005 04 18 | 704 | 0.2+ | 0.2+ | 2007 12 14 | 704 | 0.3− | 0.5+ |
| 2003 10 02 | 691 | 0.2− | 0.3+ | 2005 04 19 | 704 | 1.3+ | 0.5+ | 2007 12 14 | 704 | 1.0+ | 0.1+ |
| 2003 10 02 | 691 | 0.4− | 0.2+ | 2005 04 19 | 704 | 0.3+ | 0.3+ | 2007 12 14 | 704 | 0.1+ | 0.5+ |

**(171753)\* 2000 YN<sub>22</sub>**

Discovered 2000 Dec. 28 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.07159  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27569436 | $\omega$ | 308.41245 | +0.00997511 | −0.99947333 |
| <i>a</i> | 2.3380339  | $\Omega$ | 140.98198 | +0.93204635 | −0.00189254 |
| <i>e</i> | 0.1706042  | <i>i</i> | 2.81146   | +0.36220175 | +0.03239575 |
| <i>P</i> | 3.58       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 21 | 704 | 0.2+ | 0.3− | 2003 08 22 | 644 | 0.1+ | 0.2− | 2007 11 12 | 704 | 0.0  | 0.5+ |
| 2000 12 21 | 704 | 1.1+ | 0.1+ | 2003 08 22 | 644 | 0.1+ | 0.4− | 2007 11 12 | 704 | 0.3− | 0.7+ |
| 2000 12 21 | 704 | 0.7+ | 0.2+ | 2003 08 22 | 644 | 0.4+ | 0.4− | 2007 11 12 | 704 | 0.9+ | 0.2− |
| 2000 12 28 | 691 | 0.4− | 0.2+ | 2003 09 22 | 699 | 0.2− | 0.2+ | 2007 11 12 | 704 | 0.0  | 0.5+ |
| 2000 12 28 | 691 | 0.4− | 0.2+ | 2003 09 22 | 699 | 0.9− | 0.1+ | 2007 11 18 | G96 | 0.1− | 0.4− |
| 2000 12 28 | 691 | 0.1− | 0.3+ | 2003 09 22 | 699 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.1− | 0.6− |
| 2000 12 30 | 691 | 0.3− | 0.0  | 2003 09 22 | 699 | 0.3+ | 0.4+ | 2007 11 18 | G96 | 0.1+ | 0.6− |
| 2000 12 30 | 704 | 0.9+ | 0.1+ | 2003 09 28 | 704 | 0.0  | 0.7+ | 2007 11 18 | G96 | 0.2− | 0.6− |
| 2000 12 30 | 691 | 0.6− | 0.1+ | 2003 09 28 | 704 | 0.3+ | 1.3+ | 2007 11 21 | G96 | 0.1− | 0.3− |
| 2000 12 30 | 691 | 0.6− | 0.1+ | 2003 09 28 | 691 | 0.1− | 0.2+ | 2007 11 21 | 703 | 0.3− | 0.2+ |
| 2000 12 30 | 704 | 0.4+ | 0.2− | 2003 09 28 | 704 | 0.3− | 0.8+ | 2007 11 21 | G96 | 0.4− | 0.1− |
| 2000 12 30 | 704 | 0.0  | 0.5+ | 2003 09 28 | 691 | 0.1− | 0.1+ | 2007 11 21 | 703 | 0.1− | 0.7− |
| 2000 12 30 | 704 | 0.0  | 0.5+ | 2003 09 28 | 691 | 0.2− | 0.2+ | 2007 11 21 | G96 | 0.1+ | 0.2− |
| 2000 12 30 | 704 | 0.5+ | 0.5− | 2005 03 01 | 691 | 0.2+ | 0.1+ | 2007 11 21 | 703 | 0.3− | 0.1+ |
| 2001 01 03 | 691 | 0.0  | 0.2+ | 2005 03 01 | 691 | 0.6+ | 0.1+ | 2007 11 21 | G96 | 0.0  | 0.3− |
| 2001 01 03 | 691 | 0.1− | 0.2− | 2005 03 01 | 691 | 0.1+ | 0.1+ | 2007 11 21 | 703 | 0.2− | 1.0− |
| 2001 01 03 | 704 | 0.5+ | 0.3+ | 2005 03 12 | 695 | 0.3+ | 0.2+ | 2007 12 04 | 699 | 0.6− | 0.8+ |
| 2001 01 03 | 691 | 0.0  | 0.1− | 2005 03 12 | 695 | 0.1+ | 0.3+ | 2007 12 04 | 704 | 0.5+ | 0.1+ |
| 2001 01 03 | 704 | 1.2+ | 0.6− | 2005 03 14 | G96 | 0.1− | 0.2+ | 2007 12 04 | 699 | 0.2+ | 0.1− |
| 2001 01 03 | 704 | 1.1+ | 0.4+ | 2005 03 14 | G96 | 0.8− | 0.0  | 2007 12 04 | 704 | 0.6+ | 0.6+ |
| 2001 01 03 | 704 | 0.8+ | 1.4− | 2005 03 14 | G96 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.1− | 0.8+ |
| 2001 01 03 | 704 | 0.4+ | 0.4+ | 2005 03 14 | G96 | 0.3+ | 0.3+ | 2007 12 04 | 699 | 0.7+ | 0.1− |
| 2001 01 04 | 704 | 0.3+ | 0.6+ | 2005 04 04 | 703 | 0.1+ | 0.8+ | 2007 12 04 | 704 | 0.2+ | 0.2+ |
| 2001 01 04 | 704 | 0.1+ | 0.3+ | 2005 04 04 | 703 | 0.9− | 0.6− | 2007 12 04 | 704 | 0.1− | 0.4+ |
| 2001 01 04 | 704 | 0.6+ | 0.6+ | 2005 04 04 | 703 | 0.6− | 0.1+ | 2007 12 04 | 699 | 0.1− | 0.1+ |
| 2001 01 04 | 704 | 0.3+ | 1.2+ | 2005 04 04 | 703 | 0.5− | 0.5+ | 2007 12 15 | 704 | 0.3− | 0.1+ |
| 2001 01 04 | 704 | 0.4+ | 0.2+ | 2007 11 04 | 704 | 0.4+ | 0.4− | 2007 12 15 | 704 | 0.3− | 0.0  |
| 2001 01 20 | 704 | 0.6− | 0.9− | 2007 11 04 | 704 | 0.9+ | 1.5− | 2007 12 15 | 704 | 0.5− | 0.2− |
| 2001 01 20 | 704 | 0.6+ | 0.1− | 2007 11 04 | 704 | 0.3+ | 0.1− | 2007 12 15 | 704 | 0.3− | 0.2+ |
| 2001 01 20 | 704 | 0.4+ | 1.3− | 2007 11 04 | 704 | 0.4− | 0.8− |            |     |      |      |
| 2001 01 20 | 704 | 0.3+ | 0.7− | 2007 11 12 | 704 | 0.4+ | 0.5+ |            |     |      |      |

**(171754)\* 2000 YB<sub>24</sub> = 2003 SB<sub>305</sub>**

Discovered 2000 Dec. 28 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 52718)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.03882  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27534759 | $\omega$ | 205.94336 | −0.65236470 | −0.75084075 |
| <i>a</i> | 2.3399964  | $\Omega$ | 284.95998 | +0.71263643 | −0.56131027 |
| <i>e</i> | 0.0479907  | <i>i</i> | 6.13444   | +0.25801089 | −0.34809330 |
| <i>P</i> | 3.58       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 12 28 | 691 | 0.1+ | 0.1− | 2003 09 30 | 704 | 0.6− | 0.5− | 2005 03 11 | 699 | 0.4+  | 0.8+  |
| 2000 12 28 | 691 | 0.0  | 0.0  | 2003 09 30 | 704 | 0.0  | 0.1+ | 2005 03 11 | 699 | 0.3+  | 0.4−  |
| 2000 12 28 | 691 | 0.0  | 0.0  | 2003 09 30 | 704 | 0.4+ | 0.3− | 2005 03 11 | 699 | (0.3− | 2.9+) |
| 2000 12 30 | 691 | 0.1− | 0.1− | 2003 09 30 | 704 | 0.3− | 0.2+ | 2005 03 13 | 703 | 0.2−  | 0.6+  |
| 2000 12 30 | 691 | 0.2− | 0.0  | 2003 10 16 | 644 | 0.1+ | 0.1+ | 2005 03 13 | 703 | 0.6−  | 0.1+  |

## M.P.O. 129149

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 30 | 691 | 0.2− | 0.4− | 2003 10 16 | 644 | 0.7+  | 0.1+  | 2005 03 13 | 703 | 0.9− | 0.2− |
| 2001 01 02 | 704 | 0.3+ | 0.1+ | 2003 10 16 | 644 | 0.1+  | 0.1+  | 2005 03 13 | 703 | 0.2− | 0.1− |
| 2001 01 02 | 704 | 0.4+ | 0.2+ | 2003 10 17 | 691 | 0.3+  | 0.2+  | 2005 04 01 | 699 | 0.4+ | 0.5+ |
| 2001 01 02 | 704 | 0.4+ | 0.2− | 2003 10 17 | 691 | 0.0   | 0.0   | 2005 04 01 | 699 | 1.2+ | 0.1+ |
| 2001 01 02 | 704 | 0.1− | 0.3+ | 2003 10 17 | 691 | 0.0   | 0.1+  | 2005 04 01 | 699 | 0.1− | 1.2+ |
| 2001 01 03 | 704 | 1.1− | 0.3− | 2003 10 22 | 704 | (1.6− | 1.3+) | 2005 04 01 | 699 | 0.9+ | 0.4− |
| 2001 01 03 | 704 | 0.2+ | 0.4+ | 2003 10 22 | 704 | 0.6−  | 0.5−  | 2006 07 25 | 644 | 0.4− | 0.5+ |
| 2001 01 03 | 704 | 1.0+ | 0.4+ | 2003 10 22 | 704 | 0.2−  | 0.6−  | 2006 07 25 | 644 | 0.5− | 0.3+ |
| 2001 01 03 | 704 | 0.2− | 0.4+ | 2003 10 27 | 691 | 0.0   | 0.1+  | 2006 07 25 | 644 | 0.2− | 0.4+ |
| 2001 01 03 | 704 | 0.1+ | 0.9+ | 2003 10 27 | 691 | 0.0   | 0.2+  | 2007 11 07 | 691 | 0.6+ | 0.6+ |
| 2001 01 20 | 704 | 0.1− | 0.8− | 2003 10 27 | 691 | 0.1+  | 0.0   | 2007 11 07 | 691 | 0.1− | 0.4− |
| 2001 01 20 | 704 | 0.4+ | 0.1− | 2003 11 02 | 704 | 0.9+  | 0.2+  | 2007 11 07 | 691 | 0.3− | 0.3− |
| 2001 01 20 | 704 | 0.2− | 0.5+ | 2003 11 02 | 704 | 1.0−  | 1.2+  | 2007 12 10 | 704 | 0.5− | 0.1− |
| 2001 01 20 | 704 | 0.5+ | 0.8+ | 2003 11 02 | 704 | 0.8−  | 1.0+  | 2007 12 10 | 704 | 0.4− | 0.6+ |
| 2003 09 17 | 644 | 0.2− | 0.2− | 2005 03 07 | 704 | 0.4−  | 0.3+  | 2007 12 10 | 704 | 0.5− | 0.7+ |
| 2003 09 17 | 644 | 0.4− | 0.2− | 2005 03 07 | 704 | 1.1+  | 0.9+  | 2007 12 15 | 704 | 0.3− | 0.5− |
| 2003 09 17 | 644 | 0.1− | 0.3− | 2005 03 07 | 704 | 0.2+  | 0.3−  | 2007 12 15 | 704 | 0.8+ | 0.5− |
| 2003 09 20 | 644 | 0.1− | 0.3+ | 2005 03 07 | 704 | 0.2+  | 0.3−  | 2007 12 15 | 704 | 0.1− | 0.3− |
| 2003 09 20 | 644 | 0.0  | 0.2+ | 2005 03 07 | 704 | 0.3−  | 0.3−  | 2007 12 15 | 704 | 0.3− | 0.3− |
| 2003 09 20 | 644 | 0.0  | 0.3+ | 2005 03 11 | 699 | 0.3+  | 0.6+  |            |     |      |      |

**(171755)\* 2000 YR<sub>43</sub>**

Discovered 2000 Dec. 30 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.71186  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27999755 | $\omega$ | 203.31128 | +0.27293079 | −0.96187356 |
| <i>a</i> | 2.3140171  | $\Omega$ | 230.85466 | +0.88617262 | +0.25846770 |
| <i>e</i> | 0.1930712  | <i>i</i> | 1.29672   | +0.37444207 | +0.08940747 |
| <i>P</i> | 3.52       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 22 | 691 | 0.6−  | 0.1−  | 2001 01 21 | 704 | 1.0+ | 0.2− | 2005 03 14 | G96 | 0.4− | 0.3− |
| 2000 11 22 | 691 | 0.6+  | 1.4−  | 2001 01 21 | 704 | 0.1+ | 0.2+ | 2005 03 14 | G96 | 0.3− | 0.0  |
| 2000 11 22 | 691 | 0.7−  | 0.6−  | 2001 01 21 | 704 | 0.3− | 0.1− | 2005 03 14 | G96 | 0.1+ | 0.0  |
| 2000 12 27 | 691 | 0.2+  | 0.2+  | 2001 01 21 | 704 | 0.0  | 0.2+ | 2005 03 14 | G96 | 0.8− | 0.5+ |
| 2000 12 27 | 691 | 0.2+  | 0.0   | 2001 01 21 | 704 | 0.2+ | 0.1+ | 2005 04 05 | G96 | 0.3− | 0.0  |
| 2000 12 27 | 691 | 0.0   | 0.4−  | 2003 09 16 | 691 | 0.1+ | 0.1+ | 2005 04 05 | G96 | 0.8− | 0.1+ |
| 2000 12 30 | 704 | 0.7−  | 0.7+  | 2003 09 16 | 691 | 0.0  | 0.1+ | 2005 04 05 | G96 | 0.5− | 0.1− |
| 2000 12 30 | 704 | 0.3−  | 1.5+  | 2003 09 16 | 691 | 0.0  | 0.0  | 2005 04 05 | G96 | 0.3− | 0.2− |
| 2000 12 30 | 704 | 1.1+  | 1.1+  | 2003 09 18 | 704 | 0.2− | 0.4+ | 2005 05 08 | G96 | 0.1+ | 0.3− |
| 2000 12 30 | 704 | 0.4+  | 0.6+  | 2003 09 18 | 704 | 0.6+ | 0.3− | 2005 05 08 | G96 | 0.8− | 0.3+ |
| 2001 01 02 | 704 | 0.8+  | 0.8+  | 2003 09 18 | 704 | 0.7− | 0.5− | 2005 05 08 | G96 | 1.0− | 0.5+ |
| 2001 01 02 | 704 | 0.0   | 0.6+  | 2003 09 18 | 644 | 0.1+ | 0.7+ | 2005 05 08 | G96 | 0.7− | 0.0  |
| 2001 01 02 | 704 | 0.3−  | 0.3−  | 2003 09 18 | 644 | 0.3+ | 0.1+ | 2005 05 12 | 291 | 0.7+ | 0.3+ |
| 2001 01 02 | 704 | 0.7−  | 0.8+  | 2003 09 18 | 644 | 0.1+ | 0.2+ | 2005 05 12 | 291 | 0.5+ | 0.3+ |
| 2001 01 02 | 704 | 0.3−  | 0.4−  | 2003 09 19 | 291 | 0.3− | 0.3+ | 2005 05 12 | 291 | 0.5+ | 0.3+ |
| 2001 01 03 | 704 | 0.4+  | 0.8+  | 2003 09 19 | 291 | 0.4− | 0.4+ | 2007 11 05 | 704 | 0.5+ | 1.3+ |
| 2001 01 03 | 704 | 0.0   | 0.7+  | 2003 09 19 | 291 | 0.4− | 0.3+ | 2007 11 05 | 704 | 0.9+ | 0.5+ |
| 2001 01 03 | 704 | 0.3−  | 0.9+  | 2003 09 22 | 699 | 0.4− | 0.7+ | 2007 11 05 | 704 | 0.2− | 0.2− |
| 2001 01 03 | 704 | 0.5−  | 0.3+  | 2003 09 22 | 699 | 0.1+ | 0.8+ | 2007 11 14 | 704 | 0.4− | 0.1− |
| 2001 01 03 | 704 | 0.0   | 0.2+  | 2003 09 22 | 699 | 0.7− | 0.8+ | 2007 11 14 | 704 | 0.2+ | 0.6+ |
| 2001 01 20 | 704 | (0.9+ | 1.6−) | 2003 09 22 | 699 | 1.1+ | 0.5− | 2007 11 14 | 704 | 0.6+ | 0.7+ |
| 2001 01 20 | 704 | 0.2−  | 0.3−  | 2003 09 29 | 704 | 0.5+ | 0.1− | 2007 11 14 | 704 | 1.7+ | 0.1− |
| 2001 01 20 | 704 | 0.0   | 1.3−  | 2003 09 29 | 704 | 0.6− | 0.2− | 2007 12 16 | 691 | 0.2− | 0.1+ |
| 2001 01 21 | 704 | 0.8+  | 0.3+  | 2003 09 29 | 704 | 0.8+ | 0.7+ | 2007 12 16 | 691 | 0.2− | 0.2+ |
| 2001 01 21 | 704 | 0.2−  | 0.6+  | 2005 03 12 | 691 | 0.1+ | 0.4+ | 2007 12 16 | 691 | 0.1− | 0.0  |
| 2001 01 21 | 704 | 0.7−  | 0.1−  | 2005 03 12 | 691 | 0.1+ | 0.3+ |            |     |      |      |
| 2001 01 21 | 704 | 0.1+  | 0.8−  | 2005 03 12 | 691 | 0.6+ | 0.1+ |            |     |      |      |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                   |          |                | MPC         |                                         |                |      |      |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------|----------------|-------------|-----------------------------------------|----------------|------|------|
| $M$                                     | 16.84554                                                                                                          | (2000.0) |                | $P$         |                                         | $Q$            |      |      |
| $n$                                     | 0.27159516                                                                                                        | $\omega$ | 296.15203      | +0.77451899 |                                         | −0.61844405    |      |      |
| $a$                                     | 2.3615004                                                                                                         | $\Omega$ | 102.34278      | +0.61800030 |                                         | +0.69504229    |      |      |
| $e$                                     | 0.0944870                                                                                                         | $i$      | 7.81565        | +0.13489240 |                                         | +0.36666494    |      |      |
| $P$                                     | 3.63 <th><math>H</math></th> <td>16.1</td> <th><math>G</math></th> <td>0.15<th><math>U</math></th><td>1</td></td> | $H$      | 16.1           | $G$         | 0.15 <th><math>U</math></th> <td>1</td> | $U$            | 1    |      |
| Residuals in seconds of arc             |                                                                                                                   |          |                |             |                                         |                |      |      |
| 2000 12 20 691                          | 0.3−                                                                                                              | 0.4−     | 2001 01 21 704 | 0.9+        | 0.2−                                    | 2007 11 12 704 | 0.4− | 0.3+ |
| 2000 12 20 691                          | 0.2−                                                                                                              | 0.3−     | 2001 01 21 704 | 0.4+        | 0.4+                                    | 2007 11 12 704 | 0.3− | 0.2+ |
| 2000 12 20 691                          | 0.2−                                                                                                              | 0.5−     | 2001 01 21 704 | 0.9−        | 0.3−                                    | 2007 11 12 704 | 0.6− | 0.3− |
| 2000 12 30 704                          | 0.0                                                                                                               | 0.1+     | 2003 09 01 704 | 0.8−        | 0.4+                                    | 2007 11 12 704 | 0.5− | 0.3+ |
| 2000 12 30 704                          | 0.2−                                                                                                              | 0.8+     | 2003 09 01 704 | 0.6−        | 0.6+                                    | 2007 11 12 704 | 0.3− | 0.0  |
| 2000 12 30 704                          | 0.2+                                                                                                              | 0.5+     | 2003 09 01 704 | (0.4−       | 2.1+)                                   | 2007 12 03 D35 | 0.1− | 0.1− |
| 2000 12 30 704                          | 0.7−                                                                                                              | 0.6+     | 2003 09 01 704 | 0.5−        | 0.9+                                    | 2007 12 03 D35 | 0.0  | 0.4− |
| 2001 01 02 704                          | 0.2+                                                                                                              | 0.1−     | 2003 09 25 608 | 0.4−        | 0.7−                                    | 2007 12 03 D35 | 0.6− | 0.0  |
| 2001 01 02 704                          | 0.5+                                                                                                              | 0.2+     | 2003 09 25 608 | 0.1+        | 1.1−                                    | 2007 12 04 704 | 0.2+ | 0.2− |
| 2001 01 02 704                          | 0.3+                                                                                                              | 0.9+     | 2003 09 25 608 | 0.4−        | 0.5−                                    | 2007 12 04 704 | 0.2− | 0.7− |
| 2001 01 03 704                          | 0.3−                                                                                                              | 0.1−     | 2003 10 18 699 | 0.1+        | 0.0                                     | 2007 12 04 704 | 0.4− | 0.3− |
| 2001 01 03 704                          | 0.2−                                                                                                              | 0.5−     | 2003 10 18 699 | 0.2+        | 0.1−                                    | 2007 12 04 704 | 0.2− | 0.1− |
| 2001 01 03 704                          | 0.8+                                                                                                              | 0.9−     | 2003 10 18 699 | 0.4+        | 1.1+                                    | 2007 12 05 699 | 1.1+ | 0.1− |
| 2001 01 03 704                          | 0.4+                                                                                                              | 0.2+     | 2003 10 18 699 | 0.7+        | 0.4+                                    | 2007 12 05 699 | 0.5− | 0.4− |
| 2001 01 03 704                          | 0.7+                                                                                                              | 0.6−     | 2003 10 24 608 | 0.6+        | 0.8−                                    | 2007 12 05 699 | 0.1+ | 0.2+ |
| 2001 01 19 704                          | 0.7+                                                                                                              | 0.0      | 2003 10 24 608 | 0.6+        | 0.6−                                    | 2007 12 05 699 | 0.6+ | 0.0  |
| 2001 01 19 704                          | 0.3−                                                                                                              | 0.7+     | 2003 10 24 608 | 0.3+        | 0.1+                                    | 2007 12 15 704 | 0.2+ | 0.8+ |
| 2001 01 19 704                          | 0.1+                                                                                                              | 0.1−     | 2005 04 02 699 | 1.0+        | 0.0                                     | 2007 12 15 704 | 0.7+ | 0.9+ |
| 2001 01 19 704                          | (0.9−                                                                                                             | 1.6+)    | 2005 04 02 699 | 0.1−        | 1.4+                                    | 2007 12 15 704 | 0.1+ | 1.0+ |
| 2001 01 19 704                          | 0.5−                                                                                                              | 0.4+     | 2005 04 02 699 | (0.9−       | 1.8+)                                   | 2007 12 15 704 | 0.5+ | 0.4+ |
| 2001 01 21 704                          | 0.3+                                                                                                              | 0.2+     | 2005 04 02 699 | 0.6−        | 0.5−                                    | 2007 12 15 704 | 0.3− | 1.4+ |

**(171757)\* 2000 YK<sub>59</sub>**

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Research Team at Socorro.

|                                         |            |          |           |             |             |          |   |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |          |   |  |  |  |
| <i>M</i>                                | 269.70061  | (2000.0) | <i>P</i>  | <i>Q</i>    |             |          |   |  |  |  |
| <i>n</i>                                | 0.27042555 | $\omega$ | 207.34467 | -0.95737116 | -0.28845622 |          |   |  |  |  |
| <i>a</i>                                | 2.3683047  | $\Omega$ | 315.88086 | +0.26887336 | -0.87054544 |          |   |  |  |  |
| <i>e</i>                                | 0.1167873  | <i>i</i> | 1.25768   | +0.10558208 | -0.39867737 |          |   |  |  |  |
| <i>P</i>                                | 3.64       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |  |  |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|--|--|
| 2000 12 20 691 | 0.0   | 0.8-  | 2005 03 11 G96 | 0.4-  | 0.1+  | 2005 04 09 699 | 0.1+ | 0.5- |  |  |
| 2000 12 20 691 | 0.2-  | 0.1+  | 2005 03 11 G96 | 0.2-  | 0.0   | 2005 04 09 699 | 0.1+ | 0.0  |  |  |
| 2000 12 20 691 | 0.0   | 0.2-  | 2005 03 11 G96 | 0.3-  | 0.1-  | 2005 04 12 G96 | 0.2- | 0.0  |  |  |
| 2000 12 30 704 | 0.3+  | 1.1+  | 2005 03 12 691 | 0.1-  | 0.2+  | 2005 04 12 G96 | 0.2- | 0.0  |  |  |
| 2000 12 30 704 | 0.3+  | 0.5-  | 2005 03 12 691 | 0.1+  | 0.1+  | 2005 04 12 G96 | 0.3- | 0.1- |  |  |
| 2000 12 30 704 | 0.0   | 0.2+  | 2005 03 12 691 | 0.0   | 0.1+  | 2005 04 12 G96 | 0.2- | 0.1- |  |  |
| 2001 01 02 704 | 0.2-  | 0.4+  | 2005 03 13 703 | 0.5-  | 0.4-  | 2005 05 12 G96 | 0.2- | 0.0  |  |  |
| 2001 01 02 704 | 0.5-  | 0.1+  | 2005 03 13 703 | 0.2-  | 0.1+  | 2005 05 12 G96 | 0.4- | 0.4- |  |  |
| 2001 01 02 704 | 0.2-  | 0.2-  | 2005 03 13 703 | 0.2+  | 0.2-  | 2005 05 12 G96 | 0.2- | 0.3- |  |  |
| 2001 01 21 704 | 0.1-  | 0.0   | 2005 03 13 703 | 0.7+  | 0.2-  | 2005 05 12 G96 | 0.3- | 0.4- |  |  |
| 2001 01 21 704 | (1.0+ | 1.6-) | 2005 03 16 691 | 0.1-  | 0.4+  | 2007 11 02 691 | 0.0  | 0.2- |  |  |
| 2001 01 21 704 | 0.4-  | 0.7+  | 2005 03 16 691 | 0.1-  | 0.1+  | 2007 11 02 691 | 0.1+ | 0.0  |  |  |
| 2001 01 21 704 | 0.3+  | 0.1+  | 2005 03 16 691 | 0.0   | 0.3+  | 2007 11 02 691 | 0.8- | 0.2- |  |  |
| 2001 01 21 704 | 0.7+  | 0.0   | 2005 04 01 699 | 0.9+  | 0.1+  | 2007 11 06 691 | 0.2- | 0.2- |  |  |
| 2003 09 18 691 | 0.3-  | 0.3+  | 2005 04 01 699 | (0.4+ | 1.9+) | 2007 11 06 691 | 0.1- | 0.1+ |  |  |
| 2003 09 18 691 | 0.3-  | 0.4+  | 2005 04 01 699 | 0.4+  | 0.9+  | 2007 11 06 691 | 0.1- | 0.2+ |  |  |
| 2003 09 18 691 | 0.5-  | 0.7+  | 2005 04 01 699 | 0.7+  | 0.1+  | 2007 11 17 691 | 0.0  | 0.0  |  |  |
| 2003 09 29 691 | 0.1+  | 0.2+  | 2005 04 04 704 | 0.6+  | 0.3+  | 2007 11 17 691 | 0.0  | 0.1+ |  |  |
| 2003 09 29 691 | 0.0   | 0.5+  | 2005 04 04 703 | 1.1-  | 0.4-  | 2007 11 17 691 | 0.8- | 0.2+ |  |  |
| 2003 09 29 691 | 0.2+  | 0.2+  | 2005 04 04 704 | 0.1+  | 1.1+  | 2007 12 10 704 | 0.9+ | 0.5+ |  |  |
| 2003 10 24 704 | (2.0- | 3.5+) | 2005 04 04 703 | 0.9-  | 0.7-  | 2007 12 10 704 | 1.1+ | 0.3- |  |  |
| 2003 10 24 704 | (3.1- | 2.9+) | 2005 04 04 704 | 1.1+  | 0.4+  | 2007 12 10 704 | 0.4+ | 1.1- |  |  |
| 2003 10 24 704 | (2.2- | 1.9+) | 2005 04 04 703 | (1.8- | 0.7-) | 2007 12 10 704 | 1.2+ | 0.3+ |  |  |
| 2005 03 04 691 | 0.1+  | 0.0   | 2005 04 04 704 | (1.9+ | 1.1+) | 2007 12 14 704 | 0.4- | 0.2+ |  |  |
| 2005 03 04 691 | 0.1+  | 0.2+  | 2005 04 04 703 | (0.0  | 1.6-) | 2007 12 14 704 | 1.1+ | 0.4- |  |  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | 691 | 0.1+ | 0.1+ | 2005 04 06 | G96 | 0.4- | 0.0  | 2007 12 14 | 704 | 0.8+ | 0.6- |
| 2005 03 08 | 699 | 1.4+ | 0.4- | 2005 04 06 | G96 | 0.3- | 0.3- | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2005 03 08 | 699 | 1.3+ | 1.0+ | 2005 04 06 | G96 | 0.7- | 0.1+ | 2007 12 15 | G96 | 0.7+ | 0.1- |
| 2005 03 08 | 699 | 0.1- | 0.0  | 2005 04 06 | G96 | 0.2- | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.1- |
| 2005 03 08 | 699 | 1.1+ | 0.4+ | 2005 04 09 | 699 | 0.5+ | 0.3+ | 2007 12 15 | G96 | 0.4+ | 0.2- |
| 2005 03 11 | G96 | 0.3- | 0.0  | 2005 04 09 | 699 | 0.8+ | 0.2- |            |     |      |      |

**(171758)\* 2000 YZ<sub>83</sub>**

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Research Team at Socorro.

|                                         |            |          |           |             |             |          |   |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |          |   |  |  |  |
| <i>M</i>                                | 341.07329  | (2000.0) | <i>P</i>  | <i>Q</i>    |             |          |   |  |  |  |
| <i>n</i>                                | 0.27702610 | $\omega$ | 264.93476 | +0.16638608 | -0.98605092 |          |   |  |  |  |
| <i>a</i>                                | 2.3305348  | $\Omega$ | 175.48040 | +0.92532128 | +0.15459803 |          |   |  |  |  |
| <i>e</i>                                | 0.1641935  | <i>i</i> | 3.19167   | +0.34072892 | +0.06166866 |          |   |  |  |  |
| <i>P</i>                                | 3.56       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2000 11 28 704 | 1.3- | 0.0  | 2005 03 09 G96 | 0.4-  | 0.3-  | 2007 11 09 D29 | 0.1-  | 0.3-  |
| 2000 11 28 704 | 0.8+ | 0.3- | 2005 03 11 695 | 0.1+  | 0.1+  | 2007 11 09 D29 | 0.4+  | 0.7-  |
| 2000 11 28 704 | 1.0+ | 0.3- | 2005 03 11 695 | 0.1+  | 0.1+  | 2007 11 09 D29 | 0.4+  | 0.2-  |
| 2000 11 28 704 | 0.3+ | 1.0- | 2005 03 14 704 | 0.1+  | 1.1+  | 2007 11 12 703 | 0.2+  | 0.4+  |
| 2000 12 30 704 | 0.5- | 0.8- | 2005 03 14 704 | (2.5+ | 1.3+) | 2007 11 12 703 | 0.1-  | 0.4-  |
| 2000 12 30 704 | 0.4+ | 0.1- | 2005 03 14 704 | 0.0   | 1.0+  | 2007 11 12 703 | 0.6+  | 1.3-  |
| 2000 12 30 704 | 0.3+ | 0.3+ | 2005 03 14 704 | 0.3-  | 0.5-  | 2007 11 12 703 | 1.3+  | 1.2-  |
| 2000 12 30 704 | 0.1- | 0.3- | 2005 03 14 704 | 0.7+  | 0.1+  | 2007 11 12 704 | 1.4+  | 0.7+  |
| 2000 12 30 704 | 0.1+ | 0.1- | 2005 04 04 703 | 0.3-  | 0.5+  | 2007 11 12 704 | 0.9+  | 0.7+  |
| 2001 01 03 704 | 0.3+ | 0.1- | 2005 04 04 703 | 0.1+  | 0.3+  | 2007 11 12 704 | 0.8+  | 0.2-  |
| 2001 01 03 704 | 0.1+ | 0.0  | 2005 04 04 703 | 1.3-  | 0.7-  | 2007 11 12 704 | 1.3+  | 0.4+  |
| 2001 01 03 704 | 0.2- | 0.2- | 2005 04 04 703 | 0.9-  | 0.1+  | 2007 11 12 704 | 0.6+  | 0.2-  |
| 2001 01 03 704 | 0.3- | 0.0  | 2005 04 17 691 | 0.6+  | 0.4+  | 2007 11 19 691 | 0.2-  | 0.2-  |
| 2001 01 03 704 | 0.3- | 0.1- | 2005 04 17 691 | 0.4+  | 0.3+  | 2007 11 19 691 | 0.3-  | 0.1-  |
| 2001 01 20 704 | 0.7- | 0.8- | 2005 04 17 691 | 0.2+  | 0.3+  | 2007 11 19 691 | 0.2-  | 0.1-  |
| 2001 01 20 704 | 0.3- | 0.3- | 2007 11 03 691 | 0.1-  | 0.2+  | 2007 11 20 A50 | 0.1-  | 0.4-  |
| 2001 01 20 704 | 0.4+ | 0.0  | 2007 11 03 691 | 0.2-  | 0.3+  | 2007 11 20 A50 | 0.7+  | 0.3+  |
| 2003 08 25 704 | 0.7+ | 0.0  | 2007 11 03 691 | 0.1-  | 0.1+  | 2007 11 20 A50 | 0.7+  | 0.2-  |
| 2003 08 25 704 | 0.4- | 0.5+ | 2007 11 04 704 | 0.3+  | 0.8+  | 2007 11 20 A50 | 0.3-  | 0.6+  |
| 2003 08 25 704 | 0.3- | 0.2+ | 2007 11 04 704 | 0.0   | 0.4-  | 2007 11 21 A50 | 0.8+  | 0.9+  |
| 2003 09 21 691 | 0.2- | 0.4+ | 2007 11 04 704 | 0.2+  | 0.6-  | 2007 11 21 A50 | 0.2-  | 0.9+  |
| 2003 09 21 691 | 0.0  | 0.5+ | 2007 11 04 704 | 0.0   | 0.8+  | 2007 11 21 A50 | 0.1+  | 1.0+  |
| 2003 09 21 691 | 0.3- | 0.4+ | 2007 11 04 704 | 0.4+  | 0.9+  | 2007 11 29 704 | 0.1-  | 0.3+  |
| 2005 03 03 691 | 0.3+ | 0.3+ | 2007 11 04 691 | 0.1+  | 0.2+  | 2007 11 29 704 | 0.3-  | 0.4-  |
| 2005 03 03 691 | 0.4+ | 0.4+ | 2007 11 04 691 | 0.1+  | 0.3+  | 2007 11 29 704 | 0.1+  | 0.1+  |
| 2005 03 03 691 | 0.3- | 0.4+ | 2007 11 04 691 | 0.1+  | 0.3+  | 2007 11 29 704 | 0.8+  | 0.5+  |
| 2005 03 03 703 | 0.4+ | 0.0  | 2007 11 07 691 | 0.1-  | 0.1+  | 2007 12 04 704 | 1.4-  | 0.2-  |
| 2005 03 03 703 | 0.6+ | 0.2- | 2007 11 07 691 | 0.0   | 0.0   | 2007 12 04 704 | (1.8- | 0.8+) |
| 2005 03 03 703 | 1.2- | 0.2+ | 2007 11 07 691 | 0.1-  | 0.1+  | 2007 12 04 704 | 1.1-  | 0.2+  |
| 2005 03 03 703 | 0.2- | 0.2+ | 2007 11 08 691 | 0.4-  | 0.3-  | 2007 12 04 704 | 0.9-  | 0.7+  |
| 2005 03 09 G96 | 0.1- | 0.2- | 2007 11 08 691 | 0.3-  | 0.1+  | 2007 12 04 704 | 1.3-  | 0.1+  |
| 2005 03 09 G96 | 0.1+ | 0.3- | 2007 11 08 691 | 0.1-  | 0.1-  |                |       |       |
| 2005 03 09 G96 | 0.1- | 0.1- | 2007 11 09 D29 | 0.3+  | 0.6-  |                |       |       |

2007 DEC. 24

M.P.O. 129151

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 21 | 691 | 0.3+  | 0.6+  | 2003 10 24 | 704 | 0.2+  | 0.6+  | 2005 04 15 | 699 | (2.4- | 1.1-) |
| 2000 12 30 | 704 | 0.6-  | 0.5+  | 2003 10 24 | 704 | 1.2+  | 1.4+  | 2005 04 15 | 699 | 0.6+  | 1.0+  |
| 2000 12 30 | 704 | 0.6-  | 0.4-  | 2003 10 24 | 704 | 0.3-  | 0.6+  | 2005 05 06 | 703 | 0.2+  | 1.4-  |
| 2000 12 30 | 704 | 0.5-  | 0.1+  | 2003 10 24 | 704 | 0.5-  | 0.9+  | 2005 05 06 | 703 | 0.7+  | 0.6-  |
| 2000 12 30 | 704 | 0.7-  | 0.6-  | 2003 10 24 | 704 | (1.6- | 1.2-) | 2005 05 06 | 703 | 0.5+  | 0.0   |
| 2000 12 30 | 704 | 0.2-  | 0.9+  | 2005 03 13 | 691 | 0.1+  | 0.2+  | 2005 05 06 | 703 | 0.4+  | 1.3-  |
| 2001 01 03 | 704 | 0.6-  | 0.7-  | 2005 03 13 | 691 | 0.0   | 0.1+  | 2007 11 02 | 691 | 0.2-  | 0.1-  |
| 2001 01 03 | 704 | 0.6-  | 0.9-  | 2005 03 13 | 691 | 0.3+  | 0.1+  | 2007 11 02 | 691 | 0.2-  | 0.1-  |
| 2001 01 03 | 704 | 0.2+  | 0.2-  | 2005 03 17 | G96 | 0.5-  | 0.2-  | 2007 11 02 | 691 | 0.0   | 0.4-  |
| 2001 01 19 | 691 | 0.4+  | 0.1-  | 2005 03 17 | G96 | 0.7-  | 0.1-  | 2007 11 06 | 691 | 0.1-  | 0.2+  |
| 2001 01 19 | 691 | 0.4+  | 0.1-  | 2005 03 17 | G96 | 0.6-  | 0.2-  | 2007 11 06 | 691 | 0.1+  | 0.1-  |
| 2001 01 19 | 691 | 0.4+  | 0.1-  | 2005 03 17 | G96 | 0.4-  | 0.1-  | 2007 11 06 | 691 | 0.3-  | 0.3-  |
| 2001 01 20 | 704 | 0.3+  | 0.9+  | 2005 04 04 | 691 | 0.3+  | 0.1+  | 2007 11 13 | 691 | 0.2-  | 0.2-  |
| 2001 01 03 | 704 | 0.2+  | 0.2-  | 2005 03 17 | G96 | 0.5-  | 0.2-  | 2007 11 02 | 691 | 0.0   | 0.4-  |
| 2001 01 20 | 704 | 0.3-  | 0.0   | 2005 04 04 | 691 | 0.3+  | 0.2+  | 2007 11 13 | 691 | 0.1-  | 0.1-  |
| 2001 01 21 | 704 | (1.8+ | 0.9-) | 2005 04 04 | 704 | 0.1+  | 0.8+  | 2007 11 15 | 704 | 0.2+  | 0.5+  |
| 2001 01 21 | 704 | 0.8+  | 0.2+  | 2005 04 04 | 704 | 0.3-  | 0.9+  | 2007 11 15 | 704 | 0.3-  | 0.4-  |
| 2001 01 21 | 704 | 1.3+  | 0.4-  | 2005 04 04 | 704 | (0.1+ | 1.5+) | 2007 11 15 | 704 | 0.4+  | 1.3+  |
| 2001 01 21 | 704 | 1.2+  | 0.1-  | 2005 04 04 | 704 | 1.0-  | 1.1+  | 2007 11 15 | 704 | 0.2+  | 1.1-  |
| 2001 01 21 | 704 | 0.7-  | 0.2-  | 2005 04 09 | 691 | 0.1+  | 0.1+  | 2007 11 15 | 704 | 0.2+  | 0.2-  |
| 2001 01 21 | 704 | 0.4+  | 0.3+  | 2005 04 09 | 691 | 0.8-  | 0.0   | 2007 11 17 | 691 | 0.0   | 0.0   |
| 2001 01 21 | 704 | 0.2+  | 1.0+  | 2005 04 09 | 691 | 0.2+  | 0.4+  | 2007 11 17 | 691 | 0.1+  | 0.2-  |
| 2001 01 21 | 704 | 0.1+  | 0.4-  | 2005 04 11 | 699 | 0.6+  | 0.6+  | 2007 11 17 | 691 | 0.3-  | 0.2-  |
| 2001 01 21 | 704 | 0.6+  | 0.5-  | 2005 04 11 | 699 | 0.2-  | 0.6+  | 2007 12 10 | 704 | 0.1-  | 0.6+  |
| 2001 02 13 | 691 | 0.2-  | 0.4-  | 2005 04 11 | 699 | 1.4+  | 1.0+  | 2007 12 10 | 704 | 0.2-  | 0.1-  |
| 2001 02 13 | 691 | 0.4-  | 0.4-  | 2005 04 11 | 699 | 1.0-  | 0.0   | 2007 12 10 | 704 | 0.2-  | 0.1+  |
| 2001 02 13 | 691 | 0.3-  | 0.3-  | 2005 04 12 | 704 | 0.4+  | 1.2+  | 2007 12 14 | 704 | 1.0+  | 1.3+  |
| 2003 09 30 | 691 | 0.3-  | 0.4+  | 2005 04 12 | 704 | 1.1+  | 0.3-  | 2007 12 14 | 704 | 1.4+  | 1.1+  |
| 2003 09 30 | 691 | 0.4-  | 0.4+  | 2005 04 12 | 704 | (1.8+ | 0.9+) | 2007 12 14 | 704 | 1.4+  | 1.0+  |
| 2003 09 30 | 691 | 0.3-  | 0.2+  | 2005 04 12 | 704 | 1.3+  | 0.4+  | 2007 12 14 | 704 | 0.4+  | 0.2+  |
| 2003 10 19 | 691 | 0.3-  | 0.2+  | 2005 04 12 | 704 | 0.1+  | 0.6+  | 2007 12 14 | 704 | 0.7+  | 1.0+  |

(171760)\* 2000 YU<sub>97</sub>

Discovered 2000 Dec. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 316.44680  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.27382095 | $\omega$ | 206.00762 | -0.55981384  | -0.82821543  |
| $a$ | 2.3486859  | $\Omega$ | 278.04553 | +0.76472176  | -0.50438623  |
| $e$ | 0.1764440  | $i$      | 1.49537   | +0.31907537  | -0.24424114  |
| $P$ | 3.60       | $H$      | 16.5      | $G$ 0.15     | $U$ 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 30 | 704 | 0.3-  | 0.4+  | 2001 02 22 | 704 | 0.7+  | 0.0   | 2005 04 11 | 699 | (1.6+ | 1.3+) |
| 2000 12 30 | 704 | 0.0   | 0.3+  | 2001 02 22 | 704 | (1.7+ | 0.0 ) | 2005 04 15 | 691 | 0.3+  | 0.4+  |
| 2000 12 30 | 704 | 0.2+  | 0.7+  | 2001 02 22 | 704 | 0.8+  | 0.6-  | 2005 04 15 | 691 | 0.2+  | 0.2+  |
| 2000 12 30 | 704 | 0.4+  | 1.0+  | 2001 02 22 | 704 | 0.4-  | 0.7-  | 2005 04 15 | 691 | 0.0   | 0.2+  |
| 2000 12 30 | 704 | 0.2+  | 0.3-  | 2001 02 22 | 704 | 0.2-  | 0.1-  | 2005 05 01 | 644 | 0.1+  | 0.2+  |
| 2001 01 03 | 704 | 0.5-  | 1.3-  | 2003 10 19 | 644 | 0.4-  | 0.5+  | 2005 05 01 | 644 | 0.1-  | 0.2+  |
| 2001 01 03 | 704 | 0.1+  | 0.4+  | 2003 10 19 | 644 | 0.4-  | 0.5+  | 2005 05 01 | 644 | 0.0   | 0.3+  |
| 2001 01 03 | 704 | 0.6+  | 0.3+  | 2003 10 19 | 691 | 0.4-  | 0.4+  | 2006 07 21 | G96 | 0.3-  | 0.1+  |
| 2001 01 03 | 704 | 0.3-  | 0.4+  | 2003 10 19 | 691 | 0.2-  | 0.3+  | 2006 07 21 | G96 | 0.1+  | 0.5-  |
| 2001 01 03 | 704 | 0.6+  | 0.9+  | 2003 10 19 | 644 | 0.3-  | 0.5+  | 2006 07 21 | G96 | 0.0   | 0.0   |
| 2001 01 20 | 704 | 0.1+  | 0.5+  | 2003 10 19 | 691 | 0.3-  | 0.1+  | 2006 07 21 | G96 | 0.1-  | 0.3+  |
| 2001 01 20 | 704 | 0.6+  | 0.2+  | 2003 10 20 | 291 | 0.2-  | 0.4+  | 2007 11 18 | 691 | 0.0   | 0.0   |
| 2001 01 20 | 704 | 0.5-  | 0.3+  | 2003 10 20 | 291 | 0.1-  | 0.5+  | 2007 11 18 | 691 | 0.1+  | 0.0   |
| 2001 01 21 | 704 | 0.1-  | 0.3+  | 2003 10 20 | 291 | 0.1-  | 0.6+  | 2007 11 18 | 691 | 0.0   | 0.3+  |
| 2001 01 21 | 704 | 0.3-  | 0.3+  | 2003 10 24 | 704 | 0.5-  | 0.7+  | 2007 12 05 | 691 | 0.2-  | 0.2-  |
| 2001 01 21 | 704 | 0.5-  | 0.4+  | 2003 10 24 | 704 | 0.2-  | 0.4+  | 2007 12 05 | 691 | 0.1-  | 0.1-  |
| 2001 01 21 | 704 | 0.4-  | 0.3+  | 2003 10 24 | 704 | 0.0   | 0.7+  | 2007 12 05 | 691 | 0.0   | 0.2-  |
| 2001 01 21 | 704 | 0.6-  | 0.0   | 2003 10 24 | 704 | (0.4+ | 1.5+) | 2007 12 05 | 704 | 0.0   | 0.4-  |
| 2001 01 29 | 704 | 0.4+  | 0.4+  | 2003 10 24 | 704 | 0.4-  | 0.6+  | 2007 12 05 | 704 | 0.1-  | 0.6-  |
| 2001 01 29 | 704 | (1.0- | 1.7+) | 2003 10 24 | 704 | 0.2+  | 0.6+  | 2007 12 05 | 704 | 0.0   | 0.5-  |
| 2001 01 29 | 704 | 0.2-  | 0.0   | 2003 10 24 | 704 | 0.1+  | 0.8+  | 2007 12 05 | 704 | 0.4+  | 0.1-  |
| 2001 02 01 | 699 | 0.1-  | 1.1+  | 2003 10 24 | 704 | 1.0+  | 0.9+  | 2007 12 05 | 704 | 0.2+  | 0.5-  |
| 2001 02 01 | 699 | 0.5+  | 0.1-  | 2003 10 24 | 704 | (0.5+ | 1.6+) | 2007 12 14 | 704 | 0.7+  | 0.7+  |
| 2001 02 01 | 699 | 0.7+  | 0.7-  | 2005 03 17 | G96 | 0.6-  | 0.6+  | 2007 12 14 | 704 | 0.1+  | 0.4+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 01 | 699 | 1.0+ | 0.5+ | 2005 03 17 | G96 | 0.7-  | 0.2+  | 2007 12 14 | 704 | 0.2- | 0.2+ |
| 2001 02 02 | 704 | 0.1- | 0.1+ | 2005 03 17 | G96 | 0.9-  | 0.7+  | 2007 12 14 | 704 | 0.2- | 0.2+ |
| 2001 02 02 | 704 | 0.4+ | 0.4- | 2005 03 17 | G96 | 0.6-  | 0.6+  | 2007 12 14 | 704 | 0.2+ | 0.4+ |
| 2001 02 02 | 704 | 0.8- | 0.7+ | 2005 04 11 | 691 | 0.2+  | 0.4+  | 2007 12 15 | 691 | 0.0  | 0.4- |
| 2001 02 02 | 704 | 0.2- | 0.5- | 2005 04 11 | 691 | 0.3+  | 0.4+  | 2007 12 15 | 691 | 0.1- | 0.3- |
| 2001 02 02 | 704 | 0.1- | 0.1+ | 2005 04 11 | 691 | 0.2+  | 0.5+  | 2007 12 15 | 691 | 0.0  | 0.1- |
| 2001 02 22 | 704 | 0.7- | 0.0  | 2005 04 11 | 699 | 1.3+  | 0.8-  | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2001 02 22 | 704 | 0.1+ | 0.7+ | 2005 04 11 | 699 | (0.4+ | 1.5+) | 2007 12 16 | 691 | 0.1+ | 0.3- |
| 2001 02 22 | 704 | 0.5+ | 0.4+ | 2005 04 11 | 699 | 0.6+  | 0.7+  |            |     |      |      |

(171761)\* 2000 YR<sub>98</sub>

Discovered 2000 Dec. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 330.77058  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.27446943 | $\omega$ | 225.52145 | -0.22397633  | -0.97390396  |
| $a$ | 2.3449850  | $\Omega$ | 237.45474 | +0.90607010  | -0.19421645  |
| $e$ | 0.0871211  | $i$      | 2.49413   | +0.35898689  | -0.11743525  |
| $P$ | 3.59       | $H$      | 16.5      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 11 10 | 691 | 0.0   | 0.4-  | 2001 02 02 | 704 | 0.0   | 0.2+  | 2003 10 24 | 704 | 0.1-  | 0.4-  |
| 1996 11 10 | 691 | 0.2-  | 0.2-  | 2001 02 02 | 704 | 0.9+  | 0.7+  | 2003 10 24 | 704 | 0.1-  | 0.2+  |
| 1996 11 10 | 691 | 0.2-  | 0.5-  | 2003 09 19 | 699 | 1.2+  | 0.8+  | 2003 10 24 | 704 | 0.5-  | 0.5-  |
| 2000 12 30 | 704 | 1.3+  | 0.7-  | 2003 09 19 | 699 | 1.3+  | 0.2-  | 2003 12 25 | 291 | 0.2-  | 0.1+  |
| 2000 12 30 | 704 | 0.3+  | 0.1-  | 2003 09 19 | 699 | 0.2+  | 1.1+  | 2003 12 25 | 291 | (2.2- | 0.8+) |
| 2000 12 30 | 704 | 0.9+  | 0.0   | 2003 09 19 | 699 | (1.7+ | 1.8+) | 2003 12 25 | 291 | (2.0- | 0.5+) |
| 2001 01 03 | 704 | 0.4+  | 0.3-  | 2003 09 21 | 644 | 0.5-  | 0.6+  | 2005 03 13 | 703 | 1.0-  | 0.0   |
| 2001 01 03 | 704 | 0.4-  | 0.8-  | 2003 09 21 | 644 | 0.0   | 0.3+  | 2005 03 13 | 703 | 0.1-  | 0.4-  |
| 2001 01 03 | 704 | 0.6+  | 0.6+  | 2003 09 21 | 644 | 0.2-  | 0.6+  | 2005 03 13 | 703 | 0.3-  | 0.3-  |
| 2001 01 03 | 704 | 0.9+  | 0.0   | 2003 09 22 | 644 | 0.5-  | 0.5+  | 2005 03 13 | 703 | 0.3-  | 0.1-  |
| 2001 01 03 | 704 | 0.4-  | 0.5+  | 2003 09 22 | 644 | 0.5-  | 0.3+  | 2005 05 14 | G96 | 0.1-  | 0.1-  |
| 2001 01 03 | 704 | 0.2-  | 0.5+  | 2003 09 22 | 644 | 0.2-  | 0.5+  | 2005 05 14 | G96 | 0.2-  | 0.1+  |
| 2001 01 03 | 704 | 0.8-  | 1.1+  | 2003 09 27 | 704 | 0.2+  | 0.1+  | 2005 05 14 | G96 | 0.3+  | 0.0   |
| 2001 01 03 | 704 | 1.0-  | 0.7+  | 2003 09 27 | 704 | 0.4-  | 0.4-  | 2005 05 14 | G96 | 0.4+  | 0.3+  |
| 2001 01 20 | 704 | 0.4+  | 0.1+  | 2003 09 27 | 704 | 0.9+  | 0.3+  | 2007 12 04 | 691 | 0.1-  | 0.1-  |
| 2001 01 20 | 704 | 0.1+  | 0.4+  | 2003 09 27 | 704 | 0.7+  | 0.1+  | 2007 12 04 | 691 | 0.1-  | 0.1-  |
| 2001 01 20 | 704 | 0.9+  | 0.1-  | 2003 09 27 | 704 | 0.7+  | 0.2+  | 2007 12 04 | 691 | 0.2-  | 0.2-  |
| 2001 01 20 | 704 | 0.2-  | 0.2-  | 2003 10 19 | 691 | 0.4-  | 0.1-  | 2007 12 15 | 691 | 0.2-  | 0.3-  |
| 2001 01 21 | 704 | 0.2-  | 1.2+  | 2003 10 19 | 691 | 0.4-  | 0.1+  | 2007 12 15 | 691 | 0.4-  | 0.2+  |
| 2001 01 21 | 704 | 1.5+  | 0.5+  | 2003 10 19 | 691 | 0.0   | 0.1+  | 2007 12 15 | 691 | 0.1+  | 0.1-  |
| 2001 01 21 | 704 | 0.4-  | 1.0+  | 2003 10 21 | 699 | 0.7+  | 0.4+  | 2007 12 16 | 012 | 0.3+  | 0.4-  |
| 2001 01 21 | 704 | 1.1-  | 0.9+  | 2003 10 21 | 699 | 0.9-  | 1.2+  | 2007 12 16 | 012 | 0.4+  | 0.4-  |
| 2001 01 21 | 704 | 0.3+  | 0.7+  | 2003 10 21 | 699 | 0.3+  | 0.6-  | 2007 12 16 | 012 | 0.3+  | 0.4-  |
| 2001 02 02 | 704 | 0.7+  | 1.1-  | 2003 10 21 | 699 | 0.9+  | 0.9+  | 2007 12 16 | 012 | 0.3+  | 0.3-  |
| 2001 02 02 | 704 | (2.0+ | 0.3+) | 2003 10 24 | 704 | 0.4+  | 0.6-  | 2007 12 16 | 012 | 0.5+  | 0.2-  |
| 2001 02 02 | 704 | 0.2-  | 0.3-  | 2003 10 24 | 704 | 0.1+  | 0.0   |            |     |       |       |

(171762)\* 2000 YT<sub>108</sub> = 2003 TU<sub>50</sub>

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.1+  | 0.4-  | 2003 10 23 | 691 | 0.2- | 0.2+ | 2006 05 24 | E12 | 0.3- | 0.6+ |
| 2001 01 04 | 704 | 0.4+  | 0.4+  | 2003 10 23 | 691 | 0.1+ | 0.2- | 2007 09 08 | 699 | 0.6- | 0.4+ |
| 2001 01 04 | 704 | 0.0   | 0.1+  | 2004 12 15 | 704 | 0.5+ | 0.2+ | 2007 09 08 | 699 | 0.0  | 0.6- |
| 2001 01 04 | 704 | 0.2-  | 0.2+  | 2004 12 15 | 704 | 0.0  | 0.1- | 2007 09 08 | 699 | 0.3- | 1.4+ |
| 2001 01 20 | 704 | 0.0   | 0.1-  | 2004 12 15 | 704 | 0.1+ | 0.5- | 2007 09 08 | 699 | 0.8+ | 0.7- |
| 2001 01 20 | 704 | 0.1-  | 0.6+  | 2004 12 15 | 703 | 0.5+ | 0.0  | 2007 09 11 | 703 | 0.6+ | 0.5+ |
| 2001 01 20 | 704 | 0.1+  | 0.3-  | 2004 12 15 | 703 | 0.2- | 0.5+ | 2007 09 11 | 703 | 0.1+ | 0.0  |
| 2001 01 20 | 704 | 1.0-  | 0.2+  | 2004 12 15 | 703 | 0.3+ | 0.5- | 2007 09 11 | 703 | 1.3- | 0.9- |
| 2001 01 21 | 704 | 0.4+  | 0.3+  | 2004 12 15 | 703 | 0.3+ | 0.2+ | 2007 09 11 | 703 | 0.0  | 0.1+ |
| 2001 01 21 | 704 | (0.3- | 2.0+) | 2004 12 20 | 703 | 0.2- | 0.4+ | 2007 12 05 | G96 | 0.6+ | 0.2- |
| 2001 01 21 | 704 | 0.1-  | 0.6+  | 2004 12 20 | 703 | 0.4+ | 0.3+ | 2007 12 05 | G96 | 0.3- | 0.1+ |
| 2001 01 21 | 704 | 0.5-  | 0.7+  | 2004 12 20 | 703 | 0.9- | 1.1+ | 2007 12 05 | G96 | 0.0  | 0.1+ |
| 2001 01 24 | 704 | 0.2+  | 0.1+  | 2004 12 20 | 703 | 0.7- | 0.2+ | 2007 12 05 | G96 | 0.2- | 0.3- |
| 2001 01 24 | 704 | 0.6+  | 0.2-  | 2006 05 08 | E12 | 0.2- | 1.0+ |            |     |      |      |

(171763)\* 2000 YM<sub>110</sub> = 2005 EX<sub>114</sub>

Discovered 2000 Dec. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 74885)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 7.22793    | (2000.0) | <i>P</i> | <i>Q</i>    |             |
| <i>n</i> | 0.27590062 | $\omega$ | 37.61597 | +0.66996897 | -0.74235437 |
| <i>a</i> | 2.3368685  | $\Omega$ | 10.32614 | +0.67103296 | +0.60140756 |
| <i>e</i> | 0.2139009  | <i>i</i> | 2.29589  | +0.31757888 | +0.29532852 |
| <i>P</i> | 3.57       | <i>H</i> | 16.8     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 704 | 0.2-  | 0.3-  | 2003 08 26 | 704 | 1.0+ | 0.6- | 2007 11 18 | 704 | 0.8+ | 0.4- |
| 2000 12 30 | 704 | 0.4+  | 0.3+  | 2003 08 26 | 704 | 0.2+ | 0.1+ | 2007 11 18 | 704 | 0.3- | 0.1+ |
| 2000 12 30 | 704 | 0.4+  | 0.6-  | 2003 10 01 | 691 | 0.2- | 0.1+ | 2007 11 18 | 704 | 0.4+ | 0.3- |
| 2000 12 30 | 704 | 0.0   | 0.7+  | 2003 10 01 | 691 | 0.0  | 0.3+ | 2007 11 18 | 704 | 0.4+ | 0.3+ |
| 2000 12 30 | 704 | 0.8+  | 0.2+  | 2003 10 01 | 691 | 0.3- | 0.1+ | 2007 11 20 | 704 | 0.2- | 0.2- |
| 2001 01 04 | 704 | 0.5-  | 0.2-  | 2005 03 04 | G96 | 0.3+ | 0.2+ | 2007 11 20 | 704 | 0.2- | 0.0  |
| 2001 01 04 | 704 | 0.8+  | 0.2-  | 2005 03 04 | 691 | 0.3+ | 0.1+ | 2007 11 20 | 704 | 0.3+ | 0.3- |
| 2001 01 04 | 704 | 1.3-  | 0.0   | 2005 03 04 | G96 | 0.3- | 0.2+ | 2007 11 20 | 704 | 0.5- | 0.1- |
| 2001 01 04 | 704 | 0.9-  | 0.5+  | 2005 03 04 | G96 | 0.1- | 0.0  | 2007 11 28 | D29 | 0.3+ | 0.7- |
| 2001 01 04 | 704 | 0.1-  | 0.2-  | 2005 03 04 | G96 | 0.2- | 0.1+ | 2007 11 28 | D29 | 0.9+ | 0.2- |
| 2001 01 19 | 704 | 0.3+  | 0.5-  | 2005 03 04 | 691 | 0.0  | 0.5- | 2007 11 28 | D29 | 0.3+ | 0.6- |
| 2001 01 19 | 704 | 0.5+  | 0.2+  | 2005 03 04 | 691 | 0.1+ | 0.1- | 2007 11 28 | D29 | 0.0  | 0.1+ |
| 2001 01 19 | 704 | 0.5+  | 0.2+  | 2005 03 10 | G96 | 0.2- | 0.3+ | 2007 12 10 | 704 | 0.4+ | 0.2+ |
| 2001 01 19 | 704 | 0.2-  | 0.8-  | 2005 03 10 | G96 | 0.4- | 0.2+ | 2007 12 10 | 704 | 0.0  | 0.6+ |
| 2001 01 19 | 704 | 0.3-  | 0.3-  | 2005 03 10 | G96 | 0.3- | 0.0  | 2007 12 10 | 704 | 0.2+ | 0.1+ |
| 2001 01 20 | 704 | 0.2+  | 0.1+  | 2005 03 10 | G96 | 0.3- | 0.0  | 2007 12 10 | 704 | 0.3+ | 0.0  |
| 2001 01 20 | 704 | 0.6-  | 0.3+  | 2005 04 04 | G96 | 0.2- | 0.1+ | 2007 12 16 | 704 | 0.5- | 0.8- |
| 2001 01 20 | 704 | 0.7-  | 1.1+  | 2005 04 04 | G96 | 0.1+ | 0.0  | 2007 12 16 | 704 | 0.5- | 0.2- |
| 2001 01 21 | 704 | 0.8+  | 0.2-  | 2005 04 04 | G96 | 0.1- | 0.3+ | 2007 12 16 | 704 | 0.4- | 0.7+ |
| 2001 01 21 | 704 | 0.6-  | 0.4+  | 2005 04 04 | G96 | 0.2- | 0.3+ | 2007 12 16 | 704 | 0.5- | 0.2+ |
| 2001 01 21 | 704 | 0.7+  | 0.3+  | 2007 08 24 | 691 | 0.1+ | 0.3+ | 2007 12 16 | 704 | 0.2+ | 0.0  |
| 2001 01 21 | 704 | (0.6- | 1.7+) | 2007 08 24 | 691 | 0.3- | 0.2- |            |     |      |      |
| 2003 08 26 | 704 | 0.9+  | 0.9-  | 2007 08 24 | 691 | 0.4- | 0.0  |            |     |      |      |

(171764)\* 2000 YP<sub>110</sub> = 2005 CJ<sub>37</sub>

Discovered 2000 Dec. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 74885)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 293.52872  | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.25754078 | $\omega$ | 110.60210 | -0.00607919 | -0.99982368 |
| <i>a</i> | 2.4466511  | $\Omega$ | 339.72177 | +0.89732128 | +0.00238707 |
| <i>e</i> | 0.1659054  | <i>i</i> | 2.93841   | +0.44133611 | -0.01862544 |
| <i>P</i> | 3.83       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 07 20 | 691 | 0.3-  | 0.3+  | 2005 02 02 | 703 | 0.2- | 0.0  | 2007 09 12 | G96 | 0.3- | 0.1- |
| 1999 07 20 | 691 | (3.1+ | 3.0-) | 2005 02 02 | 704 | 0.0  | 1.3+ | 2007 09 12 | G96 | 0.4- | 0.3- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 07 20 | 691 | 0.2-  | 0.3+  | 2005 02 02 | 703 | 0.4-  | 0.3+  | 2007 09 12 | G96 | 0.0  | 0.1- |
| 2000 12 30 | 704 | 0.7-  | 0.2+  | 2005 02 02 | 704 | 0.6+  | 0.3+  | 2007 09 12 | G96 | 0.1- | 0.5- |
| 2000 12 30 | 704 | 0.1-  | 0.3-  | 2005 02 02 | 704 | (1.4+ | 1.8+) | 2007 09 14 | 699 | 0.5+ | 0.0  |
| 2000 12 30 | 704 | 0.1-  | 0.5+  | 2005 02 07 | 246 | 0.2+  | 0.6+  | 2007 09 14 | 699 | 0.1+ | 0.9+ |
| 2000 12 30 | 704 | 0.3-  | 1.0+  | 2005 02 07 | 246 | 0.8+  | 0.5+  | 2007 09 14 | 699 | 0.0  | 0.2- |
| 2000 12 30 | 704 | 0.6+  | 0.3+  | 2005 02 07 | 246 | 0.1+  | 0.5+  | 2007 09 14 | 699 | 0.2+ | 0.7+ |
| 2001 01 04 | 704 | 1.1+  | 0.6-  | 2005 02 07 | 246 | 0.1-  | 0.6+  | 2007 09 14 | A50 | 0.4+ | 0.5+ |
| 2001 01 04 | 704 | 0.0   | 0.2-  | 2005 02 07 | 246 | 0.2+  | 0.9+  | 2007 09 14 | A50 | 0.2+ | 1.0+ |
| 2001 01 04 | 704 | 0.7+  | 0.3-  | 2005 02 07 | 246 | 0.3-  | 0.4+  | 2007 09 14 | A50 | 0.0  | 0.6- |
| 2001 01 19 | 704 | 0.4-  | 0.5-  | 2005 02 07 | 246 | 0.1+  | 0.8+  | 2007 09 14 | A50 | 0.2+ | 0.0  |
| 2001 01 19 | 704 | 0.2-  | 0.4-  | 2005 02 07 | 246 | 0.2-  | 0.6+  | 2007 10 07 | G96 | 0.1- | 0.3- |
| 2001 01 19 | 704 | 0.4-  | 0.3-  | 2005 02 09 | 704 | 1.1+  | 0.1-  | 2007 10 07 | G96 | 0.4- | 0.5- |
| 2001 01 19 | 704 | 0.4-  | 0.9-  | 2005 02 09 | 704 | 0.6+  | 0.9+  | 2007 10 07 | G96 | 0.1- | 0.5- |
| 2001 01 19 | 704 | 0.2-  | 0.7-  | 2005 02 09 | 704 | 0.3+  | 0.1+  | 2007 10 07 | G96 | 0.3- | 0.4- |
| 2001 01 20 | 704 | 0.6+  | 0.2+  | 2005 02 09 | 704 | 0.6+  | 0.2+  | 2007 10 08 | G96 | 0.7- | 0.0  |
| 2001 01 20 | 704 | (1.8- | 0.3+) | 2005 02 09 | 704 | (1.3+ | 1.8+) | 2007 10 08 | G96 | 0.0  | 0.0  |
| 2001 01 20 | 704 | 0.6-  | 0.0   | 2005 03 04 | G96 | 0.1+  | 0.2+  | 2007 10 08 | G96 | 0.5+ | 0.1- |
| 2001 01 20 | 704 | 0.2+  | 0.5+  | 2005 03 04 | G96 | 0.1-  | 0.0   | 2007 10 08 | G96 | 0.4+ | 0.1+ |
| 2003 09 20 | 291 | 0.2-  | 1.0+  | 2005 03 04 | G96 | 0.2-  | 0.1+  | 2007 12 06 | G96 | 0.4+ | 0.3- |
| 2003 09 20 | 291 | 0.1-  | 0.5+  | 2005 03 04 | G96 | 0.1+  | 0.1+  | 2007 12 06 | G96 | 0.0  | 0.3- |
| 2003 09 20 | 291 | 0.0   | 0.5+  | 2005 04 04 | G96 | 0.2+  | 0.0   | 2007 12 06 | G96 | 0.4- | 0.6- |
| 2005 02 02 | 703 | (3.5+ | 0.2+) | 2005 04 04 | G96 | 0.1+  | 0.0   | 2007 12 06 | G96 | 0.4- | 0.1+ |
| 2005 02 02 | 704 | (0.5- | 2.4+) | 2005 04 04 | G96 | 0.0   | 0.3+  |            |     |      |      |
| 2005 02 02 | 703 | (1.6- | 0.2-) | 2005 04 04 | G96 | 0.1+  | 0.5+  |            |     |      |      |

(171765)\* 2000 YO<sub>131</sub>

Discovered 2000 Dec. 30 by W. K. Y. Yeung at Desert Beaver Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 350.95749  | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.27646847 | $\omega$ | 112.46493 | +0.29751203 | -0.95287203 |
| <i>a</i> | 2.33366675 | $\Omega$ | 320.07430 | +0.83843290 | +0.29049893 |
| <i>e</i> | 0.2126704  | <i>i</i> | 5.30532   | +0.45663646 | +0.08743723 |
| <i>P</i> | 3.56       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 20 | 704 | 0.7-  | 1.2-  | 2001 01 20 | 704 | 0.2+  | 0.3-  | 2007 10 09 | 704 | 0.5-  | 0.3+  |
| 2000 11 20 | 704 | 0.4+  | 0.1-  | 2001 01 21 | 704 | 0.2+  | 0.5-  | 2007 10 09 | 704 | 0.1+  | 0.0   |
| 2000 11 20 | 704 | 0.2-  | 0.3+  | 2001 01 21 | 704 | 0.1+  | 0.4-  | 2007 10 09 | 704 | 0.3-  | 0.8+  |
| 2000 11 20 | 704 | 1.0-  | 1.1+  | 2001 01 21 | 704 | 0.1-  | 0.5+  | 2007 10 09 | 704 | 0.6-  | 0.3-  |
| 2000 12 30 | 919 | (0.8+ | 2.2-) | 2001 01 21 | 704 | 0.8+  | 0.1+  | 2007 11 17 | 704 | 0.8-  | 0.2-  |
| 2000 12 30 | 919 | (1.7- | 2.3-) | 2001 01 21 | 704 | 0.3+  | 0.1-  | 2007 11 17 | 704 | 0.5-  | 0.1+  |
| 2001 01 03 | 699 | 0.4+  | 0.2-  | 2001 01 21 | 704 | 0.3+  | 0.2-  | 2007 11 17 | 704 | 0.3-  | 0.7+  |
| 2001 01 03 | 699 | 1.3+  | 0.4-  | 2001 01 21 | 704 | 0.9+  | 0.2+  | 2007 11 17 | 704 | 1.0-  | 0.5+  |
| 2001 01 03 | 699 | 0.1+  | 0.9-  | 2001 01 21 | 704 | 0.3+  | 0.1-  | 2007 11 17 | 704 | 0.9-  | 0.4+  |
| 2001 01 03 | 699 | 0.3+  | 0.5+  | 2001 01 21 | 704 | 0.2+  | 0.5+  | 2007 12 02 | 704 | 0.3+  | 0.5-  |
| 2001 01 04 | 704 | 0.4+  | 0.7+  | 2001 01 21 | 704 | 0.3+  | 0.1+  | 2007 12 02 | 704 | 0.3+  | 0.5-  |
| 2001 01 04 | 704 | 0.1+  | 0.2+  | 2001 03 02 | 691 | 0.2-  | 0.1+  | 2007 12 02 | 704 | (0.5+ | 1.6-) |
| 2001 01 04 | 704 | 0.2-  | 0.5+  | 2001 03 02 | 691 | 0.6-  | 0.3+  | 2007 12 02 | 704 | 0.6+  | 0.3-  |
| 2001 01 04 | 704 | 0.5-  | 0.3-  | 2001 03 02 | 691 | 0.1-  | 0.2+  | 2007 12 02 | 704 | 0.5+  | 0.7-  |
| 2001 01 04 | 704 | 0.2+  | 0.7+  | 2003 07 25 | 599 | 0.3+  | 0.4+  | 2007 12 03 | 704 | 0.5+  | 0.1+  |
| 2001 01 19 | 704 | 0.4-  | 0.7+  | 2003 07 25 | 599 | 0.0   | 0.1+  | 2007 12 03 | 704 | 0.3+  | 0.3-  |
| 2001 01 19 | 704 | 0.6-  | 0.3+  | 2003 07 25 | 599 | 0.1-  | 0.5+  | 2007 12 03 | H06 | 0.3+  | 0.4-  |
| 2001 01 19 | 704 | 0.4+  | 0.2-  | 2003 07 25 | 599 | 1.0-  | 1.4+  | 2007 12 03 | 704 | 0.2+  | 0.6-  |
| 2001 01 19 | 704 | 0.4+  | 0.6+  | 2003 09 04 | 691 | 0.1-  | 0.1+  | 2007 12 03 | H06 | 0.3+  | 0.4-  |
| 2001 01 19 | 704 | 0.1-  | 0.1-  | 2003 09 04 | 691 | 0.1-  | 0.3+  | 2007 12 03 | 704 | 0.3+  | 0.0   |
| 2001 01 19 | 704 | 0.3+  | 0.5+  | 2003 09 04 | 691 | 0.0   | 0.3+  | 2007 12 03 | 704 | 0.3+  | 0.1-  |
| 2001 01 19 | 704 | 0.1-  | 0.1-  | 2003 09 27 | 691 | 0.1-  | 0.0   | 2007 12 03 | H06 | 0.3+  | 0.2+  |
| 2001 01 19 | 704 | 0.7-  | 0.5+  | 2003 09 27 | 691 | 0.0   | 0.1-  | 2007 12 16 | 704 | 0.5-  | 0.4+  |
| 2001 01 19 | 704 | 0.1+  | 0.1-  | 2003 09 27 | 691 | 0.2-  | 0.0   | 2007 12 16 | 704 | 0.5+  | 1.2+  |
| 2001 01 19 | 704 | 0.1-  | 0.3-  | 2005 03 13 | 703 | 0.6+  | 0.4+  | 2007 12 16 | 704 | 0.2-  | 0.2+  |
| 2001 01 20 | 704 | 0.4-  | 0.3-  | 2005 03 13 | 703 | 0.1-  | 1.4+  | 2007 12 16 | 704 | 0.1-  | 0.4-  |
| 2001 01 20 | 704 | 0.1+  | 0.3+  | 2005 03 13 | 703 | 0.6+  | 0.4+  | 2007 12 16 | 704 | 0.1-  | 0.2-  |
| 2001 01 20 | 704 | 0.3+  | 0.5-  | 2005 03 13 | 703 | (0.4+ | 1.8+) |            |     |       |       |
| 2001 01 20 | 704 | 0.2-  | 0.4-  | 2007 10 09 | 704 | 0.6+  | 1.0-  |            |     |       |       |

2007 DEC. 24

M.P.O. 129153

(171766)\* 2000 YY<sub>143</sub>

Discovered 2000 Dec. 29 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 358.80199 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.26892146 | $\omega$ | 355.91845 | +0.50593075 | -0.85553785 |
| <i>a</i>  | 2.3771271  | $\Omega$ | 63.65638  | +0.79482940 | +0.41287603 |
| <i>e</i>  | 0.1290688  | <i>i</i> | 7.04749   | +0.33508254 | +0.31239139 |
| <i>P</i>  | 3.67       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 29 | 699 | 0.5+  | 0.4-  | 2003 09 25 | 608 | 0.1-  | 1.2+  | 2007 11 05 | 704 | 0.7+  | 1.1+  |
| 2000 12 29 | 699 | 0.1-  | 0.1-  | 2003 10 06 | 699 | (1.3- | 1.6-) | 2007 11 05 | 704 | 1.0+  | 0.4+  |
| 2000 12 29 | 699 | 0.4+  | 1.1+  | 2003 10 06 | 699 | (2.1- | 0.4+) | 2007 11 05 | 704 | 0.0   | 0.3+  |
| 2000 12 29 | 699 | 0.7+  | 0.4-  | 2003 10 06 | 699 | (1.0- | 1.7-) | 2007 11 10 | D29 | 0.1-  | 0.4-  |
| 2001 01 18 | 704 | 0.0   | 0.1-  | 2003 10 06 | 699 | 0.3+  | 0.8-  | 2007 11 10 | D29 | 0.1+  | 0.2-  |
| 2001 01 18 | 704 | 0.3+  | 0.1-  | 2003 10 18 | 699 | 1.0-  | 0.7+  | 2007 11 10 | D29 | 0.4+  | 0.2-  |
| 2001 01 18 | 704 | 0.4-  | 0.5-  | 2003 10 18 | 699 | 0.2+  | 0.7+  | 2007 11 10 | D29 | 0.6+  | 0.2-  |
| 2001 01 18 | 704 | 0.2-  | 1.0+  | 2003 10 18 | 699 | 0.4-  | 0.9+  | 2007 11 14 | 704 | 0.2-  | 1.1-  |
| 2001 02 01 | 699 | 0.0   | 0.7+  | 2003 10 18 | 699 | 0.1+  | 0.2+  | 2007 11 14 | 704 | 0.7-  | 0.2-  |
| 2001 02 01 | 699 | 0.9+  | 0.5-  | 2005 03 16 | 703 | 1.2-  | 0.8-  | 2007 11 14 | 704 | 0.3+  | 0.4-  |
| 2001 02 01 | 699 | 0.4-  | 0.5+  | 2005 03 16 | 703 | 0.6-  | 0.3+  | 2007 11 17 | 691 | 0.7-  | 0.6-  |
| 2001 02 01 | 699 | 0.5-  | 1.0+  | 2005 03 16 | 703 | (1.2- | 2.5-) | 2007 11 17 | 691 | 0.7-  | 0.4-  |
| 2001 02 16 | 704 | 0.6-  | 0.0   | 2005 03 16 | 703 | 0.4+  | 0.2-  | 2007 11 17 | 691 | 1.0-  | 0.6-  |
| 2001 02 16 | 704 | 0.8+  | 0.1+  | 2005 03 16 | 704 | (1.4+ | 1.8+) | 2007 12 10 | 704 | 0.9+  | 0.5+  |
| 2001 02 16 | 704 | 1.2-  | 0.0   | 2005 03 16 | 704 | 1.3+  | 1.3+  | 2007 12 10 | 704 | 2.4+  | 1.5+  |
| 2001 02 16 | 704 | 0.3+  | 0.2+  | 2005 03 16 | 704 | 0.0   | 0.7+  | 2007 12 10 | 704 | 2.7+  | 1.5+  |
| 2001 02 16 | 704 | 0.1+  | 0.7-  | 2005 03 16 | 704 | 1.0+  | 1.5+  | 2007 12 10 | 704 | (3.0+ | 1.0+) |
| 2003 09 20 | 644 | 0.4-  | 0.2+  | 2007 10 08 | 704 | (0.4+ | 1.6-) | 2007 12 14 | 704 | 0.4-  | 0.0   |
| 2003 09 20 | 644 | 0.3-  | 0.3+  | 2007 10 08 | 704 | 0.7-  | 0.2+  | 2007 12 14 | 704 | 0.6-  | 0.1+  |
| 2003 09 20 | 644 | 0.3-  | 0.4+  | 2007 10 08 | 704 | (1.6- | 0.6+) | 2007 12 14 | 704 | 0.6-  | 0.4-  |
| 2003 09 25 | 608 | (0.2+ | 2.3+) | 2007 11 05 | 704 | 0.9+  | 0.2+  | 2007 12 14 | 704 | 0.4-  | 0.1+  |
| 2003 09 25 | 608 | 0.3-  | 0.9+  | 2007 11 05 | 704 | 0.4+  | 0.4-  | 2007 12 14 | 704 | 0.3+  | 0.4+  |

(171767)\* 2001 AW<sub>8</sub> = 1998 HE<sub>48</sub> = 2005 EB<sub>170</sub>

Discovered 2001 Jan. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (*MPO* 74889)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 239.50714 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.27370975 | $\omega$ | 105.70838 | -0.95856946 | +0.26521115 |
| <i>a</i>  | 2.3493219  | $\Omega$ | 89.75831  | -0.28450138 | -0.87305433 |
| <i>e</i>  | 0.0874807  | <i>i</i> | 5.96729   | -0.01426743 | -0.40919333 |
| <i>P</i>  | 3.60       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 04 20 | 704 | 0.3+  | 0.4-  | 2003 10 21 | 691 | 0.1-  | 0.0   | 2006 08 16 | E12 | 0.4- | 0.6+ |
| 1998 04 20 | 704 | 1.2-  | 1.9+  | 2003 10 21 | 691 | 0.0   | 0.0   | 2006 08 16 | E12 | 1.1- | 0.2- |
| 1998 04 20 | 704 | 1.5-  | 0.6+  | 2003 10 21 | 691 | 0.0   | 0.0   | 2006 08 20 | 644 | 0.6+ | 0.5+ |
| 1998 04 20 | 704 | (4.9- | 1.5+) | 2005 01 17 | 703 | 0.8-  | 0.1+  | 2006 08 20 | 644 | 0.4+ | 0.5+ |
| 1998 04 21 | 704 | (1.1+ | 2.0-) | 2005 01 17 | 703 | 1.2-  | 1.1+  | 2006 08 20 | 644 | 0.4+ | 0.3+ |
| 1998 04 21 | 704 | 0.2-  | 0.0   | 2005 01 17 | 703 | 0.9-  | 0.3-  | 2007 11 13 | 691 | 0.0  | 0.2- |
| 1998 04 21 | 704 | 0.6-  | 1.4-  | 2005 01 17 | 703 | (2.0+ | 0.8-) | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 1998 04 21 | 704 | 1.3-  | 1.4-  | 2005 03 12 | H06 | 0.8+  | 0.4-  | 2007 11 13 | 691 | 0.0  | 0.0  |
| 1998 04 24 | 704 | 0.8-  | 1.2-  | 2005 03 12 | H06 | 0.6+  | 0.6-  | 2007 11 17 | 691 | 0.1+ | 0.1- |
| 1998 04 24 | 704 | 1.2+  | 0.5+  | 2005 03 12 | H06 | 0.6+  | 0.5+  | 2007 11 17 | 691 | 0.0  | 0.2- |
| 1998 04 24 | 704 | 0.5-  | 1.5-  | 2005 03 14 | H06 | 1.0+  | 0.6-  | 2007 11 17 | 691 | 0.1- | 0.2- |
| 1998 04 24 | 704 | 1.1+  | 0.6+  | 2005 03 14 | H06 | (1.7+ | 0.0)  | 2007 12 04 | 691 | 0.1+ | 0.3- |
| 1998 04 24 | 704 | 0.0   | 1.7-  | 2005 03 14 | H06 | 1.4+  | 1.3+  | 2007 12 04 | 691 | 0.1- | 0.0  |
| 2001 01 02 | 704 | 0.0   | 0.7+  | 2005 03 16 | 703 | 0.0   | 0.4+  | 2007 12 04 | 691 | 0.1- | 0.2- |
| 2001 01 02 | 704 | 0.5+  | 0.4+  | 2005 03 16 | 703 | 0.1-  | 0.7+  | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2001 01 02 | 704 | 0.3+  | 0.1-  | 2005 03 16 | H06 | 0.1-  | 0.1+  | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2001 01 02 | 704 | 0.1+  | 0.3+  | 2005 03 16 | 703 | 0.0   | 0.7+  | 2007 12 04 | G96 | 0.1+ | 0.4- |
| 2001 01 03 | 704 | 0.1-  | 0.1+  | 2005 03 16 | H06 | 0.4+  | 0.3+  | 2007 12 04 | G96 | 0.1+ | 0.4- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 03 | 704 | 0.7+ | 0.1+ | 2005 03 16 | 703 | 0.3- | 0.3+ | 2007 12 05 | 704 | 0.1+ | 0.5+ |
| 2001 01 03 | 704 | 0.0  | 0.3- | 2005 03 16 | H06 | 0.1+ | 0.2- | 2007 12 05 | 704 | 0.5- | 0.2- |
| 2001 01 03 | 704 | 1.0+ | 1.3- | 2005 03 18 | H06 | 0.4- | 0.2+ | 2007 12 05 | 704 | 0.3- | 1.4+ |
| 2001 01 19 | 704 | 0.0  | 0.1- | 2005 03 18 | H06 | 0.7+ | 0.4+ | 2007 12 05 | 704 | 0.6+ | 0.6+ |
| 2001 01 19 | 704 | 0.4- | 0.1+ | 2005 03 18 | H06 | 0.1+ | 0.4+ | 2007 12 16 | 691 | 0.1- | 0.2- |
| 2001 01 19 | 704 | 0.4+ | 0.7+ | 2006 08 16 | E12 | 0.5+ | 0.6+ | 2007 12 16 | 691 | 0.3- | 0.1+ |
| 2001 01 19 | 704 | 0.0  | 0.3+ | 2006 08 16 | E12 | 0.3+ | 0.4- | 2007 12 16 | 691 | 0.3- | 0.0  |

(171768)\* 2001 AW<sub>22</sub> = 1996 TG<sub>2</sub>

Discovered 2001 Jan. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 9591)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |          | <i>Q</i>    |             |
|-----------|------------|----------|----------|-------------|-------------|
| 336.68873 |            | (2000.0) |          |             |             |
| <i>n</i>  | 0.28059012 | $\omega$ | 60.33507 | -0.28941504 | -0.95601270 |
| <i>a</i>  | 2.3107580  | $\Omega$ | 46.56958 | +0.85393263 | -0.28040102 |
| <i>e</i>  | 0.1704537  | <i>i</i> | 3.76888  | +0.43247890 | -0.08611026 |
| <i>P</i>  | 3.51       | <i>H</i> | 17.1     | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 10 03 | 327 | 0.5- | 0.1+ | 2003 09 26 | 645 | 0.0   | 0.1+  | 2005 04 11 | 699 | 0.2-  | 0.3-  |
| 1996 10 03 | 327 | 0.2- | 0.0  | 2003 09 28 | 704 | 0.5-  | 1.2+  | 2005 04 11 | 699 | 0.9+  | 1.1+  |
| 1996 10 03 | 327 | 0.1- | 0.9- | 2003 09 28 | 704 | 1.4-  | 0.6+  | 2005 04 11 | 699 | 0.5+  | 0.5-  |
| 1996 10 05 | 327 | 0.5- | 0.2+ | 2003 09 28 | 704 | 0.1+  | 1.1+  | 2005 04 12 | 704 | 0.5+  | 0.2-  |
| 1996 10 05 | 327 | 0.9- | 1.0- | 2003 09 28 | 704 | (0.3- | 1.8+) | 2005 04 12 | 704 | 0.5+  | 0.1-  |
| 1996 10 05 | 327 | 1.5+ | 0.9- | 2003 09 28 | 645 | 0.0   | 0.2+  | 2005 04 12 | 704 | 0.2-  | 0.3-  |
| 2001 01 03 | 704 | 0.1+ | 0.2+ | 2003 09 28 | 645 | 0.0   | 0.1+  | 2005 04 12 | 704 | 1.3+  | 0.3+  |
| 2001 01 03 | 704 | 0.4+ | 0.6+ | 2005 03 09 | G96 | 0.3-  | 0.0   | 2005 04 15 | 699 | 0.3-  | 0.9+  |
| 2001 01 03 | 704 | 0.2+ | 0.1+ | 2005 03 09 | G96 | 0.4-  | 0.1-  | 2005 04 15 | 699 | 0.7-  | 0.4+  |
| 2001 01 03 | 704 | 1.0+ | 0.1- | 2005 03 09 | G96 | 0.6-  | 0.8-  | 2005 04 15 | 699 | 1.2-  | 0.2-  |
| 2001 01 04 | 704 | 0.1+ | 0.1- | 2005 03 09 | G96 | 0.2-  | 0.0   | 2005 04 15 | 699 | (2.0- | 0.3-) |
| 2001 01 04 | 704 | 0.0  | 0.3- | 2005 03 11 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 699 | 0.1-  | 0.5-  |
| 2001 01 04 | 704 | 0.1+ | 0.5+ | 2005 03 11 | 691 | 0.2+  | 0.1+  | 2007 12 05 | 699 | 1.0-  | 0.8-  |
| 2001 01 04 | 704 | 0.3+ | 0.6+ | 2005 03 11 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 691 | 0.3-  | 0.1+  |
| 2001 01 04 | 704 | 0.3+ | 1.2+ | 2005 03 13 | 703 | 0.4+  | 0.6+  | 2007 12 05 | 691 | 0.2-  | 0.0   |
| 2001 01 19 | 704 | 0.6- | 0.2+ | 2005 03 13 | 703 | 0.2-  | 0.7-  | 2007 12 05 | 699 | 0.1+  | 0.7-  |
| 2001 01 19 | 704 | 0.6- | 0.3+ | 2005 03 13 | 703 | 0.1+  | 0.0   | 2007 12 05 | 691 | 0.1-  | 0.0   |
| 2001 01 19 | 704 | 0.3- | 0.0  | 2005 03 13 | 703 | 0.8-  | 1.1+  | 2007 12 05 | 699 | 0.1-  | 0.1+  |
| 2001 01 19 | 704 | 1.1+ | 1.4+ | 2005 03 17 | 691 | 0.0   | 0.1+  | 2007 12 15 | 704 | 0.3+  | 0.1+  |
| 2001 01 19 | 704 | 0.6- | 0.8+ | 2005 03 17 | 691 | 0.1+  | 0.2+  | 2007 12 15 | 704 | 0.6+  | 1.1-  |
| 2003 09 22 | 699 | 0.7+ | 0.5+ | 2005 03 17 | 691 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.9+  | 0.1+  |
| 2003 09 22 | 699 | 0.4- | 0.3+ | 2005 04 11 | 691 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 0.0   | 0.3-  |
| 2003 09 22 | 699 | 0.1+ | 0.1- | 2005 04 11 | 691 | 0.1+  | 0.2+  | 2007 12 15 | 704 | 0.1+  | 1.0-  |
| 2003 09 22 | 699 | 0.3- | 0.2+ | 2005 04 11 | 691 | 0.0   | 0.4+  |            |     |       |       |
| 2003 09 26 | 645 | 0.0  | 0.1+ | 2005 04 11 | 699 | 0.6-  | 0.5-  |            |     |       |       |

(171769)\* 2001 AD<sub>40</sub>

Discovered 2001 Jan. 3 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 270.26241 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.27746319 | $\omega$ | 112.00674 | -0.97457710 | +0.18916493 |
| <i>a</i>  | 2.3280866  | $\Omega$ | 79.05848  | -0.22240073 | -0.88170794 |
| <i>e</i>  | 0.1562641  | <i>i</i> | 7.02429   | +0.02715489 | -0.43221260 |
| <i>P</i>  | 3.55       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 03 | 699 | (0.5+ | 2.3+) | 2005 04 09 | 704 | 0.4+ | 0.2- | 2005 05 12 | 704 | 0.3+ | 0.2- |
| 2001 01 03 | 699 | 1.3-  | 0.4+  | 2005 04 09 | 704 | 0.8+ | 0.6- | 2005 05 12 | 704 | 0.4- | 0.3+ |
| 2001 01 03 | 699 | 0.2+  | 0.9+  | 2005 04 09 | 704 | 0.7+ | 0.4- | 2005 05 12 | 704 | 0.3+ | 0.4+ |
| 2001 01 03 | 699 | 1.3-  | 0.3+  | 2005 04 09 | 704 | 0.4+ | 0.1+ | 2005 05 12 | 704 | 0.2+ | 0.5+ |
| 2001 01 04 | 704 | 0.1+  | 0.1+  | 2005 04 09 | 704 | 0.6+ | 0.4+ | 2007 11 02 | G96 | 0.5+ | 0.2- |
| 2001 01 04 | 704 | 0.4-  | 0.6-  | 2005 04 12 | 699 | 0.2- | 0.2+ | 2007 11 02 | G96 | 0.4+ | 0.3- |
| 2001 01 04 | 704 | 0.7+  | 0.3+  | 2005 04 12 | 699 | 0.8+ | 0.3+ | 2007 11 02 | G96 | 0.3- | 0.2- |
| 2001 01 04 | 704 | 0.6+  | 0.5+  | 2005 04 12 | 699 | 0.4+ | 0.2+ | 2007 11 02 | G96 | 0.0  | 0.0  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 19 | 704 | 0.4−  | 0.1−  | 2005 04 12 | 699 | 0.9+  | 0.5+  | 2007 11 11 | G96 | 0.5+ | 0.0  |
| 2001 01 19 | 704 | 0.1−  | 0.4−  | 2005 04 13 | 704 | 0.8+  | 0.3−  | 2007 11 11 | G96 | 0.1+ | 0.2− |
| 2001 01 19 | 704 | 0.2−  | 0.4−  | 2005 04 13 | 704 | 0.1+  | 0.1−  | 2007 11 11 | G96 | 0.1− | 0.2− |
| 2001 01 19 | 704 | 0.2−  | 0.9−  | 2005 04 13 | 704 | 0.3+  | 0.2−  | 2007 11 11 | G96 | 0.5+ | 0.1− |
| 2001 01 19 | 704 | 0.0   | 0.1−  | 2005 04 13 | 704 | 0.0   | 0.3−  | 2007 12 03 | 691 | 0.2− | 0.1+ |
| 2001 02 16 | 704 | 1.1+  | 0.2+  | 2005 04 13 | 704 | 0.5+  | 0.1−  | 2007 12 03 | 691 | 0.5− | 0.4+ |
| 2001 02 16 | 704 | (0.1− | 1.8+) | 2005 04 18 | 703 | 0.1−  | 0.7+  | 2007 12 03 | 691 | 0.1− | 0.1+ |
| 2001 02 16 | 704 | 1.4−  | 1.0+  | 2005 04 18 | 703 | 0.4−  | 0.7+  | 2007 12 06 | 704 | 0.1+ | 1.4+ |
| 2001 02 16 | 704 | 0.1−  | 0.7+  | 2005 04 18 | 703 | 0.4−  | 0.0   | 2007 12 06 | 704 | 0.6+ | 0.1+ |
| 2001 02 21 | 645 | 0.1+  | 0.2−  | 2005 04 18 | 703 | 0.6−  | 0.9+  | 2007 12 06 | 704 | 0.4+ | 0.9+ |
| 2001 02 21 | 645 | 0.1+  | 0.2−  | 2005 05 03 | 704 | 0.2+  | 1.1−  | 2007 12 06 | 704 | 0.2− | 0.7+ |
| 2003 11 29 | 691 | 0.0   | 0.1+  | 2005 05 03 | 704 | 0.2+  | 0.2+  | 2007 12 10 | 704 | 0.6+ | 0.6− |
| 2003 11 29 | 691 | 0.3−  | 0.6+  | 2005 05 03 | 704 | 0.7−  | 0.5+  | 2007 12 10 | 704 | 0.3+ | 0.4− |
| 2003 11 29 | 691 | 0.2−  | 0.2+  | 2005 05 03 | 704 | 0.2−  | 0.8+  | 2007 12 10 | 704 | 0.8+ | 0.6− |
| 2005 04 01 | 699 | 0.7−  | 1.1+  | 2005 05 03 | 704 | 1.0+  | 0.6+  | 2007 12 15 | 704 | 0.1+ | 0.3+ |
| 2005 04 01 | 699 | 0.7−  | 0.5+  | 2005 05 08 | 704 | 0.2+  | 0.4+  | 2007 12 15 | 704 | 0.0  | 0.4+ |
| 2005 04 01 | 699 | 1.2−  | 0.1−  | 2005 05 08 | 704 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 1.4+ | 0.1+ |
| 2005 04 01 | 699 | 1.0−  | 0.5−  | 2005 05 08 | 704 | 1.0+  | 0.2−  | 2007 12 15 | 704 | 0.6+ | 0.2+ |
| 2005 04 07 | 699 | 0.2+  | 0.5+  | 2005 05 11 | 699 | 0.3−  | 0.2+  | 2007 12 15 | 704 | 1.1+ | 0.4+ |
| 2005 04 07 | 699 | 0.3+  | 0.2+  | 2005 05 11 | 699 | 0.8−  | 0.1+  | 2007 12 17 | 691 | 0.2− | 0.1+ |
| 2005 04 07 | 699 | 0.7−  | 0.4+  | 2005 05 11 | 699 | (1.9− | 0.0 ) | 2007 12 17 | 691 | 0.3− | 0.1+ |
| 2005 04 07 | 699 | 1.1+  | 0.7−  | 2005 05 11 | 699 | 0.8−  | 0.0   | 2007 12 17 | 691 | 0.4− | 0.2+ |

**(171770)\* 2001 AO<sub>51</sub> = 2003 QT<sub>19</sub>**

Discovered 2001 Jan. 15 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 49885)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 20.82729   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.26965710 | $\omega$ | 266.38949 | +0.91371567 |          | −0.40487168 |          |
| <i>a</i> | 2.3728019  | $\Omega$ | 117.49092 | +0.38661951 |          | +0.83989750 |          |
| <i>e</i> | 0.1790914  | <i>i</i> | 2.24041   | +0.12509606 |          | +0.36145692 |          |
| <i>P</i> | 3.66       | <i>H</i> | 16.7      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 04 04 | 691 | 0.2−  | 0.9−  | 2003 09 15 | 644 | 0.0  | 0.4+ | 2007 10 30 | 691 | 0.0   | 0.2−  |
| 1998 04 04 | 691 | 0.2−  | 0.5−  | 2003 09 17 | 704 | 0.1− | 0.4+ | 2007 10 30 | 691 | 0.4−  | 0.1−  |
| 1998 04 04 | 691 | 0.4+  | 0.6−  | 2003 09 17 | 704 | 0.9− | 0.1+ | 2007 11 03 | 691 | 0.0   | 0.1−  |
| 2001 01 15 | 691 | 0.1−  | 0.5+  | 2003 09 17 | 704 | 0.1− | 0.9+ | 2007 11 03 | 691 | 0.1−  | 0.2−  |
| 2001 01 15 | 691 | 0.0   | 0.5+  | 2003 09 17 | 704 | 0.0  | 0.7+ | 2007 11 03 | 691 | 0.1−  | 0.1−  |
| 2001 01 15 | 691 | 0.2+  | 0.5+  | 2003 09 18 | 699 | 0.2− | 0.7+ | 2007 11 04 | 704 | 0.1−  | 0.1−  |
| 2001 01 21 | 704 | 1.0+  | 1.0+  | 2003 09 18 | 699 | 0.6+ | 0.5+ | 2007 11 04 | 704 | (1.9+ | 0.9+) |
| 2001 01 21 | 704 | 0.3+  | 0.2+  | 2003 09 18 | 699 | 0.9+ | 0.3− | 2007 11 04 | 704 | 0.3+  | 0.5−  |
| 2001 01 21 | 704 | (1.7− | 0.4−) | 2003 09 18 | 699 | 0.1− | 0.9+ | 2007 11 04 | 704 | 0.2+  | 0.6−  |
| 2001 01 21 | 704 | 1.2−  | 0.7+  | 2003 09 19 | 691 | 0.1+ | 0.1− | 2007 11 04 | 704 | 0.1+  | 0.1−  |
| 2001 02 13 | 691 | 0.3−  | 1.2+  | 2003 09 19 | 691 | 0.0  | 0.3− | 2007 11 07 | 691 | 0.1−  | 0.0   |
| 2001 02 13 | 691 | 0.4+  | 0.6+  | 2003 09 19 | 691 | 0.0  | 0.2− | 2007 11 07 | 691 | 0.2−  | 0.1−  |
| 2001 02 13 | 691 | 0.2+  | 0.5+  | 2003 09 24 | 644 | 0.2+ | 0.1+ | 2007 11 07 | 691 | 0.1−  | 0.3−  |
| 2003 08 22 | 644 | 0.4−  | 0.2+  | 2003 09 24 | 644 | 0.1+ | 0.1+ | 2007 11 14 | 704 | 1.0+  | 0.2−  |
| 2003 08 22 | 644 | 0.3−  | 0.1+  | 2003 09 24 | 644 | 0.2+ | 0.2+ | 2007 11 14 | 704 | 1.0+  | 0.2−  |
| 2003 08 22 | 644 | 0.4−  | 0.4+  | 2003 09 28 | 704 | 0.1+ | 0.4+ | 2007 11 14 | 704 | 0.7+  | 0.2−  |
| 2003 08 23 | 704 | 0.7+  | 1.2+  | 2003 09 28 | 704 | 0.9+ | 1.0− | 2007 11 14 | 704 | 1.3+  | 0.1+  |
| 2003 08 23 | 704 | 0.7+  | 1.5+  | 2003 09 28 | 704 | 0.1− | 0.4+ | 2007 11 14 | 704 | 1.1+  | 0.3−  |
| 2003 08 23 | 704 | 0.0   | 0.8+  | 2003 09 28 | 704 | 0.7+ | 0.3− | 2007 11 18 | G96 | 0.1+  | 0.5−  |
| 2003 08 23 | 704 | (0.4+ | 1.8+) | 2003 09 28 | 704 | 0.3+ | 0.2+ | 2007 11 18 | G96 | 0.4+  | 0.4−  |
| 2003 08 26 | 704 | 0.6−  | 0.6+  | 2003 09 28 | 704 | 0.1+ | 0.6− | 2007 11 18 | G96 | 0.2+  | 0.3−  |
| 2003 08 26 | 704 | 0.4−  | 0.4+  | 2003 09 28 | 704 | 0.3+ | 0.1+ | 2007 11 18 | G96 | 0.1+  | 0.5−  |
| 2003 08 26 | 704 | 0.3+  | 1.4+  | 2003 09 28 | 704 | 0.7+ | 0.1+ | 2007 12 03 | 703 | 0.1−  | 0.5−  |
| 2003 08 26 | 704 | 0.1+  | 0.4+  | 2003 09 28 | 704 | 0.1+ | 0.7+ | 2007 12 03 | 703 | 0.2+  | 0.3−  |
| 2003 09 01 | 704 | 1.5−  | 0.7+  | 2003 09 28 | 704 | 0.5− | 1.1− | 2007 12 03 | 703 | 0.1−  | 0.6−  |
| 2003 09 01 | 704 | 0.8−  | 0.1−  | 2005 03 10 | G96 | 0.1− | 0.4+ | 2007 12 03 | 703 | 0.4−  | 0.3+  |
| 2003 09 01 | 704 | 0.5−  | 0.1+  | 2005 03 10 | G96 | 0.1− | 0.7+ | 2007 12 03 | 703 | 0.2+  | 0.1+  |
| 2003 09 01 | 704 | 1.1−  | 0.2+  | 2005 03 10 | G96 | 0.2+ | 0.2+ | 2007 12 03 | 703 | 0.7+  | 0.4−  |
| 2003 09 01 | 704 | 0.7−  | 0.6+  | 2005 03 10 | G96 | 0.1− | 0.5+ | 2007 12 03 | 703 | 0.4−  | 0.8−  |
| 2003 09 14 | 608 | 0.9−  | 0.8−  | 2005 03 16 | G96 | 0.5− | 0.6+ | 2007 12 03 | 703 | 0.4+  | 0.7−  |
| 2003 09 14 | 608 | 0.6−  | 0.6−  | 2005 03 16 | G96 | 0.6− | 0.0  | 2007 12 04 | 704 | 0.0   | 0.1−  |
| 2003 09 14 | 608 | 1.0−  | 0.7−  | 2005 03 16 | G96 | 0.7− | 0.2+ | 2007 12 04 | 704 | 0.8+  | 0.2−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 15 | 644 | 0.2− | 0.2+ | 2005 03 16 | G96 | 0.6− | 0.1+ | 2007 12 04 | 704 | 0.9+ | 0.1+ |
| 2003 09 15 | 644 | 0.1− | 0.3+ | 2007 10 30 | 691 | 0.3− | 0.1− | 2007 12 04 | 704 | 0.2+ | 0.2− |

**(171771)\* 2001 AM<sub>53</sub>**

Discovered 2001 Jan. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |          |             |          |
|----------|------------|----------|----------|-------------|----------|-------------|----------|
| <i>M</i> | 331.40941  |          | (2000.0) |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.27299135 | $\omega$ | 87.76340 | −0.12632049 |          | −0.99196172 |          |
| <i>a</i> | 2.3534418  | $\Omega$ | 9.50325  | +0.89133083 |          | −0.11678336 |          |
| <i>e</i> | 0.1997937  | <i>i</i> | 2.57655  | +0.43539922 |          | −0.04871961 |          |
| <i>P</i> | 3.61       | <i>H</i> | 17.0     | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.4+  | 0.5−  | 2003 10 17 | 691 | 0.6− | 0.5+ | 2007 11 13 | 703 | 0.4+ | 0.7+ |
| 2001 01 04 | 704 | 0.3+  | 0.1−  | 2003 10 17 | 691 | 0.2− | 0.4+ | 2007 11 13 | 703 | 0.0  | 0.3+ |
| 2001 01 04 | 704 | 1.1+  | 0.6+  | 2005 03 08 | G96 | 0.4− | 0.1+ | 2007 11 13 | 703 | 0.2− | 0.5− |
| 2001 01 04 | 704 | 0.8+  | 0.8+  | 2005 03 08 | G96 | 0.3− | 0.0  | 2007 11 13 | 703 | 0.3+ | 0.5− |
| 2001 01 04 | 704 | 0.9+  | 0.7+  | 2005 03 08 | G96 | 0.3− | 0.2+ | 2007 11 17 | 691 | 0.3− | 0.4− |
| 2001 01 19 | 704 | 0.1+  | 0.5+  | 2005 03 08 | G96 | 0.5− | 0.2+ | 2007 11 17 | 691 | 0.3− | 0.0  |
| 2001 01 19 | 704 | 0.3−  | 0.3−  | 2005 03 10 | G96 | 0.2+ | 0.1+ | 2007 11 17 | 691 | 0.6− | 0.2− |
| 2001 01 19 | 704 | 0.2−  | 0.4−  | 2005 03 10 | G96 | 0.5− | 0.1+ | 2007 11 18 | 704 | 1.0− | 0.9+ |
| 2001 01 19 | 704 | 0.6−  | 0.2−  | 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.0  | 1.0+ |
| 2001 01 19 | 704 | 0.3−  | 0.5−  | 2005 03 10 | G96 | 0.1− | 0.4+ | 2007 11 18 | 704 | 0.1− | 0.7+ |
| 2001 02 01 | 699 | 0.2+  | 1.4−  | 2005 03 17 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 704 | 0.1+ | 0.8+ |
| 2001 02 01 | 699 | 1.0−  | 0.7−  | 2005 03 17 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 704 | 0.3− | 1.1+ |
| 2001 02 01 | 699 | 0.5−  | 0.7+  | 2005 03 17 | 691 | 0.1− | 0.2− | 2007 11 20 | 704 | 0.7+ | 0.3+ |
| 2001 02 01 | 699 | 0.2−  | 0.3+  | 2005 04 02 | 691 | 0.2+ | 0.4+ | 2007 11 20 | 704 | 0.1+ | 0.1+ |
| 2001 02 03 | 704 | (0.7+ | 2.1+) | 2005 04 02 | 691 | 0.2+ | 0.4+ | 2007 11 20 | 704 | 0.1+ | 0.2+ |
| 2001 02 03 | 704 | 0.4+  | 0.1+  | 2005 04 02 | 691 | 0.2+ | 0.5+ | 2007 11 20 | 704 | 0.6+ | 1.0+ |
| 2001 02 03 | 704 | 0.5−  | 0.6−  | 2005 05 04 | 691 | 0.2+ | 0.9+ | 2007 11 20 | 704 | 0.3− | 0.2+ |
| 2001 02 03 | 704 | 0.3+  | 0.1+  | 2005 05 04 | 691 | 0.4+ | 0.4+ | 2007 12 04 | 699 | 0.3+ | 0.1− |
| 2001 02 03 | 704 | 0.2+  | 0.1−  | 2005 05 04 | 691 | 0.5+ | 0.4+ | 2007 12 04 | 699 | 0.2+ | 0.5− |
| 2001 02 12 | 699 | 0.8−  | 0.3−  | 2005 05 08 | G96 | 0.1+ | 0.4− | 2007 12 04 | 699 | 0.2+ | 0.8− |
| 2001 02 12 | 699 | 0.3−  | 1.3+  | 2005 05 08 | G96 | 0.2+ | 0.2+ | 2007 12 04 | 699 | 0.7+ | 0.0  |
| 2001 02 12 | 699 | 0.1+  | 0.2+  | 2005 05 08 | G96 | 0.4− | 0.4+ | 2007 12 13 | 704 | 0.1+ | 0.9+ |
| 2001 02 12 | 699 | 0.3−  | 0.6−  | 2005 05 08 | G96 | 0.2− | 0.3+ | 2007 12 13 | 704 | 0.3+ | 0.5+ |
| 2003 09 17 | 691 | 0.2−  | 0.9+  | 2005 05 13 | 691 | 0.5+ | 0.6+ | 2007 12 13 | 704 | 0.2+ | 0.4+ |
| 2003 09 17 | 691 | 0.2−  | 0.7+  | 2005 05 13 | 691 | 0.4+ | 0.6+ | 2007 12 13 | 704 | 0.1+ | 0.2+ |
| 2003 09 17 | 691 | 0.1−  | 0.7+  | 2005 05 13 | 691 | 0.4+ | 0.5+ | 2007 12 13 | 704 | 0.4+ | 0.3+ |
| 2003 09 20 | 699 | (1.8+ | 1.5+) | 2007 11 06 | 691 | 0.3− | 0.0  | 2007 12 15 | 704 | 0.2+ | 0.0  |
| 2003 09 20 | 699 | 0.0   | 0.4−  | 2007 11 06 | 691 | 0.2− | 0.1− | 2007 12 15 | 704 | 0.2+ | 0.9+ |
| 2003 09 20 | 699 | 0.5−  | 1.0+  | 2007 11 06 | 691 | 0.3− | 0.1+ | 2007 12 15 | 704 | 0.5+ | 0.3+ |
| 2003 09 20 | 699 | 0.3+  | 0.7−  | 2007 11 09 | D29 | 0.1− | 0.1− | 2007 12 15 | 704 | 1.9+ | 2.2+ |
| 2003 10 17 | 691 | 0.3−  | 0.6+  | 2007 11 09 | D29 | 0.1+ | 0.2− |            |     |      |      |



2007 DEC. 24

M.P.O. 129155

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2001 01 20 | 704 | (1.0– 1.8–) | 2005 03 13 | 703 | 0.9– 0.5+   | 2005 04 18 | 703 | 1.5– 0.1–   |
| 2001 01 20 | 704 | 1.1– 0.4–   | 2005 03 31 | 699 | 1.0+ 0.1–   | 2005 04 18 | 703 | 0.1+ 0.5+   |
| 2001 01 20 | 704 | 0.1+ 0.2+   | 2005 03 31 | 699 | 0.5+ 0.2+   | 2005 05 08 | G96 | 0.1– 0.0    |
| 2001 01 20 | 704 | 0.6+ 1.5+   | 2005 03 31 | 699 | 0.5+ 0.8–   | 2005 05 08 | G96 | 0.4– 0.1+   |
| 2001 01 21 | 704 | 0.6+ 1.0–   | 2005 03 31 | 699 | 1.2+ 0.7+   | 2005 05 08 | G96 | 0.3– 0.0    |
| 2001 01 21 | 704 | 0.0 1.0–    | 2005 04 01 | 644 | 0.2+ 0.1–   | 2005 05 08 | G96 | 0.3– 0.2+   |
| 2001 01 21 | 704 | (2.2– 0.3–) | 2005 04 01 | 644 | 0.0 0.0     | 2005 05 23 | 644 | 0.0 0.3+    |
| 2001 01 21 | 704 | 0.1+ 0.6+   | 2005 04 01 | 644 | 0.0 0.4+    | 2005 05 23 | 644 | 0.6+ 0.5+   |
| 2001 01 21 | 704 | 0.7– 0.2–   | 2005 04 04 | 704 | 0.0 0.5–    | 2005 05 23 | 644 | 0.0 0.5+    |
| 2001 02 17 | 704 | 0.0 0.3–    | 2005 04 04 | 704 | 0.2– 0.1+   | 2005 05 23 | 644 | 0.3– 0.6+   |
| 2001 02 17 | 704 | 0.9– 0.0    | 2005 04 04 | 704 | 0.4+ 0.2–   | 2005 05 23 | 644 | 0.0 0.1+    |
| 2001 02 17 | 704 | 1.1– 0.4+   | 2005 04 04 | G96 | 0.2– 0.0    | 2005 05 23 | 644 | 0.0 0.6+    |
| 2001 02 17 | 704 | 0.4+ 0.9–   | 2005 04 04 | 704 | 0.5+ 0.1–   | 2007 11 01 | 691 | 0.2– 0.5+   |
| 2003 09 27 | 691 | 0.0 0.2+    | 2005 04 04 | G96 | 0.3– 0.1+   | 2007 11 01 | 691 | 0.3– 0.0    |
| 2003 09 27 | 691 | 0.1– 0.1–   | 2005 04 04 | G96 | 0.3– 0.1–   | 2007 11 01 | 691 | 0.4– 0.0    |
| 2003 09 27 | 691 | 0.0 0.1–    | 2005 04 04 | 704 | 0.1+ 0.4–   | 2007 11 17 | 691 | 0.1– 0.2–   |
| 2003 10 16 | 691 | 0.3– 0.2+   | 2005 04 04 | G96 | 0.3– 0.1+   | 2007 11 17 | 691 | 0.8– 0.2+   |
| 2003 10 16 | 691 | 0.4– 0.5+   | 2005 04 05 | 704 | (1.4– 1.7+) | 2007 11 17 | 691 | 0.2+ 0.3–   |
| 2003 10 16 | 691 | 0.1+ 0.3+   | 2005 04 05 | 704 | (0.2+ 1.8+) | 2007 11 17 | G96 | 0.2+ 0.3–   |
| 2003 10 24 | 704 | 0.4+ 0.2+   | 2005 04 05 | 704 | 0.7+ 0.3+   | 2007 11 17 | G96 | 0.2+ 0.3–   |
| 2003 10 24 | 704 | 1.3+ 0.8+   | 2005 04 05 | 704 | 1.2+ 0.1+   | 2007 11 17 | G96 | 0.2+ 0.3–   |
| 2003 10 24 | 704 | 0.4– 0.6+   | 2005 04 07 | 704 | 0.1+ 0.1–   | 2007 11 17 | G96 | 0.2+ 0.4–   |
| 2003 10 25 | 691 | 0.2– 0.3+   | 2005 04 07 | 704 | 0.1– 0.6+   | 2007 11 20 | 704 | 1.4+ 0.1–   |
| 2003 10 25 | 691 | 0.1– 0.3+   | 2005 04 07 | 704 | 0.6+ 0.3–   | 2007 11 20 | 704 | (1.8+ 0.5–) |
| 2003 10 25 | 691 | 0.5+ 0.1+   | 2005 04 07 | 704 | 0.5+ 0.5+   | 2007 11 20 | 704 | 1.2+ 0.7+   |
| 2003 10 25 | 291 | 0.4– 0.4+   | 2005 04 07 | 704 | 0.2– 1.5–   | 2007 11 20 | 704 | 0.9+ 1.1+   |
| 2003 10 25 | 291 | 0.2– 0.2+   | 2005 04 09 | 704 | 0.4+ 0.4+   | 2007 12 12 | 704 | 1.3– 0.4–   |
| 2003 10 25 | 291 | 0.1– 0.1+   | 2005 04 09 | 704 | 0.1+ 0.3+   | 2007 12 12 | 704 | 1.3+ 0.4+   |
| 2003 11 24 | 691 | 0.3– 0.1–   | 2005 04 09 | 704 | 0.2+ 1.0+   | 2007 12 12 | 704 | 1.3+ 0.7+   |
| 2003 11 24 | 691 | 0.5– 0.1–   | 2005 04 09 | 704 | (2.3+ 1.5–) | 2007 12 15 | 704 | 0.2+ 1.3–   |
| 2003 11 24 | 691 | 0.4+ 0.0    | 2005 04 09 | 704 | 1.5+ 0.2+   | 2007 12 15 | 704 | 1.2– 1.6–   |
| 2005 03 08 | 699 | 0.3– 0.3–   | 2005 04 12 | 704 | 0.5+ 0.6–   | 2007 12 15 | 704 | 2.0+ 0.3–   |
| 2005 03 08 | 699 | 0.0 0.4+    | 2005 04 12 | 704 | 0.4+ 0.7–   | 2007 12 15 | 704 | 0.3+ 1.5–   |
| 2005 03 08 | 699 | 0.5– 0.2+   | 2005 04 12 | 704 | 0.7+ 0.8+   |            |     |             |

(171773)\* 2001 BJ<sub>10</sub>

Discovered 2001 Jan. 17 by T. Kobayashi at Oizumi.

|                                         |            |          |           |          |             |          |             |  |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |          |             |  |
| <i>M</i>                                | 260.16000  |          | (2000.0)  |          | <i>P</i>    |          | <i>Q</i>    |  |
| <i>n</i>                                | 0.26191904 | $\omega$ | 152.87315 |          | –0.98647197 |          | –0.16099724 |  |
| <i>a</i>                                | 2.4193090  | $\Omega$ | 17.94217  |          | +0.12626786 |          | –0.86633313 |  |
| <i>e</i>                                | 0.1784821  | <i>i</i> | 5.75113   |          | +0.10454413 |          | –0.47280736 |  |
| <i>P</i>                                | 3.76       | <i>H</i> | 17.0      | <i>G</i> | 0.15        | <i>U</i> | 1           |  |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2001 01 17 | 411 | 0.0 0.3–    | 2001 02 16 | 704 | 0.1– 0.6+ | 2005 05 10 | 691 | 0.2+ 0.3+ |
| 2001 01 17 | 411 | 0.9– 1.2+   | 2001 05 22 | 691 | 0.2+ 0.1– | 2005 05 10 | 691 | 0.1– 0.4+ |
| 2001 01 18 | 704 | 0.0 0.2+    | 2001 05 22 | 691 | 0.1+ 0.1+ | 2005 05 12 | G96 | 0.4– 0.1– |
| 2001 01 18 | 704 | 0.5– 0.1+   | 2001 05 22 | 691 | 0.0 0.4–  | 2005 05 12 | G96 | 0.3– 0.0  |
| 2001 01 18 | 704 | 1.2+ 0.0    | 2003 09 28 | 691 | 0.7+ 1.3+ | 2005 05 12 | G96 | 0.3– 0.0  |
| 2001 01 18 | 704 | 1.3+ 1.1–   | 2003 09 28 | 691 | 0.4– 0.6+ | 2005 05 12 | G96 | 0.1– 0.2+ |
| 2001 01 18 | 704 | 0.5– 1.5–   | 2003 09 28 | 691 | 0.4– 0.6+ | 2007 10 21 | G96 | 0.2+ 0.5– |
| 2001 01 18 | 411 | 0.5– 0.5–   | 2003 10 19 | 691 | 0.2– 0.1+ | 2007 10 21 | G96 | 0.7+ 0.2– |
| 2001 01 18 | 411 | 0.6– 0.8–   | 2003 10 19 | 691 | 0.3– 0.2+ | 2007 10 21 | G96 | 0.0 0.2–  |
| 2001 01 21 | 411 | (1.4– 2.1–) | 2003 10 19 | 691 | 0.5– 0.1– | 2007 10 21 | G96 | 0.5+ 0.3– |
| 2001 01 21 | 411 | (1.6– 1.5–) | 2005 03 11 | 691 | 0.2+ 0.1+ | 2007 11 02 | 691 | 0.2– 0.5+ |
| 2001 01 29 | 411 | 0.5+ 0.1–   | 2005 03 11 | 691 | 0.3+ 0.1+ | 2007 11 02 | 691 | 0.1+ 0.4– |
| 2001 01 29 | 411 | (0.4+ 1.9+) | 2005 03 11 | 691 | 0.4+ 0.1– | 2007 11 02 | 691 | 0.2– 0.1+ |
| 2001 02 03 | 704 | 0.9– 0.1–   | 2005 04 06 | G96 | 0.2– 0.2– | 2007 12 04 | 691 | 0.4– 0.2– |
| 2001 02 03 | 704 | 0.4+ 0.2+   | 2005 04 06 | G96 | 0.1+ 0.1– | 2007 12 04 | 691 | 0.3– 0.2+ |
| 2001 02 03 | 704 | 0.5– 0.9–   | 2005 04 06 | G96 | 0.3– 0.1– | 2007 12 04 | 691 | 0.1– 0.1+ |
| 2001 02 03 | 704 | 0.5+ 1.0–   | 2005 04 06 | G96 | 0.2– 0.1+ | 2007 12 06 | 691 | 0.1– 0.1+ |
| 2001 02 03 | 704 | 0.5+ 0.4–   | 2005 04 12 | 704 | 0.5– 0.9+ | 2007 12 06 | 691 | 0.4+ 0.1+ |
| 2001 02 14 | 106 | 0.3– 0.5+   | 2005 04 12 | 704 | 0.2+ 0.8– | 2007 12 06 | 691 | 0.0 0.1–  |
| 2001 02 14 | 106 | 0.3– 0.3+   | 2005 04 12 | 704 | 0.2+ 1.5+ | 2007 12 14 | 691 | 0.1+ 0.7– |
| 2001 02 14 | 106 | 0.3+ 0.2+   | 2005 04 12 | 704 | 0.5+ 0.2– | 2007 12 14 | 691 | 0.2+ 0.1+ |
| 2001 02 16 | 704 | 0.1+ 0.8+   | 2005 04 30 | 691 | 0.1+ 0.3+ | 2007 12 14 | 691 | 0.3+ 0.6+ |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2001 02 16 | 704 | 0.0 0.5+  | 2005 04 30 | 691 | 0.1+ 0.3+ | 2007 12 16 | 691 | 0.1– 0.1– |
| 2001 02 16 | 704 | 0.5– 0.1+ | 2005 04 30 | 691 | 0.2+ 0.3+ | 2007 12 16 | 691 | 0.2– 0.3+ |
| 2001 02 16 | 704 | 0.7– 1.0+ | 2005 05 10 | 691 | 0.2+ 0.3+ | 2007 12 16 | 691 | 0.1+ 0.0  |

(171774)\* 2001 BW<sub>18</sub> = 2003 QH<sub>11</sub>

Discovered 2001 Jan. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (*MPO* 49887)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |          |             |          |             |  |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|--|
| <i>M</i> | 37.91221   |          | (2000.0)  |          | <i>P</i>    |          | <i>Q</i>    |  |
| <i>n</i> | 0.27574842 | $\omega$ | 304.00518 |          | +0.97333845 |          | –0.21939570 |  |
| <i>a</i> | 2.3377283  | $\Omega$ | 68.74737  |          | +0.22691337 |          | +0.87839725 |  |
| <i>e</i> | 0.2638544  | <i>i</i> | 4.11734   |          | +0.03350503 |          | +0.42459839 |  |
| <i>P</i> | 3.57       | <i>H</i> | 16.2      | <i>G</i> | 0.15        | <i>U</i> | 1           |  |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1995 04 29 | 691 | 0.6+ 0.8+   | 2003 08 31 | 608 | 0.3– 0.4–   | 2003 12 21 | 704 | 0.3+ 1.2+ |
| 1995 04 29 | 691 | 0.7+ 0.3+   | 2003 08 31 | 608 | 0.2– 0.2–   | 2006 04 25 | G96 | 0.8– 0.3+ |
| 1995 04 29 | 691 | 0.0 0.7+    | 2003 08 31 | 608 | 0.3– 0.3–   | 2006 04 25 | G96 | 0.1+ 0.4– |
| 2001 01 19 | 704 | 0.1+ 0.8+   | 2003 09 13 | 608 | 0.3– 1.2–   | 2006 04 25 | G96 | 0.1+ 0.0  |
| 2001 01 19 | 704 | 0.5– 0.2+   | 2003 09 13 | 608 | 0.2– 0.8–   | 2006 04 25 | G96 | 0.0 0.3+  |
| 2001 01 19 | 704 | (2.0– 0.5+) | 2003 09 13 | 608 | 0.3– 1.2–   | 2006 05 19 | G96 | 0.0 0.1–  |
| 2001 01 19 | 704 | 1.4– 0.6+   | 2003 09 16 | 704 | 0.4+ 0.7–   | 2006 05 19 | G96 | 0.1– 0.3+ |
| 2001 01 19 | 704 | 0.4+ 0.5+   | 2003 09 16 | 704 | 0.3+ 0.0    | 2006 05 19 | G96 | 0.7– 0.1+ |
| 2001 01 21 | 704 | 0.4+ 1.0+   | 2003 09 16 | 704 | 0.6– 0.3–   | 2006 05 19 | G96 | 0.5– 0.5+ |
| 2001 01 21 | 704 | 0.4– 0.6+   | 2003 09 16 | 704 | 0.3+ 0.1+   | 2006 05 20 | 691 | 0.7+ 0.5+ |
| 2001 01 21 | 704 | 0.2+ 0.3+   | 2003 09 16 | 704 | 0.2+ 0.0    | 2006 05 20 | 691 | 0.2– 0.2+ |
| 2001 01 21 | 704 | 0.1– 0.3+   | 2003 09 17 | 608 | 0.2– 0.4–   | 2006 05 20 | 691 | 0.4– 0.1+ |
| 2001 01 24 | 704 | 0.6– 0.3+   | 2003 09 17 | 608 | 0.2+ 0.2–   | 2006 06 01 | 691 | 0.2+ 0.3+ |
| 2001 01 24 | 704 | 0.1– 0.3+   | 2003 09 17 | 608 | 0.2– 0.2+   | 2006 06 01 | 691 | 0.1+ 0.3+ |
| 2001 01 24 | 704 | 0.9+ 0.2+   | 2003 09 19 | 699 | 0.0 0.6+    | 2006 06 01 | 691 | 0.2+ 0.1+ |
| 2002 04 08 | 644 | 0.2+ 0.9+   | 2003 09 19 | 699 | 0.1+ 0.8+   | 2007 11 11 | G96 | 0.3– 0.3+ |
| 2002 04 08 | 644 | 0.7+ 0.9+   | 2003 09 19 | 699 | 0.3– 0.3+   | 2007 11 11 | G96 | 0.4– 0.4+ |
| 2002 04 08 | 644 | 0.3+ 0.7+   | 2003 09 19 | 699 | 0.1– 0.6+   | 2007 11 11 | G96 | 0.9– 0.1+ |
| 2003 07 11 | 608 | 0.5+ 0.6+   | 2003 09 25 | 644 | 0.3– 0.7+   | 2007 11 11 | G96 | 0.4– 0.4– |
| 2003 07 11 | 608 | 0.6– 1.0+   | 2003 09 25 | 644 | 0.5– 0.3+   | 2007 11 19 | D35 | 0.5+ 0.5+ |
| 2003 07 11 | 608 | 0.1– 0.4+   | 2003 09 25 | 644 | 0.4– 0.5+   | 2007 11 19 | D35 | 0.2+ 0.1+ |
| 2003 08 21 | 735 | 0.3+ 0.3+   | 2003 10 01 | 699 | 0.6+ 0.0    | 2007 11 19 | D35 | 0.1+ 0.3+ |
| 2003 08 21 | 735 | 0.2+ 0.5+   | 2003 10 01 | 699 | 0.0 0.7–    | 2007 11 19 | D35 | 0.1+ 0.3+ |
| 2003 08 21 | 735 | 0.0 0.1+    | 2003 10 01 | 699 | 0.5+ 0.6–   | 2007 11 19 | D35 | 0.4+ 0.7+ |
| 2003 08 23 | 644 | 0.1+ 0.7+   | 2003 10 01 | 699 | 0.7– 0.3+   | 2007 11 19 | D35 | 0.4+ 0.2+ |
| 2003 08 23 | 644 | 0.1– 0.7+   | 2003 10 14 | 699 | 0.1+ 0.3–   | 2007 12 04 | G96 | 0.3– 0.2+ |
| 2003 08 23 | 704 | 0.1– 0.9+   | 2003 10 14 | 699 | 0.1– 0.2–   | 2007 12 04 | G96 | 0.2– 0.1– |
| 2003 08 23 | 644 | 0.1– 0.9+   | 2003 10 14 | 699 | 0.2– 0.5+   | 2007 12 04 | G96 | 0.4+ 0.0  |
| 2003 08 23 | 704 | 0.0 0.5+    | 2003 10 14 | 699 | 0.2– 0.3+   | 2007 12 04 | G96 | 0.9– 0.6– |
| 2003 08 23 | 704 | 0.2– 0.7+   | 2003 10 17 | 704 | 0.3+ 0.1–   | 2007 12 05 | 691 | 0.5– 0.2– |
| 2003 08 23 | 704 | 0.1– 1.0+   | 2003 10 17 | 704 | (0.8+ 2.2+) | 2007 12 05 | 691 | 0.5– 0.0  |
| 2003 08 24 | 735 | 0.1+ 0.1–   | 2003 10 17 | 704 | 0.5+ 0.0    | 2007 12 05 | 691 | 0.7+ 0.2+ |
| 2003 08 24 | 735 | 0.7– 0.6–   | 2003 10 17 | 704 | 0.4– 0.9+   | 2007 12 06 | 704 | 0.3+ 0.9+ |
| 2003 08 24 | 735 | 0.1+ 0.1+   | 2003 10 17 | 704 | 0.9+ 0.4+   | 2007 12 06 | 704 | 0.6+ 0.5+ |
| 2003 08 26 | 704 | (5.0– 1.6+) | 2003 10 17 | 704 | 0.8+ 1.3+   | 2007 12 06 | 704 | 0.4+ 0.5+ |
| 2003 08 26 | 704 | (5.2– 1.8+) | 2003 10 17 | 704 | 0.5+ 0.2+   | 2007 12 06 | 704 | 0.5+ 0.7+ |
| 2003 08 26 | 704 | (4.9– 1.2+) | 2003 10 17 | 704 | (0.3+ 2.0+) | 2007 12 07 | D29 | 0.1+ 0.1+ |
| 2003 08 26 | 704 | (5.1– 2.3+) | 2003 10 17 | 704 | 0.1– 0.6+   | 2007 12 07 | D29 | 0.3+ 0.2– |
| 2003 08 27 | 735 | 0.1+ 0.2–   | 2003 10 26 | 699 | 0.1+ 0.6+   | 2007 12 07 | D29 | 0.0 0.3–  |
| 2003 08 27 | 735 | 0.4– 0.3–   | 2003 10 26 | 699 | 0.2– 1.1–   | 2007 12 07 | D29 | 0.4+ 0.2– |
| 2003 08 28 | 735 | 0.1– 0.3+   | 2003 10 26 | 699 | 0.1+ 0.5–   | 2007 12 10 | 704 | 0.2+ 0.9+ |
| 2003 08 28 | 735 | 0.1+ 0.1+   | 2003 10 26 | 699 | (1.8– 1.4+) | 2007 12 10 | 704 | 0.7+ 1.2+ |
| 2003 08 28 | 735 | 0.3+ 0.0    | 2003 11 22 | 704 | 1.0– 0.6+   | 2007 12 10 | 704 | 0.4+ 1.0+ |
| 2003 08 30 | 735 | 0.5– 0.1–   | 2003 11 22 | 704 | 0.4– 1.0+   | 2007 12 10 | 704 | 0.1+ 0.4+ |
| 2003 08 30 | 735 | 0.0 0.1–    | 2003 11 22 | 704 | 0.3– 0.3+   | 2007 12 14 | 704 | 0.0 0.1–  |
| 2003 08 30 | 735 | 0.3– 0.1–   | 2003 12 13 | 704 | 0.1+ 0.7+   | 2007 12 14 | 704 | 0.1+ 0.2+ |
| 2003 08 31 | 704 | 0.2– 0.0    | 2003 12 13 | 704 | 0.1+ 0.7+   | 2007 12 14 | 704 | 0.3+ 0.5– |
| 2003 08 31 | 704 | 0.3– 0.1+   | 2003 12 13 | 704 | 0.1+ 0.9+   | 2007 12 14 | 704 | 0.0 0.9+  |
| 2003 08 31 | 704 | 0.1– 0.1+   | 2003 12 21 | 704 | 0.2– 0.7+   | 2007 12 14 | 704 | 0.3– 0.2– |

2003 08 31 704 0.1+ 0.1- 2003 12 21 704 0.9- 1.3+  
 2003 08 31 704 0.3- 0.2+ 2003 12 21 704 1.0- 0.1-

**(171775)\* 2001 BC<sub>20</sub>**

Discovered 2001 Jan. 19 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.16614  | (2000.0) | <b>P</b> | <b>Q</b>      |
|----------|------------|----------|----------|---------------|
| <i>n</i> | 0.28180803 | $\omega$ | 10.48990 | -0.00322395   |
| <i>a</i> | 2.3040955  | $\Omega$ | 79.74097 | +0.91048117   |
| <i>e</i> | 0.1839875  | <i>i</i> | 5.43524  | +0.41353796   |
| <i>P</i> | 3.50       | <i>H</i> | 16.8     | <i>G</i> 0.15 |
|          |            |          |          | <i>U</i> 1    |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 01 04 704 0.3- 0.4+   | 2001 02 16 704 0.7- 0.6- | 2007 10 07 G96 0.1- 0.1- |
| 2001 01 04 704 0.5+ 0.3+   | 2001 02 16 704 1.1- 0.0  | 2007 10 07 G96 0.3- 0.5- |
| 2001 01 04 704 0.4+ 0.2+   | 2001 02 19 704 0.8+ 1.1- | 2007 10 07 G96 0.3- 0.6- |
| 2001 01 04 704 0.4+ 0.3+   | 2001 02 19 704 0.5+ 0.6+ | 2007 11 12 G96 0.1+ 0.1- |
| 2001 01 04 704 0.5+ 0.4+   | 2001 02 19 704 0.0 0.1+  | 2007 11 12 G96 0.0 0.8-  |
| 2001 01 19 704 0.4- 0.6+   | 2001 02 19 704 0.4- 1.0+ | 2007 11 12 G96 0.2+ 0.1- |
| 2001 01 19 704 (0.5- 1.9-) | 2003 09 28 699 0.5- 0.4+ | 2007 11 12 G96 0.2+ 0.1+ |
| 2001 01 19 704 0.3+ 1.0-   | 2003 09 28 699 1.2- 1.3+ | 2007 12 03 703 0.3- 0.8- |
| 2001 01 19 704 0.1- 1.1-   | 2003 09 28 699 0.1+ 0.7+ | 2007 12 03 703 0.4+ 0.4+ |
| 2001 01 21 704 0.1+ 0.2-   | 2003 09 28 699 0.3+ 0.4+ | 2007 12 03 703 1.1- 0.5- |
| 2001 01 21 704 0.7+ 0.5-   | 2005 04 01 691 0.0 0.1+  | 2007 12 03 703 0.2+ 0.9+ |
| 2001 01 21 704 1.1+ 0.1+   | 2005 04 01 691 0.4- 0.1+ | 2007 12 13 704 0.9+ 0.1+ |
| 2001 01 21 704 1.0+ 0.7+   | 2005 04 01 691 0.4+ 0.0  | 2007 12 13 704 0.3- 0.7+ |
| 2001 02 01 699 0.2- 0.7-   | 2005 04 18 691 0.1+ 0.1+ | 2007 12 13 704 0.1- 0.7+ |
| 2001 02 01 699 0.8- 0.8+   | 2005 04 18 691 0.2+ 0.1- | 2007 12 13 704 0.5+ 0.2+ |
| 2001 02 01 699 0.2+ 0.1+   | 2005 04 18 691 0.0 0.1-  | 2007 12 13 704 0.4+ 1.2+ |
| 2001 02 01 699 0.7- 0.2+   | 2005 05 12 691 0.1- 0.3+ | 2007 12 16 699 0.4+ 0.0  |
| 2001 02 16 704 0.3+ 0.6+   | 2005 05 12 691 0.3- 0.1- | 2007 12 16 699 0.4+ 0.1- |
| 2001 02 16 704 1.1- 0.3+   | 2005 05 12 691 0.2+ 0.3+ | 2007 12 16 699 0.2- 0.5- |
| 2001 02 16 704 0.8- 0.5-   | 2007 10 07 G96 0.2+ 0.3+ | 2007 12 16 699 1.1- 1.0- |

**(171776)\* 2001 BU<sub>21</sub>**

Discovered 2001 Jan. 20 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.82383  | (2000.0) | <b>P</b> | <b>Q</b>      |
|----------|------------|----------|----------|---------------|
| <i>n</i> | 0.28584477 | $\omega$ | 14.29885 | -0.38506705   |
| <i>a</i> | 2.2823516  | $\Omega$ | 99.63178 | +0.80230115   |
| <i>e</i> | 0.1824217  | <i>i</i> | 23.71589 | +0.45610989   |
| <i>P</i> | 3.45       | <i>H</i> | 15.5     | <i>G</i> 0.15 |
|          |            |          |          | <i>U</i> 1    |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2000 11 26 704 0.2+ 0.1- | 2005 03 11 703 0.1+ 0.1-   | 2006 07 18 E12 0.2+ 1.3+ |
| 2000 11 26 704 0.1+ 0.4- | 2005 03 12 704 0.7+ 0.3+   | 2006 07 18 E12 0.1+ 0.8+ |
| 2000 11 26 704 0.8+ 0.4- | 2005 03 12 704 0.1+ 0.8+   | 2006 07 18 E12 0.1- 0.2+ |
| 2000 11 26 704 0.6+ 0.3+ | 2005 03 12 704 0.0 0.2+    | 2006 07 18 E12 0.3+ 0.0  |
| 2000 11 26 704 0.5- 0.9- | 2005 03 13 699 0.3+ 0.4-   | 2006 07 18 E12 0.3- 0.7+ |
| 2000 12 20 704 0.2- 0.2- | 2005 03 13 699 0.3- 0.4+   | 2006 07 18 E12 0.1- 0.9+ |
| 2000 12 20 704 0.2+ 0.3- | 2005 03 13 699 0.2- 0.8+   | 2007 10 20 704 0.1+ 0.2- |
| 2000 12 20 704 0.2+ 0.4+ | 2005 03 13 699 0.6+ 0.4-   | 2007 10 20 704 1.1+ 0.2+ |
| 2000 12 20 704 0.3- 0.4- | 2005 04 01 703 0.2- 0.6-   | 2007 10 20 704 0.8- 1.1- |
| 2001 01 03 704 0.3+ 0.1+ | 2005 04 01 703 0.2+ 0.6-   | 2007 10 20 704 0.3- 0.0  |
| 2001 01 03 704 0.5- 0.5+ | 2005 04 01 703 0.3- 0.2+   | 2007 11 12 704 0.0 0.1+  |
| 2001 01 03 704 0.5+ 0.2+ | 2005 04 01 703 0.4+ 0.1-   | 2007 11 12 704 0.1- 0.1+ |
| 2001 01 03 704 0.0 0.2+  | 2005 04 30 703 1.2- 1.0+   | 2007 11 12 704 0.0 0.0   |
| 2001 01 20 704 0.0 0.7+  | 2005 04 30 703 1.0- 0.1+   | 2007 11 12 704 0.1- 0.0  |
| 2001 01 20 704 0.4+ 0.2+ | 2005 04 30 703 0.6- 1.0+   | 2007 11 12 704 0.3+ 0.0  |
| 2001 01 20 704 0.4+ 0.1+ | 2005 04 30 703 0.4+ 0.5-   | 2007 12 04 699 1.0+ 0.3- |
| 2001 01 20 704 0.4+ 0.5- | 2005 05 10 704 1.3+ 0.4-   | 2007 12 04 699 0.5+ 0.2- |
| 2001 01 20 704 0.5- 0.4- | 2005 05 10 704 1.1+ 0.1+   | 2007 12 04 699 0.9+ 0.1+ |
| 2001 01 21 704 0.4+ 0.0  | 2005 05 10 704 (2.2+ 0.9-) | 2007 12 04 699 0.4+ 0.3- |

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 01 21 704 0.1+ 0.6+   | 2005 05 10 704 0.3+ 0.4+ | 2007 12 05 704 0.7+ 0.0  |
| 2001 01 21 704 0.4- 0.2+   | 2005 05 10 703 0.3- 0.6+ | 2007 12 05 704 0.6+ 0.5+ |
| 2001 01 21 704 0.8- 0.1+   | 2005 05 10 703 0.2+ 0.3+ | 2007 12 05 704 0.1+ 0.0  |
| 2001 01 21 704 0.1+ 0.2+   | 2005 05 10 703 0.2- 1.4+ | 2007 12 05 704 0.1+ 0.1+ |
| 2001 02 17 704 0.4- 0.4+   | 2005 05 10 703 0.6- 0.9- | 2007 12 06 G96 0.1+ 0.3- |
| 2001 02 17 704 0.6- 0.6+   | 2005 05 16 703 0.9- 0.8- | 2007 12 06 G96 0.0 0.2-  |
| 2001 02 17 704 1.0- 0.3+   | 2005 05 16 703 0.2- 0.3- | 2007 12 06 G96 0.2- 0.4- |
| 2001 02 17 704 0.9- 0.0    | 2005 05 16 703 0.1- 0.9- | 2007 12 06 691 0.2- 0.1- |
| 2001 02 17 704 0.8- 0.3+   | 2005 05 16 703 0.0 0.2-  | 2007 12 06 691 0.3- 0.1- |
| 2001 02 21 704 0.1+ 0.1-   | 2005 06 01 703 0.0 0.9-  | 2007 12 06 691 0.2- 0.0  |
| 2001 02 21 704 0.2+ 0.2-   | 2005 06 01 703 0.1+ 0.7- | 2007 12 15 691 0.6- 0.1- |
| 2001 02 21 704 0.5+ 0.2-   | 2005 06 01 703 0.2- 0.0  | 2007 12 15 691 0.6- 0.5+ |
| 2005 03 11 703 (1.6+ 0.4-) | 2005 06 01 703 0.0 0.0   | 2007 12 15 691 0.9+ 0.4+ |
| 2005 03 11 703 (1.2+ 1.8-) | 2006 07 18 E12 0.8+ 0.3- |                          |
| 2005 03 11 703 (1.6+ 1.0-) | 2006 07 18 E12 0.4- 0.1- |                          |

**(171777)\* 2001 BP<sub>22</sub> = 2003 SJ<sub>122</sub>**

Discovered 2001 Jan. 20 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. G. V. Williams (*MPO* 52756)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.32215  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.27158895 | $\omega$ | 339.50521 | -0.10580115   |
| <i>a</i> | 2.3615364  | $\Omega$ | 116.47501 | +0.92587513   |
| <i>e</i> | 0.0946886  | <i>i</i> | 5.82080   | +0.36271389   |
| <i>P</i> | 3.63       | <i>H</i> | 16.3      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2001 01 03 704 0.3+ 0.9+   | 2005 01 06 703 0.7+ 0.7-   | 2005 04 11 699 0.4- 1.1+ |
| 2001 01 03 704 0.7+ 0.0    | 2005 01 06 703 0.8+ 0.9+   | 2005 04 11 699 0.4+ 0.2+ |
| 2001 01 03 704 0.0 0.5+    | 2005 03 03 703 0.0 0.1-    | 2005 04 11 699 1.0- 0.2- |
| 2001 01 03 704 0.3- 0.5-   | 2005 03 03 703 0.1- 0.7+   | 2005 04 11 699 0.2+ 0.3+ |
| 2001 01 20 704 0.3- 0.6-   | 2005 03 03 703 0.7- 0.2-   | 2005 04 16 691 0.0 0.4+  |
| 2001 01 20 704 0.2+ 0.2+   | 2005 03 03 703 0.7- 0.1+   | 2005 04 16 691 0.2+ 0.3+ |
| 2001 01 20 704 0.2+ 0.6-   | 2005 03 04 704 0.9+ 0.6+   | 2005 04 16 691 0.1+ 0.4+ |
| 2001 01 20 704 0.0 0.1-    | 2005 03 04 704 0.6+ 0.5-   | 2007 11 08 G96 0.2+ 0.4- |
| 2001 01 20 704 (0.0 1.5-)  | 2005 03 04 704 0.4+ 0.1-   | 2007 11 08 G96 0.5+ 0.5- |
| 2001 01 21 704 0.4+ 0.9+   | 2005 03 04 704 1.1+ 0.6+   | 2007 11 08 G96 0.4+ 0.4- |
| 2001 01 21 704 0.4- 0.6-   | 2005 03 09 704 0.1- 0.4+   | 2007 11 08 G96 0.2+ 0.4- |
| 2001 01 21 704 0.4- 0.7-   | 2005 03 09 704 0.2+ 0.1-   | 2007 11 09 703 0.4+ 1.0+ |
| 2001 01 21 704 0.4+ 0.5+   | 2005 03 09 704 1.2+ 0.3+   | 2007 11 09 703 0.5+ 0.2- |
| 2003 09 17 599 0.3- 0.5+   | 2005 03 09 704 1.1+ 0.5-   | 2007 11 09 703 0.2+ 0.6+ |
| 2003 09 17 599 0.4- 0.9+   | 2005 03 09 704 0.0 0.4-    | 2007 11 09 703 0.7- 0.0  |
| 2003 09 18 599 (2.4- 1.8+) | 2005 03 10 699 0.4+ 0.4+   | 2007 11 12 704 0.6- 0.1+ |
| 2003 09 18 644 0.6- 0.7+   | 2005 03 10 699 0.5- 0.5-   | 2007 11 12 704 0.3+ 0.1+ |
| 2003 09 18 644 0.6- 0.5+   | 2005 03 10 699 0.1+ 0.1-   | 2007 11 12 704 0.3+ 0.3- |
| 2003 09 18 644 0.6- 0.5+   | 2005 03 10 699 0.1- 0.6+   | 2007 11 17 703 0.3+ 0.4+ |
| 2003 09 22 699 0.2+ 0.3+   | 2005 03 16 704 0.4+ 0.2+   | 2007 11 17 703 0.5+ 0.3- |
| 2003 09 22 699 (1.9+ 0.4+) | 2005 03 16 704 0.2- 0.7+   | 2007 11 17 703 0.5- 0.1- |
| 2003 09 22 699 0.8+ 0.8+   | 2005 03 16 704 0.3+ 0.8+   | 2007 11 17 703 0.3- 0.0  |
| 2003 09 22 699 0.5+ 1.2-   | 2005 03 16 704 0.3- 0.5+   | 2007 11 18 703 0.2+ 0.2- |
| 2003 09 30 691 0.3- 0.4+   | 2005 03 16 704 0.4+ 0.2+   | 2007 11 18 703 0.1- 0.5- |
| 2003 09 30 691 0.3- 0.2+   | 2005 03 16 703 0.7- 0.4+   | 2007 11 18 703 0.3+ 0.4- |
| 2003 09 30 691 0.0 0.3+    | 2005 03 16 703 0.4- 0.6-   | 2007 11 18 703 0.0 0.3+  |
| 2003 10 16 644 0.2- 0.5+   | 2005 03 16 703 0.5- 0.7-   | 2007 12 04 704 0.8- 0.4+ |
| 2003 10 16 644 0.3- 0.6+   | 2005 03 16 703 0.1+ 0.2+   | 2007 12 04 704 0.1+ 0.6+ |
| 2003 10 16 644 0.0 0.6+    | 2005 03 30 703 (1.9- 0.0)  | 2007 12 04 704 0.4- 0.2- |
| 2003 10 18 699 0.5- 1.0-   | 2005 03 30 703 (1.5+ 2.4-) | 2007 12 04 704 0.1- 0.1+ |
| 2003 10 18 699 0.7+ 0.6+   | 2005 03 30 703 0.1+ 0.9-   | 2007 12 04 704 0.4- 0.1+ |
| 2003 10 18 699 0.2+ 0.2+   | 2005 03 30 703 0.2- 0.1-   | 2007 12 05 699 0.7+ 0.0  |
| 2003 10 18 699 (1.8+ 0.5-) | 2005 04 03 138 1.0- 0.2-   | 2007 12 05 699 0.1+ 0.2+ |
| 2005 01 06 703 0.9- 0.3-   | 2005 04 03 138 0.2- 0.3+   | 2007 12 05 699 0.3+ 0.3- |
| 2005 01 06 703 0.2- 0.8+   | 2005 04 03 138 0.0 0.4-    | 2007 12 05 699 0.9- 1.6- |

**(171778)\* 2001 BG<sub>24</sub> = 2003 SY<sub>61</sub>**

Discovered 2001 Jan. 20 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 52757)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26932808 | $\omega$ | 285.04219 | +0.48796534 | −0.86802890 |          |   |
| <i>a</i> | 2.3747339  | $\Omega$ | 135.36885 | +0.84259595 | +0.44099972 |          |   |
| <i>e</i> | 0.1449295  | <i>i</i> | 7.50304   | +0.22786377 | +0.22813388 |          |   |
| <i>P</i> | 3.66       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 05 | 608 | 0.2−  | 1.0−  | 2003 09 17 | 699 | 0.3+  | 0.3−  | 2007 10 10 | 699 | 0.2+ | 0.2+ |
| 2001 01 05 | 608 | 0.0   | 0.9−  | 2003 09 17 | 704 | 0.7+  | 0.0   | 2007 10 10 | 699 | 0.9+ | 0.4+ |
| 2001 01 05 | 608 | 0.3−  | 1.0−  | 2003 09 17 | 704 | 0.6+  | 0.6+  | 2007 11 02 | 703 | 0.9+ | 0.9− |
| 2001 01 20 | 704 | 0.1+  | 0.9+  | 2003 09 17 | 704 | 1.2+  | 0.5+  | 2007 11 02 | 703 | 0.8− | 0.3− |
| 2001 01 20 | 704 | (1.6− | 0.8+) | 2003 09 17 | 704 | 0.1−  | 0.5+  | 2007 11 02 | 703 | 0.2+ | 0.7+ |
| 2001 01 20 | 704 | 1.2−  | 0.0   | 2003 09 17 | 704 | 0.7+  | 0.2+  | 2007 11 02 | 703 | 0.9− | 1.3+ |
| 2001 01 20 | 704 | 0.5−  | 0.7+  | 2003 09 18 | 699 | 0.1−  | 0.6+  | 2007 11 07 | D29 | 0.5+ | 0.3− |
| 2001 01 21 | 704 | 0.4+  | 0.2+  | 2003 09 18 | 699 | 1.4−  | 0.8−  | 2007 11 07 | D29 | 0.0  | 0.1− |
| 2001 01 21 | 704 | 0.2−  | 1.1−  | 2003 09 18 | 699 | 1.3−  | 1.0−  | 2007 11 07 | D29 | 0.1+ | 0.1− |
| 2001 01 21 | 704 | 0.2−  | 0.8−  | 2003 09 18 | 699 | 0.4−  | 0.6+  | 2007 11 07 | D29 | 0.2− | 0.2+ |
| 2001 01 21 | 704 | 1.0+  | 0.5−  | 2003 09 21 | 608 | 0.6−  | 0.8+  | 2007 11 14 | 699 | 0.6− | 0.0  |
| 2001 01 21 | 704 | 0.3+  | 0.4−  | 2003 09 21 | 608 | 0.1−  | 0.8+  | 2007 11 14 | 699 | 0.3− | 0.0  |
| 2001 01 21 | 704 | 0.2−  | 0.0   | 2003 09 21 | 608 | 0.0   | 0.4+  | 2007 11 14 | 699 | 0.1− | 0.1− |
| 2001 01 21 | 704 | 0.2−  | 0.2+  | 2005 03 04 | 704 | 0.4−  | 0.0   | 2007 11 14 | 699 | 0.0  | 0.1− |
| 2001 01 21 | 704 | 0.6+  | 1.3+  | 2005 03 04 | 704 | (0.9− | 2.0+) | 2007 11 15 | 703 | 0.5+ | 0.1− |
| 2001 01 21 | 704 | 0.3+  | 0.8+  | 2005 03 04 | 704 | 0.6−  | 0.3+  | 2007 11 15 | 703 | 0.1+ | 0.3+ |
| 2001 02 02 | 704 | 0.5−  | 0.3+  | 2005 03 04 | 704 | 1.1−  | 0.1−  | 2007 11 15 | 703 | 0.9+ | 0.0  |
| 2001 02 02 | 704 | 0.3+  | 0.7+  | 2005 03 13 | 704 | 0.8+  | 1.4+  | 2007 11 15 | 703 | 0.0  | 0.0  |
| 2001 02 02 | 704 | 0.7+  | 0.9+  | 2005 03 13 | 704 | 0.8+  | 0.5−  | 2007 11 19 | G96 | 0.4+ | 0.2− |
| 2001 02 02 | 704 | 0.2+  | 0.7+  | 2005 03 13 | 704 | (1.7+ | 1.4+) | 2007 11 19 | G96 | 0.3+ | 0.2− |
| 2003 08 23 | 704 | (0.3− | 1.7−) | 2005 03 13 | 704 | 0.2+  | 0.9+  | 2007 11 19 | G96 | 0.3+ | 0.2− |
| 2003 08 23 | 704 | 0.2−  | 0.6−  | 2005 04 16 | 691 | 0.3+  | 0.1+  | 2007 11 19 | G96 | 0.1+ | 0.2− |
| 2003 08 23 | 704 | (0.5− | 1.9+) | 2005 04 16 | 691 | 0.1+  | 0.2+  | 2007 12 05 | 703 | 0.6− | 0.1− |
| 2003 09 17 | 699 | (0.5− | 1.6+) | 2005 04 16 | 691 | 0.2−  | 0.2−  | 2007 12 05 | 703 | 0.4− | 0.6− |
| 2003 09 17 | 699 | 0.3+  | 0.4+  | 2007 10 10 | 699 | 1.7−  | 0.2−  | 2007 12 05 | 703 | 0.2− | 0.1− |
| 2003 09 17 | 699 | 0.6−  | 0.2−  | 2007 10 10 | 699 | 1.0−  | 1.4+  | 2007 12 05 | 703 | 1.1+ | 0.8− |

**(171779)\* 2001 BF<sub>40</sub>**

Discovered 2001 Jan. 18 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27073530 | $\omega$ | 75.51390 | −0.29283420 | −0.95476866 |          |   |
| <i>a</i> | 2.3664979  | $\Omega$ | 31.66150 | +0.83502463 | −0.28166347 |          |   |
| <i>e</i> | 0.2185079  | <i>i</i> | 5.64406  | +0.46581327 | −0.09530210 |          |   |
| <i>P</i> | 3.64       | <i>H</i> | 17.4     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 07 | 691 | 0.3−  | 0.2+  | 2005 04 11 | 691 | 0.5+ | 1.0+ | 2007 11 20 | 704 | 0.1− | 1.4+ |
| 1996 10 07 | 691 | 0.3−  | 0.5+  | 2005 05 04 | G96 | 0.2+ | 0.3− | 2007 12 04 | 691 | 0.1+ | 0.1− |
| 1996 10 07 | 691 | 0.5−  | 0.1+  | 2005 05 04 | G96 | 0.3+ | 0.1− | 2007 12 04 | 691 | 0.1+ | 0.0  |
| 1996 10 18 | 691 | 0.3+  | 0.2+  | 2005 05 04 | G96 | 0.4+ | 0.3− | 2007 12 04 | 691 | 0.1+ | 0.3− |
| 1996 10 18 | 691 | 0.0   | 0.0   | 2005 05 04 | G96 | 0.0  | 0.1+ | 2007 12 06 | 691 | 0.2+ | 0.1+ |
| 1996 10 18 | 691 | 0.4+  | 0.2+  | 2007 11 01 | 691 | 0.5− | 0.1− | 2007 12 06 | 691 | 0.3+ | 0.6+ |
| 2001 01 18 | 704 | (2.0− | 0.6+) | 2007 11 01 | 691 | 0.3− | 0.0  | 2007 12 06 | 691 | 0.0  | 0.1− |
| 2001 01 18 | 704 | 0.6−  | 0.6−  | 2007 11 01 | 691 | 0.1− | 0.3− | 2007 12 12 | 704 | 0.3+ | 0.4+ |
| 2001 01 18 | 704 | 0.8−  | 0.9−  | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 12 12 | 704 | 0.6− | 0.8− |
| 2001 01 25 | 704 | 0.2+  | 0.5+  | 2007 11 07 | 691 | 0.1+ | 0.1− | 2007 12 12 | 704 | 0.0  | 0.5+ |
| 2001 01 25 | 704 | 0.6+  | 0.3+  | 2007 11 07 | 691 | 0.1− | 0.1+ | 2007 12 13 | 704 | 0.6− | 0.1+ |
| 2001 01 25 | 704 | 0.8+  | 0.7+  | 2007 11 09 | 691 | 0.2− | 0.3− | 2007 12 13 | 704 | 0.8+ | 0.3− |
| 2001 01 25 | 704 | 1.3+  | 0.0   | 2007 11 09 | 691 | 0.5− | 0.0  | 2007 12 13 | 704 | 0.2− | 0.4− |
| 2001 01 25 | 704 | 0.3−  | 0.9−  | 2007 11 09 | 691 | 0.1− | 0.0  | 2007 12 13 | 704 | 0.3− | 0.7+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 01 | 699 | 0.3−  | 0.7+  | 2007 11 13 | 691 | 0.0  | 0.4− | 2007 12 14 | 691 | 0.1+ | 0.2+ |
| 2001 02 01 | 699 | 0.6−  | 0.3+  | 2007 11 13 | 691 | 0.2+ | 0.1− | 2007 12 14 | 691 | 0.4+ | 0.4+ |
| 2001 02 01 | 699 | (1.8− | 0.5−) | 2007 11 13 | 691 | 0.1+ | 0.3− | 2007 12 14 | 691 | 0.4+ | 0.1− |
| 2001 02 01 | 699 | 0.1−  | 0.2+  | 2007 11 18 | 704 | 0.7+ | 0.8+ | 2007 12 15 | 704 | 0.0  | 0.7+ |
| 2001 02 16 | 704 | 0.4+  | 1.1−  | 2007 11 18 | 704 | 0.9− | 0.1+ | 2007 12 15 | 704 | 0.3+ | 0.2− |
| 2001 02 16 | 704 | 0.4−  | 0.2+  | 2007 11 18 | 704 | 0.2+ | 0.1+ | 2007 12 15 | 704 | 0.3− | 0.1− |
| 2001 02 16 | 704 | 0.2−  | 0.8−  | 2007 11 18 | 704 | 0.3+ | 0.7+ | 2007 12 15 | 704 | 0.7+ | 1.2− |
| 2001 02 16 | 704 | 0.3−  | 0.2+  | 2007 11 20 | 704 | 0.2+ | 0.3+ | 2007 12 15 | 704 | 1.6− | 0.3− |
| 2001 02 16 | 704 | 0.3−  | 0.2+  | 2007 11 20 | 704 | 0.7+ | 0.1− | 2007 12 16 | 691 | 0.0  | 0.1− |
| 2005 04 11 | 691 | 0.0   | 0.1+  | 2007 11 20 | 704 | 0.9+ | 0.1+ | 2007 12 16 | 691 | 0.2− | 0.1+ |
| 2005 04 11 | 691 | 0.1−  | 0.1+  | 2007 11 20 | 704 | 0.2− | 0.2+ | 2007 12 16 | 691 | 0.1+ | 0.0  |

**(171780)\* 2001 BN<sub>41</sub>**

Discovered 2001 Jan. 24 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27964153 | $\omega$ | 222.73458 | +0.92248011 | +0.37739895 |          |   |
| <i>a</i> | 2.3159807  | $\Omega$ | 114.92695 | −0.32558639 | +0.87366236 |          |   |
| <i>e</i> | 0.1683261  | <i>i</i> | 5.13995   | −0.20742214 | +0.30705718 |          |   |
| <i>P</i> | 3.52       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 27 | 704 | 0.2+  | 0.1−  | 2003 07 25 | 644 | 0.3−  | 0.6+  | 2007 11 09 | 703 | 0.0  | 0.3+ |
| 2000 11 27 | 704 | 0.3+  | 0.4+  | 2003 07 25 | 704 | (0.6+ | 3.3−) | 2007 11 09 | 703 | 1.1− | 0.1− |
| 2000 11 27 | 704 | 0.3+  | 0.1+  | 2003 07 25 | 644 | 0.3−  | 0.6+  | 2007 11 09 | 703 | 0.3− | 0.4− |
| 2000 11 27 | 704 | 0.5−  | 0.8+  | 2003 07 30 | 608 | 0.6−  | 0.5+  | 2007 11 12 | 704 | 0.5− | 0.3− |
| 2000 11 27 | 704 | 0.1−  | 0.2+  | 2003 07 30 | 608 | 0.9−  | 1.1+  | 2007 11 12 | 704 | 0.3− | 0.6− |
| 2000 12 29 | 691 | 0.2+  | 0.3+  | 2003 07 30 | 608 | 0.6−  | 0.3+  | 2007 11 12 | 704 | 0.3− | 0.0  |
| 2000 12 29 | 691 | 0.3+  | 0.3+  | 2003 08 23 | 704 | 0.1+  | 0.1+  | 2007 11 12 | 704 | 0.1+ | 0.6− |
| 2000 12 29 | 691 | 0.4+  | 0.5+  | 2003 08 23 | 704 | 0.3−  | 0.3−  | 2007 11 12 | 704 | 0.3− | 0.3− |
| 2001 01 24 | 691 | 0.5−  | 0.1+  | 2003 08 23 | 704 | 0.1−  | 0.2+  | 2007 11 20 | 703 | 0.6− | 0.1− |
| 2001 01 24 | 691 | 0.4−  | 0.2+  | 2004 12 19 | G96 | 0.6−  | 0.4−  | 2007 11 20 | 703 | 0.4− | 0.2− |
| 2001 01 24 | 691 | 0.4−  | 0.0   | 2004 12 19 | G96 | 0.0   | 0.1+  | 2007 11 20 | 703 | 0.2+ | 0.1− |
| 2001 01 26 | 691 | 0.2+  | 0.1−  | 2004 12 19 | G96 | 0.2−  | 0.7+  | 2007 11 20 | 703 | 0.2− | 0.5+ |
| 2001 01 26 | 691 | 0.2−  | 0.5+  | 2004 12 19 | G96 | 0.6−  | 0.3−  | 2007 11 29 | 704 | 0.6+ | 0.3− |
| 2001 01 26 | 691 | 0.1−  | 0.4−  | 2007 10 19 | D35 | 0.1−  | 0.0   | 2007 11 29 | 704 | 0.2− | 0.5+ |
| 2002 03 05 | 645 | 0.1+  | 0.2+  | 2007 10 19 | D35 | 0.3−  | 0.2−  | 2007 11 29 | 704 | 0.3− | 1.3+ |
| 2002 03 05 | 645 | 0.1+  | 0.2+  | 2007 10 19 | D35 | 0.1−  | 0.4−  | 2007 11 29 | 704 | 1.0+ | 0.1+ |
| 2003 07 08 | 644 | 0.2−  | 0.9+  | 2007 11 04 | 704 | 0.7+  | 0.4−  | 2007 12 04 | 704 | 0.2− | 0.5+ |
| 2003 07 08 | 644 | 0.2−  | 0.8+  | 2007 11 04 | 704 | 0.3−  | 0.4−  | 2007 12 04 | 704 | 1.5+ | 1.0+ |
| 2003 07 08 | 644 | 0.0   | 0.7+  | 2007 11 04 | 704 | 0.2−  | 0.2−  | 2007 12 04 | 704 | 1.5+ | 0.4− |
| 2003 07 25 | 644 | 0.2−  | 0.7+  | 2007 11 04 | 704 | 0.3+  | 0.6+  | 2007 12 04 | 704 | 0.2+ | 0.4+ |
| 2003 07 25 | 704 | 1.2+  | 1.4+  | 2007 11 04 | 704 | 0.5−  | 0.2−  | 2007 12 04 | 704 | 0.7+ | 0.0  |
| 2003 07 25 | 704 | (1.8+ | 0.0 ) | 2007 11 09 | 703 | (2.0+ | 1.3+) |            |     |      |      |

**(171781)\* 2001 BG<sub>52</sub>**

Discovered 2001 Jan. 17 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27729700 | $\omega$ | 13.75498  | −0.65859683 | −0.74907642 |          |   |
| <i>a</i> | 2.3290167  | $\Omega$ | 117.49047 | +0.68253672 | −0.63474896 |          |   |
| <i>e</i> | 0.0622547  | <i>i</i> | 4.63327   | +0.31684987 | −0.18967939 |          |   |
| <i>P</i> | 3.55       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |     |      |            |     |      |      |   |
|------------|-----|-----|------|------------|-----|------|------|---|
| 2001 01 17 | 691 | 0.0 | 0.3+ | 2003 10 21 | 704 | 0.5− | 0.8+ | 2 |
|------------|-----|-----|------|------------|-----|------|------|---|

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 31 | 691 | 0.1−  | 0.1−  | 2005 03 18 | 703 | 1.3−  | 0.4−  | 2006 08 28 | 703 | (1.9+ | 0.5−) |
| 2001 01 31 | 691 | 0.4−  | 0.2−  | 2005 03 18 | 703 | 0.8+  | 0.4−  | 2006 08 28 | 703 | 0.0   | 0.4−  |
| 2001 01 31 | 691 | 0.6−  | 0.3−  | 2005 04 04 | 703 | 0.3−  | 0.7+  | 2006 08 28 | 703 | 1.0+  | 0.2−  |
| 2001 02 03 | 704 | 0.5+  | 0.1+  | 2005 04 04 | 703 | 1.0−  | 0.9+  | 2006 08 28 | 703 | (3.5− | 4.7+) |
| 2001 02 03 | 704 | (2.1+ | 0.2−) | 2005 04 04 | 703 | 0.0   | 0.4+  | 2007 12 04 | 691 | 0.0   | 0.2+  |
| 2001 02 03 | 704 | 0.0   | 0.5−  | 2005 04 04 | 703 | 0.1−  | 0.4+  | 2007 12 04 | G96 | 0.4+  | 0.3−  |
| 2001 02 03 | 704 | 0.5−  | 0.9−  | 2005 04 05 | 699 | 0.4+  | 0.7+  | 2007 12 04 | G96 | 0.4+  | 0.4−  |
| 2001 02 03 | 704 | 0.1+  | 1.0−  | 2005 04 05 | 699 | 1.0+  | 0.7−  | 2007 12 04 | 691 | 0.1−  | 0.0   |
| 2001 05 20 | 807 | 0.5+  | 0.2+  | 2005 04 05 | 699 | 0.6+  | 0.5+  | 2007 12 04 | G96 | 0.4+  | 0.4−  |
| 2001 05 20 | 807 | 1.1+  | 0.2+  | 2005 04 05 | 699 | (1.8+ | 0.5−) | 2007 12 04 | 691 | 0.1−  | 0.4+  |
| 2001 05 21 | 807 | 0.5+  | 0.1+  | 2005 04 09 | 699 | 1.0+  | 0.3+  | 2007 12 04 | G96 | 0.0   | 0.1−  |
| 2001 05 21 | 807 | 0.6+  | 0.4+  | 2005 04 09 | 699 | 0.6+  | 0.2−  | 2007 12 15 | 691 | 0.1+  | 0.1+  |
| 2003 10 21 | 704 | 0.8−  | 0.0   | 2005 04 09 | 699 | 0.6−  | 0.6−  | 2007 12 15 | 691 | 0.1+  | 0.1+  |
| 2003 10 21 | 704 | 0.4+  | 0.2−  | 2005 04 09 | 699 | 0.5−  | 0.6+  | 2007 12 15 | 691 | 0.1−  | 0.1−  |
| 2003 10 21 | 704 | 0.3−  | 0.4+  | 2005 04 13 | 704 | 1.0+  | 0.4−  |            |     |       |       |
| 2003 10 21 | 704 | 0.6+  | 0.0   | 2005 04 13 | 704 | 0.3−  | 1.3+  |            |     |       |       |

**(171782)\* 2001 BK<sub>52</sub> = 2003 WG<sub>46</sub>**

Discovered 2001 Jan. 17 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 56193)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.10497    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28578804 | $\omega$ | 353.67629 | −0.29327349   | −0.95442666 |
| <i>a</i> | 2.2826536  | $\Omega$ | 113.36673 | +0.87975828   | −0.29207279 |
| <i>e</i> | 0.0452833  | <i>i</i> | 3.45493   | +0.37418715   | −0.06134520 |
| <i>P</i> | 3.45       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 03 | 704 | 0.1−  | 0.7+  | 2003 11 19 | 699 | 1.0−  | 0.6+  | 2006 08 30 | 699 | 0.3− | 0.9+ |
| 2001 01 03 | 704 | 0.3−  | 0.9+  | 2003 11 19 | 699 | 0.7−  | 0.2+  | 2006 09 14 | 644 | 0.3− | 0.0  |
| 2001 01 03 | 704 | (0.3+ | 1.8+) | 2003 11 21 | 691 | 0.3+  | 0.2+  | 2006 09 14 | 644 | 0.4− | 0.2+ |
| 2001 01 17 | 691 | 0.2+  | 0.2−  | 2003 11 21 | 691 | 0.2+  | 0.2+  | 2006 09 14 | 703 | 0.7+ | 0.1+ |
| 2001 01 17 | 691 | 0.5−  | 0.1−  | 2003 11 21 | 691 | 0.0   | 0.2+  | 2006 09 14 | 703 | 1.1− | 0.2+ |
| 2001 01 17 | 691 | 0.4−  | 0.0   | 2003 11 24 | 699 | 0.5−  | 0.3+  | 2006 09 14 | 644 | 0.0  | 0.1− |
| 2001 01 21 | 704 | 0.4−  | 0.4−  | 2003 11 24 | 699 | 0.8−  | 0.9+  | 2006 09 14 | 703 | 0.3+ | 0.0  |
| 2001 01 21 | 704 | 0.3+  | 0.1−  | 2003 11 24 | 699 | 0.2−  | 0.1+  | 2006 09 14 | 703 | 1.1+ | 1.1− |
| 2001 01 21 | 704 | 0.4+  | 0.8−  | 2003 11 24 | 699 | 0.4+  | 1.3+  | 2006 11 27 | G96 | 0.1+ | 0.3− |
| 2001 01 21 | 704 | 0.5−  | 0.8−  | 2003 12 01 | 704 | 0.0   | 0.9+  | 2006 11 27 | G96 | 0.2− | 0.4+ |
| 2001 01 21 | 704 | 1.4+  | 0.0   | 2003 12 01 | 704 | (0.9− | 1.9+) | 2006 11 27 | G96 | 0.1+ | 0.5− |
| 2001 01 21 | 704 | 0.0   | 0.6−  | 2003 12 01 | 704 | (0.2− | 1.6+) | 2006 11 27 | G96 | 0.2+ | 0.0  |
| 2001 01 21 | 704 | 0.4+  | 0.6+  | 2003 12 01 | 704 | (2.7− | 3.3+) | 2007 11 07 | G96 | 0.4− | 0.0  |
| 2001 02 01 | 209 | 0.5+  | 0.6−  | 2005 04 14 | 691 | 0.0   | 0.4+  | 2007 11 07 | G96 | 0.1− | 0.2− |
| 2001 02 01 | 209 | 0.7+  | 0.5+  | 2005 04 14 | 691 | 0.2+  | 0.1+  | 2007 11 07 | G96 | 0.5− | 0.3+ |
| 2001 02 01 | 209 | 0.1+  | 0.3−  | 2005 04 14 | 691 | 0.1+  | 0.2+  | 2007 11 07 | G96 | 0.3− | 0.3− |
| 2003 11 17 | 703 | 1.0+  | 0.8+  | 2005 04 18 | 691 | 0.1−  | 0.6+  | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2003 11 17 | 703 | (3.0− | 1.0−) | 2005 04 18 | 691 | 0.3+  | 0.4+  | 2007 12 04 | G96 | 0.5+ | 0.2+ |
| 2003 11 17 | 703 | 0.4−  | 0.5−  | 2005 04 18 | 691 | 0.1+  | 0.4+  | 2007 12 04 | G96 | 0.2− | 0.2− |
| 2003 11 17 | 703 | 0.8−  | 0.2+  | 2006 08 30 | 699 | (0.3− | 2.1+) | 2007 12 04 | G96 | 1.2+ | 0.3+ |
| 2003 11 19 | 699 | 1.4−  | 0.6+  | 2006 08 30 | 699 | 0.3−  | 0.5+  |            |     |      |      |
| 2003 11 19 | 699 | 0.5−  | 0.0   | 2006 08 30 | 699 | 0.0   | 1.1+  |            |     |      |      |

**(171783)\* 2001 BX<sub>62</sub>**

Discovered 2001 Jan. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.55817   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28359776 | $\omega$ | 179.29590 | +0.45765058   | −0.88782080 |
| <i>a</i> | 2.2943915  | $\Omega$ | 243.46746 | +0.81549882   | +0.44076411 |
| <i>e</i> | 0.1178976  | <i>i</i> | 3.09285   | +0.35428466   | +0.13229218 |
| <i>P</i> | 3.48       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 03 | 704 | 1.0− | 0.6+ | 2003 10 23 | 704 | 0.2− | 0.2+ | 2003 11 21 | 704 | 0.5+ | 0.5+ |
| 2001 01 03 | 704 | 0.3+ | 0.6− | 2003 10 23 | 699 | 0.5+ | 0.4− | 2003 11 21 | 704 | 0.3+ | 0.4+ |
| 2001 01 03 | 704 | 0.1− | 0.7− | 2003 10 23 | 704 | 0.2+ | 0.2+ | 2003 11 30 | 691 | 0.2+ | 0.1− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 03 | 704 | 0.4+  | 0.5−  | 2003 10 23 | 704 | 0.3−  | 0.5+  | 2003 11 30 | 691 | 0.0   | 0.0   |
| 2001 01 03 | 704 | 0.4+  | 0.1+  | 2003 10 23 | 699 | 0.1−  | 0.6+  | 2003 11 30 | 691 | 0.1+  | 0.3−  |
| 2001 01 29 | 704 | (0.5+ | 2.0+) | 2003 10 23 | 704 | 0.7+  | 0.7+  | 2003 12 01 | 704 | 0.5+  | 0.1−  |
| 2001 01 29 | 704 | 0.1+  | 0.9+  | 2003 10 23 | 704 | 0.0   | 0.4+  | 2003 12 01 | 704 | 0.9+  | 0.4−  |
| 2001 01 29 | 704 | 0.3−  | 0.8+  | 2003 10 23 | 704 | 0.0   | 0.4+  | 2003 12 01 | 704 | 0.3+  | 0.6−  |
| 2001 01 29 | 704 | 0.6+  | 0.7−  | 2003 10 24 | 704 | 0.5+  | 0.1+  | 2003 12 01 | 704 | 0.0   | 0.7−  |
| 2001 01 31 | 704 | 0.3+  | 1.1+  | 2003 10 24 | 704 | 0.1−  | 0.3+  | 2003 12 01 | 704 | (0.5+ | 1.8−) |
| 2001 01 31 | 704 | 0.1−  | 0.7+  | 2003 10 24 | 704 | 0.1−  | 0.1−  | 2003 12 10 | 644 | 0.2+  | 0.1+  |
| 2001 01 31 | 704 | 0.7+  | 0.2−  | 2003 10 24 | 704 | 0.7−  | 0.1+  | 2003 12 10 | 644 | 0.1+  | 0.2+  |
| 2001 01 31 | 704 | 0.9+  | 0.5+  | 2003 10 24 | 704 | 0.2−  | 0.5+  | 2003 12 10 | 644 | 0.0   | 0.2−  |
| 2001 02 16 | 699 | 0.5−  | 0.8+  | 2003 10 24 | 704 | 0.4−  | 0.0   | 2003 12 13 | 703 | 0.4−  | 0.3−  |
| 2001 02 16 | 699 | 0.0   | 0.1−  | 2003 10 24 | 704 | 0.1−  | 0.3+  | 2003 12 13 | 703 | 0.2−  | 0.9+  |
| 2001 02 16 | 699 | 0.3−  | 0.3+  | 2003 10 24 | 704 | 0.7−  | 0.4+  | 2003 12 13 | 703 | 0.2+  | 0.1−  |
| 2001 02 16 | 699 | 0.2−  | 0.8+  | 2003 10 24 | 704 | 1.0−  | 0.2−  | 2003 12 13 | 703 | 0.4−  | 0.9−  |
| 2001 02 19 | 704 | 0.6−  | 0.9−  | 2003 10 24 | 704 | 1.3−  | 0.2+  | 2005 04 11 | 691 | 0.1−  | 0.4+  |
| 2001 02 19 | 704 | 0.7+  | 0.2−  | 2003 10 29 | 704 | 0.9−  | 0.4+  | 2005 04 11 | 691 | 0.1+  | 0.4+  |
| 2001 02 19 | 704 | 0.8−  | 0.9−  | 2003 10 29 | 703 | 0.7−  | 0.1+  | 2005 04 11 | 691 | 0.2+  | 0.3+  |
| 2001 02 19 | 704 | 0.5−  | 0.9−  | 2003 10 29 | 704 | 0.1+  | 0.5+  | 2005 04 15 | 691 | 0.3+  | 0.5+  |
| 2001 02 20 | 704 | 0.0   | 0.7+  | 2003 10 29 | 703 | 0.1+  | 0.2−  | 2005 04 15 | 691 | 0.3+  | 0.3+  |
| 2001 02 20 | 704 | 0.3+  | 0.1+  | 2003 10 29 | 703 | 1.0−  | 0.2−  | 2005 04 15 | 691 | 0.2+  | 0.3+  |
| 2001 02 20 | 704 | 0.4−  | 0.4+  | 2003 10 29 | 704 | 0.3−  | 0.3+  | 2005 04 15 | 691 | 0.5−  | 0.3+  |
| 2001 03 13 | 699 | 0.1+  | 0.0   | 2003 10 29 | 703 | 0.6−  | 0.2+  | 2005 04 15 | 691 | 0.3+  | 0.3+  |
| 2001 03 13 | 699 | 0.3+  | 0.2−  | 2003 10 29 | 704 | 0.2−  | 0.6+  | 2005 04 15 | 691 | 0.3+  | 0.3+  |
| 2001 03 13 | 699 | 0.5+  | 0.2+  | 2003 10 29 | 704 | 0.1−  | 0.6+  | 2005 05 06 | 703 | 0.4−  | 0.4−  |
| 2001 03 13 | 699 | 0.4+  | 0.2+  | 2003 11 02 | 704 | 0.2+  | 1.0+  | 2005 05 06 | 703 | (0.6− | 2.9+) |
| 2003 10 15 | 699 | 0.2+  | 0.4−  | 2003 11 02 | 704 | 0.0   | 1.0+  | 2005 05 06 | 703 | 0.3−  | 1.5+  |
| 2003 10 15 | 699 | 0.5−  | 1.2+  | 2003 11 02 | 704 | 0.6+  | 0.6+  | 2005 05 06 | 703 | 0.1+  | 1.2+  |
| 2003 10 15 | 699 | 0.3−  | 0.0   | 2003 11 02 | 704 | 0.4−  | 0.6+  | 2006 08 29 | 703 | 0.2−  | 0.1+  |
| 2003 10 15 | 699 | 0.6+  | 1.1+  | 2003 11 02 | 704 | 0.1+  | 0.2−  | 2006 08 29 | 703 | 0.8−  | 0.6−  |
| 2003 10 22 | 704 | 0.3−  | 0.4+  | 2003 11 18 | 644 | 0.1−  | 0.5+  | 2006 08 29 | 703 | 0.1−  | 0.7+  |
| 2003 10 22 | 704 | 0.3−  | 0.2−  | 2003 11 18 | 644 | 0.1+  | 0.4+  | 2006 08 29 | 703 | 1.2−  | 0.9−  |
| 2003 10 22 | 704 | 0.0   | 0.8+  | 2003 11 18 | 644 | 0.3+  | 0.4+  | 2006 08 30 | 704 | 1.1+  | 0.7+  |
| 2003 10 22 | 704 | 0.2−  | 0.3+  | 2003 11 19 | 703 | 0.1+  | 0.3−  | 2006 08 30 | 704 | 0.8+  | 1.2+  |
| 2003 10 22 | 704 | (1.8− | 0.1+) | 2003 11 19 | 703 | 0.0   | 0.3+  | 2006 08 30 | 704 | 0.5+  | 0.8−  |
| 2003 10 22 | 691 | 0.1+  | 0.1+  | 2003 11 19 | 703 | 0.1+  | 0.1+  | 2006 08 30 | 704 | 0.2+  | 0.8+  |
| 2003 10 22 | 691 | 0.1+  | 0.1+  | 2003 11 19 | 703 | 0.3+  | 0.1−  | 2007 11 18 | G96 | 0.0   | 0.5−  |
| 2003 10 22 | 691 | 0.1+  | 0.1+  | 2003 11 19 | 699 | (1.9− | 0.6+) | 2007 11 18 | G96 | 0.2−  | 0.6−  |
| 2003 10 23 | 699 | 1.1−  | 0.3−  | 2003 11 19 | 699 | 0.6−  | 0.0   | 2007 11 18 | G96 | 0.5+  | 0.4−  |
| 2003 10 23 | 704 | 0.7−  | 0.1+  | 2003 11 19 | 699 | 0.3+  | 0.1+  | 2007 11 18 | G96 | 0.2+  | 0.6−  |
| 2003 10 23 | 699 | 0.4−  | 0.2−  | 2003 11 19 | 699 | 0.3−  | 0.8−  | 2007 11 21 | 691 | 0.2−  | 0.4−  |
| 2003 10 23 | 704 | 0.5+  | 0.2+  | 2003 11 21 | 704 | 0.6+  | 0.5+  | 2007 11 21 | 691 | 0.3−  | 0.3−  |
| 2003 10 23 | 704 | 0.1−  | 0.2+  | 2003 11 21 | 704 | 0.1+  | 0.5+  | 2007 11 21 | 691 | 0.2−  | 0.3−  |
| 2003 10 23 | 704 | 0.6−  | 0.2+  | 2003 11 21 | 704 | 0.4+  | 0.7+  |            |     |       |       |

**(171784)\* 2001 BV<sub>67</sub>**

Discovered 2001 Jan. 31 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 311.88772  |          | (2000.0)  | $\mathbf{P}$  | $\mathbf{Q}$  |
|-----|------------|----------|-----------|---------------|---------------|
| $n$ | 0.27570418 | $\omega$ | 185.90490 | $-0.92277803$ | $-0.38044479$ |
| $a$ | 2.3379783  | $\Omega$ | 331.49105 | $+0.35857317$ | $-0.78967623$ |
| $e$ | 0.3395201  | $i$      | 7.36394   | $+0.14108859$ | $-0.48132443$ |
| $P$ | 3.57       | $H$      | 16.8      | $G$ 0.15      | $U$ 1         |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 31 | 704 | 0.3−  | 0.5+  | 2001 02 22 | 704 | 0.2+  | 0.3+  | 2001 04 17 | 699 | 0.2+  | 0.2+  |
| 2001 01 31 | 704 | 0.1−  | 0.1+  | 2001 02 22 | 704 | 0.1+  | 0.2+  | 2003 09 30 | 691 | 0.2+  | 0.3−  |
| 2001 01 31 | 704 | 0.3−  | 0.2+  | 2001 02 22 | 704 | 0.0   | 0.1+  | 2003 09 30 | 691 | 0.1−  | 0.3−  |
| 2001 02 01 | 704 | 0.4+  | 0.4+  | 2001 02 22 | 704 | 0.4+  | 0.4+  | 2003 09 30 | 691 | 0.5+  | 0.3−  |
| 2001 02 01 | 704 | 0.1+  | 0.2+  | 2001 02 22 | 704 | 0.7−  | 0.9+  | 2003 10 17 | 691 | 0.0   | 0.2+  |
| 2001 02 01 | 704 | 0.2−  | 0.2+  | 2001 02 22 | 704 | 0.5−  | 0.3+  | 2003 10 17 | 691 | 0.0   | 0.1−  |
| 2001 02 01 | 704 | 0.1−  | 0.3+  | 2001 02 22 | 704 | 0.1−  | 0.1+  | 2003 10 17 | 691 | 0.2−  | 0.1+  |
| 2001 02 01 | 704 | 0.0   | 0.1+  | 2001 02 22 | 704 | 0.3+  | 0.2+  | 2006 08 19 | 691 | 0.5−  | 0.3+  |
| 2001 02 19 | 699 | 0.4+  | 0.1+  | 2001 02 22 | 704 | 0.0   | 0.2+  | 2006 08 19 | 691 | 0.2−  | 0.3+  |
| 2001 02 19 | 699 | 0.7+  | 0.5+  | 2001 02 22 | 704 | 0.2+  | 0.3+  | 2006 08 19 | 691 | 0.4−  | 0.4+  |
| 2001 02 19 | 699 | 0.6+  | 0.2+  | 2001 02 23 | 704 | 0.1−  | 0.3−  | 2006 08 28 | 691 | 0.1+  | 0.4+  |
| 2001 02 19 | 704 | 0.0   | 0.2+  | 2001 02 23 | 704 | 0.2+  | 0.5+  | 2006 08 28 | 691 | 0.0   | 0.4+  |
| 2001 02 19 | 699 | (2.7+ | 0.1−) | 2001 02 23 | 704 | 0.1+  | 0.4+  | 2006 08 28 | 691 | (0.7+ | 3.1−) |
| 2001 02 19 | 704 | 0.4−  | 0.0   | 2001 02 22 | 704 | 0.2+  | 0.4−  | 2007 11 02 | 704 | 0.5−  | 1.0+  |
| 2001 02 19 | 704 | 0.2+  | 0.1−  | 2001 03 02 | 704 | 0.1−  | 0.0   | 2007 11 02 | 704 | 0.2−  | 0.3+  |
| 2001 02 19 | 704 | 0.3+  | 0.6−  | 2001 03 02 | 704 | 0.4−  | 0.6+  | 2007 11 02 | 704 | (0.7− | 1.6+) |
| 2001 02 19 | 704 | 0.4+  | 0.8−  | 2001 03 02 | 704 | 0.2+  | 0.1+  | 2007 11 02 | 704 | (0.4− | 1.7+) |
| 2001 02 19 | 691 | 0.3−  | 0.2−  | 2001 03 15 | 699 | 0.6+  | 0.2−  | 2007 11 08 | 704 | 0.3−  | 1.0+  |
| 2001 02 19 | 691 | 0.4−  | 0.2−  | 2001 03 15 | 699 | 0.6+  | 0.2−  | 2007 11 08 | 704 | 0.7+  | 0.2+  |
| 2001 02 19 | 691 | 0.4−  | 0.1−  | 2001 03 15 | 699 | 0.7+  | 0.1−  | 2007 11 08 | 704 | 0.6−  | 0.1−  |
| 2001 02 20 | 649 | (2.3− | 1.6−) | 2001 03 15 | 699 | 0.4+  | 0.1−  | 2007 11 08 | 704 | 0.1−  | 0.6+  |
| 2001 02 20 | 649 | (2.4− | 2.0−) | 2001 03 18 | 704 | 0.4+  | 0.4+  | 2007 11 16 | 704 | 1.1+  | 0.5+  |
| 2001 02 20 | 649 | 0.2+  | 0.2−  | 2001 03 18 | 704 | 0.2+  | 0.5+  | 2007 11 16 | 704 | 0.6+  | 1.4+  |
| 2001 02 20 | 750 | (1.8+ | 1.1+) | 2001 03 18 | 704 | (1.8+ | 1.7−) | 2007 11 16 | 704 | 0.8+  | 0.0   |
| 2001 02 20 | 750 | 0.2+  | 0.2+  | 2001 03 18 | 704 | 0.1+  | 0.5−  | 2007 11 16 | 704 | 0.9+  | 1.2+  |
| 2001 02 20 | 919 | (3.6+ | 0.9−) | 2001 03 18 | 704 | 0.2−  | 0.7+  | 2007 11 16 | 704 | (1.9+ | 0.5+) |
| 2001 02 20 | 750 | 0.2+  | 0.0   | 2001 03 20 | 608 | 0.0   | 0.8−  | 2007 12 02 | 704 | 0.4+  | 0.6−  |
| 2001 02 20 | 750 | 0.6+  | 0.2−  | 2001 03 20 | 608 | 0.1−  | 0.7−  | 2007 12 02 | 704 | 0.1+  | 0.2−  |
| 2001 02 20 | 919 | 0.2−  | 0.5−  | 2001 03 20 | 608 | 0.5−  | 0.6−  | 2007 12 02 | 704 | 0.2−  | 0.1+  |
| 2001 02 20 | 926 | 0.2+  | 0.1+  | 2001 03 24 | 704 | 0.4+  | 0.2+  | 2007 12 02 | 704 | 0.2−  | 0.2+  |
| 2001 02 20 | 926 | 0.2+  | 0.1+  | 2001 03 24 | 704 | 0.1+  | 0.2+  | 2007 12 02 | 704 | 0.2−  | 0.3+  |
| 2001 02 20 | 704 | 0.2+  | 0.1+  | 2001 03 24 | 704 | 0.6+  | 0.2+  | 2007 12 05 | 699 | 0.0   | 0.4+  |
| 2001 02 20 | 926 | 0.2+  | 0.2+  | 2001 03 24 | 704 | 0.3+  | 0.4+  | 2007 12 05 | 699 | 0.5−  | 0.3−  |
| 2001 02 20 | 704 | 0.6+  | 0.0   | 2001 03 29 | 704 | (1.5+ | 0.4+) | 2007 12 05 | 699 | 0.1−  | 0.2+  |
| 2001 02 20 | 704 | 0.5−  | 0.1+  | 2001 03 29 | 704 | 0.9+  | 0.9+  | 2007 12 05 | 699 | 0.6−  | 0.1−  |
| 2001 02 20 | 704 | 0.0   | 0.1+  | 2001 03 29 | 704 | 0.5+  | 0.1−  |            |     |       |       |
| 2001 02 20 | 645 | 0.2−  | 0.2−  | 2001 03 29 | 704 | 0.2+  | 0.6+  |            |     |       |       |

**(171785)\* 2001 BK<sub>70</sub> = 2003 SH<sub>175</sub>**

Discovered 2001 Jan. 25 by W. G. Dillon at George Observatory, Needville.

Id. M. E. Sansaturio (*MPO* 56195)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 322.64915  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26507566 | $\omega$ | 281.42733 | +0.00041385 | −0.99996966 |
| <i>a</i> | 2.4000640  | $\Omega$ | 168.54040 | +0.93207239 | −0.00243249 |
| <i>e</i> | 0.1462631  | <i>i</i> | 2.24401   | +0.36227185 | +0.00740076 |
| <i>P</i> | 3.72       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 25 | 735 | 0.2− | 0.7+ | 2005 03 09 | 699 | (0.2+ | 2.1+) | 2007 10 30 | 691 | 0.1−  | 0.1−  |
| 2001 01 25 | 735 | 0.0  | 0.1− | 2005 03 09 | 699 | (1.0− | 2.1+) | 2007 10 30 | 691 | 0.2−  | 0.1+  |
| 2001 01 25 | 735 | 0.2+ | 0.0  | 2005 03 17 | 683 | 0.9+  | 0.1−  | 2007 11 04 | 704 | 0.3+  | 0.4+  |
| 2001 01 29 | 704 | 1.3+ | 0.2− | 2005 03 17 | 683 | 0.6−  | 0.7+  | 2007 11 04 | 704 | 0.2−  | 0.7+  |
| 2001 01 29 | 704 | 0.4+ | 0.3− | 2005 03 17 | 683 | (2.8− | 0.3+) | 2007 11 04 | 704 | 0.1+  | 0.7−  |
| 2001 01 29 | 704 | 0.1− | 0.0  | 2007 10 07 | G96 | 0.3+  | 0.3−  | 2007 11 04 | 704 | 0.1−  | 0.6+  |
| 2001 02 01 | 684 | 0.2+ | 0.0  | 2007 10 07 | G96 | 0.4+  | 0.1−  | 2007 11 04 | 704 | (1.0+ | 1.6+) |
| 2001 02 01 | 684 | 0.5+ | 0.3− | 2007 10 07 | G96 | 0.0   | 0.2−  | 2007 11 04 | G96 | 0.4+  | 0.5−  |
| 2001 02 02 | 704 | 0.8− | 1.0+ | 2007 10 07 | G96 | 0.7+  | 0.4−  | 2007 11 04 | G96 | 0.0   | 0.4−  |
| 2001 02 02 | 704 | 0.0  | 0.1− | 2007 10 08 | 691 | 0.4−  | 0.2−  | 2007 11 04 | G96 | 0.4+  | 0.5−  |
| 2001 02 02 | 704 | 1.4− | 0.1− | 2007 10 08 | 691 | 0.5+  | 0.1−  | 2007 11 04 | G96 | 0.4+  | 0.7−  |
| 2001 02 02 | 704 | 1.1− | 0.3+ | 2007 10 08 | 691 | 0.2−  | 0.1+  | 2007 11 05 | G96 | 0.3+  | 0.3−  |
| 2001 02 02 | 704 | 0.2+ | 0.2− | 2007 10 12 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.0   | 0.4−  |
| 2001 02 02 | 684 | 0.2+ | 0.1− | 2007 10 12 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.2+  | 0.4−  |
| 2001 02 02 | 684 | 0.5+ | 0.3− | 2007 10 12 | 691 | 0.0   | 0.0   | 2007 11 05 | G96 | 0.4+  | 0.3−  |
| 2003 09 18 | 691 | 0.0  | 0.3+ | 2007 10 15 | 703 | 0.7+  | 0.5−  | 2007 11 07 | 703 | 0.1−  | 1.0+  |
| 2003 09 18 | 691 | 0.2− | 0.2+ | 2007 10 15 | 703 | (1.6+ | 0.3−) | 2007 11 07 | 703 | 0.6−  | 0.0   |
| 2003 09 18 | 691 | 0.2− | 0.2+ | 2007 10 15 | 703 | 0.6+  | 0.7−  | 2007 11 07 | 703 | 0.1−  | 0.1−  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 22 | 699 | 0.1+  | 0.6−  | 2007 10 15 | 703 | 0.2+ | 0.2+ | 2007 11 07 | 703 | 0.7−  | 0.2+  |
| 2003 09 22 | 699 | 0.2−  | 0.8+  | 2007 10 16 | 691 | 0.2− | 0.2− | 2007 11 09 | G96 | 0.3+  | 0.4−  |
| 2003 09 22 | 699 | (1.6+ | 0.2−) | 2007 10 16 | 691 | 0.3− | 0.2− | 2007 11 09 | G96 | 0.4+  | 0.3−  |
| 2003 09 22 | 699 | (1.7− | 0.6−) | 2007 10 16 | 691 | 0.2− | 0.3− | 2007 11 09 | G96 | 0.5+  | 0.2−  |
| 2003 09 29 | 691 | 0.1+  | 0.4+  | 2007 10 20 | 691 | 0.2− | 0.5+ | 2007 11 09 | G96 | 0.1+  | 0.3−  |
| 2003 09 29 | 691 | 0.4−  | 0.6+  | 2007 10 20 | 703 | 0.5+ | 0.1+ | 2007 11 11 | 699 | (1.7+ | 0.4+) |
| 2003 09 29 | 691 | 0.1−  | 0.5+  | 2007 10 20 | 691 | 0.0  | 0.0  | 2007 11 11 | 699 | 0.4+  | 0.6−  |
| 2003 10 22 | 695 | 0.5−  | 0.3+  | 2007 10 20 | 703 | 1.0− | 0.1+ | 2007 11 11 | 699 | 0.7+  | 0.2−  |
| 2003 10 22 | 695 | 0.4−  | 0.2+  | 2007 10 20 | 703 | 0.1− | 0.5+ | 2007 11 11 | 699 | (0.4+ | 1.8−) |
| 2005 03 03 | 691 | 0.2+  | 0.2+  | 2007 10 20 | 691 | 0.0  | 0.4− | 2007 11 14 | 704 | 0.5+  | 1.1+  |
| 2005 03 03 | 691 | 0.0   | 0.2+  | 2007 10 20 | 703 | 0.4− | 0.5− | 2007 11 14 | 704 | 0.0   | 0.7+  |
| 2005 03 03 | 691 | 0.2−  | 0.3+  | 2007 10 21 | 704 | 0.1+ | 1.3+ | 2007 11 14 | 704 | 0.2+  | 0.6+  |
| 2005 03 08 | 704 | 1.1+  | 1.3+  | 2007 10 21 | 704 | 1.2+ | 0.2+ | 2007 11 14 | 704 | 0.1+  | 0.2+  |
| 2005 03 08 | 704 | 1.0+  | 1.1+  | 2007 10 21 | 704 | 0.3+ | 0.6+ | 2007 11 14 | 704 | 0.4+  | 0.4+  |
| 2005 03 08 | 704 | 0.3−  | 1.2+  | 2007 10 28 | H55 | 0.3− | 0.1− | 2007 12 05 | 704 | 0.6+  | 0.1+  |
| 2005 03 08 | 704 | 0.8+  | 1.0+  | 2007 10 28 | H55 | 0.0  | 0.1− | 2007 12 05 | 704 | 0.4−  | 2.0−  |
| 2005 03 09 | 699 | (0.1− | 2.1+) | 2007 10 28 | H55 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.4+  | 1.8+  |
| 2005 03 09 | 699 | (1.0+ | 2.6+) | 2007 10 30 | 691 | 0.2− | 0.2− | 2007 12 05 | 704 | 0.9−  | 0.8+  |

**(171786)\* 2001 BF<sub>83</sub> = 2005 JA<sub>158</sub>**

Discovered 2001 Jan. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 107899)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 301.22973  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27211065 | $\omega$ | 202.23413 | −0.85112315 | −0.51518584 |
| <i>a</i> | 2.3585170  | $\Omega$ | 306.36278 | +0.49853221 | −0.73300960 |
| <i>e</i> | 0.1185705  | <i>i</i> | 7.19518   | +0.16448410 | −0.44416267 |
| <i>P</i> | 3.62       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 21 | 704 | 0.8+ | 0.7+ | 2003 10 19 | 644 | 0.0  | 0.4− | 2006 09 17 | 691 | 0.0  | 0.3+ |
| 2001 01 21 | 704 | 0.7+ | 1.0+ | 2003 12 18 | 291 | 0.1+ | 0.4+ | 2006 09 17 | 691 | 0.0  | 0.3+ |
| 2001 01 21 | 704 | 0.1+ | 0.7− | 2003 12 18 | 291 | 0.1− | 0.1+ | 2006 09 17 | 691 | 0.3− | 0.4+ |
| 2001 01 21 | 704 | 0.1− | 0.6+ | 2003 12 18 | 291 | 0.0  | 0.3+ | 2006 09 19 | 691 | 0.1− | 0.1− |
| 2001 01 31 | 704 | 1.0− | 0.0  | 2005 05 05 | 644 | 0.0  | 0.3+ | 2006 09 19 | 691 | 0.0  | 0.2+ |
| 2001 01 31 | 704 | 0.4+ | 0.6+ | 2005 05 05 | 644 | 0.4+ | 0.1+ | 2006 09 19 | 691 | 0.1+ | 0.0  |
| 2001 01 31 | 704 | 1.1− | 0.6+ | 2005 05 05 | 644 | 0.1− | 0.5+ | 2007 12 13 | 704 | 0.3− | 0.7+ |
| 2001 01 31 | 704 | 0.7+ | 0.6+ | 2005 05 11 | 644 | 0.2− | 0.2+ | 2007 12 13 | 704 | 0.8− | 0.1+ |
| 2001 02 19 | 704 | 1.0+ | 0.3− | 2005 05 11 | 644 | 0.2+ | 0.3+ | 2007 12 13 | 704 | 1.5− | 0.4+ |
| 2001 02 19 | 704 | 0.2+ | 0.0  | 2005 05 11 | 644 | 0.3+ | 0.6+ | 2007 12 13 | 704 | 1.4− | 0.7− |
| 2001 02 19 | 704 | 0.1+ | 0.0  | 2006 08 29 | 691 | 0.1− | 0.2+ | 2007 12 15 | 704 | 1.1+ | 0.4+ |
| 2003 10 03 | 691 | 0.0  | 0.3− | 2006 08 29 | 691 | 0.3− | 0.3+ | 2007 12 15 | 704 | 0.6+ | 0.1+ |
| 2003 10 03 | 691 | 0.1− | 0.3− | 2006 08 29 | 691 | 0.1− | 0.4+ | 2007 12 15 | 704 | 0.9+ | 0.3+ |
| 2003 10 03 | 691 | 0.1− | 0.3− | 2006 09 15 | 691 | 0.1+ | 0.5− | 2007 12 15 | 704 | 1.0+ | 0.4+ |
| 2003 10 19 | 644 | 0.1+ | 0.3− | 2006 09 15 | 691 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.9+ | 0.2+ |
| 2003 10 19 | 644 | 0.3+ | 0.3− | 2006 09 15 | 691 | 0.0  | 0.1− |            |     |      |      |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 04 | 704 | 0.1+  | 0.6+  | 2003 10 15 | 683 | (0.1+ | 1.6+) | 2005 04 15 | 691 | 0.6+  | 0.2+  |
| 2001 01 04 | 704 | 0.6-  | 1.0-  | 2003 10 15 | 683 | (0.0  | 1.8+) | 2005 04 15 | 691 | 1.2+  | 0.1+  |
| 2001 01 04 | 704 | 0.0   | 0.3+  | 2003 10 20 | 704 | 0.3-  | 0.4+  | 2005 04 18 | 703 | 1.3-  | 0.5-  |
| 2001 01 19 | 704 | 0.2-  | 0.5+  | 2003 10 20 | 704 | 0.0   | 0.7+  | 2005 04 18 | 703 | (1.6- | 0.0 ) |
| 2001 01 19 | 704 | 0.0   | 0.4+  | 2003 10 20 | 704 | 0.2-  | 1.4+  | 2005 04 18 | 703 | (2.6+ | 1.7-) |
| 2001 01 19 | 704 | 0.3+  | 0.1-  | 2003 10 20 | 704 | 0.5+  | 0.4+  | 2005 04 18 | 703 | 0.9-  | 0.4-  |
| 2001 01 19 | 704 | 0.5+  | 0.2+  | 2003 10 20 | 704 | 0.4+  | 0.4+  | 2007 11 05 | 704 | 0.3+  | 0.5+  |
| 2001 01 19 | 704 | 0.4-  | 0.3-  | 2003 10 21 | 691 | 0.1-  | 0.2+  | 2007 11 05 | 704 | 0.6-  | 0.6-  |
| 2001 01 19 | 704 | 0.5+  | 0.1+  | 2003 10 21 | 691 | 0.1-  | 0.3+  | 2007 11 05 | 704 | 0.2-  | 0.1-  |
| 2001 02 01 | 704 | 0.3+  | 0.3-  | 2003 10 21 | 691 | 0.3-  | 0.2+  | 2007 11 11 | 699 | 0.1+  | 1.4-  |
| 2001 02 01 | 704 | 0.5+  | 0.0   | 2003 10 22 | 645 | 0.1-  | 0.0   | 2007 11 11 | 699 | 0.1+  | 0.1-  |
| 2001 02 01 | 704 | 0.1+  | 0.1-  | 2003 10 22 | 645 | 0.0   | 0.0   | 2007 11 11 | 699 | 0.8+  | 0.3+  |
| 2001 02 01 | 704 | 0.1+  | 0.2+  | 2003 10 23 | 645 | 0.1-  | 0.0   | 2007 11 11 | 699 | 0.5+  | 0.2-  |
| 2001 02 02 | 704 | 0.4-  | 0.2-  | 2003 10 23 | 645 | 0.0   | 0.0   | 2007 11 14 | 704 | (0.8- | 1.6-) |
| 2001 02 02 | 704 | 0.3+  | 0.0   | 2003 11 19 | 644 | 0.0   | 0.5+  | 2007 11 14 | 704 | 0.2-  | 0.5+  |
| 2001 02 02 | 704 | 0.1-  | 0.1+  | 2003 11 19 | 644 | 0.2-  | 0.3+  | 2007 11 14 | 704 | 0.1+  | 0.6+  |
| 2001 02 02 | 704 | 0.4-  | 0.2-  | 2003 11 19 | 644 | 0.7-  | 0.2+  | 2007 11 14 | 704 | 0.1+  | 0.9-  |
| 2001 02 02 | 704 | 0.4-  | 0.3+  | 2003 11 28 | 699 | 0.4-  | 0.1-  | 2007 11 14 | 704 | 0.5+  | 0.3+  |
| 2001 02 19 | 699 | (1.6- | 0.1+) | 2003 11 28 | 699 | 0.9-  | 1.0+  | 2007 12 03 | 703 | 1.1-  | 0.7-  |
| 2001 02 19 | 699 | 0.4-  | 0.5+  | 2003 11 28 | 699 | 0.2+  | 0.2-  | 2007 12 03 | 703 | 0.1-  | 0.3-  |
| 2001 02 19 | 699 | 0.4-  | 0.5+  | 2003 11 28 | 699 | (0.1+ | 1.9+) | 2007 12 03 | 703 | 0.5-  | 0.1-  |
| 2001 02 19 | 699 | 0.9-  | 0.0   | 2003 12 22 | 704 | 1.5+  | 1.3-  | 2007 12 03 | 703 | 1.5-  | 1.0-  |
| 2001 03 04 | 704 | 0.5-  | 0.2+  | 2003 12 22 | 704 | 1.2+  | 0.2+  | 2007 12 05 | 704 | 0.0   | 0.3+  |
| 2001 03 04 | 704 | 0.7+  | 0.3-  | 2003 12 22 | 704 | 0.5+  | 0.2+  | 2007 12 05 | 704 | 1.0+  | 1.5+  |
| 2001 03 04 | 704 | 0.0   | 0.1+  | 2005 02 01 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 704 | 0.6+  | 0.1-  |
| 2001 03 04 | 704 | 0.4+  | 1.1+  | 2005 02 01 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.7+  | 0.6+  |
| 2001 03 19 | 704 | 0.0   | 0.8-  | 2005 02 01 | 691 | 0.8+  | 0.5+  | 2007 12 14 | 704 | 0.1-  | 0.2+  |
| 2001 03 19 | 704 | 0.4+  | 0.6+  | 2005 04 09 | 704 | 0.2+  | 0.8+  | 2007 12 14 | G96 | 0.4-  | 0.6-  |
| 2001 03 19 | 704 | 0.4+  | 0.1-  | 2005 04 09 | 704 | 0.1+  | 0.6+  | 2007 12 14 | G96 | 0.1+  | 0.6-  |
| 2001 03 19 | 704 | 0.4-  | 0.2-  | 2005 04 09 | 704 | 0.0   | 1.3+  | 2007 12 14 | G96 | 0.2-  | 0.7-  |
| 2003 09 28 | 699 | 0.0   | 0.8+  | 2005 04 09 | 704 | 0.5+  | 1.3+  | 2007 12 14 | 704 | 0.1-  | 0.8-  |
| 2003 09 28 | 699 | 0.0   | 0.0   | 2005 04 10 | 691 | 0.0   | 0.4+  | 2007 12 14 | G96 | 0.2+  | 0.5-  |
| 2003 09 28 | 699 | 0.1-  | 0.3+  | 2005 04 10 | 691 | 0.2-  | 0.5+  | 2007 12 14 | 704 | 0.2+  | 1.4+  |

**(171788)\* 2001 CR<sub>3</sub>**

Discovered 2001 Feb. 1 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC      |           |             |             |
|-----------------------------|------------|----------|-----------|-------------|-------------|
| <i>M</i>                    | 356.83287  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i>                    | 0.27346885 | $\omega$ | 79.71167  | +0.20412263 | -0.97894132 |
| <i>a</i>                    | 2.3507014  | $\Omega$ | 358.50152 | +0.85099786 | +0.17885818 |
| <i>e</i>                    | 0.2212108  | <i>i</i> | 6.15184   | +0.48387663 | +0.09840555 |
| <i>P</i>                    | 3.60       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
| Residuals in seconds of arc |            |          |           | <i>U</i>    | 0           |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 19 | 704 | 0.4+ | 0.7+ | 2003 09 19 | 704 | 0.1-  | 1.5+  | 2003 10 21 | 683 | 0.6-  | 1.0+  |
| 2001 01 19 | 704 | 0.7- | 1.2+ | 2003 09 19 | 704 | (0.7- | 2.5+) | 2003 10 21 | 683 | 0.3-  | 0.5-  |
| 2001 01 19 | 704 | 0.2+ | 1.4+ | 2003 09 26 | 704 | 0.2-  | 0.0   | 2003 10 21 | 683 | 0.8+  | 0.0   |
| 2001 01 19 | 704 | 0.9- | 1.1- | 2003 09 26 | 704 | 0.1+  | 1.3+  | 2003 10 23 | 683 | (0.6+ | 1.9-) |
| 2001 02 01 | 704 | 0.4+ | 0.7+ | 2003 09 26 | 704 | 0.1+  | 0.8+  | 2003 10 23 | 683 | (0.1+ | 1.7-) |
| 2001 02 01 | 704 | 0.1+ | 0.1+ | 2003 09 26 | 704 | 0.1+  | 0.3+  | 2003 10 23 | 683 | (0.7- | 2.0-) |
| 2001 02 01 | 704 | 0.2- | 0.3+ | 2003 09 26 | 704 | 0.3-  | 0.4+  | 2003 10 24 | 704 | 0.0   | 0.3+  |
| 2001 02 01 | 704 | 0.8- | 0.3- | 2003 09 29 | 704 | 1.3-  | 0.0   | 2003 10 24 | 683 | 0.4+  | 0.9+  |
| 2001 02 01 | 704 | 0.3+ | 0.2- | 2003 09 29 | 704 | (1.7- | 0.3-) | 2003 10 24 | 704 | 0.3-  | 0.5+  |
| 2001 02 02 | 704 | 0.7+ | 0.2- | 2003 09 29 | 704 | (1.6- | 0.1+) | 2003 10 24 | 683 | 0.3-  | 0.3+  |
| 2001 02 02 | 704 | 0.0  | 0.0  | 2003 09 29 | 704 | 1.5-  | 0.2-  | 2003 10 24 | 704 | 0.6-  | 0.2+  |
| 2001 02 02 | 704 | 0.6+ | 0.8- | 2003 09 29 | 704 | 1.2-  | 0.1-  | 2003 10 24 | 683 | 0.8-  | 0.7+  |
| 2001 02 02 | 704 | 0.9- | 0.4+ | 2003 10 01 | 699 | 0.6-  | 0.4+  | 2003 10 24 | 704 | 0.2-  | 0.7+  |
| 2001 02 02 | 704 | 0.1- | 0.9+ | 2003 10 01 | 699 | 0.3-  | 0.9-  | 2003 11 20 | 704 | 0.5+  | 0.8+  |
| 2001 02 17 | 704 | 0.0  | 0.7+ | 2003 10 01 | 699 | 0.1+  | 0.2+  | 2003 11 20 | 704 | 0.3+  | 1.3+  |
| 2001 02 17 | 704 | 0.1+ | 0.2+ | 2003 10 01 | 699 | 0.0   | 0.1+  | 2003 11 20 | 704 | 0.7+  | 1.0+  |
| 2001 02 17 | 704 | 0.5- | 0.1+ | 2003 10 04 | 608 | 0.5-  | 0.2-  | 2003 11 20 | 704 | (1.0+ | 2.1+) |
| 2001 02 17 | 704 | 0.4- | 0.0  | 2003 10 04 | 608 | 0.0   | 0.2-  | 2003 11 24 | 704 | 0.6+  | 1.2+  |
| 2001 02 17 | 704 | 0.3- | 0.2+ | 2003 10 04 | 608 | 0.2-  | 0.1+  | 2003 11 24 | 704 | 0.2+  | 0.4-  |
| 2001 02 20 | 704 | 0.0  | 0.0  | 2003 10 06 | 699 | 0.2+  | 1.0+  | 2003 11 24 | 704 | 0.4-  | 0.3+  |
| 2001 02 20 | 704 | 0.5+ | 0.2+ | 2003 10 06 | 699 | 0.1-  | 0.0   | 2003 11 24 | 704 | 0.0   | 0.9+  |
| 2001 02 20 | 704 | 0.6+ | 0.6- | 2003 10 06 | 699 | 0.7-  | 0.3+  | 2005 03 15 | G96 | 0.3-  | 0.4+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 20 | 704 | 0.3+  | 0.2-  | 2003 10 06 | 699 | 0.4-  | 0.3+  | 2005 03 15 | G96 | 0.4-  | 0.1+  |
| 2001 02 20 | 704 | 0.3+  | 0.1-  | 2003 10 16 | 644 | 0.0   | 0.4+  | 2005 03 15 | G96 | 0.2+  | 0.1+  |
| 2001 03 03 | 691 | 0.1+  | 0.3+  | 2003 10 16 | 644 | 0.2+  | 0.3+  | 2005 03 15 | G96 | 0.2+  | 0.4+  |
| 2001 03 03 | 691 | 0.2+  | 0.3+  | 2003 10 16 | 644 | 0.1+  | 0.3+  | 2005 04 15 | 691 | 0.6+  | 0.6+  |
| 2001 03 03 | 691 | 0.2+  | 0.1+  | 2003 10 17 | 683 | 0.4+  | 1.2-  | 2005 04 15 | 691 | 0.3+  | 0.6+  |
| 2001 03 14 | 699 | 0.1+  | 0.1+  | 2003 10 17 | 683 | 0.0   | 0.5-  | 2005 04 15 | 691 | 0.2+  | 0.5+  |
| 2001 03 14 | 699 | (0.3- | 1.8+) | 2003 10 17 | 683 | 0.3-  | 0.6-  | 2007 11 08 | 704 | 0.2-  | 1.1+  |
| 2001 03 14 | 699 | 0.2+  | 0.0   | 2003 10 18 | 683 | (0.2- | 1.5-) | 2007 11 08 | 704 | 0.5+  | 0.0   |
| 2001 03 14 | 699 | 0.4+  | 0.5+  | 2003 10 18 | 683 | 0.1+  | 1.4-  | 2007 11 08 | 704 | 0.1+  | 0.5+  |
| 2001 03 19 | 704 | 0.8+  | 0.1+  | 2003 10 18 | 683 | 0.5-  | 0.9-  | 2007 11 08 | 704 | 0.2-  | 0.4-  |
| 2001 03 19 | 704 | 0.3+  | 0.7-  | 2003 10 19 | 683 | 0.4+  | 1.4-  | 2007 11 08 | 704 | 0.2+  | 0.1-  |
| 2001 03 19 | 704 | 0.0   | 0.1+  | 2003 10 19 | 683 | (0.0  | 2.5-) | 2007 11 17 | 704 | 0.4-  | 0.4-  |
| 2001 03 19 | 704 | (0.9+ | 1.6+) | 2003 10 19 | 683 | 0.8-  | 1.1-  | 2007 11 17 | 704 | 0.5-  | 0.0   |
| 2003 09 16 | 699 | 0.2-  | 0.4-  | 2003 10 19 | 049 | 0.1-  | 0.4-  | 2007 11 17 | 704 | 0.4-  | 0.4-  |
| 2003 09 16 | 699 | 0.1+  | 0.4+  | 2003 10 19 | 049 | 0.3+  | 0.0   | 2007 11 17 | 704 | 0.3+  | 0.2-  |
| 2003 09 16 | 699 | 0.1-  | 0.3-  | 2003 10 19 | 049 | 0.0   | 0.3-  | 2007 11 17 | 704 | 0.0   | 0.2-  |
| 2003 09 16 | 699 | 0.6-  | 0.3-  | 2003 10 20 | 704 | 1.1-  | 0.7+  | 2007 12 02 | 704 | 0.4+  | 0.1-  |
| 2003 09 17 | 333 | 0.3+  | 0.1-  | 2003 10 20 | 704 | 1.2-  | 0.5+  | 2007 12 02 | 704 | 1.5+  | 0.8+  |
| 2003 09 17 | 333 | 0.6-  | 0.3+  | 2003 10 20 | 704 | (1.6- | 0.9+) | 2007 12 02 | 704 | 0.2-  | 0.2+  |
| 2003 09 17 | 333 | 0.0   | 0.7+  | 2003 10 20 | 704 | 0.4-  | 0.4-  | 2007 12 02 | 704 | (1.8+ | 0.3+) |
| 2003 09 18 | 691 | 0.0   | 0.4+  | 2003 10 20 | 683 | 0.3+  | 0.2+  | 2007 12 02 | 704 | 0.4+  | 1.6+  |
| 2003 09 18 | 608 | 0.1+  | 0.8-  | 2003 10 20 | 704 | 0.2+  | 0.0   | 2007 12 05 | 699 | 0.7-  | 0.8-  |
| 2003 09 18 | 691 | 0.1+  | 0.3+  | 2003 10 20 | 683 | (1.9+ | 0.9-) | 2007 12 05 | 699 | 0.5-  | 0.6-  |
| 2003 09 18 | 608 | 0.0   | 0.8-  | 2003 10 20 | 704 | 0.1+  | 0.5-  | 2007 12 05 | 699 | 0.6-  | 0.6-  |
| 2003 09 18 | 608 | 0.3+  | 0.7-  | 2003 10 20 | 683 | (1.9- | 0.5-) | 2007 12 05 | 699 | 0.5-  | 0.3-  |
| 2003 09 18 | 691 | 0.2+  | 0.4+  | 2003 10 20 | 704 | 0.7+  | 0.9+  | 2007 12 14 | D29 | 0.4-  | 0.4-  |
| 2003 09 19 | 704 | 0.2+  | 1.1+  | 2003 10 20 | 704 | 0.8+  | 0.4+  | 2007 12 14 | D29 | 0.3+  | 1.2-  |
| 2003 09 19 | 704 | (0.0  | 1.9+) | 2003 10 20 | 704 | 0.5+  | 0.5-  | 2007 12 14 | D29 | 0.3+  | 0.4-  |
| 2003 09 19 | 704 | (1.1- | 1.6+) | 2003 10 20 | 704 | 0.6+  | 0.5-  |            |     |       |       |

**(171789)\* 2001 CJs**

Discovered 2001 Feb. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC      |          |             |             |
|-----------------------------|------------|----------|----------|-------------|-------------|
| <i>M</i>                    | 278.18883  | (2000.0) | <b>P</b> | <b>Q</b>    |             |
| <i>n</i>                    | 0.26418441 | $\omega$ | 90.59888 | -0.94549017 | -0.32079767 |
| <i>a</i>                    | 2.4054588  | $\Omega$ | 70.69100 | +0.27016895 | -0.86874413 |
| <i>e</i>                    | 0.1468160  | <i>i</i> | 3.40246  | +0.18181606 | -0.37732280 |
| <i>P</i>                    | 3.73       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        |
| Residuals in seconds of arc |            |          |          | <i>U</i>    | 0           |

|                             |     |       |       |            |     |      |      |            |     |       |       |
|-----------------------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| Residuals in seconds of arc |     |       |       |            |     |      |      |            |     |       |       |
| 2001 02 01                  | 704 | 0.0   | 0.3-  | 2001 03 23 | 699 | 0.4+ | 0.3- | 2005 04 13 | 704 | 0.1-  | 0.2-  |
| 2001 02 01                  | 704 | 0.3-  | 0.1+  | 2003 10 21 | 691 | 0.1- | 0.5+ | 2005 04 13 | 704 | 0.7+  | 0.5+  |
| 2001 02 01                  | 704 | 0.7+  | 0.1-  | 2003 10 21 | 691 | 0.1+ | 0.5+ | 2005 04 13 | 704 | 0.1-  | 0.5+  |
| 2001 02 02                  | 704 | 0.1-  | 0.1-  | 2003 10 21 | 691 | 0.2- | 0.5+ | 2005 04 13 | 704 | 0.5+  | 1.0+  |
| 2001 02 02                  | 704 | 0.2+  | 0.5-  | 2003 10 24 | 704 | 0.2- | 0.9- | 2005 04 13 | 704 | 0.2-  | 0.4+  |
| 2001 02 02                  | 704 | 0.4+  | 1.2+  | 2003 10 24 | 704 | 0.5- | 0.8+ | 2005 04 14 | 691 | 0.1+  | 0.2+  |
| 2001 02 16                  | 120 | (3.1+ | 0.3-) | 2003 10 24 | 704 | 0.3- | 0.1+ | 2005 04 14 | 691 | 0.2+  | 0.3+  |
| 2001 02 16                  | 120 | 0.5-  | 0.7-  | 2003 10 24 | 704 | 0.8+ | 0.8- | 2005 04 14 | 691 | 0.1-  | 0.2+  |
| 2001 02 16                  | 120 | 0.5+  | 1.1-  | 2003 11 30 | 691 | 0.1+ | 0.2+ | 2005 05 08 | 703 | 0.3+  | 0.6+  |
| 2001 02 17                  | 704 | 0.2-  | 0.3-  | 2003 11 30 | 691 | 0.4- | 0.4+ | 2005 05 08 | 703 | 0.7-  | 0.3-  |
| 2001 02 17                  | 704 | 0.0   | 0.3+  | 2003 11 30 | 691 | 0.1- | 0.0  | 2005 05 08 | 703 | 0.5-  | 0.6-  |
| 2001 02 17                  | 704 | 0.6-  | 0.1-  | 2005 03 16 | G96 | 0.3- | 0.3- | 2005 05 08 | 703 | 0.9-  | 0.6-  |
| 2001 02 17                  | 704 | 0.2-  | 0.2-  | 2005 03 16 | G96 | 0.2- | 0.2- | 2005 05 13 | 703 | (0.6+ | 1.8+) |
| 2001 02 17                  | 704 | 0.6-  | 0.4+  | 2005 03 16 | G96 | 0.4- | 0.2- | 2005 05 13 | 703 | 0.2+  | 0.1-  |
| 2001 02 17                  | 120 | 0.6+  | 0.9-  | 2005 03 16 | G96 | 0.5- | 0.0  | 2005 05 13 | 703 | 1.3-  | 1.4-  |
| 2001 02 17                  | 120 | (2.0+ | 1.4-) | 2005 04 01 | 699 | 0.6+ | 0.8+ | 2005 05 13 | 703 | 0.9-  | 0.5+  |
| 2001 02 17                  | 120 | (0.2- | 2.4-) | 2005 04 01 | 699 | 1.2- | 0.9- | 2005 05 14 | 691 | 0.1+  | 0.1-  |
| 2001 02 17                  | 120 | 0.2-  | 0.6-  | 2005 04 01 | 699 | 0.1- | 0.1- | 2005 05 14 | 691 | 0.1-  | 0.1-  |
| 2001 02 18                  | 120 | 0.4+  | 0.4-  | 2005 04 01 | 699 | 0.3+ | 0.7- | 2005 05 14 | 691 | 0.2+  | 0.1-  |
| 2001 02 18                  | 120 | (0.2+ | 1.5-) | 2005 04 02 | 691 | 0.2+ | 0.0  | 2005 05 18 | 644 | 0.2+  | 0.2+  |
| 2001 02 19                  | 699 | 0.4-  | 0.7+  | 2005 04 02 | 691 | 0.2+ | 0.0  | 2005 05 18 | 644 | 0.1-  | 0.0   |
| 2001 02 19                  | 699 | 1.2-  | 0.3-  | 2005 04 02 | 644 | 0.2- | 0.1- | 2005 05 18 | 644 | 0.0   | 0.2-  |
| 2001 02 19                  | 699 | 0.8-  | 0.0   | 2005 04 02 | 691 | 0.2+ | 0.0  | 2005 05 18 | 644 | 0.2+  | 0.1+  |
| 2001 02 19                  | 699 | 1.1-  | 0.2+  | 2005 04 02 | 644 | 0.6+ | 0.3+ | 2005 05 18 | 644 | 0.1-  | 0.0   |
| 2001 02 20                  | 704 | (1.8- | 2.0+) | 2005 04 02 | 644 | 0.6+ | 0.2+ | 2005 05 18 | 644 | 0.1-  | 0.1-  |
| 2001 02 20                  | 704 | 0.1-  | 0.1+  | 2005 04 05 | 703 | 0.8- | 0.7- | 2007 11 02 | 691 | 0.1+  | 0.1+  |

2007 DEC. 24

M.P.O. 129161

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 20 | 704 | 0.4−  | 0.1+  | 2005 04 05 | 704 | (2.3+ | 0.1−) | 2007 11 02 | 691 | 0.1+ | 0.1+ |
| 2001 02 20 | 704 | 0.1−  | 0.3−  | 2005 04 05 | 703 | 0.7−  | 0.6−  | 2007 11 02 | 691 | 0.3+ | 0.3+ |
| 2001 02 20 | 704 | (1.6− | 0.5−) | 2005 04 05 | 703 | 0.3−  | 0.9+  | 2007 11 19 | 691 | 0.6− | 0.2+ |
| 2001 03 14 | 699 | 0.2+  | 1.1+  | 2005 04 05 | 704 | 0.6+  | 0.2+  | 2007 11 19 | 691 | 0.3− | 0.4− |
| 2001 03 14 | 699 | 0.2+  | 1.0+  | 2005 04 05 | 703 | 0.1−  | 0.5−  | 2007 11 19 | 691 | 0.1− | 0.4− |
| 2001 03 14 | 699 | 0.1−  | 0.3+  | 2005 04 05 | 704 | 0.0   | 0.4+  | 2007 11 28 | D29 | 0.4+ | 1.3− |
| 2001 03 14 | 699 | 0.1+  | 0.7+  | 2005 04 05 | 704 | (0.2+ | 1.8+) | 2007 11 28 | D29 | 0.3+ | 0.3+ |
| 2001 03 19 | 704 | 0.1−  | 0.1−  | 2005 04 10 | 691 | 0.1+  | 0.0   | 2007 11 28 | D29 | 0.2− | 0.1+ |
| 2001 03 19 | 704 | 1.4+  | 0.3−  | 2005 04 10 | 691 | 0.1+  | 0.0   | 2007 11 28 | D29 | 1.1+ | 0.3− |
| 2001 03 19 | 704 | 0.7+  | 1.0+  | 2005 04 10 | 691 | 0.2+  | 0.1−  | 2007 12 05 | 704 | 0.4+ | 0.1− |
| 2001 03 19 | 608 | 0.6−  | 0.1+  | 2005 04 10 | 691 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.1− | 0.3− |
| 2001 03 19 | 704 | 0.8+  | 0.0   | 2005 04 10 | 691 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.2+ | 0.3− |
| 2001 03 19 | 608 | 0.1−  | 0.4+  | 2005 04 10 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.5+ | 0.1− |
| 2001 03 19 | 608 | 0.6−  | 0.0   | 2005 04 11 | 699 | 0.8+  | 0.4+  | 2007 12 14 | 704 | 0.0  | 0.5− |
| 2001 03 23 | 699 | 1.4+  | 0.3+  | 2005 04 11 | 699 | 0.4−  | 0.3+  | 2007 12 14 | 704 | 0.8+ | 0.6− |
| 2001 03 23 | 699 | 0.9+  | 0.2−  | 2005 04 11 | 699 | 0.2−  | 0.2−  | 2007 12 14 | 704 | 0.2− | 0.2+ |
| 2001 03 23 | 699 | 0.6+  | 0.4+  | 2005 04 11 | 699 | 0.2−  | 0.4+  |            |     |      |      |

(171790)\* 2001 CP<sub>14</sub>

Discovered 2001 Feb. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |  |  |  |             |  |  |  |             |  |  |  |
|-----------------------------------------|--|--|--|-------------|--|--|--|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |             |  |  |  |             |  |  |  |
| M                                       |  |  |  | P           |  |  |  | Q           |  |  |  |
| 23.70474                                |  |  |  | (2000.0)    |  |  |  |             |  |  |  |
| <i>n</i>                                |  |  |  | <i>ω</i>    |  |  |  | <i>Ω</i>    |  |  |  |
| 0.27461686                              |  |  |  | 2.80088     |  |  |  | +0.75074023 |  |  |  |
| <i>a</i>                                |  |  |  | <i>Ω</i>    |  |  |  | 38.54929    |  |  |  |
| 2.3441456                               |  |  |  | +0.60491974 |  |  |  | +0.66373641 |  |  |  |
| <i>e</i>                                |  |  |  | <i>i</i>    |  |  |  | 3.42353     |  |  |  |
| 0.2165703                               |  |  |  | +0.26544530 |  |  |  | +0.35277443 |  |  |  |
| <i>P</i>                                |  |  |  | <i>H</i>    |  |  |  | <i>U</i>    |  |  |  |
| 3.59                                    |  |  |  | 16.4        |  |  |  | 0.15        |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 04 | 704 | 0.6+  | 1.2+  | 2003 09 22 | 608 | (0.1+ | 2.3+) | 2005 05 09 | G96 | 0.3−  | 0.2−  |
| 2001 01 04 | 704 | 0.5+  | 0.7+  | 2003 09 28 | 704 | 0.4−  | 0.4+  | 2007 11 06 | G96 | 0.1+  | 0.5−  |
| 2001 01 04 | 704 | 0.4+  | 0.2+  | 2003 09 28 | 704 | 0.7−  | 0.7+  | 2007 11 06 | G96 | 0.1+  | 0.8−  |
| 2001 01 04 | 704 | (1.9+ | 0.9+) | 2003 09 28 | 704 | 0.4−  | 0.8+  | 2007 11 06 | G96 | 0.1−  | 0.4−  |
| 2001 01 19 | 704 | (0.4− | 1.5+) | 2003 09 28 | 704 | 0.6−  | 0.6+  | 2007 11 06 | G96 | 0.0   | 0.4−  |
| 2001 01 19 | 704 | 0.6+  | 1.1+  | 2003 09 28 | 704 | 0.5−  | 0.5+  | 2007 11 11 | G96 | 0.4−  | 0.4−  |
| 2001 01 19 | 704 | 0.4+  | 0.8+  | 2003 10 03 | 608 | 1.2+  | 1.4−  | 2007 11 11 | G96 | 0.4−  | 0.5−  |
| 2001 02 01 | 704 | 0.2+  | 0.0   | 2003 10 03 | 608 | 0.1+  | 0.1+  | 2007 11 11 | G96 | 0.5−  | 0.5−  |
| 2001 02 01 | 704 | 0.1−  | 0.1−  | 2003 10 03 | 608 | 0.0   | 0.0   | 2007 11 11 | G96 | 0.1−  | 0.6−  |
| 2001 02 01 | 704 | 0.1−  | 0.7+  | 2003 10 06 | 699 | 0.7+  | 0.1−  | 2007 11 15 | 704 | 0.2−  | 0.1+  |
| 2001 02 01 | 704 | 0.3+  | 0.1−  | 2003 10 06 | 699 | 0.3+  | 0.2+  | 2007 11 15 | 704 | 0.5−  | 0.0   |
| 2001 02 02 | 699 | 1.1−  | 0.8+  | 2003 10 06 | 699 | 0.3+  | 0.0   | 2007 11 15 | 704 | 0.4−  | 0.2−  |
| 2001 02 02 | 699 | 0.9−  | 0.3+  | 2003 10 06 | 699 | 0.7−  | 0.3−  | 2007 11 15 | 704 | 0.2−  | 0.1+  |
| 2001 02 02 | 699 | 1.4+  | 0.3+  | 2003 10 19 | 704 | 1.2−  | 0.4+  | 2007 11 18 | 704 | 0.6+  | 0.6−  |
| 2001 02 02 | 699 | 0.2−  | 1.3+  | 2003 10 19 | 704 | 1.1−  | 0.6+  | 2007 11 18 | 704 | 0.1+  | 0.1+  |
| 2001 02 03 | 704 | 0.3+  | 0.2+  | 2003 10 19 | 704 | 0.7−  | 0.7+  | 2007 11 18 | 704 | 0.6+  | 0.6−  |
| 2001 02 03 | 704 | 0.2−  | 0.2−  | 2003 10 19 | 704 | 1.4−  | 0.4+  | 2007 11 18 | 704 | (1.5+ | 0.4−) |
| 2001 02 03 | 704 | 0.6−  | 0.4+  | 2003 10 19 | 704 | 0.4−  | 1.0+  | 2007 11 18 | 704 | 1.3+  | 0.2−  |
| 2001 02 03 | 704 | 0.3+  | 0.5+  | 2003 10 24 | 704 | 0.2+  | 0.3+  | 2007 12 04 | 699 | 0.2−  | 0.8−  |
| 2001 02 03 | 704 | 0.0   | 0.8+  | 2003 10 24 | 704 | 0.4+  | 0.8+  | 2007 12 04 | 699 | 0.7−  | 0.1−  |
| 2001 02 17 | 704 | 0.5−  | 0.0   | 2003 10 24 | 704 | 0.1+  | 0.3+  | 2007 12 04 | 699 | 0.1−  | 0.3−  |
| 2001 02 17 | 704 | 1.1+  | 0.6−  | 2003 10 24 | 704 | 0.1+  | 0.3+  | 2007 12 04 | 699 | 0.3−  | 0.9−  |
| 2001 02 17 | 704 | 0.2+  | 0.9+  | 2003 10 24 | 704 | 0.2+  | 0.5+  | 2007 12 05 | 691 | 0.6−  | 0.4−  |
| 2001 02 17 | 704 | 0.4+  | 0.5−  | 2003 11 21 | 699 | 0.5−  | 1.1+  | 2007 12 05 | 691 | 0.7−  | 0.3−  |
| 2001 02 17 | 704 | 0.5+  | 0.1+  | 2003 11 21 | 699 | 1.1−  | 0.7+  | 2007 12 05 | 691 | 0.5−  | 0.4−  |
| 2003 09 02 | 704 | 0.3+  | 0.3+  | 2003 11 21 | 704 | 0.7+  | 0.6+  | 2007 12 06 | 704 | 0.3−  | 0.4+  |
| 2003 09 02 | 704 | 0.2+  | 0.5+  | 2003 11 21 | 699 | (1.9+ | 0.4−) | 2007 12 06 | 704 | 0.8−  | 0.4+  |
| 2003 09 02 | 704 | 0.2−  | 0.5+  | 2003 11 21 | 704 | 0.5−  | 0.8−  | 2007 12 06 | 704 | 0.0   | 0.1+  |
| 2003 09 02 | 704 | 0.3−  | 0.3+  | 2003 11 21 | 704 | 0.0   | 1.0+  | 2007 12 06 | 704 | 0.1−  | 0.9+  |
| 2003 09 02 | 704 | 1.2−  | 0.3+  | 2003 11 21 | 699 | 0.4+  | 0.7+  | 2007 12 06 | 704 | 0.8−  | 0.8+  |
| 2003 09 16 | 699 | 0.7+  | 0.2+  | 2003 11 21 | 704 | 1.0−  | 0.4+  | 2007 12 13 | 704 | 0.4−  | 0.5+  |
| 2003 09 16 | 699 | 0.1+  | 0.4+  | 2003 12 21 | 704 | 0.2+  | 0.1+  | 2007 12 13 | 704 | 0.4+  | 0.6+  |
| 2003 09 16 | 699 | 0.2+  | 0.1−  | 2003 12 21 | 704 | 0.3−  | 0.5+  | 2007 12 13 | 704 | 0.4−  | 0.2+  |
| 2003 09 16 | 699 | 0.1−  | 0.0   | 2003 12 21 | 704 | 0.5−  | 0.7+  | 2007 12 13 | 704 | 0.2+  | 0.3−  |
| 2003 09 18 | 333 | 0.2+  | 0.6+  | 2005 03 12 | 691 | 0.4+  | 0.4+  | 2007 12 13 | 704 | 0.0   | 0.4+  |
| 2003 09 18 | 333 | 0.2−  | 0.1−  | 2005 03 12 | 691 | 0.2+  | 0.4+  | 2007 12 15 | 704 | 1.3+  | 0.1+  |
| 2003 09 18 | 704 | 0.2+  | 0.1−  | 2005 03 12 | 691 | 0.4+  | 0.5+  | 2007 12 15 | 704 | 1.4+  | 0.7−  |
| 2003 09 18 | 333 | 0.0   | 0.1−  | 2005 03 16 | 691 | 0.0   | 0.4+  | 2007 12 15 | 704 | 1.8+  | 0.6−  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 704 | 0.8−  | 0.5+  | 2005 03 16 | 691 | 0.1− | 0.4+ | 2007 12 15 | 704 | 1.8+ | 0.1− |
| 2003 09 18 | 704 | 1.0+  | 0.8−  | 2005 03 16 | 691 | 0.1+ | 0.4+ | 2007 12 15 | 704 | 1.1+ | 0.0  |
| 2003 09 18 | 704 | 0.0   | 0.2−  | 2005 04 11 | G96 | 0.6+ | 0.3+ | 2007 12 16 | 704 | 0.1+ | 0.2− |
| 2003 09 18 | 704 | 0.4+  | 0.1+  | 2005 04 11 | G96 | 0.2− | 0.5+ | 2007 12 16 | 704 | 0.1+ | 0.5− |
| 2003 09 18 | 644 | 0.3−  | 0.0   | 2005 04 11 | G96 | 0.0  | 0.1− | 2007 12 16 | 704 | 0.6+ | 0.2− |
| 2003 09 18 | 644 | 0.2−  | 0.1+  | 2005 04 11 | G96 | 0.2+ | 0.6+ | 2007 12 16 | 704 | 0.2+ | 0.3− |
| 2003 09 18 | 644 | 0.4−  | 0.3+  | 2005 05 09 | G96 | 0.2− | 0.2− | 2007 12 16 | 704 | 0.3+ | 0.2− |
| 2003 09 22 | 608 | (0.2+ | 1.8+) | 2005 05 09 | G96 | 0.3− | 0.3− |            |     |      |      |
| 2003 09 22 | 608 | (0.2− | 1.7+) | 2005 05 09 | G96 | 0.0  | 0.5− |            |     |      |      |

(171791)\* 2001 CZ<sub>16</sub>

Discovered 2001 Feb. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |  |  |  |             |  |  |  |             |  |  |  |
|-----------------------------------------|--|--|--|-------------|--|--|--|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |             |  |  |  |             |  |  |  |
| M                                       |  |  |  | P           |  |  |  | Q           |  |  |  |
| 47.01249                                |  |  |  | (2000.0)    |  |  |  |             |  |  |  |
| <i>n</i>                                |  |  |  | <i>ω</i>    |  |  |  | <i>Ω</i>    |  |  |  |
| 0.26995219                              |  |  |  | 35.66706    |  |  |  | +0.97674920 |  |  |  |
| <i>a</i>                                |  |  |  | <i>Ω</i>    |  |  |  | 334.60148   |  |  |  |
| 2.3710724                               |  |  |  | +0.09419368 |  |  |  | +0.80614709 |  |  |  |
| <i>e</i>                                |  |  |  | <i>i</i>    |  |  |  | 13.81431    |  |  |  |
| 0.2588013                               |  |  |  | +0.19258387 |  |  |  | +0.56094070 |  |  |  |
| <i>P</i>                                |  |  |  | <i>H</i>    |  |  |  | <i>G</i>    |  |  |  |
| 3.65                                    |  |  |  | 15.4        |  |  |  | 0.15        |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.2+  | 0.7+  | 2003 10 02 | 704 | 1.0+ | 0.1+ | 2003 12 30 | 704 | 0.0  | 0.7− |
| 2001 01 04 | 704 | 0.3+  | 0.2+  | 2003 10 16 | 644 | 0.1+ | 0.1+ | 2003 12 30 | 704 | 0.2+ | 0.3+ |
| 2001 01 04 | 704 | 0.7+  | 0.3−  | 2003 10 16 | 644 | 0.2+ | 0.1+ | 2003 12 30 | 704 | 0.7+ | 0.1− |
| 2001 02 01 | 704 | 0.1+  | 0.6−  | 2003 10 16 | 644 | 0.3+ | 0.1+ | 2003 12 30 | 704 | 0.7+ | 0.9− |
| 2001 02 01 | 704 | 0.9+  | 1.2+  | 2003 10 22 | 699 | 0.1+ | 0.4+ | 2003 12 30 | 704 | 0.1+ | 0.8− |
| 2001 02 01 | 704 | 0.7+  | 0.1−  | 2003 10 22 | 699 | 0.5+ | 0.1− | 2004 01 13 | 703 | 0.6− | 0.4+ |
| 2001 02 01 | 704 | 0.8+  | 0.2+  | 2003 10 22 | 699 | 0.2+ | 0.3+ | 2004 01 13 | 703 | 0.2− | 0.6+ |
| 2001 02 03 | 704 | 0.3+  | 0.2−  | 2003 10 22 | 699 | 0.3+ | 0.0  | 2004 01 13 | 703 | 0.2− | 0.5+ |
| 2001 02 03 | 704 | 0.4+  | 1.0−  | 2003 10 23 | 704 | 0.3− | 0.6+ | 2004 01 13 | 703 | 0.4− | 0.6+ |
| 2001 02 03 | 704 | (2.0+ | 0.1−) | 2003 10 23 | 704 | 0.1− | 0.6+ | 2005 03 08 | 691 | 0.1− | 0.0  |
| 2001 02 17 | 704 | 0.2−  | 0.2+  | 2003 10 23 | 704 | 0.1− | 0.3+ | 2005 03 08 | 691 | 0.1− | 0.2+ |
| 2001 02 17 | 704 | 0.4+  | 1.0−  | 2003 10 23 | 704 | 0.1+ | 0.3+ | 2005 03 08 | 691 | 0.2+ | 0.2+ |
| 2001 02 17 | 704 | 0.7+  | 0.2+  | 2003 10 23 | 704 | 0.2+ | 0.2+ | 2005 03 10 | 703 | 0.1+ | 0.2+ |
| 2001 02 17 | 704 | 0.1−  | 0.3+  | 2003 11 03 | 704 | 0.2− | 0.1− | 2005 03 10 | 703 | 0.7+ | 0.2+ |
| 2001 02 17 | 704 | 0.5−  | 0.4+  | 2003 11 03 | 704 | 0.4+ | 0.0  | 2005 03 10 | 703 | 0.2+ | 0.4− |
| 2001 03 03 | 691 | 0.1−  | 0.5+  | 2003 11 03 | 704 | 0.5+ | 0.4− | 2005 03 10 | 703 | 0.1− | 0.5+ |
| 2001 03 03 | 691 | 0.3−  | 0.3+  | 2003 11 03 | 704 | 0.4+ | 0.3− | 2007 11 12 | 703 | 0.2− | 0.3− |
| 2001 03 03 | 691 | 0.3−  | 0.3−  | 2003 11 03 | 704 | 0.3+ | 0.2− | 2007 11 12 | 703 | 1.1− | 0.4+ |
| 2003 08 25 | 704 | 1.2−  | 0.4−  | 2003 11 21 | 644 | 0.3+ | 0.2+ | 2007 11 12 | 703 | 0.5− | 0.4+ |
| 2003 08 25 | 704 | (1.9− | 0.2+) | 2003 11 21 | 644 | 0.2+ | 0.2+ | 2007 11 12 | 703 | 0.3+ | 0.4− |
| 2003 08 25 | 704 | 1.2−  | 0.7−  | 2003 11 21 | 644 | 0.5+ | 0.1+ | 2007 11 15 | 699 | 0.1− | 0.4− |
| 2003 08 25 | 704 | (1.6− | 0.1+) | 2003 12 03 | 704 | 0.3− | 0.1− | 2007 11 15 | 699 | 1.1− | 0.5− |
| 2003 08 25 | 704 | (1.5− | 0.2+) | 2003 12 03 | 704 | 0.1+ | 0.1− | 2007 11 15 | 699 | 0.1+ | 1.2− |
| 2003 08 26 | 704 | 1.3−  | 1.0+  | 2003 12 03 | 704 | 0.2− | 0.2+ | 2007 11 15 | 699 | 0.2− | 0.1+ |
| 2003 08 26 | 704 | 0.7−  | 1.1+  | 2003 12 03 | 704 | 0.5+ | 0.3+ | 2007 12 03 | 704 | 1.1+ | 0.3+ |
| 2003 08 26 | 704 | 1.0−  | 0.7+  | 2003 12 17 | 704 | 1.0− | 0.5− | 2007 12 03 | 704 | 0.7+ | 0.3+ |
| 2003 08 26 | 704 | 1.0−  | 0.7+  | 2003 12 17 | 704 | 1.0− | 0.8− | 2007 12 03 | 704 | 0.3+ | 0.1+ |
| 2003 08 26 | 704 | 0.7−  | 1.1+  | 2003 12 17 | 704 | 0.2− | 1.2− | 2007 12 03 | 704 | 0.6+ | 0.0  |
| 2003 10 02 | 704 | 0.2+  | 0.0   | 2003 12 17 | 704 | 0.2− | 1.1− | 2007 12 03 | 704 | 0.1− | 0.2− |
| 2003 10 02 | 704 | 1.0+  | 0.4+  | 2003 12 17 | 704 | 1.1− | 0.9− |            |     |      |      |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 06 | 704 | 0.8−  | 0.2+  | 2005 03 15 | 691 | 0.1+  | 0.1+  | 2005 04 18 | 703 | 0.1+  | 0.1−  |
| 2001 01 06 | 704 | 0.2−  | 0.7+  | 2005 03 15 | 691 | 0.0   | 0.4−  | 2005 04 18 | 703 | (1.1− | 1.8−) |
| 2001 01 17 | 704 | 0.0   | 0.4−  | 2005 04 01 | 691 | 0.1+  | 0.1+  | 2005 04 18 | 704 | 0.9+  | 0.1−  |
| 2001 01 17 | 704 | 0.0   | 1.3−  | 2005 04 01 | 691 | 0.0   | 0.0   | 2005 04 18 | 704 | (0.9− | 1.8+) |
| 2001 01 17 | 704 | 1.0−  | 0.9−  | 2005 04 01 | 691 | 0.1+  | 0.1−  | 2005 04 18 | 704 | 0.4+  | 0.4+  |
| 2001 01 17 | 704 | 0.5−  | 1.1−  | 2005 04 01 | 699 | 0.2+  | 0.5+  | 2005 04 18 | 704 | 1.0−  | 0.6+  |
| 2001 02 13 | 704 | 0.7−  | 0.1+  | 2005 04 01 | 699 | 0.0   | 0.1−  | 2005 05 04 | 691 | 0.1+  | 0.1+  |
| 2001 02 13 | 704 | 0.1−  | 0.2−  | 2005 04 01 | 699 | 0.2−  | 0.6+  | 2005 05 04 | 691 | 0.0   | 0.2+  |
| 2001 02 13 | 704 | 0.6+  | 0.6+  | 2005 04 01 | 691 | 0.1+  | 0.1+  | 2005 05 04 | 691 | 0.1+  | 0.3+  |
| 2001 02 13 | 704 | 0.1−  | 0.4−  | 2005 04 01 | 691 | 0.1+  | 0.2+  | 2005 05 04 | G96 | 0.3−  | 0.1+  |
| 2001 02 15 | 704 | 0.2+  | 0.2−  | 2005 04 01 | 691 | 0.1+  | 0.0   | 2005 05 04 | G96 | 0.1−  | 0.0   |
| 2001 02 15 | 704 | 0.2+  | 0.8−  | 2005 04 01 | 699 | 0.0   | 0.4+  | 2005 05 04 | G96 | 0.2−  | 0.1+  |
| 2001 02 15 | 704 | 0.2+  | 0.0   | 2005 04 03 | 185 | 1.0−  | 0.4−  | 2005 05 04 | G96 | 0.2−  | 0.0   |
| 2001 02 15 | 704 | 0.3−  | 0.2+  | 2005 04 03 | 185 | 0.0   | 0.2−  | 2005 05 08 | 703 | 0.6−  | 0.3−  |
| 2001 02 15 | 704 | 0.9+  | 0.3+  | 2005 04 04 | 185 | 0.2−  | 0.3−  | 2005 05 08 | 703 | 0.1−  | 0.8−  |
| 2001 03 04 | 704 | (1.6− | 1.5+) | 2005 04 04 | 185 | 0.3−  | 0.2−  | 2005 05 08 | 703 | 0.6−  | 0.3−  |
| 2001 03 04 | 704 | 0.1−  | 0.5+  | 2005 04 04 | 704 | 1.1+  | 0.4+  | 2005 05 08 | 703 | 1.3−  | 0.6+  |
| 2001 03 04 | 704 | 1.1+  | 0.6+  | 2005 04 04 | 704 | 0.8+  | 0.5+  | 2007 11 02 | 704 | 0.3+  | 0.8−  |
| 2001 03 18 | 699 | 0.0   | 0.1+  | 2005 04 04 | 704 | 0.6+  | 0.4+  | 2007 11 02 | 704 | 0.2+  | 0.9+  |
| 2001 03 18 | 699 | 0.2+  | 0.7+  | 2005 04 04 | 704 | 0.8+  | 0.6+  | 2007 11 02 | 704 | 1.4−  | 0.0   |
| 2001 03 18 | 699 | 0.0   | 0.2+  | 2005 04 04 | 704 | (1.6+ | 0.4+) | 2007 11 02 | 704 | 0.4−  | 1.0−  |
| 2001 03 18 | 699 | (1.7− | 0.3−) | 2005 04 07 | 704 | 0.0   | 0.5+  | 2007 11 02 | 704 | 0.5+  | 0.4+  |
| 2003 09 29 | 691 | 0.5−  | 0.4+  | 2005 04 07 | 704 | 0.6−  | 0.2+  | 2007 11 08 | 704 | 0.7+  | 1.3+  |
| 2003 09 29 | 691 | 0.1−  | 0.4+  | 2005 04 07 | 704 | 0.5+  | 0.2−  | 2007 11 08 | 704 | 0.3+  | 0.3+  |
| 2003 09 29 | 691 | 0.2+  | 0.3+  | 2005 04 09 | 704 | 0.4+  | 0.6+  | 2007 11 08 | 704 | 0.4−  | 0.3+  |
| 2003 10 18 | 691 | 0.1−  | 0.3+  | 2005 04 09 | 704 | 0.8+  | 0.5+  | 2007 11 08 | 704 | 1.0−  | 0.4+  |
| 2003 10 18 | 691 | 0.3−  | 0.5+  | 2005 04 09 | 704 | 0.3+  | 0.2−  | 2007 11 08 | 704 | 0.7+  | 0.5+  |
| 2003 10 18 | 691 | 0.1+  | 0.2+  | 2005 04 09 | 704 | 0.2+  | 0.4+  | 2007 11 08 | 703 | 0.1−  | 0.8−  |
| 2003 10 21 | 644 | 0.1+  | 0.6+  | 2005 04 09 | 704 | 0.2+  | 0.9+  | 2007 11 08 | 703 | 0.3−  | 0.4−  |
| 2003 10 21 | 644 | 0.3−  | 0.3+  | 2005 04 11 | G96 | 0.2−  | 0.0   | 2007 11 08 | 703 | 0.5+  | 0.2−  |
| 2003 10 21 | 644 | 0.2+  | 0.3+  | 2005 04 11 | G96 | 0.3−  | 0.0   | 2007 11 08 | 703 | 0.7−  | 0.2+  |
| 2003 10 23 | 704 | 0.3−  | 0.9+  | 2005 04 11 | G96 | 0.0   | 0.2+  | 2007 11 09 | G96 | 0.4+  | 0.4−  |
| 2003 10 23 | 291 | 0.3−  | 0.2+  | 2005 04 11 | G96 | 0.3−  | 0.0   | 2007 11 09 | G96 | 0.0   | 0.2−  |
| 2003 10 23 | 704 | 1.2−  | 1.0+  | 2005 04 12 | 691 | 0.4+  | 0.5+  | 2007 11 09 | G96 | 0.2+  | 0.3−  |
| 2003 10 23 | 291 | 0.3−  | 0.0   | 2005 04 12 | 691 | 0.2+  | 0.4+  | 2007 12 02 | 704 | 0.4+  | 0.1−  |
| 2003 10 23 | 704 | (1.3− | 1.6−) | 2005 04 12 | 691 | 0.5+  | 0.4+  | 2007 12 02 | 704 | 0.5−  | 0.1+  |
| 2003 10 23 | 704 | 0.8−  | 1.1+  | 2005 04 12 | 704 | 0.0   | 0.4−  | 2007 12 02 | 704 | 0.1+  | 0.3−  |
| 2003 10 23 | 291 | 0.4−  | 0.2+  | 2005 04 12 | 704 | 0.1+  | 0.0   | 2007 12 02 | 704 | 0.2+  | 0.4−  |
| 2005 03 10 | 703 | 0.1+  | 1.0−  | 2005 04 12 | 704 | 0.6+  | 1.3−  | 2007 12 02 | 704 | 1.0+  | 0.4−  |
| 2005 03 10 | 703 | 0.6−  | 0.1+  | 2005 04 12 | 704 | 0.3−  | 0.3−  |            |     |       |       |
| 2005 03 10 | 703 | 0.4+  | 0.2−  | 2005 04 12 | 704 | 0.0   | 0.7−  |            |     |       |       |

**(171793)\* 2001 CW<sub>42</sub> = 2003 WC<sub>152</sub>**

Discovered 2001 Feb. 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 68904)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 313.53802  | <i>P</i> | (2000.0)  | <i>Q</i>    |             |
| <i>n</i> | 0.28155417 | $\omega$ | 23.79295  | −0.95991743 | −0.27276254 |
| <i>a</i> | 2.3054803  | $\Omega$ | 140.20076 | +0.23826781 | −0.91530136 |
| <i>e</i> | 0.0984253  | <i>i</i> | 5.78248   | +0.14760416 | −0.29635117 |
| <i>P</i> | 3.50       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 13 | 704 | 0.7−  | 1.1−  | 2003 11 29 | 291 | 0.2− | 0.1+ | 2005 06 13 | 691 | 0.2− | 0.1+ |
| 2001 02 13 | 704 | 0.8−  | 0.1−  | 2003 11 29 | 291 | 0.2− | 0.4+ | 2005 06 13 | 691 | 0.1+ | 0.2− |
| 2001 02 13 | 704 | 0.3+  | 1.2+  | 2003 11 29 | 291 | 0.2− | 0.3+ | 2007 11 18 | G96 | 0.1+ | 0.1+ |
| 2001 02 13 | 704 | (0.2− | 1.8+) | 2003 12 22 | 691 | 0.1+ | 0.3− | 2007 11 18 | G96 | 0.0  | 0.6− |
| 2001 02 13 | 704 | 0.1+  | 0.1+  | 2003 12 22 | 691 | 0.3+ | 0.2− | 2007 11 18 | G96 | 0.2− | 0.1− |
| 2001 02 16 | 699 | 0.2−  | 0.1−  | 2003 12 22 | 691 | 0.0  | 0.4+ | 2007 11 18 | G96 | 0.3+ | 0.3− |
| 2001 02 16 | 699 | 1.3+  | 0.9+  | 2005 05 03 | 691 | 0.2− | 0.1+ | 2007 11 19 | G96 | 0.3− | 0.1+ |
| 2001 02 16 | 699 | 0.4+  | 1.3+  | 2005 05 03 | 691 | 0.1− | 0.3+ | 2007 11 19 | G96 | 0.3− | 0.1+ |
| 2001 02 16 | 699 | (2.1− | 0.4+) | 2005 05 03 | 691 | 0.1− | 0.2+ | 2007 11 19 | G96 | 0.1− | 0.3− |
| 2001 02 19 | 704 | 0.9+  | 0.3−  | 2005 05 09 | 691 | 0.0  | 0.2− | 2007 11 19 | G96 | 0.1− | 0.1+ |
| 2001 02 19 | 704 | 0.2+  | 1.2−  | 2005 05 09 | 691 | 0.2+ | 0.0  | 2007 12 06 | G96 | 1.0+ | 0.3− |
| 2001 02 19 | 704 | 0.2+  | 0.8−  | 2005 05 09 | 691 | 0.1− | 0.2+ | 2007 12 06 | G96 | 0.3− | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 19 | 704 | 1.4− | 0.0  | 2005 05 13 | 691 | 0.3+ | 0.5+ | 2007 12 06 | G96 | 0.0  | 0.5− |
| 2003 11 26 | 691 | 0.1− | 0.7+ | 2005 05 13 | 691 | 0.3+ | 0.5+ | 2007 12 06 | G96 | 0.1− | 0.9− |
| 2003 11 26 | 691 | 0.1− | 0.7+ | 2005 05 13 | 691 | 0.3+ | 0.4+ |            |     |      |      |
| 2003 11 26 | 691 | 0.2− | 0.7+ | 2005 06 13 | 691 | 0.2− | 0.3+ |            |     |      |      |

**(171794)\* 2001 DM<sub>7</sub>**

Discovered 2001 Feb. 16 by T. Kobayashi at Oizumi.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 284.02679  | <i>P</i> | (2000.0)  | <i>Q</i>    |             |
| <i>n</i> | 0.26324544 | $\omega$ | 100.50043 | −0.94284874 | −0.32648855 |
| <i>a</i> | 2.4111754  | $\Omega$ | 60.47202  | +0.26785737 | −0.86155817 |
| <i>e</i> | 0.0927847  | <i>i</i> | 4.39274   | +0.19821375 | −0.38874508 |
| <i>P</i> | 3.74       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 16 | 411 | 0.8+  | 0.7+  | 2001 03 29 | 699 | 0.2+  | 0.1+  | 2005 04 05 | 703 | (1.9− | 0.4+) |
| 2001 02 16 | 411 | 0.0   | 0.8−  | 2001 03 31 | 704 | 0.1−  | 0.6+  | 2005 04 05 | 703 | 0.3+  | 0.0   |
| 2001 02 17 | 704 | 0.2+  | 0.0   | 2001 03 31 | 704 | 0.3−  | 0.3−  | 2005 04 06 | 691 | 0.1+  | 0.0   |
| 2001 02 17 | 704 | 0.7+  | 0.8−  | 2001 03 31 | 704 | 1.1−  | 0.8−  | 2005 04 06 | 691 | 0.1−  | 0.3+  |
| 2001 02 17 | 704 | 1.3−  | 0.7+  | 2001 03 31 | 704 | 1.1+  | 0.2−  | 2005 04 06 | 691 | 0.1−  | 0.1+  |
| 2001 02 17 | 704 | 0.8−  | 0.5−  | 2001 04 16 | 699 | 0.9−  | 0.5−  | 2005 04 07 | 704 | 0.2+  | 0.0   |
| 2001 02 17 | 704 | 0.0   | 1.4−  | 2001 04 16 | 699 | (1.6− | 1.2−) | 2005 04 07 | 704 | 1.0+  | 0.3+  |
| 2001 02 18 | 411 | 0.8+  | 0.4+  | 2001 04 16 | 699 | 0.5+  | 0.2+  | 2005 04 07 | 704 | 0.4−  | 0.5−  |
| 2001 02 18 | 411 | 0.7−  | 0.1+  | 2001 04 16 | 699 | 0.1+  | 0.7−  | 2005 04 18 | 691 | 0.3+  | 0.1−  |
| 2001 03 03 | 704 | 0.2+  | 0.3+  | 2003 11 16 | 703 | 0.0   | 0.9+  | 2005 04 18 | 691 | 0.3+  | 0.1−  |
| 2001 03 03 | 704 | 0.7+  | 0.2−  | 2003 11 16 | 703 | 0.0   | 0.4−  | 2005 04 18 | 691 | 0.4+  | 0.1+  |
| 2001 03 03 | 704 | 0.1+  | 0.0   | 2003 11 16 | 703 | 1.2+  | 1.2+  | 2005 04 18 | 608 | 0.3−  | 0.6+  |
| 2001 03 03 | 704 | 0.2+  | 0.1−  | 2003 11 16 | 703 | 1.4−  | 0.1+  | 2005 04 18 | 608 | 0.2+  | 1.4+  |
| 2001 03 03 | 704 | 0.0   | 0.6+  | 2003 11 18 | 691 | 0.1−  | 0.1−  | 2005 04 18 | 608 | 0.2+  | 0.7+  |
| 2001 03 15 | 608 | 0.5−  | 0.2+  | 2003 11 18 | 691 | 0.2−  | 0.1+  | 2005 05 12 | 691 | 0.2+  | 0.4+  |
| 2001 03 15 | 608 | 0.2+  | 0.1+  | 2003 11 18 | 691 | 0.1−  | 0.1+  | 2005 05 12 | 691 | 0.2+  | 0.1+  |
| 2001 03 15 | 608 | 0.1+  | 0.2−  | 2003 11 21 | 704 | 0.7+  | 0.5+  | 2005 05 12 | 691 | 0.1+  | 0.2+  |
| 2001 03 18 | 608 | 0.5+  | 1.0−  | 2003 11 21 | 704 | 0.3−  | 0.3−  | 2005 06 15 | G96 | 0.2+  | 0.0   |
| 2001 03 18 | 608 | 0.4+  | 0.5−  | 2003 11 21 | 704 | 0.5−  | 0.4+  | 2005 06 15 | G96 | 0.4+  | 1.0+  |
| 2001 03 18 | 608 | 0.3+  | 0.9−  | 2003 11 21 | 704 | 0.1+  | 0.5+  | 2005 06 15 | G96 | 0.9+  | 0.1−  |
| 2001 03 19 | 704 | 0.2+  | 0.5+  | 2003 11 28 | 691 | 0.4+  | 0.1+  | 2005 06 15 | G96 | 0.1−  | 0.0   |
| 2001 03 19 | 704 | 0.4−  | 0.8+  | 2003 11 28 | 691 | 0.1+  | 0.3+  | 2006 08 15 | 644 | 0.2−  | 0.4+  |
| 2001 03 19 | 704 | (1.5+ | 0.5−) | 2003 11 28 | 691 | 0.2+  | 0.3+  | 2006 08 15 | 644 | 0.4−  | 0.5+  |
| 2001 03 19 | 704 | (0.6− | 2.0−) | 2003 12 01 | 291 | 0.1+  | 0.2+  | 2006 08 15 | 644 | 0.4−  | 0.8+  |
| 2001 03 26 | 704 | 1.0−  | 0.2+  | 2003 12 01 | 291 | 0.2+  | 0.2+  | 2006 09 18 | 568 | 0.1−  | 0.6+  |
| 2001 03 26 | 704 | 0.7−  | 0.3+  | 2003 12 01 | 291 | 0.2−  | 0.2+  | 2006 09 18 | 568 | 0.1−  | 0.6+  |
| 2001 03 26 | 704 | 0.2+  | 1.1+  | 2003 12 21 | 704 | 0.4−  | 0.2−  | 2006 09 18 | 568 | 0.1−  | 0.5+  |
| 2001 03 26 | 704 | 0.0   | 1.0+  | 2003 12 21 | 704 | 0.4−  | 0.1−  | 2006 09 22 | 568 | 0.6−  | 0.3+  |
| 2001 03 26 | 704 | (1.1− | 1.6+) | 2003 12 21 | 704 | 0.5−  | 1.3+  | 2006 09 22 | 568 | 0.6−  | 0.3+  |
| 2001 03 26 | 608 | 0.0   | 0.1+  | 2003 12 21 | 704 | 0.1+  | 0.1−  | 2006 09 22 | 568 | 0.6−  | 0.3+  |
| 2001 03 26 | 608 | 0.2−  | 0.3−  | 2003 12 21 | 704 | 0.4+  | 0.3+  | 2007 12 10 | 704 | 0.1−  | 0.1−  |
| 2001 03 26 | 608 | 0.4+  | 0.5−  | 2003 12 22 | 691 | 0.4−  | 0.3−  | 2007 12 10 | 704 | 0.2−  | 0.3+  |
| 2001 03 27 | 699 | 0.6−  | 0.1+  | 2003 12 22 | 691 | 0.2−  | 0.8+  | 2007 12 10 | 704 | 0.3+  | 0.1−  |
| 2001 03 27 | 699 | 0.0   | 0.4+  | 2003 12 22 | 691 | 0.2−  | 0.3−  | 2007 12 10 | 704 | 0.5−  | 0.0   |
| 2001 03 27 | 699 | 0.4−  | 0.2+  | 2005 02 09 | 691 | 0.2−  | 0.3+  | 2007 12 14 | 691 | 0.1+  | 0.2−  |
| 2001 03 27 | 699 | 0.6+  | 1.3+  | 2005 02 09 | 691 | 0.2−  | 0.1−  | 2007 12 14 | 691 | 0.1−  | 0.2−  |
| 2001 03 29 | 699 | (1.6+ | 0.4−) | 2005 02 09 | 691 | 0.2+  | 0.5+  | 2007 12 14 | 691 | 0.1+  | 0.0   |
| 2001 03 29 | 699 | 0.3+  | 0.2−  | 2005 04 05 | 703 | 0.7−  | 0.4+  |            |     |       |       |
| 2001 03 29 | 699 | 0.4−  | 0.0   | 2005 04 05 | 703 | 1.1−  | 0.3−  |            |     |       |       |



## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 02 | 608 | 1.0+  | 0.1-  | 2003 09 28 | 699 | 0.9+ | 0.3- | 2005 04 01 | 691 | 0.3+  | 0.5+  |
| 2001 02 02 | 608 | 0.7+  | 0.6-  | 2003 09 28 | 704 | 0.2+ | 0.1+ | 2007 11 02 | G96 | 0.1+  | 0.3-  |
| 2001 02 02 | 608 | (0.3+ | 1.7-) | 2003 09 28 | 699 | 0.3- | 0.0  | 2007 11 02 | G96 | 0.0   | 0.3-  |
| 2001 02 16 | 704 | 0.0   | 0.9+  | 2003 09 28 | 704 | 0.1- | 0.5+ | 2007 11 02 | G96 | 0.3-  | 0.4-  |
| 2001 02 16 | 704 | 0.2-  | 0.8+  | 2003 09 28 | 699 | 0.0  | 0.3+ | 2007 11 02 | G96 | 0.1+  | 0.3-  |
| 2001 02 16 | 704 | 0.2+  | 0.1+  | 2003 09 28 | 699 | 0.3+ | 0.8+ | 2007 11 11 | G96 | 0.1-  | 0.3-  |
| 2001 02 16 | 704 | 0.1-  | 0.1-  | 2003 10 16 | 699 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.3-  | 0.0   |
| 2001 02 16 | 704 | 0.1+  | 0.5-  | 2003 10 16 | 699 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.4-  | 0.5-  |
| 2001 02 16 | 704 | 0.5+  | 1.1-  | 2003 10 16 | 699 | 0.6+ | 0.1- | 2007 11 11 | G96 | 0.1-  | 0.4-  |
| 2001 02 16 | 704 | 0.8+  | 0.1-  | 2003 10 16 | 699 | 0.2+ | 0.2- | 2007 11 20 | 704 | (1.8+ | 0.6-) |
| 2001 02 16 | 704 | 0.2-  | 0.3+  | 2003 10 18 | 699 | 0.1- | 0.1- | 2007 11 20 | 704 | 1.0+  | 0.4-  |
| 2001 02 16 | 704 | 0.0   | 0.2+  | 2003 10 18 | 699 | 0.4- | 0.5+ | 2007 11 20 | 704 | 0.2+  | 0.3-  |
| 2001 02 16 | 704 | 0.0   | 0.6-  | 2003 10 18 | 699 | 0.4+ | 0.3- | 2007 11 20 | 704 | 1.3+  | 0.2+  |
| 2001 02 20 | 704 | 0.2-  | 0.4+  | 2003 10 18 | 699 | 0.4- | 0.3+ | 2007 12 13 | 704 | 0.0   | 0.0   |
| 2001 02 20 | 704 | 0.1-  | 0.3+  | 2003 10 19 | 704 | 0.7- | 1.0+ | 2007 12 13 | 704 | 0.0   | 0.2+  |
| 2001 02 20 | 704 | 0.1-  | 1.0+  | 2003 10 19 | 704 | 1.1- | 0.4- | 2007 12 13 | 704 | 0.0   | 0.6+  |
| 2001 02 20 | 704 | 0.9+  | 1.4+  | 2003 10 19 | 704 | 0.7- | 0.1+ | 2007 12 13 | 704 | 0.1+  | 0.5+  |
| 2001 03 04 | 704 | 0.7-  | 0.6+  | 2003 10 19 | 704 | 0.6- | 0.8+ | 2007 12 13 | 704 | 0.1-  | 0.2+  |
| 2001 03 04 | 704 | 0.9+  | 0.8-  | 2003 10 19 | 704 | 0.6- | 0.5+ | 2007 12 14 | D29 | 0.1-  | 0.3-  |
| 2001 03 04 | 704 | 0.9-  | 1.1+  | 2003 10 22 | 644 | 0.4+ | 0.2+ | 2007 12 14 | D29 | 0.2+  | 1.0-  |
| 2001 03 04 | 704 | 0.1+  | 0.0   | 2003 10 22 | 644 | 0.4+ | 0.2+ | 2007 12 14 | D29 | 0.1-  | 0.6-  |
| 2001 03 04 | 704 | 1.1-  | 0.5-  | 2003 10 22 | 644 | 0.4+ | 0.2+ | 2007 12 14 | D29 | 0.2-  | 0.5-  |
| 2003 09 18 | 644 | 0.3+  | 0.1+  | 2003 11 16 | 703 | 0.4- | 0.6+ | 2007 12 15 | 704 | 0.3-  | 0.3+  |
| 2003 09 18 | 644 | 0.2+  | 0.1+  | 2003 11 16 | 703 | 0.9- | 1.2+ | 2007 12 15 | 704 | 0.1+  | 0.2-  |
| 2003 09 18 | 644 | 0.1-  | 0.1-  | 2003 11 16 | 703 | 1.0- | 1.3+ | 2007 12 15 | 704 | 0.6-  | 0.0   |
| 2003 09 28 | 704 | 0.1+  | 0.1-  | 2003 11 16 | 703 | 0.8- | 1.1+ | 2007 12 15 | 704 | 0.3-  | 0.5+  |
| 2003 09 28 | 704 | 0.2-  | 0.3-  | 2005 04 01 | 691 | 0.2+ | 0.5+ |            |     |       |       |
| 2003 09 28 | 704 | 0.2-  | 0.2-  | 2005 04 01 | 691 | 0.0  | 0.4+ |            |     |       |       |

(171796)\* 2001 DX<sub>16</sub>

Discovered 2001 Feb. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC               |               |             |  |
|----------|------------|-------------------|---------------|-------------|--|
| <i>M</i> | 5.37990    | (2000.0)          | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.27408584 | $\omega$ 14.87041 | +0.04031391   | -0.99512096 |  |
| <i>a</i> | 2.3471723  | $\Omega$ 72.88172 | +0.90684899   | -0.00140020 |  |
| <i>e</i> | 0.1157664  | <i>i</i> 5.40669  | +0.41952318   | +0.09865246 |  |
| <i>P</i> | 3.60       | <i>H</i> 16.4     | <i>G</i> 0.15 | <i>U</i> 1  |  |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 02 | 608 | 0.0   | 0.6-  | 2003 10 28 | 704 | 0.2-  | 1.0+  | 2003 11 30 | 703 | (1.6- | 0.4-) |
| 2001 02 02 | 608 | 0.3+  | 0.6-  | 2003 10 28 | 704 | 0.7-  | 0.5+  | 2003 11 30 | 691 | 0.1+  | 0.2+  |
| 2001 02 02 | 608 | 0.3-  | 0.6-  | 2003 10 28 | 704 | 1.3-  | 0.5+  | 2003 11 30 | 691 | 0.1+  | 0.1+  |
| 2001 02 16 | 704 | 0.2-  | 0.0   | 2003 10 29 | 691 | 0.2+  | 0.1+  | 2003 11 30 | 691 | 0.0   | 0.2+  |
| 2001 02 16 | 704 | 0.2+  | 0.2-  | 2003 10 29 | 691 | 0.2+  | 0.1-  | 2003 12 01 | 704 | 0.3-  | 0.1-  |
| 2001 02 16 | 704 | 0.5-  | 0.8+  | 2003 10 29 | 691 | 0.2+  | 0.2+  | 2003 12 01 | 704 | 0.3-  | 0.7+  |
| 2001 02 16 | 704 | 0.1+  | 0.8+  | 2003 11 05 | 699 | 0.5-  | 0.1+  | 2003 12 01 | 704 | 0.1+  | 0.4+  |
| 2001 02 20 | 704 | 0.3-  | 0.7-  | 2003 11 05 | 699 | 0.8-  | 0.5+  | 2003 12 01 | 704 | 0.3+  | 0.5-  |
| 2001 02 20 | 704 | (0.7- | 1.6+) | 2003 11 05 | 699 | 0.4-  | 0.2+  | 2003 12 01 | 704 | 0.9+  | 0.6+  |
| 2001 02 20 | 704 | 0.4-  | 0.7-  | 2003 11 05 | 699 | 0.4+  | 0.4+  | 2004 01 12 | 644 | 0.1+  | 0.2+  |
| 2001 02 20 | 704 | 0.7+  | 1.0+  | 2003 11 16 | 691 | 0.2-  | 0.1-  | 2004 01 12 | 644 | 0.4+  | 0.5+  |
| 2001 02 20 | 704 | (0.5+ | 2.1+) | 2003 11 16 | 691 | 0.1-  | 0.1+  | 2004 01 12 | 644 | 0.4+  | 0.5+  |
| 2001 03 04 | 704 | 0.2-  | 0.0   | 2003 11 16 | 691 | 0.1-  | 0.1-  | 2005 04 14 | 691 | 0.2+  | 0.4+  |
| 2001 03 04 | 704 | 0.6-  | 0.7+  | 2003 11 19 | 699 | 0.6+  | 0.3+  | 2005 04 14 | 691 | 0.0   | 0.2+  |
| 2001 03 04 | 704 | 0.2-  | 0.6+  | 2003 11 19 | 699 | 0.6-  | 0.5-  | 2005 04 14 | 691 | 0.1+  | 0.4+  |
| 2001 03 23 | 699 | 0.2-  | 0.0   | 2003 11 19 | 699 | 0.8+  | 0.5-  | 2007 09 24 | 691 | 0.4-  | 0.2-  |
| 2001 03 23 | 699 | 0.1-  | 0.5-  | 2003 11 19 | 699 | 0.2-  | 0.1+  | 2007 09 24 | 691 | 0.7-  | 0.4+  |
| 2001 03 23 | 699 | 0.7+  | 0.4-  | 2003 11 21 | 704 | (1.9+ | 0.0 ) | 2007 09 24 | 691 | 0.1-  | 0.5+  |
| 2001 03 23 | 699 | 0.1+  | 0.6-  | 2003 11 21 | 704 | 0.6+  | 0.9+  | 2007 10 15 | G96 | 0.2-  | 0.4-  |
| 2003 10 18 | 699 | 0.6+  | 0.3-  | 2003 11 21 | 704 | 0.7+  | 1.1-  | 2007 10 15 | G96 | 0.0   | 0.4-  |
| 2003 10 18 | 699 | 0.1-  | 1.1-  | 2003 11 21 | 704 | 0.0   | 0.3+  | 2007 10 15 | G96 | 0.5-  | 0.4-  |
| 2003 10 18 | 699 | 0.5-  | 0.0   | 2003 11 21 | 704 | 0.2+  | 0.7+  | 2007 10 15 | G96 | 0.1+  | 0.6-  |
| 2003 10 18 | 699 | 0.2-  | 0.8-  | 2003 11 21 | 608 | 1.1+  | 1.1-  | 2007 12 16 | 699 | 0.6-  | 0.1-  |
| 2003 10 25 | 704 | 0.9-  | 0.5+  | 2003 11 21 | 608 | 0.1+  | 0.3-  | 2007 12 16 | 699 | 0.0   | 0.3-  |
| 2003 10 25 | 704 | 0.0   | 0.1+  | 2003 11 21 | 608 | 0.8+  | 1.0-  | 2007 12 16 | 699 | 2.1+  | 0.3-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 25 | 704 | 0.0  | 0.2+ | 2003 11 30 | 703 | 0.1-  | 0.2+  | 2007 12 16 | 699 | 1.2+ | 0.4- |
| 2003 10 28 | 704 | 1.1- | 0.5- | 2003 11 30 | 703 | (0.6+ | 1.9-) |            |     |      |      |
| 2003 10 28 | 704 | 0.8- | 0.3+ | 2003 11 30 | 703 | 0.3-  | 0.2+  |            |     |      |      |

(171797)\* 2001 DL<sub>18</sub>

Discovered 2001 Feb. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 273.42989  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.27184936 | $\omega$ 112.90583 | -0.89234507   | +0.43332768 |  |
| <i>a</i> | 2.3600281  | $\Omega$ 92.97163  | -0.44641516   | -0.80605662 |  |
| <i>e</i> | 0.2307586  | <i>i</i> 7.26468   | -0.06658664   | -0.40311270 |  |
| <i>P</i> | 3.63       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 05 08 | 691 | 0.1+ | 0.3- | 2001 02 20 | 704 | 0.2+ | 1.4- | 2006 10 01 | 705 | 0.1- | 0.4+ |
| 1994 05 08 | 691 | 0.2- | 0.2- | 2001 03 04 | 704 | 0.2+ | 0.9+ | 2006 10 01 | 705 | 0.0  | 0.4+ |
| 1994 05 08 | 691 | 0.1- | 0.2- | 2001 03 04 | 704 | 0.3+ | 0.7+ | 2007 10 07 | G96 | 0.0  | 0.7- |
| 2001 01 04 | 704 | 0.1+ | 0.0  | 2001 03 04 | 704 | 0.6+ | 0.5+ | 2007 10 07 | G96 | 0.1+ | 0.6- |
| 2001 01 04 | 704 | 1.4+ | 0.7- | 2001 03 04 | 704 | 0.9+ | 0.7+ | 2007 10 07 | G96 | 0.1- | 0.3- |
| 2001 01 04 | 704 | 0.4- | 1.5- | 2001 03 04 | 704 | 1.0+ | 0.7+ | 2007 10 07 | G96 | 0.1- | 0.3- |
| 2001 01 18 | 704 | 0.4+ | 0.2+ | 2001 03 16 | 704 | 0.3- | 0.2+ | 2007 11 04 | G96 | 0.1+ | 0.4- |
| 2001 01 18 | 704 | 1.5- | 0.1- | 2001 03 16 | 704 | 0.3+ | 0.5+ | 2007 11 04 | G96 | 0.4+ | 0.3- |
| 2001 01 18 | 704 | 1.0+ | 0.4+ | 2001 03 16 | 704 | 0.6- | 0.3+ | 2007 11 04 | G96 | 0.0  | 0.5- |
| 2001 02 02 | 704 | 0.2+ | 0.0  | 2001 03 16 | 704 | 0.2- | 0.5- | 2007 11 04 | G96 | 0.1+ | 0.3- |
| 2001 02 02 | 704 | 0.7+ | 1.2+ | 2001 03 16 | 704 | 0.3+ | 0.9- | 2007 11 21 | G96 | 0.2- | 0.3- |
| 2001 02 02 | 704 | 0.6+ | 0.2- | 2001 11 24 | 691 | 0.1+ | 0.0  | 2007 11 21 | G96 | 0.3- | 0.1- |
| 2001 02 02 | 704 | 0.1+ | 0.6+ | 2003 11 24 | 691 | 0.1- | 0.0  | 2007 11 21 | G96 | 0.0  | 0.4- |
| 2001 02 02 | 704 | 0.1- | 0.0  | 2003 11 24 | 691 | 0.2+ | 0.1+ | 2007 11 21 | G96 | 0.1- | 0.1- |
| 2001 02 16 | 704 | 0.5- | 0.2+ | 2003 12 16 | 691 | 0.1- | 0.3- | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2001 02 16 | 704 | 0.4- | 0.3- | 2003 12 16 | 691 | 0.2+ | 0.5- | 2007 12 06 | G96 | 0.4+ | 0.4- |
| 2001 02 16 | 704 | 0.6- | 0.2+ | 2003 12 16 | 691 | 0.0  | 0.2- | 2007 12 06 | G96 | 0.2+ | 0.7- |
| 2001 02 16 | 704 | 0.6- | 0.0  | 2006 09 17 | 705 | 0.1- | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.4- |
| 2001 02 16 | 704 | 1.0- | 0.1+ | 2006 09 17 | 705 | 0.1- | 0.2+ | 2007 12 14 | 704 | 1.6- | 0.9+ |
| 2001 02 20 | 704 | 0.5+ | 0.7- | 2006 09 22 | 705 | 0.0  | 0.3+ | 2007 12 14 | 704 | 0.4+ | 1.1+ |
| 2001 02 20 | 704 | 1.3- | 0.7+ | 2006 09 22 | 705 | 0.1- | 0.2+ | 2007 12 14 | 704 | 0.2+ | 1.8+ |

(171798)\* 2001 DW<sub>24</sub>

Discovered 2001 Feb. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 234.79127  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.25700986 | $\omega$ 63.95516  | -0.98359927   | +0.12661783 |  |
| <i>a</i> | 2.4500194  | $\Omega$ 123.06794 | -0.16164526   | -0.93477185 |  |
| <i>e</i> | 0.0813321  | <i>i</i> 8.81716   | +0.08002050   | -0.33191794 |  |
| <i>P</i> | 3.83       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 19 | 704 | 0.4+ | 1.2+ | 2005 03 09 | 704 | 0.4+ | 0.6+ | 2005 04 02 | 699 | 0.0   | 0.6-  |
| 2001 01 19 | 704 | 0.8- | 0.0  | 2005 03 09 | 704 | 0.8+ | 0.8+ | 2005 04 02 | 699 | 0.1-  | 0.3-  |
| 2001 01 19 | 704 | 0.7+ | 0.4+ | 2005 03 10 | 699 | 0.6+ | 0.3+ | 2005 04 12 | 704 | 0.1-  | 0.1+  |
| 2001 01 19 | 704 | 0.8+ | 0.8+ | 2005 03 10 | 699 | 0.2+ | 0.0  | 2005 04 12 | 704 | 0.4-  | 1.1-  |
| 2001 02 01 | 704 | 0.0  | 0.4- | 2005 03 10 | 699 | 0.1+ | 0.4- | 2005 04 12 | 704 | 0.3+  | 0.6-  |
| 2001 02 01 | 704 | 1.2- | 0.3- | 2005 03 10 | 699 | 0.7+ | 0.4- | 2005 04 12 | 704 | (1.5- | 2.2-) |
| 2001 02 01 | 704 | 0.3+ | 0.2+ | 2005 03 16 | 703 | 0.8- | 0.1- | 2006 08 17 | 644 | 0.1-  | 1.0+  |
| 2001 02 01 | 704 | 0.2- | 0.9- | 2005 03 16 | 703 | 0.5- | 0.2- | 2006 08 17 | 644 | 0.4-  | 0.6+  |
| 2001 02 17 | 704 | 0.1+ | 0.1- | 2005 03 16 | 703 | 0.6- | 0.1+ | 2006 08 17 | 644 | 0.0   | 0.7+  |
| 2001 02 17 | 704 | 0.1- | 0.6+ | 2005 03 16 | 703 | 0.9- | 0.5- | 2006 08 20 | 644 | 0.0   | 0.8+  |
| 2001 02 17 | 704 | 1.4+ | 0.8+ | 2005 03 16 | 704 | 0.9+ | 1.1+ | 2006 08 20 | 644 | 0.1-  | 0.9+  |
| 2001 02 17 | 704 | 0.0  | 0.7+ | 2005 03 16 | 704 | 0.2- | 1.5+ | 2006 08 20 | 644 | 0.1+  | 0.5+  |
| 2001 02 20 | 704 | 0.7- | 0.3+ | 2005 03 16 | 704 | 0.2- | 0.2+ | 2007 11 04 | G96 | 0.0   | 0.7-  |
| 2001 02 20 | 704 | 0.6+ | 0.4+ | 2005 03 16 | 704 | 0.6+ | 0.7+ | 2007 11 04 | G96 | 0.1+  | 0.7-  |
| 2001 02 20 | 704 | 0.2+ | 1.3+ | 2005 03 16 | 704 | 0.3- | 0.1- | 2007 11 04 | G96 | 0.4-  | 0.6-  |
| 2002 07 13 | 644 | 0.5- | 0.8+ | 2005 04 02 | 703 | 0.0  | 0.4- | 2007 11 04 | G96 | 0.4-  | 0.4-  |
| 2002 07 13 | 644 | 0.0  | 1.0+ | 2005 04 02 | 703 | 0.7- | 0.6+ | 2007 11 05 | 703 | 0.2-  | 1.2+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 13 | 644 | 0.0  | 1.1+ | 2005 04 02 | 703 | 0.2- | 0.2- | 2007 12 05 | 703 | 0.2+ | 0.7+ |
| 2005 03 09 | 704 | 0.1+ | 0.4+ | 2005 04 02 | 703 | 0.4- | 0.3+ | 2007 12 05 | 703 | 0.3- | 1.5+ |
| 2005 03 09 | 704 | 0.4+ | 0.5- | 2005 04 02 | 699 | 0.0  | 0.3- | 2007 12 05 | 703 | 0.2+ | 1.2+ |
| 2005 03 09 | 704 | 0.3+ | 0.3- | 2005 04 02 | 699 | 0.3+ | 0.2+ |            |     |      |      |

**(171799)\* 2001 DO<sub>32</sub>**

Discovered 2001 Feb. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 306.00379  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.26414354 | $\omega$ | 54.16245 | -0.62044411 |      | -0.78252403 |   |
| <i>a</i> | 2.4057069  | $\Omega$ | 74.26946 | +0.70098765 |      | -0.58308971 |   |
| <i>e</i> | 0.0658791  | <i>i</i> | 3.09753  | +0.35166095 |      | -0.21831751 |   |
| <i>P</i> | 3.73       | <i>H</i> | 16.1     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 19 | 704 | 0.4+  | 0.2-  | 2003 11 18 | 644 | 0.3+ | 0.6+ | 2005 04 09 | 699 | 0.7-  | 0.4+  |
| 2001 01 19 | 704 | 0.3-  | 0.5-  | 2003 11 18 | 644 | 0.0  | 0.5+ | 2005 04 13 | 704 | (0.0  | 1.7+) |
| 2001 01 19 | 704 | 0.0   | 0.2-  | 2003 11 18 | 644 | 0.1+ | 0.6+ | 2005 04 13 | 704 | 0.2+  | 0.4-  |
| 2001 02 01 | 704 | (1.6- | 0.2+) | 2003 11 20 | 691 | 0.3+ | 0.6+ | 2005 04 13 | 704 | 0.4-  | 0.1+  |
| 2001 02 01 | 704 | 0.4-  | 1.1-  | 2003 11 20 | 691 | 0.2+ | 0.2+ | 2005 04 13 | 704 | 0.6+  | 1.1+  |
| 2001 02 01 | 704 | (0.5+ | 1.7-) | 2003 11 20 | 691 | 0.2+ | 0.2+ | 2005 04 13 | 704 | (1.2+ | 2.2+) |
| 2001 02 01 | 704 | (2.7+ | 3.1-) | 2003 11 21 | 704 | 0.0  | 0.4+ | 2005 05 04 | 644 | 0.1+  | 0.5+  |
| 2001 02 17 | 704 | 0.8-  | 0.5-  | 2003 11 21 | 704 | 0.8- | 0.2+ | 2005 05 04 | 644 | 0.3+  | 0.4+  |
| 2001 02 17 | 704 | 0.8-  | 0.4+  | 2003 11 21 | 704 | 0.2- | 0.5+ | 2005 05 04 | 644 | 0.0   | 0.4+  |
| 2001 02 17 | 704 | 0.2-  | 0.4-  | 2003 11 21 | 704 | 0.5- | 0.8+ | 2005 05 13 | 691 | 0.4+  | 0.1+  |
| 2001 02 17 | 704 | 0.2-  | 1.0-  | 2003 11 21 | 704 | 0.4+ | 0.9+ | 2005 05 13 | 691 | 0.4+  | 0.1+  |
| 2001 02 20 | 704 | 0.5+  | 0.4+  | 2003 12 01 | 704 | 1.2- | 0.9- | 2005 05 13 | 691 | 0.3+  | 0.2+  |
| 2001 02 20 | 704 | 0.5-  | 0.1+  | 2003 12 01 | 704 | 0.7- | 0.5+ | 2005 05 15 | 644 | 0.3+  | 0.7+  |
| 2001 02 20 | 704 | 0.2-  | 0.5+  | 2003 12 01 | 704 | 0.3+ | 1.1- | 2005 05 15 | 644 | 0.5+  | 0.3+  |
| 2001 02 20 | 704 | 0.5-  | 0.2+  | 2003 12 01 | 704 | 0.9- | 1.1+ | 2005 05 15 | 644 | 0.2+  | 0.7+  |
| 2001 02 20 | 704 | 0.6+  | 0.3-  | 2003 12 01 | 704 | 0.4+ | 0.6- | 2006 08 14 | 644 | 0.7-  | 0.4+  |
| 2001 03 03 | 704 | 1.0-  | 0.6-  | 2005 03 10 | 691 | 0.1+ | 0.0  | 2006 08 14 | 644 | 0.4-  | 0.3+  |
| 2001 03 03 | 704 | 0.7-  | 0.2+  | 2005 03 10 | 691 | 0.2+ | 0.1- | 2006 08 14 | 644 | 0.5-  | 0.5+  |
| 2001 03 03 | 704 | 0.6+  | 0.4+  | 2005 03 10 | 691 | 0.2+ | 0.1- | 2006 08 23 | 644 | 0.1-  | 0.6+  |
| 2001 03 14 | 699 | 0.7+  | 0.0   | 2005 03 11 | 691 | 0.2+ | 0.2- | 2006 08 23 | 644 | 0.1-  | 0.7+  |
| 2001 03 14 | 699 | 0.1-  | 0.5+  | 2005 03 11 | 691 | 0.4- | 0.3+ | 2006 08 23 | 644 | 0.2+  | 0.1+  |
| 2001 03 14 | 699 | 0.2-  | 0.3+  | 2005 03 11 | 691 | 0.1+ | 0.0  | 2006 08 28 | 703 | 0.8+  | 0.2-  |
| 2001 03 14 | 699 | 0.6+  | 0.7+  | 2005 03 18 | 703 | 0.4- | 0.7- | 2006 08 28 | 703 | (0.9- | 1.7+) |
| 2001 03 19 | 608 | 0.5+  | 0.6+  | 2005 03 18 | 703 | 0.8- | 0.6- | 2006 08 28 | 703 | (0.6+ | 1.5+) |
| 2001 03 19 | 608 | 0.9+  | 0.2-  | 2005 03 18 | 703 | 0.8- | 0.2- | 2006 08 28 | 703 | 0.2-  | 0.5+  |
| 2001 03 19 | 608 | 1.1+  | 0.2+  | 2005 03 18 | 703 | 0.5- | 0.3+ | 2007 11 15 | 704 | (1.6+ | 0.9+) |
| 2003 10 19 | 691 | 0.1-  | 0.2+  | 2005 04 01 | 691 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 0.4-  | 1.3+  |
| 2003 10 19 | 691 | 0.1-  | 0.3+  | 2005 04 01 | 691 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.1+  | 0.9+  |
| 2003 10 19 | 691 | 0.0   | 0.4+  | 2005 04 01 | 691 | 0.1+ | 0.5+ | 2007 11 15 | 704 | 0.7+  | 0.4+  |
| 2003 10 23 | 699 | 0.2+  | 0.2-  | 2005 04 05 | 699 | 0.3+ | 0.1- | 2007 11 15 | 704 | 0.4+  | 0.5+  |
| 2003 10 23 | 699 | 0.5+  | 0.5+  | 2005 04 05 | 699 | 0.6+ | 0.2- | 2007 12 05 | 704 | 0.0   | 0.5+  |
| 2003 10 23 | 699 | 0.2-  | 0.0   | 2005 04 05 | 699 | 0.4+ | 0.5+ | 2007 12 05 | 704 | 0.2+  | 0.1+  |
| 2003 10 23 | 699 | 0.5-  | 0.5+  | 2005 04 05 | 699 | 0.1+ | 0.9+ | 2007 12 05 | 704 | 0.4+  | 0.2+  |
| 2003 10 24 | 704 | 0.4+  | 0.3+  | 2005 04 05 | 704 | 0.5- | 0.4+ | 2007 12 14 | 704 | 0.1+  | 0.0   |
| 2003 10 24 | 704 | 0.1+  | 0.5+  | 2005 04 05 | 704 | 0.6+ | 0.0  | 2007 12 14 | 704 | 0.3+  | 0.2-  |
| 2003 10 24 | 704 | 1.0-  | 0.4+  | 2005 04 05 | 704 | 0.4+ | 0.1- | 2007 12 14 | 704 | 0.2+  | 0.1-  |
| 2003 10 24 | 704 | 0.5-  | 0.8+  | 2005 04 05 | 704 | 0.2+ | 0.7+ | 2007 12 14 | 704 | 0.1-  | 0.6-  |
| 2003 10 24 | 704 | 0.2-  | 0.3+  | 2005 04 09 | 704 | 0.3- | 0.7- | 2007 12 14 | 704 | 1.0+  | 1.3+  |
| 2003 10 26 | 608 | 0.1-  | 0.2-  | 2005 04 09 | 704 | 0.3+ | 0.7+ | 2007 12 15 | 691 | 0.3-  | 0.2-  |
| 2003 10 26 | 608 | 0.2-  | 0.4+  | 2005 04 09 | 704 | 0.2+ | 0.8+ | 2007 12 15 | 691 | 0.2+  | 0.5-  |
| 2003 10 26 | 608 | 0.8-  | 0.2+  | 2005 04 09 | 704 | 0.3- | 0.5+ | 2007 12 15 | 691 | 0.5-  | 0.1-  |
| 2003 10 28 | 704 | 1.4-  | 0.3+  | 2005 04 09 | 704 | 0.2- | 1.3+ | 2007 12 16 | 691 | 0.1+  | 1.3-  |
| 2003 10 28 | 704 | (1.9- | 0.8+) | 2005 04 09 | 699 | 0.3+ | 0.6+ | 2007 12 16 | 691 | 0.3+  | 0.4+  |
| 2003 10 28 | 704 | (1.9- | 1.2+) | 2005 04 09 | 699 | 0.0  | 0.3- | 2007 12 16 | 691 | 0.3-  | 0.2-  |
| 2003 10 28 | 704 | 1.5-  | 1.5+  | 2005 04 09 | 699 | 0.6- | 1.3+ |            |     |       |       |

**(171800)\* 2001 DJ<sub>38</sub> = 2003 UZ<sub>89</sub>**

Discovered 2001 Feb. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 52806)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 304.55124  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26581609 | $\omega$ | 320.81630 | -0.48377198 |      | -0.87413197 |   |
| <i>a</i> | 2.3956050  | $\Omega$ | 158.01282 | +0.82913075 |      | -0.47352136 |   |
| <i>e</i> | 0.0750190  | <i>i</i> | 6.61104   | +0.28019076 |      | -0.10803152 |   |
| <i>P</i> | 3.71       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 24 | 704 | 0.4- | 0.1- | 2003 10 20 | 691 | 0.1-  | 0.2+  | 2005 03 12 | 704 | 0.9+  | 0.1+  |
| 2001 01 24 | 704 | 0.2+ | 0.0  | 2003 10 21 | 291 | 0.0   | 0.1+  | 2005 03 12 | 704 | 0.3-  | 0.3+  |
| 2001 01 24 | 704 | 0.2- | 0.4- | 2003 10 21 | 291 | 0.2-  | 0.1+  | 2005 03 12 | 704 | 0.2+  | 0.1-  |
| 2001 01 24 | 704 | 0.1+ | 0.4+ | 2003 10 21 | 291 | 0.0   | 0.4+  | 2005 03 12 | 704 | 0.2-  | 0.1-  |
| 2001 01 24 | 704 | 1.0- | 0.7- | 2003 10 22 | 645 | 0.0   | 0.1-  | 2005 03 12 | 704 | 0.3+  | 0.1-  |
| 2001 02 02 | 704 | 0.5+ | 0.6- | 2003 10 22 | 645 | 0.0   | 0.2-  | 2005 03 12 | 704 | 0.3+  | 0.2+  |
| 2001 02 02 | 704 | 0.2+ | 0.1+ | 2003 10 23 | 645 | 0.1+  | 0.2-  | 2005 03 16 | 704 | 0.8+  | 0.4+  |
| 2001 02 02 | 704 | 0.3- | 0.2+ | 2003 10 23 | 645 | 0.1+  | 0.2-  | 2005 03 16 | 704 | 1.1+  | 0.2+  |
| 2001 02 02 | 704 | 0.0  | 0.6- | 2003 10 23 | 291 | 0.8+  | 0.1+  | 2005 03 16 | 704 | 0.4+  | 0.4+  |
| 2001 02 12 | 699 | 0.1+ | 0.2+ | 2003 10 23 | 291 | 0.1-  | 0.2+  | 2005 03 16 | 704 | 0.2+  | 0.2-  |
| 2001 02 12 | 699 | 0.0  | 0.5+ | 2003 10 23 | 291 | 0.7-  | 0.1+  | 2005 03 16 | 704 | (1.6+ | 0.1+) |
| 2001 02 12 | 699 | 0.4+ | 0.5+ | 2003 10 27 | 704 | 0.2+  | 0.0   | 2005 03 30 | 703 | 0.9-  | 0.3-  |
| 2001 02 12 | 699 | 0.3- | 0.3+ | 2003 10 27 | 704 | 0.3-  | 0.1+  | 2005 03 30 | 703 | 1.1-  | 1.5+  |
| 2001 02 16 | 106 | 1.0+ | 0.6- | 2003 10 27 | 704 | 0.0   | 0.9+  | 2005 03 30 | 703 | 1.4-  | 1.1+  |
| 2001 02 16 | 106 | 0.0  | 0.4- | 2003 10 27 | 704 | 0.6+  | 0.2+  | 2005 03 30 | 703 | 0.6-  | 0.6-  |
| 2001 02 16 | 106 | 0.3+ | 0.2+ | 2003 11 28 | 291 | 0.1-  | 0.4+  | 2005 04 11 | 699 | 0.2-  | 0.2+  |
| 2001 02 19 | 704 | 0.6- | 0.1+ | 2003 11 28 | 291 | 0.4-  | 0.2+  | 2005 04 11 | 699 | 1.3-  | 0.1+  |
| 2001 02 19 | 704 | 0.6+ | 0.7- | 2003 11 28 | 291 | 0.2-  | 0.4+  | 2005 04 11 | 699 | 0.3-  | 0.2+  |
| 2001 02 19 | 704 | 0.3+ | 0.5+ | 2005 03 04 | 704 | 0.2+  | 0.2+  | 2005 04 11 | 699 | 0.1+  | 1.1+  |
| 2001 02 19 | 704 | 0.1+ | 0.0  | 2005 03 04 | 704 | 0.6-  | 0.6-  | 2007 11 02 | 703 | 0.5+  | 0.7-  |
| 2001 02 19 | 704 | 0.6- | 0.2- | 2005 03 04 | 704 | 0.7+  | 0.3+  | 2007 11 02 | 703 | 0.2+  | 0.1-  |
| 2001 02 20 | 704 | 0.5+ | 0.3- | 2005 03 04 | 704 | 0.4-  | 0.1+  | 2007 11 02 | 703 | 0.6-  | 0.9+  |
| 2001 02 20 | 704 | 0.3- | 0.9+ | 2005 03 04 | 704 | 0.4+  | 0.5+  | 2007 11 02 | 703 | 0.2+  | 0.4-  |
| 2001 02 20 | 704 | 0.3- | 1.1+ | 2005 03 08 | 699 | 0.4+  | 1.3-  | 2007 11 09 | 703 | 0.2-  | 1.2+  |
| 2001 02 20 | 704 | 0.5- | 0.8- | 2005 03 08 | 699 | 1.0+  | 0.4+  | 2007 11 09 | 703 | 0.2+  | 0.5+  |
| 2003 09 28 | 704 | 0.9- | 0.5- | 2005 03 08 | 699 | 0.6+  | 0.3-  | 2007 11 09 | 703 | 1.0-  | 0.9-  |
| 2003 09 28 | 704 | 0.6+ | 0.9+ | 2005 03 08 | 699 | 1.3-  | 0.4-  | 2007 11 09 | 703 | 0.1-  | 0.2-  |
| 2003 09 28 | 704 | 0.4+ | 0.3+ | 2005 03 09 | 704 | (1.7+ | 0.2+) | 2007 11 11 | 704 | 0.3-  | 0.8-  |
| 2003 09 28 | 704 | 0.1- | 0.3+ | 2005 03 09 | 704 | 1.2+  | 0.4-  | 2007 11 11 | 704 | 0.4-  | 0.1-  |
| 2003 10 17 | 644 | 0.1- | 0.3+ | 2005 03 09 | 704 | 0.2+  | 0.5-  | 2007 11 11 | 704 | 0.7+  | 0.0   |
| 2003 10 17 | 644 | 0.1+ | 0.2+ | 2005 03 09 | 704 | 0.5-  | 0.2-  | 2007 11 11 | 704 | 0.6+  | 0.4+  |
| 2003 10 17 | 644 | 0.6+ | 0.6+ | 2005 03 09 | 704 | 0.3+  | 0.5-  | 2007 11 11 | 704 | 0.0   | 0.1+  |
| 2003 10 20 | 704 | 0.4- | 0.1+ | 2005 03 11 | 691 | 0.1-  | 0.2+  | 2007 11 28 | D35 | 0.0   | 0.7-  |
| 2003 10 20 | 691 | 0.2- | 0.2+ | 2005 03 11 | 691 | 0.1-  | 0.0   | 2007 11 28 | D35 | 0.2-  | 0.4-  |
| 2003 10 20 | 704 | 0.4+ | 0.8+ | 2005 03 11 | 691 | 0.0   | 0.1-  | 2007 11 28 | D35 | 0.2+  | 0.6-  |
| 2003 10 20 | 704 | 0.3- | 0.8+ | 2005 03 12 | 704 | 0.3+  | 0.7-  | 2007 12 15 | 699 | 0.2+  | 0.9+  |
| 2003 10 20 | 691 | 0.1- | 0.2+ | 2005 03 12 | 704 | 1.5+  | 0.3-  | 2007 12 15 | 699 | 1.2+  | 0.6-  |
| 2003 10 20 | 704 | 1.0- | 1.0+ | 2005 03 12 | 704 | 0.6-  | 0.3-  | 2007 12 15 | 699 | 0.3-  | 0.3+  |
| 2003 10 20 | 704 | 0.0  | 0.5+ | 2005 03 12 | 704 | 0.4-  | 0.3+  | 2007 12 15 | 699 | 0.8-  | 0.1+  |

**(171801)\* 2001 DE<sub>39</sub>**

Discovered 2001 Feb. 1

2007 DEC. 24

M.P.O. 129165

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 02 | 704 | 0.3+  | 0.6+  | 2003 11 01 | 704 | 0.1- | 0.1+ | 2005 04 12 | G96 | 0.1+  | 0.4+  |
| 2001 02 19 | 704 | 0.6+  | 0.5+  | 2003 11 01 | 704 | 0.1+ | 0.3- | 2005 04 12 | G96 | 0.4-  | 0.2+  |
| 2001 02 19 | 704 | 0.7+  | 1.2+  | 2003 11 01 | 704 | 0.1+ | 0.2+ | 2005 04 12 | G96 | 0.2+  | 0.5+  |
| 2001 02 19 | 704 | 0.4+  | 0.2+  | 2003 11 01 | 704 | 0.0  | 0.1- | 2005 04 12 | G96 | 0.1-  | 0.3+  |
| 2001 02 19 | 704 | 0.4-  | 0.6+  | 2003 11 02 | 704 | 0.3- | 0.1+ | 2005 04 12 | G96 | 0.1-  | 0.2+  |
| 2001 02 20 | 704 | 0.4-  | 1.1+  | 2003 11 02 | 704 | 0.6+ | 0.8+ | 2005 04 12 | G96 | 0.0   | 0.5+  |
| 2001 02 20 | 704 | 0.0   | 1.1+  | 2003 11 02 | 704 | 0.4- | 0.5+ | 2005 04 12 | G96 | 0.3+  | 0.3+  |
| 2001 02 20 | 704 | 0.3+  | 0.6+  | 2003 11 02 | 704 | 0.6+ | 0.4+ | 2005 04 12 | G96 | 0.1-  | 0.1+  |
| 2001 02 20 | 704 | 0.1+  | 0.5+  | 2003 11 02 | 704 | 0.0  | 0.0  | 2005 04 12 | G96 | 0.1+  | 0.1+  |
| 2001 02 22 | 704 | 1.0+  | 1.1+  | 2003 11 02 | 704 | 0.5+ | 0.8+ | 2005 04 12 | G96 | 0.3+  | 0.5+  |
| 2001 02 22 | 699 | (2.0- | 0.0 ) | 2003 11 02 | 704 | 0.2+ | 0.1- | 2005 04 12 | G96 | 0.0   | 0.3+  |
| 2001 02 22 | 699 | (1.3+ | 1.7+) | 2003 11 02 | 704 | 0.5- | 1.3+ | 2005 04 12 | G96 | 0.2-  | 0.4+  |
| 2001 02 22 | 704 | 0.9+  | 0.6+  | 2003 11 02 | 704 | 0.1+ | 0.2+ | 2005 04 12 | G96 | 0.2-  | 0.2+  |
| 2001 02 22 | 699 | 0.6+  | 0.7+  | 2003 11 02 | 704 | 0.5- | 0.4+ | 2005 04 12 | G96 | 0.4-  | 0.1+  |
| 2001 02 22 | 704 | 0.6+  | 0.5+  | 2003 11 19 | 699 | 0.3- | 0.2- | 2005 04 12 | G96 | 0.4-  | 0.1+  |
| 2001 02 22 | 699 | 1.2+  | 1.5+  | 2003 11 19 | 644 | 0.1+ | 0.1+ | 2005 04 12 | G96 | 1.0-  | 0.2-  |
| 2001 02 22 | 704 | 0.6+  | 0.6+  | 2003 11 19 | 644 | 0.1- | 0.2- | 2006 08 12 | 644 | 0.2-  | 0.7+  |
| 2001 03 24 | 695 | 0.4+  | 0.4+  | 2003 11 19 | 699 | 0.6- | 0.0  | 2006 08 12 | 644 | 0.2-  | 0.6+  |
| 2001 03 24 | 695 | 0.2+  | 0.3+  | 2003 11 19 | 644 | 0.2- | 0.1- | 2006 08 12 | 644 | 0.5-  | 0.6+  |
| 2003 10 15 | 699 | 1.4-  | 0.6+  | 2003 11 19 | 699 | 0.1+ | 0.4- | 2006 08 12 | D35 | 0.9+  | 0.8+  |
| 2003 10 15 | 699 | 0.8+  | 0.2-  | 2003 11 19 | 699 | 0.1+ | 0.5+ | 2006 08 12 | D35 | 0.1-  | 0.8+  |
| 2003 10 15 | 699 | 0.8+  | 0.4+  | 2003 11 20 | 704 | 0.3- | 0.1+ | 2006 08 12 | D35 | 0.9+  | 0.4+  |
| 2003 10 15 | 699 | 0.5-  | 0.2-  | 2003 11 20 | 704 | 0.5+ | 0.6- | 2006 08 14 | 644 | 0.1-  | 0.8+  |
| 2003 10 18 | 608 | 0.1-  | 0.8-  | 2003 11 20 | 704 | 0.7- | 0.5- | 2006 08 14 | 644 | 0.1-  | 0.5+  |
| 2003 10 18 | 608 | 0.1-  | 0.8-  | 2003 11 20 | 704 | 0.1- | 0.2+ | 2006 08 14 | 644 | 0.2-  | 0.6+  |
| 2003 10 18 | 608 | 0.2-  | 1.3-  | 2003 11 24 | 704 | 0.1- | 0.4+ | 2006 08 15 | 644 | 0.3-  | 0.7+  |
| 2003 10 20 | 644 | 0.2-  | 0.0   | 2003 11 24 | 704 | 0.4+ | 1.2- | 2006 08 15 | 644 | 0.3-  | 0.8+  |
| 2003 10 20 | 644 | 0.3-  | 0.3+  | 2003 11 24 | 704 | 0.4+ | 0.3+ | 2006 08 15 | 644 | 0.7-  | 0.6+  |
| 2003 10 20 | 644 | 0.2-  | 0.1+  | 2003 11 24 | 704 | 0.3+ | 0.3+ | 2006 08 20 | 644 | 0.0   | 0.7+  |
| 2003 10 21 | 691 | 0.3-  | 0.0   | 2003 11 24 | 704 | 0.6+ | 0.1- | 2006 08 20 | 644 | 0.0   | 0.5+  |
| 2003 10 21 | 691 | 0.2-  | 0.0   | 2003 11 24 | 704 | 0.2- | 0.1+ | 2006 08 20 | 644 | 0.3+  | 0.5+  |
| 2003 10 21 | 691 | 0.2-  | 0.2-  | 2003 11 24 | 704 | 0.4+ | 0.2- | 2006 08 28 | 703 | 0.4-  | 1.0+  |
| 2003 10 22 | 704 | 0.0   | 0.0   | 2003 11 24 | 704 | 0.1- | 0.0  | 2006 08 28 | 703 | 1.5+  | 0.9-  |
| 2003 10 22 | 704 | 0.1+  | 0.3-  | 2003 11 24 | 704 | 0.6+ | 0.1+ | 2006 08 28 | 703 | 0.4-  | 0.6+  |
| 2003 10 22 | 704 | 0.3+  | 0.3-  | 2003 11 24 | 704 | 0.0  | 0.0  | 2006 08 28 | 703 | (0.5+ | 1.8+) |
| 2003 10 22 | 704 | 0.4+  | 0.1-  | 2003 11 26 | 704 | 0.3+ | 0.5+ | 2007 11 13 | G96 | 0.4-  | 0.4-  |
| 2003 10 22 | 704 | 0.0   | 0.8+  | 2003 11 26 | 704 | 0.4- | 0.6+ | 2007 11 13 | G96 | 0.1-  | 0.6-  |
| 2003 10 23 | 699 | 0.9-  | 0.2+  | 2003 11 26 | 704 | 0.3- | 0.7+ | 2007 11 13 | G96 | 0.0   | 0.1-  |
| 2003 10 23 | 699 | 0.3-  | 0.5-  | 2003 11 26 | 704 | 0.3+ | 0.1+ | 2007 11 13 | G96 | 0.8-  | 0.4-  |
| 2003 10 23 | 699 | 0.5+  | 0.2-  | 2003 11 26 | 704 | 0.1+ | 0.7+ | 2007 12 14 | G96 | 0.7+  | 0.6-  |
| 2003 10 23 | 699 | 0.0   | 0.2-  | 2003 11 30 | 691 | 0.1+ | 0.2- | 2007 12 14 | G96 | 1.2-  | 0.9-  |
| 2003 10 25 | 704 | 1.1-  | 0.6+  | 2003 11 30 | 691 | 0.1+ | 0.4- | 2007 12 14 | G96 | 0.5-  | 0.3+  |
| 2003 10 25 | 704 | 0.6-  | 0.6+  | 2003 11 30 | 691 | 0.0  | 0.4- | 2007 12 14 | G96 | 0.2-  | 0.1+  |
| 2003 10 25 | 704 | 0.0   | 0.4-  | 2003 12 22 | 704 | 0.1+ | 0.5- |            |     |       |       |
| 2003 10 25 | 704 | 0.3+  | 0.2+  | 2003 12 22 | 704 | 0.2- | 1.2+ |            |     |       |       |

(171802)\* 2001 DV<sub>39</sub>

Discovered 2001 Feb. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 321.54010  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.26975896 | $\omega$ | 216.30360 | -0.46813809              |
| <i>a</i> | 2.3722045  | $\Omega$ | 261.65271 | +0.82150463              |
| <i>e</i> | 0.1404751  | <i>i</i> | 2.72013   | +0.32554089              |
| <i>P</i> | 3.65       | <i>H</i> | 16.3      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 31 | 704 | (0.3- | 2.0+) | 2003 10 25 | 704 | 0.3- | 0.6+ | 2005 04 05 | 699 | 0.0   | 0.4-  |
| 2001 01 31 | 704 | 0.3-  | 1.3+  | 2003 10 25 | 704 | 0.0  | 0.6+ | 2005 04 05 | 699 | 0.4+  | 0.7+  |
| 2001 01 31 | 704 | 0.1-  | 0.7+  | 2003 10 25 | 704 | 0.0  | 0.8+ | 2005 04 05 | 699 | (1.7- | 0.4+) |
| 2001 01 31 | 704 | 0.2+  | 0.9+  | 2003 10 25 | 704 | 0.1+ | 0.1- | 2005 04 05 | 644 | 0.7+  | 0.0   |
| 2001 02 19 | 704 | 0.1+  | 0.1-  | 2003 10 25 | 704 | 0.4- | 0.3+ | 2005 04 05 | 644 | 0.6+  | 0.3+  |
| 2001 02 19 | 704 | 0.0   | 0.0   | 2003 10 25 | 106 | 0.3- | 0.1- | 2005 04 05 | 644 | 1.5+  | 0.2-  |
| 2001 02 19 | 704 | 0.6-  | 0.7-  | 2003 10 25 | 106 | 0.2+ | 0.0  | 2005 04 06 | 691 | 0.1+  | 0.1+  |
| 2001 02 19 | 704 | 0.5-  | 0.3+  | 2003 10 25 | 106 | 0.4- | 0.1- | 2005 04 06 | 691 | 0.2+  | 0.0   |
| 2001 02 19 | 704 | 0.1+  | 0.6+  | 2003 10 27 | 704 | 0.5- | 0.5+ | 2005 04 06 | 691 | 0.2+  | 0.0   |
| 2001 02 20 | 704 | 0.9-  | 0.3+  | 2003 10 27 | 704 | 0.2- | 0.9+ | 2005 04 15 | 691 | 0.2+  | 0.2+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 20 | 704 | 0.4+  | 0.6+  | 2003 10 27 | 704 | 0.1+  | 0.9+  | 2005 04 15 | 691 | 0.2+  | 0.3+  |
| 2001 02 20 | 704 | 0.5-  | 0.9+  | 2003 10 27 | 704 | 0.2+  | 0.9+  | 2005 04 15 | 691 | 0.0   | 0.2+  |
| 2001 02 20 | 704 | 0.7-  | 0.7+  | 2003 10 30 | 704 | 0.2-  | 0.8+  | 2005 04 19 | 699 | (1.7+ | 0.2-) |
| 2001 02 20 | 704 | (0.3+ | 1.7+) | 2003 10 30 | 704 | 0.7-  | 0.2-  | 2005 04 19 | 699 | 0.8-  | 0.1+  |
| 2001 02 21 | 704 | 0.4+  | 0.2-  | 2003 10 30 | 704 | 0.6+  | 0.1+  | 2005 04 19 | 699 | (2.1+ | 0.8-) |
| 2001 02 21 | 704 | 0.4+  | 0.2-  | 2003 10 30 | 704 | 0.7-  | 0.4-  | 2005 04 19 | 699 | (0.6- | 2.8-) |
| 2001 02 21 | 704 | 0.0   | 0.5-  | 2003 10 30 | 704 | 1.1+  | 0.1+  | 2005 05 09 | 699 | 0.4+  | 0.2+  |
| 2001 02 21 | 704 | 0.1+  | 0.4+  | 2003 10 30 | 704 | 1.1-  | 1.0+  | 2005 05 09 | 703 | 0.3-  | 0.1+  |
| 2001 02 21 | 704 | 0.6+  | 1.2+  | 2003 10 30 | 704 | 0.9+  | 0.8+  | 2005 05 09 | 703 | 0.8-  | 0.3+  |
| 2001 03 14 | 699 | 1.2+  | 0.4+  | 2003 10 30 | 704 | 0.4-  | 0.5-  | 2005 05 09 | 703 | 0.5-  | 0.2+  |
| 2001 03 14 | 699 | 0.1+  | 0.6+  | 2003 11 20 | 704 | 0.1+  | 1.1+  | 2005 05 09 | 699 | 0.3+  | 0.0   |
| 2001 03 14 | 699 | 0.7+  | 0.9+  | 2003 11 20 | 704 | 0.4-  | 0.9+  | 2005 05 09 | 703 | 0.6-  | 0.7+  |
| 2001 03 14 | 699 | 0.5+  | 0.8+  | 2003 11 20 | 704 | 0.2+  | 0.5+  | 2005 05 09 | 699 | 0.1-  | 0.6-  |
| 2001 03 23 | 699 | 1.3+  | 1.5-  | 2003 11 20 | 704 | 0.5-  | 0.2+  | 2005 05 09 | 699 | 0.3+  | 0.5+  |
| 2001 03 23 | 699 | (2.6+ | 0.9-) | 2003 11 20 | 704 | 0.1+  | 0.7-  | 2006 05 26 | G96 | 0.7-  | 0.6+  |
| 2001 03 23 | 699 | 0.4+  | 0.5+  | 2003 11 21 | 699 | 0.5-  | 0.1+  | 2006 05 26 | G96 | 0.0   | 0.7-  |
| 2001 03 23 | 699 | (0.2+ | 1.7-) | 2003 11 21 | 699 | 0.7-  | 0.2+  | 2006 05 26 | G96 | 0.4-  | 0.2+  |
| 2003 09 21 | 699 | 0.4-  | 0.4-  | 2003 11 21 | 699 | 0.1+  | 0.6+  | 2006 05 26 | G96 | 0.3+  | 0.0   |
| 2003 09 21 | 699 | 0.5-  | 0.1+  | 2003 11 21 | 699 | 0.8-  | 0.3-  | 2007 12 03 | 691 | 0.2-  | 0.2-  |
| 2003 09 21 | 699 | 1.4-  | 0.5-  | 2005 03 17 | G96 | 0.3-  | 0.1-  | 2007 12 03 | 691 | 0.4-  | 0.1-  |
| 2003 09 21 | 699 | (0.7- | 1.7+) | 2005 03 17 | G96 | 0.4-  | 0.1-  | 2007 12 03 | 691 | 0.2+  | 1.3-  |
| 2003 09 29 | 691 | 0.1+  | 0.5+  | 2005 03 17 | G96 | 0.3-  | 0.1+  | 2007 12 05 | 704 | 0.1-  | 0.3-  |
| 2003 09 29 | 691 | 0.1+  | 0.5+  | 2005 03 17 | G96 | 0.2-  | 0.1-  | 2007 12 05 | 704 | 0.2+  | 0.0   |
| 2003 09 29 | 691 | 0.1+  | 0.3+  | 2005 04 03 | 644 | 0.2+  | 0.3+  | 2007 12 05 | 704 | 0.4-  | 1.1-  |
| 2003 10 21 | 704 | 0.2-  | 0.1+  | 2005 04 03 | 644 | (1.7+ | 0.2-) | 2007 12 05 | 704 | 0.6-  | 0.5-  |
| 2003 10 21 | 704 | 0.5-  | 0.5+  | 2005 04 03 | 644 | (1.6+ | 0.1-) | 2007 12 14 | 704 | 0.2+  | 0.3+  |
| 2003 10 21 | 704 | 1.1+  | 0.2+  | 2005 04 03 | E12 | 0.6-  | 0.5+  | 2007 12 14 | 704 | 0.4+  | 0.3-  |
| 2003 10 21 | 704 | 0.2+  | 1.2+  | 2005 04 03 | E12 | 0.2+  | 0.7-  | 2007 12 14 | 704 | 0.3+  | 0.1-  |
| 2003 10 21 | 644 | 0.3-  | 0.4+  | 2005 04 03 | E12 | 0.1-  | 0.6+  | 2007 12 14 | 704 | 0.3+  | 0.1+  |
| 2003 10 21 | 644 | 0.1-  | 0.5+  | 2005 04 03 | E12 | 0.5-  | 0.0   | 2007 12 14 | 704 | 0.2+  | 0.3-  |
| 2003 10 21 | 644 | 0.1-  | 0.6+  | 2005 04 05 | 699 | 0.1+  | 0.7+  |            |     |       |       |

(171803)\* 2001 DY<sub>42</sub>

Discovered 2001 Feb. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 321.26113  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.26591218 | $\omega$ | 323.59577 | -0.33969413              |
| <i>a</i> | 2.3950278  | $\Omega$ | 146.25396 | +0.86965293              |
| <i>e</i> | 0.1458962  | <i>i</i> | 1.66852   | +0.35820619              |
| <i>P</i> | 3.71       | <i>H</i> | 16.5      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-------|
| 2001 01 31 | 704 | 0.7+ | 0.6+ | 2003 10 21 | 704 | 0.5+ | 0.5+ | 2005 04 11 | 699 | 0.6- | 1.1+  |
| 2001 01 31 | 704 | 0.3+ | 0.9+ | 2003 10 21 | 699 | 0.2- | 0.2+ | 2005 04 11 | 699 | 0.4+ | 1.1+  |
| 2001 01 31 | 704 | 1.0+ | 0.5+ | 2003 10 21 | 704 | 0.1+ | 0.3- | 2005 04 11 | 699 | 0.4+ | 0.2+  |
| 2001 01 31 | 704 | 0.2+ | 1.1+ | 2003 10 21 | 644 | 0.1- | 0.3+ | 2005 04 12 | 704 | 0.3+ | 0.3+  |
| 2001 02 13 | 691 | 0.0  | 0.2- | 2003 10 21 | 644 | 0.3- | 0.5+ | 2005 04 12 | 704 | 0.6- | 0.1+  |
| 2001 02 13 | 691 | 0.1- | 0.1- | 2003 10 21 | 704 | 0.0  | 0.3+ | 2005 04 12 | 704 | 0.5+ | 0.7-  |
| 2001 02 13 | 691 | 0.0  | 0.1- | 2003 10 21 | 644 | 0.1- | 0.2+ | 2005 04 15 | 699 | 0.2- | 0.9+  |
| 2001 02 19 | 704 | 0.7- | 0.2+ | 2003 10 21 | 644 | 0.2- | 0.4+ | 2005 04 15 | 699 | 0.2- | 0.0   |
| 2001 02 19 | 704 | 0.2- | 0.3+ | 2003 10 22 | 704 | 0.1+ | 0.0  | 2005 04 15 | 699 | 1.0+ | 1.0+  |
| 2001 02 19 | 704 | 0.4- | 0.1+ | 2003 10 22 | 704 | 0.4- | 0.3+ | 2005 04 15 | 699 | 1.1+ | 0.1-  |
| 2001 02 19 | 704 | 0.2- | 0.4- | 2003 10 22 | 704 | 0.5+ | 0.1- | 2005 04 19 | 691 | 0.1- | 0.3+  |
| 2001 02 19 | 704 | 0.2+ | 0.3+ | 2003 10 22 | 704 | 0.2- | 0.1+ | 2005 04 19 | 691 | 0.2+ | 0.1+  |
| 2001 02 20 | 704 | 0.3+ | 0.0  | 2003 10 22 | 704 | 0.3- | 0.3+ | 2005 04 19 | 691 | 0.2+ | 0.1+  |
| 2001 02 20 | 704 | 0.7- | 0.7+ | 2003 10 22 | 608 | 0.7- | 0.9+ | 2005 05 10 | G96 | 0.1- | 0.4+  |
| 2001 02 20 | 704 | 0.6- | 0.1+ | 2003 10 22 | 608 | 0.5- | 0.8+ | 2005 05 10 | G96 | 0.1+ | 0.4+  |
| 2001 02 20 | 704 | 0.5- | 0.7+ | 2003 10 22 | 608 | 0.6- | 0.6+ | 2005 05 10 | G96 | 0.5- | 0.1-  |
| 2001 02 20 | 704 | 0.0  | 0.1- | 2003 10 24 | 704 | 0.4- | 0.0  | 2005 05 10 | G96 | 0.4- | 0.1+  |
| 2001 02 22 | 704 | 0.0  | 0.4- | 2003 10 24 | 704 | 0.2+ | 0.2- | 2007 11 05 | 704 | 0.2+ | 0.7-  |
| 2001 02 22 | 704 | 0.3- | 0.5+ | 2003 10 24 | 704 | 1.1- | 0.9+ | 2007 11 05 | 704 | 0.6- | 0.1+  |
| 2001 02 22 | 704 | 0.3- | 0.5+ | 2003 10 24 | 704 | 0.6- | 0.1+ | 2007 11 05 | 704 | 0.3+ | 0.3+  |
| 2001 02 22 | 704 | 0.2- | 0.3+ | 2003 10 26 | 691 | 0.1- | 0.6+ | 2007 11 05 | 704 | 0.2- | 0.4-  |
| 2001 02 22 | 704 | 0.7+ | 0.6+ | 2003 10 26 | 691 | 0.2- | 0.3+ | 2007 11 05 | 704 | 0.2+ | 0.2+  |
| 2001 03 18 | 704 | 0.6- | 0.2+ | 2003 10 26 | 691 | 0.8- | 0.4+ | 2007 11 14 | 704 | 0.8+ | 1.0-  |
| 2001 03 18 | 704 | 0.1+ | 0.9+ | 2003 10 28 | 704 | 1.3+ | 0.8+ | 2007 11 14 | 704 | 0.4- | 1.6-) |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 03 18 | 704 | 0.2+ | 0.1+ | 2003 10 28 | 704 | 0.8+ | 0.2+ | 2007 11 14 | 704 | 0.7+  | 1.4-  |
| 2001 03 18 | 704 | 0.2+ | 0.5- | 2003 10 28 | 704 | 0.4- | 1.4+ | 2007 11 14 | 704 | 1.0+  | 0.3-  |
| 2001 03 31 | 691 | 0.5+ | 0.0  | 2005 03 09 | G96 | 0.6- | 0.1- | 2007 11 14 | 691 | 0.2-  | 0.1-  |
| 2001 03 31 | 691 | 0.1+ | 0.0  | 2005 03 09 | G96 | 0.3- | 0.2- | 2007 11 14 | 691 | 0.0   | 0.1-  |
| 2001 03 31 | 691 | 0.5+ | 0.1+ | 2005 03 09 | G96 | 0.5- | 0.0  | 2007 11 14 | 691 | 0.0   | 0.2-  |
| 2003 09 17 | 644 | 0.1- | 0.1+ | 2005 03 09 | G96 | 0.2- | 0.3- | 2007 11 19 | 691 | 0.1-  | 0.2-  |
| 2003 09 17 | 644 | 0.1- | 0.3+ | 2005 03 11 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.1-  | 0.1+  |
| 2003 09 17 | 644 | 0.3+ | 0.2+ | 2005 03 11 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.0   | 0.0   |
| 2003 09 19 | 691 | 0.0  | 0.3+ | 2005 03 11 | 691 | 0.1+ | 0.3+ | 2007 11 21 | 703 | (0.2+ | 1.8-) |
| 2003 09 19 | 691 | 0.2- | 0.4+ | 2005 03 17 | 691 | 0.3+ | 0.0  | 2007 11 21 | 703 | (0.8- | 2.0-) |
| 2003 09 19 | 691 | 0.1- | 0.5+ | 2005 03 17 | 691 | 0.2- | 0.1+ | 2007 11 21 | 703 | 0.9-  | 1.0-  |
| 2003 09 29 | 691 | 0.2+ | 0.2+ | 2005 03 17 | 691 | 0.1+ | 0.3+ | 2007 11 21 | 703 | 0.4+  | 0.6-  |
| 2003 09 29 | 691 | 0.1+ | 0.2+ | 2005 04 02 | 691 | 0.0  | 0.1+ | 2007 12 04 | 704 | 0.1+  | 0.0   |
| 2003 09 29 | 691 | 0.0  | 0.5+ | 2005 04 02 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 704 | 0.1+  | 0.4-  |
| 2003 10 21 | 699 | 1.0- | 0.4- | 2005 04 02 | 691 | 0.2+ | 0.0  | 2007 12 04 | 704 | 0.5+  | 0.4-  |
| 2003 10 21 | 699 | 0.8- | 0.8+ | 2005 04 11 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 704 | 0.3+  | 0.2-  |
| 2003 10 21 | 699 | 0.3+ | 0.2- | 2005 04 11 | 691 | 0.1+ | 0.5+ | 2007 12 04 | 704 | 0.0   | 0.1-  |
| 2003 10 21 | 644 | 0.0  | 0.3+ | 2005 04 11 | 691 | 0.2+ | 0.1+ |            |     |       |       |
| 2003 10 21 | 644 | 0.4- | 0.3+ | 2005 04 11 | 699 | 0.5- | 0.1- |            |     |       |       |

(171804)\* 2001 DF<sub>49</sub>

Discovered 2001 Feb. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 342.09546  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.27338673 | $\omega$ | 44.62899 | -0.20059111 | -0.97422287 |
| <i>a</i> | 2.3511722  | $\Omega$ | 57.20399 | +0.86103205 | -0.22557317 |
| <i>e</i> | 0.0912465  | <i>i</i> | 7.05284  | +0.46731896 | -0.00255653 |
| <i>P</i> | 3.61       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 18 | 704 | 0.4+  | 1.0+  | 2003 10 25 | 704 | 0.3+  | 0.1-  | 2005 04 27 | 850 | 1.0-  | 0.3+  |
| 2001 01 18 | 704 | 0.9-  | 0.1-  | 2003 10 25 | 704 | 0.3+  | 0.2+  | 2005 04 27 | 850 | 1.2-  | 0.2+  |
| 2001 01 18 | 704 | (1.7- | 0.4+) | 2003 10 25 | 608 | 0.5-  | 0.9-  | 2005 04 27 | 850 | 1.2-  | 0.8+  |
| 2001 02 16 | 704 | 0.6-  | 0.3-  | 2003 10 25 | 608 | 0.4-  | 1.1-  | 2005 04 27 | 850 | (2.7- | 0.3+) |
| 2001 02 16 | 704 | 0.1-  | 0.2-  | 2003 10 25 | 608 | 0.8-  | 0.4-  | 2005 04 28 | 850 | 0.8-  | 0.5-  |
| 2001 02 16 | 704 | 0.1-  | 0.5-  | 2003 10 29 | 704 | 0.3+  | 0.6+  | 2005 04 28 | 850 | 1.1-  | 0.1+  |
| 2001 02 16 | 704 | 0.2-  | 0.1-  | 2003 10 29 | 704 | 0.1+  | 0.2+  | 2005 04 28 | 850 | 0.8-  | 0.1+  |
| 2001 02 16 | 704 | 0.0   | 0.2-  | 2003 10 29 | 704 | 0.1-  | 0.4+  | 2005 04 28 | 850 | 1.2-  | 0.0   |
| 2001 02 21 | 699 | 1.3+  | 1.3+  | 2003 10 29 | 704 | 0.2+  | 0.1+  | 2005 05 02 | 850 | 0.9-  | 1.3+  |
| 2001 02 21 | 699 | 0.4+  | 0.6+  | 2003 11 01 | 704 | 0.2+  | 0.6+  | 2005 05 02 | 850 | 1.3-  | 0.1+  |
| 2001 02 21 | 704 | 0.5-  | 0.7-  | 2003 11 01 | 704 | 0.9+  | 0.9-  | 2005 05 04 | 850 | 1.1-  | 0.5+  |
| 2001 02 21 | 699 | 0.7-  | 1.1+  | 2003 11 01 | 704 | 0.6-  | 0.2+  | 2005 05 04 | 850 | 1.0-  | 0.3+  |
| 2001 02 21 | 704 | 1.1+  | 0.5-  | 2003 11 01 | 704 | 0.5+  | 1.3+  | 2005 05 04 | 850 | 0.6-  | 0.6-  |
| 2001 02 21 | 704 | 0.3+  | 0.5+  | 2003 11 01 | 704 | 0.2-  | 1.3+  | 2005 05 04 | 850 | 0.6-  | 0.4-  |
| 2001 02 21 | 704 | 0.7+  | 0.0   | 2003 11 19 | 644 | 0.0   | 0.0   | 2005 05 08 | 691 | 0.8+  | 0.2+  |
| 2001 02 21 | 699 | (2.8+ | 0.3+) | 2003 11 19 | 644 | 0.1-  | 0.0   | 2005 05 08 | 691 | 0.7+  | 0.4+  |
| 2001 02 21 | 704 | 0.2+  | 0.6+  | 2003 11 19 | 644 | 0.0   | 0.1+  | 2005 05 08 | 691 | 0.8+  | 0.2+  |
| 2001 03 04 | 704 | 0.5+  | 0.1+  | 2003 11 21 | 704 | 0.0   | 0.8+  | 2007 10 08 | 704 | 0.3-  | 0.3+  |
| 2001 03 04 | 704 | 0.6-  | 0.1-  | 2003 11 21 | 704 | 0.2+  | 0.7+  | 2007 10 08 | 704 | 0.0   | 1.1+  |
| 2001 03 04 | 704 | 0.3-  | 0.1+  | 2003 11 21 | 704 | 0.3+  | 1.1+  | 2007 10 08 | 704 | 0.4+  | 0.1+  |
| 2001 03 18 | 699 | 0.3+  | 0.4-  | 2003 11 21 | 704 | 0.1-  | 1.0+  | 2007 10 08 | 704 | 1.0-  | 0.7+  |
| 2001 03 18 | 699 | 0.7-  | 0.9+  | 2003 11 21 | 704 | 0.4-  | 0.5+  | 2007 11 06 | G96 | 0.1+  | 0.5-  |
| 2001 03 18 | 699 | 0.7-  | 1.0-  | 2005 03 10 | 699 | 0.7-  | 0.3+  | 2007 11 06 | G96 | 0.2-  | 0.7-  |
| 2001 03 18 | 699 | 0.5+  | 1.2-  | 2005 03 10 | 699 | 1.0+  | 1.0+  | 2007 11 06 | G96 | 0.0   | 0.5-  |
| 2003 10 21 | 691 | 0.1-  | 0.2-  | 2005 03 10 | 699 | 0.4+  | 0.1-  | 2007 11 06 | G96 | 0.2+  | 0.4-  |
| 2003 10 21 | 691 | 0.7-  | 0.3-  | 2005 03 10 | 699 | 0.6+  | 0.5+  | 2007 12 05 | 691 | 0.4+  | 0.8+  |
| 2003 10 21 | 691 | 0.7-  | 0.1+  | 2005 03 18 | 703 | 0.6-  | 0.9-  | 2007 12 05 | 691 | 0.4-  | 0.5-  |
| 2003 10 21 | 704 | (1.5- | 0.1-) | 2005 03 18 | 703 | 0.0   | 0.2-  | 2007 12 05 | 691 | 0.3-  | 0.4-  |
| 2003 10 21 | 704 | 0.7+  | 0.2+  | 2005 03 18 | 703 | 0.6+  | 1.4-  | 2007 12 13 | 704 | 0.8+  | 0.1+  |
| 2003 10 21 | 704 | 0.4+  | 0.9+  | 2005 03 18 | 703 | 0.7-  | 1.1-  | 2007 12 13 | 704 | 0.7+  | 0.1-  |
| 2003 10 21 | 704 | 0.3+  | 0.8+  | 2005 04 13 | 704 | 0.7+  | 0.7-  | 2007 12 13 | 704 | 0.5+  | 0.3+  |
| 2003 10 21 | 704 | 0.8+  | 0.1-  | 2005 04 13 | 704 | 1.3+  | 0.7+  | 2007 12 13 | 704 | 0.4+  | 0.3+  |
| 2003 10 21 | 644 | 0.4-  | 0.2-  | 2005 04 13 | 704 | (1.6+ | 0.4-) | 2007 12 13 | 704 | 0.3+  | 0.1+  |
| 2003 10 21 | 644 | 0.2+  | 0.4-  | 2005 04 13 | 704 | 1.2+  | 1.1-  | 2007 12 15 | 704 | 0.4+  | 0.3-  |
| 2003 10 21 | 644 | 0.0   | 0.5+  | 2005 04 18 | 703 | 0.4+  | 0.3+  | 2007 12 15 | 704 | 1.6-  | 0.4-  |
| 2003 10 25 | 704 | 1.2+  | 0.2+  | 2005 04 18 | 703 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.4-  | 1.1-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 25 | 704 | 0.2+ | 0.6- | 2005 04 18 | 703 | 0.9+ | 0.9+ | 2007 12 15 | 704 | 0.2- | 0.4- |
| 2003 10 25 | 704 | 0.4+ | 0.3- | 2005 04 18 | 703 | 0.6+ | 0.7+ | 2007 12 15 | 704 | 0.2+ | 0.4- |

(171805)\* 2001 DL<sub>52</sub> = 2001 AH<sub>40</sub>

Discovered 2001 Feb. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (d, *MPO* 13879)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 301.13214  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27467667 | $\omega$ | 124.04175 | -0.79730778 | -0.60328268 |
| <i>a</i> | 2.3438053  | $\Omega$ | 18.87467  | +0.53294782 | -0.71823045 |
| <i>e</i> | 0.1308982  | <i>i</i> | 3.31676   | +0.28331417 | -0.34669154 |
| <i>P</i> | 3.59       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 03 | 699 | 0.0   | 0.2+  | 2003 10 24 | 704 | 0.0   | 0.1+  | 2005 04 11 | G96 | 0.3-  | 0.1+  |
| 2001 01 03 | 699 | 0.1-  | 0.3-  | 2003 10 24 | 704 | 0.8-  | 0.8+  | 2005 04 11 | 699 | 0.2+  | 0.2+  |
| 2001 01 03 | 699 | 0.1-  | 0.6-  | 2003 10 24 | 704 | 0.1-  | 0.2+  | 2005 04 11 | G96 | 0.3-  | 0.2+  |
| 2001 01 03 | 699 | (2.0+ | 1.5+) | 2003 10 24 | 704 | 0.9+  | 0.5+  | 2005 04 12 | 704 | 0.7+  | 0.6+  |
| 2001 01 04 | 704 | 0.1+  | 0.1+  | 2003 10 24 | 704 | 0.1+  | 0.2-  | 2005 04 12 | 704 | 0.2+  | 0.7-  |
| 2001 01 04 | 704 | 0.0   | 0.2-  | 2003 10 24 | 704 | (1.5+ | 0.5+) | 2005 04 12 | 704 | 0.6+  | 0.7-  |
| 2001 01 04 | 704 | 0.4+  | 0.0   | 2003 10 24 | 704 | 0.4-  | 0.9+  | 2005 04 12 | 704 | 0.6+  | 0.0   |
| 2001 01 04 | 704 | 0.2+  | 0.4-  | 2003 10 24 | 704 | (1.7+ | 0.1+) | 2005 04 12 | 704 | 0.2+  | 0.7-  |
| 2001 01 04 | 704 | 0.3+  | 0.1+  | 2003 10 24 | 704 | 0.6+  | 0.9+  | 2005 04 13 | 704 | (0.9+ | 1.6+) |
| 2001 02 01 | 699 | 0.3-  | 0.1+  | 2003 10 28 | 704 | 0.7-  | 1.1+  | 2005 04 13 | 704 | (1.5+ | 1.2+) |
| 2001 02 01 | 699 | 0.5-  | 0.1+  | 2003 10 28 | 704 | 0.8-  | 0.8+  | 2005 04 13 | 704 | 0.6+  | 0.6+  |
| 2001 02 01 | 699 | 0.7-  | 0.1+  | 2003 10 28 | 704 | 0.8-  | 1.0+  | 2005 04 13 | 704 | 1.0+  | 0.5+  |
| 2001 02 01 | 699 | 1.0-  | 0.4+  | 2003 10 28 | 704 | 0.6-  | 1.3+  | 2005 04 13 | 704 | 0.2+  | 0.6+  |
| 2001 02 03 | 704 | (0.1- | 2.0-) | 2003 10 28 | 704 | (0.9- | 1.6+) | 2005 04 15 | 699 | 0.3+  | 0.6-  |
| 2001 02 03 | 704 | 0.3+  | 0.4-  | 2003 11 01 | 704 | 1.0-  | 0.2+  | 2005 04 15 | 699 | 0.4+  | 0.1+  |
| 2001 02 03 | 704 | 0.0   | 0.4-  | 2003 11 01 | 704 | (1.9- | 0.6+) | 2005 04 15 | 699 | 0.4+  | 0.5+  |
| 2001 02 03 | 704 | 0.3-  | 0.6+  | 2003 11 01 | 704 | (1.6- | 0.7-) | 2005 04 15 | 699 | 0.4-  | 0.5+  |
| 2001 02 03 | 704 | 0.5-  | 1.1+  | 2003 11 01 | 704 | (1.7- | 0.1+) | 2005 04 18 | 703 | 0.3-  | 0.5+  |
| 2001 02 12 | 699 | 0.2-  | 0.1+  | 2005 03 07 | 704 | 1.2+  | 0.4+  | 2005 04 18 | 703 | 0.2-  | 0.9+  |
| 2001 02 12 | 699 | 0.6-  | 0.1+  | 2005 03 07 | 704 | 0.5+  | 0.5+  | 2005 04 18 | 704 | 0.3-  | 0.4+  |
| 2001 02 12 | 699 | 0.1-  | 0.2+  | 2005 03 07 | 704 | (0.7+ | 1.9+) | 2005 04 18 | 703 | 0.1-  | 0.7+  |
| 2001 02 12 | 699 | 0.6-  | 1.0+  | 2005 03 07 | 704 | 0.7-  | 0.9+  | 2005 04 18 | 703 | 0.7-  | 0.2+  |
| 2001 02 17 | 704 | (2.1- | 0.2+) | 2005 03 08 | G96 | 1.1-  | 1.0+  | 2005 04 18 | 704 | 0.6+  | 0.5+  |
| 2001 02 17 | 704 | 0.3+  | 0.7-  | 2005 03 08 | G96 | 0.3-  | 1.0+  | 2005 04 18 | 704 | 0.4+  | 0.3-  |
| 2001 02 17 | 704 | 0.2-  | 0.4-  | 2005 03 08 | G96 | 0.6+  | 1.0+  | 2005 04 18 | 704 | (1.0- | 1.9-) |
| 2001 02 17 | 704 | 1.3+  | 1.1-  | 2005 03 08 | G96 | 0.4-  | 0.1+  | 2005 04 18 | 704 | 0.3+  | 0.4+  |
| 2001 02 17 | 704 | 0.9+  | 0.5-  | 2005 03 10 | 699 | 0.3-  | 0.3-  | 2005 05 08 | 703 | 0.5+  | 0.3+  |
| 2001 02 21 | 704 | 0.1+  | 0.0   | 2005 03 10 | 699 | 0.6+  | 0.4+  | 2005 05 08 | 703 | 0.3+  | 0.4-  |
| 2001 02 21 | 704 | 0.8-  | 0.7-  | 2005 03 10 | 699 | 0.6+  | 1.2+  | 2005 05 08 | 703 | 1.1-  | 0.2-  |
| 2001 02 21 | 704 | 0.5+  | 0.1+  | 2005 03 10 | 699 | 0.6-  | 0.6-  | 2005 05 08 | 703 | 1.2-  | 0.2+  |
| 2001 02 21 | 704 | 0.1+  | 0.6-  | 2005 03 13 | 691 | 0.4+  | 0.2+  | 2005 05 12 | G96 | 0.3-  | 0.1-  |
| 2001 02 21 | 704 | 0.2+  | 0.2+  | 2005 03 13 | 691 | 0.3+  | 0.2+  | 2005 05 12 | G96 | 0.4-  | 0.0   |
| 2001 03 19 | 704 | 0.4-  | 0.1+  | 2005 03 13 | 691 | 0.3+  | 0.2+  | 2005 05 12 | G96 | 0.7-  | 0.2+  |
| 2001 03 19 | 704 | 0.1-  | 0.6+  | 2005 04 03 | 644 | 0.2+  | 0.3+  | 2005 05 12 | G96 | 0.4-  | 0.2+  |
| 2001 03 19 | 704 | 0.3-  | 0.3-  | 2005 04 03 | 644 | 0.3+  | 0.1-  | 2005 05 23 | 644 | 0.4-  | 0.8+  |
| 2001 03 19 | 704 | 1.5+  | 1.4-  | 2005 04 03 | 644 | 0.1+  | 0.1+  | 2005 05 23 | 644 | 0.2-  | 0.3+  |
| 2003 09 26 | 704 | 0.8-  | 0.9+  | 2005 04 04 | 691 | 0.2-  | 0.2+  | 2005 05 23 | 644 | 0.2-  | 0.5+  |
| 2003 09 26 | 704 | 0.3-  | 0.1-  | 2005 04 04 | 691 | 0.2+  | 0.2+  | 2006 08 24 | 644 | 0.6-  | 0.6+  |
| 2003 09 26 | 704 | 0.6-  | 0.2+  | 2005 04 04 | 691 | 0.1-  | 0.2+  | 2006 08 24 | 644 | 0.4-  | 0.8+  |
| 2003 09 26 | 704 | 0.6+  | 0.4+  | 2005 04 04 | 704 | 0.7+  | 0.7+  | 2006 08 24 | 644 | 0.5-  | 0.2+  |
| 2003 09 29 | 704 | 0.5-  | 0.2+  | 2005 04 04 | 704 | 0.7+  | 0.0   | 2007 11 18 | 704 | 0.1-  | 0.4+  |
| 2003 09 29 | 704 | 1.2-  | 0.5+  | 2005 04 04 | 704 | 0.6+  | 0.0   | 2007 11 18 | 704 | 0.6+  | 0.1+  |
| 2003 09 29 | 704 | 0.2-  | 0.1+  | 2005 04 04 | 704 | 0.9+  | 0.6-  | 2007 11 18 | 704 | 0.0   | 0.6+  |
| 2003 09 29 | 704 | (0.5- | 1.8+) | 2005 04 04 | 704 | 1.0+  | 0.4+  | 2007 11 18 | 704 | 0.0   | 0.6+  |
| 2003 10 21 | 704 | 0.2+  | 0.9+  | 2005 04 07 | 704 | 0.2-  | 0.3-  | 2007 11 20 | 704 | 0.2+  | 0.1+  |
| 2003 10 21 | 704 | (2.6- | 1.4-) | 2005 04 07 | 704 | 0.5-  | 1.1+  | 2007 11 20 | 704 | 0.4+  | 0.1+  |
| 2003 10 21 | 704 | 0.3-  | 1.5+  | 2005 04 07 | 704 | 0.2+  | 0.2+  | 2007 11 20 | 704 | 0.5-  | 0.1+  |
| 2003 10 21 | 704 | (1.7- | 1.0+) | 2005 04 07 | 704 | 0.1+  | 1.2+  | 2007 11 20 | 704 | 0.6-  | 0.3+  |
| 2003 10 24 | 704 | 1.2-  | 0.7+  | 2005 04 07 | 704 | 0.4+  | 0.1+  | 2007 12 13 | 704 | 0.1+  | 0.6+  |
| 2003 10 24 | 704 | 0.0   | 0.2+  | 2005 04 07 | 704 | (0.6+ | 1.6+) | 2007 12 13 | 704 | 0.1+  | 0.3+  |
| 2003 10 24 | 704 | 0.7-  | 1.0+  | 2005 04 07 | 704 | 0.5-  | 0.2+  | 2007 12 13 | 704 | 0.1-  | 0.1+  |

2007 DEC. 24

M.P.O. 129167

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 704 | 0.0   | 0.5+  | 2005 04 11 | 691 | 0.0  | 0.8− | 2007 12 15 | 704 | 0.2+ | 0.3− |
| 2003 10 24 | 704 | (1.7− | 1.0+) | 2005 04 11 | 691 | 0.1+ | 0.1+ | 2007 12 15 | 704 | 0.7+ | 0.3+ |
| 2003 10 24 | 704 | 0.1−  | 0.6+  | 2005 04 11 | 691 | 0.2+ | 0.0  | 2007 12 15 | 704 | 0.0  | 0.5− |
| 2003 10 24 | 704 | (1.7+ | 0.8+) | 2005 04 11 | 699 | 0.4+ | 0.1+ | 2007 12 15 | 704 | 0.1+ | 0.5− |
| 2003 10 24 | 704 | 0.6+  | 0.1−  | 2005 04 11 | 699 | 0.1+ | 0.6+ | 2007 12 15 | 704 | 0.2+ | 0.1− |
| 2003 10 24 | 704 | 0.4−  | 0.4+  | 2005 04 11 | 699 | 0.2+ | 0.3+ | 2007 12 16 | 691 | 0.1− | 0.4+ |
| 2003 10 24 | 704 | 0.6+  | 0.8+  | 2005 04 11 | G96 | 0.1− | 0.1+ | 2007 12 16 | 691 | 0.3− | 0.3− |
| 2003 10 24 | 704 | 1.0+  | 1.0+  | 2005 04 11 | G96 | 0.3− | 0.1+ | 2007 12 16 | 691 | 0.0  | 0.5− |

**(171806)\* 2001 DA<sub>63</sub>**

Discovered 2001 Feb. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.92546  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27748044 | $\omega$ | 208.26994 | −0.57539383 | −0.81782710 |
| <i>a</i> | 2.3279901  | $\Omega$ | 276.85863 | +0.75208211 | −0.52475595 |
| <i>e</i> | 0.1818214  | <i>i</i> | 0.51866   | +0.32139452 | −0.23619914 |
| <i>P</i> | 3.55       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 11 17 | 691 | 0.0  | 0.3− | 2003 09 28 | 691 | 0.3+  | 0.2−  | 2005 04 11 | G96 | 0.9+ | 0.1+ |
| 1996 11 17 | 691 | 0.0  | 0.2+ | 2003 09 28 | 691 | 0.3−  | 0.3−  | 2005 05 16 | 691 | 0.1− | 0.0  |
| 1996 11 17 | 691 | 0.2− | 0.0  | 2003 09 28 | 691 | 0.0   | 0.1−  | 2005 05 16 | 691 | 0.3+ | 0.2+ |
| 2001 01 21 | 704 | 0.8+ | 1.1+ | 2003 10 19 | 691 | 0.2−  | 0.2+  | 2005 05 16 | 691 | 0.1+ | 0.2+ |
| 2001 01 21 | 704 | 0.0  | 0.2+ | 2003 10 19 | 691 | 0.3−  | 0.4+  | 2007 11 08 | G96 | 0.4+ | 0.2− |
| 2001 01 21 | 704 | 0.2+ | 0.6+ | 2003 10 19 | 691 | 0.5−  | 0.6+  | 2007 11 08 | G96 | 0.3+ | 0.2− |
| 2001 02 16 | 209 | 0.9+ | 0.1− | 2003 10 25 | 291 | 0.3+  | 0.4+  | 2007 11 08 | G96 | 0.6+ | 0.4− |
| 2001 02 16 | 209 | 0.0  | 0.2− | 2003 10 25 | 291 | 0.5−  | 0.6+  | 2007 12 03 | 703 | 0.6+ | 0.4− |
| 2001 02 17 | 209 | 0.8+ | 0.1− | 2003 10 25 | 291 | 0.1+  | 0.3+  | 2007 12 03 | 703 | 0.6− | 0.1− |
| 2001 02 19 | 704 | 0.3− | 0.5+ | 2003 10 28 | 704 | (1.5− | 0.2−) | 2007 12 03 | 703 | 0.9+ | 0.3− |
| 2001 02 19 | 704 | 0.4+ | 0.9+ | 2003 10 28 | 704 | 0.2+  | 0.7−  | 2007 12 03 | 703 | 0.4− | 0.8− |
| 2001 02 19 | 704 | 0.2+ | 0.4+ | 2003 10 28 | 704 | 0.0   | 0.4−  | 2007 12 06 | G96 | 0.1+ | 0.3− |
| 2001 02 19 | 704 | 0.6+ | 0.6+ | 2003 11 18 | 291 | 0.1+  | 0.1+  | 2007 12 06 | G96 | 0.4+ | 0.3− |
| 2001 02 19 | 704 | 0.3+ | 1.4+ | 2003 11 18 | 291 | 0.2+  | 0.1−  | 2007 12 06 | G96 | 0.6+ | 0.5− |
| 2001 02 22 | 704 | 0.2− | 0.5+ | 2003 11 18 | 291 | 0.2+  | 0.1−  | 2007 12 06 | G96 | 0.8+ | 0.2− |
| 2001 02 22 | 704 | 1.2− | 0.2+ | 2005 04 11 | G96 | 0.3−  | 0.2+  | 2007 12 15 | 291 | 0.3− | 0.1− |
| 2001 02 22 | 704 | 0.1− | 1.1− | 2005 04 11 | G96 | 0.3−  | 0.1+  | 2007 12 15 | 291 | 0.5− | 0.2− |
| 2001 02 22 | 704 | 0.2+ | 0.1− | 2005 04 11 | G96 | 0.8−  | 0.7+  | 2007 12 15 | 291 | 0.4− | 0.1− |

**(171807)\* 2001 DV<sub>64</sub>**

Discovered 2001 Feb. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.57534  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26956867 | $\omega$ | 312.61494 | −0.46204330 | −0.88651139 |
| <i>a</i> | 2.3733208  | $\Omega$ | 164.84819 | +0.83889717 | −0.44594640 |
| <i>e</i> | 0.1824736  | <i>i</i> | 5.43788   | +0.28769345 | −0.12340732 |
| <i>P</i> | 3.66       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 26 | 704 | 0.5+ | 0.4+ | 2001 03 18 | 608 | 0.2−  | 0.2−  | 2003 10 23 | 691 | 0.0  | 0.6+ |
| 2001 01 26 | 704 | 1.0+ | 0.6+ | 2001 03 18 | 608 | 0.4+  | 0.7−  | 2003 10 23 | 691 | 0.2− | 0.5+ |
| 2001 01 26 | 704 | 0.1+ | 0.1+ | 2001 03 18 | 608 | 0.1−  | 0.8−  | 2003 11 16 | 645 | 0.0  | 0.0  |
| 2001 01 26 | 704 | 0.2+ | 0.1+ | 2001 03 19 | 704 | 0.1+  | 0.5+  | 2003 11 16 | 645 | 0.0  | 0.1+ |
| 2001 02 19 | 699 | 0.2+ | 0.3+ | 2001 03 19 | 704 | 0.9−  | 0.7+  | 2003 11 20 | 645 | 0.0  | 0.0  |
| 2001 02 19 | 699 | 0.3+ | 0.5+ | 2001 03 19 | 704 | (1.1− | 2.7+) | 2003 11 20 | 645 | 0.0  | 0.1+ |
| 2001 02 19 | 699 | 0.1+ | 1.0+ | 2001 03 19 | 704 | (0.0  | 1.9+) | 2005 04 07 | 691 | 0.2− | 0.1+ |
| 2001 02 19 | 704 | 0.2+ | 0.1+ | 2001 03 19 | 704 | 0.0   | 1.2+  | 2005 04 07 | 691 | 0.0  | 0.0  |
| 2001 02 19 | 699 | 0.8− | 0.3+ | 2001 03 19 | 704 | 0.1−  | 0.5+  | 2005 04 07 | 691 | 0.1+ | 0.3+ |
| 2001 02 19 | 704 | 0.3+ | 0.3− | 2001 03 19 | 704 | 0.4−  | 0.5−  | 2005 04 14 | 691 | 0.1+ | 0.2+ |
| 2001 02 19 | 704 | 0.1− | 0.2+ | 2001 03 19 | 704 | 0.3−  | 0.4+  | 2005 04 14 | 691 | 0.1+ | 0.3+ |
| 2001 02 19 | 704 | 0.3− | 0.5+ | 2001 03 19 | 704 | 0.6−  | 0.9+  | 2005 04 14 | 691 | 0.1+ | 0.3+ |
| 2001 02 19 | 704 | 0.4− | 0.4+ | 2001 03 19 | 704 | 0.3−  | 0.6−  | 2005 04 18 | 691 | 0.0  | 0.3+ |
| 2001 02 22 | 704 | 0.4− | 0.5− | 2001 03 31 | 691 | 0.3−  | 0.5+  | 2005 04 18 | 691 | 0.1+ | 0.4+ |
| 2001 02 22 | 704 | 0.6+ | 0.3− | 2001 03 31 | 691 | 0.1+  | 0.1+  | 2005 04 18 | 691 | 0.2+ | 0.3+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 22 | 704 | 0.6+  | 0.5−  | 2001 03 31 | 691 | 0.1−  | 0.3+  | 2006 08 29 | 291 | 0.2− | 0.5+ |
| 2001 02 22 | 704 | 0.5+  | 0.4−  | 2001 05 20 | 807 | 0.4+  | 0.2+  | 2006 08 29 | 291 | 0.1− | 0.3+ |
| 2001 02 22 | 704 | 0.6+  | 1.4−  | 2001 05 21 | 807 | 0.0   | 0.3+  | 2006 08 29 | 291 | 0.1+ | 0.6+ |
| 2001 02 25 | 504 | 0.5+  | 1.2+  | 2003 09 16 | 691 | 0.3+  | 0.3+  | 2007 11 11 | 704 | 0.5− | 0.3+ |
| 2001 02 25 | 504 | 1.2+  | 0.7+  | 2003 09 16 | 691 | 0.1+  | 0.3+  | 2007 11 11 | 704 | 0.2− | 0.1− |
| 2001 02 25 | 504 | 0.9−  | 0.3+  | 2003 09 16 | 691 | 0.1+  | 0.2+  | 2007 11 11 | 704 | 0.9− | 0.0  |
| 2001 03 14 | 699 | 0.3+  | 0.4+  | 2003 09 28 | 704 | 0.9−  | 0.2+  | 2007 11 11 | 704 | 0.6− | 0.1− |
| 2001 03 14 | 699 | 0.3+  | 0.0   | 2003 09 28 | 704 | 0.1−  | 0.1+  | 2007 11 11 | 704 | 0.9− | 0.7− |
| 2001 03 14 | 699 | 0.1+  | 0.1−  | 2003 09 28 | 704 | 0.2+  | 0.1+  | 2007 11 29 | D29 | 0.8+ | 0.3− |
| 2001 03 14 | 699 | 0.9+  | 0.7−  | 2003 10 21 | 683 | 1.2−  | 1.4−  | 2007 11 29 | D29 | 0.9+ | 0.5+ |
| 2001 03 18 | 704 | 0.2−  | 1.2+  | 2003 10 21 | 683 | 0.1+  | 0.1+  | 2007 11 29 | D29 | 0.6+ | 0.1+ |
| 2001 03 18 | 704 | 0.4−  | 0.9−  | 2003 10 21 | 683 | (5.1+ | 1.6+) | 2007 11 29 | D29 | 0.6+ | 0.7− |
| 2001 03 18 | 704 | (0.5+ | 2.2−) | 2003 10 23 | 691 | 0.2−  | 0.8+  |            |     |      |      |

**(171808)\* 2001 DQ<sub>81</sub> = 2003 UH<sub>229</sub> = 2005 EV<sub>256</sub> = 2005 FX<sub>11</sub>**

Discovered 2001 Feb. 21 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 56216), A. Doppler (*MPO* 115696)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 43.56779   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27291460 | $\omega$ | 60.56769  | +0.81989713 | −0.57189451 |
| <i>a</i> | 2.3538830  | $\Omega$ | 334.28683 | +0.50177902 | +0.74016404 |
| <i>e</i> | 0.0973379  | <i>i</i> | 3.50951   | +0.27565651 | +0.35368613 |
| <i>P</i> | 3.61       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 02 | 691 | 0.3− | 0.0  | 2003 11 18 | 644 | 0.3+  | 0.2+  | 2005 03 17 | 691 | 0.1+ | 0.2+ |
| 2001 02 02 | 691 | 0.3− | 0.2+ | 2003 11 18 | 644 | 0.2−  | 0.1+  | 2005 03 17 | 691 | 0.4+ | 0.4+ |
| 2001 02 02 | 691 | 0.1− | 0.2+ | 2003 11 18 | 644 | 0.2+  | 0.1+  | 2005 03 17 | 691 | 0.4+ | 0.4+ |
| 2001 02 21 | 691 | 0.1− | 0.1− | 2003 11 19 | 703 | 1.3+  | 0.7−  | 2005 04 12 | G96 | 0.1+ | 0.0  |
| 2001 02 21 | 691 | 0.1+ | 0.3+ | 2003 11 19 | 703 | 0.2+  | 0.6−  | 2005 04 12 | G96 | 0.3− | 0.1+ |
| 2001 02 21 | 691 | 0.2+ | 0.1+ | 2003 11 19 | 703 | (3.6− | 0.9−) | 2005 04 12 | G96 | 0.4− | 0.1− |
| 2001 02 27 | 691 | 0.2+ | 0.0  | 2003 11 19 | 703 | 0.4+  | 0.4−  | 2005 04 12 | G96 | 0.1− | 0.2+ |
| 2001 02 27 | 691 | 0.4+ | 0.2+ | 2003 11 20 | 704 | 0.3+  | 0.3−  | 2007 11 03 | G96 | 0.2+ | 0.2− |
| 2001 02 27 | 691 | 0.5+ | 0.0  | 2003 11 20 | 704 | 0.5+  | 0.5−  | 2007 11 03 | G96 | 0.4− | 0.3− |
| 2001 03 02 | 691 | 0.2− | 0.1− | 2003 11 20 | 704 | 0.0   | 0.1+  | 2007 11 03 | G96 | 0.1+ | 0.3− |
| 2001 03 02 | 691 | 0.0  | 0.1− | 2003 11 20 | 704 | 0.7−  | 0.1−  | 2007 11 03 | G96 | 0.1− | 0.4− |
| 2001 03 02 | 691 | 0.1− | 0.1− | 2003 11 20 | 704 | 0.4−  | 0.1+  | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 2003 10 23 | 699 | 0.3− | 0.4+ | 2003 11 24 | 704 | 0.4+  | 0.7+  | 2007 11 11 | G96 | 0.0  | 0.5− |
| 2003 10 23 | 699 | 0.3+ | 0.6+ | 2003 11 24 | 704 | 0.8+  | 0.4+  | 2007 11 11 | G96 | 0.2− | 0.4− |
| 2003 10 23 | 699 | 0.1− | 0.7+ | 2003 11 24 | 699 | 0.4−  | 0.3+  | 2007 11 11 | G96 | 0.4− | 0.2− |
| 2003 10 23 | 699 | 0.2+ | 0.0  | 2003 11 24 | 704 | 0.3−  | 0.7+  | 2007 12 05 | 691 | 0.2− | 0.0  |
| 2003 10 25 | 704 | 0.8− | 0.4− | 2003 11 24 | 704 | 1.0−  | 1.0+  | 2007 12 05 | 691 | 0.3− | 0.2− |
| 2003 10 25 | 704 | 0.1− | 1.3+ | 2003 11 24 | 699 | 0.2−  | 0.6−  | 2007 12 05 | 691 | 0.3− | 0.2− |
| 2003 10 25 | 704 | 0.2− | 0.3− | 2003 11 24 | 704 | 0.5+  | 0.4+  | 2007 12 15 | 704 | 0.5+ | 0.5− |
| 2003 10 25 | 704 | 0.1− | 0.1+ | 2003 11 24 | 699 | 0.6−  | 0.8+  | 2007 12 15 | 704 | 0.7+ | 0.0  |
| 2003 10 25 | 704 | 0.2− | 0.2+ | 2003 11 24 | 699 | 0.1−  | 0.0   | 2007 12 15 | 704 | 0.7+ | 0.6− |
| 2003 10 30 | 704 | 0.2− | 0.8+ | 2005 03 11 | G96 | 0.4−  | 0.3−  | 2007 12 15 | 704 | 0.2+ | 0.2− |
| 2003 10 30 | 704 | 0.1− | 0.1− | 2005 03 11 | G96 | 0.3−  | 0.4−  | 2007 12 15 | 704 | 0.1− | 0.3+ |
| 2003 10 30 | 704 | 0.2− | 0.3+ | 2005 03 11 | G96 | 0.2−  | 0.2−  | 2007 12 15 | 704 | 0.3− | 1.2− |
| 2003 10 30 | 704 | 1.3− | 0.7+ | 2005 03 11 | G96 | 0.2−  | 0.2−  |            |     |      |      |

**(171809)\* 2001 DO<sub>86</sub> = 2005 LP<sub>25</sub>**

Discovered 2001 Feb. 25 by P. Kušnirák at Ondřejov.

Id. G. V. Williams (*MPO* 74924)

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 17 | 704 | 0.8+  | 0.9+  | 2003 12 21 | 704 | (0.2− | 2.2−) | 2006 09 27 | 691 | 0.2− | 0.4+ |
| 2001 02 17 | 704 | 0.3+  | 1.2+  | 2003 12 21 | 704 | (0.9+ | 1.5−) | 2007 11 07 | 291 | 0.1+ | 0.3+ |
| 2001 02 17 | 704 | (1.7+ | 0.4−) | 2003 12 21 | 704 | (0.2+ | 2.0−) | 2007 11 07 | 291 | 0.1− | 0.6− |
| 2001 02 17 | 704 | 0.9−  | 1.3+  | 2003 12 21 | 704 | 0.8+  | 1.4−  | 2007 11 07 | 291 | 0.5− | 0.4+ |
| 2001 02 17 | 704 | 0.1−  | 0.7+  | 2005 05 15 | G96 | 0.2−  | 0.0   | 2007 11 20 | G96 | 0.3+ | 0.1+ |
| 2001 02 19 | 557 | 0.1−  | 0.2+  | 2005 05 15 | G96 | 0.2+  | 0.2−  | 2007 11 20 | G96 | 0.5+ | 0.1− |
| 2001 02 19 | 557 | 0.7+  | 0.2+  | 2005 05 15 | G96 | 0.2−  | 0.2−  | 2007 11 20 | G96 | 0.1− | 0.1+ |
| 2001 02 25 | 557 | 0.5−  | 0.4+  | 2005 05 15 | G96 | 0.2−  | 0.3−  | 2007 11 20 | G96 | 0.5+ | 0.1+ |
| 2001 02 25 | 557 | 1.0+  | 0.4−  | 2005 06 08 | 691 | 0.2−  | 0.4+  | 2007 11 21 | G96 | 0.7+ | 0.1+ |
| 2001 02 25 | 557 | 0.2+  | 0.0   | 2005 06 08 | 691 | 0.1+  | 0.3+  | 2007 11 21 | G96 | 0.3+ | 0.4− |
| 2001 02 25 | 557 | 0.1+  | 0.1+  | 2005 06 08 | 691 | 0.1+  | 0.2+  | 2007 11 21 | 691 | 0.1− | 0.1+ |
| 2001 02 27 | 557 | 0.0   | 0.2+  | 2005 06 13 | 691 | 0.1+  | 0.1+  | 2007 11 21 | G96 | 0.5+ | 0.3− |
| 2001 02 28 | 557 | 0.7+  | 0.3+  | 2005 06 13 | 691 | 0.2+  | 0.0   | 2007 11 21 | 691 | 0.1− | 0.1+ |
| 2001 02 28 | 557 | 0.4−  | 0.1−  | 2005 06 13 | 691 | 0.2+  | 0.3+  | 2007 11 21 | 691 | 0.2− | 0.8− |
| 2003 11 24 | 691 | 0.2+  | 0.3+  | 2006 09 12 | 705 | 0.0   | 0.3+  | 2007 11 21 | G96 | 0.0  | 0.4− |
| 2003 11 24 | 691 | 0.1+  | 0.3+  | 2006 09 12 | 705 | 0.1−  | 0.1+  |            |     |      |      |
| 2003 11 24 | 691 | 0.0   | 0.1−  | 2006 09 16 | 705 | 0.0   | 0.3+  |            |     |      |      |

(171810)\* 2001 DY<sub>86</sub> = 2002 PO<sub>131</sub>

Discovered 2001 Feb. 18 by NEAT at Haleakala.

Id. M. E. Sansaturio (*MPO* 60738)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 338.15841  |          | (2000.0)  |     | $P$         |     | $Q$         |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.37942204 | $\omega$ | 88.08118  |     | +0.95488076 |     | −0.13403955 |
| $a$ | 1.8896775  | $\Omega$ | 279.55168 |     | +0.00942518 |     | +0.90558578 |
| $e$ | 0.0819940  | $i$      | 15.58971  |     | +0.29683985 |     | +0.40242739 |
| $P$ | 2.60       | $H$      | 16.8      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 18 | 608 | (1.1+ | 2.0+) | 2002 10 10 | 704 | 0.3−  | 0.0   | 2005 12 28 | 704 | 0.3+ | 0.5− |
| 2001 02 18 | 608 | (0.9+ | 2.5+) | 2002 10 10 | 644 | 0.0   | 0.1−  | 2005 12 28 | 704 | 0.3− | 0.1+ |
| 2001 02 18 | 608 | (1.0+ | 2.3+) | 2002 10 10 | 704 | 0.7−  | 0.4+  | 2005 12 29 | 691 | 0.2− | 0.1+ |
| 2001 03 02 | 608 | 0.1−  | 0.3+  | 2002 10 10 | 704 | 0.7+  | 0.5+  | 2005 12 29 | 691 | 0.0  | 0.1+ |
| 2001 03 02 | 608 | 0.3+  | 0.1−  | 2005 10 26 | 703 | 0.5−  | 0.5+  | 2005 12 29 | 691 | 0.0  | 0.0  |
| 2001 03 02 | 608 | 0.2−  | 0.0   | 2005 10 26 | 703 | 0.5−  | 0.2−  | 2005 12 31 | 704 | 0.9+ | 0.4+ |
| 2002 08 14 | 644 | 0.3+  | 0.1+  | 2005 10 26 | 703 | 1.1−  | 1.3−  | 2005 12 31 | 704 | 0.2− | 1.3− |
| 2002 08 14 | 644 | 0.6+  | 0.3−  | 2005 10 26 | 703 | 0.2−  | 0.1+  | 2005 12 31 | 704 | 0.5+ | 0.2+ |
| 2002 08 14 | 644 | 0.8+  | 0.1−  | 2005 12 05 | 704 | (1.7+ | 1.0+) | 2005 12 31 | 704 | 0.4− | 0.5+ |
| 2002 08 17 | 699 | 0.3−  | 0.4+  | 2005 12 05 | 704 | 0.7+  | 0.8+  | 2005 12 31 | 704 | 0.0  | 0.6+ |
| 2002 08 17 | 699 | 0.9+  | 0.9+  | 2005 12 05 | 704 | 0.4+  | 0.6+  | 2006 01 04 | 691 | 0.2− | 0.1+ |
| 2002 08 17 | 699 | 0.4−  | 0.5−  | 2005 12 05 | 704 | 0.8+  | 0.4+  | 2006 01 04 | 691 | 0.4− | 0.0  |
| 2002 08 17 | 699 | 0.3+  | 0.1−  | 2005 12 05 | 704 | 0.2+  | 0.3+  | 2006 01 04 | 691 | 0.8+ | 0.2+ |
| 2002 09 27 | 644 | 0.1−  | 0.5−  | 2005 12 05 | G96 | 0.2−  | 0.0   | 2006 01 24 | 461 | 0.1− | 0.4+ |
| 2002 09 27 | 644 | 0.4−  | 0.5−  | 2005 12 05 | G96 | 0.3−  | 0.1−  | 2006 01 24 | 461 | 0.2− | 0.1+ |
| 2002 09 27 | 644 | 0.2−  | 0.7−  | 2005 12 05 | G96 | 0.1−  | 0.2−  | 2007 06 19 | 691 | 0.2− | 0.4+ |
| 2002 09 28 | 644 | 0.6−  | 0.3+  | 2005 12 05 | G96 | 0.2−  | 0.2−  | 2007 06 19 | 691 | 0.2+ | 1.0− |
| 2002 09 28 | 644 | 0.4−  | 0.3+  | 2005 12 10 | 704 | 1.3−  | 0.4+  | 2007 06 19 | 691 | 0.3− | 0.3+ |
| 2002 09 28 | 644 | 0.5−  | 0.2+  | 2005 12 10 | 704 | 0.4−  | 0.3+  | 2007 07 15 | 704 | 0.0  | 0.7+ |
| 2002 10 05 | 699 | 0.6+  | 0.3+  | 2005 12 10 | 704 | 0.6−  | 0.9+  | 2007 07 15 | 704 | 0.2− | 0.5+ |
| 2002 10 05 | 699 | 0.0   | 0.1−  | 2005 12 25 | G96 | 0.4−  | 0.4−  | 2007 07 15 | 704 | 0.0  | 0.9+ |
| 2002 10 05 | 699 | 0.1−  | 0.5−  | 2005 12 25 | G96 | 0.2−  | 0.3−  | 2007 07 15 | 704 | 0.0  | 0.6+ |
| 2002 10 05 | 699 | 0.5−  | 0.3−  | 2005 12 25 | G96 | 0.3−  | 0.2−  | 2007 07 15 | 704 | 0.1+ | 1.4+ |
| 2002 10 10 | 704 | 0.1+  | 0.3+  | 2005 12 25 | G96 | 0.1−  | 0.1−  | 2007 12 05 | G96 | 0.5+ | 0.4− |
| 2002 10 10 | 644 | 0.1+  | 0.1−  | 2005 12 28 | 704 | 1.3+  | 0.3−  | 2007 12 05 | G96 | 0.0  | 0.4− |
| 2002 10 10 | 704 | 0.2+  | 0.4+  | 2005 12 28 | 704 | 1.0+  | 0.1−  | 2007 12 05 | G96 | 0.1+ | 0.5− |
| 2002 10 10 | 644 | 0.1+  | 0.2−  | 2005 12 28 | 704 | 1.5+  | 0.8−  | 2007 12 05 | G96 | 0.1+ | 0.4− |

(171811)\* 2001 DE<sub>87</sub>

Discovered 2001 Feb. 24 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 357.67231  |          | (2000.0)  | $P$           | $Q$           |
|-----|------------|----------|-----------|---------------|---------------|
| $n$ | 0.27882110 | $\omega$ | 138.73863 | $-0.45107577$ | $-0.87814227$ |
| $a$ | 2.3205216  | $\Omega$ | 336.66552 | $+0.67626961$ | $-0.21978164$ |
| $e$ | 0.2749858  | $i$      | 23.72416  | $+0.58240026$ | $-0.42492608$ |
| $P$ | 3.53       | $H$      | 15.7      | $G$ 0.15      | $U$ 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 26 | 704 | (0.7+ | 1.7+) | 2003 10 15 | 704 | 0.7− | 0.2+ | 2006 08 24 | 644 | 0.4−  | 0.0   |
| 2001 01 26 | 704 | (2.2+ | 0.4+) | 2003 10 15 | 704 | 0.1− | 0.5− | 2006 08 24 | 644 | 0.3−  | 0.1+  |
| 2001 01 26 | 704 | 1.2+  | 0.5+  | 2003 10 15 | 704 | 0.2− | 0.2+ | 2006 08 28 | 703 | 0.4+  | 1.3+  |
| 2001 01 26 | 704 | 0.3−  | 0.1+  | 2003 10 15 | 704 | 1.1+ | 0.8− | 2006 08 28 | 703 | 0.6−  | 0.6−  |
| 2001 02 22 | 704 | 0.4+  | 0.3+  | 2003 10 16 | 704 | 0.0  | 0.2− | 2006 08 28 | 703 | (1.7− | 0.4−) |
| 2001 02 22 | 704 | 0.6−  | 0.0   | 2003 10 16 | 704 | 0.3+ | 0.4− | 2006 08 28 | 703 | 0.3+  | 0.1−  |
| 2001 02 22 | 704 | 0.2−  | 0.5+  | 2003 10 16 | 704 | 0.6− | 0.1− | 2006 09 25 | G96 | 0.2−  | 0.5−  |
| 2001 02 22 | 704 | 0.2+  | 0.2−  | 2003 10 16 | 704 | 1.0+ | 0.1+ | 2006 09 25 | G96 | 0.2+  | 0.3+  |
| 2001 02 22 | 704 | 0.0   | 0.6+  | 2003 10 16 | 704 | 0.4− | 0.0  | 2006 09 25 | G96 | 0.6−  | 0.2−  |
| 2001 02 24 | 608 | 0.2−  | 0.4+  | 2003 10 20 | 704 | 0.3+ | 0.8+ | 2006 09 25 | G96 | 0.3−  | 0.4+  |
| 2001 02 24 | 608 | 0.1−  | 0.9+  | 2003 10 20 | 704 | 0.9− | 0.6+ | 2007 10 12 | 703 | 1.4−  | 1.2+  |
| 2001 02 24 | 608 | 0.1−  | 0.5+  | 2003 10 20 | 704 | 0.3+ | 0.6+ | 2007 10 12 | 703 | 0.9−  | 1.4+  |
| 2001 03 02 | 608 | 0.3+  | 0.2+  | 2003 10 20 | 704 | 0.4− | 0.7+ | 2007 10 12 | 703 | 0.4−  | 0.3−  |
| 2001 03 02 | 608 | 0.6+  | 0.0   | 2003 10 20 | 704 | 0.2− | 0.5+ | 2007 10 12 | 703 | 0.6+  | 0.2+  |
| 2001 03 02 | 608 | 0.6+  | 0.1+  | 2003 10 21 | 704 | 0.5+ | 0.1+ | 2007 11 08 | 703 | 0.8−  | 0.6+  |
| 2001 03 04 | 608 | (4.0+ | 0.2+) | 2003 10 21 | 704 | 0.1+ | 0.1− | 2007 11 08 | 703 | 0.8−  | 0.3−  |
| 2001 03 04 | 608 | (4.0+ | 0.1+) | 2003 10 21 | 704 | 0.4− | 0.6− | 2007 11 08 | 703 | 0.9−  | 0.9−  |
| 2001 03 04 | 608 | (3.6+ | 0.2+) | 2003 10 21 | 704 | 0.4+ | 0.1− | 2007 11 08 | 703 | 0.3−  | 0.8−  |
| 2001 03 05 | 608 | 0.7+  | 0.5−  | 2003 11 05 | 704 | 0.3− | 0.1+ | 2007 12 05 | 699 | 1.1+  | 0.3−  |
| 2001 03 05 | 608 | 0.9+  | 0.5−  | 2003 11 05 | 704 | 0.1+ | 0.0  | 2007 12 05 | 699 | 0.2+  | 0.1−  |
| 2001 03 05 | 608 | 0.5+  | 0.5−  | 2003 11 05 | 704 | 0.7− | 0.0  | 2007 12 05 | 699 | 0.0   | 0.2−  |
| 2001 04 01 | 699 | 1.1−  | 0.1−  | 2003 11 05 | 704 | 0.4− | 0.5+ | 2007 12 05 | 699 | 0.3+  | 0.6−  |
| 2001 04 01 | 699 | 0.5−  | 0.2−  | 2003 11 05 | 704 | 0.7− | 0.5− | 2007 12 16 | 704 | 0.7+  | 0.1+  |
| 2001 04 01 | 699 | 0.4−  | 0.1+  | 2003 12 05 | 704 | 1.0+ | 0.4+ | 2007 12 16 | 704 | 0.4+  | 0.5+  |
| 2001 04 01 | 699 | 0.9−  | 0.3−  | 2003 12 05 | 704 | 0.8+ | 0.2+ | 2007 12 16 | 704 | 0.1−  | 0.2−  |
| 2003 09 14 | 644 | 0.5−  | 0.0   | 2003 12 05 | 704 | 0.8+ | 0.1+ | 2007 12 16 | 704 | 0.9+  | 0.1+  |
| 2003 09 14 | 644 | 0.0   | 0.4−  | 2003 12 05 | 704 | 0.4+ | 0.3+ | 2007 12 16 | 704 | 0.8+  | 0.0   |
| 2003 09 14 | 644 | 0.0   | 0.1+  | 2006 08 24 | 644 | 0.4− | 0.2+ |            |     |       |       |

(171812)\* 2001 DW<sub>95</sub>

Discovered 2001 Feb. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |               |               |
|-----|------------|----------|-----------|---------------|---------------|
| $M$ | 303.25735  |          | (2000.0)  | $P$           | $Q$           |
| $n$ | 0.26608953 | $\omega$ | 15.61183  | $-0.54212983$ | $-0.83834631$ |
| $a$ | 2.3939635  | $\Omega$ | 107.24837 | $+0.76440310$ | $-0.52028876$ |
| $e$ | 0.1655038  | $i$      | 3.43311   | $+0.34897444$ | $-0.16271164$ |
| $P$ | 3.70       | $H$      | 17.3      | $G$ 0.15      | $U$ 0         |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 21 | 704 | 0.2+  | 0.7−  | 2001 02 22 | 699 | (0.4+ | 1.7−) | 2007 11 02 | 691 | 0.2− | 0.0  |
| 2001 01 21 | 704 | 0.6+  | 0.2−  | 2003 09 26 | 645 | 0.0   | 0.1+  | 2007 11 02 | 691 | 0.1− | 0.1− |
| 2001 01 21 | 704 | 0.3+  | 0.3+  | 2003 09 26 | 645 | 0.1−  | 0.2+  | 2007 11 04 | 704 | 0.2+ | 0.5+ |
| 2001 01 21 | 704 | 0.3−  | 0.4−  | 2003 09 28 | 645 | 0.0   | 0.1+  | 2007 11 04 | 704 | 0.6− | 0.5+ |
| 2001 01 21 | 704 | 0.2−  | 0.1−  | 2003 09 28 | 645 | 0.0   | 0.1+  | 2007 11 04 | 704 | 0.4+ | 0.4+ |
| 2001 02 01 | 704 | 0.4+  | 1.0+  | 2003 10 19 | 645 | 0.0   | 0.0   | 2007 11 04 | 704 | 0.5+ | 0.2− |
| 2001 02 01 | 704 | 0.3−  | 0.2+  | 2003 10 19 | 645 | 0.0   | 0.0   | 2007 11 12 | 703 | 0.6− | 0.6− |
| 2001 02 01 | 704 | 0.2+  | 0.0   | 2005 03 10 | 703 | (1.6− | 0.3+) | 2007 11 12 | 703 | 0.1− | 0.5− |
| 2001 02 01 | 704 | 0.7+  | 0.4+  | 2005 03 10 | 703 | 0.2−  | 0.6−  | 2007 11 12 | 703 | 0.2− | 0.9− |
| 2001 02 02 | 699 | 0.4+  | 0.3+  | 2005 03 10 | 703 | 0.4−  | 0.2−  | 2007 11 12 | 703 | 1.3− | 0.3− |
| 2001 02 02 | 699 | 0.1−  | 0.9+  | 2005 03 10 | 703 | 1.0−  | 0.4+  | 2007 11 18 | G96 | 0.5+ | 0.3− |
| 2001 02 02 | 699 | (0.3+ | 2.3+) | 2005 03 31 | 621 | 0.2−  | 0.3+  | 2007 11 18 | G96 | 0.0  | 0.2− |
| 2001 02 02 | 699 | (4.8+ | 1.0+) | 2005 04 01 | 621 | 0.4−  | 0.2−  | 2007 11 18 | G96 | 0.0  | 0.5− |
| 2001 02 17 | 704 | 0.2+  | 0.5−  | 2005 04 01 | 621 | 0.2−  | 0.4−  | 2007 11 18 | G96 | 0.3+ | 0.1− |
| 2001 02 17 | 704 | 0.6−  | 0.7−  | 2005 04 01 | 699 | (1.6+ | 1.4−) | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2001 02 17 | 704 | 0.5+  | 0.3−  | 2005 04 01 | 699 | 0.0   | 0.5+  | 2007 11 20 | 691 | 0.1− | 0.2− |
| 2001 02 17 | 704 | 0.4−  | 1.0+  | 2005 04 01 | 699 | 0.2−  | 0.4+  | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2001 02 17 | 704 | 0.5+  | 0.6−  | 2005 04 01 | 699 | 0.7−  | 0.3+  | 2007 11 20 | 703 | 0.4+ | 0.6+ |
| 2001 02 21 | 699 | 1.0+  | 0.3−  | 2005 05 04 | 691 | 0.4+  | 0.7+  | 2007 11 20 | 703 | 0.3+ | 0.1+ |
| 2001 02 21 | 699 | 0.3−  | 0.6+  | 2005 05 04 | 691 | 0.4+  | 0.4+  | 2007 11 20 | 703 | 0.3+ | 0.5+ |
| 2001 02 21 | 699 | 0.6−  | 0.4+  | 2005 05 04 | 691 | 0.2+  | 0.3+  | 2007 11 20 | 703 | 0.4− | 1.3− |
| 2001 02 21 | 699 | 1.3−  | 0.9+  | 2005 05 13 | 691 | 0.2+  | 0.1+  | 2007 12 04 | 704 | 0.6+ | 0.2+ |
| 2001 02 22 | 699 | 0.1+  | 0.5+  | 2005 05 13 | 691 | 0.5+  | 0.4+  | 2007 12 04 | 704 | 0.6− | 0.9+ |
| 2001 02 22 | 699 | 0.1−  | 0.6+  | 2005 05 13 | 691 | 0.1+  | 0.2+  | 2007 12 04 | 704 | 2.8+ | 1.1+ |
| 2001 02 22 | 699 | 0.2+  | 0.0   | 2007 11 02 | 691 | 0.2−  | 0.1−  | 2007 12 04 | 704 | 2.4+ | 1.2+ |

(171813)\* 2001 DJ<sub>103</sub> = 2000 YF<sub>68</sub>

Discovered 2001 Feb. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (d. *MPO* 12345)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 321.21850 | $\omega$ | 20.64932  | −0.89089728 | −0.35051222 |          |   |
| <i>a</i> | 2.3169284 | $\Omega$ | 135.23943 | +0.33747591 | −0.93647614 |          |   |
| <i>e</i> | 0.1891882 | <i>i</i> | 24.21962  | +0.30399351 | +0.01239418 |          |   |
| <i>P</i> | 3.53      | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 28 | 704 | 0.5+ | 0.8+ | 2001 02 16 | 704 | 0.3−  | 0.1+  | 2005 06 02 | 704 | 0.3+  | 0.1−  |
| 2000 12 28 | 704 | 0.1− | 0.4− | 2001 02 16 | 704 | 0.6−  | 0.2+  | 2005 06 20 | 644 | 0.1+  | 0.2+  |
| 2000 12 28 | 704 | 0.2− | 0.2− | 2001 02 16 | 704 | 0.6−  | 0.3+  | 2005 06 20 | 644 | 0.1+  | 0.1−  |
| 2000 12 28 | 704 | 0.9− | 1.0− | 2001 02 16 | 704 | 0.2+  | 1.0−  | 2005 06 20 | 644 | 0.5+  | 0.3−  |
| 2001 01 03 | 704 | 0.7+ | 0.4+ | 2001 02 19 | 699 | 0.8−  | 0.3−  | 2005 06 23 | 644 | 0.2+  | 0.0   |
| 2001 01 03 | 704 | 0.7+ | 0.6+ | 2001 02 19 | 699 | 0.1−  | 0.3+  | 2005 06 23 | 644 | 0.0   | 0.0   |
| 2001 01 03 | 704 | 0.2+ | 0.6+ | 2001 02 19 | 699 | 0.2−  | 0.2+  | 2005 06 23 | 644 | 0.3+  | 0.2+  |
| 2001 01 03 | 704 | 0.5+ | 0.5+ | 2001 02 19 | 699 | 0.2−  | 0.4+  | 2005 07 09 | 703 | 0.6−  | 0.1−  |
| 2001 01 03 | 704 | 0.4+ | 0.5+ | 2001 03 14 | 704 | 0.1+  | 1.3+  | 2005 07 09 | 703 | (2.1− | 0.9+) |
| 2001 01 19 | 704 | 0.1+ | 0.3− | 2001 03 14 | 704 | (0.6+ | 2.2+) | 2005 07 09 | 703 | 0.0   | 0.8−  |
| 2001 01 19 | 704 | 0.1− | 0.3+ | 2001 03 14 | 704 | 0.8−  | 0.5+  | 2005 07 09 | 703 | 0.8−  | 0.4+  |
| 2001 01 19 | 704 | 0.2+ | 0.2+ | 2001 03 14 | 704 | (1.5− | 1.6+) | 2007 11 11 | 704 | (2.9+ | 2.0+) |
| 2001 01 19 | 704 | 0.1+ | 0.2+ | 2001 03 31 | 699 | 0.8+  | 0.4−  | 2007 11 11 | 704 | (3.0+ | 2.6+) |
| 2001 02 02 | 704 | 0.3+ | 0.3+ | 2001 03 31 | 699 | 0.2+  | 0.1−  | 2007 11 11 | 704 | (1.9+ | 0.5−) |
| 2001 02 02 | 704 | 0.3+ | 0.1+ | 2001 03 31 | 699 | 0.9+  | 0.1+  | 2007 11 11 | 704 | 1.6+  | 0.9−  |
| 2001 02 02 | 704 | 0.0  | 0.1− | 2001 03 31 | 699 | 1.0+  | 0.3−  | 2007 12 05 | 703 | 0.8−  | 0.1+  |
| 2001 02 02 | 704 | 0.1− | 0.6− | 2002 08 08 | 644 | 0.1+  | 0.9+  | 2007 12 05 | 703 | 0.9−  | 0.3+  |
| 2001 02 02 | 704 | 0.1− | 0.3− | 2002 08 08 | 644 | 0.0   | 0.9+  | 2007 12 05 | 703 | 0.4−  | 0.8+  |
| 2001 02 02 | 608 | 0.2+ | 0.3+ | 2002 08 08 | 644 | 0.0   | 0.6+  | 2007 12 05 | 703 | 0.9−  | 0.1+  |
| 2001 02 02 | 608 | 0.1+ | 0.2+ | 2005 06 02 | 704 | 0.1+  | 0.3+  | 2007 12 15 | D35 | 1.0+  | 0.7−  |
| 2001 02 02 | 608 | 0.3− | 1.2− | 2005 06 02 | 704 | 0.1+  | 0.3+  | 2007 12 15 | D35 | 0.4+  | 0.1+  |
| 2001 02 16 | 704 | 0.8− | 0.5− | 2005 06 02 | 704 | 0.2−  | 0.5−  | 2007 12 15 | D35 | 0.0   | 0.3+  |

(171814)\* 2001 DS<sub>103</sub> = 2003 UH<sub>178</sub>

Discovered 2001 Feb. 16 at Crni Vrh.

Id. M. E. Sansaturio (*MPO* 60738)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 312.32542 | $\omega$ | 195.56396 | −0.53655696 | −0.84343118 |          |   |
| <i>a</i> | 2.3820151 | $\Omega$ | 286.89255 | +0.77721365 | −0.48144918 |          |   |
| <i>e</i> | 0.1398391 | <i>i</i> | 1.61861   | +0.32870286 | −0.23839156 |          |   |
| <i>P</i> | 3.68      | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 16 | 106 | 0.0   | 1.1+  | 2003 10 24 | 704 | 1.3−  | 1.3+  | 2007 11 05 | 691 | 0.7− | 0.4− |
| 2001 02 16 | 106 | 0.5−  | 0.8−  | 2003 10 24 | 704 | 0.7−  | 0.9−  | 2007 11 05 | 691 | 0.1+ | 0.4− |
| 2001 02 16 | 106 | 0.6−  | 1.3−  | 2003 10 24 | 704 | 1.0+  | 0.8+  | 2007 11 05 | 691 | 0.0  | 0.2− |
| 2001 02 19 | 704 | 0.2−  | 0.9+  | 2003 10 24 | 704 | (2.4− | 0.2+) | 2007 11 15 | 704 | 0.2− | 0.3+ |
| 2001 02 19 | 704 | (0.9+ | 1.6+) | 2003 10 24 | 704 | 0.5+  | 0.7−  | 2007 11 15 | 704 | 0.1+ | 0.5− |
| 2001 02 19 | 704 | 0.1−  | 0.4+  | 2005 03 14 | G96 | 0.2−  | 0.0   | 2007 11 15 | 704 | 0.0  | 0.8+ |
| 2001 02 19 | 704 | 1.5+  | 0.1+  | 2005 03 14 | G96 | 0.6−  | 0.0   | 2007 11 15 | 704 | 0.5+ | 0.3+ |
| 2003 09 28 | 691 | 0.0   | 0.4+  | 2005 03 14 | G96 | 0.6−  | 0.1−  | 2007 11 15 | 704 | 0.4+ | 0.7+ |
| 2003 09 28 | 691 | 0.1−  | 0.3+  | 2005 03 14 | G96 | 0.4−  | 0.1−  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2003 09 28 | 691 | 0.1+  | 0.4+  | 2005 04 06 | 691 | 0.1+  | 0.2+  | 2007 12 06 | G96 | 0.3+ | 0.1+ |
| 2003 10 21 | 644 | 0.3−  | 0.4+  | 2005 04 06 | 691 | 0.0   | 0.3+  | 2007 12 06 | G96 | 0.1+ | 0.2− |
| 2003 10 21 | 644 | 0.4−  | 0.0   | 2005 04 06 | 691 | 0.1+  | 0.4+  | 2007 12 06 | G96 | 0.1− | 0.5+ |
| 2003 10 21 | 644 | 0.2−  | 0.2+  | 2005 04 09 | 691 | 0.2+  | 0.1+  | 2007 12 14 | 704 | 0.7+ | 0.3− |
| 2003 10 21 | 644 | 0.2−  | 0.0   | 2005 04 09 | 691 | 0.5+  | 0.2+  | 2007 12 14 | 704 | 0.3+ | 0.0  |
| 2003 10 21 | 644 | 0.5−  | 0.2+  | 2005 04 09 | 691 | (3.6− | 4.1−) | 2007 12 14 | 704 | 0.6+ | 0.3+ |
| 2003 10 21 | 644 | 0.1+  | 0.1−  | 2007 11 01 | 691 | 0.5−  | 0.3−  | 2007 12 14 | 704 | 0.1+ | 0.4− |
| 2003 10 24 | 704 | 0.1−  | 0.6+  | 2007 11 01 | 691 | 0.1−  | 0.4+  | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2003 10 24 | 704 | (1.7− | 0.1−) | 2007 11 01 | 691 | 0.0   | 0.2+  |            |     |      |      |

(171815)\* 2001 EF<sub>9</sub> = 2006 SL<sub>203</sub>

Discovered 2001 Mar. 2 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 107905)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 265.95561 | $\omega$ | 194.76392 | −0.95382624 | +0.30034396 |          |   |
| <i>a</i> | 2.3881202 | $\Omega$ | 2.71986   | −0.26876574 | −0.84899471 |          |   |
| <i>e</i> | 0.1643737 | <i>i</i> | 3.62617   | −0.13409131 | −0.43474302 |          |   |
| <i>P</i> | 3.69      | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 10 15 | 691 | 0.1+  | 0.3+  | 2001 03 21 | 608 | (0.1+ | 1.6−) | 2006 09 25 | G96 | 0.2− | 0.0  |
| 1995 10 15 | 691 | 0.2+  | 0.1−  | 2001 03 29 | 699 | (0.4− | 1.8+) | 2006 09 28 | 691 | 0.1+ | 0.5+ |
| 1995 10 15 | 691 | 0.4−  | 0.3−  | 2001 03 29 | 699 | 1.1+  | 0.4+  | 2006 09 28 | 691 | 0.2+ | 0.1+ |
| 2001 03 02 | 699 | 0.1+  | 0.8+  | 2001 03 29 | 699 | 0.7−  | 0.1+  | 2006 09 28 | 691 | 0.2+ | 0.2+ |
| 2001 03 02 | 699 | 0.2+  | 0.7+  | 2001 03 29 | 699 | 1.0−  | 0.3+  | 2006 10 16 | G96 | 0.2+ | 0.0  |
| 2001 03 02 | 699 | 0.2+  | 0.8+  | 2005 01 17 | 809 | 0.3−  | 0.1−  | 2006 10 16 | G96 | 0.0  | 0.3+ |
| 2001 03 02 | 699 | 0.1−  | 0.5+  | 2005 01 17 | 809 | 0.2−  | 0.0   | 2006 10 16 | G96 | 0.7− | 0.2− |
| 2001 03 03 | 704 | 0.9+  | 1.0+  | 2005 01 17 | 809 | 0.3−  | 0.2+  | 2006 10 16 | G96 | 0.2− | 0.1+ |
| 2001 03 03 | 704 | 0.4+  | 0.5+  | 2005 05 19 | E12 | 0.3−  | 0.5+  | 2006 10 20 | G96 | 0.3+ | 0.2− |
| 2001 03 03 | 704 | 0.7+  | 0.1+  | 2005 05 19 | E12 | 0.1−  | 0.7+  | 2006 10 20 | G96 | 0.3+ | 0.5+ |
| 2001 03 03 | 704 | 0.6+  | 1.0+  | 2005 05 19 | E12 | 0.4+  | 0.0   | 2006 10 20 | G96 | 0.0  | 0.3− |
| 2001 03 03 | 704 | 0.8+  | 0.2+  | 2005 05 19 | E12 | 0.6+  | 0.5+  | 2006 10 20 | G96 | 0.5− | 0.3+ |
| 2001 03 18 | 699 | 0.7+  | 0.1−  | 2006 08 21 | 807 | 0.2−  | 0.0   | 2007 11 06 | G96 | 0.2− | 0.3− |
| 2001 03 18 | 699 | 1.3−  | 0.9+  | 2006 08 21 | 807 | 0.3−  | 0.0   | 2007 11 06 | G96 | 0.3+ | 0.5− |
| 2001 03 18 | 699 | 0.3−  | 0.3−  | 2006 08 22 | 807 | 0.3−  | 0.2+  | 2007 11 06 | G96 | 0.1− | 1.1− |
| 2001 03 18 | 699 | 0.6+  | 0.1+  | 2006 09 16 | 691 | 0.3−  | 0.4+  | 2007 11 06 | G96 | 1.1− | 0.5− |
| 2001 03 21 | 691 | 0.1+  | 0.0   | 2006 09 16 | 691 | 0.4−  | 0.6+  | 2007 12 13 | 704 | 0.3+ | 0.2+ |
| 2001 03 21 | 691 | 0.0   | 0.0   | 2006 09 16 | 691 | 0.4−  | 0.5+  | 2007 12 13 | 704 | 0.0  | 1.1+ |
| 2001 03 21 | 691 | 0.1+  | 0.1+  | 2006 09 25 | G96 | 0.2−  | 0.1−  | 2007 12 13 | 704 | 0.2+ | 0.2+ |
| 2001 03 21 | 608 | (0.2+ | 1.6−) | 2006 09 25 | G96 | 0.0   | 0.1−  |            |     |      |      |
| 2001 03 21 | 608 | 0.2+  | 1.3−  | 2006 09 25 | G96 | 0.1−  | 0.1−  |            |     |      |      |

(171816)\* 2001 EN<sub>16</sub>

Discovered 2001 Mar. 15 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 334.15149 | $\omega$ | 26.33230 | −0.21226055 | −0.97242100 |          |   |
| <i>a</i> | 2.3956218 | $\Omega$ | 76.04809 | +0.87808550 | −0.23320129 |          |   |
| <i>e</i> | 0.1563811 | <i>i</i> | 5.71595  | +0.42884883 | −0.00381472 |          |   |
| <i>P</i> | 3.71      | <i>H</i> | 16.1     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 02 | 699 | 0.2−  | 0.8−  | 2003 09 28 | 704 | 0.4+  | 1.4−  | 2005 04 13 | 704 | 0.4+ | 0.4− |
| 2001 02 02 | 699 | (0.1− | 2.5−) | 2003 09 28 | 704 | 0.1−  | 0.7−  | 2005 04 13 | 704 | 0.0  | 0.3+ |
| 2001 02 02 | 699 | 0.9+  | 0.3+  | 2003 09 28 | 704 | 0.2+  | 1.2−  | 2005 04 18 | 691 | 0.2+ | 0.2+ |
| 2001 02 02 | 699 | 0.8−  | 0.4+  | 2003 09 28 | 704 | 1.0+  | 0.9+  | 2005 04 18 | 691 | 0.3+ | 0.1+ |
| 2001 02 16 | 704 | 0.1+  | 0.8+  | 2003 10 20 | 704 | 1.4+  | 0.2−  | 2005 04 18 | 691 | 0.2+ | 0.0  |
| 2001 02 16 | 704 | 0.0   | 0.1−  | 2003 10 20 | 704 | 0.7+  | 0.5+  | 2005 05 08 | 703 | 0.7− | 1.3+ |
| 2001 02 16 | 704 | 0.1−  | 1.0+  | 2003 10 20 | 704 | 1.0+  | 0.8+  | 2005 05 08 | 703 | 0.3− | 0.7− |
| 2001 02 16 | 704 | 0.5−  | 0.5+  | 2003 10 20 | 704 | 0.9−  | 1.0+  | 2005 05 08 | 703 | 0.5− | 0.3− |
| 2001 02 16 | 704 | 1.1−  | 0.9+  | 2003 10 21 | 691 | 0.3−  | 0.2+  | 2005 05 08 | 703 | 0.6− | 0.4− |
| 2001 03 15 | 608 | 0.5−  | 1.4−  | 2003 10 21 | 691 | 0.2−  | 0.0   | 2005 05 12 | 691 | 0.1− | 0.4+ |
| 2001 03 15 | 608 | 0.0   | 1.3−  | 2003 10 21 | 691 | 0.2−  | 0.1+  | 2005 05 12 | 691 | 0.3+ | 0.4+ |
| 2001 03 15 | 608 | 0.3−  | 1.0−  | 2003 10 25 | 704 | 0.2+  | 0.4−  | 2005 05 12 | 691 | 0.1+ | 0.3+ |
| 2001 03 16 | 704 | 0.3+  | 0.0   | 2003 10 25 | 704 | 0.6−  | 0.1−  | 2007 10 14 | 704 | 0.1− | 1.0− |
| 2001 03 16 | 704 | 0.1−  | 0.5−  | 2003 10 25 | 704 | 0.3+  | 0.2+  | 2007 10 14 | 704 | 0.3− | 0.6− |
| 2001 03 16 | 704 | 0.0   | 0.1+  | 2003 10 25 | 704 | 0.3−  | 0.6+  | 2007 10 14 | 704 | 1.1− | 0.5+ |
| 2001 03 16 | 704 | 0.3−  | 0.1−  | 2003 10 25 | 704 | 0.2+  | 0.3+  | 2007 10 14 | 704 | 0.0  | 0.2− |
| 2001 03 18 | 608 | 0.1−  | 0.7−  | 2003 11 18 | 699 | 1.2−  | 0.1−  | 2007 11 19 | D29 | 0.4+ | 0.3− |
| 2001 03 18 | 608 | 0.5−  | 0.9−  | 2003 11 18 | 699 | (0.7− | 1.9−) | 2007 11 19 | D29 | 0.3− | 0.4+ |
| 2001 03 18 | 608 | 0.7−  | 0.7−  | 2003 11 18 | 699 | 0.2+  | 1.1+  | 2007 11 19 | D29 | 0.1− | 0.1+ |
| 2001 03 26 | 608 | 0.7+  | 0.4−  | 2003 11 18 | 699 | 0.0   | 0.6−  | 2007 11 19 | D29 | 0.1+ | 0.1+ |
| 2001 03 26 | 608 | 0.7+  | 0.6−  | 2003 11 19 | 644 | 0.2−  | 0.5+  | 2007 12 14 | 704 | 0.4+ | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 26 | 608 | 0.6+ | 0.4− | 2003 11 19 | 644 | 0.5− | 0.5+ | 2007 12 14 | 704 | 0.0  | 0.3− |
| 2001 03 27 | 699 | 0.5− | 1.2+ | 2003 11 19 | 644 | 0.2− | 0.2+ | 2007 12 14 | 704 | 0.0  | 0.5+ |
| 2001 03 27 | 699 | 1.2+ | 0.0  | 2005 04 13 | 704 | 0.7+ | 1.0− | 2007 12 14 | 704 | 0.3+ | 0.5+ |
| 2001 03 27 | 699 | 0.9+ | 1.0+ | 2005 04 13 | 704 | 0.2+ | 0.4+ | 2007 12 14 | 704 | 0.1+ | 0.6+ |
| 2001 03 27 | 699 | 0.4− | 0.4+ | 2005 04 13 | 704 | 0.8− | 1.1+ |            |     |      |      |

**(171817)\* 2001 EB<sub>22</sub> = 2001 FF<sub>101</sub>**

Discovered 2001 Mar. 15 by Spacewatch at Kitt Peak.

Id. A. Doppler (d, *MPO* 13879)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC        |          |           |             | MPC         |   |   |  |
|------------|----------|-----------|-------------|-------------|---|---|--|
| M          |          |           |             | P           |   |   |  |
| 285.10235  |          |           |             | (2000.0)    |   |   |  |
| n          |          |           |             | Q           |   |   |  |
| 0.25867538 | $\omega$ | 257.41411 | −0.76538374 | −0.63042121 |   |   |  |
| 2.4394916  | $\Omega$ | 243.35295 | +0.63227608 | −0.69905608 |   |   |  |
| 0.1843158  | $i$      | 8.32751   | +0.12006120 | −0.33747546 |   |   |  |
| P          |          |           |             | H           |   |   |  |
| 3.81       |          | 16.2      | G           | 0.15        | U | 1 |  |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 22 | 704 | 0.2−        | 0.3− | 2005 04 18 | 703 | 0.2− | 0.0  | 2007 11 06 | 704 | 0.4+ | 0.4− |
| 2001 02 22 | 704 | 0.9−        | 0.1− | 2005 04 18 | 703 | 1.0− | 0.4+ | 2007 11 06 | 704 | 0.2+ | 0.7+ |
| 2001 02 22 | 704 | (2.3+ 1.3−) |      | 2005 04 18 | 703 | 0.8− | 0.6+ | 2007 11 06 | 704 | 0.9+ | 0.2+ |
| 2001 03 15 | 691 | 0.2+        | 0.1+ | 2005 04 18 | 703 | 0.2− | 0.5+ | 2007 11 06 | 704 | 0.8− | 0.7− |
| 2001 03 15 | 691 | 0.2+        | 0.3+ | 2007 10 08 | 703 | 0.7− | 0.3− | 2007 11 06 | 704 | 0.0  | 0.9+ |
| 2001 03 15 | 691 | 0.2+        | 0.3+ | 2007 10 08 | 703 | 0.0  | 0.0  | 2007 11 11 | 699 | 0.1− | 0.3− |
| 2001 03 17 | 704 | 0.5−        | 0.4− | 2007 10 08 | 703 | 1.3+ | 0.6+ | 2007 11 11 | 699 | 0.4+ | 0.6− |
| 2001 03 17 | 704 | 0.0         | 0.8− | 2007 10 08 | 703 | 0.2− | 1.1+ | 2007 11 11 | 699 | 0.0  | 1.0− |
| 2001 03 17 | 704 | 0.2−        | 0.3+ | 2007 10 12 | 704 | 0.8+ | 0.7+ | 2007 11 11 | 699 | 0.4− | 0.2− |
| 2001 03 20 | 608 | 0.4−        | 0.6− | 2007 10 12 | 704 | 0.3+ | 0.5+ | 2007 11 15 | 704 | 0.4+ | 0.5+ |
| 2001 03 20 | 608 | 0.1+        | 0.7− | 2007 10 12 | 704 | 0.2− | 1.1+ | 2007 11 15 | 704 | 0.4+ | 0.5+ |
| 2001 03 20 | 608 | 0.1−        | 0.8− | 2007 10 12 | 704 | 0.9+ | 0.3− | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 2001 03 21 | 699 | 0.2+        | 0.5+ | 2007 10 16 | G96 | 0.1+ | 0.5− | 2007 11 15 | 704 | 0.3+ | 0.4− |
| 2001 03 21 | 699 | 0.6+        | 0.4− | 2007 10 16 | G96 | 0.2+ | 0.5− | 2007 11 15 | 704 | 0.5+ | 0.4+ |
| 2001 03 21 | 699 | 0.1+        | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.5− | 2007 11 18 | 704 | 0.6+ | 0.1− |
| 2001 03 21 | 699 | 1.0−        | 1.5+ | 2007 10 16 | G96 | 0.1+ | 0.4− | 2007 11 18 | 704 | 0.1+ | 0.2− |
| 2001 03 26 | 704 | 1.1−        | 1.0+ | 2007 10 21 | 703 | 0.2+ | 0.2− | 2007 11 18 | 704 | 0.4− | 0.2− |
| 2001 03 26 | 704 | 0.4−        | 0.1+ | 2007 10 21 | 703 | 0.9+ | 0.2− | 2007 11 18 | 704 | 0.1− | 0.5+ |
| 2001 03 26 | 704 | 0.6+        | 0.3+ | 2007 10 21 | 703 | 1.2+ | 0.8+ | 2007 11 19 | 691 | 0.2− | 0.1− |
| 2001 03 26 | 704 | 0.2+        | 0.6− | 2007 10 21 | 703 | 0.6− | 0.4− | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2001 03 26 | 704 | 1.0+        | 0.2− | 2007 11 01 | D35 | 0.3+ | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2003 10 25 | 704 | 1.1−        | 0.4+ | 2007 11 01 | D35 | 0.2+ | 0.0  | 2007 12 10 | 704 | 0.8+ | 1.1− |
| 2003 10 25 | 704 | 0.4+        | 1.1+ | 2007 11 01 | D35 | 0.3+ | 0.6− | 2007 12 10 | 704 | 0.4− | 0.1− |
| 2003 10 25 | 704 | 0.5+        | 0.4+ | 2007 11 01 | D35 | 0.3+ | 0.5+ | 2007 12 10 | 704 | 0.9+ | 0.3− |
| 2005 03 12 | 699 | 0.4+        | 0.4+ | 2007 11 01 | D35 | 0.4+ | 0.2+ | 2007 12 10 | 704 | 0.5+ | 0.3− |
| 2005 03 12 | 699 | 0.5+        | 0.7− | 2007 11 01 | D35 | 0.3+ | 0.2+ | 2007 12 14 | 704 | 0.8− | 0.2− |
| 2005 03 12 | 699 | 1.2+        | 0.5− | 2007 11 02 | 691 | 0.4− | 0.1− | 2007 12 14 | 704 | 1.2− | 0.6− |
| 2005 03 12 | 699 | (2.1+ 0.2+) |      | 2007 11 02 | 691 | 0.6− | 0.3+ | 2007 12 14 | 704 | 0.8+ | 0.3− |
| 2005 04 06 | 699 | 0.0         | 0.3− | 2007 11 02 | 691 | 0.2− | 0.0  | 2007 12 14 | 704 | 0.2+ | 1.4− |
| 2005 04 06 | 699 | 0.3+        | 0.3+ | 2007 11 06 | 691 | 0.6− | 0.2− | 2007 12 14 | 704 | 0.6− | 0.6+ |
| 2005 04 06 | 699 | 0.0         | 1.0− | 2007 11 06 | 691 | 0.2− | 0.1− |            |     |      |      |
| 2005 04 06 | 699 | 0.4+        | 0.5+ | 2007 11 06 | 691 | 0.2− | 0.5+ |            |     |      |      |

**(171818)\* 2001 FH<sub>5</sub>**

Discovered 2001 Mar. 18 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC        |          |           |             | MPC         |   |   |  |
|------------|----------|-----------|-------------|-------------|---|---|--|
| M          |          |           |             | P           |   |   |  |
| 270.62897  |          |           |             | (2000.0)    |   |   |  |
| n          |          |           |             | Q           |   |   |  |
| 0.26405105 | $\omega$ | 170.45695 | −0.99264914 | +0.12073563 |   |   |  |
| 2.4062687  | $\Omega$ | 16.48469  | −0.11290193 | −0.89876140 |   |   |  |
| 0.1146605  | $i$      | 1.69673   | −0.04359859 | −0.42148647 |   |   |  |
| P          |          |           |             | H           |   |   |  |
| 3.73       |          | 16.8      | G           | 0.15        | U | 1 |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 23 | 645 | 0.1− | 0.2− | 2001 03 30 | 691 | 0.0  | 0.1− | 2005 05 10 | G96 | 0.2− | 0.2− |
| 2000 12 23 | 645 | 0.1− | 0.2− | 2001 03 30 | 691 | 0.2+ | 0.0  | 2005 05 10 | G96 | 0.2− | 0.2− |
| 2001 02 20 | 691 | 0.2− | 0.0  | 2001 03 30 | 691 | 0.0  | 0.2+ | 2005 05 10 | G96 | 0.2− | 0.3− |
| 2001 02 20 | 691 | 0.4− | 0.1− | 2001 04 01 | 704 | 0.7+ | 1.5+ | 2005 05 10 | G96 | 0.2− | 0.2− |

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2001 02 20 | 691 | 0.2− | 0.1+ | 2001 04 01 | 704 | 0.5+        | 0.2+ | 2005 05 13 | 704 | 1.1+ | 0.6− |
| 2001 03 02 | 699 | 0.3− | 0.5+ | 2001 04 01 | 704 | 1.3+        | 0.6+ | 2005 05 13 | 704 | 1.0+ | 0.9− |
| 2001 03 02 | 699 | 0.4+ | 0.0  | 2001 04 01 | 704 | (1.8− 0.6+) |      | 2005 05 13 | 704 | 0.4+ | 0.3+ |
| 2001 03 02 | 699 | 0.3+ | 0.6+ | 2001 04 01 | 704 | 0.8−        | 0.7+ | 2005 05 13 | 704 | 0.4+ | 0.2+ |
| 2001 03 02 | 699 | 0.2+ | 0.4+ | 2003 11 30 | 691 | 0.2−        | 0.4+ | 2005 05 13 | 704 | 0.0  | 0.3− |
| 2001 03 18 | 699 | 0.1+ | 0.1+ | 2003 11 30 | 691 | 0.1−        | 0.4+ | 2005 05 19 | 644 | 0.1− | 0.1+ |
| 2001 03 18 | 704 | 0.5+ | 0.1+ | 2003 11 30 | 691 | 0.1+        | 0.3+ | 2005 05 19 | 644 | 0.1− | 0.1+ |
| 2001 03 18 | 704 | 0.4+ | 0.2+ | 2003 12 14 | 691 | 0.5+        | 0.1− | 2005 05 19 | 644 | 0.0  | 0.0  |
| 2001 03 18 | 704 | 0.6+ | 0.3− | 2003 12 14 | 691 | 0.4+        | 0.0  | 2006 10 20 | G96 | 0.1− | 0.0  |
| 2001 03 18 | 704 | 0.7+ | 0.3− | 2003 12 14 | 691 | 0.4+        | 0.2− | 2006 10 20 | G96 | 0.4− | 0.0  |
| 2001 03 18 | 699 | 0.7+ | 0.1− | 2003 12 14 | 291 | 0.5−        | 0.3+ | 2006 10 20 | G96 | 0.4+ | 0.2+ |
| 2001 03 18 | 704 | 0.1− | 0.2− | 2003 12 14 | 291 | 0.1−        | 0.4+ | 2006 10 20 | G96 | 0.3− | 0.2+ |
| 2001 03 18 | 699 | 0.6+ | 0.1+ | 2003 12 14 | 291 | 0.8−        | 0.6+ | 2007 11 02 | G96 | 0.7− | 0.2− |
| 2001 03 18 | 699 | 0.0  | 0.5− | 2005 05 04 | E12 | 0.1+        | 0.9− | 2007 11 02 | G96 | 0.0  | 0.2+ |
| 2001 03 20 | 704 | 0.2+ | 0.4+ | 2005 05 04 | E12 | 0.5−        | 0.1− | 2007 11 02 | G96 | 0.6+ | 0.5− |
| 2001 03 20 | 704 | 0.2+ | 0.6+ | 2005 05 04 | E12 | 0.1+        | 0.5+ | 2007 11 02 | G96 | 0.2+ | 0.0  |
| 2001 03 20 | 704 | 0.0  | 0.8+ | 2005 05 04 | E12 | 0.3−        | 0.0  | 2007 12 10 | 704 | 0.5+ | 0.3+ |
| 2001 03 20 | 704 | 0.8+ | 0.1+ | 2005 05 07 | 691 | 0.1+        | 0.1− | 2007 12 10 | 704 | 1.1+ | 1.3+ |
| 2001 03 21 | 704 | 0.5− | 0.4+ | 2005 05 07 | 691 | 0.1+        | 0.2− | 2007 12 10 | 704 | 0.2+ | 1.3+ |
| 2001 03 21 | 704 | 0.2+ | 0.7+ | 2005 05 07 | 691 | 0.2−        | 0.1− | 2007 12 10 | 704 | 0.5+ | 0.9+ |
| 2001 03 21 | 704 | 0.2− | 0.0  | 2005 05 09 | 704 | (0.0 1.6+)  |      | 2007 12 10 | 704 | 0.1+ | 1.6− |
| 2001 03 29 | 704 | 0.3+ | 0.6+ | 2005 05 09 | 704 | 0.4−        | 1.1+ | 2007 12 15 | 691 | 0.5− | 0.3− |
| 2001 03 29 | 704 | 0.2− | 1.0+ | 2005 05 09 | 704 | 0.0         | 0.8+ | 2007 12 15 | 691 | 0.0  | 0.6− |
| 2001 03 29 | 704 | 0.2+ | 0.4+ | 2005 05 09 | 704 | 1.1−        | 0.8+ | 2007 12 15 | 691 | 0.3− | 0.9− |

**(171819)\* 2001 FZ<sub>6</sub>**

Discovered 2001 Mar. 18 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC        |          |           |             | MPC         |   |   |  |
|------------|----------|-----------|-------------|-------------|---|---|--|
| M          |          |           |             | P           |   |   |  |
| 89.16562   |          |           |             | (2000.0)    |   |   |  |
| n          |          |           |             | Q           |   |   |  |
| 0.53875138 | $\omega$ | 297.28142 | +0.69986044 | +0.71239588 |   |   |  |
| 1.4958124  | $\Omega$ | 17.45704  | −0.57891669 | +0.60824680 |   |   |  |
| 0.1664785  | $i$      | 9.95114   | −0.41839077 | +0.35003992 |   |   |  |
| P          |          |           |             | H           |   |   |  |
| 1.83       |          | 18.4      | G           | 0.15        | U | 1 |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 15 | 608 | 0.3−  | 0.1−  | 2005 09 13 | A13 | 0.1− | 0.4+ | 2005 10 11 | A27 | 0.4+ | 0.0  |
| 2001 03 15 | 608 | 0.1−  | 0.2+  | 2005 09 13 | A13 | 0.2− | 0.2+ | 2005 10 11 | A27 | 0.1− | 0.0  |
| 2001 03 18 | 704 | 0.2+  | 0.2+  | 2005 09 13 | A13 | 0.1− | 0.2+ | 2005 10 11 | A27 | 0.2+ | 0.1− |
| 2001 03 18 | 699 | 0.3−  | 0.2+  | 2005 09 13 | A13 | 0.8− | 0.1+ | 2005 10 11 | A27 | 0.3+ | 0.3− |
| 2001 03 18 | 704 | (0.4+ | 1.6+) | 2005 09 13 | 084 | 0.3+ | 0.1+ | 2005 10 11 | A27 | 0.2+ | 0.1− |
| 2001 03 18 | 704 | 1.2+  | 0.2+  | 2005 09 13 | 084 | 0.0  | 0.1− | 2005 10 11 | A27 | 0.1− | 0.1− |
| 2001 03 18 | 704 | 0.3+  | 0.5+  | 2005 09 14 | 703 | 0.1+ | 0.0  | 2005 10 11 | A27 | 0.0  | 0.3+ |
| 2001 03 18 | 699 | 0.3+  | 0.0   | 2005 09 14 | 703 | 0.4− | 0.0  | 2005 10 11 | A27 | 0.4− | 0.1+ |
| 2001 03 18 | 699 | 0.5+  | 0.4+  | 2005 09 14 | 703 | 0.1− | 0.5+ | 2005 10 12 | 084 | 0.4− | 0.3− |
| 2001 03 18 | 699 | 0.7+  | 1.2+  | 2005 09 14 | 703 | 0.4+ | 0.0  | 2005 10 13 | 850 | 0.1− | 0.3− |
| 2001 03 19 | 918 | 0.3−  | 0.2−  | 2005 09 17 | 084 | 0.1− | 0.2+ | 2005 10 13 | 850 | 0.1+ | 0.3− |
| 2001 03 19 | 918 | 0.9+  | 0.6+  | 2005 09 22 | 084 | 0.6+ | 0.1− | 2005 10 13 | 850 | 0.1− | 0.1− |
| 2001 03 19 | 918 | 0.0   | 0.4+  | 2005 09 22 | 084 | 0.4− | 0.5− | 2005 10 21 | 644 | 0.0  | 0.1− |
| 2001 03 19 | 704 | 0.8+  | 0.9+  | 2005 09 24 | 703 | 0.2− | 0.0  | 2005 10 21 | 644 | 0.2+ | 0.7+ |
| 2001 03 19 | 704 | 0.8+  | 0.6−  | 2005 09 24 | 703 | 0.3+ | 0.0  | 2005 10 21 | 644 | 0.2+ | 0.1+ |
| 2001 03 19 | 704 | 0.1+  | 0.6−  | 2005 09 24 | 703 | 0.1− | 0.1− | 2005 10 22 | 703 | 0.7− | 0.0  |
| 2001 03 20 | 926 | 0.1−  | 0.5+  | 2005 09 24 | 703 | 0.1− | 0.2− | 2005 10 22 | 703 | 0.5− | 0.0  |
| 2001 03 20 | 926 | 0.4+  | 0.2+  | 2005 09 25 | 084 | 0.3− | 0.1− | 2005 10 22 | 703 | 0.1+ | 1.2+ |
| 2001 03 20 | 926 | 0.4+  | 1.1+  | 2005 09 25 | 084 | 0.1− | 0.3− | 2005 10 24 | 699 | 0.3+ | 0.5+ |
| 2001 03 21 | 859 | 0.1+  | 1.2+  | 2005 09 29 | 699 | 0.3− | 0.1− | 2005 10 24 | 699 | 0.1− | 0.3+ |
| 2001 03 21 | 859 | 1.2+  | 1.1+  | 2005 09 29 | 699 | 0.2+ | 0.0  | 2005 10 24 | 699 | 0.2− | 0.1− |
| 2001 03 21 | 859 | (4.6+ | 2.9+) | 2005 09 29 | 699 | 0.7+ | 0.0  | 2005 10 24 | 699 | 0.3+ | 0.1+ |
| 2001 03 26 | 360 | 0.1+  | 0.1+  | 2005 09 29 | 699 | 0.3− | 0.1+ | 2005 10 24 | 379 | 0.2− | 0.0  |
| 2001 03 26 | 360 | 0.4−  | 0.2+  | 2005 10 01 | 704 | 0.8− | 0.6+ | 2005 10 24 | 379 | 0.2+ | 0.4− |
| 2001 03 26 | 360 | 0.5+  | 0.5+  | 2005 10 01 | 704 | 0.8− | 0.5+ | 2005 10 27 | 699 | 0.1+ | 0.0  |
| 2001 04 06 | 413 | 0.5+  | 1.3+  | 2005 10 01 | 704 | 0.6− | 0.8+ | 2005 10 27 | 699 | 0.3− | 0.2+ |
| 2001 04 06 | 413 | 0.6+  | 0.9+  | 2005 10 01 | 691 | 0.2− | 0.2+ | 2005 10 27 | 699 | 0.3− | 0.2+ |
| 2001 04 06 | 413 | 0.5−  | 0.7+  | 2005 10 01 | 704 | 1.0− | 0.3+ | 2005 10 27 | 703 | 0.2+ | 0.2− |
| 2001 04 09 | 413 | 0.1+  | 0.1+  | 2005 10 01 | 704 | 0.6− | 0.3+ | 2005 10 27 | 699 | 0.2+ | 0.4+ |
| 2001 04 09 | 413 | 0.0   | 0.5+  | 2005 10 01 | 691 | 0.2− | 0.4+ | 2005 10 27 | 703 | 0.4+ | 0.1+ |
| 2001 04 09 | 413 | 0.1+  | 0.7+  | 2005 10 01 | 691 | 0.2− | 0.1+ | 2005 10 27 | 703 | 0.1+ | 0.5− |



2007 DEC. 24

M.P.O. 129171

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 04 12 | 413 | 0.1+  | 0.3+  | 2005 10 01 | 379 | 0.4- | 0.4+ | 2005 10 27 | 703 | 0.6-  | 0.8+  |
| 2001 04 12 | 413 | 0.1+  | 0.8+  | 2005 10 01 | 379 | 0.5- | 0.2- | 2005 10 27 | 084 | 0.3+  | 0.3-  |
| 2001 04 12 | 413 | 0.2+  | 0.1+  | 2005 10 01 | 379 | 0.6+ | 0.1+ | 2005 10 27 | 084 | 0.1+  | 0.1-  |
| 2001 05 31 | 413 | 0.3+  | 0.8-  | 2005 10 01 | 379 | 0.3+ | 0.1- | 2005 10 30 | 683 | (2.2+ | 0.2-) |
| 2001 05 31 | 413 | 0.5+  | 0.6+  | 2005 10 02 | 084 | 0.1- | 0.5- | 2005 10 30 | 683 | (3.0+ | 0.3+) |
| 2001 06 02 | 413 | 0.3-  | 0.2+  | 2005 10 02 | 084 | 0.1- | 0.2- | 2005 10 30 | 704 | 0.1-  | 0.1-  |
| 2001 06 02 | 413 | 0.4+  | 0.1-  | 2005 10 03 | 084 | 0.1- | 0.2- | 2005 10 30 | 683 | 1.1+  | 0.6+  |
| 2003 02 26 | 246 | 0.2-  | 1.0+  | 2005 10 03 | 084 | 0.3+ | 0.6- | 2005 10 30 | 704 | 0.1-  | 0.0   |
| 2003 02 26 | 246 | 0.3-  | 0.9+  | 2005 10 05 | 951 | 0.4- | 0.2- | 2005 10 30 | 704 | 0.3+  | 0.3+  |
| 2003 02 26 | 246 | 0.3+  | 0.8+  | 2005 10 05 | 951 | 0.5+ | 0.4- | 2005 10 30 | 704 | 0.1+  | 0.0   |
| 2003 02 26 | 246 | 0.4+  | 0.6+  | 2005 10 05 | 951 | 0.2+ | 0.2- | 2005 10 30 | 704 | 0.1-  | 0.0   |
| 2003 02 27 | 246 | 1.2+  | 0.0   | 2005 10 05 | 704 | 0.0  | 0.0  | 2005 10 31 | 683 | (1.7- | 0.2+) |
| 2003 02 27 | 246 | 0.3+  | 0.9+  | 2005 10 05 | 704 | 0.2- | 0.2+ | 2005 10 31 | 683 | 1.4-  | 1.0+  |
| 2003 02 27 | 246 | 0.2+  | 0.4+  | 2005 10 05 | 704 | 0.1- | 0.2+ | 2005 10 31 | 683 | 1.0-  | 1.2+  |
| 2003 02 27 | 246 | 0.8+  | 0.6+  | 2005 10 05 | 704 | 0.0  | 0.2- | 2005 11 01 | 683 | 0.1+  | 0.1+  |
| 2003 02 27 | 246 | 1.4+  | 0.0   | 2005 10 05 | 704 | 0.0  | 0.6+ | 2005 11 01 | 683 | 0.3-  | 0.7+  |
| 2003 02 27 | 246 | 0.1+  | 1.3+  | 2005 10 06 | 703 | 0.1+ | 0.2- | 2005 11 01 | 683 | 0.2-  | 0.9+  |
| 2003 02 27 | 246 | 0.5+  | 0.8+  | 2005 10 06 | 703 | 0.1- | 0.3- | 2005 11 01 | 084 | 0.0   | 0.1+  |
| 2003 04 06 | 704 | 0.9+  | 0.7-  | 2005 10 06 | 703 | 0.2+ | 0.5- | 2005 11 01 | 084 | 0.8-  | 0.8-  |
| 2003 04 06 | 704 | 0.5-  | 0.0   | 2005 10 06 | 703 | 0.2+ | 0.1- | 2005 11 02 | 704 | 0.6+  | 0.6+  |
| 2003 04 06 | 704 | 0.4-  | 0.5+  | 2005 10 06 | 703 | 0.2+ | 0.1+ | 2005 11 02 | 704 | 0.4+  | 0.6+  |
| 2003 04 21 | 170 | 0.9+  | 0.5+  | 2005 10 06 | 703 | 0.4- | 0.2- | 2005 11 02 | 704 | 0.4+  | 0.9+  |
| 2003 04 21 | 170 | 0.9+  | 0.4+  | 2005 10 06 | 703 | 0.2+ | 0.1- | 2005 11 02 | 704 | 0.4+  | 0.7+  |
| 2003 05 04 | 859 | (3.0+ | 1.1+) | 2005 10 06 | 703 | 0.4+ | 0.2- | 2005 11 02 | 704 | 0.3+  | 0.8+  |
| 2003 05 04 | 859 | 0.9-  | 1.3+  | 2005 10 06 | 379 | 0.3- | 0.4- | 2005 11 03 | 084 | 0.0   | 0.6-  |
| 2003 05 04 | 859 | 0.1+  | 0.3+  | 2005 10 06 | 379 | 0.0  | 0.1+ | 2005 11 03 | 084 | 0.3-  | 0.3-  |
| 2003 05 07 | 428 | 0.5+  | 0.6+  | 2005 10 06 | 379 | 0.1- | 0.4- | 2005 11 05 | 704 | 0.3+  | 0.0   |
| 2003 05 08 | 704 | 0.7+  | 0.4+  | 2005 10 06 | 379 | 0.2- | 0.2+ | 2005 11 05 | 704 | 0.1+  | 0.2-  |
| 2003 05 08 | 704 | 0.5-  | 0.1+  | 2005 10 07 | 084 | 0.0  | 0.4- | 2005 11 05 | 704 | 0.4+  | 0.3-  |
| 2003 05 08 | 704 | 0.3+  | 0.9+  | 2005 10 07 | 084 | 0.3- | 0.4- | 2005 11 05 | 704 | 0.1-  | 0.2+  |
| 2003 05 08 | 704 | 0.5-  | 0.5-  | 2005 10 08 | 084 | 0.2+ | 0.2- | 2005 11 05 | 704 | 0.4+  | 0.7-  |
| 2003 05 10 | 670 | 0.4-  | 0.8-  | 2005 10 08 | 084 | 0.5- | 0.0  | 2005 11 05 | 240 | 1.0+  | 0.1+  |
| 2003 05 10 | 670 | (0.5- | 2.0+) | 2005 10 09 | A62 | 0.4- | 0.2+ | 2005 11 05 | 240 | 0.8+  | 0.3-  |
| 2003 05 10 | E14 | 0.1-  | 0.6+  | 2005 10 09 | A62 | 0.1+ | 0.1+ | 2005 11 05 | 240 | 0.5+  | 0.4-  |
| 2003 05 10 | E14 | 0.2+  | 0.3+  | 2005 10 09 | A62 | 0.2- | 0.2+ | 2005 11 19 | 699 | 0.1-  | 0.4+  |
| 2003 05 10 | E14 | 0.1+  | 0.5+  | 2005 10 09 | A62 | 0.0  | 0.1- | 2005 11 19 | 699 | 0.4-  | 1.1-  |
| 2005 08 08 | 734 | 0.3+  | 0.1+  | 2005 10 09 | A62 | 0.3- | 0.3+ | 2005 11 19 | 699 | 1.0-  | 0.5+  |
| 2005 08 08 | 734 | 0.2-  | 0.6+  | 2005 10 09 | A62 | 0.1- | 0.1+ | 2005 11 19 | 699 | 0.5-  | 1.0+  |
| 2005 08 08 | 734 | 0.8-  | 0.1-  | 2005 10 09 | A62 | 0.2- | 0.2+ | 2005 12 02 | 703 | 0.8-  | 0.0   |
| 2005 08 08 | 734 | 0.7+  | 0.0   | 2005 10 09 | A62 | 0.0  | 0.2+ | 2005 12 02 | 703 | (1.1- | 1.9+) |
| 2005 08 13 | E12 | 0.1-  | 0.1-  | 2005 10 09 | A62 | 0.2- | 0.3+ | 2005 12 02 | 703 | (2.5- | 0.6+) |
| 2005 08 13 | E12 | 0.1+  | 0.1+  | 2005 10 09 | A62 | 0.0  | 0.2+ | 2005 12 02 | 703 | 0.1-  | 0.3+  |
| 2005 08 13 | E12 | 0.3+  | 0.0   | 2005 10 09 | A62 | 0.2- | 0.1+ | 2007 08 10 | 691 | 0.7+  | 0.8-  |
| 2005 08 13 | E12 | 0.1+  | 0.2+  | 2005 10 09 | A62 | 0.1- | 0.0  | 2007 08 10 | 691 | 0.1+  | 0.1+  |
| 2005 08 28 | 608 | 0.7-  | 1.2+  | 2005 10 09 | A62 | 0.2- | 0.3+ | 2007 08 10 | 691 | 0.1-  | 0.3-  |
| 2005 08 28 | 608 | 0.8-  | 1.0+  | 2005 10 09 | A62 | 0.1- | 0.0  | 2007 11 07 | 711 | 0.3-  | 1.3-  |
| 2005 08 28 | 608 | 0.6-  | 0.8+  | 2005 10 09 | A62 | 0.3- | 0.2+ | 2007 11 07 | 711 | 0.2-  | 0.3-  |
| 2005 09 03 | 084 | 0.2+  | 0.2+  | 2005 10 10 | 084 | 0.2+ | 0.4- | 2007 11 09 | 704 | 0.2+  | 0.4-  |
| 2005 09 05 | 084 | 0.4+  | 0.2-  | 2005 10 10 | A50 | 0.4- | 0.7+ | 2007 11 09 | 704 | 1.2-  | 0.2+  |
| 2005 09 06 | 704 | (1.0+ | 3.1+) | 2005 10 10 | A50 | 0.1- | 0.5+ | 2007 11 09 | 704 | 0.5-  | 0.1-  |
| 2005 09 06 | 704 | (1.7+ | 3.0+) | 2005 10 10 | A50 | 0.2+ | 0.9+ | 2007 12 05 | H45 | 0.9-  | 0.2-  |
| 2005 09 06 | 704 | 0.2-  | 0.8+  | 2005 10 10 | A50 | 0.1- | 0.9+ | 2007 12 05 | H45 | 0.3+  | 0.4+  |
| 2005 09 09 | 084 | 0.2+  | 0.4-  | 2005 10 10 | A50 | 0.1+ | 0.4+ | 2007 12 05 | H45 | 0.2+  | 0.4-  |
| 2005 09 09 | 084 | 0.4+  | 0.1-  | 2005 10 11 | 704 | 0.1+ | 0.1- | 2007 12 05 | H45 | 0.1-  | 0.6-  |
| 2005 09 10 | 084 | 0.3-  | 0.1-  | 2005 10 11 | 704 | 0.3- | 0.4+ | 2007 12 05 | H45 | 0.0   | 0.7-  |
| 2005 09 10 | 084 | 0.1+  | 0.5-  | 2005 10 11 | 704 | 0.1- | 0.4+ | 2007 12 17 | H45 | 0.6+  | 0.0   |
| 2005 09 10 | 084 | 0.2-  | 0.3-  | 2005 10 11 | 704 | 0.1- | 0.2+ | 2007 12 17 | H45 | 0.1+  | 0.4-  |
| 2005 09 10 | 084 | 0.1-  | 0.1-  | 2005 10 11 | 704 | 0.5- | 0.2+ | 2007 12 17 | H45 | 0.0   | 0.0   |
| 2005 09 12 | 084 | 0.1+  | 0.0   | 2005 10 11 | 084 | 0.0  | 0.5- | 2007 12 17 | H45 | 0.3+  | 0.2+  |
| 2005 09 12 | 084 | 0.5+  | 0.5-  | 2005 10 11 | 084 | 0.2+ | 0.3+ | 2007 12 17 | H45 | 0.5+  | 0.5-  |

(171820)\* 2001 FT<sub>12</sub>

Discovered 2001 Mar. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 308.17675  |          | (2000.0)  |            | <i>P</i>    |       | <i>Q</i>    |            |     |       |       |
|-----------------------------|------------|----------|-----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| <i>n</i>                    | 0.25943216 | $\omega$ | 352.97003 |            | -0.65588853 |       | -0.75382480 |            |     |       |       |
| <i>a</i>                    | 2.4347451  | $\Omega$ | 138.00620 |            | +0.69540928 |       | -0.62375001 |            |     |       |       |
| <i>e</i>                    | 0.1460129  | <i>i</i> | 3.38265   |            | +0.29362591 |       | -0.20660130 |            |     |       |       |
| <i>P</i>                    | 3.80       | <i>H</i> | 16.0      |            | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc |            |          |           |            |             |       |             |            |     |       |       |
| 1997 02 13                  | 691        | 0.0      | 0.3-      | 2001 03 26 | 704         | 0.1+  | 0.5+        | 2003 11 01 | 704 | (2.2- | 0.5+) |
| 1997 02 13                  | 691        | 0.1-     | 0.4-      | 2001 03 26 | 704         | (0.1+ | 3.6+)       | 2003 11 01 | 704 | 0.8-  | 0.8+  |
| 1997 02 13                  | 691        | 0.4-     | 0.3-      | 2001 03 26 | 608         | 0.2+  | 0.4-        | 2003 11 01 | 704 | 0.0   | 1.3+  |
| 2001 03 03                  | 704        | 0.8-     | 0.6-      | 2001 03 26 | 608         | 0.4+  | 0.8-        | 2003 11 03 | 704 | 0.4+  | 0.3+  |
| 2001 03 03                  | 704        | 0.1-     | 0.0       | 2001 03 26 | 608         | 0.3+  | 0.6-        | 2003 11 03 | 704 | (0.1+ | 2.3+) |
| 2001 03 03                  | 704        | 0.2-     | 0.2+      | 2001 03 29 | 699         | 1.3+  | 0.4+        | 2003 11 03 | 704 | (0.0  | 3.0+) |
| 2001 03 03                  | 704        | 0.1+     | 0.8+      | 2001 03 29 | 699         | 0.6-  | 0.2+        | 2003 11 03 | 704 | (1.2+ | 2.5+) |
| 2001 03 03                  | 704        | 0.6-     | 0.3+      | 2001 03 29 | 699         | 0.1+  | 0.5+        | 2003 11 18 | 644 | 0.1+  | 0.5+  |
| 2001 03 04                  | 734        | 0.1-     | 0.0       | 2001 03 29 | 704         | 0.2-  | 0.1-        | 2003 11 18 | 644 | 0.0   | 0.4+  |
| 2001 03 04                  | 734        | 0.2+     | 0.2+      | 2001 03 29 | 704         | 0.2-  | 0.2+        | 2003 11 18 | 644 | 0.3-  | 0.1+  |
| 2001 03 04                  | 734        | 0.8+     | 0.0       | 2001 03 29 | 699         | 0.2+  | 0.2+        | 2003 11 19 | 699 | 0.3-  | 0.2+  |
| 2001 03 19                  | 699        | 0.2+     | 0.8+      | 2001 03 29 | 704         | 1.3+  | 0.0         | 2003 11 19 | 699 | 0.1+  | 0.3+  |
| 2001 03 19                  | 699        | 0.6+     | 0.5+      | 2001 03 29 | 704         | 1.1-  | 0.9-        | 2003 11 19 | 699 | (0.7+ | 1.5-) |
| 2001 03 19                  | 704        | 0.5+     | 0.7+      | 2001 04 24 | 699         | 0.1+  | 1.0+        | 2003 11 19 | 699 | 0.4-  | 0.7+  |
| 2001 03 19                  | 699        | 0.7+     | 0.9+      | 2001 04 24 | 699         | 0.5+  | 0.5-        | 2005 04 15 | 691 | 0.3+  | 0.4+  |
| 2001 03 19                  | 704        | 0.3+     | 0.4-      | 2001 04 24 | 699         | 0.2+  | 0.2+        | 2005 04 15 | 691 | 0.1-  | 1.4+  |
| 2001 03 19                  | 704        | 0.1-     | 0.7+      | 2001 04 24 | 699         | 1.3+  | 0.5+        | 2005 04 15 | 691 | 0.3+  | 0.4+  |
| 2001 03 19                  | 704        | 0.7-     | 0.6+      | 2003 10 25 | 704         | 0.1+  | 0.1+        | 2006 07 21 | G96 | 0.3+  | 0.3+  |
| 2001 03 19                  | 699        | 0.1+     | 0.3+      | 2003 10 25 | 704         | 0.2-  | 0.7+        | 2006 07 21 | G96 | 0.3-  | 0.4+  |
| 2001 03 19                  | 704        | 0.3+     | 0.9+      | 2003 10 25 | 704         | 0.5-  | 0.5+        | 2006 07 21 | G96 | 0.4-  | 0.5+  |
| 2001 03 22                  | 209        | 0.1-     | 0.6+      | 2003 10 25 | 704         | 0.1+  | 0.9+        | 2006 07 21 | G96 | 0.4-  | 0.2+  |
| 2001 03 23                  | 209        | 0.2-     | 0.2+      | 2003 10 29 | 691         | 0.0   | 0.4+        | 2006 07 25 | 644 | 0.1-  | 1.0+  |
| 2001 03 23                  | 209        | 1.3-     | 0.3-      | 2003 10 29 | 704         | 0.2-  | 0.6+        | 2006 07 25 | 644 | 0.2-  | 1.0+  |
| 2001 03 23                  | 699        | 0.2+     | 0.1+      | 2003 10 29 | 691         | 0.1-  | 0.3+        | 2006 07 25 | 644 | 0.5-  | 0.5+  |
| 2001 03 23                  | 699        | 1.2+     | 0.3-      | 2003 10 29 | 704         | 0.6-  | 0.4+        | 2007 12 04 | 704 | 0.2-  | 0.3+  |
| 2001 03 23                  | 699        | 0.0      | 0.1-      | 2003 10 29 | 704         | 0.5-  | 0.2+        | 2007 12 04 | 704 | 0.4-  | 0.5+  |
| 2001 03 23                  | 699        | 0.9+     | 0.2+      | 2003 10 29 | 691         | 0.1-  | 0.3+        | 2007 12 04 | 704 | 0.1-  | 0.3+  |
| 2001 03 23                  | 209        | 0.3+     | 0.4-      | 2003 10 29 | 704         | (0.5+ | 1.8+)       | 2007 12 04 | 704 | 0.2-  | 0.8+  |
| 2001 03 24                  | 209        | 0.0      | 0.0       | 2003 10 29 | 699         | 0.8+  | 0.8+        | 2007 12 04 | 704 | 0.2-  | 0.5+  |
| 2001 03 24                  | 209        | 0.7-     | 0.1-      | 2003 10 29 | 699         | 0.5-  | 0.5+        | 2007 12 06 | G96 | 0.5+  | 0.3-  |
| 2001 03 26                  | 704        | 0.4-     | 0.6+      | 2003 10 29 | 699         | 0.6+  | 0.5+        | 2007 12 06 | G96 | 0.2-  | 0.3-  |
| 2001 03 26                  | 704        | 0.0      | 1.5+      | 2003 10 29 | 699         | (0.6+ | 2.2+)       | 2007 12 06 | G96 | 0.5+  | 0.4-  |
| 2001 03 26                  | 704        | 0.0      | 0.8+      | 2003 11 01 | 704         | 1.0-  | 0.6+        | 2007 12 06 | G96 | 0.4+  | 0.3-  |

(171821)\* 2001 FW<sub>14</sub> = 1999 VX<sub>130</sub>

Discovered 2001 Mar. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 13243)

Epoch

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 14 | 691 | 0.3+  | 0.1-  | 2005 05 10 | G96 | 0.2- | 0.4- | 2007 12 04 | G96 | 1.4+ | 0.2+ |
| 2001 03 19 | 699 | 0.6+  | 0.7+  | 2005 05 16 | 644 | 0.1- | 0.4+ | 2007 12 04 | 691 | 0.5- | 0.3- |
| 2001 03 19 | 699 | (1.6+ | 0.6+) | 2005 05 16 | 644 | 0.1+ | 0.1- | 2007 12 04 | 691 | 0.6- | 0.5+ |
| 2001 03 19 | 699 | 0.6-  | 1.3-  | 2005 05 16 | 644 | 0.4- | 0.3+ | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2001 03 19 | 699 | 0.1-  | 0.3+  | 2006 08 28 | 691 | 0.2+ | 0.2- | 2007 12 15 | 691 | 0.5- | 0.5+ |
| 2001 03 23 | 699 | 0.3+  | 1.0+  | 2006 08 28 | 691 | 0.1+ | 0.3+ | 2007 12 15 | 691 | 0.0  | 0.2+ |
| 2001 03 23 | 699 | 0.4-  | 0.9+  | 2006 08 28 | 691 | 0.3- | 0.1+ | 2007 12 15 | 691 | 0.4- | 0.1+ |
| 2001 03 23 | 699 | 0.6+  | 1.3+  | 2006 09 16 | 691 | 0.5+ | 0.5+ |            |     |      |      |
| 2001 03 23 | 699 | 0.5-  | 1.1+  | 2006 09 16 | 691 | 0.2+ | 0.4+ |            |     |      |      |

**(171822)\* 2001 FR<sub>20</sub>**

Discovered 2001 Mar. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.26331182 | $\omega$ | 148.78801 | -0.54360481 | -0.83770804 |          |   |
| <i>a</i> | 2.4107702  | $\Omega$ | 334.03040 | +0.74334504 | -0.45153881 |          |   |
| <i>e</i> | 0.0938619  | <i>i</i> | 6.86425   | +0.38978451 | -0.30717739 |          |   |
| <i>P</i> | 3.74       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 10 12 | 704 | 0.1-  | 0.7-  | 2003 11 19 | 704 | 0.6+ | 0.9+ | 2006 08 28 | 691 | 0.1-  | 0.7+  |
| 1999 10 12 | 704 | 0.5-  | 0.2-  | 2003 11 19 | 704 | 0.2+ | 0.3+ | 2006 08 28 | 703 | 0.1+  | 0.6+  |
| 1999 10 12 | 704 | 0.7-  | 0.2-  | 2003 11 19 | 704 | 0.6+ | 0.9+ | 2006 08 28 | 703 | 0.3-  | 0.0   |
| 1999 10 12 | 704 | 0.6-  | 0.5-  | 2003 11 19 | 704 | 0.3- | 1.2+ | 2006 08 28 | 703 | 0.3-  | 0.9+  |
| 2001 03 18 | 704 | 0.0   | 0.5-  | 2003 11 19 | 704 | 0.6+ | 1.2- | 2006 08 28 | 703 | 0.2-  | 0.3+  |
| 2001 03 18 | 704 | 0.8+  | 0.2+  | 2003 12 03 | 704 | 0.6- | 0.2- | 2006 09 25 | 699 | 0.1+  | 0.7-  |
| 2001 03 18 | 704 | (1.8- | 0.8+) | 2003 12 03 | 704 | 0.2- | 0.3- | 2006 09 25 | 699 | 0.7+  | 0.6+  |
| 2001 03 18 | 704 | 0.4+  | 0.3+  | 2003 12 03 | 704 | 0.7- | 0.3- | 2006 09 25 | 699 | 1.2-  | 1.1-  |
| 2001 03 19 | 699 | 0.6+  | 0.3+  | 2003 12 03 | 704 | 0.0  | 0.7+ | 2006 09 25 | G96 | 0.1-  | 0.1+  |
| 2001 03 19 | 699 | 0.1+  | 0.6+  | 2003 12 17 | 704 | 0.8+ | 0.7- | 2006 09 25 | G96 | 0.3+  | 0.4-  |
| 2001 03 19 | 699 | 0.6-  | 0.7+  | 2003 12 17 | 704 | 0.9+ | 0.2+ | 2006 09 25 | G96 | 0.2-  | 0.2+  |
| 2001 03 19 | 699 | 0.4+  | 1.0+  | 2003 12 17 | 704 | 0.6+ | 0.0  | 2006 09 25 | G96 | 0.3-  | 0.3+  |
| 2001 03 23 | 699 | 0.7+  | 0.2+  | 2003 12 17 | 704 | 0.7+ | 0.2- | 2006 09 25 | 699 | 0.6+  | 1.4-  |
| 2001 03 23 | 699 | 0.1+  | 1.4+  | 2003 12 17 | 704 | 0.9+ | 0.0  | 2007 11 17 | 704 | 1.8+  | 0.4-  |
| 2001 03 23 | 699 | 1.0+  | 0.7+  | 2003 12 27 | 704 | 0.6+ | 0.3- | 2007 11 17 | G96 | 0.3+  | 0.5+  |
| 2001 03 23 | 699 | 0.1+  | 0.0   | 2003 12 27 | 704 | 0.6+ | 0.2- | 2007 11 17 | G96 | 0.5-  | 0.6+  |
| 2001 04 24 | 699 | 1.0+  | 0.1-  | 2003 12 27 | 704 | 0.4- | 0.4+ | 2007 11 17 | 704 | 0.9+  | 1.1+  |
| 2001 04 24 | 699 | 1.2+  | 0.5+  | 2003 12 27 | 704 | 0.6- | 0.2+ | 2007 11 17 | G96 | 0.6-  | 0.5+  |
| 2001 04 24 | 699 | 1.0-  | 0.9+  | 2003 12 29 | 704 | 0.6- | 0.6+ | 2007 11 17 | G96 | 0.1-  | 0.1-  |
| 2001 04 24 | 699 | 0.7-  | 0.7+  | 2003 12 29 | 704 | 0.7- | 0.2+ | 2007 11 17 | 704 | (2.2+ | 1.0+) |
| 2003 10 24 | 704 | 0.5+  | 0.3-  | 2003 12 29 | 704 | 0.5+ | 0.1- | 2007 12 16 | 704 | 0.3+  | 1.2+  |
| 2003 10 24 | 704 | 0.9+  | 0.2+  | 2003 12 29 | 704 | 1.3- | 0.8- | 2007 12 16 | 704 | 0.1-  | 0.7+  |
| 2003 10 24 | 704 | 0.9+  | 0.5+  | 2003 12 29 | 704 | 0.9- | 0.2- | 2007 12 16 | 704 | 0.4-  | 0.9-  |
| 2003 10 24 | 704 | 0.2+  | 0.4+  | 2006 08 28 | 691 | 0.3- | 0.8+ | 2007 12 16 | 704 | 1.0-  | 1.3+  |
| 2003 10 24 | 704 | 0.1-  | 0.8+  | 2006 08 28 | 691 | 0.3- | 0.7+ | 2007 12 16 | 704 | 0.4-  | 0.0   |

**(171823)\* 2001 FS<sub>25</sub>**

Discovered 2001 Mar. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.27836049 | $\omega$ | 155.63178 | -0.50375636 | -0.86133715 |          |   |
| <i>a</i> | 2.3230808  | $\Omega$ | 324.51476 | +0.77280133 | -0.41532413 |          |   |
| <i>e</i> | 0.1415192  | <i>i</i> | 6.50722   | +0.38601506 | -0.29258192 |          |   |
| <i>P</i> | 3.54       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 01 | 699 | (1.2- | 2.2+) | 2003 12 03 | 704 | 0.2- | 0.3- | 2006 08 22 | 644 | 0.3-  | 0.2+  |
| 2001 02 01 | 699 | 0.9+  | 0.3-  | 2003 12 03 | 704 | 0.5+ | 0.1+ | 2006 08 22 | 644 | 0.2-  | 0.3+  |
| 2001 02 01 | 699 | 0.9+  | 0.1+  | 2003 12 04 | 704 | 0.2+ | 0.1+ | 2006 08 27 | 699 | 0.5+  | 1.2+  |
| 2001 02 01 | 699 | 0.5+  | 0.0   | 2003 12 04 | 704 | 0.3- | 0.0  | 2006 08 27 | 699 | (1.5+ | 0.7+) |
| 2001 03 18 | 704 | 0.1-  | 1.1+  | 2003 12 04 | 704 | 0.3- | 0.1- | 2006 08 27 | 699 | 0.2-  | 0.9+  |
| 2001 03 18 | 704 | 0.4-  | 0.7+  | 2003 12 04 | 704 | 0.1- | 0.9- | 2006 08 27 | 699 | 0.1+  | 1.3+  |
| 2001 03 18 | 704 | 0.3-  | 0.0   | 2003 12 04 | 704 | 0.1- | 0.0  | 2006 08 29 | 703 | 0.3+  | 0.3+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 18 | 704 | 0.5+  | 0.8+  | 2003 12 05 | 704 | 0.2-  | 0.3+  | 2006 08 29 | 703 | 0.1-  | 0.3+  |
| 2001 03 18 | 704 | 0.4+  | 0.2+  | 2003 12 05 | 704 | 0.5-  | 0.2-  | 2006 08 29 | 703 | 1.4-  | 1.1-  |
| 2001 03 19 | 699 | 1.0-  | 1.1+  | 2003 12 05 | 704 | 0.1-  | 0.3+  | 2006 08 29 | 703 | 0.6+  | 0.3-  |
| 2001 03 19 | 699 | 0.8+  | 0.6+  | 2003 12 05 | 704 | 0.8+  | 0.8+  | 2006 09 03 | 152 | 0.8+  | 0.1+  |
| 2001 03 19 | 699 | 0.3-  | 1.3+  | 2003 12 15 | 644 | 0.4-  | 0.4-  | 2006 09 03 | 152 | 0.1+  | 0.2+  |
| 2001 03 19 | 699 | 0.8+  | 0.3+  | 2003 12 15 | 644 | 0.5-  | 0.2-  | 2006 09 12 | 703 | 0.1-  | 0.5+  |
| 2001 03 20 | 608 | 0.4-  | 0.6+  | 2003 12 15 | 644 | 0.4-  | 0.0   | 2006 09 12 | 703 | 0.2-  | 0.7+  |
| 2001 03 20 | 608 | 0.3-  | 0.4+  | 2003 12 17 | 704 | 0.1-  | 0.2-  | 2006 09 12 | 703 | (1.3+ | 2.3+) |
| 2001 03 20 | 608 | 0.2-  | 0.6+  | 2003 12 17 | 704 | 0.3-  | 0.2-  | 2006 09 12 | 703 | (1.1+ | 2.5+) |
| 2001 03 23 | 704 | 0.2+  | 0.5-  | 2003 12 17 | 704 | 0.3+  | 0.4-  | 2006 09 19 | 699 | 0.2-  | 0.2-  |
| 2001 03 23 | 704 | 0.6+  | 0.1-  | 2003 12 17 | 704 | 0.1-  | 0.1+  | 2006 09 19 | 703 | 0.6-  | 0.6+  |
| 2001 03 23 | 704 | 0.7+  | 0.7-  | 2003 12 17 | 704 | 0.5-  | 0.0   | 2006 09 19 | 699 | 0.9-  | 0.0   |
| 2001 03 23 | 704 | 0.8+  | 0.1+  | 2003 12 22 | 704 | 0.3+  | 0.7-  | 2006 09 19 | 703 | 0.2-  | 1.0+  |
| 2001 03 26 | 704 | 0.8+  | 0.4+  | 2003 12 22 | 704 | (0.5+ | 2.0+) | 2006 09 19 | 703 | 0.2+  | 0.7+  |
| 2001 03 26 | 704 | 0.6+  | 0.7+  | 2003 12 22 | 704 | (2.3- | 2.0+) | 2006 09 19 | 699 | 0.6-  | 0.9+  |
| 2001 03 26 | 704 | (1.9+ | 1.0+) | 2003 12 22 | 704 | (0.6+ | 3.0-) | 2006 09 19 | 703 | 0.0   | 0.9+  |
| 2001 03 26 | 704 | 0.2+  | 0.5+  | 2003 12 27 | 704 | 0.3-  | 0.0   | 2006 09 19 | 699 | 1.4-  | 0.9+  |
| 2001 03 26 | 704 | 0.6+  | 0.9+  | 2003 12 27 | 704 | 0.0   | 0.0   | 2006 09 20 | 691 | 0.1-  | 0.5+  |
| 2001 03 26 | 704 | 0.3+  | 0.6+  | 2003 12 27 | 704 | 0.0   | 0.4+  | 2006 09 20 | 691 | 0.2-  | 0.2+  |
| 2001 03 26 | 704 | 0.6+  | 0.0   | 2003 12 27 | 704 | 0.2-  | 0.0   | 2006 09 20 | 691 | 0.0   | 0.4+  |
| 2001 03 26 | 704 | 0.4-  | 0.4+  | 2003 12 27 | 704 | 0.1-  | 0.4-  | 2006 10 16 | 703 | 0.9-  | 0.6-  |
| 2001 03 26 | 704 | 0.1+  | 0.5+  | 2003 12 29 | 704 | 0.1+  | 0.6+  | 2006 10 16 | 703 | 0.8+  | 0.2+  |
| 2001 03 29 | 608 | (2.7+ | 2.1+) | 2003 12 29 | 704 | 0.3-  | 0.5-  | 2006 10 16 | 703 | 0.0   | 0.0   |
| 2001 03 29 | 608 | (2.1+ | 2.3+) | 2003 12 29 | 704 | 0.1-  | 0.4+  | 2006 10 16 | 703 | 1.0-  | 1.1-  |
| 2001 03 29 | 608 | (2.1+ | 1.6+) | 2003 12 29 | 704 | 0.2+  | 0.2+  | 2007 09 27 | G96 | 0.4-  | 0.1+  |
| 2001 04 14 | 608 | (2.0+ | 0.4+) | 2003 12 29 | 704 | 0.3-  | 0.0   | 2007 09 27 | G96 | 0.0   | 0.2-  |
| 2001 04 14 | 608 | 1.0+  | 0.0   | 2004 01 16 | 644 | 0.1-  | 0.0   | 2007 09 27 | G96 | 0.8-  | 0.9-  |
| 2001 04 14 | 608 | (1.8+ | 0.9-) | 2004 01 16 | 644 | 0.2-  | 0.2-  | 2007 09 27 | G96 | 0.4-  | 0.1-  |
| 2003 11 19 | 704 | 0.8+  | 0.3-  | 2004 01 16 | 644 | 0.1-  | 0.2-  | 2007 11 14 | 691 | 0.0   | 0.1-  |
| 2003 11 19 | 704 | 0.5+  | 0.2-  | 2004 02 17 | 644 | 0.0   | 0.0   | 2007 11 14 | 691 | 0.0   | 0.1+  |
| 2003 11 19 | 704 | (2.3+ | 1.0+) | 2004 02 17 | 644 | 0.1-  | 0.2+  | 2007 11 14 | 691 | 0.0   | 0.3-  |
| 2003 11 19 | 704 | 0.6-  | 1.1+  | 2004 02 17 | 644 | 0.2-  | 0.5+  | 2007 12 14 | 704 | 0.6-  | 0.4+  |
| 2003 11 19 | 704 | 0.1+  | 0.3+  | 2004 02 23 | 704 | 0.5+  | 1.2+  | 2007 12 14 | 704 | 0.9+  | 1.3+  |
| 2003 12 03 | 704 | 0.2+  | 0.2+  | 2004 02 23 | 704 | (0.5+ | 2.1+) | 2007 12 14 | 704 | 0.4+  | 0.3+  |
| 2003 12 03 | 704 | 0.4+  | 0.4+  | 2004 02 23 | 704 | 1.3+  | 1.1+  | 2007 12 14 | 704 | 0.6+  | 0.3+  |
| 2003 12 03 | 704 | 0.2+  | 0.1+  | 2006 08 22 | 644 | 0.4-  | 0.1+  | 2007 12 14 | 704 | 0.4+  | 0.1+  |

**(171824)\* 2001 FK<sub>49</sub> = 2005 GG<sub>115</sub>**

Discovered 2001 Mar. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 74940)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.25977535 | $\omega$ | 127.03323 | -0.81059486 | -0.58554692 |          |   |
| <i>a</i> | 2.4326003  | $\Omega$ | 17.13024  | +0.52780706 | -0.73673600 |          |   |
| <i>e</i> | 0.1364838  | <i>i</i> | 1.63674   | +0.25368422 | -0.33816397 |          |   |
| <i>P</i> | 3.79       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 18 | 704 | 0.4+  | 0.0   | 2003 11 21 | 291 | 0.2+ | 0.4+ | 2005 05 01 | 644 | 0.0  | 0.1+ |
| 2001 03 18 | 704 | 0.5-  | 1.1+  | 2003 11 21 | 291 | 0.1- | 0.3+ | 2005 05 01 | 644 | 0.2+ | 0.3+ |
| 2001 03 18 | 704 | (0.3+ | 1.8-) | 2005 04 10 | G96 | 0.5- | 0.2- | 2005 05 01 | 644 | 0.0  | 0.1+ |
| 2001 03 18 | 704 | 0.1-  | 0.2-  | 2005 04 10 | G96 | 0.4- | 0.3- | 2005 05 01 | 644 | 0.0  | 0.3+ |
| 2001 03 24 | 704 | 0.0   | 0.8-  | 2005 04 10 | G96 | 0.4- | 0.4- | 2007 09 15 | G96 | 0.0  | 0.1+ |
| 2001 03 24 | 691 | 0.2-  | 0.1+  | 2005 04 10 | G96 | 0.5- | 0.5- | 2007 09 15 | G96 | 0.7+ | 0.2+ |
| 2001 03 24 | 704 | 0.4+  | 0.7-  | 2005 04 12 | 691 | 0.2+ | 0.3+ | 2007 09 15 | G96 | 0.5+ | 0.2+ |
| 2001 03 24 | 691 | 0.1+  | 0.0   | 2005 04 12 | 691 | 0.2- | 0.1+ | 2007 09 15 | G96 | 0.3+ | 0.1+ |
| 2001 03 24 | 691 | 0.0   | 0.0   | 2005 04 12 | 691 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.6- | 0.2- |
| 2001 03 24 | 704 | 1.1+  | 0.3+  | 2005 04 17 | 691 | 0.4+ | 0.0  | 2007 11 09 | 691 | 0.3- | 0.1+ |
| 2001 03 29 | 608 | 0.4+  | 0.5+  | 2005 04 17 | 691 | 0.0  | 0.0  | 2007 11 09 | 691 | 1.3+ | 0.7- |
| 2001 03 29 | 608 | 0.2-  | 0.9+  | 2005 04 17 | 691 | 0.3+ | 0.1- | 2007 12 15 | G96 | 0.3- | 0.1- |
| 2001 03 29 | 608 | 0.3+  | 0.6+  | 2005 04 17 | 691 | 0.2- | 0.1- | 2007 12 15 | G96 | 0.7- | 0.4- |
| 2003 10 19 | 691 | 0.1-  | 0.3+  | 2005 04 17 | 691 | 0.2+ | 0.1+ | 2007 12 15 | G96 | 0.3- | 1.6- |
| 2003 10 19 | 691 | 0.0   | 0.2+  | 2005 04 17 | 691 | 0.1- | 0.0  | 2007 12 15 | G96 | 0.2- | 0.3- |
| 2003 10 19 | 691 | 0.1-  | 0.5+  | 2005 05 01 | 644 | 0.1+ | 0.4+ |            |     |      |      |
| 2003 11 21 | 291 | 0.7-  | 0.4+  | 2005 05 01 | 644 | 0.1+ | 0.3+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129173

(171825)\* 2001 FQ<sub>63</sub>

Discovered 2001 Mar. 19 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$       |            | $P$      |          | $Q$         |             |
|-----------|------------|----------|----------|-------------|-------------|
| 345.39023 |            | (2000.0) |          |             |             |
| $n$       | 0.25952648 | $\omega$ | 2.90773  | +0.15295011 | -0.98735578 |
| $a$       | 2.4341552  | $\Omega$ | 78.29694 | +0.90582643 | +0.12322164 |
| $e$       | 0.1629449  | $i$      | 2.43784  | +0.39507562 | +0.09972459 |
| $P$       | 3.80       | $H$      | 17.2     | $G$         | 0.15        |

Residuals in seconds of arc

|            |     |             |            |     |             |      |            |     |      |      |
|------------|-----|-------------|------------|-----|-------------|------|------------|-----|------|------|
| 2001 03 02 | 699 | (1.6- 1.6+) | 2003 10 23 | 704 | 0.2+        | 0.0  | 2005 03 09 | G96 | 0.0  | 0.9- |
| 2001 03 02 | 699 | 0.8- 0.2-   | 2003 10 23 | 704 | 0.0         | 0.1- | 2005 03 17 | 691 | 0.1+ | 0.1+ |
| 2001 03 02 | 699 | 1.0- 0.3+   | 2003 10 23 | 704 | 0.4+        | 0.4+ | 2005 03 17 | 691 | 0.2+ | 0.3+ |
| 2001 03 02 | 699 | 1.1- 0.5+   | 2003 10 24 | 704 | 0.3+        | 0.1- | 2005 03 17 | 691 | 0.2+ | 0.2+ |
| 2001 03 19 | 704 | 0.3- 0.3+   | 2003 10 24 | 704 | 0.6-        | 0.1+ | 2005 04 11 | 691 | 0.3+ | 0.2+ |
| 2001 03 19 | 704 | 0.8+ 0.6-   | 2003 10 24 | 704 | 0.4-        | 0.1+ | 2005 04 11 | 691 | 0.3- | 0.8+ |
| 2001 03 19 | 704 | 0.5+ 0.3+   | 2003 10 24 | 704 | 0.3-        | 0.0  | 2005 04 11 | 691 | 0.1- | 0.1+ |
| 2001 03 19 | 704 | 0.3+ 0.2-   | 2003 10 24 | 704 | 0.4+        | 0.2+ | 2005 04 12 | 691 | 0.1+ | 0.3+ |
| 2001 03 26 | 704 | 0.4+ 0.4-   | 2003 10 25 | 608 | 0.4+        | 0.7+ | 2005 04 12 | 691 | 0.0  | 0.1+ |
| 2001 03 26 | 704 | 0.1+ 0.1+   | 2003 10 25 | 608 | 0.3+        | 0.9+ | 2005 04 12 | 691 | 0.0  | 0.1- |
| 2001 03 26 | 704 | 0.5+ 0.8+   | 2003 10 25 | 608 | 0.2+        | 0.1- | 2005 04 19 | 691 | 0.2+ | 0.1+ |
| 2001 03 26 | 704 | 0.0 0.3+    | 2003 10 28 | 704 | 0.6+        | 0.7+ | 2005 04 19 | 691 | 0.4+ | 0.1+ |
| 2001 03 26 | 704 | 0.7- 0.1+   | 2003 10 28 | 704 | 0.3+        | 1.0+ | 2005 04 19 | 691 | 0.2+ | 0.2+ |
| 2001 03 28 | 691 | 0.6+ 0.0    | 2003 10 28 | 704 | (0.9+ 2.4+) |      | 2005 05 11 | G96 | 0.3- | 0.1- |
| 2001 03 28 | 691 | 0.3+ 0.5+   | 2003 10 28 | 704 | (2.4+ 0.6-) |      | 2005 05 11 | G96 | 0.4- | 0.2- |
| 2001 03 28 | 691 | 0.5+ 0.2+   | 2003 11 01 | 704 | 0.0 0.3-    |      | 2005 05 11 | G96 | 0.3- | 0.0  |
| 2001 04 16 | 645 | 0.1- 0.1-   | 2003 11 01 | 704 | 0.1- 0.5+   |      | 2005 05 11 | G96 | 0.7- | 0.1- |
| 2001 04 16 | 645 | 0.1- 0.0    | 2003 11 01 | 704 | 0.1+ 0.5+   |      | 2007 10 11 | 704 | 0.4- | 0.2- |
| 2003 09 27 | 333 | 0.3+ 0.3+   | 2003 11 01 | 704 | 0.4- 0.5+   |      | 2007 10 11 | 704 | 0.4+ | 0.5- |
| 2003 09 27 | 333 | 0.1+ 0.2+   | 2003 11 01 | 704 | 0.1+ 0.8+   |      | 2007 10 11 | 704 | 0.3- | 1.1+ |
| 2003 09 27 | 333 | 0.2+ 0.0    | 2003 11 18 | 644 | 0.1- 0.3-   |      | 2007 10 11 | 704 | 0.8+ | 0.1+ |
| 2003 09 28 | 333 | 0.3- 0.2+   | 2003 11 18 | 644 | 0.1- 0.5+   |      | 2007 10 11 | 704 | 0.6- | 0.4- |
| 2003 09 28 | 333 | 0.2- 0.3-   | 2003 11 18 | 699 | (1.7+ 0.5-) |      | 2007 11 14 | 704 | 0.2+ | 0.0  |
| 2003 09 28 | 333 | 0.3- 0.1+   | 2003 11 18 | 644 | 0.1- 0.1+   |      | 2007 11 14 | 704 | 0.2- | 0.4+ |
| 2003 09 30 | 333 | 0.5- 0.2+   | 2003 11 18 | 699 | 0.3- 0.1+   |      | 2007 11 14 | 704 | 0.2+ | 0.2+ |
| 2003 09 30 | 333 | 0.6- 0.3+   | 2003 11 18 | 699 | 0.5+ 0.4+   |      | 2007 11 14 | 704 | 0.4+ | 0.0  |
| 2003 09 30 | 333 | 0.5- 0.4+   | 2003 11 18 | 699 | 0.7- 0.2+   |      | 2007 11 14 | 704 | 0.1- | 0.1- |
| 2003 10 02 | 691 | 0.0 0.2+    | 2003 11 21 | 704 | 0.3- 0.0    |      | 2007 12 04 | G96 | 0.3+ | 0.5- |
| 2003 10 02 | 691 | 0.1- 0.2+   | 2003 11 21 | 704 | 0.3+ 0.2-   |      | 2007 12 04 | G96 | 0.2+ | 0.7- |
| 2003 10 02 | 691 | 1.2- 0.2-   | 2003 11 21 | 704 | 0.2- 0.2+   |      | 2007 12 04 | G96 | 0.3+ | 0.5- |
| 2003 10 21 | 691 | 0.1- 0.0    | 2003 11 21 | 704 | 0.5- 0.5+   |      | 2007 12 05 | 704 | 0.3+ | 0.5+ |
| 2003 10 21 | 691 | 0.1- 0.1-   | 2003 11 21 | 704 | 0.1- 0.0    |      | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2003 10 21 | 691 | 0.0 0.2-    | 2003 11 26 | 699 | 0.5+ 0.4-   |      | 2007 12 05 | 704 | 0.4+ | 0.1- |
| 2003 10 21 | 704 | 0.2- 0.5+   | 2003 11 26 | 699 | 0.0 0.2-    |      | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2003 10 21 | 704 | 0.1+ 0.2+   | 2003 11 26 | 699 | 0.0 0.6+    |      | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2003 10 21 | 704 | 0.6+ 0.4-   | 2003 11 26 | 699 | 1.3+ 1.2-   |      | 2007 12 14 | 704 | 0.2+ | 0.3+ |
| 2003 10 21 | 704 | 0.7+ 0.1+   | 2003 12 21 | 704 | 0.1- 0.5+   |      | 2007 12 14 | 704 | 0.3+ | 0.2- |
| 2003 10 21 | 704 | 0.1+ 0.2+   | 2003 12 21 | 704 | 0.3- 0.0    |      | 2007 12 14 | 704 | 0.2+ | 0.4- |
| 2003 10 21 | 644 | 0.0 0.2+    | 2003 12 21 | 704 | 0.1- 0.7+   |      | 2007 12 14 | 704 | 0.4+ | 0.1- |
| 2003 10 21 | 644 | 0.0 0.2+    | 2003 12 21 | 704 | (0.6+ 1.7+) |      | 2007 12 14 | 704 | 0.1+ | 0.1+ |
| 2003 10 21 | 644 | 0.1+ 0.0    | 2005 03 09 | G96 | 0.3- 0.1-   |      | 2007 12 16 | 691 | 0.2- | 0.2- |
| 2003 10 23 | 704 | 0.6+ 0.5+   | 2005 03 09 | G96 | 0.2- 0.1+   |      | 2007 12 16 | 691 | 0.2- | 0.3- |
| 2003 10 23 | 704 | 0.9- 0.9+   | 2005 03 09 | G96 | 0.9- 0.9-   |      | 2007 12 16 | 691 | 0.3- | 0.3- |

(171826)\* 2001 FZ<sub>82</sub>

Discovered 2001 Mar. 24 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$       |            | $P$      |           | $Q$         |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 248.58380 |            | (2000.0) |           |             |             |
| $n$       | 0.26782158 | $\omega$ | 84.21096  | -0.68637212 | +0.72679576 |
| $a$       | 2.3836309  | $\Omega$ | 142.40292 | -0.68280907 | -0.63185487 |
| $e$       | 0.1266725  | $i$      | 2.41559   | -0.25032996 | -0.26930900 |
| $P$       | 3.68       | $H$      | 17.3      | $G$         | 0.15        |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1999 11 14 | 691 | 0.3+ 0.3-   | 2002 10 09 | 291 | 0.1+ 0.4+   | 2005 06 08 | 691 | 0.3+ 0.2+ |
| 1999 11 14 | 691 | 0.4- 0.1-   | 2002 10 09 | 291 | 0.3+ 0.5+   | 2005 06 08 | 691 | 0.3+ 0.1- |
| 1999 11 14 | 691 | 0.5- 0.1-   | 2002 10 09 | 291 | 0.1- 0.2+   | 2006 09 14 | 691 | 0.4- 1.2+ |
| 2001 02 20 | 691 | 1.2+ 1.5+   | 2005 05 03 | 703 | 0.9- 1.5-   | 2006 09 14 | 691 | 0.4- 0.5+ |
| 2001 02 20 | 691 | 0.0 0.1+    | 2005 05 03 | 703 | (2.1+ 1.4-) | 2006 09 14 | 691 | 0.2+ 0.2+ |
| 2001 02 20 | 691 | 0.4+ 0.2+   | 2005 05 03 | 703 | 0.8- 0.8-   | 2006 10 22 | G96 | 0.3- 0.1- |
| 2001 03 14 | 691 | 0.5+ 1.0+   | 2005 05 03 | 703 | 0.2- 0.3-   | 2006 10 22 | G96 | 0.0 0.2+  |
| 2001 03 14 | 691 | 0.3+ 0.1-   | 2005 05 04 | 644 | 0.5- 0.7+   | 2006 10 22 | G96 | 0.5- 0.2+ |
| 2001 03 14 | 691 | 0.1+ 0.0    | 2005 05 04 | 644 | 0.2- 0.6+   | 2006 10 22 | G96 | 0.2- 0.4+ |
| 2001 03 20 | 608 | 1.3+ 0.8+   | 2005 05 04 | 644 | 0.5- 0.4+   | 2006 10 31 | G96 | 0.1- 0.3- |
| 2001 03 20 | 608 | 1.2+ 0.0    | 2005 05 14 | G96 | 0.7- 0.1+   | 2006 10 31 | G96 | 0.1+ 0.3+ |
| 2001 03 20 | 608 | 1.4+ 0.7+   | 2005 05 14 | G96 | 0.6- 0.5+   | 2006 10 31 | G96 | 0.0 0.0   |
| 2001 03 24 | 704 | 0.3+ 0.7+   | 2005 05 14 | G96 | 0.7- 0.2+   | 2006 10 31 | G96 | 0.1+ 0.5+ |
| 2001 03 24 | 704 | 0.4- 0.1-   | 2005 05 14 | G96 | 0.7- 0.2+   | 2007 11 13 | G96 | 0.7+ 0.2+ |
| 2001 03 24 | 704 | 0.2- 0.7+   | 2005 06 03 | 691 | 0.2+ 0.2-   | 2007 11 13 | G96 | 0.0 0.8-  |
| 2001 03 26 | 704 | 0.1+ 0.3+   | 2005 06 03 | 691 | 0.4+ 0.6-   | 2007 11 13 | G96 | 0.1- 0.6- |
| 2001 03 26 | 704 | 0.7+ 0.2+   | 2005 06 03 | 691 | 0.2- 0.4+   | 2007 11 13 | G96 | 0.2- 0.6- |
| 2001 03 26 | 704 | 0.3+ 0.0    | 2005 06 03 | 703 | 0.3+ 0.2-   | 2007 12 06 | G96 | 0.6- 0.8- |
| 2001 03 26 | 704 | (1.0+ 1.7-) | 2005 06 03 | 703 | 0.7- 0.4+   | 2007 12 06 | G96 | 0.3- 0.6- |
| 2001 03 27 | 691 | 0.8- 0.2-   | 2005 06 03 | 703 | 1.1- 0.2+   | 2007 12 06 | G96 | 0.0 0.6-  |
| 2001 03 27 | 691 | 0.6- 0.2-   | 2005 06 03 | 703 | (2.0- 0.7+) | 2007 12 06 | G96 | 0.4+ 1.4- |
| 2001 03 27 | 691 | 0.5- 0.4-   | 2005 06 08 | 691 | 0.2+ 0.1+   |            |     |           |

(171827)\* 2001 FE<sub>92</sub> = 1999 RO<sub>255</sub>

Discovered 2001 Mar. 16 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 12061)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$       |            | $P$      |           | $Q$         |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 358.75456 |            | (2000.0) |           |             |             |
| $n$       | 0.26714227 | $\omega$ | 296.66943 | +0.17846178 | -0.97738384 |
| $a$       | 2.3876700  | $\Omega$ | 142.49496 | +0.95597068 | +0.14493074 |
| $e$       | 0.1749870  | $i$      | 10.73986  | +0.23296234 | +0.15399969 |
| $P$       | 3.69       | $H$      | 16.1      | $G$         | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 07 | 704 | 1.0+  | 1.0+  | 2001 03 27 | 699 | 0.4+ | 0.3- | 2003 10 27 | 699 | 0.1- | 0.3+ |
| 1999 09 07 | 704 | 0.7-  | 1.7+  | 2001 03 27 | 608 | 0.3+ | 0.4+ | 2003 11 23 | 703 | 0.5- | 0.3+ |
| 1999 09 07 | 704 | 0.4+  | 0.4+  | 2001 03 27 | 608 | 0.7+ | 0.6+ | 2003 11 23 | 703 | 0.8+ | 0.6+ |
| 1999 09 08 | 703 | 1.1-  | 1.5+  | 2001 03 27 | 608 | 0.2+ | 0.4+ | 2003 11 23 | 703 | 0.7- | 0.1+ |
| 1999 09 08 | 703 | 1.0-  | 0.9+  | 2003 09 03 | 704 | 0.7- | 0.4- | 2003 11 23 | 703 | 0.2+ | 0.4- |
| 1999 09 08 | 703 | 0.9-  | 0.1+  | 2003 09 03 | 704 | 0.1- | 0.6+ | 2003 11 23 | 699 | 0.2+ | 0.3- |
| 1999 09 08 | 703 | 1.3+  | 1.4-  | 2003 09 03 | 704 | 0.0  | 0.1+ | 2003 11 23 | 699 | 0.3+ | 0.1- |
| 2000 12 23 | 645 | 0.1-  | 0.1-  | 2003 09 03 | 704 | 0.3- | 0.6- | 2003 11 23 | 699 | 0.5- | 0.4+ |
| 2000 12 23 | 645 | 0.1-  | 0.1-  | 2003 09 26 | 645 | 0.0  | 0.1- | 2003 11 23 | 699 | 0.4+ | 0.6+ |
| 2001 01 26 | 704 | 0.8-  | 1.1+  | 2003 09 26 | 645 | 0.0  | 0.1- | 2003 12 13 | 704 | 0.1+ | 0.2- |
| 2001 01 26 | 704 | 0.4-  | 0.3+  | 2003 09 27 | 645 | 0.0  | 0.0  | 2003 12 13 | 704 | 0.4+ | 0.5+ |
| 2001 01 26 | 704 | 0.5+  | 0.3+  | 2003 09 27 | 645 | 0.0  | 0.0  | 2003 12 13 | 704 | 0.4- | 0.1- |
| 2001 02 17 | 704 | 0.2+  | 0.3+  | 2003 09 28 | 645 | 0.0  | 0.0  | 2003 12 13 | 704 | 0.2+ | 0.6- |
| 2001 02 17 | 704 | 0.1+  | 0.3+  | 2003 09 28 | 645 | 0.0  | 0.0  | 2003 12 13 | 704 | 0.1+ | 0.5+ |
| 2001 02 17 | 704 | 0.7+  | 0.3+  | 2003 10 01 | 699 | 0.2- | 0.4- | 2003 12 13 | 644 | 0.2+ | 0.3+ |
| 2001 02 17 | 704 | 0.2-  | 0.1+  | 2003 10 01 | 699 | 0.8- | 0.3+ | 2003 12 13 | 644 | 0.2+ | 0.3+ |
| 2001 02 17 | 704 | 0.0   | 0.1+  | 2003 10 01 | 699 | 0.5- | 0.9+ | 2003 12 13 | 644 | 0.0  | 0.4+ |
| 2001 03 04 | 704 | 0.1-  | 1.0+  | 2003 10 01 | 699 | 0.7- | 0.2+ | 2005 04 04 | 703 | 0.0  | 1.0- |
| 2001 03 04 | 704 | 0.2+  | 0.4+  | 2003 10 16 | 699 | 0.6+ | 0.5- | 2005 04 04 | 703 | 0.0  | 0.9+ |
| 2001 03 04 | 704 | (0.5- | 1.6+) | 2003 10 16 | 699 | 0.1- | 0.0  | 2005 04 04 | 703 | 0.2- | 1.3+ |
| 2001 03 04 | 704 | 0.1+  | 0.5+  | 2003 10 16 | 699 | 0.1+ | 0.6+ | 2005 04 04 | 703 | 0.3+ | 0.2+ |
| 2001 03 04 | 704 | 0.3-  | 0.5+  | 2003 10 16 | 699 | 0.3+ | 0.4+ | 2005 04 13 | 703 | 0.6- | 0.1+ |
| 2001 03 16 | 704 | 0.2-  | 0.2+  | 2003 10 16 | 644 | 0.1- | 0.3+ | 2005 04 13 | 703 | 0.1- | 0.1- |
| 2001 03 16 | 704 | 0.4-  | 0.6+  | 2003 10 16 | 644 | 0.0  | 0.3+ | 2005 04 13 | 703 | 0.1- | 0.3+ |
| 2001 03 16 | 704 | 0.1+  | 0.2+  | 2003 10 16 | 644 | 0.1+ | 0.5+ | 2005 04 13 | 703 | 0.4- | 0.9- |
| 2001 03 16 | 704 | 0.8-  | 0.7+  | 2003 10 19 | 704 | 0.2+ | 0.0  | 2007 09 14 | 291 | 0.2- | 0.1+ |
| 2001 03 16 | 704 | 0.6+  | 0.6+  | 2003 10 19 | 704 | 0.4+ | 0.6+ | 2007 09 14 | 291 | 0.2- | 0.1+ |
| 2001 03 18 | 608 | 1.0+  | 0.3+  | 2003 10 19 | 704 | 0.5- | 0.8+ | 2007 09 14 | 291 | 0.1- | 0.3+ |
| 2001 03 18 | 608 | 0.7+  | 0.1+  | 2003 10 19 | 704 | 0.5- | 0.6+ | 2007 12 14 | 704 | 0.7+ | 0.3- |
| 2001 03 18 | 608 | 0.7+  | 0.5+  | 2003 10 19 | 704 | 0.8- | 0.6+ | 2007 12 14 | 704 | 0.2- | 1.3- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 27 | 699 | 0.9+  | 0.1−  | 2003 10 27 | 699 | 0.5+ | 0.1+ | 2007 12 14 | 704 | 0.7+ | 1.6− |
| 2001 03 27 | 699 | (2.6+ | 0.6+) | 2003 10 27 | 699 | 0.5+ | 0.6+ | 2007 12 14 | 704 | 0.0  | 0.1− |
| 2001 03 27 | 699 | 1.0+  | 0.5+  | 2003 10 27 | 699 | 0.3− | 1.2+ | 2007 12 14 | 704 | 0.3+ | 0.1− |

**(171828)\* 2001 FD<sub>103</sub> = 2003 SO<sub>194</sub>**

Discovered 2001 Mar. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 52855)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 25.67243   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|----------|-------------|-------------|
| $n$ | 0.26807595 | $\omega$ | 44.38048 | +0.69797639 | −0.71611783 |
| $a$ | 2.3821228  | $\Omega$ | 1.35963  | +0.63060249 | +0.61326361 |
| $e$ | 0.2351951  | $i$      | 4.96421  | +0.33936628 | +0.33329116 |
| $P$ | 3.68       | $H$      | 16.0     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 09 11 | 704 | 0.2+  | 0.9+  | 2003 10 22 | 704 | 0.6+ | 0.7+ | 2003 12 27 | 608 | 0.5+  | 0.4+  |
| 1999 09 11 | 704 | 0.3−  | 0.1+  | 2003 10 22 | 704 | 0.0  | 0.3− | 2003 12 27 | 608 | 0.2+  | 0.4+  |
| 1999 09 11 | 704 | 1.8−  | 0.2−  | 2003 10 22 | 704 | 0.5+ | 0.5+ | 2003 12 27 | 608 | 0.9+  | 0.3−  |
| 1999 09 11 | 704 | 0.3+  | 0.8+  | 2003 10 22 | 704 | 0.5− | 0.1− | 2003 12 28 | 704 | 0.1−  | 0.1+  |
| 1999 09 11 | 704 | 0.9+  | 0.6−  | 2003 10 22 | 691 | 0.1+ | 0.0  | 2003 12 28 | 704 | 0.3+  | 0.1−  |
| 2001 02 20 | 645 | 0.1−  | 0.1−  | 2003 10 22 | 691 | 0.0  | 0.1+ | 2003 12 28 | 704 | 0.3+  | 0.4+  |
| 2001 02 20 | 645 | 0.1−  | 0.1−  | 2003 10 22 | 691 | 0.0  | 0.3+ | 2003 12 28 | 704 | 1.2−  | 0.7−  |
| 2001 03 18 | 704 | 0.4+  | 0.1−  | 2003 10 23 | 699 | 0.8− | 0.4− | 2005 03 11 | G96 | 0.0   | 0.0   |
| 2001 03 18 | 704 | 0.3+  | 0.1+  | 2003 10 23 | 699 | 0.3− | 0.5− | 2005 03 11 | G96 | 0.1−  | 0.1+  |
| 2001 03 18 | 704 | 0.6−  | 0.0   | 2003 10 23 | 699 | 0.1− | 0.2− | 2005 03 11 | G96 | 0.2+  | 0.0   |
| 2001 03 18 | 704 | 1.5−  | 0.4−  | 2003 10 23 | 699 | 0.4− | 0.4− | 2005 03 11 | G96 | 0.3−  | 0.1+  |
| 2001 03 20 | 691 | 0.1−  | 0.1+  | 2003 10 30 | 704 | 0.5− | 0.1− | 2007 10 21 | 703 | 0.2+  | 0.4−  |
| 2001 03 20 | 691 | 0.1+  | 0.2+  | 2003 10 30 | 704 | 0.8− | 1.0+ | 2007 10 21 | 703 | 0.6+  | 0.3+  |
| 2001 03 20 | 691 | 0.0   | 0.4+  | 2003 10 30 | 704 | 0.3− | 0.3− | 2007 10 21 | 703 | 0.8+  | 1.4+  |
| 2001 03 21 | 608 | 0.9+  | 0.4−  | 2003 10 30 | 704 | 0.3− | 0.4− | 2007 10 21 | 703 | 0.6+  | 0.6−  |
| 2001 03 21 | 608 | 0.7+  | 0.3−  | 2003 10 30 | 704 | 0.9− | 0.2− | 2007 11 04 | 703 | 1.0−  | 0.7−  |
| 2001 03 21 | 608 | 1.1+  | 0.4−  | 2003 11 02 | 704 | 0.1+ | 1.2− | 2007 11 04 | 703 | 0.2−  | 0.8−  |
| 2001 03 25 | 695 | 0.1−  | 0.7+  | 2003 11 02 | 704 | 0.3+ | 0.6− | 2007 11 04 | 703 | 0.3−  | 0.4−  |
| 2001 03 25 | 695 | 0.2+  | 0.7+  | 2003 11 02 | 704 | 0.4+ | 0.9− | 2007 11 04 | 703 | 1.4−  | 0.4+  |
| 2003 08 04 | 704 | 0.7+  | 1.2+  | 2003 11 02 | 704 | 0.2+ | 0.6− | 2007 11 07 | 704 | 0.5−  | 0.3+  |
| 2003 08 04 | 704 | 0.7−  | 1.2+  | 2003 11 02 | 704 | 0.0  | 1.2− | 2007 11 07 | 704 | 0.5−  | 0.4+  |
| 2003 08 04 | 704 | 0.3+  | 1.0+  | 2003 11 20 | 704 | 0.1− | 0.0  | 2007 11 07 | 704 | 0.3+  | 0.1+  |
| 2003 09 20 | 608 | 0.5+  | 0.7−  | 2003 11 20 | 704 | 0.4− | 0.1− | 2007 11 07 | 704 | 0.3−  | 0.8+  |
| 2003 09 20 | 608 | 0.2+  | 0.4−  | 2003 11 20 | 704 | 0.2− | 0.1− | 2007 11 09 | 704 | 0.9+  | 0.1−  |
| 2003 09 20 | 608 | 0.6+  | 0.9−  | 2003 11 20 | 704 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.4+  | 0.5+  |
| 2003 09 21 | 699 | 0.2+  | 0.0   | 2003 11 20 | 704 | 0.5− | 0.0  | 2007 11 09 | 704 | 0.0   | 0.0   |
| 2003 09 21 | 699 | 0.4−  | 0.1−  | 2003 11 21 | 691 | 0.0  | 0.0  | 2007 11 09 | 704 | 0.6+  | 0.2+  |
| 2003 09 21 | 699 | 0.3−  | 0.0   | 2003 11 21 | 691 | 0.0  | 0.0  | 2007 11 09 | 704 | 0.5+  | 0.1+  |
| 2003 09 21 | 699 | 0.9−  | 0.8−  | 2003 11 21 | 691 | 0.1+ | 0.0  | 2007 11 17 | 704 | 0.0   | 0.1+  |
| 2003 09 27 | 704 | 0.7+  | 0.7+  | 2003 11 24 | 704 | 0.2+ | 0.1− | 2007 11 17 | 704 | 0.4−  | 0.8+  |
| 2003 09 27 | 704 | (1.8+ | 0.2+) | 2003 11 24 | 704 | 0.1+ | 0.1− | 2007 11 17 | 704 | 0.2−  | 0.1−  |
| 2003 09 27 | 704 | (3.2+ | 0.0)  | 2003 11 24 | 704 | 0.0  | 0.1+ | 2007 11 17 | 704 | 0.7+  | 0.2−  |
| 2003 09 27 | 704 | (1.7+ | 0.4+) | 2003 11 24 | 704 | 0.1− | 0.0  | 2007 11 17 | 704 | (1.6+ | 0.1−) |
| 2003 09 27 | 704 | (0.7− | 2.0+) | 2003 11 24 | 704 | 0.5− | 0.1− | 2007 12 16 | 704 | 0.8+  | 0.1−  |
| 2003 10 15 | 699 | 0.1−  | 0.2−  | 2003 12 19 | 704 | 0.1− | 0.2+ | 2007 12 16 | 704 | 0.3+  | 0.3+  |
| 2003 10 15 | 699 | 0.0   | 0.1+  | 2003 12 19 | 704 | 0.2+ | 0.3+ | 2007 12 16 | 704 | 0.6+  | 0.3+  |
| 2003 10 15 | 699 | 0.2−  | 0.0   | 2003 12 19 | 704 | 0.2− | 0.1+ | 2007 12 16 | 704 | 0.1−  | 0.1+  |
| 2003 10 15 | 699 | 0.3+  | 0.0   | 2003 12 19 | 704 | 0.2− | 0.1− | 2007 12 16 | 704 | 0.6−  | 0.6+  |
| 2003 10 22 | 704 | 0.8+  | 0.4+  | 2003 12 19 | 704 | 0.3+ | 0.2− | 2007 12 16 | 699 | 1.0−  | 0.2+  |
| 2003 10 22 | 704 | 0.3−  | 0.1+  | 2003 12 23 | 704 | 0.0  | 0.1+ | 2007 12 16 | 699 | 0.2+  | 0.4−  |
| 2003 10 22 | 704 | 0.9+  | 0.4+  | 2003 12 23 | 704 | 0.1− | 0.2− | 2007 12 16 | 699 | 0.1+  | 0.3+  |
| 2003 10 22 | 704 | 0.0   | 0.0   | 2003 12 23 | 704 | 0.1− | 0.2+ | 2007 12 16 | 699 | 0.4+  | 0.5+  |
| 2003 10 22 | 704 | 0.9+  | 0.3+  | 2003 12 23 | 704 | 0.3+ | 0.4+ |            |     |       |       |
| 2003 10 22 | 704 | 0.0   | 0.1+  | 2003 12 23 | 704 | 0.0  | 0.2+ |            |     |       |       |

**(171829)\* 2001 FY<sub>105</sub>**

Discovered 2001 Mar. 18 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 7.23390    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28128975 | $\omega$ | 335.40496 | −0.28918538 | −0.95430520 |
| $a$ | 2.3069248  | $\Omega$ | 131.30994 | +0.89404700 | −0.29736937 |
| $e$ | 0.1369018  | $i$      | 5.75504   | +0.34212831 | −0.02954717 |
| $P$ | 3.50       | $H$      | 16.3      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 01 | 704 | 0.0   | 0.7+  | 2003 09 28 | 704 | 0.1+  | 0.6+  | 2003 12 20 | 704 | (1.1− | 2.4+) |
| 2001 02 01 | 704 | 0.0   | 0.3+  | 2003 09 28 | 704 | 0.5−  | 0.8+  | 2003 12 21 | 691 | 0.3+  | 0.3+  |
| 2001 02 01 | 704 | 1.1−  | 0.3+  | 2003 09 29 | 291 | 0.3−  | 0.3−  | 2003 12 21 | 691 | 0.1+  | 0.3+  |
| 2001 02 01 | 704 | 0.7+  | 0.1−  | 2003 09 29 | 291 | 0.4−  | 0.0   | 2003 12 21 | 691 | 0.2+  | 0.3+  |
| 2001 02 01 | 704 | 0.4+  | 0.3−  | 2003 09 29 | 291 | 0.5−  | 0.3−  | 2003 12 21 | 608 | 0.2+  | 0.0   |
| 2001 02 17 | 704 | 1.0−  | 1.0+  | 2003 09 29 | 699 | 0.8−  | 1.5+  | 2003 12 21 | 608 | 0.3+  | 0.1+  |
| 2001 02 17 | 704 | 0.4+  | 0.3−  | 2003 09 29 | 699 | 0.7+  | 1.1+  | 2003 12 21 | 608 | 0.3+  | 0.2−  |
| 2001 02 17 | 704 | 0.2+  | 0.5−  | 2003 09 29 | 699 | 1.2−  | 1.2+  | 2003 12 22 | 704 | 0.6+  | 0.6−  |
| 2001 02 17 | 704 | 0.2−  | 0.1+  | 2003 09 29 | 699 | (1.5− | 1.0+) | 2003 12 22 | 704 | (1.7+ | 1.4+) |
| 2001 02 17 | 704 | 0.1+  | 0.2−  | 2003 10 21 | 704 | 0.3+  | 0.5+  | 2003 12 22 | 704 | 0.6−  | 0.6+  |
| 2001 02 17 | 704 | 0.1−  | 0.6+  | 2003 10 21 | 704 | 0.1−  | 0.3−  | 2003 12 22 | 704 | 0.6+  | 0.2+  |
| 2001 02 17 | 704 | 0.2−  | 0.7+  | 2003 10 21 | 704 | 0.0   | 0.1+  | 2003 12 28 | 699 | 0.3−  | 0.7−  |
| 2001 02 17 | 704 | 0.1+  | 0.7+  | 2003 10 21 | 704 | 0.5+  | 0.8−  | 2003 12 28 | 699 | 0.3−  | 0.1+  |
| 2001 02 17 | 704 | 0.9−  | 0.3−  | 2003 10 21 | 704 | 0.3+  | 0.1+  | 2003 12 28 | 699 | 0.0   | 0.3−  |
| 2001 02 17 | 704 | 1.4+  | 0.3+  | 2003 10 29 | 699 | 0.2−  | 0.6+  | 2003 12 28 | 699 | 0.4+  | 0.1−  |
| 2001 02 20 | 704 | 1.4+  | 1.1−  | 2003 10 29 | 699 | 0.5+  | 0.2+  | 2005 05 03 | 691 | 0.4+  | 0.4+  |
| 2001 02 20 | 704 | 0.2+  | 0.4−  | 2003 10 29 | 699 | 0.2−  | 0.5+  | 2005 05 03 | 691 | 0.3+  | 0.4+  |
| 2001 02 20 | 704 | 0.5+  | 0.3−  | 2003 10 29 | 699 | 0.5+  | 1.3+  | 2005 05 03 | 691 | 0.2+  | 0.4+  |
| 2001 02 20 | 704 | 0.8+  | 0.1+  | 2003 11 19 | 699 | 0.6+  | 0.2−  | 2005 05 20 | G96 | 0.0   | 0.2−  |
| 2001 02 20 | 704 | (1.4+ | 1.8+) | 2003 11 19 | 699 | 0.0   | 0.4−  | 2005 05 20 | G96 | 0.2−  | 0.4−  |
| 2001 03 03 | 704 | 0.7+  | 0.2−  | 2003 11 19 | 699 | 0.6−  | 0.1−  | 2005 05 20 | G96 | 0.5−  | 0.5−  |
| 2001 03 03 | 704 | 0.1−  | 0.7−  | 2003 11 19 | 699 | 0.4−  | 0.9+  | 2005 05 20 | G96 | 0.2−  | 0.3−  |
| 2001 03 03 | 704 | 0.6+  | 0.1+  | 2003 11 26 | 691 | 0.2+  | 0.0   | 2005 06 12 | 691 | 0.3−  | 0.4+  |
| 2001 03 03 | 704 | 0.5+  | 1.0+  | 2003 11 26 | 691 | 0.0   | 0.1+  | 2005 06 12 | 691 | 0.1−  | 0.4+  |
| 2001 03 18 | 699 | 0.5−  | 0.3−  | 2003 11 26 | 691 | 0.1−  | 0.1−  | 2005 06 12 | 691 | 0.2−  | 0.5+  |
| 2001 03 18 | 699 | 0.5−  | 0.1+  | 2003 11 30 | 704 | 0.3+  | 0.1−  | 2006 08 18 | 644 | 0.4+  | 0.9+  |
| 2001 03 18 | 699 | 0.1+  | 0.3−  | 2003 11 30 | 704 | 0.4−  | 0.2−  | 2006 08 18 | 644 | 0.2+  | 0.7+  |
| 2001 03 18 | 699 | 0.2−  | 0.1−  | 2003 11 30 | 704 | 0.4−  | 0.2+  | 2006 08 18 | 644 | 0.4+  | 0.7+  |
| 2001 03 19 | 704 | 0.3−  | 0.4+  | 2003 11 30 | 704 | 0.7−  | 0.4−  | 2007 11 13 | G96 | 0.4+  | 0.3−  |
| 2001 03 19 | 704 | 0.1+  | 0.1+  | 2003 11 30 | 704 | 0.1+  | 0.2−  | 2007 11 13 | G96 | 0.2−  | 0.1−  |
| 2001 03 19 | 704 | (0.6− | 1.9+) | 2003 12 11 | 703 | 0.0   | 0.4+  | 2007 11 13 | G96 | 0.7−  | 0.8−  |
| 2001 03 19 | 704 | 0.4−  | 0.6+  | 2003 12 11 | 703 | 0.5+  | 0.3+  | 2007 11 13 | G96 | 0.4+  | 0.7−  |
| 2001 03 19 | 704 | 0.2−  | 0.1−  | 2003 12 11 | 703 | 1.4−  | 0.8+  | 2007 12 14 | G96 | 0.1−  | 0.0   |
| 2001 03 19 | 704 | 0.8−  | 0.4−  | 2003 12 11 | 703 | 1.1−  | 0.7−  | 2007 12 14 | G96 | 0.2−  | 0.0   |
| 2001 03 19 | 704 | 0.1+  | 1.1+  | 2003 12 20 | 704 | (0.5+ | 1.8+) | 2007 12 14 | G96 | 0.1+  | 0.1−  |
| 2003 09 28 | 704 | 0.1−  | 0.9+  | 2003 12 20 | 704 | (0.2− | 3.1+) | 2007 12 14 | G96 | 0.4+  | 0.0   |

**(171830)\* 2001 FV<sub>109</sub>**

Discovered 2001 Mar. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 301.81675  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27047278 | $\omega$ | 251.79996 | −0.99863535 | −0.04719479 |
| $a$ | 2.3680289  | $\Omega$ | 285.49033 | +0.05220627 | −0.91355253 |
| $e$ | 0.1120904  | $i$      | 1.32970   | −0.00139312 | −0.40397329 |
| $P$ | 3.64       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

|            |     |        |       |            |     |        |       |            |     |      |      |
|------------|-----|--------|-------|------------|-----|--------|-------|------------|-----|------|------|
| 2001 03 19 | 699 | 0.6+   | 0.6+  | 2003 12 22 | 704 | 0.1-   | 0.6-  | 2006 10 19 | G96 | 0.2- | 0.1- |
| 2001 03 29 | 699 | 0.1+   | 0.4+  | 2003 12 22 | 704 | 0.1-   | 1.1+  | 2006 10 19 | G96 | 0.1- | 0.2- |
| 2001 03 29 | 699 | 0.5-   | 0.2+  | 2003 12 22 | 704 | 0.1+   | 0.5+  | 2006 10 19 | G96 | 0.1+ | 0.5- |
| 2001 03 29 | 699 | 0.3-   | 0.7+  | 2003 12 22 | 704 | (0.4+) | 1.6+) | 2006 10 28 | G96 | 0.2+ | 0.3- |
| 2001 03 29 | 699 | 0.6+   | 0.5+  | 2003 12 22 | 704 | 0.6-   | 0.5+  | 2006 10 28 | G96 | 0.2+ | 0.3- |
| 2001 04 01 | 704 | 0.4+   | 0.3+  | 2003 12 22 | 704 | 0.3+   | 0.0   | 2006 10 28 | G96 | 0.2- | 0.1+ |
| 2001 04 01 | 704 | 0.2+   | 0.7+  | 2003 12 22 | 704 | 1.4+   | 0.2+  | 2006 10 28 | G96 | 0.2+ | 0.5+ |
| 2001 04 01 | 704 | (2.1+) | 1.2+) | 2003 12 23 | 704 | 0.7-   | 0.0   | 2006 11 15 | G96 | 0.0  | 0.1- |
| 2001 04 01 | 704 | 1.2+   | 1.0+  | 2003 12 23 | 704 | 0.4+   | 0.3+  | 2006 11 15 | G96 | 0.4+ | 0.1- |
| 2001 04 01 | 704 | 0.1+   | 0.4-  | 2003 12 23 | 704 | 0.3-   | 0.0   | 2006 11 15 | G96 | 0.2+ | 0.0  |
| 2001 04 24 | 699 | 0.5+   | 0.6+  | 2003 12 23 | 704 | 0.1-   | 0.6+  | 2006 11 15 | G96 | 0.0  | 0.2- |
| 2001 04 24 | 699 | 0.8+   | 0.6+  | 2003 12 23 | 704 | 0.2+   | 0.1-  | 2007 11 07 | 291 | 0.6- | 0.5+ |
| 2001 04 24 | 699 | 0.2-   | 0.6+  | 2003 12 23 | 704 | 0.7-   | 0.2-  | 2007 11 07 | 291 | 0.1- | 1.3+ |
| 2001 04 24 | 699 | 0.5+   | 0.4+  | 2003 12 23 | 704 | 0.8-   | 0.1-  | 2007 11 07 | 291 | 0.2+ | 0.3+ |
| 2002 08 27 | 644 | 0.1-   | 0.5+  | 2003 12 23 | 704 | 0.9-   | 0.3+  | 2007 11 07 | 291 | 0.0  | 0.3+ |
| 2002 08 27 | 644 | 0.0    | 0.6+  | 2003 12 23 | 704 | 0.2-   | 0.6-  | 2007 11 07 | 291 | 0.2- | 0.0  |
| 2002 08 27 | 644 | 0.1-   | 0.9+  | 2003 12 24 | 704 | 0.5+   | 0.7-  | 2007 11 07 | 291 | 0.8- | 0.5+ |
| 2003 12 18 | 704 | 0.4+   | 0.0   | 2003 12 24 | 704 | 0.2+   | 0.6+  | 2007 11 08 | G96 | 0.3+ | 0.3- |
| 2003 12 18 | 704 | 0.6+   | 0.4-  | 2003 12 24 | 704 | 0.5-   | 0.8+  | 2007 11 08 | G96 | 0.3+ | 0.5- |
| 2003 12 18 | 704 | 0.0    | 0.0   | 2003 12 29 | 704 | 0.6+   | 0.0   | 2007 11 08 | G96 | 0.0  | 0.4- |
| 2003 12 21 | 704 | 0.1+   | 0.7-  | 2003 12 29 | 704 | 0.5+   | 0.1-  | 2007 11 08 | G96 | 0.1+ | 0.1+ |
| 2003 12 21 | 704 | 0.0    | 0.5-  | 2003 12 29 | 704 | 0.4+   | 0.2+  | 2007 11 21 | 691 | 0.4+ | 0.2+ |
| 2003 12 21 | 704 | 0.0    | 0.1+  | 2003 12 29 | 704 | 0.5+   | 0.2-  | 2007 11 21 | 691 | 0.3+ | 0.1- |
| 2003 12 21 | 704 | 0.0    | 0.8-  | 2003 12 29 | 704 | 0.9+   | 0.3+  | 2007 11 21 | 691 | 0.1- | 0.0  |
| 2003 12 21 | 704 | 0.5+   | 0.7-  | 2003 12 30 | 704 | 0.6+   | 0.1+  | 2007 12 14 | G96 | 0.2- | 0.7- |
| 2003 12 22 | 333 | 0.1+   | 0.3-  | 2003 12 30 | 704 | 0.7+   | 0.6+  | 2007 12 14 | G96 | 0.3+ | 0.5- |
| 2003 12 22 | 333 | 0.3-   | 0.2-  | 2003 12 30 | 704 | 1.0+   | 0.4+  | 2007 12 14 | G96 | 0.1+ | 0.7- |
| 2003 12 22 | 333 | 0.3-   | 0.4-  | 2003 12 30 | 704 | 1.1+   | 0.1+  | 2007 12 14 | G96 | 0.4+ | 0.9- |
| 2003 12 22 | 704 | 0.5-   | 1.2-  | 2006 09 17 | 691 | 0.2-   | 0.4+  |            |     |      |      |

**(171831)\* 2001 FO<sub>145</sub>**

Discovered 2001 Mar. 24 by Spacewatch at Kitt Peak.

|                                         |            |                    |
|-----------------------------------------|------------|--------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    |
| <i>M</i>                                | 260.02033  | (2000.0)           |
| <i>n</i>                                | 0.25307456 | $\omega$ 4.39769   |
| <i>a</i>                                | 2.4753525  | $\Omega$ 159.83877 |
| <i>e</i>                                | 0.1248043  | <i>i</i> 4.32807   |
| <i>P</i>                                | 3.89       | <i>H</i> 16.3      |
| Residuals in seconds of arc             |            |                    |
| 1997 02 08                              | 566        | 0.1- 1.4-          |
| 1997 02 08                              | 566        | 0.5+ 0.5-          |
| 1997 02 08                              | 566        | 0.6+ 0.9-          |
| 2001 02 22                              | 704        | 1.3+ 0.7-          |
| 2001 02 22                              | 704        | 1.4+ 1.3+          |
| 2001 02 22                              | 704        | 0.8+ 0.1+          |
| 2001 02 22                              | 704        | 1.0+ 0.7+          |
| 2001 02 22                              | 704        | 1.1+ 0.6+          |
| 2001 03 18                              | 704        | 0.1+ 0.0           |
| 2001 03 18                              | 704        | 0.5- 0.1+          |
| 2001 03 18                              | 699        | 0.6- 0.3+          |
| 2001 03 18                              | 704        | 0.3- 0.3-          |
| 2001 03 18                              | 704        | 0.0 0.3+           |
| 2001 03 18                              | 704        | 0.2- 0.2+          |
| 2001 03 18                              | 699        | 0.2- 1.0+          |
| 2001 03 18                              | 699        | 0.5- 0.2-          |
| 2001 03 18                              | 699        | 1.0- 0.5-          |
| 2001 03 19                              | 608        | 0.1- 0.8-          |
| 2001 03 19                              | 608        | 0.8+ 0.4+          |
| 2001 03 19                              | 608        | 0.5+ 0.2+          |
| 2001 03 23                              | 209        | 0.4- 0.1-          |
| 2001 03 23                              | 209        | 0.0 0.1+           |
| 2001 03 23                              | 209        | 0.6- 0.1-          |
| 2001 03 24                              | 691        | 0.4- 0.1-          |
| 2001 03 24                              | 691        | 0.3- 0.0           |
| 2001 03 24                              | 691        | 0.2- 0.1-          |
| 2001 03 27                              | 608        | 0.6- 0.1+          |
| 2003 03 10                              | 691        | 0.2+ 0.1-          |
| 2003 03 10                              | 691        | 0.0 0.1-           |
| 2003 03 10                              | 691        | 0.1+ 0.3-          |
| 2003 03 11                              | 691        | 0.2+ 0.2-          |
| 2003 03 11                              | 691        | 0.2+ 0.2-          |
| 2003 03 11                              | 691        | 0.2+ 0.1-          |
| 2003 03 15                              | 691        | 0.3- 0.2+          |
| 2003 03 15                              | 691        | 0.3- 0.2+          |
| 2003 03 15                              | 691        | 0.1- 0.0           |
| 2003 03 18                              | 703        | 0.2+ 0.4+          |
| 2003 03 18                              | 703        | 0.4- 0.4+          |
| 2003 03 18                              | 703        | 0.3+ 0.3+          |
| 2003 03 18                              | 703        | (0.9+ 1.8-)        |
| 2003 04 01                              | 691        | 0.2- 0.1+          |
| 2003 04 01                              | 691        | 0.1+ 0.2+          |
| 2003 04 01                              | 691        | 0.0 0.2+           |
| 2003 04 04                              | 703        | 0.1+ 0.5-          |
| 2003 04 04                              | 703        | 0.1- 0.4+          |
| 2003 04 04                              | 703        | 1.2- 0.4+          |
| 2003 04 04                              | 703        | 0.3- 0.3-          |
| 2003 04 05                              | 704        | 0.3+ 1.3+          |
| 2003 04 05                              | 704        | 0.1+ 0.5+          |
| 2003 04 05                              | 704        | 0.2+ 0.7+          |
| 2003 04 05                              | 704        | 0.9+ 0.6+          |
| 2003 04 09                              | 704        | 0.4- 0.7-          |
| 2003 04 09                              | 704        | 0.7+ 0.6+          |
| 2003 04 09                              | 704        | 0.2+ 0.4+          |
| 2003 04 13                              | 704        | 1.1+ 1.1+          |
| 2003 04 18                              | 703        | (1.9+ 0.1-)        |
| 2003 04 18                              | 703        | 0.5+ 0.4-          |
| 2003 04 18                              | 703        | 0.9- 0.0           |
| 2003 04 18                              | 703        | (1.1- 2.3-)        |
| 2006 07 21                              | A50        | (12.2- 7.7-)       |
| 2006 07 21                              | A50        | (12.4- 7.8-)       |
| 2006 08 14                              | 644        | 0.2+ 0.7+          |
| 2006 08 14                              | 644        | 0.2- 0.5+          |
| 2006 08 14                              | 644        | 0.3- 1.2+          |
| 2007 10 20                              | G96        | 0.5+ 0.0           |
| 2007 10 20                              | G96        | 0.4+ 0.2+          |
| 2007 10 20                              | G96        | 0.2+ 0.1-          |
| 2007 10 20                              | G96        | 0.6+ 0.1-          |
| 2007 11 04                              | 704        | 0.2+ 0.2-          |
| 2007 11 04                              | 704        | 0.2- 0.1-          |
| 2007 11 04                              | 704        | 0.4- 0.2-          |
| 2007 11 12                              | 704        | 0.1- 0.5+          |
| 2007 11 12                              | 704        | (0.4- 2.0+)        |
| 2007 11 12                              | 704        | 0.2- 1.2+          |
| 2007 11 12                              | 704        | 0.1- 0.5+          |
| 2007 11 12                              | 704        | (1.5- 1.8+)        |
| 2007 11 13                              | 691        | 0.1- 0.2+          |
| 2007 11 13                              | 691        | 0.3- 0.2+          |
| 2007 11 13                              | 691        | 0.4- 0.1+          |
| 2007 11 20                              | 691        | 0.2- 0.1+          |
| 2007 11 20                              | 691        | 0.2- 0.1+          |

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 27 | 608 | 0.4-        | 0.3- | 2005 04 09 | 704 | 0.0  | 1.0+ | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2001 03 27 | 608 | 0.9-        | 0.3- | 2005 04 09 | 699 | 0.1+ | 0.3- | 2007 11 20 | 703 | 0.0  | 0.9+ |
| 2002 07 17 | 644 | 0.4-        | 1.0+ | 2005 04 09 | 699 | 0.1- | 0.2- | 2007 11 20 | 703 | 1.1+ | 0.5+ |
| 2002 07 17 | 644 | 0.6-        | 0.8+ | 2005 04 09 | 699 | 0.4+ | 0.3+ | 2007 11 20 | 703 | 0.2+ | 0.3+ |
| 2002 07 17 | 644 | 0.3-        | 1.1+ | 2005 04 09 | 699 | 0.3- | 0.4+ | 2007 11 20 | 703 | 0.1+ | 0.2+ |
| 2005 03 07 | 704 | (2.7+ 0.1-) |      | 2005 04 13 | 704 | 0.5+ | 0.9+ | 2007 12 04 | 704 | 0.1- | 0.7+ |
| 2005 03 07 | 704 | 1.2+        | 0.4- | 2005 04 13 | 704 | 0.0  | 0.3+ | 2007 12 04 | 704 | 0.9- | 0.8+ |
| 2005 03 07 | 704 | 0.7+        | 0.4- | 2005 04 13 | 704 | 0.2+ | 1.5+ | 2007 12 04 | 704 | 0.5+ | 1.0+ |
| 2005 03 07 | 704 | 0.2+        | 0.8- | 2005 04 13 | 704 | 0.8+ | 1.3+ |            |     |      |      |

**(171832)\* 2001 FO<sub>152</sub> = 2005 JQ<sub>177</sub>**

Discovered 2001 Mar. 26 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 74957)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$                         | 292.35834                                                                                                                         |             | (2000.0)                                                                                      |     | <b>P</b>                                                    |            | <b>Q</b>    |             |  |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------|------------|-------------|-------------|--|
| $n$                         | 0.26217815                                                                                                                        | $\omega$    | 52.31104                                                                                      |     | -0.82364089                                                 |            | -0.56264737 |             |  |
| $a$                         | 2.4177147                                                                                                                         | $\Omega$    | 93.34264                                                                                      |     | +0.49535176                                                 |            | -0.77472975 |             |  |
| $e$                         | 0.1827889                                                                                                                         | $i$         | 4.07944                                                                                       |     | +0.27612012                                                 |            | -0.28848182 |             |  |
| $P$                         | 3.76 <th><math>H</math></th> <td>16.6<th><math>G</math></th><td>0.15<th><math>U</math></th><td>1</td><th></th><th></th></td></td> | $H$         | 16.6 <th><math>G</math></th> <td>0.15<th><math>U</math></th><td>1</td><th></th><th></th></td> | $G$ | 0.15 <th><math>U</math></th> <td>1</td> <th></th> <th></th> | $U$        | 1           |             |  |
| Residuals in seconds of arc |                                                                                                                                   |             |                                                                                               |     |                                                             |            |             |             |  |
| 2001 03 02                  | 699                                                                                                                               | 0.3- 0.2-   | 2005 04 02                                                                                    | 691 | 0.3+ 0.4+                                                   | 2007 11 18 | G96         | 0.2+ 0.4-   |  |
| 2001 03 02                  | 699                                                                                                                               | 0.1- 0.1-   | 2005 04 02                                                                                    | 691 | 0.2+ 0.3+                                                   | 2007 11 18 | G96         | 0.4+ 0.4-   |  |
| 2001 03 02                  | 699                                                                                                                               | 0.6+ 0.8+   | 2005 04 13                                                                                    | 699 | 0.4+ 0.6+                                                   | 2007 11 19 | 691         | 0.0 0.4-    |  |
| 2001 03 02                  | 699                                                                                                                               | 0.5+ 0.6+   | 2005 04 13                                                                                    | 699 | (1.9- 1.2+)                                                 | 2007 11 19 | 691         | 0.0 0.0     |  |
| 2001 03 03                  | 704                                                                                                                               | 0.5- 1.3-   | 2005 04 13                                                                                    | 699 | 0.1+ 0.4+                                                   | 2007 11 19 | 691         | 0.0 0.0     |  |
| 2001 03 03                  | 704                                                                                                                               | (2.3+ 1.8-) | 2005 04 13                                                                                    | 699 | 0.2+ 0.4+                                                   | 2007 11 20 | A50         | 0.8- 0.3-   |  |
| 2001 03 03                  | 704                                                                                                                               | (0.2- 1.6-) | 2005 05 07                                                                                    | 703 | 1.0- 1.0-                                                   | 2007 11 20 | A50         | 0.3- 0.1-   |  |
| 2001 03 03                  | 704                                                                                                                               | 0.1+ 0.4-   | 2005 05 07                                                                                    | 703 | 0.2- 1.3-                                                   | 2007 11 20 | A50         | 0.4+ 0.0    |  |
| 2001 03 03                  | 704                                                                                                                               | 0.5+ 0.2+   | 2005 05 07                                                                                    | 703 | 1.5- 1.0-                                                   | 2007 11 20 | A50         | 0.0 0.9-    |  |
| 2001 03 18                  | 699                                                                                                                               | 0.7- 0.2+   | 2005 05 07                                                                                    | 703 | (1.6- 0.4-)                                                 | 2007 11 21 | A50         | 0.3- 0.2+   |  |
| 2001 03 18                  | 699                                                                                                                               | 0.3+ 0.5+   | 2005 05 14                                                                                    | 644 | 0.1- 0.4+                                                   | 2007 11 21 | A50         | 0.5+ 0.6+   |  |
| 2001 03 18                  | 699                                                                                                                               | 0.3- 0.9+   | 2005 05 14                                                                                    | 644 | 0.1+ 0.5+                                                   | 2007 11 21 | A50         | 0.2- 0.8-   |  |
| 2001 03 18                  | 699                                                                                                                               | 1.0+ 0.2-   | 2005 05 14                                                                                    | 644 | 0.1+ 0.2+                                                   | 2007 11 21 | A50         | 1.0- 0.5+   |  |
| 2001 03 26                  | 704                                                                                                                               | 0.0 1.0+    | 2007 11 03                                                                                    | 691 | 0.1- 0.1-                                                   | 2007 12 03 | 703         | 0.1+ 0.5+   |  |
| 2001 03 26                  | 704                                                                                                                               | 0.7- 0.5-   | 2007 11 03                                                                                    | 691 | 0.0 0.1-                                                    | 2007 12 03 | 703         | 0.6- 0.2-   |  |
| 2001 03 26                  | 704                                                                                                                               | 0.1+ 0.2+   | 2007 11 03                                                                                    | 691 | 0.0 0.1-                                                    | 2007 12 03 | 703         | 0.3+ 0.4-   |  |
| 2001 03 26                  | 704                                                                                                                               | (1.7- 1.2+) | 2007 11 07                                                                                    | 691 | 0.3- 0.0                                                    | 2007 12 03 | 703         | 0.5- 0.1+   |  |
| 2001 03 26                  | 704                                                                                                                               | 0.1- 0.3+   | 2007 11 07                                                                                    | 691 | 0.3- 0.2-                                                   | 2007 12 03 | 703         | 0.2+ 0.6+   |  |
| 2001 03 27                  | 699                                                                                                                               | 0.9+ 0.1-   | 2007 11 07                                                                                    | 691 | 0.3- 0.1+                                                   | 2007 12 03 | 703         | (2.1+ 0.4-) |  |
| 2001 03 27                  | 699                                                                                                                               | (1.6- 0.3-) | 2007 11 14                                                                                    | 704 | 1.0+ 0.3+                                                   | 2007 12 03 | 703         | 0.3- 0.5-   |  |
| 2001 03 27                  | 699                                                                                                                               | 0.0 0.3+    | 2007 11 14                                                                                    | 704 | 0.8+ 0.5+                                                   | 2007 12 03 | 703         | 0.4+ 0.1+   |  |
| 2001 03 27                  | 699                                                                                                                               | 0.6- 0.5-   | 2007 11 14                                                                                    | 704 | (1.7+ 0.6-)                                                 | 2007 12 05 | 704         | 1.2+ 1.0+   |  |
| 2003 10 22                  | 691                                                                                                                               | 0.3- 0.8+   | 2007 11 14                                                                                    | 704 | (2.2+ 0.3-)                                                 | 2007 12 05 | 704         | 1.2+ 0.3+   |  |
| 2003 10 22                  | 691                                                                                                                               | 0.3- 0.6+   | 2007 11 14                                                                                    | 704 | 0.1+ 0.1-                                                   | 2007 12 05 | 704         | 0.1+ 0.9-   |  |
| 2003 10 22                  | 691                                                                                                                               | 0.1- 0.5+   | 2007 11 18                                                                                    | G96 | 0.1+ 0.3-                                                   | 2007 12 05 | 704         | 0.6+ 0.0    |  |
| 2005 04 02                  | 691                                                                                                                               | 0.2+ 0.2+   | 2007 11 18                                                                                    | G96 | 0.5+ 0.2-                                                   | 2007 12 05 | 704         | 0.7+ 0.3+   |  |

**(171833)\* 2001 FA<sub>161</sub> = 2003 YV<sub>3</sub>**

Discovered 2001 Mar. 29 by NEAT at Haleakala.

Id. A. Doppler (*MPO* 68915)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 19 | 704 | 0.1−  | 0.5+  | 2003 12 22 | 704 | 0.1+  | 0.0   | 2006 10 02 | G96 | 0.4+ | 0.1− |
| 1999 10 19 | 704 | 1.5+  | 0.8+  | 2003 12 22 | 704 | 1.0−  | 0.1+  | 2006 10 02 | G96 | 0.0  | 0.0  |
| 1999 11 09 | 704 | 0.2+  | 0.2−  | 2003 12 22 | 704 | 0.0   | 0.1+  | 2006 10 21 | G96 | 0.0  | 0.2− |
| 1999 11 09 | 704 | 0.7+  | 0.6+  | 2003 12 27 | 704 | 0.8+  | 0.8−  | 2006 10 21 | G96 | 0.4+ | 0.4− |
| 1999 11 09 | 704 | 0.3+  | 0.2+  | 2003 12 27 | 704 | 1.3−  | 0.4−  | 2006 10 21 | G96 | 0.3+ | 0.1+ |
| 1999 11 09 | 704 | 1.3−  | 0.4+  | 2003 12 27 | 704 | 0.7+  | 0.8+  | 2006 10 21 | G96 | 0.0  | 0.2− |
| 2001 03 29 | 608 | 0.5+  | 0.8−  | 2003 12 27 | 704 | 0.3+  | 0.7−  | 2006 11 17 | G96 | 0.1− | 0.4− |
| 2001 03 29 | 608 | 0.4+  | 0.4−  | 2006 09 16 | 699 | 0.1−  | 0.1+  | 2006 11 17 | G96 | 0.5− | 0.1+ |
| 2001 03 29 | 608 | 0.1−  | 0.6−  | 2006 09 16 | 699 | 0.4−  | 1.2+  | 2006 11 17 | G96 | 1.0− | 0.4− |
| 2001 04 01 | 704 | 0.6+  | 1.0+  | 2006 09 16 | 699 | 0.6−  | 0.6+  | 2006 11 17 | G96 | 0.9+ | 0.3+ |
| 2001 04 01 | 704 | 0.6+  | 1.3+  | 2006 09 16 | 699 | 0.2−  | 0.6+  | 2007 10 09 | G96 | 0.2+ | 0.4− |
| 2001 04 01 | 704 | 0.7+  | 0.7+  | 2006 09 19 | 699 | (1.6+ | 1.1+) | 2007 10 09 | G96 | 0.0  | 0.5− |
| 2001 04 16 | 699 | 0.1+  | 1.0+  | 2006 09 19 | 703 | 0.5+  | 0.4−  | 2007 10 09 | G96 | 0.4+ | 0.6− |
| 2001 04 16 | 699 | 0.1−  | 0.8+  | 2006 09 19 | 699 | 0.7+  | 0.8+  | 2007 10 09 | G96 | 0.2+ | 0.2− |
| 2001 04 16 | 699 | (1.7+ | 1.7+) | 2006 09 19 | 703 | (2.0+ | 1.4−) | 2007 11 20 | G96 | 0.6+ | 0.1− |
| 2001 04 16 | 699 | 0.6−  | 0.4+  | 2006 09 19 | 703 | 0.8−  | 1.4−  | 2007 11 20 | G96 | 0.2+ | 0.3− |
| 2003 12 18 | 704 | (0.4− | 2.4+) | 2006 09 19 | 703 | 0.9−  | 0.3+  | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2003 12 18 | 704 | 0.5−  | 1.2+  | 2006 09 19 | 699 | 0.8−  | 0.5+  | 2007 11 20 | G96 | 0.3− | 0.2− |
| 2003 12 18 | 704 | (0.7− | 1.6+) | 2006 09 19 | 699 | 0.1−  | 0.8+  |            |     |      |      |
| 2003 12 18 | 704 | (0.6− | 1.8+) | 2006 09 25 | 699 | (1.8− | 0.5+) |            |     |      |      |

**(171834)\* 2001 FR<sub>173</sub>**

Discovered 2001 Mar. 21 by Spacewatch at Kitt Peak.

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 94.31975   |          |           | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.23462099 | $\omega$ | 142.49886 |          | +0.68502930 |          | +0.72846758 |
| <i>a</i>                                | 2.6035033  | $\Omega$ | 170.72867 |          | −0.68033258 |          | +0.64378285 |
| <i>e</i>                                | 0.1924614  | <i>i</i> | 2.97330   |          | −0.26054258 |          | +0.23426185 |
| <i>P</i>                                | 4.20       | <i>H</i> | 16.7      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 04 24 | 691 | 0.9− | 0.4− | 2001 03 22 | 291 | 0.1+ | 0.5+ | 2002 08 31 | 644 | 0.2+ | 0.8+ |
| 1993 04 24 | 691 | 1.0− | 0.2− | 2001 03 22 | 291 | 0.1+ | 0.2+ | 2002 08 31 | 644 | 0.1+ | 0.7+ |
| 1993 04 24 | 691 | 0.0  | 0.3+ | 2002 07 30 | 608 | 0.1− | 0.1+ | 2002 09 05 | 704 | 0.1− | 0.0  |
| 1993 05 24 | 691 | 0.9+ | 0.3− | 2002 07 30 | 608 | 0.6− | 0.1+ | 2002 09 05 | 704 | 0.1− | 0.5− |
| 1993 05 24 | 691 | 0.2+ | 0.0  | 2002 07 30 | 608 | 0.0  | 0.6+ | 2002 09 05 | 704 | 0.4− | 0.6+ |
| 1993 05 24 | 691 | 0.3+ | 0.3− | 2002 08 13 | 699 | 0.5− | 0.7+ | 2002 09 05 | 704 | 0.2+ | 0.1− |
| 1996 01 19 | 691 | 0.0  | 0.1+ | 2002 08 13 | 699 | 0.4− | 0.1+ | 2005 03 08 | G96 | 0.7− | 0.3+ |
| 1996 01 19 | 691 | 1.6+ | 0.3− | 2002 08 13 | 699 | 0.6− | 0.5+ | 2005 03 08 | G96 | 0.3− | 0.1+ |
| 1996 01 19 | 691 | 1.8− | 0.7− | 2002 08 13 | 699 | 0.3− | 0.0  | 2005 03 08 | G96 | 0.7− | 0.0  |
| 1998 10 15 | 691 | 0.1+ | 0.3− | 2002 08 17 | 644 | 0.3− | 0.6+ | 2005 03 08 | G96 | 0.4− | 0.1+ |
| 1998 10 15 | 691 | 0.4+ | 0.2− | 2002 08 17 | 644 | 0.0  | 0.3+ | 2007 11 08 | 691 | 0.4− | 0.3+ |
| 1998 10 15 | 691 | 0.0  | 0.0  | 2002 08 17 | 644 | 0.0  | 0.7+ | 2007 11 08 | 691 | 0.3− | 0.1+ |
| 2001 03 21 | 691 | 0.4+ | 0.0  | 2002 08 18 | 644 | 0.2+ | 0.3+ | 2007 11 08 | 691 | 0.3− | 0.3+ |
| 2001 03 21 | 691 | 0.0  | 1.0+ | 2002 08 18 | 644 | 0.0  | 0.2+ | 2007 12 04 | 704 | 0.8+ | 0.6+ |
| 2001 03 21 | 691 | 0.2+ | 0.7+ | 2002 08 18 | 644 | 0.1− | 0.1+ | 2007 12 04 | 704 | 0.3+ | 0.9+ |
| 2001 03 22 | 291 | 1.0+ | 0.2− | 2002 08 31 | 644 | 0.4+ | 0.4+ | 2007 12 04 | 704 | 1.2+ | 2.0+ |

**(171835)\* 2001 GO<sub>8</sub> = 2002 TU<sub>300</sub>**

Discovered 2001 Apr. 15 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 37599)

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 76.59217   |          |           | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.21560490 | $\omega$ | 150.48696 |          | +0.79348343 |          | +0.60741255 |
| <i>a</i>                                | 2.7544208  | $\Omega$ | 171.78884 |          | −0.59731705 |          | +0.78919600 |
| <i>e</i>                                | 0.2869546  | <i>i</i> | 15.37572  |          | −0.11660354 |          | +0.09066243 |
| <i>P</i>                                | 4.57       | <i>H</i> | 14.8      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 18 | 691 | 0.4+ | 0.4+ | 2002 10 10 | 644 | 0.3− | 0.7+ | 2005 03 14 | 704 | 0.2+ | 0.6− |
| 2001 02 18 | 691 | 0.5+ | 0.5+ | 2002 10 10 | 644 | 0.2− | 0.6+ | 2005 03 14 | 704 | 0.4− | 1.1+ |
| 2001 02 18 | 691 | 0.4+ | 0.7+ | 2002 10 15 | 644 | 0.6− | 0.4+ | 2005 03 14 | 704 | 0.4+ | 0.8+ |
| 2001 03 02 | 608 | 0.5+ | 0.1− | 2002 10 15 | 644 | 0.3− | 0.5+ | 2005 03 17 | 704 | 0.4− | 1.1− |
| 2001 03 02 | 608 | 0.1+ | 0.1+ | 2002 10 15 | 644 | 0.0  | 0.6+ | 2005 03 17 | 704 | 1.0+ | 0.3+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 02 | 608 | 0.0   | 0.2+  | 2002 10 18 | 644 | 0.1−  | 0.4+  | 2005 03 17 | 704 | 1.0+  | 0.2+  |
| 2001 04 15 | 704 | 0.3+  | 0.3+  | 2002 10 18 | 644 | 0.2−  | 0.4+  | 2005 03 17 | 704 | 1.1+  | 0.3+  |
| 2001 04 15 | 704 | 0.6−  | 0.4−  | 2002 10 18 | 644 | 0.3−  | 0.5+  | 2005 04 04 | G96 | 0.3+  | 0.3+  |
| 2001 04 15 | 704 | 0.4+  | 0.5+  | 2002 10 30 | 704 | 0.6+  | 0.4−  | 2005 04 04 | G96 | 0.1−  | 0.2−  |
| 2001 04 15 | 704 | (1.7+ | 0.9−) | 2002 10 30 | 704 | 0.4+  | 0.1−  | 2005 04 04 | G96 | 0.3−  | 0.3−  |
| 2001 04 15 | 704 | 0.2−  | 0.1−  | 2002 10 30 | 704 | 0.0   | 0.6−  | 2005 04 04 | G96 | 0.1−  | 0.6−  |
| 2001 04 17 | 699 | 0.1+  | 0.9+  | 2002 10 30 | 704 | 0.3+  | 0.9−  | 2005 04 09 | 699 | (0.8− | 1.8+) |
| 2001 04 17 | 699 | 0.3+  | 0.4+  | 2002 10 30 | 704 | 0.3+  | 0.6−  | 2005 04 09 | 699 | 0.4+  | 0.4−  |
| 2001 04 17 | 699 | 0.1+  | 0.8+  | 2002 11 21 | 644 | 0.2−  | 0.0   | 2005 04 09 | 699 | 0.5−  | 0.1+  |
| 2001 04 17 | 699 | 0.7−  | 0.6+  | 2002 11 21 | 644 | 0.1+  | 0.5+  | 2005 04 09 | G96 | 0.1−  | 0.1−  |
| 2001 04 27 | 704 | 0.2+  | 0.5+  | 2002 11 21 | 644 | 0.3−  | 0.6+  | 2005 04 09 | G96 | 0.1−  | 0.3−  |
| 2001 04 27 | 704 | (0.2− | 1.7+) | 2002 12 07 | 644 | 0.0   | 0.6+  | 2005 04 09 | 699 | 0.4−  | 0.5−  |
| 2001 04 27 | 704 | 0.3+  | 1.3+  | 2002 12 07 | 644 | 0.0   | 0.4+  | 2005 04 09 | G96 | 0.1+  | 0.3−  |
| 2001 04 27 | 704 | 0.8−  | 0.8+  | 2002 12 07 | 644 | 0.4+  | 0.6+  | 2005 04 09 | G96 | 0.3−  | 0.3−  |
| 2001 05 02 | 561 | 0.3+  | 0.2+  | 2005 03 03 | 703 | 0.6−  | 0.1+  | 2005 04 16 | 691 | 0.3+  | 0.0   |
| 2001 05 02 | 561 | 0.2−  | 0.7+  | 2005 03 03 | 703 | 1.1−  | 0.5−  | 2005 04 16 | 691 | 0.2+  | 0.4−  |
| 2001 05 02 | 561 | 0.1−  | 0.0   | 2005 03 03 | 703 | 0.8−  | 1.3+  | 2005 04 16 | 691 | 0.5+  | 0.2−  |
| 2001 05 23 | 699 | 0.3−  | 0.2+  | 2005 03 03 | 703 | 0.5−  | 0.4−  | 2006 05 29 | 704 | 0.3+  | 0.6+  |
| 2001 05 23 | 704 | 0.2+  | 0.6+  | 2005 03 07 | 683 | 0.5−  | 0.1+  | 2006 05 29 | 704 | 0.2+  | 0.6+  |
| 2001 05 23 | 699 | 1.0+  | 0.5+  | 2005 03 07 | 683 | (1.6+ | 1.7−) | 2006 05 29 | 704 | 0.6+  | 0.2+  |
| 2001 05 23 | 704 | 0.7−  | 0.2+  | 2005 03 07 | 683 | 1.0−  | 0.8−  | 2006 05 29 | 704 | 0.0   | 0.7+  |
| 2001 05 23 | 704 | 0.2−  | 0.3+  | 2005 03 08 | 699 | 0.3+  | 0.6+  | 2006 05 29 | 704 | 0.4−  | 0.4+  |
| 2001 05 23 | 704 | 0.9+  | 1.0+  | 2005 03 08 | 699 | 1.0+  | 0.4+  | 2006 07 03 | H51 | 0.1−  | 0.2+  |
| 2001 05 23 | 699 | 0.4−  | 0.2+  | 2005 03 08 | 699 | 0.6−  | 0.4+  | 2006 07 03 | H51 | 0.2−  | 0.4+  |
| 2001 05 23 | 704 | 0.3+  | 0.8+  | 2005 03 08 | 699 | 0.3−  | 0.6−  | 2006 07 03 | H51 | 0.8−  | 1.2+  |
| 2001 05 23 | 699 | 0.3−  | 0.2+  | 2005 03 08 | G96 | 0.6−  | 0.4−  | 2007 11 20 | 703 | 0.1−  | 0.7+  |
| 2002 08 11 | 704 | 0.2−  | 0.7+  | 2005 03 08 | G96 | 0.3−  | 0.2−  | 2007 11 20 | 703 | 0.0   | 0.5+  |
| 2002 08 11 | 704 | 0.2−  | 0.2+  | 2005 03 08 | G96 | 0.4−  | 0.5−  | 2007 11 20 | 703 | 0.6+  | 0.4+  |
| 2002 08 11 | 704 | 0.2−  | 0.1+  | 2005 03 08 | G96 | 0.5−  | 0.5−  | 2007 11 20 | 703 | 0.2+  | 0.9+  |
| 2002 09 22 | 644 | 0.3−  | 0.1+  | 2005 03 08 | G96 | 0.5−  | 0.5−  | 2007 12 06 | 703 | 1.5−  | 1.7+  |
| 2002 09 22 | 644 | 0.4−  | 0.3+  | 2005 03 08 | G96 | 0.4−  | 0.3−  | 2007 12 06 | 703 | 0.6−  | 1.9+  |
| 2002 09 22 | 644 | 0.4−  | 0.2+  | 2005 03 08 | G96 | 0.5−  | 0.4−  | 2007 12 06 | 703 | (0.8+ | 3.1+) |
| 2002 10 10 | 644 | 0.3−  | 0.6+  | 2005 03 08 | G96 | 0.6−  | 0.4−  | 2007 12 06 | 703 | 1.7+  | 1.3+  |

**(171836)\* 2001 HJ<sub>41</sub>**

Discovered 2001 Apr. 27 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 200.85454  |          |           | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.23868878 | $\omega$ | 150.34250 |          | −0.53660440 |          | +0.77146780 |
| <i>a</i>                                | 2.5738390  | $\Omega$ | 85.14839  |          | −0.82590543 |          | −0.39708638 |
| <i>e</i>                                | 0.2355961  | <i>i</i> | 20.06743  |          | −0.17302006 |          | −0.49715172 |
| <i>P</i>                                | 4.13       | <i>H</i> | 15.2      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 03 23 | 699 | 0.2+  | 0.3−  | 2001 06 15 | 704 | 0.1− | 0.6+ | 2005 05 10 | 704 | 0.0   | 0.1−  |
| 2001 03 23 | 699 | 0.2+  | 0.1+  | 2001 06 15 | 704 | 0.3+ | 0.0  | 2005 05 10 | 704 | 0.3+  | 0.3+  |
| 2001 03 23 | 699 | (0.3+ | 2.4+) | 2001 06 21 | 704 | 0.0  | 0.8+ | 2005 05 10 | 703 | 0.7−  | 0.3−  |
| 2001 03 23 | 699 | (2.0− | 2.1+) | 2001 06 21 | 704 | 0.1− | 0.6+ | 2005 05 10 | 703 | 0.9−  | 0.1−  |
| 2001 04 24 | 699 | 0.2+  | 0.1−  | 2001 06 21 | 704 | 0.3+ | 0.3+ | 2005 05 10 | 703 | 0.8−  | 0.2+  |
| 2001 04 24 | 699 | 0.7+  | 0.2−  | 2001 06 21 | 704 | 0.4+ | 0.9+ | 2005 05 10 | 703 | 0.5−  | 0.1−  |
| 2001 04 24 | 699 | 0.5+  | 0.1−  | 2001 06 21 | 704 | 0.3+ | 0.6+ | 2005 05 11 | 704 | 0.3+  | 0.1+  |
| 2001 04 24 | 699 | 0.9+  | 0.1+  | 2001 07 12 | 608 | 0.4+ | 0.2− | 2005 05 11 | 704 | 0.1−  | 0.2+  |
| 2001 04 27 | 704 | 1.3−  | 0.5−  | 2001 07 12 | 608 | 0.5+ | 0.1− | 2005 05 11 | 704 | 0.4+  | 0.2+  |
| 2001 04 27 | 704 | 0.6+  | 0.6−  | 2001 07 12 | 608 | 0.8+ | 0.1− | 2005 05 11 | 704 | 0.4+  | 0.3−  |
| 2001 04 27 | 704 | (0.5+ | 1.6−) | 2005 03 12 | 704 | 0.2+ | 0.3− | 2005 05 11 | 704 | 0.1+  | 0.2−  |
| 2001 04 27 | 704 | 0.4+  | 0.4−  | 2005 03 12 | 704 | 0.0  | 0.3+ | 2005 05 17 | 703 | (1.6− | 1.1−) |
| 2001 05 01 | 704 | 0.3−  | 0.2+  | 2005 03 12 | 704 | 0.5+ | 0.0  | 2005 05 17 | 703 | 0.1−  | 0.6−  |
| 2001 05 01 | 704 | 0.6−  | 0.2−  | 2005 03 12 | 704 | 0.3+ | 0.1− | 2005 05 17 | 703 | 0.0   | 0.1−  |
| 2001 05 01 | 704 | 0.1−  | 0.9−  | 2005 03 12 | 704 | 0.0  | 0.9+ | 2005 05 17 | 703 | 0.4−  | 0.5+  |
| 2001 05 01 | 704 | 0.2−  | 0.2−  | 2005 04 02 | 703 | 0.3− | 0.3− | 2005 06 02 | 704 | 0.0   | 0.5+  |
| 2001 05 14 | 608 | 1.3+  | 0.3−  | 2005 04 02 | 703 | 0.5− | 0.2+ | 2005 06 02 | 704 | 0.4+  | 0.7+  |
| 2001 05 14 | 608 | 1.0+  | 0.6−  | 2005 04 02 | 703 | 0.4− | 0.3− | 2005 06 02 | 704 | (0.1+ | 1.6+) |
| 2001 05 14 | 608 | 1.0+  | 0.4−  | 2005 04 02 | 703 | 0.3− | 0.3− | 2005 06 02 | 704 | 0.3+  | 0.5+  |
| 2001 05 17 | 608 | 0.0   | 0.8+  | 2005 04 09 | 703 | 0.3− | 0.5− | 2005 06 02 | 704 | 0.7+  | 0.4+  |
| 2001 05 17 | 608 | 0.5+  | 0.8+  | 2005 04 09 | 703 | 0.5− | 0.4− | 2005 06 08 | 703 | 0.3+  | 0.7−  |
| 2001 05 17 | 608 | 0.1−  | 0.5+  | 2005 04 09 | 703 | 0.1− | 0.0  | 2005 06 08 | 703 | 0.1−  | 0.3−  |

2007 DEC. 24

M.P.O. 129177

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 05 23 | 704 | 0.2-  | 0.0   | 2005 04 09 | 703 | 0.3-  | 0.1+  | 2005 06 08 | 703 | 0.7-  | 0.3-  |
| 2001 05 23 | 704 | 0.3-  | 0.1+  | 2005 04 12 | 699 | 0.3-  | 0.3+  | 2005 07 01 | 699 | (1.7- | 0.1+) |
| 2001 05 23 | 704 | 0.1-  | 0.4-  | 2005 04 12 | 699 | (2.1- | 0.4+) | 2005 07 01 | 699 | 0.2+  | 0.1+  |
| 2001 05 23 | 704 | (1.9+ | 0.8-) | 2005 04 12 | 699 | 0.3-  | 0.0   | 2005 07 01 | 699 | 0.1-  | 0.5+  |
| 2001 05 23 | 704 | 0.5-  | 0.1-  | 2005 04 12 | 699 | 0.2+  | 0.1+  | 2005 07 01 | 699 | (0.1+ | 1.7+) |
| 2001 05 25 | 704 | 0.0   | 0.7+  | 2005 04 12 | 699 | 0.3+  | 0.2-  | 2005 07 03 | 703 | 0.7+  | 0.6-  |
| 2001 05 25 | 704 | 0.3-  | 0.1-  | 2005 04 12 | 699 | 0.3+  | 0.3+  | 2005 07 03 | 703 | 0.8-  | 0.5-  |
| 2001 05 25 | 704 | 0.3-  | 0.8+  | 2005 04 12 | 699 | 0.2-  | 0.2-  | 2005 07 03 | 703 | 0.4+  | 0.1+  |
| 2001 05 25 | 704 | 0.4-  | 0.2+  | 2005 04 13 | 704 | 0.5+  | 0.8-  | 2005 07 03 | 703 | 0.6-  | 0.7-  |
| 2001 05 25 | 704 | 0.5+  | 0.6+  | 2005 04 13 | 704 | 1.0+  | 0.4-  | 2006 09 27 | 703 | (0.2- | 1.8+) |
| 2001 05 29 | 704 | 0.2-  | 0.4-  | 2005 04 13 | 704 | 0.9+  | 0.6+  | 2006 09 27 | 703 | 0.7-  | 0.3+  |
| 2001 05 29 | 704 | 0.1-  | 0.4+  | 2005 04 13 | 704 | 0.6+  | 0.4-  | 2006 09 27 | 703 | 0.6-  | 0.9+  |
| 2001 05 29 | 704 | 0.1-  | 0.5+  | 2005 04 17 | 703 | 0.1-  | 0.1-  | 2006 09 27 | 703 | 0.0   | 0.3+  |
| 2001 05 29 | 704 | 0.1+  | 0.0   | 2005 04 17 | 703 | 0.4-  | 0.1-  | 2007 11 08 | 691 | 0.3-  | 0.2+  |
| 2001 05 29 | 704 | 0.3-  | 0.0   | 2005 04 17 | 703 | 0.6-  | 0.2-  | 2007 11 08 | 691 | 0.3-  | 0.4+  |
| 2001 06 12 | 699 | 0.1-  | 0.5+  | 2005 04 17 | 703 | 0.3-  | 0.3+  | 2007 11 08 | 691 | 0.5-  | 0.3+  |
| 2001 06 12 | 699 | 0.5-  | 0.6+  | 2005 04 25 | 608 | 0.7+  | 1.1+  | 2007 11 21 | G96 | 0.4+  | 0.4+  |
| 2001 06 12 | 699 | 0.1-  | 0.2+  | 2005 04 25 | 608 | 0.9+  | 1.0+  | 2007 11 21 | G96 | 0.3+  | 0.2+  |
| 2001 06 12 | 699 | 0.9-  | 1.4-  | 2005 04 25 | 608 | 0.4+  | 1.1+  | 2007 11 21 | G96 | 0.3+  | 0.0   |
| 2001 06 14 | 608 | 0.5-  | 0.6-  | 2005 05 07 | 628 | 1.0-  | 0.4+  | 2007 11 21 | G96 | 0.8+  | 0.3+  |
| 2001 06 14 | 608 | 0.5-  | 0.5-  | 2005 05 07 | 628 | 0.5+  | 0.2-  | 2007 12 05 | G96 | 0.4+  | 0.1-  |
| 2001 06 14 | 608 | 0.6-  | 0.7-  | 2005 05 07 | 628 | 0.2+  | 0.2-  | 2007 12 05 | G96 | 0.3+  | 0.2+  |
| 2001 06 15 | 704 | 0.3+  | 0.4+  | 2005 05 10 | 704 | 0.2+  | 0.3+  | 2007 12 05 | G96 | 0.2-  | 0.3+  |
| 2001 06 15 | 704 | 0.1-  | 0.5+  | 2005 05 10 | 704 | 0.0   | 0.2-  | 2007 12 05 | G96 | 0.3+  | 0.1+  |
| 2001 06 15 | 704 | 0.0   | 0.4+  | 2005 05 10 | 704 | 0.1+  | 0.0   |            |     |       |       |

(171837)\* 2001 HQ<sub>52</sub>

Discovered 2001 Apr. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 162.20337  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23208199 | $\omega$ | 200.59451 | -0.19337598 | +0.98058437 |
| <i>a</i> | 2.6224573  | $\Omega$ | 58.26843  | -0.89472347 | -0.16263294 |
| <i>e</i> | 0.1615981  | <i>i</i> | 2.19382   | -0.40258619 | -0.10956648 |
| <i>P</i> | 4.25       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 04 23 | 704 | 0.8- | 0.1- | 2005 03 11 | 691 | 0.2+  | 0.4+  | 2006 11 21 | G96 | 0.5- | 0.1- |
| 2001 04 23 | 704 | 0.9+ | 0.2- | 2005 03 11 | 691 | 0.7+  | 0.3+  | 2006 11 21 | G96 | 0.3- | 0.1+ |
| 2001 04 23 | 704 | 1.3+ | 0.3+ | 2005 04 02 | 683 | 0.1-  | 0.4-  | 2006 11 21 | G96 | 0.1- | 1.1- |
| 2001 04 23 | 704 | 0.2+ | 0.2+ | 2005 04 02 | 683 | 1.0-  | 1.1+  | 2006 11 21 | G96 | 0.2+ | 0.4- |
| 2001 04 24 | 608 | 0.7+ | 0.8+ | 2005 04 02 | 683 | (1.1- | 1.8-) | 2007 11 09 | 691 | 0.1- | 0.4+ |
| 2001 04 24 | 608 | 1.0+ | 0.8+ | 2005 04 04 | 704 | 0.4-  | 0.7+  | 2007 11 09 | 691 | 0.2+ | 0.1- |
| 2001 04 24 | 608 | 0.8+ | 0.8+ | 2005 04 04 | 704 | 0.3+  | 0.1-  | 2007 11 09 | 691 | 0.1- | 0.0  |
| 2001 05 04 | 644 | 0.3- | 1.0+ | 2005 04 04 | 704 | 0.1-  | 0.4+  | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2001 05 04 | 644 | 0.5- | 0.5+ | 2005 04 04 | 704 | (0.5+ | 1.6+) | 2007 11 13 | 691 | 0.2- | 0.3+ |
| 2001 05 04 | 644 | 0.6- | 0.8+ | 2006 08 28 | 691 | 0.1+  | 0.2+  | 2007 11 13 | 691 | 0.2- | 0.1- |
| 2002 10 30 | 645 | 0.1- | 0.2+ | 2006 08 28 | 691 | 0.2+  | 0.2+  | 2007 12 04 | G96 | 1.1+ | 1.0+ |
| 2002 10 30 | 645 | 0.1- | 0.1+ | 2006 08 28 | 691 | 0.3-  | 0.2+  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2005 03 01 | 691 | 0.0  | 0.1+ | 2006 09 14 | 703 | 0.6-  | 1.3+  | 2007 12 04 | G96 | 0.1+ | 0.3+ |
| 2005 03 01 | 691 | 0.3- | 0.2- | 2006 09 14 | 703 | 0.2+  | 0.1-  | 2007 12 04 | G96 | 0.4+ | 0.3+ |
| 2005 03 01 | 691 | 0.1- | 0.0  | 2006 09 14 | 703 | (1.8- | 1.2+) |            |     |      |      |
| 2005 03 11 | 691 | 0.0  | 0.3+ | 2006 09 14 | 703 | (1.7- | 0.1+) |            |     |      |      |

(171838)\* 2001 HE<sub>56</sub>

Discovered 2001 Apr. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 233.83695  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.24102669 | $\omega$ | 51.71974  | -0.97097276 | +0.22970614 |
| <i>a</i> | 2.5571682  | $\Omega$ | 141.42962 | -0.23888602 | -0.91723405 |
| <i>e</i> | 0.1920164  | <i>i</i> | 6.14000   | -0.01205725 | -0.32544859 |
| <i>P</i> | 4.09       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 04 24 | 704 | 0.1+ | 0.5- | 2005 04 05 | 703 | 0.1- | 1.1- | 2005 05 08 | 703 | 1.4-  | 0.6+  |
| 2001 04 24 | 704 | 0.8- | 0.4+ | 2005 04 05 | 703 | 0.0  | 0.3+ | 2005 05 11 | 699 | 0.1-  | 0.4+  |
| 2001 04 24 | 704 | 1.3- | 0.1+ | 2005 04 05 | 703 | 0.7- | 0.1+ | 2005 05 11 | 699 | 1.0+  | 1.0-  |
| 2001 04 25 | 699 | 0.2- | 0.0  | 2005 04 05 | 704 | 0.9+ | 0.2+ | 2005 05 11 | 699 | 0.1-  | 0.2-  |
| 2001 04 25 | 699 | 0.5- | 0.4+ | 2005 04 05 | 703 | 0.0  | 0.6+ | 2005 05 11 | 699 | 0.2+  | 0.0   |
| 2001 04 25 | 699 | 1.5- | 0.9+ | 2005 04 05 | 704 | 0.6+ | 0.9+ | 2005 05 15 | 644 | 0.1-  | 0.3+  |
| 2001 04 25 | 699 | 1.0+ | 0.2+ | 2005 04 05 | 704 | 0.2+ | 0.4- | 2005 05 15 | 644 | 0.1+  | 0.3+  |
| 2001 05 15 | 699 | 0.1- | 0.0  | 2005 04 05 | 704 | 0.0  | 0.3+ | 2005 05 15 | 644 | 0.2-  | 0.1-  |
| 2001 05 15 | 699 | 0.3- | 0.4+ | 2005 04 09 | 704 | 0.2- | 0.8+ | 2005 05 18 | 644 | 0.1-  | 0.3+  |
| 2001 05 15 | 699 | 0.0  | 0.3+ | 2005 04 09 | 704 | 0.2+ | 0.3- | 2005 05 18 | 644 | 0.1+  | 0.1-  |
| 2001 05 15 | 699 | 0.0  | 0.1- | 2005 04 09 | 704 | 0.3+ | 0.5+ | 2005 05 18 | 644 | 0.1+  | 0.0   |
| 2001 05 29 | 704 | 0.6+ | 0.1- | 2005 04 09 | 704 | 0.6+ | 0.6- | 2005 05 18 | 644 | 0.1-  | 0.0   |
| 2001 05 29 | 704 | 0.2+ | 0.5+ | 2005 04 09 | 704 | 0.9- | 0.5+ | 2005 05 18 | 644 | 0.1-  | 0.3+  |
| 2001 05 29 | 704 | 0.1+ | 0.0  | 2005 04 13 | 704 | 0.1+ | 0.6- | 2005 05 18 | 644 | 0.3+  | 0.1+  |
| 2001 05 29 | 704 | 0.6+ | 1.1+ | 2005 04 13 | 704 | 0.9+ | 0.6- | 2005 06 08 | 699 | (1.9- | 0.0 ) |
| 2001 05 29 | 704 | 0.6+ | 0.2+ | 2005 04 13 | 704 | 0.5+ | 0.4- | 2005 06 08 | 699 | 0.7-  | 0.5-  |
| 2001 06 12 | 699 | 0.5+ | 1.0+ | 2005 04 13 | 704 | 0.2+ | 0.0  | 2005 06 08 | 699 | 1.1-  | 1.5+  |
| 2001 06 12 | 699 | 1.1+ | 0.7+ | 2005 04 14 | 704 | 0.4+ | 0.0  | 2005 06 08 | 699 | 0.7+  | 0.3+  |
| 2001 06 12 | 699 | 0.6+ | 0.7+ | 2005 04 14 | 691 | 0.1+ | 0.1- | 2007 11 02 | G96 | 0.0   | 0.2-  |
| 2001 06 12 | 699 | 0.7+ | 0.8+ | 2005 04 14 | 691 | 0.1- | 0.0  | 2007 11 02 | G96 | 0.2+  | 0.3-  |
| 2003 11 26 | 691 | 0.1+ | 0.4+ | 2005 04 14 | 691 | 0.0  | 0.1- | 2007 11 02 | G96 | 0.5-  | 0.2-  |
| 2003 11 26 | 691 | 0.1+ | 0.7+ | 2005 04 19 | 608 | 0.3+ | 0.4- | 2007 11 02 | G96 | 0.3-  | 0.1-  |
| 2003 11 26 | 691 | 0.2- | 0.9+ | 2005 04 19 | 608 | 0.4+ | 0.4- | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2005 03 10 | 699 | 0.4- | 0.1- | 2005 04 19 | 608 | 0.4+ | 0.4- | 2007 11 18 | G96 | 0.2+  | 0.4-  |
| 2005 03 10 | 699 | 0.4- | 0.2- | 2005 05 06 | 704 | 0.0  | 0.3+ | 2007 11 18 | G96 | 0.0   | 0.8-  |
| 2005 03 10 | 699 | 1.3+ | 0.6+ | 2005 05 06 | 704 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.2-  | 0.4-  |
| 2005 03 10 | 699 | 0.4+ | 0.3+ | 2005 05 06 | 704 | 0.5+ | 0.1- | 2007 12 05 | 703 | 0.2+  | 0.4+  |
| 2005 04 01 | 699 | 1.3- | 0.3- | 2005 05 06 | 704 | 0.6+ | 0.5+ | 2007 12 05 | 703 | 0.0   | 1.5+  |
| 2005 04 01 | 699 | 0.5- | 0.8- | 2005 05 08 | 703 | 0.7- | 0.2+ | 2007 12 05 | 703 | 0.8-  | 0.3+  |
| 2005 04 01 | 699 | 0.5- | 0.2+ | 2005 05 08 | 703 | 0.0  | 0.0  | 2007 12 05 | 703 | 0.4-  | 0.1-  |
| 2005 04 01 | 699 | 0.4- | 0.3- | 2005 05 08 | 703 | 1.0- | 0.3+ |            |     |       |       |

(171839)\* 2001 JM<sub>1</sub>

Discovered 2001 May 12 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 258.20052  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.55820755 | $\omega$ | 321.79581 | -0.96904879 | +0.12344644 |
| <i>a</i> | 1.4608499  | $\Omega$ | 226.75319 | -0.08130588 | -0.97727496 |
| <i>e</i> | 0.3108715  | <i>i</i> | 17.06763  | -0.23309612 | -0.17232132 |
| <i>P</i> | 1.77       | <i>H</i> | 19.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |           |        |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----------|--------|-------|------------|-----|-------|-------|
| 2001 05 12 | 608 | 0.2-  | 0.1-  | 2001 05 17 | 349       | 0.2-   | 0.5-  | 2001 05 24 | 557 | 0.1+  | 0.1-  |
| 2001 05 12 | 608 | 0.2-  | 0.3-  | 2001 05 17 | 349       | 0.5+   | 0.0   | 2001 05 24 | 214 | 0.5-  | 0.3-  |
| 2001 05 12 | 608 | 0.3-  | 0.5-  | 2001 05 17 | 349       | 0.2-   | 0.8-  | 2001 05 24 | 557 | 0.2+  | 0.1-  |
| 2001 05 13 | 557 | 0.0   | 0.2+  | 2001 05 18 | 726       | 1.0+   | 0.4+  | 2001 05 24 | 214 | 0.1-  | 0.0   |
| 2001 05 13 | 557 | 0.2+  | 0.2+  | 2001 05 18 | 726       | 0.4-   | 0.5+  | 2001 05 24 | 214 | 0.3-  | 0.3-  |
| 2001 05 13 | 557 | 0.0   | 0.3+  | 2001 05 18 | 726       | 1.4-   | 0.3+  | 2001 05 24 | 557 | 0.1-  | 0.0   |
| 2001 05 13 | 557 | 0.1+  | 0.3+  | 2001 05 18 | 726       | 0.3-   | 0.1-  | 2001 05 24 | 214 | 0.5-  | 0.6-  |
| 2001 05 13 | 118 | 0.1-  | 0.1+  | 2001 05 18 | 726       | 0.2-   | 0.1+  | 2001 05 24 | 557 | 0.4-  | 0.2-  |
| 2001 05 13 | 113 | (1.8+ | 1.3+) | 2001 05 18 | 726       | 0.0    | 0.5+  | 2001 05 24 | 557 | 0.3-  | 0.2-  |
| 2001 05 13 | 118 | 0.2+  | 0.1+  | 2001 05 18 | 726       | 0.3-   | 0.2+  | 2001 05 24 | 604 | 0.9+  | 0.0   |
| 2001 05 13 | 113 | 0.3+  | 0.0   | 2001 05 18 | 178(21.8+ | 4.5+)  |       | 2001 05 24 | 604 | (1.3- | 1.5-) |
| 2001 05 13 | 118 | 0.1+  | 0.2+  | 2001 05 18 | 178(15.1- | 13.7-) |       | 2001 05 24 | 557 | 0.3-  | 0.3-  |
| 2001 05 13 | 113 | 0.0   | 0.1+  | 2001 05 18 | 178       | (7.9+  | 6.9+) | 2001 05 24 | 557 | 0.2-  | 0.4-  |
| 2001 05 13 | 118 | 0.1-  | 0.2+  | 2001 05 18 | 178       | (9.7+  | 7.0+) | 2001 05 24 | 557 | 0.3-  | 0.3-  |
| 2001 05 13 | 113 | 0.1+  | 0.2+  | 2001 05 18 | 178       | (9.8+  | 7.2+) | 2001 05 25 | 557 | 0.2-  | 0.2-  |
| 2001 05 13 | 113 | 0.5-  | 0.1+  | 2001 05 19 | 104       | (2.0-  | 0.9-) | 2001 05 25 | 557 | 0.1-  | 0.2-  |
| 2001 05 13 | 113 | 0.9-  | 0.3-  | 2001 05 19 | 104       | 0.4-   | 0.2-  | 2001 05 25 | 726 | 0.1+  | 0.4-  |
| 2001 05 13 | 113 | 0.5-  | 0.1-  | 2001 05 19 | 104       | 0.8-   | 0.3-  | 2001 05 25 | 726 | 0.5+  | 0.3+  |
| 2001 05 13 | 113 | 0.7-  | 0.0   | 2001 05 19 | 151       | 0.0    | 0.6-  | 2001 05 25 | 726 | 1.0+  | 1.1-  |
| 2001 05 13 | 113 | 0.1-  | 0.1-  | 2001 05 19 | 151       | 0.2-   | 0.1-  | 2001 05 25 | 726 | 0.8-  | 1.4-  |
| 2001 05 13 | 739 | 1.1+  | 0.4+  | 2001 05 19 | 151       | 0.2+   | 0.3-  | 2001 05 25 | 726 | 0.5-  | 0.9-  |
| 2001 05 13 | 739 | (1.7+ | 0.1-) | 2001 05 19 | 610       | 0.4+   | 0.0   | 2001 05 25 | 726 | 0.6-  | 0.9-  |
| 2001 05 13 | 649 | 0.6+  | 0.3-  | 2001 05 19 | 118       | 0.0    | 0.1+  | 2001 05 25 | 739 | 0.1-  | 0.1+  |
| 2001 05 13 | 649 | 0.3-  | 0.0   | 2001 05 19 | 151       | 0.1+   | 0.1-  | 2001 05 25 | 739 | 0.7+  | 0.1+  |

|                |       |       |                |      |      |                |       |       |                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|------|------|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 2001 05 13 649 | 0.2+  | 0.2-  | 2001 05 19 610 | 0.4+ | 0.1+ | 2001 05 25 739 | 0.7+  | 0.2+  | 2001 05 14 726 | 0.4-  | 0.3-  | 2001 05 21 196 | 0.2-  | 0.2+  | 2001 05 31 704 | 0.3-  | 0.5+  |
| 2001 05 13 649 | 0.0   | 0.1+  | 2001 05 19 151 | 0.1- | 0.4- | 2001 05 25 608 | 0.6-  | 0.7-  | 2001 05 14 739 | 0.4+  | 0.5+  | 2001 05 21 557 | 0.3-  | 0.1-  | 2001 05 31 704 | 0.4-  | 0.0   |
| 2001 05 13 644 | 0.2-  | 0.0   | 2001 05 19 610 | 0.3+ | 0.2+ | 2001 05 25 608 | 0.5-  | 0.8-  | 2001 05 14 726 | 0.8-  | 0.0   | 2001 05 21 196 | 0.4-  | 0.3+  | 2001 06 01 118 | 0.1-  | 0.5-  |
| 2001 05 13 644 | 0.2-  | 0.3+  | 2001 05 19 560 | 1.3+ | 0.2+ | 2001 05 25 608 | 0.6-  | 0.6-  | 2001 05 14 726 | 0.5-  | 0.5-  | 2001 05 21 196 | 0.1+  | 0.2+  | 2001 06 01 118 | 0.0   | 0.7-  |
| 2001 05 13 644 | 0.4-  | 0.1-  | 2001 05 19 118 | 0.3- | 0.2- | 2001 05 25 903 | 0.9-  | 1.0-  | 2001 05 14 726 | 0.6-  | 0.5-  | 2001 05 21 557 | 0.1-  | 0.0   | 2001 06 02 340 | (0.2+ | 1.9-) |
| 2001 05 13 608 | 0.3+  | 0.6-  | 2001 05 19 151 | 0.2- | 0.4- | 2001 05 25 903 | 1.0-  | 1.3-  | 2001 05 14 726 | 0.4-  | 0.0   | 2001 05 21 196 | 0.1+  | 0.7+  | 2001 06 02 340 | 0.8+  | 0.8+  |
| 2001 05 13 608 | 0.1+  | 0.6-  | 2001 05 19 610 | 0.1+ | 0.2+ | 2001 05 25 360 | 0.4-  | 0.2+  | 2001 05 14 726 | 0.6-  | 0.1-  | 2001 05 21 557 | 0.0   | 0.2+  | 2001 06 03 704 | 1.0+  | 0.1-  |
| 2001 05 13 608 | 0.4+  | 0.5-  | 2001 05 19 560 | 0.7+ | 0.4+ | 2001 05 25 360 | 0.5-  | 0.2+  | 2001 05 14 926 | 0.2-  | 0.3-  | 2001 05 21 557 | 0.1-  | 0.3+  | 2001 06 03 704 | 0.3-  | 0.3+  |
| 2001 05 13 402 | (1.3+ | 1.9+) | 2001 05 19 610 | 0.1+ | 0.3+ | 2001 05 25 360 | 0.5-  | 0.1+  | 2001 05 14 926 | 0.6-  | 0.2+  | 2001 05 22 557 | 0.4+  | 0.0   | 2001 06 03 704 | 0.3+  | 0.3+  |
| 2001 05 13 402 | (1.2+ | 1.8+) | 2001 05 19 610 | 0.1+ | 0.4+ | 2001 05 25 636 | 0.7-  | 0.2+  | 2001 05 14 926 | 0.4-  | 0.0   | 2001 05 22 739 | 0.3-  | 0.1-  | 2001 06 03 704 | 0.6+  | 0.6+  |
| 2001 05 13 402 | (1.1+ | 1.6+) | 2001 05 19 587 | 0.3+ | 1.1+ | 2001 05 25 636 | 0.3-  | 0.3-  | 2001 05 14 926 | 0.8-  | 0.7-  | 2001 05 22 739 | 0.2+  | 0.1-  | 2001 06 03 704 | 0.3-  | 0.8+  |
| 2001 05 13 046 | 0.0   | 0.4+  | 2001 05 19 610 | 0.1+ | 0.5+ | 2001 05 25 636 | 0.1-  | 0.4+  | 2001 05 14 926 | 0.0   | 0.4+  | 2001 05 22 739 | 0.4+  | 0.0   | 2001 06 04 670 | 0.9+  | 0.2+  |
| 2001 05 13 046 | 0.2-  | 0.0   | 2001 05 19 587 | 0.3- | 0.5+ | 2001 05 25 636 | 0.5+  | 0.3+  | 2001 05 14 926 | 0.9+  | 0.9+  | 2001 05 22 557 | 0.3-  | 0.2-  | 2001 06 04 670 | 0.6-  | 0.2+  |
| 2001 05 13 046 | 0.0   | 0.3+  | 2001 05 19 610 | 0.1- | 0.6+ | 2001 05 25 196 | 0.8-  | 0.1+  | 2001 05 14 649 | 0.3-  | 0.0   | 2001 05 22 557 | 0.4-  | 0.2-  | 2001 06 04 560 | (1.6+ | 1.0+) |
| 2001 05 13 046 | 0.1+  | 0.2+  | 2001 05 19 587 | 0.2+ | 0.3+ | 2001 05 25 113 | 0.3-  | 0.0   | 2001 05 14 649 | 0.1+  | 0.1+  | 2001 05 22 557 | 0.5-  | 0.1-  | 2001 06 04 560 | (2.4+ | 0.4-) |
| 2001 05 13 046 | 0.0   | 0.2+  | 2001 05 19 610 | 0.1- | 0.7+ | 2001 05 25 145 | 0.0   | 0.4-  | 2001 05 14 649 | 0.2-  | 0.8+  | 2001 05 22 557 | 0.3-  | 0.1-  | 2001 06 04 560 | (1.9+ | 0.2+) |
| 2001 05 13 151 | 0.2-  | 0.3+  | 2001 05 19 560 | 1.1+ | 0.5+ | 2001 05 25 113 | 0.2-  | 0.1+  | 2001 05 14 649 | 0.8-  | 0.3+  | 2001 05 22 557 | 0.2-  | 0.2-  | 2001 06 04 560 | (3.6+ | 0.4+) |
| 2001 05 13 151 | 0.0   | 0.0   | 2001 05 19 560 | 0.5+ | 0.6+ | 2001 05 25 113 | 0.4-  | 0.0   | 2001 05 14 608 | 0.2-  | 0.5-  | 2001 05 22 557 | 0.0   | 0.2+  | 2001 06 07 360 | 0.1-  | 0.0   |
| 2001 05 13 557 | 0.1-  | 0.0   | 2001 05 19 196 | 0.4+ | 0.7+ | 2001 05 25 113 | 0.1-  | 0.1+  | 2001 05 14 608 | 1.4+  | 0.3+  | 2001 05 23 557 | 0.1-  | 0.2-  | 2001 06 07 360 | 0.4-  | 0.0   |
| 2001 05 13 151 | 0.0   | 0.2+  | 2001 05 19 196 | 0.2+ | 0.4+ | 2001 05 25 145 | 0.3+  | 0.1-  | 2001 05 14 608 | 1.1+  | 0.5+  | 2001 05 23 306 | 0.1-  | 0.5-  | 2001 06 07 360 | 0.1-  | 0.2-  |
| 2001 05 13 629 | 0.6+  | 0.4+  | 2001 05 19 196 | 0.4+ | 0.0  | 2001 05 25 113 | 0.1-  | 0.2+  | 2001 05 14 428 | 0.0   | 0.0   | 2001 05 23 306 | 0.8-  | 0.3+  | 2001 06 07 118 | 0.4-  | 0.5+  |
| 2001 05 13 629 | 0.5-  | 0.2-  | 2001 05 19 196 | 0.2- | 0.4+ | 2001 05 25 145 | 0.2-  | 0.1-  | 2001 05 14 428 | 0.3-  | 0.2+  | 2001 05 23 306 | (3.0- | 1.6-) | 2001 06 07 118 | 0.6-  | 0.4-  |
| 2001 05 13 151 | 0.1+  | 0.3+  | 2001 05 19 196 | 0.5+ | 0.8+ | 2001 05 25 196 | 0.4-  | 0.1-  | 2001 05 14 428 | 0.3-  | 0.0   | 2001 05 23 557 | 0.2-  | 0.1-  | 2001 06 07 118 | 0.4-  | 0.3+  |
| 2001 05 13 629 | 0.7+  | 0.6+  | 2001 05 19 196 | 0.4- | 0.0  | 2001 05 25 145 | 0.0   | 0.1-  | 2001 05 14 428 | 0.2-  | 0.1+  | 2001 05 23 306 | (1.6- | 1.9-) | 2001 06 11 670 | 0.6+  | 1.0+  |
| 2001 05 13 629 | 0.7+  | 0.0   | 2001 05 19 557 | 0.1+ | 0.1- | 2001 05 25 145 | 0.1+  | 0.2+  | 2001 05 14 428 | 0.3-  | 0.3+  | 2001 05 23 306 | (2.3+ | 2.5-) | 2001 06 11 670 | 0.3-  | 0.4-  |
| 2001 05 13 629 | 0.4-  | 0.5+  | 2001 05 19 557 | 0.0  | 0.0  | 2001 05 25 145 | 0.5+  | 0.1+  | 2001 05 14 322 | 0.1-  | 0.1+  | 2001 05 23 610 | 0.1+  | 0.2-  | 2001 06 11 560 | 1.3+  | 0.7-  |
| 2001 05 13 151 | 0.0   | 0.3+  | 2001 05 19 557 | 0.2+ | 0.1- | 2001 05 25 145 | 0.3-  | 0.2+  | 2001 05 14 322 | 0.0   | 0.4+  | 2001 05 23 610 | 0.0   | 0.3-  | 2001 06 11 560 | (2.1+ | 0.2+) |
| 2001 05 13 557 | 0.3-  | 0.0   | 2001 05 19 636 | 0.6- | 0.1+ | 2001 05 26 939 | 0.5+  | 0.7-  | 2001 05 14 322 | 0.0   | 0.0   | 2001 05 23 610 | 0.0   | 0.3-  | 2001 06 11 560 | 1.0+  | 1.0-  |
| 2001 05 13 151 | 0.2-  | 0.1+  | 2001 05 19 557 | 0.2- | 0.1- | 2001 05 26 939 | 0.5+  | 1.2-  | 2001 05 14 322 | 0.0   | 0.1-  | 2001 05 23 610 | 0.0   | 0.3-  | 2001 06 13 118 | 0.2-  | 0.2+  |
| 2001 05 13 151 | 0.1-  | 0.4+  | 2001 05 19 636 | 0.0  | 0.2+ | 2001 05 26 939 | 0.5-  | 0.3-  | 2001 05 15 670 | 0.1-  | 0.1+  | 2001 05 23 610 | 0.0   | 0.4-  | 2001 06 13 118 | 0.7-  | 0.4-  |
| 2001 05 13 151 | 0.1-  | 0.0   | 2001 05 19 636 | 0.3- | 0.2+ | 2001 05 26 682 | 1.2+  | 0.5+  | 2001 05 15 670 | 0.2+  | 0.6+  | 2001 05 23 557 | 0.2-  | 0.1-  | 2001 06 20 493 | 0.1+  | 0.1-  |
| 2001 05 13 165 | 0.4+  | 0.2-  | 2001 05 19 611 | 0.3- | 0.2+ | 2001 05 26 682 | (2.7+ | 1.6+) | 2001 05 15 151 | 0.0   | 0.1+  | 2001 05 23 610 | 0.0   | 0.4-  | 2001 06 20 493 | 0.0   | 0.0   |
| 2001 05 13 151 | 0.2-  | 0.1+  | 2001 05 19 611 | 0.3- | 0.0  | 2001 05 26 682 | 0.6-  | 0.2-  | 2001 05 15 151 | 0.2-  | 0.0   | 2001 05 23 610 | 0.1-  | 0.4-  | 2001 06 25 587 | 0.2-  | 0.4+  |
| 2001 05 13 165 | 0.7+  | 0.6+  | 2001 05 19 611 | 0.0  | 0.1+ | 2001 05 26 682 | 0.2-  | 0.1+  | 2001 05 15 151 | 0.1+  | 0.1-  | 2001 05 23 610 | 0.0   | 0.5-  | 2001 06 25 587 | 0.3+  | 1.3+  |
| 2001 05 13 165 | 0.1+  | 0.4+  | 2001 05 19 557 | 0.0  | 0.1+ | 2001 05 26 952 | 0.5-  | 0.5-  | 2001 05 15 151 | 0.0   | 0.2-  | 2001 05 23 610 | 0.0   | 0.6-  | 2001 06 30 644 | 0.3-  | 0.2+  |
| 2001 05 13 151 | 0.1-  | 0.0   | 2001 05 20 557 | 0.3- | 0.1- | 2001 05 26 952 | 0.3+  | 0.2-  | 2001 05 15 151 | 0.0   | 0.2-  | 2001 05 23 610 | 0.1+  | 0.5-  | 2001 06 30 644 | 0.2-  | 0.2+  |
| 2001 05 13 165 | 0.7+  | 0.2+  | 2001 05 20 349 | 0.8+ | 0.2- | 2001 05 26 952 | 0.7+  | 0.2-  | 2001 05 15 151 | 0.1-  | 0.2-  | 2001 05 23 560 | 1.2+  | 0.5-  | 2001 06 30 644 | 0.0   | 0.2+  |
| 2001 05 13 611 | 0.1+  | 0.3-  | 2001 05 20 349 | 0.8+ | 0.2- | 2001 05 27 682 | (3.4+ | 0.0 ) | 2001 05 16 739 | 0.5+  | 0.6+  | 2001 05 23 610 | 0.0   | 0.6-  | 2003 07 31 568 | 0.0   | 0.1+  |
| 2001 05 13 611 | 0.8-  | 0.8-  | 2001 05 20 349 | 0.6+ | 0.5- | 2001 05 27 739 | (2.6+ | 0.3-) | 2001 05 16 739 | 1.4+  | 0.8-  | 2001 05 23 610 | 0.1+  | 0.6-  | 2003 07 31 568 | 0.0   | 0.0   |
| 2001 05 13 611 | 0.4+  | 0.5-  | 2001 05 20 349 | 0.0  | 0.9- | 2001 05 27 682 | (2.8+ | 0.8+) | 2001 05 16 739 | 0.2+  | 0.8+  | 2001 05 23 560 | (1.9+ | 0.5-) | 2003 08 22 540 | 0.2+  | 0.9+  |
| 2001 05 13 104 | 0.1+  | 0.2+  | 2001 05 20 557 | 0.2+ | 0.2- | 2001 05 27 739 | 1.1+  | 0.2-  | 2001 05 16 739 | (2.4- | 1.1+) | 2001 05 23 151 | 0.2-  | 0.6-  | 2003 08 23 540 | 0.5+  | 0.9+  |
| 2001 05 13 104 | 0.2+  | 0.1+  | 2001 05 20 611 | 0.3+ | 0.7- | 2001 05 27 739 | 0.1+  | 0.1-  | 2001 05 16 739 | 0.3+  | 0.4+  | 2001 05 23 610 | 0.1+  | 0.5-  | 2003 08 23 540 | 0.7-  | 0.8+  |
| 2001 05 13 104 | 0.2+  | 0.0   | 2001 05 20 611 | 0.7- | 0.1+ | 2001 05 27 739 | 1.1+  | 0.6-  | 2001 05 16 739 | 0.6+  | 0.4+  | 2001 05 23 151 | 0.2+  | 0.6-  | 2005 09 25 291 | 0.6+  | 0.6+  |
| 2001 05 13 157 | 0.0   | 0.3+  | 2001 05 20 611 | 0.3+ | 0.5- | 2001 05 27 682 | (3.1- | 0.1-) | 2001 05 16 739 | 1.1+  | 0.4+  | 2001 05 23 560 | 0.8+  | 0.5+  | 2005 09 25 291 | 0.1+  | 0.2+  |
| 2001 05 13 611 | 0.4+  | 0.2-  | 2001 05 20 557 | 0.0  | 0.3- | 2001 05 27 682 | 0.1+  | 0.2+  | 2001 05 16 739 | 0.6+  | 0.5+  | 2001 05 23 151 | 0.1-  | 0.6-  | 2005 09 25 291 | 0.5+  | 1.0+  |
| 2001 05 13 611 | 0.1+  | 0.4-  | 2001 05 20 196 | 0.6+ | 0.4+ | 2001 05 27 145 | 0.2+  | 0.5+  | 2001 05 16 610 | 0.6+  | 0.2-  | 2001 05 23 610 | 0.1+  | 0.6-  | 2007 10 05 291 | 0.1-  | 0.5+  |
| 2001 05 13 611 | 0.3+  | 0.2-  | 2001 05 20 636 | 0.2+ | 0.1+ | 2001 05 27 145 | 0.4+  | 1.0+  | 2001 05 16 610 | 0.1-  | 0.1-  | 2001 05 23 151 | 0.0   | 0.6-  | 2007 10 05 291 | 0.3+  | 0.7+  |
| 2001 05 13 118 | 0.2-  | 0.3+  | 2001 05 20 557 | 0.1+ | 0.3- | 2001 05 27 145 | 0.6+  | 0.6+  | 2001 05 16 610 | 0.1-  | 0.1-  | 2001 05 23 560 | (1.8+ | 0.1+) | 2007 10 05 291 | 0.7+  | 0.0   |
| 2001 05 13 157 | 0.1-  | 0.5+  | 2001 05 20 636 | 0.3+ | 0.1+ | 2001 05 28 402 | 0.3+  | 0.2-  | 2001 05 16 610 | 0.4-  | 0.0   | 2001 05 23 557 | 0.1-  | 0.0   | 2007 11 17 291 | 0.1-  | 0.1-  |
| 2001 05 13 118 | 0.1-  | 0.2+  | 2001 05 20 196 | 0.0  | 0.3+ | 2001 05 28 402 | 0.1+  | 0.4-  | 2001 05 16 610 | 0.4-  | 0.1+  | 2001 05 23 604 | 0.2+  | 0.2+  | 2007 11 17 291 | 0.1-  | 0.0   |
| 2001 05 13 118 | 0.1-  | 0.1+  | 2001 05 20 636 | 0.3+ | 0.2+ | 2001 05 28 402 | 0.3-  | 0.5-  | 2001 05 16 610 | 0.5-  | 0.1+  | 2001 05 23 196 | 0.1+  | 0.9+  | 2007 11 17 291 | 0.3-  | 0.1+  |
| 2001 05 13 157 | 0.3-  | 0.4+  | 2001 05 20 196 | 1.2+ | 0.8+ | 2001 05 28 903 | (1.6- | 1.0-) | 2001 05 16 610 | 0.5-  | 0.2+  | 2001 05 23 557 | 0.2-  | 0.1-  | 2007 12 05 703 | 0.1+  | 0.5+  |
| 2001 05 13 557 | 0.1-  | 0.0   | 2001 05 20 557 | 0.2+ | 0.3- | 2001 05 28 903 | 0.3+  | 0.1-  | 2001 05 16 610 | 0.5-  | 0.5+  | 2001 05 23 557 | 0.2-  | 0.1-  | 2007 12 05 703 | 0.1-  | 0.6+  |
| 2001 05 13 557 | 0.3-  | 0.1+  | 2001 05 20 118 | 0.0  | 0.2- | 2001 05 28 903 | 0.3+  | 0.9-  | 2001 05 16 610 | 0.5-  | 0.6+  | 2001 05 23 604 | (2.2+ | 0.2+) | 2007 12 05 703 | 0.1-  | 0.6+  |
| 2001 05 13 595 | 0.1-  | 0.0   | 2001 05 20 118 | 0.3+ | 0.2- | 2001 05 29 118 | 0.0   | 0.2-  | 2001 05 16 610 | 0.5-  | 0.7+  | 2001 05 23 557 | 0.3-  | 0.1-  | 2007 12 05 703 | 0.9-  | 0.7-  |
| 2001 05 13 595 | 0.3-  | 0.0   | 2001 05 20 118 | 0.2+ | 0.2- | 2001 05 29 118 | 0.1+  | 0.2-  | 2001 05 16 196 | 0.4+  | 0.4-  | 2001 05 23 196 | 0.4+  | 0.4-  | 2007 12 05 703 | 0.0   | 0.1-  |
| 2001 05 13 540 | 0.1-  | 0.1+  | 2001 05 20 196 | 1.0+ | 0.2- | 2001 05 29 118 | 0.1+  | 0.2-  | 2001 05 17 349 | 0.1+  | 0.1-  | 2001 05 23 557 | 0.1-  | 0.3-  |                |       |       |
| 2001 05 13 540 |       |       |                |      |      |                |       |       |                |       |       |                |       |       |                |       |       |



Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 04 17 | 691 | 0.1–  | 0.1–  | 2003 12 27 | 704 | (3.5+ | 0.9–) | 2005 06 15 | G96 | 0.5– | 0.1+ |
| 2001 04 17 | 691 | 0.0   | 0.1–  | 2003 12 27 | 704 | (3.7+ | 0.8–) | 2005 06 15 | G96 | 0.5– | 0.0  |
| 2001 04 17 | 691 | 0.0   | 0.2+  | 2003 12 27 | 704 | (3.8+ | 0.9–) | 2005 06 15 | G96 | 0.9– | 0.1+ |
| 2001 05 15 | 699 | 0.6–  | 0.5+  | 2005 04 02 | 699 | 1.1+  | 0.2–  | 2005 06 15 | G96 | 0.4– | 0.2+ |
| 2001 05 15 | 699 | 0.4+  | 0.9+  | 2005 04 02 | 691 | 0.2+  | 0.1–  | 2006 08 16 | E12 | 0.2+ | 0.7+ |
| 2001 05 15 | 699 | 0.1+  | 0.3+  | 2005 04 02 | 699 | 0.2+  | 0.5+  | 2006 08 16 | E12 | 0.6+ | 0.1– |
| 2001 05 15 | 699 | 0.2–  | 0.8+  | 2005 04 02 | 691 | 0.2+  | 0.1+  | 2006 08 16 | E12 | 1.0+ | 0.7+ |
| 2001 05 18 | 704 | 0.3+  | 0.3+  | 2005 04 02 | 699 | 0.3+  | 0.9+  | 2006 08 16 | E12 | 0.6– | 0.2+ |
| 2001 05 18 | 704 | 0.0   | 0.0   | 2005 04 02 | 691 | 0.1+  | 0.1+  | 2006 08 17 | 644 | 0.3– | 0.6+ |
| 2001 05 18 | 704 | 0.1+  | 0.4–  | 2005 04 02 | 699 | 0.4–  | 0.2–  | 2006 08 17 | 644 | 0.1– | 0.4+ |
| 2001 05 18 | 704 | 0.7+  | 0.5+  | 2005 04 12 | 691 | 0.1+  | 0.1+  | 2006 08 17 | 644 | 0.3– | 0.8+ |
| 2001 05 18 | 704 | 0.2+  | 0.3+  | 2005 04 12 | 691 | 0.3+  | 0.0   | 2006 08 20 | 644 | 0.2– | 0.6+ |
| 2001 05 27 | 608 | 0.1+  | 0.5+  | 2005 04 12 | 691 | 0.3+  | 0.2–  | 2006 08 20 | 644 | 0.3– | 0.6+ |
| 2001 05 27 | 608 | 0.7+  | 1.2+  | 2005 04 15 | 691 | 0.6–  | 0.8+  | 2006 08 20 | 644 | 0.3+ | 0.3+ |
| 2001 05 27 | 608 | 0.0   | 1.0+  | 2005 04 15 | 691 | 0.2+  | 0.1+  | 2007 11 18 | 691 | 0.3– | 0.6– |
| 2002 08 30 | 644 | 0.7–  | 0.5+  | 2005 04 15 | 691 | 0.1+  | 0.0   | 2007 11 18 | 691 | 1.0– | 0.2+ |
| 2002 08 30 | 644 | 0.7–  | 0.1+  | 2005 05 02 | 691 | 0.1+  | 0.1–  | 2007 11 18 | 691 | 0.4– | 0.4+ |
| 2002 08 30 | 644 | 0.6–  | 0.5+  | 2005 05 02 | 691 | 0.2+  | 0.2–  | 2007 12 05 | 704 | 0.5+ | 1.1+ |
| 2003 12 18 | 704 | 0.1+  | 0.1+  | 2005 05 02 | 691 | (3.6+ | 2.4–) | 2007 12 05 | 704 | 0.3+ | 0.8+ |
| 2003 12 18 | 704 | 0.4+  | 0.5+  | 2005 05 03 | 704 | 0.4–  | 0.3+  | 2007 12 05 | 704 | 0.3+ | 0.9+ |
| 2003 12 18 | 704 | 0.0   | 0.3+  | 2005 05 03 | 704 | 0.1+  | 0.5+  | 2007 12 05 | 704 | 0.4+ | 0.8+ |
| 2003 12 18 | 704 | 1.1+  | 0.1+  | 2005 05 03 | 704 | 0.2+  | 0.2+  | 2007 12 05 | 704 | 0.3+ | 0.7+ |
| 2003 12 18 | 704 | 0.1+  | 0.2–  | 2005 05 03 | 704 | (0.4– | 1.9+) | 2007 12 05 | G96 | 0.1– | 0.1+ |
| 2003 12 21 | 704 | 0.3+  | 0.4+  | 2005 05 03 | 704 | 0.0   | 0.3+  | 2007 12 05 | G96 | 0.1– | 0.3+ |
| 2003 12 21 | 704 | 0.4+  | 0.4–  | 2005 05 07 | 703 | 0.4–  | 0.1–  | 2007 12 05 | G96 | 0.1– | 0.2+ |
| 2003 12 21 | 704 | 0.2–  | 0.6+  | 2005 05 07 | 703 | 0.5+  | 0.5–  | 2007 12 05 | G96 | 0.1– | 0.3+ |
| 2003 12 22 | 704 | 0.1+  | 0.2+  | 2005 05 07 | 703 | 0.2–  | 1.2–  | 2007 12 14 | 704 | 0.1+ | 0.4+ |
| 2003 12 22 | 704 | 0.1+  | 0.8+  | 2005 05 07 | 703 | 1.1–  | 0.2+  | 2007 12 14 | 704 | 0.3+ | 0.0  |
| 2003 12 22 | 704 | 0.0   | 0.0   | 2005 05 14 | 644 | 0.0   | 0.1–  | 2007 12 14 | 704 | 0.1– | 1.3+ |
| 2003 12 22 | 704 | 0.3–  | 0.1+  | 2005 05 14 | 644 | 0.2–  | 0.1–  | 2007 12 14 | 704 | 1.2+ | 0.3– |
| 2003 12 27 | 704 | (3.5+ | 1.2–) | 2005 05 14 | 644 | 0.0   | 0.3–  |            |     |      |      |

(171841)\* 2001 JK<sub>10</sub> = 2005 GN<sub>216</sub> = 2007 UT<sub>51</sub>

Discovered 2001 May 15 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (MPO 127888)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 130.68414  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22224375 | $\omega$ | 207.58153 | –0.04150759 | +0.97995745 |
| <i>a</i> | 2.6992908  | $\Omega$ | 60.62518  | –0.87057988 | +0.06021449 |
| <i>e</i> | 0.1520879  | <i>i</i> | 12.91942  | –0.49027318 | –0.18988841 |
| <i>P</i> | 4.43       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 24 | 608 | 0.2–  | 0.0   | 2005 04 10 | 703 | 0.1+ | 0.8+ | 2007 11 03 | 691 | 0.4+ | 0.1– |
| 2001 04 24 | 608 | 0.2–  | 0.3+  | 2006 07 26 | E12 | 0.8+ | 0.2– | 2007 11 03 | 691 | 0.1+ | 0.0  |
| 2001 04 24 | 608 | 0.0   | 0.4+  | 2006 07 26 | E12 | 0.2– | 0.4+ | 2007 11 03 | 691 | 0.2– | 0.2+ |
| 2001 05 15 | 699 | 0.8+  | 1.0+  | 2006 07 26 | E12 | 0.4– | 0.0  | 2007 11 03 | 691 | 0.1– | 0.2+ |
| 2001 05 15 | 699 | 0.7–  | 0.7+  | 2006 08 26 | E12 | 0.5– | 0.3+ | 2007 11 03 | 691 | 0.2+ | 0.2+ |
| 2001 05 15 | 699 | 1.4+  | 0.8+  | 2006 08 26 | E12 | 0.2+ | 0.0  | 2007 11 14 | 704 | 0.0  | 0.2– |
| 2001 05 15 | 699 | 0.6+  | 0.1+  | 2006 08 26 | E12 | 0.7– | 1.5+ | 2007 11 14 | 704 | 0.4– | 0.7– |
| 2001 05 18 | 704 | 0.2+  | 0.1+  | 2006 08 26 | E12 | 0.0  | 0.8+ | 2007 11 14 | 704 | 0.2+ | 0.7+ |
| 2001 05 18 | 704 | (0.5– | 2.1+) | 2007 10 08 | 691 | 0.1– | 0.3– | 2007 11 14 | 704 | 0.2+ | 0.5+ |
| 2001 05 18 | 704 | 0.0   | 0.8+  | 2007 10 08 | 691 | 0.3– | 0.1– | 2007 11 18 | 691 | 0.3– | 0.7+ |
| 2001 05 18 | 704 | 1.1+  | 0.9+  | 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.3– | 0.2+ |
| 2005 04 01 | 703 | 0.0   | 0.4–  | 2007 10 23 | 291 | 0.4– | 0.1– | 2007 11 18 | 691 | 0.1– | 0.3+ |
| 2005 04 01 | 703 | (2.0– | 0.4+) | 2007 10 23 | 291 | 0.6– | 0.1– | 2007 12 04 | 691 | 0.2+ | 0.0  |
| 2005 04 01 | 703 | 0.5–  | 0.5+  | 2007 10 23 | 291 | 0.5– | 0.0  | 2007 12 04 | 691 | 0.2+ | 0.1+ |
| 2005 04 01 | 703 | (1.2– | 2.0–) | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.1– | 0.2+ |
| 2005 04 10 | 703 | 0.6+  | 0.6+  | 2007 10 30 | 691 | 0.4+ | 0.1– | 2007 12 06 | 691 | 0.5– | 0.1+ |
| 2005 04 10 | 703 | 0.4–  | 0.3+  | 2007 10 30 | 691 | 0.0  | 0.3+ | 2007 12 06 | 691 | 0.1+ | 0.0  |
| 2005 04 10 | 703 | 1.1+  | 0.4+  | 2007 11 03 | 691 | 0.4+ | 0.1+ | 2007 12 06 | 691 | 0.3+ | 0.2– |

(171842)\* 2001 KD<sub>10</sub> = 2005 GZ<sub>20</sub>

Discovered 2001 May 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 84684)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 178.67034  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22489498 | $\omega$ | 0.25060   | –0.66760340 | +0.72504098 |
| <i>a</i> | 2.6780348  | $\Omega$ | 227.87362 | –0.68347732 | –0.68694547 |
| <i>e</i> | 0.1470518  | <i>i</i> | 13.18555  | –0.29523627 | –0.04920866 |
| <i>P</i> | 4.38       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 18 | 704 | 0.1– | 0.8+ | 2005 04 04 | 704 | 0.3–  | 0.2+  | 2007 10 31 | 691 | 0.3– | 0.1+ |
| 2001 05 18 | 704 | 0.2+ | 0.5+ | 2005 04 04 | 704 | 0.9+  | 0.1–  | 2007 10 31 | 691 | 0.4– | 0.5+ |
| 2001 05 18 | 704 | 0.5+ | 0.9+ | 2005 04 04 | 704 | 0.6+  | 0.9+  | 2007 11 03 | G96 | 0.5+ | 0.0  |
| 2001 05 18 | 704 | 0.0  | 1.3+ | 2005 04 15 | 699 | 0.5–  | 0.2–  | 2007 11 03 | G96 | 0.4+ | 0.2– |
| 2001 05 21 | 704 | 0.2– | 0.1+ | 2005 04 15 | 699 | (2.3+ | 1.6–) | 2007 11 03 | G96 | 0.3– | 0.2+ |
| 2001 05 21 | 704 | 0.1+ | 0.8+ | 2005 04 15 | 699 | 0.1+  | 0.1+  | 2007 11 03 | G96 | 0.7+ | 0.0  |
| 2001 05 21 | 704 | 0.8– | 0.4+ | 2005 04 15 | 699 | 0.9+  | 0.2+  | 2007 11 04 | 691 | 0.2+ | 0.6+ |
| 2001 05 21 | 704 | 0.3– | 0.8+ | 2005 04 15 | 703 | 0.9–  | 1.5+  | 2007 11 04 | 691 | 0.2+ | 0.1+ |
| 2001 05 21 | 704 | 0.5– | 1.4+ | 2005 04 15 | 703 | 1.3–  | 1.0+  | 2007 11 04 | 691 | 0.7+ | 0.3+ |
| 2001 05 25 | 704 | 0.5– | 0.0  | 2005 04 15 | 703 | 0.2+  | 0.8+  | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2001 05 25 | 704 | 0.3+ | 0.2+ | 2005 04 15 | 703 | 0.8–  | 0.6+  | 2007 11 05 | G96 | 0.2+ | 0.2– |
| 2001 05 25 | 704 | 0.5+ | 0.3+ | 2006 08 27 | 691 | 0.1–  | 0.1+  | 2007 11 05 | G96 | 0.4+ | 0.3– |
| 2001 05 25 | 704 | 0.6– | 1.2+ | 2006 08 27 | 691 | 0.1–  | 0.4+  | 2007 11 05 | G96 | 0.7+ | 0.1– |
| 2001 05 25 | 704 | 0.3+ | 0.4+ | 2006 08 27 | 691 | 0.0   | 0.3+  | 2007 11 07 | 703 | 0.5+ | 0.9+ |
| 2002 09 03 | 644 | 0.2+ | 0.3– | 2007 10 15 | 691 | 0.7–  | 0.3+  | 2007 11 07 | 703 | 0.4– | 0.4– |
| 2002 09 03 | 644 | 0.2– | 0.5– | 2007 10 15 | 691 | 0.4–  | 0.4+  | 2007 11 07 | 703 | 0.4+ | 0.0  |
| 2002 09 03 | 644 | 0.3+ | 0.0  | 2007 10 15 | 691 | 0.6–  | 0.1+  | 2007 11 07 | 703 | 0.1+ | 0.3– |
| 2002 10 05 | 704 | 0.0  | 1.3+ | 2007 10 19 | 691 | 0.0   | 0.1+  | 2007 11 14 | 704 | 0.8+ | 0.0  |
| 2002 10 05 | 704 | 0.1– | 0.5+ | 2007 10 19 | 691 | 0.5–  | 0.5+  | 2007 11 14 | 704 | 0.1+ | 0.4+ |
| 2002 10 05 | 704 | 0.7+ | 0.0  | 2007 10 19 | 691 | 0.8–  | 0.2–  | 2007 11 14 | 704 | 0.6+ | 0.7+ |
| 2005 03 02 | 704 | 0.6+ | 0.4+ | 2007 10 30 | 691 | (1.6– | 0.9–) | 2007 11 14 | 704 | 0.4+ | 0.4– |
| 2005 03 02 | 704 | 0.2– | 0.6+ | 2007 10 30 | 691 | 0.1+  | 0.2+  | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2005 03 02 | 704 | 0.5+ | 0.5+ | 2007 10 30 | 691 | 0.1–  | 0.0   | 2007 12 05 | 691 | 0.1– | 0.2– |
| 2005 04 03 | 704 | 0.6+ | 0.3– | 2007 10 30 | G96 | 0.3+  | 0.0   | 2007 12 05 | 691 | 0.0  | 0.3+ |
| 2005 04 03 | 704 | 0.3+ | 0.1+ | 2007 10 30 | G96 | 0.4+  | 0.1–  | 2007 12 05 | 704 | 0.2– | 0.6+ |
| 2005 04 03 | 704 | 1.1+ | 1.0+ | 2007 10 30 | G96 | 0.5+  | 0.2–  | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2005 04 03 | 704 | 0.5+ | 0.1– | 2007 10 30 | G96 | 0.4+  | 0.0   | 2007 12 05 | 704 | 0.4+ | 1.6+ |
| 2005 04 03 | 704 | 0.8+ | 0.5+ | 2007 10 31 | 691 | 0.0   | 0.6+  |            |     |      |      |

(171843)\* 2001 KW<sub>21</sub> = 2003 YQ<sub>161</sub>

Discovered 2001 May 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 64913)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 234.66019  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23931840 | $\omega$ | 141.49578 | –0.93258461 | +0.31344625 |
| <i>a</i> | 2.5693227  | $\Omega$ | 57.67896  | –0.36072897 | –0.79193960 |
| <i>e</i> | 0.0796393  | <i>i</i> | 12.22821  | –0.01267081 | –0.52400679 |
| <i>P</i> | 4.12       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 05 15 | 608 | 0.3+  | 0.5–  | 2005 02 09 | 691 | 0.0   | 0.5–  | 2005 05 11 | 699 | 1.1+  | 0.3–  |
| 2001 05 15 | 608 | 0.5+  | 0.3–  | 2005 02 09 | 691 | 0.6+  | 0.2+  | 2005 05 11 | 699 | 0.5–  | 0.8+  |
| 2001 05 15 | 608 | 0.2+  | 0.4–  | 2005 04 05 | 704 | (1.9+ | 1.6+) | 2005 05 11 | 699 | 1.1+  | 0.0   |
| 2001 05 17 | 704 | 0.3+  | 0.7+  | 2005 04 05 | 703 | 0.7–  | 0.6–  | 2005 06 01 | 699 | 1.0–  | 0.4+  |
| 2001 05 17 | 704 | 0.2–  | 0.1+  | 2005 04 05 | 703 | 0.2–  | 0.9–  | 2005 06 01 | 699 | 0.1–  | 0.4–  |
| 2001 05 17 | 704 | 0.2+  | 0.1–  | 2005 04 05 | 704 | (1.9+ | 0.1+) | 2005 06 01 | 699 | 0.5+  | 0.6+  |
| 2001 05 17 | 704 | 0.1+  | 0.2+  | 2005 04 05 | 703 | (2.0– | 1.0–) | 2005 06 01 | 699 | 1.0–  | 0.1–  |
| 2001 05 17 | 704 | 0.4–  | 1.2+  | 2005 04 05 | 703 | 0.0   | 0.4–  | 2005 06 04 | 703 | 0.4+  | 0.4+  |
| 2001 05 21 | 704 | (0.5– | 1.8+) | 2005 04 05 | 704 | 1.1+  | 0.1+  | 2005 06 04 | 703 | 1.0–  | 0.7+  |
| 2001 05 21 | 704 | 0.4–  | 0.1–  | 2005 04 05 | 704 | 0.2+  | 0.4+  | 2005 06 04 | 703 | (0.9– | 1.6+) |
| 2001 05 21 | 704 | 0.1–  | 0.4–  | 2005 04 13 | 699 | 1.0+  | 0.5+  | 2005 06 04 | 703 | 1.2–  | 0.9+  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 05 21 | 704 | 0.9+ | 1.2− | 2005 04 13 | 699 | 0.4−  | 0.0   | 2007 11 05 | 691 | 0.2−  | 0.2−  |
| 2001 05 24 | 704 | 0.3− | 0.7+ | 2005 04 13 | 699 | 0.1−  | 0.6−  | 2007 11 05 | 691 | 0.3+  | 0.7+  |
| 2001 05 24 | 704 | 0.2+ | 1.5+ | 2005 04 13 | 704 | (0.6− | 1.6+) | 2007 11 05 | 691 | 0.3−  | 0.2−  |
| 2001 05 24 | 704 | 0.1− | 0.0  | 2005 04 13 | 699 | 0.0   | 0.1+  | 2007 11 18 | G96 | 0.0   | 0.3−  |
| 2001 05 24 | 704 | 0.1− | 0.9+ | 2005 04 13 | 704 | 0.6−  | 1.1−  | 2007 11 18 | G96 | 0.3+  | 0.6−  |
| 2001 05 29 | 608 | 0.2+ | 0.4+ | 2005 04 13 | 704 | 0.5+  | 0.4−  | 2007 11 18 | G96 | 0.4−  | 0.1−  |
| 2001 05 29 | 608 | 0.6+ | 0.9+ | 2005 04 13 | 704 | (0.9+ | 2.0+) | 2007 11 18 | G96 | 0.2−  | 0.2−  |
| 2001 05 29 | 608 | 0.6+ | 0.9+ | 2005 04 15 | 691 | 0.0   | 0.2+  | 2007 11 20 | 691 | 0.1−  | 0.2+  |
| 2002 09 01 | 644 | 0.9− | 0.8+ | 2005 04 15 | 691 | 0.0   | 0.2+  | 2007 11 20 | 691 | 0.4−  | 0.1+  |
| 2002 09 01 | 644 | 0.4− | 0.6+ | 2005 04 15 | 691 | 0.2+  | 0.2+  | 2007 11 20 | 691 | 0.3−  | 0.1−  |
| 2002 09 01 | 644 | 0.0  | 1.3+ | 2005 05 03 | 704 | 0.8+  | 0.3+  | 2007 12 13 | 704 | (0.7− | 1.6+) |
| 2003 12 17 | 704 | 0.1− | 0.1+ | 2005 05 03 | 704 | (2.2− | 1.7+) | 2007 12 13 | 704 | 0.2+  | 1.1+  |
| 2003 12 17 | 704 | 0.6+ | 0.1+ | 2005 05 03 | 704 | 0.3−  | 0.2+  | 2007 12 13 | 704 | 0.4−  | 0.9+  |
| 2003 12 17 | 704 | 0.7− | 0.0  | 2005 05 03 | 704 | 0.1−  | 0.6+  | 2007 12 13 | 704 | 0.5−  | 1.1+  |
| 2003 12 17 | 704 | 0.7− | 0.2− | 2005 05 03 | 704 | 0.3+  | 0.7+  | 2007 12 13 | 704 | 0.1−  | 0.6+  |
| 2003 12 29 | 704 | 0.2− | 0.6− | 2005 05 07 | 703 | 0.4−  | 0.4−  | 2007 12 15 | 704 | 0.0   | 0.1+  |
| 2003 12 29 | 704 | 0.0  | 0.3− | 2005 05 07 | 703 | 1.0−  | 0.5−  | 2007 12 15 | 704 | 0.8+  | 0.8+  |
| 2003 12 29 | 704 | 0.6+ | 0.1− | 2005 05 07 | 703 | 0.5−  | 0.2−  | 2007 12 15 | 704 | 0.2+  | 0.7+  |
| 2003 12 29 | 704 | 0.3+ | 0.0  | 2005 05 07 | 703 | 0.6−  | 0.8−  | 2007 12 15 | 704 | 1.9+  | 2.0+  |
| 2005 02 09 | 691 | 0.0  | 0.2+ | 2005 05 11 | 699 | 1.0+  | 0.6+  |            |     |       |       |

**(171844)\* 2001 KM<sub>29</sub>**

Discovered 2001 May 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 183.02290  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.23130031 | <i>ω</i> | 350.15760 | −0.65208876 |      | +0.71644836 |   |
| <i>a</i>                                | 2.6283624  | <i>Ω</i> | 238.66625 | −0.67435199 |      | −0.69757801 |   |
| <i>e</i>                                | 0.1366162  | <i>i</i> | 16.87557  | −0.34645294 |      | +0.00930919 |   |
| <i>P</i>                                | 4.26       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 15 | 699 | 0.2+  | 0.9−  | 2003 11 18 | 691 | 0.2+ | 0.5− | 2007 10 14 | G96 | 0.5+ | 0.1− |
| 2001 05 15 | 699 | 0.2+  | 0.7−  | 2003 11 18 | 691 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.0  | 0.4+ |
| 2001 05 15 | 699 | 0.0   | 0.4+  | 2003 12 22 | 704 | 0.8+ | 0.2− | 2007 11 04 | 691 | 0.1− | 0.2+ |
| 2001 05 15 | 699 | 0.2−  | 0.6−  | 2003 12 22 | 704 | 0.3+ | 0.4+ | 2007 11 04 | 691 | 0.2+ | 0.0  |
| 2001 05 21 | 704 | 0.7−  | 0.1−  | 2003 12 22 | 704 | 0.6+ | 0.7+ | 2007 11 08 | 691 | 0.5+ | 0.2+ |
| 2001 05 21 | 704 | 0.6+  | 0.7+  | 2003 12 28 | 691 | 0.3− | 0.1− | 2007 11 08 | 691 | 0.7− | 0.4− |
| 2001 05 21 | 704 | 0.6−  | 0.6+  | 2003 12 28 | 691 | 0.3− | 0.1+ | 2007 11 08 | 691 | 0.1− | 0.2− |
| 2001 05 21 | 704 | 0.5−  | 0.3+  | 2003 12 28 | 691 | 0.3− | 0.1+ | 2007 12 06 | 691 | 0.4− | 0.0  |
| 2001 05 24 | 704 | 0.3+  | 0.8+  | 2005 03 19 | E12 | 0.0  | 0.3+ | 2007 12 06 | 691 | 0.7− | 0.5+ |
| 2001 05 24 | 704 | 0.1+  | 0.1+  | 2005 03 19 | E12 | 0.0  | 0.2− | 2007 12 06 | 691 | 0.2+ | 0.1+ |
| 2001 05 24 | 704 | 0.2+  | 1.4−  | 2005 03 19 | E12 | 0.2+ | 0.5+ | 2007 12 16 | 691 | 1.0+ | 0.5− |
| 2001 06 12 | 644 | 0.5+  | 0.8+  | 2005 03 19 | E12 | 0.1+ | 0.5+ | 2007 12 16 | 691 | 0.1− | 0.0  |
| 2001 06 12 | 644 | (0.5+ | 1.5+) | 2007 10 14 | G96 | 0.4+ | 1.2+ |            |     |      |      |
| 2001 06 12 | 644 | (1.2+ | 1.6+) | 2007 10 14 | G96 | 0.1+ | 0.1− |            |     |      |      |
| 2003 11 18 | 691 | 0.1−  | 0.4−  | 2007 10 14 | G96 | 0.4+ | 0.3+ |            |     |      |      |

**(171845)\* 2001 KV<sub>33</sub> = 2005 JH<sub>27</sub>**

Discovered 2001 May 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 74986)

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 264.70425  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.24267841 | <i>ω</i> | 55.52330  | −0.97237314 |      | −0.21810466 |   |
| <i>a</i>                                | 2.5455519  | <i>Ω</i> | 111.75487 | +0.17380158 |      | −0.91435348 |   |
| <i>e</i>                                | 0.1503520  | <i>i</i> | 5.13893   | +0.15583161 |      | −0.34115696 |   |
| <i>P</i>                                | 4.06       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 12 08 | 704 | 0.2+ | 1.4− | 2005 05 03 | 704 | 0.6+ | 0.2− | 2007 10 25 | G96 | 0.0   | 0.3−  |
| 1999 12 08 | 704 | 0.3− | 0.9− | 2005 05 03 | 704 | 0.1− | 0.1+ | 2007 11 04 | 704 | (2.0− | 0.3+) |
| 1999 12 08 | 704 | 0.5+ | 0.1− | 2005 05 03 | 704 | 0.1+ | 0.7− | 2007 11 04 | 704 | 0.0   | 0.5+  |
| 2001 05 18 | 704 | 0.3+ | 0.2+ | 2005 05 03 | 704 | 0.7+ | 0.5+ | 2007 11 04 | 704 | 0.4+  | 0.4+  |
| 2001 05 18 | 704 | 0.0  | 0.4− | 2005 05 08 | 704 | 0.7− | 0.3+ | 2007 11 04 | 704 | 0.3−  | 0.5+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 18 | 704 | 0.2+  | 0.2+  | 2005 05 08 | 704 | 0.2−  | 0.2+  | 2007 11 08 | G96 | 0.1+ | 0.0  |
| 2001 05 18 | 704 | 0.6+  | 0.4−  | 2005 05 08 | 704 | 0.2+  | 0.7−  | 2007 11 08 | G96 | 0.1− | 0.2− |
| 2001 05 18 | 704 | 0.2+  | 1.0+  | 2005 05 11 | 699 | 0.2+  | 0.1+  | 2007 11 08 | G96 | 0.2− | 0.0  |
| 2001 05 21 | 699 | 0.1−  | 0.3−  | 2005 05 11 | 699 | 0.1−  | 0.3+  | 2007 11 08 | G96 | 0.1+ | 0.2− |
| 2001 05 21 | 699 | 0.7−  | 0.3−  | 2005 05 11 | 699 | 0.6−  | 0.4+  | 2007 11 12 | 704 | 0.4− | 1.4+ |
| 2001 05 21 | 699 | 0.3+  | 0.3+  | 2005 05 11 | 699 | 0.7−  | 0.3−  | 2007 11 12 | 704 | 0.7− | 0.3+ |
| 2001 05 21 | 699 | (2.0+ | 0.5+) | 2005 05 12 | 704 | 0.3+  | 0.2+  | 2007 11 12 | 704 | 0.4− | 0.4+ |
| 2001 05 25 | 704 | 1.3−  | 0.7+  | 2005 05 12 | 704 | 0.2−  | 0.8+  | 2007 11 12 | 704 | 0.4+ | 0.8+ |
| 2001 05 25 | 704 | 0.6+  | 0.2+  | 2005 05 12 | 704 | (1.8− | 0.6−) | 2007 11 20 | 703 | 0.1− | 0.5− |
| 2001 05 25 | 704 | 0.7+  | 0.7+  | 2005 05 12 | 704 | 1.3+  | 0.2+  | 2007 11 20 | 703 | 0.6− | 0.1− |
| 2001 05 25 | 704 | 0.7+  | 0.7+  | 2005 05 31 | 699 | 1.0−  | 0.6−  | 2007 11 20 | 703 | 0.6− | 0.2+ |
| 2001 05 29 | 608 | 0.2−  | 0.4+  | 2005 05 31 | 699 | 0.4+  | 0.8+  | 2007 11 20 | 703 | 0.5− | 0.7+ |
| 2001 05 29 | 608 | 0.6−  | 0.7+  | 2005 05 31 | 699 | 0.1−  | 0.2−  | 2007 12 04 | 704 | 0.1− | 0.9+ |
| 2001 05 29 | 608 | 0.3−  | 0.8+  | 2005 05 31 | 699 | (0.5− | 2.0−) | 2007 12 04 | 704 | 0.6+ | 0.3+ |
| 2003 12 17 | 691 | 0.1−  | 0.1+  | 2007 10 24 | G96 | 0.0   | 0.4+  | 2007 12 04 | 704 | 0.2− | 0.5+ |
| 2003 12 17 | 691 | 0.1−  | 0.3+  | 2007 10 24 | G96 | 0.1−  | 0.8+  | 2007 12 04 | 704 | 0.1− | 0.4+ |
| 2003 12 17 | 691 | 0.3+  | 0.1−  | 2007 10 24 | G96 | 0.7−  | 0.1−  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2004 01 12 | 644 | 0.0   | 0.4+  | 2007 10 24 | G96 | 0.4+  | 0.4−  | 2007 12 06 | G96 | 0.2− | 0.3− |
| 2004 01 12 | 644 | 0.1+  | 0.2+  | 2007 10 25 | G96 | 0.3+  | 0.1−  | 2007 12 06 | G96 | 0.8+ | 0.1− |
| 2004 01 12 | 644 | 0.1+  | 0.3+  | 2007 10 25 | G96 | 0.5+  | 0.4−  | 2007 12 06 | G96 | 0.1− | 0.1− |
| 2005 05 03 | 704 | 0.8+  | 1.1−  | 2007 10 25 | G96 | 0.3−  | 0.1−  |            |     |      |      |

**(171846)\* 2001 KW<sub>36</sub>**

Discovered 2001 May 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 219.08755  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.23710777 | <i>ω</i> | 133.61987 | −0.84254678 |      | +0.48200187 |   |
| <i>a</i>                                | 2.5852678  | <i>Ω</i> | 76.56681  | −0.53728629 |      | −0.72067899 |   |
| <i>e</i>                                | 0.2110351  | <i>i</i> | 14.30925  | −0.03792584 |      | −0.49829307 |   |
| <i>P</i>                                | 4.16       | <i>H</i> | 15.3      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 04 23 | 704 | 0.3+  | 0.4+  | 2005 04 05 | 699 | 0.0   | 0.2+  | 2005 05 31 | 703 | 1.0−  | 0.4−  |
| 2001 04 23 | 704 | 1.1+  | 0.1−  | 2005 04 05 | 699 | 1.4−  | 0.8−  | 2005 05 31 | 703 | 0.2+  | 0.7−  |
| 2001 04 23 | 704 | (1.4+ | 1.6−) | 2005 04 05 | 699 | 0.6+  | 0.1−  | 2005 05 31 | 703 | 0.2−  | 0.8−  |
| 2001 05 21 | 704 | 0.0   | 1.1+  | 2005 04 05 | 699 | 0.3−  | 0.6−  | 2005 06 03 | 699 | 0.0   | 0.1+  |
| 2001 05 21 | 704 | 0.5+  | 0.5+  | 2005 04 08 | 704 | 0.3−  | 0.0   | 2005 06 03 | 699 | 0.0   | 0.1−  |
| 2001 05 21 | 704 | 0.2+  | 0.6+  | 2005 04 08 | 704 | 0.0   | 0.2−  | 2005 06 03 | 699 | (0.3+ | 1.9+) |
| 2001 05 21 | 704 | 0.4+  | 0.5+  | 2005 04 08 | 704 | 0.0   | 0.0   | 2005 06 03 | 699 | 0.2+  | 0.3+  |
| 2001 05 21 | 704 | 0.0   | 0.2+  | 2005 04 08 | 704 | 0.3−  | 0.3+  | 2005 06 07 | 703 | 0.3−  | 0.1+  |
| 2001 05 25 | 704 | 0.2−  | 0.9−  | 2005 04 20 | 699 | 0.1+  | 0.2−  | 2005 06 07 | 703 | 0.0   | 0.5+  |
| 2001 05 25 | 704 | 0.8+  | 0.0   | 2005 04 20 | 699 | 0.2−  | 0.4−  | 2005 06 07 | 703 | 0.3−  | 0.5+  |
| 2001 05 25 | 704 | 0.4+  | 0.4−  | 2005 04 20 | 699 | 0.6−  | 0.4+  | 2005 06 07 | 703 | 0.6−  | 0.4+  |
| 2001 05 25 | 704 | 0.8+  | 0.1−  | 2005 04 20 | 699 | 0.4+  | 0.2+  | 2005 06 08 | 699 | 0.7−  | 0.5+  |
| 2001 05 25 | 704 | 1.0+  | 1.2−  | 2005 05 02 | 608 | 0.3+  | 0.7−  | 2005 06 08 | 699 | (0.1+ | 1.9+) |
| 2001 05 28 | 704 | 0.2+  | 0.3+  | 2005 05 02 | 608 | 0.2+  | 0.7−  | 2005 06 08 | 699 | 0.9+  | 0.2+  |
| 2001 05 28 | 704 | 0.3−  | 0.4+  | 2005 05 02 | 608 | 0.3+  | 0.4−  | 2005 06 13 | 699 | (1.1+ | 2.6−) |
| 2001 05 28 | 704 | 0.4+  | 0.4+  | 2005 05 04 | 703 | 0.5−  | 0.4−  | 2005 06 13 | 699 | 0.8−  | 0.2−  |
| 2001 05 28 | 704 | 1.1+  | 0.6+  | 2005 05 04 | 703 | 0.0   | 0.3−  | 2005 06 13 | 699 | 0.4+  | 0.4−  |
| 2001 06 13 | 704 | 0.2−  | 0.4+  | 2005 05 04 | 703 | 0.5−  | 0.1+  | 2005 06 13 | 699 | 0.0   | 0.5−  |
| 2001 06 13 | 704 | 1.3−  | 1.5+  | 2005 05 04 | 703 | 1.0−  | 0.7−  | 2005 06 26 | 699 | 0.1+  | 0.2+  |
| 2001 06 13 | 704 | 0.6+  | 1.4+  | 2005 05 06 | 704 | 0.4−  | 0.2+  | 2005 06 26 | 699 | 0.7+  | 0.2+  |
| 2001 06 13 | 704 | 0.1−  | 1.4+  | 2005 05 06 | 704 | 0.1−  | 0.2+  | 2005 06 26 | 699 | (1.9+ | 0.7+) |
| 2001 06 13 | 704 | (0.6+ | 1.6+) | 2005 05 06 | 704 | 0.3+  | 0.3+  | 2005 06 26 | 699 | 0.3+  | 1.1+  |
| 2001 06 16 | 704 | 0.2−  | 0.2+  | 2005 05 06 | 704 | 0.4+  | 0.0   | 2005 07 29 | E12 | 0.6+  | 0.4−  |
| 2001 06 16 | 704 | 1.3−  | 0.1−  | 2005 05 06 | 704 | 0.1+  | 0.3+  | 2005 07 29 | E12 | 0.8+  | 0.3+  |
| 2001 06 16 | 704 | 0.2−  | 0.2−  | 2005 05 11 | 704 | (2.0− | 0.3+) | 2005 07 29 | E12 | 0.3+  | 0.2+  |
| 2001 06 16 | 704 | 0.4−  | 0.6−  | 2005 05 11 | 704 | (1.6− | 0.4+) | 2005 07 29 | E12 | 0.2−  | 0.7+  |
| 2001 06 16 | 704 | 0.3−  | 0.0   | 2005 05 11 | 704 | (1.9− | 0.2+) | 2007 10 24 | G96 | 0.0   | 0.1+  |
| 2001 06 22 | 704 | (0.1− | 1.7+) | 2005 05 11 | 704 | (2.0− | 0.3+) | 2007 10 24 | G96 | 0.5+  | 0.1−  |
| 2001 06 22 | 704 | 0.1−  | 0.3+  | 2005 05 11 | 704 | (2.4− | 0.5+) | 2007 10 24 | G96 | 0.4+  | 0.5+  |
| 2001 06 22 | 704 | 0.6−  | 0.6−  | 2005 05 11 | 703 | 0.1+  | 0.4−  | 2007 10 24 | G96 | 0.3+  | 0.0   |
| 2001 06 22 | 704 | 0.1+  | 0.8−  | 2005 05 11 | 703 | 0.2+  | 0.4+  | 2007 10 25 | G96 | 0.5+  | 0.1−  |
| 2001 06 22 | 704 | 0.0   | 0.5+  | 2005 05 11 | 703 | 0.3−  | 0.6−  | 2007 10 25 | G96 | 0.6+  | 0.1+  |
| 2003 12 19 | 691 | 0.1−  | 0.5+  | 2005 05 11 | 703 | 0.8−  | 0.0   | 2007 10 25 | G96 | 0.2−  | 0.1−  |
| 2003 12 19 | 691 | 0.2−  | 0.4+  | 2005 05 13 | 704 | 1.4+  | 0.1+  | 2007 10 25 | G96 | 0.6−  | 0.8+  |

## 2007 DEC. 24

M.P.O. 129181

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 19 | 691 | 0.3–  | 0.2+  | 2005 05 13 | 704 | 1.2+ | 1.0+ | 2007 11 04 | 704 | 1.3– | 0.8+ |
| 2005 01 07 | 703 | (0.5– | 2.0+) | 2005 05 13 | 704 | 1.3+ | 0.9+ | 2007 11 04 | 704 | 1.5– | 1.3+ |
| 2005 01 07 | 703 | 0.6–  | 0.1–  | 2005 05 13 | 704 | 1.3+ | 0.6+ | 2007 11 04 | 704 | 0.7– | 0.9+ |
| 2005 01 07 | 703 | 1.3+  | 0.2–  | 2005 05 13 | 704 | 0.8+ | 0.4– | 2007 12 04 | 704 | 0.6– | 0.6+ |
| 2005 01 07 | 703 | (2.5– | 0.6+) | 2005 05 19 | 703 | 0.0  | 0.7+ | 2007 12 04 | 704 | 0.2– | 0.1+ |
| 2005 04 04 | 703 | 0.4–  | 0.4+  | 2005 05 19 | 703 | 0.0  | 0.5+ | 2007 12 04 | 704 | 0.3+ | 0.5+ |
| 2005 04 04 | 703 | 0.6–  | 0.1+  | 2005 05 19 | 703 | 0.1+ | 0.7+ | 2007 12 04 | 704 | 0.3+ | 0.7+ |
| 2005 04 04 | 703 | 0.3–  | 0.2–  | 2005 05 19 | 703 | 0.4– | 0.8+ |            |     |      |      |
| 2005 04 04 | 703 | 0.0   | 0.2–  | 2005 05 31 | 703 | 0.1– | 0.2– |            |     |      |      |

(171847)\* 2001 KK<sub>45</sub> = 2000 BX<sub>51</sub>

Discovered 2001 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 27199)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 202.35098  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.22555650 | $\omega$ | 103.92742 | –0.83589962 | +0.50412676 |          |
| <i>a</i> | 2.6727960  | $\Omega$ | 106.74491 | –0.54887918 | –0.76907663 |          |
| <i>e</i> | 0.1220005  | <i>i</i> | 13.10303  | +0.00185993 | –0.39290884 |          |
| <i>P</i> | 4.37       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 04 | 704 | 0.1–  | 0.2–  | 2003 12 22 | 704 | 0.4+  | 0.4+  | 2005 05 08 | 703 | 0.0   | 0.2–  |
| 2000 01 04 | 704 | 0.1+  | 0.4–  | 2005 03 17 | 703 | 0.1+  | 0.1–  | 2005 05 08 | 703 | 0.1–  | 0.1–  |
| 2000 01 04 | 704 | 0.0   | 0.6+  | 2005 03 17 | 703 | 0.5+  | 0.3–  | 2005 05 08 | 703 | 0.3–  | 0.2–  |
| 2000 01 04 | 704 | 0.5+  | 1.2–  | 2005 03 17 | 703 | (1.8– | 0.9–) | 2005 06 02 | 704 | 0.8+  | 0.5+  |
| 2000 01 04 | 704 | 0.6–  | 0.2–  | 2005 03 17 | 703 | 0.4–  | 0.2+  | 2005 06 02 | 704 | 1.5+  | 0.2–  |
| 2000 01 16 | 104 | 0.3+  | 0.4–  | 2005 04 06 | 703 | 0.1–  | 0.3–  | 2005 06 02 | 704 | (1.8+ | 0.6–) |
| 2000 01 16 | 104 | 0.4–  | 0.6+  | 2005 04 06 | 703 | 0.2–  | 0.6–  | 2005 06 07 | 703 | 0.3–  | 0.1+  |
| 2000 01 16 | 104 | 0.1+  | 0.2+  | 2005 04 06 | 703 | 0.3–  | 0.4–  | 2005 06 07 | 703 | 0.5–  | 0.3–  |
| 2001 05 22 | 704 | 0.2+  | 0.3+  | 2005 04 06 | 703 | 0.2–  | 0.5–  | 2005 06 07 | 703 | (2.6+ | 4.0–) |
| 2001 05 22 | 704 | 0.1–  | 0.7+  | 2005 04 06 | 703 | 0.2–  | 0.4–  | 2005 06 07 | 703 | (2.4+ | 1.5–) |
| 2001 05 22 | 704 | (0.6+ | 1.6+) | 2005 04 06 | 703 | 0.1+  | 0.4–  | 2007 10 10 | 703 | 0.3–  | 0.6+  |
| 2001 05 26 | 704 | 0.3–  | 0.7+  | 2005 04 06 | 703 | 0.7–  | 0.3–  | 2007 10 10 | 703 | 1.2+  | 1.4+  |
| 2001 05 26 | 704 | 0.3+  | 0.1–  | 2005 04 06 | 703 | 0.0   | 0.5–  | 2007 10 10 | 703 | 0.6+  | 1.1+  |
| 2001 05 26 | 704 | 1.1+  | 0.1+  | 2005 04 11 | 704 | 0.3+  | 1.0+  | 2007 10 10 | 703 | 0.0   | 0.8+  |
| 2001 05 26 | 704 | 0.4–  | 0.8+  | 2005 04 11 | 704 | 0.3+  | 1.0+  | 2007 11 10 | 941 | 0.3–  | 0.1+  |
| 2001 06 15 | 704 | 0.4+  | 0.2+  | 2005 04 11 | 704 | 0.3+  | 1.3+  | 2007 11 11 | 941 | 0.2–  | 0.0   |
| 2001 06 15 | 704 | 0.3+  | 0.0   | 2005 04 11 | 704 | 1.2+  | 1.3+  | 2007 11 11 | 941 | 0.4–  | 0.1–  |
| 2001 06 15 | 704 | 0.8–  | 0.4+  | 2005 04 11 | 704 | 0.4+  | 1.0+  | 2007 11 11 | 941 | 0.5–  | 0.1+  |
| 2001 06 15 | 704 | 0.2+  | 0.3–  | 2005 04 12 | 699 | 0.7+  | 1.2+  | 2007 11 20 | 703 | 0.9+  | 1.1+  |
| 2001 06 15 | 704 | 0.5–  | 0.2+  | 2005 04 12 | 699 | 0.0   | 0.4+  | 2007 11 20 | 703 | 0.1+  | 0.4+  |
| 2001 06 22 | 704 | 0.2+  | 0.2–  | 2005 04 12 | 699 | (2.0+ | 1.6+) | 2007 11 20 | 703 | 0.0   | 0.4+  |
| 2001 06 22 | 704 | 0.5–  | 0.7+  | 2005 04 12 | 699 | 1.4+  | 0.3+  | 2007 11 20 | 703 | 0.2+  | 0.5–  |
| 2001 06 22 | 704 | 0.6+  | 0.2+  | 2005 04 16 | 703 | 0.8–  | 0.6–  | 2007 12 06 | 703 | 1.3–  | 0.3+  |
| 2003 12 22 | 704 | 0.3+  | 0.4+  | 2005 04 16 | 703 | 0.4–  | 0.2+  | 2007 12 06 | 703 | 1.0–  | 0.2–  |
| 2003 12 22 | 704 | 0.3–  | 0.3+  | 2005 04 16 | 703 | 0.3–  | 0.2–  | 2007 12 06 | 703 | 1.3–  | 0.6+  |
| 2003 12 22 | 704 | 0.3–  | 0.5+  | 2005 04 16 | 703 | 0.5–  | 0.1–  | 2007 12 06 | 703 | 1.1–  | 0.2+  |
| 2003 12 22 | 704 | 0.5+  | 0.3+  | 2005 05 08 | 703 | 0.4–  | 0.2+  |            |     |       |       |

(171848)\* 2001 KV<sub>56</sub> = 2005 EQ<sub>280</sub>

Discovered 2001 May 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 74990)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 199.39668  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.23520838 | $\omega$ | 56.69084  | –0.77433134 | +0.63024396 |          |
| <i>a</i> | 2.5991670  | $\Omega$ | 162.16383 | –0.62443872 | –0.74658514 |          |
| <i>e</i> | 0.0937375  | <i>i</i> | 10.64874  | –0.10240734 | –0.21308021 |          |
| <i>P</i> | 4.19       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 22 | 699 | 0.5– | 0.4+ | 2005 04 08 | 704 | 1.1+ | 0.5+ | 2006 08 28 | 699 | 0.3+ | 0.4+ |
| 2001 05 22 | 699 | 1.2+ | 0.8+ | 2005 04 08 | 704 | 0.4+ | 0.5+ | 2006 08 28 | 703 | 0.7+ | 0.2– |
| 2001 05 22 | 699 | 0.3+ | 0.5+ | 2005 04 08 | 704 | 0.6+ | 0.5+ | 2006 08 28 | 703 | 0.6– | 0.2– |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 05 22 | 699 | 0.1– | 0.7+ | 2005 04 08 | 704 | 0.1+  | 0.6+  | 2006 08 28 | 699 | 0.6–  | 0.9+  |
| 2001 05 23 | 704 | 0.1– | 0.7+ | 2005 04 08 | 704 | 0.3+  | 0.4–  | 2006 09 14 | 703 | 0.2–  | 1.4+  |
| 2001 05 23 | 704 | 0.7+ | 0.5– | 2005 04 08 | 704 | 0.1+  | 0.3+  | 2006 09 14 | 703 | 0.1+  | 0.7+  |
| 2001 05 23 | 704 | 0.4+ | 1.0+ | 2005 04 09 | 699 | 0.0   | 0.0   | 2006 09 14 | 703 | 1.2–  | 0.8+  |
| 2001 05 23 | 704 | 0.2+ | 0.9– | 2005 04 09 | 699 | 0.5+  | 0.1+  | 2006 09 14 | 703 | 0.8–  | 0.5+  |
| 2001 05 29 | 704 | 0.8– | 0.6+ | 2005 04 09 | 699 | (1.0+ | 1.7–) | 2006 09 27 | G96 | 0.3+  | 0.4–  |
| 2001 05 29 | 704 | 0.5– | 0.1– | 2006 08 18 | 644 | 0.2+  | 0.0   | 2006 09 27 | G96 | 0.2–  | 0.7–  |
| 2001 05 29 | 704 | 0.9– | 0.3– | 2006 08 18 | 644 | 0.1+  | 0.1–  | 2006 09 27 | G96 | 0.4–  | 0.8–  |
| 2002 08 28 | 644 | 0.2+ | 1.0+ | 2006 08 18 | 644 | 0.1+  | 0.1–  | 2006 09 27 | G96 | 0.4–  | 0.1+  |
| 2002 08 28 | 644 | 0.1– | 0.9+ | 2006 08 19 | 699 | 1.0+  | 0.6+  | 2006 11 11 | G96 | 0.4–  | 0.8–  |
| 2002 08 28 | 644 | 0.1+ | 0.8+ | 2006 08 19 | 699 | 0.5+  | 1.1+  | 2006 11 11 | G96 | 0.3–  | 1.1–  |
| 2005 03 10 | 703 | 0.5+ | 0.6+ | 2006 08 19 | 699 | (0.4– | 1.8+) | 2006 11 11 | G96 | 0.1–  | 0.6–  |
| 2005 03 10 | 703 | 0.2+ | 0.3+ | 2006 08 19 | 699 | 1.0+  | 0.2+  | 2006 11 11 | G96 | 0.0   | 0.9–  |
| 2005 03 10 | 703 | 0.1– | 1.2+ | 2006 08 20 | 644 | 0.1+  | 0.4+  | 2007 11 15 | 703 | 1.6–  | 1.2+  |
| 2005 03 10 | 703 | 0.5+ | 1.1+ | 2006 08 20 | 644 | 0.3–  | 0.0   | 2007 11 15 | 703 | (1.3– | 1.5+) |
| 2005 03 18 | 703 | 0.3– | 0.2+ | 2006 08 20 | 644 | 0.3–  | 0.2–  | 2007 11 15 | 703 | (0.3+ | 1.5+) |
| 2005 03 18 | 703 | 0.4– | 0.3+ | 2006 08 22 | 644 | 0.4–  | 0.3+  | 2007 11 15 | 703 | 0.4–  | 0.9+  |
| 2005 03 18 | 703 | 0.4– | 0.3– | 2006 08 22 | 644 | 0.2–  | 0.1+  | 2007 11 18 | G96 | 0.1+  | 0.7+  |
| 2005 03 18 | 703 | 0.1– | 0.2+ | 2006 08 22 | 644 | 0.3–  | 0.1+  | 2007 11 18 | G96 | 0.3+  | 0.5+  |
| 2005 04 04 | 703 | 0.6– | 0.5+ | 2006 08 22 | 644 | 0.2–  | 0.1+  | 2007 11 18 | G96 | 0.2–  | 0.5+  |
| 2005 04 04 | 703 | 0.8– | 0.1– | 2006 08 22 | 644 | 0.3–  | 0.1+  | 2007 11 18 | G96 | 0.1–  | 0.6+  |
| 2005 04 04 | 703 | 0.4– | 0.1+ | 2006 08 22 | 644 | 0.1–  | 0.3+  | 2007 11 19 | 703 | (1.3– | 2.0+) |
| 2005 04 04 | 703 | 0.6– | 0.6+ | 2006 08 26 | D35 | 0.0   | 0.3+  | 2007 11 19 | 703 | (0.6– | 1.7+) |
| 2005 04 05 | 704 | 0.2– | 1.1+ | 2006 08 26 | D35 | 0.2+  | 0.3+  | 2007 11 19 | 703 | 0.2+  | 0.9+  |
| 2005 04 05 | 704 | 1.1+ | 0.4– | 2006 08 26 | D35 | 0.1–  | 0.3+  | 2007 11 19 | 703 | 0.7–  | 0.4+  |
| 2005 04 05 | 704 | 0.4– | 0.5+ | 2006 08 28 | 699 | 1.1+  | 0.1+  | 2007 12 05 | 703 | 0.2+  | 0.5+  |
| 2005 04 05 | 704 | 0.8+ | 1.1+ | 2006 08 28 | 699 | 0.4+  | 0.9+  | 2007 12 05 | 703 | 0.9–  | 1.0+  |
| 2005 04 08 | 704 | 0.3+ | 0.1– | 2006 08 28 | 703 | 0.1–  | 0.2–  | 2007 12 05 | 703 | 0.7+  | 1.1+  |
| 2005 04 08 | 704 | 0.8+ | 0.3+ | 2006 08 28 | 703 | 0.9–  | 0.7+  | 2007 12 05 | 703 | 0.6+  | 2.0+  |

(171849)\* 2001 KW<sub>72</sub>

Discovered 2001 May 24 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 204.00173  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.23657529 | $\omega$ | 147.48433 | –0.62248189 | +0.73362663 |          |
| <i>a</i> | 2.5891456  | $\Omega$ | 82.49817  | –0.76392223 | –0.49384358 |          |
| <i>e</i> | 0.1180609  | <i>i</i> | 15.95896  | –0.17011504 | –0.46680883 |          |
| <i>P</i> | 4.17       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 05 24 | 691 | 0.0  | 0.4+ | 2005 04 06 | 703 | 0.0   | 0.6–  | 2005 05 13 | 704 | (2.0+ | 0.0 ) |
| 2001 05 24 | 691 | 0.1+ | 0.5+ | 2005 04 06 | 703 | 1.2–  | 0.3+  | 2005 05 13 | 704 | 1.3+  | 0.2–  |
| 2001 05 24 | 691 | 0.1– | 0.4+ | 2005 04 06 | 703 | 0.9–  | 0.9–  | 2005 05 31 | 703 | 0.1+  | 0.9–  |
| 2001 05 26 | 704 | 0.0  | 0.3+ | 2005 04 08 | 704 | 0.1+  | 0.6+  | 2005 05 31 | 703 | 0.4–  | 0.3–  |
| 2001 05 26 | 704 | 0.0  | 0.2+ | 2005 04 08 | 704 | 0.4+  | 0.2+  | 2005 05 31 | 703 | 0.3–  | 0.3–  |
| 2001 05 26 | 704 | 0.4+ | 0.8+ | 2005 04 08 | 704 | 0.5+  | 0.1+  | 2005 05 31 | 703 | 1.3–  | 0.2–  |
| 2001 05 26 | 704 | 0.2+ | 0.5+ | 2005 04 08 | 704 | 0.8+  | 0.9+  | 2005 06 03 | 699 | 0.3–  | 1.1+  |
| 2001 06 15 | 704 | 0.1– | 0.5+ | 2005 04 14 | 703 | 0.9–  | 0.3–  | 2005 06 03 | 699 | 0.5+  | 0.5+  |
| 2001 06 15 | 704 | 0.5+ | 0.3+ | 2005 04 14 | 703 | 0.8+  | 0.7+  | 2005 06 03 | 699 | 0.0   | 0.5+  |
| 2001 06 15 | 704 | 0.4+ | 0.8– | 2005 04 14 | 703 | 0.2+  | 0.8+  | 2005 06 03 | 699 | 0.6+  | 0.2+  |
| 2001 06 15 | 704 | 0.5+ | 0.5– | 2005 04 14 | 703 | 0.5–  | 0.8–  | 2007 11 08 | 691 | (0.2– | 1.5+) |
| 2001 06 15 | 608 | 0.5+ | 0.4– | 2005 04 20 | 703 | 0.1–  | 0.0   | 2007 11 08 | 691 | 0.2–  | 0.3–  |
| 2001 06 15 | 608 | 0.1– | 0.4– | 2005 04 20 | 703 | (1.2+ | 2.2+) | 2007 11 08 | 691 | 0.1+  | 0.0   |
| 2001 06 15 | 608 | 0.2+ | 0.3– | 2005 04 20 | 703 | 0.3–  | 1.3–  | 2007 12 04 | 691 | 0.2+  | 0.4+  |
| 2003 12 18 | 704 | 0.0  | 0.4+ | 2005 04 20 | 703 | (0.7– | 2.4+) | 2007 12 04 | 691 | 0.1–  | 0.2+  |
| 2003 12 18 | 704 | 1.0+ | 0.4+ | 2005 05 03 | 703 | 0.1–  | 0.0   | 2007 12 04 | 691 | 0.1–  | 0.0   |
| 2003 12 18 | 704 | 0.9– | 0.7+ | 2005 05 03 | 703 | 0.4–  | 0.1–  | 2007 12 05 | 704 | 0.1–  | 0.1+  |
| 2003 12 22 | 704 | 0.4+ | 0.9– | 2005 05 03 | 703 | 0.3+  | 0.2–  | 2007 12 05 | 704 | 0.1+  | 0.9+  |
| 2003 12 22 | 704 | 0.0  | 0.9– | 2005 05 03 | 703 | 0.1+  | 0.0   | 2007 12 05 | 704 | 0.5+  | 0.7+  |
| 2003 12 22 | 704 | 0.9+ | 0.0  | 2005 05 09 | 703 | 0.5–  | 0.6+  | 2007 12 05 | 704 | 0.1–  | 1.2+  |
| 2003 12 22 | 704 | 0.7+ | 0.1– | 2005 05 09 | 703 | 0.2–  | 0.8–  | 2007 12 05 | 704 | 0.5+  | 0.8+  |
| 2003 12 22 | 704 | 0.0  | 0.5– | 2005 05 09 | 703 | 0.8–  | 0.6–  | 2007 12 16 | 691 | 0.6–  | 0.5+  |
| 2004 01 19 | 691 | 0.1+ | 0.1– | 2005 05 09 | 703 | 0.4–  | 1.0–  | 2007 12 16 | 691 | 0.3–  | 0.4+  |
| 2004 01 19 | 691 | 0.2– | 0.1– | 2005 05 13 | 704 | 1.3+  | 0.5+  | 2007 12 16 | 691 | 0.1+  | 0.5–  |
| 2004 01 19 | 691 | 0.1– | 0.2– | 2005 05 13 | 704 | (2.7+ | 0.4+) |            |     |       |       |
| 2005 04 06 | 703 | 0.2– | 0.1+ | 2005 05 13 | 704 | 1.4+  | 0.1–  |            |     |       |       |

**(171850)\* 2001 LN<sub>15</sub> = 2002 TE<sub>158</sub>**

Discovered 2001 June 12 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 37662)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 81.17575   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21076913 | $\omega$ | 223.33300 | +0.56135599 | +0.78831844 |
| <i>a</i> | 2.7963920  | $\Omega$ | 82.37691  | -0.67287483 | +0.61194480 |
| <i>e</i> | 0.2108068  | <i>i</i> | 14.72061  | -0.48178722 | +0.06385605 |
| <i>P</i> | 4.68       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 04 26 | 644 | 0.2-  | 0.9+  | 2002 10 06 | 704 | 0.4-  | 0.0   | 2007 11 05 | D29 | 0.1-  | 0.1-  |
| 2001 04 26 | 644 | 0.1-  | 0.8+  | 2002 10 06 | 704 | 0.4+  | 0.8+  | 2007 11 09 | 703 | 0.3-  | 0.5+  |
| 2001 04 26 | 644 | 0.2-  | 1.0+  | 2002 10 06 | 704 | 0.1-  | 0.3+  | 2007 11 09 | 703 | 0.7+  | 0.5+  |
| 2001 05 22 | 699 | 0.8+  | 0.1-  | 2002 10 06 | 704 | 0.3+  | 0.1-  | 2007 11 09 | 703 | 1.0+  | 0.9+  |
| 2001 05 22 | 699 | 0.6+  | 0.3+  | 2002 10 11 | 704 | 0.1-  | 0.2-  | 2007 11 09 | 703 | 1.3+  | 0.3-  |
| 2001 05 22 | 699 | 0.8+  | 1.0+  | 2002 10 11 | 704 | 0.3-  | 0.2+  | 2007 11 11 | 704 | 0.4-  | 0.5+  |
| 2001 05 22 | 699 | 0.9+  | 0.8+  | 2002 10 11 | 704 | 1.1-  | 0.7+  | 2007 11 11 | 704 | 0.6-  | 0.3+  |
| 2001 06 12 | 699 | 0.4-  | 0.4-  | 2002 10 11 | 704 | 0.0   | 0.9+  | 2007 11 11 | 704 | 0.9+  | 1.0+  |
| 2001 06 12 | 699 | 0.4-  | 0.6+  | 2002 10 11 | 704 | 0.4+  | 1.2+  | 2007 11 11 | 704 | 0.3-  | 0.1-  |
| 2001 06 12 | 699 | 0.1+  | 0.1-  | 2003 12 14 | 691 | 0.1-  | 0.2+  | 2007 11 17 | 703 | (2.0+ | 0.4-) |
| 2001 06 12 | 699 | 0.1+  | 0.0   | 2003 12 14 | 691 | 0.2-  | 0.3+  | 2007 11 17 | 703 | 0.0   | 0.3+  |
| 2001 06 15 | 704 | (0.4+ | 1.8+) | 2003 12 14 | 691 | 0.6+  | 0.1-  | 2007 11 17 | 703 | 0.4+  | 0.8+  |
| 2001 06 15 | 704 | 0.6+  | 0.3-  | 2003 12 28 | 691 | 0.0   | 0.1+  | 2007 11 17 | 703 | (0.2+ | 1.6+) |
| 2001 06 15 | 704 | 0.6+  | 0.3+  | 2003 12 28 | 691 | 0.0   | 0.0   | 2007 11 17 | 703 | 0.6+  | 0.6-  |
| 2001 06 15 | 704 | 0.3-  | 1.5+  | 2003 12 28 | 691 | 0.2-  | 0.1+  | 2007 11 17 | 703 | 0.3-  | 0.6-  |
| 2002 10 05 | 704 | 0.5-  | 0.3-  | 2007 10 20 | 704 | 0.7+  | 0.8-  | 2007 11 17 | 703 | 0.5+  | 0.0   |
| 2002 10 05 | 704 | 0.6+  | 1.0-  | 2007 10 20 | 704 | 1.4-  | 0.2+  | 2007 11 17 | 703 | 0.8+  | 0.1+  |
| 2002 10 05 | 644 | 0.2-  | 0.3+  | 2007 10 20 | 704 | 0.0   | 0.8+  | 2007 11 18 | G96 | 0.1-  | 0.6-  |
| 2002 10 05 | 704 | 0.3-  | 0.1+  | 2007 10 20 | 704 | 0.1-  | 0.2-  | 2007 11 18 | G96 | 0.5-  | 0.3-  |
| 2002 10 05 | 704 | 0.5-  | 0.8-  | 2007 10 31 | 703 | 0.9-  | 0.4+  | 2007 11 18 | G96 | 0.2+  | 0.6-  |
| 2002 10 05 | 644 | 0.2-  | 0.2+  | 2007 10 31 | 703 | (1.6- | 0.8+) | 2007 11 18 | G96 | 0.2-  | 0.5-  |
| 2002 10 05 | 644 | 0.2+  | 0.3+  | 2007 10 31 | 703 | (1.9- | 0.7+) | 2007 12 05 | 703 | 0.5-  | 0.1-  |
| 2002 10 06 | 644 | 0.2+  | 0.1-  | 2007 10 31 | 703 | (0.3- | 1.9+) | 2007 12 05 | 703 | 1.1-  | 0.0   |
| 2002 10 06 | 644 | 0.0   | 0.2+  | 2007 11 05 | D29 | 0.3-  | 0.0   | 2007 12 05 | 703 | 0.8-  | 0.7+  |
| 2002 10 06 | 644 | 0.2-  | 0.4+  | 2007 11 05 | D29 | 0.2-  | 0.1+  | 2007 12 05 | 703 | 0.4-  | 0.4-  |
| 2002 10 06 | 704 | 0.5-  | 0.1+  | 2007 11 05 | D29 | 0.2+  | 0.2-  |            |     |       |       |

**(171851)\* 2001 MG = 2002 XS<sub>6</sub>**

Discovered 2001 June 16 by W. K. Y. Yeung at Desert Beaver Observatory.

Id. G. V. Williams (*MPO* 40153)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 51.57858   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18775470 | $\omega$ | 80.58549  | +0.81199579 | +0.56915602 |
| <i>a</i> | 3.0204768  | $\Omega$ | 244.61700 | -0.57576246 | +0.74476122 |
| <i>e</i> | 0.1355056  | <i>i</i> | 8.22963   | -0.09571016 | +0.34841376 |
| <i>P</i> | 5.25       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 01 07 | 688 | 0.5+  | 0.4-  | 2002 12 01 | 608 | 0.6- | 0.8+ | 2007 10 22 | 704 | 0.2+  | 0.3-  |
| 1998 01 07 | 688 | 1.0+  | 0.3-  | 2002 12 01 | 608 | 0.1- | 1.0+ | 2007 10 22 | 704 | 0.7-  | 0.8-  |
| 2001 06 15 | 644 | (0.9- | 2.5-) | 2002 12 05 | 704 | 0.6+ | 0.0  | 2007 10 22 | 704 | (1.0+ | 3.2-) |
| 2001 06 15 | 644 | (0.5- | 2.4-) | 2002 12 05 | 704 | 0.2+ | 0.1- | 2007 10 22 | 704 | 1.0+  | 0.7+  |
| 2001 06 15 | 644 | (0.9- | 2.4-) | 2002 12 05 | 704 | 0.6- | 0.7+ | 2007 10 30 | 703 | 0.1-  | 1.0-  |
| 2001 06 16 | 919 | 1.1-  | 0.4-  | 2002 12 05 | 704 | 0.3- | 0.8+ | 2007 10 30 | 703 | 0.3-  | 0.1-  |
| 2001 06 16 | 919 | 0.9-  | 1.0+  | 2002 12 06 | 704 | 0.6- | 0.1- | 2007 10 30 | 703 | 1.0-  | 1.2+  |
| 2001 06 17 | 919 | 0.1+  | 0.5+  | 2002 12 06 | 704 | 0.4- | 0.9- | 2007 10 30 | 703 | 0.6-  | 0.1+  |
| 2001 06 17 | 919 | 0.5+  | 1.0+  | 2002 12 06 | 704 | 0.2+ | 0.3- | 2007 11 02 | 704 | 1.0+  | 0.2-  |
| 2001 06 20 | 644 | 0.7-  | 0.4-  | 2002 12 06 | 704 | 0.7+ | 0.2- | 2007 11 02 | 704 | 0.3+  | 0.2-  |
| 2001 06 20 | 644 | 0.3-  | 0.4-  | 2002 12 06 | 704 | 0.4+ | 0.2+ | 2007 11 02 | 704 | 0.1+  | 0.5-  |
| 2001 06 20 | 644 | 0.8-  | 0.0   | 2002 12 10 | 704 | 0.0  | 1.1+ | 2007 11 02 | 704 | 0.2+  | 0.1-  |
| 2001 07 27 | 608 | 1.3+  | 1.2+  | 2002 12 10 | 704 | 0.2+ | 1.5+ | 2007 11 02 | 704 | 0.3+  | 0.1-  |
| 2001 07 27 | 608 | (1.7+ | 0.8+) | 2002 12 10 | 704 | 0.3- | 0.2- | 2007 11 03 | 699 | 1.3-  | 0.1-  |
| 2001 07 27 | 608 | 1.2+  | 1.4+  | 2002 12 10 | 704 | 0.1+ | 0.9- | 2007 11 03 | 699 | 0.0   | 0.6+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 25 | 704 | (1.7- | 0.8+) | 2004 02 11 | 644 | 0.3+  | 0.5+  | 2007 11 03 | 699 | (2.0- | 0.5-) |
| 2001 08 25 | 704 | 0.6-  | 0.2-  | 2004 02 11 | 644 | 0.1+  | 0.2+  | 2007 11 03 | 699 | (2.5- | 1.3-) |
| 2001 08 25 | 704 | 0.2-  | 0.3-  | 2004 02 11 | 644 | 0.0   | 0.4+  | 2007 11 07 | 704 | 0.1-  | 0.0   |
| 2002 11 05 | 704 | 0.7+  | 0.5+  | 2007 10 08 | 703 | 0.5+  | 0.7-  | 2007 11 07 | 704 | 0.1-  | 0.1+  |
| 2002 11 05 | 704 | 0.1+  | 0.6-  | 2007 10 08 | 703 | 0.0   | 0.7-  | 2007 11 07 | 704 | 0.2-  | 0.4-  |
| 2002 11 05 | 704 | 0.5-  | 0.9+  | 2007 10 08 | 703 | 0.0   | 1.2-  | 2007 11 07 | 704 | 0.1-  | 0.4+  |
| 2002 11 05 | 699 | 0.4-  | 0.5-  | 2007 10 08 | 703 | 0.5-  | 0.0   | 2007 11 07 | 704 | 0.0   | 0.2+  |
| 2002 11 05 | 704 | 0.0   | 0.2+  | 2007 10 12 | 699 | 1.1-  | 0.5-  | 2007 11 12 | 703 | 1.3+  | 0.0   |
| 2002 11 05 | 699 | 0.2+  | 0.3-  | 2007 10 12 | 699 | 0.4+  | 0.2-  | 2007 11 12 | 703 | 0.1+  | 0.9-  |
| 2002 11 05 | 699 | 0.7-  | 0.4-  | 2007 10 12 | 699 | 0.3+  | 0.4+  | 2007 11 12 | 703 | 0.7+  | 0.7+  |
| 2002 11 05 | 699 | 0.0   | 0.2-  | 2007 10 13 | 704 | 0.3+  | 0.8+  | 2007 11 12 | 703 | 0.4-  | 0.6-  |
| 2002 11 14 | 704 | 0.3+  | 0.3+  | 2007 10 13 | 704 | 0.4+  | 0.6+  | 2007 11 13 | 699 | 0.3+  | 0.2-  |
| 2002 11 14 | 704 | 0.9+  | 0.5-  | 2007 10 13 | 704 | 0.3+  | 1.2+  | 2007 11 13 | 699 | 0.2-  | 0.3-  |
| 2002 11 14 | 704 | 0.0   | 0.0   | 2007 10 13 | 704 | 0.1+  | 0.4+  | 2007 11 13 | 699 | 1.2-  | 1.0-  |
| 2002 11 14 | 704 | 0.5-  | 0.5-  | 2007 10 13 | 704 | 0.1+  | 0.4+  | 2007 11 13 | 699 | (0.7- | 1.8-) |
| 2002 11 14 | 704 | 0.5+  | 0.4+  | 2007 10 15 | 704 | 0.6+  | 0.3+  | 2007 11 18 | 704 | 0.3-  | 0.6-  |
| 2002 11 27 | 699 | 0.4+  | 0.8+  | 2007 10 15 | 704 | (2.1+ | 0.0 ) | 2007 11 18 | 704 | 0.4-  | 0.5-  |
| 2002 11 27 | 699 | 0.7-  | 0.4+  | 2007 10 15 | 704 | 0.3+  | 0.5+  | 2007 11 18 | 704 | 0.6-  | 0.3-  |
| 2002 11 27 | 699 | 1.1-  | 0.1+  | 2007 10 15 | 704 | 0.1-  | 0.0   | 2007 11 18 | 704 | 0.3-  | 0.5-  |
| 2002 11 27 | 699 | 0.5-  | 1.5+  | 2007 10 15 | 704 | 0.8+  | 0.7-  | 2007 11 18 | 704 | 0.2-  | 0.5-  |
| 2002 11 28 | 699 | 0.1-  | 1.5+  | 2007 10 18 | 704 | 0.3+  | 0.4-  | 2007 12 15 | 699 | 0.4+  | 0.1-  |
| 2002 11 28 | 699 | 0.3+  | 0.9+  | 2007 10 18 | 704 | 0.9+  | 0.2-  | 2007 12 15 | 699 | 0.5-  | 0.2+  |
| 2002 11 28 | 699 | 0.9-  | 0.4-  | 2007 10 18 | 704 | 0.4+  | 0.3+  | 2007 12 15 | 699 | 0.1-  | 0.4-  |
| 2002 11 28 | 699 | 0.8-  | 1.0-  | 2007 10 18 | 704 | 0.4+  | 0.0   | 2007 12 15 | 699 | 0.5+  | 0.3-  |
| 2002 12 01 | 608 | 0.2-  | 0.9+  | 2007 10 18 | 704 | 0.2+  | 0.3-  |            |     |       |       |

**(171852)\* 2001 MY<sub>3</sub> = 2005 EK<sub>279</sub>**

Discovered 2001 June 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 74998)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 177.56931  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22924291 | $\omega$ | 339.43518 | -0.40701384 | +0.88947991 |
| <i>a</i> | 2.6440649  | $\Omega$ | 266.06457 | -0.80625802 | -0.45674428 |
| <i>e</i> | 0.1532424  | <i>i</i> | 12.02002  | -0.42928748 | +0.01449635 |
| <i>P</i> | 4.30       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 06 16 | 704 | 0.2- | 0.4+ | 2005 03 19 | E12 | 0.2+ | 0.2+ | 2006 08 27 | 683 | (1.3+ | 1.6-) |
| 2001 06 16 | 704 | 0.1+ | 0.5+ | 2005 04 14 | 703 | 1.3- | 0.8+ | 2006 08 27 | 683 | 0.7-  | 0.4+  |
| 2001 06 16 | 704 | 0.7- | 0.2+ | 2005 04 14 | 703 | 0.7- | 0.3+ | 2006 09 27 | 703 | 0.1-  | 0.9+  |
| 2001 06 16 | 704 | 0.8- | 0.2- | 2005 04 14 | 703 | 0.0  | 0.4+ | 2006 09 27 | 703 | 0.1+  | 0.2+  |
| 2001 06 16 | 704 | 0.8- | 0.7- | 2005 04 14 | 703 | 0.3- | 0.3+ | 2006 09 27 | 703 | 0.1-  | 0.2+  |
| 2001 06 22 | 704 | 0.6+ | 1.1+ | 2005 04 27 | E12 | 0.2- | 0.6+ | 2006 09 27 | 703 | 0.2+  | 0.2+  |
| 2001 06 22 | 704 | 0.3+ | 0.7+ | 2005 04 27 | E12 | 0.7+ | 0.6+ | 2007 11 18 | 704 | (0.1- | 2.1+) |
| 2001 06 22 | 704 | 0.7- | 0.1- | 2005 04 27 | E12 | 0.3- | 0.3+ | 2007 11 18 | 704 | 1.0+  | 1.3+  |
| 2001 06 22 | 704 | 0.0  | 0.7- | 2005 04 27 | E12 | 0.3+ | 0.2+ | 2007 11 18 | 704 | 0.3+  | 1.4+  |
| 2001 06 29 | 608 | 1.1+ | 0.0  | 2005 05 04 | 644 | 0.2+ | 0.0  | 2007 11 18 | 704 | (0.4- | 1.8+) |
| 2001 06 29 | 608 | 1.0+ | 0.1+ | 2005 05 04 | 644 | 0.2+ | 0.1+ | 2007 11 20 | 704 | 0.1-  | 0.7-  |
| 2001 06 29 | 608 | 0.7+ | 0.2+ | 2005 05 04 | 644 | 0.2+ | 0.2+ | 2007 11 20 | 704 | 1.0+  | 0.1+  |
| 2001 07 13 | 644 | 0.8- | 0.3- | 2005 05 04 | E12 | 0.2+ | 0.2- | 2007 11 20 | 704 | 0.0   | 0.9+  |
| 2001 07 13 | 644 | 0.9- | 0.5- | 2005 05 04 | E12 | 0.3+ | 0.6+ | 2007 11 20 | 704 | (1.5+ | 1.2+) |
| 2001 07 13 | 644 | 0.7- | 1.2- | 2005 05 04 | E12 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.0   | 0.4+  |
| 2002 10 03 | 644 | 0.1+ | 1.1+ | 2005 05 04 | E12 | 0.0  | 0.6+ | 2007 12 04 | 291 | 0.6-  | 0.    |

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2005 03 09 E12 0.7+ 0.1-   | 2005 06 26 E12 1.4+ 0.3+ | 2007 12 15 704 0.2- 0.5- |
| 2005 03 19 E12 0.2+ 0.1+   | 2005 06 26 E12 0.4+ 0.2+ | 2007 12 15 704 0.7- 0.2+ |
| 2005 03 19 E12 (2.4- 0.8-) | 2005 06 26 E12 0.3+ 0.5+ | 2007 12 15 704 1.3+ 0.5- |
| 2005 03 19 E12 0.2+ 0.0    | 2006 08 27 683 0.1+ 0.9- |                          |

**(171853)\* 2001 MN<sub>17</sub> = 2004 FR<sub>133</sub>**

Discovered 2001 June 26 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 60771)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.77022  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24171292 | $\omega$ 55.46244  | -0.93829986   | -0.07171780 |
| <i>a</i> | 2.5523260  | $\Omega$ 118.22191 | +0.00251283   | -0.97964790 |
| <i>e</i> | 0.0602325  | <i>i</i> 22.57839  | +0.34581362   | -0.18747413 |
| <i>P</i> | 4.08       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 2001 06 26 691 0.2- 0.3+   | 2004 01 30 704 0.8+ 1.1+   | 2005 06 13 691 0.0 0.0     |
| 2001 06 26 691 0.2- 0.3+   | 2004 02 15 704 0.3- 0.7+   | 2005 06 13 691 0.1+ 0.1-   |
| 2001 06 26 691 0.1+ 0.5+   | 2004 02 15 704 (1.7+ 0.4+) | 2005 06 13 691 0.2- 0.1-   |
| 2001 06 29 691 0.2- 0.1-   | 2004 02 15 704 (2.0+ 0.5+) | 2005 06 17 691 0.0 0.1+    |
| 2001 06 29 691 0.8+ 0.5+   | 2004 02 15 704 0.2- 0.8+   | 2005 06 17 691 0.0 0.0     |
| 2001 06 29 691 0.1- 1.0+   | 2004 03 24 703 0.5+ 0.9+   | 2005 06 17 691 0.2- 0.0    |
| 2001 07 17 644 0.7- 0.4-   | 2004 03 24 703 (2.0+ 1.3+) | 2006 11 19 703 0.2- 0.3-   |
| 2001 07 17 644 0.9- 0.7-   | 2004 03 24 703 1.0+ 1.2+   | 2006 11 19 703 0.3- 0.7+   |
| 2001 07 17 644 0.9- 0.1+   | 2004 03 24 703 1.0+ 0.5+   | 2006 11 19 703 0.2- 1.0+   |
| 2001 07 21 608 1.5+ 0.5+   | 2004 03 29 704 (0.3+ 2.0+) | 2006 11 19 703 (0.3- 1.7+) |
| 2001 07 21 608 1.4+ 0.1+   | 2004 03 29 704 (0.1- 1.5+) | 2007 11 20 G96 0.2- 0.1-   |
| 2001 07 21 608 1.3+ 0.2-   | 2004 03 29 704 0.0 1.2+    | 2007 11 20 G96 0.2- 0.2+   |
| 2002 10 28 704 1.2- 0.4+   | 2004 03 29 704 (0.9- 3.2+) | 2007 11 20 G96 0.1- 0.2+   |
| 2002 10 28 704 0.3- 1.0+   | 2004 04 07 644 0.2+ 0.4+   | 2007 11 20 G96 0.2- 0.6+   |
| 2002 10 28 704 0.2+ 0.9+   | 2004 04 07 644 0.1- 0.2+   | 2007 12 16 704 1.0+ 1.0+   |
| 2004 01 30 704 (0.4- 3.8+) | 2004 04 07 644 0.1+ 0.4+   | 2007 12 16 704 0.1+ 0.4+   |
| 2004 01 30 704 (1.6+ 0.8+) | 2004 05 14 645 0.1- 0.1-   | 2007 12 16 704 0.1- 0.3+   |
| 2004 01 30 704 0.5+ 1.4+   | 2004 05 14 645 0.1- 0.1-   | 2007 12 16 704 0.7+ 1.4+   |

**(171854)\* 2001 MB<sub>20</sub>**

Discovered 2001 June 25 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 241.51872  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24291233 | $\omega$ 301.85127 | -0.42908000   | +0.87598504 |
| <i>a</i> | 2.5439174  | $\Omega$ 301.17458 | -0.71706034   | -0.47866481 |
| <i>e</i> | 0.0767062  | <i>i</i> 14.92203  | -0.54928573   | -0.05941555 |
| <i>P</i> | 4.06       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2000 03 04 645 0.1+ 0.0  | 2004 02 12 683 1.1- 0.1+   | 2004 03 16 704 0.1- 1.4- |
| 2000 03 04 645 0.0 0.0   | 2004 02 18 691 0.0 0.1+    | 2004 03 16 704 0.2+ 0.7- |
| 2001 06 25 644 0.4- 0.5+ | 2004 02 18 691 0.1- 0.3+   | 2004 03 16 704 0.9- 1.0- |
| 2001 06 25 644 0.2- 0.5+ | 2004 02 18 691 0.0 0.2+    | 2007 10 09 G96 0.3+ 0.4- |
| 2001 06 25 644 0.4- 0.2+ | 2004 02 19 704 0.0 0.1-    | 2007 10 09 G96 0.2+ 0.3- |
| 2001 06 30 644 0.3- 0.3+ | 2004 02 19 704 0.1+ 0.6+   | 2007 10 09 G96 0.1- 0.2- |
| 2001 06 30 644 0.3- 0.3+ | 2004 02 19 704 0.1- 0.1-   | 2007 10 09 G96 0.1+ 0.5- |
| 2001 06 30 644 0.1- 0.1+ | 2004 02 19 704 0.0 0.2-    | 2007 10 16 691 0.7+ 0.1+ |
| 2001 07 10 644 0.6+ 0.0  | 2004 02 23 704 0.1+ 0.9+   | 2007 10 16 691 0.1- 0.0  |
| 2001 07 10 644 0.4+ 0.0  | 2004 02 23 704 0.3+ 0.6+   | 2007 10 16 691 0.1- 0.1+ |
| 2001 07 10 644 0.2+ 0.1- | 2004 02 23 704 1.1- 0.6+   | 2007 11 07 G96 0.4- 0.4- |
| 2002 11 25 644 0.3- 0.7+ | 2004 02 23 704 0.0 1.3+    | 2007 11 07 G96 0.4- 0.2- |
| 2002 11 25 644 0.6- 0.6+ | 2004 02 23 704 0.3- 0.5+   | 2007 11 07 G96 0.3+ 0.0  |
| 2002 11 25 644 0.3- 0.4+ | 2004 02 25 683 (0.3+ 1.6-) | 2007 11 07 G96 0.6+ 0.3- |
| 2004 01 23 704 0.4+ 0.3- | 2004 02 25 683 0.7- 0.2-   | 2007 12 04 G96 0.2+ 0.6- |
| 2004 01 23 704 0.1+ 0.1- | 2004 02 25 683 0.6- 1.0-   | 2007 12 04 G96 0.2- 0.3- |
| 2004 01 23 704 0.2- 0.9+ | 2004 02 26 683 (1.8+ 1.0-) | 2007 12 04 G96 0.5- 0.4- |
| 2004 01 30 683 0.0 1.5-  | 2004 02 26 683 0.5+ 0.8+   | 2007 12 04 G96 0.2- 0.7- |
| 2004 01 30 683 0.4- 1.3+ | 2004 02 26 683 0.2+ 0.7+   |                          |
| 2004 02 12 683 0.1+ 1.1- | 2004 03 16 704 1.4+ 0.3+   |                          |

**(171855)\* 2001 MR<sub>20</sub>**

Discovered 2001 June 25 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 143.34168  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21356214 | $\omega$ 197.76639 | +0.14469159   | +0.98406378 |
| <i>a</i> | 2.7719573  | $\Omega$ 80.64895  | -0.89463930   | +0.17473252 |
| <i>e</i> | 0.1253814  | <i>i</i> 6.01275   | -0.42271134   | -0.03297009 |
| <i>P</i> | 4.62       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 2001 05 23 807 0.2+ 0.0  | 2005 04 11 691 0.2+ 0.1+   | 2005 05 08 703 (4.0+ 4.2+) |
| 2001 05 23 807 0.3+ 0.1+ | 2005 04 11 691 0.2+ 0.1-   | 2006 09 14 703 (0.4+ 2.8+) |
| 2001 06 25 644 0.1- 0.5+ | 2005 04 11 691 0.1+ 0.0    | 2006 09 14 703 (1.7+ 2.0+) |
| 2001 06 25 644 0.1- 0.5+ | 2005 04 12 699 0.1+ 0.9+   | 2006 09 14 703 (0.7- 1.6+) |
| 2001 06 25 644 0.3+ 0.1+ | 2005 04 12 699 0.0 0.5-    | 2006 09 14 703 0.6- 0.6+   |
| 2001 06 30 644 0.2+ 0.1+ | 2005 04 12 699 1.0- 0.8+   | 2006 09 20 703 (0.5+ 1.7+) |
| 2001 06 30 644 0.2+ 0.2- | 2005 04 12 699 (1.6- 3.4-) | 2006 09 20 703 0.0 0.3+    |
| 2001 06 30 644 0.2- 0.2- | 2005 04 14 691 0.0 0.2+    | 2006 09 20 703 0.2+ 0.3+   |
| 2001 07 19 644 0.3- 0.3+ | 2005 04 14 691 0.1- 0.0    | 2006 09 20 703 (1.3- 2.7-) |
| 2001 07 19 644 0.4- 0.1+ | 2005 04 14 691 0.1- 0.0    | 2007 11 02 691 0.0 0.2-    |
| 2001 07 19 644 0.3- 0.3+ | 2005 04 15 691 0.1+ 0.1-   | 2007 11 02 691 0.3- 0.2+   |
| 2003 12 21 691 0.5- 0.3- | 2005 04 15 691 0.0 0.1+    | 2007 11 02 691 0.2- 0.2+   |
| 2003 12 21 691 0.4+ 0.2+ | 2005 04 15 691 0.1+ 0.1-   | 2007 11 19 691 0.8- 0.3+   |
| 2003 12 21 691 0.2+ 0.3- | 2005 05 03 704 0.1+ 1.2-   | 2007 11 19 691 0.1+ 0.5+   |
| 2005 04 07 691 0.1+ 0.2+ | 2005 05 03 704 0.5- 0.0    | 2007 11 19 691 0.4+ 0.3+   |
| 2005 04 07 691 0.1+ 0.0  | 2005 05 03 704 0.7- 1.4+   | 2007 12 05 704 1.3+ 1.0+   |
| 2005 04 07 691 0.2+ 0.0  | 2005 05 03 704 0.3- 0.8+   | 2007 12 05 704 1.1+ 0.1-   |
| 2005 04 09 691 0.0 0.2+  | 2005 05 08 703 1.2- 0.7-   | 2007 12 05 704 0.2- 0.0    |
| 2005 04 09 691 0.2+ 0.1+ | 2005 05 08 703 (1.7- 1.2-) |                            |
| 2005 04 09 691 0.3+ 0.1+ | 2005 05 08 703 (1.4+ 5.0+) |                            |

**(171856)\* 2001 NM<sub>5</sub> = 2004 CQ<sub>104</sub>**

Discovered 2001 July 13 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 60777)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 181.58178  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22885248 | $\omega$ 171.60494 | +0.17206349   | +0.97098285 |
| <i>a</i> | 2.6470713  | $\Omega$ 108.17867 | -0.91364763   | +0.22033800 |
| <i>e</i> | 0.1064732  | <i>i</i> 10.06802  | -0.36829629   | -0.09297024 |
| <i>P</i> | 4.31       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1994 12 31 691 0.1- 0.4-   | 2001 07 28 699 0.4- 0.6+   | 2005 06 28 G96 0.5- 0.1+ |
| 1994 12 31 691 0.4- 1.2-   | 2002 11 24 644 0.4- 0.1-   | 2005 06 28 G96 0.7- 0.0  |
| 1994 12 31 691 0.2- 0.3-   | 2002 11 24 644 0.2- 0.2+   | 2005 06 28 G96 0.8- 0.1- |
| 2001 07 13 644 0.9+ 1.0-   | 2002 11 24 644 0.0 0.2-    | 2005 06 28 G96 0.6- 0.2+ |
| 2001 07 13 644 1.0+ 1.0-   | 2004 01 18 644 0.6+ 0.9+   | 2006 09 16 705 0.3- 0.5+ |
| 2001 07 13 644 0.9+ 0.8-   | 2004 01 18 644 1.1+ 0.9+   | 2006 09 16 705 0.2- 0.4+ |
| 2001 07 14 644 1.3+ 0.7+   | 2004 01 18 644 0.9+ 0.4+   | 2006 09 17 705 0.3- 0.5+ |
| 2001 07 14 644 (1.6+ 0.4+) | 2004 02 13 691 0.6+ 0.2+   | 2006 09 17 705 0.2- 0.5+ |
| 2001 07 14 644 1.4+ 0.6+   | 2004 02 13 691 0.2+ 0.3+   | 2006 09 22 705 0.3- 0.4+ |
| 2001 07 20 644 0.9+ 1.4+   | 2004 02 13 691 0.3+ 0.1-   | 2006 09 22 705 0.2- 0.5+ |
| 2001 07 20 644 0.0 1.2+    | 2004 02 19 704 (0.4+ 1.7+) | 2007 11 08 G96 0.6- 0.2- |
| 2001 07 20 644 (0.0 1.6+)  | 2004 02 19 704 0.7+ 0.9+   | 2007 11 08 G96 0.2- 0.2- |
| 2001 07 26 644 0.8- 0.1-   | 2004 02 19 704 0.9- 1.0+   | 2007 11 08 G96 0.2+ 0.4+ |
| 2001 07 26 644 1.1- 0.0    | 2004 02 19 704 0.2- 0.3+   | 2007 11 08 G96 0.4- 0.2+ |
| 2001 07 26 644 0.4- 0.1+   | 2005 06 27 G96 0.2- 0.2-   | 2007 12 05 G96 0.0 0.1+  |
| 2001 07 28 699 0.6+ 0.1-   | 2005 06 27 G96 0.5- 0.2-   | 2007 12 05 G96 0.2+ 0.3+ |
| 2001 07 28 699 (2.2- 1.0-) | 2005 06 27 G96 0.2- 0.1-   | 2007 12 05 G96 0.2- 0.4+ |
| 2001 07 28 699 1.0- 0.8-   | 2005 06 27 G96 0.5- 0.1-   | 2007 12 05 G96 0.1- 0.0  |

**(171857)\* 2001 OF<sub>12</sub>**

Discovered 2001 July 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 54.81369   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18415233 | $\omega$ 294.27633 | +0.97710255   | +0.15389032 |
| <i>a</i> | 3.0597403  | $\Omega$ 57.17970  | -0.06592970   | +0.87555753 |
| <i>e</i> | 0.1205296  | <i>i</i> 10.06926  | -0.20229652   | +0.45794845 |
| <i>P</i> | 5.35       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|-------|-------|
| 2001 07 20 | 644 | 0.7-  | 0.7+  | 2005 05 08 | G96 | 0.1- | 0.0   | 2007 11 05 | 704 | (0.4+ | 1.7+) |
| 2001 07 20 | 644 | 0.7-  | 0.5+  | 2005 05 08 | G96 | 0.2- | 0.1+  | 2007 11 05 | 704 | 0.1+  | 0.6+  |
| 2001 07 20 | 644 | 0.8-  | 1.0+  | 2005 05 08 | G96 | 0.2- | 0.2+  | 2007 11 05 | 704 | 0.0   | 0.4+  |
| 2001 07 21 | 644 | 0.2-  | 0.2-  | 2005 05 08 | G96 | 0.3- | 0.1+  | 2007 11 05 | 704 | 0.3-  | 0.6+  |
| 2001 07 21 | 644 | 0.2-  | 0.3-  | 2005 05 09 | 699 | 0.2+ | 0.7+  | 2007 11 05 | 704 | 0.3+  | 0.4+  |
| 2001 07 21 | 644 | 0.2-  | 0.3-  | 2005 05 09 | 699 | 0.4- | 0.0   | 2007 11 07 | 691 | 0.3-  | 0.2+  |
| 2001 07 27 | 644 | 0.5-  | 0.8+  | 2005 05 09 | 699 | (0.0 | 1.9+) | 2007 11 07 | 691 | 0.2-  | 0.2+  |
| 2001 07 27 | 644 | 0.2-  | 0.6+  | 2005 05 09 | 699 | 1.0+ | 1.1+  | 2007 11 07 | 691 | 0.1-  | 0.1+  |
| 2001 07 27 | 644 | 0.1+  | 0.1+  | 2005 05 19 | 644 | 0.1- | 0.4+  | 2007 11 13 | 699 | 1.5+  | 1.3-  |
| 2001 08 26 | 644 | 0.1+  | 0.7+  | 2005 05 19 | 644 | 0.4+ | 0.2+  | 2007 11 13 | 699 | 0.0   | 0.2+  |
| 2001 08 26 | 644 | 0.1-  | 0.6+  | 2005 05 19 | 644 | 0.6+ | 0.1+  | 2007 11 13 | 699 | 0.4-  | 0.3-  |
| 2001 08 26 | 644 | 0.0   | 0.5+  | 2005 06 12 | G96 | 0.2+ | 0.3+  | 2007 11 13 | 699 | 0.5+  | 0.5-  |
| 2001 09 16 | 704 | 0.0   | 0.1-  | 2005 06 12 | G96 | 0.1- | 0.4+  | 2007 11 15 | 704 | 0.0   | 0.2-  |
| 2001 09 16 | 704 | 1.0-  | 0.4+  | 2005 06 12 | G96 | 0.4- | 0.6+  | 2007 11 15 | 704 | 0.4-  | 0.0   |
| 2001 09 16 | 704 | (0.1- | 1.5+) | 2005 06 12 | G96 | 0.1- | 0.2+  | 2007 11 15 | 704 | 0.5-  | 0.4-  |
| 2001 09 18 | 699 | 1.5-  | 0.3+  | 2006 08 12 | 644 | 0.1+ | 0.1-  | 2007 11 15 | 704 | 0.8-  | 0.2-  |
| 2001 09 18 | 699 | 0.9+  | 0.2-  | 2006 08 12 | 644 | 0.0  | 0.3+  | 2007 11 15 | 704 | 0.1-  | 0.1+  |
| 2001 09 18 | 699 | 0.0   | 0.2+  | 2006 08 12 | 644 | 0.5+ | 0.1-  | 2007 11 17 | 691 | (2.8- | 1.9+) |
| 2001 09 18 | 699 | 0.1-  | 1.3-  | 2006 08 14 | 644 | 0.3+ | 0.1+  | 2007 11 17 | 691 | 0.4-  | 0.1+  |
| 2001 09 25 | 704 | 1.2+  | 0.3-  | 2006 08 14 | 644 | 0.4- | 0.0   | 2007 11 17 | 691 | 0.2-  | 0.2+  |
| 2001 09 25 | 704 | 0.7+  | 0.0   | 2006 08 14 | 644 | 0.3+ | 0.1+  | 2007 12 04 | 699 | 1.2+  | 0.2-  |
| 2001 09 25 | 704 | 0.3+  | 0.1+  | 2006 08 19 | 644 | 0.0  | 0.3-  | 2007 12 04 | 699 | 0.3-  | 0.7+  |
| 2001 10 23 | 644 | 0.1+  | 0.2-  | 2006 08 19 | 644 | 0.1+ | 0.1+  | 2007 12 04 | 699 | 0.5+  | 0.7+  |
| 2001 10 23 | 644 | 0.5+  | 0.0   | 2006 08 19 | 644 | 0.3+ | 0.2+  | 2007 12 04 | 699 | (1.6+ | 0.4-) |
| 2001 10 23 | 644 | 0.6+  | 0.2+  | 2006 08 25 | E12 | 0.1- | 0.6-  | 2007 12 10 | 704 | 0.7+  | 0.7+  |
| 2001 11 17 | 608 | 0.0   | 1.1-  | 2006 08 25 | E12 | 0.8- | 0.7-  | 2007 12 10 | 704 | 0.1+  | 0.5+  |
| 2001 11 17 | 608 | 0.1-  | 1.0-  | 2006 08 25 | E12 | 0.3+ | 0.7+  | 2007 12 10 | 704 | 0.4-  | 1.0+  |
| 2001 11 17 | 608 | 0.1-  | 0.5-  | 2006 08 25 | E12 | 0.5- | 0.3-  | 2007 12 14 | 704 | 1.3+  | 0.1-  |
| 2005 05 03 | 691 | 0.1+  | 0.1+  | 2007 11 03 | 691 | 0.0  | 0.1+  | 2007 12 14 | 704 | 0.4+  | 0.1-  |
| 2005 05 03 | 691 | 0.3+  | 0.1+  | 2007 11 03 | 691 | 0.0  | 0.1+  | 2007 12 14 | 704 | 0.4+  | 0.0   |
| 2005 05 03 | 691 | 0.2+  | 0.2+  | 2007 11 03 | 691 | 0.3- | 0.1+  |            |     |       |       |

(171858)\* 2001 OO<sub>42</sub>

Discovered 2001 July 22 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 81.39441   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18625671 | $\omega$ 67.55615  | +0.75303458   | +0.65300555 |
| <i>a</i> | 3.0366501  | $\Omega$ 251.57571 | -0.63065083   | +0.68129033 |
| <i>e</i> | 0.2421431  | <i>i</i> 4.88330   | -0.18766579   | +0.33079789 |
| <i>P</i> | 5.29       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 07 22 | 644 | (1.6+ | 0.3-) | 2001 09 20 | 704 | 0.1-  | 0.2-  | 2005 04 15 | 691 | 0.1+  | 0.3+  |
| 2001 07 22 | 644 | 1.2+  | 0.0   | 2001 09 20 | 704 | 0.6-  | 0.3-  | 2006 07 21 | 703 | 0.3+  | 0.3+  |
| 2001 07 22 | 644 | 1.1+  | 0.5+  | 2001 09 22 | 704 | 0.1-  | 0.5-  | 2006 07 21 | 703 | (1.1- | 1.5-) |
| 2001 07 26 | 644 | (0.1- | 2.0-) | 2001 09 22 | 704 | 0.2+  | 0.2-  | 2006 07 21 | 703 | 0.5-  | 0.3-  |
| 2001 07 26 | 644 | 0.4-  | 1.1-  | 2001 09 22 | 704 | 0.4+  | 0.2-  | 2006 07 21 | 703 | 0.2+  | 0.2+  |
| 2001 07 26 | 644 | 0.3-  | 1.3-  | 2001 09 23 | 704 | (0.2+ | 1.5-) | 2006 08 14 | E12 | 0.0   | 0.1+  |
| 2001 08 05 | 644 | 0.1-  | 0.1+  | 2001 09 23 | 704 | 0.0   | 1.1-  | 2006 08 14 | E12 | 0.3-  | 0.1+  |
| 2001 08 05 | 644 | 0.4-  | 0.3+  | 2001 09 23 | 704 | 0.1-  | 0.1+  | 2006 08 14 | E12 | 0.5+  | 0.5-  |
| 2001 08 05 | 644 | 0.5-  | 0.1+  | 2001 09 25 | 699 | 0.3+  | 0.7-  | 2006 08 14 | E12 | 0.1+  | 0.3-  |
| 2001 08 25 | 704 | 0.4+  | 1.0+  | 2001 09 25 | 699 | 0.1-  | 0.5+  | 2006 08 14 | E12 | 0.3+  | 0.0   |
| 2001 08 25 | 704 | 0.0   | 0.7+  | 2001 09 25 | 699 | 0.5+  | 0.4-  | 2006 08 16 | 644 | 0.2-  | 0.0   |
| 2001 08 25 | 704 | (0.4+ | 1.7+) | 2001 09 25 | 699 | 0.7-  | 0.8+  | 2006 08 16 | 644 | 0.1-  | 0.1-  |
| 2001 08 25 | 704 | 0.5+  | 1.3+  | 2001 09 28 | 644 | 0.6-  | 0.1+  | 2006 08 16 | 644 | 0.2+  | 0.1-  |
| 2001 08 27 | 699 | 0.0   | 0.4+  | 2001 09 28 | 644 | 0.3-  | 0.5+  | 2006 08 18 | 644 | 0.2+  | 0.3-  |
| 2001 08 27 | 699 | 0.7+  | 1.0+  | 2001 09 28 | 644 | 0.1-  | 0.2+  | 2006 08 18 | 644 | 0.1+  | 0.1-  |
| 2001 08 27 | 699 | 0.6+  | 1.4+  | 2001 10 14 | 704 | 0.5+  | 0.0   | 2006 08 18 | 644 | 0.0   | 0.0   |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 27 | 699 | 0.3+  | 1.1+  | 2001 10 14 | 704 | 0.3-  | 0.4+  | 2006 08 30 | 704 | 0.3+ | 0.0  |
| 2001 09 10 | 699 | (0.2- | 2.0+) | 2001 10 14 | 704 | 0.2+  | 0.7+  | 2006 08 30 | 704 | 0.2- | 0.3- |
| 2001 09 10 | 699 | 0.1-  | 0.2+  | 2001 10 14 | 704 | 0.5+  | 0.1-  | 2006 08 30 | 704 | 0.5- | 0.9+ |
| 2001 09 10 | 699 | 0.5-  | 0.8+  | 2001 10 14 | 704 | 0.0   | 0.4-  | 2006 08 30 | 704 | 0.2+ | 0.0  |
| 2001 09 10 | 699 | 0.1-  | 0.8+  | 2001 10 23 | 644 | 0.5-  | 0.5+  | 2006 08 30 | 704 | 0.3- | 0.3+ |
| 2001 09 16 | 644 | 0.9+  | 1.2-  | 2001 10 23 | 644 | 0.3-  | 0.5+  | 2007 11 01 | 691 | 0.2+ | 0.1+ |
| 2001 09 16 | 644 | 0.7+  | 0.9-  | 2001 10 23 | 699 | 1.2+  | 1.0-  | 2007 11 01 | 691 | 0.2- | 0.1+ |
| 2001 09 16 | 644 | 1.0+  | 0.8-  | 2001 10 23 | 644 | 0.6-  | 0.4+  | 2007 11 01 | 691 | 0.1- | 0.1- |
| 2001 09 17 | 704 | 0.5-  | 0.9-  | 2001 10 23 | 699 | 0.5-  | 0.9+  | 2007 12 04 | 691 | 0.1- | 0.1+ |
| 2001 09 17 | 704 | 0.0   | 0.2+  | 2001 10 23 | 699 | (1.5- | 0.7+) | 2007 12 04 | 691 | 0.1+ | 0.1+ |
| 2001 09 17 | 704 | 0.8-  | 0.8-  | 2001 10 23 | 699 | 0.7-  | 1.2+  | 2007 12 04 | 691 | 0.2- | 0.2+ |
| 2001 09 18 | 699 | 1.2-  | 1.0-  | 2002 12 04 | 695 | 0.4+  | 0.2+  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2001 09 18 | 699 | 0.1+  | 0.7+  | 2002 12 04 | 695 | 0.5+  | 0.1+  | 2007 12 04 | G96 | 0.6+ | 0.2- |
| 2001 09 18 | 699 | 0.2-  | 0.1+  | 2005 04 06 | 691 | 0.2+  | 0.4+  | 2007 12 04 | G96 | 0.9+ | 0.0  |
| 2001 09 18 | 699 | 1.4-  | 0.6+  | 2005 04 06 | 691 | 0.3+  | 0.4+  | 2007 12 16 | 691 | 0.1- | 0.2+ |
| 2001 09 20 | 704 | 0.0   | 1.2+  | 2005 04 06 | 691 | 0.2+  | 0.5+  | 2007 12 16 | 691 | 0.3- | 0.0  |
| 2001 09 20 | 704 | 0.5-  | 0.1+  | 2005 04 15 | 691 | 0.1-  | 0.3+  | 2007 12 16 | 691 | 0.1+ | 0.0  |
| 2001 09 20 | 704 | 1.1-  | 0.9+  | 2005 04 15 | 691 | 0.2+  | 0.3+  |            |     |      |      |

(171859)\* 2001 OH<sub>51</sub> = 2000 EL<sub>25</sub>

Discovered 2001 July 21 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 15885)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 145.40882  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21235436 | $\omega$ 272.49415 | +0.17521395   | +0.98447001 |
| <i>a</i> | 2.7824579  | $\Omega$ 7.62306   | -0.86748129   | +0.15961047 |
| <i>e</i> | 0.0886476  | <i>i</i> 4.71424   | -0.46559240   | +0.07309781 |
| <i>P</i> | 4.64       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 08 | 691 | 0.1- | 0.0  | 2001 07 27 | 644 | 0.0  | 0.7+ | 2006 09 14 | 703 | 0.1+ | 1.0+ |
| 2000 03 08 | 691 | 0.1- | 0.3+ | 2001 07 27 | 644 | 0.1- | 0.2+ | 2006 09 14 | 703 | 0.0  | 0.1- |
| 2000 03 08 | 691 | 0.3+ | 0.1- | 2001 07 31 | 644 | 0.0  | 0.4- | 2006 09 14 | 703 | 0.9- | 0.1+ |
| 2000 03 09 | 691 | 0.1- | 0.1+ | 2001 07 31 | 644 | 0.3- | 0.3- | 2006 09 14 | 703 | 1.1- | 0.2+ |
| 2000 03 09 | 691 | 0.0  | 0.2- | 2001 07 31 | 644 | 0.2- | 0.1- | 2006 09 30 | G96 | 0.1+ | 0.4- |
| 2000 03 09 | 691 | 1.3+ | 0.3- | 2004 02 13 | 691 | 0.2+ | 0.3+ | 2006 09 30 | G96 | 0.2+ | 0.3- |
| 2000 03 11 | 691 | 0.3- | 0.1- | 2004 02 13 | 691 | 0.1- | 0.3+ | 2006 09 30 | G96 | 0.3+ | 0.1- |
| 2000 03 11 | 691 | 0.6- | 0.3- | 2004 02 13 | 691 | 0.0  | 0.1+ | 2006 10 20 | G96 | 0.2+ | 0.0  |
| 2000 03 11 | 691 | 0.6- | 0.2+ | 2005 05 04 | 644 | 0.2- | 0.2+ | 2006 10 20 | G96 | 0.2+ | 0.3+ |
| 2000 04 05 | 704 | 1.1+ | 0.1+ | 2005 05 04 | 644 | 0.1+ | 0.3+ | 2006 10 20 | G96 | 0.5+ | 0.1+ |
| 2000 04 05 | 704 | 1.1+ | 0.3+ | 2005 05 04 | 644 | 0.0  | 0.1+ | 2006 10 20 | G96 | 0.5+ | 0.0  |
| 2000 04 05 | 704 | 0.7+ | 0.2+ | 2005 05 04 | 644 | 0.1- | 0.1+ | 2007 11 19 | 691 | 0.1- | 0.1+ |
| 2000 04 05 | 704 | 0.8- | 0.7+ | 2005 05 04 | 644 | 0.2- | 0.3+ | 2007 11 19 | 691 | 0.1- | 0.1+ |
| 2000 04 05 | 704 | 0.8+ | 0.5+ | 2005 05 04 | 644 | 0.1- | 0.2+ | 2007 11 19 | 691 | 0.3- | 0.2+ |
| 2001 07 13 | 644 | 0.2- | 0.5- | 2006 08 27 | 691 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.2- | 0.2+ |
| 2001 07 13 | 644 | 0.1+ | 0.3- | 2006 08 27 | 691 | 0.1+ | 0.4+ | 2007 12 15 | 704 | 0.1- | 0.0  |
| 2001 07 13 | 644 | 0.0  | 0.2- | 2006 08 27 | 691 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.4+ | 0.3- |
| 2001 07 21 | 644 | 0.1+ | 0.2+ | 2006 09 14 | 703 | 0.1+ | 1.4- | 2007 12 15 | 704 | 0.3- | 0.3+ |
| 2001 07 21 | 644 | 0.6- | 0.4+ | 2006 09 14 | 703 | 0.3+ | 0.1- | 2007 12 15 | 704 | 0.8+ | 0.3- |
| 2001 07 21 | 644 | 1.2- | 1.0+ | 2006 09 14 | 703 | 0.4- | 0.1+ |            |     |      |      |
| 2001 07 27 | 644 | 0.1+ | 0.2+ | 2006 09 14 | 703 | 1.0+ | 0.3- |            |     |      |      |

2007 DEC. 24

M.P.O. 129185

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 06 28 | 644 | 0.0   | 0.4+  | 2007 10 07 | G96 | 0.5+  | 0.5-  | 2007 11 05 | 704 | 0.0   | 0.2+  |
| 2001 07 16 | 699 | 0.2-  | 0.3+  | 2007 10 08 | G96 | 0.2+  | 0.5-  | 2007 11 05 | 704 | 0.8+  | 0.0   |
| 2001 07 16 | 699 | 0.5-  | 0.6+  | 2007 10 08 | G96 | 0.2+  | 0.3-  | 2007 11 05 | 704 | 0.0   | 0.7-  |
| 2001 07 16 | 699 | 0.3+  | 0.0   | 2007 10 08 | G96 | 0.3+  | 0.3-  | 2007 11 05 | 704 | 0.2-  | 0.2+  |
| 2001 07 16 | 699 | 0.4+  | 0.4+  | 2007 10 08 | G96 | 0.3+  | 0.3-  | 2007 11 05 | G96 | 0.4+  | 0.3-  |
| 2001 07 25 | 608 | 0.5-  | 0.4-  | 2007 10 11 | 704 | (1.6- | 1.5-) | 2007 11 05 | G96 | 0.5+  | 0.2-  |
| 2001 07 25 | 608 | 0.4-  | 0.5-  | 2007 10 11 | 704 | 0.2+  | 0.9-  | 2007 11 05 | G96 | 0.0   | 0.2-  |
| 2001 07 25 | 608 | 0.3-  | 0.2-  | 2007 10 11 | 704 | 0.6-  | 1.1+  | 2007 11 05 | G96 | 0.1-  | 0.3-  |
| 2001 07 25 | 608 | 0.3-  | 0.5-  | 2007 10 11 | 704 | 0.1-  | 0.9+  | 2007 11 07 | 703 | (0.1+ | 1.8+) |
| 2001 07 25 | 608 | 0.8-  | 0.2-  | 2007 10 16 | G96 | 0.1+  | 0.2-  | 2007 11 07 | 703 | 0.3+  | 1.1+  |
| 2001 07 25 | 608 | 0.6-  | 0.1-  | 2007 10 16 | G96 | 0.4+  | 0.2-  | 2007 11 07 | 703 | 0.1-  | 0.7+  |
| 2001 07 28 | 699 | 1.1+  | 0.9+  | 2007 10 16 | G96 | 0.2+  | 0.1-  | 2007 11 07 | 703 | 0.1+  | 0.5+  |
| 2001 07 28 | 699 | 0.1+  | 0.3+  | 2007 10 16 | G96 | 0.4+  | 0.2-  | 2007 11 14 | 704 | 0.7+  | 0.0   |
| 2001 07 28 | 699 | 0.3+  | 0.2+  | 2007 10 19 | 699 | (0.1+ | 1.5-) | 2007 11 14 | 704 | 0.7+  | 0.0   |
| 2001 07 28 | 699 | 0.1-  | 0.1+  | 2007 10 19 | 699 | 0.1-  | 0.5+  | 2007 11 14 | 704 | 0.3+  | 0.4+  |
| 2001 08 25 | 644 | 0.0   | 0.1-  | 2007 10 19 | 699 | 0.5-  | 0.3-  | 2007 11 14 | 704 | 0.2+  | 0.2+  |
| 2001 08 25 | 644 | 0.1+  | 0.1-  | 2007 10 19 | 699 | 0.9-  | 0.2+  | 2007 11 14 | 704 | 0.1+  | 0.1-  |
| 2001 08 25 | 644 | 0.2+  | 0.0   | 2007 10 20 | 703 | 0.5+  | 0.7-  | 2007 12 03 | 703 | 0.3-  | 1.3+  |
| 2001 09 10 | 699 | 0.1-  | 0.1-  | 2007 10 20 | 703 | 0.8+  | 0.2-  | 2007 12 03 | 703 | (1.0- | 1.6+) |
| 2001 09 10 | 699 | 0.7+  | 0.8+  | 2007 10 20 | 703 | 0.0   | 0.3+  | 2007 12 03 | 703 | 0.6-  | 0.9+  |
| 2001 09 10 | 699 | 0.4-  | 0.5+  | 2007 10 20 | 703 | 0.3+  | 0.2-  | 2007 12 03 | 703 | 0.6+  | 1.0+  |
| 2001 09 10 | 699 | 0.3+  | 0.0   | 2007 10 30 | 691 | 0.1-  | 0.1-  | 2007 12 05 | 704 | 0.4-  | 0.1+  |
| 2004 02 17 | 691 | 0.5+  | 0.0   | 2007 10 30 | 691 | 0.2-  | 0.2-  | 2007 12 05 | 704 | 1.0+  | 0.5+  |
| 2004 02 17 | 691 | 0.5+  | 0.3+  | 2007 10 30 | 691 | 0.2-  | 0.2-  | 2007 12 05 | 704 | 0.4-  | 0.4-  |
| 2004 02 17 | 691 | 0.0   | 0.3+  | 2007 10 31 | 691 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 0.0   | 0.5+  |
| 2004 02 17 | 645 | 0.1-  | 0.1-  | 2007 10 31 | 691 | 0.5-  | 0.0   | 2007 12 15 | G96 | 0.4+  | 0.2-  |
| 2004 02 17 | 645 | 0.1-  | 0.0   | 2007 10 31 | 691 | 0.1-  | 0.1-  | 2007 12 15 | G96 | 0.2+  | 0.5-  |
| 2005 03 11 | 691 | 0.4+  | 0.3+  | 2007 11 04 | 691 | 0.4-  | 0.7+  | 2007 12 15 | G96 | 0.5+  | 0.1-  |
| 2005 03 11 | 691 | 0.1-  | 0.4+  | 2007 11 04 | 691 | 0.4-  | 0.2+  | 2007 12 15 | G96 | 0.4+  | 0.2-  |
| 2005 03 11 | 691 | 0.2+  | 0.2+  | 2007 11 04 | 691 | 0.3-  | 0.1-  |            |     |       |       |
| 2007 10 07 | G96 | (1.7+ | 0.3+) | 2007 11 04 | H07 | 0.6+  | 0.1+  |            |     |       |       |

(171861)\* 2001 OP<sub>102</sub>

Discovered 2001 July 28 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 178.21488  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.23010187 | $\omega$ | 6.88671   | +0.56920493   |
| <i>a</i> | 2.6374807  | $\Omega$ | 297.95017 | -0.76335320   |
| <i>e</i> | 0.1036386  | <i>i</i> | 11.25491  | -0.30544662   |
| <i>P</i> | 4.28       | <i>H</i> | 15.2      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 01 08 | 691 | 0.2-  | 0.3-  | 2001 08 25 | 704 | 0.2+  | 0.6-  | 2006 10 23 | 703 | 0.3- | 0.8- |
| 1995 01 08 | 691 | 0.0   | 0.4-  | 2001 08 25 | 704 | 0.2-  | 1.0-  | 2006 10 23 | 703 | 0.1+ | 0.4- |
| 1995 01 08 | 691 | 0.3-  | 0.2-  | 2001 09 09 | 699 | 0.3+  | 0.0   | 2006 10 23 | 703 | 0.0  | 0.5+ |
| 2001 06 20 | 699 | (0.7+ | 1.6+) | 2001 09 09 | 699 | 0.2+  | 0.3-  | 2006 10 23 | 703 | 0.6- | 0.1+ |
| 2001 06 20 | 699 | (0.9- | 3.9+) | 2001 09 09 | 699 | 0.2+  | 0.1+  | 2007 03 15 | G96 | 0.1+ | 0.1+ |
| 2001 06 20 | 699 | 0.3-  | 1.1+  | 2001 09 09 | 699 | 0.5-  | 0.3+  | 2007 03 15 | G96 | 0.2- | 0.2+ |
| 2001 06 20 | 699 | 0.1+  | 1.0+  | 2001 09 18 | 699 | 0.4-  | 0.5+  | 2007 03 15 | G96 | 0.1+ | 0.3+ |
| 2001 07 20 | 699 | 0.6+  | 0.5+  | 2001 09 18 | 699 | 0.1+  | 0.7-  | 2007 03 15 | G96 | 0.3- | 0.3+ |
| 2001 07 20 | 699 | 0.9+  | 1.0+  | 2001 09 18 | 699 | (1.6+ | 0.7-) | 2007 10 14 | G96 | 0.1- | 0.3+ |
| 2001 07 20 | 699 | 0.8+  | 0.1+  | 2001 09 18 | 699 | 1.0+  | 0.2+  | 2007 10 14 | G96 | 0.1+ | 0.2+ |
| 2001 07 20 | 699 | 0.8+  | 0.3-  | 2001 09 24 | 644 | 0.1+  | 0.2-  | 2007 10 14 | G96 | 0.2+ | 0.3+ |
| 2001 07 28 | 608 | 1.2-  | 0.3+  | 2001 09 24 | 644 | 0.1+  | 0.3+  | 2007 10 14 | G96 | 0.2- | 0.3+ |
| 2001 07 28 | 608 | 0.8-  | 0.4+  | 2001 09 24 | 644 | 0.1+  | 0.4+  | 2007 11 18 | G96 | 0.3- | 0.1+ |
| 2001 07 28 | 608 | 1.2-  | 0.7+  | 2001 10 14 | 704 | 1.2+  | 0.7+  | 2007 11 18 | G96 | 0.2- | 0.5+ |
| 2001 07 29 | 704 | 1.2-  | 0.4-  | 2001 10 14 | 704 | 1.1+  | 0.3+  | 2007 11 18 | G96 | 0.3- | 0.7+ |
| 2001 07 29 | 704 | 0.3-  | 0.1-  | 2001 10 14 | 704 | (1.7+ | 0.9+) | 2007 11 18 | G96 | 0.3- | 0.0  |
| 2001 07 29 | 704 | 0.3+  | 0.8+  | 2001 10 14 | 704 | (2.7+ | 0.6+) | 2007 12 06 | G96 | 0.4- | 0.3- |
| 2001 07 29 | 704 | (0.6+ | 2.0+) | 2002 12 05 | 704 | 0.4+  | 0.7+  | 2007 12 06 | G96 | 0.1+ | 0.3+ |
| 2001 07 29 | 704 | 0.9-  | 0.5-  | 2002 12 05 | 704 | 0.7+  | 1.2+  | 2007 12 06 | G96 | 0.0  | 0.4+ |
| 2001 07 29 | 704 | (0.1- | 1.6+) | 2002 12 05 | 704 | 0.0   | 1.3+  | 2007 12 06 | G96 | 0.1- | 0.0  |
| 2001 08 10 | 608 | 0.2+  | 1.2-  | 2002 12 05 | 704 | (0.8+ | 2.2+) | 2007 12 06 | G96 | 0.5+ | 0.7- |
| 2001 08 10 | 608 | (0.5+ | 1.6-) | 2004 02 19 | 704 | (2.1+ | 0.7+) | 2007 12 06 | G96 | 0.3+ | 0.1+ |
| 2001 08 10 | 608 | 0.5+  | 1.4-  | 2004 02 19 | 704 | 0.0   | 1.2+  | 2007 12 06 | G96 | 0.3+ | 1.7- |
| 2001 08 25 | 704 | 0.3-  | 0.3-  | 2004 02 19 | 704 | 0.1-  | 0.9+  | 2007 12 06 | G96 | 1.2+ | 1.1- |

|            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 25 | 704 | 0.2- | 0.1- | 2004 02 19 | 704 | (1.5+ | 1.7+) |
| 2001 08 25 | 704 | 0.3- | 0.2- | 2004 02 19 | 704 | 0.6+  | 0.8+  |

(171862)\* 2001 PG<sub>49</sub> = 2005 JW<sub>72</sub>

Discovered 2001 Aug. 13 by NEAT at Palomar.

Id. A. Doppler (*MPO* 75031)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.96234  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17419771 | $\omega$ | 190.11373 | +0.62751571   |
| <i>a</i> | 3.1752244  | $\Omega$ | 221.78108 | +0.74006044   |
| <i>e</i> | 0.2081807  | <i>i</i> | 24.35057  | +0.24193922   |
| <i>P</i> | 5.66       | <i>H</i> | 14.8      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 13 | 644 | 0.1+ | 0.0  | 2005 05 11 | G96 | 0.0  | 0.2+ | 2007 11 03 | 699 | 1.0-  | 0.6+  |
| 2001 08 13 | 644 | 0.1- | 0.2+ | 2005 05 14 | G96 | 0.2- | 0.2+ | 2007 11 03 | 699 | 0.8-  | 1.3-  |
| 2001 08 13 | 644 | 0.0  | 0.1- | 2005 05 14 | G96 | 0.0  | 0.0  | 2007 11 03 | 699 | 0.9-  | 0.6-  |
| 2001 08 20 | 644 | 0.3+ | 0.1- | 2005 05 14 | G96 | 0.2- | 0.1- | 2007 11 09 | 704 | 0.3+  | 0.3+  |
| 2001 08 20 | 644 | 0.1+ | 0.2- | 2005 05 14 | G96 | 0.4- | 0.1+ | 2007 11 09 | 704 | 0.5+  | 0.2+  |
| 2001 08 20 | 644 | 0.1+ | 0.1- | 2007 09 15 | 703 | 0.4- | 0.2+ | 2007 11 09 | 704 | 0.1+  | 0.4+  |
| 2001 08 22 | 704 | 0.0  | 0.2+ | 2007 09 15 | 703 | 0.7+ | 0.0  | 2007 11 09 | 704 | 0.3-  | 0.3+  |
| 2001 08 22 | 704 | 0.1- | 0.6+ | 2007 09 15 | 703 | 0.7+ | 0.3- | 2007 11 09 | 704 | 0.2-  | 0.3+  |
| 2001 08 22 | 704 | 0.7- | 0.1- | 2007 09 15 | 703 | 0.3+ | 0.5- | 2007 11 16 | 703 | 0.6+  | 0.6+  |
| 2003 01 24 | 644 | 0.2+ | 0.6+ | 2007 10 07 | 106 | 0.4+ | 0.1+ | 2007 11 16 | 703 | 0.3+  | 0.1+  |
| 2003 01 24 | 644 | 0.2+ | 0.7+ | 2007 10 07 | 106 | 0.2- | 0.1- | 2007 11 16 | 703 | 0.3+  | 0.7+  |
| 2003 01 24 | 644 | 0.3+ | 0.6+ | 2007 10 07 | 106 | 0.2+ | 0.3- | 2007 11 16 | 703 | (1.8- | 0.3+) |
| 2005 04 11 | G96 | 0.6- | 0.1+ | 2007 10 07 | 106 | 0.2- | 0.0  | 2007 12 02 | 704 | 0.1-  | 0.5+  |
| 2005 04 11 | G96 | 0.1- | 0.1- | 2007 10 08 | 703 | 0.6+ | 0.1+ | 2007 12 02 | 704 | 1.0+  | 0.8-  |
| 2005 04 11 | G96 | 0.2- | 0.3+ | 2007 10 08 | 703 | 1.1- | 0.2+ | 2007 12 02 | 704 | 0.8+  | 0.2+  |
| 2005 04 11 | G96 | 0.4- | 0.9+ | 2007 10 08 | 703 | 0.1+ | 0.1+ | 2007 12 02 | 704 | 0.3-  | 0.7-  |
| 2005 05 08 | 691 | 0.1+ | 0.0  | 2007 10 08 | 703 | 0.2- | 0.3+ | 2007 12 16 | 704 | 0.7-  | 0.0   |
| 2005 05 08 | 691 | 0.3+ | 0.4+ | 2007 10 20 | 703 | 0.3- | 0.1+ | 2007 12 16 | 704 | 0.3+  | 1.1+  |
| 2005 05 08 | 691 | 0.2+ | 0.2+ | 2007 10 20 | 703 | 0.0  | 0.5+ | 2007 12 16 | 704 | 0.4+  | 0.6+  |
| 2005 05 11 | G96 | 0.4- | 0.2- | 2007 10 20 | 703 | 0.2+ | 0.4- | 2007 12 16 | 704 | 0.2+  | 1.2+  |
| 2005 05 11 | G96 | 0.4- | 0.1- | 2007 10 20 | 703 | 0.1+ | 0.6- | 2007 12 16 | 704 | 0.7-  | 0.0   |
| 2005 05 11 | G96 | 0.0  | 0.5+ | 2007 11 03 | 699 | 0.5- | 0.0  |            |     |       |       |

(171863)\* 2001 QK<sub>3</sub> = 1998 BV<sub>38</sub> = 2001 PT<sub>64</sub>

Discovered 2001 Aug. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (d, *MPO* 29700), T. B. Spahr (*MPO* 17736)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.52863   | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.18581205 | $\omega$ | 260.11692 | +0.98167238   |
| <i>a</i> | 3.0414929  | $\Omega$ | 110.65208 | +0.18662669   |
| <i>e</i> | 0.2079466  | <i>i</i> | 2.25847   | +0.03859808   |
| <i>P</i> | 5.30       | <i>H</i> | 15.3      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 01 29 | 691 | 0.4+ | 0.2+ | 2004 02 23 | 704 | 0.2+  | 0.3+  | 2007 11 04 | 704 | 0.4- | 0.3+ |
| 1998 01 29 | 691 | 0.1+ | 0.4- | 2004 02 23 | 704 | (0.4- | 2.4+) | 2007 11 12 | 703 | 0.0  | 0.2+ |
| 1998 01 29 | 691 | 0.3+ | 0.1+ | 2004 02 23 | 704 | 0.9+  | 0.4+  | 2007 11 12 | 703 | 0.6+ | 0.0  |
| 1998 02 03 | 691 | 0.3- | 0.0  | 2007 09 14 | G96 | 0.6-  | 0.6-  | 2007 11 12 | 703 | 0.1+ | 0.7- |
| 1998 02 03 | 691 | 0.3- | 0.1+ | 2007 09 14 | G96 | 0.5-  | 0.7-  | 2007 11 12 | 703 | 0.2+ | 0.2- |
| 1998 02 03 | 691 | 0.2- | 0.2- | 2007 09 14 | G96 | 0.8-  | 0.7-  | 2007 11 14 | 691 | 0.1- | 0.2- |
| 2001 07 21 | 608 | 0.0  | 0.6- | 2007 09 14 | G96 | 0.3-  | 0.7-  | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2001 07 21 | 608 | 0.1+ | 1.1- | 2007 10 10 | D29 | 0.4-  | 1.1-  | 2007 11 14 | 691 | 0.1+ | 0.3- |
| 2001 07 21 | 608 | 0.2- | 0.3- | 2007 10 10 | D29 | 0.1+  | 0.3-  | 2007 11 14 | 704 | 0.6+ | 0.9+ |
| 2001 08 14 | 608 | 0.2+ | 0.4+ | 2007 10 10 | D29 | 0.5+  | 0.6-  | 2007 11 14 | 704 | 0.1+ | 0.9+ |
| 2001 08 14 | 608 | 0.3+ | 0.3- | 2007 10 10 | D29 | 0.0   | 0.3-  | 2007 11 14 | 704 | 0.1+ | 0.6+ |
| 2001 08 14 | 608 | 0.5+ | 0.0  | 2007 10 19 | 699 | 0.9+  | 0.5+  | 2007 11 14 | 704 | 0.2+ | 1.0+ |
| 2001 08 16 | 704 | 0.3- | 0.1+ | 2007 10 19 | 699 | 1.1+  | 0.6+  | 2007 11 14 | 704 | 0.3+ | 0.8+ |
| 2001 08 16 | 704 | 0.2- | 0.1- | 2007 10 19 | 699 | 0.3+  | 0.6-  | 2007 11 20 | 703 | 0.4+ | 0.2- |
| 2001 08 16 | 704 | 0.3- | 0.2+ | 2007 10 19 | 699 | 0.1-  | 0.1+  | 2007 11 20 | 703 | 0.3- | 0.1- |
| 2001 08 16 | 704 | 0.6- | 0.6- | 2007 10 20 | 703 | 1.3+  | 0.8+  | 2007 11 20 | 703 | 0.6+ | 0.1- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 16 | 704 | 1.0+  | 0.2-  | 2007 10 20 | 703 | 0.4- | 0.4+ | 2007 11 20 | 703 | 0.0  | 0.1+ |
| 2001 08 18 | 704 | 0.7-  | 0.4+  | 2007 10 20 | 703 | 0.7- | 1.1- | 2007 12 03 | 703 | 0.0  | 0.8+ |
| 2001 08 18 | 704 | (0.3- | 1.7+) | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 03 | 703 | 0.0  | 0.2+ |
| 2001 08 18 | 704 | 0.2-  | 0.9+  | 2007 10 30 | 691 | 0.1- | 0.3- | 2007 12 03 | 703 | 0.6- | 0.6+ |
| 2001 08 19 | 704 | 0.1+  | 0.2+  | 2007 10 30 | 691 | 0.3- | 0.3- | 2007 12 03 | 703 | 0.6- | 0.6+ |
| 2001 08 19 | 704 | 0.6+  | 0.7+  | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.5+ | 0.5+ |
| 2001 08 19 | 704 | 0.1-  | 0.2+  | 2007 11 03 | 691 | 0.1+ | 0.5+ | 2007 12 05 | 699 | 0.1+ | 0.5+ |
| 2001 08 19 | 704 | 0.3-  | 1.0+  | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 05 | 704 | 0.6+ | 0.4+ |
| 2001 09 07 | 704 | (0.7- | 3.6-) | 2007 11 03 | 699 | 0.2+ | 0.5- | 2007 12 05 | 704 | 0.5+ | 0.6+ |
| 2001 09 07 | 704 | 0.6+  | 1.2-  | 2007 11 03 | 699 | 0.5+ | 0.2+ | 2007 12 05 | 699 | 0.1+ | 0.0  |
| 2001 09 07 | 704 | (1.4+ | 1.8-) | 2007 11 03 | 699 | 0.1+ | 0.0  | 2007 12 05 | 704 | 0.2+ | 0.5+ |
| 2001 09 21 | 291 | 0.2-  | 0.2+  | 2007 11 03 | 699 | 0.7- | 0.3- | 2007 12 05 | 699 | 0.8- | 0.2+ |
| 2001 09 21 | 291 | 0.1-  | 0.1+  | 2007 11 04 | 704 | 0.3+ | 0.1+ | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2001 09 21 | 291 | 0.1-  | 0.2+  | 2007 11 04 | 704 | 0.0  | 0.2+ | 2007 12 05 | 699 | 0.5- | 0.5+ |
| 2004 02 23 | 704 | (1.0+ | 2.1+) | 2007 11 04 | 704 | 0.2- | 0.1- |            |     |      |      |
| 2004 02 23 | 704 | 0.7-  | 0.5+  | 2007 11 04 | 704 | 0.0  | 0.5+ |            |     |      |      |

**(171864)\* 2001 QU<sub>52</sub>**

Discovered 2001 Aug. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 20.79595   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18468873 | $\omega$ | 197.78805 | +0.97563814 | -0.21927344 |
| $a$ | 3.0538131  | $\Omega$ | 174.86287 | +0.20961382 | +0.92224868 |
| $e$ | 0.2082944  | $i$      | 4.50108   | +0.06474770 | +0.31839683 |
| $P$ | 5.34       | $H$      | 15.8      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1991 11 09 | 691 | 0.1+ | 0.3- | 2005 04 10 | G96 | 0.8-  | 0.0   | 2007 11 03 | 699 | 1.3+ | 0.6- |
| 1991 11 09 | 691 | 0.1- | 0.3- | 2005 04 16 | 691 | 0.4+  | 0.3+  | 2007 11 03 | 699 | 0.3+ | 0.8+ |
| 1999 03 21 | 645 | 0.1+ | 0.2+ | 2005 04 16 | 691 | 0.1-  | 0.7+  | 2007 11 04 | 704 | 0.1- | 0.5+ |
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2005 04 16 | 691 | 0.1-  | 0.4+  | 2007 11 04 | 704 | 0.1+ | 0.4+ |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 10 09 | D29 | 0.8+  | 0.0   | 2007 11 04 | 704 | 0.0  | 0.4+ |
| 1999 03 22 | 645 | 0.1+ | 0.0  | 2007 10 09 | D29 | 0.3+  | 0.1-  | 2007 11 04 | 704 | 0.1- | 0.6+ |
| 2001 07 20 | 699 | 0.4- | 0.6+ | 2007 10 09 | D29 | 0.5+  | 0.0   | 2007 11 04 | 704 | 0.1- | 0.0  |
| 2001 07 20 | 699 | 0.7+ | 0.5+ | 2007 10 09 | D29 | 0.3+  | 0.1-  | 2007 11 08 | G96 | 0.5+ | 0.1- |
| 2001 07 20 | 699 | 0.7+ | 0.1+ | 2007 10 13 | 704 | 0.3+  | 0.9+  | 2007 11 08 | G96 | 0.3+ | 0.1- |
| 2001 07 20 | 699 | 1.2+ | 0.7+ | 2007 10 13 | 704 | 0.3-  | 0.4+  | 2007 11 08 | G96 | 0.6+ | 0.0  |
| 2001 08 16 | 704 | 0.9- | 0.2+ | 2007 10 13 | 704 | 0.8+  | 1.2+  | 2007 11 08 | G96 | 0.2+ | 0.1+ |
| 2001 08 16 | 704 | 0.0  | 0.8+ | 2007 10 13 | 704 | 0.1+  | 0.2+  | 2007 11 12 | 704 | 0.4- | 0.9+ |
| 2001 08 16 | 704 | 0.9- | 0.5+ | 2007 10 13 | 704 | 0.3-  | 0.2+  | 2007 11 12 | 704 | 0.4- | 0.5+ |
| 2001 08 16 | 704 | 0.4- | 0.4+ | 2007 10 16 | 691 | 0.2-  | 0.0   | 2007 11 12 | 704 | 0.9- | 0.8+ |
| 2001 08 19 | 704 | 0.3+ | 0.2+ | 2007 10 16 | 691 | 0.4-  | 0.1-  | 2007 11 12 | 704 | 0.1- | 0.4+ |
| 2001 08 19 | 704 | 0.4- | 1.0+ | 2007 10 16 | 691 | 0.6-  | 0.8-  | 2007 11 12 | 704 | 0.5- | 1.1+ |
| 2001 08 19 | 704 | 0.8- | 0.7+ | 2007 10 20 | 691 | 0.0   | 0.2+  | 2007 11 19 | 703 | 0.2- | 0.2+ |
| 2001 08 24 | 699 | 0.8- | 0.8+ | 2007 10 20 | 691 | 0.2-  | 0.1+  | 2007 11 19 | 703 | 0.1+ | 0.2+ |
| 2001 08 24 | 699 | 0.5- | 0.3+ | 2007 10 20 | 691 | 0.2-  | 0.1-  | 2007 11 19 | 703 | 0.2- | 0.0  |
| 2001 08 24 | 699 | 0.6- | 0.0  | 2007 10 21 | 704 | 0.4-  | 0.9+  | 2007 11 19 | 703 | 0.1+ | 1.1+ |
| 2001 08 24 | 699 | 0.2+ | 0.1- | 2007 10 21 | 704 | 0.4-  | 1.2+  | 2007 12 04 | 704 | 0.1+ | 0.0  |
| 2001 09 20 | 704 | 0.0  | 0.1+ | 2007 10 21 | 704 | (0.1- | 1.6+) | 2007 12 04 | 704 | 0.8+ | 1.2+ |
| 2001 09 20 | 704 | 0.5+ | 0.5+ | 2007 10 21 | 704 | 0.8+  | 0.6+  | 2007 12 04 | 704 | 0.1+ | 0.1+ |
| 2001 09 20 | 704 | 0.2+ | 0.1- | 2007 11 02 | D29 | 0.1+  | 0.3-  | 2007 12 04 | 704 | 0.8+ | 0.5+ |
| 2001 09 20 | 704 | 0.4- | 0.0  | 2007 11 02 | D29 | 0.5+  | 0.1+  | 2007 12 05 | 699 | 0.3- | 0.4- |
| 2001 09 20 | 704 | 1.2+ | 0.7- | 2007 11 02 | D29 | 0.3+  | 0.2-  | 2007 12 05 | 699 | 0.2+ | 0.7+ |
| 2005 04 10 | G96 | 0.4+ | 0.2- | 2007 11 02 | D29 | 0.6+  | 0.1-  | 2007 12 05 | 699 | 1.6- | 0.5+ |
| 2005 04 10 | G96 | 0.2+ | 0.5+ | 2007 11 03 | 699 | 0.7+  | 0.7-  | 2007 12 05 | 699 | 1.6- | 0.9- |
| 2005 04 10 | G96 | 0.6- | 0.3+ | 2007 11 03 | 699 | 0.7+  | 1.0+  |            |     |      |      |

**(171865)\* 2001 QQ<sub>72</sub>**

Discovered 2001 Aug. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 18.95797   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17708972 | $\omega$ | 102.19201 | +0.96636103 | -0.09490141 |
| $a$ | 3.1405604  | $\Omega$ | 263.60839 | +0.00213348 | +0.93235764 |
| $e$ | 0.2373367  | $i$      | 13.91812  | +0.25718051 | +0.34885949 |
| $P$ | 5.57       | $H$      | 14.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1951 08 06 | 261 | 0.4- | 0.8- | 2001 09 17 | 704 | 0.2+  | 0.6+  | 2007 11 05 | 704 | 0.8+  | 0.5+  |
| 1951 08 06 | 261 | 0.3+ | 0.7- | 2001 09 30 | 644 | 0.9-  | 0.8+  | 2007 11 05 | 704 | 1.1+  | 0.7-  |
| 1990 09 14 | 261 | 0.3+ | 0.1- | 2001 09 30 | 644 | 0.9-  | 0.8+  | 2007 11 05 | 704 | 0.3+  | 0.3+  |
| 1990 09 14 | 261 | 0.5+ | 0.1+ | 2001 09 30 | 644 | 0.9-  | 0.8+  | 2007 11 05 | 704 | 0.7+  | 0.0   |
| 1990 10 24 | 261 | 0.4+ | 0.1+ | 2001 10 17 | 704 | (1.6- | 0.6-) | 2007 11 05 | 704 | 0.5+  | 1.3-  |
| 1990 10 24 | 261 | 0.0  | 0.2- | 2001 10 17 | 704 | 0.2-  | 0.4-  | 2007 11 12 | 703 | 1.0-  | 0.3-  |
| 2001 07 17 | 699 | 0.4- | 0.2- | 2001 10 17 | 704 | 0.1+  | 0.1+  | 2007 11 12 | 703 | 0.1+  | 1.3+  |
| 2001 07 17 | 699 | 0.0  | 0.2- | 2001 10 17 | 704 | 0.3+  | 0.3-  | 2007 11 12 | 703 | 0.1-  | 0.2+  |
| 2001 07 17 | 699 | 0.3- | 0.1+ | 2001 10 17 | 704 | 0.4-  | 0.4-  | 2007 11 12 | 703 | 0.3-  | 1.1-  |
| 2001 07 17 | 699 | 0.1+ | 0.2+ | 2001 10 23 | 608 | 0.2-  | 0.6-  | 2007 11 13 | 703 | 0.1-  | 0.5-  |
| 2001 08 16 | 644 | 0.0  | 0.4+ | 2001 10 23 | 608 | 0.3-  | 1.1-  | 2007 11 13 | 703 | (2.2- | 0.1-) |
| 2001 08 16 | 644 | 0.1+ | 0.4+ | 2001 10 23 | 608 | 0.5-  | 0.9-  | 2007 11 13 | 703 | 0.3-  | 0.2-  |
| 2001 08 16 | 644 | 0.2+ | 0.4+ | 2001 11 18 | 704 | 0.9+  | 0.5+  | 2007 11 13 | 703 | 1.3-  | 1.0+  |
| 2001 08 18 | 699 | 0.4+ | 0.1+ | 2001 11 18 | 704 | 0.6+  | 0.4+  | 2007 11 19 | 703 | 0.9-  | 0.2+  |
| 2001 08 18 | 699 | 0.1+ | 0.5+ | 2001 11 18 | 704 | 0.4+  | 0.1+  | 2007 11 19 | 703 | 0.0   | 0.2-  |
| 2001 08 18 | 699 | 0.1+ | 0.7- | 2001 11 18 | 704 | 0.6+  | 0.5+  | 2007 11 19 | 703 | 0.5-  | 0.1+  |
| 2001 08 18 | 699 | 0.1+ | 0.3+ | 2003 01 07 | 704 | 0.0   | 0.6-  | 2007 11 19 | 703 | 0.4-  | 0.0   |
| 2001 08 20 | 644 | 0.4+ | 1.1- | 2003 01 07 | 704 | 0.3+  | 0.1-  | 2007 12 03 | 704 | 0.3-  | 0.2+  |
| 2001 08 20 | 644 | 0.5+ | 1.1- | 2003 01 07 | 704 | 0.4+  | 0.1-  | 2007 12 03 | 704 | 0.4-  | 0.4+  |
| 2001 08 20 | 644 | 0.3+ | 1.3- | 2003 01 07 | 704 | 1.1+  | 0.1+  | 2007 12 03 | 704 | 0.9-  | 0.4+  |
| 2001 08 20 | 704 | 0.2+ | 0.0  | 2007 10 09 | 703 | 0.7+  | 0.3+  | 2007 12 03 | 704 | 0.2-  | 0.0   |
| 2001 08 20 | 704 | 0.2+ | 0.6+ | 2007 10 09 | 703 | 0.1+  | 0.5+  | 2007 12 03 | 704 | 0.2-  | 0.2-  |
| 2001 08 20 | 704 | 0.0  | 0.5+ | 2007 10 09 | 703 | 0.1+  | 0.6+  | 2007 12 16 | 704 | 0.1+  | 1.5+  |
| 2001 08 20 | 704 | 0.1- | 0.8+ | 2007 10 09 | 703 | 0.2-  | 0.2+  | 2007 12 16 | 704 | 0.7+  | 0.3-  |
| 2001 08 22 | 704 | 0.1+ | 0.5+ | 2007 10 16 | 703 | 0.3-  | 0.5-  | 2007 12 16 | 704 | 0.8+  | 0.0   |
| 2001 08 22 | 704 | 0.4+ | 0.0  | 2007 10 16 | 703 | 0.0   | 0.1+  | 2007 12 16 | 704 | 0.4-  | 0.4+  |
| 2001 08 22 | 704 | 0.4- | 0.1+ | 2007 10 16 | 703 | 0.1-  | 0.3-  | 2007 12 16 | 704 | 0.6-  | 0.9-  |
| 2001 08 22 | 704 | 0.3- | 0.5+ | 2007 10 16 | 703 | 0.2-  | 0.1-  | 2007 12 16 | 699 | 0.2+  | 0.4-  |
| 2001 08 22 | 704 | 0.3- | 0.4+ | 2007 10 23 | 704 | 0.1-  | 0.1-  | 2007 12 16 | 699 | 0.1-  | 1.1-  |
| 2001 09 17 | 704 | 0.5+ | 0.5+ | 2007 10 23 | 704 | 0.2-  | 0.6-  | 2007 12 16 | 699 | 1.0+  | 0.2-  |
| 2001 09 17 | 704 | 0.4+ | 0.7+ | 2007 10 23 | 704 | 0.8-  | 0.2+  | 2007 12 16 | 699 | 0.9-  | 0.1-  |

**(171866)\* 2001 QV<sub>72</sub>**

Discovered 2001 Aug. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 82.96653   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.17263024 | $\omega$ | 140.50599 | +0.70962514 | +0.70347787 |
| $a$ | 3.1944160  | $\Omega$ | 174.28043 | -0.70388673 | +0.71029711 |
| $e$ | 0.2211744  | $i$      | 23.27709  | -0.03123518 | -0.02443154 |
| $P$ | 5.71       | $H$      | 14.0      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 20 | 644 | 0.2+  | 1.2+  | 2005 05 03 | 703 | 0.8-  | 0.2-  | 2006 09 25 | 704 | 0.1+ | 0.0  |
| 2001 08 20 | 644 | 0.4+  | 1.4+  | 2005 05 09 | 703 | 1.3-  | 0.4+  | 2006 09 25 | 704 | 0.5- | 0.1- |
| 2001 08 20 | 644 | 0.1+  | 1.4+  | 2005 05 09 | 703 | 1.2-  | 1.1+  | 2006 09 25 | 704 | 0.1- | 0.1+ |
| 2001 08 22 | 644 | 0.2+  | 1.1+  | 2005 05 09 | 703 | 1.0-  | 0.7+  | 2006 09 25 | 704 | 0.0  | 0.2+ |
| 2001 08 22 | 644 | 0.2+  | 0.7+  | 2005 05 09 | 703 | 0.8-  | 0.2+  | 2006 09 25 | 704 | 0.3- | 0.2- |
| 2001 08 22 | 644 | 0.6+  | 0.9+  | 2005 05 12 | 704 | 0.4+  | 0.0   | 2006 09 26 | 691 | 0.1+ | 0.0  |
| 2001 08 28 | 644 | 0.1-  | 0.5+  | 2005 05 12 | 704 | 0.8+  | 0.0   | 2006 09 26 | 691 | 0.1+ | 0.1- |
| 2001 08 28 | 644 | 0.4-  | 0.9+  | 2005 05 12 | 704 | 0.8+  | 0.1-  | 2006 09 26 | 691 | 0.1+ | 0.0  |
| 2001 08 28 | 644 | 0.5+  | 0.3+  | 2005 05 12 | 704 | 0.7+  | 0.7+  | 2006 09 29 | 699 | 0.6- | 0.1- |
| 2001 09 18 | 644 | 0.6-  | 0.1+  | 2005 06 02 | 704 | 0.4+  | 0.3+  | 2006 09 29 | 699 | 0.0  | 0.5+ |
| 2001 09 18 | 644 | 0.7-  | 0.1+  | 2005 06 02 | 704 | (1.0+ | 1.6+) | 2006 09 29 | 699 | 0.3- | 0.8+ |
| 2001 09 18 | 644 | 0.5-  | 0.1-  | 2005 06 02 | 704 | 0.4-  | 0.8-  | 2006 09 29 | 699 | 0.7- | 0.4- |
| 2001 10 11 | 704 | (0.4+ | 1.6+) | 2005 06 02 | 704 | 0.5+  | 0.3+  | 2006 10 01 | 691 | 0.1- | 0.1+ |
| 2001 10 11 | 704 | 0.1+  | 0.8+  | 2005 06 02 | 704 | 0.4-  | 1.4+  | 2006 10 01 | 691 | 0.1+ | 0.1- |
| 2001 10 11 | 704 | 0.3-  | 0.8+  | 2006 05 25 | 703 | 0.5-  | 0.5+  | 2006 10 01 | 691 | 0.1- | 0.0  |
| 2001 10 11 | 704 | 0.1+  | 0.3+  | 2006 05 25 | 703 | 0.5-  | 0.0   | 2006 10 20 | 703 | 0.1- | 0.5- |



2007 DEC. 24

M.P.O. 129187

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 11 | 704 | 0.5+  | 0.8+  | 2006 05 25 | 703 | 0.5+  | 1.3+  | 2006 10 20 | 703 | 0.8+  | 0.3-  |
| 2001 10 14 | 699 | 0.5+  | 1.2+  | 2006 05 25 | 703 | (1.6- | 1.1-) | 2006 10 20 | 703 | 0.8-  | 0.5-  |
| 2001 10 14 | 699 | 0.1-  | 1.0+  | 2006 07 17 | 151 | 0.1-  | 0.4-  | 2006 10 20 | 703 | 0.5-  | 0.2-  |
| 2001 10 14 | 699 | 0.7-  | 1.1+  | 2006 07 17 | 151 | 0.4-  | 0.3-  | 2006 10 21 | 703 | 1.1+  | 0.8-  |
| 2001 10 14 | 699 | 0.4-  | 1.2+  | 2006 07 17 | 151 | 0.6-  | 0.2-  | 2006 10 21 | 703 | 1.0+  | 0.1-  |
| 2001 10 23 | 608 | 0.4+  | 1.1-  | 2006 08 06 | 699 | 0.2+  | 0.3+  | 2006 10 21 | 703 | (0.3- | 2.6+) |
| 2001 10 23 | 608 | 0.4+  | 1.2-  | 2006 08 06 | 699 | 0.4-  | 0.5-  | 2006 10 21 | 703 | 0.0   | 1.5-  |
| 2001 10 23 | 608 | 0.3-  | 1.1-  | 2006 08 06 | 699 | 0.5-  | 0.7+  | 2006 11 11 | 703 | 0.1-  | 0.2+  |
| 2001 11 17 | 699 | 0.1+  | 1.1+  | 2006 08 06 | 699 | 0.1-  | 0.0   | 2006 11 11 | 703 | 0.8-  | 0.0   |
| 2001 11 17 | 699 | 1.0-  | 0.8+  | 2006 08 27 | 699 | 0.3-  | 0.0   | 2006 11 11 | 703 | 0.3-  | 0.1+  |
| 2001 11 17 | 699 | (2.0+ | 1.9+) | 2006 08 27 | 699 | 0.1+  | 0.0   | 2006 11 11 | 703 | 0.4-  | 0.9-  |
| 2001 11 17 | 699 | 0.1-  | 0.1+  | 2006 08 27 | 699 | 0.3+  | 0.3-  | 2006 11 16 | G96 | 0.4-  | 0.0   |
| 2001 12 14 | 644 | 0.2+  | 0.1+  | 2006 08 27 | 699 | 0.8+  | 0.3-  | 2006 11 16 | G96 | 0.4-  | 0.3-  |
| 2001 12 14 | 644 | 0.3+  | 0.4+  | 2006 08 28 | 704 | 0.5-  | 0.2-  | 2006 11 16 | G96 | 0.1+  | 0.2-  |
| 2001 12 14 | 644 | 0.2+  | 0.0   | 2006 08 28 | 704 | 0.8-  | 0.3-  | 2006 11 16 | G96 | 0.4-  | 0.3-  |
| 2005 03 17 | 703 | 0.6+  | 0.8+  | 2006 08 28 | 704 | 0.4-  | 0.2+  | 2006 11 18 | 704 | 0.7+  | 0.9+  |
| 2005 03 17 | 703 | (2.5+ | 0.0 ) | 2006 08 28 | 704 | 0.4-  | 0.4+  | 2006 11 18 | 704 | 0.4+  | 0.8+  |
| 2005 03 17 | 703 | 0.6-  | 0.4+  | 2006 08 28 | 704 | 0.1+  | 0.0   | 2006 11 18 | 704 | 0.9+  | 0.0   |
| 2005 03 17 | 703 | 0.0   | 0.2+  | 2006 08 30 | 699 | 0.4+  | 0.0   | 2006 11 18 | 704 | 1.2-  | 0.6+  |
| 2005 04 04 | 703 | 0.3+  | 0.8+  | 2006 08 30 | 699 | 0.1+  | 0.2-  | 2006 11 18 | 703 | 0.1+  | 0.1-  |
| 2005 04 04 | 703 | 0.2+  | 0.8+  | 2006 08 30 | 699 | 0.8-  | 0.1-  | 2006 11 18 | 703 | 0.0   | 0.7-  |
| 2005 04 04 | 703 | 0.3-  | 0.2+  | 2006 08 30 | 699 | 0.1-  | 0.3-  | 2006 11 18 | 704 | 0.2+  | 0.2-  |
| 2005 04 04 | 703 | 0.4-  | 0.3+  | 2006 08 31 | 203 | 0.1+  | 0.4-  | 2006 11 18 | 703 | 0.4+  | 0.9-  |
| 2005 04 08 | 704 | 0.6+  | 0.4-  | 2006 08 31 | 203 | 0.2-  | 0.2-  | 2006 11 18 | 703 | 0.2+  | 0.4-  |
| 2005 04 08 | 704 | 0.6+  | 0.4-  | 2006 09 11 | 703 | 0.5-  | 0.2+  | 2006 12 10 | 699 | (0.6- | 1.6+) |
| 2005 04 08 | 704 | 1.3+  | 0.5-  | 2006 09 11 | 703 | 0.2+  | 0.3-  | 2006 12 10 | 699 | 1.2-  | 0.6+  |
| 2005 04 08 | 704 | 0.6+  | 1.4+  | 2006 09 11 | 703 | 0.1-  | 0.2+  | 2006 12 10 | 699 | 0.4+  | 0.9+  |
| 2005 04 11 | 704 | 0.9+  | 0.5+  | 2006 09 11 | 703 | 0.2+  | 0.7+  | 2006 12 10 | 699 | (2.9- | 0.4+) |
| 2005 04 11 | 704 | 0.3+  | 0.8+  | 2006 09 16 | 691 | 0.1+  | 0.2+  | 2007 10 18 | 703 | 0.0   | 0.2-  |
| 2005 04 11 | 704 | 0.5+  | 0.1+  | 2006 09 16 | 691 | 0.2+  | 0.2+  | 2007 10 18 | 703 | 0.5+  | 1.2-  |
| 2005 04 11 | 704 | 0.1+  | 0.6+  | 2006 09 16 | 691 | 0.1+  | 0.2+  | 2007 10 18 | 703 | 1.2-  | 0.7+  |
| 2005 04 11 | 704 | 0.2+  | 1.0+  | 2006 09 18 | 691 | 0.1+  | 0.2+  | 2007 10 18 | 703 | 0.7-  | 0.0   |
| 2005 04 12 | 704 | 0.2+  | 1.5+  | 2006 09 18 | 691 | 0.2+  | 0.2+  | 2007 11 03 | 703 | 0.1+  | 0.1-  |
| 2005 04 12 | 704 | (1.1+ | 1.6+) | 2006 09 18 | 691 | 0.2+  | 0.2+  | 2007 11 03 | 703 | 0.1+  | 0.3-  |
| 2005 04 12 | 704 | (0.8+ | 1.6+) | 2006 09 19 | 699 | 0.5+  | 0.1-  | 2007 11 03 | 703 | 0.6+  | 0.4+  |
| 2005 04 12 | 704 | 0.1-  | 1.2+  | 2006 09 19 | 699 | 0.3+  | 0.3+  | 2007 11 03 | 703 | 0.5-  | 0.7+  |
| 2005 04 12 | 704 | 0.0   | 1.5+  | 2006 09 19 | 699 | 0.8+  | 0.3+  | 2007 12 06 | 703 | 0.9+  | 0.6+  |
| 2005 05 03 | 703 | 0.6-  | 0.2+  | 2006 09 20 | 691 | 0.1-  | 0.1-  | 2007 12 06 | 703 | 0.1-  | 0.1-  |
| 2005 05 03 | 703 | 1.0-  | 0.3-  | 2006 09 20 | 691 | 0.0   | 0.0   | 2007 12 06 | 703 | 0.1-  | 0.5+  |
| 2005 05 03 | 703 | 0.4-  | 0.2+  | 2006 09 20 | 691 | 0.1+  | 0.1+  | 2007 12 06 | 703 | 0.3+  | 0.6+  |

(171867)\* 2001 QA<sub>97</sub> = 1996 VE<sub>7</sub>

Discovered 2001 Aug. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 17856)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 45.23280   | <i>P</i> | <i>Q</i>  |
| <i>n</i> | 0.18191383 | $\omega$ | 29.67153  |
| <i>a</i> | 3.0847898  | $\Omega$ | 324.78092 |
| <i>e</i> | 0.2529018  | <i>i</i> | 9.52480   |
| <i>P</i> | 5.42       | <i>H</i> | 14.4      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 11 07 | 327 | 0.3- | 0.5- | 2001 09 15 | 644 | 0.2+ | 0.0  | 2001 10 23 | 699 | (2.3+ | 0.1-) |
| 1996 11 07 | 327 | 0.5+ | 0.1+ | 2001 09 15 | 644 | 0.0  | 0.0  | 2001 10 23 | 699 | 0.1+  | 0.3+  |
| 1996 11 07 | 327 | 0.2- | 0.6- | 2001 09 15 | 644 | 0.1+ | 0.0  | 2001 10 23 | 699 | 0.2-  | 0.6-  |
| 1996 11 09 | 327 | 1.7- | 0.5- | 2001 09 16 | 704 | 1.0+ | 0.7- | 2001 10 23 | 699 | 0.3+  | 0.4+  |
| 1996 11 09 | 327 | 1.1+ | 0.7- | 2001 09 16 | 704 | 1.0+ | 1.1- | 2001 11 11 | 644 | 0.4+  | 0.1+  |
| 1996 11 09 | 327 | 1.1+ | 0.7- | 2001 09 16 | 704 | 0.7+ | 1.1- | 2001 11 11 | 644 | 0.3+  | 0.1+  |
| 2001 07 22 | 699 | 0.5- | 0.8+ | 2001 09 16 | 704 | 0.5+ | 1.3- | 2001 11 11 | 644 | 0.2+  | 0.4+  |
| 2001 07 22 | 699 | 0.1- | 0.4+ | 2001 09 16 | 704 | 0.6+ | 1.3- | 2001 12 11 | 704 | (0.8- | 1.9-) |
| 2001 07 22 | 699 | 0.7- | 0.3+ | 2001 09 18 | 699 | 0.1+ | 0.0  | 2001 12 11 | 704 | 0.5-  | 0.2-  |
| 2001 07 22 | 699 | 1.1- | 0.8+ | 2001 09 18 | 699 | 0.1- | 0.4+ | 2001 12 11 | 704 | 0.1+  | 0.2-  |
| 2001 08 05 | 608 | 0.4- | 0.1- | 2001 09 18 | 699 | 0.2- | 0.0  | 2001 12 11 | 704 | 0.8+  | 1.2-  |
| 2001 08 05 | 608 | 0.6- | 0.0  | 2001 09 18 | 699 | 0.2- | 0.2+ | 2001 12 11 | 704 | 0.4+  | 0.3-  |
| 2001 08 05 | 608 | 0.3- | 0.0  | 2001 09 20 | 704 | 0.0  | 0.4- | 2003 01 05 | 704 | 0.6+  | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 05 | 608 | 0.5- | 0.2- | 2001 09 20 | 704 | 0.0  | 0.5- | 2003 01 05 | 704 | 0.8+  | 0.0   |
| 2001 08 05 | 608 | 0.1- | 0.2+ | 2001 09 20 | 704 | 0.0  | 0.4- | 2003 01 05 | 704 | 0.3+  | 1.1+  |
| 2001 08 05 | 608 | 0.3- | 0.0  | 2001 09 20 | 704 | 0.1+ | 1.0- | 2003 01 05 | 704 | 1.2-  | 0.1+  |
| 2001 08 17 | 704 | 0.1- | 0.1+ | 2001 09 20 | 704 | 0.0  | 0.6- | 2003 01 09 | 704 | 0.3-  | 0.4-  |
| 2001 08 17 | 704 | 0.2+ | 0.1- | 2001 09 22 | 704 | 0.2+ | 0.1- | 2003 01 09 | 704 | 0.6+  | 0.9+  |
| 2001 08 17 | 704 | 0.2+ | 0.1- | 2001 09 22 | 704 | 0.2+ | 0.2- | 2003 01 09 | 704 | 0.1-  | 0.4+  |
| 2001 08 17 | 704 | 0.1- | 0.7+ | 2001 09 22 | 704 | 0.1- | 0.3+ | 2003 01 09 | 704 | 0.0   | 1.0+  |
| 2001 08 17 | 704 | 0.0  | 0.3+ | 2001 09 22 | 704 | 0.0  | 0.1+ | 2003 01 09 | 704 | 0.5+  | 1.2+  |
| 2001 08 17 | 704 | 0.1- | 0.2+ | 2001 09 22 | 704 | 0.6+ | 1.3+ | 2005 05 16 | 644 | 0.0   | 0.1+  |
| 2001 08 17 | 704 | 0.4- | 0.3+ | 2001 09 23 | 704 | 0.7+ | 0.1+ | 2005 05 16 | 644 | 0.3+  | 0.2+  |
| 2001 08 17 | 704 | 0.6- | 0.4+ | 2001 09 23 | 704 | 0.1+ | 0.2+ | 2005 05 16 | 644 | 0.4+  | 0.7+  |
| 2001 08 17 | 704 | 0.5+ | 0.6+ | 2001 09 23 | 704 | 0.8+ | 0.3+ | 2006 07 23 | 644 | 0.0   | 0.1+  |
| 2001 08 17 | 704 | 0.1- | 0.8+ | 2001 09 23 | 704 | 0.1+ | 0.7+ | 2006 07 23 | 644 | 0.2-  | 0.2+  |
| 2001 08 24 | 699 | 0.0  | 0.3+ | 2001 09 23 | 704 | 0.6+ | 0.3+ | 2006 07 23 | 644 | 0.1-  | 0.3+  |
| 2001 08 24 | 699 | 0.3- | 0.0  | 2001 10 05 | 644 | 0.7- | 0.3+ | 2007 11 03 | 704 | (4.3+ | 2.8-) |
| 2001 08 24 | 704 | 0.6+ | 0.1- | 2001 10 05 | 644 | 0.9- | 0.5+ | 2007 11 03 | 704 | 0.3-  | 0.9-  |
| 2001 08 24 | 699 | 0.1- | 0.2- | 2001 10 05 | 644 | 0.7- | 0.4+ | 2007 11 03 | 704 | 0.2+  | 1.6-  |
| 2001 08 24 | 704 | 0.2+ | 0.0  | 2001 10 14 | 704 | 0.3+ | 0.4- | 2007 11 09 | 704 | 0.7+  | 0.3-  |
| 2001 08 24 | 699 | 0.0  | 0.3- | 2001 10 14 | 704 | 0.3+ | 0.0  | 2007 11 09 | 704 | 0.2+  | 0.2-  |
| 2001 08 24 | 704 | 0.8+ | 0.1- | 2001 10 14 | 704 | 0.3+ | 0.1+ | 2007 11 09 | 704 | 0.4+  | 0.2-  |
| 2001 09 08 | 704 | 0.1- | 0.2+ | 2001 10 14 | 704 | 0.2+ | 0.0  | 2007 11 09 | 704 | 0.8+  | 0.1+  |
| 2001 09 08 | 704 | 0.7- | 0.5+ | 2001 10 14 | 704 | 0.0  | 0.2- | 2007 11 16 | 704 | 0.4+  | 0.2+  |
| 2001 09 08 | 704 | 0.9- | 0.0  | 2001 10 16 | 704 | 0.1+ | 0.1+ | 2007 11 16 | 704 | 0.1+  | 0.5-  |
| 2001 09 08 | 704 | 1.5- | 0.1- | 2001 10 16 | 704 | 0.2+ | 0.2+ | 2007 11 16 | 704 | 0.2+  | 0.1-  |
| 2001 09 08 | 704 | 1.1- | 0.4+ | 2001 10 16 | 704 | 0.1- | 0.6+ | 2007 11 16 | 704 | 0.3+  | 0.1-  |
| 2001 09 09 | 644 | 0.2+ | 0.1- | 2001 10 16 | 704 | 0.2- | 0.3+ | 2007 12 03 | 704 | 0.1-  | 0.8+  |
| 2001 09 09 | 644 | 0.3+ | 0.2+ | 2001 10 16 | 704 | 0.3- | 0.2+ | 2007 12 03 | 704 | 0.3-  | 0.6+  |
| 2001 09 09 | 644 | 0.0  | 0.1+ | 2001 10 21 | 704 | 0.3+ | 0.2+ | 2007 12 03 | 704 | 0.7-  | 0.4+  |
| 2001 09 10 | 699 | 0.2- | 0.2- | 2001 10 21 | 704 | 0.2+ | 0.0  | 2007 12 03 | 704 | 0.3+  | 2.0+  |
| 2001 09 10 | 699 | 0.7- | 0.1- | 2001 10 21 | 704 | 0.0  | 0.3+ | 2007 12 03 | 704 | 2.1-  | 1.1+  |
| 2001 09 10 | 699 | 0.0  | 0.1+ | 2001 10 21 | 704 | 0.0  | 0.4+ |            |     |       |       |
| 2001 09 10 | 699 | 0.5- | 0.1- | 2001 10 21 | 704 | 0.8- | 0.2+ |            |     |       |       |

(171868)\* 2001 QR<sub>110</sub>

Discovered 2001 Aug. 24 by P. Kušnirák and P. Pravec at Ondřejov.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 59.92020   | <i>P</i> | <i>Q</i>  |
| <i>n</i> | 0.20344733 | $\omega$ | 305.00322 |
| <i>a</i> | 2.8630881  | $\Omega$ | 87.30166  |
| <i>e</i> | 0.1028804  | <i>i</i> | 3.33753   |
| <i>P</i> | 4.84       | <i>H</i> | 16.1      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 12 | 644 | 0.2- | 0.3+ | 2003 01 08 | 704 | 0.1- | 0.9+ | 2006 09 18 | 699 | 0.2- | 0.0  |
| 2001 08 12 | 644 | 0.6- | 0.2+ | 2003 01 31 | 704 | 0.6+ | 0.4- | 2006 09 30 | 703 | 0.5- | 0.1+ |
| 2001 08 12 | 644 | 0.0  | 0.4+ | 2003 01 31 | 704 | 0.6- | 0.3+ | 2006 09 30 | 703 | 0.3- | 0.5+ |
| 2001 08 12 | 644 | 0.8- | 0.1- | 2003 01 31 | 704 | 0.0  | 0.3+ | 2006 09 30 | 703 | 1.2+ | 1.0+ |
| 2001 08 12 | 644 | 0.4- | 0.2+ | 2004 03 21 | 691 | 0.3+ | 0.6+ | 2006 09 30 | 703 | 0.8- | 0.2+ |
| 2001 08 12 | 644 | 0.8- | 0.1+ | 2004 03 21 | 691 | 0.0  | 0.6+ | 2006 10 20 | 644 | 0.2+ | 0.0  |
| 2001 08 24 | 557 | 0.2- | 0.6- | 2004 03 21 | 691 | 0.6+ | 0.4+ | 2006 10 20 | 644 | 0.0  | 0.2+ |
| 2001 08 24 | 557 | 0.6- | 0.1+ | 2006 08 28 | 705 | 0.1+ | 0.1- | 2006 10 20 | 644 | 0.1- | 0.2+ |
| 2001 08 25 | 557 | 1.0- | 0.1- | 2006 08 28 | 705 | 0.0  | 0.0  | 2006 10 21 | 644 | 0.1+ | 0.3+ |
| 2001 08 26 | 557 | 1.2- | 0.5+ | 2006 09 12 | 705 | 0.1+ | 0.1- | 2006 10 21 | 644 | 0.1+ | 0.2+ |
| 2001 08 30 | 557 | 0.4+ | 0.0  | 2006 09 12 | 705 | 0.1+ | 0.1- | 2006 10 21 | 644 | 0.2+ | 0.1+ |
| 2001 08 30 | 557 | 0.2+ | 0.1- | 2006 09 16 | 705 | 0.1+ | 0.0  | 2007 11 11 | G96 | 0.6- | 0.0  |
| 2001 08 30 | 557 | 0.4+ | 0.3+ | 2006 09 16 | 705 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.6- | 0.0  |
| 2001 09 12 | 704 | 0.3+ | 0.4+ | 2006 09 18 | 703 | 0.2- | 0.3- | 2007 11 11 | G96 | 0.1- | 0.1- |
| 2001 09 12 | 704 | 0.3+ | 0.6+ | 2006 09 18 | 703 | 0.4- | 0.5- | 2007 11 11 | G96 | 0.6- | 0.0  |
| 2001 09 12 | 704 | 0.4- | 0.8+ | 2006 09 18 | 703 | 0.3+ | 0.2+ | 2007 12 14 | G96 | 0.5- | 0.5- |
| 2001 09 12 | 704 | 0.2- | 0.7+ | 2006 09 18 | 703 | 0.4- | 0.4+ | 2007 12 14 | G96 | 0.1- | 0.2- |
| 2001 09 12 | 704 | 0.9+ | 0.6+ | 2006 09 18 | 699 | 0.8+ | 0.0  | 2007 12 14 | G96 | 0.2- | 0.4- |
| 2003 01 08 | 704 | 0.9+ | 1.0+ | 2006 09 18 | 699 | 0.3- | 0.3- | 2007 12 14 | G96 | 0.4- | 0.1- |
| 2003 01 08 | 704 | 1.0+ | 1.5+ | 2006 09 18 | 699 | 0.4+ | 0.4+ |            |     |      |      |

**(171869)\* 2001 QD<sub>119</sub>**

Discovered 2001 Aug. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.50456   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19647187 | $\omega$ | 114.26333 | +0.43524192   | -0.89105142 |
| <i>a</i> | 2.9304600  | $\Omega$ | 309.30788 | +0.75383058   | +0.43890201 |
| <i>e</i> | 0.0888635  | <i>i</i> | 9.58284   | +0.49224377   | +0.11572554 |
| <i>P</i> | 5.02       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 17 | 704 | 0.5+ | 0.4+ | 2001 09 20 | 704 | 0.2+  | 0.7+  | 2006 08 29 | 703 | (0.7+ | 4.2+) |
| 2001 08 17 | 704 | 0.7- | 0.2+ | 2001 09 20 | 704 | 0.1-  | 1.0+  | 2006 08 29 | 703 | 0.7-  | 0.1-  |
| 2001 08 17 | 704 | 0.7+ | 0.2+ | 2001 09 20 | 704 | 0.3-  | 0.4-  | 2006 08 29 | 703 | 0.5-  | 0.5+  |
| 2001 08 23 | 699 | 1.1+ | 0.7- | 2001 10 15 | 645 | 0.0   | 0.1-  | 2006 08 29 | 703 | 0.3+  | 0.4+  |
| 2001 08 23 | 699 | 0.1- | 0.4+ | 2001 10 15 | 645 | 0.0   | 0.1-  | 2006 08 30 | 704 | 0.1+  | 0.3+  |
| 2001 08 23 | 699 | 0.8- | 0.0  | 2001 11 18 | 645 | 0.0   | 0.1-  | 2006 08 30 | 704 | 0.3-  | 0.5-  |
| 2001 08 23 | 699 | 1.5+ | 0.1- | 2001 11 18 | 645 | 0.0   | 0.1-  | 2006 08 30 | 704 | 0.9-  | 0.7-  |
| 2001 08 25 | 704 | 0.3- | 0.8+ | 2003 01 05 | 704 | 0.3-  | 0.5+  | 2006 09 18 | 703 | 0.2-  | 0.9-  |
| 2001 08 25 | 704 | 0.1+ | 0.1- | 2003 01 05 | 704 | 0.2+  | 0.6+  | 2006 09 18 | 703 | 0.0   | 0.7+  |
| 2001 08 25 | 704 | 0.4+ | 1.3+ | 2003 01 05 | 704 | 1.4-  | 1.2+  | 2006 09 18 | 703 | 0.4-  | 0.1-  |
| 2001 09 08 | 704 | 0.8+ | 0.1+ | 2003 01 05 | 704 | 0.7-  | 0.9-  | 2006 09 18 | 703 | 0.7-  | 0.7-  |
| 2001 09 08 | 704 | 0.8+ | 0.5+ | 2003 01 05 | 704 | 0.6-  | 0.7+  | 2007 11 17 | 704 | (1.2+ | 1.6+) |
| 2001 09 08 | 704 | 0.9+ | 0.5+ | 2003 01 09 | 704 | 0.1-  | 0.5-  | 2007 11 17 | 704 | 0.2+  | 0.7+  |
| 2001 09 11 | 699 | 1.1- | 0.7+ | 2003 01 09 | 704 | 0.0   | 0.3-  | 2007 11 17 | 704 | 0.0   | 1.3+  |
| 2001 09 11 | 699 | 0.0  | 0.1- | 2003 01 09 | 704 | 0.9+  | 0.2+  | 2007 11 17 | 704 | 0.5-  | 0.6+  |
| 2001 09 11 | 699 | 0.0  | 0.9+ | 2003 01 09 | 704 | 0.4-  | 0.3+  | 2007 12 02 | 704 | 0.2-  | 1.4-  |
| 2001 09 11 | 699 | 0.4- | 0.3- | 2006 08 18 | 644 | 0.1+  | 0.0   | 2007 12 02 | 704 | 0.6+  | 0.9-  |
| 2001 09 16 | 704 | 0.3+ | 0.4+ | 2006 08 18 | 644 | 0.0   | 0.2+  | 2007 12 02 | 704 | 0.6+  | 1.0-  |
| 2001 09 16 | 704 | 0.3+ | 0.2- | 2006 08 18 | 644 | 0.1-  | 0.3+  | 2007 12 02 | 704 | 0.1+  | 0.4-  |
| 2001 09 16 | 704 | 0.2+ | 0.3- | 2006 08 22 | 644 | 0.1-  | 0.3+  | 2007 12 02 | 704 | 1.2+  | 0.1-  |
| 2001 09 16 | 704 | 0.1- | 0.3+ | 2006 08 22 | 644 | 0.1-  | 0.4+  | 2007 12 16 | 704 | 0.3-  | 0.2+  |
| 2001 09 16 | 704 | 0.4- | 0.4- | 2006 08 22 | 644 | 0.4-  | 0.4+  | 2007 12 16 | 704 | 0.3-  | 0.9+  |
| 2001 09 18 | 557 | 0.1- | 0.2+ | 2006 08 27 | 699 | 0.4+  | 0.4-  | 2007 12 16 | 704 | 0.1-  | 0.1-  |
| 2001 09 18 | 557 | 0.1+ | 0.1+ | 2006 08 27 | 699 | (1.6- | 1.3+) | 2007 12 16 | 704 | 1.1+  | 1.0-  |
| 2001 09 20 | 704 | 0.2+ | 1.1+ | 2006 08 27 | 699 | (0.6+ | 1.5+) | 2007 12 16 | 704 | 0.3+  | 0.4+  |
| 2001 09 20 | 704 | 0.1+ | 0.2+ | 2006 08 27 | 699 | (2.4+ | 0.3-) |            |     |       |       |

**(171870)\* 2001 QJ<sub>125</sub>**

Discovered 2001 Aug. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 8.14042    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18596642 | $\omega$ | 332.58373 | +0.50233865   | -0.86214980 |
| <i>a</i> | 3.0398094  | $\Omega$ | 87.19483  | +0.80492861   | +0.43839517 |
| <i>e</i> | 0.2966164  | <i>i</i> | 3.78777   | +0.31582560   | +0.25398306 |
| <i>P</i> | 5.30       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 23 | 691 | 0.9-  | 0.4-  | 2003 01 26 | 699 | 0.3+  | 0.5+  | 2003 02 19 | 644 | 0.1- | 0.1+ |
| 1993 03 23 | 691 | 0.1-  | 0.0   | 2003 01 26 | 699 | 1.0-  | 0.3+  | 2003 02 19 | 644 | 1.1+ | 0.8+ |
| 1993 03 23 | 691 | 0.2+  | 1.2-  | 2003 01 26 | 699 | 1.0+  | 1.2+  | 2003 02 19 | 644 | 0.1+ | 0.4+ |
| 2001 08 01 | 644 | (0.4- | 2.0+) | 2003 01 27 | 699 | 0.1+  | 0.4-  | 2003 02 21 | 699 | 0.4+ | 1.3+ |
| 2001 08 01 | 644 | 0.2-  | 1.5+  | 2003 01 27 | 699 | 0.1-  | 0.4+  | 2003 02 21 | 699 | 0.4- | 0.4+ |
| 2001 08 01 | 644 | (0.5- | 1.8+) | 2003 01 27 | 699 | 0.0   | 0.7+  | 2003 02 21 | 699 | 0.4+ | 0.0  |
| 2001 08 19 | 704 | 0.6+  | 0.7+  | 2003 01 27 | 699 | 0.1-  | 0.4-  | 2003 02 21 | 699 | 0.6- | 0.1+ |
| 2001 08 19 | 704 | (0.2- | 1.9+) | 2003 01 27 | 704 | 0.0   | 1.0+  | 2003 03 08 | 704 | 0.6+ | 0.9+ |
| 2001 08 19 | 704 | 0.2+  | 0.2+  | 2003 01 27 | 704 | 0.5-  | 0.2+  | 2003 03 08 | 704 | 0.2+ | 0.3+ |
| 2001 08 19 | 704 | 1.1+  | 1.2+  | 2003 01 27 | 704 | 0.2-  | 0.8+  | 2003 03 08 | 704 | 1.0- | 0.1- |
| 2001 08 25 | 704 | 0.1+  | 0.8-  | 2003 01 27 | 704 | 0.1-  | 0.7+  | 2003 03 08 | 704 | 1.1- | 0.5- |
| 2001 08 25 | 704 | 0.8+  | 0.7-  | 2003 01 27 | 704 | 0.2+  | 0.7+  | 2007 11 05 | 704 | 0.4+ | 0.7- |
| 2001 08 25 | 704 | 0.5+  | 0.1-  | 2003 02 01 | 704 | (0.4- | 2.6+) | 2007 11 05 | 704 | 0.1- | 0.4- |
| 2001 08 25 | 704 | 0.0   | 1.0-  | 2003 02 01 | 704 | 0.7-  | 0.7+  | 2007 11 05 | 704 | 0.4- | 0.7- |
| 2001 09 12 | 704 | 0.5-  | 0.1+  | 2003 02 01 | 704 | 0.4+  | 0.2+  | 2007 11 05 | 704 | 0.2- | 0.8- |
| 2001 09 12 | 704 | 0.5-  | 0.5+  | 2003 02 01 | 704 | 0.0   | 0.6+  | 2007 11 05 | 704 | 0.3+ | 0.9- |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 12 | 704 | 0.7-  | 0.3+  | 2003 02 04 | 699 | 0.8- | 0.8- | 2007 12 05 | 704 | 0.1-  | 0.8-  |
| 2001 09 12 | 704 | 0.6-  | 0.0   | 2003 02 04 | 699 | 0.2+ | 0.4- | 2007 12 05 | 704 | 0.2+  | 0.8-  |
| 2001 09 19 | 704 | 0.5-  | 0.3-  | 2003 02 04 | 699 | 0.8+ | 1.3- | 2007 12 05 | 704 | 0.5+  | 0.3-  |
| 2001 09 19 | 704 | 0.5-  | 1.0-  | 2003 02 04 | 704 | 0.8+ | 0.8- | 2007 12 05 | 704 | (0.8- | 2.4+) |
| 2001 09 19 | 704 | 0.1+  | 0.6+  | 2003 02 04 | 699 | 0.0  | 0.1- | 2007 12 07 | D29 | 0.6-  | 0.6-  |
| 2001 09 19 | 704 | (0.7+ | 1.6+) | 2003 02 04 | 704 | 0.7+ | 0.1+ | 2007 12 07 | D29 | 0.6-  | 0.6-  |
| 2003 01 05 | 704 | 1.2+  | 0.1-  | 2003 02 04 | 704 | 0.4- | 0.1+ | 2007 12 07 | D29 | 0.0   | 0.8-  |
| 2003 01 05 | 704 | 0.4+  | 0.3+  | 2003 02 04 | 704 | 0.5+ | 0.0  | 2007 12 07 | D29 | 0.2-  | 0.4-  |
| 2003 01 05 | 704 | 0.0   | 0.9-  | 2003 02 04 | 704 | 0.0  | 0.6+ | 2007 12 14 | 704 | 0.5-  | 0.6+  |
| 2003 01 05 | 704 | 0.0   | 0.2+  | 2003 02 04 | 608 | 0.3+ | 0.7- | 2007 12 14 | 704 | 0.1-  | 0.1+  |
| 2003 01 26 | 699 | 0.1-  | 0.9+  | 2003 02 04 | 608 | 0.5+ | 1.4- | 2007 12 14 | 704 | 0.0   | 0.3+  |
| 2003 01 26 | 699 | (0.9- | 1.5+) | 2003 02 04 | 608 | 0.3+ | 1.0- | 2007 12 14 | 704 | 0.3-  | 0.1+  |
| 2003 01 26 | 699 | 0.2-  | 0.6+  | 2003 02 07 | 644 | 0.3- | 0.3+ | 2007 12 14 | 704 | 1.4+  | 0.4+  |
| 2003 01 26 | 699 | 0.7+  | 0.4+  | 2003 02 07 | 644 | 0.2- | 0.1+ |            |     |       |       |
| 2003 01 26 | 699 | 0.0   | 1.0+  | 2003 02 07 | 644 | 0.1- | 0.1+ |            |     |       |       |

**(171871)\* 2001 QD<sub>157</sub>**

Discovered 2001 Aug. 23 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 30.77752   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18248111 | $\omega$ | 52.44272  | +0.99180224   | +0.00417471 |
| <i>a</i> | 3.0783933  | $\Omega$ | 306.95932 | -0.06559687   | +0.87435600 |
| <i>e</i> | 0.1096893  | <i>i</i> | 9.19703   | +0.10966028   | +0.48526710 |
| <i>P</i> | 5.40       | <i>H</i> | 14.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 06 23 | 644 | 0.6-  | 0.2+  | 2001 09 20 | 704 | 0.3-  | 0.3-  | 2007 11 01 | 703 | 0.0  | 0.3+ |
| 2001 06 23 | 644 | 0.1+  | 0.5+  | 2001 09 25 | 644 | 0.1+  | 0.1+  | 2007 11 01 | 703 | 0.4+ | 0.2+ |
| 2001 06 23 | 644 | 0.2-  | 0.4+  | 2001 09 25 | 644 | 0.3-  | 0.5+  | 2007 11 03 | 704 | 0.8- | 0.3- |
| 2001 08 23 | 699 | 0.2-  | 0.3+  | 2001 09 25 | 644 | 0.2+  | 0.1-  | 2007 11 03 | 704 | 0.3+ | 0.7- |
| 2001 08 23 | 699 | 0.2+  | 0.1-  | 2002 11 06 | 704 | 1.4+  | 0.6+  | 2007 11 03 | 704 | 0.1- | 0.4- |
| 2001 08 23 | 699 | 0.2+  | 0.3+  | 2002 11 06 | 704 | 1.0+  | 0.1+  | 2007 11 03 | 704 | 0.3- | 0.5- |
| 2001 08 23 | 699 | 0.5+  | 0.2+  | 2002 11 06 | 704 | 0.1+  | 0.6+  | 2007 11 09 | 704 | 0.3+ | 0.8- |
| 2001 08 27 | 699 | 0.6-  | 0.3-  | 2002 12 05 | 704 | 1.0-  | 1.0+  | 2007 11 09 | 704 | 0.4+ | 0.5- |
| 2001 08 27 | 699 | (1.8+ | 0.8-) | 2002 12 05 | 704 | 0.3-  | 0.0   | 2007 11 09 | 704 | 0.5+ | 0.5- |
| 2001 08 27 | 699 | 0.3-  | 0.2+  | 2002 12 05 | 704 | 0.3-  | 0.3+  | 2007 11 09 | 704 | 0.3+ | 0.4- |
| 2001 08 27 | 699 | 0.2-  | 0.3+  | 2002 12 05 | 704 | 1.0-  | 0.3+  | 2007 11 09 | 704 | 0.3+ | 0.6- |
| 2001 09 07 | 699 | 0.6-  | 0.6+  | 2004 03 18 | 704 | 1.5+  | 0.8-  | 2007 11 13 | 703 | 0.1- | 0.3+ |
| 2001 09 07 | 699 | 0.2-  | 0.6+  | 2004 03 18 | 704 | (0.1- | 1.6+) | 2007 11 13 | 703 | 0.4- | 0.2+ |
| 2001 09 07 | 699 | 0.9-  | 0.6+  | 2004 03 18 | 704 | (1.8+ | 0.3+) | 2007 11 13 | 703 | 0.2+ | 0.2+ |
| 2001 09 07 | 699 | 0.1-  | 1.0+  | 2004 03 18 | 704 | 0.8+  | 0.7+  | 2007 11 13 | 703 | 0.4+ | 0.4- |
| 2001 09 08 | 704 | 0.9-  | 0.1+  | 2004 03 18 | 704 | 0.6+  | 0.9+  | 2007 11 16 | 704 | 0.6+ | 0.5+ |
| 2001 09 08 | 704 | 0.3-  | 0.2+  | 2004 03 21 | 691 | 0.0   | 0.3+  | 2007 11 16 | 704 | 0.1+ | 0.6- |
| 2001 09 08 | 704 | 0.4-  | 0.1-  | 2004 03 21 | 691 | 0.2+  | 0.4+  | 2007 11 16 | 704 | 0.3+ | 0.2+ |
| 2001 09 08 | 704 | 0.2-  | 0.9+  | 2004 03 21 | 691 | 0.1+  | 0.7+  | 2007 11 19 | 703 | 0.5- | 0.8- |
| 2001 09 08 | 704 | 0.3-  | 0.4+  | 2007 10 09 | 703 | 0.6-  | 0.8-  | 2007 11 19 | 703 | 0.2- | 0.8+ |
| 2001 09 12 | 704 | (1.6+ | 0.6+) | 2007 10 09 | 703 | 0.2+  | 0.1-  | 2007 11 19 | 703 | 0.0  | 0.5- |
| 2001 09 12 | 704 | 1.2+  | 0.2+  | 2007 10 09 | 703 | 0.1-  | 0.1-  | 2007 11 19 | 703 | 0.3+ | 0.2- |
| 2001 09 12 | 704 | (1.0+ | 2.1+) | 2007 10 09 | 703 | (2.7- | 1.2+) | 2007 12 03 | 704 | 0.2+ | 0.7+ |
| 2001 09 12 | 704 | (0.9+ | 1.9+) | 2007 10 21 | 703 | 0.7+  | 0.1-  | 2007 12 03 | 704 | 0.1- | 0.9+ |
| 2001 09 12 | 704 | (1.6+ | 1.1+) | 2007 10 21 | 703 | 0.1+  | 1.2-  | 2007 12 03 | 704 | 0.2+ | 0.6+ |
| 2001 09 20 | 704 | 0.3-  | 0.3+  | 2007 10 21 | 703 | 0.0   | 0.2-  | 2007 12 03 | 704 | 0.0  | 1.1+ |
| 2001 09 20 | 704 | 0.1-  | 0.4+  | 2007 10 21 | 703 | 0.3+  | 0.2-  | 2007 12 03 | 704 | 0.7- | 0.7+ |
| 2001 09 20 | 704 | 0.0   | 0.7+  |            |     |       |       |            |     |      |      |
| 2001 09 20 | 704 | 0.3-  | 0.1-  | 2007 11 01 | 703 | 0.3-  | 0.4+  |            |     |      |      |
| 2001 09 20 | 704 | 0.3-  | 0.1-  | 2007 11 01 | 703 | 0.8-  | 0.3-  |            |     |      |      |

2007 DEC. 24

M.P.O. 129189

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 12.37331   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.19079451 | $\omega$ | 123.82395 |     | +0.74649599 |     | -0.62697824 |
| $a$ | 2.9883088  | $\Omega$ | 276.04628 |     | +0.51207297 |     | +0.75514299 |
| $e$ | 0.1784241  | $i$      | 12.94710  |     | +0.42488235 |     | +0.19146107 |
| $P$ | 5.17       | $H$      | 14.9      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 25 | 704 | 0.3+ | 0.4- | 2002 12 11 | 704 | 0.0  | 0.1- | 2007 11 03 | 704 | 1.4+  | 0.6-  |
| 2001 08 25 | 704 | 0.2+ | 0.2- | 2002 12 31 | 704 | 0.1- | 0.4+ | 2007 11 03 | 704 | 0.8+  | 0.2-  |
| 2001 08 25 | 704 | 0.1+ | 0.6- | 2002 12 31 | 704 | 0.0  | 0.3- | 2007 11 03 | 704 | (0.3+ | 2.4-) |
| 2001 08 25 | 704 | 0.3+ | 0.0  | 2002 12 31 | 704 | 0.1- | 0.3+ | 2007 11 03 | 704 | 1.0+  | 0.1-  |
| 2001 08 25 | 704 | 0.1- | 0.1- | 2003 01 04 | 704 | 0.2- | 0.3- | 2007 11 08 | 704 | 0.1+  | 0.9+  |
| 2001 08 27 | 704 | 0.1+ | 0.1+ | 2003 01 04 | 704 | 0.3- | 0.4+ | 2007 11 08 | 704 | 0.3-  | 0.4-  |
| 2001 08 27 | 704 | 1.0- | 0.1- | 2003 01 04 | 704 | 0.3+ | 0.1- | 2007 11 08 | 704 | 0.7+  | 0.5+  |
| 2001 08 27 | 704 | 0.2+ | 0.5- | 2003 01 04 | 704 | 0.3+ | 0.2+ | 2007 11 17 | 704 | 0.4+  | 0.2+  |
| 2001 08 27 | 704 | 0.0  | 0.7+ | 2003 01 08 | 704 | 0.0  | 0.1- | 2007 11 17 | 704 | (2.3+ | 0.2-) |
| 2001 08 28 | 704 | 0.1+ | 1.3+ | 2003 01 08 | 704 | 0.3- | 0.6- | 2007 11 17 | 704 | 0.9-  | 0.1-  |
| 2001 08 28 | 704 | 0.5- | 0.2- | 2003 01 08 | 704 | 1.0+ | 0.3- | 2007 11 17 | 704 | 0.2+  | 0.2+  |
| 2001 08 28 | 704 | 0.0  | 0.5+ | 2006 06 19 | 691 | 0.0  | 0.0  | 2007 11 17 | 704 | 0.4+  | 0.3-  |
| 2002 12 06 | 704 | 0.2+ | 0.1- | 2006 06 19 | 691 | 0.6+ | 0.1+ | 2007 12 02 | 704 | 0.6-  | 0.2-  |
| 2002 12 06 | 704 | 0.1+ | 0.4- | 2006 06 19 | 691 | 0.1- | 0.1- | 2007 12 02 | 704 | 0.8-  | 0.1+  |
| 2002 12 06 | 704 | 0.8- | 0.2- | 2006 07 26 | 644 | 0.2- | 0.1- | 2007 12 02 | 704 | 0.5-  | 0.2+  |
| 2002 12 06 | 704 | 0.1+ | 0.6- | 2006 07 26 | 644 | 0.2- | 0.3- | 2007 12 16 | 704 | 0.3-  | 0.2-  |
| 2002 12 06 | 704 | 0.0  | 0.5- | 2006 07 26 | 644 | 0.1- | 0.2- | 2007 12 16 | 704 | 0.8-  | 0.3+  |
| 2002 12 11 | 704 | 0.4- | 0.3- | 2006 08 13 | 644 | 0.0  | 0.4- | 2007 12 16 | 704 | 0.3-  | 0.9+  |
| 2002 12 11 | 704 | 0.3- | 0.0  | 2006 08 13 | 644 | 0.1- | 0.3- | 2007 12 16 | 704 | 0.3-  | 0.1+  |
| 2002 12 11 | 704 | 0.0  | 0.1+ | 2006 08 13 | 644 | 0.2- | 0.1- |            |     |       |       |

(171873)\* 2001 QF<sub>197</sub>

Discovered 2001 Aug. 22 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 10.67004   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17769739 | $\omega$ | 121.02808 |     | +0.40914947 |     | -0.86343953 |
| $a$ | 3.1333964  | $\Omega$ | 301.93756 |     | +0.67276118 |     | +0.50392190 |
| $e$ | 0.2365412  | $i$      | 20.34724  |     | +0.61643256 |     | +0.02312780 |
| $P$ | 5.55       | $H$      | 14.7      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 22 | 644 | 0.0   | 0.6+  | 2001 12 22 | 704 | (2.5+ | 2.4-) | 2006 09 11 | 703 | 0.1- | 0.0  |
| 2001 08 22 | 644 | 0.3-  | 0.3+  | 2002 01 08 | 704 | 0.2+  | 0.1-  | 2006 09 11 | 703 | 0.8- | 0.6+ |
| 2001 08 22 | 644 | 0.3+  | 0.8+  | 2002 01 08 | 704 | 0.8+  | 1.0-  | 2006 09 18 | 703 | 0.2+ | 0.6+ |
| 2001 08 23 | 704 | 0.8-  | 0.3-  | 2002 01 08 | 704 | 0.2+  | 1.4-  | 2006 09 18 | 703 | 0.1+ | 0.2- |
| 2001 08 23 | 704 | 0.3+  | 0.5-  | 2003 01 14 | 644 | 0.7+  | 0.2+  | 2006 09 18 | 703 | 0.2- | 0.3- |
| 2001 08 23 | 704 | 0.2-  | 0.6-  | 2003 01 14 | 644 | 0.1+  | 0.6+  | 2006 09 18 | 703 | 0.3- | 0.4- |
| 2001 08 23 | 704 | 0.0   | 0.3-  | 2003 01 14 | 644 | 0.1+  | 0.7+  | 2007 11 03 | 704 | 0.3- | 0.4+ |
| 2001 08 23 | 704 | 0.1-  | 0.7-  | 2003 02 27 | 608 | 0.2+  | 0.9+  | 2007 11 03 | 704 | 0.1+ | 0.1+ |
| 2001 09 08 | 704 | 0.3-  | 0.5+  | 2003 02 27 | 608 | 0.8+  | 0.5+  | 2007 11 03 | 704 | 0.3- | 0.1+ |
| 2001 09 08 | 704 | 0.6-  | 0.0   | 2003 02 27 | 608 | 0.2+  | 0.5+  | 2007 11 03 | 704 | 0.2+ | 0.3- |
| 2001 09 08 | 704 | 0.5-  | 0.9+  | 2003 03 09 | 699 | 0.4+  | 0.6+  | 2007 11 03 | 704 | 0.6+ | 0.6+ |
| 2001 09 08 | 704 | 0.5-  | 0.7+  | 2003 03 09 | 699 | 0.7+  | 0.1-  | 2007 11 05 | 703 | 0.2- | 0.2- |
| 2001 09 26 | 704 | 0.7+  | 0.1+  | 2003 03 09 | 699 | 0.6+  | 0.5+  | 2007 11 05 | 703 | 0.8+ | 0.6+ |
| 2001 09 26 | 704 | 0.4+  | 0.6+  | 2003 03 09 | 699 | 0.1-  | 0.2+  | 2007 11 05 | 703 | 0.2+ | 0.3- |
| 2001 09 26 | 704 | 0.2-  | 0.1+  | 2006 07 21 | 703 | (1.5+ | 1.6-) | 2007 11 05 | 703 | 0.4- | 0.3+ |
| 2001 09 26 | 704 | 0.3+  | 0.4+  | 2006 07 21 | 703 | 0.9-  | 1.0+  | 2007 12 03 | 704 | 0.2- | 0.1- |
| 2001 09 26 | 704 | 0.1+  | 1.0+  | 2006 07 21 | 703 | 0.6-  | 0.1-  | 2007 12 03 | 704 | 0.1+ | 0.1- |
| 2001 12 09 | 704 | 0.6+  | 0.3-  | 2006 07 21 | 703 | (1.8- | 1.0+) | 2007 12 03 | 704 | 0.2+ | 0.0  |
| 2001 12 09 | 704 | 0.2-  | 0.0   | 2006 08 27 | 699 | 0.1+  | 0.2+  | 2007 12 03 | 704 | 0.0  | 0.2+ |
| 2001 12 09 | 704 | 0.2-  | 0.1+  | 2006 08 27 | 699 | 0.1+  | 0.7+  | 2007 12 03 | 704 | 0.1+ | 0.5- |
| 2001 12 09 | 704 | 0.5-  | 0.3+  | 2006 08 27 | 699 | 0.5+  | 0.4+  | 2007 12 05 | 699 | 0.6- | 0.6- |
| 2001 12 09 | 704 | 0.6-  | 0.2+  | 2006 08 27 | 699 | 0.5+  | 0.2+  | 2007 12 05 | 699 | 0.4- | 0.3- |
| 2001 12 22 | 704 | (1.9+ | 0.9-) | 2006 09 11 | 703 | 0.2-  | 0.3-  | 2007 12 05 | 699 | 0.5- | 0.2+ |
| 2001 12 22 | 704 | (1.8+ | 1.9-) | 2006 09 11 | 703 | 0.1+  | 0.3-  | 2007 12 05 | 699 | 0.0  | 0.5- |

(171874)\* 2001 QR<sub>211</sub> = 2000 KA<sub>16</sub>

Discovered 2001 Aug. 23 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (MPO 17949)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 121.11513  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.20233878 | $\omega$ | 97.88756  |     | +0.73823157 |     | +0.67440394 |
| $a$ | 2.8735360  | $\Omega$ | 219.70617 |     | -0.62714746 |     | +0.67861740 |
| $e$ | 0.0900813  | $i$      | 1.24758   |     | -0.24839528 |     | +0.29096007 |
| $P$ | 4.87       | $H$      | 15.7      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |      |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|------|
| 1994 02 16 | 691 | (2.4+ 4.1+) | 2001 09 23 | 704 | 0.3- 0.7+   | 2006 10 02 | G96 | 0.0         | 0.3- |
| 1994 02 16 | 691 | 0.5+ 0.6+   | 2001 09 23 | 704 | 0.6- 0.3+   | 2006 10 02 | G96 | 0.3+        | 0.3- |
| 1994 02 16 | 691 | 0.1+ 0.1+   | 2001 09 23 | 704 | 0.5- 0.3+   | 2006 10 02 | G96 | 0.2+        | 0.3- |
| 1995 05 27 | 691 | (2.3- 3.2+) | 2001 09 23 | 704 | 0.8- 0.4-   | 2006 10 09 | 644 | 0.2-        | 0.4+ |
| 1995 05 27 | 691 | (2.5+ 2.2+) | 2001 10 11 | 644 | 0.3- 0.5+   | 2006 10 09 | 644 | 0.2-        | 0.1+ |
| 2000 05 28 | 704 | 0.4- 1.5+   | 2001 10 11 | 644 | 0.4- 0.6+   | 2006 10 09 | 644 | 0.0         | 0.1- |
| 2000 05 28 | 704 | 0.4- 0.2-   | 2001 10 11 | 644 | 0.4- 0.6+   | 2006 10 16 | 703 | 1.1- 1.4-   |      |
| 2000 05 28 | 704 | 0.4- 0.5-   | 2005 06 27 | G96 | 0.5- 0.4+   | 2006 10 16 | 703 | 0.1+        | 0.7- |
| 2000 05 28 | 704 | 1.0+ 0.7+   | 2005 06 27 | G96 | 0.0 0.4+    | 2006 10 16 | 703 | (2.0- 0.6+) |      |
| 2000 05 29 | 704 | 0.2+ 0.1-   | 2005 06 27 | G96 | 0.0 0.3+    | 2006 10 16 | 703 | 0.8-        | 0.6- |
| 2000 05 29 | 704 | 0.9+ 0.2-   | 2005 06 27 | G96 | 0.5- 0.4+   | 2006 10 22 | 644 | 0.2+        | 0.1- |
| 2000 05 29 | 704 | 0.4+ 0.1-   | 2006 08 28 | 703 | (2.0+ 0.8+) | 2006 10 22 | 644 | 0.0         | 0.3+ |
| 2001 08 16 | 704 | 1.0+ 0.2+   | 2006 08 28 | 703 | 0.1+ 0.6-   | 2006 10 22 | 644 | 0.4+        | 0.2+ |
| 2001 08 16 | 704 | 1.3+ 0.5-   | 2006 08 28 | 703 | 0.3- 0.2-   | 2006 10 28 | G96 | 0.1-        | 0.1- |
| 2001 08 16 | 704 | 0.2- 0.6+   | 2006 08 28 | 703 | 1.2- 0.9-   | 2006 10 28 | G96 | 0.2-        | 0.8- |
| 2001 08 16 | 704 | 0.5- 0.2-   | 2006 09 17 | 691 | 0.1+ 0.0    | 2006 10 28 | G96 | 0.2+        | 0.5- |
| 2001 08 23 | 699 | 1.5- 0.9+   | 2006 09 17 | 691 | 0.0 0.1-    | 2006 10 28 | G96 | 0.1+        | 0.3- |
| 2001 08 23 | 699 | 1.4- 0.3+   | 2006 09 17 | 691 | 0.1- 0.0    | 2006 11 08 | 705 | 0.1+        | 0.3- |
| 2001 08 23 | 699 | (2.3- 0.9-) | 2006 09 17 | 291 | 0.0 0.0     | 2006 11 08 | 705 | 0.1-        | 0.2- |
| 2001 08 23 | 699 | 0.6- 0.2+   | 2006 09 17 | 291 | 0.0 0.0     | 2006 11 10 | 705 | 0.0         | 0.1- |
| 2001 08 24 | 704 | 0.3+ 0.4+   | 2006 09 17 | 291 | 0.0 0.1-    | 2006 11 10 | 705 | 0.3-        | 0.2- |
| 2001 08 24 | 704 | 0.1- 0.1+   | 2006 09 19 | 699 | 0.3+ 0.1-   | 2006 11 14 | 705 | 0.1+        | 0.1- |
| 2001 08 24 | 704 | 1.0- 1.5+   | 2006 09 19 | 699 | 0.4+ 0.2-   | 2006 11 14 | 705 | 0.1-        | 0.2- |
| 2001 08 25 | 691 | 0.3- 0.1+   | 2006 09 19 | 699 | 0.1- 1.1-   | 2006 11 17 | 705 | 0.0         | 0.2- |
| 2001 08 25 | 691 | 0.3- 0.1-   | 2006 09 19 | 699 | 0.5- 0.3+   | 2006 11 17 | 705 | 0.1-        | 0.1- |
| 2001 08 25 | 691 | 0.3- 0.1-   | 2006 09 25 | 691 | 0.2+ 0.0    | 2006 11 20 | 705 | 0.2-        | 0.2- |
| 2001 09 11 | 699 | 1.1+ 0.2+   | 2006 09 25 | 691 | 0.3+ 0.1+   | 2006 11 20 | 705 | 0.2-        | 0.3- |
| 2001 09 11 | 699 | 0.0 0.3+    | 2006 09 25 | 691 | 0.1+ 0.2+   | 2006 11 23 | 705 | 0.1-        | 0.0  |
| 2001 09 11 | 699 | 0.3+ 0.8+   | 2006 09 26 | G96 | 0.4- 0.3-   | 2006 11 23 | 705 | 0.0         | 0.1- |
| 2001 09 11 | 699 | 0.5+ 0.3-   | 2006 09 26 | G96 | 0.3- 0.2-   | 2006 11 29 | 705 | 0.0         | 0.2- |
| 2001 09 16 | 704 | 0.8- 0.8+   | 2006 09 26 | G96 | 0.2+ 0.3-   | 2006 11 29 | 705 | 0.2-        | 0.1- |
| 2001 09 16 | 704 | 0.3- 0.2-   | 2006 09 26 | G96 | 0.2+ 0.3-   | 2006 12 12 | G96 | 0.1-        | 0.0  |
| 2001 09 16 | 704 | 0.1- 0.6+   | 2006 09 27 | 704 | 0.9+ 0.1-   | 2006 12 12 | G96 | 0.1+        | 0.2+ |
| 2001 09 19 | 699 | 0.1+ 1.1+   | 2006 09 27 | 704 | 0.7+ 0.6-   | 2006 12 12 | G96 | 0.2-        | 0.1- |
| 2001 09 19 | 699 | 1.1- 0.0    | 2006 09 27 | 704 | 1.0+ 1.2-   | 2006 12 12 | G96 | 0.1+        | 0.2- |
| 2001 09 19 | 699 | (0.2- 1.8+) | 2006 09 27 | 704 | 0.2- 0.3-   | 2007 01 08 | G96 | (1.8- 2.0-) |      |
| 2001 09 19 | 699 | 0.2- 0.5+   | 2006 09 29 | 704 | 0.9+ 0.8+   | 2007 01 08 | G96 | 0.3+        | 0.0  |
| 2001 09 20 | 704 | 0.0 0.6+    | 2006 09 29 | 704 | 0.7+ 0.4+   | 2007 01 08 | G96 | 0.3-        | 0.1+ |
| 2001 09 20 | 704 | 0.1+ 0.5+   | 2006 09 29 | 704 | (1.6+ 0.6+) | 2007 01 08 | G96 | 0.5+        | 0.6- |
| 2001 09 20 | 704 | 0.0 0.9+    | 2006 10 01 | 704 | 0.9+ 0.5-   | 2007 12 04 | 691 | 0.1-        | 0.1+ |
| 2001 09 20 | 704 | 0.3- 0.6+   | 2006 10 01 | 704 | 0.0 0.3-    | 2007 12 04 | 691 | 0.1-        | 0.4+ |
| 2001 09 20 | 704 | 0.1- 1.2+   | 2006 10 01 | 704 | 1.1+ 0.2+   | 2007 12 04 | 691 | 0.2-        | 0.3+ |
| 2001 09 22 | 704 | 0.5+ 1.0+   | 2006 10 01 | 704 | 0.8+ 1.2-   | 2007 12 16 | 691 | 0.3+        | 0.1+ |
| 2001 09 22 | 704 | (0.3- 1.6+) | 2006 10 02 | 691 | 0.3+ 0.3+   | 2007 12 16 | 691 | 0.1-        | 0.4+ |
| 2001 09 22 | 704 | 0.3+ 0.1+   | 2006 10 02 | 691 | 0.1+ 0.2+   | 2007 12 16 | 691 | 0.2-        | 0.2+ |
| 2001 09 22 | 704 | 0.4- 0.4-   | 2006 10 02 | 691 | 0.3+ 0.1+   |            |     |             |      |
| 2001 09 23 | 704 | 0.1+ 0.3+   | 2006 10 02 | G96 | 0.1+ 0.2-   |            |     |             |      |

|                                         |          |           |               |             |          |  |  |
|-----------------------------------------|----------|-----------|---------------|-------------|----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC      |           |               |             |          |  |  |
| <i>M</i> 64.63458                       | (2000.0) |           | <b>P</b>      | <b>Q</b>    |          |  |  |
| <i>n</i> 0.18489119                     | $\omega$ | 84.86706  | +0.94345943   | -0.22763444 |          |  |  |
| <i>a</i> 3.0515834                      | $\Omega$ | 288.12735 | +0.09655613   | +0.88412912 |          |  |  |
| <i>e</i> 0.1081414                      | <i>i</i> | 14.68800  | +0.31711388   | +0.40804198 |          |  |  |
| <i>P</i> 5.33                           | <i>H</i> | 14.1      | <i>G</i> 0.15 | <i>U</i>    | <i>1</i> |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 23 | 704 | 1.2+  | 0.1+  | 2003 01 27 | 644 | 0.3+ | 0.7+ | 2006 09 28 | 703 | 1.1- | 0.6- |
| 2001 08 23 | 704 | 0.9+  | 0.6+  | 2003 01 27 | 644 | 0.1+ | 0.3+ | 2006 09 28 | 703 | 0.1- | 0.4- |
| 2001 08 23 | 704 | 0.9+  | 0.4+  | 2003 01 28 | 704 | 0.2- | 0.3+ | 2006 10 20 | 703 | 0.1- | 0.0  |
| 2001 08 23 | 704 | 1.3+  | 0.5-  | 2003 01 28 | 704 | 0.3- | 0.2+ | 2006 10 20 | 703 | 0.6+ | 0.2- |
| 2001 08 23 | 704 | 1.1+  | 0.0   | 2003 01 28 | 704 | 0.5+ | 0.7+ | 2006 10 20 | 703 | 0.2+ | 0.2+ |
| 2001 08 24 | 644 | 0.1+  | 0.1+  | 2003 01 28 | 704 | 0.0  | 0.9+ | 2006 10 20 | 703 | 0.1- | 0.4- |
| 2001 08 24 | 644 | 0.2+  | 0.2+  | 2004 03 26 | 704 | 0.1- | 0.8+ | 2006 11 14 | 703 | 0.1+ | 0.5+ |
| 2001 08 24 | 644 | 0.4+  | 0.1-  | 2004 03 26 | 704 | 0.2+ | 0.2+ | 2006 11 14 | 703 | 0.5+ | 0.0  |
| 2001 09 28 | 704 | 0.0   | 0.0   | 2004 03 26 | 704 | 1.1- | 0.1- | 2006 11 14 | 703 | 0.4+ | 0.4+ |
| 2001 09 28 | 704 | 0.1-  | 0.4+  | 2004 03 26 | 704 | 0.5- | 0.9+ | 2006 11 14 | 703 | 0.3+ | 0.3+ |
| 2001 09 28 | 704 | 0.1+  | 0.1+  | 2004 04 12 | E12 | 0.4+ | 0.1+ | 2006 11 25 | 703 | 1.2- | 0.1- |
| 2001 09 28 | 704 | 0.1+  | 0.5+  | 2004 04 12 | E12 | 0.7+ | 1.1- | 2006 11 25 | 703 | 0.2+ | 0.1- |
| 2001 09 28 | 704 | 0.6-  | 0.6+  | 2004 04 12 | E12 | 0.7+ | 0.2- | 2006 11 25 | 703 | 0.4+ | 0.6- |
| 2001 10 08 | 704 | 0.1+  | 0.2+  | 2004 04 12 | E12 | 0.5+ | 0.6- | 2006 11 25 | 703 | 0.2+ | 1.1- |
| 2001 10 08 | 704 | 0.2+  | 0.0   | 2006 08 10 | 644 | 0.1- | 0.1+ | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2001 10 08 | 704 | 0.2-  | 1.4+  | 2006 08 10 | 644 | 0.4+ | 0.2+ | 2007 12 05 | 691 | 0.1- | 0.1- |
| 2001 10 08 | 704 | 1.1-  | 0.2+  | 2006 08 10 | 644 | 0.1- | 0.1+ | 2007 12 05 | 691 | 0.2- | 0.1+ |
| 2001 10 08 | 704 | 0.1-  | 0.2-  | 2006 08 24 | 704 | 0.5+ | 0.2+ | 2007 12 06 | 704 | 0.1- | 0.2- |
| 2001 10 25 | 704 | 0.2+  | 0.2+  | 2006 08 24 | 704 | 0.2+ | 0.2+ | 2007 12 06 | 704 | 1.0+ | 0.0  |
| 2001 10 25 | 704 | 0.3+  | 0.9-  | 2006 08 24 | 704 | 0.5- | 0.1- | 2007 12 06 | 704 | 0.5- | 0.4- |
| 2001 10 25 | 704 | 0.0   | 0.8-  | 2006 08 29 | 699 | 1.3- | 0.6+ | 2007 12 06 | 704 | 0.3- | 0.5- |
| 2001 10 25 | 704 | 0.4-  | 1.0-  | 2006 08 29 | 699 | 0.3- | 1.1+ | 2007 12 06 | 704 | 1.0- | 0.7- |
| 2001 10 25 | 704 | 0.5-  | 1.1-  | 2006 08 29 | 699 | 0.3- | 0.1+ | 2007 12 10 | 704 | 1.0- | 0.6- |
| 2001 12 09 | 704 | 0.2+  | 0.2+  | 2006 08 29 | 699 | 0.4- | 0.0  | 2007 12 10 | 704 | 0.3- | 0.7- |
| 2001 12 09 | 704 | 0.1+  | 0.5-  | 2006 09 16 | 703 | 0.9- | 0.2- | 2007 12 10 | 704 | 1.0+ | 0.2- |
| 2001 12 09 | 704 | 0.4-  | 0.2-  | 2006 09 16 | 703 | 0.4+ | 0.2+ | 2007 12 10 | 704 | 0.3- | 0.1- |
| 2001 12 09 | 704 | 0.1-  | 0.3-  | 2006 09 16 | 703 | 0.5- | 0.2- | 2007 12 10 | 704 | 0.4- | 0.9- |
| 2001 12 09 | 704 | 0.1+  | 0.1+  | 2006 09 16 | 703 | 0.2+ | 0.1- | 2007 12 15 | 704 | 0.2+ | 0.7+ |
| 2002 01 08 | 704 | 1.0-  | 1.1+  | 2006 09 21 | 699 | 1.1+ | 0.2+ | 2007 12 15 | 704 | 1.3+ | 0.3- |
| 2002 01 08 | 704 | (1.6- | 0.5+) | 2006 09 21 | 699 | 0.3+ | 0.1+ | 2007 12 15 | 704 | 0.7+ | 0.4- |
| 2002 01 08 | 704 | 1.2-  | 1.0+  | 2006 09 21 | 699 | 0.1+ | 0.1- | 2007 12 15 | 704 | 0.4+ | 0.0  |
| 2002 01 08 | 704 | 0.9-  | 0.8+  | 2006 09 21 | 699 | 0.4+ | 1.0+ | 2007 12 15 | 704 | 0.6+ | 0.1+ |
| 2002 01 08 | 704 | (0.5- | 1.5+) | 2006 09 28 | 703 | 0.4- | 0.2- |            |     |      |      |
| 2003 01 27 | 644 | 0.1+  | 0.7+  | 2006 09 28 | 703 | 0.0  | 0.5- |            |     |      |      |

**(171876)\* 2001 QE<sub>228</sub> = 2002 XA<sub>75</sub>**

Discovered 2001 Aug. 24 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 40406)

|                                         |          |           |               |             |          |  |  |
|-----------------------------------------|----------|-----------|---------------|-------------|----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC      |           |               |             |          |  |  |
| <i>M</i> 355.43821                      | (2000.0) |           | <b>P</b>      | <b>Q</b>    |          |  |  |
| <i>n</i> 0.18902302                     | $\omega$ | 140.73851 | +0.50065573   | -0.85118195 |          |  |  |
| <i>a</i> 3.0069503                      | $\Omega$ | 278.68714 | +0.74867233   | +0.51715209 |          |  |  |
| <i>e</i> 0.0887963                      | <i>i</i> | 9.17289   | +0.43454985   | +0.08968282 |          |  |  |
| <i>P</i> 5.21                           | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i>    | <i>1</i> |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 24 | 699 | 0.3+  | 0.4+  | 2002 12 14 | 704 | 0.1- | 0.2+ | 2007 11 08 | 704 | 0.1- | 1.2+ |
| 2001 08 24 | 699 | 0.1-  | 1.2+  | 2002 12 14 | 704 | 0.1+ | 1.0+ | 2007 11 08 | 704 | 0.0  | 1.2+ |
| 2001 08 24 | 699 | 0.4+  | 0.1+  | 2003 01 05 | 704 | 0.4- | 0.4+ | 2007 11 15 | G96 | 0.5+ | 0.0  |
| 2001 08 24 | 699 | (0.3- | 1.5+) | 2003 01 05 | 704 | 0.2+ | 0.5- | 2007 11 15 | G96 | 0.0  | 0.2- |
| 2001 08 25 | 704 | 0.9-  | 0.4+  | 2003 01 05 | 704 | 0.8- | 0.3- | 2007 11 15 | G96 | 0.0  | 0.3- |
| 2001 08 25 | 704 | 0.6-  | 0.2+  | 2003 01 05 | 704 | 0.6- | 0.7+ | 2007 11 15 | G96 | 0.0  | 0.2- |
| 2001 08 25 | 704 | 0.4-  | 0.1-  | 2003 01 05 | 704 | 0.0  | 0.6+ | 2007 11 17 | 704 | 0.3+ | 0.2- |
| 2001 08 25 | 704 | 0.3-  | 0.1-  | 2006 08 18 | 644 | 0.2- | 0.4+ | 2007 11 17 | 704 | 0.9- | 0.4- |
| 2001 08 25 | 704 | 0.8-  | 0.1-  | 2006 08 18 | 644 | 0.3- | 0.4+ | 2007 11 17 | 704 | 0.1+ | 0.3+ |
| 2001 09 16 | 704 | 0.5-  | 0.5+  | 2006 08 18 | 644 | 0.8+ | 0.1+ | 2007 11 17 | 704 | 0.2+ | 0.2+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 1.2+ | 0.4+ | 2006 08 19 | 699 | 0.4+  | 0.4-  | 2007 11 17 | 704 | 0.4+  | 0.2+  |
| 2001 09 16 | 704 | 0.4+ | 0.1+ | 2006 08 19 | 699 | 0.9-  | 0.7+  | 2007 11 20 | G96 | 0.0   | 0.4-  |
| 2001 09 16 | 704 | 0.4+ | 0.2+ | 2006 08 19 | 699 | 0.2-  | 0.6-  | 2007 11 20 | G96 | 0.1-  | 0.3-  |
| 2001 09 16 | 704 | 1.0+ | 1.2+ | 2006 08 19 | 699 | 0.1-  | 0.5+  | 2007 11 20 | G96 | 0.0   | 0.4-  |
| 2001 10 15 | 645 | 0.0  | 0.1- | 2006 09 14 | 703 | 0.3-  | 0.6+  | 2007 11 20 | G96 | 0.1+  | 0.4-  |
| 2001 10 15 | 645 | 0.0  | 0.1- | 2006 09 14 | 703 | (0.9- | 1.6+) | 2007 12 12 | 704 | 0.8-  | 1.2+  |
| 2001 11 18 | 645 | 0.0  | 0.1- | 2006 09 14 | 703 | (2.0- | 0.5+) | 2007 12 12 | 704 | (1.9+ | 1.0+) |
| 2001 11 18 | 645 | 0.0  | 0.2- | 2006 09 14 | 703 | 0.9-  | 1.4+  | 2007 12 12 | 704 | 0.2-  | 1.3+  |
| 2002 12 11 | 704 | 0.1+ | 0.6- | 2007 11 03 | 291 | 0.2-  | 0.0   | 2007 12 12 | 704 | 0.8+  | 0.3-  |
| 2002 12 11 | 704 | 0.7+ | 0.2- | 2007 11 03 | 291 | 0.5-  | 0.6-  | 2007 12 15 | 704 | 1.4+  | 0.6-  |
| 2002 12 11 | 704 | 0.0  | 0.5+ | 2007 11 03 | 291 | 0.3-  | 0.0   | 2007 12 15 | 704 | 0.9+  | 1.1-  |
| 2002 12 11 | 704 | 0.0  | 0.2+ | 2007 11 08 | 704 | (0.0  | 2.1+) | 2007 12 15 | 704 | 0.6+  | 0.4-  |
| 2002 12 11 | 704 | 0.6+ | 0.5+ | 2007 11 08 | 704 | 0.2-  | 0.9+  | 2007 12 15 | 704 | 1.3+  | 0.2-  |
| 2002 12 14 | 704 | 0.4+ | 0.8+ | 2007 11 08 | 704 | 0.2-  | 1.5+  | 2007 12 15 | 704 | 0.3+  | 0.9-  |

**(171877)\* 2001 QR<sub>228</sub>**

Discovered 2001 Aug. 24 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

|                                         |          |           |               |             |          |  |  |
|-----------------------------------------|----------|-----------|---------------|-------------|----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC      |           |               |             |          |  |  |
| <i>M</i> 46.39903                       | (2000.0) |           | <b>P</b>      | <b>Q</b>    |          |  |  |
| <i>n</i> 0.18982792                     | $\omega$ | 85.07138  | +0.98013593   | -0.12996839 |          |  |  |
| <i>a</i> 2.9984443                      | $\Omega$ | 282.33902 | +0.05524963   | +0.90437914 |          |  |  |
| <i>e</i> 0.1230842                      | <i>i</i> | 8.82101   | +0.19047584   | +0.40645613 |          |  |  |
| <i>P</i> 5.19                           | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i>    | <i>1</i> |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 07 22 | 699 | (4.3+ | 0.9-) | 2001 09 25 | 704 | 0.7+ | 0.4- | 2006 08 29 | 703 | 0.5-  | 0.5+  |
| 2001 07 22 | 699 | 0.3+  | 0.2-  | 2001 09 25 | 704 | 1.2- | 0.8+ | 2006 08 29 | 703 | 0.6+  | 0.5-  |
| 2001 07 22 | 699 | 0.5+  | 0.4+  | 2001 09 25 | 704 | 0.8- | 0.7- | 2007 11 07 | 704 | 0.5+  | 0.0   |
| 2001 07 22 | 699 | 0.5-  | 0.7+  | 2001 09 25 | 704 | 0.6- | 0.2- | 2007 11 07 | 704 | 0.1+  | 0.0   |
| 2001 08 03 | 608 | 0.3-  | 0.8-  | 2001 10 16 | 704 | 0.3- | 1.0- | 2007 11 07 | 704 | 0.6+  | 0.1-  |
| 2001 08 03 | 608 | 0.5-  | 0.4-  | 2001 10 16 | 704 | 0.4+ | 0.7- | 2007 11 07 | 704 | 0.3+  | 0.4+  |
| 2001 08 03 | 608 | 0.3-  | 0.4-  | 2001 10 16 | 704 | 0.4- | 1.3- | 2007 11 07 | 704 | 0.6+  | 0.3-  |
| 2001 08 24 | 699 | 0.6+  | 0.8+  | 2001 11 18 | 704 | 0.1- | 1.0+ | 2007 11 18 | 704 | 0.6+  | 0.3-  |
| 2001 08 24 | 699 | 1.3+  | 0.1+  | 2001 11 18 | 704 | 0.5+ | 0.1+ | 2007 11 18 | 704 | 0.4+  | 0.5-  |
| 2001 08 24 | 699 | 0.9+  | 0.8+  | 2001 11 18 | 704 | 0.7+ | 0.1+ | 2007 11 18 | 704 | 0.1+  | 0.0   |
| 2001 08 24 | 699 | 1.3+  | 0.7+  | 2001 11 18 | 704 | 0.6- | 0.5+ | 2007 11 18 | 704 | 0.0   | 0.5+  |
| 2001 08 25 | 704 | 0.2-  | 0.6+  | 2003 01 04 | 704 | 0.5- | 0.5+ | 2007 11 20 | 704 | 0.8+  | 0.2+  |
| 2001 08 25 | 704 | 0.8+  | 0.2-  | 2003 01 04 | 704 | 0.6+ | 0.3+ | 2007 11 20 | 704 | (2.7+ | 0.6+) |
| 2001 08 25 | 704 | 0.3+  | 0.2+  | 2003 01 04 | 704 | 0.8+ | 1.0+ | 2007 11 20 | 704 | 0.3-  | 0.4-  |
| 2001 08 25 | 704 | 0.4-  | 1.3-  | 2003 01 04 | 704 | 0.0  | 1.1+ | 2007 11 20 | 704 | 0.3+  | 0.9-  |
| 2001 08 25 | 704 | 0.2+  | 0.2-  | 2006 07 21 | 703 | 1.4+ | 0.4- | 2007 11 20 | 691 | 0.0   | 0.4-  |
| 2001 08 31 | 644 | 0.5-  | 0.0   | 2006 07 21 | 703 | 1.2- | 1.1+ | 2007 11 20 | 691 | 0.2-  | 0.4-  |
| 2001 08 31 | 644 | 0.4-  | 0.3+  | 2006 07 21 | 703 | 1.1- | 0.2- | 2007 11 20 | 691 | 0.7-  | 0.3-  |
| 2001 08 31 | 644 | 0.5-  | 0.1+  | 2006 07 21 | 703 | 1.0- | 1.4- | 2007 12 13 | 704 | 0.2+  | 0.4+  |
| 2001 09 09 | 699 | 0.9-  | 0.2-  | 2006 08 19 | 699 | 0.9+ | 1.3+ | 2007 12 13 | 704 | 0.4+  | 0.7+  |
| 2001 09 09 | 699 | 0.2+  | 0.9+  | 2006 08 19 | 699 | 0.4- | 0.7- | 2007 12 13 | 704 | 0.3+  | 0.0   |
| 2001 09 09 | 699 | 0.3+  | 0.5+  | 2006 08 19 | 699 | 0.3- | 0.8+ | 2007 12 13 | 704 | 0.7+  | 0.6-  |
| 2001 09 09 | 699 | 0.1+  | 0.5+  | 2006 08 19 | 699 | 0.1+ | 0.4+ | 2007 12 15 | 704 | 0.1-  | 0.8+  |
| 2001 09 16 | 704 | 0.1+  | 0.1-  | 2006 08 21 | 644 | 0.4+ | 0.0  | 2007 12 15 | 704 | 0.3+  | 1.0+  |
| 2001 09 16 | 704 | 0.1-  | 0.1+  | 2006 08 21 | 644 | 0.0  | 0.4+ | 2007 12 15 | 704 | 2.1-  | 0.3+  |
| 2001 09 16 | 704 | 0.6-  | 0.2-  | 2006 08 21 | 644 | 0.5+ | 0.3- | 2007 12 15 | 704 | 0.8-  | 0.8+  |
| 2001 09 16 | 704 | 0.1+  | 0.8-  | 2006 08 29 | 703 | 0.1+ | 0.2- |            |     |       |       |
| 2001 09 16 | 704 | 0.4-  | 0.0   | 2006 08 29 | 703 | 0.2+ | 0.5+ |            |     |       |       |

2007 DEC. 24

M.P.O. 129191

|                                         |            |          |                |             |      |                |             |       |   |  |
|-----------------------------------------|------------|----------|----------------|-------------|------|----------------|-------------|-------|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |      |                |             |       |   |  |
| $M$                                     | 44.53530   |          | (2000.0)       | <b>P</b>    |      |                | <b>Q</b>    |       |   |  |
| $n$                                     | 0.17785694 | $\omega$ | 69.18286       | +0.98885410 |      |                | +0.03765816 |       |   |  |
| $a$                                     | 3.1315222  | $\Omega$ | 288.43482      | −0.09773664 |      |                | +0.89402900 |       |   |  |
| $e$                                     | 0.2002762  | $i$      | 8.73348        | +0.11231701 |      |                | +0.44642357 |       |   |  |
| $P$                                     | 5.54       | $H$      | 15.2           | $G$         | 0.15 |                | $U$         |       | 0 |  |
| Residuals in seconds of arc             |            |          |                |             |      |                |             |       |   |  |
| 2001 08 25 704                          | 1.1−       | 0.9+     | 2004 03 28 291 | 0.0         | 0.5+ | 2007 11 07 704 | (1.8+       | 1.0+) |   |  |
| 2001 08 25 704                          | 0.7−       | 0.6+     | 2004 03 28 291 | 0.2+        | 0.8+ | 2007 11 07 704 | 0.3+        | 0.1−  |   |  |
| 2001 08 25 704                          | 0.1−       | 0.7+     | 2004 03 28 291 | 0.3+        | 0.1+ | 2007 11 08 703 | 0.2+        | 0.6−  |   |  |
| 2001 08 26 699                          | 1.1+       | 0.8−     | 2004 03 28 291 | 0.6+        | 0.5+ | 2007 11 08 703 | 0.9+        | 0.2−  |   |  |
| 2001 08 26 699                          | 1.1+       | 0.2+     | 2006 05 31 G96 | 0.1−        | 0.2+ | 2007 11 08 703 | 0.2+        | 0.2−  |   |  |
| 2001 08 26 699                          | 0.8+       | 1.0+     | 2006 05 31 G96 | 0.0         | 0.3+ | 2007 11 08 703 | 0.2+        | 0.4−  |   |  |
| 2001 08 26 699                          | (1.9+      | 1.3+)    | 2006 05 31 G96 | 0.1+        | 0.1+ | 2007 11 17 704 | (1.1−       | 1.7+) |   |  |
| 2001 09 25 704                          | 0.0        | 0.3+     | 2006 05 31 G96 | 0.1+        | 0.3+ | 2007 11 17 704 | 0.7−        | 0.4+  |   |  |
| 2001 09 25 704                          | 0.3−       | 0.2+     | 2006 06 19 G96 | 0.3−        | 0.1+ | 2007 11 17 704 | 0.6−        | 0.2+  |   |  |
| 2001 09 25 704                          | 0.3+       | 0.7+     | 2006 06 19 G96 | 0.0         | 0.1+ | 2007 11 17 704 | 0.1+        | 0.5+  |   |  |
| 2001 09 25 704                          | 0.6−       | 0.4+     | 2006 06 19 G96 | 0.0         | 0.2+ | 2007 11 17 704 | 0.5+        | 0.9+  |   |  |
| 2001 09 29 644                          | 0.0        | 0.5+     | 2006 06 19 G96 | 0.2+        | 0.3− | 2007 11 20 704 | 0.3−        | 0.7+  |   |  |
| 2001 09 29 644                          | 0.1−       | 0.2+     | 2006 07 19 644 | 0.6−        | 0.3+ | 2007 11 20 704 | 0.4+        | 0.6+  |   |  |
| 2001 09 29 644                          | 0.3−       | 0.3+     | 2006 07 19 644 | 0.1−        | 0.6+ | 2007 11 20 704 | 0.0         | 1.1−  |   |  |
| 2001 10 13 644                          | (0.1−      | 1.7−)    | 2006 07 19 644 | 0.6−        | 0.2+ | 2007 12 13 704 | 0.1−        | 0.3−  |   |  |
| 2001 10 13 644                          | 0.2−       | 1.5−     | 2006 07 26 644 | 0.1−        | 0.4+ | 2007 12 13 704 | 0.0         | 0.2−  |   |  |
| 2001 10 13 644                          | (0.3−      | 1.8−)    | 2006 07 26 644 | 0.0         | 0.8+ | 2007 12 13 704 | 0.3+        | 0.4−  |   |  |
| 2001 10 20 699                          | 0.2+       | 0.4+     | 2006 07 26 644 | 0.1−        | 0.5+ | 2007 12 13 704 | 0.2−        | 0.5−  |   |  |
| 2001 10 20 699                          | 1.1−       | 0.6+     | 2006 08 16 644 | 0.3−        | 0.7+ | 2007 12 13 704 | 0.8−        | 0.4−  |   |  |
| 2001 10 20 699                          | 0.3−       | 0.1+     | 2006 08 16 644 | 0.1−        | 0.6+ | 2007 12 15 704 | 1.0−        | 1.0+  |   |  |
| 2001 10 20 699                          | 0.2−       | 0.2+     | 2006 08 16 644 | 0.0         | 0.4+ | 2007 12 15 704 | 0.9−        | 1.1+  |   |  |
| 2004 03 28 291                          | 0.1+       | 0.3+     | 2007 11 07 704 | 0.5+        | 0.9− | 2007 12 15 704 | 0.1−        | 1.2+  |   |  |
| 2004 03 28 291                          | 0.1+       | 0.2+     | 2007 11 07 704 | 1.5+        | 0.0  | 2007 12 15 704 | 0.7−        | 1.0+  |   |  |

(171879)\* 2001 QQ<sub>263</sub>

Discovered 2001 Aug. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |       |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |       |            |     |       |       |
| $M$                                     | 2.61562    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |       |            |     |       |       |
| $n$                                     | 0.18062002 | $\omega$ | 111.72864 | +0.38604701 |      | −0.91513215 |       |            |     |       |       |
| $a$                                     | 3.0995035  | $\Omega$ | 315.00682 | +0.77396090 |      | +0.38985149 |       |            |     |       |       |
| $e$                                     | 0.1520574  | $i$      | 9.45899   | +0.50194844 |      | +0.10270820 |       |            |     |       |       |
| $P$                                     | 5.46       | $H$      | 14.5      | $G$         | 0.15 | $U$         | 0     |            |     |       |       |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |       |       |
| 2001 08 25                              | 704        | 0.0      | 0.6−      | 2002 01 09  | 704  | 0.3−        | 0.1+  | 2006 08 28 | 703 | 0.5−  | 0.2−  |
| 2001 08 25                              | 704        | 0.1−     | 0.4−      | 2002 01 09  | 704  | 1.4−        | 0.2+  | 2006 08 28 | 699 | 0.3−  | 0.0   |
| 2001 08 25                              | 704        | 0.0      | 0.1−      | 2003 01 27  | 608  | (0.4−       | 2.0+) | 2006 08 28 | 699 | 0.1+  | 0.7+  |
| 2001 08 26                              | 699        | 0.5+     | 0.2−      | 2003 01 27  | 608  | (0.5−       | 1.6+) | 2006 08 28 | 699 | 0.6+  | 0.2−  |
| 2001 08 26                              | 699        | 0.1−     | 0.3−      | 2003 01 27  | 608  | (0.6−       | 1.6+) | 2006 08 28 | 699 | 0.9−  | 0.2−  |
| 2001 08 26                              | 699        | 0.4−     | 1.0+      | 2003 01 30  | 699  | 0.4+        | 0.0   | 2006 08 29 | 691 | 0.1−  | 0.2+  |
| 2001 08 26                              | 699        | 0.3+     | 0.1−      | 2003 01 30  | 699  | 0.5+        | 0.1+  | 2006 08 29 | 691 | 0.1−  | 0.3+  |
| 2001 09 09                              | 704        | 0.3−     | 0.7−      | 2003 01 30  | 699  | 0.1+        | 0.4+  | 2006 08 29 | 691 | 0.0   | 0.2+  |
| 2001 09 09                              | 704        | 1.1+     | 0.4−      | 2003 01 30  | 699  | 0.4−        | 0.6+  | 2006 08 30 | 704 | 1.0−  | 0.7+  |
| 2001 09 09                              | 704        | 0.2+     | 1.0+      | 2003 01 31  | 704  | 0.6+        | 0.1+  | 2006 08 30 | 704 | 0.2−  | 0.3−  |
| 2001 09 09                              | 704        | 0.1−     | 1.2−      | 2003 01 31  | 704  | 0.8+        | 0.3+  | 2006 08 30 | 704 | 0.7−  | 0.5+  |
| 2001 09 19                              | 699        | 0.0      | 0.7−      | 2003 01 31  | 704  | 0.2+        | 0.0   | 2006 08 30 | 704 | 0.2−  | 0.5+  |
| 2001 09 19                              | 699        | 0.4−     | 0.2+      | 2003 01 31  | 704  | 1.3+        | 0.0   | 2006 08 30 | 704 | 0.7−  | 1.0+  |
| 2001 09 19                              | 699        | 0.1−     | 0.1−      | 2003 01 31  | 704  | 0.6+        | 0.1+  | 2006 09 14 | 691 | 0.2−  | 0.3+  |
| 2001 09 19                              | 699        | 0.0      | 0.3−      | 2003 01 31  | 704  | 0.3+        | 0.0   | 2006 09 14 | 691 | 0.3−  | 0.4+  |
| 2001 09 25                              | 704        | 0.1+     | 0.0       | 2003 01 31  | 704  | 0.9+        | 0.0   | 2006 09 14 | 691 | 0.2−  | 0.3+  |
| 2001 09 25                              | 704        | 0.1−     | 0.1+      | 2003 01 31  | 704  | 0.5+        | 0.3+  | 2006 09 14 | 703 | 0.3−  | 0.7−  |
| 2001 09 25                              | 704        | 0.1+     | 0.0       | 2003 01 31  | 704  | (1.7+       | 1.2+) | 2006 09 14 | 703 | 1.3−  | 1.0+  |
| 2001 09 25                              | 704        | 0.0      | 0.0       | 2003 02 02  | 608  | (1.3+       | 2.0+) | 2006 09 14 | 703 | 1.3−  | 0.8+  |
| 2001 09 25                              | 704        | 0.2+     | 0.4+      | 2003 02 02  | 608  | (1.3+       | 1.8+) | 2006 09 14 | 703 | (1.9− | 0.3−) |
| 2001 10 15                              | 608        | 0.6−     | 0.1−      | 2003 02 02  | 608  | (1.5+       | 1.6+) | 2006 09 17 | 291 | 0.2+  | 0.3+  |
| 2001 10 15                              | 608        | 1.0−     | 0.1+      | 2003 02 03  | 704  | 0.5−        | 0.5+  | 2006 09 17 | 291 | 0.3+  | 0.3+  |
| 2001 10 15                              | 608        | 0.9−     | 0.2−      | 2003 02 03  | 704  | 1.0−        | 0.8+  | 2006 09 17 | 291 | 0.0   | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 18 | 704 | 0.4− | 0.6+ | 2003 02 03 | 704 | 0.8− | 1.4+ | 2006 09 17 | 291 | 0.2+  | 0.3+  |
| 2001 10 18 | 704 | 0.4− | 0.1+ | 2003 02 03 | 704 | 0.9− | 0.6+ | 2006 09 17 | 291 | 0.1−  | 0.1−  |
| 2001 10 18 | 704 | 0.3− | 0.5− | 2003 02 03 | 704 | 0.5+ | 1.4+ | 2006 09 17 | 291 | 0.1+  | 0.1−  |
| 2001 10 18 | 704 | 0.8− | 0.3− | 2003 02 08 | 704 | 0.5+ | 0.3+ | 2006 09 17 | 291 | 0.1+  | 0.2+  |
| 2001 10 18 | 704 | 0.1− | 0.2− | 2003 02 08 | 704 | 0.0  | 1.1+ | 2006 09 17 | 291 | 0.0   | 0.1+  |
| 2001 10 19 | 704 | 0.0  | 0.3− | 2003 02 08 | 704 | 0.4− | 1.0+ | 2006 09 17 | 291 | 0.3+  | 0.1+  |
| 2001 10 19 | 704 | 0.6+ | 0.2+ | 2003 02 08 | 704 | 0.0  | 0.8+ | 2006 09 29 | 699 | 0.9−  | 0.2−  |
| 2001 10 19 | 704 | 0.8+ | 0.4− | 2003 02 08 | 608 | 0.5+ | 0.1− | 2006 09 29 | 699 | (2.1+ | 0.3−) |
| 2001 10 19 | 704 | 0.9+ | 0.1− | 2003 02 08 | 608 | 0.3+ | 0.2+ | 2006 09 29 | 699 | 0.7−  | 0.5+  |
| 2001 10 19 | 704 | 1.1+ | 0.0  | 2003 02 08 | 608 | 0.4+ | 0.1+ | 2006 09 29 | 699 | 0.4+  | 0.8+  |
| 2001 10 20 | 699 | 0.1− | 0.2+ | 2003 02 21 | 644 | 0.1− | 0.4+ | 2007 11 08 | 704 | 0.9+  | 0.1+  |
| 2001 10 20 | 699 | 0.0  | 0.5− | 2003 02 21 | 644 | 0.2+ | 0.5+ | 2007 11 08 | 704 | 0.2+  | 1.1+  |
| 2001 10 20 | 699 | 0.0  | 0.0  | 2003 02 21 | 644 | 0.1+ | 0.6+ | 2007 11 08 | 704 | 0.3+  | 0.6+  |
| 2001 10 20 | 699 | 0.1+ | 0.6− | 2003 03 06 | 644 | 0.5+ | 0.2+ | 2007 11 08 | 704 | 0.1+  | 0.6+  |
| 2001 10 26 | 644 | 0.2− | 0.2− | 2003 03 06 | 644 | 0.2+ | 0.5+ | 2007 11 16 | 704 | 0.1+  | 0.3−  |
| 2001 10 26 | 644 | 0.4− | 0.0  | 2003 03 06 | 644 | 0.4+ | 0.3+ | 2007 11 16 | 704 | 0.6+  | 0.1−  |
| 2001 10 26 | 644 | 0.3− | 0.3− | 2003 03 06 | 644 | 0.4+ | 0.3+ | 2007 11 16 | 704 | 0.5−  | 0.3−  |
| 2001 11 11 | 644 | 0.8+ | 0.3− | 2003 03 06 | 644 | 0.1+ | 0.2+ | 2007 11 18 | D29 | 0.3−  | 0.6−  |
| 2001 11 11 | 644 | 0.2+ | 0.0  | 2003 03 06 | 644 | 0.3+ | 0.3+ | 2007 11 18 | D29 | 0.7+  | 1.2−  |
| 2001 11 11 | 644 | 0.7+ | 0.0  | 2003 03 12 | 644 | 0.4+ | 0.7+ | 2007 11 18 | D29 | 0.0   | 0.6−  |
| 2001 11 12 | 704 | 0.8+ | 0.1+ | 2003 03 12 | 644 | 0.2+ | 0.3+ | 2007 11 18 | D29 | 0.4−  | 0.7−  |
| 2001 11 12 | 704 | 1.1+ | 1.1− | 2003 03 12 | 644 | 0.3+ | 0.3+ | 2007 12 02 | 704 | 0.0   | 0.0   |
| 2001 11 12 | 704 | 0.9+ | 0.6− | 2006 08 16 | 644 | 0.1− | 0.1+ | 2007 12 02 | 704 | 0.1+  | 0.3+  |
| 2001 11 12 | 704 | 0.7+ | 0.3− | 2006 08 16 | 644 | 0.2− | 0.1− | 2007 12 02 | 704 | 1.0+  | 0.2+  |
| 2001 11 12 | 704 | 0.8+ | 0.5+ | 2006 08 16 | 644 | 0.1+ | 0.1− | 2007 12 02 | 704 | 0.8−  | 0.2−  |
| 2001 12 14 | 704 | 0.9− | 0.7− | 2006 08 18 | 699 | 0.7− | 0.7+ | 2007 12 16 | 704 | 1.1−  | 0.1−  |
| 2001 12 14 | 704 | 0.7+ | 0.5− | 2006 08 18 | 699 | 0.3− | 0.4+ | 2007 12 16 | 704 | 1.4−  | 0.1+  |
| 2001 12 14 | 704 | 0.2+ | 0.2+ | 2006 08 18 | 699 | 1.2+ | 0.0  | 2007 12 16 | 704 | 0.5+  | 0.4−  |
| 2001 12 14 | 704 | 0.8− | 0.2− | 2006 08 28 | 703 | 0.2− | 0.1+ | 2007 12 16 | 704 | 0.1+  | 0.3−  |
| 2001 12 14 | 704 | 0.6− | 1.1+ | 2006 08 28 | 703 | 1.3− | 0.2− |            |     |       |       |
| 2002 01 09 | 704 | 1.0+ | 0.1+ | 2006 08 28 | 703 | 0.6− | 0.0  |            |     |       |       |

(171880)\* 2001 QV<sub>274</sub> = 2006 MB<sub>8</sub>

Discovered 2001 Aug. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |       |       |            |           |      |             |             |     |            |      |
|-----------------------------------------|------------|-------|-------|------------|-----------|------|-------------|-------------|-----|------------|------|
| Id. G. V. Williams ( <i>MPO</i> 100042) |            |       |       |            |           |      |             |             |     |            |      |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |       |            |           |      |             |             |     |            |      |
| MPC                                     |            |       |       |            |           |      |             |             |     |            |      |
| <i>M</i>                                | 58.08047   |       |       | (2000.0)   |           |      | <b>P</b>    | <b>Q</b>    |     |            |      |
| <i>n</i>                                | 0.18696097 |       |       | $\omega$   | 216.92663 |      | +0.90898263 | +0.38982501 |     |            |      |
| <i>a</i>                                | 3.0290196  |       |       | $\Omega$   | 119.50122 |      | −0.33030694 | +0.88962088 |     |            |      |
| <i>e</i>                                | 0.1627880  |       |       | <i>i</i>   | 9.76415   |      | −0.25425953 | +0.23793096 |     |            |      |
| <i>P</i>                                | 5.27       |       |       | <i>H</i>   | 15.8      |      | <i>G</i>    | 0.15        |     | <i>U</i> 0 |      |
| Residuals in seconds of arc             |            |       |       |            |           |      |             |             |     |            |      |
| 2001 07 18                              | 644        | 0.0   | 0.7+  | 2001 09 10 | 699       | 1.2− | 1.1+        | 2006 07 21  | G96 | 0.3−       | 0.2+ |
| 2001 07 18                              | 644        | 0.2+  | 0.8+  | 2004 03 16 | 691       | 0.0  | 0.2+        | 2006 07 21  | G96 | 0.1−       | 0.3+ |
| 2001 07 18                              | 644        | 0.1+  | 0.6+  | 2004 03 16 | 691       | 0.0  | 0.1+        | 2006 07 21  | G96 | 0.1−       | 0.1+ |
| 2001 08 12                              | 608        | 0.2−  | 0.3−  | 2004 03 16 | 691       | 0.0  | 0.0         | 2006 08 20  | 644 | 0.2+       | 0.3+ |
| 2001 08 12                              | 608        | 0.4+  | 0.5−  | 2006 05 04 | G96       | 0.5− | 0.1+        | 2006 08 20  | 644 | 0.1+       | 0.4+ |
| 2001 08 12                              | 608        | 0.3+  | 0.1−  | 2006 05 04 | G96       | 0.1+ | 0.2+        | 2006 08 20  | 644 | 0.0        | 0.2+ |
| 2001 08 16                              | 704        | (2.0+ | 0.4+) | 2006 05 04 | G96       | 0.0  | 0.0         | 2007 11 05  | D29 | 0.4+       | 0.7− |
| 2001 08 16                              | 704        | 0.1+  | 0.0   | 2006 05 04 | G96       | 0.2+ | 0.6−        | 2007 11 05  | D29 | 0.2+       | 0.5− |
| 2001 08 16                              | 704        | 1.4−  | 0.4−  | 2006 06 18 | 691       | 0.2− | 0.1−        | 2007 11 05  | D29 | 0.3−       | 0.5+ |
| 2001 08 19                              | 704        | 0.2+  | 1.1−  | 2006 06 18 | 691       | 0.1− | 0.1+        | 2007 11 05  | D29 | 0.2−       | 0.5+ |
| 2001 08 19                              | 704        | (2.0+ | 1.2−) | 2006 06 18 | 691       | 0.2− | 0.1−        | 2007 11 19  | G96 | 0.4−       | 0.1− |
| 2001 08 19                              | 704        | 1.1+  | 0.5−  | 2006 06 22 | 691       | 0.2+ | 0.1−        | 2007 11 19  | G96 | 0.4+       | 0.2− |
| 2001 08 24                              | 608        | 0.3+  | 0.5−  | 2006 06 22 | 691       | 0.2+ | 0.1−        | 2007 11 19  | G96 | 0.3+       | 0.2+ |
| 2001 08 24                              | 608        | 0.3+  | 0.7−  | 2006 06 22 | 691       | 0.2+ | 0.1+        | 2007 11 19  | G96 | 0.0        | 0.2+ |
| 2001 08 24                              | 608        | 0.2+  | 0.1+  | 2006 07 20 | 644       | 0.3+ | 0.1+        | 2007 12 05  | 703 | 0.1−       | 0.0  |
| 2001 09 10                              | 699        | 0.2−  | 0.2−  | 2006 07 20 | 644       | 0.1− | 0.4+        | 2007 12 05  | 703 | 0.8+       | 0.0  |
| 2001 09 10                              | 699        | 0.6−  | 0.9+  | 2006 07 20 | 644       | 0.0  | 0.2+        | 2007 12 05  | 703 | 1.0−       | 0.4+ |
| 2001 09 10                              | 699        | 0.5+  | 0.3+  | 2006 07 21 | G96       | 0.3− | 0.0         | 2007 12 05  | 703 | 0.1−       | 0.3+ |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.05691    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.19052558 | $\omega$ | 342.70085 | +0.37294714 | -0.91815818 |
| <i>a</i> | 2.9911202  | $\Omega$ | 85.23594  | +0.86637825 | +0.29299260 |
| <i>e</i> | 0.2225265  | <i>i</i> | 7.71465   | +0.33211317 | +0.26672249 |
| <i>P</i> | 5.17       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 05 15 | 691 | 0.5-  | 0.3-  | 2002 12 31 | 704 | 0.0   | 0.2-  | 2003 02 04 | 704 | 0.2+ | 0.1- |
| 1994 05 15 | 691 | 0.9+  | 0.6-  | 2003 01 05 | 704 | 0.2-  | 0.4-  | 2003 02 04 | 704 | 1.0+ | 0.7+ |
| 1994 05 15 | 691 | 0.6-  | 0.2+  | 2003 01 05 | 704 | 1.0+  | 0.1-  | 2003 02 04 | 704 | 0.4+ | 0.5- |
| 2001 08 23 | 608 | 0.0   | 0.9+  | 2003 01 05 | 704 | 1.0-  | 0.2+  | 2003 02 04 | 704 | 0.8+ | 0.5+ |
| 2001 08 23 | 608 | 0.4+  | 1.3+  | 2003 01 05 | 704 | 0.2+  | 0.0   | 2004 03 31 | 691 | 0.2+ | 0.8+ |
| 2001 08 23 | 608 | 0.2+  | 1.0+  | 2003 01 05 | 704 | 0.5-  | 0.2+  | 2004 03 31 | 691 | 0.2+ | 0.5+ |
| 2001 08 24 | 608 | 0.2-  | 0.9+  | 2003 01 09 | 704 | 0.1-  | 0.0   | 2004 03 31 | 691 | 0.3+ | 0.5+ |
| 2001 08 24 | 608 | 0.2+  | 1.0+  | 2003 01 09 | 704 | 0.5+  | 0.0   | 2006 08 20 | 644 | 0.2+ | 0.1+ |
| 2001 08 24 | 608 | 0.3-  | 0.8+  | 2003 01 09 | 704 | 1.0+  | 0.8+  | 2006 08 20 | 644 | 0.3- | 0.2+ |
| 2001 09 07 | 644 | (2.5- | 0.7+) | 2003 01 09 | 704 | 0.7-  | 0.3-  | 2006 08 20 | 644 | 0.1+ | 0.1+ |
| 2001 09 07 | 644 | (2.3- | 0.5+) | 2003 01 09 | 704 | 0.0   | 0.7+  | 2006 08 24 | 644 | 0.2+ | 0.1- |
| 2001 09 07 | 644 | (2.7- | 0.9+) | 2003 01 29 | 645 | 0.0   | 0.1-  | 2006 08 24 | 644 | 0.3- | 0.1+ |
| 2001 09 11 | 704 | 1.2-  | 0.6+  | 2003 01 29 | 645 | 0.0   | 0.1-  | 2006 08 24 | 644 | 0.0  | 0.0  |
| 2001 09 11 | 704 | 0.4-  | 0.1-  | 2003 01 31 | 704 | 0.3+  | 0.4+  | 2007 11 15 | 704 | 0.1+ | 0.5- |
| 2001 09 11 | 704 | 0.8+  | 0.8+  | 2003 01 31 | 704 | 0.3-  | 0.1+  | 2007 11 15 | 704 | 0.9- | 0.6- |
| 2001 09 11 | 704 | 0.0   | 0.3+  | 2003 01 31 | 704 | (1.8+ | 0.3+) | 2007 11 15 | 704 | 0.6+ | 1.3- |
| 2001 09 17 | 699 | 0.8-  | 0.2+  | 2003 01 31 | 699 | 0.7-  | 1.2+  | 2007 11 15 | 704 | 0.3+ | 0.7+ |
| 2001 09 17 | 699 | 0.3+  | 0.9-  | 2003 01 31 | 704 | 0.7-  | 0.0   | 2007 12 06 | 704 | 0.2- | 0.9- |
| 2001 09 17 | 699 | 0.4-  | 0.2+  | 2003 01 31 | 704 | 0.1+  | 0.2+  | 2007 12 06 | 704 | 0.1- | 1.2- |
| 2001 09 17 | 699 | (2.2- | 2.6-) | 2003 01 31 | 699 | 0.6-  | 0.8+  | 2007 12 06 | 704 | 0.6- | 0.1+ |
| 2001 09 23 | 608 | 0.4-  | 0.0   | 2003 01 31 | 699 | 0.0   | 1.3+  | 2007 12 10 | 704 | 0.4- | 0.7+ |
| 2001 09 23 | 608 | 0.5-  | 0.2+  | 2003 01 31 | 699 | 1.5-  | 0.2+  | 2007 12 10 | 704 | 0.6+ | 0.3+ |
| 2001 09 23 | 608 | 0.0   | 0.2+  | 2003 02 01 | 645 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 0.6+ | 0.9+ |
| 2001 10 16 | 644 | 0.1-  | 0.5-  | 2003 02 01 | 645 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 0.3+ | 0.6+ |
| 2001 10 16 | 644 | 0.3-  | 0.0   | 2003 02 01 | 704 | 0.6+  | 0.6+  | 2007 12 10 | 704 | 0.8- | 1.0+ |
| 2001 10 16 | 644 | 0.1-  | 0.4-  | 2003 02 01 | 704 | 0.0   | 0.4+  | 2007 12 10 | D29 | 0.0  | 0.6- |
| 2002 12 11 | 644 | 0.3+  | 0.9+  | 2003 02 01 | 704 | 0.8+  | 0.1+  | 2007 12 10 | D29 | 0.1+ | 0.1- |
| 2002 12 11 | 644 | 0.9+  | 0.4+  | 2003 02 01 | 704 | 0.5+  | 0.9+  | 2007 12 10 | D29 | 0.1- | 0.5- |
| 2002 12 11 | 644 | 0.7+  | 0.0   | 2003 02 04 | 699 | 0.3-  | 0.7+  | 2007 12 10 | D29 | 0.3- | 0.1+ |
| 2002 12 31 | 704 | 0.2-  | 0.4+  | 2003 02 04 | 699 | 0.0   | 0.7+  | 2007 12 14 | 704 | 1.0+ | 0.1+ |
| 2002 12 31 | 704 | 0.3+  | 0.1+  | 2003 02 04 | 699 | 0.4-  | 0.3-  | 2007 12 14 | 704 | 0.2- | 0.0  |
| 2002 12 31 | 704 | 0.0   | 0.0   | 2003 02 04 | 699 | 0.4-  | 1.0+  | 2007 12 14 | 704 | 0.5+ | 0.0  |
| 2002 12 31 | 704 | 0.6+  | 0.1-  | 2003 02 04 | 704 | 1.0+  | 0.2+  | 2007 12 14 | 704 | 0.5- | 0.8+ |

(171882)\* 2001 QW<sub>290</sub>

Discovered 2001 Aug. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.43178  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17799033 | $\omega$ | 291.94862 | +0.75921330 | -0.64992668 |
| <i>a</i> | 3.1299575  | $\Omega$ | 108.60516 | +0.60976338 | +0.69175895 |
| <i>e</i> | 0.1739490  | <i>i</i> | 2.08637   | +0.22756054 | +0.31474571 |
| <i>P</i> | 5.54       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 24 | 691 | 0.2-  | 1.1-  | 2007 10 06 | 704 | 0.4+  | 0.3-  | 2007 11 07 | 704 | 0.1+ | 0.2- |
| 1993 03 24 | 691 | 0.2-  | 0.3-  | 2007 10 06 | 704 | 0.4-  | 0.4-  | 2007 11 07 | 703 | 0.2+ | 0.7- |
| 1993 03 24 | 691 | 0.3-  | 0.7-  | 2007 10 06 | 691 | 0.3-  | 0.4-  | 2007 11 07 | 703 | 0.3- | 0.1+ |
| 2001 08 16 | 704 | 0.5+  | 1.2-  | 2007 10 06 | 691 | 0.2-  | 0.0   | 2007 11 07 | 703 | 0.7+ | 0.5- |
| 2001 08 16 | 704 | (0.4+ | 1.6-) | 2007 10 06 | 691 | 0.2-  | 0.2-  | 2007 11 07 | 703 | 0.3+ | 0.6- |
| 2001 08 16 | 704 | 1.2+  | 0.6-  | 2007 10 07 | 703 | (1.7+ | 2.1+) | 2007 11 09 | G96 | 0.1- | 0.4- |
| 2001 08 17 | 644 | 0.1-  | 0.1+  | 2007 10 07 | 703 | 0.9+  | 1.2+  | 2007 11 09 | G96 | 0.0  | 0.4- |
| 2001 08 17 | 644 | 0.3-  | 0.3+  | 2007 10 07 | 703 | 0.8+  | 0.5+  | 2007 11 09 | G96 | 0.2+ | 0.3- |
| 2001 08 17 | 644 | 0.6-  | 0.3+  | 2007 10 07 | 703 | (1.1+ | 2.1+) | 2007 11 09 | G96 | 0.3+ | 0.3- |
| 2001 09 11 | 699 | 0.8-  | 0.2+  | 2007 10 09 | G96 | 0.3+  | 0.3-  | 2007 11 09 | G96 | 0.5+ | 0.4- |
| 2001 09 11 | 699 | 0.2+  | 0.1+  | 2007 10 09 | G96 | 0.1+  | 0.3-  | 2007 11 09 | G96 | 0.3+ | 0.3- |
| 2001 09 11 | 699 | 0.4-  | 0.1-  | 2007 10 09 | G96 | 0.1+  | 0.3-  | 2007 11 09 | G96 | 0.2+ | 0.2- |
| 2001 09 11 | 699 | 1.0-  | 0.6+  | 2007 10 09 | G96 | 0.5+  | 0.2-  | 2007 11 09 | G96 | 0.0  | 0.2- |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 12 | 704 | 0.0  | 0.6- | 2007 10 10 | 691 | 0.2-  | 0.0   | 2007 11 09 | 235 | 0.5+  | 0.4-  |
| 2001 09 12 | 704 | 0.4+ | 0.1- | 2007 10 10 | 691 | 0.2-  | 0.5-  | 2007 11 10 | H55 | 0.2+  | 0.0   |
| 2001 09 12 | 704 | 0.2- | 0.2- | 2007 10 10 | 691 | 0.2-  | 0.0   | 2007 11 10 | H55 | 0.2+  | 0.0   |
| 2001 09 12 | 704 | 0.1+ | 0.3- | 2007 10 11 | 704 | 0.5+  | 1.3+  | 2007 11 10 | H55 | 0.4+  | 0.0   |
| 2001 09 12 | 704 | 0.3+ | 0.2- | 2007 10 11 | 704 | 0.0   | 0.1+  | 2007 11 10 | J47 | 1.0-  | 0.8-  |
| 2001 09 19 | 704 | 0.6+ | 0.4- | 2007 10 11 | 704 | 0.7+  | 0.0   | 2007 11 11 | J47 | 0.5+  | 0.0   |
| 2001 09 19 | 704 | 0.1+ | 0.5- | 2007 10 11 | 704 | 0.1+  | 0.3+  | 2007 11 11 | J47 | 0.2+  | 0.6+  |
| 2001 09 19 | 704 | 0.4- | 0.0  | 2007 10 11 | 704 | 0.3-  | 0.7-  | 2007 11 11 | 699 | 0.8+  | 0.2+  |
| 2001 09 21 | 704 | 0.7+ | 0.9+ | 2007 10 14 | 704 | 0.1-  | 0.7+  | 2007 11 11 | 699 | 0.7+  | 0.0   |
| 2001 09 21 | 704 | 0.5+ | 0.8+ | 2007 10 14 | 704 | 0.0   | 1.2-  | 2007 11 11 | 699 | 0.7+  | 0.5-  |
| 2001 09 21 | 704 | 0.2+ | 0.8+ | 2007 10 14 | 704 | (0.8- | 2.1+) | 2007 11 11 | 699 | 0.7-  | 0.4-  |
| 2001 10 17 | 644 | 0.5- | 0.3+ | 2007 10 14 | 704 | 0.6-  | 1.4+  | 2007 11 14 | 704 | 0.2-  | 0.2+  |
| 2001 10 17 | 644 | 0.6- | 0.0  | 2007 10 18 | 691 | 0.1-  | 0.0   | 2007 11 14 | 704 | 0.4-  | 0.2+  |
| 2001 10 17 | 644 | 0.4- | 0.2+ | 2007 10 18 | 691 | 0.1-  | 0.1-  | 2007 11 14 | 704 | 0.1+  | 0.1+  |
| 2002 12 05 | 704 | 1.1- | 0.3+ | 2007 10 18 | 691 | 0.1-  | 0.2-  | 2007 11 14 | 704 | 0.7-  | 0.2+  |
| 2002 12 05 | 704 | 0.5- | 0.5+ | 2007 10 19 | 704 | 0.3+  | 0.2+  | 2007 11 14 | 704 | 0.1+  | 0.4+  |
| 2002 12 05 | 704 | 0.5- | 1.4+ | 2007 10 19 | 704 | 0.7+  | 1.1+  | 2007 11 16 | 204 | 0.0   | 0.0   |
| 2002 12 31 | 704 | 0.7- | 0.7+ | 2007 10 19 | 704 | 0.3-  | 0.7+  | 2007 11 17 | 204 | 0.5-  | 0.2+  |
| 2002 12 31 | 704 | 0.8- | 1.2+ | 2007 10 19 | 704 | 0.9-  | 0.1-  | 2007 11 17 | 703 | 0.4-  | 1.0-  |
| 2002 12 31 | 704 | 0.3+ | 0.2+ | 2007 10 30 | 703 | 0.0   | 0.2+  | 2007 11 17 | 703 | 0.6-  | 0.2-  |
| 2002 12 31 | 704 | 0.3- | 0.2- | 2007 10 30 | 703 | 0.1-  | 0.4+  | 2007 11 17 | 703 | 0.3-  | 0.3-  |
| 2003 01 04 | 704 | 0.8+ | 0.9+ | 2007 10 30 | 703 | 0.4+  | 0.3-  | 2007 11 17 | 703 | 0.5-  | 0.1-  |
| 2003 01 04 | 704 | 0.6+ | 0.5- | 2007 10 30 | 703 | 1.4+  | 0.4+  | 2007 11 19 | 585 | 0.3+  | 0.1-  |
| 2003 01 04 | 704 | 0.9+ | 1.0+ | 2007 11 05 | 704 | 0.3-  | 0.6-  | 2007 11 19 | 585 | 1.2+  | 0.5-  |
| 2003 01 04 | 704 | 0.9+ | 1.1+ | 2007 11 05 | 704 | 0.2+  | 0.6-  | 2007 11 19 | 585 | 0.1-  | 0.5-  |
| 2005 05 08 | G96 | 0.1+ | 0.3+ | 2007 11 05 | 704 | 0.7+  | 0.4-  | 2007 11 19 | 585 | (2.2+ | 0.6-) |
| 2005 05 08 | G96 | 0.2- | 0.2- | 2007 11 05 | 704 | 0.3+  | 0.4-  | 2007 12 05 | 704 | 0.2-  | 0.1-  |
| 2005 05 08 | G96 | 0.0  | 0.2+ | 2007 11 05 | 704 | 0.6+  | 0.1-  | 2007 12 05 | 704 | 0.0   | 0.1+  |
| 2005 05 08 | G96 | 0.0  | 0.1+ | 2007 11 07 | 704 | 0.7+  | 0.5+  | 2007 12 05 | 704 | 0.4-  | 0.3-  |
| 2007 10 06 | 704 | 0.2- | 0.1+ | 2007 11 07 | 704 | 0.8+  | 0.6+  | 2007 12 05 | 704 | 0.0   | 0.3-  |
| 2007 10 06 | 704 | 0.3- | 0.6+ | 2007 11 07 | 704 | 0.5+  | 0.4+  | 2007 12 05 | 704 | 0.4-  | 0.3-  |
| 2007 10 06 | 704 | 0.2+ | 0.4+ | 2007 11 07 | 704 | 0.6+  | 0.1+  |            |     |       |       |

(171883)\* 2001 QH<sub>328</sub>

Discovered 2001 Aug. 26 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.28572    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17536041 | $\omega$ | 298.29662 | +0.15506617 | -0.97622773 |
| <i>a</i> | 3.1611736  | $\Omega$ | 141.81945 | +0.97031919 | +0.12171125 |
| <i>e</i> | 0.2882604  | <i>i</i> | 14.18133  | +0.18556709 | +0.17934826 |
| <i>P</i> | 5.62       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 01 15 | 566 | 1.2+ | 0.1- | 2001 11 19 | 704 | 0.5-  | 0.6+  | 2006 08 28 | 699 | 0.3+  | 0.3+  |
| 1997 01 15 | 566 | 0.6- | 0.1+ | 2001 11 19 | 704 | 0.4-  | 0.2+  | 2006 08 28 | 699 | 0.1+  | 0.3-  |
| 1997 01 15 | 566 | 1.2- | 0.1+ | 2001 12 14 | 644 | 0.3-  | 0.3+  | 2006 08 28 | 699 | 0.5+  | 1.1+  |
| 2000 09 21 | 695 | 0.0  | 0.4- | 2001 12 14 | 644 | 0.4-  | 0.4+  | 2006 09 14 | 703 | 0.3-  | 0.9-  |
| 2000 09 21 | 695 | 0.1- | 0.3- | 2001 12 14 | 644 | 0.4-  | 0.4+  | 2006 09 14 | 703 | 0.6+  | 0.2-  |
| 2001 08 26 | 644 | 0.3- | 1.2+ | 2002 01 12 | 704 | 0.1+  | 0.4+  | 2006 09 14 | 703 | 0.4+  | 1.0-  |
| 2001 08 26 | 644 | 0.3- | 0.6+ | 2002 01 12 | 704 | 0.3-  | 0.1-  | 2006 09 14 | 703 | 0.8-  | 0.4+  |
| 2001 08 26 | 644 | 0.4- | 0.7+ | 2002 01 12 | 704 | 0.0   | 0.1+  | 2006 09 16 | 704 | 0.4+  | 1.2-  |
| 2001 09 03 | 644 | 0.2- | 0.5+ | 2002 01 12 | 704 | 0.4-  | 0.6-  | 2006 09 16 | 704 | 1.3+  | 0.0   |
| 2001 09 03 | 644 | 0.1- | 0.7+ | 2002 01 12 | 704 | 0.3-  | 0.8-  | 2006 09 16 | 704 | 0.5+  | 0.3-  |
| 2001 09 03 | 644 | 0.3- | 0.3+ | 2002 01 14 | 645 | 0.0   | 0.1-  | 2006 09 16 | 704 | 0.1-  | 0.5+  |
| 2001 09 19 | 645 | 0.2+ | 0.2- | 2002 01 14 | 645 | 0.0   | 0.1-  | 2006 09 18 | 699 | 0.2-  | 0.6-  |
| 2001 09 19 | 645 | 0.2+ | 0.2- | 2003 03 03 | 704 | (0.5+ | 1.8+) | 2006 09 18 | 699 | 0.8-  | 0.2+  |
| 2001 09 23 | 699 | 0.5- | 0.6+ | 2003 03 03 | 704 | (0.3+ | 2.2+) | 2006 09 18 | 699 | 0.8-  | 0.4-  |
| 2001 09 23 | 699 | 0.1- | 0.7- | 2003 03 03 | 704 | (0.2+ | 2.5+) | 2006 09 18 | 699 | 1.3-  | 0.5-  |
| 2001 09 23 | 699 | 0.6+ | 1.1- | 2003 03 03 | 704 | (0.8- | 2.6+) | 2006 09 20 | 644 | 0.0   | 0.4+  |
| 2001 09 23 | 699 | 0.6+ | 0.7- | 2003 03 25 | 644 | 0.6+  | 0.8+  | 2006 09 20 | 644 | 0.2+  | 0.1+  |
| 2001 10 14 | 699 | 0.9+ | 0.1+ | 2003 03 25 | 644 | 0.4+  | 0.4+  | 2006 09 20 | 644 | 0.0   | 0.3+  |
| 2001 10 14 | 699 | 0.2+ | 0.6+ | 2003 03 25 | 644 | 0.3+  | 0.5+  | 2006 09 30 | 703 | 0.0   | 0.6+  |
| 2001 10 14 | 699 | 0.6- | 0.0  | 2006 08 16 | 644 | 0.2-  | 0.1-  | 2006 09 30 | 703 | 0.5-  | 0.7-  |
| 2001 10 14 | 699 | 0.2- | 0.3+ | 2006 08 16 | 644 | 0.1-  | 0.1+  | 2006 09 30 | 703 | 0.5-  | 0.7+  |
| 2001 11 14 | 608 | 1.3+ | 0.0  | 2006 08 16 | 644 | 0.2+  | 0.2+  | 2006 09 30 | 703 | 0.0   | 1.2+  |
| 2001 11 14 | 608 | 1.2+ | 0.7+ | 2006 08 21 | 644 | 0.1+  | 0.1+  | 2007 10 20 | 704 | 0.8-  | 1.0+  |
| 2001 11 14 | 608 | 0.6+ | 1.1+ | 2006 08 21 | 644 | 0.3+  | 0.4+  | 2007 10 20 | 704 | (0.3- | 1.6+) |

## 2007 DEC. 24

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 17 | 699 | 0.7−  | 0.2+  | 2006 08 21 | 644 | 0.2+ | 0.2+ | 2007 10 20 | 704 | 1.2− | 1.1+ |
| 2001 11 17 | 699 | 0.5−  | 0.1+  | 2006 08 23 | 704 | 0.2+ | 0.9+ | 2007 12 14 | 704 | 0.8+ | 0.4− |
| 2001 11 17 | 699 | 0.6−  | 0.2+  | 2006 08 23 | 704 | 0.7− | 0.5+ | 2007 12 14 | 704 | 0.8+ | 0.3− |
| 2001 11 17 | 699 | (1.6− | 0.7+) | 2006 08 23 | 704 | 0.6− | 1.5+ | 2007 12 14 | 704 | 0.3− | 1.5+ |
| 2001 11 19 | 704 | 1.0−  | 0.1+  | 2006 08 23 | 704 | 0.1− | 0.8+ | 2007 12 14 | 704 | 0.3− | 1.7+ |
| 2001 11 19 | 704 | 0.6−  | 0.5+  | 2006 08 23 | 704 | 0.0  | 0.5+ |            |     |      |      |
| 2001 11 19 | 704 | 0.4−  | 0.5+  | 2006 08 28 | 699 | 0.1− | 1.0+ |            |     |      |      |

**(171884)\* 2001 QC<sub>329</sub> = 1999 FZ<sub>67</sub>**

Discovered 2001 Aug. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 72400)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19407831 | $\omega$ | 73.00831  | +0.92602677 | −0.37696580 |          |   |
| <i>a</i> | 2.9545049  | $\Omega$ | 309.13322 | +0.33617534 | +0.84688338 |          |   |
| <i>e</i> | 0.1055780  | <i>i</i> | 1.42330   | +0.17164080 | +0.37508043 |          |   |
| <i>P</i> | 5.08       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2006 07 18 | G96 | 1.0− | 0.1− | 2006 09 26 | G96 | 0.1− | 0.0  |
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2006 07 18 | G96 | 0.2+ | 0.6− | 2006 09 26 | G96 | 0.0  | 0.2− |
| 1999 03 22 | 645 | 0.1+ | 0.1+ | 2006 07 18 | G96 | 0.4− | 0.2− | 2006 10 21 | G96 | 0.4+ | 0.3+ |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2006 07 18 | G96 | 0.2− | 0.0  | 2006 10 21 | G96 | 0.1+ | 0.1− |
| 2001 08 16 | 704 | 0.4− | 1.5− | 2006 08 13 | 644 | 0.1− | 0.2+ | 2006 10 21 | G96 | 0.3+ | 0.1− |
| 2001 08 16 | 704 | 0.7+ | 0.4− | 2006 08 13 | 644 | 0.0  | 0.1+ | 2006 10 21 | G96 | 0.0  | 0.1+ |
| 2001 08 16 | 704 | 0.9− | 0.8+ | 2006 08 13 | 644 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 2001 08 21 | 807 | 0.1− | 0.2+ | 2006 08 13 | D35 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 0.5− | 0.1− |
| 2001 08 21 | 807 | 0.1− | 0.2+ | 2006 08 13 | D35 | 0.2+ | 0.5+ | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 2001 08 23 | 691 | 0.0  | 0.3+ | 2006 08 13 | D35 | 0.3+ | 0.3+ | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2001 08 23 | 691 | 0.0  | 0.3+ | 2006 08 16 | 644 | 0.2− | 0.6+ | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2001 08 23 | 691 | 0.1+ | 0.1+ | 2006 08 16 | 644 | 0.2− | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2001 09 21 | 704 | 0.1− | 1.2+ | 2006 08 16 | 644 | 0.1+ | 0.1+ | 2007 12 06 | G96 | 0.6+ | 0.3+ |
| 2001 09 21 | 704 | 0.6− | 1.4+ | 2006 08 17 | A50 | 0.0  | 0.2+ | 2007 12 15 | 691 | 0.3+ | 0.3− |
| 2001 09 21 | 704 | 1.0− | 0.3− | 2006 09 26 | G96 | 0.2+ | 0.0  | 2007 12 15 | 691 | 0.0  | 0.3+ |
| 2001 09 21 | 704 | 0.6− | 0.8+ | 2006 09 26 | G96 | 0.1− | 0.1− | 2007 12 15 | 691 | 0.2− | 0.1+ |

**(171885)\* 2001 QL<sub>333</sub>**

Discovered 2001 Aug. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17907054 | $\omega$ | 334.22670 | +0.66809899 | −0.68882165 |          |   |
| <i>a</i> | 3.1173575  | $\Omega$ | 72.41443  | +0.72349226 | +0.51306100 |          |   |
| <i>e</i> | 0.1206148  | <i>i</i> | 17.16730  | +0.17378921 | +0.51214563 |          |   |
| <i>P</i> | 5.50       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 20 | 644 | 0.1+ | 0.0  | 2001 12 07 | 704 | 0.2− | 0.5+ | 2007 11 15 | 704 | 0.5− | 0.2+ |
| 2001 08 20 | 644 | 0.0  | 0.3− | 2001 12 07 | 704 | 0.2+ | 0.6+ | 2007 11 15 | 704 | 0.8− | 0.3+ |
| 2001 08 20 | 644 | 0.1− | 0.1+ | 2001 12 07 | 704 | 0.2− | 1.1+ | 2007 11 15 | 704 | 0.1− | 0.3+ |
| 2001 09 19 | 645 | 0.0  | 0.1− | 2001 12 07 | 704 | 0.1− | 0.8+ | 2007 11 20 | 704 | 1.0+ | 0.5+ |
| 2001 09 19 | 645 | 0.1+ | 0.1− | 2001 12 07 | 704 | 0.1+ | 0.2− | 2007 11 20 | 704 | 0.1+ | 0.7− |
| 2001 09 21 | 645 | 0.0  | 0.1− | 2003 01 13 | 704 | 0.7+ | 1.1+ | 2007 11 20 | 704 | 0.6+ | 0.1+ |
| 2001 09 21 | 645 | 0.0  | 0.1− | 2003 01 13 | 704 | 0.4+ | 0.9+ | 2007 11 20 | 704 | 0.4+ | 0.2+ |
| 2001 10 19 | 608 | 0.6− | 0.5+ | 2003 01 13 | 704 | 0.2+ | 1.0+ | 2007 11 20 | 704 | 0.6+ | 0.7− |
| 2001 10 19 | 608 | 0.1− | 0.7+ | 2003 01 13 | 704 | 0.3− | 1.1+ | 2007 12 13 | 704 | 0.0  | 0.2− |
| 2001 10 19 | 608 | 0.3− | 0.8+ | 2003 01 13 | 704 | 0.1− | 1.3+ | 2007 12 13 | 704 | 0.8− | 0.0  |
| 2001 10 29 | 644 | 0.0  | 0.9+ | 2006 07 28 | E12 | 0.4− | 0.0  | 2007 12 13 | 704 | 0.5− | 0.6− |
| 2001 10 29 | 644 | 0.1− | 1.4+ | 2006 07 28 | E12 | 0.3− | 1.0+ | 2007 12 13 | 704 | 0.5− | 0.2+ |
| 2001 10 29 | 644 | 0.2− | 1.1+ | 2006 07 28 | E12 | 0.4− | 0.4− | 2007 12 13 | 704 | 0.5− | 0.5− |
| 2001 11 12 | 645 | 0.0  | 0.2− | 2006 07 28 | E12 | 0.3− | 0.8− | 2007 12 15 | 704 | 0.4+ | 0.4− |
| 2001 11 12 | 645 | 0.0  | 0.2− | 2006 08 25 | E12 | 0.2+ | 0.4− | 2007 12 15 | 704 | 0.7+ | 0.2− |
| 2001 11 20 | 699 | 0.9− | 1.3+ | 2006 08 25 | E12 | 0.6− | 0.8+ | 2007 12 15 | 704 | 0.6+ | 0.1− |
| 2001 11 20 | 699 | 0.8+ | 0.5+ | 2006 08 25 | E12 | 0.1+ | 0.6+ | 2007 12 15 | 704 | 1.0+ | 0.5+ |
| 2001 11 20 | 699 | 0.3+ | 1.1+ | 2006 08 25 | E12 | 0.4− | 0.1+ | 2007 12 15 | 704 | 0.9+ | 0.1+ |

## M.P.O. 129193

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 20 | 699 | 0.8+ | 0.2− | 2006 09 28 | E12 | 0.2+ | 1.1+ | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2001 11 22 | 608 | 0.0  | 0.1+ | 2006 09 28 | E12 | 0.5− | 0.7+ | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2001 11 22 | 608 | 0.1− | 0.3+ | 2006 09 28 | E12 | 0.3− | 0.6+ | 2007 12 16 | 691 | 0.3− | 0.3− |
| 2001 11 22 | 608 | 0.2+ | 0.8+ | 2006 09 28 | E12 | 0.3+ | 1.4+ |            |     |      |      |

**(171886)\* 2001 RE<sub>12</sub> = 2005 LW<sub>6</sub>**

Discovered 2001 Sept. 9 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 84829)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18656976 | $\omega$ | 147.58785 | +0.90636196 | −0.39829150 |          |   |
| <i>a</i> | 3.0332523  | $\Omega$ | 236.51785 | +0.34258659 | +0.88808089 |          |   |
| <i>e</i> | 0.1322517  | <i>i</i> | 9.73051   | +0.24726994 | +0.22951300 |          |   |
| <i>P</i> | 5.28       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1991 12 08 | 691 | 0.4−  | 0.1−  | 2005 05 04 | G96 | 0.2+  | 0.0   | 2007 11 05 | 704 | 0.3+ | 0.3+ |
| 1991 12 08 | 691 | 0.1−  | 0.0   | 2005 05 04 | G96 | 0.1−  | 0.2+  | 2007 11 05 | 704 | 0.6− | 0.2− |
| 1991 12 08 | 691 | 0.4+  | 0.5−  | 2005 05 04 | G96 | 0.0   | 0.3+  | 2007 11 05 | 704 | 0.1− | 0.5− |
| 2001 08 16 | 644 | 0.2−  | 0.4−  | 2005 05 13 | G96 | (1.6− | 0.5+) | 2007 11 05 | 704 | 0.2+ | 0.7+ |
| 2001 08 16 | 644 | 0.3−  | 0.1−  | 2005 05 13 | G96 | 0.6+  | 0.3−  | 2007 11 05 | 704 | 0.5+ | 0.6+ |
| 2001 08 16 | 644 | 0.2+  | 0.3−  | 2005 05 13 | G96 | 0.2−  | 0.2+  | 2007 11 14 | 704 | 0.4+ | 0.0  |
| 2001 08 24 | 699 | 0.6+  | 0.1+  | 2005 05 13 | G96 | 0.4−  | 0.1+  | 2007 11 14 | 704 | 0.8+ | 0.6+ |
| 2001 08 24 | 699 | 0.7+  | 0.4−  | 2005 06 01 | 691 | 0.4+  | 0.2+  | 2007 11 14 | 704 | 0.5+ | 0.3− |
| 2001 08 24 | 699 | (1.8+ | 0.2−) | 2005 06 01 | 691 | 0.1+  | 0.1+  | 2007 11 14 | 704 | 0.8+ | 1.2− |
| 2001 08 24 | 699 | 0.2+  | 0.5−  | 2005 06 01 | 691 | 0.4−  | 0.2+  | 2007 11 14 | 704 | 0.3+ | 0.4− |
| 2001 09 09 | 699 | 0.4−  | 1.4+  | 2005 06 06 | 691 | 0.2+  | 0.2+  | 2007 11 14 | 691 | 0.5− | 0.1− |
| 2001 09 09 | 699 | (1.7+ | 0.2+) | 2005 06 06 | 691 | 0.2+  | 0.1+  | 2007 11 14 | 691 | 0.4− | 0.3+ |
| 2001 09 09 | 699 | (1.1+ | 1.6−) | 2005 06 06 | 691 | 0.1−  | 0.1+  | 2007 11 14 | 691 | 0.3− | 0.1+ |
| 2001 09 09 | 699 | 0.8+  | 0.3+  | 2006 07 21 | 703 | 1.1−  | 1.1+  | 2007 12 04 | 704 | 0.3+ | 0.7+ |
| 2001 09 11 | 699 | 0.3−  | 0.0   | 2006 07 21 | 703 | 1.4−  | 0.1+  | 2007 12 04 | 704 | 0.5+ | 1.2+ |
| 2001 09 11 | 699 | (1.2+ | 2.3+) | 2006 07 21 | 703 | 0.0   | 0.6−  | 2007 12 04 | 704 | 0.6+ | 1.1+ |
| 2001 09 11 | 699 | 0.4−  | 0.3−  | 2006 07 21 | 703 | (1.8− | 0.8−) | 2007 12 04 | 704 | 0.4+ | 1.0+ |
| 2001 09 11 | 699 | 0.6−  | 0.3+  | 2007 09 13 | 704 | 1.3+  | 1.0+  | 2007 12 15 | 704 | 0.3− | 0.7+ |
| 2001 09 25 | 704 | 0.5+  | 0.4+  | 2007 09 13 | 704 | (1.8+ | 1.1+) | 2007 12 15 | 704 | 0.3+ | 0.4+ |
| 2001 09 25 | 704 | 0.4+  | 0.2+  | 2007 09 13 | 704 | 1.1+  | 0.4−  | 2007 12 15 | 704 | 0.8− | 0.3+ |
| 2001 09 25 | 704 | 0.2+  | 0.0   | 2007 09 18 | G96 | 0.2−  | 0.3−  | 2007 12 15 | 704 | 1.0− | 1.0+ |
| 2001 09 25 | 704 | 0.1−  | 0.3−  | 2007 09 18 | G96 | 0.2+  | 0.3−  | 2007 12 15 | 704 | 0.1+ | 0.0  |
| 2001 09 25 | 704 | 0.1+  | 0.5+  | 2007 09 18 | G96 | 0.5+  | 0.2−  |            |     |      |      |
| 2005 05 04 | G96 | 0.1−  | 0.2+  | 2007 09 18 | G96 | 0.0   | 0.4−  |            |     |      |      |

**(171887)\* 2001 RG<sub>15</sub> = 1999 CL<sub>70</sub> = 2004 EW<sub>58</sub>**

Discovered 2001 Sept. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 60936)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21040003 | $\omega$ | 270.72297 | −0.86037060 | +0.47829008 |          |   |
| <i>a</i> | 2.7996615  | $\Omega$ | 297.86540 | −0.35122034 | −0.80673083 |          |   |
| <i>e</i> | 0.0971776  | <i>i</i> | 11.48811  | −0.36933277 | −0.34702157 |          |   |
| <i>P</i> | 4.68       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 01 04 | 691 | 0.0   | 0.1+  | 2004 03 17 | 704 | 0.5+  | 0.1+  | 2006 09 17 | 703 | 0.3+ | 1.0+ |
| 1994 01 04 | 691 | 0.7+  | 0.5−  | 2004 03 17 | 704 | 0.6−  | 0.6+  | 2006 09 28 | 703 | 0.1− | 0.1+ |
| 1994 01 04 | 691 | 1.1−  | 1.0+  | 2004 03 17 | 704 | 0.2−  | 0.3+  | 2006 09 28 | 703 | 0.2− | 0.1− |
| 1999 02 12 | 704 | 0.4+  | 0.2+  | 2004 03 17 | 704 | 0.7+  | 0.3+  | 2006 09 28 | 703 | 0.8+ | 0.9− |
| 1999 02 12 | 704 | 0.7+  | 1.1+  | 2004 03 26 | 704 | (1.7+ | 1.1+) | 2006 09 28 | 703 | 0.1+ | 0.3+ |
| 1999 02 12 | 704 | 0.2+  | 1.5−  | 2004 03 26 | 704 | 0.9+  | 0.6+  | 2006 10 19 | 703 | 1.3+ | 0.4+ |
| 1999 02 12 | 704 | 0.1−  | 0.3+  | 2004 03 26 | 704 | 0.0   | 0.7+  | 2006 10 19 | 703 | 0.5+ | 0.2+ |
| 1999 02 16 | 704 | 1.3+  | 1.0−  | 2004 03 26 | 704 | 0.3+  | 0.2−  | 2006 10 19 | 703 | 0.6− | 0.7− |
| 1999 02 16 | 704 | (1.0− | 2.5−) | 2004 03 26 | 704 | 0.5+  | 0.3+  | 2006 10 19 | 703 | 0.1+ | 0.2− |
| 1999 02 16 | 704 | 0.6−  | 0.0   | 2004 04 24 | 608 | 0.1−  | 0.6−  | 2007 11 11 | G96 | 0.4− | 0.2− |
| 2001 09 10 | 704 | (1.2+ | 2.1+) | 2004 04 24 | 608 | 0.3+  | 0.1−  | 2007 11 11 | G96 | 0.1− | 0.3− |

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 2001 09 10 | 704 | (2.1+ 1.9+) | 2004 04 24 | 608 | 0.4+ 1.1-   | 2007 11 11 | G96 | 0.1+ 0.5- |
| 2001 09 10 | 704 | 0.6- 1.1+   | 2005 07 09 | 691 | 0.2+ 0.3+   | 2007 11 11 | G96 | 0.7- 0.5- |
| 2001 09 10 | 704 | (1.8+ 2.7+) | 2005 07 09 | 691 | 0.1- 0.1+   | 2007 12 10 | 704 | 0.1+ 0.2+ |
| 2001 09 11 | 704 | 0.2+ 0.4+   | 2005 07 09 | 691 | 1.1- 1.1+   | 2007 12 10 | 704 | 0.5+ 1.3+ |
| 2001 09 11 | 704 | 0.4+ 0.3+   | 2005 07 12 | 703 | 1.1- 0.3-   | 2007 12 10 | 704 | 1.1+ 0.1+ |
| 2001 09 11 | 704 | 0.3+ 1.1+   | 2005 07 12 | 703 | 0.0 0.0     | 2007 12 10 | 704 | 0.5+ 0.5+ |
| 2001 09 11 | 704 | 0.3- 0.2+   | 2005 07 12 | 703 | 0.5- 0.5-   | 2007 12 10 | 704 | 0.0 0.1+  |
| 2001 09 12 | 704 | 0.4+ 0.6-   | 2005 07 12 | 703 | 0.8- 0.1+   | 2007 12 15 | 704 | 0.3+ 0.9+ |
| 2001 09 12 | 704 | 0.2- 0.0    | 2005 07 15 | G96 | 0.4+ 0.2+   | 2007 12 15 | 704 | 0.3+ 0.4+ |
| 2001 09 12 | 704 | 0.2- 0.0    | 2005 07 15 | G96 | 0.1- 0.1-   | 2007 12 15 | 704 | 0.4+ 1.3+ |
| 2001 09 12 | 704 | (1.2- 1.8+) | 2005 07 15 | G96 | 0.7+ 0.2-   | 2007 12 15 | 704 | 0.1- 0.7+ |
| 2004 03 15 | 644 | 0.3+ 0.5+   | 2005 07 15 | G96 | 0.2+ 0.2+   | 2007 12 15 | 704 | 0.3+ 0.4+ |
| 2004 03 15 | 644 | 0.1+ 0.7+   | 2006 09 17 | 703 | 0.4- 0.3+   | 2007 12 17 | 691 | 0.4- 0.1+ |
| 2004 03 15 | 644 | 0.2+ 0.7+   | 2006 09 17 | 703 | (0.9- 1.8-) | 2007 12 17 | 691 | 0.3- 0.1+ |
| 2004 03 17 | 704 | 0.4- 0.1+   | 2006 09 17 | 703 | 0.1- 1.2+   |            |     |           |

**(171888)\* 2001 RJ<sub>20</sub>**

Discovered 2001 Sept. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |                    |               |             |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    | MPC           |             |  |
| <i>M</i>                                | 25.70760   | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i>                                | 0.19160086 | $\omega$ 69.97756  | +0.84868230   | -0.52741979 |  |
| <i>a</i>                                | 2.9799187  | $\Omega$ 321.82444 | +0.45817434   | +0.77051557 |  |
| <i>e</i>                                | 0.1064756  | <i>i</i> 3.67178   | +0.26422458   | +0.35795826 |  |
| <i>P</i>                                | 5.14       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2001 05 29 | 691 | 0.3+ 1.1-   | 2001 09 20 | 704 | 0.7+ 0.1+   | 2006 11 17 | G96 | 0.4- 0.7-   |
| 2001 05 29 | 691 | 0.4- 0.2-   | 2001 09 22 | 704 | 1.0+ 1.2+   | 2006 11 17 | G96 | 0.3+ 0.8-   |
| 2001 05 29 | 691 | 0.1+ 0.9-   | 2001 09 22 | 704 | 0.3+ 1.4+   | 2006 11 17 | G96 | 0.0 0.2-    |
| 2001 08 28 | 644 | 1.4- 0.3+   | 2001 09 22 | 704 | (0.7+ 1.7+) | 2006 11 17 | G96 | 0.0 0.4-    |
| 2001 08 28 | 644 | 1.0- 0.4+   | 2004 03 21 | 691 | 0.4+ 0.3+   | 2007 11 19 | G96 | 0.0 0.2-    |
| 2001 08 28 | 644 | 1.1- 0.7+   | 2004 03 21 | 691 | 0.3+ 0.2+   | 2007 11 19 | G96 | 0.1+ 0.4-   |
| 2001 09 07 | 704 | 0.9- 0.3+   | 2004 03 21 | 691 | 0.1+ 1.1+   | 2007 11 19 | G96 | 0.2+ 0.5-   |
| 2001 09 07 | 704 | 0.8- 0.1+   | 2006 07 21 | G96 | 0.1+ 0.1-   | 2007 11 19 | G96 | 0.1- 0.4-   |
| 2001 09 07 | 704 | 0.9- 0.6-   | 2006 07 21 | G96 | 0.8- 0.5+   | 2007 12 13 | 704 | (2.1+ 0.5+) |
| 2001 09 07 | 704 | (0.7- 1.7+) | 2006 07 21 | G96 | 0.1- 0.5+   | 2007 12 13 | 704 | 0.0 0.6-    |
| 2001 09 12 | 704 | 0.1+ 0.6+   | 2006 07 21 | G96 | 0.5+ 0.7+   | 2007 12 13 | 704 | 1.4+ 1.2+   |
| 2001 09 12 | 704 | 0.3+ 1.2+   | 2006 08 14 | 644 | 0.2+ 0.1+   | 2007 12 13 | 704 | (2.5+ 1.0-) |
| 2001 09 12 | 704 | 0.1- 1.3+   | 2006 08 14 | 644 | 0.3+ 0.5+   | 2007 12 13 | 704 | 0.6+ 0.1+   |
| 2001 09 12 | 704 | (0.3+ 1.8+) | 2006 08 14 | 644 | 0.1- 0.2+   | 2007 12 15 | 704 | 0.9- 0.1+   |
| 2001 09 12 | 704 | 0.2+ 0.5+   | 2006 10 21 | G96 | 0.0 0.0     | 2007 12 15 | 704 | 0.6- 0.6+   |
| 2001 09 20 | 704 | 0.1+ 0.9+   | 2006 10 21 | G96 | 0.1- 0.1+   | 2007 12 15 | 704 | 0.1- 0.1-   |
| 2001 09 20 | 704 | 0.5+ 0.7+   | 2006 10 21 | G96 | 0.4- 0.3-   | 2007 12 15 | 704 | 0.6- 0.2+   |
| 2001 09 20 | 704 | 0.9+ 1.2+   | 2006 10 21 | G96 | 0.2+ 0.5+   | 2007 12 15 | 704 | 0.6- 0.1+   |

**(171889)\* 2001 RJ<sub>31</sub>**

Discovered 2001 Sept. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |                    |               |             |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    | MPC           |             |  |
| <i>M</i>                                | 201.86483  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i>                                | 0.21072860 | $\omega$ 253.71584 | -0.27288396   | +0.96204679 |  |
| <i>a</i>                                | 2.7967506  | $\Omega$ 0.44937   | -0.85288467   | -0.24164850 |  |
| <i>e</i>                                | 0.0123647  | <i>i</i> 4.12947   | -0.44510907   | -0.12677530 |  |
| <i>P</i>                                | 4.68       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 2001 09 07 | 704 | 0.1- 0.4+   | 2004 03 18 | 704 | 1.2+ 0.8+   | 2006 10 12 | 644 | 0.1- 0.5+ |
| 2001 09 07 | 704 | 0.9- 0.8+   | 2004 03 18 | 704 | (0.3+ 1.8+) | 2006 10 12 | 644 | 0.0 0.0   |
| 2001 09 07 | 704 | (1.7- 1.5+) | 2004 03 18 | 704 | 0.1+ 0.4-   | 2006 10 17 | 703 | 1.0- 0.1+ |
| 2001 09 11 | 699 | 0.1- 0.6+   | 2004 03 18 | 704 | 0.7+ 0.1-   | 2006 10 17 | 703 | 0.2+ 0.0  |
| 2001 09 11 | 699 | (1.6+ 1.2+) | 2004 03 20 | 699 | 1.1- 0.1-   | 2006 10 17 | 703 | 0.2- 0.6- |
| 2001 09 11 | 699 | 0.5- 0.3+   | 2004 03 20 | 699 | 0.7+ 0.2+   | 2006 10 17 | 703 | 0.3+ 0.4- |
| 2001 09 11 | 699 | (0.3+ 2.6+) | 2004 03 20 | 699 | 0.6- 0.5-   | 2006 10 17 | 703 | 0.2+ 0.4- |
| 2001 09 12 | 704 | 0.1- 0.2+   | 2004 03 20 | 699 | 0.3- 0.5-   | 2006 10 17 | 703 | 1.3- 0.5- |

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2001 09 12 | 704 | 0.3+ 0.6+   | 2004 03 23 | 683 | 1.0- 1.4+ | 2006 10 17 | 703 | 0.3+ 0.3-   |
| 2001 09 12 | 704 | 0.4- 1.4+   | 2004 03 23 | 683 | 0.7- 1.2+ | 2006 10 17 | 703 | 0.2- 0.5+   |
| 2001 09 12 | 704 | 0.1+ 0.8+   | 2004 03 23 | 683 | 0.1+ 1.2+ | 2006 10 19 | G96 | 0.1+ 0.1-   |
| 2001 09 19 | 704 | 1.2- 0.9+   | 2004 03 23 | 691 | 0.1+ 0.2+ | 2006 10 19 | 644 | 0.2- 0.3+   |
| 2001 09 19 | 704 | 0.7- 1.1+   | 2004 03 23 | 691 | 0.1+ 0.2+ | 2006 10 19 | G96 | 0.3- 0.2-   |
| 2001 09 19 | 704 | 1.3- 0.9+   | 2004 03 23 | 691 | 0.3+ 0.3+ | 2006 10 19 | G96 | 0.1- 0.1-   |
| 2001 09 19 | 704 | 0.6- 1.1+   | 2004 03 27 | 704 | 0.5+ 0.0  | 2006 10 19 | G96 | 0.3+ 0.2-   |
| 2001 09 19 | 704 | 0.9- 0.5+   | 2004 03 27 | 704 | 0.7+ 0.1- | 2006 10 19 | 644 | 0.2+ 0.3+   |
| 2001 09 19 | 704 | 0.3- 1.4+   | 2004 03 27 | 704 | 0.4+ 0.2- | 2006 10 19 | 644 | 0.5+ 0.2-   |
| 2001 09 21 | 704 | 0.2- 0.8+   | 2004 03 27 | 704 | 0.2+ 0.3+ | 2006 10 20 | 644 | 0.4- 0.2+   |
| 2001 09 21 | 704 | 0.0 1.4+    | 2004 03 27 | 704 | 0.3+ 0.2- | 2006 10 20 | 644 | 0.3+ 0.4+   |
| 2001 10 17 | 644 | 0.7- 1.4+   | 2004 03 31 | 291 | 0.2- 0.2+ | 2006 10 20 | 644 | 0.1- 0.3+   |
| 2001 10 17 | 644 | 0.5- 1.2+   | 2004 03 31 | 291 | 0.2+ 0.2+ | 2006 11 15 | G96 | 0.0 0.3-    |
| 2001 10 17 | 644 | 0.6- 1.3+   | 2004 03 31 | 291 | 0.2+ 0.2+ | 2006 11 15 | G96 | 0.3+ 0.2-   |
| 2004 02 26 | 704 | (1.6+ 0.1-) | 2004 04 13 | 691 | 0.5+ 0.2+ | 2006 11 15 | G96 | 0.0 0.2+    |
| 2004 02 26 | 704 | 0.1- 0.0    | 2004 04 13 | 691 | 0.3+ 0.2+ | 2006 11 15 | G96 | 0.3- 0.1-   |
| 2004 02 26 | 704 | 1.0+ 0.0    | 2004 04 13 | 691 | 0.4+ 0.2+ | 2006 12 25 | G96 | 0.9- 0.6+   |
| 2004 02 26 | 704 | (1.5+ 0.3-) | 2006 07 21 | G96 | 0.2+ 0.0  | 2006 12 25 | G96 | 1.0+ 0.8-   |
| 2004 02 26 | 704 | 1.0+ 0.3+   | 2006 07 21 | G96 | 0.1+ 0.0  | 2006 12 25 | G96 | (0.1- 1.7-) |
| 2004 03 15 | 691 | 0.0 0.2+    | 2006 07 21 | G96 | 0.2- 0.3+ | 2006 12 25 | G96 | 0.3+ 0.5-   |
| 2004 03 15 | 703 | 0.8- 0.5+   | 2006 07 21 | G96 | 0.4- 0.1+ | 2007 11 03 | G96 | 0.1- 0.7-   |
| 2004 03 15 | 703 | 0.2- 0.9+   | 2006 09 14 | 703 | 0.2+ 0.9- | 2007 11 03 | G96 | 0.1+ 0.8-   |
| 2004 03 15 | 691 | 0.5- 0.7+   | 2006 09 14 | 703 | 0.5- 0.4- | 2007 11 03 | G96 | 0.3+ 0.7-   |
| 2004 03 15 | 703 | 0.2- 0.9+   | 2006 09 14 | 703 | 0.7- 0.4- | 2007 11 03 | G96 | 0.1+ 0.8-   |
| 2004 03 15 | 703 | 0.6- 0.2-   | 2006 09 14 | 703 | 0.4- 0.5+ | 2007 11 11 | G96 | 0.0 0.6-    |
| 2004 03 15 | 691 | 0.1+ 0.2+   | 2006 09 19 | 691 | 0.3- 0.4+ | 2007 11 11 | G96 | 0.1+ 0.6-   |
| 2004 03 16 | 704 | 0.4+ 0.2-   | 2006 09 19 | 691 | 0.2- 0.4+ | 2007 11 11 | G96 | 0.1+ 0.7-   |
| 2004 03 16 | 704 | 1.2+ 0.8+   | 2006 09 19 | 691 | 0.2- 0.5+ | 2007 11 11 | G96 | 0.2+ 0.2-   |
| 2004 03 16 | 704 | 0.4+ 1.0-   | 2006 09 26 | 691 | 0.2+ 0.0  | 2007 12 13 | 704 | 0.3+ 1.0+   |
| 2004 03 16 | 704 | 0.1- 1.0-   | 2006 09 26 | 691 | 0.0 0.0   | 2007 12 13 | 704 | (0.6+ 1.8+) |
| 2004 03 16 | 704 | 1.1+ 1.5-   | 2006 09 26 | 691 | 0.2+ 0.0  | 2007 12 13 | 704 | 0.4- 0.3+   |
| 2004 03 17 | 683 | 0.2- 1.1-   | 2006 09 30 | 691 | 0.3+ 0.1- | 2007 12 13 | 704 | 0.4+ 0.6+   |
| 2004 03 17 | 683 | 0.3- 0.4+   | 2006 09 30 | 691 | 0.1+ 0.0  | 2007 12 13 | 704 | 0.8- 1.2+   |
| 2004 03 17 | 683 | 0.4- 0.8+   | 2006 09 30 | 691 | 0.2+ 0.2- | 2007 12 15 | 704 | 0.3- 0.8+   |
| 2004 03 18 | 683 | (1.6+ 1.3-) | 2006 10 11 | 644 | 0.0 0.5+  | 2007 12 15 | 704 | 0.4+ 1.4+   |
| 2004 03 18 | 683 | 0.6- 0.7+   | 2006 10 11 | 644 | 0.2+ 0.1+ | 2007 12 15 | 704 | 1.1+ 1.1+   |
| 2004 03 18 | 683 | (2.0+ 1.3-) | 2006 10 11 | 644 | 0.2+ 0.2+ | 2007 12 15 | 704 | 0.5- 1.3+   |
| 2004 03 18 | 704 | 0.9+ 1.0+   | 2006 10 12 | 644 | 0.1- 0.2+ |            |     |             |

**(171890)\* 2001 RL<sub>42</sub>**

Discovered 2001 Sept. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |                    |               |             |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    | MPC           |             |  |
| <i>M</i>                                | 31.60831   | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i>                                | 0.18646112 | $\omega$ 251.24462 | +0.91166264   | -0.37579599 |  |
| <i>a</i>                                | 3.0344304  | $\Omega$ 130.46373 | +0.40804960   | +0.87573706 |  |
| <i>e</i>                                | 0.1358287  | <i>i</i> 12.62405  | -0.04864931   | +0.30308741 |  |
| <i>P</i>                                | 5.29       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |             |            |            |             |      |      |
|------------|-----|-------|-------|------------|-----|-------------|------------|------------|-------------|------|------|
| 2001 07 29 | 644 | 0.6-  | 0.9+  | 2001 09 17 | 699 | (2.2+ 0.5+) | 2006 09 14 | 644        | 0.1+        | 0.0  |      |
| 2001 07 29 | 644 | 0.2-  | 1.3+  | 2001 09 17 | 699 | 1.0+ 0.1+   | 2006 09 14 | 644        | 0.5-        | 0.2- |      |
| 2001 07 29 | 644 | 0.3-  | 0.9+  | 2004 03 15 | 691 | 0.1+ 0.5+   | 2006 09 14 | 644        | 0.1+        | 0.0  |      |
| 2001 08 25 | 699 | 1.1-  | 0.1+  | 2004 03 15 | 691 | 0.2+ 0.4+   | 2007 11 08 | 703        | (1.5+ 1.8-) |      |      |
| 2001 08 25 | 699 | 1.4-  | 0.4+  | 2004 03 15 | 691 | 0.1+ 0.5+   | 2007 11 08 | 703        | 0.1-        | 0.6- |      |
| 2001 08 25 | 699 | (2.3- | 0.9+) | 2006 05 26 | G96 | 0.1-        | 0.0        | 2007 11 08 | 703         | 0.1- | 0.6+ |
| 2001 08 25 | 699 | 0.8+  | 0.4+  | 2006 05 26 | G96 | 0.0         | 0.3-       | 2007 11 08 | 703         | 0.0  | 0.4+ |
| 2001 09 11 | 704 | (0.5- | 1.6+) | 2006 05 26 | G96 | 0.1+        | 0.2-       | 2007 11 15 | 703         | 0.3- | 0.4- |
| 2001 09 11 | 704 | 0.6+  | 0.6+  | 2006 05 26 | G96 | 0.2-        | 0.0        | 2007 11 15 | 703         | 0.6- | 0.0  |
| 2001 09 11 | 704 | 0.6+  | 0.9+  | 2006 08 12 | 644 | 0.3-        | 0.2+       | 2007 11 15 | 703         | 0.7+ | 0.5- |
| 2001 09 11 | 704 | 0.9-  | 0.2+  | 2006 08 12 | 644 | 0.1-        | 0.1+       | 2007 11 15 | 703         | 0.0  | 0.2+ |
| 2001 09 12 | 704 | 0.6-  | 0.3-  | 2006 08 12 | 644 | 0.0         | 0.2+       | 2007 12 05 | G96         | 0.2+ | 0.1+ |
| 2001 09 12 | 704 | 0.0   | 0.6-  | 2006 08 26 | 699 | 0.4+        | 0.4-       | 2007 12 05 | G96         | 0.0  | 0.1+ |
| 2001 09 12 | 704 | 0.2-  | 0.7+  | 2006 08 26 | 699 | 0.1+        | 0.9-       | 2007 12 05 | G96         | 0.2+ | 0.5+ |
| 2001 09 17 | 699 | 0.1+  | 0.2+  | 2006 08 26 | 699 | 0.4+        | 0.5+       | 2007 12 05 | G96         | 0.0  | 0.1+ |
| 2001 09 17 | 699 | 0.6+  | 0.3+  | 2006 08 26 | 699 | (2.4-       | 0.6-)      |            |             |      |      |



2007 DEC. 24

M.P.O. 129195

**(171891)\* 2001 RW<sub>46</sub>**

Discovered 2001 Sept. 11 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 7.28463    |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.17996171 | $\omega$ | 312.40149 |          | +0.17751149 |          | -0.92652217 |
| <i>a</i> | 3.1070577  | $\Omega$ | 124.36613 |          | +0.97892625 |          | +0.13165904 |
| <i>e</i> | 0.2636215  | <i>i</i> | 23.69588  |          | +0.10096077 |          | +0.35245222 |
| <i>P</i> | 5.48       | <i>H</i> | 14.1      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 19 | 704 | 1.0-  | 0.6+  | 2001 12 28 | 608 | 0.4+  | 0.2-  | 2003 04 07 | 644 | 0.5+  | 1.3+  |
| 2001 08 19 | 704 | 1.5-  | 0.2+  | 2001 12 28 | 608 | 0.6+  | 0.2-  | 2003 04 07 | 644 | 0.8+  | 1.1+  |
| 2001 08 19 | 704 | 1.1-  | 0.1+  | 2002 01 13 | 704 | 0.8-  | 0.7+  | 2003 04 07 | 644 | 0.5+  | 1.4+  |
| 2001 08 19 | 704 | 0.9-  | 0.2-  | 2002 01 13 | 704 | 0.3-  | 0.4+  | 2003 04 10 | 704 | 0.8+  | 1.4+  |
| 2001 09 11 | 704 | 0.3-  | 0.2+  | 2002 01 13 | 704 | 0.0   | 1.0+  | 2003 04 10 | 704 | 0.8+  | 0.2-  |
| 2001 09 11 | 704 | 0.8-  | 0.3-  | 2002 01 13 | 704 | 0.6-  | 0.7+  | 2003 04 10 | 704 | 0.5+  | 0.8+  |
| 2001 09 11 | 704 | 0.6-  | 0.2+  | 2002 01 13 | 704 | 0.4-  | 1.1+  | 2003 04 10 | 704 | 0.2+  | 0.7+  |
| 2001 09 11 | 704 | 1.0-  | 0.5-  | 2002 12 05 | 704 | 0.0   | 0.1-  | 2003 04 10 | 704 | (0.4- | 1.8+) |
| 2001 09 11 | 704 | 0.5-  | 0.4-  | 2002 12 05 | 704 | 0.2+  | 1.0+  | 2006 07 30 | E12 | 0.7-  | 0.8+  |
| 2001 09 16 | 704 | 0.3-  | 0.6-  | 2002 12 05 | 704 | 0.9-  | 0.5+  | 2006 07 30 | E12 | 0.2-  | 0.4+  |
| 2001 09 16 | 704 | 0.2-  | 0.3-  | 2003 01 07 | 704 | 0.1+  | 0.1-  | 2006 07 30 | E12 | 0.4+  | 0.6+  |
| 2001 09 16 | 704 | 0.3+  | 0.1+  | 2003 01 07 | 704 | 0.3-  | 0.6-  | 2006 07 30 | E12 | 0.0   | 0.8+  |
| 2001 09 19 | 704 | 0.6-  | 0.1+  | 2003 01 07 | 704 | 0.4+  | 0.2-  | 2006 08 16 | E12 | 0.0   | 1.0+  |
| 2001 09 19 | 704 | 0.0   | 0.1+  | 2003 01 07 | 704 | 0.4-  | 0.5+  | 2006 08 16 | E12 | 1.1-  | 0.7+  |
| 2001 09 19 | 704 | 0.1+  | 0.0   | 2003 01 07 | 704 | 0.2+  | 0.8-  | 2006 08 16 | E12 | 0.3-  | 0.4+  |
| 2001 10 09 | 704 | 0.5+  | 0.0   | 2003 01 26 | 704 | 0.1+  | 0.0   | 2006 08 16 | E12 | 0.2+  | 0.2-  |
| 2001 10 09 | 704 | 1.3+  | 0.4-  | 2003 01 26 | 704 | 0.6+  | 0.6+  | 2006 08 28 | E12 | 0.2+  | 0.5+  |
| 2001 10 09 | 704 | 1.5+  | 0.1-  | 2003 01 26 | 704 | 0.4-  | 0.3+  | 2006 08 28 | E12 | 0.2-  | 0.2+  |
| 2001 10 09 | 704 | 1.3+  | 0.0   | 2003 01 26 | 704 | 0.1-  | 0.5-  | 2006 08 28 | E12 | 0.2+  | 0.5+  |
| 2001 10 09 | 704 | 1.4+  | 0.4+  | 2003 02 04 | 699 | 0.0   | 0.2-  | 2006 08 28 | E12 | 0.4+  | 0.4+  |
| 2001 10 18 | 699 | 0.6-  | 0.2+  | 2003 02 04 | 699 | 0.7-  | 0.4+  | 2006 09 12 | E12 | 0.3+  | 0.5+  |
| 2001 10 18 | 699 | 0.8-  | 0.5+  | 2003 02 04 | 699 | 0.1-  | 0.0   | 2006 09 12 | E12 | 0.1-  | 0.5+  |
| 2001 10 18 | 699 | 0.1+  | 0.0   | 2003 02 04 | 699 | 0.1+  | 0.0   | 2006 09 12 | E12 | 0.3+  | 0.7+  |
| 2001 10 18 | 699 | 0.2-  | 0.6+  | 2003 02 07 | 704 | 0.3-  | 0.9-  | 2006 09 12 | E12 | 0.1-  | 0.7+  |
| 2001 10 23 | 704 | 0.3+  | 0.5-  | 2003 02 07 | 704 | 0.2+  | 0.0   | 2006 09 27 | E12 | 0.7-  | 1.0+  |
| 2001 10 23 | 704 | 1.0+  | 0.5-  | 2003 02 07 | 704 | 0.3-  | 0.8+  | 2006 09 27 | E12 | 0.3-  | 0.3+  |
| 2001 10 23 | 704 | 0.6+  | 0.2-  | 2003 02 07 | 704 | 1.0-  | 0.1+  | 2006 09 27 | E12 | 0.4-  | 0.6+  |
| 2001 10 23 | 704 | 0.8+  | 0.2+  | 2003 02 26 | 704 | 0.9+  | 0.1+  | 2006 09 27 | E12 | 0.0   | 1.4+  |
| 2001 10 23 | 704 | 0.4+  | 0.2+  | 2003 02 26 | 704 | 0.2+  | 0.4+  | 2006 11 09 | E12 | 0.2-  | 0.2+  |
| 2001 11 06 | 704 | 0.1-  | 0.1-  | 2003 02 26 | 704 | 0.9+  | 0.6+  | 2006 11 09 | E12 | 0.1+  | 0.1-  |
| 2001 11 06 | 704 | 0.3-  | 0.3-  | 2003 02 26 | 704 | 0.2+  | 0.8+  | 2006 11 09 | E12 | 0.1-  | 0.4+  |
| 2001 11 06 | 704 | 1.3+  | 0.4-  | 2003 03 09 | 644 | 0.2-  | 0.4+  | 2006 11 09 | E12 | 0.4+  | 0.4+  |
| 2001 11 06 | 704 | 0.1+  | 0.2-  | 2003 03 09 | 644 | 0.1-  | 0.4+  | 2007 10 19 | 704 | (0.0  | 2.9-) |
| 2001 11 06 | 704 | 0.2+  | 1.0+  | 2003 03 09 | 644 | 0.3-  | 0.2+  | 2007 10 19 | 704 | 0.5+  | 1.2-  |
| 2001 11 06 | 644 | 0.3-  | 0.3-  | 2003 03 13 | 704 | 0.6+  | 0.7+  | 2007 10 19 | 704 | (0.3+ | 1.5-) |
| 2001 11 06 | 644 | 0.3-  | 0.1-  | 2003 03 13 | 704 | 0.9+  | 0.1+  | 2007 10 19 | 704 | 0.6-  | 0.5-  |
| 2001 11 06 | 644 | 0.4+  | 0.3+  | 2003 03 13 | 704 | 1.1-  | 0.7+  | 2007 10 19 | 704 | 0.6-  | 0.0   |
| 2001 11 07 | 704 | 0.1+  | 1.1+  | 2003 03 13 | 704 | 0.4-  | 0.3+  | 2007 11 08 | 703 | 0.1+  | 1.0+  |
| 2001 11 07 | 704 | 0.1-  | 0.0   | 2003 03 13 | 704 | 0.4-  | 0.4+  | 2007 11 08 | 703 | 0.1-  | 0.5+  |
| 2001 11 07 | 704 | 1.0-  | 1.0+  | 2003 03 22 | 644 | 0.2+  | 0.9+  | 2007 11 08 | 703 | 0.1+  | 0.5+  |
| 2001 11 07 | 704 | (0.8+ | 2.6+) | 2003 03 22 | 644 | 0.4+  | 0.8+  | 2007 11 08 | 703 | 0.5+  | 0.5+  |
| 2001 12 04 | 704 | 0.7-  | 0.6+  | 2003 03 22 | 644 | 0.2+  | 1.0+  | 2007 12 14 | 704 | 0.3+  | 0.2-  |
| 2001 12 04 | 704 | (2.0- | 1.6+) | 2003 04 01 | 699 | 0.7-  | 0.4+  | 2007 12 14 | 704 | 0.8+  | 0.0   |
| 2001 12 04 | 704 | (0.5+ | 1.5+) | 2003 04 01 | 699 | (1.6- | 0.1+) | 2007 12 14 | 704 | 0.2-  | 0.8-  |
| 2001 12 04 | 704 | 0.4+  | 1.2+  | 2003 04 01 | 699 | 1.2-  | 0.8+  | 2007 12 14 | 704 | 0.5+  | 0.5-  |
| 2001 12 28 | 608 | 0.6+  | 0.6-  | 2003 04 01 | 699 | 1.0-  | 0.4+  | 2007 12 14 | 704 | 0.3-  | 0.3-  |

**(171892)\* 2001 RT<sub>48</sub>**

Discovered 2001 Sept. 11 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 40.36377   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.17353569 | $\omega$ | 266.26556 |          | +0.89632555 |          | +0.06076293 |
| <i>a</i> | 3.1832947  | $\Omega$ | 89.87083  |          | +0.11272695 |          | +0.92678976 |
| <i>e</i> | 0.2388491  | <i>i</i> | 26.05377  |          | -0.42882764 |          | +0.37063270 |
| <i>P</i> | 5.68       | <i>H</i> | 14.7      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 11 | 704 | 0.2- | 0.0  | 2001 11 18 | 608 | 0.6-  | 0.3+  | 2007 11 09 | 683 | 0.3-  | 0.6+  |
| 2001 09 11 | 704 | 0.7+ | 0.3+ | 2001 11 18 | 608 | 0.2-  | 0.2+  | 2007 11 09 | 683 | (2.3- | 0.4+) |
| 2001 09 11 | 704 | 0.3+ | 0.2- | 2001 11 18 | 608 | 0.4-  | 0.2+  | 2007 11 10 | D29 | 0.3-  | 0.1-  |
| 2001 09 11 | 704 | 0.1+ | 0.2+ | 2001 12 04 | 704 | 0.9+  | 0.7+  | 2007 11 10 | D29 | 0.3-  | 0.3-  |
| 2001 09 11 | 704 | 0.0  | 0.1- | 2001 12 04 | 704 | (0.2- | 2.2+) | 2007 11 10 | D29 | 0.2-  | 0.0   |
| 2001 09 17 | 704 | 0.6+ | 0.4+ | 2001 12 04 | 704 | (0.4+ | 2.1+) | 2007 11 10 | D29 | 0.0   | 0.2-  |
| 2001 09 17 | 704 | 0.0  | 0.6+ | 2001 12 04 | 704 | (1.6+ | 2.3+) | 2007 11 14 | 699 | 1.0-  | 0.4+  |
| 2001 09 17 | 704 | 0.3+ | 0.2+ | 2002 12 06 | 645 | 0.0   | 0.1+  | 2007 11 14 | 699 | 0.6+  | 0.2-  |
| 2001 09 17 | 704 | 0.2- | 0.4+ | 2002 12 06 | 645 | 0.0   | 0.1+  | 2007 11 14 | 699 | 0.2+  | 0.6-  |
| 2001 09 17 | 704 | 0.4+ | 0.0  | 2006 05 26 | 644 | 0.4-  | 0.0   | 2007 11 14 | 699 | 0.1-  | 0.5-  |
| 2001 09 19 | 704 | 0.2+ | 0.1+ | 2006 05 26 | 644 | 0.4+  | 0.3+  | 2007 11 15 | 703 | 0.4-  | 0.5-  |
| 2001 09 19 | 704 | 0.1+ | 0.5+ | 2006 05 26 | 644 | 0.3+  | 0.7+  | 2007 11 15 | 703 | 0.3-  | 0.9+  |
| 2001 09 19 | 704 | 0.1- | 0.7+ | 2006 06 24 | 644 | 0.3+  | 0.6+  | 2007 11 15 | 703 | 0.6-  | 0.6+  |
| 2001 10 15 | 704 | 0.8+ | 0.7- | 2006 06 24 | 644 | 0.4+  | 0.7+  | 2007 11 15 | 703 | 0.5-  | 0.1-  |
| 2001 10 15 | 704 | 1.0- | 0.6+ | 2006 06 24 | 644 | 0.1-  | 0.3+  | 2007 11 20 | 703 | 0.5+  | 0.4-  |
| 2001 10 15 | 704 | 0.7+ | 0.5- | 2006 07 26 | E12 | 0.1+  | 0.2-  | 2007 11 20 | 703 | 0.7-  | 0.1+  |
| 2001 10 15 | 704 | 0.1- | 1.2- | 2006 07 26 | E12 | 0.4+  | 0.2+  | 2007 11 20 | 703 | 0.4-  | 0.1+  |
| 2001 10 18 | 699 | 0.3- | 0.4- | 2006 07 26 | E12 | 0.7-  | 0.7+  | 2007 11 20 | 703 | 0.1+  | 0.0   |
| 2001 10 18 | 699 | 0.5+ | 0.3- | 2006 07 26 | E12 | 0.3+  | 0.7+  | 2007 12 15 | 699 | 0.5+  | 2.3-  |
| 2001 10 18 | 699 | 0.2- | 0.5- | 2007 11 07 | 683 | 1.2+  | 0.2+  | 2007 12 15 | 699 | 0.3-  | 0.1+  |
| 2001 10 18 | 699 | 0.2- | 0.5- | 2007 11 07 | 683 | 0.2+  | 0.7-  | 2007 12 15 | 699 | 1.5+  | 0.1+  |
| 2001 10 20 | 608 | 0.0  | 0.0  | 2007 11 07 | 683 | (2.9- | 0.4-) | 2007 12 15 | 699 | 1.6+  | 0.2+  |
| 2001 10 20 | 608 | 0.9- | 0.4+ | 2007 11 07 | 703 | 0.7+  | 0.6+  | 2007 12 16 | 704 | 0.2+  | 0.0   |
| 2001 10 20 | 608 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.1-  | 0.1-  | 2007 12 16 | 704 | 0.0   | 0.6+  |
| 2001 11 12 | 608 | 0.3- | 0.4- | 2007 11 07 | 703 | 0.7-  | 0.2-  | 2007 12 16 | 704 | 0.1+  | 0.4+  |
| 2001 11 12 | 608 | 0.4- | 0.6- | 2007 11 07 | 703 | 0.3-  | 0.7+  | 2007 12 16 | 704 | 0.6-  | 0.0   |
| 2001 11 12 | 608 | 0.4- | 0.0  | 2007 11 09 | 683 | 0.1+  | 0.6+  | 2007 12 16 | 704 | 0.3-  | 0.1+  |

**(171893)\* 2001 RS<sub>67</sub>**

Discovered 2001 Sept. 10 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 87.31134   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.18046080 | $\omega$ | 322.32547 |          | +0.69156484 |          | +0.72167903 |
| <i>a</i> | 3.1013264  | $\Omega$ | 351.28062 |          | -0.60459603 |          | +0.55540396 |
| <i>e</i> | 0.1325327  | <i>i</i> | 11.52558  |          | -0.39522362 |          | +0.41316562 |
| <i>P</i> | 5.46       | <i>H</i> | 14.9      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 10 | 704 | 0.5+  | 0.3+  | 2001 10 15 | 608 | 1.0- | 0.7- | 2006 08 23 | 644 | 0.1+ | 0.4+ |
| 2001 09 10 | 704 | 1.4-  | 0.3-  | 2001 10 15 | 608 | 0.8- | 0.1+ | 2006 08 24 | 644 | 0.3- | 0.2+ |
| 2001 09 10 | 704 | 0.2-  | 0.8-  | 2001 10 17 | 704 | 0.3- | 0.3- | 2006 08 24 | 644 | 0.3- | 0.5+ |
| 2001 09 10 | 704 | 0.1-  | 0.3+  | 2001 10 17 | 704 | 0.2- | 0.0  | 2006 08 24 | 644 | 0.0  | 0.2+ |
| 2001 09 10 | 704 | 0.1-  | 0.3+  | 2001 10 17 | 704 | 0.4+ | 0.6- | 2006 09 14 | 644 | 0.1+ | 0.4+ |
| 2001 09 17 | 704 | 0.1+  | 0.3-  | 2001 10 17 | 704 | 0.5+ | 0.6- | 2006 09 14 | 644 | 0.5- | 0.2+ |
| 2001 09 17 | 704 | 0.8+  | 0.0   | 2001 10 17 | 704 | 0.2+ | 0.6- | 2006 09 14 | 644 | 0.3- | 0.3+ |
| 2001 09 17 | 704 | 0.7+  | 1.1+  | 2001 10 20 | 644 | 0.5- | 0.0  | 2006 09 14 | 644 | 0.5- | 0.1+ |
| 2001 09 20 | 704 | 0.3+  | 0.3+  | 2001 10 20 | 644 | 0.2- | 0.1+ | 2006 09 14 | 644 | 0.3+ | 0.1- |
| 2001 09 20 | 704 | 0.1+  | 0.1-  | 2001 10 20 | 644 | 0.3- | 0.0  | 2006 09 14 | 644 | 0.1- | 0.1+ |
| 2001 09 20 | 704 | 0.6-  | 0.4+  | 2004 03 17 | 691 | 0.0  | 0.2+ | 2006 11 11 | G96 | 0.4- | 0.6- |
| 2001 09 20 | 704 | 0.1-  | 0.6+  | 2004 03 17 | 691 | 0.1+ | 0.3+ | 2006 11 11 | G96 | 0.0  | 0.7- |
| 2001 09 20 | 704 | 0.4+  | 1.4+  | 2004 03 17 | 691 | 0.2+ | 0.1+ | 2006 11 11 | G96 | 0.1+ | 0.3- |
| 2001 09 23 | 704 | (1.8+ | 0.9+) | 2004 03 26 | 691 | 0.3+ | 0.2+ | 2006 11 11 | G96 | 0.1- | 0.3- |
| 2001 09 23 | 704 | 0.3+  | 0.4-  | 2004 03 26 | 691 | 0.0  | 0.1- | 2007 11 08 | 704 | 0.3- | 0.0  |
| 2001 09 23 | 704 | 0.9+  | 0.7+  | 2004 03 26 | 691 | 0.4+ | 0.5+ | 2007 11 08 | 704 | 0.2- | 0.8- |
| 2001 09 23 | 704 | 0.6-  | 0.9+  | 2005 05 16 | 644 | 0.1- | 0.9+ | 2007 11 08 | 704 | 0.3- | 0.3- |
| 2001 09 28 | 644 | 0.0   | 0.1+  | 2005 05 16 | 644 | 0.1+ | 1.1+ | 2007 11 08 | 704 | 0.3- | 0.1+ |
| 2001 09 28 | 644 | 0.1+  | 0.1+  | 2005 05 16 | 644 | 0.4+ | 1.0+ | 2007 11 08 | 704 | 0.6- | 0.1- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 28 | 644 | 0.2+ | 0.3+ | 2006 08 16 | E12 | 0.2+  | 0.4-  | 2007 11 09 | 704 | 0.3- | 0.1- |
| 2001 10 12 | 608 | 0.7- | 0.5+ | 2006 08 16 | E12 | 0.2+  | 0.1-  | 2007 11 09 | 704 | 0.2+ | 0.1- |
| 2001 10 12 | 608 | 0.6- | 1.2+ | 2006 08 16 | E12 | 0.2+  | 0.1+  | 2007 11 09 | 704 | 0.3+ | 0.1- |
| 2001 10 12 | 608 | 0.1- | 0.4+ | 2006 08 16 | E12 | 0.6+  | 0.8+  | 2007 11 09 | 704 | 0.4+ | 0.2- |
| 2001 10 14 | 704 | 0.1+ | 0.2+ | 2006 08 23 | 704 | 0.6+  | 0.1-  | 2007 12 03 | 704 | 0.2+ | 0.0  |
| 2001 10 14 | 704 | 0.4- | 0.2- | 2006 08 23 | 704 | 0.3-  | 0.4-  | 2007 12 03 | 704 | 0.3+ | 0.0  |
| 2001 10 14 | 704 | 0.2+ | 0.0  | 2006 08 23 | 704 | (1.6- | 0.5+) | 2007 12 03 | 704 | 0.2+ | 0.2+ |
| 2001 10 14 | 704 | 0.5- | 0.2- | 2006 08 23 | 704 | 0.1+  | 0.1-  | 2007 12 03 | 704 | 0.1+ | 0.3+ |
| 2001 10 14 | 704 | 0.4- | 1.2+ | 2006 08 23 | 644 | 0.2-  | 0.3+  | 2007 12 03 | 704 | 0.0  | 0.3- |
| 2001 10 15 | 608 | 0.7- | 0.1- | 2006 08 23 | 644 | 0.6+  | 0.2+  |            |     |      |      |

**(171894)\* 2001 RP<sub>83</sub>**

Discovered 2001 Sept. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | P        |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| 14.43347 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.18484320 | <i>ω</i> | 90.34594  | +0.75840416 | -0.64966768 |
| <i>a</i> | 3.0521115  | <i>Ω</i> | 310.17143 | +0.56734706 | +0.69765155 |
| <i>e</i> | 0.0765210  | <i>i</i> | 3.93884   | +0.32084333 | +0.30201692 |
| <i>P</i> | 5.33       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 27 | 699 | 0.6-  | 0.2-  | 2001 09 26 | 699 | 0.5-  | 0.0   | 2006 08 20 | 644 | 0.6-  | 0.2+  |
| 2001 08 27 | 699 | 0.3-  | 0.2-  | 2001 09 26 | 699 | 0.3-  | 0.5+  | 2006 08 20 | 644 | 0.2-  | 0.2+  |
| 2001 08 27 | 699 | 0.4-  | 0.4-  | 2001 09 26 | 699 | 0.2-  | 0.6+  | 2006 08 20 | 644 | 0.1-  | 0.5+  |
| 2001 08 27 | 699 | 0.8-  | 1.0+  | 2001 09 26 | 699 | 0.2-  | 0.8+  | 2006 08 20 | 644 | 0.1+  | 0.1+  |
| 2001 09 10 | 333 | 0.3-  | 0.3+  | 2001 10 19 | 644 | 0.2+  | 0.8+  | 2006 08 20 | 644 | 0.2-  | 0.2+  |
| 2001 09 10 | 333 | 0.4-  | 0.5-  | 2001 10 19 | 644 | 0.0   | 1.2+  | 2006 08 20 | 644 | 0.4-  | 0.0   |
| 2001 09 11 | 699 | 0.7+  | 0.9+  | 2001 10 19 | 644 | 0.1-  | 1.0+  | 2006 08 20 | 644 | 0.2-  | 0.3+  |
| 2001 09 11 | 699 | 0.7+  | 0.1-  | 2004 03 16 | 691 | 0.2+  | 0.4+  | 2006 08 20 | 644 | 0.2-  | 0.1-  |
| 2001 09 11 | 699 | 0.5-  | 0.1-  | 2004 03 16 | 691 | 0.2+  | 0.5+  | 2006 08 28 | 691 | 0.0   | 0.3+  |
| 2001 09 11 | 699 | 0.2-  | 1.0+  | 2004 03 16 | 691 | 0.0   | 0.4+  | 2006 08 28 | 691 | 0.0   | 0.2+  |
| 2001 09 16 | 704 | 0.1+  | 0.6+  | 2004 03 18 | 704 | 0.1+  | 0.6+  | 2006 08 28 | 691 | (0.2- | 3.6-) |
| 2001 09 16 | 704 | 0.1+  | 0.8-  | 2004 03 18 | 704 | (1.6+ | 0.9+) | 2006 08 28 | 703 | (1.5- | 1.5+) |
| 2001 09 16 | 704 | (1.7+ | 0.7+) | 2004 03 18 | 704 | 1.3+  | 0.8+  | 2006 08 28 | 703 | 0.5-  | 0.2+  |
| 2001 09 16 | 704 | 0.7-  | 0.2-  | 2004 03 20 | 704 | 0.5+  | 0.3-  | 2006 08 28 | 703 | 0.1-  | 0.9+  |
| 2001 09 18 | 699 | 1.0-  | 1.3-  | 2004 03 20 | 704 | 0.6+  | 0.8+  | 2006 08 28 | 703 | 0.7-  | 0.5+  |
| 2001 09 18 | 699 | (0.7- | 2.4-) | 2004 03 20 | 704 | (2.0+ | 1.4+) | 2006 09 14 | 703 | 0.8+  | 0.4+  |
| 2001 09 18 | 699 | 0.1+  | 0.1+  | 2004 03 26 | 291 | 0.1-  | 0.8+  | 2006 09 14 | 703 | 1.0+  | 0.4+  |
| 2001 09 18 | 699 | 0.1+  | 0.1-  | 2004 03 26 | 291 | 0.2+  | 0.7+  | 2006 09 14 | 703 | 0.5-  | 1.3+  |
| 2001 09 20 | 704 | 0.1-  | 0.6+  | 2004 03 26 | 291 | 0.2+  | 0.5+  | 2006 09 14 | 703 | 0.3-  | 0.0   |
| 2001 09 20 | 704 | 0.4-  | 0.3+  | 2004 03 26 | 291 | 0.6+  | 1.0+  | 2006 09 27 | G96 | 0.2-  | 0.3-  |
| 2001 09 20 | 704 | 0.3-  | 0.4+  | 2004 03 26 | 291 | 0.5+  | 0.8+  | 2006 09 27 | G96 | 0.2-  | 0.2-  |
| 2001 09 20 | 704 | 0.2+  | 0.3+  | 2004 03 26 | 291 | 0.3+  | 0.8+  | 2006 09 27 | G96 | 0.7-  | 0.2+  |
| 2001 09 20 | 704 | 0.0   | 0.4+  | 2004 03 27 | 704 | 0.7+  | 1.3+  | 2006 09 27 | G96 | 0.4+  | 0.2+  |
| 2001 09 21 | 704 | 0.3-  | 0.4-  | 2004 03 27 | 704 | 1.1+  | 0.9+  | 2007 11 07 | 704 | (1.6+ | 1.0+) |
| 2001 09 21 | 704 | 0.2-  | 0.4-  | 2004 03 27 | 704 | (0.7+ | 1.7+) | 2007 11 07 | 704 | 0.4-  | 0.5-  |
| 2001 09 21 | 704 | 0.0   | 0.5+  | 2004 04 21 | 691 | 0.5+  | 0.5+  | 2007 11 07 | 704 | 0.6+  | 0.3-  |
| 2001 09 21 | 704 | 0.3-  | 0.9+  | 2004 04 21 | 691 | 0.1+  | 0.2+  | 2007 11 07 | 704 | 0.1+  | 0.4+  |
| 2001 09 21 | 644 | 0.6-  | 0.4+  | 2004 04 21 | 691 | 0.3+  | 0.4+  | 2007 11 07 | 704 | 0.3-  | 0.8+  |
| 2001 09 21 | 644 | 0.6-  | 0.9+  | 2006 06 20 | G96 | 0.1-  | 0.0   | 2007 11 18 | 704 | 0.9-  | 0.5+  |
| 2001 09 21 | 644 | 0.8-  | 0.5+  | 2006 06 20 | G96 | 0.4-  | 0.0   | 2007 11 18 | 704 | 0.9-  | 1.4+  |
| 2001 09 22 | 704 | 0.0   | 0.5+  | 2006 06 20 | G96 | 0.1+  | 0.2-  | 2007 11 18 | 704 | 0.2-  | 0.2+  |
| 2001 09 22 | 704 | 0.5+  | 0.5+  | 2006 06 20 | G96 | 0.2-  | 0.1-  | 2007 11 18 | 704 | 1.1-  | 0.4+  |
| 2001 09 22 | 704 | 0.3-  | 0.2+  | 2006 07 18 | G96 | 0.0   | 0.4+  | 2007 11 18 | 704 | 0.7-  | 0.8+  |
| 2001 09 22 | 704 | 0.7-  | 0.8+  | 2006 07 18 | G96 | 0.1+  | 0.1+  | 2007 11 20 | 704 | 0.2+  | 0.1+  |
| 2001 09 23 | 683 | 1.0+  | 0.2+  | 2006 07 18 | G96 | 0.3-  | 0.3-  | 2007 11 20 | 704 | 0.3+  | 0.0   |
| 2001 09 23 | 704 | 0.1-  | 0.3+  | 2006 07 18 | G96 | 0.1-  | 0.2+  | 2007 11 20 | 704 | 0.5+  | 0.0   |
| 2001 09 23 | 683 | (0.7- | 1.6+) | 2006 08 13 | 644 | 0.1-  | 0.3+  | 2007 11 20 | 704 | 0.1+  | 0.9+  |
| 2001 09 23 | 704 | 0.4-  | 0.7+  | 2006 08 13 | 644 | 0.3-  | 0.2+  | 2007 11 20 | 691 | 0.2-  | 0.2+  |
| 2001 09 23 | 683 | 0.6+  | 1.2-  | 2006 08 13 | 644 | 0.0   | 0.2+  | 2007 11 20 | 691 | 0.4-  | 0.0   |
| 2001 09 23 | 704 | 0.4-  | 0.9+  | 2006 08 15 | 644 | 0.1-  | 0.2+  | 2007 11 20 | 691 | 0.3+  | 0.2+  |
| 2001 09 23 | 704 | 0.3-  | 0.3+  | 2006 08 15 | 644 | 0.2-  | 0.5+  | 2007 12 12 | 704 | 1.4+  | 0.7-  |
| 2001 09 23 | 704 | 1.2-  | 1.2+  | 2006 08 15 | 644 | 0.1+  | 0.0   | 2007 12 12 | 704 | 0.1+  | 0.1-  |
| 2001 09 24 | 704 | 0.0   | 0.0   | 2006 08 16 | 644 | 0.3-  | 0.2+  | 2007 12 12 | 704 | 0.1-  | 0.4+  |
| 2001 09 24 | 704 | 0.4-  | 0.6+  | 2006 08 16 | 644 | 0.2-  | 0.0   | 2007 12 12 | 704 | 0.2-  | 0.5-  |
| 2001 09 24 | 704 | 0.4-  | 0.2-  | 2006 08 16 | 644 | 0.1+  | 0.1-  | 2007 12 13 | 704 | 0.5+  | 0.2+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 24 | 704 | 0.2+  | 0.5+  | 2006 08 17 | A50 | 0.7+ | 0.5+ | 2007 12 13 | 704 | 0.5+ | 0.0  |
| 2001 09 24 | 704 | 0.4+  | 0.6+  | 2006 08 18 | A50 | 0.5- | 0.2+ | 2007 12 13 | 704 | 0.4+ | 0.6+ |
| 2001 09 24 | 704 | 0.3-  | 0.3+  | 2006 08 19 | 699 | 0.0  | 0.7+ | 2007 12 13 | 704 | 0.1+ | 0.2- |
| 2001 09 24 | 704 | 0.5-  | 1.0+  | 2006 08 19 | 699 | 0.6+ | 0.2+ | 2007 12 13 | 704 | 0.3+ | 0.5+ |
| 2001 09 24 | 704 | 0.7+  | 0.3+  | 2006 08 19 | 699 | 0.1+ | 0.7+ | 2007 12 15 | 704 | 0.4+ | 0.1+ |
| 2001 09 24 | 704 | 0.9+  | 0.1+  | 2006 08 19 | 699 | 0.5- | 0.8+ | 2007 12 15 | 704 | 0.5- | 0.7+ |
| 2001 09 24 | 704 | (1.0+ | 1.6+) | 2006 08 20 | 644 | 0.4- | 0.2+ | 2007 12 15 | 704 | 0.1- | 0.2+ |

**(171895)\* 2001 RG<sub>85</sub> = 1996 VH<sub>35</sub>**

Discovered 2001 Sept. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 18050)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M         |            | P        |           | Q           |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 344.24072 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.18597197 | <i>ω</i> | 91.52194  | +0.14835663 | -0.98848853 |
| <i>a</i>  | 3.0397489  | <i>Ω</i> | 349.80126 | +0.82756535 | +0.14052183 |
| <i>e</i>  | 0.1094660  | <i>i</i> | 9.64874   | +0.54141103 | +0.05607168 |
| <i>P</i>  | 5.30       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 11 09 | 691 | 0.3+  | 0.4-  | 2001 09 23 | 704 | 0.5+  | 0.6+  | 2003 01 13 | 704 | 0.1- | 0.6+ |
| 1996 11 09 | 691 | 0.3+  | 0.1-  | 2001 09 23 | 704 | 0.4-  | 0.5+  | 2003 01 13 | 704 | 0.3+ | 0.6+ |
| 1996 11 09 | 691 | 0.1+  | 0.2-  | 2001 09 23 | 704 | 1.4-  | 0.1+  | 2006 08 18 | 644 | 0.2- | 0.3+ |
| 1996 11 14 | 691 | 0.2-  | 0.1-  | 2001 09 24 | 704 | 0.2-  | 0.4+  | 2006 08 18 | 644 | 0.2- | 0.2+ |
| 1996 11 14 | 691 | 0.2+  | 0.2-  | 2001 09 24 | 704 | 0.0   | 0.3-  | 2006 08 18 | 644 | 0.2+ | 0.3+ |
| 1996 11 14 | 691 | 0.5-  | 0.2-  | 2001 09 24 | 704 | 0.7-  | 0.7+  | 2006 08 23 | 644 | 0.7- | 0.2+ |
| 1996 11 17 | 691 | 0.3+  | 0.4-  | 2001 09 24 | 704 | 1.0+  | 0.1+  | 2006 08 23 | 644 | 0.3- | 0.2+ |
| 1996 11 17 | 691 | 0.1+  | 0.1-  | 2001 09 24 | 704 | 0.6-  | 0.1+  | 2006 08 23 | 644 | 0.1+ | 0.2+ |
| 1996 11 17 | 691 | 0.3+  | 0.0   | 2001 09 24 | 704 | 0.4-  | 0.8+  | 2006 08 24 | 644 | 0.3- | 0.2- |
| 2001 09 11 | 699 | 0.2-  | 0.7+  | 2001 09 24 | 704 | 1.0-  | 0.0   | 2006 08 24 | 644 | 0.3- | 0.1+ |
| 2001 09 11 | 699 | 0.4+  | 0.3+  | 2001 09 24 | 704 | 0.8-  | 0.2-  | 2006 08 24 | 644 | 0.2- | 0.0  |
| 2001 09 11 | 699 | 0.3+  | 0.0   | 2001 09 24 | 704 | 0.3-  | 0.4+  | 2007 11 03 | 704 | 1.2+ | 1.2+ |
| 2001 09 11 | 699 | 0.4+  | 0.0   | 2001 10 11 | 644 | 0.5+  | 0.1-  | 2007 11 03 | 704 | 0.1- | 1.2+ |
| 2001 09 18 | 699 | 0.7+  | 0.8+  | 2001 10 11 | 644 | 0.8+  | 0.1+  | 2007 11 03 | 704 | 0.4- | 0.4+ |
| 2001 09 18 | 699 | 1.0+  | 1.0+  | 2001 10 11 | 644 | 0.2+  | 0.2+  | 2007 11 03 | 704 | 0.3+ | 0.7+ |
| 2001 09 18 | 699 | 0.7+  | 0.0   | 2001 10 15 | 645 | 0.1+  | 0.1-  | 2007 11 09 | 704 | 0.1+ | 0.9- |
| 2001 09 18 | 699 | 1.3-  | 0.5+  | 2001 10 15 | 645 | 0.1+  | 0.1-  | 2007 11 09 | 704 | 0.5+ | 0.5+ |
| 2001 09 20 | 704 | 0.9-  | 0.0   | 2001 10 19 | 644 | 0.3+  | 0.3+  | 2007 11 09 | 704 | 0.1+ | 0.3+ |
| 2001 09 20 | 704 | 0.4-  | 0.4-  | 2001 10 19 | 644 | 0.4-  | 0.5+  | 2007 11 09 | 704 | 0.4- | 0.7+ |
| 2001 09 20 | 704 | 0.8-  | 0.1+  | 2001 10 19 | 644 | 0.0   | 0.4+  | 2007 11 09 | 704 | 1.2+ | 0.2- |
| 2001 09 20 | 704 | 0.6-  | 0.0   | 2002 12 15 | 704 | 0.4-  | 1.0+  | 2007 11 21 | 703 | 0.3+ | 0.1- |
| 2001 09 20 | 704 | 0.4-  | 0.2+  | 2002 12 15 | 704 | 0.6+  | 0.8+  | 2007 11 21 | 703 | 0.8+ | 0.5- |
| 2001 09 21 | 644 | 0.4+  | 0.5+  | 2002 12 15 | 704 | 0.2+  | 0.8+  | 2007 11 21 | 703 | 0.3- | 0.7- |
| 2001 09 21 | 644 | 0.4+  | 0.3+  | 2002 12 15 | 704 | 0.2+  | 0.2-  | 2007 11 21 | 703 | 0.7- | 0.4+ |
| 2001 09 21 | 644 | 0.5+  | 0.2+  | 2003 01 10 | 704 | (1.8- | 1.9-) | 2007 12 03 | 704 | 0.2- | 0.2- |
| 2001 09 22 | 704 | 0.6-  | 0.3-  | 2003 01 10 | 704 | 0.2-  | 0.0   | 2007 12 03 | 704 | 0.2+ | 0.4+ |
| 2001 09 22 | 704 | 0.6-  | 0.0   | 2003 01 10 | 704 | 0.3+  | 0.2-  | 2007 12 03 | 704 | 0.6- | 0.0  |
| 2001 09 22 | 704 | 0.4-  | 0.0   | 2003 01 13 | 704 | 0.3+  | 0.7-  | 2007 12 03 | 704 | 0.1+ | 1.1- |
| 2001 09 22 | 704 | 0.3-  | 0.3+  | 2003 01 13 | 704 | 0.3+  | 1.0+  | 2007 12 03 | 704 | 1.4- | 1.7- |
| 2001 09 23 | 704 | (0.9- | 2.1+) | 2003 01 13 | 704 | 0.6-  | 1.4+  |            |     |      |      |

2007 DEC. 24

M.P.O. 129197

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 11 | 699 | 1.2+  | 0.4-  | 2001 10 20 | 704 | 0.0  | 0.4+ | 2007 11 07 | 691 | 0.0   | 0.1-  |
| 2001 09 16 | 704 | 0.6+  | 0.4+  | 2004 03 15 | 691 | 0.1- | 0.4+ | 2007 11 18 | G96 | 0.0   | 0.2-  |
| 2001 09 16 | 704 | 0.5-  | 0.0   | 2004 03 15 | 691 | 0.3+ | 0.4+ | 2007 11 18 | G96 | 0.2+  | 0.1+  |
| 2001 09 16 | 704 | 1.1-  | 0.6+  | 2004 03 15 | 691 | 0.1- | 0.6+ | 2007 11 18 | G96 | 0.3+  | 0.3-  |
| 2001 09 18 | 699 | 0.3+  | 0.2+  | 2004 03 23 | 691 | 0.6+ | 0.7+ | 2007 11 18 | G96 | 0.3+  | 0.2-  |
| 2001 09 18 | 699 | 0.8-  | 0.3+  | 2004 03 23 | 691 | 0.4+ | 1.1+ | 2007 11 30 | D35 | 0.0   | 0.1-  |
| 2001 09 18 | 699 | 0.2+  | 1.0+  | 2004 03 23 | 691 | 0.6+ | 0.7+ | 2007 11 30 | D35 | 0.2-  | 0.0   |
| 2001 09 18 | 699 | 0.4+  | 0.1+  | 2006 05 24 | G96 | 0.6- | 0.1- | 2007 11 30 | D35 | 0.4-  | 0.1-  |
| 2001 09 19 | 704 | 0.7-  | 0.2+  | 2006 05 24 | G96 | 0.2- | 0.0  | 2007 12 03 | 703 | 0.2+  | 1.3+  |
| 2001 09 19 | 704 | 0.3-  | 0.3+  | 2006 05 24 | G96 | 0.0  | 0.1- | 2007 12 03 | 703 | 0.3+  | 0.6+  |
| 2001 09 19 | 704 | 0.2-  | 0.3+  | 2006 05 24 | G96 | 0.3+ | 0.2- | 2007 12 03 | 703 | 0.1-  | 1.4+  |
| 2001 09 19 | 704 | 0.5-  | 0.5+  | 2006 05 31 | G96 | 0.1+ | 0.2- | 2007 12 03 | 703 | 0.0   | 1.3+  |
| 2001 09 19 | 704 | 0.2-  | 0.6+  | 2006 05 31 | G96 | 0.7+ | 0.2+ | 2007 12 03 | 703 | 0.4-  | 0.4-  |
| 2001 09 21 | 704 | 0.6-  | 0.6+  | 2006 05 31 | G96 | 0.0  | 0.2- | 2007 12 03 | 703 | 0.5+  | 0.8+  |
| 2001 09 21 | 704 | 0.5-  | 0.4+  | 2006 05 31 | G96 | 0.2+ | 0.2- | 2007 12 03 | 703 | 0.1+  | 0.2+  |
| 2001 09 21 | 704 | (0.3+ | 1.7+) | 2006 06 20 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.8+  | 0.0   |
| 2001 09 21 | 704 | 0.5-  | 0.9+  | 2006 06 20 | 691 | 0.6- | 1.0+ | 2007 12 05 | 704 | (0.5+ | 1.8+) |
| 2001 09 21 | 704 | 0.1+  | 0.9+  | 2006 06 20 | 691 | 0.2+ | 0.1- | 2007 12 05 | 704 | 0.5-  | 0.0   |
| 2001 09 26 | 704 | 0.1-  | 0.6+  | 2007 10 24 | G96 | 0.3+ | 0.7- | 2007 12 05 | 704 | 0.9+  | 0.7+  |
| 2001 09 26 | 704 | 0.2-  | 0.4+  | 2007 10 24 | G96 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.7+  | 0.7+  |
| 2001 09 26 | 704 | 0.1-  | 0.5+  | 2007 10 24 | G96 | 0.1- | 0.4- | 2007 12 05 | 704 | 0.7+  | 1.0+  |
| 2001 09 26 | 704 | 0.2-  | 0.9+  | 2007 10 24 | G96 | 0.2- | 0.1- | 2007 12 15 | G96 | 0.5+  | 0.2-  |
| 2001 09 26 | 704 | 0.3+  | 1.3+  | 2007 11 03 | 691 | 0.3- | 0.1+ | 2007 12 15 | G96 | 0.3+  | 0.1-  |
| 2001 10 17 | 644 | 0.6-  | 0.1+  | 2007 11 03 | 691 | 0.1- | 0.0  | 2007 12 15 | G96 | 0.1+  | 0.3-  |
| 2001 10 17 | 644 | 0.5-  | 0.3+  | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 12 15 | G96 | 0.3+  | 0.1-  |
| 2001 10 17 | 644 | 0.6-  | 0.3+  | 2007 11 05 | 704 | 0.1+ | 0.2- |            |     |       |       |
| 2001 10 20 | 704 | 0.4-  | 0.0   | 2007 11 05 | 704 | 1.2- | 0.2- |            |     |       |       |

(171897)\* 2001 RQ<sub>89</sub>

Discovered 2001 Sept. 11 by the Lowell Observatory Near-Earth Object

Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC      |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 74.79950   | (2000.0) |           |
| <i>n</i>                    | 0.18191365 | $\omega$ | 308.29048 |
| <i>a</i>                    | 3.0847918  | $\Omega$ | 13.08013  |
| <i>e</i>                    | 0.1328053  | <i>i</i> | 10.44318  |
| <i>P</i>                    | 5.42       | <i>H</i> | 15.5      |
| Residuals in seconds of arc |            | <i>G</i> | 0.15      |
|                             |            | <i>U</i> | 0         |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 19 | 644 | 0.4+ | 0.7+ | 2001 10 17 | 644 | 0.2-  | 0.4+  | 2006 08 12 | 644 | 0.3+ | 0.2- |
| 2001 07 19 | 644 | 0.1- | 0.6+ | 2001 10 17 | 644 | 0.1-  | 0.4+  | 2006 08 12 | 644 | 0.5+ | 0.0  |
| 2001 07 19 | 644 | 0.7- | 0.5+ | 2001 10 17 | 644 | 0.1+  | 0.3+  | 2007 11 02 | 703 | 0.7- | 1.0- |
| 2001 09 11 | 699 | 0.0  | 0.9+ | 2001 10 17 | 644 | 0.2-  | 0.7+  | 2007 11 02 | 703 | 0.1- | 0.5- |
| 2001 09 11 | 699 | 1.0- | 0.2- | 2001 10 17 | 644 | 0.1-  | 0.3+  | 2007 11 02 | 703 | 0.5+ | 0.1+ |
| 2001 09 11 | 699 | 0.9- | 0.5+ | 2001 10 17 | 644 | 0.7-  | 1.0+  | 2007 11 02 | 703 | 0.6+ | 0.3- |
| 2001 09 11 | 699 | 0.2+ | 0.5+ | 2001 10 20 | 704 | 0.2+  | 1.0-  | 2007 11 08 | 704 | 0.2+ | 0.7+ |
| 2001 09 16 | 704 | 0.6- | 0.2- | 2001 10 20 | 704 | 0.1+  | 0.0   | 2007 11 08 | 704 | 0.4- | 0.8+ |
| 2001 09 16 | 704 | 0.7- | 0.4- | 2001 10 20 | 704 | 0.3-  | 0.0   | 2007 11 08 | 704 | 0.1+ | 0.2+ |
| 2001 09 16 | 704 | 0.3+ | 1.4+ | 2001 10 24 | 704 | (0.1+ | 2.3-) | 2007 11 08 | 704 | 0.6+ | 0.5+ |
| 2001 09 16 | 704 | 0.2- | 0.2- | 2001 10 24 | 704 | (0.1+ | 1.9-) | 2007 11 08 | 704 | 0.6+ | 0.4+ |
| 2001 09 18 | 699 | 0.1- | 0.1- | 2001 10 24 | 704 | (0.1- | 2.4-) | 2007 11 08 | 703 | 0.4- | 0.2- |
| 2001 09 18 | 699 | 0.0  | 0.2+ | 2001 10 24 | 704 | (0.0  | 1.6-) | 2007 11 08 | 703 | 0.7- | 0.2+ |
| 2001 09 18 | 699 | 0.3+ | 0.4+ | 2001 12 10 | 645 | 0.2+  | 0.1-  | 2007 11 08 | 703 | 0.8- | 0.4+ |
| 2001 09 18 | 699 | 0.3+ | 0.7- | 2001 12 10 | 645 | 0.3+  | 0.2-  | 2007 11 08 | 703 | 0.3- | 0.9- |
| 2001 09 19 | 704 | 0.1+ | 0.4+ | 2005 03 17 | G96 | 0.0   | 0.4+  | 2007 11 09 | G96 | 0.1+ | 0.3- |
| 2001 09 19 | 704 | 0.4- | 0.4+ | 2005 03 17 | G96 | 0.1+  | 0.2+  | 2007 11 09 | G96 | 0.2+ | 0.2- |
| 2001 09 19 | 704 | 0.3- | 0.0  | 2005 03 17 | G96 | 0.0   | 0.3+  | 2007 11 09 | G96 | 0.1+ | 0.1- |
| 2001 09 19 | 704 | 0.0  | 0.3- | 2005 03 17 | G96 | 0.3+  | 0.4+  | 2007 11 09 | G96 | 0.1+ | 0.2- |
| 2001 09 19 | 704 | 0.1+ | 0.4- | 2005 05 01 | 644 | 0.3+  | 0.3+  | 2007 11 09 | G96 | 0.0  | 0.2- |
| 2001 09 21 | 704 | 0.5- | 0.5+ | 2005 05 01 | 644 | 0.3+  | 0.2+  | 2007 11 09 | G96 | 0.2- | 0.4- |
| 2001 09 21 | 704 | 0.0  | 0.2+ | 2005 05 01 | 644 | 0.4+  | 0.6+  | 2007 11 09 | G96 | 0.1+ | 0.2- |
| 2001 09 21 | 704 | 0.0  | 0.1+ | 2006 07 18 | E12 | 0.1-  | 0.5-  | 2007 11 09 | G96 | 0.2- | 0.2- |
| 2001 09 21 | 704 | 0.1+ | 0.3+ | 2006 07 18 | E12 | 0.7-  | 0.1+  | 2007 11 20 | G96 | 0.3- | 0.1+ |
| 2001 09 21 | 704 | 0.1+ | 0.3+ | 2006 07 18 | E12 | 0.3+  | 0.2-  | 2007 11 20 | G96 | 0.6- | 0.1+ |
| 2001 09 21 | 704 | 0.1- | 0.1+ | 2006 07 18 | E12 | 0.9-  | 0.0   | 2007 11 20 | G96 | 0.4- | 0.1+ |
| 2001 09 21 | 704 | 0.2+ | 0.9+ | 2006 07 31 | E12 | 0.2-  | 0.8-  | 2007 11 20 | G96 | 0.6- | 0.0  |
| 2001 09 21 | 704 | 0.2+ | 0.1+ | 2006 07 31 | E12 | 1.0+  | 0.5-  | 2007 12 02 | 704 | 0.5+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 704 | 0.4- | 0.4+ | 2006 07 31 | E12 | 0.2+ | 0.0  | 2007 12 02 | 704 | 0.5+ | 0.6+ |
| 2001 09 21 | 704 | 0.8- | 0.3+ | 2006 07 31 | E12 | 1.1+ | 0.4- | 2007 12 02 | 704 | 0.3+ | 1.0+ |
| 2001 09 26 | 704 | 0.3- | 0.1+ | 2006 07 31 | E12 | 0.1- | 0.6+ | 2007 12 02 | 704 | 0.5+ | 1.0+ |
| 2001 09 26 | 704 | 0.0  | 0.4+ | 2006 07 31 | E12 | 0.3- | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.1- |
| 2001 09 26 | 704 | 0.2- | 0.7+ | 2006 07 31 | E12 | 0.3+ | 0.7- | 2007 12 04 | G96 | 0.1- | 0.2- |
| 2001 09 26 | 704 | 0.0  | 0.3+ | 2006 07 31 | E12 | 0.1- | 0.2- | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2001 09 26 | 704 | 0.0  | 1.2+ | 2006 07 31 | E12 | 0.1+ | 0.6- | 2007 12 04 | G96 | 0.1- | 0.1- |
| 2001 10 14 | 704 | 1.1- | 0.2- | 2006 07 31 | E12 | 0.2- | 0.3- | 2007 12 16 | 704 | 1.1+ | 0.3- |
| 2001 10 14 | 704 | 0.9- | 0.7- | 2006 07 31 | E12 | 0.6- | 0.3- | 2007 12 16 | 704 | 0.8- | 0.6+ |
| 2001 10 14 | 704 | 0.3+ | 1.1- | 2006 07 31 | E12 | 0.0  | 0.3+ | 2007 12 16 | 704 | 0.4- | 0.4+ |
| 2001 10 14 | 704 | 0.5- | 1.5- | 2006 08 12 | 644 | 0.6+ | 0.0  |            |     |      |      |

(171898)\* 2001 RZ<sub>90</sub>

Discovered 2001 Sept. 11 by the Lowell Observatory Near-Earth Object

Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC      |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 85.28376   | (2000.0) |           |
| <i>n</i>                    | 0.19551386 | $\omega$ | 320.99434 |
| <i>a</i>                    | 2.9400249  | $\Omega$ | 23.98088  |
| <i>e</i>                    | 0.1319909  | <i>i</i> | 6.05571   |
| <i>P</i>                    | 5.04       | <i>H</i> | 15.2      |
| Residuals in seconds of arc |            | <i>G</i> | 0.15      |
|                             |            | <i>U</i> | 1         |

|                             |     |       |       |            |     |      |      |            |     |       |       |
|-----------------------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| Residuals in seconds of arc |     |       |       |            |     |      |      |            |     |       |       |
| 1994 03 10                  | 691 | 0.2-  | 0.1+  | 2001 09 27 | 704 | 0.7+ | 0.3+ | 2006 09 22 | 704 | 0.0   | 1.1+  |
| 1994 03 10                  | 691 | 0.2+  | 0.1-  | 2001 09 27 | 704 | 0.3- | 1.3+ | 2006 09 22 | 704 | 1.1-  | 0.5+  |
| 2001 09 11                  | 699 | 0.6-  | 0.2+  | 2001 09 27 | 704 | 0.3+ | 0.8- | 2006 09 22 | 704 | 0.3-  | 0.2-  |
| 2001 09 11                  | 699 | 0.9-  | 0.2-  | 2001 10 13 | 704 | 0.5+ | 0.0  | 2006 09 22 | 704 | 0.3-  | 0.2+  |
| 2001 09 11                  | 699 | (1.7- | 0.4+) | 2001 10 13 | 704 | 0.1+ | 1.1+ | 2006 09 22 | 704 | 0.5-  | 0.4+  |
| 2001 09 11                  | 699 | 1.1-  | 0.2-  | 2001 10 13 | 704 | 1.1+ | 1.0- | 2006 09 25 | 699 | (1.8+ | 1.2+) |
| 2001 09 12                  | 704 | (0.4- | 1.8+) | 2001 10 13 | 704 | 0.4+ | 0.4- | 2006 09 25 | 699 | 1.4+  | 0.2-  |
| 2001 09 12                  | 704 | 0.2-  | 1.2+  | 2001 10 17 | 644 | 0.2- | 0.2+ | 2006 09 25 | 699 | 0.3+  | 0.2+  |
| 2001 09 12                  | 704 | 0.3+  | 1.1+  | 2001 10 17 | 644 | 0.1+ | 0.4+ | 2006 09 26 | 704 | 0.1+  | 0.3+  |
| 2001 09 12                  | 704 | 1.1+  | 0.6+  | 2001 10 17 | 644 | 0.1- | 0.3+ | 2006 09 26 | 704 | 0.0   | 0.0   |
| 2001 09 12                  | 704 | (1.0+ | 1.7+) | 2001 10 17 | 644 | 0.4- | 0.5+ | 2006 09 26 | 704 | 0.1+  | 0.1+  |
| 2001 09 18                  | 699 | 0.3+  | 0.9+  | 2001 10 17 | 644 | 0.0  | 0.5+ | 2006 09 30 | 703 | (1.0- | 2.8-) |
| 2001 09 18                  | 699 | 0.6+  | 0.4+  | 2001 10 17 | 644 | 0.2- | 0.4+ | 2006 09 30 | 703 | 0.1-  | 0.6-  |
| 2001 09 18                  | 699 | 0.1+  | 0.2+  | 2001 10 24 | 704 | 0.1- | 1.1- | 2006 09 30 | 703 | 0.4+  | 0.1+  |
| 2001 09 18                  | 699 | 0.2-  | 0.3+  | 2001 10 24 | 704 | 0.3- | 0.8- | 2006 09 30 | 703 | 0.8-  | 0.8-  |
| 2001 09 19                  | 704 | 1.1-  | 0.3+  | 2001 10 24 | 704 | 0.3+ | 0.7- | 2006 10 16 | 703 | 0.5+  | 0.0   |
| 2001 09 19                  | 704 | 0.5-  | 1.2+  | 2001 10 24 | 704 | 0.9- | 0.5- | 2006 10 16 | 703 | 0.0   | 1.3-  |
| 2001 09 19                  | 704 | 0.3-  | 0.5+  | 2003 01 05 | 704 | 0.0  | 0.7- | 2006 10 16 | 703 | 0.5-  | 0.3-  |
| 2001 09 19                  | 704 | 0.0   | 0.2+  | 2003 01 05 | 704 | 0.4- | 0.4- | 2006 10 16 | 703 | 0.5+  | 0.6-  |
| 2001 09 19                  | 704 | 0.0   | 0.3+  | 2003 01 05 | 704 | 0.2- | 0.2+ | 2006 10 19 | 695 | 0.0   | 0.1-  |
| 2001 09 21                  | 704 | 0.1-  | 0.2-  | 2003 01 05 | 704 | 1.3+ | 0.7- | 2006 10 19 | 695 | 0.1-  | 0.1-  |
| 2001 09 21                  | 704 | 0.2+  | 0.1-  | 2004 02 29 | 691 | 0.4+ | 0.4+ | 2006 10 20 | 644 | 0.2+  | 0.0   |
| 2001 09 21                  | 704 | 0.2-  | 0.4+  | 2004 02 29 | 691 | 0.5+ | 0.7+ | 2006 10 20 | 644 | 0.2+  | 0.2+  |
| 2001 09 21                  | 704 | 0.5-  | 0.0   | 2004 02 29 | 691 | 0.5+ | 0.5+ | 2006 10 20 | 644 | 0.2+  | 0.1+  |
| 2001 09 21                  | 704 | 0.2-  | 0.1-  | 2004 04 12 | 291 | 0.1- | 0.6+ | 2006 10 20 | 695 | 0.0   | 0.2-  |
| 2001 09 25                  | 644 | 0.5-  | 0.7+  | 2004 04 12 | 291 | 0.1+ | 0.4+ | 2006 11 17 | G96 | 0.1+  | 0.4-  |
| 2001 09 25                  | 644 | 0.4-  | 0.5+  | 2004 04 12 | 291 | 0.2+ | 0.4+ | 2006 11 17 | G96 | 0.0   | 0.5-  |
| 2001 09 25                  | 644 | 0.1-  | 0.5+  | 2006 08 27 | 699 | 0.1- | 0.1+ | 2006 11 17 | G96 | 0.4+  | 0.5-  |
| 2001 09 26                  | 704 | 0.2-  | 0.2+  | 2006 08 27 | 699 | 0.3+ | 1.1+ | 2006 11 17 | G96 | 0.1+  | 0.5-  |
| 2001 09 26                  | 704 | 0.5-  | 0.1-  | 2006 08 27 | 699 | 0.2+ | 0.1- | 2007 12 13 | 704 | 0.3-  | 0.0   |
| 2001 09 26                  | 704 | 0.2-  | 0.2+  | 2006 08 27 | 699 | 0.1- | 0.0  | 2007 12 13 | 704 | 0.7-  | 0.3-  |
| 2001 09 26                  | 704 | 0.2-  | 0.2+  | 2006 09 14 | 703 | 0.4- | 0.5+ | 2007 12 13 | 704 | 0.4+  | 0.4+  |
| 2001 09 26                  | 704 | 0.5-  | 0.2-  | 2006 09 14 | 703 | 0.4+ | 0.1+ | 2007 12 13 | 704 | 0.6+  | 0.5-  |
| 2001 09 27                  | 644 | 0.1+  | 0.6-  | 2006 09 14 | 703 | 0.5- | 0.6+ | 2007 12 15 | 704 | 0.0   | 0.2+  |
| 2001 09 27                  | 704 | 0.1-  | 0.3+  | 2006 09 14 | 703 | 0.2- | 0.3+ | 2007 12 15 | 704 | 0.4+  | 0.4+  |
| 2001 09 27                  | 644 | 0.0   | 0.2-  | 2006 09 16 | 704 | 0.5+ | 1.3+ | 2007 12 15 | 704 | 0.0   | 0.4+  |
| 2001 09 27                  | 704 | 0.1+  | 0.3+  | 2006 09 16 | 704 | 0.5+ | 0.2+ | 2007 12 15 | 704 | 0.0   | 0.1+  |
| 2001 09 27                  | 704 | (2.1- | 0.5+) | 2006 09 16 | 704 | 0.2+ | 0.9- | 2007 12 15 | 704 | 0.2+  | 0.1+  |
| 2001 09 27                  | 704 | 0.2-  | 0.3+  | 2006 09 16 | 704 | 0.1- | 0.8- | 2007 12 16 | 704 | 0.7+  | 1.0+  |
| 2001 09 27                  | 644 | 0.2+  | 0.7-  | 2006 09 19 | 699 | 0.6- | 1.0+ | 2007 12 16 | 704 | 0.3-  | 0.1-  |
| 2001 09 27                  | 704 | 0.4-  | 0.6+  | 2006 09 19 | 699 | 0.1+ | 0.3- | 2007 12 16 | 704 | 0.6-  | 0.1-  |
| 2001 09 27                  | 704 | 0.0   | 0.3+  | 2006 09 19 | 699 | 0.7- | 0.7- | 2007 12 16 | 704 | 0.4-  | 0.6-  |

**(171899)\* 2001 RP<sub>96</sub>**

Discovered 2001 Sept. 12 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.66449   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.19518584 | $\omega$ | 154.15962 |          | +0.94548997 |          | -0.32521307 |
| <i>a</i> | 2.9433179  | $\Omega$ | 224.82989 |          | +0.29447266 |          | +0.87595822 |
| <i>e</i> | 0.0403127  | <i>i</i> | 1.37254   |          | +0.13904879 |          | +0.35627750 |
| <i>P</i> | 5.05       | <i>H</i> | 16.2      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 24 | 691 | 0.2- | 0.0  | 2004 02 17 | 291 | 0.3+  | 0.5+  | 2006 11 16 | G96 | 1.1+ | 1.1- |
| 2001 08 24 | 691 | 0.2- | 0.1- | 2005 06 13 | G96 | 0.2-  | 0.3+  | 2006 11 16 | G96 | 1.4+ | 0.1+ |
| 2001 08 24 | 691 | 0.0  | 0.0  | 2005 06 13 | G96 | 0.1+  | 0.1-  | 2006 11 16 | G96 | 0.0  | 0.5- |
| 2001 09 12 | 691 | 0.4- | 0.1+ | 2005 06 13 | G96 | 0.2-  | 0.4-  | 2006 11 16 | G96 | 0.3- | 0.2- |
| 2001 09 12 | 691 | 0.4- | 0.3+ | 2005 06 13 | G96 | 0.0   | 0.3+  | 2007 11 02 | 691 | 0.0  | 0.1+ |
| 2001 09 12 | 691 | 0.5- | 0.1+ | 2005 06 27 | G96 | 0.6+  | 0.8+  | 2007 11 02 | 691 | 0.0  | 0.1- |
| 2001 09 12 | 704 | 0.6- | 0.6+ | 2005 06 27 | G96 | 0.2-  | 0.9+  | 2007 11 02 | 691 | 0.4+ | 0.2+ |
| 2001 09 12 | 704 | 0.4- | 0.1+ | 2005 06 27 | G96 | 0.2+  | 0.4+  | 2007 11 19 | 691 | 0.1- | 0.3- |
| 2001 09 12 | 704 | 0.1- | 0.8+ | 2005 06 27 | G96 | 0.1-  | 0.6+  | 2007 11 19 | 691 | 0.3- | 0.2- |
| 2001 09 12 | 704 | 0.3- | 0.7+ | 2006 08 28 | 703 | (1.9- | 0.1+) | 2007 11 19 | 691 | 0.5- | 0.1- |
| 2001 09 17 | 291 | 0.7+ | 0.5+ | 2006 08 28 | 703 | 0.0   | 0.4-  | 2007 12 04 | G96 | 0.4+ | 0.3- |
| 2001 09 17 | 291 | 0.5+ | 0.3+ | 2006 08 28 | 703 | 0.3-  | 0.1-  | 2007 12 04 | G96 | 0.3- | 0.7- |
| 2001 09 17 | 291 | 0.3+ | 0.1- | 2006 08 28 | 699 | 0.8-  | 1.0-  | 2007 12 04 | G96 | 1.0+ | 0.4- |
| 2001 09 20 | 704 | 0.2- | 0.7- | 2006 08 28 | 703 | 0.4-  | 0.4-  | 2007 12 04 | G96 | 0.7+ | 0.4- |
| 2001 09 20 | 704 | 0.1- | 0.1- | 2006 08 28 | 699 | 0.8+  | 1.2+  | 2007 12 05 | 704 | 0.4+ | 0.9+ |
| 2001 09 20 | 704 | 0.3- | 0.6+ | 2006 08 28 | 699 | 0.1-  | 0.3+  | 2007 12 05 | 704 | 0.9+ | 0.8+ |
| 2003 01 06 | 291 | 0.0  | 0.3+ | 2006 08 28 | 699 | 0.2+  | 1.2+  | 2007 12 05 | 704 | 0.6- | 0.6+ |
| 2003 01 06 | 291 | 0.0  | 0.1+ | 2006 09 27 | G96 | 0.2+  | 0.2-  | 2007 12 05 | 704 | 0.1- | 1.0+ |
| 2003 01 06 | 291 | 0.0  | 0.2+ | 2006 09 27 | G96 | 0.2-  | 0.0   | 2007 12 05 | 704 | 1.3- | 0.7+ |
| 2004 02 17 | 291 | 0.1+ | 0.4+ | 2006 09 27 | G96 | 0.1-  | 0.2-  |            |     |      |      |
| 2004 02 17 | 291 | 0.2+ | 0.5+ | 2006 09 27 | G96 | 0.0   | 0.2-  |            |     |      |      |

**(171900)\* 2001 RW<sub>102</sub>**

Discovered 2001 Sept. 12 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 135.36193  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.22140553 | $\omega$ | 204.03960 |          | +0.97170563 |          | +0.22417231 |
| <i>a</i> | 2.7060994  | $\Omega$ | 142.75959 |          | -0.19185651 |          | +0.93283848 |
| <i>e</i> | 0.1036741  | <i>i</i> | 7.06168   |          | -0.13776518 |          | +0.28206231 |
| <i>P</i> | 4.45       | <i>H</i> | 16.0      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 02 25 | 691 | 0.2+  | 1.1+  | 2001 09 12 | 704 | 0.2+  | 0.0   | 2001 10 16 | 644 | 0.1+  | 1.0+  |
| 1995 02 25 | 691 | 0.3-  | 0.2+  | 2001 09 12 | 704 | 0.1+  | 0.3-  | 2006 11 25 | G96 | 0.4+  | 0.2+  |
| 1995 02 25 | 691 | 0.1-  | 0.4+  | 2001 09 12 | 704 | 0.6-  | 0.6-  | 2006 11 25 | G96 | 0.0   | 0.1-  |
| 1999 02 07 | 691 | 0.3+  | 0.0   | 2001 09 12 | 704 | 0.4-  | 0.0   | 2006 11 25 | G96 | 1.1+  | 0.8+  |
| 1999 02 07 | 691 | 0.2+  | 0.2+  | 2001 09 12 | 704 | 0.5-  | 0.3+  | 2006 11 25 | G96 | 0.1+  | 0.0   |
| 1999 02 07 | 691 | 0.4+  | 0.5+  | 2001 09 19 | 699 | (1.5- | 1.8+) | 2006 12 15 | 644 | 0.2-  | 0.3+  |
| 2000 04 10 | 691 | 0.1+  | 0.3+  | 2001 09 19 | 704 | 0.6-  | 0.4+  | 2006 12 15 | 644 | 0.0   | 0.0   |
| 2000 04 10 | 691 | 0.1+  | 0.2+  | 2001 09 19 | 699 | 0.6+  | 0.2-  | 2006 12 15 | 644 | 0.1+  | 0.2+  |
| 2000 04 10 | 691 | 0.2+  | 0.6+  | 2001 09 19 | 704 | 0.6-  | 0.4-  | 2006 12 27 | 703 | 1.3-  | 0.6-  |
| 2001 08 16 | 704 | 0.6+  | 0.1+  | 2001 09 19 | 699 | (1.6+ | 0.6+) | 2006 12 27 | 703 | 1.4-  | 0.7-  |
| 2001 08 16 | 704 | 0.9+  | 0.6-  | 2001 09 19 | 704 | 0.3+  | 0.2-  | 2006 12 27 | 703 | (1.9- | 0.2-) |
| 2001 08 16 | 704 | (1.6+ | 0.0 ) | 2001 09 19 | 699 | 1.0+  | 0.4+  | 2006 12 27 | 703 | 1.3-  | 1.0-  |
| 2001 08 25 | 704 | (1.5- | 0.2-) | 2001 09 19 | 704 | 0.6+  | 0.6+  | 2007 02 21 | 291 | 0.2+  | 0.4+  |
| 2001 08 25 | 704 | 0.3-  | 0.1+  | 2001 09 19 | 704 | 0.4-  | 0.5-  | 2007 02 21 | 291 | 0.0   | 0.5+  |
| 2001 08 25 | 704 | 0.2-  | 0.7+  | 2001 09 21 | 704 | 0.4-  | 0.2+  | 2007 02 21 | 291 | 0.1-  | 0.1+  |
| 2001 08 25 | 704 | 0.0   | 0.0   | 2001 09 21 | 704 | 0.6-  | 0.1+  | 2007 11 14 | G96 | 0.5+  | 0.4+  |
| 2001 08 25 | 704 | 0.4+  | 0.7+  | 2001 09 21 | 704 | 0.1-  | 0.0   | 2007 11 14 | G96 | 0.4+  | 0.4+  |
| 2001 08 28 | 644 | 0.4-  | 0.8+  | 2001 09 21 | 704 | 0.3+  | 0.0   | 2007 11 14 | G96 | 0.2-  | 0.4-  |
| 2001 08 28 | 644 | 1.2-  | 0.9+  | 2001 09 21 | 704 | 0.1+  | 0.1+  | 2007 11 14 | G96 | 0.1-  | 0.2-  |
| 2001 08 28 | 644 | 1.0-  | 0.8+  | 2001 10 10 | 644 | 0.3+  | 1.3+  | 2007 12 14 | G96 | 0.4-  | 0.2-  |
| 2001 09 11 | 699 | 0.2+  | 0.4+  | 2001 10 10 | 644 | (0.1+ | 1.6+) | 2007 12 14 | G96 | 0.1+  | 0.2-  |
| 2001 09 11 | 699 | 0.1+  | 0.6+  | 2001 10 10 | 644 | 0.3+  | 1.4+  | 2007 12 14 | G96 | 0.0   | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 11 | 699 | 0.9- | 1.2+ | 2001 10 16 | 644 | 0.7- | 1.1+ | 2007 12 14 | G96 | 0.5- | 0.7- |
| 2001 09 11 | 699 | 0.9+ | 0.6- | 2001 10 16 | 644 | 0.4- | 0.7+ |            |     |      |      |

**(171901)\* 2001 RK<sub>104</sub>**

Discovered 2001 Sept. 12 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 79.93673   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.21198821 | $\omega$ | 259.20664 |          | +0.84297726 |          | -0.53075535 |
| <i>a</i> | 2.7856609  | $\Omega$ | 132.78334 |          | +0.52835249 |          | +0.78621743 |
| <i>e</i> | 0.1190847  | <i>i</i> | 6.86147   |          | +0.10115819 |          | +0.31648208 |
| <i>P</i> | 4.65       | <i>H</i> | 15.3      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 11 | 608 | 0.2- | 0.2- | 2003 01 08 | 704 | 0.1+  | 0.2+  | 2006 10 16 | 703 | 0.3- | 0.3- |
| 2001 08 11 | 608 | 0.3+ | 1.4- | 2003 01 08 | 704 | 0.6+  | 0.7-  | 2006 10 16 | 703 | 0.1- | 0.2+ |
| 2001 08 11 | 608 | 0.4- | 1.2- | 2003 01 08 | 704 | 0.6-  | 0.1-  | 2006 10 22 | 703 | 0.2+ | 1.2- |
| 2001 08 25 | 699 | 0.2- | 0.8+ | 2003 01 08 | 704 | (0.3- | 1.7-) | 2006 10 22 | 703 | 1.4+ | 1.1- |
| 2001 08 25 | 699 | 0.3+ | 0.0  | 2003 01 27 | 704 | 0.6-  | 0.3+  | 2006 10 22 | 703 | 0.4+ | 0.7- |
| 2001 08 25 | 699 | 0.9+ | 1.0+ | 2003 01 27 | 704 | 1.2+  | 0.7+  | 2006 10 22 | 703 | 0.1- | 0.9- |
| 2001 08 25 | 699 | 1.3+ | 0.2+ | 2003 01 27 | 704 | 0.6+  | 0.8-  | 2006 11 13 | 703 | 0.6- | 0.6+ |
| 2001 09 12 | 704 | 0.6- | 0.6+ | 2003 01 27 | 704 | 0.2+  | 0.1-  | 2006 11 13 | 703 | 0.2- | 0.3+ |
| 2001 09 12 | 704 | 0.1- | 0.2- | 2003 01 27 | 704 | (2.3+ | 0.4+) | 2006 11 13 | 703 | 0.5- | 0.2- |
| 2001 09 12 | 704 | 0.4- | 0.2+ | 2003 01 31 | 704 | 0.4+  | 0.4+  | 2006 11 13 | 703 | 0.3- | 0.5- |
| 2001 09 12 | 704 | 0.0  | 0.4+ | 2003 01 31 | 704 | 0.3+  | 1.2+  | 2006 11 19 | 703 | 0.9+ | 0.2- |
| 2001 09 19 | 699 | 1.0- | 1.2+ | 2003 01 31 | 704 | 0.1+  | 0.9+  | 2006 11 19 | 703 | 0.9- | 0.6+ |
| 2001 09 19 | 704 | 0.9- | 0.0  | 2006 09 30 | 703 | 0.8+  | 1.3+  | 2006 11 19 | 703 | 0.4+ | 0.3- |
| 2001 09 19 | 699 | 0.5+ | 0.6+ | 2006 09 30 | 703 | 0.4-  | 0.5+  | 2006 11 19 | 703 | 0.7+ | 1.3+ |
| 2001 09 19 | 704 | 0.1+ | 0.3+ | 2006 09 30 | 703 | 0.1-  | 0.8+  | 2006 12 12 | 644 | 0.1- | 0.1- |
| 2001 09 19 | 699 | 1.1- | 0.0  | 2006 09 30 | 703 | (1.7- | 0.6-) | 2006 12 12 | 644 | 0.2- | 0.5- |
| 2001 09 19 | 704 | 0.3- | 0.8+ | 2006 09 30 | 703 | 0.3+  | 0.1-  | 2006 12 12 | 644 | 0.2- | 0.0  |
| 2001 09 19 | 699 | 0.1- | 0.3- | 2006 09 30 | 703 | 1.0+  | 1.2-  | 2007 10 14 | G96 | 0.1+ | 0.6- |
| 2001 09 19 | 704 | 0.9- | 0.4+ | 2006 09 30 | 703 | 0.1+  | 0.5+  | 2007 10 14 | G96 | 0.4- | 0.2- |
| 2001 09 19 | 704 | 0.1- | 0.1+ | 2006 09 30 | 703 | 0.3-  | 0.0   | 2007 10 14 | G96 | 0.3+ | 0.3+ |
| 2001 09 21 | 704 | 0.1- | 0.1+ | 2006 10 01 | 704 | 0.6+  | 0.4+  | 2007 10 14 | G96 | 0.1- | 0.6- |
| 2001 09 21 | 704 | 0.7- | 0.3+ | 2006 10 01 | 704 | 0.2+  | 0.8-  | 2007 11 11 | G96 | 0.2+ | 0.1+ |
| 2001 09 21 | 704 | 0.3+ | 0.1+ | 2006 10 01 | 704 | 0.1-  | 1.1-  | 2007 11 11 | G96 | 0.3+ | 0.0  |
| 2001 09 21 | 704 | 0.2- | 0.6+ | 2006 10 11 | 644 | 0.1-  | 0.1-  | 2007 11 11 | G96 | 0.3+ | 0.6+ |
| 2001 10 16 | 644 | 0.9+ | 0.2- | 2006 10 11 | 644 | 0.2-  | 0.0   | 2007 11 11 | G96 | 0.2- | 0.8+ |
| 2001 10 16 | 644 | 0.8+ | 0.3- | 2006 10 11 | 644 | 0.4-  | 0.2-  | 2007 12 05 | G96 | 0.2- | 0.0  |
| 2001 10 16 | 644 | 0.7+ | 0.0  | 2006 10 12 | 644 | 0.4-  | 0.2+  | 2007 12 05 | G96 | 0.5- | 0.1- |
| 2002 12 10 | 644 | 0.6- | 0.2+ | 2006 10 12 | 644 | 0.1+  | 0.1-  | 2007 12 05 | G96 | 0.0  | 0.2+ |
| 2002 12 10 | 644 | 0.5- | 0.1- | 2006 10 12 | 644 | 0.3-  | 0.2-  | 2007 12 05 | G96 | 0.1+ | 0.4- |
| 2002 12 10 | 644 | 0.8- | 0.2+ | 2006 10 16 | 703 | (1.1+ | 2.1-) |            |     |      |      |
| 2003 01 08 | 704 | 0.4- | 0.7+ | 2006 10 16 | 703 | 0.1+  | 0.5-  |            |     |      |      |

**(171902)\* 2001 RH<sub>129</sub> = 2006 QB<sub>127</sub>**

Discovered 2001 Sept. 12 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 103212)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 97.56635   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.18521358 | $\omega$ | 285.47712 |          | +0.52947933 |          | +0.84763354 |
| <i>a</i> | 3.0480412  | $\Omega$ | 16.62670  |          | -0.72530854 |          | +0.47323576 |
| <i>e</i> | 0.1015144  | <i>i</i> | 6.86281   |          | -0.43997633 |          | +0.23992768 |
| <i>P</i> | 5.32       | <i>H</i> | 15.1      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |      |
|------------|-----|------|------|------------|-----|-------|-------|------|
| 2001 08 24 | 704 | 0.1- | 0.8+ | 2001 09 24 | 704 | (1.0+ | 1.8-) | 2006 |
|------------|-----|------|------|------------|-----|-------|-------|------|

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 19 | 699 | 1.0-  | 1.4+  | 2001 10 19 | 644 | 0.7+ | 1.3+ | 2007 11 09 | 691 | 0.1-  | 0.2-  |
| 2001 09 19 | 699 | 1.0+  | 0.1-  | 2001 10 19 | 644 | 0.7+ | 1.1+ | 2007 11 13 | 691 | 0.3-  | 0.1-  |
| 2001 09 19 | 699 | 1.0+  | 0.7+  | 2001 10 19 | 644 | 0.8+ | 1.4+ | 2007 11 13 | 691 | 0.4-  | 0.2-  |
| 2001 09 19 | 699 | 0.2-  | 0.9-  | 2001 10 20 | 704 | 0.5- | 0.9- | 2007 11 13 | 691 | 0.2-  | 0.0   |
| 2001 09 19 | 704 | 0.7-  | 0.2+  | 2001 10 20 | 704 | 0.4- | 0.5- | 2007 11 17 | 691 | 0.1+  | 0.1-  |
| 2001 09 19 | 704 | 0.4-  | 0.0   | 2001 10 20 | 704 | 0.3- | 0.5- | 2007 11 17 | 691 | 0.2-  | 0.0   |
| 2001 09 19 | 704 | 0.4-  | 0.5+  | 2001 10 20 | 704 | 0.0  | 0.4- | 2007 11 17 | 691 | 0.4+  | 0.3-  |
| 2001 09 19 | 704 | 0.4-  | 0.2+  | 2005 01 17 | 809 | 0.2+ | 0.6+ | 2007 11 18 | 704 | 0.7+  | 1.1+  |
| 2001 09 19 | 704 | 0.7-  | 0.1-  | 2005 01 17 | 809 | 0.6+ | 0.7+ | 2007 11 18 | 704 | 0.1+  | 1.2-  |
| 2001 09 21 | 704 | 0.9-  | 1.0+  | 2005 01 17 | 809 | 0.2+ | 0.6+ | 2007 11 18 | 704 | 0.5+  | 0.2-  |
| 2001 09 21 | 704 | 0.9-  | 0.2+  | 2006 07 18 | E12 | 0.3- | 0.2+ | 2007 11 18 | 704 | 1.0+  | 0.7-  |
| 2001 09 21 | 704 | 1.2-  | 1.1+  | 2006 07 18 | E12 | 0.3+ | 0.1- | 2007 11 18 | 704 | 1.1+  | 0.7-  |
| 2001 09 21 | 704 | (0.4- | 1.6+) | 2006 07 18 | E12 | 0.0  | 0.3- | 2007 12 13 | 704 | 0.5+  | 0.9+  |
| 2001 09 21 | 704 | (0.0  | 2.0+) | 2006 07 18 | E12 | 0.3+ | 0.8- | 2007 12 13 | 704 | 0.8-  | 0.9+  |
| 2001 09 23 | 704 | 0.4+  | 0.1+  | 2006 08 16 | E12 | 0.4- | 0.6- | 2007 12 13 | 704 | (2.3+ | 0.0 ) |
| 2001 09 23 | 704 | 0.1-  | 0.0   | 2006 08 16 | E12 | 0.6- | 0.8- | 2007 12 15 | 704 | 0.4-  | 0.9-  |
| 2001 09 23 | 704 | 0.3+  | 0.2-  | 2006 08 16 | E12 | 0.2+ | 0.3- | 2007 12 15 | 704 | 0.0   | 1.2+  |
| 2001 09 24 | 704 | 0.5+  | 0.0   | 2006 08 16 | E12 | 0.5- | 0.0  | 2007 12 15 | 704 | 0.2-  | 0.2+  |
| 2001 09 24 | 704 | 0.3+  | 0.5-  | 2006 08 28 | E12 | 1.4+ | 0.1- | 2007 12 15 | 704 | 0.8+  | 0.3-  |
| 2001 09 24 | 704 | 0.2-  | 1.3-  | 2006 08 28 | E12 | 0.2+ | 0.5- |            |     |       |       |

**(171903)\* 2001 RX<sub>131</sub> = 2004 ET<sub>38</sub>**

Discovered 2001 Sept. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 60982)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 356.78512  | (2000.0) | <i>P</i> | <i>Q</i>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.20420610 | $\omega$ | 39.00262 | -0.14359521              |
| <i>a</i> | 2.8559915  | $\Omega$ | 59.30451 | +0.89307054              |
| <i>e</i> | 0.0224860  | <i>i</i> | 3.27544  | +0.42638647              |
| <i>P</i> | 4.83       | <i>H</i> | 15.7     | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 12 | 704 | 0.4-  | 0.5-  | 2004 03 29 | 691 | 0.1- | 0.3+ | 2006 11 09 | 705 | 0.0  | 0.1+ |
| 2001 09 12 | 704 | 0.2-  | 0.5+  | 2004 03 29 | 691 | 0.1+ | 0.2+ | 2006 11 10 | 705 | 0.1+ | 0.1- |
| 2001 09 12 | 704 | 0.0   | 1.3+  | 2004 03 29 | 691 | 0.0  | 0.3+ | 2006 11 10 | 705 | 0.0  | 0.2- |
| 2001 09 19 | 704 | 0.6-  | 0.8+  | 2004 04 20 | 691 | 0.5+ | 0.3+ | 2006 11 14 | 705 | 0.1+ | 0.1+ |
| 2001 09 19 | 704 | (0.2- | 1.6+) | 2004 04 20 | 691 | 0.3+ | 0.2+ | 2006 11 14 | 705 | 0.1- | 0.1+ |
| 2001 09 19 | 704 | 0.3-  | 0.9+  | 2004 04 20 | 691 | 0.3+ | 0.5+ | 2006 11 16 | G96 | 0.1- | 0.1- |
| 2001 09 19 | 704 | 0.1-  | 1.2+  | 2004 04 23 | 691 | 0.2- | 0.0  | 2006 11 16 | G96 | 0.2- | 0.0  |
| 2001 09 19 | 704 | 0.2-  | 1.2+  | 2004 04 23 | 691 | 0.2- | 0.8+ | 2006 11 16 | G96 | 0.1+ | 0.1- |
| 2001 09 21 | 704 | 0.5-  | 0.4+  | 2004 04 23 | 691 | 0.2+ | 0.1+ | 2006 11 16 | G96 | 0.0  | 0.0  |
| 2001 09 21 | 704 | (2.4- | 0.4+) | 2006 09 28 | 691 | 0.2- | 0.1- | 2006 11 17 | 705 | 0.1- | 0.2+ |
| 2001 09 21 | 704 | 1.0-  | 1.1+  | 2006 09 28 | 691 | 0.1- | 0.0  | 2006 11 17 | 705 | 0.1+ | 0.3+ |
| 2001 09 21 | 704 | 0.2-  | 1.2+  | 2006 09 28 | 691 | 0.4- | 0.1+ | 2006 11 20 | 705 | 0.1- | 0.0  |
| 2001 09 21 | 704 | (3.3- | 0.9+) | 2006 10 02 | 691 | 0.3- | 0.1+ | 2006 11 20 | 705 | 0.1- | 0.1- |
| 2001 09 21 | 704 | 0.4-  | 1.1+  | 2006 10 02 | 691 | 0.4- | 0.3+ | 2006 11 24 | 705 | 0.1+ | 0.0  |
| 2001 09 21 | 704 | 0.6-  | 0.6+  | 2006 10 02 | 691 | 0.2+ | 0.0  | 2006 11 24 | 705 | 0.1- | 0.0  |
| 2001 09 21 | 704 | (3.0- | 0.2-) | 2006 10 10 | 644 | 0.1+ | 0.4+ | 2007 01 10 | G96 | 0.2- | 0.0  |
| 2001 09 21 | 704 | (0.6- | 2.1+) | 2006 10 10 | 644 | 0.1- | 0.2+ | 2007 01 10 | G96 | 0.4- | 0.2+ |
| 2001 09 21 | 704 | 0.9-  | 1.0+  | 2006 10 10 | 644 | 0.0  | 0.2+ | 2007 01 10 | G96 | 0.1+ | 0.1+ |
| 2001 09 21 | 704 | (2.9- | 0.6+) | 2006 10 19 | 644 | 0.5+ | 0.3+ | 2007 01 10 | G96 | 0.1- | 0.0  |
| 2001 09 21 | 704 | 0.5+  | 0.1+  | 2006 10 19 | 644 | 0.1- | 0.4+ | 2007 10 15 | G96 | 0.2+ | 0.1- |
| 2004 03 14 | 691 | 0.0   | 0.0   | 2006 10 19 | 644 | 0.0  | 0.4+ | 2007 10 15 | G96 | 0.8+ | 0.5- |
| 2004 03 14 | 691 | 0.0   | 0.2+  | 2006 10 19 | 644 | 0.1+ | 0.3+ | 2007 10 15 | G96 | 0.3+ | 0.3- |
| 2004 03 14 | 691 | 0.1+  | 0.1+  | 2006 10 19 | 644 | 0.3+ | 0.8+ | 2007 10 15 | G96 | 0.1- | 0.4- |
| 2004 03 16 | 704 | 0.9+  | 0.0   | 2006 10 19 | 644 | 0.2- | 0.8+ | 2007 11 07 | G96 | 0.4+ | 0.7+ |
| 2004 03 16 | 704 | 0.3+  | 0.9-  | 2006 10 23 | 705 | 0.1+ | 0.1+ | 2007 11 07 | G96 | 0.2+ | 0.0  |
| 2004 03 16 | 704 | 1.4+  | 0.7+  | 2006 10 23 | 705 | 0.2+ | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.0  |
| 2004 03 20 | 704 | 1.4+  | 0.4+  | 2006 10 27 | 705 | 0.2+ | 0.1+ | 2007 11 07 | G96 | 0.4+ | 0.1- |
| 2004 03 20 | 704 | 0.5-  | 0.7+  | 2006 10 27 | 705 | 0.2+ | 0.0  | 2007 12 04 | 691 | 0.1- | 0.3+ |
| 2004 03 20 | 704 | 0.2+  | 0.7+  | 2006 10 29 | 705 | 0.3+ | 0.1+ | 2007 12 04 | 691 | 0.3- | 0.4+ |
| 2004 03 20 | 704 | (2.1+ | 0.5+) | 2006 10 29 | 705 | 0.2+ | 0.1+ | 2007 12 04 | 691 | 0.0  | 0.0  |
| 2004 03 21 | 691 | 0.0   | 0.3+  | 2006 11 01 | 705 | 0.1+ | 0.0  | 2007 12 17 | 691 | 0.1- | 0.2- |
| 2004 03 21 | 691 | 0.1-  | 0.3+  | 2006 11 01 | 705 | 0.1+ | 0.2+ | 2007 12 17 | 691 | 0.2+ | 0.1+ |
| 2004 03 21 | 691 | 0.1-  | 0.4+  | 2006 11 09 | 705 | 0.0  | 0.1+ | 2007 12 17 | 691 | 0.1+ | 0.1+ |

**(171904)\* 2001 RG<sub>150</sub>**

Discovered 2001 Sept. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 85.66653   | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.18493851 | $\omega$ | 208.23885 | +0.36501641              |
| <i>a</i> | 3.0510628  | $\Omega$ | 83.24184  | -0.84034691              |
| <i>e</i> | 0.2738343  | <i>i</i> | 4.04632   | -0.40072445              |
| <i>P</i> | 5.33       | <i>H</i> | 16.2      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 05 30 | 691 | 0.6+  | 0.7-  | 2001 08 25 | 699 | 0.5+  | 0.3+  | 2001 10 10 | 644 | 0.2- | 1.5+ |
| 1995 05 30 | 691 | 0.5-  | 0.6+  | 2001 08 25 | 699 | 1.3-  | 0.1-  | 2007 10 08 | G96 | 0.4+ | 0.2- |
| 1995 05 30 | 691 | (0.9+ | 4.2+) | 2001 08 25 | 699 | 0.4+  | 0.9+  | 2007 10 08 | G96 | 0.8+ | 0.3- |
| 2000 03 03 | 645 | 0.2+  | 0.1+  | 2001 09 11 | 699 | 0.3-  | 0.2+  | 2007 10 08 | G96 | 0.2+ | 0.2- |
| 2000 03 03 | 645 | 0.1+  | 0.1+  | 2001 09 11 | 699 | 0.9+  | 0.1+  | 2007 10 08 | G96 | 0.8+ | 0.1- |
| 2000 05 05 | 645 | 0.0   | 0.2+  | 2001 09 11 | 699 | 0.2-  | 0.5-  | 2007 10 10 | G96 | 0.5+ | 0.1+ |
| 2000 05 05 | 645 | 0.0   | 0.3+  | 2001 09 11 | 699 | 0.4+  | 0.2+  | 2007 10 10 | G96 | 0.3+ | 0.1+ |
| 2001 08 25 | 704 | 0.5-  | 0.8+  | 2001 09 12 | 704 | 0.4-  | 0.1-  | 2007 10 10 | G96 | 0.3+ | 0.1- |
| 2001 08 25 | 704 | (1.1- | 1.7+) | 2001 09 12 | 704 | 0.8-  | 0.2-  | 2007 10 10 | G96 | 0.2+ | 0.3- |
| 2001 08 25 | 644 | 0.8-  | 0.1+  | 2001 09 12 | 704 | 0.3+  | 0.1-  | 2007 11 02 | 691 | 0.5- | 0.1+ |
| 2001 08 25 | 704 | 0.0   | 1.0+  | 2001 09 12 | 704 | 0.3-  | 0.3-  | 2007 11 02 | 691 | 0.3- | 0.5+ |
| 2001 08 25 | 644 | 0.7-  | 0.0   | 2001 09 19 | 704 | 0.9-  | 1.4+  | 2007 11 02 | 691 | 0.1- | 0.1+ |
| 2001 08 25 | 704 | 0.3-  | 1.1+  | 2001 09 19 | 704 | 0.2-  | 0.4+  | 2007 12 05 | 691 | 0.1+ | 0.3+ |
| 2001 08 25 | 704 | 0.6+  | 0.1+  | 2001 09 19 | 704 | (1.8+ | 0.3+) | 2007 12 05 | 691 | 0.2- | 0.6+ |
| 2001 08 25 | 644 | 0.5-  | 0.1-  | 2001 10 10 | 644 | 0.2+  | 0.8+  | 2007 12 05 | 691 | 0.3- | 0.5+ |
| 2001 08 25 | 699 | 1.0+  | 0.5-  | 2001 10 10 | 644 | 0.4-  | 0.9+  |            |     |      |      |

**(171905)\* 2001 SK<sub>12</sub>**

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 108.26003  | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.19355893 | $\omega$ | 86.56833  | +0.67431824              |
| <i>a</i> | 2.9597878  | $\Omega$ | 225.93148 | -0.69892761              |
| <i>e</i> | 0.0716910  | <i>i</i> | 3.40952   | -0.23831725              |
| <i>P</i> | 5.09       | <i>H</i> | 15.8      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 10 09 | 691 | 0.5+  | 0.4+  | 2001 10 14 | 645 | 0.2-  | 0.2-  | 2006 09 13 | 644 | 0.1+  | 0.3+  |
| 1991 10 09 | 691 | 0.4+  | 0.1-  | 2001 10 19 | 644 | 0.6-  | 0.0   | 2006 09 13 | 644 | 0.2-  | 0.1+  |
| 1991 10 09 | 691 | 0.3+  | 0.2-  | 2001 10 19 | 644 | 0.7-  | 0.2+  | 2006 09 16 | 644 | 0.1-  | 0.7+  |
| 2001 09 11 | 699 | 0.5-  | 0.3+  | 2001 10 19 | 644 | 0.1-  | 0.0   | 2006 09 16 | 644 | 0.5+  | 0.3+  |
| 2001 09 11 | 699 | (0.2- | 1.7+) | 2004 03 30 | 691 | 0.2+  | 1.0+  | 2006 09 16 | 644 | 0.4+  | 0.3-  |
| 2001 09 11 | 699 | 0.4-  | 1.0+  | 2004 03 30 | 691 | 0.3-  | 0.3+  | 2006 09 17 | 703 | 0.8+  | 0.0   |
| 2001 09 11 | 699 | 0.7-  | 0.3+  | 2004 03 30 | 691 | 0.3+  | 0.1-  | 2006 09 17 | 703 | 0.1-  | 0.4-  |
| 2001 09 16 | 704 | 0.2-  | 0.4+  | 2005 05 07 | G96 | 0.3-  | 0.3+  | 2006 09 17 | 703 | (1.6+ | 0.7-) |
| 2001 09 16 | 704 | 0.1+  | 0.2+  | 2005 05 07 | G96 | 0.1-  | 0.2+  | 2006 09 17 | 703 | 0.7+  | 0.7-  |
| 2001 09 16 | 704 | 0.2-  | 0.6+  | 2005 05 07 | G96 | 0.3-  | 0.1+  | 2006 09 28 | G96 | 0.5+  | 0.2-  |
| 2001 09 16 | 704 | 0.2-  | 0.0   | 2005 05 07 | G96 | 0.1-  | 0.1-  | 2006 09 28 | G96 | 0.2+  | 0.1+  |
| 2001 09 19 | 704 | (1.8- | 0.1-) | 2005 06 06 | 691 | 0.1-  | 0.3+  | 2006 09 28 | G96 | 0.4+  | 0.0   |
| 2001 09 19 | 704 | 1.5-  | 0.5+  | 2005 06 06 | 691 | 0.3-  | 0.1+  | 2006 09 28 | G96 | 0.0   | 0.2-  |
| 2001 09 19 | 704 | 0.6-  | 0.2+  | 2005 06 06 | 691 | 0.2-  | 0.3+  | 2006 09 30 | 699 | (0.4- | 2.0+) |
| 2001 09 20 | 704 | 0.1+  | 0.2+  | 2005 06 17 | 691 | 0.3+  | 0.2-  | 2006 09 30 | 699 | 1.3-  | 1.4+  |
| 2001 09 20 | 704 | 0.2+  | 0.2+  | 2005 06 17 | 691 | 0.1+  | 0.1-  | 2006 09 30 | 699 | 0.0   | 0.5-  |
| 2001 09 20 | 704 | 0.5-  | 0.0   | 2005 06 17 | 691 | 0.6+  | 0.3+  | 2006 09 30 | 699 | 0.7-  | 1.0-  |
| 2001 09 20 | 704 | 0.1-  | 0.4-  | 2006 08 27 | 699 | 0.6-  | 0.8-  | 2006 11 16 | G96 | 0.7+  | 0.0   |
| 2001 09 20 | 704 | 0.3-  | 0.1-  | 2006 08 27 | 699 | 0.1+  | 1.1+  | 2006 11 16 | G96 | 0.2-  | 0.6+  |
| 2001 09 22 | 704 | 0.3-  | 0.7+  | 2006 08 27 | 699 | (1.6+ | 0.6+) | 2006 11 16 | G96 | 0.6+  | 0.1+  |
| 2001 09 22 | 704 | 1.0-  | 0.2+  | 2006 08 27 | 699 | 0.4+  | 0.3-  | 2006 11 16 | G96 | 0.2+  | 0.1+  |
| 2001 09 22 | 704 | 0.3-  | 0.8+  | 2006 08 28 | 703 | 0.7+  | 0.4+  | 2007 11 19 | 691 | 0.3-  | 0.1-  |
| 2001 09 22 | 704 | 0.1+  | 0.2+  | 2006 08 28 | 703 | 0.3+  | 0.0   | 2007 11 19 | 691 | 0.1+  | 0.4+  |
| 2001 09 23 | 704 | 0.4-  | 0.9+  | 2006 08 28 | 703 | 0.0   | 0.6+  | 2007 11 19 | 691 | 0.1-  | 0.2+  |
| 2001 09 23 | 704 | 0.4-  | 1.4+  | 2006 08 28 | 703 | 0.8+  | 0.4-  | 2007 12 05 | 704 | 0.5+  | 0.1-  |
| 2001 09 23 | 704 | 0.4+  | 1.2+  | 2006 08 29 | 691 | 0.4+  | 0.1+  | 2007 12 05 | 704 | 0.3+  | 0.0   |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 23 | 704 | 0.3+ | 0.9+ | 2006 08 29 | 691 | 0.4+ | 0.1+ | 2007 12 05 | 704 | 0.1+ | 0.0  |
| 2001 09 23 | 704 | 0.4- | 1.0+ | 2006 08 29 | 691 | 0.3+ | 0.0  | 2007 12 05 | 704 | 1.1+ | 0.1+ |
| 2001 10 14 | 645 | 0.2- | 0.2- | 2006 09 13 | 644 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.2- | 0.9+ |

**(171906)\* 2001 SZ<sub>24</sub>**

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.41076   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17779996 | $\omega$ | 204.61309 | +0.90738304 | -0.42030447 |
| <i>a</i> | 3.1321912  | $\Omega$ | 180.24185 | +0.39983311 | +0.86348578 |
| <i>e</i> | 0.1366499  | <i>i</i> | 5.53369   | +0.12957429 | +0.27881261 |
| <i>P</i> | 5.54       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 0.6+  | 0.5+  | 2004 03 17 | 691 | 0.2+  | 0.5+  | 2007 11 07 | 704 | 0.5+  | 0.8+  |
| 2001 09 16 | 704 | 0.3+  | 1.4+  | 2004 03 17 | 691 | 0.4+  | 0.4+  | 2007 11 07 | 704 | 0.5+  | 0.9+  |
| 2001 09 16 | 704 | (0.1- | 1.7+) | 2004 03 23 | 691 | 0.1-  | 0.3+  | 2007 11 09 | 703 | 1.4+  | 0.8+  |
| 2001 09 19 | 704 | 0.5-  | 1.0+  | 2004 03 23 | 691 | 0.0   | 0.1+  | 2007 11 09 | 703 | (1.9+ | 0.8+) |
| 2001 09 19 | 704 | 0.0   | 1.2+  | 2004 03 23 | 691 | 0.0   | 0.4+  | 2007 11 09 | 703 | (0.2+ | 1.8+) |
| 2001 09 19 | 704 | (0.4+ | 1.6+) | 2005 05 16 | G96 | 0.1-  | 0.1+  | 2007 11 09 | 703 | (0.3- | 1.5+) |
| 2001 09 19 | 704 | 1.1+  | 0.4+  | 2005 05 16 | G96 | 0.6+  | 0.4+  | 2007 11 12 | G96 | 0.5+  | 0.2-  |
| 2001 09 19 | 704 | 0.4+  | 1.3+  | 2005 05 16 | G96 | 0.0   | 0.3-  | 2007 11 12 | G96 | 0.2-  | 0.3-  |
| 2001 09 21 | 704 | 0.5-  | 1.1+  | 2005 05 16 | G96 | 0.3-  | 0.2+  | 2007 11 12 | 704 | 0.6+  | 0.7-  |
| 2001 09 21 | 704 | 0.1-  | 0.2-  | 2005 05 19 | G96 | 0.3+  | 0.1+  | 2007 11 12 | G96 | 0.1+  | 0.3-  |
| 2001 09 21 | 704 | 0.1+  | 0.8+  | 2005 05 19 | G96 | 0.4+  | 0.4+  | 2007 11 12 | G96 | 0.2+  | 0.3-  |
| 2001 09 21 | 704 | 0.1+  | 0.2-  | 2005 05 19 | G96 | 0.3+  | 0.1+  | 2007 11 12 | 704 | 0.3+  | 0.5+  |
| 2001 09 26 | 704 | 0.3+  | 0.5-  | 2005 05 19 | G96 | 0.3-  | 0.1-  | 2007 11 12 | 704 | 0.0   | 0.4-  |
| 2001 09 26 | 704 | 0.5+  | 0.5+  | 2005 05 20 | G96 | 0.2-  | 0.3+  | 2007 11 12 | 704 | 0.5+  | 0.5+  |
| 2001 09 26 | 704 | 0.5-  | 1.0+  | 2005 05 20 | G96 | 0.2+  | 0.2+  | 2007 11 12 | 704 | 0.8+  | 1.0+  |
| 2001 09 26 | 704 | 0.5-  | 0.3+  | 2005 05 20 | G96 | 0.3-  | 0.6+  | 2007 11 13 | 691 | 0.1+  | 0.3+  |
| 2001 10 06 | 644 | 0.1-  | 0.8+  | 2005 05 20 | G96 | 0.3-  | 0.1+  | 2007 11 13 | 691 | 0.1+  | 0.1-  |
| 2001 10 06 | 644 | 0.4-  | 0.8+  | 2007 10 20 | G96 | 0.4+  | 0.3-  | 2007 11 13 | 691 | 0.6-  | 0.1-  |
| 2001 10 06 | 644 | 0.3+  | 0.9+  | 2007 10 20 | G96 | 0.3+  | 0.2-  | 2007 11 20 | 691 | 0.4-  | 0.2+  |
| 2001 10 11 | 644 | 0.1-  | 0.6+  | 2007 10 20 | G96 | 0.2+  | 0.2-  | 2007 11 20 | 691 | 0.2-  | 0.2-  |
| 2001 10 11 | 644 | 0.8-  | 1.0+  | 2007 10 20 | G96 | 0.0   | 0.1-  | 2007 11 20 | 691 | 0.7-  | 0.2-  |
| 2001 10 11 | 644 | 0.2+  | 1.2+  | 2007 11 01 | 691 | 0.2+  | 0.2-  | 2007 11 21 | 703 | (1.6+ | 0.4+) |
| 2001 10 13 | 704 | 0.4+  | 0.1+  | 2007 11 01 | 691 | 0.1-  | 0.1-  | 2007 11 21 | 703 | 0.4-  | 0.1+  |
| 2001 10 13 | 704 | 0.6+  | 0.1-  | 2007 11 01 | 691 | 0.0   | 0.1-  | 2007 11 21 | 703 | (1.2+ | 2.1+) |
| 2001 10 13 | 704 | 0.1-  | 0.1+  | 2007 11 05 | 691 | 0.0   | 0.0   | 2007 11 21 | 703 | 0.8-  | 0.1-  |
| 2001 10 13 | 704 | 0.0   | 0.7-  | 2007 11 05 | 691 | 0.1+  | 0.1-  | 2007 12 04 | 704 | 0.6-  | 1.5+  |
| 2001 10 14 | 645 | 0.1-  | 0.0   | 2007 11 05 | 691 | 0.0   | 0.3-  | 2007 12 04 | 704 | 0.9+  | 0.3-  |
| 2001 10 14 | 645 | 0.1-  | 0.0   | 2007 11 05 | 704 | 0.4+  | 0.9+  | 2007 12 04 | 704 | 0.1-  | 0.7+  |
| 2001 10 14 | 645 | 0.0   | 0.0   | 2007 11 05 | 704 | 0.4-  | 0.1+  | 2007 12 04 | 704 | 0.0   | 1.0+  |
| 2001 10 14 | 645 | 0.0   | 0.0   | 2007 11 05 | 704 | 0.5+  | 0.0   | 2007 12 05 | 699 | 0.6-  | 0.0   |
| 2001 12 10 | 645 | 0.0   | 0.2-  | 2007 11 05 | 704 | 0.4-  | 0.1-  | 2007 12 05 | 699 | 0.2-  | 0.0   |
| 2001 12 10 | 645 | 0.0   | 0.2-  | 2007 11 07 | 704 | 0.4+  | 0.3+  | 2007 12 05 | 699 | 0.9-  | 0.3+  |
| 2004 03 17 | 691 | 0.1+  | 0.3+  | 2007 11 07 | 704 | (0.4+ | 1.6+) | 2007 12 05 | 699 | 1.1+  | 0.4+  |

**(171907)\* 2001 ST<sub>31</sub>**

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 46.94398   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17988388 | $\omega$ | 237.89356 | +0.99488119 | +0.09603760 |
| <i>a</i> | 3.1079537  | $\Omega$ | 116.57849 | -0.07675357 | +0.92051164 |
| <i>e</i> | 0.2450651  | <i>i</i> | 2.01437   | -0.06572903 | +0.37872828 |
| <i>P</i> | 5.48       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1990 09 28 | 675 | 0.8- | 0.5+ | 2001 10 13 | 699 | 0.0  | 0.4- | 2005 06 13 | G96 | 0.3- | 0.3+ |
| 2001 09 11 | 699 | 0.8- | 1.0+ | 2001 10 13 | 704 | 0.4+ | 0.2+ | 2005 06 13 | G96 | 0.5- | 0.1+ |
| 2001 09 11 | 699 | 0.7- | 0.1- | 2001 10 13 | 704 | 0.1- | 0.4+ | 2006 05 04 | G96 | 0.4- | 0.2+ |
| 2001 09 11 | 699 | 0.7+ | 0.7+ | 2001 10 13 | 699 | 0.3- | 0.2- | 2006 05 04 | G96 | 0.0  | 0.1+ |
| 2001 09 11 | 699 | 0.7- | 0.2+ | 2001 10 13 | 704 | 0.1- | 0.8+ | 2006 05 04 | G96 | 0.2- | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |       |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|------|
| 2001 09 16 | 704 | 0.0   | 0.5+  | 2001 10 13 | 704 | 0.2+ | 0.3+ | 2006 05 04 | G96 | 0.1+  | 0.3+ |
| 2001 09 16 | 704 | 0.3+  | 0.6+  | 2001 10 16 | 704 | 0.3+ | 0.4+ | 2006 05 23 | G96 | 0.0   | 0.0  |
| 2001 09 16 | 704 | 0.2+  | 0.4+  | 2001 10 16 | 704 | 0.3- | 0.2+ | 2006 05 23 | G96 | 0.1-  | 0.2+ |
| 2001 09 16 | 704 | 0.0   | 0.7+  | 2001 10 16 | 704 | 0.6- | 0.4- | 2006 05 23 | G96 | 0.1-  | 0.2- |
| 2001 09 18 | 691 | 0.0   | 0.1-  | 2001 10 16 | 704 | 0.3+ | 0.8+ | 2006 05 23 | G96 | 0.1+  | 0.1+ |
| 2001 09 18 | 691 | 0.1+  | 0.1-  | 2001 10 16 | 704 | 0.3+ | 0.4+ | 2006 06 21 | 691 | 0.1+  | 0.5+ |
| 2001 09 18 | 691 | 0.0   | 0.1-  | 2001 10 20 | 704 | 0.2- | 0.4+ | 2006 06 21 | 691 | 0.1+  | 0.2+ |
| 2001 09 19 | 704 | 0.0   | 0.3-  | 2001 10 20 | 704 | 0.2- | 0.2+ | 2006 06 21 | 691 | 0.1+  | 0.0  |
| 2001 09 19 | 704 | 0.3+  | 0.3-  | 2001 10 20 | 704 | 0.4- | 0.0  | 2007 11 05 | 704 | (2.3+ | 0.0) |
| 2001 09 19 | 704 | 0.2+  | 0.8-  | 2001 10 20 | 704 | 0.6- | 0.1- | 2007 11 05 | 704 | 0.3+  | 0.9- |
| 2001 09 19 | 704 | 0.3+  | 0.1-  | 2001 10 20 | 704 | 0.2+ | 0.1+ | 2007 11 05 | 704 | 0.2+  | 0.2+ |
| 2001 09 19 | 704 | 0.0   | 0.6-  | 2001 10 23 | 704 | 0.1- | 1.1+ | 2007 11 05 | 704 | 0.6-  | 0.3- |
| 2001 09 21 | 704 | 0.0   | 0.3-  | 2001 10 23 | 704 | 0.2- | 0.4+ | 2007 11 14 | 704 | 0.7-  | 0.1- |
| 2001 09 21 | 704 | 0.1-  | 0.8-  | 2001 10 23 | 704 | 0.1- | 0.7+ | 2007 11 14 | 704 | 1.2-  | 0.0  |
| 2001 09 21 | 704 | 0.2+  | 0.9-  | 2001 10 23 | 704 | 0.2- | 0.9+ | 2007 11 14 | 704 | 0.5+  | 0.1+ |
| 2001 09 21 | 704 | 0.1-  | 1.0-  | 2001 10 23 | 704 | 0.7- | 0.4+ | 2007 11 14 | 691 | 0.0   | 0.2- |
| 2001 09 21 | 704 | 0.2+  | 1.1-  | 2001 10 24 | 704 | 0.0  | 0.5- | 2007 11 14 | 691 | 0.1-  | 0.2- |
| 2001 09 25 | 699 | 0.1-  | 0.7+  | 2001 10 24 | 704 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 0.0   | 0.2- |
| 2001 09 25 | 699 | 0.5+  | 0.4-  | 2001 10 24 | 704 | 0.0  | 0.3+ | 2007 11 19 | 691 | 0.0   | 0.1+ |
| 2001 09 25 | 699 | 1.0+  | 1.2+  | 2001 10 24 | 704 | 0.5+ | 0.1- | 2007 11 19 | 691 | 0.1-  | 0.0  |
| 2001 09 25 | 699 | 0.3+  | 0.4-  | 2001 11 12 | 645 | 0.1+ | 0.2- | 2007 11 19 | 691 | 0.1-  | 0.1- |
| 2001 09 25 | 683 | 0.8-  | 0.6+  | 2001 11 12 | 645 | 0.0  | 0.2- | 2007 12 04 | 691 | 0.3-  | 0.2+ |
| 2001 09 25 | 683 | (1.3- | 1.5-) | 2001 12 19 | 209 | 0.1- | 0.2+ | 2007 12 04 | 691 | 0.5-  | 0.0  |
| 2001 09 25 | 683 | (2.0+ | 2.0-) | 2001 12 19 | 209 | 0.6+ | 0.1- | 2007 12 04 | 691 | 0.5-  | 0.2- |
| 2001 09 26 | 704 | 0.2+  | 0.3+  | 2001 12 19 | 209 | 0.5- | 0.3+ | 2007 12 04 | G96 | 0.3+  | 0.2- |
| 2001 09 26 | 704 | 0.1+  | 0.5+  | 2002 12 31 | 291 | 0.4- | 0.3+ | 2007 12 04 | G96 | 0.1+  | 0.4- |
| 2001 09 26 | 704 | 0.3+  | 0.5+  | 2002 12 31 | 291 | 0.6+ | 0.4+ | 2007 12 04 | G96 | 0.5+  | 0.2- |
| 2001 09 26 | 704 | 0.0   | 0.6+  | 2002 12 31 | 291 | 0.9+ | 0.2- | 2007 12 04 | G96 | 0.4+  | 0.1- |
| 2001 09 26 | 704 | 0.2+  | 0.5+  | 2004 02 26 | 695 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 1.6+  | 1.3+ |
| 2001 10 13 | 699 | 0.5-  | 0.0   | 2004 02 26 | 695 | 0.1- | 0.4+ | 2007 12 05 | 704 | 1.2+  | 2.7+ |
| 2001 10 13 | 699 | 1.0-  | 1.0-  | 2005 06 13 | G96 | 0.2- | 0.2+ | 2007 12 05 | 704 | 0.3+  | 1.1+ |
| 2001 10 13 | 704 | 0.4-  | 0.2+  | 2005 06 13 | G96 | 0.4- | 1.0+ | 2007 12 05 | 704 | 0.2+  | 0.8+ |

**(171908)\* 2001 SW<sub>32</sub> = 2005 GH<sub>25</sub>**

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 75105)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 73.25745   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18265170 | $\omega$ | 152.11111 | +0.82253446 | +0.56870387 |
| <i>a</i> | 3.0764763  | $\Omega$ | 173.22562 | -0.52730071 | +0.76499282 |
| <i>e</i> | 0.2426861  | <i>i</i> | 1.74907   | -0.21305168 | +0.30226130 |
| <i>P</i> | 5.40       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 16 | 704 | 0.3-  | 0.8+  | 2001 10 17 | 644 | 0.4-  | 0.6+  | 2006 05 26 | G96 | 0.2+ | 0.2- |
| 2001 09 16 | 704 | 0.3-  | 0.7+  | 2001 10 20 | 704 | 0.4-  | 0.3+  | 2006 07 20 | 644 | 0.3- | 0.3+ |
| 2001 09 16 | 704 | 0.5-  | 0.7+  | 2001 10 20 | 704 | 0.6-  | 0.2+  | 2006 07 20 | 644 | 0.1- | 0.1- |
| 2001 09 16 | 704 | 0.2-  | 0.8+  | 2001 10 20 | 704 | 0.3-  | 0.1+  | 2006 07 20 | 644 | 0.3- | 0.2+ |
| 2001 09 19 | 704 | 0.9+  | 0.3+  | 2001 10 20 | 704 | 0.2-  | 0.3+  | 2006 08 11 | 644 | 0.2+ | 0.1+ |
| 2001 09 19 | 704 | 1.3+  | 0.2+  | 2001 10 20 | 704 | 0.7-  | 0.9-  | 2006 08 11 | 644 | 0.2+ | 0.3+ |
| 2001 09 19 | 704 | 0.9+  | 0.3+  | 2001 10 23 | 704 | (4.2- | 0.1+) | 2006 08 11 | 644 | 0.0  | 0.0  |
| 2001 09 19 | 704 | 0.3+  | 0.1-  | 2001 10 23 | 704 | (3.6- | 0.3+) | 2006 08 28 | 703 | 0.0  | 0.5- |
| 2001 09 19 | 291 | 0.4-  | 0.1+  | 2001 10 23 | 704 | (3.8- | 0.6+) | 2006 08 28 | 703 | 0.4+ | 1.0- |
| 2001 09 19 | 704 | 0.5+  | 0.2+  | 2001 10 23 | 704 | (3.1- | 0.9+) | 2006 08 28 | 703 | 0.3+ | 0.4+ |
| 2001 09 19 | 291 | 0.2-  | 0.1+  | 2001 10 23 | 704 | (2.9- | 0.8+) | 2006 08 28 | 703 | 0.5- | 0.1- |
| 2001 09 19 | 291 | 0.2-  | 0.2+  | 2001 10 24 | 704 | (5.5- | 1.4+) | 2006 09 26 | G96 | 0.0  | 0.1+ |
| 2001 09 25 | 699 | 0.1+  | 0.8-  | 2001 10 24 | 704 | (5.6- | 0.6+) | 2006 09 26 | G96 | 0.2- | 0.1- |
| 2001 09 25 | 699 | (1.7- | 0.3+) | 2001 10 24 | 704 | (5.0- | 1.0+) | 2006 09 26 | G96 | 0.2- | 0.1+ |
| 2001 09 25 | 699 | 0.3-  | 0.6+  | 2001 10 24 | 704 | (3.9- | 0.7+) | 2006 09 26 | G96 | 0.1+ | 0.1- |
| 2001 09 25 | 699 | 0.5+  | 0.7+  | 2005 03 08 | G96 | 0.2-  | 0.4+  | 2006 10 19 | G96 | 0.3+ | 0.1- |
| 2001 09 26 | 704 | 0.5-  | 0.2+  | 2005 03 08 | G96 | 0.7-  | 0.0   | 2006 10 19 | G96 | 0.1+ | 0.4- |
| 2001 09 26 | 704 | 0.5-  | 0.1+  | 2005 03 08 | G96 | 0.6-  | 0.1+  | 2006 10 19 | G96 | 0.0  | 0.1- |
| 2001 09 26 | 704 | 0.7-  | 0.5+  | 2005 03 08 | G96 | 0.2-  | 0.1+  | 2006 10 19 | G96 | 0.7+ | 0.1+ |
| 2001 09 26 | 704 | 0.8-  | 0.5+  | 2005 04 02 | G96 | 0.1+  | 0.1+  | 2006 11 18 | G96 | 0.1- | 0.1- |
| 2001 09 26 | 704 | 0.2+  | 0.5+  | 2005 04 02 | G96 | 0.2-  | 0.3+  | 2006 11 18 | G96 | 0.1+ | 0.2- |

2007 DEC. 24

M.P.O. 129201

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 11 | 644 | 0.3-  | 0.2+  | 2005 04 02 | G96 | 0.4+ | 0.3+ | 2006 11 18 | G96 | 0.2- | 0.7- |
| 2001 10 11 | 644 | 0.1-  | 0.2+  | 2005 04 02 | G96 | 0.2- | 0.0  | 2006 11 18 | G96 | 0.2- | 0.2- |
| 2001 10 11 | 644 | 0.1-  | 0.1-  | 2005 04 05 | G96 | 0.9- | 0.5+ | 2007 09 18 | G96 | 0.1+ | 0.0  |
| 2001 10 13 | 699 | 0.6+  | 0.3-  | 2005 04 05 | G96 | 1.0+ | 0.3- | 2007 09 18 | G96 | 0.4+ | 0.1- |
| 2001 10 13 | 699 | 0.5+  | 0.1+  | 2005 04 05 | G96 | 1.0- | 0.5- | 2007 09 18 | G96 | 0.2- | 0.2+ |
| 2001 10 13 | 704 | 0.4-  | 0.3+  | 2005 04 05 | G96 | 0.4+ | 0.1+ | 2007 09 18 | G96 | 0.5- | 0.0  |
| 2001 10 13 | 699 | 0.2-  | 0.6+  | 2005 04 09 | 691 | 0.4+ | 0.2+ | 2007 12 05 | 704 | 0.0  | 0.4- |
| 2001 10 13 | 704 | 0.0   | 0.1+  | 2005 04 09 | 691 | 0.1+ | 0.8+ | 2007 12 05 | 704 | 0.1- | 0.6+ |
| 2001 10 13 | 704 | 0.0   | 0.7+  | 2005 04 09 | 691 | 0.2+ | 0.7+ | 2007 12 05 | 704 | 0.1- | 0.1+ |
| 2001 10 13 | 699 | (1.8- | 0.2-) | 2005 04 11 | 691 | 0.3+ | 0.3+ | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2001 10 13 | 704 | 0.2-  | 0.4+  | 2005 04 11 | 691 | 0.2+ | 0.1+ | 2007 12 05 | 704 | 0.4- | 0.8+ |
| 2001 10 13 | 704 | 0.1-  | 1.1+  | 2005 04 11 | 691 | 0.2+ | 0.6+ | 2007 12 05 | G96 | 0.0  | 0.1+ |
| 2001 10 16 | 704 | 0.4+  | 0.3+  | 2005 05 06 | G96 | 0.3+ | 0.3+ | 2007 12 05 | G96 | 0.1- | 0.1- |
| 2001 10 16 | 704 | (1.5- | 0.6+) | 2005 05 06 | G96 | 0.1- | 0.4+ | 2007 12 05 | G96 | 0.3+ | 0.1+ |
| 2001 10 16 | 704 | 0.6+  | 0.6-  | 2005 05 06 | G96 | 0.1+ | 0.5- | 2007 12 05 | G96 | 0.2- | 0.1- |
| 2001 10 16 | 704 | 0.3+  | 0.6-  | 2005 05 06 | G96 | 0.4+ | 0.6+ | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2001 10 16 | 704 | 0.4+  | 0.5-  | 2006 05 26 | G96 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2001 10 17 | 644 | 0.7-  | 0.6+  | 2006 05 26 | G96 | 0.3+ | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2001 10 17 | 644 | 0.3-  | 0.8+  | 2006 05 26 | G96 | 0.0  | 0.2- | 2007 12 15 | G96 | 0.2- | 0.2+ |

(171909)\* 2001 SK<sub>44</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.92846    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18523944 | $\omega$ | 356.06148 | +0.48449283   | -0.86962096 |
| <i>a</i> | 3.0477575  | $\Omega$ | 64.93679  | +0.80544726   | +0.40106897 |
| <i>e</i> | 0.1203635  | <i>i</i> | 6.02032   | +0.34135233   | +0.28792893 |
| <i>P</i> | 5.32       | <i>H</i> | 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 27 | 699 | 0.6-  | 1.3+  | 2003 01 05 | 704 | 0.8-  | 0.1-  | 2006 09 26 | 703 | 0.1+ | 0.5- |
| 2001 08 27 | 699 | (0.8+ | 1.6+) | 2003 01 05 | 704 | 0.7-  | 0.7-  | 2006 09 26 | 703 | 0.4+ | 1.1- |
| 2001 08 27 | 699 | (0.1+ | 1.7+) | 2003 01 05 | 704 | 0.8-  | 0.5-  | 2006 09 26 | 703 | 0.1+ | 0.2+ |
| 2001 08 27 | 699 | 1.2-  | 0.0   | 2003 01 05 | 704 | 0.2-  | 1.3-  | 2006 09 26 | 703 | 0.5+ | 0.7- |
| 2001 09 16 | 704 | 0.5-  | 0.7+  | 2003 01 05 | 704 | 0.4+  | 0.5+  | 2007 11 06 | 691 | 0.2- | 0.1- |
| 2001 09 16 | 704 | 0.5+  | 0.3+  | 2003 01 09 | 704 | 0.4-  | 0.1+  | 2007 11 06 | 691 | 0.2- | 0.2- |
| 2001 09 16 | 704 | 0.9+  | 0.9+  | 2003 01 09 | 704 | 0.4-  | 0.2+  | 2007 11 06 | 691 | 0.3- | 0.3- |
| 2001 09 16 | 704 | 0.9-  | 0.5+  | 2003 01 09 | 704 | 0.9+  | 1.5+  | 2007 11 15 | 704 | 0.0  | 0.1- |
| 2001 09 19 | 704 | 0.4+  | 0.6-  | 2003 01 09 | 704 | 0.3+  | 0.6+  | 2007 11 15 | 704 | 1.2+ | 0.1+ |
| 2001 09 19 | 704 | 0.3-  | 0.6+  | 2003 01 09 | 704 | 0.3+  | 0.2-  | 2007 11 15 | 704 | 0.6+ | 0.2+ |
| 2001 09 19 | 704 | 0.1+  | 0.2-  | 2003 02 01 | 704 | 0.2-  | 0.4+  | 2007 11 15 | 704 | 0.0  | 0.4- |
| 2001 09 19 | 704 | 0.1+  | 0.2-  | 2003 02 01 | 704 | 0.2-  | 0.2-  | 2007 11 18 | D29 | 0.1- | 0.7+ |
| 2001 09 27 | 644 | 0.5-  | 0.5-  | 2003 02 01 | 704 | 0.6+  | 0.7+  | 2007 11 18 | D29 | 0.6- | 0.1- |
| 2001 09 27 | 644 | 0.2-  | 0.4-  | 2003 02 01 | 704 | (0.3- | 1.6+) | 2007 11 18 | D29 | 0.7- | 0.1+ |
| 2001 09 27 | 644 | 0.1-  | 0.4-  | 2003 02 01 | 704 | 0.3-  | 1.3+  | 2007 11 18 | D29 | 0.5+ | 0.7- |
| 2001 10 13 | 704 | 0.8-  | 1.0+  | 2004 04 11 | 644 | 0.5+  | 0.6+  | 2007 12 14 | 704 | 0.8+ | 0.3+ |
| 2001 10 13 | 704 | 0.2-  | 0.3+  | 2004 04 11 | 644 | 0.9+  | 0.5+  | 2007 12 14 | 704 | 0.3+ | 0.3+ |
| 2001 10 13 | 704 | 0.0   | 1.1-  | 2004 04 11 | 644 | 0.6+  | 0.9+  | 2007 12 14 | 704 | 0.6+ | 0.1+ |
| 2001 10 13 | 704 | 1.0+  | 0.1+  | 2006 09 20 | 703 | 0.6-  | 1.0-  | 2007 12 14 | 704 | 0.7+ | 0.2+ |
| 2001 10 24 | 644 | 0.4+  | 1.1+  | 2006 09 20 | 703 | 0.5-  | 1.0+  | 2007 12 14 | 704 | 0.7+ | 0.3- |
| 2001 10 24 | 644 | 0.2+  | 1.4+  | 2006 09 20 | 703 | (0.9- | 1.7-) |            |     |      |      |
| 2001 10 24 | 644 | 0.3+  | 1.1+  | 2006 09 20 | 703 | 0.9-  | 0.0   |            |     |      |      |

(171910)\* 2001 SZ<sub>45</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.43329   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18098500 | $\omega$ | 330.30183 | +0.64746747   | -0.75685086 |
| <i>a</i> | 3.0953350  | $\Omega$ | 79.19579  | +0.71588908   | +0.56387910 |
| <i>e</i> | 0.1907032  | <i>i</i> | 5.21216   | +0.26132107   | +0.33048016 |
| <i>P</i> | 5.45       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 04 20 | 691 | 0.1+  | 0.0   | 2001 10 08 | 644 | 0.0   | 0.6+  | 2005 06 17 | G96 | 0.0  | 0.7+ |
| 1993 04 20 | 691 | 0.5+  | 0.2+  | 2001 10 08 | 644 | 0.1-  | 0.4+  | 2005 06 17 | G96 | 0.2+ | 0.5+ |
| 1993 04 20 | 691 | 0.2+  | 0.1+  | 2001 10 08 | 644 | 0.0   | 0.5+  | 2005 06 17 | G96 | 0.1+ | 0.5+ |
| 1993 04 24 | 691 | 0.4+  | 0.1-  | 2001 10 13 | 704 | 0.3-  | 0.0   | 2005 06 17 | G96 | 0.3+ | 1.0+ |
| 1993 04 24 | 691 | 0.2+  | 0.2+  | 2001 10 13 | 704 | 1.2-  | 1.1-  | 2006 08 16 | E12 | 0.3+ | 0.1- |
| 1993 04 24 | 691 | 1.3-  | 0.4-  | 2001 10 13 | 704 | 1.2-  | 0.2+  | 2006 08 16 | E12 | 0.1+ | 0.1- |
| 2001 09 16 | 704 | 0.0   | 0.1+  | 2001 10 13 | 704 | (0.4- | 1.6-) | 2006 08 16 | E12 | 0.1+ | 0.2+ |
| 2001 09 16 | 704 | 0.5+  | 0.3+  | 2001 10 13 | 704 | 0.1+  | 0.6-  | 2006 08 16 | E12 | 0.5- | 0.6- |
| 2001 09 16 | 704 | 0.4+  | 0.2-  | 2001 10 19 | 699 | 0.3-  | 0.3-  | 2006 08 20 | 644 | 0.2- | 0.2+ |
| 2001 09 16 | 704 | 0.7+  | 1.1+  | 2001 10 19 | 699 | 0.7+  | 0.9-  | 2006 08 20 | 644 | 0.0  | 0.1+ |
| 2001 09 16 | 704 | 0.1+  | 1.5+  | 2001 10 19 | 699 | 0.7+  | 1.3-  | 2006 08 20 | 644 | 0.0  | 0.2+ |
| 2001 09 18 | 699 | 0.7+  | 0.5+  | 2001 10 19 | 699 | 0.5+  | 0.9-  | 2007 11 14 | 704 | 0.7- | 0.5- |
| 2001 09 18 | 699 | 0.5-  | 0.4+  | 2001 10 24 | 644 | 0.3+  | 0.6+  | 2007 11 14 | 704 | 0.4- | 0.4- |
| 2001 09 18 | 699 | 0.2-  | 0.3+  | 2001 10 24 | 644 | 0.2+  | 0.5+  | 2007 11 14 | 704 | 0.2- | 0.1+ |
| 2001 09 18 | 699 | 0.2+  | 0.5+  | 2001 10 24 | 644 | 0.3+  | 0.7+  | 2007 11 14 | 704 | 0.4+ | 0.2- |
| 2001 09 19 | 704 | 0.4-  | 0.6+  | 2003 01 09 | 704 | 0.4+  | 1.0+  | 2007 11 14 | 704 | 0.0  | 0.4- |
| 2001 09 19 | 704 | 0.4-  | 0.4+  | 2003 01 09 | 704 | 0.8+  | 1.1+  | 2007 12 05 | 704 | 0.3+ | 0.6- |
| 2001 09 19 | 704 | 0.7-  | 0.1-  | 2003 01 09 | 704 | 0.2-  | 1.3+  | 2007 12 05 | 704 | 1.0+ | 0.2- |
| 2001 09 19 | 704 | 0.9-  | 0.3+  | 2003 02 02 | 644 | 0.1+  | 0.0   | 2007 12 05 | 704 | 0.4+ | 0.6- |
| 2001 09 21 | 704 | 1.4-  | 0.3-  | 2003 02 02 | 644 | 0.4-  | 0.3+  | 2007 12 14 | 704 | 0.1- | 0.1+ |
| 2001 09 21 | 704 | (1.7- | 0.3+) | 2003 02 02 | 644 | 0.5-  | 0.4+  | 2007 12 14 | 704 | 0.0  | 0.1- |
| 2001 09 21 | 704 | (3.1- | 0.4-) | 2003 02 04 | 704 | 0.2+  | 0.5+  | 2007 12 14 | 704 | 0.1- | 0.0  |
| 2001 09 25 | 644 | 0.1+  | 0.3+  | 2003 02 04 | 704 | 0.6+  | 0.3+  | 2007 12 14 | 704 | 0.2- | 0.1+ |
| 2001 09 25 | 644 | 0.0   | 0.0   | 2003 02 04 | 704 | 0.4-  | 1.3+  | 2007 12 14 | 704 | 0.1+ | 0.3+ |
| 2001 09 25 | 644 | 0.1-  | 0.3+  | 2003 02 04 | 704 | 0.4+  | 0.1-  |            |     |      |      |

(171911)\* 2001 SD<sub>51</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.98499   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18201159 | $\omega$ | 154.78272 | +0.75613989   | +0.65197087 |
| <i>a</i> | 3.0836851  | $\Omega$ | 164.12323 | -0.62993652   | +0.74851814 |
| <i>e</i> | 0.1514019  | <i>i</i> | 11.90803  | -0.17729198   | +0.12105606 |
| <i>P</i> | 5.42       | <i>H</i> | 15.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 03 | 644 | 0.1-  | 1.4+  | 2001 10 08 | 644 | 0.6-  | 0.4+  | 2006 08 29 | 703 | 0.3-  | 0.7+  |
| 2001 08 03 | 644 | 0.3+  | 1.3+  | 2001 10 08 | 644 | 0.2-  | 0.5+  | 2006 08 29 | 703 | 0.5+  | 0.2+  |
| 2001 08 03 | 644 | 0.4+  | 1.2+  | 2001 10 08 | 644 | 0.6-  | 0.5+  | 2006 08 29 | 703 | 0.5-  | 0.1+  |
| 2001 08 16 | 704 | 1.2+  | 0.5+  | 2001 10 11 | 704 | 1.2+  | 0.1-  | 2006 09 16 | 699 | 0.7-  | 0.2-  |
| 2001 08 16 | 704 | 0.6+  | 0.1+  | 2001 10 11 | 704 | 0.9+  | 1.1+  | 2006 09 16 | 699 | 1.1+  | 0.5-  |
| 2001 08 16 | 704 | 1.2+  | 0.3+  | 2001 10 11 | 704 | 0.8+  | 1.4+  | 2006 09 16 | 699 | 1.1+  | 0.3+  |
| 2001 08 16 | 704 | 0.5-  | 1.0-  | 2001 10 16 | 644 | 0.4-  | 0.0   | 2006 09 16 | 699 | (0.2+ | 1.7+) |
| 2001 09 11 | 699 | 1.4-  | 0.9+  | 2001 10 16 | 644 | 0.7-  | 0.0   | 2006 09 27 | G96 | 0.1-  | 0.3-  |
| 2001 09 11 | 699 | (0.1+ | 1.6+) | 2001 10 16 | 644 | 0.4-  | 0.0   | 2006 09 27 | G96 | 0.2-  | 0.2-  |
| 2001 09 11 | 699 | 0.2-  | 1.1+  | 2004 02 12 | 691 | 0.1-  | 0.7+  | 2006 09 27 | G96 | 0.0   | 0.3-  |
| 2001 09 11 | 699 | 0.8+  | 1.2+  | 2004 02 12 | 691 | 0.3+  | 0.4+  | 2006 09 27 | G96 | 0.1-  | 0.2-  |
| 2001 09 16 | 704 | (0.3+ | 2.1-) | 2004 02 12 | 691 | 0.1+  | 0.5+  | 2006 10 22 | G96 | 0.1+  | 0.2-  |
| 2001 09 16 | 704 | 0.0   | 0.3-  | 2004 02 18 | 691 | 0.0   | 0.5+  | 2006 10 22 | G96 | 0.1-  | 0.3-  |
| 2001 09 16 | 704 | 0.1+  | 0.7-  | 2004 02 18 | 691 | 0.0   | 0.7+  | 2006 10 22 | G96 | 0.3+  | 0.3-  |
| 2001 09 18 | 699 | 0.1+  | 0.7+  | 2004 02 18 | 691 | 0.3+  | 0.6+  | 2006 10 22 | G96 | 0.1+  | 0.1+  |
| 2001 09 18 | 699 | 0.7+  | 0.1+  | 2004 02 29 | 691 | 0.1+  | 0.1-  | 2006 11 18 | G96 | 0.2+  | 0.6-  |
| 2001 09 18 | 699 | 0.5+  | 0.1+  | 2004 02 29 | 691 | 0.0   | 0.2+  | 2006 11 18 | G96 | 0.1+  | 0.6-  |
| 2001 09 18 | 699 | (1.0- | 2.4+) | 2004 02 29 | 691 | 0.1-  | 0.2+  | 2006 11 18 | G96 | 0.7-  | 0.6-  |
| 2001 09 19 | 704 | 0.4-  | 0.5-  | 2006 06 01 | 703 | 1.2-  | 0.5-  | 2006 11 18 | G96 | 0.2-  | 0.1-  |
| 2001 09 19 | 704 | 0.0   | 1.1-  | 2006 06 01 | 703 | 0.7+  | 1.1+  | 2007 11 15 | 703 | 0.2+  | 0.1-  |
| 2001 09 19 | 704 | 0.4+  | 0.9-  | 2006 06 01 | 703 | 0.4-  | 0.7+  | 2007 11 15 | 703 | 0.5-  | 0.1-  |
| 2001 09 19 | 704 | 0.3+  | 1.1-  | 2006 06 01 | 703 | (2.7- | 0.0 ) | 2007 11 15 | 703 | 0.1-  | 0.8-  |
| 2001 09 21 | 704 | 0.1-  | 0.0   | 2006 07 21 | 703 | 0.6-  | 0.3+  | 2007 11 15 | 703 | 0.1-  | 0.5-  |
| 2001 09 21 | 704 | 0.1-  | 0.1+  | 2006 07 21 | 703 | 0.4+  | 0.5+  | 2007 11 18 | G96 | 0.4+  | 0.5-  |
| 2001 09 21 | 704 | 0.0   | 0.0   | 2006 07 21 | 703 | 1.4-  | 0.4-  | 2007 11 18 | G96 | 0.9+  | 0.4-  |
| 2001 09 21 | 704 | 0.0   | 0.1+  | 2006 07 21 | 703 | 0.4-  | 1.2+  | 2007 11 18 | G96 | 0.1+  | 0.3-  |
| 2001 09 24 | 644 | 0.7-  | 0.3+  | 2006 07 25 | 224 | (1.9+ | 1.1+) | 2007 11 18 | G96 | 0.6+  | 0.2-  |
| 2001 09 24 | 644 | 0.9-  | 0.2+  | 2006 07 25 | 224 | 0.6+  | 0.1-  | 2007 11 19 | 703 | 0.5+  | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 24 | 644 | 1.0− | 0.1− | 2006 07 25 | 224 | 0.5+ | 0.2+ | 2007 11 19 | 703 | 0.5− | 0.0  |
| 2001 09 25 | 704 | 0.0  | 0.5− | 2006 08 14 | E12 | 0.6+ | 0.1+ | 2007 11 19 | 703 | 1.0− | 1.4− |
| 2001 09 25 | 704 | 0.2+ | 0.0  | 2006 08 14 | E12 | 0.9+ | 0.2+ | 2007 11 19 | 703 | 1.4− | 0.4− |
| 2001 09 25 | 704 | 1.4− | 1.0+ | 2006 08 14 | E12 | 0.5− | 0.2− | 2007 11 19 | 703 | 0.7− | 0.6− |
| 2001 09 25 | 704 | 0.4− | 0.3+ | 2006 08 14 | E12 | 0.3+ | 0.1+ | 2007 11 19 | 703 | 0.5− | 0.4+ |
| 2001 09 25 | 704 | 0.4+ | 1.2+ | 2006 08 14 | E12 | 0.0  | 0.2+ | 2007 11 19 | 703 | 0.5− | 0.6− |
| 2001 09 25 | 704 | 0.6− | 0.5+ | 2006 08 16 | 644 | 0.3+ | 0.2+ | 2007 11 19 | 703 | 0.3− | 0.5− |
| 2001 09 25 | 704 | 0.4− | 0.2− | 2006 08 16 | 644 | 0.2− | 0.2− | 2007 11 20 | 703 | 0.0  | 0.0  |
| 2001 09 25 | 691 | 0.1+ | 0.1+ | 2006 08 16 | 644 | 0.3− | 0.2+ | 2007 11 20 | 703 | 0.9+ | 0.8− |
| 2001 09 25 | 704 | 0.3− | 0.4+ | 2006 08 18 | 644 | 0.0  | 0.2+ | 2007 11 20 | 703 | 0.5+ | 0.1+ |
| 2001 09 25 | 691 | 0.1+ | 0.1+ | 2006 08 18 | 644 | 0.0  | 0.3+ | 2007 11 20 | 703 | 0.9− | 0.7+ |
| 2001 09 25 | 704 | 0.8− | 0.8+ | 2006 08 18 | 644 | 0.0  | 0.2+ | 2007 12 05 | 703 | 0.0  | 1.1− |
| 2001 09 25 | 691 | 0.1+ | 0.1+ | 2006 08 21 | 644 | 0.3− | 0.2+ | 2007 12 05 | 703 | 1.6+ | 0.8− |
| 2001 09 27 | 644 | 0.7− | 0.5+ | 2006 08 21 | 644 | 0.0  | 0.2+ | 2007 12 05 | 703 | 0.9+ | 0.0  |
| 2001 09 27 | 644 | 0.6− | 1.1+ | 2006 08 21 | 644 | 0.2+ | 0.0  | 2007 12 05 | 703 | 0.9+ | 0.4+ |
| 2001 09 27 | 644 | 0.6− | 0.5+ | 2006 08 29 | 703 | 0.0  | 1.0− |            |     |      |      |

**(171912)\* 2001 SB<sub>62</sub>**

Discovered 2001 Sept. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 9.24032    |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17521602 | $\omega$ | 22.14189 | +0.67272983 | −0.73756177 |
| $a$ | 3.1629101  | $\Omega$ | 25.69611 | +0.65695060 | +0.55899023 |
| $e$ | 0.1615871  | $i$      | 7.77090  | +0.34036817 | +0.37885692 |
| $P$ | 5.63       | $H$      | 14.9     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 17 | 704 | 0.2+  | 0.4−  | 2001 10 17 | 704 | 0.5− | 1.0+ | 2003 01 29 | 644 | 0.0  | 0.7+ |
| 2001 09 17 | 704 | 0.8+  | 1.1+  | 2001 10 19 | 644 | 0.3+ | 0.3+ | 2003 01 29 | 644 | 0.1+ | 0.8+ |
| 2001 09 17 | 704 | 0.4+  | 0.7+  | 2001 10 19 | 644 | 0.6+ | 0.0  | 2004 03 23 | 691 | 0.4+ | 0.2+ |
| 2001 09 19 | 704 | 0.1−  | 0.0   | 2001 10 19 | 644 | 0.1+ | 0.2− | 2004 03 23 | 691 | 0.0  | 0.2+ |
| 2001 09 19 | 704 | 0.7−  | 0.2+  | 2001 10 21 | 704 | 0.1+ | 0.5+ | 2004 03 23 | 691 | 0.2+ | 0.3+ |
| 2001 09 19 | 704 | 0.6+  | 0.6+  | 2001 10 21 | 704 | 0.1− | 0.1+ | 2004 05 09 | 691 | 0.5+ | 0.6+ |
| 2001 09 19 | 704 | 0.5−  | 0.9+  | 2001 10 21 | 704 | 0.2+ | 0.1+ | 2004 05 09 | 691 | 0.3+ | 0.9+ |
| 2001 09 21 | 704 | 0.6−  | 0.2+  | 2001 10 21 | 704 | 0.1− | 0.1+ | 2004 05 09 | 691 | 0.1+ | 0.6+ |
| 2001 09 21 | 704 | (0.0  | 1.7+) | 2001 10 21 | 291 | 0.3+ | 0.1− | 2007 11 04 | 691 | 0.1+ | 0.3− |
| 2001 09 21 | 704 | 0.8−  | 0.6+  | 2001 10 21 | 704 | 0.3− | 0.0  | 2007 11 04 | 691 | 0.3− | 0.4+ |
| 2001 09 21 | 704 | 0.9−  | 1.2+  | 2001 10 21 | 291 | 0.3+ | 0.1− | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2001 09 21 | 704 | 0.5−  | 1.1+  | 2001 10 21 | 291 | 0.2+ | 0.1− | 2007 11 07 | 704 | 0.1− | 0.1− |
| 2001 09 26 | 704 | 0.8−  | 1.1+  | 2001 10 24 | 704 | 0.2− | 0.2− | 2007 11 07 | 704 | 0.0  | 0.1− |
| 2001 09 26 | 704 | (0.1+ | 1.7+) | 2001 10 24 | 704 | 0.4+ | 0.1− | 2007 11 07 | 704 | 0.4− | 0.1+ |
| 2001 09 26 | 704 | (0.4− | 1.6+) | 2001 10 24 | 704 | 0.1− | 0.2+ | 2007 11 07 | 704 | 0.6+ | 0.5+ |
| 2001 09 26 | 704 | (0.8− | 2.1+) | 2001 10 24 | 704 | 0.2+ | 0.2− | 2007 11 07 | 704 | 0.1− | 0.0  |
| 2001 09 26 | 704 | (0.5− | 1.5+) | 2001 10 24 | 704 | 0.3− | 1.1− | 2007 11 08 | 691 | 0.1− | 0.2− |
| 2001 10 07 | 644 | 0.0   | 0.3+  | 2001 10 25 | 704 | 0.3− | 0.2+ | 2007 11 08 | 691 | 0.1− | 0.3− |
| 2001 10 07 | 644 | 0.1+  | 0.4+  | 2001 10 25 | 704 | 0.3− | 0.3+ | 2007 11 08 | 691 | 0.3− | 0.1− |
| 2001 10 07 | 644 | 0.1−  | 0.3+  | 2001 10 25 | 704 | 0.1− | 0.5+ | 2007 11 17 | 704 | 0.8+ | 1.0+ |
| 2001 10 12 | 699 | 0.4+  | 0.7+  | 2001 10 25 | 704 | 0.4− | 0.4+ | 2007 11 17 | 704 | 0.2+ | 0.1+ |
| 2001 10 12 | 699 | 0.1−  | 0.4+  | 2001 10 25 | 704 | 0.7− | 0.7+ | 2007 11 17 | 704 | 0.8+ | 0.4− |
| 2001 10 12 | 699 | 0.1+  | 0.6+  | 2001 11 09 | 704 | 0.9− | 0.5− | 2007 11 17 | 704 | 1.2+ | 0.6+ |
| 2001 10 12 | 699 | 0.6−  | 0.7+  | 2001 11 09 | 704 | 0.8− | 0.4− | 2007 11 20 | 704 | 0.2− | 0.8− |
| 2001 10 13 | 704 | 0.1+  | 0.6−  | 2001 11 09 | 704 | 1.2− | 1.2+ | 2007 11 20 | 704 | 0.1+ | 0.2+ |
| 2001 10 13 | 704 | 0.1−  | 0.5−  | 2001 11 16 | 291 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.0  | 0.1− |
| 2001 10 13 | 704 | 0.5+  | 0.5+  | 2001 11 16 | 291 | 0.2− | 0.1− | 2007 11 20 | 704 | 0.4− | 0.2+ |
| 2001 10 13 | 704 | 1.1+  | 0.2−  | 2001 11 16 | 291 | 0.0  | 0.3− | 2007 11 20 | 704 | 0.0  | 0.1+ |
| 2001 10 13 | 704 | 0.5−  | 0.0   | 2001 11 21 | 704 | 0.2− | 0.1+ | 2007 12 13 | 704 | 0.1− | 0.2− |
| 2001 10 15 | 704 | 0.0   | 0.1+  | 2001 11 21 | 704 | 0.1+ | 0.4− | 2007 12 13 | 704 | 0.5+ | 0.2− |
| 2001 10 15 | 704 | 0.1+  | 0.5−  | 2001 11 21 | 704 | 0.1− | 0.4− | 2007 12 13 | 704 | 0.1− | 0.1+ |
| 2001 10 15 | 704 | 1.3−  | 0.2−  | 2001 11 21 | 704 | 0.4− | 0.4+ | 2007 12 13 | 704 | 0.2− | 0.0  |
| 2001 10 15 | 704 | 0.5+  | 0.3−  | 2001 11 21 | 704 | 0.3− | 0.2+ | 2007 12 13 | 704 | 0.2− | 0.0  |
| 2001 10 15 | 704 | 0.4−  | 1.4+  | 2003 01 10 | 704 | 0.4− | 0.0  | 2007 12 16 | 704 | 0.2+ | 0.2− |
| 2001 10 17 | 704 | 0.9−  | 0.3+  | 2003 01 10 | 704 | 0.1+ | 0.6+ | 2007 12 16 | 704 | 0.4+ | 0.9− |
| 2001 10 17 | 704 | 0.1+  | 0.0   | 2003 01 10 | 704 | 0.6+ | 0.6+ | 2007 12 16 | 704 | 0.1+ | 0.2+ |
| 2001 10 17 | 704 | 0.5−  | 0.3+  | 2003 01 10 | 704 | 1.0+ | 0.5− | 2007 12 16 | 704 | 0.6+ | 0.9− |
| 2001 10 17 | 704 | 0.7−  | 1.0+  | 2003 01 29 | 644 | 0.0  | 0.7+ | 2007 12 16 | 704 | 0.6+ | 0.3− |

**(171913)\* 2001 SA<sub>74</sub>**

Discovered 2001 Sept. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 42.13412   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18233437 | $\omega$ | 86.11312  | +0.93485400 | −0.33723411 |
| $a$ | 3.0800447  | $\Omega$ | 293.56750 | +0.25823228 | +0.86043848 |
| $e$ | 0.1579219  | $i$      | 6.95570   | +0.24364747 | +0.38199316 |
| $P$ | 5.41       | $H$      | 14.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 19 | 699 | 0.4−  | 0.3+  | 2003 01 29 | 644 | 0.4+  | 0.5+  | 2006 08 30 | 704 | 0.5+ | 0.4− |
| 2001 09 19 | 699 | 0.6+  | 0.5+  | 2003 01 29 | 644 | 0.5+  | 0.1−  | 2006 08 30 | 704 | 0.2+ | 0.7+ |
| 2001 09 19 | 699 | 0.1+  | 0.2−  | 2003 01 30 | 699 | 0.6−  | 1.4+  | 2006 08 30 | 704 | 0.2− | 0.3+ |
| 2001 09 19 | 699 | 0.7−  | 0.3+  | 2003 01 30 | 699 | 0.6+  | 0.5+  | 2006 09 01 | 704 | 0.9+ | 0.2+ |
| 2001 09 20 | 699 | 0.4+  | 0.2−  | 2003 01 30 | 699 | 0.2−  | 0.1+  | 2006 09 01 | 704 | 0.2− | 0.2− |
| 2001 09 20 | 699 | 0.4+  | 0.6−  | 2003 01 30 | 699 | (0.4+ | 2.0+) | 2006 09 01 | 704 | 1.0− | 1.0− |
| 2001 09 20 | 699 | 0.1−  | 0.2+  | 2006 08 16 | 644 | 0.1+  | 0.1−  | 2006 09 11 | 703 | 0.4− | 1.1− |
| 2001 09 20 | 699 | 0.0   | 0.1+  | 2006 08 16 | 644 | 0.2−  | 0.2+  | 2006 09 11 | 703 | 0.2− | 1.2− |
| 2001 09 25 | 704 | 0.0   | 0.3+  | 2006 08 16 | 644 | 0.0   | 0.1−  | 2006 09 11 | 703 | 0.5− | 0.8− |
| 2001 09 25 | 704 | 0.2+  | 0.4+  | 2006 08 18 | 704 | 0.2−  | 1.4+  | 2006 09 11 | 703 | 0.2+ | 0.1+ |
| 2001 09 25 | 704 | 1.1−  | 0.8+  | 2006 08 18 | 704 | 0.4−  | 0.3−  | 2006 09 14 | 703 | 0.5− | 0.1+ |
| 2001 09 25 | 704 | 0.7+  | 0.5+  | 2006 08 18 | 704 | (1.0+ | 1.7+) | 2006 09 14 | 703 | 0.5− | 0.3− |
| 2001 09 25 | 704 | 0.3+  | 0.8+  | 2006 08 18 | 704 | 0.4−  | 0.9+  | 2006 09 14 | 703 | 0.1− | 0.2− |
| 2001 10 13 | 644 | 0.2−  | 0.1+  | 2006 08 19 | 699 | 0.4+  | 0.8+  | 2006 09 14 | 703 | 0.4+ | 0.1+ |
| 2001 10 13 | 644 | 0.4−  | 0.0   | 2006 08 19 | 699 | 0.0   | 0.0   | 2006 09 18 | 704 | 0.9+ | 0.1+ |
| 2001 10 13 | 644 | 0.5−  | 0.1+  | 2006 08 19 | 699 | 0.4+  | 0.5+  | 2006 09 18 | 704 | 0.3+ | 0.1+ |
| 2001 10 20 | 644 | 0.2+  | 0.4+  | 2006 08 19 | 699 | 0.3−  | 0.5+  | 2006 09 18 | 704 | 0.1− | 1.2+ |
| 2001 10 20 | 644 | 0.1+  | 0.1+  | 2006 08 19 | A94 | (1.5− | 1.1−) | 2006 09 18 | 704 | 0.4+ | 0.2− |
| 2001 10 20 | 644 | 0.2+  | 0.0   | 2006 08 19 | A94 | 0.3−  | 0.0   | 2006 09 19 | 699 | 0.7+ | 1.0+ |
| 2001 10 26 | 644 | 0.0   | 0.4−  | 2006 08 19 | A94 | 0.0   | 0.1−  | 2006 09 19 | 699 | 0.0  | 0.3− |
| 2001 10 26 | 644 | 0.1−  | 0.2−  | 2006 08 19 | A94 | 0.4−  | 0.4−  | 2006 09 19 | 699 | 0.5+ | 0.5− |
| 2001 10 26 | 644 | 0.2−  | 0.2−  | 2006 08 19 | A94 | 0.6+  | 0.0   | 2006 09 19 | 699 | 0.2− | 0.2+ |
| 2001 11 11 | 644 | 0.2−  | 0.2−  | 2006 08 23 | 704 | 0.8+  | 0.6+  | 2006 09 29 | 699 | 0.8− | 0.0  |
| 2001 11 11 | 644 | 0.2−  | 0.3+  | 2006 08 23 | 704 | 0.8+  | 0.3−  | 2006 09 29 | 699 | 0.3+ | 0.6+ |
| 2001 11 11 | 644 | 0.2−  | 0.3−  | 2006 08 23 | 704 | 0.5−  | 0.3+  | 2006 09 29 | 699 | 0.4+ | 0.4+ |
| 2001 11 17 | 704 | 0.1−  | 0.2−  | 2006 08 23 | 704 | 0.0   | 0.0   | 2006 09 29 | 699 | 0.2+ | 0.1− |
| 2001 11 17 | 704 | 0.2−  | 0.6−  | 2006 08 23 | 704 | 0.4+  | 0.3+  | 2006 11 19 | 704 | 0.2− | 0.1+ |
| 2001 11 17 | 704 | 0.2+  | 0.2+  | 2006 08 24 | 704 | 1.0+  | 0.7−  | 2006 11 19 | 704 | 1.1− | 0.3+ |
| 2001 11 17 | 704 | 0.3+  | 0.3−  | 2006 08 24 | 704 | 0.4+  | 0.3+  | 2006 11 19 | 704 | 0.9− | 0.6+ |
| 2001 11 17 | 704 | 0.1−  | 0.0   | 2006 08 24 | 704 | 0.9−  | 0.7−  | 2007 11 20 | 704 | 0.0  | 0.7− |
| 2003 01 08 | 704 | 0.2+  | 0.4−  | 2006 08 24 | 704 | 0.3−  | 0.4−  | 2007 11 20 | 704 | 0.8− | 0.5+ |
| 2003 01 08 | 704 | 0.5+  | 1.4+  | 2006 08 24 | 704 | 0.4−  | 0.1+  | 2007 11 20 | 704 | 0.7− | 0.4− |
| 2003 01 08 | 704 | (0.3− | 1.7+) | 2006 08 29 | 703 | 0.1+  | 0.5−  | 2007 12 15 | 704 | 0.3+ | 0.7+ |
| 2003 01 08 | 704 | 0.0   | 0.5+  | 2006 08 29 | 703 | 0.6−  | 0.5−  | 2007 12 15 | 704 | 0.5+ | 0.2+ |
| 2003 01 27 | 704 | 0.7−  | 0.2+  | 2006 08 29 | 703 | 0.3−  | 0.5−  | 2007 12 15 | 704 | 0.6+ | 0.2− |
| 2003 01 27 | 704 | 0.3−  | 0.7+  | 2006 08 29 | 703 | 0.4−  | 0.3−  | 2007 12 15 | 704 | 1.0+ | 0.2+ |
| 2003 01 27 | 704 | (0.4− | 1.6+) | 2006 08 30 | 704 | 0.7−  | 1.4+  | 2007 12 16 | 691 | 0.2+ | 1.3− |
| 2003 01 27 | 704 | 0.9+  | 0.9+  | 2006 08 30 | 704 | 0.0   | 0.8+  | 2007 12 16 | 691 | 0.2− | 0.2− |
| 2003 01 27 | 704 | 0.1+  | 0.3+  | 2006 08 30 | 704 | 0.7−  | 1.4+  | 2007 12 16 | 691 | 0.1+ | 0.7− |
| 2003 01 29 | 291 | 0.2+  | 0.7+  | 2006 08 30 | 704 | 0.8−  | 0.9+  | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2003 01 29 | 291 | 0.3+  | 0.9+  | 2006 08 30 | 704 | 0.8−  | 1.4+  | 2007 12 16 | 691 | 0.1− | 0.7− |
| 2003 01 29 | 291 | 0.5+  | 0.7+  | 2006 08 30 | 704 | 0.4+  | 0.7+  | 2007 12 16 | 691 | 0.3− | 0.4+ |
| 2003 01 29 | 644 | 0.3+  | 0.4+  | 2006 08 30 | 704 | 0.6+  | 0.2−  |            |     |      |      |



2007 DEC. 24

M.P.O. 129203

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 05 | 644 | 0.5+  | 1.4+  | 2001 11 17 | 704 | 0.6+  | 0.5-  | 2003 03 12 | 644 | 0.2+  | 0.2+  |
| 2001 08 05 | 644 | 0.1+  | 1.1+  | 2001 11 17 | 704 | 0.7+  | 0.2-  | 2003 03 12 | 644 | 0.5+  | 0.5+  |
| 2001 08 05 | 644 | 1.0+  | 1.3+  | 2001 11 17 | 644 | 0.2-  | 0.1+  | 2003 03 12 | 644 | 0.4+  | 0.8+  |
| 2001 08 22 | 704 | 0.6-  | 0.6-  | 2001 11 17 | 704 | 0.6-  | 0.1+  | 2006 08 13 | 644 | 0.2-  | 0.2+  |
| 2001 08 22 | 704 | 0.8+  | 0.8-  | 2001 11 17 | 644 | 0.1+  | 0.2+  | 2006 08 13 | 644 | 0.0   | 0.2+  |
| 2001 08 22 | 704 | 0.7+  | 0.1+  | 2001 11 17 | 644 | 0.1-  | 0.0   | 2006 08 13 | 644 | 0.1-  | 0.3-  |
| 2001 08 22 | 704 | 0.4+  | 0.3-  | 2001 12 11 | 704 | 0.2-  | 0.2+  | 2006 08 16 | A50 | 0.0   | 0.7+  |
| 2001 08 22 | 704 | 1.2+  | 0.2+  | 2001 12 11 | 704 | 0.2-  | 0.2-  | 2006 08 16 | A50 | 0.7-  | 0.3-  |
| 2001 08 28 | 699 | 0.4-  | 0.5-  | 2001 12 11 | 704 | 0.5-  | 0.5-  | 2006 08 17 | A50 | 0.2-  | 0.5-  |
| 2001 08 28 | 699 | 0.7-  | 0.1+  | 2001 12 11 | 704 | 0.6-  | 0.3+  | 2006 08 17 | A50 | 0.3-  | 0.8-  |
| 2001 08 28 | 699 | 0.8-  | 0.5+  | 2001 12 11 | 704 | 0.0   | 0.1+  | 2006 08 18 | 644 | 0.1-  | 0.1+  |
| 2001 08 28 | 699 | 0.6-  | 0.3+  | 2001 12 17 | 704 | 0.6-  | 1.5-  | 2006 08 18 | 644 | 0.0   | 0.2+  |
| 2001 09 10 | 704 | 0.4+  | 0.1-  | 2001 12 17 | 704 | 1.1-  | 1.1-  | 2006 08 18 | 644 | 0.1-  | 0.2+  |
| 2001 09 10 | 704 | 0.5+  | 0.1+  | 2001 12 17 | 704 | (0.6+ | 2.0-) | 2006 08 19 | 699 | 0.4+  | 0.5+  |
| 2001 09 10 | 704 | 0.3+  | 0.1-  | 2001 12 17 | 704 | 0.9-  | 0.4-  | 2006 08 19 | 699 | 0.6+  | 0.1+  |
| 2001 09 10 | 704 | 0.3-  | 0.0   | 2001 12 19 | 699 | 1.1+  | 0.0   | 2006 08 19 | 644 | 0.2-  | 0.1+  |
| 2001 09 10 | 704 | 0.6-  | 0.1+  | 2001 12 19 | 699 | 1.4+  | 0.4-  | 2006 08 19 | 699 | 0.4+  | 0.1+  |
| 2001 09 17 | 704 | 0.7-  | 0.9+  | 2001 12 19 | 699 | 0.5+  | 0.2+  | 2006 08 19 | 644 | 0.1-  | 0.3+  |
| 2001 09 17 | 704 | (1.7+ | 1.1+) | 2001 12 19 | 699 | 0.2+  | 0.7-  | 2006 08 19 | 644 | 0.3-  | 0.4+  |
| 2001 09 17 | 704 | 0.2-  | 0.0   | 2002 01 09 | 704 | 0.6-  | 0.0   | 2006 08 19 | 699 | 0.5-  | 1.5+  |
| 2001 09 17 | 704 | 0.4-  | 0.2+  | 2002 01 09 | 704 | 0.5-  | 0.4-  | 2006 08 20 | 644 | 0.4-  | 0.0   |
| 2001 09 17 | 704 | 0.7-  | 0.2+  | 2002 01 09 | 704 | 1.0-  | 0.7-  | 2006 08 20 | 644 | 0.3-  | 0.2+  |
| 2001 09 19 | 699 | 0.6+  | 0.7+  | 2002 12 14 | 645 | 0.1-  | 0.1-  | 2006 08 20 | 644 | 0.3-  | 0.0   |
| 2001 09 19 | 699 | 0.1+  | 0.6+  | 2002 12 14 | 645 | 0.1-  | 0.0   | 2006 08 21 | 644 | 0.6-  | 0.3+  |
| 2001 09 19 | 699 | 0.3-  | 0.0   | 2003 01 04 | 704 | (1.8+ | 0.5+) | 2006 08 21 | 644 | 0.1-  | 0.1+  |
| 2001 09 19 | 699 | 0.4+  | 0.4+  | 2003 01 04 | 704 | (1.5+ | 0.0 ) | 2006 08 21 | 644 | 0.3-  | 0.3+  |
| 2001 09 20 | 704 | 0.5-  | 0.1+  | 2003 01 04 | 704 | 0.3+  | 0.2+  | 2006 08 22 | 644 | 0.6-  | 0.2-  |
| 2001 09 20 | 699 | 0.1-  | 0.5+  | 2003 01 04 | 704 | 1.1+  | 1.0+  | 2006 08 22 | 644 | 0.7-  | 0.0   |
| 2001 09 20 | 699 | 0.2-  | 0.7+  | 2003 01 04 | 704 | 0.9+  | 0.4-  | 2006 08 22 | 644 | 0.5-  | 0.0   |
| 2001 09 20 | 704 | 0.3-  | 0.2+  | 2003 01 17 | 644 | 0.5+  | 0.6+  | 2006 08 28 | 691 | 0.1-  | 0.4+  |
| 2001 09 20 | 699 | 0.1-  | 0.2+  | 2003 01 17 | 644 | 0.1-  | 1.4+  | 2006 08 28 | 691 | 0.1-  | 0.2+  |
| 2001 09 20 | 699 | 0.1-  | 0.8+  | 2003 01 17 | 644 | 0.5+  | 0.7+  | 2006 08 28 | 691 | 0.2-  | 0.4+  |
| 2001 09 20 | 704 | 0.3-  | 0.4+  | 2003 01 26 | 291 | 0.7-  | 0.2+  | 2006 09 14 | 644 | 0.0   | 0.5+  |
| 2001 09 22 | 704 | 0.6+  | 0.4-  | 2003 01 26 | 291 | 0.2-  | 0.0   | 2006 09 14 | 644 | 0.0   | 0.3+  |
| 2001 09 22 | 704 | 0.2-  | 0.1+  | 2003 01 26 | 291 | 1.1-  | 0.4+  | 2006 09 14 | 703 | 0.0   | 0.1-  |
| 2001 09 22 | 704 | 0.3+  | 0.1-  | 2003 01 27 | 704 | 0.6+  | 0.8+  | 2006 09 14 | 703 | 1.0+  | 0.7-  |
| 2001 09 22 | 704 | 0.4-  | 0.1+  | 2003 01 27 | 704 | 0.6-  | 0.6+  | 2006 09 14 | 644 | 0.2-  | 0.1+  |
| 2001 09 23 | 704 | 0.5-  | 0.4+  | 2003 01 27 | 704 | 0.2-  | 0.0   | 2006 09 14 | 703 | 0.7-  | 0.3-  |
| 2001 09 23 | 704 | 0.2-  | 0.9+  | 2003 01 27 | 644 | 0.9+  | 0.9+  | 2006 09 14 | 703 | 0.3-  | 0.1-  |
| 2001 09 23 | 704 | 0.4-  | 1.2+  | 2003 01 27 | 644 | 0.4+  | 0.5+  | 2006 09 17 | 704 | 0.5-  | 1.2+  |
| 2001 09 23 | 704 | 0.2-  | 1.0+  | 2003 01 27 | 644 | 0.8+  | 0.7+  | 2006 09 17 | 704 | (1.3- | 1.6+) |
| 2001 09 23 | 704 | 0.8-  | 0.7+  | 2003 01 30 | 699 | 1.0+  | 0.3+  | 2006 09 17 | 704 | 0.4+  | 0.3+  |
| 2001 09 28 | 644 | 0.3-  | 0.1+  | 2003 01 30 | 699 | 0.7+  | 0.4+  | 2006 09 17 | 704 | 0.5+  | 0.2+  |
| 2001 09 28 | 644 | 0.2-  | 0.2+  | 2003 01 30 | 699 | 1.2+  | 0.4+  | 2006 09 24 | 699 | 0.6+  | 0.0   |
| 2001 09 28 | 644 | 0.3-  | 0.1-  | 2003 01 30 | 699 | 0.0   | 0.6+  | 2006 09 24 | 699 | 0.5+  | 0.3+  |
| 2001 10 07 | 644 | 0.3-  | 0.3+  | 2003 01 31 | 704 | 0.7+  | 0.5+  | 2006 09 24 | 699 | 0.8+  | 0.2+  |
| 2001 10 07 | 644 | 0.1+  | 0.4+  | 2003 01 31 | 704 | 0.1-  | 0.1+  | 2006 09 24 | 699 | 0.3+  | 0.3-  |
| 2001 10 07 | 644 | 0.2-  | 0.8+  | 2003 01 31 | 704 | 0.5+  | 0.5+  | 2006 09 27 | 704 | 0.3+  | 1.3+  |
| 2001 10 12 | 699 | 0.3-  | 0.0   | 2003 02 03 | 644 | 0.2+  | 0.4+  | 2006 09 27 | G96 | 0.4-  | 0.1+  |
| 2001 10 12 | 699 | 0.4-  | 0.4-  | 2003 02 03 | 699 | 0.3+  | 0.3+  | 2006 09 27 | G96 | 0.1-  | 0.1+  |
| 2001 10 12 | 699 | 0.1-  | 0.4-  | 2003 02 03 | 704 | 1.1+  | 0.6+  | 2006 09 27 | 704 | 0.2-  | 0.8+  |
| 2001 10 12 | 699 | 0.4-  | 0.4-  | 2003 02 03 | 699 | 0.1-  | 0.1-  | 2006 09 27 | G96 | 0.5+  | 0.1-  |
| 2001 10 14 | 704 | 0.1-  | 0.7+  | 2003 02 03 | 704 | 0.9+  | 0.6+  | 2006 09 27 | G96 | 0.1+  | 0.2+  |
| 2001 10 14 | 704 | 0.2+  | 0.6+  | 2003 02 03 | 699 | 0.7+  | 0.3+  | 2006 09 27 | 704 | 0.1-  | 0.4+  |
| 2001 10 14 | 704 | 0.1+  | 0.4+  | 2003 02 03 | 644 | 0.8+  | 0.2+  | 2006 11 17 | G96 | 0.2-  | 0.5-  |
| 2001 10 14 | 704 | 0.3+  | 0.8+  | 2003 02 03 | 699 | 0.5+  | 0.5+  | 2006 11 17 | G96 | 0.2-  | 0.4-  |
| 2001 10 14 | 704 | 0.3+  | 0.7+  | 2003 02 03 | 704 | 1.2+  | 1.0-  | 2006 11 17 | G96 | 0.4-  | 0.3-  |
| 2001 10 15 | 704 | 0.2-  | 0.6+  | 2003 02 03 | 704 | (2.3+ | 3.2-) | 2006 11 17 | G96 | 0.1+  | 0.2-  |
| 2001 10 15 | 704 | 0.2-  | 0.5+  | 2003 02 03 | 644 | 0.4+  | 0.6+  | 2007 10 15 | 704 | 0.6+  | 0.4-  |
| 2001 10 15 | 704 | 0.5-  | 0.5+  | 2003 02 08 | 704 | 0.7+  | 0.3+  | 2007 10 15 | 704 | 0.2-  | 0.1+  |
| 2001 10 15 | 704 | 0.2+  | 0.8+  | 2003 02 08 | 704 | 0.2+  | 0.8+  | 2007 10 15 | 704 | 0.4+  | 0.2-  |
| 2001 10 15 | 704 | 0.0   | 0.5+  | 2003 02 08 | 704 | 1.1+  | 1.3+  | 2007 10 15 | 704 | 0.2+  | 0.5+  |
| 2001 10 17 | 704 | 0.1+  | 0.3-  | 2003 02 08 | 704 | 0.4+  | 1.0+  | 2007 11 18 | 704 | 0.6+  | 0.5-  |
| 2001 10 17 | 704 | 0.4+  | 0.7-  | 2003 02 08 | 704 | 0.9+  | 0.6+  | 2007 11 18 | 704 | 0.1+  | 0.1-  |
| 2001 10 17 | 704 | 0.1+  | 0.2-  | 2003 02 11 | 608 | 0.4+  | 0.1-  | 2007 11 18 | 704 | 0.4+  | 0.2-  |
| 2001 10 17 | 704 | 0.2+  | 0.9-  | 2003 02 11 | 608 | 0.3+  | 0.3-  | 2007 11 18 | 704 | 0.0   | 0.1+  |
| 2001 10 17 | 704 | 0.1+  | 0.6-  | 2003 02 11 | 608 | 0.1+  | 0.3-  | 2007 11 19 | D29 | 0.4+  | 0.7-  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 20 | 644 | 0.7- | 0.1+ | 2003 02 21 | 644 | 0.4+ | 0.3+ | 2007 11 19 | D29 | 0.7+  | 0.4-  |
| 2001 10 20 | 644 | 0.7- | 0.0  | 2003 02 21 | 644 | 0.2+ | 0.2+ | 2007 11 19 | D29 | (0.5+ | 2.0-) |
| 2001 10 20 | 644 | 0.8- | 0.2+ | 2003 02 21 | 644 | 0.4+ | 0.5+ | 2007 11 19 | D29 | 0.5+  | 0.7-  |
| 2001 10 21 | 704 | 0.9+ | 0.0  | 2003 02 22 | 699 | 0.4- | 0.4+ | 2007 11 20 | 704 | 0.3-  | 0.5+  |
| 2001 10 21 | 704 | 0.6+ | 0.0  | 2003 02 22 | 699 | 0.0  | 0.3- | 2007 11 20 | 704 | 0.5-  | 0.7-  |
| 2001 10 21 | 704 | 0.4+ | 0.0  | 2003 02 22 | 699 | 1.1- | 0.4+ | 2007 11 20 | 704 | 0.1-  | 0.3-  |
| 2001 10 21 | 704 | 0.6+ | 0.1- | 2003 02 22 | 699 | 0.3+ | 0.5+ | 2007 12 05 | 691 | 0.1-  | 0.4-  |
| 2001 10 22 | 704 | 0.3- | 0.3+ | 2003 02 28 | 704 | 0.3+ | 0.4- | 2007 12 05 | 691 | 0.4-  | 1.4-  |
| 2001 10 22 | 704 | 0.1- | 0.2+ | 2003 02 28 | 704 | 0.1+ | 0.8+ | 2007 12 05 | 691 | 0.1+  | 0.6-  |
| 2001 10 22 | 704 | 0.1+ | 0.1+ | 2003 02 28 | 704 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.7-  | 0.7-  |
| 2001 11 10 | 644 | 0.1- | 0.1+ | 2003 02 28 | 704 | 0.5- | 0.3+ | 2007 12 13 | 704 | 0.4-  | 0.2+  |
| 2001 11 10 | 644 | 0.1- | 0.1+ | 2003 03 06 | 644 | 0.4+ | 0.5+ | 2007 12 13 | 704 | 0.2-  | 0.6-  |
| 2001 11 10 | 644 | 0.2- | 0.0  | 2003 03 06 | 644 | 0.4+ | 0.8+ | 2007 12 15 | 704 | 1.4-  | 0.7+  |
| 2001 11 16 | 695 | 0.6+ | 0.2- | 2003 03 06 | 644 | 0.6+ | 0.5+ | 2007 12 15 | 704 | 0.1+  | 0.3+  |
| 2001 11 16 | 695 | 0.1+ | 0.2- | 2003 03 07 | 460 | 0.7- | 1.0+ | 2007 12 15 | 704 | 0.0   | 0.4+  |
| 2001 11 16 | 695 | 1.0+ | 0.4- | 2003 03 07 | 460 | 0.3+ | 0.3+ | 2007 12 15 | 704 | 0.6+  | 0.7+  |
| 2001 11 16 | 695 | 0.2+ | 0.6- | 2003 03 09 | 926 | 0.2+ | 0.1+ | 2007 12 15 | 704 | 0.4+  | 0.4+  |
| 2001 11 17 | 704 | 0.1+ | 0.0  | 2003 03 09 | 926 | 0.4+ | 0.2+ |            |     |       |       |
| 2001 11 17 | 704 | 0.2+ | 0.0  | 2003 03 09 | 926 | 0.3+ | 0.4+ |            |     |       |       |

(171915)\* 2001 SX<sub>83</sub> = 2004 CC<sub>25</sub>

Discovered 2001 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 68931)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 82.42439  | <i>ω</i> | 4.20502   | +0.82305190 | +0.56642598 |          |   |
| <i>a</i> | 2.9922273 | <i>Ω</i> | 321.19678 | -0.52302499 | +0.72717967 |          |   |
| <i>e</i> | 0.0815420 | <i>i</i> | 3.82464   | -0.22142815 | +0.38777743 |          |   |
| <i>P</i> | 5.18      | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 1994 04 02 | 691 | 0.4-  | 0.5-  | 2004 02 13 | 291 | (1.8+ | 1.0+) | 2006 08 28 | 699 | (0.0 | 1.6-) |
| 1994 04 02 | 691 | (4.0+ | 1.0+) | 2004 02 13 | 291 | 0.9+  | 0.1+  | 2006 08 28 | 699 | 1.5- | 1.2-  |
| 1994 04 02 | 691 | 0.4-  | 0.5+  | 2004 02 29 | 691 | 0.1-  | 0.2-  | 2006 09 26 | G96 | 0.1+ | 0.1-  |
| 2001 09 12 | 704 | 0.3+  | 0.3+  | 2004 02 29 | 691 | 0.0   | 0.0   | 2006 09 26 | G96 | 0.1- | 0.2-  |
| 2001 09 12 | 704 | 0.3+  | 0.7+  | 2004 02 29 | 691 | 0.1+  | 0.1-  | 2006 09 26 | G96 | 0.2- | 0.0   |
| 2001 09 12 | 704 | 0.4+  | 1.3+  | 2004 03 18 | 691 | 0.5+  | 0.1-  | 2006 09 26 | G96 | 0.8- | 0.2-  |
| 2001 09 12 | 704 | 0.1+  | 0.8+  | 2004 03 18 | 691 | 0.3+  | 1.3+  | 2006 09 27 | G96 | 0.4+ | 0.6-  |
| 2001 09 20 | 704 | 0.8-  | 0.6+  | 2004 03 18 | 691 | 0.1+  | 0.5+  | 2006 09 27 | G96 | 0.4+ | 0.1-  |

|                                         |            |          |                |       |             |                |             |      |  |
|-----------------------------------------|------------|----------|----------------|-------|-------------|----------------|-------------|------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                |       |             |                |             |      |  |
| MPC                                     |            |          |                |       |             |                |             |      |  |
| <i>M</i>                                | 11.46046   |          | (2000.0)       |       | <b>P</b>    |                | <b>Q</b>    |      |  |
| <i>n</i>                                | 0.20411161 | $\omega$ | 172.78338      |       | +0.19021450 |                | -0.98153940 |      |  |
| <i>a</i>                                | 2.8568728  | $\Omega$ | 266.24985      |       | +0.89972813 |                | +0.18242767 |      |  |
| <i>e</i>                                | 0.0202991  | <i>i</i> | 1.14681        |       | +0.39282023 |                | +0.05745051 |      |  |
| <i>P</i>                                | 4.83       | <i>H</i> | 15.4           |       | <i>G</i>    | 0.15           | <i>U</i>    | 0    |  |
| Residuals in seconds of arc             |            |          |                |       |             |                |             |      |  |
| 2001 09 20 704                          | 0.6-       | 1.2+     | 2004 03 27 704 | 1.4+  | 0.1-        | 2006 10 19 G96 | 0.4+        | 0.3- |  |
| 2001 09 20 704                          | 1.0-       | 1.1+     | 2004 03 27 704 | 0.0   | 0.5+        | 2006 10 19 G96 | 0.1+        | 0.1- |  |
| 2001 09 20 704                          | 1.1-       | 1.1+     | 2004 03 29 704 | 0.4+  | 0.3+        | 2006 10 19 G96 | 0.2-        | 0.1- |  |
| 2001 09 20 704                          | 0.6-       | 0.9+     | 2004 03 29 704 | 0.9+  | 0.4+        | 2006 10 19 G96 | 0.1+        | 0.1- |  |
| 2001 09 20 704                          | 0.5-       | 0.9+     | 2004 03 29 704 | 0.7+  | 0.9+        | 2006 10 28 G96 | 0.3-        | 0.3- |  |
| 2001 09 22 704                          | 0.3-       | 0.1+     | 2004 04 12 691 | 0.2+  | 0.2+        | 2006 10 28 G96 | 0.2+        | 0.5- |  |
| 2001 09 22 704                          | 0.8+       | 0.6+     | 2004 04 12 691 | 0.3+  | 0.0         | 2006 10 28 G96 | 0.2-        | 0.9- |  |
| 2001 09 22 704                          | 0.7-       | 0.5+     | 2004 04 12 691 | 0.3+  | 0.2+        | 2006 10 28 G96 | 0.1+        | 0.1- |  |
| 2001 09 22 704                          | 0.5+       | 1.1+     | 2004 04 15 691 | 0.1+  | 0.5+        | 2006 12 16 G96 | 0.1+        | 0.3- |  |
| 2001 09 22 704                          | 0.7-       | 0.5+     | 2004 04 15 691 | 0.1+  | 0.2+        | 2006 12 16 G96 | 0.0         | 0.1- |  |
| 2001 09 23 704                          | 0.4-       | 0.5+     | 2004 04 15 691 | 0.1+  | 0.1+        | 2006 12 16 G96 | 0.0         | 0.4- |  |
| 2001 09 23 704                          | 0.2-       | 1.1+     | 2006 09 17 691 | 0.1-  | 0.3+        | 2006 12 16 G96 | 0.8-        | 0.4- |  |
| 2001 09 23 704                          | 0.1+       | 0.8+     | 2006 09 17 691 | 0.0   | 0.2+        | 2007 10 19 G96 | 0.3+        | 0.5- |  |
| 2001 09 23 704                          | 0.5-       | 0.9+     | 2006 09 17 691 | 0.2-  | 0.5+        | 2007 10 19 G96 | 0.2+        | 0.3- |  |
| 2001 09 23 704                          | 0.1-       | 0.8+     | 2006 09 17 703 | 0.5-  | 0.6-        | 2007 10 19 G96 | 0.2-        | 0.3- |  |
| 2004 03 18 704                          | 0.1+       | 0.7+     | 2006 09 17 703 | 0.6-  | 0.5-        | 2007 10 19 G96 | 0.3+        | 0.0  |  |
| 2004 03 18 704                          | 0.5-       | 0.2+     | 2006 09 17 703 | 0.6-  | 0.3+        | 2007 12 04 G96 | 0.5-        | 0.4- |  |
| 2004 03 18 704                          | 0.7-       | 0.2-     | 2006 09 17 703 | 0.4+  | 0.2-        | 2007 12 04 G96 | 0.3-        | 0.0  |  |
| 2004 03 18 704                          | 0.3-       | 0.3+     | 2006 09 20 704 | (0.0  | 1.7+)       | 2007 12 04 G96 | 0.4+        | 0.0  |  |
| 2004 03 18 704                          | 0.3-       | 0.1+     | 2006 09 20 704 | 0.1+  | 0.7+        | 2007 12 04 G96 | 0.0         | 0.3- |  |
| 2004 03 20 704                          | 0.5+       | 1.2+     | 2006 09 20 704 | 0.1+  | 0.1+        | 2007 12 04 691 | 0.1-        | 0.3+ |  |
| 2004 03 20 704                          | 0.9-       | 0.1+     | 2006 09 25 691 | 0.1-  | 0.4+        | 2007 12 04 691 | 0.2-        | 0.1+ |  |
| 2004 03 20 704                          | 1.1-       | 0.5-     | 2006 09 25 691 | 0.1+  | 0.2+        | 2007 12 04 691 | 0.5-        | 0.3+ |  |
| 2004 03 20 704                          | (1.5+      | 0.4+)    | 2006 09 25 691 | 0.0   | 0.0         | 2007 12 05 704 | 1.3+        | 0.1+ |  |
| 2004 03 26 691                          | 0.2+       | 0.5+     | 2006 10 17 703 | 0.2+  | 0.3-        | 2007 12 05 704 | 0.9+        | 0.6+ |  |
| 2004 03 26 691                          | 0.1+       | 0.3+     | 2006 10 17 703 | (3.6+ | 0.1-)       | 2007 12 05 704 | 1.7+        | 1.0+ |  |
| 2004 03 26 691                          | 0.1+       | 0.5+     | 2006 10 17 703 | 1.0+  | 0.8+        | 2007 12 05 704 | 0.2+        | 0.9+ |  |
| 2004 03 27 704                          | 0.1-       | 0.4+     | 2006 10 17 703 | (0.5+ | 2.2+)       |                |             |      |  |

**(171917)\* 2001 SA<sub>96</sub> = 2004 FY<sub>26</sub>**

Discovered 2001 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 61027)

|                                         |            |          |                |       |             |                |             |      |  |
|-----------------------------------------|------------|----------|----------------|-------|-------------|----------------|-------------|------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                |       |             |                |             |      |  |
| MPC                                     |            |          |                |       |             |                |             |      |  |
| <i>M</i>                                | 331.40698  |          | (2000.0)       |       | <b>P</b>    |                | <b>Q</b>    |      |  |
| <i>n</i>                                | 0.18661096 | $\omega$ | 264.69266      |       | +0.03144261 |                | -0.99946410 |      |  |
| <i>a</i>                                | 3.0328059  | $\Omega$ | 183.54399      |       | +0.96543750 |                | +0.03272747 |      |  |
| <i>e</i>                                | 0.0664141  | <i>i</i> | 8.46929        |       | +0.25873114 |                | -0.00065922 |      |  |
| <i>P</i>                                | 5.28       | <i>H</i> | 15.8           |       | <i>G</i>    | 0.15           | <i>U</i>    | 0    |  |
| Residuals in seconds of arc             |            |          |                |       |             |                |             |      |  |
| 2001 09 20 704                          | 0.3-       | 0.2+     | 2004 03 18 704 | 0.1-  | 0.0         | 2006 08 29 691 | 0.2-        | 0.3+ |  |
| 2001 09 20 704                          | 0.5-       | 0.0      | 2004 03 18 704 | 0.5+  | 0.2-        | 2006 08 29 691 | 0.1+        | 0.2+ |  |
| 2001 09 20 704                          | 0.2-       | 0.4+     | 2004 03 18 704 | 1.0+  | 0.5+        | 2006 09 28 G96 | 0.3-        | 0.1+ |  |
| 2001 09 20 704                          | 0.4-       | 0.2+     | 2004 03 18 704 | 0.3+  | 0.3+        | 2006 09 28 G96 | 0.2+        | 0.1- |  |
| 2001 09 20 704                          | 0.4-       | 0.2+     | 2004 03 26 699 | (0.3- | 2.0-)       | 2006 09 28 G96 | 0.1+        | 0.0  |  |
| 2001 09 21 691                          | 0.4+       | 1.1+     | 2004 03 27 704 | 0.4+  | 0.3+        | 2006 09 28 G96 | 0.1-        | 0.1- |  |
| 2001 09 21 691                          | 0.1-       | 0.3+     | 2004 03 27 704 | 0.3+  | 1.0+        | 2007 11 04 G96 | 0.1-        | 0.3+ |  |
| 2001 09 21 691                          | 0.2-       | 0.5+     | 2004 03 27 704 | 0.1-  | 0.9-        | 2007 11 04 G96 | 0.0         | 0.2+ |  |
| 2001 09 22 704                          | 0.5-       | 0.1-     | 2004 03 27 704 | 0.2-  | 0.7-        | 2007 11 04 G96 | 0.4-        | 0.4- |  |
| 2001 09 22 704                          | 0.2+       | 0.1-     | 2004 03 29 691 | 0.0   | 0.2+        | 2007 11 18 G96 | 0.4+        | 0.1+ |  |
| 2001 09 22 704                          | 0.4+       | 0.0      | 2004 03 29 691 | 0.1-  | 0.3+        | 2007 11 18 G96 | 0.0         | 0.0  |  |
| 2001 09 23 704                          | 0.5-       | 0.4-     | 2004 03 29 691 | 0.4-  | 0.2+        | 2007 11 18 G96 | 0.0         | 0.1+ |  |
| 2001 09 23 704                          | 0.0        | 0.7+     | 2004 04 15 691 | 0.1-  | 0.5+        | 2007 11 18 G96 | 0.1+        | 0.1+ |  |
| 2001 09 23 704                          | 0.5-       | 0.1+     | 2004 04 15 691 | 0.1+  | 0.3+        | 2007 12 06 H55 | 0.1-        | 0.7+ |  |
| 2001 09 23 704                          | 0.1-       | 0.1+     | 2004 04 15 691 | 0.3-  | 0.4+        | 2007 12 06 H55 | 0.2-        | 0.9+ |  |
| 2004 03 17 691                          | 0.3+       | 0.3+     | 2004 04 22 691 | 0.3+  | 0.1+        | 2007 12 06 H55 | 0.3+        | 0.3+ |  |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 03 17 691 | 0.3+ | 0.2+ | 2004 04 22 691 | 0.0  | 0.3+ | 2007 12 06 H55 | 0.3- | 1.1+ |
| 2004 03 17 691 | 0.4+ | 0.4+ | 2004 04 22 691 | 0.3- | 0.2+ |                |      |      |
| 2004 03 18 704 | 0.8+ | 0.1+ | 2006 08 29 691 | 0.1- | 0.4+ |                |      |      |

**(171918)\* 2001 SF<sub>100</sub>**

Discovered 2001 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |                |      |             |                |             |       |  |
|-----------------------------------------|------------|----------|----------------|------|-------------|----------------|-------------|-------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                |      |             |                |             |       |  |
| MPC                                     |            |          |                |      |             |                |             |       |  |
| <i>M</i>                                | 316.54449  |          | (2000.0)       |      | <b>P</b>    |                | <b>Q</b>    |       |  |
| <i>n</i>                                | 0.18128675 | $\omega$ | 106.88250      |      | -0.05599898 |                | -0.99764592 |       |  |
| <i>a</i>                                | 3.0918993  | $\Omega$ | 346.14679      |      | +0.84154747 |                | -0.02582950 |       |  |
| <i>e</i>                                | 0.0472560  | <i>i</i> | 9.51550        |      | +0.53727271 |                | -0.06352530 |       |  |
| <i>P</i>                                | 5.44       | <i>H</i> | 14.9           |      | <i>G</i>    | 0.15           | <i>U</i>    | 0     |  |
| Residuals in seconds of arc             |            |          |                |      |             |                |             |       |  |
| 2001 09 18 699                          | 0.3+       | 0.6+     | 2004 02 26 704 | 0.6+ | 1.0+        | 2006 10 22 G96 | 0.5-        | 0.3+  |  |
| 2001 09 18 699                          | 0.9-       | 0.5+     | 2004 02 26 704 | 1.0+ | 0.2+        | 2006 10 22 G96 | 0.3+        | 0.6+  |  |
| 2001 09 18 699                          | (0.4-      | 2.3+)    | 2004 02 26 704 | 0.3+ | 1.1+        | 2007 10 09 703 | 0.4+        | 0.8+  |  |
| 2001 09 18 699                          | 0.5-       | 1.5+     | 2004 03 12 644 | 0.3+ | 0.1+        | 2007 10 09 703 | 0.2-        | 0.1-  |  |
| 2001 09 20 704                          | 0.3-       | 0.2+     | 2004 03 12 644 | 0.2+ | 0.1+        | 2007 10 09 703 | 0.2+        | 0.7-  |  |
| 2001 09 20 704                          | 0.1+       | 0.5+     | 2004 03 12 644 | 0.2+ | 0.2+        | 2007 10 09 703 | 2.2-        | 1.6-  |  |
| 2001 09 20 704                          | 0.6-       | 0.1+     | 2004 03 15 691 | 0.1+ | 0.1+        | 2007 10 16 703 | 0.4+        | 0.7-  |  |
| 2001 09 20 704                          | 0.2+       | 0.3-     | 2004 03 15 691 | 0.1- | 0.1+        | 2007 10 16 703 | 1.2+        | 0.5+  |  |
| 2001 09 20 704                          | 0.5-       | 0.1-     | 2004 03 15 691 | 0.1+ | 0.2+        | 2007 10 16 703 | 0.1+        | 0.9-  |  |
| 2001 09 20 704                          | 0.5-       | 0.3+     | 2004 03 18 704 | 0.1- | 0.1+        | 2007 10 16 703 | 0.4+        | 0.4+  |  |
| 2001 09 20 704                          | 0.0        | 0.3+     | 2004 03 18 704 | 0.4+ | 0.4+        | 2007 11 02 703 | 0.3+        | 0.2+  |  |
| 2001 09 20 704                          | 0.2-       | 0.2+     | 2004 03 18 704 | 0.0  | 0.7+        | 2007 11 02 703 | 0.4-        | 0.5-  |  |
| 2001 09 20 704                          | 0.5+       | 1.2-     | 2004 03 18 704 | 0.5- | 0.4+        | 2007 11 02 703 | 0.7+        | 0.6+  |  |
| 2001 09 22 704                          | 0.1-       | 0.4+     | 2004 03 23 691 | 0.1- | 0.1+        | 2007 11 02 703 | 0.5-        | 0.2-  |  |
| 2001 09 22 704                          | 0.5-       | 0.4+     | 2004 03 23 691 | 0.0  | 0.0         | 2007 11 03 704 | 0.3-        | 0.8+  |  |
| 2001 09 22 704                          | 1.1+       | 0.1+     | 2004 03 23 691 | 0.0  | 0.1+        | 2007 11 03 704 | 0.6+        | 0.2+  |  |
| 2001 09 22 704                          | 0.4+       | 0.6+     | 2004 03 26 699 | 0.7- | 0.2-        | 2007 11 03 704 | 0.2+        | 0.2+  |  |
| 2001 09 22 704                          | 0.3+       | 0.4+     | 2004 03 26 699 | 0.0  | 0.1+        | 2007 11 08 703 | 0.4+        | 1.1-  |  |
| 2001 09 22 704                          | 0.4-       | 0.6+     | 2004 03 26 699 | 0.1- | 0.0         | 2007 11 08 703 | 1.1-        | 0.0   |  |
| 2001 09 22 704                          | 0.3+       | 0.3+     | 2004 03 26 699 | 0.4- | 1.3+        | 2007 11 08 703 | 0.6-        | 0.1+  |  |
| 2001 09 23 704                          | 0.3-       | 0.2+     | 2004 03 27 704 | 0.4+ | 0.6+        | 2007 11 08 703 | 0.2-        | 0.1-  |  |
| 2001 09 23 704                          | 0.5-       | 0.0      | 2004 03 27 704 | 0.1- | 0.2+        | 2007 11 09 704 | 1.4-        | 0.0   |  |
| 2001 09 23 704                          | 0.4+       | 0.3+     | 2004 03 27 704 | 0.8+ | 0.3-        | 2007 11 09 704 | 0.5+        | 0.3-  |  |
| 2001 09 23 704                          | 0.6-       | 0.1+     | 2004 03 27 704 | 0.2+ | 0.1-        | 2007 11 09 704 | 0.5+        | 0.8+  |  |
| 2001 09 24 704                          | 0.3+       | 0.5+     | 2004 03 27 704 | 0.7+ | 0.2+        | 2007 11 09 704 | (1.6-       | 0.8+) |  |
| 2001 09 24 704                          | 0.5-       | 0.7+     | 2004 04 17 691 | 0.2- | 0.4-        | 2007 11 16 704 | 0.3-        | 0.5-  |  |
| 2001 09 24 704                          | 0.6-       | 0.3+     | 2004 04 17 691 | 0.7+ | 0.3+        | 2007 11 16 704 | 0.1+        | 0.3+  |  |
| 2001 09 24 704                          | 0.1+       | 1.0+     | 2004 04 17 691 | 0.2+ | 0.0         | 2007 11 16 704 | 0.0         | 0.3-  |  |
| 2001 09 24 704                          | 0.1-       | 1.2+     | 2004 04 24 691 | 0.1+ | 0.1+        | 2007 12 03 704 | 0.7+        | 0.3+  |  |
| 2001 10 21 704                          | 0.8-       | 1.0+     | 2004 04 24 691 | 0.2+ | 0.1+        | 2007 12 03 704 | 0.3-        | 0.3-  |  |
| 2001 10 21 704                          | 0.6-       | 0.3-     | 2004 04 24 691 | 0.1- | 0.4+        | 2007 12 03 704 | 0.8-        | 1.1+  |  |
| 2001 10 21 704                          | 1.1-       | 0.2-     | 2006 10 22 G96 | 0.1- | 0.5+        | 2007 12 03 704 | 1.1+        | 0.5-  |  |
| 2001 10 21 704                          | 0.7-       | 0.3-     | 2006 10 22 G96 | 0.2- | 0.2+        | 2007 12 03 704 | 0.5+        | 0.4+  |  |

**(171919)\* 2001 SG<sub>115</sub>**

Discovered 2001 Sept. 20 by W. K. Y. Yeung at Desert Eagle Observatory.

|                                         |  |  |  |                          |  |  |  |                            |  |     |  |                            |             |  |  |  |  |  |  |
|-----------------------------------------|--|--|--|--------------------------|--|--|--|----------------------------|--|-----|--|----------------------------|-------------|--|--|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |                          |  |  |  |                            |  | MPC |  |                            |             |  |  |  |  |  |  |
| <i>M</i> 50.47770                       |  |  |  | (2000.0)                 |  |  |  | <b>P</b>                   |  |     |  |                            | <b>Q</b>    |  |  |  |  |  |  |
| <i>n</i> 0.18282677                     |  |  |  | $\omega$ 220.13007       |  |  |  | +0.99817935                |  |     |  |                            | −0.05625291 |  |  |  |  |  |  |
| <i>a</i> 0.3745120                      |  |  |  | $\Omega$ 143.07739       |  |  |  | +0.06031170                |  |     |  |                            | +0.92669433 |  |  |  |  |  |  |
| <i>e</i> 0.3289263                      |  |  |  | <i>i</i> 2.07606         |  |  |  | +0.00069966                |  |     |  |                            | +0.37158207 |  |  |  |  |  |  |
| <i>P</i> 5.39                           |  |  |  | <i>H</i> 16.0            |  |  |  | <i>G</i> 0.15              |  |     |  |                            | <i>U</i> 1  |  |  |  |  |  |  |
| Residuals in seconds of arc             |  |  |  |                          |  |  |  |                            |  |     |  |                            |             |  |  |  |  |  |  |
| 2001 08 24 704 0.4− 0.2+                |  |  |  | 2001 10 16 704 0.5+ 0.5+ |  |  |  | 2001 11 18 704 0.2+ 0.2+   |  |     |  | 2001 11 18 704 0.8− 0.2+   |             |  |  |  |  |  |  |
| 2001 08 24 704 0.5− 0.8+                |  |  |  | 2001 10 16 704 0.5+ 0.4+ |  |  |  | 2001 11 18 704 0.8− 0.2+   |  |     |  | 2001 11 18 704 0.8− 0.6−   |             |  |  |  |  |  |  |
| 2001 08 24 704 0.8− 0.8+                |  |  |  | 2001 10 16 704 0.4+ 0.3+ |  |  |  | 2001 11 18 704 0.8− 0.6−   |  |     |  | 2001 11 18 704 0.8− 0.6−   |             |  |  |  |  |  |  |
| 2001 08 24 704 0.7− 0.2+                |  |  |  | 2001 10 17 644 0.4− 0.5+ |  |  |  | 2001 12 14 704 (0.5+ 3.1+) |  |     |  | 2001 12 14 704 (0.5+ 3.1+) |             |  |  |  |  |  |  |
| 2001 09 19 704 1.1+ 1.0+                |  |  |  | 2001 10 17 644 0.5− 0.7+ |  |  |  | 2001 12 14 704 (0.4+ 3.8+) |  |     |  | 2001 12 14 704 (0.4+ 3.8+) |             |  |  |  |  |  |  |
| 2001 09 19 704 0.2+ 0.0                 |  |  |  | 2001 10 17 644 0.7− 0.4+ |  |  |  | 2001 12 14 704 (0.6− 4.6+) |  |     |  | 2001 12 14 704 (0.6− 4.6+) |             |  |  |  |  |  |  |

2007 DEC. 24

M.P.O. 129205

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 19 | 704 | 0.8+  | 0.0   | 2001 10 20 | 704 | 1.0+ | 0.2+ | 2001 12 14 | 704 | (0.6+ | 3.0+) |
| 2001 09 19 | 704 | 0.2+  | 0.2-  | 2001 10 20 | 704 | 0.8+ | 0.5- | 2001 12 14 | 704 | (0.9+ | 4.8+) |
| 2001 09 19 | 704 | 0.0   | 0.3+  | 2001 10 20 | 704 | 0.5+ | 0.0  | 2001 12 17 | 704 | 0.2-  | 0.5+  |
| 2001 09 20 | 333 | 0.6+  | 0.9-  | 2001 10 20 | 704 | 0.3+ | 0.0  | 2001 12 17 | 704 | 0.2-  | 0.1-  |
| 2001 09 20 | 333 | 0.8+  | 0.4-  | 2001 10 20 | 704 | 0.7+ | 0.3- | 2001 12 17 | 704 | 0.6-  | 0.4+  |
| 2001 09 20 | 333 | 0.5+  | 0.7-  | 2001 10 21 | 691 | 0.3+ | 0.1- | 2001 12 17 | 704 | 0.8-  | 0.2+  |
| 2001 09 21 | 333 | 0.9+  | 0.8-  | 2001 10 21 | 691 | 0.2+ | 0.0  | 2001 12 17 | 704 | 1.1-  | 1.1+  |
| 2001 09 21 | 333 | 0.1+  | 1.1-  | 2001 10 21 | 691 | 0.2+ | 0.2- | 2004 02 26 | 695 | 0.2+  | 0.9+  |
| 2001 09 21 | 333 | 0.4+  | 0.5+  | 2001 10 22 | 704 | 0.4+ | 0.2- | 2004 02 26 | 695 | 0.5+  | 0.4+  |
| 2001 09 21 | 704 | 0.8+  | 1.1-  | 2001 10 22 | 704 | 0.0  | 0.0  | 2006 06 22 | 691 | 0.1+  | 0.1-  |
| 2001 09 21 | 704 | 0.5+  | 1.4-  | 2001 10 22 | 704 | 0.8+ | 0.5- | 2006 06 22 | 691 | 0.1-  | 0.0   |
| 2001 09 21 | 704 | 0.4+  | 1.4-  | 2001 10 22 | 704 | 0.4- | 0.2+ | 2006 06 22 | 691 | 0.1+  | 0.3+  |
| 2001 09 21 | 704 | (0.8+ | 1.8-) | 2001 10 23 | 704 | 0.2- | 0.0  | 2006 07 20 | 644 | 0.3-  | 0.1+  |
| 2001 09 21 | 704 | (0.0  | 1.6-) | 2001 10 23 | 704 | 0.3- | 0.0  | 2006 07 20 | 644 | 0.1-  | 0.0   |
| 2001 09 26 | 704 | 0.1-  | 0.6+  | 2001 10 23 | 704 | 0.2+ | 0.2+ | 2006 07 20 | 644 | 0.1+  | 0.0   |
| 2001 09 26 | 704 | 0.4+  | 0.5-  | 2001 10 23 | 704 | 0.2- | 0.4- | 2006 07 21 | G96 | 0.2+  | 0.1-  |
| 2001 09 26 | 704 | 0.0   | 0.4+  | 2001 10 23 | 704 | 0.0  | 0.4- | 2006 07 21 | G96 | 0.1-  | 0.1+  |
| 2001 09 26 | 704 | 0.1+  | 0.7+  | 2001 10 24 | 704 | 0.6- | 0.1+ | 2006 07 21 | G96 | 0.3-  | 0.1+  |
| 2001 09 26 | 704 | 0.6-  | 1.0+  | 2001 10 24 | 704 | 0.5- | 0.0  | 2006 08 20 | 644 | 0.4-  | 0.1-  |
| 2001 10 07 | 644 | 0.3+  | 0.9+  | 2001 10 24 | 704 | 1.2- | 0.1+ | 2006 08 20 | 644 | 0.1+  | 0.1+  |
| 2001 10 07 | 644 | 0.2+  | 0.8+  | 2001 10 24 | 704 | 0.6- | 0.1+ | 2006 08 20 | 644 | 0.1-  | 0.1+  |
| 2001 10 07 | 644 | 0.2+  | 0.5+  | 2001 10 24 | 704 | 0.6- | 0.3+ | 2007 11 05 | G96 | 0.2+  | 0.3-  |
| 2001 10 13 | 704 | 0.2-  | 0.4-  | 2001 10 25 | 644 | 0.3- | 0.1+ | 2007 11 05 | G96 | 0.4+  | 0.2+  |
| 2001 10 13 | 704 | 0.0   | 0.5-  | 2001 10 25 | 644 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.3+  | 0.2-  |
| 2001 10 13 | 704 | 0.3-  | 0.2+  | 2001 10 25 | 644 | 0.3- | 0.2+ | 2007 11 05 | G96 | 0.5+  | 0.4-  |
| 2001 10 13 | 704 | 0.0   | 0.7-  | 2001 11 09 | 704 | 0.2- | 0.5- | 2007 12 04 | G96 | 0.5+  | 0.0   |
| 2001 10 13 | 704 | 0.6-  | 0.0   | 2001 11 09 | 704 | 1.2- | 0.3+ | 2007 12 04 | G96 | 0.3+  | 0.3-  |
| 2001 10 14 | 704 | 0.1-  | 0.4+  | 2001 11 09 | 704 | 0.3- | 0.2- | 2007 12 04 | G96 | 0.7+  | 0.1-  |
| 2001 10 14 | 704 | 0.1+  | 0.1-  | 2001 11 09 | 704 | 0.9- | 0.3+ | 2007 12 04 | G96 | 0.0   | 0.3-  |
| 2001 10 14 | 704 | 0.2-  | 0.4-  | 2001 11 09 | 704 | 1.1- | 1.5- | 2007 12 16 | 691 | 0.1-  | 0.4+  |
| 2001 10 14 | 704 | 0.0   | 0.1-  | 2001 11 15 | 644 | 0.2- | 0.5+ | 2007 12 16 | 691 | 0.4-  | 0.5-  |
| 2001 10 14 | 704 | 0.4-  | 0.5-  | 2001 11 15 | 644 | 0.2- | 0.9+ | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2001 10 16 | 704 | 0.2+  | 0.1+  | 2001 11 15 | 644 | 0.2- | 0.7+ |            |     |       |       |
| 2001 10 16 | 704 | 0.4+  | 0.1-  | 2001 11 18 | 704 | 0.3+ | 0.1+ |            |     |       |       |

(171920)\* 2001 SN<sub>117</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| M 52.91239 (2000.0)         |            |          |           |
| P Q                         |            |          |           |
| <i>n</i>                    | 0.20011927 | $\omega$ | 105.59814 |
| <i>a</i>                    | 2.8947436  | $\Omega$ | 288.22280 |
| <i>e</i>                    | 0.1084370  | <i>i</i> | 6.81765   |
| <i>P</i>                    | 4.93       | <i>H</i> | 16.2      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 1         |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 25 | 704 | 0.6-  | 0.7-  | 2003 01 08 | 704 | 0.5+  | 1.3+  | 2006 10 21 | 691 | 0.0  | 0.1+ |
| 2001 08 25 | 704 | 0.1+  | 0.2+  | 2006 08 25 | D35 | 0.5-  | 0.0   | 2006 10 23 | 691 | 0.0  | 0.1- |
| 2001 08 25 | 704 | 0.3-  | 0.3+  | 2006 08 25 | D35 | 0.5-  | 0.1-  | 2006 10 23 | 691 | 0.1+ | 0.3+ |
| 2001 08 25 | 704 | 1.1-  | 0.3+  | 2006 08 25 | D35 | 0.3-  | 0.1+  | 2006 10 23 | 691 | 0.0  | 0.0  |
| 2001 09 11 | 699 | 1.1+  | 1.1+  | 2006 08 29 | 703 | 0.4-  | 1.1-  | 2006 10 24 | 644 | 0.0  | 0.0  |
| 2001 09 11 | 699 | 1.5+  | 0.8-  | 2006 08 29 | 703 | 0.7+  | 0.0   | 2006 10 24 | 644 | 0.3+ | 0.0  |
| 2001 09 11 | 699 | (0.3+ | 1.7+) | 2006 08 29 | 703 | 0.1+  | 0.3-  | 2006 10 24 | 644 | 0.1+ | 0.0  |
| 2001 09 11 | 699 | 0.1+  | 0.7+  | 2006 08 29 | 703 | 0.2+  | 0.2-  | 2006 10 27 | 691 | 0.1+ | 0.2- |
| 2001 09 16 | 704 | 0.9-  | 1.4+  | 2006 10 11 | 644 | 0.1-  | 0.1+  | 2006 10 27 | 691 | 0.1+ | 0.1+ |
| 2001 09 16 | 704 | 0.9+  | 0.8+  | 2006 10 11 | 644 | 0.0   | 0.0   | 2006 10 27 | 691 | 0.0  | 0.1- |
| 2001 09 16 | 704 | 0.1-  | 0.4-  | 2006 10 11 | 644 | 0.1-  | 0.1+  | 2007 10 15 | G96 | 0.3+ | 0.1- |
| 2001 09 16 | 704 | 0.5-  | 0.9+  | 2006 10 17 | 691 | 0.4+  | 0.4-  | 2007 10 15 | G96 | 0.6+ | 0.3- |
| 2001 09 16 | 704 | 0.7-  | 1.1+  | 2006 10 17 | 691 | 0.1-  | 0.2-  | 2007 10 15 | G96 | 0.4+ | 0.1- |
| 2001 09 20 | 704 | 0.4-  | 0.2+  | 2006 10 17 | 691 | 0.0   | 0.1-  | 2007 10 15 | G96 | 0.2+ | 1.1- |
| 2001 09 20 | 704 | 0.0   | 0.3+  | 2006 10 19 | 691 | 0.1-  | 0.0   | 2007 11 04 | G96 | 0.1- | 0.1- |
| 2001 09 20 | 704 | 0.0   | 0.3-  | 2006 10 19 | 691 | 0.3-  | 0.2-  | 2007 11 04 | G96 | 0.3- | 0.2- |
| 2001 09 20 | 704 | 0.3-  | 0.3-  | 2006 10 19 | 691 | (1.8+ | 0.9-) | 2007 11 04 | G96 | 0.3+ | 0.3- |
| 2002 12 06 | 645 | 0.0   | 0.0   | 2006 10 20 | 291 | 0.0   | 0.0   | 2007 11 04 | G96 | 0.2+ | 0.3- |
| 2002 12 06 | 645 | 0.0   | 0.0   | 2006 10 20 | 291 | 0.1+  | 0.0   | 2007 12 06 | G96 | 0.3- | 0.0  |
| 2003 01 08 | 704 | 0.4-  | 0.8-  | 2006 10 20 | 291 | 0.1+  | 0.1-  | 2007 12 06 | G96 | 0.2- | 0.6+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 08 | 704 | 0.1- | 0.5+ | 2006 10 21 | 691 | 0.2- | 0.1+ | 2007 12 06 | G96 | 0.1- | 0.1- |
| 2003 01 08 | 704 | 0.3+ | 1.0+ | 2006 10 21 | 691 | 0.0  | 0.2+ | 2007 12 06 | G96 | 0.7+ | 0.2+ |

(171921)\* 2001 SF<sub>127</sub> = 2005 GW<sub>146</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 75119)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| M 23.63011 (2000.0)         |            |          |           |
| P Q                         |            |          |           |
| <i>n</i>                    | 0.16705660 | $\omega$ | 122.62130 |
| <i>a</i>                    | 3.2650785  | $\Omega$ | 220.86641 |
| <i>e</i>                    | 0.0371804  | <i>i</i> | 1.86339   |
| <i>P</i>                    | 5.90       | <i>H</i> | 15.1      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 0         |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 22 | 809 | 0.9+ | 0.9+ | 2002 12 05 | 704 | 0.4+ | 0.6+ | 2005 05 08 | G96 | 0.3- | 0.1- |
| 2001 08 23 | 691 | 0.2+ | 0.1+ | 2002 12 05 | 704 | 0.8+ | 1.1+ | 2005 05 08 | G96 | 0.4- | 0.5+ |
| 2001 08 23 | 691 | 0.0  | 0.1+ | 2004 02 13 | 691 | 0.3- | 0.4+ | 2007 09 13 | 703 | 0.4+ | 0.9+ |
| 2001 08 23 | 691 | 0.1+ | 0.2- | 2004 02 13 | 691 | 0.1+ | 0.2+ | 2007 09 13 | 703 | 0.4- | 0.2+ |
| 2001 09 16 | 704 | 0.4- | 1.1+ | 2004 02 13 | 691 | 0.5+ | 0.1+ | 2007 09 13 | 703 | 1.0+ | 0.6+ |
| 2001 09 16 | 704 | 0.7- | 0.0  | 2004 02 17 | 704 | 0.2- | 0.4+ | 2007 09 13 | 703 | 0.1+ | 0.6+ |
| 2001 09 16 | 704 | 0.7- | 0.8+ | 2004 02 17 | 704 | 0.2+ | 0.9- | 2007 09 13 | G96 | 0.0  | 0.0  |
| 2001 09 20 | 704 | 1.3- | 0.1+ | 2004 02 17 | 704 | 0.8- | 0.8+ | 2007 09 13 | G96 | 0.1- | 0.1- |
| 2001 09 20 | 704 | 0.7- | 0.8+ | 2004 02 17 | 704 | 0.2- | 0.2+ | 2007 09 13 | G96 | 0.2+ | 0.1- |
| 2001 09 20 | 704 | 0.5- | 0.3+ | 2005 04 11 | 691 | 0.0  | 0.4+ | 2007 09 13 | G96 | 0.2+ | 0.1- |
| 2001 09 20 | 704 | 0.8- | 0.1- | 2005 04 11 | 691 | 0.1+ | 0.5+ | 2007 10 06 | 704 | 0.4- | 1.1+ |
| 2001 09 20 | 704 | 0.4- | 0.1- | 2005 04 11 | 691 | 0.1- | 0.3+ | 2007 10 06 | 704 | 0.4- | 0.0  |
| 2001 09 22 | 704 | 1.5- | 1.1+ | 2005 04 15 | 691 | 0.0  | 0.2+ | 2007 10 06 | 704 | 1.3- | 0.1- |
| 2001 09 22 | 704 | 0.2+ | 0.4+ | 2005 04 15 | 691 | 0.1+ | 0.2+ | 2007 10 06 | 704 | 0.1+ | 0.3+ |
| 2001 09 22 | 704 | 0.3+ | 0.3- | 2005 04 15 | 691 | 0.2+ | 0.1+ | 2007 10 06 | 704 | 0.1- | 0.1- |
| 2001 09 23 | 704 | 0.7+ | 0.5+ | 2005 04 17 | 691 | 0.3+ | 0.1+ | 2007 12 05 | G96 | 0.1- | 0.4+ |
| 2001 09 23 | 704 | 0.5+ | 0.2- | 2005 04 17 | 691 | 0.1+ | 0.0  | 2007 12 05 | G96 | 0.1+ | 0.0  |
| 2001 09 23 | 704 | 0.8+ | 0.9+ | 2005 04 17 | 691 | 0.2+ | 0.1+ | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 2001 09 23 | 704 | 0.4+ | 0.6+ | 2005 05 08 | G96 | 0.3- | 0.1- | 2007 12 05 | G96 | 0.1- | 0.3+ |
| 2002 12 05 | 704 | 0.7- | 0.6+ | 2005 05 08 | G96 | 0.1- | 0.0  |            |     |      |      |

(171922)\* 2001 SM<sub>139</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| M 60.25487 (2000.0)         |            |          |           |
| P Q                         |            |          |           |
| <i>n</i>                    | 0.18327984 | $\omega$ | 132.58198 |
| <i>a</i>                    | 3.0694431  | $\Omega$ | 218.87615 |
| <i>e</i>                    | 0.1387812  | <i>i</i> | 2.53705   |
| <i>P</i>                    | 5.38       | <i>H</i> | 15.8      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 0         |

| Residuals in seconds of arc |     |       |       |            |     |       |       |            |     |       |       |
|-----------------------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 05 05                  | 691 | 0.0   | 0.2+  | 2001 10 15 | 608 | 0.1-  | 0.5+  | 2006 11 16 | G96 | 1.4-  | 0.2-  |
| 1994 05 05                  | 691 | 0.2-  | 0.0   | 2001 10 21 | 704 | 1.5+  | 0.8+  | 2006 11 16 | G96 | 0.7+  | 0.4-  |
| 1994 05 05                  | 691 | 0.1+  | 0.5-  | 2001 10 21 | 704 | 0.5+  | 0.8+  | 2006 11 16 | G96 | 0.0   | 0.3-  |
| 2001 09 16                  | 704 | 0.1-  | 0.5-  | 2001 10 21 | 704 | 1.1+  | 1.2+  | 2006 11 16 | G96 | 0.1-  | 0.8-  |
| 2001 09 16                  | 704 | (0.6- | 2.2-) | 2001 10 21 | 704 | 0.8+  | 0.2+  | 2007 09 18 | G96 | 0.0   | 0.2-  |
| 2001 09 16                  | 704 | 0.3-  | 0.5+  | 2001 10 21 | 704 | (1.6+ | 0.5+) | 2007 09 18 | G96 | 0.4-  | 0.1+  |
| 2001 09 16                  | 704 | 0.2-  | 0.1-  | 2005 05 13 | G96 | 0.2+  | 0.3+  | 2007 09 18 | G96 | 0.2-  | 0.4-  |
| 2001 09 20                  | 704 | 0.1-  | 0.1-  | 2005 05 13 | G96 | 0.1-  | 0.3+  | 2007 09 18 | G96 | 0.5-  | 0.1-  |
| 2001 09 20                  | 704 | 0.0   | 0.0   | 2005 05 13 | G96 | 0.4-  | 0.1-  | 2007 11 14 | 704 | 0.7+  | 0.6-  |
| 2001 09 20                  | 704 | 0.3-  | 0.1-  | 2005 05 13 | G96 | 0.2-  | 0.2+  | 2007 11 14 | 704 | 0.7-  | 0.2-  |
| 2001 09 20                  | 704 | 0.2+  | 0.0   | 2005 06 14 | 691 | 0.1+  | 0.4+  | 2007 11 14 | 704 | (1.6- | 0.4-) |
| 2001 09 23                  | 704 | 0.2-  | 0.1-  | 2005 06 14 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 704 | 0.1-  | 0.5-  |
| 2001 09 23                  | 704 | 0.1+  | 0.1+  | 2005 06 14 | 691 | 0.2+  | 0.1+  | 2007 12 05 | 704 | 1.4+  | 0.6+  |
| 2001 09 23                  | 704 | 0.9-  | 0.2+  | 2006 08 15 | D35 | 0.4+  | 0.5-  | 2007 12 05 | 704 | 0.4+  | 0.1-  |
| 2001 09 23                  | 704 | 0.9-  | 0.6-  | 2006 08 15 | D35 | 0.4+  | 0.4-  | 2007 12 05 | 704 | 0.0   | 0.8+  |
| 2001 09 25                  | 699 | 0.1+  | 0.2-  | 2006 08 15 | D35 | 0.3+  | 0.2-  | 2007 12 05 | G96 | 0.0   | 0.2-  |
| 2001 09 25                  | 699 | 0.0   | 0.1-  | 2006 08 28 | 703 | 0.3-  | 0.8-  | 2007 12 05 | G96 | 0.2-  | 0.1+  |
| 2001 09 25                  | 699 | (0.7- | 1.6+) | 2006 08 28 | 703 | 0.7+  | 0.3+  | 2007 12 05 | G96 | 0.1+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 25 | 699 | 0.8− | 0.3+ | 2006 08 28 | 703 | 0.3− | 0.2− | 2007 12 05 | G96 | 0.0  | 0.2− |
| 2001 10 11 | 644 | 0.4− | 0.4+ | 2006 08 28 | 703 | 0.3+ | 0.6− | 2007 12 15 | G96 | 0.4− | 0.3+ |
| 2001 10 11 | 644 | 0.3− | 0.0  | 2006 09 27 | G96 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2001 10 11 | 644 | 0.7− | 0.1+ | 2006 09 27 | G96 | 0.3+ | 0.1− | 2007 12 15 | G96 | 0.4− | 0.1− |
| 2001 10 15 | 608 | 0.6− | 1.3+ | 2006 09 27 | G96 | 0.1− | 0.4− | 2007 12 15 | G96 | 0.2− | 0.0  |
| 2001 10 15 | 608 | 0.2− | 0.8+ | 2006 09 27 | G96 | 0.2+ | 0.4− |            |     |      |      |

**(171923)\* 2001 SZ<sub>140</sub>**

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 0.09242    |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|----------|-------------|-------------|
| $n$ | 0.17619712 | $\omega$ | 61.99269 | +0.36450193 | −0.93110881 |
| $a$ | 3.1511580  | $\Omega$ | 6.67135  | +0.80941839 | +0.30978166 |
| $e$ | 0.3003707  | $i$      | 6.53311  | +0.46041309 | +0.19254013 |
| $P$ | 5.59       | $H$      | 15.0     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 10 | 333 | 0.4− | 0.7− | 2001 10 11 | 644 | 0.5+  | 0.1−  | 2003 02 28 | 704 | 1.2+  | 0.3−  |
| 2001 09 10 | 333 | 0.0  | 0.1− | 2001 10 11 | 644 | 0.5+  | 0.1+  | 2003 02 28 | 704 | 0.4+  | 0.5+  |
| 2001 09 11 | 699 | 1.0− | 1.2+ | 2001 10 13 | 704 | 0.2+  | 1.0+  | 2003 02 28 | 704 | 0.2+  | 0.1+  |
| 2001 09 11 | 699 | 0.6+ | 0.7− | 2001 10 13 | 704 | 0.2+  | 0.8+  | 2003 02 28 | 704 | 1.0+  | 0.0   |
| 2001 09 11 | 699 | 0.8− | 0.0  | 2001 10 13 | 704 | 0.0   | 1.2+  | 2003 02 28 | 704 | 0.1+  | 0.6−  |
| 2001 09 11 | 699 | 0.3+ | 0.0  | 2001 10 13 | 704 | 0.0   | 0.5+  | 2003 02 28 | 704 | 1.0+  | 1.0+  |
| 2001 09 16 | 704 | 0.1+ | 1.0+ | 2001 10 13 | 704 | 0.5+  | 1.0+  | 2003 03 06 | 704 | 0.9+  | 0.8+  |
| 2001 09 16 | 704 | 0.6+ | 1.0+ | 2001 10 15 | 291 | 0.2−  | 0.6−  | 2003 03 06 | 704 | 0.6+  | 0.1−  |
| 2001 09 16 | 704 | 0.5+ | 0.1+ | 2001 10 15 | 291 | 0.4−  | 0.2−  | 2003 03 06 | 704 | 0.1+  | 0.6+  |
| 2001 09 16 | 704 | 0.1− | 0.8+ | 2001 10 15 | 291 | (1.6− | 0.1−) | 2003 03 06 | 704 | 0.4+  | 0.6+  |
| 2001 09 20 | 691 | 0.5− | 0.2+ | 2001 10 15 | 608 | 0.2+  | 0.8−  | 2003 03 06 | 704 | 0.7−  | 0.6−  |
| 2001 09 20 | 704 | 0.0  | 0.2− | 2001 10 15 | 608 | 0.0   | 0.9−  | 2003 03 07 | 699 | (0.2+ | 1.8+) |
| 2001 09 20 | 691 | 0.3− | 0.1+ | 2001 10 15 | 608 | 0.0   | 0.6−  | 2003 03 07 | 699 | 0.7+  | 0.2+  |
| 2001 09 20 | 704 | 0.0  | 0.1+ | 2001 10 16 | 704 | 0.2−  | 0.2−  | 2003 03 07 | 699 | (0.2+ | 1.6+) |
| 2001 09 20 | 704 | 0.1− | 0.3− | 2001 10 16 | 704 | 0.6−  | 0.1−  | 2003 03 07 | 699 | (0.1+ | 1.7+) |
| 2001 09 20 | 691 | 0.6− | 0.1+ | 2001 10 16 | 704 | 0.3−  | 0.4−  | 2003 03 10 | 599 | (0.4+ | 1.8−) |
| 2001 09 20 | 704 | 0.3− | 0.1+ | 2001 10 16 | 704 | 0.4−  | 0.1+  | 2003 03 10 | 599 | 0.4−  | 0.3+  |
| 2001 09 20 | 704 | 0.0  | 0.3+ | 2001 10 16 | 704 | 0.2−  | 0.2−  | 2003 03 10 | 599 | 0.3−  | 1.1+  |
| 2001 09 21 | 704 | 0.3− | 0.0  | 2001 10 18 | 644 | 0.1−  | 0.0   | 2003 03 25 | 644 | 0.4+  | 0.5+  |
| 2001 09 21 | 704 | 0.3− | 0.6+ | 2001 10 18 | 644 | 0.1−  | 0.1−  | 2003 03 25 | 644 | 0.1+  | 0.4+  |
| 2001 09 21 | 704 | 0.1− | 0.0  | 2001 10 18 | 644 | 0.0   | 0.0   | 2003 03 25 | 699 | 1.0−  | 1.2+  |
| 2001 09 21 | 704 | 0.1− | 0.4+ | 2001 10 20 | 691 | 0.0   | 0.1+  | 2003 03 25 | 699 | (1.6− | 0.1−) |
| 2001 09 21 | 704 | 0.0  | 0.5+ | 2001 10 20 | 691 | 0.0   | 0.1+  | 2003 03 25 | 644 | 0.5+  | 0.8+  |
| 2001 09 23 | 704 | 0.8+ | 0.0  | 2001 10 20 | 691 | 0.0   | 0.1+  | 2003 03 25 | 699 | 0.1−  | 0.3+  |
| 2001 09 23 | 704 | 0.1+ | 0.9+ | 2001 10 21 | 704 | 0.1+  | 0.1+  | 2003 03 25 | 699 | 0.6−  | 0.4+  |
| 2001 09 23 | 704 | 0.7+ | 0.7+ | 2001 10 21 | 704 | 0.1+  | 0.2+  | 2003 04 09 | 691 | 0.3+  | 1.2+  |
| 2001 09 23 | 704 | 1.0+ | 1.1+ | 2001 10 21 | 704 | 0.1+  | 0.5+  | 2003 04 09 | 691 | 0.3+  | 0.9+  |
| 2001 09 23 | 704 | 1.0+ | 0.8+ | 2001 10 21 | 704 | 0.4+  | 0.2+  | 2003 04 09 | 691 | 0.5+  | 0.8+  |
| 2001 09 23 | 704 | 0.2− | 0.4+ | 2001 10 21 | 704 | 0.3+  | 0.4+  | 2006 08 14 | 644 | 0.5−  | 0.8+  |
| 2001 09 23 | 704 | 0.1+ | 0.4+ | 2001 11 10 | 704 | 0.4−  | 0.1−  | 2006 08 14 | 644 | 0.0   | 1.1+  |
| 2001 09 23 | 704 | 0.1− | 0.6+ | 2001 11 10 | 704 | 0.5−  | 0.6+  | 2006 08 14 | 644 | 0.7−  | 0.9+  |
| 2001 09 23 | 704 | 0.2+ | 0.6+ | 2001 11 10 | 704 | 0.1−  | 0.4−  | 2007 10 09 | 704 | 0.6+  | 0.8−  |
| 2001 09 23 | 704 | 0.0  | 0.5+ | 2001 11 10 | 704 | 0.4−  | 0.1+  | 2007 10 09 | 704 | 0.3−  | 0.5−  |
| 2001 09 24 | 704 | 0.0  | 0.5+ | 2001 11 14 | 621 | 0.1+  | 0.0   | 2007 10 09 | 704 | 0.2−  | 1.2−  |
| 2001 09 24 | 704 | 0.5+ | 0.2+ | 2001 11 14 | 621 | 0.2+  | 0.0   | 2007 10 09 | 704 | (0.2− | 2.6−) |
| 2001 09 24 | 704 | 0.9− | 0.4− | 2001 12 11 | 704 | 0.4+  | 0.9+  | 2007 11 17 | 704 | 0.3+  | 1.2−  |
| 2001 09 24 | 704 | 0.6− | 0.5− | 2001 12 11 | 704 | 0.3+  | 0.0   | 2007 11 17 | 704 | 0.1+  | 0.9−  |
| 2001 09 24 | 704 | 0.0  | 0.4− | 2001 12 11 | 704 | 0.5−  | 0.9+  | 2007 11 17 | 704 | 0.3+  | 0.2−  |
| 2001 09 25 | 699 | 0.2− | 0.4+ | 2003 02 01 | 704 | 1.0+  | 0.0   | 2007 11 17 | 704 | 0.8+  | 0.4−  |
| 2001 09 25 | 699 | 0.4− | 0.8+ | 2003 02 01 | 704 | 0.1+  | 0.1+  | 2007 12 02 | 704 | 0.5−  | 0.3+  |
| 2001 09 25 | 699 | 0.8+ | 1.0+ | 2003 02 01 | 704 | 0.1−  | 0.4+  | 2007 12 02 | 704 | 0.1+  | 0.3−  |
| 2001 09 25 | 699 | 0.5− | 0.8+ | 2003 02 01 | 704 | 0.1−  | 0.5+  | 2007 12 02 | 704 | 0.1−  | 0.0   |
| 2001 09 26 | 704 | 0.8− | 0.0  | 2003 02 01 | 704 | 0.2+  | 1.2+  | 2007 12 16 | 704 | 0.1−  | 0.9−  |
| 2001 09 26 | 704 | 0.7− | 0.1+ | 2003 02 23 | 106 | 0.4+  | 0.5−  | 2007 12 16 | 704 | 0.4−  | 0.5−  |
| 2001 09 26 | 704 | 0.7− | 0.2− | 2003 02 24 | 106 | 0.2+  | 0.5−  | 2007 12 16 | 704 | 0.3−  | 0.8−  |
| 2001 09 26 | 704 | 0.6− | 0.1− | 2003 02 24 | 106 | 0.1−  | 0.1+  |            |     |       |       |
| 2001 10 11 | 644 | 0.4+ | 0.0  | 2003 02 28 | 704 | (1.6+ | 0.1+) |            |     |       |       |

**(171924)\* 2001 SP<sub>142</sub>**

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 20.84794   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17948441 | $\omega$ | 132.43940 | +0.90859722 | −0.41214628 |
| $a$ | 3.1125636  | $\Omega$ | 252.00283 | +0.35925909 | +0.85388472 |
| $e$ | 0.1599714  | $i$      | 4.08338   | +0.21303521 | +0.31783067 |
| $P$ | 5.49       | $H$      | 15.2      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 12 15 | 691 | (1.9− | 3.2−) | 2001 09 23 | 704 | 0.4+  | 0.0   | 2007 11 05 | D29 | 0.1+  | 0.2+  |
| 1996 12 15 | 691 | (2.9+ | 1.7−) | 2001 10 14 | 704 | 1.1+  | 0.2+  | 2007 11 05 | D29 | 0.2+  | 0.5−  |
| 1996 12 15 | 691 | 0.5+  | 0.4−  | 2001 10 14 | 704 | 0.0   | 0.8+  | 2007 11 05 | D29 | 0.1+  | 0.2−  |
| 2001 08 17 | 704 | (2.9+ | 1.7+) | 2001 10 14 | 704 | 0.0   | 0.1+  | 2007 11 05 | D29 | 0.2+  | 0.4−  |
| 2001 08 17 | 704 | 0.9+  | 1.2+  | 2001 10 14 | 704 | 0.7−  | 0.4+  | 2007 11 07 | 691 | 0.1−  | 0.1+  |
| 2001 08 17 | 704 | 0.4+  | 1.4−  | 2001 10 19 | 644 | 0.3+  | 1.2+  | 2007 11 07 | 691 | 0.0   | 0.0   |
| 2001 08 27 | 699 | 0.4−  | 0.2+  | 2001 10 19 | 644 | 0.9+  | 1.4+  | 2007 11 07 | 691 | 0.1+  | 0.0   |
| 2001 08 27 | 699 | 0.3−  | 0.7+  | 2001 10 19 | 644 | (0.6+ | 1.6+) | 2007 11 13 | 699 | 0.1−  | 0.3−  |
| 2001 08 27 | 699 | 0.1+  | 0.3+  | 2001 10 21 | 704 | (1.9− | 0.0)  | 2007 11 13 | 699 | 0.2+  | 0.1+  |
| 2001 08 27 | 699 | 1.0−  | 0.4−  | 2001 10 21 | 704 | 0.6−  | 0.7−  | 2007 11 13 | 699 | 0.6+  | 0.1−  |
| 2001 09 08 | 704 | 0.1−  | 0.2−  | 2001 10 21 | 704 | 0.9−  | 0.9−  | 2007 11 13 | 699 | (0.7+ | 1.8+) |
| 2001 09 08 | 704 | 1.0+  | 0.4+  | 2001 10 21 | 704 | 0.2−  | 1.5−  | 2007 11 14 | 691 | 0.0   | 0.2+  |
| 2001 09 08 | 704 | 0.0   | 0.6+  | 2001 10 21 | 704 | 1.3−  | 1.1−  | 2007 11 14 | 691 | 0.0   | 0.2+  |
| 2001 09 08 | 704 | 0.3−  | 0.3+  | 2003 01 08 | 704 | 0.3−  | 0.5+  | 2007 11 14 | 691 | 0.4−  | 0.2+  |
| 2001 09 10 | 699 | 0.4−  | 1.2+  | 2003 01 08 | 704 | 1.2−  | 0.8+  | 2007 11 15 | 704 | 0.8−  | 0.4+  |
| 2001 09 10 | 699 | (1.6− | 2.6+) | 2003 01 08 | 704 | 0.5−  | 0.7+  | 2007 11 15 | 704 | 0.1+  | 0.4+  |
| 2001 09 10 | 699 | 0.3+  | 0.8+  | 2003 01 08 | 704 | 0.2−  | 0.4+  | 2007 11 15 | 704 | 1.4+  | 0.6−  |
| 2001 09 10 | 699 | (0.7− | 3.2+) | 2003 01 13 | 644 | (0.6+ | 1.5+) | 2007 11 15 | 704 | 0.4+  | 1.1+  |
| 2001 09 16 | 704 | 0.6−  | 0.0   | 2003 01 13 | 644 | (0.7+ | 1.8+) | 2007 11 15 | 704 | 1.3+  | 0.7+  |
| 2001 09 16 | 704 | 0.3−  | 0.9+  | 2003 01 13 | 644 | (0.5+ | 1.7+) | 2007 11 18 | 691 | 0.0   | 0.2+  |
| 2001 09 16 | 704 | 1.2−  | 0.4+  | 2004 03 16 | 691 | 0.1+  | 0.6+  | 2007 11 18 | 691 | 0.1+  | 0.1+  |
| 2001 09 18 | 699 | 1.3+  | 0.2−  | 2004 03 16 | 691 | 0.3+  | 0.5+  | 2007 11 18 | 691 | 0.0   | 0.1+  |
| 2001 09 18 | 699 | 0.1−  | 0.0   | 2004 03 16 | 691 | 0.5+  | 0.6+  | 2007 12 03 | 703 | 1.0+  | 1.1−  |
| 2001 09 18 | 699 | 0.4−  | 0.7+  | 2006 05 25 | G96 | 0.1+  | 0.3+  | 2007 12 03 | 703 | 0.3+  | 0.2+  |
| 2001 09 18 | 699 | 0.0   | 0.3+  | 2006 05 25 | G96 | 0.1−  | 0.4+  | 2007 12 03 | 703 | 0.5−  | 0.3−  |
| 2001 09 20 | 704 | 0.6+  | 0.7+  | 2006 05 25 | G96 | 0.1−  | 0.3+  | 2007 12 03 | 703 | 0.9+  | 0.2−  |
| 2001 09 20 | 704 | (0.1− | 1.8+) | 2006 05 25 | G96 | 0.3−  | 0.7+  | 2007 12 04 | G96 | 0.7+  | 0.1−  |
| 2001 09 20 | 704 | 1.0+  | 1.3+  | 2006 08 19 | 644 | 0.1−  | 0.2+  | 2007 12 04 | G96 | 0.5+  | 0.2−  |
| 2001 09 20 | 704 | 0.6−  | 1.0+  | 2006 08 19 | 644 | 0.0   | 0.4+  | 2007 12 04 | G96 | 0.5−  | 0.3−  |
| 2001 09 21 | 644 | 0.6−  | 0.8−  | 2006 08 19 | 644 | 0.1+  | 0.4+  | 2007 12 04 | G96 | 1.1+  | 0.5+  |
| 2001 09 21 | 644 | 1.3−  | 0.1−  | 2007 10 14 | G96 | 0.1+  | 0.6−  | 2007 12 10 | 704 | 1.3−  | 0.0   |
| 2001 09 21 | 644 | 1.3−  | 0.5−  | 2007 10 14 | G96 | 0.5+  | 0.2−  | 2007 12 10 | 704 | 0.7−  | 0.6−  |
| 2001 09 22 | 704 | 0.3+  | 0.5−  | 2007 10 14 | G96 | 0.3+  | 0.5−  | 2007 12 10 | 704 | 0.7−  | 0.0   |
| 2001 09 22 | 704 | 0.8+  | 0.4+  | 2007 10 14 | G96 | 0.2+  | 0.2−  | 2007 12 14 | 704 | 0.3−  | 1.8+  |
| 2001 09 22 | 704 | 0.3+  | 0.5−  | 2007 10 30 | 691 | 0.1−  | 0.0   | 2007 12 14 | 704 | 0.6−  | 0.6+  |
| 2001 09 22 | 704 | 0.6−  | 0.0   | 2007 10 30 | 691 | 0.1+  | 0.1+  | 2007 12 14 | 704 | 0.3−  | 0.4+  |
| 2001 09 23 | 704 | 0.8−  | 0.8−  | 2007 10 30 | 691 | 0.4−  | 0.1−  | 2007 12 14 | 704 | 0.6−  | 1.1+  |
| 2001 09 23 | 704 | 0.3+  | 0.3−  | 2007 11 03 | 691 | 0.0   | 1.0−  | 2007 12 14 | 704 | 1.3−  | 0.8+  |
| 2001 09 23 | 704 | 0.3+  | 0.1+  | 2007 11 03 | 691 | 0.1−  | 0.0   |            |     |       |       |
| 2001 09 23 | 704 | 0.3−  | 0.0   | 2007 11 03 | 691 | 0.3+  | 0.1−  |            |     |       |       |

2007 DEC. 24

M.P.O. 129207

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 0.1−  | 0.8+  | 2004 02 26 | 704 | 0.6− | 0.9+ | 2006 08 28 | 699 | 1.0−  | 1.1+  |
| 2001 09 16 | 704 | 0.3+  | 1.2+  | 2004 03 18 | 704 | 0.5+ | 0.2+ | 2006 08 28 | 699 | (0.9− | 2.4+) |
| 2001 09 16 | 704 | (0.9+ | 1.7+) | 2004 03 18 | 704 | 0.6+ | 0.9+ | 2006 08 28 | 699 | 0.5+  | 0.6−  |
| 2001 09 20 | 704 | 0.4−  | 0.7+  | 2004 03 18 | 704 | 0.9+ | 1.0+ | 2006 08 28 | 699 | 0.8−  | 0.7+  |
| 2001 09 20 | 704 | 0.9−  | 0.7+  | 2004 03 18 | 704 | 1.1+ | 0.2+ | 2006 09 30 | G96 | 0.2+  | 0.4+  |
| 2001 09 20 | 704 | 0.4−  | 0.1+  | 2004 03 18 | 704 | 0.4+ | 1.1+ | 2006 09 30 | G96 | 0.1+  | 0.2−  |
| 2001 09 20 | 704 | 0.7−  | 0.3+  | 2004 03 20 | 704 | 0.6+ | 0.4+ | 2006 09 30 | G96 | 0.0   | 0.0   |
| 2001 09 20 | 704 | 0.1+  | 0.6−  | 2004 03 20 | 704 | 0.9+ | 0.1+ | 2006 09 30 | G96 | 0.2−  | 0.1−  |
| 2001 09 22 | 704 | 0.5+  | 1.0+  | 2004 03 20 | 704 | 1.3+ | 1.2+ | 2006 10 27 | G96 | 0.1+  | 0.9−  |
| 2001 09 22 | 704 | 0.7−  | 1.0+  | 2004 03 20 | 704 | 1.0+ | 0.7+ | 2006 10 27 | G96 | 0.3−  | 0.5−  |
| 2001 09 22 | 704 | 0.0   | 0.2−  | 2004 03 20 | 704 | 0.8+ | 0.1+ | 2006 10 27 | G96 | 0.5+  | 0.0   |
| 2001 09 22 | 704 | 0.3−  | 0.6+  | 2006 07 25 | 644 | 0.2− | 0.5+ | 2006 10 27 | G96 | 0.5−  | 0.3+  |
| 2001 09 23 | 704 | 0.2−  | 0.7+  | 2006 07 25 | 644 | 0.5− | 0.7+ | 2007 11 09 | 704 | 1.3+  | 0.5+  |
| 2001 09 23 | 704 | 0.5−  | 0.3+  | 2006 07 25 | 644 | 0.5− | 0.1+ | 2007 11 09 | 704 | (1.1+ | 2.0+) |
| 2001 09 23 | 704 | 1.0−  | 0.7+  | 2006 08 13 | 644 | 0.3+ | 0.4+ | 2007 11 09 | 704 | 1.1+  | 1.5+  |
| 2001 09 23 | 704 | 0.8−  | 0.5+  | 2006 08 13 | 644 | 0.0  | 0.3+ | 2007 11 18 | 703 | 0.5−  | 0.4+  |
| 2004 02 15 | 703 | 0.3+  | 0.9+  | 2006 08 13 | 644 | 0.3− | 0.8+ | 2007 11 18 | 703 | 0.4−  | 0.0   |
| 2004 02 15 | 703 | 0.2−  | 0.5+  | 2006 08 24 | 644 | 0.3+ | 0.2+ | 2007 11 18 | 703 | 0.4−  | 1.3−  |
| 2004 02 15 | 703 | 0.5−  | 0.2+  | 2006 08 24 | 644 | 0.3− | 0.6+ | 2007 11 18 | 703 | 0.4−  | 0.1−  |
| 2004 02 15 | 703 | 0.7+  | 0.8+  | 2006 08 24 | 644 | 0.2+ | 0.5+ | 2007 12 03 | 704 | 1.1−  | 0.4+  |
| 2004 02 26 | 704 | (1.3+ | 1.7+) | 2006 08 28 | 703 | 0.2− | 0.1− | 2007 12 03 | 704 | 0.3−  | 0.4+  |
| 2004 02 26 | 704 | 0.5−  | 1.3+  | 2006 08 28 | 703 | 0.6+ | 0.4+ | 2007 12 03 | 704 | 0.2+  | 0.4+  |
| 2004 02 26 | 704 | 0.0   | 0.9+  | 2006 08 28 | 703 | 0.4− | 0.1+ | 2007 12 03 | 704 | 0.8−  | 0.2+  |
| 2004 02 26 | 704 | 0.4+  | 1.1+  | 2006 08 28 | 703 | 0.2− | 0.4− | 2007 12 03 | 704 | 0.9+  | 1.0−  |

(171926)\* 2001 SW<sub>143</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 197.49653  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.20896910 | $\omega$ | 320.01631 | -0.15658985  | +0.98669510  |
| $a$ | 2.8124275  | $\Omega$ | 300.93310 | -0.89263410  | -0.16033471  |
| $e$ | 0.0562042  | $i$      | 2.92234   | -0.42271029  | -0.02693619  |
| $P$ | 4.72       | $H$      | 15.6      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 27 | 699 | 0.7+  | 0.7−  | 2001 10 19 | 644 | 0.1−  | 1.2+  | 2006 09 28 | 691 | 0.1− | 0.2+ |
| 2001 08 27 | 699 | 0.4−  | 1.4−  | 2004 03 15 | 703 | 0.3+  | 0.3−  | 2006 09 28 | 691 | 0.2− | 0.2+ |
| 2001 08 27 | 699 | 1.1−  | 0.9+  | 2004 03 15 | 703 | 0.7−  | 0.1+  | 2006 10 02 | 691 | 0.0  | 0.2+ |
| 2001 08 27 | 699 | 0.0   | 0.2+  | 2004 03 15 | 703 | 0.1+  | 0.6−  | 2006 10 02 | 691 | 0.1− | 0.4+ |
| 2001 09 16 | 704 | 0.1+  | 1.2+  | 2004 03 15 | 703 | 1.1−  | 0.0   | 2006 10 02 | 691 | 0.0  | 0.3+ |
| 2001 09 16 | 704 | 0.3−  | 0.8+  | 2004 03 18 | 704 | 0.6+  | 0.3+  | 2006 10 12 | 644 | 0.4− | 0.3+ |
| 2001 09 16 | 704 | 0.5+  | 1.3+  | 2004 03 18 | 704 | 0.3+  | 0.5+  | 2006 10 12 | 644 | 0.1+ | 0.0  |
| 2001 09 20 | 704 | 0.5−  | 0.5−  | 2004 03 18 | 704 | 0.2+  | 0.7+  | 2006 10 12 | 644 | 0.4− | 0.6+ |
| 2001 09 20 | 704 | 0.5−  | 0.5−  | 2004 03 18 | 704 | 0.5+  | 0.2+  | 2006 10 17 | 691 | 0.2+ | 0.2+ |
| 2001 09 20 | 704 | 1.0−  | 0.7−  | 2004 03 18 | 704 | 0.6+  | 0.6+  | 2006 10 17 | 691 | 0.0  | 0.0  |
| 2001 09 20 | 704 | 0.5−  | 0.8−  | 2004 03 19 | 704 | 0.1−  | 1.0+  | 2006 10 17 | 691 | 0.0  | 0.0  |
| 2001 09 20 | 704 | 0.5−  | 1.2−  | 2004 03 19 | 704 | 0.3+  | 0.2−  | 2006 10 17 | 703 | 1.0+ | 0.5− |
| 2001 09 21 | 644 | 0.5+  | 0.1−  | 2004 03 19 | 704 | 0.1+  | 0.1−  | 2006 10 17 | 703 | 0.2− | 0.0  |
| 2001 09 21 | 644 | 0.7+  | 0.3−  | 2004 03 19 | 704 | 0.3−  | 0.0   | 2006 10 17 | 703 | 0.2+ | 0.3+ |
| 2001 09 21 | 644 | 0.5+  | 0.0   | 2004 03 19 | 704 | 1.0+  | 1.0+  | 2006 10 17 | 703 | 0.7+ | 0.5+ |
| 2001 09 22 | 704 | 0.4−  | 0.6+  | 2004 03 20 | 704 | 1.0+  | 0.9+  | 2006 10 20 | 644 | 0.3− | 0.1+ |
| 2001 09 22 | 704 | 0.6−  | 0.6+  | 2004 03 20 | 704 | 0.8+  | 0.5+  | 2006 10 20 | 644 | 0.1+ | 0.2+ |
| 2001 09 22 | 704 | 0.5−  | 0.6+  | 2004 03 20 | 704 | 0.2+  | 0.9+  | 2006 10 20 | 644 | 0.2− | 0.1+ |
| 2001 09 22 | 704 | 0.4−  | 0.2+  | 2004 03 20 | 704 | 0.8+  | 0.5+  | 2006 10 21 | 644 | 0.3− | 0.4+ |
| 2001 09 22 | 704 | 0.4−  | 0.5+  | 2004 03 20 | 704 | 0.6+  | 0.0   | 2006 10 21 | 644 | 0.0  | 0.0  |
| 2001 09 23 | 704 | (3.1− | 1.9+) | 2004 03 27 | 704 | 1.0+  | 0.5−  | 2006 10 21 | 644 | 0.1− | 0.2+ |
| 2001 09 23 | 704 | 0.2−  | 0.7+  | 2004 03 27 | 704 | 0.5+  | 0.2−  | 2006 11 10 | 691 | 0.0  | 0.0  |
| 2001 09 23 | 704 | (1.1+ | 2.0+) | 2004 03 27 | 703 | 0.6+  | 0.8+  | 2006 11 10 | 691 | 0.2+ | 0.3+ |
| 2001 09 23 | 704 | (0.8+ | 1.7+) | 2004 03 27 | 704 | 0.6+  | 1.2+  | 2006 11 10 | 691 | 0.2− | 0.0  |
| 2001 09 24 | 704 | (0.1− | 1.6+) | 2004 03 27 | 703 | 0.3−  | 1.1+  | 2006 11 14 | 703 | 1.1− | 0.2− |
| 2001 09 24 | 704 | 0.3+  | 1.0+  | 2004 03 27 | 704 | 0.3+  | 0.8+  | 2006 11 14 | 703 | 0.6− | 0.9− |
| 2001 09 24 | 704 | 1.3−  | 1.4+  | 2004 03 27 | 703 | (1.7+ | 0.3+) | 2006 11 14 | 703 | 0.1− | 0.1+ |
| 2001 09 24 | 704 | 0.0   | 0.7+  | 2004 03 27 | 704 | 0.1−  | 1.1+  | 2006 11 14 | 703 | 1.2− | 1.1+ |
| 2001 09 24 | 704 | 0.2−  | 0.0   | 2004 03 27 | 703 | 0.2+  | 0.6+  | 2006 11 16 | 691 | 0.2+ | 0.0  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 26 | 699 | (0.1+ | 1.7−) | 2004 04 12 | 699 | 0.8− | 0.3− | 2006 11 16 | 691 | 0.0  | 0.0  |
| 2001 09 26 | 699 | 0.9−  | 1.0+  | 2004 04 12 | 699 | 0.6− | 0.4+ | 2006 11 16 | 691 | 0.0  | 0.0  |
| 2001 09 26 | 699 | 0.4−  | 0.2−  | 2004 04 12 | 699 | 0.1− | 1.1+ | 2007 10 15 | G96 | 0.2+ | 0.5− |
| 2001 09 26 | 699 | 0.9+  | 0.4+  | 2004 04 12 | 699 | 0.2− | 0.1− | 2007 10 15 | G96 | 0.5+ | 0.7− |
| 2001 10 14 | 704 | 0.4+  | 1.4+  | 2004 04 13 | 691 | 0.1+ | 0.3+ | 2007 10 15 | G96 | 0.2+ | 0.6− |
| 2001 10 14 | 704 | 1.4−  | 0.1−  | 2004 04 13 | 691 | 0.1+ | 0.3+ | 2007 10 15 | G96 | 0.0  | 0.6− |
| 2001 10 14 | 704 | 0.3+  | 0.5+  | 2004 04 13 | 691 | 0.3+ | 0.3+ | 2007 11 07 | G96 | 0.1+ | 0.2− |
| 2001 10 14 | 704 | 0.9+  | 1.3+  | 2004 04 21 | 691 | 0.2+ | 0.2+ | 2007 11 07 | G96 | 0.1− | 0.5− |
| 2001 10 16 | 704 | 1.4−  | 0.2−  | 2004 04 21 | 691 | 0.2+ | 0.3+ | 2007 11 07 | G96 | 0.2+ | 0.4− |
| 2001 10 16 | 704 | 0.1+  | 0.1+  | 2004 04 21 | 691 | 0.1+ | 0.4+ | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2001 10 16 | 704 | 0.6−  | 0.5+  | 2004 04 24 | 691 | 0.2− | 0.5+ | 2007 12 04 | 691 | 0.1− | 0.1+ |
| 2001 10 16 | 704 | 1.4+  | 1.0+  | 2004 04 24 | 691 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.5− | 0.4− |
| 2001 10 19 | 644 | 0.0   | 1.1+  | 2004 04 24 | 691 | 0.3+ | 0.3+ | 2007 12 04 | 691 | 0.3− | 0.4− |
| 2001 10 19 | 644 | 0.0   | 1.1+  | 2006 09 28 | 691 | 0.2− | 0.3+ |            |     |      |      |

(171927)\* 2001 SW<sub>145</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 17.18992   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18133553 | $\omega$ | 66.78754  | +0.78143329  | -0.62276441  |
| $a$ | 3.0913448  | $\Omega$ | 331.68424 | +0.53815738  | +0.70431440  |
| $e$ | 0.1696227  | $i$      | 4.72478   | +0.31583009  | +0.34074288  |
| $P$ | 5.44       | $H$      | 15.1      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 26 | 704 | 0.5−  | 0.5+  | 2001 09 25 | 699 | 0.1+ | 0.0  | 2003 02 01 | 704 | (1.0− | 1.7+) |
| 2001 08 26 | 704 | 1.1+  | 0.4+  | 2001 09 25 | 699 | 0.3+ | 1.3+ | 2006 08 12 | 644 | 0.3−  | 0.2+  |
| 2001 08 26 | 704 | 0.1−  | 0.1−  | 2001 10 11 | 644 | 0.4+ | 0.7+ | 2006 08 12 | 644 | 0.2−  | 0.1+  |
| 2001 09 16 | 704 | 0.9+  | 0.3−  | 2001 10 11 | 644 | 0.2+ | 0.5+ | 2006 08 12 | 644 | 0.1+  | 0.3+  |
| 2001 09 16 | 704 | 0.2−  | 0.0   | 2001 10 11 | 644 | 0.4+ | 0.5+ | 2006 08 20 | 644 | 0.3−  | 0.2+  |
| 2001 09 16 | 704 | 0.1+  | 0.1+  | 2001 10 14 | 704 | 1.0− | 0.5− | 2006 08 20 | 644 | 0.4+  | 0.4+  |
| 2001 09 18 | 699 | 0.3+  | 0.6−  | 2001 10 14 | 704 | 0.8− | 0.5− | 2006 08 20 | 644 | 0.3−  | 0.2+  |
| 2001 09 18 | 699 | 0.2+  | 0.1−  | 2001 10 14 | 704 | 1.4− | 0.2− | 2007 11 07 | 704 | 0.2+  | 0.3−  |
| 2001 09 18 | 699 | 0.4−  | 0.9−  | 2001 10 14 | 704 | 1.5− | 0.5+ | 2007 11 07 | 704 | 0.1−  | 0.3−  |
| 2001 09 18 | 699 | 0.5−  | 0.2+  | 2001 10 19 | 644 | 0.3+ | 1.3+ | 2007 11 07 | 704 | 0.4+  | 0.3+  |
| 2001 09 20 | 704 | 0.1+  | 0.3+  | 2001 10 19 | 644 | 0.5+ | 1.2+ | 2007 11 07 | 704 | 0.2+  | 0.1−  |
| 2001 09 20 | 704 | 0.2+  | 0.1+  | 2001 10 19 | 644 | 0.3+ | 1.3+ | 2007 11 08 | 691 | 0.3−  | 0.6−  |
| 2001 09 20 | 704 | 0.3+  | 0.7−  | 2001 10 21 | 704 | 0.0  | 0.1+ | 2007 11 08 | 691 | 1.0−  | 0.1−  |
| 2001 09 20 | 704 | 0.3−  | 0.5−  | 2001 10 21 | 704 | 1.0− | 0.4− | 2007 11 08 | 691 | 0.3−  | 0.1−  |
| 2001 09 20 | 704 | 0.1+  | 0.7−  | 2001 10 21 | 704 | 0.1− | 0.3− | 2007 11 18 | 704 | 0.6+  | 0.5−  |
| 2001 09 22 | 704 | 0.2+  | 0.2−  | 2001 10 21 | 704 | 0.0  | 0.6− | 2007 11 18 | 704 | 0.4+  | 0.1+  |
| 2001 09 22 | 704 | 0.7+  | 0.3+  | 2003 01 05 | 704 | 0.2+ | 0.1+ | 2007 11 18 | 704 | 0.3+  | 0.2−  |
| 2001 09 22 | 704 | 0.7+  | 0.1−  | 2003 01 05 | 704 | 0.5− | 0.6+ | 2007 11 18 | 704 | 0.8+  | 0.4+  |
| 2001 09 23 | 704 | 0.2−  | 0.3−  | 2003 01 05 | 704 | 0.2+ | 0.1− | 2007 11 20 | 704 | 0.3+  | 0.2+  |
| 2001 09 23 | 704 | 0.1−  | 0.1−  | 2003 01 05 | 704 | 0.7− | 0.7+ | 2007 11 20 | 704 | 0.2−  | 0.4+  |
| 2001 09 23 | 704 | 0.1−  | 0.1−  | 2003 01 05 | 704 | 0.1− | 0.1+ | 2007 11 20 | 704 | 0.2+  | 0.1−  |
| 2001 09 23 | 704 | (0.2+ | 1.6−) | 2003 01 26 | 644 | 0.3− | 1.1+ | 2007 12 13 | 704 | 0.6+  | 1.0+  |
| 2001 09 24 | 704 | 0.2+  | 0.1+  | 2003 01 26 | 644 | 0.1− | 0.6+ | 2007 12 13 | 704 | 1.5+  | 0.3−  |
| 2001 09 24 | 704 | 0.1−  | 0.4−  | 2003 01 26 | 644 | 0.1− | 0.3+ | 2007 12 13 | 704 | 0.4−  | 0.9+  |
| 2001 09 24 | 704 | 0.9−  | 1.4+  | 2003 02 01 | 704 | 1.4+ | 0.3+ | 2007 12 13 | 704 | 1.4+  | 0.8−  |
| 2001 09 25 | 699 | 0.3+  | 0.2+  | 2003 02 01 | 704 | 0.8+ | 0.4− | 2007 12 13 | 704 | 0.4+  | 0.2−  |
| 2001 09 25 | 699 | 0.4+  | 1.2−  | 2003 02 01 | 704 | 0.2+ | 0.6+ |            |     |       |       |

## Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2001 08 27 699 0.5− 0.3−   | 2001 10 19 644 0.4− 0.0  | 2006 08 23 704 0.3− 0.1+   |
| 2001 08 27 699 0.5− 0.2+   | 2001 10 19 644 0.4− 0.1− | 2006 08 23 704 0.1− 0.2+   |
| 2001 08 27 699 0.4− 1.0+   | 2001 10 21 704 0.8+ 1.0− | 2006 08 28 704 (0.2+ 2.1−) |
| 2001 08 27 699 0.3− 0.3+   | 2001 10 21 704 0.7+ 1.2− | 2006 08 28 704 0.3− 0.6−   |
| 2001 09 11 699 0.3− 0.4+   | 2001 10 21 704 0.6+ 0.7− | 2006 08 28 699 0.0 0.3+    |
| 2001 09 11 699 0.4+ 0.2+   | 2001 10 21 704 0.9+ 1.2− | 2006 08 28 704 1.1− 0.2+   |
| 2001 09 11 699 0.2+ 0.0    | 2001 10 21 704 0.8+ 1.2− | 2006 08 28 699 0.0 0.1+    |
| 2001 09 11 699 0.7+ 0.8+   | 2001 10 23 691 0.2+ 0.3− | 2006 08 28 704 0.4− 0.4+   |
| 2001 09 17 704 0.7− 0.5−   | 2001 10 23 691 0.2+ 0.2− | 2006 08 28 699 0.1− 0.6+   |
| 2001 09 17 704 0.3− 0.3−   | 2001 10 23 691 0.3+ 0.4− | 2006 08 28 699 0.1− 0.3+   |
| 2001 09 17 704 0.9− 0.6−   | 2001 11 10 704 0.1− 0.1− | 2006 08 31 704 0.1+ 0.5−   |
| 2001 09 17 704 0.3− 0.0    | 2001 11 10 704 0.1+ 0.4+ | 2006 08 31 704 0.6− 0.1+   |
| 2001 09 20 704 0.2− 0.1+   | 2001 11 10 704 0.0 0.3+  | 2006 08 31 704 0.6− 0.9−   |
| 2001 09 20 704 0.4− 0.2+   | 2001 11 10 704 0.3+ 0.0  | 2006 09 18 699 0.3− 0.3−   |
| 2001 09 20 704 0.5− 0.0    | 2001 11 10 704 0.1+ 0.1+ | 2006 09 18 699 0.1+ 0.9−   |
| 2001 09 20 704 0.5− 0.2+   | 2001 11 19 704 0.5+ 0.1− | 2006 09 18 699 0.4+ 0.2−   |
| 2001 09 24 704 0.4− 0.3−   | 2001 11 19 704 0.2+ 0.8+ | 2006 09 18 699 0.2+ 0.6+   |
| 2001 09 24 704 0.6+ 0.4+   | 2001 11 19 704 0.1− 0.2+ | 2006 10 22 G96 0.4− 0.4−   |
| 2001 09 24 704 0.8+ 0.1−   | 2001 11 19 704 0.8− 1.1+ | 2006 10 22 G96 0.0 0.2−    |
| 2001 09 24 704 0.2+ 0.4+   | 2004 03 18 691 0.5+ 0.6+ | 2006 10 22 G96 0.1− 0.2−   |
| 2001 09 24 704 0.3+ 0.4+   | 2004 03 18 691 0.1+ 0.6+ | 2006 10 22 G96 0.0 0.1+    |
| 2001 10 11 644 (0.3+ 1.5+) | 2004 03 18 691 0.2+ 0.6+ | 2006 11 16 G96 0.1+ 0.0    |
| 2001 10 11 644 0.4+ 1.5+   | 2005 05 11 644 0.2+ 0.4+ | 2006 11 16 G96 0.1+ 0.0    |
| 2001 10 11 644 (0.5+ 1.6+) | 2005 05 11 644 0.5+ 0.1+ | 2006 11 16 G96 0.2+ 0.2+   |
| 2001 10 12 699 0.7+ 0.1+   | 2005 05 11 644 0.4+ 0.2+ | 2006 11 16 G96 0.2− 0.1−   |
| 2001 10 12 699 0.2+ 0.1−   | 2006 08 15 644 0.0 0.2+  | 2007 11 07 704 0.4+ 0.0    |
| 2001 10 12 699 0.8+ 0.5+   | 2006 08 15 644 0.1− 0.2+ | 2007 11 07 704 0.3+ 0.4+   |
| 2001 10 12 699 0.4+ 0.3+   | 2006 08 15 644 0.1− 0.2+ | 2007 11 07 704 0.4+ 0.4+   |
| 2001 10 14 704 0.7− 0.0    | 2006 08 16 644 0.1− 0.2+ | 2007 11 07 704 0.0 1.4+    |
| 2001 10 14 704 1.3− 0.1+   | 2006 08 16 644 0.1− 0.2+ | 2007 11 08 691 0.9− 0.0    |
| 2001 10 14 704 0.8− 0.2+   | 2006 08 16 644 0.1+ 0.1+ | 2007 11 08 691 0.1− 0.0    |
| 2001 10 14 704 1.0− 0.4+   | 2006 08 17 644 0.1+ 0.3+ | 2007 11 08 691 0.2− 0.0    |
| 2001 10 14 704 0.9− 0.1−   | 2006 08 17 644 0.1+ 0.2+ | 2007 11 20 691 0.2− 0.0    |
| 2001 10 15 704 0.2− 0.5+   | 2006 08 17 644 0.1+ 0.2+ | 2007 11 20 691 0.3+ 0.1−   |
| 2001 10 15 704 0.6− 0.4+   | 2006 08 18 644 0.0 0.2+  | 2007 11 20 691 0.4− 0.2−   |
| 2001 10 15 704 0.0 0.3−    | 2006 08 18 644 0.2+ 0.2+ | 2007 12 13 704 1.5+ 0.6−   |
| 2001 10 15 704 0.5− 0.1−   | 2006 08 18 644 0.0 0.2+  | 2007 12 13 704 0.2+ 0.9−   |
| 2001 10 15 704 0.5− 0.6+   | 2006 08 19 699 0.3+ 0.3+ | 2007 12 13 704 0.5+ 0.8+   |
| 2001 10 17 704 0.5− 0.3+   | 2006 08 19 699 0.2− 0.5+ | 2007 12 13 704 0.7+ 0.4+   |
| 2001 10 17 704 0.5− 1.3+   | 2006 08 19 699 0.4+ 0.9+ | 2007 12 15 704 0.3+ 0.2+   |
| 2001 10 17 704 0.3+ 0.7+   | 2006 08 19 699 0.5+ 0.5+ | 2007 12 15 704 1.0+ 0.6+   |
| 2001 10 17 704 0.5+ 1.4+   | 2006 08 23 704 0.1− 0.2+ | 2007 12 15 704 0.5+ 0.2+   |
| 2001 10 17 704 (0.4+ 1.7+) | 2006 08 23 704 0.2+ 0.1+ |                            |
| 2001 10 19 644 0.6− 0.1−   | 2006 08 23 704 0.2− 0.2− |                            |

(171929)\* 2001 SQ<sub>158</sub>

Discovered 2001 Sept. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | P        |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 348.16959  | (2000.0) |           |             |             |
| <i>n</i> | 0.17766826 | $\omega$ | 102.71456 | −0.16301136 | −0.98655446 |
| <i>a</i> | 3.1337390  | $\Omega$ | 356.60078 | +0.81095795 | −0.12720638 |
| <i>e</i> | 0.3032671  | <i>i</i> | 11.41061  | +0.56193817 | −0.10261016 |
| <i>P</i> | 5.55       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

## Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1973 09 20 675 1.9+ 2.4−   | 2001 10 20 644 0.4− 0.6−   | 2003 03 10 699 0.4+ 0.8− |
| 1973 09 24 675 2.2+ 2.0−   | 2001 10 21 704 0.0 0.2−    | 2003 03 10 699 0.4+ 0.5+ |
| 1973 09 24 675 2.1+ 1.9−   | 2001 10 21 704 0.3− 0.2+   | 2003 03 10 699 0.3− 0.0  |
| 1973 09 25 675 (0.1+ 3.2−) | 2001 10 21 704 0.0 0.1−    | 2003 03 10 699 0.5+ 0.8+ |
| 1973 09 25 675 0.5− 2.5−   | 2001 10 21 704 0.1+ 0.1+   | 2003 03 23 333 0.0 0.1+  |
| 2001 09 17 704 0.2− 0.3+   | 2001 10 21 704 0.4− 0.7−   | 2003 03 23 333 0.2− 0.4− |
| 2001 09 17 704 0.4+ 0.7+   | 2001 10 24 704 0.7− 0.9+   | 2003 03 25 699 0.5+ 0.6− |
| 2001 09 17 704 0.3− 0.5−   | 2001 10 24 704 (1.5+ 3.4−) | 2003 03 25 699 0.2+ 0.2+ |
| 2001 09 17 704 0.8− 0.6+   | 2001 10 24 704 0.5− 1.1−   | 2003 03 25 699 0.1+ 0.3− |

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2001 09 20 704 0.1− 0.1−   | 2001 10 24 704 0.3+ 0.8−   | 2003 03 25 699 0.2+ 0.7− |
| 2001 09 20 704 (1.8− 0.9+) | 2001 10 25 704 0.2+ 0.1−   | 2003 03 26 644 0.2+ 0.3− |
| 2001 09 20 699 0.0 0.3−    | 2001 10 25 704 0.5− 0.3+   | 2003 03 26 644 0.2+ 0.2− |
| 2001 09 20 699 0.3+ 0.3+   | 2001 10 25 704 0.3− 0.1+   | 2003 03 26 644 0.3+ 0.4− |
| 2001 09 20 704 (0.0 2.0+)  | 2001 10 25 704 0.8− 0.5+   | 2003 04 01 704 0.3− 0.1− |
| 2001 09 20 699 0.3+ 0.2+   | 2001 10 25 704 0.8− 0.4+   | 2003 04 01 704 0.2− 0.1− |
| 2001 09 20 699 0.0 0.7+    | 2001 10 28 704 0.0 0.0     | 2003 04 01 704 0.5+ 0.1− |
| 2001 09 20 704 0.9− 0.7+   | 2001 10 28 704 0.5+ 0.8+   | 2003 04 01 704 0.1+ 0.4+ |
| 2001 09 23 704 0.2− 0.5−   | 2001 10 28 704 0.2− 1.2+   | 2003 04 01 704 0.0 0.6+  |
| 2001 09 23 704 0.9− 1.3−   | 2001 10 28 704 (0.8− 2.4+) | 2003 04 05 691 0.5− 0.1− |
| 2001 09 23 704 0.4+ 0.3−   | 2001 11 10 704 0.6+ 0.5+   | 2003 04 05 691 0.4− 0.1− |
| 2001 09 23 704 0.6+ 0.3−   | 2001 11 10 704 0.7+ 0.8+   | 2003 04 05 691 0.3− 0.0  |
| 2001 09 27 333 0.4+ 0.4+   | 2001 11 10 704 0.4+ 1.0+   | 2003 05 01 691 0.0 0.1−  |
| 2001 09 27 333 0.1− 0.6−   | 2001 11 10 704 1.0+ 0.5+   | 2003 05 01 691 0.1− 0.1− |
| 2001 09 27 333 0.2+ 0.4−   | 2001 11 10 704 0.3− 0.4+   | 2003 05 01 691 0.0 0.2−  |
| 2001 10 12 699 1.0+ 0.1+   | 2001 11 11 644 0.2+ 0.1+   | 2006 10 22 G96 0.4− 0.2+ |
| 2001 10 12 699 0.1+ 0.5−   | 2001 11 11 644 0.6+ 0.1−   | 2006 10 22 G96 0.5− 0.4+ |
| 2001 10 12 699 0.1+ 0.6+   | 2001 11 11 644 0.1− 0.2+   | 2006 10 22 G96 0.4− 0.6+ |
| 2001 10 12 699 0.3− 0.2+   | 2001 11 17 704 0.4+ 0.4−   | 2006 10 22 G96 0.5− 0.7+ |
| 2001 10 12 699 0.9+ 0.6+   | 2001 11 17 704 0.7+ 0.2+   | 2006 11 16 G96 0.2+ 0.0  |
| 2001 10 12 699 0.7− 0.2−   | 2001 11 17 704 0.2+ 1.0−   | 2006 11 16 G96 0.0 0.1+  |
| 2001 10 12 699 1.2+ 0.3+   | 2001 11 17 704 1.4+ 0.7−   | 2006 11 16 G96 0.6− 0.1+ |
| 2001 10 12 699 0.7− 0.4+   | 2001 11 17 704 0.0 0.3−    | 2006 11 16 G96 0.7− 0.3+ |
| 2001 10 14 704 0.1− 0.1+   | 2001 11 20 699 0.1− 0.3−   | 2007 11 03 704 0.4− 0.1− |
| 2001 10 14 704 0.3+ 0.2+   | 2001 11 20 699 0.2− 0.2+   | 2007 11 03 704 0.3+ 0.3− |
| 2001 10 14 704 0.5+ 0.4+   | 2001 11 20 699 0.4− 0.1+   | 2007 11 03 704 0.1+ 0.0  |
| 2001 10 14 704 0.2+ 1.0+   | 2001 11 20 699 1.0− 0.3+   | 2007 11 03 704 0.0 0.4−  |
| 2001 10 14 704 0.8+ 0.9+   | 2003 02 27 599 0.3+ 0.3−   | 2007 11 03 704 1.3+ 0.4− |
| 2001 10 17 704 0.6− 0.1+   | 2003 02 27 599 0.4+ 0.5−   | 2007 12 03 704 0.0 1.3−  |
| 2001 10 17 704 0.6− 0.5−   | 2003 02 27 599 0.1− 0.5−   | 2007 12 03 704 0.3+ 0.0  |
| 2001 10 17 704 0.2+ 0.4−   | 2003 02 27 599 0.6+ 0.4−   | 2007 12 03 704 0.2− 0.8+ |
| 2001 10 17 704 1.0− 0.8−   | 2003 03 05 704 0.2− 0.2+   | 2007 12 03 704 0.6− 0.7+ |
| 2001 10 20 644 0.5− 0.6−   | 2003 03 05 704 1.2− 0.1−   | 2007 12 03 704 1.1− 0.5+ |
| 2001 10 20 644 0.4− 0.6−   | 2003 03 05 704 0.1+ 0.4+   |                          |

(171930)\* 2001 SJ<sub>170</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | P        |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 3.39701    | (2000.0) |           |             |             |
| <i>n</i> | 0.18776964 | $\omega$ | 132.73039 | +0.41339099 | −0.90516760 |
| <i>a</i> | 3.0203166  | $\Omega$ | 292.60581 | +0.80099170 | +0.41314905 |
| <i>e</i> | 0.1366232  | <i>i</i> | 6.14941   | +0.43303600 | +0.09989739 |
| <i>P</i> | 5.25       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

## Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2001 08 25 704 0.6− 0.4+ | 2002 12 10 704 0.0 0.3+    | 2003 01 25 291 0.3+ 0.6+ |
| 2001 08 25 704 0.3+ 0.8+ | 2002 12 31 704 0.5+ 0.5+   | 2003 01 25 291 0.2+ 0.2+ |
| 2001 08 25 704 1.3− 0.7+ | 2002 12 31 704 0.3+ 0.1−   | 2006 08 29 691 0.0 0.1−  |
| 2001 09 16 704 0.3− 0.5+ | 2002 12 31 704 (0.0 2.2+)  | 2006 08 29 691 0.1− 0.2+ |
| 2001 09 16 704 0.9− 0.2+ | 2002 12 31 704 0.4+ 0.5+   | 2006 08 29 691 0.1− 0.2+ |
| 2001 09 16 704 0.8− 0.4+ | 2003 01 08 704 0.2+ 0.5−   | 2006 09 17 691 0.1− 0.0  |
| 2001 09 16 704 0.6− 0.2− | 2003 01 08 704 0.1+ 0.1+   | 2006 09 17 691 0.0 0.2−  |
| 2001 09 21 704 0.2− 0.4− | 2003 01 08 704 0.9− 0.3−   | 2006 09 17 691 0.0 0.2−  |
| 2001 09 21 704 0.2+ 0.5+ | 2003 01 08 704 0.5+ 0.3+   | 2006 09 27 691 0.2+ 0.0  |
| 2001 09 21 704 0.8+ 0.1− | 2003 01 08 704 0.1+ 0.7−   | 2006 09 27 691 0.2+ 0.2− |
| 2001 09 21 704 0.0 0.3+  | 2003 01 09 704 0.5− 0.8−   | 2006 09 27 691 0.2+ 0.3− |
| 2001 09 21 704 0.8+ 0.6+ | 2003 01 09 704 (2.0+ 1.3−) | 2007 11 20 704 1.2+ 0.3+ |
| 2001 09 21 704 0.5− 0.6+ | 2003 01 09 704 (1.8+ 1.4−) | 2007 11 20 704 0.1+ 0.1+ |
| 2001 09 21 704 0.8− 0.9− | 2003 01 09 704 (2.4+ 1.4−) | 2007 11 20 704 0.4+ 0.4− |
| 2001 09 21 704 0.3+ 0.1+ | 2003 01 10 704 0.0 0.2+    | 2007 11 20 704 1.1+ 0.7+ |
| 2001 09 21 704 0.5+ 0.4− | 2003 01 10 704 (0.6− 1.8+) | 2007 12 06 691 0.5− 0.3− |
| 2001 09 28 644 0.2+ 0.2+ | 2003 01 10 704 0.5− 0.3−   | 2007 12 06 691 0.6− 0.4− |
| 2001 09 28 644 0.4+ 0.4+ | 2003 01 10 704 (0.1+ 2.0+) | 2007 12 06 691 0.5− 0.3− |
| 2001 09 28 644 0.2+ 0.5+ | 2003 01 10 704 0.2− 0.7+   | 2007 12 13 704 0.9+ 0.4+ |
| 2002 11 07 645 0.1− 0.1− | 2003 01 10 704 (0.9− 1.8+) | 2007 12 13 704 1.0+ 0.5− |
| 2002 11 07 645 0.0 0.1−  | 2003 01 10 704 (0.1+ 2.1+) | 2007 12 13 704 0.9+ 0.0  |

2007 DEC. 24

M.P.O. 129209

2002 12 10 704 0.4+ 0.1+ 2003 01 10 704 (0.8- 2.1+) 2007 12 13 704 0.7+ 0.2+  
 2002 12 10 704 0.0 0.5+ 2003 01 25 291 0.1- 0.3+

(171931)\* 2001 SP<sub>174</sub> = 2005 JF<sub>127</sub>

Discovered 2001 Sept. 16 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. G. V. Williams (*MPO* 75129)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 97.00405   | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.19712651 | <i>ω</i> 205.67359 | +0.90866138   | +0.41494364 |  |
| <i>a</i> | 2.9239685  | <i>Ω</i> 129.73098 | -0.37192161   | +0.85492068 |  |
| <i>e</i> | 0.2112399  | <i>i</i> 3.46164   | -0.18975987   | +0.31133971 |  |
| <i>P</i> | 5.00       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2000 05 02 691 0.2+ 0.1-   | 2006 08 27 705 0.2+ 0.1-   | 2006 09 26 704 0.3+ 0.4- |
| 2000 05 02 691 0.3- 0.1-   | 2006 08 27 705 0.3+ 0.1-   | 2006 09 26 704 0.5+ 0.5+ |
| 2000 05 02 691 0.1+ 0.1-   | 2006 08 28 705 0.2+ 0.2-   | 2006 09 26 704 0.8- 0.1+ |
| 2001 08 27 699 (2.1- 2.2+) | 2006 08 28 705 0.3+ 0.2-   | 2006 09 26 704 0.1- 1.3- |
| 2001 08 27 699 1.4- 0.1-   | 2006 08 30 705 0.4+ 0.2-   | 2006 09 28 704 0.1+ 0.2- |
| 2001 08 27 699 0.4- 0.0    | 2006 08 30 705 0.3+ 0.1-   | 2006 09 28 704 0.4+ 0.3- |
| 2001 08 27 699 0.8+ 0.3-   | 2006 09 11 705 0.3+ 0.1+   | 2006 09 28 704 0.2+ 0.1+ |
| 2001 09 11 699 0.5- 0.3+   | 2006 09 11 705 0.3+ 0.0    | 2006 09 28 704 0.6- 0.4+ |
| 2001 09 11 699 (0.1- 2.2+) | 2006 09 12 705 0.3+ 0.1-   | 2006 10 16 703 0.1+ 0.6+ |
| 2001 09 11 699 0.5+ 0.3-   | 2006 09 12 705 0.4+ 0.1-   | 2006 10 16 703 0.4+ 0.0  |
| 2001 09 11 699 0.8- 0.1+   | 2006 09 12 703 0.5- 0.6+   | 2006 10 16 703 0.2+ 0.2+ |
| 2001 09 16 704 0.3+ 1.4+   | 2006 09 12 703 1.1- 0.6-   | 2006 10 16 703 0.5- 0.0  |
| 2001 09 16 704 0.4+ 0.2-   | 2006 09 12 703 1.4- 0.1+   | 2006 10 20 644 0.1+ 0.2+ |
| 2001 09 16 704 0.6- 1.2+   | 2006 09 12 703 0.2+ 0.9+   | 2006 10 20 644 0.2+ 0.1- |
| 2001 09 16 704 0.3- 0.4-   | 2006 09 16 705 0.5+ 0.0    | 2006 10 20 644 0.2+ 0.5+ |
| 2001 09 21 704 0.9+ 0.3+   | 2006 09 16 705 0.4+ 0.0    | 2006 10 21 644 0.3+ 0.2- |
| 2001 09 21 704 0.7+ 0.1+   | 2006 09 18 703 0.5+ 0.3+   | 2006 10 21 644 0.2+ 0.1+ |
| 2001 09 21 704 0.9+ 0.1+   | 2006 09 18 703 0.3- 0.3-   | 2006 10 21 644 0.1+ 0.0  |
| 2001 09 21 704 0.6+ 0.4+   | 2006 09 18 703 (0.0 1.9-)  | 2006 11 23 G96 0.1- 0.3- |
| 2001 10 06 644 0.3+ 0.1+   | 2006 09 18 703 0.4+ 1.2+   | 2006 11 23 G96 0.3+ 0.5- |
| 2001 10 06 644 0.2- 0.3-   | 2006 09 18 699 0.0 0.5-    | 2006 11 23 G96 0.1- 0.8- |
| 2001 10 06 644 0.1- 0.0    | 2006 09 18 699 0.3+ 0.8+   | 2006 11 23 G96 0.2+ 0.8- |
| 2001 10 17 644 0.6- 0.4-   | 2006 09 18 699 0.6- 0.2+   | 2007 12 04 691 0.3+ 0.2+ |
| 2001 10 17 644 0.7- 0.2-   | 2006 09 18 699 0.5+ 1.0-   | 2007 12 04 G96 0.9+ 0.5- |
| 2001 10 17 644 0.6- 0.5-   | 2006 09 19 703 0.0 0.5+    | 2007 12 04 G96 0.8+ 0.2- |
| 2005 05 12 G96 0.9+ 0.4+   | 2006 09 19 703 (0.4- 1.6+) | 2007 12 04 691 0.8- 0.1+ |
| 2005 05 12 G96 0.1- 0.7+   | 2006 09 19 703 0.8- 0.0    | 2007 12 04 G96 0.5+ 0.4+ |
| 2005 05 12 G96 0.1- 0.6+   | 2006 09 19 703 0.1- 0.3+   | 2007 12 04 691 0.0 0.4+  |
| 2005 05 12 G96 0.0 0.5+    | 2006 09 22 704 (0.2+ 1.6-) | 2007 12 04 G96 0.4+ 0.9- |
| 2005 05 14 G96 0.1- 0.3+   | 2006 09 22 704 0.1- 0.5+   | 2007 12 16 691 0.1- 0.2+ |
| 2005 05 14 G96 0.1- 0.2+   | 2006 09 22 704 0.3- 1.3-   | 2007 12 16 691 0.1+ 0.2+ |
| 2005 05 14 G96 0.0 0.0     | 2006 09 22 704 0.9- 0.7-   | 2007 12 16 691 0.0 0.4-  |
| 2005 05 14 G96 0.3- 0.2+   | 2006 09 22 704 0.6- 1.3+   |                          |

(171932)\* 2001 SD<sub>198</sub> = 2002 YR<sub>26</sub>

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. G. V. Williams (*MPO* 40647)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC               |               |             |  |
|----------|------------|-------------------|---------------|-------------|--|
| <i>M</i> | 347.62097  | (2000.0)          | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.18476656 | <i>ω</i> 39.36685 | +0.25617765   | -0.96644694 |  |
| <i>a</i> | 3.0529554  | <i>Ω</i> 35.80112 | +0.87856093   | +0.22468385 |  |
| <i>e</i> | 0.1305610  | <i>i</i> 1.84142  | +0.40311748   | +0.12448890 |  |
| <i>P</i> | 5.33       | <i>H</i> 15.1     | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|                          |                           |                          |
|--------------------------|---------------------------|--------------------------|
| 1996 11 19 691 0.1+ 0.1- | 2001 09 25 704 (0.0 2.0+) | 2007 08 22 691 0.3- 0.1- |
| 1996 11 19 691 0.1- 0.3- | 2001 09 25 704 0.0 0.8+   | 2007 08 22 691 0.1- 0.2- |
| 1996 11 19 691 0.1+ 0.1- | 2001 09 25 704 0.9+ 0.8+  | 2007 11 05 691 0.1- 0.2- |
| 2001 09 19 699 1.0+ 0.4- | 2001 10 17 644 0.9+ 0.2+  | 2007 11 05 691 0.2- 0.2- |

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 2001 09 19 699 0.3+ 1.2-   | 2001 10 17 644 0.7+ 0.3+   | 2007 11 05 691 0.0 0.2-    |
| 2001 09 19 699 0.3+ 0.4+   | 2001 10 17 644 0.5+ 0.0    | 2007 11 05 G96 0.1+ 0.4-   |
| 2001 09 19 699 0.9- 0.3+   | 2001 10 18 644 0.6+ 0.2-   | 2007 11 05 G96 0.1+ 0.3-   |
| 2001 09 19 704 0.5- 0.0    | 2001 10 18 644 0.6+ 0.1-   | 2007 11 05 G96 0.1+ 0.2-   |
| 2001 09 19 704 0.4- 0.2+   | 2001 10 18 644 0.2+ 0.0    | 2007 11 05 G96 0.2+ 0.4-   |
| 2001 09 19 704 0.1+ 0.1+   | 2002 12 31 704 0.2+ 1.0+   | 2007 11 09 691 0.1+ 0.1-   |
| 2001 09 19 704 0.1- 0.3-   | 2002 12 31 704 0.1- 0.7+   | 2007 11 09 691 0.0 0.1-    |
| 2001 09 19 704 0.0 0.1+    | 2002 12 31 704 0.4- 0.8+   | 2007 11 09 691 0.0 0.3-    |
| 2001 09 21 704 0.4- 0.1+   | 2002 12 31 704 0.4+ 0.6+   | 2007 11 13 691 0.4- 0.2-   |
| 2001 09 21 704 0.1- 0.0    | 2002 12 31 704 0.3- 0.2+   | 2007 11 13 691 0.5- 0.1+   |
| 2001 09 21 704 0.6- 0.4-   | 2003 01 04 704 (0.5- 1.9+) | 2007 11 13 691 0.0 0.2-    |
| 2001 09 21 704 0.3- 0.1-   | 2003 01 04 704 0.3- 0.2+   | 2007 11 15 704 0.7+ 0.6+   |
| 2001 09 21 291 0.3+ 0.0    | 2003 01 04 704 (1.5+ 0.3-) | 2007 11 15 704 0.5+ 0.1-   |
| 2001 09 21 704 0.6- 0.1+   | 2003 01 05 704 0.1- 1.0+   | 2007 11 15 704 0.7+ 0.7+   |
| 2001 09 21 291 0.1+ 0.1+   | 2003 01 05 704 0.2+ 1.0+   | 2007 11 15 704 0.9+ 0.2+   |
| 2001 09 21 291 0.6+ 0.0    | 2003 01 05 704 (1.6- 0.9+) | 2007 11 15 704 (0.1+ 1.7+) |
| 2001 09 24 704 0.7- 0.5-   | 2003 01 05 704 0.6+ 1.0+   | 2007 11 17 691 0.1- 0.2-   |
| 2001 09 24 704 0.6- 0.4+   | 2003 01 05 704 0.2+ 1.3+   | 2007 11 17 691 0.3- 0.2-   |
| 2001 09 24 704 1.2- 0.5+   | 2003 01 08 704 0.1- 0.5+   | 2007 11 17 691 0.2- 0.1-   |
| 2001 09 24 704 0.8- 0.3+   | 2003 01 08 704 0.0 0.4-    | 2007 12 02 D35 0.0 0.1+    |
| 2001 09 24 704 (1.8- 0.4+) | 2003 01 08 704 0.1+ 0.1+   | 2007 12 02 D35 0.5+ 0.3+   |
| 2001 09 24 704 0.8- 0.4+   | 2003 01 08 704 0.0 0.2-    | 2007 12 02 D35 0.2+ 0.0    |
| 2001 09 24 704 0.7- 0.9+   | 2003 01 08 704 0.3+ 0.2-   | 2007 12 02 D35 0.4+ 0.0    |
| 2001 09 24 704 (0.8- 1.7+) | 2004 03 27 704 0.0 1.3+    | 2007 12 02 D35 0.5+ 0.0    |
| 2001 09 24 704 0.3- 0.3+   | 2004 03 27 704 0.4+ 0.8+   | 2007 12 02 D35 0.5+ 0.2-   |
| 2001 09 24 704 0.2+ 0.5+   | 2004 03 27 704 (0.1+ 1.6+) | 2007 12 10 704 0.4+ 1.5-   |
| 2001 09 24 704 0.2- 1.3+   | 2004 03 27 704 0.9+ 1.3+   | 2007 12 10 704 0.3+ 0.3+   |
| 2001 09 24 704 1.2- 0.2+   | 2006 08 13 644 0.3+ 0.0    | 2007 12 10 704 0.6+ 0.2-   |
| 2001 09 24 704 0.3- 0.5+   | 2006 08 13 644 0.2- 0.1+   | 2007 12 10 704 0.8+ 0.2+   |
| 2001 09 24 704 0.6- 0.7+   | 2006 08 13 644 0.1- 0.3+   | 2007 12 14 704 0.2+ 0.8+   |
| 2001 09 25 704 0.1+ 0.6+   | 2006 08 19 699 0.1- 0.6-   | 2007 12 14 704 0.0 0.8+    |
| 2001 09 25 704 0.2- 0.4+   | 2006 08 19 699 0.1- 0.0    | 2007 12 14 704 0.0 0.6+    |
| 2001 09 25 704 1.3- 0.3+   | 2006 08 19 699 1.0- 0.3+   | 2007 12 14 704 0.4+ 0.5+   |
| 2001 09 25 704 0.5+ 0.7+   | 2006 08 19 699 0.5+ 0.7+   | 2007 12 14 704 0.0 0.7+    |
| 2001 09 25 704 0.6- 0.2-   | 2007 08 22 691 0.2- 0.1+   |                            |

(171933)\* 2001 SN<sub>201</sub> = 2004 DS<sub>45</sub>

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. K. E. Smalley (*MPO* 61062)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 319.39588  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.18388611 | <i>ω</i> 288.24803 | -0.22507640   | -0.97418130 |  |
| <i>a</i> | 3.0626927  | <i>Ω</i> 174.66498 | +0.95020967   | -0.22347189 |  |
| <i>e</i> | 0.1186854  | <i>i</i> 10.94082  | +0.21550450   | -0.03211103 |  |
| <i>P</i> | 5.36       | <i>H</i> 15.1      | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 09 18 699 (2.0- 0.0 ) | 2004 03 24 699 0.7- 0.1+ | 2006 09 28 G96 0.3+ 0.0  |
| 2001 09 18 699 (2.4- 0.6+) | 2004 03 24 699 0.1+ 0.7+ | 2006 09 28 G96 0.2- 0.0  |
| 2001 09 18 699 (1.8- 0.0 ) | 2004 03 24 699 0.3+ 1.2+ | 2006 09 28 G96 0.4- 0.0  |
| 2001 09 18 699 0.7- 0.5+   | 2004 03 25 699 0.6- 0.7+ | 2006 09 28 G96 0.2- 0.1- |
| 2001 09 19 704 0.3- 0.0    | 2004 03 25 699 0.1+ 0.1+ | 2006 09 28 G96 0.4- 0.4- |
| 2001 09 19 704 0.3+ 1.0+   | 2004 03 25 699 0.4- 0.2- | 2006 09 28 G96 0.4+ 0.0  |
| 2001 09 19 704 0.5+ 0.7+   | 2004 03 25 699 0.2- 0.2- | 2006 09 28 G96 0.1+ 0.3- |
| 2001 09 21 704 0.2+ 0.8+   | 2004 03 26 691 0.1+ 0.3+ | 2006 09 28 G96 0.3- 0.2- |
| 2001 09 21 704 0.5+ 0.8+   | 2004 03 26 691 0.4- 0.5+ | 2007 10 13 703 0.1+ 0.7+ |
| 2001 09 21 704 0.1- 1.0+   | 2004 03 26 691 0.4- 0.6+ | 2007 10 13 703 1.4- 0.3+ |
| 2001 09 21 704 0.2+ 0.7+   | 2004 04 11 644 0.3- 0.3+ | 2007 10 13 703 0.2- 0.8+ |
| 2001 09 21 704 0.1- 1.4+   | 2004 04 11 644 0.3- 0.3+ | 2007 10 13 703 0.5- 0.5+ |
| 2001 09 26 704 0.6- 1.2+   | 2004 04 11 644 0.0 0.4+  | 2007 11 05 D29 0.1- 0.2- |
| 2001 09 26 704 0.7- 1.0+   | 2004 04 20 704 0.6+ 0.1- | 2007 11 05 D29 0.6+ 0.6+ |
| 2001 09 26 704 0.1- 0.8+   | 2004 04 20 704 1.2+ 0.8+ | 2007 11 05 D29 0.3+ 0.3+ |
| 2001 09 26 704 0.4- 0.5+   | 2004 04 20 704 0.8+ 0.7+ | 2007 11 05 D29 0.2- 0.2+ |
| 2001 10 17 644 0.3- 0.0    | 2004 04 20 704 1.3+ 1.3+ | 2007 11 12 703 0.6- 0.9+ |
| 2001 10 17 644 0.4- 0.1+   | 2004 04 20 704 0.7+ 0.0  | 2007 11 12 703 0.2+ 0.7+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 644 | 0.5−  | 0.5+  | 2004 04 20 | E12 | 0.5+  | 1.5−  | 2007 11 12 | 703 | 0.4− | 0.3+ |
| 2004 02 26 | 333 | 0.6−  | 0.0   | 2004 04 20 | E12 | (0.6+ | 1.6−) | 2007 11 12 | 703 | 0.2− | 0.0  |
| 2004 02 26 | 333 | 0.1+  | 0.3+  | 2004 04 20 | E12 | 0.4+  | 1.2−  | 2007 11 14 | G96 | 0.3+ | 0.0  |
| 2004 02 27 | 333 | 0.4+  | 0.2−  | 2004 04 20 | E12 | 0.2+  | 0.6−  | 2007 11 14 | G96 | 0.1+ | 0.1+ |
| 2004 02 27 | 333 | 0.2−  | 0.2+  | 2004 04 22 | 704 | 0.1−  | 0.6+  | 2007 11 14 | G96 | 0.1− | 0.1+ |
| 2004 03 14 | 703 | 0.2−  | 1.0+  | 2004 04 22 | 704 | 0.0   | 0.4+  | 2007 11 14 | G96 | 0.2+ | 0.1+ |
| 2004 03 14 | 703 | (2.1− | 2.4+) | 2004 04 22 | 704 | 0.1−  | 0.3+  | 2007 11 15 | 699 | 0.1+ | 0.8+ |
| 2004 03 14 | 703 | 1.0+  | 0.9+  | 2004 04 22 | 704 | 0.2+  | 0.0   | 2007 11 15 | 699 | 0.2+ | 0.1− |
| 2004 03 14 | 703 | (1.6− | 0.4+) | 2004 04 22 | 704 | 1.0+  | 0.5+  | 2007 11 15 | 699 | 0.0  | 0.2+ |
| 2004 03 19 | 704 | 0.3−  | 0.5+  | 2004 04 26 | 691 | 0.0   | 0.8+  | 2007 11 15 | 699 | 0.5+ | 0.2+ |
| 2004 03 19 | 704 | 0.3+  | 0.5+  | 2004 04 26 | 691 | 0.0   | 0.6+  | 2007 11 20 | 703 | 0.1− | 0.8+ |
| 2004 03 19 | 704 | 0.5+  | 0.2+  | 2004 04 26 | 691 | 0.1−  | 0.6+  | 2007 11 20 | 703 | 0.1+ | 0.5− |
| 2004 03 19 | 704 | 0.1−  | 0.2+  | 2006 08 28 | 703 | 0.2+  | 0.3+  | 2007 11 20 | 703 | 0.3+ | 0.3+ |
| 2004 03 22 | 704 | 0.5+  | 0.8−  | 2006 08 28 | 703 | 1.0−  | 0.3−  | 2007 11 20 | 703 | 0.5+ | 0.9+ |
| 2004 03 22 | 704 | 0.8+  | 0.1+  | 2006 08 28 | 703 | 0.7−  | 0.4−  | 2007 12 05 | 703 | 0.5− | 0.4+ |
| 2004 03 22 | 704 | 1.0+  | 0.6+  | 2006 08 28 | 703 | 0.3−  | 0.9−  | 2007 12 05 | 703 | 0.1+ | 1.1+ |
| 2004 03 22 | 704 | 0.4+  | 0.6−  | 2006 08 29 | 691 | 0.1+  | 0.4+  | 2007 12 05 | 703 | 0.2+ | 0.1+ |
| 2004 03 22 | 704 | 0.1+  | 0.3−  | 2006 08 29 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 703 | 0.7− | 0.1− |
| 2004 03 24 | 699 | 1.2−  | 0.1+  | 2006 08 29 | 691 | 0.1+  | 0.6+  |            |     |      |      |

**(171934)\* 2001 SL<sub>213</sub> = 2004 EK<sub>97</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 65024)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 63.54668   |          |           |             | P    |             | Q |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18793829 | $\omega$ | 293.50388 | +0.99657495 |      | +0.07156128 |   |
| <i>a</i> | 3.0185094  | $\Omega$ | 62.41466  | −0.04781996 |      | +0.90755260 |   |
| <i>e</i> | 0.1149159  | <i>i</i> | 2.67990   | −0.06746570 |      | +0.41379615 |   |
| <i>P</i> | 5.24       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.0   | 0.0   | 2001 10 17 | 644 | 0.2+ | 1.0+ | 2005 06 13 | G96 | 0.3− | 0.3+ |
| 1999 03 20 | 645 | 0.4−  | 0.2−  | 2001 10 17 | 644 | 0.1+ | 0.6+ | 2005 06 13 | G96 | 0.4− | 0.1+ |
| 1999 03 22 | 645 | 0.0   | 0.0   | 2002 02 07 | 695 | 0.4+ | 0.3+ | 2005 06 13 | G96 | 1.1− | 0.1+ |
| 1999 03 22 | 645 | 0.0   | 0.0   | 2002 02 07 | 695 | 0.2− | 0.4− | 2006 08 23 | 644 | 0.2− | 0.6+ |
| 2001 09 19 | 704 | 0.1−  | 1.0−  | 2004 03 15 | 691 | 0.1+ | 0.1+ | 2006 08 23 | 644 | 0.0  | 0.3+ |
| 2001 09 19 | 704 | 0.4+  | 0.1−  | 2004 03 15 | 691 | 0.9+ | 0.1+ | 2006 08 23 | 644 | 0.3+ | 0.4+ |
| 2001 09 19 | 704 | 0.1−  | 0.4−  | 2004 03 15 | 691 | 0.3+ | 0.2− | 2007 12 14 | 704 | 0.8+ | 0.6+ |
| 2001 09 19 | 704 | 0.5+  | 0.5−  | 2004 03 23 | 691 | 0.5+ | 0.5+ | 2007 12 14 | 704 | 0.3+ | 0.1− |
| 2001 09 19 | 704 | (0.8− | 1.6−) | 2004 03 23 | 691 | 0.4+ | 0.1+ | 2007 12 14 | 704 | 0.3− | 0.3+ |
| 2001 09 21 | 704 | 0.0   | 0.4−  | 2004 03 23 | 691 | 0.6+ | 0.1+ | 2007 12 14 | 704 | 0.3− | 0.1+ |
| 2001 09 21 | 704 | 0.5+  | 0.1−  | 2005 05 13 | G96 | 0.4+ | 0.2+ | 2007 12 16 | 012 | 0.9− | 0.5+ |
| 2001 09 21 | 704 | 0.2+  | 0.0   | 2005 05 13 | G96 | 0.2+ | 0.1+ | 2007 12 16 | 012 | 1.3+ | 0.4+ |
| 2001 09 21 | 704 | 0.3−  | 0.6+  | 2005 05 13 | G96 | 0.1− | 0.3+ | 2007 12 16 | 691 | 0.4− | 0.2− |
| 2001 09 21 | 704 | 0.1+  | 0.1+  | 2005 05 13 | G96 | 0.1− | 0.2+ | 2007 12 16 | 691 | 0.4− | 0.1− |
| 2001 10 17 | 644 | 0.0   | 0.4+  | 2005 06 13 | G96 | 0.5− | 0.7+ | 2007 12 16 | 691 | 0.3− | 0.2− |

**(171935)\* 2001 SJ<sub>223</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 39.72460   |          |          |             | P    |             | Q |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.18831032 | $\omega$ | 9.85485  | +0.86618650 |      | −0.49956780 |   |
| <i>a</i> | 3.0145325  | $\Omega$ | 20.13105 | +0.45600377 |      | +0.78004459 |   |
| <i>e</i> | 0.0466159  | <i>i</i> | 2.05933  | +0.20440524 |      | +0.37677905 |   |
| <i>P</i> | 5.23       | <i>H</i> | 16.0     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 03 21 | 691 | 0.2− | 0.9+ | 2001 10 14 | 691 | 0.2+  | 0.3+  | 2006 08 27 | 691 | 0.1− | 0.4+ |
| 1999 03 21 | 691 | 0.5+ | 0.6+ | 2001 10 17 | 644 | (0.5+ | 1.7+) | 2006 08 27 | 691 | 0.2− | 0.6+ |
| 1999 03 21 | 691 | 0.3− | 0.8+ | 2001 10 17 | 644 | 0.5+  | 1.4+  | 2006 08 27 | 691 | 0.4− | 0.5+ |
| 2001 09 19 | 704 | 0.1− | 0.3− | 2001 10 17 | 644 | (0.4+ | 1.8+) | 2006 09 30 | G96 | 0.2− | 0.3− |
| 2001 09 19 | 704 | 0.4− | 0.7+ | 2002 02 07 | 695 | 0.0   | 0.6+  | 2006 09 30 | G96 | 0.2− | 0.3− |
| 2001 09 19 | 704 | 1.2− | 0.5+ | 2002 02 07 | 695 | 0.9+  | 0.6+  | 2006 09 30 | G96 | 0.1− | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.7− | 1.0+ | 2004 03 26 | 691 | 0.2− | 0.0  | 2006 09 30 | G96 | 0.1− | 0.2− |
| 2001 09 19 | 704 | 0.6− | 0.0  | 2004 03 26 | 691 | 0.2+ | 0.1− | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2001 09 21 | 704 | 0.4− | 1.1+ | 2004 03 26 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.7+ | 0.2+ |
| 2001 09 21 | 704 | 0.2− | 0.2− | 2004 04 12 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 691 | 0.3− | 0.0  |
| 2001 09 21 | 704 | 0.5− | 0.6+ | 2004 04 12 | 691 | 0.5+ | 0.2+ | 2007 12 05 | 691 | 0.2− | 0.2+ |
| 2001 09 21 | 704 | 1.0− | 0.4+ | 2004 04 12 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 691 | 0.3− | 0.0  |
| 2001 09 21 | 704 | 1.0− | 0.7+ | 2004 04 19 | 691 | 0.5+ | 0.1+ | 2007 12 05 | 691 | 0.1− | 0.2+ |
| 2001 10 08 | 644 | 0.0  | 0.3+ | 2004 04 19 | 691 | 0.4+ | 0.3+ | 2007 12 14 | 704 | 1.0− | 0.2+ |
| 2001 10 08 | 644 | 0.6− | 0.6+ | 2004 04 19 | 691 | 0.2+ | 0.0  | 2007 12 14 | 704 | 0.5− | 0.3+ |
| 2001 10 08 | 644 | 0.7− | 0.3+ | 2004 04 22 | 691 | 0.2+ | 0.4+ | 2007 12 14 | 704 | 0.1+ | 0.0  |
| 2001 10 14 | 691 | 0.3+ | 0.3+ | 2004 04 22 | 691 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.8+ | 0.9+ |
| 2001 10 14 | 691 | 0.3+ | 0.1+ | 2004 04 22 | 691 | 0.0  | 0.3+ |            |     |      |      |

**(171936)\* 2001 SH<sub>226</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 89.80639   |          |           |             | P    |             | Q |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.17804991 | $\omega$ | 237.64489 | +0.52655697 |      | +0.84924962 |   |
| <i>a</i> | 3.1292593  | $\Omega$ | 64.17611  | −0.76474921 |      | +0.49315638 |   |
| <i>e</i> | 0.1537403  | <i>i</i> | 2.47653   | −0.37134404 |      | +0.18860503 |   |
| <i>P</i> | 5.54       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 12 05 | 691 | 0.7− | 0.2− | 2001 10 20 | 704 | (0.2+ | 2.9+) | 2007 10 12 | 691 | 0.1− | 0.1− |
| 1996 12 05 | 691 | 0.1− | 0.5− | 2001 10 23 | 704 | 0.7+  | 0.3−  | 2007 10 16 | 691 | 0.2− | 0.1− |
| 1996 12 05 | 691 | 0.6− | 0.4− | 2001 10 23 | 704 | 0.9+  | 0.3−  | 2007 10 16 | 691 | 0.0  | 0.3+ |
| 2001 09 11 | 691 | 0.2− | 0.0  | 2001 10 23 | 704 | 1.2+  | 1.5−  | 2007 10 16 | 691 | 0.1+ | 0.2+ |
| 2001 09 11 | 691 | 0.0  | 0.1+ | 2005 04 04 | G96 | 0.6−  | 0.0   | 2007 10 20 | 691 | 0.1+ | 0.1− |
| 2001 09 11 | 691 | 0.1− | 0.1− | 2005 04 04 | G96 | 0.2−  | 0.3+  | 2007 10 20 | 691 | 0.1− | 0.2− |
| 2001 09 18 | 691 | 0.2− | 0.2− | 2005 04 04 | G96 | 0.1−  | 0.1+  | 2007 10 20 | 691 | 0.1+ | 0.2− |
| 2001 09 18 | 691 | 0.2+ | 0.3− | 2005 04 04 | G96 | 0.1−  | 0.0   | 2007 10 30 | 691 | 0.2− | 0.0  |
| 2001 09 18 | 691 | 0.1+ | 0.4− | 2005 04 06 | 691 | 0.1+  | 0.2+  | 2007 10 30 | 691 | 0.1− | 0.1+ |
| 2001 09 19 | 704 | 0.7− | 0.4− | 2005 04 06 | 691 | 0.5+  | 0.5+  | 2007 10 30 | 691 | 0.0  | 0.0  |
| 2001 09 19 | 704 | 0.2+ | 1.0+ | 2005 04 06 | 691 | 0.1+  | 0.5+  | 2007 11 03 | 691 | 0.2− | 0.2+ |
| 2001 09 19 | 704 | 0.1− | 0.4+ | 2005 04 18 | 703 | (0.3− | 1.6−) | 2007 11 03 | 691 | 0.1− | 0.0  |
| 2001 09 19 | 704 | 0.2+ | 1.0+ | 2005 04 18 | 703 | 1.0+  | 0.3+  | 2007 11 03 | 691 | 0.2− | 0.3+ |
| 2001 09 19 | 704 | 0.4− | 0.9+ | 2005 04 18 | 703 | 1.2+  | 0.9−  | 2007 11 15 | 704 | 0.6+ | 0.6+ |
| 2001 09 21 | 691 | 0.3+ | 0.1− | 2005 04 18 | 703 | 1.0−  | 1.1−  | 2007 11 15 | 704 | 0.8+ | 1.2− |
| 2001 09 21 | 704 | 0.3+ | 1.0+ | 2006 08 12 | 644 | 0.5−  | 0.1+  | 2007 11 15 | 704 | 0.1+ | 1.0+ |
| 2001 09 21 | 691 | 0.4+ | 0.2− | 2006 08 12 | 644 | 0.4−  | 0.1−  | 2007 11 15 | 704 | 0.9+ | 0.4+ |
| 2001 09 21 | 704 | 0.2+ | 0.7+ | 2006 08 12 | 644 | 0.5−  | 0.3−  | 2007 11 19 | A50 | 0.1− | 0.6+ |
| 2001 09 21 | 704 | 0.2+ | 0.8+ | 2006 08 17 | 644 | 0.7−  | 0.1−  | 2007 11 19 | A50 | 0.6+ | 0.2+ |
| 2001 09 21 | 691 | 0.0  | 0.1+ | 2006 08 17 | 644 | 0.2−  | 0.3−  | 2007 11 19 | A50 | 0.0  | 0.1+ |
| 2001 09 21 | 704 | 0.3+ | 0.8+ | 2006 08 17 | 644 | 0.6−  | 0.2−  | 2007 11 19 | A50 | 0.9− | 0.8− |
| 2001 09 21 | 704 | 0.9+ | 1.1+ | 2006 08 17 | 644 | 0.6−  | 0.2−  | 2007 12 05 | 691 | 0.4− | 0.2+ |
| 2001 10 16 | 704 | 1.0+ | 0.5+ | 2006 08 17 | 644 | 0.5−  | 0.0   | 2007 12 05 | 691 | 0.2− | 0.1+ |
| 2001 10 16 | 704 | 0.3+ | 0.8+ | 2006 08 17 | 644 | 0.5−  | 0.1−  | 2007 12 05 | 691 | 0.1− | 0.3+ |
| 2001 10 16 | 704 | 0.5− | 1.0+ | 2007 09 10 | G96 | 0.2+  | 0.5−  | 2007 12 05 | 704 | 0.1− | 1.0+ |
| 2001 10 16 | 704 | 1.2+ | 0.9+ | 2007 09 10 | G96 | 0.1−  | 0.3−  | 2007 12 05 | 704 | 0.7+ | 0.4+ |
| 2001 10 16 | 704 | 0.6− | 0.9+ | 2007 09 10 | G96 | 0.3−  | 0.1−  | 2007 12 05 | 704 | 0.8− | 0.4+ |
| 2001 10 17 | 644 | 0.1− | 0.2+ | 2007 09 10 | G96 | 0.0   | 0.3−  | 2007 12 05 | 704 | 0.0  | 0.6− |
| 2001 10 17 | 644 | 0.2+ | 0.2+ | 2007 10 08 | 691 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2001 10 17 | 644 | 0.0  | 0.3+ | 2007 10 08 | 691 | 0.5+  | 0.3−  | 2007 12 15 | G96 | 1.0+ | 0.3− |
| 2001 10 20 | 704 | 0.1− | 0.4+ | 2007 10 08 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.1− | 0.4+ |
| 2001 10 20 | 704 | 1.4− | 0.1+ | 2007 10 12 | 691 | 0.1+  | 0.0   | 2007 12 15 | G96 | 0.2+ | 0.5+ |
| 2001 10 20 | 704 | 1.1+ | 1.1+ | 2007 10 12 | 691 | 0.1−  | 0.0   |            |     |      |      |



2007 DEC. 24

M.P.O. 129211

| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5 |             |            |     | MPC         |            |             |             |
|-----------------------------|-----------------------------------|-------------|------------|-----|-------------|------------|-------------|-------------|
| $M$                         | 79.37088                          |             | (2000.0)   |     | <b>P</b>    |            | <b>Q</b>    |             |
| $n$                         | 0.18073338                        | $\omega$    | 245.76517  |     | +0.86205519 |            | +0.50477714 |             |
| $a$                         | 3.0982073                         | $\Omega$    | 83.89002   |     | -0.44686105 |            | +0.79928416 |             |
| $e$                         | 0.1128248                         | $i$         | 2.61683    |     | -0.23911514 |            | +0.32610562 |             |
| $P$                         | 5.45                              | $H$         | 15.5       | $G$ | 0.15        | $U$        | 0           |             |
| Residuals in seconds of arc |                                   |             |            |     |             |            |             |             |
| 2001 09 19                  | 704                               | (2.0+ 0.1+) | 2001 10 23 | 704 | 0.7+ 0.3+   | 2006 08 28 | 699         | 0.4+ 1.0+   |
| 2001 09 19                  | 704                               | 0.4+ 0.1+   | 2001 10 23 | 704 | 0.9+ 0.7+   | 2006 08 28 | 699         | (1.0+ 1.7+) |
| 2001 09 19                  | 704                               | 0.2+ 0.1-   | 2001 10 25 | 691 | 0.8- 0.2+   | 2006 08 28 | 699         | 0.4+ 1.3+   |
| 2001 09 19                  | 704                               | 0.8+ 0.6-   | 2001 10 25 | 691 | 0.6- 0.0    | 2007 11 09 | 691         | 0.2- 0.0    |
| 2001 09 21                  | 704                               | 0.1- 0.2-   | 2001 10 25 | 691 | 0.4- 0.2+   | 2007 11 09 | 691         | 0.1+ 0.0    |
| 2001 09 21                  | 704                               | 0.3+ 0.2-   | 2004 03 18 | 691 | 0.4+ 0.4+   | 2007 11 09 | 691         | 1.3+ 1.3+   |
| 2001 09 21                  | 704                               | 0.4+ 0.3-   | 2004 03 18 | 691 | 0.3+ 0.6+   | 2007 11 13 | 691         | 0.3- 0.1+   |
| 2001 09 21                  | 704                               | 0.1- 0.3-   | 2004 03 18 | 691 | 0.4+ 0.2+   | 2007 11 13 | 691         | 0.4- 0.2+   |
| 2001 09 21                  | 704                               | 0.7+ 0.4-   | 2005 05 08 | G96 | 0.2- 0.2+   | 2007 11 13 | 691         | 0.8- 0.5+   |
| 2001 10 12                  | 699                               | 0.2+ 1.2+   | 2005 05 08 | G96 | 0.4- 0.0    | 2007 11 14 | 691         | 0.0 0.2+    |
| 2001 10 12                  | 699                               | 0.9- 0.1+   | 2005 05 08 | G96 | 0.7- 0.1+   | 2007 11 14 | 691         | 0.0 0.2+    |
| 2001 10 12                  | 699                               | (1.3- 2.0+) | 2005 05 08 | G96 | 0.5- 0.4+   | 2007 11 14 | 691         | 0.0 0.1+    |
| 2001 10 12                  | 699                               | (0.7+ 1.9+) | 2005 06 10 | 691 | 0.2+ 0.6+   | 2007 12 03 | 703         | 0.3- 0.5-   |
| 2001 10 14                  | 699                               | 0.1+ 0.7+   | 2005 06 10 | 691 | 0.3- 0.3+   | 2007 12 03 | 703         | 0.6- 0.3+   |
| 2001 10 14                  | 699                               | 0.2+ 0.6-   | 2005 06 10 | 691 | 0.5+ 0.4+   | 2007 12 03 | 703         | 1.1- 1.8-   |
| 2001 10 14                  | 699                               | 0.6- 0.1+   | 2005 06 13 | G96 | 0.1- 0.6+   | 2007 12 03 | 703         | 0.5- 0.7-   |
| 2001 10 14                  | 699                               | (1.7- 0.3+) | 2005 06 13 | G96 | 0.0 0.4+    | 2007 12 04 | G96         | 0.2+ 0.2-   |
| 2001 10 18                  | 644                               | 0.2+ 0.3+   | 2005 06 13 | G96 | 0.1+ 0.5+   | 2007 12 04 | G96         | 0.3+ 0.6-   |
| 2001 10 18                  | 644                               | 0.4+ 0.7+   | 2005 06 13 | G96 | 0.4- 0.5+   | 2007 12 04 | G96         | 0.0 0.3-    |
| 2001 10 18                  | 644                               | 0.3+ 0.0    | 2005 06 14 | 691 | 0.4+ 0.4+   | 2007 12 05 | 704         | 0.3+ 1.1+   |
| 2001 10 20                  | 704                               | 0.4+ 0.1+   | 2005 06 14 | 691 | 0.1+ 0.4+   | 2007 12 05 | 704         | 0.2- 0.2-   |
| 2001 10 20                  | 704                               | 0.9- 0.9+   | 2005 06 14 | 691 | 0.1+ 0.5+   | 2007 12 05 | 704         | 1.1+ 1.1+   |
| 2001 10 20                  | 704                               | 0.4- 0.3+   | 2006 08 13 | 644 | 0.1+ 0.1+   | 2007 12 05 | 704         | 0.1- 0.4+   |
| 2001 10 20                  | 704                               | 0.0 0.9+    | 2006 08 13 | 644 | 0.1+ 0.5-   | 2007 12 05 | 704         | 0.3- 0.1+   |
| 2001 10 23                  | 704                               | 0.5+ 0.1-   | 2006 08 13 | 644 | 0.2+ 0.0    |            |             |             |
| 2001 10 23                  | 704                               | 0.7+ 0.4+   | 2006 08 28 | 699 | 0.6- 0.8+   |            |             |             |

**(171938)\* 2001 SS<sub>232</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |       |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |       |            |     |       |       |
| <i>M</i>                                | 210.82850  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |       |            |     |       |       |
| <i>n</i>                                | 0.19732254 | $\omega$ | 212.61579 | −0.44680335 |      | +0.89205835 |       |            |     |       |       |
| <i>a</i>                                | 2.9220317  | $\Omega$ | 31.00011  | −0.78999265 |      | −0.35783499 |       |            |     |       |       |
| <i>e</i>                                | 0.0504712  | <i>i</i> | 7.56590   | −0.41985519 |      | −0.27601814 |       |            |     |       |       |
| <i>P</i>                                | 4.99       | <i>H</i> | 15.1      | <i>G</i>    | 0.15 | <i>U</i>    | 1     |            |     |       |       |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |       |       |
| 1999 03 23                              | 703        | 1.4−     | 1.7−      | 2001 11 20  | 704  | 0.7+        | 0.7+  | 2006 09 27 | 691 | 0.1−  | 0.1+  |
| 1999 03 23                              | 703        | 0.3−     | 1.1−      | 2001 11 20  | 704  | 0.4+        | 0.9+  | 2006 10 01 | 691 | 0.6+  | 0.4+  |
| 1999 03 23                              | 703        | 0.3−     | 0.2−      | 2001 11 20  | 704  | 0.4−        | 0.0   | 2006 10 01 | 691 | 0.1−  | 0.1+  |
| 1999 03 23                              | 703        | 1.2−     | 1.0−      | 2001 11 20  | 704  | 0.1+        | 0.5+  | 2006 10 01 | 691 | 0.1+  | 0.1+  |
| 2001 09 19                              | 704        | 0.6−     | 1.0+      | 2001 11 21  | 704  | 1.3−        | 0.6+  | 2006 10 15 | 703 | 0.3−  | 0.1−  |
| 2001 09 19                              | 704        | 0.8−     | 0.9+      | 2001 11 21  | 704  | 0.2−        | 0.8+  | 2006 10 15 | 703 | 0.6−  | 1.0+  |
| 2001 09 19                              | 704        | 1.1−     | 1.2+      | 2001 11 21  | 704  | 0.8−        | 0.0   | 2006 10 15 | 703 | 0.4−  | 0.0   |
| 2001 09 19                              | 704        | (1.2−    | 1.6+)     | 2001 11 21  | 704  | 0.4+        | 0.4−  | 2006 10 15 | 703 | 0.3+  | 0.7+  |
| 2001 09 21                              | 333        | (0.2−    | 1.5−)     | 2001 11 21  | 704  | 0.2−        | 0.8+  | 2006 10 16 | 691 | 0.6−  | 0.1+  |
| 2001 09 21                              | 333        | 0.2−     | 0.1+      | 2001 12 20  | 291  | 0.1+        | 0.1+  | 2006 10 16 | 691 | 0.2+  | 0.2−  |
| 2001 09 21                              | 333        | 0.5+     | 0.9−      | 2001 12 20  | 291  | 0.3+        | 0.2+  | 2006 10 16 | 691 | 0.2+  | 0.0   |
| 2001 09 21                              | 704        | 0.9−     | 0.7+      | 2001 12 20  | 291  | 0.1+        | 0.1+  | 2006 10 18 | H07 | 0.5+  | 1.2−  |
| 2001 09 21                              | 704        | 0.9−     | 1.1+      | 2004 03 16  | 704  | 0.0         | 0.6+  | 2006 10 18 | H07 | 0.3+  | 0.9−  |
| 2001 09 21                              | 704        | 0.6−     | 0.7+      | 2004 03 16  | 704  | (1.6−       | 1.1+) | 2006 10 18 | H07 | 0.6+  | 1.0−  |
| 2001 09 21                              | 704        | 1.1−     | 1.2+      | 2004 03 16  | 704  | (0.9+       | 1.7+) | 2006 10 18 | H07 | 0.2−  | 0.2+  |
| 2001 09 21                              | 704        | (0.5−    | 1.7+)     | 2004 03 16  | 704  | 0.6−        | 0.7+  | 2006 10 21 | 703 | 0.1−  | 1.2+  |
| 2001 09 26                              | 704        | 0.1−     | 1.0−      | 2004 03 19  | 704  | 0.8+        | 0.4+  | 2006 10 21 | 703 | (0.3− | 1.6+) |
| 2001 09 26                              | 704        | 0.9−     | 0.7−      | 2004 03 19  | 704  | 0.1+        | 0.1+  | 2006 10 21 | 703 | 0.1+  | 0.3+  |
| 2001 09 26                              | 704        | 0.5−     | 0.7−      | 2004 03 19  | 704  | 1.4+        | 0.1+  | 2006 10 21 | 703 | 0.9+  | 0.4+  |
| 2001 09 26                              | 704        | (0.5−    | 2.2−)     | 2004 03 19  | 704  | 0.8+        | 0.6+  | 2006 10 21 | 644 | 0.2−  | 0.0   |

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2001 10 12 | 699 | 0.0 0.4-    | 2004 03 19 | 704 | 0.7+ 0.5+   | 2006 10 21 | 644 | 0.1- 0.1+   |
| 2001 10 12 | 699 | 0.0 0.3-    | 2004 03 20 | 704 | 0.5+ 0.4-   | 2006 10 21 | 644 | 0.2- 0.2+   |
| 2001 10 12 | 699 | 0.1- 0.3+   | 2004 03 20 | 704 | 0.2+ 0.0    | 2006 10 27 | G96 | 0.1+ 0.3-   |
| 2001 10 12 | 699 | 0.6- 0.9+   | 2004 03 20 | 704 | 0.4+ 0.3+   | 2006 10 27 | G96 | 0.0 0.4-    |
| 2001 10 13 | 704 | 0.6- 0.7+   | 2004 03 20 | 704 | 0.7- 0.4+   | 2006 10 27 | G96 | 0.2+ 0.3-   |
| 2001 10 13 | 704 | 0.1- 0.1-   | 2004 03 20 | 699 | 0.5+ 0.4+   | 2006 10 27 | G96 | 0.3+ 0.4-   |
| 2001 10 13 | 704 | 0.1+ 0.2+   | 2004 03 20 | 704 | 0.2+ 0.1+   | 2006 11 01 | 691 | 0.3- 0.0    |
| 2001 10 14 | 291 | 1.2+ 0.2+   | 2004 03 20 | 699 | 0.0 0.2+    | 2006 11 01 | 691 | 0.0 0.2+    |
| 2001 10 14 | 291 | 1.0+ 0.3+   | 2004 03 20 | 699 | 0.6- 0.1+   | 2006 11 01 | 691 | 0.2- 0.3+   |
| 2001 10 14 | 291 | (1.8+ 0.2+) | 2004 03 20 | 699 | (1.5- 0.5+) | 2006 11 11 | 691 | 0.0 0.3+    |
| 2001 10 17 | 704 | 0.8- 0.1+   | 2004 03 22 | 704 | 0.4+ 0.3+   | 2006 11 11 | 691 | 0.2+ 0.2+   |
| 2001 10 17 | 704 | 0.5- 0.3-   | 2004 03 22 | 704 | 0.8- 0.8+   | 2006 11 11 | 691 | 0.1- 0.2+   |
| 2001 10 17 | 704 | 0.4- 0.1-   | 2004 03 22 | 704 | (1.6+ 3.0+) | 2006 11 11 | G96 | 0.1- 0.4-   |
| 2001 10 17 | 704 | 0.5+ 0.8+   | 2004 03 22 | 704 | 0.0 0.4+    | 2006 11 11 | G96 | 0.6+ 0.2-   |
| 2001 10 17 | 704 | 0.0 0.6+    | 2004 03 24 | 699 | 0.2+ 0.1+   | 2006 11 11 | 703 | 0.4+ 1.2-   |
| 2001 10 18 | I03 | 0.9- 0.2+   | 2004 03 24 | 699 | 0.1- 0.9+   | 2006 11 11 | G96 | 0.1+ 0.5-   |
| 2001 10 18 | I03 | 0.6- 0.0    | 2004 03 24 | 699 | 0.5+ 0.1-   | 2006 11 11 | G96 | 0.2+ 0.6-   |
| 2001 10 18 | 704 | 0.5+ 0.1-   | 2004 03 24 | 699 | 0.1- 0.1-   | 2006 11 11 | 703 | 0.3- 0.9+   |
| 2001 10 18 | 704 | 0.4- 0.5+   | 2004 03 28 | 704 | 0.3+ 0.6+   | 2006 11 11 | 703 | 0.9- 0.8-   |
| 2001 10 18 | 704 | 0.4- 0.4-   | 2004 03 28 | 704 | 1.0+ 0.8+   | 2006 11 11 | 703 | 1.0- 0.0    |
| 2001 10 18 | 704 | 0.2+ 0.2+   | 2004 03 28 | 704 | 0.1+ 0.3+   | 2006 11 16 | 691 | 0.1+ 0.0    |
| 2001 10 18 | I03 | 0.4- 0.2-   | 2004 03 28 | 704 | 0.2+ 0.3+   | 2006 11 16 | 691 | 0.1- 0.1-   |
| 2001 10 18 | 644 | 0.3- 0.9-   | 2004 03 28 | 691 | 0.3+ 0.4+   | 2006 11 16 | 691 | 0.2- 0.1+   |
| 2001 10 18 | 644 | 0.1- 1.3-   | 2004 03 28 | 704 | 0.1- 0.8+   | 2006 11 17 | 703 | 0.2- 0.5+   |
| 2001 10 18 | 644 | 0.2- 1.1-   | 2004 03 28 | 691 | 0.0 0.5+    | 2006 11 17 | 703 | 0.6- 1.0+   |
| 2001 10 20 | 704 | 0.4- 0.9+   | 2004 03 28 | 691 | 0.1+ 0.4+   | 2006 11 17 | 703 | 0.0 0.5-    |
| 2001 10 20 | 704 | 0.1- 0.6-   | 2004 04 11 | 703 | 0.3- 0.3+   | 2006 11 17 | 703 | 0.5- 0.2-   |
| 2001 10 20 | 704 | 0.4- 0.5-   | 2004 04 11 | 703 | 0.2- 0.6+   | 2006 11 22 | 291 | 0.1+ 0.1+   |
| 2001 10 23 | 704 | 1.2- 0.1-   | 2004 04 11 | 703 | 0.4+ 0.2-   | 2006 11 22 | 291 | 0.0 0.2+    |
| 2001 10 23 | 704 | 1.1- 0.0    | 2004 04 11 | 703 | 0.4+ 0.3-   | 2006 11 22 | 291 | 0.2- 0.1+   |
| 2001 10 23 | 704 | 0.5+ 1.5+   | 2004 04 12 | 699 | 0.1- 0.5-   | 2006 11 22 | G96 | 0.0 0.8-    |
| 2001 10 23 | 704 | 0.8- 0.1+   | 2004 04 12 | 699 | 0.0 1.0+    | 2006 11 22 | G96 | 0.3- 0.4-   |
| 2001 10 24 | 704 | (0.3- 2.3+) | 2004 04 12 | 699 | 0.1- 0.2+   | 2006 11 22 | G96 | 0.2- 0.6-   |
| 2001 10 24 | 704 | 1.3+ 1.0+   | 2004 04 12 | 699 | 0.6- 0.9+   | 2006 11 22 | G96 | 0.4- 0.3-   |
| 2001 10 24 | 704 | 1.2- 0.7+   | 2004 04 20 | 691 | 0.3+ 0.3+   | 2006 12 17 | G96 | (1.6- 0.4-) |
| 2001 10 24 | 704 | 0.0 1.3+    | 2004 04 20 | 691 | 0.3+ 0.4+   | 2006 12 17 | G96 | 1.2- 0.4-   |
| 2001 10 24 | 704 | (1.2- 1.6+) | 2004 04 20 | 691 | 0.3+ 0.3+   | 2006 12 17 | G96 | 1.1- 0.7-   |
| 2001 10 25 | 644 | 0.2- 0.2+   | 2004 04 20 | 704 | 1.0+ 0.3+   | 2006 12 17 | G96 | 0.2- 0.6-   |
| 2001 10 25 | 704 | 0.8+ 0.8-   | 2004 04 20 | 704 | 0.6+ 0.2-   | 2007 11 19 | 448 | 0.3- 1.1-   |
| 2001 10 25 | 644 | 0.4- 0.0    | 2004 04 20 | 704 | 0.7+ 0.9+   | 2007 11 19 | 448 | 0.3- 1.1-   |
| 2001 10 25 | 704 | 0.0 0.6-    | 2004 04 20 | 704 | 0.4+ 0.2+   | 2007 11 19 | 448 | 0.7- 0.5-   |
| 2001 10 25 | 644 | 0.2+ 0.3+   | 2004 04 20 | 704 | 0.4+ 0.3+   | 2007 12 16 | 704 | 0.4- 0.8-   |
| 2001 10 25 | 704 | 0.1- 0.1+   | 2006 09 27 | 691 | 0.1+ 0.3+   | 2007 12 16 | 704 | 0.0 0.7-    |
| 2001 11 20 | 704 | 0.1- 0.5+   | 2006 09 27 | 691 | 0.1+ 0.4+   | 2007 12 16 | 704 | 0.5+ 0.1-   |

**(171939)\* 2001 SH<sub>235</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |      |                    |             |       |             |      |            |     |      |      |
|-----------------------------------------|------------|------|--------------------|-------------|-------|-------------|------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |                    | MPC         |       |             |      |            |     |      |      |
| $M$                                     | 70.14436   |      | (2000.0)           | <b>P</b>    |       | <b>Q</b>    |      |            |     |      |      |
| $n$                                     | 0.17919953 |      | $\omega$ 315.46894 | +0.91569035 |       | +0.39724326 |      |            |     |      |      |
| $a$                                     | 3.1158615  |      | $\Omega$ 21.35320  | -0.30600890 |       | +0.78742048 |      |            |     |      |      |
| $e$                                     | 0.1507187  |      | $i$ 9.62844        | -0.26051821 |       | +0.47134571 |      |            |     |      |      |
| $P$                                     | 5.50       |      | $H$ 14.8           | $G$ 0.15    | $U$ 1 |             |      |            |     |      |      |
| Residuals in seconds of arc             |            |      |                    |             |       |             |      |            |     |      |      |
| 1990 10 15                              | 691        | 0.2- | 0.2+               | 2001 10 14  | 704   | 0.7-        | 0.8- | 2001 11 20 | 699 | 0.3- | 0.3+ |
| 1990 10 15                              | 691        | 0.1- | 0.1+               | 2001 10 14  | 704   | 0.5-        | 0.2- | 2001 11 20 | 699 | 0.0  | 0.8- |
| 1990 10 15                              | 691        | 0.0  | 0.1+               | 2001 10 14  | 704   | 0.1-        | 0.8- | 2001 11 20 | 699 | 0.3+ | 0.6- |
| 1990 10 16                              | 691        | 0.2+ | 0.4-               | 2001 10 14  | 704   | 0.4-        | 0.2- | 2001 11 21 | 704 | 0.2- | 0.1- |
| 1990 10 16                              | 691        | 0.3+ | 0.7-               | 2001 10 14  | 704   | 0.7-        | 0.8- | 2001 11 21 | 704 | 0.1+ | 0.1+ |
| 1990 10 16                              | 691        | 0.4+ | 0.5-               | 2001 10 17  | 704   | 0.4+        | 0.1+ | 2001 11 21 | 704 | 0.3+ | 0.3+ |
| 2001 08 04                              | 644        | 0.5- | 0.1-               | 2001 10 17  | 704   | 0.4-        | 0.3- | 2001 11 21 | 704 | 0.1+ | 0.2- |
| 2001 08 04                              | 644        | 0.4- | 0.2-               | 2001 10 17  | 704   | 0.4-        | 0.4+ | 2001 11 21 | 704 | 0.2+ | 0.1+ |
| 2001 08 04                              | 644        | 0.0  | 0.2+               | 2001 10 17  | 704   | 0.3-        | 0.6+ | 2006 07 18 | E12 | 0.1- | 0.0  |
| 2001 08 04                              | 644        | 0.4- | 0.3+               | 2001 10 17  | 704   | 0.4-        | 0.3+ | 2006 07 18 | E12 | 1.0- | 0.1- |
| 2001 08 04                              | 644        | 1.0- | 0.1-               | 2001 10 19  | 644   | 0.1+        | 0.3+ | 2006 07 18 | E12 | 0.6- | 0.2- |

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 04 | 644 | 0.6−        | 0.1+ | 2001 10 19 | 644 | 0.3+ | 0.1+ | 2006 07 18 | E12 | 0.2+ | 0.1+ |
| 2001 09 17 | 699 | 0.2−        | 0.5− | 2001 10 19 | 644 | 0.4+ | 0.2+ | 2006 08 16 | E12 | 0.2+ | 0.2− |
| 2001 09 17 | 699 | 0.1−        | 0.4− | 2001 10 21 | 704 | 0.3− | 0.0  | 2006 08 16 | E12 | 0.2− | 0.1− |
| 2001 09 17 | 699 | 0.0         | 0.5− | 2001 10 21 | 704 | 0.4− | 0.1+ | 2006 08 16 | E12 | 0.1+ | 0.1− |
| 2001 09 17 | 699 | 0.1−        | 0.5− | 2001 10 21 | 704 | 0.4− | 0.1+ | 2006 08 16 | E12 | 0.7− | 0.1+ |
| 2001 09 19 | 704 | 0.3+        | 0.2− | 2001 10 21 | 704 | 0.5− | 0.1− | 2006 09 13 | 644 | 0.1+ | 0.1+ |
| 2001 09 19 | 704 | 0.4+        | 0.1+ | 2001 10 21 | 704 | 0.7− | 0.1− | 2006 09 13 | 644 | 0.0  | 0.2+ |
| 2001 09 19 | 704 | 0.0         | 0.5− | 2001 10 25 | 704 | 0.2+ | 0.7− | 2006 09 13 | 644 | 0.3+ | 0.3+ |
| 2001 09 19 | 704 | 0.0         | 0.3− | 2001 10 25 | 704 | 0.2− | 0.4− | 2006 09 13 | 644 | 0.2+ | 0.1+ |
| 2001 09 19 | 704 | 0.0         | 0.1− | 2001 10 25 | 704 | 0.6− | 0.5− | 2006 09 13 | 644 | 0.3+ | 0.4+ |
| 2001 09 21 | 704 | 0.3+        | 0.6− | 2001 10 25 | 704 | 0.6− | 1.3+ | 2006 09 13 | 644 | 0.4+ | 0.1+ |
| 2001 09 21 | 704 | 0.1−        | 0.4− | 2001 10 25 | 704 | 0.2+ | 0.1+ | 2006 09 14 | 644 | 0.0  | 0.3+ |
| 2001 09 21 | 704 | 0.0         | 0.1− | 2001 10 26 | 644 | 0.2− | 0.2− | 2006 09 14 | 644 | 0.0  | 0.1+ |
| 2001 09 21 | 704 | 0.9+        | 0.1− | 2001 10 26 | 644 | 0.2− | 0.1− | 2006 09 14 | 644 | 0.1− | 0.3+ |
| 2001 09 21 | 704 | 0.0         | 0.2− | 2001 10 26 | 644 | 0.3+ | 0.1+ | 2007 11 08 | 704 | 0.1+ | 1.0+ |
| 2001 09 24 | 704 | (1.2+ 1.6+) |      | 2001 11 09 | 704 | 1.4− | 0.0  | 2007 11 08 | 704 | 0.1− | 0.5− |
| 2001 09 24 | 704 | 0.6+        | 0.2+ | 2001 11 09 | 704 | 0.3− | 0.1+ | 2007 11 08 | 704 | 0.0  | 0.2− |
| 2001 09 24 | 704 | 0.8+        | 0.4+ | 2001 11 09 | 704 | 0.5+ | 0.1+ | 2007 11 08 | 704 | 0.3− | 0.4− |
| 2001 09 24 | 704 | 0.1−        | 0.4+ | 2001 11 09 | 704 | 0.1+ | 0.7+ | 2007 11 08 | 704 | 0.1+ | 0.5− |
| 2001 09 24 | 704 | 0.5+        | 0.3+ | 2001 11 09 | 704 | 0.2+ | 0.7+ | 2007 11 17 | 704 | 0.3− | 0.8+ |
| 2001 10 07 | 644 | 0.6+        | 0.9+ | 2001 11 11 | 699 | 0.2+ | 0.1− | 2007 11 17 | 704 | 0.6+ | 0.0  |
| 2001 10 07 | 644 | 0.4+        | 0.9+ | 2001 11 11 | 699 | 0.8− | 0.3+ | 2007 11 17 | 704 | 0.7− | 0.2+ |
| 2001 10 07 | 644 | 0.5+        | 0.6+ | 2001 11 11 | 699 | 0.1+ | 0.3− | 2007 11 17 | 704 | 0.0  | 0.8+ |
| 2001 10 11 | 644 | 0.5+        | 0.8+ | 2001 11 11 | 699 | 0.2+ | 0.1− | 2007 11 17 | 704 | 0.0  | 0.4+ |
| 2001 10 11 | 644 | 0.6+        | 1.0+ | 2001 11 12 | 691 | 0.2+ | 0.1− | 2007 12 16 | 704 | 0.8− | 0.1+ |
| 2001 10 11 | 644 | 0.6+        | 0.8+ | 2001 11 12 | 691 | 0.3+ | 0.0  | 2007 12 16 | 704 | 0.2+ | 0.2− |
| 2001 10 13 | 704 | 0.4−        | 0.0  | 2001 11 12 | 691 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.3+ | 0.1+ |
| 2001 10 13 | 704 | 0.7−        | 0.3+ | 2001 11 19 | 704 | 0.1− | 0.1+ | 2007 12 16 | 704 | 0.0  | 0.0  |
| 2001 10 13 | 704 | 0.1−        | 0.5+ | 2001 11 19 | 704 | 0.1+ | 0.5− | 2007 12 16 | 704 | 0.0  | 0.7+ |
| 2001 10 13 | 704 | 0.5−        | 0.2+ | 2001 11 19 | 704 | 0.8+ | 0.5− |            |     |      |      |
| 2001 10 13 | 704 | 0.4−        | 0.3+ | 2001 11 20 | 699 | 0.2− | 0.3+ |            |     |      |      |

**(171940)\* 2001 SK<sub>240</sub> = 1996 WV<sub>3</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 115705)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 96.34175   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18255954 | $\omega$ | 235.45317 | +0.58438137   | +0.81135901 |
| <i>a</i> | 3.0775115  | $\Omega$ | 70.31215  | −0.73957446   | +0.53960213 |
| <i>e</i> | 0.1628729  | <i>i</i> | 0.84972   | −0.33395813   | +0.22478010 |
| <i>P</i> | 5.40       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |             |      |            |     |             |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|-------------|------|------------|-----|------|------|
| 1996 11 17 | 691 | 0.4−        | 0.1+ | 2001 10 23 | 291 | 0.4−        | 0.0  | 2006 08 28 | 703 | 0.4− | 0.6− |
| 1996 11 17 | 691 | 0.0         | 0.1− | 2005 04 02 | G96 | 0.5−        | 0.0  | 2006 08 28 | 703 | 0.4− | 0.6+ |
| 1996 11 17 | 691 | 0.2−        | 0.0  | 2005 04 02 | G96 | 0.4−        | 0.1+ | 2006 08 28 | 703 | 0.6+ | 0.2+ |
| 2001 09 19 | 704 | 0.7+        | 0.3+ | 2005 04 02 | G96 | (2.0− 0.3+) |      | 2006 08 28 | 703 | 0.1+ | 0.1− |
| 2001 09 19 | 704 | (1.5+ 0.4+) |      | 2005 04 02 | G96 | 0.0         | 0.5− | 2006 08 29 | 704 | 0.7+ | 0.2+ |
| 2001 09 19 | 704 | 0.8+        | 0.1− | 2005 04 16 | 691 | 0.2+        | 0.2+ | 2006 08 29 | 704 | 0.0  | 0.7+ |
| 2001 09 21 | 704 | 0.2−        | 0.1+ | 2005 04 16 | 691 | 0.3+        | 0.5+ | 2006 08 29 | 704 | 0.5− | 0.0  |
| 2001 09 21 | 691 | 0.1+        | 0.3+ | 2005 04 16 | 691 | 0.2+        | 0.4+ | 2007 09 14 | G96 | 0.3+ | 0.0  |
| 2001 09 21 | 704 | 0.6+        | 0.3+ | 2005 04 17 | 691 | 0.2−        | 0.1− | 2007 09 14 | G96 | 0.4+ | 0.1− |
| 2001 09 21 | 691 | 0.1+        | 0.5+ | 2005 04 17 | 691 | 0.3+        | 0.3+ | 2007 09 14 | G96 | 1.0+ | 0.2− |
| 2001 09 21 | 704 | (1.5+ 0.6+) |      | 2005 04 17 | 691 | 0.5+        | 0.5+ | 2007 09 14 | G96 | 0.5+ | 0.1− |
| 2001 09 21 | 704 | 0.0         | 0.4− | 2005 05 11 | G96 | 0.4−        | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.3− |
| 2001 09 21 | 704 | 0.7+        | 0.4− | 2005 05 11 | G96 | 0.1+        | 0.2− | 2007 11 14 | 691 | 0.8− | 0.1+ |
| 2001 09 21 | 691 | 0.1−        | 0.3− | 2005 05 11 | G96 | 0.4−        | 0.0  | 2007 11 14 | 691 | 0.1− | 0.7+ |
| 2001 10 16 | 691 | 0.1+        | 0.1− | 2005 05 11 | G96 | 0.1+        | 0.0  | 2007 11 18 | 691 | 0.0  | 0.4+ |
| 2001 10 16 | 691 | 0.3+        | 0.1− | 2006 08 24 | 644 | 0.1+        | 0.3+ | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2001 10 16 | 691 | 0.2+        | 0.0  | 2006 08 24 | 644 | 0.6−        | 0.1+ | 2007 11 18 | 691 | 0.5− | 0.6+ |
| 2001 10 17 | 644 | 0.4−        | 0.2+ | 2006 08 24 | 644 | 0.1−        | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.2− |
| 2001 10 17 | 644 | 0.0         | 0.8+ | 2006 08 28 | 703 | 0.6−        | 0.4+ | 2007 12 15 | G96 | 1.0+ | 0.0  |
| 2001 10 17 | 644 | 0.1−        | 0.2+ | 2006 08 28 | 703 | 1.0−        | 0.2− | 2007 12 15 | G96 | 0.6+ | 0.6+ |
| 2001 10 23 | 291 | 0.2+        | 0.2− | 2006 08 28 | 703 | 0.2−        | 0.1− | 2007 12 15 | G96 | 0.8+ | 0.3− |
| 2001 10 23 | 291 | 0.3−        | 0.1+ | 2006 08 28 | 703 | 0.0         | 0.4+ |            |     |      |      |

**(171941)\* 2001 SM<sub>241</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 320.12291  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17243597 | $\omega$ | 261.28295 | −0.04591624   | −0.99835891 |
| <i>a</i> | 3.1968148  | $\Omega$ | 191.51632 | +0.97063195   | −0.03649004 |
| <i>e</i> | 0.1056475  | <i>i</i> | 9.87009   | +0.23614683   | −0.04413563 |
| <i>P</i> | 5.72       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 06 19 | 691 | 0.4− | 0.1− | 2001 10 23 | 704 | 0.0  | 0.0  | 2007 10 12 | G96 | 0.1− | 0.2− |
| 1999 06 19 | 691 | 0.1− | 0.4+ | 2001 10 24 | 691 | 0.4− | 0.0  | 2007 10 12 | G96 | 0.0  | 0.4− |
| 1999 06 19 | 691 | 0.3+ | 0.4+ | 2001 10 24 | 691 | 0.0  | 0.0  | 2007 10 12 | G96 | 0.3− | 0.1− |
| 2001 09 19 | 704 | 0.8+ | 1.2+ | 2001 10 24 | 704 | 0.8− | 0.5+ | 2007 11 04 | 704 | 0.3+ | 0.5+ |
| 2001 09 19 | 704 | 0.0  | 0.2− | 2001 10 24 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 704 | 0.2− | 0.1− |
| 2001 09 19 | 704 | 0.4− | 0.4− | 2001 10 24 | 704 | 1.0− | 0.3− | 2007 11 04 | 704 | 0.1+ | 0.2+ |
| 2001 09 21 | 704 | 0.5+ | 0.8− | 2001 10 24 | 704 | 0.5− | 0.2+ | 2007 11 04 | 704 | 0.2+ | 0.1− |
| 2001 09 21 | 704 | 1.0+ | 0.3− | 2001 10 24 | 704 | 0.0  | 1.3+ | 2007 11 07 | 703 | 0.2+ | 0.4+ |
| 2001 09 21 | 704 | 0.8+ | 0.2− | 2004 04 13 | 691 | 0.7+ | 0.1− | 2007 11 07 | 703 | 0.1− | 0.4+ |
| 2001 09 21 | 704 | 0.9− | 0.6− | 2004 04 13 | 691 | 0.0  | 0.1+ | 2007 11 07 | 703 | 1.2+ | 0.7+ |
| 2001 10 18 | 644 | 0.4+ | 0.1+ | 2004 04 13 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 703 | 0.4+ | 0.7+ |
| 2001 10 18 | 644 | 0.1+ | 0.4+ | 2004 04 19 | 691 | 0.1− | 0.2+ | 2007 11 12 | 704 | 1.1− | 0.1− |
| 2001 10 18 | 644 | 0.5+ | 0.7+ | 2004 04 19 | 691 | 0.1− | 0.3+ | 2007 11 12 | 704 | 1.1− | 0.9+ |
| 2001 10 20 | 704 | 0.0  | 0.3+ | 2004 04 19 | 691 | 0.1− | 0.1+ | 2007 11 12 | 704 | 1.0− | 0.2+ |
| 2001 10 20 | 704 | 0.9+ | 0.0  | 2004 05 09 | 691 | 0.1+ | 0.4+ | 2007 12 06 | 703 | 1.1+ | 0.9+ |
| 2001 10 20 | 704 | 0.0  | 0.1− | 2004 05 09 | 691 | 0.1− | 0.4+ | 2007 12 06 | 703 | 0.4− | 0.8− |
| 2001 10 23 | 704 | 0.3+ | 0.8+ | 2004 05 09 | 691 | 0.1+ | 0.3+ | 2007 12 06 | 703 | 0.3+ | 0.5+ |
| 2001 10 23 | 704 | 0.7− | 0.8+ | 2007 10 12 | G96 | 0.2+ | 0.3− | 2007 12 06 | 703 | 0.7− | 1.4+ |

**(171942)\* 2001 SA<sub>256</sub> = 2005 JJ<sub>111</sub>**

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 75140)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 40.10279   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17300582 | $\omega$ | 271.93055 | +0.99661641   | −0.05393227 |
| <i>a</i> | 3.1897910  | $\Omega$ | 91.16477  | +0.07416856   | +0.91531343 |
| <i>e</i> | 0.1116921  | <i>i</i> | 3.55676   | −0.03542262   | +0.39911482 |
| <i>P</i> | 5.70       | <i>H</i> | 14.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|------|------|
| 2000 07 31 | 807 | 0.0   | 0.4−  | 2005 05 08 | G96 | 0.0  | 0.2+  | 2006 08 14 | 644 | 0.4+ | 0.0  |
| 2000 07 31 | 807 | 0.3+  | 0.4−  | 2005 05 08 | G96 | 0.2− | 0.4+  | 2006 08 14 | 644 | 0.1+ | 0.1− |
| 2001 09 19 | 704 | 0.7+  | 0.1+  | 2005 05 08 | G96 | 0.0  | 0.5+  | 2007 10 10 | G96 | 0.0  | 0.4− |
| 2001 09 19 | 704 | 1.3+  | 0.2−  | 2005 05 14 | G96 | 0.6− | 0.4+  | 2007 10 10 | G96 | 0.5+ | 0.4− |
| 2001 09 19 | 704 | 0.5+  | 0.1+  | 2005 05 14 | G96 | 0.4− | 0.1−  | 2007 10 10 | G96 | 0.4+ | 0.3− |
| 2001 09 19 | 704 | 0.2+  | 0.0   | 2005 05 14 | G96 | 0.3− | 0.5−  | 2007 10 10 | G96 | 0.3+ | 0.1− |
| 2001 09 21 | 704 | 0.3+  | 0.3−  | 2005 05 14 | G96 | 0.5− | 0.1+  | 2007 10 31 | 691 | 0.3− | 0.6− |
| 2001 09 21 | 704 | 0.7−  | 0.4−  | 2005 05 20 | G96 | 0.5− | 0.7+  | 2007 10 31 | 691 | 0.2− | 0.0  |
| 2001 09 21 | 704 | 0.7−  | 0.2+  | 2005 05 20 | G96 | 0.0  | 0.0   | 2007 10 31 | 691 | 0.2− | 0.2− |
| 2001 09 21 | 704 | 0.1+  | 0.2−  | 2005 05 20 | G96 | 0.5+ | 0.3+  | 2007 11 14 | 704 | 1.2+ | 0.9+ |
| 2001 09 21 | 704 | 0.3−  | 0.1−  | 2005 05 20 | G96 | (0.0 | 2.4+) | 2007 11 14 | 704 | 0.8+ | 0.2+ |
| 2001 10 23 | 704 | 0.7−  | 0.4+  | 2005 06 14 | 691 | 0.6+ | 0.7+  | 2007 11 14 | 704 | 0.1− | 0.1+ |
| 2001 10 23 | 704 | 0.4−  | 1.0+  | 2005 06 14 | 691 | 0.1− | 0.6−  | 2007 11 14 | 704 | 0.4+ | 0.6+ |
| 2001 10 23 | 704 | 0.0   | 0.5+  | 2005 06 14 | 691 | 0.4+ | 0.5+  | 2007 11 14 | 704 | 0.0  | 0.1− |
| 2001 10 23 | 704 | 0.5−  | 0.6+  | 2006 08 12 | 644 | 0.5+ | 0.3−  | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2001 10 23 | 704 | 0.2+  | 0.2+  | 2006 08 12 | 644 | 0.1+ | 0.0   | 2007 11 19 | 691 | 0.0  | 0.1− |
| 2001 10 24 | 704 | 0.5−  | 0.1+  | 2006 08 12 | 644 | 0.4+ | 0.0   | 2007 11 19 | 691 | 0.2− | 0.3+ |
| 2001 10 24 | 704 | 0.6−  | 0.5+  | 2006 08 14 | 644 | 0.0  | 0.3−  | 2007 12 05 | 704 | 0.7+ | 0.9+ |
| 2001 10 24 | 704 | 0.2−  | 0.6+  | 2006 08 14 | 644 | 0.4− | 0.2+  | 2007 12 05 | 704 | 0.7− | 0.2+ |
| 2001 10 24 | 704 | (0.2− | 1.9+) | 2006 08 14 | 644 | 0.6− | 0.1−  | 2007 12 05 | 704 | 0.0  | 0.6+ |
| 2005 05 08 | G96 | 0.2−  | 0.1−  | 2006 08 14 | 644 | 0.4− | 0.1+  | 2007 12 05 | 704 | 0.3+ | 0.0  |

2007 DEC. 24

M.P.O. 129213

(171943)\* 2001 SU<sub>256</sub>

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 291.54756  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17722052 | $\omega$ | 93.52349 |     | -0.69538975 |     | -0.70957772 |
| $a$ | 3.1390149  | $\Omega$ | 41.32522 |     | +0.57181835 |     | -0.64219972 |
| $e$ | 0.0424039  | $i$      | 9.91683  |     | +0.43526644 |     | -0.28996375 |
| $P$ | 5.56       | $H$      | 15.4     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 19 | 704 | 0.3+  | 1.0-  | 2001 11 20 | 704 | 0.3-  | 0.1+  | 2007 11 07 | 704 | (1.5+ | 0.1+) |
| 2001 09 19 | 704 | 0.4+  | 0.7-  | 2001 11 20 | 704 | (0.5+ | 1.8+) | 2007 11 07 | 704 | (2.0+ | 1.2-) |
| 2001 09 19 | 704 | 0.0   | 1.2-  | 2001 11 21 | 704 | 0.6+  | 0.5-  | 2007 11 07 | 704 | (2.3+ | 0.7-) |
| 2001 09 19 | 704 | 1.2-  | 0.4-  | 2001 11 21 | 704 | 0.7+  | 0.4+  | 2007 11 08 | 691 | 0.1-  | 0.3+  |
| 2001 09 21 | 704 | 0.0   | 0.1+  | 2001 11 21 | 704 | 0.5-  | 0.5+  | 2007 11 08 | 691 | 0.1-  | 0.0   |
| 2001 09 21 | 704 | 1.0+  | 0.2+  | 2002 11 07 | 645 | 0.1-  | 0.1-  | 2007 11 08 | 691 | 0.2-  | 0.2+  |
| 2001 09 21 | 704 | 0.2+  | 0.4+  | 2002 11 07 | 645 | 0.1-  | 0.1-  | 2007 11 13 | 703 | 1.1+  | 0.7-  |
| 2001 09 21 | 704 | 0.1-  | 0.3+  | 2003 01 10 | 704 | 0.4+  | 0.0   | 2007 11 13 | 703 | 0.9-  | 1.3+  |
| 2001 10 18 | 644 | 0.4-  | 0.4+  | 2003 01 10 | 704 | 0.9+  | 0.6+  | 2007 11 13 | 703 | 0.0   | 0.1+  |
| 2001 10 18 | 644 | 0.3+  | 0.6+  | 2003 01 10 | 704 | 0.4+  | 0.4-  | 2007 11 13 | 703 | 0.7-  | 0.1-  |
| 2001 10 18 | 644 | 0.2-  | 0.7+  | 2004 03 28 | 704 | 0.5+  | 0.6+  | 2007 11 18 | 704 | 0.5+  | 1.3+  |
| 2001 10 23 | 704 | 0.9-  | 0.9+  | 2004 03 28 | 704 | 0.2+  | 0.3-  | 2007 11 18 | 704 | 0.1-  | 0.5+  |
| 2001 10 23 | 704 | 0.2-  | 0.4-  | 2004 03 28 | 704 | 0.2+  | 0.6+  | 2007 11 18 | 704 | 0.4+  | 0.9+  |
| 2001 10 23 | 704 | 0.2+  | 0.2+  | 2004 03 28 | 704 | 0.2+  | 1.0+  | 2007 11 18 | 704 | 0.6-  | 1.0+  |
| 2001 10 23 | 704 | 0.5-  | 0.2-  | 2004 04 20 | 704 | 0.1-  | 0.5+  | 2007 11 19 | G96 | 0.4+  | 0.1-  |
| 2001 10 23 | 704 | 0.6-  | 0.2-  | 2004 04 20 | 704 | 0.8+  | 0.4+  | 2007 11 19 | G96 | 0.3+  | 0.2-  |
| 2001 10 24 | 704 | 0.4-  | 0.8+  | 2004 04 20 | 704 | 0.2+  | 0.3+  | 2007 11 19 | G96 | 0.2+  | 0.1-  |
| 2001 10 24 | 704 | (2.4- | 0.1-) | 2004 04 20 | 704 | 0.8+  | 0.5+  | 2007 11 19 | G96 | 0.1+  | 0.2-  |
| 2001 10 24 | 704 | (0.1- | 1.6+) | 2004 05 24 | 691 | 0.1+  | 0.2+  | 2007 12 16 | 704 | 0.0   | 1.4-  |
| 2001 10 24 | 704 | 0.8-  | 1.2+  | 2004 05 24 | 691 | 0.0   | 0.3+  | 2007 12 16 | 704 | 0.4-  | 0.5-  |
| 2001 10 24 | 704 | 0.3+  | 0.6+  | 2004 05 24 | 691 | 0.0   | 0.0   | 2007 12 16 | 704 | 0.2+  | 0.5-  |
| 2001 11 20 | 704 | 1.0+  | 0.1+  | 2007 11 04 | 691 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.3+  | 0.1-  |
| 2001 11 20 | 704 | 0.5-  | 0.1-  | 2007 11 04 | 691 | 0.0   | 0.0   | 2007 12 16 | 704 | 0.7-  | 0.4+  |
| 2001 11 20 | 704 | 0.3-  | 0.5+  | 2007 11 04 | 691 | 0.0   | 0.1+  |            |     |       |       |

(171944)\* 2001 SM<sub>260</sub> = 2001 TD<sub>165</sub>

Discovered 2001 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (d, *MPO* 24067), M. E. Sansaturio (d, *ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 138.83990  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.18540050 | $\omega$ | 271.93518 |     | +0.13532865 |     | +0.99060631 |
| $a$ | 3.0459922  | $\Omega$ | 5.95084   |     | -0.81704032 |     | +0.12278051 |
| $e$ | 0.0698761  | $i$      | 10.91386  |     | -0.56047416 |     | +0.06020044 |
| $P$ | 5.32       | $H$      | 15.1      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 18 | 691 | 0.1+ | 0.0  | 2001 10 21 | 704 | 0.1+  | 0.2-  | 2006 10 02 | G96 | 0.2- | 0.3- |
| 2001 09 18 | 691 | 0.0  | 0.3+ | 2001 10 21 | 704 | 0.2+  | 0.1-  | 2006 10 02 | G96 | 0.4- | 0.2- |
| 2001 09 18 | 691 | 0.1- | 0.1+ | 2001 10 21 | 704 | 0.4+  | 0.1+  | 2006 10 02 | G96 | 0.0  | 0.1- |
| 2001 09 20 | 704 | 0.1- | 0.5- | 2001 10 21 | 704 | 0.3+  | 0.2-  | 2006 10 21 | G96 | 0.2+ | 0.1- |
| 2001 09 20 | 333 | 0.3+ | 0.4- | 2001 10 21 | 704 | 0.2-  | 0.4+  | 2006 10 21 | G96 | 0.0  | 0.3- |
| 2001 09 20 | 704 | 0.7+ | 1.1+ | 2004 02 17 | 704 | 1.3+  | 0.2-  | 2006 10 21 | G96 | 0.2+ | 0.2- |
| 2001 09 20 | 333 | 0.8- | 0.2- | 2004 02 17 | 704 | 0.6+  | 0.9-  | 2006 10 21 | G96 | 0.0  | 0.0  |
| 2001 09 20 | 704 | 0.5+ | 0.1- | 2004 02 17 | 704 | 1.0+  | 0.2+  | 2006 11 17 | G96 | 0.0  | 0.2- |
| 2001 09 20 | 333 | 0.4- | 0.5+ | 2004 03 15 | 703 | 0.1-  | 0.6+  | 2006 11 17 | G96 | 0.2+ | 0.1+ |
| 2001 09 20 | 704 | 0.4+ | 0.0  | 2004 03 15 | 703 | 0.4-  | 1.0+  | 2006 11 17 | G96 | 0.2- | 0.1- |
| 2001 09 20 | 704 | 0.1- | 0.3+ | 2004 03 15 | 703 | 0.4-  | 0.1+  | 2006 11 17 | G96 | 0.6- | 0.5- |
| 2001 09 21 | 704 | 0.9- | 0.8- | 2004 03 15 | 703 | 1.0-  | 1.0+  | 2007 11 09 | 704 | 0.1- | 0.3- |
| 2001 09 21 | 704 | 0.1- | 0.7- | 2006 08 17 | 644 | 0.0   | 0.0   | 2007 11 09 | 704 | 0.4+ | 0.8+ |
| 2001 09 21 | 704 | 0.0  | 0.4- | 2006 08 17 | 644 | 0.3+  | 0.0   | 2007 11 09 | 704 | 0.2- | 0.2- |
| 2001 09 23 | 704 | 0.0  | 0.0  | 2006 08 17 | 644 | 0.2-  | 0.2-  | 2007 11 09 | 704 | 0.6+ | 0.1- |
| 2001 09 23 | 704 | 0.1+ | 0.7+ | 2006 08 30 | 699 | (0.8- | 2.1+) | 2007 11 09 | 704 | 0.3+ | 0.4+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 23 | 704 | 0.2- | 0.6+ | 2006 08 30 | 699 | 1.1+  | 0.3+  | 2007 11 16 | 704 | 1.0+ | 0.3+ |
| 2001 09 23 | 704 | 0.1+ | 0.8+ | 2006 08 30 | 699 | 0.7-  | 0.6+  | 2007 11 16 | 704 | 0.1+ | 0.1+ |
| 2001 10 15 | 608 | 1.0- | 0.1- | 2006 08 30 | 699 | 1.2+  | 0.9-  | 2007 11 16 | 704 | 0.0  | 0.1+ |
| 2001 10 15 | 608 | 0.4- | 0.1- | 2006 09 25 | 699 | 0.2-  | 1.0+  | 2007 11 16 | 704 | 0.1+ | 0.1+ |
| 2001 10 15 | 608 | 0.7- | 0.0  | 2006 09 25 | 699 | 0.6-  | 0.1+  | 2007 12 03 | 704 | 0.1- | 0.0  |
| 2001 10 18 | 644 | 0.2- | 0.1+ | 2006 09 25 | 699 | (1.5- | 0.5+) | 2007 12 03 | 704 | 0.9- | 0.2- |
| 2001 10 18 | 644 | 0.3+ | 0.1+ | 2006 09 25 | 699 | 0.4+  | 0.7+  | 2007 12 03 | 704 | 0.1- | 1.9- |
| 2001 10 18 | 644 | 0.1+ | 0.2+ | 2006 10 02 | G96 | 0.4-  | 0.5-  | 2007 12 03 | 704 | 0.4- | 0.6- |

(171945)\* 2001 SP<sub>270</sub> = 2004 FX<sub>63</sub>

Discovered 2001 Sept. 25 by W. K. Y. Yeung at Desert Eagle Observatory. Id. A. Doppler (*MPO* 84963)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 337.46194  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17476789 | $\omega$ | 261.29744 |     | +0.17422557 |     | -0.98469828 |
| $a$ | 3.1683145  | $\Omega$ | 178.65083 |     | +0.95539050 |     | +0.16809295 |
| $e$ | 0.0804900  | $i$      | 9.38722   |     | +0.23848363 |     | +0.04597889 |
| $P$ | 5.64       | $H$      | 15.4      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 09 29 | 691 | 0.6- | 0.3+ | 2001 11 21 | 645 | 0.1+  | 0.2-  | 2006 09 27 | G96 | 0.5-  | 0.5-  |
| 1995 09 29 | 691 | 0.7- | 0.1+ | 2003 02 01 | 704 | 0.3+  | 0.2-  | 2006 09 27 | G96 | 0.1-  | 0.1-  |
| 1995 09 29 | 691 | 0.5- | 0.1- | 2003 02 01 | 704 | 0.6+  | 0.3-  | 2007 11 11 | 704 | 0.1-  | 1.2+  |
| 2000 07 02 | 691 | 0.8+ | 0.1- | 2003 02 01 | 704 | 0.6-  | 0.7-  | 2007 11 11 | 704 | 0.1+  | 1.4+  |
| 2000 07 02 | 691 | 0.5+ | 0.1- | 2004 03 19 | 704 | 0.1+  | 0.4+  | 2007 11 11 | 704 | 0.3-  | 0.1+  |
| 2000 07 02 | 691 | 0.8+ | 0.0  | 2004 03 19 | 704 | 0.5-  | 0.5+  | 2007 11 13 | G96 | 0.6-  | 0.3-  |
| 2001 09 25 | 333 | 1.3+ | 1.0- | 2004 03 19 | 704 | 0.8-  | 0.1+  | 2007 11 13 | G96 | 0.5-  | 0.2-  |
| 2001 09 25 | 333 | 0.8+ | 0.6- | 2004 03 19 | 704 | 0.2-  | 0.1+  | 2007 11 13 | G96 | 0.5-  | 0.0   |
| 2001 09 25 | 333 | 0.5+ | 0.2- | 2006 08 28 | 703 | 0.2+  | 0.3-  | 2007 11 13 | G96 | 0.4-  | 0.2-  |
| 2001 09 26 | 333 | 0.2+ | 1.0- | 2006 08 28 | 703 | 1.2+  | 0.5+  | 2007 11 17 | 703 | 0.4+  | 0.5+  |
| 2001 09 26 | 333 | 0.5+ | 1.1- | 2006 08 28 | 703 | 0.7-  | 0.2-  | 2007 11 17 | 703 | 0.3-  | 0.9+  |
| 2001 09 26 | 333 | 1.2+ | 0.6- | 2006 08 28 | 703 | 0.3-  | 0.3-  | 2007 11 17 | 703 | 0.6+  | 1.3+  |
| 2001 10 16 | 704 | 0.0  | 0.6+ | 2006 08 29 | 691 | 0.3-  | 0.2+  | 2007 11 17 | 703 | (1.1- | 1.6+) |
| 2001 10 16 | 704 | 0.2- | 0.9+ | 2006 08 29 | 691 | 0.3-  | 0.1+  | 2007 12 05 | 703 | 0.4-  | 0.4+  |
| 2001 10 16 | 704 | 0.6+ | 0.0  | 2006 08 29 | 691 | 0.3-  | 0.1+  | 2007 12 05 | 703 | 0.4-  | 1.0+  |
| 2001 10 16 | 704 | 1.0- | 1.3+ | 2006 09 18 | 703 | (1.9- | 1.1+) | 2007 12 05 | 703 | 0.2+  | 0.0   |
| 2001 10 16 | 704 | 0.9+ | 0.7+ | 2006 09 18 | 703 | 0.8-  | 0.6+  | 2007 12 05 | 703 | 1.4-  | 0.2+  |
| 2001 10 16 | 644 | 0.1- | 0.4+ | 2006 09 18 | 703 | 0.1+  | 0.2-  | 2007 12 05 | 703 | 3.0+  | 2.5-  |
| 2001 10 16 | 644 | 0.5- | 0.4+ | 2006 09 18 | 703 | 1.0-  | 0.8+  | 2007 12 05 | 703 | 0.1+  | 0.5-  |
| 2001 10 16 | 644 | 0.2- | 0.3+ | 2006 09 27 | G96 | 0.0   | 0.5-  | 2007 12 05 | 703 | 0.8-  | 0.7+  |
| 2001 11 21 | 645 | 0.1+ | 0.1- | 2006 09 27 | G96 | 0.3-  | 0.4-  | 2007 12 05 | 703 | 0.0   | 0.6+  |

(171946)\* 2001 SB<sub>281</sub>

Discovered 2001 Sept. 21 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 359.80343  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $n$ | 0.17863777 | $\omega$ | 54.28180 |     | +0.33899074 |     | -0.93929855 |
| $a$ | 3.1223903  | $\Omega$ | 16.15403 |     | +0.78997515 |     | +0.25363342 |
| $e$ | 0.1348071  | $i$      | 10.97090 |     | +0.51090561 |     | +0.23105914 |
| $P$ | 5.52       | $H$      | 15.2     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 704 | 0.6- | 0.8+ | 2001 10 17 | 704 | 0.5- | 0.1+ | 2003 01 24 | 644 | 0.1+ | 0.2+ |
| 2001 09 20 | 704 | 0.3+ | 1.3+ | 2001 10 17 | 704 | 0.0  | 0.0  | 2003 01 24 | 644 | 0.0  | 0.1+ |
| 2001 09 20 | 704 | 0.9- | 0.2+ | 2001 10 17 | 704 | 0.1- | 0.8+ | 2003 01 24 | 644 | 0.3+ | 0.5+ |
| 2001 09 20 | 704 | 0.9- | 0.8+ | 2001 10 17 | 704 | 0.3- | 0.1+ | 2003 01 29 | 644 | 0.4+ | 0.2+ |
| 2001 09 20 | 704 | 0.3+ | 0.4+ | 2001 10 19 | 644 | 0.2+ | 0.4+ | 2003 01 29 | 644 | 0.5+ | 0.4+ |
| 2001 09 20 | 704 | 0.8- | 0.6+ | 2001 10 19 | 644 | 0.0  | 0.3+ | 2003 01 29 | 644 | 0.1+ | 0.0  |
| 2001 09 20 | 704 | 0.0  | 0.7+ | 2001 10 19 | 644 | 0.0  | 0.5+ | 2003 02 07 | 644 | 0.3- | 0.2+ |
| 2001 09 20 | 704 | 0.1+ | 0.1+ | 2001 10 21 | 704 | 0.5+ | 0.8+ | 2003 02 07 | 644 | 0.3- | 0.0  |
| 2001 09 20 | 704 | 0.7+ | 0.5+ | 2001 10 21 | 704 | 0.1+ | 0.7+ | 2003 02 07 | 644 | 0.2- | 0.2+ |
| 2001 09 20 | 704 | 0.7+ | 0.4+ | 2001 10 21 | 704 | 0.5+ | 0.8+ | 2003 02 19 | 644 | 0.9- | 0.8+ |
| 2001 09 20 | 704 | 0.9+ | 0.8+ | 2001 10 21 | 704 | 0.2+ | 1.0+ | 2003 02 19 | 644 | 0.4+ | 1.4+ |
| 2001 09 20 | 704 | 0.4+ | 0.2+ | 2001 10 21 | 704 | 0.1+ | 1.3+ | 2003 02 19 | 644 | 0.7+ | 1.2+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 21 | 699 | 0.0   | 1.0−  | 2001 10 25 | 691 | 0.1−  | 0.1−  | 2003 02 26 | 704 | 0.5+  | 0.7+  |
| 2001 09 21 | 699 | 0.9−  | 1.0+  | 2001 10 25 | 691 | 0.2+  | 0.1+  | 2003 02 26 | 704 | 0.2+  | 1.1+  |
| 2001 09 21 | 699 | 1.3+  | 0.8−  | 2001 10 25 | 691 | 0.1−  | 0.2−  | 2003 02 26 | 704 | 1.1+  | 0.4+  |
| 2001 09 21 | 699 | 0.4−  | 1.1−  | 2001 11 10 | 704 | 0.1+  | 0.5+  | 2003 02 26 | 704 | 0.5+  | 0.8+  |
| 2001 09 22 | 699 | 0.7−  | 0.2−  | 2001 11 10 | 704 | 0.9+  | 0.9+  | 2003 03 03 | 644 | 0.3−  | 0.9+  |
| 2001 09 22 | 699 | 1.5−  | 1.1−  | 2001 11 10 | 704 | 0.0   | 0.2+  | 2003 03 03 | 644 | 0.0   | 0.7+  |
| 2001 09 22 | 699 | 0.9−  | 0.1+  | 2001 11 10 | 704 | 0.2+  | 0.0   | 2003 03 03 | 644 | 0.0   | 0.9+  |
| 2001 09 22 | 699 | 0.5−  | 0.4−  | 2001 11 11 | 699 | 0.7−  | 0.2−  | 2003 03 07 | 645 | 0.1−  | 0.3−  |
| 2001 09 23 | 291 | 1.5+  | 0.1−  | 2001 11 11 | 699 | 0.2+  | 0.6+  | 2003 03 07 | 645 | 0.1−  | 0.3−  |
| 2001 09 23 | 291 | (2.0+ | 0.1−) | 2001 11 11 | 699 | 0.2−  | 0.6+  | 2004 04 16 | 691 | 0.2+  | 1.0+  |
| 2001 09 23 | 291 | (2.2+ | 0.4−) | 2001 11 11 | 699 | 0.9−  | 0.8+  | 2004 04 16 | 691 | 0.6+  | 0.4+  |
| 2001 09 24 | 704 | 1.1−  | 0.0   | 2001 11 16 | 691 | 0.1−  | 0.5−  | 2004 04 16 | 691 | 0.5+  | 0.6+  |
| 2001 09 24 | 704 | (1.7− | 0.1+) | 2001 11 16 | 691 | 0.2−  | 0.4−  | 2006 09 14 | 703 | 0.4−  | 0.1−  |
| 2001 09 24 | 704 | 0.9−  | 0.8+  | 2001 11 16 | 691 | 0.0   | 0.4−  | 2006 09 14 | 703 | (2.9− | 0.4−) |
| 2001 10 07 | 644 | 0.6+  | 0.2+  | 2001 11 17 | 704 | 0.3−  | 0.5−  | 2006 09 14 | 703 | (1.4− | 1.9−) |
| 2001 10 07 | 644 | 0.1+  | 0.1−  | 2001 11 17 | 704 | 0.9−  | 1.2−  | 2006 09 14 | 703 | 0.1−  | 0.1+  |
| 2001 10 07 | 644 | 0.3+  | 0.2+  | 2001 11 17 | 704 | 0.9−  | 1.0−  | 2007 11 03 | 704 | 0.8−  | 0.3+  |
| 2001 10 11 | 644 | 1.1+  | 1.0−  | 2001 11 17 | 704 | 0.2−  | 0.4−  | 2007 11 03 | 704 | 0.6−  | 0.2−  |
| 2001 10 11 | 644 | (1.7+ | 1.2−) | 2001 11 17 | 704 | 1.1−  | 0.8−  | 2007 11 03 | 704 | 0.0   | 0.0   |
| 2001 10 11 | 644 | (1.8+ | 1.2−) | 2001 11 20 | 699 | 0.5−  | 0.6−  | 2007 11 03 | 704 | 0.5−  | 0.3+  |
| 2001 10 12 | 699 | 0.0   | 1.5+  | 2001 11 20 | 699 | 0.3+  | 0.6−  | 2007 11 16 | 704 | 0.7+  | 0.0   |
| 2001 10 12 | 699 | 0.6+  | 0.6+  | 2001 11 20 | 699 | 0.1−  | 0.3−  | 2007 11 16 | 704 | 0.2−  | 0.4+  |
| 2001 10 12 | 699 | (0.4+ | 1.9+) | 2001 11 20 | 699 | (0.2+ | 2.0−) | 2007 11 16 | 704 | 0.0   | 0.0   |
| 2001 10 12 | 699 | 0.4−  | 0.3+  | 2003 01 10 | 704 | 0.2+  | 0.5+  | 2007 11 16 | 704 | 0.6+  | 0.7+  |
| 2001 10 13 | 704 | 0.8−  | 0.3−  | 2003 01 10 | 704 | 0.2−  | 0.3−  | 2007 12 03 | 704 | 0.4+  | 0.7+  |
| 2001 10 13 | 704 | 0.2+  | 1.1+  | 2003 01 10 | 704 | 0.2+  | 0.2+  | 2007 12 03 | 704 | 0.4+  | 0.8−  |
| 2001 10 13 | 704 | 0.4−  | 0.8+  | 2003 01 10 | 704 | 0.1−  | 0.1−  | 2007 12 03 | 704 | 0.3−  | 0.0   |
| 2001 10 13 | 704 | 0.1−  | 0.5−  | 2003 01 10 | 704 | 0.0   | 0.3−  | 2007 12 03 | 704 | 0.4+  | 1.0+  |

**(171947)\* 2001 SK<sub>281</sub>**

Discovered 2001 Sept. 21 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 37.07195   | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.17453334 | $\omega$ | 110.23147 | +0.98205759 | −0.17717412 |
| <i>a</i> | 3.1711525  | $\Omega$ | 260.01642 | +0.13906920 | +0.91174904 |
| <i>e</i> | 0.1826456  | <i>i</i> | 3.76050   | +0.12736818 | +0.37057121 |
| <i>P</i> | 5.65       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 21 | 699 | 0.6+ | 1.4+ | 2001 11 10 | 704 | 0.1+  | 0.6−  | 2006 08 24 | 644 | 0.1− | 0.3+ |
| 2001 09 21 | 699 | 0.4− | 0.6+ | 2001 11 10 | 704 | 0.7+  | 0.2+  | 2006 08 24 | 644 | 0.1− | 0.6+ |
| 2001 09 21 | 699 | 0.5+ | 0.1+ | 2001 11 10 | 704 | 1.1−  | 0.1−  | 2007 11 03 | D35 | 0.3+ | 0.1+ |
| 2001 09 21 | 699 | 0.3− | 0.9+ | 2001 11 11 | 699 | 0.4+  | 0.8+  | 2007 11 03 | D35 | 0.3+ | 0.0  |
| 2001 09 22 | 699 | 0.6+ | 0.1− | 2001 11 11 | 699 | 0.7−  | 1.1−  | 2007 11 03 | D35 | 0.3+ | 0.2− |
| 2001 09 22 | 699 | 0.3+ | 0.1+ | 2001 11 11 | 699 | 0.4−  | 0.3−  | 2007 11 06 | 691 | 0.5− | 0.1+ |
| 2001 09 22 | 699 | 1.4− | 0.5+ | 2001 11 11 | 699 | (1.7− | 0.1−) | 2007 11 06 | 691 | 0.1− | 0.4− |
| 2001 09 22 | 699 | 0.5− | 1.0+ | 2001 11 17 | 704 | 0.0   | 0.4−  | 2007 11 06 | 691 | 0.0  | 0.5− |
| 2001 10 14 | 704 | 0.7+ | 0.1+ | 2001 11 17 | 704 | 0.3+  | 0.1−  | 2007 11 06 | 691 | 0.1+ | 0.3− |
| 2001 10 14 | 704 | 1.0+ | 0.4+ | 2001 11 17 | 704 | 0.2−  | 0.0   | 2007 11 06 | 691 | 0.3− | 0.4− |
| 2001 10 14 | 704 | 1.0+ | 0.5+ | 2001 11 17 | 704 | 0.8+  | 0.8−  | 2007 11 06 | 691 | 0.0  | 0.2− |
| 2001 10 14 | 704 | 0.6+ | 0.4+ | 2001 11 17 | 704 | 0.5−  | 0.4−  | 2007 11 15 | 704 | 0.5− | 0.6+ |
| 2001 10 14 | 704 | 1.0+ | 0.6+ | 2001 11 17 | 644 | 0.5+  | 0.4+  | 2007 11 15 | 704 | 0.7− | 0.3+ |
| 2001 10 17 | 704 | 1.5− | 1.1+ | 2001 11 17 | 644 | 0.0   | 0.3+  | 2007 11 15 | 704 | 0.3+ | 0.3+ |
| 2001 10 17 | 704 | 0.0  | 0.4+ | 2001 11 17 | 644 | 0.1+  | 0.2+  | 2007 11 15 | 704 | 0.2+ | 0.6+ |
| 2001 10 17 | 704 | 0.7− | 0.6+ | 2001 11 19 | 704 | 0.3−  | 0.2−  | 2007 11 15 | 704 | 0.1+ | 0.4+ |
| 2001 10 17 | 704 | 0.4− | 0.8+ | 2001 11 19 | 704 | 0.0   | 0.1+  | 2007 11 17 | 691 | 0.3− | 0.3+ |
| 2001 10 17 | 704 | 0.7− | 0.3+ | 2001 11 19 | 704 | 0.3−  | 0.1+  | 2007 11 17 | 691 | 0.1− | 0.4− |
| 2001 10 18 | 704 | 0.1− | 0.2+ | 2001 11 19 | 704 | 0.3−  | 0.1−  | 2007 11 17 | 691 | 0.0  | 0.3− |
| 2001 10 18 | 704 | 0.7− | 0.4+ | 2001 11 20 | 699 | 0.0   | 0.4+  | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2001 10 18 | 704 | 0.0  | 0.4− | 2001 11 20 | 699 | 0.6+  | 0.2+  | 2007 12 04 | G96 | 0.2− | 0.1− |
| 2001 10 18 | 704 | 0.3− | 0.2− | 2001 11 20 | 699 | 0.3+  | 0.2+  | 2007 12 04 | G96 | 0.5+ | 0.3− |
| 2001 10 18 | 704 | 0.3− | 0.0  | 2001 11 20 | 699 | (4.1+ | 0.4+) | 2007 12 04 | G96 | 0.0  | 0.2− |
| 2001 10 18 | 704 | 0.4− | 0.4− | 2001 11 24 | 704 | 0.3+  | 0.3+  | 2007 12 04 | G96 | 0.3+ | 0.1− |
| 2001 10 18 | 704 | 1.1− | 0.5− | 2001 11 24 | 704 | 0.9+  | 0.1−  | 2007 12 04 | G96 | 0.5+ | 0.0  |
| 2001 10 18 | 704 | 0.2+ | 0.2− | 2001 11 24 | 704 | 1.0+  | 0.2+  | 2007 12 04 | G96 | 0.0  | 0.1− |
| 2001 10 18 | 704 | 0.3− | 0.4− | 2003 01 27 | 644 | 0.0   | 0.9+  | 2007 12 04 | G96 | 0.2+ | 0.1− |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 18 | 704 | 0.6− | 0.2− | 2003 01 27 | 644 | 0.2+ | 0.9+ | 2007 12 05 | 704 | (0.3+ | 1.6+) |
| 2001 10 19 | 644 | 0.7− | 0.2+ | 2003 01 27 | 644 | 0.3+ | 1.2+ | 2007 12 05 | 704 | 0.2+  | 1.2+  |
| 2001 10 19 | 644 | 0.1+ | 1.2+ | 2004 03 28 | 691 | 0.4+ | 0.5+ | 2007 12 05 | 704 | 0.2+  | 1.2+  |
| 2001 10 19 | 644 | 0.1+ | 1.1+ | 2004 03 28 | 691 | 0.1+ | 0.5+ | 2007 12 05 | 704 | 0.2+  | 0.8+  |
| 2001 10 21 | 704 | 0.2+ | 0.2+ | 2004 03 28 | 691 | 0.3+ | 0.7+ | 2007 12 05 | 704 | 0.0   | 1.4+  |
| 2001 10 21 | 704 | 0.5− | 0.2− | 2005 05 12 | G96 | 0.3+ | 0.5+ | 2007 12 14 | 704 | 0.4+  | 0.2−  |
| 2001 10 21 | 704 | 0.1− | 0.1+ | 2005 05 12 | G96 | 0.2− | 0.1+ | 2007 12 14 | 704 | 0.3+  | 0.3−  |
| 2001 10 21 | 704 | 0.4− | 0.3+ | 2005 05 12 | G96 | 0.5− | 0.1+ | 2007 12 14 | 704 | 0.2−  | 0.1−  |
| 2001 10 24 | 333 | 0.5+ | 0.3+ | 2005 05 12 | G96 | 0.0  | 0.2+ | 2007 12 14 | 704 | 0.2+  | 0.3−  |
| 2001 10 24 | 333 | 0.3+ | 0.8− | 2006 05 26 | G96 | 0.8+ | 0.5+ | 2007 12 14 | 704 | 0.3−  | 1.2+  |
| 2001 10 24 | 333 | 0.4+ | 0.7− | 2006 05 26 | G96 | 1.0− | 0.9− | 2007 12 15 | G96 | 0.5+  | 0.4−  |
| 2001 10 26 | 644 | 0.4− | 0.4+ | 2006 05 26 | G96 | 0.3− | 0.3+ | 2007 12 15 | G96 | 0.6+  | 0.4−  |
| 2001 10 26 | 644 | 0.4− | 0.3+ | 2006 08 13 | 644 | 0.1− | 0.3+ | 2007 12 15 | G96 | 0.3+  | 0.6−  |
| 2001 10 26 | 644 | 0.2− | 0.4+ | 2006 08 13 | 644 | 0.0  | 0.4+ | 2007 12 15 | G96 | 0.4+  | 0.4−  |
| 2001 11 10 | 704 | 0.0  | 0.6− | 2006 08 13 | 644 | 0.1+ | 0.6+ |            |     |       |       |
| 2001 11 10 | 704 | 0.1− | 0.2− | 2006 08 24 | 644 | 0.0  | 0.5+ |            |     |       |       |

**(171948)\* 2001 SJ<sub>288</sub>**

Discovered 2001 Sept. 27 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 41.93077   | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.17444877 | $\omega$ | 242.21438 | +0.92843690 | +0.31864687 |
| <i>a</i> | 3.1721772  | $\Omega$ | 98.67899  | −0.23464140 | +0.90154465 |
| <i>e</i> | 0.2143804  | <i>i</i> | 11.13848  | −0.28800754 | +0.29271389 |
| <i>P</i> | 5.65       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 27 | 704 | 1.1+ | 0.7+ | 2007 09 12 | F85 | (0.5− | 2.6+) | 2007 11 05 | 703 | 0.2− | 0.1− |
| 2000 05 27 | 704 | 0.3+ | 0.9+ | 2007 09 12 | F85 | (0.1+ | 2.4+) | 2007 11 14 | G96 | 0.1+ | 0.3− |
| 2000 05 27 | 704 | 0.5+ | 0.4+ | 2007 09 12 | F85 | (0.6− | 2.9+) | 2007 11 14 | G96 | 0.0  | 0.4− |
| 2000 05 27 | 704 | 0.1− | 0.3− | 2007 10 16 | 703 | 1.0+  | 0.1+  | 2007 11 14 | G96 | 0.0  | 0.4− |
| 2000 05 27 | 704 | 0.1+ | 0.0  | 2007 10 16 | 703 | 1.4+  | 0.6+  | 2007 11 14 | G96 | 0.0  | 0.5− |
| 2000 07 03 | 691 | 0.3− | 0.1+ | 2007 10 16 | 703 | 1.1−  | 0.5+  | 2007 11 15 | 699 | 0.0  | 0.5− |
| 2000 07 03 | 691 | 0.1+ | 0.2+ | 2007 10 16 | 703 | 0.2+  | 0.1−  | 2007 11 15 | 699 | 0.5− | 1.2+ |
| 2000 07 03 | 691 | 0.0  | 0.3+ | 2007 10 19 | 704 | 0.7+  | 0.7+  | 2007 11 15 | 699 | 0.3− | 0.9− |
| 2001 09 12 | 704 | 0.6− | 0.2+ | 2007 10 19 | 704 | 0.4+  | 0.6+  | 2007 11 15 | 699 | 0.2+ | 0.2+ |
| 2001 09 12 | 704 | 0.2− | 0.6+ | 2007 10 19 | 704 | 0.2−  | 0.8−  | 2007 11 18 | 699 | 0.9+ | 0.1− |
| 2001 09 12 | 704 | 0.6+ | 0.5+ | 2007 10 19 | 704 | 0.6+  | 1.2+  | 2007 11 18 | 699 | 1.4+ | 0.9− |
| 2001 09 27 | 644 | 0.4+ | 1.0+ | 2007 10 19 | 704 | 0.1+  | 0.3+  | 2007 11 18 | 699 | 0.6+ | 0.9+ |
| 2001 09 27 | 644 | 0.1+ | 0.8+ | 2007 10 21 | G96 | 0.0   | 0.2−  | 2007 11 18 | 699 | 0.4− | 0.4− |
| 2001 09 27 | 644 | 0.3− | 0.9+ | 2007 10 21 | G96 | 0.5+  | 0.2−  | 2007 11 20 | 703 | 0.4+ | 0.2+ |
| 2001 09 29 | 608 | 0.5− | 0.7− | 2007 10 21 | G96 | 0.1−  | 0.3−  | 2007 11 20 | 703 | 0.9− | 0.8+ |
| 2001 09 29 | 608 | 0.2− | 0.9− | 2007 10 21 | G96 | 0.0   | 0.1−  | 2007 11 20 | 703 | 1.2− | 0.8− |
| 2001 09 29 | 608 | 0.0  | 0.2− | 2007 10 30 | 703 | 0.3+  | 0.1−  | 2007 11 20 | 703 | 0.1+ | 0.6− |
| 2001 10 11 | 704 | 0.5− | 0.1+ | 2007 10 30 | 703 | 0.3−  | 0.6+  | 2007 12 06 | 703 | 0.4+ | 0.9+ |
| 2001 10 11 | 704 | 0.1− | 0.5+ | 2007 10 30 | 703 | 1.2−  | 0.0   | 2007 12 06 | 703 | 1.2− | 0.1+ |
| 2001 10 11 | 704 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.2+  | 0.5+  | 2007 12 06 | 703 | 0.5− | 0.4+ |
| 2004 02 16 | 691 | 0.2− | 0.6+ | 2007 11 05 | 703 | 0.2+  | 0.5−  | 2007 12 06 | 703 | 0.9− | 0.8− |
| 2004 02 16 | 691 | 0.3+ | 0.3+ | 2007 11 05 | 703 | 0.7−  | 0.4+  |            |     |      |      |
| 2004 02 16 | 691 | 0.3+ | 0.1+ | 2007 11 05 | 703 | 0.9−  | 0.2+  |            |     |      |      |

2007 DEC. 24

M.P.O. 129215

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 21 | 704 | 0.5−  | 0.2−  | 2002 12 29 | A38 | 0.1+ | 0.1+ | 2006 09 17 | F84 | 0.8−  | 0.5+  |
| 2001 09 21 | 704 | 0.9+  | 0.1−  | 2002 12 29 | A38 | 0.6+ | 1.0+ | 2006 09 17 | F84 | 0.7−  | 0.0   |
| 2001 09 21 | 704 | 1.1−  | 0.8+  | 2002 12 29 | A38 | 0.1− | 0.2+ | 2006 09 18 | 703 | 0.1−  | 0.5−  |
| 2001 09 21 | 704 | 1.2+  | 0.2−  | 2002 12 31 | 699 | 0.4+ | 0.5− | 2006 09 18 | 703 | 0.8−  | 0.2−  |
| 2001 09 21 | 704 | 0.1+  | 1.0−  | 2002 12 31 | 699 | 0.2+ | 0.6+ | 2006 09 18 | 703 | 0.5−  | 0.2−  |
| 2001 09 21 | 704 | 0.7+  | 0.3−  | 2002 12 31 | 699 | 0.3− | 1.1+ | 2006 09 18 | 703 | 0.7−  | 0.0   |
| 2001 09 21 | 704 | 0.8−  | 0.4+  | 2002 12 31 | 699 | 0.1− | 0.4+ | 2006 09 20 | 703 | 0.2−  | 0.2+  |
| 2001 09 21 | 704 | 0.8+  | 0.0   | 2003 01 10 | 704 | 0.2+ | 0.0  | 2006 09 20 | 703 | 0.3−  | 0.1+  |
| 2001 09 21 | 704 | 0.5−  | 0.3+  | 2003 01 10 | 704 | 0.6+ | 1.0− | 2006 09 20 | 703 | 0.1+  | 0.1−  |
| 2001 09 21 | 704 | 0.5+  | 0.1−  | 2003 01 10 | 704 | 0.5+ | 0.2− | 2006 09 20 | 703 | 1.2−  | 0.7+  |
| 2001 09 25 | 704 | 0.1+  | 0.0   | 2003 01 10 | 704 | 0.5+ | 0.8− | 2006 09 21 | 699 | 1.0−  | 0.0   |
| 2001 09 25 | 704 | 0.4+  | 0.2+  | 2003 01 10 | 704 | 0.9+ | 0.8− | 2006 09 21 | 699 | 0.3−  | 0.5+  |
| 2001 09 25 | 704 | 0.5+  | 0.3−  | 2003 01 13 | 704 | 0.2+ | 0.4− | 2006 09 21 | 699 | 0.6+  | 0.8−  |
| 2001 09 25 | 704 | 0.3+  | 0.1−  | 2003 01 13 | 704 | 0.2+ | 0.0  | 2006 09 21 | 699 | 0.6+  | 0.6+  |
| 2001 09 25 | 704 | 0.3+  | 0.5+  | 2003 01 13 | 704 | 0.2− | 0.1− | 2006 09 26 | 703 | (0.3− | 1.7−) |
| 2001 10 11 | 704 | 0.7+  | 0.6+  | 2003 01 13 | 704 | 0.5− | 0.6− | 2006 09 26 | 703 | 1.2−  | 0.4+  |
| 2001 10 11 | 704 | 0.6+  | 0.5+  | 2003 01 31 | 699 | 0.3+ | 0.3+ | 2006 09 26 | 703 | 0.6+  | 1.0+  |
| 2001 10 11 | 704 | 0.1+  | 0.7+  | 2003 01 31 | 699 | 0.3+ | 0.3− | 2006 09 26 | 703 | 1.3−  | 0.0   |
| 2001 10 11 | 704 | 0.0   | 0.8+  | 2003 01 31 | 699 | 0.2− | 0.6+ | 2007 12 13 | 704 | 0.5−  | 0.3−  |
| 2001 10 11 | 704 | (1.5+ | 0.8+) | 2003 01 31 | 704 | 0.1− | 0.0  | 2007 12 13 | 704 | 1.0−  | 0.1−  |
| 2001 10 19 | 699 | 0.3+  | 0.6+  | 2003 01 31 | 704 | 0.5− | 0.4+ | 2007 12 13 | 704 | 0.9−  | 0.3−  |
| 2001 10 19 | 699 | 0.0   | 0.7+  | 2003 01 31 | 699 | 0.9− | 0.9+ | 2007 12 13 | 704 | 1.1−  | 0.0   |
| 2001 10 19 | 699 | 0.2−  | 1.3+  | 2003 01 31 | 704 | 0.3− | 0.2− | 2007 12 13 | 704 | 0.6−  | 1.4−  |
| 2001 10 19 | 699 | (0.3+ | 2.8+) | 2003 01 31 | 704 | 0.6+ | 0.5+ | 2007 12 15 | 704 | 0.4+  | 0.0   |
| 2001 10 20 | 704 | 1.0+  | 0.4+  | 2003 01 31 | 704 | 0.2+ | 0.8+ | 2007 12 15 | 704 | 1.0−  | 0.1+  |
| 2001 10 20 | 704 | (0.4+ | 1.6+) | 2003 02 01 | 941 | 0.2− | 1.4+ | 2007 12 15 | 704 | 0.7+  | 0.7−  |
| 2001 10 20 | 704 | 0.0   | 0.6+  | 2003 02 01 | 941 | 0.1+ | 1.1+ | 2007 12 15 | 704 | 0.1+  | 0.1+  |
| 2001 10 23 | 644 | 0.0   | 0.8+  | 2003 02 01 | 941 | 0.9+ | 0.8+ | 2007 12 15 | 704 | 1.0+  | 0.7+  |
| 2001 10 23 | 644 | 0.2+  | 0.6+  | 2003 02 01 | 941 | 0.8+ | 0.4+ | 2007 12 15 | 704 | 0.3+  | 0.2+  |
| 2001 10 23 | 644 | 0.1+  | 0.6+  | 2004 04 15 | 644 | 0.3+ | 0.9+ | 2007 12 15 | 704 | 0.2+  | 0.6+  |

(171950)\* 2001 SY<sub>317</sub>

Discovered 2001 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|          |                                   |                    |
|----------|-----------------------------------|--------------------|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                |
| <i>M</i> | 119.38419                         | (2000.0)           |
| <i>n</i> | 0.18727972                        | $\omega$ 257.55304 |
| <i>a</i> | 3.0255817                         | $\Omega$ 46.72182  |
| <i>e</i> | 0.0512557                         | <i>i</i> 2.76014   |
| <i>P</i> | 5.26                              | <i>H</i> 15.7      |
|          |                                   | <i>G</i> 0.15      |
|          |                                   | <i>U</i> 0         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 12 05 | 691 | 0.0  | 0.4− | 2004 03 11 | 644 | 0.7+  | 0.5+  | 2006 10 02 | G96 | 0.0  | 0.4− |
| 1997 12 05 | 691 | 0.2− | 0.6− | 2004 03 11 | 644 | 0.2+  | 1.1+  | 2006 10 02 | G96 | 0.3− | 0.7− |
| 1997 12 05 | 691 | 0.0  | 0.2− | 2004 03 11 | 644 | 0.4+  | 0.2+  | 2007 11 04 | F85 | 0.3− | 0.3+ |
| 2001 09 19 | 704 | 0.2− | 0.5+ | 2004 03 15 | 691 | 0.1+  | 0.5+  | 2007 11 04 | F85 | 0.5− | 0.1+ |
| 2001 09 19 | 704 | 0.3− | 0.4+ | 2004 03 15 | 691 | 0.1+  | 0.4+  | 2007 11 04 | F85 | 0.5+ | 0.7− |
| 2001 09 19 | 704 | 0.2− | 1.0+ | 2004 03 15 | 691 | 0.3+  | 0.4+  | 2007 11 05 | 691 | 0.0  | 0.0  |
| 2001 09 26 | 704 | 0.2+ | 0.8+ | 2006 08 28 | 703 | 0.1+  | 0.9+  | 2007 11 05 | 691 | 0.5− | 0.1+ |
| 2001 09 26 | 704 | 0.7− | 0.6+ | 2006 08 28 | 703 | 1.2+  | 0.8+  | 2007 11 05 | 691 | 0.0  | 0.1− |
| 2001 09 26 | 704 | 0.0  | 0.6+ | 2006 08 28 | 703 | 0.7+  | 0.7−  | 2007 11 13 | 691 | 0.1+ | 0.1− |
| 2001 10 20 | 704 | 0.3− | 0.9+ | 2006 08 28 | 703 | 0.6+  | 1.1−  | 2007 11 13 | 691 | 0.1+ | 0.3+ |
| 2001 10 20 | 704 | 0.1+ | 0.4+ | 2006 09 14 | 703 | 0.1+  | 1.2+  | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2001 10 20 | 704 | 0.1+ | 0.9+ | 2006 09 14 | 703 | 0.8−  | 0.6−  | 2007 12 06 | G96 | 0.2+ | 0.3+ |
| 2001 10 20 | 704 | 0.8− | 1.0+ | 2006 09 14 | 703 | 0.6+  | 1.2−  | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2001 10 20 | 704 | 0.8− | 1.3+ | 2006 09 14 | 703 | 0.4+  | 0.6+  | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2001 10 25 | 691 | 0.3− | 0.2− | 2006 09 16 | 699 | 1.1−  | 0.8+  | 2007 12 06 | G96 | 0.6+ | 0.1− |
| 2001 10 25 | 691 | 0.5− | 0.4− | 2006 09 16 | 699 | (1.7− | 1.5+) | 2007 12 14 | 704 | 0.4+ | 0.2− |
| 2001 10 25 | 691 | 0.4− | 0.3− | 2006 09 16 | 699 | 0.2−  | 0.6+  | 2007 12 14 | 704 | 0.1+ | 0.6− |
| 2001 10 25 | 691 | 0.2+ | 0.1− | 2006 09 16 | 699 | 1.2−  | 0.3−  | 2007 12 14 | 704 | 0.8− | 0.9+ |
| 2001 10 25 | 691 | 0.7+ | 0.1+ | 2006 10 02 | G96 | 0.3+  | 0.2+  | 2007 12 14 | 704 | 0.1− | 0.5− |
| 2001 10 25 | 691 | 0.4+ | 0.0  | 2006 10 02 | G96 | 0.1−  | 0.2−  | 2007 12 14 | 704 | 0.1+ | 1.1+ |

(171951)\* 2001 SS<sub>328</sub> = 2001 UZ<sub>188</sub>

Discovered 2001 Sept. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (d, MPO 34060)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 81.01566   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
| <i>n</i> | 0.19987444 | $\omega$ 305.40471 | +0.99853204   | −0.02054179 |
| <i>a</i> | 2.8971070  | $\Omega$ 55.82278  | +0.04006713   | +0.90276241 |
| <i>e</i> | 0.0653147  | <i>i</i> 3.47309   | −0.03644712   | +0.42964878 |
| <i>P</i> | 4.93       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 12 | 704 | 0.0  | 0.1− | 2004 03 19 | 704 | 0.3+  | 0.2+  | 2006 10 12 | 644 | 0.1− | 0.2+ |
| 2001 09 12 | 704 | 0.4+ | 0.7+ | 2004 03 19 | 704 | (0.4− | 1.7+) | 2006 10 12 | 644 | 0.4+ | 0.4− |
| 2001 09 12 | 704 | 0.0  | 0.8+ | 2004 07 15 | 807 | 0.2+  | 0.2+  | 2006 10 22 | 644 | 0.0  | 0.0  |
| 2001 09 12 | 704 | 0.3− | 0.6+ | 2004 07 16 | 807 | 0.6+  | 0.1+  | 2006 10 22 | 644 | 0.1− | 0.2− |
| 2001 09 19 | 699 | 1.0− | 0.6− | 2006 08 27 | 705 | 0.1+  | 0.0   | 2006 10 22 | 644 | 0.2+ | 0.3+ |
| 2001 09 19 | 699 | 0.0  | 0.3+ | 2006 08 27 | 705 | 0.1+  | 0.1−  | 2006 10 23 | 644 | 0.2+ | 0.0  |
| 2001 09 19 | 699 | 0.1+ | 0.1− | 2006 09 18 | 699 | 0.0   | 0.3−  | 2006 10 23 | 644 | 0.0  | 0.3+ |
| 2001 09 19 | 699 | 0.1− | 0.5+ | 2006 09 18 | 699 | 0.3−  | 0.4−  | 2006 10 23 | 644 | 0.2+ | 0.0  |
| 2001 09 21 | 704 | 0.5− | 0.7− | 2006 09 18 | 699 | 0.9−  | 0.3−  | 2006 12 22 | G96 | 0.1+ | 0.3+ |
| 2001 09 21 | 704 | 0.5− | 0.2+ | 2006 09 18 | 699 | 0.6+  | 0.2+  | 2006 12 22 | G96 | 0.4+ | 0.5− |
| 2001 09 21 | 704 | 0.3− | 0.2− | 2006 09 26 | 704 | 0.3−  | 1.0+  | 2006 12 22 | G96 | 0.7− | 0.3− |
| 2001 09 21 | 704 | 0.5− | 0.1+ | 2006 09 26 | 704 | 0.3−  | 0.8+  | 2006 12 22 | G96 | 0.3− | 0.8− |
| 2001 09 21 | 704 | 1.1+ | 0.4+ | 2006 09 26 | 704 | 0.2+  | 1.3+  | 2007 10 10 | 291 | 0.6− | 0.1+ |
| 2001 10 18 | 644 | 0.2− | 0.2+ | 2006 09 26 | 704 | 0.4−  | 0.4+  | 2007 10 10 | 291 | 0.6− | 0.6+ |
| 2001 10 18 | 644 | 0.3− | 0.1+ | 2006 09 26 | 704 | (0.3+ | 1.8+) | 2007 10 10 | 291 | 0.5− | 0.4+ |
| 2001 10 18 | 644 | 0.4− | 0.4+ | 2006 09 28 | 691 | 0.0   | 0.1+  | 2007 11 11 | G96 | 0.2+ | 0.2− |
| 2001 10 20 | 704 | 0.5+ | 0.5+ | 2006 09 28 | 691 | 0.2−  | 0.0   | 2007 11 11 | G96 | 0.9+ | 0.2− |
| 2001 10 20 | 704 | 0.3− | 1.2+ | 2006 09 28 | 691 | 0.2−  | 0.0   | 2007 11 11 | G96 | 1.0+ | 0.2− |
| 2001 10 20 | 704 | 0.6+ | 1.1− | 2006 10 10 | 644 | 0.2+  | 0.1−  | 2007 11 11 | G96 | 0.6+ | 0.1− |
| 2001 10 20 | 704 | 0.6+ | 0.1+ | 2006 10 10 | 644 | 0.3+  | 0.0   | 2007 12 15 | 704 | 0.5+ | 0.5− |
| 2004 03 17 | 691 | 0.4+ | 0.3+ | 2006 10 10 | 644 | 0.1−  | 0.1−  | 2007 12 15 | 704 | 0.7+ | 0.6− |
| 2004 03 17 | 691 | 0.2+ | 0.5+ | 2006 10 11 | 104 | (2.9− | 1.1−) | 2007 12 15 | 704 | 1.2+ | 1.3− |
| 2004 03 17 | 691 | 0.1+ | 0.5+ | 2006 10 11 | 104 | 0.2+  | 0.3+  | 2007 12 15 | 704 | 0.5+ | 0.5− |
| 2004 03 19 | 704 | 0.5− | 1.1+ | 2006 10 11 | 104 | 0.1+  | 0.3+  |            |     |      |      |
| 2004 03 19 | 704 | 0.2− | 0.2+ | 2006 10 12 | 644 | 0.2+  | 0.1+  |            |     |      |      |

(171952)\* 2001 SD<sub>340</sub>

Discovered 2001 Sept. 21 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 239.49070  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
| <i>n</i> | 0.22227471 | $\omega$ 299.82622 | −0.47012676   | +0.86944892 |
| <i>a</i> | 2.6990402  | $\Omega$ 301.36261 | −0.73596947   | −0.48110800 |
| <i>e</i> | 0.1566656  | <i>i</i> 10.23930  | −0.48716503   | −0.11222153 |
| <i>P</i> | 4.43       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |             |      |            |     |             |            |     |           |      |
|------------|-----|-------------|------|------------|-----|-------------|------------|-----|-----------|------|
| 2001 08 26 | 699 | 0.2−        | 1.1+ | 2004 01 29 | 704 | (1.9+ 0.5−) | 2005 06 13 | G96 | 0.6−      | 0.1+ |
| 2001 08 26 | 699 | 0.6+        | 1.2+ | 2004 01 29 | 704 | 0.5+ 0.2+   | 2005 06 13 | G96 | 1.1−      | 0.2+ |
| 2001 08 26 | 699 | 0.4−        | 0.1+ | 2004 01 29 | 704 | (1.7+ 0.1+) | 2005 06 13 | G96 | 0.8−      | 0.1+ |
| 2001 08 26 | 699 | 0.0         | 0.0  | 2004 02 03 | 608 | 0.5+ 1.0+   | 2005 06 23 | 644 | 0.1+ 0.2+ |      |
| 2001 09 10 | 704 | (1.9+ 0.6−) |      | 2004 02 03 | 608 | 0.7+ 0.9+   | 2005 06 23 | 644 | 0.2+ 0.4+ |      |
| 2001 09 10 | 704 | 0.1− 0.1−   |      | 2004 02 03 | 608 | 0.6+ 1.4+   | 2005 06 23 | 644 | 0.1− 0.3+ |      |
| 2001 09 10 | 704 | 0.8+ 0.7+   |      | 2004 02 14 | 644 | 0.1+ 0.1+   | 2005 06 29 | 644 | 0.1+ 0.4+ |      |
| 2001 09 10 | 704 | 0.6+ 0.3+   |      | 2004 02 14 | 644 | 0.2+ 0.0    | 2005 06 29 | 644 | 0.1+ 0.4+ |      |
| 2001 09 10 | 704 | 0.8+ 0.7+   |      | 2004 02 14 | 644 | 0.3+ 0.1−   | 2005 06 29 | 644 | 0.0 0.2+  |      |
| 2001 09 10 | 704 | 0.4+ 0.5+   |      | 2004 02 19 | 704 | (0.5+ 2.6+) | 2005 07 11 | 703 | 0.2− 1.1+ |      |
| 2001 09 10 | 699 | 0.0 0.5+    |      | 2004 02 19 | 704 | 0.5+ 1.3+   | 2005 07 11 | 703 | 0.1+ 0.2− |      |
| 2001 09 10 | 704 | 0.7+ 0.3+   |      | 2004 02 19 | 704 | 0.8+ 1.2+   | 2005 07 11 | 703 | 0.3+ 0.4+ |      |
| 2001 09 10 | 704 | 1.1+ 0.9+   |      | 2004 02 19 | 704 | 0.9+ 0.9+   | 2005 07 11 | 703 | 0.0 1.1+  |      |
| 2001 09 10 | 704 | 0.1− 0.0    |      | 2004 02 19 | 704 | (0.7+ 1.7+) | 2005 07 12 | 703 | 0.4− 0.0  |      |
| 2001 09 10 | 704 | 0.9+ 0.5−   |      | 2004 02 20 | 608 | 0.4+ 0.7+   | 2005 07 12 | 703 | 0.3− 0.3+ |      |
| 2001 09 10 | 699 | (0.2+ 1.9+) |      | 2004 02 20 | 608 | 0.4+ 0.7+   | 2005 07 12 | 703 | 0.4+ 0.1+ |      |
| 2001 09 10 | 699 | (2.4− 2.0+) |      | 2004 02 20 | 608 | 0.5+ 0.7+   | 2005 07 12 | 703 | 1.1− 0.8− |      |
| 2001 09 10 | 699 | (1.8− 2.1+) |      | 2004 02 24 | 608 | 0.4− 0.7−   | 2005 08 06 | 644 | 0.0 0.3+  |      |
| 2001 09 18 | 645 | 0.2− 0.0    |      | 2004 02 24 | 608 | 0.7− 0.6−   | 2005 08 06 | 644 | 0.0 0.2+  |      |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 18 | 645 | 0.2−  | 0.0   | 2004 02 24 | 608 | 0.5−  | 1.0−  | 2005 08 06 | 644 | 0.1−  | 0.3+  |
| 2001 09 21 | 699 | 0.6−  | 1.2+  | 2004 03 14 | 644 | 0.6+  | 0.3+  | 2005 08 30 | 704 | 0.2−  | 0.9+  |
| 2001 09 21 | 699 | 0.5−  | 0.5+  | 2004 03 14 | 644 | 0.4+  | 0.4+  | 2005 08 30 | 704 | 0.4+  | 0.4+  |
| 2001 09 21 | 699 | 0.9−  | 0.1+  | 2004 03 14 | 644 | 0.4+  | 0.3+  | 2005 08 30 | 704 | 0.7−  | 1.4+  |
| 2001 09 21 | 699 | 0.2+  | 0.6+  | 2004 03 16 | 704 | 0.7+  | 0.3+  | 2006 10 23 | 703 | 0.2+  | 0.5−  |
| 2001 09 25 | 704 | 0.2+  | 0.9+  | 2004 03 16 | 704 | 0.4+  | 0.4+  | 2006 10 23 | 703 | (1.7− | 1.0−) |
| 2001 09 25 | 704 | 0.2+  | 0.8+  | 2004 03 16 | 704 | 0.2−  | 0.9+  | 2006 10 23 | 703 | 0.4+  | 0.6+  |
| 2001 09 25 | 704 | 0.5−  | 0.5+  | 2004 03 16 | 704 | 0.0   | 0.1+  | 2006 10 23 | 703 | 0.2−  | 0.8+  |
| 2001 09 25 | 704 | 0.5−  | 0.6+  | 2004 03 16 | 704 | 0.2+  | 0.6+  | 2006 10 29 | 703 | 0.4+  | 0.4+  |
| 2001 09 25 | 704 | (0.3− | 1.9+) | 2004 03 31 | 703 | 0.3−  | 1.3+  | 2006 10 29 | 703 | 1.7−  | 0.6+  |
| 2001 10 17 | 704 | 0.7−  | 0.4+  | 2004 03 31 | 703 | 1.2+  | 0.2−  | 2006 10 29 | 703 | 0.4−  | 0.1+  |
| 2001 10 17 | 704 | 0.4+  | 0.4−  | 2004 03 31 | 703 | 0.7+  | 0.7+  | 2006 10 29 | 703 | (0.2− | 2.6−) |
| 2001 10 17 | 704 | (0.4− | 1.8−) | 2004 03 31 | 703 | 1.0−  | 1.0+  | 2007 11 12 | G96 | 0.1−  | 0.2−  |
| 2003 11 29 | 291 | (1.7− | 1.1+) | 2004 03 31 | 704 | 0.4+  | 0.3−  | 2007 11 12 | G96 | 0.6+  | 0.6−  |
| 2003 11 29 | 291 | 0.6−  | 0.4+  | 2004 03 31 | 704 | 0.3+  | 0.5+  | 2007 11 12 | G96 | 0.1−  | 0.0   |
| 2003 11 29 | 291 | 1.0−  | 0.4+  | 2004 03 31 | 704 | 0.6+  | 0.2+  | 2007 11 12 | G96 | 0.0   | 0.2−  |
| 2004 01 28 | 704 | 1.3+  | 0.2+  | 2004 03 31 | 704 | 0.1+  | 0.2+  | 2007 12 14 | G96 | 0.1−  | 0.1−  |
| 2004 01 28 | 704 | 1.1+  | 0.4+  | 2004 04 16 | 699 | (2.1+ | 0.0 ) | 2007 12 14 | G96 | 0.5+  | 0.3+  |
| 2004 01 28 | 704 | 0.1−  | 0.0   | 2004 04 16 | 699 | (2.4+ | 0.9+) | 2007 12 14 | G96 | 0.1−  | 0.0   |
| 2004 01 28 | 704 | 0.8+  | 0.7+  | 2004 04 16 | 699 | 0.5−  | 0.3−  | 2007 12 14 | G96 | 0.2−  | 0.2+  |
| 2004 01 28 | 704 | 0.9+  | 1.1+  | 2004 04 16 | 699 | 0.4−  | 0.5−  |            |     |       |       |
| 2004 01 29 | 704 | 1.4+  | 0.0   | 2005 06 13 | G96 | 0.7−  | 0.1+  |            |     |       |       |

**(171953)\* 2001 SN<sub>345</sub>**

Discovered 2001 Sept. 23 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 18.78484   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18358750 | $\omega$ | 340.12469 | +0.47994921   | −0.83232262 |
| <i>a</i> | 3.0660129  | $\Omega$ | 80.30563  | +0.83814851   | −0.34166249 |
| <i>e</i> | 0.2512129  | <i>i</i> | 16.33802  | +0.25914440   | +0.43646970 |
| <i>P</i> | 5.37       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 20 | 644 | 0.6− | 0.2+ | 2001 10 28 | 644 | 0.6+ | 0.2+ | 2006 08 25 | E12 | 0.9−  | 0.1−  |
| 2001 08 20 | 644 | 0.2− | 0.1− | 2001 11 17 | 699 | 0.6+ | 0.1+ | 2006 08 25 | E12 | 0.2−  | 0.2+  |
| 2001 08 20 | 644 | 0.1− | 0.2− | 2001 11 17 | 699 | 0.8− | 0.4− | 2006 08 25 | E12 | 0.1+  | 0.4+  |
| 2001 09 23 | 644 | 0.5− | 0.1+ | 2001 11 17 | 699 | 0.1− | 0.5+ | 2007 11 03 | G96 | 0.2−  | 0.5−  |
| 2001 09 23 | 644 | 0.4− | 0.8+ | 2001 11 17 | 699 | 0.1+ | 0.3− | 2007 11 03 | G96 | 0.1−  | 0.4−  |
| 2001 09 23 | 644 | 0.2− | 0.5+ | 2003 02 01 | 644 | 0.1+ | 0.6+ | 2007 11 03 | G96 | 0.4−  | 0.4−  |
| 2001 09 25 | 699 | 0.9+ | 1.1+ | 2003 02 01 | 644 | 0.4+ | 0.4+ | 2007 11 03 | G96 | 0.1−  | 0.5−  |
| 2001 09 25 | 699 | 1.1− | 0.6+ | 2003 02 01 | 644 | 0.1− | 0.5+ | 2007 11 07 | 704 | 0.4+  | 0.6−  |
| 2001 09 25 | 699 | 1.4− | 0.1+ | 2003 02 22 | 644 | 0.0  | 0.8+ | 2007 11 07 | 704 | 0.8+  | 1.0−  |
| 2001 09 25 | 699 | 0.1+ | 1.0− | 2003 02 22 | 644 | 0.6+ | 0.9+ | 2007 11 07 | 704 | (1.9+ | 0.1+) |
| 2001 10 15 | 608 | 0.1− | 0.3− | 2003 02 22 | 644 | 0.1+ | 1.2+ | 2007 12 16 | 704 | 0.2+  | 0.2−  |
| 2001 10 15 | 608 | 0.7+ | 0.6+ | 2003 03 09 | 644 | 0.2+ | 0.5+ | 2007 12 16 | 704 | 0.1−  | 0.0   |
| 2001 10 15 | 608 | 0.3+ | 0.6+ | 2003 03 09 | 644 | 0.5+ | 0.8+ | 2007 12 16 | 704 | 0.7+  | 0.1−  |
| 2001 10 28 | 644 | 0.0  | 0.6+ | 2003 03 09 | 644 | 0.1+ | 0.8+ | 2007 12 16 | 704 | 0.2−  | 0.1−  |
| 2001 10 28 | 644 | 0.4+ | 0.2+ | 2006 08 25 | E12 | 0.1+ | 0.3+ | 2007 12 16 | 704 | 0.1−  | 0.1−  |

**(171954)\* 2001 SE<sub>348</sub> = 2006 SQ<sub>76</sub>**

Discovered 2001 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 108024)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 30.65974   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18110328 | $\omega$ | 143.90238 | +0.90037081   | −0.40855045 |
| <i>a</i> | 3.0939872  | $\Omega$ | 240.86888 | +0.34814539   | +0.88281447 |
| <i>e</i> | 0.0614525  | <i>i</i> | 9.86991   | +0.26101186   | +0.23178684 |
| <i>P</i> | 5.44       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 26 | 704 | 1.3+ | 1.0+ | 2006 09 23 | 691 | 0.2− | 0.0  | 2007 11 14 | 691 | 0.3−  | 0.3+  |
| 2001 09 26 | 704 | 0.0  | 0.2+ | 2006 09 23 | 691 | 0.4− | 0.3− | 2007 11 14 | 691 | 0.7−  | 0.3−  |
| 2001 09 26 | 704 | 0.2− | 1.2+ | 2006 09 23 | 691 | 0.4+ | 0.4+ | 2007 11 14 | 691 | (2.0− | 1.4+) |
| 2001 09 29 | 644 | 0.4− | 0.9+ | 2006 09 26 | 691 | 0.1+ | 0.0  | 2007 12 03 | 703 | 0.9+  | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 29 | 644 | 0.0  | 0.9+ | 2006 09 26 | 691 | 0.1+ | 0.2− | 2007 12 03 | 703 | 0.3− | 0.2+ |
| 2001 09 29 | 644 | 0.5− | 0.8+ | 2006 09 26 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.0  | 0.4+ |
| 2001 10 15 | 608 | 0.7− | 0.4− | 2006 09 28 | 691 | 0.1− | 0.0  | 2007 12 03 | 703 | 0.3+ | 0.5+ |
| 2001 10 15 | 608 | 0.2− | 0.2+ | 2006 09 28 | 691 | 0.2− | 0.2− | 2007 12 04 | G96 | 0.5+ | 0.3− |
| 2001 10 15 | 608 | 0.7− | 0.3− | 2006 09 28 | 691 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.4+ | 0.2− |
| 2004 03 28 | 691 | 0.1+ | 0.1+ | 2007 10 16 | G96 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.1− |
| 2004 03 28 | 691 | 0.1+ | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.1− | 2007 12 05 | 704 | 0.7+ | 0.2+ |
| 2004 03 28 | 691 | 0.2+ | 0.9+ | 2007 10 16 | G96 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.2− | 0.6+ |
| 2006 08 30 | 699 | 0.1+ | 0.9− | 2007 10 16 | G96 | 0.1+ | 0.1− | 2007 12 05 | 704 | 0.6+ | 0.3+ |
| 2006 08 30 | 699 | 0.7− | 0.2+ | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 12 05 | 704 | 1.1+ | 0.5+ |
| 2006 08 30 | 699 | 0.1− | 0.2− | 2007 10 30 | 691 | 0.2− | 0.3− | 2007 12 05 | 704 | 0.3+ | 0.1− |
| 2006 08 30 | 699 | 1.2+ | 0.2+ | 2007 10 30 | 691 | 0.2+ | 0.1− | 2007 12 15 | G96 | 0.6+ | 0.4− |
| 2006 09 20 | 691 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.6+ | 0.7− |
| 2006 09 20 | 691 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.5− |
| 2006 09 20 | 691 | 0.1− | 0.0  | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.1− | 0.4− |

**(171955)\* 2001 SH<sub>350</sub>**

Discovered 2001 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 177.54241  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17207155 | $\omega$ | 204.85400 | −0.59032466   | +0.79806038 |
| <i>a</i> | 3.2013267  | $\Omega$ | 29.41555  | −0.69329637   | −0.42462289 |
| <i>e</i> | 0.0487009  | <i>i</i> | 14.25032  | −0.41334845   | −0.42754535 |
| <i>P</i> | 5.73       | <i>H</i> | 14.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 20 | 704 | 0.9−  | 0.4+  | 2004 03 21 | 699 | 0.1− | 1.0+ | 2007 11 07 | 704 | 0.9+  | 0.1−  |
| 2001 09 20 | 704 | 0.3−  | 1.2+  | 2004 03 21 | 699 | 0.7− | 1.2− | 2007 11 07 | 704 | 1.2+  | 1.2−  |
| 2001 09 20 | 704 | 0.0   | 1.2+  | 2004 03 23 | 704 | 0.3+ | 0.1+ | 2007 11 09 | 704 | 0.8−  | 0.0   |
| 2001 09 20 | 704 | 0.5+  | 0.9−  | 2004 03 23 | 704 | 0.0  | 0.4+ | 2007 11 09 | 704 | 0.7−  | 0.2+  |
| 2001 09 20 | 704 | 0.9−  | 0.1+  | 2004 03 23 | 704 | 0.4+ | 0.4+ | 2007 11 09 | 704 | 0.2+  | 0.3+  |
| 2001 10 21 | 704 | 0.3+  | 1.3+  | 2004 03 23 | 704 | 0.0  | 0.2+ | 2007 11 09 | 704 | 0.6+  | 0.3−  |
| 2001 10 21 | 704 | 0.7−  | 0.5+  | 2004 03 23 | 704 | 0.1− | 0.0  | 2007 11 09 | 704 | 0.2−  | 0.1+  |
| 2001 10 21 | 704 | 0.3−  | 1.5+  | 2004 03 28 | 113 | 0.5− | 0.4+ | 2007 11 09 | G96 | 0.4+  | 0.4−  |
| 2001 10 21 | 704 | (0.2− | 1.5+) | 2004 03 28 | 113 | 0.1− | 0.6+ | 2007 11 09 | G96 | 0.1+  | 0.5−  |
| 2001 10 21 | 704 | 0.2+  | 1.1+  | 2004 03 28 | 113 | 0.1− | 0.6+ | 2007 11 09 | G96 | 0.2−  | 0.5−  |
| 2001 10 26 | 644 | 0.1−  | 0.8+  | 2004 04 16 | 691 | 0.3+ | 0.1− | 2007 11 09 | G96 | 0.1+  | 0.5−  |
| 2001 10 26 | 644 | 0.1−  | 1.0+  | 2004 04 16 | 691 | 0.3+ | 0.0  | 2007 11 20 | 704 | (0.3+ | 2.5−) |
| 2001 10 26 | 644 | 0.2+  | 1.1+  | 2004 04 16 | 691 | 0.3+ | 0.2− | 2007 11 20 | 704 | 0.1+  | 0.4−  |
| 2001 11 10 | 704 | 0.4+  | 0.2−  | 2006 09 20 | 703 | 0.3− | 0.3− | 2007 11 20 | 704 | 0.0   | 0.1−  |
| 2001 11 10 | 704 | 0.6+  | 0.6−  | 2006 09 20 | 703 | 0.1+ | 1.0+ | 2007 11 20 | 704 | 0.6+  | 0.1−  |
| 2001 11 10 | 704 | 0.3+  | 0.5−  | 2006 09 20 | 703 | 0.6− | 1.0+ | 2007 11 20 | 704 | 0.3+  | 0.3+  |
| 2001 11 19 | 704 | 0.9−  | 0.9−  | 2006 09 20 | 703 | 1.3− | 0.7+ | 2007 12 04 | G96 | 0.2+  | 0.7−  |
| 2001 11 19 | 704 | 1.1−  | 0.0   | 2006 09 26 | 703 | 0.4+ | 0.5+ | 2007 12 04 | G96 | 0.1−  | 0.8−  |
| 2001 11 19 | 704 | 1.0−  | 1.4−  | 2006 09 26 | 703 | 1.3− | 0.2− | 2007 12 04 | G96 | 0.3−  | 0.6−  |
| 2004 03 15 | 704 | 0.5+  | 0.5+  | 2006 09 26 | 703 | 0.1+ | 0.8+ | 2007 12 04 | G96 | 0.0   | 0.8−  |
| 2004 03 15 | 704 | 0.1+  | 1.0+  | 2006 09 26 | 703 | 0.4+ | 0.4− | 2007 12 16 | 704 | 0.9−  | 0.0   |
| 2004 03 15 | 704 | 0.7+  | 1.2+  | 2007 11 02 | 704 | 0.5− | 0.2− | 2007 12 16 | 704 | 0.4+  | 0.5+  |
| 2004 03 15 | 704 | 0.4+  | 0.9+  | 2007 11 02 | 704 | 0.4+ | 0.8+ | 2007 12 16 | 704 | 0.8−  | 0.7+  |
| 2004 03 15 | 704 | 0.7+  | 0.9+  | 2007 11 02 | 704 | 0.4+ | 0.6+ | 2007 12 16 | 704 | 0.6+  | 0.7+  |
| 2004 03 21 | 699 | 0.3−  | 0.1+  | 2007 11 07 | 704 | 0.0  | 0.6+ |            |     |       |       |
| 2004 03 21 | 699 | 0.4−  | 0.1−  | 2007 11 07 | 704 | 0.2− | 0.3− |            |     |       |       |

**(171956)\* 2001 TO<sub>10</sub>**

Discovered 2001 Oct. 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

2007 DEC. 24

M.P.O. 129217

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.3+ | 0.2+ | 2001 10 23 | 704 | 0.4+  | 0.2+  | 2007 10 12 | 691 | 0.2+ | 0.4- |
| 2001 09 19 | 704 | 0.3+ | 0.4+ | 2001 10 23 | 704 | 0.1+  | 0.1+  | 2007 10 12 | 691 | 0.0  | 0.4- |
| 2001 09 19 | 704 | 0.3+ | 0.1- | 2001 10 23 | 704 | 0.5+  | 0.6+  | 2007 10 12 | 691 | 0.1+ | 0.2- |
| 2001 09 21 | 704 | 1.1- | 0.1+ | 2001 10 23 | 704 | 0.9+  | 0.2+  | 2007 10 19 | 699 | 0.0  | 0.4- |
| 2001 09 21 | 704 | 0.6- | 0.6+ | 2001 10 23 | 704 | 1.0+  | 0.3+  | 2007 10 19 | 699 | 0.1+ | 0.3+ |
| 2001 09 21 | 704 | 0.6- | 0.0  | 2001 10 24 | 704 | 0.2+  | 0.5+  | 2007 10 19 | 699 | 0.0  | 0.9- |
| 2001 09 21 | 704 | 0.1+ | 1.0+ | 2001 10 24 | 704 | 0.8+  | 1.3+  | 2007 10 19 | 699 | 0.6+ | 0.7- |
| 2001 09 21 | 704 | 0.6- | 0.2- | 2001 10 24 | 704 | 0.4-  | 0.6+  | 2007 11 12 | 703 | 0.0  | 0.5- |
| 2001 09 21 | 704 | 0.8- | 0.3+ | 2001 10 24 | 704 | 0.7-  | 1.0+  | 2007 11 12 | 703 | 0.2- | 0.0  |
| 2001 09 21 | 704 | 1.1- | 0.3- | 2001 10 24 | 704 | 0.1+  | 0.3+  | 2007 11 12 | 703 | 0.4+ | 0.9+ |
| 2001 09 21 | 704 | 0.4- | 0.5+ | 2001 10 25 | 704 | 0.3+  | 0.9-  | 2007 11 12 | 703 | 0.4- | 0.2- |
| 2001 09 21 | 704 | 0.5- | 0.6- | 2001 10 25 | 704 | 0.7+  | 0.9+  | 2007 11 14 | 704 | 0.3+ | 0.8+ |
| 2001 09 21 | 704 | 0.4- | 0.7+ | 2001 10 25 | 704 | (0.1+ | 1.7+) | 2007 11 14 | 704 | 0.7+ | 1.1+ |
| 2001 10 13 | 704 | 1.0- | 0.4+ | 2001 10 25 | 704 | 0.5+  | 0.6+  | 2007 11 14 | 704 | 0.6+ | 0.2- |
| 2001 10 13 | 704 | 0.9- | 0.2- | 2001 11 14 | 691 | 0.0   | 0.2+  | 2007 11 14 | 704 | 0.6+ | 0.3+ |
| 2001 10 13 | 704 | 0.5- | 0.0  | 2001 11 14 | 691 | 0.0   | 0.2+  | 2007 11 14 | 704 | 0.4- | 0.7- |
| 2001 10 14 | 704 | 0.9- | 0.2- | 2001 11 14 | 691 | 0.1+  | 0.3+  | 2007 11 20 | 691 | 0.4- | 0.3- |
| 2001 10 14 | 704 | 0.1+ | 0.0  | 2001 11 20 | 704 | 0.4-  | 0.4-  | 2007 11 20 | 691 | 0.1- | 0.1- |
| 2001 10 14 | 704 | 0.0  | 0.0  | 2001 11 20 | 704 | 0.3-  | 1.1-  | 2007 11 20 | 691 | 0.1- | 0.2- |
| 2001 10 14 | 704 | 0.1- | 0.3+ | 2001 11 20 | 704 | 0.6-  | 1.5-  | 2007 11 20 | 703 | 0.6+ | 0.7+ |
| 2001 10 14 | 704 | 0.1- | 0.4+ | 2003 01 29 | 291 | 0.0   | 0.3+  | 2007 11 20 | 703 | 1.1+ | 1.5- |
| 2001 10 17 | 704 | 0.0  | 0.5- | 2003 01 29 | 291 | 0.2+  | 0.2+  | 2007 11 20 | 703 | 0.4- | 0.5- |
| 2001 10 17 | 704 | 0.1+ | 0.7- | 2003 01 29 | 291 | 0.1-  | 0.3+  | 2007 11 20 | 703 | 1.2+ | 0.5- |
| 2001 10 17 | 704 | 0.9+ | 0.7- | 2003 01 31 | 644 | 0.0   | 0.3+  | 2007 12 03 | 703 | 0.3- | 0.2- |
| 2001 10 20 | 704 | 0.2- | 0.9+ | 2003 01 31 | 644 | 0.6+  | 0.1+  | 2007 12 03 | 703 | 0.7+ | 0.0  |
| 2001 10 20 | 704 | 0.8+ | 0.1- | 2003 01 31 | 644 | 0.1+  | 0.7+  | 2007 12 03 | 703 | 0.7+ | 1.2- |
| 2001 10 20 | 704 | 0.7- | 0.7+ | 2004 07 16 | 807 | 0.1+  | 0.4+  | 2007 12 03 | 703 | 0.8+ | 0.0  |
| 2001 10 20 | 704 | 0.5+ | 0.5- | 2004 07 16 | 807 | 0.1+  | 0.1+  | 2007 12 04 | 691 | 0.3- | 0.3- |
| 2001 10 20 | 704 | 0.6+ | 0.3- | 2007 09 14 | G96 | 0.2+  | 0.3-  | 2007 12 04 | 691 | 0.1- | 0.3- |
| 2001 10 21 | 704 | 0.7- | 0.3+ | 2007 09 14 | G96 | 0.4+  | 0.2-  | 2007 12 04 | 691 | 0.1- | 0.1- |
| 2001 10 21 | 704 | 0.3- | 0.5- | 2007 09 14 | G96 | 0.6+  | 0.4-  | 2007 12 05 | 704 | 0.3+ | 1.4+ |
| 2001 10 21 | 704 | 0.3- | 0.1- | 2007 09 14 | G96 | 0.4+  | 0.3-  | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2001 10 21 | 704 | 0.4+ | 0.3+ | 2007 09 14 | G96 | 0.5+  | 0.3-  | 2007 12 05 | 704 | 0.2+ | 0.9+ |
| 2001 10 21 | 704 | 0.2- | 1.0+ | 2007 09 14 | G96 | 0.3-  | 0.5-  | 2007 12 05 | 704 | 0.6+ | 1.3+ |
| 2001 10 21 | 704 | 0.2- | 0.3+ | 2007 09 14 | G96 | 0.3+  | 0.2-  | 2007 12 06 | 691 | 0.8- | 0.6+ |
| 2001 10 21 | 704 | 0.9- | 1.0+ | 2007 09 14 | G96 | 0.1+  | 0.0   | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2001 10 21 | 704 | 0.4+ | 0.1+ | 2007 10 08 | 691 | 0.1-  | 0.5-  | 2007 12 06 | 691 | 0.0  | 0.1- |
| 2001 10 21 | 704 | 0.7- | 1.4+ | 2007 10 08 | 691 | 0.0   | 0.2-  |            |     |      |      |
| 2001 10 21 | 704 | 0.5+ | 0.6+ | 2007 10 08 | 691 | 0.3-  | 0.4-  |            |     |      |      |

(171957)\* 2001 TR<sub>11</sub>

Discovered 2001 Oct. 13 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC               |               |
|----------|------------|-------------------|---------------|
| <i>M</i> | 6.12137    | (2000.0)          |               |
| <i>n</i> | 0.17904179 | $\omega$ 39.59817 | +0.58239087   |
| <i>a</i> | 3.1176913  | $\Omega$ 14.78781 | +0.73825404   |
| <i>e</i> | 0.1118948  | <i>i</i> 1.66819  | +0.34029671   |
| <i>P</i> | 5.50       | <i>H</i> 15.8     | <i>G</i> 0.15 |
|          |            | <i>U</i>          | 0             |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 07 24 | 691 | 0.0   | 0.4+  | 2001 10 14 | 699 | 1.2+ | 0.7- | 2006 08 28 | 703 | 0.3-  | 0.1-  |
| 1995 07 24 | 691 | 0.3+  | 0.3-  | 2001 10 14 | 699 | 1.0+ | 1.2+ | 2006 08 28 | 703 | 0.5+  | 0.9-  |
| 1995 07 24 | 691 | 0.5-  | 0.2+  | 2001 10 14 | 704 | 0.6- | 0.3- | 2006 08 28 | 703 | 0.2+  | 0.4-  |
| 1996 12 05 | 691 | 0.1-  | 0.2-  | 2001 10 14 | 704 | 0.3+ | 0.0  | 2006 08 28 | 703 | (2.1+ | 1.4-) |
| 1996 12 05 | 691 | 0.1+  | 0.2-  | 2001 10 14 | 704 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.3+  | 0.0   |
| 1996 12 05 | 691 | 0.0   | 0.4-  | 2001 10 14 | 704 | 0.0  | 0.5- | 2007 09 15 | G96 | 0.1-  | 0.0   |
| 2001 09 18 | 691 | 0.0   | 0.0   | 2001 10 14 | 608 | 0.5- | 0.5+ | 2007 09 15 | G96 | 0.2-  | 0.3-  |
| 2001 09 18 | 691 | 0.1+  | 0.1-  | 2001 10 14 | 608 | 0.4- | 0.5+ | 2007 09 15 | G96 | 0.1-  | 0.2-  |
| 2001 09 18 | 691 | 0.1+  | 0.1+  | 2001 10 14 | 608 | 0.7- | 0.3+ | 2007 11 13 | 703 | 0.9+  | 1.3+  |
| 2001 09 20 | 704 | 0.5+  | 0.8-  | 2001 10 15 | 691 | 0.1- | 0.0  | 2007 11 13 | 703 | 0.6+  | 0.8-  |
| 2001 09 20 | 704 | (1.1+ | 1.9-) | 2001 10 15 | 691 | 0.2- | 0.1+ | 2007 11 13 | 703 | 0.4+  | 0.0   |
| 2001 09 20 | 704 | 0.8+  | 0.4+  | 2001 10 15 | 691 | 0.1- | 0.1- | 2007 11 13 | 703 | 1.5+  | 0.8+  |
| 2001 09 20 | 704 | 0.6+  | 0.3-  | 2001 10 21 | 704 | 0.7- | 0.3+ | 2007 11 15 | 704 | 0.0   | 1.5+  |
| 2001 09 24 | 704 | 0.3+  | 0.6-  | 2001 10 21 | 704 | 1.3- | 0.1+ | 2007 11 15 | 704 | 0.4+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 24 | 704 | 1.1+ | 1.2- | 2001 10 21 | 704 | 0.0  | 0.3+ | 2007 11 15 | 704 | 0.5+  | 1.3+  |
| 2001 09 24 | 704 | 0.3- | 0.6+ | 2001 10 21 | 704 | 0.6- | 0.3+ | 2007 11 15 | 704 | (1.5+ | 1.8+) |
| 2001 09 24 | 704 | 0.8+ | 0.6+ | 2001 10 21 | 704 | 1.2- | 0.3+ | 2007 11 17 | 691 | 0.2-  | 0.4-  |
| 2001 09 24 | 704 | 0.2+ | 0.1+ | 2003 01 09 | 704 | 0.3+ | 0.4+ | 2007 11 17 | 691 | 0.3-  | 0.2-  |
| 2001 10 07 | 644 | 0.3+ | 0.4+ | 2003 01 09 | 704 | 0.8+ | 1.0+ | 2007 11 17 | 691 | 0.3-  | 0.1-  |
| 2001 10 07 | 644 | 0.2+ | 0.3+ | 2003 01 09 | 704 | 0.4+ | 0.5+ | 2007 12 10 | 704 | 1.1+  | 0.4+  |
| 2001 10 07 | 644 | 0.2- | 0.3+ | 2003 01 09 | 704 | 0.7- | 0.3+ | 2007 12 10 | 704 | 0.8+  | 0.2-  |
| 2001 10 12 | 699 | 0.8- | 0.6+ | 2003 01 25 | 645 | 0.0  | 0.1- | 2007 12 10 | 704 | 0.2-  | 0.1-  |
| 2001 10 12 | 699 | 0.0  | 0.2+ | 2003 01 25 | 645 | 0.0  | 0.1- | 2007 12 10 | 704 | 0.6-  | 0.0   |
| 2001 10 12 | 699 | 0.5- | 0.6+ | 2003 01 26 | 608 | 0.6+ | 1.1+ | 2007 12 14 | 704 | 0.5-  | 0.3+  |
| 2001 10 12 | 699 | 0.6- | 0.3+ | 2003 01 26 | 608 | 0.5+ | 0.9+ | 2007 12 14 | 704 | 0.1+  | 0.1+  |
| 2001 10 13 | 704 | 0.2- | 0.7- | 2003 01 26 | 608 | 0.2+ | 0.7+ | 2007 12 14 | 704 | 0.4-  | 0.2+  |
| 2001 10 13 | 704 | 0.3- | 1.0- | 2003 01 29 | 645 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.3-  | 0.3-  |
| 2001 10 13 | 704 | 0.1- | 0.2+ | 2003 01 29 | 645 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.0   | 0.4-  |
| 2001 10 13 | 704 | 0.4+ | 0.4- | 2003 01 29 | 644 | 0.2+ | 1.2+ | 2007 12 15 | G96 | 0.6-  | 0.6-  |
| 2001 10 14 | 699 | 1.4+ | 0.3+ | 2003 01 29 | 644 | 0.1- | 0.9+ | 2007 12 15 | G96 | 0.4-  | 0.4-  |
| 2001 10 14 | 699 | 0.8+ | 0.1- | 2003 01 29 | 644 | 0.2+ | 1.2+ |            |     |       |       |

(171958)\* 2001 TJ<sub>31</sub>

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 356.03382  | (2000.0)           |               |
| <i>n</i> | 0.18214507 | $\omega$ 185.08038 | -0.16431135   |
| <i>a</i> | 3.0821783  | $\Omega$ 274.43962 | +0.91041716   |
| <i>e</i> | 0.0962004  | <i>i</i> 8.97272   | +0.37966087   |
| <i>P</i> | 5.41       | <i>H</i> 15.3      | <i>G</i> 0.15 |
|          |            | <i>U</i>           | 1             |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 14 | 704 | 0.8-  | 0.8-  | 2001 11 21 | 704 | (1.2+ | 2.1+) | 2006 10 21 | 644 | 0.2- | 0.2- |
| 2001 10 14 | 704 | 0.2-  | 0.7-  | 2001 11 24 | 704 | 0.0   | 0.9-  | 2006 10 21 | 644 | 0.2- | 0.1- |
| 2001 10 14 | 704 | 0.4-  | 0.7+  | 2001 11 24 | 704 | 0.1-  | 0.4-  | 2006 10 21 | 644 | 0.1+ | 0.3- |
| 2001 10 14 | 704 | 0.9+  | 0.2+  | 2001 11 24 | 704 | 0.7-  | 0.7-  | 2006 10 21 | 644 | 0.3+ | 0.1+ |
| 2001 10 15 | 704 | 0.1+  | 0.2+  | 2001 11 24 | 704 | 0.1-  | 0.1-  | 2006 10 21 | 644 | 0.0  | 0.1- |
| 2001 10 15 | 704 | 0.3-  | 0.9+  | 2001 12 18 | 446 | 0.3+  | 0.5+  | 2006 10 21 | 644 | 0.2+ | 0.3- |
| 2001 10 15 | 704 | 0.2-  | 0.9+  | 2001 12 18 | 446 | 0.6+  | 0.0   | 2006 10 22 | 644 | 0.3+ | 0.1- |
| 2001 10 15 | 704 | 0.1+  | 0.7+  | 2001 12 20 | 644 | 0.2+  | 1.1+  | 2006 10 22 | 644 | 0.1+ | 0.1- |
| 2001 10 15 | 704 | (1.1+ | 1.7+) | 2001 12 20 | 644 | 0.3+  | 1.2+  | 2006 10 22 | 644 | 0.2+ | 0.1+ |
| 2001 11 11 | 699 | 0.3+  | 0.6-  | 2001 12 20 | 644 | 0.4-  | 0.9+  | 2006 10 23 | 644 | 0.5+ | 0.1+ |
| 2001 11 11 | 699 | 0.2+  | 0.9+  | 2005 06 18 | G96 | 0.1-  | 0.2+  | 2006 10 23 | 644 | 0.4+ | 0.0  |
| 2001 11 11 | 699 | 0.1+  | 0.6+  | 2005 06 18 | G96 | 0.1-  | 0.1+  | 2006 10 23 | 644 | 0.2+ | 0.2- |
| 2001 11 11 | 699 | 0.3-  | 0.0   | 2005 06 18 | G96 | 0.6-  | 0.1+  | 2007 10 07 | G96 | 0.1- | 0.0  |
| 2001 11 12 | 704 | 0.6-  | 0.7-  | 2005 06 18 | G96 | 0.1-  | 0.2+  | 2007 10 07 | G96 | 0.0  | 0.2- |
| 2001 11 12 | 704 | 0.3-  | 1.4-  | 2005 07 08 | 691 | 0.3+  | 0.0   | 2007 10 07 | G96 | 0.3- | 0.1- |
| 2001 11 12 | 704 | 0.0   | 1.5-  | 2005 07 08 | 691 | 0.0   | 0.3+  | 2007 10 07 | G96 | 0.2+ | 0.0  |
| 2001 11 12 | 704 | 0.6-  | 1.4-  | 2005 07 08 | 691 | 0.2+  | 0.2+  | 2007 11 04 | G96 | 0.5+ | 0.0  |
| 2001 11 17 | 704 | 0.3+  | 0.2+  | 2005 07 11 | G96 | 0.6-  | 0.2-  | 2007 11 04 | G96 | 0.2- | 0.4- |
| 2001 11 17 | 704 | (1.8+ | 1.7-) | 2005 07 11 | G96 | 0.3-  | 0.2-  | 2007 11 04 | G96 | 0.1- | 0.1+ |
| 2001 11 17 | 704 | 0.1+  | 0.2-  | 2005 07 11 | G96 | 0.4-  | 0.1-  | 2007 11 04 | G96 | 0.2+ | 0.1- |
| 2001 11 17 | 704 | 0.4+  | 0.4+  | 2005 07 11 | G96 | 0.0   | 0.3-  | 2007 11 11 | G96 | 0.2- | 0.2- |
| 2001 11 18 | 704 | 0.1-  | 0.2+  | 2006 09 22 | 699 | 0.9-  | 0.7+  | 2007 11 11 | G96 | 0.1- | 0.2- |
| 2001 11 18 | 704 | 0.5+  | 0.3+  | 2006 09 22 | 699 | 0.3-  | 0.1-  | 2007 11 11 | G96 | 0.0  | 0.2- |
| 2001 11 18 | 704 | 0.1+  | 0.4+  | 2006 09 22 | 699 | 1.1-  | 0.0   | 2007 11 11 | G96 | 0.2+ | 0.2- |
| 2001 11 18 | 704 | 0.2-  | 0.5+  | 2006 09 22 | 699 | (2.4- | 1.9+) | 2007 12 02 | D35 | 0.1+ | 0.9+ |
| 2001 11 21 | 704 | 0.6+  | 0.2+  | 2006 10 12 | 644 | 0.1+  | 0.3-  | 2007 12 02 | D35 | 0.3- | 0.5+ |
| 2001 11 21 | 704 | 0.6-  | 0.0   | 2006 10 12 | 644 | 0.2+  | 0.4-  | 2007 12 02 | D35 | 0.2+ | 0.0  |
| 2001 11 21 | 704 | 0.3+  | 1.0+  | 2006 10 12 | 644 | 0.4+  | 0.3-  |            |     |      |      |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |          |            | MPC         |       |             |            |     |       |       |
|-----------------------------------------|------------|-------|----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| <i>M</i>                                | 35.77278   |       | (2000.0) |            | <b>P</b>    |       | <b>Q</b>    |            |     |       |       |
| <i>n</i>                                | 0.17796562 |       | $\omega$ | 327.68660  | +0.93713048 |       | −0.33964326 |            |     |       |       |
| <i>a</i>                                | 3.1302472  |       | $\Omega$ | 52.37816   | +0.33783438 |       | +0.82533301 |            |     |       |       |
| <i>e</i>                                | 0.1840859  |       | <i>i</i> | 5.81005    | +0.08748935 |       | +0.45107413 |            |     |       |       |
| <i>P</i>                                | 5.54       |       | <i>H</i> | 14.8       | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc             |            |       |          |            |             |       |             |            |     |       |       |
| 2001 09 21                              | 704        | 0.2+  | 0.2+     | 2001 10 21 | 704         | 0.2+  | 0.8−        | 2001 11 21 | 704 | 1.2−  | 0.7+  |
| 2001 09 21                              | 704        | 0.3+  | 0.5−     | 2001 10 21 | 704         | (0.8+ | 1.9−)       | 2001 11 21 | 704 | 0.9−  | 0.8+  |
| 2001 09 21                              | 704        | 0.5−  | 0.2−     | 2001 10 21 | 704         | 0.3+  | 0.4−        | 2001 12 17 | 704 | (2.1− | 1.5−) |
| 2001 09 21                              | 704        | 0.3+  | 0.3−     | 2001 10 21 | 704         | 0.4−  | 0.7−        | 2001 12 17 | 704 | 1.2−  | 0.4−  |
| 2001 09 21                              | 704        | 0.3−  | 0.1−     | 2001 10 21 | 704         | 0.2+  | 0.5−        | 2001 12 17 | 704 | (1.1− | 2.0−) |
| 2001 10 13                              | 704        | 0.0   | 0.7+     | 2001 10 23 | 704         | 0.6−  | 0.9+        | 2001 12 17 | 704 | 0.9−  | 1.1−  |
| 2001 10 13                              | 704        | 0.4−  | 0.2+     | 2001 10 23 | 704         | 0.7−  | 0.4+        | 2003 01 31 | 644 | 0.5+  | 0.1+  |
| 2001 10 13                              | 704        | 0.8+  | 0.1+     | 2001 10 23 | 704         | 0.3−  | 1.1+        | 2003 01 31 | 644 | 0.6+  | 0.0   |
| 2001 10 13                              | 704        | 0.9+  | 0.9+     | 2001 10 23 | 704         | 0.4−  | 0.9+        | 2003 01 31 | 644 | 0.6+  | 0.2+  |
| 2001 10 14                              | 699        | 0.9+  | 0.2+     | 2001 10 23 | 704         | 0.6−  | 0.8+        | 2005 02 16 | 809 | 0.1+  | 0.1+  |
| 2001 10 14                              | 699        | 1.2+  | 0.6−     | 2001 10 24 | 704         | 0.4+  | 0.6+        | 2005 02 16 | 809 | 0.2+  | 0.1+  |
| 2001 10 14                              | 699        | 0.0   | 0.7−     | 2001 10 24 | 704         | 0.3+  | 0.7+        | 2005 02 16 | 809 | 0.0   | 0.1+  |
| 2001 10 14                              | 699        | 0.6−  | 0.7−     | 2001 10 24 | 704         | 0.0   | 1.2+        | 2005 06 14 | G96 | 0.2−  | 0.8+  |
| 2001 10 17                              | 704        | 0.6−  | 0.4+     | 2001 10 24 | 704         | 0.7+  | 1.3+        | 2005 06 14 | G96 | 0.1−  | 0.8+  |
| 2001 10 17                              | 704        | 0.2+  | 0.2−     | 2001 10 24 | 704         | 0.3−  | 0.9+        | 2005 06 14 | G96 | 0.3−  | 0.6+  |
| 2001 10 17                              | 704        | 0.0   | 0.5+     | 2001 10 25 | 704         | 0.1−  | 0.6−        | 2005 06 14 | G96 | 0.1−  | 0.8+  |
| 2001 10 17                              | 704        | 0.2+  | 0.6+     | 2001 10 25 | 704         | 0.2+  | 0.4−        | 2006 08 17 | 644 | 0.3+  | 0.0   |
| 2001 10 17                              | 704        | 0.4+  | 0.4+     | 2001 10 25 | 704         | 0.0   | 1.1−        | 2006 08 17 | 644 | 0.4+  | 0.1+  |
| 2001 10 17                              | 644        | 0.8−  | 0.4+     | 2001 10 25 | 704         | 0.1+  | 0.1−        | 2006 08 17 | 644 | 0.4+  | 0.2+  |
| 2001 10 17                              | 644        | 0.7−  | 0.5+     | 2001 10 25 | 704         | 0.2−  | 0.2−        | 2006 08 24 | 644 | 0.8+  | 0.3−  |
| 2001 10 17                              | 644        | 0.7−  | 0.4+     | 2001 10 25 | 704         | 0.4+  | 0.3+        | 2006 08 24 | 644 | 0.3+  | 0.1−  |
| 2001 10 20                              | 704        | 0.9+  | 0.2+     | 2001 10 25 | 704         | 0.0   | 0.9−        | 2006 08 24 | 644 | 0.3+  | 0.2+  |
| 2001 10 20                              | 704        | 0.5+  | 0.0      | 2001 10 25 | 704         | 0.4+  | 0.2+        | 2006 08 28 | E12 | 0.2+  | 0.3−  |
| 2001 10 20                              | 704        | 0.4+  | 0.0      | 2001 10 25 | 704         | 0.1−  | 1.2−        | 2006 08 28 | E12 | 0.2−  | 0.5+  |
| 2001 10 20                              | 704        | 0.6+  | 0.1+     | 2001 10 25 | 704         | 0.3+  | 0.6+        | 2006 08 28 | E12 | 0.5−  | 1.2−  |
| 2001 10 20                              | 704        | 0.3+  | 0.4−     | 2001 11 09 | 704         | 0.1−  | 0.2+        | 2006 08 28 | E12 | 0.7−  | 0.6+  |
| 2001 10 21                              | 704        | 1.1+  | 1.5−     | 2001 11 09 | 704         | 0.2−  | 0.3−        | 2007 11 06 | 691 | 0.1−  | 0.2−  |
| 2001 10 21                              | 704        | 0.7+  | 0.2+     | 2001 11 09 | 704         | 0.1+  | 0.5+        | 2007 11 06 | 691 | 0.2−  | 0.4−  |
| 2001 10 21                              | 704        | 0.2−  | 0.2−     | 2001 11 09 | 704         | 0.4−  | 0.2−        | 2007 11 06 | 691 | 0.2−  | 0.1−  |
| 2001 10 21                              | 704        | 0.1−  | 0.1−     | 2001 11 09 | 704         | 0.0   | 0.1−        | 2007 11 14 | 691 | 0.1−  | 0.0   |
| 2001 10 21                              | 704        | 1.4+  | 1.5−     | 2001 11 18 | 704         | 0.3−  | 0.3−        | 2007 11 14 | 691 | 0.1−  | 0.1−  |
| 2001 10 21                              | 704        | 0.7+  | 0.3−     | 2001 11 18 | 704         | 0.6+  | 0.2−        | 2007 11 14 | 691 | 0.1−  | 0.1+  |
| 2001 10 21                              | 704        | 0.5−  | 0.1−     | 2001 11 18 | 704         | 0.6−  | 0.1−        | 2007 12 10 | 704 | 0.4+  | 0.1+  |
| 2001 10 21                              | 704        | 0.3+  | 0.7−     | 2001 11 20 | 704         | 0.7−  | 0.5+        | 2007 12 10 | 704 | 0.1+  | 0.1−  |
| 2001 10 21                              | 704        | 1.1+  | 1.3−     | 2001 11 20 | 704         | 0.4−  | 0.2+        | 2007 12 10 | 704 | 0.2+  | 0.5+  |
| 2001 10 21                              | 704        | 0.4+  | 0.6−     | 2001 11 20 | 704         | 0.6−  | 1.1+        | 2007 12 15 | 704 | 0.8+  | 0.5+  |
| 2001 10 21                              | 704        | 0.3−  | 0.1−     | 2001 11 20 | 704         | 0.8−  | 0.7+        | 2007 12 15 | 704 | 0.0   | 0.7−  |
| 2001 10 21                              | 704        | 0.3−  | 0.4−     | 2001 11 20 | 704         | 0.7−  | 0.3+        | 2007 12 15 | 704 | 0.7+  | 0.4+  |
| 2001 10 21                              | 704        | (1.2+ | 1.7−)    | 2001 11 21 | 704         | 1.1−  | 0.7+        | 2007 12 15 | 704 | 0.4+  | 0.3+  |
| 2001 10 21                              | 704        | 1.1+  | 0.3−     | 2001 11 21 | 704         | 1.1−  | 0.8+        |            |     |       |       |
| 2001 10 21                              | 704        | 0.4−  | 0.1−     | 2001 11 21 | 704         | 0.9−  | 0.8+        |            |     |       |       |

**(171960)\* 2001 TO<sub>64</sub>**

Discovered 2001 Oct. 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |                   |          |             |             |          |
|-----------------------------------------|-------------------|----------|-------------|-------------|----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC               |          |             |             |          |
| $M$ 15.25977                            | (2000.0)          |          | <b>P</b>    |             | <b>Q</b> |
| $n$ 0.18009343                          | $\omega$ 21.96414 |          | +0.43880371 | −0.89821973 |          |
| $a$ 3.1055424                           | $\Omega$ 42.01991 |          | +0.81865171 | +0.38788777 |          |
| $e$ 0.1776245                           | $i$ 2.18716       |          | +0.37048709 | +0.20674717 |          |
| $P$ 5.47                                | $H$ 15.7          | $G$ 0.15 |             | $U$         | 0        |

Residuals in seconds of arc

|                          |                            |                          |  |  |  |  |  |
|--------------------------|----------------------------|--------------------------|--|--|--|--|--|
| 1992 02 26 691 0.1+ 0.8+ | 2001 11 18 691 0.1+ 0.0    | 2006 09 30 G96 0.2+ 0.3− |  |  |  |  |  |
| 1992 02 26 691 0.5+ 0.0  | 2001 11 18 691 0.0 0.1−    | 2006 10 20 G96 0.2+ 0.5− |  |  |  |  |  |
| 2001 10 11 644 0.0 0.4+  | 2001 11 18 704 0.1− 0.6−   | 2006 10 20 G96 0.6+ 0.4− |  |  |  |  |  |
| 2001 10 11 644 0.4+ 0.1+ | 2001 11 18 704 (0.4− 1.6−) | 2006 10 20 G96 0.4+ 0.3+ |  |  |  |  |  |
| 2001 10 11 644 0.1− 0.8+ | 2001 11 18 704 0.9− 0.7−   | 2006 10 20 G96 0.3+ 0.0  |  |  |  |  |  |

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 2001 10 13 704 0.8− 0.7−   | 2001 11 18 704 0.8− 0.7−   | 2006 11 17 G96 0.1+ 0.3−   |
| 2001 10 13 704 0.3− 0.0    | 2001 11 18 704 1.3− 1.0−   | 2006 11 17 G96 0.1+ 0.4−   |
| 2001 10 13 704 0.2− 0.4−   | 2001 11 19 704 1.0− 0.5+   | 2006 11 17 G96 0.3+ 0.1−   |
| 2001 10 13 704 0.7− 0.0    | 2001 11 19 704 0.7− 0.1−   | 2006 11 17 G96 0.9+ 0.1+   |
| 2001 10 13 704 0.3− 1.2+   | 2001 11 19 704 (1.8− 0.5−) | 2007 11 02 G96 0.3− 0.5−   |
| 2001 10 15 691 0.6+ 0.2+   | 2001 11 19 704 0.8− 0.0    | 2007 11 02 G96 0.1+ 0.2−   |
| 2001 10 15 691 0.3+ 0.1−   | 2001 11 19 704 0.8− 0.2+   | 2007 11 02 G96 0.2+ 0.6−   |
| 2001 10 15 691 0.4+ 0.0    | 2001 11 21 704 0.4+ 1.2+   | 2007 11 02 G96 0.5+ 0.5−   |
| 2001 10 17 704 0.0 0.2+    | 2001 11 21 704 0.3− 0.9+   | 2007 11 11 G96 0.2+ 0.4−   |
| 2001 10 17 704 0.2+ 1.0+   | 2001 11 21 704 0.2− 0.1+   | 2007 11 11 G96 0.2− 0.1−   |
| 2001 10 17 704 0.8+ 0.2+   | 2001 11 21 704 0.1− 1.1+   | 2007 11 11 G96 0.1+ 0.2−   |
| 2001 10 17 704 (1.6+ 2.0−) | 2002 12 14 645 0.0 0.0     | 2007 11 11 G96 0.3+ 0.5−   |
| 2001 10 18 644 0.3− 0.1+   | 2002 12 14 645 0.0 0.0     | 2007 12 03 691 0.0 0.2−    |
| 2001 10 18 644 0.3− 0.1+   | 2003 01 26 608 0.0 0.3−    | 2007 12 03 691 0.1− 0.1−   |
| 2001 10 18 644 0.3− 0.0    | 2003 01 26 608 0.5+ 0.3−   | 2007 12 03 691 0.2+ 0.1−   |
| 2001 10 20 704 0.1+ 0.4+   | 2003 01 26 608 0.1+ 0.7−   | 2007 12 03 691 0.2+ 0.0    |
| 2001 10 20 704 0.2− 0.1+   | 2003 01 28 645 0.1− 0.0    | 2007 12 03 691 0.2− 0.2−   |
| 2001 10 20 704 0.8+ 0.4+   | 2003 01 28 645 0.1− 0.1−   | 2007 12 03 691 0.4− 0.1−   |
| 2001 10 25 644 0.7− 0.6−   | 2006 09 14 703 1.3− 0.5−   | 2007 12 06 704 (1.7+ 0.9+) |
| 2001 10 25 644 0.3− 0.2+   | 2006 09 14 703 0.9− 0.0    | 2007 12 06 704 (3.7+ 2.0+) |
| 2001 10 25 644 0.5− 0.2+   | 2006 09 14 703 1.1+ 0.6−   | 2007 12 06 704 (1.7+ 0.8−) |
| 2001 10 26 704 0.9+ 0.0    | 2006 09 14 703 0.9+ 0.6−   | 2007 12 06 704 (1.9+ 1.0+) |
| 2001 10 26 704 0.6+ 0.5+   | 2006 09 14 703 (0.2− 1.6−) | 2007 12 06 704 (1.9+ 1.3+) |
| 2001 10 26 704 0.1− 0.6−   | 2006 09 14 703 0.4− 0.9+   | 2007 12 10 704 0.1+ 0.2+   |
| 2001 10 26 704 0.2+ 0.1−   | 2006 09 14 703 0.6+ 1.4−   | 2007 12 10 704 0.5+ 0.1+   |
| 2001 11 09 704 (1.6− 1.6−) | 2006 09 14 703 0.7− 0.9+   | 2007 12 10 704 0.0 0.3+    |
| 2001 11 09 704 0.5− 0.3−   | 2006 09 30 703 0.5− 0.6−   | 2007 12 10 704 0.1− 1.5−   |
| 2001 11 09 704 0.1+ 0.4−   | 2006 09 30 703 0.3+ 0.2+   | 2007 12 14 704 0.0 0.4+    |
| 2001 11 17 704 1.0− 1.3+   | 2006 09 30 G96 0.1+ 0.4−   | 2007 12 14 704 0.3+ 0.2−   |
| 2001 11 17 704 0.4− 0.7+   | 2006 09 30 703 0.5+ 0.4−   | 2007 12 14 704 0.6+ 0.2+   |
| 2001 11 17 704 1.1− 0.7+   | 2006 09 30 G96 0.4+ 0.4−   | 2007 12 14 704 0.5− 0.5−   |
| 2001 11 17 704 (0.1− 1.8+) | 2006 09 30 703 0.7+ 0.4−   | 2007 12 14 704 0.0 0.0     |
| 2001 11 18 691 0.2+ 0.0    | 2006 09 30 G96 0.1− 0.2−   |                            |



2007 DEC. 24

M.P.O. 129219

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 31 | 704 | 0.4+ | 0.1- | 2007 11 07 | 704 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.1+ | 1.4+ |
| 2002 12 31 | 291 | 0.5- | 0.4+ | 2007 11 07 | 704 | 1.0+ | 0.4+ | 2007 12 15 | 704 | 0.4+ | 0.4+ |
| 2002 12 31 | 291 | 0.1+ | 0.1+ | 2007 11 13 | 703 | 0.7- | 0.3- | 2007 12 15 | 704 | 0.1+ | 0.4+ |
| 2002 12 31 | 291 | 0.2+ | 0.1+ | 2007 11 13 | 703 | 0.9- | 0.3+ | 2007 12 15 | 704 | 0.3- | 0.1+ |
| 2003 01 04 | 704 | 0.1+ | 0.1- | 2007 11 13 | 703 | 0.2- | 0.3- | 2007 12 15 | 704 | 0.1+ | 0.5+ |
| 2003 01 04 | 704 | 0.4- | 0.3- | 2007 11 13 | 703 | 0.5+ | 0.3+ | 2007 12 15 | 704 | 0.0  | 0.5+ |

**(171962)\* 2001 TP<sub>82</sub>**

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 326.55449  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17987068 | $\omega$ | 215.83254 | +0.00611166 | -0.99471331 |
| <i>a</i> | 3.1081059  | $\Omega$ | 234.03590 | +0.94443216 | +0.03943252 |
| <i>e</i> | 0.0609308  | <i>i</i> | 7.27607   | +0.32864958 | -0.09481829 |
| <i>P</i> | 5.48       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 17 | 704 | 0.8- | 0.5+ | 2006 08 22 | 644 | 0.2+ | 0.1+ | 2007 11 07 | 691 | 0.3- | 0.2- |
| 2001 09 17 | 704 | 0.4- | 0.6- | 2006 08 22 | 644 | 0.2- | 0.4- | 2007 11 12 | A13 | 0.2- | 0.3- |
| 2001 09 17 | 704 | 0.1- | 0.2- | 2006 08 22 | 644 | 0.3- | 0.0  | 2007 11 12 | A13 | 0.1- | 0.3- |
| 2001 09 26 | 704 | 0.5- | 0.3- | 2006 09 14 | 691 | 0.1+ | 0.1- | 2007 11 14 | 704 | 0.2- | 0.2+ |
| 2001 09 26 | 704 | 0.7+ | 0.4+ | 2006 09 14 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.8+ | 0.5+ |
| 2001 09 26 | 704 | 0.8+ | 0.8+ | 2006 09 14 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.2- | 0.1- |
| 2001 09 26 | 704 | 0.1- | 0.6+ | 2006 09 17 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.0  | 0.2+ |
| 2001 09 26 | 704 | 0.5- | 0.2+ | 2006 09 17 | 691 | 0.0  | 0.4+ | 2007 11 14 | 704 | 0.1- | 0.3- |
| 2001 10 14 | 704 | 0.9- | 0.0  | 2006 09 17 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2001 10 14 | 704 | 0.2- | 0.6+ | 2006 09 22 | 691 | 0.3+ | 0.2- | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2001 10 14 | 704 | 0.1- | 0.3+ | 2006 09 22 | 691 | 0.2- | 0.3+ | 2007 11 18 | 691 | 0.0  | 0.2- |
| 2001 10 14 | 704 | 0.5- | 1.0+ | 2006 09 22 | 691 | 0.1- | 0.4+ | 2007 12 05 | 704 | 0.5+ | 1.3+ |
| 2001 10 17 | 704 | 0.1+ | 1.2- | 2006 09 25 | 691 | 0.1+ | 0.3- | 2007 12 05 | 704 | 0.6+ | 1.5+ |
| 2001 10 17 | 704 | 0.1+ | 1.3- | 2006 09 25 | 691 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.2+ | 1.0+ |
| 2001 10 17 | 704 | 0.1- | 1.2- | 2006 09 25 | 691 | 0.2- | 0.1- | 2007 12 05 | 704 | 0.3- | 1.3+ |
| 2001 10 18 | 704 | 1.4- | 0.5- | 2007 10 17 | G96 | 0.2+ | 0.4+ | 2007 12 06 | G96 | 0.3- | 0.2- |
| 2001 10 18 | 704 | 1.1+ | 0.3- | 2007 10 17 | G96 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.4- |
| 2001 10 18 | 704 | 0.8+ | 0.5+ | 2007 10 17 | G96 | 0.0  | 0.6- | 2007 12 06 | G96 | 0.1+ | 0.4- |
| 2001 10 18 | 704 | 0.8+ | 0.0  | 2007 10 17 | G96 | 0.3+ | 0.3- | 2007 12 06 | G96 | 0.1+ | 0.4- |
| 2001 10 18 | 704 | 1.1+ | 0.6+ | 2007 11 06 | A13 | 0.0  | 0.7- | 2007 12 12 | A77 | 0.3- | 0.8+ |
| 2004 04 16 | 644 | 0.0  | 0.2+ | 2007 11 06 | A13 | 0.1+ | 0.5- | 2007 12 12 | A77 | 0.1- | 0.6- |
| 2004 04 16 | 644 | 0.2- | 1.2+ | 2007 11 07 | 691 | 0.2- | 0.1+ | 2007 12 12 | A77 | 2.2+ | 0.5+ |
| 2004 04 16 | 644 | 0.7+ | 0.1+ | 2007 11 07 | 691 | 0.2- | 0.0  |            |     |      |      |

**(171963)\* 2001 TR<sub>84</sub>**

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 191.31621  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18286323 | $\omega$ | 206.98925 | -0.58026810 | +0.80998924 |
| <i>a</i> | 3.0741033  | $\Omega$ | 27.78979  | -0.71049596 | -0.45251163 |
| <i>e</i> | 0.0217359  | <i>i</i> | 10.49085  | -0.39810102 | -0.37302902 |
| <i>P</i> | 5.39       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 21 | 704 | 1.2+ | 1.2+ | 2001 11 19 | 704 | 0.3+  | 0.1+  | 2006 08 30 | 699 | 0.5-  | 1.1+  |
| 2001 09 21 | 704 | 0.5+ | 0.2- | 2001 11 20 | 691 | 0.1+  | 0.1-  | 2006 08 30 | 699 | 0.3+  | 0.8+  |
| 2001 09 21 | 704 | 0.3- | 0.7+ | 2001 11 20 | 691 | 0.0   | 0.1+  | 2006 08 30 | 699 | 0.0   | 1.0+  |
| 2001 09 21 | 704 | 0.0  | 0.2+ | 2001 11 20 | 691 | 0.1-  | 0.2+  | 2006 08 30 | 699 | 0.1+  | 0.0   |
| 2001 09 21 | 704 | 0.8+ | 0.8+ | 2001 11 21 | 704 | 0.3-  | 0.4+  | 2006 09 14 | 703 | 0.3-  | 0.8+  |
| 2001 10 07 | 644 | 0.2- | 0.5+ | 2001 11 21 | 704 | 0.2-  | 0.5+  | 2006 09 14 | 703 | (0.2- | 1.7+) |
| 2001 10 07 | 644 | 0.3- | 0.4+ | 2001 11 21 | 704 | (0.2- | 1.6+) | 2006 09 14 | 703 | 0.7-  | 0.3-  |
| 2001 10 07 | 644 | 0.3- | 0.5+ | 2001 11 21 | 704 | 0.7-  | 1.3+  | 2006 09 14 | 703 | 0.4+  | 1.2-  |
| 2001 10 14 | 704 | 0.2- | 0.7+ | 2001 11 21 | 704 | 0.1-  | 1.0+  | 2006 09 30 | 703 | 1.0-  | 0.1+  |
| 2001 10 14 | 704 | 0.2- | 0.8+ | 2004 02 19 | 704 | 0.8+  | 0.2+  | 2006 09 30 | 703 | 0.3-  | 0.4-  |
| 2001 10 14 | 704 | 0.3- | 0.9+ | 2004 02 19 | 704 | 1.4+  | 0.0   | 2006 09 30 | 703 | 0.8-  | 0.6+  |
| 2001 10 14 | 704 | 0.1- | 0.9+ | 2004 02 19 | 704 | 1.0+  | 0.3-  | 2006 09 30 | 703 | 0.8-  | 1.1+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 14 | 704 | 0.1-  | 0.7+  | 2004 03 16 | 704 | 0.8-  | 1.0+  | 2006 10 19 | 703 | 0.1+  | 0.5+  |
| 2001 10 17 | I03 | 0.2-  | 0.3-  | 2004 03 16 | 704 | 0.0   | 0.6+  | 2006 10 19 | 703 | 0.0   | 0.2+  |
| 2001 10 17 | I03 | (0.4- | 1.7+) | 2004 03 16 | 704 | 0.5+  | 0.3+  | 2006 10 19 | 703 | 0.7+  | 0.3+  |
| 2001 10 17 | 704 | 0.3+  | 0.0   | 2004 03 19 | 704 | 1.4+  | 1.1+  | 2006 10 19 | 703 | 0.5-  | 0.3-  |
| 2001 10 17 | 704 | 0.3+  | 0.6+  | 2004 03 19 | 704 | (1.1+ | 1.7+) | 2006 11 09 | 644 | 0.3-  | 0.4+  |
| 2001 10 17 | 704 | 0.4-  | 0.2+  | 2004 03 19 | 704 | 1.0+  | 0.6+  | 2006 11 09 | 644 | 0.4-  | 0.7+  |
| 2001 10 17 | 704 | 0.3+  | 0.8-  | 2004 03 19 | 704 | (1.7- | 0.9+) | 2006 11 09 | 644 | 0.1-  | 0.5+  |
| 2001 10 17 | 704 | 0.6+  | 0.1-  | 2004 03 19 | 704 | 0.2+  | 0.7+  | 2006 11 25 | G96 | 0.2-  | 0.3-  |
| 2001 10 17 | I03 | 0.0   | 0.0   | 2004 03 20 | 704 | 0.4+  | 0.3+  | 2006 11 25 | G96 | 0.1+  | 0.3+  |
| 2001 10 18 | 644 | 0.1+  | 0.4-  | 2004 03 20 | 704 | 0.2-  | 0.1-  | 2006 11 25 | G96 | 0.4-  | 0.3+  |
| 2001 10 18 | 644 | 0.1-  | 0.6-  | 2004 03 20 | 704 | 0.3+  | 0.6+  | 2006 11 25 | G96 | 0.3+  | 0.1-  |
| 2001 10 18 | 644 | 0.2-  | 0.8-  | 2004 03 20 | 704 | 0.0   | 0.5+  | 2007 11 08 | 704 | 0.3+  | 0.2-  |
| 2001 10 20 | 704 | 0.2-  | 0.5-  | 2004 03 20 | 704 | 0.2-  | 0.4+  | 2007 11 08 | 704 | 0.1-  | 0.4-  |
| 2001 10 20 | 704 | 0.2-  | 0.9-  | 2004 03 24 | 699 | 0.4-  | 0.3+  | 2007 11 08 | 704 | 0.7-  | 0.5+  |
| 2001 10 20 | 704 | 0.2-  | 0.4-  | 2004 03 24 | 699 | 1.1+  | 0.7+  | 2007 11 08 | 704 | (1.1- | 1.6-) |
| 2001 10 20 | 704 | 0.2+  | 1.0-  | 2004 03 24 | 699 | 0.1+  | 0.5-  | 2007 11 17 | 704 | 0.0   | 0.4-  |
| 2001 10 22 | 704 | 0.2+  | 0.2-  | 2004 03 24 | 699 | 0.8-  | 0.4-  | 2007 11 17 | 704 | 0.9-  | 0.2+  |
| 2001 10 22 | 704 | 0.2-  | 0.1+  | 2004 03 26 | 704 | 0.4+  | 1.0+  | 2007 11 17 | 704 | 0.4-  | 0.7-  |
| 2001 10 22 | 704 | 0.7-  | 0.4+  | 2004 03 26 | 704 | 0.1+  | 0.2+  | 2007 11 17 | 704 | 0.8-  | 0.1-  |
| 2001 10 22 | 704 | 0.6+  | 0.5-  | 2004 03 26 | 704 | 0.0   | 0.6+  | 2007 11 17 | 704 | 0.4+  | 0.2+  |
| 2001 10 23 | 704 | 1.2-  | 1.1+  | 2004 03 26 | 704 | 0.2+  | 0.2+  | 2007 11 20 | 704 | 0.2-  | 0.3-  |
| 2001 10 23 | 704 | 1.1-  | 0.4+  | 2004 03 26 | 704 | 0.9+  | 0.7+  | 2007 11 20 | 704 | 0.1+  | 0.7-  |
| 2001 10 23 | 704 | 0.7-  | 0.8+  | 2004 03 30 | 703 | 0.0   | 1.4+  | 2007 11 20 | 704 | 0.3-  | 0.8-  |
| 2001 10 23 | 704 | 0.3+  | 0.4+  | 2004 03 30 | 703 | 0.5+  | 0.6+  | 2007 11 20 | 704 | 0.0   | 0.4+  |
| 2001 10 24 | 704 | 0.3-  | 0.6-  | 2004 03 30 | 703 | (1.1- | 1.8+) | 2007 12 04 | 703 | (3.3- | 0.1+) |
| 2001 10 24 | 704 | 0.4-  | 0.3+  | 2004 03 30 | 703 | (1.5+ | 2.8+) | 2007 12 04 | 703 | 1.2-  | 0.8-  |
| 2001 10 24 | 704 | 0.0   | 0.7+  | 2004 04 19 | 704 | 0.0   | 0.8+  | 2007 12 04 | 703 | 1.4+  | 0.2-  |
| 2001 10 24 | 704 | 0.2-  | 0.7+  | 2004 04 19 | 704 | 0.7+  | 0.4+  | 2007 12 04 | 703 | (4.0+ | 1.0-) |
| 2001 10 24 | 704 | 0.1-  | 0.3+  | 2004 04 19 | 704 | 1.2+  | 1.1+  | 2007 12 16 | 704 | 0.6+  | 0.0   |
| 2001 10 25 | 644 | 0.7-  | 0.1-  | 2004 04 19 | 704 | 0.0   | 0.2+  | 2007 12 16 | 704 | 1.0+  | 0.1-  |
| 2001 10 25 | 644 | 0.4-  | 0.3+  | 2004 04 19 | 704 | 0.5+  | 0.4-  | 2007 12 16 | 704 | 1.1+  | 0.2-  |
| 2001 10 25 | 644 | 0.7-  | 0.0   | 2004 04 21 | 691 | 0.1-  | 0.1+  | 2007 12 16 | 704 | 0.8+  | 0.2+  |
| 2001 11 19 | 704 | 0.3-  | 1.3-  | 2004 04 21 | 691 | 0.1-  | 0.2+  | 2007 12 16 | 704 | (2.0+ | 0.2+) |
| 2001 11 19 | 704 | 0.7-  | 0.1-  | 2004 04 21 | 691 | 0.2-  | 0.2+  |            |     |       |       |

**(171964)\* 2001 TV<sub>87</sub>**

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Research Team at Socorro.

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MPC

| <i>M</i> | 0.27572    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17840254 | $\omega$ | 179.99211 | +0.54559330 | -0.82791370 |
| <i>a</i> | 3.1251344  | $\Omega$ | 236.94258 | +0.76888742 | +0.55619569 |
| <i>e</i> | 0.0658122  | <i>i</i> | 8.91957   | +0.33337678 | +0.07214749 |
| <i>P</i> | 5.52       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 10 | 704 | 0.1-  | 0.6-  | 2006 08 17 | 644 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.1-  | 0.1-  |
| 2001 09 10 | 704 | 0.3+  | 0.7-  | 2006 08 17 | 644 | 0.1+ | 0.2+ | 2007 10 16 | G96 | 0.0   | 0.3-  |
| 2001 09 10 | 704 | 0.3+  | 0.2+  | 2006 08 27 | 699 | 0.6+ | 0.2+ | 2007 11 03 | 691 | 0.3-  | 0.1-  |
| 2001 09 20 | 699 | 0.3+  | 0.3-  | 2006 08 27 | 699 | 0.4- | 0.2+ | 2007 11 03 | 691 | 0.4-  | 0.1+  |
| 2001 09 20 | 699 | 0.7+  | 0.8-  | 2006 08 27 | 699 | 0.2+ | 0.2- | 2007 11 03 | 691 | 0.0   | 0.1-  |
| 2001 09 20 | 699 | 0.4-  | 0.9-  | 2006 08 27 | 699 | 0.2+ | 0.5- | 2007 11 07 | 691 | 0.1-  | 0.0   |
| 2001 09 20 | 699 | 0.1+  | 0.4+  | 2006 08 29 | 703 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.0   | 0.1+  |
| 2001 09 28 | 644 | 0.1-  | 0.7+  | 2006 08 29 | 703 | 0.1- | 0.1+ | 2007 11 07 | 691 | 0.1-  | 0.0   |
| 2001 09 28 | 644 | 0.1-  | 0.0   | 2006 08 29 | 703 | 1.0- | 0.4+ | 2007 11 14 | 704 | 0.3+  | 0.2-  |
| 2001 09 28 | 644 | 0.1+  | 0.1-  | 2006 08 29 | 703 | 0.0  | 0.5+ | 2007 11 14 | 704 | 0.1+  | 0.4+  |
| 2001 10 12 | 699 | 1.0-  | 0.4-  | 2006 08 30 | 699 | 0.5+ | 0.7+ | 2007 11 14 | 704 | 0.1+  | 0.3-  |
| 2001 10 12 | 699 | (1.6- | 0.2-) | 2006 08 30 | 699 | 0.0  | 0.4+ | 2007 11 14 | 704 | 1.0+  | 0.6+  |
| 2001 10 12 | 699 | 0.8-  | 0.0   | 2006 08 30 | 699 | 0.6- | 0.6+ | 2007 11 14 | 704 | 1.3+  | 0.2-  |
| 2001 10 12 | 699 | 1.3+  | 0.5+  | 2006 08 30 | 699 | 0.2+ | 0.7- | 2007 11 17 | A77 | (2.1- | 1.5+) |
| 2001 10 14 | 704 | 0.8-  | 0.1+  | 2006 09 19 | 691 | 0.3+ | 0.1+ | 2007 11 17 | A77 | (1.7- | 1.9+) |
| 2001 10 14 | 704 | 0.9-  | 0.2+  | 2006 09 19 | 691 | 0.2+ | 0.1+ | 2007 11 17 | A77 | (2.0- | 1.7+) |
| 2001 10 14 | 704 | 1.2-  | 0.2+  | 2006 09 19 | 691 | 0.2+ | 0.2+ | 2007 11 18 | A77 | 0.8+  | 0.1-  |
| 2001 10 14 | 704 | 0.9-  | 0.1-  | 2006 09 22 | 691 | 0.0  | 0.0  | 2007 11 18 | A77 | 0.7+  | 0.1-  |
| 2001 10 14 | 704 | 1.1-  | 0.4+  | 2006 09 22 | 691 | 0.1- | 0.1- | 2007 11 18 | A77 | 1.3+  | 0.5+  |
| 2001 10 17 | 704 | 1.0+  | 0.2+  | 2006 09 22 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.3-  | 0.2-  |
| 2001 10 17 | 704 | 1.1+  | 1.2+  | 2006 09 25 | 691 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.2-  | 0.0   |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 17 | 704 | 1.0+ | 0.5+ | 2006 09 25 | 691 | 0.3+ | 0.1- | 2007 11 18 | 691 | 0.1-  | 0.1-  |
| 2001 10 17 | 704 | 0.8+ | 0.3- | 2006 09 25 | 691 | 0.0  | 0.1- | 2007 12 03 | 703 | 1.0-  | 0.1+  |
| 2001 10 20 | 644 | 0.2+ | 0.4+ | 2006 09 26 | 703 | 0.4- | 0.5- | 2007 12 03 | 703 | 0.1+  | 0.1+  |
| 2001 10 20 | 644 | 0.0  | 0.5+ | 2006 09 26 | 703 | 0.3- | 0.8- | 2007 12 03 | 703 | 0.1+  | 0.3+  |
| 2001 10 20 | 644 | 0.0  | 0.5+ | 2006 09 26 | 703 | 0.7- | 1.5+ | 2007 12 03 | 703 | 0.2+  | 0.1-  |
| 2001 10 21 | 704 | 0.9- | 0.4+ | 2006 09 26 | 703 | 1.1- | 0.3+ | 2007 12 04 | 699 | 0.1-  | 0.1+  |
| 2001 10 21 | 704 | 0.4- | 1.0+ | 2006 09 27 | 691 | 0.0  | 0.1- | 2007 12 04 | 699 | 0.4-  | 0.3+  |
| 2001 10 21 | 704 | 0.7- | 0.3+ | 2006 09 27 | 691 | 0.0  | 0.1- | 2007 12 04 | 699 | 0.5+  | 0.8+  |
| 2001 10 21 | 704 | 0.2+ | 0.8+ | 2006 09 27 | 691 | 0.1+ | 0.3- | 2007 12 04 | 699 | 0.8-  | 0.4+  |
| 2003 01 05 | 704 | 0.2- | 0.4- | 2006 09 30 | 691 | 0.1- | 0.0  | 2007 12 05 | 704 | (0.6- | 1.9+) |
| 2003 01 05 | 704 | 0.2- | 0.9- | 2006 09 30 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.7-  | 0.8+  |
| 2003 01 05 | 704 | 0.6+ | 0.7- | 2006 09 30 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.0   | 1.2+  |
| 2003 01 05 | 704 | 0.2+ | 0.2- | 2007 08 24 | 691 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.1-  | 1.0+  |
| 2004 04 14 | 291 | 0.1+ | 0.6+ | 2007 08 24 | 691 | 0.1+ | 0.4- | 2007 12 05 | 704 | 0.3+  | 1.1+  |
| 2004 04 14 | 291 | 0.2+ | 0.5+ | 2007 08 24 | 691 | 0.1+ | 0.0  | 2007 12 13 | A77 | 0.4-  | 0.5-  |
| 2004 04 14 | 291 | 0.1+ | 0.6+ | 2007 10 16 | G96 | 0.3+ | 0.2- | 2007 12 13 | A77 | 0.9+  | 0.7-  |
| 2006 08 17 | 644 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.4+ | 0.1- | 2007 12 13 | A77 | 0.5+  | 0.1+  |

**(171965)\* 2001 TZ<sub>89</sub>**

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MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 103.93659  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18390840 | $\omega$ | 41.04370  | +0.64839283 | +0.75658028 |
| $a$ | 3.0624453  | $\Omega$ | 269.55463 | -0.71874048 | +0.57166330 |
| $e$ | 0.1073815  | $i$      | 4.85856   | -0.25099573 | +0.31747024 |
| $P$ | 5.36       | $H$      | 14.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 10 | 704 | 1.0-  | 0.2+  | 2001 10 24 | 704 | 1.1-  | 0.4+  | 2006 09 11 | 703 | 0.4+  | 0.1-  |
| 2001 09 10 | 704 | (0.7+ | 1.6+) | 2001 10 24 | 704 | 0.5+  | 1.5+  | 2006 09 18 | 703 | 0.1-  | 0.1-  |
| 2001 09 10 | 704 | 0.6+  | 1.1+  | 2001 11 10 | 704 | 0.6+  | 0.4-  | 2006 09 18 | 703 | 0.2+  | 0.3-  |
| 2001 09 19 | 699 | 0.5+  | 0.4-  | 2001 11 10 | 704 | 0.7+  | 0.1+  | 2006 09 18 | 703 | 0.2-  | 1.1-  |
| 2001 09 19 | 699 | 0.7-  | 0.6+  | 2001 11 10 | 704 | 0.2+  | 0.2-  | 2006 09 18 | 704 | 0.4+  | 0.1+  |
| 2001 09 19 | 699 | 1.1-  | 0.5+  | 2001 11 10 | 704 | (0.3- | 2.0-) | 2006 09 18 | 704 | 0.5+  | 0.7+  |
| 2001 09 19 | 699 | 1.2-  | 0.9-  | 2001 11 17 | 704 | 0.0   | 1.0-  | 2006 09 18 | 704 | 1.4+  | 0.2+  |
| 2001 09 23 | 704 | 0.4-  | 0.9+  | 2001 11 17 | 704 | 0.1+  | 0.8+  | 2006 09 18 | 704 | 0.0   | 0.7-  |
| 2001 09 23 | 704 | (1.6- | 0.0 ) | 2001 11 17 | 704 | 1.0+  | 0.4-  | 2006 09 18 | 704 | (1.6+ | 0.2-) |
| 2001 09 23 | 704 | 0.1-  | 0.6+  | 2001 11 17 | 704 | 0.5+  | 0.3-  | 2006 09 20 | 699 | 0.2+  | 0.0   |
| 2001 09 23 | 704 | 1.3-  | 0.1+  | 2005 05 21 | 644 | 0.1+  | 1.3+  | 2006 09 20 | 699 | 0.0   | 0.5+  |
| 2001 09 28 | 644 | 0.1-  | 0.4-  | 2005 05 21 | 644 | 0.0   | 0.7+  | 2006 09 20 | 699 | 1.0+  | 0.7+  |
| 2001 09 28 | 644 | 0.1-  | 0.0   | 2005 05 21 | 644 | 0.3+  | 0.8+  | 2006 09 20 | 699 | 0.0   | 0.1+  |
| 2001 09 28 | 644 | 0.2-  | 0.1-  | 2006 07 26 | A50 | 0.6-  | 1.2-  | 2006 09 20 | A13 | 0.1-  | 0.9-  |
| 2001 10 07 | 644 | 0.3-  | 0.3-  | 2006 07 26 | A50 | 0.4-  | 0.3-  | 2006 09 20 | A13 | 0.0   | 0.7-  |
| 2001 10 07 | 644 | 0.0   | 0.1+  | 2006 07 27 | A50 | 0.5-  | 0.7-  | 2006 09 30 | 699 | 0.5-  | 0.7+  |
| 2001 10 07 | 644 | 0.2+  | 0.1+  | 2006 07 27 | A50 | 0.4-  | 1.1-  | 2006 09 30 | 699 | 0.1+  | 0.8-  |
| 2001 10 12 | 699 | 0.5+  | 0.3-  | 2006 08 19 | 644 | 0.3+  | 0.0   | 2006 09 30 | 699 | 0.6-  | 0.7-  |
| 2001 10 12 | 699 | 0.4-  | 0.5+  | 2006 08 19 | 644 | 0.1-  | 0.2-  | 2006 09 30 | 699 | 0.2-  | 1.1-  |
| 2001 10 12 | 699 | (1.8+ | 0.1+) | 2006 08 19 | 644 | 0.2+  | 0.2-  | 2007 11 09 | 691 | 0.1-  | 0.3-  |
| 2001 10 12 | 699 | 0.1+  | 0.6+  | 2006 08 29 | 703 | 0.8+  | 0.0   | 2007 11 09 | 691 | 0.0   | 0.2-  |
| 2001 10 14 | 704 | 0.1+  | 0.2+  | 2006 08 29 | 703 | 0.5-  | 0.1-  | 2007 11 09 | 691 | 0.1+  | 0.2-  |
| 2001 10 14 | 704 | 0.5-  | 0.0   | 2006 08 29 | 703 | 0.1+  | 0.2-  | 2007 11 15 | 704 | 0.4-  | 0.9+  |
| 2001 10 14 | 704 | 0.3-  | 0.6+  | 2006 08 29 | 703 | 0.1-  | 0.2-  | 2007 11 15 | 704 | 1.1-  | 0.4+  |
| 2001 10 14 | 704 | 0.2+  | 0.5+  | 2006 08 30 | 699 | 0.2-  | 0.3-  | 2007 11 15 | 704 | 0.7+  | 0.1-  |
| 2001 10 14 | 704 | 0.9-  | 0.1+  | 2006 08 30 | 704 | 0.7+  | 0.4+  | 2007 11 15 | 704 | 0.1-  | 0.8+  |
| 2001 10 17 | 704 | 0.1-  | 0.2+  | 2006 08 30 | 699 | 0.3+  | 0.1-  | 2007 11 17 | 691 | 0.0   | 0.3-  |
| 2001 10 17 | 704 | 0.2+  | 1.1-  | 2006 08 30 | 704 | 0.2+  | 0.6-  | 2007 11 17 | 691 | 0.2-  | 0.3-  |
| 2001 10 17 | 704 | 0.0   | 0.2-  | 2006 08 30 | 704 | 0.2+  | 0.1+  | 2007 11 17 | 691 | 0.0   | 0.2-  |
| 2001 10 17 | 704 | 0.2+  | 0.2-  | 2006 08 30 | 699 | 0.5+  | 0.5+  | 2007 12 14 | 704 | 0.8+  | 0.3+  |
| 2001 10 20 | 644 | 0.0   | 0.4+  | 2006 08 30 | 704 | 0.4-  | 0.2+  | 2007 12 14 | 704 | 0.1+  | 0.9+  |
| 2001 10 20 | 644 | 0.2-  | 0.4+  | 2006 08 30 | 704 | 0.5+  | 0.6+  | 2007 12 14 | 704 | 0.4+  | 0.7+  |
| 2001 10 20 | 644 | 0.0   | 0.4+  | 2006 08 30 | 699 | 0.4+  | 0.4-  | 2007 12 14 | 704 | 0.5+  | 0.1-  |
| 2001 10 21 | 704 | 0.8-  | 1.1+  | 2006 09 01 | 704 | 0.2+  | 1.0+  | 2007 12 14 | 704 | 0.5+  | 0.3+  |
| 2001 10 21 | 704 | 0.7+  | 0.7+  | 2006 09 01 | 704 | 0.2+  | 0.9+  | 2007 12 15 | G96 | 0.0   | 0.1-  |
| 2001 10 21 | 704 | 0.9+  | 0.6+  | 2006 09 01 | 704 | 0.6-  | 1.3+  | 2007 12 15 | G96 | 0.2-  | 0.1+  |
| 2001 10 24 | 704 | 0.4+  | 0.3-  | 2006 09 11 | 703 | 1.1-  | 0.1-  | 2007 12 15 | G96 | 0.1-  | 0.0   |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 24 | 704 | 0.4- | 0.7+ | 2006 09 11 | 703 | 0.0  | 0.2- | 2007 12 15 | G96 | 0.2- | 0.2- |
| 2001 10 24 | 704 | 0.7+ | 0.1+ | 2006 09 11 | 703 | 0.3- | 0.6- |            |     |      |      |

**(171966)\* 2001 TH<sub>93</sub>**

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Research Team at Socorro.

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MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 19.69482   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18471817 | $\omega$ | 173.73314 | +0.51115799 | -0.84969744 |
| $a$ | 3.0534887  | $\Omega$ | 245.45858 | +0.78226072 | +0.52227964 |
| $e$ | 0.1309567  | $i$      | 8.17501   | +0.35606975 | +0.07237569 |
| $P$ | 5.34       | $H$      | 15.0      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1990 09 13 | 691 | 0.7-  | 0.0   | 2001 10 21 | 704 | 0.6-  | 0.2+  | 2003 02 03 | 699 | 0.1-  | 0.2+  |
| 1990 09 13 | 691 | 0.4-  | 0.0   | 2001 10 21 | 704 | 0.3-  | 0.1-  | 2003 02 03 | 699 | 1.2+  | 0.5+  |
| 1990 09 13 | 691 | 0.5-  | 0.3-  | 2001 10 21 | 704 | 0.5-  | 0.2+  | 2006 09 14 | 703 | 0.1+  | 0.9-  |
| 1996 12 03 | 691 | 0.7+  | 0.1+  | 2001 10 21 | 704 | 0.1+  | 0.6+  | 2006 09 14 | 703 | 0.1+  | 0.2+  |
| 1996 12 03 | 691 | 0.7+  | 0.1+  | 2001 10 23 | 704 | 0.6-  | 0.8+  | 2006 09 14 | 703 | 1.3+  | 0.4+  |
| 1996 12 03 | 691 | 0.7+  | 0.2+  | 2001 10 23 | 704 | 0.3+  | 0.1-  | 2006 09 14 | 703 | 0.3-  | 0.1-  |
| 2001 09 19 | 699 | 1.0-  | 0.9+  | 2001 10 23 | 704 | 0.3-  | 0.1+  | 2006 09 15 | 704 | 0.5+  | 0.0   |
| 2001 09 19 | 699 | 0.4-  | 0.1-  | 2001 10 23 | 704 | 0.4-  | 0.9-  | 2006 09 15 | 704 | 1.0+  | 0.6-  |
| 2001 09 19 | 699 | 1.1+  | 0.6-  | 2001 10 25 | 704 | 0.2-  | 0.2-  | 2006 09 15 | 704 | 0.4+  | 0.4+  |
| 2001 09 19 | 699 | 0.4-  | 0.2+  | 2001 10 25 | 704 | 0.1-  | 0.2+  | 2006 09 15 | 704 | 0.7+  | 0.0   |
| 2001 09 20 | 704 | 0.7+  | 0.1+  | 2001 10 25 | 704 | 0.1+  | 0.5+  | 2006 09 20 | 699 | 0.8+  | 0.7-  |
| 2001 09 20 | 704 | 0.5-  | 0.4+  | 2001 10 25 | 704 | 0.5+  | 0.7+  | 2006 09 20 | 699 | 0.4-  | 0.9+  |
| 2001 09 20 | 704 | 0.2+  | 0.2+  | 2001 10 25 | 704 | 0.4+  | 0.5+  | 2006 09 20 | 699 | 0.3-  | 1.5+  |
| 2001 09 20 | 704 | 0.4-  | 0.2-  | 2001 11 10 | 704 | 0.6+  | 0.1-  | 2006 09 20 | 699 | 0.2+  | 0.4-  |
| 2001 09 22 | 704 | (1.7- | 3.8-) | 2001 11 10 | 704 | 0.3-  | 0.0   | 2006 09 22 | 703 | 0.4-  | 0.3-  |
| 2001 09 22 | 704 | 0.7-  | 0.3-  | 2001 11 10 | 704 | 0.5-  | 0.4-  | 2006 09 22 | 703 | 0.1-  | 0.0   |
| 2001 09 22 | 704 | (0.6- | 1.6+) | 2001 11 11 | 699 | 0.5-  | 0.2+  | 2006 09 22 | 703 | 0.3-  | 0.8+  |
| 2001 09 22 | 704 | 0.6+  | 0.7-  | 2001 11 11 | 699 | 0.6-  | 0.7-  | 2006 09 22 | 703 | 0.6+  | 0.7-  |
| 2001 09 22 | 704 | 0.2+  | 0.7-  | 2001 11 11 | 699 | 0.8-  | 0.8-  | 2006 09 29 | 699 | 0.5-  | 0.1+  |
| 2001 10 12 | 699 | 0.2+  | 0.3+  | 2001 11 11 | 699 | 0.2-  | 0.1-  | 2006 09 29 | 699 | 0.5-  | 0.8-  |
| 2001 10 12 | 699 | 0.4-  | 0.2-  | 2001 11 17 | 704 | 0.8+  | 0.8+  | 2006 09 29 | 699 | 0.2-  | 0.0   |
| 2001 10 12 | 699 | 1.4-  | 0.1-  | 2001 11 17 | 704 | 0.1+  | 0.3+  | 2006 09 29 | 699 | 0.2-  | 0.2+  |
| 2001 10 12 | 699 | 0.3+  | 0.5+  | 2001 11 17 | 704 | 0.4-  | 0.1-  | 2006 10 01 | 703 | (0.7+ | 1.8+) |
| 2001 10 14 | 704 | 0.2-  | 0.2-  | 2001 11 17 | 704 | 0.2-  | 0.7+  | 2006 10 01 | 703 | (1.1+ | 2.1+) |
| 2001 10 14 | 704 | 0.0   | 0.4-  | 2001 11 17 | 644 | 0.4-  | 0.6+  | 2006 10 01 | 703 | 0.9+  | 1.0+  |
| 2001 10 14 | 704 | 0.1+  | 0.0   | 2001 11 17 | 644 | 0.1-  | 0.3+  | 2006 10 01 | 703 | 1.2+  | 0.1-  |
| 2001 10 14 | 704 | 0.1+  | 0.2+  | 2001 11 17 | 644 | 0.7-  | 0.4+  | 2006 10 11 | 644 | 0.8+  | 0.4-  |
| 2001 10 14 | 704 | 0.2+  | 0.1+  | 2003 01 26 | 699 | 0.3+  | 0.2+  | 2006 10 11 | 644 | 0.5+  | 0.0   |
| 2001 10 17 | 704 | 0.1+  | 0.1-  | 2003 01 26 | 699 | 0.1-  | 0.2+  | 2006 10 11 | 644 | 0.1+  | 0.1+  |
| 2001 10 17 | 704 | 0.1-  | 0.4-  | 2003 01 26 | 699 | 0.2+  | 0.7-  | 2007 12 04 | 704 | 0.5-  | 0.3-  |
| 2001 10 17 | 704 | 0.9+  | 0.2+  | 2003 01 26 | 699 | 0.6-  | 0.6+  | 2007 12 04 | 704 | 0.4-  | 0.1-  |
| 2001 10 17 | 704 | 0.3+  | 0.8-  | 2003 02 02 | 608 | 1.0+  | 1.0+  | 2007 12 04 | 704 | 1.1+  | 1.2-  |
| 2001 10 20 | 644 | 0.1+  | 0.1+  | 2003 02 02 | 608 | 0.5+  | 0.8+  | 2007 12 04 | 704 | 0.5-  | 0.7-  |
| 2001 10 20 | 644 | 0.2+  | 0.1-  | 2003 02 02 | 608 | 1.1+  | 0.9+  | 2007 12 06 | 691 | 0.5-  | 0.1-  |
| 2001 10 20 | 644 | 0.1+  | 0.1+  | 2003 02 03 | 699 | (0.3- | 1.7+) | 2007 12 06 | 691 | 0.6-  | 0.2-  |
| 2001 10 21 | 704 | 0.3+  | 0.2+  | 2003 02 03 | 699 | 0.6+  | 0.2+  | 2007 12 06 | 691 | 1.2-  | 0.2-  |

2007 DEC. 24

M.P.O. 129221

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 25 | 333 | 0.1+  | 0.8-  | 2001 11 09 | 704 | 0.1-  | 0.1+  | 2001 12 19 | 704 | 0.4-  | 0.4+  |
| 2001 10 14 | 704 | 0.2+  | 0.0   | 2001 11 17 | 704 | 0.5-  | 0.9+  | 2003 01 24 | 644 | 0.3+  | 0.4+  |
| 2001 10 14 | 704 | 0.1+  | 0.2+  | 2001 11 17 | 704 | 0.4-  | 0.4+  | 2003 01 24 | 644 | 0.3+  | 0.1+  |
| 2001 10 14 | 704 | 0.3+  | 0.4+  | 2001 11 17 | 704 | 0.2-  | 0.1+  | 2003 01 24 | 644 | 0.4+  | 0.4+  |
| 2001 10 14 | 704 | 0.3-  | 0.2-  | 2001 11 19 | 608 | 0.2+  | 0.3+  | 2003 01 29 | 644 | 0.4+  | 0.7+  |
| 2001 10 17 | 704 | 0.7+  | 1.1-  | 2001 11 19 | 608 | 0.5+  | 0.4-  | 2003 01 29 | 644 | 0.2+  | 0.6+  |
| 2001 10 17 | 704 | 0.6-  | 1.1+  | 2001 11 19 | 608 | 0.3+  | 0.2-  | 2003 01 29 | 644 | 0.4+  | 0.5+  |
| 2001 10 17 | 704 | 0.5-  | 0.2-  | 2001 11 20 | 704 | 0.1-  | 0.2+  | 2003 03 07 | 645 | 0.1-  | 0.1-  |
| 2001 10 17 | 704 | 0.0   | 1.1+  | 2001 11 20 | 704 | 0.0   | 0.7+  | 2003 03 07 | 645 | 0.1-  | 0.1-  |
| 2001 10 18 | 644 | 0.5-  | 0.4+  | 2001 11 20 | 704 | 0.1-  | 0.5+  | 2003 04 26 | 645 | 0.1-  | 0.1-  |
| 2001 10 18 | 644 | 0.3-  | 0.8+  | 2001 11 20 | 704 | 0.3-  | 0.1+  | 2003 04 26 | 645 | 0.1-  | 0.2-  |
| 2001 10 18 | 644 | 0.4-  | 0.6+  | 2001 11 20 | 704 | 0.3-  | 0.6+  | 2004 03 15 | 691 | 0.4+  | 0.4+  |
| 2001 10 20 | 704 | (1.9- | 0.9+) | 2001 11 21 | 704 | 0.2-  | 0.2-  | 2004 03 15 | 691 | 0.5+  | 0.1+  |
| 2001 10 20 | 704 | 0.8-  | 0.8+  | 2001 11 21 | 704 | 0.1-  | 0.0   | 2004 03 15 | 691 | 0.4+  | 0.1-  |
| 2001 10 20 | 704 | 1.1-  | 1.2+  | 2001 11 21 | 704 | 0.2+  | 0.0   | 2004 04 14 | 691 | 0.4+  | 0.6+  |
| 2001 10 22 | 704 | 0.3-  | 0.5+  | 2001 11 21 | 704 | 0.1-  | 0.2-  | 2004 04 14 | 691 | 0.3+  | 0.6+  |
| 2001 10 22 | 704 | 0.4-  | 0.8+  | 2001 11 21 | 704 | 0.3-  | 0.2-  | 2004 04 14 | 691 | 0.2+  | 0.6+  |
| 2001 10 22 | 704 | 0.6-  | 0.3+  | 2001 12 11 | 704 | 0.3-  | 0.5+  | 2004 04 23 | 691 | 0.1+  | 0.6+  |
| 2001 10 22 | 704 | 0.1-  | 0.6+  | 2001 12 11 | 704 | 0.3-  | 0.3+  | 2004 04 23 | 691 | 0.2+  | 0.6+  |
| 2001 10 22 | 704 | 0.0   | 0.5+  | 2001 12 11 | 704 | 0.5-  | 0.8+  | 2004 04 23 | 691 | 0.4+  | 0.5+  |
| 2001 10 23 | 704 | 0.4+  | 0.6-  | 2001 12 11 | 704 | (1.5- | 0.8+) | 2006 09 26 | 703 | 1.0-  | 0.1-  |
| 2001 10 23 | 704 | 1.3+  | 1.3+  | 2001 12 11 | 704 | 0.7-  | 0.8+  | 2006 09 26 | 703 | 0.8-  | 0.2+  |
| 2001 10 23 | 704 | 0.4-  | 0.4+  | 2001 12 15 | 704 | 1.1+  | 0.2+  | 2006 09 26 | 703 | 0.5-  | 0.3-  |
| 2001 10 23 | 704 | 0.1+  | 1.3-  | 2001 12 15 | 704 | 1.0+  | 0.6+  | 2006 09 26 | 703 | 0.6-  | 0.1+  |
| 2001 10 23 | 704 | 0.2+  | 0.2-  | 2001 12 15 | 704 | 0.5-  | 0.8+  | 2006 10 02 | 703 | (1.2- | 2.1+) |
| 2001 10 23 | 704 | 0.1-  | 0.2+  | 2001 12 15 | 704 | 0.4-  | 0.5-  | 2006 10 02 | 703 | 0.2+  | 0.3-  |
| 2001 10 23 | 704 | 0.3+  | 1.2+  | 2001 12 18 | 704 | 0.2-  | 0.2-  | 2006 10 02 | 703 | (1.8+ | 0.2-) |
| 2001 10 23 | 704 | 0.1+  | 0.5+  | 2001 12 18 | 704 | 0.4-  | 0.7-  | 2006 10 02 | 703 | 0.9+  | 0.2-  |
| 2001 10 23 | 704 | 0.9-  | 0.5+  | 2001 12 18 | 704 | 0.1-  | 0.3+  | 2007 12 02 | 704 | 0.1+  | 0.3-  |
| 2001 10 24 | 704 | 0.1-  | 0.2-  | 2001 12 18 | 704 | 0.1+  | 0.3-  | 2007 12 02 | 704 | 0.2+  | 0.2+  |
| 2001 10 24 | 704 | 0.7-  | 0.1+  | 2001 12 18 | 704 | 0.9-  | 0.5-  | 2007 12 02 | 704 | 0.5+  | 0.8-  |
| 2001 10 24 | 704 | 0.1-  | 0.6+  | 2001 12 19 | 704 | 0.4+  | 0.5-  | 2007 12 02 | 704 | 0.6-  | 0.1-  |
| 2001 10 24 | 704 | 0.8+  | 0.5+  | 2001 12 19 | 704 | 0.1+  | 0.1+  | 2007 12 16 | 704 | 0.9+  | 0.7+  |
| 2001 10 24 | 704 | 0.3+  | 0.5+  | 2001 12 19 | 704 | 0.3-  | 0.2-  | 2007 12 16 | 704 | 0.5+  | 0.0   |
| 2001 11 09 | 704 | (1.5+ | 0.6-) | 2001 12 19 | 644 | 0.1-  | 0.1+  | 2007 12 16 | 704 | 0.5+  | 0.2-  |

(171968)\* 2001 TF<sub>108</sub>

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC      |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 351.71852  | (2000.0) |           |
| <i>n</i>                    | 0.18189029 | $\omega$ | 117.77587 |
| <i>a</i>                    | 3.0850559  | $\Omega$ | 307.88921 |
| <i>e</i>                    | 0.0351309  | <i>i</i> | 5.01996   |
| <i>P</i>                    | 5.42       | <i>H</i> | 14.9      |
| Residuals in seconds of arc |            | <i>G</i> | 0.15      |
|                             |            | <i>U</i> | 0         |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 10 | 704 | 0.2-  | 0.0   | 2006 08 21 | 644 | 0.1+  | 0.0   | 2007 11 12 | G96 | 0.3+  | 0.3-  |
| 2001 09 10 | 704 | 0.5+  | 1.0+  | 2006 08 21 | 644 | 0.0   | 0.2-  | 2007 11 18 | 704 | 0.7+  | 0.4-  |
| 2001 09 10 | 704 | 0.9+  | 0.2+  | 2006 08 28 | 703 | 1.4+  | 0.3-  | 2007 11 18 | 704 | 0.5+  | 0.4-  |
| 2001 09 20 | 704 | (0.8- | 1.7+) | 2006 08 28 | 703 | (0.2+ | 1.5+) | 2007 11 18 | 704 | 0.6-  | 1.3+  |
| 2001 09 20 | 704 | 1.4-  | 1.0+  | 2006 08 28 | 703 | 0.1-  | 1.5+  | 2007 11 18 | 704 | 0.4+  | 0.5-  |
| 2001 09 20 | 704 | 0.6-  | 0.7+  | 2006 08 28 | 703 | 0.8+  | 0.8+  | 2007 11 18 | 704 | 0.1+  | 1.0-  |
| 2001 09 23 | 704 | 0.0   | 0.9-  | 2006 08 30 | 704 | 0.2+  | 0.2-  | 2007 11 19 | 691 | 0.3-  | 0.3-  |
| 2001 09 23 | 704 | 1.3-  | 1.2+  | 2006 08 30 | 704 | 0.2-  | 0.5-  | 2007 11 19 | 691 | 0.1-  | 0.1-  |
| 2001 09 23 | 704 | 1.0-  | 0.6-  | 2006 08 30 | 704 | 0.0   | 0.1+  | 2007 11 19 | 691 | 0.0   | 0.0   |
| 2001 09 23 | 704 | 0.1-  | 0.1+  | 2006 08 30 | 704 | 0.2-  | 0.7-  | 2007 11 20 | 704 | 0.2-  | 0.3-  |
| 2001 09 26 | 704 | (1.3- | 2.1+) | 2006 09 14 | 703 | 1.2+  | 0.6-  | 2007 11 20 | 704 | 0.2-  | 0.2-  |
| 2001 09 26 | 704 | (0.3+ | 1.6+) | 2006 09 14 | 703 | 0.0   | 0.6-  | 2007 11 20 | 704 | 0.1+  | 1.1-  |
| 2001 09 26 | 704 | 0.8-  | 0.6+  | 2006 09 14 | 703 | 0.2+  | 0.5+  | 2007 11 20 | 704 | 0.1-  | 0.6-  |
| 2001 09 26 | 704 | 1.1-  | 1.0+  | 2006 09 14 | 703 | 1.1-  | 0.5-  | 2007 11 20 | 704 | 0.2+  | 1.3-  |
| 2001 09 26 | 704 | (1.5- | 1.1+) | 2006 09 28 | G96 | 0.2-  | 0.6-  | 2007 11 20 | 691 | 0.3-  | 0.2+  |
| 2001 10 14 | 704 | (1.0+ | 1.5+) | 2006 09 28 | G96 | 0.0   | 0.4-  | 2007 11 20 | 691 | 0.1-  | 0.0   |
| 2001 10 14 | 704 | 0.5-  | 0.5+  | 2006 09 28 | G96 | 0.3-  | 0.2-  | 2007 11 20 | 691 | 0.0   | 0.0   |
| 2001 10 14 | 704 | 0.1+  | 0.3-  | 2006 09 28 | G96 | 0.2-  | 0.3-  | 2007 12 04 | 699 | 0.9-  | 0.5+  |
| 2001 10 14 | 704 | 0.3+  | 0.6-  | 2006 09 30 | 291 | 0.1-  | 0.3+  | 2007 12 04 | 699 | 0.5+  | 0.5-  |
| 2001 10 14 | 704 | 0.1-  | 1.5+  | 2006 09 30 | 291 | 0.1-  | 0.4+  | 2007 12 04 | 699 | (1.8+ | 0.3+) |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 18 | 704 | 0.3- | 0.5+ | 2006 09 30 | 291 | 0.0  | 0.4+ | 2007 12 04 | 699 | 0.2-  | 0.7+  |
| 2001 10 18 | 704 | 0.6+ | 0.4- | 2007 11 02 | 691 | 0.2- | 0.1- | 2007 12 12 | 704 | (2.1+ | 0.5+) |
| 2001 10 18 | 704 | 0.0  | 0.4+ | 2007 11 02 | 691 | 0.1- | 0.0  | 2007 12 12 | 704 | 0.1-  | 0.6+  |
| 2001 10 18 | 704 | 0.5- | 0.6+ | 2007 11 02 | 691 | 0.1- | 0.1- | 2007 12 12 | 704 | 0.2-  | 0.9+  |
| 2001 10 18 | 704 | 0.6+ | 1.1+ | 2007 11 06 | D29 | 0.3+ | 0.1+ | 2007 12 12 | 704 | 0.0   | 0.0   |
| 2003 01 08 | 704 | 0.8+ | 0.7+ | 2007 11 06 | D29 | 0.0  | 0.2- | 2007 12 12 | 704 | 0.1+  | 0.8+  |
| 2003 01 08 | 704 | 0.3+ | 1.0+ | 2007 11 06 | D29 | 0.4+ | 0.4- | 2007 12 13 | 704 | 0.2-  | 1.0+  |
| 2003 01 08 | 704 | 0.3+ | 0.6- | 2007 11 06 | D29 | 0.5+ | 0.3+ | 2007 12 13 | 704 | 0.2-  | 0.5-  |
| 2003 01 08 | 704 | 0.6+ | 0.5+ | 2007 11 07 | 704 | 0.1+ | 0.6- | 2007 12 13 | 704 | 0.2-  | 0.4+  |
| 2004 03 28 | 691 | 0.1+ | 0.6+ | 2007 11 07 | 704 | 0.3+ | 0.7- | 2007 12 13 | 704 | 0.0   | 0.2+  |
| 2004 03 28 | 691 | 0.4+ | 0.6+ | 2007 11 07 | 704 | 0.5+ | 0.2+ | 2007 12 13 | 704 | 0.0   | 0.9+  |
| 2004 03 28 | 691 | 0.2+ | 0.7+ | 2007 11 07 | 704 | 0.5+ | 0.5- | 2007 12 15 | 704 | 0.3+  | 0.2-  |
| 2006 07 25 | 644 | 0.0  | 0.2+ | 2007 11 07 | 704 | 0.6+ | 0.3+ | 2007 12 15 | 704 | 0.2+  | 0.2+  |
| 2006 07 25 | 644 | 0.4- | 0.1- | 2007 11 12 | G96 | 0.1+ | 0.1- | 2007 12 15 | 704 | 0.2+  | 0.4-  |
| 2006 07 25 | 644 | 0.3+ | 0.4+ | 2007 11 12 | G96 | 0.1- | 0.2- | 2007 12 15 | 704 | 0.7-  | 0.3+  |
| 2006 08 21 | 644 | 0.0  | 0.3- | 2007 11 12 | G96 | 0.1+ | 0.3- | 2007 12 15 | 704 | 0.6+  | 0.1+  |

(171969)\* 2001 TH<sub>109</sub> = 2006 QN<sub>136</sub>

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 108043)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                             |            | MPC      |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 113.73573  | (2000.0) |           |
| <i>n</i>                    | 0.17903417 | $\omega$ | 64.55447  |
| <i>a</i>                    | 3.1177797  | $\Omega$ | 241.33954 |
| <i>e</i>                    | 0.0485077  | <i>i</i> | 10.65398  |
| <i>P</i>                    | 5.51       | <i>H</i> | 14.5      |
| Residuals in seconds of arc |            | <i>G</i> | 0.15      |
|                             |            | <i>U</i> | 1         |

| Residuals in seconds of arc |     |       |       |            |     |       |       |            |     |       |       |
|-----------------------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 13                  | 699 | 0.4+  | 0.3-  | 2004 03 17 | 704 | 0.6+  | 0.0   | 2006 10 01 | 703 | 0.5-  | 1.2+  |
| 2001 10 13                  | 699 | (2.3- | 0.6-) | 2004 03 17 | 704 | 0.1-  | 0.2-  | 2006 10 01 | 703 | 0.1+  | 0.9+  |
| 2001 10 13                  | 699 | 0.8+  | 0.4-  | 2004 03 17 | 704 | 0.2+  | 0.7-  | 2006 10 11 | 644 | 0.1-  | 0.1-  |
| 2001 10 13                  | 699 | 1.0+  | 0.5+  | 2004 03 17 | 704 | (2.5+ | 0.6+) | 2006 10 11 | 644 | 0.3+  | 0.3-  |
| 2001 10 14                  | 704 | 1.0-  | 0.3+  | 2005 01 26 | 809 | 0.4-  | 0.2+  | 2006 10 11 | 644 | 0.4+  | 0.1+  |
| 2001 10 14                  | 704 | 0.3+  | 0.1-  | 2005 01 26 | 809 | 0.2-  | 0.2+  | 2006 10 11 | 644 | 0.2+  | 0.1+  |
| 2001 10 14                  | 704 | 0.4+  | 0.1+  | 2005 01 26 | 809 | 0.3-  | 0.2+  | 2006 10 11 | 644 | 0.6+  | 0.0   |
| 2001 10 14                  | 704 | 0.6-  | 1.2+  | 2006 08 29 | 699 | 0.3+  | 0.2-  | 2006 10 11 | 644 | 0.1+  | 0.2-  |
| 2001 10 18                  | 704 | 0.2-  | 1.0-  | 2006 08 29 | 699 | 0.4+  | 0.1-  | 2006 10 17 | 703 | 0.1-  | 0.7+  |
| 2001 10 18                  | 704 | 0.4+  | 1.0-  | 2006 08 29 | 699 | 0.4-  | 0.2+  | 2006 10 17 | 703 | 0.7+  | 0.0   |
| 2001 10 18                  | 704 | 0.2-  | 0.0   | 2006 08 29 | 699 | 0.3+  | 0.8+  | 2006 10 17 | 703 | (1.6- | 1.0+) |
| 2001 10 21                  | 704 | 0.5-  | 0.5+  | 2006 08 31 | 704 | 0.7-  | 0.3+  | 2006 10 17 | 703 | 1.3-  | 0.2+  |
| 2001 10 21                  | 704 | 0.6-  | 0.9-  | 2006 08 31 | 704 | 0.3-  | 0.2+  | 2007 11 05 | 704 | 0.3+  | 0.0   |
| 2001 10 21                  | 704 | 1.3-  | 0.6+  | 2006 08 31 | 704 | 0.2-  | 0.0   | 2007 11 05 | 704 | 0.3+  | 0.1-  |
| 2001 10 21                  | 704 | 0.4-  | 0.0   | 2006 08 31 | 704 | 0.1+  | 1.1-  | 2007 11 05 | 704 | 0.4+  | 0.6+  |
| 2001 10 21                  | 704 | 0.4-  | 0.1-  | 2006 09 14 | 703 | 0.4+  | 0.1+  | 2007 11 05 | 704 | 1.1+  | 0.2+  |
| 2001 11 10                  | 704 | 0.5+  | 0.1+  | 2006 09 14 | 703 | 0.8-  | 0.0   | 2007 11 05 | 704 | (1.7+ | 1.0+) |
| 2001 11 10                  | 704 | 0.6+  | 0.5-  | 2006 09 14 | 703 | 0.2+  | 0.8+  | 2007 11 13 | 691 | 0.7+  | 0.5+  |
| 2001 11 10                  | 644 | 0.5-  | 0.0   | 2006 09 14 | 703 | 0.1+  | 0.3-  | 2007 11 13 | 691 | 0.9-  | 0.1+  |
| 2001 11 10                  | 644 | 0.1+  | 0.2-  | 2006 09 15 | 704 | 0.1-  | 0.1-  | 2007 11 13 | 691 | 0.2-  | 0.2-  |
| 2001 11 10                  | 704 | 0.2-  | 0.2-  | 2006 09 15 | 704 | 0.1+  | 1.5-  | 2007 11 14 | 691 | 0.1-  | 0.4-  |
| 2001 11 10                  | 644 | 0.3-  | 0.2+  | 2006 09 15 | 704 | 0.1+  | 0.5+  | 2007 11 14 | 691 | 0.3-  | 0.3-  |
| 2001 11 10                  | 704 | 0.2-  | 0.9-  | 2006 09 15 | 704 | 1.0-  | 0.0   | 2007 11 14 | 691 | 0.1-  | 0.1-  |
| 2001 11 24                  | 704 | 0.8+  | 0.2+  | 2006 09 15 | 704 | 0.1+  | 0.0   | 2007 11 18 | 691 | 0.2-  | 0.3-  |
| 2001 11 24                  | 704 | 1.1+  | 1.5+  | 2006 09 16 | 644 | 0.2+  | 0.1-  | 2007 11 18 | 691 | 0.1-  | 0.2-  |
| 2001 11 24                  | 704 | 0.7+  | 0.4+  | 2006 09 16 | 644 | 0.2+  | 0.4-  | 2007 11 18 | 691 | 0.2-  | 0.3-  |
| 2001 11 24                  | 704 | 0.3+  | 0.4-  | 2006 09 16 | 644 | 0.0   | 0.2-  | 2007 11 30 | D35 | 0.1+  | 0.1+  |
| 2003 01 05                  | 704 | 0.3+  | 0.7+  | 2006 09 27 | 703 | 0.5-  | 0.2+  | 2007 11 30 | D35 | 0.2+  | 0.4+  |
| 2003 01 05                  | 704 | 0.6-  | 0.5+  | 2006 09 27 | 703 | 0.7-  | 0.5-  | 2007 11 30 | D35 | 0.3+  | 0.1+  |
| 2003 01 05                  | 704 | 0.7-  | 1.1+  | 2006 09 27 | 703 | (1.5- | 0.3-) | 2007 12 03 | 703 | 1.4+  | 1.2+  |
| 2003 01 05                  | 704 | 0.4-  | 0.4-  | 2006 09 27 | 703 | 0.7-  | 0.5-  | 2007 12 03 | 703 | 0.7+  | 0.8+  |
| 2003 01 05                  | 704 | 0.4+  | 0.1-  | 2006 10 01 | 703 | 1.2+  | 1.0+  | 2007 12 03 | 703 | 1.1+  | 1.0+  |
| 2004 03 17                  | 704 | 0.3+  | 0.4+  | 2006 10 01 | 703 | 0.8+  | 0.4-  | 2007 12 03 | 703 | 0.1-  | 0.4+  |

|                                         |            |          |           |             |      |             |       |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |       |            |     |      |      |
| <i>M</i>                                | 320.51158  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |       |            |     |      |      |
| <i>n</i>                                | 0.17339473 | $\omega$ | 209.02105 | -0.17582079 |      | -0.92552166 |       |            |     |      |      |
| <i>a</i>                                | 3.1850197  | $\Omega$ | 252.82722 | +0.95731540 |      | -0.08134548 |       |            |     |      |      |
| <i>e</i>                                | 0.1816608  | <i>i</i> | 20.55190  | +0.22942159 |      | -0.36985478 |       |            |     |      |      |
| <i>P</i>                                | 5.68       | <i>H</i> | 14.1      | <i>G</i>    | 0.15 | <i>U</i>    | 1     |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |      |      |
| 1986 03 09                              | 260        | 0.3-     | 0.7+      | 2003 01 02  | 704  | 0.8+        | 0.0   | 2007 11 08 | 703 | 0.1- | 0.4- |
| 1986 03 09                              | 260        | 0.1-     | 1.9-      | 2003 01 14  | 644  | 0.3-        | 0.4+  | 2007 11 09 | 704 | 0.8+ | 0.2+ |
| 2001 10 15                              | 704        | 0.1+     | 0.4+      | 2003 01 14  | 644  | 0.4-        | 0.2+  | 2007 11 09 | 704 | 0.5- | 0.0  |
| 2001 10 15                              | 704        | 0.1-     | 0.6+      | 2003 01 14  | 644  | 0.2-        | 0.5+  | 2007 11 09 | 704 | 0.2+ | 0.1+ |
| 2001 10 15                              | 704        | 0.1-     | 0.9+      | 2003 01 29  | 704  | 0.6-        | 0.5+  | 2007 11 09 | 704 | 0.5+ | 0.3+ |
| 2001 10 15                              | 704        | 0.4-     | 0.5-      | 2003 01 29  | 704  | 0.4-        | 0.5+  | 2007 11 09 | 704 | 0.9+ | 0.5+ |
| 2001 10 15                              | 704        | 0.4-     | 0.8+      | 2003 01 29  | 704  | 0.5-        | 0.5+  | 2007 11 15 | 699 | 0.3- | 0.1+ |
| 2001 10 18                              | 704        | 0.6+     | 1.1+      | 2003 01 29  | 704  | 0.6-        | 0.9+  | 2007 11 15 | 699 | 0.8- | 0.3- |
| 2001 10 18                              | 704        | 0.1+     | 0.7+      | 2004 04 19  | E12  | (0.6+       | 1.7+) | 2007 11 15 | 699 | 0.1+ | 0.2- |
| 2001 10 18                              | 704        | 0.0      | 0.7+      | 2004 04 19  | E12  | 1.4+        | 0.9+  | 2007 11 15 | 699 | 0.2+ | 0.5- |
| 2001 10 18                              | 704        | 0.3-     | 1.0+      | 2004 04 19  | E12  | 0.2-        | 0.3+  | 2007 11 16 | 704 | 0.8- | 0.3- |
| 2001 10 18                              | 704        | 0.2+     | 1.1+      | 2004 04 19  | E12  | 0.6-        | 0.3+  | 2007 11 16 | 704 | 1.2- | 0.3+ |
| 2001 10 27                              | 704        | 0.7-     | 1.0+      | 2006 08 19  | 691  | 0.2+        | 0.2-  | 2007 11 16 | 704 | 0.1+ | 0.8- |
| 2001 10 27                              | 704        | 0.7-     | 0.1-      | 2006 08 19  | 691  | 0.0         | 0.4-  | 2007 11 17 | 704 | 0.4+ | 0.7- |
| 2001 10 27                              | 704        | 1.0-     | 0.1+      | 2006 08 19  | 691  | 0.0         | 0.0   | 2007 11 17 | 704 | 0.0  | 0.9- |
| 2001 10 27                              | 704        | 0.6-     | 0.4+      | 2007 10 12  | 699  | 0.1+        | 0.5-  | 2007 11 17 | 704 | 0.3+ | 0.6- |
| 2001 10 27                              | 704        | 1.4-     | 0.5+      | 2007 10 12  | 699  | 0.1+        | 0.2-  | 2007 11 30 | A77 | 0.6- | 0.6+ |
| 2001 10 28                              | 644        | 0.9+     | 0.2-      | 2007 10 12  | 699  | 0.5-        | 0.6-  | 2007 11 30 | A77 | 0.3- | 0.5- |
| 2001 10 28                              | 644        | 0.4+     | 0.1+      | 2007 10 12  | 699  | 1.4-        | 1.4+  | 2007 12 02 | 704 | 0.4+ | 0.2  |
| 2001 10 28                              | 644        | 1.0+     | 0.1-      | 2007 11 02  | 703  | 0.0         | 0.3-  | 2007 12 02 | 704 | 0.2+ | 0.2- |
| 2001 11 12                              | 704        | 0.0      | 0.5+      | 2007 11 02  | 703  | 0.5+        | 0.2-  | 2007 12 02 | 704 | 0.3+ | 0.2+ |
| 2001 11 12                              | 704        | 0.1+     | 0.1+      | 2007 11 02  | 703  | 0.1-        | 0.7-  | 2007 12 02 | 704 | 0.4+ | 0.2+ |
| 2001 11 12                              | 704        | 0.4-     | 0.3+      | 2007 11 03  | 704  | 0.0         | 0.1-  | 2007 12 02 | 704 | 0.4+ | 0.0  |
| 2001 11 12                              | 704        | 0.2+     | 1.0+      | 2007 11 03  | 704  | 0.3+        | 0.2+  | 2007 12 05 | 699 | 0.3+ | 0.3- |
| 2001 11 12                              | 704        | 0.5-     | 0.0       | 2007 11 03  | G96  | 0.1-        | 0.4-  | 2007 12 05 | 699 | 0.2- | 0.2+ |
| 2002 12 15                              | 608        | 0.3+     | 0.2-      | 2007 11 03  | 704  | 0.2+        | 0.3+  | 2007 12 05 | 699 | 0.1+ | 0.4- |
| 2002 12 15                              | 608        | 0.6+     | 0.1+      | 2007 11 03  | G96  | 0.2+        | 0.4-  | 2007 12 05 | 699 | 0.4+ | 0.3- |
| 2002 12 15                              | 608        | 0.3+     | 0.4+      | 2007 11 03  | G96  | 0.0         | 0.3-  | 2007 12 16 | 704 | 0.3+ | 0.9+ |
| 2003 01 02                              | 704        | 0.2+     | 0.5+      | 2007 11 03  | G96  | 0.2+        | 0.4-  | 2007 12 16 | 704 | 0.9- | 0.7- |
| 2003 01 02                              | 704        | 0.6+     | 0.0       | 2007 11 08  | 703  | 0.1+        | 0.3-  | 2007 12 16 | 704 | 0.4+ | 0.7- |
| 2003 01 02                              | 704        | 0.7+     | 0.5-      | 2007 11 08  | 703  | 0.2-        | 0.5-  |            |     |      |      |
| 2003 01 02                              | 704        | 1.0+     | 0.1+      | 2007 11 08  | 703  | 0.4-        | 1.0-  |            |     |      |      |

**(171971)\* 2001 TN<sub>121</sub>**

Discovered 2001 Oct. 15 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

|                                         |            |          |           |             |      |             |      |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |      |            |     |      |      |
| $M$                                     | 39.63073   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |      |            |     |      |      |
| $n$                                     | 0.18896578 | $\omega$ | 120.94901 | +0.57086695 |      | -0.80533808 |      |            |     |      |      |
| $a$                                     | 3.0075575  | $\Omega$ | 293.39675 | +0.68132052 |      | +0.57327830 |      |            |     |      |      |
| $e$                                     | 0.1091834  | $i$      | 10.02832  | +0.45816294 |      | +0.15093894 |      |            |     |      |      |
| $P$                                     | 5.22       | $H$      | 14.7      | $G$         | 0.15 | $U$         | 1    |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |             |      |            |     |      |      |
| 2001 09 25                              | 704        | 0.2+     | 0.3-      | 2003 01 28  | 704  | 0.1-        | 0.2+ | 2006 09 28 | 703 | 0.3+ | 0.7- |
| 2001 09 25                              | 704        | 0.4+     | 0.0       | 2003 01 28  | 704  | 0.4-        | 1.0+ | 2006 09 28 | 703 | 0.4+ | 0.7- |
| 2001 09 25                              | 704        | 0.3-     | 0.8-      | 2003 01 28  | 608  | 0.3+        | 0.3- | 2006 09 28 | 703 | 0.0  | 0.4- |
| 2001 09 25                              | 704        | 0.2-     | 0.7-      | 2003 01 28  | 608  | 0.1+        | 0.3- | 2006 10 16 | 104 | 0.6- | 0.6+ |
| 2001 09 25                              | 704        | 0.1+     | 0.8-      | 2003 01 28  | 608  | 0.1-        | 0.1- | 2006 10 16 | 104 | 0.3+ | 0.5+ |
| 2001 10 13                              | 644        | 0.7-     | 0.1-      | 2003 02 03  | 699  | 0.6+        | 0.7+ | 2006 10 16 | 104 | 0.4- | 0.8+ |
| 2001 10 13                              | 644        | 0.4-     | 0.0       | 2003 02 03  | 699  | 0.7-        | 0.0  | 2006 10 19 | 703 | 0.0  | 0.5- |
| 2001 10 13                              | 644        | 0.6-     | 0.1-      | 2003 02 03  | 699  | 0.0         | 0.2+ | 2006 10 19 | 703 | 0.2- | 0.2+ |
| 2001 10 15                              | 704        | 0.2-     | 0.4+      | 2003 02 03  | 699  | 0.3-        | 0.2- | 2006 10 19 | 703 | 0.6- | 0.2- |
| 2001 10 15                              | 704        | 0.1-     | 0.1-      | 2003 02 09  | 608  | 1.2+        | 1.1+ | 2006 10 19 | 703 | 0.2- | 0.5- |
| 2001 10 15                              | 704        | 1.0+     | 0.0       | 2003 02 09  | 608  | 0.8+        | 0.7+ | 2006 10 22 | 644 | 0.1+ | 0.2+ |
| 2001 10 15                              | 704        | 0.8+     | 1.2-      | 2003 02 09  | 608  | 0.5+        | 0.4+ | 2006 10 22 | 644 | 0.1+ | 0.4+ |
| 2001 10 15                              | 704        | 0.2+     | 0.1-      | 2006 08 29  | 699  | 1.1+        | 0.5- | 2006 10 22 | 644 | 0.0  | 0.4+ |
| 2001 10 18                              | 704        | 0.5+     | 0.4+      | 2006 08 29  | 699  | 0.6+        | 0.6+ | 2006 10 31 | 703 | 0.5+ | 0.5- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 18 | 704 | 0.3+ | 0.1+ | 2006 08 29 | 699 | 0.6+  | 0.1-  | 2006 10 31 | 703 | 0.9- | 0.1+ |
| 2001 10 18 | 704 | 0.7+ | 0.2+ | 2006 08 29 | 699 | 0.1-  | 0.2+  | 2006 10 31 | 703 | 0.3+ | 0.5- |
| 2001 10 18 | 704 | 0.5+ | 0.4+ | 2006 09 14 | 644 | 0.1-  | 0.2+  | 2006 10 31 | 703 | 0.4+ | 0.2+ |
| 2001 10 18 | 704 | 0.0  | 0.1+ | 2006 09 14 | 644 | 0.1+  | 0.1+  | 2007 11 11 | G96 | 0.1+ | 0.5- |
| 2001 10 27 | 704 | 1.3- | 0.4+ | 2006 09 14 | 644 | 0.0   | 0.2+  | 2007 11 11 | G96 | 0.4+ | 0.7- |
| 2001 10 27 | 704 | 0.6- | 0.7+ | 2006 09 16 | 703 | 0.4-  | 0.5+  | 2007 11 11 | G96 | 0.4+ | 0.8- |
| 2001 10 27 | 704 | 0.6- | 0.2+ | 2006 09 16 | 703 | 0.5+  | 0.2-  | 2007 11 11 | G96 | 0.2+ | 0.9- |
| 2001 10 27 | 704 | 0.9- | 0.3+ | 2006 09 16 | 703 | 0.8+  | 1.4-  | 2007 12 14 | A77 | 1.2+ | 0.5- |
| 2001 10 27 | 704 | 0.2- | 1.0+ | 2006 09 16 | 703 | 0.5+  | 0.1-  | 2007 12 14 | A77 | 0.4+ | 0.5- |
| 2001 11 12 | 704 | 0.0  | 0.2+ | 2006 09 22 | 699 | 0.3+  | 0.4+  | 2007 12 14 | A77 | 0.5+ | 0.2+ |
| 2001 11 12 | 704 | 0.1+ | 0.0  | 2006 09 22 | 699 | 0.6-  | 0.8-  | 2007 12 15 | 291 | 0.3- | 0.2- |
| 2001 11 12 | 704 | 0.1+ | 0.5+ | 2006 09 22 | 699 | 1.0+  | 0.1+  | 2007 12 15 | 291 | 0.2- | 0.1- |
| 2001 11 12 | 704 | 0.0  | 0.6+ | 2006 09 22 | 699 | 0.3+  | 0.0   | 2007 12 15 | 291 | 0.2- | 0.2- |
| 2001 11 12 | 704 | 0.1- | 0.9+ | 2006 09 25 | 703 | 0.5-  | 0.9+  | 2007 12 16 | 291 | 0.4- | 0.5+ |
| 2001 12 07 | 644 | 0.0  | 0.0  | 2006 09 25 | 703 | (0.2+ | 1.6-) | 2007 12 16 | 291 | 0.2- | 0.3- |
| 2001 12 07 | 644 | 0.0  | 0.0  | 2006 09 25 | 703 | 0.5-  | 0.5+  | 2007 12 16 | 291 | 0.2- | 0.1- |
| 2001 12 07 | 644 | 0.1- | 0.1- | 2006 09 25 | 703 | 1.4-  | 0.2-  |            |     |      |      |
| 2003 01 28 | 704 | 0.6+ | 0.4+ | 2006 09 28 | 703 | 0.8-  | 0.0   |            |     |      |      |

**(171972)\* 2001 TU<sub>121</sub> = 2005 LM<sub>7</sub>**

Discovered 2001 Oct. 15 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 75164)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                             |       |          |            | MPC         |                                               |             |            |     |       |       |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------|-------|----------|------------|-------------|-----------------------------------------------|-------------|------------|-----|-------|-------|
| <i>M</i>                                | 128.54778                                                                                                   |       | (2000.0) |            | <b>P</b>    |                                               | <b>Q</b>    |            |     |       |       |
| <i>n</i>                                | 0.17835936                                                                                                  |       | $\omega$ | 30.30042   | +0.01287140 |                                               | +0.94371253 |            |     |       |       |
| <i>a</i>                                | 3.1256387                                                                                                   |       | $\Omega$ | 242.28836  | -0.97590752 |                                               | -0.06014367 |            |     |       |       |
| <i>e</i>                                | 0.1016094                                                                                                   |       | <i>i</i> | 21.92166   | -0.21780458 |                                               | +0.32525284 |            |     |       |       |
| <i>P</i>                                | 5.53 <th><i>H</i></th> <td>14.4</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td colspan="2">1</td></td> |       | <i>H</i> | 14.4       | <i>G</i>    | 0.15 <th><i>U</i></th> <td colspan="2">1</td> | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc             |                                                                                                             |       |          |            |             |                                               |             |            |     |       |       |
| 2001 10 15                              | 704                                                                                                         | 0.0   | 0.4+     | 2005 06 14 | G96         | 0.1-                                          | 0.1+        | 2007 11 13 | 699 | 0.6+  | 0.5-  |
| 2001 10 15                              | 704                                                                                                         | 0.4+  | 0.7+     | 2005 06 14 | G96         | 0.0                                           | 0.5+        | 2007 11 13 | 699 | 0.6-  | 0.3-  |
| 2001 10 15                              | 704                                                                                                         | 0.3-  | 0.5+     | 2005 06 14 | G96         | 0.1-                                          | 0.6+        | 2007 11 16 | A77 | 0.7-  | 0.7+  |
| 2001 10 15                              | 704                                                                                                         | 0.2+  | 0.6+     | 2005 06 15 | 691         | 0.5-                                          | 0.4-        | 2007 11 16 | A77 | (1.7- | 1.4+) |
| 2001 10 18                              | 704                                                                                                         | 0.7-  | 0.6-     | 2005 06 15 | 691         | 0.0                                           | 0.2+        | 2007 11 17 | A77 | 0.2-  | 0.3+  |
| 2001 10 18                              | 704                                                                                                         | 0.1-  | 0.1-     | 2005 06 15 | 691         | 0.1-                                          | 0.2+        | 2007 11 17 | 691 | 0.2-  | 0.0   |
| 2001 10 18                              | 704                                                                                                         | 0.0   | 1.1+     | 2006 09 20 | 703         | 0.7-                                          | 0.6+        | 2007 11 17 | 691 | 0.2-  | 0.1-  |
| 2001 10 18                              | 704                                                                                                         | 0.2+  | 0.7+     | 2006 09 20 | 703         | 0.0                                           | 0.7+        | 2007 11 17 | 691 | 0.2-  | 0.2+  |
| 2001 10 20                              | 699                                                                                                         | 0.2-  | 0.3+     | 2006 09 20 | 703         | 0.2+                                          | 0.1+        | 2007 11 18 | A77 | 1.0+  | 0.4+  |
| 2001 10 20                              | 699                                                                                                         | 0.4+  | 0.6-     | 2006 09 20 | 703         | 0.1-                                          | 0.8-        | 2007 11 18 | A77 | 0.7+  | 0.1+  |
| 2001 10 20                              | 699                                                                                                         | 0.5-  | 0.6-     | 2007 10 09 | 691         | 0.1+                                          | 0.4-        | 2007 11 18 | A77 | 1.0+  | 0.7+  |
| 2001 10 20                              | 699                                                                                                         | (2.0+ | 0.7-)    | 2007 10 09 | 691         | 0.6+                                          | 0.6-        | 2007 11 18 | 704 | 1.0+  | 0.4+  |
| 2001 11 12                              | 704                                                                                                         | 0.1+  | 1.3-     | 2007 10 09 | 691         | 0.2+                                          | 0.3-        | 2007 11 18 | 704 | 0.3+  | 0.5+  |
| 2001 11 12                              | 704                                                                                                         | 0.7-  | 0.2-     | 2007 10 18 | 691         | 0.2+                                          | 0.3-        | 2007 11 18 | 704 | (1.6+ | 0.6-) |
| 2001 11 12                              | 704                                                                                                         | 0.1+  | 0.1-     | 2007 10 18 | 691         | 0.3+                                          | 0.1-        | 2007 11 20 | 704 | 0.0   | 0.3-  |
| 2001 11 12                              | 704                                                                                                         | 0.9+  | 0.2-     | 2007 10 18 | 691         | 0.1+                                          | 0.0         | 2007 11 20 | 704 | 0.2+  | 0.7+  |
| 2003 01 05                              | 704                                                                                                         | 0.9+  | 0.3-     | 2007 10 21 | 703         | 0.5+                                          | 0.5-        | 2007 11 20 | 704 | 0.1+  | 0.9-  |
| 2003 01 05                              | 704                                                                                                         | 0.7-  | 0.3+     | 2007 10 21 | 703         | 0.6-                                          | 0.4-        | 2007 11 20 | 704 | 0.3+  | 0.0   |
| 2003 01 05                              | 704                                                                                                         | 0.6+  | 0.6+     | 2007 10 21 | 703         | 0.4-                                          | 0.4+        | 2007 11 20 | 704 | 0.8+  | 0.0   |
| 2003 01 05                              | 704                                                                                                         | 0.3+  | 0.2+     | 2007 10 21 | 703         | (0.6-                                         | 1.5+)       | 2007 12 04 | 691 | 0.2-  | 0.1-  |
| 2003 01 11                              | 644                                                                                                         | 0.3-  | 0.5+     | 2007 11 01 | 691         | 0.2-                                          | 0.1+        | 2007 12 04 | 691 | 0.1+  | 0.1+  |
| 2003 01 11                              | 644                                                                                                         | 0.2+  | 0.6+     | 2007 11 01 | 691         | 0.1+                                          | 0.1+        | 2007 12 04 | 691 | 0.1+  | 0.3+  |
| 2003 01 11                              | 644                                                                                                         | 0.3-  | 0.4+     | 2007 11 01 | 691         | 0.1+                                          | 0.4+        | 2007 12 05 | 699 | 0.7+  | 0.5-  |
| 2005 05 16                              | 644                                                                                                         | 0.1+  | 0.4+     | 2007 11 05 | 691         | 0.5-                                          | 0.7+        | 2007 12 05 | 691 | 1.2-  | 0.4-  |
| 2005 05 16                              | 644                                                                                                         | 0.1+  | 0.2+     | 2007 11 05 | 691         | 0.1-                                          | 0.0         | 2007 12 05 | 699 | 0.3-  | 0.5+  |
| 2005 05 16                              | 644                                                                                                         | 0.0   | 0.6+     | 2007 11 05 | 691         | 0.0                                           | 0.1+        | 2007 12 05 | 691 | 0.4+  | 0.3-  |
| 2005 06 04                              | 704                                                                                                         | 0.7+  | 0.1+     | 2007 11 07 | 704         | 0.4-                                          | 0.9+        | 2007 12 05 | 691 | 0.2-  | 0.1+  |
| 2005 06 04                              | 704                                                                                                         | (4.0+ | 0.3+)    | 2007 11 07 | 704         | 0.3+                                          | 0.5+        | 2007 12 05 | 699 | 0.3+  | 0.2+  |
| 2005 06 04                              | 704                                                                                                         | 0.5+  | 1.0-     | 2007 11 07 | 704         | 0.6+                                          | 0.2+        | 2007 12 05 | 699 | 0.1+  | 0.3+  |
| 2005 06 04                              | 704                                                                                                         | 0.4+  | 0.4+     | 2007 11 07 | 704         | 0.4-                                          | 0.3-        | 2007 12 06 | 691 | 0.1-  | 0.1+  |
| 2005 06 04                              | 704                                                                                                         | 1.3+  | 0.7+     | 2007 11 07 | 704         | 0.4-                                          | 0.3+        | 2007 12 06 | 691 | 0.3+  | 0.3-  |
| 2005 06 06                              | 691                                                                                                         | 0.1+  | 0.2+     | 2007 11 09 | 691         | 0.1-                                          | 0.2-        | 2007 12 06 | 691 | 0.3-  | 0.3+  |
| 2005 06 06                              | 691                                                                                                         | 0.1+  | 0.2+     | 2007 11 09 | 691         | 0.1-                                          | 0.1+        | 2007 12 14 | 704 | 2.2+  | 0.6-  |
| 2005 06 06                              | 691                                                                                                         | 0.1-  | 0.2+     | 2007 11 09 | 691         | 0.2-                                          | 0.2-        | 2007 12 14 | 704 | 0.3-  | 0.2-  |
| 2005 06 11                              | 703                                                                                                         | 0.6-  | 0.3+     | 2007 11 13 | 691         | 0.1+                                          | 0.1-        | 2007 12 14 | 704 | 1.0-  | 0.3-  |

2007 DEC. 24

M.P.O. 129223

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 11 | 703 | 0.8− | 0.0  | 2007 11 13 | 691 | 0.1− | 0.1+ | 2007 12 15 | 691 | 0.1− | 0.5+ |
| 2005 06 11 | 703 | 0.7− | 0.0  | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 12 15 | 691 | 0.0  | 0.1+ |
| 2005 06 11 | 703 | 0.6+ | 0.9− | 2007 11 13 | 699 | 0.7+ | 0.7+ | 2007 12 15 | 691 | 0.1− | 0.2+ |
| 2005 06 14 | G96 | 0.0  | 0.4+ | 2007 11 13 | 699 | 0.4+ | 0.4− |            |     |      |      |

**(171973)\* 2001 TO<sub>122</sub>**

Discovered 2001 Oct. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.91298   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17469398 | $\omega$ | 167.02364 | +0.66989990   | −0.63394713 |
| <i>a</i> | 3.1692081  | $\Omega$ | 239.30684 | +0.63472296   | +0.75903695 |
| <i>e</i> | 0.1620163  | <i>i</i> | 26.70572  | +0.38517643   | −0.14823611 |
| <i>P</i> | 5.64       | <i>H</i> | 14.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 704 | 0.5−  | 0.4+  | 2001 11 17 | 644 | 0.1−  | 0.0   | 2001 12 20 | 704 | 0.7− | 0.3+ |
| 2001 10 15 | 704 | 0.8−  | 0.4+  | 2001 11 17 | 644 | 0.1+  | 0.4−  | 2001 12 20 | 704 | 1.1− | 0.5+ |
| 2001 10 15 | 704 | 0.5−  | 0.6+  | 2001 11 17 | 644 | 0.1+  | 0.1−  | 2001 12 20 | 704 | 1.3− | 0.3+ |
| 2001 10 15 | 704 | 1.2−  | 0.3−  | 2001 11 21 | 704 | 0.5+  | 0.2−  | 2005 07 04 | 644 | 0.2+ | 0.8+ |
| 2001 10 15 | 704 | 1.0−  | 0.4+  | 2001 11 21 | 704 | 0.6+  | 0.1+  | 2005 07 04 | 644 | 0.1− | 0.6+ |
| 2001 10 18 | 704 | 0.0   | 0.5−  | 2001 11 21 | 704 | 0.8+  | 0.1+  | 2005 07 04 | 644 | 0.0  | 0.0  |
| 2001 10 18 | 704 | 0.3+  | 0.1−  | 2001 11 21 | 704 | 0.2+  | 0.5−  | 2006 08 13 | 644 | 0.5− | 0.1+ |
| 2001 10 18 | 704 | (0.2− | 1.6+) | 2001 11 21 | 704 | 0.8+  | 0.8−  | 2006 08 13 | 644 | 0.3− | 0.2+ |
| 2001 10 18 | 704 | 0.4+  | 0.1−  | 2001 11 24 | 704 | 0.2+  | 0.0   | 2006 08 13 | 644 | 0.3− | 0.2+ |
| 2001 10 19 | 704 | 0.5−  | 0.1+  | 2001 11 24 | 704 | 0.0   | 0.7−  | 2006 08 14 | 644 | 0.0  | 0.0  |
| 2001 10 19 | 704 | 0.7−  | 0.2+  | 2001 11 24 | 704 | 0.0   | 0.2−  | 2006 08 14 | 644 | 0.3+ | 0.0  |
| 2001 10 19 | 704 | 0.8−  | 0.7+  | 2001 11 24 | 704 | 0.0   | 0.4−  | 2006 08 14 | 644 | 0.0  | 0.1+ |
| 2001 10 19 | 704 | 0.0   | 0.0   | 2001 11 24 | 704 | 0.3+  | 0.6−  | 2006 08 23 | H82 | 0.5− | 0.0  |
| 2001 10 19 | 704 | 0.3−  | 0.1+  | 2001 12 10 | 704 | 0.2−  | 0.3−  | 2006 08 23 | H82 | 0.5+ | 0.2+ |
| 2001 10 27 | 699 | 1.2+  | 0.5+  | 2001 12 10 | 704 | 0.7−  | 0.2−  | 2006 08 23 | H82 | 0.4− | 0.4− |
| 2001 10 27 | 699 | 0.0   | 0.3−  | 2001 12 10 | 704 | 0.6−  | 0.1−  | 2006 08 23 | H82 | 0.1+ | 0.2+ |
| 2001 10 27 | 699 | 0.5+  | 0.1+  | 2001 12 10 | 704 | 0.6−  | 0.3+  | 2006 10 22 | 703 | 0.6− | 0.3− |
| 2001 10 27 | 704 | 0.6+  | 0.4−  | 2001 12 10 | 704 | 0.3−  | 0.5+  | 2006 10 22 | 703 | 0.1+ | 0.2− |
| 2001 10 27 | 699 | 0.5+  | 0.2−  | 2001 12 15 | 704 | 0.2−  | 0.1+  | 2006 10 22 | 703 | 1.0− | 1.4+ |
| 2001 10 27 | 704 | 0.4+  | 0.8−  | 2001 12 15 | 704 | 0.5+  | 0.4+  | 2006 10 22 | 703 | 0.7+ | 0.3− |
| 2001 10 27 | 704 | 0.2+  | 1.0−  | 2001 12 15 | 704 | 0.4+  | 0.5+  | 2006 11 15 | 703 | 0.7+ | 1.1+ |
| 2001 10 27 | 704 | 0.7+  | 0.5−  | 2001 12 15 | 704 | 0.4+  | 1.0+  | 2006 11 15 | 703 | 0.4+ | 0.0  |
| 2001 10 27 | 704 | 0.5+  | 1.0−  | 2001 12 18 | 704 | 0.5−  | 0.3+  | 2006 11 15 | 703 | 0.1− | 0.5− |
| 2001 11 10 | 704 | 0.3+  | 0.2−  | 2001 12 18 | 704 | 0.3−  | 0.4+  | 2006 11 15 | 703 | 0.4− | 0.6− |
| 2001 11 10 | 704 | 0.6+  | 0.5−  | 2001 12 18 | 704 | 0.6−  | 0.7+  | 2007 10 21 | 704 | 1.1+ | 0.0  |
| 2001 11 10 | 704 | 1.2+  | 0.2−  | 2001 12 18 | 704 | 0.1+  | 0.5+  | 2007 10 21 | 704 | 0.6+ | 0.0  |
| 2001 11 10 | 704 | (1.8+ | 0.9+) | 2001 12 18 | 704 | 0.4+  | 0.3+  | 2007 10 21 | 704 | 0.5+ | 0.8− |
| 2001 11 10 | 704 | (2.8+ | 0.8−) | 2001 12 19 | 704 | 0.0   | 0.5+  | 2007 12 06 | 703 | 1.1− | 0.7− |
| 2001 11 12 | 704 | 0.2+  | 0.1−  | 2001 12 19 | 704 | 0.1+  | 0.4+  | 2007 12 06 | 703 | 0.5− | 0.0  |
| 2001 11 12 | 704 | 0.4+  | 0.3−  | 2001 12 19 | 704 | 0.2−  | 0.6+  | 2007 12 06 | 703 | 0.4− | 0.5+ |
| 2001 11 12 | 704 | 0.2+  | 0.3−  | 2001 12 19 | 644 | 0.2−  | 0.3+  | 2007 12 14 | 704 | 1.2+ | 0.5+ |
| 2001 11 12 | 704 | 0.3−  | 0.8−  | 2001 12 19 | 704 | 0.3−  | 0.5+  | 2007 12 14 | 704 | 0.1+ | 1.2+ |
| 2001 11 12 | 704 | 0.2+  | 0.8−  | 2001 12 19 | 644 | 0.5+  | 0.5+  | 2007 12 14 | 704 | 0.1+ | 0.1+ |
| 2001 11 14 | 291 | 0.1−  | 0.3−  | 2001 12 19 | 644 | 0.2−  | 0.3+  | 2007 12 14 | 704 | 0.1− | 0.1− |
| 2001 11 14 | 291 | 0.4−  | 0.1+  | 2001 12 19 | 704 | 0.2+  | 0.8+  | 2007 12 14 | 704 | 0.3− | 0.0  |
| 2001 11 14 | 291 | 0.2+  | 0.2+  | 2001 12 20 | 704 | (2.0+ | 0.3−) |            |     |      |      |

**(171974)\* 2001 TM<sub>124</sub>**

Discovered 2001 Oct. 12 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.79043  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18667124 | $\omega$ | 193.98509 | +0.03051927   | −0.98936085 |
| <i>a</i> | 3.0321530  | $\Omega$ | 254.41231 | +0.93066616   | +0.08003740 |
| <i>e</i> | 0.0522693  | <i>i</i> | 8.49231   | +0.36459439   | −0.12148714 |
| <i>P</i> | 5.28       | <i>H</i> | 14.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 01 01 | 691 | 0.2+ | 0.2− | 2001 10 15 | 608 | 0.3− | 0.0  | 2006 09 22 | 703 | 0.8− | 1.1+ |
| 1992 01 01 | 691 | 0.2+ | 0.5− | 2001 10 20 | 644 | 0.5− | 0.3− | 2006 09 22 | 703 | 0.3− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 01 01 | 691 | 0.2+ | 0.2− | 2001 10 20 | 644 | 0.3− | 0.1− | 2006 09 22 | 703 | 0.0   | 1.3+  |
| 2001 08 28 | 644 | 0.5− | 0.1− | 2001 10 20 | 644 | 0.5− | 0.1− | 2006 09 22 | 703 | 0.7−  | 0.2−  |
| 2001 08 28 | 644 | 0.4− | 0.4+ | 2001 10 26 | 644 | 0.3+ | 0.6+ | 2006 10 01 | 703 | (0.5+ | 2.0−) |
| 2001 08 28 | 644 | 0.2− | 0.2+ | 2001 10 26 | 644 | 0.2+ | 0.8+ | 2006 10 01 | 703 | 1.3+  | 1.1−  |
| 2001 09 25 | 704 | 0.1− | 0.9+ | 2001 10 26 | 644 | 0.4+ | 0.6+ | 2006 10 01 | 703 | 0.8+  | 0.4+  |
| 2001 09 25 | 704 | 0.7− | 0.4+ | 2003 01 07 | 704 | 0.7+ | 1.0+ | 2006 10 01 | 703 | 0.3−  | 0.8−  |
| 2001 09 25 | 704 | 0.2+ | 0.2+ | 2003 01 07 | 704 | 0.3+ | 1.1+ | 2006 10 11 | 644 | 0.2+  | 0.2−  |
| 2001 09 25 | 704 | 0.5− | 0.8+ | 2003 01 07 | 704 | 0.0  | 0.5+ | 2006 10 11 | 644 | 0.0   | 0.2+  |
| 2001 09 25 | 704 | 0.7− | 0.2+ | 2004 03 15 | 644 | 0.0  | 0.3+ | 2006 10 11 | 644 | 0.1+  | 0.3+  |
| 2001 09 29 | 644 | 1.0− | 0.6− | 2004 03 15 | 644 | 0.0  | 0.5+ | 2006 10 20 | 691 | 0.2+  | 0.0   |
| 2001 09 29 | 644 | 0.3+ | 0.9+ | 2004 03 15 | 644 | 0.5+ | 0.1+ | 2006 10 20 | 691 | 0.1+  | 0.0   |
| 2001 09 29 | 644 | 1.1− | 0.2− | 2004 03 26 | 704 | 0.1− | 0.1+ | 2006 10 20 | 691 | 0.1+  | 0.0   |
| 2001 09 29 | 644 | 0.2+ | 0.2+ | 2004 03 26 | 704 | 0.1− | 0.3+ | 2006 10 22 | 691 | 0.3+  | 0.1−  |
| 2001 09 29 | 644 | 1.1− | 0.5− | 2004 03 26 | 704 | 0.1+ | 0.1− | 2006 10 22 | 691 | 0.2+  | 0.3−  |
| 2001 09 29 | 644 | 0.3+ | 0.3+ | 2004 03 26 | 704 | 0.6− | 0.4+ | 2006 10 22 | 691 | 0.2+  | 0.0   |
| 2001 10 12 | 608 | 0.0  | 0.1+ | 2004 04 17 | 704 | 0.7+ | 1.4+ | 2007 11 17 | 691 | 0.5+  | 0.5+  |
| 2001 10 12 | 608 | 0.1− | 0.4− | 2004 04 17 | 704 | 0.4+ | 0.0  | 2007 11 17 | 691 | 0.2−  | 0.7+  |
| 2001 10 12 | 608 | 0.3− | 0.3− | 2004 04 17 | 704 | 0.6+ | 0.6+ | 2007 11 17 | 691 | 0.3+  | 0.4+  |
| 2001 10 13 | 644 | 0.7− | 0.6+ | 2004 04 17 | 704 | 0.8− | 0.9+ | 2007 12 05 | 704 | 0.5−  | 1.7−  |
| 2001 10 13 | 644 | 0.6− | 0.7+ | 2006 09 20 | 699 | 0.9+ | 0.4− | 2007 12 05 | 704 | 0.7−  | 2.7−  |
| 2001 10 13 | 644 | 0.0  | 0.8+ | 2006 09 20 | 699 | 0.8+ | 0.1− | 2007 12 05 | 704 | 0.8−  | 1.2−  |
| 2001 10 15 | 608 | 0.8− | 0.2− | 2006 09 20 | 699 | 0.4− | 0.4+ | 2007 12 05 | 704 | 0.6−  | 1.2−  |
| 2001 10 15 | 608 | 0.5− | 0.0  | 2006 09 20 | 699 | 0.0  | 0.0  |            |     |       |       |

**(171975)\* 2001 TY<sub>127</sub> = 2004 BM<sub>110</sub>**

Discovered 2001 Oct. 10 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61124)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 158.40987  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18779675 | $\omega$ | 221.81808 | −0.18139435   | +0.97479660 |
| <i>a</i> | 3.0200259  | $\Omega$ | 38.26546  | −0.83747343   | −0.08389453 |
| <i>e</i> | 0.1039846  | <i>i</i> | 12.10545  | −0.51549427   | −0.20672033 |
| <i>P</i> | 5.25       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 10 | 644 | 1.2− | 0.2+ | 2004 02 15 | 704 | 0.3+  | 0.7+  | 2006 09 26 | 703 | 1.2− | 0.8− |
| 2001 10 10 | 644 | 0.8− | 0.5+ | 2004 02 15 | 704 | 0.6+  | 0.3+  | 2006 09 26 | 703 | 0.2+ | 0.9+ |
| 2001 10 10 | 644 | 0.5− | 0.4+ | 2004 03 18 | 703 | 0.2+  | 1.0+  | 2006 10 02 | 703 | 0.5− | 0.8− |
| 2001 10 14 | 645 | 0.0  | 0.0  | 2004 03 18 | 703 | 0.4+  | 1.0+  | 2006 10 02 | 703 | 1.0− | 0.5+ |
| 2001 10 14 | 645 | 0.1+ | 0.0  | 2004 03 18 | 703 | (0.2+ | 1.9+) | 2006 10 02 | 703 | 0.1+ | 0.2+ |
| 2001 10 14 | 608 | 0.4− | 0.2+ | 2004 03 18 | 703 | 0.2+  | 1.0+  | 2006 10 02 | 703 | 0.3− | 1.0− |
| 2001 10 14 | 608 | 0.7− | 0.2+ | 2004 03 23 | 704 | 0.0   | 0.2−  | 2006 10 02 | 703 | 0.0  | 0.3− |
| 2001 10 14 | 608 | 0.4− | 0.5+ | 2004 03 23 | 704 | 0.0   | 0.0   | 2006 10 02 | 703 | 0.3+ | 0.8+ |
| 2001 10 15 | 645 | 0.1+ | 0.0  | 2004 03 23 | 704 | 0.1+  | 0.1+  | 2006 10 02 | 703 | 0.1− | 0.7− |
| 2001 10 15 | 645 | 0.1+ | 0.0  | 2004 03 23 | 704 | 0.8+  | 0.6−  | 2006 10 02 | 703 | 0.4− | 0.1− |
| 2001 10 16 | 644 | 0.4− | 0.3− | 2004 03 23 | 704 | 0.2−  | 0.2+  | 2006 10 10 | 644 | 0.0  | 0.6+ |
| 2001 10 16 | 644 | 0.5− | 0.7− | 2004 03 25 | 704 | 0.7−  | 1.0+  | 2006 10 10 | 644 | 0.4+ | 0.8+ |
| 2001 10 16 | 644 | 0.3− | 0.7− | 2004 03 25 | 704 | 0.9+  | 0.3−  | 2006 10 10 | 644 | 0.1+ | 0.5+ |
| 2001 11 18 | 645 | 0.0  | 0.0  | 2004 03 25 | 704 | 0.7−  | 0.5+  | 2007 11 17 | 704 | 0.9+ | 0.3+ |
| 2001 11 18 | 645 | 0.1− | 0.0  | 2004 03 25 | 704 | (2.2− | 0.3+) | 2007 11 17 | 704 | 0.4+ | 1.1+ |
| 2001 12 10 | 645 | 0.1+ | 0.1− | 2006 08 16 | 644 | 0.1−  | 0.5+  | 2007 11 17 | 704 | 0.3+ | 1.2− |
| 2001 12 10 | 645 | 0.1+ | 0.1− | 2006 08 16 | 644 | 0.1−  | 0.3+  | 2007 11 17 | 704 | 0.3− | 0.1− |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |           | MPC         |      |             |            |     |             |
|-----------------------------------------|------------|-------------|-----------|-------------|------|-------------|------------|-----|-------------|
| <i>M</i>                                | 41.08074   | (2000.0)    |           | <b>P</b>    |      | <b>Q</b>    |            |     |             |
| <i>n</i>                                | 0.17804188 | $\omega$    | 106.47778 | +0.98399812 |      | +0.02316538 |            |     |             |
| <i>a</i>                                | 3.1293534  | $\Omega$    | 252.46318 | −0.08303999 |      | +0.93687198 |            |     |             |
| <i>e</i>                                | 0.1485568  | <i>i</i>    | 10.67732  | +0.15764535 |      | +0.34890436 |            |     |             |
| <i>P</i>                                | 5.54       | <i>H</i>    | 15.2      | <i>G</i>    | 0.15 | <i>U</i>    | 0          |     |             |
| Residuals in seconds of arc             |            |             |           |             |      |             |            |     |             |
| 1995 06 28                              | 691        | 0.1−        | 0.2+      | 2001 10 19  | 704  | (1.0+ 2.2+) | 2007 11 07 | 704 | 0.2+ 0.6−   |
| 1995 06 28                              | 691        | 0.2+        | 0.2+      | 2001 10 19  | 704  | 1.2+ 1.3+   | 2007 11 07 | 704 | 0.9+ 0.2−   |
| 1995 06 28                              | 691        | 0.3−        | 0.1+      | 2001 10 26  | 644  | 1.0+ 1.2+   | 2007 11 07 | 704 | 0.5+ 0.3+   |
| 2001 09 23                              | 644        | 0.5−        | 0.4−      | 2001 10 26  | 644  | 0.9+ 1.0+   | 2007 11 07 | 704 | 0.4+ 0.4−   |
| 2001 09 23                              | 644        | 0.3−        | 0.1−      | 2001 10 26  | 644  | 1.2+ 1.2+   | 2007 11 07 | 704 | 0.5+ 0.1+   |
| 2001 09 23                              | 644        | 0.6−        | 0.0       | 2006 05 09  | G96  | 0.1+ 0.2−   | 2007 11 18 | 704 | 0.1− 0.3+   |
| 2001 09 25                              | 704        | 0.1+        | 0.2−      | 2006 05 09  | G96  | 0.3− 0.0    | 2007 11 18 | 704 | 0.2+ 0.6+   |
| 2001 09 25                              | 704        | 0.0         | 0.5−      | 2006 05 09  | G96  | 0.1− 0.1+   | 2007 11 18 | 704 | 0.1− 0.4+   |
| 2001 09 25                              | 704        | 0.4−        | 0.7−      | 2006 05 09  | G96  | 0.5− 0.1−   | 2007 11 18 | 704 | 0.2+ 0.4+   |
| 2001 09 25                              | 704        | 0.2−        | 0.5−      | 2006 05 25  | 691  | 0.5− 1.4−   | 2007 11 18 | 691 | 0.1− 0.2−   |
| 2001 09 25                              | 704        | 0.6−        | 0.8−      | 2006 05 25  | 691  | 0.1+ 0.2+   | 2007 11 18 | 691 | 0.1− 0.1−   |
| 2001 09 29                              | 644        | 0.2−        | 0.0       | 2006 05 25  | 691  | 0.3+ 0.2+   | 2007 11 18 | 691 | 0.2− 0.1−   |
| 2001 09 29                              | 644        | 0.5−        | 0.2−      | 2006 05 30  | 691  | 0.9+ 0.0    | 2007 11 20 | 704 | 0.5− 1.1+   |
| 2001 09 29                              | 644        | 0.4−        | 0.0       | 2006 05 30  | 691  | 0.3− 0.1+   | 2007 11 20 | 704 | 0.2− 0.3+   |
| 2001 10 13                              | 699        | 0.1+        | 0.6+      | 2006 05 30  | 691  | 0.1+ 0.0    | 2007 11 20 | 704 | 0.2+ 1.0−   |
| 2001 10 13                              | 699        | 0.8−        | 0.1−      | 2007 10 21  | G96  | 0.3+ 0.4−   | 2007 12 03 | 703 | 0.8− 0.2−   |
| 2001 10 13                              | 644        | 0.2−        | 0.7+      | 2007 10 21  | G96  | 0.2+ 0.5−   | 2007 12 03 | 703 | 0.2− 1.2+   |
| 2001 10 13                              | 699        | 0.1−        | 0.2−      | 2007 10 21  | G96  | 0.3+ 0.3−   | 2007 12 03 | 703 | 0.1− 1.1+   |
| 2001 10 13                              | 644        | 0.0         | 0.5+      | 2007 10 21  | G96  | 0.2+ 0.5−   | 2007 12 03 | 703 | 0.1− 0.8+   |
| 2001 10 13                              | 699        | 0.3−        | 0.1+      | 2007 10 21  | G96  | 0.1+ 0.3−   | 2007 12 04 | 699 | (2.4+ 0.2−) |
| 2001 10 13                              | 644        | 0.1+        | 0.6+      | 2007 10 21  | G96  | 0.3+ 0.3−   | 2007 12 04 | 699 | 0.1− 0.2+   |
| 2001 10 14                              | 644        | 0.0         | 0.6+      | 2007 10 21  | G96  | 0.0 0.4−    | 2007 12 04 | 699 | 0.6− 0.4−   |
| 2001 10 14                              | 644        | 0.0         | 0.4+      | 2007 10 21  | G96  | 0.3+ 0.3−   | 2007 12 04 | 699 | 0.4− 0.2+   |
| 2001 10 14                              | 644        | 0.2−        | 0.6+      | 2007 11 02  | 691  | 0.1− 0.0    | 2007 12 10 | 704 | 0.0 0.2+    |
| 2001 10 17                              | 704        | 0.2−        | 1.2−      | 2007 11 02  | 691  | 0.1− 0.1−   | 2007 12 10 | 704 | 0.4+ 0.2−   |
| 2001 10 17                              | 704        | 0.1−        | 0.5−      | 2007 11 02  | 691  | 0.2− 0.1−   | 2007 12 10 | 704 | 0.1+ 1.4+   |
| 2001 10 17                              | 704        | 0.1−        | 1.3−      | 2007 11 05  | D29  | 0.3− 0.3−   | 2007 12 15 | G96 | 0.5+ 0.6−   |
| 2001 10 17                              | 704        | 0.3−        | 0.1−      | 2007 11 05  | D29  | 0.2+ 0.6−   | 2007 12 15 | G96 | 0.2+ 0.6−   |
| 2001 10 19                              | 704        | (1.6+ 1.3+) |           | 2007 11 05  | D29  | (1.9+ 1.4−) | 2007 12 15 | G96 | 0.5+ 0.3−   |
| 2001 10 19                              | 704        | 0.7+ 0.0    |           | 2007 11 05  | D29  | 0.2− 0.3−   | 2007 12 15 | G96 | 0.2+ 0.4−   |

**(171977)\* 2001 TO<sub>134</sub>**

Discovered 2001 Oct. 13 by NEAT at Palomar.

|                                         |            |      |          |            |     |             |      |             |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|-------------|------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC         |      |             |     |      |      |
| $M$                                     | 2.12836    |      | (2000.0) |            |     | <b>P</b>    |      | <b>Q</b>    |     |      |      |
| $n$                                     | 0.17983716 |      | $\omega$ | 142.57343  |     | +0.45643718 |      | −0.87200399 |     |      |      |
| $a$                                     | 3.1084921  |      | $\Omega$ | 279.64154  |     | +0.76682000 |      | +0.48633217 |     |      |      |
| $e$                                     | 0.2950602  |      | $i$      | 10.33357   |     | +0.45127840 |      | +0.05558833 |     |      |      |
| $P$                                     | 5.48       |      | $H$      | 15.7       |     | $G$         | 0.15 |             | $U$ | 1    |      |
| Residuals in seconds of arc             |            |      |          |            |     |             |      |             |     |      |      |
| 2001 08 17                              | 644        | 0.2+ | 0.9+     | 2001 10 17 | 704 | 0.8−        | 0.8− | 2007 10 09  | 704 | 0.2+ | 0.2+ |
| 2001 08 17                              | 644        | 0.5+ | 0.8+     | 2001 10 17 | 704 | 0.7−        | 0.8+ | 2007 10 09  | 704 | 1.0− | 1.2− |
| 2001 08 17                              | 644        | 0.1− | 1.4+     | 2001 10 17 | 704 | 0.6−        | 0.2+ | 2007 10 12  | 704 | 1.1+ | 0.2+ |
| 2001 09 09                              | 699        | 0.5− | 0.0      | 2001 10 17 | 704 | 0.1−        | 0.1+ | 2007 10 12  | 704 | 0.8+ | 0.0  |
| 2001 09 09                              | 699        | 0.5− | 0.2+     | 2001 10 17 | 704 | 0.4−        | 0.3+ | 2007 10 12  | 704 | 0.9+ | 0.2− |
| 2001 09 09                              | 699        | 0.6+ | 0.5+     | 2003 02 02 | 699 | 0.2+        | 0.6+ | 2007 11 20  | 704 | 0.5+ | 0.3+ |
| 2001 09 09                              | 699        | 0.7+ | 0.4+     | 2003 02 02 | 699 | 0.8+        | 0.8+ | 2007 11 20  | 704 | 0.5+ | 0.2− |
| 2001 09 10                              | 704        | 0.2+ | 0.5+     | 2003 02 02 | 699 | (0.9+ 1.9+) |      | 2007 11 20  | 704 | 0.5+ | 0.3− |
| 2001 09 10                              | 704        | 0.1− | 0.1+     | 2003 02 02 | 699 | 0.6+        | 0.9+ | 2007 11 20  | 704 | 0.6− | 0.7− |
| 2001 09 10                              | 704        | 0.0  | 0.3+     | 2006 07 21 | D35 | 0.3−        | 0.1− | 2007 12 06  | 691 | 0.2− | 0.0  |
| 2001 09 10                              | 704        | 0.2+ | 0.4−     | 2006 07 21 | D35 | 0.4−        | 0.4− | 2007 12 06  | 691 | 0.2− | 0.0  |
| 2001 09 10                              | 704        | 0.2+ | 0.4+     | 2006 07 21 | D35 | 0.6−        | 0.3− | 2007 12 06  | 691 | 0.1− | 0.0  |
| 2001 09 29                              | 644        | 0.3+ | 0.3+     | 2006 08 31 | 568 | 0.3+        | 0.6+ | 2007 12 13  | 704 | 0.1− | 0.0  |
| 2001 09 29                              | 644        | 0.1− | 0.3+     | 2006 08 31 | 568 | 0.3+        | 0.5+ | 2007 12 13  | 704 | 0.3− | 0.9+ |
| 2001 09 29                              | 644        | 0.1+ | 0.1+     | 2006 08 31 | 568 | 0.3+        | 0.5+ | 2007 12 13  | 704 | 0.2− | 0.3− |
| 2001 10 13                              | 644        | 0.5− | 0.0      | 2006 09 01 | 568 | 0.3+        | 0.4− | 2007 12 13  | 704 | 0.7− | 0.3+ |
| 2001 10 13                              | 644        | 0.6− | 0.2+     | 2006 09 01 | 568 | 0.3+        | 0.4− | 2007 12 13  | 704 | 0.3+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |           |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-----------|
| 2001 10 13 | 644 | 0.1− | 0.2+ | 2006 09 01 | 568 | 0.3+ | 0.4− | 2007 12 15 | 704 | 0.0 0.4+  |
| 2001 10 15 | 608 | 0.4+ | 1.4− | 2007 10 09 | 704 | 0.4− | 0.3− | 2007 12 15 | 704 | 0.1+ 0.2− |
| 2001 10 15 | 608 | 0.2− | 1.4− | 2007 10 09 | 704 | 0.1− | 0.4− | 2007 12 15 | 704 | 0.2− 0.0  |
| 2001 10 15 | 608 | 0.1+ | 1.4− | 2007 10 09 | 704 | 1.4+ | 0.1+ | 2007 12 15 | 704 | 0.4− 0.0  |

**(171978)\* 2001 TR<sub>135</sub>**

Discovered 2001 Oct. 13 by NEAT at Palomar.

|                                         |            |      |      |                    |     |               |       |            |             |       |       |
|-----------------------------------------|------------|------|------|--------------------|-----|---------------|-------|------------|-------------|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |                    |     | MPC           |       |            |             |       |       |
| <i>M</i>                                | 341.51544  |      |      | (2000.0)           |     | <b>P</b>      |       |            | <b>Q</b>    |       |       |
| <i>n</i>                                | 0.17747822 |      |      | $\omega$ 189.99062 |     | +0.00940119   |       |            | −0.98714215 |       |       |
| <i>a</i>                                | 3.1359756  |      |      | $\Omega$ 259.60025 |     | +0.92827361   |       |            | +0.06794479 |       |       |
| <i>e</i>                                | 0.2074582  |      |      | <i>i</i> 9.33655   |     | +0.37177912   |       |            | −0.14468548 |       |       |
| <i>P</i>                                | 5.55       |      |      | <i>H</i> 15.2      |     | <i>G</i> 0.15 |       |            | <i>U</i> 1  |       |       |
| Residuals in seconds of arc             |            |      |      |                    |     |               |       |            |             |       |       |
| 2001 09 25                              | 704        | 0.2− | 0.7+ | 2003 01 28         | 704 | 0.3−          | 0.3+  | 2007 11 15 | 704         | 0.3−  | 0.9+  |
| 2001 09 25                              | 704        | 0.5− | 0.6+ | 2003 02 03         | 608 | (1.0+         | 1.7+) | 2007 11 15 | 704         | 0.2+  | 0.2−  |
| 2001 09 25                              | 704        | 0.1− | 0.4+ | 2003 02 03         | 608 | 1.1+          | 0.7+  | 2007 11 15 | 704         | 0.5−  | 0.6+  |
| 2001 09 25                              | 704        | 0.8− | 0.3− | 2003 02 03         | 608 | 0.5+          | 1.2+  | 2007 11 20 | 704         | 1.0+  | 1.3−  |
| 2001 09 25                              | 704        | 0.1− | 0.4+ | 2003 03 08         | 699 | (0.9−         | 2.5+) | 2007 11 20 | 704         | (1.4+ | 1.7−) |
| 2001 09 29                              | 644        | 0.5+ | 0.6+ | 2003 03 08         | 699 | 1.2+          | 0.1+  | 2007 11 20 | 704         | 1.4+  | 1.4−  |
| 2001 09 29                              | 644        | 0.6+ | 0.7+ | 2003 03 08         | 699 | 1.0+          | 0.9+  | 2007 11 20 | 704         | (1.2+ | 1.7−) |
| 2001 09 29                              | 644        | 0.5+ | 0.7+ | 2003 03 08         | 699 | 0.4−          | 0.0   | 2007 11 20 | 704         | (1.1+ | 1.6−) |
| 2001 10 13                              | 644        | 0.0  | 0.8+ | 2006 05 25         | G96 | 0.6−          | 0.3+  | 2007 12 10 | 704         | 0.2−  | 0.2+  |
| 2001 10 13                              | 644        | 0.3− | 0.4+ | 2006 05 25         | G96 | 0.2−          | 0.4+  | 2007 12 10 | 704         | 0.5−  | 0.4+  |
| 2001 10 13                              | 644        | 0.0  | 0.4+ | 2006 05 25         | G96 | 0.3+          | 0.8+  | 2007 12 10 | 704         | 0.0   | 0.7+  |
| 2001 10 15                              | 608        | 0.1− | 0.4− | 2006 05 25         | G96 | 0.1+          | 0.5+  | 2007 12 14 | 704         | 0.6+  | 0.1−  |
| 2001 10 15                              | 608        | 0.2− | 0.4− | 2007 11 02         | 691 | 0.2−          | 0.0   | 2007 12 14 | 704         | 0.3+  | 0.2−  |
| 2001 10 15                              | 608        | 0.1− | 0.5− | 2007 11 02         | 691 | 0.4−          | 0.0   | 2007 12 14 | 704         | 0.2+  | 0.1−  |
| 2001 10 26                              | 644        | 0.6− | 0.0  | 2007 11 02         | 691 | 0.3−          | 0.2−  | 2007 12 14 | 704         | 0.5+  | 0.2+  |
| 2001 10 26                              | 644        | 0.2− | 0.3+ | 2007 11 10         | D29 | 0.4−          | 0.4−  | 2007 12 14 | 704         | 0.2−  | 0.2−  |
| 2001 10 26                              | 644        | 0.1− | 0.2+ | 2007 11 10         | D29 | 0.0           | 0.1−  | 2007 12 15 | G96         | 0.2+  | 0.6−  |
| 2003 01 28                              | 704        | 0.3− | 0.5+ | 2007 11 10         | D29 | 0.2+          | 0.3−  | 2007 12 15 | G96         | 0.5+  | 0.6−  |
| 2003 01 28                              | 704        | 0.3− | 0.1+ | 2007 11 10         | D29 | 0.0           | 0.3−  | 2007 12 15 | G96         | 0.3+  | 0.6−  |
| 2003 01 28                              | 704        | 0.1− | 0.8+ | 2007 11 15         | 704 | 0.1−          | 0.5+  | 2007 12 15 | G96         | 0.5+  | 0.7−  |
| 2003 01 28                              | 704        | 0.2− | 0.5+ | 2007 11 15         | 704 | 0.7−          | 0.3+  |            |             |       |       |

**(171979)\* 2001 TW<sub>135</sub> = 2005 JS<sub>125</sub>**

Discovered 2001 Oct. 13 by NEAT at Palomar.

|                                         |            |          |           |             |      |       |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------|-------------|------------|-----|------|------|
| Id. G. V. Williams ( <i>MPO</i> 75166)  |            |          |           |             |      |       |             |            |     |      |      |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      | MPC   |             |            |     |      |      |
| <i>M</i>                                | 52.93993   |          | (2000.0)  | <b>P</b>    |      |       | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.18025458 | $\omega$ | 107.06486 | +0.98497447 |      |       | +0.07074532 |            |     |      |      |
| <i>a</i>                                | 3.1036913  | $\Omega$ | 249.10384 | −0.12095128 |      |       | +0.93374108 |            |     |      |      |
| <i>e</i>                                | 0.1460103  | <i>i</i> | 9.70854   | +0.12327236 |      |       | +0.35088844 |            |     |      |      |
| <i>P</i>                                | 5.47       | <i>H</i> | 14.7      | <i>G</i>    | 0.15 |       | <i>U</i>    | 0          |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |       |             |            |     |      |      |
| 2001 09 19                              | 699        | 0.1−     | 0.3−      | 2001 11 09  | 049  | 0.9+  | 0.5−        | 2006 08 22 | 621 | 0.3− | 0.5− |
| 2001 09 19                              | 699        | 0.7−     | 0.1+      | 2001 11 09  | 049  | 0.3+  | 0.4−        | 2006 08 22 | 621 | 0.3− | 0.4− |
| 2001 09 19                              | 699        | 1.2−     | 0.2+      | 2001 11 09  | 049  | 0.3+  | 0.8−        | 2007 11 06 | 691 | 0.4− | 0.1− |
| 2001 09 19                              | 699        | 1.0−     | 0.4+      | 2001 11 10  | 704  | 0.8+  | 0.4−        | 2007 11 06 | 691 | 0.4− | 0.1− |
| 2001 09 25                              | 704        | 0.3−     | 0.7+      | 2001 11 10  | 704  | 0.8+  | 0.3−        | 2007 11 06 | 691 | 0.4− | 0.0  |
| 2001 09 25                              | 704        | 0.2+     | 0.4−      | 2001 11 10  | 704  | 1.2+  | 0.1−        | 2007 11 10 | D29 | 0.1− | 0.3+ |
| 2001 09 25                              | 704        | 0.6−     | 0.6−      | 2001 11 10  | 704  | 1.1+  | 0.7−        | 2007 11 10 | D29 | 0.1+ | 0.2+ |
| 2001 09 25                              | 704        | 0.4+     | 1.5−      | 2001 11 10  | 704  | (1.8+ | 0.2+)       | 2007 11 10 | D29 | 0.1− | 0.1− |
| 2001 09 25                              | 704        | 0.2+     | 1.3−      | 2001 11 17  | 704  | (0.6− | 2.0−)       | 2007 11 10 | D29 | 0.3+ | 0.3− |
| 2001 09 29                              | 644        | 0.1+     | 1.0+      | 2001 11 17  | 704  | (0.4+ | 2.3−)       | 2007 11 14 | 704 | 0.0  | 0.9+ |
| 2001 09 29                              | 644        | 0.3+     | 0.9+      | 2001 11 17  | 704  | (1.1− | 1.7−)       | 2007 11 14 | 704 | 0.2− | 0.2+ |
| 2001 09 29                              | 644        | 0.3+     | 0.9+      | 2001 11 17  | 704  | (0.7− | 1.8−)       | 2007 11 14 | 704 | 0.7− | 0.1+ |
| 2001 10 13                              | 699        | 0.6+     | 0.2+      | 2003 01 13  | 644  | 0.4+  | 0.8+        | 2007 11 14 | 704 | 0.4− | 0.1+ |
| 2001 10 13                              | 699        | 0.2+     | 0.5−      | 2003 01 13  | 644  | 1.0+  | 0.7+        | 2007 12 03 | 703 | 0.0  | 0.6+ |
| 2001 10 13                              | 699        | 0.2−     | 0.2+      | 2003 01 13  | 644  | 1.0+  | 0.8+        | 2007 12 03 | 703 | 0.3+ | 0.2− |
| 2001 10 13                              | 699        | 0.4+     | 0.2−      | 2005 05 11  | 644  | 0.3−  | 0.2+        | 2007 12 03 | 703 | 0.1− | 0.6+ |
| 2001 10 13                              | 644        | 0.2+     | 0.1+      | 2005 05 11  | 644  | 0.3−  | 0.3+        | 2007 12 04 | G96 | 0.1− | 0.1− |

2007 DEC. 24

M.P.O. 129225

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 13 | 644 | 0.0  | 0.0  | 2005 05 11 | 644 | 0.1-  | 0.6+  | 2007 12 04 | G96 | 0.0   | 0.0   |
| 2001 10 13 | 644 | 0.1+ | 0.0  | 2005 05 16 | 644 | 0.2-  | 0.2-  | 2007 12 04 | G96 | 0.1+  | 0.0   |
| 2001 10 15 | 608 | 0.7- | 0.1+ | 2005 05 16 | 644 | 0.0   | 0.2+  | 2007 12 04 | G96 | 0.2+  | 0.0   |
| 2001 10 15 | 608 | 0.5- | 0.1- | 2005 05 16 | 644 | 0.0   | 0.3+  | 2007 12 05 | 704 | 1.4+  | 0.2+  |
| 2001 10 15 | 608 | 0.5- | 0.3- | 2006 07 21 | 703 | (1.2- | 2.1+) | 2007 12 05 | 704 | 1.6+  | 0.1+  |
| 2001 10 17 | 704 | 0.8- | 1.0+ | 2006 07 21 | 703 | 0.6-  | 1.3+  | 2007 12 05 | 704 | (2.3+ | 0.6+) |
| 2001 10 17 | 704 | 0.4- | 0.3+ | 2006 07 21 | 703 | 0.1+  | 1.2+  | 2007 12 05 | 704 | (2.2+ | 0.9+) |
| 2001 10 17 | 704 | 0.4- | 0.2- | 2006 07 21 | 703 | 0.7+  | 0.6+  | 2007 12 05 | 704 | 1.2+  | 0.4+  |
| 2001 10 17 | 704 | 0.3- | 0.2+ | 2006 07 26 | A50 | 0.4+  | 0.3+  | 2007 12 15 | G96 | 0.1-  | 0.0   |
| 2001 10 17 | 704 | 0.4- | 0.4+ | 2006 07 26 | A50 | 0.4+  | 0.8+  | 2007 12 15 | G96 | 0.0   | 0.2-  |
| 2001 10 26 | 644 | 0.3- | 0.0  | 2006 07 27 | A50 | 0.2+  | 0.2-  | 2007 12 15 | G96 | 0.3+  | 0.1-  |
| 2001 10 26 | 644 | 0.1- | 0.2+ | 2006 07 27 | A50 | 0.2-  | 0.7+  | 2007 12 15 | G96 | 0.0   | 0.1-  |
| 2001 10 26 | 644 | 0.0  | 0.4+ | 2006 08 22 | 621 | 0.3-  | 0.3-  |            |     |       |       |

(171980)\* 2001 TO<sub>145</sub>

Discovered 2001 Oct. 10 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 42.89229   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.18482335 | $\omega$ | 341.93371 | +0.89692448  | -0.39672824  |
| $a$ | 3.0523300  | $\Omega$ | 43.14106  | +0.43270354  | +0.69651369  |
| $e$ | 0.2046949  | $i$      | 16.59339  | +0.09107211  | +0.59789245  |
| $P$ | 5.33       | $H$      | 14.9      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 12 | 704 | 1.2-  | 1.5+  | 2001 10 19 | 699 | 0.1-  | 0.7+  | 2006 07 29 | E12 | 0.5-  | 0.1+  |
| 2001 09 12 | 704 | (2.0- | 0.1+) | 2001 10 19 | 699 | 0.0   | 0.7+  | 2006 08 13 | E12 | 0.1+  | 0.8+  |
| 2001 09 12 | 704 | (1.7- | 0.6+) | 2001 10 19 | 699 | 0.2-  | 0.4+  | 2006 08 13 | E12 | 0.2+  | 0.2+  |
| 2001 09 17 | 699 | 0.3-  | 0.3+  | 2001 10 20 | 704 | 0.5+  | 0.1-  | 2006 08 13 | E12 | 0.4+  | 0.2+  |
| 2001 09 17 | 699 | 0.4-  | 0.3-  | 2001 10 20 | 704 | 0.6+  | 0.0   | 2006 08 13 | E12 | 0.5+  | 0.2+  |
| 2001 09 17 | 699 | 0.1+  | 0.2+  | 2001 10 20 | 704 | 0.8+  | 0.1-  | 2006 08 25 | E12 | 0.3+  | 0.5-  |
| 2001 09 17 | 699 | 0.3-  | 0.3+  | 2001 10 20 | 704 | 0.7+  | 0.2-  | 2006 08 25 | E12 | 0.6+  | 0.0   |
| 2001 09 21 | 644 | 0.6-  | 0.3+  | 2001 11 12 | 645 | 0.1+  | 0.2-  | 2006 08 25 | E12 | 0.0   | 0.3+  |
| 2001 09 21 | 644 | 0.6-  | 0.2+  | 2001 11 12 | 645 | 0.1+  | 0.2-  | 2006 08 25 | E12 | 0.1-  | 0.3-  |
| 2001 09 21 | 644 | 0.7-  | 0.2+  | 2001 11 15 | 644 | 1.1-  | 0.7-  | 2006 09 12 | E12 | (0.4+ | 3.1-) |
| 2001 09 25 | 704 | 1.0-  | 0.7+  | 2001 11 15 | 644 | 0.1-  | 0.2+  | 2006 09 12 | E12 | 0.4-  | 0.1-  |
| 2001 09 25 | 704 | 0.4-  | 0.4+  | 2001 11 15 | 644 | 0.6-  | 0.6+  | 2006 09 12 | E12 | 0.8-  | 0.1+  |
| 2001 09 25 | 704 | 0.5-  | 0.6+  | 2001 11 18 | 704 | 0.7+  | 0.1+  | 2006 09 12 | E12 | 0.6-  | 0.5-  |
| 2001 09 25 | 704 | 0.4-  | 0.3+  | 2001 11 18 | 704 | 0.2-  | 0.3+  | 2007 11 05 | 703 | 0.8-  | 0.3-  |
| 2001 09 25 | 704 | 0.9-  | 0.9+  | 2001 11 18 | 704 | (2.0- | 0.0 ) | 2007 11 05 | 703 | 1.0-  | 1.1+  |
| 2001 10 10 | 644 | 0.0   | 0.1+  | 2001 11 18 | 704 | 0.3-  | 0.2-  | 2007 11 05 | 703 | (2.0- | 1.7+) |
| 2001 10 10 | 644 | 0.0   | 0.2+  | 2001 11 20 | 704 | 0.6-  | 0.3+  | 2007 11 05 | 703 | (3.0- | 1.1+) |
| 2001 10 10 | 644 | 0.1+  | 0.2+  | 2001 11 20 | 704 | 0.4+  | 0.7+  | 2007 11 09 | 704 | 0.3-  | 0.2+  |
| 2001 10 16 | 704 | 0.5-  | 0.3+  | 2001 11 20 | 704 | 0.3+  | 0.1+  | 2007 11 09 | 704 | 0.2+  | 0.1+  |
| 2001 10 16 | 704 | 0.3-  | 0.1+  | 2001 11 20 | 704 | 0.0   | 0.3-  | 2007 11 09 | 704 | 0.7+  | 0.1-  |
| 2001 10 16 | 704 | 0.4-  | 0.6+  | 2001 11 20 | 704 | 0.6-  | 0.2-  | 2007 11 09 | 704 | 0.6+  | 0.6+  |
| 2001 10 16 | 704 | (0.6- | 2.0+) | 2004 04 26 | 691 | 0.2+  | 0.3+  | 2007 11 09 | 704 | 0.2+  | 0.2+  |
| 2001 10 16 | 704 | 0.8+  | 1.4+  | 2004 04 26 | 691 | 0.0   | 0.1+  | 2007 12 03 | 704 | 0.0   | 0.2-  |
| 2001 10 16 | 644 | 0.9+  | 0.7-  | 2004 04 26 | 691 | 0.3+  | 0.3+  | 2007 12 03 | 704 | 0.1-  | 0.1+  |
| 2001 10 16 | 644 | 0.8+  | 0.8-  | 2006 07 29 | E12 | 0.0   | 0.7-  | 2007 12 03 | 704 | 0.2-  | 0.0   |
| 2001 10 16 | 644 | 1.1+  | 0.9-  | 2006 07 29 | E12 | 0.5-  | 0.2+  | 2007 12 03 | 704 | 0.7+  | 0.2+  |
| 2001 10 19 | 699 | 0.1-  | 0.3+  | 2006 07 29 | E12 | 0.3+  | 0.0   | 2007 12 03 | 704 | 0.6+  | 0.3+  |

(171981)\* 2001 TB<sub>150</sub>

Discovered 2001 Oct. 10 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 327.45077  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.17556248 | $\omega$ | 41.77972 | -0.25633569  | -0.95600579  |
| $a$ | 3.1587475  | $\Omega$ | 63.52521 | +0.83923035  | -0.29333850  |
| $e$ | 0.1632548  | $i$      | 9.16895  | +0.47956693  | +0.00233580  |
| $P$ | 5.61       | $H$      | 15.1     | $G$ 0.15     | $U$ 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 10 | 644 | (0.0  | 1.6+) | 2003 02 19 | 644 | 0.2- | 0.0  | 2007 11 08 | 701 | 0.3- | 0.1+ |
| 2001 10 10 | 644 | (1.0- | 1.6+) | 2003 02 19 | 644 | 0.2- | 0.0  | 2007 11 08 | 701 | 0.3+ | 0.4+ |
| 2001 10 10 | 644 | (0.4- | 2.2+) | 2003 02 19 | 644 | 0.1- | 0.1+ | 2007 11 09 | 701 | 0.1+ | 0.1- |
| 2001 10 16 | 704 | 0.1-  | 0.2+  | 2003 02 26 | 704 | 0.5- | 1.1+ | 2007 11 09 | 701 | 0.5+ | 0.1- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 16 | 704 | 0.7- | 0.8+ | 2003 02 26 | 704 | 0.2+  | 0.7+  | 2007 11 09 | 701 | 0.2+ | 0.2+ |
| 2001 10 16 | 704 | 1.0- | 1.3+ | 2003 02 26 | 704 | 0.9+  | 1.2+  | 2007 11 13 | 691 | 0.3- | 0.0  |
| 2001 10 16 | 644 | 0.5- | 0.1- | 2003 02 26 | 704 | (0.3+ | 1.7+) | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2001 10 16 | 644 | 0.6- | 0.2- | 2003 03 08 | 644 | 0.1+  | 0.3+  | 2007 11 13 | 691 | 0.1- | 0.2+ |
| 2001 10 16 | 644 | 0.7- | 0.1+ | 2003 03 08 | 644 | 0.1-  | 0.1+  | 2007 11 14 | 691 | 0.1+ | 0.1- |
| 2001 10 24 | 644 | 0.1- | 1.4+ | 2003 03 08 | 644 | 0.1+  | 0.2+  | 2007 11 14 | 691 | 0.8- | 1.1+ |
| 2001 10 24 | 644 | 0.2+ | 1.4+ | 2004 05 28 | 691 | 0.6+  | 0.4+  | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2001 10 24 | 644 | 0.1+ | 1.4+ | 2004 05 28 | 691 | 0.1-  | 0.6+  | 2007 11 15 | 704 | 0.4- | 0.3+ |
| 2001 11 16 | 843 | 0.3+ | 0.4+ | 2004 05 28 | 691 | 0.2+  | 0.5+  | 2007 11 15 | 704 | 0.3+ | 0.7+ |
| 2001 11 16 | 843 | 0.8- | 0.5+ | 2004 06 08 | 691 | 0.1+  | 0.3+  | 2007 11 15 | 704 | 0.6- | 0.6+ |
| 2002 12 31 | 704 | 0.7- | 0.5+ | 2004 06 08 | 691 | 0.1+  | 0.0   | 2007 11 15 | 704 | 0.1+ | 0.1+ |
| 2002 12 31 | 704 | 0.0  | 0.3+ | 2004 06 08 | 691 | 0.0   | 0.1+  | 2007 11 15 | 704 | 0.2+ | 0.6+ |
| 2002 12 31 | 704 | 0.7+ | 0.0  | 2007 11 01 | 691 | 0.4-  | 0.1-  | 2007 12 02 | D35 | 0.1+ | 0.1+ |
| 2002 12 31 | 704 | 0.6+ | 0.3- | 2007 11 01 | 691 | 0.4-  | 0.0   | 2007 12 02 | D35 | 0.1+ | 0.1+ |
| 2003 01 10 | 704 | 0.7- | 0.4- | 2007 11 01 | 691 | 0.2-  | 0.0   | 2007 12 02 | D35 | 0.0  | 0.2+ |
| 2003 01 10 | 704 | 0.8- | 0.5- | 2007 11 05 | 704 | 0.7+  | 0.1+  | 2007 12 04 | 699 | 0.6+ | 0.6- |
| 2003 01 10 | 704 | 0.2- | 0.2+ | 2007 11 05 | 704 | 0.6+  | 0.1-  | 2007 12 04 | 699 | 0.7+ | 0.2- |
| 2003 01 10 | 704 | 0.6+ | 0.1+ | 2007 11 05 | 704 | 0.4+  | 0.0   | 2007 12 04 | 699 | 0.6+ | 0.2+ |
| 2003 01 10 | 704 | 0.3+ | 0.7- | 2007 11 05 | 704 | 1.1+  | 0.4-  | 2007 12 04 | 699 | 0.4+ | 0.5- |
| 2003 01 28 | 644 | 0.1- | 0.8- | 2007 11 05 | 691 | 0.0   | 0.0   | 2007 12 10 | 704 | 0.3+ | 0.8- |
| 2003 01 28 | 644 | 0.2+ | 0.6+ | 2007 11 05 | 704 | 0.8+  | 0.1-  | 2007 12 10 | 704 | 0.3+ | 0.6- |
| 2003 01 28 | 644 | 0.0  | 0.6- | 2007 11 05 | 691 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 0.6- | 0.3+ |
| 2003 01 28 | 644 | 0.2+ | 0.3+ | 2007 11 05 | G96 | 0.5+  | 0.2-  | 2007 12 15 | G96 | 0.6+ | 0.7- |
| 2003 01 28 | 644 | 0.1+ | 0.6- | 2007 11 05 | G96 | 0.5+  | 0.3-  | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2003 01 28 | 644 | 0.1+ | 0.4+ | 2007 11 05 | 691 | 0.3-  | 0.0   | 2007 12 15 | G96 | 0.3+ | 0.4- |
| 2003 02 02 | 644 | 0.5+ | 0.4+ | 2007 11 05 | G96 | 0.3+  | 0.2-  | 2007 12 15 | G96 | 0.1- | 0.8- |
| 2003 02 02 | 644 | 0.4- | 0.3- | 2007 11 05 | G96 | 0.1+  | 0.2-  |            |     |      |      |
| 2003 02 02 | 644 | 0.3+ | 0.7+ | 2007 11 08 | 701 | 0.2-  | 0.0   |            |     |      |      |

(171982)\* 2001 TP<sub>152</sub>

Discovered 2001 Oct. 10 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 47.38569   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.17537993 | $\omega$ | 293.38797 | +0.97984029  | +0.11740082  |
| $a$ | 3.1609391  | $\Omega$ | 60.21759  | -0.02686548  | +0.87920041  |
| $e$ | 0.2255750  | $i$      | 10.73390  | -0.19796779  | +0.46176151  |
| $P$ | 5.62       | $H$      | 15.3      | $G$          | $U$          |
|     |            |          |           | 0.15         | 0            |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 22 | 645 | 0.1+  | 0.1+  | 2001 10 20 | 704 | 0.2- | 0.1+ | 2006 08 26 | E12 | 0.7+  | 0.4-  |
| 1999 03 22 | 645 | 0.1+  | 0.1+  | 2001 10 24 | 644 | 0.4- | 0.4+ | 2006 08 26 | E12 | 0.5-  | 0.1+  |
| 2001 09 17 | 699 | 0.2+  | 1.1-  | 2001 10 24 | 644 | 0.5- | 0.1+ | 2006 08 26 | E12 | 0.6+  | 0.4-  |
| 2001 09 17 | 699 | (0.2- | 2.7+) | 2001 10 24 | 644 | 0.4- | 0.3+ | 2006 08 26 | E12 | 1.2-  | 0.2+  |
| 2001 09 17 | 699 | 0.3+  | 0.4+  | 2001 11 15 | 644 | 0.6- | 1.1+ | 2007 09 18 | G96 | 0.0   | 0.4-  |
| 2001 09 17 | 699 | 0.6+  | 1.3+  | 2001 11 15 | 644 | 0.5- | 0.2+ | 2007 09 18 | G96 | 0.5+  | 0.3-  |
| 2001 10 10 | 644 | 0.6-  | 0.7+  | 2001 11 15 | 644 | 0.3- | 0.2- | 2007 09 18 | G96 | 0.4+  | 0.3-  |
| 2001 10 10 | 644 | 0.6-  | 0.3+  | 2001 11 18 | 704 | 0.3+ | 0.5- | 2007 09 18 | G96 | 0.3+  | 0.2-  |
| 2001 10 10 | 644 | 0.5-  | 0.8+  | 2001 11 18 | 704 | 0.1- | 0.3+ | 2007 11 02 | 691 | 0.0   | 0.1+  |
| 2001 10 14 | 699 | 1.2+  | 0.0   | 2001 11 18 | 704 | 0.3+ | 0.8+ | 2007 11 02 | 691 | 0.2-  | 0.7-  |
| 2001 10 14 | 699 | 0.2-  | 0.1+  | 2001 11 18 | 704 | 0.3+ | 0.5+ | 2007 11 02 | 691 | 0.6-  | 0.7-  |
| 2001 10 14 | 699 | 0.0   | 0.6-  | 2001 11 18 | 704 | 0.3+ | 0.2+ | 2007 11 15 | 704 | 1.3+  | 1.2+  |
| 2001 10 14 | 699 | 0.9-  | 0.0   | 2005 04 30 | 691 | 0.0  | 0.2+ | 2007 11 15 | 704 | 0.7+  | 0.1+  |
| 2001 10 16 | 704 | 0.1+  | 0.3-  | 2005 04 30 | 691 | 1.1- | 0.7- | 2007 11 15 | 704 | 1.5+  | 1.5+  |
| 2001 10 16 | 704 | 0.4+  | 0.3-  | 2005 04 30 | 691 | 0.3+ | 0.5+ | 2007 11 15 | 704 | 1.1+  | 0.1+  |
| 2001 10 16 | 704 | 0.5-  | 0.3+  | 2006 07 20 | E12 | 0.3- | 0.3+ | 2007 12 10 | 704 | (0.6+ | 1.6+) |
| 2001 10 16 | 704 | 0.6+  | 0.4-  | 2006 07 20 | E12 | 0.3- | 0.5+ | 2007 12 10 | 704 | 1.3+  | 0.8+  |
| 2001 10 16 | 704 | 0.1-  | 0.2+  | 2006 07 20 | E12 | 0.4+ | 0.4+ | 2007 12 10 | 704 | (2.1+ | 0.4-) |
| 2001 10 16 | 644 | 0.5-  | 0.1+  | 2006 07 20 | E12 | 0.7+ | 0.2- | 2007 12 15 | 704 | 0.7-  | 0.1+  |
| 2001 10 16 | 644 | 0.5-  | 0.2+  | 2006 07 20 | E12 | 0.1- | 0.1- | 2007 12 15 | 704 | 0.4-  | 0.4+  |
| 2001 10 16 | 644 | 1.0-  | 0.3+  | 2006 07 29 | E12 | 0.3- | 0.1+ | 2007 12 15 | 704 | 1.0-  | 0.1+  |
| 2001 10 20 | 704 | 0.0   | 0.4+  | 2006 07 29 | E12 | 0.3+ | 0.3+ | 2007 12 15 | 704 | 0.7-  | 0.4+  |
| 2001 10 20 | 704 | 0.3-  | 0.2-  | 2006 07 29 | E12 | 0.4+ | 0.6+ | 2007 12 15 | 704 | 0.1-  | 0.0   |
| 2001 10 20 | 704 | 0.4+  | 0.0   | 2006 07 29 | E12 | 0.0  | 0.2- |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 33.57162   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.18262752 | $\omega$ | 78.79888  |     | +0.91058583 |     | -0.41262920 |
| $a$ | 3.0767478  | $\Omega$ | 305.56694 |     | +0.36683314 |     | +0.83344811 |
| $e$ | 0.0993392  | $i$      | 1.68277   |     | +0.19043870 |     | +0.36756141 |
| $P$ | 5.40       | $H$      | 16.3      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 704 | 0.5-  | 0.8-  | 2001 10 21 | 704 | 0.8+ | 0.3+ | 2006 08 28 | 703 | 0.5+ | 0.4+ |
| 2001 09 20 | 704 | 1.3-  | 1.0+  | 2001 10 24 | 691 | 0.2+ | 0.1+ | 2006 09 26 | G96 | 0.0  | 0.3- |
| 2001 09 20 | 704 | 0.7+  | 0.4+  | 2001 10 24 | 691 | 0.0  | 0.3+ | 2006 09 26 | G96 | 0.1- | 0.2- |
| 2001 09 20 | 704 | 0.9-  | 0.1-  | 2001 10 24 | 691 | 0.1+ | 0.2+ | 2006 09 26 | G96 | 0.1+ | 0.0  |
| 2001 10 11 | 644 | 0.4-  | 0.6+  | 2004 03 17 | 691 | 0.5+ | 0.1+ | 2006 09 26 | G96 | 0.6- | 0.5- |
| 2001 10 11 | 644 | 0.6-  | 0.3+  | 2004 03 17 | 691 | 0.7+ | 0.2+ | 2007 11 09 | 691 | 0.2- | 0.1+ |
| 2001 10 11 | 644 | 0.6-  | 0.3+  | 2004 03 17 | 691 | 0.4+ | 0.5+ | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2001 10 18 | 644 | 0.6-  | 0.7+  | 2004 03 23 | 291 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.2- | 0.2+ |
| 2001 10 18 | 644 | 0.4-  | 1.1+  | 2004 03 23 | 291 | 1.0- | 0.5+ | 2007 11 13 | 691 | 0.1+ | 0.3- |
| 2001 10 18 | 644 | 0.2-  | 0.0   | 2004 03 23 | 291 | 0.6- | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.3- |
| 2001 10 21 | 691 | 0.1+  | 0.1-  | 2004 03 29 | 691 | 0.4+ | 0.4- | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2001 10 21 | 704 | (1.6+ | 0.8+) | 2004 03 29 | 691 | 0.2+ | 0.3- | 2007 12 15 | G96 | 0.1+ | 0.2- |
| 2001 10 21 | 691 | 0.1+  | 0.1+  | 2004 03 29 | 691 | 0.1+ | 0.5+ | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2001 10 21 | 704 | 0.1+  | 0.2-  | 2006 08 28 | 703 | 0.3- | 1.0+ | 2007 12 15 | G96 | 0.6+ | 0.0  |
| 2001 10 21 | 691 | 0.1+  | 0.0   | 2006 08 28 | 703 | 0.2- | 0.6+ | 2007 12 15 | G96 | 0.5+ | 0.1+ |
| 2001 10 21 | 704 | 0.6-  | 0.6-  | 2006 08 28 | 703 | 0.3+ | 0.3- |            |     |      |      |

**(171984)\* 2001 TQ<sub>175</sub>**

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 356.00822  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17524002 | $\omega$ | 86.19298  |     | +0.59084017 |     | -0.80568627 |
| $a$ | 3.1626213  | $\Omega$ | 327.47298 |     | +0.70560470 |     | +0.54137175 |
| $e$ | 0.1751449  | $i$      | 4.49716   |     | +0.39119036 |     | +0.24038772 |
| $P$ | 5.62       | $H$      | 16.0      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |       |            |     |       |       |            |     |       |       |
|------------|-----|------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 07 22 | 691 | 0.5- | 0.1+  | 2007 10 09 | 691 | 0.2-  | 0.0   | 2007 11 09 | 691 | 0.0   | 0.1-  |
| 1995 07 22 | 691 | 0.3- | 0.0   | 2007 10 21 | 703 | (0.7+ | 1.6-) | 2007 11 09 | 691 | 0.1+  | 0.2-  |
| 1995 07 22 | 691 | 0.1+ | 0.4-  | 2007 10 21 | 703 | 0.4-  | 0.6+  | 2007 11 09 | 704 | 0.3+  | 0.3+  |
| 1995 07 27 | 691 | 0.3+ | 0.0   | 2007 10 21 | 703 | 0.5-  | 0.8+  | 2007 11 09 | 704 | 0.3-  | 0.1-  |
| 1995 07 27 | 691 | 0.3+ | 0.6+  | 2007 10 21 | 703 | (2.0- | 0.4+) | 2007 11 09 | 704 | 0.3+  | 0.3+  |
| 1995 07 27 | 691 | (0.0 | 5.7-) | 2007 11 01 | 691 | 0.8-  | 0.1-  | 2007 11 09 | 704 | 0.6+  | 0.6+  |
| 2001 08 27 | 644 | 0.0  | 0.2-  | 2007 11 01 | 691 | 0.1+  | 0.2-  | 2007 11 09 | 704 | 0.1+  | 0.3-  |
| 2001 08 27 | 644 | 0.5- | 0.3-  | 2007 11 01 | 691 | 0.0   | 0.1-  | 2007 11 13 | 691 | 0.1-  | 0.2-  |
| 2001 08 27 | 644 | 0.2- | 0.0   | 2007 11 02 | 704 | (1.7- | 1.5-) | 2007 11 13 | 691 | 0.3-  | 0.6-  |
| 2001 09 23 | 704 | 0.0  | 0.7+  | 2007 11 02 | 704 | 0.0   | 0.2+  | 2007 11 13 | 691 | 0.3-  | 0.1-  |
| 2001 09 23 | 704 | 0.0  | 0.5+  | 2007 11 02 | 704 | 0.8+  | 0.1+  | 2007 11 13 | 699 | 0.1+  | 0.5+  |
| 2001 09 23 | 704 | 0.8+ | 1.2+  | 2007 11 02 | 704 | 0.7+  | 0.5-  | 2007 11 13 | 699 | 1.2+  | 0.5+  |
| 2001 10 06 | 644 | 0.8- | 0.4+  | 2007 11 02 | 704 | 0.2-  | 0.1-  | 2007 11 13 | 699 | 0.4+  | 0.3-  |
| 2001 10 06 | 644 | 0.7- | 0.4+  | 2007 11 02 | 703 | 0.6-  | 0.4+  | 2007 11 13 | 699 | 0.1+  | 0.2-  |
| 2001 10 06 | 644 | 0.8- | 0.3+  | 2007 11 02 | 703 | 0.1-  | 0.7+  | 2007 11 17 | 691 | 0.0   | 0.1+  |
| 2001 10 14 | 704 | 0.8+ | 0.5-  | 2007 11 02 | 703 | 0.9+  | 0.6-  | 2007 11 17 | 691 | 0.0   | 0.2-  |
| 2001 10 14 | 704 | 0.7+ | 0.1-  | 2007 11 02 | 703 | (0.6+ | 1.5-) | 2007 11 17 | 691 | 0.1+  | 0.0   |
| 2001 10 14 | 704 | 0.4- | 0.2+  | 2007 11 05 | 691 | 0.3-  | 0.2-  | 2007 11 20 | 704 | 0.5+  | 0.1+  |
| 2001 10 14 | 704 | 0.4- | 0.6-  | 2007 11 05 | 691 | 0.1-  | 0.1+  | 2007 11 20 | 704 | (0.3- | 1.6+) |
| 2001 10 18 | 644 | 0.2- | 0.4+  | 2007 11 05 | 691 | 0.1-  | 0.1-  | 2007 11 20 | 704 | 0.9+  | 0.5+  |
| 2001 10 18 | 644 | 0.5- | 0.2+  | 2007 11 07 | 691 | 0.1-  | 0.3-  | 2007 11 20 | 704 | 0.3-  | 0.1+  |
| 2001 10 18 | 644 | 0.3- | 0.2+  | 2007 11 07 | 691 | 0.2-  | 0.2-  | 2007 12 13 | 704 | 1.4+  | 0.5+  |
| 2001 10 21 | 704 | 1.3+ | 0.6-  | 2007 11 07 | 691 | 0.1-  | 0.0   | 2007 12 13 | 704 | 0.4+  | 0.9+  |
| 2001 10 21 | 704 | 0.2- | 0.2+  | 2007 11 08 | 704 | 0.2+  | 0.2-  | 2007 12 13 | 704 | 0.2+  | 0.5+  |
| 2001 10 21 | 704 | 0.7- | 0.5+  | 2007 11 08 | 704 | 0.4+  | 0.7-  | 2007 12 16 | 704 | 0.9+  | 0.1-  |
| 2003 02 01 | 645 | 0.0  | 0.1+  | 2007 11 08 | 704 | 0.5+  | 0.3+  | 2007 12 16 | 704 | 1.2+  | 0.4+  |
| 2003 02 01 | 645 | 0.0  | 0.1+  | 2007 11 08 | 704 | 0.5+  | 0.4+  | 2007 12 16 | 704 | 0.4+  | 0.3+  |
| 2007 10 09 | 691 | 0.4- | 0.1+  | 2007 11 08 | 704 | 0.4+  | 0.6+  | 2007 12 16 | 704 | 0.8+  | 0.7+  |
| 2007 10 09 | 691 | 0.0  | 0.1-  | 2007 11 09 | 691 | 0.2-  | 0.1-  |            |     |       |       |

**(171985)\* 2001 TB<sub>184</sub> = 2005 LT<sub>35</sub>**

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 75172)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 122.65654  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.18635529 | $\omega$ | 84.42102  |     | +0.43807465 |     | +0.89361544 |
| $a$ | 3.0355791  | $\Omega$ | 212.13536 |     | -0.88023543 |     | +0.40436906 |
| $e$ | 0.0664350  | $i$      | 10.58200  |     | -0.18241763 |     | +0.19477449 |
| $P$ | 5.29       | $H$      | 15.0      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 28 | 644 | 0.2- | 0.3+ | 2005 06 01 | 691 | 0.2-  | 0.4-  | 2006 08 28 | 704 | 0.2+  | 0.4-  |
| 2001 09 28 | 644 | 0.0  | 0.5+ | 2005 06 03 | 703 | (2.9+ | 0.5+) | 2006 09 16 | 644 | 0.1+  | 0.3+  |
| 2001 09 28 | 644 | 0.2+ | 0.3+ | 2005 06 03 | 703 | (2.1- | 0.4+) | 2006 09 16 | 644 | 0.4+  | 0.4+  |
| 2001 10 14 | 704 | 0.7- | 0.3+ | 2005 06 03 | 703 | 0.4+  | 0.0   | 2006 09 16 | 644 | 0.0   | 0.3+  |
| 2001 10 14 | 704 | 0.0  | 0.3+ | 2005 06 03 | 703 | 0.9-  | 0.6+  | 2006 09 18 | 703 | 0.3-  | 0.9+  |
| 2001 10 14 | 704 | 0.2+ | 0.9+ | 2005 06 11 | 691 | 0.2+  | 0.1+  | 2006 09 18 | 703 | 0.6-  | 0.1+  |
| 2001 10 14 | 704 | 0.5+ | 0.7+ | 2005 06 11 | 691 | 0.0   | 0.0   | 2006 09 18 | 703 | (0.4- | 1.6+) |
| 2001 10 18 | 644 | 0.1- | 0.4- | 2005 06 11 | 691 | 0.7-  | 0.6+  | 2006 09 18 | 703 | 0.0   | 1.0+  |
| 2001 10 18 | 644 | 0.4- | 0.7- | 2005 06 14 | 691 | 0.2+  | 0.3+  | 2006 09 20 | 699 | 0.4-  | 0.3+  |
| 2001 10 18 | 644 | 0.1- | 0.6- | 2005 06 14 | 691 | 0.2+  | 0.2+  | 2006 09 20 | 699 | (0.3- | 2.2-) |
| 2001 10 21 | 704 | 0.2+ | 0.2+ | 2005 06 14 | 691 | 0.2+  | 0.1+  | 2006 09 20 | 699 | 0.0   | 0.3-  |
| 2001 10 21 | 704 | 0.0  | 0.4- | 2005 06 24 | 644 | 0.0   | 0.2+  | 2006 09 20 | 699 | 0.2-  | 0.1-  |
| 2001 10 21 | 704 | 0.2- | 0.0  | 2005 06 24 | 644 | 0.2+  | 0.1+  | 2007 11 12 | 704 | 1.1+  | 0.6+  |
| 2001 10 21 | 704 | 0.1+ | 0.1- | 2005 06 24 | 644 | 0.1+  | 0.2+  | 2007 11 12 | 704 | 0.4-  | 0.8+  |
| 2001 10 21 | 704 | 0.1- | 0.1+ | 2005 06 29 | 691 | 0.1+  | 0.0   | 2007 11 12 | 704 | 0.5-  | 0.7+  |
| 2004 02 14 | 644 | 0.1+ | 0.8+ | 2005 06 29 | 691 | 0.2+  | 0.1+  | 2007 12 16 | 704 | 0.1-  | 0.4+  |
| 2004 02 14 | 644 | 0.7+ | 0.6+ | 2005 06 29 | 691 | 0.0   | 0.1+  | 2007 12 16 | 704 | 0.3+  | 1.3+  |
| 2004 02 14 | 644 | 0.5+ | 0.9+ | 2006 08 28 | 704 | 0.6+  | 1.1-  | 2007 12 16 | 704 | 0.4+  | 0.5+  |
| 2005 06 01 | 691 | 0.0  | 0.0  | 2006 08 28 | 704 | 0.4+  | 0.3-  | 2007 12 16 | 704 | 0.4-  | 1.2+  |
| 2005 06 01 | 691 | 0.2- | 0.1+ | 2006 08 28 | 704 | (3.6+ | 0.2-) |            |     |       |       |

**(171986)\* 2001 TX<sub>188</sub>**

Discovered 2001 Oct. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 37.33913   |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17526736 | $\omega$ | 16.25117 |     | +0.91126738 |     | -0.41161309 |
| $a$ | 3.1622924  | $\Omega$ | 8.09080  |     | +0.36689575 |     | +0.79724374 |
| $e$ | 0.1798484  | $i$      | 5.25925  |     | +0.18702747 |     | +0.44156209 |
| $P$ | 5.62       | $H$      | 14.9     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 07 28 | 691 | 0.2+ | 0.2- | 2001 11 24 | 704 | 0.1- | 0.2+ | 2006 08 23 | 704 | 0.1+ | 0.3- |
| 1995 07 28 | 691 | 0.1+ | 0.3- | 2001 11 24 | 704 | 0.0  | 0.7- | 2006 08 23 | 704 | 0.0  | 0.6+ |
| 1995 07 28 | 691 | 0.0  | 0.1- | 2001 12 10 | 704 | 0.4- | 0.9- | 2006 08 23 | 704 | 0.4+ | 0.2+ |
| 2001 10 12 | 699 | 0.3+ | 1.4+ | 2001 12 10 | 704 | 0.0  | 1.2- | 2006 08 23 | 704 | 0.7+ | 0.2+ |
| 2001 10 12 | 699 | 0.8- | 0.1+ | 2001 12 10 | 704 | 0.8- | 1.0- | 2006 08 23 | 644 | 0.0  | 0.1- |
| 2001 10 12 | 699 | 1.1+ | 0.1- | 2001 12 10 | 704 | 1.1- | 1.5- | 2006 08 23 | 644 | 0.0  | 0.3+ |
| 2001 10 12 | 699 | 0.2- | 0.8+ | 2001 12 10 | 704 | 1.3- | 0.8- | 2006 08 23 | 644 | 0.2- | 0.1+ |
| 2001 10 14 | 704 | 0.4+ | 0.2- | 2001 12 17 | 704 | 0.9+ | 0.7- | 2006 08 23 | 644 | 0.4- | 0.4+ |
| 2001 10 14 | 704 | 0.1+ | 0.2- | 2001 12 17 | 704 | 0.6+ | 0.3+ | 2006 08 23 | 644 | 0.1- | 0.1+ |
| 2001 10 14 | 704 | 0.3+ | 0.0  | 2001 12 17 | 704 | 1.3+ | 0.2+ | 2006 08 23 | 644 | 0.5- | 0.3+ |
| 2001 10 14 | 704 | 0.1- | 0.1- | 2001 12 17 | 704 | 0.2+ | 0.3- | 2006 08 24 | 644 | 0.1+ | 0.1+ |
| 2001 10 18 | 691 | 0.1- | 0.3- | 2002 01 06 | 644 | 0.3+ | 0.6+ | 2006 08 24 | 644 | 0.3- | 0.2+ |
| 2001 10 18 | 691 | 0.2- | 0.2- | 2002 01 06 | 644 | 0.1- | 0.3+ | 2006 08 24 | 644 | 0.3- | 0.0  |
| 2001 10 18 | 691 | 0.1- | 0.2- | 2002 01 06 | 644 | 0.6+ | 0.6+ | 2006 08 24 | 644 | 0.1- | 0.2+ |
| 2001 10 19 | 644 | 0.6+ | 0.9+ | 2002 01 09 | 704 | 0.3- | 0.4- | 2006 08 24 | 644 | 0.2- | 0.2+ |
| 2001 10 19 | 644 | 0.5+ | 1.1+ | 2002 01 09 | 704 | 0.8- | 0.0  | 2006 08 24 | 644 | 0.1- | 0.1+ |
| 2001 10 19 | 644 | 0.5+ | 0.8+ | 2002 01 09 | 704 | 0.3- | 0.2- | 2006 08 28 | 699 | 0.6- | 0.4+ |
| 2001 10 21 | 704 | 0.6+ | 0.1+ | 2002 01 09 | 704 | 0.7- | 0.3- | 2006 08 28 | 699 | 0.5+ | 0.6+ |
| 2001 10 21 | 704 | 0.8+ | 0.2- | 2003 01 27 | 699 | 0.8+ | 0.2- | 2006 08 28 | 699 | 0.4- | 0.9+ |
| 2001 10 21 | 704 | 0.3+ | 0.3+ | 2003 01 27 | 699 | 0.3- | 0.1- | 2006 08 28 | 699 | 0.1- | 0.0  |



2007 DEC. 24

M.P.O. 129227

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 21 | 704 | 0.6+ | 0.0  | 2003 01 27 | 699 | 0.0  | 0.7+ | 2006 08 31 | 704 | 0.2- | 0.2- |
| 2001 10 21 | 704 | 0.3+ | 0.3+ | 2003 01 27 | 699 | 0.1- | 0.8+ | 2006 08 31 | 704 | 0.3+ | 0.1+ |
| 2001 10 26 | 644 | 0.2+ | 0.7+ | 2003 02 04 | 704 | 0.9+ | 1.0+ | 2006 08 31 | 704 | 0.5+ | 1.0+ |
| 2001 10 26 | 644 | 0.5+ | 0.6+ | 2003 02 04 | 704 | 0.1+ | 1.5+ | 2006 09 14 | 703 | 0.3- | 0.4- |
| 2001 10 26 | 644 | 0.2+ | 0.5+ | 2003 02 04 | 704 | 0.5- | 1.4+ | 2006 09 14 | 703 | 0.6- | 0.5+ |
| 2001 11 10 | 704 | 0.1+ | 0.9+ | 2003 02 04 | 704 | 0.4+ | 0.4+ | 2006 09 14 | 703 | 0.2- | 0.3- |
| 2001 11 10 | 704 | 0.2+ | 0.7+ | 2005 02 17 | 809 | 0.4+ | 0.3+ | 2006 09 14 | 703 | 0.9- | 0.6- |
| 2001 11 10 | 644 | 0.4- | 0.4+ | 2005 02 17 | 809 | 0.3+ | 0.4+ | 2006 09 30 | 703 | 0.5+ | 0.4- |
| 2001 11 10 | 704 | 0.6+ | 0.1- | 2005 02 17 | 809 | 0.4+ | 0.3+ | 2006 09 30 | 703 | 0.6+ | 1.0- |
| 2001 11 10 | 644 | 0.4- | 0.4+ | 2006 08 16 | 644 | 0.2- | 0.1+ | 2006 09 30 | 703 | 0.4- | 0.8- |
| 2001 11 10 | 644 | 0.2- | 0.6+ | 2006 08 16 | 644 | 0.2+ | 0.3+ | 2006 09 30 | 703 | 0.1+ | 1.0- |
| 2001 11 12 | 704 | 0.2- | 0.5+ | 2006 08 16 | 644 | 0.1- | 0.2+ | 2006 11 23 | G96 | 0.2- | 0.2- |
| 2001 11 12 | 704 | 0.6- | 0.6+ | 2006 08 17 | 644 | 0.0  | 0.2+ | 2006 11 23 | G96 | 0.1- | 0.3- |
| 2001 11 12 | 704 | 0.6+ | 0.0  | 2006 08 17 | 644 | 0.0  | 0.3+ | 2006 11 23 | G96 | 0.1- | 0.2- |
| 2001 11 17 | 644 | 0.8+ | 0.3+ | 2006 08 17 | 644 | 0.2- | 0.0  | 2006 11 23 | G96 | 0.1- | 0.2- |
| 2001 11 17 | 644 | 0.0  | 0.1+ | 2006 08 18 | 644 | 0.0  | 0.2+ | 2007 11 18 | 704 | 0.6- | 0.2- |
| 2001 11 17 | 644 | 0.4+ | 0.3+ | 2006 08 18 | 644 | 0.0  | 0.2+ | 2007 11 18 | 704 | 0.7- | 1.1- |
| 2001 11 19 | 704 | 0.7- | 0.3- | 2006 08 18 | 644 | 0.2- | 0.2+ | 2007 11 18 | 704 | 0.2- | 0.2+ |
| 2001 11 19 | 704 | 0.8- | 0.5- | 2006 08 18 | 644 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.1- | 0.2- |
| 2001 11 19 | 704 | 0.7- | 0.4- | 2006 08 18 | 644 | 0.2- | 0.2+ | 2007 12 15 | 704 | 0.0  | 0.0  |
| 2001 11 19 | 704 | 0.8- | 0.3- | 2006 08 18 | 644 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 1.2+ | 0.0  |
| 2001 11 19 | 704 | 0.4- | 0.0  | 2006 08 19 | 644 | 0.2- | 0.2+ | 2007 12 15 | 704 | 1.0+ | 0.9+ |
| 2001 11 24 | 704 | 0.3- | 0.4- | 2006 08 19 | 644 | 0.2- | 0.2+ | 2007 12 15 | 704 | 0.1- | 0.5+ |
| 2001 11 24 | 704 | 0.1+ | 0.2+ | 2006 08 19 | 644 | 0.1- | 0.4+ |            |     |      |      |
| 2001 11 24 | 704 | 0.6+ | 0.7- | 2006 08 23 | 704 | 0.1- | 1.4+ |            |     |      |      |

(171987)\* 2001 TZ<sub>200</sub> = 2004 GV<sub>67</sub>

Discovered 2001 Oct. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 61140)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 328.92400  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.17448347 | $\omega$ | 12.23799 | +0.01276567 | -0.98548700 |
| <i>a</i> | 3.1717566  | $\Omega$ | 77.21037 | +0.90215038 | -0.06165550 |
| <i>e</i> | 0.1701189  | <i>i</i> | 9.99584  | +0.43123280 | +0.15815805 |
| <i>P</i> | 5.65       | <i>H</i> | 15.4     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 11 | 704 | 0.0   | 0.1+  | 2007 10 09 | D29 | 0.2-  | 0.3-  | 2007 11 09 | 703 | 0.9+  | 1.4+  |
| 2001 10 11 | 704 | 0.3+  | 0.1-  | 2007 10 09 | D29 | 0.1+  | 0.1-  | 2007 11 09 | 703 | 0.2+  | 0.4+  |
| 2001 10 11 | 704 | (0.3- | 1.8-) | 2007 10 10 | 699 | (0.5- | 1.6+) | 2007 11 09 | 703 | (1.1+ | 1.6+) |
| 2001 10 15 | 644 | 0.2+  | 0.3+  | 2007 10 10 | 699 | 0.2+  | 0.2+  | 2007 11 09 | 703 | 0.0   | 0.7+  |
| 2001 10 15 | 644 | 0.2-  | 0.5+  | 2007 10 10 | 699 | 0.9-  | 0.0   | 2007 11 09 | 703 | (0.9+ | 1.6+) |
| 2001 10 15 | 644 | 0.0   | 0.6+  | 2007 10 10 | 699 | 0.3-  | 0.1+  | 2007 11 09 | 703 | 0.1+  | 0.5-  |
| 2001 10 23 | 644 | 0.3-  | 0.1-  | 2007 10 12 | G96 | 0.0   | 0.1-  | 2007 11 12 | 704 | 0.3-  | 0.3+  |
| 2001 10 23 | 644 | 0.4-  | 0.2-  | 2007 10 12 | G96 | 0.3+  | 0.2-  | 2007 11 12 | 704 | 0.2-  | 0.9+  |
| 2001 10 23 | 644 | 0.3-  | 0.1-  | 2007 10 12 | G96 | 1.0-  | 1.4-  | 2007 11 12 | 704 | 0.9-  | 0.4+  |
| 2002 12 08 | 291 | 0.8+  | 0.1+  | 2007 10 12 | G96 | 0.5+  | 1.4-  | 2007 11 12 | 704 | 0.2-  | 0.8+  |
| 2002 12 08 | 291 | 0.3+  | 0.1-  | 2007 10 13 | 704 | 0.1+  | 0.9-  | 2007 11 12 | 704 | 0.3-  | 0.2+  |
| 2002 12 08 | 291 | 0.2+  | 0.2+  | 2007 10 13 | 704 | 0.1+  | 0.5+  | 2007 11 15 | 699 | 0.1+  | 0.3+  |
| 2003 01 10 | 704 | 1.1+  | 0.3+  | 2007 10 13 | 704 | 0.4-  | 0.2-  | 2007 11 15 | 699 | 0.1-  | 0.0   |
| 2003 01 10 | 704 | (1.2+ | 1.7+) | 2007 10 13 | 704 | 0.5-  | 1.1-  | 2007 11 15 | 699 | 0.4+  | 0.6+  |
| 2003 01 10 | 704 | (1.8+ | 0.1+) | 2007 10 21 | 704 | (0.9+ | 1.7+) | 2007 11 15 | 699 | 0.3-  | 0.1-  |
| 2003 01 10 | 704 | 0.3+  | 0.8+  | 2007 10 21 | 704 | 1.0-  | 0.4+  | 2007 11 20 | G96 | 0.2-  | 0.2-  |
| 2003 01 10 | 704 | 0.9+  | 0.2-  | 2007 10 21 | 704 | 0.2-  | 0.4+  | 2007 11 20 | G96 | 0.3-  | 0.3-  |
| 2003 01 25 | 645 | 0.1-  | 0.0   | 2007 10 21 | 704 | 0.3+  | 0.1-  | 2007 11 20 | G96 | 0.2-  | 0.2-  |
| 2003 01 25 | 645 | 0.0   | 0.0   | 2007 11 03 | 699 | 0.0   | 0.0   | 2007 11 20 | G96 | 0.1-  | 0.4-  |
| 2003 01 25 | 645 | 0.0   | 0.1-  | 2007 11 03 | 699 | 0.8+  | 0.3+  | 2007 11 29 | 704 | 1.2-  | 0.5+  |
| 2003 01 25 | 645 | 0.0   | 0.1-  | 2007 11 03 | 699 | 0.8-  | 0.4+  | 2007 11 29 | 704 | 0.0   | 0.5+  |
| 2003 01 31 | 699 | 1.2-  | 0.1+  | 2007 11 03 | 699 | 0.6+  | 0.0   | 2007 11 29 | 704 | 0.2+  | 1.2+  |
| 2003 01 31 | 699 | 0.4-  | 0.2+  | 2007 11 03 | 699 | 0.3-  | 0.1-  | 2007 11 29 | 704 | 0.4-  | 0.5+  |
| 2003 01 31 | 699 | 0.4-  | 0.7+  | 2007 11 03 | 699 | 0.4+  | 0.5+  | 2007 11 29 | 704 | (1.2+ | 1.6+) |
| 2003 01 31 | 699 | 0.1-  | 0.3+  | 2007 11 03 | 699 | 0.4-  | 0.8-  | 2007 12 04 | 704 | 0.2-  | 0.3-  |
| 2004 04 13 | 691 | 0.4+  | 0.3+  | 2007 11 03 | 699 | 0.6-  | 0.4+  | 2007 12 04 | 704 | 0.1-  | 0.2+  |
| 2004 04 13 | 691 | 0.5+  | 0.5+  | 2007 11 04 | 704 | (2.4+ | 2.7-) | 2007 12 04 | 704 | 0.5+  | 0.7+  |
| 2004 04 13 | 691 | 0.4+  | 0.2+  | 2007 11 04 | 704 | 0.8+  | 0.9+  | 2007 12 04 | 704 | 0.0   | 1.1+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 04 20 | 691 | 0.1- | 0.5+ | 2007 11 04 | 704 | 0.1+  | 1.2+  | 2007 12 05 | 699 | 0.2+ | 0.9- |
| 2004 04 20 | 691 | 0.0  | 0.5+ | 2007 11 04 | 704 | (0.3- | 1.8+) | 2007 12 05 | 699 | 0.2- | 0.7+ |
| 2004 04 20 | 691 | 0.0  | 0.3+ | 2007 11 04 | 704 | (0.3+ | 3.2+) | 2007 12 05 | 699 | 0.2+ | 0.3- |
| 2007 10 09 | D29 | 0.2- | 0.2+ | 2007 11 09 | 703 | 1.0+  | 0.7+  | 2007 12 05 | 699 | 0.7+ | 0.0  |
| 2007 10 09 | D29 | 0.2- | 0.1+ | 2007 11 09 | 703 | 0.6-  | 0.4+  |            |     |      |      |

(171988)\* 2001 TB<sub>202</sub>

Discovered 2001 Oct. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.55323   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18896676 | $\omega$ | 302.77615 | +0.94071864 | -0.26192850 |
| <i>a</i> | 3.0075472  | $\Omega$ | 73.19960  | +0.33353031 | +0.82988684 |
| <i>e</i> | 0.0974818  | <i>i</i> | 13.00947  | -0.06169251 | +0.49262693 |
| <i>P</i> | 5.22       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 12 | 704 | 0.5+ | 0.3- | 2003 01 10 | 704 | 1.0+  | 1.2+  | 2007 11 18 | 704 | 0.7+ | 0.4+ |
| 2001 09 12 | 704 | 0.3+ | 0.1+ | 2003 01 10 | 704 | 0.8+  | 1.4+  | 2007 11 18 | 704 | 0.6+ | 0.5+ |
| 2001 09 12 | 704 | 0.2- | 0.3- | 2003 01 10 | 704 | 0.6+  | 1.3+  | 2007 11 20 | 704 | 0.2+ | 0.0  |
| 2001 10 11 | 704 | 0.1- | 0.2+ | 2003 01 10 | 704 | 1.1+  | 1.2+  | 2007 11 20 | 704 | 0.8+ | 0.5- |
| 2001 10 11 | 704 | 0.4+ | 0.6+ | 2006 09 26 | 703 | (2.2- | 1.6+) | 2007 11 20 | 704 | 0.6+ | 0.3- |
| 2001 10 11 | 704 | 0.3- | 0.6+ | 2006 09 26 | 703 | 0.6+  | 1.2+  | 2007 11 20 | 704 | 0.3+ | 0.6+ |
| 2001 10 11 | 704 | 0.5+ | 1.1+ | 2006 09 26 | 703 | 0.6-  | 0.1+  | 2007 12 13 | 704 | 0.3- | 0.0  |
| 2001 10 11 | 704 | 0.3- | 1.1+ | 2006 09 26 | 703 | (0.3+ | 1.9-) | 2007 12 13 | 704 | 0.1- | 0.1- |
| 2001 10 15 | 644 | 0.6- | 0.6- | 2006 10 12 | E12 | 0.4+  | 0.7-  | 2007 12 13 | 704 | 0.7- | 0.5- |
| 2001 10 15 | 644 | 0.4- | 0.6- | 2006 10 12 | E12 | 0.1-  | 0.5-  | 2007 12 13 | 704 | 0.5- | 0.4- |
| 2001 10 15 | 644 | 0.1- | 0.4- | 2006 10 12 | E12 | 0.1-  | 1.2-  | 2007 12 13 | 704 | 0.2- | 0.2+ |
| 2002 12 06 | 645 | 0.1- | 0.1- | 2006 10 12 | E12 | 0.3-  | 0.2+  | 2007 12 15 | 704 | 0.5- | 0.3- |
| 2002 12 06 | 645 | 0.1- | 0.1- | 2007 11 18 | 704 | 0.5-  | 0.0   | 2007 12 15 | 704 | 0.1+ | 1.0- |
| 2003 01 10 | 704 | 0.7+ | 0.5+ | 2007 11 18 | 704 | 0.7+  | 0.2+  | 2007 12 15 | 704 | 0.3- | 0.3- |

(171989)\* 2001 TS<sub>203</sub>

Discovered 2001 Oct. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.31961   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17411529 | $\omega$ | 270.26098 | +0.94805847 | +0.26254474 |
| <i>a</i> | 3.1762264  | $\Omega$ | 74.52247  | -0.16239315 | +0.88495863 |
| <i>e</i> | 0.2200930  | <i>i</i> | 10.74020  | -0.27352075 | +0.38460172 |
| <i>P</i> | 5.66       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 05 28 | 704 | 0.0  | 0.1- | 2007 10 07 | 703 | 1.4+  | 0.7+  | 2007 11 04 | 704 | 0.2-  | 1.2+  |
| 2000 05 28 | 704 | 0.9- | 0.7+ | 2007 10 07 | 703 | 0.5+  | 0.0   | 2007 11 04 | 704 | 0.0   | 0.0   |
| 2000 05 28 | 704 | 0.9- | 1.2+ | 2007 10 07 | 703 | 1.2+  | 0.3-  | 2007 11 04 | 704 | 0.1-  | 0.4+  |
| 2000 05 28 | 704 | 0.9- | 0.5+ | 2007 10 07 | 703 | 0.9+  | 0.3+  | 2007 11 07 | 703 | 1.0-  | 0.9-  |
| 2000 05 28 | 704 | 0.4+ | 0.1+ | 2007 10 09 | D29 | 0.0   | 0.4-  | 2007 11 07 | 703 | 0.4-  | 1.0-  |
| 2001 09 07 | 699 | 0.3+ | 0.3+ | 2007 10 09 | D29 | 0.1-  | 0.4-  | 2007 11 07 | 703 | 0.3-  | 0.7-  |
| 2001 09 07 | 699 | 0.7- | 0.4+ | 2007 10 09 | D29 | 0.2-  | 0.5-  | 2007 11 07 | 703 | 0.1-  | 0.1-  |
| 2001 09 07 | 699 | 0.7+ | 0.2+ | 2007 10 09 | D29 | 0.1-  | 0.6-  | 2007 11 12 | 704 | (0.1- | 1.5+) |
| 2001 09 07 | 699 | 0.3+ | 0.6+ | 2007 10 10 | 699 | 0.5+  | 0.5-  | 2007 11 12 | 704 | 0.2-  | 0.0   |
| 2001 09 12 | 704 | 0.2- | 0.7+ | 2007 10 10 | 699 | 0.7-  | 0.2+  | 2007 11 12 | G96 | 0.1-  | 0.4-  |
| 2001 09 12 | 704 | 0.6+ | 1.4+ | 2007 10 10 | 699 | 0.3-  | 0.0   | 2007 11 12 | 704 | 0.9+  | 0.7+  |
| 2001 09 12 | 704 | 0.1- | 0.4+ | 2007 10 10 | 699 | 0.6+  | 0.5-  | 2007 11 12 | G96 | 0.2+  | 0.3-  |
| 2001 09 25 | 644 | 0.3+ | 0.1+ | 2007 10 13 | 704 | 0.2-  | 0.3+  | 2007 11 12 | 704 | 0.8-  | 1.1+  |
| 2001 09 25 | 644 | 0.3+ | 0.0  | 2007 10 13 | 704 | 0.8+  | 0.4+  | 2007 11 12 | G96 | 0.1-  | 0.3-  |
| 2001 09 25 | 644 | 0.2+ | 0.2- | 2007 10 13 | 704 | 0.3-  | 0.3+  | 2007 11 12 | G96 | 0.2-  | 0.3-  |
| 2001 10 11 | 704 | 0.5- | 0.6- | 2007 10 13 | 704 | 0.5+  | 0.1+  | 2007 11 12 | 704 | 0.9-  | 1.4+  |
| 2001 10 11 | 704 | 0.0  | 0.4- | 2007 10 13 | 704 | 0.2+  | 0.5+  | 2007 11 19 | 703 | 0.9-  | 0.1+  |
| 2001 10 11 | 704 | 0.4- | 0.9+ | 2007 10 30 | 703 | (1.9- | 0.3+) | 2007 11 19 | 703 | 0.3-  | 0.9+  |
| 2001 10 11 | 704 | 0.5- | 0.2+ | 2007 10 30 | 703 | 0.2-  | 0.3+  | 2007 11 19 | 703 | 0.3-  | 0.4-  |
| 2001 10 15 | 644 | 0.2+ | 0.4+ | 2007 10 30 | 703 | 1.2-  | 0.1+  | 2007 11 19 | 703 | 0.8-  | 0.1+  |
| 2001 10 15 | 644 | 0.3+ | 0.4+ | 2007 10 30 | 703 | 0.5+  | 1.4+  | 2007 11 29 | 704 | 0.4+  | 0.4+  |
| 2001 10 15 | 644 | 0.3+ | 0.5+ | 2007 11 02 | D29 | 0.7-  | 1.0-  | 2007 11 29 | 704 | 0.6-  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 23 | 644 | 1.2− | 0.9+ | 2007 11 02 | D29 | 0.0  | 0.6− | 2007 11 29 | 704 | 1.1+  | 0.3+  |
| 2001 10 23 | 644 | 1.1− | 1.0+ | 2007 11 02 | D29 | 0.2+ | 0.6− | 2007 11 29 | 704 | 1.1−  | 0.2+  |
| 2001 10 23 | 644 | 1.1− | 1.0+ | 2007 11 02 | D29 | 0.1+ | 0.4− | 2007 11 29 | 704 | 1.1+  | 1.2+  |
| 2005 04 01 | 691 | 0.4+ | 0.6+ | 2007 11 02 | D29 | 0.1− | 0.2− | 2007 12 04 | 704 | 1.2−  | 1.3+  |
| 2005 04 01 | 691 | 0.7+ | 0.4+ | 2007 11 02 | D29 | 0.1− | 0.1+ | 2007 12 04 | 704 | 1.2−  | 1.2+  |
| 2005 04 01 | 691 | 0.4+ | 0.6+ | 2007 11 02 | D29 | 0.0  | 0.4− | 2007 12 04 | 704 | (0.8− | 1.6+) |
| 2005 05 13 | 691 | 0.5+ | 0.5+ | 2007 11 02 | D29 | 0.1− | 0.1− | 2007 12 04 | 704 | (0.4− | 2.0+) |
| 2005 05 13 | 691 | 0.1+ | 0.6+ | 2007 11 04 | 704 | 0.1+ | 0.6+ | 2007 12 04 | 704 | (1.3− | 2.4+) |
| 2005 05 13 | 691 | 0.4+ | 0.5+ | 2007 11 04 | 704 | 0.0  | 1.0+ |            |     |       |       |

**(171990)\* 2001 TY<sub>208</sub>**

Discovered 2001 Oct. 12 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 30.74323   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17908555 | $\omega$ | 285.00425 | +0.91315031   | −0.40110368 |
| <i>a</i> | 3.1171834  | $\Omega$ | 98.68619  | +0.39650011   | +0.83269813 |
| <i>e</i> | 0.0361332  | <i>i</i> | 4.21236   | +0.09457360   | +0.38174554 |
| <i>P</i> | 5.50       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 16 | 704 | 0.6−  | 0.7+  | 2006 08 23 | 644 | 0.2−  | 0.1+  | 2007 11 14 | 704 | 0.5+ | 0.6− |
| 2001 09 16 | 704 | 0.2−  | 0.5+  | 2006 09 14 | 703 | 0.4−  | 1.3+  | 2007 11 14 | 704 | 0.7+ | 1.0+ |
| 2001 09 16 | 704 | 0.3+  | 0.2+  | 2006 09 14 | 703 | 0.2+  | 0.2−  | 2007 11 14 | 704 | 0.0  | 0.1− |
| 2001 10 12 | 699 | 0.2+  | 0.0   | 2006 09 14 | 703 | 0.5+  | 0.1−  | 2007 11 14 | 704 | 0.2+ | 0.5+ |
| 2001 10 12 | 699 | 0.5+  | 1.2+  | 2006 09 14 | 703 | 0.4−  | 0.3−  | 2007 11 14 | 704 | 0.0  | 0.3+ |
| 2001 10 12 | 699 | 0.8+  | 0.1+  | 2007 10 24 | G96 | 0.2−  | 0.1−  | 2007 11 14 | 704 | 0.3+ | 1.1+ |
| 2001 10 12 | 699 | 0.8+  | 0.5−  | 2007 10 24 | G96 | 0.8+  | 0.3−  | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2001 10 18 | 644 | 1.1−  | 0.7+  | 2007 10 24 | G96 | 0.3−  | 0.5−  | 2007 11 20 | G96 | 0.1+ | 0.2− |
| 2001 10 18 | 644 | 1.3−  | 1.4+  | 2007 10 24 | G96 | 0.1+  | 0.2−  | 2007 11 20 | G96 | 0.4+ | 0.3− |
| 2001 10 18 | 644 | 1.4−  | 1.0+  | 2007 11 08 | 691 | 0.2−  | 0.2+  | 2007 11 20 | G96 | 0.5+ | 0.1− |
| 2001 10 25 | 645 | 0.0   | 0.1−  | 2007 11 08 | 691 | 0.1−  | 0.3+  | 2007 11 20 | G96 | 0.7+ | 0.5− |
| 2001 10 25 | 645 | 0.0   | 0.0   | 2007 11 08 | 691 | 0.1−  | 0.1+  | 2007 11 20 | G96 | 0.3− | 0.7− |
| 2004 03 20 | 704 | 0.2+  | 1.2+  | 2007 11 13 | 699 | 0.0   | 0.8−  | 2007 11 20 | G96 | 0.4+ | 0.2− |
| 2004 03 20 | 704 | (0.4+ | 1.6+) | 2007 11 13 | 699 | 0.9−  | 0.6+  | 2007 11 20 | G96 | 0.6+ | 0.8− |
| 2004 03 20 | 704 | 1.5+  | 0.0   | 2007 11 13 | 699 | 0.3−  | 0.8−  | 2007 12 04 | 704 | 0.3− | 0.1+ |
| 2004 03 30 | 691 | 0.1−  | 0.2+  | 2007 11 13 | 699 | 1.3−  | 0.8+  | 2007 12 04 | 704 | 0.2+ | 0.2+ |
| 2004 03 30 | 691 | 0.1+  | 0.3+  | 2007 11 14 | 704 | 0.3−  | 0.1−  | 2007 12 04 | 704 | 0.9− | 0.0  |
| 2004 03 30 | 691 | 0.0   | 0.4+  | 2007 11 14 | 704 | (2.1+ | 0.4−) | 2007 12 04 | 704 | 0.3− | 0.1+ |
| 2006 08 23 | 644 | 0.2−  | 0.3+  | 2007 11 14 | 704 | 0.8+  | 1.4−  | 2007 12 04 | 704 | 0.0  | 0.0  |
| 2006 08 23 | 644 | 0.1−  | 0.4+  | 2007 11 14 | 704 | 0.5+  | 0.2−  |            |     |      |      |

**(171991)\* 2001 TP<sub>210</sub> = 2004 CL<sub>104</sub>**

Discovered 2001 Oct. 13 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61143)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 135.35633  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19169137 | $\omega$ | 336.56559 | +0.23790700   | +0.96219211 |
| <i>a</i> | 2.9789806  | $\Omega$ | 306.93770 | −0.86283341   | +0.14666800 |
| <i>e</i> | 0.0694714  | <i>i</i> | 9.55042   | −0.44600311   | +0.22951002 |
| <i>P</i> | 5.14       | <i>H</i> | 14.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 25 | 704 | 0.3+  | 0.7+  | 2004 01 29 | 699 | 0.0  | 0.3− | 2006 08 29 | 703 | 0.3+  | 0.5+  |
| 2001 08 25 | 704 | 0.5+  | 0.1+  | 2004 01 29 | 699 | 0.8− | 1.0+ | 2006 08 29 | 703 | 0.2−  | 1.3+  |
| 2001 08 25 | 704 | 0.0   | 0.0   | 2004 01 29 | 699 | 0.5+ | 0.2+ | 2006 08 30 | 704 | 0.3−  | 0.8+  |
| 2001 08 25 | 704 | 1.0+  | 0.6+  | 2004 02 13 | 644 | 0.2+ | 0.4+ | 2006 08 30 | 704 | (1.5− | 0.7+) |
| 2001 08 25 | 704 | 0.3+  | 0.2+  | 2004 02 13 | 644 | 0.3+ | 0.3+ | 2006 08 30 | 704 | 0.2−  | 0.5+  |
| 2001 08 25 | 704 | 0.4+  | 0.4−  | 2004 02 13 | 644 | 0.2− | 0.4+ | 2006 09 13 | 644 | 0.5−  | 0.0   |
| 2001 08 25 | 704 | 0.3+  | 0.9+  | 2004 02 19 | 704 | 0.3+ | 0.3+ | 2006 09 13 | 644 | 0.5−  | 0.2+  |
| 2001 09 10 | 699 | 1.0+  | 0.7+  | 2004 02 19 | 704 | 0.5+ | 0.2− | 2006 09 13 | 644 | 0.0   | 0.0   |
| 2001 09 10 | 699 | 0.0   | 0.1+  | 2004 02 19 | 704 | 0.8+ | 0.9+ | 2006 09 20 | 699 | 0.1−  | 0.2−  |
| 2001 09 10 | 699 | (2.1+ | 0.5+) | 2004 02 19 | 704 | 0.6+ | 0.0  | 2006 09 20 | 699 | 1.0+  | 0.1−  |
| 2001 09 10 | 699 | 0.3+  | 0.2+  | 2004 02 19 | 704 | 0.6+ | 0.4+ | 2006 09 20 | 699 | 0.4+  | 0.6+  |
| 2001 09 18 | 699 | 0.7+  | 0.3−  | 2004 02 23 | 704 | 0.8+ | 0.1+ | 2006 09 20 | 699 | 0.3−  | 0.1+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 18 | 699 | 0.1−  | 0.5+  | 2004 02 23 | 704 | 0.7+  | 0.2+  | 2006 09 30 | 699 | 0.0  | 0.0  |
| 2001 09 18 | 699 | 0.8+  | 0.2+  | 2004 02 23 | 704 | 0.6+  | 0.7+  | 2006 09 30 | 699 | 0.0  | 0.7+ |
| 2001 09 18 | 699 | 0.2+  | 0.6−  | 2004 02 23 | 704 | 1.5+  | 0.7+  | 2006 09 30 | 699 | 0.8+ | 0.6+ |
| 2001 09 21 | 644 | 1.1−  | 0.6−  | 2004 02 26 | 704 | (1.6+ | 0.1+) | 2006 09 30 | 699 | 0.9− | 0.1− |
| 2001 09 21 | 644 | 0.6−  | 0.4−  | 2004 02 26 | 704 | (2.1+ | 1.0−) | 2007 01 09 | G96 | 0.2+ | 0.1− |
| 2001 09 21 | 644 | 0.8−  | 0.5−  | 2004 02 26 | 704 | (1.0+ | 2.0+) | 2007 01 09 | G96 | 0.5− | 0.2+ |
| 2001 09 25 | 704 | 0.0   | 0.2−  | 2004 02 26 | 704 | 0.6+  | 0.3+  | 2007 01 09 | G96 | 0.6− | 0.0  |
| 2001 09 25 | 704 | 0.2+  | 0.2+  | 2004 02 26 | 704 | 0.3+  | 0.3−  | 2007 01 09 | G96 | 0.1− | 0.1− |
| 2001 09 25 | 704 | 0.2+  | 0.0   | 2004 03 15 | 704 | 0.8−  | 0.2−  | 2007 01 09 | G96 | 0.1+ | 0.7+ |
| 2001 09 25 | 704 | 0.2−  | 0.3+  | 2004 03 15 | 704 | 0.1+  | 0.0   | 2007 11 08 | 704 | 0.3− | 0.1+ |
| 2001 09 25 | 704 | 0.4−  | 0.0   | 2004 03 15 | 704 | 0.1+  | 0.4+  | 2007 11 08 | 704 | 0.3− | 0.6− |
| 2001 10 13 | 644 | 0.3−  | 0.3+  | 2004 03 15 | 704 | 1.0+  | 1.0+  | 2007 11 08 | 704 | 0.2+ | 0.5− |
| 2001 10 13 | 644 | 0.1+  | 0.5+  | 2006 07 26 | A50 | 0.3−  | 0.4−  | 2007 11 08 | 704 | 0.2− | 0.8− |
| 2001 10 13 | 644 | 0.4−  | 0.5+  | 2006 07 26 | A50 | 0.3−  | 0.1+  | 2007 11 16 | 704 | 1.1+ | 0.5− |
| 2001 10 17 | 704 | 0.7−  | 0.2+  | 2006 08 18 | 644 | 0.1−  | 0.1−  | 2007 11 16 | 704 | 1.1− | 0.6− |
| 2001 10 17 | 704 | 1.3−  | 0.4−  | 2006 08 18 | 644 | 0.2−  | 0.5+  | 2007 11 16 | 704 | 0.6− | 0.9− |
| 2001 10 17 | 704 | 1.0−  | 0.1−  | 2006 08 18 | 644 | 0.3−  | 0.1−  | 2007 12 16 | 704 | 0.2+ | 0.8− |
| 2001 10 17 | 704 | 0.9−  | 0.1+  | 2006 08 27 | 699 | 0.3−  | 0.4+  | 2007 12 16 | 704 | 0.2+ | 0.4− |
| 2001 10 17 | 704 | (1.8− | 0.4+) | 2006 08 27 | 699 | 0.3−  | 0.3−  | 2007 12 16 | 704 | 0.3+ | 0.4+ |
| 2003 11 21 | 291 | 0.5−  | 0.5+  | 2006 08 27 | 699 | 0.3−  | 0.1−  | 2007 12 16 | 704 | 0.5+ | 0.3+ |
| 2003 11 21 | 291 | 0.5−  | 0.5+  | 2006 08 27 | 699 | 0.2+  | 1.0+  | 2007 12 16 | 704 | 0.4+ | 0.2− |
| 2003 11 21 | 291 | 0.1−  | 0.4+  | 2006 08 29 | 703 | 0.6−  | 0.4+  |            |     |      |      |
| 2004 01 29 | 699 | 0.7+  | 0.1+  | 2006 08 29 | 703 | 1.1−  | 0.3+  |            |     |      |      |

**(171992)\* 2001 TK<sub>214</sub>**

Discovered 2001 Oct. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 71.66753   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17543434 | $\omega$ | 25.73989  | +0.76935872   | +0.62086422 |
| <i>a</i> | 3.1602854  | $\Omega$ | 295.04856 | −0.61103462   | +0.64654949 |
| <i>e</i> | 0.2172474  | <i>i</i> | 9.55498   | −0.18634339   | +0.44328476 |
| <i>P</i> | 5.62       | <i>H</i> | 14.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 25 | 704 | 0.7+  | 1.1−  | 2004 02 18 | 691 | 0.1+ | 0.1+ | 2006 08 11 | 644 | 0.2−  | 0.1+  |
| 2001 08 25 | 704 | 0.3+  | 0.3+  | 2004 02 18 | 691 | 0.4− | 0.1− | 2006 08 11 | 644 | 0.2−  | 0.1−  |
| 2001 08 25 | 704 | 0.6+  | 0.3−  | 2006 06 19 | G96 | 0.1+ | 0.5− | 2006 08 11 | 644 | 0.2−  | 0.0   |
| 2001 09 25 | 704 | 1.0+  | 0.2−  | 2006 06 19 | G96 | 0.1+ | 0.6− | 2006 08 11 | 644 | 0.0   | 0.1+  |
| 2001 09 25 | 704 | 0.0   | 0.1+  | 2006 06 19 | G96 | 0.1+ | 0.5− | 2006 08 11 | 644 | 0.1+  | 0.0   |
| 2001 09 25 | 704 | 0.3−  | 0.4−  | 2006 06 20 | 691 | 0.1− | 0.2+ | 2006 08 18 | 644 | 0.1−  | 0.0   |
| 2001 09 25 | 704 | 0.3+  | 0.1−  | 2006 06 20 | 691 | 0.2− | 0.2+ | 2006 08 18 | 644 | 0.2−  | 0.0   |
| 2001 09 25 | 704 | 1.5−  | 0.3+  | 2006 06 20 | 691 | 0.2− | 0.3+ | 2006 08 18 | 644 | 0.0   | 0.1−  |
| 2001 10 13 | 644 | 0.6+  | 0.2+  | 2006 07 25 | 644 | 0.0  | 0.0  | 2007 11 02 | 704 | (0.7+ | 1.7+) |
| 2001 10 13 | 644 | 0.5+  | 0.4−  | 2006 07 25 | 644 | 0.2− | 0.2+ | 2007 11 02 | 704 | 0.1+  | 0.7+  |
| 2001 10 13 | 644 | 0.8+  | 0.4+  | 2006 07 25 | 644 | 0.0  | 0.1− | 2007 11 02 | 704 | 0.0   | 0.9+  |
| 2001 10 18 | 704 | 0.1−  | 0.5−  | 2006 07 25 | 644 | 0.1+ | 0.0  | 2007 11 08 | 704 | 0.0   | 0.4+  |
| 2001 10 18 | 704 | 0.8+  | 0.3−  | 2006 07 25 | 644 | 0.1+ | 0.1+ | 2007 11 08 | 704 | 1.2+  | 0.9−  |
| 2001 10 18 | 704 | 0.1−  | 0.4−  | 2006 07 25 | 644 | 0.2+ | 0.1− | 2007 11 08 | 704 | 0.3+  | 0.4−  |
| 2001 10 18 | 704 | 0.2+  | 0.9−  | 2006 07 26 | 644 | 0.2− | 0.0  | 2007 11 08 | 704 | 0.4+  | 0.3−  |
| 2001 10 18 | 704 | 0.1−  | 0.7−  | 2006 07 26 | 644 | 0.1− | 0.0  | 2007 11 08 | 704 | 0.2+  | 0.2−  |
| 2001 11 12 | 704 | 1.1−  | 0.7+  | 2006 07 26 | 704 | 0.2+ | 0.3− | 2007 12 16 | 704 | 1.0−  | 0.7−  |
| 2001 11 12 | 704 | 1.2−  | 0.4+  | 2006 07 26 | 644 | 0.1− | 0.0  | 2007 12 16 | 704 | 0.1−  | 0.1−  |
| 2001 11 12 | 704 | 1.1−  | 1.5+  | 2006 07 26 | 704 | 0.6+ | 0.2+ | 2007 12 16 | 704 | 0.9−  | 0.3+  |
| 2001 11 12 | 704 | 0.4−  | 1.3+  | 2006 07 26 | 704 | 0.3+ | 0.0  | 2007 12 16 | 704 | 0.1−  | 0.4+  |
| 2001 11 12 | 704 | (1.2− | 1.6+) | 2006 07 26 | 704 | 0.9+ | 0.6+ |            |     |       |       |
| 2004 02 18 | 691 | 0.4+  | 0.2+  | 2006 08 11 | 644 | 0.2− | 0.1+ |            |     |       |       |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2001 09 25 | 704 | (0.4− 1.9+) | 2001 11 12 | 704 | 0.1+ 0.5− | 2007 11 03 | 691 | 0.2− 0.1+   |
| 2001 09 25 | 704 | 0.1− 0.5−   | 2001 11 12 | 704 | 0.2+ 0.1− | 2007 11 03 | 691 | 0.1− 0.0    |
| 2001 09 25 | 704 | (0.2+ 1.6−) | 2001 11 12 | 704 | 0.1− 0.7− | 2007 11 07 | 691 | 0.2+ 0.1−   |
| 2001 09 25 | 704 | 0.1− 0.6−   | 2001 11 20 | 699 | 0.7+ 1.3+ | 2007 11 07 | 691 | 0.1+ 0.1−   |
| 2001 09 25 | 704 | 0.1− 1.1−   | 2001 11 20 | 699 | 1.0+ 0.2− | 2007 11 07 | 691 | 0.0 0.1−    |
| 2001 10 13 | 644 | 0.7− 0.2+   | 2001 11 20 | 699 | 1.1+ 0.6+ | 2007 11 15 | 704 | (2.4+ 2.0+) |
| 2001 10 13 | 644 | 0.5− 0.1+   | 2001 11 20 | 699 | 0.1+ 0.8+ | 2007 11 15 | 704 | (2.3+ 2.9+) |
| 2001 10 13 | 644 | 0.7− 0.1+   | 2001 12 10 | 704 | 0.1+ 0.1+ | 2007 11 15 | 704 | (2.0+ 2.1+) |
| 2001 10 18 | 704 | 0.2+ 0.1−   | 2001 12 10 | 704 | 0.2− 0.1+ | 2007 11 20 | 704 | 0.6+ 0.4+   |
| 2001 10 18 | 704 | 1.2+ 0.6−   | 2001 12 10 | 704 | 0.2− 0.7+ | 2007 11 20 | 704 | 0.1− 0.7+   |
| 2001 10 18 | 704 | 0.0 0.8+    | 2001 12 10 | 704 | 0.2− 0.7+ | 2007 11 20 | 704 | 0.3+ 0.3+   |
| 2001 10 18 | 704 | 1.1+ 0.7−   | 2001 12 10 | 704 | 0.1− 0.3+ | 2007 11 20 | 704 | 0.4− 0.4+   |
| 2001 10 18 | 704 | 0.5+ 0.7−   | 2002 12 14 | 645 | 0.0 0.0   | 2007 11 20 | 704 | 0.1− 0.9+   |
| 2001 11 10 | 704 | 1.2− 0.7−   | 2002 12 14 | 645 | 0.0 0.0   | 2007 12 06 | G96 | 0.3+ 0.3−   |
| 2001 11 10 | 704 | 0.3+ 0.1−   | 2003 01 28 | 645 | 0.0 0.0   | 2007 12 06 | G96 | 0.2+ 0.3−   |
| 2001 11 10 | 704 | 0.3− 0.2+   | 2003 01 28 | 645 | 0.0 0.0   | 2007 12 06 | G96 | 0.1+ 0.4−   |
| 2001 11 10 | 704 | (0.8+ 2.0+) | 2006 08 22 | 644 | 0.4+ 0.4+ | 2007 12 06 | G96 | 0.6+ 0.3−   |
| 2001 11 11 | 699 | 0.8− 0.5−   | 2006 08 22 | 644 | 0.1+ 0.4+ | 2007 12 10 | 704 | 0.2+ 0.1+   |
| 2001 11 11 | 699 | 0.6+ 0.4+   | 2006 08 22 | 644 | 0.1− 0.4+ | 2007 12 10 | 704 | 0.5+ 0.3+   |
| 2001 11 11 | 699 | 1.2− 0.0    | 2006 08 23 | 644 | 1.2− 0.7− | 2007 12 10 | 704 | 0.6+ 0.7+   |
| 2001 11 11 | 699 | 0.9− 0.5+   | 2006 08 23 | 644 | 0.1− 0.3+ | 2007 12 14 | 704 | 0.2+ 0.1−   |
| 2001 11 11 | 644 | 0.0 0.3+    | 2006 08 23 | 644 | 0.2+ 0.4+ | 2007 12 14 | 704 | 0.4+ 0.2−   |
| 2001 11 11 | 644 | 0.3− 0.1−   | 2007 11 03 | 691 | 0.1− 0.2− | 2007 12 14 | 704 | 0.3+ 0.0    |
| 2001 11 11 | 644 | 0.5− 0.1−   | 2007 11 03 | 691 | 0.2− 0.1− | 2007 12 14 | 704 | 1.9+ 1.5−   |
| 2001 11 12 | 704 | 0.7+ 0.4−   | 2007 11 03 | 691 | 1.0− 0.3+ | 2007 12 14 | 704 | 0.0 0.5−    |
| 2001 11 12 | 704 | 0.6+ 0.3−   | 2007 11 03 | 691 | 0.2− 0.3+ |            |     |             |

(171994)\* 2001 TZ<sub>218</sub> = 1996 BV<sub>8</sub>

Discovered 2001 Oct. 14 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 29723)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.21567   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17145320 | $\omega$ | 316.79736 | +0.84910131 | −0.46860582 |
| <i>a</i> | 3.2090192  | $\Omega$ | 72.65391  | +0.52687205 | +0.71824921 |
| <i>e</i> | 0.2078533  | <i>i</i> | 14.79787  | +0.03785254 | +0.51432155 |
| <i>P</i> | 5.75       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1996 01 20 | 691 | 0.1+ 0.1−   | 2001 11 18 | 608 | 0.4+ 0.0    | 2007 11 07 | 691 | 0.2− 0.0  |
| 1996 01 20 | 691 | 0.1+ 0.5−   | 2001 11 18 | 608 | 0.1+ 0.2+   | 2007 11 07 | 691 | 0.3− 0.0  |
| 1996 01 20 | 691 | 0.2− 0.3−   | 2001 12 07 | 704 | 1.1+ 1.1+   | 2007 11 14 | 704 | 0.1− 0.2+ |
| 1996 01 21 | 691 | 0.3+ 0.1+   | 2001 12 07 | 704 | 1.0+ 0.1−   | 2007 11 14 | 704 | 0.1+ 0.6+ |
| 1996 01 21 | 691 | 0.3− 0.0    | 2001 12 07 | 704 | 1.4+ 0.7−   | 2007 11 14 | 704 | 0.0 0.0   |
| 1996 01 21 | 691 | 0.1− 0.0    | 2001 12 07 | 704 | (1.5+ 0.8+) | 2007 11 14 | 704 | 0.7+ 0.2+ |
| 2001 09 21 | 645 | 0.1− 0.1+   | 2003 01 29 | 644 | 0.5+ 0.9+   | 2007 11 14 | 704 | 0.3+ 0.3+ |
| 2001 09 21 | 645 | 0.2− 0.1+   | 2003 01 29 | 644 | 0.4+ 0.9+   | 2007 11 18 | G96 | 0.2− 0.4− |
| 2001 10 14 | 699 | 0.9+ 0.1+   | 2003 01 29 | 644 | 0.7+ 1.0+   | 2007 11 18 | G96 | 0.4+ 0.3− |
| 2001 10 14 | 699 | 0.6+ 1.2+   | 2005 05 15 | G96 | 0.1+ 0.3+   | 2007 11 18 | G96 | 0.3+ 0.4− |
| 2001 10 14 | 699 | 0.5− 0.4−   | 2005 05 15 | G96 | 0.3− 0.1−   | 2007 11 18 | G96 | 0.2+ 0.3− |
| 2001 10 14 | 699 | 0.1+ 0.7+   | 2005 05 15 | G96 | 0.6− 0.1−   | 2007 11 19 | 691 | 0.0 0.2−  |
| 2001 10 15 | 644 | 0.4+ 0.5+   | 2005 05 15 | G96 | 0.0 0.8+    | 2007 11 19 | 691 | 0.1− 0.1− |
| 2001 10 15 | 644 | 0.4+ 0.2+   | 2005 05 19 | G96 | 0.2+ 0.0    | 2007 11 19 | 691 | 0.2− 0.3− |
| 2001 10 15 | 644 | 0.5+ 0.2+   | 2005 05 19 | G96 | 0.2+ 0.0    | 2007 11 30 | D35 | 0.2− 0.1− |
| 2001 10 23 | 644 | 0.5− 0.9+   | 2005 05 19 | G96 | 0.4+ 0.3−   | 2007 11 18 | D35 | 0.3− 0.1+ |
| 2001 10 23 | 644 | 0.6− 0.8+   | 2005 05 19 | G96 | 0.1− 0.3+   | 2007 11 30 | D35 | 0.2− 0.1− |
| 2001 10 23 | 644 | 0.5− 1.0+   | 2007 10 19 | 699 | 1.4+ 0.4+   | 2007 12 04 | G96 | 0.4+ 0.5− |
| 2001 11 11 | 645 | 0.0 0.1−    | 2007 10 19 | 699 | 0.2− 0.5−   | 2007 12 04 | G96 | 0.1+ 0.4− |
| 2001 11 11 | 645 | 0.1+ 0.0    | 2007 10 19 | 699 | 0.3+ 0.0    | 2007 12 04 | G96 | 0.9+ 0.3− |
| 2001 11 18 | 704 | 0.5− 1.1−   | 2007 10 19 | 699 | 0.1− 0.8−   | 2007 12 04 | G96 | 0.5+ 0.4− |
| 2001 11 18 | 704 | 0.6− 0.1+   | 2007 11 04 | 704 | 0.1+ 0.5+   | 2007 12 05 | 704 | 0.1− 0.1+ |
| 2001 11 18 | 704 | 0.2− 0.3+   | 2007 11 04 | 704 | 0.1− 0.9+   | 2007 12 05 | 704 | 0.4− 0.1+ |
| 2001 11 18 | 704 | 0.5− 0.1−   | 2007 11 04 | 704 | 0.6− 0.3+   | 2007 12 05 | 704 | 0.3− 0.5− |
| 2001 11 18 | 704 | (1.8− 0.5−) | 2007 11 04 | 704 | 0.2− 0.6+   | 2007 12 05 | 704 | 0.2− 0.1+ |
| 2001 11 18 | 608 | 0.2− 0.1−   | 2007 11 07 | 691 | 0.2+ 0.1+   | 2007 12 05 | 704 | 0.3− 0.0  |

(171995)\* 2001 TJ<sub>235</sub>

Discovered 2001 Oct. 15 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 34.56947   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.19107790 | $\omega$ | 89.51213  | +0.56861200 | −0.81225007 |
| <i>a</i> | 2.9853534  | $\Omega$ | 324.79179 | +0.63600220 | +0.53440859 |
| <i>e</i> | 0.1320114  | <i>i</i> | 13.04292  | +0.52171026 | +0.23378896 |
| <i>P</i> | 5.16       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1998 01 22 | 691 | 0.1− 1.1−   | 2003 02 01 | 704 | 0.1− 0.8+   | 2006 09 29 | 699 | 0.0 1.0+  |
| 1998 01 22 | 691 | 0.4+ 0.3−   | 2003 02 01 | 704 | 0.8− 1.3+   | 2006 09 29 | 699 | 0.4+ 0.6+ |
| 1998 01 22 | 691 | 0.0 0.4+    | 2003 02 01 | 704 | 0.0 0.8+    | 2006 09 29 | 699 | 0.1+ 0.9− |
| 2001 09 18 | 644 | 0.0 0.3−    | 2003 02 01 | 704 | 0.3+ 1.2+   | 2006 10 09 | 644 | 0.2+ 0.2+ |
| 2001 09 18 | 644 | 0.0 0.1−    | 2003 02 01 | 704 | 0.5+ 1.2+   | 2006 10 09 | 644 | 0.2+ 0.0  |
| 2001 09 18 | 644 | 0.0 0.1−    | 2003 02 01 | 608 | 0.1− 1.1+   | 2006 10 09 | 644 | 0.1+ 0.0  |
| 2001 09 19 | 699 | 0.5− 1.5+   | 2003 02 01 | 608 | 0.9− 0.8+   | 2006 10 23 | 703 | 0.2+ 0.7− |
| 2001 09 19 | 699 | 0.7+ 0.9+   | 2003 02 01 | 608 | 0.9− 0.4+   | 2006 10 23 | 703 | 0.3− 0.8+ |
| 2001 09 19 | 699 | 0.7+ 0.1−   | 2006 08 29 | 699 | 0.6+ 1.1−   | 2006 10 23 | 703 | 0.9+ 0.0  |
| 2001 09 19 | 699 | 0.2− 0.3+   | 2006 08 29 | 699 | 0.3− 0.1+   | 2006 10 23 | 703 | 0.8− 1.4+ |
| 2001 09 29 | 644 | 0.1− 0.5+   | 2006 08 29 | 699 | 1.4− 0.5+   | 2007 11 18 | G96 | 0.3− 0.8− |
| 2001 09 29 | 644 | 0.1+ 0.3+   | 2006 08 29 | 699 | 0.6+ 0.1−   | 2007 11 18 | G96 | 0.1+ 0.8− |
| 2001 09 29 | 644 | 0.8− 1.3+   | 2006 09 06 | 644 | 0.1+ 0.1−   | 2007 11 18 | G96 | 0.4− 0.7− |
| 2001 10 15 | 608 | 0.3− 1.1−   | 2006 09 06 | 644 | 0.2− 0.1−   | 2007 11 18 | G96 | 0.0 1.1−  |
| 2001 10 15 | 608 | 0.0 1.2−    | 2006 09 06 | 644 | 0.3− 0.2+   | 2007 11 19 | G96 | 0.3− 0.6− |
| 2001 10 15 | 608 | 0.4− 0.2−   | 2006 09 16 | 703 | 0.4− 0.0    | 2007 11 19 | G96 | 0.1− 0.8− |
| 2001 10 20 | 699 | 0.2+ 0.2−   | 2006 09 16 | 703 | (0.2− 1.7−) | 2007 11 19 | G96 | 0.5+ 0.6− |
| 2001 10 20 | 699 | 0.3+ 0.5−   | 2006 09 16 | 703 | 0.3+ 0.2−   | 2007 11 19 | G96 | 0.1+ 0.6− |
| 2001 10 20 | 699 | 0.9− 0.4−   | 2006 09 16 | 703 | 0.7− 0.8−   | 2007 12 16 | 704 | 0.3+ 0.3− |
| 2001 10 20 | 699 | 0.2+ 0.5+   | 2006 09 27 | 703 | 1.0+ 0.1−   | 2007 12 16 | 704 | 0.5+ 0.6− |
| 2003 01 27 | 699 | 0.9+ 0.0    | 2006 09 27 | 703 | (1.7− 1.5−) | 2007 12 16 | 704 | 0.2− 0.5− |
| 2003 01 27 | 699 | (1.7+ 0.6+) | 2006 09 27 | 703 | (0.0 3.5−)  | 2007 12 16 | 704 | 0.3− 0.1− |
| 2003 01 27 | 699 | 0.8+ 1.1+   | 2006 09 27 | 703 | 1.0− 0.9−   | 2007 12 16 | 704 | 0.1− 0.8+ |
| 2003 01 27 | 699 | 0.4− 1.0+   | 2006 09 29 | 699 | 0.4+ 1.2+   |            |     |           |

(171996)\* 2001 TM<sub>238</sub>

Discovered 2001 Oct. 15 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 7.84061    |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.18777060 | $\omega$ | 6.96131  | +0.35902405 | −0.92027661 |
| <i>a</i> | 3.0203063  | $\Omega$ | 62.10102 | +0.84760355 | +0.25172176 |
| <i>e</i> | 0.1777603  | <i>i</i> | 10.13658 | +0.39073004 | +0.29954486 |
| <i>P</i> | 5.25       | <i>H</i> | 15.2     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2001 08 28 | 644 | 0.3+ 0.6+   | 2003 01 07 | 704 | 0.8+ 0.4+ | 2006 09 17 | 699 | (0.1− 2.6−) |
| 2001 08 28 | 644 | 0.1+ 0.6+   | 2003 01 10 | 704 | 0.6+ 0.5+ | 2006 09 17 | 699 | (2.7− 0.3+) |
| 2001 08 28 | 644 | 0.2+ 0.9+   | 2003 01 10 | 704 | 0.2+ 0.4+ | 2006 09 17 | 699 | (2.3− 2.6−) |
| 2001 09 12 | 704 | 1.3− 0.4+   | 2003 01 10 | 704 | 0.9+ 0.0  | 2006 09 17 | 699 | 0.7+ 0.2−   |
| 2001 09 12 | 704 | 0.6+ 1.1+   | 2003 01 10 | 704 | 0.9+ 0.1− | 2006 10 11 | E12 | 0.0 0.5+    |
| 2001 09 12 | 704 | (1.2− 1.7+) | 2003 01 10 | 704 | 0.3+ 0.2− | 2006 10 11 | E12 | 0.2+ 0.2−   |
| 2001 09 12 | 704 | 0.1+ 0.5+   | 2003 01 10 | 644 | 0.0 0.5+  | 2006 10 11 | E12 | 0.4+ 0.3−   |
| 2001 09 18 | 699 | 0.0 0.1−    | 2003 01 10 | 644 | 0.0 0.5+  | 2006 10 11 | E12 | 0.6+ 0.8−   |
| 2001 09 18 | 699 | 0.6− 0.3+   | 2003 01 10 | 644 | 0.1+ 0.2+ | 2007 10 12 | 704 | 0.2+ 0.5+   |
| 2001 09 18 | 699 | 0.3− 0.3+   | 2003 01 13 | 704 | 0.0 0.2+  | 2007 10 12 | 704 | 0.3− 0.3+   |
| 2001 09 18 | 699 | 1.0− 0.5+   | 2003 01 13 | 704 | 0.2+ 0.6+ | 2007 10 12 | 704 | 0.1+ 0.1−   |
| 2001 09 25 | 704 | 0.6+ 0.8−   | 2003 01 13 | 704 | 0.4− 0.3+ | 2007 11 18 | 704 | 0.3+ 0.0    |
| 2001 09 25 | 704 | 0.1+ 1.1−   | 2003 01 13 | 704 | 0.2− 0.6+ | 2007 11 18 | 704 | 0.5+ 0.4−   |
| 2001 09 25 | 704 | 0.2+ 0.1+   | 2003 01 13 | 704 | 0.0 0.7+  | 2007 11 18 | 704 | (           |

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2001 10 19 699 0.2+ 0.1- | 2003 01 31 699 0.1- 1.2+   | 2007 12 05 699 0.3+ 0.5- |
| 2001 10 19 699 0.8- 0.5+ | 2003 01 31 699 (0.0 1.6+)  | 2007 12 05 699 0.5- 0.8- |
| 2001 10 19 699 0.1+ 0.8+ | 2003 01 31 699 (0.5- 1.9+) | 2007 12 13 704 0.1- 0.3- |
| 2001 10 23 644 0.4- 0.4- | 2006 08 18 644 0.2- 0.1-   | 2007 12 13 704 0.1+ 0.7+ |
| 2001 10 23 644 0.3- 0.5- | 2006 08 18 644 0.1+ 0.1-   | 2007 12 13 704 0.5- 0.2- |
| 2001 10 23 644 0.2- 0.1- | 2006 08 18 644 0.2- 0.2-   | 2007 12 13 704 0.5- 0.3- |
| 2003 01 05 699 0.1+ 0.2- | 2006 08 18 644 0.0 0.2-    | 2007 12 13 704 0.3- 0.1- |
| 2003 01 05 699 0.6- 0.2+ | 2006 08 18 644 0.1+ 0.1-   | 2007 12 16 704 0.9+ 0.4- |
| 2003 01 05 699 0.4- 0.3+ | 2006 08 18 644 0.2- 0.3-   | 2007 12 16 704 0.4- 0.7- |
| 2003 01 05 699 0.1+ 0.4+ | 2006 08 28 E12 0.2- 0.2+   | 2007 12 16 704 0.2- 0.6- |
| 2003 01 07 704 0.2+ 1.0+ | 2006 08 28 E12 0.5+ 0.6-   | 2007 12 16 704 0.4+ 0.5- |
| 2003 01 07 704 0.3+ 0.5+ | 2006 08 28 E12 0.3- 0.7-   |                          |
| 2003 01 07 704 0.9+ 1.5+ | 2006 08 28 E12 0.2- 0.1+   |                          |

(171997)\* 2001 TW<sub>256</sub> = 2004 JZ<sub>37</sub>

Discovered 2001 Oct. 14 by NEAT at Haleakala.

Id. A. Doppler (MPO 108063)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.93576  | (2000.0) | <i>P</i>  | <i>Q</i>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17766873 | $\omega$ | 354.87799 | -0.29281909   |
| <i>a</i> | 3.1337334  | $\Omega$ | 111.88479 | +0.88830178   |
| <i>e</i> | 0.1689953  | <i>i</i> | 18.77756  | +0.35380352   |
| <i>P</i> | 5.55       | <i>H</i> | 14.4      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1993 05 27 691 0.4- 0.4- | 2003 02 04 699 0.5- 0.9+ | 2004 05 14 699 0.1+ 0.8+ |
| 1993 05 27 691 0.0 0.4-  | 2003 02 04 699 0.0 0.4+  | 2004 05 14 699 0.5+ 0.3+ |
| 1993 05 27 691 0.2- 0.4- | 2003 02 04 699 0.2- 0.8+ | 2004 05 14 699 1.4- 0.7+ |
| 2001 10 14 608 0.4- 1.1+ | 2003 02 26 704 0.4+ 0.1- | 2004 05 20 691 0.1+ 0.3+ |
| 2001 10 14 608 0.1+ 0.9+ | 2003 02 26 704 0.1+ 0.4+ | 2004 05 20 691 0.2+ 0.2+ |
| 2001 10 14 608 0.4+ 0.8+ | 2003 02 26 704 0.6+ 0.0  | 2004 05 20 691 0.3+ 0.2+ |
| 2001 10 23 699 0.5+ 0.2+ | 2003 02 26 704 0.0 0.5-  | 2005 06 14 G96 0.5+ 0.3+ |
| 2001 10 23 699 1.0- 0.4+ | 2003 02 26 704 0.2- 0.3- | 2005 06 14 G96 0.2+ 0.5+ |
| 2001 10 23 699 1.2- 0.7+ | 2003 03 03 644 0.3- 1.1+ | 2005 06 14 G96 0.6+ 0.7+ |
| 2001 10 23 699 0.9- 1.4+ | 2003 03 03 644 0.3- 1.0+ | 2007 11 18 D29 0.3+ 0.3- |
| 2001 11 18 608 0.2- 1.0+ | 2003 03 03 644 0.3- 1.0+ | 2007 11 18 D29 0.5- 0.3- |
| 2001 11 18 608 0.3- 0.7+ | 2003 03 08 699 0.1- 0.1+ | 2007 11 18 D29 0.1- 0.2- |
| 2001 11 18 608 0.0 0.8+  | 2003 03 08 699 0.2+ 0.3- | 2007 11 18 D29 0.7+ 0.8- |
| 2002 12 31 704 0.3+ 0.1+ | 2003 03 08 699 0.1+ 0.2+ | 2007 11 18 D29 0.6+ 0.7- |
| 2002 12 31 704 0.1+ 0.4+ | 2003 03 08 699 0.6+ 0.8+ | 2007 11 18 D29 0.6+ 0.6- |
| 2002 12 31 704 0.1- 0.0  | 2003 03 08 644 0.2+ 0.0  | 2007 11 18 D29 0.2- 0.5- |
| 2002 12 31 704 0.6+ 0.4- | 2003 03 08 644 0.3+ 0.0  | 2007 11 18 D29 0.2+ 0.4- |
| 2003 01 10 704 0.0 0.2+  | 2003 03 08 644 0.1+ 0.0  | 2007 12 06 703 0.3- 0.4- |
| 2003 01 10 704 0.5+ 0.1+ | 2004 05 14 704 0.0 0.4-  | 2007 12 06 703 0.1+ 0.9- |
| 2003 01 10 704 0.0 0.2-  | 2004 05 14 704 0.1- 1.2+ | 2007 12 06 703 0.2+ 0.7- |
| 2003 01 10 704 0.2+ 0.5- | 2004 05 14 699 0.1- 0.6+ | 2007 12 06 703 0.4- 0.4- |
| 2003 02 04 699 0.0 0.2+  | 2004 05 14 704 0.2- 0.2+ |                          |

(171998)\* 2001 UM<sub>3</sub> = 2002 XB<sub>84</sub>

Discovered 2001 Oct. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 40812)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 268.31463  | (2000.0) | <i>P</i>  | <i>Q</i>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17723767 | $\omega$ | 105.79810 | -0.90893468   |
| <i>a</i> | 3.1388124  | $\Omega$ | 50.08363  | +0.33337526   |
| <i>e</i> | 0.1285494  | <i>i</i> | 5.79321   | +0.25039704   |
| <i>P</i> | 5.56       | <i>H</i> | 15.0      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2001 10 16 704 (2.2- 1.2+) | 2004 03 28 704 0.1- 0.2-   | 2007 11 03 691 0.1- 0.0  |
| 2001 10 16 704 (1.6- 1.0+) | 2004 03 28 704 0.1+ 0.8+   | 2007 11 03 691 0.0 0.1+  |
| 2001 10 16 704 0.5- 1.0+   | 2004 03 28 704 0.7+ 0.5+   | 2007 11 03 699 0.1+ 0.2+ |
| 2001 10 17 704 0.1- 0.6+   | 2004 03 28 704 (0.7+ 1.6+) | 2007 11 03 699 0.4- 0.4+ |
| 2001 10 17 704 1.2- 0.5+   | 2004 04 16 704 0.2- 0.1+   | 2007 11 03 699 0.1+ 0.2+ |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 10 17 704 1.1- 1.1- | 2004 04 16 704 0.2+ 0.2+ | 2007 11 03 699 1.9- 0.8- |
| 2001 10 17 704 0.4- 0.9+ | 2004 04 16 704 0.5- 0.6+ | 2007 11 05 A77 0.0 0.0   |
| 2001 10 20 704 0.3+ 0.7+ | 2004 04 16 704 0.1+ 0.5+ | 2007 11 05 A77 0.1+ 0.1+ |
| 2001 10 20 704 0.6- 0.2- | 2004 04 16 704 1.3+ 1.2+ | 2007 11 05 A77 0.2+ 0.0  |
| 2001 10 20 704 0.1- 0.2- | 2004 04 16 644 0.3+ 0.3+ | 2007 11 05 704 0.2+ 0.3- |
| 2001 10 20 704 0.7- 0.6+ | 2004 04 16 644 0.4- 0.5+ | 2007 11 05 704 1.2+ 0.3+ |
| 2001 10 20 704 0.9- 0.7+ | 2004 04 16 644 0.3+ 0.7+ | 2007 11 05 704 1.1+ 0.1+ |
| 2001 10 25 691 0.1- 0.4+ | 2004 04 19 704 0.6+ 0.6+ | 2007 11 05 704 0.9+ 0.1+ |
| 2001 10 25 691 0.3+ 0.4+ | 2004 04 19 704 1.1- 1.4+ | 2007 11 11 G96 0.3+ 0.2- |
| 2001 10 25 691 0.2+ 0.2+ | 2004 04 19 704 0.3+ 0.0  | 2007 11 11 G96 0.4+ 0.4- |
| 2002 12 13 704 0.3+ 0.6- | 2004 04 19 704 0.9- 0.4+ | 2007 11 11 G96 0.4+ 0.2+ |
| 2002 12 13 704 0.9- 0.0  | 2004 04 19 704 0.1- 0.5+ | 2007 11 11 G96 0.4+ 0.4- |
| 2002 12 13 704 0.7+ 0.0  | 2004 05 19 691 0.2+ 0.1+ | 2007 11 14 691 0.5- 0.3+ |
| 2002 12 13 704 0.4- 0.2- | 2004 05 19 691 0.2+ 0.2+ | 2007 11 14 691 0.1+ 0.2+ |
| 2002 12 14 704 0.7+ 0.8- | 2004 05 19 691 0.4+ 0.1+ | 2007 11 14 691 0.1- 0.1+ |
| 2002 12 14 704 0.1+ 0.4- | 2007 10 08 691 0.2+ 0.0  | 2007 11 15 704 0.4- 0.1+ |
| 2002 12 14 704 0.5- 0.2- | 2007 10 08 691 0.7- 0.2- | 2007 11 15 704 0.1+ 1.2+ |
| 2002 12 14 704 0.2- 0.9+ | 2007 10 08 691 0.0 0.1+  | 2007 11 15 704 0.1+ 0.5+ |
| 2003 02 01 704 0.6- 0.8- | 2007 10 08 691 0.1- 0.0  | 2007 11 15 704 0.1- 0.8+ |
| 2003 02 01 704 0.4+ 0.8- | 2007 10 08 691 0.0 0.0   | 2007 11 15 704 0.1+ 0.4+ |
| 2003 02 01 704 0.4+ 0.0  | 2007 10 08 691 0.0 0.4-  | 2007 11 18 704 0.2+ 0.4- |
| 2003 02 01 704 0.2- 0.3+ | 2007 10 30 691 0.2- 0.2- | 2007 11 18 704 0.0 0.3+  |
| 2003 02 01 704 0.3+ 0.1+ | 2007 10 30 691 0.1+ 0.1- | 2007 11 18 704 0.5+ 0.5+ |
| 2004 03 22 704 0.0 0.4-  | 2007 10 30 691 0.1- 0.1- | 2007 11 18 704 0.0 0.5+  |
| 2004 03 22 704 0.5+ 1.0- | 2007 10 30 G96 0.1+ 0.1- | 2007 11 18 704 0.2- 0.6+ |
| 2004 03 22 704 0.5+ 0.7+ | 2007 10 30 G96 0.5+ 0.8- | 2007 12 05 691 0.1+ 0.2+ |
| 2004 03 22 704 0.9+ 0.6+ | 2007 10 30 G96 0.5+ 0.5- | 2007 12 05 691 0.4- 0.7+ |
| 2004 03 28 704 0.5- 0.5+ | 2007 11 03 691 0.1- 0.1- | 2007 12 05 691 0.0 0.2+  |

(171999)\* 2001 UQ<sub>21</sub>

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 100.53432  | (2000.0) | <i>P</i>  | <i>Q</i>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.18080323 | $\omega$ | 13.31416  | +0.57011100   |
| <i>a</i> | 3.0974093  | $\Omega$ | 291.61128 | -0.76678785   |
| <i>e</i> | 0.0473144  | <i>i</i> | 8.58504   | -0.29497430   |
| <i>P</i> | 5.45       | <i>H</i> | 14.7      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2001 09 10 704 0.0 0.6-  | 2004 03 16 704 0.9+ 0.9+   | 2006 09 28 691 0.2- 0.1+ |
| 2001 09 10 704 0.9- 0.2+ | 2004 03 16 704 1.4- 0.2+   | 2006 09 28 691 0.2- 0.1+ |
| 2001 09 10 704 0.1+ 0.3+ | 2004 03 16 704 0.4+ 0.4+   | 2006 09 28 691 0.0 0.1+  |
| 2001 09 25 704 0.5- 0.5+ | 2004 03 16 704 0.1+ 0.3+   | 2007 11 02 704 0.1+ 0.7+ |
| 2001 09 25 704 0.4- 1.3+ | 2004 03 16 704 0.1+ 1.2+   | 2007 11 02 704 0.2+ 0.6+ |
| 2001 09 25 704 0.1- 0.7+ | 2006 08 15 958 0.0 0.3-    | 2007 11 02 704 1.2- 0.6- |
| 2001 09 25 704 0.3+ 1.0+ | 2006 08 16 958 0.0 0.1+    | 2007 11 02 704 1.0+ 0.6+ |
| 2001 09 25 704 0.5+ 1.1+ | 2006 08 16 958 (1.2+ 3.4-) | 2007 11 02 704 0.7- 0.3- |
| 2001 09 26 704 0.1- 0.8- | 2006 08 30 704 0.2- 0.3-   | 2007 11 08 704 0.4+ 0.3+ |
| 2001 09 26 704 0.2- 0.9- | 2006 08 30 704 0.3+ 0.2-   | 2007 11 08 704 0.6+ 0.9- |
| 2001 09 26 704 0.9- 0.6- | 2006 08 30 704 0.5+ 0.5+   | 2007 11 08 704 0.9+ 0.2- |
| 2001 09 26 704 0.6- 1.5+ | 2006 08 30 704 0.0 0.9+    | 2007 11 08 704 0.7- 0.5+ |
| 2001 09 29 644 0.1+ 0.1- | 2006 08 30 704 0.3+ 0.0    | 2007 11 15 699 0.4- 0.7- |
| 2001 09 29 644 0.0 0.3+  | 2006 09 15 691 0.0 0.1+    | 2007 11 15 699 0.3+ 0.5- |
| 2001 09 29 644 0.1+ 0.4- | 2006 09 15 691 0.0 0.2+    | 2007 11 15 699 1.2+ 0.0  |
| 2001 10 13 644 0.5+ 0.6+ | 2006 09 15 691 0.0 0.0     | 2007 11 15 699 0.8- 0.4- |
| 2001 10 13 644 0.1- 0.4+ | 2006 09 17 691 0.0 0.1-    | 2007 11 17 704 0.4+ 0.4- |
| 2001 10 13 644 0.5+ 0.6+ | 2006 09 17 691 0.0 0.1+    | 2007 11 17 704 0.2+ 1.0+ |
| 2001 10 17 704 0.1- 0.3- | 2006 09 17 691 0.0 0.0     | 2007 11 17 704 0.9- 0.4+ |
| 2001 10 17 704 0.1- 0.8- | 2006 09 19 699 1.1+ 0.3-   | 2007 11 17 704 0.7+ 0.2- |
| 2001 10 17 704 0.6+ 0.6- | 2006 09 19 691 0.1+ 0.1+   | 2007 11 20 G96 0.4- 0.1- |
| 2001 10 17 704 0.3- 0.5+ | 2006 09 19 691 0.3- 1.3-   | 2007 11 20 G96 0.5- 0.2- |
| 2001 10 19 704 0.0 0.0   | 2006 09 19 699 0.5+ 0.8-   | 2007 11 20 G96 0.6- 0.1- |
| 2001 10 19 704 0.0 0.5+  | 2006 09 19 691 0.0 0.0     | 2007 11 20 G96 0.6- 0.1- |
| 2001 10 19 704 0.9- 0.5+ | 2006 09 19 699 0.3- 0.0    | 2007 12 02 704 1.1- 0.7- |
| 2004 02 14 608 0.4+ 0.3- | 2006 09 19 699 0.4+ 0.6+   | 2007 12 02 704 1.5+ 0.2+ |
| 2004 02 14 608 0.5+ 0.3- | 2006 09 23 691 0.1- 0.2+   | 2007 12 02 704 0.6+ 0.7- |

2007 DEC. 24

M.P.O. 129231

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 14 | 608 | 0.4+ | 0.3- | 2006 09 23 | 691 | 0.1+ | 0.1+ | 2007 12 02 | 704 | 0.7- | 0.9+ |
| 2004 02 19 | 704 | 0.1- | 1.3+ | 2006 09 23 | 691 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.0  | 0.5- |
| 2004 02 19 | 704 | 0.6+ | 0.0  | 2006 09 26 | 691 | 0.3+ | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.5- |
| 2004 02 19 | 704 | 0.1+ | 0.6+ | 2006 09 26 | 691 | 0.3- | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.6- |
| 2004 02 19 | 704 | 0.1- | 0.5- | 2006 09 26 | 691 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.1+ | 0.2- |

(172000)\* 2001 UO<sub>22</sub>

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19186549 | $\omega$ | 82.76360  | +0.94121238 | +0.31116736 |          |   |
| <i>a</i> | 2.9771780  | $\Omega$ | 259.03960 | -0.33781151 | -0.86508470 |          |   |
| <i>e</i> | 0.1041355  | <i>i</i> | 7.69794   | -0.00162410 | +0.39345055 |          |   |
| <i>P</i> | 5.14       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 20 | 699 | 0.7-  | 0.5+  | 2001 12 11 | 704 | 0.8+  | 1.2+  | 2006 10 03 | 704 | (1.6- | 1.6+) |
| 2001 09 20 | 699 | 0.1+  | 0.4-  | 2003 01 07 | 704 | (0.2+ | 3.3+) | 2006 10 03 | 704 | 0.5-  | 0.3-  |
| 2001 09 20 | 699 | 0.6-  | 0.0   | 2003 01 07 | 704 | 0.8+  | 0.3+  | 2006 10 03 | 704 | 1.3-  | 0.5+  |
| 2001 09 20 | 699 | 0.4-  | 0.6+  | 2003 01 07 | 704 | (1.3+ | 2.4+) | 2006 10 03 | 704 | 0.2+  | 0.1+  |
| 2001 09 25 | 704 | 0.2+  | 0.1-  | 2003 01 07 | 704 | (0.5+ | 3.2+) | 2006 10 11 | 644 | 0.1+  | 0.1+  |
| 2001 09 25 | 704 | 0.0   | 0.4-  | 2003 01 07 | 704 | 1.6+  | 0.3+  | 2006 10 11 | 644 | 0.0   | 0.2+  |
| 2001 09 25 | 704 | 0.5+  | 0.4+  | 2004 03 17 | 704 | (1.9+ | 2.3+) | 2006 10 11 | 644 | 0.0   | 0.2+  |
| 2001 09 25 | 704 | 0.1-  | 0.4-  | 2004 03 17 | 704 | (0.1+ | 1.6+) | 2006 10 17 | 703 | 0.1+  | 0.5-  |
| 2001 09 25 | 704 | 0.4-  | 0.1-  | 2004 03 17 | 704 | 0.1+  | 0.4+  | 2006 10 17 | 703 | 1.3-  | 0.6+  |
| 2001 10 13 | 644 | 0.0   | 0.7+  | 2004 03 26 | 699 | 0.6+  | 0.6+  | 2006 10 17 | 703 | (0.7- | 2.4+) |
| 2001 10 13 | 644 | 0.1-  | 0.2-  | 2004 03 26 | 699 | 1.0+  | 0.7+  | 2006 10 17 | 703 | 0.1-  | 0.1+  |
| 2001 10 13 | 644 | 0.2-  | 0.2-  | 2004 03 26 | 699 | 0.5-  | 0.9+  | 2006 10 22 | 644 | 0.2-  | 0.2+  |
| 2001 10 17 | 704 | (2.5+ | 2.5-) | 2004 03 26 | 699 | 0.3+  | 0.3+  | 2006 10 22 | 644 | 0.1+  | 0.2+  |
| 2001 10 17 | 704 | (2.4+ | 3.6-) | 2004 03 27 | 703 | 1.5+  | 1.2+  | 2006 10 22 | 644 | 0.1-  | 0.2+  |
| 2001 10 17 | 704 | (2.2+ | 3.1-) | 2004 03 27 | 703 | 1.0+  | 0.0   | 2006 10 22 | 644 | 0.3-  | 0.1+  |
| 2001 10 17 | 704 | (2.2+ | 3.2-) | 2004 03 27 | 703 | 0.4-  | 0.7+  | 2006 10 22 | 644 | 0.4-  | 0.1+  |
| 2001 10 17 | 704 | (2.3+ | 2.9-) | 2004 03 27 | 703 | 1.0-  | 1.3+  | 2006 10 22 | 644 | 0.2-  | 0.1+  |
| 2001 10 19 | 704 | 0.5-  | 1.0+  | 2005 08 04 | 644 | 0.0   | 0.2-  | 2006 10 23 | 644 | 0.1-  | 0.2+  |
| 2001 10 19 | 704 | 1.0-  | 0.2+  | 2005 08 04 | 644 | 0.2-  | 0.6+  | 2006 10 23 | 644 | 0.0   | 0.2+  |
| 2001 10 19 | 704 | 0.2+  | 0.3-  | 2005 08 04 | 644 | 0.1+  | 0.4+  | 2006 10 23 | 644 | 0.3-  | 0.2+  |
| 2001 10 19 | 704 | 0.6+  | 0.0   | 2006 08 29 | 699 | 0.8+  | 1.1+  | 2006 10 23 | 703 | 0.6-  | 1.1+  |
| 2001 10 20 | 644 | 0.0   | 0.3-  | 2006 08 29 | 699 | 0.1-  | 0.6+  | 2006 10 23 | 703 | 0.7-  | 0.1-  |
| 2001 10 20 | 644 | 0.0   | 0.3-  | 2006 08 29 | 699 | 0.7+  | 0.2+  | 2006 10 23 | 703 | 0.7-  | 0.1-  |
| 2001 10 20 | 644 | 0.0   | 0.1-  | 2006 09 14 | 644 | 0.1-  | 0.1+  | 2006 10 23 | 703 | 0.2+  | 0.3+  |
| 2001 10 26 | 644 | (2.1- | 1.0+) | 2006 09 14 | 644 | 0.4-  | 0.2+  | 2006 11 08 | 644 | 0.3+  | 0.3-  |
| 2001 10 26 | 644 | (2.1- | 1.0+) | 2006 09 14 | 644 | (1.8- | 0.4+) | 2006 11 08 | 644 | 0.1-  | 0.3+  |
| 2001 10 26 | 644 | (2.0- | 1.1+) | 2006 09 16 | 703 | 0.1+  | 0.6-  | 2006 11 08 | 644 | 0.0   | 0.3+  |
| 2001 11 05 | 734 | 0.6-  | 0.4-  | 2006 09 16 | 703 | 0.0   | 0.3-  | 2006 11 08 | 644 | 0.1+  | 0.1+  |
| 2001 11 05 | 734 | 0.1+  | 0.3+  | 2006 09 16 | 703 | 0.0   | 0.0   | 2006 11 08 | 644 | 0.1+  | 0.0   |
| 2001 11 05 | 734 | 0.5-  | 0.0   | 2006 09 16 | 703 | 0.0   | 0.5-  | 2006 11 08 | 644 | 0.2-  | 0.3+  |
| 2001 11 05 | 734 | 0.0   | 0.2+  | 2006 09 19 | 699 | 0.1+  | 0.1-  | 2007 10 14 | G96 | 0.4+  | 0.3-  |
| 2001 11 10 | 704 | 0.2-  | 0.7-  | 2006 09 19 | 699 | 0.5+  | 0.1-  | 2007 10 14 | G96 | 0.2+  | 0.3-  |
| 2001 11 10 | 704 | 0.9-  | 0.3-  | 2006 09 19 | 699 | 0.1-  | 0.4-  | 2007 10 14 | G96 | 0.0   | 0.5-  |
| 2001 11 10 | 704 | 0.4+  | 0.4+  | 2006 09 19 | 699 | 0.0   | 0.0   | 2007 10 14 | G96 | 0.3+  | 0.4-  |
| 2001 11 10 | 704 | 1.0+  | 0.4-  | 2006 09 27 | 699 | 0.7+  | 0.8+  | 2007 12 04 | 704 | 0.8+  | 0.5+  |
| 2001 11 17 | 704 | 0.1+  | 0.9-  | 2006 09 27 | 699 | 0.3+  | 0.0   | 2007 12 04 | 704 | 1.2+  | 1.1+  |
| 2001 11 17 | 704 | 0.1-  | 1.0-  | 2006 09 27 | 699 | 0.6+  | 0.1+  | 2007 12 04 | 704 | 0.4+  | 0.9+  |
| 2001 11 17 | 704 | 0.0   | 1.0-  | 2006 09 27 | 699 | 0.8+  | 0.2+  | 2007 12 04 | 704 | 0.9+  | 1.5+  |
| 2001 11 17 | 704 | 0.0   | 0.6-  | 2006 09 27 | 703 | 0.7+  | 0.3+  | 2007 12 04 | 691 | 0.1-  | 0.2-  |
| 2001 11 17 | 644 | 0.1-  | 0.4+  | 2006 09 27 | 703 | 0.7+  | 0.3+  | 2007 12 04 | 691 | 0.0   | 0.2-  |
| 2001 11 17 | 704 | 0.4-  | 1.3-  | 2006 09 27 | 703 | 0.6+  | 0.9+  | 2007 12 04 | 691 | 0.1-  | 0.4-  |
| 2001 11 17 | 644 | 0.1+  | 0.4+  | 2006 09 27 | 703 | 0.9-  | 0.2+  | 2007 12 16 | 691 | 0.6-  | 0.3+  |
| 2001 11 17 | 644 | 0.2-  | 0.3+  | 2006 09 27 | 703 | 0.4-  | 0.0   | 2007 12 16 | 691 | 0.5-  | 0.5+  |
| 2001 12 11 | 704 | 0.5+  | 0.5+  | 2006 09 27 | 703 | 0.4+  | 0.2-  | 2007 12 16 | 691 | 0.0   | 0.2-  |
| 2001 12 11 | 704 | 0.0   | 0.7+  | 2006 09 27 | 703 | 0.9-  | 0.6+  | 2007 12 16 | 691 | 0.4-  | 0.0   |
| 2001 12 11 | 704 | 0.6+  | 0.3+  | 2006 09 27 | 703 | 0.1-  | 0.1+  | 2007 12 16 | 691 | 0.1+  | 0.4-  |
| 2001 12 11 | 704 | 1.1+  | 0.9+  | 2006 10 03 | 704 | 0.8+  | 0.9-  | 2007 12 16 | 691 | 0.1+  | 0.2-  |

(172001)\* 2001 UN<sub>23</sub>

Discovered 2001 Oct. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17626914 | $\omega$ | 46.09169  | +0.99183746 | +0.04479468 |          |   |
| <i>a</i> | 3.1502996  | $\Omega$ | 310.96313 | -0.09789641 | +0.86741269 |          |   |
| <i>e</i> | 0.2183396  | <i>i</i> | 9.09624   | +0.08169911 | +0.49556902 |          |   |
| <i>P</i> | 5.59       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 25 | 704 | 0.3+ | 0.3+ | 2003 02 01 | 645 | 0.0  | 0.0  | 2006 08 17 | 644 | 0.1+ | 0.0  |
| 2001 09 25 | 704 | 0.2- | 0.7- | 2003 02 01 | 645 | 0.0  | 0.0  | 2006 08 17 | 644 | 0.1+ | 0.0  |
| 2001 09 25 | 704 | 0.3- | 0.5+ | 2006 07 19 | D35 | 0.0  | 0.0  | 2006 08 17 | 644 | 0.3+ | 0.2+ |
| 2001 09 25 | 704 | 0.5- | 0.3- | 2006 07 19 | D35 | 0.3- | 0.0  | 2006 08 17 | 644 | 0.0  | 0.1- |
| 2001 09 25 | 704 | 0.4+ | 0.1- | 2006 07 19 | D35 | 0.1- | 0.2- | 2006 08 18 | 644 | 0.3+ | 0.2+ |
| 2001 10 13 | 699 | 0.9+ | 0.3+ | 2006 07 26 | 644 | 0.1- | 0.1+ | 2006 08 18 | 644 | 0.1- | 0.1+ |
| 2001 10 13 | 699 | 0.2- | 1.1+ | 2006 07 26 | 644 | 0.2- | 0.2+ | 2006 08 18 | 644 | 0.1- | 0.0  |
| 2001 10 13 | 699 | 1.0+ | 0.4+ | 2006 07 26 | 644 | 0.3- | 0.3+ | 2006 09 26 | G96 | 0.0  | 0.0  |
| 2001 10 13 | 699 | 0.9+ | 0.7+ | 2006 08 14 | 644 | 0.1- | 0.1+ | 2006 09 26 | G96 | 0.3- | 0.1+ |
| 2001 10 13 | 644 | 0.6- | 0.6- | 2006 08 14 | 644 | 0.1+ | 0.1- | 2006 09 26 | G96 | 0.1- | 0.2+ |
| 2001 10 13 | 644 | 0.5- | 0.2- | 2006 08 14 | 644 | 0.1+ | 0.2- | 2006 09 26 | G96 | 0.5- | 0.1- |
| 2001 10 13 | 644 | 0.5- | 0.0  | 2006 08 14 | 644 | 0.2+ | 0.0  | 2006 10 22 | G96 | 0.2- | 0.3- |
| 2001 10 18 | 704 | 0.3+ | 0.1+ | 2006 08 14 | 644 | 0.1+ | 0.1- | 2006 10 22 | G96 | 0.0  | 0.1+ |
| 2001 10 18 | 704 | 0.4+ | 0.6- | 2006 08 14 | 644 | 0.2+ | 0.0  | 2006 10 22 | G96 | 0.4- | 0.4- |
| 2001 10 18 | 704 | 0.3+ | 0.2+ | 2006 08 15 | 644 | 0.4- | 0.1+ | 2006 10 22 | G96 | 0.2- | 0.4- |
| 2001 10 18 | 704 | 0.9+ | 1.0- | 2006 08 15 | 644 | 0.0  | 0.0  | 2007 11 08 | 704 | 1.0+ | 0.9+ |
| 2001 10 19 | 704 | 0.9- | 0.0  | 2006 08 15 | 644 | 0.1- | 0.1- | 2007 11 08 | 704 | 1.2+ | 0.6+ |
| 2001 10 19 | 704 | 0.3- | 0.6- | 2006 08 16 | 644 | 0.2+ | 0.2- | 2007 11 08 | 704 | 1.5+ | 0.2+ |
| 2001 10 19 | 704 | 0.7- | 0.0  | 2006 08 16 | 644 | 0.0  | 0.2- | 2007 11 17 | 704 | 0.5+ | 0.2+ |
| 2001 11 12 | 704 | 0.3+ | 0.3- | 2006 08 16 | 644 | 0.4+ | 0.1+ | 2007 11 17 | 704 | 0.5+ | 0.5- |
| 2001 11 12 | 704 | 0.2- | 0.1+ | 2006 08 17 | 644 | 0.1+ | 0.2- | 2007 11 17 | 704 | 0.6+ | 1.1- |
| 2001 11 12 | 704 | 0.2+ | 0.4+ | 2006 08 17 | 644 | 0.0  | 0.3- | 2007 11 17 | 704 | 0.4- | 0.0  |
| 2001 11 12 | 704 | 0.2- | 0.5+ | 2006 08 17 | 644 | 0.7+ | 0.2- | 2007 12 16 | 704 | 1.2- | 0.5- |
| 2001 11 12 | 704 | 0.1- | 0.3+ | 2006 08 17 | 644 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.3- | 0.9- |
| 2001 12 10 | 704 | 0.3- | 0.0  | 2006 08 17 | 644 | 0.1- | 0.2- | 2007 12 16 | 704 | 1.5- | 0.8- |
| 2001 12 10 | 704 | 0.0  | 0.2+ | 2006 08 17 | 644 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.9- | 0.3+ |
| 2001 12 10 | 704 | 0.4- | 0.4- | 2006 08 17 | 644 | 0.1+ | 0.1+ | 2007 12 16 | 704 | 0.5- | 0.1- |
| 2001 12 10 | 704 | 0.9- | 0.6+ | 2006 08 17 | 644 | 0.0  | 0.1- |            |     |      |      |

(172002)\* 2001 UO<sub>28</sub> = 2003 AP<sub>89</sub>

Discovered 2001 Oct. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 43111)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17850558 | $\omega$ | 184.47965 | -0.72620821 | +0.67694218 |          |   |
| <i>a</i> | 3.1239317  | $\Omega$ | 39.02582  | -0.62468335 | -0.57696231 |          |   |
| <i>e</i> | 0.0385864  | <i>i</i> | 10.97515  | -0.28704066 | -0.45701616 |          |   |
| <i>P</i> | 5.52       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 04 17 | 691 | 0.2-  | 0.1+  | 2001 11 21 | 704 | 0.4+ | 0.6+ | 2007 10 10 | D29 | (1.7+ | 0.3-) |
| 1993 04 17 | 691 | 0.2+  | 0.5-  | 2001 11 21 | 704 | 0.4+ | 0.8+ | 2007 10 12 | 704 | (1.9+ | 1.2+) |
| 1993 04 17 | 691 | 0.4-  | 0.0   | 2001 11 21 | 704 | 0.0  | 0.2- | 2007 10 12 | 704 | 0.6+  | 0.0   |
| 2001 09 26 | 704 | (0.3+ | 2.2+) | 2001 11 21 | 704 | 1.0- | 0.0  | 2007 10 12 | 704 | 0.4+  | 0.5-  |
| 2001 09 26 | 704 | (1.0- | 1.8+) | 2003 01 04 | 704 | 0.5- | 0.7- | 2007 11 02 | 691 | 0.1-  | 0.1-  |
| 2001 09 26 | 704 | 1.0-  | 1.2+  | 2003 01 04 | 704 | 0.4- | 0.8- | 2007 11 02 | 691 | 0.2-  | 0.1-  |
| 2001 10 16 | 704 | 0.6-  | 0.7-  | 2003 01 04 | 704 | 0.2+ | 0.3- | 2007 11 02 | 691 | 0.4-  | 0.1-  |
| 2001 10 16 | 704 | 0.5+  | 0.5+  | 2003 01 10 | 704 | 0.8+ | 0.1- | 2007 11 07 | 704 | 0.7+  | 0.6-  |
| 2001 10 16 | 704 | 0.6+  | 0.2+  | 2003 01 10 | 704 | 0.1- | 0.8- | 2007 11 07 | 704 | 0.1+  | 0.2+  |
| 2001 10 20 | 704 | 0.0   | 0.1+  | 2003 01 10 | 704 | 0.2- | 0.1- | 2007 11 07 | 704 | 0.5+  | 0.2-  |
| 2001 10 20 | 704 | 0.1+  | 0.8+  | 2003 01 10 | 704 | 0.1+ | 0.0  | 2007 11 07 | 704 | 0.3+  | 0.9+  |
| 2001 10 20 | 704 | 0.3+  | 0.0   | 2004 03 15 | 704 | 0.3+ | 0.0  | 2007 11 07 | 704 | 0.2+  | 0.7+  |

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 20 | 704 | 0.3+ | 0.7+  | 2004 03 15 | 704 | 0.5+ | 0.1- | 2007 11 17 | G96 | 0.4+ | 0.4- |
| 2001 10 23 | 704 | (0.0 | 1.9+) | 2004 03 15 | 704 | 0.1- | 0.6- | 2007 11 17 | G96 | 0.3+ | 0.4- |
| 2001 10 23 | 704 | 0.5+ | 0.3+  | 2004 03 15 | 704 | 0.4+ | 0.7+ | 2007 11 17 | G96 | 0.7+ | 0.4- |
| 2001 10 23 | 704 | 0.0  | 0.0   | 2004 03 18 | 691 | 0.2+ | 0.4+ | 2007 11 17 | G96 | 0.1+ | 0.3- |
| 2001 10 23 | 704 | 0.6+ | 0.0   | 2004 03 18 | 691 | 0.3+ | 0.4+ | 2007 11 18 | 704 | 0.9- | 0.1+ |
| 2001 10 24 | 691 | 0.0  | 0.1+  | 2004 03 18 | 691 | 0.2+ | 0.3+ | 2007 11 18 | 704 | 0.3- | 0.0  |
| 2001 10 24 | 691 | 0.0  | 0.0   | 2004 03 23 | 704 | 0.7+ | 0.6+ | 2007 11 18 | 704 | 0.8- | 0.5+ |
| 2001 10 24 | 691 | 0.0  | 0.2+  | 2004 03 23 | 704 | 0.0  | 0.3+ | 2007 11 18 | 704 | 0.8- | 0.2+ |
| 2001 10 24 | 704 | 0.8- | 0.9-  | 2004 03 23 | 704 | 0.3+ | 0.8+ | 2007 11 20 | 704 | 0.4+ | 0.2- |
| 2001 10 24 | 704 | 0.5+ | 0.4-  | 2004 03 23 | 704 | 0.2+ | 0.4+ | 2007 11 20 | 704 | 0.5- | 0.3+ |
| 2001 10 24 | 704 | 0.4- | 0.2+  | 2004 03 23 | 704 | 0.3- | 0.4+ | 2007 11 20 | 704 | 0.1+ | 0.3- |
| 2001 10 24 | 704 | 0.1- | 0.2+  | 2006 09 20 | 703 | 0.6- | 0.6+ | 2007 11 20 | 704 | 0.3+ | 0.5- |
| 2001 10 24 | 704 | 0.1- | 0.1+  | 2006 09 20 | 703 | 0.5- | 0.7- | 2007 11 20 | 704 | 0.1- | 0.3- |
| 2001 11 20 | 704 | 0.5- | 0.3+  | 2006 09 20 | 703 | 0.3- | 0.9+ | 2007 12 13 | 704 | 0.0  | 0.7+ |
| 2001 11 20 | 704 | 0.2- | 0.2+  | 2006 09 20 | 703 | 0.2- | 0.2+ | 2007 12 13 | 704 | 0.2+ | 0.3- |
| 2001 11 20 | 704 | 0.3- | 0.2+  | 2007 10 10 | D29 | 0.8+ | 0.7+ | 2007 12 13 | 704 | 0.3+ | 0.2- |
| 2001 11 20 | 704 | 0.6- | 0.5-  | 2007 10 10 | D29 | 0.1+ | 0.4+ | 2007 12 13 | 704 | 0.1+ | 0.6+ |
| 2001 11 20 | 704 | 0.7- | 0.1+  | 2007 10 10 | D29 | 0.1+ | 0.6+ | 2007 12 13 | 704 | 0.0  | 0.2+ |

**(172003)\* 2001 UB<sub>33</sub>**

Discovered 2001 Oct. 16 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 62.84120   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.18083077 | $\omega$ | 300.70178 |     | +0.97937133 |     | -0.03599245 |
| $a$ | 3.0970948  | $\Omega$ | 62.02478  |     | +0.13015038 |     | +0.86507613 |
| $e$ | 0.1077328  | $i$      | 13.01144  |     | -0.15457254 |     | +0.50034771 |
| $P$ | 5.45       | $H$      | 14.7      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 10 | 644 | 0.9-  | 0.1-  | 2001 12 17 | 704 | 0.0   | 0.2+  | 2006 09 20 | 703 | 0.8+  | 0.3-  |
| 2001 10 10 | 644 | 0.8-  | 0.4+  | 2001 12 17 | 704 | 0.4+  | 1.2+  | 2006 09 20 | 703 | 0.1-  | 0.1+  |
| 2001 10 10 | 644 | 1.0-  | 0.4-  | 2001 12 17 | 704 | (0.5- | 1.7+) | 2006 09 26 | 703 | 0.4-  | 1.1-  |
| 2001 10 14 | 699 | 0.6+  | 0.1-  | 2004 03 23 | 704 | 0.8+  | 0.7+  | 2006 09 26 | 703 | 1.2-  | 0.5+  |
| 2001 10 14 | 699 | 0.7-  | 0.8-  | 2004 03 23 | 704 | 0.1+  | 1.0+  | 2006 09 26 | 703 | 0.1+  | 1.3-  |
| 2001 10 14 | 699 | 0.4+  | 0.3+  | 2004 03 23 | 704 | 0.5+  | 0.4+  | 2006 09 26 | 703 | 0.1-  | 0.2+  |
| 2001 10 14 | 699 | 1.1-  | 0.0   | 2005 01 24 | 809 | 0.1-  | 0.0   | 2006 10 11 | F84 | 0.5+  | 0.5-  |
| 2001 10 16 | 704 | 0.4+  | 0.4-  | 2005 01 24 | 809 | 0.3+  | 0.3+  | 2006 10 11 | F84 | 0.3-  | 0.2-  |
| 2001 10 16 | 704 | 0.4-  | 0.3-  | 2005 01 24 | 809 | 0.3-  | 0.0   | 2006 10 11 | F84 | 0.2+  | 0.4+  |
| 2001 10 16 | 704 | 0.6+  | 0.0   | 2006 08 14 | 644 | 0.2-  | 0.2+  | 2006 10 12 | E12 | 0.1+  | 0.3+  |
| 2001 10 16 | 704 | 0.2-  | 0.6-  | 2006 08 14 | 644 | 0.0   | 0.0   | 2006 10 12 | E12 | 0.5+  | 0.5+  |
| 2001 10 16 | 704 | 0.4+  | 0.5-  | 2006 08 14 | 644 | 0.5+  | 0.3+  | 2006 10 12 | E12 | 0.8-  | 0.4+  |
| 2001 10 20 | 704 | (2.3- | 2.6+) | 2006 08 16 | 644 | 0.1-  | 0.0   | 2006 10 12 | E12 | 1.0-  | 0.2-  |
| 2001 10 20 | 704 | (3.1- | 2.0+) | 2006 08 16 | 644 | 0.0   | 0.1+  | 2007 11 07 | 704 | 0.0   | 0.6-  |
| 2001 10 20 | 704 | (3.1- | 1.9+) | 2006 08 16 | 644 | 0.2+  | 0.0   | 2007 11 07 | 704 | 0.3-  | 0.5-  |
| 2001 10 24 | 644 | 0.5+  | 0.2+  | 2006 08 17 | 644 | 0.3+  | 0.0   | 2007 11 07 | 704 | 0.1+  | 0.3+  |
| 2001 10 24 | 644 | 0.3+  | 0.3+  | 2006 08 17 | 644 | 0.2-  | 0.4+  | 2007 11 20 | 704 | (0.4+ | 1.6-) |
| 2001 10 24 | 644 | 0.4+  | 1.1+  | 2006 08 17 | 644 | 0.2+  | 0.0   | 2007 11 20 | 704 | 0.4-  | 0.3-  |
| 2001 11 17 | 704 | 1.5-  | 1.5+  | 2006 08 18 | 644 | 0.3+  | 0.0   | 2007 11 20 | 704 | 0.7+  | 0.1-  |
| 2001 11 17 | 704 | 0.3-  | 0.3+  | 2006 08 18 | 644 | 0.3+  | 0.0   | 2007 11 20 | 704 | 0.5+  | 0.9+  |
| 2001 11 17 | 704 | 1.1+  | 0.0   | 2006 08 18 | 644 | 0.2+  | 0.2+  | 2007 12 15 | 704 | 0.1+  | 0.6-  |
| 2001 12 14 | 704 | (0.2- | 2.0+) | 2006 08 18 | 644 | 0.3+  | 0.0   | 2007 12 15 | 704 | 0.1-  | 1.0-  |
| 2001 12 14 | 704 | (0.2- | 2.3+) | 2006 08 18 | 644 | 0.3+  | 0.1+  | 2007 12 15 | 704 | 0.1-  | 0.2-  |
| 2001 12 14 | 704 | 0.5-  | 1.2+  | 2006 08 18 | 644 | 0.2+  | 0.2+  | 2007 12 15 | 704 | 0.1-  | 0.4-  |
| 2001 12 14 | 704 | (1.1+ | 3.0+) | 2006 09 20 | 703 | 0.2-  | 0.2-  |            |     |       |       |
| 2001 12 17 | 704 | 0.4+  | 0.1+  | 2006 09 20 | 703 | 0.1-  | 0.1-  |            |     |       |       |

**(172004)\* 2001 UD<sub>38</sub>**

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 129.96922  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17738650 | $\omega$ | 260.62839 |     | +0.14226365 |     | +0.98817447 |
| $a$ | 3.1370565  | $\Omega$ | 17.85799  |     | -0.81910237 |     | +0.14997553 |
| $e$ | 0.0541248  | $i$      | 10.75087  |     | -0.55572688 |     | +0.03191494 |
| $P$ | 5.56       | $H$      | 14.6      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 20 | 704 | 0.2+ | 0.6- | 2004 03 19 | 644 | 0.9+  | 0.5+  | 2006 10 12 | 644 | 0.1-  | 0.5+  |
| 2001 09 20 | 704 | 1.1+ | 0.5- | 2004 03 19 | 644 | 0.7+  | 0.6+  | 2006 10 12 | 644 | 0.2+  | 0.3+  |
| 2001 09 20 | 704 | 0.6+ | 0.6- | 2004 03 19 | 644 | 0.8+  | 0.4+  | 2007 11 02 | 704 | 1.2+  | 0.9-  |
| 2001 10 12 | 699 | 0.2+ | 0.1- | 2004 03 20 | 704 | 0.6+  | 1.4+  | 2007 11 02 | 704 | 0.2-  | 1.2-  |
| 2001 10 12 | 699 | 0.9+ | 0.4- | 2004 03 20 | 704 | 0.6+  | 0.9+  | 2007 11 02 | 704 | (0.1+ | 2.1+) |
| 2001 10 12 | 699 | 0.9- | 0.2+ | 2004 03 20 | 704 | (0.3+ | 2.0+) | 2007 11 02 | 704 | 0.1-  | 0.5+  |
| 2001 10 12 | 699 | 0.5+ | 0.6+ | 2004 03 20 | 704 | 0.7+  | 1.0+  | 2007 11 02 | 703 | 0.3+  | 0.1-  |
| 2001 10 17 | 704 | 1.4- | 0.9+ | 2006 08 16 | 644 | 0.1+  | 0.2+  | 2007 11 02 | 703 | 0.5-  | 0.5+  |
| 2001 10 17 | 704 | 0.4- | 0.5+ | 2006 08 16 | 644 | 0.1-  | 0.3+  | 2007 11 02 | 703 | 0.2+  | 1.1-  |
| 2001 10 17 | 704 | 1.5- | 0.4+ | 2006 08 16 | 644 | 0.2-  | 0.2+  | 2007 11 02 | 703 | 1.4-  | 0.5+  |
| 2001 10 17 | 704 | 1.5- | 0.7+ | 2006 08 16 | 644 | 0.0   | 0.1+  | 2007 11 08 | 704 | 0.7+  | 1.2+  |
| 2001 10 19 | 644 | 0.1+ | 0.4+ | 2006 08 16 | 644 | 0.4-  | 0.1-  | 2007 11 08 | 704 | 0.5+  | 0.1-  |
| 2001 10 19 | 644 | 0.0  | 0.3+ | 2006 08 16 | 644 | 0.1-  | 0.1+  | 2007 11 08 | 704 | 0.0   | 0.2+  |
| 2001 10 19 | 644 | 0.1+ | 0.3+ | 2006 08 30 | 699 | (0.6- | 1.7+) | 2007 11 08 | 704 | 0.8-  | 0.2+  |
| 2001 10 20 | 704 | 0.2+ | 0.9+ | 2006 08 30 | 699 | 0.1-  | 0.3+  | 2007 11 08 | 704 | 0.3-  | 1.0+  |
| 2001 10 20 | 704 | 0.1+ | 1.3+ | 2006 08 30 | 699 | 0.2-  | 0.3-  | 2007 11 08 | 703 | 0.7-  | 1.0-  |
| 2001 10 20 | 704 | 0.7+ | 0.7+ | 2006 08 30 | 699 | 0.7-  | 0.4+  | 2007 11 08 | 703 | (0.5+ | 1.7-) |
| 2001 10 20 | 704 | 0.0  | 0.8+ | 2006 09 18 | 699 | 0.6+  | 0.0   | 2007 11 08 | 703 | 0.7+  | 0.6-  |
| 2001 10 21 | 704 | 1.4- | 1.0- | 2006 09 18 | 699 | 0.8+  | 0.1+  | 2007 11 08 | 703 | 1.4+  | 0.0   |
| 2001 10 21 | 704 | 0.6- | 0.9- | 2006 09 18 | 699 | 0.2+  | 0.6+  | 2007 11 17 | 704 | 0.2+  | 0.1+  |
| 2001 10 21 | 704 | 0.8- | 0.3- | 2006 09 18 | 699 | 0.4+  | 0.6+  | 2007 11 17 | 704 | 0.2+  | 0.6+  |
| 2001 10 21 | 704 | 0.2+ | 0.8- | 2006 09 20 | 703 | 0.6-  | 0.8+  | 2007 11 17 | 704 | 0.3-  | 0.3+  |
| 2001 10 21 | 704 | 1.2+ | 0.0  | 2006 09 20 | 703 | 1.3-  | 0.6+  | 2007 11 17 | 704 | 0.1-  | 0.5+  |
| 2001 10 26 | 644 | 0.1+ | 0.4+ | 2006 09 20 | 703 | 0.1+  | 0.5-  | 2007 11 17 | 704 | 0.1-  | 0.1+  |
| 2001 10 26 | 644 | 0.1- | 0.3+ | 2006 09 20 | 703 | 0.9+  | 1.0+  | 2007 12 04 | G96 | 0.2-  | 0.5-  |
| 2001 10 26 | 644 | 0.1+ | 0.3+ | 2006 09 25 | 699 | 0.6-  | 0.1-  | 2007 12 04 | G96 | 0.4-  | 1.0-  |
| 2004 02 17 | 703 | 0.2+ | 1.4+ | 2006 09 25 | 699 | 0.5-  | 0.1-  | 2007 12 04 | G96 | 0.1-  | 0.6-  |
| 2004 02 17 | 703 | 0.1- | 0.1- | 2006 09 25 | 699 | 0.6-  | 0.1-  | 2007 12 04 | G96 | 0.3-  | 0.5-  |
| 2004 02 17 | 703 | 0.8- | 1.0- | 2006 09 25 | 699 | 0.2-  | 0.6-  | 2007 12 16 | 704 | 0.3-  | 0.4-  |
| 2004 02 17 | 703 | 0.4- | 0.6- | 2006 09 26 | 703 | 0.7+  | 0.6+  | 2007 12 16 | 704 | 0.3+  | 0.5+  |
| 2004 03 15 | 704 | 0.4- | 0.4+ | 2006 09 26 | 703 | 0.2-  | 0.4-  | 2007 12 16 | 704 | 0.9+  | 0.1-  |
| 2004 03 15 | 704 | 1.4+ | 0.9+ | 2006 09 26 | 703 | 1.2-  | 0.7+  | 2007 12 16 | 704 | 0.1+  | 0.0   |
| 2004 03 15 | 704 | 0.1- | 1.1+ | 2006 09 26 | 703 | (1.7- | 0.4+) |            |     |       |       |
| 2004 03 15 | 704 | 0.6+ | 0.8+ | 2006 10 12 | 644 | 0.3-  | 0.2+  |            |     |       |       |

**(172005)\* 2001 UH<sub>43</sub>**

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 340.60555  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17413084 | $\omega$ | 36.22071 |     | +0.00542531 |     | -0.99635167 |
| $a$ | 3.1760372  | $\Omega$ | 53.62139 |     | +0.89080982 |     | -0.03388214 |
| $e$ | 0.1790101  | $i$      | 6.07245  |     | +0.45434396 |     | +0.07832845 |
| $P$ | 5.66       | $H$      | 15.6     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 26 | 704 | 0.9-  | 0.5+  | 2001 10 26 | 691 | 0.1+  | 0.1-  | 2007 09 15 | G96 | 0.1- | 0.2- |
| 2001 09 26 | 704 | 0.0   | 0.5-  | 2001 11 09 | 691 | 0.2+  | 0.2-  | 2007 09 15 | G96 | 0.2+ | 0.1+ |
| 2001 09 26 | 704 | (0.3+ | 1.5-) | 2001 11 09 | 691 | 0.2+  | 0.1-  | 2007 09 15 | G96 | 0.1- | 0.2- |
| 2001 09 26 | 704 | 0.8-  | 0.2-  | 2001 11 09 | 691 | 0.1-  | 0.3-  | 2007 09 15 | G96 | 0.2- | 0.4- |
| 2001 10 17 | 704 | 0.0   | 0.6+  | 2001 11 20 | 704 | 1.3+  | 0.6+  | 2007 10 16 | G96 | 0.1+ | 0.4- |
| 2001 10 17 | 704 | 0.5-  | 0.4+  | 2001 11 20 | 704 | 1.1+  | 1.3+  | 2007 10 16 | G96 | 0.2+ | 0.1- |
| 2001 10 17 | 704 | 0.4-  | 0.4-  | 2001 11 20 | 704 | (1.5+ | 1.6+) | 2007 10 16 | G96 | 0.4+ | 0.2- |
| 2001 10 17 | 704 | 0.1-  | 0.2+  | 2001 11 20 | 704 | 1.4+  | 0.3+  | 2007 10 16 | G96 | 0.1+ | 0.2- |
| 2001 10 18 | 644 | 0.8-  | 0.5+  | 2001 11 20 | 704 | 0.7+  | 0.8+  | 2007 11 06 | 691 | 0.2- | 0.2- |
| 2001 10 18 | 644 | 1.0-  | 0.1+  | 2001 11 21 | 704 | 0.1-  | 0.6+  | 2007 11 06 | 691 | 0.1- | 0.2- |
| 2001 10 18 | 644 | 0.9-  | 0.6+  | 2001 11 21 | 704 | 0.5-  | 0.4+  | 2007 11 06 | 691 | 0.1- | 0.1+ |
| 2001 10 20 | 704 | 0.1+  | 0.3+  | 2001 11 21 | 704 | 0.5-  | 0.2+  | 2007 11 15 | 704 | 0.4+ | 0.0  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 20 | 704 | 0.0   | 0.2+  | 2001 11 21 | 704 | 0.0   | 0.1+  | 2007 11 15 | 704 | 0.5+ | 0.9- |
| 2001 10 20 | 704 | 0.2+  | 0.1+  | 2003 01 27 | 704 | 0.2-  | 0.3+  | 2007 11 15 | 704 | 0.7+ | 0.4- |
| 2001 10 23 | 704 | 1.1-  | 1.0+  | 2003 01 27 | 704 | 1.2+  | 0.1+  | 2007 11 15 | 704 | 0.3+ | 0.4- |
| 2001 10 23 | 704 | 1.0-  | 0.5+  | 2003 01 27 | 704 | 0.4+  | 1.3+  | 2007 11 15 | 704 | 0.1+ | 0.3- |
| 2001 10 23 | 704 | 0.0   | 1.3+  | 2003 01 27 | 704 | (1.9+ | 0.7+) | 2007 11 17 | 691 | 0.3+ | 0.2- |
| 2001 10 23 | 704 | 0.6-  | 0.9+  | 2003 02 24 | 599 | 0.0   | 0.6+  | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2001 10 23 | 704 | 1.1-  | 0.6-  | 2003 02 24 | 599 | 0.2-  | 0.4+  | 2007 11 17 | 691 | 0.2- | 0.1- |
| 2001 10 24 | 704 | 0.7-  | 0.7+  | 2003 02 25 | 599 | 0.1+  | 1.3+  | 2007 12 10 | 704 | 0.3- | 0.4+ |
| 2001 10 24 | 704 | 0.1-  | 1.5+  | 2003 02 25 | 599 | 0.6+  | 0.1+  | 2007 12 10 | 704 | 1.2- | 0.3- |
| 2001 10 24 | 704 | 0.4+  | 0.6+  | 2003 02 25 | 599 | 0.3+  | 0.2+  | 2007 12 10 | 704 | 0.4- | 0.6- |
| 2001 10 24 | 704 | 1.3-  | 0.5+  | 2003 02 25 | 599 | 0.2+  | 0.3+  | 2007 12 10 | 704 | 0.6+ | 0.1+ |
| 2001 10 25 | 704 | (1.4- | 3.3+) | 2003 02 25 | 599 | 0.2-  | 0.8+  | 2007 12 14 | 704 | 0.1- | 1.6- |
| 2001 10 25 | 704 | (1.1+ | 2.3+) | 2003 02 25 | 599 | 0.3+  | 0.3+  | 2007 12 14 | 704 | 1.0+ | 0.9- |
| 2001 10 25 | 704 | (0.6+ | 1.8+) | 2004 04 25 | 691 | 0.0   | 0.4+  | 2007 12 14 | 704 | 0.2- | 1.4- |
| 2001 10 26 | 691 | 0.0   | 0.1+  | 2004 04 25 | 691 | 0.1-  | 0.1+  | 2007 12 14 | 704 | 0.6+ | 0.8+ |
| 2001 10 26 | 691 | 0.1+  | 0.1+  | 2004 04 25 | 691 | 0.2+  | 0.0   | 2007 12 14 | 704 | 0.4+ | 0.9+ |

**(172006)\* 2001 UT<sub>51</sub>**

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

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|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> |            | 58.37850 | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.17643354 | $\omega$ | 319.33880 | +0.99277483 | +0.02143522 |
| <i>a</i> | 3.1483423  | $\Omega$ | 39.90923  | +0.04348537 | +0.85275921 |
| <i>e</i> | 0.1036818  | <i>i</i> | 10.60399  | -0.11183541 | +0.52186422 |
| <i>P</i> | 5.59       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 04 19 | 691 | 0.5-  | 1.3-  | 2001 11 12 | 691 | 0.4+  | 0.0   | 2006 08 17 | 644 | 0.2-  | 0.0   |
| 1993 04 19 | 691 | 0.3-  | 0.9-  | 2001 11 12 | 691 | 0.4+  | 0.0   | 2006 08 18 | 644 | 0.1+  | 0.1-  |
| 2001 09 19 | 704 | (0.2- | 2.5+) | 2001 11 12 | 691 | 0.4+  | 0.0   | 2006 08 18 | 644 | 0.3+  | 0.0   |
| 2001 09 19 | 704 | (0.3- | 2.9+) | 2001 11 16 | 644 | 0.3-  | 0.1-  | 2006 08 18 | 644 | 0.1-  | 0.0   |
| 2001 09 19 | 704 | (1.3- | 2.9+) | 2001 11 16 | 644 | 0.4-  | 0.2+  | 2006 08 28 | E12 | 0.6+  | 0.8+  |
| 2001 09 19 | 704 | (0.8- | 2.5+) | 2001 11 16 | 644 | 0.2+  | 0.2+  | 2006 08 28 | E12 | 0.1+  | 0.7+  |
| 2001 09 19 | 704 | (1.0- | 2.9+) | 2001 11 19 | 704 | 0.2+  | 0.4-  | 2006 08 28 | E12 | 0.2-  | 0.6+  |
| 2001 10 17 | 704 | 0.4-  | 0.0   | 2001 11 19 | 704 | 0.2-  | 0.6-  | 2006 08 28 | E12 | 0.3+  | 0.2+  |
| 2001 10 17 | 704 | 0.7-  | 0.3+  | 2001 11 19 | 704 | 0.2+  | 0.4-  | 2006 09 14 | 644 | 0.1+  | 0.1+  |
| 2001 10 17 | 704 | 0.1-  | 0.0   | 2001 11 19 | 704 | 0.1+  | 0.5-  | 2006 09 14 | 644 | 0.0   | 0.0   |
| 2001 10 18 | 644 | 0.7-  | 0.3-  | 2001 11 19 | 704 | 0.1+  | 0.4-  | 2006 09 14 | 644 | 0.1-  | 0.2-  |
| 2001 10 18 | 644 | 0.7-  | 0.2-  | 2001 11 21 | 704 | 0.3+  | 0.1-  | 2006 09 17 | 699 | 0.7-  | 0.9-  |
| 2001 10 18 | 644 | 1.0-  | 0.1-  | 2001 11 21 | 704 | 0.4+  | 0.6-  | 2006 09 17 | 699 | 0.0   | 0.1-  |
| 2001 10 20 | 704 | 0.2-  | 0.7-  | 2001 11 21 | 704 | 0.1-  | 0.4-  | 2006 09 17 | 699 | 1.1+  | 1.2-  |
| 2001 10 20 | 704 | 0.5-  | 0.9-  | 2001 11 21 | 704 | 0.5+  | 1.2-  | 2006 09 17 | 699 | 0.7-  | 1.5+  |
| 2001 10 20 | 704 | 0.0   | 0.6-  | 2001 11 21 | 704 | 0.6-  | 0.2-  | 2006 09 20 | 703 | 0.4+  | 0.7+  |
| 2001 10 22 | 704 | 0.2+  | 0.3-  | 2001 11 21 | 704 | 0.6+  | 0.7-  | 2006 09 20 | 703 | 0.7-  | 0.6-  |
| 2001 10 22 | 704 | 0.8-  | 0.6-  | 2001 11 21 | 704 | 0.4-  | 0.1-  | 2006 09 20 | 703 | 0.7+  | 1.1+  |
| 2001 10 22 | 704 | 0.9+  | 0.8+  | 2001 11 21 | 704 | 0.2+  | 0.1-  | 2006 09 20 | 703 | 0.1+  | 0.2-  |
| 2001 10 22 | 704 | 0.9-  | 0.2-  | 2001 11 21 | 704 | 0.2-  | 0.2-  | 2006 09 26 | 703 | 0.4-  | 0.0   |
| 2001 10 22 | 704 | 0.3-  | 0.0   | 2001 11 21 | 704 | 0.4+  | 0.6-  | 2006 09 26 | 703 | 0.6+  | 0.4+  |
| 2001 10 23 | 704 | 0.2+  | 0.1-  | 2004 03 20 | 704 | 0.7-  | 0.8-  | 2006 09 26 | 703 | 0.8-  | 1.0+  |
| 2001 10 23 | 704 | 0.2+  | 0.3+  | 2004 03 20 | 704 | 0.1+  | 0.0   | 2006 09 26 | 703 | (0.4- | 1.5-) |
| 2001 10 23 | 704 | 0.3-  | 0.2-  | 2004 03 20 | 704 | (2.6+ | 0.3+) | 2007 11 17 | 704 | 0.5-  | 0.5-  |
| 2001 10 23 | 704 | 0.3+  | 0.1-  | 2004 03 20 | 704 | 0.7+  | 1.0+  | 2007 11 17 | 704 | 0.1-  | 0.2+  |
| 2001 10 25 | 644 | 0.1+  | 0.9+  | 2004 04 21 | 691 | 0.2+  | 0.8+  | 2007 11 17 | 704 | 0.8+  | 0.4-  |
| 2001 10 25 | 644 | 0.0   | 1.1+  | 2004 04 21 | 691 | 0.0   | 0.8+  | 2007 11 17 | 704 | 0.6+  | 0.4+  |
| 2001 10 25 | 644 | 0.0   | 1.1+  | 2004 04 21 | 691 | 0.3+  | 0.7+  | 2007 12 02 | 704 | 0.1+  | 0.2-  |
| 2001 10 26 | 704 | 0.3-  | 0.9+  | 2005 02 15 | 809 | 0.2+  | 0.0   | 2007 12 02 | 704 | 0.1+  | 0.2+  |
| 2001 10 26 | 704 | 0.3-  | 0.5-  | 2005 02 15 | 809 | 0.1-  | 0.1+  | 2007 12 02 | 704 | 0.3+  | 0.3-  |
| 2001 10 26 | 704 | 0.6-  | 0.4+  | 2005 02 15 | 809 | 0.2+  | 0.0   | 2007 12 16 | 704 | 0.2+  | 1.2+  |
| 2001 10 26 | 704 | 0.4+  | 0.1-  | 2006 08 16 | 644 | 0.2-  | 0.0   | 2007 12 16 | 704 | 0.3-  | 1.5+  |
| 2001 11 09 | 704 | 0.1+  | 1.4-  | 2006 08 16 | 644 | 0.2-  | 0.1+  | 2007 12 16 | 704 | 0.0   | 2.2+  |
| 2001 11 09 | 704 | (1.2+ | 3.0-) | 2006 08 16 | 644 | 0.3-  | 0.1+  | 2007 12 16 | 704 | 0.3-  | 1.2+  |
| 2001 11 09 | 704 | 0.6+  | 0.2+  | 2006 08 17 | 644 | 0.1-  | 0.2-  |            |     |       |       |
| 2001 11 09 | 704 | 0.4+  | 1.0-  | 2006 08 17 | 644 | 0.2-  | 0.1+  |            |     |       |       |

**(172007)\* 2001 UG<sub>53</sub>**

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

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|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> |            | 86.27611 | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.17581081 | $\omega$ | 245.28056 | +0.67341466 | +0.63735968 |
| <i>a</i> | 3.1557723  | $\Omega$ | 72.70145  | -0.45251944 | +0.75602798 |
| <i>e</i> | 0.2683867  | <i>i</i> | 23.09712  | -0.58458434 | +0.14897763 |
| <i>P</i> | 5.61       | <i>H</i> | 14.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 13 | 699 | (1.8- | 0.5+) | 2005 05 09 | 703 | 0.0  | 0.1+ | 2006 08 23 | E12 | 0.1- | 0.0  |
| 2001 10 13 | 699 | 0.9-  | 0.0   | 2005 05 13 | 704 | 1.0+ | 0.8+ | 2006 08 23 | E12 | 0.0  | 0.0  |
| 2001 10 13 | 699 | 0.1+  | 0.4-  | 2005 05 13 | 704 | 0.3+ | 0.3+ | 2006 08 23 | E12 | 0.2- | 0.2- |
| 2001 10 13 | 699 | (1.0+ | 1.5+) | 2005 05 13 | 704 | 0.5+ | 0.1- | 2006 08 31 | E12 | 0.3- | 0.0  |
| 2001 10 17 | 704 | 0.0   | 0.2+  | 2005 05 13 | 704 | 0.5+ | 0.7+ | 2006 08 31 | E12 | 0.1- | 0.1- |
| 2001 10 17 | 704 | 0.2+  | 0.8+  | 2005 05 13 | 704 | 1.0+ | 0.6+ | 2006 08 31 | E12 | 0.8- | 0.1- |
| 2001 10 17 | 704 | 0.5+  | 1.0+  | 2005 05 31 | 703 | 0.6- | 0.7+ | 2006 08 31 | E12 | 0.3- | 0.3+ |
| 2001 10 17 | 704 | 0.2+  | 0.5+  | 2005 05 31 | 703 | 0.8- | 1.3+ | 2006 09 05 | E12 | 0.6- | 0.4- |
| 2001 10 20 | 704 | 0.4-  | 0.6+  | 2005 05 31 | 703 | 0.5- | 0.6+ | 2006 09 05 | E12 | 0.3- | 0.1- |
| 2001 10 20 | 704 | 0.8-  | 0.2-  | 2005 05 31 | 703 | 0.6- | 0.8+ | 2006 09 05 | E12 | 0.3+ | 0.4- |
| 2001 10 20 | 704 | 0.2+  | 0.6+  | 2005 06 01 | 704 | 1.4+ | 1.0+ | 2006 09 05 | E12 | 0.3+ | 0.1+ |
| 2001 10 20 | 704 | 0.2+  | 1.4+  | 2005 06 01 | 704 | 0.8+ | 0.1+ | 2006 09 14 | E12 | 0.4- | 0.1+ |
| 2001 11 24 | 704 | 0.5-  | 0.4-  | 2005 06 01 | 704 | 1.5+ | 1.0+ | 2006 09 14 | E12 | 0.1- | 0.1+ |
| 2001 11 24 | 704 | 0.1+  | 0.5-  | 2005 06 01 | 704 | 0.3+ | 0.4+ | 2006 09 14 | E12 | 0.3- | 0.2+ |
| 2001 11 24 | 704 | 0.6-  | 0.3-  | 2005 06 01 | 704 | 0.8+ | 0.6+ | 2006 09 22 | E12 | 0.1- | 0.5+ |
| 2001 11 24 | 704 | 0.5-  | 0.5+  | 2005 06 03 | 699 | 0.2- | 0.4+ | 2006 09 22 | E12 | 0.7- | 0.2- |
| 2001 11 24 | 704 | 1.0-  | 0.1+  | 2005 06 03 | 699 | 0.7- | 0.1+ | 2006 09 22 | E12 | 0.3- | 0.2- |
| 2001 11 24 | 704 | 0.2-  | 0.1+  | 2005 06 03 | 699 | 0.2+ | 0.6+ | 2006 09 22 | E12 | 0.1- | 0.7+ |
| 2001 11 24 | 704 | 0.1+  | 0.2+  | 2005 06 03 | 699 | 0.5+ | 0.9+ | 2006 09 29 | E12 | 0.4+ | 0.6+ |
| 2001 11 24 | 704 | 0.3-  | 0.1-  | 2005 06 08 | 699 | 0.3+ | 0.7+ | 2006 09 29 | E12 | 0.1+ | 0.5+ |
| 2001 11 24 | 704 | 0.1+  | 1.3+  | 2005 06 08 | 699 | 0.3+ | 0.3- | 2006 09 29 | E12 | 0.6+ | 0.7+ |
| 2001 11 24 | 704 | 0.1-  | 0.3-  | 2005 06 08 | 699 | 0.4- | 0.2+ | 2006 09 29 | E12 | 0.3+ | 0.2+ |
| 2001 12 11 | 704 | 0.4-  | 0.3+  | 2005 06 08 | 699 | 0.6- | 0.4+ | 2006 10 14 | E12 | 0.3- | 0.5- |
| 2001 12 11 | 704 | 0.0   | 0.5+  | 2005 07 01 | 699 | 0.7+ | 0.7- | 2006 10 14 | E12 | 0.5+ | 0.1- |
| 2001 12 11 | 704 | 0.3-  | 0.5+  | 2005 07 01 | 699 | 0.8+ | 0.3+ | 2006 10 14 | E12 | 0.4+ | 0.0  |
| 2001 12 11 | 704 | 0.1-  | 0.2+  | 2005 07 01 | 699 | 0.9+ | 0.1- | 2006 11 08 | E12 | 0.2+ | 0.9+ |
| 2001 12 11 | 704 | 0.3+  | 0.6+  | 2005 07 01 | 699 | 1.4+ | 0.5- | 2006 11 08 | E12 | 0.1+ | 0.2- |
| 2001 12 18 | 644 | 0.0   | 0.2+  | 2006 05 09 | E12 | 0.2- | 0.7- | 2006 11 08 | E12 | 0.5- | 0.5- |
| 2001 12 18 | 644 | 0.3-  | 0.3+  | 2006 05 09 | E12 | 1.0+ | 0.6+ | 2006 11 08 | E12 | 0.4+ | 0.0  |
| 2001 12 18 | 644 | 0.6-  | 0.1-  | 2006 05 09 | E12 | 0.3- | 0.5+ | 2006 11 19 | E12 | 0.1+ | 0.1- |
| 2005 04 08 | 704 | (1.6+ | 0.8+) | 2006 05 09 | E12 | 0.7- | 0.4+ | 2006 11 19 | E12 | 0.1- | 0.3+ |
| 2005 04 08 | 704 | 1.1+  | 0.8+  | 2006 06 01 | E12 | 1.1+ | 0.2+ | 2006 11 19 | E12 | 0.5+ | 0.5+ |
| 2005 04 08 | 704 | 0.5+  | 0.2+  | 2006 06 01 | E12 | 0.2+ | 0.2+ | 2007 11 06 | 691 | 0.0  | 0.1- |
| 2005 04 20 | 703 | 0.1-  | 1.1-  | 2006 06 01 | E12 | 0.4- | 0.5+ | 2007 11 06 | 691 | 0.4- | 0.1- |
| 2005 04 20 | 703 | 0.6-  | 0.0   | 2006 06 01 | E12 | 0.2- | 0.1+ | 2007 11 06 | 691 | 0.4- | 0.1- |
| 2005 04 20 | 703 | 0.1-  | 0.2-  | 2006 07 28 | E12 | 0.0  | 0.2+ | 2007 12 10 | 704 | 0.2+ | 0.4+ |
| 2005 04 20 | 703 | 0.2-  | 0.6-  | 2006 07 28 | E12 | 0.5- | 0.0  | 2007 12 10 | 704 | 0.5+ | 0.5- |
| 2005 05 03 | 703 | 0.4+  | 0.1+  | 2006 07 28 | E12 | 0.1- | 0.4+ | 2007 12 10 | 704 | 0.7+ | 0.7+ |
| 2005 05 03 | 703 | 0.5-  | 0.4+  | 2006 07 28 | E12 | 0.1+ | 0.0  | 2007 12 15 | 704 | 0.1+ | 1.9+ |
| 2005 05 03 | 703 | 0.6+  | 0.1+  | 2006 08 14 | E12 | 0.4- | 0.1+ | 2007 12 15 | 704 | 0.2+ | 1.2+ |
| 2005 05 03 | 703 | 0.2-  | 0.5+  | 2006 08 14 | E12 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.1- | 0.2+ |
| 2005 05 09 | 703 | 0.7+  | 0.7+  | 2006 08 14 | E12 | 0.2- | 0.1- | 2007 12 15 | 704 | 0.3+ | 1.7+ |
| 2005 05 09 | 703 | 0.4-  | 0.3+  | 2006 08 14 | E12 | 0.4- | 0.0  |            |     |      |      |
| 2005 05 09 | 703 | 1.0-  | 0.0   | 2006 08 23 | E12 | 0.2- | 0.1+ |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 181.42361  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18114048 | $\omega$ 193.51921 | -0.37896292   | +0.91079528 |
| <i>a</i> | 3.0935635  | $\Omega$ 54.45231  | -0.82922626   | -0.25562167 |
| <i>e</i> | 0.0460727  | <i>i</i> 11.61602  | -0.41081737   | -0.32420598 |
| <i>P</i> | 5.44       | <i>H</i> 14.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 05 10 | 704 | 1.1-  | 1.2+  | 2003 01 10 | 704 | 0.6-  | 0.7-  | 2004 04 10 | 644 | 0.1-  | 0.0   |
| 1999 05 10 | 704 | 0.3-  | 0.5-  | 2003 01 10 | 704 | 0.8-  | 0.4-  | 2004 04 15 | 704 | 0.3-  | 0.1+  |
| 1999 05 10 | 704 | 0.6+  | 1.9+  | 2003 01 10 | 704 | 0.4-  | 0.5-  | 2004 04 15 | 704 | 0.1-  | 0.7+  |
| 1999 05 10 | 704 | (4.8- | 0.3-) | 2004 03 15 | 704 | 0.0   | 0.0   | 2004 04 15 | 704 | 0.7-  | 0.2-  |
| 2001 09 19 | 704 | 0.4+  | 0.8+  | 2004 03 15 | 704 | 0.0   | 0.4-  | 2006 09 19 | 703 | (1.7- | 0.6+) |
| 2001 09 19 | 704 | 0.3-  | 0.5+  | 2004 03 15 | 704 | 0.4+  | 0.2-  | 2006 09 19 | 703 | 0.8-  | 0.0   |
| 2001 09 19 | 704 | 0.5-  | 0.1-  | 2004 03 23 | 704 | 0.0   | 1.4+  | 2006 09 19 | 703 | 0.6-  | 0.8+  |
| 2001 09 19 | 704 | 0.0   | 0.2-  | 2004 03 23 | 704 | 0.3-  | 0.9+  | 2006 09 19 | 703 | 0.8-  | 0.5+  |
| 2001 10 17 | 704 | 0.7+  | 0.1+  | 2004 03 23 | 704 | 0.2+  | 0.5+  | 2006 09 25 | 703 | 0.2-  | 0.2-  |
| 2001 10 17 | 704 | 0.3-  | 0.5+  | 2004 03 23 | 704 | 0.4+  | 0.8+  | 2006 09 25 | 703 | 0.7-  | 0.6+  |
| 2001 10 17 | 704 | 0.2-  | 0.3+  | 2004 03 23 | 704 | 0.6-  | 0.7+  | 2006 09 25 | 703 | 1.2-  | 0.3-  |
| 2001 10 20 | 704 | 0.5-  | 0.6+  | 2004 03 25 | 704 | 1.5+  | 0.0   | 2006 09 25 | 703 | (2.2- | 0.4+) |
| 2001 10 20 | 704 | 0.3-  | 0.6+  | 2004 03 25 | 704 | 0.9+  | 0.3+  | 2006 10 11 | 644 | 0.1-  | 0.8+  |
| 2001 10 20 | 704 | 0.0   | 0.0   | 2004 03 25 | 704 | 1.4+  | 0.5-  | 2006 10 11 | 644 | 0.1-  | 0.9+  |
| 2001 10 23 | 704 | 1.2+  | 0.2+  | 2004 03 25 | 704 | 1.3+  | 0.4-  | 2006 10 11 | 644 | 0.2-  | 0.8+  |
| 2001 10 23 | 704 | 0.9+  | 0.1-  | 2004 03 26 | 704 | (1.7+ | 0.3+) | 2007 11 03 | 691 | 0.2-  | 0.3-  |
| 2001 10 23 | 704 | 1.0-  | 1.0+  | 2004 03 26 | 704 | 0.9+  | 0.1+  | 2007 11 03 | 691 | 0.1-  | 0.3-  |
| 2001 10 24 | 704 | 0.6-  | 0.4-  | 2004 03 26 | 704 | 1.3+  | 0.3+  | 2007 11 03 | 691 | 0.1-  | 0.3-  |
| 2001 10 24 | 704 | 0.9+  | 1.0+  | 2004 03 26 | 704 | 1.3+  | 1.1+  | 2007 12 13 | 704 | 0.4+  | 0.1-  |
| 2001 10 24 | 704 | 0.1+  | 0.8+  | 2004 03 26 | 704 | 0.4+  | 0.2-  | 2007 12 13 | 704 | 0.2+  | 0.0   |
| 2001 10 24 | 704 | 0.7+  | 0.2-  | 2004 03 28 | 704 | (2.5+ | 0.0 ) | 2007 12 13 | 704 | 0.0   | 0.4+  |
| 2001 10 24 | 704 | 0.6+  | 0.6-  | 2004 03 28 | 704 | 1.1+  | 1.2+  | 2007 12 15 | 704 | 0.1+  | 0.9+  |
| 2001 10 25 | 644 | 0.6-  | 1.3+  | 2004 03 28 | 704 | 1.1-  | 0.6+  | 2007 12 15 | 704 | 0.2-  | 0.7+  |
| 2001 10 25 | 644 | 0.8-  | 1.0+  | 2004 03 28 | 704 | (0.8+ | 2.4+) | 2007 12 15 | 704 | 0.1-  | 0.8+  |
| 2001 10 25 | 644 | 0.6-  | 0.8+  | 2004 04 10 | 644 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 0.4-  | 0.4+  |
| 2003 01 10 | 704 | 0.6-  | 0.6-  | 2004 04 10 | 644 | 0.0   | 0.4+  | 2007 12 15 | 704 | 0.6+  | 0.7+  |

(172009)\* 2001 UM<sub>59</sub>

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 98.87333   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17994653 | $\omega$ 52.90520  | +0.66488856   | +0.74549453 |
| <i>a</i> | 3.1072324  | $\Omega$ 258.83604 | -0.69946275   | +0.59958199 |
| <i>e</i> | 0.1095811  | <i>i</i> 2.71594   | -0.26205927   | +0.29110022 |
| <i>P</i> | 5.48       | <i>H</i> 14.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 10 | 704 | 0.2+  | 0.3+  | 2001 10 26 | 644 | 0.0   | 0.2+  | 2007 09 15 | G96 | 0.1- | 0.2- |
| 2001 09 10 | 704 | 0.3-  | 0.4+  | 2001 10 26 | 644 | 0.1+  | 0.3+  | 2007 09 15 | G96 | 0.6+ | 0.3- |
| 2001 09 10 | 704 | 0.7-  | 0.1+  | 2001 11 17 | 704 | 0.1-  | 0.3+  | 2007 09 15 | G96 | 0.6+ | 0.0  |
| 2001 09 20 | 704 | 0.1-  | 1.1+  | 2001 11 17 | 704 | (1.1+ | 1.9+) | 2007 09 15 | G96 | 0.2+ | 0.3- |
| 2001 09 20 | 704 | 0.1+  | 1.1+  | 2001 11 17 | 704 | 0.9-  | 0.3+  | 2007 10 16 | G96 | 0.2+ | 0.1- |
| 2001 09 20 | 704 | 0.3+  | 1.1+  | 2001 11 17 | 704 | 0.4+  | 0.3-  | 2007 10 16 | G96 | 0.1+ | 0.1- |
| 2001 09 24 | 704 | 0.1+  | 0.8-  | 2005 05 18 | E12 | 0.0   | 0.0   | 2007 10 16 | G96 | 0.4+ | 0.3- |
| 2001 09 24 | 704 | 0.1-  | 0.3-  | 2005 05 18 | E12 | 0.4+  | 0.3+  | 2007 11 02 | 691 | 0.6- | 0.2- |
| 2001 09 24 | 704 | 1.3-  | 0.2+  | 2005 05 18 | E12 | 0.9+  | 0.2-  | 2007 11 02 | 691 | 0.6- | 0.1- |
| 2001 09 24 | 704 | 1.1+  | 1.3-  | 2005 05 18 | E12 | 0.4-  | 0.3+  | 2007 11 02 | 691 | 0.2- | 0.0  |
| 2001 09 26 | 704 | (1.6+ | 0.3+) | 2005 06 14 | G96 | 0.4-  | 0.2+  | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2001 09 26 | 704 | 0.3-  | 0.2-  | 2005 06 14 | G96 | 0.0   | 0.3+  | 2007 11 05 | G96 | 0.4+ | 0.4- |
| 2001 09 26 | 704 | 0.6+  | 0.1-  | 2005 06 14 | G96 | 0.1-  | 0.3+  | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2001 09 26 | 704 | 0.3-  | 0.3+  | 2005 06 14 | G96 | 0.1-  | 0.2+  | 2007 11 05 | G96 | 0.6+ | 0.3- |
| 2001 09 26 | 704 | 1.4+  | 0.2+  | 2006 08 24 | 644 | 0.1-  | 0.1-  | 2007 11 13 | 703 | 1.3- | 0.3- |
| 2001 09 26 | 704 | 0.2+  | 0.8+  | 2006 08 24 | 644 | 0.0   | 0.1-  | 2007 11 13 | 703 | 0.2+ | 1.3- |
| 2001 09 26 | 704 | 0.1+  | 0.5+  | 2006 08 24 | 644 | 0.1+  | 0.1+  | 2007 11 13 | 703 | 0.6+ | 0.6- |
| 2001 09 26 | 704 | 0.9-  | 1.3-  | 2006 08 28 | 699 | 0.4-  | 0.9-  | 2007 11 13 | 703 | 0.4- | 0.6- |
| 2001 10 11 | 644 | 0.6+  | 0.3+  | 2006 08 28 | 699 | 0.5+  | 0.5-  | 2007 11 15 | 704 | 0.6+ | 0.5+ |
| 2001 10 11 | 644 | 0.6+  | 0.2+  | 2006 08 28 | 699 | 0.4-  | 0.1+  | 2007 11 15 | 704 | 0.7+ | 0.2+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 11 | 644 | 0.9+  | 0.3+  | 2006 08 29 | 691 | 0.2+  | 0.3-  | 2007 11 15 | 704 | 0.4- | 1.3+ |
| 2001 10 12 | 699 | 0.2-  | 0.5-  | 2006 08 29 | 691 | 0.4+  | 0.2-  | 2007 11 15 | 704 | 0.4+ | 1.3+ |
| 2001 10 12 | 699 | 0.2+  | 0.3+  | 2006 08 29 | 691 | 0.2+  | 0.4-  | 2007 11 17 | 691 | 0.2- | 0.2- |
| 2001 10 12 | 699 | 1.1-  | 0.5+  | 2006 08 30 | 704 | 0.4-  | 0.4+  | 2007 11 17 | 691 | 0.4- | 0.0  |
| 2001 10 12 | 699 | 0.9+  | 1.1-  | 2006 08 30 | 704 | 0.6-  | 0.6+  | 2007 11 17 | 691 | 0.3- | 0.0  |
| 2001 10 17 | 704 | 0.4+  | 0.0   | 2006 08 30 | 704 | 0.1+  | 0.7+  | 2007 12 04 | 699 | 0.4+ | 0.6- |
| 2001 10 17 | 704 | 0.7-  | 0.6+  | 2006 08 30 | 704 | 0.4-  | 1.3+  | 2007 12 04 | 699 | 0.1- | 0.0  |
| 2001 10 17 | 704 | 0.1+  | 0.2+  | 2006 08 30 | 704 | 0.2-  | 0.4+  | 2007 12 04 | 699 | 0.1+ | 0.3- |
| 2001 10 17 | 704 | (0.3- | 2.3+) | 2006 09 01 | 704 | 0.3+  | 0.3-  | 2007 12 04 | 699 | 0.5+ | 1.1+ |
| 2001 10 17 | 704 | 0.5-  | 1.1+  | 2006 09 01 | 704 | 0.4-  | 0.6-  | 2007 12 14 | 704 | 0.3- | 0.7+ |
| 2001 10 19 | 644 | 0.2+  | 0.4+  | 2006 09 01 | 704 | 0.3+  | 0.5-  | 2007 12 14 | 704 | 1.5+ | 0.2- |
| 2001 10 19 | 644 | 0.1+  | 0.1+  | 2006 09 01 | 704 | 0.4-  | 0.2+  | 2007 12 14 | 704 | 1.0+ | 0.2+ |
| 2001 10 19 | 644 | 0.0   | 0.4+  | 2006 09 17 | 703 | 0.6-  | 0.4-  | 2007 12 14 | 704 | 1.3+ | 0.5- |
| 2001 10 21 | 704 | 0.2-  | 0.2+  | 2006 09 17 | 703 | 0.7-  | 1.2-  | 2007 12 15 | G96 | 0.3+ | 0.5- |
| 2001 10 21 | 704 | 0.1-  | 0.7+  | 2006 09 17 | 703 | 0.3-  | 0.6-  | 2007 12 15 | G96 | 0.3+ | 0.0  |
| 2001 10 21 | 704 | 0.3-  | 0.8+  | 2006 09 20 | 699 | 0.4+  | 0.5+  | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2001 10 21 | 704 | 0.4-  | 0.6+  | 2006 09 20 | 699 | 0.2+  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.4- |
| 2001 10 21 | 704 | 0.2-  | 0.8+  | 2006 09 20 | 699 | (2.0- | 0.5+) | 2007 12 15 | G96 | 0.1+ | 0.3- |
| 2001 10 26 | 691 | 0.3-  | 0.3+  | 2006 09 20 | 699 | 1.1+  | 0.0   | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2001 10 26 | 691 | 0.1-  | 0.5-  | 2006 10 10 | 644 | 0.1+  | 0.3-  | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2001 10 26 | 691 | 0.3-  | 0.1+  | 2006 10 10 | 644 | 0.4+  | 0.1+  | 2007 12 15 | G96 | 0.1+ | 0.3- |
| 2001 10 26 | 644 | 0.2+  | 0.1+  | 2006 10 10 | 644 | 0.0   | 0.2-  |            |     |      |      |

(172010)\* 2001 US<sub>62</sub> = 1999 GV<sub>12</sub>

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (MPO 20595)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.05751   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18040648 | $\omega$ 165.78689 | +0.92079345   | -0.37804040 |
| <i>a</i> | 3.1019489  | $\Omega$ 216.89021 | +0.34041796   | +0.89908608 |
| <i>e</i> | 0.0926225  | <i>i</i> 9.20697   | +0.19040752   | +0.22074799 |
| <i>P</i> | 5.46       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 07 05 | 691 | 0.7- | 0.0  | 2001 10 17 | 704 | 0.1+ | 0.3- | 2005 05 15 | G96 | 0.6- | 0.2+ |
| 1995 07 05 | 691 | 0.7- | 0.2+ | 2001 10 17 | 704 | 0.7- | 0.8+ | 2005 05 15 | G96 | 0.1- | 0.3+ |
| 1995 07 05 | 691 | 0.7- | 0.1+ | 2001 10 18 | 644 | 0.6- | 0.1+ | 2006 07 24 | 621 | 0.8+ | 0.0  |
| 1996 12 03 | 691 | 0.9+ | 0.3+ | 2001 10 18 | 644 | 0.5- | 0.0  | 2006 07 24 | 621 | 0.4+ | 0.2- |
| 1996 12 03 | 691 | 0.7+ | 0.6+ | 2001 10 18 | 644 | 0.8- | 0.7+ | 2006 07 24 | 621 | 0.4+ | 0.6- |
| 1996 12 03 | 691 | 0.5+ | 0.4+ | 2001 10 21 | 704 | 0.5+ | 0.2- | 2006 09 19 | 691 | 0.8+ | 0.3+ |
| 1999 04 12 | 691 | 0.7+ | 0.4+ | 2001 10 21 | 704 | 0.5- | 0.8- | 2006 09 19 | 691 | 0.7+ | 0.4+ |
| 1999 04 12 | 691 | 0.1+ | 0.6+ | 2001 10 21 | 704 | 1.0- | 0.8- | 2006 09 19 | 691 | 0.7+ | 0.3+ |
| 1999 04 12 | 691 | 0.1+ | 0.0  | 2001 10 21 | 704 | 0.7- | 0.1- | 2007 09 15 | G96 | 0.5- | 0.0  |
| 1999 04 16 | 691 | 0.3+ | 0.2- | 2001 10 21 | 704 | 0.3+ | 0.1+ | 2007 09 15 | G96 | 0.2- | 0.3- |
| 1999 04 16 | 691 | 0.3- | 0.3+ | 2001 11 17 | 691 | 0.3- | 0.2+ | 2007 09 15 | G96 | 0.8- | 0.3- |
| 2001 08 27 | 644 | 0.8- | 0.3+ | 2001 11 17 | 691 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.4- | 0.2- |
| 2001 08 27 | 644 | 0.7- | 0.0  | 2001 11 17 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.4- | 0.5+ |
| 2001 08 27 | 644 | 0.3- | 0.2+ | 2004 02 18 | I03 | 0.5- | 0.9+ | 2007 12 04 | 704 | 1.8- | 1.9- |
| 2001 09 28 | 644 | 0.6+ | 0.0  | 2004 02 18 | I03 | 0.4- | 1.0+ | 2007 12 04 | 704 | 0.2- | 0.9+ |
| 2001 09 28 | 644 | 0.1- | 0.2- | 2004 02 18 | I03 | 0.6- | 0.9+ | 2007 12 04 | 704 | 1.1- | 1.6+ |
| 2001 09 28 | 644 | 0.1+ | 0.1- | 2005 05 15 | G96 | 0.6- | 0.4- | 2007 12 04 | 704 | 0.4- | 0.1+ |
| 2001 10 17 | 704 | 0.3+ | 0.7- | 2005 05 15 | G96 | 0.3- | 0.2+ |            |     |      |      |



2007 DEC. 24

M.P.O. 129235

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 24 | 704 | 0.1+  | 0.4+  | 2004 03 16 | 704 | 0.2+  | 1.0+  | 2006 10 15 | 703 | (0.7+ | 1.8+) |
| 2001 08 24 | 704 | 0.1-  | 0.5+  | 2004 03 17 | 704 | 0.1-  | 0.0   | 2006 10 15 | 703 | 0.1+  | 0.6+  |
| 2001 08 24 | 704 | 0.0   | 0.7+  | 2004 03 17 | 704 | 0.7+  | 0.8+  | 2006 10 15 | 703 | 0.4-  | 0.5+  |
| 2001 08 24 | 704 | 0.0   | 1.1+  | 2004 03 17 | 704 | 0.0   | 0.5+  | 2006 10 15 | 703 | 0.1+  | 0.4+  |
| 2001 09 12 | 704 | 0.1-  | 0.8+  | 2004 03 19 | 704 | 0.1-  | 0.0   | 2006 10 20 | 644 | 0.1-  | 0.2+  |
| 2001 09 12 | 704 | 0.5-  | 0.2+  | 2004 03 19 | 704 | 0.8-  | 0.7-  | 2006 10 20 | 644 | 0.3-  | 0.5+  |
| 2001 09 12 | 704 | 0.8-  | 0.2+  | 2004 03 19 | 704 | 0.6-  | 0.4-  | 2006 10 20 | 644 | 0.1-  | 0.6+  |
| 2001 09 12 | 704 | 0.5-  | 0.3+  | 2004 03 19 | 704 | 0.8+  | 0.4+  | 2006 10 20 | 644 | 0.5-  | 0.2+  |
| 2001 09 12 | 704 | 0.3-  | 0.8+  | 2004 03 19 | 704 | 0.1-  | 0.1+  | 2006 10 20 | 644 | 0.2-  | 0.2+  |
| 2001 09 19 | 704 | 1.4+  | 0.1-  | 2004 03 22 | 704 | 0.1-  | 1.4+  | 2006 10 20 | 644 | 0.2-  | 0.3+  |
| 2001 09 19 | 704 | 1.2+  | 0.1-  | 2004 03 22 | 704 | 1.1+  | 0.7+  | 2006 10 21 | 644 | 0.1-  | 0.3+  |
| 2001 09 19 | 704 | 1.2+  | 0.0   | 2004 03 22 | 704 | 0.1-  | 1.3+  | 2006 10 21 | 644 | 0.0   | 0.5+  |
| 2001 09 19 | 704 | 1.4+  | 0.6-  | 2004 03 22 | 704 | 0.3-  | 0.4+  | 2006 10 21 | 644 | 0.1-  | 0.3+  |
| 2001 09 19 | 704 | 1.2+  | 0.8-  | 2004 03 24 | 699 | 0.7-  | 0.1-  | 2006 10 22 | G96 | 0.3+  | 0.2-  |
| 2001 09 24 | 704 | 0.3-  | 0.4+  | 2004 03 24 | 699 | 0.2-  | 0.2-  | 2006 10 22 | G96 | 0.0   | 0.2-  |
| 2001 09 24 | 704 | 0.2+  | 0.8+  | 2004 03 24 | 699 | 0.4-  | 0.6+  | 2006 10 22 | G96 | 0.0   | 0.4-  |
| 2001 09 24 | 704 | 0.1-  | 0.7-  | 2004 03 24 | 699 | 0.8-  | 0.6+  | 2006 10 22 | G96 | 0.1+  | 0.1-  |
| 2001 09 24 | 704 | 0.1-  | 0.7+  | 2004 03 28 | 704 | 1.0+  | 0.1+  | 2006 10 21 | G96 | 0.4-  | 0.1-  |
| 2001 09 24 | 704 | 0.6-  | 0.4+  | 2004 03 28 | 704 | 0.5+  | 0.0   | 2006 10 31 | G96 | 0.1+  | 0.2-  |
| 2001 09 24 | 704 | 0.3-  | 0.1+  | 2004 03 28 | 704 | 1.4+  | 0.1-  | 2006 10 31 | G96 | 0.6-  | 0.0   |
| 2001 09 24 | 704 | 0.3+  | 0.8+  | 2004 03 28 | 704 | 0.9+  | 0.3-  | 2006 10 31 | G96 | 0.9+  | 0.2+  |
| 2001 09 24 | 704 | 0.3+  | 0.6+  | 2004 03 28 | 704 | 1.3+  | 0.7+  | 2006 11 11 | 703 | 0.8-  | 0.6-  |
| 2001 09 24 | 704 | 0.2-  | 1.1+  | 2004 03 29 | 691 | 0.2+  | 0.5+  | 2006 11 11 | 703 | (3.5- | 1.4+) |
| 2001 09 24 | 704 | 1.2-  | 0.5-  | 2004 03 29 | 691 | 0.3+  | 0.4+  | 2006 11 11 | 703 | 1.1-  | 0.3+  |
| 2001 09 24 | 704 | 0.2+  | 1.0+  | 2004 03 29 | 691 | 0.2+  | 0.5+  | 2006 11 11 | 703 | 0.8-  | 1.0-  |
| 2001 09 24 | 704 | 0.2+  | 0.6+  | 2004 04 12 | 699 | 0.3+  | 0.3+  | 2006 11 14 | G96 | 0.3+  | 0.1-  |
| 2001 09 24 | 644 | 0.1-  | 0.4+  | 2004 04 12 | 699 | 0.1-  | 0.5+  | 2006 11 14 | G96 | 0.0   | 0.3-  |
| 2001 09 24 | 704 | 0.7-  | 0.5+  | 2004 04 12 | 699 | 0.1-  | 0.4+  | 2006 11 14 | G96 | 0.1+  | 0.0   |
| 2001 09 24 | 704 | 0.3-  | 0.3-  | 2004 04 12 | 699 | 0.2-  | 0.4+  | 2006 11 14 | G96 | 0.3+  | 0.4-  |
| 2001 09 24 | 704 | 0.2+  | 0.2+  | 2004 04 15 | 699 | 0.2+  | 0.8+  | 2006 12 16 | G96 | 0.4+  | 0.3-  |
| 2001 09 24 | 704 | 0.6+  | 1.1+  | 2004 04 15 | 699 | 0.7-  | 0.3-  | 2006 12 16 | G96 | 0.4+  | 0.4-  |
| 2001 09 24 | 704 | 1.1-  | 0.5+  | 2004 04 15 | 699 | 0.5+  | 0.4+  | 2006 12 16 | G96 | 0.4+  | 0.0   |
| 2001 09 24 | 644 | 0.7-  | 0.8+  | 2004 04 15 | 699 | 0.3+  | 0.6+  | 2006 12 16 | G96 | 0.4+  | 0.1-  |
| 2001 09 24 | 704 | 0.2-  | 1.2+  | 2004 04 19 | 704 | 0.4+  | 0.0   | 2007 01 08 | G96 | 0.2+  | 0.5-  |
| 2001 09 24 | 704 | 0.8-  | 0.7+  | 2004 04 19 | 704 | 1.4+  | 0.5+  | 2007 01 08 | G96 | 0.6-  | 0.4+  |
| 2001 09 24 | 644 | 0.3-  | 0.6+  | 2004 04 19 | 704 | 0.6+  | 0.5+  | 2007 01 08 | G96 | 0.3-  | 0.2+  |
| 2001 09 26 | 699 | (0.3- | 1.7+) | 2004 04 19 | 704 | 0.8+  | 0.1-  | 2007 01 08 | G96 | 1.0+  | 1.4+  |
| 2001 09 26 | 699 | (0.6- | 2.2+) | 2004 04 19 | 704 | 0.8+  | 0.5+  | 2007 01 28 | G96 | 0.1+  | 0.2-  |
| 2001 09 26 | 699 | 0.1-  | 1.0-  | 2004 04 22 | 704 | 0.8+  | 0.7+  | 2007 01 28 | G96 | 0.2+  | 0.4-  |
| 2001 09 26 | 699 | 0.7-  | 1.4+  | 2004 04 22 | 704 | 1.0+  | 0.3+  | 2007 01 28 | G96 | 0.4+  | 0.3+  |
| 2001 10 17 | 644 | 0.5-  | 0.4+  | 2004 04 22 | 704 | 0.1-  | 0.2+  | 2007 01 28 | G96 | 0.4-  | 0.3-  |
| 2001 10 17 | 644 | 0.6-  | 0.3+  | 2004 04 22 | 704 | 1.0+  | 0.7+  | 2007 02 06 | G96 | 0.1-  | 0.3-  |
| 2001 10 17 | 644 | 0.5-  | 0.4+  | 2004 04 22 | 704 | 0.2-  | 0.6+  | 2007 02 06 | G96 | 0.2+  | 0.5-  |
| 2001 10 17 | 644 | 0.3-  | 0.4+  | 2004 04 23 | 691 | 0.2-  | 0.5+  | 2007 02 06 | G96 | 0.1-  | 0.2+  |
| 2001 10 17 | 644 | 0.5-  | 0.8+  | 2004 04 23 | 691 | 0.2-  | 0.4+  | 2007 02 06 | G96 | 0.2+  | 0.2+  |
| 2001 10 17 | 644 | 0.5-  | 0.7+  | 2004 04 23 | 691 | 0.2-  | 0.7+  | 2007 11 07 | G96 | 0.2-  | 0.0   |
| 2001 10 20 | 704 | 0.6-  | 0.5+  | 2006 09 14 | 703 | 0.7+  | 0.2-  | 2007 11 07 | G96 | 0.1-  | 0.0   |
| 2001 10 20 | 704 | 0.5-  | 1.0+  | 2006 09 14 | 703 | 0.8-  | 0.8+  | 2007 11 07 | G96 | 0.1-  | 0.2+  |
| 2001 10 20 | 704 | 0.6-  | 1.0+  | 2006 09 14 | 703 | 0.6+  | 0.7-  | 2007 11 07 | G96 | 0.1-  | 0.1+  |
| 2001 10 20 | 704 | 1.0-  | 1.1+  | 2006 09 14 | 703 | 1.1-  | 0.8-  | 2007 12 04 | 699 | 0.3+  | 0.0   |
| 2001 10 23 | 704 | 0.5-  | 0.7+  | 2006 09 18 | 691 | 0.1+  | 0.1+  | 2007 12 04 | 699 | 0.4+  | 0.5+  |
| 2001 10 23 | 704 | 1.1-  | 0.7+  | 2006 09 18 | 691 | 0.3-  | 0.3+  | 2007 12 04 | 699 | 1.1+  | 0.3+  |
| 2001 10 23 | 704 | 0.8-  | 0.1+  | 2006 09 18 | 691 | 0.3-  | 0.1+  | 2007 12 04 | 699 | 0.4+  | 1.1+  |
| 2001 10 23 | 704 | (1.6- | 0.2-) | 2006 09 20 | 704 | 0.3-  | 0.7-  | 2007 12 06 | G96 | 0.5-  | 0.3+  |
| 2001 10 24 | 704 | 0.4-  | 0.8+  | 2006 09 20 | 704 | 1.4-  | 0.5-  | 2007 12 06 | G96 | 0.3-  | 0.1+  |
| 2001 10 24 | 704 | (0.5- | 1.6+) | 2006 09 20 | 704 | 0.2-  | 0.5+  | 2007 12 06 | G96 | 0.2-  | 0.0   |
| 2001 10 24 | 704 | 0.7-  | 0.6+  | 2006 09 25 | 691 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.6+  | 0.4+  |
| 2001 10 24 | 704 | 1.0-  | 1.0+  | 2006 09 25 | 691 | 0.2+  | 0.2+  | 2007 12 15 | 704 | 1.0+  | 0.6+  |
| 2004 03 16 | 704 | 0.4+  | 0.3+  | 2006 09 25 | 691 | 0.1+  | 0.0   | 2007 12 15 | 704 | 0.1+  | 0.0   |
| 2004 03 16 | 704 | 0.6+  | 0.5+  | 2006 10 01 | 704 | 1.2+  | 0.8-  | 2007 12 15 | 704 | 0.8-  | 2.0+  |
| 2004 03 16 | 704 | 0.1-  | 0.7+  | 2006 10 01 | 704 | 0.5+  | 1.5+  |            |     |       |       |
| 2004 03 16 | 704 | 0.7+  | 0.0   | 2006 10 01 | 704 | (0.5+ | 1.9+) |            |     |       |       |

(172012)\* 2001 UK<sub>101</sub>

Discovered 2001 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|                             |            |          |           |            |              |      |              |            |     |       |       |
|-----------------------------|------------|----------|-----------|------------|--------------|------|--------------|------------|-----|-------|-------|
| $\dot{M}$                   | 86.39970   |          | (2000.0)  |            | $\mathbf{P}$ |      | $\mathbf{Q}$ |            |     |       |       |
| $n$                         | 0.17954314 | $\omega$ | 282.75047 |            | +0.75493711  |      | +0.64727870  |            |     |       |       |
| $a$                         | 3.1118848  | $\Omega$ | 37.06656  |            | -0.51317882  |      | +0.68311185  |            |     |       |       |
| $e$                         | 0.0640819  | $i$      | 10.06685  |            | -0.40831049  |      | +0.33821365  |            |     |       |       |
| $P$                         | 5.49       | $H$      | 15.6      |            | $G$          | 0.15 | $U$          | 0          |     |       |       |
| Residuals in seconds of arc |            |          |           |            |              |      |              |            |     |       |       |
| 2001 10 17                  | 644        | 0.0      | 0.4+      | 2001 11 12 | 645          | 0.0  | 0.1+         | 2005 02 11 | 809 | 0.3-  | 0.0   |
| 2001 10 17                  | 644        | 0.2-     | 0.4+      | 2001 11 18 | 704          | 0.3- | 0.2-         | 2005 05 21 | 644 | 0.1+  | 0.6+  |
| 2001 10 17                  | 644        | 0.7-     | 0.5+      | 2001 11 18 | 704          | 0.9+ | 0.7-         | 2005 05 21 | 644 | 0.3+  | 0.4+  |
| 2001 10 20                  | 704        | 0.9-     | 0.1-      | 2001 11 18 | 704          | 0.8+ | 0.6-         | 2005 05 21 | 644 | 0.1+  | 0.5+  |
| 2001 10 20                  | 704        | 0.3-     | 0.6+      | 2001 11 20 | 704          | 0.1+ | 0.3-         | 2006 07 30 | E12 | 0.3+  | 1.0+  |
| 2001 10 20                  | 704        | 0.6-     | 0.0       | 2001 11 20 | 704          | 0.3- | 0.7+         | 2006 07 30 | E12 | 0.2+  | 0.4+  |
| 2001 10 20                  | 704        | 0.2-     | 0.8-      | 2001 11 20 | 704          | 1.1+ | 1.2+         | 2006 07 30 | E12 | 0.9-  | 0.2+  |
| 2001 10 20                  | 704        | 0.6-     | 0.1+      | 2004 01 28 | 645          | 0.1+ | 0.0          | 2006 07 30 | E12 | 0.4-  | 0.5+  |
| 2001 10 23                  | 704        | 0.9-     | 0.2-      | 2004 01 28 | 645          | 0.1+ | 0.0          | 2007 10 14 | G96 | 0.2-  | 0.2-  |
| 2001 10 23                  | 704        | 0.7+     | 0.8-      | 2004 03 23 | 704          | 0.5- | 1.4+         | 2007 10 14 | G96 | 0.2+  | 0.2-  |
| 2001 10 23                  | 704        | 0.4-     | 0.7+      | 2004 03 23 | 704          | 0.7+ | 0.9+         | 2007 10 14 | G96 | (1.6- | 1.7+) |
| 2001 10 23                  | 704        | 0.5+     | 0.4-      | 2004 03 23 | 704          | 0.0  | 0.8+         | 2007 11 20 | 704 | 0.7-  | 0.1-  |
| 2001 10 25                  | 645        | 0.0      | 0.0       | 2004 03 23 | 704          | 1.0- | 1.1+         | 2007 11 20 | 704 | 0.5+  | 0.7+  |
| 2001 10 25                  | 645        | 0.0      | 0.0       | 2005 02 11 | 809          | 0.3- | 0.2-         | 2007 11 20 | 704 | 0.3-  | 0.3-  |
| 2001 11 12                  | 645        | 0.0      | 0.0       | 2005 02 11 | 809          | 0.2- | 0.2+         | 2007 11 20 | 704 | 0.2+  | 0.2+  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 17 | 644 | 0.0  | 0.4+ | 2001 11 12 | 645 | 0.0  | 0.1+ | 2005 02 11 | 809 | 0.3-  | 0.0   |
| 2001 10 17 | 644 | 0.2- | 0.4+ | 2001 11 18 | 704 | 0.3- | 0.2- | 2005 05 21 | 644 | 0.1+  | 0.6+  |
| 2001 10 17 | 644 | 0.7- | 0.5+ | 2001 11 18 | 704 | 0.9+ | 0.7- | 2005 05 21 | 644 | 0.3+  | 0.4+  |
| 2001 10 20 | 704 | 0.9- | 0.1- | 2001 11 18 | 704 | 0.8+ | 0.6- | 2005 05 21 | 644 | 0.1+  | 0.5+  |
| 2001 10 20 | 704 | 0.3- | 0.6+ | 2001 11 20 | 704 | 0.1+ | 0.3- | 2006 07 30 | E12 | 0.3+  | 1.0+  |
| 2001 10 20 | 704 | 0.6- | 0.0  | 2001 11 20 | 704 | 0.3- | 0.7+ | 2006 07 30 | E12 | 0.2+  | 0.4+  |
| 2001 10 20 | 704 | 0.2- | 0.8- | 2001 11 20 | 704 | 1.1+ | 1.2+ | 2006 07 30 | E12 | 0.9-  | 0.2+  |
| 2001 10 20 | 704 | 0.6- | 0.1+ | 2004 01 28 | 645 | 0.1+ | 0.0  | 2006 07 30 | E12 | 0.4-  | 0.5+  |
| 2001 10 23 | 704 | 0.9- | 0.2- | 2004 01 28 | 645 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.2-  | 0.2-  |
| 2001 10 23 | 704 | 0.7+ | 0.8- | 2004 03 23 | 704 | 0.5- | 1.4+ | 2007 10 14 | G96 | 0.2+  | 0.2-  |
| 2001 10 23 | 704 | 0.4- | 0.7+ | 2004 03 23 | 704 | 0.7+ | 0.9+ | 2007 10 14 | G96 | (1.6- | 1.7+) |
| 2001 10 23 | 704 | 0.5+ | 0.4- | 2004 03 23 | 704 | 0.0  | 0.8+ | 2007 11 20 | 704 | 0.7-  | 0.1-  |
| 2001 10 25 | 645 | 0.0  | 0.0  | 2004 03 23 | 704 | 1.0- | 1.1+ | 2007 11 20 | 704 | 0.5+  | 0.7+  |
| 2001 10 25 | 645 | 0.0  | 0.0  | 2005 02 11 | 809 | 0.3- | 0.2- | 2007 11 20 | 704 | 0.3-  | 0.3-  |
| 2001 11 12 | 645 | 0.0  | 0.0  | 2005 02 11 | 809 | 0.2- | 0.2+ | 2007 11 20 | 704 | 0.2+  | 0.2+  |

(172013)\* 2001 UB<sub>102</sub>

Discovered 2001 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$                         | 153.18244  |          | (2000.0)       |       | $P$         |                | $Q$         |
|-----------------------------|------------|----------|----------------|-------|-------------|----------------|-------------|
| $n$                         | 0.17778882 | $\omega$ | 226.37389      |       | -0.20280789 |                | +0.97401784 |
| $a$                         | 3.1323221  | $\Omega$ | 32.33049       |       | -0.83539097 |                | -0.11840206 |
| $e$                         | 0.0480461  | $i$      | 10.86283       |       | -0.51087268 |                | -0.19305493 |
| $P$                         | 5.54       | $H$      | 14.9           | $G$   | 0.15        | $U$            | 1           |
| Residuals in seconds of arc |            |          |                |       |             |                |             |
| 1999 04 09                  | 691 0.1+   | 0.1+     | 2004 03 17 691 | 0.1+  | 0.2+        | 2007 11 20 704 | 0.4- 0.6+   |
| 1999 04 09                  | 691 0.1-   | 0.1+     | 2004 03 17 691 | 0.1-  | 0.2+        | 2007 11 20 704 | 0.1- 0.3+   |
| 1999 04 09                  | 691 0.0    | 0.1+     | 2004 03 17 691 | 0.1+  | 0.2+        | 2007 11 20 704 | 0.5+ 1.3+   |
| 2001 10 14                  | 291 0.3+   | 0.1+     | 2004 03 27 691 | 0.1+  | 0.1-        | 2007 11 20 704 | 0.5- 0.2-   |
| 2001 10 14                  | 291 0.4+   | 0.0      | 2004 03 27 691 | 0.0   | 0.1-        | 2007 11 20 G96 | 0.1+ 0.6-   |
| 2001 10 14                  | 291 0.1+   | 0.0      | 2004 03 27 691 | 0.0   | 0.2+        | 2007 11 20 G96 | 0.4- 0.7-   |
| 2001 10 18                  | 644 0.8-   | 1.3+     | 2007 08 12 691 | 0.2+  | 0.1+        | 2007 11 20 G96 | 0.0 0.3-    |
| 2001 10 18                  | 644 0.7-   | 1.3+     | 2007 08 12 691 | 0.5-  | 0.1+        | 2007 11 20 704 | 0.6+ 1.4-   |
| 2001 10 18                  | 644 0.7-   | 1.1+     | 2007 08 12 691 | 0.3+  | 0.2+        | 2007 11 20 G96 | 0.1+ 0.4-   |
| 2001 10 20                  | 704 0.0    | 0.5-     | 2007 08 24 691 | 0.2-  | 0.2+        | 2007 11 20 G96 | 0.4+ 0.4-   |
| 2001 10 20                  | 704 0.2+   | 0.6-     | 2007 08 24 691 | (0.8- | 1.7+)       | 2007 11 20 G96 | 0.2+ 0.2-   |
| 2001 10 20                  | 704 0.5+   | 0.2-     | 2007 08 24 691 | 0.2-  | 0.1+        | 2007 11 20 G96 | 0.3- 0.4-   |
| 2001 10 20                  | 704 1.0+   | 0.2+     | 2007 10 21 G96 | 0.1-  | 0.4-        | 2007 11 20 G96 | 0.0 0.4-    |
| 2001 10 20                  | 704 0.8+   | 0.0      | 2007 10 21 G96 | 0.2-  | 0.4-        | 2007 11 21 G96 | 0.2- 0.4-   |
| 2001 10 23                  | 704 0.8-   | 0.8+     | 2007 10 21 G96 | 0.2+  | 0.3-        | 2007 11 21 G96 | 0.1- 0.2-   |
| 2001 10 23                  | 704 (1.8-  | 0.4+)    | 2007 10 21 G96 | 0.0   | 0.4-        | 2007 11 21 G96 | 0.2- 0.2-   |
| 2001 10 23                  | 704 1.2-   | 0.5-     | 2007 10 21 G96 | 0.0   | 0.1-        | 2007 11 21 G96 | 0.5- 0.1-   |
| 2001 10 23                  | 704 0.6-   | 1.0-     | 2007 10 21 G96 | 0.1+  | 0.2-        | 2007 11 21 G96 | 0.3- 0.1-   |
| 2001 10 24                  | 704 0.9-   | 0.2-     | 2007 10 21 G96 | 0.1-  | 0.2-        | 2007 11 21 G96 | 0.1+ 0.7-   |
| 2001 10 24                  | 704 0.0    | 0.9-     | 2007 10 21 G96 | 0.4+  | 0.2-        | 2007 11 21 G96 | 0.4- 0.3-   |
| 2001 10 24                  | 704 0.2+   | 0.6-     | 2007 10 21 G96 | 0.2+  | 0.4-        | 2007 11 21 G96 | 0.0 0.2-    |
| 2001 10 24                  | 704 0.6-   | 0.6-     | 2007 10 21 G96 | 0.2+  | 0.3-        | 2007 12 12 704 | 0.7- 0.3+   |
| 2001 10 25                  | 644 0.9-   | 0.9+     | 2007 10 21 G96 | 0.1+  | 0.0         | 2007 12 12 704 | 0.3+ 0.0    |
| 2001 10 25                  | 644 0.2-   | 0.5+     | 2007 10 21 G96 | 0.1+  | 0.0         | 2007 12 12 704 | 0.1- 0.8+   |
| 2001 10 25                  | 644 0.5-   | 0.6+     | 2007 11 18 704 | 0.9+  | 0.2+        | 2007 12 13 704 | 0.2+ 0.1+   |
| 2001 11 21                  | 704 (1.9-  | 0.5-)    | 2007 11 18 704 | 0.1+  | 0.4+        | 2007 12 13 704 | 0.4+ 0.2+   |
| 2001 11 21                  | 704 (1.6-  | 0.4-)    | 2007 11 18 704 | 0.1-  | 0.5+        | 2007 12 13 704 | 0.1+ 0.7+   |
| 2001 11 21                  | 704 0.0    | 0.9+     | 2007 11 18 704 | 0.2+  | 0.1+        | 2007 12 13 704 | 0.5+ 0.4+   |
| 2004 02 13                  | 691 0.1+   | 0.0      | 2007 11 18 704 | 0.1-  | 0.6-        | 2007 12 13 704 | 0.1- 0.5+   |
| 2004 02 13                  | 691 0.0    | 0.2-     | 2007 11 20 704 | 0.3+  | 0.3+        |                |             |
| 2004 02 13                  | 691 0.1+   | 0.0      | 2007 11 20 704 | 0.5+  | 0.7+        |                |             |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 04 09 | 691 | 0.1+  | 0.1+  | 2004 03 17 | 691 | 0.1+  | 0.2+  | 2007 11 20 | 704 | 0.4- | 0.6+ |
| 1999 04 09 | 691 | 0.1-  | 0.1+  | 2004 03 17 | 691 | 0.1-  | 0.2+  | 2007 11 20 | 704 | 0.1- | 0.3+ |
| 1999 04 09 | 691 | 0.0   | 0.1+  | 2004 03 17 | 691 | 0.1+  | 0.2+  | 2007 11 20 | 704 | 0.5+ | 1.3+ |
| 2001 10 14 | 291 | 0.3+  | 0.1+  | 2004 03 27 | 691 | 0.1+  | 0.1-  | 2007 11 20 | 704 | 0.5- | 0.2- |
| 2001 10 14 | 291 | 0.4+  | 0.0   | 2004 03 27 | 691 | 0.0   | 0.1-  | 2007 11 20 | G96 | 0.1+ | 0.6- |
| 2001 10 14 | 291 | 0.1+  | 0.0   | 2004 03 27 | 691 | 0.0   | 0.2+  | 2007 11 20 | G96 | 0.4- | 0.7- |
| 2001 10 18 | 644 | 0.8-  | 1.3+  | 2007 08 12 | 691 | 0.2+  | 0.1+  | 2007 11 20 | G96 | 0.0  | 0.3- |
| 2001 10 18 | 644 | 0.7-  | 1.3+  | 2007 08 12 | 691 | 0.5-  | 0.1+  | 2007 11 20 | 704 | 0.6+ | 1.4- |
| 2001 10 18 | 644 | 0.7-  | 1.1+  | 2007 08 12 | 691 | 0.3+  | 0.2+  | 2007 11 20 | G96 | 0.1+ | 0.4- |
| 2001 10 20 | 704 | 0.0   | 0.5-  | 2007 08 24 | 691 | 0.2-  | 0.2+  | 2007 11 20 | G96 | 0.4+ | 0.4- |
| 2001 10 20 | 704 | 0.2+  | 0.6-  | 2007 08 24 | 691 | (0.8- | 1.7+) | 2007 11 20 | G96 | 0.2+ | 0.2- |
| 2001 10 20 | 704 | 0.5+  | 0.2-  | 2007 08 24 | 691 | 0.2-  | 0.1+  | 2007 11 20 | G96 | 0.3- | 0.4- |
| 2001 10 20 | 704 | 1.0+  | 0.2+  | 2007 10 21 | G96 | 0.1-  | 0.4-  | 2007 11 20 | G96 | 0.0  | 0.4- |
| 2001 10 20 | 704 | 0.8+  | 0.0   | 2007 10 21 | G96 | 0.2-  | 0.4-  | 2007 11 21 | G96 | 0.2- | 0.4- |
| 2001 10 23 | 704 | 0.8-  | 0.8+  | 2007 10 21 | G96 | 0.2+  | 0.3-  | 2007 11 21 | G96 | 0.1- | 0.2- |
| 2001 10 23 | 704 | (1.8- | 0.4+) | 2007 10 21 | G96 | 0.0   | 0.4-  | 2007 11 21 | G96 | 0.2- | 0.2- |
| 2001 10 23 | 704 | 1.2-  | 0.5-  | 2007 10 21 | G96 | 0.0   | 0.1-  | 2007 11 21 | G96 | 0.5- | 0.1- |
| 2001 10 23 | 704 | 0.6-  | 1.0-  | 2007 10 21 | G96 | 0.1+  | 0.2-  | 2007 11 21 | G96 | 0.3- | 0.1- |
| 2001 10 24 | 704 | 0.9-  | 0.2-  | 2007 10 21 | G96 | 0.1-  | 0.2-  | 2007 11 21 | G96 | 0.1+ | 0.7- |
| 2001 10 24 | 704 | 0.0   | 0.9-  | 2007 10 21 | G96 | 0.4+  | 0.2-  | 2007 11 21 | G96 | 0.4- | 0.3- |
| 2001 10 24 | 704 | 0.2+  | 0.6-  | 2007 10 21 | G96 | 0.2+  | 0.4-  | 2007 11 21 | G96 | 0.0  | 0.2- |
| 2001 10 24 | 704 | 0.6-  | 0.6-  | 2007 10 21 | G96 | 0.2+  | 0.3-  | 2007 12 12 | 704 | 0.7- | 0.3+ |
| 2001 10 25 | 644 | 0.9-  | 0.9+  | 2007 10 21 | G96 | 0.1+  | 0.0   | 2007 12 12 | 704 | 0.3+ | 0.0  |
| 2001 10 25 | 644 | 0.2-  | 0.5+  | 2007 10 21 | G96 | 0.1+  | 0.0   | 2007 12 12 | 704 | 0.1- | 0.8+ |
| 2001 10 25 | 644 | 0.5-  | 0.6+  | 2007 11 18 | 704 | 0.9+  | 0.2+  | 2007 12 13 | 704 | 0.2+ | 0.1+ |
| 2001 11 21 | 704 | (1.9- | 0.5-) | 2007 11 18 | 704 | 0.1+  | 0.4+  | 2007 12 13 | 704 | 0.4- | 0.2+ |
| 2001 11 21 | 704 | (1.6- | 0.4-) | 2007 11 18 | 704 | 0.1-  | 0.5+  | 2007 12 13 | 704 | 0.1+ | 0.7+ |
| 2001 11 21 | 704 | 0.0   | 0.9+  | 2007 11 18 | 704 | 0.2+  | 0.1+  | 2007 12 13 | 704 | 0.5+ | 0.4+ |
| 2004 02 13 | 691 | 0.1+  | 0.0   | 2007 11 18 | 704 | 0.1-  | 0.6-  | 2007 12 13 | 704 | 0.1- | 0.5+ |
| 2004 02 13 | 691 | 0.0   | 0.2-  | 2007 11 20 | 704 | 0.3+  | 0.3+  |            |     |      |      |
| 2004 02 13 | 691 | 0.1+  | 0.0   | 2007 11 20 | 704 | 0.5+  | 0.7+  |            |     |      |      |

**(172014)\* 2001 UX<sub>103</sub>**

Discovered 2001 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |            | (2000.0) |           | $P$         |             | $Q$ |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.18197837 | $\omega$ | 351.63086 | +0.05613008 | −0.99750125 |     |   |
| $a$ | 3.0840603  | $\Omega$ | 95.14371  | +0.91851154 | +0.03474492 |     |   |
| $e$ | 0.2202302  | $i$      | 2.46887   | +0.39138978 | +0.06151465 |     |   |
| $P$ | 5.42       | $H$      | 16.3      | $G$         | 0.15        | $U$ | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.3+  | 1.1−  | 2001 11 21 | 704 | (1.6+ | 0.1−) | 2006 10 02 | G96 | 0.1− | 0.1− |
| 2001 10 17 | 704 | 1.0−  | 0.0   | 2003 02 22 | 644 | 1.2+  | 0.6+  | 2006 10 02 | G96 | 0.5− | 0.3− |
| 2001 10 17 | 704 | 0.5−  | 0.1+  | 2003 02 22 | 644 | 0.9+  | 0.7+  | 2007 10 19 | G96 | 0.4+ | 0.1− |
| 2001 10 17 | 704 | (1.6+ | 2.0−) | 2003 02 22 | 644 | 0.7+  | 0.6+  | 2007 10 19 | G96 | 0.3+ | 0.1+ |
| 2001 10 20 | 704 | 0.2−  | 0.4+  | 2003 03 31 | 645 | 0.1−  | 0.2+  | 2007 10 19 | G96 | 0.2+ | 0.1− |
| 2001 10 20 | 704 | 0.1+  | 0.2+  | 2003 03 31 | 645 | 0.1−  | 0.1+  | 2007 10 19 | G96 | 0.1+ | 0.1+ |
| 2001 10 20 | 704 | 0.4+  | 0.1+  | 2003 04 05 | 691 | 0.5+  | 0.0   | 2007 11 11 | G96 | 0.7− | 1.3− |
| 2001 10 23 | 704 | 1.2−  | 0.8−  | 2003 04 05 | 691 | 0.6+  | 0.4+  | 2007 11 11 | G96 | 0.6− | 0.7− |
| 2001 10 23 | 704 | 0.5+  | 0.5+  | 2003 04 05 | 691 | 0.4+  | 0.1+  | 2007 11 11 | G96 | 0.4+ | 0.3− |
| 2001 10 23 | 704 | 0.1+  | 0.6+  | 2006 08 18 | 691 | 0.0   | 0.6+  | 2007 11 11 | G96 | 0.0  | 0.3− |
| 2001 10 23 | 704 | 0.3−  | 0.8+  | 2006 08 18 | 691 | 0.1−  | 0.1+  | 2007 11 21 | G96 | 0.3+ | 0.7− |
| 2001 10 23 | 704 | 1.0+  | 0.9+  | 2006 08 18 | 691 | 0.1−  | 0.6+  | 2007 11 21 | G96 | 0.3+ | 0.1− |
| 2001 10 24 | 704 | 0.6−  | 0.8−  | 2006 08 27 | 691 | 0.1−  | 0.1+  | 2007 11 21 | G96 | 0.4+ | 0.3− |
| 2001 10 24 | 704 | 0.6−  | 1.0+  | 2006 08 27 | 691 | 0.1−  | 0.5+  | 2007 11 21 | G96 | 0.1− | 0.4− |
| 2001 10 24 | 704 | 1.3−  | 1.0+  | 2006 08 27 | 691 | 0.3−  | 0.2+  | 2007 12 15 | 691 | 0.2− | 0.2+ |
| 2001 11 21 | 704 | 1.4+  | 0.4+  | 2006 10 02 | G96 | 0.2+  | 0.0   | 2007 12 15 | 691 | 0.0  | 0.4+ |
| 2001 11 21 | 704 | 1.0+  | 0.7−  | 2006 10 02 | G96 | 0.2−  | 0.3−  | 2007 12 15 | 691 | 0.0  | 0.2− |

**(172015)\* 2001 UJ<sub>105</sub> = 2004 EB<sub>58</sub>**

Discovered 2001 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 61168)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |            | (2000.0) |           | $P$         |             | $Q$ |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.18040399 | $\omega$ | 219.10473 | −0.02147375 | +0.98823350 |     |   |
| $a$ | 3.1019774  | $\Omega$ | 50.20954  | −0.86070510 | +0.05879101 |     |   |
| $e$ | 0.0798235  | $i$      | 11.36653  | −0.50865077 | −0.14120258 |     |   |
| $P$ | 5.46       | $H$      | 14.4      | $G$         | 0.15        | $U$ | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|-------|-------|
| 2001 10 18 | 644 | 0.2+  | 0.2+  | 2004 03 15 | 704 | 0.2− | 0.4+  | 2006 10 09 | 644 | 0.1+  | 0.8+  |
| 2001 10 18 | 644 | 0.1+  | 0.1+  | 2004 03 15 | 704 | 0.4− | 0.1+  | 2006 10 09 | 644 | 0.3−  | 0.2+  |
| 2001 10 18 | 644 | 0.4+  | 0.0   | 2004 03 15 | 704 | 0.5+ | 0.4+  | 2006 10 12 | 644 | 0.2−  | 0.2+  |
| 2001 10 20 | 704 | (2.3− | 0.0 ) | 2004 03 17 | 704 | 1.1− | 0.2+  | 2006 10 12 | 644 | 0.1+  | 0.0   |
| 2001 10 20 | 704 | (1.8− | 0.6−) | 2004 03 17 | 704 | (0.0 | 1.8+) | 2006 10 12 | 644 | 0.2−  | 0.0   |
| 2001 10 20 | 704 | (2.9− | 0.3+) | 2004 03 17 | 704 | 0.2+ | 0.1+  | 2007 11 18 | 704 | 0.2−  | 0.5+  |
| 2001 10 23 | 704 | 0.1+  | 0.2−  | 2004 03 17 | 704 | 0.2− | 1.1−  | 2007 11 18 | 704 | 0.3−  | 0.0   |
| 2001 10 23 | 704 | 0.0   | 0.5+  | 2004 03 17 | 704 | 1.3+ | 0.2−  | 2007 11 18 | 704 | 0.1+  | 1.3−  |
| 2001 10 23 | 704 | 0.5+  | 0.0   | 2004 03 17 | 704 | 0.1+ | 0.7+  | 2007 11 18 | 704 | 0.1+  | 0.6−  |
| 2001 10 24 | 704 | 0.1+  | 0.4+  | 2004 03 17 | 704 | 0.4+ | 0.2+  | 2007 11 19 | G96 | (1.6− | 0.6−) |
| 2001 10 24 | 704 | 0.0   | 0.0   | 2004 03 17 | 704 | 0.9+ | 0.4+  | 2007 11 19 | G96 | 0.6+  | 0.8−  |
| 2001 10 24 | 704 | 0.9−  | 0.7+  | 2004 03 17 | 704 | 0.9+ | 0.1+  | 2007 11 19 | G96 | 0.2+  | 0.5−  |
| 2001 10 24 | 704 | 0.2−  | 0.0   | 2004 03 25 | 704 | 0.5+ | 0.6+  | 2007 11 19 | G96 | 0.0   | 0.4−  |
| 2001 11 20 | 704 | 0.6−  | 0.1−  | 2004 03 25 | 704 | 0.4+ | 0.1+  | 2007 12 13 | 704 | 0.2+  | 0.6+  |
| 2001 11 20 | 704 | 0.7−  | 0.1+  | 2004 03 25 | 704 | 1.0− | 0.7+  | 2007 12 13 | 704 | 0.3+  | 0.6+  |
| 2001 11 20 | 704 | 0.8−  | 1.1+  | 2006 09 25 | 703 | 0.1+ | 0.2+  | 2007 12 13 | 704 | 0.3+  | 1.0−  |
| 2001 11 20 | 704 | 0.1−  | 0.5+  | 2006 09 25 | 703 | 0.1+ | 0.3+  | 2007 12 13 | 704 | 0.0   | 0.3−  |
| 2001 11 20 | 704 | 0.1−  | 0.0   | 2006 09 25 | 703 | 0.8− | 0.3+  | 2007 12 15 | 704 | 0.6−  | 0.1+  |
| 2004 03 15 | 704 | (1.6− | 0.8+) | 2006 09 25 | 703 | 0.2+ | 1.3−  | 2007 12 15 | 704 | 0.2+  | 0.3−  |
| 2004 03 15 | 704 | 0.5−  | 0.4+  | 2006 10 09 | 644 | 0.2− | 0.5+  | 2007 12 15 | 704 | 0.1−  | 0.9+  |

**(172016)\* 2001 UY<sub>112</sub> = 2003 FV<sub>46</sub>**

Discovered 2001 Oct. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 46819)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |           | (2000.0) |          | $P$         |             | $Q$ |   |
|-----|-----------|----------|----------|-------------|-------------|-----|---|
| $n$ | 2.58988   | $\omega$ | 96.28950 | −0.38909443 | −0.92079708 |     |   |
| $a$ | 3.0554942 | $\Omega$ | 16.68834 | +0.80335617 | −0.35360693 |     |   |
| $e$ | 0.2190934 | $i$      | 5.42930  | +0.45080416 | −0.16460519 |     |   |
| $P$ | 5.34      | $H$      | 15.2     | $G$         | 0.15        | $U$ | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 14 | 704 | 0.9+  | 0.3+  | 2003 03 24 | 691 | 0.4+  | 0.0   | 2006 10 10 | 644 | 0.0   | 0.1+  |
| 2001 10 14 | 704 | 0.3+  | 0.3−  | 2003 03 24 | 691 | 0.8+  | 0.1−  | 2006 10 10 | 644 | 0.5−  | 0.2+  |
| 2001 10 14 | 704 | 0.6−  | 0.5−  | 2003 03 27 | 644 | 0.0   | 0.1+  | 2006 10 10 | 644 | 0.1−  | 0.4+  |
| 2001 10 14 | 704 | 0.2+  | 0.2+  | 2003 03 27 | 699 | 0.0   | 0.1+  | 2006 10 13 | A50 | 0.1−  | 0.4+  |
| 2001 10 14 | 704 | 0.5+  | 0.6+  | 2003 03 27 | 699 | 0.2−  | 0.1−  | 2006 10 13 | A50 | 0.2+  | 0.1+  |
| 2001 10 21 | 704 | 0.5−  | 0.2−  | 2003 03 27 | 699 | 0.6+  | 0.3+  | 2006 10 13 | A50 | 0.1+  | 0.5−  |
| 2001 10 21 | 704 | 0.8−  | 0.2−  | 2003 03 27 | 644 | 0.0   | 0.4+  | 2006 10 16 | 691 | 0.2+  | 0.7+  |
| 2001 10 21 | 704 | 0.8−  | 0.2−  | 2003 03 27 | 699 | 0.2−  | 0.4+  | 2006 10 16 | 691 | 0.1+  | 0.2+  |
| 2001 10 21 | 704 | 0.8−  | 0.5−  | 2003 03 27 | 644 | 0.0   | 0.3+  | 2006 10 16 | 691 | 0.0   | 0.4+  |
| 2001 10 23 | 704 | 0.7+  | 0.3+  | 2003 04 01 | 704 | 0.7+  | 0.8+  | 2006 10 21 | 644 | 0.1−  | 0.3+  |
| 2001 10 23 | 704 | 0.3+  | 0.3+  | 2003 04 01 | 704 | 0.4+  | 0.2+  | 2006 10 21 | 644 | 0.0   | 0.5+  |
| 2001 10 23 | 704 | 0.6−  | 0.4+  | 2003 04 01 | 704 | 0.7+  | 1.1+  | 2006 10 21 | 644 | 0.1+  | 0.7+  |
| 2001 10 23 | 704 | 0.0   | 0.0   | 2003 04 01 | 704 | 0.6+  | 1.0+  | 2006 10 28 | 691 | 0.3−  | 0.1−  |
| 2001 10 26 | 644 | 0.4+  | 0.8+  | 2003 04 01 | 704 | (0.9+ | 1.6+) | 2006 10 28 | 691 | 0.5−  | 0.2+  |
| 2001 10 26 | 644 | 0.2+  | 1.0+  | 2003 04 03 | 699 | 0.1−  | 0.2+  | 2006 10 28 | 691 | 0.1−  | 0.0   |
| 2001 10 26 | 644 | 0.3+  | 0.9+  | 2003 04 03 | 699 | 0.4+  | 0.0   | 2006 11 01 | 691 | 0.1+  | 0.4+  |
| 2001 11 11 | 699 | 0.3−  | 0.2−  | 2003 04 03 | 699 | 0.0   | 0.2+  | 2006 11 01 | 691 | 0.1+  | 0.1+  |
| 2001 11 11 | 699 | 0.7+  | 0.6−  | 2003 04 03 | 699 | 0.3−  | 0.2−  | 2006 11 01 | 691 | 0.2−  | 0.6+  |
| 2001 11 11 | 699 | 0.2+  | 0.3−  | 2003 04 04 | 691 | (0.6+ | 1.9+) | 2006 11 11 | 703 | 0.5+  | 0.4+  |
| 2001 11 11 | 699 | 0.3−  | 0.1−  | 2003 04 04 | 691 | (0.7+ | 1.9+) | 2006 11 11 | 703 | 0.1−  | 0.2+  |
| 2001 11 12 | 704 | 0.3+  | 0.2−  | 2003 04 04 | 691 | (0.5+ | 1.7+) | 2006 11 11 | 703 | 0.2+  | 0.7+  |
| 2001 11 12 | 704 | 0.3+  | 0.2−  | 2003 04 08 | 691 | 0.4−  | 0.0   | 2006 11 11 | 703 | 1.2−  | 0.1−  |
| 2001 11 12 | 704 | 0.9+  | 0.0   | 2003 04 08 | 691 | 0.5−  | 0.1−  | 2006 11 15 | G96 | 0.0   | 0.6−  |
| 2001 11 12 | 704 | 0.3+  | 0.3+  | 2003 04 08 | 691 | 0.2−  | 0.1−  | 2006 11 15 | G96 | 0.3−  | 0.3−  |
| 2001 11 12 | 704 | 0.4+  | 0.6+  | 2003 04 08 | 704 | (1.8+ | 0.5+) | 2006 11 15 | G96 | 0.1+  | 0.6−  |
| 2001 11 20 | 608 | (0.6+ | 2.8−) | 2003 04 08 | 704 | 0.3−  | 1.1+  | 2006 11 15 | G96 | 0.5+  | 0.3−  |
| 2001 11 20 | 608 | 0.3−  | 1.4−  | 2003 04 08 | 704 | 0.4+  | 0.5+  | 2006 11 17 | 703 | 0.4+  | 0.9+  |
| 2001 11 20 | 608 | 0.1+  | 1.0−  | 2003 04 08 | 704 | 0.9+  | 1.4+  | 2006 11 17 | 703 | 0.5−  | 1.4+  |
| 2001 11 21 | 704 | (1.0+ | 1.8+) | 2003 04 08 | 704 | 1.0+  | 0.5−  | 2006 11 17 | 703 | (2.0− | 1.2+) |
| 2001 11 21 | 704 | 0.1−  | 0.7+  | 2003 05 05 | 691 | 0.0   | 0.4+  | 2006 11 17 | 703 | 0.1−  | 0.0   |
| 2001 11 21 | 704 | 0.7+  | 1.3+  | 2003 05 05 | 691 | 0.0   | 0.3+  | 2006 11 21 | 704 | 0.3+  | 1.0+  |
| 2001 11 21 | 704 | 0.3−  | 1.1+  | 2003 05 05 | 691 | 0.0   | 0.6+  | 2006 11 21 | 704 | 0.4−  | 0.8+  |
| 2001 11 21 | 704 | 0.9+  | 1.2+  | 2006 09 14 | 691 | 0.0   | 0.3+  | 2006 11 21 | 704 | 0.2−  | 0.6+  |
| 2001 11 24 | 704 | 0.7+  | 0.0   | 2006 09 14 | 691 | 0.1−  | 0.2+  | 2006 11 27 | G96 | 0.6+  | 0.3−  |
| 2001 11 24 | 704 | 0.5−  | 0.4+  | 2006 09 14 | 691 | 0.1+  | 0.1+  | 2006 11 27 | G96 | 0.2+  | 0.4−  |
| 2001 11 24 | 704 | 0.2−  | 0.6−  | 2006 09 21 | 152 | 0.8+  | 1.0+  | 2006 11 27 | G96 | 0.0   | 0.3−  |
| 2001 11 24 | 704 | 1.0+  | 0.9−  | 2006 09 21 | 152 | (0.8− | 2.2+) | 2006 11 27 | G96 | 0.1+  | 0.5−  |
| 2001 11 24 | 704 | 1.1+  | 0.1−  | 2006 09 22 | 152 | 0.0   | 1.1−  | 2006 12 25 | G96 | 0.2+  | 0.3+  |
| 2001 12 08 | 699 | (1.8+ | 0.0 ) | 2006 09 25 | 691 | 0.1−  | 0.1−  | 2006 12 25 | G96 | 0.3−  | 0.1−  |
| 2001 12 08 | 699 | 0.9−  | 0.1−  | 2006 09 25 | G96 | 0.2−  | 0.1+  | 2006 12 25 | G96 | 0.3−  | 0.7−  |
| 2001 12 08 | 699 | (0.4+ | 2.4+) | 2006 09 25 | G96 | 0.5−  | 0.0   | 2006 12 25 | G96 | 0.1+  | 0.1+  |
| 2001 12 08 | 699 | 0.0   | 1.0−  | 2006 09 25 | 691 | 0.4−  | 0.2−  | 2007 11 10 | 703 | (0.6− | 1.9−) |
| 2001 12 10 | 704 | 0.4+  | 0.4−  | 2006 09 25 | G96 | 0.3−  | 0.1+  | 2007 11 10 | 703 | 1.0−  | 0.6+  |
| 2001 12 10 | 704 | 1.4−  | 1.0−  | 2006 09 25 | G96 | 0.1+  | 0.1+  | 2007 11 10 | 703 | 0.8−  | 0.8+  |
| 2001 12 10 | 704 | 1.1−  | 1.5−  | 2006 09 25 | 691 | 0.4−  | 0.3−  | 2007 11 10 | 703 | 0.2−  | 0.7−  |
| 2001 12 10 | 704 | 0.9−  | 0.5−  | 2006 09 25 | 152 | 0.3−  | 0.0   | 2007 12 06 | 703 | 1.3+  | 0.3+  |
| 2001 12 17 | 704 | 0.3−  | 0.1+  | 2006 09 25 | 152 | 0.0   | 0.1+  | 2007 12 06 | 703 | 0.4−  | 0.1+  |
| 2001 12 17 | 704 | 0.0   | 0.6−  | 2006 09 25 | 152 | 0.3+  | 0.3+  | 2007 12 06 | 703 | 1.3−  | 0.2−  |
| 2001 12 17 | 704 | 0.2+  | 0.5−  | 2006 09 26 | 152 | 0.7−  | 0.2+  | 2007 12 06 | 703 | 0.8−  | 0.8+  |
| 2001 12 17 | 704 | 0.0   | 0.4−  | 2006 09 26 | 152 | 0.5+  | 0.3−  | 2007 12 13 | 704 | 0.8+  | 0.4−  |
| 2001 12 20 | 644 | 0.0   | 0.1−  | 2006 09 26 | 152 | 0.6+  | 0.8+  | 2007 12 13 | 704 | (0.1+ | 1.7−) |
| 2001 12 20 | 644 | 0.1+  | 0.2−  | 2006 09 26 | 152 | 0.7−  | 0.6+  | 2007 12 13 | 704 | 1.1+  | 0.0   |
| 2001 12 20 | 644 | 0.1+  | 0.3−  | 2006 09 27 | 152 | 0.1−  | 1.1+  | 2007 12 14 | A77 | 0.4−  | 0.1−  |
| 2003 03 10 | 704 | (1.2+ | 1.8+) | 2006 09 27 | 152 | 0.5+  | 0.8−  | 2007 12 14 | A77 | 0.9+  | 0.6−  |

## 2007 DEC. 24

## M.P.O. 129237

|            |     |      |      |            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-----|
| 2003 03 10 | 704 | 1.1+ | 0.3+ | 2006 09 29 | 691 | 0.1- | 0.0  | 2007 12 14 | A77 | 0.8+ | 0.0 |
| 2003 03 10 | 704 | 0.3- | 0.2- | 2006 09 29 | 691 | 0.1- | 0.0  |            |     |      |     |
| 2003 03 24 | 691 | 0.4+ | 0.1+ | 2006 09 29 | 691 | 0.3- | 0.2- |            |     |      |     |

(172017)\* 2001 UA<sub>125</sub> = 2003 EF<sub>58</sub>

Discovered 2001 Oct. 22 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 46827)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 343.11027  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17505056 | $\omega$ | 8.28386  |     | -0.11576245 |     | -0.95080136 |
| $a$ | 3.1649029  | $\Omega$ | 88.71450 |     | +0.89404839 |     | -0.22578748 |
| $e$ | 0.2490890  | $i$      | 16.70430 |     | +0.43275458 |     | +0.21212447 |
| $P$ | 5.63       | $H$      | 15.4     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 12 | 608 | 0.3-  | 0.2-  | 2003 03 13 | 704 | (3.3+ | 2.2-) | 2007 10 13 | 704 | (1.6+ | 0.2-) |
| 2001 10 12 | 608 | 0.0   | 0.6-  | 2003 03 22 | 644 | 0.1+  | 0.1+  | 2007 10 13 | 704 | 1.5+  | 0.3-  |
| 2001 10 12 | 608 | 0.5-  | 0.2+  | 2003 03 22 | 644 | 0.0   | 0.1+  | 2007 10 21 | 704 | 1.2-  | 0.7+  |
| 2001 10 22 | 644 | 0.6-  | 1.1+  | 2003 03 22 | 644 | 0.0   | 0.1+  | 2007 10 21 | 704 | 0.3-  | 0.2-  |
| 2001 10 22 | 644 | 0.3-  | 0.7+  | 2003 04 01 | 699 | 0.3+  | 0.2-  | 2007 10 21 | 704 | 0.5-  | 0.2+  |
| 2001 10 22 | 644 | 0.5-  | 1.3+  | 2003 04 01 | 699 | 0.8+  | 0.1+  | 2007 10 21 | 704 | 0.7-  | 0.3+  |
| 2001 10 28 | 644 | 0.4+  | 0.3+  | 2003 04 01 | 699 | 1.2-  | 0.5-  | 2007 11 12 | 704 | 0.3+  | 0.2+  |
| 2001 10 28 | 644 | 0.1+  | 0.1-  | 2003 04 01 | 699 | 0.4-  | 0.4+  | 2007 11 12 | 704 | 0.7-  | 0.2-  |
| 2001 10 28 | 644 | 0.5+  | 0.4+  | 2003 04 07 | 644 | 0.2+  | 0.1+  | 2007 11 12 | 704 | 0.7-  | 0.4-  |
| 2002 01 08 | 645 | 0.0   | 0.1+  | 2003 04 07 | 644 | 0.2+  | 0.0   | 2007 11 12 | 704 | 0.1-  | 0.3-  |
| 2002 01 08 | 645 | 0.0   | 0.1+  | 2003 04 07 | 644 | 0.2+  | 0.1+  | 2007 11 12 | 704 | 0.3-  | 0.3+  |
| 2003 01 26 | 704 | 0.3+  | 0.5+  | 2003 04 10 | 704 | 0.4+  | 0.5+  | 2007 11 30 | D29 | 0.1+  | 0.2-  |
| 2003 01 26 | 704 | 1.2+  | 0.4+  | 2003 04 10 | 704 | 0.3-  | 1.1+  | 2007 11 30 | D29 | 0.3-  | 0.3-  |
| 2003 01 26 | 704 | 0.1+  | 1.4+  | 2003 04 10 | 704 | 0.5+  | 0.4+  | 2007 11 30 | D29 | 0.4+  | 0.3-  |
| 2003 01 26 | 704 | 0.4+  | 0.4+  | 2003 04 10 | 704 | 0.9+  | 1.0+  | 2007 11 30 | D29 | 0.1+  | 0.6-  |
| 2003 02 26 | 704 | 0.3-  | 0.1-  | 2003 04 10 | 704 | (0.9- | 1.9+) | 2007 12 04 | 704 | 0.4+  | 0.1-  |
| 2003 02 26 | 704 | 0.1-  | 0.3-  | 2004 05 23 | 704 | 0.2+  | 0.7+  | 2007 12 04 | 704 | 0.5+  | 0.1-  |
| 2003 02 26 | 704 | 0.0   | 0.4-  | 2004 05 23 | 704 | 0.9+  | 1.3+  | 2007 12 04 | 704 | 0.1+  | 0.1-  |
| 2003 02 26 | 704 | 0.1-  | 0.2+  | 2004 05 23 | 704 | 0.5+  | 0.6+  | 2007 12 04 | 704 | 1.0+  | 0.8-  |
| 2003 03 09 | 644 | 0.5-  | 0.3-  | 2004 05 23 | 704 | (0.4+ | 2.4+) | 2007 12 04 | 704 | 0.8+  | 0.2+  |
| 2003 03 09 | 644 | 0.4-  | 0.3-  | 2006 08 15 | E12 | 0.2+  | 0.0   | 2007 12 15 | 691 | 0.2-  | 0.0   |
| 2003 03 09 | 644 | 0.3-  | 0.2-  | 2006 08 15 | E12 | 0.6-  | 0.7+  | 2007 12 15 | 691 | 0.4-  | 0.2+  |
| 2003 03 13 | 704 | (4.8+ | 2.4-) | 2006 08 15 | E12 | 0.5-  | 0.2-  | 2007 12 15 | 691 | 0.3+  | 0.0   |
| 2003 03 13 | 704 | (5.4+ | 4.0-) | 2006 08 15 | E12 | 0.3-  | 0.9+  |            |     |       |       |
| 2003 03 13 | 704 | (5.4+ | 1.7-) | 2007 10 13 | 704 | 1.3+  | 0.4+  |            |     |       |       |

(172018)\* 2001 UL<sub>137</sub> = 2005 JJ<sub>145</sub>

Discovered 2001 Oct. 23 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 75194)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 93.18278   |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.17778230 | $\omega$ | 113.19867 |     | +0.68216863  |     | +0.73106044  |
| $a$ | 3.1323988  | $\Omega$ | 199.83554 |     | -0.68506015  |     | +0.63230620  |
| $e$ | 0.0689731  | $i$      | 2.36819   |     | -0.25561406  |     | +0.25639713  |
| $P$ | 5.54       | $H$      | 15.4      | $G$ | 0.15         | $U$ | 0            |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 04 16 | 691 | 0.3- | 0.4+ | 2005 05 15 | G96 | 0.1-  | 0.5+  | 2006 09 27 | G96 | 0.4- | 0.6+ |
| 1999 04 16 | 691 | 0.5+ | 0.7+ | 2005 05 20 | G96 | 0.2-  | 0.3+  | 2006 09 27 | G96 | 0.2+ | 0.2+ |
| 1999 04 16 | 691 | 0.5+ | 0.7+ | 2005 05 20 | G96 | (1.0+ | 1.8+) | 2006 09 27 | G96 | 0.1- | 0.6- |
| 2001 09 23 | 704 | 0.3+ | 0.4+ | 2005 05 20 | G96 | 0.4-  | 0.2+  | 2007 09 10 | G96 | 0.1+ | 0.1+ |
| 2001 09 23 | 704 | 0.7+ | 1.4+ | 2005 05 20 | G96 | 0.2+  | 0.4+  | 2007 09 10 | G96 | 0.2- | 0.0  |
| 2001 09 23 | 704 | 0.3- | 0.5+ | 2006 08 13 | 644 | 0.3+  | 0.1-  | 2007 09 10 | G96 | 0.3- | 0.4- |
| 2001 10 14 | 291 | 1.1- | 0.0  | 2006 08 13 | 644 | 0.4+  | 0.2-  | 2007 09 10 | G96 | 0.4- | 0.2- |
| 2001 10 14 | 291 | 0.8- | 0.0  | 2006 08 13 | 644 | 0.0   | 0.1-  | 2007 10 31 | G96 | 0.2+ | 0.3- |
| 2001 10 14 | 291 | 0.5- | 0.1- | 2006 08 13 | 644 | 0.1-  | 0.8-  | 2007 10 31 | G96 | 0.1+ | 0.9- |
| 2001 10 18 | 644 | 1.3+ | 0.5+ | 2006 08 13 | 644 | 0.1-  | 0.1-  | 2007 10 31 | G96 | 0.6+ | 0.3- |
| 2001 10 18 | 644 | 0.7+ | 0.9+ | 2006 08 13 | 644 | 0.0   | 0.0   | 2007 10 31 | G96 | 0.1+ | 0.5- |
| 2001 10 18 | 644 | 0.8+ | 1.0+ | 2006 08 19 | 691 | 0.1+  | 0.3+  | 2007 11 08 | 691 | 0.3- | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 23 | 704 | (1.8+ | 1.0+) | 2006 08 19 | 691 | 0.4+ | 0.3+ | 2007 11 08 | 691 | 0.4- | 0.1- |
| 2001 10 23 | 704 | 0.2+  | 0.2+  | 2006 08 19 | 691 | 0.2+ | 0.3+ | 2007 11 08 | 691 | 0.4- | 0.2- |
| 2001 10 23 | 704 | 0.6+  | 0.7+  | 2006 08 28 | 703 | 0.3+ | 0.7- | 2007 11 14 | 704 | 0.1+ | 0.6+ |
| 2001 10 23 | 704 | 0.8+  | 0.7+  | 2006 08 28 | 703 | 0.8- | 0.3+ | 2007 11 14 | 704 | 0.6+ | 0.3+ |
| 2001 10 24 | 704 | 0.4-  | 1.0-  | 2006 08 28 | 703 | 0.1- | 0.2+ | 2007 11 14 | 704 | 0.7+ | 0.8+ |
| 2001 10 24 | 704 | 0.8+  | 0.3+  | 2006 08 28 | 703 | 0.1- | 1.4- | 2007 11 14 | 704 | 0.5+ | 0.8+ |
| 2001 10 24 | 704 | 1.1+  | 0.8+  | 2006 09 26 | G96 | 0.1- | 0.3- | 2007 12 05 | 704 | 0.2+ | 0.4+ |
| 2001 10 24 | 704 | 0.1+  | 1.0+  | 2006 09 26 | G96 | 0.3+ | 0.3- | 2007 12 05 | 704 | 0.5+ | 0.0  |
| 2005 05 15 | G96 | 0.1+  | 0.2-  | 2006 09 26 | G96 | 0.1+ | 0.4- | 2007 12 05 | 704 | 0.2+ | 0.6+ |
| 2005 05 15 | G96 | 0.0   | 0.0   | 2006 09 26 | G96 | 1.3- | 0.6+ | 2007 12 05 | 704 | 0.6+ | 1.2+ |
| 2005 05 15 | G96 | 0.2+  | 0.4+  | 2006 09 27 | G96 | 0.6- | 0.1- | 2007 12 05 | 704 | 0.2+ | 0.6+ |

(172019)\* 2001 UP<sub>163</sub> = 2001 UL<sub>78</sub>

Discovered 2001 Oct. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. B. G. Marsden (d, *MPO* 21170)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 318.89742  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17499047 | $\omega$ | 68.32826 |     | -0.20556393 |     | -0.97404417 |
| $a$ | 3.1656273  | $\Omega$ | 33.97501 |     | +0.82347939 |     | -0.22448404 |
| $e$ | 0.0684432  | $i$      | 9.76379  |     | +0.52879595 |     | -0.02906673 |
| $P$ | 5.63       | $H$      | 15.6     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 704 | 0.2+  | 0.7-  | 2001 10 24 | 704 | 0.2+ | 1.0+ | 2007 10 21 | G96 | 0.2+ | 0.3- |
| 2001 09 21 | 704 | 1.0-  | 0.1+  | 2001 10 24 | 704 | 0.3+ | 1.0+ | 2007 10 21 | G96 | 0.2+ | 0.3- |
| 2001 09 21 | 704 | 0.2-  | 0.7-  | 2001 11 15 | 691 | 0.1- | 0.5- | 2007 10 21 | G96 | 0.1+ | 0.1- |
| 2001 09 21 | 704 | (1.6- | 0.4-) | 2001 11 15 | 691 | 0.0  | 0.4- | 2007 11 17 | G96 | 0.1+ | 0.4- |
| 2001 10 17 | 704 | 1.1+  | 1.1+  | 2001 11 15 | 691 | 0.3- | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.4- |
| 2001 10 17 | 704 | 0.3+  | 0.9+  | 2002 12 06 | 645 | 0.0  | 0.1- | 2007 11 17 | G96 | 0.0  | 0.4- |
| 2001 10 17 | 704 | 0.1-  | 0.8+  | 2002 12 06 | 645 | 0.1- | 0.1- | 2007 11 17 | G96 | 0.1- | 0.3- |
| 2001 10 20 | 704 | 1.2-  | 1.0+  | 2003 01 10 | 704 | 0.8+ | 0.8+ | 2007 11 20 | 704 | 0.4+ | 0.3+ |
| 2001 10 20 | 704 | 0.4-  | 0.9+  | 2003 01 10 | 704 | 0.4- | 0.1- | 2007 11 20 | 704 | 1.3+ | 0.3+ |
| 2001 10 20 | 704 | 0.3+  | 0.7+  | 2003 01 10 | 704 | 0.1- | 0.8+ | 2007 11 20 | 704 | 0.5+ | 0.5+ |
| 2001 10 20 | 704 | 0.6-  | 0.3+  | 2003 01 10 | 704 | 0.2- | 1.3+ | 2007 12 13 | 704 | 0.4- | 0.3+ |
| 2001 10 22 | 704 | 1.1-  | 0.0   | 2003 01 10 | 704 | 0.0  | 0.6- | 2007 12 13 | 704 | 0.2- | 0.6- |
| 2001 10 22 | 704 | 0.6-  | 1.4+  | 2004 04 13 | 691 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.2+ | 0.1- |
| 2001 10 22 | 704 | 0.1-  | 0.4+  | 2004 04 13 | 691 | 0.4+ | 0.2+ | 2007 12 13 | 704 | 0.3- | 0.0  |
| 2001 10 23 | 704 | (1.1- | 2.5+) | 2004 04 13 | 691 | 0.1+ | 0.3+ | 2007 12 13 | 704 | 0.3- | 0.2+ |
| 2001 10 23 | 704 | 0.3-  | 1.4+  | 2004 05 10 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.5- | 0.5+ |
| 2001 10 23 | 704 | 0.5-  | 1.4+  | 2004 05 10 | 691 | 0.1+ | 0.5+ | 2007 12 15 | 704 | 0.9- | 0.1- |
| 2001 10 24 | 704 | 0.7+  | 0.1+  | 2004 05 10 | 691 | 0.3+ | 0.5+ | 2007 12 15 | 704 | 0.1+ | 0.0  |
| 2001 10 24 | 704 | 0.2-  | 0.5+  | 2007 10 21 | G96 | 0.1+ | 0.3- | 2007 12 15 | 704 | 0.3- | 0.1+ |

(172020)\* 2001 UN<sub>187</sub> = 2003 AE<sub>89</sub>

Discovered 2001 Oct. 17 by NEAT at Palomar.

Id. A. Doppler (*MPO* 46851)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 290.98788  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.18283507 | $\omega$ | 104.63521 |     | -0.67644169 |     | -0.73172138 |
| $a$ | 3.0744189  | $\Omega$ | 28.49095  |     | +0.58995786 |     | -0.60639333 |
| $e$ | 0.0734464  | $i$      | 10.10915  |     | +0.44088135 |     | -0.31124098 |
| $P$ | 5.39       | $H$      | 15.5      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 26 | 704 | 0.6+ | 0.7+ | 2004 03 20 | 699 | 0.4+  | 1.3+  | 2007 11 05 | D29 | 0.4+ | 0.8- |
| 2001 09 26 | 704 | 0.3- | 0.9+ | 2004 03 20 | 699 | (1.6- | 2.0-) | 2007 11 07 | 704 | 0.0  | 1.1- |
| 2001 09 26 | 704 | 0.6- | 0.5- | 2004 03 21 | 691 | 0.1+  | 0.2+  | 2007 11 07 | 704 | 0.1- | 0.2+ |
| 2001 10 14 | 645 | 0.1- | 0.2+ | 2004 03 21 | 691 | 0.2+  | 0.3+  | 2007 11 07 | 704 | 0.0  | 0.5- |
| 2001 10 14 | 645 | 0.1- | 0.2+ | 2004 03 21 | 691 | 0.1+  | 0.1+  | 2007 11 07 | 704 | 1.4- | 0.4+ |
| 2001 10 15 | 645 | 0.1- | 0.1+ | 2004 03 22 | 704 | (2.2+ | 0.0 ) | 2007 11 12 | G96 | 0.1- | 0.3- |
| 2001 10 15 | 645 | 0.2- | 0.1+ | 2004 03 22 | 704 | 1.3+  | 0.5+  | 2007 11 12 | G96 | 0.0  | 0.4- |
| 2001 10 17 | 644 | 0.2- | 0.3+ | 2004 03 22 | 704 | 1.3+  | 0.2-  | 2007 11 12 | G96 | 0.1+ | 0.3- |
| 2001 10 17 | 644 | 0.1- | 0.4+ | 2004 03 22 | 704 | (2.2+ | 0.1-) | 2007 11 12 | G96 | 0.2- | 0.3- |
| 2001 10 17 | 644 | 0.3- | 0.6+ | 2004 03 22 | 704 | (1.9+ | 1.1-) | 2007 11 17 | 704 | 0.9+ | 0.7+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 20 | 704 | 0.6−  | 1.0+  | 2004 03 24 | 699 | 0.0   | 0.1−  | 2007 11 17 | 704 | 0.5− | 0.3+ |
| 2001 10 20 | 704 | 0.1−  | 0.7+  | 2004 03 24 | 699 | 1.1+  | 1.0+  | 2007 11 17 | 704 | 0.1+ | 1.2+ |
| 2001 10 20 | 704 | 0.9−  | 1.4+  | 2004 03 24 | 699 | 0.9+  | 0.4−  | 2007 11 17 | 704 | 0.7+ | 0.9+ |
| 2001 10 20 | 704 | (0.0  | 1.9+) | 2004 03 24 | 699 | 1.1+  | 0.9+  | 2007 11 17 | 704 | 0.1− | 0.1− |
| 2001 10 20 | 704 | 0.5+  | 1.2+  | 2004 03 28 | 704 | 0.6+  | 0.8+  | 2007 11 20 | 704 | 0.6+ | 1.1+ |
| 2002 12 03 | 644 | 0.2−  | 0.2−  | 2004 03 28 | 704 | 0.3+  | 0.3+  | 2007 11 20 | 704 | 0.1− | 0.9+ |
| 2002 12 03 | 644 | 0.1−  | 0.1−  | 2004 03 28 | 704 | 0.4+  | 0.9+  | 2007 11 20 | 704 | 1.2− | 0.5+ |
| 2002 12 03 | 644 | 0.1−  | 0.4+  | 2004 03 28 | 704 | 0.1−  | 0.4+  | 2007 11 20 | 704 | 0.7− | 0.3+ |
| 2003 01 04 | 704 | 0.1−  | 0.7+  | 2004 04 15 | 699 | (0.1+ | 2.0+) | 2007 11 20 | 704 | 0.1− | 0.7+ |
| 2003 01 04 | 704 | 0.1−  | 0.6−  | 2004 04 15 | 699 | (0.9+ | 1.6+) | 2007 11 20 | G96 | 0.1− | 0.2− |
| 2003 01 04 | 704 | 0.7−  | 1.0−  | 2004 04 15 | 699 | 0.3+  | 1.0+  | 2007 11 20 | G96 | 0.2+ | 0.2− |
| 2003 01 04 | 704 | 0.5−  | 0.1+  | 2004 04 15 | 699 | (1.8− | 0.5+) | 2007 11 20 | G96 | 0.0  | 0.4− |
| 2003 01 04 | 704 | 0.1−  | 0.4−  | 2004 04 19 | 704 | 0.5+  | 0.9+  | 2007 11 20 | G96 | 0.2+ | 0.4− |
| 2003 01 10 | 704 | 0.9+  | 0.2−  | 2004 04 19 | 704 | 0.4+  | 0.2+  | 2007 12 13 | 704 | 0.2+ | 0.3+ |
| 2003 01 10 | 704 | 0.3+  | 0.1−  | 2004 04 19 | 704 | 0.5+  | 0.3+  | 2007 12 13 | 704 | 0.5− | 0.3+ |
| 2003 01 10 | 704 | 0.9+  | 0.5+  | 2004 04 19 | 704 | 0.6−  | 0.2−  | 2007 12 13 | 704 | 0.1− | 0.9+ |
| 2003 01 10 | 704 | 0.1+  | 0.3+  | 2004 04 20 | 704 | 0.3+  | 0.7+  | 2007 12 13 | 704 | 0.5− | 0.7+ |
| 2004 03 19 | 704 | 0.7−  | 0.1+  | 2004 04 20 | 704 | 1.0+  | 0.6+  | 2007 12 13 | 704 | 0.1+ | 0.2− |
| 2004 03 19 | 704 | 0.3−  | 0.6+  | 2004 04 20 | 704 | 0.5+  | 1.5+  | 2007 12 16 | 704 | 0.9+ | 0.6− |
| 2004 03 19 | 704 | (0.3− | 2.0+) | 2004 04 20 | 704 | 0.7+  | 1.4+  | 2007 12 16 | 704 | 0.5+ | 0.7− |
| 2004 03 19 | 704 | 0.7−  | 0.2+  | 2004 04 20 | 704 | 0.6+  | 1.4+  | 2007 12 16 | 704 | 0.1− | 0.7− |
| 2004 03 19 | 704 | 0.5−  | 0.9+  | 2007 11 05 | D29 | 0.2−  | 0.2−  | 2007 12 16 | 704 | 0.8+ | 0.4− |
| 2004 03 20 | 699 | (1.5− | 1.2+) | 2007 11 05 | D29 | 0.2+  | 0.4−  |            |     |      |      |
| 2004 03 20 | 699 | 0.1+  | 0.4+  | 2007 11 05 | D29 | 0.0   | 0.8−  |            |     |      |      |

(172021)\* 2001 UQ<sub>204</sub> = 2004 FJ<sub>45</sub>

Discovered 2001 Oct. 19 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61183)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |  |  |  | Q |  |  |  |
|-----|--|--|--|---|--|--|--|
| P   |  |  |  | Q |  |  |  |
| M   |  |  |  | Q |  |  |  |
| n   |  |  |  | Q |  |  |  |
| a   |  |  |  | Q |  |  |  |
| e   |  |  |  | Q |  |  |  |
| P   |  |  |  | Q |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 04 25 | 691 | 0.7+  | 0.4+  | 2002 12 28 | 704 | 0.0   | 0.4−  | 2006 08 16 | 644 | 0.7−  | 0.2+  |
| 1993 04 25 | 691 | 0.6+  | 0.5+  | 2002 12 28 | 704 | 0.2−  | 0.5+  | 2006 09 18 | 703 | 0.6−  | 0.2−  |
| 1993 04 25 | 691 | 0.1+  | 0.7+  | 2002 12 28 | 704 | 0.3+  | 0.6+  | 2006 09 18 | 703 | 1.0−  | 0.1+  |
| 1998 03 25 | 704 | 0.4−  | 1.0+  | 2004 03 16 | 704 | 0.7+  | 0.7+  | 2006 09 18 | 703 | 0.9−  | 0.4+  |
| 1998 03 25 | 704 | 0.2+  | 0.6+  | 2004 03 16 | 704 | (1.8+ | 0.4+) | 2006 09 18 | 703 | 0.8−  | 0.8+  |
| 1998 03 25 | 704 | 0.0   | 1.0+  | 2004 03 16 | 704 | 0.5+  | 0.8−  | 2006 09 26 | 703 | 0.1+  | 1.0+  |
| 1998 03 25 | 704 | (3.7− | 0.0 ) | 2004 03 20 | 704 | 0.8+  | 0.3+  | 2006 09 26 | 703 | 0.4−  | 1.2+  |
| 2001 10 14 | 704 | 0.9−  | 0.5+  | 2004 03 20 | 704 | 0.1+  | 0.4+  | 2006 09 26 | 703 | 0.9−  | 0.6+  |
| 2001 10 14 | 704 | 1.1−  | 0.9+  | 2004 03 20 | 704 | (1.9+ | 0.2+) | 2006 09 26 | 703 | 0.6+  | 0.4+  |
| 2001 10 14 | 704 | (0.9− | 1.5+) | 2004 03 20 | 704 | 0.7+  | 0.2+  | 2006 09 26 | 703 | 1.1−  | 0.8+  |
| 2001 10 14 | 704 | 0.9−  | 0.9+  | 2004 03 20 | 704 | 0.4+  | 0.3+  | 2006 09 26 | 703 | 0.1−  | 0.5+  |
| 2001 10 14 | 704 | 0.4−  | 0.9+  | 2004 03 22 | 699 | (1.9+ | 1.9−) | 2006 09 26 | 703 | (1.2− | 2.1−) |
| 2001 10 19 | 644 | 0.5−  | 0.0   | 2004 03 22 | 699 | 0.7−  | 0.7+  | 2006 09 26 | 703 | 0.7−  | 0.0   |
| 2001 10 19 | 644 | 0.8−  | 0.4−  | 2004 03 22 | 704 | 0.9+  | 0.8+  | 2006 10 11 | 644 | 0.0   | 0.7+  |
| 2001 10 19 | 644 | 1.2−  | 0.1+  | 2004 03 22 | 699 | 0.1−  | 0.1+  | 2006 10 11 | 644 | 0.1−  | 0.2+  |
| 2001 10 21 | 704 | 0.3+  | 1.2+  | 2004 03 22 | 704 | 0.5+  | 0.5+  | 2006 10 11 | 644 | 0.2−  | 0.2+  |
| 2001 10 21 | 704 | 0.2−  | 1.1+  | 2004 03 22 | 704 | 0.0   | 0.2−  | 2007 11 09 | 704 | 0.1+  | 0.4+  |
| 2001 10 21 | 704 | 0.2−  | 1.3+  | 2004 03 22 | 699 | 0.2+  | 1.0+  | 2007 11 09 | 704 | 0.4+  | 1.1−  |
| 2001 10 21 | 704 | 0.1−  | 0.9+  | 2004 03 22 | 704 | 0.5+  | 0.3+  | 2007 11 09 | 704 | 0.2+  | 0.2−  |
| 2001 10 21 | 704 | (0.5+ | 1.8+) | 2004 04 19 | 704 | 0.3+  | 1.1+  | 2007 11 09 | 704 | 0.3+  | 0.9+  |
| 2001 11 10 | 704 | 0.3−  | 0.3−  | 2004 04 19 | 704 | (1.7+ | 0.2−) | 2007 12 03 | 704 | 0.8+  | 1.1+  |
| 2001 11 10 | 704 | 0.6+  | 0.5−  | 2004 04 19 | 704 | 0.1+  | 0.7+  | 2007 12 03 | 704 | (1.1− | 1.6+) |
| 2001 11 10 | 704 | 0.6−  | 0.1+  | 2004 04 19 | 704 | 0.1+  | 0.0   | 2007 12 03 | 704 | 1.0−  | 0.1+  |
| 2001 12 10 | 704 | 1.4+  | 0.2+  | 2004 04 19 | 704 | 0.6+  | 0.3+  | 2007 12 03 | 704 | (2.3− | 1.6+) |
| 2001 12 10 | 704 | 0.2+  | 0.7+  | 2006 08 16 | 644 | 0.3−  | 0.4+  |            |     |       |       |
| 2001 12 10 | 704 | 0.2−  | 0.8+  | 2006 08 16 | 644 | 0.0   | 0.3+  |            |     |       |       |

(172022)\* 2001 UZ<sub>209</sub>

Discovered 2001 Oct. 20 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |  |  |  | Q |  |  |  |
|-----|--|--|--|---|--|--|--|
| P   |  |  |  | Q |  |  |  |
| M   |  |  |  | Q |  |  |  |
| n   |  |  |  | Q |  |  |  |
| a   |  |  |  | Q |  |  |  |
| e   |  |  |  | Q |  |  |  |
| P   |  |  |  | Q |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 03 09 | 809 | (1.6+ | 2.2−) | 2003 02 24 | 608 | 0.7+  | 0.1−  | 2006 10 11 | E12 | 0.3+  | 0.7+  |
| 2001 08 25 | 644 | 0.3+  | 0.4+  | 2003 02 24 | 608 | 0.8+  | 0.5−  | 2007 11 08 | 703 | 0.4+  | 0.1−  |
| 2001 08 25 | 644 | 0.4+  | 0.4+  | 2003 03 08 | 699 | 0.6−  | 0.0   | 2007 11 08 | 703 | (1.8+ | 0.2+) |
| 2001 08 25 | 644 | 0.3+  | 0.2+  | 2003 03 08 | 699 | (0.1+ | 1.9+) | 2007 11 08 | 703 | 0.6+  | 0.8+  |
| 2001 09 18 | 644 | 0.3−  | 0.0   | 2003 03 08 | 699 | 1.3−  | 0.2+  | 2007 11 08 | 703 | 0.8−  | 0.6+  |
| 2001 09 18 | 644 | 0.3−  | 0.2−  | 2003 03 08 | 699 | 0.2−  | 0.4+  | 2007 11 09 | 703 | 1.4−  | 1.3+  |
| 2001 09 18 | 644 | 0.2+  | 0.2+  | 2003 03 13 | 608 | 0.2−  | 0.2−  | 2007 11 09 | 703 | 1.0+  | 0.3+  |
| 2001 10 11 | 704 | 0.7−  | 0.2+  | 2003 03 13 | 608 | 0.2+  | 0.5−  | 2007 11 09 | 703 | 0.3+  | 0.1−  |
| 2001 10 11 | 704 | 0.3−  | 0.3−  | 2003 03 13 | 608 | 0.1+  | 0.3−  | 2007 11 09 | 703 | 1.1+  | 1.5+  |
| 2001 10 11 | 704 | 0.3−  | 0.5+  | 2006 08 30 | 699 | 0.7−  | 0.4+  | 2007 11 11 | 704 | 0.2+  | 1.1−  |
| 2001 10 11 | 704 | 0.1+  | 0.4+  | 2006 08 30 | 699 | 1.0−  | 0.0   | 2007 11 11 | 704 | 0.9+  | 0.4+  |
| 2001 10 11 | 704 | 1.2−  | 0.3+  | 2006 08 30 | 699 | 0.1−  | 1.0+  | 2007 11 11 | 704 | 0.7+  | 0.5−  |
| 2001 10 20 | 608 | 0.4+  | 1.0−  | 2006 09 20 | 703 | 0.2+  | 0.5+  | 2007 11 11 | 704 | 0.0   | 0.0   |
| 2001 10 20 | 608 | 0.2+  | 1.0−  | 2006 09 20 | 703 | 0.6+  | 0.5+  | 2007 11 11 | 704 | 1.5+  | 0.5−  |
| 2001 10 20 | 608 | 0.1−  | 0.6−  | 2006 09 20 | 703 | 0.2+  | 0.6+  | 2007 11 19 | 703 | 0.5−  | 0.3+  |
| 2001 10 23 | 699 | 0.9+  | 0.7−  | 2006 09 20 | 703 | 0.7+  | 0.4−  | 2007 11 19 | 703 | 1.3−  | 0.9+  |
| 2001 10 23 | 699 | 0.7+  | 0.1−  | 2006 09 26 | 703 | 0.3+  | 0.3−  | 2007 11 19 | 703 | 1.0−  | 0.2+  |
| 2001 10 23 | 699 | 0.1+  | 0.3+  | 2006 09 26 | 703 | 0.2+  | 0.3+  | 2007 11 19 | 703 | 0.1−  | 0.4+  |
| 2001 10 23 | 699 | 0.2−  | 0.2−  | 2006 09 26 | 703 | 0.8−  | 0.2−  | 2007 12 16 | 699 | 0.7−  | 0.0   |
| 2003 02 11 | 608 | 0.2+  | 1.1+  | 2006 09 26 | 703 | 0.8+  | 0.6−  | 2007 12 16 | 699 | 0.3−  | 0.5−  |
| 2003 02 11 | 608 | 0.0   | 0.1−  | 2006 10 11 | E12 | 0.7−  | 0.4−  | 2007 12 16 | 699 | 0.6−  | 0.8−  |
| 2003 02 11 | 608 | 0.7+  | 0.5+  | 2006 10 11 | E12 | 0.5−  | 0.4−  | 2007 12 16 | 699 | 0.1+  | 0.8−  |
| 2003 02 24 | 608 | (0.9+ | 1.5+) | 2006 10 11 | E12 | 0.2+  | 0.3−  |            |     |       |       |

(172023)\* 2001 UV<sub>211</sub> = 1999 KC<sub>4</sub>

Discovered 2001 Oct. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 33494)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |  |  |  | Q |  |  |  |
|-----|--|--|--|---|--|--|--|
| P   |  |  |  | Q |  |  |  |
| M   |  |  |  | Q |  |  |  |
| n   |  |  |  | Q |  |  |  |
| a   |  |  |  | Q |  |  |  |
| e   |  |  |  | Q |  |  |  |
| P   |  |  |  | Q |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 01 10 | 691 | (6.6+ | 2.4+) | 2001 10 23 | 049 | 0.6−  | 0.4−  | 2006 09 17 | 703 | 0.3+  | 0.3+  |
| 1997 01 10 | 691 | 0.3−  | 0.1+  | 2001 10 23 | 049 | 0.7−  | 0.7−  | 2006 09 17 | 703 | 0.4−  | 0.4+  |
| 1997 01 10 | 691 | 0.2−  | 0.2+  | 2001 11 19 | 704 | 0.0   | 1.2+  | 2006 09 29 | 699 | 0.6+  | 0.7+  |
| 1999 05 18 | 691 | 0.3−  | 0.3+  | 2001 11 19 | 704 | (1.7+ | 1.7+) | 2006 09 29 | 699 | (1.5+ | 2.3+) |
| 1999 05 18 | 691 | 0.0   | 0.2+  | 2001 11 19 | 704 | (0.2− | 1.8+) | 2006 09 29 | 699 | 0.6+  | 0.1+  |
| 1999 05 18 | 691 | 0.1+  | 0.1+  | 2001 11 19 | 704 | (0.7− | 1.9+) | 2006 09 29 | 699 | 0.4+  | 0.7−  |
| 1999 05 21 | 691 | 0.1−  | 0.3+  | 2001 11 20 | 691 | 0.4+  | 0.6−  | 2006 10 11 | 691 | 0.0   | 0.0   |
| 1999 05 21 | 691 | 0.1−  | 0.0   | 2001 11 20 | 691 | 0.0   | 0.3−  | 2006 10 11 | 691 | 0.2+  | 0.5+  |
| 1999 05 21 | 691 | 0.4+  | 0.1−  | 2001 11 20 | 691 | 0.3+  | 0.2−  | 2006 10 11 | 691 | 0.0   | 0.4+  |
| 2000 05 31 | 691 | 0.2+  | 0.1+  | 2001 11 21 | 704 | (0.7− | 1.6+) | 2006 10 21 | 691 | 0.5−  | 0.1+  |
| 2000 05 31 | 691 | 0.1+  | 0.5−  | 2001 11 21 | 704 | 0.7−  | 1.2+  | 2006 10 21 | 691 | 0.4−  | 0.2−  |
| 2000 05 31 | 691 | 0.2+  | 0.0   | 2001 11 21 | 704 | 0.1−  | 1.3+  | 2006 10 21 | 691 | 0.2−  | 0.1+  |
| 2001 10 13 | 691 | 0.1+  | 0.3+  | 2001 11 21 | 704 | 0.3−  | 0.9+  | 2006 10 23 | 691 | 0.2−  | 0.1−  |
| 2001 10 13 | 691 | 0.1+  | 0.5+  | 2001 11 21 | 704 | 0.0   | 1.0+  | 2006 10 23 | 691 | 0.0   | 0.1−  |
| 2001 10 13 | 691 | 0.2+  | 0.6+  | 2004 03 27 | 704 | 0.2−  | 1.3+  | 2006 10 23 | 691 | 0.3−  | 0.0   |
| 2001 10 21 | 704 | 0.7+  | 0.5−  | 2004 03 27 | 704 | 0.1+  | 1.2+  | 2007 11 08 | 691 | 0.0   | 0.2−  |
| 2001 10 21 | 704 | 0.2−  | 0.1−  | 2004 03 27 | 704 | 0.4+  | 0.2+  | 2007 11 08 | 691 | 0.0   | 0.2−  |
| 2001 10 21 | 704 | 0.2+  | 0.3+  | 2004 03 27 | 704 | 1.0+  | 0.6+  | 2007 11 08 | 691 | 0.1+  | 0.1−  |
| 2001 10 21 | 704 | 0.5+  | 0.0   | 2004 03 27 | 704 | 0.3+  | 0.7+  | 2007 11 20 | 691 | 0.1−  | 0.1+  |
| 2001 10 21 | 704 | 0.0   | 1.0−  | 2006 09 17 | 703 | 0.1+  | 0.7−  | 2007 11 20 | 691 | 0.5+  | 0.3+  |
| 2001 10 23 | 049 | 1.1−  | 0.7−  | 2006 09 17 | 703 | 0.1−  | 0.1+  | 2007 11 20 | 691 | 0.4+  | 0.3−  |

2007 DEC. 24

M.P.O. 129239

(172024)\* 2001 UF<sub>214</sub>

Discovered 2001 Oct. 23 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 104.50918 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.17902241 | $\omega$ | 224.31745 | +0.60695180 | +0.79355892 |
| <i>a</i>  | 3.1179163  | $\Omega$ | 83.09954  | -0.71650540 | +0.56995700 |
| <i>e</i>  | 0.1160724  | <i>i</i> | 2.49905   | -0.34384521 | +0.21310388 |
| <i>P</i>  | 5.51       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 08 29 | 809 | 0.4-  | 0.0   | 2004 02 23 | 704 | 0.4-  | 0.9+  | 2006 08 30 | 699 | 0.5-  | 0.9+  |
| 2000 07 07 | 704 | 0.7-  | 1.8+  | 2004 02 23 | 704 | 0.5+  | 0.1+  | 2006 08 30 | 699 | 0.1-  | 0.3+  |
| 2000 07 07 | 704 | 0.3+  | 2.0+  | 2004 02 23 | 704 | (1.1+ | 1.5+) | 2006 09 14 | 703 | 0.5-  | 0.7-  |
| 2000 07 07 | 704 | 1.1+  | 1.1+  | 2004 02 23 | 704 | 0.9+  | 0.0   | 2006 09 14 | 703 | 0.0   | 0.2-  |
| 2001 09 19 | 704 | 0.8+  | 0.1+  | 2004 03 18 | 691 | 0.2+  | 0.2+  | 2006 09 14 | 703 | 1.2+  | 0.4-  |
| 2001 09 19 | 704 | 0.3-  | 0.2+  | 2004 03 18 | 691 | 0.2+  | 0.5+  | 2006 09 14 | 703 | 0.3-  | 0.2-  |
| 2001 09 19 | 704 | 0.6-  | 0.9+  | 2004 03 18 | 691 | 0.0   | 0.3+  | 2006 09 30 | 703 | (2.4- | 0.5-) |
| 2001 09 19 | 704 | 1.0-  | 1.4+  | 2005 06 06 | 691 | 0.1+  | 0.4+  | 2006 09 30 | 703 | 1.1+  | 1.1-  |
| 2001 10 18 | 644 | 0.5+  | 0.2-  | 2005 06 06 | 691 | 0.2-  | 0.1+  | 2006 09 30 | 703 | 0.2-  | 0.9-  |
| 2001 10 18 | 644 | 0.8+  | 0.1+  | 2005 06 06 | 691 | 0.1-  | 0.0   | 2006 09 30 | 703 | 0.5-  | 0.0   |
| 2001 10 18 | 644 | 0.5+  | 0.1-  | 2006 08 23 | 644 | 0.1-  | 0.1-  | 2007 09 15 | G96 | (2.5- | 2.4+) |
| 2001 10 23 | 704 | 0.6-  | 0.4-  | 2006 08 23 | 644 | 0.3+  | 0.6+  | 2007 09 15 | G96 | 0.0   | 0.4-  |
| 2001 10 23 | 704 | 0.3-  | 0.0   | 2006 08 23 | 644 | 0.2-  | 0.1+  | 2007 09 15 | G96 | 0.6+  | 0.1+  |
| 2001 10 23 | 704 | 0.3+  | 0.8+  | 2006 08 24 | 644 | 0.2+  | 0.2+  | 2007 09 15 | G96 | 0.1+  | 0.3-  |
| 2001 10 23 | 704 | 0.5-  | 0.4+  | 2006 08 24 | 644 | 0.2+  | 0.4+  | 2007 12 03 | 703 | 0.7-  | 1.5+  |
| 2001 10 24 | 704 | 0.1+  | 0.0   | 2006 08 24 | 644 | 0.2-  | 0.4+  | 2007 12 03 | 703 | 0.9+  | 1.0+  |
| 2001 10 24 | 704 | 0.6-  | 0.2+  | 2006 08 28 | 703 | 0.2+  | 0.1-  | 2007 12 03 | 703 | 0.1-  | 0.2+  |
| 2001 10 24 | 704 | 0.6-  | 1.1+  | 2006 08 28 | 703 | 1.0-  | 0.2+  | 2007 12 03 | 703 | 0.7-  | 0.7+  |
| 2001 10 24 | 704 | (0.2+ | 2.5+) | 2006 08 28 | 703 | 0.0   | 0.6-  | 2007 12 04 | G96 | 0.0   | 0.2-  |
| 2001 11 21 | 704 | 0.3+  | 0.6-  | 2006 08 28 | 703 | 0.1-  | 0.3+  | 2007 12 04 | G96 | 0.0   | 0.1-  |
| 2001 11 21 | 704 | 1.2-  | 0.4-  | 2006 08 30 | 699 | 1.1+  | 0.2-  | 2007 12 04 | G96 | 0.0   | 0.9+  |
| 2001 11 21 | 704 | (0.4- | 1.5+) | 2006 08 30 | 699 | 0.0   | 0.4+  | 2007 12 04 | G96 | 0.0   | 0.1+  |

(172025)\* 2001 UL<sub>214</sub>

Discovered 2001 Oct. 23 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 204.84564 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.17647755 | $\omega$ | 31.10528  | -0.80237963 | +0.59677814 |
| <i>a</i>  | 3.1478189  | $\Omega$ | 185.54776 | -0.56053028 | -0.75731642 |
| <i>e</i>  | 0.0974075  | <i>i</i> | 3.87966   | -0.20492130 | -0.26519370 |
| <i>P</i>  | 5.58       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 18 | 644 | 0.3+  | 0.5+  | 2004 03 17 | 691 | 0.1-  | 0.2+  | 2006 09 16 | 699 | 0.9-  | 1.1+  |
| 2001 10 18 | 644 | 0.4+  | 0.2+  | 2004 03 18 | 704 | 0.5+  | 0.1-  | 2006 09 16 | 699 | 0.4-  | 0.0   |
| 2001 10 18 | 644 | 0.2+  | 0.1+  | 2004 03 18 | 704 | 0.4+  | 0.5-  | 2006 09 16 | 699 | 1.0+  | 1.0+  |
| 2001 10 23 | 704 | 0.1+  | 0.1+  | 2004 03 18 | 704 | (1.2+ | 1.9+) | 2006 09 16 | 699 | 0.9+  | 1.2+  |
| 2001 10 23 | 704 | 0.2+  | 0.2-  | 2004 03 18 | 704 | 1.1+  | 0.3-  | 2006 09 25 | 699 | 0.3+  | 1.1+  |
| 2001 10 23 | 704 | 0.3+  | 0.2+  | 2004 03 18 | 704 | 0.3+  | 1.4+  | 2006 09 25 | 699 | 0.2-  | 0.3-  |
| 2001 10 23 | 704 | 0.1+  | 1.2+  | 2004 03 23 | 704 | 0.4+  | 0.3+  | 2006 09 25 | 699 | (0.4- | 1.7+) |
| 2001 10 23 | 704 | 0.3-  | 0.8+  | 2004 03 23 | 704 | 0.6+  | 0.4+  | 2006 09 25 | G96 | 0.3-  | 0.0   |
| 2001 10 26 | 291 | 0.1+  | 0.1+  | 2004 03 23 | 704 | 0.1+  | 0.8+  | 2006 09 25 | G96 | 0.2-  | 0.0   |
| 2001 10 26 | 291 | 0.4+  | 0.4+  | 2004 03 23 | 704 | 0.4+  | 0.4+  | 2006 09 25 | G96 | 0.1+  | 0.1+  |
| 2001 10 26 | 291 | 0.4-  | 0.5+  | 2004 03 23 | 704 | 0.7+  | 0.6+  | 2006 09 25 | 699 | (2.7+ | 0.9-) |
| 2001 11 14 | 691 | 0.2+  | 0.1+  | 2004 03 24 | 699 | 0.0   | 0.1+  | 2006 09 25 | G96 | 0.1-  | 0.1+  |
| 2001 11 14 | 691 | 0.0   | 0.5+  | 2004 03 24 | 699 | 0.4+  | 0.6+  | 2006 09 30 | 691 | 0.1-  | 0.4+  |
| 2001 11 14 | 691 | 0.2+  | 0.1+  | 2004 03 24 | 699 | 0.1+  | 0.2-  | 2006 09 30 | 691 | 0.2-  | 0.3+  |
| 2001 11 20 | 704 | 1.3-  | 0.5+  | 2004 03 24 | 699 | 0.2+  | 0.1+  | 2006 09 30 | 691 | 0.1+  | 0.1+  |
| 2001 11 20 | 704 | 0.3-  | 0.2+  | 2004 03 26 | 691 | 0.0   | 0.1+  | 2006 10 16 | G96 | 0.3-  | 0.3+  |
| 2001 11 20 | 704 | 0.6-  | 0.1+  | 2004 03 26 | 691 | 0.3-  | 0.1-  | 2006 10 16 | G96 | 0.4-  | 0.2-  |
| 2001 11 20 | 704 | 0.7-  | 0.1-  | 2004 03 26 | 691 | 0.0   | 0.3+  | 2006 10 16 | G96 | 0.6-  | 0.4-  |
| 2001 11 21 | 704 | (1.9- | 0.3+) | 2004 03 27 | 704 | 0.3+  | 0.5-  | 2006 10 16 | G96 | 0.2-  | 0.1-  |
| 2001 11 21 | 704 | 1.5-  | 0.1-  | 2004 03 27 | 704 | 0.3+  | 0.2-  | 2006 10 27 | G96 | 0.4-  | 0.0   |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 11 21 | 704 | 0.7-  | 0.3-  | 2004 03 27 | 704 | 0.2+ | 0.2+ | 2006 10 27 | G96 | 0.3-  | 0.2-  |
| 2001 11 21 | 704 | 0.7-  | 0.2+  | 2004 03 27 | 704 | 0.3+ | 0.1+ | 2006 10 27 | G96 | 0.3+  | 0.1+  |
| 2004 02 26 | 704 | 0.7+  | 1.0+  | 2004 03 27 | 704 | 0.3+ | 0.6- | 2006 10 27 | G96 | 0.1-  | 0.2+  |
| 2004 02 26 | 704 | 0.5+  | 0.1-  | 2004 04 12 | 644 | 0.2+ | 0.6+ | 2007 10 24 | G96 | 0.4+  | 1.0-  |
| 2004 02 26 | 704 | 0.0   | 1.0+  | 2004 04 12 | 691 | 0.0  | 0.4+ | 2007 10 24 | G96 | 0.0   | 0.4-  |
| 2004 02 26 | 704 | (0.5+ | 1.9+) | 2004 04 12 | 644 | 0.1+ | 0.5+ | 2007 10 24 | G96 | 0.6+  | 0.7-  |
| 2004 02 26 | 704 | 0.5+  | 1.0+  | 2004 04 12 | 691 | 0.0  | 0.5+ | 2007 10 24 | G96 | 0.4-  | 0.6-  |
| 2004 03 11 | 673 | 0.4+  | 0.3+  | 2004 04 12 | 644 | 0.2+ | 0.7+ | 2007 11 04 | 704 | 0.1-  | 0.5+  |
| 2004 03 11 | 673 | 0.8+  | 0.1+  | 2004 04 12 | 691 | 0.1+ | 0.4+ | 2007 11 04 | 704 | 0.1-  | 0.2-  |
| 2004 03 11 | 673 | 0.7-  | 0.7+  | 2004 04 15 | 699 | 0.0  | 0.0  | 2007 11 04 | 704 | 0.1+  | 0.7+  |
| 2004 03 12 | 673 | 0.0   | 0.3+  | 2004 04 15 | 699 | 0.8- | 0.7+ | 2007 11 05 | 704 | 0.4-  | 0.9-  |
| 2004 03 12 | 673 | 0.1-  | 0.3+  | 2004 04 15 | 699 | 0.1- | 0.3+ | 2007 11 05 | 704 | 0.5-  | 0.4+  |
| 2004 03 12 | 673 | 0.1-  | 0.3+  | 2004 04 15 | 699 | 0.6- | 0.2+ | 2007 11 05 | 704 | (0.7- | 3.1+) |
| 2004 03 15 | 703 | 0.4-  | 0.8+  | 2004 04 21 | 704 | 1.4+ | 0.8+ | 2007 11 05 | 704 | 1.0-  | 0.2+  |
| 2004 03 15 | 703 | 1.1+  | 0.3+  | 2004 04 21 | 704 | 0.3+ | 0.1+ | 2007 11 05 | 704 | 0.8-  | 0.8+  |
| 2004 03 15 | 703 | (1.9+ | 0.1-) | 2004 04 21 | 704 | 0.4+ | 0.7+ | 2007 11 20 | G96 | 0.1-  | 0.6-  |
| 2004 03 15 | 703 | (2.3+ | 1.7-) | 2004 04 21 | 704 | 0.6- | 1.0+ | 2007 11 20 | G96 | 0.5+  | 0.7-  |
| 2004 03 16 | 704 | 0.3+  | 0.5+  | 2006 08 28 | 691 | 0.2- | 0.3+ | 2007 11 20 | G96 | 0.1-  | 0.5-  |
| 2004 03 16 | 704 | 0.4-  | 0.8+  | 2006 08 28 | 691 | 0.3- | 0.5+ | 2007 11 20 | G96 | 0.5+  | 0.6-  |
| 2004 03 16 | 704 | (2.6- | 1.0+) | 2006 08 28 | 691 | 0.4- | 0.6+ | 2007 12 04 | 704 | 0.9+  | 0.5-  |
| 2004 03 16 | 704 | 0.1-  | 0.3-  | 2006 09 15 | 691 | 0.0  | 0.6+ | 2007 12 04 | 704 | 0.3+  | 0.5-  |
| 2004 03 17 | 691 | 0.1+  | 0.2+  | 2006 09 15 | 691 | 0.2- | 0.4+ | 2007 12 04 | 704 | 0.9+  | 0.3+  |
| 2004 03 17 | 691 | 0.1-  | 0.2+  | 2006 09 15 | 691 | 0.1- | 0.6+ | 2007 12 04 | 704 | 0.2+  | 0.6-  |

(172026)\* 2001 VF<sub>1</sub>

Discovered 2001 Nov. 6 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | <i>P</i> |           | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| 45.82454 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.18534133 | $\omega$ | 284.61974 | +0.90485768 | -0.27918149 |
| <i>a</i> | 3.0466404  | $\Omega$ | 92.39300  | +0.39028047 | +0.84555111 |
| <i>e</i> | 0.2960216  | <i>i</i> | 18.76386  | -0.17004037 | +0.45508352 |
| <i>P</i> | 5.32       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 19 | 704 | 0.9+  | 0.6+  | 2001 11 07 | 704 | 0.3+  | 0.1-  | 2007 11 07 | G96 | 0.1+  | 0.2-  |
| 2001 08 19 | 704 | 1.0+  | 0.7-  | 2001 11 07 | 704 | 0.3-  | 0.3+  | 2007 11 07 | G96 | 0.1+  | 0.1-  |
| 2001 08 19 | 704 | (2.2+ | 1.3-) | 2003 01 24 | 644 | (0.2+ | 1.7+) | 2007 11 07 | G96 | 0.2+  | 0.3-  |
| 2001 08 19 | 704 | (2.4+ | 1.3-) | 2003 01 24 | 644 | 0.1+  | 1.2+  | 2007 11 21 | G96 | 0.1-  | 0.0   |
| 2001 09 11 | 704 | 0.6+  | 1.2-  | 2003 01 24 | 644 | (0.4+ | 1.6+) | 2007 11 21 | G96 | 0.3+  | 0.3-  |
| 2001 09 11 | 704 | 0.7-  | 1.3+  | 2003 01 29 | 644 | (0.2- | 1.7+) | 2007 11 21 | G96 | 0.1+  | 0.0   |
| 2001 09 11 | 704 | 0.6+  | 0.4+  | 2003 01 29 | 644 | (0.0  | 1.6+) | 2007 11 21 | G96 | 0.1-  | 0.2-  |
| 2001 09 23 | 644 | 0.3-  | 0.1-  | 2003 01 29 | 644 | 0.2-  | 1.2+  | 2007 12 04 | 699 | 0.2-  | 0.4+  |
| 2001 09 23 | 644 | 0.1-  | 0.1-  | 2006 05 28 | E12 | 0.2-  | 0.1+  | 2007 12 04 | 699 | 1.3-  | 0.3+  |
| 2001 09 23 | 644 | 0.0   | 0.3-  | 2006 05 28 | E12 | 0.0   | 0.5+  | 2007 12 04 | 699 | 1.0-  | 0.0   |
| 2001 09 25 | 699 | 0.6-  | 0.9+  | 2006 05 28 | E12 | 0.1+  | 0.4-  | 2007 12 04 | 699 | 0.9+  | 0.3-  |
| 2001 09 25 | 699 | 0.4-  | 0.6+  | 2006 05 28 | E12 | (0.3- | 1.6+) | 2007 12 05 | 691 | 0.5-  | 0.3+  |
| 2001 09 25 | 699 | 0.4-  | 0.3+  | 2006 07 26 | E12 | 0.1+  | 0.8+  | 2007 12 05 | 691 | 0.3-  | 0.1-  |
| 2001 09 25 | 699 | 0.3-  | 0.2+  | 2006 07 26 | E12 | 0.3-  | 0.1+  | 2007 12 05 | 691 | 0.2-  | 0.2-  |
| 2001 10 18 | 699 | 0.3-  | 1.2-  | 2006 07 26 | E12 | 0.2-  | 0.1-  | 2007 12 13 | 704 | 1.3+  | 0.2-  |
| 2001 10 18 | 699 | 0.1-  | 0.3-  | 2006 08 26 | E12 | 0.1-  | 1.0+  | 2007 12 13 | 704 | 1.5+  | 0.1+  |
| 2001 10 18 | 699 | 0.3+  | 0.2+  | 2006 08 26 | E12 | 0.3+  | 0.4+  | 2007 12 13 | 704 | 1.0+  | 0.6+  |
| 2001 10 18 | 699 | 0.6-  | 0.5-  | 2006 08 26 | E12 | 0.0   | 0.1+  | 2007 12 13 | 704 | (1.6+ | 0.6+) |
| 2001 11 06 | 704 | 0.8+  | 0.1-  | 2006 08 26 | E12 | 0.8-  | 0.1-  | 2007 12 13 | 704 | 1.2+  | 0.5-  |
| 2001 11 06 | 704 | 0.0   | 0.3+  | 2006 09 27 | E12 | 0.7-  | 0.1+  | 2007 12 15 | 704 | 0.2-  | 0.8+  |
| 2001 11 06 | 704 | 0.6+  | 0.5-  | 2006 09 27 | E12 | 0.3+  | 0.4-  | 2007 12 15 | 704 | 0.2+  | 0.3-  |
| 2001 11 07 | 704 | 0.1-  | 0.6+  | 2006 09 27 | E12 | 0.1+  | 0.2-  | 2007 12 15 | 704 | 0.7-  | 0.7+  |
| 2001 11 07 | 704 | 0.6-  | 0.2-  | 2006 09 27 | E12 | 1.1+  | 0.0   | 2007 12 15 | 704 | 1.0+  | 0.6-  |
| 2001 11 07 | 704 | 0.0   | 0.1+  | 2007 11 07 | G96 | 0.2+  | 0.1-  | 2007 12 15 | 704 | 0.0   | 0.0   |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 80.43460   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18804684 | $\omega$ 54.93384  | +0.93115724   | +0.33016808 |
| <i>a</i> | 3.0173477  | $\Omega$ 285.35098 | -0.36431631   | +0.82522854 |
| <i>e</i> | 0.2844260  | <i>i</i> 9.23209   | -0.01482657   | +0.45824327 |
| <i>P</i> | 5.24       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 22 | 704 | 0.5-  | 0.6-  | 2001 11 12 | 704 | 0.8-  | 0.7+  | 2006 09 11 | 703 | 0.3+  | 0.6-  |
| 2001 08 22 | 704 | 0.4-  | 0.1-  | 2001 11 12 | 704 | 0.7-  | 0.7+  | 2006 09 11 | 703 | 1.0-  | 0.3-  |
| 2001 08 22 | 704 | 0.7-  | 0.2-  | 2001 12 07 | 644 | 0.1-  | 0.1-  | 2006 09 11 | 703 | 0.2-  | 0.2+  |
| 2001 08 22 | 704 | 0.2+  | 0.3+  | 2001 12 07 | 644 | 0.1+  | 0.3-  | 2006 09 11 | 703 | 0.1+  | 0.2+  |
| 2001 08 28 | 644 | 0.4+  | 0.7+  | 2001 12 07 | 644 | 0.4+  | 0.0   | 2006 09 15 | 704 | 0.5+  | 0.0   |
| 2001 08 28 | 644 | 0.5+  | 0.9+  | 2001 12 10 | 704 | 0.6-  | 0.4-  | 2006 09 15 | 704 | 0.6+  | 0.5+  |
| 2001 08 28 | 644 | 0.5+  | 0.8+  | 2001 12 10 | 704 | 0.4-  | 0.8-  | 2006 09 15 | 704 | 0.7-  | 0.1+  |
| 2001 09 10 | 704 | 0.2-  | 0.6-  | 2001 12 10 | 704 | 0.3-  | 0.5-  | 2006 09 15 | 704 | 0.5+  | 0.3+  |
| 2001 09 10 | 704 | 0.4-  | 0.3-  | 2001 12 10 | 704 | 0.3-  | 0.4+  | 2006 09 15 | 704 | 0.1+  | 0.2+  |
| 2001 09 10 | 704 | 0.9-  | 0.5+  | 2001 12 10 | 704 | 0.7-  | 0.2-  | 2006 09 15 | 704 | 0.3-  | 0.3+  |
| 2001 09 10 | 704 | (2.0- | 0.9-) | 2002 01 09 | 704 | 0.3+  | 0.9-  | 2006 09 15 | 704 | 0.3-  | 0.0   |
| 2001 09 18 | 644 | 0.2+  | 0.4-  | 2002 01 09 | 704 | 0.1+  | 0.8-  | 2006 09 15 | 704 | 0.3+  | 0.2+  |
| 2001 09 18 | 644 | 0.2+  | 0.0   | 2002 01 09 | 704 | 0.2+  | 0.3-  | 2006 09 15 | 704 | 0.0   | 0.1-  |
| 2001 09 18 | 644 | 0.1+  | 0.2+  | 2002 01 09 | 704 | (1.7+ | 0.1+) | 2006 09 15 | 704 | 0.1+  | 0.9+  |
| 2001 09 21 | 699 | 0.0   | 0.9+  | 2004 03 16 | 691 | 0.1+  | 0.2+  | 2006 09 20 | 699 | 0.2-  | 0.2+  |
| 2001 09 21 | 699 | 0.0   | 0.2+  | 2004 03 16 | 691 | 0.2+  | 0.2+  | 2006 09 20 | 699 | 0.1-  | 0.1-  |
| 2001 09 21 | 699 | 0.0   | 0.2+  | 2004 03 16 | 691 | 0.0   | 0.0   | 2006 09 20 | 699 | 0.3+  | 0.2+  |
| 2001 09 21 | 699 | 0.0   | 0.4+  | 2006 07 01 | 703 | 0.3-  | 0.7-  | 2006 10 01 | 703 | 0.1-  | 0.5-  |
| 2001 09 25 | 704 | 0.3+  | 0.2-  | 2006 07 01 | 703 | (0.6- | 2.1-) | 2006 10 01 | 703 | 0.4-  | 0.6-  |
| 2001 09 25 | 704 | 0.1+  | 0.7+  | 2006 07 01 | 703 | 0.2-  | 0.3-  | 2006 10 01 | 703 | 0.4+  | 0.4-  |
| 2001 09 25 | 704 | 0.2+  | 0.3+  | 2006 07 01 | 703 | 0.1-  | 0.4-  | 2006 10 01 | 703 | 0.1+  | 0.2-  |
| 2001 09 25 | 704 | 0.1+  | 0.6+  | 2006 07 21 | 704 | 0.9-  | 0.4+  | 2006 10 11 | 644 | 0.3+  | 0.1+  |
| 2001 09 25 | 704 | 0.2+  | 0.7+  | 2006 07 21 | 704 | 0.6+  | 1.0+  | 2006 10 11 | 644 | 0.2+  | 0.0   |
| 2001 10 18 | 704 | 0.3+  | 1.5-  | 2006 07 21 | 704 | 0.7+  | 0.1-  | 2006 10 11 | 644 | 0.4+  | 0.1+  |
| 2001 10 18 | 704 | (0.1- | 1.9-) | 2006 07 21 | 704 | 0.2-  | 0.1-  | 2006 11 13 | 703 | 0.3-  | 0.1-  |
| 2001 10 18 | 704 | (0.2+ | 2.7-) | 2006 07 21 | 704 | 0.1+  | 0.2+  | 2006 11 13 | 703 | 0.4+  | 0.2+  |
| 2001 10 18 | 704 | (0.5+ | 2.4-) | 2006 07 24 | 704 | 0.1-  | 0.9-  | 2006 11 13 | 703 | 0.1-  | 0.1+  |
| 2001 10 18 | 704 | (0.3- | 2.0-) | 2006 07 24 | 704 | 0.4+  | 0.7-  | 2006 11 13 | 703 | 0.0   | 0.5-  |
| 2001 11 10 | 704 | 0.4+  | 0.0   | 2006 07 24 | 704 | 0.7-  | 0.5-  | 2006 12 11 | 703 | 0.2+  | 0.1-  |
| 2001 11 10 | 704 | 1.0+  | 0.1+  | 2006 07 24 | 704 | 0.0   | 0.3+  | 2006 12 11 | 703 | 1.0+  | 0.3-  |
| 2001 11 10 | 704 | 0.4+  | 0.3-  | 2006 08 19 | 644 | 0.1-  | 0.1+  | 2006 12 11 | 703 | 0.8-  | 0.3-  |
| 2001 11 10 | 704 | 0.0   | 0.3-  | 2006 08 19 | 644 | 0.5-  | 0.2-  | 2006 12 11 | 703 | 0.1+  | 1.3+  |
| 2001 11 11 | 699 | 0.2+  | 0.2+  | 2006 08 19 | 644 | 0.7-  | 0.2-  | 2007 01 16 | 703 | (2.9- | 2.6+) |
| 2001 11 11 | 699 | 0.5-  | 0.0   | 2006 08 27 | 699 | 0.4+  | 0.0   | 2007 01 16 | 703 | 0.4+  | 0.9-  |
| 2001 11 11 | 699 | 0.4-  | 0.6-  | 2006 08 27 | 699 | 0.1+  | 0.1+  | 2007 01 16 | 703 | (1.7- | 1.9-) |
| 2001 11 11 | 704 | 1.2+  | 0.6+  | 2006 08 27 | 699 | 0.6+  | 0.4+  | 2007 01 16 | 703 | (2.2+ | 3.2-) |
| 2001 11 11 | 704 | (2.3+ | 0.3+) | 2006 08 27 | 699 | (0.4+ | 1.6-) | 2007 11 02 | G96 | 0.7+  | 0.1-  |
| 2001 11 11 | 699 | 0.6-  | 0.3-  | 2006 08 28 | 704 | 0.2+  | 0.1-  | 2007 11 02 | G96 | 0.4+  | 0.3-  |
| 2001 11 11 | 704 | 0.2+  | 0.3+  | 2006 08 28 | 704 | 0.1+  | 0.5+  | 2007 11 02 | G96 | 0.6+  | 0.0   |
| 2001 11 11 | 704 | 1.1+  | 0.5-  | 2006 08 28 | 704 | 0.3-  | 0.3-  | 2007 11 02 | G96 | 0.9+  | 0.1-  |
| 2001 11 11 | 644 | 0.3+  | 0.3-  | 2006 08 28 | 704 | 0.2+  | 0.3+  | 2007 12 03 | 691 | 0.0   | 0.3+  |
| 2001 11 11 | 644 | 0.3+  | 0.4-  | 2006 08 28 | 704 | 0.3-  | 0.0   | 2007 12 03 | 691 | 0.2-  | 0.1+  |
| 2001 11 11 | 644 | 0.3+  | 0.1-  | 2006 08 30 | 699 | 0.1+  | 0.1+  | 2007 12 03 | 691 | 0.2-  | 0.0   |
| 2001 11 12 | 704 | 0.5-  | 0.7+  | 2006 08 30 | 699 | 0.0   | 0.2-  | 2007 12 15 | 691 | 0.5-  | 0.2+  |
| 2001 11 12 | 704 | 0.7-  | 0.7+  | 2006 08 30 | 699 | 0.1+  | 0.1-  | 2007 12 15 | 691 | 0.1+  | 0.3-  |
| 2001 11 12 | 704 | 0.8-  | 0.4+  | 2006 08 30 | 699 | 0.0   | 0.3-  | 2007 12 15 | 691 | 0.1+  | 0.2-  |

**(172028)\* 2001 VL<sub>23</sub> = 1993 FO<sub>85</sub>**

Discovered 2001 Nov. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 103261)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 60.81883   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18876918 | $\omega$ 63.11758  | +0.74559609   | -0.66636502 |
| <i>a</i> | 3.0096454  | $\Omega$ 338.66744 | +0.60474686   | +0.68077184 |
| <i>e</i> | 0.1825856  | <i>i</i> 1.04633   | +0.27994232   | +0.30415021 |
| <i>P</i> | 5.22       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 03 22 | 809 | 0.1- | 1.2+ | 2006 07 22 | G96 | 0.8-  | 0.1-  | 2006 10 28 | G96 | 0.4+  | 0.5-  |
| 2001 10 21 | 704 | 0.2+ | 0.4- | 2006 07 22 | G96 | 0.3-  | 0.1+  | 2006 10 28 | G96 | 0.2+  | 0.5-  |
| 2001 10 21 | 704 | 0.4+ | 1.2- | 2006 07 22 | G96 | 0.1-  | 0.3-  | 2006 10 28 | G96 | 0.4+  | 0.5-  |
| 2001 10 21 | 704 | 0.3+ | 0.5- | 2006 07 22 | G96 | 0.8-  | 0.2-  | 2006 11 07 | 644 | 0.1+  | 0.2-  |
| 2001 10 21 | 704 | 0.2+ | 0.5- | 2006 07 22 | G96 | 0.2-  | 0.1+  | 2006 11 07 | 644 | 0.2+  | 0.1-  |
| 2001 11 09 | 704 | 0.5- | 0.5- | 2006 07 22 | G96 | (1.8- | 0.6-) | 2006 11 07 | 644 | 0.6+  | 0.2-  |
| 2001 11 09 | 704 | 0.2+ | 0.1- | 2006 07 22 | G96 | 0.2-  | 0.3-  | 2006 11 09 | 644 | 0.3+  | 0.0   |
| 2001 11 09 | 704 | 0.8+ | 0.2- | 2006 09 18 | 691 | 0.4-  | 0.2+  | 2006 11 09 | 644 | 0.3+  | 0.0   |
| 2001 11 09 | 704 | 0.7- | 0.9- | 2006 09 18 | 691 | 0.2-  | 0.2-  | 2006 11 09 | 644 | 0.3+  | 0.1-  |
| 2001 11 09 | 704 | 0.0  | 0.1- | 2006 09 18 | 691 | 0.4-  | 0.2+  | 2006 11 11 | 691 | 0.1-  | 0.0   |
| 2001 11 09 | 644 | 0.0  | 0.1+ | 2006 09 24 | 691 | 0.1+  | 0.1+  | 2006 11 11 | 691 | 0.1-  | 0.0   |
| 2001 11 09 | 644 | 0.1- | 0.1- | 2006 09 24 | 691 | 0.2+  | 0.1+  | 2006 11 11 | 691 | 0.1-  | 0.0   |
| 2001 11 09 | 644 | 0.2- | 0.2- | 2006 09 24 | 691 | 0.1-  | 0.0   | 2006 11 11 | 703 | 0.1-  | 1.3+  |
| 2001 11 12 | 704 | 0.2+ | 0.5+ | 2006 09 26 | 152 | (1.3- | 1.5+) | 2006 11 11 | 703 | 0.2+  | 0.1-  |
| 2001 11 12 | 704 | 0.1+ | 0.6+ | 2006 09 26 | 152 | 0.0   | 0.4-  | 2006 11 11 | 703 | 0.9+  | 0.8+  |
| 2001 11 12 | 704 | 0.3+ | 1.1+ | 2006 09 27 | 152 | 0.3+  | 0.3+  | 2006 11 11 | 703 | 0.7+  | 0.4-  |
| 2001 11 12 | 704 | 0.1- | 0.8+ | 2006 09 27 | 704 | 0.2+  | 0.6+  | 2006 11 13 | G96 | 0.2+  | 0.5-  |
| 2001 11 19 | 704 | 0.3+ | 0.3+ | 2006 09 27 | 704 | 0.4+  | 0.9+  | 2006 11 13 | G96 | 0.4+  | 0.3-  |
| 2001 11 19 | 704 | 0.2+ | 0.1+ | 2006 09 27 | 704 | 0.3-  | 0.9+  | 2006 11 13 | G96 | 0.0   | 0.2-  |
| 2001 11 19 | 704 | 0.2+ | 0.3- | 2006 09 27 | 704 | 0.3-  | 0.0   | 2006 11 13 | G96 | 0.1+  | 0.4-  |
| 2001 11 19 | 704 | 0.1+ | 0.1+ | 2006 09 27 | 704 | 1.1-  | 0.8+  | 2006 11 17 | 703 | 0.1-  | 0.9-  |
| 2001 11 19 | 704 | 0.4+ | 0.2+ | 2006 10 11 | 691 | 0.0   | 0.3-  | 2006 11 17 | 703 | 0.8+  | 0.4-  |
| 2001 11 20 | 704 | 1.0- | 0.3- | 2006 10 11 | 691 | 0.3+  | 0.0   | 2006 11 17 | 703 | 0.0   | 1.1+  |
| 2001 11 20 | 704 | 0.6- | 0.4+ | 2006 10 11 | 691 | 0.1-  | 0.1-  | 2006 11 17 | 703 | 0.0   | 0.1+  |
| 2001 11 20 | 704 | 1.1- | 1.0+ | 2006 10 16 | 683 | 0.5-  | 1.0-  | 2006 11 18 | 691 | 0.1+  | 0.1+  |
| 2001 11 20 | 704 | 0.5- | 0.4+ | 2006 10 16 | 683 | (0.4+ | 2.3-) | 2006 11 18 | 691 | 0.1-  | 0.1-  |
| 2001 11 20 | 704 | 0.0  | 0.2+ | 2006 10 16 | 683 | 0.4+  | 0.0   | 2006 11 18 | 691 | 0.1-  | 0.0   |
| 2001 11 21 | 704 | 0.7- | 0.2+ | 2006 10 19 | 644 | (0.7- | 1.8-) | 2006 11 20 | 691 | 0.0   | 0.1-  |
| 2001 11 21 | 704 | 0.8- | 0.3+ | 2006 10 19 | 644 | 0.1-  | 0.4-  | 2006 11 20 | 691 | 0.2+  | 0.0   |
| 2001 11 21 | 704 | 0.4- | 0.0  | 2006 10 19 | 644 | 0.1+  | 0.1-  | 2006 11 20 | G96 | 0.2+  | 0.6-  |
| 2001 11 21 | 704 | 0.7- | 0.8+ | 2006 10 20 | 683 | 0.1+  | 0.6-  | 2006 11 20 | 691 | 0.0   | 0.0   |
| 2001 11 21 | 704 | 0.9- | 0.9+ | 2006 10 20 | 683 | 0.4+  | 1.3-  | 2006 11 20 | G96 | 0.1-  | 0.5-  |
| 2001 11 21 | 608 | 0.1+ | 1.3+ | 2006 10 20 | 683 | 1.3-  | 0.4+  | 2006 11 20 | G96 | 0.3+  | 0.4-  |
| 2001 11 21 | 608 | 0.4+ | 0.1+ | 2006 10 20 | 644 | 0.3+  | 0.2+  | 2006 11 20 | G96 | 0.1-  | 0.5-  |
| 2001 11 21 | 608 | 0.7+ | 0.6- | 2006 10 20 | 644 | 0.2+  | 0.2-  | 2006 11 21 | 704 | (0.5+ | 2.4-) |
| 2001 12 13 | 644 | 0.0  | 0.5- | 2006 10 20 | 644 | 0.1-  | 0.0   | 2006 11 21 | 704 | 0.7-  | 0.1-  |
| 2001 12 13 | 644 | 0.0  | 0.3- | 2006 10 20 | 644 | 0.2+  | 0.1+  | 2006 11 21 | 704 | 0.4-  | 0.7+  |
| 2001 12 13 | 644 | 0.6+ | 0.2+ | 2006 10 20 | 644 | 0.1+  | 0.0   | 2006 11 21 | 704 | 0.1-  | 0.0   |
| 2001 12 15 | 704 | 0.0  | 0.5+ | 2006 10 20 | 644 | 0.1+  | 0.1+  | 2006 12 13 | G96 | 0.2+  | 0.6-  |
| 2001 12 15 | 704 | 0.4- | 0.1+ | 2006 10 21 | 703 | 0.9-  | 0.2+  | 2006 12 13 | G96 | 0.3+  | 0.4-  |
| 2001 12 15 | 704 | 0.5- | 0.0  | 2006 10 21 | 703 | 0.3-  | 0.6-  | 2006 12 13 | G96 | 0.0   | 0.5-  |
| 2001 12 15 | 704 | 0.1- | 0.2+ | 2006 10 21 | 703 | 0.3-  | 1.0-  | 2006 12 13 | G96 | 0.1+  | 0.7-  |
| 2001 12 15 | 704 | 0.1- | 0.1+ | 2006 10 21 | 703 | 0.8+  | 0.2-  | 2006 12 25 | 703 | 0.1+  | 1.2+  |
| 2001 12 18 | 704 | 0.2- | 0.1+ | 2006 10 21 | 644 | 0.2+  | 0.1-  | 2006 12 25 | 703 | 0.2+  | 0.8+  |
| 2001 12 18 | 704 | 0.1+ | 0.3+ | 2006 10 21 | 644 | 0.3+  | 0.3-  | 2006 12 25 | 703 | 0.9-  | 0.6-  |
| 2001 12 18 | 704 | 0.1- | 0.7+ | 2006 10 21 | 644 | 0.2+  | 0.2-  | 2006 12 25 | 703 | 1.2+  | 0.7+  |
| 2001 12 18 | 704 | 0.3- | 0.0  | 2006 10 22 | 683 | 0.5-  | 0.3-  | 2007 01 09 | G96 | 0.1+  | 0.4-  |
| 2001 12 18 | 704 | 0.1- | 0.4+ | 2006 10 22 | 683 | 0.5-  | 1.5+  | 2007 01 09 | G96 | 0.1-  | 0.2+  |
| 2001 12 19 | 704 | 0.2- | 0.2+ | 2006 10 22 | 683 | 0.3+  | 1.2+  | 2007 01 09 | G96 | 0.2-  | 0.1-  |
| 2001 12 19 | 704 | 0.6+ | 0.7+ | 2006 10 23 | 704 | 0.2+  | 0.2+  | 2007 01 09 | G96 | 0.2+  | 0.4-  |
| 2001 12 19 | 704 | 0.5+ | 0.4+ | 2006 10 23 | 683 | 0.0   | 0.4+  | 2007 10 16 | G96 | 0.3-  | 0.3-  |
| 2001 12 19 | 704 | 0.2+ | 0.3+ | 2006 10 23 | 704 | 0.4-  | 0.7+  | 2007 10 16 | G96 | 0.2+  | 0.5-  |
| 2002 01 14 | 704 | 0.3+ | 0.1+ | 2006 10 23 | 683 | 0.8+  | 0.8+  | 2007 10 16 | G96 | 0.0   | 0.5-  |
| 2002 01 14 | 704 | 0.6+ | 0.2+ | 2006 10 23 | 683 | 0.0   | 0.9+  | 2007 10 16 | G96 | 0.1+  | 0.7-  |
| 2002 01 14 | 704 | 0.5+ | 0.4+ | 2006 10 23 | 704 | 0.0   | 1.1+  | 2007 12 05 | G96 | 0.4-  | 0.9-  |
| 2002 01 14 | 704 | 0.7+ | 0.4+ | 2006 10 23 | 704 | 0.2+  | 0.2+  | 2007 12 05 | G96 | 0.7-  | 0.4-  |
| 2004 04 22 | 691 | 0.2+ | 0.4+ | 2006 10 26 | 224 | 0.2+  | 0.7+  | 2007 12 05 | G96 | 0.7-  | 0.5-  |
| 2004 04 22 | 691 | 0.2+ | 0.3+ | 2006 10 26 | 224 | (0.4+ | 1.7+) | 2007 12 05 | G96 | 0.6-  | 0.1-  |
| 2004 04 22 | 691 | 0.2+ | 0.4+ | 2006 10 26 | 224 | (1.9+ | 1.3+) |            |     |       |       |
| 2006 07 22 | G96 | 0.8- | 0.3- | 2006 10 28 | G96 | 0.1-  | 0.5-  |            |     |       |       |

2007 DEC. 24

M.P.O. 129241

|                                         |            |          |                |             |       |                |             |       |  |  |
|-----------------------------------------|------------|----------|----------------|-------------|-------|----------------|-------------|-------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |       |                |             |       |  |  |
| $M$                                     | 61.52238   | (2000.0) |                | <b>P</b>    |       |                | <b>Q</b>    |       |  |  |
| $n$                                     | 0.17490423 | $\omega$ | 314.31328      | +0.92514404 |       |                | −0.23725538 |       |  |  |
| $a$                                     | 3.1666678  | $\Omega$ | 61.54133       | +0.36489946 |       |                | +0.77103968 |       |  |  |
| $e$                                     | 0.0998239  | $i$      | 19.69866       | −0.10467522 |       |                | +0.59093799 |       |  |  |
| $P$                                     | 5.64       | $H$      | 14.9           | $G$         | 0.15  | $U$            |             | 1     |  |  |
| Residuals in seconds of arc             |            |          |                |             |       |                |             |       |  |  |
| 2001 11 09 704                          | 1.4+       | 0.5+     | 2001 12 18 704 | 0.1+        | 0.2−  | 2006 09 27 703 | 1.2−        | 0.2−  |  |  |
| 2001 11 09 704                          | 0.6+       | 0.5−     | 2001 12 19 704 | 0.4−        | 0.1−  | 2006 09 27 703 | 0.6−        | 0.3+  |  |  |
| 2001 11 09 704                          | 0.2−       | 0.3+     | 2001 12 19 704 | 0.5−        | 0.3+  | 2006 09 27 703 | 0.3−        | 0.2−  |  |  |
| 2001 11 09 704                          | 0.7+       | 0.2−     | 2001 12 19 704 | 1.1−        | 0.6+  | 2006 09 27 703 | 0.3−        | 0.2−  |  |  |
| 2001 11 12 704                          | 0.8−       | 0.4+     | 2001 12 19 704 | 1.0−        | 0.4+  | 2006 09 27 703 | 0.1+        | 0.0   |  |  |
| 2001 11 12 704                          | 0.3+       | 0.3+     | 2001 12 20 704 | 0.6−        | 0.8+  | 2006 10 25 E12 | 0.2+        | 0.3−  |  |  |
| 2001 11 12 704                          | 0.2+       | 0.3+     | 2001 12 20 704 | 0.3+        | 0.3+  | 2006 10 25 E12 | 0.9+        | 0.2−  |  |  |
| 2001 11 12 704                          | 0.1−       | 0.3+     | 2001 12 20 704 | 0.5+        | 0.4+  | 2006 10 25 E12 | 0.0         | 0.2−  |  |  |
| 2001 11 12 704                          | 0.3+       | 0.2+     | 2001 12 20 704 | 0.4+        | 0.8+  | 2006 10 25 E12 | (1.7+       | 0.6+) |  |  |
| 2001 11 19 704                          | 0.3−       | 0.2−     | 2002 01 08 704 | 0.2−        | 0.1+  | 2006 10 31 703 | 0.3−        | 0.6+  |  |  |
| 2001 11 19 704                          | 1.1−       | 1.0+     | 2002 01 08 704 | 0.0         | 1.1−  | 2006 10 31 703 | 0.7+        | 0.7−  |  |  |
| 2001 11 19 704                          | 0.0        | 0.5+     | 2002 01 08 704 | (0.7−       | 2.5−) | 2006 10 31 703 | (1.6−       | 1.0+) |  |  |
| 2001 11 21 704                          | 0.5+       | 0.6−     | 2002 01 08 704 | 0.8−        | 0.6−  | 2006 10 31 703 | 0.4+        | 0.9+  |  |  |
| 2001 11 21 704                          | 0.4−       | 0.8−     | 2003 03 24 645 | 0.1−        | 0.0   | 2007 11 16 704 | 0.1−        | 0.5+  |  |  |
| 2001 11 21 704                          | 0.6+       | 1.3−     | 2003 03 24 645 | 0.1−        | 0.1−  | 2007 11 16 704 | 0.1+        | 0.7+  |  |  |
| 2001 11 21 704                          | 0.2+       | 0.1+     | 2003 04 26 645 | 0.1+        | 0.1+  | 2007 11 16 704 | 0.2+        | 0.5+  |  |  |
| 2001 11 21 704                          | 0.4−       | 1.1−     | 2003 04 26 645 | 0.1+        | 0.0   | 2007 11 16 704 | 1.1+        | 0.8+  |  |  |
| 2001 12 09 644                          | 0.6+       | 0.2−     | 2006 09 22 703 | 0.5+        | 0.7−  | 2007 11 16 704 | 1.4+        | 0.2−  |  |  |
| 2001 12 09 644                          | 0.1+       | 0.3−     | 2006 09 22 703 | 0.2−        | 0.8+  | 2007 12 03 704 | 0.2+        | 0.3+  |  |  |
| 2001 12 09 644                          | 0.6+       | 0.3−     | 2006 09 22 703 | 0.7−        | 0.1−  | 2007 12 03 704 | 1.4−        | 0.3−  |  |  |
| 2001 12 15 704                          | 0.4+       | 0.9−     | 2006 09 22 703 | 0.3−        | 0.0   | 2007 12 03 704 | 0.4−        | 0.2+  |  |  |
| 2001 12 15 704                          | 0.6+       | 0.1−     | 2006 09 24 699 | 0.4+        | 0.1−  | 2007 12 03 704 | 0.3−        | 0.1+  |  |  |
| 2001 12 15 704                          | 0.4+       | 0.1−     | 2006 09 24 699 | 0.5+        | 0.4+  | 2007 12 03 704 | 0.2−        | 0.0   |  |  |
| 2001 12 15 704                          | 0.1−       | 0.5+     | 2006 09 24 699 | 0.1−        | 1.1−  | 2007 12 05 699 | 0.4−        | 1.2−  |  |  |
| 2001 12 18 704                          | 0.3−       | 0.2+     | 2006 09 27 703 | 0.5+        | 0.8+  | 2007 12 05 699 | 0.1−        | 0.3−  |  |  |
| 2001 12 18 704                          | 0.5−       | 0.4−     | 2006 09 27 703 | 0.2+        | 0.5+  | 2007 12 05 699 | 0.9+        | 0.7−  |  |  |
| 2001 12 18 704                          | 0.3−       | 0.4+     | 2006 09 27 703 | 0.0         | 0.3−  | 2007 12 05 699 | 0.9−        | 0.2+  |  |  |

(172030)\* 2001 VR<sub>91</sub>

Discovered 2001 Nov. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |       |            |     |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |       |            |     |      |
| $M$                                     | 7.46444    | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |       |            |     |      |
| $n$                                     | 0.17830065 | $\omega$ | 347.98003 | +0.17853865 |      | −0.93216929 |       |            |     |      |
| $a$                                     | 3.1263248  | $\Omega$ | 91.11748  | +0.92682589 |      | +0.05187090 |       |            |     |      |
| $e$                                     | 0.0865317  | $i$      | 18.36054  | +0.33032970 |      | +0.35828736 |       |            |     |      |
| $P$                                     | 5.53       | $H$      | 15.0      | $G$         | 0.15 | $U$         | 0     |            |     |      |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |      |
| 1990 12 11                              | 691        | 0.3−     | 0.2+      | 2001 11 20  | 699  | (1.7−       | 2.3+) | 2006 09 27 | 703 | 0.1− |
| 1990 12 11                              | 691        | 0.2+     | 0.2+      | 2001 12 08  | 699  | 1.3−        | 1.2+  | 2006 09 27 | 703 | 0.5− |
| 1990 12 11                              | 691        | 0.1−     | 0.1+      | 2001 12 08  | 699  | 0.7+        | 1.0+  | 2006 09 27 | 703 | 0.5− |
| 2001 10 20                              | 608        | 0.1−     | 0.6−      | 2001 12 08  | 699  | 1.4−        | 0.2+  | 2006 10 12 | E12 | 0.6− |
| 2001 10 20                              | 608        | 0.7−     | 0.3−      | 2001 12 08  | 699  | 0.0         | 0.1+  | 2006 10 12 | E12 | 0.5− |
| 2001 10 20                              | 608        | 0.4−     | 0.1−      | 2001 12 19  | 704  | 0.0         | 0.6−  | 2006 10 12 | E12 | 0.4− |
| 2001 11 12                              | 699        | 0.1+     | 0.6+      | 2001 12 19  | 704  | 0.5−        | 0.2+  | 2006 10 12 | E12 | 0.7− |
| 2001 11 12                              | 699        | 0.1−     | 0.3+      | 2001 12 19  | 704  | 0.4+        | 0.3+  | 2007 12 03 | 691 | 0.0  |
| 2001 11 12                              | 699        | 0.0      | 0.7+      | 2002 01 08  | 644  | 0.3+        | 0.3+  | 2007 12 03 | 691 | 0.1− |
| 2001 11 12                              | 699        | 0.2+     | 0.6+      | 2002 01 08  | 644  | 0.0         | 0.3+  | 2007 12 03 | 691 | 0.2− |
| 2001 11 12                              | 608        | 0.4−     | 0.8−      | 2002 01 08  | 644  | 0.4+        | 0.4+  | 2007 12 04 | 699 | 1.3+ |
| 2001 11 12                              | 608        | 0.0      | 0.4−      | 2003 02 01  | 644  | 0.0         | 0.6+  | 2007 12 04 | 699 | 0.1− |
| 2001 11 12                              | 608        | 0.2+     | 0.7−      | 2003 02 01  | 644  | 0.1−        | 0.7+  | 2007 12 04 | 699 | 0.9− |
| 2001 11 15                              | 704        | 0.2−     | 0.1+      | 2003 02 01  | 644  | 0.0         | 0.7+  | 2007 12 04 | 699 | 0.9− |
| 2001 11 15                              | 704        | 0.1+     | 0.1−      | 2003 03 08  | 699  | 0.1−        | 1.1+  | 2007 12 06 | 704 | 0.0  |
| 2001 11 15                              | 704        | 0.5−     | 0.6−      | 2003 03 08  | 699  | 0.6+        | 0.9−  | 2007 12 06 | 704 | 0.1− |
| 2001 11 15                              | 704        | (1.6−    | 1.6−)     | 2003 03 08  | 699  | 0.1+        | 0.4+  | 2007 12 06 | 704 | 0.9− |
| 2001 11 15                              | 704        | 0.4−     | 0.1+      | 2003 03 08  | 699  | 1.3−        | 0.6+  | 2007 12 10 | 704 | 1.0− |
| 2001 11 18                              | 704        | 0.8−     | 0.2−      | 2003 03 09  | 644  | 0.3+        | 0.8+  | 2007 12 10 | 704 | 0.7− |

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 11 18 704 0.2+ 0.2+   | 2003 03 09 644 0.1+ 0.9+ | 2007 12 10 704 0.3+ 0.2− |
| 2001 11 18 704 0.5− 0.4+   | 2003 03 09 644 0.3+ 0.6+ | 2007 12 10 704 0.6+ 0.3− |
| 2001 11 19 699 0.0 1.3+    | 2003 04 01 644 0.4+ 0.3+ | 2007 12 10 704 0.2+ 0.2− |
| 2001 11 19 699 0.6+ 0.9+   | 2003 04 01 644 0.0 0.5+  | 2007 12 14 704 0.2− 0.3+ |
| 2001 11 19 699 (0.5+ 3.3+) | 2003 04 01 644 0.2+ 0.2+ | 2007 12 14 704 0.5+ 0.1− |
| 2001 11 19 699 (1.7+ 1.2+) | 2005 07 26 644 0.3+ 0.9+ | 2007 12 14 704 0.9− 0.3− |
| 2001 11 20 699 0.1− 0.5+   | 2005 07 26 644 0.1+ 0.5+ | 2007 12 17 691 0.1+ 0.6− |
| 2001 11 20 699 0.7+ 0.4+   | 2005 07 26 644 0.3+ 0.7+ | 2007 12 17 691 0.1− 0.2− |
| 2001 11 20 699 0.1− 1.2+   | 2006 09 27 703 0.1− 0.4+ | 2007 12 17 691 0.0 0.3−  |

(172031)\* 2001 VL<sub>112</sub> = 2004 FJ<sub>144</sub>

Discovered 2001 Nov. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |             |                    |            |               |            |             |            |     |             |       |
|-----------------------------------------|------------|-------------|--------------------|------------|---------------|------------|-------------|------------|-----|-------------|-------|
| Id. G. V. Williams ( <i>MPO</i> 61198)  |            |             |                    |            |               |            |             |            |     |             |       |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |                    |            |               |            |             |            |     |             |       |
|                                         |            |             |                    |            | MPC           |            |             |            |     |             |       |
| <i>M</i>                                | 73.80574   |             | (2000.0)           |            | <b>P</b>      |            | <b>Q</b>    |            |     |             |       |
| <i>n</i>                                | 0.18030183 |             | $\omega$ 347.67995 |            | +0.99947240   |            | +0.02867937 |            |     |             |       |
| <i>a</i>                                | 3.1031489  |             | $\Omega$ 10.71169  |            | −0.01814174   |            | +0.88227797 |            |     |             |       |
| <i>e</i>                                | 0.2296896  |             | <i>i</i> 4.70479   |            | −0.02694064   |            | +0.46985432 |            |     |             |       |
| <i>P</i>                                | 5.47       |             | <i>H</i> 15.2      |            | <i>G</i> 0.15 | <i>U</i> 1 |             |            |     |             |       |
| Residuals in seconds of arc             |            |             |                    |            |               |            |             |            |     |             |       |
| 2001 10 21                              | 704        | 0.7+        | 0.2+               | 2006 08 18 | 691           | 0.2−       | 0.0         | 2006 09 30 | 704 | 0.1+        | 0.5−  |
| 2001 10 21                              | 704        | 0.1+        | 0.1−               | 2006 08 18 | 691           | 0.2−       | 0.0         | 2006 09 30 | 704 | 0.2+        | 0.8+  |
| 2001 10 21                              | 704        | 0.1+        | 0.1+               | 2006 08 25 | 704           | 0.6+       | 0.7+        | 2006 09 30 | 704 | 1.0−        | 0.5−  |
| 2001 10 21                              | 704        | 0.5+        | 0.3+               | 2006 08 25 | 704           | 0.2+       | 1.1+        | 2006 09 30 | 704 | 0.1+        | 0.2−  |
| 2001 11 11                              | 691        | 0.2−        | 0.6−               | 2006 08 25 | 704           | 0.7−       | 0.2+        | 2006 10 03 | 705 | 0.2+        | 0.2−  |
| 2001 11 11                              | 691        | 0.2−        | 0.6−               | 2006 08 27 | 705           | 0.1+       | 0.2−        | 2006 10 03 | 705 | 0.2+        | 0.2−  |
| 2001 11 11                              | 691        | 0.0         | 0.5−               | 2006 08 27 | 705           | 0.0        | 0.2−        | 2006 10 11 | 291 | 0.1+        | 0.3+  |
| 2001 11 12                              | 704        | 0.2+        | 0.2−               | 2006 09 11 | 705           | 0.1+       | 0.3−        | 2006 10 11 | 291 | 0.2+        | 0.3+  |
| 2001 11 12                              | 704        | 0.9+        | 0.5−               | 2006 09 11 | 705           | 0.2+       | 0.4−        | 2006 10 11 | 291 | 0.2+        | 0.3+  |
| 2001 11 12                              | 704        | 0.6+        | 0.6+               | 2006 09 12 | 703           | 1.0+       | 0.8+        | 2006 10 16 | G96 | (0.1−       | 1.9−) |
| 2001 11 12                              | 704        | 0.3−        | 0.1+               | 2006 09 12 | 703           | 0.4+       | 0.5+        | 2006 10 16 | G96 | 0.2−        | 0.4−  |
| 2001 11 12                              | 704        | 0.7+        | 0.2+               | 2006 09 12 | 703           | 0.3−       | 1.3+        | 2006 10 16 | G96 | 0.2+        | 0.4−  |
| 2001 11 19                              | 704        | 0.2−        | 0.0                | 2006 09 12 | 703           | 0.2+       | 1.2+        | 2006 10 16 | G96 | 0.1+        | 0.2−  |
| 2001 11 19                              | 704        | 0.3−        | 0.0                | 2006 09 13 | 644           | 0.2−       | 0.0         | 2006 10 19 | 644 | 0.1−        | 0.1−  |
| 2001 11 19                              | 704        | 0.3+        | 0.1+               | 2006 09 13 | 644           | 0.3−       | 0.1+        | 2006 10 19 | 644 | 0.1+        | 0.3−  |
| 2001 11 19                              | 704        | 0.1−        | 0.1−               | 2006 09 13 | 644           | 0.0        | 0.1−        | 2006 10 19 | 644 | 0.3−        | 0.2−  |
| 2001 11 24                              | 704        | 0.4−        | 0.4+               | 2006 09 15 | 691           | 0.1+       | 0.3+        | 2006 10 20 | 644 | 0.9−        | 0.0   |
| 2001 11 24                              | 704        | 0.3−        | 0.7−               | 2006 09 15 | 691           | 0.1−       | 0.2+        | 2006 10 20 | 644 | 0.5−        | 0.1−  |
| 2001 11 24                              | 704        | 0.6+        | 0.3−               | 2006 09 15 | 691           | 0.1+       | 0.3+        | 2006 10 20 | 644 | 0.5−        | 0.3+  |
| 2001 11 24                              | 704        | 0.9−        | 0.7−               | 2006 09 17 | 704           | 0.4+       | 0.5+        | 2006 10 20 | 644 | 0.4−        | 0.1−  |
| 2001 11 24                              | 704        | 0.2+        | 0.3−               | 2006 09 17 | 704           | 0.4+       | 0.4+        | 2006 10 20 | 644 | 0.3−        | 0.0   |
| 2001 11 24                              | 704        | 0.9−        | 0.0                | 2006 09 17 | 704           | 0.1−       | 0.6+        | 2006 10 20 | 644 | 0.2−        | 0.1−  |
| 2001 11 24                              | 704        | 1.1−        | 0.6−               | 2006 09 17 | 704           | 0.3+       | 0.2+        | 2006 10 21 | 644 | 0.2−        | 0.0   |
| 2001 11 24                              | 704        | 0.6−        | 0.6−               | 2006 09 17 | 704           | 0.0        | 0.4+        | 2006 10 21 | 644 | 0.2−        | 0.0   |
| 2001 11 24                              | 704        | 0.0         | 0.3−               | 2006 09 18 | 699           | 0.2+       | 0.1−        | 2006 10 21 | 644 | 0.2−        | 0.0   |
| 2001 12 10                              | 704        | 0.4+        | 0.9−               | 2006 09 18 | 705           | 0.2+       | 0.2−        | 2006 10 28 | G96 | 0.1+        | 0.2−  |
| 2001 12 10                              | 704        | 0.2−        | 0.5+               | 2006 09 18 | 705           | 0.2+       | 0.3−        | 2006 10 28 | G96 | 0.0         | 0.5−  |
| 2001 12 10                              | 704        | 0.1−        | 0.8+               | 2006 09 18 | 699           | 0.3−       | 0.0         | 2006 10 28 | G96 | 0.1−        | 0.4−  |
| 2001 12 10                              | 704        | 0.6+        | 0.5+               | 2006 09 18 | 699           | 0.1+       | 0.0         | 2006 10 28 | G96 | 0.2+        | 0.4−  |
| 2001 12 11                              | 704        | 0.1+        | 0.2+               | 2006 09 18 | 699           | 0.1+       | 0.5+        | 2006 11 21 | 704 | (0.1+ 1.9+) |       |
| 2001 12 11                              | 704        | 0.0         | 0.3+               | 2006 09 20 | 704           | 0.4−       | 0.4+        | 2006 11 21 | 704 | 0.1−        | 0.9+  |
| 2001 12 11                              | 704        | 0.0         | 0.4+               | 2006 09 20 | 704           | 0.2−       | 0.3+        | 2006 11 21 | 704 | 0.8−        | 1.2+  |
| 2001 12 11                              | 704        | 0.1−        | 0.2+               | 2006 09 20 | 704           | 0.2−       | 0.6−        | 2006 11 21 | 704 | 0.2−        | 0.4+  |
| 2001 12 11                              | 704        | 0.7+        | 0.4−               | 2006 09 20 | 704           | 0.3−       | 0.0         | 2006 12 12 | 644 | 0.1−        | 0.0   |
| 2001 12 15                              | 704        | 0.1+        | 0.2−               | 2006 09 20 | 704           | 0.3−       | 0.1−        | 2006 12 12 | 644 | 0.0         | 0.2+  |
| 2001 12 15                              | 704        | 0.5+        | 0.2−               | 2006 09 20 | 644           | 0.4−       | 0.1−        | 2006 12 12 | 644 | 0.2+        | 0.0   |
| 2001 12 15                              | 704        | 0.5+        | 0.4+               | 2006 09 20 | 644           | 0.4−       | 0.2−        | 2006 12 17 | G96 | 0.8+        | 0.9−  |
| 2001 12 15                              | 704        | 0.1+        | 1.1+               | 2006 09 20 | 644           | 0.3−       | 0.2−        | 2006 12 17 | G96 | 0.1−        | 0.6−  |
| 2001 12 18                              | 704        | (1.5+ 1.3−) |                    | 2006 09 26 | 704           | 0.2−       | 0.1−        | 2006 12 17 | G96 | 0.2+        | 0.4−  |
| 2001 12 18                              | 704        | (0.3+ 1.8−) |                    | 2006 09 26 | 704           | 0.2+       | 0.3+        | 2006 12 17 | G96 | 0.2−        | 0.2−  |
| 2001 12 18                              | 704        | 0.6+        | 0.1−               | 2006 09 26 | 704           | 1.0−       | 0.5+        | 2007 01 09 | G96 | 0.2−        | 0.2−  |
| 2001 12 18                              | 704        | 0.0         | 0.6+               | 2006 09 26 | 704           | 0.7−       | 0.1−        | 2007 01 09 | G96 | 0.2−        | 0.0   |
| 2001 12 18                              | 704        | 0.0         | 0.7−               | 2006 09 26 | G96           | 0.3−       | 0.3−        | 2007 01 09 | G96 | 0.3−        | 0.6−  |
| 2001 12 18                              | 704        | 0.1−        | 0.3+               | 2006 09 26 | G96           | 0.1−       | 0.3−        | 2007 01 09 | G96 | 0.2+        | 0.6−  |

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 12 18 | 704 | 0.1+        | 0.4+ | 2006 09 26 | G96 | 0.1+ | 0.3- | 2007 01 27 | G96 | 0.3- | 0.5+ |
| 2001 12 18 | 704 | 0.2+        | 1.1+ | 2006 09 26 | G96 | 0.1- | 0.3- | 2007 01 27 | G96 | 0.1+ | 0.2- |
| 2001 12 18 | 704 | 0.3+        | 0.7+ | 2006 09 27 | 704 | 0.2+ | 0.1+ | 2007 01 27 | G96 | 0.0  | 0.1+ |
| 2001 12 18 | 704 | 1.0+        | 0.8+ | 2006 09 27 | 704 | 0.0  | 0.4+ | 2007 01 27 | G96 | 0.6+ | 0.3+ |
| 2001 12 19 | 704 | 0.8-        | 0.6+ | 2006 09 27 | 704 | 0.3- | 0.5+ | 2007 11 03 | G96 | 0.1- | 0.3- |
| 2001 12 19 | 704 | 0.8-        | 0.9+ | 2006 09 27 | 704 | 0.2- | 0.0  | 2007 11 03 | G96 | 0.1- | 0.1- |
| 2001 12 19 | 704 | 1.0-        | 0.6+ | 2006 09 27 | 704 | 0.2- | 0.5+ | 2007 11 03 | G96 | 0.4+ | 0.3+ |
| 2001 12 19 | 704 | 0.9-        | 1.1+ | 2006 09 28 | 704 | 0.1+ | 0.6+ | 2007 11 03 | G96 | 0.0  | 0.1+ |
| 2004 03 29 | 691 | 0.6+        | 0.4+ | 2006 09 28 | 704 | 0.1+ | 0.5+ | 2007 01 27 | G96 | 0.3- | 0.2- |
| 2004 03 29 | 691 | 0.4+        | 0.4+ | 2006 09 28 | 704 | 0.3+ | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.1- |
| 2004 03 29 | 691 | 0.7+        | 0.9+ | 2006 09 28 | 704 | 0.4- | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.2+ |
| 2004 03 31 | 291 | 0.1+        | 0.9+ | 2006 09 28 | 704 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.2+ | 0.3- |
| 2004 03 31 | 291 | 0.2+        | 0.7+ | 2006 09 28 | 704 | 0.8- | 1.1+ | 2007 12 05 | 691 | 0.5- | 0.0  |
| 2004 03 31 | 291 | 0.1+        | 0.9+ | 2006 09 28 | 704 | 0.3- | 0.6+ | 2007 11 11 | G96 | 0.1+ | 0.2+ |
| 2006 07 21 | 704 | (0.2+ 1.9-) |      | 2006 09 28 | 704 | 0.7- | 0.1- | 2007 12 05 | 691 | 0.4- | 1.2+ |
| 2006 07 21 | 704 | (1.5- 2.3-) |      | 2006 09 28 | 704 | 0.0  | 0.7+ | 2007 12 13 | 704 | 1.5+ | 1.8- |
| 2006 07 21 | 704 | 1.4-        | 0.8- | 2006 09 28 | 704 | 0.2+ | 0.0  | 2007 12 13 | 704 | 0.9+ | 0.1- |
| 2006 07 21 | 704 | (2.6- 0.6+) |      | 2006 09 28 | 704 | 0.4+ | 0.2+ | 2007 12 13 | 704 | 1.4+ | 0.7+ |
| 2006 08 18 | 691 | 0.1-        | 0.2+ | 2006 09 28 | 704 | 0.4- | 0.1- |            |     |      |      |

**(172032)\* 2001 VW<sub>132</sub> = 2000 QG<sub>157</sub>**

Discovered 2001 Nov. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 108127)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 85.47899   |          | (2000.0)  |  | <b>P</b>    |  | <b>Q</b>    |  |      |  |
|----------|--|------------|----------|-----------|--|-------------|--|-------------|--|------|--|
| <i>n</i> |  | 0.17861795 | $\omega$ | 77.62325  |  | +0.99063580 |  | +0.00376100 |  |      |  |
| <i>a</i> |  | 3.1226213  | $\Omega$ | 282.04374 |  | -0.06138236 |  | +0.90516706 |  |      |  |
| <i>e</i> |  | 0.0657450  | <i>i</i> | 8.02186   |  | +0.12195460 |  | +0.42503935 |  |      |  |
| <i>P</i> |  | 5.52       |          | <i>H</i>  |  | 15.4        |  | <i>G</i>    |  | 0.15 |  |
|          |  |            |          |           |  |             |  | <i>U</i>    |  | 1    |  |

Residuals in seconds of arc

|            |     |             |      |            |     |             |      |            |     |             |
|------------|-----|-------------|------|------------|-----|-------------|------|------------|-----|-------------|
| 2000 08 31 | 704 | 0.0         | 0.0  | 2001 12 18 | 704 | 0.6+        | 1.2- | 2006 09 28 | 703 | (2.2+ 2.6-) |
| 2000 08 31 | 704 | 0.8-        | 0.7- | 2001 12 18 | 704 | 0.4+        | 1.3- | 2006 10 10 | 644 | 0.1-        |
| 2000 08 31 | 704 | 0.8-        | 0.1- | 2001 12 18 | 704 | 0.9+        | 1.1- | 2006 10 10 | 644 | 0.1+        |
| 2000 08 31 | 704 | 0.7+        | 1.5+ | 2001 12 18 | 704 | 0.4-        | 1.0+ | 2006 10 10 | 644 | 0.2+        |
| 2000 09 03 | 704 | 0.1+        | 0.5+ | 2001 12 18 | 704 | 0.3-        | 0.8+ | 2006 10 11 | 644 | 0.1+        |
| 2000 09 03 | 704 | 1.2-        | 0.4+ | 2001 12 18 | 704 | 0.1-        | 0.6+ | 2006 10 11 | 644 | 0.2+        |
| 2000 09 03 | 704 | 0.2-        | 0.6+ | 2001 12 18 | 704 | 1.3-        | 1.1- | 2006 10 11 | 644 | 0.1+        |
| 2000 09 03 | 704 | 1.1+        | 0.2- | 2002 12 07 | 645 | 0.0         | 0.1+ | 2006 10 31 | 703 | 0.2+        |
| 2001 11 11 | 704 | 0.1+        | 0.0  | 2002 12 07 | 645 | 0.1+        | 0.0  | 2006 10 31 | 703 | 0.1-        |
| 2001 11 11 | 704 | 0.0         | 1.3- | 2003 02 22 | 644 | 0.3+        | 0.7+ | 2006 10 31 | 703 | 1.3-        |
| 2001 11 11 | 704 | 0.4-        | 1.0- | 2003 02 22 | 644 | 0.5+        | 0.7+ | 2006 10 31 | 703 | 0.4-        |
| 2001 11 24 | 704 | (0.4+ 1.7+) |      | 2003 02 22 | 644 | 0.7+        | 0.7+ | 2007 11 02 | G96 | 0.1-        |
| 2001 11 24 | 704 | 0.2-        | 1.4+ | 2006 09 20 | 699 | 0.7+        | 0.6- | 2007 11 02 | G96 | 0.4+        |
| 2001 11 24 | 704 | (0.2+ 1.9+) |      | 2006 09 20 | 699 | (2.0- 0.2+) |      | 2007 11 02 | G96 | 0.1-        |
| 2001 11 24 | 704 | (1.0+ 2.4+) |      | 2006 09 20 | 699 | 0.4+        | 0.8+ | 2007 11 02 | G96 | 0.3+        |
| 2001 12 07 | 644 | 0.4-        | 1.3+ | 2006 09 20 | 699 | 0.4-        | 0.7+ | 2007 12 14 | 701 | 0.7+        |
| 2001 12 07 | 644 | 0.0         | 1.1+ | 2006 09 28 | 703 | 0.4+        | 0.7- | 2007 12 14 | 701 | 0.0         |
| 2001 12 07 | 644 | 0.3+        | 0.9+ | 2006 09 28 | 703 | 0.1+        | 0.5- | 2007 12 14 | 701 | 1.9-        |
| 2001 12 18 | 704 | 0.5+        | 0.9- | 2006 09 28 | 703 | (0.0 2.2-)  |      |            |     | 0.0         |

**(172033)\* 2001 WQ = 2006 RA<sub>100</sub>**

Discovered 2001 Nov. 16 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 108128)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 106.83788  |          | (2000.0)  |  | <b>P</b>    |  | <b>Q</b>    |  |      |  |
|----------|--|------------|----------|-----------|--|-------------|--|-------------|--|------|--|
| <i>n</i> |  | 0.16908901 | $\omega$ | 261.18770 |  | +0.58683364 |  | +0.80954623 |  |      |  |
| <i>a</i> |  | 3.2388622  | $\Omega$ | 44.75791  |  | -0.73357853 |  | +0.54000248 |  |      |  |
| <i>e</i> |  | 0.1149527  | <i>i</i> | 1.31518   |  | -0.34276642 |  | +0.23028725 |  |      |  |
| <i>P</i> |  | 5.83       |          | <i>H</i>  |  | 15.4        |  | <i>G</i>    |  | 0.15 |  |
|          |  |            |          |           |  |             |  | <i>U</i>    |  | 0    |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 16 | 291 | 0.3- | 0.0  | 2006 09 19 | 699 | 0.1- | 1.2+ | 2007 11 05 | 691 | 0.3- | 0.2- |
| 2001 11 16 | 291 | 0.3- | 0.2+ | 2006 09 25 | 699 | 0.0  | 1.2+ | 2007 11 05 | 691 | 0.6- | 0.8- |

|            |     |             |      |            |     |             |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2001 11 16 | 291 | 0.1-        | 0.1+ | 2006 09 25 | 699 | 1.0-        | 0.1- | 2007 11 05 | G96 | 0.3+ | 0.1- |
| 2001 11 17 | 291 | 0.5+        | 0.1- | 2006 09 25 | 699 | 0.1+        | 1.1+ | 2007 11 05 | G96 | 0.6+ | 0.1- |
| 2001 11 17 | 291 | 0.4+        | 0.1- | 2006 09 25 | 699 | (2.9+ 1.6+) |      | 2007 11 05 | 691 | 0.6- | 0.0  |
| 2001 11 17 | 291 | 0.8+        | 0.1- | 2006 09 26 | 691 | 0.0         | 0.2+ | 2007 11 05 | G96 | 0.6+ | 0.3- |
| 2001 12 07 | 691 | 0.4-        | 0.4+ | 2006 09 26 | 691 | 0.1-        | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1- |
| 2001 12 07 | 691 | 0.4-        | 0.6+ | 2006 09 26 | 691 | 0.0         | 0.5+ | 2007 12 04 | G96 | 0.0  | 0.2- |
| 2001 12 07 | 691 | 0.5-        | 0.1+ | 2006 09 26 | G96 | 0.3-        | 0.1- | 2007 12 04 | G96 | 0.2- | 0.2- |
| 2004 03 18 | 704 | 0.9+        | 0.5+ | 2006 09 26 | G96 | 0.3-        | 0.1- | 2007 12 04 | G96 | 0.2+ | 0.2- |
| 2004 03 18 | 704 | 1.4+        | 1.1+ | 2006 09 26 | G96 | 0.1-        | 0.2- | 2007 12 04 | G96 | 0.0  | 0.0  |
| 2004 03 18 | 704 | 0.8+        | 0.4- | 2006 09 26 | G96 | 0.1+        | 0.2- | 2007 12 04 | G96 | 0.4+ | 0.1+ |
| 2004 04 25 | 691 | 0.2+        | 0.0  | 2006 10 20 | G96 | 0.7+        | 0.2- | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2004 04 25 | 691 | 0.0         | 0.9+ | 2006 10 20 | G96 | 0.2-        | 0.4- | 2007 12 04 | G96 | 0.5+ | 0.1- |
| 2004 04 25 | 691 | 0.1-        | 0.8+ | 2006 10 20 | G96 | 0.6-        | 0.1- | 2007 12 04 | G96 | 0.1- | 0.2- |
| 2006 08 17 | 644 | 0.8-        | 0.0  | 2006 10 20 | G96 | 0.0         | 0.2- | 2007 12 05 | 704 | 0.8+ | 1.2+ |
| 2006 08 17 | 644 | 0.2-        | 0.2+ | 2006 11 15 | G96 | 0.3-        | 0.5- | 2007 12 05 | 704 | 0.1- | 1.3+ |
| 2006 08 17 | 644 | 1.0-        | 0.6+ | 2006 11 15 | G96 | 0.1+        | 0.0  | 2007 12 05 | 704 | 0.2- | 0.6+ |
| 2006 09 14 | 644 | 0.2-        | 0.3+ | 2006 11 15 | G96 | 0.6+        | 0.3- | 2007 12 05 | 704 | 0.8- | 0.5+ |
| 2006 09 14 | 644 | 0.1-        | 0.2+ | 2006 11 15 | G96 | 0.2-        | 0.2- | 2007 12 15 | G96 | 0.7+ | 0.3- |
| 2006 09 14 | 644 | 0.1-        | 0.1+ | 2007 01 10 | G96 | 1.0-        | 0.1+ | 2007 12 15 | G96 | 0.7+ | 0.9- |
| 2006 09 19 | 699 | (2.3- 0.4-) |      | 2007 01 10 | G96 | 0.3+        | 0.4- | 2007 12 15 | G96 | 0.8+ | 0.1- |
| 2006 09 19 | 703 | 0.8+        | 0.4+ | 2007 01 10 | G96 | 0.1-        | 0.1+ | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2006 09 19 | 699 | 0.5+        | 0.7- | 2007 01 10 | G96 | 0.3+        | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.2+ |
| 2006 09 19 | 703 | 0.3+        | 0.3+ | 2007 09 15 | G96 | 0.1+        | 0.2- | 2007 12 15 | G96 | 0.7+ | 0.1- |
| 2006 09 19 | 703 | (1.6- 0.3-) |      | 2007 09 15 | G96 | 0.1-        | 0.2- | 2007 12 15 | G96 | 0.0  | 0.0  |
| 2006 09 19 | 699 | 0.7+        | 1.0+ | 2007 09 15 | G96 | 0.1+        | 0.2+ | 2007 12 15 | G96 | 0.6- | 0.5+ |
| 2006 09 19 | 703 | 0.5-        | 0.3- | 2007 09 15 | G96 | 0.3+        | 0.1- |            |     |      |      |

**(172034)\* 2001 WR<sub>1</sub>**

Discovered 2001 Nov. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 29.35780   |          | (2000.0) |  | <b>P</b>    |  | <b>Q</b>    |  |      |  |
|----------|--|------------|----------|----------|--|-------------|--|-------------|--|------|--|
| <i>n</i> |  | 0.68282378 | $\omega$ | 48.51531 |  | +0.58039631 |  | -0.81289351 |  |      |  |
| <i>a</i> |  | 1.2772139  | $\Omega$ | 6.57080  |  | +0.56213162 |  | +0.35691791 |  |      |  |
| <i>e</i> |  | 0.2025073  | <i>i</i> | 25.03153 |  | +0.58919281 |  | +0.46023228 |  |      |  |
| <i>P</i> |  | 1.44       |          | <i>H</i> |  | 17.8        |  | <i>G</i>    |  | 0.15 |  |
|          |  |            |          |          |  |             |  | <i>U</i>    |  | 1    |  |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |             |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|-------------|------|
| 1953 02 14 | 261 | (2.8- 2.0+) |      | 2005 02 10 | 084 | 0.1+ | 0.1+ | 2005 03 19 | 726 | 0.9+        | 0.5- |
| 1953 02 14 | 261 | (3.3- 2.2+) |      | 2005 02 23 | 084 | 0.2+ | 0.2+ | 2005 03 19 | 726 | 0.2+        | 0.4+ |
| 1975 09 07 | 260 | 0.6+        | 0.9- | 2005 02 23 | 084 | 0.2+ | 0.1- | 2005 03 19 | 726 | 0.3-        | 0.5- |
| 1975 09 07 | 260 | 0.4-        | 1.3- | 2005 02 24 | 084 | 0.6+ | 0.1- | 2005 03 19 | 726 | 0.1-        | 1.5+ |
| 2001 10 08 | 644 | 0.8-        | 0.5+ | 2005 02 24 | 084 | 0.1+ | 0.0  | 2005 03 19 | 726 | 0.3-        | 0.2+ |
| 2001 10 08 | 644 | 0.8-        | 0.4+ | 2005 02 24 | 084 | 0.1- | 0.1+ | 2005 03 19 | 726 | 0.4-        | 0.3- |
| 2001 10 08 | 644 | 0.8-        | 0.2+ | 2005 02 26 | 084 | 0.3- | 0.6+ | 2005 03 19 | 726 | 0.6-        | 0.1- |
| 2001 11 17 | 704 | 1.5+        | 0.1+ | 2005 02 26 | 084 | 0.4- | 0.5+ | 2005 03 20 | 204 | 0.2+        | 0.2+ |
| 2001 11 17 | 704 | (1.7+ 0.7-) |      | 2005 03 01 | 703 | 0.3- | 0.6- | 2005 03 20 | 204 | 0.1+        | 0.2+ |
| 2001 11 17 | 704 | (2.2+ 1.6-) |      | 2005 03 01 | 703 | 0.1- | 0.4- | 2005 03 20 | 204 | 0.2-        | 0.2+ |
| 2001 11 17 | 704 | (2.0+ 0.9-) |      | 2005 03 01 | 703 | 0.3- | 0.3- | 2005 03 20 | 204 | 0.2+        | 0.1+ |
| 2001 11 18 | 704 | 0.3-        | 1.1+ | 2005 03 01 | 703 | 0.0  | 0.6- | 2005 03 20 | H45 | 0.4-        | 0.6+ |
| 2001 11 18 | 704 | 0.9+        | 0.8+ | 2005 03 01 | 084 | 0.1+ | 0.6+ | 2005 03 20 | H45 | 1.1-        | 0.5+ |
| 2001 11 18 | 704 | 0.1-        | 0.9+ | 2005 03 02 | 084 | 0.0  | 0.4+ | 2005 03 20 | H45 | 0.7+        | 0.5- |
| 2001 11 18 | 704 | 0.1-        | 0.1- | 2005 03 02 | 084 | 0.1+ | 0.1+ | 2005 03 20 | H45 | 1.3+        | 0.5- |
| 2001 11 18 | 704 | 0.4-        | 0.4+ | 2005 03 03 | A70 | 0.5+ | 0.2+ | 2005 03 20 | H45 | 0.9+        | 0.3+ |
| 2001 11 18 | 704 | 1.0+        | 0.1- | 2005 03 03 | A70 | 0.6+ | 0.3- | 2005 03 20 | 084 | 0.1-        | 0.2+ |
| 2001 11 18 | 704 | 0.2-        | 1.1+ | 2005 03 03 | A70 | 0.8+ | 0.0  | 2005 03 20 | 084 | 0.1-        | 0.1- |
| 2001 11 18 | 704 | 0.1-        | 0.6- | 2005 03 04 | A70 | 0.2+ | 0.4- | 2005 03 21 | 726 | 1.2-        | 0.8+ |
| 2001 11 19 | 938 | 0.5+        | 0.0  | 2005 03 05 | 084 | 0.6- | 0.4- | 2005 03 21 | 726 | 1.2+        | 0.1- |
| 2001 11 19 | 587 | 0.4-        | 0.4- | 2005 03 05 | 084 | 0.6- | 0.6- | 2005 03 21 | 726 | (0.5+ 1.8-) |      |
| 2001 11 19 | 587 | 0.1-        | 0.1- | 2005 03 05 | H45 | 0.0  | 0.4- | 2005 03 21 | 726 | 0.6-        | 0.5- |
| 2001 11 19 | 587 | 0.4-        | 0.5+ | 2005 03 05 | H45 | 0.8- | 0.1- | 2005 03 21 | 726 | 0.2+        | 0.2- |
| 2001 11 20 | 704 | 0.3+        | 0.9+ | 2005 03 05 | H45 | 0.2- | 0.2+ | 2005 03 21 | 726 | 0.3+        | 0.4+ |
| 2001 11 20 | 704 | 0.3+        | 0.0  | 2005 03 07 | A41 | 0.7- | 0.1- | 2005 03 21 | 084 | 0.1+        | 0.4+ |
| 2001 11 20 | 704 | 0.2+        | 0.3- | 2005 03 07 | A41 | 0.2+ | 0.3- | 2005 03 21 | 084 | 0.2+        | 0.4+ |
| 2001 11 20 | 704 | 0.0         | 0.6- | 2005 03 07 | A41 | 0.3+ | 0.1- | 2005 03 22 | 084 | 0.1-        | 0.4+ |
| 2001 11 20 | 704 | 0.0         | 0.0  | 2005 03 08 | H45 | 0.4- | 0.5- | 2005 03 22 | 084 | 0.6-        | 0.1+ |
| 2001 11 20 | 046 | 0.0         | 0.4+ | 2005 03 08 | H45 | 0.7- | 0.2- | 2005 03 28 | H45 | 0.5+        | 0.5+ |



2007 DEC. 24

M.P.O. 129243

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 20 | 046 | 0.2-  | 0.5+  | 2005 03 08 | H45 | 1.2-  | 0.6-  | 2005 03 28 | H45 | 0.9-  | 0.1-  |
| 2001 11 20 | 046 | 0.0   | 0.3+  | 2005 03 08 | H45 | 0.2-  | 0.0   | 2005 03 28 | H45 | 0.4+  | 0.4+  |
| 2001 11 20 | 046 | 0.1-  | 0.0   | 2005 03 08 | H45 | 0.3+  | 0.4-  | 2005 03 28 | H45 | 0.5+  | 0.5+  |
| 2001 11 20 | 046 | 0.4-  | 1.2+  | 2005 03 09 | 703 | 0.4-  | 0.2-  | 2005 03 28 | 608 | 0.6-  | 0.8-  |
| 2001 11 20 | 557 | 0.6+  | 0.2+  | 2005 03 09 | 703 | 0.2-  | 0.2-  | 2005 03 28 | 608 | 0.8-  | 1.1-  |
| 2001 11 20 | 557 | 0.0   | 0.0   | 2005 03 09 | 703 | 0.2-  | 0.2-  | 2005 03 28 | 608 | 0.7-  | 0.9-  |
| 2001 11 20 | 557 | 0.8-  | 0.3+  | 2005 03 09 | 703 | 0.4-  | 0.3-  | 2005 03 28 | 084 | 0.3+  | 0.3+  |
| 2001 11 20 | 557 | 0.1+  | 0.8+  | 2005 03 10 | 084 | 0.3-  | 0.2+  | 2005 03 28 | 084 | 0.5+  | 0.2+  |
| 2001 11 20 | 557 | 0.1+  | 0.2-  | 2005 03 10 | 084 | 0.1+  | 0.3-  | 2005 03 29 | 084 | 0.3+  | 0.1-  |
| 2001 11 20 | 557 | 0.5+  | 0.1-  | 2005 03 10 | H45 | 0.2+  | 0.3+  | 2005 03 29 | 084 | 0.3-  | 0.1+  |
| 2001 11 20 | 557 | 0.8+  | 0.4+  | 2005 03 10 | H45 | 0.1+  | 0.2+  | 2005 03 30 | 703 | 0.0   | 0.1-  |
| 2001 11 25 | 691 | 0.3+  | 0.7-  | 2005 03 10 | H45 | 0.3+  | 0.0   | 2005 03 30 | 703 | 0.2+  | 0.2+  |
| 2001 11 25 | 691 | 0.9+  | 0.3-  | 2005 03 10 | H45 | 0.6+  | 0.1-  | 2005 03 30 | 703 | 0.2+  | 0.4+  |
| 2001 11 25 | 691 | 0.1-  | 0.4-  | 2005 03 10 | H45 | 0.9-  | 0.1-  | 2005 03 30 | 703 | 0.4+  | 0.3+  |
| 2001 12 05 | 587 | 0.2+  | 0.9+  | 2005 03 12 | H45 | 0.2-  | 0.2+  | 2005 03 30 | 084 | 0.1-  | 0.4-  |
| 2001 12 05 | 587 | 0.5+  | 0.3+  | 2005 03 12 | H45 | 0.3-  | 0.0   | 2005 03 31 | H45 | 0.3-  | 0.4+  |
| 2001 12 06 | 649 | 0.0   | 0.0   | 2005 03 12 | H45 | 0.3-  | 0.2+  | 2005 03 31 | H45 | 0.1+  | 0.2-  |
| 2001 12 06 | 649 | 0.1+  | 0.1+  | 2005 03 12 | H45 | 0.2-  | 0.1-  | 2005 03 31 | H45 | 0.4+  | 0.2-  |
| 2001 12 06 | 649 | 0.1-  | 0.2+  | 2005 03 12 | H45 | 0.3+  | 0.1+  | 2005 03 31 | H45 | 0.3-  | 0.6+  |
| 2001 12 09 | 704 | 0.1-  | 0.3-  | 2005 03 13 | 071 | (4.2+ | 6.5+) | 2005 03 31 | H45 | 0.2-  | 0.1+  |
| 2001 12 09 | 704 | 0.3-  | 0.2-  | 2005 03 13 | 071 | (1.5+ | 1.1+) | 2005 03 31 | 084 | 0.1-  | 0.2-  |
| 2001 12 09 | 704 | 0.4-  | 0.4-  | 2005 03 13 | 071 | 0.4+  | 0.4+  | 2005 03 31 | 084 | 0.1+  | 0.2+  |
| 2001 12 10 | 649 | 0.3+  | 0.1+  | 2005 03 13 | 726 | 0.0   | 0.3+  | 2005 04 03 | 240 | 0.1-  | 0.1+  |
| 2001 12 10 | 649 | 0.0   | 0.0   | 2005 03 13 | 726 | 0.1+  | 1.0-  | 2005 04 03 | 240 | 0.2-  | 0.1-  |
| 2001 12 10 | 649 | 0.2+  | 0.2+  | 2005 03 13 | 726 | 0.2+  | 0.4-  | 2005 04 03 | 240 | 0.2-  | 0.3-  |
| 2001 12 24 | 649 | 0.2+  | 1.0-  | 2005 03 13 | 726 | 0.8+  | 0.6-  | 2005 04 03 | 240 | 0.2-  | 0.0   |
| 2001 12 24 | 649 | 0.1+  | 0.9-  | 2005 03 13 | 726 | 0.0   | 1.5+  | 2005 04 03 | 240 | 0.2-  | 0.0   |
| 2001 12 24 | 649 | 0.0   | 0.9-  | 2005 03 13 | 726 | 0.3-  | 0.1-  | 2005 04 03 | 240 | 0.3-  | 0.2+  |
| 2001 12 28 | 649 | 0.3+  | 0.6-  | 2005 03 13 | 726 | 0.8-  | 0.6+  | 2005 04 03 | 240 | 0.2-  | 0.2+  |
| 2001 12 28 | 649 | 0.1-  | 0.8-  | 2005 03 13 | 726 | 0.8+  | 0.1+  | 2005 04 03 | 240 | 0.1-  | 0.2+  |
| 2001 12 28 | 649 | 0.4+  | 0.7-  | 2005 03 13 | 726 | 0.2-  | 0.8+  | 2005 04 03 | 046 | 0.6+  | 0.2-  |
| 2002 02 13 | 696 | 0.4+  | 0.2-  | 2005 03 13 | A30 | 0.1+  | 0.0   | 2005 04 03 | 046 | 0.1+  | 0.2+  |
| 2002 02 13 | 696 | 0.3+  | 0.2-  | 2005 03 13 | A30 | 0.2+  | 0.1-  | 2005 04 03 | 046 | 0.4+  | 0.2-  |
| 2002 03 12 | 649 | 0.9-  | 0.3+  | 2005 03 13 | A30 | 0.2+  | 0.1-  | 2005 04 03 | 046 | 0.1+  | 0.1-  |
| 2002 03 12 | 649 | 0.7-  | 0.1-  | 2005 03 13 | A30 | 0.1+  | 0.2-  | 2005 04 03 | 046 | 0.2+  | 0.2-  |
| 2002 03 12 | 649 | 0.9-  | 0.1+  | 2005 03 14 | 726 | 0.1-  | 0.4+  | 2005 04 03 | A41 | 0.5+  | 0.7-  |
| 2002 03 21 | 704 | 0.5+  | 1.3+  | 2005 03 14 | 726 | 0.3-  | 0.0   | 2005 04 03 | A41 | 0.3+  | 0.1-  |
| 2002 03 21 | 704 | (1.7+ | 1.4+) | 2005 03 14 | 726 | 0.0   | 0.3+  | 2005 04 03 | 084 | 0.5+  | 0.0   |
| 2002 03 21 | 704 | (1.0+ | 1.6+) | 2005 03 14 | 726 | 0.7-  | 0.2+  | 2005 04 03 | 084 | 0.7+  | 0.2+  |
| 2002 03 21 | 704 | 0.1+  | 1.3+  | 2005 03 14 | 726 | 0.6+  | 0.5+  | 2005 04 03 | A41 | 0.2+  | 0.2-  |
| 2004 08 26 | 097 | 0.9-  | 0.1+  | 2005 03 16 | 084 | 0.4-  | 0.4-  | 2005 04 04 | 704 | 0.2+  | 0.1+  |
| 2004 08 26 | 097 | 0.1-  | 0.3-  | 2005 03 16 | 084 | 0.2+  | 0.4-  | 2005 04 04 | 704 | 0.4-  | 0.1+  |
| 2004 08 26 | 699 | 0.3-  | 0.5-  | 2005 03 16 | 703 | 0.3-  | 0.3-  | 2005 04 04 | 704 | 0.3+  | 0.0   |
| 2004 08 26 | 699 | 0.0   | 0.1+  | 2005 03 16 | 703 | 0.4-  | 0.1-  | 2005 04 04 | 704 | 0.1+  | 0.1+  |
| 2004 08 26 | 699 | 0.0   | 0.1-  | 2005 03 16 | 703 | 0.3-  | 0.2-  | 2005 04 04 | 704 | 0.2+  | 0.0   |
| 2004 08 26 | 699 | 0.2+  | 0.1-  | 2005 03 16 | 703 | 0.2-  | 0.3-  | 2005 04 04 | 084 | 0.2+  | 0.3+  |
| 2004 09 02 | 568 | 0.1+  | 0.0   | 2005 03 16 | 151 | 0.2-  | 0.1-  | 2005 04 04 | 084 | 0.3+  | 0.2+  |
| 2004 09 02 | 568 | 0.3+  | 0.1+  | 2005 03 16 | 151 | 0.2-  | 0.2+  | 2005 04 06 | 084 | 0.2-  | 0.1+  |
| 2004 09 10 | 704 | 1.1+  | 0.8-  | 2005 03 16 | 127 | 1.3+  | 0.2+  | 2005 04 06 | 084 | 0.3-  | 0.1-  |
| 2004 09 10 | 704 | 0.9+  | 0.3-  | 2005 03 16 | 127 | 1.1+  | 0.3+  | 2005 04 09 | 699 | 0.9+  | 0.1-  |
| 2004 09 10 | 704 | 0.7+  | 1.2-  | 2005 03 16 | 127 | 0.8+  | 0.2+  | 2005 04 09 | 699 | 0.5+  | 0.1-  |
| 2004 09 10 | 704 | 0.3+  | 0.6+  | 2005 03 16 | 127 | 1.2+  | 0.2+  | 2005 04 09 | 699 | 0.1-  | 0.0   |
| 2004 09 13 | 704 | 0.4+  | 0.4+  | 2005 03 16 | 084 | 0.7+  | 1.4-  | 2005 04 09 | 699 | 0.4+  | 0.1+  |
| 2004 09 13 | 704 | 0.0   | 0.9+  | 2005 03 16 | 084 | 0.4+  | 0.2+  | 2005 04 10 | 691 | 0.2+  | 0.2+  |
| 2004 09 13 | 704 | 0.5+  | 0.4+  | 2005 03 17 | 726 | 0.8+  | 1.4+  | 2005 04 10 | 691 | 0.1+  | 0.3+  |
| 2004 09 15 | 084 | 0.3+  | 0.8+  | 2005 03 17 | 726 | 0.4-  | 0.4-  | 2005 04 10 | 691 | 0.0   | 0.0   |
| 2004 09 18 | 704 | 0.2+  | 0.3-  | 2005 03 17 | 726 | 0.4+  | 0.1+  | 2005 04 15 | 703 | 0.9-  | 0.2-  |
| 2004 09 18 | 704 | 0.7+  | 0.2-  | 2005 03 17 | 726 | 0.3-  | 0.3+  | 2005 04 15 | 703 | 0.8-  | 0.2+  |
| 2004 09 18 | 704 | 1.0+  | 0.3-  | 2005 03 17 | 726 | 0.2+  | 0.3+  | 2005 04 15 | 703 | 0.8-  | 0.2+  |
| 2004 09 18 | 704 | 0.2+  | 0.2-  | 2005 03 17 | 726 | 0.1+  | 0.2-  | 2005 04 15 | 703 | (1.6- | 0.2-) |
| 2004 09 18 | 704 | 0.9-  | 1.0-  | 2005 03 17 | 130 | 0.7-  | 0.2+  | 2005 04 16 | 683 | 1.2-  | 0.4-  |
| 2004 09 19 | 084 | 0.2-  | 0.2-  | 2005 03 17 | 130 | 0.4-  | 0.3-  | 2005 04 16 | 683 | 0.1+  | 0.7-  |
| 2004 10 02 | 699 | 0.2+  | 0.4+  | 2005 03 17 | 130 | 0.0   | 0.2-  | 2005 04 16 | 683 | 0.7-  | 1.1+  |
| 2004 10 02 | 699 | 0.4+  | 1.1+  | 2005 03 17 | 130 | 0.1+  | 0.5+  | 2007 09 11 | G96 | 0.1-  | 0.3-  |
| 2004 10 02 | 699 | 0.8+  | 0.1+  | 2005 03 18 | 726 | 1.0-  | 1.2-  | 2007 09 11 | G96 | 0.6+  | 0.2-  |
| 2004 10 02 | 699 | 0.3-  | 1.1+  | 2005 03 18 | 726 | 1.3+  | 1.3-  | 2007 09 11 | G96 | 0.1+  | 0.2-  |
| 2004 10 12 | 704 | 0.0   | 0.2+  | 2005 03 18 | 726 | 0.7-  | 0.3-  | 2007 09 11 | G96 | 0.0   | 0.1+  |
| 2004 10 12 | 704 | 0.8+  | 0.9+  | 2005 03 18 | 726 | 0.6-  | 0.5-  | 2007 12 06 | 703 | 0.6-  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 10 12 | 704 | 0.2- | 0.1+ | 2005 03 18 | 726 | 0.6- | 0.7- | 2007 12 06 | 703 | (1.3- | 1.5+) |
| 2004 12 31 | 170 | 0.5+ | 0.8- | 2005 03 18 | 726 | 0.5+ | 0.1- | 2007 12 06 | 703 | 0.3-  | 1.2-  |
| 2004 12 31 | 170 | 0.6+ | 0.8- | 2005 03 18 | J87 | 0.1- | 0.3- | 2007 12 06 | 703 | 0.5-  | 0.7+  |
| 2004 12 31 | 170 | 0.6+ | 0.7- | 2005 03 18 | J87 | 0.3- | 0.4- |            |     |       |       |
| 2005 02 10 | 084 | 0.3+ | 0.1- | 2005 03 18 | J87 | 0.2- | 0.3- |            |     |       |       |

**(172035)\* 2001 WG<sub>16</sub>**

Discovered 2001 Nov. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 86.15471   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.18630307 | $\omega$ | 100.03438 | +0.99827068 | -0.00936901 |
| <i>a</i> | 3.0361464  | $\Omega$ | 260.51949 | -0.01391916 | +0.92147147 |
| <i>e</i> | 0.1043357  | <i>i</i> | 3.37306   | +0.05711313 | +0.38833303 |
| <i>P</i> | 5.29       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 19 | 644 | 0.2- | 0.1- | 2001 11 24 | 704 | 0.5+  | 0.5-  | 2006 09 25 | 704 | 0.3+  | 1.1+  |
| 2001 10 19 | 644 | 0.2- | 0.2+ | 2001 12 07 | 704 | (0.2- | 1.8+) | 2006 09 25 | 704 | (1.7+ | 0.7+) |
| 2001 10 19 | 644 | 0.3- | 0.6- | 2001 12 07 | 704 | 0.9-  | 0.3-  | 2006 09 25 | 704 | (2.3+ | 1.1+) |
| 2001 10 21 | 704 | 0.5+ | 0.1+ | 2001 12 07 | 704 | 0.6-  | 0.5-  | 2006 09 27 | 691 | 0.2-  | 0.3+  |
| 2001 10 21 | 704 | 0.7+ | 0.6+ | 2001 12 07 | 704 | (1.1- | 2.0+) | 2006 09 27 | 691 | 0.1+  | 0.0   |
| 2001 10 21 | 704 | 1.2+ | 0.8- | 2001 12 07 | 704 | 0.2-  | 0.2+  | 2006 09 27 | 691 | 0.2+  | 0.0   |
| 2001 10 21 | 704 | 1.2+ | 0.6+ | 2001 12 07 | 704 | 0.9-  | 0.8+  | 2006 10 01 | 691 | 0.1+  | 0.1-  |
| 2001 10 26 | 644 | 0.3- | 0.1- | 2001 12 07 | 704 | 0.2+  | 0.3+  | 2006 10 01 | 691 | 0.2+  | 0.0   |
| 2001 10 26 | 644 | 0.2- | 0.0  | 2001 12 07 | 704 | 0.7-  | 0.3+  | 2006 10 01 | 691 | 0.0   | 0.1+  |
| 2001 10 26 | 644 | 0.3- | 0.1+ | 2001 12 07 | 704 | 0.5-  | 0.1-  | 2006 10 12 | 644 | 0.2-  | 0.1+  |
| 2001 11 16 | 049 | 0.1+ | 0.3+ | 2001 12 18 | 704 | 0.3-  | 0.3-  | 2006 10 12 | 644 | 0.3-  | 0.0   |
| 2001 11 16 | 049 | 0.5+ | 0.5+ | 2001 12 18 | 704 | 0.2+  | 1.3+  | 2006 10 12 | 644 | 0.1+  | 0.1-  |
| 2001 11 16 | 049 | 0.1- | 0.2- | 2001 12 18 | 704 | 0.3+  | 0.5+  | 2006 10 17 | 703 | 0.1-  | 1.1-  |
| 2001 11 17 | 704 | 0.9- | 0.9+ | 2001 12 18 | 704 | 0.3-  | 0.7+  | 2006 10 17 | 703 | 0.0   | 0.4+  |
| 2001 11 17 | 704 | 0.6- | 0.3- | 2001 12 18 | 704 | 0.1-  | 0.3-  | 2006 10 17 | 703 | 0.6+  | 0.0   |
| 2001 11 17 | 704 | 0.2- | 0.2+ | 2001 12 19 | 704 | 0.9-  | 0.4-  | 2006 10 17 | 703 | 0.5-  | 0.1+  |
| 2001 11 17 | 704 | 0.4- | 0.4+ | 2001 12 19 | 704 | 0.1-  | 0.1-  | 2006 10 20 | 644 | 0.1-  | 0.0   |
| 2001 11 17 | 704 | 0.7- | 0.0  | 2001 12 19 | 704 | 0.5-  | 0.2+  | 2006 10 20 | 644 | 0.4+  | 0.2+  |
| 2001 11 19 | 704 | 0.1- | 0.0  | 2001 12 19 | 704 | 0.1+  | 0.2+  | 2006 10 20 | 644 | 0.2+  | 0.2+  |
| 2001 11 19 | 704 | 0.0  | 0.7+ | 2001 12 19 | 704 | 0.1-  | 0.3-  | 2006 10 21 | 644 | 0.1+  | 0.0   |
| 2001 11 19 | 704 | 0.3+ | 0.3+ | 2004 05 09 | 691 | 0.4+  | 0.3+  | 2006 10 21 | 644 | 0.1-  | 0.0   |
| 2001 11 19 | 704 | 0.2+ | 0.7+ | 2004 05 09 | 691 | 0.3+  | 0.7+  | 2006 10 21 | 644 | 0.1+  | 0.1+  |
| 2001 11 19 | 704 | 0.1+ | 0.3+ | 2004 05 09 | 691 | 0.0   | 0.6+  | 2006 11 18 | G96 | 0.1+  | 0.6-  |
| 2001 11 19 | 608 | 0.1+ | 0.1+ | 2006 09 17 | 691 | 0.2-  | 0.3+  | 2006 11 18 | G96 | 0.1+  | 0.1-  |
| 2001 11 19 | 608 | 0.2+ | 0.1- | 2006 09 17 | 691 | 0.2-  | 0.2+  | 2006 11 18 | G96 | 0.1-  | 0.5-  |
| 2001 11 19 | 608 | 0.5- | 0.1- | 2006 09 17 | 691 | 0.0   | 0.4+  | 2006 11 18 | G96 | 0.5-  | 1.2-  |
| 2001 11 20 | 291 | 0.3+ | 0.0  | 2006 09 18 | 703 | 1.0-  | 0.1-  | 2007 10 07 | G96 | 0.6+  | 0.9-  |
| 2001 11 20 | 291 | 0.0  | 0.1+ | 2006 09 18 | 703 | 0.7+  | 0.3-  | 2007 10 07 | G96 | 0.7+  | 0.5-  |
| 2001 11 20 | 291 | 0.0  | 0.2+ | 2006 09 18 | 703 | 0.4-  | 0.9-  | 2007 10 07 | G96 | 0.5+  | 0.6-  |
| 2001 11 21 | 704 | 0.1+ | 1.0+ | 2006 09 18 | 703 | 0.4-  | 0.7-  | 2007 10 07 | G96 | 0.1+  | 0.1+  |
| 2001 11 21 | 704 | 0.3- | 0.8+ | 2006 09 18 | 699 | 0.2+  | 0.2-  | 2007 11 11 | G96 | 0.0   | 0.5-  |
| 2001 11 21 | 704 | 1.1- | 1.5+ | 2006 09 18 | 699 | 0.2+  | 0.3+  | 2007 11 11 | G96 | 0.4+  | 0.3-  |
| 2001 11 21 | 704 | 0.3+ | 0.5+ | 2006 09 18 | 699 | 0.4+  | 0.9-  | 2007 11 11 | G96 | 0.4+  | 0.4-  |
| 2001 11 21 | 704 | 1.1+ | 0.9- | 2006 09 18 | 699 | 0.1-  | 0.1+  | 2007 11 11 | G96 | 0.4+  | 0.8-  |
| 2001 11 24 | 704 | 0.2+ | 0.1- | 2006 09 19 | 703 | 0.4-  | 0.4-  | 2007 12 03 | 691 | 0.2-  | 0.1-  |
| 2001 11 24 | 704 | 0.9+ | 0.0  | 2006 09 19 | 703 | 0.6+  | 0.3+  | 2007 12 03 | 691 | 0.3-  | 0.1-  |
| 2001 11 24 | 704 | 0.3- | 0.5- | 2006 09 19 | 703 | 0.1+  | 1.0-  | 2007 12 03 | 691 | 0.4-  | 0.1-  |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.1+  | 0.2+  | 2001 12 17 | 704 | 0.3+ | 0.5+ | 2006 08 16 | E12 | 0.1+ | 0.0  |
| 2001 09 19 | 704 | 0.2-  | 0.0   | 2001 12 17 | 704 | 0.0  | 0.6+ | 2006 08 28 | E12 | 0.1- | 0.2- |
| 2001 09 19 | 704 | 0.4-  | 0.0   | 2001 12 17 | 704 | 0.6+ | 0.7+ | 2006 08 28 | E12 | 0.2- | 0.0  |
| 2001 09 19 | 704 | 0.2-  | 0.9+  | 2001 12 17 | 704 | 0.6+ | 0.5+ | 2006 08 28 | E12 | 0.0  | 0.0  |
| 2001 09 19 | 704 | (0.1+ | 1.6+) | 2001 12 20 | 704 | 1.0- | 0.9- | 2006 08 28 | E12 | 0.3- | 0.1+ |
| 2001 11 09 | 704 | 0.4+  | 0.5-  | 2001 12 20 | 704 | 1.3- | 0.5- | 2006 09 27 | E12 | 0.3- | 0.3+ |
| 2001 11 09 | 704 | (0.7+ | 1.7-) | 2001 12 20 | 704 | 0.6- | 0.2- | 2006 09 27 | E12 | 0.6+ | 0.6- |
| 2001 11 09 | 704 | 1.0-  | 0.9-  | 2001 12 20 | 704 | 1.1- | 0.1- | 2006 09 27 | E12 | 0.2+ | 0.3- |
| 2001 11 09 | 704 | 0.6+  | 0.7-  | 2001 12 20 | 704 | 0.9- | 0.5- | 2006 09 27 | E12 | 0.3+ | 0.6- |
| 2001 11 17 | 704 | 0.4+  | 0.0   | 2001 12 23 | 608 | 1.4- | 0.3- | 2006 10 11 | E12 | 0.3+ | 0.2+ |
| 2001 11 17 | 704 | 0.6+  | 0.5+  | 2001 12 23 | 608 | 0.2+ | 0.8- | 2006 10 11 | E12 | 0.0  | 0.1+ |
| 2001 11 17 | 704 | 0.5+  | 0.1-  | 2001 12 23 | 608 | 0.4+ | 1.0- | 2006 10 11 | E12 | 0.3+ | 0.3- |
| 2001 11 17 | 704 | 0.8+  | 0.1-  | 2002 01 09 | 704 | 1.2+ | 0.1- | 2006 10 11 | E12 | 0.0  | 0.3- |
| 2001 11 17 | 704 | 0.6+  | 0.1-  | 2002 01 09 | 704 | 0.4- | 0.6+ | 2006 10 12 | 644 | 0.2- | 0.6+ |
| 2001 11 20 | 704 | 0.3-  | 0.1+  | 2002 01 09 | 704 | 0.1+ | 0.9+ | 2006 10 12 | 644 | 0.4- | 0.6+ |
| 2001 11 20 | 704 | 0.1+  | 0.2+  | 2002 01 09 | 704 | 0.3- | 1.0+ | 2006 10 12 | 644 | 0.5- | 0.5+ |
| 2001 11 20 | 704 | 0.2-  | 0.2+  | 2002 01 09 | 704 | 0.1- | 0.3+ | 2006 10 12 | 644 | 0.5- | 0.4+ |
| 2001 11 20 | 704 | 0.2-  | 0.4+  | 2002 01 13 | 704 | 0.6- | 0.4- | 2006 10 12 | 644 | 0.2- | 0.6+ |
| 2001 11 20 | 704 | 0.4-  | 0.3+  | 2002 01 13 | 704 | 0.7- | 0.1- | 2006 10 12 | 644 | 0.2- | 0.3+ |
| 2001 11 24 | 704 | 0.6-  | 0.1-  | 2002 01 13 | 704 | 0.9+ | 0.1+ | 2006 10 28 | E12 | 0.6- | 0.3+ |
| 2001 11 24 | 704 | (0.0  | 1.8-) | 2002 01 13 | 704 | 0.2+ | 0.1- | 2006 10 28 | E12 | 1.5+ | 0.0  |
| 2001 11 24 | 704 | 0.8+  | 1.5-  | 2002 01 15 | 704 | 0.1- | 1.2- | 2006 10 28 | E12 | 0.3+ | 0.7+ |
| 2001 11 24 | 704 | 0.2+  | 0.6-  | 2002 01 15 | 691 | 0.0  | 0.3+ | 2006 10 28 | E12 | 0.6- | 0.0  |
| 2001 11 24 | 704 | 0.2+  | 0.2-  | 2002 01 15 | 704 | 0.0  | 0.0  | 2006 11 17 | 644 | 0.1+ | 0.3+ |
| 2001 12 05 | 608 | 0.3+  | 1.2-  | 2002 01 15 | 704 | 0.4+ | 0.9- | 2006 11 17 | 644 | 0.0  | 0.2+ |
| 2001 12 05 | 608 | 0.4+  | 0.6-  | 2002 01 15 | 691 | 0.1- | 0.4+ | 2006 11 17 | 644 | 0.2+ | 0.1+ |
| 2001 12 05 | 608 | 0.2-  | 0.6-  | 2002 01 15 | 704 | 0.4+ | 0.8- | 2007 11 02 | G96 | 0.2+ | 0.2- |
| 2001 12 07 | 644 | 0.3-  | 0.1+  | 2002 01 15 | 691 | 0.1- | 0.3+ | 2007 11 02 | G96 | 0.2- | 0.3- |
| 2001 12 07 | 644 | 0.1-  | 0.2+  | 2002 01 15 | 704 | 0.4+ | 0.8- | 2007 11 02 | G96 | 0.3- | 0.2- |
| 2001 12 07 | 644 | 0.2-  | 0.3+  | 2003 03 08 | 644 | 0.4+ | 0.4+ | 2007 11 02 | G96 | 0.2+ | 0.1- |
| 2001 12 11 | 704 | 0.3+  | 0.9+  | 2003 03 08 | 644 | 0.8+ | 0.4+ | 2007 11 06 | G96 | 0.1+ | 0.0  |
| 2001 12 11 | 704 | 0.1-  | 0.7+  | 2003 03 08 | 644 | 0.7+ | 0.7+ | 2007 11 06 | G96 | 0.3- | 0.1- |
| 2001 12 11 | 704 | 0.2-  | 0.6+  | 2005 06 17 | 691 | 0.1- | 0.4+ | 2007 11 06 | G96 | 0.1+ | 0.1- |
| 2001 12 11 | 704 | 0.2+  | 0.0   | 2005 06 17 | 691 | 0.2+ | 0.5+ | 2007 11 06 | G96 | 0.3+ | 0.1- |
| 2001 12 14 | 704 | 0.3+  | 0.6+  | 2005 06 17 | 691 | 0.2+ | 0.4+ | 2007 12 15 | 704 | 0.0  | 0.6+ |
| 2001 12 14 | 704 | 0.4+  | 0.4+  | 2006 07 30 | E12 | 0.2+ | 0.5+ | 2007 12 15 | 704 | 0.2- | 1.8+ |
| 2001 12 14 | 704 | 0.3+  | 0.6+  | 2006 07 30 | E12 | 0.5- | 0.5- | 2007 12 15 | 704 | 0.1+ | 0.3- |
| 2001 12 14 | 704 | 0.1-  | 0.5+  | 2006 07 30 | E12 | 0.3+ | 0.2+ | 2007 12 15 | 704 | 0.7- | 1.7+ |
| 2001 12 14 | 704 | 0.2-  | 0.3+  | 2006 07 30 | E12 | 0.1+ | 0.7+ |            |     |      |      |
| 2001 12 17 | 704 | 0.2+  | 0.5+  | 2006 08 16 | E12 | 0.0  | 0.3+ |            |     |      |      |

(172037)\* 2001 WZ<sub>32</sub>

Discovered 2001 Nov. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | <i>P</i> |           | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| 44.77356 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.17983168 | $\omega$ | 311.63941 | +0.80104622 | -0.57192400 |
| <i>a</i> | 3.1085552  | $\Omega$ | 83.98291  | +0.58834557 | +0.69781613 |
| <i>e</i> | 0.1578824  | <i>i</i> | 10.23542  | +0.11033789 | +0.43122568 |
| <i>P</i> | 5.48       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.2+ | 1.3+ | 2001 11 20 | 704 | 0.3-  | 1.1+  | 2006 09 20 | 703 | 0.0  | 0.1+ |
| 2001 10 17 | 704 | 0.6+ | 1.3+ | 2001 12 11 | 704 | 0.4-  | 0.1+  | 2006 09 20 | 703 | 0.8- | 0.6+ |
| 2001 10 17 | 704 | 0.9- | 0.0  | 2001 12 11 | 704 | 0.7-  | 0.9-  | 2006 09 20 | 703 | 0.4+ | 0.1+ |
| 2001 10 17 | 704 | 0.2+ | 0.1+ | 2001 12 11 | 704 | 0.4-  | 0.7-  | 2006 09 20 | 703 | 1.1+ | 1.1- |
| 2001 10 19 | 291 | 0.4+ | 0.3+ | 2001 12 11 | 704 | 0.4-  | 0.5-  | 2006 09 26 | 703 | 0.1+ | 0.7- |
| 2001 10 19 | 291 | 0.5- | 0.2+ | 2001 12 11 | 704 | 0.2-  | 0.7-  | 2006 09 26 | 703 | 0.5+ | 0.2- |
| 2001 10 19 | 291 | 0.3- | 0.0  | 2001 12 17 | 704 | 0.2-  | 1.0-  | 2006 09 26 | 703 | 0.1+ | 0.3- |
| 2001 11 09 | 704 | 0.4+ | 1.0+ | 2001 12 17 | 704 | 0.4-  | 0.6-  | 2006 09 26 | 703 | 0.4- | 0.4+ |
| 2001 11 09 | 704 | 0.1- | 1.0+ | 2001 12 17 | 704 | (2.0- | 0.1-) | 2006 10 22 | 644 | 1.0- | 0.1+ |
| 2001 11 09 | 704 | 0.2- | 0.6+ | 2001 12 17 | 704 | 0.0   | 0.4+  | 2006 10 22 | 644 | 0.1- | 0.2+ |
| 2001 11 09 | 704 | 1.4+ | 0.2+ | 2001 12 17 | 704 | 1.5+  | 0.2+  | 2006 10 22 | 644 | 0.1+ | 0.2+ |
| 2001 11 09 | 704 | 0.7+ | 0.3+ | 2001 12 18 | 644 | 0.3-  | 0.2+  | 2007 11 07 | G96 | 0.0  | 0.6- |
| 2001 11 17 | 704 | 1.2+ | 1.5- | 2001 12 18 | 644 | 0.0   | 0.1-  | 2007 11 07 | G96 | 0.0  | 0.3- |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 11 17 | 704 | (1.2+ | 1.8-) | 2001 12 18 | 644 | 0.1- | 0.1+ | 2007 11 07 | G96 | 0.1-  | 0.5-  |
| 2001 11 17 | 704 | (0.9+ | 1.6-) | 2001 12 20 | 704 | 1.0+ | 0.8+ | 2007 11 07 | G96 | 0.3+  | 0.2-  |
| 2001 11 19 | 699 | 1.1-  | 0.2+  | 2001 12 20 | 704 | 0.2- | 0.3- | 2007 12 05 | 691 | 0.1+  | 0.2-  |
| 2001 11 19 | 699 | 0.6-  | 0.1-  | 2001 12 20 | 704 | 0.5+ | 1.4+ | 2007 12 05 | 691 | 0.2-  | 0.3-  |
| 2001 11 19 | 699 | 0.5-  | 0.0   | 2001 12 20 | 704 | 0.7- | 0.5+ | 2007 12 05 | 691 | 0.3-  | 0.0   |
| 2001 11 19 | 699 | 0.6-  | 0.1+  | 2004 04 13 | 691 | 0.4+ | 0.2+ | 2007 12 15 | 704 | (1.9+ | 2.7-) |
| 2001 11 20 | 704 | 0.2-  | 0.3+  | 2004 04 13 | 691 | 0.2+ | 0.3+ | 2007 12 15 | 704 | 0.9+  | 0.4-  |
| 2001 11 20 | 704 | 0.2+  | 0.8-  | 2004 04 13 | 691 | 0.0  | 0.8+ | 2007 12 15 | 704 | 0.7+  | 0.3+  |

(172038)\* 2001 WE<sub>51</sub>

Discovered 2001 Nov. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | <i>P</i> |           | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| 37.56882 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.18742027 | $\omega$ | 58.58930  | +0.62132740 | -0.78353963 |
| <i>a</i> | 3.0240689  | $\Omega$ | 352.99298 | +0.70660436 | +0.56263727 |
| <i>e</i> | 0.0874599  | <i>i</i> | 1.98793   | +0.33861858 | +0.26363791 |
| <i>P</i> | 5.26       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 03 20 | 691 | 0.4+ | 0.3- | 2001 11 21 | 704 | (1.4+ | 1.6-) | 2006 10 17 | G96 | 0.2+ | 0.0  |
| 1998 03 20 | 691 | 0.0  | 0.4- | 2001 11 21 | 704 | (1.6+ | 0.3+) | 2006 10 17 | G96 | 1.0+ | 0.0  |
| 1998 03 20 | 691 | 0.2- | 0.0  | 2004 05 13 | 691 | 0.3+  | 0.2+  | 2006 10 17 | G96 | 0.9+ | 1.2- |
| 2001 10 21 | 704 | 0.4- | 0.8+ | 2004 05 13 | 691 | 0.1-  | 0.3+  | 2006 10 28 | G96 | 0.0  | 0.2+ |
| 2001 10 21 | 704 | 0.2- | 0.4+ | 2004 05 13 | 691 | 0.3+  | 0.3+  | 2006 10 28 | G96 | 0.3- | 0.1- |
| 2001 10 21 | 704 | 0.7- | 0.9+ | 2004 05 21 | 691 | 0.2-  | 0.1+  | 2006 10 28 | G96 | 0.2- | 0.1- |
| 2001 10 26 | 644 | 1.3- | 0.3+ | 2004 05 21 | 691 | 0.2-  | 0.5+  | 2006 10 28 | G96 | 0.1- | 0.2+ |
| 2001 10 26 | 644 | 1.5- | 0.3+ | 2004 05 21 | 691 | 0.4+  | 0.2+  | 2007 11 07 | G96 | 0.2- | 0.1+ |
| 2001 10 26 | 644 | 1.1- | 0.4+ | 2006 07 21 | G96 | 0.5+  | 0.5+  | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2001 11 19 | 704 | 0.1- | 0.9+ | 2006 07 21 | G96 | 1.3+  | 0.8-  | 2007 11 07 | G96 | 0.6+ | 0.3- |
| 2001 11 19 | 704 | 0.3+ | 0.6+ | 2006 07 21 | G96 | 0.4+  | 0.1-  | 2007 11 07 | G96 | 0.0  | 0.2- |
| 2001 11 19 | 704 | 0.2- | 0.6+ | 2006 07 21 | G96 | 0.0   | 1.0-  | 2007 12 04 | 691 | 0.4- | 0.3+ |
| 2001 11 19 | 704 | 0.7- | 0.7+ | 2006 10 02 | 691 | 0.1-  | 0.1+  | 2007 12 04 | 691 | 0.2- | 0.2- |
| 2001 11 19 | 704 | 0.3- | 0.4- | 2006 10 02 | 691 | 0.1+  | 0.0   | 2007 12 04 | 691 | 0.3+ | 0.1+ |
| 2001 11 21 | 704 | 1.3+ | 0.1- | 2006 10 02 | 691 | 0.0   | 0.2+  |            |     |      |      |
| 2001 11 21 | 704 | 0.9+ | 0.5- | 2006 10 17 | G96 | 0.5-  | 0.2+  |            |     |      |      |

(172039)\* 2001 WZ<sub>58</sub>

Discovered 2001 Nov. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 294.05882 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.17475940 | $\omega$ | 118.20818 | -0.86913177 | -0.48828672 |
| <i>a</i>  | 3.1684171  | $\Omega$ | 32.74205  | +0.38729719 | -0.77084192 |
| <i>e</i>  | 0.2072098  | <i>i</i> | 8.36159   | +0.30758878 | -0.40911956 |
| <i>P</i>  | 5.64       | <i>H</i> | 14.5      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 04 22 | 704 | 0.3-  | 1.8-  | 2001 11 21 | 704 | 0.2+ | 0.2- | 2007 11 19 | G96 | 0.1+ | 0.2- |
| 1998 04 22 | 704 | (1.1+ | 2.7-) | 2001 11 21 | 704 | 0.2+ | 0.8+ | 2007 11 20 | 704 | 0.2- | 0.4- |
| 1998 04 22 | 704 | 0.3+  | 1.3-  | 2001 11 21 | 704 | 0.3- | 0.0  | 2007 11 20 | 704 | 0.1+ | 0.5+ |
| 1998 04 22 | 704 | (0.1- | 4.2-) | 2003 01 28 | 644 | 0.3+ | 0.8+ | 2007 11 20 | 704 | 0.1+ | 0.5+ |
| 1998 05 01 | 704 | 0.2-  | 1.6+  | 2003 01 28 | 644 | 0.3+ | 0.9+ | 2007 11 20 | 704 | 0.9+ | 0.3- |
| 1998 05 01 | 704 | 1.1+  | 0.5+  | 2003 01 28 | 644 | 0.5+ | 1.1+ | 2007 11 20 | 704 | 1.3- | 0.2+ |
| 1998 05 01 | 704 | 0.5-  | 0.1+  | 2003 03 03 | 644 | 0.1+ | 0.0  | 2007 11 20 | 691 | 0.1+ | 0.2- |
| 1998 05 01 | 704 | 0.2-  | 1.3+  | 2003 03 03 | 644 | 0.1+ | 0.2+ | 2007 11 20 | 691 | 0.1- | 0.3- |
| 2001 10 21 | 704 | 0.2-  | 0.5+  | 2003 03 03 | 644 | 0.2+ | 0.3+ | 2007 11 20 | 691 | 0.2- | 0.2- |
| 2001 10 21 | 704 | 0.5-  | 0.7+  | 2007 10 24 | G96 | 0.4- | 0.2+ | 2007 11 30 | A77 | 0.8- | 0.2+ |
| 2001 10 21 | 704 | 0.3-  | 0.2-  | 2007 10 24 | G96 | 0.0  | 0.2- | 2007 11 30 | A77 | 0.5- | 0.4- |
| 2001 10 21 | 704 | 0.9-  | 1.4+  | 2007 10 24 | G96 | 0.5+ | 0.1- | 2007 11 30 | A77 | 0.3- | 0.1- |
| 2001 10 26 | 644 | 0.3-  | 0.7+  | 2007 10 24 | G96 | 0.5- | 0.4- | 2007 12 13 | 704 | 0.9+ | 0.7- |
| 2001 10 26 | 644 | 0.1-  | 0.8+  | 2007 11 08 | 691 | 0.2- | 0.2- | 2007 12 13 | 704 | 0.7+ | 0.6- |
| 2001 10 26 | 644 | 0.1-  | 0.5+  | 2007 11 08 | 691 | 0.1- | 0.0  | 2007 12 13 | 704 | 0.3+ | 0.6- |
| 2001 11 11 | 691 | 0.2-  | 0.1+  | 2007 11 08 | 691 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.4- | 0.1+ |
| 2001 11 11 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 704 | 0.8- | 0.2- | 2007 12 13 | 704 | 0.9+ | 0.6- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 11 | 691 | 0.4− | 0.1+ | 2007 11 18 | 704 | 0.4+ | 0.1+ | 2007 12 16 | 704 | 0.4+ | 0.1+ |
| 2001 11 19 | 704 | 1.0+ | 0.1+ | 2007 11 18 | 704 | 0.0  | 0.2+ | 2007 12 16 | 704 | 1.5+ | 0.0  |
| 2001 11 19 | 704 | 0.4+ | 0.4+ | 2007 11 18 | 704 | 0.5+ | 0.2+ | 2007 12 16 | 704 | 0.7− | 0.5+ |
| 2001 11 19 | 704 | 0.0  | 0.1− | 2007 11 19 | G96 | 0.3+ | 0.2− | 2007 12 16 | 704 | 1.1+ | 0.0  |
| 2001 11 21 | 704 | 0.1+ | 1.0+ | 2007 11 19 | G96 | 0.2+ | 0.2− | 2007 12 16 | 704 | 1.7+ | 0.2− |
| 2001 11 21 | 704 | 0.2+ | 0.2+ | 2007 11 19 | G96 | 0.1+ | 0.2− |            |     |      |      |

**(172040)\* 2001 WQ<sub>71</sub> = 1995 UL<sub>65</sub>**

Discovered 2001 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 25436)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 306.27439  |          | (2000.0) |             | <b>P</b> |  | <b>Q</b>    |   | MPG |  |  |
|----------|------------|----------|----------|-------------|----------|--|-------------|---|-----|--|--|
| <i>n</i> | 0.17183331 | $\omega$ | 70.09373 | −0.71203859 |          |  | −0.69590054 |   |     |  |  |
| <i>a</i> | 3.2042850  | $\Omega$ | 65.67673 | +0.59976890 |          |  | −0.67198234 |   |     |  |  |
| <i>e</i> | 0.1576030  | <i>i</i> | 5.88302  | +0.36507303 |          |  | −0.25330255 |   |     |  |  |
| <i>P</i> | 5.74       | <i>H</i> | 15.6     | <i>G</i>    | 0.15     |  | <i>U</i>    | 1 |     |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 10 21 | 691 | 0.1+  | 0.1−  | 2001 11 20 | 704 | (0.3− | 1.9+) | 2003 03 05 | 704 | (1.4+ | 1.6+) |
| 1995 10 21 | 691 | 0.1+  | 0.0   | 2001 11 21 | 704 | 1.3−  | 0.7+  | 2003 03 05 | 704 | 0.4+  | 0.5+  |
| 1995 10 21 | 691 | 0.1+  | 0.2+  | 2001 11 21 | 704 | 0.7−  | 1.1+  | 2003 03 07 | 644 | 0.1−  | 0.2+  |
| 1995 10 27 | 691 | 0.1−  | 0.1+  | 2001 11 21 | 704 | (0.6− | 1.6+) | 2003 03 07 | 644 | 0.3−  | 0.6−  |
| 1995 10 27 | 691 | 0.2−  | 0.4−  | 2001 11 21 | 704 | (0.7− | 1.6+) | 2003 03 07 | 644 | 0.2−  | 0.1−  |
| 1995 10 27 | 691 | 0.4−  | 0.9−  | 2001 11 21 | 704 | 1.2−  | 1.2+  | 2007 09 15 | G96 | 0.1−  | 0.3−  |
| 1996 12 02 | 691 | 1.6−  | 1.1−  | 2003 02 08 | 699 | (0.2− | 2.0+) | 2007 09 15 | G96 | 0.0   | 0.2−  |
| 1996 12 02 | 691 | 0.5+  | 0.4−  | 2003 02 08 | 699 | 0.4+  | 0.3+  | 2007 09 15 | G96 | 0.3+  | 0.1+  |
| 1996 12 02 | 691 | 0.7+  | 0.3−  | 2003 02 08 | 699 | 0.7−  | 0.1+  | 2007 09 15 | G96 | 0.0   | 0.1+  |
| 2001 10 13 | 691 | 0.6+  | 0.1+  | 2003 02 08 | 699 | 0.3−  | 0.5+  | 2007 09 18 | G96 | 0.3−  | 0.5−  |
| 2001 10 13 | 691 | 0.4+  | 0.3+  | 2003 02 21 | 644 | 0.1−  | 0.2+  | 2007 09 18 | G96 | 0.1+  | 1.0−  |
| 2001 10 13 | 691 | 0.8+  | 0.6+  | 2003 02 21 | 644 | 0.3+  | 0.2+  | 2007 09 18 | G96 | 0.6−  | 0.3−  |
| 2001 10 23 | 704 | 0.1+  | 1.4+  | 2003 02 21 | 644 | 0.1+  | 0.1+  | 2007 09 18 | G96 | 0.3+  | 0.6−  |
| 2001 10 23 | 704 | 0.2−  | 0.2−  | 2003 02 28 | 608 | 0.4+  | 0.2−  | 2007 11 06 | 691 | 0.1−  | 0.2−  |
| 2001 10 23 | 704 | 0.5−  | 0.9+  | 2003 02 28 | 608 | 0.4+  | 0.2−  | 2007 11 06 | 691 | 0.2−  | 0.2−  |
| 2001 10 23 | 704 | 0.3+  | 0.4+  | 2003 02 28 | 608 | 0.5+  | 1.2+  | 2007 11 06 | 691 | 0.1−  | 0.1+  |
| 2001 11 20 | 704 | (0.4+ | 2.4+) | 2003 03 03 | 644 | 0.2+  | 0.8+  | 2007 12 05 | G96 | 0.5−  | 0.2−  |
| 2001 11 20 | 704 | 0.6−  | 1.3+  | 2003 03 03 | 644 | 0.4+  | 0.6+  | 2007 12 05 | G96 | 0.1−  | 0.3+  |
| 2001 11 20 | 704 | (0.2− | 1.7+) | 2003 03 03 | 644 | 0.6+  | 0.9+  | 2007 12 05 | G96 | 1.0−  | 0.1−  |
| 2001 11 20 | 704 | (0.1+ | 1.8+) | 2003 03 05 | 704 | (0.3+ | 1.6+) | 2007 12 05 | G96 | 1.0+  | 1.0+  |

**(172041)\* 2001 WJ<sub>96</sub> = 2005 NN<sub>84</sub>**

Discovered 2001 Nov. 17 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 85272)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 170.79021  |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |   | MPG |  |  |
|----------|------------|----------|-----------|-------------|----------|--|-------------|---|-----|--|--|
| <i>n</i> | 0.18519677 | $\omega$ | 224.44727 | +0.24287132 |          |  | +0.96922967 |   |     |  |  |
| <i>a</i> | 3.0482256  | $\Omega$ | 59.64734  | −0.87656936 |          |  | +0.23697954 |   |     |  |  |
| <i>e</i> | 0.0568251  | <i>i</i> | 2.66293   | −0.41549931 |          |  | +0.06659238 |   |     |  |  |
| <i>P</i> | 5.32       | <i>H</i> | 16.3      | <i>G</i>    | 0.15     |  | <i>U</i>    | 0 |     |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 30 | 691 | 0.2−  | 0.1−  | 2005 07 02 | 691 | 0.6− | 0.1+ | 2006 11 14 | G96 | 0.2+ | 0.3− |
| 2000 08 30 | 691 | 0.1+  | 0.3−  | 2005 07 02 | 691 | 0.0  | 0.3+ | 2006 11 14 | G96 | 0.2+ | 0.2− |
| 2000 08 30 | 691 | 0.1−  | 0.2−  | 2005 07 02 | 691 | 0.9− | 0.5+ | 2006 11 14 | G96 | 0.0  | 0.1− |
| 2001 11 17 | 691 | 0.4−  | 0.6+  | 2005 07 11 | 691 | 0.5+ | 0.6+ | 2006 11 22 | 691 | 0.4+ | 0.0  |
| 2001 11 17 | 691 | 0.0   | 0.3+  | 2005 07 11 | 691 | 0.4− | 0.1− | 2006 11 22 | 691 | 1.0+ | 0.6+ |
| 2001 11 17 | 691 | 0.4−  | 0.3+  | 2005 07 11 | 691 | 0.4− | 0.3− | 2006 11 22 | 691 | 0.1− | 0.1+ |
| 2001 11 21 | 704 | (1.7− | 1.0+) | 2006 09 30 | G96 | 0.1+ | 0.2− | 2006 11 25 | 703 | 0.7− | 0.8− |
| 2001 11 21 | 704 | 1.2−  | 0.2−  | 2006 09 30 | G96 | 0.2+ | 0.6− | 2006 11 25 | 703 | 0.1+ | 0.5− |
| 2001 11 21 | 704 | 0.5−  | 1.1+  | 2006 09 30 | G96 | 0.2+ | 0.1− | 2006 11 25 | 703 | 0.3+ | 0.2− |
| 2001 12 14 | 291 | 0.0   | 0.5+  | 2006 09 30 | G96 | 0.1+ | 0.5− | 2006 11 25 | 703 | 0.5+ | 0.3+ |
| 2001 12 14 | 291 | 0.2+  | 0.5+  | 2006 10 27 | G96 | 0.1− | 0.7− | 2007 11 05 | G96 | 0.4+ | 0.5− |
| 2001 12 14 | 291 | 0.1+  | 0.5+  | 2006 10 27 | G96 | 0.3+ | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.1− |
| 2004 04 22 | 691 | 0.2+  | 0.1+  | 2006 10 27 | G96 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.3− | 0.0  |
| 2004 04 22 | 691 | 0.4+  | 0.1+  | 2006 10 27 | G96 | 0.2+ | 0.1− | 2007 11 05 | G96 | 0.3− | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 22 | 691 | 0.5+ | 0.1− | 2006 11 10 | 691 | 0.6+ | 0.5+ | 2007 12 03 | 691 | 0.8− | 0.0  |
| 2004 05 13 | 691 | 0.3+ | 0.6+ | 2006 11 10 | 691 | 0.4+ | 0.2+ | 2007 12 03 | 691 | 0.4− | 0.0  |
| 2004 05 13 | 691 | 0.3+ | 0.4+ | 2006 11 10 | 691 | 0.3− | 0.5+ | 2007 12 03 | 691 | 1.1− | 0.2+ |
| 2004 05 13 | 691 | 0.3+ | 0.1+ | 2006 11 14 | G96 | 0.4+ | 0.7− |            |     |      |      |

**(172042)\* 2001 WT<sub>101</sub> = 2006 UB<sub>112</sub>**

Discovered 2001 Nov. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 108143)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 297.39454  |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |   | MPG |  |  |
|----------|------------|----------|-----------|-------------|----------|--|-------------|---|-----|--|--|
| <i>n</i> | 0.17519420 | $\omega$ | 286.03186 | −0.74262580 |          |  | −0.66710277 |   |     |  |  |
| <i>a</i> | 3.1631727  | $\Omega$ | 212.19386 | +0.64897030 |          |  | −0.69508137 |   |     |  |  |
| <i>e</i> | 0.0876496  | <i>i</i> | 6.35774   | +0.16536165 |          |  | −0.26802197 |   |     |  |  |
| <i>P</i> | 5.63       | <i>H</i> | 15.8      | <i>G</i>    | 0.15     |  | <i>U</i>    | 0 |     |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 18 | 691 | 0.4+ | 0.4+ | 2004 04 22 | 691 | 0.1− | 0.3+ | 2006 10 21 | 691 | 0.4− | 0.7+ |
| 2001 11 18 | 691 | 0.2+ | 0.3+ | 2004 04 22 | 691 | 0.2+ | 0.3+ | 2006 10 21 | 691 | 0.0  | 0.3− |
| 2001 11 18 | 691 | 0.1+ | 0.2+ | 2004 04 22 | 691 | 0.1+ | 0.3+ | 2007 11 04 | 691 | 0.1− | 0.1− |
| 2001 11 20 | 704 | 0.7− | 0.3− | 2004 05 18 | 599 | 0.3− | 0.7+ | 2007 11 04 | 691 | 0.2− | 0.2− |
| 2001 11 20 | 704 | 0.7− | 0.1− | 2004 05 18 | 599 | 0.3− | 0.4+ | 2007 11 04 | 691 | 0.3− | 0.4+ |
| 2001 11 20 | 704 | 0.1+ | 0.2+ | 2004 05 18 | 599 | 0.1− | 0.7+ | 2007 11 21 | G96 | 0.4+ | 0.1− |
| 2001 11 20 | 704 | 0.7− | 0.0  | 2004 05 18 | 599 | 1.1+ | 0.2+ | 2007 11 21 | G96 | 0.2+ | 0.1− |
| 2001 11 21 | 704 | 0.5+ | 0.1+ | 2006 08 21 | 691 | 0.1− | 0.1− | 2007 11 21 | G96 | 0.0  | 0.2− |
| 2001 11 21 | 704 | 0.2− | 0.5+ | 2006 08 21 | 691 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.1− | 0.2− |
| 2001 11 21 | 704 | 0.0  | 1.3+ | 2006 08 21 | 691 | 0.0  | 0.2− | 2007 12 04 | 704 | 0.4+ | 0.3+ |
| 2001 11 21 | 704 | 0.2+ | 0.8− | 2006 10 19 | 691 | 0.2+ | 0.0  | 2007 12 04 | 704 | 1.2+ | 0.9+ |
| 2001 12 10 | 691 | 0.3− | 0.5− | 2006 10 19 | 691 | 0.3+ | 0.2+ | 2007 12 04 | 704 | 0.3− | 0.1+ |
| 2001 12 10 | 691 | 0.0  | 0.2− | 2006 10 19 | 691 | 0.1− | 0.1+ | 2007 12 04 | 704 | 0.2− | 0.7+ |
| 2001 12 10 | 691 | 0.2− | 0.0  | 2006 10 21 | 691 | 0.0  | 0.3+ | 2007 12 04 | 704 | 0.5+ | 0.5+ |

**(172043)\* 2001 XJ<sub>9</sub>**

Discovered 2001 Dec. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 61.94494   |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |   | MPG |  |  |
|----------|------------|----------|-----------|-------------|----------|--|-------------|---|-----|--|--|
| <i>n</i> | 0.17376710 | $\omega$ | 307.04833 | +0.97535721 |          |  | +0.11796984 |   |     |  |  |
| <i>a</i> | 3.1804679  | $\Omega$ | 47.01582  | +0.00251935 |          |  | +0.83903718 |   |     |  |  |
| <i>e</i> | 0.2925629  | <i>i</i> | 14.76556  | −0.22061722 |          |  | +0.53113062 |   |     |  |  |
| <i>P</i> | 5.67       | <i>H</i> | 14.7      | <i>G</i>    | 0.15     |  | <i>U</i>    | 0 |     |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 704 | 0.6− | 0.7+ | 2002 01 08 | 704 | 0.0  | 0.1− | 2006 07 29 | E12 | 0.1+ | 0.1− |
| 2001 10 15 | 704 | 0.2− | 0.5+ | 2002 02 08 | 704 | 0.2+ | 0.1+ | 2006 07 29 | E12 | 0.2− | 0.1+ |
| 2001 10 15 | 704 | 0.5− | 1.3+ | 2002 02 08 | 704 | 0.5− | 0.1+ | 2006 08 13 | E12 | 0.5+ | 0.0  |
| 2001 10 15 | 704 | 0.5− | 1.4+ | 2002 02 08 | 704 | 0.6+ | 0.3+ | 2006 08 13 | E12 | 0.0  | 0.2− |
| 2001 11 11 | 704 | 0.8− | 1.3+ | 2005 04 11 | G96 | 0.1+ | 0.4+ | 2006 08 13 | E12 | 0.0  | 0.2− |
| 2001 11 11 | 704 | 0.7− | 1.4+ | 2005 04 11 | G96 | 0.1− | 0.4+ | 2006 08 13 | E12 | 0.1+ | 0.3+ |
| 2001 11 11 | 704 | 0.7− | 0.8+ | 2005 04 11 | G96 | 0.1+ | 0.7+ | 2006 08 25 | E12 | 0.1+ | 0.3+ |
| 2001 11 11 | 704 | 0.9− | 1.4+ | 2005 04 11 | G96 | 0.1− | 0.5+ | 2006 08 25 | E12 | 0.4− | 0.3+ |
| 2001 11 24 | 704 | 0.7− | 0.5+ | 2005 04 17 | 691 | 0.0  | 0.2+ | 2006 08 25 | E12 | 0.1− | 0.1+ |
| 2001 11 24 | 704 | 0.4+ | 0.1− | 2005 04 17 | 691 | 0.1+ | 0.3+ | 2006 08 25 | E12 | 0.7− | 0.0  |
| 2001 11 24 | 704 | 0.2+ | 0.3+ | 2005 04 17 | 691 | 0.0  | 0.3+ | 2006 09 03 | E12 | 0.3+ | 0.2− |
| 2001 11 24 | 704 | 0.0  | 0.6+ | 2005 05 07 | 691 | 0.2+ | 0.4+ | 2006 09 03 | E12 | 0.2+ | 0.4+ |
| 2001 12 09 | 704 | 0.9− | 0.5+ | 2005 05 07 | 691 | 0.4+ | 0.3+ | 2006 09 03 | E12 | 0.2+ | 0.2+ |
| 2001 12 09 | 704 | 0.7− | 0.8+ | 2005 05 07 | 691 | 0.2+ | 0.2+ | 2006 09 03 | E12 | 0.2− | 0.6− |
| 2001 12 09 | 704 | 0.4− | 0.6+ | 2005 05 07 | 691 | 0.3+ | 0.3+ | 2006 09 12 | E12 | 0.0  | 0.3+ |
| 2001 12 09 | 704 | 0.6− | 1.2+ | 2005 05 07 | 691 | 0.1+ | 0.2+ | 2006 09 12 | E12 | 0.8− | 0.1− |
| 2001 12 10 | 704 | 0.4− | 0.2+ | 2005 05 07 | 691 | 0.3+ | 0.2+ | 2006 09 12 | E12 | 0.3− | 0.2+ |
| 2001 12 10 | 704 | 0.2+ | 0.0  | 2005 05 09 | G96 | 0.0  | 0.0  | 2006 09 12 | E12 | 0.6− | 0.1+ |
| 2001 12 10 | 704 | 0.2+ | 0.2+ | 2005 05 09 | G96 | 0.0  | 0.3+ | 2006 09 27 | E12 | 0.2− | 0.2− |
| 2001 12 10 | 704 | 0.0  | 0.2− | 2005 05 09 | G96 | 0.0  | 0.2+ | 2006 09 27 | E12 | 0.2+ | 0.1+ |
| 2001 12 10 | 704 | 1.1+ | 0.2+ | 2005 05 09 | G96 | 0.1− | 0.1+ | 2006 09 27 | E12 | 0.4+ | 0.5+ |
| 2001 12 11 | 704 | 0.3− | 1.4− | 2006 05 29 | E12 | 0.4− | 0.1− | 2006 09 27 | E12 | 0.0  | 0.2+ |
| 2001 12 11 | 704 | 0.7− | 0.2− | 2006 05 29 | E12 | 0.2+ | 0.0  | 2006 11 17 | 644 | 0.2− | 0.1− |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 12 11 | 704 | 0.2− | 0.4+ | 2006 05 29 | E12 | 0.5−  | 0.0   | 2006 11 17 | 644 | 0.3+ | 0.3+ |
| 2001 12 11 | 704 | 0.6− | 0.1+ | 2006 05 29 | E12 | (1.5+ | 0.5+) | 2006 11 17 | 644 | 0.1+ | 0.2+ |
| 2001 12 11 | 704 | 0.6− | 0.0  | 2006 05 29 | E12 | 0.3−  | 0.0   | 2007 11 03 | 704 | 0.0  | 0.7+ |
| 2001 12 20 | 704 | 0.1+ | 0.0  | 2006 05 29 | E12 | 0.2+  | 0.2+  | 2007 11 03 | 704 | 0.3+ | 1.1+ |
| 2001 12 20 | 704 | 0.0  | 0.1− | 2006 05 29 | E12 | 0.6+  | 0.0   | 2007 11 03 | 704 | 1.3+ | 0.7+ |
| 2001 12 20 | 704 | 0.0  | 0.1+ | 2006 05 29 | E12 | 0.1−  | 0.4−  | 2007 11 03 | 704 | 0.4+ | 0.4+ |
| 2001 12 20 | 704 | 0.0  | 0.2+ | 2006 06 22 | E12 | (0.4− | 1.6+) | 2007 11 16 | 704 | 0.1+ | 0.2− |
| 2001 12 22 | 704 | 0.2− | 0.5− | 2006 06 22 | E12 | 0.0   | 1.2+  | 2007 11 16 | 704 | 0.4− | 0.7− |
| 2001 12 22 | 704 | 0.4+ | 0.5− | 2006 06 22 | E12 | 0.2−  | 0.8+  | 2007 11 16 | 704 | 0.8+ | 0.2− |
| 2001 12 22 | 704 | 0.7+ | 0.7− | 2006 06 22 | E12 | 0.3+  | 0.1−  | 2007 11 16 | 704 | 0.7+ | 0.9− |
| 2001 12 22 | 704 | 0.3+ | 0.4+ | 2006 07 20 | E12 | 0.3−  | 0.7+  | 2007 11 16 | 704 | 0.4+ | 0.0  |
| 2001 12 22 | 704 | 0.9+ | 0.1− | 2006 07 20 | E12 | 0.0   | 0.7+  | 2007 12 03 | 704 | 0.1− | 0.5+ |
| 2002 01 08 | 704 | 1.0+ | 0.6− | 2006 07 20 | E12 | 0.2−  | 0.2−  | 2007 12 03 | 704 | 0.0  | 0.6− |
| 2002 01 08 | 704 | 0.7+ | 0.2+ | 2006 07 20 | E12 | 0.4−  | 0.2−  | 2007 12 03 | 704 | 1.9− | 0.6+ |
| 2002 01 08 | 704 | 0.6+ | 0.6+ | 2006 07 29 | E12 | 0.1+  | 0.2+  | 2007 12 03 | 704 | 1.0− | 0.3+ |
| 2002 01 08 | 704 | 0.3+ | 0.1+ | 2006 07 29 | E12 | 0.1−  | 0.1+  |            |     |      |      |

**(172044)\* 2001 XZ<sub>10</sub>**

Discovered 2001 Dec. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 51.38670   |          |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.17396270 | $\omega$ | 286.67713 | +0.97974780 | −0.09053566 |          |   |
| <i>a</i>                                | 3.1780834  | $\Omega$ | 78.78806  | +0.15961674 | +0.89167135 |          |   |
| <i>e</i>                                | 0.0820557  | <i>i</i> | 10.49057  | −0.12089972 | +0.44353749 |          |   |
| <i>P</i>                                | 5.67       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.1−  | 0.0   | 2001 12 11 | 704 | 0.5+  | 0.5−  | 2006 08 20 | 644 | 0.0  | 0.1− |
| 2001 10 17 | 704 | 1.0+  | 0.3−  | 2001 12 11 | 704 | 0.3+  | 0.5+  | 2006 08 28 | E12 | 0.5+ | 0.2+ |
| 2001 10 17 | 704 | (2.2+ | 1.1−) | 2001 12 18 | 704 | 0.0   | 0.8+  | 2006 08 28 | E12 | 0.4+ | 0.0  |
| 2001 10 17 | 704 | 0.1+  | 0.6−  | 2001 12 18 | 704 | 0.4+  | 1.1+  | 2006 08 28 | E12 | 0.7+ | 0.0  |
| 2001 11 18 | 608 | 0.1−  | 0.6−  | 2001 12 18 | 704 | 0.4−  | 1.2+  | 2006 08 28 | E12 | 0.6+ | 0.3− |
| 2001 11 18 | 608 | 0.2+  | 1.1−  | 2001 12 18 | 704 | 0.5−  | 1.1+  | 2006 09 17 | 699 | 0.6− | 0.6+ |
| 2001 11 18 | 608 | 0.4−  | 0.6−  | 2001 12 18 | 704 | 0.4+  | 1.1+  | 2006 09 17 | 699 | 0.3− | 0.1− |
| 2001 11 20 | 704 | 0.1+  | 0.3−  | 2003 01 10 | 704 | 0.5−  | 1.0+  | 2006 09 17 | 699 | 0.6− | 0.7+ |
| 2001 11 20 | 699 | 0.1+  | 0.6+  | 2003 01 10 | 704 | (1.6− | 0.4+) | 2006 09 17 | 699 | 1.2− | 0.0  |
| 2001 11 20 | 704 | 0.1−  | 0.8+  | 2003 01 10 | 704 | 0.3−  | 1.1+  | 2006 09 26 | 703 | 0.5+ | 0.9+ |
| 2001 11 20 | 699 | 0.9−  | 0.5+  | 2003 01 10 | 704 | (0.2− | 1.7+) | 2006 09 26 | 703 | 0.4− | 0.6− |
| 2001 11 20 | 704 | 0.4−  | 0.1+  | 2004 03 15 | 704 | 0.8+  | 0.4+  | 2006 09 26 | 703 | 0.5− | 0.4+ |
| 2001 11 20 | 699 | 0.8−  | 1.0+  | 2004 03 15 | 704 | (1.6+ | 0.1+) | 2006 09 26 | 703 | 0.4− | 0.3+ |
| 2001 11 20 | 704 | 0.8−  | 0.8−  | 2004 03 15 | 704 | 0.4+  | 0.7+  | 2007 10 30 | 691 | 0.1− | 0.1− |
| 2001 11 20 | 699 | 0.5−  | 0.3+  | 2006 07 30 | E12 | 0.1+  | 0.4+  | 2007 10 30 | 691 | 0.1− | 0.1− |
| 2001 11 20 | 704 | (0.1+ | 2.3−) | 2006 07 30 | E12 | 0.3−  | 0.2−  | 2007 10 30 | 691 | 0.0  | 0.2− |
| 2001 12 07 | 704 | 0.2−  | 0.2+  | 2006 07 30 | E12 | 1.0+  | 0.7−  | 2007 11 14 | 704 | 0.3+ | 0.2− |
| 2001 12 07 | 704 | (0.9+ | 1.6+) | 2006 07 30 | E12 | 0.3+  | 0.3+  | 2007 11 14 | 704 | 0.0  | 1.1− |
| 2001 12 07 | 704 | 0.2+  | 0.3+  | 2006 08 14 | 644 | 0.1−  | 0.2−  | 2007 11 14 | 704 | 0.3+ | 0.4− |
| 2001 12 07 | 704 | 0.9+  | 1.0+  | 2006 08 14 | 644 | 0.3−  | 0.1+  | 2007 11 14 | 704 | 0.2+ | 1.0− |
| 2001 12 07 | 704 | 1.4−  | 0.4+  | 2006 08 14 | 644 | 0.0   | 0.2−  | 2007 11 14 | 704 | 0.8+ | 0.2+ |
| 2001 12 07 | 704 | 0.4+  | 0.2+  | 2006 08 16 | 644 | 0.1+  | 0.2−  | 2007 11 14 | 691 | 0.2+ | 0.0  |
| 2001 12 07 | 704 | 0.3−  | 1.2+  | 2006 08 16 | 644 | 0.2−  | 0.1+  | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2001 12 07 | 704 | 1.2−  | 0.1−  | 2006 08 16 | 644 | 0.2−  | 0.0   | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2001 12 07 | 704 | 0.4+  | 1.1+  | 2006 08 17 | 644 | 0.1+  | 0.3−  | 2007 11 19 | 691 | 0.1+ | 0.2− |
| 2001 12 09 | 699 | 1.0−  | 0.4−  | 2006 08 17 | 644 | 0.3+  | 0.1−  | 2007 11 19 | 691 | 0.1− | 0.3− |
| 2001 12 09 | 699 | 0.5−  | 0.7+  | 2006 08 17 | 644 | 0.2−  | 0.1+  | 2007 11 19 | 691 | 0.1+ | 0.5− |
| 2001 12 09 | 699 | 0.8+  | 0.1+  | 2006 08 18 | 644 | 0.1+  | 0.3−  | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2001 12 09 | 699 | (1.7− | 1.4−) | 2006 08 18 | 644 | 0.1−  | 0.4−  | 2007 12 05 | 704 | 0.2+ | 0.3− |
| 2001 12 11 | 704 | 0.2+  | 0.0   | 2006 08 18 | 644 | 0.0   | 0.3−  | 2007 12 05 | 704 | 0.2− | 0.4+ |
| 2001 12 11 | 704 | 0.6−  | 1.0−  | 2006 08 20 | 644 | 0.1+  | 0.1−  | 2007 12 05 | 704 | 0.3+ | 0.5− |
| 2001 12 11 | 704 | 0.9+  | 0.3+  | 2006 08 20 | 644 | 0.3+  | 0.2+  | 2007 12 05 | 704 | 1.0+ | 0.3+ |

**(172045)\* 2001 XR<sub>22</sub>**

Discovered 2001 Dec. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 349.50657  |          |           | (2000.0)    | <b>P</b>    | <b>Q</b> |
| <i>n</i> | 0.17547420 | $\omega$ | 177.73540 | −0.49404114 | −0.85037621 |          |
| <i>a</i> | 3.1598069  | $\Omega$ | 301.82034 | +0.79430753 | −0.35676918 |          |
| <i>e</i> | 0.1416086  | <i>i</i> | 12.30341  | +0.35355183 | −0.38675063 |          |
| <i>P</i> | 5.62       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        | <i>U</i> |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 12 07 | 644 | 0.2+ | 0.2− | 2002 01 12 | 704 | 0.8+  | 0.8−  | 2006 11 22 | 703 | 0.3− | 0.6+ |
| 2001 12 07 | 644 | 1.0+ | 0.3− | 2002 01 12 | 704 | 0.2+  | 0.2+  | 2006 11 22 | 703 | 0.9− | 0.3+ |
| 2001 12 07 | 644 | 0.2− | 0.1− | 2002 01 12 | 704 | 0.9+  | 0.4−  | 2006 11 22 | 703 | 0.9− | 0.4+ |
| 2001 12 09 | 704 | 0.2− | 0.1+ | 2002 02 08 | 704 | 0.8+  | 0.2+  | 2006 11 22 | 703 | 0.9− | 0.2+ |
| 2001 12 09 | 704 | 0.0  | 0.3− | 2002 02 08 | 704 | 0.0   | 0.3−  | 2006 11 22 | 703 | 0.6+ | 0.4+ |
| 2001 12 09 | 704 | 0.1− | 0.3+ | 2002 02 08 | 704 | 0.3+  | 0.2+  | 2006 11 22 | 703 | 0.9+ | 1.4+ |
| 2001 12 09 | 704 | 0.3+ | 0.1+ | 2002 02 08 | 704 | (0.1+ | 1.9+) | 2006 11 22 | 703 | 0.7+ | 1.2+ |
| 2001 12 13 | 704 | 0.4− | 0.3+ | 2003 03 23 | 644 | 0.3−  | 0.7+  | 2006 11 22 | 703 | 0.0  | 0.6+ |
| 2001 12 13 | 704 | 0.2− | 0.0  | 2003 03 23 | 644 | 0.2−  | 0.7+  | 2007 11 12 | G96 | 0.4− | 0.2− |
| 2001 12 13 | 704 | 0.1+ | 0.6+ | 2003 03 23 | 644 | 0.0   | 0.7+  | 2007 11 12 | G96 | 0.2− | 0.6− |
| 2001 12 13 | 704 | 0.9− | 1.1− | 2003 03 31 | 644 | 0.0   | 0.9+  | 2007 11 12 | G96 | 0.4− | 0.3− |
| 2001 12 22 | 704 | 1.3− | 0.4− | 2003 03 31 | 644 | 0.0   | 0.9+  | 2007 11 12 | G96 | 0.1− | 0.4− |
| 2001 12 22 | 704 | 0.8− | 1.4− | 2003 03 31 | 644 | 0.4+  | 1.0+  | 2007 11 20 | 704 | 0.1− | 1.1+ |
| 2001 12 22 | 704 | 1.1− | 1.1− | 2003 04 05 | 608 | 0.8+  | 0.6−  | 2007 11 20 | 704 | 0.3+ | 0.7+ |
| 2002 01 08 | 704 | 0.1+ | 1.2+ | 2003 04 05 | 608 | 0.6+  | 0.4−  | 2007 11 20 | 704 | 0.4+ | 0.2− |
| 2002 01 08 | 704 | 0.6+ | 1.6+ | 2003 04 05 | 608 | 0.6+  | 0.3−  | 2007 11 20 | 704 | 0.3+ | 0.7− |
| 2002 01 08 | 704 | 0.3+ | 1.1+ | 2006 10 27 | 703 | 0.3−  | 0.2+  | 2007 12 14 | G96 | 0.5− | 0.7− |
| 2002 01 08 | 704 | 0.1+ | 1.0+ | 2006 10 27 | 703 | 0.4−  | 1.0−  | 2007 12 14 | G96 | 0.3− | 0.6− |
| 2002 01 08 | 704 | 0.1− | 1.2+ | 2006 10 27 | 703 | 0.0   | 1.3−  | 2007 12 14 | G96 | 0.6− | 0.6− |
| 2002 01 12 | 704 | 0.6− | 0.0  | 2006 10 27 | 703 | 0.0   | 0.6+  | 2007 12 14 | G96 | 0.3− | 0.6− |

**(172046)\* 2001 XA<sub>51</sub>**

Discovered 2001 Dec. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 75.01122   |          |           | (2000.0)    | <b>P</b>    | <b>Q</b> |
| <i>n</i> | 0.17732744 | $\omega$ | 60.03632  | +0.86239359 | +0.43044298 |          |
| <i>a</i> | 3.1377529  | $\Omega$ | 273.31426 | −0.50516123 | +0.76603022 |          |
| <i>e</i> | 0.2249568  | <i>i</i> | 15.47973  | +0.03300649 | +0.47740605 |          |
| <i>P</i> | 5.56       | <i>H</i> | 14.1      | <i>G</i>    | 0.15        | <i>U</i> |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 12 29 | 688 | 0.1−  | 0.4−  | 2005 05 14 | E12 | 0.2+ | 1.1+ | 2006 08 27 | 699 | 0.1+  | 0.1−  |
| 1997 12 29 | 688 | 0.1−  | 0.2−  | 2005 05 14 | E12 | 0.4− | 0.2− | 2006 08 30 | 699 | 0.1+  | 0.3−  |
| 2001 08 23 | 704 | 0.1−  | 0.4−  | 2005 05 14 | E12 | 0.7+ | 0.2+ | 2006 08 30 | 699 | 0.1+  | 0.1−  |
| 2001 08 23 | 704 | 0.8−  | 0.0   | 2005 05 14 | E12 | 0.1+ | 0.5+ | 2006 08 30 | 699 | 0.2+  | 0.0   |
| 2001 08 23 | 704 | 0.3+  | 0.0   | 2006 05 27 | E12 | 0.6− | 0.3+ | 2006 08 30 | 699 | 0.1+  | 0.0   |
| 2001 08 23 | 704 | 0.1+  | 0.2+  | 2006 05 27 | E12 | 0.4− | 0.0  | 2006 09 15 | 704 | 0.9+  | 0.2−  |
| 2001 08 23 | 704 | 0.3+  | 0.7−  | 2006 05 27 | E12 | 0.3+ | 0.1− | 2006 09 15 | 704 | 0.7+  | 0.2+  |
| 2001 10 08 | 704 | 0.7−  | 0.1−  | 2006 05 27 | E12 | 0.7− | 0.7− | 2006 09 15 | 704 | 0.9+  | 0.7+  |
| 2001 10 08 | 704 | 0.5−  | 0.5+  | 2006 06 03 | 703 | 0.4− | 0.4− | 2006 09 15 | 704 | 0.2−  | 1.3+  |
| 2001 10 08 | 704 | 0.2−  | 0.1+  | 2006 06 03 | 703 | 0.3− | 0.3+ | 2006 09 15 | 704 | 0.1−  | 0.5−  |
| 2001 10 08 | 704 | 0.5−  | 0.7−  | 2006 06 03 | 703 | 0.1− | 0.3+ | 2006 11 13 | 703 | 0.2+  | 0.1−  |
| 2001 11 11 | 704 | 0.2+  | 0.2−  | 2006 06 03 | 703 | 1.5− | 0.0  | 2006 11 13 | 703 | 0.6+  | 1.4+  |
| 2001 11 11 | 704 | 0.0   | 0.3−  | 2006 06 12 | 644 | 0.4− | 0.4+ | 2006 11 13 | 703 | 1.4+  | 1.2+  |
| 2001 11 11 | 704 | 0.6+  | 0.3−  | 2006 06 12 | 644 | 0.1− | 0.0  | 2006 11 13 | 703 | (1.1+ | 1.7+) |
| 2001 11 11 | 704 | 0.4+  | 0.1+  | 2006 06 12 | 644 | 0.2− | 0.2+ | 2006 11 19 | 703 | 0.8−  | 0.0   |
| 2001 11 11 | 704 | 0.3−  | 0.6+  | 2006 06 21 | 703 | 0.7− | 0.3+ | 2006 11 19 | 703 | 0.5−  | 0.1+  |
| 2001 12 10 | 704 | (0.4− | 1.6+) | 2006 06 21 | 703 | 0.1− | 0.1+ | 2006 11 19 | 703 | 0.3−  | 0.5+  |
| 2001 12 10 | 704 | 0.5−  | 1.3+  | 2006 06 21 | 703 | 1.0− | 0.2− | 2006 11 19 | 703 | 0.7−  | 0.1−  |
| 2001 12 10 | 704 | (0.5− | 2.1+) | 2006 06 21 | 703 | 0.3+ | 0.2− | 2006 11 19 | 291 | 0.0   | 0.0   |
| 2001 12 10 | 704 | (0.3− | 1.9+) | 2006 06 24 | 699 | 0.7− | 0.6− | 2006 11 19 | 291 | 1.3+  | 0.0   |
| 2001 12 14 | 704 | 0.1+  | 0.0   | 2006 06 24 | 699 | 0.3+ | 0.1− | 2006 11 19 | 291 | 0.8+  | 0.8+  |
| 2001 12 14 | 704 | 0.1−  | 0.4+  | 2006 06 24 | 699 | 0.4− | 0.3− | 2006 11 27 | 703 | 1.0−  | 0.3+  |
| 2001 12 14 | 704 | 0.2−  | 0.1−  | 2006 07 21 | 704 | 0.6− | 0.2+ | 2006 11 27 | 703 | 0.7−  | 0.8−  |
| 2001 12 14 | 704 | 0.2+  | 0.1−  | 2006 07 21 | 704 | 0.7+ | 0.5+ | 2006 11 27 | 703 | 1.0−  | 0.3−  |
| 2001 12 14 | 704 | 0.3−  | 0.1+  | 2006 07 21 | 704 | 0.3+ | 0.1+ | 2006 11 27 | 703 | 0.3+  | 0.9−  |
| 2001 12 18 | 699 | 0.1+  | 0.3+  | 2006 07 21 | 704 | 0.1− | 0.3− | 2006 12 21 | 703 | (1.9+ | 0.6−) |

2007 DEC. 24

M.P.O. 129247

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 12 18 | 699 | 0.8+  | 0.8-  | 2006 08 06 | 699 | 0.1- | 0.4- | 2006 12 21 | 703 | 0.5- | 0.8+ |
| 2001 12 18 | 699 | 0.1-  | 0.1-  | 2006 08 06 | 699 | 0.6+ | 0.0  | 2006 12 21 | 703 | 0.5- | 0.2+ |
| 2001 12 18 | 699 | 0.4-  | 0.3+  | 2006 08 06 | 699 | 0.0  | 0.3+ | 2006 12 21 | 703 | 0.6- | 0.8- |
| 2002 02 06 | 704 | (0.3+ | 1.9+) | 2006 08 06 | 699 | 0.9- | 0.0  | 2007 12 06 | 691 | 0.1+ | 0.3+ |
| 2002 02 06 | 704 | 0.8+  | 0.9+  | 2006 08 08 | 704 | 0.9- | 0.0  | 2007 12 06 | 691 | 1.0- | 1.2- |
| 2002 02 06 | 704 | (0.7+ | 1.8+) | 2006 08 08 | 704 | 0.0  | 0.7- | 2007 12 06 | 691 | 0.4+ | 0.2+ |
| 2003 01 01 | 704 | (0.6+ | 1.5+) | 2006 08 08 | 704 | 0.5- | 0.7- | 2007 12 15 | 704 | 0.8+ | 0.9+ |
| 2003 01 01 | 704 | 1.1+  | 0.8+  | 2006 08 27 | 699 | 0.5- | 0.3- | 2007 12 15 | 704 | 0.4- | 0.9+ |
| 2003 01 01 | 704 | 0.3+  | 0.2+  | 2006 08 27 | 699 | 0.5+ | 0.7- | 2007 12 15 | 704 | 0.9+ | 1.1+ |

(172047)\* 2001 XY<sub>71</sub>

Discovered 2001 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.15617  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17806006 | $\omega$ | 101.82276 | -0.89201631 | -0.17877629 |
| <i>a</i> | 3.1291403  | $\Omega$ | 69.03826  | -0.06085683 | -0.86259301 |
| <i>e</i> | 0.2570651  | <i>i</i> | 26.39566  | +0.44788765 | -0.47325716 |
| <i>P</i> | 5.54       | <i>H</i> | 14.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 05 24 | 704 | (2.8- | 0.5+) | 2001 12 17 | 704 | 0.5+  | 0.4+  | 2003 04 07 | 644 | 0.2-  | 0.2+  |
| 1998 05 24 | 704 | 0.7-  | 0.1-  | 2001 12 18 | 644 | 0.3-  | 0.5-  | 2003 04 07 | 644 | 0.8+  | 0.6-  |
| 1998 05 24 | 704 | 0.6-  | 0.0   | 2001 12 18 | 644 | 0.4-  | 0.3-  | 2003 04 23 | 704 | 0.1-  | 1.1-  |
| 1998 05 24 | 704 | (6.1- | 1.9+) | 2001 12 18 | 644 | 0.0   | 0.9-  | 2003 04 23 | 704 | 0.1-  | 0.3-  |
| 2001 09 21 | 691 | 0.1-  | 0.4-  | 2002 12 04 | 704 | 0.3+  | 0.3+  | 2003 04 23 | 704 | 0.3+  | 0.4-  |
| 2001 09 21 | 691 | 0.0   | 0.0   | 2002 12 04 | 704 | 0.6-  | 0.5-  | 2003 04 23 | 704 | 0.3+  | 0.5-  |
| 2001 09 21 | 691 | 0.1-  | 0.3+  | 2002 12 04 | 704 | 0.1+  | 0.1+  | 2003 04 24 | 704 | 0.3+  | 0.5+  |
| 2001 10 25 | 644 | 0.2+  | 0.5+  | 2002 12 04 | 704 | 0.9+  | 0.2-  | 2003 04 24 | 704 | 0.4+  | 0.4+  |
| 2001 10 25 | 644 | 0.1-  | 0.9+  | 2003 01 11 | 704 | 0.4-  | 0.7-  | 2003 04 24 | 704 | 0.5+  | 0.6-  |
| 2001 10 25 | 644 | 0.0   | 0.6+  | 2003 01 11 | 704 | 0.3-  | 0.1+  | 2003 04 24 | 704 | 0.3+  | 0.3-  |
| 2001 11 17 | 704 | 0.7+  | 0.3+  | 2003 01 11 | 704 | 1.0-  | 0.1-  | 2007 11 02 | 704 | (1.1- | 2.0-) |
| 2001 11 17 | 704 | 1.0-  | 0.8+  | 2003 01 11 | 704 | 1.1-  | 0.1+  | 2007 11 02 | 704 | 0.9-  | 0.8-  |
| 2001 11 17 | 704 | 0.2-  | 0.3-  | 2003 01 11 | 704 | 0.9-  | 0.3-  | 2007 11 02 | 704 | 0.5-  | 0.2-  |
| 2001 11 24 | 704 | (0.7+ | 2.0+) | 2003 03 13 | 699 | 0.2-  | 0.3-  | 2007 11 02 | 704 | 0.2+  | 0.0   |
| 2001 11 24 | 704 | 0.4+  | 0.8+  | 2003 03 13 | 699 | 0.6+  | 0.4+  | 2007 11 16 | 704 | 0.6+  | 0.2+  |
| 2001 11 24 | 704 | 0.1-  | 0.3+  | 2003 03 13 | 699 | 0.1+  | 0.1-  | 2007 11 16 | 704 | 0.6+  | 0.1-  |
| 2001 12 11 | 704 | 0.9-  | 0.1+  | 2003 03 13 | 699 | 0.4-  | 0.3-  | 2007 11 16 | 704 | 0.1-  | 0.3-  |
| 2001 12 11 | 704 | 0.8-  | 0.3-  | 2003 03 24 | 704 | 1.3+  | 1.3+  | 2007 11 16 | 704 | 0.4+  | 0.5+  |
| 2001 12 11 | 704 | 0.3-  | 0.5+  | 2003 03 24 | 704 | 0.2-  | 0.5+  | 2007 11 16 | 704 | 0.4-  | 0.7-  |
| 2001 12 11 | 704 | 0.8+  | 1.0+  | 2003 03 24 | 704 | 0.5+  | 0.8+  | 2007 12 03 | 704 | 0.1-  | 0.2-  |
| 2001 12 11 | 704 | 0.0   | 0.2+  | 2003 03 24 | 704 | 0.5+  | 0.0   | 2007 12 03 | 704 | 0.6-  | 0.3-  |
| 2001 12 14 | 704 | 0.1+  | 0.4+  | 2003 03 24 | 704 | 0.5+  | 1.2+  | 2007 12 03 | 704 | 0.4-  | 0.6-  |
| 2001 12 14 | 704 | 0.3-  | 0.3-  | 2003 03 24 | 704 | 0.0   | 0.0   | 2007 12 03 | 704 | 0.0   | 0.3-  |
| 2001 12 14 | 704 | 0.2+  | 0.2+  | 2003 03 24 | 704 | (1.5+ | 0.5+) | 2007 12 03 | 704 | 0.1+  | 0.7-  |
| 2001 12 17 | 704 | 0.5+  | 1.0-  | 2003 03 24 | 704 | 0.6-  | 0.1+  | 2007 12 17 | 703 | 0.4+  | 0.2+  |
| 2001 12 17 | 704 | 0.3-  | 0.2+  | 2003 03 24 | 704 | 0.4+  | 1.0+  | 2007 12 17 | 703 | 0.5+  | 0.5-  |
| 2001 12 17 | 704 | 0.0   | 0.3-  | 2003 03 24 | 704 | 0.0   | 0.3+  | 2007 12 17 | 703 | 0.9+  | 0.2+  |
| 2001 12 17 | 704 | 0.2-  | 0.7+  | 2003 04 07 | 644 | 0.1-  | 0.1+  | 2007 12 17 | 703 | 0.6-  | 0.5-  |

(172048)\* 2001 XL<sub>75</sub>

Discovered 2001 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.34528   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17670923 | $\omega$ | 325.64764 | +0.64930324 | -0.70635933 |
| <i>a</i> | 3.1450670  | $\Omega$ | 82.09860  | +0.74591820 | +0.51916397 |
| <i>e</i> | 0.0637020  | <i>i</i> | 16.53444  | +0.14836221 | +0.48117073 |
| <i>P</i> | 5.58       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 12 11 | 704 | 0.5+ | 0.2- | 2002 01 13 | 704 | 0.5- | 0.5+ | 2006 10 21 | 703 | (1.1- | 1.9+) |
| 2001 12 11 | 704 | 0.4+ | 0.6- | 2002 01 13 | 704 | 0.6+ | 0.0  | 2007 11 03 | G96 | 0.1+  | 1.1-  |
| 2001 12 11 | 704 | 0.1+ | 0.1- | 2002 01 15 | 704 | 0.7+ | 0.4+ | 2007 11 03 | G96 | 0.3+  | 0.3-  |
| 2001 12 11 | 704 | 0.0  | 0.1- | 2002 01 15 | 704 | 0.2+ | 0.5+ | 2007 11 03 | G96 | 0.4+  | 0.8-  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 12 14 | 704 | 0.2-  | 0.8+  | 2002 01 15 | 704 | 0.4+  | 0.6+  | 2007 11 03 | G96 | 0.5-  | 0.3-  |
| 2001 12 14 | 704 | 0.1-  | 0.7+  | 2003 02 01 | 644 | 0.9-  | 0.2-  | 2007 11 12 | G96 | 0.0   | 0.1-  |
| 2001 12 14 | 704 | 0.3+  | 0.6+  | 2003 02 01 | 644 | 0.3-  | 0.2-  | 2007 11 12 | G96 | 0.3+  | 0.3-  |
| 2001 12 14 | 704 | 0.5-  | 0.5+  | 2003 02 01 | 644 | 0.4-  | 0.1+  | 2007 11 12 | G96 | 0.1+  | 0.2-  |
| 2001 12 14 | 704 | 0.4+  | 0.6+  | 2003 02 21 | 644 | 0.4+  | 0.2-  | 2007 11 12 | G96 | 0.2-  | 0.4-  |
| 2001 12 17 | 704 | 0.6-  | 0.0   | 2003 02 21 | 644 | 0.0   | 0.1-  | 2007 12 13 | 704 | 0.2-  | 0.4+  |
| 2001 12 17 | 704 | 0.6-  | 0.0   | 2003 02 21 | 644 | 0.3+  | 0.2+  | 2007 12 13 | 704 | 0.4+  | 0.7+  |
| 2001 12 17 | 704 | 0.1+  | 0.7-  | 2003 03 09 | 644 | 0.4-  | 0.3+  | 2007 12 13 | 704 | 0.2-  | 0.3+  |
| 2001 12 17 | 704 | 0.7-  | 0.2-  | 2003 03 09 | 644 | 0.6-  | 0.3+  | 2007 12 13 | 704 | (0.1+ | 1.9+) |
| 2001 12 17 | 704 | 0.6-  | 0.2+  | 2003 03 09 | 644 | 0.2-  | 0.2+  | 2007 12 13 | 704 | 0.7+  | 0.3+  |
| 2001 12 20 | 704 | 0.4-  | 0.8+  | 2004 03 30 | 291 | 0.3+  | 0.7+  | 2007 12 14 | D29 | 0.1-  | 1.2-  |
| 2001 12 20 | 704 | 0.6-  | 0.1+  | 2004 03 30 | 291 | 0.5+  | 0.7+  | 2007 12 14 | D29 | 0.6+  | 0.7-  |
| 2001 12 20 | 704 | 0.6-  | 0.6+  | 2004 03 30 | 291 | 0.6+  | 0.4+  | 2007 12 14 | D29 | 0.2-  | 0.9-  |
| 2002 01 09 | 704 | 0.5-  | 1.0+  | 2006 09 24 | 699 | 1.0-  | 1.1+  | 2007 12 14 | D29 | 0.2-  | 1.5-  |
| 2002 01 09 | 704 | 0.8-  | 0.4+  | 2006 09 24 | 699 | 0.8-  | 1.2+  | 2007 12 16 | 704 | 0.3-  | 0.8+  |
| 2002 01 09 | 704 | 0.8+  | 1.2+  | 2006 09 24 | 699 | (1.7- | 0.7+) | 2007 12 16 | 704 | 0.2+  | 1.1+  |
| 2002 01 09 | 704 | (1.7+ | 1.2+) | 2006 09 24 | 699 | 1.0-  | 0.5+  | 2007 12 16 | 704 | 0.8+  | 1.0+  |
| 2002 01 13 | 704 | 0.1-  | 0.2-  | 2006 10 21 | 703 | 0.3-  | 0.4+  | 2007 12 16 | 704 | 0.0   | 0.2-  |
| 2002 01 13 | 704 | 0.4-  | 0.2-  | 2006 10 21 | 703 | 0.1+  | 0.2+  | 2007 12 16 | 704 | 0.5-  | 0.0   |
| 2002 01 13 | 704 | (1.9+ | 0.2-) | 2006 10 21 | 703 | 0.5-  | 0.2-  |            |     |       |       |

(172049)\* 2001 XB<sub>92</sub>

Discovered 2001 Dec. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 113.99554  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18851216 | $\omega$ | 16.50201  | +0.95156781 | +0.30684541 |
| <i>a</i> | 3.0123803  | $\Omega$ | 325.61013 | -0.28575177 | +0.85982224 |
| <i>e</i> | 0.1307264  | <i>i</i> | 1.93731   | -0.11342235 | +0.40810734 |
| <i>P</i> | 5.23       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 1995 10 02 | 691 | (0.3- 5.0-) | 2001 12 19 | 704 | 0.1+ 0.4+ | 2006 10 28 | 691 | 0.0 0.2+    |
| 1995 10 02 | 691 | 1.2- 0.5+   | 2001 12 19 | 704 | 0.1- 1.0+ | 2006 10 28 | 691 | 0.1+ 0.1-   |
| 1995 10 02 | 691 | 0.5+ 1.3+   | 2001 12 19 | 704 | 0.1+ 0.1+ | 2006 10 28 | 691 | 0.3+ 0.0    |
| 2001 10 21 | 704 | 0.3+ 0.9+   | 2002 01 06 | 691 | 0.3- 0.2+ | 2006 11 01 | 691 | 0.0 0.1+    |
| 2001 10 21 | 704 | 0.1- 0.3+   | 2002 01 06 | 691 | 0.2+ 0.0  | 2006 11 01 | 691 | 0.3+ 0.4+   |
| 2001 10 21 | 704 | 0.6- 0.2-   | 2002 01 06 | 691 | 0.2- 0.1- | 2006 11 01 | 691 | 0.2- 0.1+   |
| 2001 10 21 | 704 | 0.6- 0.1-   | 2003 01 28 | 291 | 0.2+ 0.1+ | 2006 11 08 | 644 | 0.1+ 0.1+   |
| 2001 11 19 | 704 | 0.3+ 0.2-   | 2003 01 28 | 291 | 0.4+ 0.3+ | 2006 11 08 | 644 | 0.1- 0.2+   |
| 2001 11 19 | 704 | 0.0 0.2-    | 2003 01 28 | 291 | 0.1- 0.3+ | 2006 11 08 | 644 | 0.6- 0.1-   |
| 2001 11 19 | 704 | 0.8+ 1.1-   | 2004 04 13 | 691 | 0.3+ 0.2+ | 2006 11 15 | G96 | 0.1+ 0.2-   |
| 2001 11 21 | 704 | (0.5+ 1.9+) | 2004 04 13 | 691 | 0.4+ 0.5+ | 2006 11 15 | G96 | 0.1+ 0.2-   |
| 2001 11 21 | 704 | (0.6+ 1.9+) | 2004 04 13 | 691 | 0.5+ 0.2+ | 2006 11 15 | G96 | 0.1+ 0.2-   |
| 2001 11 21 | 704 | (0.7+ 1.6+) | 2004 04 20 | 691 | 0.2- 0.4+ | 2006 11 15 | G96 | 0.5- 0.6-   |
| 2001 11 21 | 704 | (0.6+ 1.9+) | 2004 04 20 | 691 | 0.3- 0.2+ | 2006 11 17 | 703 | (0.2+ 2.9+) |
| 2001 11 21 | 704 | (0.8+ 1.8+) | 2004 04 20 | 691 | 0.1- 0.4+ | 2006 11 17 | 703 | 0.0 0.9-    |
| 2001 12 10 | 704 | 0.3+ 0.6+   | 2004 05 09 | 691 | 0.1- 0.5+ | 2006 11 17 | 703 | (1.1+ 1.9+) |
| 2001 12 10 | 704 | 0.3- 0.4-   | 2004 05 09 | 691 | 0.1+ 0.5+ | 2006 11 17 | 703 | 0.1- 1.1+   |
| 2001 12 10 | 704 | 0.7+ 1.0+   | 2004 05 09 | 691 | 0.4+ 0.3+ | 2007 11 11 | G96 | 0.5+ 0.6-   |
| 2001 12 15 | 704 | 0.9- 0.2+   | 2006 10 16 | 691 | 0.2- 0.3+ | 2007 11 11 | G96 | 0.3+ 0.5-   |
| 2001 12 15 | 704 | 0.1+ 0.5+   | 2006 10 16 | 691 | 0.3- 0.1+ | 2007 11 11 | G96 | 0.2+ 0.7-   |
| 2001 12 15 | 704 | 1.0- 0.2-   | 2006 10 16 | 691 | 0.1+ 0.2+ | 2007 11 11 | G96 | 0.0 0.6-    |
| 2001 12 15 | 704 | 0.0 0.5+    | 2006 10 20 | 691 | 0.0 0.1+  | 2007 12 14 | G96 | 0.4- 0.1-   |
| 2001 12 18 | 704 | 0.2+ 0.2-   | 2006 10 20 | 691 | 0.1- 0.2+ | 2007 12 14 | G96 | 0.2- 0.2-   |
| 2001 12 18 | 704 | 0.7- 0.1+   | 2006 10 20 | 691 | 0.3- 0.1+ | 2007 12 14 | G96 | 0.1- 0.2+   |
| 2001 12 18 | 704 | 0.7+ 1.0+   | 2006 10 23 | H07 | 0.1- 0.0  | 2007 12 14 | G96 | 0.6- 0.1-   |
| 2001 12 18 | 704 | 0.5- 0.2-   | 2006 10 23 | H07 | 0.7+ 0.3+ |            |     |             |
| 2001 12 19 | 704 | 0.4- 0.3-   | 2006 10 23 | H07 | 0.6+ 1.3- |            |     |             |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.49426   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17295141 | $\omega$ | 256.95778 | +0.83766549   | +0.46955091 |
| <i>a</i> | 3.1904601  | $\Omega$ | 74.43072  | -0.31683730   | +0.83382554 |
| <i>e</i> | 0.2020824  | <i>i</i> | 16.83537  | -0.44489398   | +0.29027042 |
| <i>P</i> | 5.70       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 17 | 704 | 1.0-  | 0.1-  | 2002 12 13 | 645 | 0.1+  | 0.1-  | 2007 11 18 | 291 | 0.2-  | 0.2-  |
| 2001 10 17 | 704 | 0.3+  | 1.1+  | 2002 12 13 | 645 | 0.1+  | 0.0   | 2007 11 18 | 291 | 0.0   | 0.2-  |
| 2001 10 17 | 704 | 1.5-  | 0.6+  | 2005 05 10 | 691 | 0.4+  | 0.6+  | 2007 11 19 | 691 | 0.0   | 0.2-  |
| 2001 10 17 | 704 | (1.7- | 0.1+) | 2005 05 10 | 691 | 0.1+  | 0.8+  | 2007 11 19 | 691 | 0.6-  | 1.4+  |
| 2001 11 19 | 699 | 0.0   | 0.6-  | 2005 05 10 | 691 | 0.7+  | 0.4+  | 2007 11 19 | 691 | 0.2-  | 0.1-  |
| 2001 11 19 | 699 | 0.2-  | 0.4-  | 2005 05 14 | 691 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.1-  | 0.2+  |
| 2001 11 19 | 699 | 0.0   | 0.5+  | 2005 05 14 | 691 | 0.1+  | 0.7+  | 2007 12 05 | 704 | 0.1-  | 0.0   |
| 2001 11 19 | 699 | 0.2-  | 1.1+  | 2005 05 14 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 704 | 0.6+  | 0.1+  |
| 2001 12 11 | 704 | 0.3-  | 0.7+  | 2006 08 25 | E12 | 0.8+  | 0.4+  | 2007 12 05 | 704 | 0.0   | 0.2+  |
| 2001 12 11 | 704 | 0.2-  | 0.7+  | 2006 08 25 | E12 | 1.0+  | 0.1+  | 2007 12 05 | 704 | 0.8-  | 0.8+  |
| 2001 12 11 | 704 | 0.9-  | 0.1+  | 2006 08 25 | E12 | 1.0-  | 1.0+  | 2007 12 05 | 703 | 0.6-  | 0.5+  |
| 2001 12 11 | 704 | 0.5-  | 0.1+  | 2006 08 25 | E12 | 0.1+  | 0.9+  | 2007 12 05 | 703 | 0.1-  | 0.2+  |
| 2001 12 17 | 704 | 1.3-  | 1.0-  | 2006 09 25 | E12 | 0.9+  | 0.5-  | 2007 12 05 | 703 | (1.9+ | 0.7+) |
| 2001 12 17 | 704 | 0.4-  | 0.5+  | 2006 09 25 | E12 | 1.1-  | 0.1-  | 2007 12 05 | 703 | 0.4+  | 1.2+  |
| 2001 12 17 | 704 | (2.0- | 0.7-) | 2006 09 25 | E12 | (1.0- | 2.0-) | 2007 12 14 | 704 | 0.2-  | 0.4-  |
| 2001 12 17 | 704 | 1.2-  | 0.7+  | 2006 09 25 | E12 | (2.3- | 1.1+) | 2007 12 14 | 704 | 1.0+  | 0.2-  |
| 2001 12 17 | 704 | 0.2-  | 0.2+  | 2007 11 06 | 691 | 0.5-  | 0.8+  | 2007 12 14 | 704 | 0.3-  | 1.2+  |
| 2001 12 18 | 704 | 0.6+  | 0.0   | 2007 11 06 | 691 | 0.1+  | 0.1-  | 2007 12 14 | 704 | 0.5+  | 0.1-  |
| 2001 12 18 | 704 | (1.1+ | 1.7+) | 2007 11 06 | 691 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.5+  | 1.0-  |
| 2001 12 18 | 704 | 0.7+  | 1.5+  | 2007 11 14 | 291 | 0.1+  | 0.1-  | 2007 12 15 | 691 | 0.2+  | 0.1-  |
| 2001 12 18 | 704 | 0.4+  | 0.5+  | 2007 11 14 | 291 | 0.2+  | 0.1-  | 2007 12 15 | 691 | 0.3+  | 0.1+  |
| 2002 12 06 | 645 | 0.0   | 0.1-  | 2007 11 14 | 291 | 0.4-  | 0.3+  | 2007 12 15 | 691 | 0.0   | 0.2-  |
| 2002 12 06 | 645 | 0.0   | 0.0   | 2007 11 18 | 291 | 0.4-  | 0.1-  |            |     |       |       |

(172051)\* 2001 XA<sub>125</sub> = 1995 SG<sub>61</sub>

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (MPO 23240)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.43635   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19099470 | $\omega$ | 339.58635 | -0.35169293   | -0.93543676 |
| <i>a</i> | 2.9862203  | $\Omega$ | 130.98657 | +0.86528664   | -0.33937442 |
| <i>e</i> | 0.1588729  | <i>i</i> | 2.70610   | +0.35719899   | -0.09890943 |
| <i>P</i> | 5.16       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 09 19 | 691 | 0.6- | 0.4+ | 2003 03 25 | 699 | 0.1-  | 0.2-  | 2006 10 22 | 691 | 0.7- | 0.4- |
| 1995 09 19 | 691 | 0.5- | 0.2+ | 2003 03 25 | 699 | (1.8- | 0.1+) | 2006 10 31 | G96 | 0.0  | 0.4- |
| 1995 09 19 | 691 | 0.6- | 0.1+ | 2003 03 25 | 699 | 0.3-  | 0.4+  | 2006 10 31 | G96 | 0.1- | 0.1- |
| 1995 09 20 | 691 | 0.3+ | 0.2- | 2003 03 25 | 699 | 0.6-  | 1.5+  | 2006 10 31 | G96 | 0.2+ | 0.4- |
| 1995 09 20 | 691 | 0.4+ | 0.4- | 2003 03 26 | 644 | 0.6+  | 0.4+  | 2006 10 31 | G96 | 0.4+ | 0.3- |
| 1995 09 20 | 691 | 0.2+ | 0.3- | 2003 03 26 | 644 | 0.3+  | 0.4+  | 2006 11 16 | G96 | 0.1- | 0.3- |
| 1995 09 20 | 691 | 0.0  | 0.3- | 2003 03 26 | 644 | (1.7+ | 0.4-) | 2006 11 16 | G96 | 0.4+ | 0.1- |
| 1995 09 20 | 691 | 0.0  | 0.1- | 2005 07 01 | 291 | 0.2+  | 0.3+  | 2006 11 16 | G96 | 0.2- | 0.5- |
| 1995 09 20 | 691 | 0.3+ | 0.1- | 2005 07 01 | 291 | 0.2+  | 0.4+  | 2006 11 16 | G96 | 0.3+ | 0.5- |
| 2001 11 20 | 704 | 0.1- | 1.4+ | 2005 07 01 | 291 | 0.0   | 0.5+  | 2006 11 17 | 703 | 0.6+ | 0.5- |
| 2001 11 20 | 704 | 0.1- | 0.1+ | 2006 10 02 | G96 | 0.2-  | 0.3-  | 2006 11 17 | 703 | 0.8- | 1.0+ |
| 2001 11 20 | 704 | 0.1- | 1.1+ | 2006 10 02 | G96 | 0.1+  | 0.2-  | 2006 11 17 | 703 | 1.5+ | 0.9- |
| 2001 11 20 | 704 | 0.1- | 0.5+ | 2006 10 02 | G96 | 0.1-  | 0.1-  | 2006 11 17 | 703 | 0.6- | 0.2- |
| 2001 11 20 | 704 | 0.2- | 0.3+ | 2006 10 02 | G96 | 0.0   | 0.2-  | 2007 11 13 | G96 | 0.0  | 0.6- |
| 2001 12 13 | 644 | 0.3+ | 0.8+ | 2006 10 16 | 703 | 0.1-  | 0.0   | 2007 11 13 | G96 | 0.3+ | 0.3- |
| 2001 12 13 | 644 | 0.2+ | 0.6+ | 2006 10 16 | 703 | 0.1-  | 0.7+  | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 2001 12 13 | 644 | 0.3+ | 0.8+ | 2006 10 16 | 703 | 0.6+  | 0.1-  | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 2001 12 14 | 704 | 0.0  | 0.5+ | 2006 10 16 | 703 | 0.4-  | 0.0   | 2007 12 14 | G96 | 0.1- | 0.4- |
| 2001 12 14 | 704 | 0.9- | 0.4+ | 2006 10 18 | 691 | 0.0   | 0.1+  | 2007 12 14 | G96 | 0.2+ | 0.1- |
| 2001 12 14 | 704 | 0.0  | 0.8- | 2006 10 18 | 691 | 0.2-  | 0.1-  | 2007 12 14 | G96 | 0.3- | 0.1- |
| 2001 12 17 | 704 | 0.8+ | 0.1- | 2006 10 18 | 691 | 0.4+  | 0.3+  | 2007 12 14 | G96 | 0.4- | 0.2- |

|            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|-----|
| 2001 12 17 | 704 | 0.7+ | 0.1- | 2006 10 22 | 691 | 0.2- | 0.0 |
| 2001 12 17 | 704 | 1.1+ | 0.7+ | 2006 10 22 | 691 | 0.2- | 0.0 |

(172052)\* 2001 XX<sub>125</sub>

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.12072  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.17914229 | $\omega$ | 48.24256 | -0.66800638   | -0.71933719 |
| <i>a</i> | 3.1165252  | $\Omega$ | 84.73705 | +0.61327519   | -0.67721950 |
| <i>e</i> | 0.1360465  | <i>i</i> | 11.03384 | +0.42149853   | -0.15468600 |
| <i>P</i> | 5.50       | <i>H</i> | 15.3     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 17 | 704 | 1.3-  | 1.0-  | 2003 03 08 | 704 | 0.8+  | 0.1-  | 2006 10 12 | 644 | 0.2+  | 0.2+  |
| 2001 11 17 | 704 | 0.9-  | 1.0-  | 2003 03 08 | 704 | 0.3+  | 0.5+  | 2006 10 16 | 703 | 0.3-  | 0.5-  |
| 2001 11 17 | 704 | 1.3-  | 0.4-  | 2003 03 08 | 644 | 0.3+  | 0.3+  | 2006 10 16 | 703 | 0.6+  | 0.9+  |
| 2001 11 17 | 704 | (1.8- | 0.4-) | 2003 03 08 | 644 | 0.5+  | 0.4+  | 2006 10 16 | 703 | 0.3+  | 0.4+  |
| 2001 12 14 | 644 | 0.2-  | 0.1+  | 2003 03 08 | 644 | 0.3+  | 0.3+  | 2006 10 16 | 703 | 0.5-  | 0.7+  |
| 2001 12 14 | 704 | 0.5+  | 0.7+  | 2003 03 12 | 704 | 0.1-  | 0.1+  | 2006 11 16 | 703 | (2.4- | 0.7+) |
| 2001 12 14 | 644 | 0.1-  | 0.7+  | 2003 03 12 | 704 | 0.5+  | 0.2+  | 2006 11 16 | 703 | 0.2-  | 0.9-  |
| 2001 12 14 | 704 | 0.8+  | 0.7-  | 2003 03 12 | 704 | 0.6+  | 0.8-  | 2006 11 16 | 703 | 0.4-  | 0.2+  |
| 2001 12 14 | 704 | 0.5+  | 0.5-  | 2003 03 12 | 704 | 0.8+  | 0.3-  | 2006 11 16 | 703 | 0.7-  | 0.1+  |
| 2001 12 14 | 704 | 0.1+  | 0.4-  | 2003 03 12 | 704 | 0.1-  | 0.0   | 2007 11 07 | G96 | 0.1-  | 0.4-  |
| 2001 12 14 | 704 | 0.2+  | 0.2-  | 2003 03 26 | 704 | 0.9+  | 1.1+  | 2007 11 07 | G96 | 0.0   | 0.1-  |
| 2001 12 14 | 644 | 0.2+  | 0.4+  | 2003 03 26 | 704 | 1.0+  | 0.4+  | 2007 11 07 | G96 | 0.1-  | 0.4-  |
| 2001 12 17 | 704 | 0.0   | 0.5+  | 2003 03 26 | 704 | (1.1+ | 1.7+) | 2007 11 07 | G96 | 0.6-  | 0.4-  |
| 2001 12 17 | 704 | 0.1-  | 0.4+  | 2003 03 26 | 704 | 0.8+  | 0.5-  | 2007 11 18 | 704 | 0.1+  | 0.6+  |
| 2001 12 17 | 704 | 0.3-  | 0.8+  | 2003 03 26 | 704 | 0.0   | 0.6+  | 2007 11 18 | 704 | 0.2-  | 0.2+  |
| 2001 12 17 | 704 | 0.4-  | 0.2+  | 2003 04 04 | 704 | 0.8-  | 1.2+  | 2007 11 18 | 704 | 0.3+  | 0.1-  |
| 2001 12 17 | 704 | 0.2+  | 0.8+  | 2003 04 04 | 704 | 1.0-  | 1.4+  | 2007 12 05 | 691 | 0.3-  | 0.2-  |
| 2001 12 20 | 704 | 0.9+  | 0.4-  | 2003 04 04 | 704 | 0.6+  | 0.3+  | 2007 12 05 | 691 | 0.6-  | 0.3-  |
| 2001 12 20 | 704 | 0.3+  | 0.8+  | 2003 04 04 | 704 | 1.3-  | 0.6+  | 2007 12 05 | 691 | 0.4-  | 0.4-  |
| 2001 12 20 | 704 | 0.6+  | 0.6+  | 2003 04 09 | 644 | 0.2+  | 0.4+  | 2007 12 13 | 704 | 0.8+  | 0.2+  |
| 2001 12 20 | 704 | 0.1+  | 0.5+  | 2003 04 09 | 644 | 0.4+  | 0.4+  | 2007 12 13 | 704 | 0.4+  | 0.0   |
| 2002 01 15 | 704 | 0.4+  | 0.0   | 2003 04 09 | 644 | 0.4+  | 0.1+  | 2007 12 13 | 704 | 0.2+  | 0.2-  |
| 2002 01 15 | 704 | 0.2+  | 0.5+  | 2006 08 28 | 705 | 0.2-  | 0.2+  | 2007 12 13 | 704 | 1.3+  | 0.3+  |
| 2002 01 15 | 704 | 0.9-  | 0.1+  | 2006 08 28 | 705 | 0.1-  | 0.1+  | 2007 12 13 | 704 | 0.4+  | 0.2+  |
| 2003 01 28 | 645 | 0.1-  | 0.1-  | 2006 10 10 | 644 | 0.3-  | 0.0   | 2007 12 15 | 704 | 0.9+  | 0.3+  |
| 2003 01 28 | 645 | 0.1-  | 0.1-  | 2006 10 10 | 644 | 0.2-  | 0.0   | 2007 12 15 | 704 | 0.1+  | 0.2-  |
| 2003 03 08 | 704 | 0.0   | 0.5+  | 2006 10 10 | 644 | 0.1-  | 0.9+  | 2007 12 15 | 704 | 0.6+  | 0.0   |
| 2003 03 08 | 704 | (0.5- | 1.9+) | 2006 10 12 | 644 | 0.0   | 0.2-  | 2007 12 15 | 704 | 0.5+  | 0.3+  |
| 2003 03 08 | 704 | 0.9-  | 0.2-  | 2006 10 12 | 644 | 0.3+  | 0.1+  | 2007 12 15 | 704 | 0.2+  | 0.4+  |

(172053)\* 2001 XH<sub>131</sub> = 1998 HH<sub>143</sub>

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (MPO 23243)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.70211  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18033853 | $\omega$ | 71.79964 | -0.90042225   | -0.40582008 |
| <i>a</i> | 3.1027279  | $\Omega$ | 84.01441 | +0.31522507   | -0.85689268 |
| <i>e</i> | 0.0962877  | <i>i</i> | 9.06430  | +0.29978813   | -0.31787574 |
| <i>P</i> | 5.47       | <i>H</i> | 14.9     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |             |            |     |      |      |            |     |             |      |
|------------|-----|-------------|------------|-----|------|------|------------|-----|-------------|------|
| 1998 04 21 | 704 | (1.0+ 2.3-) | 2001 12 14 | 704 | 0.9+ | 0.0  | 2003 03 31 | 644 | 0.0         | 0.2+ |
| 1998 04 21 | 704 | 0.3+ 1.1-   | 2001 12 14 | 704 | 0.2+ | 0.6+ | 2003 04 06 | 699 | 1.1-        | 0.2- |
| 1998 04 21 | 704 | 0.2- 0.7+   | 2001 12 17 | 704 | 0.6+ | 0.1- | 2003 04 06 | 699 | (2.1- 0.9+) |      |
| 1998 04 21 | 704 | 0.5+ 0.5+   | 2001 12 17 | 704 | 0.0  | 1.5+ | 2003 04 06 | 699 | 0.7-        | 0.7- |
| 1998 04 23 | 704 | 0.0 0.1-    | 2001 12 17 | 704 | 1.0+ | 0.4+ | 2003 04 06 | 699 | 1.4-        | 0.4- |
| 1998 04 23 | 704 | 0.7+ 0.3-   | 2001 12 17 | 704 | 0.5+ | 0.6- | 2005 07 04 | 644 | 0.1+        | 0.4+ |
| 1998 04 23 | 704 | 0.9- 1.7+   | 2001 12 17 | 704 | 0.2+ | 0.4- | 2005 07 04 | 644 | 0.3-        | 0.7+ |
| 1998 04 23 | 704 | 0.9+ 0.8-   | 2001 12 20 | 704 | 0.1- | 0.3- | 2005 07 04 | 644 | 0.0         | 1.1+ |
| 2001 11 09 | 704 | 1.3+ 1.0-   | 2001 12 20 | 704 | 0.7- | 0.9- | 2005 07 30 | 644 | 0.4-        | 0.9+ |

|            |     |      |      |            |     |      |       |
|------------|-----|------|------|------------|-----|------|-------|
| 2001 11 09 | 704 | 0.6+ | 1.3- | 2001 12 20 | 704 | 0.2- | 0.4+  |
| 2001 11 09 | 704 | 0.1- | 0.2- | 2001 12 20 | 704 | 0.8- | 0.5-  |
| 2001 11 09 | 704 | 0.8- | 0.3- | 2003 03 08 | 704 | 0.5+ | 0.4+  |
| 2001 11 20 | 704 | 1.0- | 0.4+ | 2003 03 08 | 704 | (0.0 | 1.6+) |
| 2001 11 20 | 704 | 0.4+ | 1.0+ | 2003 03 08 | 704 | 0.9+ | 0.0   |
| 2001 11 20 | 704 | 0.1+ | 0.3+ | 2003 03 08 | 704 | 0.4+ | 1.0+  |
| 2001 11 20 | 704 | 1.0- | 1.2+ | 2003 03 08 | 644 | 0.2+ | 0.0   |
| 2001 11 20 | 704 | 1.3- | 0.5+ | 2003 03 08 | 644 | 0.1- | 0.3-  |
| 2001 11 21 | 704 | 0.0  | 0.7+ | 2003 03 08 | 644 | 0.0  | 0.5+  |
| 2001 11 21 | 704 | 1.0- | 1.1+ | 2003 03 26 | 704 | 0.8- | 1.1+  |
| 2001 11 21 | 704 | 0.1- | 0.6+ | 2003 03 26 | 704 | 0.5+ | 0.3+  |
| 2001 11 21 | 704 | 0.3+ | 0.1- | 2003 03 26 | 704 | 0.3+ | 0.7+  |
| 2001 12 14 | 704 | 0.0  | 0.4- | 2003 03 26 | 704 | 0.3+ | 0.3+  |
| 2001 12 14 | 704 | 0.2+ | 0.2+ | 2003 03 31 | 644 | 0.2+ | 0.4+  |
| 2001 12 14 | 704 | 0.4+ | 0.2+ | 2003 03 31 | 644 | 0.2+ | 0.4+  |

**(172054)\* 2001 XJ<sub>132</sub>**

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 82.61137   | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17649449 | $\omega$ | 277.39954 | +0.98343569   |
| <i>a</i> | 3.1476175  | $\Omega$ | 78.10899  | -0.00368868   |
| <i>e</i> | 0.1244136  | <i>i</i> | 9.56594   | -0.18121987   |
| <i>P</i> | 5.58       | <i>H</i> | 15.2      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 11 18 | 691 | 0.4+  | 0.3-  | 2006 09 21 | 699 | (1.7+ | 1.1-) | 2006 10 23 | 644 | 0.3+ | 0.0  |
| 2001 11 18 | 691 | 0.4+  | 0.6-  | 2006 09 21 | 699 | 0.8-  | 0.4+  | 2006 10 23 | 644 | 0.0  | 0.2- |
| 2001 11 18 | 691 | 0.7+  | 0.1-  | 2006 09 21 | 699 | 0.2+  | 1.1+  | 2006 10 23 | 644 | 0.3- | 0.0  |
| 2001 11 20 | 704 | 0.1-  | 0.3+  | 2006 09 25 | 699 | 0.4+  | 1.0+  | 2006 10 23 | 644 | 0.1- | 0.1+ |
| 2001 11 20 | 704 | 0.7-  | 0.1-  | 2006 09 25 | 699 | 0.0   | 0.1-  | 2006 10 25 | D35 | 1.1- | 0.3+ |
| 2001 11 20 | 704 | 0.3-  | 0.7+  | 2006 09 25 | 699 | 0.4-  | 0.2-  | 2006 10 25 | D35 | 0.2+ | 0.0  |
| 2001 11 21 | 704 | 0.5-  | 1.2+  | 2006 09 25 | 699 | 0.4+  | 0.7-  | 2006 10 25 | D35 | 0.5+ | 0.1- |
| 2001 11 21 | 704 | 0.5-  | 0.9+  | 2006 09 29 | 699 | 0.1-  | 0.2+  | 2006 10 28 | 703 | 0.4- | 0.0  |
| 2001 11 21 | 704 | 0.2-  | 1.1+  | 2006 09 29 | 699 | 0.8+  | 0.6+  | 2006 10 28 | 703 | 0.2- | 0.3- |
| 2001 11 21 | 704 | 0.1-  | 0.7+  | 2006 09 29 | 699 | 0.3+  | 0.0   | 2006 10 28 | 703 | 0.8+ | 0.6+ |
| 2001 12 14 | 704 | 0.1-  | 0.4-  | 2006 09 29 | 699 | 0.3+  | 0.2+  | 2006 10 28 | 703 | 0.5- | 0.5- |
| 2001 12 14 | 704 | 0.7-  | 0.6-  | 2006 10 02 | 703 | 0.8-  | 0.2+  | 2007 11 02 | G96 | 1.0+ | 0.3- |
| 2001 12 14 | 704 | (0.1+ | 1.7-) | 2006 10 02 | 703 | 0.4+  | 0.1+  | 2007 11 02 | G96 | 0.5+ | 0.7- |
| 2001 12 14 | 704 | (0.1- | 1.7-) | 2006 10 02 | 703 | 0.2-  | 0.1-  | 2007 11 02 | G96 | 0.0  | 0.7- |
| 2001 12 17 | 704 | 0.1+  | 0.6-  | 2006 10 02 | 703 | 0.7-  | 0.1-  | 2007 11 02 | G96 | 0.4+ | 0.6- |
| 2001 12 17 | 704 | 0.1-  | 0.0   | 2006 10 17 | 703 | 0.1-  | 0.1+  | 2007 11 06 | G96 | 0.8+ | 0.8- |
| 2001 12 17 | 704 | 0.5-  | 0.2-  | 2006 10 17 | 703 | 0.2+  | 0.4+  | 2007 11 06 | G96 | 0.3+ | 0.5- |
| 2001 12 17 | 704 | 0.6-  | 0.0   | 2006 10 17 | 703 | 0.5-  | 0.9+  | 2007 11 06 | G96 | 0.0  | 0.6- |
| 2001 12 17 | 704 | 0.7-  | 0.1+  | 2006 10 17 | 703 | 0.2-  | 0.5-  | 2007 11 06 | G96 | 0.2+ | 0.4- |
| 2001 12 23 | 691 | 0.2+  | 0.3-  | 2006 10 21 | 644 | 0.0   | 0.2-  | 2007 11 11 | G96 | 0.2- | 0.4- |
| 2001 12 23 | 691 | 0.1+  | 0.2-  | 2006 10 21 | 644 | 0.1+  | 0.1-  | 2007 11 11 | G96 | 0.2- | 0.4- |
| 2001 12 23 | 691 | 0.6-  | 1.0+  | 2006 10 21 | 644 | 0.2-  | 0.2-  | 2007 11 11 | G96 | 0.2- | 0.3- |
| 2004 04 15 | 644 | 0.2+  | 0.5+  | 2006 10 22 | 644 | 0.2-  | 0.0   | 2007 11 11 | G96 | 0.1- | 0.4- |
| 2004 04 15 | 644 | 0.1+  | 0.8+  | 2006 10 22 | 644 | 0.2+  | 0.1+  | 2007 12 05 | 691 | 0.3- | 0.2+ |
| 2004 04 15 | 644 | 0.7+  | 0.8+  | 2006 10 22 | 644 | 0.1-  | 0.2+  | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2006 09 18 | 703 | 1.4+  | 0.3-  | 2006 10 22 | 644 | 0.2-  | 0.2-  | 2007 12 05 | 691 | 0.4- | 0.1+ |
| 2006 09 18 | 703 | 0.1-  | 0.5-  | 2006 10 22 | 644 | 0.1-  | 0.1-  | 2007 12 15 | 704 | 0.6+ | 0.5+ |
| 2006 09 18 | 703 | 0.1+  | 0.6-  | 2006 10 22 | 644 | 0.1-  | 0.1+  | 2007 12 15 | 704 | 0.3+ | 0.6+ |
| 2006 09 18 | 703 | 0.2-  | 0.6-  | 2006 10 23 | 644 | 0.0   | 0.0   | 2007 12 15 | 704 | 0.4+ | 0.5- |
| 2006 09 21 | 699 | 0.1-  | 0.8+  | 2006 10 23 | 644 | 0.1-  | 0.0   | 2007 12 15 | 704 | 0.4+ | 0.5- |

**(172055)\* 2001 XG<sub>137</sub>**

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 285.55794  | (2000.0) | <b>P</b> | <b>Q</b>      |
|----------|------------|----------|----------|---------------|
| <i>n</i> | 0.17335330 | $\omega$ | 88.48948 | -0.95161444   |
| <i>a</i> | 3.1855271  | $\Omega$ | 83.62070 | +0.01174046   |
| <i>e</i> | 0.0721383  | <i>i</i> | 16.09064 | +0.30707021   |
| <i>P</i> | 5.69       | <i>H</i> | 14.6     | <i>G</i> 0.15 |
|          |            |          |          | <i>U</i> 0    |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 11 20 | 704 | 0.4+  | 0.5+  | 2001 12 20 | 704 | 0.0  | 0.6+ | 2004 05 18 | 704 | 0.1-  | 0.4+  |
| 2001 11 20 | 704 | 0.0   | 0.3+  | 2001 12 20 | 704 | 0.0  | 0.5+ | 2004 05 18 | 704 | 1.4+  | 0.4-  |
| 2001 11 20 | 704 | 0.4+  | 0.4+  | 2002 01 13 | 704 | 0.3+ | 0.4- | 2004 06 22 | 599 | 0.2-  | 0.4+  |
| 2001 11 20 | 704 | 0.4+  | 0.0   | 2002 01 13 | 704 | 0.4+ | 0.3- | 2004 06 22 | 599 | 0.4+  | 0.4+  |
| 2001 11 20 | 704 | 0.1-  | 0.3+  | 2002 01 13 | 704 | 0.7+ | 0.8- | 2004 06 22 | 599 | 0.2-  | 0.0   |
| 2001 12 14 | 704 | 0.7-  | 0.2+  | 2002 01 13 | 704 | 1.0+ | 0.0  | 2005 09 06 | E12 | 0.4-  | 0.1-  |
| 2001 12 14 | 704 | 1.2-  | 0.6+  | 2002 01 15 | 704 | 0.1+ | 0.4+ | 2005 09 06 | E12 | 0.8-  | 0.4+  |
| 2001 12 14 | 704 | 1.3-  | 1.0+  | 2002 01 15 | 704 | 1.4+ | 0.1- | 2005 09 06 | E12 | 0.0   | 0.4+  |
| 2001 12 14 | 691 | 0.2-  | 0.3-  | 2002 01 15 | 704 | 0.4+ | 1.1+ | 2005 09 06 | E12 | 0.6-  | 0.3+  |
| 2001 12 14 | 704 | 0.8-  | 0.6+  | 2002 01 15 | 704 | 0.2+ | 0.4+ | 2007 11 02 | G96 | 0.2+  | 0.4-  |
| 2001 12 14 | 691 | 0.1-  | 0.4-  | 2002 01 15 | 704 | 0.6+ | 0.4+ | 2007 11 02 | G96 | 0.3+  | 0.4-  |
| 2001 12 14 | 691 | 0.4-  | 0.5-  | 2003 02 01 | 644 | 0.0  | 0.2+ | 2007 11 02 | G96 | 0.1-  | 0.4-  |
| 2001 12 17 | 704 | 0.3+  | 0.1-  | 2003 02 01 | 644 | 0.1- | 0.3- | 2007 11 02 | G96 | 0.6+  | 0.7+  |
| 2001 12 17 | 704 | 0.4+  | 0.5-  | 2003 02 01 | 644 | 0.2- | 0.1- | 2007 12 05 | 691 | 0.1+  | 0.0   |
| 2001 12 17 | 704 | 0.5+  | 0.1-  | 2003 02 21 | 644 | 0.1+ | 0.1+ | 2007 12 05 | 691 | 0.2-  | 0.0   |
| 2001 12 17 | 704 | 0.2+  | 0.2-  | 2003 02 21 | 644 | 0.0  | 0.1- | 2007 12 05 | 691 | 0.2-  | 0.2-  |
| 2001 12 17 | 704 | 0.6+  | 0.0   | 2003 02 21 | 644 | 0.2+ | 0.0  | 2007 12 13 | 704 | (0.4+ | 1.6+) |
| 2001 12 19 | 704 | 0.3-  | 1.1+  | 2003 03 09 | 644 | 0.4+ | 0.2- | 2007 12 13 | 704 | 0.5+  | 0.5-  |
| 2001 12 19 | 704 | 0.3-  | 0.6+  | 2003 03 09 | 644 | 0.3+ | 0.2- | 2007 12 13 | 704 | 0.2+  | 0.3-  |
| 2001 12 19 | 704 | 0.3+  | 0.8+  | 2003 03 09 | 644 | 0.1+ | 0.2+ | 2007 12 13 | 704 | 0.3+  | 0.8+  |
| 2001 12 19 | 704 | (1.5+ | 1.0+) | 2003 03 22 | 644 | 0.5- | 0.4+ | 2007 12 13 | 704 | 0.4+  | 0.5-  |
| 2001 12 19 | 704 | 0.2+  | 0.5+  | 2003 03 22 | 644 | 0.3- | 0.1+ | 2007 12 15 | 704 | 0.6+  | 0.2-  |
| 2001 12 20 | 704 | 0.3-  | 0.1+  | 2003 03 22 | 644 | 0.4- | 0.3+ | 2007 12 15 | 704 | 0.7+  | 0.6-  |
| 2001 12 20 | 704 | 0.4-  | 0.3-  | 2003 04 07 | 644 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.4+  | 0.3-  |
| 2001 12 20 | 704 | 0.5-  | 0.3+  | 2003 04 07 | 644 | 0.4- | 0.5+ | 2007 12 15 | 704 | 0.2-  | 0.1-  |
| 2001 12 20 | 704 | 0.1-  | 0.6+  | 2003 04 07 | 644 | 0.4- | 1.0+ | 2007 12 15 | 704 | 0.1-  | 0.3-  |
| 2001 12 20 | 704 | 0.2-  | 1.4+  | 2004 05 18 | 704 | 0.8+ | 0.6+ | 2007 12 17 | 691 | 0.1+  | 0.2+  |
| 2001 12 20 | 704 | 0.5-  | 0.7+  | 2004 05 18 | 704 | 0.3+ | 0.2- | 2007 12 17 | 691 | 0.2-  | 0.0   |
| 2001 12 20 | 704 | 0.2+  | 0.3+  | 2004 05 18 | 704 | 0.4+ | 0.8+ | 2007 12 17 | 691 | 0.1-  | 0.0   |

**(172056)\* 2001 XZ<sub>153</sub>**

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 100.16739  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17199432 | $\omega$ | 249.31153 | +0.92173571   |
| <i>a</i> | 3.2022850  | $\Omega$ | 92.33398  | -0.20051053   |
| <i>e</i> | 0.1111671  | <i>i</i> | 13.90465  | -0.33196207   |
| <i>P</i> | 5.73       | <i>H</i> | 14.8      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 2    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 10 02 | 699 | 0.8+  | 0.2-  | 2006 09 19 | 703 | (0.2+ | 1.7-) | 2006 12 09 | 699 | (1.9- | 0.6+) |
| 2000 10 02 | 699 | 0.9+  | 0.7+  | 2006 09 19 | 703 | 0.0   | 0.8-  | 2006 12 09 | 699 | (1.6- | 0.6-) |
| 2000 10 02 | 699 | 0.7-  | 0.7-  | 2006 09 19 | 703 | 1.3+  | 0.7-  | 2006 12 09 | 699 | (2.3+ | 0.9+) |
| 2000 10 02 | 699 | (2.6+ | 0.3-) | 2006 10 02 | 703 | 0.4-  | 0.8+  | 2006 12 12 | 644 | 0.2+  | 0.6+  |
| 2001 12 14 | 704 | 0.4-  | 0.6-  | 2006 10 02 | 703 | (0.5- | 2.1-) | 2006 12 12 | 644 | 0.1+  | 0.4+  |
| 2001 12 14 | 704 | 0.4+  | 0.2-  | 2006 10 02 | 703 | 0.0   | 0.5+  | 2006 12 12 | 644 | 0.2+  | 0.1+  |
| 2001 12 14 | 704 | 0.2-  | 0.0   | 2006 10 02 | 703 | 0.8+  | 0.7-  | 2007 11 05 | G96 | 0.3+  | 0.2-  |
| 2001 12 14 | 704 | 0.2+  | 0.1+  | 2006 10 11 | 644 | 0.2+  | 0.2+  | 2007 11 05 | G96 | 0.4+  | 0.2+  |
| 2001 12 14 | 704 | 0.4+  | 0.1+  | 2006 10 11 | 644 | 0.2-  | 0.1+  | 2007 11 05 | G96 | 0.5+  | 0.4-  |
| 2001 12 17 | 704 | 0.6-  | 0.8-  | 2006 10 11 | 644 | 0.2-  | 0.5+  | 2007 11 05 | G96 | 0.2+  | 0.0   |
| 2001 12 17 | 704 | 0.0   | 0.3-  | 2006 10 20 | 703 | 0.4-  | 0.7+  | 2007 11 11 | G96 | 0.9+  | 0.1-  |
| 2001 12 17 | 704 | 0.3+  | 0.1-  | 2006 10 20 | 703 | 0.1+  | 0.5-  | 2007 11 11 | G96 | 1.0+  | 0.2-  |
| 2002 01 13 | 704 | 0.9-  | 0.3+  | 2006 10 20 | 703 | 0.4-  | 0.2-  | 2007 11 11 | G96 | 0.6+  | 0.4-  |
| 2002 01 13 | 704 | 0.6-  | 0.5+  | 2006 10 20 | 703 | 0.1+  | 0.3-  | 2007 11 11 | G96 | 0.6+  | 0.3-  |
| 2002 01 13 | 704 | (1.3- | 1.8+) | 2006 10 28 | 703 | 0.7+  | 0.8+  | 2007 12 03 | 691 | 0.1+  | 0.2+  |
| 2002 01 15 | 704 | 0.4+  | 0.2+  | 2006 10 28 | 703 | 0.3-  | 0.1+  | 2007 12 03 | 691 | 1.0-  | 0.2-  |

2002 01 15 704 0.4+ 0.1- 2006 10 28 703 0.4- 0.3-  
 2006 09 19 703 1.2- 0.3- 2006 12 09 699 0.6- 0.4-

**(172057)\* 2001 XY<sub>196</sub>**

Discovered 2001 Dec. 14 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.37377   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17445049 | $\omega$ | 335.76291 | -0.09861688 | -0.97337927 |          |   |
| <i>a</i> | 3.1721564  | $\Omega$ | 119.30834 | +0.94737034 | -0.15546747 |          |   |
| <i>e</i> | 0.1842606  | <i>i</i> | 13.72552  | +0.30457206 | +0.16841220 |          |   |
| <i>P</i> | 5.65       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 17 | 704 | 0.3-  | 0.2-  | 2002 01 21 | 704 | 0.3+ | 0.5- | 2006 09 27 | 705 | 0.0  | 0.1- |
| 2001 11 17 | 704 | 0.3-  | 0.3-  | 2002 01 21 | 704 | 0.4+ | 1.1- | 2006 09 30 | 699 | 0.3- | 0.6+ |
| 2001 11 17 | 704 | 0.3+  | 0.1-  | 2002 02 03 | 699 | 0.2- | 0.0  | 2006 09 30 | 699 | 0.1+ | 1.0- |
| 2001 11 17 | 704 | 0.1-  | 0.1-  | 2002 02 03 | 699 | 0.7- | 0.1- | 2006 09 30 | 699 | 0.6+ | 1.1- |
| 2001 12 14 | 704 | 0.2+  | 0.5-  | 2002 02 03 | 699 | 0.6+ | 0.4- | 2006 09 30 | 699 | 0.2+ | 0.7- |
| 2001 12 14 | 704 | 0.1-  | 0.3-  | 2002 02 03 | 699 | 0.8- | 0.1- | 2006 09 30 | 705 | 0.0  | 0.0  |
| 2001 12 14 | 704 | 0.6-  | 0.1-  | 2002 02 03 | 699 | 0.3+ | 0.2+ | 2006 09 30 | 705 | 0.1+ | 0.0  |
| 2001 12 14 | 704 | 0.6-  | 0.0   | 2002 02 03 | 699 | 0.7- | 0.5+ | 2006 10 01 | 705 | 0.1+ | 0.0  |
| 2001 12 14 | 704 | 0.8-  | 0.3+  | 2002 02 03 | 699 | 0.3+ | 0.3+ | 2006 10 01 | 705 | 0.0  | 0.1- |
| 2001 12 17 | 704 | 0.2+  | 0.1-  | 2002 02 03 | 699 | 0.3- | 0.3+ | 2006 10 02 | 705 | 0.2+ | 0.1- |
| 2001 12 17 | 704 | 0.3+  | 0.2-  | 2002 02 04 | 644 | 0.2- | 0.2+ | 2006 10 02 | 705 | 0.1+ | 0.0  |
| 2001 12 17 | 704 | 0.6+  | 0.4+  | 2002 02 04 | 644 | 0.1+ | 0.3+ | 2006 10 04 | 705 | 0.0  | 0.0  |
| 2001 12 17 | 704 | 0.2-  | 0.5+  | 2002 02 04 | 644 | 0.1- | 0.1+ | 2006 10 04 | 705 | 0.2+ | 0.1- |
| 2001 12 17 | 644 | 0.4+  | 0.0   | 2002 02 05 | 644 | 0.4- | 0.3- | 2006 10 11 | 705 | 0.0  | 0.1+ |
| 2001 12 17 | 704 | 0.4+  | 0.3+  | 2002 02 05 | 644 | 0.1- | 0.2+ | 2006 10 11 | 705 | 0.2+ | 0.0  |
| 2001 12 17 | 644 | 0.5+  | 0.1-  | 2002 02 05 | 644 | 0.3+ | 0.4+ | 2006 10 12 | 705 | 0.0  | 0.1+ |
| 2001 12 17 | 644 | 0.3+  | 0.0   | 2002 02 07 | 704 | 1.0+ | 1.1+ | 2006 10 12 | 705 | 0.0  | 0.0  |
| 2001 12 20 | 704 | 0.6+  | 0.5+  | 2002 02 07 | 704 | 0.2+ | 1.3+ | 2006 10 28 | 703 | 0.7+ | 0.0  |
| 2001 12 20 | 704 | (1.8+ | 0.7+) | 2002 02 07 | 704 | 1.0+ | 0.8+ | 2006 10 28 | 703 | 0.1- | 0.5- |
| 2001 12 20 | 704 | 1.0+  | 1.4+  | 2002 02 07 | 704 | 0.0  | 0.8+ | 2006 10 28 | 703 | 0.8- | 0.7+ |
| 2001 12 20 | 704 | (1.4+ | 2.2+) | 2002 02 07 | 704 | 1.0+ | 0.4+ | 2006 10 28 | 703 | 1.0- | 1.2- |
| 2001 12 23 | 608 | 0.0   | 0.8-  | 2002 02 10 | 704 | 0.4+ | 0.1+ | 2006 11 10 | 704 | 0.3- | 1.2+ |
| 2001 12 23 | 608 | 0.1-  | 0.7-  | 2002 02 10 | 704 | 0.1- | 0.1- | 2006 11 10 | 704 | 0.9+ | 0.2- |
| 2001 12 23 | 608 | 0.4+  | 0.7-  | 2002 02 10 | 704 | 0.1+ | 0.0  | 2006 11 10 | 704 | 0.3- | 0.3- |
| 2002 01 07 | 644 | 0.1-  | 0.2+  | 2002 02 10 | 704 | 0.1- | 0.0  | 2006 11 10 | 704 | 1.0+ | 0.5+ |
| 2002 01 07 | 644 | 0.1-  | 0.3+  | 2002 02 10 | 704 | 0.0  | 0.1- | 2006 11 16 | 703 | 0.4+ | 0.5+ |
| 2002 01 07 | 644 | 0.3-  | 0.4+  | 2002 02 12 | 704 | 0.6- | 1.0+ | 2006 11 16 | 703 | 0.7- | 0.3+ |
| 2002 01 07 | 644 | 0.1+  | 0.5-  | 2002 02 12 | 704 | 0.3- | 1.1+ | 2006 11 16 | 703 | 0.1- | 0.0  |
| 2002 01 07 | 644 | 0.1+  | 0.3-  | 2002 02 12 | 704 | 0.6- | 1.4+ | 2006 11 16 | 703 | 0.5+ | 0.2- |
| 2002 01 07 | 644 | 0.0   | 0.9-  | 2002 02 12 | 704 | 0.3- | 1.1+ | 2006 12 06 | 644 | 0.2- | 0.2+ |
| 2002 01 09 | 704 | 0.2+  | 0.5+  | 2002 02 12 | 704 | 0.5- | 1.1+ | 2006 12 06 | 644 | 0.3- | 0.2+ |
| 2002 01 09 | 704 | 0.9+  | 0.2+  | 2002 02 20 | 704 | 0.5+ | 1.3- | 2006 12 06 | 644 | 0.1- | 0.0  |
| 2002 01 09 | 704 | 0.9+  | 0.3+  | 2002 02 20 | 704 | 1.4- | 0.4- | 2006 12 12 | 644 | 0.0  | 0.1- |
| 2002 01 09 | 704 | 1.0+  | 0.0   | 2002 02 20 | 704 | 0.8- | 0.3+ | 2006 12 12 | 644 | 0.2- | 0.0  |
| 2002 01 09 | 704 | 1.2+  | 0.4+  | 2002 02 20 | 704 | 0.6- | 0.6+ | 2006 12 12 | 644 | 0.0  | 0.0  |
| 2002 01 11 | 699 | 0.1-  | 1.0+  | 2002 02 20 | 704 | 1.2- | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.1- |
| 2002 01 11 | 699 | 0.2+  | 0.2-  | 2002 02 21 | 049 | 0.3- | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.1- |
| 2002 01 11 | 699 | 0.4-  | 0.7+  | 2002 02 21 | 049 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.3- |
| 2002 01 11 | 699 | 0.1+  | 0.4+  | 2002 02 21 | 049 | 0.4- | 0.3+ | 2007 11 14 | G96 | 0.5+ | 0.2+ |
| 2002 01 13 | 608 | 0.3-  | 0.2-  | 2005 07 27 | 644 | 0.4- | 0.7+ | 2007 11 14 | G96 | 0.0  | 0.0  |
| 2002 01 13 | 608 | 0.1+  | 0.6-  | 2005 07 27 | 644 | 0.3+ | 0.5+ | 2007 11 14 | G96 | 0.5+ | 0.1+ |
| 2002 01 13 | 608 | (0.0  | 1.6-) | 2005 07 27 | 644 | 0.2- | 0.6+ | 2007 11 14 | G96 | 0.4+ | 0.2- |
| 2002 01 14 | 704 | 0.2-  | 0.7-  | 2005 08 01 | E12 | 0.9- | 1.2+ | 2007 11 19 | 691 | 0.2- | 0.2- |
| 2002 01 14 | 704 | 0.3-  | 0.5-  | 2005 08 01 | E12 | 0.5- | 0.5- | 2007 11 19 | 691 | 0.2+ | 0.3- |
| 2002 01 14 | 704 | 0.2-  | 0.7-  | 2005 08 01 | E12 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.2- | 0.0  |
| 2002 01 14 | 704 | 0.6-  | 0.7-  | 2005 08 01 | E12 | 0.1- | 0.9+ | 2007 12 13 | 704 | 1.0- | 0.4+ |
| 2002 01 14 | 704 | 0.5-  | 0.6-  | 2005 09 01 | 644 | 0.1+ | 0.7+ | 2007 12 13 | 704 | 0.4- | 0.2+ |
| 2002 01 21 | 704 | 0.2-  | 0.3-  | 2005 09 01 | 644 | 0.2+ | 1.0+ | 2007 12 13 | 704 | 0.0  | 0.5- |
| 2002 01 21 | 704 | 0.3+  | 0.4-  | 2005 09 01 | 644 | 0.2+ | 0.6+ |            |     |      |      |
| 2002 01 21 | 704 | 0.1-  | 0.4-  | 2006 09 27 | 705 | 0.0  | 0.1- |            |     |      |      |

**(172058)\* 2001 XN<sub>201</sub>**

Discovered 2001 Dec. 14 by W. Bickel at Bergisch Gladbach.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.90663   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.16874580 | $\omega$ | 325.71195 | -0.03436298 | -0.99903635 |          |   |
| <i>a</i> | 3.2432524  | $\Omega$ | 126.24236 | +0.92435978 | -0.04215800 |          |   |
| <i>e</i> | 0.0830433  | <i>i</i> | 1.94012   | +0.37997129 | +0.01220958 |          |   |
| <i>P</i> | 5.84       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 12 14 | 621 | 0.4- | 0.3- | 2002 02 12 | 691 | 0.4-  | 0.0   | 2006 11 13 | 644 | 0.2+ | 0.4+ |
| 2001 12 14 | 621 | 0.1- | 0.6- | 2002 02 12 | 691 | (2.5- | 1.1+) | 2006 11 13 | 644 | 0.4+ | 0.0  |
| 2001 12 14 | 621 | 0.2+ | 0.3- | 2002 02 14 | 691 | 0.9+  | 0.8+  | 2006 11 13 | 644 | 0.5+ | 0.3+ |
| 2001 12 15 | 621 | 0.1- | 0.0  | 2002 02 14 | 691 | 0.8+  | 0.4+  | 2006 11 17 | 703 | 0.5+ | 0.6+ |
| 2001 12 15 | 621 | 0.2- | 0.0  | 2002 02 14 | 691 | 1.0+  | 0.5+  | 2006 11 17 | 703 | 0.1- | 0.6+ |
| 2001 12 15 | 621 | 0.6- | 0.1- | 2002 02 14 | 291 | 0.2+  | 0.2-  | 2006 11 17 | 703 | 0.2- | 0.5- |
| 2001 12 15 | 621 | 1.3- | 0.6+ | 2002 02 14 | 291 | 0.4+  | 0.2-  | 2006 11 17 | 703 | 0.2- | 0.2+ |
| 2002 01 10 | 644 | 0.3+ | 0.0  | 2002 02 14 | 291 | 0.4+  | 0.1+  | 2006 11 17 | 703 | 0.0  | 0.0  |
| 2002 01 10 | 644 | 0.3+ | 0.3+ | 2003 04 25 | 691 | 0.0   | 0.6+  | 2006 11 17 | 703 | 0.7- | 0.4- |
| 2002 01 10 | 644 | 0.2+ | 0.3+ | 2003 04 25 | 691 | 0.2+  | 0.7+  | 2006 11 17 | 703 | 0.0  | 0.2- |
| 2002 01 14 | 704 | 0.4+ | 0.0  | 2003 04 25 | 691 | 0.1+  | 0.7+  | 2006 11 17 | 703 | 0.7- | 0.7- |
| 2002 01 14 | 704 | 0.4+ | 0.4+ | 2005 08 27 | 644 | 0.3+  | 0.9+  | 2006 12 11 | 691 | 0.1- | 0.2+ |
| 2002 01 14 | 704 | 0.1- | 0.0  | 2005 08 27 | 644 | 0.1+  | 1.0+  | 2006 12 11 | 691 | 0.2- | 0.4+ |
| 2002 01 22 | 291 | 0.7- | 0.0  | 2005 08 27 | 644 | 0.1+  | 0.8+  | 2006 12 11 | 691 | 0.1- | 0.2- |
| 2002 01 22 | 291 | 0.5- | 0.0  | 2006 10 16 | 691 | 0.1-  | 0.1+  | 2007 02 08 | G96 | 0.2+ | 0.1- |
| 2002 01 22 | 291 | 0.7- | 0.2- | 2006 10 16 | 691 | 0.3-  | 0.0   | 2007 02 08 | G96 | 0.0  | 0.2+ |
| 2002 02 07 | 704 | 0.2+ | 0.6+ | 2006 10 16 | 691 | 0.1-  | 0.1-  | 2007 02 08 | G96 | 0.2- | 0.2+ |
| 2002 02 07 | 704 | 0.2+ | 0.2+ | 2006 10 28 | 691 | 0.2-  | 0.3+  | 2007 02 08 | G96 | 0.1- | 0.6- |
| 2002 02 07 | 704 | 0.9- | 1.0+ | 2006 10 28 | 691 | 0.2+  | 0.2+  | 2007 11 19 | G96 | 0.3+ | 0.2- |
| 2002 02 08 | 691 | 0.4+ | 0.2+ | 2006 10 28 | 691 | 0.2+  | 0.1-  | 2007 11 19 | G96 | 0.1+ | 0.3- |
| 2002 02 08 | 691 | 0.3- | 0.2- | 2006 11 01 | 691 | 0.0   | 0.1+  | 2007 11 19 | G96 | 0.1- | 0.4- |
| 2002 02 08 | 691 | 0.1- | 0.2- | 2006 11 01 | 691 | 0.0   | 0.1+  | 2007 11 19 | G96 | 0.1- | 0.6- |
| 2002 02 10 | 704 | 0.2+ | 0.5- | 2006 11 01 | 691 | 0.0   | 0.5+  | 2007 12 04 | G96 | 0.2+ | 0.4- |
| 2002 02 10 | 704 | 0.3- | 0.9- | 2006 11 09 | 644 | 0.2-  | 0.0   | 2007 12 04 | G96 | 0.2+ | 0.3- |
| 2002 02 10 | 704 | 0.1- | 0.8- | 2006 11 09 | 644 | 0.1-  | 0.3+  | 2007 12 04 | G96 | 0.2+ | 0.2- |
| 2002 02 12 | 691 | 0.5- | 0.4- | 2006 11 09 | 644 | 0.1+  | 0.2+  | 2007 12 04 | G96 | 0.2- | 0.7- |

**(172059)\* 2001 XL<sub>203</sub>**

Discovered 2001 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 91.50202   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18177163 | $\omega$ | 231.27744 | +0.94960301 | +0.28547902 |          |   |
| <i>a</i> | 3.0863983  | $\Omega$ | 111.79568 | -0.22645671 | +0.91034249 |          |   |
| <i>e</i> | 0.1829712  | <i>i</i> | 8.01372   | -0.21672904 | +0.29963024 |          |   |
| <i>P</i> | 5.42       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 07 07 | 704 | 0.4-  | 1.6+  | 2004 03 23 | 704 | 0.0   | 0.0   | 2006 09 29 | 699 | 0.3+ | 0.7+ |
| 2000 07 07 | 704 | 0.0   | 0.9-  | 2004 03 23 | 704 | 1.2+  | 0.7+  | 2006 09 29 | 699 | 0.1+ | 0.1- |
| 2000 07 07 | 704 | 0.5-  | 0.3-  | 2004 03 23 | 704 | (1.9+ | 0.8+) | 2006 09 30 | 704 | 1.3- | 0.2- |
| 2000 07 07 | 704 | 0.0   | 0.4-  | 2004 03 23 | 704 | 0.7+  | 0.5+  | 2006 09 30 | 704 | 0.3- | 0.3- |
| 2000 07 07 | 704 | 0.3-  | 0.2+  | 2005 07 04 | 703 | 1.0-  | 1.2+  | 2006 09 30 | 704 | 0.9- | 0.2+ |
| 2001 10 17 | 704 | 0.5-  | 1.4+  | 2005 07 04 | 703 | 0.8-  | 1.5-  | 2006 09 30 | 704 | 0.5- | 0.6- |
| 2001 10 17 | 704 | (0.8- | 2.5+) | 2005 07 04 | 703 | 0.6+  | 0.0   | 2006 09 30 | 704 | 1.4- | 0.1+ |
| 2          |     |       |       |            |     |       |       |            |     |      |      |



|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 12 11 | 704 | 0.2− | 0.2− | 2006 09 18 | 703 | 0.5−  | 0.0   | 2006 10 28 | 703 | 0.5− | 0.1+ |
| 2001 12 11 | 704 | 0.0  | 0.5− | 2006 09 18 | 703 | 0.0   | 0.2−  | 2006 10 28 | 703 | 1.1− | 0.2− |
| 2001 12 11 | 704 | 0.4+ | 0.3+ | 2006 09 21 | 699 | 0.6+  | 0.0   | 2006 12 21 | 644 | 0.3+ | 0.0  |
| 2001 12 11 | 704 | 0.3− | 0.1− | 2006 09 21 | 699 | 0.2−  | 0.8+  | 2006 12 21 | 644 | 0.0  | 0.4+ |
| 2001 12 11 | 704 | 0.4+ | 0.1− | 2006 09 21 | 699 | 0.5+  | 0.5+  | 2006 12 21 | 644 | 0.1+ | 0.3+ |
| 2001 12 18 | 644 | 0.2+ | 0.1− | 2006 09 21 | 699 | 0.3+  | 0.1−  | 2006 12 21 | 703 | 0.4+ | 0.1+ |
| 2001 12 18 | 644 | 0.3+ | 0.3+ | 2006 09 21 | 608 | 1.2+  | 1.4−  | 2006 12 21 | 703 | 0.6− | 1.2− |
| 2001 12 18 | 644 | 0.2− | 0.3+ | 2006 09 21 | 608 | (0.9+ | 1.7−) | 2006 12 21 | 703 | 0.5+ | 1.1+ |
| 2001 12 18 | 704 | 1.4+ | 0.4− | 2006 09 21 | 608 | 1.0+  | 0.4−  | 2006 12 21 | 703 | 0.4+ | 0.4+ |
| 2001 12 18 | 704 | 0.1− | 1.2− | 2006 09 25 | 699 | 0.2−  | 0.3+  | 2007 12 04 | G96 | 0.4− | 0.2− |
| 2001 12 18 | 704 | 1.3+ | 0.3− | 2006 09 25 | 699 | 0.2−  | 0.1+  | 2007 12 04 | G96 | 0.4+ | 0.2− |
| 2001 12 18 | 704 | 0.6+ | 0.2+ | 2006 09 25 | 699 | 0.5−  | 0.2−  | 2007 12 04 | G96 | 0.3+ | 0.1− |
| 2002 01 08 | 644 | 0.5− | 0.1+ | 2006 09 25 | 699 | 0.1+  | 0.2+  | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2002 01 08 | 644 | 0.1− | 0.3+ | 2006 09 26 | 703 | 0.1−  | 0.1−  | 2007 12 04 | 691 | 0.2− | 0.1− |
| 2002 01 08 | 644 | 0.1− | 0.3+ | 2006 09 26 | 703 | 0.3−  | 0.3−  | 2007 12 04 | 691 | 0.3+ | 0.3− |
| 2003 01 31 | 644 | 0.4+ | 0.5+ | 2006 09 26 | 703 | 0.5−  | 0.0   | 2007 12 04 | 691 | 0.1− | 0.4− |
| 2003 01 31 | 644 | 0.3+ | 0.5+ | 2006 09 26 | 703 | 0.2−  | 0.7−  | 2007 12 16 | 691 | 0.2− | 0.0  |
| 2003 01 31 | 644 | 0.5+ | 0.1+ | 2006 09 29 | 699 | 0.3+  | 0.1−  | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2004 03 23 | 704 | 0.3− | 1.0+ | 2006 09 29 | 699 | 0.4−  | 0.1−  | 2007 12 16 | 691 | 0.3− | 0.0  |

**(172060)\* 2001 XR<sub>208</sub> = 2004 KE<sub>5</sub>**

Discovered 2001 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 65231)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 215.21481  |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.15493500 | $\omega$ | 319.85677 | −0.85928326 | +0.43710944 |
| <i>a</i> | 3.4332310  | $\Omega$ | 247.97188 | −0.36412251 | −0.88747815 |
| <i>e</i> | 0.0872343  | <i>i</i> | 16.65241  | −0.35923122 | −0.14600638 |
| <i>P</i> | 6.36       | <i>H</i> | 14.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 20 | 704 | 0.1+  | 0.0   | 2004 05 22 | 704 | 0.2+  | 1.0+  | 2007 11 09 | 691 | 0.0   | 0.1+  |
| 2001 11 20 | 704 | 0.0   | 0.1−  | 2004 05 22 | 704 | 0.1+  | 0.1−  | 2007 11 09 | 691 | 0.4−  | 0.8+  |
| 2001 11 20 | 704 | 0.6−  | 0.4−  | 2004 05 22 | 704 | 0.0   | 0.2+  | 2007 11 09 | 691 | 0.2−  | 0.0   |
| 2001 12 11 | 704 | 0.1+  | 0.5−  | 2004 06 05 | 644 | 0.8−  | 0.0   | 2007 11 13 | 691 | 0.1+  | 0.1+  |
| 2001 12 11 | 704 | 0.2+  | 0.0   | 2004 06 05 | 644 | 0.7−  | 0.0   | 2007 11 13 | 691 | 0.1−  | 0.1+  |
| 2001 12 11 | 704 | 0.1−  | 0.1−  | 2004 06 05 | 644 | 0.7−  | 0.0   | 2007 11 13 | 691 | 0.0   | 0.1+  |
| 2001 12 11 | 704 | 0.6−  | 0.2+  | 2004 06 12 | E12 | 0.8−  | 0.4−  | 2007 11 15 | 704 | (1.5+ | 0.1−) |
| 2001 12 11 | 704 | 0.0   | 0.7−  | 2004 06 12 | E12 | 0.2+  | 1.3−  | 2007 11 15 | 704 | 1.0+  | 0.2+  |
| 2001 12 18 | 704 | 0.6−  | 0.6+  | 2004 06 12 | E12 | 0.1+  | 0.7−  | 2007 11 15 | 704 | 0.4+  | 0.2−  |
| 2001 12 18 | 704 | 0.2+  | 0.3+  | 2004 06 12 | E12 | (0.4+ | 1.6−) | 2007 11 15 | 704 | 0.2+  | 0.3−  |
| 2001 12 18 | 704 | 0.1+  | 0.1−  | 2004 06 22 | E12 | 0.2+  | 0.4+  | 2007 11 15 | 704 | 0.3+  | 0.5+  |
| 2003 01 13 | 644 | 0.5+  | 0.4+  | 2004 06 22 | E12 | 0.1+  | 0.2−  | 2007 11 17 | 691 | 0.1−  | 0.4+  |
| 2003 01 13 | 644 | 1.1+  | 1.3+  | 2004 06 22 | E12 | 0.1+  | 1.2−  | 2007 11 17 | 691 | 0.1+  | 0.1−  |
| 2003 01 13 | 644 | 0.9+  | 0.4+  | 2004 06 22 | E12 | 0.2+  | 0.0   | 2007 11 17 | 691 | 0.0   | 0.1+  |
| 2004 04 25 | 704 | 0.0   | 0.2−  | 2005 06 29 | 644 | 0.2−  | 0.7+  | 2007 12 03 | 703 | 0.3−  | 0.8+  |
| 2004 04 25 | 704 | 0.0   | 0.1+  | 2005 06 29 | 644 | 0.2−  | 0.8+  | 2007 12 03 | 703 | 0.2+  | 0.4−  |
| 2004 04 25 | 704 | 0.3−  | 0.4+  | 2005 06 29 | 644 | 0.3−  | 0.9+  | 2007 12 03 | 703 | 0.2−  | 0.0   |
| 2004 04 25 | 704 | 1.0−  | 0.8+  | 2005 06 29 | 644 | 0.1−  | 0.6+  | 2007 12 03 | 703 | 0.2+  | 0.2−  |
| 2004 05 19 | E12 | (1.7+ | 1.2+) | 2005 06 29 | 644 | 0.1−  | 0.8+  | 2007 12 14 | 704 | 0.9−  | 0.8−  |
| 2004 05 19 | E12 | 0.2−  | 0.7+  | 2005 06 29 | 644 | 0.2−  | 0.6+  | 2007 12 14 | 704 | 0.2−  | 0.4+  |
| 2004 05 19 | E12 | 0.8+  | 1.0+  | 2006 09 22 | 699 | 0.1+  | 0.9−  | 2007 12 14 | 704 | 0.3+  | 0.0   |
| 2004 05 19 | E12 | 0.6+  | 0.5+  | 2006 09 22 | 699 | 0.6+  | 0.3+  | 2007 12 14 | 704 | 0.4+  | 1.2+  |
| 2004 05 20 | E12 | 0.4+  | 0.9+  | 2006 09 22 | 699 | (1.2− | 3.0+) | 2007 12 15 | G96 | 2.0+  | 0.4+  |
| 2004 05 20 | E12 | 0.1−  | 0.7+  | 2006 09 22 | 699 | (1.4+ | 1.7+) | 2007 12 15 | G96 | 0.7+  | 0.2−  |
| 2004 05 20 | E12 | 0.1−  | 0.1+  | 2007 11 02 | 691 | 0.2−  | 0.3+  | 2007 12 15 | G96 | 0.6+  | 0.3−  |
| 2004 05 20 | E12 | 0.6+  | 0.2+  | 2007 11 02 | 691 | 0.1−  | 0.1+  | 2007 12 15 | G96 | 0.3+  | 0.2−  |
| 2004 05 22 | 704 | (0.0  | 2.1+) | 2007 11 02 | 691 | 0.5−  | 0.6−  |            |     |       |       |

**(172061)\* 2001 XH<sub>223</sub>**

Discovered 2001 Dec. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 325.68611  |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17846503 | $\omega$ | 222.64457 | −0.64791874 | −0.74695968 |
| <i>a</i> | 3.1244048  | $\Omega$ | 268.31315 | +0.73288714 | −0.55796788 |
| <i>e</i> | 0.0541579  | <i>i</i> | 8.58274   | +0.20755179 | −0.36155647 |
| <i>P</i> | 5.52       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 19 | 704 | 0.3−  | 0.6+  | 2005 07 26 | 644 | 0.1− | 0.3+ | 2006 10 12 | 644 | 0.4− | 0.1+ |
| 2001 11 19 | 704 | 0.0   | 0.5−  | 2005 08 06 | 644 | 0.1− | 0.1+ | 2006 10 12 | 644 | 0.2− | 0.2+ |
| 2001 11 19 | 704 | 0.1−  | 0.3+  | 2005 08 06 | 644 | 0.2+ | 0.3+ | 2006 10 15 | 291 | 0.1+ | 0.2− |
| 2001 11 19 | 704 | 0.1−  | 0.2+  | 2005 08 06 | 644 | 0.1+ | 0.1+ | 2006 10 15 | 291 | 0.4+ | 0.1− |
| 2001 12 15 | 704 | 0.2+  | 0.3−  | 2005 08 24 | 644 | 0.4− | 0.1− | 2006 10 15 | 291 | 0.3+ | 0.0  |
| 2001 12 15 | 704 | 0.1−  | 0.2−  | 2005 08 24 | 644 | 0.1+ | 0.0  | 2007 10 19 | G96 | 0.3− | 0.2− |
| 2001 12 15 | 704 | 0.2−  | 0.3−  | 2005 08 24 | 644 | 0.1− | 0.3− | 2007 10 19 | G96 | 1.0− | 0.3− |
| 2001 12 15 | 704 | 0.2+  | 0.4−  | 2006 09 18 | 703 | 0.1+ | 0.7− | 2007 10 19 | G96 | 0.0  | 0.2− |
| 2001 12 18 | 704 | 0.2+  | 0.7+  | 2006 09 18 | 703 | 0.6+ | 0.1− | 2007 10 19 | G96 | 0.7− | 0.3− |
| 2001 12 18 | 704 | 0.1+  | 0.6+  | 2006 09 18 | 703 | 0.1− | 0.3+ | 2007 11 05 | G96 | 0.3− | 0.1− |
| 2001 12 18 | 704 | 1.2+  | 0.3+  | 2006 09 18 | 703 | 0.1− | 0.1− | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2001 12 19 | 704 | 0.0   | 0.2+  | 2006 09 19 | G92 | 0.2− | 0.4+ | 2007 11 05 | G96 | 0.5− | 0.2− |
| 2001 12 19 | 704 | 0.0   | 0.0   | 2006 09 19 | G92 | 0.2+ | 0.7+ | 2007 12 04 | G96 | 0.2+ | 0.4− |
| 2001 12 19 | 704 | 0.1+  | 0.5+  | 2006 09 19 | G92 | 0.1+ | 0.3+ | 2007 12 04 | G96 | 0.2− | 0.1− |
| 2001 12 19 | 704 | 0.7+  | 0.6+  | 2006 09 28 | 703 | 0.8− | 0.2− | 2007 12 04 | G96 | 0.4− | 0.0  |
| 2002 01 08 | 704 | 0.4−  | 0.5+  | 2006 09 28 | 703 | 0.0  | 0.5− | 2007 12 04 | G96 | 0.2− | 0.2− |
| 2002 01 08 | 704 | 0.2−  | 0.1+  | 2006 09 28 | 703 | 1.1− | 0.5− | 2007 12 05 | 704 | 1.0+ | 0.3+ |
| 2002 01 08 | 704 | (2.2− | 0.8+) | 2006 09 28 | 703 | 0.3+ | 0.2+ | 2007 12 05 | 704 | 0.6+ | 0.3− |
| 2002 01 08 | 704 | 1.2−  | 0.8−  | 2006 10 11 | 644 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.5+ | 0.7+ |
| 2002 01 08 | 704 | 0.4−  | 0.4−  | 2006 10 11 | 644 | 0.2− | 0.2+ | 2007 12 05 | 704 | 0.5+ | 0.7+ |
| 2005 07 26 | 644 | 0.1−  | 0.0   | 2006 10 11 | 644 | 0.3− | 0.0  |            |     |      |      |
| 2005 07 26 | 644 | 0.1+  | 0.1+  | 2006 10 12 | 644 | 0.4− | 0.0  |            |     |      |      |

**(172062)\* 2001 XV<sub>227</sub> = 2005 LK<sub>44</sub>**

Discovered 2001 Dec. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 75244)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 44.57976   |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17686627 | $\omega$ | 123.64214 | +0.70995466 | −0.68692179 |
| <i>a</i> | 3.1432050  | $\Omega$ | 280.28557 | +0.58254309 | +0.69669336 |
| <i>e</i> | 0.0775620  | <i>i</i> | 9.07844   | +0.39573720 | +0.20677720 |
| <i>P</i> | 5.57       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 12 11 | 691 | 0.2− | 0.3− | 2001 12 20 | 644 | 0.1+  | 0.1+  | 2006 10 11 | 644 | 0.0  | 0.4− |
| 1996 12 11 | 691 | 0.1− | 0.4− | 2002 01 08 | 704 | 0.6−  | 0.9+  | 2006 10 22 | 644 | 0.1+ | 0.3+ |
| 1996 12 11 | 691 | 0.1+ | 0.1− | 2002 01 08 | 704 | 0.4−  | 1.2+  | 2006 10 22 | 644 | 0.6+ | 0.4+ |
| 2000 10 02 | 645 | 0.0  | 0.1− | 2002 01 08 | 704 | (0.6− | 2.3+) | 2006 10 22 | 644 | 0.1+ | 0.0  |
| 2000 10 02 | 645 | 0.0  | 0.0  | 2005 06 03 | 691 | 0.2+  | 0.3−  | 2007 11 04 | G96 | 0.2− | 0.5− |
| 2001 12 15 | 704 | 0.2+ | 0.4+ | 2005 06 03 | 691 | 0.1−  | 0.3+  | 2007 11 04 | G96 | 0.4− | 0.1− |
| 2001 12 15 | 704 | 0.2+ | 1.0+ | 2005 06 03 | 691 | 0.2−  | 0.1−  | 2007 11 04 | G96 | 0.2+ | 0.4− |
| 2001 12 15 | 704 | 0.9+ | 0.8+ | 2005 06 12 | 691 | 0.2+  | 0.1+  | 2007 11 04 | G96 | 0.4+ | 0.1− |
| 2001 12 18 | 704 | 0.1− | 0.4− | 2005 06 12 | 691 | 0.2+  | 0.0   | 2007 11 04 | G96 | 0.0  | 0.3− |
| 2001 12 18 | 704 | 0.5− | 0.1− | 2005 06 12 | 691 | 0.3−  | 0.1+  | 2007 11 04 | G96 | 0.3+ | 0.3+ |
| 2001 12 18 | 704 | 1.0− | 0.1− | 2005 06 14 | G96 | 0.5−  | 0.1−  | 2007 11 04 | G96 | 0.3+ | 0.2− |
| 2001 12 18 | 704 | 0.6− | 0.2− | 2005 06 14 | G96 | 0.1+  | 0.3+  | 2007 11 04 | G96 | 0.1+ | 0.2+ |
| 2001 12 18 | 704 | 0.1− | 0.4− | 2005 06 14 | G96 | 0.3−  | 0.1+  | 2007 11 11 | G96 | 0.2+ | 0.2− |
| 2001 12 19 | 704 | 0.5+ | 0.1+ | 2005 06 14 | G96 | 0.2−  | 0.3+  | 2007 11 11 | G96 | 0.5+ | 0.4− |
| 2001 12 19 | 704 | 0.4+ | 0.3− | 2006 09 28 | 703 | 0.1+  | 0.6+  | 2007 11 11 | G96 | 0.3+ | 0.6− |
| 2001 12 19 | 704 | 0.4− | 0.4+ | 2006 09 28 | 703 | 0.8−  | 0.9−  | 2007 11 11 | G96 | 0.6+ | 0.4− |
| 2001 12 19 | 704 | 0.4+ | 0.3+ | 2006 09 28 | 703 | 0.0   | 1.0−  | 2007 12 15 | 691 | 0.1− | 0.4+ |
| 2001 12 19 | 704 | 0.1+ | 0.1− | 2006 09 28 | 703 | 0.3+  | 0.7+  | 2007 12 15 | 691 | 0.2− | 0.1− |
| 2001 12 20 | 644 | 0.0  | 0.3+ | 2006 10 11 | 644 | 0.2+  | 0.1+  | 2007 12 15 | 691 | 0.3− | 0.0  |
| 2001 12 20 | 644 | 0.3+ | 0.4+ | 2006 10 11 | 644 | 0.2−  | 0.3+  |            |     |      |      |

**(172063)\* 2001 XP<sub>237</sub>**

Discovered 2001 Dec. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17852529 | $\omega$ | 37.75778 | −0.29062427 | −0.95453026 |          |   |
| <i>a</i> | 3.1237017  | $\Omega$ | 69.22415 | +0.85967498 | −0.29095423 |          |   |
| <i>e</i> | 0.0719927  | <i>i</i> | 4.07271  | +0.42011483 | −0.06494316 |          |   |
| <i>P</i> | 5.52       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 12 08 | 691 | 0.0   | 0.2−  | 2001 12 15 | 704 | 1.1−  | 1.1−  | 2006 09 17 | 691 | 0.3− | 0.1+ |
| 1996 12 08 | 691 | 0.2−  | 0.2−  | 2001 12 15 | 704 | (1.7− | 0.8−) | 2006 09 17 | 691 | 0.0  | 0.6+ |
| 1996 12 08 | 691 | 0.2−  | 0.3−  | 2001 12 15 | 704 | 1.1−  | 0.5−  | 2006 09 17 | 691 | 0.0  | 0.3+ |
| 1998 03 22 | 691 | 0.2−  | 0.0   | 2001 12 15 | 704 | 1.2−  | 0.0   | 2006 09 27 | 691 | 0.1+ | 0.1+ |
| 1998 03 22 | 691 | (7.0+ | 2.1+) | 2001 12 18 | 704 | 0.1+  | 0.2−  | 2006 09 27 | 691 | 0.2+ | 0.1+ |
| 1998 03 22 | 691 | 0.2+  | 0.3+  | 2001 12 18 | 704 | 1.3+  | 1.0+  | 2006 09 27 | 691 | 0.1+ | 0.2+ |
| 2000 09 03 | 645 | 0.1+  | 0.0   | 2001 12 18 | 704 | 0.9+  | 0.8+  | 2006 10 21 | G96 | 0.6+ | 0.0  |
| 2000 09 03 | 645 | 0.1−  | 0.0   | 2001 12 18 | 704 | 0.3+  | 1.1+  | 2006 10 21 | G96 | 0.1− | 0.2− |
| 2000 09 05 | 645 | 0.0   | 0.1−  | 2001 12 19 | 704 | 0.8+  | 0.8+  | 2006 10 21 | G96 | 0.1+ | 0.3− |
| 2000 09 05 | 645 | 0.0   | 0.2−  | 2001 12 19 | 704 | 0.8+  | 0.9+  | 2006 10 21 | G96 | 0.1− | 0.1+ |
| 2001 11 21 | 704 | 0.7+  | 1.1−  | 2001 12 19 | 704 | 0.4+  | 1.0+  | 2007 11 07 | G96 | 0.0  | 0.2− |
| 2001 11 21 | 704 | 0.3+  | 1.0−  | 2001 12 19 | 704 | 0.6−  | 0.7+  | 2007 11 07 | G96 | 0.3− | 0.3− |
| 2001 11 21 | 704 | (0.0  | 1.7−) | 2001 12 19 | 704 | 0.4+  | 0.1−  | 2007 11 07 | G96 | 0.4− | 0.3− |
| 2001 11 21 | 704 | 0.4+  | 1.3−  | 2002 12 11 | 645 | 0.0   | 0.1+  | 2007 11 07 | G96 | 0.7− | 0.0  |
| 2001 12 09 | 644 | 0.3−  | 0.5+  | 2002 12 11 | 645 | 0.0   | 0.0   | 2007 12 04 | 691 | 0.3− | 0.4+ |
| 2001 12 09 | 644 | 0.1−  | 0.6+  | 2003 03 30 | 645 | 0.1+  | 0.0   | 2007 12 04 | 691 | 0.2− | 0.5− |
| 2001 12 09 | 644 | 0.2−  | 1.1+  | 2003 03 30 | 645 | 0.2+  | 0.0   | 2007 12 04 | 691 | 0.6− | 0.2− |

**(172064)\* 2001 XA<sub>245</sub>**

Discovered 2001 Dec. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17288629 | $\omega$ | 23.52510 | −0.24538484 | −0.92742165 |          |   |
| <i>a</i> | 3.1912611  | $\Omega$ | 81.65165 | +0.83797659 | −0.34932074 |          |   |
| <i>e</i> | 0.1034729  | <i>i</i> | 16.57626 | +0.48742334 | +0.13365668 |          |   |
| <i>P</i> | 5.70       | <i>H</i> | 15.1     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 03 05 | 327 | 0.5+  | 0.7+  | 2003 02 11 | 704 | 0.8− | 0.4− | 2007 11 04 | 704 | 0.4+  | 0.9+  |
| 1998 03 05 | 327 | 0.4+  | 0.6+  | 2003 02 11 | 704 | 1.0+ | 1.4+ | 2007 11 04 | 704 | 0.6+  | 0.3+  |
| 1998 03 05 | 327 | 0.2−  | 0.0   | 2003 02 19 | 644 | 0.1+ | 0.5+ | 2007 11 04 | 704 | 0.8+  | 0.6−  |
| 2001 11 18 | 704 | 0.1−  | 0.2+  | 2003 02 19 | 644 | 0.1+ | 0.5+ | 2007 11 12 | 704 | 0.9−  | 0.1+  |
| 2001 11 18 | 704 | 0.4−  | 0.5−  | 2003 02 19 | 644 | 0.0  | 0.3+ | 2007 11 12 | 704 | 1.0−  | 0.7+  |
| 2001 11 18 | 704 | 0.2+  | 0.3−  | 2003 03 03 | 644 | 0.0  | 0.9+ | 2007 11 12 | 704 | (1.8− | 0.2+) |
| 2001 11 18 | 704 | 0.8−  | 0.7+  | 2003 03 03 | 644 | 0.2+ | 0.5+ | 2007 11 12 | 704 | 0.6+  | 0.6−  |
| 2001 11 18 | 704 | 0.8−  | 0.4−  | 2003 03 03 | 644 | 0.4+ | 0.7+ | 2007 11 28 | D29 | 0.4−  | 0.4−  |
| 2001 12 15 | 704 | 0.2+  | 0.4−  | 2003 03 07 | 645 | 0.1− | 0.2− | 2007 11 28 | D29 | 0.8+  | 0.6−  |
| 2001 12 15 | 704 | 0.1−  | 0.7−  | 2003 03 07 | 645 | 0.1− | 0.2− | 2007 11 28 | D29 | 0.4−  | 0.0   |
| 2001 12 15 | 704 | 0.4+  | 0.4+  | 2003 03 09 | 644 | 0.5− | 0.4+ | 2007 11 28 | D29 | 0.4−  | 0.1−  |
| 2001 12 19 | 704 | 0.3+  | 0.5+  | 2003 03 09 | 644 | 0.6− | 0.7+ | 2007 12 05 | 704 | 0.2+  | 0.4−  |
| 2001 12 19 | 704 | 1.2+  | 0.4−  | 2003 03 09 | 644 | 0.2− | 0.8+ | 2007 12 05 | 704 | 0.1+  | 0.4−  |
| 2001 12 19 | 704 | (0.3+ | 1.6−) | 2003 03 09 | 644 | 0.8+ | 0.6+ | 2007 12 05 | 704 | 0.2−  | 0.2−  |
| 2001 12 19 | 704 | 0.7+  | 0.5−  | 2003 03 09 | 644 | 0.5+ | 0.7+ | 2007 12 05 | 704 | 0.3−  | 0.1−  |
| 2003 02 01 | 644 | 1.0+  | 1.1+  | 2003 03 09 | 644 | 0.3+ | 0.8+ | 2007 12 05 | 704 | 0.2−  | 0.0   |
| 2003 02 01 | 644 | 1.0+  | 1.0+  | 2003 04 26 | 645 | 0.0  | 0.1− | 2007 12 16 | 691 | 0.5−  | 0.3−  |
| 2003 02 01 | 644 | (1.8+ | 1.0+) | 2003 04 26 | 645 | 0.0  | 0.1− | 2007 12 16 | 691 | 0.5−  | 0.4−  |
| 2003 02 11 | 704 | 0.1+  | 1.5−  | 2007 11 04 | 704 | 0.9+ | 1.2+ | 2007 12 16 | 691 | 0.5+  | 1.0+  |
| 2003 02 11 | 704 | 0.1+  | 0.0   | 2007 11 04 | 704 | 0.8+ | 0.4+ |            |     |       |       |

**(172065)\* 2001 XL<sub>245</sub>**

Discovered 2001 Dec. 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17835806 | $\omega$ | 11.02924  | −0.51634764 | −0.83463303 |          |   |
| <i>a</i> | 3.1256539  | $\Omega$ | 110.31230 | +0.76933177 | −0.55044697 |          |   |
| <i>e</i> | 0.1792848  | <i>i</i> | 11.79894  | +0.37618312 | −0.01989578 |          |   |
| <i>P</i> | 5.53       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 13 | 699 | 1.1−  | 1.2+  | 2003 02 28 | 704 | 0.5+  | 0.1+  | 2006 09 25 | 703 | 1.1+  | 1.2−  |
| 2001 10 13 | 699 | 0.8−  | 0.4−  | 2003 02 28 | 704 | 0.5+  | 0.1+  | 2006 09 25 | 703 | 0.1−  | 0.4+  |
| 2001 10 13 | 699 | (1.5− | 0.7+) | 2003 02 28 | 704 | 0.3+  | 0.1+  | 2006 09 25 | 703 | 0.2+  | 0.5−  |
| 2001 10 13 | 699 | 0.6+  | 0.6−  | 2003 03 02 | 704 | 0.2+  | 0.5−  | 2006 10 21 | 703 | (2.0− | 0.4+) |
| 2001 10 20 | 608 | 0.0   | 0.7−  | 2003 03 02 | 704 | (0.4− | 2.4−) | 2006 10 21 | 703 | 0.6−  | 1.2+  |
| 2001 10 20 | 608 | 0.2−  | 0.6−  | 2003 03 02 | 704 | 0.8+  | 1.3−  | 2006 10 21 | 703 | 0.3+  | 0.3+  |
| 2001 10 20 | 608 | 0.2+  | 0.7−  | 2003 03 02 | 704 | 0.3−  | 0.3−  | 2006 10 21 | 703 | 1.0−  | 0.4−  |
| 2001 11 18 | 704 | 0.0   | 0.4+  | 2003 03 08 | 699 | 0.2+  | 0.5+  | 2006 10 22 | 644 | 0.2−  | 0.3+  |
| 2001 11 18 | 704 | 0.2−  | 0.1−  | 2003 03 08 | 699 | 0.4−  | 0.0   | 2006 10 22 | 644 | 0.3+  | 0.4+  |
| 2001 11 18 | 704 | 0.4+  | 0.3+  | 2003 03 08 | 699 | 0.4+  | 0.3+  | 2006 10 22 | 644 | 0.0   | 0.5+  |
| 2001 11 18 | 704 | 0.6−  | 0.1+  | 2003 03 08 | 699 | 0.7+  | 0.4+  | 2006 10 24 | 644 | 0.1−  | 0.4+  |
| 2001 11 18 | 704 | (0.5− | 1.6+) | 2003 03 08 | 704 | 0.3+  | 0.0   | 2006 10 24 | 644 | 0.3−  | 0.6+  |
| 2001 11 20 | 699 | 0.3+  | 0.3+  | 2003 03 08 | 704 | 0.1−  | 0.2+  | 2006 10 24 | 644 | 0.1+  | 0.5+  |
| 2001 11 20 | 699 | 0.6+  | 1.3+  | 2003 03 08 | 704 | 1.1+  | 0.3+  | 2006 10 28 | 703 | 0.0   | 0.0   |
| 2001 11 20 | 699 | (0.9− | 2.5+) | 2003 03 08 | 704 | 0.2−  | 0.7+  | 2006 10 28 | 703 | 0.2−  | 0.2−  |
| 2001 11 20 | 699 | 0.1+  | 0.5+  | 2003 03 08 | 704 | 0.3+  | 0.2+  | 2006 10 28 | 703 | 0.6+  | 0.3−  |
| 2001 11 20 | 608 | 0.0   | 0.4−  | 2003 03 08 | 644 | 0.0   | 0.2+  | 2006 10 28 | 703 | 0.4+  | 0.8−  |
| 2001 11 20 | 608 | 0.1+  | 0.0   | 2003 03 08 | 644 | 0.1+  | 0.1+  | 2007 11 12 | 704 | 0.3+  | 0.9+  |
| 2001 11 20 | 608 | 0.2−  | 0.0   | 2003 03 08 | 644 | 0.1+  | 0.2+  | 2007 11 12 | 704 | 0.3−  | 0.0   |
| 2001 12 07 | 704 | 0.4+  | 0.2−  | 2003 03 12 | 704 | 0.6+  | 0.4+  | 2007 11 12 | 704 | 0.8−  | 0.2+  |
| 2001 12 07 | 704 | 0.2+  | 1.0+  | 2003 03 12 | 704 | 0.4−  | 0.7+  | 2007 11 12 | 704 | 0.3+  | 1.2+  |
| 2001 12 07 | 704 | (0.1+ | 1.8+) | 2003 03 12 | 704 | 0.0   | 0.2+  | 2007 11 14 | 704 | 0.4+  | 1.3−  |
| 2001 12 15 | 704 | 0.9−  | 0.6+  | 2003 03 12 | 704 | 0.4−  | 0.8+  | 2007 11 14 | 704 | 0.3−  | 0.5+  |
| 2001 12 15 | 704 | 0.9−  | 0.4+  | 2003 03 12 | 704 | 0.3+  | 0.2+  | 2007 11 14 | 704 | 0.4−  | 0.8−  |
| 2001 12 15 | 704 | 0.5−  | 0.1−  | 2003 03 12 | 704 | 0.2−  | 0.6+  | 2007 12 04 | 699 | 0.2+  | 0.0   |
| 2001 12 19 | 704 | 0.7+  | 0.1+  | 2003 03 12 | 704 | 0.2+  | 0.2+  | 2007 12 04 | 704 | 0.5+  | 1.0+  |
| 2001 12 19 | 704 | 0.2+  | 0.2−  | 2003 03 12 | 704 | 0.0   | 0.8+  | 2007 12 04 | 699 | 0.0   | 0.2−  |
| 2001 12 19 | 704 | 0.6+  | 1.1−  | 2003 03 12 | 704 | 0.6+  | 0.1−  | 2007 12 04 | 704 | 0.3+  | 1.1+  |
| 2001 12 19 | 704 | 1.1+  | 0.7+  | 2003 03 12 | 704 | 0.3−  | 0.6+  | 2007 12 04 | 704 | 0.2+  | 1.6+  |
| 2001 12 19 | 704 | 0.4+  | 0.1+  | 2003 04 06 | 699 | 0.3+  | 0.1+  | 2007 12 04 | 699 | 0.2+  | 1.0+  |
| 2002 12 11 | 645 | 0.2−  | 0.3−  | 2003 04 06 | 699 | 0.3+  | 0.1−  | 2007 12 04 | 704 | 0.3+  | 1.5+  |
| 2002 12 11 | 645 | 0.1−  | 0.3−  | 2003 04 06 | 699 | 0.0   | 0.7+  | 2007 12 04 | 704 | (0.3+ | 1.7+) |
| 2003 01 13 | 291 | 0.2−  | 0.2+  | 2003 04 06 | 699 | 0.4+  | 0.4+  | 2007 12 04 | 699 | 1.5+  | 0.7−  |
| 2003 01 13 | 291 | 0.3−  | 0.2+  | 2003 04 09 | 644 | 0.2−  | 0.3+  | 2007 12 06 | G96 | 0.1−  | 0.5−  |
| 2003 01 13 | 291 | 0.1−  | 0.3+  | 2003 04 09 | 644 | 0.2−  | 0.3+  | 2007 12 06 | G96 | 0.9−  | 1.1−  |
| 2003 02 06 | 704 | 1.1+  | 0.9−  | 2003 04 09 | 644 | 0.1−  | 0.2+  | 2007 12 06 | G96 | 0.2−  | 0.6−  |
| 2003 02 06 | 704 | 0.3−  | 1.1+  | 2006 09 20 | 703 | 0.1−  | 1.0−  | 2007 12 06 | G96 | 0.1−  | 0.4−  |
| 2003 02 06 | 704 | 0.1−  | 0.1−  | 2006 09 20 | 703 | 0.2+  | 0.6+  | 2007 12 14 | D29 | 0.0   | 0.7−  |
| 2003 02 06 | 704 | 0.3+  | 0.0   | 2006 09 20 | 703 | 0.7−  | 0.2+  | 2007 12 14 | D29 | 0.1−  | 0.5−  |
| 2003 02 28 | 704 | 0.3+  | 0.2−  | 2006 09 20 | 703 | 0.3−  | 0.2+  | 2007 12 14 | D29 | 0.3−  | 0.5−  |
| 2003 02 28 | 704 | 0.2−  | 0.2+  | 2006 09 25 | 703 | 1.3−  | 0.0   | 2007 12 14 | D29 | 0.0   | 0.3−  |

**(172066)\* 2001 YB<sub>39</sub> = 2005 NQ<sub>86</sub>**

Discovered 2001 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 89173)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | (2000.0) |
|----------|--|----------|
|----------|--|----------|

2007 DEC. 24

M.P.O. 129253

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 12 17 | 291 | 1.1+ | 0.8+ | 2001 12 23 | 291 | 0.1-  | 0.3-  | 2005 07 15 | 691 | 0.0  | 0.2+ |
| 2001 12 17 | 291 | 0.9+ | 0.5+ | 2002 01 14 | 704 | 0.3-  | 0.3+  | 2006 09 26 | 691 | 0.1+ | 0.1+ |
| 2001 12 17 | 291 | 1.1+ | 0.6+ | 2002 01 14 | 704 | 1.2+  | 0.1+  | 2006 09 26 | 691 | 0.2+ | 0.2+ |
| 2001 12 18 | 704 | 0.1- | 0.6+ | 2002 01 14 | 704 | 0.5-  | 0.3+  | 2006 09 26 | 691 | 0.4+ | 0.0  |
| 2001 12 18 | 704 | 0.6+ | 0.1- | 2002 01 14 | 704 | 0.3-  | 0.1+  | 2006 09 30 | 691 | 0.1+ | 0.2- |
| 2001 12 18 | 704 | 0.7+ | 0.6- | 2002 01 14 | 704 | 0.8-  | 0.3-  | 2006 09 30 | 691 | 0.2+ | 0.0  |
| 2001 12 18 | 704 | 0.3- | 0.6- | 2003 03 07 | 699 | 0.1+  | 0.2-  | 2006 09 30 | 691 | 0.2+ | 0.0  |
| 2001 12 18 | 704 | 0.2- | 0.4- | 2003 03 07 | 699 | (0.2+ | 2.4-) | 2006 10 23 | G96 | 0.0  | 0.3- |
| 2001 12 19 | 704 | 0.5+ | 0.0  | 2003 03 07 | 699 | 1.2+  | 0.1+  | 2006 10 23 | G96 | 0.5+ | 0.5- |
| 2001 12 19 | 704 | 0.1+ | 0.1- | 2003 03 07 | 699 | 0.7+  | 0.1+  | 2006 10 23 | G96 | 0.3+ | 0.2- |
| 2001 12 19 | 704 | 0.6+ | 0.0  | 2005 06 14 | G96 | 0.8-  | 0.7+  | 2006 10 23 | G96 | 0.3- | 0.3- |
| 2001 12 19 | 704 | 0.9- | 1.0+ | 2005 06 14 | G96 | 0.4-  | 0.9+  | 2007 12 03 | 691 | 0.4- | 0.2- |
| 2001 12 19 | 704 | 0.7+ | 0.3+ | 2005 06 14 | G96 | 0.0   | 0.7+  | 2007 12 03 | 691 | 0.0  | 0.2- |
| 2001 12 19 | 704 | 0.1- | 0.2+ | 2005 06 14 | G96 | 0.0   | 0.2+  | 2007 12 03 | 691 | 0.3+ | 0.8+ |
| 2001 12 19 | 704 | 0.2- | 0.3+ | 2005 07 03 | G96 | 0.4-  | 0.1+  | 2007 12 15 | 691 | 0.0  | 0.5- |
| 2001 12 23 | 691 | 0.6- | 0.5- | 2005 07 03 | G96 | 0.0   | 0.0   | 2007 12 15 | 691 | 0.5- | 0.2- |
| 2001 12 23 | 691 | 1.0- | 0.0  | 2005 07 03 | G96 | 0.2+  | 0.1+  | 2007 12 15 | 691 | 0.3- | 0.2- |

(172067)\* 2001 YH<sub>94</sub>

Discovered 2001 Dec. 19 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 95.96079   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18577689 | $\omega$ | 75.74431  | +0.96739554 | +0.17967266 |
| <i>a</i> | 3.0418766  | $\Omega$ | 273.67407 | -0.23836160 | +0.88412529 |
| <i>e</i> | 0.0781705  | <i>i</i> | 10.30403  | +0.08561315 | +0.43132378 |
| <i>P</i> | 5.31       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 25 | 691 | 0.1- | 0.2- | 2001 12 19 | 291 | 0.1- | 0.1- | 2006 11 14 | 703 | 0.3- | 0.1+ |
| 1995 08 25 | 691 | 0.2- | 0.1- | 2001 12 19 | 291 | 0.1- | 0.1+ | 2007 10 19 | G96 | 0.1+ | 0.2+ |
| 1995 08 25 | 691 | 0.0  | 0.1+ | 2001 12 19 | 291 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.4+ | 0.2- |
| 2001 10 15 | 704 | 0.0  | 1.3- | 2001 12 20 | 291 | 0.4+ | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.1+ |
| 2001 10 15 | 704 | 0.4- | 0.7- | 2001 12 20 | 291 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.1- | 0.2- |
| 2001 10 15 | 704 | 0.8+ | 0.9- | 2001 12 20 | 291 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2001 10 15 | 704 | 0.3+ | 1.0+ | 2003 01 28 | 645 | 0.0  | 0.1- | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2001 11 11 | 704 | 1.1- | 0.7- | 2003 01 28 | 645 | 0.0  | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2001 11 11 | 699 | 0.3+ | 1.2+ | 2004 04 13 | 644 | 0.4+ | 0.1- | 2007 11 05 | G96 | 0.0  | 0.3- |
| 2001 11 11 | 704 | 0.6+ | 1.4- | 2004 04 13 | 644 | 0.3+ | 0.1- | 2007 12 04 | G96 | 0.7+ | 0.1- |
| 2001 11 11 | 704 | 0.2- | 1.0- | 2004 04 13 | 644 | 0.5+ | 0.0  | 2007 12 04 | G96 | 0.6+ | 0.2- |
| 2001 11 11 | 699 | 0.9- | 0.1+ | 2006 09 17 | 703 | 0.4- | 0.3+ | 2007 12 04 | G96 | 0.0  | 0.1- |
| 2001 11 11 | 704 | 0.0  | 1.0- | 2006 09 17 | 703 | 0.6- | 0.5- | 2007 12 04 | G96 | 0.5+ | 0.1- |
| 2001 11 11 | 699 | 0.8- | 0.4+ | 2006 09 17 | 703 | 0.8- | 0.4+ | 2007 12 04 | 691 | 0.5+ | 0.6+ |
| 2001 11 11 | 704 | 0.1- | 0.7+ | 2006 09 28 | 703 | 0.2+ | 0.2- | 2007 12 04 | 691 | 0.2+ | 1.1+ |
| 2001 11 11 | 699 | 0.4- | 0.5+ | 2006 09 28 | 703 | 0.6+ | 0.2- | 2007 12 04 | 691 | 0.4- | 0.1- |
| 2001 11 24 | 704 | 0.2- | 0.1- | 2006 09 28 | 703 | 0.0  | 0.1- | 2007 12 16 | 691 | 0.3- | 0.2+ |
| 2001 11 24 | 704 | 0.8+ | 0.4+ | 2006 09 28 | 703 | 0.1+ | 0.1- | 2007 12 16 | 691 | 0.3- | 0.1- |
| 2001 11 24 | 704 | 0.1+ | 0.2+ | 2006 11 14 | 703 | 0.7+ | 0.0  | 2007 12 16 | 691 | 0.5- | 0.2- |
| 2001 11 24 | 704 | 0.3+ | 1.0+ | 2006 11 14 | 703 | 0.1+ | 0.0  |            |     |      |      |
| 2001 11 24 | 704 | 0.5+ | 0.9+ | 2006 11 14 | 703 | 0.3+ | 0.1- |            |     |      |      |

(172068)\* 2002 AE<sub>13</sub>

Discovered 2002 Jan. 11 by CINEOS at Campo Imperatore.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 142.44183  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29255915 | $\omega$ | 315.89119 | -0.17619695 | +0.98169091 |
| <i>a</i> | 2.2472959  | $\Omega$ | 303.83250 | -0.87729131 | -0.18995294 |
| <i>e</i> | 0.1267027  | <i>i</i> | 4.99817   | -0.44644663 | -0.01417164 |
| <i>P</i> | 3.37       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 11 | 599 | 0.4+  | 1.0+  | 2003 08 18 | 599 | 0.2- | 0.1+ | 2003 09 24 | 644 | 0.2- | 0.1+ |
| 2002 01 11 | 599 | 0.5+  | 0.2+  | 2003 08 18 | 599 | 0.2- | 0.4+ | 2003 09 24 | 644 | 0.1- | 0.4+ |
| 2002 01 12 | 599 | 0.6+  | 0.2+  | 2003 08 18 | 599 | 0.0  | 0.1+ | 2003 09 24 | 644 | 0.0  | 0.3+ |
| 2002 01 12 | 599 | 0.2+  | 0.4+  | 2003 08 19 | 599 | 0.2- | 0.3+ | 2006 06 02 | F84 | 0.8+ | 0.2+ |
| 2002 01 13 | 704 | 0.6+  | 1.2+  | 2003 08 19 | 599 | 0.0  | 0.4+ | 2006 06 02 | F84 | 0.5- | 0.0  |
| 2002 01 13 | 704 | (1.0+ | 2.2+) | 2003 08 19 | 599 | 0.2- | 0.3+ | 2006 06 02 | F84 | 0.1- | 0.5+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 01 13 | 704 | (0.6- | 1.8+) | 2003 08 21 | 644 | 0.4-  | 0.4+  | 2007 11 09 | G96 | 0.3+  | 0.6-  |
| 2002 01 13 | 704 | 0.9+  | 1.3+  | 2003 08 21 | 644 | 0.3-  | 0.3+  | 2007 11 09 | G96 | 0.6+  | 0.9-  |
| 2002 02 05 | 644 | 0.4+  | 0.6+  | 2003 08 21 | 644 | 0.3-  | 0.5+  | 2007 11 09 | G96 | 0.0   | 0.4-  |
| 2002 02 05 | 644 | 0.4+  | 1.2+  | 2003 08 22 | 599 | 0.0   | 0.2+  | 2007 11 09 | G96 | 0.2-  | 0.4-  |
| 2002 02 05 | 644 | 0.1+  | 0.5+  | 2003 08 22 | 599 | (1.6- | 1.5+) | 2007 11 17 | 704 | (3.8+ | 0.6+) |
| 2002 02 07 | 704 | 1.2+  | 0.8+  | 2003 08 22 | 599 | 0.4-  | 0.3+  | 2007 11 17 | 704 | 0.7+  | 0.5+  |
| 2002 02 07 | 704 | 0.5+  | 0.8+  | 2003 08 22 | 599 | 0.4-  | 0.3+  | 2007 11 17 | 704 | 0.2+  | 0.0   |
| 2002 02 07 | 704 | 0.9+  | 0.0   | 2003 08 24 | 704 | 0.7-  | 1.1+  | 2007 11 20 | 704 | 0.8-  | 0.5-  |
| 2002 02 11 | 704 | 0.4+  | 0.5+  | 2003 08 24 | 704 | 0.2+  | 0.5+  | 2007 11 20 | 704 | 0.8+  | 0.3+  |
| 2002 02 11 | 704 | 0.4+  | 0.8+  | 2003 08 24 | 704 | (0.3+ | 1.8+) | 2007 11 20 | 704 | 0.3-  | 0.6+  |
| 2002 02 11 | 704 | 0.0   | 0.3+  | 2003 08 24 | 704 | 0.1-  | 0.7+  | 2007 11 20 | G96 | 0.2+  | 0.6-  |
| 2002 02 11 | 704 | 0.1-  | 0.2+  | 2003 08 25 | 704 | 0.3-  | 0.5+  | 2007 11 20 | 704 | 0.2+  | 0.8-  |
| 2002 02 11 | 704 | 0.1+  | 0.2+  | 2003 08 25 | 704 | 0.5+  | 0.1+  | 2007 11 20 | G96 | 0.1-  | 0.7-  |
| 2002 02 12 | 691 | 0.1-  | 0.3+  | 2003 08 25 | 704 | 0.1-  | 0.3+  | 2007 11 20 | G96 | 0.2+  | 0.1-  |
| 2002 02 12 | 691 | 0.2-  | 0.3+  | 2003 08 25 | 704 | 0.5-  | 0.5+  | 2007 11 20 | G96 | 0.1+  | 0.4-  |
| 2002 02 12 | 691 | 0.1-  | 0.3+  | 2003 09 01 | 704 | 0.6-  | 0.4+  | 2007 12 13 | 704 | 0.1-  | 0.0   |
| 2003 08 04 | 704 | 0.2-  | 0.1-  | 2003 09 01 | 704 | (0.4- | 1.5+) | 2007 12 13 | 704 | 0.7-  | 0.7+  |
| 2003 08 04 | 704 | 0.4+  | 0.8+  | 2003 09 01 | 704 | 0.1-  | 0.5+  | 2007 12 13 | 704 | 0.7-  | 1.0+  |
| 2003 08 04 | 704 | 0.4-  | 1.4+  | 2003 09 01 | 704 | 0.4-  | 0.0   |            |     |       |       |
| 2003 08 04 | 704 | 0.7-  | 0.7+  | 2003 09 01 | 704 | 0.2+  | 0.2+  |            |     |       |       |

(172069)\* 2002 AA<sub>38</sub>

Discovered 2002 Jan. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 294.39039  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.17371286 | $\omega$ | 77.43261 | -0.91753146 | -0.05858690 |
| <i>a</i> | 3.1811299  | $\Omega$ | 98.19025 | -0.07375186 | -0.94685770 |
| <i>e</i> | 0.1073096  | <i>i</i> | 23.41429 | +0.39076423 | -0.31627213 |
| <i>P</i> | 5.67       | <i>H</i> | 14.7     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 17 | 704 | 0.8+ | 1.1+ | 2003 02 07 | 699 | 0.4- | 0.6- | 2007 11 21 | G96 | 0.4+ | 0.4- |
| 2001 11 17 | 704 | 0.2+ | 0.5+ | 2003 04 01 | 699 | 0.2+ | 0.3- | 2007 11 21 | G96 | 0.3- | 0.2- |
| 2001 11 17 | 704 | 0.2+ | 0.1- | 2003 04 01 | 699 | 0.1- | 0.4+ | 2007 11 21 | G96 | 0.3+ | 0.3- |
| 2002 01 09 | 704 | 0.3- | 0.1+ | 2003 04 01 | 699 | 0.3- | 0.3+ | 2007 12 03 | D35 | 0.3+ | 0.2+ |
| 2002 01 09 | 704 | 0.3+ | 0.2- | 2003 04 01 | 699 | 0.3+ | 0.2- | 2007 12 03 | D35 | 0.8- | 1.2+ |
| 2002 01 09 | 704 | 0.2- | 0.0  | 2003 04 07 | 644 | 0.6+ | 0.5+ | 2007 12 03 | D35 | 0.2- | 0.2+ |
| 2002 01 13 | 704 | 0.1- | 0.5+ | 2003 04 07 | 644 | 0.5+ | 0.2+ | 2007 12 04 | 691 | 0.2- | 0.2- |
| 2002 01 13 | 704 | 0.9- | 0.1- | 2003 04 07 | 644 | 0.0  | 0.5+ | 2007 12 04 | 691 | 0.5- | 0.0  |
| 2002 01 13 | 704 | 0.1- | 0.1+ | 2006 11 17 | 703 | 0.5- | 0.4+ | 2007 12 04 | 691 | 0.1- | 0.1- |
| 2002 01 13 | 704 | 0.0  | 0.3- | 2006 11 17 | 703 | 0.5+ | 1.4+ | 2007 12 10 | 704 | 1.0+ | 0.2+ |
| 2002 01 13 | 704 | 0.6- | 0.1+ | 2006 11 17 | 703 | 0.4+ | 0.7- | 2007 12 10 | 704 | 0.9+ | 0.2- |
| 2002 01 15 | 704 | 0.4- | 0.0  | 2006 11 17 | 703 | 1.2- | 0.2- | 2007 12 10 | 704 | 0.2+ | 0.7+ |
| 2002 01 15 | 704 | 0.0  | 0.5- | 2007 10 07 | G96 | 0.2- | 0.1+ | 2007 12 10 | 704 | 0.5- | 0.6- |
| 2002 01 15 | 704 | 0.6+ | 0.5+ | 2007 10 07 | G96 | 0.0  | 0.4- | 2007 12 10 | 704 | 0.0  | 0.6- |
| 2003 01 26 | 704 | 0.6- | 0.5+ | 2007 10 07 | G96 | 0.1+ | 0.2- | 2007 12 15 | 704 | 0.8+ | 0.2- |
| 2003 01 26 | 704 | 0.7- | 0.4- | 2007 10 07 | G96 | 0.1+ | 0.5- | 2007 12 15 | 704 | 0.3+ | 0.1+ |
| 2003 01 26 | 704 | 0.2- | 0.3+ | 2007 11 04 | G96 | 0.1- | 0.2- | 2007 12 15 | 704 | 0.8+ | 0.6+ |
| 2003 02 07 | 699 | 0.1- | 0.6- | 2007 11 04 | G96 | 0.1- | 0.4- | 2007 12 15 | 704 | 0.2- | 0.5- |
| 2003 02 07 | 699 | 0.2+ | 0.7+ | 2007 11 04 | G96 | 0.2- | 0.3- | 2007 12 15 | 704 | 0.6+ | 0.1+ |
| 2003 02 07 | 699 | 0.7+ | 0.1+ | 2007 11 04 | G96 | 0.3+ | 0.2- |            |     |      |      |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 12 18 | 704 | 0.2+  | 0.1+  | 2003 03 26 | 644 | 0.4+ | 0.2− | 2006 10 16 | 703 | 0.8− | 0.7− |
| 2001 12 18 | 704 | 0.5+  | 0.3−  | 2003 03 26 | 644 | 0.4+ | 0.5− | 2006 10 16 | 703 | 0.5− | 0.2− |
| 2001 12 18 | 704 | 1.1+  | 0.7+  | 2003 03 27 | 704 | 0.7+ | 0.5+ | 2006 10 21 | G96 | 0.1+ | 0.1+ |
| 2001 12 18 | 704 | 0.1−  | 0.8−  | 2003 03 27 | 704 | 0.9+ | 0.5− | 2006 10 21 | G96 | 0.1+ | 0.3+ |
| 2002 01 06 | 691 | 0.5−  | 0.3−  | 2003 03 27 | 704 | 0.7+ | 0.3− | 2006 10 21 | G96 | 0.2+ | 0.5+ |
| 2002 01 06 | 691 | 0.4−  | 0.5−  | 2003 03 27 | 704 | 0.1+ | 0.2+ | 2006 10 21 | G96 | 0.1+ | 0.1+ |
| 2002 01 06 | 691 | 0.3−  | 0.1−  | 2003 03 31 | 699 | 0.2+ | 1.3− | 2006 11 01 | G96 | 0.0  | 0.3+ |
| 2002 01 08 | 704 | 1.3+  | 0.4+  | 2003 03 31 | 699 | 0.6− | 0.6+ | 2006 11 01 | G96 | 0.2− | 0.2+ |
| 2002 01 08 | 704 | 0.7+  | 0.0   | 2003 03 31 | 699 | 0.4+ | 0.1+ | 2006 11 01 | G96 | 0.2+ | 0.1+ |
| 2002 01 08 | 704 | 0.7+  | 0.6+  | 2003 03 31 | 699 | 0.8− | 0.0  | 2006 11 01 | G96 | 0.0  | 0.0  |
| 2002 01 08 | 704 | 0.1−  | 0.5+  | 2003 04 01 | 645 | 0.2− | 0.1− | 2007 10 15 | G96 | 0.4+ | 0.3− |
| 2002 01 14 | 704 | 0.4−  | 0.0   | 2003 04 01 | 645 | 0.2− | 0.1− | 2007 10 15 | G96 | 0.5+ | 0.2− |
| 2002 01 14 | 704 | 0.2−  | 0.0   | 2003 04 01 | 704 | 0.6+ | 0.3− | 2007 10 15 | G96 | 0.6+ | 0.5− |
| 2002 01 14 | 704 | 0.2+  | 0.2+  | 2003 04 01 | 704 | 0.2+ | 0.4− | 2007 10 15 | G96 | 0.3+ | 0.1− |
| 2002 01 14 | 704 | 0.3−  | 0.5+  | 2003 04 01 | 704 | 0.3− | 0.9− | 2007 11 07 | G96 | 0.1− | 0.1− |
| 2002 01 14 | 704 | 0.9+  | 0.3+  | 2003 04 01 | 704 | 0.1− | 0.6− | 2007 11 07 | G96 | 0.1− | 0.2− |
| 2003 03 06 | 704 | (1.1+ | 1.8+) | 2003 04 02 | 608 | 0.6− | 0.4− | 2007 11 07 | G96 | 0.4+ | 0.2− |
| 2003 03 06 | 704 | 0.2+  | 0.5+  | 2003 04 02 | 608 | 0.1+ | 0.1− | 2007 11 07 | G96 | 0.1− | 0.4− |
| 2003 03 06 | 704 | 0.5+  | 0.3−  | 2003 04 02 | 608 | 0.1− | 0.2+ | 2007 12 04 | 691 | 0.1+ | 0.2− |
| 2003 03 06 | 704 | 0.1+  | 0.1−  | 2003 04 06 | 636 | 0.0  | 0.5+ | 2007 12 04 | 691 | 0.2− | 0.2− |
| 2003 03 09 | 704 | 0.3+  | 1.1+  | 2003 04 06 | 636 | 0.9+ | 1.3+ | 2007 12 04 | 691 | 0.2− | 0.1− |
| 2003 03 09 | 704 | 0.6+  | 1.0+  | 2003 04 06 | 636 | 1.2+ | 0.9+ | 2007 12 15 | 704 | 0.1− | 0.1+ |
| 2003 03 09 | 704 | 0.4+  | 0.4−  | 2003 04 09 | 704 | 0.2− | 0.7+ | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 2003 03 09 | 704 | 1.0+  | 0.8+  | 2003 04 09 | 704 | 0.1− | 0.3+ | 2007 12 15 | 704 | 0.1− | 0.9+ |
| 2003 03 09 | 704 | 0.8+  | 0.4+  | 2003 04 09 | 704 | 0.1− | 0.8+ | 2007 12 15 | 704 | 1.0+ | 1.3+ |
| 2003 03 14 | 608 | 0.4+  | 0.1−  | 2003 04 09 | 704 | 0.1− | 0.5+ | 2007 12 15 | 704 | 1.2+ | 0.3− |
| 2003 03 14 | 608 | 0.1+  | 0.5−  | 2003 04 09 | 704 | 0.4+ | 0.9+ | 2007 12 17 | 691 | 0.1− | 0.1+ |
| 2003 03 14 | 608 | 0.0   | 0.6−  | 2006 10 16 | 703 | 0.9+ | 1.2− | 2007 12 17 | 691 | 0.4− | 0.1+ |
| 2003 03 26 | 644 | 0.3+  | 0.3−  | 2006 10 16 | 703 | 0.4− | 0.8+ | 2007 12 17 | 691 | 0.1− | 0.1+ |

**(172071)\* 2002 AP<sub>74</sub> = 2003 HJ<sub>9</sub>**

Discovered 2002 Jan. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 47138)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 258.37774  | (2000.0) |           |
| <i>n</i>                    | 0.18098773 | $\omega$ | 294.69320 |
| <i>a</i>                    | 3.0953039  | $\Omega$ | 302.47788 |
| <i>e</i>                    | 0.0811558  | <i>i</i> | 10.55653  |
| <i>P</i>                    | 5.45       | <i>H</i> | 14.6      |
| Residuals in seconds of arc |            |          |           |
| MPC                         |            |          |           |
| <i>P</i>                    | 5.45       | <i>H</i> | 14.6      |
| <i>n</i>                    | 0.18098773 | $\omega$ | 294.69320 |
| <i>a</i>                    | 3.0953039  | $\Omega$ | 302.47788 |
| <i>e</i>                    | 0.0811558  | <i>i</i> | 10.55653  |
| <i>P</i>                    | 5.45       | <i>H</i> | 14.6      |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 02 01 | 691 | 0.2− | 0.4− | 2003 03 30 | 699 | 0.1−  | 0.7+  | 2005 10 01 | 703 | 0.4−  | 1.4+  |
| 1997 02 01 | 691 | 0.3− | 0.7− | 2003 04 07 | 704 | (2.0+ | 0.5+) | 2005 10 01 | 703 | (3.1+ | 1.8+) |
| 1997 02 01 | 691 | 0.3− | 0.4− | 2003 04 07 | 704 | (2.2+ | 0.6+) | 2005 10 01 | 703 | 1.2+  | 0.1+  |
| 2001 12 18 | 644 | 0.1+ | 0.4+ | 2003 04 07 | 704 | (2.3+ | 0.2+) | 2006 12 10 | A13 | 0.1−  | 0.0   |
| 2001 12 18 | 644 | 0.3+ | 0.6+ | 2003 04 07 | 704 | 0.6+  | 0.5+  | 2006 12 10 | A13 | 0.8+  | 0.6−  |
| 2001 12 18 | 644 | 0.2+ | 0.6+ | 2003 04 07 | 704 | 1.3+  | 1.2+  | 2006 12 10 | A13 | 0.5+  | 0.3−  |
| 2001 12 19 | 704 | 0.1− | 0.3− | 2003 04 07 | 644 | 0.3+  | 0.9+  | 2006 12 13 | 703 | 0.7−  | 0.8+  |
| 2001 12 19 | 704 | 0.5+ | 0.3− | 2003 04 07 | 644 | 0.3+  | 1.3+  | 2006 12 13 | 703 | 0.2+  | 0.0   |
| 2001 12 19 | 704 | 0.1− | 0.4− | 2003 04 07 | 644 | 0.8+  | 0.5+  | 2006 12 13 | 703 | 0.7+  | 1.0+  |
| 2002 01 08 | 704 | 0.2− | 0.7+ | 2003 04 24 | 608 | 0.3+  | 0.6−  | 2006 12 13 | 703 | 0.2−  | 0.6−  |
| 2002 01 08 | 704 | 0.6− | 0.1+ | 2003 04 24 | 608 | 0.3+  | 0.2+  | 2007 11 11 | G96 | 0.4−  | 0.1−  |
| 2002 01 08 | 704 | 1.0− | 0.4+ | 2003 04 24 | 608 | 0.1−  | 0.2+  | 2007 11 11 | G96 | 0.3+  | 0.5+  |
| 2002 01 14 | 704 | 0.6− | 0.1+ | 2003 04 26 | 608 | 0.5+  | 0.8−  | 2007 11 11 | G96 | 0.5−  | 0.6+  |
| 2002 01 14 | 704 | 0.2+ | 0.4+ | 2003 04 26 | 608 | 0.5+  | 1.0−  | 2007 11 11 | G96 | 0.1+  | 0.4+  |
| 2002 01 14 | 704 | 0.1− | 0.6+ | 2003 04 26 | 608 | 0.7+  | 0.0   | 2007 12 06 | G96 | 0.4−  | 0.0   |
| 2002 01 14 | 704 | 0.4+ | 0.5+ | 2004 06 15 | 704 | 1.1−  | 0.9−  | 2007 12 06 | G96 | 0.3+  | 0.5−  |
| 2002 01 14 | 704 | 0.3+ | 0.2+ | 2004 06 15 | 704 | 0.5+  | 0.4−  | 2007 12 06 | G96 | 0.4−  | 0.8+  |
| 2003 03 30 | 699 | 0.2− | 0.5+ | 2004 06 15 | 704 | 0.4+  | 0.6−  | 2007 12 06 | G96 | 0.3+  | 0.8+  |
| 2003 03 30 | 699 | 0.6− | 0.0  | 2004 06 15 | 704 | 0.7−  | 0.8+  |            |     |       |       |
| 2003 03 30 | 699 | 0.2+ | 0.3+ | 2005 10 01 | 703 | 1.2−  | 1.3+  |            |     |       |       |

**(172072)\* 2002 AF<sub>81</sub> = 2003 FG<sub>63</sub>**

Discovered 2002 Jan. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 72459)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 24.45095   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18271797 | $\omega$ | 316.72570 | -0.09932664  | -0.99009886  |
| $a$ | 3.0757323  | $\Omega$ | 138.67903 | +0.94900496  | -0.12423172  |
| $e$ | 0.1131019  | $i$      | 8.63988   | +0.29920529  | +0.06535086  |
| $P$ | 5.39       | $H$      | 15.2      | $G$ 0.15     | $U$ 0        |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 26 | 645 | 0.0  | 0.0  | 2003 03 26 | 644 | 0.7+  | 0.5+  | 2006 11 13 | 703 | 1.0− | 0.8− |
| 2000 09 26 | 645 | 0.0  | 0.0  | 2003 03 27 | 704 | 0.5+  | 0.7−  | 2006 11 13 | 703 | 0.3+ | 0.3+ |
| 2001 12 11 | 704 | 0.8+ | 0.6+ | 2003 03 27 | 704 | 0.9−  | 0.1+  | 2006 11 19 | 703 | 0.4− | 0.7− |
| 2001 12 11 | 704 | 1.1+ | 0.0  | 2003 03 27 | 704 | (1.0+ | 1.6+) | 2006 11 19 | 703 | 0.1+ | 0.5+ |
| 2001 12 11 | 704 | 0.0  | 0.2+ | 2003 03 27 | 704 | 0.0   | 1.2+  | 2006 11 19 | 703 | 0.1+ | 0.4+ |
| 2001 12 11 | 704 | 1.5+ | 0.8+ | 2003 04 01 | 645 | 0.1−  | 0.0   | 2006 11 19 | 703 | 0.5− | 0.4− |
| 2002 01 09 | 704 | 0.4− | 0.4+ | 2003 04 01 | 645 | 0.0   | 0.0   | 2006 12 05 | 644 | 0.0  | 0.0  |
| 2002 01 09 | 704 | 0.8− | 0.2− | 2005 11 03 | G96 | 0.2−  | 0.7−  | 2006 12 05 | 644 | 0.0  | 0.6+ |
| 2002 01 09 | 704 | 1.3− | 1.0− | 2005 11 03 | G96 | (1.5− | 0.5−) | 2006 12 05 | 644 | 0.3+ | 0.5+ |
| 2002 01 09 | 704 | 0.2− | 0.4+ | 2005 11 03 | G96 | 0.2+  | 0.2−  | 2007 11 11 | G96 | 0.4− | 0.1+ |
| 2002 01 09 | 704 | 0.4− | 0.7− | 2005 11 03 | G96 | 0.2−  | 0.2+  | 2007 11 11 | G96 | 0.3− | 0.2+ |
| 2002 01 14 | 704 | 0.1− | 0.1+ | 2006 10 16 | 703 | 0.3+  | 0.5−  | 2007 11 11 | G96 | 0.1− | 0.0  |
| 2002 01 14 | 704 | 0.7− | 0.1− | 2006 10 16 | 703 | 0.9−  | 0.8−  | 2007 11 11 | G96 | 0.0  | 0.2− |
| 2002 01 14 | 704 | 0.6+ | 0.2− | 2006 10 16 | 703 | 0.0   | 0.1−  | 2007 11 13 | G96 | 0.3− | 0.1− |
| 2002 01 14 | 704 | 0.2+ | 0.3− | 2006 10 16 | 703 | 0.4+  | 0.1−  | 2007 11 13 | G96 | 0.4− | 0.0  |
| 2002 01 14 | 704 | 0.3− | 0.2− | 2006 10 22 | 703 | 1.4+  | 0.6−  | 2007 11 13 | G96 | 0.1+ | 0.1− |
| 2003 03 26 | 644 | 0.6+ | 0.2+ | 2006 10 22 | 703 | (1.6+ | 2.0−) | 2007 11 13 | G96 | 0.0  | 0.1+ |
| 2003 03 26 | 644 | 0.5+ | 0.5+ | 2006 10 22 | 703 | 0.3−  | 1.3+  | 2007 12 05 | G96 | 0.4+ | 0.3− |
| 2003 03 26 | 644 | 0.7+ | 0.1+ | 2006 10 22 | 703 | 0.3+  | 0.5+  | 2007 12 05 | G96 | 0.3+ | 0.2− |
| 2003 03 26 | 644 | 0.5+ | 0.4+ | 2006 11 13 | 703 | 0.1−  | 0.2+  | 2007 12 05 | G96 | 0.2+ | 0.2− |
| 2003 03 26 | 644 | 0.9+ | 0.3+ | 2006 11 13 | 703 | 0.3−  | 0.6+  | 2007 12 05 | G96 | 0.2+ | 0.2− |

**(172073)\* 2002 AF<sub>85</sub>**

Discovered 2002 Jan. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 155.05200  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18148700 | $\omega$ | 207.21353 | +0.89064383  | +0.37307944  |
| $a$ | 3.0896245  | $\Omega$ | 128.42173 | −0.33291824  | +0.92441340  |
| $e$ | 0.0845098  | $i$      | 19.37666  | −0.30970795  | +0.07919336  |
| $P$ | 5.43       | $H$      | 14.7      | $G$ 0.15     | $U$ 1        |

| Residuals in seconds of arc |     |      |      |            |     |       |       |            |     |      |      |
|-----------------------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 07 13                  | 704 | 0.3− | 0.6+ | 2002 02 04 | 644 | 0.4+  | 0.9+  | 2004 06 12 | 644 | 0.9+ | 0.5+ |
| 1999 07 13                  | 704 | 0.2− | 0.6+ | 2002 02 09 | 704 | 1.0−  | 1.1+  | 2005 09 26 | 704 | 0.1+ | 1.2+ |
| 1999 07 13                  | 704 | 0.3− | 0.9+ | 2002 02 09 | 704 | 0.7−  | 1.5+  | 2005 09 26 | 704 | 0.5+ | 0.6− |
| 1999 07 13                  | 704 | 0.7− | 0.6+ | 2002 02 09 | 704 | 0.5+  | 0.8+  | 2005 09 26 | 704 | 0.2− | 0.1+ |
| 1999 07 13                  | 704 | 1.7− | 1.3+ | 2002 02 09 | 704 | 0.5−  | 1.2+  | 2005 09 26 | 704 | 0.3+ | 0.0  |
| 2000 11 29                  | 608 | 0.6+ | 0.8− | 2002 02 11 | 704 | 0.2+  | 0.8−  | 2005 10 02 | E12 | 0.5+ | 0.9+ |
| 2000 11 29                  | 608 | 0.4+ | 0.7− | 2002 02 11 | 704 | 0.5+  | 0.2+  | 2005 10 02 | E12 | 0.7+ | 0.3− |
| 2000 11 29                  | 608 | 0.2+ | 0.7− | 2002 02 11 | 704 | 0.1−  | 0.0   | 2005 10 02 | E12 | 1.4− | 1.3+ |
| 2002 01 08                  | 644 | 0.4− | 0.0  | 2002 12 11 | 645 | 0.0   | 0.3−  | 2005 10 02 | E12 | 0.6+ | 0.9+ |
| 2002 01 08                  | 644 | 0.4− | 0.3− | 2002 12 11 | 645 | 0.0   | 0.2−  | 2006 12 12 | 644 | 0.2+ | 0.2− |
| 2002 01 08                  | 644 | 0.4− | 0.2− | 2003 03 26 | 704 | (1.6+ | 0.5+) | 2006 12 12 | 644 | 0.6+ | 0.0  |
| 2002 01 09                  | 704 | 0.1− | 0.4+ | 2003 03 26 | 704 | 0.0   | 0.3+  | 2006 12 12 | 644 | 0.1+ | 0.3− |
| 2002 01 09                  | 704 | 0.2− | 0.0  | 2003 03 26 | 704 | 0.6+  | 0.4+  | 2007 10 15 | G96 | 0.3+ | 0.7+ |
| 2002 01 09                  | 704 | 0.8+ | 0.5+ | 2003 04 05 | 699 | 0.6+  | 1.1+  | 2007 10 15 | G96 | 1.0+ | 0.0  |
| 2002 01 09                  | 704 | 0.9− | 0.6+ | 2003 04 05 | 699 | (1.1− | 1.5−) | 2007 10 15 | G96 | 0.8+ | 0.0  |
| 2002 01 09                  | 704 | 1.2+ | 0.5+ | 2003 04 05 | 699 | 0.8+  | 0.4−  | 2007 10 15 | G96 | 0.5+ | 0.1− |
| 2002 01 14                  | 704 | 0.6− | 0.3+ | 2003 04 05 | 699 | 0.5−  | 0.9+  | 2007 12 15 | 291 | 0.1+ | 0.3− |
| 2002 01 14                  | 704 | 0.0  | 0.3+ | 2003 04 09 | 644 | 0.8+  | 0.5+  | 2007 12 15 | 291 | 0.8− | 0.0  |
| 2002 01 14                  | 704 | 0.1− | 0.7+ | 2003 04 09 | 644 | 0.7+  | 0.4+  | 2007 12 15 | 291 | 0.4− | 0.3+ |

2007 DEC. 24

M.P.O. 129255

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2002 01 14 | 704 | (0.4− 1.9+) | 2003 04 09 | 644 | 0.6+ 0.1+ | 2007 12 17 | 291 | 0.3− 0.2+ |
| 2002 02 04 | 644 | 0.4+ 1.0+   | 2004 06 12 | 644 | 0.6+ 0.6+ | 2007 12 17 | 291 | 0.5− 0.1+ |
| 2002 02 04 | 644 | 0.5+ 1.4+   | 2004 06 12 | 644 | 0.5+ 0.1− | 2007 12 17 | 291 | 0.5− 0.1+ |

(172074)\* 2002 AQ<sub>93</sub>

Discovered 2002 Jan. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 45.95864   | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.17357384 | <i>ω</i> 77.82522  | +0.51199030   | −0.85898623 |  |
| <i>a</i> | 3.1828283  | <i>Ω</i> 341.37741 | +0.78449739   | +0.46897633 |  |
| <i>e</i> | 0.1654420  | <i>i</i> 0.52587   | +0.34989968   | +0.20543579 |  |
| <i>P</i> | 5.68       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2000 10 01 | 704 | 0.3+ 0.6+   | 2002 02 07 | 704 | 0.1+ 0.9+ | 2006 11 11 | 703 | 0.0 0.6+    |
| 2000 10 01 | 704 | 0.0 0.2+    | 2005 07 12 | G96 | 0.0 0.2+  | 2006 11 11 | 703 | 0.8− 0.2−   |
| 2000 10 01 | 704 | 0.1− 0.7+   | 2005 07 12 | G96 | 0.4+ 0.0  | 2006 11 11 | 703 | 0.1+ 0.3−   |
| 2000 10 01 | 704 | 0.5+ 0.6+   | 2005 07 12 | G96 | 0.6− 0.1+ | 2006 11 14 | G96 | 0.1− 0.5−   |
| 2000 10 01 | 704 | 0.4− 0.5+   | 2005 07 12 | G96 | 0.2+ 0.1− | 2006 11 14 | G96 | 0.3− 0.4−   |
| 2000 10 02 | 645 | 0.0 0.1−    | 2005 07 12 | G96 | 0.3+ 0.5+ | 2006 11 14 | G96 | 0.3− 0.5−   |
| 2000 10 02 | 645 | 0.0 0.1−    | 2005 07 12 | G96 | 0.1+ 0.4− | 2006 11 14 | G96 | 0.6− 0.5−   |
| 2001 12 14 | 291 | 0.3+ 0.1+   | 2005 07 12 | G96 | 0.1+ 0.3+ | 2006 11 17 | 703 | 0.3− 0.7−   |
| 2001 12 14 | 291 | 0.9− 0.1+   | 2005 07 12 | G96 | 0.1− 0.3− | 2006 11 17 | 703 | (1.6− 0.7+) |
| 2001 12 14 | 291 | 0.5+ 0.1−   | 2006 07 21 | G96 | 0.2− 0.1− | 2006 11 17 | 703 | 1.3− 0.1+   |
| 2001 12 18 | 704 | 0.6+ 0.6+   | 2006 07 21 | G96 | 0.1+ 0.0  | 2006 11 17 | 703 | 1.0− 0.4+   |
| 2001 12 18 | 704 | 0.0 0.1−    | 2006 07 21 | G96 | 0.6+ 0.3− | 2006 11 18 | 704 | 0.7+ 0.5+   |
| 2001 12 18 | 704 | 0.5+ 0.1+   | 2006 07 21 | G96 | 0.0 0.1+  | 2006 11 18 | 704 | 0.4− 1.0+   |
| 2001 12 18 | 704 | 0.1− 0.0    | 2006 09 26 | G96 | 0.1+ 0.4− | 2006 11 18 | 704 | 0.7+ 0.8+   |
| 2001 12 18 | 704 | 0.2+ 0.1+   | 2006 09 26 | G96 | 0.2− 0.2− | 2006 11 22 | 691 | 0.4+ 0.4+   |
| 2002 01 05 | 699 | 0.1+ 1.1+   | 2006 09 26 | G96 | 0.0 0.3−  | 2006 11 22 | 691 | 0.2+ 0.1−   |
| 2002 01 05 | 699 | (1.8− 1.1+) | 2006 09 26 | G96 | 0.2− 0.3− | 2006 11 22 | 691 | 0.1+ 0.1−   |
| 2002 01 05 | 699 | 1.3+ 0.4+   | 2006 10 16 | 691 | 0.0 0.1−  | 2006 11 27 | 691 | 0.4+ 0.2+   |
| 2002 01 05 | 699 | 0.3− 0.5−   | 2006 10 16 | 691 | 0.2− 0.1− | 2006 11 27 | 691 | 0.4+ 0.1+   |
| 2002 01 08 | 704 | (0.6+ 2.0+) | 2006 10 16 | 691 | 0.1− 0.0  | 2006 11 27 | 691 | 0.2+ 0.1+   |
| 2002 01 08 | 704 | 0.5− 0.9+   | 2006 10 27 | G96 | 0.1− 0.3− | 2006 12 24 | G96 | 0.6+ 0.2−   |
| 2002 01 08 | 704 | 0.5− 1.0+   | 2006 10 27 | G96 | 0.2+ 0.2− | 2006 12 24 | G96 | 0.7+ 0.3−   |
| 2002 01 08 | 704 | (0.6− 1.7+) | 2006 10 27 | G96 | 0.0 0.3−  | 2006 12 24 | G96 | 0.2+ 0.2−   |
| 2002 01 08 | 704 | 0.6− 1.3+   | 2006 10 29 | 691 | 0.1+ 0.2+ | 2006 12 24 | G96 | 0.3+ 0.1+   |
| 2002 01 09 | 645 | 0.0 0.1−    | 2006 10 29 | 691 | 0.0 0.0   | 2007 11 07 | G96 | 0.6− 0.3+   |
| 2002 01 09 | 645 | 0.0 0.2−    | 2006 10 29 | 691 | 0.0 0.1+  | 2007 11 07 | G96 | 0.3+ 0.1+   |
| 2002 01 14 | 704 | 0.7+ 0.5+   | 2006 11 09 | 644 | 0.1+ 0.4− | 2007 11 07 | G96 | 1.1− 1.3−   |
| 2002 01 14 | 704 | 0.6+ 0.4+   | 2006 11 09 | 644 | 0.0 0.2−  | 2007 11 07 | G96 | 0.4− 0.1+   |
| 2002 01 14 | 704 | 0.5+ 0.4+   | 2006 11 09 | 644 | 0.3− 0.2− | 2007 12 04 | G96 | 0.6− 0.3−   |
| 2002 01 14 | 704 | 0.1+ 0.2+   | 2006 11 10 | 691 | 0.0 0.0   | 2007 12 04 | G96 | 0.0 0.1−    |
| 2002 01 14 | 704 | 0.3+ 0.5+   | 2006 11 10 | 691 | 0.4− 0.0  | 2007 12 04 | G96 | 0.2+ 0.2−   |
| 2002 02 07 | 704 | 0.3− 0.2−   | 2006 11 10 | 691 | 0.1− 0.2+ | 2007 12 04 | G96 | 0.3+ 0.1−   |
| 2002 02 07 | 704 | 0.2+ 0.5−   | 2006 11 11 | 703 | 1.3− 0.2+ |            |     |             |

(172075)\* 2002 AC<sub>95</sub>

Discovered 2002 Jan. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 359.79241  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.15174106 | <i>ω</i> 330.82159 | +0.28685335   | −0.93943796 |  |
| <i>a</i> | 3.4812401  | <i>Ω</i> 101.97890 | +0.91191009   | +0.20780029 |  |
| <i>e</i> | 0.0284291  | <i>i</i> 11.05291  | +0.29348790   | +0.27253507 |  |
| <i>P</i> | 6.50       | <i>H</i> 14.8      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |             |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-------------|
| 2002 01 08 | 704 | 0.4+ 1.1+ | 2003 03 12 | 644 | 0.8+ 0.7+ | 2006 09 25 | 703 | 0.2+ 0.6+   |
| 2002 01 08 | 704 | 0.2+ 0.8+ | 2004 05 15 | 704 | 0.3− 0.0  | 2006 09 25 | 703 | 0.3− 0.7−   |
| 2002 01 08 | 704 | 0.9+ 1.0+ | 2004 05 15 | 704 | 0.0 0.3−  | 2006 09 25 | 703 | (1.7+ 1.5+) |
| 2002 01 08 | 704 | 0.1+ 1.2+ | 2004 05 15 | 704 | 0.6+ 1.2+ | 2006 09 25 | 703 | 0.2+ 1.1+   |
| 2002 01 08 | 704 | 0.5+ 0.9+ | 2004 05 15 | 704 | 0.1+ 0.2− | 2006 10 21 | 703 | 0.8+ 0.1+   |

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2002 01 14 | 704 | (1.6− 1.0−) | 2004 05 23 | 704 | 0.5+ 0.1−   | 2006 10 21 | 703 | (1.8+ 0.4+) |
| 2002 01 14 | 704 | (2.2− 1.5−) | 2004 05 23 | 704 | 0.6+ 0.5−   | 2006 10 21 | 703 | 0.5− 0.5−   |
| 2002 01 14 | 704 | (1.6− 1.6−) | 2004 05 23 | 704 | 0.9+ 0.1+   | 2006 10 21 | 703 | 0.1− 0.5−   |
| 2002 01 14 | 704 | 1.4− 1.3−   | 2004 05 23 | 704 | 0.7+ 0.2−   | 2006 10 28 | 703 | 1.2− 1.1−   |
| 2002 01 14 | 645 | 0.0 0.1−    | 2004 06 10 | 599 | 0.3− 0.1+   | 2006 10 28 | 703 | 0.1+ 0.3+   |
| 2002 01 14 | 645 | 0.1− 0.1−   | 2004 06 10 | 599 | 1.2− 0.3−   | 2006 10 28 | 703 | 0.1− 0.6+   |
| 2002 01 20 | 699 | 0.1+ 0.1+   | 2004 06 10 | 599 | 1.2− 0.4+   | 2006 10 28 | 703 | 0.0 0.4+    |
| 2002 01 20 | 699 | 0.2+ 0.1+   | 2004 06 10 | 599 | (0.6− 2.3+) | 2007 12 04 | 704 | 0.4− 0.6+   |
| 2002 01 20 | 699 | 0.2− 1.4+   | 2004 06 16 | 704 | (0.2− 1.5+) | 2007 12 04 | 704 | 0.9− 0.2+   |
| 2002 01 20 | 699 | 0.6− 0.1−   | 2004 06 16 | 704 | 0.9− 1.2+   | 2007 12 04 | 704 | (0.1+ 2.2+) |
| 2002 02 10 | 704 | 0.5− 1.1−   | 2004 06 16 | 704 | 0.5− 0.7+   | 2007 12 04 | 704 | 0.0 0.3+    |
| 2002 02 10 | 704 | 0.9+ 0.0    | 2004 06 16 | 704 | 1.4+ 0.7+   | 2007 12 04 | 704 | 0.9+ 0.7−   |
| 2002 02 10 | 704 | 0.1+ 0.2+   | 2006 09 20 | 703 | (2.0+ 0.5−) | 2007 12 06 | G96 | 0.2+ 0.5+   |
| 2002 02 10 | 704 | 0.5+ 0.4+   | 2006 09 20 | 703 | 0.0 0.3+    | 2007 12 06 | G96 | 0.6− 0.2−   |
| 2003 03 12 | 644 | 0.4+ 0.4+   | 2006 09 20 | 703 | 0.5+ 0.9+   | 2007 12 06 | G96 | 0.3+ 0.1−   |
| 2003 03 12 | 644 | 0.3+ 0.4+   | 2006 09 20 | 703 | 0.5− 1.5+   | 2007 12 06 | G96 | 0.1+ 0.1+   |

(172076)\* 2002 AS<sub>199</sub> = 2003 JR<sub>16</sub>

Discovered 2002 Jan. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 72474)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 81.39757   | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.31480460 | <i>ω</i> 250.02184 | +0.83562319   | +0.54823945 |  |
| <i>a</i> | 2.1401391  | <i>Ω</i> 76.71780  | −0.48994169   | +0.77200210 |  |
| <i>e</i> | 0.1845118  | <i>i</i> 2.01185   | −0.24837678   | +0.32163064 |  |
| <i>P</i> | 3.13       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 2002 01 08 | 704 | 0.4− 0.4−   | 2006 03 25 | 691 | 0.2+ 0.2−   | 2006 05 01 | 704 | 1.3+ 0.5− |
| 2002 01 08 | 704 | 0.1+ 0.6−   | 2006 03 25 | 691 | 0.0 0.1−    | 2006 05 01 | 704 | 0.0 0.2−  |
| 2002 01 08 | 704 | 0.6− 0.5−   | 2006 03 25 | 691 | 0.1− 0.1+   | 2006 05 14 | 644 | 0.1+ 0.1− |
| 2002 01 08 | 704 | 0.8− 0.1−   | 2006 04 02 | 691 | 0.0 0.2−    | 2006 05 14 | 644 | 0.2+ 0.1+ |
| 2002 01 14 | 704 | 0.3+ 0.6+   | 2006 04 02 | 691 | 0.1− 0.2−   | 2006 05 14 | 644 | 0.1− 0.2+ |
| 2002 01 14 | 704 | 0.3+ 0.9+   | 2006 04 02 | 691 | 0.0 0.1−    | 2006 05 16 | 644 | 0.1+ 0.1+ |
| 2002 01 14 | 704 | 0.6+ 1.2+   | 2006 04 07 | 691 | 0.1− 0.1−   | 2006 05 16 | 644 | 0.1− 0.1− |
| 2002 01 14 | 704 | (0.8+ 1.6+) | 2006 04 07 | 691 | 0.0 0.0     | 2006 05 16 | 644 | 0.3− 0.0  |
| 2002 01 14 | 704 | (1.6+ 1.0+) | 2006 04 07 | 691 | 0.0 0.2−    | 2006 05 19 | 703 | 0.0 0.8+  |
| 2002 02 10 | 704 | 0.2− 0.2−   | 2006 04 19 | 644 | 0.4− 0.6−   | 2006 05 19 | 703 | 0.6− 0.0  |
| 2002 02 10 | 704 | 0.7− 0.3+   | 2006 04 19 | 644 | 0.6− 0.2−   | 2006 05 19 | 703 | 0.4+ 0.5+ |
| 2002 02 10 | 704 | 0.1+ 0.7−   | 2006 04 19 | 644 | 0.2− 0.3−   | 2006 05 19 | 703 | 0.7− 0.1+ |
| 2002 02 10 | 704 | 0.3+ 0.1+   | 2006 04 23 | 704 | 0.3+ 0.9+   | 2006 05 22 | G96 | 0.1− 0.3− |
| 2003 04 29 | 704 | 1.2− 1.0+   | 2006 04 23 | 704 | 0.2+ 0.5+   | 2006 05 22 | G96 | 0.3− 0.4− |
| 2003 04 29 | 704 | 0.9+ 0.9−   | 2006 04 23 | 704 | 0.4+ 0.1−   | 2006 05 22 | G96 | 0.7− 0.1− |
| 2003 04 29 | 704 | 0.1+ 0.6+   | 2006 04 24 | 704 | 0.0 0.6+    | 2006 05 22 | G96 | 0.4− 0.3− |
| 2003 04 29 | 704 | 0.4− 0.1−   | 2006 04 24 | 704 | 0.5+ 0.3+   | 2006 07 22 | G96 | 0.8− 0.2− |
| 2003 05 05 | 704 | 0.6+ 0.8+   | 2006 04 24 | 704 | 1.0+ 0.2+   | 2006 07 22 | G96 | 0.3− 0.3− |
| 2003 05 05 | 704 | 1.3+ 0.1−   | 2006 04 24 | 704 | (1.1+ 1.8−) | 2006 07 22 | G96 | 0.2+ 0.1− |
| 2003 05 05 | 704 | 0.1+ 0.1−   | 2006 04 26 | 691 | 0.0 0.1−    | 2006 07 22 | G96 | 0.4− 0.3+ |
| 2003 05 05 | 704 | 0.1+ 0.2+   | 2006 04 26 | 691 | 0.0 0.0     | 2007 12 05 | 691 | 0.2− 0.0  |
| 2003 05 12 | 673 | 0.6− 0.4−   | 2006 04 26 | 691 | 0.0 0.9+    | 2007 12 05 | 691 | 0.1+ 0.1− |
| 2003 05 12 | 673 | 0.7− 0.3−   | 2006 04 30 | 699 | 0.5− 0.5−   | 2007 12 05 | 691 | 0.1− 0.0  |
| 2003 05 12 | 673 | 0.0 0.1−    | 2006 04 30 | 699 | 0.5− 0.2−   | 2007 12 14 | 704 | 0.6− 0.0  |
| 2003 05 12 | 673 | 0.0 0.1−    | 2006 04 30 | 699 | 0.6+ 0.0    | 2007 12 14 | 704 | 0.3− 0.1+ |
| 2004 12 12 | 691 | 0.2+ 0.1−   | 2006 05 01 | 704 | (2.4+ 0.0 ) | 2007 12 14 | 704 | 0.4+ 0.2+ |
| 2004 12 12 | 691 | 0.1+ 0.2−   | 2006 05 01 | 704 | 1.0+ 0.4+   | 2007 12 14 | 704 | 0.2+ 0.1+ |
| 2004 12 12 | 691 | 0.0 0.1−    | 2006 05 01 | 704 | 0.0 0.2−    | 2007 12 14 | 704 | 0.3+ 0.9+ |

(172077)\* 2002 AF<sub>202</sub> = 2003 QS<sub>8</sub>

Discovered 2002 Jan. 12 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 172.34389  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29379534 | $\omega$ | 348.55281 | -0.65950387 | +0.74941775 |
| <i>a</i> | 2.2409876  | $\Omega$ | 240.15522 | -0.68423418 | -0.63073779 |
| <i>e</i> | 0.1116687  | <i>i</i> | 3.87031   | -0.31125269 | -0.20135263 |
| <i>P</i> | 3.35       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 12 | 644 | 0.2+ | 0.2+ | 2003 08 20 | 106 | 0.2+ | 0.1- | 2007 11 02 | G96 | 0.6+ | 0.4- |
| 2002 01 12 | 644 | 0.4+ | 0.3- | 2004 12 10 | 691 | 0.2- | 0.5- | 2007 11 02 | G96 | 0.1- | 0.1- |
| 2002 01 12 | 644 | 0.4+ | 0.3+ | 2004 12 10 | 691 | 0.0  | 0.7- | 2007 11 02 | G96 | 0.3+ | 0.3- |
| 2002 02 06 | 644 | 0.1- | 0.7+ | 2004 12 10 | 691 | 0.1+ | 0.5- | 2007 11 03 | 691 | 0.0  | 0.3- |
| 2002 02 06 | 644 | 0.2- | 0.7+ | 2007 10 07 | 691 | 0.2- | 0.3+ | 2007 11 03 | 691 | 0.3+ | 0.1+ |
| 2002 02 06 | 644 | 0.4- | 0.7+ | 2007 10 07 | 691 | 0.3- | 0.4+ | 2007 11 03 | 691 | 0.2+ | 0.2- |
| 2002 02 11 | 704 | 1.3- | 0.8+ | 2007 10 07 | 691 | 1.2- | 0.4- | 2007 11 03 | 691 | 0.4- | 0.2- |
| 2002 02 11 | 704 | 0.5- | 0.6+ | 2007 10 11 | 691 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.5- | 0.1- |
| 2002 02 11 | 704 | 0.9+ | 0.7- | 2007 10 11 | 691 | 0.2- | 0.1+ | 2007 11 03 | 691 | 0.4+ | 0.1+ |
| 2002 02 11 | 704 | 0.5+ | 0.1+ | 2007 10 11 | 691 | 0.4- | 0.5+ | 2007 11 05 | A77 | 0.2+ | 0.1+ |
| 2002 02 16 | 644 | 0.3+ | 0.2+ | 2007 10 15 | 691 | 0.0  | 0.3+ | 2007 11 05 | A77 | 0.1- | 0.2+ |
| 2002 02 16 | 644 | 0.1+ | 0.2+ | 2007 10 15 | 691 | 0.6+ | 1.2+ | 2007 11 05 | A77 | 0.5+ | 0.8+ |
| 2002 02 16 | 644 | 0.2+ | 0.2+ | 2007 10 15 | 691 | 0.1- | 0.4+ | 2007 11 07 | 703 | 0.4- | 0.4- |
| 2002 03 12 | 291 | 0.1- | 0.2+ | 2007 10 19 | 691 | 0.3+ | 0.3- | 2007 11 07 | 703 | 0.6+ | 1.0+ |
| 2002 03 12 | 291 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.4- | 0.6+ |
| 2002 03 12 | 291 | 0.4+ | 0.2+ | 2007 10 19 | 691 | 0.2+ | 0.4+ | 2007 11 07 | 703 | 0.3- | 0.8- |
| 2003 07 24 | 644 | 0.2- | 0.5+ | 2007 10 31 | G96 | 0.8+ | 0.3- | 2007 12 15 | G96 | 0.7+ | 0.6- |
| 2003 07 24 | 644 | 0.2- | 0.6+ | 2007 10 31 | G96 | 0.2+ | 0.4- | 2007 12 15 | G96 | 0.5+ | 0.8- |
| 2003 07 24 | 644 | 0.4- | 0.4+ | 2007 10 31 | G96 | 0.6+ | 0.3- | 2007 12 15 | G96 | 0.3+ | 0.9- |
| 2003 08 20 | 106 | 0.3- | 0.8- | 2007 10 31 | G96 | 0.0  | 0.3- | 2007 12 15 | G96 | 0.7+ | 0.4- |
| 2003 08 20 | 106 | 0.7+ | 0.1- | 2007 11 02 | G96 | 0.6+ | 0.2- |            |     |      |      |

(172078)\* 2002 BL<sub>16</sub> = 2000 SR<sub>10</sub>

Discovered 2002 Jan. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 25621)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 238.67032  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.30175605 | $\omega$ | 251.80310 | -0.99404281 | +0.06937479 |
| <i>a</i> | 2.2013988  | $\Omega$ | 292.10645 | -0.02691719 | -0.90363195 |
| <i>e</i> | 0.0956244  | <i>i</i> | 5.20558   | -0.10561423 | -0.42265405 |
| <i>P</i> | 3.27       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 24 | 684 | 0.8+  | 0.1+  | 2002 02 12 | 704 | (0.2+ | 1.6+) | 2004 12 15 | 704 | 0.1+  | 0.2-  |
| 2000 09 24 | 684 | 0.6+  | 0.1-  | 2002 02 12 | 704 | 0.5+  | 0.9+  | 2004 12 15 | 704 | 0.2-  | 0.6-  |
| 2000 09 24 | 684 | 0.6+  | 0.6-  | 2002 02 12 | 704 | 1.4+  | 0.1+  | 2004 12 15 | 704 | 0.1+  | 0.3+  |
| 2000 09 25 | 684 | 1.0-  | 0.3-  | 2002 02 13 | 645 | 0.1-  | 0.1-  | 2005 01 17 | 704 | 0.1+  | 0.4+  |
| 2000 09 25 | 684 | 0.7-  | 0.4+  | 2002 02 13 | 645 | 0.2-  | 0.1-  | 2005 01 17 | 704 | 0.6-  | 0.4-  |
| 2002 01 13 | 704 | 1.3+  | 0.1+  | 2002 02 16 | 644 | 0.1+  | 0.6+  | 2005 01 17 | 704 | 0.2-  | 0.3+  |
| 2002 01 19 | 704 | 1.4+  | 0.2-  | 2002 02 16 | 644 | 0.1+  | 0.4+  | 2005 01 17 | 704 | 0.7+  | 0.8-  |
| 2002 01 19 | 704 | 0.7+  | 0.1+  | 2002 02 16 | 644 | 0.1+  | 0.5+  | 2005 02 02 | 704 | 0.4+  | 0.8-  |
| 2002 01 19 | 704 | 1.1+  | 0.3-  | 2002 03 05 | 645 | 0.0   | 0.1-  | 2005 02 02 | 704 | 0.3+  | 0.6+  |
| 2002 01 19 | 704 | 0.8+  | 0.4-  | 2002 03 05 | 645 | 0.1-  | 0.1-  | 2005 02 02 | 704 | 0.1-  | 0.1-  |
| 2002 01 19 | 704 | 0.4+  | 1.0-  | 2002 03 06 | 644 | 0.4+  | 1.1+  | 2007 11 07 | 704 | (2.1+ | 0.4+) |
| 2002 01 22 | 704 | 0.2+  | 0.1+  | 2002 03 06 | 644 | 0.5+  | 1.3+  | 2007 11 07 | 704 | 0.8+  | 0.4+  |
| 2002 01 22 | 704 | 0.2+  | 0.0   | 2002 03 06 | 644 | 0.2+  | 1.2+  | 2007 11 07 | 704 | 0.1+  | 0.5-  |
| 2002 01 22 | 704 | 0.0   | 0.5-  | 2002 03 10 | 608 | 0.8-  | 0.0   | 2007 11 07 | 704 | 0.7+  | 0.3+  |
| 2002 02 06 | 644 | 0.6+  | 0.6+  | 2002 03 10 | 608 | 0.7-  | 0.8+  | 2007 11 18 | 704 | 0.3-  | 0.5-  |
| 2002 02 06 | 644 | 0.3+  | 0.4+  | 2002 03 10 | 608 | 0.6-  | 0.2+  | 2007 11 18 | 704 | 0.5+  | 0.2-  |
| 2002 02 06 | 644 | 0.4+  | 0.5+  | 2002 03 12 | 645 | 0.1-  | 0.1-  | 2007 11 18 | 704 | (1.6- | 1.0+) |
| 2002 02 07 | 704 | (1.5+ | 0.6-) | 2002 03 12 | 645 | 0.1-  | 0.1-  | 2007 11 18 | 704 | 0.1-  | 0.3+  |
| 2002 02 07 | 704 | 0.3+  | 0.9-  | 2002 03 12 | 704 | (0.5- | 2.7+) | 2007 12 12 | 704 | 0.8-  | 0.3-  |
| 2002 02 07 | 704 | 1.4+  | 1.0-  | 2002 03 12 | 704 | 0.5-  | 0.2-  | 2007 12 12 | 704 | 0.3+  | 1.3-  |
| 2002 02 07 | 704 | 0.9+  | 1.1-  | 2002 03 12 | 704 | (0.1+ | 2.0+) | 2007 12 12 | 704 | 0.3+  | 0.4-  |
| 2002 02 07 | 704 | 1.4+  | 1.1-  | 2002 03 12 | 704 | (1.3- | 1.7+) | 2007 12 12 | 704 | 0.0   | 0.5-  |
| 2002 02 11 | 704 | 0.4-  | 0.8+  | 2002 03 14 | 644 | 0.5+  | 0.6-  | 2007 12 13 | 704 | 0.0   | 0.5-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 02 11 | 704 | 0.6+ | 0.3+ | 2002 03 14 | 644 | (0.6+ | 1.5+) | 2007 12 13 | 704 | 0.2- | 0.6- |
| 2002 02 11 | 704 | 0.2- | 0.6+ | 2002 03 14 | 644 | 0.4+  | 1.5+  | 2007 12 13 | 704 | 0.5- | 0.2- |
| 2002 02 11 | 704 | 0.6+ | 0.3+ | 2003 09 24 | 644 | 0.1+  | 0.6+  | 2007 12 13 | 704 | 0.2- | 0.1- |
| 2002 02 11 | 704 | 0.5- | 0.7+ | 2003 09 24 | 644 | 0.3-  | 0.5+  | 2007 12 13 | 704 | 0.3- | 0.1+ |
| 2002 02 11 | 704 | 0.7+ | 0.5+ | 2003 09 24 | 644 | 0.9-  | 0.4+  | 2007 12 15 | 704 | 0.9+ | 0.4+ |
| 2002 02 11 | 704 | 0.1+ | 1.1+ | 2004 12 14 | 704 | 0.7-  | 0.1+  | 2007 12 15 | 704 | 0.1- | 0.6+ |
| 2002 02 11 | 704 | 0.3+ | 1.0+ | 2004 12 14 | 704 | 0.5-  | 0.6-  | 2007 12 15 | 704 | 0.0  | 0.1+ |
| 2002 02 11 | 704 | 0.1- | 1.2+ | 2004 12 14 | 704 | 0.1+  | 0.1-  | 2007 12 15 | 704 | 0.7+ | 1.3+ |
| 2002 02 11 | 704 | 0.3+ | 0.7+ | 2004 12 14 | 704 | 0.4-  | 0.6+  | 2007 12 15 | 704 | 0.4- | 0.8+ |
| 2002 02 12 | 704 | 0.8- | 0.7+ | 2004 12 15 | 704 | 0.2+  | 1.2+  |            |     |      |      |
| 2002 02 12 | 704 | 0.3+ | 1.3+ | 2004 12 15 | 704 | 1.1-  | 0.5+  |            |     |      |      |

(172079)\* 2002 BX<sub>30</sub> = 2000 SH<sub>372</sub>

Discovered 2002 Jan. 18 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (MPO 85422)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.96625   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.15605370 | $\omega$ | 22.02060 | +0.58596694 | -0.79730042 |
| <i>a</i> | 3.4168035  | $\Omega$ | 32.63109 | +0.69767221 | +0.40551693 |
| <i>e</i> | 0.1756434  | <i>i</i> | 15.57227 | +0.41218470 | +0.44706606 |
| <i>P</i> | 6.32       | <i>H</i> | 14.1     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 24 | 704 | 0.3+ | 0.2- | 2002 01 19 | 699 | 0.4-  | 0.7+  | 2006 10 12 | 644 | 0.1+  | 0.3+  |
| 2000 09 24 | 704 | 1.6+ | 1.0+ | 2002 01 19 | 699 | 0.5-  | 1.4+  | 2006 10 12 | 644 | 0.1-  | 0.4+  |
| 2000 09 24 | 704 | 0.9+ | 1.7+ | 2002 01 19 | 699 | 0.6+  | 0.5+  | 2007 11 03 | 704 | 0.3+  | 0.6-  |
| 2000 09 24 | 704 | 1.4- | 2.0+ | 2002 01 19 | 699 | (1.7+ | 0.1+) | 2007 11 03 | 704 | 0.5+  | 0.2-  |
| 2000 10 25 | 704 | 0.1- | 0.9- | 2002 01 25 | 704 | 0.9-  | 0.4+  | 2007 11 03 | 704 | 0.4-  | 0.3-  |
| 2000 10 25 | 704 | 1.8- | 1.0- | 2002 01 25 | 704 | 0.7-  | 0.3-  | 2007 11 03 | 704 | 0.2-  | 0.4+  |
| 2000 10 25 | 704 | 0.9+ | 0.5- | 2002 01 25 | 704 | 0.5-  | 0.4-  | 2007 11 03 | 704 | 0.3-  | 0.1+  |
| 2000 10 25 | 704 | 1.0- | 0.6- | 2002 01 25 | 704 | 0.7-  | 0.7+  | 2007 11 09 | 704 | 1.1-  | 0.1+  |
| 2001 12 23 | 704 | 0.0  | 0.6+ | 2002 01 25 | 704 | 0.6-  | 0.2-  | 2007 11 09 | 704 | 0.1-  | 0.1-  |
| 2001 12 23 | 704 | 0.1+ | 0.6+ | 2002 02 07 | 699 | 0.4-  | 0.8-  | 2007 11 09 | 704 | 0.2-  | 0.1-  |
| 2001 12 23 | 704 | 0.3+ | 1.0+ | 2002 02 07 | 699 | 0.8-  | 0.2+  | 2007 11 09 | 704 | 0.6-  | 0.2-  |
| 2001 12 23 | 704 | 0.8+ | 0.9+ | 2002 02 07 | 699 | 0.1-  | 0.1-  | 2007 11 09 | 704 | (1.9- | 0.1+) |
| 2002 01 06 | 704 | 0.4+ | 0.1+ | 2002 02 07 | 699 | 0.2+  | 0.8+  | 2007 11 16 | 704 | 0.4+  | 0.4-  |
| 2002 01 06 | 704 | 0.3+ | 0.3+ | 2006 08 17 | 644 | 0.3-  | 0.2+  | 2007 11 16 | 704 | 0.4+  | 1.0-  |
| 2002 01 06 | 704 | 0.3+ | 0.2- | 2006 08 17 | 644 | 0.5-  | 0.1+  | 2007 11 16 | 704 | 1.0+  | 0.2-  |
| 2002 01 06 | 704 | 0.7+ | 0.6- | 2006 08 17 | 644 | 0.0   | 0.3+  | 2007 11 16 | 704 | 1.0+  | 0.0   |
| 2002 01 06 | 704 | 1.2+ | 0.2+ | 2006 08 28 | E12 | 0.7-  | 0.8+  | 2007 12 03 | 704 | 0.5+  | 0.5-  |
| 2002 01 18 | 699 | 0.7- | 1.5+ | 2006 08 28 | E12 | 0.1-  | 0.2-  | 2007 12 03 | 704 | 0.6+  | 0.4-  |
| 2002 01 18 | 699 | 0.8+ | 0.5- | 2006 08 28 | E12 | 0.3+  | 0.5-  | 2007 12 03 | 704 | 0.3+  | 0.4-  |
| 2002 01 18 | 699 | 0.0  | 0.4+ | 2006 08 28 | E12 | 0.5-  | 0.0   | 2007 12 03 | 704 | 0.5+  | 0.5-  |
| 2002 01 18 | 699 | 1.0+ | 0.7- | 2006 10 12 | 644 | 0.1-  | 0.1+  | 2007 12 03 | 704 | 0.7-  | 1.4-  |

(172080)\* 2002 CA<sub>18</sub>

Discovered 2002 Feb. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.33763  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29541553 | $\omega$ | 54.41668  | +0.87425085 | -0.48279600 |
| <i>a</i> | 2.2327864  | $\Omega$ | 334.33716 | +0.39864524 | +0.77379481 |
| <i>e</i> | 0.1084106  | <i>i</i> | 6.75316   | +0.27706935 | +0.41006049 |
| <i>P</i> | 3.34       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2004 12 01 | 703 | 0.0   | 0.2-  | 2007 09 14 | 704 | 0.1+ | 0.0  |
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2004 12 01 | 703 | (1.9- | 1.0+) | 2007 09 14 | 699 | 0.6- | 0.2+ |
| 2002 01 10 | 644 | 0.5- | 0.4+ | 2004 12 02 | 704 | 0.2+  | 0.4-  | 2007 09 14 | 699 | 0.6- | 0.6+ |
| 2002 01 10 | 644 | 0.3- | 0.6+ | 2004 12 02 | 704 | 0.1+  | 0.2-  | 2007 09 14 | 699 | 0.4+ | 0.3- |
| 2002 01 10 | 644 | 0.1- | 0.4+ | 2004 12 02 | 704 | 0.4+  | 0.9-  | 2007 09 14 | 699 | 0.4+ | 0.1+ |
| 2002 01 22 | 291 | 0.2- | 0.0  | 2004 12 02 | 704 | 0.2-  | 1.2-  | 2007 09 17 | 704 | 0.4+ | 0.1- |
| 2002 01 22 | 291 | 0.1- | 0.3+ | 2004 12 02 | 704 | 0.9+  | 0.1-  | 2007 09 17 | 704 | 0.8+ | 1.0+ |
| 2002 01 22 | 291 | 0.0  | 0.2+ | 2004 12 14 | 703 | 0.4+  | 0.1-  | 2007 09 17 | 704 | 1.0+ | 1.3+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 02 06 | 704 | 0.7+  | 0.8+  | 2004 12 14 | 703 | 0.3-  | 0.1+  | 2007 09 17 | 704 | 0.5+ | 0.3- |
| 2002 02 06 | 704 | 0.4+  | 0.2+  | 2004 12 14 | 703 | 0.1+  | 0.0   | 2007 09 17 | 704 | 1.0- | 0.5+ |
| 2002 02 06 | 704 | 1.1+  | 0.3+  | 2004 12 14 | 703 | 0.0   | 0.5-  | 2007 10 08 | 699 | 0.5- | 0.3+ |
| 2002 02 06 | 704 | 1.0+  | 0.8+  | 2004 12 15 | 703 | 0.1-  | 0.9+  | 2007 10 08 | 699 | 0.5- | 0.5- |
| 2002 02 07 | 704 | 0.4+  | 0.2+  | 2004 12 15 | 703 | 1.1-  | 0.2-  | 2007 10 08 | 699 | 0.8+ | 0.0  |
| 2002 02 07 | 704 | 1.1+  | 0.3-  | 2004 12 15 | 703 | 0.4-  | 0.7-  | 2007 10 08 | 699 | 0.2- | 0.3- |
| 2002 02 07 | 704 | 0.1+  | 0.9+  | 2004 12 15 | 703 | 0.6-  | 0.6-  | 2007 10 09 | 704 | 1.0- | 0.4+ |
| 2002 02 07 | 704 | 0.0   | 0.9+  | 2004 12 20 | 703 | 0.2-  | 0.2+  | 2007 10 09 | 704 | 0.2- | 0.3+ |
| 2002 02 07 | 704 | (1.8+ | 1.1+) | 2004 12 20 | 703 | 0.4-  | 0.7-  | 2007 10 09 | 704 | 0.9- | 0.8+ |
| 2002 02 10 | 704 | 0.1-  | 0.8+  | 2004 12 20 | 703 | 0.1-  | 0.5-  | 2007 10 09 | 704 | 0.4- | 0.6+ |
| 2002 02 10 | 704 | 0.2+  | 0.2+  | 2004 12 20 | 703 | 0.2+  | 0.5+  | 2007 10 15 | 704 | 0.9- | 0.7- |
| 2002 02 10 | 704 | 0.5+  | 0.3+  | 2007 09 03 | 703 | 0.3+  | 0.5+  | 2007 10 15 | 704 | 0.2- | 0.7+ |
| 2002 02 12 | 704 | 0.3-  | 0.1+  | 2007 09 03 | 703 | 0.5+  | 0.5+  | 2007 10 15 | 704 | 0.2- | 0.3- |
| 2002 02 12 | 704 | 0.7+  | 0.1+  | 2007 09 03 | 703 | 0.2-  | 0.8+  | 2007 10 15 | 704 | 0.3+ | 0.6+ |
| 2002 02 12 | 704 | 0.4+  | 0.6+  | 2007 09 03 | 703 | 0.5-  | 0.6+  | 2007 10 15 | 704 | 0.6- | 0.0  |
| 2002 02 12 | 704 | 0.3+  | 0.3+  | 2007 09 07 | 704 | 0.6+  | 1.4+  | 2007 10 21 | G96 | 0.2- | 0.2- |
| 2002 02 12 | 704 | 0.1+  | 0.8-  | 2007 09 07 | 704 | (0.2+ | 2.1+) | 2007 10 21 | G96 | 0.3- | 0.2- |
| 2004 11 19 | 704 | 0.6+  | 0.3+  | 2007 09 07 | 704 | 0.7-  | 1.1+  | 2007 10 21 | G96 | 0.3+ | 0.4- |
| 2004 11 19 | 704 | 0.1-  | 0.1-  | 2007 09 07 | 704 | 0.1-  | 0.1+  | 2007 10 21 | G96 | 0.1+ | 0.3- |
| 2004 11 19 | 704 | 0.7+  | 0.0   | 2007 09 07 | 704 | (0.2- | 2.1+) | 2007 12 15 | G96 | 0.0  | 0.5- |
| 2004 11 19 | 704 | 0.2-  | 0.4-  | 2007 09 14 | 704 | 0.0   | 0.1+  | 2007 12 15 | G96 | 0.1+ | 0.6- |
| 2004 11 19 | 704 | 0.3+  | 0.1+  | 2007 09 14 | 704 | 1.3-  | 0.5+  | 2007 12 15 | G96 | 0.0  | 0.1+ |
| 2004 12 01 | 703 | 0.2+  | 1.2-  | 2007 09 14 | 704 | 0.3-  | 0.4+  | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2004 12 01 | 703 | 0.1+  | 0.8-  | 2007 09 14 | 704 | 0.5-  | 0.3-  |            |     |      |      |

**(172081)\* 2002 CA<sub>35</sub> = 2004 XF<sub>61</sub>**

Discovered 2002 Feb. 6 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. K. E. Smalley (*MPO* 72490)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 9.24911    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29658216 | $\omega$ 310.49615 | +0.97486441   | -0.18766556 |
| <i>a</i> | 2.2269273  | $\Omega$ 60.63551  | +0.22207670   | +0.86184024 |
| <i>e</i> | 0.2007383  | <i>i</i> 7.92006   | -0.01792545   | +0.47118259 |
| <i>P</i> | 3.32       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 04 14 | 691 | 0.2-  | 0.1+  | 2005 01 16 | 704 | 0.1-  | 0.3-  | 2007 10 19 | 703 | 0.2-  | 0.4+  |
| 1996 04 14 | 691 | 0.2+  | 0.2-  | 2005 01 16 | 704 | 0.0   | 0.2-  | 2007 10 19 | 703 | 0.3+  | 0.8+  |
| 1996 04 14 | 691 | 0.1-  | 0.1-  | 2005 01 16 | 704 | 0.4+  | 0.0   | 2007 10 19 | 703 | 1.2+  | 0.3+  |
| 2002 02 06 | 704 | 0.2-  | 0.1+  | 2005 01 19 | 704 | 0.4-  | 0.7-  | 2007 10 24 | G96 | 0.0   | 0.8-  |
| 2002 02 06 | 704 | 0.7+  | 0.1+  | 2005 01 19 | 704 | (2.0+ | 0.9+) | 2007 10 24 | G96 | 0.2+  | 0.9-  |
| 2002 02 06 | 704 | 0.3+  | 1.0+  | 2005 01 19 | 704 | 0.1+  | 0.7-  | 2007 10 24 | G96 | 0.6-  | 0.7-  |
| 2002 02 08 | 704 | 0.7+  | 0.9+  | 2005 01 19 | 704 | 0.4+  | 0.4-  | 2007 10 24 | G96 | 0.1-  | 0.7-  |
| 2002 02 08 | 704 | 0.7+  | 0.4+  | 2007 09 21 | D29 | 0.2+  | 0.2-  | 2007 10 24 | G96 | 0.3-  | 0.7-  |
| 2002 02 08 | 704 | 0.2+  | 0.4+  | 2007 09 21 | D29 | 0.3+  | 0.0   | 2007 10 24 | G96 | 0.3+  | 0.7-  |
| 2002 02 08 | 704 | 0.4-  | 0.4-  | 2007 09 21 | D29 | 0.5+  | 0.3-  | 2007 10 24 | G96 | 0.4+  | 0.8-  |
| 2002 02 10 | 704 | (0.5- | 1.7+) | 2007 09 21 | D29 | 0.4+  | 0.2-  | 2007 10 24 | G96 | 0.4+  | 0.7-  |
| 2002 02 10 | 704 | 0.0   | 0.7+  | 2007 10 08 | 699 | 0.1-  | 0.1+  | 2007 10 24 | G96 | 0.0   | 0.7-  |
| 2002 02 10 | 704 | 0.5-  | 0.7+  | 2007 10 08 | 699 | 0.4-  | 0.0   | 2007 10 24 | G96 | 0.1-  | 0.9-  |
| 2002 02 22 | 644 | 0.2+  | 0.6+  | 2007 10 08 | 699 | 0.2+  | 0.0   | 2007 10 24 | G96 | 0.3-  | 0.6-  |
| 2002 02 22 | 644 | 0.1+  | 0.3+  | 2007 10 08 | 699 | 0.4-  | 0.0   | 2007 10 24 | G96 | 0.1+  | 0.9-  |
| 2002 02 22 | 644 | 0.1+  | 0.6+  | 2007 10 10 | 703 | 0.0   | 0.5+  | 2007 10 31 | 703 | 0.0   | 0.1+  |
| 2004 12 11 | 704 | 0.6+  | 0.0   | 2007 10 10 | 703 | 0.3+  | 0.3+  | 2007 10 31 | 703 | 0.2+  | 0.0   |
| 2004 12 11 | 704 | 0.3+  | 0.2+  | 2007 10 10 | 703 | 0.4-  | 0.5+  | 2007 10 31 | 703 | 0.3+  | 0.1-  |
| 2004 12 11 | 704 | 0.3+  | 0.6-  | 2007 10 10 | 703 | 0.1-  | 0.3+  | 2007 10 31 | 703 | 0.2-  | 0.2-  |
| 2004 12 11 | 704 | 0.3+  | 0.4-  | 2007 10 13 | 704 | 0.7-  | 0.0   | 2007 11 12 | 704 | 0.5+  | 1.0+  |
| 2004 12 11 | 704 | 0.2+  | 0.3-  | 2007 10 13 | 704 | 0.9-  | 0.2-  | 2007 11 12 | 704 | 0.1+  | 0.8+  |
| 2004 12 15 | 704 | 0.2+  | 0.3-  | 2007 10 13 | 704 | 0.8-  | 0.0   | 2007 11 12 | 704 | 0.3-  | 0.8+  |
| 2004 12 15 | 704 | 0.1-  | 0.4-  | 2007 10 13 | 704 | 0.5-  | 0.1+  | 2007 11 12 | 704 | 0.4+  | 0.8+  |
| 2004 12 15 | 704 | 0.4-  | 0.1+  | 2007 10 13 | 704 | 1.0-  | 0.1+  | 2007 11 12 | 704 | 0.1+  | 1.1+  |
| 2004 12 15 | 704 | 0.6-  | 0.4+  | 2007 10 17 | 699 | 0.1-  | 0.4-  | 2007 11 17 | 703 | 0.2+  | 0.2+  |
| 2004 12 15 | 704 | 0.4-  | 0.2+  | 2007 10 17 | 699 | 0.1-  | 0.2+  | 2007 11 17 | 703 | 0.7+  | 1.1+  |
| 2004 12 17 | 704 | 0.2-  | 0.1+  | 2007 10 17 | 699 | 0.2+  | 0.3+  | 2007 11 17 | 703 | 0.5-  | 0.4+  |
| 2004 12 17 | 704 | 0.5+  | 0.0   | 2007 10 17 | 699 | 0.1+  | 0.2+  | 2007 11 17 | 703 | (1.5- | 1.6-) |
| 2004 12 17 | 704 | 0.3-  | 0.6-  | 2007 10 18 | 704 | 0.0   | 0.4-  | 2007 11 29 | 704 | 0.2-  | 0.2-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 17 | 704 | 0.5- | 0.2- | 2007 10 18 | 704 | 0.4- | 0.2- | 2007 11 29 | 704 | 0.5- | 0.3+ |
| 2004 12 18 | 704 | 0.1- | 0.2+ | 2007 10 18 | 704 | 0.2- | 0.2+ | 2007 11 29 | 704 | 0.2- | 0.3- |
| 2004 12 18 | 704 | 0.8- | 0.5- | 2007 10 18 | 704 | 0.2- | 0.4- | 2007 11 29 | 704 | 0.1+ | 0.3- |
| 2004 12 18 | 704 | 0.3- | 0.5- | 2007 10 18 | 704 | 0.2- | 0.8+ | 2007 12 04 | 704 | 0.0  | 0.5+ |
| 2004 12 18 | 704 | 0.4- | 1.2- | 2007 10 19 | 703 | 0.4- | 0.1- | 2007 12 04 | 704 | 0.6+ | 0.5+ |
| 2005 01 12 | 704 | 0.8+ | 0.1- | 2007 10 19 | 703 | 0.6- | 0.4+ | 2007 12 04 | 704 | 0.4+ | 1.1+ |
| 2005 01 12 | 704 | 1.1+ | 0.3+ | 2007 10 19 | 703 | 0.1- | 0.1+ | 2007 12 04 | 704 | 0.3+ | 0.9+ |
| 2005 01 12 | 704 | 0.2- | 0.0  | 2007 10 19 | 703 | 0.3+ | 0.4+ | 2007 12 04 | 704 | 0.6+ | 0.8+ |
| 2005 01 16 | 704 | 0.5- | 0.2- | 2007 10 19 | 703 | 0.5+ | 0.5+ |            |     |      |      |

**(172082)\* 2002 CX<sub>71</sub>**

Discovered 2002 Feb. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 22.15897   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30987778 | $\omega$ 309.87768 | +0.88939353   | -0.45523826 |
| <i>a</i> | 2.1627638  | $\Omega$ 77.23935  | +0.43138485   | +0.80561203 |
| <i>e</i> | 0.1419916  | <i>i</i> 2.44935   | +0.15128208   | +0.37914032 |
| <i>P</i> | 3.18       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 03 12 | 691 | 0.0   | 0.6-  | 2004 12 20 | G96 | 0.3- | 0.6- | 2006 05 24 | G96 | 0.3-  | 0.3+  |
| 1996 03 12 | 691 | 0.1-  | 0.6-  | 2004 12 20 | G96 | 0.2- | 0.5- | 2006 05 24 | 691 | 0.1-  | 0.4+  |
| 1996 03 12 | 691 | 0.6-  | 0.1-  | 2004 12 20 | G96 | 0.1- | 0.4- | 2006 05 24 | G96 | 0.1+  | 0.3+  |
| 2002 01 14 | 704 | 0.3+  | 1.0+  | 2004 12 21 | 703 | 0.9- | 0.7- | 2006 05 24 | G96 | 0.6-  | 0.3+  |
| 2002 01 14 | 704 | 1.0+  | 1.1+  | 2004 12 21 | 703 | 0.2- | 0.3- | 2006 05 24 | G96 | 0.3+  | 0.3+  |
| 2002 01 14 | 704 | 0.7+  | 0.7-  | 2004 12 21 | 703 | 1.0- | 0.2- | 2006 05 24 | 448 | (2.4- | 0.5+) |
| 2002 02 07 | 704 | 0.1-  | 1.0+  | 2004 12 21 | 703 | 0.9- | 1.0- | 2006 05 24 | 691 | 0.2+  | 0.4+  |
| 2002 02 07 | 704 | 0.4-  | 0.5-  | 2005 01 06 | 704 | 0.6+ | 1.0+ | 2006 05 24 | 448 | 0.1+  | 0.4-  |
| 2002 02 07 | 704 | 0.1+  | 0.6+  | 2005 01 06 | 704 | 1.0+ | 0.4+ | 2006 05 24 | 691 | 0.2+  | 0.2+  |
| 2002 02 07 | 704 | 0.2+  | 0.7+  | 2005 01 06 | 704 | 0.4+ | 0.2- | 2006 05 24 | 448 | 0.2-  | 0.8+  |
| 2002 02 07 | 704 | 0.8+  | 1.3+  | 2005 01 06 | 704 | 0.1- | 0.6+ | 2007 11 05 | 704 | (0.3- | 2.0+) |
| 2002 02 10 | 704 | (0.0  | 2.1+) | 2005 01 11 | 704 | 0.4- | 0.2+ | 2007 11 05 | 704 | 0.4+  | 0.1+  |
| 2002 02 10 | 704 | 0.1-  | 1.3+  | 2005 01 11 | 704 | 0.5- | 0.0  | 2007 11 05 | 704 | 0.7+  | 1.0+  |
| 2002 02 10 | 704 | (0.3+ | 1.6+) | 2005 01 11 | 704 | 0.3- | 0.4+ | 2007 11 05 | 704 | 0.1-  | 0.1-  |
| 2002 02 10 | 704 | 0.0   | 0.9+  | 2005 01 17 | 704 | 0.3+ | 0.0  | 2007 11 14 | 704 | 0.6+  | 0.0   |
| 2002 02 10 | 704 | 0.2+  | 1.3+  | 2005 01 17 | 704 | 0.5+ | 0.2+ | 2007 11 14 | 704 | 0.3+  | 0.2-  |
| 2002 02 12 | 704 | 1.0+  | 0.0   | 2005 01 17 | 704 | 0.0  | 0.3- | 2007 11 14 | 704 | 0.3+  | 0.7+  |
| 2002 02 12 | 704 | 0.4-  | 0.6-  | 2005 01 18 | 691 | 0.1+ | 0.1- | 2007 11 14 | 704 | 0.4+  | 0.1-  |
| 2002 02 12 | 704 | 0.7+  | 0.2-  | 2005 01 18 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.2+  | 0.5+  |
| 2002 02 12 | 704 | 0.9+  | 0.7-  | 2005 01 18 | 691 | 0.3+ | 0.0  | 2007 11 14 | 691 | 0.2-  | 0.1+  |
| 2002 03 14 | 704 | 0.5-  | 1.2-  | 2005 02 02 | 704 | 0.4+ | 0.3+ | 2007 11 14 | 691 | 0.3-  | 0.1+  |
| 2002 03 14 | 704 | 0.6-  | 0.0   | 2005 02 02 | 704 | 0.2+ | 0.3+ | 2007 12 05 | 704 | 0.1+  | 0.0   |
| 2002 03 14 | 704 | (0.6- | 2.0+) | 2005 02 02 | 704 | 0.3+ | 0.6+ | 2007 12 05 | 704 | 1.2-  | 0.3+  |
| 2004 12 14 | 704 | 1.5-  | 0.7-  | 2005 02 02 | 704 | 0.7+ | 0.8- | 2007 12 05 | 704 | 0.1-  | 0.5+  |
| 2004 12 14 | 704 | (2.2- | 0.9-) | 2006 05 19 | G96 | 0.3- | 0.3+ | 2007 12 05 | 704 | 0.8-  | 1.0+  |
| 2004 12 14 | 704 | 0.9-  | 0.2-  | 2006 05 19 | G96 | 0.4- | 0.3+ | 2007 12 05 | 704 | 1.4-  | 1.0+  |
| 2004 12 14 | 704 | 0.8-  | 0.6-  | 2006 05 19 | G96 | 0.2- | 0.4+ | 2007 12 15 | G96 | 0.3+  | 0.4-  |
| 2004 12 16 | 691 | 0.2-  | 0.1+  | 2006 05 19 | G96 | 0.3- | 0.1+ | 2007 12 15 | G96 | 1.0+  | 0.4+  |
| 2004 12 16 | 691 | 0.2-  | 0.1-  | 2006 05 20 | 691 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.6+  | 0.3-  |
| 2004 12 16 | 691 | 0.0   | 0.3-  | 2006 05 20 | 691 | 0.2+ | 0.0  | 2007 12 15 | G96 | 0.0   | 0.5-  |
| 2004 12 20 | G96 | 0.0   | 0.3-  | 2006 05 20 | 691 | 0.4+ | 0.3+ |            |     |       |       |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 07 31 | 807 | 0.0  | 0.2− | 2004 12 20 | 621 | 0.0   | 0.1+  | 2005 03 12 | G96 | 1.0− | 0.3− |
| 2000 07 31 | 807 | 0.1+ | 0.2− | 2004 12 20 | 621 | (0.4+ | 2.1+) | 2007 11 02 | 691 | 0.3− | 0.0  |
| 2000 08 01 | 807 | 0.1+ | 0.2− | 2004 12 20 | 621 | 0.2+  | 0.4+  | 2007 11 02 | 691 | 0.3− | 0.1− |
| 2000 08 01 | 807 | 0.0  | 0.2− | 2004 12 21 | 621 | 0.6−  | 0.2+  | 2007 11 02 | 691 | 0.1− | 0.0  |
| 2002 02 07 | 704 | 1.1− | 0.1− | 2004 12 21 | 621 | 0.5−  | 0.2−  | 2007 11 14 | 691 | 0.3− | 0.0  |
| 2002 02 07 | 704 | 0.4− | 1.3− | 2004 12 21 | 621 | (1.0− | 1.7−) | 2007 11 14 | 691 | 0.3− | 0.1− |
| 2002 02 07 | 704 | 0.0  | 0.3+ | 2005 01 06 | 704 | 0.5+  | 0.8+  | 2007 11 14 | 691 | 0.3− | 0.0  |
| 2002 02 07 | 704 | 0.1+ | 0.3+ | 2005 01 06 | 704 | 0.8+  | 0.8+  | 2007 12 05 | 704 | 0.4+ | 0.2− |
| 2002 02 10 | 704 | 0.4+ | 0.6+ | 2005 01 06 | 704 | 0.0   | 0.4+  | 2007 12 05 | 704 | 0.8+ | 0.0  |
| 2002 02 10 | 704 | 0.0  | 0.4+ | 2005 01 11 | 704 | 1.2+  | 0.5+  | 2007 12 05 | 704 | 0.8+ | 0.0  |
| 2002 02 10 | 704 | 0.2− | 0.1+ | 2005 01 11 | 704 | 0.8+  | 0.1+  | 2007 12 05 | 704 | 1.2+ | 0.1− |
| 2002 02 10 | 704 | 0.7+ | 1.3+ | 2005 01 11 | 704 | 0.1+  | 0.2−  | 2007 12 05 | 704 | 1.0+ | 0.0  |
| 2002 02 10 | 704 | 0.6+ | 0.5+ | 2005 01 11 | 704 | (1.7+ | 0.5+) | 2007 12 05 | G96 | 0.2+ | 0.2− |
| 2002 02 12 | 704 | 0.4− | 1.5− | 2005 01 15 | 704 | 0.5+  | 1.4+  | 2007 12 05 | G96 | 0.0  | 0.3− |
| 2002 02 12 | 704 | 0.3+ | 1.4− | 2005 01 15 | 704 | 0.4+  | 0.2+  | 2007 12 05 | G96 | 0.1− | 0.4− |
| 2002 02 12 | 704 | 0.3+ | 1.3− | 2005 01 15 | 704 | (0.3+ | 2.0+) | 2007 12 05 | G96 | 0.4+ | 0.4− |
| 2002 02 12 | 704 | 0.9− | 1.2− | 2005 01 15 | 704 | 0.5+  | 0.9+  | 2007 12 15 | G96 | 0.4+ | 0.2− |
| 2002 02 12 | 704 | 0.5− | 0.9− | 2005 01 15 | 704 | 0.6−  | 1.0+  | 2007 12 15 | G96 | 0.3+ | 0.4− |
| 2004 12 12 | 691 | 0.0  | 0.0  | 2005 03 12 | G96 | 0.6−  | 0.5−  | 2007 12 15 | G96 | 0.6+ | 0.3− |
| 2004 12 12 | 691 | 0.1− | 0.1+ | 2005 03 12 | G96 | 0.4−  | 0.4+  | 2007 12 15 | G96 | 0.3+ | 0.4− |
| 2004 12 12 | 691 | 0.4− | 0.1+ | 2005 03 12 | G96 | 0.2−  | 0.3−  |            |     |      |      |

(172084)\* 2002 CR<sub>88</sub> = 1997 HU<sub>10</sub>

Discovered 2002 Feb. 7 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.  
Id. G. V. Williams (*MPO* 25654)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 288.80636  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.16910379 | $\omega$ 232.16077 | −0.79314056   | +0.60903286 |
| <i>a</i> | 3.2386734  | $\Omega$ 345.35822 | −0.55543706   | −0.72511421 |
| <i>e</i> | 0.0871941  | <i>i</i> 0.60068   | −0.24983537   | −0.32138506 |
| <i>P</i> | 5.83       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 04 30 | 704 | 1.2+  | 0.7−  | 2002 02 14 | 735 | 0.0   | 0.6+  | 2005 11 26 | G96 | 0.2+ | 0.2+ |
| 1997 04 30 | 704 | 1.0+  | 0.2+  | 2002 02 14 | 735 | (0.2− | 1.6+) | 2005 11 26 | G96 | 0.1+ | 0.5+ |
| 1997 04 30 | 704 | 1.3−  | 1.4+  | 2002 02 14 | 735 | 0.8+  | 0.5−  | 2005 11 26 | G96 | 0.7+ | 0.5− |
| 1997 04 30 | 704 | 0.8−  | 1.0+  | 2002 02 17 | 735 | 0.2−  | 0.4+  | 2005 11 26 | G96 | 0.3+ | 0.2+ |
| 1997 04 30 | 704 | (2.9− | 0.4−) | 2002 02 17 | 735 | 0.5+  | 0.1+  | 2006 11 25 | 691 | 0.2− | 0.4+ |
| 1997 05 01 | 704 | (0.3+ | 2.7+) | 2002 02 17 | 735 | 1.0−  | 0.4+  | 2006 11 25 | 691 | 0.4+ | 0.5+ |
| 1997 05 01 | 704 | 0.3+  | 0.5+  | 2002 02 20 | 704 | 0.6+  | 0.6+  | 2006 11 25 | 691 | 0.1+ | 0.4− |
| 1997 05 01 | 704 | 0.1−  | 0.1−  | 2002 02 20 | 704 | 0.8+  | 0.4+  | 2006 12 13 | 691 | 0.1+ | 0.1+ |
| 1997 05 01 | 704 | 1.0+  | 0.0   | 2002 02 20 | 704 | 0.3−  | 0.2−  | 2006 12 13 | 691 | 0.3+ | 0.0  |
| 2002 01 14 | 691 | 0.0   | 0.0   | 2002 02 20 | 704 | 0.2−  | 0.9+  | 2006 12 13 | 691 | 0.1+ | 0.0  |
| 2002 01 14 | 691 | 0.2−  | 0.1+  | 2002 02 20 | 704 | 0.3+  | 0.4+  | 2006 12 25 | 691 | 0.0  | 0.1− |
| 2002 01 14 | 691 | 0.3+  | 0.1+  | 2002 03 05 | 691 | 0.3−  | 0.1+  | 2006 12 25 | 691 | 0.2− | 0.1− |
| 2002 02 07 | 644 | 0.4−  | 0.2+  | 2002 03 05 | 691 | 0.4−  | 0.1+  | 2006 12 25 | 691 | 0.2− | 0.1− |
| 2002 02 07 | 644 | 0.2−  | 0.2+  | 2002 03 05 | 691 | 0.5−  | 0.1+  | 2006 12 25 | 691 | 0.3− | 0.6− |
| 2002 02 07 | 291 | 0.7−  | 0.7−  | 2002 03 14 | 704 | 0.3+  | 0.3+  | 2006 12 25 | 691 | 0.1− | 0.1− |
| 2002 02 07 | 704 | 0.4−  | 0.0   | 2002 03 14 | 704 | 1.1+  | 0.1−  | 2006 12 25 | 691 | 0.1+ | 0.0  |
| 2002 02 07 | 704 | 0.1−  | 0.4−  | 2002 03 14 | 704 | 0.3+  | 0.1+  | 2007 01 24 | G96 | 0.3− | 0.6+ |
| 2002 02 07 | 291 | 0.9−  | 0.8−  | 2002 03 14 | 704 | 0.1−  | 0.1+  | 2007 01 24 | G96 | 0.2+ | 0.3+ |
| 2002 02 07 | 704 | 0.5+  | 0.3−  | 2005 09 30 | 691 | 0.7−  | 0.0   | 2007 01 24 | G96 | 0.6+ | 0.3− |
| 2002 02 07 | 291 | 0.7−  | 0.9−  | 2005 09 30 | 691 | 0.6−  | 0.3−  | 2007 01 24 | G96 | 0.4+ | 0.1− |
| 2002 02 07 | 691 | 0.5+  | 0.3+  | 2005 09 30 | 691 | 0.3−  | 0.9−  | 2007 02 23 | G96 | 0.3− | 0.2− |
| 2002 02 07 | 644 | 0.4−  | 0.1+  | 2005 10 07 | 691 | 0.0   | 0.0   | 2007 02 23 | G96 | 0.2− | 0.3− |
| 2002 02 07 | 691 | 0.7+  | 0.6+  | 2005 10 07 | 691 | 0.1−  | 0.2+  | 2007 02 23 | G96 | 0.2+ | 0.3− |
| 2002 02 07 | 691 | 0.6+  | 0.5+  | 2005 10 07 | 691 | 0.1+  | 0.2+  | 2007 02 23 | G96 | 0.2+ | 0.4− |
| 2002 02 10 | 704 | 0.9+  | 0.5−  | 2005 10 26 | 691 | 0.3+  | 0.3+  | 2007 11 13 | G96 | 0.5− | 0.3− |
| 2002 02 10 | 704 | 0.1−  | 0.3−  | 2005 10 26 | 691 | 0.3+  | 0.1+  | 2007 11 13 | G96 | 0.3+ | 0.2− |
| 2002 02 10 | 704 | 0.0   | 0.5−  | 2005 10 26 | 691 | 0.2+  | 0.0   | 2007 11 13 | G96 | 0.1+ | 0.2− |
| 2002 02 10 | 704 | 1.2+  | 0.8+  | 2005 10 27 | G96 | 0.0   | 0.3+  | 2007 11 13 | G96 | 0.4+ | 0.1− |
| 2002 02 10 | 704 | 0.3+  | 0.8+  | 2005 10 27 | G96 | 0.1+  | 0.1−  | 2007 12 14 | G96 | 0.4− | 0.3− |
| 2002 02 12 | 704 | 0.6+  | 1.0+  | 2005 10 27 | G96 | 0.0   | 0.1+  | 2007 12 14 | G96 | 0.0  | 0.1+ |
| 2002 02 12 | 704 | (2.1+ | 1.1+) | 2005 10 27 | G96 | 0.1+  | 0.1+  | 2007 12 14 | G96 | 0.1+ | 0.6− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 12 | 704 | 0.8+  | 0.3+  | 2005 10 30 | 291 | 0.0  | 0.4+ | 2007 12 14 | G96 | 0.2− | 0.6+ |
| 2002 02 12 | 704 | (2.3+ | 0.7+) | 2005 10 30 | 291 | 0.2− | 0.5+ |            |     |      |      |
| 2002 02 12 | 704 | 0.2−  | 0.5+  | 2005 10 30 | 291 | 0.1+ | 0.4+ |            |     |      |      |

(172085)\* 2002 CV<sub>97</sub>

Discovered 2002 Feb. 7 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 115.62440  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29118705 | $\omega$ 309.07152 | +0.54127436   | +0.84074031 |
| <i>a</i> | 2.2543500  | $\Omega$ 353.65621 | −0.72939142   | +0.46157960 |
| <i>e</i> | 0.2163627  | <i>i</i> 6.93099   | −0.41834222   | +0.28301943 |
| <i>P</i> | 3.38       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 19 | 704 | 0.5+  | 1.2−  | 2003 08 25 | 704 | 1.2+  | 0.7+  | 2003 10 16 | 644 | 0.3−  | 0.3−  |
| 2000 11 19 | 704 | 0.8+  | 0.2+  | 2003 08 31 | 291 | 0.2−  | 0.2−  | 2003 10 16 | 644 | 0.1−  | 0.1−  |
| 2000 11 19 | 704 | 0.3−  | 0.7−  | 2003 08 31 | 291 | 0.2−  | 0.2−  | 2003 10 16 | 644 | 0.0   | 0.1−  |
| 2000 11 19 | 704 | 0.3−  | 0.4−  | 2003 08 31 | 291 | 0.3−  | 0.2−  | 2003 10 20 | 704 | 0.6−  | 0.6−  |
| 2002 02 07 | 704 | 0.3+  | 0.6+  | 2003 09 03 | 704 | 0.1−  | 0.1+  | 2003 10 20 | 704 | 0.5−  | 0.6+  |
| 2002 02 07 | 704 | 0.0   | 0.5+  | 2003 09 03 | 704 | 0.2+  | 0.8+  | 2003 10 20 | 704 | 0.0   | 0.8+  |
| 2002 02 07 | 704 | 0.5+  | 0.6+  | 2003 09 03 | 704 | 0.8−  | 0.4+  | 2003 10 20 | 704 | 0.6+  | 1.1+  |
| 2002 02 10 | 704 | 0.1+  | 1.0+  | 2003 09 08 | 699 | 1.1−  | 0.7−  | 2003 10 20 | 704 | 0.1+  | 0.5+  |
| 2002 02 10 | 704 | 0.6+  | 1.1+  | 2003 09 08 | 699 | 0.0   | 0.1−  | 2003 10 25 | 704 | 0.2+  | 0.1−  |
| 2002 02 10 | 704 | 0.4+  | 1.1+  | 2003 09 08 | 699 | 0.6−  | 0.2−  | 2003 10 25 | 704 | 0.1−  | 0.1+  |
| 2002 02 10 | 704 | (0.7+ | 1.5+) | 2003 09 08 | 699 | 0.3+  | 1.4+  | 2003 10 25 | 704 | 0.1+  | 0.3+  |
| 2002 02 12 | 704 | (0.8− | 2.6+) | 2003 09 16 | 699 | 1.4−  | 0.1−  | 2003 10 25 | 704 | 0.1−  | 0.3−  |
| 2002 02 12 | 704 | (0.5− | 2.2+) | 2003 09 16 | 699 | 0.9−  | 0.4−  | 2003 10 25 | 704 | 0.2+  | 0.3−  |
| 2002 02 12 | 704 | (0.6− | 2.9+) | 2003 09 16 | 699 | 0.1−  | 0.3+  | 2003 10 30 | 704 | 0.1+  | 0.2+  |
| 2002 02 12 | 704 | (0.1+ | 2.7+) | 2003 09 16 | 699 | 0.1−  | 0.2+  | 2003 10 30 | 704 | 1.1+  | 0.5+  |
| 2002 02 20 | 704 | 0.2+  | 0.2+  | 2003 09 18 | 691 | 0.2+  | 0.2+  | 2003 10 30 | 704 | 0.3−  | 1.3+  |
| 2002 02 20 | 704 | 0.5+  | 0.7+  | 2003 09 18 | 691 | 0.2+  | 0.1+  | 2003 10 30 | 704 | 0.8−  | 0.0   |
| 2002 02 20 | 704 | 0.1+  | 0.2−  | 2003 09 18 | 691 | 0.2+  | 0.1+  | 2003 11 20 | 704 | 0.4−  | 0.2+  |
| 2002 02 20 | 704 | 0.3+  | 0.4+  | 2003 09 19 | 704 | 0.2−  | 0.1+  | 2003 11 20 | 704 | 0.7+  | 0.8−  |
| 2002 02 20 | 704 | 0.1−  | 1.4+  | 2003 09 19 | 704 | 0.0   | 0.2+  | 2003 11 20 | 704 | 0.4−  | 0.6+  |
| 2002 02 22 | 644 | 0.6+  | 1.2+  | 2003 09 19 | 704 | 0.4+  | 0.4+  | 2003 11 20 | 704 | 0.1−  | 0.3+  |
| 2002 02 22 | 644 | 0.8+  | 1.3+  | 2003 09 19 | 704 | 0.3+  | 0.6+  | 2003 11 20 | 704 | 0.3+  | 0.6+  |
| 2002 02 22 | 644 | 0.5+  | 0.7+  | 2003 09 19 | 704 | 0.9−  | 1.1+  | 2003 11 21 | 699 | 0.8−  | 0.7−  |
| 2002 02 24 | 644 | 0.1+  | 0.0   | 2003 09 26 | 704 | 0.1+  | 0.0   | 2003 11 21 | 699 | 0.7−  | 0.3+  |
| 2002 02 24 | 644 | 0.2+  | 0.1+  | 2003 09 26 | 704 | 0.2+  | 0.0   | 2003 11 21 | 699 | 0.6−  | 0.1−  |
| 2002 02 24 | 644 | 0.2+  | 0.0   | 2003 09 26 | 704 | 0.1+  | 0.1−  | 2003 11 21 | 699 | (3.0− | 0.7+) |
| 2002 03 12 | 644 | 0.7+  | 0.3+  | 2003 09 26 | 704 | 0.2+  | 0.0   | 2005 01 16 | 704 | 0.3+  | 0.1−  |
| 2002 03 12 | 644 | 0.4+  | 0.4+  | 2003 09 26 | 704 | 0.1−  | 0.2−  | 2005 01 16 | 704 | 0.1+  | 0.6+  |
| 2002 03 12 | 644 | 0.5+  | 0.3+  | 2003 10 06 | 699 | 0.2+  | 0.1−  | 2005 01 16 | 704 | 0.6+  | 0.1−  |
| 2003 08 01 | 704 | 0.2+  | 0.4+  | 2003 10 06 | 699 | 0.4−  | 0.4+  | 2005 03 01 | 703 | 1.1−  | 0.5−  |
| 2003 08 01 | 704 | 0.2−  | 0.0   | 2003 10 06 | 699 | 0.4−  | 0.1+  | 2005 03 01 | 703 | 1.5−  | 1.2−  |
| 2003 08 01 | 704 | 1.2−  | 0.0   | 2003 10 06 | 699 | 0.1+  | 0.4+  | 2005 03 01 | 703 | 0.4−  | 0.3−  |
| 2003 08 01 | 704 | 0.9+  | 0.1−  | 2003 10 12 | 699 | 0.7−  | 0.4+  | 2005 03 01 | 703 | 1.2+  | 0.7+  |
| 2003 08 01 | 704 | 0.2−  | 0.5−  | 2003 10 12 | 699 | 0.8−  | 1.2−  | 2007 12 03 | 704 | 0.2−  | 0.8−  |
| 2003 08 22 | 704 | 1.0+  | 0.6+  | 2003 10 12 | 699 | 0.2−  | 0.7−  | 2007 12 03 | 704 | 0.2+  | 0.4−  |
| 2003 08 22 | 704 | 0.0   | 0.4+  | 2003 10 12 | 699 | (1.6+ | 0.4+) | 2007 12 03 | 704 | 0.7−  | 0.5−  |
| 2003 08 22 | 704 | (2.7+ | 2.6+) | 2003 10 15 | 644 | 0.2−  | 0.1−  | 2007 12 03 | 704 | 0.0   | 0.8−  |
| 2003 08 22 | 704 | (2.1+ | 2.8+) | 2003 10 15 | 644 | 0.0   | 0.0   | 2007 12 03 | 704 | 0.2−  | 0.6−  |
| 2003 08 25 | 704 | 0.9+  | 1.0+  | 2003 10 15 | 644 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.7+  | 0.8−  |
| 2003 08 25 | 704 | (0.4+ | 1.6+) | 2003 10 15 | 049 | 0.1+  | 0.3−  | 2007 12 16 | 704 | 0.7+  | 0.4−  |
| 2003 08 25 | 704 | 0.8+  | 0.2+  | 2003 10 15 | 049 | 0.5−  | 0.2+  | 2007 12 16 | 704 | 0.4−  | 0.4+  |
| 2003 08 25 | 704 | 1.1+  | 0.9+  | 2003 10 15 | 049 | 0.3−  | 0.2−  |            |     |       |       |



2007 DEC. 24

M.P.O. 129259

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 147.62689  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28392035 | $\omega$ 221.51109 | -0.07741431   | +0.99645296 |
| <i>a</i> | 2.2926532  | $\Omega$ 44.07877  | -0.90177047   | -0.05586769 |
| <i>e</i> | 0.2242607  | <i>i</i> 2.71843   | -0.42522587   | -0.06293099 |
| <i>P</i> | 3.47       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 02 07 | 704 | 1.4+  | 0.9+  | 2002 03 16 | 704 | 0.1+  | 0.9+  | 2003 10 21 | 699 | 0.5+  | 1.5+  |
| 2002 02 07 | 704 | 0.5+  | 1.2+  | 2002 03 16 | 704 | 0.9-  | 1.2+  | 2003 10 21 | 699 | 0.0   | 0.0   |
| 2002 02 07 | 704 | 0.4+  | 0.4+  | 2002 03 16 | 704 | 0.4-  | 0.6+  | 2003 10 21 | 699 | 0.1+  | 0.1-  |
| 2002 02 07 | 704 | 0.3+  | 0.4+  | 2002 03 22 | 644 | 0.1+  | 0.8+  | 2003 10 23 | 704 | (1.5+ | 0.2+) |
| 2002 02 07 | 704 | 1.1+  | 0.3-  | 2002 03 22 | 644 | 0.1-  | 0.8+  | 2003 10 23 | 704 | 0.3-  | 0.3-  |
| 2002 02 10 | 704 | 0.3+  | 0.1-  | 2002 03 22 | 644 | 0.3+  | 0.9+  | 2003 10 23 | 704 | 0.2-  | 0.8+  |
| 2002 02 10 | 704 | 0.0   | 0.6+  | 2002 03 23 | 691 | 0.2-  | 0.2+  | 2003 10 23 | 704 | 0.6+  | 0.3-  |
| 2002 02 10 | 704 | 0.8+  | 0.4+  | 2002 03 23 | 691 | 0.3-  | 0.1+  | 2003 10 23 | 704 | (0.4- | 1.8+) |
| 2002 02 10 | 704 | 0.2+  | 0.4+  | 2002 03 23 | 691 | 0.1-  | 0.2+  | 2003 10 28 | 704 | 0.5-  | 0.0   |
| 2002 02 10 | 704 | 0.1-  | 0.3+  | 2002 03 23 | 644 | 0.2-  | 0.4-  | 2003 10 28 | 704 | 0.7-  | 0.5+  |
| 2002 02 12 | 704 | 0.2-  | 0.2-  | 2002 03 23 | 644 | 0.3-  | 0.1-  | 2003 10 28 | 704 | 0.1-  | 0.4+  |
| 2002 02 12 | 704 | 0.0   | 0.4-  | 2002 03 23 | 644 | 0.3-  | 0.4-  | 2003 10 28 | 704 | 0.4-  | 0.1-  |
| 2002 02 12 | 704 | 0.6+  | 0.4-  | 2003 09 17 | 644 | 0.4+  | 0.4+  | 2004 12 15 | 691 | 0.1-  | 0.2+  |
| 2002 02 20 | 704 | 0.7+  | 0.6+  | 2003 09 17 | 644 | 0.2+  | 0.5+  | 2004 12 15 | 691 | 0.1-  | 0.0   |
| 2002 02 20 | 704 | 0.6+  | 0.7+  | 2003 09 17 | 644 | 0.4+  | 0.3+  | 2004 12 15 | 691 | 0.1-  | 0.1-  |
| 2002 02 20 | 704 | 0.0   | 0.2+  | 2003 09 20 | 704 | 0.1+  | 0.0   | 2005 01 07 | 704 | 0.2-  | 0.8+  |
| 2002 02 20 | 704 | 0.9+  | 0.7+  | 2003 09 20 | 704 | 0.2+  | 0.8+  | 2005 01 07 | 704 | 0.1-  | 0.8+  |
| 2002 02 20 | 704 | 0.1+  | 0.3-  | 2003 09 20 | 704 | 0.2-  | 0.2+  | 2005 01 07 | 704 | 0.5+  | 0.3+  |
| 2002 02 24 | 644 | 0.1-  | 0.4-  | 2003 09 20 | 704 | 0.7+  | 0.7+  | 2005 01 07 | 704 | 0.5-  | 1.1+  |
| 2002 02 24 | 644 | 0.4-  | 0.4-  | 2003 09 26 | 704 | 0.5+  | 0.9+  | 2006 05 26 | 644 | 0.4+  | 0.7+  |
| 2002 02 24 | 644 | 0.1-  | 0.5-  | 2003 09 26 | 704 | 0.4-  | 1.4+  | 2006 05 26 | 644 | 0.2-  | 1.3+  |
| 2002 03 04 | 106 | (0.2- | 1.6+) | 2003 09 26 | 704 | 0.1+  | 1.3+  | 2006 05 26 | 644 | 0.4-  | 1.0+  |
| 2002 03 04 | 106 | 1.5+  | 0.3-  | 2003 09 26 | 704 | 0.6-  | 0.8+  | 2006 06 30 | 704 | (0.7- | 2.3+) |
| 2002 03 04 | 106 | 0.3+  | 0.5+  | 2003 09 26 | 704 | 1.1-  | 0.1+  | 2006 06 30 | 704 | 0.4-  | 0.8+  |
| 2002 03 09 | 704 | 0.8+  | 0.8+  | 2003 10 01 | 691 | 0.0   | 0.1+  | 2006 06 30 | 704 | (0.5- | 1.5+) |
| 2002 03 09 | 704 | 0.2-  | 0.2+  | 2003 10 01 | 691 | 0.0   | 0.1+  | 2006 06 30 | 704 | 0.1-  | 1.0+  |
| 2002 03 09 | 704 | 0.8-  | 0.4-  | 2003 10 01 | 691 | 0.1+  | 0.0   | 2006 06 30 | 704 | 0.3-  | 0.8+  |
| 2002 03 09 | 704 | 0.3+  | 0.3-  | 2003 10 15 | 644 | 0.2-  | 0.1+  | 2007 09 18 | G96 | 0.2-  | 0.6-  |
| 2002 03 09 | 704 | 0.1+  | 0.4-  | 2003 10 15 | 644 | 0.0   | 0.3+  | 2007 09 18 | G96 | 0.6-  | 0.5-  |
| 2002 03 09 | 106 | 0.4-  | 0.0   | 2003 10 15 | 644 | 0.0   | 0.2+  | 2007 09 18 | G96 | 0.6+  | 0.2-  |
| 2002 03 09 | 106 | (1.8- | 0.5+) | 2003 10 18 | 691 | 0.0   | 0.3+  | 2007 09 18 | G96 | 0.2+  | 0.2-  |
| 2002 03 10 | 106 | 0.3-  | 0.0   | 2003 10 18 | 691 | 0.1+  | 0.1+  | 2007 12 14 | 704 | 0.3-  | 0.8+  |
| 2002 03 14 | 704 | 0.6+  | 0.1-  | 2003 10 18 | 691 | 1.2-  | 0.1-  | 2007 12 14 | 704 | 0.2-  | 0.5-  |
| 2002 03 14 | 704 | 0.2-  | 0.1+  | 2003 10 20 | 704 | 0.2-  | 0.2+  | 2007 12 14 | 704 | 1.2+  | 0.3+  |
| 2002 03 14 | 704 | 0.8+  | 0.4-  | 2003 10 20 | 704 | (1.6- | 0.1-) | 2007 12 14 | 704 | 0.1+  | 0.6-  |
| 2002 03 14 | 704 | 0.2+  | 0.3+  | 2003 10 20 | 704 | 0.8+  | 0.0   | 2007 12 15 | G96 | 1.2+  | 1.2-  |
| 2002 03 14 | 704 | 0.1-  | 0.2+  | 2003 10 20 | 704 | 0.6-  | 0.1-  | 2007 12 15 | G96 | 0.6+  | 0.5-  |
| 2002 03 16 | 704 | 0.3-  | 0.2-  | 2003 10 20 | 704 | 0.5-  | 1.1-  | 2007 12 15 | G96 | 0.3-  | 0.0   |
| 2002 03 16 | 704 | 0.4-  | 0.3+  | 2003 10 21 | 699 | 0.3+  | 0.1+  | 2007 12 15 | G96 | 0.1-  | 0.4-  |

(172087)\* 2002 CS<sub>170</sub>

Discovered 2002 Feb. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 150.08565  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27789039 | $\omega$ 187.85903 | -0.48499577   | +0.87317276 |
| <i>a</i> | 2.3257000  | $\Omega$ 53.14194  | -0.79902299   | -0.41992418 |
| <i>e</i> | 0.1250507  | <i>i</i> 3.47232   | -0.35544531   | -0.24745304 |
| <i>P</i> | 3.55       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 01 | 691 | 0.0  | 0.4- | 2003 09 01 | 704 | 0.7- | 1.4+ | 2007 10 30 | G96 | 0.4- | 0.0  |
| 2000 11 01 | 691 | 0.1+ | 0.1- | 2003 09 18 | 699 | 0.5- | 1.1+ | 2007 10 30 | 703 | 0.0  | 0.4- |
| 2000 11 01 | 691 | 0.3+ | 0.3- | 2003 09 18 | 699 | 0.5- | 1.3- | 2007 10 30 | G96 | 0.1+ | 0.0  |
| 2002 02 08 | 704 | 0.3- | 0.6+ | 2003 09 18 | 699 | 0.6- | 0.5- | 2007 10 30 | G96 | 0.0  | 0.2- |
| 2002 02 08 | 704 | 0.6+ | 0.3+ | 2003 09 18 | 699 | 0.2- | 0.4+ | 2007 11 02 | 291 | 0.1+ | 0.0  |
| 2002 02 08 | 704 | 0.1+ | 0.2+ | 2004 12 19 | 691 | 0.2+ | 0.2- | 2007 11 02 | 291 | 0.0  | 0.1+ |
| 2002 02 08 | 704 | 1.3+ | 1.3+ | 2004 12 19 | 691 | 0.3+ | 0.5- | 2007 11 02 | 291 | 0.1+ | 0.1+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 02 08 | 704 | 0.0  | 1.0+ | 2004 12 19 | 691 | 0.1-  | 0.3+  | 2007 11 02 | G96 | 0.0  | 0.2- |
| 2002 02 09 | 049 | 0.2- | 0.2+ | 2006 05 27 | 704 | 0.4+  | 1.2-  | 2007 11 02 | G96 | 0.2- | 0.2+ |
| 2002 02 09 | 049 | 0.3+ | 0.1- | 2006 05 27 | 704 | 0.7-  | 0.3-  | 2007 11 02 | G96 | 0.2+ | 0.1- |
| 2002 02 09 | 049 | 0.3- | 0.1+ | 2006 05 27 | 704 | 0.3+  | 0.4+  | 2007 11 02 | G96 | 0.1+ | 0.1- |
| 2002 02 12 | 704 | 0.8- | 0.4+ | 2006 05 27 | 704 | (0.9- | 1.8+) | 2007 11 02 | 291 | 0.2- | 0.0  |
| 2002 02 12 | 704 | 0.2- | 0.4- | 2006 05 27 | 704 | 0.4+  | 0.9+  | 2007 11 02 | 291 | 0.2- | 0.1- |
| 2002 02 12 | 704 | 0.5- | 0.3+ | 2007 10 06 | 691 | 0.3-  | 0.1+  | 2007 11 02 | 291 | 0.3- | 0.0  |
| 2002 02 12 | 704 | 1.4- | 0.4- | 2007 10 06 | 691 | 0.3-  | 0.0   | 2007 11 02 | 291 | 0.6+ | 0.1+ |
| 2002 03 11 | 644 | 0.7+ | 0.2+ | 2007 10 06 | 691 | 0.0   | 0.1+  | 2007 11 02 | 291 | 0.5+ | 0.0  |
| 2002 03 11 | 644 | 0.1+ | 0.6+ | 2007 10 07 | G96 | (3.0+ | 1.9-) | 2007 11 02 | 291 | 0.6+ | 0.2+ |
| 2002 03 11 | 644 | 0.1+ | 0.0  | 2007 10 07 | G96 | 0.4+  | 0.3-  | 2007 11 05 | 704 | 1.1+ | 1.2+ |
| 2002 03 12 | 644 | 0.5+ | 1.0+ | 2007 10 07 | G96 | 0.4+  | 0.4-  | 2007 11 05 | 704 | 0.4+ | 0.8+ |
| 2002 03 12 | 644 | 0.6+ | 0.8+ | 2007 10 10 | 691 | 0.2-  | 0.1+  | 2007 11 05 | 704 | 0.3+ | 0.6+ |
| 2002 03 12 | 644 | 0.8+ | 0.9+ | 2007 10 10 | 691 | 0.4-  | 0.1-  | 2007 11 05 | 704 | 0.8- | 0.7+ |
| 2002 03 22 | 644 | 0.3+ | 0.4+ | 2007 10 10 | 691 | 0.1-  | 0.0   | 2007 11 07 | 703 | 0.3+ | 0.3+ |
| 2002 03 22 | 644 | 0.3+ | 0.5+ | 2007 10 15 | 703 | 0.7-  | 1.2+  | 2007 11 07 | 703 | 0.3- | 0.5- |
| 2002 03 22 | 644 | 0.5+ | 1.1+ | 2007 10 15 | 703 | 0.4-  | 1.0+  | 2007 11 07 | 703 | 0.3- | 1.0+ |
| 2002 04 04 | 608 | 0.1+ | 1.0- | 2007 10 15 | 703 | 0.8-  | 0.4-  | 2007 11 07 | 703 | 1.4- | 0.6+ |
| 2002 04 04 | 608 | 0.1- | 0.0  | 2007 10 15 | 703 | 1.0-  | 0.5+  | 2007 12 05 | G96 | 0.4+ | 0.5- |
| 2002 04 04 | 608 | 0.5- | 0.7- | 2007 10 30 | 703 | 0.1+  | 0.3+  | 2007 12 05 | G96 | 0.1- | 0.7- |
| 2003 09 01 | 704 | 0.0  | 1.1+ | 2007 10 30 | 703 | 0.5+  | 0.4-  | 2007 12 05 | G96 | 0.1- | 0.5- |
| 2003 09 01 | 704 | 0.1+ | 0.9+ | 2007 10 30 | G96 | 0.4-  | 0.1-  | 2007 12 05 | G96 | 0.1- | 0.7- |
| 2003 09 01 | 704 | 0.2+ | 1.1+ | 2007 10 30 | 703 | 1.0-  | 0.1+  |            |     |      |      |

(172088)\* 2002 CB<sub>211</sub>

Discovered 2002 Feb. 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 322.47413  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.30575090 | $\omega$ 91.77994 | -0.14594504   | -0.98927665 |
| <i>a</i> | 2.1821816  | $\Omega$ 6.62005  | +0.88711307   | -0.13339049 |
| <i>e</i> | 0.0860499  | <i>i</i> 2.80222  | +0.43787036   | -0.05948695 |
| <i>P</i> | 3.22       | <i>H</i> 17.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 14 | 691 | 0.8-  | 0.3-  | 2002 03 16 | 704 | 0.1- | 0.2- | 2007 10 24 | G96 | 0.1- | 0.3+ |
| 1999 04 14 | 691 | 0.4+  | 0.0   | 2002 03 16 | 704 | 0.1- | 0.2+ | 2007 10 24 | G96 | 0.3+ | 0.1+ |
| 1999 04 14 | 691 | 0.0   | 0.1+  | 2002 03 16 | 704 | 0.5+ | 0.6- | 2007 10 24 | G96 | 0.2+ | 0.2- |
| 2000 08 27 | 807 | 0.1+  | 0.7+  | 2002 03 16 | 704 | 0.1- | 0.1+ | 2007 10 24 | G96 | 0.6+ | 0.1+ |
| 2000 08 27 | 807 | 0.3-  | 0.6+  | 2002 03 20 | 291 | 0.1+ | 0.2- | 2007 11 01 | 691 | 0.2- | 0.3+ |
| 2002 02 07 | 695 | 0.5-  | 0.1-  | 2002 03 20 | 291 | 0.2- | 0.1- | 2007 11 01 | 691 | 0.7- | 0.0  |
| 2002 02 07 | 695 | 0.3-  | 0.1-  | 2002 03 20 | 291 | 0.1- | 0.2- | 2007 11 01 | 691 | 0.1- | 0.2- |
| 2002 02 10 | 704 | 0.6-  | 0.9+  | 2005 01 07 | 704 | 0.2+ | 0.2+ | 2007 11 17 | 691 | 0.2- | 0.3+ |
| 2002 02 10 | 704 | 0.0   | 0.7+  | 2005 01 07 | 704 | 0.7- | 0.9- | 2007 11 17 | 691 | 0.1- | 0.3+ |
| 2002 02 10 | 704 | 0.9+  | 0.8+  | 2005 01 07 | 704 | 0.3+ | 0.3+ | 2007 11 17 | 691 | 0.1- | 0.0  |
| 2002 02 10 | 704 | 0.1+  | 0.8+  | 2005 01 07 | 704 | 0.9- | 0.9- | 2007 11 18 | 704 | 1.2+ | 1.3- |
| 2002 02 12 | 704 | (0.6+ | 2.9+) | 2005 01 07 | 704 | 0.6+ | 0.1- | 2007 11 18 | 704 | 0.4- | 0.4+ |
| 2002 02 12 | 704 | (0.4+ | 2.3+) | 2005 01 07 | 704 | 0.0  | 0.3- | 2007 11 18 | 704 | 0.3+ | 0.8- |
| 2002 02 12 | 704 | (0.7+ | 3.2+) | 2005 01 07 | 704 | 0.6+ | 0.4- | 2007 11 18 | 704 | 0.2- | 0.6- |
| 2002 02 12 | 704 | (0.8+ | 3.2+) | 2005 01 07 | 704 | 0.0  | 0.4- | 2007 11 18 | 704 | 0.4- | 0.1- |
| 2002 02 20 | 704 | 0.6+  | 0.0   | 2005 01 07 | 704 | 0.2- | 0.1+ | 2007 12 04 | 699 | 1.1- |      |

2002 03 14 704 0.2+ 0.9- 2005 02 04 G96 0.4- 0.8- 2007 12 15 704 1.3+ 0.5+  
 2002 03 16 704 1.2+ 0.3- 2005 02 04 G96 0.5- 0.7-

**(172089)\* 2002 CK<sub>223</sub> = 1997 SB<sub>22</sub>**

Discovered 2002 Feb. 11 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. A. Doppler (*MPO* 29875)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.66705  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30430369 | $\omega$ | 193.55468 | -0.44243089   | -0.89515566 |
| <i>a</i> | 2.1890948  | $\Omega$ | 282.72707 | +0.82790537   | -0.38440634 |
| <i>e</i> | 0.0478184  | <i>i</i> | 3.19267   | +0.34471379   | -0.22567257 |
| <i>P</i> | 3.24       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1997 09 27 691 0.1+ 0.0    | 2002 02 20 704 0.9+ 0.9- | 2007 10 24 G96 0.3+ 0.2+   |
| 1997 09 27 691 0.5+ 0.6-   | 2002 02 20 704 1.3+ 0.2- | 2007 10 24 G96 0.5+ 0.4-   |
| 1997 09 27 691 0.4+ 0.3-   | 2002 03 12 645 0.1- 0.1- | 2007 10 24 G96 0.8+ 0.1-   |
| 1997 09 30 691 1.0+ 0.1-   | 2002 03 12 645 0.1- 0.1- | 2007 10 24 G96 0.0 1.1-    |
| 1997 09 30 691 0.7- 0.2+   | 2002 03 13 704 0.0 0.6+  | 2007 11 02 691 0.1+ 0.1+   |
| 1997 09 30 691 0.2+ 0.6-   | 2002 03 13 704 0.8- 0.7- | 2007 11 02 691 0.3+ 0.1-   |
| 1997 10 04 691 0.3+ 0.7-   | 2002 03 13 704 0.5- 0.8+ | 2007 11 02 691 0.2+ 0.2+   |
| 1997 10 04 691 0.3+ 0.4-   | 2002 03 13 704 0.2- 0.5+ | 2007 11 02 691 0.1+ 0.2-   |
| 1997 10 04 691 0.4+ 0.0    | 2002 03 15 704 0.5+ 0.3+ | 2007 11 02 691 0.4+ 0.1+   |
| 2000 09 07 691 1.0- 0.4+   | 2002 03 15 704 0.1- 0.0  | 2007 11 02 691 1.0- 0.4-   |
| 2000 09 07 691 1.2- 0.4+   | 2002 03 15 704 1.0+ 0.7+ | 2007 11 09 D29 0.1- 1.1-   |
| 2000 09 07 691 1.1- 0.5+   | 2002 03 15 704 0.1- 0.7+ | 2007 11 09 D29 0.3- 0.3-   |
| 2002 02 11 704 0.8+ 0.1+   | 2003 08 31 691 0.4+ 0.8+ | 2007 11 09 D29 0.2+ 0.2-   |
| 2002 02 11 704 0.1+ 0.6+   | 2003 08 31 691 0.4+ 0.3+ | 2007 11 09 D29 0.9+ 0.0    |
| 2002 02 11 704 0.1- 0.6+   | 2003 08 31 691 0.3+ 0.6+ | 2007 11 18 704 (1.6+ 1.0+) |
| 2002 02 11 704 0.2- 0.4+   | 2005 01 13 704 0.2- 0.7+ | 2007 11 18 704 (0.1+ 1.5+) |
| 2002 02 12 704 (2.2- 0.8+) | 2005 01 13 704 0.3- 0.6+ | 2007 11 18 704 0.2+ 1.1+   |
| 2002 02 12 704 0.8- 0.2-   | 2005 01 13 704 0.7+ 0.5+ | 2007 11 18 704 0.1+ 1.4+   |
| 2002 02 12 704 1.5- 0.7+   | 2005 01 13 704 0.4- 0.3+ | 2007 11 18 704 0.3- 1.4+   |
| 2002 02 13 645 0.0 0.1-    | 2005 01 13 704 0.3- 0.3- | 2007 11 30 A77 0.2+ 1.3+   |
| 2002 02 13 645 0.0 0.1-    | 2005 01 15 704 0.0 0.2+  | 2007 11 30 A77 0.1+ 1.0+   |
| 2002 02 16 644 0.3+ 1.4+   | 2005 01 15 704 0.4- 0.4+ | 2007 11 30 A77 0.9- 0.1-   |
| 2002 02 16 644 0.8+ 1.1+   | 2005 01 15 704 0.0 0.6+  | 2007 12 16 704 0.7- 1.6+   |
| 2002 02 16 644 0.5+ 0.8+   | 2005 01 15 704 0.0 0.4+  | 2007 12 16 704 1.5- 0.1+   |
| 2002 02 20 704 0.4+ 0.5+   | 2005 01 15 704 0.0 0.2-  | 2007 12 16 704 0.4- 0.2-   |
| 2002 02 20 704 (1.6+ 0.4-) | 2005 01 15 704 0.2- 0.8+ | 2007 12 16 704 0.2+ 1.1+   |
| 2002 02 20 704 0.7+ 0.3+   | 2005 01 15 704 1.3+ 1.1+ |                            |

**(172090)\* 2002 CL<sub>257</sub> = 2006 WS<sub>111</sub>**

Discovered 2002 Feb. 6 by M. W. Buie at Kitt Peak.

Id. G. V. Williams (*MPO* 108234)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 292.12537  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17110662 | $\omega$ | 59.21993  | -0.88198799   | +0.47099409 |
| <i>a</i> | 3.2133510  | $\Omega$ | 148.87049 | -0.44237400   | -0.81558120 |
| <i>e</i> | 0.1117024  | <i>i</i> | 1.79333   | -0.16248821   | -0.33614262 |
| <i>P</i> | 5.76       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 02 06 695 0.4- 0.0  | 2005 10 01 G96 0.5- 0.3+ | 2006 11 27 691 0.0 0.3+  |
| 2002 02 06 695 0.3- 0.0  | 2005 10 01 G96 0.1- 0.3+ | 2006 11 27 691 0.0 0.4+  |
| 2002 02 08 691 0.2+ 0.3+ | 2005 10 01 G96 0.2+ 0.2+ | 2006 11 27 691 0.3- 0.2+ |
| 2002 02 08 691 0.3+ 0.4+ | 2005 10 01 G96 0.0 0.5+  | 2006 12 14 G96 0.0 0.1-  |
| 2002 02 08 691 0.4+ 0.3+ | 2005 10 10 691 0.8- 0.9+ | 2006 12 14 G96 0.0 0.2+  |
| 2002 02 11 704 1.2- 0.2+ | 2005 10 10 691 0.2- 0.3+ | 2006 12 14 G96 0.5- 1.3- |
| 2002 02 11 704 0.4- 0.5+ | 2005 10 10 691 0.3- 0.1+ | 2006 12 14 G96 0.1+ 0.1- |
| 2002 02 11 704 0.4+ 0.3+ | 2005 10 28 G96 0.0 0.2-  | 2007 11 11 G96 0.6- 0.9- |
| 2002 02 11 704 0.1- 0.7+ | 2005 10 28 G96 0.1- 0.0  | 2007 11 11 G96 0.1- 0.0  |
| 2003 05 01 691 0.3+ 1.3+ | 2005 10 28 G96 0.3+ 0.2+ | 2007 11 11 G96 0.1- 0.5- |
| 2003 05 01 691 0.3+ 1.4+ | 2005 10 28 G96 0.0 0.5+  | 2007 11 11 G96 0.6- 0.7- |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 05 01 691 0.4+ 0.9+ | 2006 11 11 691 0.1+ 0.4+ | 2007 12 05 G96 0.5+ 0.0  |
| 2003 05 24 691 0.2- 0.0  | 2006 11 11 691 0.0 0.1-  | 2007 12 05 G96 0.1+ 0.2- |
| 2003 05 24 691 0.2- 0.1- | 2006 11 11 691 0.4- 0.5+ | 2007 12 05 G96 0.6+ 0.2+ |
| 2003 05 24 691 0.1+ 0.0  | 2006 11 19 691 0.1- 0.1- | 2007 12 05 G96 0.3- 0.3- |
| 2003 06 01 807 0.2- 0.3- | 2006 11 19 691 0.2+ 0.7+ | 2007 12 05 G96 0.6- 0.5- |
| 2003 06 01 807 0.1- 0.3- | 2006 11 19 691 0.1- 0.1+ | 2007 12 05 G96 0.1+ 0.1- |
| 2004 08 22 691 0.1+ 0.5+ | 2006 11 23 691 0.4+ 0.2+ | 2007 12 05 G96 0.2- 0.1+ |
| 2004 08 22 691 0.1- 0.7+ | 2006 11 23 691 0.2+ 0.2- | 2007 12 05 G96 0.6- 0.3- |
| 2004 08 22 691 0.2+ 0.0  | 2006 11 23 691 0.2+ 0.3+ |                          |

**(172091)\* 2002 CL<sub>311</sub>**

Discovered 2002 Feb. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 164.18889  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29683498 | $\omega$ | 3.76327   | -0.25048272   | +0.96614012 |
| <i>a</i> | 2.2256626  | $\Omega$ | 251.73850 | -0.88992684   | -0.25495428 |
| <i>e</i> | 0.1126592  | <i>i</i> | 3.73739   | -0.38116746   | -0.03964334 |
| <i>P</i> | 3.32       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1999 04 11 699 0.5+ 0.9+   | 2002 03 13 644 0.4+ 0.4+   | 2003 09 27 704 0.7+ 0.7+   |
| 1999 04 11 699 1.6+ 0.7+   | 2002 03 13 644 0.3+ 0.4+   | 2003 09 27 704 0.6- 1.5+   |
| 1999 04 11 699 0.9- 0.1+   | 2002 03 13 644 0.2+ 0.0    | 2003 09 27 704 0.6- 0.6+   |
| 1999 04 17 704 (1.3+ 2.2+) | 2003 08 20 644 0.4- 0.5+   | 2003 09 30 691 0.2- 0.3+   |
| 1999 04 17 704 0.4+ 1.6+   | 2003 08 20 644 0.6- 0.5+   | 2003 09 30 691 0.1- 0.3+   |
| 1999 04 17 704 0.5- 1.3+   | 2003 08 20 644 0.3- 0.7+   | 2003 09 30 691 0.1- 0.5+   |
| 1999 04 17 704 (0.7+ 2.7+) | 2003 08 22 599 0.2- 0.1+   | 2007 11 09 691 0.1- 0.0    |
| 1999 04 17 704 (6.8- 2.2+) | 2003 08 22 599 0.2- 0.1+   | 2007 11 09 691 0.0 0.1-    |
| 2000 09 24 691 0.1+ 0.3-   | 2003 08 23 599 0.1- 0.1+   | 2007 11 09 691 0.0 0.0     |
| 2000 09 24 691 0.0 0.6-    | 2003 08 24 704 0.3+ 1.0-   | 2007 11 17 691 0.1- 0.0    |
| 2000 09 24 691 0.1- 0.2-   | 2003 08 24 704 0.9+ 0.3-   | 2007 11 17 691 0.4- 0.2-   |
| 2002 02 11 704 0.4+ 0.8+   | 2003 08 24 704 0.1+ 0.6+   | 2007 11 17 691 0.3- 0.1+   |
| 2002 02 11 704 0.6+ 0.6+   | 2003 08 28 644 0.1- 0.5+   | 2007 12 03 703 (0.6+ 1.8+) |
| 2002 02 11 704 0.2+ 0.9+   | 2003 08 28 644 0.0 0.5+    | 2007 12 03 703 0.9+ 0.5+   |
| 2002 02 11 704 0.3+ 1.1+   | 2003 08 28 644 0.3+ 0.4+   | 2007 12 03 703 (1.6+ 0.3-) |
| 2002 02 11 704 0.6+ 1.2+   | 2003 09 02 704 0.2- 0.5-   | 2007 12 03 703 0.3+ 0.5+   |
| 2002 02 16 644 0.2+ 0.7+   | 2003 09 02 704 0.7- 0.9+   | 2007 12 04 G96 0.1+ 0.1-   |
| 2002 02 16 644 0.4+ 0.5+   | 2003 09 02 704 0.6- 0.6+   | 2007 12 04 G96 0.2- 0.1-   |
| 2002 02 16 644 0.2+ 0.5+   | 2003 09 02 704 (1.6+ 0.9-) | 2007 12 04 G96 0.1- 0.1-   |
| 2002 02 20 699 (2.0- 0.1+) | 2003 09 18 691 0.0 0.4+    | 2007 12 04 G96 0.0 0.0     |
| 2002 02 20 699 0.4+ 0.7+   | 2003 09 18 691 0.2- 0.5+   | 2007 12 05 704 0.5- 0.3+   |
| 2002 02 20 699 0.2- 1.1+   | 2003 09 18 691 0.2- 0.4+   | 2007 12 05 704 0.3- 0.9+   |
| 2002 02 20 699 1.3+ 1.4+   | 2003 09 18 644 0.1+ 0.6+   | 2007 12 05 704 1.2+ 1.0+   |
| 2002 03 05 645 0.0 0.0     | 2003 09 18 644 0.1- 0.6+   | 2007 12 05 704 0.1- 0.7+   |
| 2002 03 05 645 0.0 0.0     | 2003 09 18 644 0.2- 0.7+   | 2007 12 15 G96 0.4+ 0.2-   |
| 2002 03 06 644 0.6+ 0.2-   | 2003 09 23 644 0.2- 0.4+   | 2007 12 15 G96 0.4+ 0.5-   |
| 2002 03 06 644 0.1+ 0.1-   | 2003 09 23 644 0.3- 0.4+   | 2007 12 15 G96 0.4+ 0.2-   |
| 2002 03 06 644 0.3+ 0.3-   | 2003 09 23 644 0.2- 0.1+   | 2007 12 15 G96 0.1+ 0.3-   |
| 2002 03 12 645 0.0 0.1+    | 2003 09 27 704 0.6- 1.2+   |                            |
| 2002 03 12 645 0.0 0.1+    | 2003 09 27 704 0.1+ 0.1+   |                            |

**(172092)\* 2002 EH<sub>20</sub> = 1991 GA<sub>14</sub>**

Discovered 2002 Mar. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 29953)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 196.80383  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26713352 | $\omega$ | 150.55796 | -0.98969352   | -0.14204138 |
| <i>a</i> | 2.3877221  | $\Omega$ | 21.29903  | +0.11963581   | -0.88994736 |
| <i>e</i> | 0.1271761  | <i>i</i> | 2.87090   | +0.07870202   | -0.43337968 |
| <i>P</i> | 3.69       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

2007 DEC. 24

M.P.O. 129261

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1991 04 10 809 0.5+ 0.3+   | 2002 03 17 152 (3.3+ 1.1+) | 2002 04 17 704 1.2- 0.7+   |
| 1991 04 10 809 0.2+ 0.9-   | 2002 03 17 152 0.0 0.3+    | 2002 04 17 704 0.9- 0.4+   |
| 1991 04 10 809 0.5+ 1.1-   | 2002 03 17 152 0.7+ 1.0+   | 2003 07 24 644 0.9- 0.6+   |
| 1997 12 29 327 1.8- 0.7-   | 2002 03 18 704 0.3+ 0.3+   | 2003 07 24 644 1.1- 0.7+   |
| 1997 12 29 327 0.9- 0.2-   | 2002 03 18 704 0.6- 0.5-   | 2003 07 24 644 0.0 0.9+    |
| 1997 12 29 327 1.2- 0.0    | 2002 03 18 704 0.2+ 0.1-   | 2004 12 02 703 0.3+ 0.6+   |
| 2000 11 01 704 0.1+ 1.1+   | 2002 03 18 704 0.2- 0.4-   | 2004 12 02 703 0.4+ 0.7+   |
| 2000 11 01 704 0.7- 0.1+   | 2002 03 21 644 0.2+ 0.0    | 2004 12 02 703 0.5+ 0.3+   |
| 2000 11 01 704 1.4- 0.2+   | 2002 03 21 644 0.2+ 0.1+   | 2004 12 02 703 0.1+ 0.9-   |
| 2000 11 01 704 0.6- 0.8+   | 2002 03 21 291 0.1- 0.1+   | 2004 12 07 704 0.6+ 0.5+   |
| 2002 02 24 644 0.3+ 0.6+   | 2002 03 21 291 0.1- 0.1+   | 2004 12 07 704 0.1+ 0.9+   |
| 2002 02 24 644 0.2+ 0.1+   | 2002 03 21 291 0.2- 0.0    | 2004 12 07 704 0.1- 1.0+   |
| 2002 02 24 644 0.3- 0.7+   | 2002 03 21 644 0.1- 0.3-   | 2004 12 07 704 (1.5+ 1.3+) |
| 2002 02 24 644 0.0 0.2+    | 2002 04 02 691 0.6- 0.8+   | 2004 12 07 704 0.3+ 0.6+   |
| 2002 02 24 644 0.3- 0.3+   | 2002 04 02 691 0.2+ 0.1+   | 2004 12 11 704 (2.2- 0.1+) |
| 2002 02 24 644 0.1- 0.4-   | 2002 04 02 691 0.5+ 0.3+   | 2004 12 11 704 0.2- 0.2+   |
| 2002 03 05 699 0.9+ 0.4-   | 2002 04 04 691 0.0 0.5-    | 2004 12 11 704 0.8+ 0.4+   |
| 2002 03 05 699 0.4+ 0.5-   | 2002 04 04 691 0.2- 0.1-   | 2004 12 11 704 0.3+ 0.2+   |
| 2002 03 05 699 0.7+ 0.2+   | 2002 04 04 691 0.4- 0.1-   | 2004 12 14 703 0.1+ 0.9+   |
| 2002 03 05 699 (1.6+ 0.6+) | 2002 04 10 704 0.5+ 0.3+   | 2004 12 14 703 0.4- 0.4-   |
| 2002 03 09 704 0.5+ 0.0    | 2002 04 10 704 0.3+ 0.3+   | 2004 12 14 703 0.6+ 0.2-   |
| 2002 03 09 704 0.5- 0.5+   | 2002 04 10 704 1.0+ 0.9+   | 2004 12 14 703 0.2- 0.6-   |
| 2002 03 09 704 0.0 0.9+    | 2002 04 10 704 0.6+ 1.2+   | 2007 09 13 G96 0.5- 0.7+   |
| 2002 03 09 704 0.5- 0.2+   | 2002 04 10 704 0.7+ 0.5+   | 2007 09 13 G96 0.2- 0.6+   |
| 2002 03 09 704 0.7- 0.7+   | 2002 04 14 644 0.1+ 0.3+   | 2007 09 13 G96 0.2- 0.5+   |
| 2002 03 10 608 0.1+ 0.3-   | 2002 04 14 644 0.2- 0.2+   | 2007 09 13 G96 0.0 0.5+    |
| 2002 03 10 608 0.5- 0.3-   | 2002 04 14 644 0.0 0.2+    | 2007 10 12 G96 0.5- 0.3+   |
| 2002 03 10 608 0.1- 0.1+   | 2002 04 15 644 0.0 0.4+    | 2007 10 12 G96 0.1- 0.4+   |
| 2002 03 11 704 0.0 1.2-    | 2002 04 15 644 0.2+ 0.5+   | 2007 10 12 G96 0.4- 0.4+   |
| 2002 03 11 704 0.6+ 0.2-   | 2002 04 15 644 0.7+ 0.3+   | 2007 10 12 G96 0.0 0.4+    |
| 2002 03 11 704 0.8+ 0.8+   | 2002 04 15 704 0.2+ 0.2-   | 2007 12 06 G96 0.2- 0.0    |
| 2002 03 16 704 1.4+ 1.2-   | 2002 04 15 704 0.5+ 0.1-   | 2007 12 06 G96 0.3+ 0.1+   |
| 2002 03 16 704 0.8+ 0.3-   | 2002 04 15 704 0.1+ 0.4-   | 2007 12 06 G96 0.2- 0.3+   |
| 2002 03 16 704 (1.6+ 0.2-) | 2002 04 17 704 0.4- 0.3-   | 2007 12 06 G96 0.3+ 0.1-   |
| 2002 03 16 704 0.2+ 0.2-   | 2002 04 17 704 0.4- 0.6+   |                            |
| 2002 03 16 704 1.4+ 0.4-   | 2002 04 17 704 0.0 1.0+    |                            |

(172093)\* 2002 EM<sub>28</sub>

Discovered 2002 Mar. 9 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | (2000.0) |           | P           |             | Q        |   |
|-----------|------------|----------|-----------|-------------|-------------|----------|---|
| 169.47738 |            |          |           |             |             |          |   |
| <i>n</i>  | 0.29576829 | $\omega$ | 258.95270 | -0.19597450 | +0.98060898 |          |   |
| <i>a</i>  | 2.2310106  | $\Omega$ | 359.74545 | -0.88378553 | -0.17670087 |          |   |
| <i>e</i>  | 0.1173088  | <i>i</i> | 2.23431   | -0.42487309 | -0.08475160 |          |   |
| <i>P</i>  | 3.33       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1999 05 13 704 0.2+ 1.0-   | 2002 03 12 333 1.4- 0.0    | 2003 09 29 691 0.1+ 0.5+ |
| 1999 05 13 704 (4.0- 0.6+) | 2002 03 12 704 0.6+ 0.1-   | 2003 09 29 645 0.1- 0.0  |
| 1999 05 13 704 1.6- 1.5+   | 2002 03 12 644 0.2+ 0.6+   | 2003 09 29 645 0.0 0.0   |
| 1999 05 13 704 (4.0- 0.8+) | 2002 03 12 644 0.3+ 0.5+   | 2003 10 24 691 0.1- 0.6+ |
| 2002 02 10 704 0.6+ 0.8+   | 2002 03 12 644 0.5+ 0.6+   | 2003 10 24 691 0.4- 0.3+ |
| 2002 02 10 704 (0.5- 1.8+) | 2002 03 14 704 (0.8+ 1.6+) | 2003 10 24 691 0.7- 0.5+ |
| 2002 02 10 704 0.6- 0.3+   | 2002 03 14 704 1.3+ 0.4+   | 2004 12 18 G96 0.2+ 0.1+ |
| 2002 02 10 704 0.5+ 1.5+   | 2002 03 14 704 1.3+ 1.2+   | 2004 12 18 G96 0.1- 0.2- |
| 2002 02 10 704 0.1- 0.7+   | 2002 03 14 704 (1.8+ 1.9+) | 2004 12 18 G96 0.3- 0.0  |
| 2002 02 14 333 0.4- 0.7+   | 2002 03 16 704 1.2+ 1.1+   | 2004 12 18 G96 0.0 0.1-  |
| 2002 02 14 333 1.0+ 0.6+   | 2002 03 16 704 1.0+ 1.3+   | 2004 12 19 G96 0.1+ 0.3- |
| 2002 02 14 333 (2.4+ 0.9+) | 2002 03 16 704 1.3+ 0.2+   | 2004 12 19 G96 0.7- 0.5+ |
| 2002 02 20 704 0.1+ 1.2+   | 2002 03 16 704 0.7+ 0.3+   | 2004 12 19 G96 0.3- 0.7- |
| 2002 02 20 704 (1.0+ 2.7+) | 2003 09 22 699 0.5+ 0.1+   | 2004 12 19 G96 0.2- 0.4- |
| 2002 02 20 704 (0.4+ 1.8+) | 2003 09 22 699 0.0 0.2+    | 2006 08 16 644 0.3- 0.3+ |
| 2002 02 20 704 (0.0 2.2+)  | 2003 09 22 699 1.0+ 1.2+   | 2006 08 16 644 0.0 0.3+  |
| 2002 02 25 644 0.3- 1.0+   | 2003 09 22 699 0.5+ 0.6+   | 2006 08 16 644 0.3- 0.6+ |

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2002 02 25 644 0.2+ 0.6+ | 2003 09 26 704 0.3- 0.8+   | 2006 08 16 644 0.2- 0.5+ |
| 2002 02 25 644 0.1- 0.7+ | 2003 09 26 704 0.7- 0.8+   | 2006 08 16 644 0.2- 0.4+ |
| 2002 03 05 699 0.3+ 0.3+ | 2003 09 26 704 0.7- 0.7+   | 2006 08 16 644 0.1+ 0.8+ |
| 2002 03 05 699 0.2+ 0.9+ | 2003 09 26 704 0.3- 1.3+   | 2006 08 24 644 0.1- 0.5+ |
| 2002 03 05 699 0.3+ 0.3+ | 2003 09 26 645 0.1- 0.1+   | 2006 08 24 644 0.1+ 0.4+ |
| 2002 03 05 699 0.4+ 0.4+ | 2003 09 26 704 0.4- 0.8+   | 2006 08 24 644 0.1- 0.5+ |
| 2002 03 09 704 0.7+ 0.3- | 2003 09 26 645 0.0 0.1+    | 2007 11 14 691 0.0 0.1-  |
| 2002 03 09 704 1.0+ 0.5+ | 2003 09 28 645 0.1- 0.0    | 2007 11 14 691 0.4- 0.4- |
| 2002 03 09 704 0.0 0.0   | 2003 09 28 645 0.0 0.0     | 2007 11 14 691 0.1- 0.0  |
| 2002 03 12 691 0.1+ 0.3+ | 2003 09 29 691 0.0 0.4+    | 2007 12 15 704 0.4- 0.3- |
| 2002 03 12 691 0.1+ 0.4+ | 2003 09 29 704 (0.0 1.7+)  | 2007 12 15 704 0.6+ 0.0  |
| 2002 03 12 691 0.2+ 0.7+ | 2003 09 29 704 0.4+ 0.4+   | 2007 12 15 704 0.4- 0.2- |
| 2002 03 12 333 0.1- 1.1+ | 2003 09 29 691 0.1- 0.5+   | 2007 12 15 704 0.2- 0.2- |
| 2002 03 12 704 1.4+ 0.9+ | 2003 09 29 704 (2.0+ 0.7+) | 2007 12 15 704 0.9+ 1.4- |
| 2002 03 12 704 1.1+ 1.3+ | 2003 09 29 704 0.4- 0.9+   |                          |
| 2002 03 12 333 0.3- 0.3- | 2003 09 29 704 1.1+ 0.7+   |                          |

(172094)\* 2002 EK<sub>69</sub>

Discovered 2002 Mar. 13 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | (2000.0) |           | P           |             | Q        |   |
|-----------|------------|----------|-----------|-------------|-------------|----------|---|
| 200.98756 |            |          |           |             |             |          |   |
| <i>n</i>  | 0.28942678 | $\omega$ | 229.29465 | -0.79005456 | +0.61281990 |          |   |
| <i>a</i>  | 2.2634813  | $\Omega$ | 348.46758 | -0.53500586 | -0.70222689 |          |   |
| <i>e</i>  | 0.0791744  | <i>i</i> | 4.67550   | -0.29930339 | -0.36239367 |          |   |
| <i>P</i>  | 3.41       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2002 03 13 704 0.1- 0.6+   | 2002 04 10 704 0.9+ 1.0- | 2005 02 04 G96 0.4- 0.6-   |
| 2002 03 13 704 0.1- 0.1+   | 2002 04 14 704 0.1- 0.3+ | 2005 02 04 G96 0.6- 0.6-   |
| 2002 03 13 704 0.2+ 0.4-   | 2002 04 14 704 0.5+ 0.6+ | 2007 11 07 704 (0.7+ 1.6+) |
| 2002 03 13 704 0.1+ 0.5+   | 2002 04 14 704 0.2- 0.7+ | 2007 11 07 704 0.2+ 1.4+   |
| 2002 03 13 704 (2.1+ 0.2-) | 2002 04 14 704 0.4- 0.7+ | 2007 11 07 704 1.3- 0.2-   |
| 2002 03 15 704 0.3+ 0.9+   | 2002 04 14 704 0.2- 0.4+ | 2007 11 18 704 0.0 1.5-    |
| 2002 03 15 704 0.5+ 0.6+   | 2003 09 16 691 0.4- 0.7+ | 2007 11 18 704 1.0+ 0.2+   |
| 2002 03 15 704 0.0 0.1+    | 2003 09 16 691 0.2- 0.5+ | 2007 11 18 704 0.4+ 0.1-   |
| 2002 03 15 704 0.4- 0.5+   | 2003 09 16 691 0.3- 0.7+ | 2007 11 19 691 0.0 0.0     |
| 2002 03 15 704 0.3- 0.7+   | 2004 12 21 703 0.6- 1.2+ | 2007 11 19 691 0.0 0.0     |
| 2002 03 18 704 0.1- 0.2+   | 2004 12 21 703 0.2- 0.2+ | 2007 11 20 691 0.1- 0.0    |
| 2002 03 18 704 0.4- 0.1+   | 2004 12 21 703 0.3+ 0.5- | 2007 11 20 691 0.1+ 0.0    |
| 2002 03 18 704 0.6+ 1.3+   | 2004 12 21 703 0.8+ 0.3+ | 2007 11 20 691 0.1- 0.1-   |
| 2002 03 18 704 (1.2- 1.7+) | 2005 01 16 704 0.3- 0.8- | 2007 11 20 691 0.2- 0.1-   |
| 2002 03 18 704 1.4+ 1.2+   | 2005 01 16 704 0.0 0.9-  | 2007 11 20 691 0.1+ 0.2+   |
| 2002 04 04 644 0.0 0.1+    | 2005 01 16 704 0.0 0.3+  | 2007 11 20 691 0.1+ 0.1-   |
| 2002 04 04 644 0.1+ 0.3+   | 2005 02 03 704 0.1+ 0.7+ | 2007 11 20 691 0.2- 0.2+   |
| 2002 04 04 644 1.1+ 0.2+   | 2005 02 03 704 0.5+ 0.1+ | 2007 12 13 704 1.0+ 0.7+   |
| 2002 04 10 704 0.9+ 0.2+   | 2005 02 03 704 0.5- 0.3- | 2007 12 13 704 0.2- 0.9+   |
| 2002 04 10 704 0.1- 0.2+   | 2005 02 03 704 1.0+ 0.1+ | 2007 12 13 704 0.1+ 0.6+   |
| 2002 04 10 704 0.2+ 0.4-   | 2005 02 04 G96 0.6- 0.2- | 2007 12 13 704 0.4- 0.9+   |
| 2002 04 10 704 0.6+ 0.4+   | 2005 02 04 G96 0.2- 0.3- | 2007 12 13 704 0.2- 0.3+   |

(172095)\* 2002 EP<sub>79</sub>

Discovered 2002 Mar. 10 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | (2000.0) |           | P           |             | Q        |   |
|-----------|------------|----------|-----------|-------------|-------------|----------|---|
| 236.11599 |            |          |           |             |             |          |   |
| <i>n</i>  | 0.29602770 | $\omega$ | 263.10141 | -0.94741993 | +0.31184118 |          |   |
| <i>a</i>  | 2.2297071  | $\Omega$ | 295.04819 | -0.25330018 | -0.86790255 |          |   |
| <i>e</i>  | 0.0760879  | <i>i</i> | 4.54360   | -0.19553642 | -0.38665261 |          |   |
| <i>P</i>  | 3.33       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 03 10 608 0.0 0.1-  | 2003 09 17 691 0.1- 0.4+ | 2005 01 16 691 0.1+ 0.3+ |
| 2002 03 10 608 0.0 0.9-  | 2003 09 20 291 0.0 0.5+  | 2005 01 16 691 0.0 0.2+  |
| 2002 03 10 608 0.0 0.2-  | 2003 09 20 291 0.2- 0.5+ | 2005 01 16 691 0.0 0.3+  |
| 2002 03 14 644 0.1- 0.6+ | 2003 09 20 291 0.0 0.4+  | 2005 01 17 704 0.4- 0.8+ |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 03 14 | 644 | 0.1+  | 0.7+  | 2003 10 19 | 645 | 0.0  | 0.0  | 2005 01 17 | 704 | 0.3+  | 0.9-  |
| 2002 03 14 | 644 | 0.4+  | 1.1+  | 2003 10 19 | 645 | 0.0  | 0.1+ | 2005 01 17 | 704 | 1.0+  | 0.2-  |
| 2002 03 20 | 704 | 0.0   | 0.1+  | 2003 10 22 | 645 | 0.1- | 0.0  | 2005 02 02 | 704 | 0.5-  | 1.2+  |
| 2002 03 20 | 704 | 0.0   | 0.7+  | 2003 10 22 | 645 | 0.1- | 0.0  | 2005 02 02 | 704 | 0.3-  | 1.1+  |
| 2002 03 20 | 704 | 0.8+  | 0.8+  | 2003 10 23 | 645 | 0.1- | 0.0  | 2005 02 02 | 704 | 0.4+  | 1.3+  |
| 2002 03 20 | 704 | 1.3+  | 1.1+  | 2003 10 23 | 645 | 0.1- | 0.1+ | 2005 02 09 | 699 | 0.3+  | 0.1-  |
| 2002 04 05 | 644 | 0.3+  | 0.6+  | 2003 11 16 | 645 | 0.0  | 0.1+ | 2005 02 09 | 699 | 0.4+  | 0.1+  |
| 2002 04 05 | 644 | 0.5+  | 0.7+  | 2003 11 16 | 645 | 0.1+ | 0.1+ | 2005 02 09 | 699 | 0.1-  | 0.8+  |
| 2002 04 05 | 644 | 0.3+  | 0.4+  | 2003 11 20 | 645 | 0.1- | 0.0  | 2005 02 09 | 699 | 0.1+  | 0.2+  |
| 2002 04 09 | 704 | 0.2-  | 0.7-  | 2003 11 20 | 645 | 0.1- | 0.0  | 2005 02 09 | 704 | (1.5+ | 0.6-) |
| 2002 04 09 | 704 | 0.2+  | 0.3+  | 2004 12 18 | G96 | 0.1- | 0.3- | 2005 02 09 | 704 | 0.1+  | 0.2+  |
| 2002 04 09 | 704 | 0.1+  | 0.3+  | 2004 12 18 | G96 | 0.6- | 0.4- | 2005 02 09 | 704 | 0.5+  | 0.9-  |
| 2002 04 12 | 704 | 1.1+  | 0.8+  | 2004 12 18 | G96 | 0.0  | 0.2- | 2005 02 09 | 704 | 0.1-  | 0.0   |
| 2002 04 12 | 704 | 0.4+  | 1.2+  | 2004 12 18 | G96 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.4-  | 0.5-  |
| 2002 04 12 | 704 | 0.3+  | 0.9+  | 2004 12 19 | G96 | 0.1- | 0.2- | 2007 11 07 | 691 | 0.2-  | 0.2-  |
| 2002 04 12 | 608 | (2.0- | 0.1+) | 2004 12 19 | G96 | 0.1- | 0.1- | 2007 11 07 | 691 | 0.0   | 0.1-  |
| 2002 04 12 | 608 | (1.8- | 0.2+) | 2004 12 19 | G96 | 0.1- | 0.4- | 2007 12 10 | 704 | 0.2+  | 0.2+  |
| 2002 04 12 | 608 | (2.0- | 0.3+) | 2004 12 19 | G96 | 0.2- | 0.1- | 2007 12 10 | 704 | 0.1+  | 0.1-  |
| 2002 04 30 | 644 | 0.4+  | 0.7+  | 2005 01 15 | 704 | 0.5- | 0.2+ | 2007 12 10 | 704 | 1.1+  | 0.4+  |
| 2002 04 30 | 644 | 0.0   | 0.5+  | 2005 01 15 | 704 | 0.4+ | 0.2- | 2007 12 10 | 704 | 1.2+  | 0.5+  |
| 2002 04 30 | 644 | 0.4+  | 0.6+  | 2005 01 15 | 704 | 0.2- | 0.8+ | 2007 12 15 | 704 | 0.7+  | 0.3-  |
| 2003 09 17 | 691 | 0.1+  | 0.2+  | 2005 01 15 | 704 | 0.5- | 1.0+ | 2007 12 15 | 704 | 0.2+  | 0.4-  |
| 2003 09 17 | 691 | 0.1-  | 0.4+  | 2005 01 15 | 704 | 0.9- | 0.1- | 2007 12 15 | 704 | 0.4+  | 0.2+  |

**(172096)\* 2002 EP<sub>90</sub> = 5033 P-L = 2003 OU<sub>22</sub>**

Discovered 2002 Mar. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 50031), A. Doppler (*MPO* 108241)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27519121 | $\omega$ | 297.02458 | +0.63614076 | +0.77127455 |
| <i>a</i> | 2.3408828  | $\Omega$ | 12.55037  | -0.66829469 | +0.56467785 |
| <i>e</i> | 0.2377717  | <i>i</i> | 5.66749   | -0.38562565 | +0.29372519 |
| <i>P</i> | 3.58       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1960 10 22 | 675 | 0.1+  | 1.2-  | 2003 08 25 | 704 | 0.7+  | 0.4+  | 2003 10 24 | 704 | 0.4-  | 0.2+  |
| 1960 10 25 | 675 | 0.5+  | 0.6+  | 2003 09 04 | 704 | 0.6+  | 0.4+  | 2003 10 24 | 704 | 0.2-  | 0.4+  |
| 1960 10 26 | 675 | 0.4+  | 0.5-  | 2003 09 04 | 704 | 1.0+  | 0.2+  | 2003 10 24 | 704 | 0.6-  | 0.2+  |
| 1995 04 06 | 691 | 0.2-  | 0.4+  | 2003 09 04 | 704 | 0.2+  | 1.4-  | 2003 11 01 | 704 | 1.2-  | 0.6+  |
| 1995 04 06 | 691 | 0.1-  | 0.0   | 2003 09 04 | 704 | (1.7+ | 0.2+) | 2003 11 01 | 704 | 0.0   | 0.4+  |
| 1995 04 06 | 691 | 0.1-  | 0.0   | 2003 09 04 | 704 | (0.0  | 1.6+) | 2003 11 01 | 704 | 0.1+  | 0.1+  |
| 2002 03 09 | 704 | 0.2-  | 0.8-  | 2003 09 19 | 699 | 0.5+  | 0.0   | 2003 11 01 | 704 | 0.1+  | 0.5-  |
| 2002 03 09 | 704 | 0.1-  | 0.5+  | 2003 09 19 | 699 | 0.1-  | 0.5-  | 2003 12 22 | 704 | 0.4-  | 0.3+  |
| 2002 03 09 | 704 | (0.9- | 1.6+) | 2003 09 19 | 699 | 0.3+  | 0.0   | 2003 12 22 | 704 | 0.4-  | 0.1+  |
| 2002 03 12 | 704 | 0.1+  | 0.1+  | 2003 09 19 | 699 | 0.0   | 0.2+  | 2003 12 22 | 704 | 1.0-  | 1.4-  |
| 2002 03 12 | 704 | 0.7+  | 0.9+  | 2003 09 20 | 704 | 0.2-  | 0.3+  | 2003 12 22 | 704 | 1.0+  | 0.2+  |
| 2002 03 12 | 704 | (1.6+ | 1.3+) | 2003 09 20 | 704 | 0.9-  | 0.1+  | 2005 01 16 | 704 | 1.1-  | 0.2-  |
| 2002 03 12 | 704 | (1.7+ | 0.7+) | 2003 09 20 | 704 | 0.4-  | 0.1-  | 2005 01 16 | 704 | 0.1+  | 0.6-  |
| 2002 03 12 | 644 | 0.2+  | 0.6+  | 2003 09 21 | 608 | 0.2-  | 0.6-  | 2005 01 16 | 704 | 0.7+  | 1.0+  |
| 2002 03 12 | 644 | 0.1+  | 0.9+  | 2003 09 21 | 608 | 0.6-  | 0.5-  | 2005 01 16 | 704 | 0.9+  | 0.3+  |
| 2002 03 12 | 644 | 0.3+  | 0.3+  | 2003 09 21 | 608 | 0.4-  | 0.3-  | 2006 03 25 | 644 | 0.2+  | 0.0   |
| 2002 03 12 | 644 | 0.2+  | 0.7+  | 2003 09 26 | 704 | 0.1-  | 0.8+  | 2006 03 25 | 644 | 0.3+  | 0.1+  |
| 2002 03 12 | 644 | 0.3+  | 0.7+  | 2003 09 26 | 704 | 0.7+  | 0.1+  | 2006 03 25 | 644 | 0.0   | 0.3+  |
| 2002 03 12 | 644 | 0.2+  | 0.8+  | 2003 09 26 | 704 | 0.3-  | 0.3+  | 2006 04 26 | 704 | 1.4+  | 0.2+  |
| 2002 03 16 | 704 | 0.7+  | 0.5+  | 2003 09 29 | 704 | 1.1-  | 0.4+  | 2006 04 26 | 704 | 0.7-  | 0.2+  |
| 2002 03 16 | 704 | 0.3+  | 0.2+  | 2003 09 29 | 704 | 0.1-  | 0.2+  | 2006 04 26 | 704 | 0.2+  | 0.2-  |
| 2002 03 16 | 704 | 0.2+  | 0.3+  | 2003 09 29 | 704 | 0.8-  | 0.6+  | 2006 04 26 | 704 | (0.5+ | 1.5+) |
| 2002 03 16 | 704 | 0.3+  | 0.2+  | 2003 09 29 | 704 | 0.8-  | 0.5+  | 2006 05 16 | E12 | 0.3+  | 0.2+  |
| 2002 03 16 | 704 | 0.8+  | 0.4+  | 2003 09 29 | 704 | 0.6-  | 0.5+  | 2006 05 16 | E12 | 0.2+  | 0.4+  |
| 2003 07 30 | 704 | 0.4+  | 0.4+  | 2003 10 02 | 704 | 0.9-  | 1.0+  | 2006 05 16 | E12 | 0.0   | 0.7-  |
| 2003 07 30 | 704 | 0.1+  | 0.3+  | 2003 10 02 | 704 | 0.7-  | 1.2+  | 2006 05 16 | E12 | 0.2+  | 1.2+  |
| 2003 07 30 | 704 | 0.5-  | 0.1-  | 2003 10 02 | 704 | 0.7-  | 1.1+  | 2006 05 18 | 644 | 0.2+  | 0.3+  |
| 2003 07 30 | 704 | 0.7-  | 0.0   | 2003 10 03 | 608 | 0.2+  | 0.2-  | 2006 05 18 | 644 | 0.0   | 0.4+  |
| 2003 07 30 | 704 | 0.0   | 0.8+  | 2003 10 03 | 608 | 0.1+  | 0.7-  | 2006 05 18 | 644 | 0.1+  | 0.3+  |
| 2003 08 04 | 704 | 0.0   | 0.2-  | 2003 10 03 | 608 | 0.2+  | 0.8-  | 2006 05 24 | 644 | 0.0   | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 04 | 704 | 0.6+ | 0.2+ | 2003 10 15 | 699 | 0.1- | 0.2+ | 2006 05 24 | 644 | 0.1+ | 0.4+ |
| 2003 08 04 | 704 | 0.5- | 0.3+ | 2003 10 15 | 699 | 0.2- | 0.6+ | 2006 05 24 | 644 | 0.2+ | 0.4+ |
| 2003 08 04 | 704 | 0.8+ | 0.6- | 2003 10 15 | 699 | 0.8+ | 0.3- | 2006 06 01 | 699 | 0.4- | 0.3- |
| 2003 08 04 | 704 | 0.1- | 0.9+ | 2003 10 15 | 699 | 0.4+ | 0.2- | 2006 06 01 | 699 | 0.5+ | 0.7- |
| 2003 08 04 | 704 | 0.0  | 1.0- | 2003 10 19 | 691 | 0.0  | 0.0  | 2006 06 01 | 699 | 0.4+ | 0.7+ |
| 2003 08 04 | 704 | 0.7- | 0.6+ | 2003 10 19 | 691 | 0.3- | 0.0  | 2006 06 01 | 699 | 0.2- | 0.3+ |
| 2003 08 04 | 704 | 0.1+ | 0.6+ | 2003 10 19 | 691 | 0.4- | 0.1- | 2007 11 07 | 704 | 0.8+ | 0.7- |
| 2003 08 22 | 704 | 0.6+ | 0.1+ | 2003 10 21 | 704 | 0.1- | 0.6+ | 2007 11 07 | 704 | 0.2+ | 0.3- |
| 2003 08 22 | 704 | 1.0+ | 1.1+ | 2003 10 21 | 704 | 0.2- | 0.4+ | 2007 11 07 | 704 | 0.6- | 1.0+ |
| 2003 08 22 | 704 | 1.2+ | 0.5+ | 2003 10 21 | 704 | 0.1+ | 0.3- | 2007 12 13 | 704 | 0.0  | 0.5+ |
| 2003 08 25 | 704 | 1.1+ | 0.1- | 2003 10 21 | 704 | 0.0  | 0.3+ | 2007 12 13 | 704 | 0.0  | 0.2- |
| 2003 08 25 | 704 | 1.2+ | 0.3+ | 2003 10 21 | 704 | 0.5- | 0.2+ | 2007 12 13 | 704 | 1.6+ | 0.3- |
| 2003 08 25 | 704 | 0.7- | 0.1+ | 2003 10 24 | 704 | 0.5- | 0.3+ | 2007 12 13 | 704 | 0.6- | 0.1- |
| 2003 08 25 | 704 | 1.1+ | 1.0+ | 2003 10 24 | 704 | 0.2- | 0.5+ | 2007 12 13 | 704 | 0.0  | 0.3- |

**(172097)\* 2002 EX<sub>107</sub>**

Discovered 2002 Mar. 8 at Ondřejov.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.30615192 | $\omega$ | 23.27238 | +0.73726238 | -0.67550973 |
| <i>a</i> | 2.1802756  | $\Omega$ | 19.23554 | +0.61427372 | +0.66318931 |
| <i>e</i> | 0.1730852  | <i>i</i> | 1.98924  | +0.28126851 | +0.32228333 |
| <i>P</i> | 3.22       | <i>H</i> | 17.3     | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 01 03 | 691 | 0.2+  | 0.0   | 2002 03 20 | 691 | 0.1+  | 0.6-  | 2007 09 15 | G96 | 0.1+  | 0.3-  |
| 1995 01 03 | 691 | 0.3+  | 0.3-  | 2002 03 20 | 691 | 0.4+  | 0.2+  | 2007 09 15 | G96 | 0.2-  | 0.3-  |
| 1995 01 03 | 691 | 0.1-  | 0.6-  | 2005 01 06 | 703 | 0.8+  | 0.9-  | 2007 09 15 | G96 | 0.1+  | 0.2-  |
| 1999 04 18 | 691 | 0.7-  | 0.5-  | 2005 01 06 | 703 | 0.2-  | 0.5+  | 2007 09 15 | G96 | 0.0   | 0.2-  |
| 1999 04 18 | 691 | 0.6-  | 0.4-  | 2005 01 06 | 703 | 0.3-  | 0.7-  | 2007 09 18 | G96 | 0.4-  | 0.2-  |
| 1999 04 18 | 691 | 0.3-  | 0.1-  | 2005 01 06 | 703 | 1.0-  | 0.1-  | 2007 09 18 | G96 | 0.5-  | 0.4-  |
| 2002 02 06 | 695 | 0.3+  | 0.5+  | 2005 01 15 | 691 | 0.4-  | 0.2+  | 2007 09 18 | G96 | 0.0   | 0.4-  |
| 2002 02 06 | 695 | 0.4+  | 0.5+  | 2005 01 15 | 691 | 0.4-  | 0.1+  | 2007 09 18 | G96 | 0.1-  | 0.5-  |
| 2002 02 10 | 704 | 0.0   | 1.5-  | 2005 01 15 | 691 | 0.4-  | 0.1+  | 2007 10 06 | 704 | 1.5+  | 0.5+  |
| 2002 02 10 | 704 | 0.0   | 1.0-  | 2005 01 16 | 704 | 0.3-  | 0.5+  | 2007 10 06 | 704 | 0.2+  | 0.8+  |
| 2002 02 10 | 704 | 0.9+  | 0.7-  | 2005 01 16 | 704 | 0.6-  | 0.6-  | 2007 10 06 | 704 | 1.2-  | 0.1+  |
| 2002 02 10 | 704 | 0.9+  | 0.5+  | 2005 01 16 | 704 | 0.4-  | 0.6+  | 2007 11 15 | 704 | 1.0+  | 0.1+  |
| 2002 02 10 | 704 | 0.0   | 0.6-  | 2005 01 16 | 704 | 0.5+  | 0.1+  | 2007 11 15 | 704 | 0.8+  | 0.7-  |
| 2002 02 13 | 645 | 0.1-  | 0.3-  | 2005 02 01 | 703 | 0.3+  | 0.7+  | 2007 11 15 | 704 | 0.1+  | 0.9-  |
| 2002 02 13 | 645 | 0.1-  | 0.3-  | 2005 02 01 | 703 | 0.8+  | 0.6+  | 2007 11 15 | 704 | 1.2+  | 0.9-  |
| 2002 03 08 | 557 | 0.2-  | 1.2+  | 2005 02 01 | 703 | (1.6- | 0.3+) | 2007 12 10 | 704 | (1.7+ | 1.4+) |
| 2002 03 08 | 557 | 1.2+  | 0.2+  | 2005 02 01 | 703 | 0.2-  | 0.8+  | 2007 12 10 | 704 | 0.3-  | 0.0   |
| 2002 03 08 | 557 | (1.7- | 0.0 ) | 2005 02 03 | 704 | 0.1-  | 0.5+  | 2007 12 10 | 704 | 0.1-  | 0.5-  |
| 2002 03 12 | 291 | 0.0   | 0.5+  | 2005 02 03 | 704 | 0.4-  | 0.4+  | 2007 12 10 | 704 | 0.4+  | 0.7+  |
| 2002 03 12 | 291 | 0.2+  | 0.6+  | 2005 02 03 | 704 | 0.0   | 0.4+  | 2007 12 14 | 704 | 0.5-  | 0.2-  |
| 2002 03 12 | 291 | 0.5+  | 0.5+  | 2005 02 03 | 704 | 0.4+  | 0.3+  | 2007 12 14 | 704 | 0.2+  | 0.3-  |
| 2002 03 14 | 704 | (1.5- | 0.7+) | 2005 02 03 | 704 | 0.1-  | 0.7+  | 2007 12 14 | 704 | 0.3-  | 0.1-  |
| 2002 03 14 | 704 | (2.3- | 0.6+) | 2005 02 14 | 704 | 0.4+  | 0.7+  | 2007 12 14 | 704 | 0.4-  | 0.6-  |
| 2002 03 14 | 704 | (2.1- | 0.7+) | 2005 02 14 | 704 | 0.7+  | 0.7+  | 2007 12 15 | 704 | 0.2-  | 1.3+  |
| 2002 03 14 | 704 | 1.1-  | 1.3+  | 2005 02 14 | 704 | (1.2+ | 1.6+) | 2007 12 15 | 704 | 0.5-  | 2.0+  |
| 2002 03 14 | 704 | (0.6- | 1.8+) | 2005 02 14 | 704 | 0.6+  | 0.2-  |            |     |       |       |
| 2002 03 20 | 691 | 0.3+  | 0.4+  | 2005 02 14 | 704 | 0.8+  | 0.4-  |            |     |       |       |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1992 03 01 809 1.0− 1.6+   | 2002 04 17 704 0.4+ 0.2−   | 2005 02 14 704 0.7+ 0.1+   |
| 1995 01 23 691 0.2+ 0.2−   | 2003 10 22 691 0.0 0.6+    | 2005 02 14 704 0.9+ 0.2+   |
| 1995 01 23 691 0.0 0.6−    | 2003 10 22 691 0.1+ 0.6+   | 2006 09 18 699 0.4− 0.8+   |
| 1995 01 23 691 0.1+ 0.5−   | 2003 10 22 691 0.1− 0.3+   | 2006 09 18 699 (2.1− 1.7+) |
| 2002 03 10 699 0.0 0.6+    | 2005 01 13 691 0.3− 0.1−   | 2006 09 18 699 0.5+ 0.3+   |
| 2002 03 10 699 0.7− 0.8+   | 2005 01 13 691 0.2+ 0.3+   | 2006 09 18 699 1.3− 0.1+   |
| 2002 03 10 699 0.1− 0.9+   | 2005 01 13 691 0.1− 0.1−   | 2006 09 26 703 (1.8− 0.5+) |
| 2002 03 10 699 (1.7− 1.3+) | 2005 02 02 691 0.5+ 0.2−   | 2006 09 26 703 (2.0− 0.2−) |
| 2002 03 12 704 0.3+ 0.7+   | 2005 02 02 691 0.1+ 0.2−   | 2006 09 26 703 0.6− 0.5+   |
| 2002 03 12 704 0.0 1.0+    | 2005 02 02 691 0.1− 0.0    | 2006 09 26 703 0.3− 0.4+   |
| 2002 03 12 704 0.7+ 0.3−   | 2005 02 03 704 0.2− 1.1−   | 2006 09 30 703 0.3− 0.7+   |
| 2002 03 12 704 0.0 0.6+    | 2005 02 03 704 0.2+ 0.0    | 2006 09 30 703 (1.0− 1.9+) |
| 2002 04 13 644 0.1− 1.2+   | 2005 02 03 704 0.4+ 0.5−   | 2006 09 30 703 0.5+ 0.9−   |
| 2002 04 13 644 0.3− 1.3+   | 2005 02 03 704 0.6+ 0.0    | 2006 09 30 703 0.4+ 0.0    |
| 2002 04 13 644 0.3− 0.9+   | 2005 02 03 704 0.2+ 0.3−   | 2007 12 04 691 0.2− 0.1+   |
| 2002 04 16 704 0.4+ 0.5−   | 2005 02 04 699 0.4+ 0.4+   | 2007 12 04 G96 0.1+ 0.0    |
| 2002 04 16 704 0.1− 0.7−   | 2005 02 04 699 (0.2+ 2.5+) | 2007 12 04 G96 0.2− 0.7−   |
| 2002 04 16 704 0.3+ 0.1−   | 2005 02 04 699 0.8+ 0.1+   | 2007 12 04 691 0.0 0.1+    |
| 2002 04 16 704 0.3− 0.4−   | 2005 02 04 699 0.5+ 0.6+   | 2007 12 04 G96 0.6+ 0.3−   |
| 2002 04 16 704 0.8− 0.0    | 2005 02 09 699 0.1− 0.5+   | 2007 12 04 691 0.3− 0.1+   |
| 2002 04 17 704 1.2+ 0.0    | 2005 02 09 699 0.5− 0.6+   | 2007 12 04 G96 0.2− 0.3−   |
| 2002 04 17 704 0.1+ 0.5+   | 2005 02 09 699 0.1+ 0.4+   | 2007 12 16 691 0.1+ 0.2+   |
| 2002 04 17 704 0.5+ 0.1−   | 2005 02 09 699 0.8− 0.3+   | 2007 12 16 691 0.3− 0.0    |
| 2002 04 17 704 0.4+ 0.3−   | 2005 02 14 704 (1.9+ 0.6−) | 2007 12 16 691 0.4− 0.1+   |

(172099)\* 2002 ET<sub>127</sub> = 2004 XL<sub>158</sub>

Discovered 2002 Mar. 12 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 72573)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 193.04058  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29370210 | $\omega$ 71.41617  | −0.78767285   | +0.61589448 |
| <i>a</i> | 2.2414618  | $\Omega$ 146.59561 | −0.57544274   | −0.72637839 |
| <i>e</i> | 0.0637425  | <i>i</i> 1.63077   | −0.22008437   | −0.30503841 |
| <i>P</i> | 3.36       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2000 10 01 704 0.3+ 0.1−   | 2002 03 14 704 0.2− 0.5+ | 2007 10 30 691 0.2− 0.0  |
| 2000 10 01 704 0.0 0.8+    | 2002 03 14 704 0.8− 1.3+ | 2007 10 30 691 0.0 0.5+  |
| 2000 10 01 704 0.6− 0.4+   | 2002 03 18 691 0.3+ 0.4+ | 2007 10 30 691 0.1− 0.1+ |
| 2002 02 20 704 0.1− 0.6−   | 2002 03 18 691 0.4+ 0.2+ | 2007 11 14 691 0.0 0.5+  |
| 2002 02 20 704 0.1− 0.2−   | 2002 03 18 691 0.3+ 0.2+ | 2007 11 14 691 0.1− 0.2− |
| 2002 02 20 704 (0.2+ 3.3−) | 2004 12 14 691 0.0 0.0   | 2007 11 14 691 0.2+ 0.1+ |
| 2002 02 20 704 0.1+ 0.7+   | 2004 12 14 691 0.0 0.1+  | 2007 11 14 704 0.9+ 1.2+ |
| 2002 02 24 644 0.0 0.1−    | 2004 12 14 691 0.2− 0.0  | 2007 11 14 704 0.9+ 0.8+ |
| 2002 02 24 644 0.2− 0.6+   | 2004 12 19 691 0.2+ 0.3− | 2007 11 14 704 1.5+ 1.4+ |
| 2002 02 24 644 0.2+ 0.2+   | 2004 12 19 691 0.1− 0.2+ | 2007 11 14 704 0.6+ 0.5+ |
| 2002 03 04 209 0.2− 0.1−   | 2004 12 19 691 0.1− 0.5− | 2007 11 14 704 0.8+ 1.1+ |
| 2002 03 04 209 0.2+ 0.6−   | 2005 01 17 691 0.0 0.6−  | 2007 12 04 691 0.4− 0.0  |
| 2002 03 04 209 0.3+ 0.6+   | 2005 01 17 691 0.0 0.6−  | 2007 12 04 691 0.6− 0.1+ |
| 2002 03 12 644 0.5− 0.6+   | 2005 01 17 691 0.2+ 0.6− | 2007 12 04 691 0.2+ 0.2− |
| 2002 03 12 644 0.2− 0.4+   | 2007 10 10 G96 0.3+ 0.2+ | 2007 12 06 691 0.5− 0.3− |
| 2002 03 12 644 0.3− 0.8+   | 2007 10 10 G96 0.1+ 0.1+ | 2007 12 06 691 0.1− 0.3− |
| 2002 03 14 704 0.8+ 0.7+   | 2007 10 10 G96 0.2+ 0.5+ | 2007 12 06 691 0.3− 0.2− |
| 2002 03 14 704 0.4− 0.3−   | 2007 10 10 G96 0.4+ 0.2+ |                          |

(172100)\* 2002 FO<sub>8</sub>

Discovered 2002 Mar. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 238.38005  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30105551 | $\omega$ 296.43772 | −0.93150209   | +0.35976169 |
| <i>a</i> | 2.2048125  | $\Omega$ 264.68735 | −0.31159396   | −0.86530619 |
| <i>e</i> | 0.1331147  | <i>i</i> 3.08710   | −0.18765144   | −0.34902253 |
| <i>P</i> | 3.27       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2002 03 12 699 1.4+ 0.5+   | 2003 09 22 699 0.2− 0.2− | 2005 01 15 704 0.4− 0.5−   |
| 2002 03 12 699 0.1− 0.6+   | 2003 09 22 699 0.0 1.5+  | 2005 01 15 704 0.2+ 0.4+   |
| 2002 03 12 699 (1.7+ 1.0+) | 2003 09 22 699 0.4+ 0.2− | 2005 01 17 704 0.3+ 0.1−   |
| 2002 03 12 699 1.0+ 0.6+   | 2003 09 22 699 0.4+ 0.1− | 2005 01 17 704 0.5− 0.2+   |
| 2002 03 14 644 0.9+ 1.1+   | 2003 09 30 691 0.0 0.5+  | 2005 01 17 704 0.3+ 0.6+   |
| 2002 03 14 644 0.8+ 0.9+   | 2003 09 30 691 0.2+ 0.6+ | 2005 01 17 704 0.1+ 0.9−   |
| 2002 03 14 644 0.6+ 0.9+   | 2003 09 30 691 0.0 0.5+  | 2005 01 17 704 0.1− 0.8+   |
| 2002 03 16 704 0.7+ 0.5+   | 2003 10 18 645 0.1− 0.0  | 2005 02 01 703 0.0 0.1−    |
| 2002 03 16 704 1.1+ 0.6+   | 2003 10 18 645 0.1− 0.1+ | 2005 02 01 703 0.1+ 0.5−   |
| 2002 03 16 704 0.8+ 0.6+   | 2003 10 23 645 0.1− 0.0  | 2005 02 01 703 0.0 0.1−    |
| 2002 03 16 704 1.0+ 0.4+   | 2003 10 23 645 0.0 0.0   | 2005 02 01 703 0.6− 0.7−   |
| 2002 03 16 704 (2.0+ 1.4+) | 2003 10 24 645 0.0 0.0   | 2005 02 02 704 (0.2− 4.2+) |
| 2002 03 18 704 0.1+ 0.9+   | 2003 10 24 645 0.0 0.0   | 2005 02 02 704 (1.2− 2.8+) |
| 2002 03 18 704 0.3− 0.1+   | 2003 11 16 645 0.1− 0.0  | 2005 02 02 704 1.1− 0.8+   |
| 2002 03 18 704 0.1+ 0.7+   | 2003 11 16 645 0.0 0.1−  | 2005 02 02 704 (2.2− 4.6+) |
| 2002 03 18 704 0.1− 0.2−   | 2004 12 20 G96 0.2+ 0.4− | 2005 02 02 704 (0.7− 1.9+) |
| 2002 03 18 704 1.1− 0.3−   | 2004 12 20 G96 0.3− 0.4− | 2005 03 13 G96 0.1− 0.4−   |
| 2002 04 05 644 (1.5− 2.1−) | 2004 12 20 G96 0.1− 0.3− | 2005 03 13 G96 0.2− 0.2−   |
| 2002 04 05 644 0.4+ 0.1−   | 2004 12 20 G96 0.0 0.2−  | 2005 03 13 G96 0.6− 0.1−   |
| 2002 04 05 644 0.2+ 0.1−   | 2005 01 06 704 0.6− 0.7+ | 2005 03 13 G96 0.2− 0.3−   |
| 2002 04 10 704 0.0 0.3+    | 2005 01 06 704 0.1+ 0.2− | 2006 08 16 644 0.1+ 0.6+   |
| 2002 04 10 704 0.0 0.7+    | 2005 01 06 704 0.1+ 0.1− | 2006 08 16 644 0.1− 0.2+   |
| 2002 04 10 704 0.2− 0.4+   | 2005 01 11 704 1.0+ 0.2+ | 2006 08 16 644 0.2− 0.3+   |
| 2002 04 10 704 0.0 0.6+    | 2005 01 11 704 0.7+ 0.4+ | 2007 12 05 704 0.6+ 0.1−   |
| 2002 04 10 704 0.0 0.5+    | 2005 01 11 704 0.6+ 0.1+ | 2007 12 05 704 0.1+ 0.8−   |
| 2002 04 12 704 0.0 0.7+    | 2005 01 11 704 1.1+ 0.6+ | 2007 12 05 704 (0.7+ 2.9−) |
| 2002 04 12 704 0.1− 0.2+   | 2005 01 13 703 0.3− 0.3+ | 2007 12 05 704 0.3+ 0.1−   |
| 2002 04 12 704 0.1− 0.2+   | 2005 01 13 703 0.4− 0.5+ | 2007 12 14 704 0.3+ 0.2+   |
| 2002 04 12 704 1.2− 0.7+   | 2005 01 13 703 0.2+ 0.2+ | 2007 12 14 704 0.7− 0.0    |
| 2002 04 12 704 0.3+ 0.2+   | 2005 01 13 703 1.0− 0.6− | 2007 12 14 704 0.6+ 0.9+   |
| 2003 09 18 691 0.1+ 0.3+   | 2005 01 15 704 0.4− 0.1− | 2007 12 14 704 0.2− 0.3+   |
| 2003 09 18 691 0.1− 0.4+   | 2005 01 15 704 0.1− 0.1− |                            |
| 2003 09 18 691 0.0 0.1+    | 2005 01 15 704 0.0 0.2+  |                            |

(172101)\* 2002 FR<sub>14</sub>

Discovered 2002 Mar. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 133.35992  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27220332 | $\omega$ 171.13456 | +0.09487495   | +0.99511789 |
| <i>a</i> | 2.3579817  | $\Omega$ 104.30618 | −0.91505485   | +0.09793106 |
| <i>e</i> | 0.1981432  | <i>i</i> 1.60776   | −0.39201194   | +0.01224316 |
| <i>P</i> | 3.62       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2002 03 16 704 (1.1− 2.4+) | 2002 04 17 704 0.6− 0.9−   | 2005 01 16 568 0.4+ 0.3− |
| 2002 03 16 704 1.3− 0.4+   | 2002 04 17 704 0.7− 0.8−   | 2005 01 17 568 0.5+ 0.6− |
| 2002 03 16 704 0.4− 1.1+   | 2002 04 20 644 0.2+ 0.1−   | 2005 03 04 G96 0.6− 0.2− |
| 2002 03 16 704 (0.8− 2.5+) | 2002 04 20 644 0.2+ 0.2+   | 2005 03 04 G96 0.6− 0.4− |
| 2002 03 20 699 0.0 0.5−    | 2002 04 20 644 0.1+ 0.1+   | 2005 03 04 G96 0.4− 0.5− |
| 2002 03 20 699 0.8+ 0.6+   | 2002 05 08 699 1.0+ 0.3+   | 2005 03 04 G96 0.4− 0.2+ |
| 2002 03 20 699 0.0 1.3+    | 2002 05 08 699 0.2− 1.1+   | 2007 11 13 691 0.1− 0.0  |
| 2002 03 20 699 1.0+ 0.5−   | 2002 05 08 699 (0.6+ 1.5+) | 2007 11 13 691 0.0 0.6+  |
| 2002 04 05 699 0.5− 0.3+   | 2002 05 08 699 0.4+ 0.4−   | 2007 11 13 691 0.4− 0.5− |
| 2002 04 05 699 0.5+ 0.2+   | 2002 05 10 644 0.0 0.3+    | 2007 11 18 691 0.7+ 0.2+ |
| 2002 04 05 699 0.4+ 0.1−   | 2002 05 10 644 0.3+ 0.4+   | 2007 11 18 691 0.4− 0.3− |
| 2002 04 05 699 0.1− 0.8+   | 2002 05 10 644 0.3+ 0.4+   | 2007 11 18 691 0.1+ 0.3+ |
| 2002 04 10 704 0.2+ 0.2+   | 2003 09 28 691 0.1− 0.2+   | 2007 12 03 703 0.7+ 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 10 | 704 | 0.0  | 0.7+ | 2003 09 28 | 691 | 0.0  | 0.4+ | 2007 12 03 | 703 | 0.6- | 1.5- |
| 2002 04 10 | 704 | 0.1- | 0.6+ | 2003 09 28 | 691 | 0.1+ | 0.3+ | 2007 12 03 | 703 | 0.4- | 0.6- |
| 2002 04 10 | 704 | 0.2+ | 0.1+ | 2003 10 24 | 704 | 0.6- | 1.0+ | 2007 12 03 | 703 | 0.2+ | 0.2- |
| 2002 04 10 | 704 | 0.7+ | 0.3+ | 2003 10 24 | 704 | 0.1+ | 0.8+ | 2007 12 05 | 704 | 0.7- | 0.9+ |
| 2002 04 14 | 644 | 0.1- | 0.4+ | 2003 10 24 | 704 | 0.6- | 0.0  | 2007 12 05 | 704 | 0.4+ | 0.7+ |
| 2002 04 14 | 644 | 0.1- | 0.3+ | 2003 10 24 | 704 | 0.7- | 1.0+ | 2007 12 05 | 704 | 0.4+ | 0.0  |
| 2002 04 14 | 644 | 0.1+ | 0.2+ | 2003 10 24 | 704 | 0.4- | 0.7+ | 2007 12 05 | 704 | 0.3+ | 0.4- |
| 2002 04 17 | 704 | 0.6+ | 0.2+ | 2005 01 16 | 568 | 0.5+ | 0.3- |            |     |      |      |
| 2002 04 17 | 704 | 0.2- | 0.2- | 2005 01 16 | 568 | 0.4+ | 0.2- |            |     |      |      |

**(172102)\* 2002 FK<sub>15</sub> = 2005 BG<sub>7</sub>**

Discovered 2002 Mar. 16 by NEAT at Haleakala.

Id. G. V. Williams (*MPO* 72582)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 170.16874  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.29071845 | $\omega$ | 158.78080 | -0.30306743 |      | +0.94315541 |   |
| <i>a</i> | 2.2567718  | $\Omega$ | 93.37338  | -0.89282701 |      | -0.23097028 |   |
| <i>e</i> | 0.0924079  | <i>i</i> | 7.85392   | -0.33318172 |      | -0.23897826 |   |
| <i>P</i> | 3.39       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 06 06 | 699 | 1.1+ | 1.9+ | 2002 03 20 | 704 | 0.9+  | 0.4-  | 2007 11 04 | 691 | 0.4- | 0.1+ |
| 1999 06 06 | 699 | 1.5+ | 1.6+ | 2003 09 19 | 699 | 0.8-  | 0.6+  | 2007 11 12 | 704 | 0.5- | 1.2+ |
| 1999 06 06 | 699 | 0.1- | 0.0  | 2003 09 19 | 699 | (1.3- | 1.5+) | 2007 11 12 | 704 | 0.0  | 0.2+ |
| 1999 06 15 | 704 | 0.4+ | 0.3- | 2003 09 19 | 699 | (0.0  | 2.4+) | 2007 11 12 | 704 | 1.2- | 0.6+ |
| 1999 06 15 | 704 | 0.8- | 0.1- | 2003 09 19 | 699 | 0.3+  | 0.1-  | 2007 11 12 | 704 | 1.3- | 0.5+ |
| 1999 06 15 | 704 | 0.7- | 0.9+ | 2003 09 24 | 644 | 0.4-  | 0.5+  | 2007 11 18 | G96 | 0.1- | 0.4- |
| 1999 06 15 | 704 | 0.6- | 0.4+ | 2003 09 24 | 644 | 0.2-  | 0.6+  | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 2002 03 11 | 644 | 0.6+ | 0.2+ | 2003 09 24 | 644 | 0.2+  | 1.4+  | 2007 11 18 | G96 | 0.2+ | 0.2- |
| 2002 03 11 | 644 | 0.5+ | 0.1+ | 2005 01 16 | 704 | 0.6+  | 0.7-  | 2007 12 04 | 704 | 0.5+ | 0.1- |
| 2002 03 11 | 644 | 0.2+ | 0.3+ | 2005 01 16 | 704 | 1.2+  | 0.4+  | 2007 12 04 | 704 | 0.2- | 0.7+ |
| 2002 03 16 | 608 | 1.2- | 1.1+ | 2005 01 16 | 704 | 0.6-  | 0.1+  | 2007 12 04 | 704 | 0.3- | 0.5- |
| 2002 03 16 | 608 | 1.4- | 0.7+ | 2005 01 17 | 691 | 0.1-  | 0.0   | 2007 12 04 | 704 | 0.4+ | 0.1+ |
| 2002 03 16 | 608 | 0.9- | 0.9+ | 2005 01 17 | 691 | 0.0   | 0.0   | 2007 12 04 | 704 | 0.3+ | 0.8+ |
| 2002 03 20 | 699 | 0.5+ | 0.2- | 2005 01 17 | 691 | 0.0   | 0.0   | 2007 12 05 | G96 | 0.3+ | 0.0  |
| 2002 03 20 | 699 | 0.0  | 0.6- | 2005 02 03 | 704 | 1.1+  | 0.3-  | 2007 12 05 | G96 | 0.1+ | 0.1- |
| 2002 03 20 | 699 | 0.6+ | 1.1+ | 2005 02 03 | 704 | 0.0   | 0.5+  | 2007 12 05 | G96 | 0.2+ | 0.1+ |
| 2002 03 20 | 699 | 0.3+ | 0.7- | 2005 02 03 | 704 | 0.2-  | 0.7-  | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2002 03 20 | 704 | 1.1+ | 0.6+ | 2005 02 03 | 704 | 0.6-  | 0.4-  | 2007 12 15 | 704 | 0.4- | 0.3+ |
| 2002 03 20 | 704 | 0.1- | 0.6+ | 2007 11 04 | 691 | 0.3-  | 0.1+  | 2007 12 15 | 704 | 0.9+ | 0.7+ |
| 2002 03 20 | 704 | 0.2+ | 0.3- | 2007 11 04 | 691 | 0.2-  | 0.1+  | 2007 12 15 | 704 | 0.9+ | 1.0+ |

**(172103)\* 2002 FT<sub>34</sub> = 1998 FE<sub>129</sub>**

Discovered 2002 Mar. 20 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 30115)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 193.97129  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26070641 | $\omega$ | 335.75276 | -0.98730485 |      | -0.15540886 |   |
| <i>a</i> | 2.4268052  | $\Omega$ | 195.41429 | +0.15827486 |      | -0.94521403 |   |
| <i>e</i> | 0.1131902  | <i>i</i> | 7.09306   | +0.01334897 |      | -0.28708628 |   |
| <i>P</i> | 3.78       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 22 | 704 | (2.6- | 0.8-) | 2002 04 09 | 704 | 0.0  | 0.2- | 2003 09 29 | 691 | 0.1- | 0.2+ |
| 1998 03 22 | 704 | (2.3- | 0.5-) | 2002 04 09 | 704 | 0.5+ | 0.0  | 2003 09 29 | 691 | 0.2+ | 0.4+ |
| 1998 03 22 | 704 | 0.4-  | 1.5+  | 2002 04 10 | 704 | 0.6+ | 0.4+ | 2003 09 29 | 691 | 0.2+ | 0.2+ |
| 1998 03 22 | 704 | (3.1- | 0.6+) | 2002 04 10 | 704 | 0.7- | 0.3+ | 2004 12 18 | 704 | 0.1+ | 0.6+ |
| 1998 03 26 | 704 | 0.1+  | 0.3+  | 2002 04 10 | 704 | 0.1- | 0.3- | 2004 12 18 | 704 | 0.2- | 0.6+ |
| 1998 03 26 | 704 | (0.1+ | 2.9+) | 2002 04 10 | 704 | 0.3+ | 0.3+ | 2004 12 18 | 704 | 1.0+ | 1.2+ |
| 1998 03 26 | 704 | 0.5-  | 1.2+  | 2002 04 10 | 704 | 0.2- | 0.3- | 2006 05 18 | 644 | 0.2+ | 0.3- |
| 2002 03 20 | 699 | (1.7+ | 0.1-) | 2002 04 12 | 608 | 1.3- | 0.7+ | 2006 05 18 | 644 | 0.5+ | 0.2- |
| 2002 03 20 | 699 | 0.0   | 0.0   | 2002 04 12 | 608 | 1.1- | 0.7+ | 2006 05 18 | 644 | 0.1+ | 0.0  |
| 2002 03 20 | 699 | (1.6+ | 0.3-) | 2002 04 12 | 608 | 0.9- | 0.6+ | 2006 05 25 | G96 | 0.2- | 0.0  |
| 2002 03 20 | 699 | 1.1+  | 0.6+  | 2002 04 14 | 644 | 0.4+ | 0.5+ | 2006 05 25 | G96 | 0.1- | 0.1- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 03 23 | 704 | (0.4+ | 1.9+) | 2002 04 14 | 644 | 0.2+  | 0.5+  | 2006 05 25 | G96 | 0.0   | 0.1-  |
| 2002 03 23 | 704 | 0.6+  | 1.4+  | 2002 04 14 | 644 | 0.1+  | 0.4+  | 2006 05 25 | G96 | 0.0   | 0.0   |
| 2002 03 23 | 704 | 0.2+  | 0.8+  | 2002 04 17 | 704 | 0.7+  | 0.2-  | 2006 05 28 | 703 | (1.4- | 2.0-) |
| 2002 03 23 | 704 | (0.0  | 2.2+) | 2002 04 17 | 704 | (1.5- | 2.0+) | 2006 05 28 | 703 | 0.8-  | 1.1-  |
| 2002 03 23 | 704 | 1.2+  | 1.5+  | 2002 04 17 | 704 | 0.2-  | 0.1-  | 2006 05 28 | 703 | (1.8- | 1.1-) |
| 2002 04 05 | 699 | 0.5-  | 0.5+  | 2002 04 17 | 704 | 0.2+  | 0.1+  | 2006 05 28 | 703 | 0.6-  | 0.1+  |
| 2002 04 05 | 699 | 0.3-  | 0.6-  | 2002 04 17 | 704 | 0.0   | 0.6-  | 2007 10 05 | 691 | 0.1+  | 0.6+  |
| 2002 04 05 | 699 | 0.4+  | 0.8+  | 2002 05 08 | 704 | 0.3-  | 0.1-  | 2007 10 05 | 691 | 0.1-  | 0.4+  |
| 2002 04 05 | 699 | (1.7- | 1.7-) | 2002 05 08 | 704 | 0.1+  | 0.6-  | 2007 10 05 | 691 | 0.6-  | 0.1+  |
| 2002 04 08 | 644 | 0.0   | 0.3+  | 2002 05 08 | 704 | (1.7- | 0.4+) | 2007 10 15 | 691 | 0.6-  | 0.6+  |
| 2002 04 08 | 644 | 0.1+  | 0.3+  | 2002 05 08 | 704 | 0.7-  | 0.4-  | 2007 10 15 | 691 | 0.2-  | 0.2+  |
| 2002 04 08 | 644 | 0.2+  | 0.4+  | 2002 05 08 | 644 | 0.2+  | 0.5+  | 2007 10 15 | 691 | 0.1-  | 0.3+  |
| 2002 04 09 | 644 | 0.5+  | 1.1+  | 2002 05 08 | 644 | 0.1-  | 0.3+  | 2007 12 06 | G96 | 0.1-  | 0.4+  |
| 2002 04 09 | 644 | (0.6+ | 1.8+) | 2002 05 08 | 644 | 0.2+  | 0.2+  | 2007 12 06 | G96 | 0.3+  | 0.1+  |
| 2002 04 09 | 644 | 0.5+  | 1.2+  | 2002 05 16 | 608 | 0.1+  | 0.8-  | 2007 12 06 | G96 | 0.4+  | 0.4+  |
| 2002 04 09 | 704 | 0.9+  | 0.2+  | 2002 05 16 | 608 | 0.5+  | 0.7-  | 2007 12 06 | G96 | 0.3+  | 0.1+  |
| 2002 04 09 | 704 | 0.5+  | 0.3-  | 2002 05 16 | 608 | 0.2+  | 0.4-  |            |     |       |       |

**(172104)\* 2002 GA<sub>12</sub>**

Discovered 2002 Apr. 15 by W. K. Y. Yeung at Desert Eagle Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 251.21087  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.29456073 | $\omega$ | 78.24851  | -0.99492539 |      | +0.09232567 |   |
| <i>a</i> | 2.2371039  | $\Omega$ | 107.03910 | -0.10061032 |      | -0.91691868 |   |
| <i>e</i> | 0.0986427  | <i>i</i> | 2.39733   | +0.00101565 |      | -0.38824748 |   |
| <i>P</i> | 3.35       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 02 02 | 691 | 0.0   | 0.1-  | 2002 04 17 | 704 | 0.6+  | 0.6-  | 2005 02 09 | 699 | 0.2+ | 0.5+ |
| 1995 02 02 | 691 | 0.0   | 0.1+  | 2002 04 17 | 704 | 0.6+  | 0.2-  | 2005 02 09 | 699 | 0.3+ | 0.2+ |
| 1995 02 02 | 691 | 0.3-  | 0.7-  | 2002 04 17 | 704 | 0.4+  | 0.6-  | 2005 02 09 | 699 | 0.4- | 0.1- |
| 2002 04 01 | 644 | 0.6+  | 0.7+  | 2002 04 17 | 704 | 0.5+  | 0.6-  | 2005 02 09 | 699 | 0.6- | 0.1+ |
| 2002 04 01 | 644 | 0.1+  | 0.5+  | 2002 04 18 | 333 | 0.7+  | 0.4+  | 2005 03 02 | 703 | 0.9- | 0.7- |
| 2002 04 01 | 644 | 0.5+  | 0.4+  | 2002 04 18 | 333 | 0.3-  | 0.0   | 2005 03 02 | 703 | 0.7- | 0.3+ |
| 2002 04 08 | 644 | 0.1+  | 1.5+  | 2002 05 08 | 704 | (1.2- | 2.2+) | 2005 03 02 | 703 | 0.1+ | 0.7- |
| 2002 04 08 | 644 | 0.1-  | 0.5+  | 2002 05 08 | 704 | 0.8-  | 1.4+  | 2005 03 02 | 703 | 1.0- | 0.3+ |
| 2002 04 08 | 644 | 0.0   | 0.4+  | 2002 05 08 | 704 | (0.0  | 1.6+) | 2005 03 04 | 049 | 0.3- | 0.1+ |
| 2002 04 10 | 704 | 1.3+  | 0.1-  | 2003 09 21 | 691 | 0.1+  | 0.3+  | 2005 03 04 | 049 | 0.1+ | 1.2- |
| 2002 04 10 | 704 | 0.2+  | 0.8+  | 2003 09 21 | 691 | 0.0   | 0.4+  | 2005 03 04 | 049 | 0.2+ | 1.3- |
| 2002 04 10 | 704 | 0.4+  | 0.4+  | 2003 09 21 | 691 | 0.2-  | 0.3+  | 2005 03 13 | 691 | 0.2+ | 0.1- |
| 2002 04 10 | 704 | 0.4-  | 0.2+  | 2003 09 24 | 644 | 0.9-  | 0.6+  | 2005 03 13 | 691 | 0.3+ | 0.1- |
| 2002 04 10 | 704 | 0.5-  | 0.0   | 2003 09 24 | 644 | 0.1-  | 0.3+  | 2005 03 13 | 691 | 0.1+ | 0.2- |
| 2002 04 12 | 608 | (2.8- | 0.2-) | 2003 09 24 | 644 | 0.3-  | 0.3+  | 2007 11 05 | 691 | 0.3- | 0.2+ |
| 2002 04 12 | 608 | (2.3- | 0.6-) | 2005 01 06 | 704 | 1.1+  | 1.1+  | 2007 11 05 | 691 | 0.1+ | 0.3+ |
| 2002 04 12 | 608 | (2.6- | 0.2+) | 2005 01 06 | 704 | 0.5+  | 0.3+  | 2007 11 05 | 691 | 0.1+ | 0.3+ |
| 2002 04 14 | 644 | 0.1+  | 0.6+  | 2005 01 06 | 704 | 0.9+  | 0.0   | 2007 12 05 | 704 | 0.6- | 0.3- |
| 2002 04 14 | 644 | 0.1+  | 0.6+  | 2005 01 16 | 691 | 0.0   | 0.3+  | 2007 12 05 | 704 | 0.0  | 0.7+ |
| 2002 04 14 | 644 | 0.6+  | 0.5+  | 2005 01 16 | 691 | 0.3+  | 0.4+  | 2007 12 05 | 704 | 1.1+ | 0.7+ |
| 2002 04 15 | 333 | 0.4-  | 0.0   | 2005 01 16 | 691 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 1.4+ | 0.7+ |
| 2002 04 15 | 333 | 1.1-  | 0.3+  | 2005 02 03 | 704 | (1.0+ | 2.5+) | 2007 12 16 | 691 | 0.1- | 0.0  |
| 2002 04 15 | 333 | 0.3-  | 0.1-  | 2005 02 03 | 704 | (2.7+ | 0.4+) | 2007 12 16 | 691 | 0.6- | 0.4- |
| 2002 04 15 | 333 | 0.7-  | 0.2-  | 2005 02 03 | 704 | (1.2+ | 2.3+) | 2007 12 16 | 691 | 0.1- | 0.1- |
| 2002 04 15 | 333 | 0.1+  | 0.9+  | 2005 02 03 | 704 | (0.5+ | 2.7+) |            |     |      |      |
| 2002 04 15 | 333 | 0.0   | 0.4-  | 2005 02 03 | 704 | (2.9+ | 0.1+) |            |     |      |      |

2007 DEC. 24

M.P.O. 129265

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 04 15 | 704 | 0.1+ | 0.2+ | 2002 05 16 | 704 | 0.1+  | 0.4-  | 2005 01 08 | 599 | 0.3+  | 0.0   |
| 2002 04 15 | 704 | 0.2+ | 0.2+ | 2002 05 16 | 608 | 0.6+  | 0.5-  | 2005 01 08 | 599 | 0.0   | 0.2+  |
| 2002 04 15 | 704 | 0.2+ | 0.5+ | 2002 05 16 | 608 | 0.7+  | 0.4-  | 2005 01 17 | 691 | 0.2+  | 0.4+  |
| 2002 04 17 | 704 | 0.2- | 0.5- | 2002 05 16 | 608 | 0.7+  | 0.4-  | 2005 01 17 | 691 | 0.1-  | 0.5+  |
| 2002 04 17 | 704 | 0.5- | 0.7- | 2002 05 21 | 704 | 0.2-  | 0.3+  | 2005 01 17 | 691 | 0.3+  | 0.4+  |
| 2002 04 17 | 704 | 1.5- | 0.9+ | 2002 05 21 | 704 | 0.5+  | 0.6+  | 2005 02 03 | 704 | 0.8-  | 0.5+  |
| 2002 04 17 | 704 | 0.8- | 0.1- | 2002 05 21 | 704 | 0.5+  | 0.6+  | 2005 02 03 | 704 | 0.1-  | 0.7+  |
| 2002 04 17 | 704 | 0.1+ | 0.6- | 2002 05 21 | 704 | 0.4-  | 0.0   | 2005 02 03 | 704 | (0.8+ | 1.6+) |
| 2002 04 19 | 691 | 0.1- | 0.2+ | 2002 05 21 | 704 | 0.0   | 1.1+  | 2005 02 03 | 704 | 0.4-  | 1.1+  |
| 2002 04 19 | 691 | 0.1- | 0.2+ | 2002 05 31 | 704 | 0.0   | 0.3-  | 2006 08 18 | 644 | 0.0   | 0.2+  |
| 2002 04 19 | 691 | 0.1- | 0.2+ | 2002 05 31 | 704 | 0.0   | 0.2-  | 2006 08 18 | 644 | 0.2-  | 0.2+  |
| 2002 05 09 | 704 | 0.6+ | 0.5+ | 2002 05 31 | 704 | 0.0   | 0.1-  | 2006 08 18 | 644 | 0.1-  | 0.6+  |
| 2002 05 09 | 704 | 1.0+ | 0.4+ | 2002 05 31 | 704 | 0.4-  | 0.2+  | 2006 08 23 | 644 | 0.2-  | 0.6+  |
| 2002 05 09 | 704 | 0.8+ | 0.4+ | 2002 05 31 | 704 | 0.6-  | 0.1-  | 2006 08 23 | 644 | 0.1-  | 0.3+  |
| 2002 05 09 | 704 | 0.5+ | 0.4+ | 2002 06 06 | 704 | (0.0  | 1.8+) | 2006 08 23 | 644 | 0.1+  | 0.5+  |
| 2002 05 09 | 704 | 1.0+ | 0.2+ | 2002 06 06 | 704 | (0.3- | 2.4+) | 2006 08 24 | 644 | 0.1-  | 0.3+  |
| 2002 05 10 | 704 | 0.0  | 0.0  | 2002 06 06 | 704 | 0.3-  | 1.4+  | 2006 08 24 | 644 | 0.8-  | 0.4+  |
| 2002 05 10 | 704 | 0.0  | 0.2- | 2002 06 06 | 704 | (0.7- | 2.6+) | 2006 08 24 | 644 | 0.5-  | 0.3+  |
| 2002 05 10 | 704 | 0.2+ | 0.2- | 2003 09 27 | 691 | 0.2+  | 0.2+  | 2007 12 06 | G96 | 0.0   | 0.0   |
| 2002 05 10 | 704 | 0.2+ | 0.2- | 2003 09 27 | 691 | 0.1+  | 0.4+  | 2007 12 06 | G96 | 0.1+  | 0.3-  |
| 2002 05 12 | 333 | 0.6+ | 0.2+ | 2003 09 27 | 691 | 0.1-  | 0.2+  | 2007 12 06 | G96 | 0.8+  | 0.1+  |
| 2002 05 12 | 333 | 0.3+ | 0.2- | 2003 10 16 | 691 | 0.4-  | 0.5+  | 2007 12 06 | G96 | 0.3+  | 0.1+  |
| 2002 05 12 | 333 | 0.0  | 0.1- | 2003 10 16 | 691 | 0.5-  | 0.4+  | 2007 12 15 | G96 | 0.3-  | 0.2-  |
| 2002 05 16 | 704 | 0.9- | 1.4+ | 2003 10 16 | 691 | 0.2-  | 0.2+  | 2007 12 15 | G96 | 0.3+  | 0.3+  |
| 2002 05 16 | 704 | 0.2+ | 0.1+ | 2005 01 08 | 599 | 0.3-  | 0.1-  | 2007 12 15 | G96 | 0.0   | 0.9-  |
| 2002 05 16 | 704 | 0.2- | 0.2- | 2005 01 08 | 599 | 0.1+  | 0.3+  | 2007 12 15 | G96 | 0.4+  | 0.1+  |

(172106)\* 2002 GH<sub>24</sub>

Discovered 2002 Apr. 13 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 125.36696  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.28187775 | $\omega$ | 94.33427  | +0.30857792 | +0.95117194 |
| <i>a</i> | 2.3037155  | $\Omega$ | 193.64585 | -0.88434117 | +0.28409894 |
| <i>e</i> | 0.1366860  | <i>i</i> | 1.74495   | -0.35031468 | +0.12066370 |
| <i>P</i> | 3.50       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 03 13 | 644 | 0.7+  | 0.9+  | 2003 09 21 | 699 | 0.2+ | 0.2- | 2003 10 22 | 683 | (0.5+ | 1.5-) |
| 2002 03 13 | 644 | 0.5+  | 1.2+  | 2003 09 21 | 699 | 0.5- | 0.4+ | 2003 10 22 | 683 | (0.8- | 2.5-) |
| 2002 03 13 | 644 | 0.5+  | 1.3+  | 2003 09 21 | 691 | 0.2- | 0.3+ | 2003 10 23 | 704 | 0.1+  | 0.8+  |
| 2002 03 15 | 704 | 1.0+  | 1.2+  | 2003 09 21 | 691 | 0.1- | 0.1+ | 2003 10 23 | 704 | 0.2+  | 0.9+  |
| 2002 03 15 | 704 | 1.2+  | 1.1+  | 2003 09 21 | 691 | 0.1- | 0.2+ | 2003 10 23 | 704 | 0.2+  | 0.5+  |
| 2002 03 15 | 704 | (0.2+ | 1.8+) | 2003 09 22 | 699 | 0.9+ | 0.1+ | 2003 10 23 | 704 | 0.3-  | 1.1+  |
| 2002 03 15 | 704 | 0.0   | 0.5+  | 2003 09 22 | 699 | 0.2+ | 0.5- | 2005 01 16 | 691 | 0.2+  | 0.3-  |
| 2002 03 15 | 704 | 0.4+  | 1.4+  | 2003 09 22 | 699 | 0.1- | 0.4+ | 2005 01 16 | 691 | 0.3+  | 0.0   |
| 2002 03 19 | 699 | 1.4-  | 0.3-  | 2003 09 22 | 699 | 1.1- | 0.1+ | 2005 01 16 | 691 | 0.2-  | 0.2-  |
| 2002 03 19 | 699 | 0.2-  | 0.7+  | 2003 09 25 | 608 | 0.2- | 1.0- | 2005 01 19 | 691 | 0.1-  | 0.2+  |
| 2002 03 19 | 699 | 0.8-  | 0.5+  | 2003 09 25 | 608 | 0.4+ | 0.5- | 2005 01 19 | 691 | 0.0   | 0.1-  |
| 2002 03 19 | 699 | (1.0+ | 1.8+) | 2003 09 25 | 608 | 0.5- | 1.1- | 2005 01 19 | 691 | 0.0   | 0.2-  |
| 2002 03 20 | 691 | 0.4+  | 0.7+  | 2003 09 26 | 704 | 0.3- | 0.1+ | 2005 02 02 | 704 | (0.5+ | 2.1+) |
| 2002 03 20 | 691 | 0.2-  | 1.2+  | 2003 09 26 | 704 | 1.2+ | 1.0+ | 2005 02 02 | 704 | 0.5-  | 0.8+  |
| 2002 03 20 | 691 | 0.0   | 0.6+  | 2003 09 26 | 704 | 0.2+ | 0.4+ | 2005 02 02 | 704 | 0.4-  | 1.2+  |
| 2002 04 12 | 704 | (0.3+ | 1.6+) | 2003 09 26 | 704 | 0.5+ | 0.1- | 2005 02 02 | 704 | (0.3- | 1.7+) |
| 2002 04 12 | 704 | (0.5- | 1.7+) | 2003 09 27 | 691 | 0.3- | 0.1+ | 2007 11 14 | 691 | 0.3-  | 0.3-  |
| 2002 04 12 | 704 | (0.3+ | 1.9+) | 2003 09 27 | 691 | 0.4- | 0.0  | 2007 11 14 | 691 | 0.2-  | 0.0   |
| 2002 04 12 | 704 | 0.1+  | 0.8+  | 2003 09 27 | 691 | 0.5- | 0.2+ | 2007 11 14 | 691 | 0.5+  | 0.1-  |
| 2002 04 13 | 691 | 0.3+  | 0.1-  | 2003 09 29 | 704 | 0.1+ | 0.7+ | 2007 11 19 | 691 | 0.2-  | 0.1-  |
| 2002 04 13 | 691 | 0.1+  | 0.2+  | 2003 09 29 | 704 | 0.1- | 0.5+ | 2007 11 19 | 691 | 0.2-  | 0.2-  |
| 2002 04 13 | 691 | 0.4+  | 0.4+  | 2003 09 29 | 704 | 0.8- | 0.8+ | 2007 11 19 | 691 | 0.0   | 0.2-  |
| 2002 04 14 | 704 | 0.4-  | 0.8+  | 2003 09 29 | 704 | 0.7- | 1.1+ | 2007 12 05 | 704 | 0.5+  | 1.3+  |
| 2002 04 14 | 704 | 1.0-  | 0.3+  | 2003 09 29 | 704 | 0.8- | 0.8+ | 2007 12 05 | 704 | 0.7+  | 0.3+  |
| 2002 04 14 | 704 | 0.9-  | 0.1-  | 2003 10 15 | 644 | 0.2+ | 0.4+ | 2007 12 05 | 704 | 0.5-  | 0.0   |
| 2002 04 14 | 704 | 0.5-  | 1.3+  | 2003 10 15 | 644 | 0.2+ | 0.3+ | 2007 12 05 | 704 | 0.1+  | 1.1+  |
| 2002 04 14 | 704 | 1.2-  | 0.5+  | 2003 10 15 | 644 | 0.1+ | 0.5+ | 2007 12 05 | 704 | 1.1+  | 0.6+  |
| 2002 04 19 | 691 | 0.2+  | 0.6-  | 2003 10 20 | 691 | 0.2- | 0.2+ | 2007 12 05 | G96 | 0.1-  | 0.6-  |
| 2002 04 19 | 691 | 0.6+  | 0.7-  | 2003 10 20 | 691 | 0.3- | 0.3+ | 2007 12 05 | G96 | 0.0   | 0.5-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 19 | 691 | 0.5+ | 0.5- | 2003 10 20 | 691 | 0.2-  | 0.2+  | 2007 12 05 | G96 | 0.2- | 0.5- |
| 2003 09 20 | 291 | 0.1- | 0.4+ | 2003 10 20 | 704 | 1.4+  | 1.1+  | 2007 12 15 | G96 | 0.1+ | 0.5- |
| 2003 09 20 | 291 | 0.1+ | 0.3+ | 2003 10 20 | 704 | 0.1-  | 0.5+  | 2007 12 15 | G96 | 0.2+ | 0.7- |
| 2003 09 20 | 291 | 0.1- | 0.3+ | 2003 10 20 | 704 | 0.5+  | 0.3+  | 2007 12 15 | G96 | 0.4- | 0.6- |
| 2003 09 21 | 699 | 0.3+ | 0.3- | 2003 10 20 | 704 | (2.4+ | 0.0 ) | 2007 12 15 | G96 | 0.4+ | 0.3- |
| 2003 09 21 | 699 | 0.7+ | 0.1- | 2003 10 22 | 683 | 0.6+  | 1.4-  |            |     |      |      |

(172107)\* 2002 GW<sub>41</sub> = 2003 SC<sub>69</sub>

Discovered 2002 Apr. 4 by NEAT at Palomar.

Id. G. V. Williams (MPO 52956)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 112.58059  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.27216889 | $\omega$ | 79.55192  | +0.28181853 | +0.95820541 |
| <i>a</i> | 2.3581806  | $\Omega$ | 206.97408 | -0.91726868 | +0.25402862 |
| <i>e</i> | 0.1184965  | <i>i</i> | 6.22715   | -0.28141871 | +0.13157454 |
| <i>P</i> | 3.62       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 02 02 | 691 | 0.4- | 0.5- | 2003 09 20 | 704 | 0.1-  | 0.1+  | 2006 05 25 | 644 | 0.0  | 0.5+ |
| 1998 02 02 | 691 | 0.7- | 0.3- | 2003 09 20 | 704 | 1.1-  | 0.1-  | 2006 05 25 | 644 | 0.0  | 0.5+ |
| 1998 02 02 | 691 | 0.3+ | 0.4+ | 2003 09 20 | 704 | 1.2-  | 1.2-  | 2006 05 25 | 644 | 0.1- | 0.4+ |
| 2002 04 04 | 644 | 0.0  | 0.7+ | 2003 09 21 | 644 | 0.2-  | 0.1-  | 2006 06 04 | G96 | 0.3- | 0.1+ |
| 2002 04 04 | 644 | 0.2+ | 0.8+ | 2003 09 21 | 644 | 0.2+  | 0.2+  | 2006 06 04 | G96 | 0.2- | 0.1+ |
| 2002 04 04 | 644 | 0.3+ | 0.4+ | 2003 09 21 | 644 | 0.1-  | 0.1+  | 2006 06 04 | G96 | 0.4- | 0.2+ |
| 2002 04 05 | 699 | 0.9+ | 0.6+ | 2003 09 27 | 704 | 1.3-  | 0.2-  | 2006 06 04 | G96 | 0.5- | 0.1+ |
| 2002 04 05 | 699 | 0.3+ | 0.3+ | 2003 09 27 | 704 | 0.3-  | 0.1+  | 2007 09 10 | G96 | 0.2+ | 0.4- |
| 2002 04 05 | 699 | 0.1+ | 0.6+ | 2003 09 27 | 704 | 0.3+  | 0.6+  | 2007 09 10 | G96 | 0.7+ | 0.1- |
| 2002 04 05 | 699 | 0.0  | 1.0+ | 2003 09 27 | 704 | 0.1+  | 0.4+  | 2007 09 10 | G96 | 0.2+ | 0.2- |
| 2002 04 12 | 704 | 1.2+ | 0.8+ | 2003 09 27 | 704 | 0.7-  | 0.2+  | 2007 09 10 | G96 | 0.8+ | 0.2- |
| 2002 04 12 | 704 | 0.4+ | 0.3+ | 2003 10 01 | 699 | 0.3+  | 0.6-  | 2007 09 11 | 291 | 0.4- | 0.0  |
| 2002 04 12 | 704 | 0.2- | 0.2+ | 2003 10 01 | 699 | 0.4+  | 1.2+  | 2007 09 11 | 291 | 0.3- | 0.0  |
| 2002 04 12 | 704 | 0.5+ | 1.4+ | 2003 10 01 | 699 | (2.3- | 0.6+) | 2007 09 11 | 291 | 0.3- | 0.0  |
| 2002 04 14 | 704 | 0.4- | 0.2+ | 2003 10 01 | 699 | 0.1-  | 0.1-  | 2007 11 09 | 691 | 0.1+ | 0.4+ |
| 2002 04 14 | 704 | 1.3+ | 0.3- | 2003 10 15 | 644 | 0.3+  | 0.4-  | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2002 04 14 | 704 | 0.3+ | 0.8- | 2003 10 15 | 644 | 0.2+  | 0.2+  | 2007 11 09 | 691 | 0.2+ | 0.2+ |
| 2002 04 14 | 704 | 1.0+ | 0.1+ | 2003 10 15 | 644 | 0.1+  | 0.3+  | 2007 11 12 | 704 | 1.2- | 0.0  |
| 2002 04 15 | 644 | 0.3+ | 1.4+ | 2003 10 21 | 644 | 0.4+  | 0.5+  | 2007 11 12 | 704 | 1.0- | 0.1- |
| 2002 04 15 | 644 | 0.3+ | 1.2+ | 2003 10 21 | 644 | 0.1-  | 0.8+  | 2007 11 12 | 704 | 0.9+ | 0.1+ |
| 2002 04 15 | 644 | 0.1+ | 1.4+ | 2003 10 21 | 644 | 0.1+  | 0.6+  | 2007 11 12 | 704 | 0.1- | 0.7+ |
| 2003 09 17 | 691 | 0.2+ | 0.1- | 2003 10 21 | 644 | 0.2-  | 0.5+  | 2007 11 13 | 691 | 0.2+ | 1.3- |
| 2003 09 17 | 691 | 0.3+ | 0.2- | 2003 10 21 | 644 | 0.0   | 0.6+  | 2007 11 13 | 691 | 0.0  | 0.3+ |
| 2003 09 17 | 691 | 0.2+ | 0.1+ | 2003 10 21 | 644 | 0.2+  | 0.4+  | 2007 11 13 | 691 | 0.1- | 0.2+ |
| 2003 09 18 | 644 | 0.0  | 0.6+ | 2003 10 24 | 691 | 0.1-  | 0.1+  | 2007 11 18 | G96 | 0.5+ | 0.1+ |
| 2003 09 18 | 644 | 0.2- | 0.2+ | 2003 10 24 | 704 | 0.0   | 1.0+  | 2007 11 18 | G96 | 0.9+ | 0.1- |
| 2003 09 18 | 644 | 0.0  | 0.3+ | 2003 10 24 | 691 | 0.1-  | 0.3+  | 2007 11 18 | G96 | 0.7+ | 0.1+ |
| 2003 09 18 | 608 | 0.2- | 1.1- | 2003 10 24 | 704 | 0.5-  | 1.1+  | 2007 11 18 | G96 | 0.7+ | 0.3+ |
| 2003 09 18 | 608 | 0.9+ | 1.4- | 2003 10 24 | 704 | 1.2+  | 0.6+  | 2007 12 05 | 704 | 0.7+ | 1.4+ |
| 2003 09 18 | 608 | 0.2- | 1.1- | 2003 10 24 | 691 | 0.1-  | 0.4+  | 2007 12 05 | 704 | 0.4- | 2.0+ |
| 2003 09 20 | 704 | 0.4- | 0.7+ | 2003 10 24 | 704 | 0.4-  | 0.3+  | 2007 12 05 | 704 | 1.4- | 0.2+ |
| 2003 09 20 | 704 | 0.2- | 0.4+ | 2003 10 24 | 704 | (1.1+ | 2.0+) | 2007 12 05 | 704 | 1.1- | 1.1+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 04 09 | 704 | 0.0   | 0.2+  | 2003 09 20 | 704 | 0.2-  | 0.3+  | 2003 10 22 | 691 | 0.2+  | 0.1+  |
| 2002 04 09 | 704 | 0.3+  | 0.7+  | 2003 09 21 | 644 | 0.6-  | 0.3+  | 2006 04 24 | 699 | 0.2-  | 0.5+  |
| 2002 04 13 | 644 | 0.5+  | 0.1+  | 2003 09 21 | 644 | 0.5-  | 0.2+  | 2006 04 24 | 699 | (0.2+ | 1.7+) |
| 2002 04 13 | 644 | 0.4+  | 0.2-  | 2003 09 21 | 644 | 0.5-  | 0.0   | 2006 04 24 | 699 | 0.8+  | 0.2+  |
| 2002 04 13 | 644 | 0.4+  | 0.1+  | 2003 09 22 | 704 | 0.6-  | 0.0   | 2006 04 24 | 699 | (0.2- | 1.8+) |
| 2002 05 08 | 704 | 0.0   | 0.1-  | 2003 09 22 | 704 | 0.2-  | 0.4-  | 2006 05 01 | 691 | 0.0   | 0.3+  |
| 2002 05 08 | 704 | 1.0-  | 1.0-  | 2003 09 22 | 704 | 0.2+  | 0.3+  | 2006 05 01 | 691 | 0.1+  | 0.3+  |
| 2002 05 08 | 704 | 0.6+  | 0.1-  | 2003 09 22 | 704 | 0.4-  | 0.1+  | 2006 05 01 | 691 | 0.0   | 0.4+  |
| 2002 05 08 | 704 | 0.5+  | 0.5-  | 2003 09 22 | 704 | 0.8+  | 0.4+  | 2007 09 12 | 703 | 0.4-  | 0.7-  |
| 2002 05 08 | 704 | 0.3-  | 0.2-  | 2003 09 30 | 699 | 0.2-  | 0.1-  | 2007 09 12 | 703 | 0.0   | 0.2-  |
| 2002 05 19 | 644 | 0.1+  | 0.8+  | 2003 09 30 | 699 | 0.4+  | 0.4+  | 2007 09 12 | 703 | 0.1+  | 0.3+  |
| 2002 05 19 | 644 | 0.4+  | 1.0+  | 2003 09 30 | 699 | 0.5+  | 0.1-  | 2007 09 12 | 703 | (0.4+ | 1.6-) |
| 2002 05 19 | 644 | 0.1+  | 0.8+  | 2003 09 30 | 699 | 0.7-  | 0.7-  | 2007 10 25 | G96 | 0.0   | 0.2-  |
| 2002 06 10 | 704 | 0.4+  | 0.3-  | 2003 09 30 | 704 | 0.0   | 0.2+  | 2007 10 25 | G96 | 0.0   | 0.2-  |
| 2002 06 10 | 704 | 0.6+  | 0.0   | 2003 09 30 | 704 | (1.5- | 0.3-) | 2007 10 25 | G96 | 0.0   | 0.0   |
| 2002 06 10 | 704 | 0.0   | 0.2-  | 2003 09 30 | 704 | 0.9+  | 0.3+  | 2007 10 25 | G96 | 0.5+  | 1.1-  |
| 2002 06 10 | 704 | 1.2-  | 0.6+  | 2003 09 30 | 704 | 0.8-  | 1.2-  | 2007 12 06 | G96 | 0.0   | 0.3-  |
| 2003 09 04 | 704 | (1.0+ | 1.9+) | 2003 09 30 | 704 | 0.8-  | 0.1+  | 2007 12 06 | G96 | 0.3+  | 0.0   |
| 2003 09 04 | 704 | 0.1+  | 0.1+  | 2003 10 17 | 699 | 0.9+  | 0.4+  | 2007 12 06 | G96 | 0.2+  | 0.2+  |
| 2003 09 04 | 704 | 0.0   | 0.4+  | 2003 10 17 | 699 | 0.3+  | 1.0+  | 2007 12 06 | G96 | 0.0   | 0.0   |

**(172109)\* 2002 GP<sub>72</sub> = 2003 UK<sub>155</sub>**

Discovered 2002 Apr. 9 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 56330)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 115.23430  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.26957413 | $\omega$ | 168.62356 | +0.26981330  | +0.96161752  |
| $a$ | 2.3732887  | $\Omega$ | 117.01317 | -0.88779387  | +0.26850656  |
| $e$ | 0.1628125  | $i$      | 3.21248   | -0.37285765  | +0.05653288  |
| $P$ | 3.66       | $H$      | 16.0      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 09 | 699 | 0.6+ | 1.1+ | 2003 10 15 | 699 | 0.3- | 0.6+ | 2006 06 22 | 644 | 0.3+  | 0.3+  |
| 2002 04 09 | 699 | 0.2+ | 0.8+ | 2003 10 15 | 699 | 1.3+ | 0.2+ | 2006 06 22 | 644 | 0.1+  | 0.5+  |
| 2002 04 09 | 699 | 0.2+ | 0.7+ | 2003 10 15 | 699 | 0.1- | 1.0- | 2006 06 22 | 644 | 0.4+  | 0.5+  |
| 2002 04 09 | 699 | 0.1- | 0.3+ | 2003 10 15 | 699 | 1.0- | 0.6+ | 2007 11 04 | 691 | 0.2-  | 0.0   |
| 2002 04 10 | 704 | 1.1+ | 0.8+ | 2003 10 20 | 704 | 1.0- | 0.8+ | 2007 11 04 | 691 | 0.2-  | 0.2-  |
| 2002 04 10 | 704 | 0.2+ | 0.4- | 2003 10 20 | 704 | 0.3+ | 0.6+ | 2007 11 04 | 691 | 0.0   | 0.0   |
| 2002 04 10 | 704 | 0.4+ | 0.5+ | 2003 10 20 | 704 | 0.7- | 0.5+ | 2007 11 08 | 691 | 0.1+  | 0.3+  |
| 2002 04 10 | 704 | 0.1+ | 0.7+ | 2003 10 20 | 704 | 0.5+ | 0.1+ | 2007 11 08 | 691 | 0.1-  | 0.1+  |
| 2002 04 10 | 704 | 0.0  | 0.7+ | 2003 10 20 | 704 | 0.8- | 0.3+ | 2007 11 08 | 691 | 0.0   | 0.0   |
| 2002 04 17 | 704 | 0.1- | 0.3+ | 2003 10 23 | 691 | 0.1- | 0.2+ | 2007 11 14 | 704 | (0.1+ | 1.9+) |
| 2002 04 17 | 704 | 0.8+ | 0.4- | 2003 10 23 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | 1.0-  | 1.3+  |
| 2002 04 17 | 704 | 0.5- | 0.8+ | 2003 10 23 | 691 | 0.2- | 0.0  | 2007 11 14 | 704 | 0.6+  | 0.4+  |
| 2002 04 17 | 704 | 0.0  | 0.2+ | 2005 01 13 | 691 | 0.1- | 0.2+ | 2007 11 14 | 704 | (1.5+ | 1.1+) |
| 2002 04 17 | 704 | 0.1- | 0.8- | 2005 01 13 | 691 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.3+  | 0.2-  |
| 2003 09 20 | 699 | 0.2+ | 0.2- | 2005 01 13 | 691 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.4+  | 0.0   |
| 2003 09 20 | 699 | 0.1+ | 1.2+ | 2006 05 28 | 704 | 0.2+ | 0.3+ | 2007 11 20 | G96 | 0.1+  | 0.2-  |
| 2003 09 20 | 699 | 0.3- | 0.2- | 2006 05 28 | 704 | 1.0- | 0.4+ | 2007 11 20 | G96 | 0.4+  | 0.0   |
| 2003 09 20 | 699 | 1.0- | 0.3- | 2006 05 28 | 704 | 0.2- | 0.7+ | 2007 12 04 | 704 | 1.2+  | 0.4+  |
| 2003 09 28 | 704 | 0.5+ | 0.2+ | 2006 05 28 | 704 | 0.0  | 0.1- | 2007 12 04 | 704 | 0.4+  | 1.0+  |
| 2003 09 28 | 704 | 0.0  | 0.8+ | 2006 05 28 | 704 | 0.1+ | 1.0+ | 2007 12 04 | 704 | 0.4-  | 0.5+  |
| 2003 09 28 | 704 | 0.4+ | 0.2+ | 2006 06 14 | 644 | 0.3+ | 0.4+ | 2007 12 04 | 704 | 1.0-  | 0.7+  |
| 2003 09 28 | 704 | 0.2+ | 0.1- | 2006 06 14 | 644 | 0.1+ | 0.3+ |            |     |       |       |
| 2003 09 28 | 704 | 0.4+ | 0.1+ | 2006 06 14 | 644 | 0.1+ | 0.7+ |            |     |       |       |

**(172110)\* 2002 GV<sub>79</sub>**

Discovered 2002 Apr. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 286.35288  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.30211534 | $\omega$ | 128.94042 | -0.97199563 | -0.23372494 |
| $a$ | 2.1996531  | $\Omega$ | 37.56125  | +0.20129911 | -0.88174910 |
| $e$ | 0.1194118  | $i$      | 2.29735   | +0.12125659 | -0.40974525 |
| $P$ | 3.26       | $H$      | 16.8      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 08 07 | 608 | 0.1-  | 0.2+  | 2005 02 03 | 704 | 0.1+  | 0.5+  | 2005 03 09 | 704 | 0.5+  | 0.4-  |
| 1996 08 07 | 608 | 0.2-  | 0.9+  | 2005 02 03 | 704 | 0.4-  | 0.2-  | 2005 03 12 | 704 | 0.4-  | 0.3+  |
| 2002 04 10 | 704 | 0.8-  | 1.0+  | 2005 02 09 | 691 | 0.3-  | 0.2-  | 2005 03 12 | 704 | 0.1-  | 0.1+  |
| 2002 04 10 | 704 | 0.5+  | 0.2-  | 2005 02 09 | 691 | 0.4-  | 0.3-  | 2005 03 12 | 704 | 0.4+  | 0.1-  |
| 2002 04 10 | 704 | 0.6-  | 0.1-  | 2005 02 09 | 691 | 0.5-  | 0.1-  | 2005 03 12 | 704 | 0.4+  | 0.1-  |
| 2002 04 10 | 704 | 0.6+  | 0.1+  | 2005 02 09 | 704 | 0.3+  | 0.3+  | 2005 03 12 | 704 | 0.0   | 0.3+  |
| 2002 04 10 | 704 | 0.6-  | 0.4-  | 2005 02 09 | 704 | 0.6+  | 0.4+  | 2005 04 11 | G96 | 0.4-  | 0.4-  |
| 2002 04 11 | 704 | 0.2-  | 0.6-  | 2005 02 09 | 704 | 0.4+  | 0.2-  | 2005 04 11 | G96 | 0.5-  | 0.2-  |
| 2002 04 11 | 704 | 0.3-  | 0.7-  | 2005 02 09 | 704 | 0.0   | 0.6-  | 2005 04 11 | G96 | 0.3-  | 0.2-  |
| 2002 04 11 | 704 | 0.5+  | 0.5-  | 2005 02 09 | 704 | 0.7+  | 0.9+  | 2005 04 11 | G96 | 0.3-  | 0.5-  |
| 2002 04 11 | 704 | 0.2-  | 1.1-  | 2005 02 14 | 704 | 0.7+  | 0.7-  | 2005 04 11 | G96 | 0.3-  | 0.2-  |
| 2002 04 14 | 704 | 0.0   | 0.3+  | 2005 02 14 | 704 | 0.4+  | 0.4-  | 2005 04 11 | G96 | 0.4-  | 0.4-  |
| 2002 04 14 | 704 | 0.2+  | 0.1-  | 2005 02 14 | 704 | 0.2-  | 0.5-  | 2005 04 11 | G96 | 0.4-  | 0.7-  |
| 2002 04 14 | 704 | 0.3-  | 0.2-  | 2005 02 14 | 704 | 0.2-  | 0.4-  | 2005 04 11 | G96 | 0.4-  | 0.5-  |
| 2002 04 14 | 704 | 1.3-  | 0.5+  | 2005 02 14 | 704 | 0.5+  | 1.0-  | 2007 11 19 | D35 | 0.6+  | 0.1-  |
| 2002 04 14 | 704 | 0.1+  | 0.3+  | 2005 03 04 | 704 | 0.3+  | 0.6+  | 2007 11 19 | D35 | 0.0   | 0.6+  |
| 2002 04 14 | 644 | 0.1+  | 0.3+  | 2005 03 04 | 704 | 0.2+  | 0.1+  | 2007 11 19 | D35 | 0.1-  | 0.2+  |
| 2002 04 14 | 644 | 0.3+  | 0.1+  | 2005 03 04 | 704 | 0.1-  | 0.6+  | 2007 12 04 | G96 | 0.8+  | 0.5-  |
| 2002 04 14 | 644 | 0.4+  | 0.1+  | 2005 03 04 | 704 | 0.5-  | 0.3+  | 2007 12 04 | G96 | 0.4+  | 0.1+  |
| 2002 05 09 | 644 | 0.3+  | 0.5-  | 2005 03 04 | 704 | 0.2-  | 0.2+  | 2007 12 04 | G96 | 0.0   | 0.1-  |
| 2002 05 09 | 644 | 0.2+  | 0.6-  | 2005 03 08 | 699 | 1.4-  | 0.4-  | 2007 12 04 | G96 | 0.4-  | 0.1-  |
| 2002 05 09 | 644 | 0.8+  | 0.2-  | 2005 03 08 | 699 | 0.6-  | 0.4+  | 2007 12 05 | 691 | 0.1-  | 0.0   |
| 2002 05 11 | 704 | 0.1+  | 0.4+  | 2005 03 08 | 699 | 0.5+  | 0.4+  | 2007 12 05 | 691 | 0.1-  | 0.0   |
| 2002 05 11 | 704 | 0.0   | 0.5+  | 2005 03 08 | 699 | 0.8-  | 0.0   | 2007 12 05 | 691 | 0.1-  | 0.1+  |
| 2002 05 11 | 704 | 0.2+  | 0.6+  | 2005 03 08 | 704 | 0.1-  | 1.0+  | 2007 12 06 | 704 | 1.0+  | 0.6-  |
| 2002 05 11 | 704 | 0.1+  | 0.4+  | 2005 03 08 | 704 | 0.4+  | 0.2+  | 2007 12 06 | 704 | 0.4+  | 0.3-  |
| 2002 05 11 | 704 | 0.1+  | 0.5+  | 2005 03 08 | 704 | 0.3-  | 0.2+  | 2007 12 06 | 704 | 0.1+  | 0.2-  |
| 2002 05 18 | 644 | 0.1-  | 0.4+  | 2005 03 08 | 704 | 0.3+  | 0.6-  | 2007 12 06 | 704 | 1.4+  | 0.3+  |
| 2002 05 18 | 644 | 0.4+  | 0.6+  | 2005 03 08 | 704 | 0.6+  | 1.1+  | 2007 12 10 | 704 | 0.5+  | 0.8+  |
| 2002 05 18 | 644 | 0.4+  | 0.5+  | 2005 03 09 | 704 | 1.0+  | 0.3-  | 2007 12 10 | 704 | (0.5- | 1.5+) |
| 2005 02 02 | 703 | (0.7+ | 2.0+) | 2005 03 09 | 704 | 0.6+  | 0.8+  | 2007 12 10 | 704 | 0.3+  | 0.5+  |
| 2005 02 02 | 703 | 0.0   | 0.8+  | 2005 03 09 | 704 | 0.5+  | 0.4+  | 2007 12 10 | 704 | 0.2-  | 0.1+  |
| 2005 02 02 | 703 | (1.0+ | 1.8+) | 2005 03 09 | 704 | (1.5+ | 1.1+) | 2007 12 17 | 691 | 0.1-  | 0.1-  |
| 2005 02 02 | 703 | (0.5- | 1.6+) | 2005 03 09 | 704 | 0.6+  | 0.3+  | 2007 12 17 | 691 | 0.3-  | 0.6+  |
| 2005 02 03 | 704 | 0.3-  | 0.9+  | 2005 03 09 | 704 | 1.2+  | 0.0   | 2007 12 17 | 691 | 0.3-  | 0.1-  |
| 2005 02 03 | 704 | 0.2+  | 0.1-  | 2005 03 09 | 704 | 0.1+  | 0.4+  |            |     |       |       |
| 2005 02 03 | 704 | 0.5+  | 0.3-  | 2005 03 09 | 704 | 0.3+  | 0.2-  |            |     |       |       |

**(172111)\* 2002 GV<sub>87</sub>**

Discovered 2002 Apr. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 134.25534  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26916172 | $\omega$ | 135.23924 | +0.07482037 | +0.99544519 |
| $a$ | 2.3757123  | $\Omega$ | 138.94394 | -0.93825893 | +0.09034187 |
| $e$ | 0.1415005  | $i$      | 5.16108   | -0.33774560 | -0.03045040 |
| $P$ | 3.66       | $H$      | 15.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 07 | 704 | 0.1+  | 0.9-  | 2002 04 16 | 704 | 0.4-  | 0.1+  | 2005 01 16 | 704 | 0.2+  | 0.0   |
| 1999 09 07 | 704 | 0.5+  | 0.2+  | 2002 04 16 | 704 | 0.2-  | 0.4-  | 2005 01 16 | 704 | 0.2+  | 0.7+  |
| 1999 09 07 | 704 | 0.6-  | 1.1+  | 2002 04 16 | 704 | (0.4+ | 1.5-) | 2005 01 16 | 691 | 0.0   | 0.1+  |
| 2002 04 10 | 704 | 0.3+  | 0.2-  | 2002 04 16 | 704 | (1.8+ | 0.5+) | 2005 01 16 | 704 | (2.0+ | 0.1-) |
| 2002 04 10 | 704 | 0.3-  | 0.5+  | 2002 05 07 | 644 | 0.2+  | 0.4+  | 2005 01 16 | 691 | 0.1+  | 0.3+  |
| 2002 04 10 | 704 | 0.3+  | 0.8-  | 2002 05 07 | 644 | 0.1+  | 0.2+  | 2005 02 02 | 704 | 0.1-  | 0.4+  |
| 2002 04 10 | 704 | (0.6+ | 1.6+) | 2002 05 07 | 644 | 0.4+  | 0.2+  | 2005 02 02 | 704 | 0.1-  | 0.4-  |
| 2002 04 10 | 704 | 0.5-  | 0.2+  | 2002 05 08 | 704 | 0.2+  | 0.5+  | 2005 02 02 | 704 | 0.8+  | 0.4+  |
| 2002 04 11 | 704 | 0.2-  | 0.2+  | 2002 05 08 | 704 | 0.1-  | 0.1+  | 2005 02 02 | 704 | 0.1-  | 1.1-  |



|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 11 | 704 | 0.1+  | 0.9−  | 2002 05 08 | 704 | 0.6−  | 1.2+  | 2005 03 08 | G96 | 0.5− | 0.6− |
| 2002 04 11 | 704 | 0.9−  | 0.5+  | 2002 05 08 | 704 | 0.0   | 1.5+  | 2005 03 08 | G96 | 0.3− | 0.3− |
| 2002 04 11 | 704 | 0.6+  | 0.1−  | 2002 05 08 | 704 | 0.2−  | 1.1+  | 2005 03 08 | G96 | 0.3− | 0.3− |
| 2002 04 13 | 644 | 0.0   | 0.3+  | 2003 09 28 | 704 | 0.3−  | 1.1+  | 2005 03 08 | G96 | 0.1− | 0.3− |
| 2002 04 13 | 644 | 0.4+  | 0.2+  | 2003 09 28 | 704 | 0.0   | 1.0+  | 2007 11 12 | 704 | 0.4− | 0.4− |
| 2002 04 13 | 644 | 0.4+  | 0.2+  | 2003 09 28 | 704 | (1.9+ | 0.3−) | 2007 11 12 | 704 | 0.1+ | 0.5+ |
| 2002 04 15 | 699 | 0.8+  | 0.8+  | 2003 10 20 | 644 | 0.5−  | 0.2+  | 2007 11 12 | 704 | 0.2+ | 1.4+ |
| 2002 04 15 | 699 | 1.1+  | 0.1−  | 2003 10 20 | 644 | 0.2−  | 0.1+  | 2007 12 04 | 704 | 1.4− | 0.0  |
| 2002 04 15 | 699 | (1.6+ | 0.9+) | 2003 10 20 | 644 | 0.3−  | 0.2+  | 2007 12 04 | 704 | 0.4− | 0.4+ |
| 2002 04 15 | 699 | 0.1−  | 0.1−  | 2005 01 16 | 704 | 0.6+  | 0.1+  | 2007 12 04 | 704 | 0.6− | 0.4+ |
| 2002 04 16 | 704 | 0.1+  | 0.0   | 2005 01 16 | 691 | 0.1−  | 0.2−  | 2007 12 04 | 704 | 1.7+ | 1.3+ |

**(172112)\* 2002 GB<sub>88</sub>**

Discovered 2002 Apr. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 173.38998  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.27970533 | <i>ω</i> 169.80060 | −0.37647856   | +0.91864152 |  |
| <i>a</i> | 2.3156285  | <i>Ω</i> 78.00295  | −0.85837510   | −0.29723154 |  |
| <i>e</i> | 0.0647290  | <i>i</i> 7.03733   | −0.34850551   | −0.26029053 |  |
| <i>P</i> | 3.52       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 10 | 704 | 0.2+  | 0.2−  | 2002 05 03 | 699 | 0.5−  | 1.1+  | 2007 09 10 | 291 | 0.3− | 0.7+ |
| 2002 04 10 | 704 | (2.0+ | 1.4−) | 2002 05 07 | 644 | 0.3+  | 0.1+  | 2007 09 10 | 291 | 0.3− | 0.5+ |
| 2002 04 10 | 704 | 0.2+  | 0.2+  | 2002 05 07 | 644 | 0.1−  | 0.3+  | 2007 09 10 | 291 | 0.6− | 0.7+ |
| 2002 04 10 | 704 | 0.8+  | 0.8+  | 2002 05 07 | 644 | 0.1−  | 0.4+  | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2002 04 10 | 704 | 0.6−  | 0.7+  | 2002 05 08 | 704 | 0.6−  | 0.6−  | 2007 11 19 | 691 | 0.2− | 0.0  |
| 2002 04 11 | 704 | 0.4−  | 0.1−  | 2002 05 08 | 704 | 0.6+  | 1.5+  | 2007 11 19 | 691 | 0.3− | 0.2+ |
| 2002 04 11 | 704 | 0.7−  | 1.0−  | 2002 05 08 | 704 | 0.2+  | 0.3−  | 2007 11 30 | D35 | 0.0  | 0.1− |
| 2002 04 11 | 704 | 0.3+  | 0.2+  | 2002 05 08 | 704 | 0.7+  | 0.6+  | 2007 11 30 | D35 | 0.1+ | 0.1− |
| 2002 04 11 | 704 | 0.7−  | 0.4+  | 2002 06 06 | 704 | 0.7+  | 0.3−  | 2007 11 30 | D35 | 0.4− | 0.3+ |
| 2002 04 13 | 644 | 0.0   | 0.1−  | 2002 06 06 | 704 | 0.1+  | 0.1−  | 2007 12 04 | G96 | 0.1− | 0.0  |
| 2002 04 13 | 644 | 0.4−  | 0.2−  | 2002 06 06 | 704 | 1.3+  | 0.3+  | 2007 12 04 | G96 | 0.4+ | 0.1+ |
| 2002 04 13 | 644 | 0.2−  | 0.5+  | 2005 01 07 | 704 | 0.5+  | 1.1+  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2002 04 16 | 704 | 0.1−  | 0.3−  | 2005 01 07 | 704 | 0.2+  | 0.5−  | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2002 04 16 | 704 | 0.7+  | 0.4+  | 2005 01 07 | 704 | 0.1+  | 0.1+  | 2007 12 05 | 704 | 0.7+ | 0.1− |
| 2002 04 16 | 704 | 0.2+  | 0.1+  | 2005 01 07 | 704 | 0.5+  | 0.2+  | 2007 12 05 | 704 | 0.1− | 0.8− |
| 2002 04 16 | 704 | 0.1+  | 0.4+  | 2005 03 09 | 703 | (1.8− | 0.6−) | 2007 12 05 | 704 | 0.8+ | 1.3+ |
| 2002 04 29 | 644 | 0.4+  | 0.1+  | 2005 03 09 | 703 | (0.6− | 1.7−) | 2007 12 05 | 704 | 0.9+ | 1.2+ |
| 2002 04 29 | 644 | 0.4+  | 0.3+  | 2005 03 09 | 703 | (2.2− | 0.2−) | 2007 12 05 | 704 | 0.8+ | 1.0+ |
| 2002 04 29 | 644 | 0.3+  | 0.3+  | 2005 03 09 | 703 | 1.1−  | 0.2−  | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2002 05 03 | 699 | 0.6−  | 0.2−  | 2006 08 14 | 644 | 0.0   | 1.0+  | 2007 12 15 | G96 | 0.1− | 0.2− |
| 2002 05 03 | 699 | 0.0   | 0.6+  | 2006 08 14 | 644 | 0.0   | 1.4+  | 2007 12 15 | G96 | 0.5− | 0.0  |
| 2002 05 03 | 699 | 1.1+  | 0.8+  | 2006 08 14 | 644 | 0.5−  | 1.1+  | 2007 12 15 | G96 | 0.1+ | 0.0  |

**(172113)\* 2002 GA<sub>93</sub> = 2003 MQ<sub>6</sub>**

Discovered 2002 Apr. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (*MPO* 50058)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 42.30525   | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.28690922 | <i>ω</i> 156.07663 | +0.95088481   | −0.30268883 |  |
| <i>a</i> | 2.2767030  | <i>Ω</i> 221.71635 | +0.26597755   | +0.90602277 |  |
| <i>e</i> | 0.1867216  | <i>i</i> 5.58724   | +0.15834776   | +0.29580772 |  |
| <i>P</i> | 3.44       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 01 | 704 | 0.3− | 0.1+ | 2003 08 01 | 704 | 0.5− | 1.0+ | 2003 10 18 | 704 | 0.4− | 0.4+ |
| 2000 11 01 | 704 | 0.3+ | 0.0  | 2003 08 15 | 608 | 0.1− | 0.2− | 2003 10 18 | 704 | 0.3− | 0.3+ |
| 2000 11 01 | 704 | 0.7− | 0.4+ | 2003 08 15 | 608 | 0.1− | 0.8− | 2003 10 18 | 704 | 0.1− | 0.2− |
| 2000 11 01 | 704 | 0.4− | 0.3− | 2003 08 15 | 608 | 0.3− | 0.1+ | 2003 10 18 | 704 | 0.0  | 0.1− |
| 2002 04 04 | 644 | 0.5+ | 0.5+ | 2003 08 24 | 704 | 0.8− | 0.1− | 2003 10 18 | 704 | 0.0  | 0.4+ |
| 2002 04 04 | 644 | 0.7+ | 0.7+ | 2003 08 24 | 704 | 0.1− | 0.5+ | 2003 10 19 | 699 | 1.2+ | 0.0  |
| 2002 04 04 | 644 | 0.5+ | 0.6+ | 2003 08 24 | 704 | 0.5+ | 0.7+ | 2003 10 19 | 699 | 0.7+ | 0.6− |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 09 | 704 | (1.7+ | 0.1+) | 2003 08 24 | 704 | 0.4− | 0.7+ | 2003 10 19 | 699 | 0.2+  | 0.3+  |
| 2002 04 09 | 704 | 0.5+  | 1.0−  | 2003 08 24 | 704 | 0.4+ | 1.0+ | 2003 10 19 | 699 | 1.5+  | 0.3+  |
| 2002 04 09 | 704 | 0.1+  | 0.8−  | 2003 09 02 | 704 | 0.1− | 0.6− | 2003 11 20 | 704 | 0.3+  | 0.5+  |
| 2002 04 12 | 704 | 0.2+  | 0.1−  | 2003 09 02 | 704 | 0.2− | 0.4− | 2003 11 20 | 704 | 0.2−  | 0.2−  |
| 2002 04 12 | 704 | 0.3+  | 1.2+  | 2003 09 02 | 704 | 0.5− | 0.3− | 2003 11 20 | 704 | 0.1−  | 0.2+  |
| 2002 04 12 | 704 | 0.1+  | 0.6+  | 2003 09 02 | 704 | 0.2− | 0.4− | 2003 11 20 | 704 | 0.6+  | 0.1+  |
| 2002 04 15 | 644 | 0.4+  | 0.5+  | 2003 09 02 | 704 | 0.3− | 0.2− | 2003 11 24 | 704 | 1.0+  | 1.3+  |
| 2002 04 15 | 644 | 0.1+  | 1.0+  | 2003 09 13 | 699 | 0.7− | 0.7− | 2003 11 24 | 704 | 0.6+  | 0.8+  |
| 2002 04 15 | 644 | 0.3+  | 0.7+  | 2003 09 13 | 699 | 1.3− | 0.5+ | 2003 11 24 | 704 | 0.2−  | 0.2−  |
| 2003 06 26 | 704 | (1.8− | 0.9+) | 2003 09 13 | 699 | 0.7+ | 0.8+ | 2005 03 04 | G96 | 0.1−  | 0.3+  |
| 2003 06 26 | 704 | 0.4+  | 0.6+  | 2003 09 13 | 699 | 0.2− | 0.2+ | 2005 03 04 | G96 | 0.2+  | 0.2+  |
| 2003 06 26 | 704 | 0.1−  | 0.2+  | 2003 09 14 | 608 | 0.5+ | 1.2− | 2005 03 04 | G96 | 0.2−  | 0.0   |
| 2003 06 26 | 704 | 1.2−  | 0.5+  | 2003 09 14 | 608 | 0.1+ | 0.9− | 2005 03 04 | G96 | 0.1+  | 0.4+  |
| 2003 06 29 | 704 | 0.6+  | 0.0   | 2003 09 14 | 608 | 0.5+ | 0.8− | 2006 06 20 | 644 | 0.4−  | 0.4+  |
| 2003 06 29 | 704 | 0.1+  | 0.3+  | 2003 09 16 | 699 | 0.3− | 0.4− | 2006 06 20 | 644 | 0.1−  | 0.3+  |
| 2003 06 29 | 704 | 0.2+  | 0.2+  | 2003 09 16 | 699 | 0.1− | 0.6− | 2006 06 20 | 644 | 0.5−  | 0.5+  |
| 2003 07 07 | 599 | 0.0   | 0.2−  | 2003 09 16 | 699 | 0.5− | 0.1+ | 2007 11 04 | 704 | 0.1+  | 1.0+  |
| 2003 07 08 | 599 | 0.1−  | 0.7+  | 2003 09 16 | 699 | 0.1+ | 0.3− | 2007 11 04 | 704 | 1.1+  | 0.5+  |
| 2003 07 08 | 599 | 0.0   | 0.3+  | 2003 09 18 | 704 | 0.3− | 0.7+ | 2007 11 04 | 704 | 0.3+  | 0.9+  |
| 2003 07 08 | 599 | 0.3−  | 0.1+  | 2003 09 18 | 704 | 0.5+ | 0.5− | 2007 11 12 | 704 | (0.1+ | 1.6+) |
| 2003 07 23 | 644 | 0.1−  | 0.1−  | 2003 09 18 | 704 | 0.3+ | 0.2+ | 2007 11 12 | 704 | 0.9+  | 0.6+  |
| 2003 07 23 | 644 | 0.1+  | 0.3+  | 2003 09 18 | 704 | 0.2+ | 0.3+ | 2007 11 12 | 704 | 0.2+  | 0.2+  |
| 2003 07 23 | 644 | 0.0   | 0.2+  | 2003 09 27 | 699 | 0.3− | 0.2− | 2007 11 12 | 704 | 1.2+  | 0.3+  |
| 2003 07 31 | 608 | 0.9+  | 0.3+  | 2003 09 27 | 699 | 0.0  | 0.2+ | 2007 12 04 | 704 | 0.6+  | 0.4+  |
| 2003 07 31 | 608 | 0.1+  | 0.1+  | 2003 09 27 | 699 | 0.2− | 0.5+ | 2007 12 04 | 704 | 0.3+  | 0.1+  |
| 2003 07 31 | 608 | 0.3+  | 0.7+  | 2003 09 27 | 699 | 0.0  | 0.5− | 2007 12 04 | 704 | 0.6+  | 0.2+  |
| 2003 08 01 | 704 | 0.9−  | 0.3+  | 2003 09 27 | 704 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.1+  | 0.4+  |
| 2003 08 01 | 704 | 0.8−  | 0.6+  | 2003 09 27 | 704 | 0.3− | 0.2− | 2007 12 06 | 691 | 0.5+  | 0.4+  |
| 2003 08 01 | 704 | 0.7−  | 0.5+  | 2003 09 27 | 704 | 0.4+ | 0.0  | 2007 12 06 | 691 | 0.0   | 0.2+  |
| 2003 08 01 | 704 | 0.2−  | 1.2+  | 2003 09 27 | 704 | 0.5+ | 0.5− | 2007 12 06 | 691 | 1.4−  | 0.1+  |

**(172114)\* 2002 GA<sub>108</sub>**

Discovered 2002 Apr. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 126.29816  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.26836845 | <i>ω</i> 213.00566 | −0.00220131   | +0.99492394 |  |
| <i>a</i> | 2.3803916  | <i>Ω</i> 57.05710  | −0.88954594   | +0.04401276 |  |
| <i>e</i> | 0.1201816  | <i>i</i> 6.88524   | −0.45684043   | −0.09049442 |  |
| <i>P</i> | 3.67       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 11 | 704 | 1.3+ | 0.7+ | 2005 01 07 | 599 | 0.3+ | 0.7− | 2007 11 05 | 704 | 0.1+ | 0.8− |
| 2002 04 11 | 704 | 0.4+ | 0.4+ | 2005 01 07 | 599 | 0.2+ | 0.5− | 2007 11 05 | G96 | 0.3+ | 0.4− |
| 2002 04 11 | 704 | 0.4+ | 1.2+ | 2007 09 14 | G96 | 0.1+ | 0.3− | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 2002 04 11 | 704 | 0.0  | 0.6+ | 2007 09 14 | G96 | 0.5+ | 0.1− | 2007 11 05 | G96 | 0.0  | 0.3− |
| 2002 04 11 | 704 | 0.7+ | 0.1+ | 2007 09 14 | G96 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.1− |
| 2002 04 12 | 608 | 0.5− | 0.2+ | 2007 09 14 | G96 | 0.2− | 0.3− | 2007 11 07 | 704 | 0.6+ | 0.7+ |
| 2002 04 12 | 608 | 0.9− | 0.1+ | 2007 10 08 | 691 | 0.1− | 0.2+ | 2007 11 07 | 704 | 0.0  | 0.0  |
| 2002 04 12 | 608 | 0.8− | 0.9+ | 2007 10 08 | G96 | 0.4+ | 0.0  | 2007 11 07 | 704 | 0.1− | 0.3+ |
| 2002 04 13 | 644 | 0.8+ | 0.2+ | 2007 10 08 | 691 | 0.1− | 0.6+ | 2007 11 07 | 704 | 0.9+ | 1.2− |
| 2002 04 13 | 644 | 0.8+ | 0.2+ | 2007 10 08 | G96 | 0.5+ | 0.1+ | 2007 11 07 | 704 | 0.1− | 0.0  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 28 | 704 | 1.1−  | 0.4+  | 2007 10 30 | 691 | (3.3− | 2.8−) | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2003 09 28 | 704 | 0.3−  | 0.5+  | 2007 10 30 | 691 | 0.4−  | 0.1−  | 2007 12 15 | G96 | 1.2+ | 0.2− |
| 2003 10 18 | 699 | 0.2−  | 0.5+  | 2007 10 30 | 691 | 0.1+  | 0.0   | 2007 12 15 | G96 | 0.9+ | 0.4− |
| 2003 10 18 | 699 | (2.1− | 0.9+) | 2007 11 03 | 691 | 0.5−  | 0.0   | 2007 12 16 | 291 | 0.5− | 0.1− |
| 2003 10 18 | 699 | 0.1+  | 1.4+  | 2007 11 03 | 691 | 0.5−  | 0.2+  | 2007 12 16 | 291 | 0.5+ | 0.2+ |
| 2003 10 18 | 699 | 0.1+  | 0.5−  | 2007 11 03 | 691 | 0.2−  | 0.0   | 2007 12 16 | 291 | 0.4− | 0.4+ |
| 2005 01 07 | 599 | 0.1−  | 0.3−  | 2007 11 05 | 704 | 0.4+  | 0.2−  |            |     |      |      |
| 2005 01 07 | 599 | 0.0   | 0.5−  | 2007 11 05 | 704 | 0.6+  | 0.3−  |            |     |      |      |

**(172115)\* 2002 GH<sub>112</sub>**

Discovered 2002 Apr. 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 210.09647  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28247865 | <i>ω</i> | 117.36787 | −0.85273857 | +0.51298285 |
| <i>a</i> | 2.3004473  | <i>Ω</i> | 93.64423  | −0.50728786 | −0.76843398 |
| <i>e</i> | 0.1053657  | <i>i</i> | 5.65939   | −0.12448272 | −0.38256740 |
| <i>P</i> | 3.49       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 11 20 | 691 | 0.3− | 0.1+ | 2002 05 07 | 644 | 0.2−  | 0.6+  | 2005 02 14 | 704 | 0.1−  | 0.8−  |
| 1993 11 20 | 691 | 0.2− | 0.0  | 2002 05 07 | 644 | 0.4−  | 0.5+  | 2005 02 14 | 704 | 0.3+  | 0.4−  |
| 1993 11 20 | 691 | 0.2+ | 0.1+ | 2002 05 14 | 699 | (1.7+ | 0.8+) | 2005 02 14 | 704 | 0.4+  | 0.2+  |
| 2000 12 01 | 691 | 0.0  | 0.3− | 2002 05 14 | 699 | 0.4+  | 0.3+  | 2005 03 01 | 703 | (0.3+ | 2.0−) |
| 2000 12 01 | 691 | 0.6+ | 0.2+ | 2002 05 14 | 699 | 0.0   | 0.4−  | 2005 03 01 | 703 | 0.3−  | 1.0−  |
| 2000 12 01 | 691 | 0.1− | 0.5− | 2002 05 14 | 699 | (1.8+ | 0.4+) | 2005 03 01 | 703 | 0.1−  | 0.2−  |
| 2002 04 10 | 704 | 0.8− | 1.2+ | 2003 09 30 | 691 | 0.2−  | 0.4+  | 2005 03 01 | 703 | 0.8−  | 0.6−  |
| 2002 04 10 | 704 | 0.1− | 1.0+ | 2003 09 30 | 691 | 0.1+  | 0.5+  | 2006 06 03 | G96 | 0.1+  | 0.3+  |
| 2002 04 10 | 704 | 0.7+ | 0.7+ | 2003 09 30 | 691 | 0.1−  | 0.7+  | 2006 06 03 | G96 | 0.2+  | 0.2+  |
| 2002 04 10 | 704 | 0.2+ | 0.6+ | 2005 01 13 | 691 | 0.2+  | 0.1−  | 2006 06 03 | G96 | 0.3−  | 0.2+  |
| 2002 04 10 | 704 | 0.3+ | 1.0+ | 2005 01 13 | 691 | 0.1+  | 0.1−  | 2006 06 03 | G96 | 0.1+  | 0.3+  |
| 2002 04 13 | 644 | 0.0  | 0.4+ | 2005 01 13 | 691 | 0.1+  | 0.1−  | 2007 11 04 | 691 | 0.4−  | 0.5+  |
| 2002 04 13 | 644 | 0.0  | 0.7+ | 2005 01 16 | 704 | (0.2− | 1.6−) | 2007 11 04 | 691 | 0.4−  | 0.1+  |
| 2002 04 13 | 644 | 0.2− | 0.6+ | 2005 01 16 | 704 | (0.7− | 3.1−) | 2007 11 04 | 691 | 0.4−  | 0.2+  |
| 2002 04 15 | 699 | 0.6+ | 0.0  | 2005 01 16 | 704 | (1.2− | 2.2−) | 2007 11 08 | 691 | 0.5−  | 0.2+  |
| 2002 04 15 | 699 | 0.2+ | 0.5+ | 2005 02 01 | 703 | 0.3+  | 0.4+  | 2007 11 08 | 691 | 0.1−  | 0.5+  |
| 2002 04 15 | 699 | 0.3+ | 0.9+ | 2005 02 01 | 703 | 0.5−  | 1.2+  | 2007 11 08 | 691 | 0.1+  | 0.4+  |
| 2002 04 15 | 699 | 0.4+ | 0.8+ | 2005 02 01 | 703 | 0.7+  | 0.2−  | 2007 12 04 | 704 | 0.5+  | 0.1+  |
| 2002 04 16 | 704 | 0.4+ | 0.2+ | 2005 02 01 | 703 | 0.4−  | 0.7+  | 2007 12 04 | 704 | 0.3+  | 1.3−  |
| 2002 04 16 | 704 | 1.1+ | 0.4− | 2005 02 03 | 704 | 0.5+  | 1.3+  | 2007 12 04 | 704 | 1.2+  | 0.5+  |
| 2002 04 16 | 704 | 0.5− | 0.7− | 2005 02 03 | 704 | 0.2−  | 0.1−  | 2007 12 04 | 704 | 0.8−  | 0.2−  |
| 2002 04 16 | 704 | 0.3+ | 0.0  | 2005 02 03 | 704 | 0.9+  | 0.3+  |            |     |       |       |
| 2002 05 07 | 644 | 0.6− | 0.6+ | 2005 02 03 | 704 | 0.8+  | 0.4+  |            |     |       |       |

**(172116)\* 2002 GO<sub>113</sub>**

Discovered 2002 Apr. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 238.76414  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28571323 | <i>ω</i> | 18.27738  | −0.98800305 | −0.14672443 |
| <i>a</i> | 2.2830521  | <i>Ω</i> | 153.14369 | +0.12502037 | −0.94307083 |
| <i>e</i> | 0.0491598  | <i>i</i> | 6.12309   | +0.09066357 | −0.29847840 |
| <i>P</i> | 3.45       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 03 05 | 291 | 0.3−  | 0.5+  | 2003 08 23 | 644 | 0.4−  | 0.4+  | 2005 03 13 | G96 | 0.1−  | 0.3−  |
| 2002 03 05 | 291 | 0.3−  | 0.5+  | 2003 09 04 | 691 | 0.3−  | 0.6+  | 2005 03 13 | G96 | 0.1−  | 0.3−  |
| 2002 03 05 | 291 | 0.3−  | 0.5+  | 2003 09 04 | 691 | 0.1+  | 0.8+  | 2005 03 13 | G96 | 0.0   | 0.4−  |
| 2002 03 09 | 704 | 0.2+  | 0.4+  | 2003 09 04 | 691 | 0.0   | 0.6+  | 2005 03 13 | G96 | (1.8+ | 0.4−) |
| 2002 03 09 | 704 | 0.9+  | 0.6+  | 2003 09 18 | 699 | (1.9+ | 0.2+) | 2007 11 07 | 703 | 0.2+  | 1.2+  |
| 2002 03 09 | 704 | 0.8+  | 0.3+  | 2003 09 18 | 699 | (1.2− | 2.2+) | 2007 11 07 | 703 | 0.2−  | 0.2+  |
| 2002 03 09 | 704 | (2.7+ | 1.6−) | 2003 09 18 | 699 | 0.5−  | 0.3+  | 2007 11 07 | 703 | 1.3−  | 1.1+  |
| 2002 03 09 | 704 | 0.2+  | 0.0   | 2003 09 18 | 699 | (1.9− | 0.7−) | 2007 11 07 | 703 | 0.7−  | 0.3+  |
| 2002 03 19 | 699 | 0.6+  | 0.6+  | 2005 01 13 | 704 | 0.7+  | 0.8−  | 2007 11 11 | 704 | 1.5−  | 0.1+  |
| 2002 03 19 | 699 | 0.2+  | 0.0   | 2005 01 13 | 703 | 0.3−  | 0.2−  | 2007 11 11 | 704 | (1.8− | 0.5+) |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 19 | 699 | 0.2− | 0.2− | 2005 01 13 | 704 | 0.4− | 0.0  | 2007 11 11 | 704 | 0.8− | 0.4+ |
| 2002 03 19 | 699 | 0.4− | 0.1+ | 2005 01 13 | 703 | 0.6− | 0.0  | 2007 11 11 | 704 | 1.3− | 0.5+ |
| 2002 04 11 | 704 | 0.5+ | 0.3+ | 2005 01 13 | 703 | 0.2− | 0.3− | 2007 11 15 | G96 | 0.5+ | 0.1− |
| 2002 04 11 | 704 | 0.2+ | 0.8+ | 2005 01 13 | 704 | 0.3− | 0.3+ | 2007 11 15 | G96 | 0.3+ | 0.0  |
| 2002 04 11 | 704 | 0.3+ | 0.9+ | 2005 01 13 | 703 | 0.1+ | 0.6− | 2007 11 15 | G96 | 0.2+ | 0.4+ |
| 2002 04 11 | 704 | 0.1+ | 0.1− | 2005 01 13 | 704 | 0.3− | 0.5+ | 2007 11 15 | 704 | 0.2+ | 0.3+ |
| 2002 04 11 | 704 | 0.5− | 0.4+ | 2005 01 13 | 704 | 0.2− | 0.4− | 2007 11 15 | G96 | 0.6+ | 0.1− |
| 2002 04 13 | 644 | 0.3+ | 0.6+ | 2005 01 19 | 691 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 0.2+ | 0.5+ |
| 2002 04 13 | 644 | 0.5+ | 0.4+ | 2005 01 19 | 691 | 0.3+ | 0.2+ | 2007 11 15 | 704 | 0.2+ | 1.2+ |
| 2002 04 13 | 644 | 0.4+ | 0.7+ | 2005 01 19 | 691 | 0.2+ | 0.3+ | 2007 11 15 | 704 | 1.3+ | 0.5+ |
| 2002 04 16 | 704 | 1.2+ | 0.8+ | 2005 02 02 | 704 | 0.4− | 1.5+ | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 2002 04 16 | 704 | 1.1+ | 0.2+ | 2005 02 02 | 704 | 0.4− | 0.5+ | 2007 11 17 | G96 | 0.0  | 0.4− |
| 2002 04 16 | 704 | 0.1+ | 0.7+ | 2005 02 02 | 704 | 0.2− | 0.2+ | 2007 11 17 | G96 | 0.1+ | 0.3− |
| 2002 04 16 | 704 | 0.6+ | 0.5+ | 2005 02 02 | 704 | 0.8+ | 1.2+ | 2007 11 17 | G96 | 0.0  | 0.2− |
| 2002 04 16 | 704 | 0.3+ | 0.7− | 2005 02 02 | 704 | 0.3+ | 0.4+ | 2007 11 17 | G96 | 0.1+ | 0.3− |
| 2003 07 25 | 644 | 0.3− | 0.8+ | 2005 02 08 | H06 | 1.2+ | 0.8− | 2007 12 06 | 703 | 0.6+ | 0.0  |
| 2003 07 25 | 644 | 0.3− | 0.9+ | 2005 02 08 | H06 | 0.2+ | 0.4+ | 2007 12 06 | 703 | 0.6− | 0.2+ |
| 2003 07 25 | 644 | 0.4− | 0.7+ | 2005 02 13 | H06 | 0.2− | 0.0  | 2007 12 06 | 703 | 0.5+ | 0.1+ |
| 2003 08 23 | 644 | 0.6− | 0.5+ | 2005 02 13 | H06 | 0.6− | 0.7− | 2007 12 06 | 703 | 0.6− | 0.1+ |
| 2003 08 23 | 644 | 0.5− | 0.5+ | 2005 02 13 | H06 | 0.5− | 1.2− |            |     |      |      |

**(172117)\* 2002 GH<sub>114</sub>**

Discovered 2002 Apr. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 205.08648  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28477386 | <i>ω</i> | 141.15108 | −0.87512506 | +0.47699906 |
| <i>a</i> | 2.2880700  | <i>Ω</i> | 67.52111  | −0.46304538 | −0.77662251 |
| <i>e</i> | 0.0824132  | <i>i</i> | 5.05471   | −0.14051728 | −0.41149650 |
| <i>P</i> | 3.46       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 12 | 704 | 0.3+  | 0.6+  | 2005 01 07 | 704 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.1+ |
| 2002 03 12 | 704 | 0.1−  | 0.3−  | 2005 01 07 | 704 | 0.3+ | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 2002 03 12 | 704 | 0.2−  | 0.9+  | 2005 01 11 | 097 | 0.2− | 0.1− | 2007 11 05 | 704 | 0.5+ | 0.1+ |
| 2002 04 02 | 644 | 0.2+  | 0.3+  | 2005 01 11 | 097 | 0.2+ | 0.1− | 2007 11 05 | 704 | 0.2+ | 0.7+ |
| 2002 04 02 | 644 | 0.3−  | 0.0   | 2005 01 11 | 097 | 0.2− | 0.1− | 2007 11 05 | 704 | 0.5+ | 0.6+ |
| 2002 04 02 | 644 | 0.2−  | 0.2+  | 2005 01 12 | 704 | 0.5− | 1.1− | 2007 11 05 | 704 | 0.3− | 0.2+ |
| 2002 04 11 | 704 | 0.0   | 0.1+  | 2005 01 12 | 704 | 0.3+ | 0.4+ | 2007 11 13 | 699 | 0.8+ | 0.8− |
| 2002 04 11 | 704 | 0.0   | 0.0   | 2005 01 12 | 704 | 0.1+ | 1.2− | 2007 11 13 | 699 | 0.6+ | 0.2− |
| 2002 04 11 | 704 | 0.6−  | 0.2+  | 2005 01 16 | 704 | 0.6+ | 0.0  | 2007 11 13 | 699 | 1.4+ | 0.4+ |
| 2002 04 11 | 704 | 0.1−  | 0.2+  | 2005 01 16 | 704 | 0.5− | 0.1+ | 2007 11 13 | 699 | 1.0+ | 0.6− |
| 2002 04 11 | 704 | 0.3+  | 0.1+  | 2005 01 16 | 704 | 0.8+ | 1.1− | 2007 11 14 | 704 | 0.2− | 0.2+ |
| 2002 04 13 | 644 | 0.0   | 0.3+  | 2005 01 18 | 691 | 0.0  | 0.2− | 2007 11 14 | 704 | 0.3+ | 0.6+ |
| 2002 04 13 | 644 | 0.2−  | 0.4+  | 2005 01 18 | 691 | 0.1+ | 0.2− | 2007 11 14 | 704 | 0.2− | 0.4+ |
| 2002 04 13 | 644 | 0.1−  | 0.3+  | 2005 01 18 | 691 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.1+ | 0.6+ |
| 2002 04 15 | 644 | 0.1−  | 0.1+  | 2005 01 19 | 704 | 0.4− | 0.2− | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2002 04 15 | 644 | 0.3−  | 0.3+  | 2005 01 19 | 704 | 0.3− | 0.3+ | 2007 11 19 | 691 | 0.3− | 0.2+ |
| 2002 04 15 | 644 | 0.3−  | 0.3+  | 2005 01 19 | 704 | 0.0  | 0.3+ | 2007 11 19 | 691 | 0.3− | 0.2+ |
| 2002 04 16 | 704 | 1.4+  | 0.3+  | 2005 01 19 | 704 | 0.4− | 0.0  | 2007 12 03 | 703 | 1.2− | 0.3+ |
| 2002 04 16 | 704 | 0.1+  | 0.6+  | 2005 02 03 | 704 | 0.6+ | 0.1− | 2007 12 03 | 703 | 0.9− | 0.3− |
| 2002 04 16 | 704 | 0.4+  | 0.4+  | 2005 02 03 | 704 | 0.2+ | 0.0  | 2007 12 03 | 703 | 0.1− | 1.1− |
| 2002 04 16 | 704 | 0.3+  | 0.2+  | 2005 02 03 | 704 | 0.4− | 0.2+ | 2007 12 03 | 703 | 1.9− | 0.5− |
| 2002 04 16 | 704 | 0.4+  | 0.1+  | 2005 02 03 | 704 | 0.9+ | 0.7+ | 2007 12 04 | 691 | 0.3− | 0.3+ |
| 2002 05 16 | 704 | 1.2+  | 0.1+  | 2006 06 09 | 644 | 0.1− | 0.9+ | 2007 12 04 | 691 | 0.1− | 0.4+ |
| 2002 05 16 | 704 | (1.8+ | 0.0 ) | 2006 06 09 | 644 | 0.0  | 0.6+ | 2007 12 04 | 691 | 0.4− | 0.2+ |
| 2002 05 16 | 704 | 0.8+  | 0.6+  | 2006 06 09 | 644 | 0.1− | 0.5+ | 2007 12 05 | 704 | 0.1− | 0.8− |
| 2003 08 26 | 704 | 0.3+  | 0.2+  | 2007 09 14 | G96 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.1+ | 0.6− |
| 2003 08 26 | 704 | 0.6−  | 0.9+  | 2007 09 14 | G96 | 0.1+ | 0.1− | 2007 12 05 | 704 | 2.0+ | 0.3+ |
| 2003 08 26 | 704 | 0.1−  | 0.1−  | 2007 09 14 | G96 | 0.5+ | 0.4− | 2007 12 05 | 704 | 1.4+ | 0.0  |
| 2005 01 06 | 703 | 0.0   | 0.1−  | 2007 09 14 | G96 | 0.1− | 0.3− | 2007 12 05 | 704 | 1.7+ | 0.3+ |
| 2005 01 06 | 703 | 0.1−  | 0.3+  | 2007 10 10 | G96 | 0.0  | 0.1− | 2007 12 06 | 691 | 0.4− | 0.1+ |
| 2005 01 06 | 703 | 0.1−  | 0.1+  | 2007 10 10 | G96 | 0.5+ | 0.1− | 2007 12 06 | 691 | 0.2− | 0.0  |
| 2005 01 06 | 703 | 0.3−  | 0.8−  | 2007 10 10 | G96 | 0.2+ | 0.2− | 2007 12 06 | 691 | 0.3− | 0.4+ |
| 2005 01 07 | 704 | (1.5+ | 0.5−) | 2007 10 10 | G96 | 0.5+ | 0.2− |            |     |      |      |
| 2005 01 07 | 704 | 0.4−  | 0.9+  | 2007 11 03 | 691 | 0.0  | 0.2+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129269

(172118)\* 2002 GN<sub>114</sub>

Discovered 2002 Apr. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 125.76461 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.27169679 | $\omega$ | 215.68866 | +0.15528786 | +0.98202048 |
| <i>a</i>  | 2.3609115  | $\Omega$ | 63.46356  | -0.87623304 | +0.18709930 |
| <i>e</i>  | 0.1786341  | <i>i</i> | 6.89081   | -0.45618126 | -0.02509252 |
| <i>P</i>  | 3.63       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 03 23 | 608 | 1.1-  | 0.1-  | 2003 09 19 | 599 | 0.6+  | 0.2+  | 2005 01 19 | 704 | (1.5+ | 2.5-) |
| 2002 03 23 | 608 | 0.0   | 1.4-  | 2003 09 19 | 599 | 0.1+  | 0.3+  | 2005 01 19 | 704 | (0.3+ | 1.6-) |
| 2002 03 23 | 608 | 0.2-  | 1.3-  | 2003 09 19 | 599 | (0.9- | 2.1+) | 2005 01 19 | 704 | 0.5-  | 0.3-  |
| 2002 04 06 | 704 | 0.1+  | 0.1-  | 2003 09 20 | 699 | 0.2-  | 0.7+  | 2007 10 14 | G96 | 0.3-  | 0.5-  |
| 2002 04 06 | 704 | 0.6-  | 0.9+  | 2003 09 20 | 699 | 0.5-  | 1.2+  | 2007 10 14 | G96 | 0.1+  | 0.6-  |
| 2002 04 06 | 704 | 0.5-  | 0.3+  | 2003 09 20 | 699 | 0.7+  | 1.4-  | 2007 10 14 | G96 | 0.1-  | 0.2-  |
| 2002 04 10 | 608 | (2.6- | 0.1+) | 2003 09 20 | 699 | 1.1-  | 0.6+  | 2007 10 14 | G96 | 0.1-  | 0.3-  |
| 2002 04 10 | 608 | (2.3- | 1.0+) | 2003 09 22 | 644 | 0.5-  | 0.3+  | 2007 11 05 | 704 | 0.4+  | 0.8+  |
| 2002 04 10 | 608 | (1.9- | 1.4+) | 2003 09 22 | 644 | 0.6-  | 0.1+  | 2007 11 05 | 704 | 0.5-  | 0.7-  |
| 2002 04 11 | 699 | 0.3+  | 0.2-  | 2003 09 22 | 644 | 0.6-  | 0.1+  | 2007 11 05 | 704 | 1.0+  | 0.1+  |
| 2002 04 11 | 699 | 0.6+  | 0.6+  | 2003 09 28 | 704 | 0.5-  | 0.4-  | 2007 11 05 | G96 | 0.2-  | 0.2-  |
| 2002 04 11 | 699 | 0.8+  | 1.0+  | 2003 09 28 | 704 | 0.6-  | 0.6+  | 2007 11 05 | G96 | 0.0   | 0.3-  |
| 2002 04 11 | 704 | 0.1+  | 0.5+  | 2003 09 28 | 704 | 0.1-  | 0.2+  | 2007 11 05 | G96 | 0.4-  | 0.2-  |
| 2002 04 11 | 704 | 0.2+  | 0.1-  | 2003 09 28 | 704 | 0.1+  | 0.5+  | 2007 11 05 | G96 | 0.4-  | 0.2-  |
| 2002 04 11 | 704 | 0.5+  | 0.2-  | 2003 09 28 | 704 | 0.1+  | 0.1-  | 2007 12 02 | D35 | 0.2-  | 0.3+  |
| 2002 04 11 | 699 | 1.1+  | 0.3-  | 2003 10 15 | 644 | 0.1+  | 0.3+  | 2007 12 02 | D35 | 0.0   | 0.4+  |
| 2002 04 11 | 704 | 0.6+  | 0.3-  | 2003 10 15 | 644 | 0.2-  | 0.4+  | 2007 12 02 | D35 | 0.3+  | 0.5+  |
| 2002 04 11 | 704 | 0.6+  | 0.5-  | 2003 10 15 | 644 | 0.0   | 0.5+  | 2007 12 03 | 703 | 0.6+  | 0.4-  |
| 2002 04 13 | 644 | 0.1+  | 0.2+  | 2003 10 20 | 704 | (0.4+ | 2.1+) | 2007 12 03 | 703 | 0.5-  | 0.6-  |
| 2002 04 13 | 644 | 0.1+  | 0.2+  | 2003 10 20 | 704 | (1.9+ | 2.6+) | 2007 12 03 | 703 | 0.8-  | 0.7+  |
| 2002 04 13 | 644 | 0.1+  | 0.3+  | 2003 10 20 | 704 | (0.3- | 2.3+) | 2007 12 03 | 703 | 0.3-  | 0.3+  |
| 2002 04 16 | 704 | 0.2-  | 0.4+  | 2003 10 20 | 704 | (3.9+ | 4.1-) | 2007 12 05 | 704 | 0.9+  | 0.1+  |
| 2002 04 16 | 704 | 0.2-  | 0.8+  | 2003 10 20 | 704 | (0.2+ | 1.7+) | 2007 12 05 | 704 | 0.7+  | 0.2-  |
| 2002 04 16 | 704 | 0.0   | 0.4+  | 2003 11 19 | 644 | 0.2-  | 0.8+  | 2007 12 05 | 704 | 0.4+  | 0.0   |
| 2002 04 16 | 704 | 0.2-  | 0.3+  | 2003 11 19 | 644 | 0.4+  | 0.6+  | 2007 12 05 | 704 | 0.2+  | 0.7-  |
| 2002 04 16 | 704 | 0.6-  | 0.8+  | 2003 11 19 | 644 | 0.3+  | 0.5+  | 2007 12 05 | 704 | 0.4+  | 0.7-  |
| 2002 05 13 | 699 | 0.6+  | 1.0+  | 2005 01 16 | 704 | 0.6+  | 0.4+  | 2007 12 15 | G96 | 0.4-  | 0.4-  |
| 2002 05 13 | 699 | 0.5-  | 0.1+  | 2005 01 16 | 704 | 0.4+  | 0.9+  | 2007 12 15 | G96 | 0.4-  | 0.6-  |
| 2002 05 13 | 699 | 0.1-  | 1.4-  | 2005 01 16 | 704 | 0.0   | 0.9+  | 2007 12 15 | G96 | 0.1+  | 0.1-  |
| 2002 05 13 | 699 | 0.7-  | 0.6+  | 2005 01 16 | 704 | 0.5+  | 0.7+  | 2007 12 15 | G96 | 0.2+  | 0.4-  |

(172119)\* 2002 GR<sub>117</sub> = 2003 TT<sub>15</sub>

Discovered 2002 Apr. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 52980)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 110.96077 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.28352387 | $\omega$ | 253.73293 | +0.68386297 | +0.71973831 |
| <i>a</i>  | 2.2947901  | $\Omega$ | 60.04204  | -0.60554756 | +0.65135218 |
| <i>e</i>  | 0.1374175  | <i>i</i> | 7.93579   | -0.40699337 | +0.24024385 |
| <i>P</i>  | 3.48       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 704 | 0.3+  | 0.6-  | 2003 09 30 | 645 | 0.0  | 0.0  | 2003 10 27 | 704 | 0.6+ | 0.7+ |
| 2000 12 30 | 704 | 0.8+  | 0.1+  | 2003 09 30 | 645 | 0.0  | 0.0  | 2003 10 27 | 704 | 0.0  | 0.2+ |
| 2000 12 30 | 704 | 0.1-  | 0.2-  | 2003 10 05 | 691 | 0.1- | 0.3+ | 2003 10 27 | 704 | 0.1+ | 0.1- |
| 2000 12 30 | 704 | 0.4-  | 0.1+  | 2003 10 05 | 691 | 0.1- | 0.3+ | 2003 10 27 | 704 | 0.3+ | 0.1+ |
| 2002 03 13 | 704 | 0.4+  | 0.3-  | 2003 10 05 | 691 | 0.1- | 0.2+ | 2003 10 29 | 699 | 0.3+ | 0.2+ |
| 2002 03 13 | 704 | 0.1-  | 0.5+  | 2003 10 15 | 699 | 0.2+ | 0.0  | 2003 10 29 | 699 | 0.6- | 0.3+ |
| 2002 03 13 | 704 | 0.4-  | 0.4+  | 2003 10 15 | 699 | 0.4- | 1.0+ | 2003 10 29 | 699 | 0.5- | 0.5+ |
| 2002 03 13 | 704 | 0.0   | 0.6-  | 2003 10 15 | 699 | 1.2- | 0.1- | 2003 10 29 | 699 | 0.5- | 0.2+ |
| 2002 04 11 | 704 | (1.2+ | 2.3+) | 2003 10 15 | 699 | 0.2- | 0.5- | 2003 11 16 | 645 | 0.1+ | 0.1- |
| 2002 04 11 | 704 | 0.4+  | 0.3+  | 2003 10 16 | 644 | 0.2- | 0.6+ | 2003 11 16 | 645 | 0.1+ | 0.0  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 11 | 704 | 0.9- | 0.2+ | 2003 10 16 | 644 | 0.4-  | 0.5+  | 2003 11 19 | 644 | 0.2- | 0.4+ |
| 2002 04 13 | 644 | 0.4+ | 0.4+ | 2003 10 16 | 644 | 0.3-  | 0.5+  | 2003 11 19 | 644 | 0.1- | 0.7+ |
| 2002 04 13 | 644 | 0.6+ | 0.4+ | 2003 10 19 | 704 | (0.8+ | 1.5+) | 2003 11 19 | 644 | 0.0  | 0.4+ |
| 2002 04 13 | 644 | 0.3+ | 0.6+ | 2003 10 19 | 704 | 0.2+  | 0.6-  | 2003 11 20 | 645 | 0.0  | 0.2- |
| 2002 04 16 | 704 | 0.3+ | 1.4+ | 2003 10 19 | 704 | 0.2+  | 0.9+  | 2003 11 20 | 645 | 0.1+ | 0.2- |
| 2002 04 16 | 704 | 0.0  | 0.1- | 2003 10 19 | 704 | (0.1- | 1.5+) | 2007 11 20 | 704 | 0.6- | 0.3- |
| 2002 04 16 | 704 | 0.7+ | 0.5+ | 2003 10 22 | 645 | 0.0   | 0.0   | 2007 11 20 | 704 | 1.3+ | 0.0  |
| 2002 04 16 | 704 | 0.2+ | 0.9+ | 2003 10 22 | 645 | 0.0   | 0.0   | 2007 11 20 | 704 | 0.0  | 0.9- |
| 2002 04 16 | 704 | 0.6+ | 1.0+ | 2003 10 22 | 608 | 1.4-  | 1.1-  | 2007 11 20 | 704 | 0.1+ | 0.6- |
| 2003 09 19 | 704 | 1.4- | 0.0  | 2003 10 22 | 608 | 0.5-  | 0.8-  | 2007 12 13 | 704 | 0.2+ | 0.5+ |
| 2003 09 19 | 704 | 0.2- | 1.0+ | 2003 10 22 | 608 | 0.4-  | 0.3-  | 2007 12 13 | 704 | 0.1+ | 0.1- |
| 2003 09 19 | 704 | 0.6- | 0.2+ | 2003 10 23 | 691 | 0.0   | 0.1+  | 2007 12 13 | 704 | 0.3+ | 0.3+ |
| 2003 09 19 | 704 | 0.7- | 0.2+ | 2003 10 23 | 691 | 0.2+  | 0.1+  | 2007 12 13 | 704 | 0.5- | 0.3+ |
| 2003 09 28 | 699 | 0.8- | 0.3- | 2003 10 23 | 691 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.5- | 1.1+ |
| 2003 09 28 | 699 | 0.6+ | 0.2+ | 2003 10 24 | 645 | 0.0   | 0.0   | 2007 12 15 | 704 | 0.1- | 1.0+ |
| 2003 09 28 | 699 | 0.3- | 0.4+ | 2003 10 24 | 645 | 0.0   | 0.0   | 2007 12 15 | 704 | 0.1- | 1.0+ |
| 2003 09 28 | 699 | 1.2+ | 0.2+ | 2003 10 27 | 704 | 0.2+  | 0.1+  |            |     |      |      |

(172120)\* 2002 GZ<sub>131</sub>

Discovered 2002 Apr. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 129.38901 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.28061609 | $\omega$ | 267.91820 | +0.32009791 | +0.94732667 |
| <i>a</i>  | 2.3106154  | $\Omega$ | 20.75999  | -0.85705134 | +0.29426591 |
| <i>e</i>  | 0.0694221  | <i>i</i> | 1.69172   | -0.40373299 | +0.12641101 |
| <i>P</i>  | 3.51       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 23 | 691 | 0.1-  | 0.0   | 2002 04 15 | 644 | 0.4+  | 0.6+  | 2005 02 01 | 644 | 0.3+  | 0.5+  |
| 2000 12 23 | 691 | 0.1-  | 0.2+  | 2002 04 22 | 644 | 0.1-  | 0.2+  | 2005 02 01 | 644 | 0.7+  | 0.3+  |
| 2000 12 23 | 691 | 0.1-  | 0.1-  | 2002 04 22 | 644 | 0.4-  | 0.2-  | 2005 02 03 | 704 | 1.3+  | 0.8+  |
| 2002 03 11 | 691 | 0.2-  | 0.3+  | 2002 04 22 | 644 | 0.2+  | 0.1-  | 2005 02 03 | 704 | (0.7+ | 1.8+) |
| 2002 03 11 | 691 | 0.1-  | 0.4+  | 2003 09 16 | 291 | 0.4-  | 0.3+  | 2005 02 03 | 704 | 1.1+  | 0.9+  |
| 2002 03 11 | 691 | 0.5-  | 0.1+  | 2003 09 16 | 291 | 0.2-  | 0.3+  | 2005 03 02 | 691 | 0.0   | 0.1-  |
| 2002 04 12 | 704 | 0.7+  | 0.5-  | 2003 09 16 | 291 | 0.1-  | 0.3+  | 2005 03 02 | 691 | 0.1-  | 0.3+  |
| 2002 04 12 | 704 | 0.4+  | 0.1+  | 2003 09 29 | 704 | (1.3- | 2.0+) | 2005 03 02 | 691 | 0.6+  | 0.1-  |
| 2002 04 12 | 704 | 1.1+  | 0.2-  | 2003 09 29 | 704 | 0.1-  | 1.2+  | 2007 11 09 | 691 | 0.4-  | 0.0   |
| 2002 04 12 | 704 | 0.7+  | 0.1-  | 2003 09 29 | 704 | 1.3+  | 1.3-  | 2007 11 09 | 691 | 0.2-  | 0.3-  |
| 2002 04 14 | 704 | 0.2-  | 1.4+  | 2003 10 20 | 691 | 0.0   | 0.4+  | 2007 11 09 | 691 | 0.0   | 0.1-  |
| 2002 04 14 | 704 | 0.1+  | 1.4+  | 2003 10 20 | 691 | 0.1-  | 0.5+  | 2007 12 15 | G96 | 0.0   | 0.0   |
| 2002 04 14 | 704 | 0.0   | 1.4+  | 2003 10 20 | 691 | 0.2-  | 0.6+  | 2007 12 15 | G96 | 0.2-  | 0.0   |
| 2002 04 14 | 704 | (0.9- | 2.3+) | 2005 01 16 | 691 | 0.1+  | 0.1-  | 2007 12 15 | G96 | 0.4-  | 0.4-  |
| 2002 04 14 | 704 | (0.4- | 1.8+) | 2005 01 16 | 691 | 0.1+  | 0.1-  | 2007 12 15 | G96 | 0.0   | 0.0   |
| 2002 04 15 | 644 | 0.3+  | 0.7+  | 2005 01 16 | 691 | 0.2-  | 0.0   |            |     |       |       |
| 2002 04 15 | 644 | 0.4+  | 0.6+  | 2005 02 01 | 644 | 0.1-  | 0.0   |            |     |       |       |

(172121)\* 2002 GO<sub>135</sub>

Discovered 2002 Apr. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 151.18775 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.27948925 | $\omega$ | 287.91423 | -0.03625919 | +0.99860269 |
| <i>a</i>  | 2.3168219  | $\Omega$ | 339.89019 | -0.86934721 | -0.05049198 |
| <i>e</i>  | 0.1024781  | <i>i</i> | 6.41988   | -0.49286987 | +0.01559547 |
| <i>P</i>  | 3.53       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |     |        |
|------------|-----|-----|--------|
| 2002 04 12 | 704 | 0.0 | 0.1+</ |
|------------|-----|-----|--------|

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 04 14 | 704 | 0.7+  | 0.0   | 2003 09 21 | 704 | 0.2−  | 0.8+  | 2005 02 07 | 185 | 0.1−  | 0.0   |
| 2002 04 14 | 704 | 0.5+  | 0.3+  | 2003 09 27 | 704 | 0.1+  | 0.2+  | 2005 02 14 | 704 | 0.2+  | 0.6+  |
| 2002 05 04 | 699 | 0.1+  | 0.1+  | 2003 09 27 | 704 | 0.2−  | 0.1+  | 2005 02 14 | 704 | 0.3+  | 1.2+  |
| 2002 05 04 | 699 | 0.2−  | 0.3+  | 2003 09 27 | 704 | 0.5−  | 0.8+  | 2005 02 14 | 704 | (1.6+ | 1.4+) |
| 2002 05 04 | 699 | 0.2+  | 0.4+  | 2003 09 27 | 704 | 1.0−  | 0.5+  | 2005 03 14 | G96 | 0.0   | 0.2−  |
| 2002 05 04 | 699 | 0.5+  | 0.4+  | 2003 10 16 | 691 | 0.1+  | 0.4+  | 2005 03 14 | G96 | 0.3−  | 0.0   |
| 2002 05 11 | 704 | 0.7−  | 0.2+  | 2003 10 16 | 691 | 0.1+  | 0.3+  | 2005 03 14 | G96 | 0.3−  | 0.0   |
| 2002 05 11 | 704 | 0.0   | 0.1−  | 2003 10 16 | 691 | 0.2+  | 0.0   | 2005 03 14 | G96 | 0.3−  | 0.1−  |
| 2002 05 11 | 704 | 0.2+  | 0.0   | 2003 10 17 | 699 | (0.1− | 1.6−) | 2005 03 16 | G96 | 0.5−  | 0.2−  |
| 2002 05 11 | 704 | 0.6−  | 0.4+  | 2003 10 17 | 699 | 0.6−  | 0.2+  | 2005 03 16 | G96 | 0.2−  | 0.1−  |
| 2002 05 11 | 704 | 0.6−  | 0.5−  | 2003 10 17 | 699 | 1.3−  | 0.7+  | 2005 03 16 | G96 | 0.2−  | 0.2−  |
| 2002 05 15 | 644 | (1.1+ | 1.8+) | 2003 10 17 | 699 | (0.2+ | 1.7−) | 2005 03 16 | G96 | 0.2−  | 0.1−  |
| 2002 05 15 | 644 | (0.8+ | 1.7+) | 2003 10 22 | 691 | 0.0   | 0.2−  | 2005 03 17 | G96 | 0.0   | 0.2−  |
| 2002 05 15 | 644 | (1.2+ | 1.9+) | 2003 10 22 | 691 | 0.2−  | 0.2−  | 2005 03 17 | G96 | 0.2−  | 0.3−  |
| 2002 05 17 | 644 | (1.4+ | 1.8+) | 2003 10 22 | 691 | 0.1−  | 0.1−  | 2005 03 17 | G96 | 0.3−  | 0.3−  |
| 2002 05 17 | 644 | 0.1+  | 0.7+  | 2005 01 15 | 691 | 0.1−  | 0.1+  | 2005 03 17 | G96 | 0.2−  | 0.0   |
| 2002 05 17 | 644 | 0.8+  | 1.4+  | 2005 01 15 | 691 | 0.2+  | 0.0   | 2006 07 23 | 644 | 0.2−  | 0.5+  |
| 2003 09 17 | 644 | 0.0   | 0.3+  | 2005 01 15 | 691 | 0.1+  | 0.0   | 2006 07 23 | 644 | 0.1−  | 0.3+  |
| 2003 09 17 | 644 | 0.3−  | 0.1+  | 2005 01 16 | 704 | 0.6+  | 0.2+  | 2006 07 23 | 644 | 0.1+  | 0.8+  |
| 2003 09 17 | 644 | 0.2+  | 0.1+  | 2005 01 16 | 704 | 0.8+  | 0.3−  | 2007 11 08 | 704 | 0.7−  | 0.8−  |
| 2003 09 17 | 644 | 0.2+  | 0.4+  | 2005 01 16 | 704 | 1.0+  | 1.1+  | 2007 11 08 | 704 | 0.2−  | 0.7−  |
| 2003 09 17 | 644 | 0.2−  | 0.4+  | 2005 01 16 | 704 | 0.6+  | 0.8+  | 2007 11 08 | 704 | 0.3−  | 0.5+  |
| 2003 09 17 | 644 | 0.2+  | 0.2−  | 2005 01 16 | 704 | 0.4+  | 0.5−  | 2007 11 08 | 704 | 0.6−  | 0.8−  |
| 2003 09 19 | 644 | 0.0   | 0.3+  | 2005 01 18 | 691 | 0.3+  | 0.1−  | 2007 12 16 | 704 | 0.2+  | 0.2−  |
| 2003 09 19 | 644 | 0.1+  | 0.2+  | 2005 01 18 | 691 | 0.2+  | 0.1−  | 2007 12 16 | 704 | 1.2+  | 0.7+  |
| 2003 09 19 | 699 | 0.7−  | 0.0   | 2005 01 18 | 691 | 0.2+  | 0.1+  | 2007 12 16 | 704 | 0.8+  | 0.2+  |
| 2003 09 19 | 644 | 0.1+  | 0.2+  | 2005 01 19 | 704 | 0.2−  | 0.3−  | 2007 12 16 | 704 | 0.6−  | 0.7+  |
| 2003 09 19 | 699 | 0.4+  | 0.1+  | 2005 01 19 | 704 | 0.1+  | 0.9+  | 2007 12 16 | 704 | 0.0   | 0.0   |
| 2003 09 19 | 699 | 0.0   | 0.1+  | 2005 01 19 | 704 | 0.4−  | 0.3+  |            |     |       |       |
| 2003 09 19 | 699 | 0.0   | 0.4−  | 2005 01 19 | 704 | (0.3+ | 1.8+) |            |     |       |       |

**(172122)\* 2002 GD<sub>151</sub> = 2005 EE<sub>31</sub>**

Discovered 2002 Apr. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 75333)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 320.56075  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.31013369 | $\omega$ | 198.99128 | −0.77812332 | −0.62677255 |
| $a$ | 2.1615739  | $\Omega$ | 302.12726 | +0.58236544 | −0.69546413 |
| $e$ | 0.0744521  | $i$      | 2.77438   | +0.23531807 | −0.35140549 |
| $P$ | 3.18       | $H$      | 17.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 06 | 608 | 0.8− | 0.1+ | 2005 03 03 | 703 | 0.3−  | 0.7−  | 2005 03 17 | 703 | 1.2− | 0.5− |
| 2000 10 06 | 608 | 0.8− | 0.3+ | 2005 03 03 | 683 | 0.7−  | 0.2−  | 2005 03 17 | 703 | 0.6+ | 1.5− |
| 2000 10 06 | 608 | 1.1− | 0.4+ | 2005 03 03 | 703 | 0.2−  | 0.0   | 2005 03 17 | 703 | 0.0  | 0.5− |
| 2002 04 09 | 704 | 0.1+ | 0.3+ | 2005 03 03 | 703 | 0.2−  | 1.1−  | 2005 03 17 | 703 | 0.3+ | 0.3+ |
| 2002 04 09 | 704 | 0.7+ | 0.4+ | 2005 03 03 | 703 | 0.6−  | 0.2+  | 2005 03 31 | 644 | 1.0+ | 0.9− |
| 2002 04 09 | 704 | 0.6+ | 0.5− | 2005 03 07 | 683 | (0.2+ | 1.9+) | 2005 03 31 | 644 | 0.5+ | 0.4+ |
| 2002 04 14 | 704 | 0.4+ | 0.2+ | 2005 03 07 | 683 | 0.2−  | 1.3+  | 2005 03 31 | 644 | 0.6+ | 0.3+ |
| 2002 04 14 | 704 | 0.1− | 0.6+ | 2005 03 07 | 683 | 0.3−  | 0.9+  | 2005 05 14 | G96 | 0.0  | 0.7− |
| 2002 04 14 | 704 | 0.9+ | 0.4+ | 2005 03 08 | 699 | 0.2−  | 0.7+  | 2005 05 14 | G96 | 0.4− | 0.4− |
| 2002 04 14 | 704 | 0.5− | 0.1− | 2005 03 08 | 683 | (2.1+ | 2.1−) | 2005 05 14 | G96 | 0.0  | 0.3− |
| 2002 04 15 | 644 | 0.3+ | 0.4+ | 2005 03 08 | 683 | 0.2−  | 0.3−  | 2005 05 14 | G96 | 0.1− | 0.5− |
| 2002 04 15 | 644 | 0.4+ | 0.1+ | 2005 03 08 | 699 | 0.3−  | 0.1+  | 2006 06 20 | G96 | 0.5− | 0.0  |
| 2002 04 15 | 644 | 0.0  | 0.1+ | 2005 03 08 | 683 | 0.1+  | 0.7+  | 2006 06 20 | G96 | 0.2− | 0.2− |
| 2003 09 18 | 644 | 0.1+ | 0.7+ | 2005 03 08 | 699 | 0.1+  | 0.6+  | 2006 06 20 | G96 | 0.8− | 0.8+ |
| 2003 09 18 | 644 | 0.1+ | 0.6+ | 2005 03 08 | 699 | 0.1+  | 0.2−  | 2006 06 20 | G96 | 0.1+ | 0.5− |
| 2003 09 18 | 644 | 0.2+ | 0.7+ | 2005 03 09 | 683 | (0.8− | 2.5−) | 2006 08 13 | 644 | 0.5− | 0.4+ |
| 2003 09 20 | 691 | 0.1− | 0.5+ | 2005 03 09 | 699 | 1.1−  | 0.5−  | 2006 08 13 | 644 | 0.3− | 0.2+ |
| 2003 09 20 | 691 | 0.1+ | 0.5+ | 2005 03 09 | 683 | (1.7− | 1.2−) | 2006 08 13 | 644 | 0.2− | 0.5+ |
| 2003 09 20 | 691 | 0.1− | 0.5+ | 2005 03 09 | 699 | 0.8−  | 0.6+  | 2006 09 27 | G96 | 0.3− | 0.0  |
| 2005 02 02 | 704 | 1.0+ | 0.7+ | 2005 03 09 | 704 | 0.4+  | 0.5+  | 2006 09 27 | G96 | 0.2+ | 0.5+ |
| 2005 02 02 | 704 | 0.6+ | 0.6+ | 2005 03 09 | 683 | 0.3−  | 0.9−  | 2006 09 27 | G96 | 0.5− | 0.5− |
| 2005 02 02 | 704 | 0.7+ | 1.4+ | 2005 03 09 | 704 | 0.8+  | 0.4+  | 2006 09 27 | G96 | 0.1+ | 0.1− |
| 2005 03 01 | 683 | 0.0  | 0.7+ | 2005 03 09 | 699 | 0.0   | 0.5+  | 2007 11 11 | G96 | 0.3+ | 0.3− |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 01 | 683 | (1.0− | 1.9+) | 2005 03 09 | 704 | 0.8+  | 0.4+  | 2007 11 11 | G96 | 0.4+ | 0.1− |
| 2005 03 01 | 683 | (2.3+ | 1.9+) | 2005 03 09 | 704 | 0.7+  | 0.3+  | 2007 11 11 | G96 | 0.8+ | 0.1− |
| 2005 03 02 | 691 | 0.0   | 0.4+  | 2005 03 09 | 699 | 0.1+  | 0.3−  | 2007 11 11 | G96 | 0.5+ | 0.4− |
| 2005 03 02 | 691 | 0.3−  | 0.6+  | 2005 03 09 | 704 | 0.8+  | 0.4+  | 2007 12 14 | G96 | 0.4− | 0.1− |
| 2005 03 02 | 691 | 0.2+  | 0.1+  | 2005 03 10 | 683 | 0.3−  | 1.5+  | 2007 12 14 | G96 | 0.1+ | 0.3+ |
| 2005 03 03 | 683 | (0.8− | 2.2−) | 2005 03 10 | 683 | 0.1−  | 0.1−  | 2007 12 14 | G96 | 0.1− | 0.1− |
| 2005 03 03 | 683 | 0.1−  | 0.9−  | 2005 03 10 | 683 | (2.0+ | 0.5+) | 2007 12 14 | G96 | 0.3+ | 0.3− |

**(172123)\* 2002 GQ<sub>168</sub>**

Discovered 2002 Apr. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 149.47664  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.29689631 | $\omega$ | 47.26597  | +0.58662409 | +0.80843189 |
| $a$ | 2.2253561  | $\Omega$ | 258.71311 | −0.75661659 | +0.52592822 |
| $e$ | 0.0821065  | $i$      | 2.80924   | −0.28879665 | +0.26426763 |
| $P$ | 3.32       | $H$      | 16.9      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 26 | 691 | 0.4+  | 0.1+  | 2003 10 21 | 704 | 0.0   | 0.1−  | 2006 08 28 | 703 | 1.0−  | 0.2+  |
| 2000 11 26 | 691 | 0.4+  | 0.2−  | 2003 10 21 | 704 | 0.5−  | 0.1−  | 2006 08 29 | 691 | 0.2+  | 0.2+  |
| 2000 11 26 | 691 | 0.3+  | 0.3−  | 2003 10 21 | 704 | 0.9−  | 0.5+  | 2006 08 29 | 691 | 0.2+  | 0.3+  |
| 2002 04 04 | 644 | 0.0   | 0.3+  | 2003 10 25 | 704 | 1.2+  | 0.4−  | 2006 08 29 | 691 | 0.1+  | 0.1+  |
| 2002 04 04 | 644 | 0.1+  | 0.4+  | 2003 10 25 | 704 | 0.2−  | 0.1+  | 2006 08 30 | 704 | 1.0+  | 0.7+  |
| 2002 04 04 | 644 | 0.1−  | 0.5+  | 2003 10 25 | 704 | 0.4+  | 1.2+  | 2006 08 30 | 704 | 0.7−  | 0.3−  |
| 2002 04 04 | 608 | 1.1−  | 0.2−  | 2003 10 25 | 704 | 0.5−  | 0.0   | 2006 08 30 | 704 | 0.0   | 0.4+  |
| 2002 04 04 | 608 | 1.2−  | 0.2+  | 2003 10 29 | 704 | 1.2+  | 1.1+  | 2006 08 30 | 704 | 0.3+  | 0.5+  |
| 2002 04 04 | 608 | 1.4−  | 0.3+  | 2003 10 29 | 704 | 0.2−  | 0.0   | 2006 08 30 | 704 | 0.4−  | 0.2+  |
| 2002 04 09 | 704 | 1.2+  | 0.7−  | 2003 10 29 | 704 | 0.0   | 1.2+  | 2006 09 12 | 699 | 0.1+  | 1.1+  |
| 2002 04 09 | 704 | 1.3+  | 0.4−  | 2005 03 10 | 699 | (0.4− | 1.9+) | 2006 09 12 | 699 | 0.2−  | 0.7+  |
| 2002 04 09 | 704 | 0.5+  | 0.9+  | 2005 03 10 | 699 | 1.6−  | 0.8+  | 2006 09 12 | 699 | (0.6+ | 1.5+) |
| 2002 04 09 | 704 | 0.9+  | 0.7+  | 2005 03 10 | 703 | (0.7− | 1.6+) | 2006 09 12 | 699 | 0.1+  | 0.1−  |
| 2002 04 14 | 704 | 0.4−  | 0.7+  | 2005 03 10 | 699 | 0.1−  | 1.3+  | 2006 09 14 | 703 | 0.0   | 0.7+  |
| 2002 04 14 | 704 | 0.1+  | 0.4+  | 2005 03 10 | 703 | 0.0   | 1.1+  | 2006 09 14 | 703 | 0.8−  | 0.0   |
| 2002 04 14 | 704 | 0.3+  | 1.2+  | 2005 03 10 | 703 | 0.2+  | 0.8+  | 2006 09 14 | 703 | 0.6−  | 0.8+  |
| 2002 04 14 | 704 | (0.5− | 1.6+) | 2005 03 10 | 699 | 0.1+  | 1.5+  | 2006 09 14 | 703 | 1.4−  | 0.4+  |
| 2002 04 14 | 704 | (0.2+ | 1.7+) | 2005 03 10 | 703 | 1.2−  | 0.5−  | 2006 09 18 | 703 | 0.6+  | 0.9−  |
| 2002 05 13 | 704 | 1.1+  | 0.6−  | 2006 08 16 | 644 | 0.0   | 0.3−  | 2006 09 18 | 703 | 0.1+  | 1.3−  |
| 2002 05 13 | 704 | (0.3− | 1.6+) | 2006 08 16 | 644 | 0.3+  | 0.3−  | 2006 09 18 | 703 | 1.2+  | 0.1−  |
| 2002 05 13 | 704 | (3.1+ | 0.6+) | 2006 08 16 | 644 | 0.2+  | 0.1−  | 2006 09 18 | 703 | 0.8−  | 0.0   |
| 2002 05 13 | 704 | 1.2+  | 0.1−  | 2006 08 18 | 699 | 0.2+  | 0.6−  | 2006 09 28 | G96 | 0.2+  | 0.4−  |
| 2003 09 20 | 644 | 0.1−  | 0.2+  | 2006 08 18 | 699 | 0.1−  | 1.2+  | 2006 09 28 | G96 | 0.4+  | 0.4−  |
| 2003 09 20 | 644 | 0.2−  | 0.3+  | 2006 08 18 | 699 | 0.1+  | 0.5−  | 2006 09 28 | G96 | 0.2−  | 0.4−  |
| 2003 09 20 | 644 | 0.3+  | 0.4+  | 2006 08 18 | 699 | 0.3−  | 0.9−  | 2006 09 28 | G96 | 0.0   | 0.3−  |
| 2003 09 20 | 644 | 0.0   | 0.2+  | 2006 08 24 | 704 | 0.2−  | 1.0+  | 2006 09 28 | G96 | 0.0   | 0.2−  |
| 2003 09 20 | 644 | 0.3−  | 0.3+  | 2006 08 24 | 704 | 0.4−  | 0.1−  | 2006 09 28 | G96 | 0.1+  | 0.4−  |
| 2003 09 20 | 644 | 0.2−  | 0.1+  | 2006 08 24 | 704 | 0.1−  | 0.4−  | 2006 09 28 | G96 | 0.3+  | 0.4−  |
| 2003 09 22 | 691 | 0.1−  | 0.1−  | 2006 08 24 | 704 | 0.3+  | 0.2−  | 2007 11 11 | G96 | 0.8+  | 0.1−  |
| 2003 09 22 | 691 | 0.2−  | 0.1−  | 2006 08 24 | 704 | 0.2+  | 0.6−  | 2007 11 11 | G96 | 0.5+  | 0.2+  |
| 2003 09 22 | 691 | 0.3−  | 0.2−  | 2006 08 28 | 699 | 0.7+  | 0.9+  | 2007 11 11 | G96 | 0.2+  | 0.2−  |
| 2003 09 27 | 691 | 0.0   | 0.1+  | 2006 08 28 | 699 | 1.3+  | 0.1−  | 2007 11 11 | G96 | 0.3+  | 0.4−  |
| 2003 09 27 | 691 | 0.2−  | 0.1−  | 2006 08 28 | 699 | 0.1+  | 0.5−  | 2007 12 15 | G96 | 1.2+  | 0.3−  |
| 2003 09 27 | 691 | 0.2−  | 0.1+  | 2006 08 28 | 699 | 0.1+  | 0.2+  | 2007 12 15 | G96 | 0.0   | 0.1−  |
| 2003 10 16 | 691 | 0.3−  | 0.2+  | 2006 08 28 | 703 | 0.3+  | 0.3+  | 2007 12 15 | G96 | 0.1−  | 0.5−  |
| 2003 10 16 | 691 | 0.4−  | 0.1+  | 2006 08 28 | 703 | 1.1−  | 0.1+  | 2007 12 15 | G96 | 0.1+  | 0.1+  |
| 2003 10 16 | 691 | 0.5−  | 0.1+  | 2006 08 28 | 703 | 0.1−  | 0.1−  |            |     |       |       |

2007 DEC. 24

M.P.O. 129271

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 163.45047  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27193384 | $\omega$ 355.95525 | -0.78112731   | +0.62181633 |
| <i>a</i> | 2.3595393  | $\Omega$ 222.66561 | -0.57048829   | -0.74752502 |
| <i>e</i> | 0.0549090  | <i>i</i> 4.77641   | -0.25373852   | -0.23356111 |
| <i>P</i> | 3.62       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 05 31 | 691 | 0.4+  | 1.0-  | 2006 04 25 | G96 | 0.2+  | 0.3+  | 2007 10 12 | 704 | 1.0+  | 0.3+  |
| 1995 05 31 | 691 | 0.1+  | 1.0-  | 2006 04 25 | G96 | 0.2+  | 0.1+  | 2007 10 12 | 704 | 0.6+  | 0.2-  |
| 1995 05 31 | 691 | 0.7-  | 0.1+  | 2006 04 25 | G96 | 0.2+  | 0.2-  | 2007 10 13 | 691 | 0.2-  | 0.1+  |
| 2002 04 04 | 644 | 0.2-  | 1.2+  | 2006 04 25 | G96 | 0.2+  | 0.2+  | 2007 10 13 | 691 | 0.1-  | 0.2+  |
| 2002 04 04 | 644 | 0.2-  | 0.8+  | 2006 05 06 | G96 | 0.2-  | 0.3+  | 2007 10 13 | 691 | 0.2+  | 0.1+  |
| 2002 04 04 | 644 | 0.5-  | 1.3+  | 2006 05 06 | G96 | 0.2-  | 0.2+  | 2007 10 13 | 703 | (2.0- | 0.9+) |
| 2002 04 10 | 704 | (1.6- | 1.6+) | 2006 05 06 | G96 | 0.1+  | 0.1+  | 2007 10 13 | 703 | 0.3+  | 1.1+  |
| 2002 04 10 | 704 | 0.7+  | 0.7+  | 2006 05 21 | G96 | 0.1-  | 0.2+  | 2007 10 13 | 703 | 0.0   | 1.1+  |
| 2002 04 10 | 704 | 0.3+  | 0.8+  | 2006 05 21 | G96 | 0.3-  | 0.0   | 2007 10 13 | 703 | 1.0-  | 0.9+  |
| 2002 04 10 | 704 | 0.3+  | 0.4+  | 2006 05 21 | G96 | 0.5-  | 0.1-  | 2007 10 15 | 704 | 0.2-  | 0.3-  |
| 2002 04 14 | 704 | 0.7+  | 0.7+  | 2006 05 21 | G96 | 0.0   | 0.0   | 2007 10 15 | 704 | 1.0+  | 0.3-  |
| 2002 04 14 | 704 | 0.8+  | 1.5+  | 2006 05 27 | 704 | 0.0   | 0.6+  | 2007 10 15 | 704 | 0.7+  | 0.7-  |
| 2002 04 14 | 704 | 0.2+  | 0.7+  | 2006 05 27 | 704 | 0.9-  | 0.6+  | 2007 10 15 | 704 | 0.2-  | 0.5-  |
| 2002 04 14 | 704 | 1.1+  | 0.0   | 2006 05 27 | 704 | (2.6- | 1.5+) | 2007 10 16 | 691 | 0.3-  | 0.3+  |
| 2002 04 14 | 704 | 0.3+  | 1.3+  | 2006 06 16 | 691 | 0.2+  | 0.4+  | 2007 10 16 | 691 | 0.1-  | 0.1+  |
| 2003 09 29 | 691 | 0.0   | 0.3-  | 2006 06 16 | 691 | 0.2+  | 0.1+  | 2007 10 16 | 691 | 0.3-  | 0.1+  |
| 2003 09 29 | 691 | 0.2-  | 0.1-  | 2006 06 16 | 691 | 0.1+  | 0.3+  | 2007 11 01 | 691 | 0.4-  | 0.4-  |
| 2003 09 29 | 691 | 0.3-  | 0.1+  | 2007 10 11 | G96 | 0.6+  | 0.3+  | 2007 11 01 | 691 | 0.2-  | 0.2+  |
| 2003 09 30 | 291 | 0.4-  | 0.1+  | 2007 10 11 | G96 | 0.3+  | 0.0   | 2007 11 01 | 691 | 0.2+  | 0.1+  |
| 2003 09 30 | 291 | 0.1-  | 0.3+  | 2007 10 11 | G96 | 0.4+  | 0.0   | 2007 12 06 | G96 | 0.3+  | 0.2-  |
| 2003 09 30 | 291 | 0.0   | 0.6+  | 2007 10 11 | G96 | 0.5+  | 0.1+  | 2007 12 06 | G96 | 0.1+  | 0.1-  |
| 2004 12 12 | 691 | 0.1-  | 0.0   | 2007 10 12 | 704 | 0.4+  | 0.2+  | 2007 12 06 | G96 | 0.5+  | 0.1-  |
| 2004 12 12 | 691 | 0.1-  | 0.2+  | 2007 10 12 | 704 | 0.4+  | 0.4+  | 2007 12 06 | G96 | 0.9+  | 0.3-  |
| 2004 12 12 | 691 | 0.3-  | 0.0   | 2007 10 12 | 704 | 0.6+  | 0.5+  |            |     |       |       |

(172125)\* 2002 HE<sub>4</sub>

Discovered 2002 Apr. 16 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 237.32870  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28737672 | $\omega$ 72.20503  | -0.98795310   | +0.12412233 |
| <i>a</i> | 2.2742332  | $\Omega$ 114.84178 | -0.14922312   | -0.92232034 |
| <i>e</i> | 0.1389726  | <i>i</i> 5.84563   | +0.04100155   | -0.36594922 |
| <i>P</i> | 3.43       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 02 16 | 608 | 0.2+ | 0.8+ | 2002 05 09 | 704 | 0.6+ | 0.1- | 2005 01 18 | 691 | 0.1+  | 0.1-  |
| 2002 02 16 | 608 | 0.2+ | 0.8+ | 2002 05 09 | 704 | 0.5+ | 0.3- | 2005 01 18 | 691 | 0.3-  | 0.0   |
| 2002 02 16 | 608 | 0.5+ | 0.6+ | 2002 05 09 | 704 | 0.5- | 0.1- | 2005 01 20 | 699 | 0.0   | 0.7-  |
| 2002 04 10 | 704 | 0.1+ | 0.6+ | 2002 05 09 | 704 | 0.6+ | 0.9- | 2005 01 20 | 699 | (1.8+ | 0.4+) |
| 2002 04 10 | 704 | 0.3- | 0.4+ | 2002 05 12 | 704 | 0.6- | 0.5- | 2005 01 20 | 699 | 0.7+  | 0.8-  |
| 2002 04 10 | 704 | 0.4- | 0.7+ | 2002 05 12 | 704 | 0.5- | 0.6- | 2005 01 20 | 699 | 0.7-  | 0.2+  |
| 2002 04 10 | 704 | 0.1- | 0.6+ | 2002 05 12 | 704 | 0.8- | 0.7- | 2005 02 01 | 703 | 0.2-  | 0.2-  |
| 2002 04 10 | 704 | 0.1- | 0.9+ | 2002 05 14 | 699 | 0.7+ | 0.1- | 2005 02 01 | 703 | 0.5-  | 0.6-  |
| 2002 04 11 | 704 | 0.3- | 0.4- | 2002 05 14 | 699 | 0.1- | 0.2+ | 2005 02 01 | 703 | 0.6-  | 0.2-  |
| 2002 04 11 | 704 | 1.1- | 0.2+ | 2002 05 14 | 699 | 0.2+ | 0.9- | 2005 02 01 | 703 | 0.7-  | 1.0+  |
| 2002 04 11 | 704 | 0.6- | 0.6+ | 2002 05 14 | 699 | 0.5+ | 0.8- | 2005 02 02 | 704 | 1.0+  | 0.0   |
| 2002 04 11 | 704 | 0.5- | 1.1+ | 2004 12 18 | G96 | 0.5+ | 0.6+ | 2005 02 02 | 704 | 0.2+  | 0.1+  |
| 2002 04 12 | 644 | 0.3- | 0.4+ | 2004 12 18 | G96 | 0.2- | 0.3- | 2005 02 02 | 704 | 0.2+  | 0.2-  |
| 2002 04 12 | 644 | 0.3- | 0.4+ | 2004 12 18 | G96 | 0.2- | 0.5- | 2005 02 02 | 704 | 0.2+  | 0.7+  |
| 2002 04 12 | 644 | 0.2- | 0.4+ | 2004 12 18 | G96 | 0.1- | 0.2- | 2005 02 02 | 704 | 0.6-  | 0.2+  |
| 2002 04 13 | 644 | 0.6- | 0.3+ | 2004 12 20 | G96 | 0.3- | 0.1- | 2005 03 14 | G96 | 0.0   | 0.2-  |
| 2002 04 13 | 644 | 0.6- | 0.4+ | 2004 12 20 | G96 | 0.2- | 0.2- | 2005 03 14 | G96 | 0.0   | 0.3-  |
| 2002 04 13 | 644 | 0.5- | 0.3+ | 2004 12 20 | G96 | 0.2- | 0.1- | 2005 03 14 | G96 | 0.2+  | 0.3-  |
| 2002 04 15 | 699 | 1.0+ | 0.0  | 2004 12 20 | G96 | 0.1- | 0.3- | 2005 03 14 | G96 | 0.0   | 0.4-  |
| 2002 04 15 | 699 | 0.3- | 0.7+ | 2005 01 01 | 703 | 0.4- | 0.8- | 2006 06 19 | G96 | 0.1+  | 0.3+  |
| 2002 04 15 | 699 | 0.2+ | 0.1+ | 2005 01 01 | 703 | 0.3+ | 0.1- | 2006 06 19 | G96 | 0.3+  | 0.1-  |
| 2002 04 15 | 699 | 1.4+ | 0.3+ | 2005 01 01 | 703 | 0.3- | 0.3+ | 2006 06 19 | G96 | 0.1-  | 0.1+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 04 16 | 704 | 0.9+  | 0.2+  | 2005 01 01 | 703 | 0.0   | 0.4-  | 2006 06 19 | G96 | 0.4-  | 0.6+  |
| 2002 04 16 | 704 | 0.4+  | 0.2-  | 2005 01 06 | 704 | 0.2+  | 0.2-  | 2006 08 20 | 644 | 0.3-  | 0.3+  |
| 2002 04 16 | 704 | 1.2+  | 0.2+  | 2005 01 06 | 704 | (3.7- | 0.6+) | 2006 08 20 | 644 | 0.0   | 0.4+  |
| 2002 04 16 | 704 | 0.3+  | 0.2-  | 2005 01 06 | 704 | 0.3-  | 0.8+  | 2006 08 20 | 644 | 0.2-  | 0.5+  |
| 2002 04 16 | 704 | (2.4+ | 0.6+) | 2005 01 06 | 704 | (1.7- | 0.4+) | 2007 11 02 | G96 | 0.1+  | 0.0   |
| 2002 04 17 | 704 | 0.3-  | 0.7+  | 2005 01 11 | 704 | 0.2+  | 0.2+  | 2007 11 02 | G96 | 0.1+  | 0.1+  |
| 2002 04 17 | 704 | 0.5-  | 0.3+  | 2005 01 11 | 704 | 0.3+  | 0.8+  | 2007 11 02 | G96 | 0.1+  | 0.0   |
| 2002 04 17 | 704 | 0.5+  | 0.4-  | 2005 01 11 | 704 | 0.1-  | 0.0   | 2007 11 06 | D29 | 0.0   | 0.1+  |
| 2002 04 17 | 704 | 0.0   | 0.2+  | 2005 01 11 | 704 | 0.6+  | 0.3-  | 2007 11 06 | D29 | 0.6-  | 0.2+  |
| 2002 04 17 | 704 | 0.6-  | 0.2+  | 2005 01 15 | 704 | 0.5+  | 0.1-  | 2007 11 06 | D29 | 0.1-  | 0.4+  |
| 2002 05 01 | 106 | 0.8-  | 0.5+  | 2005 01 15 | 704 | 0.1+  | 0.2+  | 2007 11 06 | D29 | 0.4-  | 1.3+  |
| 2002 05 01 | 106 | 0.1+  | 0.0   | 2005 01 15 | 704 | 0.3+  | 0.2+  | 2007 11 20 | 703 | 0.2+  | 1.0+  |
| 2002 05 01 | 106 | 0.1+  | 0.1-  | 2005 01 15 | 704 | 0.0   | 0.2+  | 2007 11 20 | 703 | 0.3+  | 0.7+  |
| 2002 05 07 | 704 | 0.4+  | 0.7-  | 2005 01 15 | 704 | 0.1-  | 0.3+  | 2007 11 20 | 703 | (1.7- | 1.8+) |
| 2002 05 07 | 704 | 0.7+  | 0.1-  | 2005 01 17 | 704 | 0.2+  | 0.1-  | 2007 11 20 | 703 | 0.1-  | 0.9+  |
| 2002 05 07 | 704 | 0.3+  | 0.5-  | 2005 01 17 | 704 | 0.1-  | 0.1-  | 2007 12 04 | 704 | 0.1-  | 0.3-  |
| 2002 05 07 | 704 | 0.1+  | 0.5-  | 2005 01 17 | 704 | 0.4+  | 0.1-  | 2007 12 04 | 704 | 0.8-  | 0.8+  |
| 2002 05 07 | 704 | 0.2-  | 0.0   | 2005 01 17 | 704 | 0.6+  | 0.0   | 2007 12 04 | 704 | 0.1-  | 0.2+  |
| 2002 05 09 | 704 | 1.3+  | 0.0   | 2005 01 18 | 691 | 0.1+  | 0.1-  | 2007 12 04 | 704 | 0.2-  | 0.6+  |

(172126)\* 2002 HV<sub>4</sub>

Discovered 2002 Apr. 18 by J. Broughton at Reedy Creek.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 213.87022  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28064809 | $\omega$ 202.53798 | -0.90777131   | +0.41945413 |
| <i>a</i> | 2.3104398  | $\Omega$ 2.26914   | -0.37202739   | -0.80169865 |
| <i>e</i> | 0.1209824  | <i>i</i> 4.45856   | -0.19377013   | -0.42583741 |
| <i>P</i> | 3.51       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 02 21 | 691 | 0.5+  | 0.9-  | 2003 08 30 | 691 | 0.0   | 0.1-  | 2005 01 19 | 704 | (0.7+ | 1.8+) |
| 2002 02 21 | 691 | 0.0   | 0.9-  | 2003 08 30 | 691 | 0.0   | 0.3-  | 2005 01 19 | 704 | 0.4-  | 1.1+  |
| 2002 02 21 | 691 | 0.2+  | 1.1-  | 2003 08 31 | 291 | 0.5-  | 0.1-  | 2005 01 19 | 704 | 0.1-  | 0.1-  |
| 2002 04 09 | 704 | 0.1-  | 0.5+  | 2003 08 31 | 291 | 1.3-  | 0.2+  | 2005 02 03 | 704 | 0.7+  | 1.1+  |
| 2002 04 09 | 704 | 0.4+  | 0.5-  | 2003 08 31 | 291 | 0.3-  | 0.0   | 2005 02 03 | 704 | 0.5+  | 0.2-  |
| 2002 04 09 | 704 | 0.1-  | 0.3+  | 2003 09 18 | 644 | 0.0   | 0.6+  | 2005 02 03 | 704 | 0.5-  | 0.2+  |
| 2002 04 09 | 704 | 0.3-  | 0.6+  | 2003 09 18 | 644 | 0.2+  | 0.7+  | 2005 02 03 | 704 | 0.1-  | 0.3+  |
| 2002 04 09 | 704 | 1.0+  | 0.2-  | 2003 09 18 | 644 | 0.0   | 0.8+  | 2005 02 03 | 704 | 0.7-  | 0.2+  |
| 2002 04 14 | 704 | 0.4+  | 0.5-  | 2003 09 19 | 599 | 0.1-  | 0.2+  | 2005 02 14 | 704 | (2.0+ | 1.3-) |
| 2002 04 14 | 704 | 0.0   | 0.7-  | 2003 09 19 | 599 | 0.1+  | 0.6+  | 2005 02 14 | 704 | 0.6+  | 0.7-  |
| 2002 04 14 | 704 | 0.1-  | 0.3+  | 2003 09 19 | 599 | 0.5+  | 0.5+  | 2005 02 14 | 704 | 1.0+  | 0.2-  |
| 2002 04 14 | 704 | 0.1+  | 0.6+  | 2003 09 22 | 644 | 0.1+  | 0.5+  | 2007 10 21 | G96 | 0.4+  | 0.1+  |
| 2002 04 14 | 704 | 0.4+  | 0.7+  | 2003 09 22 | 644 | 0.1+  | 0.5+  | 2007 10 21 | G96 | 0.2-  | 0.2+  |
| 2002 04 18 | 704 | 0.7+  | 0.1-  | 2003 09 22 | 644 | 0.1+  | 0.4+  | 2007 10 21 | G96 | 0.5+  | 0.2-  |
| 2002 04 18 | 704 | 0.0   | 0.1+  | 2003 09 29 | 704 | 0.7+  | 0.0   | 2007 10 21 | G96 | 0.4+  | 0.1-  |
| 2002 04 18 | 704 | 0.1+  | 0.3+  | 2003 09 29 | 704 | 0.0   | 0.2-  | 2007 10 21 | G96 | 0.2+  | 0.1-  |
| 2002 04 18 | 428 | (1.1+ | 2.0+) | 2003 09 29 | 704 | 0.5-  | 0.4+  | 2007 10 21 | G96 | 0.1-  | 0.0   |
| 2002 04 19 | 428 | 0.7-  | 0.3+  | 2003 09 29 | 704 | 0.1+  | 0.3+  | 2007 10 21 | G96 | 0.3+  | 0.1+  |
| 2002 04 19 | 428 | 0.4+  | 0.8+  | 2003 09 29 | 704 | 0.3-  | 0.9+  | 2007 10 21 | G96 | 0.0   | 0.1+  |
| 2002 04 19 | 428 | 1.3+  | 0.3+  | 2003 09 29 | 691 | 0.0   | 0.1+  | 2007 11 18 | 704 | 0.1-  | 0.8+  |
| 2002 04 22 | 428 | 0.6+  | 0.0   | 2003 09 29 | 691 | 0.1+  | 0.2+  | 2007 11 18 | 704 | 0.2-  | 0.2+  |
| 2002 04 22 | 428 | 0.5+  | 0.3-  | 2003 09 29 | 691 | 0.3+  | 0.1+  | 2007 11 18 | 704 | 0.0   | 1.1+  |
| 2002 05 04 | 699 | 0.7-  | 0.8+  | 2003 10 22 | 645 | 0.0   | 0.0   | 2007 11 18 | 704 | 0.8+  | 0.2-  |
| 2002 05 04 | 699 | 0.2-  | 0.3+  | 2003 10 22 | 645 | 0.1+  | 0.1-  | 2007 11 18 | 704 | (2.2+ | 2.7+) |
| 2002 05 04 | 699 | 0.3+  | 0.8+  | 2003 10 24 | 645 | 0.0   | 0.1-  | 2007 11 20 | 704 | 0.8+  | 0.7+  |
| 2002 05 04 | 699 | 0.3-  | 0.5+  | 2003 10 24 | 645 | 0.1+  | 0.1-  | 2007 11 20 | 704 | (0.3+ | 1.7+) |
| 2002 05 09 | 704 | 0.2-  | 0.2+  | 2004 12 21 | 703 | (0.7- | 1.9-) | 2007 11 20 | 704 | 0.0   | 0.1-  |
| 2002 05 09 | 704 | 0.2+  | 0.8+  | 2004 12 21 | 703 | 0.2-  | 0.5-  | 2007 11 20 | 704 | 0.9+  | 0.0   |
| 2002 05 09 | 704 | 0.2+  | 0.6+  | 2004 12 21 | 703 | 0.5-  | 0.5-  | 2007 12 12 | 704 | 0.5-  | 0.3-  |
| 2002 05 09 | 704 | 0.2+  | 0.7+  | 2004 12 21 | 703 | 1.1-  | 1.2+  | 2007 12 12 | 704 | 0.8+  | 0.3+  |
| 2002 05 09 | 704 | 0.5+  | 0.5+  | 2005 01 07 | 704 | 1.1-  | 1.3+  | 2007 12 12 | 704 | 0.1-  | 0.1+  |
| 2002 05 11 | 704 | 0.8-  | 0.4+  | 2005 01 07 | 704 | 0.0   | 0.4+  | 2007 12 12 | 704 | 1.0+  | 0.3+  |
| 2002 05 11 | 704 | 1.0-  | 0.9+  | 2005 01 07 | 704 | 0.5-  | 0.1-  | 2007 12 13 | 704 | 0.5+  | 0.0   |
| 2002 05 11 | 704 | 0.9-  | 0.3-  | 2005 01 07 | 704 | 0.5-  | 0.2+  | 2007 12 13 | 704 | 0.0   | 0.6+  |
| 2002 05 11 | 704 | (1.6- | 0.1-) | 2005 01 12 | 704 | 0.1+  | 0.2+  | 2007 12 13 | 704 | 0.5+  | 0.3+  |
| 2002 05 11 | 704 | 0.8-  | 1.2+  | 2005 01 12 | 704 | 0.7+  | 0.1-  | 2007 12 13 | 704 | 1.2+  | 0.5+  |
| 2002 05 17 | 644 | 0.0   | 0.2+  | 2005 01 12 | 704 | 0.6+  | 0.6-  | 2007 12 13 | 704 | 0.7-  | 0.5-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 05 17 | 644 | 0.3− | 0.6+ | 2005 01 16 | 704 | (1.7+ | 0.7+) | 2007 12 14 | 691 | 0.3− | 0.4+ |
| 2002 05 17 | 644 | 0.0  | 0.7+ | 2005 01 16 | 704 | 0.7+  | 0.2−  | 2007 12 14 | 691 | 0.3− | 0.6+ |
| 2002 06 05 | 644 | 0.2+ | 0.7+ | 2005 01 16 | 704 | 0.2+  | 0.5+  | 2007 12 14 | 691 | 0.8− | 0.1+ |
| 2002 06 05 | 644 | 0.5+ | 0.4+ | 2005 01 16 | 704 | 0.1−  | 1.2+  | 2007 12 16 | 691 | 0.3− | 0.1+ |
| 2002 06 05 | 644 | 0.1+ | 0.5+ | 2005 01 16 | 704 | 0.0   | 0.5−  | 2007 12 16 | 691 | 0.0  | 1.1− |
| 2003 08 30 | 691 | 0.2− | 0.3+ | 2005 01 19 | 704 | 0.3−  | 0.3+  | 2007 12 16 | 691 | 0.0  | 0.4+ |

**(172127)\* 2002 HD<sub>10</sub>**

Discovered 2002 Apr. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27451562 | <i>ω</i> | 250.71238 | +0.32816393 | +0.94236325 |
| <i>a</i> | 2.3447219  | <i>Ω</i> | 38.64093  | −0.82268959 | +0.31907641 |
| <i>e</i> | 0.1268433  | <i>i</i> | 5.99970   | −0.46420929 | +0.10070627 |
| <i>P</i> | 3.59       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 03 20 | 699 | 0.8+  | 0.2−  | 2002 05 08 | 704 | 0.5− | 0.7+ | 2003 10 24 | 704 | 0.6−  | 1.1+  |
| 2002 03 20 | 699 | 0.5+  | 0.2−  | 2002 05 14 | 699 | 0.3+ | 1.2+ | 2003 10 24 | 704 | 0.2−  | 0.9+  |
| 2002 03 20 | 699 | (0.2+ | 1.6+) | 2002 05 14 | 699 | 0.7− | 0.6+ | 2003 10 24 | 704 | 0.9+  | 0.7+  |
| 2002 03 20 | 699 | 1.2−  | 0.4+  | 2002 05 14 | 699 | 0.4+ | 0.4+ | 2003 10 24 | 704 | 0.1+  | 0.6+  |
| 2002 04 08 | 644 | 0.1+  | 1.2+  | 2002 05 14 | 699 | 0.6+ | 1.2+ | 2003 10 24 | 704 | 0.9+  | 0.2+  |
| 2002 04 08 | 644 | 0.1+  | 1.3+  | 2003 09 19 | 691 | 0.3− | 0.2+ | 2003 10 26 | 703 | 0.2−  | 0.2−  |
| 2002 04 08 | 644 | 0.0   | 1.4+  | 2003 09 19 | 691 | 0.3− | 0.5+ | 2003 10 26 | 703 | (1.6− | 0.1+) |
| 2002 04 10 | 704 | (1.6+ | 0.9+) | 2003 09 19 | 691 | 0.4− | 0.3+ | 2003 10 26 | 703 | 1.3−  | 0.4−  |
| 2002 04 10 | 704 | (1.7+ | 0.6+) | 2003 09 20 | 699 | 0.6+ | 0.1− | 2003 10 26 | 703 | (2.7− | 0.4+) |
| 2002 04 10 | 704 | (0.6+ | 1.6+) | 2003 09 20 | 699 | 0.2− | 0.6+ | 2003 10 28 | 704 | 0.3−  | 0.3−  |
| 2002 04 10 | 704 | 0.7+  | 0.6+  | 2003 09 20 | 699 | 1.1− | 0.4+ | 2003 10 28 | 704 | 0.1+  | 0.8+  |
| 2002 04 10 | 704 | 0.2−  | 1.4+  | 2003 09 20 | 699 | 0.1+ | 0.1+ | 2003 10 28 | 704 | (1.6+ | 1.0−) |
| 2002 04 14 | 644 | 0.3+  | 0.6+  | 2003 09 29 | 704 | 0.5+ | 0.7+ | 2003 10 28 | 704 | 0.5+  | 0.6+  |
| 2002 04 14 | 644 | 0.3+  | 0.6+  | 2003 09 29 | 704 | 0.4+ | 0.2+ | 2003 10 28 | 704 | 0.3−  | 0.3+  |
| 2002 04 14 | 644 | 0.3+  | 0.7+  | 2003 09 29 | 704 | 0.1+ | 0.0  | 2005 02 01 | 703 | 1.3+  | 1.3+  |
| 2002 04 17 | 704 | 1.0+  | 0.2+  | 2003 09 29 | 704 | 0.1− | 0.5− | 2005 02 01 | 703 | 0.0   | 0.2−  |
| 2002 04 17 | 704 | 0.2+  | 0.2−  | 2003 09 29 | 691 | 0.1− | 0.0  | 2005 02 01 | 703 | 0.7−  | 0.4−  |
| 2002 04 17 | 704 | 1.1+  | 0.7+  | 2003 09 29 | 691 | 0.4− | 0.1+ | 2005 02 01 | 703 | 0.1+  | 0.2−  |
| 2002 04 17 | 704 | (0.8+ | 1.8+) | 2003 09 29 | 691 | 0.3− | 0.2+ | 2007 11 20 | 704 | 0.6+  | 0.2+  |
| 2002 04 17 | 704 | 0.7+  | 0.4+  | 2003 10 18 | 691 | 0.0  | 0.4+ | 2007 11 20 | 704 | 0.9+  | 0.3−  |
| 2002 04 22 | 644 | 0.2+  | 0.3+  | 2003 10 18 | 691 | 0.1+ | 0.3+ | 2007 11 20 | 704 | 0.2−  | 0.5+  |
| 2002 04 22 | 704 | 0.4+  | 0.1−  | 2003 10 18 | 691 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.5+  | 0.4+  |
| 2002 04 22 | 704 | 0.0   | 0.1−  | 2003 10 21 | 644 | 0.3− | 0.1+ | 2007 11 20 | 691 | 0.0   | 0.0   |
| 2002 04 22 | 704 | 0.1−  | 0.8+  | 2003 10 21 | 704 | 0.7− | 0.3+ | 2007 11 20 | 691 | 1.2−  | 0.9−  |
| 2002 04 22 | 644 | 0.2+  | 0.3+  | 2003 10 21 | 704 | 1.1− | 0.6+ | 2007 11 20 | 691 | 0.2+  | 0.3+  |
| 2002 04 22 | 644 | 0.3+  | 0.5+  | 2003 10 21 | 644 | 0.6− | 0.3+ | 2007 12 13 | 704 | (0.3− | 1.8+) |
| 2002 05 02 | 699 | 1.4+  | 1.2+  | 2003 10 21 | 704 | 0.6− | 1.1+ | 2007 12 13 | 704 | 0.8+  | 0.1+  |
| 2002 05 02 | 699 | 0.6+  | 0.5+  | 2003 10 21 | 704 | 0.0  | 0.4+ | 2007 12 13 | 704 | 0.6+  | 0.6+  |
| 2002 05 02 | 699 | 0.5+  | 0.4−  | 2003 10 21 | 644 | 0.3− | 0.2+ | 2007 12 13 | 704 | (1.6+ | 0.8+) |
| 2002 05 02 | 699 | (0.6+ | 1.8+) | 2003 10 21 | 704 | 0.6− | 0.7+ | 2007 12 15 | 704 | 0.6+  | 0.3−  |
| 2002 05 08 | 704 | 0.1+  | 0.7+  | 2003 10 22 | 608 | 0.8+ | 0.1+ | 2007 12 15 | 704 | 0.3−  | 0.6+  |
| 2002 05 08 | 704 | 0.6+  | 1.2+  | 2003 10 22 | 608 | 0.3+ | 0.2+ | 2007 12 15 | 704 | 0.0   | 1.3+  |
| 2002 05 08 | 704 | 0.1−  | 0.3+  | 2003 10 22 | 608 | 0.5+ | 0.9− | 2007 12 15 | 704 | 0.3−  | 0.7+  |

**(172128)\* 2002 HO<sub>14</sub> = 1999 NN<sub>42</sub> = 2000 WK<sub>148</sub>**

Discovered 2002 Apr. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 31611)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28171996 | <i>ω</i> | 201.96766 | +0.64574857 | +0.75345935 |
| <i>a</i> | 2.3045756  | <i>Ω</i> | 108.48206 | −0.67969965 | +0.64106308 |
| <i>e</i> | 0.1299383  | <i>i</i> | 7.49577   | −0.34787521 | +0.14607235 |
| <i>P</i> | 3.50       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 07 14 | 704 | 0.3+  | 0.0   | 2003 10 19 | 644 | 0.0  | 0.3+ | 2006 08 19 | 644 | 0.1+ | 0.1+ |
| 1999 07 14 | 704 | 0.6+  | 0.0   | 2003 10 19 | 644 | 0.0  | 0.3+ | 2006 08 19 | 644 | 0.1− | 0.0  |
| 1999 07 14 | 704 | 0.1+  | 0.9−  | 2003 10 19 | 644 | 0.1+ | 0.3+ | 2006 08 19 | 644 | 0.1+ | 0.2− |
| 1999 07 14 | 704 | 1.0+  | 0.6−  | 2003 10 20 | 704 | 0.3+ | 0.0  | 2006 08 19 | 644 | 0.1− | 0.0  |
| 1999 07 16 | 704 | 0.1+  | 1.0+  | 2003 10 20 | 704 | 1.0+ | 1.4+ | 2006 08 23 | 704 | 0.5− | 0.4− |
| 1999 07 16 | 704 | 0.3−  | 0.6+  | 2003 10 20 | 704 | 0.8− | 0.0  | 2006 08 23 | 704 | 1.3− | 0.9+ |
| 1999 07 16 | 704 | 0.7−  | 0.5−  | 2003 10 20 | 704 | 0.6− | 0.5− | 2006 08 23 | 704 | 0.4− | 0.3− |
| 2000 11 29 | 691 | 0.1+  | 0.1−  | 2003 10 20 | 704 | 0.1− | 0.0  | 2006 08 23 | 704 | 0.0  | 0.1− |
| 2000 11 29 | 691 | 0.1−  | 0.5−  | 2003 10 21 | 644 | 0.0  | 0.2− | 2006 08 24 | 644 | 0.4− | 0.0  |
| 2000 11 29 | 691 | 0.0   | 0.0   | 2003 10 21 | 644 | 0.1− | 0.3+ | 2006 08 24 | 644 | 0.2+ | 0.0  |
| 2000 12 03 | 691 | 0.3−  | 0.2−  | 2003 10 21 | 644 | 0.1− | 0.4+ | 2006 08 24 | 644 | 0.1+ | 0.1+ |
| 2000 12 03 | 691 | 0.8−  | 0.2−  | 2003 10 29 | 691 | 0.3+ | 0.2+ | 2006 08 28 | 704 | 0.1− | 0.7− |
| 2000 12 03 | 691 | 1.0−  | 0.1−  | 2003 10 29 | 691 | 0.1+ | 0.3+ | 2006 08 28 | 704 | 0.6+ | 0.1+ |
| 2002 04 16 | 704 | 0.4+  | 0.8+  | 2003 10 29 | 691 | 0.2+ | 0.1+ | 2006 08 28 | 704 | 0.4− | 0.3+ |
| 2002 04 16 | 704 | 0.1+  | 0.3+  | 2003 11 21 | 699 | 0.7+ | 1.1− | 2006 08 28 | 704 | 1.0− | 0.2− |
| 2002 04 16 | 704 | (1.6+ | 0.7+) | 2003 11 21 | 699 | 0.1+ | 0.2+ | 2007 12 04 | G96 | 0.7+ | 0.2− |
| 2002 04 18 | 608 | 0.4+  | 0.3+  | 2003 11 21 | 699 | 0.2− | 0.5+ | 2007 12 04 | G96 | 0.4+ | 0.3− |
| 2002 04 18 | 608 | 0.3+  | 0.2−  | 2003 11 21 | 699 | 0.3+ | 1.3+ | 2007 12 04 | G96 | 0.6+ | 0.2− |
| 2002 04 18 | 608 | 0.7+  | 0.0   | 2006 08 12 | 644 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.5+ | 0.7− |
| 2002 05 12 | 644 | 1.1+  | 0.4+  | 2006 08 12 | 644 | 0.3+ | 0.0  | 2007 12 04 | 691 | 0.5+ | 0.2+ |
| 2002 05 12 | 644 | 0.6+  | 0.4+  | 2006 08 12 | 644 | 0.0  | 0.2+ | 2007 12 04 | 691 | 0.5− | 0.4+ |
| 2002 05 12 | 644 | 0.7+  | 0.5+  | 2006 08 14 | 644 | 0.1− | 0.0  | 2007 12 04 | 691 | 0.1+ | 0.0  |
| 2003 10 16 | 699 | 0.1−  | 0.1−  | 2006 08 14 | 644 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.6+ | 1.0+ |
| 2003 10 16 | 699 | 0.3−  | 1.5−  | 2006 08 14 | 644 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.7+ | 1.1+ |
| 2003 10 16 | 699 | 0.6+  | 0.5+  | 2006 08 19 | 644 | 0.2− | 0.2− | 2007 12 05 | 704 | 0.5− | 0.2+ |
| 2003 10 16 | 699 | 0.5−  | 1.1+  | 2006 08 19 | 644 | 0.1− | 0.1+ |            |     |      |      |

**(172129)\* 2002 HR<sub>16</sub>**

Discovered 2002 Apr. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28791377 | <i>ω</i> | 253.94852 | −0.90733085 | −0.41146493 |
| <i>a</i> | 2.2714042  | <i>Ω</i> | 261.68903 | +0.41132175 | −0.82633160 |
| <i>e</i> | 0.1126678  | <i>i</i> | 5.00335   | +0.08697787 | −0.38454219 |
| <i>P</i> | 3.42       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 18 | 644 | 0.2+  | 0.3+  | 2005 01 13 | 704 | (0.4− | 1.6+) | 2007 11 09 | 691 | 0.3+ | 0.5− |
| 2002 04 18 | 644 | 0.0   | 0.2+  | 2005 01 13 | 704 | (0.3− | 2.0+) | 2007 11 13 | 691 | 0.2− | 0.1− |
| 2002 04 18 | 644 | 0.1−  | 0.1+  | 2005 01 13 | 704 | 0.3+  | 1.3+  | 2007 11 13 | 691 | 0.3+ | 0.0  |
| 2002 04 18 | 608 | 0.5−  | 0.6−  | 2005 01 17 | 691 | 0.1+  | 0.1+  | 2007 11 13 | 691 | 0.0  | 0.1− |
| 2002 04 18 | 608 | 0.1+  | 1.3−  | 2005 01 17 | 691 | 0.1−  | 0.1+  | 2007 11 18 | 704 | 0.5+ | 0.1+ |
| 2002 04 18 | 608 | 0.1+  | 1.3−  | 2005 01 17 | 691 | 0.3+  | 0.0   | 2007 11 18 | 704 | 1.2− | 0.5− |
| 2002 04 20 | 644 | 0.0   | 0.6+  | 2005 02 02 | 704 | 0.1−  | 0.7+  | 2007 11 18 | 704 | 0.2− | 0.3+ |
| 2002 04 20 | 644 | 0.3−  | 0.2+  | 2005 02 02 | 704 | 0.8−  | 1.0+  | 2007 11 18 | 704 | 0.3+ | 0.4− |
| 2002 04 20 | 644 | 0.1−  | 0.2+  | 2005 02 02 | 704 | 0.4−  | 0.1−  | 2007 11 18 | 704 | 0.2− | 0.2+ |
| 2002 05 17 | 644 | 0.6+  | 1.0+  | 2005 02 02 | 704 | 0.0   | 0.1−  | 2007 11 20 | 704 | 0.5− | 0.7+ |
| 2002 05 17 | 644 | 0.5+  | 0.8+  | 2005 02 09 | 704 | 0.0   | 1.0+  | 2007 11 20 | 704 | 0.6+ | 0.4+ |
| 2002 05 17 | 644 | (0.3+ | 2.7+) | 2005 02 09 | 704 | 0.5+  | 0.1+  | 2007 11 20 | 704 | 0.1− | 0.8+ |
| 2003 09 18 | 691 | 0.1−  | 0.4+  | 2005 02 09 | 704 | 0.1+  | 0.1+  | 2007 12 14 | 691 | 0.2+ | 0.1− |
| 2003 09 18 | 691 | 0.4−  | 0.2+  | 2007 11 07 | 691 | 0.1+  | 0.0   | 2007 12 14 | 691 | 0.1− | 0.1− |
| 2003 09 18 | 691 | 0.3+  | 0.1−  | 2007 11 07 | 691 | 0.1+  | 0.1−  | 2007 12 14 | 691 | 0.0  | 0.1+ |
| 2003 09 30 | 691 | 0.1−  | 0.1+  | 2007 11 07 | 691 | 0.0   | 0.1−  | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2003 09 30 | 691 | 0.2−  | 0.3+  | 2007 11 09 | 691 | 0.1−  | 0.0   | 2007 12 16 | 691 | 0.0  | 0.1+ |
| 2003 09 30 | 691 | 0.1−  | 0.3+  | 2007 11 09 | 691 | 0.0   | 0.3−  | 2007 12 16 | 691 | 0.1− | 0.1− |

2007 DEC. 24

M.P.O. 129273

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 04 01 | 704 | 0.2+  | 0.2-  | 2003 09 21 | 704 | 0.5-  | 0.1+  | 2007 10 21 | 703 | (1.7+ | 0.3-) |
| 1998 04 01 | 704 | 0.9+  | 1.8+  | 2003 09 21 | 704 | 1.2-  | 0.7-  | 2007 10 21 | 703 | 1.2+  | 0.3+  |
| 1998 04 01 | 704 | (0.7+ | 2.8-) | 2003 09 21 | 608 | 0.3-  | 0.6+  | 2007 10 21 | 703 | 0.9+  | 0.0   |
| 1998 04 01 | 704 | 0.5-  | 0.3+  | 2003 09 21 | 608 | 0.5-  | 0.0   | 2007 11 01 | D35 | 0.4+  | 0.1+  |
| 1998 04 01 | 704 | (4.1- | 1.0-) | 2003 09 21 | 608 | 0.2-  | 0.3-  | 2007 11 01 | D35 | 0.4+  | 0.3+  |
| 1999 09 05 | 703 | 0.5-  | 0.1-  | 2003 09 30 | 704 | 0.9+  | 0.4+  | 2007 11 01 | D35 | 0.5+  | 0.5-  |
| 1999 09 05 | 703 | 0.2-  | 1.0+  | 2003 09 30 | 704 | 0.1-  | 0.1+  | 2007 11 02 | 691 | 0.0   | 0.0   |
| 1999 09 05 | 703 | 0.6-  | 1.5+  | 2003 09 30 | 704 | 0.4-  | 0.4-  | 2007 11 02 | 691 | 0.2-  | 0.0   |
| 1999 09 05 | 703 | 1.1-  | 0.1+  | 2003 09 30 | 704 | 0.2+  | 0.0   | 2007 11 02 | 691 | (2.8+ | 0.1+) |
| 2002 04 18 | 644 | 0.1+  | 0.3+  | 2003 09 30 | 704 | 0.9+  | 0.3+  | 2007 11 04 | A24 | (1.2+ | 1.7-) |
| 2002 04 18 | 644 | 0.2-  | 0.2+  | 2003 10 02 | 691 | 0.1+  | 0.1-  | 2007 11 04 | A24 | 0.7+  | 1.4-  |
| 2002 04 18 | 644 | 0.1+  | 0.4+  | 2003 10 02 | 691 | 0.0   | 0.1-  | 2007 11 04 | A24 | 0.9-  | 0.2-  |
| 2002 05 04 | 699 | 0.6+  | 0.2-  | 2003 10 02 | 691 | 0.3+  | 0.2-  | 2007 11 06 | 691 | 0.2-  | 0.1+  |
| 2002 05 04 | 699 | 0.2+  | 0.4+  | 2003 10 16 | 691 | 0.0   | 0.1+  | 2007 11 06 | 691 | 0.0   | 0.6+  |
| 2002 05 04 | 699 | 0.4-  | 0.1-  | 2003 10 16 | 691 | 0.0   | 0.0   | 2007 11 06 | 691 | 1.3-  | 0.6-  |
| 2002 05 04 | 699 | 0.1-  | 1.0+  | 2003 10 16 | 691 | 0.1+  | 0.1+  | 2007 11 07 | H07 | 0.2-  | 1.5+  |
| 2002 05 08 | 608 | 0.0   | 0.6-  | 2003 10 17 | 699 | 0.2-  | 0.3+  | 2007 11 07 | H07 | (0.3+ | 1.5+) |
| 2002 05 08 | 608 | 0.0   | 0.1-  | 2003 10 17 | 699 | 0.3+  | 0.1-  | 2007 11 07 | H07 | 0.8+  | 1.4+  |
| 2002 05 08 | 608 | 0.1-  | 0.1-  | 2003 10 17 | 699 | 0.0   | 0.5+  | 2007 11 07 | 704 | 0.5+  | 0.2-  |
| 2002 05 09 | 704 | 0.4-  | 0.3-  | 2003 10 17 | 699 | 0.6+  | 0.4-  | 2007 11 07 | 703 | 0.0   | 0.6+  |
| 2002 05 09 | 704 | 0.4+  | 0.4-  | 2003 10 20 | 644 | 0.1+  | 0.4+  | 2007 11 07 | 704 | 0.4+  | 0.6-  |
| 2002 05 09 | 704 | (0.8+ | 1.7-) | 2003 10 20 | 644 | 0.2-  | 0.2+  | 2007 11 07 | 704 | 0.4+  | 0.2-  |
| 2002 05 09 | 704 | 0.8+  | 0.7+  | 2003 10 20 | 644 | 0.0   | 0.2+  | 2007 11 07 | 703 | 0.1-  | 0.8-  |
| 2002 05 09 | 704 | 0.3+  | 0.1-  | 2003 10 21 | 704 | 1.2+  | 0.9+  | 2007 11 07 | 704 | 0.3+  | 0.4+  |
| 2002 05 09 | 644 | 0.1+  | 0.3+  | 2003 10 21 | 704 | 0.9-  | 0.3+  | 2007 11 07 | 703 | 0.2-  | 0.4+  |
| 2002 05 09 | 644 | 0.4+  | 0.3+  | 2003 10 21 | 704 | 1.3-  | 0.1+  | 2007 11 07 | 704 | 0.2+  | 0.5-  |
| 2002 05 09 | 644 | 0.0   | 0.3+  | 2003 10 30 | 704 | 0.0   | 0.4-  | 2007 11 07 | 703 | 0.3+  | 0.9+  |
| 2002 05 10 | 644 | 0.2-  | 0.3+  | 2003 10 30 | 704 | 1.0-  | 0.6-  | 2007 11 12 | H07 | 0.2+  | 0.1+  |
| 2002 05 10 | 644 | 0.1+  | 0.2+  | 2003 10 30 | 704 | (1.6- | 1.8+) | 2007 11 12 | H07 | 0.2+  | 0.4+  |
| 2002 05 10 | 644 | 0.2-  | 0.4+  | 2003 11 02 | 291 | 0.1-  | 0.1+  | 2007 11 12 | H07 | 0.7-  | 0.1-  |
| 2002 05 11 | 704 | 0.1+  | 0.5+  | 2003 11 02 | 291 | 0.3+  | 0.1+  | 2007 11 18 | 704 | 0.3+  | 0.8+  |
| 2002 05 11 | 704 | 0.5-  | 0.4+  | 2003 11 02 | 291 | 0.2-  | 0.1+  | 2007 11 18 | 704 | 0.9-  | 0.2-  |
| 2002 05 11 | 704 | 0.6-  | 0.4+  | 2007 10 08 | 703 | 0.3+  | 0.1-  | 2007 11 18 | 704 | 0.1+  | 0.4+  |
| 2002 05 11 | 704 | 0.4-  | 0.9+  | 2007 10 08 | 703 | 1.2+  | 0.7+  | 2007 11 18 | 704 | 0.8-  | 0.5+  |
| 2002 05 11 | 704 | 0.6-  | 0.9+  | 2007 10 08 | 703 | 1.3+  | 1.4+  | 2007 11 18 | 704 | 0.2+  | 0.3+  |
| 2002 05 18 | 644 | 0.5+  | 0.8+  | 2007 10 08 | 703 | 0.0   | 0.0   | 2007 11 19 | 691 | 0.4-  | 0.1+  |
| 2002 05 18 | 644 | 0.9+  | 0.8+  | 2007 10 09 | D29 | (0.4+ | 1.6-) | 2007 11 19 | 691 | 0.2-  | 0.2+  |
| 2002 05 18 | 644 | 1.1+  | 0.1+  | 2007 10 09 | D29 | 0.8+  | 0.8-  | 2007 11 19 | 691 | 0.0   | 0.1+  |
| 2003 09 17 | 644 | 0.3+  | 0.1-  | 2007 10 09 | D29 | 1.3+  | 0.8-  | 2007 11 20 | 704 | 0.8-  | 0.1-  |
| 2003 09 17 | 644 | 0.3+  | 0.0   | 2007 10 09 | D29 | 0.6+  | 0.5-  | 2007 11 20 | 704 | 0.2-  | 0.8+  |
| 2003 09 17 | 644 | 0.4+  | 0.1-  | 2007 10 12 | 704 | 1.0+  | 0.9+  | 2007 11 20 | 704 | 0.4+  | 0.8+  |
| 2003 09 20 | 644 | 0.1-  | 0.4+  | 2007 10 12 | 704 | 0.2-  | 0.4-  | 2007 11 29 | 104 | (0.3- | 1.8-) |
| 2003 09 20 | 644 | 0.0   | 0.1+  | 2007 10 12 | 704 | 0.3-  | 0.0   | 2007 11 29 | 104 | 0.0   | 0.2-  |
| 2003 09 20 | 644 | 0.1+  | 0.1+  | 2007 10 15 | 704 | 0.1+  | 0.7+  | 2007 11 29 | 104 | 0.5-  | 0.2-  |
| 2003 09 20 | 691 | 0.2+  | 0.2-  | 2007 10 15 | 704 | 0.2+  | 0.1+  | 2007 12 03 | 703 | 0.0   | 0.1+  |
| 2003 09 20 | 691 | 0.1+  | 0.3-  | 2007 10 15 | 704 | (0.4+ | 1.6+) | 2007 12 03 | 703 | 1.4-  | 0.7+  |
| 2003 09 20 | 691 | 0.2+  | 0.1-  | 2007 10 15 | 704 | 0.4+  | 0.7+  | 2007 12 03 | 703 | 0.1-  | 0.8+  |
| 2003 09 21 | 699 | 0.4+  | 0.4-  | 2007 10 16 | G96 | 0.1+  | 0.2-  | 2007 12 03 | 703 | 0.1+  | 0.4-  |
| 2003 09 21 | 699 | 0.2+  | 0.0   | 2007 10 16 | G96 | 0.2+  | 0.1-  | 2007 12 14 | 704 | 1.3-  | 0.4+  |
| 2003 09 21 | 704 | 0.4-  | 0.2+  | 2007 10 16 | G96 | 0.0   | 0.3-  | 2007 12 14 | 704 | 1.0-  | 0.5-  |
| 2003 09 21 | 699 | 0.7+  | 0.2-  | 2007 10 16 | G96 | 0.2+  | 0.1-  | 2007 12 14 | 704 | 0.3-  | 0.4-  |
| 2003 09 21 | 699 | 0.0   | 0.3+  | 2007 10 21 | 703 | (0.1+ | 1.9-) |            |     |       |       |

(172131)\* 2002 JT<sub>24</sub>

Discovered 2002 May 8 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M         |            | MPC      |           | MPC         |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 120.59479 |            | (2000.0) |           |             |             |
|           |            | P        |           | Q           |             |
| <i>n</i>  | 0.26324189 | $\omega$ | 212.88507 | +0.23338039 | +0.96613859 |
| <i>a</i>  | 2.4111971  | $\Omega$ | 70.81699  | -0.86509201 | +0.25797128 |
| <i>e</i>  | 0.1387795  | <i>i</i> | 6.69097   | -0.44401509 | +0.00520007 |
| <i>P</i>  | 3.74       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 11 27 | 691 | 0.1-  | 0.3+  | 2002 05 10 | 704 | 1.2+  | 0.3+  | 2003 11 19 | 644 | 0.4-  | 0.0   |
| 1992 11 27 | 691 | 0.1-  | 0.4+  | 2002 05 10 | 704 | (2.4+ | 0.6+) | 2003 11 19 | 644 | 0.6-  | 0.3+  |
| 1992 11 27 | 691 | 0.0   | 0.1+  | 2002 05 16 | 704 | 1.0+  | 0.1+  | 2003 11 21 | 291 | 0.2-  | 0.2+  |
| 1999 09 08 | 703 | 0.5-  | 0.3+  | 2002 05 16 | 704 | 0.2+  | 0.7+  | 2003 11 21 | 291 | 0.1+  | 0.1+  |
| 1999 09 08 | 703 | 0.9-  | 0.4+  | 2002 05 16 | 704 | 0.9+  | 0.7+  | 2003 11 21 | 291 | 0.1+  | 0.2+  |
| 1999 09 08 | 703 | 0.2-  | 0.4-  | 2002 05 19 | 644 | 0.5+  | 1.0+  | 2005 02 01 | 703 | 0.5-  | 0.2+  |
| 1999 09 08 | 703 | 1.7-  | 0.6+  | 2002 05 19 | 644 | 0.4-  | 1.1+  | 2005 02 01 | 703 | 1.2+  | 0.2+  |
| 2002 04 04 | 608 | 0.7-  | 0.4-  | 2002 05 19 | 644 | 0.5+  | 1.1+  | 2005 02 01 | 703 | 0.0   | 1.1-  |
| 2002 04 04 | 608 | 0.6-  | 0.6-  | 2002 06 06 | 704 | (0.4- | 1.7+) | 2005 02 01 | 703 | 0.3+  | 0.9+  |
| 2002 04 04 | 608 | 0.6-  | 0.4-  | 2002 06 06 | 704 | 0.5+  | 0.6+  | 2007 11 08 | 691 | 0.6-  | 0.1-  |
| 2002 04 05 | 699 | 0.3-  | 1.1+  | 2002 06 06 | 704 | (0.1+ | 1.8+) | 2007 11 08 | 691 | 0.4-  | 0.2-  |
| 2002 04 05 | 699 | 0.4+  | 1.3+  | 2002 06 06 | 704 | 1.4+  | 0.0   | 2007 11 08 | 691 | 0.6-  | 0.1-  |
| 2002 04 05 | 699 | (0.1+ | 1.7+) | 2003 10 21 | 644 | 0.3+  | 0.3+  | 2007 11 13 | 699 | 0.6+  | 0.8+  |
| 2002 04 05 | 699 | 1.4+  | 0.9+  | 2003 10 21 | 644 | 0.2+  | 0.7+  | 2007 11 13 | 699 | 1.0-  | 0.3+  |
| 2002 04 09 | 704 | 0.0   | 0.1+  | 2003 10 21 | 644 | 0.5+  | 0.2+  | 2007 11 13 | 699 | 0.8+  | 1.2+  |
| 2002 04 09 | 704 | 0.5+  | 0.5+  | 2003 10 22 | 691 | 0.1+  | 0.3+  | 2007 11 13 | 699 | 0.5+  | 0.5+  |
| 2002 04 09 | 704 | (0.3+ | 1.7+) | 2003 10 22 | 691 | 0.0   | 0.1+  | 2007 11 17 | A77 | 0.7+  | 0.1-  |
| 2002 04 09 | 704 | 0.3+  | 0.9-  | 2003 10 22 | 691 | 0.1+  | 0.3+  | 2007 11 17 | A77 | 0.3+  | 0.5-  |
| 2002 04 12 | 608 | 1.3-  | 0.6+  | 2003 10 23 | 699 | (1.3- | 2.4+) | 2007 11 17 | A77 | 0.3+  | 0.1+  |
| 2002 04 12 | 608 | 1.1-  | 0.8+  | 2003 10 23 | 699 | 0.5-  | 0.1-  | 2007 11 18 | A77 | 0.3-  | 0.5+  |
| 2002 04 12 | 608 | 0.9-  | 0.1-  | 2003 10 23 | 699 | 1.5+  | 0.9-  | 2007 11 18 | A77 | 0.5+  | 0.2+  |
| 2002 04 17 | 704 | 0.9+  | 1.1+  | 2003 10 23 | 699 | 0.2+  | 0.3-  | 2007 11 18 | A77 | 0.2+  | 0.0   |
| 2002 04 17 | 704 | 0.6+  | 1.1+  | 2003 10 25 | 704 | 1.0+  | 0.2+  | 2007 12 05 | 704 | (1.2- | 2.6+) |
| 2002 04 17 | 704 | (0.7+ | 1.5+) | 2003 10 25 | 704 | 0.2+  | 0.5+  | 2007 12 05 | 704 | (1.9- | 3.4+) |
| 2002 04 17 | 704 | (0.1- | 2.4+) | 2003 10 25 | 704 | 0.7+  | 0.5+  | 2007 12 05 | 704 | (0.0  | 2.2+) |
| 2002 04 17 | 704 | (1.0+ | 1.8+) | 2003 10 25 | 704 | 0.3+  | 0.8-  | 2007 12 05 | 704 | 0.2+  | 1.4+  |
| 2002 05 08 | 704 | 0.2+  | 0.4+  | 2003 10 29 | 704 | 0.2-  | 1.3+  | 2007 12 05 | 704 | 1.2-  | 1.2+  |
| 2002 05 08 | 704 | 0.2+  | 0.8+  | 2003 10 29 | 704 | (0.8+ | 2.1+) | 2007 12 15 | G96 | 0.3-  | 0.1-  |
| 2002 05 08 | 704 | 0.2+  | 1.5+) | 2003 10 29 | 704 | 0.2-  | 0.4+  | 2007 12 15 | G96 | 0.4-  | 0.4-  |
| 2002 05 08 | 704 | 0.1+  | 0.3+  | 2003 10 29 | 704 | 0.1-  | 0.2+  | 2007 12 15 | G96 | 0.4-  | 0.1-  |
| 2002 05 08 | 704 | 0.1+  | 0.4+  | 2003 10 29 | 704 | 0.8-  | 0.0   | 2007 12 15 | G96 | 0.3+  | 0.5-  |
| 2002 05 10 | 704 | (2.6+ | 1.8+) | 2003 11 19 | 644 | 0.4-  | 0.3+  |            |     |       |       |

(172132)\* 2002 JE<sub>34</sub>

Discovered 2002 May 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M         |            | MPC      |           | MPC         |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 114.20202 |            | (2000.0) |           |             |             |
|           |            | P        |           | Q           |             |
| <i>n</i>  | 0.26621244 | $\omega$ | 219.27084 | +0.69059014 | +0.72264067 |
| <i>a</i>  | 2.3932266  | $\Omega$ | 94.42803  | -0.65586823 | +0.64297518 |
| <i>e</i>  | 0.2078507  | <i>i</i> | 1.70086   | -0.30483130 | +0.25371910 |
| <i>P</i>  | 3.70       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 19 | 691 | 0.1+ | 0.2- | 2002 06 09 | 704 | 0.0  | 0.6+ | 2006 06 22 | 644 | 0.2- | 0.2+ |
| 2001 01 19 | 691 | 0.0  | 0.2+ | 2002 06 09 | 704 | 0.8+ | 0.9+ | 2006 07 20 | 644 | 0.1+ | 0.3- |
| 2001 01 19 | 691 | 0.1+ | 0.4+ | 2002 06 09 | 704 | 0.3+ | 1.0+ | 2006 07 20 | 644 | 0.3+ | 0.1+ |
| 2002 05 09 | 704 | 0.1- | 0.9+ | 2003 11 15 | 291 | 0.0  | 0.2+ | 2006 07 20 | 644 | 0.0  | 0.0  |
| 2002 05 09 | 704 | 0.4- | 0.2- | 2003 11 15 | 291 | 0.0  | 0.4+ | 2006 07 22 | 644 | 0.1- | 0.3- |
| 2002 05 09 | 704 | 0.9- | 0.2+ | 2003 11 15 | 291 | 0.5+ | 0.2+ | 2006 07 22 | 644 | 0.2- | 0.1- |
| 2002 05 09 | 704 | 0.8- | 0.5- | 2003 11 24 | 691 | 0.1+ | 0.1+ | 2006 07 22 | 644 | 0.2- | 0.0  |
| 2002 05 10 | 704 | 0.2+ | 0.7- | 2003 11 24 | 691 | 0.1- | 0.2+ | 2006 07 23 | 644 | 0.0  | 0.2- |
| 2002 05 10 | 704 | 0.6- | 0.7+ | 2003 11 24 | 691 | 0.3- | 0.1- | 2006 07 23 | 644 | 0.2+ | 0.0  |
| 2002 05 10 | 704 | 0.4- | 0.3+ | 2003 12 19 | 691 | 0.1- | 0.0  | 2006 07 23 | 644 | 0.0  | 0.1- |
| 2002 05 12 | 704 | 1.2+ | 0.3- | 2003 12 19 | 691 | 0.1- | 0.1+ | 2006 08 14 | 644 | 0.1+ | 0.3+ |
| 2002 05 12 | 704 | 0.6+ | 0.1+ | 2003 12 19 | 691 | 0.1- | 0.2- | 2006 08 14 | 644 | 0.1+ | 0.2+ |
| 2002 05 12 | 704 | 1.1+ | 0.3- | 2005 04 11 | 695 | 0.3+ | 0.1+ | 2006 08 14 | 644 | 0.0  | 0.3+ |
| 2002 05 13 | 704 | 0.1- | 0.2- | 2005 04 11 | G96 | 0.2+ | 0.5- | 2006 08 16 | 644 | 0.2- | 0.3+ |
| 2002 05 13 | 704 | 0.2+ | 0.1+ | 2005 04 11 | G96 | 0.2- | 0.1+ | 2006 08 16 | 644 | 0.1+ | 0.3+ |
| 2002 05 13 | 704 | 0.1- | 0.8- | 2005 04 11 | G96 | 0.2- | 0.7- | 2006 08 16 | 644 | 0.2- | 0.2+ |
| 2002 05 13 | 704 | 0.1- | 0.2- | 2005 04 11 | G96 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.6+ | 0.8- |
| 2002 05 13 | 704 | 1.3+ | 1.3- | 2005 04 11 | 695 | 0.2+ | 0.2+ | 2007 10 19 | G96 | 0.4+ | 0.1+ |
| 2002 05 17 | 644 | 0.3- | 1.0+ | 2006 05 04 | G96 | 0.2- | 0.2- | 2007 10 19 | G96 | 0.3+ | 0.2+ |
| 2002 05 17 | 644 | 0.2+ | 0.2+ | 2006 05 04 | G96 | 0.1- | 0.0  | 2007 10 19 | G96 | 0.5+ | 0.3- |
| 2002 05 17 | 644 | 0.4+ | 0.5+ | 2006 05 04 | G96 | 0.3+ | 0.2+ | 2007 12 03 | 691 | 1.1+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 08 | 704 | 1.1− | 0.8− | 2006 05 04 | G96 | 0.6+ | 0.3+ | 2007 12 03 | 691 | 0.6− | 0.1+ |
| 2002 06 08 | 704 | 1.0− | 0.3− | 2006 06 21 | 691 | 0.0  | 0.0  | 2007 12 03 | 691 | 0.2+ | 0.7− |
| 2002 06 08 | 704 | 0.4− | 0.6− | 2006 06 21 | 691 | 0.0  | 0.0  | 2007 12 15 | 691 | 0.2− | 0.3+ |
| 2002 06 09 | 704 | 0.2+ | 0.9+ | 2006 06 21 | 691 | 0.0  | 0.1− | 2007 12 15 | 691 | 0.6− | 0.2+ |
| 2002 06 09 | 704 | 0.0  | 1.1+ | 2006 06 22 | 644 | 0.1− | 0.0  | 2007 12 15 | 691 | 0.3− | 0.3− |
| 2002 06 09 | 704 | 0.4+ | 1.1+ | 2006 06 22 | 644 | 0.1− | 0.1+ |            |     |      |      |

**(172133)\* 2002 JH<sub>39</sub> = 2005 EP<sub>206</sub>**

Discovered 2002 May 10 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 108259)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 309.56099  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.30463990 | $\omega$ | 274.00936 |     | −0.96057718  |     | −0.27519394  |
| $a$ | 2.1874839  | $\Omega$ | 250.02053 |     | +0.26883095  |     | −0.88322156  |
| $e$ | 0.0425839  | $i$      | 2.40846   |     | +0.07086187  |     | −0.37972091  |
| $P$ | 3.24       | $H$      | 17.1      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 05 09 | 644 | 0.2+ | 0.2+ | 2003 09 28 | 691 | 0.1+  | 0.2+  | 2005 03 14 | G96 | 0.2+  | 0.2+  |
| 2002 05 09 | 644 | 0.4+ | 0.1− | 2003 09 28 | 691 | 0.5−  | 0.0   | 2006 08 29 | 703 | (0.5− | 1.6+) |
| 2002 05 09 | 644 | 0.1+ | 0.4+ | 2003 09 28 | 691 | 0.3+  | 0.2+  | 2006 08 29 | 703 | 0.8−  | 0.3+  |
| 2002 05 10 | 291 | 0.3− | 0.2+ | 2003 10 17 | 691 | 0.2−  | 0.0   | 2006 08 29 | 703 | (1.0+ | 1.6−) |
| 2002 05 10 | 291 | 0.4− | 0.2+ | 2003 10 17 | 691 | 0.0   | 0.1+  | 2006 08 29 | 703 | 0.7+  | 0.0   |
| 2002 05 10 | 291 | 0.2− | 0.4+ | 2003 10 17 | 691 | 0.1+  | 0.0   | 2006 08 29 | 691 | 0.2−  | 0.1+  |
| 2002 05 11 | 291 | 0.0  | 0.0  | 2003 10 24 | 704 | 0.1−  | 0.2−  | 2006 08 29 | 691 | 0.0   | 0.1+  |
| 2002 05 11 | 291 | 0.3− | 0.1+ | 2003 10 24 | 704 | 0.4−  | 0.2−  | 2006 08 29 | 691 | 0.0   | 0.1+  |
| 2002 05 11 | 291 | 0.1− | 0.1+ | 2003 10 24 | 704 | 0.1−  | 0.2+  | 2006 11 16 | G96 | 0.1−  | 0.1−  |
| 2002 05 11 | 704 | 0.6+ | 0.7− | 2003 10 24 | 704 | 0.4−  | 0.1−  | 2006 11 16 | G96 | 0.4−  | 0.3−  |
| 2002 05 11 | 704 | 1.0+ | 0.1− | 2003 10 24 | 704 | 0.0   | 0.0   | 2006 11 16 | G96 | 0.5+  | 0.5−  |
| 2002 05 11 | 704 | 1.5+ | 0.6− | 2005 03 07 | 704 | 1.4+  | 0.1−  | 2006 11 16 | G96 | 0.8+  | 0.1+  |
| 2002 05 11 | 704 | 1.1+ | 0.4+ | 2005 03 07 | 704 | 0.8+  | 1.3+  | 2007 11 18 | G96 | 0.9+  | 0.2−  |
| 2002 05 11 | 704 | 1.0+ | 0.7+ | 2005 03 07 | 704 | (1.4+ | 3.2+) | 2007 11 18 | G96 | 0.1+  | 0.3−  |
| 2002 05 13 | 704 | 0.4− | 0.8− | 2005 03 13 | 703 | 0.6−  | 0.7+  | 2007 11 18 | G96 | 0.3−  | 0.4−  |
| 2002 05 13 | 704 | 0.2− | 1.2− | 2005 03 13 | 703 | 0.9−  | 0.1−  | 2007 11 18 | G96 | 0.4+  | 0.3−  |
| 2002 05 13 | 704 | 0.4+ | 1.1− | 2005 03 13 | 703 | 1.4−  | 1.0+  | 2007 12 06 | G96 | 0.1−  | 0.3+  |
| 2002 05 13 | 704 | 1.2+ | 0.9− | 2005 03 13 | 703 | 0.2−  | 0.0   | 2007 12 06 | G96 | 0.4+  | 0.5+  |
| 2003 09 20 | 644 | 0.2+ | 0.3+ | 2005 03 14 | G96 | 0.1−  | 0.4+  | 2007 12 06 | G96 | 0.6+  | 0.1+  |
| 2003 09 20 | 644 | 0.3+ | 0.3+ | 2005 03 14 | G96 | 0.1+  | 0.2+  | 2007 12 06 | G96 | 0.1+  | 0.2−  |
| 2003 09 20 | 644 | 0.3+ | 0.6+ | 2005 03 14 | G96 | 0.0   | 0.3+  |            |     |       |       |

**(172134)\* 2002 JN<sub>40</sub>**

Discovered 2002 May 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 87.88502   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.27876784 | $\omega$ | 89.71252  |     | +0.90628182 |     | +0.41485823 |
| $a$ | 2.3208172  | $\Omega$ | 245.77595 |     | −0.41444692 |     | +0.83462698 |
| $e$ | 0.1866362  | $i$      | 5.08990   |     | −0.08298800 |     | +0.36234025 |
| $P$ | 3.54       | $H$      | 15.4      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 03 04 | 704 | (0.7− | 2.6−) | 2003 09 20 | 644 | 0.4−  | 0.3+  | 2003 11 18 | 699 | 0.5− | 0.3− |
| 1998 03 04 | 704 | 0.9−  | 0.6−  | 2003 09 20 | 644 | 0.3−  | 0.4+  | 2003 11 20 | 704 | 0.3− | 0.4+ |
| 1998 03 04 | 704 | 1.6−  | 1.2−  | 2003 09 22 | 704 | 0.9+  | 0.5−  | 2003 11 20 | 704 | 0.1+ | 0.1+ |
| 1998 03 04 | 704 | (2.6− | 1.5−) | 2003 09 22 | 704 | 0.1−  | 0.8−  | 2003 11 20 | 704 | 0.2− | 0.2+ |
| 2002 04 04 | 644 | 0.1+  | 0.9+  | 2003 09 22 | 704 | 0.7+  | 0.8−  | 2003 11 20 | 704 | 0.0  | 0.0  |
| 2002 04 04 | 644 | 0.3+  | 0.5+  | 2003 09 22 | 704 | (0.9+ | 1.7−) | 2003 11 20 | 704 | 0.0  | 0.3+ |
| 2002 04 04 | 644 | 0.1+  | 0.6+  | 2003 09 22 | 704 | (0.6− | 1.8−) | 2003 11 24 | 704 | 0.3+ | 0.5+ |
| 2002 04 09 | 704 | 0.1+  | 1.4+  | 2003 09 27 | 704 | 0.3−  | 0.6+  | 2003 11 24 | 704 | 0.2+ | 0.2− |
| 2002 04 09 | 704 | 1.0+  | 0.5+  | 2003 09 27 | 704 | 0.3−  | 0.0   | 2003 11 24 | 704 | 0.3+ | 0.2+ |
| 2002 04 09 | 704 | 0.3−  | 0.0   | 2003 09 27 | 704 | 0.0   | 0.1+  | 2003 11 24 | 704 | 0.5+ | 0.1+ |
| 2002 04 09 | 704 | 0.0   | 0.8+  | 2003 09 27 | 704 | 0.2−  | 0.4+  | 2003 11 24 | 704 | 0.1− | 0.1− |
| 2002 04 12 | 704 | 0.2−  | 0.5+  | 2003 09 27 | 704 | 1.0−  | 0.1+  | 2003 11 26 | 699 | 1.0− | 0.4− |
| 2002 04 12 | 704 | 0.4+  | 0.8+  | 2003 10 15 | 699 | 0.3−  | 0.2−  | 2003 11 26 | 699 | 0.4− | 0.1+ |
| 2002 04 12 | 704 | 0.1+  | 0.6−  | 2003 10 15 | 699 | 0.3+  | 0.2−  | 2003 11 26 | 699 | 0.4− | 0.4− |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 14 | 704 | 0.2+  | 0.9+  | 2003 10 15 | 699 | 0.3− | 0.1− | 2003 11 26 | 699 | 0.8−  | 0.3−  |
| 2002 04 14 | 704 | 1.1−  | 0.5+  | 2003 10 15 | 699 | 0.1− | 0.2+ | 2003 11 28 | 691 | 0.4+  | 0.0   |
| 2002 04 14 | 704 | 1.0−  | 0.4+  | 2003 10 23 | 704 | 0.0  | 0.1− | 2003 11 28 | 691 | 0.1+  | 0.1−  |
| 2002 04 14 | 704 | 1.3−  | 0.2+  | 2003 10 23 | 704 | 0.0  | 0.1− | 2003 11 28 | 691 | 0.0   | 0.2+  |
| 2002 04 14 | 704 | (2.3− | 0.6−) | 2003 10 23 | 704 | 0.0  | 0.1− | 2003 12 01 | 704 | 0.9+  | 0.9+  |
| 2002 04 15 | 644 | 0.1+  | 0.7+  | 2003 10 23 | 704 | 0.0  | 0.1− | 2003 12 01 | 704 | 0.5+  | 0.2+  |
| 2002 04 15 | 644 | 0.1+  | 1.0+  | 2003 10 23 | 704 | 0.1− | 0.1+ | 2003 12 01 | 704 | 1.4+  | 0.4+  |
| 2002 04 15 | 644 | 0.1+  | 1.0+  | 2003 10 24 | 704 | 1.0− | 0.5+ | 2003 12 01 | 704 | 0.5+  | 0.4+  |
| 2002 04 30 | 644 | (0.0  | 1.9+) | 2003 10 24 | 704 | 0.7− | 0.4+ | 2003 12 17 | 699 | 0.6+  | 1.1+  |
| 2002 04 30 | 644 | (0.1+ | 2.0+) | 2003 10 24 | 704 | 1.0− | 0.3+ | 2003 12 17 | 699 | 0.8+  | 0.3−  |
| 2002 04 30 | 644 | (0.1+ | 2.1+) | 2003 10 24 | 704 | 0.9− | 0.2+ | 2003 12 17 | 699 | 0.4+  | 0.5+  |
| 2002 05 08 | 704 | (0.7+ | 1.7+) | 2003 10 24 | 704 | 1.0− | 0.2+ | 2003 12 17 | 699 | 0.6−  | 0.9+  |
| 2002 05 08 | 704 | 0.7+  | 0.2+  | 2003 10 25 | 704 | 0.1+ | 1.0− | 2003 12 20 | 704 | 0.2+  | 0.2+  |
| 2002 05 08 | 704 | 0.7+  | 1.1+  | 2003 10 25 | 704 | 0.3− | 1.1− | 2003 12 20 | 704 | 0.3+  | 0.1+  |
| 2002 05 08 | 704 | 1.1+  | 0.4+  | 2003 10 25 | 704 | 0.1+ | 0.4− | 2003 12 20 | 704 | 0.6+  | 0.5+  |
| 2002 05 11 | 704 | 0.4+  | 0.1+  | 2003 10 25 | 704 | 0.3− | 0.7− | 2003 12 20 | 704 | 0.0   | 0.0   |
| 2002 05 11 | 704 | (1.8+ | 0.0 ) | 2003 10 25 | 704 | 0.2− | 1.1− | 2003 12 20 | 704 | 0.3−  | 0.7+  |
| 2002 05 11 | 704 | 0.8+  | 1.2+  | 2003 10 27 | 691 | 0.0  | 0.0  | 2003 12 22 | 704 | 0.8+  | 0.2+  |
| 2002 05 11 | 704 | 1.1+  | 0.2−  | 2003 10 27 | 691 | 0.1+ | 0.1+ | 2003 12 22 | 704 | 0.1+  | 0.1+  |
| 2002 05 11 | 704 | 1.1+  | 0.6+  | 2003 10 27 | 691 | 0.1− | 0.0  | 2003 12 22 | 704 | 0.9+  | 0.0   |
| 2002 05 17 | 644 | 0.3+  | 0.9+  | 2003 10 30 | 704 | 0.1+ | 0.1− | 2003 12 22 | 704 | 1.4+  | 0.4+  |
| 2002 05 17 | 644 | 0.7+  | 0.7+  | 2003 10 30 | 704 | 0.2+ | 0.1+ | 2003 12 27 | 704 | 0.4−  | 0.5+  |
| 2002 05 17 | 644 | 0.7+  | 1.1+  | 2003 10 30 | 704 | 0.0  | 0.1− | 2003 12 27 | 704 | 0.3−  | 1.0+  |
| 2003 08 05 | 704 | 0.0   | 0.3+  | 2003 10 30 | 704 | 0.2+ | 0.2+ | 2003 12 27 | 704 | (1.0− | 1.9+) |
| 2003 08 05 | 704 | 0.5−  | 1.1+  | 2003 10 30 | 704 | 0.2+ | 0.4+ | 2003 12 27 | 704 | 0.5−  | 0.8+  |
| 2003 08 05 | 704 | 0.4−  | 1.0+  | 2003 11 01 | 704 | 0.7+ | 0.3+ | 2005 03 03 | 703 | 0.2+  | 0.7+  |
| 2003 08 05 | 704 | (0.5− | 2.3+) | 2003 11 01 | 704 | 0.1− | 0.1+ | 2005 03 03 | 703 | 0.2−  | 0.2+  |
| 2003 08 05 | 704 | 0.3+  | 1.2+  | 2003 11 01 | 704 | 0.4+ | 1.3+ | 2005 03 03 | 703 | 0.5+  | 0.2−  |
| 2003 08 24 | 704 | 1.3−  | 0.8+  | 2003 11 01 | 704 | 0.4− | 1.1+ | 2005 03 03 | 703 | 0.2+  | 1.5−  |
| 2003 08 24 | 704 | 0.3−  | 1.1+  | 2003 11 01 | 704 | 0.2− | 0.5+ | 2005 03 10 | 703 | 1.2+  | 0.3−  |
| 2003 08 24 | 704 | 0.0   | 0.1−  | 2003 11 01 | 704 | 0.3+ | 0.1+ | 2005 03 10 | 703 | 0.2+  | 0.6+  |
| 2003 08 24 | 704 | 0.4+  | 0.7+  | 2003 11 01 | 704 | 0.4+ | 0.6+ | 2005 03 10 | 703 | 0.9+  | 0.2+  |
| 2003 08 24 | 704 | 1.1−  | 1.1+  | 2003 11 01 | 704 | 0.0  | 0.1− | 2005 03 10 | 703 | 0.7−  | 0.8+  |
| 2003 08 28 | 704 | 0.6−  | 0.3+  | 2003 11 01 | 704 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.1+  | 0.3−  |
| 2003 08 28 | 704 | (1.6− | 0.0 ) | 2003 11 01 | 704 | 0.5+ | 0.3− | 2007 11 05 | G96 | 0.1+  | 0.2−  |
| 2003 08 28 | 704 | 1.3−  | 0.5+  | 2003 11 01 | 704 | 0.4− | 0.2− | 2007 11 05 | G96 | 0.0   | 0.2−  |
| 2003 09 03 | 608 | 0.2+  | 0.6−  | 2003 11 01 | 704 | 0.6+ | 0.1+ | 2007 11 05 | G96 | 0.1−  | 0.2−  |
| 2003 09 03 | 608 | 0.4+  | 0.5−  | 2003 11 01 | 704 | 0.4+ | 0.1+ | 2007 12 04 | 704 | 0.3−  | 0.1−  |
| 2003 09 03 | 608 | 0.4+  | 0.8−  | 2003 11 01 | 704 | 0.3+ | 0.8+ | 2007 12 04 | 704 | 1.5−  | 1.0+  |
| 2003 09 20 | 644 | 0.3−  | 0.1+  | 2003 11 01 | 704 | 0.3+ | 0.3+ | 2007 12 04 | 704 | 0.3+  | 0.7+  |
| 2003 09 20 | 644 | 0.4−  | 0.3+  | 2003 11 18 | 699 | 0.6− | 0.0  | 2007 12 04 | 704 | 0.5−  | 0.9−  |
| 2003 09 20 | 644 | 0.3−  | 0.1+  | 2003 11 18 | 699 | 0.2− | 0.2+ | 2007 12 04 | 704 | 0.5−  | 0.1−  |
| 2003 09 20 | 644 | 0.4−  | 0.4+  | 2003 11 18 | 699 | 0.5− | 0.1− |            |     |       |       |

**(172135)\* 2002 JK<sub>48</sub>**

Discovered 2002 May 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 273.85705  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.29653625 | $\omega$ | 288.06245 |     | -0.99623794 |     | -0.06313678 |
| $a$ | 2.2271571  | $\Omega$ | 248.35145 |     | +0.08088251 |     | -0.92334802 |
| $e$ | 0.1051034  | $i$      | 3.66173   |     | -0.03111243 |     | -0.37873762 |
| $P$ | 3.32       | $H$      | 17.1      | $G$ | 0.15        | $U$ | 1           |



2007 DEC. 24

M.P.O. 129275

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 05 08 | 699 | 0.4− | 0.3+ | 2003 09 19 | 691 | 0.2+  | 0.3+  | 2006 08 22 | 644 | 0.6−  | 0.1+  |
| 2002 05 08 | 699 | 0.9− | 0.5+ | 2003 09 19 | 691 | 0.0   | 0.4+  | 2006 08 22 | 644 | 0.4−  | 0.1+  |
| 2002 05 08 | 699 | 0.4− | 0.6+ | 2003 09 19 | 691 | 0.3+  | 0.3+  | 2006 08 29 | 703 | 0.5+  | 0.5+  |
| 2002 05 08 | 699 | 0.6− | 0.3+ | 2005 02 28 | 683 | 0.1+  | 1.4+  | 2006 08 29 | 703 | 0.1−  | 0.8+  |
| 2002 05 09 | 704 | 0.2+ | 0.7− | 2005 02 28 | 683 | (0.7+ | 2.8+) | 2006 08 29 | 703 | 0.8−  | 1.4+  |
| 2002 05 09 | 704 | 0.4− | 0.7+ | 2005 02 28 | 683 | (0.7+ | 2.6+) | 2006 08 29 | 703 | 1.3−  | 0.3+  |
| 2002 05 09 | 704 | 0.3+ | 0.3+ | 2005 03 01 | 683 | 0.7+  | 1.4+  | 2006 09 28 | G96 | 0.7−  | 0.6−  |
| 2002 05 09 | 704 | 0.5+ | 0.5− | 2005 03 01 | 683 | 0.3+  | 1.4+  | 2006 09 28 | G96 | 0.3−  | 0.3−  |
| 2002 05 09 | 704 | 0.8+ | 0.8+ | 2005 03 01 | 683 | 0.2−  | 0.3−  | 2006 09 28 | G96 | 0.0   | 0.4−  |
| 2002 05 09 | 644 | 0.3− | 0.2+ | 2005 03 02 | 683 | 0.4+  | 0.7−  | 2006 09 28 | G96 | (1.7− | 0.8−) |
| 2002 05 09 | 644 | 0.2− | 0.1+ | 2005 03 02 | 683 | 1.2+  | 0.0   | 2007 12 04 | 691 | 0.1+  | 0.0   |
| 2002 05 09 | 644 | 0.1− | 0.2+ | 2005 03 02 | 683 | 0.1−  | 0.8−  | 2007 12 04 | 691 | 0.3−  | 1.0−  |
| 2002 05 11 | 704 | 0.2+ | 0.0  | 2005 03 04 | 683 | 0.6−  | 1.3+  | 2007 12 04 | 691 | 0.1+  | 0.2+  |
| 2002 05 11 | 704 | 0.0  | 0.7− | 2005 03 04 | 683 | (1.7+ | 0.5+) | 2007 12 16 | 691 | 0.2−  | 0.2+  |
| 2002 05 11 | 704 | 0.0  | 0.3− | 2005 03 04 | 683 | 0.1+  | 0.2+  | 2007 12 16 | 691 | 0.7+  | 0.1+  |
| 2002 05 11 | 704 | 0.0  | 0.1− | 2005 03 10 | 699 | 0.1−  | 1.0+  | 2007 12 16 | 691 | 0.1−  | 0.4+  |

**(172136)\* 2002 JP<sub>56</sub>**

Discovered 2002 May 9 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 179.72405  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27128129 | <i>ω</i> | 173.51856 | −0.69621941   | +0.71646115 |
| <i>a</i> | 2.3633216  | <i>Ω</i> | 52.34580  | −0.66108189   | −0.61591280 |
| <i>e</i> | 0.1443459  | <i>i</i> | 3.20720   | −0.27973070   | −0.32761996 |
| <i>P</i> | 3.63       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 13 | 644 | 0.3+  | 0.4+  | 2002 06 04 | 291 | 0.2+ | 0.7+ | 2007 10 30 | G96 | 0.4+ | 0.3− |
| 2002 04 13 | 644 | 0.1+  | 0.2+  | 2002 06 04 | 291 | 0.3+ | 0.7+ | 2007 11 03 | G96 | 0.1− | 0.6+ |
| 2002 04 13 | 644 | 0.1−  | 0.3+  | 2002 06 04 | 291 | 0.7+ | 0.7+ | 2007 11 03 | G96 | 0.1− | 0.2+ |
| 2002 05 09 | 644 | 0.5+  | 0.3−  | 2003 10 19 | 691 | 0.2− | 0.1+ | 2007 11 03 | G96 | 0.5+ | 0.3+ |
| 2002 05 09 | 704 | (0.3+ | 2.0+) | 2003 10 19 | 691 | 0.0  | 0.1− | 2007 11 03 | G96 | 0.1+ | 0.5+ |
| 2002 05 09 | 644 | 0.4+  | 0.4−  | 2003 10 19 | 691 | 0.1− | 0.0  | 2007 11 04 | 691 | 0.2+ | 0.4+ |
| 2002 05 09 | 704 | 0.4+  | 1.5+  | 2003 10 24 | 645 | 0.0  | 0.1− | 2007 11 04 | 691 | 0.3− | 0.3+ |
| 2002 05 09 | 644 | 0.1+  | 0.4−  | 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.9− | 0.1+ |
| 2002 05 09 | 704 | 0.1+  | 0.3+  | 2003 11 16 | 645 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.1+ |
| 2002 05 11 | 704 | 0.9−  | 0.0   | 2003 11 16 | 645 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 2002 05 11 | 704 | 0.9−  | 0.2−  | 2005 01 18 | 691 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.2+ |
| 2002 05 11 | 704 | 0.9−  | 0.2−  | 2005 01 18 | 691 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.5+ |
| 2002 05 11 | 704 | 0.3−  | 0.6−  | 2005 01 18 | 691 | 0.1+ | 0.1− | 2007 11 20 | G96 | 0.4+ | 0.5+ |
| 2002 05 11 | 704 | 0.7−  | 0.7−  | 2007 10 18 | 691 | 0.6− | 0.5+ | 2007 11 20 | G96 | 0.2+ | 0.2− |
| 2002 05 13 | 704 | 0.7+  | 0.3−  | 2007 10 18 | 691 | 0.5+ | 0.6+ | 2007 11 20 | G96 | 0.0  | 0.6+ |
| 2002 05 13 | 704 | 0.3−  | 0.2+  | 2007 10 18 | 691 | 0.1− | 0.2+ | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2002 05 13 | 704 | 0.2−  | 0.3−  | 2007 10 30 | 691 | 0.1+ | 0.5+ | 2007 12 15 | G96 | 0.4+ | 0.8− |
| 2002 05 13 | 704 | 0.0   | 1.4−  | 2007 10 30 | 691 | 0.1− | 0.2− | 2007 12 15 | G96 | 0.4+ | 0.1+ |
| 2002 05 13 | 704 | 0.1+  | 0.9−  | 2007 10 30 | 691 | 0.8− | 0.1+ | 2007 12 15 | G96 | 0.1− | 0.5− |
| 2002 05 18 | 644 | 0.1+  | 0.6+  | 2007 10 30 | G96 | 0.5+ | 0.1− | 2007 12 15 | G96 | 0.5+ | 0.4− |
| 2002 05 18 | 644 | 0.3+  | 0.6+  | 2007 10 30 | G96 | 0.4− | 0.2− |            |     |      |      |
| 2002 05 18 | 644 | 0.1+  | 0.8+  | 2007 10 30 | G96 | 0.7+ | 0.0  |            |     |      |      |

**(172137)\* 2002 JY<sub>61</sub>**

Discovered 2002 May 8 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 111.25929  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26362873 | <i>ω</i> | 218.03211 | +0.49604273   | +0.85742571 |
| <i>a</i> | 2.4088378  | <i>Ω</i> | 82.09408  | −0.75891200   | +0.50477399 |
| <i>e</i> | 0.1290998  | <i>i</i> | 7.94901   | −0.42189357   | +0.10012181 |
| <i>P</i> | 3.74       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 14 | 704 | 0.0  | 0.2− | 2002 06 05 | 699 | 0.7− | 0.7+ | 2003 10 21 | 704 | 1.0+ | 0.1− |
| 1999 09 14 | 704 | 0.5− | 0.3− | 2002 06 06 | 704 | 0.8+ | 0.7+ | 2003 10 29 | 691 | 0.2− | 0.1+ |
| 1999 09 14 | 704 | 0.1+ | 0.3+ | 2002 06 06 | 704 | 1.0+ | 0.1+ | 2003 10 29 | 691 | 0.2− | 0.1+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 30 | 704 | (2.5− | 0.5−) | 2002 06 06 | 704 | 0.7+  | 0.9+  | 2003 10 29 | 691 | 0.3−  | 0.1+  |
| 1999 09 30 | 704 | 0.1−  | 0.1+  | 2002 06 08 | 704 | 0.3+  | 1.0+  | 2003 11 01 | 704 | 0.5−  | 0.5−  |
| 1999 09 30 | 704 | 0.9−  | 0.8+  | 2002 06 08 | 704 | 0.1+  | 0.9+  | 2003 11 01 | 704 | 0.1+  | 0.3+  |
| 1999 10 16 | 704 | 0.9+  | 0.8−  | 2002 06 08 | 704 | 0.0   | 0.7+  | 2003 11 01 | 704 | 0.1+  | 0.4+  |
| 1999 10 16 | 704 | 0.1+  | 1.2+  | 2002 06 08 | 704 | 0.1+  | 0.3+  | 2003 11 30 | 704 | 0.8−  | 0.9+  |
| 1999 10 16 | 704 | 0.1−  | 0.0   | 2002 06 08 | 704 | 0.4−  | 0.5+  | 2003 11 30 | 704 | 0.3+  | 0.7+  |
| 1999 10 16 | 704 | 0.6−  | 0.5+  | 2002 06 11 | 644 | 0.6+  | 1.3+  | 2003 11 30 | 704 | 0.0   | 0.4+  |
| 2002 05 02 | 699 | 0.3−  | 0.4+  | 2002 06 11 | 644 | 0.7+  | 1.1+  | 2005 03 01 | 703 | 0.1+  | 0.6+  |
| 2002 05 02 | 699 | 0.8−  | 0.7+  | 2002 06 11 | 644 | 0.2+  | 1.2+  | 2005 03 01 | 703 | (0.5− | 2.4+) |
| 2002 05 02 | 699 | 0.7−  | 1.0+  | 2002 06 16 | 644 | 0.0   | 0.4+  | 2005 03 01 | 703 | 0.9−  | 1.5+  |
| 2002 05 02 | 699 | 0.0   | 1.1+  | 2002 06 16 | 644 | 0.6+  | 0.7+  | 2005 03 01 | 703 | 1.2+  | 0.8+  |
| 2002 05 04 | 644 | 0.4+  | 0.3+  | 2002 06 16 | 644 | 0.4+  | 0.3+  | 2005 03 09 | 703 | 0.4+  | 0.4+  |
| 2002 05 04 | 644 | 0.2+  | 0.3+  | 2003 10 18 | 644 | 0.1+  | 0.4+  | 2005 03 09 | 703 | 1.1−  | 0.7−  |
| 2002 05 04 | 644 | 0.3+  | 0.5+  | 2003 10 18 | 644 | 0.1+  | 0.4+  | 2005 03 09 | 703 | 1.0+  | 0.1+  |
| 2002 05 08 | 704 | 0.5+  | 0.5−  | 2003 10 18 | 644 | 0.2+  | 0.6+  | 2005 03 09 | 703 | 1.1+  | 0.3+  |
| 2002 05 08 | 704 | 0.1−  | 0.0   | 2003 10 19 | 644 | 0.1+  | 0.5+  | 2007 11 14 | 691 | 0.4−  | 0.7+  |
| 2002 05 08 | 704 | 0.3+  | 0.3+  | 2003 10 19 | 644 | 0.2−  | 0.6+  | 2007 11 14 | 691 | 0.5−  | 0.7+  |
| 2002 05 08 | 704 | 0.9+  | 0.6−  | 2003 10 19 | 644 | 0.0   | 0.7+  | 2007 11 14 | 691 | (0.4+ | 2.9+) |
| 2002 05 12 | 704 | 0.9+  | 0.6−  | 2003 10 19 | 644 | 0.0   | 0.7+  | 2007 12 05 | 704 | 1.6+  | 0.3+  |
| 2002 05 12 | 704 | 0.2−  | 0.5+  | 2003 10 19 | 644 | 0.2−  | 0.6+  | 2007 12 05 | 704 | 0.2+  | 0.3+  |
| 2002 05 12 | 704 | 0.6+  | 0.5−  | 2003 10 19 | 644 | 0.3+  | 0.6+  | 2007 12 05 | 704 | 0.4−  | 0.3+  |
| 2002 06 05 | 699 | 0.3−  | 0.3+  | 2003 10 21 | 704 | (2.1+ | 0.1+) | 2007 12 05 | 704 | 0.1+  | 0.3+  |
| 2002 06 05 | 699 | 0.5−  | 0.5+  | 2003 10 21 | 704 | 0.3−  | 0.2+  | 2007 12 05 | 704 | 0.5−  | 1.2−  |
| 2002 06 05 | 699 | 0.2−  | 0.7−  | 2003 10 21 | 704 | 0.1+  | 0.1−  |            |     |       |       |

**(172138)\* 2002 JK<sub>64</sub>**

Discovered 2002 May 9 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 192.57920  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27590913 | <i>ω</i> | 140.22577 | −0.63602945   | +0.76989802 |
| <i>a</i> | 2.3368204  | <i>Ω</i> | 90.21309  | −0.72060664   | −0.56839405 |
| <i>e</i> | 0.1735677  | <i>i</i> | 2.99153   | −0.27603010   | −0.29014692 |
| <i>P</i> | 3.57       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 09 | 704 | 0.2+  | 0.1−  | 2002 06 06 | 704 | 0.6− | 0.3+ | 2005 01 07 | 691 | 0.3+ | 0.5+ |
| 2002 05 09 | 704 | (1.6+ | 0.3+) | 2002 06 06 | 704 | 0.5− | 0.7+ | 2005 01 07 | 691 | 0.2+ | 0.4+ |
| 2002 05 09 | 704 | 0.0   | 0.3+  | 2002 06 06 | 704 | 0.1− | 0.6+ | 2005 01 07 | 691 | 0.3+ | 0.3+ |
| 2002 05 09 | 704 | 0.0   | 0.3+  | 2002 06 06 | 704 | 0.4− | 1.1+ | 2005 01 15 | 691 | 0.2+ | 0.3− |
| 2002 05 09 | 704 | 0.4−  | 0.3−  | 2002 06 07 | 608 | 0.5− | 0.9+ | 2005 01 15 | 691 | 0.3+ | 0.3− |
| 2002 05 10 | 704 | 0.7−  | 0.0   | 2002 06 07 | 608 | 0.8− | 0.6+ | 2005 01 15 | 691 | 0.2+ | 0.2− |
| 2002 05 10 | 704 | 0.5−  | 0.5+  | 2002 06 07 | 608 | 0.0  | 0.8+ | 2005 02 03 | 704 | 0.5− | 1.2+ |
| 2002 05 10 | 704 | 0.0   | 0.2+  | 2002 06 08 | 704 | 0.2+ | 0.5− | 2005 02 03 | 704 | 0.3− | 0.8+ |
| 2002 05 12 | 704 | 0.4+  | 0.5+  | 2002 06 08 | 704 | 0.2+ | 0.4− | 2005 02 03 | 704 | 0.1+ | 0.9+ |
| 2002 05 12 | 704 | 0.1+  | 0.4−  | 2002 06 08 | 704 | 0.5− | 0.1− | 2005 02 03 | 704 | 0.1+ | 0.5+ |
| 2002 05 12 | 704 | 0.5+  | 0.1−  | 2002 06 08 | 704 | 0.5+ | 0.7− | 2006 08 15 | 644 | 0.1− | 0.5+ |
| 2002 05 12 | 704 | 0.4+  | 0.3+  | 2002 06 10 | 704 | 0.1+ | 0.7+ | 2006 08 15 | 644 | 0.1− | 0.4+ |
| 2002 05 16 | 704 | 0.6+  | 0.2+  | 2002 06 10 | 704 | 0.6+ | 0.3− | 2006 08 15 | 644 | 0.2− | 0.6+ |
| 2002 05 16 | 704 | 0.1−  | 0.6−  | 2002 06 10 | 704 | 0.1+ | 0.1− | 2006 08 16 | E12 | 0.5+ | 0.1− |
| 2002 05 16 | 704 | 0.3−  | 0.6−  | 2002 06 10 | 704 | 0.5+ | 0.1− | 2006 08 16 | E12 | 0.1+ | 0.6+ |
| 2002 05 16 | 704 | 0.6+  | 0.5−  | 2002 06 10 | 704 | 0.2− | 0.9+ | 2006 08 16 | E12 | 1.2+ | 0.6+ |
| 2002 05 19 | 644 | 0.4+  | 0.5+  | 2002 06 11 | 644 | 0.1+ | 0.6+ | 2006 08 16 | E12 | 0.2− | 0.6+ |
| 2002 05 19 | 644 | 0.0   | 1.0+  | 2002 06 11 | 644 | 0.1+ | 0.6+ | 2007 11 05 | 691 | 0.1− | 0.1+ |
| 2002 05 19 | 644 | 0.2+  | 1.0+  | 2002 06 11 | 704 | 0.2+ | 0.5+ | 2007 11 05 | 691 | 0.0  | 0.4+ |
| 2002 05 21 | 704 | 0.4−  | 0.6+  | 2002 06 11 | 704 | 0.4− | 0.2− | 2007 11 05 | 691 | 0.7− | 0.3+ |
| 2002 05 21 | 704 | 0.3−  | 0.7+  | 2002 06 11 | 704 | 0.2− | 1.1− | 2007 11 09 | 691 | 0.2− | 0.3+ |
| 2002 05 21 | 704 | 0.3−  | 0.8+  | 2002 06 11 | 644 | 0.0  | 0.5+ | 2007 11 09 | 691 | 0.4+ | 0.2+ |
| 2002 05 21 | 704 | 0.5+  | 1.3+  | 2002 06 16 | 644 | 0.3+ | 0.4+ | 2007 11 09 | 691 | 0.1− | 0.5+ |
| 2002 05 21 | 704 | 0.0   | 0.7+  | 2002 06 16 | 644 | 0.0  | 0.4+ | 2007 11 14 | 691 | 0.4− | 0.7+ |
| 2002 05 28 | 608 | 0.6+  | 0.4+  | 2002 06 16 | 644 | 0.1− | 0.4+ | 2007 11 14 | 691 | 0.6− | 0.2+ |
| 2002 05 28 | 608 | 0.8+  | 0.1+  | 2002 06 25 | 644 | 0.3+ | 0.3+ | 2007 11 14 | 691 | 0.5− | 0.5+ |
| 2002 05 28 | 608 | 0.5+  | 0.1+  | 2002 06 25 | 644 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.1+ |
| 2002 06 05 | 704 | 0.2+  | 0.3+  | 2002 06 25 | 644 | 0.2+ | 0.4+ | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2002 06 05 | 704 | 0.1+  | 1.1+  | 2003 10 20 | 691 | 0.1+ | 0.4+ | 2007 12 15 | G96 | 0.2− | 0.2+ |
| 2002 06 05 | 704 | 0.3+  | 0.8+  | 2003 10 20 | 691 | 0.0  | 0.5+ | 2007 12 15 | G96 | 0.1− | 0.0  |
| 2002 06 05 | 704 | 0.3+  | 0.6+  | 2003 10 20 | 691 | 0.2− | 0.6+ |            |     |      |      |

**(172139)\* 2002 JS<sub>77</sub>**

Discovered 2002 May 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 281.39337  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.29634656 | $\omega$ 121.57742 | −0.89601916   | −0.44005681 |  |
| <i>a</i> | 2.2281074  | $\Omega$ 32.42440  | +0.36075457   | −0.79918278 |  |
| <i>e</i> | 0.0907341  | <i>i</i> 6.33440   | +0.25885478   | −0.40945926 |  |
| <i>P</i> | 3.33       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 10 01 | 704 | 0.0   | 0.6+  | 2002 04 13 | 291 | 0.1−  | 0.1+  | 2005 02 05 | 012 | 0.6−  | 0.1−  |
| 2000 10 01 | 704 | 0.0   | 0.3+  | 2002 04 13 | 291 | 0.2−  | 0.1+  | 2005 02 05 | 012 | 0.9−  | 0.4−  |
| 2000 10 01 | 704 | 0.3−  | 0.1+  | 2002 04 14 | 608 | (2.5− | 0.7−) | 2005 02 05 | 012 | 0.5+  | 0.3−  |
| 2000 10 06 | 699 | 0.2−  | 0.5+  | 2002 04 14 | 608 | (2.2− | 0.8−) | 2005 02 05 | 012 | 0.3−  | 0.5−  |
| 2000 10 06 | 699 | (0.3− | 2.2+) | 2002 04 14 | 608 | (2.5− | 0.8−) | 2005 02 05 | 012 | 0.4+  | 0.1−  |
| 2000 10 06 | 699 | 0.2−  | 0.1+  | 2002 04 17 | 704 | 0.3+  | 1.0+  | 2005 02 06 | 012 | 0.1−  | 0.1−  |
| 2000 10 06 | 699 | 1.6−  | 0.0   | 2002 04 17 | 704 | 0.4+  | 1.4+  | 2005 02 06 | 012 | 0.2−  | 0.0   |
| 2000 10 07 | 699 | 1.0−  | 1.3+  | 2002 04 17 | 704 | (0.4+ | 1.8+) | 2005 02 06 | 012 | 0.6−  | 0.3+  |
| 2000 10 07 | 699 | (2.6+ | 1.0+) | 2002 04 17 | 704 | 0.5+  | 1.2+  | 2005 02 06 | 012 | 0.2−  | 0.2−  |
| 2000 10 07 | 699 | 1.3+  | 1.4+  | 2002 04 17 | 704 | (0.8+ | 1.8+) | 2005 02 06 | 012 | 0.4−  | 0.5−  |
| 2000 10 07 | 699 | 0.9−  | 1.2+  | 2002 04 22 | 644 | 0.1−  | 0.0   | 2005 02 06 | 012 | 1.0−  | 0.2−  |
| 2002 03 20 | 699 | 0.5−  | 0.7+  | 2002 04 22 | 644 | 0.3+  | 0.0   | 2005 02 07 | 012 | 0.2+  | 0.3+  |
| 2002 03 20 | 699 | 0.4+  | 0.0   | 2002 04 22 | 644 | 0.0   | 0.2+  | 2005 02 07 | 012 | 0.4+  | 0.1+  |
| 2002 03 20 | 699 | 0.5+  | 0.4−  | 2002 05 09 | 644 | 0.0   | 1.1+  | 2005 02 07 | 012 | 1.3+  | 0.8−  |
| 2002 03 20 | 699 | (2.1+ | 1.0−) | 2002 05 09 | 644 | (0.4+ | 1.6+) | 2005 02 07 | 012 | 0.2+  | 0.1+  |
| 2002 03 23 | 704 | 0.0   | 0.3−  | 2002 05 09 | 644 | 0.0   | 1.0+  | 2005 02 07 | 012 | 0.5+  | 0.2−  |
| 2002 03 23 | 704 | 0.6+  | 0.4−  | 2002 05 11 | 704 | 0.3+  | 0.9+  | 2005 02 07 | 012 | (1.8+ | 0.7−) |
| 2002 03 23 | 704 | 0.9+  | 1.2+  | 2002 05 11 | 704 | 0.3+  | 0.8+  | 2005 02 07 | 012 | 0.5+  | 0.2−  |
| 2002 04 01 | 644 | 0.2+  | 0.2+  | 2002 05 11 | 704 | 0.1+  | 0.9+  | 2005 02 08 | 012 | 0.4+  | 0.2−  |
| 2002 04 01 | 644 | 0.7+  | 0.2+  | 2002 05 11 | 704 | (0.2− | 1.8+) | 2005 02 08 | 012 | 0.2−  | 0.2−  |
| 2002 04 01 | 644 | 0.5+  | 0.1−  | 2002 05 11 | 704 | 1.0+  | 1.0+  | 2005 02 08 | 012 | 0.1+  | 0.4−  |
| 2002 04 03 | 644 | 0.0   | 0.4+  | 2002 05 13 | 704 | 0.7+  | 0.0   | 2005 02 08 | 012 | 0.2−  | 0.6−  |
| 2002 04 03 | 644 | 0.5+  | 0.2+  | 2002 05 13 | 704 | 0.4−  | 0.4−  | 2005 03 01 | 703 | 0.1−  | 0.0   |
| 2002 04 03 | 644 | 0.4+  | 0.3+  | 2002 05 13 | 704 | 0.6+  | 0.5+  | 2005 03 01 | 703 | 0.7−  | 0.6−  |
| 2002 04 05 | 699 | 0.3−  | 0.0   | 2002 05 13 | 704 | 0.2−  | 0.1+  | 2005 03 01 | 703 | 0.8−  | 0.9+  |
| 2002 04 05 | 699 | 0.6−  | 0.2−  | 2002 05 13 | 704 | 0.0   | 0.4+  | 2005 03 01 | 703 | 0.2−  | 0.2+  |
| 2002 04 05 | 699 | 0.4−  | 0.1−  | 2002 05 15 | 608 | 0.3+  | 0.4−  | 2007 11 20 | 704 | 0.3−  | 0.3+  |
| 2002 04 05 | 699 | 0.5+  | 0.9+  | 2002 05 15 | 608 | 0.3+  | 0.9−  | 2007 11 20 | 704 | 0.2−  | 0.9−  |
| 2002 04 08 | 644 | 0.0   | 0.1+  | 2002 05 15 | 608 | 0.6+  | 0.7−  | 2007 11 20 | 704 | 0.0   | 0.5+  |
| 2002 04 08 | 644 | 0.3+  | 0.1+  | 2005 02 01 | 703 | 0.6+  | 0.1−  | 2007 11 20 | 704 | 0.6−  | 0.9+  |
| 2002 04 08 | 644 | 0.3+  | 0.2+  | 2005 02 01 | 703 | 0.1+  | 0.0   | 2007 12 13 | 704 | 0.2+  | 0.9+  |
| 2002 04 10 | 704 | 0.6−  | 0.5+  | 2005 02 01 | 703 | 0.0   | 0.7−  | 2007 12 13 | 704 | 0.1+  | 1.4+  |
| 2002 04 10 | 704 | 0.3+  | 0.2−  | 2005 02 01 | 703 | 0.4+  | 0.2+  | 2007 12 13 | 704 | 0.4−  | 1.1+  |
| 2002 04 10 | 704 | 0.2+  | 0.0   | 2005 02 03 | 704 | 0.2−  | 0.2−  | 2007 12 13 | 704 | 0.7+  | 0.7+  |
| 2002 04 10 | 704 | 0.1+  | 0.1−  | 2005 02 03 | 704 | 0.4+  | 0.8−  | 2007 12 16 | 704 | 0.3−  | 0.9+  |
| 2002 04 10 | 704 | 0.3+  | 0.5+  | 2005 02 03 | 704 | 0.8−  | 0.1−  | 2007 12 16 | 704 | 0.2−  | 0.4+  |
| 2002 04 12 | 608 | 1.2−  | 1.0−  | 2005 02 03 | 704 | 1.4−  | 0.0   | 2007 12 16 | 704 | 0.2+  | 0.4+  |
| 2002 04 12 | 608 | (2.0− | 0.7−) | 2005 02 03 | 704 | 0.6−  | 0.2+  | 2007 12 16 | 704 | 0.2−  | 0.6+  |
| 2002 04 12 | 608 | (2.9− | 0.2+) | 2005 02 05 | 012 | 0.2+  | 0.1+  | 2007 12 16 | 704 | 0.3−  | 0.3+  |
| 2002 04 13 | 291 | 0.1−  | 0.1−  | 2005 02 05 | 012 | 0.6+  | 0.2−  |            |     |       |       |

**(172140)\* 2002 JP<sub>78</sub>**

Discovered 2002 May 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 129.66342  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.27435333 | $\omega$ 72.30225  | +0.19084835   | +0.98025884 |  |
| <i>a</i> | 2.3456465  | $\Omega$ 208.85433 | −0.93631532   | +0.16598211 |  |
| <i>e</i> | 0.1013316  | <i>i</i> 6.14608   | −0.29477198   | +0.10743624 |  |
| <i>P</i> | 3.59       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 06 | 691 | 0.2− | 0.2+ | 2002 04 14 | 704 | 0.2+ | 0.1+ | 2007 10 20 | G96 | 0.1+ | 0.1− |
| 1996 10 06 | 691 | 0.1+ | 0.3+ | 2002 04 14 | 704 | 0.1+ | 0.4− | 2007 10 20 | G96 | 0.7+ | 0.3− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 10 06 | 691 | 0.0   | 0.3+  | 2002 04 14 | 608 | (0.6− | 1.8+) | 2007 10 30 | 691 | 0.2+  | 0.1+  |
| 2002 04 03 | 291 | 0.0   | 0.5+  | 2002 04 14 | 608 | (0.3− | 1.9+) | 2007 10 30 | 691 | 0.0   | 0.3−  |
| 2002 04 03 | 291 | 0.1−  | 0.5+  | 2002 04 14 | 608 | (0.6− | 1.6+) | 2007 10 30 | 691 | 0.2+  | 0.1−  |
| 2002 04 03 | 291 | 0.1−  | 0.4+  | 2002 05 11 | 704 | 0.9+  | 1.1+  | 2007 11 03 | 691 | 0.4−  | 0.1−  |
| 2002 04 08 | 644 | 0.2+  | 0.6+  | 2002 05 11 | 704 | 0.2+  | 0.6+  | 2007 11 03 | 691 | 0.3−  | 0.0   |
| 2002 04 08 | 644 | 0.1+  | 0.6+  | 2002 05 11 | 704 | 0.4+  | 0.7+  | 2007 11 03 | 691 | 0.2−  | 0.1−  |
| 2002 04 08 | 644 | 0.0   | 0.7+  | 2002 05 11 | 704 | 0.8+  | 0.0   | 2007 11 04 | 691 | 0.2−  | 0.1+  |
| 2002 04 09 | 644 | 0.2+  | 0.5+  | 2002 05 11 | 704 | (1.6+ | 0.7+) | 2007 11 04 | 691 | 0.0   | 0.1+  |
| 2002 04 09 | 644 | 0.3+  | 0.3+  | 2002 05 13 | 704 | 0.2−  | 0.5+  | 2007 11 04 | 691 | 0.1−  | 0.1+  |
| 2002 04 09 | 644 | 0.1+  | 1.0+  | 2002 05 13 | 704 | 0.3+  | 0.6−  | 2007 11 07 | 691 | 0.0   | 0.1−  |
| 2002 04 09 | 704 | 1.3+  | 0.4+  | 2002 05 13 | 704 | 0.1−  | 0.5+  | 2007 11 07 | 691 | 0.1+  | 0.2+  |
| 2002 04 09 | 704 | 0.9+  | 1.4+  | 2002 05 13 | 704 | 0.8−  | 1.2+  | 2007 11 07 | 691 | 0.1+  | 0.2+  |
| 2002 04 09 | 704 | 0.6+  | 1.2+  | 2002 05 13 | 704 | 1.1+  | 0.4−  | 2007 11 08 | 691 | 0.1+  | 0.0   |
| 2002 04 11 | 704 | (1.7− | 1.9+) | 2002 05 13 | 691 | 0.1−  | 0.3+  | 2007 11 08 | 691 | 0.5−  | 0.5+  |
| 2002 04 11 | 704 | (0.9− | 2.0+) | 2003 09 30 | 691 | 0.0   | 0.4+  | 2007 11 08 | 691 | 0.6+  | 0.0   |
| 2002 04 11 | 704 | (0.2− | 3.2+) | 2003 09 30 | 691 | 0.1−  | 0.4+  | 2007 11 19 | 691 | 0.0   | 0.2+  |
| 2002 04 12 | 704 | 1.0+  | 0.0   | 2003 10 19 | 691 | 0.0   | 0.3+  | 2007 11 19 | 691 | 0.1−  | 0.0   |
| 2002 04 12 | 704 | (1.6+ | 0.2+) | 2003 10 19 | 691 | 0.2−  | 0.3+  | 2007 11 19 | 691 | 0.1+  | 0.1−  |
| 2002 04 12 | 704 | 0.4+  | 0.2−  | 2003 10 19 | 691 | 0.3−  | 0.5+  | 2007 11 21 | A50 | 0.0   | 0.6−  |
| 2002 04 12 | 704 | 0.2−  | 0.2+  | 2003 10 24 | 704 | 0.3−  | 1.1+  | 2007 11 21 | A50 | 0.3−  | 0.3−  |
| 2002 04 12 | 608 | (2.2− | 0.6+) | 2003 10 24 | 704 | 0.0   | 0.4+  | 2007 11 21 | A50 | 0.1−  | 0.9−  |
| 2002 04 12 | 608 | 1.3−  | 0.8+  | 2003 10 24 | 704 | 0.4+  | 0.6+  | 2007 11 21 | A50 | 0.3−  | 0.5−  |
| 2002 04 12 | 608 | 1.4−  | 0.2−  | 2003 10 24 | 704 | 0.2−  | 0.8+  | 2007 12 04 | 704 | 1.5+  | 0.0   |
| 2002 04 14 | 704 | 0.1+  | 0.2−  | 2003 10 24 | 704 | 0.5−  | 0.4+  | 2007 12 04 | 704 | 1.1−  | 1.4+  |
| 2002 04 14 | 704 | 0.4+  | 0.3+  | 2007 10 20 | G96 | 0.1+  | 0.2−  | 2007 12 04 | 704 | 0.5+  | 0.8+  |
| 2002 04 14 | 704 | 0.3−  | 0.0   | 2007 10 20 | G96 | 0.5+  | 0.3−  | 2007 12 04 | 704 | (1.6− | 0.3−) |

**(172141)\* 2002 JT<sub>79</sub>**

Discovered 2002 May 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 64.79881   | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.27685436 | $\omega$ 317.08521 | +0.99239614   | +0.09949542 |  |
| <i>a</i> | 2.3314985  | $\Omega$ 37.38763  | −0.05250071   | +0.87463670 |  |
| <i>e</i> | 0.1572018  | <i>i</i> 6.85373   | −0.11132644   | +0.47445895 |  |
| <i>P</i> | 3.56       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 09 22 | 327 | 0.0   | 0.8−  | 2003 09 27 | 683 | 0.5−  | 0.1−  | 2003 10 21 | 644 | 0.2−  | 0.3+  |
| 1996 09 22 | 327 | 0.1+  | 0.9−  | 2003 09 27 | 683 | 0.2+  | 0.3−  | 2003 10 22 | 683 | 0.6+  | 1.4+  |
| 1996 09 22 | 327 | 0.1+  | 1.0−  | 2003 09 27 | 683 | (2.1− | 0.4−) | 2003 10 22 | 683 | (0.1− | 2.7+) |
| 2000 12 19 | 704 | 0.1+  | 0.9+  | 2003 09 28 | 704 | 0.0   | 0.1+  | 2003 10 22 | 683 | 0.5−  | 0.5+  |
| 2000 12 19 | 704 | 0.3−  | 0.8−  | 2003 09 28 | 704 | 0.0   | 0.3+  | 2003 10 23 | 683 | 0.3+  | 0.9+  |
| 2000 12 19 | 704 | 1.2+  | 0.9−  | 2003 09 28 | 699 | 0.1+  | 0.1+  | 2003 10 23 | 683 | 1.5+  | 0.5+  |
| 2002 04 04 | 691 | 0.0   | 0.6+  | 2003 09 28 | 704 | 0.1+  | 0.3+  | 2003 10 23 | 683 | 0.1−  | 0.3+  |
| 2002 04 04 | 691 | 0.2+  | 0.5+  | 2003 09 28 | 699 | 0.4+  | 0.1−  | 2003 10 24 | 683 | 0.2+  | 0.2+  |
| 2002 04 04 | 691 | 0.3+  | 0.4+  | 2003 09 28 | 704 | 0.3+  | 0.4+  | 2003 10 24 | 683 | 0.0   | 0.7+  |
| 2002 04 09 | 704 | 0.7−  | 0.8−  | 2003 09 28 | 699 | 0.3−  | 0.2−  | 2003 10 24 | 704 | 0.1−  | 0.4+  |
| 2002 04 09 | 704 | 0.2+  | 0.5−  | 2003 09 28 | 704 | 0.4+  | 0.5+  | 2003 10 24 | 683 | 0.8−  | 0.7−  |
| 2002 04 09 | 704 | (1.6+ | 0.0 ) | 2003 09 28 | 699 | 0.3+  | 0.1−  | 2003 10 24 | 704 | 0.2−  | 0.3+  |
| 2002 04 14 | 644 | 0.7+  | 0.6+  | 2003 09 28 | 683 | 1.3+  | 0.0   | 2003 10 24 | 704 | 0.4+  | 0.6+  |
| 2002 04 14 | 644 | 0.7+  | 0.9+  | 2003 09 28 | 683 | (2.5+ | 0.3+) | 2003 10 24 | 704 | 0.1+  | 0.3+  |
| 2002 04 14 | 644 | 0.9+  | 0.9+  | 2003 09 29 | 683 | 1.0+  | 0.6+  | 2003 10 24 | 704 | 0.2−  | 0.4+  |
| 2002 04 17 | 704 | 0.9+  | 1.2+  | 2003 09 29 | 683 | (3.2+ | 0.8+) | 2003 10 26 | 683 | 0.1−  | 0.4+  |
| 2002 04 17 | 704 | (1.7− | 0.5+) | 2003 09 29 | 683 | (2.3+ | 0.3+) | 2003 10 26 | 683 | (0.2+ | 1.7+) |
| 2002 04 17 | 704 | 0.1+  | 0.2+  | 2003 09 30 | 683 | 1.0−  | 0.0   | 2003 10 26 | 683 | 1.2−  | 0.3+  |
| 2002 04 17 | 704 | 0.9+  | 0.8−  | 2003 09 30 | 683 | 0.1−  | 0.1+  | 2003 10 27 | 683 | 0.2−  | 0.2−  |
| 2002 05 09 | 644 | 0.4+  | 1.3+  | 2003 09 30 | 683 | 1.4−  | 0.1+  | 2003 10 27 | 683 | 1.0−  | 1.1+  |
| 2002 05 09 | 644 | 0.4+  | 1.3+  | 2003 10 02 | 683 | (1.7+ | 0.3+) | 2003 10 28 | 704 | 0.5+  | 0.5−  |
| 2002 05 09 | 644 | 0.1+  | 0.9+  | 2003 10 02 | 683 | (1.7+ | 1.5+) | 2003 10 28 | 704 | 0.8−  | 0.2+  |
| 2002 05 11 | 704 | 0.6−  | 0.2+  | 2003 10 02 | 683 | 1.0+  | 0.2+  | 2003 10 28 | 704 | 0.5+  | 0.3−  |
| 2002 05 11 | 704 | (0.4− | 1.6+) | 2003 10 03 | 608 | 0.7+  | 0.4−  | 2003 10 28 | 704 | 0.4+  | 0.7+  |
| 2002 05 11 | 704 | 0.8+  | 1.1+  | 2003 10 03 | 608 | 0.2+  | 0.8−  | 2003 10 28 | 704 | 1.1−  | 0.2−  |
| 2002 05 11 | 704 | 0.5+  | 0.6+  | 2003 10 03 | 608 | 0.1+  | 1.4−  | 2003 10 29 | 699 | 0.7−  | 0.3+  |
| 2002 05 13 | 704 | 0.3+  | 0.8+  | 2003 10 04 | 683 | 0.2−  | 0.1−  | 2003 10 29 | 699 | 0.2+  | 0.3+  |
| 2002 05 13 | 704 | 0.2−  | 1.2+  | 2003 10 04 | 683 | 0.1+  | 0.2−  | 2003 10 29 | 699 | 0.3−  | 0.1−  |
| 2002 05 13 | 704 | 0.2−  | 0.6+  | 2003 10 04 | 683 | 1.2−  | 0.4+  | 2003 10 29 | 699 | 0.4−  | 0.1+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 05 13 | 704 | 0.6+  | 0.0   | 2003 10 05 | 683 | 1.0+  | 0.1-  | 2003 10 30 | 608 | 0.6+  | 0.3-  |
| 2002 05 13 | 704 | 0.5+  | 1.1+  | 2003 10 05 | 683 | 0.6+  | 0.4+  | 2003 10 30 | 608 | 0.0   | 0.3-  |
| 2003 08 01 | 704 | (0.1- | 1.7+) | 2003 10 05 | 683 | 0.8+  | 0.1+  | 2003 10 30 | 608 | 0.5+  | 0.1-  |
| 2003 08 01 | 704 | 0.2+  | 0.4+  | 2003 10 15 | 683 | 0.1+  | 0.9-  | 2003 10 31 | 683 | 0.4-  | 0.3+  |
| 2003 08 01 | 704 | 0.7-  | 0.4+  | 2003 10 15 | 683 | 0.3-  | 0.1-  | 2003 10 31 | 683 | 0.4-  | 0.1+  |
| 2003 09 09 | 608 | 0.6+  | 0.5+  | 2003 10 15 | 683 | 0.0   | 0.1-  | 2003 10 31 | 683 | 0.3-  | 0.6+  |
| 2003 09 09 | 608 | 0.6+  | 1.0+  | 2003 10 15 | 644 | 0.0   | 0.0   | 2003 11 03 | 608 | 0.3-  | 0.2-  |
| 2003 09 09 | 608 | 0.4+  | 0.6+  | 2003 10 15 | 644 | 0.0   | 0.1+  | 2003 11 03 | 608 | 0.5+  | 0.2+  |
| 2003 09 17 | 683 | 0.5+  | 0.9-  | 2003 10 15 | 644 | 0.1+  | 0.3+  | 2003 11 03 | 608 | 0.0   | 0.1-  |
| 2003 09 17 | 683 | (0.6- | 1.7-) | 2003 10 16 | 683 | 0.7-  | 0.2+  | 2003 11 21 | 704 | 0.2+  | 0.6-  |
| 2003 09 17 | 683 | 0.1+  | 0.4-  | 2003 10 16 | 683 | 1.3-  | 1.0+  | 2003 11 21 | 704 | 0.3+  | 0.3-  |
| 2003 09 18 | 683 | 1.0+  | 0.4-  | 2003 10 16 | 683 | 1.5-  | 0.2+  | 2003 11 21 | 704 | 1.2-  | 0.2+  |
| 2003 09 18 | 333 | 0.4-  | 0.3-  | 2003 10 17 | 683 | 0.8+  | 0.2-  | 2003 11 21 | 704 | 0.1+  | 0.1-  |
| 2003 09 18 | 683 | 0.3-  | 1.1-  | 2003 10 17 | 683 | 0.6+  | 0.9+  | 2003 12 19 | 644 | 0.2-  | 0.1+  |
| 2003 09 18 | 333 | 0.5-  | 0.1+  | 2003 10 17 | 683 | 0.4-  | 0.2+  | 2003 12 19 | 644 | 0.2-  | 0.1+  |
| 2003 09 18 | 683 | (1.7- | 0.0 ) | 2003 10 18 | 683 | 0.0   | 0.3-  | 2003 12 19 | 644 | 0.4-  | 0.3+  |
| 2003 09 18 | 333 | 0.7-  | 0.1-  | 2003 10 18 | 683 | 0.4-  | 0.9+  | 2003 12 21 | 704 | 0.1+  | 1.1+  |
| 2003 09 19 | 704 | 0.8-  | 0.1+  | 2003 10 18 | 683 | 0.3+  | 0.3-  | 2003 12 21 | 704 | 0.8-  | 0.4+  |
| 2003 09 19 | 704 | 0.5-  | 0.6+  | 2003 10 19 | 683 | 0.1-  | 0.8+  | 2003 12 21 | 704 | 0.3+  | 0.4+  |
| 2003 09 19 | 704 | 0.4-  | 1.1+  | 2003 10 19 | 683 | (0.3- | 2.4+) | 2003 12 21 | 704 | 1.0+  | 1.2+  |
| 2003 09 19 | 683 | 1.2-  | 0.2-  | 2003 10 19 | 683 | 0.3-  | 0.9+  | 2003 12 21 | 704 | (1.5- | 0.3+) |
| 2003 09 19 | 704 | 0.1+  | 0.9+  | 2003 10 20 | 683 | 0.4+  | 0.0   | 2005 03 02 | 703 | 0.4+  | 0.3-  |
| 2003 09 19 | 683 | 0.3-  | 0.4-  | 2003 10 20 | 683 | 0.2-  | 1.2+  | 2005 03 02 | 703 | 0.3-  | 0.3+  |
| 2003 09 19 | 704 | 0.9-  | 0.1+  | 2003 10 20 | 683 | 0.6-  | 0.1+  | 2005 03 02 | 703 | 0.0   | 0.2-  |
| 2003 09 19 | 683 | 0.6-  | 0.1-  | 2003 10 20 | 704 | 0.3+  | 0.2-  | 2005 03 02 | 703 | 0.4+  | 0.1+  |
| 2003 09 19 | 106 | 0.2+  | 0.3-  | 2003 10 20 | 704 | 0.1-  | 0.2-  | 2007 12 02 | 704 | 0.3+  | 0.2-  |
| 2003 09 19 | 106 | 0.2-  | 0.2-  | 2003 10 20 | 704 | 0.0   | 0.4-  | 2007 12 02 | 704 | 0.3+  | 0.4-  |
| 2003 09 19 | 106 | 0.1-  | 0.2-  | 2003 10 20 | 704 | 0.1-  | 0.1-  | 2007 12 02 | 704 | 0.4+  | 0.4-  |
| 2003 09 20 | 683 | 0.0   | 0.0   | 2003 10 20 | 704 | 0.0   | 0.0   | 2007 12 02 | 704 | 0.0   | 0.3+  |
| 2003 09 20 | 683 | 0.3+  | 0.4-  | 2003 10 21 | 678 | 1.3-  | 0.8-  | 2007 12 02 | 704 | 0.4+  | 0.2+  |
| 2003 09 20 | 683 | 0.5-  | 0.6-  | 2003 10 21 | 678 | 0.2-  | 0.5-  | 2007 12 16 | 704 | 0.2-  | 1.2+  |
| 2003 09 21 | 644 | 0.1-  | 0.3+  | 2003 10 21 | 644 | 0.2-  | 0.3+  | 2007 12 16 | 704 | 0.6-  | 0.8+  |
| 2003 09 21 | 683 | 0.8+  | 0.1+  | 2003 10 21 | 683 | 0.6+  | 1.0-  | 2007 12 16 | 704 | 0.4-  | 0.5+  |
| 2003 09 21 | 683 | 0.9+  | 0.6-  | 2003 10 21 | 678 | 0.1-  | 0.8+  | 2007 12 16 | 704 | 0.7-  | 0.8+  |
| 2003 09 21 | 683 | 0.4+  | 0.1-  | 2003 10 21 | 683 | 0.1+  | 0.7+  | 2007 12 16 | 704 | 0.5-  | 0.8+  |
| 2003 09 21 | 644 | 0.0   | 0.2+  | 2003 10 21 | 644 | 0.1-  | 0.2+  |            |     |       |       |
| 2003 09 21 | 644 | 0.0   | 0.5+  | 2003 10 21 | 683 | 1.1+  | 0.6+  |            |     |       |       |

**(172142)\* 2002 JN<sub>80</sub>**

Discovered 2002 May 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 207.29971  |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28421543 | $\omega$ | 176.64507 | -0.79671057 | +0.60044714 |
| <i>a</i> | 2.2910661  | $\Omega$ | 40.51761  | -0.55692182 | -0.68529095 |
| <i>e</i> | 0.0530871  | <i>i</i> | 6.06733   | -0.23471332 | -0.41211594 |
| <i>P</i> | 3.47       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 04 08 | 644 | 0.3+  | 0.4+  | 2002 05 13 | 704 | 1.1+  | 0.9-  | 2005 03 01 | 703 | 1.0-  | 0.6+  |
| 2002 04 08 | 644 | 0.4+  | 0.7+  | 2002 05 13 | 704 | (0.5+ | 1.8-) | 2005 03 01 | 703 | 0.4-  | 0.5+  |
| 2002 04 08 | 644 | 0.5+  | 0.8+  | 2003 09 18 | 644 | 0.4-  | 1.0+  | 2006 07 20 | E12 | 1.4-  | 0.1-  |
| 2002 04 09 | 644 | 0.1+  | 0.6+  | 2003 09 18 | 644 | 0.4-  | 0.7+  | 2006 07 20 | E12 | 0.3+  | 0.8+  |
| 2002 04 09 | 644 | 0.2+  | 0.7+  | 2003 09 18 | 644 | 0.5-  | 0.5+  | 2006 07 20 | E12 | 0.6+  | 0.1+  |
| 2002 04 09 | 644 | 0.3+  | 0.6+  | 2003 09 22 | 691 | 0.2-  | 0.5+  | 2006 07 20 | E12 | 0.3-  | 0.2-  |
| 2002 04 14 | 644 | 0.4+  | 1.0+  | 2003 09 22 | 691 | 0.2-  | 0.2+  | 2006 07 20 | E12 | 0.2+  | 0.7-  |
| 2002 04 14 | 644 | 0.0   | 0.6+  | 2003 09 22 | 691 | 0.3-  | 0.4+  | 2007 11 20 | 691 | 0.3-  | 0.4+  |
| 2002 04 14 | 644 | 0.1+  | 0.8+  | 2003 09 28 | 704 | 0.1+  | 1.3+  | 2007 11 20 | 691 | 0.1-  | 0.5+  |
| 2002 05 06 | 291 | 0.2-  | 0.3+  | 2003 09 28 | 704 | (0.0  | 1.7+) | 2007 11 20 | 691 | 0.0   | 0.3+  |
| 2002 05 06 | 291 | 1.0+  | 0.3+  | 2003 09 28 | 704 | 0.2-  | 0.0   | 2007 12 13 | 704 | (0.8+ | 1.7+) |
| 2002 05 06 | 291 | 0.4+  | 1.0+  | 2003 09 28 | 704 | 0.6-  | 1.0+  | 2007 12 13 | 704 | 1.1+  | 0.0   |
| 2002 05 11 | 704 | 0.3-  | 0.9+  | 2005 02 01 | 703 | 0.1+  | 0.2-  | 2007 12 13 | 704 | (1.6+ | 0.1+) |
| 2002 05 11 | 704 | 0.1+  | 0.2-  | 2005 02 01 | 703 | 0.8-  | 0.5-  | 2007 12 15 | 704 | 0.0   | 0.4+  |
| 2002 05 11 | 704 | (1.7+ | 0.6+) | 2005 02 01 | 703 | 0.5+  | 0.5-  | 2007 12 15 | 704 | 1.2-  | 1.4+  |
| 2002 05 11 | 704 | 0.3-  | 0.2+  | 2005 02 01 | 703 | 0.3-  | 0.6-  | 2007 12 15 | 704 | 0.4+  | 0.5+  |
| 2002 05 13 | 704 | 0.2+  | 0.5-  | 2005 03 01 | 703 | 0.0   | 1.2+  | 2007 12 15 | 704 | 0.1+  | 0.9+  |
| 2002 05 13 | 704 | 0.2-  | 0.3+  | 2005 03 01 | 703 | (0.0  | 1.6+) | 2007 12 15 | 704 | 0.9+  | 1.1+  |

**(172143)\* 2002 JW<sub>80</sub>**

Discovered 2002 May 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 94.82361   |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28339644 | $\omega$ | 9.91093   | +0.95540499 | +0.29485464 |
| <i>a</i> | 2.2954779  | $\Omega$ | 332.92325 | -0.27330779 | +0.86216841 |
| <i>e</i> | 0.1485224  | <i>i</i> | 2.03803   | -0.11182195 | +0.41197860 |
| <i>P</i> | 3.48       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 21 | 291 | 0.0   | 0.6+  | 2003 10 23 | 699 | 1.0-  | 0.1-  | 2003 11 26 | 699 | 0.9- | 0.3- |
| 2002 03 21 | 291 | 0.2+  | 0.8+  | 2003 10 23 | 699 | 0.5-  | 0.8-  | 2003 11 26 | 699 | 0.5- | 0.9- |
| 2002 03 21 | 291 | 0.1-  | 0.8+  | 2003 10 23 | 699 | 0.1+  | 0.3+  | 2003 11 26 | 699 | 0.2+ | 1.2+ |
| 2002 04 09 | 704 | 0.5+  | 0.5-  | 2003 10 23 | 699 | 0.1-  | 0.4-  | 2003 12 01 | 704 | 1.2+ | 1.1+ |
| 2002 04 09 | 704 | 0.7+  | 0.2+  | 2003 10 25 | 106 | 0.9+  | 0.1-  | 2003 12 01 | 704 | 0.9+ | 0.6+ |
| 2002 04 09 | 704 | 0.8+  | 0.2+  | 2003 10 25 | 106 | 0.2+  | 0.4-  | 2003 12 01 | 704 | 0.2+ | 0.2- |
| 2002 04 14 | 704 | 0.3-  | 0.6+  | 2003 10 25 | 106 | 0.3-  | 0.4-  | 2003 12 01 | 704 | 0.1+ | 1.4+ |
| 2002 04 14 | 704 | 0.2-  | 0.0   | 2003 10 29 | 704 | 1.0-  | 0.6+  | 2003 12 01 | 704 | 0.5- | 0.1+ |
| 2002 04 14 | 704 | 0.4+  | 0.8+  | 2003 10 29 | 704 | 0.2-  | 0.5+  | 2003 12 22 | 704 | 1.1- | 0.9- |
| 2002 04 14 | 704 | 0.9+  | 0.5+  | 2003 10 29 | 704 | 0.7-  | 0.9+  | 2003 12 22 | 704 | 0.3+ | 0.1- |
| 2002 05 11 | 704 | 0.4+  | 0.6+  | 2003 10 29 | 704 | 0.5-  | 0.7+  | 2003 12 22 | 704 | 0.8+ | 0.1- |
| 2002 05 11 | 704 | 0.2+  | 0.8+  | 2003 10 30 | 704 | 0.4-  | 0.6+  | 2003 12 22 | 704 | 1.0+ | 0.4+ |
| 2002 05 11 | 704 | (0.6- | 2.1+) | 2003 10 30 | 704 | 0.1+  | 0.3+  | 2005 03 08 | G96 | 0.5- | 0.1+ |
| 2002 05 11 | 704 | 0.5-  | 1.2+  | 2003 10 30 | 704 | 0.8-  | 0.6+  | 2005 03 08 | G96 | 0.2- | 0.3+ |
| 2002 05 11 | 704 | (0.4+ | 1.7+) | 2003 10 30 | 704 | 0.1-  | 0.6+  | 2005 03 08 | G96 | 0.4- | 0.4+ |
| 2002 05 13 | 704 | (1.7- | 0.2+) | 2003 11 02 | 704 | 0.1+  | 0.1-  | 2005 03 08 | G96 | 0.2- | 0.2+ |
| 2002 05 13 | 704 | 1.0+  | 0.6+  | 2003 11 02 | 704 | 0.3+  | 0.4+  | 2005 04 02 | G96 | 0.0  | 0.1+ |
| 2002 05 13 | 704 | 0.7+  | 1.1+  | 2003 11 02 | 704 | 0.2-  | 0.0   | 2005 04 02 | G96 | 0.2- | 0.2+ |
| 2002 05 13 | 704 | (1.7- | 0.2+) | 2003 11 02 | 704 | 0.1-  | 0.1+  | 2005 04 02 | G96 | 0.6+ | 0.0  |
| 2002 05 13 | 704 | 0.2+  | 0.4-  | 2003 11 02 | 704 | 0.2+  | 0.4+  | 2005 04 02 | G96 | 0.1+ | 0.1+ |
| 2002 05 18 | 644 | 0.6+  | 1.0+  | 2003 11 18 | 644 | 0.2+  | 0.3+  | 2005 05 11 | G96 | 0.2- | 0.3- |
| 2002 05 18 | 644 | 0.3+  | 1.0+  | 2003 11 18 | 699 | 1.0-  | 0.3-  | 2005 05 11 | G96 | 0.3- | 0.2+ |
| 2002 05 18 | 644 | 0.8+  | 0.8+  | 2003 11 18 | 644 | 0.1-  | 0.1-  | 2005 05 11 | G96 | 0.0  | 0.1+ |
| 2003 09 05 | 704 | 0.1-  | 0.7+  | 2003 11 18 | 699 | 0.2+  | 0.1+  | 2005 05 11 | G96 | 0.6+ | 0.0  |
| 2003 09 05 | 704 | 0.2-  | 0.7+  | 2003 11 18 | 644 | 0.3+  | 0.1+  | 2006 07 04 | E12 | 0.2+ | 0.1- |
| 2003 09 05 | 704 | 0.7+  | 0.3+  | 2003 11 18 | 699 | 0.4+  | 0.1-  | 2006 07 04 | E12 | 0.6+ | 0.4+ |
| 2003 10 15 | 699 | 1.0-  | 0.3+  | 2003 11 18 | 699 | 0.3+  | 0.6+  | 2006 07 04 | E12 | 0.3- | 0.3- |
| 2003 10 15 | 699 | 0.1-  | 0.2-  | 2003 11 20 | 704 | 1.0-  | 0.1+  | 2006 07 04 | E12 | 0.2- | 0.3+ |
| 2003 10 15 | 699 | 0.9+  | 0.1-  | 2003 11 20 | 704 | 0.3-  | 0.7+  | 2006 07 21 | 704 | 0.2- | 0.9+ |
| 2003 10 15 | 699 | (2.0- | 0.1+) | 2003 11 20 | 704 | 0.1-  | 0.5+  | 2006 07 21 | 704 | 1.2+ | 0.9- |
| 2003 10 16 | 106 | 0.3-  | 0.6-  | 2003 11 20 | 704 | 0.7+  | 0.3+  | 2006 07 21 | 704 | 0.4- | 1.4+ |
| 2003 10 16 | 106 | 0.3+  | 0.3+  | 2003 11 20 | 704 | 0.5-  | 0.2+  | 2006 07 21 | 704 | 0.0  | 0.4+ |
| 2003 10 16 | 106 | 0.2+  | 0.1+  | 2003 11 24 | 704 | (1.2+ | 1.7+) | 2007 11 07 | G96 | 0.4+ | 0.1- |
| 2003 10 22 | 704 | 0.4-  | 0.6+  | 2003 11 24 | 704 | 0.9+  | 0.1-  | 2007 11 07 | G96 | 0.1+ | 0.2- |
| 2003 10 22 | 704 | 0.2-  | 0.2+  | 2003 11 24 | 704 | 0.1+  | 1.5+  | 2007 11 07 | G96 | 0.1- | 0.4- |
| 2003 10 22 | 704 | 0.5-  | 0.7+  | 2003 11 24 | 704 | 0.9+  | 0.1-  | 2007 11 07 | G96 | 0.1+ | 0.4- |
| 2003 10 22 | 704 | 0.0   | 0.5+  | 2003 11 26 | 699 | 0.4+  | 0.2+  | 2007 12 06 | G96 | 0.0  | 0.1- |
| 2003 10 22 | 704 | 0.5-  | 0.5+  | 2003 11 26 | 699 | 0.4+  | 0.1+  | 2007 12 06 | G96 | 0.2- | 0.0  |
| 2003 10 22 | 691 | 0.1-  | 0.0   | 2003 11 26 | 699 | 0.5+  | 1.2+  | 2007 12 06 | G96 | 0.2+ | 0.2+ |
| 2003 10 22 | 691 | 0.1-  | 0.1+  | 2003 11 26 | 699 | 1.5-  | 1.1+  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2003 10 22 | 691 | 0.2-  | 0.1+  | 2003 11 26 | 699 | 0.3-  | 0.2-  |            |     |      |      |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 17 | 704 | 0.2+ | 0.2+ | 2003 10 19 | 691 | 0.3- | 0.4+ | 2007 11 13 | 691 | 0.1- | 0.6+ |
| 2002 04 17 | 704 | 0.6+ | 0.7+ | 2005 01 16 | 691 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.7- | 0.4+ |
| 2002 04 17 | 704 | 0.7+ | 0.7+ | 2005 01 16 | 691 | 0.0  | 0.1+ | 2007 11 13 | 691 | 1.1+ | 0.2- |
| 2002 04 17 | 704 | 0.9- | 0.5+ | 2005 01 16 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.0  |
| 2002 04 17 | 704 | 0.4+ | 0.3+ | 2005 01 17 | 704 | 0.3- | 0.4- | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2002 05 09 | 704 | 0.2+ | 0.5+ | 2005 01 17 | 704 | 0.6- | 0.6- | 2007 11 14 | 691 | 0.5- | 0.2- |
| 2002 05 09 | 704 | 0.2- | 0.7+ | 2005 01 17 | 704 | 0.0  | 0.6- | 2007 11 18 | 691 | 0.3- | 0.0  |
| 2002 05 09 | 704 | 0.6+ | 0.9+ | 2005 02 02 | 704 | 0.2- | 0.0  | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2002 05 15 | 608 | 0.1- | 0.2- | 2005 02 02 | 704 | 0.8+ | 0.8- | 2007 11 18 | 691 | 0.1+ | 0.1- |
| 2002 05 15 | 608 | 0.3+ | 0.2- | 2005 02 02 | 704 | 0.0  | 1.3- | 2007 11 18 | G96 | 0.7+ | 0.3- |
| 2002 05 15 | 608 | 0.0  | 0.2- | 2005 02 02 | 704 | 0.4+ | 0.2- | 2007 11 18 | G96 | 0.2+ | 0.2- |
| 2002 05 16 | 704 | 0.2+ | 1.2+ | 2005 02 02 | 704 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2002 05 16 | 704 | 0.6+ | 1.3+ | 2005 03 02 | 703 | 0.6+ | 0.7+ | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2002 05 16 | 704 | 0.1+ | 0.7+ | 2005 03 02 | 703 | 0.1- | 0.6+ | 2007 12 03 | 703 | 0.2- | 1.6+ |
| 2002 05 19 | 644 | 0.3+ | 0.7+ | 2005 03 02 | 703 | 0.3+ | 0.2- | 2007 12 03 | 703 | 1.4- | 0.1- |
| 2002 05 19 | 644 | 0.3+ | 0.8+ | 2005 03 02 | 703 | 0.3+ | 0.5- | 2007 12 03 | 703 | 0.6- | 0.5+ |
| 2002 05 19 | 644 | 0.5+ | 0.6+ | 2006 07 25 | G96 | 0.0  | 0.4+ | 2007 12 03 | 703 | 2.3- | 0.2+ |
| 2002 06 02 | 699 | 0.1- | 0.5+ | 2006 07 25 | G96 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 2.0+ | 2.0+ |
| 2002 06 02 | 699 | 0.0  | 0.8+ | 2006 07 25 | G96 | 0.7+ | 0.1- | 2007 12 05 | 704 | 0.1- | 2.2+ |
| 2002 06 02 | 699 | 0.2- | 0.3+ | 2006 07 25 | G96 | 0.2+ | 0.1+ | 2007 12 05 | 704 | 0.2+ | 1.6+ |
| 2002 06 02 | 699 | 0.6- | 0.2- | 2007 11 09 | 691 | 0.2- | 0.2- | 2007 12 05 | 704 | 0.7+ | 0.9+ |
| 2003 10 19 | 691 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.2+ |            |     |      |      |
| 2003 10 19 | 691 | 0.1- | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.2+ |            |     |      |      |

(172145)\* 2002 JY<sub>138</sub> = 2003 UN<sub>168</sub>

Discovered 2002 May 9 by NEAT at Palomar.

Id. G. V. Williams (MPO 56358)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 53.46862   | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.26311477 | $\omega$ 125.30003 | +0.99011068   | -0.02996892 |  |
| <i>a</i> | 2.4119737  | $\Omega$ 236.79168 | -0.01415013   | +0.95059998 |  |
| <i>e</i> | 0.1740639  | <i>i</i> 9.42761   | +0.13957300   | +0.30896851 |  |
| <i>P</i> | 3.75       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 08 | 704 | 0.3- | 0.6- | 2003 10 23 | 699 | 0.5-  | 0.4-  | 2003 11 19 | 699 | 0.3-  | 0.4+  |
| 1999 09 08 | 704 | 1.0+ | 0.5- | 2003 10 23 | 691 | 0.3-  | 0.2-  | 2003 11 19 | 699 | 0.4-  | 0.2+  |
| 1999 09 08 | 704 | 0.7+ | 0.5- | 2003 10 23 | 691 | 0.2-  | 0.2-  | 2003 11 19 | 699 | 0.2+  | 0.1-  |
| 1999 09 08 | 704 | 0.5- | 0.5- | 2003 10 23 | 691 | 0.2-  | 0.2-  | 2003 11 19 | 699 | 0.1-  | 0.1-  |
| 1999 10 04 | 704 | 0.4+ | 0.2+ | 2003 10 25 | 704 | 0.0   | 0.1-  | 2003 11 21 | 704 | 0.2+  | 0.1+  |
| 1999 10 04 | 704 | 0.5+ | 0.3- | 2003 10 25 | 704 | 0.1+  | 0.2-  | 2003 11 21 | 704 | 0.1+  | 0.4-  |
| 1999 10 04 | 704 | 0.0  | 0.2+ | 2003 10 25 | 704 | 0.1-  | 0.2-  | 2003 11 21 | 704 | 0.6+  | 0.3+  |
| 1999 10 04 | 704 | 0.4- | 0.7+ | 2003 10 25 | 704 | 0.3-  | 0.1+  | 2003 11 21 | 704 | 0.4-  | 0.0   |
| 1999 10 04 | 704 | 1.1+ | 0.0  | 2003 10 25 | 704 | 0.2-  | 0.4+  | 2003 11 21 | 704 | 0.2+  | 0.2+  |
| 1999 10 19 | 704 | 0.2+ | 0.3+ | 2003 10 29 | 703 | 0.8-  | 0.4+  | 2003 11 30 | 703 | 0.3-  | 0.6+  |
| 1999 10 19 | 704 | 0.0  | 0.1+ | 2003 10 29 | 703 | (3.2+ | 4.8+) | 2003 11 30 | 703 | 0.1+  | 0.0   |
| 1999 10 19 | 704 | 0.0  | 0.4+ | 2003 10 29 | 703 | 1.5-  | 0.3-  | 2003 11 30 | 703 | 0.0   | 0.4+  |
| 1999 10 19 | 704 | 0.0  | 0.5+ | 2003 10 29 | 703 | 0.8-  | 0.3+  | 2003 11 30 | 703 | 0.1+  | 0.4+  |
| 1999 10 19 | 704 | 0.6- | 0.8+ | 2003 10 30 | 704 | 0.4-  | 0.1+  | 2003 11 30 | 691 | 0.1-  | 0.2-  |
| 2000 11 30 | 645 | 0.0  | 0.0  | 2003 10 30 | 704 | 0.7-  | 0.7+  | 2003 11 30 | 691 | 0.1-  | 0.2-  |
| 2000 11 30 | 645 | 0.0  | 0.0  | 2003 10 30 | 704 | 0.2+  | 0.2-  | 2003 11 30 | 691 | 0.3-  | 0.1-  |
| 2002 05 09 | 644 | 0.8+ | 1.0+ | 2003 10 30 | 704 | 0.0   | 0.0   | 2003 12 01 | 704 | 0.0   | 0.4+  |
| 2002 05 09 | 644 | 0.0  | 0.3+ | 2003 10 30 | 704 | 0.0   | 0.0   | 2003 12 01 | 704 | 0.3-  | 0.2+  |
| 2002 05 09 | 644 | 0.0  | 0.5+ | 2003 11 02 | 704 | 0.5-  | 0.5+  | 2003 12 01 | 704 | 0.1-  | 0.2+  |
| 2002 05 11 | 704 | 0.2- | 0.4+ | 2003 11 02 | 704 | 0.6-  | 0.5+  | 2003 12 01 | 704 | 0.2+  | 0.4+  |
| 2002 05 11 | 704 | 0.9- | 0.2+ | 2003 11 02 | 704 | 0.6+  | 0.4-  | 2003 12 01 | 704 | 0.3-  | 0.1-  |
| 2002 05 11 | 704 | 0.7- | 0.6+ | 2003 11 02 | 704 | 0.4-  | 0.1+  | 2003 12 11 | 703 | 0.5-  | 0.7-  |
| 2002 05 11 | 704 | 0.3- | 0.8+ | 2003 11 03 | 704 | 0.7+  | 0.3-  | 2003 12 11 | 703 | 1.3+  | 0.7+  |
| 2002 05 17 | 644 | 0.2+ | 0.7+ | 2003 11 03 | 704 | 1.3+  | 0.5-  | 2003 12 11 | 703 | 0.4-  | 0.2+  |
| 2002 05 17 | 644 | 0.4+ | 1.0+ | 2003 11 03 | 704 | 1.1+  | 0.4+  | 2003 12 11 | 703 | (1.8- | 3.1-) |
| 2002 05 17 | 644 | 0.3+ | 0.8+ | 2003 11 03 | 704 | 1.3+  | 0.4+  | 2003 12 21 | 704 | 0.2-  | 0.5+  |
| 2003 10 05 | 704 | 0.2+ | 0.7+ | 2003 11 03 | 704 | (2.6+ | 0.0 ) | 2003 12 21 | 704 | 0.7-  | 0.5-  |
| 2003 10 05 | 704 | 0.9+ | 0.1+ | 2003 11 05 | 699 | 0.2+  | 0.2-  | 2003 12 21 | 704 | 0.1+  | 1.0+  |
| 2003 10 05 | 704 | 0.0  | 0.3+ | 2003 11 05 | 699 | 0.8-  | 0.5+  | 2003 12 21 | 704 | 0.1+  | 0.4+  |
| 2003 10 05 | 704 | 0.9+ | 0.1+ | 2003 11 05 | 699 | 0.1-  | 0.3+  | 2003 12 21 | 704 | 0.1+  | 0.3-  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 05 | 704 | 0.5-  | 0.3-  | 2003 11 05 | 699 | 0.2- | 0.7+ | 2005 03 13 | 703 | (0.7+ | 1.8+) |
| 2003 10 22 | 704 | (1.6- | 2.3-) | 2003 11 12 | 608 | 0.4+ | 1.0+ | 2005 03 13 | 703 | 0.1+  | 1.4+  |
| 2003 10 22 | 704 | 0.3+  | 0.6+  | 2003 11 12 | 608 | 0.4+ | 1.0+ | 2005 03 13 | 703 | 0.4-  | 0.1-  |
| 2003 10 22 | 704 | 0.3+  | 0.3-  | 2003 11 12 | 608 | 0.2+ | 1.5+ | 2005 03 13 | 703 | (1.5+ | 1.6+) |
| 2003 10 22 | 704 | 0.2+  | 0.2-  | 2003 11 16 | 691 | 0.0  | 0.1- | 2007 11 04 | 704 | 0.7+  | 0.2-  |
| 2003 10 22 | 704 | (0.6- | 1.6+) | 2003 11 16 | 691 | 0.1+ | 0.0  | 2007 11 04 | 704 | 0.9+  | 0.9+  |
| 2003 10 22 | 704 | 0.1+  | 0.4-  | 2003 11 16 | 691 | 0.0  | 0.1+ | 2007 11 04 | 704 | 1.3+  | 0.9+  |
| 2003 10 22 | 704 | 0.3+  | 0.1+  | 2003 11 18 | 703 | 0.1+ | 0.6- | 2007 12 04 | 704 | 0.2+  | 0.7-  |
| 2003 10 23 | 699 | 0.6+  | 0.1+  | 2003 11 18 | 703 | 0.0  | 0.8+ | 2007 12 04 | 704 | 0.2+  | 0.8-  |
| 2003 10 23 | 699 | 0.7-  | 0.2-  | 2003 11 18 | 703 | 1.3- | 0.5- | 2007 12 04 | 704 | 0.4+  | 0.5-  |
| 2003 10 23 | 699 | 0.3-  | 0.1-  | 2003 11 18 | 703 | 0.5- | 0.6- | 2007 12 04 | 704 | 0.4+  | 0.8-  |

(172146)\* 2002 JJ<sub>149</sub> = 2000 YX<sub>65</sub>

Discovered 2002 May 15 by NEAT at Palomar.

Id. A. Doppler (MPO 108265)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 238.74255  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.28678108 | $\omega$ 321.29399 | -0.64682055   | +0.63553122 |  |
| <i>a</i> | 2.2773812  | $\Omega$ 263.83784 | -0.55058802   | -0.77163361 |  |
| <i>e</i> | 0.2095636  | <i>i</i> 25.08880  | -0.52770827   | +0.02610830 |  |
| <i>P</i> | 3.44       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |  |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 30 | 704 | 0.0   | 0.2-  | 2002 07 09 | 704 | 0.2-  | 0.2-  | 2005 05 13 | E12 | 0.4- | 0.2+ |
| 2000 12 30 | 704 | 0.2+  | 0.7+  | 2002 07 09 | 704 | 0.0   | 0.6-  | 2005 05 13 | E12 | 0.5+ | 0.0  |
| 2000 12 30 | 704 | 0.1+  | 0.0   | 2002 07 18 | 704 | 0.6-  | 0.2+  | 2005 05 13 | E12 | 0.1- | 0.4+ |
| 2000 12 30 | 704 | 0.1+  | 1.4+  | 2002 07 18 | 704 | 0.4-  | 0.1+  | 2005 05 13 | E12 | 0.1- | 0.5+ |
| 2001 01 03 | 704 | 0.8+  | 0.4+  | 2002 07 18 | 704 | 0.2-  | 0.4+  | 2005 06 30 | E12 | 0.9+ | 0.2+ |
| 2001 01 03 | 704 | 0.5-  | 0.8+  | 2002 07 18 | 704 | 0.1-  | 0.1-  | 2005 06 30 | E12 | 0.4- | 0.3+ |
| 2001 01 03 | 704 | (1.8+ | 0.1+) | 2002 07 18 | 704 | 0.1-  | 0.3-  | 2005 06 30 | E12 | 0.7+ | 0.3+ |
| 2002 05 15 | 644 | 0.0   | 0.7+  | 2002 08 12 | 704 | 0.7+  | 0.4+  | 2006 10 02 | 703 | 0.1- | 0.8- |
| 2002 05 15 | 644 | 0.3-  | 0.8+  | 2002 08 12 | 704 | 0.9+  | 0.5+  | 2006 10 02 | 703 | 0.5- | 0.3+ |
| 2002 05 15 | 644 | 0.3-  | 0.8+  | 2002 08 12 | 704 | 0.3+  | 0.0   | 2006 10 02 | 703 | 0.5+ | 1.0+ |
| 2002 05 21 | 704 | 0.2-  | 0.9+  | 2003 12 17 | 704 | 0.9+  | 0.9+  | 2006 10 02 | 703 | 0.6+ | 1.0+ |
| 2002 05 21 | 704 | 0.4-  | 1.3+  | 2003 12 17 | 704 | 0.5+  | 0.4-  | 2006 10 23 | 703 | 1.2- | 0.6- |
| 2002 05 21 | 704 | 0.1-  | 0.7+  | 2003 12 17 | 704 | 0.3-  | 1.0+  | 2006 10 23 | 703 | 0.3+ | 0.5- |
| 2002 06 02 | 644 | 0.4-  | 0.1+  | 2003 12 17 | 704 | 0.5-  | 0.4+  | 2006 10 23 | 703 | 0.1- | 0.2- |
| 2002 06 02 | 644 | 0.3-  | 0.1+  | 2003 12 17 | 704 | 0.3+  | 0.2-  | 2006 10 23 | 703 | 0.3- | 0.4- |
| 2002 06 02 | 644 | 0.4-  | 0.1+  | 2005 03 02 | E12 | 0.9-  | 0.2-  | 2007 12 04 | 704 | 0.2- | 0.9+ |
| 2002 06 14 | 704 | 0.5-  | 0.5-  | 2005 03 02 | E12 | 0.1+  | 0.2+  | 2007 12 04 | 704 | 0.4+ | 0.5+ |
| 2002 06 14 | 704 | 0.4+  | 0.3-  | 2005 03 02 | E12 | (1.6+ | 0.5+) | 2007 12 04 | 704 | 1.0+ | 0.5+ |
| 2002 06 14 | 704 | 0.0   | 0.5-  | 2005 03 02 | E12 | 0.3+  | 0.1-  | 2007 12 06 | 691 | 0.1- | 0.1- |
| 2002 06 14 | 704 | 0.0   | 0.0   | 2005 04 19 | E12 | 0.3+  | 0.1+  | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2002 06 14 | 704 | 0.6-  | 1.0+  | 2005 04 19 | E12 | 0.2+  | 0.4+  | 2007 12 06 | 691 | 0.2+ | 0.0  |
| 2002 07 09 | 704 | 0.1-  | 0.2-  | 2005 04 19 | E12 | 0.1-  | 0.0   |            |     |      |      |
| 2002 07 09 | 704 | 0.5+  | 0.3-  | 2005 04 19 | E12 | 1.0-  | 1.0-  |            |     |      |      |

(172147)\* 2002 KU<sub>5</sub>

Discovered 2002 May 16 by the Lincoln Laboratory Near-Earth Asteroid

2007 DEC. 24

M.P.O. 129279

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 05 21 | 704 | 0.3+  | 1.5+  | 2002 07 18 | 704 | 1.3-  | 0.1-  | 2005 03 13 | 699 | 1.1+  | 0.3+  |
| 2002 05 21 | 704 | 0.7+  | 0.0   | 2002 07 18 | 704 | 0.5-  | 0.2+  | 2007 11 05 | 704 | 0.5-  | 0.1+  |
| 2002 05 21 | 704 | 0.2+  | 0.3+  | 2002 10 06 | 704 | 0.1-  | 0.0   | 2007 11 05 | 704 | 1.1+  | 0.7+  |
| 2002 06 05 | 704 | 0.6+  | 0.6+  | 2002 10 06 | 704 | 0.6+  | 0.4+  | 2007 11 05 | 704 | 0.7+  | 0.4-  |
| 2002 06 05 | 704 | 0.3+  | 0.7+  | 2002 10 06 | 704 | 0.6+  | 0.1-  | 2007 11 05 | 704 | 0.3-  | 0.1-  |
| 2002 06 05 | 704 | 0.7+  | 1.3+  | 2003 11 21 | 704 | (1.4+ | 2.6+) | 2007 11 05 | 691 | 0.2+  | 0.5+  |
| 2002 06 05 | 704 | 0.0   | 0.3+  | 2003 11 21 | 704 | 0.1+  | 0.7+  | 2007 11 05 | 691 | 0.4-  | 0.1-  |
| 2002 06 09 | 704 | 0.3+  | 0.4+  | 2003 11 21 | 704 | (0.1+ | 2.0+) | 2007 11 05 | 691 | 0.4-  | 0.3+  |
| 2002 06 09 | 704 | 0.2-  | 0.6+  | 2003 12 19 | 704 | (2.0+ | 0.3+) | 2007 11 09 | 691 | (1.9+ | 0.1-) |
| 2002 06 09 | 704 | 0.1-  | 0.4+  | 2003 12 19 | 704 | 1.1+  | 0.6-  | 2007 11 09 | 691 | 0.2-  | 0.2+  |
| 2002 06 09 | 704 | 0.2+  | 0.6+  | 2003 12 19 | 704 | 0.6+  | 0.5+  | 2007 11 09 | 691 | 0.2-  | 0.0   |
| 2002 06 09 | 704 | 0.2+  | 0.4+  | 2003 12 21 | 704 | 0.6-  | 0.7+  | 2007 11 15 | 704 | 0.7+  | 0.5+  |
| 2002 06 13 | 704 | 0.2-  | 1.2+  | 2003 12 21 | 704 | 0.2-  | 0.1+  | 2007 11 15 | 704 | 0.3+  | 0.7+  |
| 2002 06 13 | 704 | 1.0+  | 1.2+  | 2003 12 21 | 704 | 0.1+  | 0.6-  | 2007 11 15 | 704 | 1.3+  | 1.0+  |
| 2002 06 13 | 704 | (2.1+ | 0.4-) | 2003 12 23 | 704 | 0.2+  | 0.3-  | 2007 12 05 | 704 | 0.5+  | 0.3+  |
| 2002 06 13 | 704 | 1.2+  | 0.4+  | 2003 12 23 | 704 | 0.5-  | 0.8+  | 2007 12 05 | 704 | 0.1+  | 0.3+  |
| 2002 06 14 | 608 | 0.1-  | 0.2+  | 2003 12 23 | 704 | 0.8-  | 0.1-  | 2007 12 05 | 704 | 0.4+  | 0.6+  |
| 2002 06 14 | 608 | 0.5-  | 0.2+  | 2003 12 23 | 704 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.3+  | 0.9+  |
| 2002 06 14 | 608 | 0.4-  | 0.3+  | 2003 12 23 | 704 | 0.1-  | 0.0   | 2007 12 05 | 704 | 0.8+  | 0.1+  |

(172148)\* 2002 LU<sub>5</sub>

Discovered 2002 June 4 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 123.22303  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26319589 | $\omega$ | 326.43301 | +0.40434995   | +0.91457851 |
| <i>a</i> | 2.4114781  | $\Omega$ | 327.41587 | -0.83630055   | +0.36667811 |
| <i>e</i> | 0.1797553  | <i>i</i> | 0.73142   | -0.37027355   | +0.17056762 |
| <i>P</i> | 3.74       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 06 | 691 | 0.1+ | 0.3- | 2002 06 08 | 291 | 0.0   | 0.1+  | 2006 06 18 | 644 | 0.2-  | 0.2+  |
| 1999 10 06 | 691 | 0.0  | 0.2- | 2002 06 08 | 704 | 0.3-  | 0.0   | 2006 06 18 | 644 | 0.0   | 0.2+  |
| 1999 10 06 | 691 | 0.2+ | 0.5- | 2002 06 08 | 291 | 0.1+  | 0.2+  | 2006 06 22 | G96 | 0.1-  | 0.0   |
| 1999 11 09 | 704 | 0.4+ | 0.1+ | 2002 06 08 | 704 | 0.0   | 0.3+  | 2006 06 22 | G96 | 0.2+  | 0.8+  |
| 1999 11 09 | 704 | 0.3- | 0.3- | 2002 06 08 | 291 | (1.9- | 1.1+) | 2006 06 22 | G96 | 0.0   | 0.2-  |
| 1999 11 09 | 704 | 0.8- | 0.4- | 2003 11 18 | 691 | 0.1+  | 0.1+  | 2006 06 22 | G96 | 0.2-  | 0.3+  |
| 1999 11 09 | 704 | 0.4+ | 1.0+ | 2003 11 18 | 691 | 0.0   | 0.2+  | 2006 06 22 | G96 | 0.0   | 0.3+  |
| 2002 05 11 | 704 | 0.4+ | 0.8- | 2003 11 18 | 691 | 0.1+  | 0.2+  | 2006 06 22 | G96 | 0.1+  | 0.1+  |
| 2002 05 11 | 704 | 0.7+ | 0.8- | 2005 03 04 | G96 | 0.1+  | 0.2-  | 2006 06 22 | G96 | 0.3+  | 0.2+  |
| 2002 05 11 | 704 | 0.2- | 1.0- | 2005 03 04 | G96 | 0.4-  | 0.2-  | 2006 06 22 | G96 | 0.1+  | 0.0   |
| 2002 05 18 | 644 | 0.0  | 0.2+ | 2005 03 04 | G96 | 0.1+  | 0.5-  | 2006 07 04 | E12 | (1.0+ | 1.6-) |
| 2002 05 18 | 644 | 0.2+ | 0.3+ | 2005 03 04 | G96 | 0.2-  | 0.5-  | 2006 07 04 | E12 | 0.5-  | 0.1+  |
| 2002 05 18 | 644 | 0.0  | 0.2+ | 2006 05 22 | G96 | 0.6-  | 0.3+  | 2006 07 04 | E12 | 1.1+  | 0.4-  |
| 2002 06 04 | 644 | 0.2- | 0.4+ | 2006 05 22 | G96 | 0.1+  | 0.1-  | 2006 07 04 | E12 | (2.0- | 0.6-) |
| 2002 06 04 | 644 | 0.1+ | 0.2+ | 2006 05 22 | G96 | 0.3-  | 0.3+  | 2007 11 18 | 691 | 0.0   | 0.7-  |
| 2002 06 04 | 644 | 0.2+ | 0.3+ | 2006 05 22 | G96 | 0.5-  | 0.0   | 2007 11 18 | 691 | 0.4-  | 0.0   |
| 2002 06 07 | 644 | 0.1- | 0.6- | 2006 06 17 | 691 | 0.1+  | 0.1+  | 2007 11 18 | 691 | 0.0   | 0.1+  |
| 2002 06 07 | 644 | 0.4- | 0.9- | 2006 06 17 | 691 | 0.0   | 0.0   | 2007 12 05 | 691 | 0.4+  | 0.8+  |
| 2002 06 07 | 644 | 0.5- | 0.8- | 2006 06 17 | 691 | 0.3-  | 0.1-  | 2007 12 05 | 691 | 0.2-  | 0.2+  |
| 2002 06 08 | 704 | 0.9- | 0.1+ | 2006 06 18 | 644 | 0.1+  | 0.2+  | 2007 12 05 | 691 | 0.0   | 0.0   |

(172149)\* 2002 LA<sub>13</sub> = 1998 QP<sub>7</sub>

Discovered 2002 June 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 31776)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 100.69048  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24344527 | $\omega$ | 200.31887 | +0.64866599   | +0.74429666 |
| <i>a</i> | 2.5402034  | $\Omega$ | 110.47811 | -0.67274495   | +0.65838174 |
| <i>e</i> | 0.2442424  | <i>i</i> | 9.76678   | -0.35587451   | +0.11205336 |
| <i>P</i> | 4.05       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 06 17 | 691 | 0.6- | 0.1- | 2002 06 05 | 704 | 0.4+ | 0.3+ | 2002 08 10 | 807 | 0.1- | 0.5- |
| 1998 06 17 | 691 | 0.8- | 0.1+ | 2002 06 05 | 704 | 0.2+ | 0.7+ | 2002 08 13 | 704 | 0.2- | 0.2- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 06 17 | 691 | 0.7-  | 0.2-  | 2002 06 08 | 704 | 0.8+  | 0.3-  | 2002 08 13 | 704 | 0.5- | 0.3- |
| 1998 06 18 | 691 | 1.1+  | 0.5+  | 2002 06 08 | 704 | 1.0+  | 0.0   | 2002 08 13 | 704 | 0.9- | 0.9- |
| 1998 06 18 | 691 | 0.7-  | 0.5+  | 2002 06 08 | 704 | 0.6+  | 0.4-  | 2002 08 13 | 704 | 1.4- | 1.2- |
| 1998 06 18 | 691 | 0.4-  | 0.0   | 2002 06 08 | 704 | 1.0+  | 1.4-  | 2002 08 31 | 704 | 0.7+ | 1.3+ |
| 1998 07 03 | 691 | 0.7+  | 0.5+  | 2002 06 11 | 704 | 0.1+  | 0.4+  | 2002 08 31 | 704 | 0.8+ | 0.1+ |
| 1998 07 03 | 691 | 0.7+  | 0.6+  | 2002 06 11 | 704 | 1.1+  | 1.0-  | 2002 08 31 | 704 | 0.1+ | 0.1+ |
| 1998 07 03 | 691 | 0.8+  | 0.3+  | 2002 06 11 | 704 | 1.0+  | 0.4-  | 2002 08 31 | 704 | 0.1- | 1.3- |
| 1998 07 16 | 699 | 0.5+  | 0.4+  | 2002 06 11 | 704 | 0.2+  | 0.8-  | 2002 08 31 | 704 | 1.0+ | 1.2- |
| 1998 07 16 | 699 | 0.2-  | 1.5+  | 2002 06 16 | 644 | 0.1+  | 0.2+  | 2002 09 06 | 704 | 0.6+ | 0.4+ |
| 1998 07 16 | 699 | 0.5-  | 0.9+  | 2002 06 16 | 644 | 0.3+  | 0.1+  | 2002 09 06 | 704 | 0.4+ | 0.2- |
| 1998 08 17 | 704 | (1.5+ | 2.1-) | 2002 06 16 | 644 | 0.2+  | 0.1+  | 2002 09 06 | 704 | 0.6+ | 1.0- |
| 1998 08 17 | 704 | 0.5+  | 0.6-  | 2002 06 18 | 704 | 0.2+  | 0.4+  | 2003 12 19 | 704 | 1.4- | 0.1+ |
| 1998 08 17 | 704 | 0.0   | 0.6+  | 2002 06 18 | 704 | 0.2+  | 0.2-  | 2003 12 19 | 704 | 0.4- | 0.7+ |
| 1998 08 17 | 704 | 0.4-  | 0.4-  | 2002 06 18 | 704 | 0.1+  | 0.0   | 2003 12 19 | 704 | 0.7+ | 0.8+ |
| 1998 08 17 | 704 | 0.2-  | 0.7+  | 2002 06 18 | 704 | 0.1+  | 0.3-  | 2006 07 18 | 704 | 0.8+ | 0.7- |
| 1998 08 23 | 704 | 0.1-  | 1.0-  | 2002 06 18 | 704 | 0.1-  | 0.7-  | 2006 07 18 | 704 | 1.1+ | 0.2+ |
| 1998 08 23 | 704 | 0.5-  | 0.6-  | 2002 07 01 | 644 | 0.3-  | 0.6-  | 2006 07 18 | 704 | 0.7- | 1.3+ |
| 1998 08 23 | 704 | 1.2+  | 0.9-  | 2002 07 01 | 644 | 0.3-  | 0.5-  | 2006 07 18 | 704 | 0.3- | 0.2+ |
| 1998 08 23 | 704 | 1.7-  | 1.2-  | 2002 07 01 | 644 | 0.2-  | 0.4-  | 2007 12 04 | 704 | 0.2+ | 0.9+ |
| 2001 03 21 | 608 | 0.1-  | 0.1+  | 2002 07 04 | 291 | 0.7-  | 0.7+  | 2007 12 04 | 704 | 0.0  | 0.5+ |
| 2001 03 21 | 608 | 0.4+  | 0.4-  | 2002 07 04 | 291 | 1.1-  | 0.1+  | 2007 12 04 | 704 | 0.3+ | 0.0  |
| 2001 03 21 | 608 | 0.1+  | 0.4-  | 2002 07 04 | 291 | 0.4-  | 0.6-  | 2007 12 04 | 704 | 0.2+ | 0.3+ |
| 2002 05 21 | 704 | 0.5+  | 0.9-  | 2002 07 05 | 704 | 0.1-  | 1.2+  | 2007 12 04 | 704 | 0.2- | 0.7+ |
| 2002 05 21 | 704 | 1.3+  | 0.3-  | 2002 07 05 | 704 | (0.6- | 2.1+) | 2007 12 16 | D35 | 0.1- | 0.1- |
| 2002 05 21 | 704 | 0.3-  | 0.8+  | 2002 07 05 | 704 | 1.1-  | 0.6-  | 2007 12 16 | D35 | 0.2- | 0.6+ |
| 2002 05 21 | 704 | 0.6+  | 0.5+  | 2002 07 05 | 704 | 0.3+  | 0.6-  | 2007 12 16 | D35 | 0.4- | 0.6+ |
| 2002 06 05 | 704 | 1.2+  | 0.5+  | 2002 07 05 | 704 | 0.3-  | 0.4+  |            |     |      |      |
| 2002 06 05 | 704 | 0.6+  | 1.3+  | 2002 08 10 | 807 | 0.2-  | 0.5-  |            |     |      |      |

(172150)\* 2002 LR<sub>36</sub> = 1998 SF<sub>165</sub>

Discovered 2002 June 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 33617)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 81.26778   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23503280 | $\omega$ | 183.06362 | +0.84896868   | +0.51387537 |
| <i>a</i> | 2.6004613  | $\Omega$ | 145.11397 | -0.48014179   | +0.84750059 |
| <i>e</i> | 0.1822924  | <i>i</i> | 12.44181  | -0.22071712   | +0.13294683 |
| <i>P</i> | 4.19       | <i>H</i> | 14.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 08 04 | 699 | 0.2+  | 1.1+  | 2002 08 12 | 608 | 0.3+ | 0.7- | 2002 10 11 | 704 | 0.6-  | 1.2+  |
| 1998 08 04 | 699 | 0.4-  | 1.3+  | 2002 08 12 | 608 | 0.0  | 0.4- | 2002 10 11 | 704 | 0.1-  | 0.3-  |
| 1998 08 04 | 699 | 0.2+  | 0.4+  | 2002 08 14 | 704 | 0.1+ | 0.1- | 2005 03 08 | 699 | 0.8+  | 0.2+  |
| 1998 09 22 | 699 | 0.4-  | 1.1+  | 2002 08 14 | 704 | 0.1+ | 0.4+ | 2005 03 08 | 699 | 0.6+  | 0.7+  |
| 1998 09 22 | 699 | 0.1+  | 0.9+  | 2002 08 14 | 704 | 0.2+ | 0.3+ | 2005 03 08 | 699 | 0.3+  | 1.0+  |
| 1998 09 22 | 699 | 0.3-  | 0.5+  | 2002 08 14 | 704 | 0.1- | 0.2- | 2005 03 08 | 699 | 0.5-  | 0.1+  |
| 1998 09 27 | 699 | 0.1-  | 0.7+  | 2002 08 14 | 704 | 0.6- | 0.2- | 2005 03 10 | 699 | 0.3+  | 0.0   |
| 1998 09 27 | 699 | 0.4-  | 0.6+  | 2002 08 17 | 644 | 0.1- | 0.6+ | 2005 03 10 | 699 | 0.4+  | 0.8+  |
| 1998 09 27 | 699 | 0.0   | 1.1+  | 2002 08 17 | 644 | 0.3+ | 0.7+ | 2005 03 10 | 699 | 0.3-  | 0.3+  |
| 2002 06 09 | 704 | 0.7+  | 0.9-  | 2002 08 17 | 644 | 0.3- | 0.6+ | 2005 03 10 | 699 | 0.3-  | 1.0+  |
| 2002 06 09 | 704 | 0.4+  | 0.6-  | 2002 08 19 | 608 | 0.7- | 0.5+ | 2005 03 12 | 704 | 0.7+  | 0.3-  |
| 2002 06 09 | 704 | 0.5+  | 0.4-  | 2002 08 19 | 608 | 0.6- | 0.2+ | 2005 03 12 | 704 | (1.3- | 1.9+) |
| 2002 06 09 | 704 | 0.6+  | 0.6-  | 2002 08 19 | 608 | 0.1+ | 0.4+ | 2005 03 12 | 704 | (1.0- | 1.7+) |
| 2002 06 13 | 704 | 0.7+  | 0.5+  | 2002 08 24 | 644 | 0.1- | 0.4+ | 2005 03 12 | 704 | 0.8+  | 0.2+  |
| 2002 06 13 | 704 | 0.6+  | 0.3+  | 2002 08 24 | 644 | 0.2- | 0.2+ | 2005 03 12 | 704 | 0.9-  | 1.5+  |
| 2002 06 13 | 704 | 0.9+  | 0.7+  | 2002 08 24 | 644 | 0.1- | 0.2+ | 2005 03 16 | 704 | (1.0+ | 1.8+) |
| 2002 06 13 | 704 | 0.0   | 0.1+  | 2002 08 27 | 644 | 0.2+ | 0.3+ | 2005 03 16 | 704 | 0.4+  | 0.4+  |
| 2002 06 13 | 704 | (1.8+ | 0.8+) | 2002 08 27 | 644 | 0.0  | 0.3+ | 2005 03 16 | 704 | 0.4+  | 0.3+  |
| 2002 07 09 | 704 | 0.5+  | 0.2+  | 2002 08 27 | 644 | 0.3+ | 0.4+ | 2005 03 16 | 704 | (1.2+ | 2.4+) |
| 2002 07 09 | 704 | 0.5+  | 0.2-  | 2002 09 01 | 699 | 0.4- | 0.3+ | 2005 03 16 | 704 | 0.1-  | 0.3+  |
| 2002 07 09 | 704 | 0.1+  | 0.3-  | 2002 09 01 | 699 | 0.3- | 0.0  | 2005 03 17 | 704 | 0.9+  | 0.2+  |
| 2002 07 09 | 704 | 0.2+  | 0.2-  | 2002 09 01 | 699 | 0.4- | 0.7+ | 2005 03 17 | 704 | 0.2+  | 0.4+  |
| 2002 07 12 | 644 | 0.1-  | 0.6+  | 2002 09 01 | 699 | 0.3+ | 0.2+ | 2005 03 17 | 704 | 0.3+  | 0.2+  |
| 2002 07 12 | 644 | 0.1-  | 0.6+  | 2002 09 02 | 608 | 0.4+ | 0.0  | 2005 03 17 | 704 | 0.6+  | 0.8+  |
| 2002 07 12 | 644 | 0.1-  | 0.6+  | 2002 09 02 | 608 | 0.1+ | 0.8- | 2005 03 30 | 703 | 0.8-  | 0.4+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 14 | 704 | 0.5+ | 0.1- | 2002 09 02 | 608 | 0.3-  | 0.7-  | 2005 03 30 | 703 | 0.2- | 0.1- |
| 2002 07 14 | 704 | 0.7+ | 0.2- | 2002 09 05 | 704 | 0.2-  | 0.4-  | 2005 03 30 | 703 | 0.3- | 0.5+ |
| 2002 07 14 | 704 | 0.8+ | 0.0  | 2002 09 05 | 704 | 0.4-  | 0.4-  | 2005 03 30 | 703 | 0.7- | 0.8+ |
| 2002 07 14 | 704 | 0.3+ | 0.2+ | 2002 09 05 | 704 | 0.9-  | 0.5-  | 2005 04 11 | 699 | 0.6+ | 0.5+ |
| 2002 07 14 | 704 | 1.2+ | 0.1- | 2002 09 05 | 704 | 0.6-  | 0.6-  | 2005 04 11 | 699 | 0.7+ | 1.0- |
| 2002 07 22 | 644 | 0.2- | 1.1+ | 2002 09 05 | 704 | 0.0   | 0.3-  | 2005 04 11 | 699 | 0.2+ | 0.2- |
| 2002 07 22 | 644 | 0.1+ | 1.1+ | 2002 09 13 | 608 | 0.3-  | 1.1-  | 2005 04 11 | 699 | 0.0  | 0.3+ |
| 2002 07 22 | 644 | 0.2- | 1.1+ | 2002 09 13 | 608 | 0.3-  | 1.0-  | 2005 04 17 | 691 | 0.2- | 0.3+ |
| 2002 07 23 | 644 | 0.1+ | 0.0  | 2002 09 13 | 608 | 0.1-  | 0.8-  | 2005 04 17 | 691 | 0.2- | 0.4+ |
| 2002 07 23 | 644 | 0.2- | 0.1+ | 2002 09 15 | 644 | 0.1-  | 0.2-  | 2005 04 17 | 691 | 0.0  | 0.3+ |
| 2002 07 23 | 644 | 0.1+ | 0.1+ | 2002 09 15 | 644 | 0.1-  | 0.3-  | 2007 11 18 | D29 | 0.0  | 0.1+ |
| 2002 08 06 | 644 | 0.2- | 0.3+ | 2002 09 15 | 644 | (0.1+ | 2.0-) | 2007 11 18 | D29 | 0.2- | 0.5+ |
| 2002 08 06 | 644 | 0.6- | 0.2+ | 2002 09 22 | 608 | 0.1-  | 0.9+  | 2007 11 18 | D29 | 0.1+ | 0.2+ |
| 2002 08 06 | 644 | 0.4- | 0.2+ | 2002 09 22 | 608 | 0.0   | 0.9+  | 2007 11 18 | D29 | 0.3- | 1.2+ |
| 2002 08 07 | 644 | 0.3- | 0.5+ | 2002 09 22 | 608 | 0.1-  | 1.0+  | 2007 11 20 | 703 | 0.3- | 0.1+ |
| 2002 08 07 | 644 | 0.1- | 0.3+ | 2002 09 29 | 608 | 0.0   | 0.4-  | 2007 11 20 | 703 | 0.1+ | 0.4+ |
| 2002 08 07 | 644 | 0.4- | 0.4+ | 2002 09 29 | 608 | 0.3+  | 0.5-  | 2007 11 20 | 703 | 0.3- | 0.3+ |
| 2002 08 08 | 699 | 0.2- | 0.4+ | 2002 09 29 | 608 | 0.3+  | 0.4-  | 2007 11 20 | 703 | 0.5- | 1.0+ |
| 2002 08 08 | 699 | 0.7- | 0.1+ | 2002 10 02 | 608 | 0.1-  | 1.2-  | 2007 12 14 | 704 | 0.5+ | 0.4+ |
| 2002 08 08 | 699 | 0.4- | 0.2- | 2002 10 02 | 608 | 0.3+  | 1.1-  | 2007 12 14 | 704 | 0.1- | 0.4- |
| 2002 08 08 | 699 | 0.1- | 0.2+ | 2002 10 02 | 608 | (0.1+ | 2.0-) | 2007 12 14 | 704 | 0.3+ | 0.1- |
| 2002 08 12 | 608 | 0.1+ | 0.6- | 2002 10 11 | 704 | (1.8- | 0.1+) | 2007 12 14 | 704 | 0.5+ | 0.8+ |

**(172151)\* 2002 LL<sub>43</sub> = 1998 QS<sub>110</sub>**

Discovered 2002 June 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.  
Id. A. Doppler (*MPO* 31785)

|                                         |  |  |            |  |  |          |  |  |           |  |  |
|-----------------------------------------|--|--|------------|--|--|----------|--|--|-----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |            |  |  |          |  |  |           |  |  |
| <i>M</i>                                |  |  | (2000.0)   |  |  | <b>P</b> |  |  | <b>Q</b>  |  |  |
| <i>n</i>                                |  |  | 0.22944723 |  |  | $\omega$ |  |  | 105.40022 |  |  |
| <i>a</i>                                |  |  | 2.6424950  |  |  | $\Omega$ |  |  | 249.03481 |  |  |
| <i>e</i>                                |  |  | 0.1550679  |  |  | <i>i</i> |  |  | 13.84483  |  |  |
| <i>P</i>                                |  |  | 4.30       |  |  | <i>H</i> |  |  | 15.2      |  |  |
|                                         |  |  |            |  |  | <i>G</i> |  |  | 0.15      |  |  |
|                                         |  |  |            |  |  |          |  |  | <i>U</i>  |  |  |
|                                         |  |  |            |  |  |          |  |  | 1         |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 08 27 | 704 | 0.9+ | 0.2+ | 2002 08 12 | 704 | 0.4-  | 0.6+  | 2007 11 07 | 704 | 0.2+ | 0.0  |
| 1998 08 27 | 704 | 1.0+ | 0.3- | 2002 08 24 | 644 | 0.3+  | 0.5+  | 2007 11 07 | 704 | 0.4+ | 0.2- |
| 1998 08 27 | 704 | 1.2- | 1.5+ | 2002 08 24 | 644 | 0.2+  | 0.2+  | 2007 11 07 | 704 | 0.6+ | 0.1- |
| 1998 08 27 | 704 | 1.0+ | 1.2- | 2002 08 24 | 644 | 0.2+  | 0.3+  | 2007 11 07 | 704 | 0.2+ | 0.2+ |
| 1998 08 27 | 704 | 0.9+ | 0.9- | 2003 12 01 | 704 | 0.7-  | 0.0   | 2007 11 07 | 704 | 0.3+ | 0.8- |
| 1998 09 01 | 327 | 0.8+ | 0.3- | 2003 12 01 | 704 | 0.2-  | 0.8+  | 2007 11 09 | 691 | 0.2- | 0.1- |
| 1998 09 01 | 327 | 0.5- | 0.6- | 2003 12 01 | 704 | 0.6-  | 0.2+  | 2007 11 09 | 691 | 0.3- | 0.0  |
| 1998 09 01 | 327 | 0.6- | 0.4- | 2005 04 02 | 644 | 0.3+  | 0.8+  | 2007 11 09 | 691 | 0.3- | 0.1- |
| 1998 10 10 | 699 | 0.4- | 0.7+ | 2005 04 02 | 644 | 0.6+  | 0.8+  | 2007 11 13 | 691 | 0.3- | 0.2+ |
| 1998 10 10 | 699 | 0.7- | 1.2+ | 2005 04 02 | 644 | 1.0+  | 0.7+  | 2007 11 13 | 699 | 0.2- | 0.4+ |
| 1998 10 10 | 699 | 0.5- | 0.4+ | 2007 10 15 | 704 | 0.4+  | 0.0   | 2007 11 13 | 691 | 0.5- | 0.0  |
| 2002 06 10 | 704 | 0.7+ | 0.1- | 2007 10 15 | 704 | 0.5+  | 0.1+  | 2007 11 13 | 699 | 0.1+ | 0.1- |
| 2002 06 10 | 704 | 0.4- | 0.6+ | 2007 10 15 | 704 | (0.7- | 2.0-) | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2002 06 10 | 704 | 0.8- | 0.5+ | 2007 10 15 | 704 | 0.5+  | 1.2-  | 2007 11 13 | 699 | 0.4- | 0.8- |
| 2002 06 10 | 704 | 0.4+ | 0.5+ | 2007 10 19 | 703 | 0.5+  | 0.6+  | 2007 11 13 | 699 | 0.3+ | 0.2+ |
| 2002 06 14 | 704 | 0.1+ | 0.2- | 2007 10 19 | 703 | 0.7+  | 0.6+  | 2007 11 18 | 704 | 1.0+ | 0.0  |
| 2002 06 14 | 704 | 0.1+ | 0.4- | 2007 10 19 | 703 | 0.9+  | 0.7+  | 2007 11 18 | 704 | 0.7+ | 0.5+ |
| 2002 06 14 | 704 | 0.6- | 0.1+ | 2007 10 19 | 703 | 1.2-  | 0.4+  | 2007 11 18 | 704 | 0.5+ | 0.5+ |
| 2002 06 14 | 704 | 0.0  | 0.0  | 2007 10 21 | G96 | 0.0   | 0.3-  | 2007 11 18 | 704 | 0.3+ | 0.5+ |
| 2002 06 14 | 704 | 0.8- | 0.2+ | 2007 10 21 | G96 | 0.1+  | 0.3-  | 2007 11 18 | 704 | 0.7+ | 0.3+ |
| 2002 06 18 | 599 | 0.0  | 0.0  | 2007 10 21 | G96 | 0.0   | 0.3-  | 2007 12 03 | 703 | 0.0  | 0.5- |
| 2002 06 18 | 599 | 0.2- | 0.2+ | 2007 10 21 | G96 | 0.1+  | 0.3-  | 2007 12 03 | 703 | 0.3+ | 0.1+ |
| 2002 06 18 | 599 | 0.1+ | 0.5+ | 2007 10 24 | 704 | 0.2+  | 0.6+  | 2007 12 03 | 703 | 0.5- | 0.5+ |
| 2002 06 19 | 599 | 0.1- | 0.1+ | 2007 10 24 | 704 | 0.1+  | 0.6+  | 2007 12 03 | 703 | 0.2+ | 0.2- |
| 2002 07 11 | 704 | 1.0+ | 0.0  | 2007 10 24 | 704 | 0.5-  | 0.9+  | 2007 12 04 | 699 | 1.0+ | 0.4- |
| 2002 07 11 | 704 | 0.6+ | 0.9- | 2007 10 24 | 704 | 0.2+  | 0.5+  | 2007 12 04 | 699 | 0.3+ | 0.0  |
| 2002 07 11 | 704 | 0.9+ | 0.1- | 2007 10 24 | 704 | 0.2+  | 0.4+  | 2007 12 04 | 699 | 1.1+ | 0.8- |
| 2002 07 27 | 644 | 0.2- | 0.2- | 2007 11 05 | 691 | 0.2-  | 0.1-  | 2007 12 04 | 699 | 0.3- | 0.6- |
| 2002 07 27 | 644 | 0.3- | 0.1+ | 2007 11 05 | 691 | 0.3-  | 0.0   | 2007 12 10 | 704 | 0.3- | 0.1+ |
| 2002 07 27 | 644 | 0.2- | 0.0  | 2007 11 05 | 691 | 0.2-  | 0.2-  | 2007 12 10 | 704 | 0.4- | 0.1- |
| 2002 08 03 | 644 | 0.1+ | 0.2- | 2007 11 06 | H06 | 0.2-  | 0.6+  | 2007 12 10 | 704 | 0.3- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 03 | 644 | 0.1- | 0.0  | 2007 11 06 | H06 | 1.1+ | 0.1- | 2007 12 10 | 704 | 0.2+ | 0.3+ |
| 2002 08 03 | 644 | 0.3- | 0.0  | 2007 11 06 | H06 | 0.4+ | 0.3+ | 2007 12 14 | 704 | 0.1+ | 0.1+ |
| 2002 08 12 | 704 | 0.7- | 0.1- | 2007 11 06 | D29 | 0.3+ | 0.2- | 2007 12 14 | 704 | 0.1+ | 0.3- |
| 2002 08 12 | 704 | 0.4- | 0.1+ | 2007 11 06 | D29 | 0.5+ | 0.1+ | 2007 12 14 | 704 | 0.1- | 0.3+ |
| 2002 08 12 | 704 | 0.5- | 0.3+ | 2007 11 06 | D29 | 0.1- | 0.3- | 2007 12 14 | 704 | 0.1+ | 0.4+ |
| 2002 08 12 | 704 | 0.6- | 0.2+ | 2007 11 06 | D29 | 0.3+ | 0.4- | 2007 12 14 | 704 | 0.2- | 0.1+ |

**(172152)\* 2002 LH<sub>62</sub>**

Discovered 2002 June 12 by NEAT at Palomar.

|                                         |  |  |            |  |  |          |  |  |           |  |  |
|-----------------------------------------|--|--|------------|--|--|----------|--|--|-----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |            |  |  |          |  |  |           |  |  |
| <i>M</i>                                |  |  | (2000.0)   |  |  | <b>P</b> |  |  | <b>Q</b>  |  |  |
| <i>n</i>                                |  |  | 0.23519430 |  |  | $\omega$ |  |  | 280.14984 |  |  |
| <i>a</i>                                |  |  | 2.5992708  |  |  | $\Omega$ |  |  | 94.17945  |  |  |
| <i>e</i>                                |  |  | 0.3240056  |  |  | <i>i</i> |  |  | 6.25835   |  |  |
| <i>P</i>                                |  |  | 4.19       |  |  | <i>H</i> |  |  | 16.5      |  |  |
|                                         |  |  |            |  |  | <i>G</i> |  |  | 0.15      |  |  |
|                                         |  |  |            |  |  |          |  |  | <i>U</i>  |  |  |
|                                         |  |  |            |  |  |          |  |  | 1         |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 20 | 699 | 0.0  | 1.6+ | 2002 07 05 | 704 | 0.4+ | 0.2+ | 2007 10 07 | G96 | 0.0  | 0.3+ |
| 1998 08 20 | 699 | 0.1- | 1.1+ | 2002 07 05 | 704 | 0.7+ | 0.9+ | 2007 11 08 | G96 | 0.1- | 0.0  |
| 1998 08 20 | 699 | 1.0- | 1.7+ | 2002 07 05 | 644 | 0.2- | 0.1+ | 2007 11 08 | G96 | 0.2- | 0.0  |
| 2002 06 12 | 644 | 0.1- | 0.5- | 2002 07 05 | 704 | 0.3- | 0.7+ | 2007 11 08 | G96 | 0.3- | 0.1+ |
| 2002 06 12 | 644 | 0.7- | 0.6- | 2002 07 14 | 644 | 0.1+ | 0.4+ | 2007 11 08 | G96 | 0.0  | 0.1+ |
| 2002 06 12 | 644 | 0.1+ | 0.2- | 2002 07 14 | 644 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.5+ | 0.1+ |
| 2002 06 16 | 644 | 0.1+ | 0.0  | 2002 07 14 | 644 | 0.2- | 0.4+ | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2002 06 16 | 644 | 0.2+ | 0.1+ | 2004 02 11 | 691 | 0.0  | 0.5+ | 2007 11 11 | G96 | 0.0  | 0.3+ |
| 2002 06 17 | 644 | 0.1+ | 0.2+ | 2004 02 11 | 691 | 0.0  | 0.4+ | 2007 11 11 | G96 | 0.2- | 0.1- |
| 2002 06 17 | 644 | 0.3- | 0.1+ | 2004 02 11 | 691 | 0.2+ | 0.3+ | 2007 12 14 | G96 | 0.2- | 0.0  |
| 2002 06 29 | 644 | 0.2- | 0.4+ | 2004 03 17 | 645 | 0.0  | 0.1+ | 2007 12 14 | G96 | 0.4+ | 0.1+ |
| 2002 06 29 | 644 | 0.0  | 0.1+ | 2004 03 17 | 645 | 0.0  | 0.1+ | 2007 12 14 | G96 | 0.3+ | 0.0  |
| 2002 07 05 | 644 | 0.1- | 0.1+ | 2007 10 07 | G96 | 0.3- | 0.1+ | 2007 12 14 | G96 | 0.4+ | 0.1+ |
| 2002 07 05 | 704 | 0.1- | 0.7+ | 2007 10 07 | G96 | 0.3+ | 0.0  |            |     |      |      |
| 2002 07 05 | 644 | 0.1- | 0.2+ | 2007 10 07 | G96 | 0.1+ | 0.7+ |            |     |      |      |

**(172153)\* 2002 NK<sub>6</sub> = 1998 MF<sub>7</sub>**

Discovered 2002 July 11 by CINEOS at Campo Imperatore.

Id. A. Doppler (*MPO* 33644)

|                |
|----------------|
| Epoch 2007 Oct |
|----------------|

2007 DEC. 24

M.P.O. 129281

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 06 | 644 | 0.2− | 0.0  | 2006 08 12 | 644 | 0.3+ | 0.1− | 2007 12 15 | 691 | 0.2+ | 0.3− |
| 2002 08 07 | 644 | 0.0  | 0.2− | 2006 08 20 | 644 | 0.5− | 0.1+ | 2007 12 15 | 691 | 0.1+ | 0.1− |
| 2002 08 07 | 644 | 0.0  | 0.0  | 2006 08 20 | 644 | 0.3− | 0.1− |            |     |      |      |

(172154)\* 2002 NR<sub>13</sub> = 1997 EQ<sub>12</sub>

Discovered 2002 July 4 by NEAT at Palomar.

Id. A. Doppler (MPO 33651)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 108.15909  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26316418 | <i>ω</i> 71.18285  | +0.98327981   | +0.15136824 |
| <i>a</i> | 2.4116718  | <i>Ω</i> 280.01337 | −0.17992785   | +0.89321033 |
| <i>e</i> | 0.41264821 | <i>i</i> 5.90047   | +0.02804967   | +0.42339457 |
| <i>P</i> | 3.75       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 03 03 | 691 | 0.2−  | 0.2−  | 2002 08 26 | 644 | 0.2−  | 0.3+  | 2006 09 15 | 704 | 0.5+  | 0.1+  |
| 1997 03 03 | 691 | 0.3−  | 0.6−  | 2002 08 26 | 644 | 0.5+  | 0.1+  | 2006 09 15 | 704 | 0.3+  | 0.3−  |
| 1997 03 03 | 691 | 0.7−  | 0.1−  | 2003 12 21 | 704 | 0.6−  | 0.3−  | 2006 09 15 | 704 | 0.0   | 0.6+  |
| 1997 03 10 | 691 | 0.2+  | 0.5−  | 2003 12 21 | 704 | 0.3+  | 0.6+  | 2006 09 20 | 699 | 0.3−  | 0.6−  |
| 1997 03 10 | 691 | 0.4−  | 0.2−  | 2003 12 21 | 704 | 0.0   | 0.6+  | 2006 09 20 | 699 | 0.2+  | 0.5+  |
| 1997 03 10 | 691 | 0.3−  | 0.3−  | 2003 12 21 | 704 | 0.3+  | 0.8+  | 2006 09 20 | 699 | 0.4+  | 0.5−  |
| 2002 06 16 | 644 | 0.5−  | 0.5+  | 2003 12 29 | 691 | 0.3+  | 0.3+  | 2006 09 22 | 703 | 0.2−  | 0.9−  |
| 2002 06 16 | 644 | 0.0   | 0.4+  | 2003 12 29 | 691 | 0.1+  | 0.2+  | 2006 09 22 | 703 | (0.1− | 1.7−) |
| 2002 06 16 | 644 | 0.3−  | 0.3+  | 2003 12 29 | 691 | 0.3+  | 0.3+  | 2006 09 22 | 703 | 0.1−  | 0.1+  |
| 2002 07 04 | 644 | 0.4−  | 0.0   | 2004 01 27 | 691 | 0.4+  | 0.3+  | 2006 09 22 | 703 | (1.6+ | 0.3−) |
| 2002 07 04 | 644 | 0.1−  | 0.1+  | 2004 01 27 | 691 | 0.2+  | 0.2+  | 2006 09 23 | 106 | 0.5−  | 1.2−  |
| 2002 07 04 | 644 | 0.3−  | 0.2+  | 2004 01 27 | 691 | 0.2+  | 0.6+  | 2006 09 23 | 106 | 0.3+  | 0.6−  |
| 2002 07 05 | 704 | 0.6−  | 0.2+  | 2006 08 18 | 644 | 0.1+  | 0.2−  | 2006 09 23 | 106 | 0.7−  | 1.1−  |
| 2002 07 05 | 704 | 0.5−  | 1.0+  | 2006 08 18 | 644 | 0.2+  | 0.5−  | 2006 09 23 | 106 | 0.1+  | 0.7−  |
| 2002 07 05 | 704 | 0.1+  | 0.7+  | 2006 08 18 | 644 | 0.1+  | 0.3−  | 2006 09 29 | 699 | 0.2−  | 0.1−  |
| 2002 07 05 | 704 | 0.1−  | 0.7+  | 2006 08 26 | D35 | 0.2+  | 0.1−  | 2006 09 29 | 699 | 0.3−  | 0.2−  |
| 2002 07 14 | 644 | 0.2+  | 0.3+  | 2006 08 26 | D35 | 0.2+  | 0.1−  | 2006 09 29 | 699 | 0.6+  | 0.2−  |
| 2002 07 14 | 644 | 0.2+  | 0.3+  | 2006 08 26 | D35 | 0.1+  | 0.1−  | 2006 10 01 | 704 | 0.5+  | 0.1+  |
| 2002 07 14 | 704 | 0.1+  | 0.4+  | 2006 08 27 | 699 | 0.7+  | 0.5−  | 2006 10 01 | 704 | 1.1+  | 0.3−  |
| 2002 07 14 | 704 | 0.1−  | 0.6+  | 2006 08 27 | 699 | 0.9+  | 0.3+  | 2006 10 01 | 704 | 0.7+  | 0.4+  |
| 2002 07 14 | 704 | 0.4+  | 0.6−  | 2006 08 27 | 699 | 0.4+  | 0.3+  | 2006 10 01 | 704 | 0.3+  | 0.2+  |
| 2002 07 14 | 704 | 0.4+  | 0.2−  | 2006 08 27 | 699 | 0.4+  | 0.4−  | 2006 10 11 | 644 | 0.1−  | 0.3−  |
| 2002 07 14 | 704 | 0.4+  | 0.4−  | 2006 08 28 | 704 | 1.0−  | 0.2+  | 2006 10 11 | 644 | 0.0   | 0.3−  |
| 2002 07 14 | 644 | 0.0   | 0.5+  | 2006 08 28 | 704 | 0.1−  | 0.8−  | 2006 10 11 | 644 | 0.0   | 0.1−  |
| 2002 07 22 | 644 | 0.0   | 0.1−  | 2006 08 28 | 704 | 0.6−  | 0.7−  | 2006 11 19 | 703 | 0.8−  | 0.0   |
| 2002 07 22 | 644 | 0.4−  | 0.1+  | 2006 08 28 | 704 | 0.3+  | 1.0−  | 2006 11 19 | 703 | 0.3−  | 0.3−  |
| 2002 07 22 | 644 | 0.4−  | 0.2+  | 2006 08 28 | 704 | 0.1+  | 0.3+  | 2006 11 19 | 703 | 0.9−  | 1.0−  |
| 2002 08 06 | 644 | 0.2−  | 0.9+  | 2006 08 29 | 703 | 0.9−  | 1.0+  | 2006 11 19 | 703 | 0.2+  | 0.1−  |
| 2002 08 06 | 644 | 0.0   | 0.8+  | 2006 08 29 | 703 | 0.9−  | 0.3+  | 2007 10 19 | G96 | 0.4+  | 0.1−  |
| 2002 08 06 | 644 | 0.2−  | 0.8+  | 2006 08 29 | 703 | 0.0   | 0.6+  | 2007 10 19 | G96 | 0.9−  | 0.0   |
| 2002 08 16 | 644 | 0.0   | 0.1+  | 2006 08 29 | 703 | (3.7− | 1.5+) | 2007 10 19 | 691 | 0.3−  | 0.4+  |
| 2002 08 16 | 644 | 0.0   | 0.1+  | 2006 09 06 | 644 | 0.1+  | 0.3−  | 2007 10 19 | G96 | 0.1+  | 0.1+  |
| 2002 08 16 | 644 | 0.3+  | 0.3+  | 2006 09 06 | 644 | 0.2+  | 0.3−  | 2007 10 19 | G96 | 0.3+  | 0.5+  |
| 2002 08 17 | 608 | 0.1+  | 0.8−  | 2006 09 06 | 644 | 0.0   | 0.4−  | 2007 10 19 | 691 | 0.1−  | 0.3+  |
| 2002 08 17 | 608 | (0.3+ | 1.5−) | 2006 09 14 | 703 | 1.1−  | 0.5−  | 2007 10 19 | 691 | 0.3−  | 0.2−  |
| 2002 08 17 | 608 | (0.5+ | 1.6−) | 2006 09 14 | 703 | 0.1−  | 0.3−  | 2007 12 15 | G96 | 0.0   | 0.5−  |
| 2002 08 26 | 644 | 0.2−  | 0.1+  | 2006 09 14 | 703 | 0.1+  | 0.3−  | 2007 12 15 | G96 | 0.7+  | 0.2−  |
| 2002 08 26 | 644 | 0.5+  | 0.2+  | 2006 09 14 | 703 | 0.4+  | 0.3+  | 2007 12 15 | G96 | 0.1+  | 0.1+  |
| 2002 08 26 | 644 | 0.2−  | 0.1+  | 2006 09 15 | 704 | 0.4+  | 0.3+  | 2007 12 15 | G96 | 0.4+  | 0.4−  |
| 2002 08 26 | 644 | 0.4+  | 0.2+  | 2006 09 15 | 704 | 0.5+  | 0.3+  |            |     |       |       |

(172155)\* 2002 NM<sub>18</sub>

Discovered 2002 July 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 51.60429   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22615327 | <i>ω</i> 196.45362 | +0.92132886   | +0.37567942 |
| <i>a</i> | 2.6680920  | <i>Ω</i> 141.00426 | −0.33637885   | +0.89935773 |
| <i>e</i> | 0.2225926  | <i>i</i> 9.15234   | −0.19494205   | +0.22365298 |
| <i>P</i> | 4.36       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 10 18 | 699 | 0.3+  | 1.1−  | 2002 08 06 | 644 | 0.3+  | 0.1+  | 2007 11 02 | 703 | 0.1−  | 0.7+  |
| 1998 10 18 | 699 | 0.4−  | 0.9+  | 2002 08 07 | 644 | 0.2+  | 0.2+  | 2007 11 02 | 703 | 0.9−  | 1.0−  |
| 1998 10 18 | 699 | 1.3+  | 0.8+  | 2002 08 07 | 644 | 0.3+  | 0.1+  | 2007 11 04 | 941 | 0.9+  | 0.1+  |
| 2001 03 19 | 645 | 0.1−  | 0.1+  | 2002 08 07 | 644 | 0.3+  | 0.1+  | 2007 11 04 | 941 | 0.8+  | 0.1+  |
| 2001 03 19 | 645 | 0.0   | 0.1+  | 2002 08 28 | 644 | 0.0   | 0.3−  | 2007 11 04 | 941 | 0.8+  | 0.1+  |
| 2002 06 24 | 644 | 0.5+  | 0.3+  | 2002 08 28 | 644 | 0.1+  | 0.2−  | 2007 11 04 | 941 | 0.7+  | 0.2+  |
| 2002 06 24 | 644 | 0.2+  | 0.1+  | 2002 08 28 | 644 | 0.2−  | 0.2−  | 2007 11 15 | 703 | 1.0−  | 0.0   |
| 2002 06 24 | 644 | 0.1+  | 0.0   | 2005 04 10 | 691 | 0.2+  | 0.2+  | 2007 11 15 | 703 | 0.7−  | 0.4+  |
| 2002 07 03 | 644 | 0.0   | 0.1+  | 2005 04 10 | 691 | 0.1+  | 0.5+  | 2007 11 15 | 703 | 0.9−  | 0.0   |
| 2002 07 03 | 644 | 0.7−  | 0.1−  | 2005 04 10 | 691 | 0.5+  | 0.3+  | 2007 11 15 | 703 | 0.6−  | 0.7−  |
| 2002 07 03 | 644 | 0.2+  | 0.5+  | 2006 05 09 | G96 | 0.3−  | 0.1−  | 2007 11 19 | 703 | 0.3−  | 0.7+  |
| 2002 07 08 | 644 | 0.1+  | 0.2+  | 2006 05 09 | G96 | 0.1+  | 0.1−  | 2007 11 19 | 703 | 0.3+  | 0.3+  |
| 2002 07 08 | 644 | 0.1−  | 0.2+  | 2006 05 09 | G96 | 0.0   | 0.0   | 2007 11 19 | 703 | (0.9+ | 1.7+) |
| 2002 07 08 | 644 | 0.0   | 0.3+  | 2006 05 09 | G96 | 0.4+  | 0.1+  | 2007 11 19 | 703 | 1.2−  | 1.4+  |
| 2002 07 09 | 704 | (0.9− | 2.0+) | 2006 05 27 | 703 | 0.1+  | 0.4+  | 2007 11 19 | G96 | 0.1+  | 0.4+  |
| 2002 07 09 | 704 | 0.2−  | 0.6+  | 2006 05 27 | 703 | 0.2−  | 0.2+  | 2007 11 19 | G96 | 0.5+  | 0.2+  |
| 2002 07 09 | 704 | (1.7− | 1.0+) | 2006 05 27 | 703 | 0.9−  | 0.3−  | 2007 11 19 | G96 | 0.3−  | 0.3+  |
| 2002 07 09 | 704 | (1.8− | 0.5+) | 2006 05 27 | 703 | 0.6+  | 0.8+  | 2007 11 19 | G96 | 0.3+  | 0.3+  |
| 2002 07 09 | 704 | 1.2−  | 1.0+  | 2006 06 03 | 703 | 0.1+  | 0.5−  | 2007 12 04 | 683 | 0.0   | 0.4+  |
| 2002 07 14 | 704 | (1.9− | 0.2+) | 2006 06 03 | 703 | 0.4−  | 0.0   | 2007 12 04 | 683 | 0.0   | 0.3−  |
| 2002 07 14 | 704 | 1.5−  | 1.1+  | 2006 06 03 | 703 | 0.3−  | 0.3+  | 2007 12 04 | 683 | 0.3−  | 0.0   |
| 2002 07 14 | 704 | 0.7−  | 0.7+  | 2006 06 03 | 703 | 0.1−  | 1.3−  | 2007 12 05 | 703 | 0.5−  | 1.4+  |
| 2002 07 22 | 644 | 0.2−  | 0.1−  | 2006 06 19 | 691 | 0.2+  | 0.3+  | 2007 12 05 | 703 | 1.4+  | 0.9+  |
| 2002 07 22 | 644 | 0.0   | 0.0   | 2006 06 19 | 691 | 0.4+  | 0.0   | 2007 12 05 | 703 | 0.9−  | 0.5+  |
| 2002 07 22 | 644 | 0.1−  | 0.1+  | 2006 06 19 | 691 | 0.3+  | 0.2+  | 2007 12 05 | 703 | 0.6−  | 0.8+  |
| 2002 08 06 | 644 | 0.2+  | 0.1+  | 2007 11 02 | 703 | 0.2−  | 0.6+  |            |     |       |       |
| 2002 08 06 | 644 | 0.0   | 0.1+  | 2007 11 02 | 703 | (1.7+ | 0.1+) |            |     |       |       |

(172156)\* 2002 ND<sub>22</sub>

Discovered 2002 July 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 21.01357   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22388901 | <i>ω</i> 94.63754  | +0.92216113   | −0.35323989 |
| <i>a</i> | 2.6860507  | <i>Ω</i> 286.11253 | +0.25657556   | +0.86352438 |
| <i>e</i> | 0.2190084  | <i>i</i> 9.44221   | +0.28946129   | +0.35992668 |
| <i>P</i> | 4.40       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |             |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------------|------|
| 1998 08 29 | 704 | 0.6+  | 0.6−  | 2002 09 06 | 704 | 0.4− | 0.6+ | 2004 01 24 | 704 | 0.6+        | 0.3+ |
| 1998 08 29 | 704 | 1.6−  | 0.5−  | 2002 10 04 | 704 | 0.4+ | 0.5− | 2004 01 24 | 704 | 0.7+        | 0.5+ |
| 1998 08 29 | 704 | 0.5+  | 0.4−  | 2002 10 04 | 704 | 1.1− | 0.4− | 2004 01 27 | 691 | 0.2+        | 0.4+ |
| 1998 08 29 | 704 | 1.0+  | 1.7+  | 2002 10 04 | 704 | 1.4+ | 0.5+ | 2004 01 27 | 691 | 0.3+        | 0.3+ |
| 1998 08 29 | 704 | 0.5−  | 0.2+  | 2002 10 04 | 704 | 0.6+ | 0.6− | 2004 01 27 | 691 | 0.3+        | 0.3+ |
| 1998 10 29 | 699 | 0.4+  | 0.2+  | 2002 11 14 | 644 | 0.0  | 0.7+ | 2004 01 30 | 704 | (0.5+ 1.8+) |      |
| 1998 10 29 | 699 | 0.0   | 0.1−  | 2002 11 14 | 644 | 0.2+ | 0.8+ | 2004 01 30 | 704 | 0.7+        | 0.6+ |
| 1998 10 29 | 699 | 1.2−  | 0.4−  | 2002 11 14 | 644 | 0.6+ | 0.7+ | 2004 01 30 | 704 | 0.2−        | 0.4+ |
| 1998 11 26 | 699 | 0.1+  | 0.2+  | 2002 12 06 | 704 | 0.8− | 0.2+ | 2004 01 30 | 704 | 1.0+        | 0.7+ |
| 1998 11 26 | 699 | 0.1−  | 0.3+  | 2002 12 06 | 704 | 0.3+ | 0.3+ | 2004 02 16 | 691 | 0.3+        | 0.2+ |
| 1998 11 26 | 699 | 0.0   | 0.8+  | 2002 12 06 | 704 | 0.5− | 0.2− | 2004 02 16 | 691 | 0.3+        | 0.4+ |
| 2002 07 09 | 704 | (1.7− | 1.3+) | 2003 12 16 | 699 | 0.3+ | 0.3+ | 2004 02 16 | 691 | 0.3+        | 0.1+ |
| 2002 07 09 | 704 | 1.2−  | 0.4+  | 2003 12 16 | 699 | 0.8− | 1.3− | 2004 02 17 | 645 | 0.1−        | 0.1− |
| 2002 07 09 | 704 | 1.5−  | 0.7+  | 2003 12 16 | 699 | 0.1+ | 0.7− | 2004 02 17 | 645 | 0.1−        | 0.1− |
| 2002 07 09 | 704 | 0.5−  | 0.1+  | 2003 12 16 | 699 | 0.6+ | 1.5+ | 2004 04 14 | 645 | 0.1−        | 0.0  |
| 2002 07 14 | 704 | 0.1−  | 0.3+  | 2003 12 19 | 704 | 0.0  | 0.8+ | 2004 04 14 | 645 | 0.0         | 0.0  |
| 2002 07 14 | 704 | 0.2+  | 0.6+  | 2003 12 19 | 704 | 0.1+ | 0.5+ | 2007 11 03 | 704 | 0.2−        | 0.8+ |
| 2002 07 14 | 704 | 0.2−  | 0.3+  | 2003 12 19 | 704 | 0.7+ | 0.5+ | 2007 11 03 | 704 | 0.7−        | 0.8+ |
| 2002 07 14 | 704 | 0.1+  | 0.4+  | 2003 12 27 | 691 | 0.2− | 0.1+ | 2007 11 03 | 704 | 0.3−        | 0.5+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 14 | 704 | 0.1+ | 0.8+ | 2003 12 27 | 691 | 0.1+ | 0.2- | 2007 11 03 | 704 | 0.4-  | 0.5+  |
| 2002 07 28 | 608 | 0.4- | 0.8- | 2003 12 27 | 691 | 0.1+ | 0.2+ | 2007 11 03 | 704 | 0.5-  | 0.0   |
| 2002 07 28 | 608 | 0.2- | 0.4- | 2003 12 29 | 699 | 0.5- | 0.2+ | 2007 11 06 | D29 | 0.2+  | 0.2-  |
| 2002 07 28 | 608 | 0.3- | 0.5- | 2003 12 29 | 699 | 0.3- | 0.5+ | 2007 11 06 | D29 | 0.1+  | 0.6-  |
| 2002 08 05 | 644 | 0.5- | 0.7+ | 2003 12 29 | 699 | 0.1- | 0.0  | 2007 11 06 | D29 | 0.2-  | 0.8-  |
| 2002 08 05 | 644 | 0.3- | 0.7+ | 2003 12 29 | 699 | 0.6- | 0.6+ | 2007 11 06 | D29 | 0.1-  | 0.8-  |
| 2002 08 05 | 644 | 0.3- | 0.6+ | 2004 01 19 | 699 | 0.4+ | 0.2- | 2007 11 08 | 704 | 0.3+  | 0.1+  |
| 2002 08 14 | 704 | 0.8+ | 0.2- | 2004 01 19 | 699 | 0.3+ | 0.0  | 2007 11 08 | 704 | (1.9+ | 0.0 ) |
| 2002 08 14 | 704 | 0.9+ | 0.7+ | 2004 01 19 | 699 | 0.6+ | 0.6+ | 2007 11 08 | 704 | 0.7-  | 0.3-  |
| 2002 08 14 | 704 | 0.9+ | 1.0+ | 2004 01 19 | 699 | 0.7+ | 1.3+ | 2007 11 16 | 704 | 0.3+  | 0.4-  |
| 2002 08 26 | 644 | 0.2+ | 0.4+ | 2004 01 21 | 704 | 0.8- | 0.8- | 2007 11 16 | 704 | 0.3+  | 0.5-  |
| 2002 08 26 | 644 | 0.2- | 0.5+ | 2004 01 21 | 704 | 0.7- | 0.8+ | 2007 11 16 | 704 | 0.0   | 0.7-  |
| 2002 08 26 | 644 | 0.2- | 0.3+ | 2004 01 21 | 704 | 0.1+ | 0.6- | 2007 11 16 | 704 | 0.6+  | 1.0-  |
| 2002 09 02 | 608 | 0.2- | 0.1- | 2004 01 24 | 704 | 0.6- | 0.2+ | 2007 11 16 | 704 | 0.6+  | 0.2-  |
| 2002 09 02 | 608 | 0.4- | 0.0  | 2004 01 24 | 704 | 0.0  | 0.1+ | 2007 12 13 | 104 | 0.2+  | 0.6-  |
| 2002 09 02 | 608 | 1.0- | 0.2+ | 2004 01 24 | 704 | 0.2- | 0.1- | 2007 12 13 | 104 | 0.1+  | 0.5-  |
| 2002 09 06 | 704 | 0.2+ | 0.3+ | 2004 01 24 | 704 | 0.7+ | 0.2+ | 2007 12 13 | 104 | 0.1+  | 0.5-  |
| 2002 09 06 | 704 | 0.3- | 0.2+ | 2004 01 24 | 704 | 0.5+ | 1.1- |            |     |       |       |

**(172157)\* 2002 NN<sub>26</sub>**

Discovered 2002 July 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> |            | <i>P</i> | <i>Q</i>  |
| 51.69432 |            | (2000.0) |           |
| <i>n</i> | 0.22544710 | $\omega$ | 37.03103  |
| <i>a</i> | 2.6736606  | $\Omega$ | 319.22766 |
| <i>e</i> | 0.2143041  | <i>i</i> | 10.87874  |
| <i>P</i> | 4.37       | <i>H</i> | 15.0      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 14 | 704 | 0.4+  | 1.9-  | 2002 08 13 | 699 | 0.3-  | 0.6+  | 2004 01 13 | 699 | 0.4- | 0.5+ |
| 1998 11 14 | 704 | 1.9+  | 1.8-  | 2002 08 26 | 644 | 0.1+  | 0.1+  | 2004 01 13 | 699 | 0.2- | 0.0  |
| 1998 11 14 | 704 | 0.4+  | 1.6-  | 2002 08 26 | 644 | 0.3+  | 0.0   | 2004 01 13 | 699 | 1.0- | 0.6+ |
| 1998 11 14 | 704 | 0.6-  | 0.2+  | 2002 08 26 | 644 | 0.2+  | 0.1+  | 2004 01 22 | 704 | 0.2+ | 0.7+ |
| 1998 11 16 | 704 | 0.1-  | 0.3-  | 2002 09 01 | 608 | 0.2-  | 0.4-  | 2004 01 22 | 704 | 0.2- | 1.0+ |
| 1998 11 16 | 704 | 0.3-  | 0.6-  | 2002 09 01 | 608 | 0.1+  | 0.6-  | 2004 01 22 | 704 | 0.8- | 1.0+ |
| 1998 11 16 | 704 | 0.6+  | 1.4-  | 2002 09 01 | 608 | 0.3-  | 0.8-  | 2004 01 22 | 704 | 0.3- | 1.1+ |
| 1998 11 16 | 704 | (4.8- | 0.3+) | 2002 09 06 | 704 | 0.3+  | 0.3-  | 2004 01 30 | 704 | 0.8+ | 0.3+ |
| 1998 11 26 | 699 | 0.5-  | 0.1-  | 2002 09 06 | 704 | 0.3+  | 0.0   | 2004 01 30 | 704 | 0.5+ | 0.7- |
| 1998 11 26 | 699 | 0.6-  | 0.4+  | 2002 09 06 | 704 | 0.7-  | 0.0   | 2004 01 30 | 704 | 0.5+ | 0.7- |
| 1998 11 26 | 699 | 1.3+  | 0.8+  | 2002 09 06 | 704 | 0.2-  | 0.1+  | 2004 02 13 | 691 | 0.4+ | 0.2+ |
| 2002 06 27 | 644 | 0.3-  | 0.4+  | 2002 09 06 | 704 | 0.0   | 1.0+  | 2004 02 13 | 691 | 0.4+ | 0.1+ |
| 2002 06 27 | 644 | 0.1-  | 0.3+  | 2002 09 13 | 644 | 0.2-  | 0.3+  | 2004 02 13 | 691 | 0.3+ | 0.7+ |
| 2002 06 27 | 644 | 0.3+  | 0.3+  | 2002 09 13 | 644 | 0.2-  | 0.5+  | 2004 02 15 | 704 | 0.7+ | 0.9+ |
| 2002 07 09 | 704 | 0.4+  | 0.8+  | 2002 09 13 | 644 | 0.0   | 0.2+  | 2004 02 15 | 704 | 0.3- | 0.0  |
| 2002 07 09 | 704 | 0.2+  | 0.5+  | 2002 09 15 | 608 | 1.3-  | 0.8+  | 2004 02 15 | 704 | 0.2+ | 0.8+ |
| 2002 07 09 | 704 | 1.4-  | 0.1-  | 2002 09 15 | 608 | 1.3-  | 0.7+  | 2004 02 15 | 704 | 0.5+ | 0.8+ |
| 2002 07 09 | 704 | 0.3+  | 0.2+  | 2002 09 15 | 608 | 1.4-  | 0.9+  | 2004 02 23 | 704 | 0.3+ | 0.9+ |
| 2002 07 09 | 704 | 0.6+  | 0.5-  | 2002 09 26 | 644 | 0.3+  | 0.4-  | 2004 02 23 | 704 | 0.2- | 0.7- |
| 2002 07 14 | 704 | 0.3+  | 0.5+  | 2002 09 26 | 644 | 0.2-  | 0.1-  | 2004 02 23 | 704 | 0.2+ | 0.5- |
| 2002 07 14 | 704 | 0.3-  | 0.4+  | 2002 09 26 | 644 | 0.1-  | 0.1-  | 2004 02 23 | 704 | 0.3- | 0.0  |
| 2002 07 14 | 704 | 0.5-  | 0.5+  | 2002 10 04 | 704 | 0.1+  | 0.2-  | 2004 02 23 | 704 | 0.0  | 0.2+ |
| 2002 07 14 | 704 | 0.3-  | 0.6+  | 2002 10 04 | 704 | 0.5+  | 0.4+  | 2007 11 09 | 704 | 0.0  | 0.2- |
| 2002 07 14 | 704 | 0.3-  | 0.6+  | 2002 10 04 | 704 | 0.3+  | 0.0   | 2007 11 09 | 704 | 0.2+ | 0.5- |
| 2002 08 09 | 704 | 0.2+  | 0.2-  | 2002 10 04 | 704 | 0.4+  | 0.7+  | 2007 11 09 | 704 | 0.1- | 0.3- |
| 2002 08 09 | 704 | 0.4-  | 0.9-  | 2002 10 04 | 704 | 0.3-  | 0.6+  | 2007 11 09 | 704 | 0.0  | 0.5+ |
| 2002 08 09 | 704 | 1.2-  | 0.1-  | 2003 12 23 | 704 | 0.6+  | 0.3+  | 2007 11 09 | 704 | 0.2+ | 0.7+ |
| 2002 08 12 | 704 | 0.3+  | 0.3+  | 2003 12 23 | 704 | 0.1+  | 1.1+  | 2007 11 16 | 704 | 1.2+ | 0.3- |
| 2002 08 12 | 704 | 0.1+  | 0.5+  | 2003 12 23 | 704 | 0.8+  | 1.1+  | 2007 11 16 | 704 | 0.1+ | 0.6- |
| 2002 08 12 | 704 | 0.2-  | 0.3+  | 2003 12 23 | 704 | (0.9+ | 1.9+) | 2007 11 16 | 704 | 0.3- | 0.9- |
| 2002 08 12 | 704 | 0.1-  | 0.8+  | 2003 12 23 | 704 | 0.6+  | 1.2+  | 2007 12 03 | 704 | 0.0  | 0.2+ |
| 2002 08 12 | 704 | 0.0   | 0.9+  | 2003 12 28 | 704 | 1.3+  | 0.6+  | 2007 12 03 | 704 | 0.1- | 0.2- |
| 2002 08 13 | 699 | 1.3-  | 0.7+  | 2003 12 28 | 704 | 0.6+  | 0.9+  | 2007 12 03 | 704 | 0.4- | 0.0  |
| 2002 08 13 | 699 | 0.3-  | 1.1+  | 2003 12 28 | 704 | 0.1+  | 0.8+  | 2007 12 03 | 704 | 0.6- | 0.0  |
| 2002 08 13 | 699 | 0.0   | 0.3+  | 2004 01 13 | 699 | 1.0-  | 0.9+  | 2007 12 03 | 704 | 0.4- | 0.4- |

**(172158)\* 2002 NS<sub>28</sub> = 2005 JJ<sub>59</sub>**

Discovered 2002 July 13 by NEAT at Palomar.

Id. A. Doppler (*MPO* 75388)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> |            | <i>P</i> | <i>Q</i>  |
| 98.41984 |            | (2000.0) |           |
| <i>n</i> | 0.25770017 | $\omega$ | 85.26914  |
| <i>a</i> | 2.4456422  | $\Omega$ | 259.15508 |
| <i>e</i> | 0.1277506  | <i>i</i> | 0.79716   |
| <i>P</i> | 3.82       | <i>H</i> | 16.7      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 10 13 | 691 | 0.2+ | 0.5+ | 2005 05 12 | G96 | 0.4+ | 0.0  | 2006 08 28 | 699 | 0.9+  | 0.9+  |
| 1991 10 13 | 691 | 0.2- | 0.2+ | 2005 05 12 | G96 | 0.1+ | 0.2+ | 2006 08 28 | 691 | 0.2+  | 0.1+  |
| 1991 10 13 | 691 | 0.0  | 0.5+ | 2006 06 20 | G96 | 0.1- | 0.2+ | 2006 08 28 | 699 | 0.4+  | 0.5+  |
| 2002 07 05 | 291 | 0.4- | 0.2- | 2006 06 20 | G96 | 0.0  | 0.3- | 2006 08 28 | 703 | 0.8+  | 0.6+  |
| 2002 07 05 | 291 | 0.4- | 0.2- | 2006 06 20 | G96 | 0.4- | 0.3- | 2006 08 28 | 703 | 0.1-  | 0.3-  |
| 2002 07 05 | 291 | 0.4- | 0.2- | 2006 06 20 | G96 | 0.2- | 0.1+ | 2006 08 28 | 699 | 0.7+  | 0.2-  |
| 2002 07 13 | 644 | 0.0  | 0.3+ | 2006 08 13 | 644 | 0.2- | 0.1- | 2006 08 28 | 703 | 0.5-  | 0.6+  |
| 2002 07 13 | 644 | 0.1- | 0.1- | 2006 08 13 | 644 | 0.1- | 0.0  | 2006 08 28 | 703 | 0.4-  | 0.1+  |
| 2002 07 13 | 644 | 0.2- | 0.0  | 2006 08 13 | 644 | 0.2- | 0.0  | 2006 09 14 | 703 | 0.3+  | 0.1-  |
| 2002 07 14 | 644 | 0.1- | 0.7+ | 2006 08 13 | 644 | 0.4- | 0.2+ | 2006 09 14 | 703 | 0.2+  | 0.7-  |
| 2002 07 14 | 644 | 0.3+ | 0.7+ | 2006 08 13 | 644 | 0.0  | 0.2- | 2006 09 14 | 703 | 0.8-  | 0.9-  |
| 2002 07 14 | 644 | 0.4+ | 0.6+ | 2006 08 13 | 644 | 0.0  | 0.2+ | 2006 09 14 | 703 | (0.8- | 3.0-) |
| 2003 12 14 | 291 | 0.1+ | 0.1+ | 2006 08 15 | 644 | 0.1- | 0.1- | 2006 10 21 | G96 | 0.5-  | 0.1+  |
| 2003 12 14 | 291 | 0.4- | 0.1+ | 2006 08 15 | 644 | 0.2- | 0.1+ | 2006 10 21 | G96 | 0.4+  | 0.4-  |
| 2003 12 14 | 291 | 0.6- | 0.1+ | 2006 08 15 | 644 | 0.1- | 0.1+ | 2006 10 21 | G96 | 0.1+  | 0.5-  |
| 2005 03 10 | G96 | 0.4- | 0.5+ | 2006 08 16 | A50 | 0.3- | 0.1+ | 2006 10 21 | G96 | 0.0   | 0.0   |
| 2005 03 10 | G96 | 0.3+ | 0.4- | 2006 08 17 | A50 | 0.2- | 0.4- | 2006 11 16 | G96 | 0.1-  | 0.5-  |
| 2005 03 10 | G96 | 0.4- | 0.1+ | 2006 08 17 | A50 | 0.5+ | 0.9- | 2006 11 16 | G96 | 0.1-  | 0.9-  |
| 2005 03 10 | G96 | 0.3+ | 0.0  | 2006 08 17 | A50 | 0.4- | 0.7+ | 2006 11 16 | G96 | 0.1-  | 0.4-  |
| 2005 05 08 | G96 | 0.4- | 0.0  | 2006 08 19 | 699 | 0.8+ | 0.1- | 2006 11 16 | G96 | 0.1-  | 0.1-  |
| 2005 05 08 | G96 | 0.4+ | 0.0  | 2006 08 19 | 699 | 0.3- | 0.2- | 2007 11 04 | G96 | 0.9+  | 0.5-  |
| 2005 05 08 | G96 | 0.1- | 0.2+ | 2006 08 19 | 699 | 0.0  | 0.4+ | 2007 11 04 | G96 | 0.1-  | 0.7-  |
| 2005 05 08 | G96 | 0.1+ | 0.0  | 2006 08 19 | 699 | 0.0  | 0.7+ | 2007 11 04 | G96 | 0.4+  | 0.1-  |
| 2005 05 10 | 691 | 0.3+ | 0.2+ | 2006 08 22 | 644 | 0.2- | 0.1- | 2007 11 04 | G96 | 0.3+  | 0.6+  |
| 2005 05 10 | 691 | 0.8+ | 0.1+ | 2006 08 22 | 644 | 0.2- | 0.1+ | 2007 12 05 | G96 | 0.2+  | 0.1-  |
| 2005 05 10 | 691 | 0.0  | 0.4+ | 2006 08 22 | 644 | 0.2+ | 0.0  | 2007 12 05 | G96 | 0.1+  | 0.6+  |
| 2005 05 12 | G96 | 0.1+ | 0.3+ | 2006 08 28 | 691 | 0.3+ | 0.0  | 2007 12 05 | G96 | 0.1-  | 0.3-  |
| 2005 05 12 | G96 | 0.0  | 0.2- | 2006 08 28 | 691 | 0.3+ | 0.2+ | 2007 12 05 | G96 | 0.4+  | 0.1+  |

**(172159)\* 2002 NJ<sub>30</sub>**

Discovered 2002 July 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC       |            |          |           |
|-----------|------------|----------|-----------|
| <i>M</i>  |            | <i>P</i> | <i>Q</i>  |
| 200.61285 |            | (2000.0) |           |
| <i>n</i>  | 0.26511142 | $\omega$ | 127.47267 |
| <i>a</i>  | 2.3998481  | $\Omega$ | 104.14016 |
| <i>e</i>  | 0.1702894  | <i>i</i> | 6.60017   |
| <i>P</i>  | 3.72       | <i>H</i> | 16.1      |
|           |            | <i>G</i> | 0.15      |
|           |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 11 29 | 691 | 0.0  | 0.1+ | 2002 07 09 | 246 | 0.4+  | 0.3-  | 2006 08 17 | 644 | 0.0  | 0.3+ |
| 1992 11 29 | 691 | 0.1- | 0.1- | 2002 07 09 | 246 | 0.5+  | 0.2-  | 2006 08 17 | 644 | 0.1- | 0.6+ |
| 1992 11 29 | 691 | 0.1+ | 0.4- | 2002 07 09 | 246 | 0.7+  | 0.2-  | 2006 08 22 | 644 | 0.5- | 0.2+ |
| 1998 05 24 | 704 | 1.2- | 0.0  | 2002 07 09 | 246 | 0.4+  | 0.2-  | 2006 08 22 | 644 | 0.1+ | 0.6+ |
| 1998 05 24 | 704 | 0.4- | 1.8+ | 2002 07 09 | 246 | 0.4+  | 0.2-  | 2006 08 22 | 644 | 0.3- | 0.1+ |
| 1998 05 24 | 704 | 1.3+ | 0.4+ | 2002 07 09 | 246 | 0.3+  | 0.1-  | 2006 09 18 | 699 | 1.1+ | 1.4+ |
| 1998 05 24 | 704 | 0.9- | 1.0+ | 2002 07 09 | 246 | 0.6+  | 0.5-  | 2006 09 18 | 699 | 1.4- | 0.8- |
| 1998 05 24 | 704 | 0.3+ | 0.3- | 2002 07 09 | 246 | 0.5+  | 0.1-  | 2006 09 18 | 699 | 0.3- | 0.5+ |
| 2001 01 19 | 704 | 0.2+ | 0.5+ | 2002 07 09 | 644 | (0.3- | 1.9+) | 2006 09 18 | 699 | 0.1- | 0.1- |
| 2001 01 19 | 704 | 0.1+ | 0.3- | 2002 07 09 | 644 | 0.0   | 0.2-  | 2006 09 20 | 703 | 0.2+ | 0.5+ |
| 2001 01 19 | 704 | 0.3+ | 0.1- | 2002 07 09 | 644 | 0.2-  | 0.1-  | 2006 09 20 | 703 | 1.4- | 0.3- |
| 2001 01 19 | 704 | 0.2+ | 0.5- | 2002 07 14 | 644 | 0.1-  | 0.1+  | 2006 09 20 | 703 | 0.8- | 0.2- |
| 2001 01 19 | 704 | 0.5+ | 0.1- | 2002 07 14 | 644 | 0.2+  | 0.1+  | 2006 09 20 | 703 | 0.8- | 0.9+ |
| 2002 05 19 | 644 | 0.3- | 0.2+ | 2002 07 14 | 644 | 0.1+  | 0.1+  | 2006 09 26 | 703 | 1.1- | 0.6+ |



2007 DEC. 24

M.P.O. 129283

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 05 19 | 644 | 0.3-  | 0.1-  | 2005 02 02 | 703 | 0.6- | 0.5+ | 2006 09 26 | 703 | (1.0- | 2.1+) |
| 2002 05 19 | 644 | 0.1+  | 0.2+  | 2005 02 02 | 703 | 0.9- | 0.2- | 2006 09 26 | 703 | 0.7+  | 0.2-  |
| 2002 06 12 | 644 | 0.4-  | 0.1-  | 2005 02 02 | 703 | 0.0  | 0.0  | 2006 09 26 | 703 | 0.8-  | 0.8+  |
| 2002 06 12 | 644 | 0.1-  | 0.7-  | 2005 02 02 | 703 | 0.4+ | 0.3+ | 2007 12 04 | 704 | 0.3+  | 0.1+  |
| 2002 06 12 | 644 | 0.5-  | 0.9-  | 2005 03 11 | 699 | 1.0+ | 0.8+ | 2007 12 04 | 704 | 0.5-  | 0.2-  |
| 2002 06 17 | 644 | 0.2-  | 0.5-  | 2005 03 11 | 699 | 0.5+ | 0.6+ | 2007 12 04 | 704 | 0.9+  | 0.2-  |
| 2002 06 17 | 644 | 0.4-  | 0.3-  | 2005 03 11 | 699 | 0.8- | 0.7+ | 2007 12 04 | 704 | 0.2+  | 0.1-  |
| 2002 06 17 | 644 | 0.3-  | 0.4-  | 2005 03 11 | 699 | 0.7+ | 0.2- | 2007 12 05 | G96 | 0.1+  | 0.3-  |
| 2002 07 05 | 704 | 1.0+  | 0.3-  | 2006 08 16 | 644 | 0.0  | 0.5+ | 2007 12 05 | G96 | 0.4-  | 0.3-  |
| 2002 07 05 | 704 | 1.0+  | 0.9-  | 2006 08 16 | 644 | 0.1+ | 0.2+ | 2007 12 05 | G96 | 0.2-  | 0.2-  |
| 2002 07 05 | 704 | 0.9+  | 0.8-  | 2006 08 16 | 644 | 0.0  | 0.1+ |            |     |       |       |
| 2002 07 05 | 704 | (1.6+ | 0.0 ) | 2006 08 17 | 644 | 0.2- | 0.8+ |            |     |       |       |

(172160)\* 2002 NF<sub>32</sub>

Discovered 2002 July 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 96.60756   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.22820226 | $\omega$ | 61.95461  | +0.35019498 |      | +0.92091396 |   |
| <i>a</i>                                | 2.6520971  | $\Omega$ | 229.59965 | -0.91878703 |      | +0.30219199 |   |
| <i>e</i>                                | 0.1913472  | <i>i</i> | 12.98524  | -0.18219187 |      | +0.24616554 |   |
| <i>P</i>                                | 4.32       | <i>H</i> | 15.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 10 12 | 699 | 0.4+  | 0.9+  | 2002 09 11 | 644 | 0.3-  | 0.9+  | 2007 11 05 | 704 | 0.4+  | 0.0   |
| 1998 10 12 | 699 | 0.3-  | 0.6+  | 2002 09 11 | 644 | 0.0   | 0.9+  | 2007 11 05 | 704 | 0.0   | 0.7-  |
| 1998 10 12 | 699 | 0.4-  | 1.8-  | 2002 09 12 | 049 | 0.0   | 0.7-  | 2007 11 05 | 704 | 0.5+  | 0.7+  |
| 2001 03 24 | 699 | 0.1+  | 0.6+  | 2002 09 12 | 049 | 0.0   | 0.3-  | 2007 11 11 | G96 | 0.6+  | 0.4-  |
| 2001 03 24 | 699 | (0.3+ | 1.7+) | 2002 09 12 | 049 | 0.3+  | 0.5-  | 2007 11 11 | G96 | 0.6+  | 0.3-  |
| 2001 03 24 | 699 | 0.4+  | 0.7+  | 2002 09 21 | 644 | 0.3-  | 0.0   | 2007 11 11 | G96 | 0.6+  | 0.4-  |
| 2001 03 24 | 699 | 0.6+  | 1.2+  | 2002 09 21 | 644 | 0.2-  | 0.0   | 2007 11 14 | 691 | 0.1-  | 0.1+  |
| 2002 07 13 | 704 | 1.1-  | 1.1-  | 2002 09 21 | 644 | 0.1+  | 0.0   | 2007 11 14 | 691 | 0.1-  | 0.1-  |
| 2002 07 13 | 704 | 1.5-  | 0.3-  | 2002 10 06 | 704 | 0.3+  | 0.1-  | 2007 11 14 | 691 | 0.0   | 0.2+  |
| 2002 07 13 | 704 | 1.3-  | 1.3-  | 2002 10 06 | 704 | 0.7-  | 0.1-  | 2007 11 14 | 704 | 0.3+  | 0.8-  |
| 2002 07 13 | 704 | (0.1+ | 1.9-) | 2002 10 06 | 704 | 0.1-  | 0.0   | 2007 11 14 | 704 | 0.6+  | 0.2-  |
| 2002 07 13 | 704 | (1.4- | 2.0-) | 2002 10 06 | 704 | 0.0   | 0.4-  | 2007 11 14 | 704 | 0.1+  | 0.2-  |
| 2002 07 17 | 704 | 0.4-  | 0.2+  | 2006 06 05 | 704 | 0.5-  | 0.3+  | 2007 11 14 | 704 | 0.4+  | 0.5-  |
| 2002 07 17 | 704 | 0.1+  | 0.5+  | 2006 06 05 | 704 | 0.1-  | 0.6+  | 2007 11 14 | 704 | 0.4+  | 0.5-  |
| 2002 07 17 | 704 | 0.8-  | 0.5+  | 2006 06 05 | 704 | 0.3+  | 0.6+  | 2007 11 16 | 704 | 0.0   | 0.1+  |
| 2002 07 17 | 704 | (1.8- | 0.2+) | 2006 07 26 | 644 | 0.0   | 0.3+  | 2007 11 16 | 704 | 0.2+  | 0.5-  |
| 2002 07 18 | 704 | 0.1-  | 0.2+  | 2006 07 26 | 644 | 0.2-  | 0.3+  | 2007 11 16 | 704 | 0.4+  | 0.2+  |
| 2002 07 18 | 704 | 0.0   | 0.3+  | 2006 07 26 | 644 | 0.2-  | 0.4+  | 2007 11 16 | 704 | 1.1+  | 0.6-  |
| 2002 07 18 | 704 | 0.4-  | 0.4+  | 2007 10 07 | 691 | 0.0   | 0.5+  | 2007 11 18 | 704 | 0.7+  | 0.1-  |
| 2002 07 18 | 704 | 0.3-  | 0.1+  | 2007 10 07 | 691 | 0.1-  | 0.3-  | 2007 11 18 | 704 | 1.0+  | 0.7-  |
| 2002 07 18 | 704 | 0.5-  | 0.0   | 2007 10 07 | 691 | 0.3-  | 0.1-  | 2007 11 18 | 704 | 0.5+  | 0.4-  |
| 2002 08 03 | 644 | 0.3-  | 0.6-  | 2007 10 11 | 704 | 0.2-  | 0.8+  | 2007 11 18 | 704 | 0.3+  | 0.7-  |
| 2002 08 03 | 644 | 0.1-  | 0.6-  | 2007 10 11 | 704 | 0.1+  | 0.5-  | 2007 11 18 | 704 | 0.4+  | 0.5+  |
| 2002 08 03 | 644 | 0.0   | 0.7-  | 2007 10 11 | 704 | 0.2+  | 0.6-  | 2007 11 19 | A50 | 0.5+  | 0.2+  |
| 2002 08 11 | 704 | 0.7+  | 0.1-  | 2007 10 15 | 703 | 0.5-  | 0.1+  | 2007 11 19 | A50 | 0.4+  | 0.2+  |
| 2002 08 11 | 704 | 0.8+  | 0.1+  | 2007 10 15 | 703 | 0.3-  | 0.3-  | 2007 11 19 | A50 | 0.3+  | 0.8+  |
| 2002 08 11 | 704 | 0.5+  | 0.2-  | 2007 10 15 | 703 | 0.5+  | 0.5+  | 2007 11 19 | A50 | 1.2+  | 0.6-  |
| 2002 08 11 | 704 | 0.9+  | 0.3+  | 2007 10 15 | 703 | 0.8-  | 0.4-  | 2007 11 20 | 703 | (0.6- | 1.6+) |
| 2002 08 11 | 704 | 0.9+  | 0.5+  | 2007 10 15 | 691 | 0.2+  | 0.2-  | 2007 11 20 | 703 | 0.4+  | 1.3+  |
| 2002 08 14 | 644 | 0.3+  | 0.3+  | 2007 10 15 | 691 | 0.2-  | 0.1-  | 2007 11 20 | 703 | 0.1-  | 0.5-  |
| 2002 08 14 | 644 | 0.2+  | 0.3+  | 2007 10 15 | 691 | 0.1+  | 0.4-  | 2007 11 20 | 703 | 0.1-  | 0.1+  |
| 2002 08 14 | 644 | 0.2+  | 0.2+  | 2007 10 16 | 291 | 0.4-  | 0.1-  | 2007 12 03 | 703 | 0.2+  | 0.4+  |
| 2002 08 15 | 704 | 0.4-  | 0.7-  | 2007 10 16 | 291 | 0.5-  | 0.0   | 2007 12 03 | 703 | 1.4-  | 0.5-  |
| 2002 08 15 | 704 | 0.7-  | 0.4-  | 2007 10 16 | 291 | 0.6-  | 0.3-  | 2007 12 03 | 703 | 0.5+  | 0.1-  |
| 2002 08 15 | 704 | 0.1+  | 0.2-  | 2007 10 30 | 691 | 0.8-  | 0.5+  | 2007 12 03 | 703 | 0.3-  | 0.3-  |
| 2002 08 15 | 704 | 0.5-  | 0.3-  | 2007 10 30 | 691 | 0.0   | 0.1-  | 2007 12 04 | 691 | 0.1-  | 0.1+  |
| 2002 08 25 | 644 | 0.2+  | 0.6+  | 2007 10 30 | 691 | 0.1-  | 0.2-  | 2007 12 04 | 691 | 0.2-  | 0.1+  |
| 2002 08 25 | 644 | 0.0   | 0.5+  | 2007 10 30 | G96 | 0.2+  | 0.2-  | 2007 12 04 | 691 | 0.2+  | 1.5+  |
| 2002 08 25 | 644 | 0.3+  | 0.6+  | 2007 10 30 | G96 | 0.3+  | 0.5-  | 2007 12 05 | 704 | 0.3+  | 1.1+  |
| 2002 09 02 | 644 | 0.2-  | 0.4+  | 2007 10 30 | G96 | 0.3+  | 0.5-  | 2007 12 05 | 704 | 0.1-  | 1.0+  |
| 2002 09 02 | 644 | 0.3-  | 0.5+  | 2007 10 30 | G96 | 0.3+  | 0.4-  | 2007 12 05 | 704 | 0.6+  | 0.4+  |
| 2002 09 02 | 644 | 0.3-  | 0.3+  | 2007 11 03 | 691 | 0.1-  | 0.1-  | 2007 12 05 | 704 | 0.1-  | 1.3+  |
| 2002 09 04 | 699 | 1.4+  | 0.1+  | 2007 11 03 | 691 | (1.7- | 0.4+) | 2007 12 05 | 704 | 0.0   | 1.3+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 04 | 699 | 0.8+ | 0.2+ | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 06 | 691 | 0.2+ | 0.2+ |
| 2002 09 04 | 699 | 1.2+ | 0.1- | 2007 11 05 | A77 | 0.0  | 0.3- | 2007 12 06 | 691 | 0.1+ | 0.1- |
| 2002 09 04 | 699 | 0.4+ | 0.6+ | 2007 11 05 | A77 | 0.0  | 0.5+ | 2007 12 06 | 691 | 0.4- | 0.0  |
| 2002 09 11 | 644 | 0.1- | 1.0+ | 2007 11 05 | A77 | 0.1- | 1.0+ |            |     |      |      |

(172161)\* 2002 NR<sub>34</sub>

Discovered 2002 July 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 49.83500   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.22603068 | $\omega$ | 192.62966 | +0.92823201 |      | +0.35059133 |   |
| <i>a</i>                                | 2.6690566  | $\Omega$ | 146.00804 | -0.31902462 |      | +0.92219907 |   |
| <i>e</i>                                | 0.1918184  | <i>i</i> | 12.85467  | -0.19133379 |      | +0.16320111 |   |
| <i>P</i>                                | 4.36       | <i>H</i> | 15.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 09 27 | 699 | 0.5+  | 0.3+  | 2002 08 03 | 644 | 0.1+  | 0.0   | 2007 10 10 | 703 | 0.4+ | 0.2+ |
| 1998 09 27 | 699 | 0.9+  | 1.0-  | 2002 08 03 | 644 | 0.0   | 0.0   | 2007 10 10 | 703 | 0.3+ | 0.1- |
| 1998 09 27 | 699 | 0.5-  | 0.8-  | 2002 08 14 | 704 | 0.1-  | 0.8-  | 2007 10 10 | 703 | 0.1+ | 0.1- |
| 2002 07 09 | 704 | 0.1+  | 0.2-  | 2002 08 14 | 704 | 0.4+  | 0.9-  | 2007 10 10 | 703 | 1.2- | 0.7+ |
| 2002 07 09 | 704 | 0.8+  | 0.3+  | 2002 08 14 | 704 | 0.4+  | 0.1-  | 2007 10 19 | 704 | 0.5+ | 0.6+ |
| 2002 07 09 | 704 | 0.9-  | 0.5-  | 2002 08 17 | 608 | 1.2-  | 0.6+  | 2007 10 19 | 704 | 0.5+ | 0.2+ |
| 2002 07 09 | 704 | 0.1+  | 0.3-  | 2002 08 17 | 608 | 0.5-  | 1.1+  | 2007 10 19 | 704 | 0.1+ | 0.3- |
| 2002 07 12 | 644 | 0.2+  | 0.2-  | 2002 08 17 | 608 | 0.7-  | 0.8+  | 2007 10 20 | 704 | 0.5- | 0.6+ |
| 2002 07 12 | 644 | 0.1+  | 0.1-  | 2005 03 12 | 704 | (2.2+ | 1.6+) | 2007 10 20 | 704 | 0.0  | 0.8+ |
| 2002 07 12 | 644 | 0.3+  | 0.1+  | 2005 03 12 | 704 | 0.4+  | 1.4+  | 2007 10 20 | 704 | 0.0  | 0.0  |
| 2002 07 18 | 704 | 1.0+  | 1.1+  | 2005 03 12 | 704 | 0.9+  | 0.6+  | 2007 11 07 | 703 | 0.0  | 0.1- |
| 2002 07 18 | 704 | (2.5- | 1.8+) | 2005 03 16 | 703 | 0.5-  | 1.1-  | 2007 11 07 | 703 | 0.8+ | 0.0  |
| 2002 07 18 | 704 | 0.9-  | 0.1+  | 2005 03 16 | 703 | 0.6+  | 0.5-  | 2007 11 07 | 703 | 0.2- | 0.3+ |
| 2002 07 18 | 704 | 0.8-  | 0.2+  | 2005 03 16 | 703 | 0.3-  | 0.5+  | 2007 11 07 | 703 | 0.0  | 0.1- |
| 2002 07 18 | 704 | 0.9-  | 0.3+  | 2005 03 16 | 703 | 1.0-  | 0.2+  | 2007 11 15 | 703 | 0.5- | 0.3+ |
| 2002 07 21 | 644 | 0.2-  | 0.2-  | 2006 06 04 | 703 | 1.2-  | 0.4-  | 2007 11 15 | 703 | 0.2- | 0.5+ |
| 2002 07 21 | 644 | 0.1-  | 0.0   | 2006 06 04 | 703 | 0.6-  | 0.2+  | 2007 11 15 | 703 | 1.1- | 0.2+ |
| 2002 07 21 | 644 | 0.1+  | 0.1-  | 2006 06 04 | 703 | 0.1+  | 0.0   | 2007 11 15 | 703 | 0.3- | 0.2+ |
| 2002 07 21 | 644 | 0.1+  | 0.1+  | 2006 06 04 | 703 | 0.3+  | 0.1+  | 2007 12 05 | 703 | 0.4+ | 0.1- |
| 2002 07 21 | 644 | 0.5+  | 0.1+  | 2006 06 21 | 691 | 0.3+  | 0.3+  | 2007 12 05 | 703 | 0.5- | 0.2- |
| 2002 07 21 | 644 | 0.8+  | 0.2+  | 2006 06 21 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 703 | 0.3+ | 0.2- |
| 2002 08 03 | 644 | 0.5+  | 0.5-  | 2006 06 21 | 691 | 0.1+  | 0.2+  | 2007 12 05 | 703 | 0.2- | 1.0+ |

(172162)\* 2002 NX<sub>37</sub>

Discovered 2002 July 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 46.06255   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.21972540 | $\omega$ | 89.06533  | +0.92376205 |      | +0.36735527 |   |
| <i>a</i>                                | 2.7198766  | $\Omega$ | 249.37576 | -0.38096144 |      | +0.85258024 |   |
| <i>e</i>                                | 0.2206516  | <i>i</i> | 6.64063   | -0.03914142 |      | +0.37169483 |   |
| <i>P</i>                                | 4.49       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 16 | 566 | 0.2-  | 1.4-  | 2002 09 02 | 608 | 0.3-  | 0.2-  | 2007 11 06 | 735 | 0.9+ | 0.9- |
| 1998 11 16 | 566 | 0.0   | 1.7-  | 2002 09 02 | 608 | 0.6-  | 0.0   | 2007 11 06 | 735 | 0.0  | 0.7- |
| 1998 11 16 | 566 | 0.3-  | 1.2-  | 2002 09 04 | 644 | 0.0   | 0.0   | 2007 11 06 | 735 | 0.3+ | 0.3- |
| 2002 07 09 | 704 | (1.6+ | 0.1+) | 2002 09 04 | 644 | 0.2-  | 0.1-  | 2007 11 06 | 735 | 0.7+ | 0.1+ |
| 2002 07 09 | 704 | (1.7+ | 1.8+) | 2002 09 04 | 644 | 0.3-  | 0.4-  | 2007 11 06 | 704 | 0.6- | 0.9+ |
| 2002 07 09 | 704 | (2.7+ | 0.7+) | 2002 09 22 | 644 | 0.2+  | 0.3-  | 2007 11 06 | 704 | 0.3- | 0.5- |
| 2002 07 09 | 704 | 0.9+  | 0.4-  | 2002 09 22 | 644 | 0.2+  | 0.6-  | 2007 11 06 | 704 | 0.1- | 0.3- |
| 2002 07 09 | 704 | 1.2+  | 1.5+  | 2002 09 22 | 644 | 0.0   | 0.3-  | 2007 11 06 | 704 | 0.1- | 0.3- |
| 2002 07 12 | 644 | 0.3+  | 0.0   | 2002 10 01 | 699 | 0.6-  | 0.6+  | 2007 11 06 | 704 | 0.5+ | 0.6+ |
| 2002 07 12 | 644 | 0.2+  | 0.0   | 2002 10 01 | 699 | 0.5-  | 0.8+  | 2007 11 07 | 703 | 0.6+ | 0.7+ |
| 2002 07 12 | 644 | 0.2-  | 0.0   | 2002 10 01 | 699 | 0.3+  | 0.2-  | 2007 11 07 | 703 | 0.3+ | 0.2+ |
| 2002 07 17 | 704 | 0.0   | 0.0   | 2002 10 01 | 699 | (1.6- | 0.0 ) | 2007 11 07 | 703 | 0.0  | 1.3+ |
| 2002 07 17 | 704 | 0.1+  | 0.1+  | 2002 10 04 | 704 | 0.4+  | 0.0   | 2007 11 07 | 703 | 0.6+ | 0.4+ |
| 2002 07 17 | 704 | 0.5-  | 0.5+  | 2002 10 04 | 704 | 0.2+  | 0.4+  | 2007 11 08 | 691 | 0.3- | 0.1- |
| 2002 07 18 | 704 | 0.4-  | 0.1+  | 2002 10 04 | 704 | 0.7+  | 0.9+  | 2007 11 08 | 691 | 0.4- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 18 | 704 | 0.3− | 0.0  | 2002 10 04 | 704 | 0.4+ | 0.8+ | 2007 11 08 | 691 | 0.4−  | 0.2+  |
| 2002 07 18 | 704 | 0.4− | 0.3+ | 2005 03 08 | 691 | 0.2+ | 0.5+ | 2007 11 13 | 699 | 0.4+  | 0.3−  |
| 2002 07 18 | 704 | 0.2+ | 0.3+ | 2005 03 08 | 691 | 0.2+ | 0.6+ | 2007 11 13 | 699 | 1.2+  | 0.1−  |
| 2002 07 18 | 704 | 0.0  | 0.7+ | 2005 03 08 | 691 | 0.7+ | 0.3+ | 2007 11 13 | 699 | 0.2−  | 0.2+  |
| 2002 07 21 | 644 | 0.5− | 0.7− | 2006 05 23 | G96 | 0.7− | 0.3− | 2007 11 13 | 699 | (1.8+ | 0.1−) |
| 2002 07 21 | 644 | 0.2− | 0.9− | 2006 05 23 | G96 | 0.1− | 0.3+ | 2007 11 15 | 704 | 0.1−  | 0.0   |
| 2002 07 21 | 644 | 0.7− | 0.6− | 2006 05 23 | G96 | 0.6− | 0.2+ | 2007 11 15 | 704 | 0.1−  | 0.9+  |
| 2002 08 05 | 644 | 0.3+ | 0.8+ | 2006 06 24 | D35 | 0.7− | 0.2+ | 2007 11 15 | 704 | 0.7−  | 1.0+  |
| 2002 08 05 | 644 | 0.9+ | 1.1+ | 2006 06 24 | D35 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.1−  | 0.5+  |
| 2002 08 05 | 644 | 0.6+ | 0.8+ | 2007 10 12 | 704 | 0.4− | 0.1+ | 2007 11 15 | 704 | 0.2−  | 0.4+  |
| 2002 08 08 | 699 | 0.2+ | 0.2− | 2007 10 12 | 704 | 0.2− | 0.6− | 2007 11 18 | 704 | 0.2+  | 0.2+  |
| 2002 08 08 | 699 | 0.6+ | 0.2− | 2007 10 12 | 704 | 0.2− | 0.5− | 2007 11 18 | 704 | 0.6+  | 0.2+  |
| 2002 08 08 | 699 | 0.2− | 0.3+ | 2007 10 15 | 704 | 0.7+ | 0.3+ | 2007 11 18 | 704 | 0.7+  | 0.3+  |
| 2002 08 08 | 699 | 0.4+ | 0.4− | 2007 10 15 | 704 | 1.1+ | 0.0  | 2007 11 18 | 704 | 0.2+  | 0.1+  |
| 2002 08 12 | 704 | 0.3− | 0.1+ | 2007 10 15 | 704 | 0.6+ | 0.1+ | 2007 11 18 | 704 | 0.4+  | 0.1+  |
| 2002 08 12 | 704 | 0.3− | 0.2+ | 2007 10 19 | 699 | 0.2− | 0.2+ | 2007 11 19 | 691 | 0.2−  | 0.3+  |
| 2002 08 12 | 704 | 0.5− | 0.5+ | 2007 10 19 | 699 | 0.6− | 0.1+ | 2007 11 19 | 691 | 0.2−  | 0.0   |
| 2002 08 12 | 704 | 0.3− | 0.3+ | 2007 10 19 | 699 | 1.1+ | 0.3+ | 2007 11 19 | 691 | 0.1−  | 0.2+  |
| 2002 08 12 | 704 | 0.5− | 0.2+ | 2007 10 19 | 699 | 0.6+ | 0.2− | 2007 11 20 | 704 | 0.1+  | 0.3+  |
| 2002 08 13 | 644 | 0.0  | 0.1− | 2007 10 31 | 691 | 0.1+ | 0.1− | 2007 11 20 | 704 | 0.3−  | 0.3+  |
| 2002 08 13 | 644 | 0.2− | 0.4− | 2007 10 31 | 691 | 0.3− | 0.1− | 2007 11 20 | 704 | 0.9+  | 0.3+  |
| 2002 08 13 | 699 | 0.5+ | 0.0  | 2007 10 31 | 691 | 0.4− | 0.2− | 2007 11 20 | 704 | 0.7+  | 0.5+  |
| 2002 08 13 | 644 | 0.0  | 0.1− | 2007 11 02 | D29 | 0.1+ | 0.3− | 2007 11 20 | 704 | 0.0   | 0.8+  |
| 2002 08 13 | 699 | 0.3− | 0.3+ | 2007 11 02 | D29 | 0.2+ | 0.4− | 2007 12 03 | 703 | 0.1−  | 0.2−  |
| 2002 08 13 | 699 | 0.2+ | 0.2+ | 2007 11 02 | D29 | 0.1+ | 0.1− | 2007 12 03 | 703 | 0.1+  | 0.3−  |
| 2002 08 13 | 699 | 0.1+ | 0.2+ | 2007 11 02 | D29 | 0.6+ | 0.4− | 2007 12 03 | 703 | 1.1−  | 0.4−  |
| 2002 08 15 | 644 | 0.2+ | 0.0  | 2007 11 03 | 735 | 0.2+ | 0.2+ | 2007 12 03 | 703 | 0.2+  | 0.4+  |
| 2002 08 15 | 644 | 0.0  | 0.0  | 2007 11 03 | 735 | 0.2+ | 0.4+ | 2007 12 05 | 691 | 0.1−  | 0.0   |
| 2002 08 15 | 644 | 0.2+ | 0.2− | 2007 11 03 | 735 | 0.1− | 0.5− | 2007 12 05 | 691 | 0.2−  | 0.1+  |
| 2002 08 25 | 644 | 0.3− | 0.2− | 2007 11 03 | 735 | 0.3+ | 0.4− | 2007 12 05 | 691 | 0.1−  | 0.1−  |
| 2002 08 25 | 644 | 0.3− | 0.1− | 2007 11 04 | 691 | 0.2− | 0.1+ | 2007 12 13 | A77 | 0.0   | 0.4+  |
| 2002 08 25 | 644 | 0.2− | 0.0  | 2007 11 04 | 691 | 0.2− | 0.2− | 2007 12 13 | A77 | 0.2−  | 0.4+  |
| 2002 09 02 | 608 | 0.2− | 0.2+ | 2007 11 04 | 691 | 0.2− | 0.1− | 2007 12 13 | A77 | 1.5+  | 1.2+  |

**(172163)\* 2002 NV<sub>48</sub>**

Discovered 2002 July 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |                    |
|-----------------------------------------|------------|--------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    |
| <i>M</i>                                | 54.19654   | (2000.0)           |
| <i>n</i>                                | 0.22390200 | $\omega$ 88.48468  |
| <i>a</i>                                | 2.6859467  | $\Omega$ 246.90418 |
| <i>e</i>                                | 0.2771276  | <i>i</i> 2.50716   |
| <i>P</i>                                | 4.40       | <i>H</i> 16.8      |
|                                         |            | <i>G</i> 0.15      |
|                                         |            | <i>U</i> 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 16 | 691 | 0.0  | 0.4+ | 2002 08 07 | 644 | 0.4−  | 0.1+  | 2007 09 15 | G96 | 0.1+ | 0.0  |
| 1998 11 16 | 691 | 0.2− | 0.1+ | 2002 08 14 | 704 | 0.7+  | 0.8−  | 2007 09 15 | G96 | 0.2+ | 0.4− |
| 1998 11 16 | 691 | 0.0  | 0.0  | 2002 08 14 | 704 | 0.5+  | 0.7+  | 2007 11 05 | 691 | 0.6− | 0.2− |
| 2002 07 14 | 704 | 0.4+ | 0.2− | 2002 08 14 | 704 | (1.7+ | 0.8−) | 2007 11 05 | 691 | 0.3− | 0.1+ |
| 2002 07 14 | 704 | 0.6+ | 0.6− | 2002 08 14 | 704 | 0.6+  | 0.7+  | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 2002 07 14 | 704 | 0.1− | 0.7− | 2002 08 16 | 644 | 0.3−  | 0.3+  | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2002 07 14 | 704 | 0.1+ | 0.3− | 2002 08 16 | 644 | 0.4−  | 0.1+  | 2007 11 05 | 691 | 0.3− | 0.2− |
| 2002 07 17 | 644 | 0.4− | 0.1+ | 2002 08 16 | 644 | 0.2−  | 0.1+  | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2002 07 17 | 644 | 0.2− | 0.2+ | 2002 08 17 | 644 | 0.6−  | 1.1−  | 2007 11 05 | G96 | 0.0  | 0.2− |
| 2002 07 17 | 644 | 0.1+ | 0.0  | 2002 08 17 | 644 | 0.1−  | 1.0−  | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2002 07 22 | 644 | 0.1+ | 0.3+ | 2002 08 17 | 644 | 0.1−  | 0.8−  | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2002 07 22 | 644 | 0.4− | 0.0  | 2006 05 20 | G96 | 0.1+  | 0.1+  | 2007 11 18 | 691 | 0.1− | 0.1− |
| 2002 07 22 | 644 | 0.3− | 0.2+ | 2006 05 20 | G96 | 0.2+  | 0.2+  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2002 07 28 | 608 | 0.2− | 1.0+ | 2006 05 20 | G96 | 0.2+  | 0.5+  | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2002 07 28 | 608 | 0.7+ | 0.8+ | 2006 05 20 | G96 | 0.3−  | 0.2+  | 2007 12 04 | G96 | 0.5+ | 0.0  |
| 2002 07 28 | 608 | 0.4+ | 0.3+ | 2006 06 04 | G96 | 0.1−  | 0.3+  | 2007 12 04 | G96 | 0.4+ | 0.1+ |
| 2002 08 06 | 644 | 0.0  | 0.2+ | 2006 06 04 | G96 | 0.3+  | 0.3−  | 2007 12 05 | 704 | 0.4− | 0.3+ |
| 2002 08 06 | 644 | 0.0  | 0.1+ | 2006 06 04 | G96 | 0.2−  | 0.2+  | 2007 12 05 | 704 | 1.1+ | 0.9+ |
| 2002 08 06 | 644 | 0.1− | 0.3+ | 2006 06 04 | G96 | 0.0   | 0.2−  | 2007 12 05 | 704 | 0.7+ | 0.3− |
| 2002 08 07 | 644 | 0.4− | 0.2+ | 2007 09 15 | G96 | 0.3+  | 0.0   | 2007 12 05 | 704 | 1.4+ | 0.0  |
| 2002 08 07 | 644 | 0.2+ | 0.7− | 2007 09 15 | G96 | 0.3+  | 0.5+  |            |     |      |      |

**(172164)\* 2002 NR<sub>52</sub>**

Discovered 2002 July 14 by NEAT at Palomar.

|                                         |            |                    |
|-----------------------------------------|------------|--------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    |
| <i>M</i>                                | 34.32570   | (2000.0)           |
| <i>n</i>                                | 0.24001431 | $\omega$ 262.35617 |
| <i>a</i>                                | 2.5643539  | $\Omega$ 119.43659 |
| <i>e</i>                                | 0.0718934  | <i>i</i> 4.79204   |
| <i>P</i>                                | 4.11       | <i>H</i> 15.9      |
|                                         |            | <i>G</i> 0.15      |
|                                         |            | <i>U</i> 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 08 17 | 704 | 1.0− | 0.8− | 2003 12 19 | 704 | 0.1−  | 0.1−  | 2005 05 03 | 691 | 0.0  | 0.1+ |
| 1998 08 17 | 704 | 0.2− | 0.6− | 2003 12 19 | 704 | 0.0   | 0.3+  | 2005 05 12 | 691 | 0.1+ | 0.1+ |
| 1998 08 17 | 704 | 0.0  | 0.2+ | 2003 12 19 | 704 | 0.6+  | 0.1−  | 2005 05 12 | 691 | 0.1+ | 0.2+ |
| 1998 08 17 | 704 | 0.4+ | 1.7+ | 2003 12 19 | 704 | 0.0   | 0.3+  | 2005 05 12 | 691 | 0.2+ | 0.1+ |
| 1998 08 17 | 704 | 0.8+ | 1.1+ | 2003 12 23 | 704 | 0.1−  | 0.5+  | 2006 07 20 | 644 | 0.2+ | 0.0  |
| 2002 07 14 | 644 | 0.1− | 0.6+ | 2003 12 23 | 704 | 0.2−  | 0.4+  | 2006 07 20 | 644 | 0.2+ | 0.1+ |
| 2002 07 14 | 644 | 0.3+ | 0.4+ | 2003 12 23 | 704 | 0.1−  | 0.4+  | 2006 07 20 | 644 | 0.0  | 0.1+ |
| 2002 07 14 | 644 | 0.0  | 0.5+ | 2003 12 23 | 704 | 0.0   | 0.2−  | 2007 10 30 | 691 | 0.5− | 0.0  |
| 2002 07 18 | 644 | 0.2− | 0.8+ | 2005 04 04 | 703 | 0.2−  | 0.4+  | 2007 10 30 | 691 | 0.4− | 0.2+ |
| 2002 07 18 | 644 | 0.2− | 0.6+ | 2005 04 04 | 703 | 0.8−  | 1.3+  | 2007 10 30 | 691 | 0.1− | 0.6+ |
| 2002 07 18 | 644 | 0.2− | 0.5+ | 2005 04 04 | 703 | 1.3+  | 1.0+  | 2007 12 04 | 699 | 0.7− | 0.4+ |
| 2002 08 08 | 644 | 0.0  | 0.3+ | 2005 04 04 | 703 | 0.6+  | 0.5+  | 2007 12 04 | 704 | 0.3+ | 0.4+ |
| 2002 08 08 | 644 | 0.1+ | 0.1+ | 2005 04 05 | 699 | 0.6−  | 0.5+  | 2007 12 04 | 699 | 0.5+ | 0.0  |
| 2002 08 08 | 644 | 0.1− | 0.1+ | 2005 04 05 | 699 | (1.6− | 1.0+) | 2007 12 04 | 704 | 0.2+ | 0.1+ |
| 2002 08 14 | 704 | 0.1+ | 0.7− | 2005 04 05 | 699 | 0.1−  | 0.3−  | 2007 12 04 | 704 | 0.2+ | 0.5+ |
| 2002 08 14 | 704 | 0.7− | 0.7+ | 2005 04 05 | 699 | 0.7−  | 0.7+  | 2007 12 04 | 699 | 1.1+ | 0.1+ |
| 2002 08 14 | 704 | 0.5− | 0.3− | 2005 04 06 | 683 | 1.0−  | 0.8−  | 2007 12 04 | 704 | 0.3+ | 0.4+ |
| 2002 08 29 | 644 | 0.2− | 0.1+ | 2005 04 06 | 683 | (0.2− | 2.0+) | 2007 12 04 | 704 | 0.4+ | 0.1+ |
| 2002 08 29 | 644 | 0.0  | 0.2+ | 2005 04 06 | 683 | (1.7+ | 1.7−) | 2007 12 04 | 699 | 0.0  | 0.4+ |
| 2002 08 29 | 644 | 0.3− | 0.3+ | 2005 05 03 | 691 | 0.2+  | 0.2+  |            |     |      |      |
| 2003 12 19 | 704 | 0.2− | 0.1+ | 2005 05 03 | 691 | 0.5+  | 0.3+  |            |     |      |      |

**(172165)\* 2002 NL<sub>53</sub> = 2001 FL<sub>132</sub>**

Discovered 2002 July 14 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 33691)

|                                         |            |                    |
|-----------------------------------------|------------|--------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    |
| <i>M</i>                                | 88.15986   | (2000.0)           |
| <i>n</i>                                | 0.23716882 | $\omega$ 198.39298 |
| <i>a</i>                                | 2.5848240  | $\Omega$ 121.11263 |
| <i>e</i>                                | 0.1782336  | <i>i</i> 4.31242   |
| <i>P</i>                                | 4.16       | <i>H</i> 15.3      |
|                                         |            | <i>G</i> 0.15      |
|                                         |            | <i>U</i> 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 08 17 | 704 | 0.3−  | 0.3−  | 2002 07 23 | 644 | 0.1−  | 0.3+  | 2005 03 03 | 703 | 0.4+  | 0.4+  |
| 1998 08 17 | 704 | 0.7−  | 1.0+  | 2002 07 23 | 644 | 0.0   | 0.1+  | 2005 03 03 | 703 | 0.2−  | 0.3+  |
| 1998 08 17 | 704 | 1.1−  | 0.6−  | 2002 08 08 | 699 | 0.0   | 0.1+  | 2005 03 03 | 703 | 1.1−  | 0.5+  |
| 1998 08 17 | 704 | (2.5− | 0.5−) | 2002 08 08 | 699 | 0.4−  | 0.4−  | 2005 03 03 | 703 | 1.0+  | 0.8−  |
| 1998 08 17 | 704 | 1.4−  | 0.6+  | 2002 08 08 | 699 | 0.1−  | 0.5−  | 2005 03 04 | 704 | (0.6− | 1.9+) |
| 1998 09 16 | 699 | 1.8+  | 0.5+  | 2002 08 08 | 699 | 0.1+  | 0.4+  | 2005 03 04 | 704 | 0.8+  | 0.9+  |
| 1998 09 16 | 699 | 1.3+  | 1.4+  | 2002 08 08 | 644 | 0.2−  | 0.3+  | 2005 03 04 | 704 | 0.3+  | 0.1+  |
| 1998 09 16 | 699 | (1.7+ | 2.1+) | 2002 08 08 | 644 | 0.0   | 0.4+  | 2005 03 08 | 699 | 0.9+  | 0.4+  |
| 2001 03 20 | 608 | 0.7+  | 0.6+  | 2002 08 08 | 644 | 0.1−  | 0.4+  | 2005 03 08 | 699 | 0.2+  | 0.3−  |
| 2001 03 20 | 608 | 0.8+  | 0.6+  | 2002 08 14 | 704 | 1.4+  | 0.9−  | 2005 03 08 | 699 | 0.1−  | 1.0+  |
| 2001 03 20 | 608 | 0.2+  | 0.4+  | 2002 08 14 | 704 | 0.5−  | 0.6+  | 2005 03 08 | 699 | 0.5−  | 0.8−  |
| 2001 03 26 | 704 | 0.4+  | 0.7+  | 2002 08 14 | 704 | (0.6− | 1.6+) | 2005 03 12 | 704 | 0.1−  | 0.1−  |
| 2001 03 26 | 704 | 0.2+  | 0.8+  | 2002 08 14 | 704 | 0.0   | 0.6+  | 2005 03 12 | 704 | 0.4−  | 0.4−  |
| 2001 03 26 | 704 | 0.3−  | 0.2+  | 2002 08 14 | 704 | (0.1− | 1.8+) | 2005 03 12 | 704 | 0.3−  | 0.2−  |
| 2001 03 26 | 704 | (0.6+ | 2.1+) | 2002 08 18 | 644 | 0.3−  | 0.6−  | 2005 03 12 | 704 | 0.5+  | 0.9−  |
| 2002 06 11 | 699 | 0.8−  | 1.0−  | 2002 08 18 | 644 | 0.3−  | 0.5−  | 2005 03 12 | 704 | 0.4−  | 0.8+  |
| 2002 06 11 | 699 | 1.4−  | 0.7+  | 2002 08 18 | 644 | 0.3−  | 0.6−  | 2005 03 12 | 704 | 0.3+  | 0.7−  |
| 2002 06 11 | 699 | 0.0   | 0.1−  | 2002 08 31 | 704 | 0.1−  | 0.2+  | 2005 03 12 | 704 | (0.8+ | 1.6+) |
| 2002 06 11 | 699 | (0.3− | 1.6+) | 2002 08 31 | 704 | 0.7−  | 0.1−  | 2005 03 12 | 704 | 0.9−  | 0.8−  |
| 2002 07 05 | 704 | 0.5+  | 0.7+  | 2002 08 31 | 704 | 0.2+  | 0.0   | 2007 11 20 | 691 | 0.4−  | 0.2+  |
| 2002 07 05 | 704 | 0.8+  | 0.5−  | 2002 08 31 | 704 | 0.6−  | 0.5+  | 2007 11 20 | 691 | 0.1+  | 0.8+  |
| 2002 07 05 | 704 | 1.2+  | 0.4+  | 2002 09 01 | 699 | 0.0   | 0.0   | 2007 11 20 | 691 | 0.3−  | 0.1−  |

2007 DEC. 24

M.P.O. 129285

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 05 | 704 | 0.7− | 1.0+ | 2002 09 01 | 699 | 0.3+ | 0.7− | 2007 12 04 | 704 | 1.6+ | 0.1+ |
| 2002 07 05 | 704 | 0.4− | 0.2− | 2002 09 01 | 699 | 0.8+ | 0.2− | 2007 12 04 | 704 | 0.3+ | 1.4+ |
| 2002 07 14 | 644 | 0.0  | 0.1+ | 2002 09 01 | 699 | 0.9+ | 0.1+ | 2007 12 04 | 704 | 0.3+ | 1.0+ |
| 2002 07 14 | 644 | 0.0  | 0.1− | 2003 12 19 | 704 | 0.0  | 0.7+ | 2007 12 05 | G96 | 0.1− | 0.6− |
| 2002 07 14 | 644 | 0.2− | 0.2− | 2003 12 19 | 704 | 0.8− | 0.0  | 2007 12 05 | G96 | 0.8+ | 0.5− |
| 2002 07 18 | 644 | 0.2− | 0.8+ | 2003 12 19 | 704 | 1.2− | 1.0− | 2007 12 05 | G96 | 0.0  | 0.2− |
| 2002 07 18 | 644 | 0.4− | 0.8+ | 2005 03 03 | 691 | 0.1− | 0.2+ | 2007 12 05 | G96 | 0.4+ | 0.4− |
| 2002 07 18 | 644 | 0.2− | 0.7+ | 2005 03 03 | 691 | 0.1− | 0.3+ |            |     |      |      |
| 2002 07 23 | 644 | 0.1− | 0.2+ | 2005 03 03 | 691 | 0.3+ | 0.3+ |            |     |      |      |

**(172166)\* 2002 NU<sub>56</sub> = 2000 AF<sub>94</sub> = 2003 YQ<sub>77</sub> = 2005 EX<sub>53</sub>**

Discovered 2002 July 1 by P. J. Tristram at the Mount John Observatory.

Id. A. Doppler (*MPO* 89300)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 69.27536   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.24108985 | $\omega$ | 334.37014 | +0.93310454 | +0.35959068 |          |   |
| <i>a</i> | 2.5567215  | $\Omega$ | 4.55845   | −0.32253237 | +0.84085198 |          |   |
| <i>e</i> | 0.2616342  | <i>i</i> | 2.33273   | −0.15902449 | +0.40455222 |          |   |
| <i>P</i> | 4.09       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 07 21 | 704 | 0.8+  | 1.4+  | 2003 12 04 | 704 | 0.0  | 0.2+ | 2005 03 04 | 691 | 0.4+ | 0.1− |
| 1998 07 21 | 704 | 0.2+  | 1.9+  | 2003 12 04 | 704 | 0.4+ | 0.4− | 2005 03 04 | 691 | 0.4+ | 0.4+ |
| 1998 07 21 | 704 | (1.4− | 3.6+) | 2003 12 04 | 704 | 0.5− | 0.7+ | 2005 03 08 | 704 | 0.8− | 1.0− |
| 1998 07 21 | 704 | 0.1+  | 0.7−  | 2003 12 18 | 704 | 0.2− | 0.1+ | 2005 03 08 | 704 | 0.1+ | 0.3− |
| 2000 01 03 | 704 | 0.2+  | 0.4−  | 2003 12 18 | 704 | 0.0  | 0.2+ | 2005 03 08 | 704 | 0.7− | 0.2− |
| 2000 01 03 | 704 | 0.6−  | 1.0−  | 2003 12 18 | 704 | 0.0  | 0.0  | 2005 04 11 | 691 | 0.1+ | 0.1+ |
| 2000 01 03 | 704 | 1.7+  | 0.8−  | 2003 12 18 | 704 | 1.2− | 1.0+ | 2005 04 11 | 691 | 0.2+ | 0.2+ |
| 2000 01 07 | 704 | 0.5+  | 1.2−  | 2003 12 18 | 704 | 0.5− | 0.4− | 2005 04 11 | 691 | 0.3+ | 0.3+ |
| 2000 01 07 | 704 | 1.1−  | 0.5−  | 2003 12 22 | 704 | 0.2+ | 0.3+ | 2005 05 13 | G96 | 0.4− | 0.1− |
| 2000 01 07 | 704 | 0.5−  | 1.3−  | 2003 12 22 | 704 | 0.2− | 0.6+ | 2005 05 13 | G96 | 0.5− | 1.0− |
| 2000 01 07 | 704 | (0.4+ | 2.2−) | 2003 12 22 | 704 | 0.5+ | 0.1− | 2005 05 13 | G96 | 0.5− | 0.1− |
| 2000 01 07 | 704 | 0.1+  | 1.7−  | 2003 12 22 | 704 | 0.3+ | 0.7+ | 2005 05 13 | G96 | 0.3− | 0.6− |
| 2001 03 02 | 691 | 0.6−  | 0.2+  | 2003 12 22 | 704 | 0.2+ | 1.1+ | 2007 11 15 | 704 | 1.0+ | 0.9+ |
| 2001 03 02 | 691 | 0.7−  | 0.6+  | 2003 12 27 | 704 | 0.1+ | 0.5+ | 2007 11 15 | 704 | 0.7+ | 0.7+ |
| 2001 03 02 | 691 | 0.2−  | 0.0   | 2003 12 27 | 704 | 0.3+ | 1.0+ | 2007 11 15 | 704 | 1.0+ | 0.0  |
| 2002 07 01 | 474 | (3.4− | 4.6−) | 2003 12 27 | 704 | 0.1− | 0.9+ | 2007 11 15 | 704 | 0.5+ | 0.4+ |
| 2002 07 01 | 474 | 0.7+  | 0.0   | 2003 12 27 | 704 | 0.2− | 0.1+ | 2007 12 10 | 704 | 1.0− | 0.6+ |
| 2002 07 08 | 474 | (2.9+ | 0.3+) | 2003 12 27 | 704 | 0.4+ | 0.1+ | 2007 12 10 | 704 | 0.6− | 0.5+ |
| 2002 07 08 | 474 | 1.2−  | 0.5+  | 2005 03 04 | 691 | 0.6+ | 0.2− | 2007 12 10 | 704 | 0.5− | 0.2− |
| 2002 07 09 | 474 | 0.1+  | 0.6+  | 2005 03 04 | 691 | 0.2+ | 0.1− | 2007 12 10 | 704 | 0.7− | 0.1+ |
| 2002 07 09 | 474 | 1.1−  | 0.1+  | 2005 03 04 | 691 | 0.1+ | 0.4− |            |     |      |      |
| 2003 12 04 | 704 | 0.3−  | 1.1+  | 2005 03 04 | 691 | 0.4+ | 0.3+ |            |     |      |      |

**(172167)\* 2002 NK<sub>61</sub> = 1994 PH<sub>39</sub>**

Discovered 2002 July 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 108279)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.19802   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.24069151 | $\omega$ | 170.48512 | +0.71014326 | +0.70264677 |          |   |
| <i>a</i> | 2.5595417  | $\Omega$ | 144.73830 | −0.65092716 | +0.67934882 |          |   |
| <i>e</i> | 0.2010317  | <i>i</i> | 4.42510   | −0.26831024 | +0.21159559 |          |   |
| <i>P</i> | 4.09       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 03 23 | 809 | (1.9+ | 2.2−) | 2001 03 21 | 608 | 0.2− | 0.8− | 2005 02 01 | 691 | 0.2+  | 0.0   |
| 1993 04 14 | 691 | 0.8+  | 0.3+  | 2001 03 21 | 608 | 0.8− | 1.3− | 2005 02 01 | 691 | 0.2+  | 0.1+  |
| 1993 04 14 | 691 | 0.4+  | 0.6+  | 2002 05 21 | 704 | 0.2− | 0.3+ | 2005 02 01 | 691 | 0.0   | 0.0   |
| 1993 04 14 | 691 | 0.4+  | 0.6+  | 2002 05 21 | 704 | 0.3+ | 0.2− | 2005 03 03 | 703 | 1.2−  | 0.1+  |
| 1994 08 10 | 809 | (2.0− | 2.1+) | 2002 05 21 | 704 | 0.4− | 0.1− | 2005 03 03 | 703 | 0.3+  | 0.4−  |
| 1994 08 10 | 809 | (1.9− | 3.2+) | 2002 06 18 | 704 | 0.8− | 0.2+ | 2005 03 03 | 703 | (1.9− | 0.6+) |
| 1994 08 10 | 809 | (1.8− | 2.6+) | 2002 06 18 | 704 | 0.4− | 0.4+ | 2005 03 03 | 703 | 0.6+  | 0.5+  |
| 1994 08 11 | 809 | 1.7−  | 0.4+  | 2002 06 18 | 704 | 0.4− | 0.3− | 2005 03 10 | G96 | 0.3−  | 0.1−  |
| 1994 08 11 | 809 | 1.1−  | 1.8+  | 2002 06 18 | 704 | 0.7− | 0.3+ | 2005 03 10 | G96 | 0.4−  | 0.1−  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 08 11 | 809 | (2.1− | 2.0+) | 2002 07 05 | 704 | 0.0   | 0.8+  | 2005 03 10 | G96 | 0.1− | 0.1+ |
| 1998 08 17 | 704 | 0.6+  | 0.0   | 2002 07 05 | 704 | 0.7+  | 1.0+  | 2005 03 10 | G96 | 0.4− | 0.3+ |
| 1998 08 17 | 704 | (3.9+ | 0.3−) | 2002 07 05 | 704 | 0.1−  | 0.3+  | 2005 04 11 | G96 | 0.3− | 0.2− |
| 1998 08 17 | 704 | 0.1+  | 1.2+  | 2002 07 05 | 704 | 0.2+  | 0.3+  | 2005 04 11 | G96 | 0.3− | 0.1− |
| 1998 08 17 | 704 | 0.7+  | 0.2+  | 2002 07 14 | 704 | 1.1+  | 1.3−  | 2005 04 11 | G96 | 0.6− | 0.3− |
| 1998 08 23 | 704 | (2.4+ | 0.4+) | 2002 07 14 | 704 | 0.7−  | 0.3−  | 2005 04 11 | G96 | 0.2− | 0.1− |
| 1998 08 23 | 704 | (1.3+ | 2.2+) | 2002 07 14 | 704 | 0.3+  | 1.3−  | 2007 11 12 | 704 | 0.6+ | 0.6+ |
| 1998 08 23 | 704 | 0.4−  | 0.1+  | 2002 07 14 | 704 | 0.4−  | 0.3−  | 2007 11 12 | 704 | 0.4− | 0.1− |
| 1998 08 23 | 704 | (5.9− | 0.7−) | 2002 07 14 | 704 | 0.3+  | 0.1−  | 2007 11 12 | 704 | 0.8+ | 0.7− |
| 2000 12 23 | 645 | 0.1−  | 0.0   | 2002 07 14 | 704 | (2.0− | 0.4+) | 2007 11 12 | 704 | 0.8+ | 0.8− |
| 2000 12 23 | 645 | 0.0   | 0.1+  | 2002 07 14 | 704 | 0.7+  | 1.3−  | 2007 12 04 | 704 | 0.5+ | 0.1− |
| 2001 02 20 | 645 | 0.1−  | 0.0   | 2002 07 14 | 704 | 0.1−  | 0.5−  | 2007 12 04 | 704 | 0.1+ | 0.6+ |
| 2001 02 20 | 645 | 0.1−  | 0.0   | 2002 07 14 | 704 | 0.9+  | 1.1−  | 2007 12 04 | 704 | 0.6− | 1.0+ |
| 2001 03 21 | 608 | 0.1−  | 1.3−  | 2002 07 14 | 704 | 0.3−  | 0.4−  | 2007 12 04 | 704 | 0.1+ | 0.3+ |

**(172168)\* 2002 OA<sub>1</sub>**

Discovered 2002 July 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.47468   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23437507 | $\omega$ | 147.68428 | +0.70295976 | −0.67915718 |          |   |
| <i>a</i> | 2.6053242  | $\Omega$ | 256.64315 | +0.59764580 | +0.72502089 |          |   |
| <i>e</i> | 0.1772556  | <i>i</i> | 12.53534  | +0.38557370 | +0.11441257 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 06 | 704 | 0.5− | 0.1+ | 2003 12 04 | 703 | 0.6− | 0.2− | 2007 11 17 | 691 | 0.0   | 0.1−  |
| 2000 02 06 | 704 | 0.0  | 0.1− | 2003 12 04 | 703 | 1.4− | 0.2− | 2007 11 20 | 704 | 0.3+  | 0.1−  |
| 2000 02 06 | 704 | 0.1+ | 0.1+ | 2003 12 22 | 704 | 0.9+ | 1.0+ | 2007 11 20 | 704 | 0.2+  | 0.2−  |
| 2002 07 17 | 704 | 0.5+ | 1.0− | 2003 12 22 | 704 | 0.1+ | 0.8+ | 2007 11 20 | 704 | 0.5+  | 0.2−  |
| 2002 07 17 | 704 | 0.2− | 0.0  | 2003 12 22 | 704 | 0.5+ | 0.2+ | 2007 11 20 | 704 | 0.4+  | 0.4−  |
| 2002 07 17 | 704 | 0.1+ | 0.9− | 2003 12 22 | 704 | 1.0+ | 0.4− | 2007 11 20 | 704 | 0.1+  | 0.1−  |
| 2002 07 18 | 704 | 0.5+ | 0.8+ | 2007 10 12 | 704 | 0.5− | 1.2+ | 2007 12 05 | G96 | 0.0   | 0.3−  |
| 2002 07 18 | 704 | 0.5+ | 0.5+ | 2007 10 12 | 704 | 0.4− | 0.8+ | 2007 12 05 | G96 | 0.1+  | 0.1−  |
| 2002 07 18 | 704 | 0.8− | 0.1− | 2007 10 12 | 704 | 0.9− | 0.5+ | 2007 12 05 | G96 | 0.5+  | 0.2−  |
| 2002 08 12 | 704 | 0.5+ | 0.5− | 2007 10 12 | 704 | 0.6+ | 1.4+ | 2007 12 05 | G96 | 0.3+  | 0.3−  |
| 2002 08 12 | 704 | 0.0  | 0.2+ | 2007 10 15 | 704 | 0.3+ | 0.2− | 2007 12 12 | 951 | 1.4+  | 0.1+  |
| 2002 08 12 | 704 | 0.7− | 0.6+ | 2007 10 15 | 704 | 1.1+ | 0.3+ | 2007 12 12 | 951 | (2.2+ | 0.7−) |
| 2002 08 12 | 704 | 0.0  | 0.3+ | 2007 10 15 | 704 | 0.4+ | 0.5+ | 2007 12 12 | 951 | 1.2−  | 0.0   |
| 2002 08 13 | 704 | 0.5− | 0.1− | 2007 11 07 | 691 | 0.1− | 0.1− | 2007 12 14 | 704 | 0.4+  | 0.6−  |
| 2002 08 13 | 704 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 12 14 | 704 | 0.2+  | 0.2−  |
| 2002 08 13 | 704 | 0.1+ | 0.6+ | 2007 11 07 | 691 | 0.3− | 0.0  | 2007 12 14 | 704 | 0.0   | 0.1−  |
| 2002 08 13 | 704 | 0.3− | 0.3+ | 2007 11 15 | 704 | 0.5+ | 0.3− | 2007 12 14 | 704 | 0.1−  | 0.0   |
| 2003 12 01 | 704 | 0.3+ | 0.7+ | 2007 11 15 | 704 | 0.3+ | 0.0  | 2007 12 14 | 704 | 0.1+  | 0.0   |
| 2003 12 01 | 704 | 1.0+ | 0.5+ | 2007 11 15 | 704 | 0.0  | 0.5− | 2007 12 16 | 691 | 0.1−  | 0.0   |
| 2003 12 01 | 704 | 0.3+ | 0.2− | 2007 11 15 | 704 | 0.1+ | 0.1− | 2007 12 16 | 691 | 0.2−  | 0.0   |
| 2003 12 01 | 704 | 0.2+ | 0.7+ | 2007 11 15 | 704 | 0.2+ | 0.6− | 2007 12 16 | 691 | 0.3−  | 0.1−  |
| 2003 12 04 | 703 | 0.4− | 0.2− | 2007 11 17 | 691 | 0.0  | 0.0  |            |     |       |       |
| 2003 12 04 | 703 | 0.4− | 0.2+ | 2007 11 17 | 691 | 0.1− | 0.1− |            |     |       |       |

**(172169)\* 2002 OY<sub>2</sub>**

Discovered 2002 July 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 36.53854   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |  |  |
|----------|------------|----------|-----------|-------------|-------------|--|--|
| <i>n</i> | 0.21636745 | $\omega$ | 180.17436 | +0.99995268 | −0.00959486 |  |  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 04 11 | 691 | 0.1− | 0.2− | 2002 09 16 | 644 | 0.2−  | 0.2+  | 2002 11 11 | 704 | 0.5+  | 0.8+  |
| 1996 04 11 | 691 | 0.3+ | 0.2− | 2002 09 18 | 644 | 0.6−  | 0.4−  | 2002 11 11 | 704 | (1.5+ | 1.3+) |
| 2001 05 24 | 645 | 0.1− | 0.1+ | 2002 09 18 | 644 | 0.3−  | 0.5−  | 2005 04 10 | G96 | 0.0   | 0.5+  |
| 2001 05 24 | 645 | 0.1+ | 0.1+ | 2002 09 18 | 644 | 0.3−  | 0.4−  | 2005 04 10 | G96 | 0.1−  | 0.2+  |
| 2002 07 17 | 704 | 0.9− | 0.7− | 2002 10 01 | 608 | 1.2+  | 1.0+  | 2005 04 10 | G96 | 0.1−  | 0.8+  |
| 2002 07 17 | 704 | 0.2− | 0.7− | 2002 10 01 | 608 | 1.3+  | 0.7+  | 2005 04 10 | G96 | 0.5+  | 0.4+  |
| 2002 07 17 | 704 | 0.2− | 0.1+ | 2002 10 01 | 608 | 1.0+  | 0.5+  | 2005 04 11 | 695 | 0.0   | 0.8+  |
| 2002 07 18 | 704 | 0.4− | 0.8− | 2002 10 03 | 704 | (1.7− | 0.1−) | 2005 04 11 | 695 | 0.4+  | 0.7+  |
| 2002 07 18 | 704 | 0.1− | 0.6− | 2002 10 03 | 704 | (1.5− | 0.2−) | 2007 09 13 | 703 | 0.3−  | 0.4+  |
| 2002 07 18 | 704 | 0.7+ | 0.2+ | 2002 10 03 | 704 | (1.7− | 0.1+) | 2007 09 13 | 703 | 0.3+  | 0.3+  |
| 2002 08 11 | 704 | 0.2+ | 0.2+ | 2002 10 03 | 704 | (1.8− | 0.4+) | 2007 09 13 | 703 | 0.3−  | 0.0   |
| 2002 08 11 | 704 | 0.6+ | 0.3− | 2002 10 03 | 704 | 1.4−  | 0.5+  | 2007 09 13 | 703 | 0.7−  | 0.7+  |
| 2002 08 11 | 704 | 0.0  | 0.3+ | 2002 10 06 | 704 | 0.2−  | 0.2−  | 2007 09 20 | 703 | 0.4+  | 0.1+  |
| 2002 08 11 | 704 | 0.0  | 0.1+ | 2002 10 06 | 704 | 0.1−  | 0.2−  | 2007 09 20 | 703 | 0.1+  | 0.0   |
| 2002 08 11 | 704 | 0.3+ | 0.0  | 2002 10 06 | 704 | 0.0   | 0.2−  | 2007 09 20 | 703 | 0.0   | 1.2−  |
| 2002 08 16 | 704 | 0.2+ | 0.1− | 2002 10 06 | 704 | 0.5+  | 0.9−  | 2007 09 20 | 703 | 1.0−  | 1.4−  |
| 2002 08 16 | 704 | 1.1− | 0.3+ | 2002 10 07 | 704 | 0.6−  | 0.2−  | 2007 10 19 | 704 | 0.3+  | 0.5+  |
| 2002 08 16 | 704 | 0.0  | 0.2+ | 2002 10 07 | 704 | 0.0   | 0.0   | 2007 10 19 | 704 | 0.0   | 0.2+  |
| 2002 08 16 | 704 | 0.0  | 0.2− | 2002 10 07 | 704 | 0.7−  | 0.3−  | 2007 10 19 | 704 | 0.4−  | 0.1+  |
| 2002 08 16 | 704 | 0.2+ | 0.3− | 2002 10 07 | 704 | 0.2−  | 0.3−  | 2007 10 19 | 704 | 0.2+  | 0.2−  |
| 2002 08 16 | 704 | 0.3+ | 0.1+ | 2002 10 07 | 704 | 0.3−  | 0.3+  | 2007 10 19 | 704 | 0.1+  | 0.0   |
| 2002 08 16 | 704 | 0.3+ | 0.1+ | 2002 10 09 | 699 | 1.3+  | 0.3−  | 2007 11 03 | 703 | 0.3−  | 0.6−  |
| 2002 08 22 | 644 | 0.1− | 0.3− | 2002 10 09 | 699 | 0.2+  | 0.1−  | 2007 11 03 | 703 | 0.3−  | 0.6−  |
| 2002 08 22 | 644 | 0.0  | 0.4− | 2002 10 09 | 699 | 0.2−  | 0.5−  | 2007 11 03 | 703 | 0.3+  | 1.4−  |
| 2002 08 22 | 644 | 0.0  | 0.1− | 2002 10 09 | 699 | 0.7+  | 0.8−  | 2007 11 03 | 703 | 0.3−  | 0.4−  |
| 2002 08 28 | 644 | 0.3− | 0.0  | 2002 10 11 | 704 | 0.1−  | 0.4−  | 2007 11 09 | 703 | 0.8+  | 0.8+  |
| 2002 08 28 | 644 | 0.1− | 0.2− | 2002 10 11 | 704 | 0.0   | 0.2+  | 2007 11 09 | 703 | 0.4+  | 0.9+  |
| 2002 08 28 | 644 | 0.3− | 0.1− | 2002 10 11 | 704 | 0.0   | 0.5+  | 2007 11 09 | 703 | 0.1+  | 0.7+  |
| 2002 09 04 | 699 | 0.3+ | 0.0  | 2002 10 11 | 704 | 0.3−  | 0.2−  | 2007 11 09 | 703 | 1.4+  | 0.6+  |
| 2002 09 04 | 699 | 0.1− | 0.0  | 2002 10 11 | 704 | 0.3−  | 0.2−  | 2007 11 15 | 703 | 0.1−  | 0.2+  |
| 2002 09 04 | 699 | 0.4− | 0.1− | 2002 10 29 | 704 | 0.2−  | 0.7+  | 2007 11 15 | 703 | 0.1−  | 0.3−  |
| 2002 09 04 | 699 | 0.0  | 0.5− | 2002 10 29 | 704 | 1.5−  | 0.2+  | 2007 11 15 | 703 | 0.2+  | 0.3−  |
| 2002 09 06 | 704 | 0.3+ | 0.2+ | 2002 10 29 | 704 | 0.2−  | 0.3+  | 2007 11 15 | 703 | 0.2−  | 0.1+  |
| 2002 09 06 | 704 | 0.3+ | 0.3+ | 2002 10 29 | 704 | 0.4−  | 0.1+  | 2007 12 05 | 703 | 0.2−  | 0.2−  |
| 2002 09 06 | 704 | 0.0  | 0.0  | 2002 10 29 | 704 | 0.1+  | 0.3+  | 2007 12 05 | 703 | 0.0   | 1.0+  |
| 2002 09 06 | 704 | 0.1+ | 0.0  | 2002 11 06 | 704 | 0.1+  | 0.6+  | 2007 12 05 | 703 | 0.4−  | 0.2+  |
| 2002 09 06 | 704 | 0.1+ | 0.2− | 2002 11 06 | 704 | 0.0   | 1.4+  | 2007 12 05 | 703 | 0.3−  | 0.7+  |
| 2002 09 14 | 644 | 0.2− | 0.4+ | 2002 11 06 | 704 | 0.5+  | 0.4+  |            |     |       |       |

**(172170)\* 2002 OE<sub>4</sub>**

Discovered 2002 July 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 64.19603   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.22754311 | $\omega$ | 55.72434  | +0.97421973 | +0.15578592 |
| <i>a</i> | 2.6572164  | $\Omega$ | 294.82982 | −0.21486006 | +0.86122828 |
| <i>e</i> | 0.2031352  | <i>i</i> | 10.35796  | +0.06878277 | +0.48375262 |
| <i>P</i> | 4.33       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|------|------|
| 1998 11 14 | 704 | 0.8+  | 1.0−  | 2002 08 30 | 699 | (0.0 | 1.9−) | 2002 12 01 | 704 | 0.9− | 0.9+ |
| 1998 11 14 | 704 | 0.4+  | 0.9−  | 2002 08 30 | 699 | 0.7+ | 0.1+  | 2002 12 01 | 704 | 0.7+ | 0.1− |
| 1998 11 14 | 704 | 0.5−  | 0.2+  | 2002 08 30 | 699 | 0.5+ | 0.4+  | 2003 12 22 | 691 | 0.2− | 0.3+ |
| 1998 11 14 | 704 | 1.6−  | 1.6+  | 2002 08 30 | 699 | 0.4+ | 0.2+  | 2003 12 22 | 691 | 0.1− | 0.2+ |
| 1998 11 14 | 704 | (2.9− | 1.1+) | 2002 09 04 | 644 | 0.3− | 0.2+  | 2003 12 22 | 691 | 0.1+ | 0.3+ |
| 2002 07 17 | 704 | 0.2−  | 1.1+  | 2002 09 04 | 644 | 0.4− | 0.2+  | 2004 01 24 | 704 | 0.1− | 0.2+ |
| 2002 07 17 | 704 | 0.3−  | 0.1+  | 2002 09 04 | 644 | 0.2− | 0.3+  | 2004 01 24 | 704 | 0.2+ | 0.1− |
| 2002 07 17 | 704 | 0.5−  | 0.8+  | 2002 09 12 | 644 | 0.0  | 0.1−  | 2004 01 24 | 704 | 0.1− | 0.3− |
| 2002 07 18 | 704 | 0.1+  | 0.0   | 2002 09 12 | 644 | 0.0  | 0.1−  | 2004 01 24 | 704 | 0.0  | 0.2+ |
| 2002 07 18 | 704 | 0.3−  | 0.3−  | 2002 09 12 | 644 | 0.1+ | 0.2−  | 2004 02 17 | 645 | 0.1− | 0.1+ |
| 2002 07 18 | 704 | 0.2−  | 0.9+  | 2002 10 04 | 699 | 0.9− | 0.1−  | 2004 02 17 | 645 | 0.4+ | 0.1+ |
| 2002 07 18 | 704 | 0.0   | 0.0   | 2002 10 04 | 699 | 0.3− | 0.0   | 2006 06 16 | 644 | 0.1− | 0.4+ |
| 2002 08 10 | 704 | 0.3−  | 0.4−  | 2002 10 04 | 699 | 0.1+ | 0.6−  | 2006 06 16 | 644 | 0.1+ | 0.6+ |
| 2002 08 10 | 704 | 0.2−  | 0.2+  | 2002 10 04 | 699 | 0.6+ | 0.4−  | 2006 06 16 | 644 | 0.4+ | 0.5+ |
| 2002 08 10 | 704 | 0.4−  | 0.2−  | 2002 10 05 | 704 | 0.3+ | 0.1−  | 2006 06 16 | 644 | 0.3− | 0.4+ |
| 2002 08 10 | 704 | 0.5−  | 0.2−  | 2002 10 05 | 644 | 0.6− | 0.0   | 2006 06 16 | 644 | 0.1− | 0.2+ |
| 2002 08 10 | 704 | 0.1−  | 0.0   | 2002 10 05 | 704 | 0.4+ | 0.1+  | 2006 06 16 | 644 | 0.0  | 0.8+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 11 | 704 | 0.4− | 0.2+ | 2002 10 05 | 704 | 0.3− | 0.1− | 2006 06 30 | 704 | 0.4− | 0.1− |
| 2002 08 11 | 704 | 0.4− | 0.5− | 2002 10 05 | 644 | 0.3− | 0.1− | 2006 06 30 | 704 | 0.2− | 1.2− |
| 2002 08 11 | 704 | 0.7+ | 1.0+ | 2002 10 05 | 704 | 0.1+ | 0.2+ | 2006 06 30 | 704 | 0.5+ | 0.3+ |
| 2002 08 11 | 704 | 0.4− | 0.4− | 2002 10 05 | 644 | 0.0  | 0.0  | 2006 06 30 | 704 | 1.4− | 0.4+ |
| 2002 08 11 | 704 | 0.3− | 0.6− | 2002 10 05 | 704 | 0.3+ | 0.2+ | 2006 06 30 | 704 | 0.2+ | 0.4+ |
| 2002 08 11 | 704 | 0.0  | 0.5+ | 2002 10 06 | 644 | 0.1− | 0.2+ | 2007 11 20 | 704 | 0.5+ | 0.4− |
| 2002 08 11 | 704 | 1.4+ | 0.0  | 2002 10 06 | 644 | 0.2− | 0.0  | 2007 11 20 | 704 | 0.4+ | 0.3+ |
| 2002 08 11 | 704 | 0.1− | 0.8− | 2002 10 06 | 644 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.5+ | 1.1− |
| 2002 08 11 | 704 | 0.9+ | 0.5− | 2002 10 26 | 049 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 1.1− | 1.2− |
| 2002 08 11 | 704 | 0.2+ | 0.2− | 2002 10 26 | 049 | 0.2+ | 0.4+ | 2007 12 13 | 704 | 0.3− | 0.6− |
| 2002 08 27 | 644 | 0.3− | 0.6+ | 2002 10 26 | 049 | 0.2+ | 0.1− | 2007 12 13 | 704 | 0.7− | 0.1+ |
| 2002 08 27 | 644 | 0.1− | 0.7+ | 2002 12 01 | 704 | 0.8+ | 0.3+ | 2007 12 13 | 704 | 0.4− | 0.6+ |
| 2002 08 27 | 644 | 0.3− | 0.6+ | 2002 12 01 | 704 | 0.2+ | 0.0  |            |     |      |      |

**(172171)\* 2002 PT = 1998 RD<sub>47</sub>**

Discovered 2002 Aug. 2 by CINEOS at Campo Imperatore.

Id. G. V. Williams (*MPO* 35240)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 356.48730  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.23119607 | $\omega$ | 141.20089 | +0.32479846 | −0.94194582 |
| <i>a</i> | 2.6291523  | $\Omega$ | 289.69934 | +0.84364909 | +0.32922539 |
| <i>e</i> | 0.2069037  | <i>i</i> | 5.18678   | +0.42750693 | +0.06594479 |
| <i>P</i> | 4.26       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 09 14 | 704 | 0.4+  | 0.6−  | 2002 09 14 | 644 | 0.4−  | 0.6+  | 2004 01 30 | 704 | 1.0+  | 0.8+  |
| 1998 09 14 | 704 | 0.0   | 0.2−  | 2003 10 22 | 699 | (0.1− | 1.7−) | 2004 01 30 | 704 | 1.2+  | 0.7+  |
| 1998 09 14 | 704 | 0.9−  | 0.2−  | 2003 10 22 | 699 | 0.2−  | 0.6−  | 2004 02 11 | 703 | 0.8−  | 0.5−  |
| 1998 09 14 | 704 | 0.3−  | 0.7+  | 2003 10 22 | 699 | 0.2+  | 0.6+  | 2004 02 11 | 703 | 1.4−  | 0.2+  |
| 1998 09 16 | 699 | 0.3−  | 0.3−  | 2003 10 22 | 699 | 0.4+  | 0.5+  | 2004 02 11 | 703 | 0.2−  | 0.1+  |
| 1998 09 16 | 699 | 0.1+  | 0.9+  | 2003 10 25 | 691 | 0.4+  | 0.3+  | 2004 02 11 | 703 | (1.9+ | 2.8+) |
| 1998 09 16 | 699 | 0.6−  | 0.0   | 2003 10 25 | 691 | 0.1−  | 0.2−  | 2004 02 17 | 704 | 1.1+  | 0.8+  |
| 1998 09 18 | 704 | 1.3+  | 0.4−  | 2003 10 25 | 691 | 0.4+  | 0.0   | 2004 02 17 | 704 | (0.4+ | 1.8+) |
| 1998 09 18 | 704 | 0.6−  | 1.5−  | 2003 11 21 | 704 | 0.5−  | 0.5+  | 2004 02 17 | 704 | 0.2+  | 1.1+  |
| 1998 09 18 | 704 | (3.4− | 2.6−) | 2003 11 21 | 704 | 0.2+  | 0.7+  | 2004 02 17 | 704 | 0.7+  | 1.1+  |
| 1998 09 18 | 704 | 1.0+  | 1.1+  | 2003 11 21 | 704 | 0.1−  | 0.6+  | 2004 02 17 | 704 | (2.5+ | 1.5+) |
| 1998 09 18 | 704 | 0.3−  | 0.0   | 2003 12 18 | 644 | 0.1+  | 0.2−  | 2004 02 22 | 704 | 0.6+  | 0.3+  |
| 2002 08 02 | 599 | 0.3−  | 0.6+  | 2003 12 18 | 644 | 0.3+  | 0.2−  | 2004 02 22 | 704 | 0.0   | 0.4+  |
| 2002 08 02 | 599 | 0.4−  | 0.5+  | 2003 12 18 | 644 | 0.1+  | 0.1−  | 2004 02 22 | 704 | 0.1+  | 0.1+  |
| 2002 08 02 | 599 | 0.4−  | 0.6+  | 2003 12 19 | 291 | 0.6−  | 0.3+  | 2006 11 01 | G96 | 0.2+  | 0.0   |
| 2002 08 03 | 599 | 0.2+  | 0.3+  | 2003 12 19 | 291 | 0.5−  | 0.4+  | 2006 11 01 | G96 | 0.6+  | 0.0   |
| 2002 08 04 | 599 | 0.3+  | 0.8+  | 2003 12 19 | 291 | 0.3+  | 0.5+  | 2006 11 01 | G96 | 0.3−  | 0.2+  |
| 2002 08 04 | 599 | 0.1+  | 0.5+  | 2004 01 24 | 704 | 0.1−  | 0.1+  | 2006 11 01 | G96 | 0.5−  | 0.5+  |
| 2002 08 05 | 599 | 0.3−  | 0.4+  | 2004 01 24 | 704 | 0.4+  | 0.2+  | 2007 10 12 | 704 | 0.5+  | 0.3−  |
| 2002 08 05 | 599 | 0.3−  | 0.5+  | 2004 01 24 | 704 | 0.3+  | 0.4−  | 2007 10 12 | 704 | 0.3+  | 0.0   |
| 2002 08 05 | 599 | 0.3−  | 0.8+  | 2004 01 24 | 704 | 0.2+  | 0.6+  | 2007 10 12 | 704 | 0.4−  | 0.6−  |
| 2002 08 06 | 644 | 0.5−  | 0.5+  | 2004 01 24 | 704 | 0.3+  | 0.9+  | 2007 10 12 | 704 | 0.3+  | 0.2−  |
| 2002 08 06 | 644 | 0.3−  | 0.7+  | 2004 01 25 | 608 | 0.2+  | 0.4−  | 2007 10 15 | 704 | 0.1+  | 0.6−  |
| 2002 08 06 | 644 | 0.4−  | 0.4+  | 2004 01 25 | 608 | 0.3+  | 0.5−  | 2007 10 15 | 704 | 0.6−  | 0.5−  |
| 2002 08 07 | 599 | 0.1+  | 0.2+  | 2004 01 25 | 608 | 0.1+  | 0.4−  | 2007 10 15 | 704 | 0.6−  | 0.5−  |
| 2002 08 07 | 599 | 0.4−  | 0.4+  | 2004 01 26 | 699 | 0.0   | 0.0   | 2007 10 15 | 704 | 0.6−  | 0.4−  |
| 2002 08 07 | 599 | 0.5−  | 0.1+  | 2004 01 26 | 699 | 0.2−  | 0.3+  | 2007 11 20 | 704 | 0.4−  | 0.3−  |
| 2002 08 26 | 644 | 0.0   | 0.2+  | 2004 01 26 | 699 | 0.1−  | 0.0   | 2007 11 20 | 704 | 0.6−  | 0.0   |
| 2002 08 26 | 644 | 0.1−  | 0.3+  | 2004 01 26 | 699 | 1.2−  | 0.1−  | 2007 11 20 | 704 | 0.4−  | 0.3+  |
| 2002 08 26 | 644 | 0.3+  | 0.5+  | 2004 01 28 | 691 | 0.1+  | 0.1−  | 2007 11 20 | 704 | 0.5−  | 0.3+  |
| 2002 08 27 | 644 | 0.4−  | 0.4+  | 2004 01 28 | 691 | 0.0   | 0.0   | 2007 12 15 | 704 | 0.3+  | 0.6−  |
| 2002 08 27 | 644 | 0.0   | 0.3+  | 2004 01 28 | 691 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.3+  | 0.4−  |
| 2002 08 27 | 644 | 0.1+  | 0.5+  | 2004 01 30 | 704 | 0.6+  | 0.5+  | 2007 12 15 | 704 | 0.5+  | 0.3−  |
| 2002 09 14 | 644 | 0.6−  | 0.7+  | 2004 01 30 | 704 | 0.7+  | 1.1+  | 2007 12 15 | 704 | 0.6+  | 0.4−  |
| 2002 09 14 | 644 | 0.5−  | 0.5+  | 2004 01 30 | 704 | 0.6+  | 0.4+  | 2007 12 15 | 704 | 0.4+  | 0.2−  |

2007 DEC. 24

M.P.O. 129287

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 264.19618  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25415003 | $\omega$ | 236.99115 | -0.98560424   | -0.14552697 |
| <i>a</i> | 2.4683644  | $\Omega$ | 294.51235 | +0.16853858   | -0.88598695 |
| <i>e</i> | 0.0748738  | <i>i</i> | 5.42737   | -0.01338000   | -0.44028290 |
| <i>P</i> | 3.88       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 24 | 699 | 0.8+  | 0.8+  | 2002 08 17 | 644 | 0.2-  | 0.1-  | 2006 09 15 | 691 | 0.1+ | 0.0  |
| 2001 03 24 | 699 | 1.5+  | 1.3+  | 2002 08 27 | 644 | 0.3-  | 0.2-  | 2006 09 26 | 691 | 0.5+ | 0.0  |
| 2001 03 24 | 699 | (1.9+ | 1.4+) | 2002 08 27 | 644 | 0.2-  | 0.6+  | 2006 09 26 | 691 | 0.0  | 0.5+ |
| 2001 03 24 | 699 | 1.3+  | 0.4+  | 2002 08 27 | 644 | 0.0   | 0.0   | 2006 09 26 | 691 | 0.3+ | 0.2- |
| 2001 03 26 | 704 | (0.2- | 2.6+) | 2003 11 20 | 704 | 0.5-  | 0.2-  | 2006 09 28 | 691 | 0.4+ | 0.1- |
| 2001 03 26 | 704 | 0.3-  | 0.6+  | 2003 11 20 | 704 | 0.7-  | 0.2-  | 2006 09 28 | 691 | 0.5+ | 0.2+ |
| 2001 03 26 | 704 | (1.1+ | 1.8+) | 2003 11 20 | 704 | 0.7-  | 0.9+  | 2006 09 28 | 691 | 0.0  | 0.2+ |
| 2001 03 26 | 704 | (0.7+ | 1.7+) | 2003 11 20 | 704 | (1.6- | 2.8-) | 2006 09 28 | G96 | 0.3- | 0.4- |
| 2001 03 26 | 704 | (0.2+ | 2.0+) | 2005 05 01 | 644 | 0.2-  | 0.9+  | 2006 09 28 | G96 | 0.0  | 0.6- |
| 2002 07 22 | 644 | 0.4-  | 0.5+  | 2005 05 01 | 644 | 0.4-  | 0.9+  | 2006 09 28 | G96 | 0.6- | 0.5- |
| 2002 07 22 | 644 | 0.5-  | 0.6+  | 2005 05 01 | 644 | 0.2-  | 0.8+  | 2006 09 28 | G96 | 0.3- | 0.6- |
| 2002 07 22 | 644 | 0.1+  | 0.8+  | 2006 08 13 | 644 | 0.1-  | 0.2+  | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2002 08 06 | 644 | 0.6-  | 0.5+  | 2006 08 13 | 644 | 0.6-  | 0.0   | 2007 11 03 | 691 | 0.2+ | 0.2- |
| 2002 08 06 | 644 | 0.1-  | 0.5+  | 2006 08 13 | 644 | 0.1-  | 0.4+  | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2002 08 06 | 644 | 0.3-  | 0.5+  | 2006 08 19 | 691 | 0.4-  | 0.2+  | 2007 12 13 | 704 | 0.0  | 0.7+ |
| 2002 08 07 | 644 | 0.1+  | 0.4+  | 2006 08 19 | 691 | 0.1-  | 0.0   | 2007 12 13 | 704 | 1.4- | 0.9+ |
| 2002 08 07 | 644 | 0.1-  | 0.7+  | 2006 08 19 | 691 | 0.1-  | 0.3+  | 2007 12 13 | 704 | 0.5- | 0.9+ |
| 2002 08 07 | 644 | 0.1-  | 0.1+  | 2006 08 22 | 644 | 0.2-  | 0.1+  | 2007 12 15 | 704 | 0.4+ | 0.4+ |
| 2002 08 08 | 644 | 0.1-  | 0.1+  | 2006 08 22 | 644 | 0.6-  | 0.1+  | 2007 12 15 | 704 | 0.6+ | 1.6+ |
| 2002 08 08 | 644 | 0.0   | 0.3-  | 2006 08 22 | 644 | 0.2-  | 0.0   | 2007 12 15 | 704 | 1.0+ | 1.0+ |
| 2002 08 17 | 644 | 0.3-  | 1.0+  | 2006 09 15 | 691 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 0.3+ | 1.0+ |
| 2002 08 17 | 644 | 0.0   | 0.3-  | 2006 09 15 | 691 | 0.2-  | 0.6-  | 2007 12 15 | 704 | 0.3+ | 1.0+ |

(172173)\* 2002 PW<sub>24</sub>

Discovered 2002 Aug. 6 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 211.35558  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26470678 | $\omega$ | 353.06075 | -0.47645134   | +0.87734961 |
| <i>a</i> | 2.4022932  | $\Omega$ | 248.47159 | -0.80367636   | -0.46090647 |
| <i>e</i> | 0.0817210  | <i>i</i> | 3.51450   | -0.35650866   | -0.13350240 |
| <i>P</i> | 3.72       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 15 | 691 | 0.2-  | 0.0   | 2005 04 03 | 644 | 0.2+  | 0.0   | 2006 09 19 | 703 | (0.1+ | 1.5-) |
| 1999 11 15 | 691 | 0.1-  | 0.3+  | 2005 04 03 | 644 | 0.4+  | 0.3+  | 2006 09 19 | 699 | 0.3+  | 0.0   |
| 1999 11 15 | 691 | 0.4+  | 0.4+  | 2005 04 05 | 699 | 0.8+  | 0.8+  | 2006 09 19 | 703 | 0.1-  | 0.5-  |
| 2002 07 22 | 644 | 0.2-  | 0.3+  | 2005 04 05 | 699 | 1.1+  | 0.3+  | 2006 09 19 | 699 | (2.1- | 0.3+) |
| 2002 07 22 | 644 | 0.8-  | 0.3+  | 2005 04 05 | 644 | 0.8+  | 0.5+  | 2006 09 20 | 691 | 0.1+  | 0.2+  |
| 2002 07 22 | 644 | 0.5-  | 0.1+  | 2005 04 05 | 699 | 0.8+  | 1.3-  | 2006 09 20 | 691 | 0.2-  | 0.3+  |
| 2002 08 06 | 644 | 0.2-  | 0.8+  | 2005 04 05 | 699 | 1.3+  | 1.0+  | 2006 09 20 | 691 | 0.2+  | 0.1+  |
| 2002 08 06 | 644 | 0.3-  | 1.2+  | 2005 04 05 | 644 | 0.1+  | 0.0   | 2006 10 17 | 235 | 0.0   | 0.4+  |
| 2002 08 06 | 644 | 0.0   | 1.2+  | 2005 04 05 | 644 | 0.0   | 0.4+  | 2006 10 18 | 691 | 0.0   | 0.1+  |
| 2002 08 07 | 644 | 0.6-  | 0.4+  | 2005 04 06 | 691 | (1.6+ | 0.5-) | 2006 10 18 | 691 | 0.2+  | 0.2+  |
| 2002 08 07 | 644 | 0.6-  | 0.5+  | 2005 04 06 | 691 | 0.2+  | 0.5+  | 2006 10 18 | 691 | 0.4-  | 0.4+  |
| 2002 08 07 | 644 | 0.1-  | 0.2+  | 2005 04 06 | 691 | 0.0   | 0.3+  | 2006 10 20 | 691 | 0.1+  | 0.1+  |
| 2002 08 16 | 644 | 0.1-  | 0.3+  | 2005 04 09 | 735 | 0.5-  | 0.1+  | 2006 10 20 | 691 | 0.4+  | 0.2+  |
| 2002 08 16 | 644 | 0.0   | 0.6+  | 2005 04 09 | 735 | 0.2-  | 0.1+  | 2006 10 20 | 691 | 0.4-  | 0.1+  |
| 2002 08 16 | 644 | 0.1+  | 0.3+  | 2005 04 09 | 735 | 0.5-  | 0.1+  | 2006 10 22 | 691 | 0.0   | 0.2+  |
| 2003 12 28 | 291 | 0.2-  | 0.1-  | 2005 04 10 | 691 | (1.6- | 0.9+) | 2006 10 22 | 691 | 0.2-  | 0.2+  |
| 2003 12 28 | 291 | 0.2-  | 0.3+  | 2005 04 10 | 691 | 0.4+  | 0.4+  | 2006 10 22 | 691 | 0.2-  | 0.4+  |
| 2003 12 28 | 291 | 0.2-  | 1.1+  | 2005 04 10 | 691 | 0.3+  | 0.5+  | 2007 10 19 | G96 | 0.3+  | 0.8-  |
| 2003 12 29 | 691 | 0.1-  | 0.4+  | 2005 04 15 | 691 | 0.3+  | 0.4+  | 2007 10 19 | G96 | 0.5-  | 0.1+  |
| 2003 12 29 | 691 | 0.0   | 0.1+  | 2005 04 15 | 691 | 0.1-  | 0.5+  | 2007 10 19 | G96 | 0.2-  | 0.2+  |
| 2003 12 29 | 691 | 0.2+  | 0.4+  | 2005 04 15 | 691 | 0.1-  | 0.3+  | 2007 10 19 | G96 | 0.2+  | 0.0   |
| 2005 04 02 | 735 | (1.0- | 1.8+) | 2006 09 19 | 699 | 0.3+  | 0.2+  | 2007 12 04 | 691 | 0.0   | 0.1+  |
| 2005 04 02 | 735 | 1.4-  | 0.3+  | 2006 09 19 | 703 | 0.3-  | 0.6-  | 2007 12 04 | 691 | 0.2+  | 0.2+  |
| 2005 04 02 | 735 | 0.4-  | 0.3+  | 2006 09 19 | 699 | 0.5-  | 0.6-  | 2007 12 04 | 691 | 0.3-  | 0.1+  |
| 2005 04 03 | 644 | 0.1+  | 0.0   | 2006 09 19 | 703 | 0.0   | 0.8-  |            |     |       |       |

(172174)\* 2002 PW<sub>26</sub>

Discovered 2002 Aug. 6 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.35337   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23686939 | $\omega$ | 173.16087 | +0.55023272   | -0.83292573 |
| <i>a</i> | 2.5870019  | $\Omega$ | 243.44024 | +0.76295066   | +0.53019725 |
| <i>e</i> | 0.1960988  | <i>i</i> | 3.78077   | +0.33933796   | +0.15851055 |
| <i>P</i> | 4.16       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 06 | 644 | 0.3- | 0.3+ | 2004 01 29 | 704 | 0.5- | 0.1+ | 2005 05 16 | G96 | 0.4-  | 0.3-  |
| 2002 08 06 | 644 | 0.4- | 0.4+ | 2004 02 01 | 608 | 0.1+ | 0.0  | 2005 05 16 | G96 | 0.0   | 0.1-  |
| 2002 08 06 | 644 | 0.6- | 0.4+ | 2004 02 01 | 608 | 0.3+ | 0.3- | 2005 05 16 | G96 | 0.2+  | 0.3-  |
| 2002 08 07 | 644 | 0.4- | 0.8+ | 2004 02 01 | 608 | 0.4+ | 0.3- | 2005 05 16 | G96 | 0.1-  | 0.4-  |
| 2002 08 07 | 644 | 0.0  | 0.8+ | 2004 02 11 | 644 | 0.0  | 0.3+ | 2006 07 23 | G96 | 0.2-  | 0.3+  |
| 2002 08 07 | 644 | 0.1+ | 0.8+ | 2004 02 11 | 644 | 0.0  | 0.4+ | 2006 07 23 | G96 | 0.6-  | 0.2+  |
| 2002 08 16 | 644 | 0.7- | 0.7+ | 2004 02 11 | 644 | 0.2+ | 0.5+ | 2006 07 23 | G96 | 0.5-  | 0.4+  |
| 2002 08 16 | 644 | 0.3- | 0.8+ | 2004 02 11 | 703 | 0.2- | 1.2- | 2006 07 23 | G96 | 0.2+  | 0.2+  |
| 2002 08 16 | 644 | 0.3+ | 0.7+ | 2004 02 11 | 703 | 0.1- | 0.1- | 2007 11 05 | 704 | 0.5+  | 0.1+  |
| 2002 08 26 | 644 | 0.1+ | 0.5+ | 2004 02 11 | 703 | 0.2- | 0.4+ | 2007 11 05 | 704 | 0.6+  | 0.1+  |
| 2002 08 26 | 644 | 0.2+ | 0.8+ | 2004 02 11 | 703 | 0.2+ | 0.0  | 2007 11 05 | 704 | 0.5+  | 1.0+  |
| 2002 08 26 | 644 | 0.0  | 0.7+ | 2004 02 23 | 704 | 0.2- | 0.6+ | 2007 11 14 | 704 | (0.0  | 2.6+) |
| 2003 10 24 | 691 | 0.0  | 0.6+ | 2004 02 23 | 704 | 0.2+ | 0.3- | 2007 11 14 | 704 | 0.8+  | 1.1+  |
| 2003 10 24 | 691 | 0.1- | 0.9+ | 2004 02 23 | 704 | 0.4+ | 0.0  | 2007 11 14 | 704 | 1.1+  | 1.0+  |
| 2003 10 24 | 691 | 0.1+ | 0.3+ | 2004 03 08 | 644 | 0.0  | 0.7+ | 2007 11 14 | 704 | (3.1+ | 2.1+) |
| 2004 01 24 | 704 | 0.1+ | 0.4- | 2004 03 08 | 644 | 0.1- | 0.4+ | 2007 11 14 | 704 | (1.9+ | 1.1+) |
| 2004 01 24 | 704 | 0.2- | 0.8- | 2004 03 08 | 644 | 0.1- | 0.7+ | 2007 11 19 | G96 | 0.3+  | 0.1+  |
| 2004 01 24 | 704 | 0.8+ | 0.4- | 2005 05 14 | 291 | 0.2- | 0.4+ | 2007 11 19 | G96 | 0.1-  | 0.1+  |
| 2004 01 24 | 704 | 0.5+ | 0.2- | 2005 05 14 | 291 | 0.5+ | 0.2+ | 2007 11 19 | G96 | 0.1+  | 0.0   |
| 2004 01 29 | 704 | 0.0  | 0.1+ | 2005 05 14 | 291 | 0.1+ | 0.1+ | 2007 11 19 | G96 | 0.1+  | 0.0   |
| 2004 01 29 | 704 | 0.6- | 0.8+ | 2005 05 14 | 291 | 0.1+ | 0.4+ | 2007 12 16 | 691 | 0.1-  | 0.1+  |
| 2004 01 29 | 704 | 0.3+ | 0.4+ | 2005 05 14 | 291 | 0.0  | 0.6+ | 2007 12 16 | 691 | 0.1-  | 0.2+  |
| 2004 01 29 | 704 | 0.2- | 0.8+ | 2005 05 14 | 291 | 0.2+ | 0.3+ | 2007 12 16 | 691 | 0.2-  | 0.1+  |

(172175)\* 2002 PP<sub>36</sub>

Discovered 2002 Aug. 6 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.40786   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23731679 | $\omega$ | 87.18053  | +0.99239508   | -0.10188829 |
| <i>a</i> | 2.5837495  | $\Omega$ | 278.66055 | +0.06527638   | +0.91133484 |
| <i>e</i> | 0.1001608  | <i>i</i> | 4.00638   | +0.10435999   | +0.39885784 |
| <i>P</i> | 4.15       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 11 30 | 691 | 0.1- | 0.2+ | 2002 08 26 | 644 | 0.2- | 0.0  | 2006 07 20 | 644 | 0.3-  | 0.2-  |
| 1995 11 30 | 691 | 0.2- | 0.1+ | 2002 08 26 | 644 | 0.1- | 0.1+ | 2006 07 26 | 644 | 0.0   | 0.4-  |
| 1995 11 30 | 691 | 0.2- | 0.1+ | 2002 08 26 | 644 | 0.1- | 0.8+ | 2006 07 26 | 644 | 0.1+  | 0.2-  |
| 1998 09 16 | 699 | 0.5+ | 0.5+ | 2002 09 06 | 704 | 0.5+ | 0.1- | 2006 07 26 | 644 | 0.0   | 0.3-  |
| 1998 09 16 | 699 | 0.1+ | 0.6+ | 2002 09 06 | 704 | 0.2+ | 0.1- | 2006 08 12 | 644 | 0.1+  | 0.5-  |
| 1998 09 16 | 699 | 0.4+ | 0.8+ | 2002 09 06 | 704 | 0.5+ | 0.3- | 2006 08 12 | 644 | 0.1+  | 0.3-  |
| 2002 08 06 | 644 | 0.0  | 0.3+ | 2002 09 06 | 704 | 0.5+ | 0.3- | 2006 08 12 | 644 | 0.4-  | 0.5-  |
| 2002 08 06 | 644 | 0.2- | 0.3+ | 2002 09 13 | 644 | 0.0  | 0.2+ | 2006 08 13 | 644 | 0.1-  | 0.4-  |
| 2002 08 06 | 644 | 0.0  | 0.2+ | 2002 09 13 | 644 | 0.0  | 0.7+ | 2006 08 13 | 644 | 0.2-  | 0.3-  |
| 2002 08 08 | 644 | 0.5- | 0.0  | 2002 09 13 | 644 | 0.1- | 0.2+ | 2006 08 13 | 644 | 0.2-  | 0.3-  |
| 2002 08 08 | 644 | 0.5- | 0.4- | 2002 09 14 | 644 | 0.1- | 0.3+ | 2006 10 23 | G96 | 0.0   | 0.2-  |
| 2002 08 08 | 644 | 0.6- | 0.4- | 2002 09 14 | 644 | 0.3+ | 0.5+ | 2006 10 23 | G96 | 0.2-  | 0.3-  |
| 2002 08 12 | 704 | 0.6- | 0.1+ | 2002 09 14 | 644 | 0.0  | 0.5+ | 2006 10 23 | G96 | 0.9+  | 0.0   |
| 2002 08 12 | 704 | 0.2- | 0.5+ | 2005 03 12 | 691 | 0.0  | 0.3+ | 2006 10 23 | G96 | 0.3+  | 0.1+  |
| 2002 08 12 | 704 | 0.1+ | 0.3+ | 2005 03 12 | 691 | 0.3+ | 0.4+ | 2007 12 03 | 691 | 0.4-  | 0.5+  |
| 2002 08 12 | 704 | 0.5- | 0.5+ | 2005 03 12 | 691 | 0.3+ | 0.3+ | 2007 12 03 | 691 | 0.5-  | 0.2+  |
| 2002 08 16 | 608 | 0.3+ | 0.7- | 2005 04 06 | 691 | 0.3+ | 0.1- | 2007 12 03 | 691 | (1.6+ | 1.5+) |
| 2002 08 16 | 608 | 0.1+ | 0.7- | 2005 04 06 | 691 | 0.1+ | 0.0  | 2007 12 14 | 704 | 1.6+  | 0.7+  |
| 2002 08 16 | 608 | 0.2+ | 0.2- | 2005 04 06 | 691 | 0.0  | 0.1+ | 2007 12 14 | 691 | 0.4-  | 0.7+  |
| 2002 08 17 | 644 | 0.6- | 0.2+ | 2006 05 31 | G96 | 0.1+ | 0.3- | 2007 12 14 | 704 | 1.5+  | 0.7+  |
| 2002 08 17 | 644 | 0.4- | 0.3+ | 2006 05 31 | G96 | 0.0  | 0.3- | 2007 12 14 | 691 | 0.4-  | 0.7+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 17 | 644 | 0.4− | 0.3+ | 2006 05 31 | G96 | 0.1− | 0.2− | 2007 12 14 | 704 | 1.1+ | 0.3+ |
| 2002 08 17 | 644 | 0.2− | 1.1+ | 2006 05 31 | G96 | 0.2+ | 0.5− | 2007 12 14 | 704 | 1.4+ | 0.2− |
| 2002 08 17 | 644 | 0.1− | 1.3+ | 2006 07 20 | 644 | 0.2+ | 0.2− | 2007 12 14 | 691 | 0.3+ | 2.3− |
| 2002 08 17 | 644 | 0.3− | 0.6+ | 2006 07 20 | 644 | 0.0  | 0.2− |            |     |      |      |

**(172176)\* 2002 PH<sub>41</sub>**

Discovered 2002 Aug. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 75.24573   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23179074 | $\omega$ | 52.66943  | +0.98404245 | +0.06509031 |
| <i>a</i> | 2.6246536  | $\Omega$ | 303.02325 | −0.13921096 | +0.86127528 |
| <i>e</i> | 0.1835254  | <i>i</i> | 11.39131  | +0.11081862 | +0.50395252 |
| <i>P</i> | 4.25       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 14 | 704 | 1.3+  | 0.6+  | 2002 10 09 | 704 | 0.3+  | 0.5+  | 2006 08 14 | E12 | 0.1−  | 0.1+  |
| 1998 11 14 | 704 | 0.1−  | 1.4−  | 2002 10 09 | 704 | 0.3+  | 0.7+  | 2006 08 14 | E12 | 0.1−  | 0.3−  |
| 1998 11 14 | 704 | (2.9+ | 0.1−) | 2002 10 09 | 704 | (0.6− | 2.1+) | 2006 08 14 | E12 | 0.6+  | 0.8−  |
| 1998 11 14 | 704 | 1.5+  | 0.8−  | 2002 10 09 | 704 | (0.3+ | 2.1+) | 2006 08 14 | E12 | 0.0   | 0.0   |
| 2002 08 04 | 704 | 0.1+  | 0.2−  | 2002 11 06 | 699 | 0.1+  | 0.3−  | 2006 08 15 | 644 | 0.1+  | 0.2+  |
| 2002 08 04 | 704 | (2.0+ | 1.0−) | 2002 11 06 | 699 | 0.1−  | 0.2+  | 2006 08 15 | 644 | 0.2−  | 0.0   |
| 2002 08 04 | 704 | 0.3+  | 1.0+  | 2002 11 06 | 699 | 0.2+  | 0.2−  | 2006 08 15 | 644 | 0.1+  | 0.1+  |
| 2002 08 04 | 704 | 1.4+  | 0.7−  | 2002 11 06 | 699 | 0.7−  | 0.7−  | 2006 08 29 | 703 | 0.8+  | 0.0   |
| 2002 08 10 | 704 | 1.0−  | 0.0   | 2004 01 17 | 644 | 0.2−  | 0.6+  | 2006 08 29 | 703 | 0.9+  | 0.6−  |
| 2002 08 10 | 704 | 0.4+  | 0.5+  | 2004 01 17 | 644 | (0.3− | 1.6+) | 2006 08 29 | 703 | (2.5− | 0.3+) |
| 2002 08 10 | 704 | 0.7+  | 0.6+  | 2004 01 17 | 644 | 0.2+  | 0.7+  | 2006 08 29 | 703 | 1.4−  | 0.4+  |
| 2002 08 10 | 704 | 1.0−  | 0.5+  | 2004 01 24 | 704 | 0.7−  | 0.4+  | 2006 08 30 | 704 | 1.3+  | 0.6+  |
| 2002 08 10 | 704 | 0.6−  | 0.4+  | 2004 01 24 | 704 | 0.9+  | 0.9+  | 2006 08 30 | 704 | 1.0+  | 0.0   |
| 2002 09 11 | 644 | 0.3+  | 0.4−  | 2004 01 24 | 704 | (0.3+ | 1.9+) | 2006 08 30 | 704 | 0.9+  | 0.1+  |
| 2002 09 11 | 644 | 0.5−  | 0.3−  | 2004 01 24 | 704 | (1.2+ | 2.2+) | 2006 08 30 | 704 | 0.4+  | 0.4−  |
| 2002 09 11 | 644 | 1.1−  | 0.6−  | 2004 01 24 | 704 | 0.2−  | 0.0   | 2006 08 30 | 704 | 0.2+  | 0.3−  |
| 2002 09 14 | 699 | 0.7−  | 0.1+  | 2004 01 28 | 691 | 0.1−  | 0.2+  | 2006 09 25 | G96 | 0.2−  | 0.5−  |
| 2002 09 14 | 699 | 0.2−  | 0.0   | 2004 01 28 | 691 | 0.1+  | 0.0   | 2006 09 25 | G96 | 0.0   | 0.3−  |
| 2002 09 14 | 699 | 0.3−  | 0.1+  | 2004 01 28 | 691 | 0.1−  | 0.2−  | 2006 09 25 | G96 | 0.0   | 0.4−  |
| 2002 09 14 | 699 | 0.8−  | 0.1−  | 2006 07 20 | 644 | 0.2+  | 0.2+  | 2006 09 25 | G96 | 0.5−  | 0.2−  |
| 2002 10 03 | 644 | 0.2−  | 0.2−  | 2006 07 20 | 644 | 0.1−  | 0.2+  | 2007 12 13 | 704 | 0.3+  | 0.9−  |
| 2002 10 03 | 644 | 0.3−  | 0.2−  | 2006 07 20 | 644 | 0.1−  | 0.1+  | 2007 12 13 | 704 | 0.4+  | 0.7−  |
| 2002 10 03 | 644 | 0.1−  | 0.2−  | 2006 07 25 | 213 | 0.5−  | 0.1+  | 2007 12 13 | 704 | 0.0   | 1.2−  |
| 2002 10 06 | 704 | 0.4−  | 0.9+  | 2006 07 25 | 213 | 0.4−  | 0.0   | 2007 12 15 | 704 | 0.8+  | 0.5−  |
| 2002 10 06 | 704 | 0.4−  | 0.3−  | 2006 07 25 | 213 | 0.9−  | 0.1+  | 2007 12 15 | 704 | 0.3−  | 0.6+  |
| 2002 10 06 | 704 | 0.1+  | 0.7+  | 2006 08 14 | 644 | 0.0   | 0.2+  | 2007 12 15 | 704 | 0.2−  | 1.4+  |
| 2002 10 06 | 704 | 0.2+  | 0.2+  | 2006 08 14 | 644 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.1−  | 0.1+  |
| 2002 10 06 | 704 | 0.6−  | 0.2+  | 2006 08 14 | 644 | 0.1−  | 0.1+  |            |     |       |       |

**(172177)\* 2002 PS<sub>42</sub>**

Discovered 2002 Aug. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.59505   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22894682 | $\omega$ | 273.27186 | +0.86353483 | −0.49731354 |
| <i>a</i> | 2.6463441  | $\Omega$ | 116.56532 | +0.49180162 | +0.79384404 |
| <i>e</i> | 0.1980052  | <i>i</i> | 5.36233   | +0.11152923 | +0.34998698 |
| <i>P</i> | 4.30       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 02 14 | 691 | 0.0  | 0.7+ | 2002 10 08 | 699 | 0.4− | 0.6+ | 2005 05 10 | 691 | 0.2+ | 0.2+ |
| 1991 02 14 | 691 | 0.2+ | 0.6+ | 2002 10 08 | 699 | 0.0  | 0.5+ | 2005 05 10 | 691 | 0.2+ | 0.1+ |
| 1991 02 14 | 691 | 0.1− | 0.0  | 2002 10 15 | 644 | 0.0  | 0.4+ | 2006 08 15 | 644 | 0.3− | 0.0  |
| 1998 12 15 | 704 | 0.9+ | 0.6+ | 2002 10 15 | 644 | 0.1− | 0.4+ | 2006 08 15 | 644 | 0.2− | 0.1+ |
| 1998 12 15 | 704 | 0.7+ | 0.5− | 2002 10 15 | 644 | 0.1− | 0.5+ | 2006 08 15 | 644 | 0.1− | 0.0  |
| 1998 12 15 | 704 | 0.1− | 1.8− | 2002 10 16 | 644 | 0.4− | 0.3+ | 2006 08 16 | 644 | 0.4− | 0.0  |
| 1998 12 15 | 704 | 1.1− | 0.7− | 2002 10 16 | 644 | 0.3− | 0.4+ | 2006 08 16 | 644 | 0.3− | 0.0  |
| 2002 08 05 | 704 | 0.6− | 0.3+ | 2002 10 16 | 644 | 0.3− | 0.5+ | 2006 08 16 | 644 | 0.4− | 0.0  |
| 2002 08 05 | 704 | 0.7− | 0.3− | 2002 10 30 | 704 | 0.3+ | 0.7+ | 2006 08 17 | 644 | 0.6− | 0.2+ |

|            |     |      |       |            |     |       |       |            |     |       |       |
|------------|-----|------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 05 | 704 | 0.3+ | 0.4−  | 2002 10 30 | 704 | 0.2−  | 0.2−  | 2006 08 17 | 644 | 0.2−  | 0.1−  |
| 2002 08 10 | 704 | 0.2− | 1.1+  | 2002 10 30 | 704 | 1.0−  | 0.1−  | 2006 08 17 | 644 | 0.3−  | 0.1+  |
| 2002 08 10 | 704 | (0.0 | 1.5+) | 2002 10 30 | 704 | 0.0   | 0.5−  | 2006 08 19 | 699 | 0.2−  | 0.4+  |
| 2002 08 10 | 704 | 0.2− | 1.3+  | 2002 10 30 | 704 | 0.2+  | 0.3−  | 2006 08 19 | 699 | 0.6−  | 0.0   |
| 2002 08 10 | 704 | 0.2− | 1.2+  | 2002 11 06 | 644 | 0.7−  | 0.4−  | 2006 08 19 | 699 | 0.1−  | 0.2+  |
| 2002 08 10 | 704 | 0.2+ | 0.9+  | 2002 11 06 | 644 | 0.7−  | 0.4−  | 2006 08 19 | 699 | 0.5−  | 0.1−  |
| 2002 08 12 | 704 | 0.6+ | 0.4+  | 2002 11 06 | 644 | 0.5−  | 0.3−  | 2006 08 23 | 704 | 0.4+  | 0.3−  |
| 2002 08 12 | 704 | 0.1+ | 0.3+  | 2002 11 07 | 704 | 0.2+  | 0.4+  | 2006 08 23 | 704 | 0.1−  | 0.2+  |
| 2002 08 12 | 704 | 0.4+ | 0.5+  | 2002 11 07 | 704 | 0.1+  | 0.3+  | 2006 08 23 | 704 | 0.5+  | 0.3−  |
| 2002 08 12 | 704 | 0.4+ | 0.7+  | 2002 11 07 | 704 | 0.1−  | 0.5+  | 2006 08 23 | 704 | 0.0   | 0.3+  |
| 2002 08 12 | 704 | 0.0  | 0.6+  | 2002 11 07 | 704 | 0.2+  | 0.6+  | 2006 08 23 | 704 | 0.9−  | 1.3+  |
| 2002 09 30 | 704 | 0.4− | 0.4+  | 2002 11 07 | 704 | 0.3−  | 1.1+  | 2006 08 23 | 704 | 0.1+  | 0.2+  |
| 2002 09 30 | 704 | 0.5− | 0.4+  | 2002 11 11 | 704 | 0.2−  | 0.0   | 2006 08 23 | 704 | 0.6+  | 0.2−  |
| 2002 09 30 | 704 | 0.2− | 0.8+  | 2002 11 11 | 704 | 0.3−  | 0.5+  | 2006 08 23 | 704 | 1.0+  | 0.1+  |
| 2002 09 30 | 704 | 0.1+ | 0.2+  | 2002 11 11 | 704 | 0.1−  | 0.7+  | 2006 08 23 | 704 | (1.0− | 1.7+) |
| 2002 09 30 | 704 | 0.5− | 0.1+  | 2002 11 11 | 704 | 0.1+  | 0.6+  | 2006 08 23 | 704 | 0.4+  | 0.0   |
| 2002 10 02 | 608 | 0.8− | 0.4+  | 2002 11 20 | 644 | 0.1−  | 0.1+  | 2006 08 28 | E12 | 0.6−  | 0.0   |
| 2002 10 02 | 608 | 1.2− | 0.2+  | 2002 11 20 | 644 | 0.7−  | 0.1+  | 2006 08 28 | E12 | 0.3+  | 0.1−  |
| 2002 10 02 | 608 | 1.1− | 0.4+  | 2002 11 20 | 644 | 0.4−  | 0.1+  | 2006 08 28 | E12 | 0.3+  | 0.3+  |
| 2002 10 04 | 704 | 0.9− | 0.9+  | 2002 12 02 | 608 | 0.3−  | 0.5−  | 2006 08 28 | E12 | 0.4−  | 0.0   |
| 2002 10 04 | 704 | 0.3+ | 1.2+  | 2002 12 02 | 608 | 0.2−  | 0.7−  | 2006 08 31 | 704 | 0.5−  | 0.1−  |
| 2002 10 04 | 704 | 0.6− | 1.3+  | 2002 12 02 | 608 | 0.1−  | 0.4−  | 2006 08 31 | 704 | 0.6+  | 0.9−  |
| 2002 10 04 | 704 | 0.7− | 0.7+  | 2002 12 07 | 704 | 0.1−  | 0.8+  | 2006 08 31 | 704 | 0.3+  | 0.7−  |
| 2002 10 04 | 704 | 0.6− | 1.1+  | 2002 12 07 | 704 | 0.1−  | 0.5+  | 2006 08 31 | 704 | 1.0+  | 0.9−  |
| 2002 10 04 | 645 | 0.2+ | 0.1−  | 2002 12 07 | 704 | (0.2− | 1.6+) | 2007 11 08 | G96 | 0.2+  | 0.1+  |
| 2002 10 04 | 645 | 0.2+ | 0.1−  | 2004 01 22 | 704 | (0.3+ | 1.6+) | 2007 11 08 | G96 | 0.3+  | 0.2+  |
| 2002 10 05 | 645 | 0.1− | 0.2−  | 2004 01 22 | 704 | 0.6+  | 1.4+  | 2007 11 08 | G96 | 0.9+  | 0.0   |
| 2002 10 05 | 645 | 0.2− | 0.2−  | 2004 01 22 | 704 | 0.1−  | 0.3+  | 2007 11 08 | G96 | 0.0   | 0.0   |
| 2002 10 07 | 644 | 0.3− | 0.3+  | 2004 01 22 | 704 | 0.1−  | 0.5+  | 2007 12 14 | G96 | 0.0   | 0.0   |
| 2002 10 07 | 644 | 0.3− | 0.3+  | 2005 05 08 | 691 | 0.2+  | 0.2+  | 2007 12 14 | G96 | 0.0   | 0.1−  |
| 2002 10 07 | 644 | 0.3− | 0.6+  | 2005 05 08 | 691 | 0.2+  | 0.4+  | 2007 12 14 | G96 | 0.2−  | 0.4+  |
| 2002 10 08 | 699 | 0.1+ | 0.0   | 2005 05 08 | 691 | 0.0   | 0.4+  | 2007 12 14 | G96 | 0.0   | 0.5+  |
| 2002 10 08 | 699 | 0.2− | 1.0+  | 2005 05 10 | 691 | 0.2+  | 0.1+  |            |     |       |       |

**(172178)\* 2002 PU<sub>43</sub>**

Discovered 2002 Aug. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 69.07498   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21600471 | $\omega$ | 339.53519 | +0.78501659 | +0.61645521 |
| <i>a</i> | 2.7510209  | $\Omega$ | 341.99035 | −0.53733222 | +0.62853219 |
| <i>e</i> | 0.1797067  | <i>i</i> | 11.39589  | −0.30825807 | +0.47426812 |
| <i>P</i> | 4.56       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 05 | 704 | 0.0   | 1.4−  | 2002 10 12 | 704 | 0.3−  | 0.3+  | 2005 03 13 | 691 | 0.4+ | 0.3+ |
| 2002 08 05 | 704 | 0.7+  | 0.6+  | 2002 10 12 | 704 | 0.3−  | 0.2+  | 2005 03 13 | 691 | 0.1+ | 0.3+ |
| 2002 08 05 | 704 | (1.9+ | 0.1−) | 2002 10 12 | 704 | 0.0   | 0.4+  | 2005 03 13 | 691 | 0.3+ | 0.2+ |
| 2002 08 05 | 704 | 0.1+  | 0.8−  | 2002 12 01 | 704 | 0.1+  | 0.2+  | 2005 03 17 | G96 | 0.2− | 0.0  |
| 2002 08 11 | 704 | 0.6−  | 0.8−  | 2002 12 01 | 704 | 1.1−  | 1.1−  | 2005 03 17 | G96 | 0.1− | 0.1− |
| 2002 08 11 | 704 | 0.1−  | 0.4+  | 2002 12 01 | 704 | 0.6+  | 0.1−  | 2005 03 17 | G96 | 0.4− | 1.1− |
| 2002 08 11 | 704 | 0.2−  | 0.2+  | 2002 12 01 | 704 | 0.9+  | 0.9+  | 2005 03 17 | G96 | 0.8− | 0.2+ |
| 2002 08 11 | 704 | 0.1+  | 0.3+  | 2003 12 17 | 704 | 0.3−  | 0.3−  | 2005 03 17 | 703 | 0.2+ | 0.4− |
| 2002 08 16 | 704 | (1.2− | 2.3−) | 2003 12 17 | 704 | 0.2−  | 0.1+  | 2005 03 17 | 703 | 1.2− | 0.4− |
| 2002 08 16 | 704 | 0.4−  | 0.1−  | 2003 12 17 | 704 | 0.1−  | 0.4+  | 2005 03 17 | 703 | 0.0  | 0.4+ |
| 2002 08 16 | 704 | 0.5−  | 0.6+  | 2003 12 17 | 704 | 0.3+  | 0.1+  | 2005 03 17 | 703 | 0.5− | 0.3− |
| 2002 09 06 | 704 | 0.5−  | 0.5+  | 2005 03 02 | 691 | 0.3+  | 0.1−  | 2007 11 08 | 703 | 0.2− | 0.1− |
| 2002 09 06 | 704 | 0.2−  | 0.6+  | 2005 03 02 | 691 | 0.8+  | 0.3+  | 2007 11 08 | 703 | 0.1− | 0.8− |
| 2002 09 06 | 704 | 0.2−  | 1.2−  | 2005 03 02 | 691 | 0.4−  | 0.3+  | 2007 11 08 | 703 | 0.1− | 0.3− |
| 2002 09 06 | 704 | 0.3−  | 0.2+  | 2005 03 03 | 703 | 0.5−  | 0.6+  | 2007 11 08 | 703 | 1.1− | 0.2+ |
| 2002 09 06 | 704 | 0.1−  | 0.1+  | 2005 03 03 | 703 | (2.0− | 1.2+) | 2007 11 21 | 703 | 1.0− | 0.2− |
| 2002 09 13 | 644 | 0.4−  | 0.3+  | 2005 03 03 | 703 | 0.3−  | 0.5+  | 2007 11 21 | 703 | 0.4+ | 0.6+ |
| 2002 09 13 | 644 | 0.3−  | 0.2+  | 2005 03 03 | 703 | 0.4+  | 1.3−  | 2007 11 21 | 703 | 0.9− | 0.2+ |
| 2002 09 13 | 644 | 0.4−  | 0.1+  | 2005 03 09 | 704 | 0.2+  | 0.1+  | 2007 11 21 | 703 | 0.0  | 0.3+ |
| 2002 10 04 | 704 | 0.1−  | 0.8+  | 2005 03 09 | 704 | 0.0   | 0.0   | 2007 12 03 | 704 | 0.9+ | 0.1− |
| 2002 10 04 | 704 | 0.3−  | 0.9+  | 2005 03 09 | 704 | 0.4−  | 1.4+  | 2007 12 03 | 704 | 1.9+ | 0.0  |
| 2002 10 04 | 704 | 0.1−  | 0.0   | 2005 03 12 | 704 | (1.7+ | 0.2−) | 2007 12 03 | 704 | 0.5+ | 1.6− |

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2002 10 04 704 0.4+ 0.5+ 2005 03 12 704 1.2+ 0.2+ 2007 12 03 704 0.0 1.1+  
 2002 10 04 704 0.1+ 0.8+ 2005 03 12 704 (1.6+ 0.8+) 2007 12 03 704 0.5+ 0.8-

**(172179)\* 2002 PK<sub>47</sub>**

Discovered 2002 Aug. 10 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.15558  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.38412099 | $\omega$ | 84.19571  | +0.73663378 | -0.63936143 |
| <i>a</i> | 1.8742349  | $\Omega$ | 315.28212 | +0.42669205 | +0.69225636 |
| <i>e</i> | 0.1494638  | <i>i</i> | 18.25676  | +0.52469474 | +0.33466115 |
| <i>P</i> | 2.57       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 1           |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2001 02 20 608 0.3+ 0.0  | 2006 01 05 704 0.7+ 0.9-   | 2006 02 02 703 0.4- 0.9+ |
| 2001 02 20 608 0.3+ 0.4+ | 2006 01 05 704 0.7+ 0.6+   | 2006 02 02 703 1.0+ 1.3+ |
| 2001 02 20 608 0.8+ 0.0  | 2006 01 05 704 0.8+ 1.3+   | 2006 02 02 703 0.4+ 0.0  |
| 2002 08 10 704 0.2- 0.2- | 2006 01 06 699 0.9- 0.8+   | 2006 02 02 703 0.5+ 0.9+ |
| 2002 08 10 704 0.3- 0.8- | 2006 01 06 699 1.0+ 0.5-   | 2006 02 04 704 0.1- 0.3- |
| 2002 08 10 704 0.3+ 0.4- | 2006 01 06 699 0.5+ 0.3+   | 2006 02 04 704 0.8+ 1.1+ |
| 2002 08 10 704 0.6+ 0.2- | 2006 01 06 699 0.5- 0.5-   | 2006 02 04 704 0.5- 0.5+ |
| 2002 08 10 704 0.2- 0.4- | 2006 01 20 703 0.2- 0.0    | 2006 02 04 704 0.6+ 0.9+ |
| 2002 08 11 704 0.6- 0.8- | 2006 01 20 703 1.0- 0.8-   | 2006 02 04 704 0.2- 0.6+ |
| 2002 08 11 704 0.2+ 0.3- | 2006 01 20 703 1.1- 0.8-   | 2006 02 20 703 0.3- 0.2- |
| 2002 08 11 704 0.1- 1.2- | 2006 01 20 703 0.6- 0.1+   | 2006 02 20 703 1.1+ 0.2- |
| 2002 08 11 704 0.6- 0.7+ | 2006 01 23 691 0.1+ 0.1+   | 2006 02 20 703 1.5+ 0.3+ |
| 2002 08 11 704 0.2+ 0.6+ | 2006 01 23 691 0.2+ 0.0    | 2006 02 20 703 0.8+ 0.1- |
| 2002 08 14 699 0.2- 0.2+ | 2006 01 23 691 0.1+ 0.2-   | 2006 02 24 291 0.0 0.3+  |
| 2002 08 14 699 0.1+ 0.5+ | 2006 01 26 703 0.2- 0.2-   | 2006 02 24 291 0.1- 0.5+ |
| 2002 08 14 699 0.2+ 1.1+ | 2006 01 26 703 1.4- 0.2-   | 2006 02 24 291 0.0 0.5+  |
| 2002 08 14 699 0.4+ 1.1+ | 2006 01 26 703 0.6- 0.3-   | 2006 02 26 704 1.4+ 0.1+ |
| 2002 09 10 644 0.5- 0.7- | 2006 01 26 703 0.3- 0.4-   | 2006 02 26 704 0.2- 0.0  |
| 2002 09 10 644 0.4- 0.7- | 2006 01 27 699 0.1+ 0.3+   | 2006 02 26 704 0.0 0.6-  |
| 2002 09 10 644 0.4- 0.7- | 2006 01 27 699 0.2+ 0.6-   | 2006 02 26 704 0.2+ 0.3+ |
| 2002 09 11 644 0.5- 1.0+ | 2006 01 27 699 (2.0+ 0.1-) | 2007 08 08 704 0.5+ 0.8+ |
| 2002 09 11 644 0.2- 1.1+ | 2006 01 27 699 0.5+ 0.0    | 2007 08 08 704 0.2+ 0.2+ |
| 2002 09 11 644 0.2- 1.2+ | 2006 01 28 G96 0.1- 0.4-   | 2007 08 08 704 1.0- 0.1- |
| 2002 10 09 704 0.3- 0.1- | 2006 01 28 G96 0.1- 0.2-   | 2007 08 08 704 0.0 0.9+  |
| 2002 10 09 704 0.2+ 0.3+ | 2006 01 28 G96 0.0 0.3-    | 2007 08 14 J75 0.9- 0.8+ |
| 2002 10 09 704 0.3+ 0.4- | 2006 01 28 G96 0.0 0.5-    | 2007 08 14 J75 0.1+ 0.4+ |
| 2002 10 09 704 0.0 0.6+  | 2006 01 28 G96 0.3- 0.6-   | 2007 08 14 J75 0.0 0.7+  |
| 2005 12 29 703 0.6- 0.2+ | 2006 01 28 G96 0.3- 0.5-   | 2007 12 05 G96 0.3- 0.1- |
| 2005 12 29 703 1.3- 0.0  | 2006 01 28 G96 0.9- 0.1-   | 2007 12 05 G96 0.2- 0.1+ |
| 2005 12 29 703 0.6- 0.0  | 2006 01 28 G96 0.0 0.5-    | 2007 12 05 G96 0.0 0.1+  |
| 2005 12 29 703 0.7- 0.3- | 2006 01 31 691 0.0 0.0     | 2007 12 05 G96 0.4- 0.1+ |
| 2006 01 05 704 0.7+ 0.2- | 2006 01 31 691 0.2+ 0.1+   |                          |
| 2006 01 05 704 0.5- 0.4+ | 2006 01 31 691 0.0 0.0     |                          |

**(172180)\* 2002 PR<sub>48</sub>**

Discovered 2002 Aug. 10 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.27604   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21759538 | $\omega$ | 103.10035 | +0.76520253 | -0.62227706 |
| <i>a</i> | 2.7375975  | $\Omega$ | 295.63543 | +0.49664403 | +0.73369666 |
| <i>e</i> | 0.1444493  | <i>i</i> | 10.54765  | +0.40964595 | +0.27287446 |
| <i>P</i> | 4.53       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 1           |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1998 11 16 704 0.1- 0.7- | 2002 09 12 644 0.9- 0.1-   | 2004 01 30 691 0.3+ 0.1- |
| 1998 11 16 704 1.5+ 0.2- | 2002 10 05 704 0.8+ 0.3-   | 2004 01 30 704 0.5- 0.7+ |
| 1998 11 16 704 0.6- 1.1- | 2002 10 05 704 1.0+ 0.7-   | 2004 01 30 704 0.4- 0.3+ |
| 1998 11 16 704 0.2- 0.1+ | 2002 10 05 704 0.8+ 0.3-   | 2004 01 30 704 0.1+ 0.3+ |
| 1998 12 17 704 1.0+ 0.7- | 2002 10 05 704 (0.2+ 1.7-) | 2004 01 30 704 0.1+ 0.8- |
| 1998 12 17 704 1.9- 1.6- | 2002 10 26 049 0.4- 0.4+   | 2004 01 30 704 0.2- 0.1+ |

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1998 12 17 704 0.3+ 1.3-   | 2002 10 26 049 0.1- 0.5+ | 2004 02 14 691 0.0 0.1+    |
| 1998 12 17 704 (5.1- 0.5+) | 2002 10 26 049 0.1- 0.2+ | 2004 02 14 691 0.1+ 0.2+   |
| 2002 08 10 704 (0.2+ 2.3+) | 2004 01 16 644 0.1- 0.4+ | 2004 02 14 691 0.2+ 0.2+   |
| 2002 08 10 704 (0.9- 1.7+) | 2004 01 16 644 0.0 0.4+  | 2004 02 20 049 0.5- 0.2-   |
| 2002 08 10 704 0.2+ 0.7+   | 2004 01 16 644 0.1- 0.2+ | 2004 02 20 049 0.1+ 0.6+   |
| 2002 08 11 704 0.7- 0.9+   | 2004 01 17 644 0.5+ 0.5+ | 2004 02 20 049 0.3+ 0.7+   |
| 2002 08 11 704 0.7+ 1.0+   | 2004 01 17 644 0.3+ 0.3+ | 2007 11 03 704 0.0 0.4+    |
| 2002 08 11 704 0.2+ 1.1+   | 2004 01 17 644 0.2+ 0.4+ | 2007 11 03 704 0.7+ 0.7+   |
| 2002 08 16 704 0.7- 0.0    | 2004 01 19 691 0.0 0.0   | 2007 11 03 704 0.5- 0.4+   |
| 2002 08 16 704 0.2- 0.1-   | 2004 01 19 691 0.2+ 0.1+ | 2007 11 03 704 0.2- 0.1+   |
| 2002 08 16 704 1.2- 0.2+   | 2004 01 19 691 0.0 0.0   | 2007 11 03 704 0.7+ 0.3-   |
| 2002 09 04 644 0.2- 0.6+   | 2004 01 24 704 0.1+ 0.0  | 2007 11 09 704 0.8- 0.1-   |
| 2002 09 04 644 0.0 0.5+    | 2004 01 24 704 0.9- 0.0  | 2007 11 09 704 0.7- 0.2+   |
| 2002 09 04 644 0.3- 0.6+   | 2004 01 24 704 0.3+ 0.3+ | 2007 11 09 704 (2.0- 0.3-) |
| 2002 09 09 113 0.1+ 0.2+   | 2004 01 26 699 0.2+ 1.2+ | 2007 12 03 704 0.1- 0.4-   |
| 2002 09 09 113 0.3+ 0.3+   | 2004 01 26 699 0.0 1.1+  | 2007 12 03 704 0.1+ 0.0    |
| 2002 09 09 113 0.1+ 0.2-   | 2004 01 26 699 0.3+ 0.4- | 2007 12 03 704 0.3+ 0.3+   |
| 2002 09 09 113 0.0 0.5+    | 2004 01 26 699 0.5- 0.3+ | 2007 12 03 704 0.2+ 0.1+   |
| 2002 09 12 644 1.0- 0.2-   | 2004 01 30 691 0.2+ 0.2- | 2007 12 03 704 0.0 0.2-    |
| 2002 09 12 644 1.1- 0.3-   | 2004 01 30 691 0.2+ 0.2- |                            |

**(172181)\* 2002 PW<sub>48</sub>**

Discovered 2002 Aug. 10 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 101.06902  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21905266 | $\omega$ | 354.28504 | +0.33578747 | +0.92758459 |
| <i>a</i> | 2.7254425  | $\Omega$ | 295.24482 | -0.85687889 | +0.22859206 |
| <i>e</i> | 0.1166042  | <i>i</i> | 10.43421  | -0.39115898 | +0.29552071 |
| <i>P</i> | 4.50       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 1           |

Residuals in seconds of arc

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 2002 08 10 704 0.5+ 0.0  | 2002 10 04 699 1.2- 0.8+   | 2005 04 02 644 1.3+ 1.1+   |
| 2002 08 10 704 0.9+ 1.1+ | 2002 10 04 699 0.4- 0.8+   | 2005 04 02 644 1.3+ 0.6+   |
| 2002 08 10 704 0.1+ 1.1- | 2002 10 06 644 0.4+ 0.2-   | 2006 06 09 644 0.4+ 0.4+   |
| 2002 08 10 704 0.5+ 0.5+ | 2002 10 06 644 0.1+ 0.0    | 2006 06 09 644 0.5+ 0.4+   |
| 2002 08 11 704 0.7+ 0.4+ | 2002 10 06 644 0.3+ 0.2-   | 2006 06 09 644 0.2+ 0.6+   |
| 2002 08 11 704 0.1+ 1.1+ | 2003 11 20 704 1.0+ 0.0    | 2006 06 30 704 0.1+ 0.1-   |
| 2002 08 11 704 0.7- 0.4+ | 2003 11 20 704 0.5+ 0.6+   | 2006 06 30 704 0.2+ 0.0    |
| 2002 08 11 704 0.4+ 0.4- | 2003 11 20 704 1.1+ 1.1+   | 2006 06 30 704 0.3+ 0.9-   |
| 2002 08 16 704 0.6- 0.5+ | 2003 12 28 704 0.7+ 0.9-   | 2007 11 09 704 0.1+ 0.2-   |
| 2002 08 16 704 0.1+ 0.8+ | 2003 12 28 704 0.4+ 0.6-   | 2007 11 09 704 0.1+ 0.3-   |
| 2002 08 16 704 0.3+ 1.0+ | 2003 12 28 704 0.1- 0.5-   | 2007 11 09 704 1.0+ 0.1+   |
| 2002 08 22 644 0.3- 0.6- | 2005 03 07 704 (1.2+ 2.3+) | 2007 11 09 704 0.7+ 0.3-   |
| 2002 08 22 644 0.1- 0.7- | 2005 03 07 704 (1.9+ 0.6+) | 2007 11 09 704 0.1+ 0.3-   |
| 2002 08 22 644 0.1- 0.5- | 2005 03 07 704 (2.1+ 0.2+) | 2007 11 09 703 (1.7- 0.5-) |
| 2002 09 12 644 0.5- 0.4+ | 2005 03 08 703 0.3- 0.5+   | 2007 11 09 703 0.6- 0.5+   |
| 2002 09 12 644 0.4- 0.2+ | 2005 03 08 703 0.5- 0.1-   | 2007 11 09 703 0.1+ 0.0    |
| 2002 09 12 644 0.7- 0.2+ | 2005 03 08 703 0.5- 0.2+   | 2007 11 09 703 0.6- 0.6+   |
| 2002 09 14 699 1.4- 0.1+ | 2005 03 08 703 0.4+ 0.1-   | 2007 12 03 704 0.3- 0.1-   |
| 2002 09 14 699 0.3- 0.1- | 2005 03 13 703 0.7- 0.6+   | 2007 12 03 704 0.6- 0.4-   |
| 2002 09 14 699 0.6+ 0.6- | 2005 03 13 703 0.8- 0.1-   | 2007 12 03 704 1.1- 1.0-   |
| 2002 09 14 699 0.8- 0.3+ | 2005 03 13 703 0.2- 1.0+   | 2007 12 03 704 0.4- 0.1-   |
| 2002 10 04 699 0.3- 0.3- | 2005 03 13 703 0.1- 1.5+   | 2007 12 03 704 0.2- 0.4+   |
| 2002 10 04 699 0.7- 0.4+ | 2005 04 02 644 1.4+ 0.5+   |                            |

**(172182)\* 2002 PK<sub>74</sub> = 1998 TZ<sub>7</sub>**

Discovered 2002 Aug. 12 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. A. Doppler (*MPO* 35287)

| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5                                                                                     |          |                |             | MPC         |                |             |      |  |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------|----------|----------------|-------------|-------------|----------------|-------------|------|--|
| <i>M</i>                    | 86.80654                                                                                                              |          | (2000.0)       |             | <b>P</b>    |                | <b>Q</b>    |      |  |
| <i>n</i>                    | 0.22521793                                                                                                            | $\omega$ | 109.24671      |             | +0.56008966 |                | +0.82673806 |      |  |
| <i>a</i>                    | 2.6754740                                                                                                             | $\Omega$ | 195.16950      |             | -0.81557743 |                | +0.53905544 |      |  |
| <i>e</i>                    | 0.0977260                                                                                                             | <i>i</i> | 11.67451       |             | -0.14537206 |                | +0.16100748 |      |  |
| <i>P</i>                    | 4.38 <th><i>H</i></th> <td>15.8</td> <td></td> <th><i>G</i></th> <td>0.15</td> <th><i>U</i></th> <td>0</td> <td></td> | <i>H</i> | 15.8           |             | <i>G</i>    | 0.15           | <i>U</i>    | 0    |  |
| Residuals in seconds of arc |                                                                                                                       |          |                |             |             |                |             |      |  |
| 1998 10 10 699              | 0.2-                                                                                                                  | 1.1+     | 2002 08 13 704 | 0.6-        | 0.6+        | 2007 10 08 D29 | 0.4+        | 0.1+ |  |
| 1998 10 10 699              | (0.2+ 2.6+)                                                                                                           |          | 2002 08 15 644 | 0.2-        | 0.6-        | 2007 10 08 D29 | 0.7-        | 0.1+ |  |
| 1998 10 10 699              | 0.1- 1.1+                                                                                                             |          | 2002 08 15 644 | 0.1+        | 0.5-        | 2007 10 08 D29 | 0.5+        | 0.5+ |  |
| 1998 10 13 691              | 0.1+ 0.1-                                                                                                             |          | 2002 08 15 644 | 0.0         | 0.5-        | 2007 10 10 G96 | 0.0         | 0.3- |  |
| 1998 10 13 691              | 0.2+ 0.1-                                                                                                             |          | 2002 08 26 644 | 0.1+        | 0.3+        | 2007 10 10 G96 | 0.0         | 0.1- |  |
| 1998 10 13 691              | 0.1+ 0.1-                                                                                                             |          | 2002 08 26 644 | 0.1+        | 0.1+        | 2007 10 10 G96 | 0.1+        | 0.2- |  |
| 1998 10 17 691              | 0.3- 0.7-                                                                                                             |          | 2002 08 26 644 | 0.1-        | 0.2+        | 2007 10 10 G96 | 0.1+        | 0.3- |  |
| 1998 10 17 691              | 0.1+ 0.3-                                                                                                             |          | 2002 08 27 644 | 0.0         | 0.0         | 2007 10 13 704 | 0.3-        | 1.0+ |  |
| 2001 04 14 691              | 0.1- 0.2+                                                                                                             |          | 2002 08 27 644 | 0.2-        | 0.2+        | 2007 10 13 704 | 0.3-        | 0.8+ |  |
| 2001 04 14 691              | 0.1- 0.4+                                                                                                             |          | 2002 08 27 644 | 0.2-        | 0.2+        | 2007 10 13 704 | 0.5+        | 0.1- |  |
| 2001 04 14 691              | 0.2- 0.1+                                                                                                             |          | 2002 09 04 644 | 0.1+        | 0.4+        | 2007 10 20 704 | 0.9-        | 0.9- |  |
| 2002 07 20 644              | 0.1- 0.5+                                                                                                             |          | 2002 09 04 644 | 0.3+        | 0.3+        | 2007 10 20 704 | 0.1-        | 0.7- |  |
| 2002 07 20 644              | 0.4+ 0.5+                                                                                                             |          | 2002 09 04 644 | 0.2+        | 0.0         | 2007 10 20 704 | 1.3-        | 1.0- |  |
| 2002 07 20 644              | 0.3+ 0.5+                                                                                                             |          | 2002 09 21 644 | 0.0         | 0.2+        | 2007 10 20 704 | 0.2-        | 0.1+ |  |
| 2002 08 04 644              | 0.0 0.2+                                                                                                              |          | 2002 09 21 644 | 0.3-        | 0.4+        | 2007 11 07 703 | (1.3+ 1.8+) |      |  |
| 2002 08 04 644              | 0.1+ 0.3+                                                                                                             |          | 2002 09 21 644 | 0.4+        | 0.1+        | 2007 11 07 703 | 1.4+        | 0.6+ |  |
| 2002 08 04 644              | 0.1- 0.5+                                                                                                             |          | 2005 03 04 097 | 0.0         | 0.1-        | 2007 11 07 703 | 0.4+        | 0.3+ |  |
| 2002 08 12 704              | 1.1- 0.7+                                                                                                             |          | 2005 03 04 097 | 0.5+        | 0.0         | 2007 11 11 704 | 0.5-        | 0.5+ |  |
| 2002 08 12 704              | 0.1- 0.3+                                                                                                             |          | 2005 03 04 097 | 0.1+        | 0.3+        | 2007 11 11 704 | 0.1+        | 0.2+ |  |
| 2002 08 12 704              | 0.6- 0.0                                                                                                              |          | 2005 03 10 699 | 0.9+        | 0.4-        | 2007 11 11 704 | 0.0         | 0.7+ |  |
| 2002 08 12 704              | (0.7- 1.6-)                                                                                                           |          | 2005 03 10 699 | (2.2+ 0.5-) |             | 2007 11 11 699 | 0.0         | 0.9- |  |
| 2002 08 13 683              | (0.7+ 1.6+)                                                                                                           |          | 2005 03 10 703 | 0.5+        | 0.6+        | 2007 11 11 699 | 0.0         | 0.0  |  |
| 2002 08 13 704              | 0.7+ 0.0                                                                                                              |          | 2005 03 10 699 | 0.4+        | 0.5-        | 2007 11 11 699 | 0.5-        | 0.5+ |  |
| 2002 08 13 699              | 0.8+ 0.4+                                                                                                             |          | 2005 03 10 703 | 0.1+        | 0.6+        | 2007 11 11 699 | 0.3-        | 1.3+ |  |
| 2002 08 13 683              | 1.2- 0.9-                                                                                                             |          | 2005 03 10 703 | 0.1-        | 1.1+        | 2007 11 18 703 | 0.4-        | 0.2+ |  |
| 2002 08 13 704              | 0.0 0.1-                                                                                                              |          | 2005 03 10 699 | 0.5+        | 0.3+        | 2007 11 18 703 | 0.2-        | 0.6+ |  |
| 2002 08 13 699              | 1.0+ 0.3+                                                                                                             |          | 2005 03 10 703 | 0.2+        | 0.5+        | 2007 11 18 703 | 0.5+        | 0.1- |  |
| 2002 08 13 683              | 0.0 0.7-                                                                                                              |          | 2007 10 07 703 | 0.4-        | 0.1+        | 2007 11 18 703 | 0.8-        | 0.1- |  |
| 2002 08 13 704              | 0.3- 0.1-                                                                                                             |          | 2007 10 07 703 | 0.1+        | 0.1-        | 2007 12 06 683 | 0.9-        | 1.2+ |  |
| 2002 08 13 699              | 0.8+ 0.6+                                                                                                             |          | 2007 10 07 703 | 0.9+        | 0.4+        | 2007 12 06 683 | 0.2-        | 0.5+ |  |
| 2002 08 13 704              | 0.6- 0.2+                                                                                                             |          | 2007 10 07 703 | (1.8+ 0.1+) |             | 2007 12 06 683 | 0.6+        | 0.1+ |  |
| 2002 08 13 699              | 0.7+ 0.2+                                                                                                             |          | 2007 10 08 D29 | 0.1+        | 0.3+        |                |             |      |  |

**(172183)\* 2002 PZ<sub>74</sub>**

Discovered 2002 Aug. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |                |             |       |                |             |       |  |
|-----------------------------------------|------------|----------|----------------|-------------|-------|----------------|-------------|-------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                | MPC         |       |                |             |       |  |
| $M$                                     | 9.41023    |          | (2000.0)       | <b>P</b>    |       |                | <b>Q</b>    |       |  |
| $n$                                     | 0.22540678 | $\omega$ | 128.92800      | +0.65161910 |       |                | −0.73090604 |       |  |
| $a$                                     | 2.6739794  | $\Omega$ | 279.15801      | +0.61672041 |       |                | +0.66621780 |       |  |
| $e$                                     | 0.2343614  | $i$      | 11.86000       | +0.44164294 |       |                | +0.14808846 |       |  |
| $P$                                     | 4.37       | $H$      | 16.3           | $G$         | 0.15  |                | $U$         | 1     |  |
| Residuals in seconds of arc             |            |          |                |             |       |                |             |       |  |
| 1998 10 02 699                          | 0.7−       | 1.0−     | 2002 08 12 704 | 0.1−        | 1.0+  | 2004 01 14 644 | 0.8+        | 0.3+  |  |
| 1998 10 02 699                          | 0.2+       | 1.3−     | 2002 08 12 704 | 0.3−        | 0.0   | 2004 01 14 644 | 0.7+        | 0.3+  |  |
| 1998 10 02 699                          | 0.3+       | 0.2−     | 2002 08 12 704 | 0.3+        | 0.8−  | 2004 01 29 704 | 1.4+        | 1.3+  |  |
| 1998 10 30 699                          | 0.2−       | 0.8+     | 2002 08 13 704 | 0.7+        | 1.1+  | 2004 01 29 704 | 0.9+        | 0.3+  |  |
| 1998 10 30 699                          | 0.4+       | 0.3+     | 2002 08 13 704 | 1.0+        | 1.1−  | 2004 01 29 704 | 0.7+        | 0.5+  |  |
| 1998 10 30 699                          | 0.7+       | 1.2+     | 2002 08 13 704 | 0.8+        | 0.1+  | 2004 02 16 703 | 0.9−        | 0.2+  |  |
| 1998 11 15 699                          | 0.4−       | 0.4+     | 2002 08 13 704 | (1.3+       | 1.9−) | 2004 02 16 703 | 0.7−        | 0.2+  |  |
| 1998 11 15 699                          | 0.7−       | 0.3+     | 2002 08 15 644 | 0.1+        | 0.3+  | 2004 02 16 703 | 1.1−        | 0.3−  |  |
| 1998 11 15 699                          | 0.2−       | 0.1+     | 2002 08 15 644 | 0.1−        | 0.3+  | 2004 02 16 703 | 0.2−        | 0.6+  |  |
| 2002 07 12 644                          | 0.1+       | 0.5+     | 2002 08 15 644 | 0.1−        | 0.5+  | 2007 11 17 704 | (3.2−       | 0.0 ) |  |
| 2002 07 12 644                          | 0.3−       | 0.3+     | 2002 08 25 644 | 0.4−        | 0.5+  | 2007 11 17 704 | 1.5−        | 0.6+  |  |
| 2002 07 12 644                          | 0.3−       | 0.5+     | 2002 08 25 644 | 0.3−        | 0.1−  | 2007 11 17 704 | 0.3−        | 0.1−  |  |
| 2002 08 04 644                          | 0.1−       | 0.3+     | 2002 08 25 644 | 0.2−        | 0.3−  | 2007 11 17 704 | 0.0         | 1.0−  |  |
| 2002 08 04 644                          | 0.0        | 0.5+     | 2002 09 04 644 | 0.6−        | 0.5+  | 2007 12 13 704 | 0.5+        | 0.2+  |  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 04 | 644 | 0.1- | 0.8+ | 2002 09 04 | 644 | 0.2- | 0.3+ | 2007 12 13 | 704 | 0.1+ | 0.2- |
| 2002 08 04 | 644 | 0.2+ | 0.5+ | 2002 09 04 | 644 | 0.3- | 0.1+ | 2007 12 13 | 704 | 0.4+ | 0.1- |
| 2002 08 04 | 644 | 0.2+ | 0.7+ | 2002 09 05 | 645 | 0.0  | 0.2- | 2007 12 13 | 704 | 0.1+ | 0.5+ |
| 2002 08 04 | 644 | 0.0  | 0.5+ | 2002 09 05 | 645 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.1+ | 0.1+ |
| 2002 08 08 | 699 | 0.9+ | 0.6+ | 2002 09 21 | 644 | 0.5- | 0.2+ | 2007 12 15 | 704 | 0.1+ | 0.9- |
| 2002 08 08 | 699 | 0.5+ | 1.1+ | 2002 09 21 | 644 | 0.4- | 0.0  | 2007 12 15 | 704 | 0.0  | 0.5+ |
| 2002 08 08 | 699 | 0.2- | 1.0+ | 2002 09 21 | 644 | 0.5- | 0.1+ | 2007 12 15 | 704 | 0.0  | 0.6- |
| 2002 08 08 | 699 | 0.0  | 1.5+ | 2004 01 14 | 644 | 0.5+ | 0.8+ |            |     |      |      |

**(172184)\* 2002 PT<sub>83</sub> = 2000 BH<sub>45</sub>**

Discovered 2002 Aug. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 35295)

|                                         |            |          |           |               |             |
|-----------------------------------------|------------|----------|-----------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |               |             |
| <i>M</i>                                | 53.81783   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.22358448 | $\varpi$ | 208.83976 | +0.96422091   | +0.21751022 |
| <i>a</i>                                | 2.6884891  | $\Omega$ | 137.70689 | −0.17865364   | +0.95550633 |
| <i>e</i>                                | 0.1893874  | <i>i</i> | 13.01529  | −0.19585943   | +0.19924094 |
| <i>P</i>                                | 4.41       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

| Residuals in seconds of arc |     |       |       |            |     |      |      |            |     |      |      |
|-----------------------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19                  | 645 | 0.0   | 0.0   | 2002 08 11 | 608 | 0.3- | 0.5+ | 2002 09 15 | 608 | 0.1- | 0.5- |
| 1998 09 19                  | 645 | 0.1+  | 0.0   | 2002 08 14 | 704 | 0.5+ | 1.4+ | 2002 09 15 | 608 | 0.3- | 0.6- |
| 1998 09 25                  | 645 | 0.1-  | 0.0   | 2002 08 14 | 704 | 0.8- | 0.5- | 2002 09 16 | 644 | 0.2- | 0.2+ |
| 1998 09 25                  | 645 | 0.1-  | 0.0   | 2002 08 14 | 704 | 0.5- | 0.4- | 2002 09 16 | 644 | 0.4- | 0.2+ |
| 2000 01 28                  | 691 | 0.1-  | 0.3-  | 2002 08 14 | 704 | 0.1- | 0.2- | 2002 09 16 | 644 | 0.1- | 0.5+ |
| 2000 01 28                  | 691 | 0.2-  | 0.4-  | 2002 08 14 | 704 | 0.7- | 0.7+ | 2002 09 30 | 608 | 0.1- | 1.1- |
| 2000 01 28                  | 691 | 0.1+  | 0.1-  | 2002 08 15 | 699 | 0.3- | 0.2- | 2002 09 30 | 608 | 0.5- | 0.9- |
| 2000 02 07                  | 691 | 0.1+  | 0.2+  | 2002 08 15 | 699 | 1.4+ | 0.2+ | 2002 09 30 | 608 | 0.7- | 1.3- |
| 2000 02 07                  | 691 | 0.0   | 0.4+  | 2002 08 15 | 699 | 1.1+ | 0.1+ | 2007 11 07 | 703 | 0.2+ | 0.8+ |
| 2000 02 07                  | 691 | 0.0   | 0.1+  | 2002 08 15 | 699 | 0.6+ | 0.2- | 2007 11 07 | 703 | 0.9- | 0.4+ |
| 2002 07 09                  | 704 | 0.3-  | 0.4+  | 2002 08 18 | 644 | 0.5+ | 0.4+ | 2007 11 07 | 703 | 0.4- | 0.9- |
| 2002 07 09                  | 704 | 0.4-  | 0.0   | 2002 08 18 | 644 | 0.3+ | 0.3+ | 2007 11 15 | 703 | 0.9+ | 0.1- |
| 2002 07 09                  | 704 | 0.4-  | 0.2-  | 2002 08 18 | 644 | 0.3+ | 0.3+ | 2007 11 15 | 703 | 0.7+ | 0.3+ |
| 2002 08 10                  | 704 | 0.4-  | 0.5+  | 2002 08 19 | 644 | 0.2+ | 1.2+ | 2007 11 15 | 703 | 0.2- | 0.7+ |
| 2002 08 10                  | 704 | 0.8-  | 0.2+  | 2002 08 19 | 644 | 0.4+ | 1.2+ | 2007 11 15 | 703 | 0.4- | 0.1+ |
| 2002 08 10                  | 704 | 0.5+  | 0.2-  | 2002 08 19 | 644 | 0.1+ | 1.0+ | 2007 12 05 | 703 | 0.9- | 0.2+ |
| 2002 08 10                  | 704 | 0.3-  | 0.7-  | 2002 09 05 | 608 | 0.2+ | 0.5- | 2007 12 05 | 703 | 0.0  | 0.2+ |
| 2002 08 10                  | 704 | 0.1+  | 0.4+  | 2002 09 05 | 608 | 0.8+ | 0.6- | 2007 12 05 | 703 | 0.4- | 0.1+ |
| 2002 08 11                  | 608 | 0.2-  | 0.6+  | 2002 09 05 | 608 | 0.8+ | 1.4- | 2007 12 05 | 703 | 0.5+ | 1.3+ |
| 2002 08 11                  | 608 | (0.6- | 2.0+) | 2002 09 15 | 608 | 0.6- | 0.6- |            |     |      |      |

**(172185)\* 2002 PS<sub>104</sub>**



2007 DEC. 24

M.P.O. 129291

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 05 | 644 | 0.2− | 0.2+ | 2003 12 21 | 704 | 0.5+  | 0.1−  | 2007 11 01 | 703 | 1.0+ | 0.1− |
| 2002 08 05 | 644 | 0.4− | 0.2+ | 2003 12 21 | 704 | 0.1+  | 0.2+  | 2007 11 01 | 703 | 1.1+ | 0.1+ |
| 2002 08 12 | 704 | 0.1+ | 0.0  | 2003 12 21 | 704 | 0.5−  | 0.4+  | 2007 11 01 | 703 | 0.7+ | 0.2+ |
| 2002 08 12 | 704 | 0.3− | 0.3+ | 2004 01 21 | 704 | (2.1− | 0.9+) | 2007 11 03 | 704 | 0.2+ | 0.0  |
| 2002 08 12 | 704 | 0.3− | 0.1− | 2004 01 21 | 704 | 0.9−  | 0.2−  | 2007 11 03 | 704 | 0.0  | 0.2− |
| 2002 08 12 | 704 | 0.4− | 0.2− | 2004 01 21 | 704 | 0.9−  | 0.3−  | 2007 11 03 | 704 | 0.3+ | 0.3+ |
| 2002 08 12 | 704 | 0.5− | 0.6− | 2004 01 21 | 704 | 0.5−  | 0.0   | 2007 11 09 | 704 | 0.3+ | 0.1+ |
| 2002 08 15 | 644 | 0.0  | 0.1− | 2005 03 11 | 699 | 0.7−  | 0.1+  | 2007 11 09 | 704 | 0.3+ | 0.2+ |
| 2002 08 15 | 644 | 0.0  | 0.1+ | 2005 03 11 | 699 | (0.3− | 1.9+) | 2007 11 09 | 704 | 0.0  | 0.3− |
| 2002 08 15 | 644 | 0.2+ | 0.2+ | 2005 03 11 | 699 | 0.5+  | 0.7+  | 2007 11 09 | 704 | 0.1+ | 0.0  |
| 2002 08 26 | 644 | 0.2− | 0.0  | 2005 03 11 | 699 | (1.9+ | 0.2+) | 2007 11 09 | 704 | 0.1+ | 0.1− |
| 2002 08 26 | 644 | 0.0  | 0.0  | 2007 10 08 | 703 | 0.9+  | 0.3+  | 2007 11 09 | 703 | 0.2− | 0.4+ |
| 2002 08 26 | 644 | 0.1+ | 0.0  | 2007 10 08 | 703 | 0.4−  | 0.5−  | 2007 11 09 | 703 | 0.5− | 0.2+ |
| 2002 08 27 | 704 | 0.2− | 0.1− | 2007 10 08 | 703 | 0.4+  | 0.2−  | 2007 11 09 | 703 | 0.3− | 0.3− |
| 2002 08 27 | 704 | 0.4− | 0.4− | 2007 10 08 | 703 | 0.3−  | 0.4−  | 2007 11 09 | 703 | 0.6− | 0.4+ |
| 2002 08 27 | 704 | 1.2+ | 0.3− | 2007 10 14 | 703 | 0.8−  | 0.3+  | 2007 12 02 | 704 | 0.1+ | 0.3+ |
| 2002 08 27 | 704 | 0.1+ | 0.8− | 2007 10 14 | 703 | 0.2−  | 1.5−  | 2007 12 02 | 704 | 0.0  | 0.6− |
| 2002 08 27 | 704 | 0.7+ | 0.6− | 2007 10 14 | 703 | 0.4−  | 0.2+  | 2007 12 02 | 704 | 0.0  | 0.1− |
| 2002 09 04 | 699 | 0.8− | 0.1− | 2007 10 14 | 703 | 0.8−  | 0.5+  | 2007 12 02 | 704 | 0.2+ | 0.6+ |
| 2002 09 04 | 699 | 0.3− | 0.5− | 2007 10 18 | A50 | 0.7−  | 0.4−  |            |     |      |      |
| 2002 09 04 | 699 | 0.5− | 0.1− | 2007 10 18 | A50 | 0.0   | 0.0   |            |     |      |      |

**(172186)\* 2002 PK<sub>108</sub>**

Discovered 2002 Aug. 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22332138 | <i>ω</i> | 350.97242 | +0.96018709 | +0.27909970 |          |   |
| <i>a</i> | 2.6906003  | <i>Ω</i> | 352.78720 | −0.24996834 | +0.83919301 |          |   |
| <i>e</i> | 0.2502921  | <i>i</i> | 5.48644   | −0.12472600 | +0.46675308 |          |   |
| <i>P</i> | 4.41       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 11 | 704 | 1.3+  | 0.7+  | 2002 08 18 | 644 | 0.2−  | 0.1+  | 2005 03 08 | G96 | 0.3− | 0.2− |
| 1998 11 11 | 704 | 1.1−  | 0.9+  | 2002 08 18 | 644 | 0.1−  | 0.2+  | 2005 03 08 | G96 | 0.4− | 0.1+ |
| 1998 11 11 | 704 | (0.8− | 3.4−) | 2002 08 29 | 644 | 0.3−  | 0.1−  | 2005 03 08 | G96 | 0.2+ | 0.3+ |
| 1998 11 11 | 704 | (0.5+ | 2.9−) | 2002 08 29 | 644 | 0.1−  | 0.3+  | 2005 03 08 | G96 | 1.4− | 0.5+ |
| 1998 11 15 | 699 | 0.8−  | 0.0   | 2002 08 29 | 644 | 0.1−  | 0.1+  | 2005 04 02 | G96 | 0.5+ | 0.2+ |
| 1998 11 15 | 699 | 0.8−  | 0.1+  | 2002 08 31 | 699 | 0.5−  | 0.5−  | 2005 04 02 | G96 | 0.7+ | 0.6− |
| 1998 11 15 | 699 | 0.9+  | 0.3−  | 2002 08 31 | 699 | (1.9− | 0.4−) | 2005 04 02 | G96 | 0.0  | 0.5− |
| 2002 07 15 | 644 | 0.3−  | 0.2−  | 2002 08 31 | 699 | 0.3−  | 0.9−  | 2005 04 02 | G96 | 0.4+ | 0.2− |
| 2002 07 15 | 644 | 0.0   | 0.1+  | 2002 08 31 | 699 | 0.2−  | 1.2−  | 2007 11 17 | 704 | 0.3− | 0.1− |
| 2002 07 15 | 644 | 0.5−  | 0.0   | 2002 09 05 | 704 | 0.5−  | 0.1+  | 2007 11 17 | 704 | 0.5− | 0.0  |
| 2002 08 13 | 704 | 0.8+  | 0.4+  | 2002 09 05 | 704 | 0.1−  | 0.3+  | 2007 11 17 | 704 | 0.2− | 0.5− |
| 2002 08 13 | 704 | 1.0+  | 0.2+  | 2002 09 05 | 704 | 0.4−  | 0.0   | 2007 11 20 | 704 | 0.7+ | 0.1+ |
| 2002 08 13 | 704 | 0.8+  | 0.1+  | 2002 09 29 | 608 | (2.1+ | 0.9+) | 2007 11 20 | 704 | 0.6− | 1.1− |
| 2002 08 13 | 704 | 0.8+  | 0.1−  | 2002 09 29 | 608 | (1.9+ | 0.6+) | 2007 11 20 | 704 | 0.5+ | 0.8− |
| 2002 08 13 | 704 | 1.3+  | 0.1−  | 2002 09 29 | 608 | (1.8+ | 0.0 ) | 2007 11 20 | 704 | 0.6+ | 0.2+ |
| 2002 08 15 | 644 | 0.3−  | 0.1−  | 2002 10 11 | 704 | 0.1−  | 0.9+  | 2007 12 16 | 704 | 0.3− | 0.0  |
| 2002 08 15 | 644 | 0.4−  | 0.3−  | 2002 10 11 | 704 | (0.0  | 1.8+) | 2007 12 16 | 704 | 0.2− | 0.3+ |
| 2002 08 15 | 644 | 0.2−  | 0.1−  | 2002 10 11 | 704 | 0.0   | 0.5+  | 2007 12 16 | 704 | 0.5+ | 0.2− |
| 2002 08 18 | 644 | 0.3−  | 0.1+  | 2002 10 11 | 704 | 0.2+  | 0.5−  | 2007 12 16 | 704 | 0.0  | 0.1− |

**(172187)\* 2002 PX<sub>112</sub> = 2002 PO<sub>112</sub>**

Discovered 2002 Aug. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (d, MPO 35319)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23234624 | <i>ω</i> | 86.03538  | +0.73191604 | −0.66335685 |          |   |
| <i>a</i> | 2.6204685  | <i>Ω</i> | 315.42843 | +0.50318457 | +0.68030700 |          |   |
| <i>e</i> | 0.2136812  | <i>i</i> | 12.82199  | +0.45946078 | +0.31167303 |          |   |
| <i>P</i> | 4.24       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 09 19 | 699 | 0.4−  | 0.1+  | 2002 09 06 | 704 | 0.3−  | 0.5+  | 2004 02 14 | 608 | 0.0   | 0.3−  |
| 1998 09 19 | 699 | 0.0   | 0.7−  | 2002 09 06 | 704 | 0.7−  | 0.2−  | 2004 02 14 | 608 | 0.7+  | 0.4−  |
| 1998 09 19 | 699 | 0.6+  | 1.6−  | 2002 09 06 | 704 | 0.0   | 0.0   | 2004 02 14 | 608 | 0.5+  | 0.1−  |
| 1998 10 29 | 699 | 0.4+  | 0.5+  | 2002 09 13 | 644 | 0.1+  | 0.4+  | 2004 02 17 | 704 | 0.9+  | 1.1+  |
| 1998 10 29 | 699 | 0.1+  | 0.6+  | 2002 09 13 | 644 | 0.1−  | 0.3+  | 2004 02 17 | 704 | 0.0   | 0.8+  |
| 1998 10 29 | 699 | 0.4+  | 0.0   | 2002 09 13 | 644 | 0.0   | 0.2+  | 2004 02 17 | 704 | 0.8+  | 1.4+  |
| 1998 11 21 | 699 | 0.9−  | 0.8−  | 2002 10 04 | 704 | 0.2−  | 0.1−  | 2004 02 17 | 704 | 0.1−  | 0.1+  |
| 1998 11 21 | 699 | 0.5+  | 0.9−  | 2002 10 04 | 704 | 0.1+  | 0.1−  | 2004 02 17 | 704 | 0.4+  | 0.5+  |
| 1998 11 21 | 699 | 0.2+  | 0.2+  | 2002 10 04 | 704 | 0.5−  | 0.9−  | 2004 03 01 | 691 | 0.2+  | 0.2+  |
| 2002 08 08 | 699 | 0.1−  | 0.3+  | 2003 12 21 | 645 | 0.1−  | 0.0   | 2004 03 01 | 691 | 0.3+  | 0.2+  |
| 2002 08 08 | 699 | 0.6−  | 0.5+  | 2003 12 21 | 645 | 0.1−  | 0.1−  | 2004 03 01 | 691 | 0.1−  | 0.3+  |
| 2002 08 08 | 699 | 0.3−  | 0.2+  | 2004 01 18 | 644 | 0.2+  | 0.5+  | 2004 03 19 | 644 | 0.1−  | 0.4+  |
| 2002 08 08 | 699 | 0.0   | 0.1+  | 2004 01 18 | 644 | 0.2+  | 0.0   | 2004 03 19 | 644 | 0.0   | 0.5+  |
| 2002 08 09 | 608 | 0.3−  | 1.0+  | 2004 01 18 | 644 | 0.3+  | 0.5+  | 2004 03 19 | 644 | 0.3+  | 0.5+  |
| 2002 08 09 | 608 | (0.4− | 1.5+) | 2004 01 24 | 704 | 0.6+  | 0.0   | 2006 08 18 | 644 | 0.2−  | 0.5+  |
| 2002 08 09 | 608 | 0.5−  | 0.9+  | 2004 01 24 | 704 | 0.4+  | 0.2+  | 2006 08 18 | 644 | 0.2−  | 0.6+  |
| 2002 08 12 | 704 | 0.8−  | 1.2+  | 2004 01 24 | 704 | 0.1−  | 0.8+  | 2006 08 18 | 644 | 0.5−  | 0.4+  |
| 2002 08 12 | 704 | 0.2−  | 1.2+  | 2004 01 24 | 704 | 1.2+  | 0.9+  | 2006 10 19 | G96 | 0.4−  | 0.5−  |
| 2002 08 12 | 704 | 0.4−  | 1.4+  | 2004 01 24 | 704 | 0.5+  | 0.8+  | 2006 10 19 | G96 | 0.1−  | 0.1+  |
| 2002 08 12 | 704 | 0.4−  | 0.7+  | 2004 01 26 | 699 | 0.9+  | 0.1−  | 2006 10 19 | G96 | 0.2+  | 0.0   |
| 2002 08 13 | 699 | 0.3−  | 0.6+  | 2004 01 26 | 699 | (1.5+ | 0.5+) | 2006 10 19 | G96 | 0.1−  | 0.5+  |
| 2002 08 13 | 699 | 0.4−  | 0.4+  | 2004 01 26 | 699 | (0.3− | 1.6+) | 2007 11 16 | 704 | 0.7−  | 0.2+  |
| 2002 08 13 | 699 | 0.0   | 0.5−  | 2004 01 26 | 699 | 0.3−  | 0.3+  | 2007 11 16 | 704 | 0.9−  | 0.6+  |
| 2002 08 13 | 699 | 0.9−  | 0.4+  | 2004 01 29 | 704 | 0.0   | 0.9+  | 2007 11 16 | 704 | 0.2−  | 0.7+  |
| 2002 08 16 | 644 | 0.4−  | 0.5+  | 2004 01 29 | 704 | 0.9+  | 0.6+  | 2007 11 16 | 704 | 1.1+  | 1.1+  |
| 2002 08 16 | 644 | 0.6−  | 0.3+  | 2004 01 29 | 704 | 0.8+  | 0.7+  | 2007 12 05 | 699 | (1.0− | 2.2+) |
| 2002 08 16 | 644 | 0.5−  | 0.6+  | 2004 01 29 | 704 | 0.4+  | 1.0+  | 2007 12 05 | 699 | 1.1+  | 1.0+  |
| 2002 08 19 | 644 | 0.2−  | 0.4+  | 2004 01 29 | 704 | 0.9+  | 0.9+  | 2007 12 05 | 699 | 0.4+  | 0.2−  |
| 2002 08 19 | 644 | 0.2−  | 0.4+  | 2004 02 12 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 699 | 0.4−  | 0.8−  |
| 2002 08 19 | 644 | 0.1+  | 0.6+  | 2004 02 12 | 691 | 0.4+  | 0.3+  | 2007 12 16 | 704 | 0.1+  | 0.7−  |
| 2002 08 27 | 644 | 0.2−  | 1.3+  | 2004 02 12 | 333 | 0.2−  | 0.3−  | 2007 12 16 | 704 | 0.6−  | 0.1−  |
| 2002 08 27 | 644 | 0.2−  | 1.3+  | 2004 02 12 | 333 | 0.2−  | 0.1+  | 2007 12 16 | 704 | 0.4−  | 0.8−  |
| 2002 08 27 | 644 | 0.3−  | 1.3+  | 2004 02 12 | 333 | 0.9−  | 0.3+  | 2007 12 16 | 704 | 0.3−  | 0.0   |
| 2002 09 06 | 704 | 0.2−  | 0.4+  | 2004 02 12 | 691 | 0.2+  | 0.4+  | 2007 12 16 | 704 | 0.1−  | 0.2−  |

**(172188)\* 2002 PD<sub>117</sub>**

Discovered 2002 Aug. 14 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21262161 | <i>ω</i> | 7.89626   | +0.73969600 | +0.66746085 |          |   |
| <i>a</i> | 2.7801258  | <i>Ω</i> | 309.86545 | −0.62335307 | +0.63162357 |          |   |
| <i>e</i> | 0.2210148  | <i>i</i> | 6.41124   | −0.25353655 | +0.39439534 |          |   |
| <i>P</i> | 4.64       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 01 27 | 691 | 0.1+  | 0.2−  | 2002 09 10 | 608 | 0.8− | 1.2− | 2007 10 18 | 699 | 0.8+  | 0.7+  |
| 2000 01 27 | 691 | 0.1+  | 0.2−  | 2002 09 17 | 608 | 0.7− | 0.2+ | 2007 10 21 | 703 | 0.6+  | 0.2+  |
| 2000 01 27 | 691 | 0.2+  | 0.2+  | 2002 09 17 | 608 | 0.7− | 0.5+ | 2007 10 21 | 703 | 0.6+  | 0.1−  |
| 2001 04 26 | 699 | 0.5−  | 0.1+  | 2002 09 17 | 608 | 0.8− | 0.2+ | 2007 10 21 | 703 | 0.2+  | 0.9+  |
| 2001 04 26 | 699 | 0.5−  | 0.2−  | 2002 10 04 | 704 | 0.3− | 0.4+ | 2007 10 21 | 703 | 0.2+  | 0.6+  |
| 2001 04 26 | 699 | 0.3+  | 0.1+  | 2002 10 04 | 704 | 0.1− | 0.6+ | 2007 10 24 | 704 | 0.0   | 1.1−  |
| 2001 04 26 | 699 | 0.6+  | 0.5+  | 2002 10 04 | 704 | 0.1+ | 0.5+ | 2007 10 24 | 704 | 0.9−  | 1.3+  |
| 2002 07 14 | 704 | (1.7+ | 0.3−) | 2002 10 04 | 699 | 0.5+ | 0.0  | 2007 10 24 | 704 | (0.9− | 1.5+) |
| 2002 07 14 | 704 | 0.1+  | 0.1−  | 2002 10 04 | 704 | 0.0  | 0.7+ | 2007 11 02 | 704 | 0.6+  | 0.1−  |
| 2002 07 14 | 704 | 0.3+  | 0.2−  | 2002 10 04 | 699 | 0.5− | 0.3− | 2007 11 02 | 704 | 0.0   | 0.6−  |
| 2002 07 14 | 704 | 0.8−  | 0.1+  | 2002 10 04 | 704 | 0.1− | 0.5− | 2007 11 02 | 704 | 0.4+  | 0.7+  |
| 2002 07 14 | 704 | 0.0   | 0.6−  | 2002 10 04 | 699 | 1.2+ | 0.0  | 2007 11 02 | 704 | 0.6+  | 0.8−  |
| 2002 08 09 | 608 | 0.1−  | 0.3−  | 2002 10 04 | 699 | 0.7+ | 0.7+ | 2007 11 02 | 704 | 0.6+  | 0.8+  |
| 2002 08 09 | 608 | 0.6−  | 0.0   | 2002 10 05 | 644 | 0.1− | 0.1+ | 2007 11 02 | 703 | 0.8+  | 0.4+  |
| 2002 08 09 | 608 | 0.7−  | 0.2+  | 2002 10 05 | 644 | 0.3+ | 0.1+ | 2007 11 02 | 703 | 0.5−  | 0.5+  |
| 2002 08 11 | 704 | 0.8−  | 0.1+  | 2002 10 05 | 644 | 0.2+ | 0.1+ | 2007 11 02 | 703 | 0.3−  | 0.4+  |
| 2002 08 11 | 704 | 1.0−  | 0.0   | 2002 10 06 | 644 | 0.2+ | 0.0  | 2007 11 02 | 703 | 0.2−  | 0.8+  |
| 2002 08 11 | 704 | 0.5−  | 0.1−  | 2002 10 06 | 644 | 0.3+ | 0.1+ | 2007 11 08 | 704 | 0.2+  | 0.1+  |
| 2002 08 11 | 704 | 1.2−  | 0.1+  | 2002 10 06 | 644 | 0.4+ | 0.1+ | 2007 11 08 | 704 | 0.9+  | 0.2+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 11 | 704 | 0.9+  | 0.2-  | 2002 11 08 | 704 | 1.1-  | 0.1-  | 2007 11 08 | 704 | 0.5+ | 1.0+ |
| 2002 08 11 | 704 | 0.2+  | 0.5-  | 2002 11 08 | 704 | 0.4-  | 0.2+  | 2007 11 08 | 704 | 0.0  | 0.2+ |
| 2002 08 11 | 704 | 1.0+  | 0.5-  | 2002 11 08 | 704 | 0.9+  | 0.5-  | 2007 11 08 | 704 | 0.0  | 0.8+ |
| 2002 08 11 | 704 | 0.8+  | 0.9+  | 2002 11 08 | 704 | 0.0   | 1.2+  | 2007 11 08 | 703 | 0.0  | 0.0  |
| 2002 08 11 | 704 | 0.4+  | 0.2-  | 2002 11 12 | 291 | 0.3+  | 0.5-  | 2007 11 08 | 703 | 0.8- | 0.3+ |
| 2002 08 14 | 699 | 0.1+  | 0.6+  | 2002 11 12 | 291 | 0.5+  | 0.5-  | 2007 11 08 | 703 | 0.0  | 0.3+ |
| 2002 08 14 | 699 | 0.3-  | 0.4+  | 2002 11 12 | 291 | 0.3+  | 0.8-  | 2007 11 08 | 703 | 0.4- | 0.1- |
| 2002 08 14 | 699 | 0.4+  | 0.5+  | 2002 12 11 | 704 | 0.7-  | 1.2-  | 2007 11 15 | 699 | 0.1- | 0.3- |
| 2002 08 14 | 699 | 0.2-  | 0.7+  | 2002 12 11 | 704 | 0.9-  | 0.5+  | 2007 11 15 | 699 | 0.5+ | 0.1- |
| 2002 08 16 | 704 | 0.2-  | 0.5+  | 2002 12 11 | 704 | 0.6-  | 0.3-  | 2007 11 15 | 699 | 0.5- | 0.4+ |
| 2002 08 16 | 704 | 0.8-  | 0.2+  | 2002 12 11 | 704 | 0.1-  | 0.4+  | 2007 11 15 | 699 | 0.9+ | 0.1- |
| 2002 08 16 | 704 | 0.1+  | 0.1+  | 2005 03 10 | 703 | 1.0-  | 0.9+  | 2007 11 16 | G96 | 0.1+ | 0.0  |
| 2002 08 16 | 704 | 0.7-  | 0.2+  | 2005 03 10 | 703 | 0.6-  | 0.5+  | 2007 11 16 | G96 | 0.0  | 0.2- |
| 2002 08 16 | 704 | 0.2+  | 0.7+  | 2005 03 10 | 703 | (1.8- | 0.8+) | 2007 11 16 | G96 | 0.2+ | 0.1- |
| 2002 08 16 | 704 | 0.2+  | 0.5+  | 2005 03 10 | 703 | 0.5+  | 0.2+  | 2007 11 17 | G96 | 0.1+ | 0.2- |
| 2002 08 16 | 704 | (1.5- | 1.4+) | 2006 06 22 | 644 | 0.1+  | 0.2+  | 2007 11 17 | 704 | 0.5- | 0.9+ |
| 2002 08 16 | 704 | 0.3-  | 0.4-  | 2006 06 22 | 644 | 0.5+  | 0.5+  | 2007 11 17 | G96 | 0.0  | 0.3- |
| 2002 08 16 | 704 | 0.5-  | 0.5+  | 2006 06 22 | 644 | 0.1+  | 0.4+  | 2007 11 17 | G96 | 0.1- | 0.3- |
| 2002 08 16 | 704 | 0.0   | 0.2-  | 2006 06 27 | E12 | 0.0   | 0.0   | 2007 11 17 | 704 | 0.7+ | 1.4+ |
| 2002 08 28 | 644 | 0.2+  | 0.1-  | 2006 06 27 | E12 | 0.4-  | 0.6+  | 2007 11 17 | G96 | 0.4+ | 0.4- |
| 2002 08 28 | 644 | 0.4+  | 0.0   | 2006 06 27 | E12 | 0.5+  | 0.2+  | 2007 11 17 | 704 | 0.7- | 0.6- |
| 2002 08 28 | 644 | 0.3+  | 0.1+  | 2006 06 27 | E12 | 0.3+  | 0.1+  | 2007 11 17 | 704 | 0.7+ | 0.0  |
| 2002 09 05 | 699 | 0.9+  | 0.0   | 2007 10 10 | 699 | 0.8+  | 0.4+  | 2007 11 18 | G96 | 0.6+ | 0.4- |
| 2002 09 05 | 699 | 0.6+  | 0.1-  | 2007 10 10 | 699 | 0.2+  | 0.3-  | 2007 11 18 | G96 | 0.4- | 0.5- |
| 2002 09 05 | 699 | 1.4+  | 0.2+  | 2007 10 10 | 699 | 0.4+  | 0.1+  | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 2002 09 05 | 699 | 0.8+  | 0.2-  | 2007 10 10 | 699 | 0.5-  | 1.3+  | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2002 09 06 | 704 | 0.4-  | 0.5+  | 2007 10 16 | 703 | 0.7-  | 0.6-  | 2007 11 19 | 291 | 0.4- | 0.1- |
| 2002 09 06 | 704 | 0.1+  | 0.4+  | 2007 10 16 | 703 | 0.8+  | 0.2+  | 2007 11 19 | 291 | 0.4- | 0.0  |
| 2002 09 06 | 704 | 0.2-  | 0.3-  | 2007 10 16 | 703 | 0.6-  | 0.2+  | 2007 11 19 | 291 | 0.4- | 0.0  |
| 2002 09 06 | 704 | 0.0   | 0.2-  | 2007 10 16 | 703 | 0.3+  | 0.8+  | 2007 12 02 | 704 | 0.1- | 0.5- |
| 2002 09 06 | 704 | 0.4+  | 0.3+  | 2007 10 18 | 699 | 0.7-  | 0.6-  | 2007 12 02 | 704 | 0.0  | 0.6- |
| 2002 09 10 | 608 | 0.3-  | 0.7-  | 2007 10 18 | 699 | 1.0-  | 0.4-  | 2007 12 02 | 704 | 1.0- | 0.1- |
| 2002 09 10 | 608 | 0.8-  | 1.2-  | 2007 10 18 | 699 | 1.2-  | 0.2+  | 2007 12 02 | 704 | 0.4+ | 0.2+ |

**(172189)\* 2002 PA<sub>122</sub> = 1998 QZ<sub>36</sub>**

Discovered 2002 Aug. 13 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 37781)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 136.54449  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.24292916 | $\omega$ | 10.71678  | +0.25611854  | +0.96147005  |
| $a$ | 2.5437999  | $\Omega$ | 274.17838 | -0.89412378  | +0.19636333  |
| $e$ | 0.1437531  | $i$      | 5.74834   | -0.36734991  | +0.19239744  |
| $P$ | 4.06       | $H$      | 16.4      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 04 10 | 691 | 0.1+  | 0.7+  | 2002 08 17 | 608 | 0.1- | 0.3- | 2006 07 21 | 703 | 0.5-  | 0.1+  |
| 1997 04 10 | 691 | 0.3-  | 0.5+  | 2002 08 17 | 608 | 0.2- | 0.2- | 2006 07 21 | 703 | 0.2-  | 0.8+  |
| 1997 04 10 | 691 | 0.8+  | 0.2+  | 2002 08 26 | 644 | 0.1- | 1.2+ | 2006 07 21 | 703 | 0.1+  | 0.1+  |
| 1998 08 17 | 704 | 1.7+  | 1.4+  | 2002 08 26 | 644 | 0.1- | 1.2+ | 2006 08 21 | 644 | 0.0   | 0.2+  |
| 1998 08 17 | 704 | 0.1+  | 0.4-  | 2002 08 26 | 644 | 0.3+ | 1.1+ | 2006 08 21 | 644 | 0.1+  | 0.4+  |
| 1998 08 17 | 704 | (3.1+ | 1.0+) | 2002 09 05 | 699 | 0.9- | 0.2+ | 2006 08 21 | 644 | 0.0   | 0.1+  |
| 1998 08 17 | 704 | 2.0+  | 0.8+  | 2002 09 05 | 699 | 0.5- | 1.1- | 2006 08 24 | 608 | (0.5+ | 2.5-) |
| 1998 09 19 | 645 | 0.1-  | 0.3-  | 2002 09 05 | 699 | 0.5- | 0.1+ | 2006 08 24 | 608 | (0.2+ | 2.2-) |
| 1998 09 19 | 645 | 0.1-  | 0.3-  | 2002 09 05 | 699 | 0.4+ | 1.4- | 2006 08 24 | 608 | (0.0  | 2.1-) |
| 2000 01 13 | 691 | 0.4+  | 0.2-  | 2002 09 06 | 704 | 0.0  | 0.6+ | 2006 08 28 | 699 | (1.7+ | 0.1-) |
| 2000 01 13 | 691 | 0.4+  | 0.3-  | 2002 09 06 | 704 | 0.4+ | 0.7+ | 2006 08 28 | 699 | 0.4+  | 0.5+  |
| 2000 01 13 | 691 | 0.2+  | 0.2-  | 2002 09 06 | 704 | 0.8+ | 0.5+ | 2006 08 28 | 699 | 0.4-  | 0.3+  |
| 2002 08 12 | 704 | 0.4-  | 1.2+  | 2002 09 06 | 704 | 0.8+ | 0.5+ | 2006 08 28 | 699 | 0.7-  | 0.3+  |
| 2002 08 12 | 704 | 0.0   | 0.8+  | 2002 09 06 | 704 | 0.3+ | 0.4+ | 2007 11 18 | 691 | 0.3-  | 0.1+  |
| 2002 08 12 | 704 | 0.5-  | 1.0+  | 2002 09 13 | 644 | 0.4- | 0.3+ | 2007 11 18 | 691 | 0.4-  | 0.1+  |
| 2002 08 12 | 704 | 0.8-  | 0.9+  | 2002 09 13 | 644 | 0.3- | 0.2+ | 2007 11 18 | 691 | 0.5-  | 0.4+  |
| 2002 08 12 | 704 | 0.7-  | 0.3+  | 2002 09 13 | 644 | 0.0  | 0.1+ | 2007 12 05 | 691 | 0.2-  | 0.0   |
| 2002 08 13 | 699 | 0.5+  | 0.4+  | 2004 01 13 | 691 | 0.1- | 0.1- | 2007 12 05 | 691 | 0.0   | 0.0   |
| 2002 08 13 | 699 | 0.9+  | 0.4+  | 2004 01 13 | 691 | 0.2- | 0.4+ | 2007 12 05 | 691 | 0.6+  | 0.1+  |
| 2002 08 13 | 699 | (1.6+ | 2.2+) | 2004 01 13 | 691 | 0.2+ | 0.3+ | 2007 12 06 | 691 | 0.0   | 0.4+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 13 | 699 | 0.4- | 0.5+ | 2005 03 13 | 703 | 0.3-  | 0.3-  | 2007 12 06 | 691 | 0.0  | 0.5+ |
| 2002 08 16 | 644 | 0.0  | 0.5+ | 2005 03 13 | 703 | (0.5- | 1.6+) | 2007 12 06 | 691 | 0.4- | 0.2+ |
| 2002 08 16 | 644 | 0.1+ | 0.3+ | 2005 03 13 | 703 | 0.6-  | 0.1+  | 2007 12 06 | 691 | 0.1+ | 0.6+ |
| 2002 08 16 | 644 | 0.3- | 0.2+ | 2005 03 13 | 703 | 0.0   | 0.5+  | 2007 12 06 | 691 | 0.1+ | 0.0  |
| 2002 08 17 | 608 | 0.3+ | 0.2+ | 2006 07 21 | 703 | 0.3+  | 1.2+  | 2007 12 06 | 691 | 0.3+ | 0.3- |

**(172190)\* 2002 PQ<sub>126</sub>**

Discovered 2002 Aug. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 37.72637   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23379936 | $\omega$ | 274.25178 | +0.90440518 | -0.40483879 |
| $a$ | 2.6095993  | $\Omega$ | 109.67427 | +0.42568694 | +0.83465798 |
| $e$ | 0.1310555  | $i$      | 8.22734   | +0.02901544 | +0.37343219 |
| $P$ | 4.22       | $H$      | 15.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 22 | 699 | 0.2+ | 0.8+ | 2003 12 19 | 704 | 0.0  | 0.1+ | 2004 01 31 | 691 | 0.2+  | 0.2+  |
| 1998 09 22 | 699 | 0.5- | 0.4+ | 2003 12 19 | 704 | 0.2- | 0.2- | 2004 02 15 | 704 | 0.1-  | 0.9-  |
| 1998 09 22 | 699 | 0.6+ | 0.9+ | 2003 12 19 | 704 | 0.1+ | 0.3- | 2004 02 15 | 704 | 0.3+  | 0.4+  |
| 2002 08 14 | 704 | 1.4+ | 0.5- | 2003 12 21 | 645 | 0.0  | 0.2- | 2004 02 15 | 704 | 0.1-  | 0.1+  |
| 2002 08 14 | 704 | 0.8- | 0.8- | 2003 12 21 | 645 | 0.0  | 0.2- | 2006 07 17 | H06 | 0.2-  | 0.5+  |
| 2002 08 14 | 704 | 0.3- | 1.0- | 2004 01 13 | 699 | 0.4- | 0.1- | 2006 07 17 | H06 | (1.2+ | 1.8+) |
| 2002 08 14 | 704 | 0.1- | 0.7- | 2004 01 13 | 699 | 0.6- | 0.5- | 2006 07 17 | H06 | 0.3+  | 0.4+  |
| 2002 08 14 | 704 | 0.0  | 0.3+ | 2004 01 13 | 699 | 0.6+ | 0.2- | 2006 07 20 | 644 | 0.3+  | 0.4+  |
| 2002 08 16 | 608 | 0.6+ | 0.7- | 2004 01 13 | 691 | 0.0  | 0.1+ | 2006 07 20 | 644 | 0.1+  | 0.1+  |
| 2002 08 16 | 608 | 1.1+ | 0.2- | 2004 01 13 | 699 | 0.7- | 0.7+ | 2006 07 20 | 644 | 0.2+  | 0.4+  |
| 2002 08 16 | 608 | 0.2+ | 0.5- | 2004 01 13 | 691 | 0.1+ | 0.2+ | 2006 08 14 | 644 | 0.1+  | 0.5+  |
| 2002 08 19 | 644 | 0.1- | 0.2- | 2004 01 13 | 691 | 0.0  | 0.2+ | 2006 08 14 | 644 | 0.0   | 0.6+  |
| 2002 08 19 | 644 | 0.3- | 0.2- | 2004 01 21 | 704 | 0.6+ | 0.1- | 2006 08 14 | 644 | 0.1+  | 0.4+  |
| 2002 08 19 | 644 | 0.3- | 0.0  | 2004 01 21 | 704 | 0.8+ | 0.3+ | 2007 11 12 | 704 | 0.6-  | 0.9-  |
| 2002 08 19 | 644 | 0.6- | 0.1+ | 2004 01 21 | 704 | 0.6+ | 0.0  | 2007 11 12 | 704 | 0.2-  | 0.2+  |
| 2002 08 19 | 644 | 0.3- | 0.1+ | 2004 01 21 | 704 | 0.4- | 0.4- | 2007 11 12 | 704 | 0.3-  | 0.1-  |
| 2002 08 19 | 644 | 0.5- | 0.1- | 2004 01 21 | 704 | 0.3- | 0.4- | 2007 12 04 | 704 | 0.0   | 1.3+  |
| 2002 09 05 | 608 | 0.2- | 0.4- | 2004 01 30 | 704 | 0.2- | 0.4+ | 2007 12 04 | 704 | 0.1-  | 0.2+  |
| 2002 09 05 | 608 | 0.3- | 0.7- | 2004 01 30 | 704 | 0.6- | 1.0+ | 2007 12 04 | 704 | 0.2-  | 0.9+  |
| 2002 09 05 | 608 | 0.1+ | 0.4- | 2004 01 30 | 704 | 0.9- | 0.5+ | 2007 12 04 | 704 | 1.1+  | 0.8+  |
| 2003 12 19 | 704 | 0.5- | 1.0- | 2004 01 31 | 691 | 0.0  | 0.1+ | 2007 12 04 | 704 | 0.1-  | 1.5+  |
| 2003 12 19 | 704 | 0.1- | 0.5+ | 2004 01 31 | 691 | 0.1+ | 0.0  |            |     |       |       |

**(172191)\* 2002 PH<sub>152</sub> = 2003 YU<sub>161</sub>**

Discovered 2002 Aug. 10 by M. W. Buie at Cerro Tololo.

Id. A. Doppler (*MPO* 69384)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 12.76617   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23018117 | $\omega$ | 72.34008  | +0.80190739 | -0.58620006 |
| $a$ | 2.6368749  | $\Omega$ | 323.30681 | +0.44831013 | +0.71806482 |
| $e$ | 0.0563400  | $i$      | 11.13408  | +0.39492095 | +0.37516984 |
| $P$ | 4.28       | $H$      | 15.7      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 18 | 699 | 0.8+ | 0.4+ | 2003 12 17 | 704 | 0.1+ | 0.6- | 2005 04 14 | 703 | 0.9- | 0.9+ |
| 1998 09 18 | 699 | 1.3- | 0.0  | 2003 12 17 | 704 | 0.1+ | 0.2- | 2005 04 14 | 703 | 0.4- | 0.3+ |
| 1998 09 18 | 699 | 0.2- | 0.0  | 2003 12 17 | 704 | 0.6+ | 0.5+ | 2005 05 01 | 644 | 0.2+ | 0.6+ |
| 2002 08 10 | 807 | 0.6- | 0.1+ | 2003 12 28 | 704 | 0.1+ | 0.6+ | 2005 05 01 | 644 | 0.4+ | 0.1+ |
| 2002 08 10 | 807 | 0.1- | 0.3+ | 2003 12 28 | 704 | 0.4+ | 0.9+ | 2005 05 01 | 644 | 0.5+ | 0.3+ |
| 2002 08 12 | 699 | 0.3- | 1.0+ | 2003 12 28 | 704 | 0.5+ | 0.1+ | 2007 11 08 | 703 | 0.1+ | 0.5- |
| 2002 08 12 | 699 | 0.3- | 0.3+ | 2003 12 28 | 704 | 0.8- | 0.3+ | 2007 11 08 | 703 | 0.6- | 0.2- |
| 2002 08 12 | 699 | 0.1+ | 0.1+ | 2005 03 13 | 691 | 0.2+ | 0.2+ | 2007 11 08 | 703 | 0.4- | 0.3- |
| 2002 08 12 | 699 | 0.7+ | 0.0  | 2005 03 13 | 691 | 0.1+ | 0.1+ | 2007 11 08 | 703 | 0.2- | 0.0  |
| 2002 08 17 | 644 | 0.0  | 0.8+ | 2005 03 13 | 691 | 0.0  | 0.1+ | 2007 12 03 | 704 | 0.3+ | 1.0+ |
| 2002 08 17 | 644 | 0.1- | 0.3+ | 2005 03 18 | 599 | 0.4+ | 0.3+ | 2007 12 03 | 704 | 0.4+ | 0.8+ |
| 2002 08 17 | 644 | 0.1- | 0.4+ | 2005 03 18 | 599 | 0.1- | 0.2+ | 2007 12 03 | 704 | 0.3+ | 0.4- |
| 2002 08 27 | 644 | 0.3- | 0.2+ | 2005 03 18 | 599 | 0.9+ | 0.2+ | 2007 12 03 | 704 | 0.1+ | 0.3+ |
| 2002 08 27 | 644 | 0.1- | 0.3+ | 2005 03 18 | 599 | 0.9+ | 0.1- | 2007 12 03 | 704 | 0.6- | 0.6+ |

2007 DEC. 24

M.P.O. 129293

2002 08 27 644 0.5− 0.0 2005 04 14 703 0.2+ 0.2+  
 2003 12 17 704 0.5− 0.6+ 2005 04 14 703 0.9− 0.2−

(172192)\* 2002 PB<sub>156</sub> = 1994 PE<sub>6</sub>

Discovered 2002 Aug. 8 by S. F. Hoenig on NEAT images taken at Palomar.

Id. A. Doppler (*MPO* 47206)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.01208   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24148775 | $\omega$ | 110.90974 | +0.29479664   | −0.94746469 |
| <i>a</i> | 2.5539123  | $\Omega$ | 321.24742 | +0.78640068   | +0.31434333 |
| <i>e</i> | 0.2542936  | <i>i</i> | 11.43679  | +0.54283415   | +0.05915177 |
| <i>P</i> | 4.08       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 08 10 | 809 | 0.4−  | 0.2−  | 2004 01 22 | 704 | 0.6+ | 0.2+ | 2004 02 13 | 333 | 0.4−  | 0.1+  |
| 1994 08 10 | 809 | (2.4− | 0.5+) | 2004 01 22 | 704 | 0.2+ | 0.1− | 2004 02 13 | 333 | 0.2−  | 0.2+  |
| 1994 08 10 | 809 | (3.0− | 1.0−) | 2004 01 22 | 704 | 0.5+ | 0.0  | 2004 02 13 | 333 | 0.5−  | 0.5+  |
| 1994 08 11 | 809 | 0.3−  | 0.9+  | 2004 01 22 | 704 | 0.2+ | 0.1+ | 2004 02 17 | 704 | 0.7−  | 0.4+  |
| 1994 08 11 | 809 | 0.7−  | 1.3+  | 2004 01 22 | 704 | 0.5+ | 0.4+ | 2004 02 17 | 704 | 1.0−  | 0.1+  |
| 1994 08 11 | 809 | (0.3− | 2.5+) | 2004 01 29 | 704 | 0.2− | 0.5+ | 2004 02 17 | 704 | 0.4−  | 0.2−  |
| 2002 08 08 | 644 | 0.4−  | 1.3+  | 2004 01 29 | 704 | 0.9+ | 0.4+ | 2004 02 17 | 704 | 0.8−  | 0.6+  |
| 2002 08 08 | 644 | 0.3−  | 1.0+  | 2004 01 29 | 704 | 0.5+ | 1.1+ | 2004 02 17 | 704 | 0.6−  | 0.6+  |
| 2002 08 08 | 644 | 0.2−  | 0.8+  | 2004 01 29 | 704 | 1.0+ | 0.1+ | 2004 02 19 | 704 | 0.2+  | 0.2+  |
| 2002 08 17 | 644 | 0.2+  | 0.9+  | 2004 01 29 | 704 | 0.4+ | 0.1− | 2004 02 19 | 704 | 0.5+  | 0.1−  |
| 2002 08 17 | 644 | 0.1−  | 0.3+  | 2004 01 30 | 691 | 0.1− | 0.2+ | 2004 02 19 | 704 | 0.7+  | 0.2+  |
| 2002 08 17 | 644 | 0.6−  | 0.5+  | 2004 01 30 | 691 | 0.0  | 0.2+ | 2004 02 19 | 704 | 0.2+  | 0.0   |
| 2002 08 18 | 644 | 0.9−  | 0.5+  | 2004 01 30 | 691 | 0.0  | 0.2+ | 2004 02 19 | 704 | 0.0   | 0.1+  |
| 2002 08 18 | 644 | 0.4−  | 0.4+  | 2004 02 04 | 608 | 0.2+ | 0.6− | 2004 03 18 | 704 | 0.2+  | 0.0   |
| 2002 08 18 | 644 | 0.3−  | 0.8+  | 2004 02 04 | 608 | 0.1− | 0.0  | 2004 03 18 | 704 | 0.9+  | 0.3−  |
| 2002 08 27 | 644 | 0.6−  | 0.3+  | 2004 02 04 | 608 | 0.6− | 0.1− | 2004 03 18 | 704 | 0.4+  | 0.1−  |
| 2002 08 27 | 644 | 0.4−  | 0.5+  | 2004 02 11 | 699 | 0.3− | 0.4+ | 2007 11 08 | 704 | 0.4+  | 0.7+  |
| 2002 08 27 | 644 | 0.0   | 0.4+  | 2004 02 11 | 644 | 0.1+ | 0.2+ | 2007 11 08 | 704 | 0.9+  | 0.7+  |
| 2003 12 22 | 704 | 0.7+  | 0.9+  | 2004 02 11 | 699 | 0.7− | 0.3+ | 2007 11 08 | 704 | 0.4+  | 0.7−  |
| 2003 12 22 | 704 | 0.3+  | 1.0+  | 2004 02 11 | 699 | 0.6− | 0.1+ | 2007 11 08 | 704 | 0.7+  | 0.4+  |
| 2003 12 22 | 704 | 0.2−  | 0.5+  | 2004 02 11 | 644 | 0.2+ | 0.3+ | 2007 11 08 | 704 | (2.5+ | 0.5+) |
| 2003 12 22 | 704 | 0.0   | 0.6+  | 2004 02 11 | 699 | 0.1+ | 0.4− | 2007 11 17 | 704 | 0.6+  | 0.6+  |
| 2003 12 25 | 645 | 0.0   | 0.1−  | 2004 02 11 | 644 | 0.2+ | 0.2+ | 2007 11 17 | 704 | 0.8+  | 0.4+  |
| 2003 12 25 | 645 | 0.0   | 0.0   | 2004 02 12 | 333 | 0.6− | 0.3− | 2007 11 17 | 704 | 0.5+  | 0.1+  |
| 2003 12 27 | 704 | (1.7+ | 0.0 ) | 2004 02 12 | 333 | 1.0− | 0.2+ | 2007 11 17 | 704 | 0.1−  | 0.2+  |
| 2003 12 27 | 704 | 0.2−  | 0.6+  | 2004 02 12 | 333 | 0.1− | 0.3+ | 2007 12 15 | 291 | 0.6−  | 0.2−  |
| 2003 12 27 | 704 | 0.0   | 1.1−  | 2004 02 13 | 691 | 0.3+ | 0.1+ | 2007 12 15 | 291 | 0.6−  | 0.0   |
| 2003 12 27 | 704 | 0.4+  | 0.6+  | 2004 02 13 | 691 | 0.3+ | 0.0  | 2007 12 15 | 291 | 0.5−  | 0.2−  |
| 2004 01 05 | 699 | 0.4−  | 0.1+  | 2004 02 13 | 691 | 0.3+ | 0.1+ | 2007 12 16 | 699 | 0.9+  | 0.3−  |
| 2004 01 05 | 699 | 0.8+  | 1.3+  | 2004 02 13 | 333 | 0.1+ | 0.1− | 2007 12 16 | 699 | 0.1+  | 0.6−  |
| 2004 01 05 | 699 | 0.2+  | 0.9−  | 2004 02 13 | 333 | 0.7+ | 0.6− | 2007 12 16 | 699 | 0.4−  | 0.2−  |
| 2004 01 05 | 699 | 0.3−  | 0.5+  | 2004 02 13 | 333 | 1.0+ | 0.4+ | 2007 12 16 | 699 | 1.5+  | 0.9−  |

(172193)\* 2002 PA<sub>160</sub>

Discovered 2002 Aug. 8 by S. F. Hoenig on NEAT images taken at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 102.09195  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24659315 | $\omega$ | 294.92597 | +0.83785528   | +0.54544796 |
| <i>a</i> | 2.5185392  | $\Omega$ | 32.03192  | −0.48467487   | +0.76185398 |
| <i>e</i> | 0.1362121  | <i>i</i> | 2.37981   | −0.25117483   | +0.34937807 |
| <i>P</i> | 4.00       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 03 14 | 691 | 1.2+ | 0.7− | 2002 08 15 | 644 | 0.1− | 0.2− | 2005 04 04 | G96 | 0.3+ | 0.1+ |
| 1997 03 14 | 691 | 0.4+ | 0.7− | 2002 08 15 | 644 | 0.4− | 0.3− | 2005 04 04 | G96 | 0.0  | 0.0  |
| 1997 03 14 | 691 | 0.3+ | 0.6− | 2002 08 18 | 644 | 0.2− | 0.6− | 2006 08 12 | 644 | 0.1− | 0.0  |
| 1997 04 09 | 691 | 0.5− | 0.1− | 2002 08 18 | 644 | 0.1+ | 0.3− | 2006 08 12 | 644 | 0.3+ | 0.1+ |
| 1997 04 09 | 691 | 0.4− | 0.4− | 2002 08 18 | 644 | 0.4− | 0.3− | 2006 08 12 | 644 | 0.3+ | 0.0  |
| 1997 04 09 | 691 | 0.2− | 0.1+ | 2002 08 29 | 644 | 0.0  | 0.1+ | 2006 08 28 | 703 | 0.1+ | 0.1+ |
| 2001 03 21 | 691 | 0.0  | 0.8+ | 2002 08 29 | 644 | 0.4− | 0.7− | 2006 08 28 | 703 | 0.3+ | 0.8+ |
| 2001 03 21 | 691 | 0.6− | 0.6+ | 2002 08 29 | 644 | 0.0  | 0.0  | 2006 08 28 | 703 | 1.1+ | 1.5+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 21 | 691 | 0.4− | 0.7+ | 2002 09 15 | 644 | 1.1− | 1.0− | 2006 08 28 | 703 | 0.6+ | 1.0+ |
| 2002 07 14 | 644 | 0.1− | 0.1− | 2002 09 15 | 644 | 0.1− | 0.4− | 2007 12 04 | G96 | 0.3+ | 0.4+ |
| 2002 07 23 | 644 | 0.5+ | 0.6+ | 2005 03 10 | G96 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.6+ | 0.1− |
| 2002 07 23 | 644 | 0.1+ | 0.3+ | 2005 03 10 | G96 | 0.0  | 0.4+ | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2002 07 23 | 644 | 0.8− | 0.2+ | 2005 03 10 | G96 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.4− | 0.0  |
| 2002 08 08 | 644 | 0.4+ | 0.2− | 2005 03 10 | G96 | 0.2− | 0.2+ | 2007 12 05 | 691 | 0.1+ | 0.1− |
| 2002 08 08 | 644 | 0.1− | 0.1− | 2005 04 04 | G96 | 0.2+ | 0.1+ | 2007 12 05 | 691 | 0.1− | 0.1− |
| 2002 08 08 | 644 | 0.0  | 0.1− | 2005 04 04 | G96 | 0.1+ | 0.0  | 2007 12 05 | 691 | 0.2− | 0.1+ |

(172194)\* 2002 PD<sub>162</sub> = 2000 CF<sub>137</sub>

Discovered 2002 Aug. 8 by S. F. Hoenig on NEAT images taken at Palomar.

Id. K. E. Smalley (*MPO* 47212), T. B. Spahr (*ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.87776   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22947429 | $\omega$ | 48.81689  | +0.96716185   | −0.25319301 |
| <i>a</i> | 2.6422872  | $\Omega$ | 325.83258 | +0.21977581   | +0.87692941 |
| <i>e</i> | 0.1540414  | <i>i</i> | 2.26179   | +0.12765795   | +0.40851941 |
| <i>P</i> | 4.30       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 04 | 691 | 0.4+ | 0.6+ | 2002 08 08 | 644 | 0.4− | 0.6+ | 2005 03 11 | G96 | 0.1+ | 0.2+ |
| 2000 02 04 | 691 | 0.3+ | 0.5+ | 2002 08 17 | 644 | 0.2− | 0.0  | 2005 03 11 | G96 | 0.1− | 0.3− |
| 2000 02 04 | 691 | 0.0  | 0.7+ | 2002 08 17 | 644 | 0.3− | 0.1+ | 2005 03 11 | G96 | 0.2+ | 0.0  |
| 2000 02 05 | 691 | 0.0  | 0.3+ | 2002 08 17 | 644 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.0  | 0.3− |
| 2000 02 05 | 691 | 0.2− | 0.2+ | 2002 08 27 | 644 | 0.1− | 1.1+ | 2007 11 05 | 691 | 0.4− | 0.2− |
| 2000 02 05 | 691 | 0.0  | 0.4+ | 2002 08 27 | 644 | 0.1− | 0.8+ | 2007 11 05 | 691 | 0.4− | 0.3− |
| 2000 02 06 | 691 | 0.5− | 0.1+ | 2002 08 27 | 644 | 0.1+ | 0.6+ | 2007 11 13 | 691 | 0.3− | 0.2− |
| 2000 02 06 | 691 | 0.4− | 0.2+ | 2002 09 04 | 644 | 0.0  | 0.4+ | 2007 11 13 | 691 | 0.1− | 0.1− |
| 2000 02 06 | 691 | 0.6− | 0.1+ | 2002 09 04 | 644 | 0.1+ | 0.3+ | 2007 11 13 | 691 | 0.2− | 0.4− |
| 2000 03 11 | 691 | 0.3+ | 0.3− | 2002 09 04 | 644 | 0.2− | 0.3+ | 2007 12 05 | G96 | 0.7+ | 0.4− |
| 2000 03 11 | 691 | 0.5+ | 0.7− | 2002 09 14 | 644 | 0.3+ | 0.7+ | 2007 12 05 | G96 | 0.6+ | 0.3− |
| 2000 03 11 | 691 | 0.3+ | 0.7− | 2002 09 14 | 644 | 0.4+ | 0.7+ | 2007 12 05 | G96 | 0.6+ | 0.2− |
| 2002 07 23 | 644 | 0.1+ | 0.0  | 2002 09 14 | 644 | 0.4+ | 0.4+ | 2007 12 05 | G96 | 0.9+ | 0.4− |
| 2002 07 23 | 644 | 0.4+ | 0.4+ | 2003 12 22 | 704 | 0.8+ | 1.4+ | 2007 12 15 | 704 | 0.5+ | 0.3+ |
| 2002 07 23 | 644 | 0.4− | 0.0  | 2003 12 22 | 704 | 0.2+ | 0.6+ | 2007 12 15 | 704 | 0.1+ | 0.1− |
| 2002 07 29 | 644 | 0.9− | 0.9+ | 2003 12 22 | 704 | 0.3+ | 1.4+ | 2007 12 15 | 704 | 0.3− | 0.5+ |
| 2002 07 29 | 644 | 0.4− | 0.2+ | 2003 12 28 | 691 | 0.1− | 0.2+ | 2007 12 15 | 704 | 1.1+ | 0.5+ |
| 2002 07 29 | 644 | 0.5− | 0.1+ | 2003 12 28 | 691 | 0.6+ | 0.1+ | 2007 12 15 | 704 | 0.1− | 0.9+ |
| 2002 08 08 | 644 | 0.3− | 0.1+ | 2003 12 28 | 691 | 0.3+ | 0.1+ |            |     |      |      |
| 2002 08 08 | 644 | 0.6− | 0.1+ | 2005 03 11 | G96 | 0.1− | 0.2− |            |     |      |      |

(172195)\* 2002 QK<sub>9</sub>

Discovered 2002 Aug. 19 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.26497   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22598907 | $\omega$ | 292.89015 | +0.78661617   | +0.61301497 |
| <i>a</i> | 2.6693842  | $\Omega$ | 29.45897  | −0.49711084   | +0.69967469 |
| <i>e</i> | 0.0766607  | <i>i</i> | 8.63142   | −0.36621825   | +0.36697135 |
| <i>P</i> | 4.36       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 10 11 | 699 | 1.5+ | 0.1+ | 2005 03 03 | 703 | 1.2+ | 0.9+ | 2007 11 09 | 691 | 0.4−  | 0.1−  |
| 1998 10 11 | 699 | 1.0− | 0.4− | 2005 05 10 | G96 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.3−  | 0.0   |
| 1998 10 11 | 699 | 0.0  | 0.8− | 2005 05 10 | G96 | 0.3+ | 0.2− | 2007 11 09 | 691 | 0.2−  | 0.1+  |
| 2001 05 01 | 691 | 0.1+ | 0.6+ | 2005 05 10 | G96 | 0.2+ | 0.0  | 2007 11 13 | 699 | (1.7+ | 1.5−) |
| 2001 05 01 | 691 | 0.3+ | 0.4+ | 2005 05 10 | G96 | 0.1+ | 0.1+ | 2007 11 13 | 699 | 0.5−  | 0.0   |
| 2001 05 01 | 691 | 0.6+ | 0.7+ | 2007 10 12 | 704 | 0.0  | 0.9+ | 2007 11 13 | 699 | (1.8+ | 1.4−) |
| 2002 08 12 | 608 | 0.2+ | 0.2+ | 2007 10 12 | 704 | 0.0  | 0.1+ | 2007 11 13 | 699 | 0.5+  | 0.2+  |
| 2002 08 1  |     |      |      |            |     |      |      |            |     |       |       |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 20 | 644 | 0.3− | 0.4+ | 2007 11 01 | 691 | 0.5− | 0.3+ | 2007 11 18 | A77 | 0.9+  | 0.1+  |
| 2002 09 09 | 644 | 0.0  | 0.4− | 2007 11 01 | 691 | 0.6− | 0.3− | 2007 11 18 | A77 | 0.5+  | 0.5−  |
| 2002 09 09 | 644 | 0.2− | 0.1− | 2007 11 05 | 691 | 0.3− | 0.3− | 2007 11 18 | A77 | 0.8+  | 0.2+  |
| 2002 09 09 | 644 | 0.2− | 0.0  | 2007 11 05 | 691 | 0.2− | 0.3− | 2007 11 18 | 704 | 0.9+  | 1.3+  |
| 2002 09 09 | 644 | 0.0  | 0.3− | 2007 11 05 | 691 | 0.8+ | 0.2− | 2007 11 18 | 704 | 0.0   | 0.8+  |
| 2002 09 09 | 644 | 0.3− | 0.0  | 2007 11 06 | 704 | 0.1+ | 0.1− | 2007 11 18 | 704 | 0.5+  | 0.5+  |
| 2002 09 09 | 644 | 0.1− | 0.2− | 2007 11 06 | 704 | 0.4− | 0.4+ | 2007 11 18 | 704 | 0.5+  | 0.6+  |
| 2002 09 16 | 644 | 0.2− | 0.2− | 2007 11 06 | 704 | 0.9+ | 1.4+ | 2007 11 18 | 704 | 0.6+  | 0.9+  |
| 2002 09 16 | 644 | 0.0  | 0.1+ | 2007 11 07 | 704 | 0.1+ | 1.0− | 2007 11 20 | 704 | 1.5+  | 1.5+  |
| 2002 09 30 | 608 | 0.2+ | 0.3+ | 2007 11 07 | 704 | 0.1− | 0.6+ | 2007 11 20 | 704 | 0.9+  | 0.4+  |
| 2002 09 30 | 608 | 0.3− | 0.3− | 2007 11 07 | 704 | 0.1+ | 0.2− | 2007 11 20 | 704 | 0.4+  | 1.1+  |
| 2002 09 30 | 608 | 0.4− | 0.4− | 2007 11 07 | 704 | 1.0+ | 0.2+ | 2007 11 20 | 704 | (1.1+ | 2.2+) |
| 2002 10 07 | 608 | 0.3− | 1.1+ | 2007 11 07 | 704 | 0.6− | 0.6− | 2007 12 13 | 704 | 0.8−  | 0.4+  |
| 2002 10 07 | 608 | 0.7+ | 0.4+ | 2007 11 07 | 704 | 1.4+ | 1.2− | 2007 12 13 | 704 | 0.2+  | 0.1+  |
| 2002 10 07 | 608 | 0.5+ | 0.5+ | 2007 11 07 | 704 | 0.0  | 0.3− | 2007 12 13 | 704 | 0.7+  | 0.4−  |
| 2005 03 03 | 703 | 1.4− | 0.4− | 2007 11 07 | 704 | 0.1+ | 0.5+ | 2007 12 13 | 704 | 0.1+  | 0.2+  |
| 2005 03 03 | 703 | 1.2− | 0.4− | 2007 11 07 | 704 | 0.3+ | 0.5− |            |     |       |       |
| 2005 03 03 | 703 | 0.3+ | 0.0  | 2007 11 07 | 704 | 0.0  | 0.2+ |            |     |       |       |

(172196)\* 2002 QT<sub>12</sub> = 2005 EC<sub>195</sub>

Discovered 2002 Aug. 26 by NEAT at Palomar.

Id. G. V. Williams (MPO 75484)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $M$ | 173.52522  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
| $n$ | 0.23753203 | $\omega$ | 52.71171  | −0.51345821  | +0.85803509  |     |   |
| $a$ | 2.5821884  | $\Omega$ | 186.42630 | −0.81663975  | −0.49277715  |     |   |
| $e$ | 0.0489252  | $i$      | 5.99080   | −0.26355300  | −0.14472896  |     |   |
| $P$ | 4.15       | $H$      | 16.0      | $G$          | 0.15         | $U$ | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 09 14 | 691 | 0.2−  | 0.8−  | 2005 04 02 | G96 | 0.2+  | 0.3+  | 2007 11 04 | 704 | 0.7+  | 0.7+  |
| 1994 09 14 | 691 | 0.0   | 0.8+  | 2005 04 02 | G96 | 0.4−  | 0.0   | 2007 11 04 | 704 | 0.7+  | 0.5+  |
| 2002 08 16 | 644 | 0.1+  | 0.4+  | 2005 04 02 | G96 | 0.3+  | 0.0   | 2007 11 04 | 704 | 0.7+  | 0.2+  |
| 2002 08 16 | 644 | 0.1+  | 0.5+  | 2005 04 02 | G96 | 0.0   | 0.2+  | 2007 11 05 | 691 | 0.1+  | 0.0   |
| 2002 08 16 | 644 | 0.1−  | 0.3+  | 2005 04 02 | G96 | 0.1−  | 0.3+  | 2007 11 05 | 691 | 0.2+  | 0.0   |
| 2002 08 18 | 644 | 0.3−  | 0.4+  | 2005 04 02 | G96 | 0.1+  | 0.1+  | 2007 11 05 | 691 | 0.1−  | 0.3−  |
| 2002 08 18 | 644 | 0.4−  | 0.5+  | 2005 04 02 | G96 | 0.0   | 0.2+  | 2007 11 05 | 704 | 0.5−  | 0.3+  |
| 2002 08 18 | 644 | 0.2−  | 0.3+  | 2005 04 04 | 704 | (0.1+ | 1.8−) | 2007 11 05 | 704 | 0.0   | 0.7+  |
| 2002 08 26 | 644 | 0.5−  | 0.6+  | 2005 04 04 | 704 | 0.1+  | 0.4+  | 2007 11 05 | 704 | 0.5−  | 1.2+  |
| 2002 08 26 | 644 | 0.1−  | 0.6+  | 2005 04 04 | 704 | 0.5+  | 0.4+  | 2007 11 09 | 691 | 0.4−  | 0.1−  |
| 2002 08 26 | 644 | 0.5−  | 0.4+  | 2005 04 04 | 704 | 0.9+  | 0.5−  | 2007 11 09 | 691 | 0.1+  | 0.0   |
| 2002 08 27 | 644 | 0.1+  | 0.6+  | 2005 04 05 | G96 | 0.4+  | 0.1−  | 2007 11 09 | 691 | 0.3−  | 0.0   |
| 2002 08 27 | 644 | 0.2−  | 0.3+  | 2005 04 05 | G96 | 0.7+  | 0.4−  | 2007 11 12 | 704 | 0.4+  | 0.3+  |
| 2002 08 27 | 644 | 0.0   | 0.4+  | 2005 04 05 | G96 | 0.0   | 0.1−  | 2007 11 12 | 704 | 0.2+  | 1.2+  |
| 2003 12 17 | 691 | 0.4+  | 0.5−  | 2005 04 05 | G96 | 0.2−  | 0.2+  | 2007 11 12 | 704 | (1.8+ | 1.1−) |
| 2003 12 17 | 691 | 0.2+  | 0.4−  | 2005 05 06 | G96 | 0.1−  | 0.1+  | 2007 11 13 | 691 | 0.3+  | 0.1−  |
| 2003 12 17 | 691 | 0.3+  | 0.3−  | 2005 05 06 | G96 | 0.2−  | 0.0   | 2007 11 13 | 691 | 0.3−  | 0.2+  |
| 2005 03 11 | G96 | 0.0   | 0.0   | 2005 05 06 | G96 | 0.2−  | 0.1−  | 2007 11 13 | 691 | 0.2−  | 0.1−  |
| 2005 03 11 | G96 | 0.0   | 0.0   | 2005 05 06 | G96 | 0.2−  | 0.4+  | 2007 11 20 | 703 | (1.7− | 0.3−) |
| 2005 03 11 | G96 | 0.0   | 0.1+  | 2006 08 12 | 644 | 0.2+  | 0.0   | 2007 11 20 | 703 | 0.0   | 0.2−  |
| 2005 03 11 | G96 | 0.0   | 0.1+  | 2006 08 12 | 644 | 0.3+  | 0.2+  | 2007 11 20 | 703 | 0.0   | 0.2+  |
| 2005 03 13 | 691 | 0.2+  | 0.5+  | 2006 08 12 | 644 | 0.1−  | 0.0   | 2007 11 20 | 703 | 1.4−  | 0.8+  |
| 2005 03 13 | 703 | (1.0+ | 2.4+) | 2006 08 13 | 644 | 0.0   | 0.3+  | 2007 12 04 | 704 | 0.2+  | 0.9+  |
| 2005 03 13 | 691 | 0.3+  | 0.5+  | 2006 08 13 | 644 | 0.6+  | 0.2+  | 2007 12 04 | 704 | 0.5+  | 0.1−  |
| 2005 03 13 | 703 | 0.8−  | 0.8+  | 2006 08 13 | 644 | 0.4+  | 0.2+  | 2007 12 04 | 704 | 0.3+  | 1.0+  |
| 2005 03 13 | 703 | 1.3−  | 0.5+  | 2007 11 01 | 691 | 0.8−  | 0.1−  | 2007 12 04 | 704 | 0.2+  | 0.3+  |
| 2005 03 13 | 703 | 0.0   | 1.2+  | 2007 11 01 | 691 | 0.0   | 0.4+  | 2007 12 04 | 704 | 0.9+  | 1.0+  |
| 2005 03 13 | 691 | 0.1+  | 0.4+  | 2007 11 01 | 691 | 0.3−  | 0.3+  |            |     |       |       |
| 2005 04 02 | G96 | 0.2−  | 0.1−  | 2007 11 04 | 704 | 0.1−  | 0.5−  |            |     |       |       |

(172197)\* 2002 QF<sub>19</sub>

Discovered 2002 Aug. 26 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 40.52776   |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.23399193 | $\omega$ | 273.02949 | +0.83920611 | −0.53821472 |
| $a$ | 2.6081674  | $\Omega$ | 119.54523 | +0.52769795 | +0.77136801 |
| $e$ | 0.1711912  | $i$      | 5.13295   | +0.13140770 | +0.33958256 |
| $P$ | 4.21       | $H$      | 16.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.0  | 0.0  | 2004 01 22 | 704 | 0.9− | 1.1+ | 2006 08 16 | 644 | 0.4− | 0.6+ |
| 1998 09 19 | 645 | 0.0  | 0.1+ | 2004 02 11 | 691 | 0.0  | 0.2+ | 2006 08 16 | 644 | 0.4+ | 0.2+ |
| 2002 08 26 | 644 | 0.2− | 0.2+ | 2004 02 11 | 691 | 0.1+ | 0.2+ | 2006 08 16 | 644 | 0.1+ | 0.2+ |
| 2002 08 26 | 644 | 0.1− | 0.2+ | 2004 02 11 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 1.0+ | 0.2+ |
| 2002 08 26 | 644 | 0.2− | 0.1− | 2004 02 23 | 704 | 0.3+ | 0.7+ | 2007 12 05 | 704 | 0.1− | 0.4− |
| 2002 08 29 | 644 | 0.4+ | 1.0+ | 2004 02 23 | 704 | 0.3− | 0.1+ | 2007 12 05 | 704 | 0.9− | 1.4+ |
| 2002 08 29 | 644 | 0.5+ | 0.7+ | 2004 02 23 | 704 | 1.1+ | 0.8+ | 2007 12 05 | 704 | 0.2+ | 0.9+ |
| 2002 08 29 | 644 | 0.4+ | 0.8+ | 2004 02 23 | 704 | 0.8+ | 0.8− | 2007 12 06 | G96 | 0.3+ | 0.4− |
| 2002 09 15 | 644 | 0.3− | 0.9+ | 2004 02 23 | 704 | 0.2− | 0.5+ | 2007 12 06 | G96 | 0.5+ | 0.8− |
| 2002 09 15 | 644 | 0.6− | 0.7+ | 2005 04 15 | 691 | 0.4+ | 0.1+ | 2007 12 06 | G96 | 0.3− | 0.5− |
| 2002 09 15 | 644 | 0.6− | 0.8+ | 2005 04 15 | 691 | 0.1+ | 0.3− | 2007 12 06 | G96 | 0.4+ | 0.6− |
| 2002 09 16 | 644 | 0.3− | 0.1+ | 2005 04 15 | 691 | 0.5+ | 0.4+ | 2007 12 14 | A77 | 1.2− | 0.4− |
| 2002 09 16 | 644 | 0.1− | 0.5− | 2005 05 02 | 691 | 0.0  | 0.2+ | 2007 12 14 | A77 | 0.5+ | 0.4+ |
| 2002 09 16 | 644 | 0.1− | 0.1+ | 2005 05 02 | 691 | 0.3− | 0.5+ | 2007 12 14 | A77 | 0.2+ | 0.2+ |
| 2004 01 18 | 644 | 0.1− | 0.2+ | 2005 05 02 | 691 | 0.3− | 0.3+ | 2007 12 15 | 691 | 0.1+ | 0.3+ |
| 2004 01 18 | 644 | 0.1+ | 0.1− | 2006 05 24 | G96 | 0.0  | 0.0  | 2007 12 15 | 691 | 0.1− | 0.0  |
| 2004 01 18 | 644 | 0.1+ | 0.1+ | 2006 05 24 | G96 | 0.5− | 0.3+ | 2007 12 15 | 691 | 0.0  | 0.0  |
| 2004 01 22 | 704 | 0.7+ | 1.2+ | 2006 05 24 | G96 | 0.5− | 0.2+ |            |     |      |      |
| 2004 01 22 | 704 | 0.8− | 0.2+ | 2006 05 24 | G96 | 0.5− | 0.1+ |            |     |      |      |

(172198)\* 2002 QF<sub>20</sub>

Discovered 2002 Aug. 28 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 77.38545   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.22397583 | $\omega$ | 83.67244  | +0.85119630  | +0.51621381  |
| $a$ | 2.6853564  | $\Omega$ | 245.21233 | −0.51331416  | +0.78113743  |
| $e$ | 0.1254759  | $i$      | 5.99415   | −0.10942320  | +0.35120880  |
| $P$ | 4.40       | $H$      | 15.7      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 16 | 704 | 0.2−  | 1.2−  | 2002 10 05 | 644 | 0.0  | 0.3+ | 2007 11 13 | 691 | 0.0   | 0.2−  |
| 2002 08 16 | 704 | 0.2−  | 1.2−  | 2002 10 06 | 644 | 0.6− | 0.2+ | 2007 11 13 | 691 | 0.1−  | 0.1−  |
| 2002 08 16 | 704 | 0.3−  | 0.4−  | 2002 10 06 | 644 | 0.3− | 0.5+ | 2007 11 13 | 691 | (2.4− | 1.9+) |
| 2002 08 16 | 704 | (0.1− | 2.2−) | 2002 10 06 | 644 | 0.4− | 0.3+ | 2007 11 14 | 691 | 0.2+  | 0.1−  |
| 2002 08 22 | 644 | 0.3−  | 0.6+  | 2005 03 03 | 691 | 0.4+ | 0.5+ | 2007 11 14 | 691 | 0.2−  | 0.2+  |
| 2002 08 22 | 644 | 0.1−  | 0.4+  | 2005 03 03 | 691 | 0.2+ | 0.6+ | 2007 11 14 | 691 | 0.1−  | 0.1+  |
| 2002 08 22 | 644 | 0.3−  | 0.3+  | 2005 03 03 | 691 | 0.1+ | 0.8+ | 2007 11 18 | 691 | 0.1+  | 0.3+  |
| 2002 08 28 | 644 | 0.1+  | 1.2+  | 2006 05 05 | G96 | 0.2− | 0.1+ | 2007 11 18 | 691 | 0.1−  | 0.1+  |
| 2002 08 28 | 644 | 0.1+  | 1.0+  | 2006 05 05 | G96 | 0.3− | 0.2+ | 2007 11 18 | 691 | 0.0   | 0.1+  |
| 2002 08 28 | 644 | 0.1+  | 1.2+  | 2006 05 05 | G96 | 0.2− | 0.1+ | 2007 12 03 | 703 | 0.2+  | 0.3+  |
| 2002 08 29 | 644 | 0.0   | 0.5+  | 2006 05 05 | G96 | 0.5+ | 0.1+ | 2007 12 03 | 703 | 0.6−  | 0.2−  |
| 2002 08 29 | 644 | 0.1−  | 0.3+  | 2006 06 21 | 644 | 0.3− | 0.3+ | 2007 12 03 | 703 | 0.3−  | 1.1−  |
| 2002 08 29 | 644 | 0.1−  | 0.3+  | 2006 06 21 | 644 | 0.2+ | 0.3+ | 2007 12 03 | 703 | 1.0+  | 0.2−  |
| 2002 09 05 | 699 | 0.6+  | 0.2+  | 2006 06 21 | 644 | 0.2+ | 0.3+ | 2007 12 04 | 699 | 0.7+  | 0.4+  |
| 2002 09 05 | 699 | 0.4+  | 0.0   | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 12 04 | 699 | 1.6+  | 0.1−  |
| 2002 09 05 | 699 | 0.8+  | 0.1−  | 2007 11 01 | 691 | 0.3− | 0.3+ | 2007 12 04 | G96 | 0.4+  | 0.2+  |
| 2002 09 05 | 699 | 1.4+  | 0.2−  | 2007 11 01 | 691 | 0.8− | 0.4− | 2007 12 04 | 699 | 0.9−  | 0.2+  |
| 2002 09 07 | 704 | 0.6−  | 0.2+  | 2007 11 05 | 704 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.0   | 0.1+  |
| 2002 09 07 | 704 | 0.0   | 0.1+  | 2007 11 05 | 704 | 0.7− | 0.1− | 2007 12 04 | G96 | 0.2+  | 0.2−  |
| 2002 09 07 | 704 | 0.8−  | 0.6+  | 2007 11 05 | 704 | 0.6− | 0.4+ | 2007 12 04 | G96 | 0.2+  | 0.0   |
| 2002 09 07 | 704 | 0.9−  | 0.3+  | 2007 11 05 | 704 | 0.4+ | 0.2− | 2007 12 04 | 699 | 0.0   | 0.9+  |
| 2002 09 13 | 644 | 0.1+  | 0.0   | 2007 11 05 | 704 | 0.2− | 1.2− | 2007 12 05 | 704 | 0.7+  | 0.9+  |
| 2002 09 13 | 644 | 0.4−  | 0.1+  | 2007 11 05 | G96 | 0.6+ | 0.1− | 2007 12 05 | 704 | 0.3+  | 1.3+  |
| 2002 09 13 | 644 | 0.0   | 0.0   | 2007 11 05 | G96 | 0.4+ | 0.3− | 2007 12 05 | 704 | 0.5+  | 0.7+  |
| 2002 10 05 | 644 | 0.1−  | 0.2+  | 2007 11 05 | G96 | 0.3+ | 0.2− | 2007 12 05 | 704 | 0.1−  | 0.4+  |
| 2002 10 05 | 644 | 0.6−  | 0.4+  | 2007 11 05 | G96 | 0.5+ | 0.1− |            |     |       |       |

2007 DEC. 24

M.P.O. 129295

(172199)\* 2002 QK<sub>24</sub>

Discovered 2002 Aug. 29 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 66.11606   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22848788 | $\omega$ | 348.93164 |     | +0.75980972 |     | +0.64267949 |
| $a$ | 2.6498865  | $\Omega$ | 330.34936 |     | -0.58030472 |     | +0.60226385 |
| $e$ | 0.1875156  | $i$      | 11.45469  |     | -0.29314779 |     | +0.47354125 |
| $P$ | 4.31       | $H$      | 15.7      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 02 10 | 691 | 0.7+  | 0.2+  | 2002 08 29 | 644 | 0.2-  | 0.4+  | 2005 03 11 | G96 | 1.3- | 0.1- |
| 1996 02 10 | 691 | 0.2+  | 0.6+  | 2002 08 29 | 644 | 0.1+  | 0.6+  | 2005 03 11 | G96 | 1.0- | 0.3- |
| 1996 02 10 | 691 | 0.4+  | 0.2+  | 2002 08 29 | 644 | 0.0   | 0.0   | 2005 03 11 | G96 | 1.1- | 0.0  |
| 1998 09 16 | 699 | 0.3+  | 0.4-  | 2002 08 29 | 644 | 0.3+  | 0.4+  | 2007 10 09 | 703 | 0.3- | 0.7+ |
| 1998 09 16 | 699 | 0.2+  | 0.6-  | 2002 08 30 | 644 | 0.2-  | 0.2+  | 2007 10 09 | 703 | 0.1+ | 1.0+ |
| 1998 09 16 | 699 | 1.0-  | 1.2-  | 2002 08 30 | 644 | 0.2+  | 0.1+  | 2007 10 09 | 703 | 0.1- | 0.8+ |
| 1998 09 27 | 699 | 0.7-  | 0.7+  | 2002 08 30 | 644 | 0.1+  | 0.0   | 2007 10 09 | 703 | 0.3- | 0.5+ |
| 1998 09 27 | 699 | 0.5-  | 0.8+  | 2002 08 31 | 704 | (1.6+ | 1.1+) | 2007 11 12 | 703 | 0.3+ | 0.2- |
| 1998 09 27 | 699 | 0.1+  | 0.3-  | 2002 08 31 | 704 | (2.0+ | 0.4-) | 2007 11 12 | 703 | 0.5- | 0.1+ |
| 2002 07 16 | 644 | 0.1-  | 0.1+  | 2002 08 31 | 704 | 0.7+  | 0.0   | 2007 11 12 | 703 | 0.7- | 0.3- |
| 2002 07 16 | 644 | 0.2+  | 0.0   | 2003 12 30 | 704 | 0.0   | 0.0   | 2007 11 12 | 703 | 0.5- | 0.5- |
| 2002 07 16 | 644 | 0.1-  | 0.1+  | 2003 12 30 | 704 | 0.6+  | 0.1+  | 2007 12 03 | 704 | 0.9+ | 0.2- |
| 2002 08 13 | 704 | 0.1-  | 0.3+  | 2003 12 30 | 704 | 1.1-  | 0.1+  | 2007 12 03 | 704 | 0.8+ | 0.2- |
| 2002 08 13 | 704 | 0.4-  | 0.5+  | 2003 12 30 | 704 | 0.4-  | 0.3-  | 2007 12 03 | 704 | 0.5+ | 0.9- |
| 2002 08 13 | 704 | (1.8- | 1.6+) | 2005 02 01 | 691 | 0.1+  | 0.0   | 2007 12 03 | 704 | 1.0+ | 0.5- |
| 2002 08 13 | 704 | 0.2-  | 0.1-  | 2005 02 01 | 691 | 0.1-  | 0.1+  | 2007 12 03 | 704 | 1.1+ | 0.2- |
| 2002 08 29 | 644 | 0.2-  | 0.3+  | 2005 02 01 | 691 | 0.2+  | 0.3+  |            |     |      |      |
| 2002 08 29 | 644 | 0.1+  | 0.6+  | 2005 03 11 | G96 | 0.6-  | 0.6-  |            |     |      |      |

(172200)\* 2002 QO<sub>28</sub> = 1998 SL<sub>83</sub>

Discovered 2002 Aug. 29 by NEAT at Palomar.

Id. A. Doppler (MPO 35363)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 65.59309   |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.22841863 | $\omega$ | 325.65429 |     | +0.82179616  |     | +0.56978117  |
| $a$ | 2.6504220  | $\Omega$ | 359.60865 |     | -0.49694269  |     | +0.71613640  |
| $e$ | 0.1759957  | $i$      | 5.90792   |     | -0.27874547  |     | +0.40311050  |
| $P$ | 4.31       | $H$      | 16.1      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 26 | 704 | 1.1+ | 0.3+ | 2002 08 30 | 644 | 0.1+ | 0.1+ | 2005 04 04 | G96 | 0.0   | 0.2-  |
| 1998 09 26 | 704 | 1.5- | 1.7- | 2002 08 31 | 704 | 0.2+ | 0.7+ | 2005 04 04 | G96 | 0.0   | 0.2+  |
| 1998 09 26 | 704 | 0.6- | 0.8+ | 2002 08 31 | 704 | 1.0+ | 0.2+ | 2005 04 04 | G96 | 0.6+  | 0.0   |
| 1998 09 26 | 704 | 0.2+ | 1.4- | 2002 08 31 | 704 | 0.4+ | 1.0+ | 2007 11 07 | 704 | 0.2+  | 0.2+  |
| 1998 09 27 | 704 | 0.7+ | 0.5- | 2004 01 19 | 691 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.0   | 1.2+  |
| 1998 09 27 | 704 | 0.0  | 0.3+ | 2004 01 19 | 691 | 0.2- | 0.1- | 2007 11 07 | 704 | 0.8+  | 0.1+  |
| 1998 09 27 | 704 | 1.7+ | 0.5- | 2004 01 19 | 691 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.1-  | 0.0   |
| 2001 03 24 | 701 | 0.1- | 0.5+ | 2005 03 10 | G96 | 0.2- | 0.1- | 2007 11 09 | G96 | 0.1+  | 0.7+  |
| 2001 03 24 | 701 | 0.7+ | 0.4+ | 2005 03 10 | G96 | 0.3- | 0.1- | 2007 11 09 | G96 | 0.5+  | 0.0   |
| 2001 03 24 | 701 | 1.2- | 0.9+ | 2005 03 10 | G96 | 0.2- | 0.2- | 2007 11 09 | G96 | 0.2-  | 0.0   |
| 2002 07 15 | 644 | 0.2- | 0.3+ | 2005 03 10 | G96 | 0.5- | 0.1- | 2007 11 09 | G96 | 0.2-  | 0.0   |
| 2002 07 15 | 644 | 0.2- | 0.1+ | 2005 03 16 | G96 | 0.6- | 0.0  | 2007 11 20 | 704 | 1.3-  | 0.2+  |
| 2002 07 15 | 644 | 0.3- | 0.2+ | 2005 03 16 | G96 | 0.8- | 0.3- | 2007 11 20 | 704 | 0.3-  | 0.8+  |
| 2002 08 13 | 704 | 0.5+ | 0.2- | 2005 03 16 | G96 | 0.5- | 0.1- | 2007 11 20 | 704 | (1.1- | 1.6+) |
| 2002 08 13 | 704 | 0.1- | 0.3- | 2005 03 16 | G96 | 1.0- | 0.3- | 2007 11 20 | G96 | 0.3-  | 0.3-  |
| 2002 08 13 | 704 | 0.4- | 0.5- | 2005 03 16 | G96 | 1.1- | 1.3- | 2007 11 20 | G96 | 0.2-  | 0.4-  |
| 2002 08 13 | 704 | 1.0- | 0.3+ | 2005 03 16 | G96 | 0.6- | 0.2+ | 2007 11 20 | G96 | 0.2-  | 0.3-  |
| 2002 08 13 | 704 | 0.3+ | 0.8+ | 2005 03 16 | G96 | 0.4- | 0.2+ | 2007 11 20 | G96 | 0.2-  | 0.2-  |
| 2002 08 29 | 644 | 0.0  | 0.0  | 2005 03 16 | G96 | 0.4- | 0.5+ | 2007 12 04 | G96 | 0.1+  | 0.1-  |
| 2002 08 29 | 644 | 0.2- | 0.3+ | 2005 04 04 | 691 | 0.3+ | 0.0  | 2007 12 04 | G96 | 0.3-  | 0.3-  |
| 2002 08 29 | 644 | 0.3- | 0.0  | 2005 04 04 | 691 | 0.6+ | 0.2- | 2007 12 04 | G96 | 0.1+  | 0.0   |
| 2002 08 30 | 644 | 0.0  | 0.1+ | 2005 04 04 | 691 | 0.9+ | 0.1+ | 2007 12 04 | G96 | 0.3+  | 0.2-  |
| 2002 08 30 | 644 | 0.3- | 0.0  | 2005 04 04 | G96 | 0.1- | 0.2- |            |     |       |       |

(172201)\* 2002 QU<sub>30</sub> = 2006 KK<sub>46</sub>

Discovered 2002 Aug. 29 by NEAT at Palomar.

Id. G. V. Williams (MPO 100323)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 39.17630   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.21463092 | $\omega$ | 227.38788 |     | +0.93619720 |     | +0.34839448 |
| $a$ | 2.7627475  | $\Omega$ | 112.17476 |     | -0.30601088 |     | +0.87293951 |
| $e$ | 0.2452818  | $i$      | 2.87415   |     | -0.17289345 |     | +0.34146433 |
| $P$ | 4.59       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 03 | 644 | 0.1- | 0.6- | 2006 05 21 | G96 | 0.0   | 0.1-  | 2007 11 04 | 704 | 0.1+  | 1.1+  |
| 2002 08 03 | 644 | 0.2- | 0.7- | 2006 05 21 | G96 | 0.2-  | 0.1+  | 2007 11 04 | 704 | 0.2+  | 0.8+  |
| 2002 08 03 | 644 | 0.4- | 0.5- | 2006 05 21 | G96 | 0.1-  | 0.0   | 2007 11 04 | G96 | 0.0   | 0.4-  |
| 2002 08 14 | 704 | 0.4- | 0.2- | 2006 05 21 | 691 | 0.2+  | 0.2+  | 2007 11 04 | G96 | 0.2+  | 0.3-  |
| 2002 08 14 | 704 | 0.6+ | 0.9- | 2006 05 21 | 691 | 0.4+  | 0.6+  | 2007 11 04 | G96 | 0.2-  | 0.2-  |
| 2002 08 14 | 704 | 0.5- | 0.6+ | 2006 05 21 | 691 | 0.2-  | 0.7+  | 2007 11 04 | G96 | 0.2+  | 0.2-  |
| 2002 08 14 | 704 | 0.3+ | 0.6+ | 2006 05 25 | 691 | 0.2+  | 0.1+  | 2007 11 07 | 704 | 0.8-  | 1.1+  |
| 2002 08 14 | 704 | 1.1- | 1.2+ | 2006 05 25 | 691 | 0.3+  | 0.0   | 2007 11 07 | 704 | 0.3-  | 0.6+  |
| 2002 08 18 | 644 | 0.3+ | 0.1- | 2006 05 25 | 691 | 0.1-  | 0.3+  | 2007 11 07 | 704 | 0.4-  | 0.6+  |
| 2002 08 18 | 644 | 0.6+ | 0.5+ | 2006 05 29 | 691 | 0.2-  | 0.2+  | 2007 11 07 | 704 | 0.6-  | 1.3+  |
| 2002 08 18 | 644 | 0.2+ | 0.0  | 2006 05 29 | 691 | 0.1+  | 0.3+  | 2007 11 07 | 704 | (0.7- | 1.6+) |
| 2002 08 18 | 644 | 0.2+ | 0.6+ | 2006 05 29 | 691 | 0.5-  | 0.3+  | 2007 11 07 | 703 | 0.6-  | 0.1+  |
| 2002 08 18 | 644 | 0.5+ | 0.2- | 2006 06 02 | 691 | 0.4+  | 0.8+  | 2007 11 07 | 703 | (2.1- | 0.4+) |
| 2002 08 18 | 644 | 0.0  | 0.7+ | 2006 06 02 | 691 | 0.5+  | 0.6+  | 2007 11 07 | 703 | 0.0   | 0.4+  |
| 2002 08 29 | 644 | 0.1+ | 0.2+ | 2006 06 02 | 691 | 0.5+  | 0.5+  | 2007 11 07 | 703 | 0.4-  | 1.0+  |
| 2002 08 29 | 644 | 0.1- | 0.2+ | 2007 10 08 | G96 | 0.2+  | 0.2-  | 2007 11 11 | 699 | 0.5+  | 0.7+  |
| 2002 08 29 | 644 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.2+  | 0.4-  | 2007 11 11 | 699 | 0.0   | 1.0+  |
| 2002 08 30 | 644 | 0.2- | 0.4- | 2007 10 08 | G96 | 0.1+  | 0.3-  | 2007 11 11 | 699 | 0.8+  | 0.1+  |
| 2002 08 30 | 644 | 0.2- | 0.3- | 2007 10 08 | G96 | 0.1+  | 0.1-  | 2007 11 11 | 699 | 0.4+  | 0.1-  |
| 2002 08 30 | 644 | 0.5- | 0.2- | 2007 10 12 | 691 | 0.2-  | 0.1-  | 2007 11 12 | 704 | 0.2-  | 0.5+  |
| 2003 12 29 | 691 | 0.2+ | 0.3+ | 2007 10 12 | 691 | 0.4-  | 0.0   | 2007 11 12 | 704 | 0.8-  | 0.5+  |
| 2003 12 29 | 691 | 0.2+ | 0.5+ | 2007 10 12 | 691 | 0.2-  | 0.1+  | 2007 11 12 | 704 | 0.2+  | 0.3+  |
| 2003 12 29 | 691 | 0.2+ | 0.3+ | 2007 10 20 | 691 | 0.3-  | 0.0   | 2007 11 12 | 704 | 0.9-  | 0.8+  |
| 2005 03 16 | G96 | 0.6- | 0.3+ | 2007 10 20 | 691 | 0.0   | 0.0   | 2007 11 12 | 704 | (0.2- | 1.9+) |
| 2005 03 16 | G96 | 0.6+ | 0.9+ | 2007 10 20 | 691 | 0.4-  | 0.1+  | 2007 11 14 | 704 | 0.6-  | 0.8-  |
| 2005 03 16 | G96 | 0.4- | 1.0+ | 2007 10 30 | 703 | 1.0+  | 0.8+  | 2007 11 14 | 704 | 0.4-  | 0.9+  |
| 2005 03 16 | G96 | 0.6- | 1.1+ | 2007 10 30 | 703 | 0.4+  | 0.4-  | 2007 11 14 | 704 | 0.0   | 0.8+  |
| 2006 05 06 | G96 | 0.1- | 0.3+ | 2007 10 30 | 703 | (0.9+ | 2.1+) | 2007 11 14 | 704 | 0.4+  | 0.7+  |
| 2006 05 06 | G96 | 0.0  | 0.2- | 2007 10 30 | 703 | 0.7+  | 0.7+  | 2007 12 05 | 704 | 0.3-  | 0.9-  |
| 2006 05 06 | G96 | 0.6+ | 0.1+ | 2007 11 04 | 704 | 0.3+  | 1.1+  | 2007 12 05 | 704 | 0.4-  | 0.4+  |
| 2006 05 06 | G96 | 0.1+ | 0.0  | 2007 11 04 | 704 | 1.3+  | 0.5+  | 2007 12 05 | 704 | 0.2+  | 1.1+  |
| 2006 05 21 | G96 | 0.6- | 0.3+ | 2007 11 04 | 704 | 0.2-  | 1.0+  |            |     |       |       |

(172202)\* 2002 QL<sub>34</sub>

Discovered 2002 Aug. 29 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 127.32643  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.23880455 | $\omega$ | 207.76569 |     | +0.32593410 |     | +0.94364915 |
| $a$ | 2.5730071  | $\Omega$ | 81.30356  |     | -0.85626778 |     | +0.32039208 |
| $e$ | 0.1589106  | $i$      | 3.32814   |     | -0.40071492 |     | +0.08291686 |
| $P$ | 4.13       | $H$      | 16.2      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 04 03 | 704 | 1.0+ | 1.1- | 2005 03 03 | 691 | 0.4+  | 0.2+  | 2006 08 12 | 644 | 0.1- | 0.0  |
| 1997 04 03 | 704 | 0.6+ | 0.0  | 2005 03 03 | 691 | 0.1+  | 0.4+  | 2006 08 12 | 644 | 0.1- | 0.0  |
| 2001 04 16 | 645 | 0.1- | 0.1+ | 2005 03 03 | 691 | 0.0   | 0.5+  | 2006 08 20 | 644 | 0.1- | 0.0  |
| 2001 04 16 | 645 | 0.0  | 0.1+ | 2005 03 08 | 699 | 1.0-  | 0.1+  | 2006 08 20 | 644 | 0.1- | 0.0  |
| 2002 08 12 | 608 | 0.1- | 0.0  | 2005 03 08 | 699 | 0.2-  | 1.5+  | 2006 08 20 | 644 | 0.1- | 0.1+ |
| 2002 08 12 | 608 | 0.2+ | 0.2- | 2005 03 08 | 699 | 0.5-  | 0.9+  | 2006 08 23 | 644 | 0.0  | 0.2- |
| 2002 08 12 | 608 | 0.2+ | 0.1+ | 2005 03 08 | 699 | 0.3-  | 0.8+  | 2006 08 23 | 644 | 0.4- | 0.2+ |
| 2002 08 29 | 644 | 0.6- | 0.9+ | 2005 03 09 | 704 | 0.1+  | 0.6+  | 2006 08 23 | 644 | 0.2+ | 0.3+ |
| 2002 08 29 | 644 | 0.4+ | 0.7+ | 2005 03 09 | 704 | 0.3+  | 0.1+  | 2006 08 24 | 644 | 0.2- | 0.0  |
| 2002 08 29 | 644 | 0.4- | 0.7+ | 2005 03 09 | 704 | (1.0+ | 1.8+) | 2006 08 24 | 644 | 0.1- | 0.2+ |
| 2002 08 29 | 644 | 0.2+ | 0.6+ | 2005 03 09 | 704 | (0.9+ | 2.1+) | 2006 08 24 | 644 | 0.0  | 0.2+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 29 | 644 | 0.7−  | 0.9+  | 2005 03 09 | 704 | (1.1+ | 1.9+) | 2006 08 28 | 699 | 0.3+ | 0.7− |
| 2002 08 29 | 644 | 0.5+  | 0.7+  | 2005 03 13 | 704 | 0.3−  | 0.1+  | 2006 08 28 | 699 | 0.6− | 0.1− |
| 2002 08 30 | 644 | 0.0   | 0.5+  | 2005 03 13 | 704 | 0.6+  | 0.2+  | 2006 08 28 | 699 | 0.6− | 0.0  |
| 2002 08 30 | 644 | 0.0   | 0.4+  | 2005 03 13 | 704 | 1.3+  | 0.9+  | 2006 08 28 | 699 | 0.5+ | 0.1+ |
| 2002 08 30 | 644 | 0.1−  | 0.5+  | 2005 03 13 | 704 | 1.3+  | 1.4+  | 2006 08 28 | E12 | 0.2− | 0.2+ |
| 2002 09 05 | 704 | (0.1+ | 2.0+) | 2005 03 13 | 704 | 0.5+  | 1.0+  | 2006 08 28 | E12 | 0.1+ | 0.5+ |
| 2002 09 05 | 704 | (0.3− | 2.7+) | 2005 03 16 | 704 | (1.7+ | 0.0 ) | 2006 08 28 | E12 | 0.6− | 0.6+ |
| 2002 09 05 | 704 | (0.1+ | 2.7+) | 2005 03 16 | 704 | 1.1+  | 0.8+  | 2006 08 28 | E12 | 0.1− | 0.2+ |
| 2002 09 05 | 704 | (0.6− | 2.7+) | 2005 03 16 | 704 | 1.3+  | 0.8+  | 2006 09 14 | 644 | 0.2− | 0.1+ |
| 2002 09 06 | 704 | 0.1−  | 1.0+  | 2005 03 16 | 704 | (0.6+ | 1.6+) | 2006 09 14 | 644 | 0.1− | 0.1+ |
| 2002 09 06 | 704 | 0.3−  | 0.3+  | 2005 04 13 | 691 | 0.0   | 0.5+  | 2006 09 14 | 644 | 0.3+ | 0.2+ |
| 2002 09 06 | 704 | (0.6+ | 2.3+) | 2005 04 13 | 691 | 0.2+  | 0.1+  | 2007 12 01 | H55 | 0.2+ | 0.3+ |
| 2002 09 08 | 608 | 0.5−  | 0.6+  | 2005 04 13 | 691 | 0.4+  | 0.2+  | 2007 12 01 | H55 | 0.6+ | 0.4+ |
| 2002 09 08 | 608 | 0.4−  | 0.7+  | 2006 07 21 | 704 | 0.3+  | 0.3+  | 2007 12 01 | H55 | 0.2+ | 0.1− |
| 2002 09 08 | 608 | 0.4−  | 0.8+  | 2006 07 21 | 704 | 0.4+  | 1.2−  | 2007 12 01 | H55 | 0.7+ | 0.4+ |
| 2002 09 13 | 704 | 0.9−  | 1.1+  | 2006 07 21 | 704 | 0.9+  | 0.1−  | 2007 12 01 | H55 | 0.4+ | 0.3− |
| 2002 09 13 | 704 | 0.7−  | 0.2+  | 2006 07 21 | 704 | 0.6+  | 0.2+  | 2007 12 04 | 691 | 0.3− | 0.4+ |
| 2002 09 13 | 704 | 0.8−  | 0.3+  | 2006 07 21 | 644 | 0.1−  | 0.6+  | 2007 12 04 | 691 | 0.2− | 0.1− |
| 2002 09 15 | 644 | 0.1−  | 0.6+  | 2006 07 21 | 644 | 0.0   | 0.5+  | 2007 12 04 | 691 | 0.1− | 0.6+ |
| 2002 09 15 | 644 | 0.3−  | 0.5+  | 2006 07 21 | 644 | 0.0   | 0.3+  | 2007 12 05 | 704 | 0.5+ | 0.8+ |
| 2002 09 15 | 644 | 0.2−  | 0.4+  | 2006 07 25 | 644 | 1.1−  | 1.3+  | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2002 09 16 | 644 | 0.2−  | 0.4+  | 2006 07 25 | 644 | 0.1−  | 0.2+  | 2007 12 05 | 704 | 0.3− | 1.2+ |
| 2002 09 16 | 644 | 0.3−  | 0.4+  | 2006 07 25 | 644 | 0.0   | 0.4+  | 2007 12 05 | 704 | 0.3+ | 0.5+ |
| 2002 09 16 | 644 | 0.2−  | 0.4+  | 2006 08 12 | 644 | 0.1−  | 0.0   |            |     |      |      |

**(172203)\* 2002 QZ<sub>36</sub> = 2004 CT<sub>53</sub>**

Discovered 2002 Aug. 30 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 61265)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 11.74176   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23861610 | $\omega$ | 313.96961 | +0.06182426 | −0.99759009 |
| <i>a</i> | 2.5743616  | $\Omega$ | 132.45808 | +0.92751337 | +0.04577013 |
| <i>e</i> | 0.1722276  | <i>i</i> | 2.44647   | +0.36864172 | +0.05214512 |
| <i>P</i> | 4.13       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 03 26 | 691 | 0.4+  | 0.2−  | 2004 02 11 | 291 | 0.2−  | 0.1+  | 2004 03 26 | 691 | 0.4− | 0.3+ |
| 1996 03 26 | 691 | 0.2+  | 0.1+  | 2004 02 11 | 291 | 0.0   | 0.2+  | 2004 03 26 | 691 | 0.3− | 0.7+ |
| 1996 03 26 | 691 | 0.2+  | 0.0   | 2004 02 17 | 691 | 0.1+  | 0.1+  | 2005 06 17 | G96 | 0.5− | 0.8+ |
| 2000 03 11 | 704 | 0.7−  | 1.0+  | 2004 02 17 | 691 | 0.3+  | 0.3+  | 2005 06 17 | G96 | 0.1+ | 0.8+ |
| 2000 03 11 | 704 | 1.3−  | 0.4−  | 2004 02 17 | 691 | 0.1+  | 0.1+  | 2005 06 17 | G96 | 0.1+ | 0.8+ |
| 2000 03 11 | 704 | 1.7−  | 0.5+  | 2004 02 17 | 704 | (0.2+ | 1.9+) | 2005 06 17 | G96 | 0.4− | 1.1+ |
| 2000 03 11 | 704 | 0.4−  | 0.0   | 2004 02 17 | 704 | 1.0+  | 0.8−  | 2006 08 22 | 644 | 0.1− | 0.6+ |
| 2002 08 30 | 291 | 0.1−  | 0.2+  | 2004 02 17 | 704 | 0.7+  | 1.0+  | 2006 08 22 | 644 | 0.2+ | 0.6+ |
| 2002 08 30 | 291 | 0.2−  | 0.1+  | 2004 02 17 | 704 | 0.9+  | 0.4+  | 2006 08 22 | 644 | 0.2+ | 0.7+ |
| 2002 08 30 | 291 | 0.2−  | 0.3+  | 2004 02 17 | 704 | 0.8+  | 0.0   | 2006 08 28 | 699 | 0.3+ | 0.3+ |
| 2002 08 31 | 291 | 0.1−  | 0.3+  | 2004 02 17 | 608 | 0.1+  | 0.5−  | 2006 08 28 | 703 | 0.1+ | 0.1+ |
| 2002 08 31 | 291 | 0.3−  | 0.3+  | 2004 02 17 | 608 | 0.0   | 1.2−  | 2006 08 28 | 703 | 0.2− | 0.6+ |
| 2002 08 31 | 291 | 0.1−  | 0.1+  | 2004 02 17 | 608 | 0.3−  | 0.7−  | 2006 08 28 | 699 | 0.5+ | 1.4+ |
| 2002 09 07 | 704 | 0.3+  | 0.8+  | 2004 02 23 | 704 | (1.9+ | 0.6+) | 2006 08 28 | 703 | 1.0− | 0.3+ |
| 2002 09 07 | 704 | 0.1−  | 0.1−  | 2004 02 23 | 704 | (1.7+ | 0.3+) | 2006 08 28 | 703 | 0.2+ | 0.6+ |
| 2002 09 07 | 704 | 0.8−  | 0.0   | 2004 02 23 | 704 | (1.6+ | 0.9+) | 2006 08 28 | 699 | 0.5− | 1.3+ |
| 2002 09 13 | 644 | 0.1−  | 0.1+  | 2004 02 23 | 704 | 0.6+  | 0.2+  | 2006 08 28 | 699 | 0.3− | 0.4− |
| 2002 09 13 | 644 | 0.4−  | 0.5+  | 2004 02 23 | 704 | (1.7+ | 1.2+) | 2006 09 30 | G96 | 0.0  | 0.1− |
| 2002 09 13 | 644 | 0.2−  | 0.6+  | 2004 02 29 | 691 | 0.1+  | 0.4+  | 2006 09 30 | G96 | 0.1+ | 0.1+ |
| 2002 09 15 | 644 | 0.1−  | 0.6+  | 2004 02 29 | 691 | 0.3+  | 0.5+  | 2006 09 30 | G96 | 0.2+ | 0.4− |
| 2002 09 15 | 644 | 0.1−  | 0.8+  | 2004 02 29 | 691 | 0.2−  | 0.4+  | 2006 09 30 | G96 | 0.5+ | 0.1+ |
| 2002 09 15 | 644 | 0.1+  | 0.7+  | 2004 03 15 | 703 | 0.8−  | 0.7+  | 2007 11 08 | G96 | 0.1− | 0.4− |
| 2002 09 15 | 644 | 0.5−  | 0.5+  | 2004 03 15 | 703 | (1.6− | 0.3−) | 2007 11 08 | G96 | 0.1− | 0.4− |
| 2002 09 15 | 644 | 0.1+  | 0.9+  | 2004 03 15 | 703 | 0.2−  | 0.4−  | 2007 11 08 | G96 | 0.4− | 0.4− |
| 2002 09 15 | 644 | 0.5−  | 0.5+  | 2004 03 15 | 703 | 0.8−  | 0.2−  | 2007 11 08 | G96 | 0.4− | 0.5− |
| 2004 01 24 | 704 | (1.7+ | 0.3+) | 2004 03 19 | 704 | 0.5+  | 0.1+  | 2007 12 14 | G96 | 0.3− | 0.1+ |
| 2004 01 24 | 704 | 0.5+  | 0.8+  | 2004 03 19 | 704 | 0.0   | 0.2+  | 2007 12 14 | G96 | 0.2− | 0.0  |
| 2004 01 24 | 704 | 1.3+  | 1.3+  | 2004 03 19 | 704 | 0.4+  | 0.1−  | 2007 12 14 | G96 | 0.4+ | 0.0  |
| 2004 01 24 | 704 | 1.4+  | 1.0+  | 2004 03 19 | 704 | 0.4−  | 0.1+  | 2007 12 14 | G96 | 0.5+ | 0.4+ |
| 2004 01 24 | 704 | 1.3+  | 1.1+  | 2004 03 19 | 704 | 1.1+  | 0.5−  |            |     |      |      |
| 2004 02 11 | 291 | 0.1+  | 0.0   | 2004 03 26 | 691 | 0.1−  | 0.2+  |            |     |      |      |

**(172204)\* 2002 QR<sub>52</sub>**

Discovered 2002 Aug. 29 by S. F. Hoenig on NEAT images taken at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 206.78355  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23366216 | $\omega$ | 70.54894  | −0.87465413 | +0.47240770 |
| <i>a</i> | 2.6106208  | $\Omega$ | 137.45164 | −0.48273578 | −0.82844696 |
| <i>e</i> | 0.0090898  | <i>i</i> | 9.24853   | −0.04411719 | −0.30084313 |
| <i>P</i> | 4.22       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 18 | 644 | 0.0   | 0.5+  | 2005 03 18 | 703 | (1.2− | 1.6−) | 2007 11 02 | 703 | (2.9− | 0.6+) |
| 2002 08 18 | 644 | 0.1−  | 0.7+  | 2005 04 01 | 699 | 0.9−  | 0.6+  | 2007 11 02 | 703 | 0.4−  | 0.5+  |
| 2002 08 18 | 644 | 0.1+  | 0.4+  | 2005 04 01 | 699 | 0.0   | 0.1−  | 2007 11 02 | 703 | 0.4−  | 0.6+  |
| 2002 08 29 | 644 | 0.5+  | 0.0   | 2005 04 01 | 699 | 0.6−  | 0.4+  | 2007 11 02 | 703 | 0.2−  | 0.0   |
| 2002 08 29 | 644 | 0.1−  | 0.3+  | 2005 04 01 | 699 | 0.1+  | 0.2−  | 2007 11 09 | 703 | 0.5+  | 0.6−  |
| 2002 08 29 | 644 | 0.4+  | 0.0   | 2005 04 08 | 704 | 0.4−  | 1.2+  | 2007 11 09 | 703 | 0.5+  | 1.3+  |
| 2002 09 11 | 608 | 0.7−  | 0.1+  | 2005 04 08 | 704 | 1.0+  | 0.7+  | 2007 11 09 | 703 | (0.1+ | 2.1+) |
| 2002 09 11 | 608 | 0.3−  | 0.2−  | 2005 04 08 | 704 | 1.0+  | 0.8+  | 2007 11 09 | 703 | 0.3−  | 0.6+  |
| 2002 09 11 | 608 | 0.3+  | 0.5−  | 2006 08 12 | 644 | 0.1−  | 0.0   | 2007 11 19 | G96 | 0.2+  | 0.2−  |
| 2002 09 15 | 644 | 0.1+  | 0.1+  | 2006 08 12 | 644 | 0.0   | 0.2+  | 2007 11 19 | G96 | 0.1−  | 0.2−  |
| 2002 09 15 | 644 | 0.2+  | 0.1+  | 2006 08 12 | 644 | 0.2−  | 0.2+  | 2007 11 19 | G96 | 0.0   | 0.2−  |
| 2002 09 15 | 644 | 0.1−  | 0.4+  | 2006 08 13 | 644 | 0.3+  | 0.6+  | 2007 11 19 | G96 | 0.2+  | 0.0   |
| 2002 09 16 | 644 | 0.2+  | 0.3−  | 2006 08 13 | 644 | 0.5+  | 0.1+  | 2007 12 05 | 703 | 0.1+  | 0.0   |
| 2002 09 16 | 644 | 0.8−  | 0.0   | 2006 08 13 | 644 | 0.3+  | 0.2−  | 2007 12 05 | 703 | 0.0   | 0.2−  |
| 2002 09 16 | 644 | 0.1−  | 0.1+  | 2006 09 30 | G96 | 0.4−  | 0.6−  | 2007 12 05 | 703 | 1.0−  | 0.3−  |
| 2005 03 18 | 703 | 0.2−  | 0.7−  | 2006 09 30 | G96 | 0.2−  | 0.0   | 2007 12 05 | 703 | 0.5+  | 0.5+  |
| 2005 03 18 | 703 | 0.7+  | 0.4−  | 2006 09 30 | G96 | 0.5−  | 0.8−  |            |     |       |       |
| 2005 03 18 | 703 | (2.3− | 0.3+) | 2006 09 30 | G96 | 0.2−  | 0.0   |            |     |       |       |

**(172205)\* 2002 QT<sub>52</sub> = 1998 TY<sub>23</sub>**

Discovered 2002 Aug. 29 by S. F. Hoenig on NEAT images taken at Palomar.

Id. K. E. Smalley (*MPO* 50109)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 35.96950   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23332122 | $\omega$ | 25.43506 | +0.78051531 | −0.62495864 |
| <i>a</i> | 2.6131634  | $\Omega$ | 13.27625 | +0.56188217 | +0.69087887 |
| <i>e</i> | 0.2132206  | <i>i</i> | 3.72463  | +0.27401511 | +0.36347364 |
| <i>P</i> | 4.22       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |             |            |     |             |      |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------|------------|-----|-------------|
| 1998 09 15 | 699 | (0.2+ 4.8+) | 2002 09 04 | 644 | 0.0         | 0.5+ | 2004 02 23 | 704 | (0.9+ 2.0+) |
| 1998 09 15 | 699 | (1.7+ 2.2+) | 2002 09 04 | 644 | 0.3−        | 0.4+ | 2004 02 23 | 704 | 0.4+ 0.4+   |
| 1998 09 15 | 699 | 0.1+ 1.0+   | 2002 09 05 | 704 | 0.5−        | 0.5− | 2004 02 23 | 704 | 0.9+ 0.4+   |
| 1998 09 25 | 327 | 1.7+ 0.2+   | 2002 09 05 | 704 | 0.5+        | 0.1+ | 2005 05 10 | 807 | 0.2+ 0.3+   |
| 1998 09 25 | 327 | 1.2+ 0.1+   | 2002 09 05 | 704 | 0.0         | 0.3+ | 2005 05 10 | 807 | 0.1+ 0.4+   |
| 1998 09 25 | 327 | 2.1+ 0.3+   | 2002 09 05 | 704 | (2.0+ 0.0)  |      | 2005 05 16 | G96 | 0.1+ 0.4+   |
| 1998 10 14 | 691 | 0.5− 0.0    | 2002 09 05 | 704 | 0.5−        | 0.7+ | 2005 05 16 | G96 | 0.2− 0.1−   |
| 1998 10 14 | 691 | 0.4− 0.0    | 2002 09 15 | 644 | 0.1−        | 0.2− | 2005 05 16 | G96 | 0.4− 0.0    |
| 1998 10 14 | 691 | 0.3− 0.1+   | 2002 09 15 | 644 | 0.5−        | 0.0  | 2005 05 16 | G96 | 0.1+ 0.1+   |
| 1998 10 19 | 691 | 0.1+ 0.3−   | 2002 09 15 | 644 | 0.1−        | 0.2+ | 2007 11 20 | G96 | 0.3− 0.6−   |
| 1998 10 19 | 691 | 0.0 0.3−    | 2002 09 26 | 644 | 0.0         | 0.3+ | 2007 11 20 | G96 | 0.7− 0.5−   |
| 1998 10 19 | 691 | 0.1+ 0.2−   | 2002 09 26 | 644 | 0.1+ 0.2+   |      | 2007 11 20 | G96 | 0.0 0.5−    |
| 2002 08 11 | 644 | 0.0 1.1+    | 2002 09 26 | 644 | 0.1−        | 0.3+ | 2007 11 20 | G96 | 0.4− 0.5−   |
| 2002 08 18 | 644 | 0.9− 1.2+   | 2004 01 22 | 704 | 1.1−        | 0.7+ | 2007 12 15 | 704 | 0.2− 0.4+   |
| 2002 08 18 | 644 | 0.6− 0.5+   | 2004 01 22 | 704 | 1.2+ 1.2+   |      | 2007 12 15 | 704 | 0.8+ 0.9+   |
| 2002 08 18 | 644 | 0.6− 0.9+   | 2004 01 22 | 704 | (0.5+ 2.4+) |      | 2007 12 15 | 704 | 0.3+ 0.5+   |
| 2002 08 29 | 644 | 0.2+ 0.3+   | 2004 02 13 | 691 | 0.2+ 0.1+   |      | 2007 12 15 | 704 | 0.4+ 0.8+   |
| 2002 08 29 | 644 | 0.3+ 0.1+   | 2004 02 13 | 691 | 0.1−        | 0.3+ | 2007 12 15 | 704 | 0.2+ 0.7+   |
| 2002 09 04 | 644 | 0.3+ 0.5+   | 2004 02 13 | 691 | 0.2+ 0.1+   |      |            |     |             |

2007 DEC. 24

M.P.O. 129297

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 175.15208  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24436303 | $\omega$ 138.88142 | -0.28248537   | +0.95804049 |
| <i>a</i> | 2.5338392  | $\Omega$ 114.65894 | -0.89350749   | -0.24435177 |
| <i>e</i> | 0.0741466  | <i>i</i> 3.06446   | -0.34906500   | -0.14983535 |
| <i>P</i> | 4.03       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 04 | 608 | 0.6- | 0.8- | 2005 03 10 | 691 | 0.2+  | 0.2+  | 2005 04 09 | 699 | 0.5+ | 0.1+ |
| 2001 03 04 | 608 | 0.5+ | 0.2- | 2005 03 10 | 691 | 0.1+  | 0.1+  | 2005 04 09 | 699 | 1.1- | 0.0  |
| 2001 04 15 | 608 | 0.6+ | 0.2+ | 2005 03 10 | 691 | 0.1+  | 0.0   | 2005 05 12 | 691 | 0.1- | 0.5+ |
| 2001 04 15 | 608 | 0.2- | 0.9+ | 2005 03 11 | 691 | 0.0   | 0.2+  | 2005 05 12 | 691 | 0.0  | 0.4+ |
| 2001 04 15 | 608 | 0.3- | 0.4+ | 2005 03 11 | 691 | 0.0   | 0.1-  | 2005 05 12 | 691 | 0.1+ | 0.4+ |
| 2002 08 18 | 644 | 0.0  | 0.1- | 2005 03 11 | 691 | 0.2-  | 0.1-  | 2005 05 15 | 644 | 0.0  | 0.4+ |
| 2002 08 18 | 644 | 1.0- | 0.5+ | 2005 03 18 | 703 | 0.3-  | 0.5+  | 2005 05 15 | 644 | 0.2+ | 0.1+ |
| 2002 08 18 | 644 | 0.6- | 0.5+ | 2005 03 18 | 703 | 0.5-  | 0.1+  | 2005 05 15 | 644 | 0.0  | 0.6+ |
| 2002 08 29 | 644 | 0.2+ | 0.8+ | 2005 03 18 | 703 | 0.5-  | 1.0-  | 2006 08 28 | 703 | 0.4- | 0.0  |
| 2002 08 29 | 644 | 0.2+ | 0.8+ | 2005 03 18 | 703 | 0.2-  | 0.4-  | 2006 08 28 | 703 | 0.4+ | 0.5- |
| 2002 09 01 | 644 | 0.1- | 0.7+ | 2005 04 04 | 703 | 0.1+  | 0.5-  | 2006 08 28 | 703 | 0.7- | 0.1+ |
| 2002 09 01 | 644 | 0.8- | 0.7+ | 2005 04 04 | 703 | 0.4-  | 1.5-  | 2006 08 28 | 703 | 0.7+ | 0.7- |
| 2002 09 04 | 644 | 0.1- | 0.6+ | 2005 04 04 | 703 | (0.4+ | 1.7-) | 2007 11 13 | 691 | 0.2+ | 0.0  |
| 2002 09 04 | 644 | 0.3+ | 0.6+ | 2005 04 04 | 703 | 0.1-  | 0.3-  | 2007 11 13 | 691 | 0.2- | 0.2- |
| 2002 09 04 | 644 | 0.3- | 0.5+ | 2005 04 05 | 699 | 1.5+  | 0.4+  | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2002 09 15 | 644 | 0.1+ | 0.7+ | 2005 04 05 | 699 | 0.5+  | 0.6+  | 2007 12 16 | 691 | 0.5- | 1.4+ |
| 2002 09 15 | 644 | 0.1+ | 0.7+ | 2005 04 05 | 699 | 1.3+  | 0.0   | 2007 12 16 | 691 | 0.1+ | 0.2+ |
| 2002 09 15 | 644 | 0.0  | 0.7+ | 2005 04 05 | 699 | 0.6+  | 0.1+  | 2007 12 16 | 691 | 0.1+ | 0.2+ |
| 2002 09 16 | 644 | 0.4- | 0.3+ | 2005 04 09 | 699 | 0.6-  | 1.4+  |            |     |      |      |
| 2002 09 16 | 644 | 0.4- | 0.4+ | 2005 04 09 | 699 | 1.0+  | 1.0+  |            |     |      |      |

(172207)\* 2002 QN<sub>68</sub>

Discovered 2002 Aug. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.31925   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22980879 | $\omega$ 44.41316  | +0.80526198   | -0.59283047 |
| <i>a</i> | 2.6397226  | $\Omega$ 351.92591 | +0.52164206   | +0.71657479 |
| <i>e</i> | 0.0394343  | <i>i</i> 4.18738   | +0.28185581   | +0.36752225 |
| <i>P</i> | 4.29       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 17 | 608 | 0.1- | 0.2+ | 2005 03 13 | 691 | 0.2+ | 0.6+ | 2007 11 13 | 703 | 0.3-  | 0.1-  |
| 2002 08 17 | 608 | 0.1+ | 0.1- | 2005 03 13 | 691 | 0.3+ | 0.4+ | 2007 11 13 | 703 | 1.2+  | 0.2-  |
| 2002 08 17 | 608 | 0.9- | 0.2+ | 2005 03 13 | 691 | 0.4+ | 0.6+ | 2007 11 13 | 703 | 0.3-  | 0.1+  |
| 2002 08 18 | 644 | 0.4- | 1.0+ | 2005 04 04 | 691 | 0.1+ | 0.2- | 2007 11 18 | 704 | 0.8-  | 0.9+  |
| 2002 08 18 | 644 | 0.2- | 0.6+ | 2005 04 04 | 691 | 0.1- | 0.4+ | 2007 11 18 | 704 | 0.3-  | 0.6+  |
| 2002 08 18 | 644 | 0.3- | 0.8+ | 2005 04 04 | 691 | 0.4+ | 0.2+ | 2007 11 18 | 704 | 0.0   | 0.2-  |
| 2002 08 29 | 644 | 0.1+ | 0.2+ | 2007 10 21 | G96 | 0.2+ | 0.1- | 2007 11 18 | 704 | 0.3-  | 0.6+  |
| 2002 08 29 | 644 | 0.0  | 0.4+ | 2007 10 21 | G96 | 0.2- | 0.1- | 2007 11 20 | 704 | (0.1- | 2.3+) |
| 2002 08 29 | 644 | 0.0  | 0.3+ | 2007 10 21 | G96 | 0.0  | 0.1- | 2007 11 20 | 704 | (0.2- | 1.8+) |
| 2002 09 01 | 644 | 0.3+ | 0.5+ | 2007 10 21 | G96 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.5-  | 0.2-  |
| 2002 09 01 | 644 | 0.0  | 0.2+ | 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 11 20 | 704 | 0.3-  | 0.7-  |
| 2002 09 01 | 644 | 0.3- | 0.2+ | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 20 | 704 | 0.1+  | 0.8+  |
| 2002 09 04 | 644 | 0.3- | 0.4+ | 2007 11 02 | 691 | 0.1- | 0.5+ | 2007 11 20 | G96 | 0.0   | 0.0   |
| 2002 09 04 | 644 | 0.2- | 0.1+ | 2007 11 02 | 703 | 0.5- | 0.2- | 2007 11 20 | G96 | 0.1-  | 0.1+  |
| 2002 09 04 | 644 | 0.0  | 0.3+ | 2007 11 02 | 703 | 0.8- | 0.1+ | 2007 11 20 | G96 | 0.3+  | 0.0   |
| 2002 09 15 | 644 | 0.3- | 0.4+ | 2007 11 02 | 703 | 0.7+ | 0.7- | 2007 11 20 | G96 | 0.2+  | 0.1+  |
| 2002 09 15 | 644 | 0.0  | 0.2+ | 2007 11 02 | 703 | 0.5- | 0.6- | 2007 12 12 | 704 | (2.6+ | 1.3+) |
| 2002 09 15 | 644 | 0.4- | 0.0  | 2007 11 05 | D29 | 0.3- | 0.4- | 2007 12 12 | 704 | (1.9+ | 1.1+) |
| 2003 11 24 | 691 | 0.0  | 0.0  | 2007 11 05 | D29 | 0.5+ | 0.1- | 2007 12 12 | 704 | (2.4- | 1.6+) |
| 2003 11 24 | 691 | 0.2- | 0.1- | 2007 11 05 | D29 | 0.1- | 0.1+ | 2007 12 13 | 704 | 0.5-  | 1.5+  |
| 2003 11 24 | 691 | 0.0  | 0.0  | 2007 11 05 | D29 | 0.2+ | 0.1- | 2007 12 13 | 704 | 0.5-  | 1.3+  |
| 2003 12 23 | 704 | 1.0+ | 0.1- | 2007 11 07 | 704 | 0.1+ | 0.4- | 2007 12 13 | 704 | 0.3-  | 1.0+  |
| 2003 12 23 | 704 | 0.0  | 0.5+ | 2007 11 07 | 704 | 0.3+ | 0.3- | 2007 12 13 | 704 | (0.5- | 1.9+) |
| 2003 12 23 | 704 | 0.1- | 0.2+ | 2007 11 07 | 704 | 0.2+ | 0.5- | 2007 12 13 | 704 | (0.6- | 1.9+) |
| 2003 12 28 | 704 | 0.2- | 0.4- | 2007 11 07 | 704 | 0.7+ | 0.4- | 2007 12 15 | 704 | 0.4+  | 0.7+  |
| 2003 12 28 | 704 | 0.5- | 0.1+ | 2007 11 07 | 704 | 0.7+ | 0.1+ | 2007 12 15 | 704 | 0.4-  | 0.7+  |
| 2003 12 28 | 704 | 0.2+ | 0.4- | 2007 11 13 | 699 | 0.7- | 0.6+ | 2007 12 15 | 704 | 0.4-  | 0.7+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | G96 | 0.4- | 0.2+ | 2007 11 13 | 699 | 0.1+ | 0.5- | 2007 12 15 | 704 | 0.1- | 0.3+ |
| 2005 03 11 | G96 | 0.5- | 0.0  | 2007 11 13 | 699 | 0.1- | 0.4- | 2007 12 15 | 704 | 0.2- | 0.3+ |
| 2005 03 11 | G96 | 0.3- | 0.1+ | 2007 11 13 | 699 | 0.5+ | 0.6- |            |     |      |      |
| 2005 03 11 | G96 | 0.2- | 0.1+ | 2007 11 13 | 703 | 0.7+ | 0.5- |            |     |      |      |

(172208)\* 2002 QH<sub>74</sub> = 2004 BJ<sub>64</sub> = 2005 JD<sub>160</sub>

Discovered 2002 Aug. 28 by NEAT at Palomar.

Id. K. E. Smalley (*MPO* 85580)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.74156   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23824596 | $\omega$ 61.26338  | +0.55208325   | -0.83378734 |
| <i>a</i> | 2.5770273  | $\Omega$ 355.22558 | +0.75787238   | +0.50264383 |
| <i>e</i> | 0.1269417  | <i>i</i> 1.14115   | +0.34761120   | +0.22835902 |
| <i>P</i> | 4.14       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 01 | 691 | 0.2- | 0.1- | 2002 09 14 | 644 | 0.3+ | 0.5+ | 2005 05 07 | G96 | 0.1-  | 0.3+  |
| 1998 09 01 | 691 | 0.4- | 0.2- | 2002 09 15 | 644 | 0.3- | 0.5+ | 2005 05 07 | G96 | 0.2-  | 0.0   |
| 1998 09 01 | 691 | 0.2+ | 0.2- | 2002 09 15 | 644 | 0.2- | 0.6+ | 2005 05 16 | G96 | 0.2-  | 0.3-  |
| 2000 02 10 | 691 | 0.2- | 0.4- | 2002 09 15 | 644 | 0.1- | 0.4+ | 2005 05 16 | G96 | 0.0   | 0.3-  |
| 2000 02 10 | 691 | 0.4- | 0.4+ | 2004 01 16 | 691 | 0.1+ | 0.0  | 2005 05 16 | G96 | 0.5-  | 0.2+  |
| 2000 02 10 | 691 | 0.3- | 0.2+ | 2004 01 16 | 691 | 0.0  | 0.2+ | 2005 05 16 | G96 | 0.1+  | 0.1+  |
| 2002 08 17 | 644 | 0.6+ | 0.1+ | 2004 01 16 | 691 | 1.6+ | 0.5- | 2007 11 02 | G96 | 0.2+  | 0.3-  |
| 2002 08 17 | 644 | 0.1- | 0.3+ | 2004 01 22 | 704 | 1.4+ | 0.5+ | 2007 11 02 | G96 | 0.0   | 0.2-  |
| 2002 08 17 | 644 | 0.4+ | 0.4+ | 2004 01 22 | 704 | 1.1+ | 0.3+ | 2007 11 02 | G96 | 0.9+  | 0.9-  |
| 2002 08 18 | 644 | 0.1+ | 0.6+ | 2004 01 22 | 704 | 1.2+ | 0.5+ | 2007 11 02 | G96 | (0.2- | 1.6-) |
| 2002 08 18 | 644 | 0.2- | 0.6+ | 2004 01 22 | 704 | 1.1+ | 0.5+ | 2007 11 11 | G96 | 0.4-  | 0.4-  |
| 2002 08 18 | 644 | 0.1- | 0.3+ | 2004 01 22 | 704 | 0.6+ | 0.7+ | 2007 11 11 | G96 | 0.5+  | 0.4-  |
| 2002 08 28 | 644 | 0.0  | 0.4+ | 2004 01 27 | 691 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.3+  | 0.3-  |
| 2002 08 28 | 644 | 0.8+ | 0.2+ | 2004 01 27 | 691 | 0.1- | 0.4+ | 2007 11 11 | G96 | 0.2+  | 0.5-  |
| 2002 08 28 | 644 | 0.1- | 0.5+ | 2004 01 27 | 691 | 0.2- | 0.4+ | 2007 12 15 | 691 | 0.6-  | 0.0   |
| 2002 09 14 | 644 | 0.6- | 0.7+ | 2005 05 07 | G96 | 0.1- | 0.4+ | 2007 12 15 | 691 | 0.4-  | 0.2-  |
| 2002 09 14 | 644 | 0.1+ | 0.5+ | 2005 05 07 | G96 | 0.3+ | 0.3+ | 2007 12 15 | 691 | 0.7-  | 0.1-  |

(172209)\* 2002 QG<sub>75</sub> = 2005 JH<sub>158</sub>

Discovered 2002 Aug. 28 by NEAT at Palomar.

Id. K. E. Smalley (*MPO* 85581)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 115.09515  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23942542 | $\omega$ 250.14158 | +0.61416817   | +0.78905261 |
| <i>a</i> | 2.5685570  | $\Omega$ 57.75773  | -0.71776290   | +0.56583143 |
| <i>e</i> | 0.0197498  | <i>i</i> 0.94222   | -0.32804554   | +0.23922955 |
| <i>P</i> | 4.12       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 08 | 644 | 0.0  | 0.4+ | 2005 03 08 | G96 | 0.6+ | 0.2+ | 2007 11 02 | 691 | 0.5+ | 0.4+ |
| 2002 08 08 | 644 | 0.0  | 0.6+ | 2005 03 08 | G96 | 0.0  | 0.2- | 2007 11 02 | 691 | 0.1+ | 0.2- |
| 2002 08 08 | 644 | 0.1+ | 0.4+ | 2005 03 08 | G96 | 0.7- | 0.3+ | 2007 11 02 | 691 | 0.1- | 0.0  |
| 2002 08 18 | 644 | 0.3- | 0.2- | 2005 04 09 | G96 | 0.3- | 0.6+ | 2007 12 04 | 691 | 0.3+ | 0.2- |
| 2002 08 18 | 644 | 0.8- | 0.0  | 2005 04 09 | G96 | 0.3+ | 0.0  | 2007 12 04 | 691 | 0.5- | 0.0  |
| 2002 08 18 | 644 | 0.1- | 0.0  | 2005 04 09 | G96 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.3- | 0.3- |
| 2002 08 28 | 644 | 0.2- | 0.1+ | 2005 04 09 | G96 | 0.2+ | 0.1+ | 2007 12 05 | G96 | 0.4+ | 0.1- |
| 2002 08 28 | 644 | 0.1+ | 0.1+ | 2005 05 06 | G96 | 0.2+ | 0.6+ | 2007 12 05 | G96 | 0.6+ | 0.3+ |
| 2002 08 28 | 644 | 0.2- | 0.0  | 2005 05 06 | G96 | 0.2+ | 0.5+ | 2007 12 05 | G96 | 0.5+ | 0.1+ |
| 2002 09 15 | 644 | 0.1+ | 0.3- | 2005 05 06 | G96 | 1.1+ | 0.5- | 2007 12 05 | G96 | 0.4+ | 0.6- |
| 2002 09 15 | 644 | 0.6+ | 0.2+ | 2005 05 06 | G96 | 0.1+ | 0.0  | 2007 12 16 | 691 | 0.2- | 0.3+ |
| 2002 09 15 | 644 | 0.1+ | 0.0  | 2005 05 13 | G96 | 0.1+ | 0.2+ | 2007 12 16 | 691 | 0.5- | 0.2+ |
| 2003 11 24 | 695 | 0.1+ | 0.1+ | 2005 05 13 | G96 | 0.4- | 0.3- | 2007 12 16 | 691 | 0.3+ | 0.3+ |
| 2003 11 24 | 695 | 0.1- | 0.0  | 2005 05 13 | G96 | 0.1- | 0.1+ |            |     |      |      |
| 2005 03 08 | G96 | 0.0  | 0.3- | 2005 05 13 | G96 | 0.7- | 0.3+ |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.48462   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21607699 | $\omega$ 249.48837 | +0.98004018   | -0.19813045 |
| <i>a</i> | 2.7504074  | $\Omega$ 121.93608 | +0.18880128   | +0.90194892 |
| <i>e</i> | 0.0768649  | <i>i</i> 1.10032   | +0.06225213   | +0.38370883 |
| <i>P</i> | 4.56       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 14 | 691 | 0.9+ | 0.3- | 2004 01 30 | 691 | 0.5- | 0.3+ | 2007 10 15 | 703 | 0.5- | 0.5+ |
| 1998 11 14 | 691 | 0.5+ | 0.1- | 2004 01 30 | 691 | 0.3- | 0.3+ | 2007 10 15 | 703 | 0.7- | 0.9+ |
| 1998 11 14 | 691 | 0.7+ | 0.2- | 2004 01 30 | 691 | 0.5+ | 0.0  | 2007 10 15 | 703 | 0.3+ | 0.2+ |
| 1998 11 21 | 691 | 0.6- | 0.4+ | 2005 03 11 | 695 | 0.3+ | 0.3+ | 2007 10 16 | 691 | 0.3+ | 0.1+ |
| 1998 11 21 | 691 | 0.6- | 0.2+ | 2005 03 11 | 695 | 0.1+ | 0.6+ | 2007 10 16 | 691 | 0.1- | 0.1+ |
| 1998 11 21 | 691 | 0.8- | 0.5+ | 2005 04 06 | G96 | 0.4- | 0.0  | 2007 10 16 | 691 | 0.4- | 0.2- |
| 2002 08 14 | 291 | 0.2- | 0.2+ | 2005 04 06 | G96 | 0.1- | 0.1+ | 2007 10 20 | 691 | 0.1- | 0.2+ |
| 2002 08 14 | 291 | 0.2- | 0.2+ | 2005 04 06 | G96 | 0.5+ | 0.2+ | 2007 10 20 | 691 | 0.1+ | 0.0  |
| 2002 08 14 | 291 | 0.1+ | 0.1+ | 2005 04 06 | G96 | 0.6- | 0.6- | 2007 10 20 | 691 | 0.1- | 0.2+ |
| 2002 08 27 | 644 | 0.1- | 0.2- | 2005 05 06 | G96 | 0.1+ | 0.3- | 2007 10 24 | G96 | 0.0  | 0.0  |
| 2002 08 27 | 644 | 0.0  | 0.8+ | 2005 05 06 | G96 | 0.5+ | 0.3- | 2007 10 24 | G96 | 0.1- | 0.2- |
| 2002 08 28 | 644 | 0.0  | 0.2+ | 2005 05 06 | G96 | 0.1+ | 0.2- | 2007 10 24 | G96 | 0.9+ | 0.4+ |
| 2002 08 28 | 644 | 0.2- | 0.7+ | 2005 05 06 | G96 | 0.2+ | 0.2+ | 2007 10 24 | G96 | 0.7+ | 0.2- |
| 2002 08 28 | 644 | 0.1- | 0.3+ | 2007 10 07 | G96 | 0.4+ | 0.5- | 2007 11 01 | G96 | 0.4+ | 0.5- |
| 2002 08 29 | 644 | 0.0  | 0.3+ | 2007 10 07 | G96 | 0.3+ | 0.3- | 2007 11 01 | G96 | 0.1+ | 0.5- |
| 2002 08 29 | 644 | 0.1- | 0.2- | 2007 10 07 | G96 | 0.2+ | 0.4- | 2007 11 01 | G96 | 0.3+ | 0.4- |
| 2002 08 29 | 644 | 0.2+ | 0.4- | 2007 10 07 | G96 | 0.3+ | 0.3- | 2007 11 01 | G96 | 0.5+ | 0.4- |
| 2002 09 08 | 608 | 0.7+ | 0.1- | 2007 10 12 | 691 | 0.7- | 0.6- | 2007 12 05 | G96 | 0.5+ | 0.5- |
| 2002 09 15 | 644 | 0.4- | 0.3+ | 2007 10 12 | 691 | 0.1- | 0.0  | 2007 12 05 | G96 | 0.8+ | 0.2- |
| 2002 09 15 | 644 | 0.5- | 0.0  | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 12 05 | G96 | 0.7+ | 0.6- |
| 2002 09 15 | 644 | 0.4- | 0.2- | 2007 10 15 | 703 | 1.2+ | 0.4- | 2007 12 05 | G96 | 0.0  | 0.3- |

**(172211)\* 2002 QE<sub>84</sub> = 1993 FK<sub>68</sub> = 2003 WZ<sub>114</sub>**

Discovered 2002 Aug. 27 by NEAT at Palomar.

Id. A. Doppler (*MPO* 100329)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 282.33791  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25248981 | $\omega$ 187.49246 | -0.96338219   | -0.26665716 |
| <i>a</i> | 2.4791729  | $\Omega$ 336.98257 | +0.24958156   | -0.85351831 |
| <i>e</i> | 0.1682656  | <i>i</i> 4.11877   | +0.09799896   | -0.44766110 |
| <i>P</i> | 3.90       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 21 | 809 | 0.4- | 0.6+ | 2003 11 20 | 704 | 0.0   | 0.0   | 2006 08 19 | 691 | 0.2- | 0.2+ |
| 1993 03 22 | 809 | 0.7+ | 0.1+ | 2003 11 20 | 704 | 0.1-  | 0.7+  | 2006 08 19 | 691 | 0.0  | 0.3+ |
| 2002 08 17 | 644 | 0.1- | 0.3- | 2003 11 20 | 704 | 1.0-  | 1.1+  | 2006 09 25 | G96 | 0.4+ | 0.1+ |
| 2002 08 17 | 644 | 0.4+ | 0.7+ | 2003 11 24 | 704 | 0.2-  | 0.8+  | 2006 09 25 | G96 | 0.7+ | 0.3- |
| 2002 08 17 | 644 | 0.0  | 0.0  | 2003 11 24 | 704 | 1.4+  | 1.0-  | 2006 09 25 | G96 | 0.0  | 0.1- |
| 2002 08 27 | 644 | 0.3+ | 0.9- | 2003 11 24 | 704 | 0.6-  | 0.5-  | 2006 09 25 | G96 | 0.7+ | 0.1+ |
| 2002 08 27 | 644 | 0.2- | 0.1+ | 2003 11 24 | 704 | (0.6- | 1.8+) | 2007 11 07 | 691 | 0.2- | 0.3+ |
| 2002 08 27 | 644 | 0.2- | 0.0  | 2003 11 24 | 704 | (2.2- | 0.1-) | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2002 09 01 | 644 | 0.2+ | 0.1- | 2003 12 18 | 691 | 0.0   | 0.1-  | 2007 11 07 | 691 | 0.1- | 0.1- |
| 2002 09 01 | 644 | 0.2- | 0.2- | 2003 12 18 | 691 | 0.2+  | 0.1-  | 2007 12 13 | 704 | 0.7+ | 1.1+ |
| 2003 11 20 | 704 | 0.7- | 0.0  | 2003 12 18 | 691 | 0.2+  | 0.1-  | 2007 12 13 | 704 | 0.3+ | 0.1+ |
| 2003 11 20 | 704 | 0.1+ | 1.2- | 2006 08 19 | 691 | 0.3-  | 0.0   | 2007 12 13 | 704 | 0.1+ | 0.2- |

**(172212)\* 2002 QW<sub>89</sub> = 2003 YU<sub>74</sub>**

Discovered 2002 Aug. 27 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 94836)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 308.93341  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25929449 | $\omega$ 202.27435 | -0.91165814   | -0.40906972 |
| <i>a</i> | 2.4356069  | $\Omega$ 313.51742 | +0.38473128   | -0.81601371 |
| <i>e</i> | 0.1317326  | <i>i</i> 3.10352   | +0.14443433   | -0.40839146 |
| <i>P</i> | 3.80       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 28 | 691 | 0.5+ | 0.6+ | 2002 08 27 | 644 | 0.1- | 0.3- | 2004 01 13 | 691 | 0.2- | 0.2+ |
| 1998 08 28 | 691 | 0.0  | 0.3+ | 2002 08 27 | 644 | 0.3- | 0.0  | 2004 01 13 | 691 | 0.2- | 0.1+ |
| 1998 08 28 | 691 | 0.2+ | 0.4+ | 2002 09 01 | 644 | 0.1+ | 0.1- | 2004 01 13 | 691 | 0.0  | 0.4+ |
| 2001 04 24 | 608 | 0.2- | 0.0  | 2002 09 01 | 644 | 0.1- | 0.1+ | 2006 10 20 | 691 | 0.0  | 0.0  |
| 2001 04 24 | 608 | 0.4- | 0.1- | 2002 09 04 | 644 | 0.2- | 0.1+ | 2006 10 20 | 691 | 0.0  | 0.1+ |
| 2001 04 24 | 608 | 0.7- | 0.4- | 2002 09 04 | 644 | 0.6- | 0.2- | 2006 10 20 | 691 | 0.1+ | 0.2+ |
| 2001 05 03 | 608 | 0.4- | 1.0+ | 2002 09 04 | 644 | 0.2+ | 0.2- | 2006 10 20 | G96 | 0.3+ | 0.4- |
| 2001 05 03 | 608 | 0.5+ | 0.2- | 2002 09 14 | 644 | 0.1- | 0.0  | 2006 10 20 | G96 | 0.2+ | 0.0  |
| 2001 05 03 | 608 | 0.1- | 0.7+ | 2002 09 14 | 644 | 0.2- | 0.1- | 2006 10 20 | G96 | 0.2- | 0.3- |
| 2001 05 27 | 608 | 0.1+ | 0.3+ | 2002 09 14 | 644 | 0.0  | 0.0  | 2006 10 20 | G96 | 0.2+ | 0.7- |
| 2001 05 27 | 608 | 0.3+ | 0.3+ | 2003 12 18 | 704 | 0.0  | 0.9+ | 2007 11 07 | G96 | 0.1+ | 0.4- |
| 2001 05 27 | 608 | 0.3+ | 0.5+ | 2003 12 18 | 704 | 0.5+ | 1.1+ | 2007 11 07 | G96 | 0.2- | 0.4- |
| 2002 08 15 | 291 | 0.2+ | 0.4- | 2003 12 18 | 704 | 1.0+ | 0.9+ | 2007 11 07 | G96 | 0.4- | 0.1- |
| 2002 08 15 | 291 | 0.6- | 0.2- | 2003 12 18 | 704 | 0.5+ | 0.7+ | 2007 11 07 | G96 | 0.3+ | 0.2- |
| 2002 08 15 | 291 | 0.3- | 0.2- | 2003 12 22 | 704 | 0.5- | 0.6- | 2007 12 14 | G96 | 0.7+ | 0.4- |
| 2002 08 17 | 644 | 0.3- | 0.2+ | 2003 12 22 | 704 | 0.2- | 0.3- | 2007 12 14 | G96 | 0.6+ | 0.2- |
| 2002 08 17 | 644 | 0.2+ | 0.2- | 2003 12 22 | 704 | 0.5- | 0.5- | 2007 12 14 | G96 | 0.0  | 0.3- |
| 2002 08 17 | 644 | 0.4+ | 0.6+ | 2003 12 22 | 704 | 0.3- | 0.5- | 2007 12 14 | G96 | 0.3+ | 0.1- |
| 2002 08 27 | 644 | 0.0  | 0.1+ | 2003 12 22 | 704 | 0.3- | 0.5- |            |     |      |      |

**(172213)\* 2002 QA<sub>110</sub>**

Discovered 2002 Aug. 17 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.23190  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23124285 | $\omega$ 135.53317 | +0.53290360   | -0.84547953 |
| <i>a</i> | 2.6287977  | $\Omega$ 282.23638 | +0.76623670   | +0.49937282 |
| <i>e</i> | 0.0691731  | <i>i</i> 2.01274   | +0.35901960   | +0.18918551 |
| <i>P</i> | 4.26       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 19 | 645 | 0.0  | 0.0  | 2002 08 27 | 644 | 0.1+ | 0.5+ | 2007 10 31 | 691 | 0.0   | 0.3-  |
| 1998 09 19 | 645 | 0.0  | 0.1- | 2002 09 14 | 644 | 0.1+ | 0.1+ | 2007 10 31 | 691 | 0.2+  | 0.1-  |
| 1998 09 25 | 645 | 0.0  | 0.1- | 2002 09 14 | 644 | 0.3- | 0.1- | 2007 11 08 | 691 | 0.6-  | 0.0   |
| 1998 09 25 | 645 | 0.1+ | 0.0  | 2002 09 14 | 644 | 0.2- | 0.1- | 2007 11 08 | 691 | 0.5-  | 0.4-  |
| 2001 05 23 | 807 | 0.1+ | 0.9+ | 2003 11 20 | 695 | 0.1+ | 0.0  | 2007 11 08 | 691 | 0.7-  | 0.0   |
| 2001 05 23 | 807 | 0.2+ | 0.8+ | 2003 11 20 | 695 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2+  | 0.4-  |
| 2002 07 29 | 644 | 0.3+ | 1.0+ | 2005 03 17 | G96 | 1.1- | 0.3+ | 2007 11 15 | 704 | 0.9+  | 0.0   |
| 2002 07 29 | 644 | 0.1- | 0.6+ | 2005 03 17 | G96 | 0.7- | 0.2+ | 2007 11 15 | 704 | (1.5+ | 0.9+) |
| 2002 07 29 | 644 | 0.3+ | 0.7+ | 2005 03 17 | G96 | 0.7- | 0.1+ | 2007 11 15 | 704 | 1.0+  | 0.0   |
| 2002 08 07 | 644 | 0.5- | 1.0+ | 2005 03 17 | G96 | 0.1- | 0.4+ | 2007 11 15 | 704 | 0.0   | 0.2-  |
| 2002 08 07 | 644 | 0.2- | 0.4+ | 2005 04 09 | 691 | 0.7+ | 0.3+ | 2007 11 20 | 704 | 1.3+  | 0.0   |
| 2002 08 07 | 644 | 0.3- | 0.6+ | 2005 04 09 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 704 | 0.7+  | 0.4+  |
| 2002 08 17 | 644 | 0.1- | 0.5+ | 2005 04 09 | 691 | 0.1+ | 0.1- | 2007 11 20 | 704 | 1.0+  | 0.1-  |
| 2002 08 17 | 644 | 0.3- | 0.2+ | 2007 10 11 | 691 | 0.2+ | 1.2+ | 2007 12 04 | 691 | 0.2-  | 0.9+  |
| 2002 08 17 | 644 | 0.2- | 0.3+ | 2007 10 11 | 691 | 0.1- | 0.3+ | 2007 12 04 | 691 | 0.1+  | 0.3+  |
| 2002 08 27 | 644 | 0.2- | 0.3+ | 2007 10 11 | 691 | 0.2- | 0.1- | 2007 12 04 | 691 | 0.1+  | 0.4+  |
| 2002 08 27 | 644 | 0.3- | 0.0  | 2007 10 31 | 691 | 0.0  | 0.3- |            |     |       |       |

**(172214)\* 2002 QV<sub>115</sub> = 2005 FR<sub>2</sub> = 2006 PL<sub>38</sub>**

Discovered 2002 Aug. 29 by NEAT at Palomar.

Id. T. B. Spahr (*MPO* 121549), A. Doppler (*MPO* 125869)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 150.94122  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23290912 | $\omega$ 191.33640 | -0.23902132   | +0.97082243 |
| <i>a</i> | 2.6162449  | $\Omega$ 64.83720  | -0.88921234   | -0.21085578 |
| <i>e</i> | 0.0875645  | <i>i</i> 1.22204   | -0.39009001   | -0.11420877 |
| <i>P</i> | 4.23       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.1+ | 0.1- | 2005 03 18 | 704 | 0.5- | 0.7- | 2007 11 07 | 691 | 0.8- | 0.5+ |
| 1998 09 19 | 645 | 0.0  | 0.0  | 2006 08 14 | 644 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.5- | 0.1+ |
| 2001 03 20 | 691 | 0.2+ | 0.4+ | 2006 08 14 | 644 | 0.2- | 0.4+ | 2007 11 07 | 691 | 0.6- | 0.0  |
| 2001 03 20 | 691 | 0.0  | 0.2+ | 2006 08 14 | 644 | 0.0  | 0.0  | 2007 11 08 | 691 | 0.2- | 0.3+ |
| 2001 03 20 | 691 | 0.1+ | 0.2+ | 2006 08 15 | 644 | 0.1- | 0.1+ | 2007 11 08 | 691 | 0.2- | 0.1+ |



2007 DEC. 24

M.P.O. 129299

|            |     |             |      |            |     |      |      |            |     |             |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|-------------|------|
| 2002 08 18 | 644 | 0.2−        | 0.6+ | 2006 08 15 | 644 | 0.2− | 0.2− | 2007 11 08 | 691 | 0.1−        | 0.5+ |
| 2002 08 18 | 644 | 0.0         | 0.5+ | 2006 08 15 | 644 | 0.2+ | 0.1+ | 2007 11 11 | G96 | 0.4+        | 0.1− |
| 2002 08 29 | 644 | 0.2−        | 0.1+ | 2006 10 23 | G96 | 0.1+ | 0.2− | 2007 11 11 | G96 | 0.5+        | 0.2+ |
| 2002 08 29 | 644 | 0.4−        | 0.0  | 2006 10 23 | G96 | 0.2− | 0.2− | 2007 11 11 | G96 | 0.6+        | 0.0  |
| 2002 08 29 | 644 | 0.2+        | 0.2+ | 2006 10 23 | G96 | 0.2+ | 0.1+ | 2007 11 11 | G96 | 0.6+        | 0.1− |
| 2002 09 16 | 644 | 0.4−        | 0.6+ | 2006 10 23 | G96 | 0.4+ | 0.6+ | 2007 11 14 | 704 | (1.6+ 0.0 ) |      |
| 2002 09 16 | 644 | 0.3−        | 0.4+ | 2007 10 17 | G96 | 0.4+ | 0.5− | 2007 11 14 | 704 | 0.4+        | 0.7− |
| 2005 03 17 | 704 | 0.6+        | 0.3+ | 2007 10 17 | G96 | 0.2+ | 0.0  | 2007 11 14 | 704 | 0.2+        | 0.3+ |
| 2005 03 17 | 704 | 0.4−        | 0.5− | 2007 10 17 | G96 | 0.7+ | 0.1− | 2007 12 06 | G96 | 0.5+        | 0.9− |
| 2005 03 17 | 704 | 1.0+        | 0.2+ | 2007 10 17 | G96 | 0.6+ | 0.1+ | 2007 12 06 | G96 | 0.1−        | 1.0− |
| 2005 03 17 | 704 | 0.7−        | 0.3− | 2007 11 03 | 691 | 0.3+ | 0.2+ | 2007 12 06 | G96 | 1.0+        | 1.9− |
| 2005 03 18 | 704 | (1.7+ 0.1−) |      | 2007 11 03 | 691 | 0.1− | 0.3+ | 2007 12 06 | G96 | 0.3+        | 0.5− |
| 2005 03 18 | 704 | 0.3+        | 0.7+ | 2007 11 03 | 691 | 0.2+ | 0.1+ |            |     |             |      |

(172215)\* 2002 RL<sub>26</sub>

Discovered 2002 Sept. 4 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 17.37445   |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23215660 | <i>ω</i> | 112.39560 | +0.44598479 | −0.87718106 |
| <i>a</i> | 2.6218954  | <i>Ω</i> | 309.87389 | +0.71203641 | +0.46815325 |
| <i>e</i> | 0.1473313  | <i>i</i> | 13.40388  | +0.54231145 | +0.10670484 |
| <i>P</i> | 4.25       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |             |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|-------------|------|
| 2000 03 06 | 608 | 0.9+        | 0.1− | 2002 10 06 | 644 | 0.2− | 0.3+ | 2006 07 25 | 644 | 0.2−        | 0.2+ |
| 2000 03 06 | 608 | 0.6+        | 0.8+ | 2003 12 25 | 645 | 0.0  | 0.2+ | 2006 07 25 | 644 | 0.1−        | 0.4+ |
| 2000 03 06 | 608 | 0.0         | 0.2+ | 2003 12 25 | 645 | 0.1− | 0.2+ | 2006 07 25 | 644 | 0.2−        | 0.3+ |
| 2002 09 04 | 644 | 0.5−        | 0.1+ | 2004 01 26 | 699 | 0.3− | 0.3+ | 2006 08 14 | 644 | 0.1+        | 0.3+ |
| 2002 09 04 | 644 | 0.5−        | 0.3+ | 2004 01 26 | 699 | 0.1− | 0.2− | 2006 08 14 | 644 | 0.2−        | 0.3+ |
| 2002 09 04 | 644 | 0.5−        | 0.1+ | 2004 01 26 | 699 | 0.1+ | 0.3+ | 2006 08 14 | 644 | 0.2−        | 0.1+ |
| 2002 09 05 | 699 | 1.0−        | 0.8+ | 2004 01 26 | 699 | 0.6− | 0.0  | 2006 08 18 | 644 | 0.1+        | 0.1+ |
| 2002 09 05 | 699 | 0.8−        | 0.4− | 2004 01 29 | 704 | 0.5+ | 0.3− | 2006 08 18 | 644 | 0.1+        | 0.2+ |
| 2002 09 05 | 699 | 0.6+        | 0.1+ | 2004 01 29 | 704 | 0.0  | 0.9+ | 2006 08 18 | 644 | 0.2+        | 0.4+ |
| 2002 09 05 | 699 | 1.4−        | 0.5− | 2004 01 29 | 704 | 0.4+ | 0.3+ | 2007 11 08 | 704 | 0.6−        | 0.2− |
| 2002 09 12 | 644 | 0.1−        | 0.0  | 2004 01 29 | 704 | 0.3+ | 0.6+ | 2007 11 08 | 704 | 0.2+        | 0.0  |
| 2002 09 12 | 644 | 0.1−        | 0.0  | 2004 01 29 | 704 | 0.6+ | 0.4+ | 2007 11 08 | 704 | 0.2+        | 0.4+ |
| 2002 09 12 | 644 | 0.2−        | 0.2+ | 2004 02 13 | 333 | 0.1+ | 0.2+ | 2007 11 08 | 704 | (1.8+ 0.2+) |      |
| 2002 10 04 | 699 | (1.7+ 0.1−) |      | 2004 02 13 | 333 | 0.1− | 0.3+ | 2007 12 02 | 704 | 0.6−        | 0.5− |
| 2002 10 04 | 699 | 1.2+        | 1.1− | 2004 02 13 | 333 | 0.3− | 0.3+ | 2007 12 02 | 704 | 0.4+        | 0.7− |
| 2002 10 04 | 699 | 0.8+        | 0.0  | 2004 02 14 | 608 | 0.5− | 0.2− | 2007 12 02 | 704 | 0.3−        | 0.2− |
| 2002 10 04 | 699 | 0.8+        | 0.2+ | 2004 02 14 | 608 | 0.3− | 0.5− | 2007 12 02 | 704 | 0.2+        | 0.6− |
| 2002 10 05 | 704 | 0.1+        | 0.9+ | 2004 02 14 | 608 | 0.5− | 0.4+ | 2007 12 05 | 699 | 0.1−        | 0.6+ |
| 2002 10 05 | 644 | 0.4−        | 0.2+ | 2004 02 17 | 704 | 1.3+ | 0.2− | 2007 12 05 | 699 | 0.9−        | 0.7− |
| 2002 10 05 | 704 | 0.2−        | 0.6+ | 2004 02 17 | 704 | 1.2+ | 0.2+ | 2007 12 05 | 699 | 0.4−        | 0.3− |
| 2002 10 05 | 704 | (0.1+ 1.6+) |      | 2004 02 17 | 704 | 1.0+ | 0.3− | 2007 12 05 | 699 | 1.0−        | 0.5− |
| 2002 10 05 | 644 | 0.1−        | 0.4+ | 2004 02 17 | 704 | 0.5+ | 0.2− | 2007 12 16 | 704 | 0.1+        | 0.9− |
| 2002 10 05 | 704 | 0.2+        | 0.3+ | 2004 02 17 | 704 | 1.4+ | 0.4− | 2007 12 16 | 704 | 0.0         | 0.3+ |
| 2002 10 05 | 704 | 0.2−        | 0.8+ | 2006 06 19 | G96 | 0.6− | 0.1− | 2007 12 16 | 704 | 0.6+        | 0.5− |
| 2002 10 05 | 644 | 0.4−        | 0.2+ | 2006 06 19 | G96 | 0.2− | 0.0  | 2007 12 16 | 704 | 0.3+        | 0.1+ |
| 2002 10 06 | 644 | 0.3−        | 0.3+ | 2006 06 19 | G96 | 0.2+ | 0.6− | 2007 12 16 | 704 | 0.2+        | 0.8+ |
| 2002 10 06 | 644 | 0.0         | 0.3+ | 2006 06 19 | G96 | 0.0  | 0.0  | 2007 12 16 | 704 | 0.0         | 1.1− |

(172216)\* 2002 RF<sub>44</sub>

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 22.00095   |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21162240 | <i>ω</i> | 10.40579  | +0.99108739 | −0.13266473 |
| <i>a</i> | 2.7888701  | <i>Ω</i> | 357.13366 | +0.09813044 | +0.78838167 |
| <i>e</i> | 0.2036891  | <i>i</i> | 13.97592  | +0.09009000 | +0.60071159 |
| <i>P</i> | 4.66       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2002 08 16 | 608 | 0.1+ | 0.6+ | 2002 10 07 | 704 | 0.9−        | 0.3− | 2007 10 12 | 699 | 0.3− | 0.2+ |
| 2002 08 16 | 608 | 0.1+ | 0.9+ | 2002 10 07 | 704 | (2.1− 1.3−) |      | 2007 10 12 | 699 | 0.2− | 0.3− |

|            |     |             |      |            |     |             |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2002 08 16 | 608 | 0.1+        | 0.3+ | 2002 10 09 | 699 | (1.9− 0.2−) |      | 2007 10 16 | 703 | 0.3− | 0.9− |
| 2002 09 05 | 704 | (2.1+ 0.9−) |      | 2002 10 09 | 699 | 0.1−        | 0.3− | 2007 10 16 | 703 | 0.3− | 0.2− |
| 2002 09 05 | 704 | (1.9+ 0.5−) |      | 2002 10 09 | 699 | 0.2−        | 0.9+ | 2007 10 16 | 703 | 0.4− | 0.4− |
| 2002 09 05 | 704 | 1.5+        | 0.0  | 2002 10 09 | 699 | 0.4−        | 0.4− | 2007 10 16 | 703 | 0.5− | 0.1− |
| 2002 09 05 | 704 | (1.6+ 1.0−) |      | 2002 10 11 | 704 | 0.8−        | 0.3+ | 2007 10 24 | 704 | 1.2+ | 0.5− |
| 2002 09 06 | 704 | 0.4+        | 0.6+ | 2002 10 11 | 704 | 0.3−        | 0.6+ | 2007 10 24 | 704 | 0.6− | 0.2+ |
| 2002 09 06 | 704 | 0.4+        | 0.7+ | 2002 10 11 | 704 | 0.3−        | 0.9+ | 2007 10 24 | 704 | 0.2+ | 0.0  |
| 2002 09 06 | 704 | 0.5+        | 0.0  | 2002 10 11 | 704 | 0.4−        | 1.0+ | 2007 10 24 | 704 | 0.8+ | 0.3− |
| 2002 09 06 | 704 | 0.8+        | 0.1+ | 2004 01 18 | 644 | 0.1−        | 0.8+ | 2007 11 03 | 703 | 0.4− | 0.5+ |
| 2002 09 06 | 704 | 0.0         | 0.2+ | 2004 01 18 | 644 | 0.1+        | 0.6+ | 2007 11 03 | 703 | 0.5− | 0.0  |
| 2002 09 09 | 608 | 0.4−        | 0.0  | 2004 01 18 | 644 | 0.0         | 0.6+ | 2007 11 03 | 703 | 1.1− | 0.0  |
| 2002 09 09 | 608 | 0.4−        | 0.2+ | 2004 01 19 | 704 | 0.5+        | 0.5+ | 2007 11 03 | 703 | 0.7− | 0.8+ |
| 2002 09 09 | 608 | 0.5−        | 0.0  | 2004 01 19 | 704 | 0.2+        | 0.0  | 2007 11 12 | 703 | 1.1+ | 0.1+ |
| 2002 09 14 | 608 | 0.3−        | 0.6− | 2004 01 19 | 704 | 0.3+        | 0.2+ | 2007 11 12 | 703 | 0.0  | 0.1− |
| 2002 09 14 | 608 | 0.5−        | 0.2− | 2004 01 19 | 704 | 1.3+        | 0.8+ | 2007 11 12 | 703 | 0.3+ | 0.7− |
| 2002 09 14 | 608 | 0.0         | 0.6− | 2005 03 14 | G96 | 0.9−        | 0.0  | 2007 11 12 | 703 | 0.5+ | 0.5− |
| 2002 10 03 | 704 | 0.3−        | 0.5+ | 2005 03 14 | G96 | 0.2−        | 0.2− | 2007 12 03 | 704 | 0.4+ | 0.0  |
| 2002 10 03 | 704 | 0.0         | 0.1− | 2005 03 14 | G96 | 0.5+        | 0.2− | 2007 12 03 | 704 | 0.2+ | 0.3− |
| 2002 10 03 | 704 | 1.0+        | 1.2− | 2005 03 14 | G96 | 0.2−        | 0.1− | 2007 12 03 | 704 | 0.4+ | 0.1− |
| 2002 10 06 | 704 | 0.1−        | 0.3− | 2007 09 20 | 703 | 0.9+        | 1.0+ | 2007 12 03 | 704 | 0.6+ | 0.4+ |
| 2002 10 06 | 704 | 0.1+        | 0.1− | 2007 09 20 | 703 | (1.7+ 1.2+) |      | 2007 12 03 | 704 | 0.3+ | 0.4− |
| 2002 10 06 | 704 | 0.1+        | 0.3− | 2007 09 20 | 703 | 0.2−        | 0.8+ | 2007 12 04 | G96 | 0.2+ | 0.4− |
| 2002 10 06 | 704 | 0.2−        | 0.1− | 2007 09 20 | 703 | 1.0+        | 0.1+ | 2007 12 04 | G96 | 0.1− | 0.3− |
| 2002 10 06 | 704 | 0.4−        | 0.0  | 2007 10 12 | 699 | 0.2−        | 0.4− | 2007 12 04 | G96 | 0.3+ | 0.4− |
| 2002 10 07 | 704 | 0.8−        | 0.5− | 2007 10 12 | 699 | 0.2−        | 0.4− | 2007 12 04 | G96 | 0.0  | 0.2− |

(172217)\* 2002 RK<sub>44</sub> = 1989 TT<sub>6</sub> = 1998 WW

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 35396)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 33.28432   |          | <i>P</i>  |             | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22491165 | <i>ω</i> | 300.46365 | +0.84212324 | −0.53630500 |
| <i>a</i> | 2.6779024  | <i>Ω</i> | 92.02407  | +0.51217576 | +0.76250370 |
| <i>e</i> | 0.2621376  | <i>i</i> | 3.24764   | +0.16883259 | +0.36189096 |
| <i>P</i> | 4.38       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |             |      |            |     |             |            |     |      |      |
|------------|-----|-------------|------|------------|-----|-------------|------------|-----|------|------|
| 1989 10 07 | 809 | 0.5+        | 0.2− | 2002 09 09 | 608 | (0.7− 1.6+) | 2002 10 05 | 704 | 0.3− | 0.7+ |
| 1989 10 07 | 809 | 1.0+        | 0.3− | 2002 09 09 | 608 | 0.8− 0.7+   | 2004 02 14 | 691 | 0.1+ | 0.9+ |
| 1989 10 07 | 809 | 0.8−        | 0.8− | 2002 09 09 | 608 | 0.6− 1.0+   | 2004 02 14 | 691 | 0.6+ | 0.7+ |
| 1989 10 08 | 809 | 0.2+        | 0.7+ | 2002 09 13 | 704 | 0.7+ 0.6+   | 2004 02 14 | 691 | 0.0  | 0.8+ |
| 1989 10 08 | 809 | 0.3−        | 0.6+ | 2002 09 13 | 704 | 0.2+ 0.7+   | 2005 04 12 | 695 | 0.0  | 0.5+ |
| 1989 10 08 | 809 | 0.1+        | 0.6+ | 2002 09 13 | 704 | 0.4+ 0.6+   | 2005 04 12 | 695 | 0.1− | 0.6+ |
| 1989 10 08 | 809 | (4.7+ 1.6+) |      | 2002 09 13 | 704 | 0.1+ 0.7+   | 2007 10 19 | G96 | 0.2+ | 0.0  |
| 1989 10 08 | 809 | (4.5+ 1.3+) |      | 2002 09 13 | 504 | (0.7− 4.7−) | 2007 10 19 | G96 | 0.4+ | 0.2− |
| 1989 10 08 | 809 | (3.1+ 1.2+) |      | 2002 09 13 | 504 | (1.4− 2.5−) | 2007 10 19 | G96 | 0.1+ | 0.1+ |
| 1998 11 17 | 684 | 0.4−        | 0.8− | 2002 09 14 | 504 | 0.1+ 0.8−   | 2007 10 19 | G96 | 0.3+ | 0.4− |
| 1998 11 17 | 684 | 0.5−        | 1.1− | 2002 09 14 | 608 | 0.6− 0.6+   | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 1998 11 19 | 684 | 0.2−        | 1.0− | 2002 09 14 | 608 | 0.6− 0.4+   | 2007 11 11 | G96 | 0.2− | 0.2− |
| 1998 11 19 | 684 | 0.1−        | 0.7− | 2002 09 14 | 608 | 0.8− 0.4+   | 2007 11 11 | G96 | 0.3+ | 0.2− |
| 2002 08 20 | 644 | 0.2+        | 0.1+ | 2002 09 15 | 644 | 0.2− 0.0    | 2007 11 11 | G96 | 0.0  | 0.2− |
| 2002 08 20 | 644 | 0.1+        | 0.2+ | 2002 09 15 | 644 | 0.1− 0.0    | 2007 12 03 | 691 | 0.3− | 0.1− |
| 2002 08 20 | 644 | 0.2+        | 0.2+ | 2002 09 15 | 644 | 0.3− 0.2+   | 2007 12 03 | 691 | 0.1− | 0.1− |
| 2002 09 05 | 704 | 0.3−        | 0.0  | 2002 09 16 | 644 | 0.0 0.6+    | 2007 12 03 | 691 | 0.3− | 0.3+ |
| 2002 09 05 | 704 | 0.2+        | 0.4− | 2002 09 16 | 644 | 0.0 0.6+    | 2007 12 10 | 704 | 0.5+ | 0.1+ |
| 2002 09 05 | 704 | 0.1−        | 0.5− | 2002 09 16 | 644 | 0.2− 0.5+   | 2007 12 10 | 704 | 0.8+ | 0.3− |
| 2002 09 05 | 704 | 1.1+        | 0.9− | 2002 10 03 | 704 | 0.3− 0.5+   | 2007 12 10 | 704 | 0.0  | 0.4− |
| 2002 09 06 | 704 | 0.5−        | 0.2− | 2002 10 03 | 704 | 0.3− 0.6+   | 2007 12 10 | 704 | 0.4+ | 1.3+ |
| 2002 09 06 | 704 | 0.0         | 0.5+ | 2002 10 03 | 704 | 0.3− 0.5+   | 2007 12 14 | 704 | 0.6+ | 0.3+ |
| 2002 09 06 | 704 | 0.1+        | 0.4− | 2002 10 03 | 704 | 0.5− 0.1+   | 2007 12 14 | 704 | 0.5+ | 0.5+ |
| 2002 09 06 | 704 | 0.4+        | 0.2+ | 2002 10 05 | 704 | 0.8− 0.7+   | 2007 12 14 | 704 | 0.8+ | 0.0  |
| 2002 09 06 | 704 | 0.3+        | 0.3+ | 2002 10 05 | 704 | 0.2− 0.5−   | 2007 12 14 | 704 | 0.2+ | 0.1− |

**(172218)\* 2002 RG<sub>47</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC      |             |             |            |
|----------|------------|----------|----------|-------------|-------------|------------|
| <i>M</i> | 40.91480   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i> | 0.22826831 | $\omega$ | 23.22165 | +0.88593020 | -0.46353880 |            |
| <i>a</i> | 2.6515855  | $\Omega$ | 4.49356  | +0.38674952 | +0.71910583 |            |
| <i>e</i> | 0.2024239  | <i>i</i> | 11.86448 | +0.25603222 | +0.51770511 |            |
| <i>P</i> | 4.32       | <i>H</i> | 15.2     | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 14 | 704 | 1.8+  | 1.1-  | 2002 10 03 | 704 | 0.1-  | 0.6+  | 2004 01 30 | 704 | 0.4+  | 0.4+  |
| 1998 11 14 | 704 | (2.4+ | 1.9-) | 2002 10 03 | 704 | 0.5-  | 0.3+  | 2004 01 30 | 704 | 0.1+  | 0.6+  |
| 1998 11 14 | 704 | (2.1+ | 2.1-) | 2002 10 03 | 704 | 0.4+  | 0.3+  | 2004 01 30 | 704 | 0.0   | 0.0   |
| 1998 11 14 | 704 | (1.8+ | 2.6-) | 2002 10 03 | 704 | 1.0-  | 0.2+  | 2004 01 30 | 704 | 0.6+  | 0.4-  |
| 1998 11 14 | 704 | 1.3-  | 0.8-  | 2002 10 03 | 704 | 0.2-  | 0.0   | 2004 01 30 | 704 | 0.2+  | 0.0   |
| 2002 08 30 | 699 | 0.2-  | 0.3-  | 2002 10 03 | 704 | 0.9-  | 0.4+  | 2004 02 15 | 704 | 0.1-  | 1.4+  |
| 2002 08 30 | 699 | 0.3-  | 0.7+  | 2002 10 03 | 704 | 0.0   | 0.3+  | 2004 02 15 | 704 | 0.7+  | 0.4+  |
| 2002 08 30 | 699 | 0.6+  | 1.0+  | 2002 10 03 | 704 | 0.9-  | 1.0+  | 2004 02 15 | 704 | 0.8+  | 1.1+  |
| 2002 08 30 | 699 | 0.5+  | 0.0   | 2002 10 03 | 704 | 0.1+  | 0.5+  | 2004 02 15 | 704 | 0.2+  | 0.8+  |
| 2002 09 05 | 699 | 1.1-  | 1.3+  | 2002 10 06 | 704 | 0.4+  | 1.0-  | 2004 03 23 | 704 | 0.3+  | 0.5+  |
| 2002 09 05 | 704 | 0.3-  | 0.1+  | 2002 10 06 | 704 | 0.1-  | 0.1-  | 2004 03 23 | 704 | 0.5+  | 0.1+  |
| 2002 09 05 | 699 | 0.2-  | 0.3+  | 2002 10 06 | 704 | 0.5+  | 0.5-  | 2004 03 23 | 704 | 0.6+  | 1.3+  |
| 2002 09 05 | 704 | 0.2-  | 0.2+  | 2002 10 06 | 704 | 0.4-  | 0.0   | 2004 03 23 | 704 | 0.3+  | 0.2+  |
| 2002 09 05 | 699 | 0.2-  | 0.3+  | 2002 10 07 | 704 | 0.7+  | 0.4-  | 2005 05 10 | 699 | (0.4- | 1.7+) |
| 2002 09 05 | 704 | 1.2-  | 1.0+  | 2002 10 07 | 704 | 1.0+  | 0.3-  | 2005 05 10 | 699 | (2.4+ | 1.6-) |
| 2002 09 05 | 699 | 0.5+  | 0.2+  | 2002 10 07 | 704 | 0.8+  | 0.3-  | 2005 05 10 | 699 | 0.5+  | 0.8+  |
| 2002 09 05 | 704 | 0.8-  | 1.0+  | 2002 10 07 | 704 | 0.8+  | 0.2-  | 2005 05 10 | 699 | 0.9+  | 0.6+  |
| 2002 09 05 | 704 | 0.0   | 0.5-  | 2002 10 11 | 704 | 0.2+  | 0.0   | 2005 05 16 | 644 | 0.3+  | 0.7+  |
| 2002 09 06 | 704 | 0.1+  | 0.5+  | 2002 10 11 | 704 | 0.2+  | 0.3+  | 2005 05 16 | 644 | 0.5+  | 0.3+  |
| 2002 09 06 | 704 | 0.4+  | 1.2+  | 2002 10 11 | 704 | 0.3+  | 0.1-  | 2005 05 16 | 644 | 0.3+  | 0.7+  |
| 2002 09 06 | 704 | 0.1-  | 1.0+  | 2002 10 11 | 704 | 0.3+  | 0.1+  | 2006 07 20 | E12 | (0.1- | 2.3+) |
| 2002 09 06 | 704 | 0.1+  | 0.9+  | 2002 10 11 | 704 | 0.1+  | 0.3+  | 2006 07 20 | E12 | 0.4-  | 0.4+  |
| 2002 09 06 | 704 | 0.2-  | 0.8+  | 2002 10 29 | 704 | 0.1-  | 0.3-  | 2006 07 20 | E12 | 1.4-  | 0.8+  |
| 2002 09 10 | 608 | 0.5-  | 0.1-  | 2002 10 29 | 704 | 0.3-  | 0.0   | 2006 07 20 | E12 | 0.6-  | 0.7+  |
| 2002 09 10 | 608 | 0.5-  | 0.8+  | 2002 10 29 | 704 | 0.6+  | 0.1+  | 2006 07 20 | E12 | 0.7-  | 1.1+  |
| 2002 09 10 | 608 | 0.3-  | 0.4-  | 2002 10 29 | 704 | 0.1-  | 0.0   | 2007 11 05 | 703 | 0.1+  | 0.1+  |
| 2002 09 12 | 246 | 0.4+  | 0.0   | 2002 11 04 | 608 | 0.6-  | 0.2-  | 2007 11 05 | 703 | 1.3-  | 0.5-  |
| 2002 09 12 | 246 | 0.5+  | 0.2-  | 2002 11 04 | 608 | 0.4-  | 0.1-  | 2007 11 05 | 703 | 0.8-  | 0.0   |
| 2002 09 12 | 246 | 0.4+  | 0.1-  | 2002 11 04 | 608 | 1.4-  | 0.2-  | 2007 11 05 | 703 | 0.5+  | 0.6-  |
| 2002 09 12 | 246 | 0.4+  | 0.1-  | 2002 11 06 | 704 | 0.4-  | 0.0   | 2007 12 03 | 704 | 0.4+  | 0.5+  |
| 2002 09 12 | 246 | 0.4+  | 0.2-  | 2002 11 06 | 704 | 0.1+  | 0.1+  | 2007 12 03 | 704 | 0.1+  | 0.0   |
| 2002 09 12 | 246 | 0.3+  | 0.3-  | 2002 11 06 | 704 | (1.8+ | 1.6-) | 2007 12 03 | 704 | 0.3-  | 0.2-  |
| 2002 09 15 | 644 | 0.3-  | 0.2-  | 2002 11 06 | 704 | (0.1+ | 1.6-) | 2007 12 03 | 704 | 0.5+  | 0.4+  |
| 2002 09 15 | 644 | 0.4-  | 0.1-  | 2004 01 18 | 644 | 0.5+  | 0.6+  | 2007 12 03 | 704 | 0.3+  | 0.2+  |
| 2002 09 15 | 644 | 0.3-  | 0.1-  | 2004 01 18 | 644 | 0.3+  | 0.7+  | 2007 12 03 | 704 | 0.9+  | 0.2+  |
| 2002 09 17 | 608 | (1.5- | 0.9-) | 2004 01 18 | 644 | 0.6+  | 0.7+  | 2007 12 03 | 704 | 0.3+  | 0.1+  |
| 2002 09 17 | 608 | (1.7- | 0.9-) | 2004 01 20 | 704 | 0.1+  | 1.2+  | 2007 12 03 | 704 | 1.0+  | 0.3+  |
| 2002 09 17 | 608 | 1.4-  | 0.7-  | 2004 01 20 | 704 | 0.1-  | 0.6+  | 2007 12 03 | 704 | 0.1+  | 0.4+  |
| 2002 10 03 | 704 | 0.5-  | 0.3+  | 2004 01 20 | 704 | 0.9-  | 1.3+  | 2007 12 03 | 704 | 0.1+  | 1.2+  |

**(172219)\* 2002 RR<sub>47</sub> = 2004 CS<sub>68</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 61283)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |              |            |
|----------|------------|----------|-----------|-------------|--------------|------------|
| <i>M</i> | 35.63868   |          | (2000.0)  | <b>P</b>    | <b>Q</b>     |            |
| <i>n</i> | 0.22904531 | $\omega$ | 339.27967 | +0.81699158 | -0.574773318 |            |
| <i>a</i> | 2.6455853  | $\Omega$ | 55.88866  | +0.53672968 | +0.72812471  |            |
| <i>e</i> | 0.1631966  | <i>i</i> | 3.25242   | +0.21082220 | +0.37351865  |            |
| <i>P</i> | 4.30       | <i>H</i> | 15.7      | <i>G</i>    | 0.15         | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 11 | 704 | (2.5+ | 1.6-) | 2002 10 01 | 699 | 0.3-  | 0.0   | 2007 11 02 | G96 | 0.1+ | 0.4- |
| 1998 11 11 | 704 | (2.7+ | 1.2+) | 2002 10 01 | 699 | 0.9+  | 0.7+  | 2007 11 02 | G96 | 0.1+ | 0.4- |
| 1998 11 11 | 704 | 1.2-  | 1.1+  | 2002 10 01 | 699 | 0.3-  | 0.3-  | 2007 11 11 | G96 | 0.1- | 0.1+ |
| 1998 11 11 | 704 | 1.2+  | 0.6+  | 2002 10 01 | 699 | 0.6+  | 1.0+  | 2007 11 11 | G96 | 0.2- | 0.4- |
| 1998 11 11 | 704 | (3.5- | 0.4-) | 2002 10 03 | 704 | 0.5-  | 0.8-  | 2007 11 11 | G96 | 0.3+ | 0.8- |
| 2001 05 22 | 807 | 0.0   | 0.1-  | 2002 10 03 | 704 | 0.6+  | 0.2-  | 2007 11 11 | G96 | 0.4+ | 0.3- |
| 2001 05 22 | 807 | 0.0   | 0.1-  | 2002 10 03 | 704 | 0.6-  | 0.3-  | 2007 12 04 | 699 | 1.5- | 0.5- |
| 2002 09 05 | 699 | 1.2+  | 1.2+  | 2002 10 03 | 704 | 0.3+  | 0.0   | 2007 12 04 | 699 | 0.2+ | 0.5+ |
| 2002 09 05 | 704 | 0.6+  | 0.8-  | 2002 10 11 | 704 | 0.8-  | 0.3-  | 2007 12 04 | 699 | 0.5+ | 0.0  |
| 2002 09 05 | 699 | (1.6+ | 0.3+) | 2002 10 11 | 704 | 1.0-  | 0.2-  | 2007 12 04 | 699 | 0.3+ | 0.8- |
| 2002 09 05 | 704 | 0.5+  | 0.1-  | 2002 10 11 | 704 | 0.6+  | 0.7-  | 2007 12 06 | 704 | 0.1- | 0.2- |
| 2002 09 05 | 699 | 0.2-  | 0.7+  | 2004 02 11 | 699 | 0.6+  | 0.2-  | 2007 12 06 | 704 | 0.3+ | 0.6+ |
| 2002 09 05 | 699 | (0.8+ | 1.8+) | 2004 02 11 | 699 | 0.2-  | 0.0   | 2007 12 06 | 704 | 0.1- | 0.7+ |
| 2002 09 05 | 704 | 0.3-  | 0.8+  | 2004 02 11 | 699 | 0.1+  | 0.6+  | 2007 12 06 | 704 | 0.2+ | 0.3+ |
| 2002 09 05 | 704 | 0.0   | 0.2+  | 2004 02 11 | 699 | 1.0+  | 1.3+  | 2007 12 06 | 704 | 0.5+ | 0.7+ |
| 2002 09 05 | 608 | 0.7+  | 0.0   | 2004 02 16 | 704 | 0.6-  | 0.9+  | 2007 12 10 | 704 | 1.1+ | 0.8+ |
| 2002 09 05 | 608 | 0.1-  | 0.5+  | 2004 02 16 | 704 | (0.8- | 1.6+) | 2007 12 10 | 704 | 1.3+ | 1.0+ |
| 2002 09 05 | 608 | 1.1+  | 0.8-  | 2004 02 16 | 704 | 0.7-  | 0.4+  | 2007 12 10 | 704 | 1.5+ | 0.5+ |
| 2002 09 06 | 704 | 1.1-  | 1.0+  | 2004 02 16 | 704 | (0.5+ | 1.5+) | 2007 12 10 | 704 | 0.6+ | 0.9+ |
| 2002 09 06 | 704 | 0.4-  | 0.3+  | 2005 04 07 | 691 | 0.5+  | 0.6+  | 2007 12 10 | 704 | 0.8+ | 0.9+ |
| 2002 09 06 | 704 | 0.4-  | 0.0   | 2005 04 07 | 691 | 0.3-  | 0.6+  | 2007 12 15 | 704 | 0.1- | 0.8- |
| 2002 09 10 | 608 | 0.5-  | 0.3-  | 2005 04 07 | 691 | 0.3+  | 0.0   | 2007 12 15 | 704 | 0.1+ | 0.6- |
| 2002 09 10 | 608 | 0.0   | 0.3-  | 2006 08 14 | 644 | 0.0   | 0.1+  | 2007 12 15 | 704 | 0.2+ | 0.7- |
| 2002 09 10 | 608 | 0.7-  | 0.0   | 2006 08 14 | 644 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.4+ | 1.0- |
| 2002 09 15 | 644 | 0.5-  | 0.4+  | 2006 08 14 | 644 | 0.0   | 0.4+  | 2007 12 15 | 704 | 0.3- | 0.1- |
| 2002 09 15 | 644 | 0.4-  | 0.7+  | 2006 08 19 | 644 | 0.1-  | 0.4+  | 2007 12 17 | 691 | 0.4- | 0.2+ |
| 2002 09 15 | 644 | 0.5-  | 0.5+  | 2006 08 19 | 644 | 0.3+  | 0.4+  | 2007 12 17 | 691 | 0.4- | 0.1+ |
| 2002 09 17 | 608 | 0.2-  | 0.1+  | 2006 08 19 | 644 | 0.5-  | 0.3+  | 2007 12 17 | 691 | 0.5- | 0.1+ |
| 2002 09 17 | 608 | 0.2-  | 0.4-  | 2007 11 02 | G96 | 0.3-  | 0.2-  |            |     |      |      |
| 2002 09 17 | 608 | 0.3-  | 0.3+  | 2007 11 02 | G96 | 0.3-  | 0.2-  |            |     |      |      |

**(172220)\* 2002 RZ<sub>57</sub>**

Discovered 2002 Sept. 5 by the Lowell Observatory Near-Earth Object Search  
at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |             |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>M</i> | 97.97212   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i> | 0.23983423 | $\omega$ | 54.49033  | +0.95604670 | +0.28356646 |            |
| <i>a</i> | 2.5656374  | $\Omega$ | 288.93423 | -0.28802814 | +0.86059614 |            |
| <i>e</i> | 0.0932478  | <i>i</i> | 4.52331   | -0.05490444 | +0.42304178 |            |
| <i>P</i> | 4.11       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 699 | 1.3- | 0.7- | 2004 01 27 | 691 | 0.3+ | 0.1- | 2006 08 30 | 704 | 0.8+ | 0.3- |
| 2002 09 05 | 699 | 0.8- | 0.2+ | 2004 01 27 | 691 | 0.0  | 0.1+ | 2006 08 30 | 704 | 1.4+ | 0.4+ |
| 2002 09 05 | 699 | 0.4- | 1.3- | 2004 01 27 | 691 | 0.0  | 0.1- | 2006 08 30 | 704 | 1.3+ | 0.2- |
| 2002 09 05 | 699 | 0.6+ | 0.3+ | 2004 01 27 | 691 | 0.0  | 0.0  | 2006 09 11 | 703 | 0.2+ | 1.1- |
| 2002 09 06 | 704 | 0.7- | 0.7+ | 2004 01 27 | 691 | 0.1+ | 0.2+ | 2006 09 11 | 703 | 0.2- | 1.3- |
| 2002 09 06 | 704 | 0.5- | 0.9+ | 2004 02 16 | 691 | 0.3+ | 0.4+ | 2006 09 11 | 703 | 0.0  | 0.2- |
| 2002 09 06 | 704 | 0.7+ | 0.9- | 2004 02 16 | 691 | 0.4+ | 0.4+ | 2006 09 11 | 703 | 0.4- | 1.5- |
| 2002 09 11 | 608 | 0.5+ | 0.2+ | 2004 02 16 | 691 | 0.6+ | 0.4+ | 2006 09 13 | 644 | 0.3+ | 0.1+ |
| 2002 09 11 | 608 | 0.2+ | 0.6+ | 2006 08 15 | 644 | 0.4+ | 0.1+ | 2006 09 13 | 644 | 0.3+ | 0.1- |
| 2002 09 11 | 608 | 0.1+ | 0.7+ | 2006 08 15 | 644 | 0.3+ | 0.1- | 2006 09 13 | 644 | 0.3+ | 0.0  |
| 2002 09 13 | 644 | 0.1+ | 0.1+ | 2006 08 15 | 644 | 0.4+ | 0.4- | 2006 09 17 | 703 | 0.8- | 0.4- |
| 2002 09 13 | 644 | 0.0  | 0.4+ | 2006 08 24 | 704 | 0.6+ | 0.2- | 2006 09 17 | 703 | 0.6+ | 0.8+ |
| 2002 09 13 | 644 | 0.0  | 0.3+ | 2006 08 24 | 704 | 1.4+ | 0.2  | 2006 09 17 | 703 | 0.6+ | 0.5+ |
| 2002 09 19 | 644 | 0.1+ | 0.7+ | 2006 08 24 | 704 | 0.4+ | 0.6+ | 2006 09 17 | 703 | 0.2- | 1.2+ |
| 2002 09 19 | 644 | 0.4- | 1.2+ | 2006 08 24 | 704 | 0.5- | 0.4+ | 2007 10 15 | G96 | 1.0- | 1.1- |
| 2002 09 19 | 644 | 0.1- | 0.7+ | 2006 08 24 | 704 | 0.1- | 0.7+ | 2007 10 15 | G96 | 0.4- | 0.3- |
| 2002 10 04 | 704 | 0.1- | 0.8- | 2006 08 28 | 699 | 0.7+ | 0.0  | 2007 10 15 | G96 | 0.1- | 0.0  |
| 2002 10 04 | 704 | 0.6- | 0.2- | 2006 08 28 | 699 | 0.4- | 0.5+ | 2007 10 15 | G96 | 0.2+ | 0.1- |
| 2002 10 04 | 704 | 0.0  | 0.1+ | 2006 08 28 | 699 | 0.1- | 1.2- | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2002 10 04 | 704 | 0.1+ | 0.3+ | 2006 08 28 | 699 | 1.0- | 1.0+ | 2007 11 05 | G96 | 0.5+ | 0.1- |
| 2002 10 04 | 704 | 0.1- | 1.0+ | 2006 08 29 | 703 | 1.0- | 0.0  | 2007 11 05 | G96 | 0.1- | 0.5- |
| 2003 12 27 | 691 | 0.6- | 0.0  | 2006 08 29 | 703 | 0.4- | 0.3- | 2007 11 05 | G96 | 0.2- | 0.5- |
| 2003 12 27 | 691 | 0.4- | 0.4+ | 2006 08 29 | 703 | 1.0- | 0.0  | 2007 12 04 | G96 | 0.9- | 0.8- |

## 2007 DEC. 24

M.P.O. 129301

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 27 | 691 | 0.0  | 0.3+ | 2006 08 29 | 703 | 0.3- | 0.3+ | 2007 12 04 | G96 | 0.5- | 0.3- |
| 2004 01 21 | 704 | 0.5+ | 0.8+ | 2006 08 29 | 703 | 0.5- | 0.3- | 2007 12 04 | G96 | 0.3+ | 0.6- |
| 2004 01 21 | 704 | 0.6+ | 1.6+ | 2006 08 29 | 703 | 0.4- | 0.6- | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2004 01 21 | 704 | 0.2- | 0.1+ | 2006 08 29 | 703 | 0.4- | 0.4- | 2007 12 15 | 691 | 0.2- | 0.0  |
| 2004 01 21 | 704 | 0.3+ | 0.1+ | 2006 08 29 | 703 | 0.2- | 0.3- | 2007 12 15 | 691 | 0.3- | 0.9- |
| 2004 01 27 | 691 | 0.1+ | 0.1+ | 2006 08 30 | 704 | 1.1- | 0.5+ | 2007 12 15 | 691 | 0.1+ | 0.4- |

(172221)\* 2002 RP<sub>59</sub>

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 26.80125   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21209527 | $\omega$ | 6.08339  | +0.94885664 | -0.31311355 |
| $a$ | 2.7847234  | $\Omega$ | 12.39372 | +0.28114537 | +0.77984392 |
| $e$ | 0.2829955  | $i$      | 10.84566 | +0.14362573 | +0.54203631 |
| $P$ | 4.65       | $H$      | 15.8     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 12 | 645 | 0.0   | 0.2+  | 2002 10 07 | 699 | 0.7- | 0.0  | 2002 12 01 | 704 | 0.3+ | 0.2+ |
| 2000 02 12 | 645 | 0.1+  | 0.2+  | 2002 10 07 | 699 | 0.4+ | 1.4+ | 2002 12 01 | 704 | 0.3- | 0.8- |
| 2000 03 03 | 645 | 0.3+  | 0.2+  | 2002 10 07 | 699 | 0.9- | 0.1+ | 2002 12 01 | 704 | 0.5- | 0.6+ |
| 2000 03 03 | 645 | 0.3+  | 0.1+  | 2002 10 07 | 699 | 1.0- | 0.2+ | 2002 12 01 | 704 | 0.4- | 0.4- |
| 2002 08 12 | 704 | (1.8- | 1.7+) | 2002 10 07 | 704 | 0.1+ | 0.4+ | 2002 12 01 | 608 | 0.3- | 0.3- |
| 2002 08 12 | 704 | 0.3+  | 0.6+  | 2002 10 07 | 704 | 0.2+ | 0.6+ | 2002 12 01 | 608 | 0.3- | 0.5- |
| 2002 08 12 | 704 | 0.5-  | 0.3+  | 2002 10 07 | 704 | 0.2+ | 0.5+ | 2002 12 01 | 608 | 0.4- | 0.5- |
| 2002 09 05 | 704 | 0.6-  | 0.5+  | 2002 10 07 | 704 | 0.0  | 0.3+ | 2002 12 06 | 704 | 0.6- | 0.2+ |
| 2002 09 05 | 704 | 0.3-  | 0.4+  | 2002 10 07 | 704 | 0.1+ | 0.9+ | 2002 12 06 | 704 | 0.6- | 1.4- |
| 2002 09 05 | 704 | 0.2-  | 0.8+  | 2002 10 11 | 704 | 0.3- | 0.1+ | 2002 12 06 | 704 | 0.2- | 0.1- |
| 2002 09 05 | 704 | 0.2-  | 0.6+  | 2002 10 11 | 704 | 0.0  | 0.0  | 2002 12 06 | 704 | 0.7- | 0.1- |
| 2002 09 05 | 704 | 0.2-  | 0.5+  | 2002 10 11 | 704 | 0.2- | 0.1+ | 2002 12 11 | 704 | 0.9- | 0.3+ |
| 2002 09 06 | 704 | 0.1+  | 0.7+  | 2002 10 11 | 704 | 0.1- | 0.1+ | 2002 12 11 | 704 | 0.5- | 0.5+ |
| 2002 09 06 | 704 | 0.1+  | 0.3+  | 2002 10 11 | 704 | 0.1- | 0.2+ | 2002 12 11 | 704 | 0.6+ | 0.1+ |
| 2002 09 06 | 704 | 0.1-  | 0.6+  | 2002 10 28 | 608 | 0.3- | 0.6- | 2002 12 11 | 704 | 1.2+ | 0.6+ |
| 2002 09 06 | 704 | 0.5-  | 0.3+  | 2002 10 28 | 608 | 0.1- | 0.5- | 2002 12 11 | 704 | 0.6+ | 0.3- |
| 2002 09 06 | 704 | 0.0   | 0.2+  | 2002 10 28 | 608 | 0.2- | 0.9- | 2003 01 05 | 704 | 0.8- | 0.2- |
| 2002 09 10 | 608 | 1.2-  | 0.0   | 2002 10 31 | 699 | 0.8- | 0.0  | 2003 01 05 | 704 | 0.1- | 0.3+ |
| 2002 09 10 | 608 | 1.2-  | 0.1+  | 2002 10 31 | 699 | 0.2- | 0.5+ | 2003 01 05 | 704 | 0.6+ | 0.9+ |
| 2002 09 10 | 608 | 1.2-  | 0.0   | 2002 10 31 | 699 | 0.5- | 0.1+ | 2003 01 05 | 704 | 0.2- | 0.6+ |
| 2002 09 14 | 683 | 0.4+  | 1.4+  | 2002 10 31 | 699 | 0.6- | 0.1- | 2004 02 16 | 691 | 0.1- | 0.3+ |
| 2002 09 14 | 683 | 0.2-  | 0.3+  | 2002 10 31 | 704 | 0.6- | 0.5- | 2004 02 16 | 691 | 0.2- | 0.3+ |
| 2002 09 14 | 683 | (2.8- | 2.8-) | 2002 10 31 | 704 | 0.7- | 0.4- | 2004 02 16 | 691 | 0.0  | 0.0  |
| 2002 09 15 | 683 | 0.4+  | 0.9+  | 2002 10 31 | 704 | 0.1- | 0.5- | 2005 03 14 | G96 | 0.4- | 0.2- |
| 2002 09 15 | 683 | 0.3+  | 0.1+  | 2002 10 31 | 704 | 0.1+ | 0.4- | 2005 03 14 | G96 | 1.0- | 0.2+ |
| 2002 09 15 | 683 | 1.3+  | 0.1-  | 2002 10 31 | 704 | 0.3- | 0.4+ | 2005 03 14 | G96 | 0.4- | 0.0  |
| 2002 09 16 | 683 | 0.9+  | 1.1+  | 2002 11 08 | 704 | 0.2+ | 0.4- | 2005 03 14 | G96 | 0.7- | 0.4+ |
| 2002 09 16 | 683 | 0.9+  | 0.0   | 2002 11 08 | 704 | 0.4+ | 0.0  | 2005 04 04 | 691 | 0.5+ | 0.7+ |
| 2002 09 29 | 557 | 0.2-  | 0.2-  | 2002 11 08 | 704 | 0.3+ | 0.2+ | 2005 04 04 | 691 | 0.2+ | 0.5+ |
| 2002 09 29 | 557 | 0.5-  | 0.2-  | 2002 11 08 | 704 | 0.7+ | 0.3- | 2005 04 04 | 691 | 0.3+ | 0.8+ |
| 2002 10 01 | 608 | 0.9-  | 0.3+  | 2002 11 08 | 704 | 0.1+ | 0.1+ | 2007 11 03 | 704 | 1.1+ | 0.5+ |
| 2002 10 01 | 608 | 1.2-  | 0.3+  | 2002 11 12 | 704 | 0.0  | 0.3- | 2007 11 03 | 704 | 0.0  | 0.4+ |
| 2002 10 01 | 608 | 1.2-  | 0.4+  | 2002 11 12 | 704 | 0.6+ | 0.5- | 2007 11 03 | 704 | 0.8+ | 0.3- |
| 2002 10 02 | 704 | 0.7-  | 0.1-  | 2002 11 12 | 704 | 0.1+ | 0.3- | 2007 11 03 | 704 | 0.9+ | 1.0+ |
| 2002 10 02 | 704 | 0.6-  | 0.2+  | 2002 11 12 | 704 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.0  | 0.2- |
| 2002 10 02 | 704 | 0.7-  | 0.4-  | 2002 11 12 | 704 | 0.8+ | 0.0  | 2007 11 09 | 704 | 0.4+ | 0.8- |
| 2002 10 02 | 704 | 0.4-  | 0.7+  | 2002 11 21 | 644 | 0.6+ | 1.3+ | 2007 11 09 | 704 | 0.6- | 0.1+ |
| 2002 10 03 | 704 | 0.4+  | 0.4+  | 2002 11 21 | 644 | 0.0  | 1.0+ | 2007 11 09 | 704 | 0.3+ | 0.1- |
| 2002 10 03 | 704 | 0.2+  | 0.4+  | 2002 11 21 | 644 | 0.3+ | 1.3+ | 2007 12 03 | 704 | 0.3- | 0.8- |
| 2002 10 03 | 704 | 0.4+  | 0.4+  | 2002 11 22 | 644 | 0.1- | 0.3+ | 2007 12 03 | 704 | 0.3- | 0.4+ |
| 2002 10 03 | 704 | 0.2+  | 0.2+  | 2002 11 22 | 644 | 0.1+ | 0.4+ | 2007 12 03 | 704 | 0.6- | 0.9- |
| 2002 10 03 | 704 | 0.3+  | 0.1+  | 2002 11 22 | 644 | 0.0  | 0.3+ |            |     |      |      |

(172222)\* 2002 RH<sub>60</sub>

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 75.52187   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21927290 | $\omega$ | 250.02172 | +0.79609313 | +0.60284823 |
| $a$ | 2.7236172  | $\Omega$ | 72.86801  | -0.53243637 | +0.73935039 |
| $e$ | 0.2312272  | $i$      | 3.17972   | -0.28765820 | +0.29989167 |
| $P$ | 4.49       | $H$      | 15.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 05 | 704 | (0.0  | 1.8+) | 2002 10 03 | 704 | 0.4-  | 0.8+  | 2004 01 22 | 704 | 0.1- | 0.6+ |
| 2002 08 05 | 704 | 0.5+  | 1.1+  | 2002 10 08 | 699 | 0.3-  | 0.6+  | 2005 03 01 | 691 | 0.0  | 0.1+ |
| 2002 08 05 | 704 | 0.2-  | 0.5+  | 2002 10 08 | 699 | 0.2+  | 0.1+  | 2005 03 01 | 691 | 0.1+ | 0.0  |
| 2002 08 05 | 704 | 0.2-  | 0.1+  | 2002 10 08 | 699 | 0.5-  | 1.0+  | 2005 03 01 | 691 | 0.2+ | 0.8+ |
| 2002 09 05 | 704 | 1.1-  | 0.3+  | 2002 10 08 | 699 | 0.0   | 0.1+  | 2007 09 18 | G96 | 0.2- | 0.4- |
| 2002 09 05 | 704 | 1.1-  | 0.5-  | 2002 10 08 | 608 | 0.0   | 0.3+  | 2007 09 18 | G96 | 0.5- | 0.2- |
| 2002 09 05 | 704 | 0.1-  | 1.4+  | 2002 10 08 | 608 | 0.2+  | 0.4+  | 2007 09 18 | G96 | 0.0  | 0.2- |
| 2002 09 05 | 704 | 0.6-  | 0.4+  | 2002 10 08 | 608 | 0.1-  | 0.2+  | 2007 09 18 | G96 | 0.3+ | 0.5- |
| 2002 09 05 | 704 | 0.4-  | 0.4+  | 2002 10 10 | 645 | 0.2+  | 0.3-  | 2007 09 18 | G96 | 0.2+ | 0.0  |
| 2002 09 06 | 704 | 0.3+  | 1.4+  | 2002 10 10 | 645 | 0.2+  | 0.2-  | 2007 09 18 | G96 | 0.1- | 0.1- |
| 2002 09 06 | 704 | 0.1+  | 0.6+  | 2002 10 11 | 704 | 0.7-  | 0.2+  | 2007 09 18 | G96 | 0.1- | 0.3- |
| 2002 09 06 | 704 | 0.4-  | 0.1+  | 2002 10 11 | 704 | 0.6-  | 0.7+  | 2007 09 18 | G96 | 0.4- | 0.1- |
| 2002 09 06 | 704 | 1.1-  | 0.0   | 2002 10 11 | 704 | 0.3+  | 0.0   | 2007 11 02 | 691 | 0.0  | 0.1- |
| 2002 09 06 | 704 | (1.5- | 0.4-) | 2002 10 11 | 704 | 0.9-  | 0.1+  | 2007 11 02 | 691 | 0.0  | 0.0  |
| 2002 09 10 | 608 | 0.4+  | 1.0+  | 2002 10 11 | 704 | 0.0   | 0.4+  | 2007 11 02 | 691 | 0.1- | 0.0  |
| 2002 09 10 | 608 | 0.6+  | 1.0+  | 2002 10 22 | 644 | 0.1+  | 0.1+  | 2007 11 19 | 691 | 0.0  | 0.3- |
| 2002 09 10 | 608 | 0.1+  | 1.0+  | 2002 10 22 | 644 | 0.0   | 0.0   | 2007 11 19 | 691 | 0.0  | 0.4- |
| 2002 09 28 | 608 | (1.8- | 0.6-) | 2002 10 22 | 644 | 0.2+  | 0.1+  | 2007 11 19 | 691 | 0.4- | 0.2- |
| 2002 09 28 | 608 | 1.4-  | 0.1-  | 2002 11 06 | 644 | (0.1+ | 1.6+) | 2007 11 28 | D29 | 0.3+ | 0.3- |
| 2002 09 28 | 608 | (2.1- | 0.6-) | 2002 11 06 | 644 | (0.1- | 1.7+) | 2007 11 28 | D29 | 0.3+ | 0.5- |
| 2002 09 30 | 704 | 0.0   | 0.5-  | 2002 11 06 | 644 | (0.4+ | 1.7+) | 2007 11 28 | D29 | 0.0  | 0.2- |
| 2002 09 30 | 704 | 0.0   | 0.8-  | 2002 11 19 | 644 | 0.4-  | 0.8+  | 2007 11 28 | D29 | 0.1- | 0.3+ |
| 2002 09 30 | 704 | 0.0   | 0.7-  | 2002 11 19 | 644 | 0.5-  | 1.0+  | 2007 12 03 | 703 | 0.5- | 0.2+ |
| 2002 09 30 | 704 | 0.0   | 1.0-  | 2002 11 19 | 644 | 0.3-  | 0.4+  | 2007 12 03 | 703 | 0.8+ | 0.9+ |
| 2002 09 30 | 704 | 0.4+  | 0.6-  | 2002 11 19 | 644 | 0.3-  | 0.5+  | 2007 12 03 | 703 | 0.0  | 0.5+ |
| 2002 10 02 | 704 | 0.5-  | 0.1+  | 2002 11 19 | 644 | 0.2-  | 0.4+  | 2007 12 03 | 703 | 1.2+ | 2.0+ |
| 2002 10 02 | 704 | 0.4+  | 0.5+  | 2002 11 19 | 644 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.9+ | 0.5+ |
| 2002 10 02 | 704 | 0.6-  | 0.2+  | 2004 01 13 | 691 | 0.3+  | 0.4-  | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2002 10 02 | 704 | 0.5-  | 0.2+  | 2004 01 13 | 691 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.1- | 0.0  |
| 2002 10 03 | 704 | 0.1-  | 0.4+  | 2004 01 13 | 691 | 0.3-  | 0.3+  | 2007 12 05 | 704 | 0.2- | 0.1+ |
| 2002 10 03 | 704 | 0.1+  | 0.3+  | 2004 01 22 | 704 | 0.2-  | 0.4+  | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2002 10 03 | 704 | 0.2+  | 0.4+  | 2004 01 22 | 704 | 0.3-  | 0.5+  |            |     |      |      |
| 2002 10 03 | 704 | 0.3+  | 0.3+  | 2004 01 22 | 704 | 0.7+  | 0.2+  |            |     |      |      |

(172223)\* 2002 RP<sub>66</sub>

Discovered 2002 Sept. 3 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 311.60392  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.22626527 | $\omega$ | 203.99329 | -0.45042634 | -0.86996503 |
| $a$ | 2.6672115  | $\Omega$ | 273.31083 | +0.84821560 | -0.34681880 |
| $e$ | 0.1133952  | $i$      | 11.59701  | +0.27865106 | -0.35053896 |
| $P$ | 4.36       | $H$      | 14.7      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 16 | 704 | 0.4-  | 0.6+  | 2003 12 16 | 699 | 0.5+ | 0.4- | 2004 03 15 | 704 | 0.5-  | 1.0+  |
| 2002 08 16 | 704 | 0.8-  | 0.6+  | 2003 12 20 | 704 | 0.5+ | 0.1+ | 2005 05 30 | E12 | 0.2+  | 0.3+  |
| 2002 08 16 | 704 | 0.1+  | 0.0   | 2003 12 20 | 704 | 0.2- | 0.2+ | 2005 05 30 | E12 | 0.2-  | 0.2+  |
| 2002 08 16 | 704 | 1.0-  | 0.1+  | 2003 12 20 | 704 | 0.6+ | 0.2- | 2005 05 30 | E12 | 0.8+  | 0.4+  |
| 2002 09 03 | 644 | 0.0   | 0.5+  | 2003 12 20 | 704 | 0.5+ | 0.1+ | 2005 05 30 | E12 | 0.2-  | 0.8+  |
| 2002 09 03 | 644 | 0.3-  | 0.4+  | 2003 12 21 | 704 | 0.3+ | 0.1- | 2007 11 02 | 704 | 0.1+  | 0.6+  |
| 2002 09 03 | 644 | 0.5-  | 0.5+  | 2003 12 21 | 704 | 0.5+ | 0.2+ | 2007 11 02 | 704 | 0.1+  | 0.3+  |
| 2002 09 05 | 049 | (2.8- | 1.0-) | 2003 12 21 | 704 | 0.2+ | 0.3+ | 2007 11 02 | 704 | 0.8+  | 0.3+  |
| 2002 09 05 | 049 | (3.2- | 0.8-) | 2003 12 21 | 704 | 0.5+ | 0.5+ | 2007 11 02 | 704 | 0.3+  | 0.9+  |
| 2002 09 05 | 049 | (2.8- | 0.1-) | 2003 12 21 | 704 | 0.6+ | 0.1- | 2007 11 02 | 704 | 0.4+  | 0.3+  |
| 2002 09 07 | 704 | 0.2+  | 0.1-  | 2003 12 22 | 691 | 0.0  | 0.1- | 2007 11 08 | 704 | 0.3-  | 0.7-  |
| 2002 09 07 | 704 | 0.0   | 0.4+  | 2003 12 22 | 691 | 0.1- | 0.3- | 2007 11 08 | 704 | 1.0-  | 0.4+  |
| 2002 09 07 | 704 | 0.2+  | 0.2+  | 2003 12 22 | 691 | 0.1- | 0.3- | 2007 11 08 | 704 | (2.0- | 0.0 ) |
| 2002 09 07 | 704 | 0.3-  | 0.3+  | 2003 12 23 | 704 | 0.2+ | 0.7- | 2007 11 17 | 704 | 0.3-  | 0.6-  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 07 | 704 | 0.3−  | 0.2+  | 2003 12 23 | 704 | 0.1+ | 0.8+ | 2007 11 17 | 704 | 0.3− | 0.4− |
| 2002 09 11 | 644 | 0.1−  | 0.6+  | 2003 12 23 | 704 | 0.2+ | 0.3+ | 2007 11 17 | 704 | 0.2− | 0.8− |
| 2002 09 11 | 644 | 0.0   | 0.2+  | 2003 12 27 | 703 | 0.5+ | 1.1− | 2007 11 17 | 704 | 0.2− | 0.7− |
| 2002 09 11 | 644 | 0.0   | 0.7+  | 2003 12 27 | 703 | 0.5+ | 1.4− | 2007 11 17 | 704 | 0.0  | 1.1− |
| 2002 10 03 | 644 | 0.3−  | 0.6+  | 2003 12 27 | 703 | 0.7− | 1.5+ | 2007 11 20 | 704 | 0.4+ | 0.9+ |
| 2002 10 03 | 644 | 0.4+  | 0.5+  | 2004 01 23 | 704 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.8+ | 0.4− |
| 2002 10 03 | 644 | 0.1−  | 0.3−  | 2004 01 23 | 704 | 0.7− | 1.3+ | 2007 11 20 | 704 | 0.1+ | 0.2+ |
| 2003 11 21 | 704 | 0.3+  | 1.2+  | 2004 01 23 | 704 | 1.3− | 1.0+ | 2007 11 20 | 704 | 0.6+ | 0.5+ |
| 2003 11 21 | 704 | 0.1−  | 0.9+  | 2004 01 23 | 704 | 0.6− | 0.8+ | 2007 11 20 | 704 | 1.0+ | 0.3+ |
| 2003 11 21 | 704 | (0.3+ | 1.7+) | 2004 01 23 | 704 | 0.4− | 0.7+ | 2007 12 12 | 704 | 0.5− | 2.7− |
| 2003 11 21 | 704 | 1.0−  | 0.6+  | 2004 01 29 | 704 | 0.2+ | 0.1− | 2007 12 12 | 704 | 0.5− | 0.3− |
| 2003 11 21 | 704 | 0.4+  | 0.3+  | 2004 01 29 | 704 | 0.3− | 0.3− | 2007 12 12 | 704 | 0.1− | 0.1− |
| 2003 12 01 | 703 | 0.7+  | 0.6+  | 2004 01 29 | 704 | 0.2+ | 0.4− | 2007 12 12 | 704 | 0.1+ | 0.3− |
| 2003 12 01 | 703 | 0.7+  | 0.5+  | 2004 02 17 | 704 | 0.1+ | 1.0+ | 2007 12 12 | 704 | 0.5− | 0.3− |
| 2003 12 01 | 703 | 1.2+  | 0.3+  | 2004 02 17 | 704 | 0.0  | 1.2+ | 2007 12 13 | 704 | 0.5− | 0.4− |
| 2003 12 01 | 703 | 1.3+  | 0.6−  | 2004 02 17 | 704 | 0.1+ | 1.1+ | 2007 12 13 | 704 | 0.2− | 0.4− |
| 2003 12 16 | 699 | 0.1−  | 0.2−  | 2004 03 15 | 704 | 0.5− | 1.1+ | 2007 12 13 | 704 | 0.1+ | 0.3− |
| 2003 12 16 | 699 | 0.2−  | 0.2+  | 2004 03 15 | 704 | 0.9+ | 1.0− | 2007 12 13 | 704 | 0.1− | 0.2− |
| 2003 12 16 | 699 | 0.6+  | 0.1+  | 2004 03 15 | 704 | 1.3− | 0.5+ | 2007 12 13 | 704 | 0.2− | 0.4− |

**(172224)\* 2002 RU<sub>88</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 212.65409  | <i>P</i> | (2000.0)  | <i>Q</i>    |             |          |   |
| <i>n</i>                                | 0.23350663 | $\omega$ | 243.57023 | −0.89691479 | +0.44000745 |          |   |
| <i>a</i>                                | 2.6117799  | $\Omega$ | 322.48890 | −0.37559588 | −0.81056655 |          |   |
| <i>e</i>                                | 0.0502302  | <i>i</i> | 4.14519   | −0.23339151 | −0.38649102 |          |   |
| <i>P</i>                                | 4.22       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 28 | 644 | 0.2− | 0.2+ | 2005 04 10 | 691 | 0.2+ | 0.5+ | 2006 10 22 | G96 | 0.2+  | 0.5+  |
| 2002 08 28 | 644 | 0.2− | 0.4+ | 2005 04 18 | 703 | 0.0  | 0.5− | 2006 10 22 | G96 | 0.4+  | 0.7−  |
| 2002 08 28 | 644 | 0.3+ | 0.0  | 2005 04 18 | 703 | 0.9− | 1.5− | 2006 10 22 | G96 | 0.0   | 0.2+  |
| 2002 09 05 | 704 | 0.1+ | 0.1− | 2005 04 18 | 703 | 1.3− | 0.5− | 2007 11 07 | 704 | 1.0−  | 0.0   |
| 2002 09 05 | 704 | 0.3− | 1.3+ | 2005 04 18 | 703 | 0.7− | 0.1+ | 2007 11 07 | 704 | 0.9+  | 0.3+  |
| 2002 09 05 | 704 | 0.1− | 0.9+ | 2005 05 01 | 644 | 0.1+ | 0.2+ | 2007 11 07 | 704 | 0.6−  | 0.0   |
| 2002 09 07 | 704 | 0.4+ | 0.4− | 2005 05 01 | 644 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.8−  | 1.1+  |
| 2002 09 07 | 704 | 0.8+ | 1.3+ | 2005 05 01 | 644 | 0.1+ | 0.3+ | 2007 11 18 | 704 | 0.4−  | 0.1+  |
| 2002 09 07 | 704 | 0.2+ | 0.9+ | 2005 05 01 | 644 | 0.2+ | 0.4+ | 2007 11 18 | 704 | 0.9−  | 0.2+  |
| 2002 09 14 | 644 | 0.3− | 0.4+ | 2005 05 01 | 644 | 0.3+ | 0.4+ | 2007 11 18 | 704 | 0.1−  | 0.6+  |
| 2002 09 14 | 644 | 0.8− | 0.2+ | 2005 05 01 | 644 | 0.1+ | 0.3+ | 2007 11 18 | 704 | 0.4−  | 0.7+  |
| 2002 09 14 | 644 | 0.6− | 0.3+ | 2005 05 09 | 699 | 0.2− | 0.3− | 2007 11 19 | 691 | 0.2−  | 0.0   |
| 2002 10 03 | 704 | 0.1− | 0.4+ | 2005 05 09 | 699 | 0.8− | 0.0  | 2007 11 19 | 691 | 0.1−  | 0.0   |
| 2002 10 03 | 704 | 1.2− | 0.2+ | 2005 05 09 | 699 | 1.4− | 0.4+ | 2007 11 19 | 691 | 0.1−  | 0.0   |
| 2002 10 03 | 704 | 1.1− | 0.1+ | 2005 05 09 | 699 | 0.0  | 0.7+ | 2007 12 12 | 704 | 0.7−  | 0.2+  |
| 2005 03 17 | 704 | 0.7+ | 0.4+ | 2006 08 19 | 699 | 0.4− | 0.4+ | 2007 12 12 | 704 | 0.3+  | 0.1+  |
| 2005 03 17 | 704 | 0.6+ | 1.0+ | 2006 08 19 | 699 | 0.5− | 0.1+ | 2007 12 12 | 704 | 0.5+  | 0.6+  |
| 2005 03 17 | 704 | 0.0  | 0.5− | 2006 08 19 | 699 | 0.2+ | 0.8+ | 2007 12 12 | 704 | 0.1−  | 0.1+  |
| 2005 04 05 | 699 | 0.3+ | 1.3+ | 2006 08 19 | 699 | 0.3+ | 0.4+ | 2007 12 13 | 704 | 0.4−  | 0.0   |
| 2005 04 05 | 699 | 0.2+ | 0.0  | 2006 08 20 | 644 | 0.2− | 0.2+ | 2007 12 13 | 704 | 0.8+  | 1.0+  |
| 2005 04 05 | 699 | 0.2+ | 0.0  | 2006 08 20 | 644 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.0   | 1.1+  |
| 2005 04 05 | 699 | 0.3+ | 0.5+ | 2006 08 20 | 644 | 0.2+ | 0.1+ | 2007 12 13 | 704 | (0.8− | 2.5+) |
| 2005 04 06 | 691 | 0.3+ | 0.5+ | 2006 08 28 | 703 | 0.2− | 0.3+ | 2007 12 15 | 704 | 0.6+  | 1.1+  |
| 2005 04 06 | 691 | 0.4+ | 0.4+ | 2006 08 28 | 703 | 1.0− | 1.0+ | 2007 12 15 | 704 | 0.0   | 0.7+  |
| 2005 04 06 | 691 | 0.5+ | 0.2+ | 2006 08 28 | 703 | 0.0  | 0.2+ | 2007 12 15 | 704 | 0.2−  | 0.8+  |
| 2005 04 10 | 691 | 0.2+ | 0.6+ | 2006 08 28 | 703 | 0.2− | 0.1+ | 2007 12 15 | 704 | 0.0   | 0.9+  |
| 2005 04 10 | 691 | 0.2+ | 0.4+ | 2006 10 22 | G96 | 0.1− | 0.0  | 2007 12 15 | 704 | 1.4+  | 1.3+  |

**(172225)\* 2002 RS<sub>90</sub> = 2000 EF<sub>162</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 37854)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|                   |            |          |           |             |             |          |   |          |          |
|-------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|----------|
| <i>M</i> 11.15043 |            |          |           | (2000.0)    |             |          |   | <i>P</i> | <i>Q</i> |
| <i>n</i>          | 0.21263689 | $\omega$ | 35.35757  | +0.88014519 | −0.47372566 |          |   |          |          |
| <i>a</i>          | 2.7799926  | $\Omega$ | 352.72170 | +0.36102993 | +0.70967892 |          |   |          |          |
| <i>e</i>          | 0.0439454  | <i>i</i> | 13.91690  | +0.30822369 | +0.52147850 |          |   |          |          |
| <i>P</i>          | 4.64       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |          |          |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 03 | 557 | 0.3−  | 0.1−  | 2002 09 14 | 644 | 0.3−  | 0.2+  | 2006 07 29 | E12 | 0.0   | 0.9+  |
| 2000 03 03 | 557 | 0.8+  | 1.9+  | 2002 09 14 | 644 | 0.4−  | 0.3+  | 2007 10 09 | 703 | (1.7− | 0.1−) |
| 2000 03 03 | 557 | 0.4+  | 1.7+  | 2002 09 14 | 644 | 0.7−  | 0.4+  | 2007 10 09 | 703 | 0.8−  | 1.0+  |
| 2000 03 03 | 557 | 0.1−  | 1.0+  | 2002 10 04 | 704 | 0.8−  | 0.2+  | 2007 10 09 | 703 | 0.2−  | 0.3+  |
| 2000 03 03 | 704 | 0.7+  | 0.1+  | 2002 10 04 | 704 | 1.1−  | 0.1+  | 2007 10 09 | 703 | 0.7−  | 0.3−  |
| 2000 03 03 | 704 | 0.3+  | 0.2−  | 2002 10 04 | 704 | 0.4−  | 0.1+  | 2007 10 16 | 703 | 0.7+  | 0.7+  |
| 2000 03 03 | 704 | 0.3+  | 0.5−  | 2002 10 04 | 704 | 0.7−  | 1.0+  | 2007 10 16 | 703 | 1.4+  | 1.0+  |
| 2000 03 03 | 704 | 0.4+  | 0.1−  | 2003 12 29 | 704 | (1.7+ | 2.1+) | 2007 10 16 | 703 | (1.7+ | 1.0+) |
| 2000 03 03 | 704 | 0.1+  | 0.4+  | 2003 12 29 | 704 | (0.7+ | 1.9+) | 2007 10 16 | 703 | 0.6+  | 0.0   |
| 2000 03 11 | 704 | 0.3−  | 0.2−  | 2003 12 29 | 704 | 0.7+  | 0.9+  | 2007 10 21 | 703 | 0.9−  | 0.5+  |
| 2000 03 11 | 704 | 0.7+  | 0.4+  | 2003 12 29 | 704 | 1.3+  | 0.9+  | 2007 10 21 | 703 | 0.8+  | 0.2−  |
| 2000 03 11 | 704 | 0.0   | 0.3−  | 2005 03 18 | 599 | 0.5+  | 0.7+  | 2007 10 21 | 703 | 0.6+  | 0.4−  |
| 2000 03 11 | 704 | 0.0   | 0.3+  | 2005 03 18 | 599 | (1.5− | 1.7+) | 2007 10 21 | 703 | (0.6+ | 1.6−) |
| 2000 03 11 | 704 | 0.2+  | 0.7+  | 2005 03 18 | 599 | 0.0   | 0.6+  | 2007 11 19 | 703 | 0.6−  | 0.9−  |
| 2002 09 05 | 704 | 0.6−  | 1.5+  | 2005 03 18 | 599 | 0.3+  | 0.6+  | 2007 11 19 | 703 | 0.1−  | 1.0−  |
| 2002 09 05 | 704 | 0.2+  | 1.1+  | 2005 05 01 | 644 | 0.5+  | 0.5+  | 2007 11 19 | 703 | 0.2−  | 0.8−  |
| 2002 09 05 | 704 | (1.2− | 1.9+) | 2005 05 01 | 644 | 0.4+  | 0.3+  | 2007 11 19 | 703 | 1.4−  | 0.4+  |
| 2002 09 07 | 704 | 0.2−  | 0.2+  | 2005 05 01 | 644 | 0.2+  | 0.4+  | 2007 12 03 | 704 | 0.1−  | 0.4−  |
| 2002 09 07 | 704 | 0.4−  | 0.3+  | 2006 07 29 | E12 | 0.2+  | 0.2+  | 2007 12 03 | 704 | 0.2+  | 0.8−  |
| 2002 09 07 | 704 | 0.4+  | 0.4+  | 2006 07 29 | E12 | 0.1−  | 0.5+  | 2007 12 03 | 704 | 0.2+  | 0.2+  |
| 2002 09 07 | 704 | 0.1−  | 1.2+  | 2006 07 29 | E12 | 0.3−  | 0.6+  |            |     |       |       |

**(172226)\* 2002 RB<sub>97</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 74.97832   | <i>P</i> | (2000.0)  | <i>Q</i>    |             |          |   |
| <i>n</i>                                | 0.22182761 | $\omega$ | 319.76747 | +0.95527248 | +0.29420765 |          |   |
| <i>a</i>                                | 2.7026656  | $\Omega$ | 23.17469  | −0.24800683 | +0.85215243 |          |   |
| <i>e</i>                                | 0.1090042  | <i>i</i> | 4.36311   | −0.16108102 | +0.43275639 |          |   |
| <i>P</i>                                | 4.44       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 704 | 0.0  | 0.5+ | 2002 10 11 | 704 | 0.7− | 0.2− | 2005 05 12 | G96 | 0.2− | 0.1+ |
| 2002 09 05 | 704 | 0.3+ | 0.2− | 2002 10 31 | 704 | 0.6− | 1.2+ | 2005 05 12 | G96 | 0.1− | 0.3+ |
| 2002 09 05 | 704 | 0.2+ | 0.5− | 2002 10 31 | 704 | 0.1+ | 1.3+ | 2006 08 12 | 644 | 0.1+ | 0.5+ |
| 2002 09 05 | 704 | 0.8+ | 0.2+ | 2002 10 31 | 704 | 0.7+ | 1.4+ | 2006 08 12 | 644 | 0.1+ | 0.4+ |
| 2002 09 07 | 704 | 0.1+ | 1.1+ | 2002 10 31 | 704 | 0.6+ | 1.3+ | 2006 08 12 | 644 | 0.1− | 0.4+ |
| 2002 09 07 | 704 | 0.1+ | 0.4+ | 2002 10 31 | 704 | 0.1+ | 1.2+ | 2006 08 19 | 644 | 0.1− | 0.5+ |
| 2002 09 07 | 704 | 0.1− | 0.1+ | 2002 11 21 | 644 | 0.2− | 0.2+ | 2006 08 19 | 644 | 0.0  | 0.5+ |
| 2002 09 07 | 704 | 0.4+ | 0.2− | 2002 11 21 | 644 | 0.3− | 0.5+ | 2006 08 19 | 644 | 0.0  | 0.4+ |
| 2002 09 07 | 704 | 0.5− | 0.0  | 2002 11 21 | 644 | 0.2− | 0.7+ | 2006 08 23 | 704 | 0.9+ | 1.0− |
| 2002 09 27 | 644 | 1.0− | 0.7+ | 2003 12 28 | 704 | 0.4− | 1.2+ | 2006 08 23 | 704 | 0.7− | 0.1− |
| 2002 09 27 | 644 | 0.8− | 0.1+ | 2003 12 28 | 704 | 1.2+ | 0.1− | 2006 08 23 | 644 | 0.0  | 0.0  |
| 2002 09 27 | 644 | 0.9− | 0.2+ | 2003 12 28 | 704 | 0.2+ | 0.3+ | 2006 08 23 | 644 | 0.3+ | 0.5+ |
| 2002 09 28 | 644 | 0.8− | 0.2+ | 2003 12 28 | 704 | 0.9+ | 0.5+ | 2006 08 23 | 704 | 1.1− | 0.1− |
| 2002 09 28 | 644 | 0.7− | 0.1+ | 2003 12 28 | 704 | 0.4− | 0.4+ | 2006 08 23 | 644 | 0.0  | 0.3+ |
| 2002 09 28 | 644 | 0.7− | 0.1+ | 2005 04 02 | G96 | 0.0  | 0.1+ | 2006 08 23 | 644 | 0.1− | 0.6+ |
| 2002 10 01 | 699 | 1.3+ | 0.9+ | 2005 04 02 | G96 | 0.2− | 0.0  | 2006 08 23 | 644 | 0.3− | 0.4+ |
| 2002 10 01 | 699 | 0.1+ | 0.1+ | 2005 04 02 | G96 | 0.2− | 0.1+ | 2006 08 23 | 644 | 0.1+ | 0.5+ |
| 2002 10 01 | 699 | 0.9+ | 0.0  | 2005 04 02 | G96 | 0.1+ | 0.4+ | 2006 08 24 | 644 | 0.1+ | 0.4+ |
| 2002 10 01 | 699 | 0.5+ | 0.4+ | 2005 04 09 | 691 | 0.0  | 0.2+ | 2006 08 24 | 644 | 0.1− | 0.4+ |
| 2002 10 02 | 704 | 0.0  | 1.0+ | 2005 04 09 | 691 | 0.3+ | 0.5+ | 2006 08 24 | 644 | 0.1− | 0.5+ |
| 2002 10 02 | 704 | 0.5− | 0.4+ | 2005 04 09 | 691 | 0.1− | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.1− |
| 2002 10 02 | 704 | 1.2− | 0.8+ | 2005 04 09 | 691 | 0.2+ | 0.3+ | 2007 11 19 | 691 | 0.8− | 0.1− |
| 2002 10 02 | 704 | 0.9− | 0.9− | 2005 04 09 | 691 | 0.3+ | 0.4+ | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2002 10 03 | 704 | 0.6− | 0.7+ | 2005 04 09 | 691 | 0.4+ | 0.2+ | 2007 12 06 | 691 | 0.2− | 0.4+ |
| 2002 10 03 | 704 | 0.3+ | 0.0  | 2005 04 15 | 699 | 0.8+ | 1.2+ | 2007 12 06 | 691 | 0.3− | 0.1+ |

|            |     |       |       |            |     |        |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|--------|-------|------------|-----|------|------|
| 2002 10 03 | 704 | 0.0   | 0.3–  | 2005 04 15 | 699 | 0.7–   | 0.5+  | 2007 12 06 | 691 | 0.1– | 0.3+ |
| 2002 10 03 | 704 | 0.6–  | 0.1–  | 2005 04 15 | 699 | 0.0    | 0.9+  | 2007 12 13 | 704 | 0.5+ | 0.9+ |
| 2002 10 03 | 704 | 0.2–  | 0.5–  | 2005 04 15 | 699 | (1.1+) | 1.9+) | 2007 12 13 | 704 | 1.1+ | 0.2+ |
| 2002 10 07 | 704 | (1.1– | 1.6+) | 2005 04 17 | 691 | 0.4+   | 0.2+  | 2007 12 13 | 704 | 0.8+ | 0.1+ |
| 2002 10 07 | 704 | (0.9– | 1.7+) | 2005 04 17 | 691 | 0.5+   | 0.5+  | 2007 12 13 | 704 | 0.7+ | 1.2+ |
| 2002 10 07 | 704 | (0.3– | 1.9+) | 2005 04 17 | 691 | 0.1+   | 0.2+  | 2007 12 13 | 704 | 0.3+ | 0.5+ |
| 2002 10 07 | 704 | (0.9– | 1.9+) | 2005 05 08 | 703 | 0.3–   | 0.7+  | 2007 12 15 | 704 | 0.1+ | 0.0  |
| 2002 10 07 | 704 | (0.8– | 1.9+) | 2005 05 08 | 703 | 0.3+   | 1.5+  | 2007 12 15 | 704 | 0.7+ | 0.5– |
| 2002 10 11 | 704 | 0.3–  | 0.1+  | 2005 05 08 | 703 | 0.4+   | 0.5–  | 2007 12 15 | 704 | 0.2+ | 0.9+ |
| 2002 10 11 | 704 | 0.3–  | 0.2–  | 2005 05 08 | 703 | 1.0+   | 1.0+  | 2007 12 15 | 704 | 0.3– | 0.1– |
| 2002 10 11 | 704 | 0.3–  | 0.3+  | 2005 05 12 | G96 | 0.3–   | 0.3+  |            |     |      |      |
| 2002 10 11 | 704 | 0.2–  | 0.6–  | 2005 05 12 | G96 | 0.3–   | 0.2+  |            |     |      |      |

**(172227)\* 2002 RG<sub>109</sub>**

Discovered 2002 Sept. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i>                                | 44.08264   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.22246099 | $\omega$ | 50.82068  | +0.99312689 |      | –0.04443858 |   |
| <i>a</i>                                | 2.6975332  | $\Omega$ | 311.44151 | –0.01325924 |      | +0.87644646 |   |
| <i>e</i>                                | 0.1419010  | <i>i</i> | 8.30496   | +0.11628914 |      | +0.47944427 |   |
| <i>P</i>                                | 4.43       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 08 15 | 691 | 0.2– | 0.6+ | 2002 09 13 | 644 | 0.2–  | 0.3+  | 2003 12 18 | 704 | 1.1– | 0.3– |
| 1993 08 15 | 691 | 0.0  | 0.6+ | 2002 09 13 | 644 | 0.3–  | 0.3+  | 2003 12 22 | 704 | 0.8– | 0.5+ |
| 1993 08 15 | 691 | 0.5– | 0.6+ | 2002 09 30 | 704 | 0.0   | 0.2–  | 2003 12 22 | 704 | 1.0– | 0.2+ |
| 2002 07 14 | 704 | 0.8+ | 0.2+ | 2002 09 30 | 704 | 0.1+  | 0.0   | 2003 12 22 | 704 | 0.1– | 0.4+ |
| 2002 07 14 | 704 | 0.3– | 0.3– | 2002 09 30 | 704 | 0.1+  | 0.4+  | 2003 12 22 | 704 | 0.2+ | 0.5+ |
| 2002 07 14 | 704 | 0.0  | 0.4+ | 2002 09 30 | 704 | 0.4+  | 0.0   | 2004 01 15 | 691 | 0.0  | 0.2+ |
| 2002 07 14 | 704 | 0.1– | 0.6+ | 2002 10 04 | 704 | 0.6+  | 0.3–  | 2004 01 15 | 691 | 0.2– | 0.2+ |
| 2002 08 12 | 704 | 0.3+ | 0.7+ | 2002 10 04 | 704 | 0.3+  | 0.1–  | 2004 01 15 | 691 | 0.1– | 0.1– |
| 2002 08 12 | 704 | 0.3– | 0.7+ | 2002 10 04 | 704 | 0.1–  | 0.2+  | 2004 01 22 | 704 | 0.2– | 0.1+ |
| 2002 08 12 | 704 | 0.3+ | 1.1+ | 2002 10 04 | 704 | 0.2+  | 0.3+  | 2004 01 22 | 704 | 0.1– | 0.1– |
| 2002 08 12 | 704 | 0.2– | 0.4+ | 2002 10 04 | 704 | 0.8+  | 0.3–  | 2004 01 22 | 704 | 0.7+ | 0.9+ |
| 2002 08 12 | 704 | 0.1+ | 1.1+ | 2002 10 05 | 645 | 0.1–  | 0.2–  | 2004 01 22 | 704 | 0.8+ | 1.1+ |
| 2002 09 06 | 704 | 0.2+ | 0.6+ | 2002 10 05 | 645 | 0.1–  | 0.2–  | 2004 01 22 | 704 | 0.6+ | 1.2+ |
| 2002 09 06 | 704 | 0.2+ | 0.3+ | 2002 10 31 | 645 | 0.0   | 0.2–  | 2004 01 27 | 691 | 0.2+ | 0.1– |
| 2002 09 06 | 704 | 0.1+ | 0.3+ | 2002 10 31 | 645 | 0.0   | 0.2–  | 2004 01 27 | 691 | 0.2+ | 0.0  |
| 2002 09 06 | 704 | 0.1– | 0.6+ | 2002 10 31 | 704 | (1.5+ | 0.7+) | 2004 01 27 | 691 | 0.1+ | 0.0  |
| 2002 09 06 | 704 | 0.3– | 0.3+ | 2002 10 31 | 704 | 1.1+  | 0.9–  | 2007 11 03 | 704 | 0.9– | 1.0+ |
| 2002 09 06 | 599 | 0.1+ | 0.4+ | 2002 10 31 | 704 | 1.0+  | 0.1+  | 2007 11 03 | 704 | 0.4– | 0.2+ |
| 2002 09 06 | 599 | 0.1+ | 0.4+ | 2002 10 31 | 704 | 1.2+  | 0.4–  | 2007 11 03 | 704 | 0.4+ | 1.1+ |
| 2002 09 06 | 599 | 0.3– | 0.9+ | 2002 11 08 | 645 | 0.0   | 0.2–  | 2007 11 03 | 704 | 0.6+ | 0.5– |
| 2002 09 07 | 704 | 0.2+ | 0.1– | 2002 11 08 | 704 | 0.9+  | 0.3+  | 2007 11 03 | 704 | 0.0  | 1.4+ |
| 2002 09 07 | 704 | 0.3– | 0.6+ | 2002 11 08 | 645 | 0.0   | 0.2–  | 2007 11 08 | 704 | 0.8+ | 0.5+ |
| 2002 09 07 | 704 | 0.0  | 0.1+ | 2002 11 08 | 704 | 1.3–  | 0.1+  | 2007 11 08 | 704 | 0.9+ | 0.3+ |
| 2002 09 07 | 704 | 0.2+ | 0.0  | 2002 11 08 | 704 | 0.4+  | 0.2+  | 2007 11 08 | 704 | 1.0+ | 0.7– |
| 2002 09 07 | 704 | 0.0  | 0.6+ | 2002 11 08 | 704 | (0.1– | 1.7+) | 2007 11 08 | 704 | 0.2– | 0.3– |
| 2002 09 07 | 704 | 0.6– | 0.1+ | 2002 12 06 | 704 | 0.4+  | 1.2+  | 2007 11 16 | 704 | 0.2– | 0.0  |
| 2002 09 07 | 704 | 0.8– | 1.1+ | 2002 12 06 | 704 | 0.2+  | 1.2+  | 2007 11 16 | 704 | 0.3– | 0.1– |
| 2002 09 07 | 704 | 0.0  | 0.1+ | 2002 12 06 | 704 | 0.6–  | 0.7+  | 2007 11 16 | 704 | 0.5– | 0.2– |
| 2002 09 07 | 704 | 0.9– | 0.3+ | 2002 12 06 | 704 | 0.2+  | 1.1+  | 2007 11 16 | 704 | 0.4– | 0.7+ |
| 2002 09 07 | 704 | 0.3– | 0.4+ | 2003 12 17 | 691 | 0.1–  | 0.2–  | 2007 12 16 | 704 | 0.6+ | 0.0  |
| 2002 09 07 | 599 | 0.2+ | 0.2+ | 2003 12 17 | 691 | 0.1–  | 0.2–  | 2007 12 16 | 704 | 0.7+ | 0.1+ |
| 2002 09 07 | 599 | 0.1+ | 0.1+ | 2003 12 17 | 691 | 0.0   | 0.4+  | 2007 12 16 | 704 | 1.0+ | 0.1– |
| 2002 09 07 | 599 | 0.3+ | 0.2+ | 2003 12 18 | 704 | 1.3+  | 1.1+  | 2007 12 16 | 704 | 0.9– | 0.4– |
| 2002 09 07 | 599 | 0.2+ | 0.3+ | 2003 12 18 | 704 | (2.6– | 2.1–) |            |     |      |      |
| 2002 09 13 | 644 | 0.2– | 0.3+ | 2003 12 18 | 704 | 1.2+  | 0.9+  |            |     |      |      |

**(172228)\* 2002 RJ<sub>113</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 42.08365   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22967517 | $\omega$ | 252.08244 | +0.95733156 |      | –0.28166053 |   |
| <i>a</i> | 2.6407464  | $\Omega$ | 124.23035 | +0.28580790 |      | +0.88963370 |   |
| <i>e</i> | 0.0983321  | <i>i</i> | 4.48696   | +0.04278004 |      | +0.35947076 |   |
| <i>P</i> | 4.29       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |        |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|--------|-------|------------|-----|------|------|
| 1994 12 01 | 691 | 0.2–  | 0.2–  | 2003 12 25 | 608 | (0.3+) | 1.8+) | 2006 07 21 | G96 | 0.3– | 0.1+ |
| 1994 12 01 | 691 | 0.2–  | 0.4–  | 2003 12 25 | 608 | (0.6–  | 1.6+) | 2006 08 21 | 644 | 0.1+ | 0.2+ |
| 1994 12 01 | 691 | 0.3–  | 0.1+  | 2003 12 27 | 691 | 0.6+   | 0.2–  | 2006 08 21 | 644 | 0.1– | 0.2+ |
| 1998 10 20 | 699 | 1.8+  | 0.7+  | 2003 12 27 | 691 | 0.8+   | 0.3+  | 2006 08 21 | 644 | 0.0  | 0.1+ |
| 1998 10 20 | 699 | 0.4+  | 0.1–  | 2003 12 27 | 691 | 0.4+   | 0.5+  | 2007 11 12 | 704 | 0.1– | 0.5– |
| 1998 10 20 | 699 | 0.0   | 1.9+  | 2004 01 21 | 704 | 0.4+   | 0.1+  | 2007 11 12 | 704 | 0.7– | 0.3– |
| 2002 08 29 | 644 | 0.3+  | 0.6+  | 2004 01 21 | 704 | 0.1+   | 0.1+  | 2007 11 12 | 704 | 0.2+ | 0.7+ |
| 2002 08 29 | 644 | 0.4+  | 0.6+  | 2004 01 21 | 704 | 0.2–   | 0.2–  | 2007 11 12 | 704 | 0.1– | 0.1– |
| 2002 08 29 | 644 | 0.2+  | 0.6+  | 2004 01 22 | 704 | 0.4–   | 0.5–  | 2007 11 20 | 691 | 0.2– | 0.0  |
| 2002 09 05 | 704 | (0.7+ | 1.6+) | 2004 01 22 | 704 | 0.1–   | 0.2+  | 2007 11 20 | 691 | 0.3– | 0.1+ |
| 2002 09 05 | 704 | 0.4–  | 1.1+  | 2004 01 22 | 704 | 0.1–   | 0.2–  | 2007 11 20 | 691 | 0.2– | 0.1+ |
| 2002 09 05 | 704 | 0.4–  | 0.6+  | 2004 01 22 | 704 | 0.5+   | 0.1+  | 2007 12 04 | 704 | 0.4– | 0.6+ |
| 2002 09 05 | 704 | 0.5+  | 0.9+  | 2004 01 31 | 691 | 0.0    | 0.2–  | 2007 12 04 | 704 | 0.3– | 0.1+ |
| 2002 09 08 | 608 | 0.4+  | 0.5–  | 2004 01 31 | 691 | 0.1+   | 0.1+  | 2007 12 04 | 704 | 0.4– | 0.2+ |
| 2002 09 08 | 608 | 0.1+  | 0.1–  | 2004 01 31 | 691 | 0.3+   | 0.1+  | 2007 12 04 | 704 | 0.5+ | 1.2+ |
| 2002 09 08 | 608 | 0.1+  | 0.1–  | 2005 05 03 | 691 | 0.1+   | 0.5+  | 2007 12 04 | 704 | 0.9– | 0.2+ |
| 2002 09 13 | 704 | 0.0   | 0.5+  | 2005 05 03 | 691 | 0.2+   | 0.1+  | 2007 12 05 | G96 | 0.1– | 0.1+ |
| 2002 09 13 | 704 | 0.4–  | 0.0   | 2005 05 03 | 691 | 0.2–   | 0.5+  | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 2002 09 13 | 704 | 0.2+  | 0.8–  | 2006 05 25 | G96 | 0.4–   | 0.1+  | 2007 12 05 | G96 | 0.3+ | 0.3– |
| 2002 09 16 | 608 | 0.4–  | 0.8–  | 2006 05 25 | G96 | 0.0    | 0.4–  | 2007 12 05 | G96 | 0.0  | 0.0  |
| 2002 09 16 | 608 | 0.6–  | 0.8–  | 2006 05 25 | G96 | 0.2+   | 0.1–  | 2007 12 06 | G96 | 0.1– | 0.1– |
| 2002 09 16 | 608 | (1.6– | 0.3–) | 2006 05 25 | G96 | 0.0    | 0.1–  | 2007 12 06 | G96 | 0.4+ | 0.1– |
| 2003 12 21 | 645 | 0.1–  | 0.0   | 2006 07 21 | G96 | 0.1–   | 0.1+  | 2007 12 06 | G96 | 0.2+ | 0.3– |
| 2003 12 21 | 645 | 0.1–  | 0.0   | 2006 07 21 | G96 | 0.1–   | 0.1+  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2003 12 25 | 608 | (0.1– | 1.6+) | 2006 07 21 | G96 | 0.2–   | 0.0   |            |     |      |      |

**(172229)\* 2002 RT<sub>113</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i>                                | 359.82264  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.20287578 | $\omega$ | 352.02452 | +0.99528771 |      | –0.09671672 |   |
| <i>a</i>                                | 2.8684630  | $\Omega$ | 13.53149  | +0.09052270 |      | +0.90108698 |   |
| <i>e</i>                                | 0.0894869  | <i>i</i> | 1.70130   | +0.03475658 |      | +0.42271519 |   |
| <i>P</i>                                | 4.86       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 02 02 | 691 | 0.0   | 0.1+  | 2002 09 16 | 644 | 1.2– | 0.0  | 2007 10 06 | 704 | 0.5–  | 1.2+  |
| 1995 02 02 | 691 | 0.4+  | 0.0   | 2002 09 29 | 291 | 0.1– | 0.3+ | 2007 10 06 | 704 | (0.8– | 1.7–) |
| 1995 02 02 | 691 | 0.1–  | 0.1+  | 2002 09 29 | 291 | 0.1– | 0.1+ | 2007 10 06 | 704 | 0.4–  | 1.2+  |
| 2000 03 03 | 704 | (2.2+ | 0.2+) | 2002 09 29 | 291 | 0.0  | 0.1+ | 2007 10 06 | 704 | 0.5–  | 0.2+  |
| 2000 03 03 | 704 | 0.2+  | 1.6+  | 2002 10 03 | 704 | 0.2+ | 0.6+ | 2007 10 08 | 699 | 1.1+  | 0.8+  |
| 2000 03 03 | 704 | 0.2+  | 0.7+  | 2002 10 03 | 704 | 0.1– | 1.5+ | 2007 10 08 | 699 | 0.3+  | 0.4+  |
| 2000 03 03 | 704 | 1.1+  | 0.6+  | 2002 10 03 | 704 | 0.2– | 1.1+ | 2007 10 08 | 699 | 0.5+  | 0.0   |
| 2000 03 03 | 704 | 0.6+  | 1.4+  | 2002 10 03 | 704 | 0.5– | 1.2+ | 2007 10 08 | 699 | (1.5– | 1.7+) |
| 2001 05 22 | 807 | 0.2+  | 0.5–  | 2005 03 04 | G96 | 0.3– | 0.5+ | 2007 10 12 | G96 | 0.1–  | 0.2–  |
| 2001 05 22 | 807 | 0.1+  | 0.4–  | 2005 03 04 | G96 | 0.0  | 0.3+ | 2007 10 12 | G96 | 0.0   | 0.3–  |
| 2002 08 29 | 644 | 0.3–  | 0.1–  | 2005 03 04 | G96 | 0.2+ | 0.2+ | 2007 10 12 | G96 | 0.0   | 0.3–  |
| 2002 08 29 | 644 | 0.0   | 0.2+  | 2005 03 04 | G96 | 0.3– | 0.2+ | 2007 10 12 | G96 | 0.1+  | 0.4–  |
| 2002 08 29 | 644 | 0.1–  | 0.1+  | 2005 04 04 | G96 | 0.0  | 0.1+ | 2007 10 14 | 704 | 1.1+  | 0.3+  |
| 2002 09 05 | 699 | 0.6–  | 1.0+  | 2005 04 04 | G96 | 0.0  | 0.2+ | 2007 10 14 | 704 | 1.3+  | 0.2+  |
| 2002 09 05 | 699 | 0.4+  | 1.2–  | 2005 04 04 | G96 | 0.3+ | 0.2+ | 2007 10 14 | 704 | 0.9+  | 0.5+  |
| 2002 09 05 | 699 | 0.7–  | 0.1+  | 2005 04 04 | G96 | 0.2– | 0.5+ | 2007 10 14 | 704 | 0.3–  | 1.3+  |
| 2002 09 05 | 699 | 0.5+  | 1.1–  | 2005 04 16 | 691 | 0.5+ | 0.6+ | 2007 10 15 | 703 | (1.7– | 0.2+) |
| 2002 09 05 | 704 | 0.1+  | 0.6–  | 2005 04 16 | 691 | 0.7+ | 0.7+ | 2007 10 15 | 703 | 1.1–  | 0.5+  |
| 2002 09 05 | 704 | 0.6+  | 0.7+  | 2005 04 16 | 691 | 0.1– | 0.9+ | 2007 10 15 | 703 | 0.9–  | 0.2+  |
| 2002 09 05 | 704 | 0.2–  | 0.7+  | 2007 09 14 | G96 | 0.0  | 0.4– | 2007 10 15 | 703 | 0.3–  | 0.5+  |
| 2002 09 05 | 704 | 0.3+  | 1.1+  | 2007 09 14 | G96 | 0.3– | 0.4– | 2007 10 28 | 926 | 0.1–  | 0.2+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 704 | 0.0  | 0.7+ | 2007 09 14 | G96 | 0.0  | 0.4- | 2007 10 28 | 926 | 0.4- | 0.1- |
| 2002 09 08 | 608 | 0.5- | 0.5+ | 2007 09 14 | G96 | 0.3- | 0.3- | 2007 10 28 | 926 | 0.1- | 0.3+ |
| 2002 09 08 | 608 | 0.9- | 0.8+ | 2007 10 04 | G96 | 0.8- | 0.2- | 2007 12 06 | G96 | 0.0  | 0.3+ |
| 2002 09 08 | 608 | 0.2- | 0.2+ | 2007 10 04 | G96 | 0.3- | 0.3- | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2002 09 16 | 644 | 0.5- | 0.0  | 2007 10 04 | G96 | 0.4- | 0.3- | 2007 12 06 | G96 | 0.2- | 0.2- |
| 2002 09 16 | 644 | 0.6- | 0.0  | 2007 10 06 | 704 | 0.2+ | 0.8+ | 2007 12 06 | G96 | 0.4+ | 0.7- |

**(172230)\* 2002 RZ<sub>113</sub> = 1995 BV<sub>14</sub>**

Discovered 2002 Sept. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.  
Id. G. V. Williams (*MPO* 37882)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 51.74994   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.20263428 | $\omega$ | 137.06414 |     | +0.62365674 |     | +0.78168510 |
| $a$ | 2.8707416  | $\Omega$ | 171.51602 |     | -0.72528695 |     | +0.58081043 |
| $e$ | 0.0646571  | $i$      | 1.76626   |     | -0.29156665 |     | +0.22721720 |
| $P$ | 4.86       | $H$      | 15.9      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 01 31 | 691 | 0.0  | 0.2+ | 2003 12 25 | 691 | 0.0   | 0.1+  | 2007 09 13 | 699 | 0.6-  | 0.7+  |
| 1995 01 31 | 691 | 0.0  | 0.3+ | 2005 03 03 | 703 | 0.8-  | 1.2+  | 2007 09 14 | 699 | 0.9-  | 0.1-  |
| 1995 01 31 | 691 | 0.6- | 0.1- | 2005 03 03 | 703 | 0.6+  | 0.7+  | 2007 09 14 | 699 | (0.3+ | 2.0+) |
| 1995 02 07 | 691 | 0.1- | 0.4- | 2005 03 03 | 703 | (1.6+ | 1.5+) | 2007 09 14 | 699 | 0.6+  | 0.9+  |
| 1995 02 07 | 691 | 0.6+ | 0.3+ | 2005 03 03 | 703 | 0.7-  | 0.4+  | 2007 09 14 | 699 | 0.9-  | 0.4+  |
| 1995 02 07 | 691 | 0.1+ | 0.0  | 2005 03 08 | G96 | 0.0   | 0.1+  | 2007 10 04 | G96 | 0.0   | 0.2-  |
| 2001 05 29 | 691 | 0.1+ | 0.4+ | 2005 03 08 | G96 | 0.2-  | 0.2-  | 2007 10 04 | G96 | 0.0   | 0.2-  |
| 2001 05 29 | 691 | 0.8+ | 0.2- | 2005 03 08 | G96 | 0.2-  | 0.1+  | 2007 10 04 | G96 | 0.4+  | 0.1-  |
| 2001 05 29 | 691 | 0.3- | 0.4+ | 2005 03 08 | G96 | 0.0   | 0.2+  | 2007 10 04 | G96 | 0.8-  | 0.9+  |
| 2002 09 05 | 704 | 0.5+ | 0.7- | 2005 04 02 | G96 | 0.1+  | 0.3+  | 2007 10 06 | 704 | (1.9+ | 0.5+) |
| 2002 09 05 | 704 | 0.7- | 0.6+ | 2005 04 02 | G96 | 0.2-  | 0.1-  | 2007 10 06 | 704 | 0.4+  | 0.4+  |
| 2002 09 05 | 704 | 0.0  | 0.2+ | 2005 04 02 | G96 | 0.2+  | 0.0   | 2007 10 06 | 704 | 1.2-  | 0.5-  |
| 2002 09 05 | 704 | 0.8- | 0.6+ | 2005 04 02 | G96 | 0.1+  | 0.1+  | 2007 10 06 | 704 | 0.4+  | 0.6+  |
| 2002 09 08 | 608 | 0.7- | 0.9- | 2007 09 04 | G96 | 1.0+  | 0.4-  | 2007 10 08 | 291 | 0.3-  | 0.3+  |
| 2002 09 08 | 608 | 0.3- | 0.1- | 2007 09 04 | G96 | 0.2+  | 0.6-  | 2007 10 08 | 291 | 0.1-  | 0.3+  |
| 2002 09 08 | 608 | 0.3- | 0.6- | 2007 09 04 | G96 | 0.5+  | 0.3-  | 2007 10 08 | 291 | 0.2-  | 0.2+  |
| 2002 09 14 | 644 | 0.1- | 0.3+ | 2007 09 04 | G96 | 0.3+  | 0.4-  | 2007 10 12 | G96 | 0.3+  | 0.2-  |
| 2002 09 14 | 644 | 0.2- | 0.0  | 2007 09 13 | 704 | 0.0   | 0.5+  | 2007 10 12 | G96 | 0.4+  | 0.2-  |
| 2002 09 14 | 644 | 0.4- | 0.1+ | 2007 09 13 | 704 | 0.1+  | 0.4+  | 2007 10 12 | G96 | 0.5+  | 0.3-  |
| 2002 09 15 | 644 | 0.7+ | 0.1- | 2007 09 13 | 704 | 0.6+  | 0.2+  | 2007 10 12 | G96 | 0.0   | 0.3-  |
| 2002 09 15 | 644 | 0.5+ | 0.2+ | 2007 09 13 | 704 | 0.5+  | 0.1-  | 2007 12 04 | G96 | 0.2-  | 0.8-  |
| 2002 09 15 | 644 | 0.1+ | 0.1- | 2007 09 13 | 699 | 0.3+  | 0.4+  | 2007 12 04 | G96 | 0.4+  | 0.2+  |
| 2003 12 25 | 691 | 0.3+ | 0.0  | 2007 09 13 | 699 | 0.6-  | 0.6-  | 2007 12 04 | G96 | 0.0   | 0.6-  |
| 2003 12 25 | 691 | 0.2+ | 0.2+ | 2007 09 13 | 699 | 0.4-  | 0.4+  | 2007 12 04 | G96 | 0.2+  | 0.2+  |

**(172231)\* 2002 RZ<sub>127</sub>**

Discovered 2002 Sept. 10 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 337.95723  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.22631202 | $\omega$ | 185.13976 |     | +0.16024863  |     | -0.96637103  |
| $a$ | 2.6668442  | $\Omega$ | 255.74859 |     | +0.91285886  |     | +0.22260254  |
| $e$ | 0.1233823  | $i$      | 11.97596  |     | +0.37551175  |     | -0.12874448  |
| $P$ | 4.36       | $H$      | 15.9      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 20 | 644 | 0.4- | 0.5+ | 2003 12 25 | 608 | 0.2+ | 0.8+ | 2007 11 18 | 704 | 0.3-  | 0.4-  |
| 2002 07 20 | 644 | 0.1+ | 0.6+ | 2003 12 25 | 608 | 0.4+ | 1.0+ | 2007 11 18 | 704 | (0.7- | 1.7-) |
| 2002 07 20 | 644 | 0.3+ | 0.5+ | 2003 12 25 | 608 | 0.6+ | 1.2+ | 2007 11 18 | 704 | 0.4+  | 0.4+  |
| 2002 08 04 | 644 | 0.3+ | 0.9+ | 2006 05 09 | G96 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.1+  | 0.1+  |
| 2002 08 04 | 644 | 0.1+ | 0.9+ | 2006 05 09 | G96 | 0.5- | 0.1- | 2007 11 20 | 704 | 0.5-  | 0.4-  |
| 2002 08 04 | 644 | 0.3+ | 0.5+ | 2006 05 09 | G96 | 0.2+ | 0.4- | 2007 11 20 | 704 | 0.9+  | 0.4-  |
| 2002 08 04 | 644 | 0.2+ | 0.2- | 2006 05 09 | G96 | 0.2- | 0.2- | 2007 11 20 | 704 | 0.3+  | 0.6+  |
| 2002 08 04 | 644 | 0.0  | 0.3- | 2006 05 30 | 691 | 0.2+ | 0.2+ | 2007 11 20 | 704 | 0.9+  | 0.2-  |
| 2002 08 04 | 644 | 0.3- | 0.4- | 2006 05 30 | 691 | 0.1- | 0.3+ | 2007 11 20 | 704 | 0.5+  | 0.0   |
| 2002 09 03 | 644 | 0.0  | 1.2- | 2006 05 30 | 691 | 0.3- | 0.5+ | 2007 12 04 | 699 | 0.0   | 0.0   |
| 2002 09 03 | 644 | 0.0  | 0.3- | 2006 06 04 | 691 | 0.5- | 0.2- | 2007 12 04 | 699 | 1.1+  | 0.7-  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 03 | 644 | 0.0   | 0.4-  | 2006 06 04 | 691 | 0.4+ | 0.1+ | 2007 12 04 | 699 | 0.1+ | 0.1- |
| 2002 09 04 | 699 | (1.1+ | 1.7-) | 2006 06 04 | 691 | 0.1- | 0.5+ | 2007 12 04 | 699 | 0.9- | 1.3+ |
| 2002 09 04 | 699 | 0.6-  | 0.8+  | 2007 11 07 | 704 | 0.6- | 0.8+ | 2007 12 10 | 704 | 0.2- | 0.0  |
| 2002 09 04 | 699 | 0.9+  | 0.2+  | 2007 11 07 | 704 | 0.1- | 0.1- | 2007 12 10 | 704 | 0.0  | 0.3+ |
| 2002 09 04 | 699 | 0.6-  | 1.0+  | 2007 11 07 | 704 | 0.1- | 0.8- | 2007 12 10 | 704 | 0.1- | 0.6+ |
| 2002 09 10 | 644 | 0.2+  | 0.2-  | 2007 11 07 | 704 | 0.3- | 0.8- | 2007 12 15 | 704 | 0.5- | 0.7+ |
| 2002 09 10 | 644 | 0.2+  | 0.2-  | 2007 11 07 | 704 | 0.7- | 0.1- | 2007 12 15 | 704 | 0.4- | 0.2+ |
| 2002 09 10 | 644 | 0.1-  | 0.2-  | 2007 11 12 | G96 | 0.2+ | 0.3- | 2007 12 15 | 704 | 0.0  | 0.9+ |
| 2002 09 11 | 644 | 0.0   | 0.3-  | 2007 11 12 | G96 | 0.2- | 0.4- | 2007 12 15 | 704 | 0.3- | 0.7+ |
| 2002 09 11 | 644 | 0.0   | 0.1-  | 2007 11 12 | G96 | 0.1- | 0.3- | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2002 09 11 | 644 | 0.3-  | 0.2-  | 2007 11 12 | G96 | 0.1- | 0.5- | 2007 12 15 | G96 | 0.3+ | 0.2- |
| 2003 12 01 | 704 | 0.9+  | 0.2+  | 2007 11 17 | G96 | 0.2+ | 0.3- | 2007 12 15 | G96 | 0.1- | 0.1- |
| 2003 12 01 | 704 | 0.6+  | 0.8+  | 2007 11 17 | G96 | 0.2+ | 0.4- | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2003 12 01 | 704 | 0.5-  | 1.0+  | 2007 11 17 | G96 | 0.2+ | 0.4- |            |     |      |      |
| 2003 12 01 | 704 | 0.0   | 0.5+  | 2007 11 17 | G96 | 0.2- | 0.4- |            |     |      |      |

**(172232)\* 2002 RL<sub>131</sub>**

Discovered 2002 Sept. 11 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 337.66154  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22546111 | $\omega$ | 171.58387 |     | +0.04098604 |     | -0.98106613 |
| $a$ | 2.6735498  | $\Omega$ | 275.91458 |     | +0.90527578 |     | +0.11663551 |
| $e$ | 0.1502539  | $i$      | 10.97027  |     | +0.42284266 |     | -0.15461374 |
| $P$ | 4.37       | $H$      | 15.5      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 04 | 699 | 0.4+  | 0.4+  | 2003 10 24 | 691 | 0.2+  | 0.1+  | 2004 01 29 | 704 | 0.3+  | 0.7+  |
| 2000 04 04 | 699 | 0.6+  | 0.6+  | 2003 12 18 | 644 | 0.2+  | 0.4+  | 2004 01 29 | 704 | 0.6+  | 0.3+  |
| 2000 04 04 | 699 | (2.2+ | 0.8+) | 2003 12 18 | 644 | 0.2+  | 0.1+  | 2004 02 18 | 704 | 0.5-  | 0.5+  |
| 2000 04 04 | 699 | 0.8+  | 0.1+  | 2003 12 18 | 644 | 0.1+  | 0.0   | 2004 02 18 | 704 | 0.6+  | 0.5+  |
| 2002 09 04 | 644 | 0.5-  | 0.9+  | 2003 12 22 | 703 | (1.9+ | 0.7+) | 2004 02 18 | 704 | 0.1+  | 0.6+  |
| 2002 09 04 | 644 | 0.6-  | 0.8+  | 2003 12 22 | 703 | 0.0   | 0.3-  | 2004 02 18 | 704 | 0.4+  | 0.9+  |
| 2002 09 04 | 644 | 0.5-  | 1.1+  | 2003 12 22 | 703 | 0.7+  | 0.2+  | 2004 02 18 | 704 | 0.6-  | 1.0+  |
| 2002 09 11 | 644 | 0.5-  | 0.1-  | 2003 12 22 | 703 | 0.8+  | 0.3+  | 2007 11 02 | 704 | (1.9+ | 0.4-) |
| 2002 09 11 | 644 | 0.7-  | 0.2-  | 2003 12 23 | 704 | 0.4-  | 0.4-  | 2007 11 02 | 704 | 0.5+  | 0.9-  |
| 2002 09 11 | 644 | 0.3-  | 0.2-  | 2003 12 23 | 704 | 0.5+  | 0.0   | 2007 11 02 | 704 | 0.8-  | 1.0-  |
| 2002 09 12 | 644 | 0.1-  | 0.3-  | 2003 12 23 | 704 | 0.3+  | 0.6-  | 2007 11 02 | 704 | (0.3- | 1.7+) |
| 2002 09 12 | 644 | 0.2-  | 0.2+  | 2003 12 23 | 704 | 0.4-  | 0.7-  | 2007 11 02 | 704 | 0.7+  | 0.6+  |
| 2002 09 12 | 644 | 0.7+  | 0.1-  | 2003 12 23 | 704 | 0.3+  | 0.0   | 2007 11 17 | 704 | 0.5+  | 0.0   |
| 2002 09 12 | 644 | 0.4-  | 0.1+  | 2004 01 13 | 699 | 1.0-  | 0.5-  | 2007 11 17 | 704 | 0.0   | 0.2-  |
| 2002 09 12 | 644 | 0.1-  | 0.1-  | 2004 01 13 | 699 | (1.4- | 2.6-) | 2007 11 17 | 704 | 0.0   | 0.2-  |
| 2002 09 12 | 644 | 0.6-  | 0.0   | 2004 01 13 | 699 | 0.2-  | 0.2-  | 2007 11 17 | 704 | 0.1+  | 0.6-  |
| 2002 10 05 | 704 | 0.1-  | 0.6+  | 2004 01 13 | 699 | 0.5-  | 0.0   | 2007 11 17 | 704 | 0.0   | 0.4-  |
| 2002 10 05 | 704 | 0.3+  | 0.8+  | 2004 01 13 | 644 | 0.0   | 0.0   | 2007 12 13 | 704 | 0.4+  | 0.0   |
| 2002 10 05 | 704 | 0.8+  | 0.1+  | 2004 01 13 | 644 | 0.3+  | 0.1+  | 2007 12 13 | 704 | 0.6+  | 0.8+  |
| 2002 10 05 | 704 | 0.0   | 0.3-  | 2004 01 13 | 644 | 0.3+  | 0.3+  | 2007 12 13 | 704 | 0.7-  | 0.0   |
| 2002 10 05 | 704 | 0.3-  | 0.3-  | 2004 01 23 | 704 | 0.1+  | 0.4+  | 2007 12 13 | 704 | 0.5+  | 0.1+  |
| 2002 10 06 | 644 | 0.1-  | 1.1+  | 2004 01 23 | 704 | 0.6+  | 0.3+  | 2007 12 16 | 704 | 0.0   | 0.5-  |
| 2002 10 06 | 644 | 0.1+  | 0.9+  | 2004 01 23 | 704 | 0.2+  | 0.2+  | 2007 12 16 | 704 | 0.2-  | 0.3+  |
| 2002 10 06 | 644 | 0.1-  | 1.0+  | 2004 01 23 | 704 | (2.3+ | 0.4+) | 2007 12 16 | 704 | 0.5-  | 0.8-  |
| 2003 10 24 | 691 | 0.1+  | 0.1+  | 2004 01 23 | 704 | 1.4-  | 0.6-  | 2007 12 16 | 704 | 0.2-  | 0.5-  |
| 2003 10 24 | 691 | 0.5-  | 0.4+  | 2004 01 29 | 704 | 0.1+  | 0.1+  | 2007 12 16 | 704 | 0.4-  | 0.2-  |

**(172233)\* 2002 RB<sub>141</sub>**

Discovered 2002 Sept. 10

## 2007 DEC. 24

## M.P.O. 129305

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 10 | 644 | 0.4+ | 0.9+ | 2004 01 31 | 704 | (1.1+ | 1.9+) | 2006 09 26 | 703 | (2.0+ | 0.8+) |
| 2002 09 10 | 644 | 0.5- | 0.4+ | 2004 01 31 | 704 | 0.5+  | 1.3+  | 2006 09 26 | 703 | 0.3-  | 0.2-  |
| 2002 09 10 | 644 | 0.2+ | 0.8+ | 2004 01 31 | 704 | 0.9+  | 1.4+  | 2006 09 26 | 703 | 0.1-  | 0.1-  |
| 2002 09 13 | 608 | 0.4- | 0.3- | 2004 01 31 | 704 | 0.5+  | 0.5+  | 2006 09 26 | 703 | 0.4-  | 0.3-  |
| 2002 09 13 | 608 | 0.4- | 0.1+ | 2004 02 02 | 699 | 0.0   | 0.6-  | 2006 09 26 | 703 | 0.6-  | 0.8-  |
| 2002 09 13 | 608 | 0.4- | 1.1- | 2004 02 02 | 699 | 0.3+  | 0.6-  | 2007 09 27 | G96 | 1.1+  | 0.1+  |
| 2002 09 17 | 644 | 0.0  | 0.5+ | 2004 02 02 | 699 | 0.0   | 0.4+  | 2007 09 27 | G96 | 0.2+  | 1.1-  |
| 2002 09 17 | 644 | 0.1- | 0.4+ | 2004 02 02 | 699 | (2.0- | 0.1-) | 2007 09 27 | G96 | 0.7+  | 1.1-  |
| 2002 09 17 | 644 | 0.2- | 0.4+ | 2004 02 11 | 704 | (0.1- | 1.8+) | 2007 09 27 | G96 | 0.4+  | 0.8-  |
| 2002 09 19 | 644 | 0.3- | 0.4+ | 2004 02 11 | 704 | 0.5-  | 0.3+  | 2007 11 05 | 703 | (2.0- | 2.4+) |
| 2002 09 19 | 644 | 0.3- | 0.5+ | 2004 02 11 | 704 | 0.3+  | 0.5+  | 2007 11 05 | 703 | 0.6-  | 0.0   |
| 2002 09 19 | 644 | 0.3- | 0.2+ | 2004 02 11 | 704 | 0.2-  | 1.2+  | 2007 11 05 | 703 | 0.2-  | 0.3-  |
| 2002 10 05 | 704 | 0.4+ | 0.1+ | 2004 02 11 | 704 | 1.3+  | 0.0   | 2007 11 05 | 703 | 0.5-  | 1.3-  |
| 2002 10 05 | 704 | 0.6+ | 0.4- | 2004 02 15 | 201 | 0.1-  | 0.4+  | 2007 11 20 | 703 | 0.3-  | 0.1-  |
| 2002 10 05 | 704 | 0.5+ | 0.0  | 2004 02 15 | 201 | 0.5-  | 0.1+  | 2007 11 20 | 703 | 0.0   | 0.1-  |
| 2002 10 29 | 704 | 0.7- | 0.5- | 2006 08 28 | E12 | 0.5+  | 0.4+  | 2007 11 20 | 703 | 0.7+  | 0.7-  |
| 2002 10 29 | 704 | 0.6- | 0.0  | 2006 08 28 | E12 | 0.1+  | 0.2+  | 2007 11 20 | 703 | 1.1-  | 0.9-  |
| 2002 10 29 | 704 | 0.1- | 0.5+ | 2006 08 28 | E12 | 0.4-  | 0.6+  |            |     |       |       |
| 2002 10 29 | 704 | 0.2- | 0.2+ | 2006 08 28 | E12 | 0.2+  | 0.4+  |            |     |       |       |

(172234)\* 2002 RS<sub>142</sub>

Discovered 2002 Sept. 11 by NEAT at Palomar.

|                                         |            |                    |               |             |
|-----------------------------------------|------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    | Q             |             |
| <i>M</i>                                | 29.59955   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
| <i>n</i>                                | 0.22103175 | $\omega$ 153.15664 | +0.95045683   | -0.30391051 |
| <i>a</i>                                | 2.7091493  | $\Omega$ 224.69930 | +0.26590927   | +0.90374354 |
| <i>e</i>                                | 0.0305219  | <i>i</i> 5.33065   | +0.16100954   | +0.30147307 |
| <i>P</i>                                | 4.46       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 11 | 644 | 0.2- | 0.6+ | 2005 04 09 | 691 | 0.2+ | 0.1+ | 2007 11 03 | 691 | 0.1+ | 0.1- |
| 2002 09 11 | 644 | 0.3+ | 0.5+ | 2005 04 09 | 691 | 0.1- | 0.6+ | 2007 11 03 | 691 | 0.2- | 0.0  |
| 2002 09 11 | 644 | 0.5+ | 0.6+ | 2005 04 09 | 691 | 0.0  | 0.3+ | 2007 11 03 | 691 | 0.0  | 0.1- |
| 2002 09 13 | 644 | 0.3- | 0.2+ | 2005 04 17 | 691 | 0.3+ | 0.2+ | 2007 11 05 | 704 | 0.0  | 0.9+ |
| 2002 09 13 | 644 | 0.4- | 0.4+ | 2005 04 17 | 691 | 0.1- | 0.2+ | 2007 11 05 | 704 | 0.5- | 0.1+ |
| 2002 09 13 | 644 | 0.4- | 0.8+ | 2005 04 17 | 691 | 0.3+ | 0.6- | 2007 11 05 | 704 | 0.1- | 0.2- |
| 2002 09 17 | 644 | 0.2+ | 0.1+ | 2006 06 20 | 691 | 0.3+ | 0.5+ | 2007 11 05 | 704 | 0.5+ | 0.4+ |
| 2002 09 17 | 644 | 0.5- | 0.1+ | 2006 06 20 | 691 | 0.3- | 0.4+ | 2007 11 14 | 704 | 1.0+ | 0.8+ |
| 2002 09 17 | 644 | 0.4- | 0.1+ | 2006 06 20 | 691 | 0.2+ | 0.8+ | 2007 11 14 | 704 | 0.4+ | 1.4+ |
| 2002 10 10 | 645 | 0.1+ | 0.0  | 2007 10 11 | 691 | 0.2- | 0.1- | 2007 11 14 | 704 | 0.6+ | 0.8+ |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 10 11 | 691 | 0.2+ | 0.2- | 2007 11 14 | 704 | 0.4- | 1.5+ |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2007 10 11 | 691 | 0.2- | 0.2- | 2007 11 18 | 691 | 0.4- | 0.4+ |
| 2002 10 31 | 645 | 0.2- | 0.0  | 2007 10 18 | 701 | 0.4+ | 0.3+ | 2007 11 18 | 691 | 0.0  | 0.3+ |
| 2003 12 22 | 704 | 1.4+ | 0.9+ | 2007 10 18 | 701 | 0.9+ | 0.4- | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2003 12 22 | 704 | 0.6+ | 0.0  | 2007 10 18 | 701 | 0.5+ | 0.0  | 2007 12 06 | 691 | 0.5- | 0.2+ |
| 2003 12 22 | 704 | 0.7+ | 1.1+ | 2007 10 18 | 701 | 0.4+ | 0.3- | 2007 12 06 | 691 | 0.2- | 0.0  |
| 2005 03 15 | G96 | 0.6- | 0.7+ | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 12 06 | 691 | 0.2- | 0.0  |
| 2005 03 15 | G96 | 0.6- | 0.6+ | 2007 10 30 | 691 | 0.0  | 0.3- | 2007 12 14 | 691 | 0.1- | 0.0  |
| 2005 03 15 | G96 | 0.8- | 0.3+ | 2007 10 30 | 691 | 0.1- | 0.2+ | 2007 12 14 | 691 | 0.3- | 0.2- |
| 2005 03 15 | G96 | 0.0  | 0.6+ | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 12 14 | 691 | 0.3+ | 0.4+ |
| 2005 04 04 | 691 | 0.1- | 0.6+ | 2007 10 30 | G96 | 0.6+ | 0.5- | 2007 12 16 | 691 | 0.2- | 0.1+ |
| 2005 04 04 | 691 | 0.2+ | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.2- | 2007 12 16 | 691 | 0.1+ | 0.0  |
| 2005 04 04 | 691 | 0.1+ | 0.7+ | 2007 10 30 | G96 | 0.2+ | 0.4- | 2007 12 16 | 691 | 0.0  | 0.2+ |

(172235)\* 2002 RF<sub>149</sub>

Discovered 2002 Sept. 11 by NEAT at Haleakala.

|                                         |            |                    |               |             |
|-----------------------------------------|------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    | Q             |             |
| <i>M</i>                                | 323.86067  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
| <i>n</i>                                | 0.22737601 | $\omega$ 263.57554 | +0.02438647   | -0.99945834 |
| <i>a</i>                                | 2.6585181  | $\Omega$ 185.18336 | +0.98637115   | +0.02765329 |
| <i>e</i>                                | 0.0662036  | <i>i</i> 14.15824  | +0.16271836   | -0.01784154 |
| <i>P</i>                                | 4.33       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 18 | 691 | 0.5+ | 0.1- | 2002 09 11 | 608 | 0.1+ | 1.0- | 2007 10 30 | 703 | 0.4+ | 0.2- |
| 1998 09 18 | 691 | 0.6+ | 0.1- | 2002 09 13 | 644 | 0.5- | 0.7+ | 2007 10 30 | 703 | 0.2+ | 0.1- |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 09 18 | 691 | 0.3+ | 0.2- | 2002 09 13 | 644 | 0.4-  | 0.1+  | 2007 11 05 | 703 | (2.7+ | 0.6-) |
| 1998 10 01 | 691 | 0.2- | 0.6+ | 2002 09 13 | 644 | 0.3-  | 0.2+  | 2007 11 05 | 703 | 0.2+  | 0.2-  |
| 1998 10 01 | 691 | 0.7- | 0.3+ | 2005 04 02 | 691 | 0.1+  | 0.4+  | 2007 11 05 | 703 | 0.5+  | 1.0-  |
| 1998 10 01 | 691 | 0.4- | 0.1- | 2005 04 02 | 691 | 0.0   | 0.3+  | 2007 11 05 | 703 | 0.7+  | 0.2-  |
| 2000 02 08 | 645 | 0.0  | 0.1+ | 2005 04 02 | 691 | 0.0   | 0.3+  | 2007 11 12 | 703 | 0.3-  | 0.5+  |
| 2000 02 08 | 645 | 0.0  | 0.0  | 2005 05 11 | 703 | (1.6- | 0.0 ) | 2007 11 12 | 703 | 0.3-  | 0.3-  |
| 2002 08 04 | 644 | 0.3+ | 0.9+ | 2005 05 11 | 703 | (1.4+ | 1.9+) | 2007 11 12 | 703 | 0.5+  | 0.2+  |
| 2002 08 04 | 644 | 0.3+ | 0.8+ | 2005 05 11 | 703 | 0.1+  | 0.4-  | 2007 11 12 | 703 | 0.6-  | 0.8+  |
| 2002 08 04 | 644 | 0.1- | 1.0+ | 2005 05 11 | 703 | (0.5- | 3.4+) | 2007 12 06 | 703 | 0.2+  | 1.6+  |
| 2002 08 27 | 644 | 0.2+ | 0.5+ | 2005 05 16 | 644 | 0.2+  | 0.3+  | 2007 12 06 | 703 | 0.3+  | 0.2-  |
| 2002 08 27 | 644 | 0.2- | 0.6+ | 2005 05 16 | 644 | 0.2+  | 0.3+  | 2007 12 06 | 703 | 1.3-  | 0.3+  |
| 2002 08 27 | 644 | 0.2- | 0.5+ | 2005 05 16 | 644 | 0.3+  | 0.3+  | 2007 12 06 | 703 | 1.2-  | 0.5+  |
| 2002 09 11 | 608 | 0.4- | 0.6- | 2007 10 30 | 703 | 0.5+  | 0.2-  |            |     |       |       |
| 2002 09 11 | 608 | 0.3+ | 0.8- | 2007 10 30 | 703 | 0.1+  | 0.5+  |            |     |       |       |

(172236)\* 2002 RH<sub>173</sub> = 2004 CW<sub>63</sub>

Discovered 2002 Sept. 13 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 61328)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 15.58611   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
| <i>n</i> | 0.21219340 | $\omega$ 315.84177 | +0.83314264   | -0.53150598 |
| <i>a</i> | 2.7838648  | $\Omega$ 76.85345  | +0.54090604   | +0.72545144 |
| <i>e</i> | 0.2351214  | <i>i</i> 9.03297   | +0.11529958   | +0.43728893 |
| <i>P</i> | 4.64       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 09 | 608 | 0.0  | 0.0  | 2002 10 29 | 704 | 0.0   | 0.5+  | 2007 11 10 | D29 | 0.4+  | 0.2-  |
| 2002 09 09 | 608 | 0.9- | 1.4+ | 2002 10 29 | 704 | 0.0   | 0.7+  | 2007 11 10 | D29 | 0.0   | 0.3-  |
| 2002 09 09 | 608 | 0.1- | 0.5+ | 2002 10 29 | 704 | 0.4-  | 0.9+  | 2007 11 10 | D29 | 0.0   | 0.1-  |
| 2002 09 13 | 704 | 0.3+ | 0.2- | 2002 10 29 | 704 | 0.8-  | 0.1-  | 2007 11 10 | D29 | 0.1+  | 0.1-  |
| 2002 09 13 | 704 | 0.3+ | 0.1+ | 2004 02 13 | 644 | 0.3+  | 0.7+  | 2007 11 14 | 704 | 0.2-  | 0.6-  |
| 2002 09 13 | 704 | 0.0  | 0.2- | 2004 02 13 | 644 | 0.0   | 0.8+  | 2007 11 14 | 704 | 0.0   | 0.3-  |
| 2002 09 13 | 704 | 0.4+ | 0.2- | 2004 02 13 | 644 | 0.2-  | 0.9+  | 2007 11 14 | 704 | 0.3+  | 1.0+  |
| 2002 09 14 | 608 | 0.8- | 0.5- | 2004 02 15 | 704 | 0.8+  | 0.5+  | 2007 11 14 | 704 | 0.2-  | 0.1-  |
| 2002 09 14 | 608 | 0.9- | 0.1- | 2004 02 15 | 704 | 0.9+  | 0.6+  | 2007 11 14 | 704 | 0.5+  | 1.3+  |
| 2002 09 14 | 608 | 0.7- | 0.8- | 2004 02 15 | 704 | 0.6+  | 0.7+  | 2007 11 14 | 704 | (2.0+ | 0.2-) |
| 2002 09 17 | 644 | 0.4+ | 0.6+ | 2004 02 15 | 704 | 0.1+  | 0.7+  | 2007 11 14 | 704 | 0.6+  | 1.1+  |
| 2002 09 17 | 644 | 0.2+ | 0.2+ | 2005 04 07 | 691 | 0.4+  | 0.5+  | 2007 11 18 | G96 | 0.0   | 0.3-  |
| 2002 09 17 | 644 | 0.3+ | 0.5+ | 2005 04 07 | 691 | 0.0   | 0.6+  | 2007 11 18 | G96 | 0.1-  | 0.3-  |
| 2002 09 19 | 644 | 0.3- | 0.2+ | 2005 04 07 | 691 | 0.1+  | 0.6+  | 2007 11 18 | G96 | 0.3+  | 0.3-  |
| 2002 09 19 | 644 | 0.0  | 0.3+ | 2007 10 07 | 704 | (1.2- | 1.7+) | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2002 09 19 | 644 | 0.5- | 0.3+ | 2007 10 07 | 704 | 0.5-  | 0.2-  | 2007 11 30 | D35 | 0.0   | 0.0   |
| 2002 10 01 | 608 | 0.8- | 1.2+ | 2007 10 07 | 704 | 0.8+  | 0.5+  | 2007 11 30 | D35 | 0.0   | 0.1-  |
| 2002 10 01 | 608 | 1.0- | 1.2+ | 2007 10 07 | 704 | 0.7-  | 0.1+  | 2007 11 30 | D35 | 0.1+  | 0.1-  |
| 2002 10 01 | 608 | 0.9- | 1.1+ | 2007 10 07 | 704 | 0.6+  | 0.0   | 2007 12 03 | 703 | 0.2+  | 0.1+  |
| 2002 10 05 | 704 | 0.2+ | 0.8+ | 2007 10 19 | D29 | 0.2+  | 0.3-  | 2007 12 03 | 703 | 0.4-  | 0.6+  |
| 2002 10 05 | 704 | 0.2- | 0.1+ | 2007 10 19 | D29 | 0.1+  | 0.5-  | 2007 12 03 | 703 | 0.5+  | 0.8+  |
| 2002 10 05 | 704 | 0.1- | 0.4+ | 2007 10 19 | D29 | 0.3+  | 0.3-  | 2007 12 03 | 703 | 0.2-  | 0.4-  |
| 2002 10 05 | 704 | 0.0  | 1.0+ | 2007 10 19 | D29 | 0.2+  | 0.1-  | 2007 12 04 | 699 | 0.3-  | 0.4+  |
| 2002 10 05 | 704 | 0.6+ | 0.0  | 2007 11 03 | 691 | 0.0   | 0.1+  | 2007 12 04 | 699 | 0.2+  | 0.2+  |
| 2002 10 07 | 608 | 0.1+ | 0.2- | 2007 11 03 | 691 | 0.1-  | 0.0   | 2007 12 04 | 699 | 0.3+  | 0.1+  |
| 2002 10 07 | 608 | 0.3+ | 0.2- | 2007 11 03 | 691 | 0.1+  | 0.0   | 2007 12 05 | 704 | 0.4-  | 0.2+  |
| 2002 10 07 | 608 | 0.1+ | 0.2- | 2007 11 04 | 704 | 0.6+  | 0.4-  | 2007 12 05 | 704 | 0.4-  | 0.3-  |
| 2002 10 25 | 644 | 0.2- | 0.4+ | 2007 11 04 | 704 | 0.5+  | 0.1-  | 2007 12 05 | 704 | 0.0   | 0.0   |
| 2002 10 25 | 644 | 0.1- | 0.2+ | 2007 11 04 | 704 | 0.6+  | 0.1+  | 2007 12 05 | 704 | 0.0   | 0.1-  |
| 2002 10 25 | 644 | 0.2- | 0.2+ | 2007 11 04 | 704 | 0.2+  | 0.5-  | 2007 12 05 | 704 | 0.1-  | 0.3-  |
| 2002 10 28 | 608 | 0.1+ | 0.6- | 2007 11 04 | 704 | 0.0   | 0.3+  | 2007 12 15 | G96 | 0.2+  | 0.1-  |
| 2002 10 28 | 608 | 0.3+ | 0.9- | 2007 11 07 | 691 | 0.4-  | 0.1-  | 2007 12 15 | G96 | 0.3+  | 0.1-  |
| 2002 10 28 | 608 | 0.1- | 1.0- | 2007 11 07 | 691 | 0.5-  | 0.1-  | 2007 12 15 | G96 | 0.2+  | 0.0   |
| 2002 10 29 | 704 | 1.4+ | 0.5+ | 2007 11 07 | 691 | 0.4-  | 0.1-  | 2007 12 15 | G96 | 0.3-  | 0.2-  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.97741  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21004110 | $\omega$ 228.31672 | +0.52183034   | -0.85303280 |
| <i>a</i> | 2.8028500  | $\Omega$ 190.23214 | +0.79126092   | +0.48634706 |
| <i>e</i> | 0.0853026  | <i>i</i> 1.71118   | +0.31874639   | +0.18921305 |
| <i>P</i> | 4.69       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 30 | 691 | 0.0   | 0.1-  | 2004 02 20 | 621 | 0.6+  | 0.1+  | 2007 10 31 | G96 | 0.7+  | 0.6-  |
| 2000 03 30 | 691 | 0.1+  | 0.5-  | 2005 05 11 | G96 | (1.9+ | 0.0 ) | 2007 10 31 | G96 | 0.0   | 0.4-  |
| 2000 03 30 | 691 | 0.1+  | 0.2+  | 2005 05 11 | G96 | 0.3-  | 0.1+  | 2007 10 31 | G96 | 0.5+  | 0.2-  |
| 2002 09 13 | 291 | 0.4-  | 0.1+  | 2005 05 11 | G96 | 0.1-  | 0.2+  | 2007 10 31 | G96 | 0.2-  | 0.1-  |
| 2002 09 13 | 291 | 0.1-  | 0.1-  | 2005 05 11 | G96 | 0.3-  | 0.5+  | 2007 11 05 | 704 | 0.1-  | 0.9+  |
| 2002 09 13 | 291 | 0.0   | 0.0   | 2007 10 10 | 691 | 0.0   | 0.1-  | 2007 11 05 | 704 | 1.1+  | 0.3+  |
| 2002 09 15 | 291 | 0.5-  | 0.1-  | 2007 10 10 | 691 | 0.1-  | 0.1-  | 2007 11 05 | 704 | 0.1+  | 0.6+  |
| 2002 09 15 | 291 | 0.0   | 0.2+  | 2007 10 10 | 691 | 0.1-  | 0.1+  | 2007 11 05 | 704 | 1.5+  | 0.1+  |
| 2002 09 15 | 291 | 0.1+  | 0.1+  | 2007 10 14 | 691 | 0.1+  | 0.0   | 2007 11 07 | 704 | 0.6+  | 0.2-  |
| 2002 09 26 | 644 | 0.4-  | 0.1+  | 2007 10 14 | 691 | 0.3-  | 0.3+  | 2007 11 07 | 704 | 0.9+  | 0.6-  |
| 2002 09 26 | 644 | 0.7-  | 0.4+  | 2007 10 14 | 691 | 0.4-  | 0.0   | 2007 11 07 | 704 | 0.7+  | 0.4-  |
| 2002 09 26 | 644 | 0.3-  | 0.4+  | 2007 10 18 | 691 | 0.1-  | 0.1-  | 2007 11 07 | 704 | 0.5+  | 0.1-  |
| 2002 10 03 | 704 | 0.5+  | 0.4+  | 2007 10 18 | 691 | 0.3+  | 0.1-  | 2007 11 07 | 704 | 0.3+  | 0.2-  |
| 2002 10 03 | 704 | 0.0   | 1.4+  | 2007 10 18 | 691 | 0.1-  | 0.1+  | 2007 11 09 | G96 | 0.6+  | 0.3-  |
| 2002 10 03 | 704 | 0.7+  | 0.2+  | 2007 10 18 | 691 | 0.4+  | 0.2-  | 2007 11 09 | G96 | 0.8+  | 0.4-  |
| 2002 10 03 | 704 | 0.8+  | 0.4+  | 2007 10 18 | 691 | 0.2-  | 0.0   | 2007 11 09 | G96 | 1.0+  | 0.5-  |
| 2002 10 03 | 704 | 0.1-  | 0.1+  | 2007 10 18 | 691 | 0.3-  | 0.1+  | 2007 11 09 | G96 | 0.6+  | 0.4-  |
| 2002 10 05 | 644 | (0.2+ | 1.8+) | 2007 10 20 | 703 | 0.8+  | 0.4-  | 2007 11 09 | 291 | 0.3-  | 0.1+  |
| 2002 10 05 | 644 | (0.1+ | 1.6+) | 2007 10 20 | 703 | 1.1-  | 0.7+  | 2007 11 09 | 291 | 0.3-  | 0.0   |
| 2002 10 05 | 644 | (0.3+ | 1.6+) | 2007 10 20 | 703 | 0.6+  | 0.1-  | 2007 11 09 | 291 | 0.1-  | 0.0   |
| 2002 11 08 | 645 | 0.2+  | 0.1-  | 2007 10 20 | 703 | 1.4-  | 0.1+  | 2007 11 14 | 704 | 0.9-  | 0.4-  |
| 2002 11 08 | 645 | 0.1-  | 0.2-  | 2007 10 30 | 703 | 0.2+  | 0.2+  | 2007 11 14 | 704 | 0.2-  | 0.6+  |
| 2004 01 21 | 704 | (1.6+ | 0.7-) | 2007 10 30 | 703 | 0.6+  | 0.6-  | 2007 11 14 | 704 | (0.3- | 1.7+) |
| 2004 01 21 | 704 | 0.4-  | 0.0   | 2007 10 30 | G96 | 0.4+  | 0.1+  | 2007 11 14 | 704 | 0.1-  | 0.2-  |
| 2004 01 21 | 704 | 0.5+  | 0.6+  | 2007 10 30 | 703 | 1.2-  | 0.7+  | 2007 11 17 | 703 | 0.2-  | 0.4-  |
| 2004 01 21 | 704 | 0.0   | 0.9+  | 2007 10 30 | G96 | 0.5+  | 0.1-  | 2007 11 17 | 703 | 0.8-  | 0.3+  |
| 2004 02 11 | 691 | 0.2-  | 0.1-  | 2007 10 30 | 703 | 0.4-  | 0.7+  | 2007 11 17 | 703 | 0.3-  | 0.8+  |
| 2004 02 11 | 691 | 0.1-  | 0.2+  | 2007 10 30 | G96 | 0.6+  | 0.1-  | 2007 11 17 | 703 | 0.4-  | 0.8-  |
| 2004 02 11 | 691 | 0.3-  | 0.3+  | 2007 10 30 | G96 | 0.6+  | 0.1+  | 2007 12 05 | 704 | 0.7-  | 0.6+  |
| 2004 02 19 | 621 | 0.6-  | 0.2-  | 2007 10 30 | G96 | 0.3+  | 0.2+  | 2007 12 05 | 704 | 0.2+  | 0.2+  |
| 2004 02 19 | 621 | 1.0+  | 1.1-  | 2007 10 30 | G96 | 0.2+  | 0.1+  | 2007 12 05 | 704 | 0.7+  | 0.3-  |
| 2004 02 20 | 621 | 0.3+  | 0.7-  | 2007 10 30 | G96 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.3-  | 0.0   |
| 2004 02 20 | 621 | 0.2+  | 0.3+  | 2007 10 30 | G96 | 0.1-  | 0.2+  |            |     |       |       |

(172238)\* 2002 RY<sub>179</sub>

Discovered 2002 Sept. 14 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.02581  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21955571 | $\omega$ 291.63236 | -0.41597330   | -0.90929948 |
| <i>a</i> | 2.7212779  | $\Omega$ 183.02730 | +0.89509555   | -0.40710346 |
| <i>e</i> | 0.0348046  | <i>i</i> 12.97830  | +0.16053090   | -0.08626260 |
| <i>P</i> | 4.49       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 14 | 291 | 0.2+ | 0.0  | 2002 10 07 | 704 | 1.0+  | 0.1+  | 2007 11 05 | 683 | (2.8+ | 1.4+) |
| 2002 09 14 | 291 | 0.4+ | 0.0  | 2002 10 11 | 704 | 1.0-  | 0.2+  | 2007 11 07 | 683 | 0.9-  | 1.3-  |
| 2002 09 14 | 291 | 0.6+ | 0.1+ | 2002 10 11 | 704 | (0.1- | 2.2+) | 2007 11 07 | 683 | 0.5+  | 1.2-  |
| 2002 09 15 | 291 | 0.2- | 0.0  | 2002 10 11 | 704 | (2.0- | 0.1-) | 2007 11 07 | 683 | (0.2+ | 1.7-) |
| 2002 09 15 | 291 | 0.1- | 0.1+ | 2002 10 11 | 704 | 0.0   | 0.9+  | 2007 11 09 | 703 | 0.5+  | 0.1+  |
| 2002 09 15 | 291 | 0.2- | 0.1+ | 2002 10 11 | 645 | 0.0   | 0.1-  | 2007 11 09 | 703 | 0.4-  | 0.6+  |
| 2002 09 26 | 644 | 0.5- | 0.4+ | 2002 10 11 | 645 | 0.0   | 0.1-  | 2007 11 09 | 703 | 0.2-  | 0.1+  |
| 2002 09 26 | 644 | 0.5- | 0.2+ | 2002 10 28 | 644 | 0.6-  | 0.4-  | 2007 11 09 | 703 | 1.1-  | 0.4+  |
| 2002 09 26 | 644 | 0.5- | 0.2+ | 2002 10 28 | 644 | 0.6-  | 0.6-  | 2007 11 15 | 703 | 0.5+  | 0.3+  |
| 2002 09 30 | 704 | 0.2- | 0.3- | 2002 10 28 | 644 | 0.6-  | 0.0   | 2007 11 15 | 703 | 0.1+  | 0.6-  |
| 2002 09 30 | 704 | 0.7- | 0.0  | 2005 03 31 | 691 | 0.0   | 0.4+  | 2007 11 15 | 703 | 0.3-  | 0.1-  |
| 2002 09 30 | 704 | 0.0  | 0.7- | 2005 03 31 | 691 | 0.1+  | 0.1+  | 2007 11 15 | 703 | 0.9+  | 0.1+  |
| 2002 09 30 | 608 | 0.0  | 0.3+ | 2005 03 31 | 691 | 0.2+  | 0.3+  | 2007 11 17 | 703 | 0.0   | 0.2-  |
| 2002 09 30 | 608 | 0.2- | 0.0  | 2005 04 18 | 691 | 0.0   | 0.1+  | 2007 11 17 | 703 | 0.4-  | 0.2+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 30 | 608 | (0.4- | 1.9-) | 2005 04 18 | 691 | 0.3+ | 0.3+ | 2007 11 17 | 703 | 0.3- | 0.3- |
| 2002 10 02 | 704 | 0.4+  | 0.5+  | 2005 04 18 | 691 | 0.2+ | 0.0  | 2007 11 17 | 703 | 0.9+ | 0.0  |
| 2002 10 02 | 704 | 0.9-  | 0.3+  | 2005 05 11 | 703 | 1.3- | 0.4- | 2007 11 17 | A13 | 0.2+ | 0.2- |
| 2002 10 02 | 704 | 1.1-  | 0.6+  | 2005 05 11 | 703 | 0.3- | 0.6- | 2007 11 18 | A13 | 0.2- | 0.1+ |
| 2002 10 02 | 704 | (0.6- | 2.4+) | 2005 05 11 | 703 | 1.2- | 0.6+ | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2002 10 03 | 704 | (0.9- | 1.7+) | 2005 05 11 | 703 | 0.1- | 0.6- | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2002 10 03 | 704 | 0.3-  | 0.9+  | 2005 06 23 | 644 | 0.4+ | 0.3+ | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2002 10 03 | 704 | 0.5-  | 0.6+  | 2005 06 23 | 644 | 0.0  | 0.5+ | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2002 10 03 | 704 | (0.4- | 2.0+) | 2005 06 23 | 644 | 0.1- | 0.5+ | 2007 11 19 | 703 | 1.4- | 1.2+ |
| 2002 10 05 | 644 | 0.1-  | 0.1+  | 2006 08 16 | 644 | 0.2- | 0.1+ | 2007 11 19 | 703 | 0.3+ | 0.4- |
| 2002 10 05 | 644 | 0.1-  | 0.3+  | 2006 08 16 | 644 | 0.2- | 0.1+ | 2007 11 19 | 703 | 0.3- | 0.1- |
| 2002 10 05 | 644 | 0.0   | 0.4+  | 2006 08 16 | 644 | 0.1+ | 0.3+ | 2007 11 19 | 703 | 0.2+ | 0.1- |
| 2002 10 05 | 645 | 0.1+  | 0.1-  | 2007 11 03 | 703 | 0.3+ | 1.1+ | 2007 12 05 | 703 | 0.6- | 0.1+ |
| 2002 10 05 | 645 | 0.1+  | 0.1-  | 2007 11 03 | 703 | 1.3- | 1.3+ | 2007 12 05 | 703 | 0.1+ | 0.2+ |
| 2002 10 07 | 704 | 0.0   | 0.9+  | 2007 11 03 | 703 | 0.6- | 0.2+ | 2007 12 05 | 703 | 0.4+ | 0.1+ |
| 2002 10 07 | 704 | 1.3-  | 0.2+  | 2007 11 03 | 703 | 0.7- | 0.6+ | 2007 12 05 | 703 | 0.6+ | 1.1+ |
| 2002 10 07 | 704 | 0.4-  | 0.9+  | 2007 11 05 | 683 | 1.0+ | 0.6- |            |     |      |      |
| 2002 10 07 | 704 | 0.5+  | 1.0+  | 2007 11 05 | 683 | 0.5+ | 0.6+ |            |     |      |      |

(172239)\* 2002 RO<sub>182</sub>

Discovered 2002 Sept. 11 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.65224   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22457253 | $\omega$ 62.51844  | +0.97555796   | +0.01590608 |
| <i>a</i> | 2.6805977  | $\Omega$ 295.85357 | -0.12269650   | +0.86684836 |
| <i>e</i> | 0.0932619  | <i>i</i> 14.09566  | +0.18229713   | +0.49831809 |
| <i>P</i> | 4.39       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 15 | 704 | 0.9- | 0.3+ | 2003 12 19 | 704 | 0.4-  | 0.3-  | 2006 06 19 | G96 | 0.4-  | 0.3+  |
| 2002 08 15 | 704 | 0.4- | 0.6+ | 2003 12 19 | 704 | (0.8- | 1.6+) | 2006 06 19 | G96 | 0.1-  | 0.1+  |
| 2002 08 15 | 704 | 0.3+ | 0.9+ | 2003 12 19 | 704 | 1.4-  | 0.5+  | 2006 07 25 | 644 | 0.1-  | 0.2+  |
| 2002 08 15 | 704 | 0.4+ | 1.1+ | 2003 12 19 | 704 | 1.2+  | 1.4-  | 2006 07 25 | 644 | 0.3-  | 0.5+  |
| 2002 09 11 | 644 | 0.2- | 1.0- | 2003 12 22 | 704 | (1.3+ | 1.7-) | 2006 07 25 | 644 | 0.2-  | 0.3+  |
| 2002 09 11 | 644 | 0.0  | 1.0- | 2003 12 22 | 704 | 0.0   | 0.1+  | 2006 08 13 | 644 | 0.3-  | 0.3+  |
| 2002 09 11 | 644 | 0.1+ | 1.0- | 2003 12 22 | 704 | 0.2-  | 0.1+  | 2006 08 13 | 644 | 0.2-  | 0.5+  |
| 2002 09 14 | 699 | 0.4- | 0.2- | 2003 12 22 | 704 | 0.9-  | 0.0   | 2006 08 13 | 644 | 0.1-  | 0.5+  |
| 2002 09 14 | 699 | 0.2- | 0.5- | 2003 12 22 | 704 | 0.7+  | 0.2+  | 2006 08 18 | 644 | 0.2+  | 0.2+  |
| 2002 09 14 | 699 | 0.3+ | 0.1- | 2003 12 27 | 704 | 0.9+  | 0.3+  | 2006 08 18 | 644 | 0.2-  | 0.4+  |
| 2002 09 14 | 699 | 0.3- | 0.1+ | 2003 12 27 | 704 | 0.3-  | 0.5-  | 2006 08 18 | 644 | 0.1-  | 0.2+  |
| 2002 10 03 | 644 | 0.4+ | 0.7- | 2003 12 27 | 704 | 0.0   | 0.0   | 2007 11 09 | 704 | 1.3+  | 0.0   |
| 2002 10 03 | 644 | 0.4- | 0.0  | 2003 12 29 | 699 | 0.3-  | 0.1-  | 2007 11 09 | 704 | 1.1+  | 0.2-  |
| 2002 10 03 | 644 | 0.4- | 0.2- | 2003 12 29 | 699 | 0.4-  | 0.1+  | 2007 11 09 | 704 | (0.1+ | 2.0+) |
| 2002 10 06 | 704 | 0.2+ | 0.6- | 2003 12 29 | 699 | (0.5- | 1.6+) | 2007 11 16 | 704 | 0.3-  | 1.2+  |
| 2002 10 06 | 704 | 0.3+ | 0.2- | 2003 12 29 | 699 | (2.4- | 1.1+) | 2007 11 16 | 704 | 0.1+  | 0.7+  |
| 2002 10 06 | 704 | 0.2+ | 0.0  | 2004 01 24 | 704 | (1.6+ | 2.1+) | 2007 11 16 | 704 | 0.6-  | 0.7+  |
| 2002 10 06 | 704 | 0.1- | 0.5- | 2004 01 24 | 704 | 0.6+  | 0.7+  | 2007 11 16 | 704 | 0.5-  | 1.4+  |
| 2002 10 06 | 704 | 0.7+ | 0.1- | 2004 01 24 | 704 | 0.2+  | 0.8+  | 2007 12 03 | 704 | 0.5-  | 0.0   |
| 2002 10 09 | 704 | 0.5+ | 0.4+ | 2004 01 24 | 704 | (0.2- | 2.4+) | 2007 12 03 | 704 | 0.7+  | 0.2-  |
| 2002 10 09 | 704 | 1.3+ | 0.0  | 2004 01 24 | 704 | 0.4+  | 0.2+  | 2007 12 03 | 704 | 0.2-  | 0.2-  |
| 2002 10 09 | 704 | 1.2+ | 0.3- | 2006 06 19 | G96 | 0.2-  | 0.6+  | 2007 12 16 | 235 | 0.2-  | 0.5+  |
| 2002 10 09 | 704 | 0.7- | 0.5+ | 2006 06 19 | G96 | 0.5-  | 0.3-  |            |     |       |       |



2007 DEC. 24

M.P.O. 129307

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 29 | 644 | 0.1+ | 0.5+ | 2003 12 27 | 691 | 0.2+ | 0.1- | 2007 11 12 | 704 | 0.4- | 0.4+ |
| 2002 08 29 | 644 | 0.2- | 0.1+ | 2003 12 27 | 691 | 0.0  | 0.2- | 2007 11 12 | 704 | 1.2- | 0.8+ |
| 2002 08 29 | 644 | 0.2+ | 0.3+ | 2003 12 29 | 699 | 0.6- | 0.8+ | 2007 11 12 | 704 | 0.5+ | 0.0  |
| 2002 09 07 | 704 | 0.8- | 0.1- | 2003 12 29 | 699 | 1.1- | 0.2- | 2007 11 12 | 704 | 0.4+ | 0.7- |
| 2002 09 07 | 704 | 0.1- | 1.0+ | 2003 12 29 | 699 | 0.3- | 1.0+ | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2002 09 07 | 704 | 0.1+ | 0.5- | 2003 12 29 | 699 | 0.9- | 0.9- | 2007 11 18 | G96 | 0.6+ | 0.3- |
| 2002 09 07 | 704 | 0.7+ | 0.6- | 2004 01 24 | 704 | 0.8+ | 0.9+ | 2007 11 18 | G96 | 0.3+ | 0.1- |
| 2002 09 12 | 644 | 0.8- | 0.2+ | 2004 01 24 | 704 | 0.5+ | 0.2- | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2002 09 12 | 644 | 0.8- | 0.5+ | 2004 01 24 | 704 | 1.0- | 1.1+ | 2007 12 03 | 703 | 0.9- | 0.5- |
| 2002 09 12 | 644 | 0.7- | 0.5+ | 2005 04 01 | 691 | 0.3- | 0.6+ | 2007 12 03 | 703 | 0.5- | 0.3+ |
| 2002 09 15 | 644 | 1.2- | 0.3+ | 2005 04 01 | 691 | 0.3+ | 0.2+ | 2007 12 03 | 703 | 0.2- | 0.9+ |
| 2002 09 15 | 644 | 0.8- | 0.5+ | 2005 04 01 | 691 | 0.3+ | 0.0  | 2007 12 03 | 703 | 0.3- | 0.8- |
| 2002 09 15 | 644 | 0.9- | 0.4+ | 2005 04 12 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 704 | 0.6- | 1.0+ |
| 2002 10 05 | 704 | 1.1+ | 1.1+ | 2005 04 12 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.6+ | 0.6+ |
| 2002 10 05 | 704 | 0.4+ | 0.1+ | 2005 04 12 | 691 | 0.3+ | 0.0  | 2007 12 04 | 704 | 0.8+ | 0.3+ |
| 2002 10 05 | 704 | 1.2+ | 0.2+ | 2005 04 18 | 705 | 0.7- | 0.0  | 2007 12 04 | 704 | 0.3+ | 1.1+ |
| 2002 10 05 | 704 | 1.3+ | 0.0  | 2005 04 18 | 705 | 0.3- | 0.2+ | 2007 12 04 | 704 | 0.7- | 1.5+ |
| 2003 12 22 | 691 | 0.2+ | 0.0  | 2005 04 18 | 705 | 0.4- | 0.3- |            |     |      |      |

**(172241)\* 2002 RT<sub>196</sub> = 1994 VF<sub>4</sub> = 1996 AH<sub>15</sub>**

Discovered 2002 Sept. 12 by NEAT at Haleakala.

Id. A. Doppler (*MPO* 37915)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 107.84847  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23460328 | $\omega$ | 309.00516 | +0.55638587   | +0.83090626 |
| <i>a</i> | 2.6036344  | $\Omega$ | 354.79234 | -0.74264994   | +0.49433280 |
| <i>e</i> | 0.1397084  | <i>i</i> | 3.43329   | -0.37270072   | +0.25540138 |
| <i>P</i> | 4.20       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 10 28 | 691 | 0.2+  | 0.5+  | 2002 09 05 | 704 | (0.7+ | 2.2+) | 2005 04 02 | G96 | 0.1+ | 0.1+ |
| 1994 10 28 | 691 | 0.0   | 0.1+  | 2002 09 05 | 704 | (0.4+ | 2.2+) | 2005 04 02 | G96 | 0.1+ | 0.0  |
| 1994 10 28 | 691 | 0.2+  | 0.4+  | 2002 09 12 | 608 | 0.9-  | 0.8+  | 2005 04 02 | G96 | 0.2- | 0.3+ |
| 1994 11 05 | 691 | 1.0-  | 0.0   | 2002 09 12 | 608 | 0.8-  | 0.3+  | 2005 04 02 | G96 | 0.1- | 0.2+ |
| 1994 11 05 | 691 | 0.5+  | 0.7+  | 2002 09 12 | 608 | 0.5-  | 0.8+  | 2006 07 26 | 644 | 0.0  | 0.1- |
| 1994 11 05 | 691 | 0.1-  | 0.1-  | 2002 09 13 | 704 | 0.7+  | 0.7+  | 2006 07 26 | 644 | 0.4- | 0.4+ |
| 1994 11 10 | 691 | 0.0   | 0.2-  | 2002 09 13 | 704 | 0.4-  | 0.4+  | 2006 07 26 | 644 | 0.2- | 0.2+ |
| 1994 11 10 | 691 | 0.1-  | 0.1-  | 2002 09 13 | 704 | 0.2-  | 0.4-  | 2006 08 19 | 644 | 0.6+ | 0.0  |
| 1994 11 10 | 691 | 0.2-  | 0.1-  | 2002 09 15 | 644 | 0.0   | 0.5+  | 2006 08 19 | 644 | 0.1- | 0.1+ |
| 1996 01 12 | 691 | 0.2-  | 0.4+  | 2002 09 15 | 644 | 0.2-  | 0.2+  | 2006 08 19 | 644 | 0.1+ | 0.1- |
| 1996 01 12 | 691 | 0.2+  | 0.3+  | 2002 09 15 | 644 | 0.5-  | 0.4+  | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 1996 01 25 | 691 | 0.0   | 0.1-  | 2005 03 03 | 691 | 0.5+  | 0.5+  | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 1996 01 25 | 691 | 0.2+  | 0.0   | 2005 03 03 | 691 | 0.4+  | 0.7+  | 2007 11 18 | G96 | 0.7+ | 0.0  |
| 1996 01 25 | 691 | 0.2+  | 0.1+  | 2005 03 03 | 691 | 0.2+  | 0.5+  | 2007 11 18 | G96 | 0.5+ | 0.1- |
| 2002 08 29 | 644 | 0.2+  | 0.4+  | 2005 03 08 | G96 | 0.5-  | 0.0   | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2002 08 29 | 644 | 0.3+  | 0.5+  | 2005 03 08 | G96 | 0.3-  | 0.2+  | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2002 08 29 | 644 | 0.1+  | 0.4+  | 2005 03 08 | G96 | 0.2-  | 0.0   | 2007 11 20 | 691 | 0.2- | 1.2- |
| 2002 09 05 | 704 | (0.6- | 2.3+) | 2005 03 08 | G96 | 0.1-  | 0.1+  |            |     |      |      |

**(172242)\* 2002 RA<sub>200</sub> = 2007 TY<sub>231</sub>**

Discovered 2002 Sept. 13 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 127965)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 50.27587   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21609528 | $\omega$ | 276.00516 | +0.97392923   | +0.22405310 |
| <i>a</i> | 2.7502522  | $\Omega$ | 71.05174  | -0.19043275   | +0.89258651 |
| <i>e</i> | 0.1024102  | <i>i</i> | 2.15258   | -0.12327699   | +0.39126656 |
| <i>P</i> | 4.56       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.0  | 0.5+ | 2007 09 18 | G96 | 0.3+ | 0.3- | 2007 11 14 | 691 | 0.2- | 0.2- |
| 2002 09 13 | 644 | 0.0  | 0.5+ | 2007 09 18 | G96 | 0.4+ | 0.3- | 2007 11 14 | 691 | 0.1- | 0.1- |
| 2002 09 13 | 644 | 0.2- | 0.4+ | 2007 09 18 | G96 | 0.3+ | 0.5- | 2007 11 14 | 691 | 0.5- | 0.8+ |
| 2002 09 15 | 608 | 0.3- | 0.3- | 2007 10 08 | 691 | 0.1- | 0.2+ | 2007 11 17 | 703 | 0.4+ | 0.1+ |
| 2002 09 15 | 608 | 0.2- | 0.7- | 2007 10 08 | 691 | 0.3- | 0.2+ | 2007 11 17 | 703 | 0.8+ | 1.2+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 15 | 608 | 0.5- | 0.3- | 2007 10 08 | 691 | 0.2- | 0.1+ | 2007 11 17 | 703 | 1.3+  | 0.0   |
| 2002 10 01 | 699 | 0.6+ | 0.6+ | 2007 10 12 | 691 | 0.2- | 0.0  | 2007 11 17 | 703 | (2.1+ | 1.9+) |
| 2002 10 01 | 699 | 0.3- | 0.6+ | 2007 10 12 | 691 | 0.1- | 0.3- | 2007 11 18 | 691 | 0.1-  | 0.0   |
| 2002 10 01 | 699 | 0.4+ | 0.8+ | 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 18 | 691 | 0.4-  | 0.0   |
| 2002 10 01 | 699 | 0.5- | 0.2+ | 2007 10 16 | 691 | 0.6+ | 1.0- | 2007 11 18 | 691 | 0.2-  | 0.5+  |
| 2003 12 29 | 691 | 0.3+ | 0.2+ | 2007 10 16 | 691 | 0.2- | 0.1- | 2007 11 29 | 104 | 0.5-  | 0.2-  |
| 2003 12 29 | 691 | 0.2+ | 0.3+ | 2007 10 16 | 691 | 0.7- | 0.2- | 2007 11 29 | 104 | 0.6+  | 0.5+  |
| 2003 12 29 | 691 | 0.4- | 0.4- | 2007 10 20 | 703 | 0.1+ | 0.3- | 2007 11 29 | 104 | 0.7+  | 0.1-  |
| 2005 03 10 | G96 | 0.2- | 0.1- | 2007 10 20 | 703 | 1.4+ | 0.5- | 2007 12 05 | 691 | 0.1+  | 0.1+  |
| 2005 03 10 | G96 | 0.2+ | 0.2+ | 2007 10 20 | 703 | 0.4- | 0.5+ | 2007 12 05 | 691 | 0.1-  | 0.1+  |
| 2005 03 10 | G96 | 0.2+ | 0.3+ | 2007 10 20 | 703 | 1.4+ | 0.4+ | 2007 12 05 | 691 | 0.0   | 0.1+  |
| 2005 03 10 | G96 | 0.1- | 0.2+ | 2007 10 20 | 691 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.6+  | 0.2-  |
| 2005 05 12 | G96 | 0.4- | 0.1+ | 2007 10 20 | 691 | 0.1+ | 0.1- | 2007 12 05 | 704 | 0.9+  | 0.5+  |
| 2005 05 12 | G96 | 0.3+ | 0.1+ | 2007 10 20 | 691 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.2-  | 1.1+  |
| 2005 05 12 | G96 | 0.2+ | 0.2+ | 2007 10 30 | 691 | 0.4+ | 0.2- | 2007 12 05 | 704 | 0.2+  | 1.0+  |
| 2005 05 12 | G96 | 0.2+ | 0.1- | 2007 10 30 | 691 | 0.1- | 0.1+ | 2007 12 05 | 704 | 0.6+  | 0.5-  |
| 2007 09 10 | G96 | 0.6+ | 0.2- | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.1-  | 0.5-  |
| 2007 09 10 | G96 | 0.3+ | 0.3- | 2007 11 05 | 704 | 0.4+ | 0.4- | 2007 12 15 | G96 | 0.2+  | 0.7-  |
| 2007 09 10 | G96 | 0.6+ | 0.2- | 2007 11 05 | 704 | 0.0  | 0.3+ | 2007 12 15 | G96 | 0.2-  | 0.7-  |
| 2007 09 18 | G96 | 0.3+ | 0.5- | 2007 11 05 | 704 | 0.2+ | 0.1- | 2007 12 15 | G96 | 0.5+  | 0.4-  |
|            |     |      |      | 2007 11 05 | 704 | 0.5+ | 0.5+ |            |     |       |       |

**(172243)\* 2002 RT<sub>202</sub> = 2000 BC<sub>13</sub>**

Discovered 2002 Sept. 13 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 37917)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.06817   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21404122 | $\omega$ | 351.08268 | +0.76084609   | +0.64392860 |
| <i>a</i> | 2.7678195  | $\Omega$ | 328.37132 | -0.58552722   | +0.62777758 |
| <i>e</i> | 0.1672014  | <i>i</i> | 8.82251   | -0.27976974   | +0.43732283 |
| <i>P</i> | 4.60       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 01 28 | 691 | 0.5+  | 0.4+  | 2002 09 06 | 704 | 0.2+  | 1.3+  | 2007 10 12 | 699 | 0.6- | 0.4- |
| 2000 01 28 | 691 | 0.2+  | 0.3+  | 2002 09 13 | 644 | 0.4-  | 0.1+  | 2007 10 16 | 703 | 1.0+ | 0.6+ |
| 2000 01 28 | 691 | 0.7+  | 0.0   | 2002 09 13 | 644 | 0.4-  | 0.2+  | 2007 10 16 | 703 | 1.4+ | 0.2- |
| 2000 01 30 | 691 | 0.1-  | 0.2-  | 2002 09 13 | 644 | 0.3-  | 0.4+  | 2007 10 16 | 703 | 0.4+ | 0.1- |
| 2000 01 30 | 691 | 0.6-  | 0.2+  | 2002 09 15 | 608 | 0.4-  | 0.5-  | 2007 10 16 | 703 | 0.2+ | 0.4- |
| 2000 01 30 | 691 | 0.5-  | 0.2+  | 2002 09 15 | 608 | 0.4-  | 0.2-  | 2007 11 02 | 703 | 0.7- | 1.1+ |
| 2000 03 09 | 691 | 0.8+  | 0.1+  | 2002 09 15 | 608 | 0.3-  | 0.2-  | 2007 11 02 | 703 | 1.0+ | 0.6+ |
| 2000 03 09 | 691 | 0.4-  | 0.2-  | 2002 09 19 | 644 | 0.3-  | 0.1-  | 2007 11 02 | 703 | 1.4+ | 0.2+ |
| 2000 03 09 | 691 | 0.2-  | 0.3-  | 2002 09 19 | 644 | 0.2-  | 0.3-  | 2007 11 02 | 703 | 1.3+ | 0.9+ |
| 2002 08 11 | 704 | 0.3+  | 1.4+  | 2002 09 19 | 644 | 0.0   | 0.1-  | 2007 11 08 | 703 | 0.9- | 1.0- |
| 2002 08 11 | 704 | 0.2-  | 1.3+  | 2002 09 28 | 608 | (2.1- | 0.7-) | 2007 11 08 | 703 | 1.2+ | 0.6+ |
| 2002 08 11 | 704 | 0.1+  | 1.4+  | 2002 09 28 | 608 | (2.1- | 0.5-) | 2007 11 08 | 703 | 0.2- | 0.1- |
| 2002 08 16 | 704 | 0.3+  | 1.1+  | 2002 09 28 | 608 | (2.1- | 0.4-) | 2007 11 08 | 703 | 0.7+ | 0.8- |
| 2002 08 16 | 704 | 1.1+  | 1.0+  | 2002 10 04 | 704 | 0.1-  | 0.2+  | 2007 11 09 | 704 | 0.4+ | 0.6- |
| 2002 08 16 | 704 | 0.8+  | 0.4+  | 2002 10 04 | 704 | 0.3-  | 0.8+  | 2007 11 09 | 704 | 0.5+ | 0.6- |
| 2002 08 18 | 608 | 0.6-  | 0.1-  | 2002 10 04 | 704 | 0.3+  | 0.5+  | 2007 11 09 | 704 | 0.7+ | 0.9- |
| 2002 08 18 | 608 | 0.5-  | 0.3+  | 2002 10 04 | 704 | 0.4-  | 0.5+  | 2007 11 09 | 704 | 0.6+ | 0.3- |
| 2002 08 18 | 608 | 0.4-  | 0.3+  | 2002 10 04 | 704 | 0.1+  | 0.2+  | 2007 11 16 | 704 | 0.6- | 0.6- |
| 2002 09 06 | 704 | 0.0   | 0.1-  | 2002 10 12 | 704 | 0.1-  | 0.3+  | 2007 11 16 | 704 | 0.6- | 0.5- |
| 2002 09 06 | 704 | (1.3- | 3.3-) | 2002 10 12 | 704 | 0.3-  | 0.4-  | 2007 11 16 | 704 | 0.1- | 0.7- |
| 2002 09 06 | 704 | 0.4-  | 0.3-  | 2002 10 12 | 704 | 0.9-  | 0.1-  | 2007 12 03 | 704 | 1.0- | 0.4+ |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.76106   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21737849 | $\omega$ | 69.73012  | +0.83888057 | -0.54268722 |
| <i>a</i> | 2.7394182  | $\Omega$ | 323.10177 | +0.46959788 | +0.76064681 |
| <i>e</i> | 0.1219661  | <i>i</i> | 4.01813   | +0.27524029 | +0.35624012 |
| <i>P</i> | 4.53       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 02 07 | 691 | 0.3-  | 1.0-  | 2004 01 22 | 704 | 0.5-  | 0.1-  | 2007 11 07 | 704 | 0.6+  | 0.8+  |
| 1995 02 07 | 691 | 0.2-  | 0.6-  | 2004 01 22 | 704 | 0.3+  | 0.3-  | 2007 11 07 | 704 | 0.7+  | 0.0   |
| 1995 02 07 | 691 | 0.4-  | 0.4-  | 2004 01 22 | 704 | 0.7-  | 0.0   | 2007 11 07 | 704 | 0.8+  | 1.0+  |
| 2000 02 12 | 645 | 0.1+  | 0.1+  | 2004 01 22 | 704 | 0.2-  | 0.4+  | 2007 11 07 | 704 | 0.1+  | 1.4+  |
| 2000 02 12 | 645 | 0.1+  | 0.1+  | 2004 01 30 | 691 | 0.1+  | 0.1+  | 2007 11 07 | 704 | 0.7+  | 0.2+  |
| 2002 09 06 | 704 | 0.0   | 0.1-  | 2004 01 30 | 691 | 0.0   | 0.1+  | 2007 11 08 | D29 | 0.8-  | 0.4-  |
| 2002 09 06 | 704 | 0.0   | 1.0+  | 2004 01 30 | 691 | 0.0   | 0.2+  | 2007 11 08 | D29 | (1.5- | 1.2-) |
| 2002 09 06 | 704 | 1.1+  | 0.0   | 2004 01 30 | 704 | 0.1-  | 0.3-  | 2007 11 08 | D29 | 0.3+  | 0.3-  |
| 2002 09 14 | 644 | 0.1-  | 0.5+  | 2004 01 30 | 704 | 0.4-  | 0.3+  | 2007 11 08 | D29 | 0.2-  | 0.1-  |
| 2002 09 14 | 644 | 0.0   | 0.5+  | 2004 01 30 | 704 | 0.9-  | 0.6+  | 2007 11 13 | 703 | 0.3+  | 0.3-  |
| 2002 09 14 | 644 | 0.1-  | 0.5+  | 2004 01 30 | 704 | 0.1-  | 0.3+  | 2007 11 13 | 703 | 0.4+  | 0.5+  |
| 2002 09 15 | 608 | 0.6-  | 0.2-  | 2004 01 30 | 291 | 0.1+  | 0.2+  | 2007 11 13 | 703 | 0.6-  | 0.5-  |
| 2002 09 15 | 608 | 0.5-  | 0.2-  | 2004 01 30 | 291 | 0.0   | 0.2+  | 2007 11 13 | 703 | 0.9+  | 0.7-  |
| 2002 09 15 | 608 | 0.6-  | 0.3-  | 2004 01 30 | 291 | 0.0   | 0.2+  | 2007 11 18 | 704 | 0.7-  | 1.3+  |
| 2002 10 04 | 704 | 0.3-  | 1.3+  | 2004 02 12 | 291 | 0.4-  | 0.0   | 2007 11 18 | 704 | 0.1-  | 0.6+  |
| 2002 10 04 | 704 | 0.1+  | 1.3+  | 2004 02 12 | 291 | 0.3+  | 0.3-  | 2007 11 18 | 704 | 0.6+  | 0.3-  |
| 2002 10 04 | 704 | 0.1-  | 1.2-  | 2004 02 12 | 291 | 0.2+  | 0.0   | 2007 11 18 | 704 | (1.6- | 0.8-) |
| 2002 10 04 | 704 | 0.5+  | 0.1+  | 2004 02 14 | 691 | 0.0   | 0.0   | 2007 11 18 | 704 | 0.7+  | 0.0   |
| 2002 10 04 | 704 | 0.4+  | 1.0-  | 2004 02 14 | 691 | 0.2+  | 0.1-  | 2007 11 19 | 691 | 0.7-  | 1.0+  |
| 2002 10 07 | 699 | 1.3-  | 1.4+  | 2004 02 14 | 691 | 0.1+  | 0.1-  | 2007 11 19 | 691 | 0.0   | 0.2-  |
| 2002 10 07 | 699 | (1.0+ | 1.6+) | 2004 02 23 | 704 | (2.0+ | 0.1-) | 2007 11 19 | 691 | 0.0   | 0.1-  |
| 2002 10 07 | 699 | 0.1-  | 0.4+  | 2004 02 23 | 704 | 0.7-  | 0.1+  | 2007 11 20 | 704 | 0.8-  | 0.0   |
| 2002 10 07 | 699 | 0.3-  | 0.1-  | 2004 02 23 | 704 | 0.6+  | 0.5-  | 2007 11 20 | 704 | 0.1-  | 0.6-  |
| 2003 12 22 | 704 | 0.7+  | 0.1-  | 2004 02 23 | 704 | 0.1-  | 0.2-  | 2007 11 20 | 704 | 0.0   | 0.6-  |
| 2003 12 22 | 704 | 0.1-  | 0.8-  | 2004 04 13 | 645 | 0.1-  | 0.0   | 2007 11 20 | 691 | 0.1+  | 0.1-  |
| 2003 12 22 | 704 | 0.7+  | 0.0   | 2004 04 13 | 645 | 0.2-  | 0.0   | 2007 11 20 | 691 | 0.0   | 0.3-  |
| 2003 12 22 | 704 | 0.2-  | 0.1-  | 2004 04 15 | 645 | 0.1+  | 0.0   | 2007 11 20 | 691 | 0.0   | 0.2-  |
| 2003 12 27 | 704 | 1.1+  | 0.2+  | 2004 04 15 | 645 | 0.0   | 0.1+  | 2007 12 12 | 704 | 0.6-  | 0.5-  |
| 2003 12 27 | 704 | 1.3+  | 0.4-  | 2007 11 02 | 691 | 0.2+  | 0.2-  | 2007 12 12 | 704 | 0.1-  | 0.4-  |
| 2003 12 27 | 704 | 0.3-  | 0.6-  | 2007 11 02 | 704 | 0.6+  | 0.6+  | 2007 12 12 | 704 | 0.6-  | 0.3+  |
| 2003 12 27 | 704 | 1.0+  | 0.2-  | 2007 11 02 | 691 | 0.3+  | 0.2-  | 2007 12 12 | 704 | 1.0-  | 0.3-  |
| 2004 01 17 | 644 | 0.2+  | 0.6+  | 2007 11 02 | 704 | 0.3+  | 0.4+  | 2007 12 12 | 704 | 0.3-  | 0.7+  |
| 2004 01 17 | 644 | 0.4-  | 0.5+  | 2007 11 02 | 691 | 0.0   | 0.2-  | 2007 12 15 | 704 | 0.6-  | 0.2+  |
| 2004 01 17 | 644 | 0.3+  | 0.4+  | 2007 11 02 | 704 | 0.6-  | 0.8+  | 2007 12 15 | 704 | 0.3+  | 0.1+  |
| 2004 01 19 | 691 | 0.2+  | 0.2+  | 2007 11 02 | 704 | 0.8+  | 0.9+  | 2007 12 15 | 704 | 0.1+  | 0.2-  |
| 2004 01 19 | 691 | 0.3+  | 0.2+  | 2007 11 06 | 691 | 0.1-  | 0.1-  | 2007 12 15 | 704 | 0.1+  | 0.5-  |
| 2004 01 19 | 691 | 0.0   | 0.3+  | 2007 11 06 | 691 | 0.2+  | 0.2-  |            |     |       |       |
| 2004 01 22 | 704 | 0.2+  | 0.3+  | 2007 11 06 | 691 | 0.2-  | 0.5-  |            |     |       |       |

(172245)\* 2002 RV<sub>206</sub> = 1998 SH<sub>121</sub>

Discovered 2002 Sept. 14 by NEAT at Palomar.

Id. G. V. Williams (MPO 37918)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 81.33230   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23912871 | $\omega$ | 48.64299  | +0.99549159 | -0.08009229 |
| <i>a</i> | 2.5706813  | $\Omega$ | 315.88036 | +0.04924694 | +0.89428033 |
| <i>e</i> | 0.1835492  | <i>i</i> | 4.18558   | +0.08106319 | +0.44028163 |
| <i>P</i> | 4.12       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 26 | 704 | 1.0+ | 0.1+ | 2006 08 01 | A50 | 0.2+ | 0.1- | 2006 09 14 | 703 | 0.6- | 0.5- |
| 1998 09 26 | 704 | 0.1- | 1.4- | 2006 08 01 | A50 | 0.4- | 0.1+ | 2006 09 14 | 703 | 0.5- | 0.6- |
| 1998 09 26 | 704 | 1.8+ | 1.4- | 2006 08 14 | 644 | 0.0  | 0.1+ | 2006 09 14 | 703 | 0.4- | 0.5- |
| 1998 09 26 | 704 | 0.9+ | 1.2- | 2006 08 14 | 644 | 0.3+ | 0.0  | 2006 09 14 | 703 | 1.3- | 0.1- |
| 1998 09 27 | 704 | 0.2+ | 0.3+ | 2006 08 14 | 644 | 0.1+ | 0.0  | 2006 09 17 | 704 | 0.7- | 0.4- |
| 1998 09 27 | 704 | 0.7+ | 0.0  | 2006 08 16 | 644 | 0.0  | 0.2- | 2006 09 17 | 704 | 0.2+ | 0.2- |
| 1998 09 27 | 704 | 0.9- | 1.6- | 2006 08 16 | 644 | 0.1+ | 0.3- | 2006 09 17 | 704 | 0.9+ | 0.1- |
| 2002 09 06 | 704 | 0.1- | 0.8- | 2006 08 16 | 644 | 0.2+ | 0.0  | 2006 09 17 | 704 | 0.1+ | 0.5+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 06 | 704 | 1.3- | 0.6+ | 2006 08 17 | 644 | 0.1-  | 0.2-  | 2006 09 17 | 704 | 0.4+  | 0.8-  |
| 2002 09 06 | 704 | 0.3- | 0.1- | 2006 08 17 | 644 | 0.1-  | 0.2-  | 2006 09 18 | 703 | 0.1+  | 0.4-  |
| 2002 09 06 | 704 | 0.1- | 0.0  | 2006 08 17 | 644 | 0.1-  | 0.2-  | 2006 09 18 | 703 | 0.2+  | 0.2+  |
| 2002 09 06 | 704 | 0.6- | 0.3+ | 2006 08 19 | 691 | 0.2-  | 0.0   | 2006 09 18 | 703 | 0.5-  | 0.1-  |
| 2002 09 14 | 644 | 0.0  | 0.7+ | 2006 08 19 | 691 | 0.1+  | 0.0   | 2006 09 18 | 703 | 0.0   | 0.3-  |
| 2002 09 14 | 644 | 0.2- | 0.7+ | 2006 08 19 | 691 | 0.1-  | 0.1+  | 2006 09 18 | 699 | 0.3-  | 0.3-  |
| 2002 09 14 | 644 | 0.1- | 0.8+ | 2006 08 21 | 704 | 0.8+  | 0.3+  | 2006 09 18 | 699 | 0.2-  | 0.3+  |
| 2002 09 15 | 644 | 0.2- | 0.0  | 2006 08 21 | 704 | 0.1+  | 0.1+  | 2006 09 18 | 699 | 0.3-  | 0.7+  |
| 2002 09 15 | 644 | 0.3- | 0.1- | 2006 08 21 | 704 | 0.1+  | 0.5+  | 2006 09 18 | 699 | 0.1+  | 0.6+  |
| 2002 09 15 | 644 | 0.2- | 0.1- | 2006 08 21 | 704 | 1.1+  | 0.7+  | 2006 09 20 | 704 | 0.5+  | 0.1+  |
| 2002 09 15 | 608 | 0.9- | 0.8- | 2006 08 21 | 704 | 0.3+  | 0.3+  | 2006 09 20 | 704 | 0.2+  | 0.9-  |
| 2002 09 15 | 608 | 1.0- | 0.6- | 2006 08 28 | 703 | 0.1+  | 0.1-  | 2006 09 20 | 704 | 0.0   | 0.3-  |
| 2002 09 15 | 608 | 0.7- | 0.5- | 2006 08 28 | 703 | 0.1+  | 0.2+  | 2006 09 24 | 699 | 0.9+  | 0.4-  |
| 2002 09 19 | 644 | 0.3- | 0.0  | 2006 08 28 | 703 | 0.8+  | 0.9-  | 2006 09 24 | 699 | (1.7- | 0.4-) |
| 2002 09 19 | 644 | 0.6- | 0.2+ | 2006 08 28 | 703 | 0.2-  | 0.4-  | 2006 09 24 | 699 | 0.8-  | 1.3+  |
| 2002 09 19 | 644 | 0.5- | 0.3+ | 2006 08 28 | 699 | 0.6-  | 0.5-  | 2006 09 24 | 699 | 0.1+  | 0.9+  |
| 2002 10 04 | 704 | 0.7- | 0.1+ | 2006 08 28 | 699 | 0.4+  | 0.2-  | 2006 09 27 | G96 | 0.5-  | 0.4-  |
| 2002 10 04 | 704 | 0.5- | 0.2+ | 2006 08 28 | 699 | 0.3-  | 0.6+  | 2006 09 27 | G96 | 0.3+  | 0.4-  |
| 2002 10 04 | 704 | 0.2- | 0.6- | 2006 08 28 | 699 | 0.2-  | 0.3+  | 2006 09 27 | G96 | 0.0   | 0.2-  |
| 2002 10 04 | 704 | 0.3- | 0.9+ | 2006 08 29 | 704 | (1.8+ | 0.1+) | 2006 09 27 | G96 | 0.3-  | 0.2-  |
| 2002 10 04 | 704 | 0.5- | 0.1+ | 2006 08 29 | 704 | 0.2+  | 0.3+  | 2007 11 11 | G96 | 0.0   | 0.3+  |
| 2002 10 08 | 704 | 1.0+ | 0.3- | 2006 08 29 | 704 | 0.1+  | 0.7+  | 2007 11 11 | G96 | 0.1+  | 0.0   |
| 2002 10 08 | 704 | 0.8+ | 0.3- | 2006 08 29 | 704 | 0.2-  | 0.2+  | 2007 11 11 | G96 | 0.5-  | 0.1-  |
| 2002 10 08 | 704 | 0.0  | 0.0  | 2006 08 30 | 704 | 0.1+  | 0.5+  | 2007 11 11 | G96 | 0.1+  | 0.0   |
| 2002 11 06 | 291 | 0.4+ | 0.5+ | 2006 08 30 | 704 | 0.7+  | 1.2+  | 2007 12 14 | G96 | 0.0   | 0.2+  |
| 2002 11 06 | 291 | 0.2+ | 0.1+ | 2006 08 30 | 704 | 0.5+  | 0.1+  | 2007 12 14 | G96 | 0.1+  | 0.6+  |
| 2002 11 06 | 291 | 0.3+ | 0.4+ | 2006 08 30 | 704 | 0.7-  | 1.4+  | 2007 12 14 | G96 | 0.1+  | 0.3+  |
| 2004 02 11 | 691 | 0.3+ | 0.4+ | 2006 08 30 | 704 | 0.5+  | 0.5+  | 2007 12 14 | G96 | 0.1+  | 0.2-  |
| 2004 02 11 | 691 | 0.1+ | 0.4+ | 2006 08 30 | 157 | 0.4-  | 0.2+  |            |     |       |       |
| 2004 02 11 | 691 | 0.0  | 0.2+ | 2006 08 30 | 157 | 0.2+  | 0.3+  |            |     |       |       |

(172246)\* 2002 RS<sub>223</sub> = 2000 EE<sub>90</sub>

Discovered 2002 Sept. 13 by NEAT at Haleakala.

Id. A. Doppler (MPO 40997)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.41060  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.22895058 | $\omega$ | 77.87394 | -0.45734596 | -0.88416036 |
| <i>a</i> | 2.6463151  | $\Omega$ | 39.79304 | +0.74693366 | -0.44012034 |
| <i>e</i> | 0.0831121  | <i>i</i> | 8.56952  | +0.48262282 | -0.15669891 |
| <i>P</i> | 4.30       | <i>H</i> | 15.3     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 09 | 704 | 0.0  | 0.2+ | 2003 12 28 | 704 | (1.5+ | 0.1+) | 2004 01 31 | 704 | (0.3- | 1.7-) |
| 2000 03 09 | 704 | 0.2- | 0.6+ | 2003 12 29 | 703 | 1.4+  | 0.5-  | 2004 01 31 | 704 | (1.1+ | 2.4-) |
| 2000 03 09 | 704 | 0.1+ | 0.2+ | 2003 12 29 | 703 | 0.2+  | 0.4-  | 2004 01 31 | 704 | (1.1+ | 2.4-) |
| 2000 03 09 | 704 | 0.1+ | 0.0  | 2003 12 29 | 703 | 0.2-  | 0.5-  | 2004 02 11 | 704 | 0.6-  | 0.2+  |
| 2000 03 09 | 704 | 0.6+ | 0.8+ | 2003 12 29 | 703 | (1.2- | 2.0+) | 2004 02 11 | 704 | 0.1+  | 0.3+  |
| 2000 03 12 | 704 | 0.4- | 0.0  | 2003 12 30 | 704 | 0.4+  | 0.4+  | 2004 02 11 | 704 | 0.5+  | 0.3+  |
| 2000 03 12 | 704 | 0.4+ | 0.2- | 2003 12 30 | 704 | 0.1-  | 0.0   | 2004 02 11 | 704 | 0.1-  | 0.2-  |
| 2000 03 12 | 704 | 0.3- | 0.1+ | 2003 12 30 | 704 | 0.1+  | 0.3+  | 2006 08 20 | 644 | 0.0   | 0     |

2007 DEC. 24

M.P.O. 129309

2003 12 28 704 0.2+ 0.9+ 2004 01 19 704 (4.5- 0.4-) 2007 12 16 704 0.2- 0.2-  
 2003 12 28 704 0.2+ 0.6+ 2004 01 31 704 (0.8+ 3.7-)

**(172247)\* 2002 RF<sub>224</sub>**

Discovered 2002 Sept. 13 by the Lowell Observatory Near-Earth Object  
 Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |             |          |   |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|--|
| <i>M</i> | 352.50480  | (2000.0) | <b>P</b>  |             |             | <b>Q</b> |   |  |
| <i>n</i> | 0.21152058 | $\omega$ | 310.00716 | +0.70263325 | -0.68970962 |          |   |  |
| <i>a</i> | 2.7897651  | $\Omega$ | 94.39210  | +0.69454618 | +0.61135441 |          |   |  |
| <i>e</i> | 0.2052071  | <i>i</i> | 10.10568  | +0.15463544 | +0.38800313 |          |   |  |
| <i>P</i> | 4.66       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 22 | 704 | 0.2-  | 0.8+  | 2004 01 20 | 704 | 0.4-  | 0.5+  | 2007 10 19 | 703 | 0.1- | 0.1+ |
| 1998 12 22 | 704 | 0.1+  | 1.2-  | 2004 01 20 | 704 | 0.0   | 0.3+  | 2007 10 19 | 699 | 0.3+ | 0.1- |
| 1998 12 22 | 704 | (0.0  | 2.1+) | 2004 01 20 | 704 | 0.0   | 0.3+  | 2007 10 19 | 703 | 0.1+ | 0.1+ |
| 1998 12 22 | 704 | 0.6+  | 0.6-  | 2004 01 31 | 704 | 0.2-  | 1.2+  | 2007 10 19 | 703 | 0.2- | 0.3+ |
| 2002 08 14 | 704 | (0.5+ | 1.5+) | 2004 01 31 | 704 | (0.1- | 1.9+) | 2007 10 19 | 703 | 0.5- | 0.1+ |
| 2002 08 14 | 704 | 0.2+  | 1.1-  | 2004 01 31 | 704 | 0.9+  | 1.3+  | 2007 10 31 | 703 | 0.2+ | 0.2- |
| 2002 08 14 | 704 | 1.3+  | 1.0-  | 2004 01 31 | 704 | 0.9+  | 0.0   | 2007 10 31 | 703 | 0.2+ | 0.0  |
| 2002 08 14 | 704 | 1.1+  | 1.3-  | 2004 02 10 | 644 | 0.1-  | 0.5+  | 2007 10 31 | 703 | 0.8+ | 0.0  |
| 2002 08 20 | 644 | 0.2+  | 0.1+  | 2004 02 10 | 644 | 0.1+  | 0.5+  | 2007 11 07 | 703 | 0.3- | 0.5- |
| 2002 08 20 | 644 | 0.1+  | 0.0   | 2004 02 10 | 644 | 0.1-  | 0.7+  | 2007 11 07 | 703 | 0.7- | 0.5- |
| 2002 08 20 | 644 | 0.1+  | 0.1-  | 2004 02 17 | 645 | 0.3-  | 0.0   | 2007 11 07 | 703 | 0.6- | 0.3- |
| 2002 09 09 | 644 | 0.1-  | 0.6+  | 2004 02 17 | 645 | 0.2+  | 0.3-  | 2007 11 14 | 699 | 0.2+ | 0.0  |
| 2002 09 09 | 644 | 0.1-  | 0.7+  | 2005 04 13 | 703 | 0.6+  | 0.6-  | 2007 11 14 | 699 | 0.5+ | 0.4- |
| 2002 09 09 | 644 | 0.2+  | 0.4+  | 2005 04 13 | 703 | 0.3-  | 0.2+  | 2007 11 14 | 699 | 0.4+ | 0.2- |
| 2002 09 09 | 644 | 0.1-  | 0.5+  | 2005 04 13 | 703 | (2.6- | 1.0+) | 2007 11 14 | 699 | 0.4+ | 0.5- |
| 2002 09 09 | 644 | 0.0   | 0.2+  | 2005 04 13 | 703 | 0.1-  | 0.9-  | 2007 11 15 | 703 | 0.2- | 0.1+ |
| 2002 09 09 | 644 | 0.0   | 0.4+  | 2007 10 13 | 704 | 0.2+  | 0.5+  | 2007 11 15 | 703 | 0.2+ | 0.0  |
| 2002 09 13 | 699 | 0.2-  | 0.2-  | 2007 10 13 | 704 | 0.1-  | 0.3+  | 2007 11 15 | 703 | 0.6+ | 0.2+ |
| 2002 09 13 | 699 | 0.2+  | 0.6+  | 2007 10 13 | 704 | 0.1-  | 0.1-  | 2007 11 15 | 703 | 0.1- | 0.1- |
| 2002 09 13 | 699 | 0.1-  | 0.1-  | 2007 10 18 | 704 | 0.9-  | 0.2-  | 2007 11 15 | 703 | 0.1- | 0.1- |
| 2002 09 13 | 699 | 0.0   | 0.2-  | 2007 10 18 | 704 | 0.4-  | 0.6-  | 2007 11 15 | 703 | 0.1+ | 0.3+ |
| 2002 09 13 | 608 | 0.5-  | 0.6-  | 2007 10 18 | 704 | 0.6-  | 0.5-  | 2007 11 15 | 703 | 0.4+ | 0.1- |
| 2002 09 13 | 608 | 1.0-  | 0.5-  | 2007 10 18 | 704 | 0.3-  | 0.0   | 2007 11 15 | 703 | 0.2+ | 0.1+ |
| 2002 09 13 | 608 | 0.5-  | 0.8-  | 2007 10 18 | 704 | 0.6-  | 0.2+  | 2007 12 06 | 703 | 0.4- | 0.9+ |
| 2002 09 17 | 644 | 0.3-  | 0.2+  | 2007 10 19 | 699 | 0.1+  | 0.1+  | 2007 12 06 | 703 | 0.7+ | 0.8+ |
| 2002 09 17 | 644 | 0.2-  | 0.2+  | 2007 10 19 | 699 | 0.6+  | 0.0   | 2007 12 06 | 703 | 0.6+ | 0.3+ |
| 2002 09 17 | 644 | 0.2-  | 0.2+  | 2007 10 19 | 699 | 0.2+  | 0.1-  | 2007 12 06 | 703 | 0.2- | 0.4+ |

**(172248)\* 2002 RV<sub>225</sub>**

Discovered 2002 Sept. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |             |          |   |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|--|
| <i>M</i> | 341.24855  | (2000.0) | <b>P</b>  |             |             | <b>Q</b> |   |  |
| <i>n</i> | 0.21964230 | $\omega$ | 118.41000 | +0.18212017 | -0.97878650 |          |   |  |
| <i>a</i> | 2.7205626  | $\Omega$ | 320.73783 | +0.84227716 | +0.20454422 |          |   |  |
| <i>e</i> | 0.1259584  | <i>i</i> | 8.52868   | +0.50734744 | +0.01177466 |          |   |  |
| <i>P</i> | 4.49       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 16 | 704 | 0.1+ | 0.2+ | 2004 01 13 | 699 | 1.1-  | 0.7+  | 2004 02 20 | 333 | 0.9- | 0.0  |
| 2002 08 16 | 704 | 0.9- | 0.6+ | 2004 01 13 | 699 | 0.0   | 0.3+  | 2004 02 23 | 049 | 0.5+ | 1.5- |
| 2002 08 16 | 704 | 0.0  | 1.1- | 2004 01 13 | 699 | (1.8+ | 2.1-) | 2004 02 23 | 049 | 0.2+ | 0.8- |
| 2002 08 28 | 644 | 0.4- | 0.6+ | 2004 01 16 | 644 | 0.6+  | 0.8+  | 2004 02 23 | 049 | 0.4+ | 0.9- |
| 2002 08 28 | 644 | 0.2- | 0.5+ | 2004 01 16 | 644 | 0.2+  | 0.1+  | 2004 02 26 | 704 | 0.3- | 0.8+ |
| 2002 08 28 | 644 | 0.2- | 0.3+ | 2004 01 16 | 644 | 0.3+  | 0.3+  | 2004 02 26 | 704 | 0.5- | 0.5+ |
| 2002 09 06 | 704 | 0.2- | 0.2- | 2004 01 17 | 644 | 0.2+  | 0.3+  | 2004 02 26 | 704 | 0.6- | 0.9+ |
| 2002 09 06 | 704 | 0.4- | 0.6+ | 2004 01 17 | 644 | 0.2+  | 0.2+  | 2004 02 26 | 704 | 0.2- | 0.2+ |
| 2002 09 06 | 704 | 0.3- | 0.5+ | 2004 01 17 | 644 | 0.3+  | 0.1-  | 2004 02 26 | 704 | 0.2+ | 0.4+ |
| 2002 09 06 | 704 | 0.1+ | 0.6- | 2004 01 22 | 704 | 0.6+  | 0.3+  | 2006 08 14 | 644 | 0.2+ | 0.2+ |
| 2002 09 06 | 704 | 0.1+ | 0.1- | 2004 01 22 | 704 | 0.5+  | 0.3+  | 2006 08 14 | 644 | 0.0  | 0.3+ |
| 2002 09 13 | 644 | 0.4- | 0.3+ | 2004 01 22 | 704 | 0.5+  | 0.3+  | 2006 08 14 | 644 | 0.0  | 0.5+ |
| 2002 09 13 | 644 | 0.4- | 0.2+ | 2004 01 22 | 704 | 0.7+  | 0.4+  | 2006 10 21 | G96 | 0.8- | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 13 | 644 | 0.5-  | 0.3+  | 2004 01 22 | 704 | 0.7+ | 0.4+ | 2006 10 21 | G96 | 0.2-  | 0.2-  |
| 2002 09 17 | 608 | (1.7- | 0.9-) | 2004 01 26 | 699 | 0.2- | 0.5- | 2006 10 21 | G96 | 0.6-  | 0.1-  |
| 2002 09 17 | 608 | 1.2-  | 1.1-  | 2004 01 26 | 699 | 0.2+ | 0.2- | 2006 10 21 | G96 | 0.6-  | 0.3+  |
| 2002 09 17 | 608 | (1.6- | 0.6-) | 2004 01 26 | 699 | 0.1- | 0.1+ | 2006 10 28 | G96 | 0.6+  | 0.1-  |
| 2002 10 04 | 704 | 0.3+  | 0.2-  | 2004 01 26 | 699 | 0.7- | 0.3- | 2006 10 28 | G96 | 0.1-  | 0.1+  |
| 2002 10 04 | 704 | 0.4-  | 0.0   | 2004 01 28 | 691 | 0.1+ | 0.1+ | 2006 10 28 | G96 | 0.2-  | 0.5+  |
| 2002 10 04 | 704 | 0.0   | 0.2+  | 2004 01 28 | 691 | 0.1+ | 0.0  | 2006 10 28 | G96 | 0.3+  | 0.3+  |
| 2002 10 04 | 699 | 0.6+  | 0.3+  | 2004 01 28 | 691 | 0.1+ | 0.0  | 2007 11 03 | 704 | 1.4-  | 0.4+  |
| 2002 10 04 | 704 | 0.5+  | 0.6+  | 2004 01 30 | 704 | 0.7- | 0.5- | 2007 11 03 | 704 | 1.3-  | 0.5-  |
| 2002 10 04 | 699 | 0.6+  | 0.2+  | 2004 01 30 | 704 | 0.0  | 0.1- | 2007 11 03 | 704 | 1.3-  | 0.5-  |
| 2002 10 04 | 704 | 0.5+  | 0.3+  | 2004 01 30 | 704 | 0.4- | 0.9- | 2007 11 03 | 704 | 1.3-  | 0.9-  |
| 2002 10 04 | 699 | 0.5+  | 0.4+  | 2004 01 30 | 704 | 0.3- | 0.4- | 2007 11 03 | 704 | 1.1-  | 0.5-  |
| 2002 10 04 | 699 | 1.5+  | 0.4-  | 2004 01 30 | 704 | 0.0  | 0.4- | 2007 11 09 | 704 | 0.3-  | 1.6-  |
| 2002 11 02 | 049 | 0.1+  | 0.1+  | 2004 02 11 | 699 | 0.2- | 0.0  | 2007 11 09 | 704 | 1.1+  | 0.1+  |
| 2002 11 02 | 049 | 0.1-  | 0.2+  | 2004 02 11 | 699 | 0.4+ | 0.2+ | 2007 11 09 | 704 | (0.6- | 2.3-) |
| 2002 11 02 | 049 | 0.5-  | 0.2+  | 2004 02 11 | 699 | 0.7- | 0.5- | 2007 11 09 | 704 | 0.6+  | 0.2+  |
| 2003 11 20 | 704 | 0.4+  | 0.3+  | 2004 02 11 | 699 | 0.1- | 0.4+ | 2007 11 09 | 704 | (0.3- | 1.9-) |
| 2003 11 20 | 704 | 0.4-  | 0.2-  | 2004 02 14 | 691 | 0.1- | 0.2+ | 2007 11 09 | 704 | 0.4+  | 0.1+  |
| 2003 11 20 | 704 | 0.1-  | 0.3-  | 2004 02 14 | 691 | 0.0  | 0.2+ | 2007 11 09 | 704 | (0.2- | 1.8-) |
| 2003 11 20 | 704 | (2.4- | 1.0+) | 2004 02 14 | 691 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.5+  | 0.5+  |
| 2003 12 27 | 704 | 1.0+  | 0.3+  | 2004 02 16 | 704 | 0.9+ | 0.6- | 2007 11 09 | 704 | 0.1-  | 1.4-  |
| 2003 12 27 | 704 | 0.4+  | 0.0   | 2004 02 16 | 704 | 0.7+ | 0.7- | 2007 11 09 | 704 | 0.6+  | 0.6+  |
| 2003 12 27 | 704 | 0.6+  | 0.9+  | 2004 02 16 | 704 | 0.4+ | 0.0  | 2007 11 16 | 704 | 0.2+  | 0.7+  |
| 2003 12 27 | 704 | 0.3+  | 0.3+  | 2004 02 16 | 704 | 0.7+ | 0.6- | 2007 11 16 | 704 | 0.1-  | 0.1-  |
| 2003 12 27 | 704 | 0.5-  | 0.1-  | 2004 02 16 | 704 | 0.5+ | 0.1+ | 2007 11 16 | 704 | 0.1-  | 0.2+  |
| 2004 01 04 | 699 | 0.0   | 1.2+  | 2004 02 17 | 644 | 0.2+ | 0.4+ | 2007 11 16 | 704 | 0.3+  | 0.3-  |
| 2004 01 04 | 699 | 0.2-  | 0.7+  | 2004 02 17 | 644 | 0.1- | 0.5+ | 2007 11 16 | 704 | 0.3+  | 0.5+  |
| 2004 01 04 | 699 | 1.0+  | 0.4-  | 2004 02 17 | 644 | 0.1+ | 0.3+ | 2007 12 03 | 704 | 0.1+  | 0.5-  |
| 2004 01 04 | 699 | (0.8- | 1.8-) | 2004 02 17 | 106 | 0.4- | 0.4- | 2007 12 03 | 704 | 0.5+  | 0.2-  |
| 2004 01 05 | 703 | 0.9-  | 0.5+  | 2004 02 17 | 106 | 0.0  | 0.1- | 2007 12 03 | 704 | 0.9+  | 0.1-  |
| 2004 01 05 | 703 | 0.7-  | 0.6+  | 2004 02 17 | 106 | 0.1+ | 0.2- | 2007 12 03 | 704 | 0.9+  | 0.1-  |
| 2004 01 05 | 703 | 0.7-  | 0.1-  | 2004 02 20 | 333 | 0.2- | 0.6- | 2007 12 03 | 704 | 1.2+  | 0.2+  |
| 2004 01 05 | 703 | 0.1-  | 1.0+  | 2004 02 20 | 333 | 1.1- | 0.0  |            |     |       |       |
| 2004 01 13 | 699 | 0.2+  | 0.9-  | 2004 02 20 | 333 | 0.5- | 0.4- |            |     |       |       |

**(172249)\* 2002 RG<sub>226</sub> = 2006 QB<sub>91</sub>**

Discovered 2002 Sept. 13 by NEAT at Haleakala.

Id. G. V. Williams (*MPO* 103396)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |             |          |   |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|--|
| <i>M</i> | 121.57080  | (2000.0) | <b>P</b>  |             |             | <b>Q</b> |   |  |
| <i>n</i> | 0.22582643 | $\omega$ | 156.53341 | +0.18696594 | +0.98123167 |          |   |  |
| <i>a</i> | 2.6706657  | $\Omega$ | 124.21105 | -0.91010370 | +0.19110094 |          |   |  |
| <i>e</i> | 0.1739971  | <i>i</i> | 3.27220   | -0.36980399 | +0.02578454 |          |   |  |
| <i>P</i> | 4.36       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 0 |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 01 07 | 691 | 0.1+  | 0.2-  | 2002 09 29 | 608 | 0.2+  | 0.3-  | 2006 08 17 | 644 | 0.2+ | 0.3+ |
| 2000 01 07 | 691 | 0.2+  | 0.1-  | 2002 09 29 | 608 | 0.3+  | 0.3+  | 2006 08 17 | 644 | 0.5+ | 0.3- |
| 2000 01 07 | 691 | 0.8+  | 0.1-  | 2005 03 03 | 691 | 0.3+  | 0.1-  | 2006 08 18 | 644 | 0.3+ | 0.3+ |
| 2001 04 17 | 699 | (2.3+ | 0.4+) | 2005 03 03 | 691 | 0.1+  | 0.2+  | 2006 08 18 | 644 | 0.1+ | 0.2+ |
| 2001 04 17 | 699 | 0.4+  | 0.5+  | 2005 03 03 | 691 | 0.0   | 0.1+  | 2006 08 18 | 644 | 0.3- | 0.2+ |
| 2001 04 17 | 699 | 1.2+  | 0.2+  | 2005 04 09 | 691 | (0.5- | 1.7+) | 2006 08 18 | 64  |      |      |

Id. A. Doppler (*MPO* 69391)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 249.03621  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23549873 | $\omega$ 247.85438 | -0.99761572   | +0.05028304 |
| <i>a</i> | 2.5970303  | $\Omega$ 295.00117 | -0.02600175   | -0.90832302 |
| <i>e</i> | 0.1675685  | <i>i</i> 2.98976   | -0.06392791   | -0.41523597 |
| <i>P</i> | 4.19       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |             |      |            |     |             |      |            |     |             |      |
|------------|-----|-------------|------|------------|-----|-------------|------|------------|-----|-------------|------|
| 2002 09 11 | 644 | 0.4+        | 0.2+ | 2003 11 29 | 691 | 0.2-        | 0.1+ | 2005 05 19 | 644 | 0.1-        | 0.1+ |
| 2002 09 11 | 644 | 0.3+        | 0.1+ | 2003 11 29 | 691 | 0.1-        | 0.1+ | 2006 08 29 | 691 | 0.0         | 0.5+ |
| 2002 09 11 | 644 | 0.3+        | 0.2+ | 2003 12 22 | 704 | 0.7+        | 1.1+ | 2006 08 29 | 691 | 0.5-        | 0.5- |
| 2002 09 14 | 644 | (0.5+ 1.8+) |      | 2003 12 22 | 704 | 0.3+        | 1.1+ | 2006 08 29 | 691 | 0.1-        | 0.6+ |
| 2002 09 14 | 644 | 0.3+        | 1.3+ | 2003 12 22 | 704 | 0.4-        | 0.8+ | 2006 09 28 | G96 | 0.0         | 0.3- |
| 2002 09 17 | 644 | 0.5-        | 0.5+ | 2003 12 22 | 704 | (0.6- 1.6+) |      | 2006 09 28 | G96 | 0.6+        | 0.2- |
| 2002 09 17 | 644 | 0.1+        | 0.3+ | 2003 12 25 | 691 | 0.2-        | 0.0  | 2006 09 28 | G96 | 0.4-        | 0.4- |
| 2002 09 17 | 644 | 0.1+        | 0.7+ | 2003 12 25 | 691 | 0.2+        | 0.1+ | 2006 09 28 | G96 | 0.3+        | 0.1+ |
| 2002 09 18 | 644 | 0.4-        | 0.6+ | 2003 12 25 | 691 | 0.4+        | 0.1+ | 2007 11 18 | 704 | 0.4+        | 0.4- |
| 2002 09 18 | 644 | 0.3+        | 0.5+ | 2003 12 27 | 704 | (0.0 1.8+)  |      | 2007 11 18 | 704 | 0.3-        | 1.1- |
| 2002 10 10 | 645 | 0.0         | 0.0  | 2003 12 27 | 704 | 0.9-        | 0.8- | 2007 11 18 | 704 | (0.4- 1.9-) |      |
| 2002 10 10 | 645 | 0.2+        | 0.1- | 2003 12 27 | 704 | 0.2+        | 0.8+ | 2007 12 15 | 704 | 1.0+        | 0.1- |
| 2002 10 30 | 645 | 0.1-        | 0.1- | 2003 12 27 | 704 | 0.8-        | 1.0- | 2007 12 15 | 704 | 0.6+        | 0.8- |
| 2002 10 30 | 645 | 0.1-        | 0.0  | 2005 05 19 | 644 | 0.3+        | 0.5+ | 2007 12 15 | 704 | 0.2-        | 0.9- |
| 2003 11 29 | 691 | 0.0         | 0.3+ | 2005 05 19 | 644 | 0.1+        | 0.4+ |            |     |             |      |

(172251)\* 2002 RR<sub>237</sub>

Discovered 2002 Sept. 15 by R. Matson on NEAT images taken at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 113.82258  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22656830 | $\omega$ 172.34646 | +0.25235405   | +0.96750270 |
| <i>a</i> | 2.6648327  | $\Omega$ 112.26931 | -0.88870108   | +0.23827745 |
| <i>e</i> | 0.0838030  | <i>i</i> 0.99058   | -0.38278952   | +0.08463083 |
| <i>P</i> | 4.35       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 20 | 644 | 0.4- | 0.1- | 2005 04 04 | G96 | 0.2- | 0.1+ | 2007 10 30 | 691 | 0.4- | 0.8+ |
| 2002 08 20 | 644 | 0.2+ | 0.5+ | 2005 04 04 | G96 | 0.5+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.3- |
| 2002 08 29 | 644 | 0.4- | 0.1+ | 2005 04 09 | G96 | 0.2+ | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.8- |
| 2002 08 29 | 644 | 0.7- | 0.6+ | 2005 04 09 | G96 | 1.1- | 0.3+ | 2007 10 30 | G96 | 0.2+ | 0.0  |
| 2002 08 29 | 644 | 0.2- | 0.2+ | 2005 04 09 | G96 | 0.4- | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.4- |
| 2002 09 01 | 608 | 0.7+ | 0.4+ | 2005 04 09 | G96 | 0.4- | 0.1- | 2007 11 04 | 691 | 0.3+ | 0.0  |
| 2002 09 01 | 608 | 0.9+ | 0.2+ | 2006 06 17 | 691 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.2+ | 0.1+ |
| 2002 09 15 | 644 | 0.3- | 0.3- | 2006 06 17 | 691 | 0.2- | 0.0  | 2007 11 04 | 691 | 0.2- | 0.3+ |
| 2002 09 15 | 644 | 0.2- | 0.2- | 2006 06 17 | 691 | 0.2+ | 0.4+ | 2007 11 05 | G96 | 0.1- | 0.3- |
| 2002 09 15 | 644 | 0.3- | 0.0  | 2007 09 10 | G96 | 0.3+ | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.5- |
| 2002 09 16 | 644 | 0.1- | 1.1+ | 2007 09 10 | G96 | 0.2+ | 0.2- | 2007 11 05 | G96 | 0.3+ | 0.4- |
| 2002 09 16 | 644 | 0.2- | 0.4+ | 2007 09 10 | G96 | 0.1+ | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.4- |
| 2002 09 16 | 644 | 0.4- | 0.3+ | 2007 09 10 | G96 | 0.4+ | 0.5- | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2005 03 01 | 691 | 0.4+ | 0.3+ | 2007 10 16 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2005 03 01 | 691 | 0.1+ | 0.3+ | 2007 10 16 | 691 | 0.1+ | 0.4- | 2007 11 14 | 691 | 0.1- | 0.6+ |
| 2005 03 01 | 691 | 0.2+ | 0.5+ | 2007 10 16 | 691 | 0.0  | 0.1- | 2007 12 05 | 691 | 0.3- | 0.3- |
| 2005 04 04 | G96 | 0.4+ | 0.0  | 2007 10 30 | 691 | 0.6- | 0.0  | 2007 12 05 | 691 | 0.3- | 0.2+ |
| 2005 04 04 | G96 | 0.1- | 0.1- | 2007 10 30 | 691 | 0.4+ | 0.2- | 2007 12 05 | 691 | 0.2- | 0.1+ |

(172252)\* 2002 RR<sub>263</sub> = 1998 WB<sub>26</sub> = 2006 MY<sub>8</sub>

Discovered 2002 Sept. 13 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 108387)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 99.33339   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22566743 | $\omega$ 64.94349  | +0.64728683   | +0.75986989 |
| <i>a</i> | 2.6719201  | $\Omega$ 245.52947 | -0.72099949   | +0.58474704 |
| <i>e</i> | 0.1018388  | <i>i</i> 3.78895   | -0.24734490   | +0.28402226 |
| <i>P</i> | 4.37       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 16 | 691 | 0.5+ | 0.2- | 2002 09 18 | 644 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.2+ |
| 1998 11 16 | 691 | 0.4+ | 0.5- | 2002 09 18 | 644 | 0.3- | 0.3+ | 2007 11 05 | G96 | 0.3+ | 0.1- |
| 1998 11 16 | 691 | 0.6+ | 0.1+ | 2002 10 31 | 645 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.3+ |
| 1998 11 19 | 691 | 0.4- | 0.6- | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.9+ | 0.0  |
| 1998 11 19 | 691 | 0.0  | 0.1- | 2006 05 30 | G96 | 0.1- | 0.2- | 2007 11 09 | 691 | 0.4- | 0.4+ |
| 1998 11 19 | 691 | 0.7- | 0.3- | 2006 05 30 | G96 | 0.6- | 0.2- | 2007 11 09 | 691 | 0.4- | 0.3+ |
| 2002 09 11 | 644 | 0.5+ | 0.2+ | 2006 05 30 | G96 | 0.3- | 0.4- | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2002 09 11 | 644 | 0.5- | 0.2+ | 2006 05 30 | G96 | 0.2+ | 0.5- | 2007 11 14 | 691 | 0.0  | 0.4+ |
| 2002 09 11 | 644 | 0.2- | 0.3+ | 2006 06 19 | G96 | 0.3+ | 0.5- | 2007 11 14 | 691 | 0.6- | 0.4+ |
| 2002 09 13 | 644 | 0.7- | 0.3- | 2006 06 19 | G96 | 0.6+ | 0.4- | 2007 11 14 | 691 | 0.3+ | 0.1+ |
| 2002 09 13 | 644 | 0.1- | 0.1- | 2006 06 19 | G96 | 0.5- | 0.4- | 2007 12 04 | G96 | 0.9+ | 0.0  |
| 2002 09 13 | 644 | 0.0  | 0.4+ | 2006 06 19 | G96 | 0.1- | 0.7- | 2007 12 04 | G96 | 0.6+ | 0.1- |
| 2002 09 17 | 644 | 0.1+ | 0.0  | 2006 06 22 | 691 | 0.3+ | 0.4+ | 2007 12 04 | G96 | 0.2+ | 0.1- |
| 2002 09 17 | 644 | 0.7- | 0.1- | 2006 06 22 | 691 | 0.2- | 0.2+ | 2007 12 04 | G96 | 0.7+ | 0.0  |
| 2002 09 17 | 644 | 0.2- | 0.1+ | 2006 06 22 | 691 | 0.0  | 0.5+ |            |     |      |      |

(172253)\* 2002 RC<sub>271</sub>

Discovered 2002 Sept. 1 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 61.45798   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22646797 | $\omega$ 169.67508 | +0.95854670   | +0.28475271 |
| <i>a</i> | 2.6656197  | $\Omega$ 173.75265 | -0.26765313   | +0.91211209 |
| <i>e</i> | 0.0600253  | <i>i</i> 5.38042   | -0.09772425   | +0.29490240 |
| <i>P</i> | 4.35       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 10 | 807 | 0.1- | 0.5+ | 2005 04 10 | G96 | 0.2+ | 0.3+ | 2007 11 09 | 703 | 0.7- | 0.6+ |
| 2002 08 10 | 807 | 0.0  | 0.7+ | 2005 04 10 | G96 | 0.1+ | 0.2- | 2007 11 09 | 703 | 1.0- | 0.7+ |
| 2002 09 01 | 608 | 0.1+ | 0.1+ | 2006 05 06 | G96 | 0.0  | 0.2+ | 2007 11 09 | 703 | 0.2- | 0.2- |
| 2002 09 01 | 608 | 0.1+ | 0.4+ | 2006 05 06 | G96 | 0.1- | 0.2+ | 2007 11 12 | G96 | 0.3+ | 0.1- |
| 2002 09 01 | 608 | 0.4+ | 0.3+ | 2006 05 06 | G96 | 0.3- | 0.0  | 2007 11 12 | G96 | 0.4+ | 0.1- |
| 2002 09 05 | 704 | 0.0  | 0.6- | 2006 05 06 | G96 | 0.2+ | 0.5+ | 2007 11 12 | G96 | 0.5+ | 0.3- |
| 2002 09 05 | 704 | 0.0  | 0.7- | 2007 10 20 | G96 | 0.4+ | 0.1+ | 2007 11 12 | G96 | 0.8+ | 0.3- |
| 2002 09 05 | 704 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.7+ | 0.1+ | 2007 11 20 | 703 | 0.4+ | 1.4+ |
| 2002 09 14 | 644 | 0.2- | 0.0  | 2007 10 20 | G96 | 0.4+ | 0.2- | 2007 11 20 | 703 | 0.1- | 1.0- |
| 2002 09 14 | 644 | 0.0  | 0.2+ | 2007 11 01 | 691 | 0.0  | 0.3- | 2007 11 20 | 703 | 1.0- | 0.5+ |
| 2002 09 14 | 644 | 0.0  | 0.1+ | 2007 11 01 | 691 | 0.6- | 0.3- | 2007 11 21 | 703 | 0.6+ | 0.5+ |
| 2002 09 15 | 608 | 0.6- | 0.7- | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 11 21 | 703 | 0.4+ | 0.7- |
| 2002 09 15 | 608 | 0.3- | 0.5- | 2007 11 04 | 704 | 0.5- | 0.8+ | 2007 11 21 | 703 | 1.0+ | 0.2+ |
| 2002 09 15 | 608 | 0.3+ | 0.2- | 2007 11 04 | 704 | 0.8+ | 0.8+ | 2007 11 21 | 703 | 1.4+ | 0.4+ |
| 2002 09 16 | 644 | 0.3+ | 0.2+ | 2007 11 04 | 704 | 0.5+ | 0.1+ | 2007 11 21 | G96 | 0.5+ | 0.3- |
| 2002 09 16 | 644 | 0.1- | 0.4+ | 2007 11 04 | 704 | 0.4- | 0.1- | 2007 11 21 | G96 | 0.3+ | 0.1- |
| 2002 09 16 | 644 | 0.2- | 0.1- | 2007 11 04 | 704 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.6+ | 0.1- |
| 2002 09 30 | 608 | 0.0  | 0.3+ | 2007 11 05 | 691 | 0.0  | 0.2- | 2007 11 21 | G96 | 0.4+ | 0.0  |
| 2002 09 30 | 608 | 0.1- | 0.0  | 2007 11 05 | 691 | 0.1- | 0.1+ | 2007 12 04 | 704 | 2.6+ | 0.4+ |
| 2002 09 30 | 608 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.3- | 0.1+ | 2007 12 04 | 704 | 0.9- | 0.5+ |
| 2005 03 11 | 695 | 0.0  | 0.4+ | 2007 11 09 | 691 | 0.2- | 0.1+ | 2007 12 04 | 704 | 0.2+ | 0.6+ |
| 2005 03 11 | 695 | 0.1- | 0.5+ | 2007 11 09 | 691 | 0.2- | 0.1+ | 2007 12 04 | 704 | 0.3- | 0.4+ |
| 2005 04 10 | G96 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.6- | 0.2- |            |     |      |      |
| 2005 04 10 | G96 | 0.1+ | 0.1+ | 2007 11 09 | 703 | 0.3- | 0.2- |            |     |      |      |

(172254)\* 2002 SY<sub>8</sub> = 2000 DH<sub>89</sub>

Discovered 2002 Sept. 27 by NEAT at Palomar.

Id. A. Doppler (*MPO* 69393)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 135.24992  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22464604 | $\omega$ 142.75462 | +0.30832729   | +0.95034637 |
| <i>a</i> | 2.6800128  | $\Omega$ 145.14712 | -0.88957537   | +0.30374022 |
| <i>e</i> | 0.04711174 | <i>i</i> 4.22913   | -0.33703107   | +0.06770268 |
| <i>P</i> | 4.39       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 09 10 | 691 | 1.6- | 0.1+ | 2002 10 30 | 645 | 0.3+ | 0.1+ | 2006 08 28 | 703 | 0.2+ | 0.7- |
| 1993 09 10 | 691 | 0.3- | 0.0  | 2003 12 27 | 691 | 0.4+ | 0.3- | 2006 08 28 | 703 | 0.0  | 0.2+ |

2007 DEC. 24

M.P.O. 129311

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 09 10 | 691 | 0.3− | 0.2+ | 2003 12 27 | 691 | 0.0  | 0.7+ | 2006 08 28 | 703 | 0.6− | 0.7− |
| 1996 03 19 | 691 | 0.8+ | 0.9+ | 2003 12 27 | 691 | 0.1+ | 0.7+ | 2006 09 30 | G96 | 0.1+ | 0.0  |
| 1996 03 19 | 691 | 0.1− | 0.8− | 2005 04 14 | 691 | 0.0  | 0.4+ | 2006 09 30 | G96 | 0.2+ | 0.1+ |
| 1996 03 19 | 691 | 0.2− | 0.8− | 2005 04 14 | 691 | 0.1+ | 0.3+ | 2006 09 30 | G96 | 0.3+ | 0.2− |
| 2000 02 26 | 691 | 0.4− | 0.3− | 2005 04 14 | 691 | 0.0  | 0.3+ | 2006 09 30 | G96 | 0.4+ | 0.1− |
| 2000 02 26 | 691 | 0.2− | 0.2− | 2005 04 18 | 691 | 0.0  | 0.4+ | 2006 10 22 | G96 | 0.3+ | 0.4+ |
| 2000 02 26 | 691 | 0.1+ | 0.5− | 2005 04 18 | 691 | 0.3+ | 0.6+ | 2006 10 22 | G96 | 0.2− | 0.3+ |
| 2000 03 04 | 691 | 0.5+ | 0.4+ | 2005 04 18 | 691 | 0.1+ | 0.4+ | 2006 10 22 | G96 | 0.2− | 0.1+ |
| 2000 03 04 | 691 | 0.1+ | 0.2+ | 2006 08 13 | 644 | 0.1+ | 0.2+ | 2006 10 22 | G96 | 0.7− | 0.6+ |
| 2000 03 04 | 691 | 0.1+ | 0.0  | 2006 08 13 | 644 | 0.0  | 0.1+ | 2007 11 08 | 691 | 0.9− | 0.1+ |
| 2002 09 27 | 644 | 0.2+ | 0.6+ | 2006 08 13 | 644 | 0.1− | 0.2+ | 2007 11 08 | 691 | 0.6− | 0.1+ |
| 2002 09 27 | 644 | 0.9− | 0.8+ | 2006 08 21 | 644 | 0.1+ | 0.2+ | 2007 11 08 | 691 | 0.7− | 0.2+ |
| 2002 09 27 | 644 | 0.7− | 0.5+ | 2006 08 21 | 644 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.1− | 0.1− |
| 2002 09 28 | 644 | 0.4− | 0.6+ | 2006 08 21 | 644 | 0.1+ | 0.0  | 2007 11 21 | G96 | 0.1− | 0.2− |
| 2002 09 28 | 644 | 0.7− | 0.7+ | 2006 08 28 | 703 | 1.1− | 0.4− | 2007 11 21 | G96 | 0.4− | 0.0  |
| 2002 09 28 | 644 | 0.6− | 0.6+ | 2006 08 28 | 703 | 0.1− | 0.2+ | 2007 11 21 | G96 | 0.3− | 0.0  |
| 2002 10 05 | 645 | 0.2+ | 0.0  | 2006 08 28 | 703 | 0.0  | 0.2+ | 2007 12 04 | 704 | 0.0  | 0.7+ |
| 2002 10 05 | 645 | 0.2+ | 0.0  | 2006 08 28 | 703 | 0.6− | 0.3+ | 2007 12 04 | 704 | 0.5− | 0.6+ |
| 2002 10 30 | 645 | 0.2+ | 0.0  | 2006 08 28 | 703 | 0.8− | 0.5− | 2007 12 04 | 704 | 0.3− | 0.2− |

(172255)\* 2002 SQ<sub>9</sub> = 2005 GJ<sub>170</sub>

Discovered 2002 Sept. 27 by NEAT at Palomar.

Id. G. V. Williams (MPO 75630)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 63.96474   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.22029456 | $\omega$ | 329.70797 | +0.99452483 | +0.09734329 |
| <i>a</i> | 2.7151899  | $\Omega$ | 24.79162  | −0.06802682 | +0.87916380 |
| <i>e</i> | 0.0631889  | <i>i</i> | 5.20063   | −0.07932668 | +0.46647111 |
| <i>P</i> | 4.47       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 27 | 644 | 0.2− | 0.6+ | 2005 04 12 | 691 | 0.3+ | 0.3+ | 2007 11 03 | 691 | 0.1− | 0.2+ |
| 2002 09 27 | 644 | 0.3− | 0.8+ | 2005 04 12 | 691 | 0.1+ | 0.5+ | 2007 11 18 | 704 | 0.0  | 0.6+ |
| 2002 09 27 | 644 | 0.4− | 0.7+ | 2005 04 12 | 691 | 0.4+ | 0.5+ | 2007 11 18 | 704 | 0.7+ | 0.1+ |
| 2002 09 28 | 644 | 0.4− | 0.6+ | 2005 04 17 | 691 | 0.5+ | 0.4+ | 2007 11 18 | 704 | 0.4− | 0.8− |
| 2002 09 28 | 644 | 0.4− | 0.4+ | 2005 04 17 | 691 | 0.4+ | 0.5+ | 2007 11 18 | 704 | 0.4− | 0.6− |
| 2002 09 28 | 644 | 0.6− | 0.7+ | 2005 04 17 | 691 | 0.4+ | 0.5+ | 2007 11 18 | G96 | 0.0  | 0.5− |
| 2002 10 01 | 699 | 0.0  | 0.5+ | 2005 05 01 | 644 | 0.0  | 0.5+ | 2007 11 18 | G96 | 0.6+ | 0.4− |
| 2002 10 01 | 699 | 0.7+ | 0.6+ | 2005 05 01 | 644 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.3+ | 0.3− |
| 2002 10 01 | 699 | 0.1− | 0.0  | 2005 05 01 | 644 | 0.1+ | 0.2+ | 2007 11 18 | G96 | 0.1+ | 0.2− |
| 2002 10 01 | 699 | 0.1− | 0.6− | 2005 05 14 | G96 | 0.6− | 0.1− | 2007 11 20 | 691 | 0.3− | 0.0  |
| 2002 10 02 | 704 | 0.3− | 0.2+ | 2005 05 14 | G96 | 0.7− | 0.2− | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2002 10 02 | 704 | 0.5+ | 0.3+ | 2005 05 14 | G96 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2002 10 02 | 704 | 0.1− | 0.4+ | 2005 05 14 | G96 | 0.3− | 0.0  | 2007 12 13 | 704 | 0.6+ | 0.0  |
| 2002 10 11 | 704 | 1.3− | 0.2− | 2006 08 12 | 644 | 0.4− | 0.5+ | 2007 12 13 | 704 | 0.6+ | 0.8+ |
| 2002 10 11 | 704 | 0.3− | 0.8+ | 2006 08 12 | 644 | 0.0  | 0.3+ | 2007 12 13 | 704 | 0.4− | 0.8+ |
| 2002 10 11 | 704 | 0.1− | 0.2+ | 2006 08 12 | 644 | 0.2+ | 0.4+ | 2007 12 13 | 704 | 0.0  | 0.4+ |
| 2002 10 11 | 704 | 0.4+ | 0.2− | 2006 08 14 | 644 | 0.2− | 0.6+ | 2007 12 15 | 704 | 0.4− | 1.5+ |
| 2005 03 10 | G96 | 0.3− | 0.3+ | 2006 08 14 | 644 | 0.2− | 0.7+ | 2007 12 15 | 704 | 0.2+ | 1.3+ |
| 2005 03 10 | G96 | 0.4− | 0.2+ | 2006 08 14 | 644 | 0.4− | 0.7+ | 2007 12 15 | 704 | 0.4+ | 1.6+ |
| 2005 03 10 | G96 | 0.3− | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.1+ | 2007 12 15 | 704 | 0.2− | 1.1+ |
| 2005 03 10 | G96 | 0.2− | 0.3− | 2007 11 03 | 691 | 0.0  | 0.1+ |            |     |      |      |

(172256)\* 2002 SN<sub>11</sub> = 2005 GJ<sub>164</sub>

Discovered 2002 Sept. 27 by NEAT at Palomar.

Id. A. Doppler (MPO 94847)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 160.27670  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.22113259 | $\omega$ | 233.65899 | −0.17934414 | +0.98305999 |
| <i>a</i> | 2.7083256  | $\Omega$ | 26.08580  | −0.87282497 | −0.14127199 |
| <i>e</i> | 0.0382536  | <i>i</i> | 4.93130   | −0.45388573 | −0.11677020 |
| <i>P</i> | 4.46       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 27 | 644 | 0.6− | 0.3+ | 2005 04 17 | 691 | 0.3+ | 0.4+ | 2006 08 24 | 644 | 0.2+ | 0.0  |
| 2002 09 27 | 644 | 0.5− | 0.5+ | 2005 04 17 | 691 | 0.3+ | 0.2+ | 2006 08 24 | 644 | 0.1− | 0.1+ |
| 2002 09 27 | 644 | 0.4− | 0.3+ | 2005 05 01 | 644 | 0.2+ | 0.2+ | 2007 11 08 | 691 | 0.2− | 0.1+ |
| 2002 09 28 | 644 | 0.6− | 0.6+ | 2005 05 01 | 644 | 0.2− | 0.2+ | 2007 11 08 | 691 | 0.3− | 0.2+ |
| 2002 09 28 | 644 | 0.7− | 0.4+ | 2005 05 01 | 644 | 0.2− | 0.4+ | 2007 11 08 | 691 | 0.1− | 0.7+ |
| 2002 09 28 | 644 | 0.5− | 0.5+ | 2005 05 14 | 644 | 0.3− | 0.2+ | 2007 11 18 | 704 | 0.9+ | 1.0− |
| 2002 10 11 | 704 | 1.0+ | 0.2+ | 2005 05 14 | 644 | 0.2+ | 0.4+ | 2007 11 18 | 704 | 0.9+ | 0.6− |
| 2002 10 11 | 704 | 0.4+ | 0.0  | 2005 05 14 | 644 | 0.4+ | 0.2+ | 2007 11 18 | 704 | 0.8− | 0.2− |
| 2002 10 11 | 704 | 0.6+ | 0.7+ | 2006 08 16 | 644 | 0.1+ | 0.1+ | 2007 11 30 | A77 | 0.3+ | 0.3+ |
| 2002 10 11 | 704 | 0.3− | 0.3− | 2006 08 16 | 644 | 0.4− | 0.4+ | 2007 11 30 | A77 | 0.2+ | 0.5+ |
| 2005 04 10 | G96 | 0.4− | 0.1− | 2006 08 16 | 644 | 0.0  | 0.1− | 2007 11 30 | A77 | 0.1+ | 0.8+ |
| 2005 04 10 | G96 | 0.5− | 0.0  | 2006 08 16 | 644 | 0.1− | 0.2− | 2007 12 13 | 704 | 0.1− | 0.5+ |
| 2005 04 10 | G96 | 0.0  | 0.1+ | 2006 08 16 | 644 | 0.3+ | 0.1+ | 2007 12 13 | 704 | 0.1− | 0.2+ |
| 2005 04 10 | G96 | 0.0  | 0.0  | 2006 08 16 | 644 | 0.4− | 0.1− | 2007 12 13 | 704 | 0.2+ | 0.3− |
| 2005 04 17 | 691 | 0.3+ | 0.6+ | 2006 08 24 | 644 | 0.2+ | 0.3+ | 2007 12 13 | 704 | 0.2+ | 0.4− |

(172257)\* 2002 SD<sub>16</sub>

Discovered 2002 Sept. 27 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 32.39884   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.22145303 | $\omega$ | 103.28847 | +0.72117928 | −0.66883331 |
| <i>a</i> | 2.7057124  | $\Omega$ | 299.02293 | +0.52839779 | +0.69954579 |
| <i>e</i> | 0.2382690  | <i>i</i> | 11.90941  | +0.44799131 | +0.25159031 |
| <i>P</i> | 4.45       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 17 | 704 | 1.1−        | 0.2− | 2002 10 07 | 704 | 0.0  | 0.8− | 2002 11 14 | 704 | 0.4+ | 0.4+ |
| 1998 12 17 | 704 | 0.7+        | 0.5− | 2002 10 07 | 704 | 0.7− | 0.9− | 2006 07 26 | 644 | 0.5− | 0.2+ |
| 1998 12 17 | 704 | 0.2−        | 0.9− | 2002 10 07 | 704 | 0.0  | 0.7− | 2006 07 26 | 644 | 0.6− | 0.1+ |
| 1998 12 17 | 704 | 1.2−        | 1.1− | 2002 10 07 | 704 | 0.6− | 1.0− | 2006 07 26 | 644 | 0.1− | 0.1+ |
| 1998 12 17 | 704 | 1.2+        | 0.1+ | 2002 10 07 | 704 | 0.6− | 0.6+ | 2006 08 18 | 644 | 0.6− | 0.1+ |
| 1999 01 16 | 704 | 1.8−        | 0.9− | 2002 10 10 | 704 | 0.4+ | 0.4− | 2006 08 18 | 644 | 0.1− | 0.2+ |
| 1999 01 16 | 704 | 0.3−        | 0.1− | 2002 10 10 | 704 | 0.9+ | 0.5− | 2006 08 18 | 644 | 0.4− | 0.1+ |
| 1999 01 16 | 704 | 1.3+        | 0.5− | 2002 10 10 | 704 | 0.8+ | 0.9− | 2006 08 30 | 704 | 1.3+ | 0.1− |
| 1999 01 16 | 704 | (1.8− 2.5−) |      | 2002 10 10 | 704 | 0.5+ | 0.4− | 2006 08 30 | 704 | 0.9+ | 0.5+ |
| 2002 08 30 | 704 | 0.1+        | 0.2− | 2002 10 10 | 704 | 0.7+ | 0.2− | 2006 08 30 | 704 | 0.3+ | 0.4− |
| 2002 08 30 | 704 | 0.0         | 0.8+ | 2002 11 01 | 644 | 0.0  | 0.8+ | 2007 11 07 | 704 | 0.3− | 0.2− |
| 2002 08 30 | 704 | 0.9−        | 0.7− | 2002 11 01 | 644 | 0.3+ | 1.1+ | 2007 11 07 | 704 | 1.2+ | 0.6+ |
| 2002 08 30 | 704 | 0.8−        | 1.0+ | 2002 11 01 | 644 | 0.1+ | 0.8+ | 2007 11 07 | 704 | 0.4+ | 1.2+ |
| 2002 08 30 | 704 | 0.2−        | 0.5+ | 2002 11 08 | 704 | 0.6+ | 0.7+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2002 09 27 | 644 | 0.4−        | 0.2− | 2002 11 08 | 704 | 0.3+ | 0.3+ | 2007 11 18 | G96 | 0.4− | 0.0  |
| 2002 09 27 | 644 | 0.7−        | 0.2− | 2002 11 08 | 704 | 1.3+ | 0.7− | 2007 11 18 | G96 | 0.2+ | 0.2− |
| 2002 09 27 | 644 | 0.7−        | 0.2− | 2002 11 08 | 704 | 0.1+ | 0.1− | 2007 11 18 | G96 | 0.3+ | 0.2− |
| 2002 09 28 | 644 | 0.6−        | 0.2− | 2002 11 08 | 704 | 0.6+ | 0.4− | 2007 12 15 | 704 | 1.1+ | 1.7+ |
| 2002 09 28 | 644 | 0.5−        | 0.2− | 2002 11 12 | 644 | 0.1− | 1.1+ | 2007 12 15 | 704 | 0.1− | 0.4+ |
| 2002 09 28 | 644 | 0.7−        | 0.3− | 2002 11 12 | 644 | 0.2− | 1.2+ | 2007 12 15 | 704 | 0.0  | 0.8+ |
| 2002 10 06 | 699 | 0.7−        | 0.4+ | 2002 11 12 | 644 | 0.1+ | 1.0+ | 2007 12 15 | 704 | 0.3+ | 0.5+ |
| 2002 10 06 | 699 | 0.6−        | 0.2+ | 2002 11 14 | 704 | 0.6+ | 0.4− | 2007 12 15 | 704 | 0.3+ | 0.7+ |
| 2002 10 06 | 699 | 0.4−        | 0.3+ | 2002 11 14 | 704 | 0.5+ | 0.3− |            |     |      |      |
| 2002 10 06 | 699 | 0.1−        | 0.1− | 2002 11 14 | 704 | 1.0+ | 0.2− |            |     |      |      |

(172258)\* 2002 SG<sub>23</sub>

Discovered 2002 Sept. 27 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|--|

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 30 | 704 | 0.4− | 0.2+ | 2005 03 09 | G96 | 0.7−  | 0.2−  | 2007 11 14 | 691 | 0.1+  | 0.1−  |
| 2002 09 30 | 704 | 0.2− | 0.2− | 2005 03 09 | G96 | 0.1+  | 0.3+  | 2007 11 14 | 691 | 0.1−  | 0.0   |
| 2002 10 01 | 608 | 0.6− | 0.5− | 2005 03 12 | 691 | 0.5+  | 0.1+  | 2007 11 14 | 691 | 0.2−  | 0.1+  |
| 2002 10 01 | 608 | 0.5− | 0.4− | 2005 03 12 | 691 | 0.6+  | 0.2+  | 2007 11 14 | 704 | 0.6−  | 0.5−  |
| 2002 10 01 | 608 | 0.0  | 0.8− | 2005 03 12 | 691 | 0.3+  | 0.2+  | 2007 11 14 | 704 | 1.1−  | 0.5−  |
| 2002 10 02 | 704 | 0.3+ | 0.1+ | 2005 04 02 | 691 | 0.1+  | 0.0   | 2007 11 14 | 704 | 0.6−  | 0.4−  |
| 2002 10 02 | 704 | 0.4+ | 0.6+ | 2005 04 02 | 691 | 0.2+  | 0.3+  | 2007 11 14 | 704 | 0.7−  | 0.7−  |
| 2002 10 02 | 704 | 0.0  | 0.1− | 2005 04 02 | 691 | 0.2+  | 0.3+  | 2007 11 14 | 704 | 0.5−  | 0.7−  |
| 2002 10 02 | 704 | 0.1+ | 0.3+ | 2005 04 11 | G96 | 0.2−  | 0.2+  | 2007 11 18 | 691 | 0.1−  | 0.1+  |
| 2002 10 03 | 704 | 0.0  | 0.7+ | 2005 04 11 | G96 | 0.1−  | 0.1+  | 2007 11 18 | 691 | 0.2−  | 0.4+  |
| 2002 10 03 | 704 | 0.1− | 0.0  | 2005 04 11 | G96 | 0.0   | 0.1+  | 2007 11 18 | 691 | 0.0   | 0.0   |
| 2002 10 03 | 704 | 1.5+ | 0.9+ | 2005 04 11 | G96 | 0.0   | 0.4+  | 2007 12 03 | 703 | 0.4−  | 0.8+  |
| 2002 10 03 | 704 | 0.3+ | 0.3+ | 2005 04 12 | 691 | 1.4−  | 0.0   | 2007 12 03 | 703 | (0.3+ | 1.9+) |
| 2002 10 11 | 704 | 1.0+ | 1.1+ | 2005 04 12 | 691 | 0.3+  | 0.6+  | 2007 12 03 | 703 | 0.1+  | 0.7+  |
| 2002 10 11 | 704 | 0.7+ | 0.3+ | 2005 04 12 | 691 | 0.5+  | 0.3+  | 2007 12 03 | 703 | 0.9+  | 1.3+  |
| 2002 10 11 | 704 | 1.0− | 0.5+ | 2005 05 10 | G96 | 0.0   | 0.2+  | 2007 12 04 | 691 | 0.1−  | 0.0   |
| 2002 10 11 | 704 | 0.3+ | 0.5+ | 2005 05 10 | G96 | 0.5+  | 0.3+  | 2007 12 04 | 691 | 0.3+  | 0.2+  |
| 2002 10 11 | 704 | 0.6+ | 0.5+ | 2005 05 10 | G96 | 0.0   | 0.3+  | 2007 12 04 | 691 | 0.0   | 0.1−  |
| 2002 10 30 | 645 | 0.0  | 0.1− | 2005 05 10 | G96 | 0.5+  | 0.3+  | 2007 12 05 | 704 | 0.4+  | 0.1+  |
| 2002 10 30 | 645 | 0.1− | 0.1− | 2007 09 18 | G96 | 0.6+  | 0.2−  | 2007 12 05 | 704 | 1.0−  | 0.2−  |
| 2003 12 19 | 691 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.7+  | 0.2−  | 2007 12 05 | 704 | 0.4+  | 0.0   |
| 2003 12 19 | 691 | 0.1+ | 0.3+ | 2007 09 18 | G96 | 0.5+  | 0.2+  | 2007 12 05 | 704 | 0.3+  | 1.3+  |
| 2003 12 19 | 691 | 0.2+ | 0.5+ | 2007 09 18 | G96 | 0.2+  | 0.4−  | 2007 12 05 | 704 | 0.5+  | 0.6+  |
| 2003 12 21 | 645 | 0.1− | 0.2− | 2007 10 08 | 691 | 0.0   | 0.0   | 2007 12 06 | 691 | 0.2+  | 0.0   |
| 2003 12 21 | 645 | 0.1− | 0.3− | 2007 10 08 | 691 | 0.2−  | 0.1+  | 2007 12 06 | 691 | 0.3−  | 0.5−  |
| 2003 12 21 | 691 | 0.1+ | 0.5+ | 2007 10 08 | 691 | 0.1−  | 0.5−  | 2007 12 06 | 691 | 0.2+  | 0.2−  |
| 2003 12 21 | 691 | 0.0  | 0.1+ | 2007 10 20 | 703 | 1.1+  | 0.2+  | 2007 12 14 | 691 | 0.3−  | 0.5+  |
| 2003 12 21 | 691 | 0.1+ | 0.4− | 2007 10 20 | 703 | 0.9+  | 0.2−  | 2007 12 14 | 691 | 0.4−  | 0.1+  |
| 2004 01 24 | 704 | 0.6+ | 0.2+ | 2007 10 20 | 703 | (1.7+ | 0.2+) | 2007 12 14 | 691 | 0.7−  | 0.1−  |
| 2004 01 24 | 704 | 0.4− | 0.3− | 2007 10 20 | 703 | 0.4+  | 0.4+  | 2007 12 16 | 691 | 0.0   | 0.6−  |
| 2004 01 24 | 704 | 0.8− | 0.8− | 2007 10 30 | 691 | 0.1−  | 0.2−  | 2007 12 16 | 691 | 0.1+  | 0.3+  |
| 2004 01 27 | 691 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.0   | 0.2+  | 2007 12 16 | 691 | 0.0   | 1.8+  |

**(172259)\* 2002 SF<sub>26</sub> = 1993 QC<sub>7</sub>**

Discovered 2002 Sept. 28 by NEAT at Haleakala.

Id. G. V. Williams (*MPO* 37939)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 94.13520   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.22300645 | $\omega$ | 176.66740 | +0.64950768  | +0.75801677  |
| $a$ | 2.6931328  | $\Omega$ | 133.82630 | −0.69950801  | +0.62641063  |
| $e$ | 0.2359226  | $i$      | 4.73753   | −0.29804081  | +0.18171489  |
| $P$ | 4.42       | $H$      | 16.5      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 08 20 | 809 | 0.2−  | 1.4+  | 2002 10 03 | 704 | 0.7−  | 0.7−  | 2003 12 28 | 691 | 0.7+ | 0.2+ |
| 1993 08 20 | 809 | 0.8−  | 1.3+  | 2002 10 03 | 704 | 0.7−  | 0.3−  | 2003 12 29 | 691 | 0.6+ | 0.5+ |
| 1993 08 20 | 809 | (0.2− | 2.3+) | 2002 10 03 | 704 | 0.9−  | 1.2+  | 2003 12 29 | 691 | 0.2+ | 0.4+ |
| 1993 08 24 | 809 | 0.9+  | 1.9+  | 2002 10 03 | 704 | 0.8−  | 0.4−  | 2003 12 29 | 691 | 0.3+ | 0.3+ |
| 1993 08 24 | 809 | 0.3+  | 1.0+  | 2002 10 05 | 645 | 0.1+  | 0.2−  | 2005 03 03 | 691 | 0.1+ | 0.2+ |
| 1993 08 24 | 809 | 1.6+  | 1.3+  | 2002 10 05 | 645 | 0.1+  | 0.2−  | 2005 03 03 | 691 | 0.3+ | 0.2+ |
| 1996 03 12 | 691 | 1.0−  | 0.2−  | 2002 10 08 | 699 | 0.0   | 0.5−  | 2005 03 03 | 691 | 0.2+ | 0.5+ |
| 1996 03 12 | 691 | 1.2−  | 0.3−  | 2002 10 08 | 699 | 1.2−  | 0.0   | 2006 05 23 | G96 | 0.4+ | 0.2+ |
| 1996 03 12 | 691 | 0.7−  | 0.2−  | 2002 10 08 | 699 | 0.6−  | 1.1−  | 2006 05 23 | G96 | 0.5+ | 0.1+ |
| 2000 02 05 | 695 | 0.8+  | 0.3+  | 2002 10 08 | 699 | 0.7+  | 0.5−  | 2006 05 23 | G96 | 0.3+ | 0.1+ |
| 2000 02 05 | 695 | 0.4+  | 0.5+  | 2002 10 11 | 704 | 1.0−  | 0.4+  | 2006 05 23 | G96 | 0.4+ | 0.1+ |
| 2002 09 28 | 608 | (1.7− | 1.7−) | 2002 10 11 | 704 | (2.0− | 0.3+) | 2006 06 18 | 644 | 0.1+ | 0.1+ |
| 2002 09 28 | 608 | (1.8− | 1.5−) | 2002 10 11 | 704 | 0.6−  | 0.9+  | 2006 06 18 | 644 | 0.3+ | 0.2+ |
| 2002 09 28 | 608 | (1.6− | 1.7−) | 2002 10 11 | 704 | 0.7−  | 0.6+  | 2006 06 18 | 644 | 0.2+ | 0.1+ |
| 2002 09 30 | 704 | 0.9−  | 0.4−  | 2002 10 11 | 704 | 0.3−  | 0.5+  | 2007 11 20 | 691 | 0.2− | 0.2+ |
| 2002 09 30 | 704 | 1.3−  | 0.2−  | 2002 10 15 | 644 | 0.1−  | 1.0+  | 2007 11 20 | 691 | 0.2− | 0.1+ |
| 2002 09 30 | 704 | 0.1+  | 0.6−  | 2002 10 15 | 644 | 0.2−  | 1.2+  | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2002 09 30 | 704 | 0.2+  | 0.4−  | 2002 10 15 | 644 | 0.0   | 1.3+  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2002 09 30 | 704 | 1.0−  | 0.4+  | 2002 11 06 | 644 | 0.5−  | 0.3−  | 2007 12 06 | G96 | 0.3+ | 0.5− |
| 2002 10 02 | 704 | 0.1+  | 0.7+  | 2002 11 06 | 644 | 0.3−  | 0.1+  | 2007 12 06 | G96 | 1.1+ | 0.8− |
| 2002 10 02 | 704 | 1.2+  | 0.0   | 2002 11 06 | 644 | 0.2−  | 0.1−  | 2007 12 06 | G96 | 0.7+ | 0.7− |
| 2002 10 02 | 704 | 0.4+  | 1.0−  | 2003 12 28 | 691 | 0.8+  | 0.1+  |            |     |      |      |
| 2002 10 03 | 704 | 0.1−  | 0.5−  | 2003 12 28 | 691 | 0.4+  | 0.0   |            |     |      |      |

**(172260)\* 2002 SN<sub>40</sub>**

Discovered 2002 Sept. 30 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 32.04043   |          | (2000.0) | $P$         | $Q$         |
| $n$ | 0.22539897 | $\omega$ | 10.47464 | +0.78109078 | −0.62089929 |
| $a$ | 2.6740413  | $\Omega$ | 28.24235 | +0.56230103 | +0.65333332 |
| $e$ | 0.1238490  | $i$      | 8.04086  | +0.27150459 | +0.43317393 |
| $P$ | 4.37       | $H$      | 15.8     | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 05 | 645 | 0.1+  | 0.1−  | 2002 10 06 | 644 | 0.4−  | 0.3+  | 2004 03 17 | 645 | 0.1− | 0.0  |
| 2002 09 05 | 645 | 0.1+  | 0.1−  | 2002 10 11 | 704 | 0.1+  | 0.9+  | 2004 03 17 | 645 | 0.1− | 0.0  |
| 2002 09 06 | 704 | 1.4−  | 1.0−  | 2002 10 11 | 704 | 0.6+  | 0.9+  | 2004 04 16 | 645 | 0.1− | 0.0  |
| 2002 09 06 | 704 | (1.7− | 0.1−) | 2002 10 11 | 704 | 0.7+  | 1.1+  | 2004 04 16 | 645 | 0.0  | 0.0  |
| 2002 09 06 | 704 | (2.1− | 0.7−) | 2002 10 11 | 704 | 0.2−  | 1.0+  | 2005 05 07 | 691 | 0.2+ | 0.5+ |
| 2002 09 14 | 608 | 0.2−  | 0.1+  | 2002 10 11 | 704 | (0.3− | 1.8+) | 2005 05 07 | 691 | 0.3+ | 0.7+ |
| 2002 09 14 | 608 | 0.1−  | 0.2+  | 2002 11 06 | 704 | 0.3−  | 0.1+  | 2005 05 07 | 691 | 0.2+ | 0.5+ |
| 2002 09 14 | 608 | 0.3−  | 0.0   | 2002 11 06 | 704 | 0.1−  | 0.8−  | 2006 07 18 | E12 | 0.4+ | 0.2+ |
| 2002 09 30 | 608 | 0.7−  | 0.5−  | 2002 11 06 | 704 | 1.1−  | 0.9+  | 2006 07 18 | E12 | 0.5− | 0.5+ |
| 2002 09 30 | 608 | 0.8−  | 0.0   | 2002 11 06 | 704 | 0.6−  | 0.1+  | 2006 07 18 | E12 | 0.2+ | 0.4+ |
| 2002 09 30 | 608 | 0.7−  | 0.1−  | 2004 01 17 | 644 | 0.0   | 0.3+  | 2006 07 18 | E12 | 0.3− | 1.4− |
| 2002 10 01 | 699 | 1.1−  | 0.7+  | 2004 01 17 | 644 | 0.0   | 0.1+  | 2006 08 23 | 644 | 0.2− | 0.9+ |
| 2002 10 01 | 699 | 1.2−  | 0.8+  | 2004 01 17 | 644 | 0.3+  | 0.5+  | 2006 08 23 | 644 | 0.2− | 0.6+ |
| 2002 10 01 | 699 | 0.3−  | 0.7+  | 2004 02 11 | 644 | 0.2−  | 1.1+  | 2006 08 23 | 644 | 0.1+ | 1.0+ |
| 2002 10 01 | 699 | 0.8−  | 0.7+  | 2004 02 11 | 644 | 0.2+  | 1.1+  | 2007 11 17 | 704 | 0.0  | 0.2− |
| 2002 10 02 | 704 | (0.4− | 1.5+) | 2004 02 11 | 644 | 0.0   | 1.1+  | 2007 11 17 | 704 | 0.6− | 0.4+ |
| 2002 10 02 | 704 | 0.5+  | 1.2+  | 2004 02 15 | 704 | 0.7+  | 0.0   | 2007 11 17 | 704 | 0.2− | 0.3− |
| 2002 10 02 | 704 | 0.9+  | 0.7+  | 2004 02 15 | 704 | 0.8+  | 0.4+  | 2007 11 17 | 704 | 1.5+ | 0.3+ |
| 2002 10 03 | 704 | 0.5+  | 0.2−  | 2004 02 15 | 704 | 0.7+  | 0.4+  | 2007 12 02 | 704 | 0.0  | 0.3− |
| 2002 10 03 | 704 | 0.5+  | 0.1−  | 2004 02 15 | 704 | 1.3+  | 0.1−  | 2007 12 02 | 704 | 0.6+ | 0.4+ |
| 2002 10 03 | 704 | 0.9+  | 0.8−  | 2004 02 15 | 704 | 0.9+  | 0.0   | 2007 12 02 | 704 | 0.7− | 0.1+ |
| 2002 10 03 | 704 | 0.4+  | 0.7−  | 2004 02 16 | 691 | 0.2+  | 0.2−  | 2007 12 02 | 704 | 0.4− | 0.9+ |
| 2002 10 03 | 704 | 0.5+  | 0.2+  | 2004 02 16 | 691 | 0.2+  | 0.2−  | 2007 12 02 | 704 | 0.1+ | 0.8+ |
| 2002 10 05 | 644 | 0.7−  | 0.3+  | 2004 02 16 | 691 | 0.2+  | 0.1−  | 2007 12 16 | 704 | 0.1− | 0.3− |
| 2002 10 05 | 644 | 0.6−  | 0.3+  | 2004 02 22 | 703 | 0.9+  | 0.1−  | 2007 12 16 | 704 | 0.5− | 0.3− |
| 2002 10 05 | 644 | 0.6−  | 0.4+  | 2004 02 22 | 703 | 0.5−  | 0.1+  | 2007 12 16 | 704 | 0.3+ | 0.4− |
| 2002 10 06 | 644 | 0.4−  | 0.5+  | 2004 02 22 | 703 | 0.2+  | 0.2+  |            |     |      |      |
| 2002 10 06 | 644 | 0.5−  | 0.3+  | 2004 02 22 | 703 | 0.2+  | 1.3+  |            |     |      |      |

**(172261)\* 2002 SN<sub>51</sub> = 2002 TJ<sub>83</sub>**

Discovered 2002 Sept. 16 by NEAT at Palomar.

Id. A. Doppler (d, *MPO* 38538), G. V. Williams (d, *MPO* 56619)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 86.34599   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.23558417 | $\omega$ | 252.48635 | +0.95973984  | +0.26818606  |
| $a$ | 2.5964023  | $\Omega$ | 91.89472  | −0.21542246  | +0.89357409  |
| $e$ | 0.2045464  | $i$      | 4.79358   | −0.18025702  | +0.36000218  |
| $P$ | 4.18       | $H$      | 16.2      | $G$ 0.15     | $U$ 1        |

2007 DEC. 24

M.P.O. 129313

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 02 | 608 | 0.1+  | 0.3-  | 2004 02 11 | 691 | 0.3+ | 0.5+ | 2007 12 04 | 691 | 0.1+ | 0.3+ |
| 2002 10 04 | 704 | (1.8+ | 0.6-) | 2006 08 14 | 644 | 0.3- | 0.2+ | 2007 12 04 | 691 | 0.1- | 0.1+ |
| 2002 10 04 | 704 | 0.8+  | 0.4-  | 2006 08 14 | 644 | 0.1- | 0.2+ | 2007 12 04 | 691 | 0.3- | 0.2- |
| 2002 10 04 | 704 | 0.7+  | 0.9-  | 2006 08 14 | 644 | 0.2- | 0.3+ | 2007 12 04 | 691 | 0.1+ | 0.5- |
| 2002 10 05 | 704 | 0.2+  | 0.2-  | 2006 08 20 | 644 | 0.1+ | 0.4+ | 2007 12 17 | 691 | 1.9- | 0.1- |
| 2002 10 05 | 704 | 0.2-  | 0.1+  | 2006 08 20 | 644 | 0.3+ | 0.3+ | 2007 12 17 | 691 | 0.2- | 0.0- |
| 2002 10 05 | 704 | 0.2+  | 0.1-  | 2006 08 20 | 644 | 0.2+ | 0.3+ | 2007 12 17 | 691 | 0.1+ | 0.2+ |
| 2002 10 05 | 704 | 0.4+  | 0.7+  | 2006 08 24 | 644 | 0.4- | 0.4+ |            |     |      |      |
| 2002 10 05 | 704 | 0.0   | 0.1-  | 2006 08 24 | 644 | 0.1- | 0.4+ |            |     |      |      |

**(172262)\* 2002 SK<sub>54</sub>**

Discovered 2002 Sept. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 58.49480   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21342686 | $\omega$ | 357.53747 | +0.78808571 | +0.60919336 |
| <i>a</i> | 2.7731285  | $\Omega$ | 324.44252 | -0.56214219 | +0.65376016 |
| <i>e</i> | 0.1524342  | <i>i</i> | 8.73800   | -0.25083275 | +0.44886646 |
| <i>P</i> | 4.62       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 09 | 704 | 0.9+ | 0.1- | 2002 10 09 | 704 | 0.1+ | 0.0  | 2007 11 01 | 703 | 0.0   | 0.1-  |
| 2002 07 09 | 704 | 0.7- | 0.4- | 2002 10 09 | 704 | 0.1+ | 0.3+ | 2007 11 01 | 703 | 0.5-  | 0.3-  |
| 2002 07 09 | 704 | 1.0- | 1.1+ | 2002 10 09 | 704 | 0.0  | 0.7- | 2007 11 01 | 703 | 0.4-  | 0.9-  |
| 2002 08 12 | 704 | 0.8- | 1.2+ | 2002 10 10 | 645 | 0.0  | 0.1- | 2007 11 03 | 704 | 0.6-  | 0.5+  |
| 2002 08 12 | 704 | 0.5+ | 0.2+ | 2002 10 10 | 645 | 0.0  | 0.1- | 2007 11 03 | 704 | 0.4-  | 0.1+  |
| 2002 08 12 | 704 | 0.4- | 1.1+ | 2002 11 08 | 645 | 0.0  | 0.1- | 2007 11 03 | 704 | 0.5-  | 0.1+  |
| 2002 08 28 | 644 | 0.0  | 0.2+ | 2002 11 08 | 645 | 0.1- | 0.1- | 2007 11 03 | 704 | 0.4-  | 0.5-  |
| 2002 08 28 | 644 | 0.1- | 0.5+ | 2003 12 01 | 691 | 0.1- | 0.1- | 2007 11 03 | 704 | 0.5+  | 1.0+  |
| 2002 08 28 | 644 | 0.2- | 0.4+ | 2003 12 01 | 691 | 0.0  | 0.3- | 2007 11 09 | 704 | 0.1-  | 1.0+  |
| 2002 09 06 | 704 | 0.1- | 0.6+ | 2003 12 01 | 691 | 0.1+ | 0.1- | 2007 11 09 | 704 | 0.9+  | 0.3+  |
| 2002 09 06 | 704 | 0.1- | 0.1- | 2005 01 17 | 291 | 0.2- | 1.0+ | 2007 11 09 | 704 | (2.2- | 1.1+) |
| 2002 09 06 | 704 | 0.2+ | 0.7- | 2005 01 17 | 291 | 0.5+ | 0.4+ | 2007 11 09 | 704 | 0.2-  | 0.4+  |
| 2002 09 06 | 704 | 0.2- | 0.0  | 2005 01 17 | 291 | 0.6+ | 0.5+ | 2007 11 09 | 704 | 0.2-  | 0.3+  |
| 2002 09 06 | 704 | 0.1- | 0.3+ | 2005 03 03 | 703 | 0.1- | 0.4- | 2007 11 13 | 703 | 0.4-  | 0.4-  |
| 2002 09 13 | 644 | 0.1- | 0.5+ | 2005 03 03 | 703 | 0.8- | 0.0  | 2007 11 13 | 703 | 0.6+  | 0.6-  |
| 2002 09 13 | 644 | 0.0  | 0.5+ | 2005 03 03 | 703 | 1.3+ | 1.4- | 2007 11 13 | 703 | 0.6+  | 0.5-  |
| 2002 09 13 | 644 | 0.3+ | 0.3+ | 2005 03 03 | 703 | 0.0  | 0.8- | 2007 11 13 | 703 | 0.9-  | 0.3-  |
| 2002 09 30 | 704 | 0.3+ | 0.6+ | 2005 03 03 | 703 | 0.2- | 0.1- | 2007 11 16 | 704 | 0.7+  | 0.1+  |
| 2002 09 30 | 704 | 0.0  | 0.0  | 2005 03 03 | 703 | 0.1- | 0.3- | 2007 11 16 | 704 | 0.3+  | 0.6+  |
| 2002 09 30 | 704 | 0.5+ | 0.6+ | 2005 03 03 | 703 | 0.4- | 1.2+ | 2007 11 16 | 704 | 0.3-  | 0.8+  |
| 2002 09 30 | 704 | 0.1+ | 0.7+ | 2005 03 03 | 703 | 0.6- | 0.5- | 2007 12 02 | 704 | 0.7+  | 0.5+  |
| 2002 10 04 | 704 | 0.6+ | 0.1+ | 2005 03 04 | G96 | 0.3- | 0.0  | 2007 12 02 | 704 | 0.0   | 0.7+  |
| 2002 10 04 | 704 | 0.1- | 0.2+ | 2005 03 04 | G96 | 0.3- | 0.2- | 2007 12 02 | 704 | 0.1+  | 1.1+  |
| 2002 10 04 | 704 | 0.3+ | 0.3+ | 2005 03 04 | G96 | 0.2- | 0.4- | 2007 12 02 | 704 | 0.0   | 0.0   |
| 2002 10 04 | 704 | 0.8+ | 0.7+ | 2005 03 04 | G96 | 0.5+ | 0.0  |            |     |       |       |
| 2002 10 04 | 704 | 0.4+ | 0.3- | 2007 11 01 | 703 | 0.6- | 1.0- |            |     |       |       |

**(172263)\* 2002 SF<sub>61</sub>**

Discovered 2002 Sept. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 23.75219   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22161001 | $\omega$ | 359.25729 | +0.81771851 | -0.57059050 |
| <i>a</i> | 2.7044345  | $\Omega$ | 35.87928  | +0.52878509 | +0.69251969 |
| <i>e</i> | 0.0768294  | <i>i</i> | 7.44234   | +0.22742639 | +0.44141020 |
| <i>P</i> | 4.45       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 16 | 644 | 0.5+  | 0.7+  | 2003 12 27 | 704 | 0.3+  | 0.2+  | 2007 11 19 | G96 | 0.2+ | 0.1- |
| 2002 09 16 | 644 | 0.4+  | 0.7+  | 2003 12 27 | 704 | 0.1-  | 0.7-  | 2007 11 19 | G96 | 0.3+ | 0.3- |
| 2002 09 16 | 644 | 0.3+  | 0.3+  | 2004 01 28 | 691 | 0.1-  | 0.3+  | 2007 11 19 | G96 | 0.0  | 0.1+ |
| 2002 09 17 | 608 | 0.9-  | 0.3-  | 2004 01 28 | 691 | 0.0   | 0.3+  | 2007 11 20 | 704 | 0.4+ | 0.1- |
| 2002 09 17 | 608 | 0.5-  | 0.5+  | 2004 01 28 | 691 | 0.2-  | 0.4+  | 2007 11 20 | 704 | 0.2+ | 0.3- |
| 2002 09 17 | 608 | 0.7-  | 0.0   | 2004 01 31 | 704 | (0.8+ | 1.9+) | 2007 11 20 | 704 | 0.2- | 0.4+ |
| 2002 10 03 | 704 | (0.1+ | 2.8+) | 2004 01 31 | 704 | 0.6+  | 0.3+  | 2007 11 20 | 704 | 1.0+ | 0.4+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 03 | 704 | (0.7- | 3.3+) | 2004 01 31 | 704 | 0.4- | 0.5- | 2007 11 20 | 704 | 0.1+ | 0.1+ |
| 2002 10 03 | 704 | (1.3- | 1.5+) | 2004 02 09 | 644 | 0.1- | 0.6+ | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2002 10 03 | 704 | (2.3- | 2.9+) | 2004 02 09 | 644 | 0.1- | 0.3+ | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2002 10 03 | 704 | (3.7- | 1.9+) | 2004 02 09 | 644 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2002 10 06 | 608 | 0.4+  | 0.4-  | 2006 08 19 | 644 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.7+ | 0.4- |
| 2002 10 06 | 608 | 0.0   | 0.3-  | 2006 08 19 | 644 | 0.1- | 0.6+ | 2007 12 13 | 704 | 0.1+ | 0.6- |
| 2002 10 06 | 608 | 0.2+  | 0.6-  | 2006 08 19 | 644 | 0.1- | 0.4+ | 2007 12 13 | 704 | 0.5+ | 1.2- |
| 2002 10 11 | 704 | 0.6+  | 0.3-  | 2007 11 08 | 691 | 0.7- | 0.3- | 2007 12 13 | 704 | 0.6+ | 1.3- |
| 2002 10 11 | 704 | 0.9+  | 0.0   | 2007 11 08 | 691 | 0.4- | 0.2- | 2007 12 13 | 704 | 0.0  | 0.0  |
| 2002 10 11 | 704 | 1.1-  | 0.2-  | 2007 11 08 | 691 | 0.4- | 0.0  | 2007 12 16 | 704 | 0.3+ | 0.7+ |
| 2002 10 11 | 704 | 0.6-  | 1.0+  | 2007 11 18 | 704 | 0.6+ | 0.4+ | 2007 12 16 | 704 | 0.1+ | 1.4+ |
| 2003 12 21 | 645 | 0.1+  | 0.1-  | 2007 11 18 | 704 | 0.8+ | 0.2- | 2007 12 16 | 704 | 0.3- | 0.7+ |
| 2003 12 21 | 645 | 0.0   | 0.1-  | 2007 11 18 | 704 | 0.5+ | 0.2+ | 2007 12 16 | 704 | 0.0  | 0.5+ |
| 2003 12 27 | 704 | 1.2-  | 0.4+  | 2007 11 18 | 704 | 0.7+ | 0.1+ | 2007 12 16 | 704 | 1.4+ | 0.5+ |
| 2003 12 27 | 704 | 0.2-  | 0.7+  | 2007 11 19 | G96 | 0.0  | 0.3- |            |     |      |      |

**(172264)\* 2002 TW<sub>15</sub>**

Discovered 2002 Oct. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 44.94446   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21216570 | $\omega$ | 118.90412 | +0.97781610 | +0.20582676 |
| <i>a</i> | 2.7841071  | $\Omega$ | 229.24622 | -0.20557806 | +0.90741485 |
| <i>e</i> | 0.1049874  | <i>i</i> | 2.94140   | -0.04016640 | +0.36637908 |
| <i>P</i> | 4.65       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 03 | 704 | 0.2-  | 0.3-  | 2005 03 17 | 691 | 0.0   | 0.4+  | 2007 11 05 | 704 | 0.4+ | 0.1- |
| 2000 03 03 | 704 | 0.1+  | 0.3+  | 2005 03 17 | 691 | 0.5+  | 0.5+  | 2007 11 05 | 704 | 0.4+ | 0.3- |
| 2000 03 03 | 704 | 0.3+  | 0.2+  | 2005 05 12 | G96 | 0.4-  | 0.4+  | 2007 11 05 | 704 | 0.4+ | 0.8- |
| 2000 03 03 | 704 | 0.6-  | 0.7+  | 2005 05 12 | G96 | 0.4-  | 0.1+  | 2007 11 05 | 704 | 0.2+ | 0.1- |
| 2000 03 03 | 704 | 0.4+  | 0.3-  | 2005 05 12 | G96 | 0.0   | 0.1+  | 2007 11 05 | 704 | 0.1+ | 0.1- |
| 2002 09 06 | 704 | 0.2+  | 0.4+  | 2005 05 12 | G96 | 0.7-  | 0.0   | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2002 09 06 | 704 | 0.5+  | 0.3-  | 2007 10 10 | 691 | 0.2-  | 0.1-  | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2002 09 06 | 704 | 0.4-  | 0.5+  | 2007 10 10 | 691 | 0.2-  | 0.1-  | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2002 09 06 | 704 | 0.2-  | 0.1-  | 2007 10 10 | 691 | 0.1-  | 0.0   | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2002 09 06 | 704 | 0.2+  | 0.6-  | 2007 10 11 | 704 | 0.8+  | 0.3+  | 2007 11 07 | 703 | 0.2+ | 0.1+ |
| 2002 09 14 | 644 | 0.2+  | 0.4+  | 2007 10 11 | 704 | 0.0   | 0.8+  | 2007 11 07 | 703 | 1.2+ | 0.9+ |
| 2002 09 14 | 644 | 0.0   | 0.3+  | 2007 10 11 | 704 | 0.4-  | 0.5+  | 2007 11 07 | 703 | 0.5- | 0.8+ |
| 2002 09 14 | 644 | 0.0   | 0.2+  | 2007 10 14 | 691 | 0.1-  | 0.1-  | 2007 11 07 | 703 | 0.9+ | 0.6+ |
| 2002 10 02 | 704 | 0.4-  | 0.1+  | 2007 10 14 | 691 | 0.2-  | 0.6+  | 2007 11 11 | G96 | 0.5+ | 0.0  |
| 2002 10 02 | 704 | 0.3-  | 0.4-  | 2007 10 14 | 691 | 0.1-  | 0.0   | 2007 11 11 | G96 | 0.2+ | 0.2- |
| 2002 10 02 | 704 | 0.2-  | 0.5+  | 2007 10 14 | 691 | 0.2-  | 0.1-  | 2007 11 11 | G96 | 0.3+ | 0.2- |
| 2002 10 02 | 704 | 0.6-  | 1.3+  | 2007 10 14 | 691 | 0.4-  | 0.0   | 2007 11 11 | G96 | 0.0  | 0.2- |
| 2002 10 03 | 704 | 0.2-  | 0.5+  | 2007 10 14 | 691 | 0.2-  | 0.0   | 2007 11 15 | 704 | 0.2- | 1.4+ |
| 2002 10 03 | 704 | 0.2-  | 0.5+  | 2007 10 15 | 703 | 0.1-  | 0.9+  | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 2002 10 03 | 704 | 0.3-  | 0.7+  | 2007 10 15 | 703 | 0.2-  | 0.4+  | 2007 11 15 | 704 | 0.0  | 0.3+ |
| 2002 10 03 | 704 | 0.4-  | 0.6+  | 2007 10 15 | 703 | 0.9-  | 0.7-  | 2007 11 15 | 704 | 0.3+ | 0.5+ |
| 2002 10 03 | 704 | 0.1-  | 0.7+  | 2007 10 15 | 703 | 0.5+  | 0.5+  | 2007 11 15 | 704 | 0.0  | 0.4+ |
| 2002 10 04 | 704 | (0.6- | 1.7+) | 2007 10 18 | 691 | 0.2-  | 0.0   | 2007 11 17 | G96 | 0.7+ | 0.2- |
| 2002 10 04 | 704 | 0.2-  | 1.2+  | 2007 10 18 | 691 | 0.2-  | 0.0   | 2007 11 17 | G96 | 0.5+ | 0.0  |
| 2002 10 04 | 704 | 1.1-  | 0.7+  | 2007 10 18 | 691 | 0.0   | 0.1+  | 2007 11 17 | G96 | 0.4+ | 0.0  |
| 2002 10 04 | 704 | 0.7-  | 1.1+  | 2007 10 30 | 703 | (2.2- | 0.3+) | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2002 10 31 | 704 | 0.2+  | 0.2+  | 2007 10 30 | 703 | 0.3+  | 0.4-  | 2007 12 05 | 699 | 0.9+ | 0.8- |
| 2002 10 31 | 704 | 0.2+  | 0.2+  | 2007 10 30 | 703 | 0.8+  | 0.7-  | 2007 12 05 | 699 | 1.7+ | 0.2+ |
| 2002 10 31 | 645 | 0.0   | 0.2-  | 2007 10 30 | 703 | 0.2-  | 0.6-  | 2007 12 05 | 699 | 0.5- | 0.1- |
| 2002 10 31 | 645 | 0.0   | 0.2-  | 2007 10 30 | G96 | 0.4+  | 0.0   | 2007 12 05 | 699 | 0.5+ | 0.3+ |
| 2002 10 31 | 704 | 0.1+  | 0.5+  | 2007 10 30 | G96 | 0.4+  | 0.3-  | 2007 12 06 | G96 | 0.6- | 0.5- |
| 2002 10 31 | 704 | 0.3+  | 0.7+  | 2007 10 30 | G96 | 0.4+  | 0.0   | 2007 12 06 | G96 | 0.3- | 0.2- |
| 2002 10 31 | 704 | 1.1+  | 1.3+  | 2007 10 30 | G96 | 0.4+  | 0.0   | 2007 12 06 | G96 | 0.3+ | 0.3- |
| 2003 12 21 | 645 | 0.0   | 0.0   | 2007 10 31 | 691 | 0.3-  | 0.1+  | 2007 12 06 | G96 | 0.0  | 0.5- |
| 2003 12 21 | 645 | 0.0   | 0.0   | 2007 10 31 | 691 | 0.2-  | 0.0   |            |     |      |      |
| 2005 03 17 | 691 | 0.4+  | 0.4+  | 2007 10 31 | 691 | 0.2-  | 0.0   |            |     |      |      |

**(172265)\* 2002 TW<sub>21</sub>**

Discovered 2002 Oct. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 37.78276   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.22225126 | $\omega$ | 355.26363 | +0.87521679 | -0.47960652 |          |   |
| <i>a</i> | 2.6992300  | $\Omega$ | 33.63051  | +0.44746879 | +0.75320441 |          |   |
| <i>e</i> | 0.0236036  | <i>i</i> | 6.53510   | +0.18375868 | +0.45017852 |          |   |
| <i>P</i> | 4.43       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 02 | 704 | 0.8-  | 0.0   | 2003 11 21 | 644 | 0.0   | 0.1+  | 2005 05 08 | E12 | 0.2+ | 0.4+ |
| 2002 10 02 | 704 | 0.8-  | 0.1+  | 2003 11 21 | 644 | 0.5-  | 0.5+  | 2005 05 16 | G96 | 0.0  | 0.4+ |
| 2002 10 02 | 704 | 0.5-  | 0.8+  | 2003 12 27 | 704 | 0.0   | 0.6+  | 2005 05 16 | G96 | 0.1- | 0.3+ |
| 2002 10 02 | 704 | 0.6-  | 0.6-  | 2003 12 27 | 704 | 0.0   | 0.2+  | 2005 05 16 | G96 | 0.2+ | 0.3+ |
| 2002 10 02 | 704 | 0.3-  | 0.3+  | 2003 12 27 | 704 | (0.9+ | 1.8+) | 2005 05 16 | G96 | 0.0  | 0.3+ |
| 2002 10 03 | 704 | 0.1+  | 0.2-  | 2003 12 27 | 704 | 0.7-  | 0.6+  | 2006 08 16 | E12 | 0.2+ | 0.2+ |
| 2002 10 03 | 704 | 0.2-  | 0.1-  | 2003 12 29 | 704 | 0.8+  | 1.4+  | 2006 08 16 | E12 | 0.4- | 0.2+ |
| 2002 10 03 | 704 | 0.1-  | 0.0   | 2003 12 29 | 704 | 0.3-  | 0.9+  | 2006 08 16 | E12 | 0.1+ | 0.3+ |
| 2002 10 03 | 704 | 0.3+  | 0.6+  | 2003 12 29 | 704 | 0.6+  | 1.3+  | 2006 08 16 | E12 | 0.6+ | 0.0  |
| 2002 10 03 | 704 | 0.1+  | 0.1-  | 2003 12 29 | 704 | 0.1+  | 1.1+  | 2006 08 17 | 644 | 0.1+ | 0.3+ |
| 2002 10 07 | 704 | 0.0   | 0.9+  | 2004 01 17 | 644 | 0.1+  | 0.0   | 2006 08 17 | 644 | 0.1- | 0.0  |
| 2002 10 07 | 704 | 0.9-  | 0.2+  | 2004 01 17 | 644 | 0.2-  | 0.1+  | 2006 08 17 | 644 | 0.0  | 0.3+ |
| 2002 10 07 | 704 | 1.0-  | 0.1+  | 2004 01 17 | 644 | 0.4+  | 0.1+  | 2006 08 20 | 644 | 0.2- | 0.1- |
| 2002 10 07 | 704 | 0.1+  | 0.4+  | 2004 01 26 | 699 | 0.8-  | 0.2-  | 2006 08 20 | 644 | 0.3- | 0.0  |
| 2002 10 11 | 704 | 1.1+  | 0.6+  | 2004 01 26 | 699 | 0.5-  | 0.1+  | 2006 08 20 | 644 | 0.3- | 0.1- |
| 2002 10 11 | 704 | 0.7+  | 0.2-  | 2004 01 26 | 699 | 0.1+  | 0.4-  | 2006 08 24 | 644 | 0.1+ | 0.1- |
| 2002 10 11 | 704 | 0.3+  | 0.4-  | 2004 01 26 | 699 | 0.9-  | 0.4+  | 2006 08 24 | 644 | 0.3+ | 0.1- |
| 2002 10 11 | 704 | 0.2+  | 0.4+  | 2004 01 31 | 704 | 0.9+  | 0.1-  | 2006 08 24 | 644 | 0.1- | 0.1- |
| 2002 10 11 | 704 | 0.2+  | 0.5+  | 2004 01 31 | 704 | 0.4+  | 0.6-  | 2007 11 07 | 704 | 0.2- | 0.7+ |
| 2002 10 12 | 704 | (1.1- | 1.9+) | 2004 01 31 | 704 | 0.3+  | 1.2-  | 2007 11 07 | 704 | 0.5+ | 0.1+ |
| 2002 10 12 | 704 | 1.4+  | 1.4+  | 2004 01 31 | 704 | 1.4+  | 0.9-  | 2007 11 07 | 704 | 0.6- | 0.1+ |
| 2002 10 12 | 704 | (0.4- | 1.7+) | 2004 01 31 | 704 | 0.3+  | 0.8-  | 2007 11 07 | 704 | 0.8- | 0.7- |
| 2002 10 12 | 704 | 0.4-  | 1.2+  | 2005 03 10 | G96 | 0.5-  | 0.2+  | 2007 12 13 | 704 | 0.4+ | 0.4- |
| 2002 10 31 | 704 | 0.4-  | 0.4+  | 2005 03 10 | G96 | 0.1-  | 0.4+  | 2007 12 13 | 704 | 0.6- | 0.0  |
| 2002 10 31 | 704 | 0.3-  | 0.2+  | 2005 03 10 | G96 | 0.4+  | 0.0   | 2007 12 13 | 704 | 0.8- | 0.8- |
| 2002 10 31 | 704 | 0.6-  | 0.2-  | 2005 03 10 | G96 | 0.1-  | 0.4+  | 2007 12 13 | 704 | 0.3+ | 0.2+ |
| 2002 10 31 | 704 | 0.0   | 1.0+  | 2005 04 17 | 691 | 0.2+  | 0.5+  | 2007 12 13 | 704 | 0.2- | 0.2- |
| 2002 10 31 | 704 | 0.0   | 0.5-  | 2005 04 17 | 691 | 0.1+  | 0.4+  | 2007 12 15 | 704 | 0.1- | 0.1+ |
| 2002 11 02 | 608 | 0.1-  | 0.3-  | 2005 04 17 | 691 | 0.2+  | 0.4+  | 2007 12 15 | 704 | 0.0  | 0.3+ |
| 2002 11 02 | 608 | 0.3-  | 0.6-  | 2005 05 08 | E12 | 0.6+  | 0.1+  | 2007 12 15 | 704 | 1.0+ | 0.9+ |
| 2002 11 02 | 608 | 0.6-  | 0.6-  | 2005 05 08 | E12 | 0.3-  | 0.1+  | 2007 12 15 | 704 | 0.6+ | 0.4+ |
| 2003 11 21 | 644 | 0.2-  | 0.1+  | 2005 05 08 | E12 | 0.4+  | 0.1-  | 2007 12 15 | 704 | 0.0  | 0.5+ |

**(172266)\* 2002 TM<sub>23</sub> = 2004 BQ<sub>19</sub>**

Discovered 2002 Oct. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69396)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC      |             |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> | 5.55090    |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.21937819 | $\omega$ | 28.08356 | +0.48572066 | -0.87181053 |          |   |
| <i>a</i> | 2.7227457  | $\Omega$ | 32.97109 | +0.77858184 | +0.39851618 |          |   |
| <i>e</i> | 0.0622966  | <i>i</i> | 6.69193  | +0.39734840 | +0.28483548 |          |   |
| <i>P</i> | 4.49       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 02 | 704 | 0.3+  | 0.4+  | 2002 10 11 | 704 | 1.2+ | 0.1- | 2004 04 15 | 645 | 0.0  | 0.0  |
| 2002 10 02 | 704 | (2.0+ | 0.4+) | 2002 10 11 | 704 | 0.1- | 0.1- | 2004 04 15 | 645 | 0.1+ | 0.0  |
| 2002 10 02 | 704 | 1.2-  | 0.1+  | 2002 10 11 | 704 | 0.4+ | 0.2+ | 2004 04 16 | 645 | 0.0  | 0.0  |
| 2002 10 02 | 704 | 0.0   | 0.7+  | 2002 10 11 | 704 | 0.0  | 0.4- | 2004 04 16 | 645 | 0.0  | 0.0  |
| 2002 10 03 | 704 | 0.3-  | 0.1+  | 2002 10 11 | 704 | 1.2+ | 1.0- | 2006 08 16 | E12 | 0.9- | 1.1+ |
| 2002 10 03 | 704 | 0.1-  | 0.6+  | 2002 10 11 | 704 | 0.7+ | 0.4+ | 2006 08 16 | E12 | 1.5- | 0.7+ |
| 2002 10 03 | 704 | 0.9-  | 0.4+  | 2002 10 31 | 704 | 0.2- | 0.2- | 2006 08 16 | E12 | 0.0  | 0.6+ |
| 2002 10 03 | 704 | 0.1-  | 0.8+  | 2002 10 31 | 704 | 0.1+ | 0.5- | 2006 08 16 | E12 | 0.6- | 0.8+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 03 | 704 | 0.2+ | 0.1+ | 2002 10 31 | 704 | 0.6-  | 0.1-  | 2006 08 20 | 644 | 0.1+ | 0.4+ |
| 2002 10 04 | 704 | 0.1+ | 0.4- | 2002 10 31 | 704 | 0.1+  | 0.2-  | 2006 08 20 | 644 | 0.1+ | 0.4+ |
| 2002 10 04 | 704 | 0.1- | 0.3+ | 2002 10 31 | 704 | 0.8-  | 0.7-  | 2006 08 20 | 644 | 0.4+ | 0.6+ |
| 2002 10 04 | 704 | 0.9- | 0.5- | 2004 01 17 | 644 | 0.3-  | 0.6+  | 2007 11 03 | 691 | 0.2- | 0.2- |
| 2002 10 07 | 704 | 1.0- | 0.2- | 2004 01 17 | 644 | 0.3+  | 0.2+  | 2007 11 03 | 691 | 0.1- | 0.4- |
| 2002 10 07 | 704 | 0.4- | 0.4+ | 2004 01 17 | 644 | 0.4+  | 0.4+  | 2007 11 03 | 691 | 0.4- | 0.0  |
| 2002 10 07 | 704 | 0.5- | 0.2+ | 2004 01 20 | 704 | 0.9+  | 1.0+  | 2007 12 13 | 704 | 0.5+ | 0.6+ |
| 2002 10 10 | 704 | 0.2+ | 0.5+ | 2004 01 20 | 704 | 0.6+  | 0.4+  | 2007 12 13 | 704 | 0.2- | 0.0  |
| 2002 10 10 | 704 | 0.4+ | 0.4- | 2004 01 20 | 704 | 1.4+  | 1.0+  | 2007 12 13 | 704 | 0.2+ | 0.4- |
| 2002 10 10 | 704 | 0.5+ | 0.3- | 2004 02 15 | 704 | (0.7- | 1.9-) | 2007 12 13 | 704 | 0.7+ | 0.2- |
| 2002 10 11 | 704 | 0.3+ | 0.0  | 2004 02 15 | 704 | 0.2-  | 0.7+  | 2007 12 16 | 704 | 1.1+ | 0.6+ |
| 2002 10 11 | 704 | 0.0  | 0.0  | 2004 02 15 | 704 | 0.4+  | 0.9+  | 2007 12 16 | 704 | 0.3- | 0.9+ |
| 2002 10 11 | 704 | 1.4+ | 0.1+ | 2004 03 18 | 645 | 0.1-  | 0.1+  | 2007 12 16 | 704 | 0.9+ | 1.0- |
| 2002 10 11 | 704 | 0.2- | 0.9+ | 2004 03 18 | 645 | 0.1-  | 0.0   | 2007 12 16 | 704 | 0.0  | 0.1+ |

**(172267)\* 2002 TP<sub>29</sub>**

Discovered 2002 Oct. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC      |             |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> | 356.05657  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.21684556 | $\omega$ | 66.80623 | +0.08438321 | -0.99626190 |          |   |
| <i>a</i> | 2.7439047  | $\Omega$ | 18.38187 | +0.89143975 | +0.06718994 |          |   |
| <i>e</i> | 0.1699063  | <i>i</i> | 3.36050  | +0.44521303 | +0.05429310 |          |   |
| <i>P</i> | 4.55       | <i>H</i> | 15.6     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2002 10 02 | 704 | 0.2+ | 0.6- | 2004 02 23 | 704 | 0.8+        | 0.1- | 2004 03 28 | 704 | 1.2+ | 0.9+ |
| 2002 10 02 | 704 | 0.4- | 0.1+ | 2004 02 23 | 704 | 0.2-        | 0.4+ | 2004 04 24 | 691 | 0.1+ | 0.5+ |
| 2002 10 02 | 704 | 0.1+ | 0.1+ | 2004 03 15 | 691 | 0.2+        | 0.2+ | 2004 04 24 | 691 | 0.1+ | 0.4+ |
| 2002 10 02 | 704 | 0.1+ | 0.2+ | 2004 03 15 | 703 | 0.3+        | 0.2+ | 2004 04 24 | 691 | 0.2+ | 0.5+ |
| 2002 10 03 | 704 | 0.2- | 0.6+ | 2004 03 15 | 704 | 0.4+        | 0.4+ | 2006 08 16 | 644 | 0.1- | 0.6+ |
| 2002 10 03 | 704 | 0.4+ | 1.0+ | 2004 03 15 | 691 | 0.0         | 0.1+ | 2006 08 16 | 644 | 0.1- | 0.1+ |
| 2002 10 03 | 704 | 0.0  | 0.9+ | 2004 03 15 | 703 | 0.2-        | 0.5+ | 2006 08 16 | 644 | 0.2- | 0.3+ |
| 2002 10 04 | 599 | 0.2- | 0.3+ | 2004 03 15 | 704 | 0.7+        | 0.1- | 2006 08 17 | 644 | 0.5- | 0.5+ |
| 2002 10 04 | 599 | 0.1- | 0.4+ | 2004 03 15 | 703 | 0.0         | 0.6- | 2006 08 17 | 644 | 0.0  | 1.0+ |
| 2002 10 04 | 599 | 0.1+ | 0.3+ | 2004 03 15 | 704 | 0.2+        | 0.6+ | 2006 08 17 | 644 | 0.3- | 0.3+ |
| 2002 10 06 | 599 | 0.2- | 0.6+ | 2004 03 15 | 691 | 0.0         | 0.2+ | 2006 08 18 | 644 | 0.1- | 0.4+ |
| 2002 10 06 | 599 | 0.0  | 0.5+ | 2004 03 15 | 704 | 0.4-        | 0.7+ | 2006 08 18 | 644 | 0.2+ | 0.3+ |
| 2002 10 06 | 599 | 0.1- | 0.5+ | 2004 03 15 | 703 | 0.3+        | 0.4+ | 2006 08 18 | 644 | 0.1- | 0.6+ |
| 2002 10 07 | 704 | 0.1+ | 0.0  | 2004 03 15 | 704 | 0.1+        | 1.2+ | 2006 08 20 | 644 | 0.1- | 0.7+ |
| 2002 10 07 | 704 | 0.0  | 0.2- | 2004 03 19 | 704 | 0.7+        | 0.5- | 2006 08 20 | 644 | 0.0  | 0.6+ |
| 2002 10 07 | 704 | 0.2+ | 0.0  | 2004 03 19 | 704 | 0.9+        | 0.2+ | 2006 08 20 | 644 | 0.1- | 0.1+ |
| 2002 10 07 | 704 | 0.3+ | 0.4+ | 2004 03 19 | 704 | 0.5+        | 0.4+ | 2006 08 24 | 644 | 0.6- | 0.4+ |
| 2002 10 09 | 704 | 1.1- | 0.4- | 2004 03 19 | 704 | 0.2+        | 0.3+ | 2006 08 24 | 644 | 0.1- | 0.7+ |
| 2002 10 09 | 704 | 0.3- | 0.6- | 2004 03 19 | 704 | 0.7+        | 0.1- | 2006 08 24 | 644 | 0.1- | 0.7+ |
| 2002 10 09 | 704 | 0.5- | 0.2- | 2004 03 19 | 704 | 0.9+        | 0.0  | 2006 08 24 | 644 | 0.2- | 0.6+ |
| 2002 10 09 | 704 | 1.0- | 0.1- | 2004 03 19 | 704 | 0.3+        | 0.2+ | 2006 08 24 | 644 | 0.5- | 0.2+ |
| 2002 10 09 | 704 | 0.3- | 0.5+ | 2004 03 19 | 704 | 0.9+        | 0.6+ | 2006 08 24 | 644 | 0.2- | 0.5+ |
| 2002 10 11 | 644 | 0.2+ | 1.0+ | 2004 03 19 | 704 | 0.5+        | 0.3+ | 2006 11 23 | G96 | 0.4- | 0.3- |
| 2002 10 11 | 704 | 0.4- | 0.1+ | 2004 03 19 | 704 | 1.3+        | 0.7+ | 2006 11 23 | G96 | 0.2- | 0.4- |
| 2002 10 11 | 644 | 0.2- | 1.2+ | 2004 03 20 | 699 | 0.7-        | 0.2+ | 2006 11 23 | G96 | 0.0  | 0.4- |
| 2002 10 11 | 704 | 0.6- | 0.4+ | 2004 03 20 | 704 | 1.2+        | 0.4+ | 2006 11 23 | G96 | 0.1+ | 0.6- |
| 2002 10 11 | 704 | 0.1+ | 0.3+ | 2004 03 20 | 699 | 0.5+        | 0.1- | 2007 10 12 | 704 | 0.4- | 0.7- |
| 2002 10 11 | 704 | 0.9- | 1.5+ | 2004 03 20 | 704 | 0.4+        | 0.7+ | 2007 10 12 | 704 | 0.6+ | 0.9- |
| 2002 10 11 | 644 | 0.2- | 1.1+ | 2004 03 20 | 704 | 0.7+        | 0.2+ | 2007 10 12 | 704 | 0.6- | 1.3- |
| 2002 10 30 | 644 | 0.2- | 0.4+ | 2004 03 20 | 699 | (1.8+ 1.2+) |      | 2007 10 12 | 704 | 0.8+ | 0.6- |
| 2002 10 30 | 644 | 0.2- | 0.4+ | 2004 03 20 | 704 | 0.6+        | 0.1- | 2007 11 06 | G96 | 0.0  | 0.4- |
| 2002 10 30 | 644 | 0.0  | 0.5+ | 2004 03 20 | 704 | 0.1-        | 0.6+ | 2007 11 06 | G96 | 0.0  | 0.3- |
| 2002 11 04 | 608 | 0.0  | 0.2+ | 2004 03 20 | 699 | 0.8-        | 0.5- | 2007 11 06 | G96 | 0.4+ | 0.5- |
| 2002 11 04 | 608 | 0.1+ | 0.2- | 2004 03 22 | 704 | 0.7+        | 0.5+ | 2007 11 06 | G96 | 0.3+ | 0.4- |
| 2002 11 04 | 608 | 1.0+ | 0.2- | 2004 03 22 | 704 | 0.3-        | 0.8+ | 2007 12 05 | 699 | 0.1+ | 0.4+ |
| 2002 11 06 | 704 | 0.4- | 0.8+ | 2004 03 22 | 704 | 0.1-        | 0.5- | 2007 12 05 | 699 | 0.4+ | 0.5- |
| 2002 11 06 | 704 | 0.9- | 0.8+ | 2004 03 22 | 704 | 0.3+        | 0.5+ | 2007 12 05 | 691 | 0.3- | 0.3- |
| 2002 11 06 | 704 | 0.4- | 0.9+ | 2004 03 22 | 704 | 0.1+        | 0.3+ | 2007 12 05 | 691 | 0.4- | 0.2- |
| 2002 11 06 | 704 | 1.1- | 1.1+ | 2004 03 23 | 691 | 0.2-        | 0.2+ | 2007 12 05 | 699 | 0.1+ | 0.4- |
| 2002 11 10 | 704 | 0.5- | 0.9+ | 2004 03 23 | 704 | 0.5-        | 0.6+ | 2007 12 05 | 691 | 0.9- | 0.0  |
| 2002 11 10 | 704 | 0.2+ | 1.5+ | 2004 03 23 | 691 | 0.3-        | 0.2+ | 2007 12 05 | 699 | 0.1+ | 0.4- |



2007 DEC. 24

M.P.O. 129315

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 10 | 704 | 0.3- | 1.4+ | 2004 03 23 | 704 | 0.0   | 0.6-  | 2007 12 13 | 704 | 0.3+ | 0.3+ |
| 2002 11 12 | 644 | 0.1- | 0.3- | 2004 03 23 | 704 | 0.6+  | 0.1-  | 2007 12 13 | 704 | 0.6+ | 0.1+ |
| 2002 11 12 | 644 | 0.1+ | 0.5+ | 2004 03 23 | 704 | 0.5-  | 0.3+  | 2007 12 13 | 704 | 0.2+ | 1.3- |
| 2002 11 12 | 644 | 0.3- | 0.5+ | 2004 03 23 | 691 | 0.2-  | 0.3+  | 2007 12 13 | 704 | 0.6+ | 0.3- |
| 2002 11 22 | 644 | 0.0  | 0.1+ | 2004 03 23 | 704 | 0.1+  | 0.4+  | 2007 12 15 | 704 | 1.3+ | 0.1+ |
| 2002 11 22 | 644 | 0.3- | 0.3+ | 2004 03 28 | 704 | (1.1- | 1.6+) | 2007 12 15 | 704 | 0.8+ | 1.1- |
| 2002 11 22 | 644 | 0.3- | 0.3+ | 2004 03 28 | 704 | 0.5-  | 0.0   | 2007 12 15 | 704 | 0.1- | 0.7+ |
| 2004 02 23 | 704 | 0.5- | 1.1+ | 2004 03 28 | 704 | 0.3-  | 1.2+  |            |     |      |      |
| 2004 02 23 | 704 | 0.0  | 0.4+ | 2004 03 28 | 704 | (1.8+ | 1.2+) |            |     |      |      |

(172268)\* 2002 TE<sub>64</sub>

Discovered 2002 Oct. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 299.44829  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23444339 | $\omega$ | 236.75598 | -0.89800651 | -0.43517908 |
| <i>a</i> | 2.6048180  | $\Omega$ | 277.37329 | +0.42229549 | -0.81113883 |
| <i>e</i> | 0.0768894  | <i>i</i> | 3.74837   | +0.12349422 | -0.39073389 |
| <i>P</i> | 4.20       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 03 | 688 | 0.2- | 0.1+ | 2004 01 26 | 699 | 0.4-  | 0.7+  | 2007 12 03 | 701 | 0.1-  | 0.4-  |
| 2000 03 03 | 688 | 0.0  | 0.4+ | 2004 01 26 | 699 | 0.4-  | 0.1+  | 2007 12 03 | 701 | 0.1-  | 0.1-  |
| 2002 10 04 | 704 | 0.5+ | 0.6+ | 2004 01 26 | 699 | 0.2-  | 0.5+  | 2007 12 03 | 691 | 0.1-  | 0.1-  |
| 2002 10 04 | 704 | 0.6- | 0.3+ | 2004 01 30 | 704 | 0.7+  | 0.6+  | 2007 12 03 | 691 | 0.4-  | 0.2-  |
| 2002 10 04 | 704 | 0.4+ | 0.1- | 2004 01 30 | 704 | (1.7+ | 1.3+) | 2007 12 03 | 701 | 0.0   | 0.4-  |
| 2002 10 04 | 704 | 1.3- | 0.4+ | 2004 01 30 | 704 | 1.1+  | 0.1+  | 2007 12 03 | 691 | 0.1-  | 0.1-  |
| 2002 10 05 | 644 | 0.4- | 0.8+ | 2004 01 30 | 704 | 1.4+  | 0.1+  | 2007 12 03 | 701 | 0.0   | 0.2-  |
| 2002 10 05 | 644 | 0.0  | 1.2+ | 2004 01 30 | 704 | 0.6+  | 0.1+  | 2007 12 04 | 701 | 1.0+  | 0.2+  |
| 2002 10 05 | 644 | 0.1- | 1.2+ | 2004 02 22 | 704 | 0.9-  | 0.9+  | 2007 12 04 | 701 | 0.6+  | 0.0   |
| 2002 10 05 | 599 | 0.5- | 0.4- | 2004 02 22 | 704 | 0.1-  | 0.8+  | 2007 12 04 | 701 | 0.0   | 0.1-  |
| 2002 10 05 | 599 | 0.4- | 0.2+ | 2004 02 22 | 704 | 0.1-  | 1.0+  | 2007 12 04 | 701 | 0.4+  | 0.0   |
| 2002 10 05 | 599 | 0.3+ | 0.1- | 2005 01 17 | 809 | 0.1-  | 0.5+  | 2007 12 04 | 701 | 0.1-  | 0.0   |
| 2002 10 10 | 704 | 1.1+ | 0.4+ | 2005 01 17 | 809 | 0.2-  | 0.4+  | 2007 12 04 | 701 | 0.3-  | 0.2+  |
| 2002 10 10 | 704 | 0.5+ | 0.6+ | 2005 01 17 | 809 | 0.2-  | 0.6+  | 2007 12 04 | 701 | 0.2+  | 0.1-  |
| 2002 10 10 | 704 | 1.0+ | 0.1- | 2006 08 29 | 703 | 0.1+  | 0.4-  | 2007 12 04 | 701 | 0.0   | 0.1+  |
| 2002 10 10 | 704 | 0.5+ | 0.4- | 2006 08 29 | 703 | 0.9-  | 0.1+  | 2007 12 04 | 701 | 0.4-  | 0.1-  |
| 2002 10 12 | 704 | 0.5- | 0.6- | 2006 08 29 | 703 | (1.1- | 1.5+) | 2007 12 04 | 701 | 0.3+  | 0.1-  |
| 2002 10 12 | 704 | 0.7- | 0.4+ | 2006 08 29 | 703 | 1.2-  | 0.1+  | 2007 12 05 | 704 | (1.9+ | 0.6+) |
| 2002 10 12 | 704 | 0.2- | 0.4+ | 2006 09 20 | 691 | 0.1+  | 0.0   | 2007 12 05 | 704 | 0.7+  | 0.4+  |
| 2002 10 12 | 704 | 0.8- | 0.9- | 2006 09 20 | 691 | 0.3+  | 0.0   | 2007 12 05 | 704 | (1.9+ | 0.5+) |
| 2002 11 02 | 608 | 0.3- | 0.3- | 2006 09 20 | 691 | 0.0   | 0.0   | 2007 12 05 | 704 | (0.1- | 1.9+) |
| 2002 11 02 | 608 | 0.8- | 0.3- | 2006 10 18 | 691 | 0.1+  | 0.4+  | 2007 12 05 | 701 | 0.2-  | 0.7-  |
| 2002 11 02 | 608 | 0.5- | 0.3- | 2006 10 18 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 701 | 0.0   | 0.5-  |
| 2004 01 24 | 704 | 0.2+ | 0.6+ | 2006 10 18 | 691 | 0.0   | 0.2+  | 2007 12 05 | 701 | 0.2+  | 0.3-  |
| 2004 01 24 | 704 | 0.4+ | 0.5+ | 2007 11 02 | G96 | 0.2+  | 0.1-  | 2007 12 05 | 701 | 0.0   | 0.2-  |
| 2004 01 24 | 704 | 0.9+ | 0.7+ | 2007 11 02 | G96 | 0.2+  | 0.2-  | 2007 12 15 | 691 | 0.4-  | 0.2-  |
| 2004 01 24 | 704 | 1.0+ | 0.3+ | 2007 11 02 | G96 | 0.2+  | 0.1-  | 2007 12 15 | 691 | 0.2-  | 0.0   |
| 2004 01 26 | 699 | 0.1+ | 0.3- | 2007 11 02 | G96 | 0.1+  | 0.4-  | 2007 12 15 | 691 | 0.2-  | 0.2-  |

(172269)\* 2002 TJ<sub>69</sub>

Discovered 2002 Oct. 9 by A. Martin at Mülheim-Ruhr.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 11.83863   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21565301 | $\omega$ | 63.77911  | +0.67237537 | -0.73903652 |
| <i>a</i> | 2.7540112  | $\Omega$ | 343.75316 | +0.61482551 | +0.58894351 |
| <i>e</i> | 0.2221783  | <i>i</i> | 8.56551   | +0.41219044 | +0.32706354 |
| <i>P</i> | 4.57       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 11 | 704 | 0.1+ | 0.2+ | 2002 10 12 | 704 | 0.1+  | 0.4+  | 2004 03 18 | 704 | 1.0+ | 1.4+ |
| 2002 08 11 | 704 | 0.1- | 0.3+ | 2002 10 12 | 704 | 0.3-  | 0.0   | 2004 03 18 | 704 | 0.7+ | 0.6+ |
| 2002 08 11 | 704 | 0.0  | 0.6+ | 2002 10 12 | 704 | 0.1-  | 0.6+  | 2004 03 18 | 704 | 1.3+ | 1.3+ |
| 2002 08 11 | 704 | 0.6+ | 0.3+ | 2002 10 15 | 628 | (1.6+ | 2.5+) | 2004 03 18 | 704 | 1.2+ | 0.2+ |
| 2002 08 11 | 704 | 0.3+ | 0.6+ | 2002 10 15 | 628 | 1.3-  | 1.2-  | 2006 07 20 | E12 | 1.0+ | 0.5+ |

|            |     |      |       |            |     |       |       |            |     |      |      |
|------------|-----|------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 06 | 704 | 1.1- | 0.9+  | 2002 10 31 | 704 | 0.3+  | 0.2+  | 2006 07 20 | E12 | 0.6- | 0.0  |
| 2002 09 06 | 704 | 0.1- | 0.4+  | 2002 10 31 | 704 | 1.0+  | 0.4+  | 2006 07 20 | E12 | 0.7- | 0.3+ |
| 2002 09 06 | 704 | 0.7- | 0.5+  | 2002 10 31 | 704 | 0.1-  | 0.3+  | 2006 07 20 | E12 | 0.2+ | 0.4+ |
| 2002 09 14 | 644 | 0.5- | 0.7-  | 2002 10 31 | 704 | 0.7+  | 0.6+  | 2007 11 03 | 704 | 1.0+ | 0.5- |
| 2002 09 14 | 644 | 0.2- | 0.2-  | 2002 10 31 | 704 | 0.2+  | 0.4+  | 2007 11 03 | 704 | 1.2+ | 0.6- |
| 2002 09 14 | 644 | (0.0 | 1.7+) | 2002 11 06 | 113 | 0.0   | 0.0   | 2007 11 03 | 704 | 0.6+ | 0.4- |
| 2002 09 14 | 644 | 0.5- | 0.8-  | 2002 11 06 | 113 | 0.5+  | 0.3+  | 2007 11 03 | 704 | 0.8+ | 0.5- |
| 2002 09 14 | 644 | 0.3- | 0.4-  | 2002 12 06 | 704 | 0.4-  | 0.0   | 2007 11 09 | 704 | 0.4+ | 0.1+ |
| 2002 09 14 | 644 | 0.2- | 1.5+  | 2002 12 06 | 704 | 1.1-  | 1.4+  | 2007 11 09 | 704 | 0.2+ | 0.3- |
| 2002 09 14 | 644 | 0.5- | 0.7-  | 2002 12 06 | 704 | (1.7- | 0.4+) | 2007 11 09 | 704 | 0.2+ | 0.4+ |
| 2002 09 14 | 644 | 0.5- | 0.4-  | 2002 12 06 | 704 | 0.6-  | 0.0   | 2007 11 09 | 704 | 0.7+ | 0.0  |
| 2002 09 14 | 644 | 0.3- | 1.4+  | 2004 01 22 | 704 | 0.4+  | 0.9+  | 2007 11 09 | 704 | 0.7+ | 0.1+ |
| 2002 09 16 | 608 | 0.6- | 0.7+  | 2004 01 22 | 704 | 0.8-  | 0.9+  | 2007 11 16 | 704 | 0.1- | 0.1- |
| 2002 09 16 | 608 | 0.4- | 0.1+  | 2004 01 22 | 704 | 0.8-  | 1.0+  | 2007 11 16 | 704 | 0.4+ | 0.4- |
| 2002 09 16 | 608 | 0.3- | 0.3-  | 2004 02 17 | 691 | 0.2+  | 0.2+  | 2007 11 16 | 704 | 0.2+ | 0.3+ |
| 2002 10 04 | 704 | 0.3+ | 0.4+  | 2004 02 17 | 691 | 0.3+  | 0.2+  | 2007 11 16 | 704 | 0.4- | 0.6- |
| 2002 10 04 | 704 | 0.4+ | 0.4+  | 2004 02 17 | 691 | 0.2+  | 0.2+  | 2007 12 01 | B15 | 0.2- | 0.4- |
| 2002 10 04 | 704 | 0.4+ | 0.8+  | 2004 02 17 | 704 | (0.4+ | 2.6+) | 2007 12 01 | B15 | 0.2- | 0.4- |
| 2002 10 04 | 704 | 0.0  | 0.2+  | 2004 02 17 | 704 | 0.3-  | 0.6+  | 2007 12 01 | B15 | 0.1- | 0.2- |
| 2002 10 04 | 704 | 0.5- | 0.6+  | 2004 02 17 | 704 | (0.4+ | 1.7+) | 2007 12 01 | B15 | 0.0  | 0.3- |
| 2002 10 04 | 704 | 0.5- | 0.4+  | 2004 02 17 | 704 | (0.8+ | 2.0+) | 2007 12 01 | B15 | 0.2- | 0.4- |
| 2002 10 04 | 704 | 0.2+ | 0.3+  | 2004 02 17 | 704 | (0.8+ | 2.2+) | 2007 12 01 | B15 | 0.3- | 0.4- |
| 2002 10 04 | 704 | 0.6+ | 0.5+  | 2004 02 19 | 049 | 0.4-  | 0.0   | 2007 12 02 | B15 | 0.3- | 0.6- |
| 2002 10 09 | 628 | 0.1- | 0.0   | 2004 02 19 | 049 | 0.3-  | 0.2+  | 2007 12 02 | B15 | 0.4- | 0.3- |
| 2002 10 09 | 628 | 0.5- | 0.3+  | 2004 02 19 | 049 | 0.1+  | 0.3-  | 2007 12 02 | B15 | 0.2- | 0.3- |
| 2002 10 09 | 628 | 0.2+ | 0.3+  | 2004 02 23 | 704 | 0.3-  | 0.4+  | 2007 12 03 | 704 | 0.4+ | 0.3+ |
| 2002 10 09 | 628 | 0.1+ | 0.2-  | 2004 02 23 | 704 | 0.4+  | 0.1+  | 2007 12 03 | 704 | 0.6- | 0.5+ |
| 2002 10 09 | 628 | 0.3- | 0.5+  | 2004 02 23 | 704 | 0.1-  | 0.1-  | 2007 12 03 | 704 | 0.5- | 0.3+ |
| 2002 10 10 | 628 | 0.7+ | 0.4-  | 2004 02 23 | 704 | 0.1-  | 0.2+  | 2007 12 03 | 704 | 0.7- | 0.6+ |
| 2002 10 10 | 628 | 0.4- | 0.3+  | 2004 02 23 | 704 | 0.3+  | 0.3-  | 2007 12 15 | 628 | 0.5- | 0.5- |
| 2002 10 10 | 628 | 0.2+ | 0.0   | 2004 03 15 | 704 | 1.0+  | 1.4+  | 2007 12 16 | 628 | 0.1- | 0.2- |
| 2002 10 10 | 628 | 0.4- | 0.1-  | 2004 03 15 | 704 | 0.5+  | 0.7+  | 2007 12 16 | 628 | 0.5- | 0.2+ |
| 2002 10 10 | 628 | 0.1- | 0.2-  | 2004 03 15 | 704 | 0.3+  | 0.5+  | 2007 12 16 | 628 | 0.0  | 1.6- |
| 2002 10 11 | 628 | 1.2- | 0.9+  | 2004 03 15 | 704 | 0.2-  | 1.3+  |            |     |      |      |
| 2002 10 12 | 704 | 0.2- | 0.0   | 2004 03 18 | 704 | 1.1+  | 0.3+  |            |     |      |      |

(172270)\* 2002 TN<sub>70</sub>

Discovered 2002 Oct. 3 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 114.82512  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23073990 | $\omega$ | 54.05973  | +0.39769465 | +0.89941694 |
| <i>a</i> | 2.6326164  | $\Omega$ | 240.34536 | -0.89461745 | +0.33623452 |
| <i>e</i> | 0.1654970  | <i>i</i> | 12.04521  | -0.20371201 | +0.27927676 |
| <i>P</i> | 4.27       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 13 | 704 | 0.6-  | 0.5-  | 2002 10 09 | 704 | 0.2-  | 0.3-  | 2006 06 01 | 703 | 0.7- | 0.5- |
| 2002 07 13 | 704 | 0.6-  | 0.5+  | 2002 10 09 | 704 | 0.3+  | 0.3-  | 2006 06 01 | 703 | 0.6- | 0.2- |
| 2002 07 13 | 704 | 0.2-  | 0.1+  | 2002 10 09 | 704 | 0.3-  | 0.6-  | 2006 06 01 | 703 | 0.7- | 0.7+ |
| 2002 07 13 | 704 | (0.8- | 1.9+) | 2002 10 09 | 704 | 0.7+  | 0.5-  | 2006 06 01 | 703 | 0.1- | 0.2- |
| 2002 08 15 | 704 | 0.0   | 0.1+  | 2002 12 01 | 704 | 0.5+  | 0.0   | 2006 06 12 | 644 | 0.4+ | 0.1- |
| 2002 08 15 | 704 | 0.1-  | 0.1-  | 2002 12 01 | 704 | 0.2+  | 0.6+  | 2006 06 12 | 644 | 0.4- | 0.3- |
| 2002 08 15 | 704 | 0.3+  | 0.1+  | 2002 12 01 | 704 | 0.2+  | 0.5+  | 2006 06 12 | 644 | 0.1+ | 0.0  |
| 2002 08 15 | 704 | 0.2+  | 0.3-  | 2002 12 01 | 704 | 0.6+  | 1.1+  | 2006 06 20 | 644 | 0.1+ | 0.1+ |
| 2002 08 15 | 704 | 0.6+  | 0.2-  | 2002 12 01 | 704 | 0.1+  | 1.3+  | 2006 06 20 | 644 | 0.1+ | 0.1+ |
| 2002 09 11 | 644 | 0.0   | 0.2-  | 2005 03 17 | 704 | (1.5+ | 0.7+) | 2006 06 20 | 644 | 0.3+ | 0.5+ |
| 2002 09 11 | 644 | 0.0   | 0.1-  | 2005 03 17 | 704 | 0.7+  | 0.1-  | 2006 08 29 | 704 | 0.8+ | 0.0  |
| 2002 09 11 | 644 | 0.1-  | 0.3-  | 2005 03 17 | 704 | 0.0   | 0.0   | 2006 08 29 | 704 | 0.1- | 0.4+ |
| 2002 09 12 | 049 | 0.5-  | 0.2+  | 2005 04 05 | 703 | 0.1+  | 0.9+  | 2006 08 29 | 704 | 0.2- | 0.1- |
| 2002 09 12 | 049 | 0.6-  | 0.1-  | 2005 04 05 | 703 | 0.3-  | 1.0+  | 2006 08 29 | 704 | 0.2- | 0.3+ |
| 2002 09 12 | 049 | 0.3-  | 0.4+  | 2005 04 05 | 703 | (1.7- | 1.2+) | 2007 11 19 | 691 | 0.0  | 0.1- |
| 2002 10 03 | 644 | 0.0   | 0.4-  | 2005 04 05 | 703 | 0.8+  | 1.2+  | 2007 11 19 | 691 | 0.0  | 0.1- |
| 2002 10 03 | 644 | 0.3+  | 0.1+  | 2006 05 10 | G96 | 0.4+  | 0.1+  | 2007 11 19 | 691 | 0.1+ | 0.1- |
| 2002 10 03 | 644 | 0.4+  | 0.2+  | 2006 05 10 | G96 | 0.1+  | 0.3+  | 2007 12 03 | 703 | 0.7- | 0.3- |
| 2002 10 04 | 699 | 0.2+  | 0.9+  | 2006 05 10 | G96 | 0.3-  | 0.0   | 2007 12 03 | 703 | 0.6+ | 0.4+ |
| 2002 10 04 | 699 | 0.7-  | 0.1+  | 2006 05 10 | G96 | 0.1-  | 0.2+  | 2007 12 03 | 703 | 0.6- | 0.2- |
| 2002 10 04 | 699 | 0.0   | 0.0   | 2006 05 14 | 644 | 0.3+  | 0.2+  | 2007 12 03 | 703 | 0.8- | 0.2+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 699 | 0.5−  | 0.0   | 2006 05 14 | 644 | 0.4+ | 0.1+ | 2007 12 04 | 704 | 1.3+ | 0.9+ |
| 2002 10 06 | 704 | (2.1− | 1.2−) | 2006 05 14 | 644 | 0.2+ | 0.6+ | 2007 12 04 | 704 | 1.2− | 1.3+ |
| 2002 10 06 | 704 | (2.5− | 0.2−) | 2006 05 20 | 703 | 0.3+ | 0.0  | 2007 12 04 | 704 | 0.3+ | 0.5+ |
| 2002 10 06 | 704 | (2.2− | 1.7−) | 2006 05 20 | 703 | 1.2− | 1.3+ | 2007 12 04 | 704 | 0.2+ | 0.6+ |
| 2002 10 06 | 704 | (1.4− | 1.6−) | 2006 05 20 | 703 | 0.5+ | 0.2− |            |     |      |      |
| 2002 10 06 | 704 | (2.4− | 1.4−) | 2006 05 20 | 703 | 0.0  | 0.1− |            |     |      |      |

**(172271)\* 2002 TW<sub>79</sub> = 1999 AY<sub>23</sub>**

Discovered 2002 Oct. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 38020)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 359.24130  |  | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
|----------|--|------------|--|----------|----------|-------------|------|-------------|---|
| <i>n</i> |  | 0.21054707 |  | $\omega$ | 16.38014 | +0.26101998 |      | −0.94020288 |   |
| <i>a</i> |  | 2.7983578  |  | $\Omega$ | 58.96435 | +0.85455860 |      | +0.11961361 |   |
| <i>e</i> |  | 0.2078545  |  | <i>i</i> | 14.79678 | +0.44899685 |      | +0.31892183 |   |
| <i>P</i> |  | 4.68       |  | <i>H</i> | 15.0     | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 01 14 | 327 | 0.2+  | 1.4−  | 2002 11 11 | 704 | 0.5+  | 0.8−  | 2003 01 01 | 704 | 0.0  | 0.8+ |
| 1999 01 14 | 327 | 1.0+  | 0.6−  | 2002 11 11 | 704 | 0.3+  | 0.3−  | 2003 01 04 | 704 | 0.5− | 0.6− |
| 1999 01 14 | 327 | 0.1−  | 0.7−  | 2002 11 11 | 704 | 0.6+  | 0.5−  | 2003 01 04 | 704 | 1.2− | 1.3− |
| 1999 01 16 | 327 | 0.5−  | 0.4+  | 2002 11 11 | 704 | 0.3+  | 0.9−  | 2003 01 04 | 704 | 0.4+ | 0.3− |
| 1999 01 16 | 327 | 0.1+  | 0.0   | 2002 11 11 | 704 | 1.0+  | 0.4−  | 2003 01 04 | 704 | 0.0  | 0.2+ |
| 1999 01 16 | 327 | 0.4+  | 1.0+  | 2002 11 11 | 644 | 0.4−  | 0.3−  | 2003 01 19 | 644 | 0.4+ | 0.5+ |
| 1999 02 18 | 704 | 1.0+  | 1.0−  | 2002 11 11 | 644 | 0.5+  | 0.6+  | 2003 01 19 | 644 | 0.3+ | 0.5+ |
| 1999 02 18 | 704 | 0.1+  | 1.8+  | 2002 11 11 | 644 | 0.3−  | 0.1+  | 2003 01 19 | 644 | 0.4+ | 0.7+ |
| 1999 02 18 | 704 | 0.2+  | 0.2+  | 2002 11 21 | 644 | 0.2−  | 0.8+  | 2003 01 27 | 704 | 0.3− | 0.1− |
| 1999 02 18 | 704 | 0.9−  | 1.3−  | 2002 11 21 | 644 | 0.2−  | 0.8+  | 2003 01 27 | 704 | 0.6− | 0.3+ |
| 1999 02 18 | 704 | (6.1− | 0.6−) | 2002 11 21 | 644 | 0.2+  | 0.7+  | 2003 01 27 | 704 | 1.0− | 0.7+ |
| 2002 10 01 | 704 | 1.1−  | 0.7+  | 2002 11 22 | 644 | 0.2−  | 0.4+  | 2003 01 27 | 704 | 1.5− | 1.3+ |
| 2002 10 01 | 704 | 0.1+  | 0.1+  | 2002 11 22 | 644 | 0.4−  | 0.5+  | 2004 03 24 | 703 | 0.5+ | 0.8+ |
| 2002 10 01 | 704 | 0.3−  | 0.1−  | 2002 11 22 | 644 | 0.0   | 0.3+  | 2004 03 24 | 703 | 0.1− | 1.2+ |
| 2002 10 01 | 704 | 1.3−  | 0.2−  | 2002 12 01 | 704 | 0.4−  | 0.7+  | 2004 03 24 | 703 | 0.4− | 0.9+ |
| 2002 10 04 | 704 | (0.5− | 1.7+) | 2002 12 01 | 704 | 0.4−  | 0.3−  | 2004 03 24 | 703 | 0.6− | 0.3+ |
| 2002 10 04 | 704 | 0.6−  | 0.9+  | 2002 12 01 | 704 | 0.7+  | 0.3−  | 2004 03 25 | 704 | 0.1− | 1.2+ |
| 2002 10 04 | 704 | (1.5− | 1.7+) | 2002 12 01 | 704 | 0.6+  | 0.1−  | 2004 03 25 | 704 | 0.7+ | 0.2+ |
| 2002 10 04 | 704 | 0.8−  | 1.1+  | 2002 12 01 | 704 | 0.5+  | 0.1−  | 2004 03 25 | 704 | 0.4+ | 0.5+ |
| 2002 10 04 | 704 | 0.5−  | 0.3+  | 2002 12 06 | 608 | 0.1+  | 0.2−  | 2004 03 25 | 704 | 0.3+ | 0.9+ |
| 2002 10 06 | 608 | 0.8−  | 1.2−  | 2002 12 06 | 608 | 0.2+  | 0.4−  | 2006 08 26 | E12 | 0.1− | 0.4+ |
| 2002 10 06 | 608 | 0.3−  | 1.1−  | 2002 12 06 | 608 | 0.4+  | 0.1+  | 2006 08 26 | E12 | 0.2+ | 1.2+ |
| 2002 10 06 | 608 | 0.5−  | 0.8−  | 2002 12 09 | 644 | 0.3+  | 0.1+  | 2006 08 26 | E12 | 0.2− | 0.7+ |
| 2002 10 09 | 699 | 1.5+  | 0.0   | 2002 12 09 | 644 | 0.1−  | 0.3+  | 2006 08 26 | E12 | 0.7+ | 0.7+ |
| 2002 10 09 | 699 | 0.4+  | 0.9+  | 2002 12 09 | 644 | 0.3−  | 0.2+  | 2007 11 07 | 704 | 0.3− | 0.3− |
| 2002 10 09 | 699 | 0.6+  | 0.4+  | 2002 12 10 | 704 | 0.6+  | 0.1−  | 2007 11 07 | 704 | 0.0  | 0.2− |
| 2002 10 09 | 699 | 0.7+  | 0.6−  | 2002 12 10 | 704 | 0.3+  | 0.7−  | 2007 11 07 | 704 | 0.3− | 0.1− |
| 2002 10 26 | 608 | 0.1−  | 1.3−  | 2002 12 10 | 704 | 0.8−  | 0.4+  | 2007 11 07 | 704 | 0.5− | 0.8− |
| 2002 10 26 | 608 | 0.0   | 1.3−  | 2002 12 10 | 704 | 1.2−  | 0.7+  | 2007 11 07 | 704 | 0.5− | 0.1+ |
| 2002 10 26 | 608 | 0.2−  | 1.4−  | 2002 12 10 | 704 | 0.1−  | 0.0   | 2007 11 17 | 704 | 0.9+ | 0.8− |
| 2002 11 01 | 704 | 0.4+  | 0.2+  | 2002 12 11 | 704 | 0.4+  | 0.0   | 2007 11 17 | 704 | 0.3+ | 0.9− |
| 2002 11 01 | 704 | 0.4−  | 0.3+  | 2002 12 11 | 704 | 0.3+  | 0.1+  | 2007 11 17 | 704 | 0.1+ | 0.5− |
| 2002 11 01 | 704 | (1.6+ | 0.7−) | 2002 12 11 | 704 | 0.1+  | 0.6+  | 2007 11 17 | 704 | 0.1+ | 0.7− |
| 2002 11 01 | 704 | 0.1+  | 0.2+  | 2002 12 11 | 704 | 0.4−  | 0.4−  | 2007 11 17 | 704 | 0.1+ | 0.1− |
| 2002 11 01 | 704 | 0.1−  | 0.1−  | 2002 12 11 | 704 | 0.5−  | 0.1−  | 2007 11 20 | 704 | 0.3+ | 0.2− |
| 2002 11 01 | 608 | 0.8−  | 0.3−  | 2002 12 11 | 704 | 0.8−  | 0.2+  | 2007 11 20 | 704 | 0.0  | 0.5+ |
| 2002 11 01 | 608 | 0.8−  | 0.5−  | 2002 12 11 | 704 | 0.2+  | 0.5+  | 2007 11 20 | 704 | 0.6+ | 0.2− |
| 2002 11 01 | 608 | 1.4−  | 0.1−  | 2002 12 11 | 704 | 0.2−  | 0.7−  | 2007 11 20 | 704 | 0.9+ | 0.3+ |
| 2002 11 06 | 608 | 0.8+  | 0.6+  | 2002 12 11 | 704 | 0.2+  | 0.3+  | 2007 11 20 | 704 | 0.6+ | 1.3+ |
| 2002 11 06 | 608 | 1.4+  | 0.4−  | 2002 12 11 | 704 | 0.4−  | 0.4+  | 2007 12 02 | 704 | 0.2− | 0.1− |
| 2002 11 06 | 608 | 0.8+  | 0.9+  | 2002 12 12 | 704 | 0.4−  | 0.2+  | 2007 12 02 | 704 | 0.0  | 0.3+ |
| 2002 11 07 | 704 | 0.0   | 0.5+  | 2002 12 12 | 704 | 0.0   | 0.3+  | 2007 12 02 | 704 | 0.8− | 0.6− |
| 2002 11 07 | 704 | 0.1+  | 0.7+  | 2002 12 12 | 704 | 0.3−  | 0.2+  | 2007 12 02 | 704 | 0.0  | 0.3− |
| 2002 11 07 | 704 | 0.2−  | 0.7+  | 2002 12 12 | 704 | 0.6+  | 0.5+  | 2007 12 02 | 704 | 0.0  | 0.4+ |
| 2002 11 07 | 704 | 0.1+  | 0.7+  | 2003 01 01 | 704 | (0.1− | 2.2−) |            |     |      |      |
| 2002 11 07 | 704 | 0.0   | 1.3+  | 2003 01 01 | 704 | 0.3−  | 0.8−  |            |     |      |      |

**(172272)\* 2002 TP<sub>83</sub>**

Discovered 2002 Oct. 2 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 48.61480   |  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|--|------------|--|----------|-----------|-------------|------|-------------|---|
| <i>n</i> |  | 0.21514090 |  | $\omega$ | 251.72817 | +0.95822936 |      | +0.26351064 |   |
| <i>a</i> |  | 2.7583798  |  | $\Omega$ | 92.87775  | −0.20177935 |      | +0.89835748 |   |
| <i>e</i> |  | 0.1850236  |  | <i>i</i> | 6.39082   | −0.20268594 |      | +0.35144841 |   |
| <i>P</i> |  | 4.58       |  | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 16 | 691 | 0.1+  | 0.8+  | 2004 01 22 | 704 | 0.2− | 0.7+ | 2007 11 12 | 704 | 0.1− | 0.2− |
| 2001 04 16 | 691 | 0.4+  | 0.8+  | 2004 01 22 | 704 | 0.4− | 0.8+ | 2007 11 12 | 704 | 0.3+ | 0.7+ |
| 2002 09 05 | 699 | 0.0   | 0.6+  | 2004 01 22 | 704 | 0.0  | 0.8− | 2007 11 12 | 704 | 0.0  | 0.5− |
| 2002 09 05 | 699 | 0.2+  | 0.8−  | 2004 01 22 | 704 | 0.0  | 0.7+ | 2007 11 12 | 704 | 0.3+ | 0.1+ |
| 2002 09 05 | 699 | 0.3−  | 0.2+  | 2004 01 31 | 691 | 0.1+ | 0.2+ | 2007 11 12 | 704 | 0.1+ | 0.5+ |
| 2002 09 05 | 699 | 0.4−  | 0.8−  | 2004 01 31 | 691 | 0.1− | 0.3+ | 2007 11 13 | 691 | 0.1− | 0.4− |
| 2002 09 13 | 704 | 0.6+  | 1.3+  | 2004 01 31 | 691 | 0.2+ | 0.3+ | 2007 11 13 | 691 | 0.1− | 0.3− |
| 2002 09 13 | 704 | 0.9−  | 0.1−  | 2007 10 13 | 704 | 0.7+ | 0.4− | 2007 11 13 | 691 | 0.1− | 0.3− |
| 2002 09 13 | 704 | 1.0−  | 0.1+  | 2007 10 13 | 704 | 1.3+ | 0.5− | 2007 11 15 | 699 | 0.4+ | 0.3− |
| 2002 09 13 | 704 | 0.5−  | 0.2+  | 2007 10 13 | 704 | 0.1+ | 0.1− | 2007 11 15 | 699 | 1.0+ | 0.0  |
| 2002 09 17 | 644 | 0.5−  | 0.4−  | 2007 10 13 | 704 | 0.4+ | 0.0  | 2007 11 15 | 699 | 0.1− | 0.6− |
| 2002 09 17 | 644 | 0.6−  | 0.1−  | 2007 11 01 | 691 | 0.4− | 0.0  | 2007 11 15 | 699 | 0.1+ | 0.3+ |
| 2002 09 17 | 644 | 0.5−  | 0.1−  | 2007 11 01 | 691 | 0.2− | 0.2− | 2007 11 20 | 691 | 0.7− | 0.3+ |
| 2002 10 02 | 608 | 0.9−  | 0.9+  | 2007 11 01 | 691 | 0.3− | 0.2− | 2007 11 20 | 703 | 0.6+ | 0.6+ |
| 2002 10 02 | 608 | 0.6−  | 1.2+  | 2007 11 03 | 699 | 0.1+ | 0.2+ | 2007 11 20 | 703 | 0.0  | 0.3+ |
| 2002 10 02 | 608 | 0.4−  | 0.4−  | 2007 11 03 | 699 | 1.2− | 0.0  | 2007 11 20 | 691 | 0.5− | 0.2− |
| 2002 10 04 | 704 | 0.6+  | 0.3+  | 2007 11 03 | 699 | 0.9+ | 0.3+ | 2007 11 20 | 703 | 0.5+ | 1.2− |
| 2002 10 04 | 704 | (0.2− | 1.7+) | 2007 11 03 | 699 | 0.1+ | 0.4− | 2007 11 20 | 703 | 1.2− | 0.1+ |
| 2002 10 04 | 704 | 0.7+  | 0.9+  | 2007 11 04 | 704 | 0.1+ | 0.3+ | 2007 11 20 | 691 | 0.4− | 0.6− |
| 2002 10 04 | 704 | 0.3+  | 0.9+  | 2007 11 04 | 704 | 0.5+ | 0.5+ | 2007 12 04 | 704 | 0.4+ | 0.9+ |
| 2002 10 04 | 704 | 1.0+  | 0.8+  | 2007 11 04 | 704 | 0.8+ | 0.2+ | 2007 12 04 | 704 | 0.1− | 0.6+ |
| 2002 10 05 | 704 | 0.1+  | 0.7+  | 2007 11 04 | 704 | 0.4+ | 0.9+ | 2007 12 04 | 704 | 0.3− | 0.9+ |
| 2002 10 05 | 704 | 0.2+  | 0.7+  | 2007 11 04 | 704 | 0.1+ | 0.3+ | 2007 12 04 | 704 | 0.3+ | 0.3+ |
| 2002 10 05 | 704 | 0.2−  | 0.8+  | 2007 11 05 | 691 | 0.1− | 0.4− | 2007 12 04 | 704 | 0.7+ | 0.4+ |
| 2002 10 10 | 699 | 0.3+  | 0.4+  | 2007 11 05 | 691 | 0.1− | 0.3− | 2007 12 05 | 704 | 2.1+ | 1.9+ |
| 2002 10 10 | 699 | 0.5+  | 0.3+  | 2007 11 05 | 691 | 0.1− | 0.3− | 2007 12 05 | 704 | 0.3+ | 0.2− |
| 2002 10 10 | 699 | 1.1−  | 0.6+  | 2007 11 05 | D29 | 0.0  | 0.2− | 2007 12 05 | 704 | 0.5+ | 1.3+ |
| 2002 10 10 | 699 | 0.0   | 1.0+  | 2007 11 05 | D29 | 0.2+ | 0.4− | 2007 12 05 | 704 | 0.3− | 0.4+ |
| 2003 12 17 | 691 | 0.4−  | 0.1+  | 2007 11 05 | D29 | 0.4+ | 0.4− | 2007 12 05 | 699 | 0.5+ | 0.3− |
| 2003 12 17 | 691 | 0.1−  | 0.1−  | 2007 11 05 | D29 | 0.4+ | 0.5− | 2007 12 05 | 704 | 0.7+ | 0.9+ |
| 2003 12 17 | 691 | 0.4−  | 0.1+  | 2007 11 07 | 704 | 0.3+ | 0.5+ | 2007 12 05 | 704 | 0.0  | 0.4+ |
| 2003 12 21 | 691 | 0.1+  | 0.4+  | 2007 11 07 | 704 | 0.6+ | 0.4+ | 2007 12 05 | 704 | 0.9+ | 0.4+ |
| 2003 12 21 | 691 | 0.3+  | 0.0   | 2007 11 07 | 704 | 0.1− | 0.2+ | 2007 12 05 | 704 | 0.2+ | 0.0  |
| 2003 12 21 | 691 | 0.4+  | 0.2−  | 2007 11 07 | 704 | 0.4− | 0.1+ | 2007 12 05 | 699 | 0.1− | 0.3− |
| 2003 12 22 | 704 | 0.7+  | 1.1+  | 2007 11 07 | 704 | 0.3+ | 0.9+ | 2007 12 05 | 704 | 0.5+ | 1.1+ |
| 2003 12 22 | 704 | 0.6+  | 0.4+  | 2007 11 09 | 691 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2003 12 22 | 704 | 0.8+  | 0.5+  | 2007 11 09 | 691 | 0.0  | 0.4− | 2007 12 05 | 699 | 0.3− | 0.5− |
| 2004 01 22 | 704 | 0.6−  | 0.3+  | 2007 11 09 | 691 | 0.1− | 0.0  | 2007 12 05 | 699 | 0.2− | 0.1+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 03 | 644 | 0.2− | 0.3− | 2004 04 15 | 645 | 0.0   | 0.1+  | 2006 08 30 | 704 | 0.3− | 0.2− |
| 2002 10 03 | 644 | 0.1− | 0.0  | 2004 04 16 | 645 | 0.1−  | 0.0   | 2006 08 30 | 704 | 0.4− | 0.8− |
| 2002 10 03 | 644 | 0.7+ | 0.6− | 2004 04 16 | 645 | 0.0   | 0.1+  | 2006 09 25 | G96 | 0.2+ | 0.3− |
| 2002 10 04 | 704 | 0.2+ | 0.3+ | 2005 04 14 | 703 | 0.9+  | 0.8+  | 2006 09 25 | G96 | 0.4− | 0.1− |
| 2002 10 04 | 704 | 0.2− | 0.2− | 2005 04 14 | 703 | (1.7+ | 0.1+) | 2006 09 25 | G96 | 0.1+ | 0.3− |
| 2002 10 04 | 704 | 0.8+ | 0.8+ | 2005 04 14 | 703 | 0.3−  | 0.5+  | 2006 09 25 | G96 | 0.0  | 0.4− |
| 2002 10 04 | 704 | 0.4− | 0.1− | 2005 04 14 | 703 | (1.6− | 0.7+) | 2006 11 16 | G96 | 0.1+ | 0.4− |
| 2002 10 04 | 704 | 0.2− | 0.6− | 2006 08 18 | 699 | (2.0+ | 1.5+) | 2006 11 16 | G96 | 0.1− | 0.5− |
| 2002 10 09 | 704 | 0.7+ | 0.3+ | 2006 08 18 | 699 | 0.1+  | 0.6+  | 2006 11 16 | G96 | 0.0  | 0.1− |
| 2002 10 09 | 704 | 0.1− | 0.1− | 2006 08 18 | 699 | 1.4+  | 0.1−  | 2006 11 16 | G96 | 0.1+ | 0.4− |
| 2002 10 09 | 704 | 0.5+ | 0.3+ | 2006 08 18 | 699 | 0.3−  | 1.1+  | 2007 12 13 | 704 | 0.1+ | 0.8− |
| 2002 10 09 | 704 | 0.6− | 0.6− | 2006 08 19 | 691 | 0.2+  | 0.1+  | 2007 12 13 | 704 | 0.7+ | 0.5− |
| 2002 10 12 | 704 | 0.4+ | 0.9+ | 2006 08 19 | 691 | 0.1+  | 0.1−  | 2007 12 13 | 704 | 0.9− | 0.8− |
| 2002 10 12 | 704 | 0.6− | 0.6+ | 2006 08 19 | 691 | 0.1+  | 0.0   | 2007 12 13 | 704 | 0.6− | 0.1+ |
| 2002 10 12 | 704 | 0.2+ | 1.1+ | 2006 08 28 | 699 | 0.2−  | 0.6+  | 2007 12 16 | 704 | 1.0− | 0.1+ |
| 2004 01 16 | 644 | 0.2+ | 0.2+ | 2006 08 28 | 703 | 0.2−  | 0.4+  | 2007 12 16 | 704 | 0.9+ | 0.4− |
| 2004 01 16 | 644 | 0.4+ | 0.7+ | 2006 08 28 | 703 | 0.2−  | 0.5+  | 2007 12 16 | 704 | 0.6+ | 1.2+ |
| 2004 01 16 | 644 | 0.5+ | 0.4+ | 2006 08 28 | 699 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.7+ | 1.1+ |

**(172274)\* 2002 TD<sub>98</sub> = 2006 HQ<sub>82</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 100372)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 61.61580   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.19251775 | $\omega$ | 83.27258  | +0.27294801  | +0.96199551  |
| $a$ | 2.9704497  | $\Omega$ | 202.57212 | −0.89067505  | +0.24955105  |
| $e$ | 0.1550813  | $i$      | 1.19452   | −0.36358952  | +0.11085539  |
| $P$ | 5.12       | $H$      | 16.1      | $G$ 0.15     | $U$ 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 10 22 | 691 | 0.4−  | 0.2+  | 2006 04 30 | 691 | 0.1−  | 0.1+  | 2007 09 12 | 699 | 0.1+ | 0.1− |
| 1992 10 22 | 691 | 0.2−  | 0.2+  | 2006 04 30 | 691 | 0.2−  | 0.2+  | 2007 09 12 | G96 | 0.4+ | 0.3− |
| 1992 10 22 | 691 | 0.3−  | 0.3+  | 2006 05 04 | 691 | 0.2−  | 0.5+  | 2007 09 12 | G96 | 0.4+ | 0.2− |
| 2002 09 13 | 291 | 0.1+  | 0.2+  | 2006 05 04 | 691 | 0.2−  | 0.3+  | 2007 09 13 | 704 | 0.2− | 0.2+ |
| 2002 09 13 | 291 | 0.1+  | 0.1−  | 2006 05 04 | 691 | 0.1−  | 0.2+  | 2007 09 13 | 704 | 0.4− | 0.6+ |
| 2002 09 13 | 291 | 0.0   | 0.3+  | 2006 05 20 | G96 | 0.1+  | 0.2+  | 2007 09 13 | 704 | 0.3− | 0.8− |
| 2002 09 26 | 644 | 0.3−  | 0.0   | 2006 05 20 | G96 | 0.5−  | 0.1−  | 2007 10 04 | G96 | 0.1− | 0.2− |
| 2002 09 26 | 644 | 0.2−  | 0.6−  | 2006 05 20 | G96 | 0.0   | 0.1−  | 2007 10 04 | G96 | 0.1+ | 0.1− |
| 2002 09 26 | 644 | 0.5−  | 0.4−  | 2006 05 20 | 691 | 0.2+  | 0.3+  | 2007 10 04 | G96 | 0.3− | 0.3− |
| 2002 10 03 | 704 | 0.5+  | 1.2+  | 2006 05 20 | G96 | 0.0   | 0.1+  | 2007 10 04 | G96 | 0.1− | 0.4− |
| 2002 10 03 | 704 | 0.6+  | 1.0+  | 2006 05 20 | 691 | 0.2+  | 0.1+  | 2007 10 06 | 704 | 0.5+ | 0.1+ |
| 2002 10 03 | 704 | 0.4+  | 0.9+  | 2006 05 20 | 691 | 0.3+  | 0.1+  | 2007 10 06 | 704 | 0.3+ | 0.0  |
| 2002 10 03 | 704 | (0.8+ | 2.1+) | 2006 05 28 | 691 | 0.1−  | 0.1+  | 2007 10 06 | 704 | 0.9− | 0.0  |
| 2002 10 05 | 644 | 0.1−  | 0.8+  | 2006 05 28 | 691 | 0.2−  | 1.0−  | 2007 10 12 | G96 | 0.2− | 0.4− |
| 2002 10 05 | 644 | 0.0   | 0.1−  | 2006 05 28 | 691 | 0.6+  | 0.2−  | 2007 10 12 | G96 | 0.1+ | 0.5− |
| 2002 10 05 | 644 | 0.1+  | 0.2+  | 2006 06 04 | 691 | 0.1−  | 0.4+  | 2007 10 12 | G96 | 0.3+ | 0.5− |
| 2002 10 11 | 704 | 1.1+  | 0.8+  | 2006 06 04 | 691 | 0.0   | 0.1+  | 2007 10 12 | G96 | 0.1+ | 0.2− |
| 2002 10 11 | 704 | 0.1+  | 0.1−  | 2006 06 04 | 691 | 0.0   | 0.0   | 2007 10 20 | G96 | 0.6− | 0.2− |
| 2002 10 11 | 704 | 1.0+  | 0.5−  | 2006 06 19 | G96 | 0.3−  | 0.5−  | 2007 10 20 | G96 | 0.2− | 0.2− |
| 2005 04 02 | G96 | 0.5+  | 0.6+  | 2006 06 19 | G96 | 0.2−  | 0.4−  | 2007 10 20 | G96 | 0.5− | 0.7− |
| 2005 04 02 | G96 | 0.0   | 0.2−  | 2006 06 19 | G96 | 0.2−  | 0.6−  | 2007 10 20 | G96 | 0.3− | 0.2− |
| 2005 04 02 | G96 | 0.1+  | 0.0   | 2006 06 19 | G96 | 0.2−  | 0.8−  | 2007 12 06 | G96 | 0.1+ | 0.2+ |
| 2005 04 02 | G96 | 0.6−  | 0.3+  | 2007 09 12 | 699 | (1.7− | 0.3+) | 2007 12 06 | G96 | 0.3− | 0.4+ |
| 2006 04 26 | 691 | 0.2+  | 0.1+  | 2007 09 12 | 699 | 0.0   | 0.2+  | 2007 12 06 | G96 | 0.5+ | 0.2+ |
| 2006 04 26 | 691 | 0.1−  | 0.0   | 2007 09 12 | 699 | 0.9−  | 0.1+  | 2007 12 06 | G96 | 0.6+ | 0.0  |
| 2006 04 26 | 691 | 0.4+  | 0.2+  | 2007 09 12 | G96 | 0.2+  | 0.3−  |            |     |      |      |
| 2006 04 30 | 691 | 0.1−  | 0.2+  | 2007 09 12 | G96 | 0.2−  | 0.2−  |            |     |      |      |

**(172275)\* 2002 TO<sub>108</sub>**

Discovered 2002 Oct. 1 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 23.66317   |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.21816813 | $\omega$ | 318.70998 | +0.82746779 | −0.53540161 |
| $a$ | 2.7328041  | $\Omega$ | 74.42818  | +0.55019347 | +0.71286947 |
| $e$ | 0.1605959  | $i$      | 10.11874  | +0.11217934 | +0.45294838 |
| $P$ | 4.52       | $H$      | 15.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 14 | 608 | 1.3−  | 0.2−  | 2004 01 28 | 703 | (1.3− | 1.6+) | 2007 11 14 | 704 | 0.1− | 0.5− |
| 2002 09 14 | 608 | 0.7−  | 0.5−  | 2004 01 28 | 703 | 1.4+  | 0.8+  | 2007 11 14 | 704 | 0.1+ | 0.2+ |
| 2002 09 14 | 608 | 1.1−  | 0.3+  | 2004 02 11 | 644 | 0.3−  | 0.4+  | 2007 11 14 | 704 | 0.5+ | 0.2− |
| 2002 09 19 | 644 | 0.1−  | 0.3+  | 2004 02 11 | 644 | 0.1+  | 0.4+  | 2007 11 14 | 704 | 0.0  | 0.1− |
| 2002 09 19 | 644 | 0.5−  | 0.4+  | 2004 02 11 | 644 | 0.1+  | 0.5+  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2002 09 19 | 644 | 0.4−  | 0.4+  | 2004 02 14 | 704 | 0.4−  | 1.0+  | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2002 10 01 | 608 | 0.0   | 0.3−  | 2004 02 14 | 704 | 1.3+  | 1.2+  | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 2002 10 01 | 608 | 0.2−  | 0.8−  | 2004 02 14 | 704 | 0.1+  | 0.6−  | 2007 12 04 | G96 | 0.1− | 0.3− |
| 2002 10 01 | 608 | 0.1+  | 0.5−  | 2004 02 14 | 704 | 0.2+  | 0.1+  | 2007 12 05 | 704 | 0.0  | 0.4− |
| 2002 10 05 | 704 | 0.2+  | 1.4+  | 2004 02 14 | 704 | 1.1+  | 1.3+  | 2007 12 05 | 704 | 0.1− | 0.1− |
| 2002 10 05 | 704 | 0.3−  | 0.8+  | 2004 02 16 | 703 | 1.2+  | 0.8−  | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2002 10 05 | 704 | 0.8−  | 1.1+  | 2004 02 16 | 703 | (1.7− | 0.9−) | 2007 12 05 | 704 | 0.2− | 0.0  |
| 2002 10 05 | 704 | (0.7− | 1.8+) | 2004 02 16 | 703 | 1.0−  | 0.1+  | 2007 12 05 | 704 | 0.0  | 0.1− |
| 2002 10 07 | 608 | 0.2+  | 1.0+  | 2004 02 16 | 703 | 0.1+  | 0.1−  | 2007 12 05 | 703 | 0.1− | 0.3+ |
| 2002 10 07 | 608 | 0.2+  | 1.0+  | 2004 05 14 | 645 | 0.0   | 0.0   | 2007 12 05 | 703 | 0.0  | 0.1− |
| 2002 10 07 | 608 | 0.0   | 0.1+  | 2004 05 14 | 645 | 0.1−  | 0.0   | 2007 12 05 | 703 | 0.6+ | 0.2+ |
| 2002 10 25 | 644 | 0.1+  | 0.3+  | 2005 04 15 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 703 | 0.2+ | 0.0  |
| 2002 10 25 | 644 | 0.0   | 0.1+  | 2005 04 15 | 691 | 0.1+  | 0.3+  | 2007 12 14 | 704 | 0.1+ | 0.7− |
| 2002 10 25 | 644 | 0.5−  | 0.4+  | 2005 04 15 | 691 | 0.2+  | 0.4+  | 2007 12 14 | 704 | 0.1+ | 0.4− |
| 2002 10 29 | 704 | 0.2+  | 0.9+  | 2007 11 05 | 704 | 0.3+  | 0.6+  | 2007 12 14 | 704 | 0.8+ | 0.1− |
| 2002 10 29 | 704 | 1.1+  | 1.0+  | 2007 11 05 | 704 | 0.4+  | 0.7+  | 2007 12 14 | 704 | 0.4+ | 0.5− |
| 2002 10 29 | 704 | (0.3− | 1.9−) | 2007 11 05 | 704 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.4+ | 0.4+ |
| 2004 01 17 | 644 | 0.4+  | 0.2+  | 2007 11 05 | 704 | 0.8−  | 0.3−  | 2007 12 15 | 691 | 0.1− | 0.1− |
| 2004 01 17 | 644 | 0.2+  | 0.7+  | 2007 11 09 | 691 | 0.0   | 0.1+  | 2007 12 15 | 691 | 0.3− | 0.1− |
| 2004 01 17 | 644 | 0.1+  | 0.3+  | 2007 11 09 | 691 | 0.0   | 0.1+  | 2007 12 15 | 691 | 0.3− | 0.1− |
| 2004 01 28 | 703 | (0.8+ | 2.0+) | 2007 11 09 | 691 | 0.1−  | 0.0   |            |     |      |      |
| 2004 01 28 | 703 | 0.2+  | 0.7+  | 2007 11 14 | 704 | 0.5+  | 0.2−  |            |     |      |      |

**(172276)\* 2002 TP<sub>111</sub> = 2007 PJ<sub>39</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. K. E. Smalley (*MPO* 122418)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 51.43870   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.20632161 | $\omega$ | 312.70808 | +0.57429213  | +0.81789535  |
| $a$ | 2.8364355  | $\Omega$ | 352.10701 | −0.65617658  | +0.43421420  |
| $e$ | 0.1454845  | $i$      | 14.83218  | −0.48951083  | +0.37749864  |
| $P$ | 4.78       | $H$      | 15.6      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 11 | 608 | 0.8−  | 1.4+  | 2007 08 17 | J75 | 0.0  | 0.0  | 2007 10 08 | 699 | 0.3−  | 0.7−  |
| 2002 08 11 | 608 | 1.4−  | 1.4+  | 2007 08 17 | J75 | 0.1− | 0.2− | 2007 10 08 | 699 | 0.5−  | 0.3+  |
| 2002 08 18 | 608 | 0.3−  | 0.2−  | 2007 08 17 | J75 | 0.2+ | 0.2− | 2007 10 09 | 704 | 0.3+  | 0.8−  |
| 2002 08 18 | 608 | 0.3−  | 0.7−  | 2007 09 02 | 703 | 0.4− | 0.0  | 2007 10 09 | 704 | 0.3+  | 1.0−  |
| 2002 08 18 | 608 | 0.1−  | 1.2−  | 2007 09 02 | 703 | 0.5+ | 0.6− | 2007 10 09 | 704 | 0.3+  | 0.2−  |
| 2002 08 19 | 644 | 0.3−  | 0.7+  | 2007 09 02 | 703 | 1.5− | 0.6− | 2007 10 09 | 704 | 0.1+  | 0.6−  |
| 2002 08 19 | 644 | 0.1−  | 0.7+  | 2007 09 02 | 703 | 1.1− | 0.2− | 2007 10 09 | 704 | 0.6+  | 0.2−  |
| 2002 08 19 | 644 | 0.2−  | 0.8+  | 2007 09 04 | 683 | 0.7− | 0.1− | 2007 10 12 | 704 | 0.5−  | 1.5−  |
| 2002 08 30 | 644 | 0.4−  | 0.1−  | 2007 09 04 | 683 | 1.3− | 1.4− | 2007 10 12 | 704 | 0.6−  | 0.5−  |
| 2002 08 30 | 644 | 0.1+  | 0.4+  | 2007 09 04 | 683 | 0.4+ | 0.6− | 2007 10 12 | 704 | 0.8+  | 0.3+  |
| 2002 08 30 | 644 | 0.2−  | 0.3+  | 2007 09 05 | 699 | 1.4− | 0.2+ | 2007 10 12 | 704 | 0.2+  | 0.1+  |
| 2002 09 15 | 644 | 0.8−  | 0.1+  | 2007 09 05 | 699 | 0.4− | 0.4+ | 2007 10 12 | 704 | 0.4+  | 0.2+  |
| 2002 09 15 | 644 | 0.6−  | 0.4+  | 2007 09 05 | 699 | 0.4− | 0.0  | 2007 10 13 | 703 | 1.0+  | 0.3+  |
| 2002 09 15 | 644 | 0.3−  | 0.3+  | 2007 09 05 | 699 | 0.1− | 0.4− | 2007 10 13 | 703 | 0.5+  | 0.7+  |
| 2002 10 03 | 704 | 0.0   | 0.3+  | 2007 09 08 | 699 | 0.0  | 0.1+ | 2007 10 13 | 703 | (1.6+ | 1.6+) |
| 2002 10 03 | 704 | 0.5−  | 1.4−  | 2007 09 08 | 699 | 1.0+ | 0.7+ | 2007 10 13 | 703 | 0.4−  | 0.6+  |
| 2002 10 03 | 704 | (0.2− | 1.6−) | 2007 09 08 | 699 | 1.3+ | 0.3− | 2007 10 15 | 704 | 0.2+  | 0.9+  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 05 | 704 | 1.1+  | 0.1-  | 2007 09 08 | 699 | 0.2- | 0.0  | 2007 10 15 | 704 | 0.5+  | 0.7+  |
| 2002 10 05 | 704 | 0.8+  | 0.5-  | 2007 09 11 | D29 | 0.2- | 1.0- | 2007 10 15 | 704 | 1.5-  | 0.8+  |
| 2002 10 05 | 704 | 0.0   | 0.4-  | 2007 09 11 | D29 | 0.5+ | 0.5+ | 2007 10 19 | 704 | 0.3+  | 0.3+  |
| 2002 10 07 | 704 | 0.2+  | 0.2+  | 2007 09 11 | D29 | 0.1- | 0.3- | 2007 10 19 | 704 | 0.3+  | 0.1-  |
| 2002 10 07 | 704 | 0.8+  | 1.1+  | 2007 09 11 | D29 | 0.2+ | 0.2- | 2007 10 19 | 704 | (1.6+ | 0.2-) |
| 2002 10 07 | 704 | 0.4+  | 0.2+  | 2007 09 14 | 704 | 1.3+ | 0.9+ | 2007 10 19 | 704 | 0.6-  | 0.0   |
| 2002 10 07 | 704 | (1.8- | 3.2+) | 2007 09 14 | 704 | 0.5- | 0.5- | 2007 10 19 | 704 | 0.5-  | 0.1+  |
| 2005 03 04 | G98 | 1.0+  | 1.4+  | 2007 09 14 | 704 | 0.4- | 0.6+ | 2007 10 20 | G96 | 0.1+  | 0.3-  |
| 2005 03 04 | G98 | 0.4+  | 0.2+  | 2007 09 14 | 704 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.1-  | 0.5-  |
| 2005 03 04 | G98 | 0.8+  | 0.9+  | 2007 09 21 | 704 | 0.1+ | 0.7+ | 2007 10 20 | G96 | 0.2-  | 0.4-  |
| 2005 03 04 | G98 | 0.4+  | 1.2+  | 2007 09 21 | 704 | 0.3- | 0.3+ | 2007 10 20 | G96 | 0.2-  | 0.3-  |
| 2005 03 04 | G98 | 0.5+  | 0.7+  | 2007 09 21 | 704 | 0.1+ | 0.4+ | 2007 11 02 | 704 | 0.7+  | 0.6+  |
| 2006 05 05 | E12 | 0.0   | 0.7-  | 2007 09 21 | 704 | 0.1- | 0.2- | 2007 11 02 | 704 | 0.8+  | 0.9+  |
| 2006 05 05 | E12 | 0.3-  | 0.6+  | 2007 09 21 | 704 | 0.9+ | 0.7+ | 2007 11 02 | 704 | 0.5+  | 0.2+  |
| 2007 07 13 | D35 | 0.3-  | 0.4-  | 2007 10 07 | 703 | 0.9+ | 0.2+ | 2007 11 02 | 704 | 1.4-  | 0.8+  |
| 2007 07 13 | D35 | 0.7+  | 0.1-  | 2007 10 07 | 703 | 0.8- | 0.6+ | 2007 12 05 | 703 | 1.1+  | 0.8-  |
| 2007 07 13 | D35 | 0.1-  | 0.5+  | 2007 10 07 | 703 | 0.4+ | 0.3+ | 2007 12 05 | 703 | 0.3-  | 1.1-  |
| 2007 08 15 | J75 | 0.1+  | 0.0   | 2007 10 07 | 703 | 0.2- | 0.6+ | 2007 12 05 | 703 | 1.0-  | 0.5+  |
| 2007 08 15 | J75 | 1.3+  | 0.5+  | 2007 10 08 | 699 | 0.1- | 0.5- | 2007 12 05 | 703 | 0.3-  | 0.9-  |
| 2007 08 15 | J75 | 0.3+  | 0.2+  | 2007 10 08 | 699 | 0.0  | 0.2+ |            |     |       |       |

**(172277)\* 2002 TU<sub>111</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 23.92509   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.22887170 | $\omega$ | 301.14803 | +0.64625023 |      | -0.75941951 |   |
| <i>a</i>                                | 2.6469231  | $\Omega$ | 108.40087 | +0.72433943 |      | +0.57944324 |   |
| <i>e</i>                                | 0.1845524  | <i>i</i> | 4.54058   | +0.24019374 |      | +0.29585052 |   |
| <i>P</i>                                | 4.31       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 11 | 704 | 0.5+  | 1.8+  | 2002 10 03 | 704 | 0.9- | 0.7+ | 2005 05 04 | 691 | 0.3+ | 0.5+ |
| 1998 11 11 | 704 | 0.5+  | 0.5+  | 2002 10 05 | 704 | 0.4- | 0.9+ | 2005 05 04 | 691 | 0.4+ | 0.6+ |
| 1998 11 11 | 704 | 1.7-  | 1.4+  | 2002 10 05 | 704 | 1.3- | 0.0  | 2007 11 05 | 704 | 0.4+ | 0.3- |
| 1998 11 11 | 704 | 0.5-  | 0.1-  | 2002 10 05 | 704 | 0.1- | 0.5+ | 2007 11 05 | 704 | 0.2- | 0.0  |
| 1998 11 19 | 699 | 0.5+  | 0.2+  | 2003 12 21 | 645 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.3+ | 0.6- |
| 1998 11 19 | 699 | 0.8+  | 0.4-  | 2003 12 21 | 645 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.7- | 0.6- |
| 1998 11 19 | 699 | 0.0   | 0.2-  | 2004 01 23 | 699 | 1.4- | 0.6- | 2007 11 05 | G96 | 0.0  | 0.1- |
| 2002 09 06 | 704 | 0.3-  | 0.5+  | 2004 01 23 | 699 | 1.5+ | 1.2+ | 2007 11 05 | G96 | 0.5+ | 0.2- |
| 2002 09 06 | 704 | 1.1-  | 1.0+  | 2004 01 23 | 699 | 0.6- | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.3- |
| 2002 09 06 | 704 | 0.4+  | 0.6+  | 2004 01 23 | 699 | 0.1- | 0.2+ | 2007 12 04 | 699 | 0.0  | 0.5- |
| 2002 09 06 | 704 | 0.3+  | 0.9+  | 2004 02 13 | 691 | 0.1- | 0.3+ | 2007 12 04 | 699 | 0.2+ | 0.9+ |
| 2002 09 06 | 704 | 0.0   | 0.4+  | 2004 02 13 | 691 | 0.2- | 0.4+ | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2002 09 10 | 608 | 0.2+  | 0.7+  | 2004 02 13 | 691 | 0.2+ | 0.3+ | 2007 12 04 | G96 | 0.1- | 0.1+ |
| 2002 09 10 | 608 | 0.0   | 0.2-  | 2004 02 23 | 704 | 0.6+ | 0.5+ | 2007 12 04 | 699 | 1.3+ | 0.6+ |
| 2002 09 10 | 608 | (0.8+ | 5.0+) | 2004 02 23 | 704 | 0.4+ | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.3- |
| 2002 09 13 | 704 | 0.6-  | 0.7+  | 2004 02 23 | 704 | 0.6+ | 0.5+ | 2007 12 04 | G96 | 0.1+ | 0.2- |
| 2002 09 13 | 704 | 0.1-  | 0.6+  | 2004 02 23 | 704 | 0.4+ | 0.7+ | 2007 12 04 | 699 | 0.1- | 0.2- |
| 2002 09 13 | 704 | 0.7-  | 0.8+  | 2004 03 20 | 704 | 0.4+ | 0.1- | 2007 12 04 | 691 | 0.1- | 0.3+ |
| 2002 09 13 | 704 | 0.4-  | 0.1-  | 2004 03 20 | 704 | 0.4- | 0.4+ | 2007 12 04 | 691 | 0.2- | 0.2+ |
| 2002 09 16 | 644 | 0.6-  | 0.7+  | 2004 03 20 | 704 | 0.4- | 0.3+ | 2007 12 04 | 691 | 0.3- | 0.1- |
| 2002 09 16 | 644 | 0.2-  | 0.5+  | 2004 03 20 | 704 | 0.6+ | 0.5+ | 2007 12 05 | 704 | 0.1+ | 0.5+ |
| 2002 09 16 | 644 | 0.0   | 0.7+  | 2005 04 16 | 691 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 0.3+ | 0.8+ |
| 2002 10 03 | 704 | (1.3- | 1.6+) | 2005 04 16 | 691 | 0.3- | 0.5+ | 2007 12 05 | 704 | 0.7+ | 1.6+ |
| 2002 10 03 | 704 | 0.2+  | 0.8+  | 2005 04 16 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.4+ | 0.2- |
| 2002 10 03 | 704 | 0.4-  | 1.0+  | 2005 05 04 | 691 | 0.4+ | 0.6+ |            |     |      |      |

**(172278)\* 2002 TU<sub>112</sub> = 2003 YH<sub>13</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.  
Id. G. V. Williams (*MPO* 56657)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 251.85436  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.23911997 | $\omega$ | 182.74249 | -0.93705712 |      | +0.34862488 |   |
| <i>a</i> | 2.5707440  | $\Omega$ | 17.69942  | -0.31912252 |      | -0.83225553 |   |
| <i>e</i> | 0.0825475  | <i>i</i> | 3.69872   | -0.14172078 |      | -0.43105849 |   |
| <i>P</i> | 4.12       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 10 28 | 691 | 0.3+  | 0.1-  | 2003 12 17 | 699 | 0.8-  | 0.2+  | 2004 02 15 | 704 | (4.5+ | 1.2-) |
| 1994 10 28 | 691 | 0.4+  | 0.4-  | 2003 12 18 | 704 | (1.7+ | 0.8+) | 2006 08 28 | 705 | 0.1+  | 0.1-  |
| 1994 10 28 | 691 | 0.4+  | 0.5-  | 2003 12 18 | 704 | 0.8-  | 0.2-  | 2006 08 28 | 705 | 0.1+  | 0.0   |
| 1995 11 18 | 691 | 0.1+  | 0.5-  | 2003 12 18 | 704 | 0.7-  | 0.1+  | 2006 09 11 | 705 | 0.3+  | 0.1+  |
| 1995 11 18 | 691 | 0.6-  | 0.2+  | 2003 12 18 | 704 | (1.6- | 0.3-) | 2006 09 11 | 705 | 0.4+  | 0.1+  |
| 1995 11 18 | 691 | 0.5+  | 0.2+  | 2003 12 18 | 704 | 0.6-  | 0.7+  | 2006 09 18 | 699 | 1.1+  | 0.8+  |
| 2000 02 11 | 704 | 0.5-  | 0.3-  | 2003 12 22 | 704 | 0.4-  | 0.7+  | 2006 09 18 | 699 | 0.9+  | 0.9+  |
| 2000 02 11 | 704 | 0.1-  | 0.2-  | 2003 12 22 | 704 | 0.0   | 0.6+  | 2006 09 18 | 699 | 0.7+  | 0.2-  |
| 2000 02 11 | 704 | 1.2+  | 0.3+  | 2003 12 22 | 704 | 0.9+  | 0.3+  | 2006 09 18 | 699 | 0.2+  | 1.4+  |
| 2000 02 11 | 704 | 0.4-  | 1.2+  | 2003 12 22 | 704 | 0.3+  | 0.4+  | 2006 09 30 | G96 | 0.0   | 0.2-  |
| 2002 09 28 | 644 | 0.5-  | 0.2+  | 2003 12 22 | 704 | 0.5-  | 0.4+  | 2006 09 30 | 703 | 0.6+  | 0.7+  |
| 2002 09 28 | 644 | 0.7-  | 0.3+  | 2003 12 27 | 704 | (2.7+ | 0.1-) | 2006 09 30 | G96 | 0.1+  | 0.3-  |
| 2002 09 28 | 644 | 0.6-  | 0.1+  | 2003 12 27 | 704 | (2.0+ | 0.7-) | 2006 09 30 | G96 | 0.1-  | 0.1+  |
| 2002 09 29 | 291 | 0.0   | 0.1+  | 2003 12 27 | 704 | (2.5+ | 1.0+) | 2006 09 30 | 703 | (1.7- | 0.3+) |
| 2002 09 29 | 291 | 0.2-  | 0.0   | 2003 12 27 | 704 | 1.0+  | 0.1+  | 2006 09 30 | G96 | 0.4+  | 0.1+  |
| 2002 09 29 | 291 | 0.2-  | 0.1-  | 2003 12 27 | 704 | 1.0+  | 0.2-  | 2006 09 30 | 703 | 0.2+  | 0.4+  |
| 2002 10 03 | 704 | 0.7+  | 0.3-  | 2004 01 13 | 699 | 0.3-  | 0.6-  | 2006 09 30 | 703 | 1.0-  | 0.1+  |
| 2002 10 03 | 704 | 0.2-  | 0.7-  | 2004 01 13 | 699 | 0.2-  | 0.2-  | 2006 10 20 | G96 | 0.0   | 0.2-  |
| 2002 10 03 | 704 | 1.0-  | 0.9-  | 2004 01 13 | 699 | 0.3+  | 0.3+  | 2006 10 20 | G96 | 0.0   | 0.2-  |
| 2002 10 03 | 704 | 0.3+  | 0.6+  | 2004 01 13 | 699 | 1.1-  | 0.5-  | 2006 10 20 | G96 | 0.1-  | 0.4-  |
| 2002 10 03 | 704 | 0.4-  | 0.5+  | 2004 01 16 | 691 | 0.3+  | 0.0   | 2006 10 20 | G96 | 0.2-  | 0.1-  |
| 2002 10 05 | 704 | 0.1+  | 0.1+  | 2004 01 16 | 691 | 0.1-  | 0.1-  | 2006 11 21 | G96 | 0.5-  | 0.1+  |
| 2002 10 05 | 704 | 0.8-  | 0.7-  | 2004 01 16 | 691 | 0.0   | 0.0   | 2006 11 21 | G96 | 0.7-  | 0.4-  |
| 2002 10 05 | 704 | 0.0   | 0.3+  | 2004 01 19 | 699 | 0.3-  | 0.0   | 2006 11 21 | G96 | 0.3-  | 0.3-  |
| 2002 10 05 | 704 | 0.2+  | 0.5-  | 2004 01 19 | 699 | 0.5-  | 0.4-  | 2006 11 21 | G96 | 0.1+  | 0.0   |
| 2002 10 05 | 704 | 0.7-  | 0.1-  | 2004 01 19 | 699 | 0.1+  | 1.3-  | 2007 12 13 | 704 | 0.8-  | 0.5+  |
| 2002 10 06 | 291 | 0.1+  | 0.0   | 2004 01 19 | 699 | 0.5-  | 0.3+  | 2007 12 13 | 704 | 0.2-  | 0.8+  |
| 2002 10 06 | 291 | 0.1-  | 0.3+  | 2004 01 22 | 704 | 0.4+  | 0.2-  | 2007 12 13 | 704 | 0.8+  | 0.9+  |
| 2002 10 06 | 291 | 0.2-  | 0.2-  | 2004 01 22 | 704 | 0.2+  | 0.4+  | 2007 12 13 | 704 | (0.2- | 1.6+) |
| 2002 10 11 | 704 | 1.0-  | 1.0+  | 2004 01 22 | 704 | 0.1+  | 0.2+  | 2007 12 15 | 704 | 0.6+  | 0.3+  |
| 2002 10 11 | 704 | (1.8+ | 0.3+) | 2004 01 22 | 704 | 0.1-  | 0.1-  | 2007 12 15 | 704 | 0.4-  | 0.4+  |
| 2002 10 11 | 704 | (1.8+ | 0.8+) | 2004 01 22 | 704 | 0.2-  | 0.3-  | 2007 12 15 | 704 | 1.3+  | 1.6-  |
| 2003 12 17 | 699 | 0.1-  | 0.1-  | 2004 02 15 | 704 | (5.7+ | 0.2-) | 2007 12 15 | 704 | 0.0   | 1.3+  |
| 2003 12 17 | 699 | 0.2+  | 0.7-  | 2004 02 15 | 704 | (5.0+ | 0.8+) | 2007 12 15 | 704 | 0.2-  | 0.0   |
| 2003 12 17 | 699 | 1.0+  | 0.6-  | 2004 02 15 | 704 | (5.1+ | 1.2-) |            |     |       |       |

**(172279)\* 2002 TO<sub>121</sub>**

Discovered 2002 Oct. 3 by NEAT at Palomar.

|                                         |            |          |           |             |      |             |       |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |       |            |     |       |       |
| <i>M</i>                                | 12.73710   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |       |            |     |       |       |
| <i>n</i>                                | 0.21350371 | $\omega$ | 90.61791  | +0.64843594 |      | −0.75784936 |       |            |     |       |       |
| <i>a</i>                                | 2.7724631  | $\Omega$ | 318.66079 | +0.64783452 |      | +0.59905957 |       |            |     |       |       |
| <i>e</i>                                | 0.0542619  | <i>i</i> | 6.26478   | +0.39980154 |      | +0.25844144 |       |            |     |       |       |
| <i>P</i>                                | 4.62       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 1     |            |     |       |       |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |       |       |
| 2002 10 03                              | 644        | 0.3+     | 0.0       | 2004 02 26  | 704  | (0.4−       | 1.6+) | 2007 11 08 | 704 | 0.5+  | 1.2−  |
| 2002 10 03                              | 644        | 0.1+     | 0.2−      | 2004 02 26  | 704  | (0.5−       | 1.7+) | 2007 11 08 | 704 | 0.2−  | 0.3−  |
| 2002 10 03                              | 644        | 0.1+     | 0.1+      | 2004 02 26  | 704  | 0.3+        | 1.2+  | 2007 11 08 | 704 | 0.9−  | 0.5−  |
| 2002 10 05                              | 704        | (1.7+    | 0.5−)     | 2004 02 26  | 704  | 0.2−        | 0.5+  | 2007 11 08 | 704 | 0.6−  | 0.3+  |
| 2002 10 05                              | 704        | 0.5+     | 0.9+      | 2006 07 21  | G96  | 0.2−        | 0.0   | 2007 11 08 | 704 | (0.1− | 1.8+) |
| 2002 10 05                              | 704        | 0.8+     | 1.1+      | 2006 07 21  | G96  | 0.8−        | 0.0   | 2007 11 17 | 704 | 0.4−  | 0.0   |
| 2002 10 10                              | 704        | 1.3−     | 0.7+      | 2006 07 21  | G96  | 0.2+        | 0.1+  | 2007 11 17 | 704 | 0.3−  | 0.7−  |
| 2002 10 10                              | 704        | 0.0      | 0.8−      | 2006 07 21  | G96  | 0.1+        | 0.1+  | 2007 11 17 | 704 | 0.0   | 0.6−  |
| 2002 10 10                              | 704        | 0.8−     | 0.6−      | 2006 08 16  | 644  | 0.2−        | 0.1+  | 2007 11 17 | 704 | 1.0−  | 0.1−  |
| 2002 11 01                              | 644        | 0.1−     | 0.4−      | 2006 08 16  | 644  | 0.3−        | 0.1+  | 2007 11 20 | 704 | 0.3−  | 0.3−  |
| 2002 11 01                              | 644        | 0.2+     | 0.6−      | 2006 08 16  | 644  | 0.2+        | 0.0   | 2007 11 20 | 704 | 0.6+  | 0.2−  |
| 2002 11 01                              | 644        | 0.1+     | 0.4−      | 2006 08 19  | 699  | 0.7+        | 0.7+  | 2007 11 20 | 704 | (0.3− | 2.1−) |

## 2007 DEC. 24

## M.P.O. 129319

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 05 | 704 | 0.4− | 0.6− | 2006 08 19 | 699 | (2.5+ | 1.7+) | 2007 11 20 | 704 | 0.4− | 0.4− |
| 2002 11 05 | 704 | 0.4− | 0.8+ | 2006 08 19 | 699 | 0.3+  | 1.4+  | 2007 11 20 | 704 | 0.2+ | 0.4− |
| 2002 11 05 | 704 | 0.0  | 0.1− | 2006 08 19 | 699 | 0.4−  | 0.2−  | 2007 12 16 | 704 | 0.2+ | 0.9+ |
| 2002 11 05 | 704 | 1.0+ | 0.2+ | 2006 09 27 | G96 | 0.5−  | 0.0   | 2007 12 16 | 704 | 0.2+ | 0.3+ |
| 2004 01 31 | 691 | 0.0  | 0.0  | 2006 09 27 | G96 | 0.1−  | 0.2+  | 2007 12 16 | 704 | 0.8+ | 1.0+ |
| 2004 01 31 | 691 | 0.1+ | 0.2+ | 2006 09 27 | G96 | 0.1−  | 0.1+  | 2007 12 16 | 704 | 0.6− | 1.0+ |
| 2004 01 31 | 691 | 0.2+ | 0.0  | 2006 09 27 | G96 | 0.2−  | 0.2+  | 2007 12 16 | 704 | 1.6+ | 1.2+ |

(172280)\* 2002 TM<sub>124</sub>

Discovered 2002 Oct. 4 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 250.44434  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18654117 | $\omega$ | 188.67431 | −0.28906106   | −0.94446415 |
| <i>a</i> | 3.0335623  | $\Omega$ | 278.23959 | +0.88751825   | −0.20319134 |
| <i>e</i> | 0.0498915  | <i>i</i> | 9.08706   | +0.35882456   | −0.25826489 |
| <i>P</i> | 5.28       | <i>H</i> | 14.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 03 | 644 | 0.0   | 0.4+  | 2003 11 23 | 704 | 1.0+  | 0.4+  | 2005 04 06 | 699 | 1.4+ | 0.8+ |
| 2002 09 03 | 644 | 0.2+  | 0.5+  | 2003 12 18 | 704 | (2.2+ | 0.2+) | 2005 04 06 | 699 | 0.1+ | 0.9+ |
| 2002 09 03 | 644 | 0.2−  | 0.1+  | 2003 12 18 | 704 | (0.5+ | 1.6+) | 2005 04 06 | 699 | 0.4− | 0.4− |
| 2002 09 12 | 644 | 0.7−  | 1.0+  | 2003 12 18 | 704 | (1.2+ | 1.7+) | 2005 04 06 | 699 | 0.1− | 0.6+ |
| 2002 09 12 | 644 | 0.7−  | 1.0+  | 2003 12 21 | 704 | 0.2+  | 0.2+  | 2007 09 11 | 703 | 0.9− | 0.4+ |
| 2002 09 12 | 644 | 0.9−  | 1.0+  | 2003 12 21 | 704 | 0.3+  | 0.2−  | 2007 09 11 | 703 | 0.3− | 0.0  |
| 2002 10 04 | 644 | 0.2−  | 0.7−  | 2003 12 21 | 704 | 0.6+  | 0.1−  | 2007 09 11 | 703 | 0.1− | 1.0+ |
| 2002 10 04 | 644 | 0.0   | 0.9−  | 2003 12 21 | 704 | 0.0   | 0.2−  | 2007 09 11 | 703 | 1.1− | 0.6+ |
| 2002 10 04 | 644 | 0.3−  | 0.6−  | 2003 12 21 | 704 | 0.6−  | 0.2+  | 2007 09 12 | B21 | 0.3+ | 0.5− |
| 2002 10 05 | 704 | 0.2+  | 0.0   | 2003 12 21 | 704 | 0.7−  | 0.5+  | 2007 09 12 | B21 | 0.3+ | 0.4− |
| 2002 10 05 | 704 | 0.1−  | 0.0   | 2003 12 21 | 704 | 0.7−  | 0.1+  | 2007 09 12 | B21 | 0.3+ | 0.3− |
| 2002 10 05 | 704 | 0.1−  | 0.1+  | 2003 12 24 | 704 | 0.0   | 0.1+  | 2007 09 13 | B21 | 0.2− | 0.1− |
| 2002 10 05 | 704 | 0.3+  | 0.8+  | 2003 12 24 | 704 | 0.3−  | 0.2−  | 2007 09 13 | B21 | 0.5+ | 0.2− |
| 2002 10 05 | 704 | 0.6+  | 0.8+  | 2003 12 24 | 704 | 0.3+  | 0.6−  | 2007 09 13 | B21 | 0.5+ | 0.1− |
| 2002 10 09 | 704 | 0.7+  | 0.6+  | 2004 01 21 | 704 | 0.1−  | 0.1−  | 2007 09 14 | B21 | 0.4+ | 0.0  |
| 2002 10 09 | 704 | 1.0−  | 0.3+  | 2004 01 21 | 704 | 0.2+  | 0.0   | 2007 09 14 | B21 | 0.4+ | 0.2− |
| 2002 10 09 | 704 | 0.2+  | 0.8+  | 2004 01 21 | 704 | 0.1+  | 0.0   | 2007 09 15 | B21 | 0.2+ | 0.0  |
| 2002 10 09 | 704 | 0.4−  | 0.0   | 2004 01 21 | 704 | 0.2+  | 0.5−  | 2007 09 15 | B21 | 0.0  | 0.1+ |
| 2002 10 09 | 704 | 0.2+  | 0.0   | 2004 01 21 | 704 | 0.7−  | 0.0   | 2007 09 15 | B21 | 0.2+ | 0.6− |
| 2003 11 21 | 704 | 0.5−  | 0.2−  | 2005 04 03 | 704 | 0.5+  | 1.2+  | 2007 12 06 | G96 | 0.5− | 0.0  |
| 2003 11 21 | 704 | (0.4− | 1.9+) | 2005 04 03 | 704 | 0.2−  | 0.2+  | 2007 12 06 | G96 | 0.1− | 0.3− |
| 2003 11 21 | 704 | 0.3−  | 0.1+  | 2005 04 03 | 704 | 0.8−  | 0.9−  | 2007 12 06 | G96 | 0.2+ | 0.2− |
| 2003 11 21 | 704 | 0.4−  | 0.4−  | 2005 04 05 | 644 | 0.7+  | 0.6+  | 2007 12 06 | G96 | 0.5+ | 0.3− |
| 2003 11 23 | 704 | 0.3+  | 0.6+  | 2005 04 05 | 644 | 0.5+  | 0.6+  |            |     |      |      |
| 2003 11 23 | 704 | 1.0+  | 0.8+  | 2005 04 05 | 644 | 0.4+  | 0.7+  |            |     |      |      |

(172281)\* 2002 TD<sub>133</sub>

Discovered 2002 Oct. 4 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 229.94990  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26959587 | $\omega$ | 300.85244 | +0.00913822   | +0.99842560 |
| <i>a</i> | 2.3731612  | $\Omega$ | 329.52219 | −0.87614856   | −0.01868043 |
| <i>e</i> | 0.0957874  | <i>i</i> | 6.26420   | −0.48195455   | +0.05289018 |
| <i>P</i> | 3.66       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 04 07 | 691 | 0.3− | 0.9− | 2002 10 09 | 704 | 0.2+  | 0.4+  | 2004 02 11 | 699 | 0.4−  | 0.3−  |
| 1997 04 07 | 691 | 0.1− | 0.9− | 2002 10 12 | 704 | 0.6−  | 0.2−  | 2004 02 11 | 699 | (1.8− | 0.4−) |
| 1997 04 07 | 691 | 0.0  | 0.8− | 2002 10 12 | 704 | (1.1+ | 2.5+) | 2004 02 15 | 704 | 0.6+  | 0.7+  |
| 1998 08 17 | 704 | 0.5+ | 0.2− | 2002 10 12 | 704 | 0.9+  | 0.3−  | 2004 02 15 | 704 | 0.4+  | 0.5−  |
| 1998 08 17 | 704 | 1.9− | 1.3+ | 2002 10 12 | 704 | 0.8+  | 0.6+  | 2004 02 15 | 704 | 0.4−  | 0.2−  |
| 1998 08 17 | 704 | 0.5− | 0.3− | 2002 10 12 | 704 | 0.6+  | 0.3+  | 2004 02 15 | 704 | 0.1−  | 0.8+  |
| 1998 08 17 | 704 | 1.4− | 0.6+ | 2003 12 19 | 704 | 1.1−  | 0.2+  | 2004 02 15 | 704 | 0.4+  | 0.1−  |
| 1998 08 17 | 704 | 0.7− | 1.2− | 2003 12 19 | 704 | 0.5−  | 0.2+  | 2004 02 23 | 704 | 0.2−  | 1.0+  |
| 2002 09 06 | 704 | 0.6+ | 0.5+ | 2003 12 19 | 704 | 0.5+  | 0.0   | 2004 02 23 | 704 | 0.6−  | 1.4+  |
| 2002 09 06 | 704 | 0.5+ | 0.7− | 2003 12 19 | 704 | 0.4+  | 0.5+  | 2004 02 23 | 704 | 0.3−  | 1.0+  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 06 | 704 | (0.3+ | 2.3−) | 2003 12 19 | 704 | 0.5− | 0.4+ | 2004 02 23 | 704 | 0.4−  | 0.9+  |
| 2002 09 06 | 704 | 0.3−  | 0.4+  | 2004 01 12 | 644 | 0.0  | 0.3+ | 2004 02 23 | 704 | 0.2+  | 1.0+  |
| 2002 10 04 | 704 | 0.5−  | 0.5+  | 2004 01 12 | 644 | 0.1+ | 0.1− | 2006 10 19 | 703 | (1.1+ | 2.7−) |
| 2002 10 04 | 704 | 0.1−  | 0.4+  | 2004 01 12 | 644 | 0.2+ | 0.0  | 2006 10 19 | 703 | 0.6−  | 1.5−  |
| 2002 10 04 | 644 | 0.1+  | 0.3+  | 2004 01 16 | 644 | 0.1− | 0.2+ | 2006 10 19 | 703 | 0.1+  | 1.1−  |
| 2002 10 04 | 704 | 0.7+  | 0.3−  | 2004 01 16 | 644 | 0.1+ | 0.3+ | 2006 10 19 | 703 | 0.2+  | 0.6+  |
| 2002 10 04 | 644 | 0.1−  | 0.4+  | 2004 01 16 | 644 | 0.6+ | 0.2− | 2006 11 02 | G96 | 0.0   | 1.0−  |
| 2002 10 04 | 644 | 0.1−  | 0.2+  | 2004 01 19 | 691 | 0.1− | 0.1+ | 2006 11 02 | G96 | 0.1+  | 0.8−  |
| 2002 10 04 | 704 | 0.7+  | 1.4+  | 2004 01 19 | 691 | 0.1− | 0.0  | 2006 11 02 | G96 | 0.2+  | 0.7−  |
| 2002 10 05 | 704 | 0.1−  | 0.2−  | 2004 01 19 | 691 | 0.1− | 0.0  | 2006 11 02 | G96 | 0.3+  | 0.5−  |
| 2002 10 05 | 704 | 0.4+  | 0.0   | 2004 01 22 | 704 | 0.0  | 0.7− | 2006 11 15 | G96 | 0.4+  | 0.6−  |
| 2002 10 05 | 704 | 0.3+  | 0.4+  | 2004 01 22 | 704 | 0.6− | 0.0  | 2006 11 15 | G96 | 0.1+  | 0.8−  |
| 2002 10 05 | 704 | 0.4−  | 0.1+  | 2004 01 22 | 704 | 0.2− | 0.6− | 2006 11 15 | G96 | 0.4+  | 0.6−  |
| 2002 10 05 | 704 | 0.3+  | 0.1−  | 2004 01 22 | 704 | 0.1+ | 0.3− | 2006 11 15 | G96 | 0.1+  | 0.6−  |
| 2002 10 05 | 704 | 0.3−  | 0.1−  | 2004 01 30 | 704 | 0.3− | 0.1+ | 2007 11 14 | G96 | 0.3−  | 0.2+  |
| 2002 10 05 | 704 | 0.0   | 0.2−  | 2004 01 30 | 704 | 0.2+ | 0.3+ | 2007 11 14 | G96 | 0.3−  | 0.0   |
| 2002 10 05 | 704 | 0.3−  | 0.0   | 2004 01 30 | 704 | 1.1+ | 0.1+ | 2007 11 14 | G96 | 0.3−  | 0.1−  |
| 2002 10 05 | 704 | 0.6−  | 0.5−  | 2004 01 30 | 704 | 0.4+ | 0.4+ | 2007 11 14 | G96 | 0.3−  | 0.1−  |
| 2002 10 05 | 704 | 0.2+  | 0.0   | 2004 02 11 | 691 | 0.1− | 0.2+ | 2007 12 14 | 704 | 0.5+  | 0.2+  |
| 2002 10 09 | 704 | 0.1+  | 0.2+  | 2004 02 11 | 691 | 0.1− | 0.3+ | 2007 12 14 | 704 | 0.7+  | 2.0+  |
| 2002 10 09 | 704 | (1.8+ | 0.6+) | 2004 02 11 | 691 | 0.2− | 0.2+ | 2007 12 14 | 704 | 1.8+  | 0.6+  |
| 2002 10 09 | 704 | 0.2+  | 0.4+  | 2004 02 11 | 699 | 0.3+ | 0.6+ | 2007 12 14 | 704 | 2.8+  | 1.1+  |
| 2002 10 09 | 704 | 0.7+  | 0.0   | 2004 02 11 | 699 | 0.3− | 0.5− |            |     |       |       |

(172282)\* 2002 TJ<sub>134</sub> = 2006 HY<sub>76</sub>

Discovered 2002 Oct. 4 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 100375)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 62.58175   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18056971 | $\omega$ | 30.73636  | +0.02145260   | +0.98917013 |
| <i>a</i> | 3.1000791  | $\Omega$ | 240.84891 | −0.94775161   | −0.02611487 |
| <i>e</i> | 0.1066871  | <i>i</i> | 9.57017   | −0.31828709   | +0.14443151 |
| <i>P</i> | 5.46       | <i>H</i> | 15.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 11 06 | 704 | (4.7− | 0.8−) | 2006 05 01 | 691 | 0.0  | 0.0  | 2006 06 04 | 704 | 0.6+  | 0.8−  |
| 1997 11 06 | 704 | (6.6− | 0.9−) | 2006 05 01 | 691 | 0.2− | 0.1− | 2007 09 11 | 703 | (0.1+ | 3.2+) |
| 1997 11 06 | 704 | (5.8− | 1.3+) | 2006 05 05 | 691 | 0.0  | 0.1− | 2007 09 11 | 703 | 0.0   | 1.1+  |
| 1997 11 06 | 704 | (9.6− | 1.8+) | 2006 05 05 | 691 | 0.0  | 0.0  | 2007 09 11 | 703 | 0.3+  | 1.1+  |
| 2002 09 14 | 608 | 0.8−  | 0.3−  | 2006 05 05 | 691 | 0.1− | 0.1+ | 2007 09 11 | 703 | 0.8+  | 1.0+  |
| 2002 09 14 | 608 | 0.1−  | 1.0−  | 2006 05 10 | 644 | 0.1+ | 0.1− | 2007 09 13 | 699 | 0.2−  | 0.1+  |
| 2002 09 14 | 608 | 1.1−  | 0.5−  | 2006 05 10 | 644 | 0.1+ | 0.1− | 2007 09 13 | 699 | 0.2+  | 0.2−  |
| 2002 10 04 | 644 | 0.3−  | 0.3+  | 2006 05 10 | 644 | 0.2+ | 0.1− | 2007 09 13 | 699 | 1.0+  | 0.6−  |
| 2002 10 04 | 644 | 0.2−  | 0.1+  | 2006 05 10 | 644 | 0.1+ | 0.0  | 2007 09 13 | 699 | 0.2+  | 0.1+  |
| 2002 10 04 | 644 | 0.2−  | 0.3+  | 2006 05 10 | 644 | 0.1+ | 0.2− | 2007 09 19 | A44 | 0.1+  | 0.5−  |
| 2002 10 05 | 704 | 0.1+  | 0.1+  | 2006 05 10 | 644 | 0.4+ | 0.1− | 2007 12 05 | G96 | 0.7−  | 0.8−  |
| 2002 10 05 | 704 | 0.1+  | 0.7+  | 2006 05 18 | 644 | 0.0  | 0.1− | 2007 12 05 | G96 | 0.2−  | 0.2−  |
| 2002 10 05 | 704 | 0.9+  | 1.3+  | 2006 05 18 | 644 | 0.3− | 0.2− | 2007 12 05 | G96 | 1.0−  | 0.4−  |
| 2002 10 05 | 704 | 0.2+  | 0.7+  | 2006 05 18 | 644 | 0.1+ | 0.1− | 2007 12 05 | G96 | 0.4−  | 0.1−  |
| 2002 10 05 | 704 | 0.4+  | 0.4+  | 2006 05 20 | 691 | 0.1+ | 0.2+ | 2007 12 05 | G96 | 0.1−  | 0.6−  |
| 2005 02 15 | 809 | 0.3+  | 0.6+  | 2006 05 20 | 691 | 0.1+ | 0.1+ | 2007 12 05 | G96 | 0.7−  | 0.0   |
| 2005 02 15 | 809 | 0.3+  | 0.6+  | 2006 05 20 | 691 | 0.2+ | 0.2+ | 2007 12 05 | G96 | 0.4−  | 0.9−  |
| 2005 02 15 | 809 | 0.3+  | 0.5+  | 2006 06 04 | 704 | 0.4− | 0.4− | 2007 12 05 | G96 | 0.2+  | 0.1+  |
| 2006 04 25 | 644 | 0.4−  | 0.1−  | 2006 06 04 | 691 | 0.2+ | 0.4− | 2007 12 05 | G96 | 0.2−  | 0.3+  |
| 2006 04 25 | 644 | 0.4−  | 0.2+  | 2006 06 04 | 704 | 0.8− | 0.5− | 2007 12 05 | G96 | 0.1+  | 0.1+  |
| 2006 04 25 | 644 | 0.1+  | 0.2+  | 2006 06 04 | 691 | 0.0  | 0.1+ | 2007 12 05 | G96 | 0.2−  | 0.1−  |
| 2006 05 01 | 691 | 0.1+  | 0.1−  | 2006 06 04 | 691 | 0.2− | 0.2+ | 2007 12 05 | G96 | 0.1+  | 0.2−  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.93229   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20850031 | $\omega$ 107.95175 | +0.93298160   | -0.33291330 |
| <i>a</i> | 2.8166415  | $\Omega$ 271.67018 | +0.25607376   | +0.88105939 |
| <i>e</i> | 0.1388270  | <i>i</i> 7.86604   | +0.25292599   | +0.33601053 |
| <i>P</i> | 4.73       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 2002 10 04 699 | 0.8-  | 0.1-  | 2002 11 27 699 | 0.7+  | 0.3+  | 2006 06 22 691 | 0.3-  | 0.2+  |
| 2002 10 04 699 | 0.7+  | 0.5+  | 2002 11 28 699 | 0.2+  | 0.2-  | 2006 06 22 691 | 0.2-  | 0.4+  |
| 2002 10 04 699 | 0.9-  | 0.9-  | 2002 11 28 699 | (1.9+ | 0.4+) | 2006 06 24 644 | 0.7-  | 0.4+  |
| 2002 10 04 699 | 0.9+  | 0.6-  | 2002 11 28 699 | 0.3+  | 0.2-  | 2006 06 24 644 | 0.2-  | 0.2+  |
| 2002 10 04 699 | 0.2-  | 0.1+  | 2002 11 28 699 | 0.2+  | 0.3+  | 2006 06 24 644 | 0.0   | 0.3+  |
| 2002 10 04 699 | 0.7+  | 0.2-  | 2002 12 02 704 | 0.2-  | 0.8-  | 2006 07 21 D35 | 0.0   | 0.2+  |
| 2002 10 04 699 | 1.1-  | 0.5-  | 2002 12 02 704 | 0.4+  | 0.7-  | 2006 07 21 D35 | 0.0   | 0.3+  |
| 2002 10 04 699 | 0.4+  | 0.1+  | 2002 12 02 704 | 0.1+  | 0.6-  | 2006 07 21 D35 | 0.1-  | 0.3+  |
| 2002 10 05 704 | 0.4+  | 0.2+  | 2002 12 02 704 | 1.0+  | 0.3+  | 2006 08 11 644 | 0.5-  | 0.5+  |
| 2002 10 05 704 | 0.1-  | 0.1+  | 2002 12 02 704 | 0.2+  | 0.3-  | 2006 08 11 644 | 0.3-  | 0.2+  |
| 2002 10 05 704 | 0.0   | 0.0   | 2002 12 06 704 | 0.1-  | 0.6+  | 2006 08 11 644 | 0.0   | 0.2+  |
| 2002 10 05 704 | 1.0+  | 0.4-  | 2002 12 06 704 | 0.1+  | 0.4+  | 2006 08 14 644 | 0.5-  | 0.1+  |
| 2002 10 05 704 | 0.1-  | 0.2-  | 2002 12 06 704 | 0.1-  | 0.0   | 2006 08 14 644 | 0.3-  | 0.2+  |
| 2002 10 10 704 | 1.1-  | 1.4+  | 2002 12 06 704 | 0.1-  | 0.3+  | 2006 08 14 644 | 0.2-  | 0.4+  |
| 2002 10 10 704 | 0.3-  | 0.3+  | 2002 12 06 704 | 0.1-  | 0.5+  | 2006 08 15 644 | 0.5-  | 0.1+  |
| 2002 10 10 704 | 0.1+  | 0.7+  | 2002 12 11 644 | 0.3-  | 0.1+  | 2006 08 15 644 | 0.5-  | 0.1-  |
| 2002 10 10 704 | 0.5+  | 0.8+  | 2002 12 11 644 | 0.5-  | 0.2+  | 2006 08 15 644 | 0.4-  | 0.0   |
| 2002 10 12 704 | 0.1-  | 1.5+  | 2002 12 11 644 | 0.3-  | 0.2+  | 2006 08 31 568 | 0.8+  | 0.9+  |
| 2002 10 12 704 | 0.1+  | 1.1+  | 2002 12 11 704 | 0.4+  | 0.2-  | 2006 08 31 568 | 0.9+  | 0.9+  |
| 2002 10 12 704 | (0.1+ | 2.1+) | 2002 12 11 704 | 0.1-  | 0.1+  | 2006 08 31 568 | 0.7+  | 0.8+  |
| 2002 10 12 704 | 0.2-  | 0.8+  | 2002 12 11 704 | 1.0-  | 0.3+  | 2006 09 01 568 | 0.4+  | 0.3+  |
| 2002 11 06 704 | 0.5-  | 0.7-  | 2002 12 11 704 | 0.5-  | 0.7+  | 2006 09 01 568 | 0.5+  | 0.3+  |
| 2002 11 06 704 | 0.2-  | 0.2-  | 2003 01 05 704 | 1.0+  | 0.9+  | 2006 09 01 568 | 0.5+  | 0.3+  |
| 2002 11 06 699 | 0.2-  | 0.1+  | 2003 01 05 704 | 0.8-  | 0.1+  | 2007 11 18 704 | 0.1-  | 0.3-  |
| 2002 11 06 704 | 0.1+  | 0.3+  | 2003 01 05 704 | 0.8+  | 1.0+  | 2007 11 18 704 | 0.5+  | 0.0   |
| 2002 11 06 699 | 0.4-  | 0.1+  | 2003 01 05 704 | 0.6+  | 0.3-  | 2007 11 18 704 | 0.6+  | 0.8+  |
| 2002 11 06 704 | 0.3+  | 0.0   | 2004 02 17 683 | (0.4- | 1.8-) | 2007 11 19 691 | 0.4-  | 0.2-  |
| 2002 11 06 699 | 0.2-  | 0.0   | 2004 02 17 683 | (1.5- | 0.9-) | 2007 11 19 691 | 0.0   | 0.0   |
| 2002 11 06 704 | 0.1+  | 0.4+  | 2004 02 17 683 | 0.2+  | 1.0+  | 2007 11 19 691 | 0.1-  | 0.3+  |
| 2002 11 06 699 | 0.2-  | 0.3+  | 2004 02 18 691 | 0.3+  | 0.6+  | 2007 11 20 704 | 1.5+  | 0.8+  |
| 2002 11 11 699 | 0.2+  | 0.4-  | 2004 02 18 691 | 0.2+  | 0.4+  | 2007 11 20 704 | 0.3+  | 0.0   |
| 2002 11 11 699 | 0.8-  | 0.0   | 2004 02 18 691 | 0.3+  | 0.6+  | 2007 11 20 704 | 1.2+  | 0.2+  |
| 2002 11 11 699 | 0.6-  | 0.2-  | 2004 02 19 704 | 0.7+  | 1.0+  | 2007 11 20 704 | 0.9+  | 0.1-  |
| 2002 11 11 699 | 0.7-  | 0.3+  | 2004 02 19 704 | (0.4+ | 2.0+) | 2007 11 20 704 | (2.6- | 0.4-) |
| 2002 11 14 704 | 0.2+  | 0.3-  | 2004 02 19 704 | 0.7+  | 0.8+  | 2007 12 10 704 | 0.0   | 0.1-  |
| 2002 11 14 704 | 0.1+  | 0.6+  | 2004 02 19 704 | 1.0+  | 1.1+  | 2007 12 10 704 | 0.0   | 0.2+  |
| 2002 11 14 704 | 0.3-  | 0.0   | 2004 02 19 704 | (1.7+ | 2.1+) | 2007 12 10 704 | 0.0   | 0.4+  |
| 2002 11 14 704 | 0.7-  | 0.2+  | 2004 03 15 704 | 0.5+  | 1.3+  | 2007 12 14 704 | 0.1-  | 0.0   |
| 2002 11 14 704 | 0.1-  | 0.1-  | 2004 03 15 704 | 0.2+  | 1.2+  | 2007 12 14 704 | 0.4-  | 0.5-  |
| 2002 11 24 644 | 0.3-  | 0.2+  | 2004 03 15 704 | 0.4-  | 0.3+  | 2007 12 14 704 | 0.2-  | 0.2-  |
| 2002 11 24 644 | 0.4-  | 0.2-  | 2006 05 30 G96 | 0.5-  | 0.1-  | 2007 12 14 704 | 0.5-  | 0.2+  |
| 2002 11 24 644 | 0.4-  | 0.1-  | 2006 05 30 G96 | 0.3-  | 0.0   | 2007 12 14 704 | 0.3-  | 0.6+  |
| 2002 11 27 699 | 0.7+  | 0.0   | 2006 05 30 G96 | 0.3-  | 0.1+  | 2007 12 15 691 | 0.1-  | 0.3-  |
| 2002 11 27 699 | 0.5+  | 0.1+  | 2006 05 30 G96 | 0.3-  | 0.1+  | 2007 12 15 691 | 0.2-  | 0.3-  |
| 2002 11 27 699 | 0.6+  | 0.1-  | 2006 06 22 691 | 0.2-  | 0.5+  | 2007 12 15 691 | 0.0   | 0.5-  |

**(172284)\* 2002 TO<sub>138</sub>**

Discovered 2002 Oct. 4 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.18430   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21515797 | $\omega$ 59.86919  | +0.97460444   | +0.18733283 |
| <i>a</i> | 2.7582339  | $\Omega$ 289.09935 | -0.22242359   | +0.87332853 |
| <i>e</i> | 0.3485878  | <i>i</i> 7.46012   | +0.02596002   | +0.44967064 |
| <i>P</i> | 4.58       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2000 02 12 645 | 0.1- | 0.1+ | 2002 10 12 704 | 0.4+ | 0.4- | 2002 12 02 704 | 0.2+  | 0.3-  |
| 2000 02 12 645 | 0.1- | 0.2+ | 2002 10 12 704 | 0.6+ | 0.1- | 2002 12 02 704 | 0.0   | 0.3-  |
| 2000 03 04 645 | 0.1+ | 0.0  | 2002 10 15 704 | 0.2+ | 0.1+ | 2002 12 05 704 | 1.0+  | 1.1+  |
| 2000 03 04 645 | 0.2+ | 0.0  | 2002 10 15 704 | 0.2+ | 0.2+ | 2002 12 05 704 | 1.5+  | 0.5+  |
| 2002 07 17 704 | 0.3+ | 0.4- | 2002 10 15 704 | 0.9- | 0.1+ | 2002 12 05 704 | 0.8+  | 0.4+  |
| 2002 07 17 704 | 0.2+ | 0.7+ | 2002 10 15 704 | 0.4- | 0.5+ | 2002 12 05 704 | 0.7+  | 1.3+  |
| 2002 07 17 704 | 0.1+ | 0.4+ | 2002 10 15 704 | 0.1+ | 0.6+ | 2002 12 20 644 | 0.1-  | 0.4+  |
| 2002 08 10 704 | 0.7+ | 0.2- | 2002 11 01 704 | 0.3- | 0.3+ | 2002 12 20 644 | 0.2+  | 0.2+  |
| 2002 08 10 704 | 0.6- | 0.1- | 2002 11 01 704 | 0.0  | 0.3+ | 2002 12 20 644 | 0.1-  | 0.1+  |
| 2002 08 10 704 | 0.3+ | 0.5- | 2002 11 01 704 | 0.0  | 0.6- | 2002 12 31 704 | 0.3-  | 0.1+  |
| 2002 08 10 704 | 0.1- | 0.5- | 2002 11 01 704 | 0.0  | 0.1+ | 2002 12 31 704 | 0.4-  | 0.8-  |
| 2002 08 10 704 | 1.4+ | 0.3- | 2002 11 01 704 | 0.6- | 0.5+ | 2002 12 31 704 | 0.0   | 0.8-  |
| 2002 09 07 704 | 0.8- | 0.7+ | 2002 11 03 704 | 0.2- | 0.3+ | 2002 12 31 704 | 1.0-  | 0.4-  |
| 2002 09 07 704 | 1.1- | 0.7+ | 2002 11 03 704 | 0.1+ | 0.7+ | 2002 12 31 704 | 0.1-  | 0.3-  |
| 2002 09 07 704 | 0.2- | 0.8+ | 2002 11 03 704 | 0.2+ | 1.0+ | 2003 01 05 704 | 0.9-  | 0.6-  |
| 2002 09 07 704 | 0.4  | 0.5+ | 2002 11 03 704 | 0.1+ | 0.5+ | 2003 01 05 704 | 0.6-  | 0.0   |
| 2002 09 07 704 | 0.4- | 1.0+ | 2002 11 07 704 | 0.6- | 0.6- | 2003 01 05 704 | 0.1-  | 0.5+  |
| 2002 10 04 699 | 0.4+ | 0.5+ | 2002 11 07 704 | 0.7- | 0.4- | 2003 01 05 704 | 0.7-  | 0.6+  |
| 2002 10 04 699 | 0.7+ | 0.3+ | 2002 11 07 704 | 0.3- | 0.6- | 2003 01 05 704 | 0.4+  | 1.3+  |
| 2002 10 04 699 | 0.7+ | 0.8+ | 2002 11 07 704 | 0.0  | 0.7- | 2006 06 27 E12 | 0.4-  | 0.3+  |
| 2002 10 04 699 | 1.0+ | 0.2- | 2002 11 07 704 | 0.5+ | 0.7- | 2006 06 27 E12 | 0.2-  | 0.3+  |
| 2002 10 05 704 | 0.6- | 0.1+ | 2002 11 08 704 | 0.0  | 0.2- | 2006 06 27 E12 | 0.5+  | 0.6+  |
| 2002 10 05 704 | 0.4- | 0.0  | 2002 11 08 704 | 0.2- | 0.6- | 2006 06 27 E12 | 0.2+  | 1.2+  |
| 2002 10 05 704 | 0.7- | 0.3+ | 2002 11 08 704 | 0.2- | 0.5- | 2007 09 24 291 | 0.4-  | 0.3-  |
| 2002 10 05 704 | 0.5- | 0.1+ | 2002 11 08 704 | 0.2- | 0.4- | 2007 09 24 291 | 0.5-  | 0.0   |
| 2002 10 05 704 | 0.1+ | 0.2- | 2002 11 14 644 | 0.3+ | 0.0  | 2007 09 24 291 | 0.3-  | 0.4-  |
| 2002 10 07 704 | 0.2- | 0.2+ | 2002 11 14 644 | 0.2+ | 0.1- | 2007 12 04 G96 | 0.3+  | 0.2-  |
| 2002 10 07 704 | 0.2- | 0.2- | 2002 11 14 704 | 0.3- | 0.1+ | 2007 12 04 G96 | 0.1+  | 0.5-  |
| 2002 10 07 704 | 0.1+ | 0.4+ | 2002 11 14 704 | 0.2+ | 0.2- | 2007 12 04 G96 | 0.3+  | 0.5-  |
| 2002 10 07 704 | 0.1+ | 0.8+ | 2002 11 14 644 | 0.1+ | 0.3- | 2007 12 04 G96 | 0.0   | 0.4-  |
| 2002 10 07 704 | 0.2- | 0.4+ | 2002 11 14 704 | 0.1+ | 0.4- | 2007 12 06 704 | (2.2+ | 0.3+) |
| 2002 10 10 704 | 0.0  | 0.0  | 2002 11 14 704 | 0.4- | 0.0  | 2007 12 06 704 | 0.3+  | 0.4-  |
| 2002 10 10 704 | 0.1+ | 0.0  | 2002 11 14 704 | 0.1+ | 0.4- | 2007 12 06 704 | 0.3-  | 0.3-  |
| 2002 10 10 704 | 0.1+ | 0.2+ | 2002 11 24 644 | 0.3- | 0.1- | 2007 12 14 704 | 0.4+  | 0.0   |
| 2002 10 10 704 | 0.0  | 0.2- | 2002 11 24 644 | 0.3- | 0.1+ | 2007 12 14 704 | 0.2+  | 0.9+  |
| 2002 10 10 704 | 0.1- | 0.2+ | 2002 11 24 644 | 0.2- | 0.1+ | 2007 12 14 704 | 0.9+  | 1.5+  |
| 2002 10 12 704 | 0.1- | 0.1- | 2002 12 02 704 | 0.5+ | 0.1- | 2007 12 14 704 | 0.6+  | 0.2+  |
| 2002 10 12 704 | 0.3- | 0.3+ | 2002 12 02 704 | 0.1+ | 0.3- |                |       |       |
| 2002 10 12 704 | 0.3+ | 0.5- | 2002 12 02 704 | 0.2+ | 0.0  |                |       |       |

**(172285)\* 2002 TX<sub>138</sub>**

Discovered 2002 Oct. 4 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.43994   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18170058 | $\omega$ 67.62311  | +0.94161368   | +0.30536670 |
| <i>a</i> | 3.0872029  | $\Omega$ 274.36428 | -0.33668510   | +0.85070494 |
| <i>e</i> | 0.1130388  | <i>i</i> 8.17745   | -0.00261258   | +0.42784610 |
| <i>P</i> | 5.42       | <i>H</i> 14.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 12 04 | 704 | 0.2+ | 0.6+ | 2002 12 02 | 704 | (1.6- | 0.8-) | 2007 09 05 | 703 | 0.0  | 0.3+ |
| 1997 12 04 | 704 | 0.0  | 0.4+ | 2002 12 02 | 704 | 0.5-  | 1.3-  | 2007 09 05 | 703 | 0.3+ | 0.6- |
| 1997 12 04 | 704 | 0.4- | 0.0  | 2002 12 02 | 704 | (0.7- | 2.0-) | 2007 09 08 | 699 | 0.8+ | 0.3+ |
| 1997 12 04 | 704 | 1.2- | 0.3- | 2002 12 05 | 704 | 0.3-  | 0.3+  | 2007 09 08 | 699 | 0.4+ | 0.1- |
| 2002 10 04 | 699 | 0.3+ | 0.9+ | 2002 12 05 | 704 | 0.1-  | 0.1+  | 2007 09 08 | 699 | 0.4- | 0.9- |
| 2002 10 04 | 699 | 0.1- | 0.2+ | 2002 12 05 | 704 | (0.8- | 1.5-) | 2007 09 08 | 699 | 0.1+ | 0.2- |
| 2002 10 04 | 699 | 0.0  | 0.2+ | 2002 12 05 | 704 | 0.3-  | 0.4-  | 2007 09 11 | 703 | 0.0  | 0.1+ |
| 2002 10 04 | 699 | 0.6- | 0.6+ | 2003 01 05 | 704 | 0.5+  | 0.5+  | 2007 09 11 | 703 | 0.4+ | 0.2+ |
| 2002 10 05 | 704 | 0.4- | 0.5- | 2003 01 05 | 704 | 0.1+  | 0.1+  | 2007 09 11 | 703 | 0.1+ | 0.2- |
| 2002 10 05 | 704 | 0.1- | 0.3- | 2003 01 05 | 704 | 1.1+  | 0.4+  | 2007 09 11 | 703 | 0.1- | 0.2- |
| 2002 10 05 | 704 | 0.3- | 0.6- | 2003 01 05 | 704 | 1.1+  | 0.8+  | 2007 10 08 | 704 | 0.1+ | 0.4+ |
| 2002 10 10 | 704 | 0.4- | 0.2+ | 2003 12 21 | 691 | 0.2-  | 0.1-  | 2007 10 08 | 704 | 0.1+ | 0.5+ |
| 2002 10 10 | 704 | 0.4+ | 0.3- | 2003 12 21 | 691 | 0.1+  | 0.2-  | 2007 10 08 | 704 | 0.3- | 0.8+ |
| 2002 10 10 | 704 | 0.8+ | 0.8+ | 2003 12 21 | 691 | 0.1-  | 0.2-  | 2007 10 08 | 704 | 0.2+ | 0.4+ |

2007 DEC. 24

M.P.O. 129321

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 10 | 704 | 0.2+ | 0.1+ | 2003 12 23 | 704 | 0.4- | 0.5+ | 2007 10 08 | 704 | 0.2-  | 0.1-  |
| 2002 10 12 | 704 | 0.4- | 0.1- | 2003 12 23 | 704 | 0.0  | 0.4+ | 2007 10 08 | 704 | 0.1-  | 0.2+  |
| 2002 10 12 | 704 | 0.4+ | 0.4+ | 2003 12 23 | 704 | 0.3+ | 0.1- | 2007 10 08 | 704 | 0.4-  | 0.0   |
| 2002 10 12 | 704 | 0.1- | 0.3- | 2003 12 23 | 704 | 0.0  | 0.1- | 2007 10 08 | 704 | 0.7+  | 0.2+  |
| 2002 11 05 | 704 | 0.2+ | 0.8- | 2003 12 23 | 704 | 0.5- | 0.1- | 2007 10 08 | 704 | 0.2-  | 0.1-  |
| 2002 11 05 | 704 | 0.0  | 0.3- | 2004 01 17 | 608 | 0.1+ | 0.4+ | 2007 10 08 | 704 | 0.2-  | 0.1-  |
| 2002 11 05 | 704 | 0.3+ | 0.5- | 2004 01 17 | 608 | 0.3+ | 0.4+ | 2007 11 08 | 704 | 0.0   | 0.5-  |
| 2002 11 05 | 704 | 0.1- | 0.3- | 2004 01 17 | 608 | 0.0  | 0.2+ | 2007 11 08 | 704 | 0.5-  | 1.0-  |
| 2002 11 05 | 704 | 0.3+ | 0.4- | 2005 03 31 | G92 | 1.3+ | 0.0  | 2007 11 08 | 704 | 1.1-  | 0.1-  |
| 2002 11 06 | 704 | 0.1+ | 0.0  | 2005 03 31 | G92 | 0.9- | 0.8+ | 2007 11 08 | 704 | 0.4+  | 0.2+  |
| 2002 11 06 | 704 | 0.4+ | 0.9+ | 2005 03 31 | G92 | 0.8+ | 0.1+ | 2007 12 02 | 704 | 0.2-  | 0.6+  |
| 2002 11 06 | 704 | 0.0  | 0.1+ | 2007 09 04 | 703 | 1.3- | 0.2+ | 2007 12 02 | 704 | 0.2-  | 0.2-  |
| 2002 11 06 | 704 | 0.3+ | 0.1+ | 2007 09 04 | 703 | 0.4- | 0.5+ | 2007 12 02 | 704 | (1.2+ | 2.0+) |
| 2002 11 06 | 704 | 0.0  | 0.6+ | 2007 09 04 | 703 | 0.1- | 0.4+ | 2007 12 13 | 704 | 0.4-  | 0.1+  |
| 2002 11 13 | 644 | 0.1+ | 0.1- | 2007 09 04 | 703 | 0.2+ | 0.0  | 2007 12 13 | 704 | 0.1-  | 0.6-  |
| 2002 11 13 | 644 | 0.2+ | 0.3- | 2007 09 05 | 703 | 0.0  | 0.8+ | 2007 12 13 | 704 | 0.8-  | 0.2-  |
| 2002 11 13 | 644 | 0.1+ | 0.0  | 2007 09 05 | 703 | 0.2+ | 1.3- | 2007 12 13 | 704 | 0.3+  | 0.4+  |

(172286)\* 2002 TL<sub>139</sub>

Discovered 2002 Oct. 4 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 62.97403   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.21345610 | $\omega$ | 71.03943  | +0.97090766 |      | +0.20737494 |   |
| <i>a</i>                                | 2.7728753  | $\Omega$ | 276.85410 | -0.23854213 |      | +0.88123212 |   |
| <i>e</i>                                | 0.1778718  | <i>i</i> | 6.92594   | +0.02087993 |      | +0.42476534 |   |
| <i>P</i>                                | 4.62       | <i>H</i> | 14.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 30 | 704 | 0.3+  | 1.1+  | 2002 10 12 | 704 | 1.1-  | 1.3-  | 2004 02 11 | 644 | 0.2- | 0.7+ |
| 2002 08 30 | 704 | 1.4-  | 1.0+  | 2002 10 12 | 704 | 0.4-  | 0.0   | 2004 02 11 | 644 | 0.3- | 0.3+ |
| 2002 08 30 | 704 | (1.2- | 1.8+) | 2002 10 12 | 704 | 1.0-  | 0.7-  | 2004 02 11 | 644 | 0.1+ | 0.1+ |
| 2002 09 07 | 704 | 0.2-  | 0.0   | 2002 11 05 | 704 | 0.3+  | 0.2+  | 2006 05 23 | G96 | 1.0- | 0.1- |
| 2002 09 07 | 704 | 0.2-  | 0.1+  | 2002 11 05 | 704 | 0.3+  | 0.2-  | 2006 05 23 | G96 | 0.3- | 0.2- |
| 2002 09 07 | 704 | 0.4+  | 0.6+  | 2002 11 05 | 704 | 0.2-  | 0.3+  | 2006 05 23 | G96 | 0.0  | 0.4- |
| 2002 10 04 | 699 | 0.3+  | 0.1+  | 2002 11 05 | 704 | 0.5+  | 0.2-  | 2006 05 23 | G96 | 0.3+ | 0.1- |
| 2002 10 04 | 699 | 0.3-  | 0.5-  | 2002 11 05 | 704 | 0.4+  | 0.2+  | 2006 06 18 | 644 | 0.2+ | 0.4+ |
| 2002 10 04 | 699 | 1.4-  | 0.3+  | 2002 11 06 | 704 | 1.3+  | 0.0   | 2006 06 18 | 644 | 0.1+ | 0.4+ |
| 2002 10 04 | 699 | 0.2-  | 0.1-  | 2002 11 06 | 704 | 0.5+  | 0.7+  | 2006 06 18 | 644 | 0.4+ | 0.1- |
| 2002 10 05 | 704 | 0.5+  | 0.4-  | 2002 11 06 | 704 | 0.7+  | 0.3+  | 2006 07 19 | 644 | 0.1- | 0.1+ |
| 2002 10 05 | 704 | 0.3+  | 0.2+  | 2002 11 06 | 704 | 0.4+  | 1.1+  | 2006 07 19 | 644 | 0.3+ | 0.0  |
| 2002 10 05 | 704 | 0.4+  | 0.1+  | 2002 11 06 | 704 | 0.1+  | 0.2-  | 2006 07 19 | 644 | 0.2+ | 0.1- |
| 2002 10 05 | 704 | 0.4+  | 0.0   | 2002 11 13 | 644 | 0.2-  | 0.0   | 2006 07 20 | 644 | 0.2- | 0.1- |
| 2002 10 05 | 704 | 0.6+  | 0.5+  | 2002 11 13 | 644 | 0.0   | 0.1+  | 2006 07 20 | 644 | 0.1+ | 0.1- |
| 2002 10 10 | 704 | 0.4-  | 0.4+  | 2002 11 13 | 644 | 0.4-  | 0.1+  | 2006 07 20 | 644 | 0.0  | 0.4- |
| 2002 10 10 | 704 | 0.0   | 0.5-  | 2002 11 14 | 704 | 0.1+  | 0.3+  | 2007 11 15 | 704 | 0.6+ | 0.0  |
| 2002 10 10 | 704 | 0.4+  | 0.5-  | 2002 11 14 | 704 | 1.1+  | 1.1+  | 2007 11 15 | 704 | 1.1+ | 0.3- |
| 2002 10 10 | 704 | 0.2-  | 0.5+  | 2002 11 14 | 704 | 0.6+  | 0.6+  | 2007 11 15 | 704 | 0.8+ | 0.6- |
| 2002 10 10 | 704 | 0.2-  | 0.1-  | 2002 11 14 | 704 | 0.7+  | 1.1+  | 2007 11 15 | 704 | 0.1+ | 0.4- |
| 2002 10 11 | 704 | 0.6-  | 0.6-  | 2002 11 14 | 704 | (1.6+ | 1.4+) | 2007 11 15 | 704 | 1.0+ | 0.0  |
| 2002 10 11 | 704 | 0.4+  | 0.1-  | 2002 12 06 | 704 | 0.1+  | 0.1-  | 2007 12 10 | 704 | 0.8+ | 0.2+ |
| 2002 10 11 | 704 | 0.1-  | 0.5-  | 2002 12 06 | 704 | 0.4+  | 0.6+  | 2007 12 10 | 704 | 1.0+ | 0.7+ |
| 2002 10 11 | 704 | 0.1-  | 0.1-  | 2002 12 06 | 704 | 0.2+  | 1.0+  | 2007 12 10 | 704 | 0.1+ | 0.7+ |
| 2002 10 11 | 704 | 0.1-  | 0.2-  | 2002 12 06 | 704 | 0.3-  | 0.1+  | 2007 12 14 | 704 | 0.4+ | 1.2+ |
| 2002 10 11 | 704 | 0.2+  | 0.0   | 2002 12 11 | 704 | 0.6-  | 0.6+  | 2007 12 14 | 704 | 0.3+ | 0.2+ |
| 2002 10 11 | 704 | 0.8-  | 0.8-  | 2002 12 11 | 704 | 0.1+  | 0.3-  | 2007 12 14 | 704 | 0.4+ | 0.9+ |
| 2002 10 11 | 704 | 0.2-  | 0.1+  | 2002 12 11 | 704 | 0.5-  | 0.3+  | 2007 12 14 | 704 | 0.0  | 0.3+ |
| 2002 10 11 | 704 | 0.9-  | 0.7-  | 2002 12 11 | 704 | 0.2+  | 0.8+  | 2007 12 14 | 704 | 0.3+ | 0.3+ |
| 2002 10 11 | 704 | 0.3-  | 0.5-  | 2004 01 23 | 704 | (6.6+ | 4.6-) | 2007 12 15 | 691 | 0.5+ | 0.2+ |
| 2002 10 12 | 704 | 1.4-  | 1.1-  | 2004 01 23 | 704 | 0.7+  | 0.9+  | 2007 12 15 | 691 | 0.1+ | 0.3+ |
| 2002 10 12 | 704 | 0.5-  | 0.1-  | 2004 01 23 | 704 | 0.9+  | 1.1+  | 2007 12 15 | 691 | 2.4- | 2.8- |

(172287)\* 2002 TE<sub>144</sub> = 2005 GF<sub>143</sub>

Discovered 2002 Oct. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.  
Id. A. Doppler (MPO 89347)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 86.14194   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.23963044 | $\omega$ | 256.69126 | +0.99615022 |      | +0.02437132 |   |
| <i>a</i> | 2.5670917  | $\Omega$ | 101.86434 | +0.00949992 |      | +0.92490842 |   |
| <i>e</i> | 0.1595546  | <i>i</i> | 4.93612   | -0.08714642 |      | +0.37940802 |   |
| <i>P</i> | 4.11       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 10 31 | 691 | 0.4+ | 0.3+ | 2002 10 06 | 704 | 0.2+ | 0.5+ | 2006 08 22 | 644 | 0.3-  | 0.0   |
| 1994 10 31 | 691 | 0.5+ | 0.2+ | 2002 10 06 | 608 | 0.3+ | 0.2- | 2006 08 22 | 644 | 0.2+  | 0.1+  |
| 1994 10 31 | 691 | 0.7- | 0.7+ | 2002 10 06 | 608 | 0.1- | 0.2- | 2006 08 22 | 644 | 0.3-  | 0.0   |
| 1996 02 18 | 691 | 0.5- | 0.0  | 2002 10 06 | 704 | 0.2+ | 0.4- | 2006 08 24 | 644 | 0.3-  | 0.2+  |
| 1996 02 18 | 691 | 0.3+ | 0.2- | 2002 10 06 | 608 | 0.4+ | 0.3- | 2006 08 24 | 644 | 0.1-  | 0.1+  |
| 1997 05 09 | 691 | 1.4- | 0.7+ | 2002 10 06 | 704 | 0.0  | 1.0+ | 2006 08 24 | 644 | 0.5-  | 0.0   |
| 1997 05 09 | 691 | 0.0  | 0.3+ | 2002 10 06 | 704 | 0.1+ | 0.2+ | 2006 09 20 | 703 | 1.0+  | 0.4+  |
| 1997 05 09 | 691 | 0.2+ | 0.5+ | 2004 02 11 | 691 | 0.1+ | 0.5+ | 2006 09 20 | 703 | (0.3+ | 1.6+) |
| 2002 09 05 | 599 | 0.6- | 0.4+ | 2004 02 11 | 691 | 0.1+ | 0.8+ | 2006 09 20 | 703 | 0.9-  | 0.9+  |
| 2002 09 05 | 599 | 0.3+ | 0.2+ | 2004 02 11 | 691 | 0.5+ | 0.4+ | 2006 09 20 | 703 | 1.0-  | 0.5+  |
| 2002 09 06 | 599 | 0.1+ | 0.4+ | 2005 04 10 | 691 | 0.5+ | 0.3+ | 2007 11 11 | G96 | 0.7-  | 0.7+  |
| 2002 09 06 | 599 | 0.3+ | 0.3+ | 2005 04 10 | 691 | 0.3+ | 0.0  | 2007 11 11 | G96 | 0.3-  | 0.1-  |
| 2002 09 16 | 644 | 0.8- | 0.6+ | 2005 04 10 | 691 | 0.9+ | 0.1+ | 2007 11 11 | G96 | 0.8-  | 0.1-  |
| 2002 09 16 | 644 | 0.6- | 0.4+ | 2005 04 18 | 691 | 0.2+ | 0.1+ | 2007 11 11 | G96 | 0.3-  | 0.3+  |
| 2002 09 16 | 644 | 0.6- | 0.2+ | 2005 04 18 | 691 | 0.2+ | 0.4+ | 2007 12 14 | G96 | 0.6-  | 0.3-  |
| 2002 10 05 | 704 | 0.8+ | 0.9- | 2005 04 18 | 691 | 0.3+ | 0.3- | 2007 12 14 | G96 | 0.6-  | 0.0   |
| 2002 10 05 | 704 | 0.2- | 0.5+ | 2006 08 18 | 644 | 0.0  | 0.1+ | 2007 12 14 | G96 | 1.0-  | 0.3-  |
| 2002 10 05 | 704 | 0.3+ | 0.9+ | 2006 08 18 | 644 | 0.2+ | 0.0  | 2007 12 14 | G96 | 0.4-  | 0.5+  |
| 2002 10 05 | 704 | 0.7- | 0.3- | 2006 08 18 | 644 | 0.2- | 0.2- |            |     |       |       |

(172288)\* 2002 TO<sub>156</sub>

Discovered 2002 Oct. 5 by NEAT at Palomar.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |     | MPC         |      |             |     |       |       |
|-----------------------------------------|------------|----------|-----------|------------|-----|-------------|------|-------------|-----|-------|-------|
| <i>M</i>                                |            | 36.03898 |           | (2000.0)   |     | <b>P</b>    |      | <b>Q</b>    |     |       |       |
| <i>n</i>                                | 0.21842082 | $\omega$ | 136.49745 |            |     | +0.99214526 |      | -0.10226233 |     |       |       |
| <i>a</i>                                | 2.7306960  | $\Omega$ | 229.51490 |            |     | +0.07200618 |      | +0.93782225 |     |       |       |
| <i>e</i>                                | 0.0381594  | <i>i</i> | 5.43531   |            |     | +0.10228827 |      | +0.33171048 |     |       |       |
| <i>P</i>                                | 4.51       | <i>H</i> | 16.4      |            |     | <i>G</i>    | 0.15 | <i>U</i>    | 0   |       |       |
| Residuals in seconds of arc             |            |          |           |            |     |             |      |             |     |       |       |
| 1998 11 27                              | 691        | 0.1+     | 0.2+      | 2006 05 04 | G96 | 0.2+        | 0.0  | 2007 11 07  | 703 | 0.9-  | 0.6+  |
| 1998 11 27                              | 691        | 0.1-     | 0.1+      | 2006 05 04 | G96 | 0.2-        | 0.1- | 2007 11 11  | G96 | 0.5+  | 0.2-  |
| 1998 11 27                              | 691        | 0.4-     | 0.2+      | 2006 05 04 | G96 | 0.3-        | 0.1- | 2007 11 11  | G96 | 0.2+  | 0.4-  |
| 1999 03 09                              | 568        | (2.4+    | 0.5+)     | 2007 10 07 | 691 | 0.6+        | 0.3+ | 2007 11 11  | G96 | 0.5+  | 0.4-  |
| 1999 03 09                              | 568        | 1.7+     | 0.7+      | 2007 10 07 | 691 | 0.8-        | 0.5- | 2007 11 11  | G96 | 0.3+  | 0.2-  |
| 2002 08 28                              | 644        | 0.2-     | 0.4+      | 2007 10 07 | 691 | 0.4-        | 0.2+ | 2007 11 11  | 699 | 0.2+  | 0.7-  |
| 2002 08 28                              | 644        | 0.4+     | 0.4+      | 2007 10 11 | 691 | 0.8+        | 0.9+ | 2007 11 11  | 699 | (1.9+ | 0.1+) |
| 2002 08 28                              | 644        | 0.0      | 0.5+      | 2007 10 11 | 691 | 0.1-        | 0.1+ | 2007 11 11  | 699 | 0.3-  | 1.0-  |
| 2002 09 13                              | 644        | 0.1+     | 0.3+      | 2007 10 11 | 691 | 0.1-        | 0.1+ | 2007 11 11  | 699 | 0.2+  | 0.0   |
| 2002 09 13                              | 644        | 0.0      | 0.1+      | 2007 10 19 | 691 | 0.2-        | 0.3+ | 2007 11 15  | 704 | 0.5+  | 1.0+  |
| 2002 09 13                              | 644        | 0.0      | 0.4+      | 2007 10 19 | 691 | 0.3-        | 0.2- | 2007 11 15  | 704 | 0.3+  | 0.3-  |
| 2002 10 05                              | 644        | 0.2-     | 0.4+      | 2007 10 19 | 691 | 0.1-        | 0.3- | 2007 11 15  | 704 | 0.1+  | 0.6+  |
| 2002 10 05                              | 644        | 0.5-     | 0.2+      | 2007 10 30 | G96 | 0.4+        | 0.2- | 2007 11 15  | 704 | 0.4+  | 0.3-  |
| 2002 10 05                              | 644        | 0.1-     | 0.6+      | 2007 10 30 | G96 | 0.1+        | 0.3- | 2007 11 15  | 704 | 0.1-  | 0.0   |
| 2002 10 06                              | 644        | 0.4-     | 0.5+      | 2007 10 30 | G96 | 0.4+        | 0.3- | 2007 11 17  | 703 | (0.1+ | 1.7+) |
| 2002 10 06                              | 644        | 0.0      | 0.4+      | 2007 10 30 | G96 | 0.5+        | 0.3- | 2007 11 17  | 703 | 0.3-  | 0.2+  |
| 2002 10 06                              | 644        | 0.4+     | 0.2+      | 2007 10 31 | 691 | 0.5-        | 0.0  | 2007 11 17  | 703 | 0.1+  | 0.6-  |
| 2002 10 30                              | 645        | 0.0      | 0.1-      | 2007 10 31 | 691 | 0.0         | 0.0  | 2007 11 17  | 703 | 0.2-  | 0.4-  |
| 2002 10 30                              | 645        | 0.1+     | 0.0       | 2007 10 31 | 691 | 0.1-        | 0.1+ | 2007 11 20  | G96 | 0.5+  | 0.5-  |
| 2002 11 08                              | 645        | 0.0      | 0.1-      | 2007 11 05 | 704 | 0.9+        | 1.4+ | 2007 11 20  | G96 | 0.6+  | 0.4-  |
| 2002 11 08                              | 645        | 0.0      | 0.1-      | 2007 11 05 | 704 | 0.1-        | 0.1+ | 2007 11 20  | G96 | 0.1+  | 0.5-  |
| 2005 03 17                              | G96        | 0.1+     | 0.1+      | 2007 11 05 | 704 | 0.6+        | 0.1- | 2007 11 20  | G96 | 0.3+  | 0.5-  |
| 2005 03 17                              | G96        | 0.0      | 0.2+      | 2007 11 05 | 704 | 0.0         | 1.5+ | 2007 12 03  | 703 | 0.8-  | 0.0   |
| 2005 03 17                              | G96        | 0.0      | 0.4+      | 2007 11 07 | 703 | 0.6-        | 0.4- | 2007 12 03  | 703 | 0.7-  | 0.5+  |
| 2005 03 17                              | G96        | 0.2+     | 0.3+      | 2007 11 07 | 703 | 0.9+        | 0.4- | 2007 12 03  | 703 | 0.4+  | 0.5-  |
| 2006 05 04                              | G96        | 0.2-     | 0.5+      | 2007 11 07 | 703 | 0.7+        | 0.0  | 2007 12 03  | 703 | 1.7-  | 1.2-  |

**(172289)\* 2002 TS<sub>164</sub>**

Discovered 2002 Oct. 5 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 27.21376   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22553267 | $\omega$ | 302.17595 |     | +0.26547626 |     | -0.94334134 |
| $a$ | 2.6729843  | $\Omega$ | 131.07818 |     | +0.94937219 |     | +0.21980880 |
| $e$ | 0.1082480  | $i$      | 15.31264  |     | +0.16797263 |     | +0.24857839 |
| $P$ | 4.37       | $H$      | 15.1      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 2002 10 05 | 644 | 0.0   | 0.3+  | 2003 12 28 | 704 | 0.3-  | 0.0   | 2006 09 26 | 703 | 0.5- | 0.7+  |
| 2002 10 05 | 644 | 0.0   | 0.1+  | 2003 12 28 | 704 | 0.2+  | 0.4-  | 2006 09 26 | 703 | 0.4- | 0.0   |
| 2002 10 05 | 644 | 0.2-  | 0.0   | 2003 12 28 | 704 | 0.2+  | 0.2+  | 2006 09 26 | 703 | 0.1+ | 0.2+  |
| 2002 10 06 | 704 | 0.7-  | 0.6+  | 2004 02 17 | 704 | 0.9-  | 1.1+  | 2006 10 12 | E12 | 0.2- | 0.5+  |
| 2002 10 06 | 704 | 0.4+  | 0.2+  | 2004 02 17 | 704 | 0.2-  | 0.8+  | 2006 10 12 | E12 | 0.6- | 1.3-  |
| 2002 10 06 | 704 | 0.1-  | 0.1-  | 2004 02 17 | 704 | (0.9+ | 2.3+) | 2006 10 12 | E12 | 0.5- | 0.3-  |
| 2002 10 06 | 644 | 0.2-  | 0.0   | 2004 02 17 | 704 | 0.2-  | 1.0+  | 2006 10 12 | E12 | 1.1- | 0.6+  |
| 2002 10 06 | 644 | 0.0   | 0.0   | 2004 03 11 | 644 | 0.2-  | 0.7+  | 2006 11 17 | 644 | 0.3- | 0.3-  |
| 2002 10 06 | 644 | 0.0   | 0.1+  | 2004 03 11 | 644 | 0.3+  | 0.5+  | 2006 11 17 | 644 | 0.0  | 0.0   |
| 2002 10 10 | 644 | 0.4+  | 0.1+  | 2004 03 11 | 644 | 0.0   | 0.6+  | 2006 11 17 | 644 | 0.1+ | 0.2+  |
| 2002 10 10 | 644 | 0.3+  | 0.2+  | 2004 03 14 | 704 | 0.3-  | 1.5+  | 2007 11 04 | 703 | 0.8- | 0.4-  |
| 2002 10 10 | 644 | 0.5+  | 0.3+  | 2004 03 14 | 704 | 0.3+  | 0.3+  | 2007 11 04 | 703 | 1.0- | 0.4+  |
| 2002 10 28 | 644 | 0.1-  | 0.0   | 2004 03 14 | 704 | 0.1+  | 0.8+  | 2007 11 04 | 703 | 0.2+ | 0.2-  |
| 2002 10 28 | 644 | 0.1-  | 0.0   | 2004 03 26 | 703 | 0.0   | 0.2-  | 2007 11 04 | 703 | 0.5- | 1.2+  |
| 2002 10 28 | 644 | 0.2-  | 0.1-  | 2004 03 26 | 703 | 1.3+  | 1.2+  | 2007 11 12 | 704 | 0.6+ | 0.1+  |
| 2002 10 29 | 704 | 0.4+  | 0.1-  | 2004 03 26 | 703 | 0.2-  | 0.2-  | 2007 11 12 | 704 | 0.4- | 1.1-  |
| 2002 10 29 | 704 | (0.5+ | 1.6+) | 2004 03 26 | 703 | 1.1+  | 1.3-  | 2007 11 12 | 704 | (0.0 | 1.6-) |
| 2002 10 29 | 704 | 0.9+  | 0.2+  | 2004 04 14 | 644 | 0.1-  | 0.6+  | 2007 11 12 | 704 | 0.1- | 0.2-  |
| 2002 10 29 | 704 | 0.3-  | 1.3+  | 2004 04 14 | 644 | 0.1+  | 0.8+  | 2007 11 18 | 703 | 0.3- | 0.5-  |
| 2002 11 06 | 644 | 0.2-  | 0.1-  | 2004 04 14 | 644 | 0.5+  | 0.8+  | 2007 11 18 | 703 | 0.8+ | 0.2-  |
| 2002 11 06 | 644 | 0.2-  | 0.1-  | 2006 09 17 | 699 | 0.1+  | 0.4+  | 2007 11 18 | 703 | 0.2- | 0.8+  |
| 2002 11 06 | 644 | 0.7-  | 1.3-  | 2006 09 17 | 699 | 0.3+  | 1.0+  | 2007 11 18 | 703 | 0.8+ | 0.3-  |
| 2002 11 16 | 644 | 0.0   | 0.4+  | 2006 09 17 | 699 | 0.8+  | 0.2-  | 2007 12 04 | 704 | 0.6+ | 1.0-  |
| 2002 11 16 | 644 | 0.1-  | 0.1+  | 2006 09 17 | 699 | 0.1-  | 0.7+  | 2007 12 04 | 704 | 0.3+ | 1.5-  |
| 2002 11 16 | 644 | 0.0   | 0.2+  | 2006 09 20 | 703 | 0.2-  | 1.0+  | 2007 12 04 | 704 | 0.1+ | 0.9+  |
| 2002 12 13 | 644 | 0.2+  | 0.1-  | 2006 09 20 | 703 | 0.0   | 0.7+  | 2007 12 04 | 704 | 0.5+ | 0.9-  |
| 2002 12 13 | 644 | 0.1+  | 0.3-  | 2006 09 20 | 703 | 0.2+  | 0.9+  | 2007 12 04 | 704 | 0.2+ | 0.9+  |
| 2002 12 13 | 644 | 0.1+  | 0.2-  | 2006 09 20 | 703 | 0.2-  | 0.5+  |            |     |      |       |
| 2003 12 28 | 704 | 0.9-  | 0.1-  | 2006 09 26 | 703 | 0.1+  | 0.5+  |            |     |      |       |

**(172290)\* 2002 TW<sub>166</sub>**

Discovered 2002 Oct. 3 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 18.25120   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22145803 | $\omega$ | 139.55680 |     | +0.77664441 |     | -0.58633395 |
| $a$ | 2.7056717  | $\Omega$ | 257.83583 |     | +0.49990323 |     | +0.79610978 |
| $e$ | 0.0236030  | $i$      | 13.62609  |     | +0.38330173 |     | +0.14973880 |
| $P$ | 4.45       | $H$      | 15.1      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 02 14 | 691 | 0.0  | 0.8- | 2003 12 01 | 704 | 0.4+ | 0.5+ | 2007 11 08 | D29 | 0.6+ | 0.1+ |
| 1999 02 14 | 691 | 0.1+ | 0.9- | 2003 12 01 | 704 | 0.6+ | 0.8+ | 2007 11 08 | D29 | 0.3- | 0.2- |
| 1999 02 14 | 691 | 0.9- | 0.6- | 2005 05 16 | 644 | 0.0  | 0.4+ | 2007 11 08 | D29 | 0.7- | 0.1- |
| 2000 03 09 | 704 | 0.1- | 0.1- | 2005 05 16 | 644 | 0.1- | 0.4+ | 2007 11 13 | 703 | 0.1- | 0.2+ |
| 2000 03 09 | 704 | 0.0  | 0.7+ | 2005 05 16 | 644 | 0.1+ | 0.4+ | 2007 11 13 | 703 | 0.7- | 0.1+ |
| 2000 03 09 | 704 | 1.2+ | 0.8+ | 2006 07 03 | 621 | 0.1+ | 1.0- | 2007 11 13 | 703 | 0.7- | 0.4+ |
| 2000 03 09 | 704 | 0.4+ | 0.5+ | 2006 07 03 | 621 | 0.0  | 0.2- | 2007 11 13 | 703 | 0.7- | 0.2+ |
| 2002 08 30 | 704 | 0.2- | 0.2- | 2006 07 03 | 621 | 0.6- | 0.3- | 2007 11 18 | 704 | 1.1+ | 0.2- |
| 2002 08 30 | 704 | 0.5+ | 0.2- | 2006 07 25 | 644 | 0.2- | 0.1+ | 2007 11 18 | 704 | 1.0+ | 0.4- |
| 2002 08 30 | 704 | 0.6- | 0.5- | 2006 07 25 | 644 | 0.1- | 0.0  | 2007 11 18 | 704 | 1.0+ | 0.3- |
| 2002 08 30 | 704 | 0.4+ | 1.1+ | 2006 07 25 | 644 | 0.2+ | 0.2+ | 2007 11 18 | 704 | 1.0+ | 0.1- |
| 2002 09 11 | 644 | 0.2- | 1.0+ | 2007 11 02 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.9+ | 0.3- |
| 2002 09 11 | 644 | 0.1+ | 1.2+ | 2007 11 02 | 704 | 0.2+ | 0.4+ | 2007 11 20 | 704 | 0.2- | 1.1+ |
| 2002 09 11 | 644 | 0.2- | 1.1+ | 2007 11 02 | 691 | 0.1- | 0.0  | 2007 11 20 | 704 | 0.5+ | 0.0  |
| 2002 10 03 | 644 | 0.2- | 0.0  | 2007 11 02 | 704 | 0.5+ | 0.2+ | 2007 11 20 | 704 | 0.3+ | 0.1- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 03 | 644 | 0.0   | 0.2+  | 2007 11 02 | 704 | 0.3-  | 0.2-  | 2007 11 20 | 704 | 0.4+ | 0.1- |
| 2002 10 03 | 644 | 0.1+  | 0.3+  | 2007 11 02 | 691 | 0.1-  | 0.0   | 2007 11 20 | 704 | 0.1+ | 0.2+ |
| 2002 10 05 | 699 | 0.8+  | 0.5-  | 2007 11 02 | 704 | 0.6-  | 0.1+  | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2002 10 05 | 699 | 0.4+  | 0.6+  | 2007 11 02 | 704 | 0.4-  | 0.1+  | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2002 10 05 | 699 | 0.1+  | 0.7+  | 2007 11 06 | 691 | 0.1-  | 0.1+  | 2007 11 20 | 691 | 0.1- | 0.3+ |
| 2002 10 05 | 699 | 0.5+  | 0.2-  | 2007 11 06 | 691 | 0.1+  | 0.1-  | 2007 12 04 | 699 | 0.3+ | 0.3- |
| 2002 10 06 | 704 | 0.0   | 0.8+  | 2007 11 06 | 691 | 0.1-  | 0.1+  | 2007 12 04 | 699 | 0.4- | 0.5+ |
| 2002 10 06 | 704 | 0.5+  | 0.9+  | 2007 11 06 | 691 | 0.1-  | 0.1-  | 2007 12 04 | 699 | 0.6+ | 0.4- |
| 2002 10 06 | 704 | 0.4+  | 0.8+  | 2007 11 06 | 691 | 0.3-  | 0.2-  | 2007 12 04 | 699 | 0.0  | 0.3- |
| 2002 10 06 | 704 | 0.0   | 0.7+  | 2007 11 06 | 691 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.3- | 0.8+ |
| 2002 10 09 | 704 | 0.4+  | 0.4-  | 2007 11 07 | 704 | 0.5+  | 0.4+  | 2007 12 15 | 704 | 0.2+ | 0.5+ |
| 2002 10 09 | 704 | 0.1-  | 0.3-  | 2007 11 07 | 704 | 0.7-  | 0.5-  | 2007 12 15 | 704 | 0.0  | 0.3+ |
| 2002 10 09 | 704 | 1.4-  | 1.4-  | 2007 11 07 | 704 | 0.4+  | 0.3+  | 2007 12 15 | 704 | 0.3- | 0.6+ |
| 2002 10 09 | 704 | 0.1-  | 0.7-  | 2007 11 07 | 704 | 0.8+  | 0.1-  | 2007 12 15 | 704 | 0.1+ | 0.6+ |
| 2003 12 01 | 704 | 0.5+  | 0.6+  | 2007 11 07 | 704 | (0.1+ | 2.2+) |            |     |      |      |
| 2003 12 01 | 704 | (0.2+ | 2.2+) | 2007 11 08 | D29 | 0.8-  | 0.2-  |            |     |      |      |

**(172291)\* 2002 TH<sub>174</sub> = 1998 WQ<sub>7</sub> = 2004 CA<sub>92</sub>**

Discovered 2002 Oct. 4 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 61440)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 357.91806  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22038758 | $\omega$ | 354.67822 |     | +0.37372152 |     | -0.91636514 |
| $a$ | 2.7144258  | $\Omega$ | 73.31447  |     | +0.85643556 |     | +0.28148660 |
| $e$ | 0.0764009  | $i$      | 8.61892   |     | +0.35616058 |     | +0.28467564 |
| $P$ | 4.47       | $H$      | 15.6      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 16 | 104 | 0.5+  | 0.2-  | 2004 01 17 | 644 | 0.2+  | 0.3+  | 2007 12 04 | G96 | 0.1-  | 0.2-  |
| 1998 11 16 | 104 | 1.0+  | 1.2-  | 2004 01 17 | 644 | 0.1+  | 0.3+  | 2007 12 04 | G96 | 0.5+  | 0.2-  |
| 1998 11 16 | 104 | (0.2+ | 2.2-) | 2004 02 14 | 704 | 0.9+  | 0.6+  | 2007 12 04 | G96 | 0.1-  | 0.0   |
| 1998 11 16 | 104 | (1.0+ | 2.6-) | 2004 02 14 | 704 | 0.3-  | 0.3+  | 2007 12 04 | G96 | 0.4+  | 0.1-  |
| 1998 11 16 | 104 | 1.9+  | 1.7-  | 2004 02 14 | 704 | 0.1+  | 0.8+  | 2007 12 10 | 704 | 0.4-  | 0.2+  |
| 1998 11 16 | 104 | 1.3+  | 0.7-  | 2004 02 14 | 704 | 0.1-  | 0.3+  | 2007 12 10 | 704 | 0.2-  | 0.1+  |
| 2002 10 04 | 704 | 0.3-  | 1.1+  | 2004 02 18 | 691 | 0.0   | 0.0   | 2007 12 10 | 704 | (1.5+ | 2.8+) |
| 2002 10 04 | 704 | 0.5+  | 0.2-  | 2004 02 18 | 691 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.6+  | 0.3+  |
| 2002 10 04 | 704 | 1.2-  | 0.5+  | 2004 02 18 | 691 | 0.1-  | 0.1+  | 2007 12 14 | 704 | 0.4+  | 0.2+  |
| 2002 10 04 | 704 | 0.4-  | 0.3+  | 2004 02 22 | 703 | (2.6- | 1.6-) | 2007 12 14 | 704 | 0.5+  | 0.5+  |
| 2002 10 04 | 704 | 0.8-  | 0.7+  | 2004 02 22 | 703 | (0.3- | 2.0-) | 2007 12 14 | 704 | 1.2+  | 0.2+  |
| 2002 10 06 | 704 | 0.4+  | 1.0+  | 2004 02 22 | 703 | 0.2-  | 0.8-  | 2007 12 15 | 691 | 0.3-  | 0.1-  |
| 2002 10 06 | 704 | 1.3-  | 1.2+  | 2004 02 22 | 703 | 0.2+  | 0.0   | 2007 12 15 | 691 | 0.3-  | 0.0   |
| 2002 10 06 | 704 | 1.5-  | 0.6+  | 2005 05 12 | G96 | 0.4-  | 0.0   | 2007 12 15 | 691 | 0.4-  | 0.1-  |
| 2002 10 16 | 644 | 0.7-  | 0.5+  | 2005 05 12 | G96 | 0.3-  | 0.2+  | 2007 12 15 | 704 | 0.8+  | 0.2+  |
| 2002 10 16 | 644 | 1.1-  | 0.3+  | 2005 05 12 | G96 | 0.4-  | 0.0   | 2007 12 15 | 704 | 0.7+  | 0.4+  |
| 2002 10 16 | 644 | 1.0-  | 0.2+  | 2005 05 12 | G96 | 0.8-  | 0.0   | 2007 12 15 | 704 | 0.9+  | 0.9+  |
| 2003 12 27 | 704 | 1.1+  | 0.7+  | 2005 05 13 | 691 | 1.1+  | 0.0   | 2007 12 15 | 704 | 0.3+  | 0.3+  |
| 2003 12 27 | 704 | (2.2+ | 1.2+) | 2005 05 13 | 691 | 0.1+  | 0.4+  | 2007 12 15 | 704 | 0.6+  | 0.2-  |
| 2003 12 27 | 704 | 0.6-  | 0.6+  | 2005 05 13 | 691 | 0.3+  | 0.3+  | 2007 12 16 | 704 | 0.5+  | 0.2+  |
| 2003 12 27 | 704 | 0.5+  | 1.2+  | 2007 11 06 | 691 | (3.2- | 1.8-) | 2007 12 16 | 704 | 0.5+  | 0.0   |
| 2004 01 13 | 699 | 0.5-  | 0.7+  | 2007 11 06 | 691 | 0.6-  | 0.0   | 2007 12 16 | 704 | 0.5+  | 0.1+  |
| 2004 01 13 | 699 | 1.2-  | 0.2+  | 2007 11 06 | 691 | 0.4-  | 0.0   | 2007 12 16 | 704 | 0.5+  | 0.0   |
| 2004 01 13 | 699 | 1.1-  | 0.8+  | 2007 11 14 | 704 | 1.2+  | 0.6+  | 2007 12 16 | 704 | 0.5+  | 0.3-  |
| 2004 01 13 | 699 | 1.3-  | 1.1+  | 2007 11 14 | 704 | 1.3+  | 0.1-  |            |     |       |       |
| 2004 01 17 | 644 | 0.1-  | 0.1+  | 2007 11 14 | 704 | 0.4-  | 0.5-  |            |     |       |       |



## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 06 16 | 704 | 0.4− | 0.6− | 2002 11 11 | 699 | 0.8−  | 1.0−  | 2007 11 08 | 704 | 0.5+ | 0.3+ |
| 2001 06 16 | 704 | 0.4− | 0.6− | 2002 11 11 | 699 | 0.4−  | 0.2−  | 2007 11 08 | 704 | 0.5− | 0.0  |
| 2001 06 16 | 704 | 0.6+ | 0.4+ | 2002 11 13 | 446 | (1.6− | 0.2−) | 2007 11 08 | 704 | 0.0  | 0.2+ |
| 2001 06 16 | 704 | 0.6+ | 0.5− | 2002 11 13 | 446 | 0.4−  | 0.8+  | 2007 11 08 | 704 | 0.4+ | 0.3− |
| 2001 07 13 | 644 | 0.0  | 0.3+ | 2005 03 11 | 703 | 0.2−  | 0.2+  | 2007 11 08 | 704 | 0.2+ | 0.2+ |
| 2001 07 13 | 644 | 0.0  | 0.4+ | 2005 03 11 | 703 | 0.2+  | 0.0   | 2007 11 15 | 699 | 0.6+ | 0.6− |
| 2001 07 13 | 644 | 0.1− | 0.3+ | 2005 03 11 | 703 | 0.4+  | 0.7−  | 2007 11 15 | 699 | 0.4− | 0.0  |
| 2002 10 11 | 644 | 0.3+ | 0.1− | 2005 03 11 | 703 | 0.6−  | 0.9+  | 2007 11 15 | 699 | 0.6+ | 0.6− |
| 2002 10 11 | 644 | 0.1+ | 0.1− | 2006 05 04 | G96 | 0.3−  | 0.1+  | 2007 11 15 | 699 | 0.7+ | 0.3− |
| 2002 10 11 | 644 | 0.3+ | 0.3− | 2006 05 04 | G96 | 0.4−  | 0.0   | 2007 11 16 | 704 | 0.1− | 0.6+ |
| 2002 10 15 | 704 | 0.2+ | 0.4− | 2006 05 04 | G96 | 0.1−  | 0.1+  | 2007 11 16 | 704 | 0.4− | 1.3+ |
| 2002 10 15 | 704 | 0.8+ | 0.7− | 2006 05 04 | G96 | 0.3−  | 0.1+  | 2007 11 16 | 704 | 0.9− | 0.6+ |
| 2002 10 15 | 704 | 0.9+ | 0.6− | 2006 05 26 | 644 | 0.4−  | 0.3+  | 2007 12 16 | 704 | 0.3+ | 1.0+ |
| 2002 11 08 | 704 | 0.7− | 0.7− | 2006 05 26 | 644 | 0.0   | 0.2+  | 2007 12 16 | 704 | 0.3− | 1.8+ |
| 2002 11 08 | 704 | 0.8− | 0.2− | 2006 05 26 | 644 | 0.1+  | 0.3+  | 2007 12 16 | 704 | 0.0  | 0.2− |
| 2002 11 08 | 704 | 0.4− | 0.6− | 2006 05 28 | E12 | 0.0   | 0.5+  | 2007 12 16 | 704 | 0.1− | 0.4+ |
| 2002 11 11 | 699 | 0.5+ | 0.4+ | 2006 05 28 | E12 | 0.2−  | 0.9+  |            |     |      |      |
| 2002 11 11 | 699 | 0.6+ | 0.6+ | 2006 05 28 | E12 | 0.3−  | 0.2+  |            |     |      |      |

(172293)\* 2002 TD<sub>178</sub>

Discovered 2002 Oct. 11 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 45.65386   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.20327754 | $\omega$ | 33.14635  | +0.97070006  | +0.16794235  |
| $a$ | 2.8646822  | $\Omega$ | 316.13025 | −0.23594822  | +0.80156758  |
| $e$ | 0.1493558  | $i$      | 14.35863  | +0.04549543  | +0.57383341  |
| $P$ | 4.85       | $H$      | 15.2      | $G$ 0.15     | $U$ 1        |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 16 | 699 | 0.7−  | 0.0   | 2002 12 07 | 704 | 0.4+  | 0.0   | 2004 01 30 | 704 | 0.2+ | 0.1+ |
| 2002 09 16 | 699 | 1.2+  | 0.3−  | 2002 12 11 | 699 | 0.3−  | 0.4+  | 2004 02 12 | 291 | 0.0  | 0.0  |
| 2002 09 16 | 699 | 0.5−  | 0.3+  | 2002 12 11 | 699 | 0.2+  | 0.6+  | 2004 02 12 | 291 | 0.1+ | 0.0  |
| 2002 09 16 | 699 | 0.3−  | 0.5−  | 2002 12 11 | 699 | (1.7+ | 0.2−) | 2004 02 12 | 291 | 0.0  | 0.1+ |
| 2002 10 01 | 704 | (3.4+ | 2.1−) | 2002 12 11 | 699 | 1.0+  | 0.8+  | 2004 02 17 | 644 | 0.3+ | 0.1+ |
| 2002 10 01 | 704 | (0.6+ | 5.0−) | 2003 12 22 | 704 | 0.2−  | 0.1+  | 2004 02 17 | 644 | 0.0  | 0.4+ |
| 2002 10 01 | 704 | (2.0+ | 1.6−) | 2003 12 22 | 704 | 0.4+  | 0.6+  | 2004 02 17 | 644 | 0.1+ | 0.2+ |
| 2002 10 01 | 704 | (5.1+ | 2.8−) | 2003 12 22 | 704 | 0.4+  | 0.1+  | 2004 02 17 | 644 | 0.2+ | 0.1+ |
| 2002 10 07 | 704 | 0.8+  | 0.2−  | 2003 12 22 | 704 | 1.0−  | 0.2−  | 2004 02 17 | 644 | 0.3+ | 0.4+ |
| 2002 10 07 | 704 | 0.2−  | 0.1+  | 2003 12 27 | 704 | 0.4+  | 1.4+  | 2004 02 17 | 644 | 0.2+ | 0.2+ |
| 2002 10 07 | 704 | 0.5+  | 0.2−  | 2003 12 27 | 704 | 1.1+  | 1.5+  | 2004 03 17 | 645 | 0.0  | 0.3− |
| 2002 10 07 | 704 | 0.8+  | 0.1−  | 2003 12 27 | 704 | 1.0+  | 1.1−  | 2004 03 17 | 645 | 0.0  | 0.3− |
| 2002 10 11 | 644 | 0.2−  | 0.3+  | 2003 12 27 | 704 | 0.2−  | 0.4+  | 2005 04 02 | 644 | 0.2+ | 0.3+ |
| 2002 10 11 | 644 | 0.2−  | 0.0   | 2003 12 29 | 291 | 0.7−  | 0.1+  | 2005 04 02 | 644 | 0.3+ | 0.3+ |
| 2002 10 11 | 644 | 0.5−  | 0.0   | 2003 12 29 | 291 | 0.7−  | 0.1+  | 2005 04 02 | 644 | 0.4+ | 0.3+ |
| 2002 10 15 | 704 | 0.6−  | 0.2−  | 2003 12 29 | 291 | 0.4−  | 0.1+  | 2005 04 07 | 644 | 0.1− | 0.5+ |
| 2002 10 15 | 704 | 1.4−  | 0.9−  | 2004 01 16 | 644 | 0.0   | 0.0   | 2005 04 07 | 644 | 0.1+ | 0.4+ |
| 2002 10 15 | 704 | 0.8−  | 0.3+  | 2004 01 16 | 644 | 0.1−  | 0.3+  | 2005 04 07 | 644 | 0.0  | 0.2+ |
| 2002 10 15 | 704 | 0.4−  | 0.5−  | 2004 01 16 | 644 | 0.0   | 0.2+  | 2005 05 11 | 644 | 0.1+ | 0.2+ |
| 2002 10 20 | 644 | 0.2−  | 0.4+  | 2004 01 17 | 644 | 0.2−  | 0.0   | 2005 05 11 | 644 | 0.1+ | 0.3+ |
| 2002 10 20 | 644 | 0.1−  | 0.3+  | 2004 01 17 | 644 | 0.1−  | 0.3+  | 2005 05 11 | 644 | 0.7+ | 0.4+ |
| 2002 10 20 | 644 | 0.1−  | 0.4+  | 2004 01 17 | 644 | 0.1−  | 0.0   | 2007 07 04 | G96 | 0.3+ | 0.4− |
| 2002 10 31 | 704 | 0.5+  | 0.8+  | 2004 01 19 | 691 | 0.2−  | 0.1+  | 2007 07 04 | G96 | 0.4+ | 0.0  |
| 2002 10 31 | 704 | 0.4+  | 0.4+  | 2004 01 19 | 691 | 0.2−  | 0.1−  | 2007 07 04 | G96 | 0.1− | 0.0  |
| 2002 10 31 | 704 | 0.6+  | 0.1+  | 2004 01 19 | 691 | 0.1−  | 0.0   | 2007 07 04 | G96 | 0.2− | 0.2+ |
| 2002 10 31 | 704 | 0.7+  | 0.7+  | 2004 01 22 | 704 | 0.2+  | 0.5+  | 2007 09 20 | 106 | 1.3− | 0.0  |
| 2002 10 31 | 704 | 0.9+  | 0.2+  | 2004 01 22 | 704 | 0.3−  | 0.5+  | 2007 09 20 | 106 | 0.5+ | 0.1+ |
| 2002 11 01 | 704 | 0.8−  | 0.7−  | 2004 01 22 | 704 | 0.4+  | 0.4+  | 2007 09 20 | 106 | 0.4− | 0.4+ |
| 2002 11 01 | 704 | 1.0−  | 0.4−  | 2004 01 22 | 704 | 0.6−  | 0.0   | 2007 09 20 | 106 | 0.4− | 0.1− |
| 2002 11 01 | 704 | 0.8−  | 0.6−  | 2004 01 28 | 691 | 0.4+  | 0.1+  | 2007 12 08 | B03 | 0.1+ | 0.2− |
| 2002 11 15 | 704 | 1.5+  | 1.0+  | 2004 01 28 | 691 | 0.2+  | 0.1+  | 2007 12 08 | B03 | 0.3+ | 0.0  |
| 2002 11 15 | 704 | (1.1+ | 1.6+) | 2004 01 28 | 691 | 0.2+  | 0.0   | 2007 12 08 | B03 | 0.3+ | 0.1− |
| 2002 11 15 | 704 | (0.5+ | 1.6+) | 2004 01 30 | 691 | 0.3+  | 0.0   | 2007 12 08 | B03 | 0.3+ | 0.1− |
| 2002 12 07 | 704 | 0.3−  | 0.3−  | 2004 01 30 | 691 | 0.1+  | 0.2+  | 2007 12 08 | B03 | 0.1+ | 0.1+ |
| 2002 12 07 | 704 | 0.4+  | 0.6−  | 2004 01 30 | 691 | 0.2+  | 0.1+  | 2007 12 08 | B03 | 0.1− | 0.1+ |
| 2002 12 07 | 704 | 0.2−  | 0.3+  | 2004 01 30 | 704 | 0.7+  | 0.0   | 2007 12 08 | B03 | 0.2+ | 0.3+ |
| 2002 12 07 | 704 | 0.7−  | 0.3−  | 2004 01 30 | 704 | 0.1+  | 0.4−  |            |     |      |      |

(172294)\* 2002 TQ<sub>179</sub>

Discovered 2002 Oct. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 144.78753  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.23991093 | $\omega$ | 21.40100  | +0.73916161  | +0.64616252  |
| $a$ | 2.5650905  | $\Omega$ | 296.89878 | −0.64474773  | +0.59722987  |
| $e$ | 0.1950104  | $i$      | 12.30363  | −0.19478315  | +0.47517416  |
| $P$ | 4.11       | $H$      | 15.6      | $G$ 0.15     | $U$ 1        |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 06 27 | 644 | 0.1−  | 0.2+  | 2002 12 06 | 704 | 0.4+  | 0.3−  | 2006 11 22 | 703 | 0.3− | 0.8+ |
| 2001 06 27 | 644 | 0.2+  | 0.3+  | 2002 12 12 | 644 | 0.1−  | 0.1+  | 2006 11 22 | 703 | 0.5− | 0.0  |
| 2001 06 27 | 644 | 0.1+  | 0.3+  | 2002 12 12 | 644 | 0.3−  | 0.2−  | 2006 11 22 | 703 | 0.7− | 0.2− |
| 2002 10 01 | 704 | 0.1−  | 0.6−  | 2002 12 12 | 644 | 0.5+  | 0.3+  | 2006 12 15 | 703 | 0.6− | 0.3− |
| 2002 10 01 | 704 | 0.0   | 0.5−  | 2004 02 11 | 644 | 0.1+  | 1.0+  | 2006 12 15 | 703 | 0.6+ | 0.6+ |
| 2002 10 01 | 704 | 0.8−  | 1.3+  | 2004 02 11 | 644 | 0.5−  | 1.3+  | 2006 12 15 | 703 | 1.3+ | 0.9+ |
| 2002 10 13 | 644 | (0.9+ | 1.6+) | 2004 02 11 | 644 | 0.1+  | 0.9+  | 2006 12 15 | 703 | 1.0+ | 0.2− |
| 2002 10 13 | 644 | 0.8+  | 1.3+  | 2005 05 13 | E12 | 0.2−  | 0.3+  | 2007 03 11 | G96 | 0.2+ | 0.5− |
| 2002 10 13 | 644 | 1.2+  | 1.0+  | 2005 05 13 | E12 | 0.7+  | 0.6+  | 2007 03 11 | G96 | 0.6− | 0.3− |
| 2002 10 15 | 704 | 0.7−  | 1.4+  | 2005 05 13 | E12 | 0.1+  | 0.6−  | 2007 03 11 | G96 | 0.3+ | 0.5− |
| 2002 10 15 | 704 | 0.4+  | 0.6+  | 2005 05 13 | E12 | 0.1+  | 0.4+  | 2007 03 11 | G96 | 0.1− | 0.8− |
| 2002 10 15 | 704 | 0.9+  | 1.4+  | 2006 09 25 | 703 | 0.5+  | 0.1+  | 2007 11 09 | G96 | 0.2+ | 0.7− |
| 2002 10 31 | 704 | 0.6+  | 0.2+  | 2006 09 25 | 703 | 0.1−  | 0.3−  | 2007 11 09 | G96 | 0.6− | 0.0  |
| 2002 10 31 | 704 | 0.0   | 1.0+  | 2006 09 25 | 703 | 0.2−  | 0.1−  | 2007 11 09 | G96 | 0.1− | 0.7− |
| 2002 10 31 | 704 | 1.3−  | 1.4+  | 2006 09 25 | 703 | 0.2+  | 0.6−  | 2007 11 09 | G96 | 0.3+ | 0.3− |
| 2002 11 15 | 704 | 0.1+  | 0.4−  | 2006 10 23 | 703 | 0.9−  | 0.4−  | 2007 11 09 | G96 | 0.2− | 0.9− |
| 2002 11 15 | 704 | 0.2+  | 0.1−  | 2006 10 23 | 703 | 0.4−  | 0.1−  | 2007 11 09 | G96 | 0.5+ | 0.1+ |
| 2002 11 15 | 704 | 0.5+  | 0.8−  | 2006 10 23 | 703 | 0.0   | 0.8−  | 2007 11 09 | G96 | 0.0  | 0.3− |
| 2002 11 15 | 704 | 0.6−  | 1.3−  | 2006 10 23 | 703 | 0.1−  | 0.3−  | 2007 11 09 | G96 | 0.2+ | 0.2− |
| 2002 12 03 | 644 | 0.0   | 0.3+  | 2006 11 16 | 703 | (1.6+ | 2.7+) | 2007 12 15 | G96 | 0.0  | 0.2− |
| 2002 12 03 | 644 | 0.2−  | 0.5+  | 2006 11 16 | 703 | 0.7+  | 0.9−  | 2007 12 15 | G96 | 0.3− | 0.3+ |
| 2002 12 03 | 644 | 0.2−  | 0.4+  | 2006 11 16 | 703 | 0.5+  | 1.2−  | 2007 12 15 | G96 | 0.1− | 0.1− |
| 2002 12 06 | 704 | 0.8−  | 1.0−  | 2006 11 16 | 703 | (2.2+ | 0.9−) | 2007 12 15 | G96 | 0.0  | 0.6− |
| 2002 12 06 | 704 | 0.0   | 0.7+  | 2006 11 22 | 703 | 0.2−  | 0.3+  |            |     |      |      |

(172295)\* 2002 TC<sub>195</sub>

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 40.39478   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.21533256 | $\omega$ | 331.74840 | +0.85448408  | −0.51227480  |
| $a$ | 2.7567428  | $\Omega$ | 59.32194  | +0.49349196  | +0.74865689  |
| $e$ | 0.1150912  | $i$      | 5.75265   | +0.16224255  | +0.42081752  |
| $P$ | 4.58       | $H$      | 15.4      | $G$ 0.15     | $U$ 1        |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 03 | 704 | 0.3+  | 0.1−  | 2002 11 06 | 704 | 0.1− | 0.2+ | 2005 04 07 | G96 | 0.1+  | 0.2+  |
| 2002 10 03 | 704 | 0.6−  | 0.7−  | 2002 11 06 | 704 | 0.7− | 0.1− | 2005 04 07 | G96 | 0.4−  | 0.4+  |
| 2002 10 03 | 704 | (1.5+ | 0.1−) | 2002 11 06 | 704 | 0.2− | 0.3− | 2005 04 07 | G96 | 0.1+  | 0.3+  |
| 2002 10 03 | 704 | 0.8−  | 0.0   | 2002 11 12 | 644 | 0.2+ | 0.6+ | 2005 06 14 | G96 | 0.7+  | 0.4+  |
| 2002 10 03 | 704 | 0.5+  | 0.4+  | 2002 11 12 | 644 | 0.5+ | 0.4+ | 2005 06 14 | G96 | 0.2−  | 0.2+  |
| 2002 10 03 | 704 | 0.3−  | 0.0   | 2002 11 12 | 644 | 1.2+ | 0.8− | 2005 06 14 | G96 | 0.3−  | 0.2−  |
| 2002 10 03 | 704 | 0.1−  | 0.2+  | 2002 11 22 | 644 | 0.1+ | 0.1+ | 2005 06 14 | G96 | 0.2−  | 0.2+  |
| 2002 10 03 | 704 | 0.7−  | 0.5+  | 2002 11 22 | 644 | 0.2+ | 0.1− | 2006 08 16 | E12 | 0.9−  | 1.1+  |
| 2002 10 03 | 704 | 0.5−  | 0.1−  | 2002 11 22 | 644 | 0.0  | 0.0  | 2006 08 16 | E12 | (0.8− | 1.6+) |
| 2002 10 07 | 704 | 0.4−  | 0.1+  | 2002 12 05 | 704 | 0.0  | 0.1− | 2006 08 16 | E12 | 0.1−  | 0.2+  |
| 2002 10 07 | 704 | 0.8+  | 0.2+  | 2002 12 05 | 704 | 0.6− | 0.4+ | 2006 08 16 | E12 | 0.6+  | 1.1+  |
| 2002 10 07 | 704 | 0.3−  | 1.4+  | 2002 12 05 | 704 | 0.9− | 0.1− | 2007 12 05 | 691 | 0.1−  | 0.4−  |
| 2002 10 09 | 704 | 0.1−  | 0.7+  | 2002 12 05 | 704 | 0.3− | 0.6+ | 2007 12 05 | 691 | 0.1+  | 0.4−  |
| 2002 10 09 | 704 | 0.5−  | 0.5−  | 2002 12 05 | 704 | 0.3+ | 0.9+ | 2007 12 05 | 691 | 0.3−  | 0.4−  |
| 2002 10 09 | 704 | 0.5−  | 0.8−  | 2002 12 11 | 644 | 0.6+ | 0.1+ | 2007 12 06 | 704 | 0.3+  | 0.6+  |
| 2002 10 11 | 704 | 0.1+  | 0.5−  | 2002 12 11 | 644 | 0.2− | 0.6+ | 2007 12 06 | 704 | 0.9−  | 0.2−  |
| 2002 10 11 | 704 | 0.5+  | 0.5+  | 2002 12 11 | 644 | 0.1+ | 0.3+ | 2007 12 06 | 704 | 0.4−  | 0.1−  |
| 2002 10 11 | 704 | 0.1+  | 0.5−  | 2004 02 16 | 704 | 0.5+ | 0.4− | 2007 12 06 | 704 | 0.4+  | 0.3−  |
| 2002 10 11 | 704 | 0.3−  | 0.0   | 2004 02 16 | 704 | 1.4+ | 0.5+ | 2007 12 06 | 704 | 0.7−  | 0.2+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 31 | 644 | 0.5+ | 0.4+ | 2004 02 16 | 704 | 0.6+ | 0.7+ | 2007 12 13 | 704 | 0.2+ | 0.0  |
| 2002 10 31 | 644 | 0.7+ | 0.0  | 2004 02 17 | 691 | 0.2+ | 0.2+ | 2007 12 13 | 704 | 0.2+ | 0.5- |
| 2002 10 31 | 644 | 0.5+ | 0.0  | 2004 02 17 | 691 | 0.0  | 0.2+ | 2007 12 13 | 704 | 0.7+ | 0.4- |
| 2002 11 04 | 699 | 0.2+ | 0.6+ | 2004 02 17 | 691 | 0.3- | 0.2+ | 2007 12 13 | 704 | 0.1+ | 0.2- |
| 2002 11 04 | 699 | 0.1- | 0.5+ | 2004 03 23 | 704 | 0.3- | 0.6+ | 2007 12 15 | 704 | 0.5- | 0.2- |
| 2002 11 04 | 699 | 0.3+ | 0.2+ | 2004 03 23 | 704 | 0.4+ | 0.0  | 2007 12 15 | 704 | 0.5+ | 0.5+ |
| 2002 11 04 | 699 | 0.9- | 0.3- | 2004 03 23 | 704 | 0.1+ | 0.6+ | 2007 12 15 | 704 | 0.4- | 0.7+ |
| 2002 11 06 | 704 | 0.7- | 0.2+ | 2004 03 23 | 704 | 0.6+ | 1.4+ | 2007 12 15 | 704 | 1.1+ | 0.2+ |
| 2002 11 06 | 704 | 0.6- | 0.0  | 2005 04 07 | G96 | 0.1- | 0.3+ | 2007 12 15 | 704 | 0.1+ | 0.4+ |

**(172296)\* 2002 TV<sub>195</sub> = 2000 HC<sub>3</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. M. Kretlow (*MPO* 43232)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 27.27393   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.20413846 | $\omega$ | 172.84934 | +0.85209456 | -0.49899205 |          |   |
| <i>a</i> | 2.8566223  | $\Omega$ | 218.43137 | +0.46674075 | +0.86098965 |          |   |
| <i>e</i> | 0.1372061  | <i>i</i> | 14.71903  | +0.23682892 | +0.09850762 |          |   |
| <i>P</i> | 4.83       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 11 02 | 691 | 0.2+ | 0.6- | 2002 11 11 | 704 | 0.0  | 1.1+ | 2005 05 08 | 691 | 0.3+  | 0.5+  |
| 1997 11 02 | 691 | 0.1- | 0.6- | 2002 11 11 | 704 | 0.3+ | 0.5+ | 2005 05 08 | 691 | 0.5+  | 0.5+  |
| 1997 11 02 | 691 | 0.2+ | 0.6- | 2002 11 11 | 704 | 0.3+ | 0.3- | 2005 05 11 | G96 | 0.5-  | 0.4+  |
| 2000 04 26 | 691 | 0.2+ | 0.5- | 2002 11 23 | 644 | 0.1- | 0.1+ | 2005 05 11 | G96 | 0.2-  | 0.1+  |
| 2000 04 26 | 691 | 0.2- | 0.3- | 2002 11 23 | 644 | 0.0  | 0.4+ | 2005 05 11 | G96 | 0.1+  | 0.0   |
| 2000 04 26 | 691 | 0.3- | 0.3- | 2002 11 23 | 644 | 0.3+ | 0.1- | 2005 05 11 | G96 | 0.1+  | 0.3+  |
| 2000 04 27 | 691 | 0.3- | 0.0  | 2002 12 01 | 704 | 0.2- | 0.3+ | 2006 05 26 | 691 | 0.1-  | 0.1+  |
| 2000 04 27 | 691 | 0.2- | 0.5- | 2002 12 01 | 704 | 0.2- | 0.4+ | 2006 05 26 | 691 | 0.2-  | 0.1+  |
| 2000 04 27 | 691 | 0.1- | 0.1- | 2002 12 01 | 704 | 0.1+ | 0.5+ | 2006 05 26 | 691 | 0.1-  | 0.1+  |
| 2002 10 03 | 704 | 0.1+ | 0.5- | 2002 12 01 | 704 | 0.0  | 0.6+ | 2006 05 31 | 691 | 0.1+  | 0.1+  |
| 2002 10 03 | 704 | 0.8+ | 0.4- | 2002 12 01 | 704 | 0.2- | 0.7+ | 2006 05 31 | 691 | 0.3-  | 0.4+  |
| 2002 10 03 | 704 | 1.2+ | 0.8- | 2002 12 02 | 608 | 0.7+ | 0.7+ | 2006 05 31 | 691 | 0.1-  | 0.2+  |
| 2002 10 07 | 704 | 0.4- | 1.4- | 2002 12 02 | 608 | 0.4+ | 0.4+ | 2007 11 11 | 704 | (0.2- | 1.7+) |
| 2002 10 07 | 704 | 0.3- | 0.3- | 2002 12 02 | 608 | 0.9+ | 0.6+ | 2007 11 11 | 704 | (0.7- | 2.4+) |
| 2002 10 07 | 704 | 0.6- | 0.2- | 2002 12 13 | 608 | 1.0- | 0.2+ | 2007 11 11 | 704 | (1.0- | 2.7+) |
| 2002 11 07 | 704 | 0.3+ | 0.5+ | 2002 12 13 | 608 | 0.7- | 0.1+ | 2007 11 11 | 704 | 0.4+  | 0.1+  |
| 2002 11 07 | 704 | 0.0  | 0.1- | 2002 12 13 | 608 | 0.5- | 0.3+ | 2007 12 05 | 703 | 0.0   | 0.8+  |
| 2002 11 07 | 704 | 0.8- | 0.7+ | 2005 04 11 | G96 | 0.0  | 0.2+ | 2007 12 05 | 703 | 0.2+  | 0.3+  |
| 2002 11 07 | 704 | 0.1- | 0.7+ | 2005 04 11 | G96 | 0.2+ | 0.0  | 2007 12 05 | 703 | 0.2+  | 0.1+  |
| 2002 11 07 | 704 | 0.9- | 0.0  | 2005 04 11 | G96 | 0.3+ | 0.3+ | 2007 12 05 | 703 | 0.7-  | 1.4+  |
| 2002 11 11 | 704 | 0.1+ | 0.3+ | 2005 04 11 | G96 | 0.1- | 0.0  |            |     |       |       |
| 2002 11 11 | 704 | 0.3+ | 0.5+ | 2005 05 08 | 691 | 0.2+ | 0.4+ |            |     |       |       |

**(172297)\* 2002 TU<sub>199</sub>**

Discovered 2002 Oct. 6 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 50.52681   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.22407270 | $\omega$ | 68.91520  | +0.91277877 | -0.36958465 |          |   |
| <i>a</i> | 2.6845825  | $\Omega$ | 312.31546 | +0.22879220 | +0.81532634 |          |   |
| <i>e</i> | 0.2723802  | <i>i</i> | 13.60214  | +0.33836230 | +0.44570187 |          |   |
| <i>P</i> | 4.40       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 12 17 | 704 | (0.3+ | 2.2-) | 2002 10 15 | 704 | 0.1+ | 0.4- | 2004 02 19 | 704 | (1.8+ | 1.1+) |
| 1998 12 17 | 704 | (0.8- | 2.3-) | 2002 10 15 | 704 | 0.0  | 0.4- | 2004 02 19 | 704 | 1.3+  | 0.8+  |
| 1998 12 17 | 704 | (1.3+ | 2.6-) | 2002 10 15 | 704 | 0.5- | 0.9- | 2006 06 29 | F84 | 0.6+  | 0.4-  |
| 1998 12 17 | 704 | 1.5-  | 1.9-  | 2002 10 15 | 704 | 0.2- | 0.3- | 2006 06 29 | F84 | 1.3-  | 0.4+  |
| 2002 08 13 | 704 | 0.5-  | 0.2-  | 2002 11 10 | 704 | 0.2- | 1.1- | 2006 06 29 | F84 | 0.7+  | 0.1-  |
| 2002 08 13 | 704 | 0.2-  | 0.3-  | 2002 11 10 | 704 | 0.7- | 0.1+ | 2006 07 17 | 428 | 0.3-  | 0.2+  |
| 2002 08 13 | 704 | 0.1+  | 0.3+  | 2002 11 10 | 704 | 0.1- | 0.3+ | 2006 07 17 | 428 | 0.3-  | 0.3-  |
| 2002 08 13 | 704 | 0.3-  | 0.1-  | 2002 11 10 | 704 | 0.2+ | 0.2+ | 2006 07 18 | 428 | 0.6+  | 0.3+  |
| 2002 08 30 | 704 | 0.5+  | 0.4-  | 2002 11 10 | 704 | 0.0  | 0.4- | 2006 07 23 | 644 | 0.1-  | 0.5+  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 30 | 704 | 0.3+ | 0.1- | 2002 11 14 | 704 | 0.4+  | 0.1+  | 2006 07 23 | 644 | 0.3-  | 0.5+  |
| 2002 08 30 | 704 | 0.3- | 0.0  | 2002 11 14 | 704 | 0.0   | 0.3+  | 2006 07 23 | 644 | 0.1+  | 0.4+  |
| 2002 08 30 | 704 | 0.8+ | 0.3- | 2002 11 14 | 704 | 0.2+  | 0.4+  | 2006 07 23 | 644 | 0.0   | 0.1+  |
| 2002 08 30 | 704 | 0.9+ | 0.3- | 2002 11 14 | 704 | 0.1-  | 0.4+  | 2006 07 23 | 644 | 0.1+  | 0.4+  |
| 2002 09 28 | 644 | 0.5- | 0.0  | 2002 12 02 | 704 | 0.4+  | 0.5+  | 2006 07 23 | 644 | 0.1-  | 0.1+  |
| 2002 09 28 | 644 | 0.6- | 0.1- | 2002 12 02 | 704 | 0.3+  | 0.4+  | 2006 08 14 | 644 | 0.2-  | 0.2+  |
| 2002 09 28 | 644 | 0.6- | 0.0  | 2002 12 02 | 704 | 0.4+  | 0.7+  | 2006 08 14 | 644 | 0.1-  | 0.2+  |
| 2002 10 06 | 699 | 0.2- | 0.0  | 2002 12 11 | 699 | 0.2-  | 0.6+  | 2006 08 14 | 644 | 0.4-  | 0.2+  |
| 2002 10 06 | 699 | 0.2- | 0.1+ | 2002 12 11 | 699 | 0.7-  | 0.4+  | 2006 08 19 | 644 | 0.3-  | 0.2+  |
| 2002 10 06 | 699 | 0.3- | 0.1+ | 2002 12 11 | 699 | 0.7-  | 0.7+  | 2006 08 19 | 644 | 0.1-  | 0.2+  |
| 2002 10 06 | 699 | 0.1+ | 0.1+ | 2002 12 11 | 699 | (1.8- | 0.9+) | 2006 08 19 | 644 | 0.3-  | 0.2+  |
| 2002 10 07 | 704 | 0.5+ | 0.1+ | 2002 12 27 | 644 | 0.2+  | 0.5-  | 2007 11 20 | 704 | 0.4+  | 0.7+  |
| 2002 10 07 | 704 | 0.4+ | 0.4+ | 2002 12 27 | 644 | 0.1+  | 0.8-  | 2007 11 20 | 704 | (1.4+ | 2.9+) |
| 2002 10 07 | 704 | 0.3+ | 0.5+ | 2002 12 27 | 644 | 0.3+  | 0.6-  | 2007 11 20 | 704 | 0.3+  | 1.5+  |
| 2002 10 07 | 704 | 0.0  | 0.4+ | 2002 12 31 | 704 | 0.6+  | 0.7+  | 2007 11 20 | 704 | 0.7+  | 1.0+  |
| 2002 10 07 | 704 | 0.3+ | 0.5+ | 2002 12 31 | 704 | 0.1-  | 1.2+  | 2007 12 16 | 699 | 0.7+  | 0.9-  |
| 2002 10 10 | 704 | 0.2+ | 0.3- | 2002 12 31 | 704 | 0.5-  | 0.1+  | 2007 12 16 | 699 | 0.1+  | 1.1+  |
| 2002 10 10 | 704 | 0.0  | 0.1- | 2002 12 31 | 704 | 0.1-  | 0.0   | 2007 12 16 | 699 | 0.4-  | 0.3-  |
| 2002 10 10 | 704 | 0.0  | 0.4- | 2002 12 31 | 704 | 0.2-  | 0.1+  | 2007 12 16 | 699 | 0.7-  | 0.1-  |
| 2002 10 10 | 704 | 0.2- | 0.2- | 2004 02 19 | 704 | 0.2+  | 0.3+  |            |     |       |       |
| 2002 10 15 | 704 | 0.1- | 0.4+ | 2004 02 19 | 704 | 1.0+  | 1.0+  |            |     |       |       |

**(172298)\* 2002 TD<sub>213</sub> = 1993 TJ<sub>40</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 38072)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 23.65238   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.21728884 | $\omega$ | 326.01351 | +0.79808756 | -0.59535658 |          |   |
| <i>a</i> | 2.7401716  | $\Omega$ | 70.79512  | +0.57236449 | +0.70096136 |          |   |
| <i>e</i> | 0.0800186  | <i>i</i> | 5.63783   | +0.18829536 | +0.39268781 |          |   |
| <i>P</i> | 4.54       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 11 | 809 | (4.3+ | 0.1-) | 2002 10 10 | 645 | 0.2+ | 0.0  | 2005 05 17 | G96 | 0.3+ | 0.0  |
| 1993 10 11 | 809 | (4.1+ | 0.0 ) | 2002 10 10 | 645 | 0.2+ | 0.0  | 2005 05 17 | G96 | 0.2- | 0.2- |
| 1993 10 11 | 809 | (3.3+ | 0.0 ) | 2002 10 11 | 645 | 0.1+ | 0.1+ | 2005 05 19 | G96 | 0.6- | 0.0  |
| 1993 10 21 | 809 | (4.4+ | 0.9+) | 2002 10 11 | 645 | 0.1+ | 0.2+ | 2005 05 19 | G96 | 0.2- | 0.2- |
| 1993 10 21 | 809 | (2.9+ | 1.0+) | 2002 10 15 | 644 | 0.0  | 1.3+ | 2005 05 19 | G96 | 0.2- | 0.1- |
| 1993 10 21 | 809 | (4.7+ | 1.0-) | 2002 10 15 | 644 | 0.0  | 1.3+ | 2005 05 19 | G96 | 0.1+ | 0.2- |
| 1996 05 20 | 691 | 1.1-  | 0.3+  | 2002 10 15 | 644 | 0.4+ | 1.2+ | 2007 11 02 | 691 | 0.3- | 0.1+ |
| 1996 05 20 | 691 | 0.8-  | 0.5+  | 2002 10 30 | 645 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.2- | 0.3+ |
| 1996 05 20 | 691 | 1.1-  | 0.4+  | 2002 10 30 | 645 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.3- | 0.1+ |
| 2002 10 03 | 704 | 0.6-  | 0.2+  | 2002 11 08 | 645 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.4- | 0.1- |
| 2002 10 03 | 704 | 0.5-  | 0.6-  | 2002 11 08 | 645 | 0.0  | 0.0  | 2007 11 14 | 691 | 1.4- | 0.7+ |
| 2002 10 03 | 704 | 0.9-  | 0.8-  | 2004 03 18 | 645 | 0.2+ | 0.1- | 2007 11 14 | 691 | 0.4- | 0.0  |
| 2002 10 03 | 704 | 0.5+  | 1.3-  | 2004 03 18 | 645 | 0.1+ | 0.1- | 2007 12 04 | 691 | 0.7- | 0.1+ |
| 2002 10 03 | 704 | 0.1-  | 1.2-  | 2004 04 15 | 645 | 0.3+ | 0.0  | 2007 12 04 | 691 | 0.9- | 0.1+ |
| 2002 10 05 | 645 | 0.0   | 0.0   | 2004 04 15 | 645 | 0.2+ | 0.1- | 2007 12 04 | 691 | 0.4+ | 0.7- |
| 2002 10 05 | 645 | 0.0   | 0.0   | 2005 05 04 | 691 | 0.4+ | 0.4+ | 2007 12 14 | 704 | 0.8+ | 0.3- |
| 2002 10 07 | 644 | 0.0   | 0.4+  | 2005 05 04 | 691 | 0.5+ | 0.2+ | 2007 12 14 | 704 | 0.3+ | 0.6+ |
| 2002 10 07 | 644 | 0.3-  | 0.6+  | 2005 05 04 | 691 | 0.5+ | 0.2+ | 2007 12 14 | 704 | 0.9- | 1.5+ |
| 2002 10 07 | 644 | 0.1-  | 0.5+  | 2005 05 10 | 691 | 0.4+ | 0.3+ | 2007 12 16 | 701 | 0.5- | 0.2- |
| 2002 10 08 | 699 | 1.5-  | 0.0   | 2005 05 10 | 691 | 0.5+ | 0.3+ | 2007 12 16 | 701 | 0.2+ | 0.4- |
| 2002 10 08 | 699 | 0.6-  | 0.1+  | 2005 05 10 | 691 | 0.3+ | 0.3+ | 2007 12 16 | 701 | 0.5- | 0.3- |
| 2002 10 08 | 699 | (2.6- | 1.8+) | 2005 05 17 | G96 | 0.1- | 0.1+ | 2007 12 16 | 701 | 0.2- | 0.0  |
| 2002 10 08 | 699 | (1.7- | 0.2-) | 2005 05 17 | G96 | 0.1- | 0.2- |            |     |      |      |

2007 DEC. 24

M.P.O. 129325

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                        |                          |               |  |             |  |  |  |  |  |
|-----------------------------------------|----------------------------|--------------------------|---------------|--|-------------|--|--|--|--|--|
| <i>M</i> 12.90446                       | (2000.0)                   |                          | <b>P</b>      |  | <b>Q</b>    |  |  |  |  |  |
| <i>n</i> 0.21133035                     | $\omega$ 319.77284         |                          | +0.79094731   |  | -0.60477893 |  |  |  |  |  |
| <i>a</i> 2.7914390                      | $\Omega$ 77.68406          |                          | +0.58300144   |  | +0.69872696 |  |  |  |  |  |
| <i>e</i> 0.0757627                      | <i>i</i> 5.46096           |                          | +0.18577318   |  | +0.38212966 |  |  |  |  |  |
| <i>P</i> 4.66                           | <i>H</i> 15.9              |                          | <i>G</i> 0.15 |  | <i>U</i> 0  |  |  |  |  |  |
| Residuals in seconds of arc             |                            |                          |               |  |             |  |  |  |  |  |
| 1993 12 15 691 0.0 0.0                  | 2003 12 28 704 0.5- 0.8+   | 2007 11 05 704 0.6+ 1.2+ |               |  |             |  |  |  |  |  |
| 1993 12 15 691 0.0 0.4-                 | 2003 12 28 704 0.6+ 0.5-   | 2007 11 05 704 0.2+ 0.6+ |               |  |             |  |  |  |  |  |
| 1993 12 15 691 0.3- 0.3+                | 2003 12 28 704 0.4+ 1.1-   | 2007 11 05 704 0.4+ 0.2+ |               |  |             |  |  |  |  |  |
| 2002 09 30 704 (1.7- 2.0+)              | 2004 01 17 644 0.5+ 0.6+   | 2007 11 05 704 0.5- 0.4+ |               |  |             |  |  |  |  |  |
| 2002 09 30 704 0.7- 0.6+                | 2004 01 17 644 0.4- 0.1+   | 2007 11 05 D29 1.0+ 0.0  |               |  |             |  |  |  |  |  |
| 2002 09 30 704 1.4- 0.9-                | 2004 01 17 644 0.6+ 0.3+   | 2007 11 05 D29 0.5+ 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 05 645 0.0 0.1-                 | 2004 01 26 699 0.4- 0.1+   | 2007 11 05 D29 0.5+ 0.3- |               |  |             |  |  |  |  |  |
| 2002 10 05 645 0.0 0.1-                 | 2004 01 26 699 0.7+ 0.3+   | 2007 11 05 D29 0.0 0.4+  |               |  |             |  |  |  |  |  |
| 2002 10 07 644 0.3- 0.2+                | 2004 01 26 699 0.4+ 0.3-   | 2007 11 08 691 0.4- 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 07 644 0.3- 0.6+                | 2004 01 26 699 0.1+ 1.0+   | 2007 11 08 691 0.4- 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 07 644 0.2- 0.6+                | 2004 01 30 704 0.3+ 0.3+   | 2007 11 08 691 0.4- 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 08 699 0.1- 0.2+                | 2004 01 30 704 1.3+ 0.2-   | 2007 11 14 704 0.1+ 0.2+ |               |  |             |  |  |  |  |  |
| 2002 10 08 699 0.7+ 0.6+                | 2004 01 30 704 (1.8+ 0.1-) | 2007 11 14 704 0.7- 0.2+ |               |  |             |  |  |  |  |  |
| 2002 10 08 699 (0.4- 1.6+)              | 2004 01 30 704 0.1- 0.7+   | 2007 11 14 704 0.3- 0.8+ |               |  |             |  |  |  |  |  |
| 2002 10 08 699 0.5+ 0.7+                | 2004 02 15 704 0.6- 0.4+   | 2007 11 14 704 0.5- 0.2+ |               |  |             |  |  |  |  |  |
| 2002 10 10 645 0.1+ 0.0                 | 2004 02 15 704 0.3- 1.2+   | 2007 11 14 704 0.0 0.0   |               |  |             |  |  |  |  |  |
| 2002 10 10 645 0.1+ 0.1+                | 2004 02 15 704 0.2- 0.8+   | 2007 11 19 691 0.1- 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 11 704 0.1+ 0.3-                | 2004 02 17 645 0.0 0.2-    | 2007 11 19 691 0.4- 0.1+ |               |  |             |  |  |  |  |  |
| 2002 10 11 704 0.9+ 0.4-                | 2004 02 17 645 0.1- 0.3-   | 2007 11 19 691 0.2- 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 11 704 0.2+ 0.3-                | 2005 04 02 691 0.1- 0.4+   | 2007 12 03 703 1.8+ 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 11 704 0.4- 0.9-                | 2005 04 02 691 0.3+ 0.7+   | 2007 12 03 703 0.8+ 0.7+ |               |  |             |  |  |  |  |  |
| 2002 10 11 704 0.2+ 0.2+                | 2005 04 02 691 0.2+ 0.6+   | 2007 12 03 703 0.2- 1.3+ |               |  |             |  |  |  |  |  |
| 2002 10 15 644 0.1- 0.9+                | 2007 10 20 G96 0.2+ 0.2-   | 2007 12 03 703 0.2- 1.0+ |               |  |             |  |  |  |  |  |
| 2002 10 15 644 0.0 0.8+                 | 2007 10 20 G96 0.3+ 0.2-   | 2007 12 04 699 0.3+ 0.4+ |               |  |             |  |  |  |  |  |
| 2002 10 15 644 0.2- 0.9+                | 2007 10 20 G96 0.3+ 0.3-   | 2007 12 04 699 0.2+ 0.8- |               |  |             |  |  |  |  |  |
| 2002 10 16 644 0.2- 0.5+                | 2007 10 20 G96 0.3+ 0.1-   | 2007 12 04 699 0.2+ 0.6- |               |  |             |  |  |  |  |  |
| 2002 10 16 644 0.1- 0.2+                | 2007 11 03 H07 0.1+ 1.2+   | 2007 12 04 699 0.3- 0.1- |               |  |             |  |  |  |  |  |
| 2002 10 16 644 0.2- 0.4+                | 2007 11 03 H07 0.4- 0.1+   | 2007 12 05 704 0.6+ 1.0+ |               |  |             |  |  |  |  |  |
| 2002 10 30 645 0.1+ 0.1-                | 2007 11 03 H07 0.1- 0.1+   | 2007 12 05 704 0.1+ 0.8+ |               |  |             |  |  |  |  |  |
| 2002 10 30 645 0.1+ 0.1-                | 2007 11 04 691 0.3- 0.1+   | 2007 12 05 704 0.8+ 1.1+ |               |  |             |  |  |  |  |  |
| 2002 11 08 645 0.0 0.1-                 | 2007 11 04 691 0.4- 0.0    | 2007 12 05 704 0.6+ 0.8+ |               |  |             |  |  |  |  |  |
| 2002 11 08 645 0.0 0.1-                 | 2007 11 04 691 0.6- 0.1+   | 2007 12 05 704 0.9+ 0.8+ |               |  |             |  |  |  |  |  |
| 2003 12 28 704 0.1+ 0.7-                | 2007 11 05 704 0.2- 0.0    |                          |               |  |             |  |  |  |  |  |

(172300)\* 2002 TE<sub>228</sub>

Discovered 2002 Oct. 6 by NEAT at Haleakala.

|                                         |               |          |            |                 |      |             |               |
|-----------------------------------------|---------------|----------|------------|-----------------|------|-------------|---------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |               |          |            | MPC             |      |             |               |
| <i>M</i>                                | 83.73146      |          | (2000.0)   | <b>P</b>        |      | <b>Q</b>    |               |
| <i>n</i>                                | 0.22848964    | $\omega$ | 288.26410  | +0.93387817     |      | +0.25076707 |               |
| <i>a</i>                                | 2.6498729     | $\Omega$ | 57.93986   | −0.08374593     |      | +0.84644621 |               |
| <i>e</i>                                | 0.2822211     | <i>i</i> | 17.50572   | −0.34764663     |      | +0.46972831 |               |
| <i>P</i>                                | 4.31          | <i>H</i> | 15.5       | <i>G</i>        | 0.15 | <i>U</i>    | 1             |
| Residuals in seconds of arc             |               |          |            |                 |      |             |               |
| 1998 12 14                              | 704 0.3−      | 0.6+     | 2002 11 11 | 704 0.2+        | 0.1+ | 2006 05 21  | E12 0.1+ 0.1− |
| 1998 12 14                              | 704 0.2−      | 0.6−     | 2002 11 11 | 704 0.3−        | 0.1+ | 2006 05 28  | E12 0.2+ 0.6+ |
| 1998 12 14                              | 704 1.5+      | 0.2+     | 2002 11 11 | 704 0.0         | 0.1− | 2006 05 28  | E12 0.1+ 0.2+ |
| 1998 12 14                              | 704 1.2−      | 1.1−     | 2002 11 11 | 704 0.1−        | 0.0  | 2006 05 28  | E12 1.1+ 0.5− |
| 2002 08 12                              | 704 0.1+ 0.2− |          | 2002 11 12 | 683 0.1+ 0.1+   |      | 2006 06 18  | E12 0.6− 0.0  |
| 2002 08 12                              | 704 0.1− 0.3+ |          | 2002 11 12 | 683 (2.1− 1.6+) |      | 2006 06 18  | E12 0.2+ 0.3+ |
| 2002 08 12                              | 704 0.7+ 0.1+ |          | 2002 11 13 | 683 0.0 0.8+    |      | 2006 06 18  | E12 0.3− 0.3+ |
| 2002 08 12                              | 704 0.6+ 0.0  |          | 2002 11 13 | 683 0.1+ 0.3+   |      | 2006 06 18  | E12 0.4− 0.4+ |
| 2002 10 05                              | 645 0.1+ 0.2− |          | 2002 11 13 | 683 0.2− 0.4+   |      | 2006 08 13  | E12 0.0 0.2−  |
| 2002 10 05                              | 645 0.1+ 0.2− |          | 2002 11 30 | 704 0.0 1.1−    |      | 2006 08 13  | E12 0.0 0.1−  |
| 2002 10 06                              | 608 0.8+ 1.2− |          | 2002 11 30 | 704 0.7+ 0.1−   |      | 2006 08 13  | E12 0.2− 0.0  |
| 2002 10 06                              | 608 0.9+ 0.2− |          | 2002 11 30 | 704 0.4+ 0.5−   |      | 2006 08 13  | E12 0.0 0.1+  |
| 2002 10 06                              | 608 0.8+ 0.7− |          | 2002 12 07 | 704 0.2− 0.8+   |      | 2006 08 22  | E12 0.2− 0.2+ |
| 2002 10 09                              | 699 0.6− 0.4+ |          | 2002 12 07 | 704 0.6− 0.3+   |      | 2006 08 22  | E12 0.1− 0.1+ |

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2002 10 09 699 0.0 0.3+  | 2002 12 07 704 0.1+ 0.5+   | 2006 08 22 E12 0.2- 0.1- |
| 2002 10 09 699 0.8- 0.1+ | 2002 12 07 704 0.0 0.0     | 2006 08 22 E12 0.0 0.1-  |
| 2002 10 09 699 0.6- 0.1+ | 2002 12 11 704 0.6+ 0.6+   | 2006 08 23 428 0.2+ 0.0  |
| 2002 10 10 644 0.1- 0.6+ | 2002 12 11 704 0.3+ 0.7+   | 2006 08 25 428 0.5- 0.2+ |
| 2002 10 10 644 0.1- 0.6+ | 2002 12 11 704 0.3+ 0.5+   | 2006 08 31 E12 0.2- 0.1+ |
| 2002 10 10 645 0.1+ 0.1- | 2002 12 11 704 0.1- 0.9+   | 2006 08 31 E12 0.1+ 0.2- |
| 2002 10 10 644 0.2- 0.6+ | 2002 12 11 704 0.5- 0.5+   | 2006 08 31 E12 0.1- 0.4+ |
| 2002 10 10 645 0.0 0.1-  | 2003 01 04 704 1.1- 0.5-   | 2006 08 31 E12 0.3- 0.4+ |
| 2002 10 15 644 0.2- 1.0+ | 2003 01 04 704 (2.0- 0.2-) | 2006 09 14 E12 0.1- 0.3- |
| 2002 10 15 644 0.0 0.3-  | 2003 01 04 704 1.1- 0.6-   | 2006 09 14 E12 0.4- 0.2- |
| 2002 10 15 644 0.2- 1.0+ | 2003 01 04 704 (1.8- 0.6-) | 2006 09 14 E12 0.3+ 0.8+ |
| 2002 10 15 644 0.1- 0.1- | 2003 01 05 699 (1.6- 0.0)  | 2006 09 25 E12 0.1- 0.4+ |
| 2002 10 15 644 0.2- 0.9+ | 2003 01 05 699 0.8+ 0.2+   | 2006 09 25 E12 0.3+ 0.4- |
| 2002 10 15 644 0.1+ 0.1- | 2003 01 05 699 1.1+ 0.7-   | 2006 09 25 E12 0.3- 0.0  |
| 2002 10 26 608 0.8- 0.7+ | 2003 01 05 699 0.2- 0.3+   | 2006 09 30 E12 0.5+ 0.3+ |
| 2002 10 26 608 0.7- 0.6+ | 2003 01 27 704 (0.0 2.9+)  | 2006 09 30 E12 0.0 0.4+  |
| 2002 10 26 608 0.3- 0.6+ | 2003 01 27 704 (0.2+ 2.7+) | 2006 09 30 E12 0.1- 0.4+ |
| 2002 10 31 704 0.3- 0.0  | 2003 01 27 704 (0.2- 3.0+) | 2006 09 30 E12 0.1+ 0.3+ |
| 2002 10 31 704 0.5- 0.1- | 2003 01 27 704 (0.7- 2.9+) | 2006 10 07 E12 0.1+ 0.5+ |
| 2002 10 31 704 0.5- 0.1+ | 2004 01 17 644 0.3- 0.3+   | 2006 10 07 E12 0.4- 0.6+ |
| 2002 10 31 704 0.4- 0.1+ | 2004 01 17 644 0.3- 0.4+   | 2006 10 07 E12 0.5- 0.5- |
| 2002 10 31 704 0.7- 0.3+ | 2004 01 17 644 0.1+ 0.6+   | 2006 10 07 E12 0.3- 0.3+ |
| 2002 11 01 608 0.9+ 0.3+ | 2005 04 08 704 0.1+ 0.7+   | 2006 10 14 E12 0.3+ 0.4+ |
| 2002 11 01 608 0.7+ 0.6+ | 2005 04 08 704 0.9+ 0.6+   | 2006 10 14 E12 0.6+ 0.1- |
| 2002 11 01 608 0.9+ 0.6+ | 2005 04 08 704 1.3+ 0.4+   | 2006 10 14 E12 0.2+ 0.2+ |
| 2002 11 05 704 0.2- 0.0  | 2006 04 26 E12 0.8- 0.7+   | 2006 10 14 E12 0.5+ 0.0  |
| 2002 11 05 704 0.3- 0.2+ | 2006 04 26 E12 0.2+ 0.5+   | 2007 11 20 703 0.7- 0.7+ |
| 2002 11 05 704 0.2- 0.0  | 2006 04 26 E12 0.3+ 0.1+   | 2007 11 20 703 0.6+ 0.6+ |
| 2002 11 05 704 0.4- 0.1+ | 2006 04 26 E12 0.3- 0.6+   | 2007 11 20 703 0.1- 1.0+ |
| 2002 11 05 704 0.5- 0.3+ | 2006 05 05 E12 0.1+ 0.6+   | 2007 11 20 703 1.0- 1.1+ |
| 2002 11 06 699 0.2- 0.1+ | 2006 05 05 E12 0.1+ 0.1-   | 2007 12 03 704 0.5+ 0.2+ |
| 2002 11 06 699 0.3- 0.1+ | 2006 05 05 E12 0.5- 0.1+   | 2007 12 03 704 0.6+ 0.2+ |
| 2002 11 06 699 0.6- 0.3+ | 2006 05 05 E12 (1.0- 2.8-) | 2007 12 03 704 0.7+ 0.7+ |
| 2002 11 06 699 0.1- 0.3+ | 2006 05 21 E12 0.0 0.2+    |                          |
| 2002 11 11 704 0.3- 0.1- | 2006 05 21 E12 0.1- 0.3+   |                          |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 15 | 704 | 0.3+ | 0.0  | 2006 07 20 | 644 | 0.0  | 0.1+ | 2007 11 17 | 704 | 0.1+ | 0.6- |
| 2002 10 15 | 704 | 0.5+ | 0.3+ | 2006 07 23 | G96 | 0.2- | 0.3- | 2007 11 17 | 704 | 0.3- | 0.3- |
| 2002 11 08 | 704 | 0.0  | 1.0+ | 2006 07 23 | G96 | 0.4- | 0.1+ | 2007 12 16 | 704 | 0.2- | 0.6- |
| 2002 11 08 | 704 | 0.1- | 0.7+ | 2006 07 23 | G96 | 0.1- | 0.3- | 2007 12 16 | 704 | 0.3+ | 0.3- |
| 2002 11 08 | 704 | 0.3- | 0.7+ | 2006 07 23 | G96 | 0.3- | 0.2- | 2007 12 16 | 704 | 0.1- | 0.1- |
| 2002 11 08 | 704 | 0.0  | 0.3+ | 2006 07 26 | 644 | 0.2- | 0.1+ | 2007 12 16 | 704 | 0.4- | 0.4+ |
| 2002 12 06 | 704 | 0.7+ | 1.2+ | 2006 07 26 | 644 | 0.1- | 0.2+ | 2007 12 16 | 704 | 0.4+ | 0.4+ |
| 2002 12 06 | 704 | 1.1+ | 0.2- | 2006 07 26 | 644 | 0.3- | 0.2+ |            |     |      |      |

**(172302)\* 2002 TY<sub>235</sub>**

Discovered 2002 Oct. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 48.73558   | (2000.0) |           |
| <i>n</i> | 0.23253226 | $\omega$ | 148.00206 |
| <i>a</i> | 2.6190708  | $\Omega$ | 259.14822 |
| <i>e</i> | 0.0947148  | <i>i</i> | 13.53659  |
| <i>P</i> | 4.24       | <i>H</i> | 15.2      |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 12 14 | 704 | 0.2-  | 0.3-  | 2002 11 14 | 644 | 0.8-  | 0.3-  | 2006 09 06 | 644 | 0.1+  | 0.1-  |
| 1998 12 14 | 704 | (2.4+ | 1.0-) | 2002 11 14 | 644 | 0.4-  | 0.1-  | 2006 09 06 | 644 | 0.1+  | 0.1-  |
| 1998 12 14 | 704 | 1.6+  | 0.3+  | 2002 11 14 | 644 | 0.1-  | 0.2-  | 2006 09 06 | 644 | 0.2+  | 0.1-  |
| 1998 12 14 | 704 | (4.8- | 0.1+) | 2002 11 14 | 704 | 0.1+  | 0.4+  | 2006 09 16 | 703 | 0.4+  | 0.2-  |
| 1999 02 09 | 691 | 0.0   | 0.3-  | 2002 11 14 | 704 | 0.0   | 0.6-  | 2006 09 16 | 703 | 0.2+  | 1.3-  |
| 1999 02 09 | 691 | 0.6+  | 0.3-  | 2002 11 14 | 704 | 0.4-  | 0.0   | 2006 09 16 | 703 | 0.4-  | 0.1-  |
| 1999 02 09 | 691 | 0.1+  | 0.3-  | 2002 11 14 | 704 | 0.4+  | 0.9+  | 2006 09 16 | 703 | 0.1+  | 0.6+  |
| 2002 09 27 | 644 | 0.1+  | 0.7+  | 2002 11 14 | 704 | 0.1+  | 0.0   | 2006 09 21 | 699 | 0.1-  | 0.5-  |
| 2002 09 27 | 644 | 0.2+  | 0.1+  | 2002 11 19 | 644 | 0.2-  | 0.1+  | 2006 09 21 | 699 | (1.9+ | 1.9+) |
| 2002 09 27 | 644 | 0.1+  | 0.3-  | 2002 11 19 | 644 | 0.3-  | 0.1+  | 2006 09 21 | 699 | 1.1+  | 0.6+  |
| 2002 10 06 | 704 | 0.3-  | 0.9-  | 2002 11 19 | 644 | 0.1-  | 0.3+  | 2006 09 21 | 699 | 0.3+  | 0.0   |
| 2002 10 06 | 704 | 0.8-  | 1.1-  | 2002 11 19 | 644 | 0.0   | 0.2-  | 2006 09 27 | 703 | 0.7+  | 0.9+  |
| 2002 10 06 | 704 | 0.4-  | 1.0-  | 2002 11 19 | 644 | 0.2-  | 0.5-  | 2006 09 27 | 703 | 0.1+  | 0.4+  |
| 2002 10 06 | 704 | 1.0-  | 1.4-  | 2002 11 19 | 644 | 0.1+  | 0.1-  | 2006 09 27 | 703 | 0.7+  | 1.1+  |
| 2002 10 06 | 704 | 0.4-  | 0.7-  | 2002 12 02 | 704 | 0.5+  | 0.2-  | 2006 09 27 | 703 | 0.0   | 0.3+  |
| 2002 10 06 | 699 | 0.5+  | 0.4+  | 2002 12 02 | 704 | (0.1- | 1.6-) | 2006 09 27 | 703 | 0.2+  | 1.0+  |
| 2002 10 06 | 699 | 0.2+  | 0.2-  | 2002 12 02 | 704 | 0.4-  | 0.0   | 2006 09 27 | 703 | 0.6+  | 0.7-  |
| 2002 10 06 | 699 | 0.2-  | 0.8+  | 2004 01 16 | 644 | 0.4+  | 1.0+  | 2006 09 27 | 703 | 0.1+  | 0.9+  |
| 2002 10 06 | 699 | 0.9-  | 0.5-  | 2004 01 16 | 644 | 0.1-  | 1.0+  | 2006 09 27 | 703 | 0.5-  | 0.3+  |
| 2002 10 10 | 704 | 0.8-  | 0.1+  | 2004 01 16 | 644 | 0.1+  | 0.9+  | 2006 10 17 | 703 | 0.1-  | 0.4+  |
| 2002 10 10 | 704 | 0.3+  | 0.1-  | 2004 01 29 | 699 | 0.5+  | 0.3-  | 2006 10 17 | 703 | 0.8-  | 0.5-  |
| 2002 10 10 | 704 | 0.7+  | 0.7-  | 2004 01 29 | 699 | 0.6-  | 0.1+  | 2006 10 17 | 703 | 0.5-  | 0.2+  |
| 2002 10 10 | 704 | 0.0   | 0.9-  | 2004 01 29 | 699 | 0.5-  | 0.4+  | 2006 10 17 | 703 | 0.2-  | 0.3+  |
| 2002 10 10 | 704 | 0.7+  | 0.6-  | 2004 01 29 | 699 | 0.0   | 0.9+  | 2006 11 14 | 703 | 0.3-  | 0.3-  |
| 2002 10 15 | 704 | 0.3-  | 0.2-  | 2004 02 18 | 703 | 1.2+  | 1.3+  | 2006 11 14 | 703 | 0.2-  | 0.8+  |
| 2002 10 15 | 704 | 0.6-  | 0.9+  | 2004 02 18 | 703 | 0.5+  | 1.5+  | 2006 11 14 | 703 | 0.6-  | 0.9+  |
| 2002 10 15 | 704 | 0.1+  | 0.1-  | 2004 02 18 | 703 | 1.1+  | 0.8+  | 2006 11 14 | 703 | 0.3+  | 0.8-  |
| 2002 10 15 | 704 | 0.6-  | 0.3-  | 2004 02 18 | 703 | 0.3+  | 1.1+  | 2007 11 11 | 941 | 0.3+  | 0.1+  |
| 2002 11 01 | 644 | 0.1-  | 0.6+  | 2006 08 29 | 699 | 0.2-  | 0.3+  | 2007 11 11 | 941 | 0.3+  | 0.1+  |
| 2002 11 01 | 644 | 0.2+  | 0.9+  | 2006 08 29 | 699 | 0.4+  | 1.0-  | 2007 11 11 | 941 | 0.3+  | 0.1+  |
| 2002 11 01 | 644 | 0.1+  | 1.1+  | 2006 08 29 | 699 | 0.9+  | 1.2+  | 2007 11 11 | 941 | 0.1+  | 0.0   |
| 2002 11 07 | 704 | 0.4-  | 1.0+  | 2006 08 29 | 699 | 0.2-  | 0.3+  | 2007 12 16 | 699 | 0.5-  | 0.0   |
| 2002 11 07 | 704 | 0.4-  | 0.7+  | 2006 09 01 | 704 | 0.3-  | 1.0+  | 2007 12 16 | 699 | 0.9-  | 0.7-  |
| 2002 11 07 | 704 | 0.1-  | 0.9+  | 2006 09 01 | 704 | 1.3-  | 0.0   | 2007 12 16 | 699 | 0.2-  | 1.7-  |
| 2002 11 07 | 704 | 0.8-  | 1.0+  | 2006 09 01 | 704 | 0.0   | 0.5+  | 2007 12 16 | 699 | 0.8-  | 1.1-  |

**(172303)\* 2002 TZ<sub>235</sub> = 1998 XB<sub>45</sub>**

Discovered 2002 Oct. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 38079)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 13.14017   | (2000.0) |           |
| <i>n</i> | 0.21747651 | $\omega$ | 120.28952 |
| <i>a</i> | 2.7385950  | $\Omega$ | 296.27043 |
| <i>e</i> | 0.0719647  | <i>i</i> | 12.81962  |
| <i>P</i> | 4.53       | <i>H</i> | 15.0      |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 12 14 | 704 | (0.7+ | 2.6-) | 2004 01 14 | 644 | 0.0  | 0.3+ | 2004 03 15 | 704 | 1.1-  | 1.1+  |
| 1998 12 14 | 704 | (1.0+ | 2.8-) | 2004 01 14 | 644 | 0.1+ | 0.0  | 2006 08 16 | 644 | 0.2-  | 0.3+  |
| 1998 12 14 | 704 | (1.4+ | 2.4-) | 2004 01 23 | 704 | 0.4+ | 0.1+ | 2006 08 16 | 644 | 0.3-  | 0.4+  |
| 1998 12 17 | 704 | (0.2+ | 2.3-) | 2004 01 23 | 704 | 0.5+ | 0.2- | 2006 08 16 | 644 | 0.4-  | 0.6+  |
| 1998 12 17 | 704 | 0.1+  | 1.6-  | 2004 01 23 | 704 | 0.1+ | 0.6+ | 2006 08 21 | 644 | 0.0   | 0.4+  |
| 1998 12 17 | 704 | 1.0+  | 1.0+  | 2004 01 23 | 704 | 1.1+ | 0.5+ | 2006 08 21 | 644 | 0.2-  | 0.4+  |
| 2002 09 27 | 644 | 0.3+  | 0.6+  | 2004 01 23 | 704 | 0.6+ | 0.1- | 2006 08 21 | 644 | 0.3+  | 0.3+  |
| 2002 09 27 | 644 | 0.2+  | 0.6+  | 2004 01 29 | 704 | 0.2+ | 0.1- | 2006 08 29 | 703 | (2.8+ | 1.4+) |
| 2002 09 27 | 644 | 0.4+  | 0.1-  | 2004 01 29 | 699 | 0.9+ | 0.0  | 2006 08 29 | 703 | (0.1+ | 1.6+) |
| 2002 10 06 | 704 | 0.3+  | 0.5+  | 2004 01 29 | 704 | 0.3+ | 0.7- | 2006 08 29 | 703 | 0.7-  | 1.4+  |
| 2002 10 06 | 704 | 0.8+  | 0.7-  | 2004 01 29 | 699 | 0.2+ | 0.2- | 2006 08 29 | 703 | 0.1-  | 1.2+  |
| 2002 10 06 | 704 | 0.6-  | 0.0   | 2004 01 29 | 704 | 0.1+ | 0.0  | 2006 08 29 | 703 | 0.5-  | 0.7+  |
| 2002 10 06 | 704 | 0.2-  | 0.5+  | 2004 01 29 | 699 | 0.4- | 0.2+ | 2006 08 29 | 703 | 0.9-  | 0.6+  |
| 2002 10 10 | 704 | (0.6- | 2.1-) | 2004 01 29 | 704 | 0.1- | 0.2- | 2006 08 29 | 703 | 0.3-  | 0.6+  |
| 2002 10 10 | 704 | 0.5-  | 1.0-  | 2004 01 29 | 704 | 0.5+ | 0.4+ | 2006 08 29 | 703 | 0.7-  | 0.0   |
| 2002 10 10 | 704 | 1.3-  | 0.8-  | 2004 01 29 | 699 | 0.1- | 0.7+ | 2006 08 30 | 699 | 0.0   | 0.5+  |
| 2002 10 10 | 704 | 0.7-  | 0.7-  | 2004 02 11 | 644 | 0.8- | 0.7+ | 2006 08 30 | 699 | 1.1+  | 0.2+  |
| 2002 10 15 | 704 | 0.5+  | 0.0   | 2004 02 11 | 644 | 0.3+ | 0.1+ | 2006 08 30 | 699 | (0.4- | 1.8+) |
| 2002 10 15 | 704 | 0.2-  | 0.2+  | 2004 02 11 | 644 | 0.2+ | 0.4+ | 2006 08 30 | 699 | (1.3+ | 1.8+) |
| 2002 10 15 | 704 | 0.2-  | 0.1+  | 2004 02 17 | 691 | 0.3+ | 0.2+ | 2007 12 02 | 704 | 0.6+  | 0.6-  |
| 2002 10 15 | 704 | (1.6+ | 1.9+) | 2004 02 17 | 691 | 0.2+ | 0.3+ | 2007 12 02 | 704 | 0.7+  | 0.5-  |
| 2002 11 08 | 704 | 0.4-  | 0.1+  | 2004 02 17 | 691 | 0.3+ | 0.3+ | 2007 12 02 | 704 | 0.0   | 0.7-  |
| 2002 11 08 | 704 | 0.4-  | 1.1+  | 2004 03 12 | 644 | 0.0  | 0.3+ | 2007 12 02 | 704 | 0.8+  | 0.4-  |
| 2002 11 08 | 704 | 0.0   | 0.7+  | 2004 03 12 | 644 | 0.2- | 0.4+ | 2007 12 16 | 704 | 0.1+  | 0.3+  |
| 2002 11 14 | 644 | 0.1-  | 0.3-  | 2004 03 12 | 644 | 0.1+ | 0.2+ | 2007 12 16 | 704 | 0.0   | 0.3-  |
| 2002 11 14 | 644 | 0.2-  | 0.2-  | 2004 03 15 | 704 | 0.9- | 0.4+ | 2007 12 16 | 704 | 0.9-  | 0.0   |
| 2002 11 14 | 644 | 0.1+  | 0.3-  | 2004 03 15 | 704 | 0.9- | 0.1+ | 2007 12 16 | 704 | 0.5-  | 0.1+  |
| 2004 01 14 | 644 | 0.2+  | 0.4+  | 2004 03 15 | 704 | 0.5- | 0.5+ | 2007 12 16 | 704 | 0.9-  | 0.2+  |

**(172304)\* 2002 TC<sub>238</sub>**

Discovered 2002 Oct. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 80.49783   | (2000.0) |           |
| <i>n</i> | 0.22995779 | $\omega$ | 65.06572  |
| <i>a</i> | 2.6385822  | $\Omega$ | 289.92745 |
| <i>e</i> | 0.1947524  | <i>i</i> | 11.95529  |
| <i>P</i> | 4.29       | <i>H</i> | 15.9      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 01 21 | 691 | 0.5- | 0.1+ | 2002 10 15 | 704 | 0.3- | 0.1- | 2006 08 24 | 644 | 0.1- | 0.2+ |
| 1991 01 21 | 691 | 0.6- | 0.3+ | 2002 10 15 | 704 | 1.1- | 0.3+ | 2006 08 24 | 644 | 0.0  | 0.1+ |
| 1991 01 21 | 691 | 0.5+ | 1.6- | 2002 10 15 | 704 | 0.1+ | 0.5+ | 2006 08 30 | 699 | 0.1+ | 0.7+ |
| 2000 03 04 | 645 | 0.1+ | 0.2+ | 2002 10 15 | 704 | 0.4- | 0.4+ | 2006 08 30 | 699 | 0.3+ | 0.1+ |
| 2000 03 04 | 645 | 0.1+ | 0.2+ | 2002 11 08 | 704 | 0.7+ | 0.1+ | 2006 08 30 | 699 | 0.1- | 0.2+ |
| 2002 08 30 | 704 | 0.7+ | 0.7- | 2002 11 08 | 704 | 0.2+ | 0.4+ | 2006 08 30 | 699 | 0.2- | 0.5+ |
| 2002 08 30 | 704 | 0.2+ | 0.4- | 2002 11 08 | 704 | 0.1+ | 0.4+ | 2006 10 16 | 703 | 0.2+ | 0.5- |
| 2002 08 30 | 704 | 0.2+ | 0.1+ | 2002 11 08 | 704 | 0.2+ | 0.2- | 2006 10 16 | 703 | 1.5+ | 0.8- |
| 2002 09 20 | 644 | 0.2- | 0.1- | 2002 11 14 | 644 | 0.1- | 0.0  | 2006 10 16 | 703 | 0.1+ | 0.1- |
| 2002 09 20 | 644 | 0.0  | 0.2+ | 2002 11 14 | 644 | 0.1+ | 0.1+ | 2006 10 16 | 703 | 1.1- | 0.6- |
| 2002 09 20 | 644 | 0.2+ | 0.2- | 2002 11 14 | 644 | 0.4+ | 0.0  | 2007 11 07 | G96 | 0.3+ | 0.2- |
| 2002 09 27 | 644 | 1.2+ | 0.8+ | 2002 11 14 | 704 | 0.3+ | 0.7+ | 2007 11 07 | G96 | 0.2+ | 0.2- |
| 2002 09 27 | 644 | 0.1- | 0.0  | 2002 11 14 | 704 | 0.6+ | 0.5+ | 2007 11 07 | G96 | 0.2- | 0.1- |
| 2002 09 27 | 644 | 0.7+ | 0.1+ | 2002 11 14 | 704 | 0.1- | 0.0  | 2007 11 07 | G96 | 0.2- | 0.1+ |
| 2002 09 27 | 644 | 0.2- | 0.2+ | 2002 12 02 | 704 | 0.0  | 0.2- | 2007 11 12 | G96 | 0.2- | 0.1+ |
| 2002 09 27 | 644 | 0.4+ | 0.3+ | 2002 12 02 | 704 | 0.2+ | 0.0  | 2007 11 12 | G96 | 0.4- | 0.3- |
| 2002 09 27 | 644 | 0.2- | 0.0  | 2002 12 02 | 704 | 0.3+ | 0.5+ | 2007 11 12 | G96 | 0.1+ | 0.2- |
| 2002 10 07 | 704 | 0.5- | 0.6+ | 2006 05 26 | G96 | 0.2- | 0.2- | 2007 11 12 | G96 | 0.0  | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 07 | 704 | 0.4− | 0.0  | 2006 05 26 | G96 | 0.2+ | 0.1− | 2007 12 06 | G96 | 0.0  | 0.2− |
| 2002 10 07 | 704 | 0.0  | 0.1− | 2006 05 26 | G96 | 0.5− | 0.2− | 2007 12 06 | G96 | 0.2− | 0.2− |
| 2002 10 07 | 704 | 0.5− | 0.2+ | 2006 05 26 | G96 | 0.1− | 0.0  | 2007 12 06 | G96 | 0.2− | 0.2− |
| 2002 10 10 | 704 | 1.1− | 0.2− | 2006 07 01 | 703 | 0.9− | 0.3− | 2007 12 06 | G96 | 0.0  | 0.3− |
| 2002 10 10 | 704 | 0.2− | 0.2− | 2006 07 01 | 703 | 0.2+ | 0.5− | 2007 12 06 | G96 | 0.2+ | 0.3− |
| 2002 10 10 | 704 | 1.0− | 0.2+ | 2006 07 01 | 703 | 1.4+ | 0.2+ | 2007 12 06 | G96 | 0.2− | 0.0  |
| 2002 10 10 | 704 | 1.4− | 0.4+ | 2006 07 01 | 703 | 0.5+ | 0.3+ | 2007 12 06 | G96 | 0.0  | 0.3+ |
| 2002 10 15 | 704 | 1.1− | 0.3+ | 2006 08 24 | 644 | 0.2− | 0.1+ | 2007 12 06 | G96 | 0.8− | 0.2− |

**(172305)\* 2002 TY<sub>239</sub> = 1997 NX<sub>10</sub>**

Discovered 2002 Oct. 9 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 38081)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 28.12575   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22139820 | $\omega$ | 192.33040 | +0.58476932 −0.79895168  |
| <i>a</i> | 2.7061591  | $\Omega$ | 222.10689 | +0.76091972 +0.60024190  |
| <i>e</i> | 0.1359970  | <i>i</i> | 12.08944  | +0.28115123 +0.03722738  |
| <i>P</i> | 4.45       | <i>H</i> | 15.4      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 07 06 | 688 | 0.5+ | 0.2+ | 2002 10 12 | 704 | 0.3−  | 0.3−  | 2002 12 05 | 704 | 0.1−  | 0.4−  |
| 1997 07 06 | 688 | 1.0+ | 0.0  | 2002 10 12 | 704 | 0.3−  | 0.9−  | 2002 12 05 | 704 | 0.7+  | 0.7−  |
| 1997 07 06 | 688 | 0.9+ | 0.4+ | 2002 10 12 | 704 | 0.2−  | 0.3−  | 2002 12 05 | 704 | 0.1−  | 1.4−  |
| 1997 07 06 | 688 | 0.5+ | 0.6+ | 2002 10 12 | 704 | 0.8−  | 0.3+  | 2002 12 05 | 704 | (1.4− | 2.0−) |
| 1997 07 07 | 688 | 0.3− | 0.7+ | 2002 10 12 | 704 | 0.2−  | 0.6−  | 2002 12 11 | 704 | 0.2−  | 0.8+  |
| 1997 07 07 | 688 | 0.3+ | 0.0  | 2002 10 12 | 704 | 0.1−  | 0.5−  | 2002 12 11 | 704 | 0.5−  | 0.0   |
| 1997 07 07 | 688 | 0.0  | 0.0  | 2002 10 12 | 704 | 0.9−  | 1.1+  | 2002 12 11 | 704 | 1.2−  | 0.3+  |
| 1997 07 07 | 688 | 0.6+ | 0.1+ | 2002 10 12 | 704 | 0.4−  | 0.2−  | 2002 12 11 | 704 | 0.4−  | 0.8+  |
| 2002 10 04 | 704 | 0.1+ | 0.2− | 2002 10 12 | 704 | 0.1−  | 0.6−  | 2005 06 14 | 691 | 0.4−  | 0.0   |
| 2002 10 04 | 704 | 0.8− | 0.4+ | 2002 10 31 | 699 | 0.4−  | 0.0   | 2005 06 14 | 691 | 0.2−  | 0.3+  |
| 2002 10 04 | 704 | 0.1+ | 0.2+ | 2002 10 31 | 699 | 0.9−  | 0.5+  | 2005 06 14 | 691 | 0.2−  | 0.4+  |
| 2002 10 04 | 704 | 0.6+ | 1.1+ | 2002 10 31 | 699 | 0.9−  | 0.2+  | 2006 08 27 | 699 | 0.6−  | 0.3+  |
| 2002 10 04 | 704 | 0.3+ | 0.1+ | 2002 10 31 | 699 | 0.3−  | 0.1−  | 2006 08 27 | 699 | 0.2−  | 0.3+  |
| 2002 10 09 | 704 | 0.2+ | 0.2− | 2002 11 06 | 704 | 0.1+  | 0.2+  | 2006 08 27 | 699 | 0.6+  | 0.6−  |
| 2002 10 09 | 704 | 0.2+ | 0.4+ | 2002 11 06 | 704 | 0.0   | 1.2+  | 2006 08 27 | 699 | 1.0+  | 0.3+  |
| 2002 10 09 | 704 | 0.1+ | 0.1− | 2002 11 06 | 704 | 0.2−  | 0.3−  | 2006 09 11 | 703 | 1.0+  | 0.1+  |
| 2002 10 09 | 704 | 0.2− | 0.9+ | 2002 11 06 | 704 | 0.5+  | 0.3+  | 2006 09 11 | 703 | 1.2−  | 0.8+  |
| 2002 10 09 | 704 | 0.4+ | 0.1+ | 2002 11 06 | 704 | 0.1−  | 0.4+  | 2006 09 11 | 703 | (2.4+ | 0.4−) |
| 2002 10 10 | 704 | 0.0  | 0.0  | 2002 11 10 | 704 | (2.4+ | 0.1−) | 2006 09 11 | 703 | 0.7+  | 0.0   |
| 2002 10 10 | 704 | 0.4− | 0.5− | 2002 11 10 | 704 | 0.5+  | 0.4−  | 2006 09 19 | 703 | 0.2+  | 0.1+  |
| 2002 10 10 | 704 | 0.8− | 0.3+ | 2002 11 10 | 704 | (1.8+ | 3.0−) | 2006 09 19 | 703 | 0.1−  | 0.0   |
| 2002 10 10 | 704 | 0.1+ | 0.1− | 2002 11 10 | 704 | 0.1−  | 0.0   | 2006 09 19 | 703 | 0.6+  | 0.2+  |
| 2002 10 10 | 704 | 0.3+ | 1.1+ | 2002 11 12 | 644 | 0.9+  | 0.6+  | 2006 09 19 | 703 | 0.8−  | 0.3−  |
| 2002 10 11 | 704 | 0.4− | 1.1− | 2002 11 12 | 644 | 0.3+  | 0.2+  | 2007 11 11 | 704 | (0.4− | 2.3+) |
| 2002 10 11 | 704 | 0.7− | 0.1+ | 2002 11 12 | 644 | 0.6+  | 0.5+  | 2007 11 11 | 704 | 0.9−  | 0.9+  |
| 2002 10 11 | 704 | 0.8− | 0.2+ | 2002 11 22 | 644 | 0.1+  | 0.1+  | 2007 11 11 | 704 | 0.5−  | 0.3−  |
| 2002 10 11 | 704 | 0.2− | 0.3− | 2002 11 22 | 644 | 0.2−  | 0.4+  | 2007 11 11 | 704 | 0.6+  | 1.2+  |
| 2002 10 11 | 704 | 0.6− | 0.2− | 2002 11 22 | 644 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.8+  | 0.4−  |
| 2002 10 12 | 704 | 1.5− | 0.6− | 2002 12 01 | 704 | 0.9+  | 0.3−  | 2007 12 14 | 704 | 0.3+  | 0.3−  |
| 2002 10 12 | 704 | 0.7+ | 1.0− | 2002 12 01 | 704 | 0.9+  | 0.1+  | 2007 12 14 | 704 | 0.2−  | 1.2+  |
| 2002 10 12 | 704 | 0.1+ | 0.9− | 2002 12 01 | 704 | 0.3+  | 0.1−  | 2007 12 14 | D29 | 0.5+  | 0.0   |
| 2002 10 12 | 704 | 0.4+ | 0.6− | 2002 12 01 | 704 | 1.1+  | 0.1+  | 2007 12 14 | D29 | 2.6+  | 0.2+  |
| 2002 10 12 | 704 | 0.4+ | 0.4− | 2002 12 01 | 704 | 0.8+  | 0.1+  | 2007 12 14 | D29 | 0.2−  | 0.0   |
| 2002 10 12 | 704 | 0.5− | 0.2− | 2002 12 05 | 704 | 0.1−  | 0.2+  | 2007 12 14 | D29 | 0.6+  | 0.2+  |

**(172306)\* 2002 TV<sub>250</sub>**

Discovered 2002 Oct. 7 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 75.65978   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22008017 | $\omega$ | 86.45770  | +0.98704609 +0.15822652  |
| <i>a</i> | 2.7169529  | $\Omega$ | 264.43706 | −0.15574533 +0.90526777  |
| <i>e</i> | 0.1954845  | <i>i</i> | 1.52803   | −0.03851511 +0.39427736  |
| <i>P</i> | 4.48       | <i>H</i> | 16.3      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 02 07 | 691 | 0.1−  | 0.2+  | 2002 11 07 | 704 | 0.1+  | 0.5+  | 2006 07 21 | A50 | 0.2−  | 0.0   |
| 1995 02 07 | 691 | 0.0   | 0.2−  | 2002 11 08 | 704 | 0.4−  | 0.4+  | 2006 07 25 | G96 | 0.5−  | 0.1+  |
| 1995 02 07 | 691 | 0.0   | 0.5+  | 2002 11 08 | 704 | 0.2+  | 0.4+  | 2006 07 25 | G96 | 0.0   | 0.4+  |
| 2000 02 12 | 645 | 0.1+  | 0.2+  | 2002 11 08 | 704 | 0.3−  | 0.6+  | 2006 07 25 | G96 | 0.0   | 0.1+  |
| 2000 02 12 | 645 | 0.0   | 0.1+  | 2002 11 10 | 704 | 0.6+  | 0.1+  | 2006 08 14 | 644 | 0.0   | 0.3+  |
| 2002 10 07 | 704 | 0.4+  | 0.4+  | 2002 11 10 | 704 | 0.5+  | 0.2+  | 2006 08 14 | 644 | 0.0   | 0.3+  |
| 2002 10 07 | 699 | 0.6+  | 0.8−  | 2002 11 10 | 704 | 0.4+  | 0.6−  | 2006 08 14 | 644 | 0.0   | 0.3+  |
| 2002 10 07 | 704 | 0.4−  | 0.0   | 2002 11 10 | 704 | (3.0− | 0.9+) | 2006 08 26 | 699 | 0.7−  | 0.2+  |
| 2002 10 07 | 704 | 0.0   | 0.5−  | 2002 11 10 | 704 | 0.6+  | 0.3−  | 2006 08 26 | 699 | 0.8+  | 0.5+  |
| 2002 10 07 | 699 | 0.0   | 0.1−  | 2002 11 10 | 704 | 1.3+  | 0.5+  | 2006 08 26 | 699 | 0.0   | 0.2+  |
| 2002 10 07 | 704 | 0.2+  | 0.1−  | 2002 11 10 | 704 | 0.8−  | 0.5+  | 2006 08 26 | 699 | (1.1− | 2.0+) |
| 2002 10 07 | 699 | 1.1−  | 0.4+  | 2002 11 11 | 704 | 0.4+  | 0.0   | 2006 08 28 | 703 | 0.6−  | 0.4−  |
| 2002 10 07 | 699 | 0.1+  | 0.5−  | 2002 11 11 | 704 | 0.9+  | 0.2−  | 2006 08 28 | 703 | 1.1−  | 0.1−  |
| 2002 10 11 | 704 | 0.3−  | 0.7−  | 2002 11 11 | 704 | 0.6+  | 0.5−  | 2006 08 28 | 703 | 0.5−  | 0.4−  |
| 2002 10 11 | 704 | 0.4+  | 0.2−  | 2002 11 12 | 644 | 0.4+  | 0.3+  | 2006 08 28 | 703 | 0.9−  | 0.1+  |
| 2002 10 11 | 704 | 0.1+  | 0.3−  | 2002 11 12 | 644 | 0.5+  | 0.0   | 2006 08 29 | 704 | 0.0   | 0.2+  |
| 2002 10 16 | 699 | 1.0+  | 0.8+  | 2002 11 12 | 644 | 0.2+  | 0.2+  | 2006 08 29 | 704 | 0.3−  | 0.5+  |
| 2002 10 16 | 699 | (1.4+ | 1.9+) | 2002 11 14 | 704 | 0.2−  | 0.6−  | 2006 08 29 | 704 | 0.4+  | 0.4+  |
| 2002 10 16 | 699 | 0.9−  | 1.2+  | 2002 11 14 | 704 | 0.2−  | 0.0   | 2006 08 29 | 704 | 0.4+  | 0.7+  |
| 2002 10 16 | 699 | 1.1−  | 1.1+  | 2002 11 14 | 704 | 0.0   | 0.6−  | 2006 08 29 | 704 | 0.4+  | 0.6+  |
| 2002 10 31 | 644 | 0.0   | 0.0   | 2002 11 14 | 704 | 0.5−  | 0.3−  | 2006 09 13 | 644 | 0.3−  | 0.2+  |
| 2002 10 31 | 699 | 0.0   | 0.6−  | 2002 11 14 | 704 | 0.9−  | 0.5−  | 2006 09 13 | 644 | 0.3−  | 0.1+  |
| 2002 10 31 | 644 | 0.1+  | 0.2−  | 2002 11 30 | 608 | 0.2+  | 0.6+  | 2006 09 13 | 644 | 0.4−  | 0.4+  |
| 2002 10 31 | 699 | 0.1−  | 0.8−  | 2002 11 30 | 608 | 0.7+  | 0.1+  | 2006 11 17 | G96 | 0.6+  | 0.1+  |
| 2002 10 31 | 644 | 0.1−  | 0.2−  | 2002 11 30 | 608 | 0.2+  | 0.4+  | 2006 11 17 | G96 | 0.9+  | 0.3+  |
| 2002 10 31 | 699 | 0.9−  | 0.2−  | 2002 12 10 | 644 | 0.0   | 0.2+  | 2006 11 17 | G96 | 0.6+  | 0.7+  |
| 2002 10 31 | 699 | 0.1−  | 0.2−  | 2002 12 10 | 644 | 0.2−  | 0.1−  | 2006 11 17 | G96 | 0.8+  | 0.0   |
| 2002 11 02 | 608 | 1.0−  | 0.1+  | 2002 12 10 | 644 | 0.2+  | 0.0   | 2007 11 05 | G96 | 0.1+  | 0.2−  |
| 2002 11 02 | 608 | 0.7−  | 0.3+  | 2002 12 11 | 644 | 0.0   | 0.1+  | 2007 11 05 | G96 | 0.1−  | 0.2−  |
| 2002 11 02 | 608 | 0.9−  | 0.1−  | 2002 12 11 | 644 | 0.1+  | 0.0   | 2007 11 05 | G96 | 0.1−  | 0.3−  |
| 2002 11 06 | 704 | 0.3−  | 0.8+  | 2002 12 11 | 644 | 0.8+  | 0.5−  | 2007 11 05 | G96 | 0.2+  | 0.4−  |
| 2002 11 06 | 704 | 0.1+  | 0.9+  | 2004 03 01 | 691 | 0.2+  | 0.1+  | 2007 12 04 | G96 | 0.5+  | 0.4−  |
| 2002 11 06 | 704 | 1.1−  | 0.5+  | 2004 03 01 | 691 | 0.4+  | 0.3+  | 2007 12 04 | G96 | 0.0   | 0.1−  |
| 2002 11 06 | 704 | 0.3−  | 0.8+  | 2004 03 01 | 691 | 0.3+  | 0.0   | 2007 12 04 | G96 | 0.0   | 0.1−  |
| 2002 11 06 | 704 | 0.3−  | 0.2−  | 2006 05 24 | G96 | 0.0   | 0.1+  | 2007 12 04 | G96 | 0.5+  | 0.7−  |
| 2002 11 07 | 704 | 0.3+  | 0.1+  | 2006 05 24 | G96 | 0.2−  | 0.4+  | 2007 12 16 | 691 | 0.8−  | 0.9+  |
| 2002 11 07 | 704 | 0.3+  | 0.3−  | 2006 05 24 | G96 | 0.0   | 0.2+  | 2007 12 16 | 691 | 0.1−  | 0.4−  |
| 2002 11 07 | 704 | 0.1+  | 0.3+  | 2006 05 24 | G96 | 0.2+  | 0.2+  | 2007 12 16 | 691 | 0.0   | 0.3−  |
| 2002 11 07 | 704 | 0.1+  | 0.8+  | 2006 07 21 | A50 | 0.0   | 0.0   |            |     |       |       |

**(172307)\* 2002 TT<sub>262</sub> = 2006 PX<sub>7</sub>**

Discovered 2002 Oct. 10 by NEAT at Palomar.

Id. A. Doppler (*MPO* 108470)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 101.69235  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21359655 | $\omega$ | 284.17032 | +0.63848687 +0.76771688  |
| <i>a</i> | 2.7716596  | $\Omega$ | 25.75480  | −0.64915865 +0.57508064  |
| <i>e</i> | 0.0582179  | <i>i</i> | 7.17487   | −0.41343387 +0.28265361  |
| <i>P</i> | 4.61       | <i>H</i> | 15.4      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 03 | 704 | 0.2− | 0.3+ | 2005 04 10 | 691 | 0.2+ | 0.4+ | 2007 11 13 | 703 | 0.5+ | 0.6+ |
| 2002 10 03 | 704 | 0.1− | 1.1+ | 2005 05 01 | 644 | 0.0  | 0.4+ | 2007 11 13 | 703 | 0.8+ | 0.6− |
| 2002 10 03 | 704 | 0.0  | 0.1− | 2005 05 01 | 644 | 0.3+ | 0.2+ | 2007 11 18 | 704 | 1.2+ | 0.5+ |
| 2002 10 03 | 704 | 0.4− | 0.3+ | 2005 05 01 | 644 | 0.2+ | 0.2+ | 2007 11 18 | 704 | 0.3+ | 0.3+ |
| 2002 10 10 | 644 | 0.0  | 0.5− | 2005 05 10 | 807 | 0.2+ | 0.2+ | 2007 11 18 | 704 | 1.1+ | 0.2+ |
| 2002 10 10 | 644 | 0.3− | 0.4+ | 2005 05 11 | 807 | 0.2+ | 0.2+ | 2007 11 18 | 704 | 0.3+ | 1.2− |
| 2002 10 10 | 644 | 0.1− | 0.4+ | 2006 08 12 | 644 | 0.1− | 0.8+ | 2007 11 19 | 691 | 0.0  | 0.2− |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 11 | 704 | 0.9− | 0.1− | 2006 08 12 | 644 | 0.2− | 0.8+ | 2007 11 19 | 691 | 0.2−  | 0.0   |
| 2002 10 11 | 704 | 0.1− | 0.9+ | 2006 08 12 | 644 | 0.1− | 0.7+ | 2007 11 19 | 691 | 0.0   | 0.1−  |
| 2002 10 11 | 704 | 1.0+ | 0.0  | 2006 08 19 | 644 | 0.5− | 0.7+ | 2007 11 20 | 691 | 0.1−  | 0.1−  |
| 2003 12 28 | 704 | 0.4− | 0.7+ | 2006 08 19 | 644 | 0.5− | 0.9+ | 2007 11 20 | 691 | 0.3−  | 0.2−  |
| 2003 12 28 | 704 | 0.2+ | 0.7− | 2006 08 19 | 644 | 0.8− | 0.6+ | 2007 11 20 | 691 | 0.6−  | 0.3+  |
| 2003 12 28 | 704 | 0.1− | 0.9+ | 2007 11 02 | 691 | 0.0  | 0.1− | 2007 12 12 | 704 | (0.2− | 1.6+) |
| 2003 12 28 | 704 | 0.1+ | 1.2+ | 2007 11 02 | 691 | 0.2+ | 0.0  | 2007 12 12 | 704 | 0.4+  | 0.2+  |
| 2005 03 10 | G96 | 0.1− | 0.0  | 2007 11 02 | 691 | 0.0  | 0.1− | 2007 12 12 | 704 | 0.5+  | 1.2−  |
| 2005 03 10 | G96 | 0.0  | 0.1− | 2007 11 06 | 691 | 0.1+ | 0.0  | 2007 12 12 | 704 | 0.6+  | 0.5−  |
| 2005 03 10 | G96 | 0.4− | 0.0  | 2007 11 06 | 691 | 0.0  | 0.3+ | 2007 12 13 | 704 | 0.3+  | 1.0+  |
| 2005 03 10 | G96 | 0.9+ | 0.3− | 2007 11 06 | 691 | 0.7− | 0.1− | 2007 12 13 | 704 | 0.4−  | 0.1+  |
| 2005 04 02 | G96 | 0.1− | 0.2− | 2007 11 07 | 704 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.2+  | 0.6+  |
| 2005 04 02 | G96 | 0.1− | 0.0  | 2007 11 07 | 704 | 1.2− | 0.4+ | 2007 12 13 | 704 | 0.1−  | 0.9+  |
| 2005 04 02 | G96 | 0.0  | 0.1+ | 2007 11 07 | 704 | 0.1− | 0.8− | 2007 12 13 | 704 | 0.5+  | 1.1+  |
| 2005 04 02 | G96 | 0.0  | 0.2+ | 2007 11 07 | 704 | 0.4+ | 0.8+ | 2007 12 15 | 704 | 0.7+  | 0.6+  |
| 2005 04 10 | 691 | 0.3+ | 0.7+ | 2007 11 13 | 703 | 0.3− | 0.1+ | 2007 12 15 | 704 | 0.1+  | 0.8+  |
| 2005 04 10 | 691 | 0.4+ | 0.6+ | 2007 11 13 | 703 | 1.0− | 0.1+ | 2007 12 15 | 704 | 0.2−  | 1.8+  |

**(172308)\* 2002 TQ<sub>267</sub>**

Discovered 2002 Oct. 8 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 33.69115   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22926722 | $\omega$ | 127.24365 | +0.34523548   | −0.93790009 |
| <i>a</i> | 2.6438779  | $\Omega$ | 302.52685 | +0.84779909   | +0.32719842 |
| <i>e</i> | 0.1010635  | <i>i</i> | 2.31100   | +0.40255331   | +0.11525894 |
| <i>P</i> | 4.30       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 08 | 699 | 0.3−  | 0.5+  | 2004 02 19 | 704 | 1.0+  | 1.2+  | 2006 09 29 | 704 | 0.8+ | 0.4+ |
| 2002 10 08 | 699 | 0.4+  | 0.8+  | 2004 03 12 | 644 | 0.1+  | 0.6+  | 2006 09 29 | 704 | 0.9+ | 0.0  |
| 2002 10 08 | 699 | 0.3+  | 0.1−  | 2004 03 12 | 644 | 0.2+  | 0.7+  | 2006 10 01 | 703 | 0.3− | 0.3− |
| 2002 10 08 | 699 | 0.9−  | 1.4+  | 2004 03 12 | 644 | 0.3+  | 0.4+  | 2006 10 01 | 703 | 0.1− | 0.2− |
| 2002 10 12 | 704 | 0.2+  | 0.0   | 2004 03 18 | 704 | 0.2−  | 0.6+  | 2006 10 01 | 703 | 0.6+ | 0.5− |
| 2002 10 12 | 704 | 0.0   | 0.2+  | 2004 03 18 | 704 | 0.2+  | 0.1+  | 2006 10 01 | 703 | 0.2+ | 0.4− |
| 2002 10 12 | 704 | 1.1−  | 0.7+  | 2004 03 18 | 704 | 0.6−  | 0.7+  | 2006 10 10 | 644 | 0.1− | 0.2+ |
| 2002 10 12 | 704 | 0.0   | 0.7+  | 2004 03 18 | 704 | 0.6−  | 1.4+  | 2006 10 10 | 644 | 0.4+ | 0.1+ |
| 2002 10 31 | 699 | 1.1+  | 0.6−  | 2004 03 18 | 704 | 0.9+  | 0.1−  | 2006 10 10 | 644 | 0.0  | 0.1+ |
| 2002 10 31 | 699 | 0.8+  | 0.7−  | 2006 08 21 | 691 | 0.0   | 0.1−  | 2006 10 11 | 644 | 0.5− | 0.1+ |
| 2002 10 31 | 699 | 0.3+  | 0.1−  | 2006 08 21 | 691 | 0.3−  | 0.2+  | 2006 10 11 | 644 | 0.3− | 0.3+ |
| 2002 10 31 | 699 | 0.3+  | 0.2+  | 2006 08 21 | 691 | 0.1−  | 0.1+  | 2006 10 11 | 644 | 0.0  | 0.3+ |
| 2002 11 05 | 704 | 0.2+  | 0.3+  | 2006 08 28 | 703 | 0.0   | 0.6−  | 2006 10 23 | G96 | 0.4− | 0.3− |
| 2002 11 05 | 704 | 0.8−  | 0.2+  | 2006 08 28 | 703 | (1.6− | 0.6+) | 2006 10 23 | G96 | 0.2− | 0.3− |
| 2002 11 05 | 704 | 0.2+  | 0.2+  | 2006 08 28 | 703 | 0.5−  | 0.4−  | 2006 10 23 | G96 | 0.2− | 0.2− |
| 2002 11 05 | 704 | 0.1−  | 0.8+  | 2006 08 28 | 703 | 1.1−  | 0.9−  | 2006 10 23 | G96 | 0.1− | 0.3− |
| 2002 11 08 | 704 | 0.1−  | 0.1+  | 2006 09 12 | 703 | 0.5−  | 0.3−  | 2007 11 07 | G96 | 0.4− | 0.3− |
| 2002 11 08 | 704 | 0.4+  | 0.4−  | 2006 09 12 | 703 | 0.7−  | 0.2−  | 2007 11 07 | G96 | 0.4− | 0.3− |
| 2002 11 08 | 704 | 0.6+  | 0.5−  | 2006 09 12 | 703 | 0.4−  | 1.1+  | 2007 11 07 | G96 | 0.1+ | 0.3− |
| 2002 11 12 | 704 | 0.1+  | 0.2+  | 2006 09 12 | 703 | 0.1−  | 0.7−  | 2007 11 07 | G96 | 0.5+ | 0.2+ |
| 2002 11 12 | 704 | 0.4+  | 0.3+  | 2006 09 17 | 703 | 0.3+  | 0.9+  | 2007 11 21 | 691 | 0.5− | 0.3+ |
| 2002 11 12 | 704 | 0.2−  | 0.4−  | 2006 09 17 | 703 | 0.4+  | 0.9+  | 2007 11 21 | 691 | 0.5− | 0.3− |
| 2002 11 12 | 704 | 1.1−  | 0.7−  | 2006 09 17 | 703 | 0.2+  | 0.9+  | 2007 11 21 | 691 | 0.4+ | 0.4− |
| 2002 11 12 | 704 | 0.4−  | 0.0   | 2006 09 17 | 703 | 0.4+  | 0.7+  | 2007 12 14 | G96 | 0.1+ | 0.7− |
| 2002 11 14 | 704 | (1.6− | 1.9+) | 2006 09 19 | 699 | 0.5+  | 0.3+  | 2007 12 14 | G96 | 0.1− | 1.1− |
| 2002 11 14 | 704 | 0.9−  | 1.2+  | 2006 09 19 | 699 | 0.9+  | 0.8−  | 2007 12 14 | G96 | 0.4+ | 0.7− |
| 2002 11 14 | 704 | 0.5−  | 0.4−  | 2006 09 19 | 699 | 0.6−  | 0.2+  | 2007 12 14 | G96 | 0.2+ | 0.4− |
| 2004 02 19 | 704 | 0.8+  | 0.3+  | 2006 09 19 | 699 | 0.1+  | 0.2+  |            |     |      |      |
| 2004 02 19 | 704 | 1.3+  | 1.2+  | 2006 09 29 | 704 | 0.8+  | 0.7+  |            |     |      |      |

**(172309)\* 2002 TU<sub>268</sub>**

Discovered 2002 Oct. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 0.11233    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21405256 | $\omega$ | 82.04158  | +0.42629401   | −0.90357211 |
| <i>a</i> | 2.7677218  | $\Omega$ | 342.53336 | +0.76360932   | +0.38481383 |
| <i>e</i> | 0.2235572  | <i>i</i> | 8.19586   | +0.48494765   | +0.18835011 |
| <i>P</i> | 4.60       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 21 | 704 | 1.1−  | 0.6+  | 2002 10 31 | 699 | 0.1−  | 0.6+  | 2004 03 15 | 704 | 0.2− | 0.9+ |
| 1998 12 21 | 704 | 1.3+  | 0.9−  | 2002 10 31 | 699 | 0.1−  | 0.3+  | 2004 03 15 | 704 | 0.2+ | 0.5− |
| 1998 12 21 | 704 | (2.9− | 0.0 ) | 2002 11 08 | 704 | 0.1−  | 0.7+  | 2004 03 15 | 704 | 0.1− | 0.5+ |
| 1998 12 21 | 704 | 0.3−  | 1.4−  | 2002 11 08 | 704 | 0.3−  | 0.4+  | 2004 03 15 | 704 | 0.5+ | 0.0  |
| 1998 12 21 | 704 | (2.6− | 0.6−) | 2002 11 08 | 704 | 0.3−  | 0.3+  | 2004 03 15 | 704 | 0.8+ | 0.7+ |
| 1999 01 22 | 699 | 1.1−  | 0.7−  | 2002 11 08 | 704 | 0.1−  | 0.6+  | 2004 03 18 | 704 | 1.3+ | 0.9+ |
| 1999 01 22 | 699 | 0.4+  | 0.5−  | 2002 11 08 | 704 | 0.7−  | 1.0+  | 2004 03 18 | 704 | 1.1+ | 0.3+ |
| 1999 01 22 | 699 | 0.9−  | 0.3−  | 2002 11 08 | 704 | 0.2+  | 0.2+  | 2004 03 18 | 704 | 0.9+ | 0.4+ |
| 2002 09 06 | 704 | 0.5−  | 0.3+  | 2002 11 08 | 704 | 0.3+  | 0.8+  | 2004 03 18 | 704 | 0.7+ | 0.1+ |
| 2002 09 06 | 704 | 0.1−  | 0.3−  | 2002 11 08 | 704 | 0.2−  | 0.5+  | 2004 03 18 | 704 | 1.3+ | 1.0+ |
| 2002 09 06 | 704 | 0.8−  | 0.2−  | 2002 11 08 | 704 | 0.1−  | 1.1+  | 2004 03 27 | 704 | 0.4+ | 0.6+ |
| 2002 09 06 | 704 | 0.6−  | 0.1−  | 2002 11 08 | 704 | 0.2−  | 0.9+  | 2004 03 27 | 704 | 0.0  | 0.9+ |
| 2002 09 06 | 704 | 0.6−  | 0.1+  | 2002 12 01 | 704 | 0.3−  | 0.7−  | 2004 03 27 | 704 | 0.5− | 0.9+ |
| 2002 09 14 | 608 | 0.5−  | 0.7+  | 2002 12 01 | 704 | 0.0   | 0.2+  | 2004 03 27 | 704 | 0.3+ | 0.8+ |
| 2002 09 14 | 608 | 0.5−  | 0.5+  | 2002 12 01 | 704 | 0.6−  | 0.6+  | 2007 11 03 | 704 | 0.3+ | 0.7− |
| 2002 09 14 | 608 | 0.6−  | 0.8+  | 2002 12 11 | 704 | 0.4+  | 0.1+  | 2007 11 03 | 704 | 0.2− | 0.7− |
| 2002 10 04 | 704 | 0.4+  | 0.5+  | 2002 12 11 | 704 | 1.2+  | 1.0+  | 2007 11 03 | 704 | 0.6+ | 0.8− |
| 2002 10 04 | 704 | 0.7+  | 1.0+  | 2002 12 11 | 704 | 0.2−  | 0.1+  | 2007 11 03 | 704 | 0.4− | 0.3− |
| 2002 10 04 | 704 | (2.1+ | 0.2−) | 2002 12 11 | 704 | 0.4+  | 0.4+  | 2007 11 03 | 704 | 0.9− | 0.2+ |
| 2002 10 09 | 704 | 0.3−  | 0.3+  | 2004 02 13 | 291 | 0.2−  | 0.3+  | 2007 11 09 | 704 | 0.7+ | 0.8− |
| 2002 10 09 | 704 | 0.1−  | 0.9+  | 2004 02 13 | 291 | 0.1−  | 0.5+  | 2007 11 09 | 704 | 0.2+ | 0.5− |
| 2002 10 09 | 704 | 0.8−  | 0.9+  | 2004 02 13 | 291 | 0.3−  | 0.3+  | 2007 11 09 | 704 | 0.0  | 0.6− |
| 2002 10 09 | 704 | 0.1−  | 1.3+  | 2004 02 14 | 703 | 0.1−  | 0.3+  | 2007 11 09 | 704 | 0.3+ | 0.3− |
| 2002 10 09 | 704 | 0.5−  | 0.8+  | 2004 02 14 | 703 | 1.3+  | 1.0+  | 2007 11 09 | 704 | 0.4+ | 0.1− |
| 2002 10 12 | 704 | 0.5−  | 0.2−  | 2004 02 14 | 703 | 1.4+  | 1.0−  | 2007 11 16 | 704 | 0.6+ | 0.1+ |
| 2002 10 12 | 704 | 0.1+  | 0.6−  | 2004 02 14 | 703 | (1.5+ | 1.8+) | 2007 11 16 | 704 | 0.3+ | 0.1− |
| 2002 10 12 | 704 | 0.5−  | 0.5−  | 2004 02 26 | 704 | 0.7+  | 0.6+  | 2007 11 16 | 704 | 0.2+ | 0.3+ |
| 2002 10 12 | 704 | 0.2−  | 0.5−  | 2004 02 26 | 704 | 0.5+  | 0.2+  | 2007 11 16 | 704 | 0.0  | 0.6− |
| 2002 10 12 | 704 | 0.3−  | 0.3−  | 2004 02 26 | 704 | 0.2+  | 0.0   | 2007 12 03 | 704 | 0.5− | 0.2+ |
| 2002 10 23 | 608 | 0.1−  | 0.1+  | 2004 02 26 | 704 | 0.7+  | 0.4+  | 2007 12 03 | 704 | 0.2+ | 1.0− |
| 2002 10 23 | 608 | 0.6−  | 0.3+  | 2004 02 26 | 704 | 0.1+  | 0.2+  | 2007 12 03 | 704 | 1.2− | 0.3+ |
| 2002 10 23 | 608 | 0.4−  | 0.3−  | 2004 03 12 | 644 | 0.2+  | 0.3+  | 2007 12 03 | 704 | 0.3− | 0.2+ |
| 2002 10 31 | 699 | 0.4+  | 0.7−  | 2004 03 12 | 644 | 0.2+  | 0.4+  | 2007 12 03 | 704 | 0.7− | 0.0  |
| 2002 10 31 | 699 | 0.0   | 0.7+  | 2004 03 12 | 644 | 0.0   | 0.1+  |            |     |      |      |

**(172310)\* 2002 TL<sub>273</sub>**

Discovered 2002 Oct. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 25.11717   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21470275 | $\omega$ | 152.67520 | +0.83208670   | −0.55216307 |
| <i>a</i> | 2.7621313  | $\Omega$ | 240.93643 | +0.49730019   | +0.78456731 |
| <i>e</i> | 0.1216203  | <i>i</i> | 3.43806   | +0.24560995   | +0.28208169 |
| <i>P</i> | 4.59       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 25 | 691 | 0.5−  | 0.1+  | 2004 02 13 | 699 | 0.0  | 0.2− | 2006 10 22 | G96 | 0.2− | 0.9− |
| 1995 02 25 | 691 | 1.1−  | 0.3+  | 2004 02 13 | 699 | 0.1+ | 0.8+ | 2006 10 22 | G96 | 0.2+ | 0.2− |
| 1995 02 25 | 691 | 1.9+  | 1.5−  | 2004 02 13 | 699 | 0.3− | 1.4+ | 2007 09 18 | G96 | 0.1+ | 0.4− |
| 2002 10 01 | 699 | (1.2− | 1.7−) | 2004 02 13 | 699 | 1.0− | 0.0  | 2007 09 18 | G96 | 0.1− | 0.6− |
| 2002 10 01 | 699 | (1.7− | 0.5−) | 2005 05 11 | 807 | 0.1− | 0.6+ | 2007 09 18 | G96 | 0.1− | 0.5− |
| 2002 10 01 | 699 | 0.3−  | 0.1−  | 2005 05 11 | 807 | 0.1+ | 0.7+ | 2007 09 18 | G96 | 0.2+ | 0.2− |
| 2002 10 01 | 699 | 0.3−  | 0.6−  | 2005 05 14 | G96 | 0.6− | 0.1+ | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2002 10 04 | 704 | 0.5+  | 0.1−  | 2005 05 14 | G96 | 0.5− | 0.2+ | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2002 10 04 | 704 | 0.0   | 0.1+  | 2005 05 14 | G96 | 0.8− | 0.5+ | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2002 10 04 | 704 | (0.7− | 2.6−) | 2005 05 14 | G96 | 0.2− | 0.8+ | 2007 12 04 | G96 | 0.7+ | 0.3− |
| 2002 10 09 | 704 | 0.8−  | 0.2+  | 2006 05 30 | G96 | 0.1+ | 0.3− | 2007 12 04 | G96 | 0.1+ | 0.1− |
| 2002 10 09 | 704 | 0.2+  | 0.5+  | 2006 05 30 | G96 | 0.2+ | 0.3− | 2007 12 04 | G96 | 0.4+ | 0.2− |

2007 DEC. 24

M.P.O. 129329

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 09 | 704 | 1.4−  | 0.2+  | 2006 05 30 | G96 | 0.2−  | 0.0   | 2007 12 05 | 704 | 0.2+  | 0.1+  |
| 2002 10 09 | 704 | 1.2+  | 1.1+  | 2006 05 30 | G96 | 0.1−  | 0.3−  | 2007 12 05 | 704 | 0.6+  | 0.2+  |
| 2002 10 12 | 704 | 1.0−  | 1.4−  | 2006 06 22 | 691 | 0.2+  | 0.3+  | 2007 12 05 | 704 | 0.4+  | 0.3+  |
| 2002 10 12 | 704 | 1.0+  | 0.9−  | 2006 06 22 | 691 | 0.1+  | 0.1−  | 2007 12 05 | 704 | 0.3+  | 0.8+  |
| 2002 10 12 | 704 | 0.1−  | 0.7+  | 2006 06 22 | 691 | 0.3+  | 0.4+  | 2007 12 05 | 704 | (1.7+ | 1.0+) |
| 2002 10 12 | 704 | (0.1− | 1.6+) | 2006 08 20 | 644 | 0.2+  | 0.3−  | 2007 12 16 | 691 | 0.0   | 0.0   |
| 2002 10 12 | 704 | 0.2−  | 0.6−  | 2006 08 20 | 644 | 0.6+  | 0.5−  | 2007 12 16 | 691 | 0.1+  | 0.2−  |
| 2002 10 30 | 644 | 0.8−  | 0.5+  | 2006 08 20 | 644 | 0.2+  | 0.3−  | 2007 12 16 | 691 | 0.2−  | 0.0   |
| 2002 10 30 | 644 | 0.6−  | 0.3+  | 2006 10 22 | G96 | (3.3− | 1.3−) |            |     |       |       |
| 2002 10 30 | 644 | 0.6−  | 0.5+  | 2006 10 22 | G96 | 0.1+  | 0.6−  |            |     |       |       |

**(172311)\* 2002 TO<sub>275</sub> = 2001 LW<sub>16</sub>**

Discovered 2002 Oct. 9 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 38095)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 94.61545   | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.21619411 | $\omega$ | 91.13206  | +0.73785013 | +0.66745825     |
| <i>a</i> | 2.7494140  | $\Omega$ | 227.00727 | −0.66091698 | +0.68427448     |
| <i>e</i> | 0.1732740  | <i>i</i> | 7.88815   | −0.13698879 | +0.29371401     |
| <i>P</i> | 4.56       | <i>H</i> | 15.1      | <i>G</i>    | 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 10 31 | 910 | 0.6−  | 0.3+  | 2002 11 01 | 608 | 0.3+  | 0.7−  | 2005 03 09 | 691 | 0.4−  | 0.6+  |
| 1997 10 31 | 910 | 0.7−  | 0.1+  | 2002 11 01 | 608 | 0.2−  | 1.0−  | 2006 05 25 | 703 | 0.8−  | 1.0+  |
| 1997 10 31 | 910 | 0.8−  | 0.0   | 2002 11 06 | 704 | 0.3+  | 1.0+  | 2006 05 25 | 703 | 0.6+  | 0.3−  |
| 2001 06 15 | 704 | 0.4+  | 0.5+  | 2002 11 06 | 704 | 1.0−  | 0.5+  | 2006 05 25 | 703 | (0.2+ | 1.7+) |
| 2001 06 15 | 704 | (1.6+ | 0.5+) | 2002 11 06 | 704 | 0.4−  | 0.8+  | 2006 05 25 | 703 | 0.9+  | 0.2+  |
| 2001 06 15 | 704 | 0.7+  | 0.9−  | 2002 11 06 | 704 | 0.4+  | 0.2−  | 2006 06 20 | 644 | 0.1+  | 0.1+  |
| 2001 06 16 | 691 | 0.1−  | 0.4+  | 2002 11 07 | 704 | 0.5+  | 0.2+  | 2006 06 20 | 644 | 0.1−  | 0.2−  |
| 2001 06 16 | 691 | 0.1+  | 1.3+  | 2002 11 07 | 704 | 0.4+  | 0.6+  | 2006 06 20 | 644 | 0.1+  | 0.4+  |
| 2001 06 16 | 691 | 0.3+  | 0.6+  | 2002 11 07 | 704 | 0.1+  | 0.0   | 2006 07 21 | 703 | 0.2−  | 0.4−  |
| 2002 10 04 | 704 | 0.2−  | 0.4+  | 2002 11 07 | 704 | 0.1+  | 0.0   | 2006 07 21 | 703 | 0.8−  | 0.1+  |
| 2002 10 04 | 704 | 0.4−  | 0.3+  | 2002 11 07 | 704 | 0.1−  | 0.7+  | 2006 07 21 | 703 | 0.2−  | 0.6−  |
| 2002 10 04 | 704 | 0.3−  | 0.6+  | 2002 11 08 | 704 | 0.0   | 0.1−  | 2006 07 21 | 703 | 0.6−  | 0.1−  |
| 2002 10 04 | 704 | 0.7−  | 0.4+  | 2002 11 08 | 704 | 0.5−  | 0.5−  | 2006 08 16 | 644 | 0.1+  | 0.1−  |
| 2002 10 04 | 704 | 0.5−  | 0.7+  | 2002 11 08 | 704 | 0.3+  | 0.1−  | 2006 08 16 | 644 | 0.1+  | 0.1+  |
| 2002 10 09 | 704 | 0.0   | 0.8+  | 2002 11 10 | 704 | 0.2−  | 0.6+  | 2006 08 16 | 644 | 0.3+  | 0.1+  |
| 2002 10 09 | 704 | 0.6+  | 1.2+  | 2002 11 10 | 704 | (2.0+ | 0.5−) | 2006 08 30 | 704 | 0.5+  | 0.1−  |
| 2002 10 09 | 704 | 0.5+  | 0.6+  | 2002 11 10 | 704 | 0.3+  | 0.5−  | 2006 08 30 | 704 | 0.7+  | 1.4−  |
| 2002 10 09 | 704 | 0.6−  | 0.1+  | 2002 11 10 | 704 | 0.7+  | 0.3−  | 2006 08 30 | 704 | 1.3−  | 0.3+  |
| 2002 10 09 | 704 | 0.5+  | 0.6+  | 2002 11 12 | 644 | 0.1−  | 0.3+  | 2006 08 30 | 704 | 0.2+  | 0.2−  |
| 2002 10 12 | 704 | 0.7+  | 1.3+  | 2002 11 12 | 644 | 0.1−  | 0.7+  | 2006 08 30 | 704 | 0.6+  | 0.3−  |
| 2002 10 12 | 704 | 0.2+  | 0.7+  | 2002 11 12 | 644 | 0.3+  | 0.0   | 2006 10 18 | 084 | 0.1+  | 0.1+  |
| 2002 10 12 | 704 | 0.0   | 1.0+  | 2002 11 22 | 644 | 0.1+  | 0.1−  | 2007 11 08 | 691 | 0.5−  | 0.2+  |
| 2002 10 12 | 704 | 0.5−  | 0.0   | 2002 11 22 | 644 | 0.9−  | 0.2−  | 2007 11 08 | 691 | 0.4−  | 0.2+  |
| 2002 10 16 | 644 | 0.2−  | 0.0   | 2002 11 22 | 644 | 0.2+  | 0.3−  | 2007 11 08 | 691 | 0.3−  | 0.0   |
| 2002 10 16 | 644 | 0.1−  | 0.4+  | 2002 12 01 | 704 | 0.5+  | 0.5+  | 2007 12 04 | 704 | 0.6+  | 0.5+  |
| 2002 10 16 | 644 | 0.1+  | 0.3+  | 2002 12 01 | 704 | 1.1+  | 0.3+  | 2007 12 04 | 704 | 1.0+  | 1.0+  |
| 2002 10 26 | 608 | 0.6−  | 0.5−  | 2002 12 01 | 704 | 1.0−  | 1.0+  | 2007 12 04 | 704 | 0.5+  | 0.7+  |
| 2002 10 26 | 608 | 0.5−  | 0.6−  | 2002 12 01 | 704 | 0.2+  | 0.4−  | 2007 12 04 | 704 | 0.9+  | 0.2+  |
| 2002 10 26 | 608 | 0.3−  | 0.8−  | 2005 03 09 | 691 | 0.3+  | 0.4+  | 2007 12 04 | 704 | 1.3+  | 0.1−  |
| 2002 11 01 | 608 | 0.5+  | 0.1+  | 2005 03 09 | 691 | 0.1+  | 0.6+  |            |     |       |       |

**(172312)\* 2002 TO<sub>284</sub>**

Discovered 2002 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 348.15362  | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.19233454 | $\omega$ | 126.62563 | +0.70299100 | −0.69398527     |
| <i>a</i> | 2.9723358  | $\Omega$ | 277.90698 | +0.59206170 | +0.69222394     |
| <i>e</i> | 0.1118081  | <i>i</i> | 9.03386   | +0.39403883 | +0.19801632     |
| <i>P</i> | 5.12       | <i>H</i> | 15.1      | <i>G</i>    | 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 01 | 691 | 0.1− | 0.0   | 2002 11 14 | 704 | 0.3+ | 0.3− | 2007 10 08 | 703 | 0.2− | 0.3+ |
| 1998 01 01 | 691 | 0.1− | 0.0   | 2002 11 24 | 644 | 0.0  | 0.5+ | 2007 10 08 | 703 | 0.6− | 0.6+ |
| 1998 01 01 | 691 | 0.6− | 0.1−  | 2002 11 24 | 644 | 0.0  | 0.7+ | 2007 10 08 | 703 | 0.4+ | 0.2+ |
| 1999 03 21 | 645 | 0.0  | 0.0   | 2002 11 24 | 644 | 0.0  | 0.7+ | 2007 10 08 | 703 | 0.5− | 0.3− |
| 1999 03 21 | 645 | 0.1− | 0.0   | 2002 12 02 | 704 | 0.1+ | 0.4− | 2007 10 14 | 703 | 0.0  | 0.0  |
| 2001 06 28 | 691 | 0.3− | 0.5+  | 2002 12 02 | 704 | 1.0+ | 0.4+ | 2007 10 14 | 703 | 0.6− | 0.1+ |
| 2001 06 28 | 691 | 0.1− | 0.6+  | 2002 12 02 | 704 | 0.9+ | 1.0+ | 2007 10 14 | 703 | 0.9− | 0.1+ |
| 2001 06 28 | 691 | 0.2− | 0.8+  | 2002 12 02 | 704 | 0.1+ | 1.1− | 2007 10 14 | 703 | 0.3+ | 0.6+ |
| 2002 09 07 | 704 | 0.4+ | 0.5−  | 2002 12 02 | 704 | 1.0+ | 0.5− | 2007 10 21 | 703 | 0.5− | 0.2− |
| 2002 09 07 | 704 | 0.9− | 0.1−  | 2002 12 03 | 644 | 0.0  | 0.4+ | 2007 10 21 | 703 | 0.4− | 0.3+ |
| 2002 09 07 | 704 | 0.5− | 1.3−  | 2002 12 03 | 644 | 0.1− | 0.2+ | 2007 10 21 | 703 | 0.6− | 0.1− |
| 2002 10 05 | 704 | 0.0  | 0.5−  | 2002 12 03 | 644 | 0.0  | 0.2+ | 2007 10 21 | 703 | 0.4− | 0.1− |
| 2002 10 05 | 704 | 0.8− | 0.0   | 2002 12 05 | 704 | 0.4− | 0.7+ | 2007 10 23 | 704 | 0.2− | 0.5+ |
| 2002 10 05 | 704 | 0.4− | 0.2−  | 2002 12 05 | 704 | 0.0  | 0.0  | 2007 10 23 | 704 | 0.3− | 0.7+ |
| 2002 10 05 | 704 | 0.0  | 0.2+  | 2002 12 05 | 704 | 1.0− | 1.0− | 2007 10 23 | 704 | 0.2− | 0.2+ |
| 2002 10 10 | 704 | 1.2− | 0.5+  | 2002 12 05 | 704 | 0.3− | 0.1+ | 2007 10 23 | 704 | 0.2− | 0.0  |
| 2002 10 10 | 704 | 1.2− | 0.9+  | 2002 12 11 | 644 | 0.0  | 0.1− | 2007 10 23 | 704 | 0.7+ | 0.2+ |
| 2002 10 10 | 704 | (0.0 | 1.6+) | 2002 12 11 | 644 | 0.1+ | 0.4+ | 2007 11 01 | 703 | 0.0  | 0.6+ |
| 2002 10 10 | 704 | 0.0  | 0.0   | 2002 12 11 | 644 | 0.1+ | 0.4+ | 2007 11 01 | 703 | 0.1− | 0.4+ |
| 2002 10 10 | 704 | 0.1+ | 0.4+  | 2002 12 31 | 704 | 0.6+ | 0.8+ | 2007 11 01 | 703 | 0.1− | 1.2+ |
| 2002 10 12 | 704 | 0.7+ | 0.9−  | 2002 12 31 | 704 | 0.3+ | 0.6+ | 2007 11 01 | 703 | 0.3− | 0.7+ |
| 2002 10 12 | 704 | 1.1+ | 0.4−  | 2002 12 31 | 704 | 0.0  | 0.3− | 2007 11 03 | 704 | 0.4+ | 0.9+ |
| 2002 10 12 | 704 | 0.1+ | 0.5−  | 2002 12 31 | 704 | 0.7+ | 0.9− | 2007 11 03 | 704 | 0.3− | 1.3+ |
| 2002 10 12 | 704 | 1.4+ | 1.1−  | 2002 12 31 | 704 | 0.1− | 0.3+ | 2007 11 03 | 704 | 0.3+ | 1.1+ |
| 2002 10 12 | 704 | 1.0+ | 0.2+  | 2004 02 12 | 644 | 0.0  | 0.1+ | 2007 11 03 | 704 | 0.1+ | 0.2− |
| 2002 11 06 | 704 | 0.7+ | 0.4+  | 2004 02 12 | 644 | 0.0  | 0.2+ | 2007 11 03 | 704 | 0.2− | 0.5+ |
| 2002 11 06 | 704 | 0.0  | 0.1−  | 2004 02 12 | 644 | 0.3+ | 0.4+ | 2007 11 08 | 703 | 0.2+ | 0.2− |
| 2002 11 06 | 704 | 0.2− | 0.1−  | 2004 02 13 | 699 | 0.2+ | 0.6+ | 2007 11 08 | 703 | 0.3+ | 0.4− |
| 2002 11 06 | 704 | 0.1+ | 0.0   | 2004 02 13 | 699 | 0.6− | 0.1+ | 2007 11 08 | 703 | 0.2− | 0.6− |
| 2002 11 06 | 704 | 0.1+ | 0.4−  | 2004 02 13 | 699 | 0.2− | 0.5+ | 2007 11 08 | 703 | 0.1− | 0.8− |
| 2002 11 11 | 699 | 0.0+ | 1.1+  | 2004 02 13 | 699 | 0.4+ | 0.4+ | 2007 11 09 | 704 | 0.2− | 0.0  |
| 2002 11 11 | 699 | 0.1− | 0.0   | 2004 02 18 | 691 | 0.1+ | 0.2+ | 2007 11 09 | 704 | 0.4− | 0.3+ |
| 2002 11 11 | 699 | 0.4+ | 0.0   | 2004 02 18 | 691 | 0.1+ | 0.2+ | 2007 11 09 | 704 | 0.1− | 0.3+ |
| 2002 11 11 | 699 | 0.1− | 0.6+  | 2004 02 18 | 704 | 0.3+ | 1.0+ | 2007 11 09 | 704 | 0.2+ | 0.0  |
| 2002 11 13 | 644 | 0.2− | 0.4−  | 2004 02 18 | 704 | 0.2− | 0.2+ | 2007 11 09 | 704 | 1.1− | 0.2+ |
| 2002 11 13 | 644 | 0.0  | 0.3−  | 2004 02 18 | 691 | 0.3+ | 0.2+ | 2007 12 16 | 704 | 0.6− | 0.9− |
| 2002 11 13 | 644 | 0.3− | 0.4−  | 2004 02 18 | 704 | 0.2− | 1.2+ | 2007 12 16 | 704 | 0.6− | 0.7− |
| 2002 11 14 | 704 | 0.2+ | 0.6−  | 2004 02 18 | 704 | 0.8+ | 1.2+ | 2007 12 16 | 704 | 0.3+ | 0.5+ |
| 2002 11 14 | 704 | 1.1+ | 1.0−  | 2004 02 19 | 608 | 0.3+ | 0.9+ | 2007 12 16 | 704 | 0.3+ | 0.7− |
| 2002 11 14 | 704 | 0.1+ | 0.1−  | 2004 02 19 | 608 | 0.7+ | 0.7+ | 2007 12 16 | 704 | 1.5+ | 1.0− |
| 2002 11 14 | 704 | 0.5+ | 0.8−  | 2004 02 19 | 608 | 1.3+ | 0.3+ |            |     |      |      |

**(172313)\* 2002 TM<sub>286</sub>**

Discovered 2002 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 68.46298   | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.20868877 | $\omega$ | 311.96136 | +0.93174418 | +0.35512954     |
| <i>a</i> | 2.8149456  | $\Omega$ | 27.49336  | −0.26526359 | +0.80812009     |
| <i>e</i> | 0.1637760  | <i>i</i> | 9.44231   | −0.24796776 | +0.46992014     |
| <i>P</i> | 4.72       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |      |            |
|------------|-----|------|------|------------|
| 2002 10 10 | 704 | 1.1− | 0.5+ | 2002 11 14 |
|------------|-----|------|------|------------|

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 05 | 704 | 0.6+ | 0.5+ | 2004 02 17 | 645 | 0.1- | 0.0  | 2006 08 12 | E12 | 0.2-  | 0.2+  |
| 2002 11 05 | 704 | 0.2- | 1.1+ | 2004 02 17 | 645 | 0.1- | 0.1- | 2006 08 12 | E12 | 0.4-  | 0.5-  |
| 2002 11 05 | 704 | 0.1- | 0.8+ | 2004 02 18 | 691 | 0.0  | 0.2+ | 2006 08 12 | E12 | 0.1+  | 0.8-  |
| 2002 11 05 | 704 | 0.2+ | 0.1+ | 2004 02 18 | 691 | 0.0  | 0.2+ | 2006 08 12 | E12 | (2.9- | 1.4+) |
| 2002 11 08 | 704 | 0.8- | 1.4+ | 2004 02 18 | 691 | 0.2+ | 0.2- | 2007 11 17 | 704 | 0.4+  | 0.1+  |
| 2002 11 08 | 704 | 0.5- | 0.2+ | 2005 03 09 | G96 | 0.1+ | 0.0  | 2007 11 17 | 704 | 0.4-  | 0.8-  |
| 2002 11 08 | 704 | 0.4- | 0.2+ | 2005 03 09 | G96 | 0.1- | 0.1+ | 2007 11 17 | 704 | 0.3+  | 0.5+  |
| 2002 11 08 | 704 | 0.3+ | 1.0- | 2005 03 09 | G96 | 0.4- | 0.2- | 2007 11 17 | 704 | 0.1-  | 0.3-  |
| 2002 11 12 | 704 | 0.3- | 0.6+ | 2005 03 09 | G96 | 0.6+ | 0.0  | 2007 12 16 | 704 | 0.4+  | 0.2+  |
| 2002 11 12 | 704 | 0.4+ | 0.3+ | 2005 04 02 | 691 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.6+  | 0.3-  |
| 2002 11 12 | 704 | 0.0  | 0.2+ | 2005 04 02 | 691 | 0.2+ | 0.1+ | 2007 12 16 | 704 | 0.0   | 0.7-  |
| 2002 11 12 | 704 | 0.4+ | 0.2- | 2005 04 02 | 691 | 0.1+ | 0.1+ | 2007 12 16 | 704 | 0.1-  | 0.5-  |
| 2002 11 12 | 704 | 0.2- | 0.5+ | 2005 04 11 | 691 | 0.0  | 0.3+ | 2007 12 16 | 704 | 0.2-  | 0.1+  |
| 2002 11 14 | 704 | 0.5+ | 0.4+ | 2005 04 11 | 691 | 0.1+ | 0.1+ |            |     |       |       |
| 2002 11 14 | 704 | 1.1+ | 0.6+ | 2005 04 11 | 691 | 0.2+ | 0.2+ |            |     |       |       |

**(172314)\* 2002 TR<sub>290</sub>**

Discovered 2002 Oct. 10 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.29497   |          | <i>P</i>  | <i>Q</i>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.22322985 | $\omega$ | 69.47419  | +0.84552221   |
| <i>a</i> | 2.6913357  | $\Omega$ | 322.60969 | +0.45603465   |
| <i>e</i> | 0.1029527  | <i>i</i> | 4.49500   | +0.27771315   |
| <i>P</i> | 4.42       | <i>H</i> | 15.5      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 04 | 704 | 0.3-  | 0.1-  | 2002 12 11 | 704 | 0.4+  | 0.4-  | 2006 08 21 | 704 | 0.2-  | 0.0   |
| 2002 10 04 | 704 | 0.1+  | 0.1-  | 2002 12 11 | 704 | 0.2+  | 0.7-  | 2006 08 21 | 704 | 0.1-  | 0.1+  |
| 2002 10 04 | 704 | 0.0   | 0.5-  | 2002 12 11 | 704 | 0.6+  | 0.7-  | 2006 08 21 | 704 | 0.9-  | 0.4+  |
| 2002 10 10 | 704 | 0.5-  | 0.4+  | 2002 12 11 | 704 | 1.2-  | 0.3-  | 2006 08 27 | 699 | 0.5+  | 0.1+  |
| 2002 10 10 | 704 | 0.1-  | 0.7-  | 2003 01 05 | 704 | 1.0+  | 1.2+  | 2006 08 27 | 699 | 0.2+  | 0.2-  |
| 2002 10 10 | 704 | 0.2+  | 0.4+  | 2003 01 05 | 704 | 0.7+  | 1.3+  | 2006 08 27 | 699 | 0.0   | 0.4+  |
| 2002 10 10 | 704 | (2.2- | 1.0+) | 2003 01 05 | 704 | 0.5+  | 0.9+  | 2006 08 28 | 703 | (2.4+ | 3.0+) |
| 2002 10 12 | 704 | 1.0+  | 0.3-  | 2003 01 05 | 704 | 0.0   | 1.4+  | 2006 08 28 | 703 | 0.9-  | 0.5+  |
| 2002 10 12 | 704 | 0.1+  | 0.4-  | 2003 11 30 | 691 | 0.0   | 0.1+  | 2006 08 28 | 703 | 1.0-  | 1.1+  |
| 2002 10 12 | 704 | 0.2-  | 0.5-  | 2003 11 30 | 691 | 0.1+  | 0.1-  | 2006 08 28 | 703 | 0.8-  | 0.1+  |
| 2002 10 12 | 704 | 0.2-  | 0.9-  | 2003 11 30 | 691 | 0.6+  | 0.0   | 2006 08 28 | 691 | 0.1-  | 0.4+  |
| 2002 10 12 | 704 | 0.9-  | 0.0   | 2004 02 12 | 291 | 0.1-  | 0.2+  | 2006 08 28 | 691 | 0.0   | 0.3+  |
| 2002 11 01 | 644 | 0.3+  | 0.3+  | 2004 02 12 | 291 | 0.1-  | 0.2+  | 2006 08 28 | 691 | 0.0   | 0.5+  |
| 2002 11 01 | 644 | 0.3+  | 0.4+  | 2004 02 12 | 291 | 0.2-  | 0.2+  | 2006 09 16 | 644 | 0.4-  | 0.2+  |
| 2002 11 01 | 644 | 0.3+  | 0.1+  | 2004 02 17 | 691 | 0.0   | 0.1+  | 2006 09 16 | 644 | 0.1-  | 0.2+  |
| 2002 11 05 | 704 | 0.8-  | 0.3-  | 2004 02 17 | 691 | 0.1-  | 0.2+  | 2006 09 16 | 644 | 0.4+  | 0.4+  |
| 2002 11 05 | 704 | 0.4-  | 0.4+  | 2004 02 17 | 691 | 0.1+  | 0.2+  | 2006 09 17 | 704 | 0.5+  | 0.1+  |
| 2002 11 05 | 704 | 0.4-  | 0.0   | 2004 02 18 | 704 | 0.7-  | 1.1+  | 2006 09 17 | 704 | 0.3+  | 0.6-  |
| 2002 11 05 | 704 | 0.4-  | 0.3+  | 2004 02 18 | 704 | 1.0+  | 0.9+  | 2006 09 17 | 704 | 0.6+  | 1.2-  |
| 2002 11 05 | 704 | 0.9-  | 0.2-  | 2004 02 18 | 704 | 0.1+  | 0.4+  | 2006 09 17 | 703 | 0.4-  | 0.7+  |
| 2002 11 06 | 699 | 0.0   | 0.3+  | 2004 02 18 | 704 | 0.0   | 0.6+  | 2006 09 17 | 704 | 0.1-  | 0.4-  |
| 2002 11 06 | 699 | 0.6-  | 0.2+  | 2004 02 18 | 704 | 0.1+  | 1.3+  | 2006 09 17 | 703 | 0.1-  | 0.0   |
| 2002 11 06 | 699 | 0.8-  | 0.5-  | 2004 02 25 | 333 | 0.2+  | 0.3-  | 2006 09 17 | 704 | 0.2-  | 0.6-  |
| 2002 11 06 | 699 | 0.9+  | 0.5+  | 2004 02 25 | 333 | 0.2-  | 0.1-  | 2006 09 17 | 703 | 0.2-  | 0.7+  |
| 2002 11 06 | 608 | 0.7-  | 0.3+  | 2004 02 26 | 333 | 0.1+  | 0.0   | 2006 09 17 | 703 | 0.1+  | 0.1+  |
| 2002 11 06 | 608 | 0.6-  | 0.1+  | 2004 02 26 | 333 | 0.1-  | 0.1+  | 2006 09 18 | 704 | 0.5+  | 0.6+  |
| 2002 11 06 | 608 | 0.7-  | 0.1+  | 2004 02 26 | 704 | 0.6-  | 0.9+  | 2006 09 18 | 704 | 0.6+  | 0.5-  |
| 2002 11 08 | 704 | 0.1+  | 0.1+  | 2004 02 26 | 704 | 0.1+  | 0.3-  | 2006 09 18 | 704 | 0.8+  | 0.1+  |
| 2002 11 08 | 704 | 0.4+  | 0.4-  | 2004 02 26 | 704 | 0.6+  | 0.7+  | 2006 09 18 | 704 | (2.3+ | 0.8-) |
| 2002 11 08 | 704 | 0.2+  | 0.6-  | 2004 02 26 | 704 | 0.0   | 0.3-  | 2006 09 25 | 704 | 0.2+  | 0.3-  |
| 2002 11 12 | 704 | 0.2-  | 0.1+  | 2004 02 26 | 333 | 0.2+  | 0.2+  | 2006 09 25 | 704 | 0.8-  | 0.2+  |
| 2002 11 12 | 704 | 0.3+  | 0.3-  | 2004 02 26 | 704 | 0.5-  | 0.5+  | 2006 09 25 | 704 | 0.0   | 0.7+  |
| 2002 11 12 | 704 | 0.7+  | 0.0   | 2004 03 11 | 644 | 0.6+  | 0.0   | 2006 09 25 | 704 | 0.6-  | 0.1-  |
| 2002 11 12 | 704 | 0.1+  | 0.7+  | 2004 03 11 | 644 | 0.3+  | 0.4+  | 2006 09 25 | 704 | 0.7-  | 0.2-  |
| 2002 11 12 | 704 | 0.3-  | 0.1+  | 2004 03 11 | 644 | 0.5+  | 0.0   | 2006 09 28 | G96 | 0.1-  | 0.0   |
| 2002 11 13 | 644 | 0.2+  | 0.1-  | 2004 03 18 | 704 | (2.4+ | 2.0+) | 2006 09 28 | G96 | 0.1-  | 0.0   |
| 2002 11 13 | 644 | 0.0   | 0.1-  | 2004 03 18 | 704 | 1.4+  | 0.6+  | 2006 09 28 | G96 | 0.3-  | 0.0   |
| 2002 11 13 | 644 | 0.1-  | 0.2-  | 2004 03 18 | 704 | 1.4-  | 0.3+  | 2006 09 28 | G96 | 0.4-  | 0.3+  |
| 2002 11 14 | 704 | 0.3+  | 0.4+  | 2004 03 25 | 704 | 1.1+  | 0.1+  | 2006 09 30 | 699 | 0.9-  | 1.3+  |
| 2002 11 14 | 704 | 0.8+  | 0.3+  | 2004 03 25 | 704 | 0.8+  | 0.3-  | 2006 09 30 | 699 | (2.0- | 0.2+) |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 14 | 704 | 1.5+ | 0.2+ | 2004 03 25 | 704 | 0.2+  | 0.3+  | 2006 09 30 | 699 | 1.3- | 1.4+ |
| 2002 11 14 | 704 | 0.4+ | 0.8+ | 2004 03 25 | 704 | 1.0+  | 0.0   | 2006 09 30 | 699 | 0.6- | 0.0  |
| 2002 11 24 | 644 | 0.0  | 0.2- | 2004 03 26 | 691 | 0.0   | 0.1+  | 2006 10 21 | 644 | 0.1- | 0.5+ |
| 2002 11 24 | 644 | 0.4+ | 0.1+ | 2004 03 26 | 691 | 0.3+  | 0.1+  | 2006 10 21 | 644 | 0.1+ | 0.1+ |
| 2002 11 24 | 644 | 0.0  | 0.1- | 2004 03 26 | 691 | 0.3+  | 0.0   | 2006 10 21 | 644 | 0.2+ | 0.1+ |
| 2002 12 02 | 704 | 0.7+ | 0.3- | 2006 08 06 | 699 | 0.1+  | 0.0   | 2007 11 07 | G96 | 0.3+ | 0.6- |
| 2002 12 02 | 704 | 1.0+ | 0.1+ | 2006 08 06 | 699 | (1.0+ | 1.5+) | 2007 11 07 | G96 | 0.0  | 0.3- |
| 2002 12 02 | 704 | 0.0  | 0.2+ | 2006 08 06 | 699 | 0.1-  | 0.2+  | 2007 11 07 | G96 | 0.3- | 0.6- |
| 2002 12 06 | 704 | 0.9- | 0.6- | 2006 08 06 | 699 | 0.7-  | 0.4-  | 2007 11 07 | G96 | 0.3+ | 0.6- |
| 2002 12 06 | 704 | 0.2+ | 1.1- | 2006 08 15 | 644 | 0.1-  | 0.2+  | 2007 12 06 | G96 | 0.0  | 0.4- |
| 2002 12 06 | 704 | 0.2- | 0.6- | 2006 08 15 | 644 | 0.0   | 0.1+  | 2007 12 06 | G96 | 0.2- | 0.5- |
| 2002 12 06 | 704 | 0.1- | 0.2+ | 2006 08 15 | 644 | 0.1-  | 0.4+  | 2007 12 06 | G96 | 0.1- | 0.5- |
| 2002 12 06 | 704 | 0.4- | 1.1- | 2006 08 19 | 644 | 0.3-  | 0.5+  | 2007 12 06 | G96 | 0.1+ | 0.3- |
| 2002 12 06 | 608 | 0.1+ | 1.4- | 2006 08 19 | 644 | 0.1+  | 0.5+  | 2007 12 15 | 704 | 0.2+ | 1.2+ |
| 2002 12 06 | 608 | 0.4- | 0.8- | 2006 08 19 | 644 | 0.2-  | 0.3+  | 2007 12 15 | 704 | 0.1- | 0.9+ |
| 2002 12 06 | 608 | 0.1+ | 1.2- | 2006 08 19 | A50 | 0.4+  | 0.1-  | 2007 12 15 | 704 | 0.2+ | 0.8+ |
| 2002 12 11 | 644 | 0.1+ | 0.0  | 2006 08 19 | A50 | 0.3-  | 0.0   | 2007 12 15 | 704 | 0.2- | 1.5+ |
| 2002 12 11 | 644 | 0.0  | 0.0  | 2006 08 21 | 704 | 0.1+  | 1.5+  | 2007 12 15 | 704 | 0.3+ | 1.5+ |
| 2002 12 11 | 644 | 0.2+ | 0.3+ | 2006 08 21 | 704 | 0.1+  | 0.9+  |            |     |      |      |

**(172315)\* 2002 TL<sub>300</sub>**

Discovered 2002 Oct. 15 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 294.63459  |          | <i>P</i> | <i>Q</i>      |
|----------|------------|----------|----------|---------------|
| <i>n</i> | 0.21898645 | $\omega$ | 79.72266 | -0.66301126   |
| <i>a</i> | 2.7259919  | $\Omega$ | 53.99543 | +0.54129915   |
| <i>e</i> | 0.0701915  | <i>i</i> | 15.26927 | +0.51711828   |
| <i>P</i> | 4.50       | <i>H</i> | 15.1     | <i>G</i> 0.15 |
|          |            |          |          | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 10 | 608 | 0.1+  | 0.7-  | 2004 02 26 | 703 | 0.5-  | 0.9+  | 2007 11 18 | 704 | 0.6+ | 1.2- |
| 2000 04 10 | 608 | 0.7+  | 0.5-  | 2004 02 26 | 703 | 0.2-  | 0.4+  | 2007 11 18 | 704 | 0.7+ | 0.4- |
| 2000 04 10 | 608 | 0.9+  | 1.5-  | 2005 04 07 | G96 | 0.7-  | 0.6+  | 2007 11 19 | G96 | 0.0  | 0.0  |
| 2002 10 15 | 644 | 0.3-  | 0.6+  | 2005 04 07 | G96 | 0.0   | 1.1+  | 2007 11 19 | G96 | 0.0  | 0.1+ |
| 2002 10 15 | 644 | 0.2-  | 0.9+  | 2005 04 07 | G96 | 0.0   | 0.0   | 2007 11 19 | G96 | 0.2+ | 0.0  |
| 2002 10 15 | 644 | 0.3-  | 0.7+  | 2005 04 07 | G96 | 0.0   | 0.1+  | 2007 11 19 | G96 | 0.3+ | 0.2+ |
| 2002 10 16 | 644 | 0.5+  | 0.1+  | 2007 10 16 | G96 | 0.0   | 0.0   | 2007 11 20 | 704 | 1.0+ | 0.5- |
| 2002 10 16 | 644 | 0.6-  | 0.0   | 2007 10 16 | G96 | 0.0   | 1.1-  | 2007 11 20 | 704 | 0.8+ | 0.7+ |
| 2002 10 16 | 644 | 0.2+  | 0.3+  | 2007 10 16 | G96 | 0.1+  | 0.1-  | 2007 11 20 | 704 | 0.1+ | 0.1- |
| 2002 10 28 | 644 | 0.9-  | 0.3-  | 2007 10 24 | G96 | 0.1+  | 0.1-  | 2007 11 20 | 704 | 1.1+ | 0.0  |
| 2002 10 28 | 644 | 0.3-  | 0.2-  | 2007 10 24 | G96 | 0.3+  | 0.4-  | 2007 11 20 | 704 | 0.7+ | 0.0  |
| 2002 10 28 | 644 | 0.4-  | 0.7-  | 2007 10 24 | G96 | 0.4+  | 0.9-  | 2007 11 20 | 691 | 0.3- | 0.1+ |
| 2002 11 06 | 644 | 0.0   | 0.1-  | 2007 10 24 | G96 | 0.1+  | 0.4-  | 2007 11 20 | 691 | 0.1- | 0.1+ |
| 2002 11 06 | 644 | 0.1-  | 0.0   | 2007 11 02 | 691 | 0.2-  | 0.1+  | 2007 11 20 | G96 | 0.0  | 0.1+ |
| 2002 11 06 | 644 | 0.3+  | 0.0   | 2007 11 02 | 691 | 0.1-  | 0.2+  | 2007 11 20 | G96 | 0.1- | 0.1- |
| 2003 12 30 | 704 | 0.4+  | 0.1-  | 2007 11 02 | 691 | 0.2-  | 0.2+  | 2007 11 20 | G96 | 0.2+ | 0.1+ |
| 2003 12 30 | 704 | 0.3+  | 0.7+  | 2007 11 06 | 691 | 0.1-  | 0.0   | 2007 11 20 | 691 | 0.1- | 0.2+ |
| 2003 12 30 | 704 | 0.7-  | 0.9+  | 2007 11 06 | 691 | 0.0   | 0.1+  | 2007 11 20 | G96 | 0.0  | 0.0  |
| 2003 12 30 | 704 | 0.2+  | 0.2+  | 2007 11 06 | 691 | 0.2-  | 0.1+  | 2007 12 13 | 704 | 0.0  | 0.0  |
| 2003 12 30 | 704 | 0.1-  | 0.2+  | 2007 11 09 | D29 | 0.8+  | 0.6-  | 2007 12 13 | 704 | 0.6- | 0.5+ |
| 2004 01 19 | 704 | 0.2-  | 0.2+  | 2007 11 09 | D29 | 0.1-  | 0.1+  | 2007 12 13 | 704 | 0.2+ | 0.1+ |
| 2004 01 19 | 704 | 0.2-  | 0.3+  | 2007 11 09 | D29 | 0.4+  | 0.3-  | 2007 12 13 | 704 | 0.3+ | 0.4- |
| 2004 01 19 | 704 | 0.1-  | 0.1-  | 2007 11 09 | D29 | 0.4+  | 0.2-  | 2007 12 13 | 704 | 0.4+ | 0.2- |
| 2004 01 19 | 704 | 0.3-  | 0.2+  | 2007 11 13 | 703 | (2.6+ | 1.0+) | 2007 12 16 | 704 | 0.6+ | 0.3- |
| 2004 01 19 | 704 | 0.0   | 0.8+  | 2007 11 13 | 703 | 0.1-  | 0.1-  | 2007 12 16 | 704 | 0.3+ | 0.7+ |
| 2004 02 10 | 704 | 0.5-  | 0.6-  | 2007 11 13 | 703 | 0.1-  | 0.1-  | 2007 12 16 | 704 | 0.2- | 0.2+ |
| 2004 02 10 | 704 | 1.1-  | 0.2-  | 2007 11 13 | 703 | (1.5- | 1.5+) | 2007 12 16 | 704 | 0.2- | 0.3+ |
| 2004 02 10 | 704 | 0.1+  | 0.2-  | 2007 11 18 | 704 | 0.4+  | 1.0-  | 2007 12 16 | 704 | 0.2+ | 0.5+ |
| 2004 02 26 | 703 | (1.5+ | 1.4+) | 2007 11 18 | 704 | 0.1-  | 0.5+  |            |     |      |      |
| 2004 02 26 | 703 | (0.9- | 2.4+) | 2007 11 18 | 704 | 0.0   | 1.1-  |            |     |      |      |



2007 DEC. 24

M.P.O. 129331

|                                         |            |       |          |            |     |             |      |             |          |      |      |
|-----------------------------------------|------------|-------|----------|------------|-----|-------------|------|-------------|----------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |          | MPC        |     |             |      |             |          |      |      |
| <i>M</i>                                | 74.75206   |       | (2000.0) | <b>P</b>   |     |             |      | <b>Q</b>    |          |      |      |
| <i>n</i>                                | 0.23208865 |       | $\omega$ | 290.52647  |     | +0.98127860 |      | -0.18687573 |          |      |      |
| <i>a</i>                                | 2.6224071  |       | $\Omega$ | 80.26657   |     | +0.18957756 |      | +0.89459924 |          |      |      |
| <i>e</i>                                | 0.1073426  |       | <i>i</i> | 2.70887    |     | +0.03395071 |      | +0.40591829 |          |      |      |
| <i>P</i>                                | 4.25       |       | <i>H</i> | 16.5       |     | <i>G</i>    | 0.15 |             | <i>U</i> | 1    |      |
| Residuals in seconds of arc             |            |       |          |            |     |             |      |             |          |      |      |
| 1996 03 12                              | 691        | 0.3+  | 0.5-     | 2005 05 07 | G96 | 0.2-        | 0.0  | 2006 09 30  | 703      | 0.7+ | 1.3- |
| 1996 03 12                              | 691        | 0.1+  | 0.5-     | 2005 05 07 | G96 | 0.2-        | 0.1+ | 2006 09 30  | 703      | 0.7+ | 0.3+ |
| 1996 03 12                              | 691        | 0.5-  | 0.2-     | 2005 05 07 | G96 | 0.6-        | 0.1+ | 2006 09 30  | 703      | 0.3+ | 0.5+ |
| 1998 11 23                              | 691        | 0.2+  | 0.4-     | 2005 05 07 | G96 | 0.3-        | 0.1+ | 2006 11 27  | G96      | 0.1- | 0.0  |
| 1998 11 23                              | 691        | 0.2+  | 0.5-     | 2005 05 08 | 691 | 0.1-        | 0.1+ | 2006 11 27  | G96      | 0.2+ | 0.1- |
| 1998 11 23                              | 691        | 0.1-  | 0.4-     | 2005 05 08 | 691 | 0.1+        | 0.0  | 2006 11 27  | G96      | 0.0  | 0.3- |
| 2002 10 11                              | 704        | 1.1-  | 0.3+     | 2005 05 08 | 691 | 0.0         | 0.6- | 2006 11 27  | G96      | 0.4+ | 0.8- |
| 2002 10 11                              | 704        | (2.4- | 0.3+)    | 2005 06 13 | G96 | 0.2+        | 0.1+ | 2007 01 17  | G96      | 0.7- | 0.2- |
| 2002 10 11                              | 704        | 1.4-  | 0.4-     | 2005 06 13 | G96 | 0.3+        | 0.4+ | 2007 01 17  | G96      | 1.1- | 0.1- |
| 2002 10 15                              | 704        | 0.1+  | 1.4+     | 2005 06 13 | G96 | 0.2-        | 0.5+ | 2007 01 17  | G96      | 0.9- | 1.2+ |
| 2002 10 15                              | 704        | 0.4+  | 0.7+     | 2005 06 13 | G96 | 0.5-        | 0.5+ | 2007 01 17  | G96      | 0.4- | 0.0  |
| 2002 10 15                              | 704        | 0.3+  | 0.5+     | 2006 09 14 | 703 | 1.3+        | 1.2- | 2007 10 07  | G96      | 0.6+ | 0.1- |
| 2002 10 31                              | 704        | 0.6-  | 0.5+     | 2006 09 14 | 703 | 0.9+        | 0.7+ | 2007 10 07  | G96      | 0.1+ | 0.4+ |
| 2002 10 31                              | 704        | 0.5-  | 0.3-     | 2006 09 14 | 644 | 0.0         | 0.2+ | 2007 10 07  | G96      | 0.5+ | 0.2- |
| 2002 10 31                              | 704        | 0.0   | 0.3+     | 2006 09 14 | 703 | 0.5-        | 0.8- | 2007 10 07  | G96      | 0.1- | 0.4- |
| 2002 10 31                              | 704        | 0.2+  | 0.2-     | 2006 09 14 | 703 | 0.1+        | 0.7- | 2007 11 21  | G96      | 0.0  | 0.2+ |
| 2004 01 22                              | 704        | 0.8-  | 1.2+     | 2006 09 14 | 644 | 0.1+        | 0.0  | 2007 11 21  | G96      | 0.0  | 0.2+ |
| 2004 01 22                              | 704        | 0.8+  | 0.9+     | 2006 09 14 | 644 | 0.3-        | 0.2+ | 2007 11 21  | G96      | 0.5+ | 0.3+ |
| 2004 01 22                              | 704        | 0.3+  | 0.1+     | 2006 09 30 | 703 | 0.6+        | 0.1+ | 2007 11 21  | G96      | 0.1- | 0.1- |

**(172317)\* 2002 TZ<sub>315</sub> = 2005 LJ<sub>6</sub>**

Discovered 2002 Oct. 4 by the Sloan Digital Sky Survey at Apache Point.

Id. G. V. Williams (*MPO* 75753)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |       |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|------|------|
| <i>M</i>                                | 208.67104  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |       |            |     |      |      |
| <i>n</i>                                | 0.21576266 | $\omega$ | 130.85591 | -0.69985805 |      | +0.67143106 |       |            |     |      |      |
| <i>a</i>                                | 2.7530780  | $\Omega$ | 92.86731  | -0.70649728 |      | -0.60047284 |       |            |     |      |      |
| <i>e</i>                                | 0.0852380  | <i>i</i> | 14.12178  | -0.10516799 |      | -0.43429564 |       |            |     |      |      |
| <i>P</i>                                | 4.57       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 0     |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |      |      |
| 2001 07 18                              | 644        | (0.5-    | 2.6-)     | 2005 06 02  | E12  | 0.2-        | 0.9-  | 2005 07 05 | 644 | 0.1- | 0.0  |
| 2001 07 18                              | 644        | 0.3-     | 0.6+      | 2005 06 02  | E12  | 0.3-        | 0.4+  | 2005 07 05 | 644 | 0.1- | 0.3+ |
| 2001 07 18                              | 644        | (0.3-    | 2.3-)     | 2005 06 02  | E12  | 0.0         | 0.0   | 2005 07 05 | 644 | 0.0  | 0.0  |
| 2001 07 18                              | 644        | 0.1-     | 0.6+      | 2005 06 02  | E12  | 0.0         | 0.0   | 2005 07 05 | 644 | 0.1- | 0.2- |
| 2001 07 18                              | 644        | (0.6-    | 2.4-)     | 2005 06 04  | 691  | 0.3+        | 0.2+  | 2006 08 20 | 644 | 0.0  | 0.1- |
| 2001 07 18                              | 644        | 0.6-     | 0.5+      | 2005 06 04  | 691  | 0.6-        | 0.6+  | 2006 08 20 | 644 | 0.4+ | 0.1- |
| 2002 10 04                              | 645        | 0.0      | 0.0       | 2005 06 04  | 691  | 0.2+        | 0.2+  | 2006 08 20 | 644 | 0.1- | 0.2- |
| 2002 10 04                              | 645        | 0.0      | 0.1-      | 2005 06 05  | 704  | (2.4-       | 0.8+) | 2007 11 08 | G96 | 0.1+ | 0.1+ |
| 2002 10 10                              | 645        | 0.0      | 0.0       | 2005 06 05  | 704  | 0.7+        | 0.5+  | 2007 11 08 | G96 | 0.1+ | 0.8- |
| 2002 10 10                              | 645        | 0.0      | 0.0       | 2005 06 05  | 704  | (0.5+       | 1.6-) | 2007 11 08 | G96 | 0.6- | 0.0  |
| 2002 10 11                              | 645        | 0.0      | 0.1+      | 2005 06 05  | 704  | (2.0-       | 0.9-) | 2007 11 08 | G96 | 0.2- | 0.4- |
| 2002 10 11                              | 645        | 0.0      | 0.2+      | 2005 06 11  | 691  | 0.4+        | 0.2+  | 2007 12 04 | 704 | 0.9+ | 1.3+ |
| 2002 10 31                              | 645        | 0.0      | 0.0       | 2005 06 11  | 691  | 0.4+        | 0.2+  | 2007 12 04 | 704 | 0.4- | 0.9+ |
| 2002 10 31                              | 645        | 0.0      | 0.0       | 2005 06 11  | 691  | 0.3+        | 0.2+  | 2007 12 04 | 704 | 0.2- | 1.1+ |
| 2003 12 29                              | 704        | (1.1-    | 2.1+)     | 2005 06 15  | 691  | 0.4+        | 0.2+  | 2007 12 04 | 704 | 1.3- | 0.5+ |
| 2003 12 29                              | 704        | 0.5-     | 1.1+      | 2005 06 15  | 691  | 0.2+        | 0.1+  | 2007 12 04 | 704 | 0.2- | 0.8+ |
| 2003 12 29                              | 704        | 0.6+     | 1.3+      | 2005 06 15  | 691  | 0.6-        | 0.0   | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2003 12 29                              | 704        | 0.1+     | 0.4+      | 2005 06 23  | 644  | 0.1-        | 0.0   | 2007 12 06 | G96 | 0.2- | 0.2+ |
| 2003 12 29                              | 704        | 0.2+     | 1.3+      | 2005 06 23  | 644  | 0.1+        | 0.1-  | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2004 01 31                              | 704        | (0.2+    | 1.6+)     | 2005 06 23  | 644  | 0.0         | 0.0   | 2007 12 06 | G96 | 0.2- | 0.0  |
| 2004 01 31                              | 704        | 0.2-     | 0.4-      | 2005 07 05  | 644  | 0.2-        | 0.5+  |            |     |      |      |
| 2004 01 31                              | 704        | 0.5+     | 0.1+      | 2005 07 05  | 644  | 0.0         | 0.2+  |            |     |      |      |

**(172318)\* 2002 TY<sub>342</sub> = 1995 DT<sub>7</sub>**

Discovered 2002 Oct. 5 by the Sloan Digital Sky Survey at Apache Point.

Id. G. V. Williams (*MPO* 50155)

|                                         |            |      |          |            |     |             |      |             |          |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|-------------|------|-------------|----------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          | MPC        |     |             |      |             |          |      |      |
| <i>M</i>                                | 274.71812  |      | (2000.0) | <b>P</b>   |     |             |      | <b>Q</b>    |          |      |      |
| <i>n</i>                                | 0.21168002 |      | $\omega$ | 351.51345  |     | −0.83931825 |      | −0.53974181 |          |      |      |
| <i>a</i>                                | 2.7883640  |      | $\Omega$ | 155.47521  |     | +0.50752063 |      | −0.82078217 |          |      |      |
| <i>e</i>                                | 0.1218997  |      | <i>i</i> | 9.00779    |     | +0.19485299 |      | −0.18707060 |          |      |      |
| <i>P</i>                                | 4.66       |      | <i>H</i> | 16.2       |     | <i>G</i>    | 0.15 |             | <i>U</i> | 0    |      |
| Residuals in seconds of arc             |            |      |          |            |     |             |      |             |          |      |      |
| 1995 02 24                              | 691        | 0.2+ | 0.0      | 2004 01 26 | 699 | 0.7+        | 0.0  | 2004 02 17  | 704      | 0.1+ | 1.2+ |
| 1995 02 24                              | 691        | 1.1− | 0.1+     | 2004 01 26 | 699 | 0.8+        | 0.2+ | 2004 02 17  | 704      | 0.5− | 0.8+ |
| 1995 02 24                              | 691        | 0.1+ | 0.0      | 2004 01 26 | 699 | 0.1−        | 0.5− | 2004 02 22  | 704      | 0.1+ | 0.7+ |
| 1995 03 01                              | 691        | 0.3+ | 0.2−     | 2004 01 28 | 926 | 0.2+        | 0.1− | 2004 02 22  | 704      | 0.1− | 0.5+ |
| 1995 03 01                              | 691        | 0.0  | 0.5−     | 2004 01 28 | 926 | 0.2+        | 0.1− | 2004 02 22  | 704      | 0.1+ | 0.3+ |
| 1995 03 01                              | 691        | 0.1+ | 0.8−     | 2004 01 28 | 926 | 0.3+        | 0.1+ | 2005 06 11  | 691      | 0.0  | 0.5+ |
| 1995 03 29                              | 691        | 0.0  | 0.1+     | 2004 01 28 | 291 | 0.3−        | 0.2+ | 2005 06 11  | 691      | 0.1+ | 0.5+ |
| 1995 03 29                              | 691        | 0.5− | 0.5−     | 2004 01 28 | 291 | 0.1−        | 0.2+ | 2005 06 11  | 691      | 0.1+ | 0.4+ |
| 1995 03 29                              | 691        | 0.2+ | 0.7−     | 2004 01 28 | 291 | 0.1−        | 0.3+ | 2007 11 12  | 703      | 1.3+ | 1.3+ |
| 2002 10 05                              | 645        | 0.0  | 0.0      | 2004 01 29 | 704 | 0.2+        | 0.3− | 2007 11 12  | 703      | 0.6+ | 0.7+ |
| 2002 10 05                              | 645        | 0.0  | 0.0      | 2004 01 29 | 704 | 0.4+        | 0.6+ | 2007 11 12  | 703      | 1.1+ | 0.4+ |
| 2002 10 10                              | 645        | 0.0  | 0.0      | 2004 01 29 | 704 | 0.5+        | 0.4+ | 2007 11 12  | 703      | 1.1− | 0.1− |
| 2002 10 10                              | 645        | 0.0  | 0.0      | 2004 01 29 | 704 | 1.2+        | 1.0+ | 2007 11 14  | G96      | 0.2− | 0.0  |
| 2002 10 11                              | 645        | 0.0  | 0.0      | 2004 01 29 | 704 | 0.2+        | 0.2+ | 2007 11 14  | G96      | 0.0  | 0.1− |
| 2002 10 11                              | 645        | 0.0  | 0.1−     | 2004 02 11 | 644 | 0.0         | 0.3+ | 2007 11 14  | G96      | 0.2− | 0.3− |
| 2004 01 23                              | 704        | 0.3− | 1.5−     | 2004 02 11 | 644 | 0.0         | 0.5+ | 2007 11 14  | G96      | 0.2+ | 0.1− |
| 2004 01 23                              | 704        | 0.8− | 1.3−     | 2004 02 11 | 644 | 0.0         | 0.1+ | 2007 12 06  | 703      | 1.0− | 0.6− |
| 2004 01 23                              | 704        | 0.1− | 0.2−     | 2004 02 17 | 704 | 0.0         | 0.8+ | 2007 12 06  | 703      | 1.9− | 0.2− |
| 2004 01 23                              | 704        | 0.6+ | 0.1+     | 2004 02 17 | 704 | 0.3−        | 1.2+ | 2007 12 06  | 703      | 0.5+ | 0.8+ |
| 2004 01 26                              | 699        | 0.1+ | 0.3+     | 2004 02 17 | 704 | 0.4+        | 0.8+ | 2007 12 06  | 703      | 1.3− | 0.8− |

**(172319)\* 2002 TR<sub>375</sub> = 2006 QJ<sub>37</sub>**

Discovered 2002 Oct. 3 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 108485)

|                                         |            |          |           |            |             |      |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |      |             |            |     |      |      |
| <i>M</i>                                | 14.14330   |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.21862179 | $\omega$ | 348.04485 |            | +0.57565151 |      | -0.81143191 |            |     |      |      |
| <i>a</i>                                | 2.7290223  | $\Omega$ | 66.72898  |            | +0.75898984 |      | +0.48426806 |            |     |      |      |
| <i>e</i>                                | 0.0761376  | <i>i</i> | 6.31292   |            | +0.30423635 |      | +0.32720438 |            |     |      |      |
| <i>P</i>                                | 4.51       | <i>H</i> | 15.8      |            | <i>G</i>    | 0.15 | <i>U</i>    | 1          |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |     |      |      |
| 1993 10 11                              | 809        | 1.4+     | 1.1-      | 2002 10 31 | 699         | 0.0  | 0.2-        | 2006 06 03 | 568 | 0.1+ | 0.1+ |
| 1993 10 11                              | 809        | 1.6+     | 1.6-      | 2002 10 31 | 704         | 0.3- | 0.4+        | 2006 06 03 | 568 | 0.2+ | 0.4+ |
| 1993 10 11                              | 809        | 1.7-     | 1.5-      | 2002 10 31 | 704         | 0.2+ | 0.3-        | 2006 06 03 | 568 | 0.1+ | 0.0  |
| 1993 10 21                              | 809        | 0.0      | 1.1+      | 2004 02 15 | 704         | 0.9+ | 0.9+        | 2006 06 03 | 568 | 0.2+ | 0.5+ |
| 1993 10 21                              | 809        | 0.3+     | 0.4-      | 2004 02 15 | 704         | 0.1+ | 0.4+        | 2006 08 16 | E12 | 0.7+ | 0.3+ |
| 1993 10 21                              | 809        | 0.2-     | 0.3-      | 2004 02 15 | 704         | 1.2+ | 0.0         | 2006 08 16 | E12 | 1.3- | 0.5- |
| 2002 10 03                              | 704        | (0.4-    | 2.0+)     | 2004 02 15 | 704         | 0.1+ | 0.7+        | 2006 08 16 | E12 | 0.5+ | 0.1- |
| 2002 10 03                              | 704        | 0.7-     | 0.8+      | 2004 03 18 | 644         | 0.3+ | 0.7+        | 2006 08 16 | E12 | 0.3+ | 1.2+ |
| 2002 10 03                              | 704        | 0.4+     | 0.2+      | 2004 03 18 | 644         | 0.2+ | 0.9+        | 2006 08 20 | 644 | 0.2- | 0.5+ |
| 2002 10 11                              | 704        | 0.4-     | 0.4+      | 2004 03 18 | 644         | 0.4+ | 0.6+        | 2006 08 20 | 644 | 0.1- | 0.2+ |
| 2002 10 11                              | 704        | 0.7+     | 0.2+      | 2005 04 11 | G96         | 0.1- | 0.5+        | 2006 08 20 | 644 | 0.1- | 0.6+ |
| 2002 10 11                              | 704        | 0.4-     | 1.0+      | 2005 04 11 | G96         | 0.5- | 0.6+        | 2007 12 14 | 704 | 0.1+ | 0.1- |
| 2002 10 11                              | 704        | 1.2-     | 1.5+      | 2005 04 11 | G96         | 0.3+ | 0.1+        | 2007 12 14 | 704 | 0.4+ | 0.3+ |
| 2002 10 31                              | 699        | 0.5-     | 0.1-      | 2005 04 11 | G96         | 0.4- | 0.5+        | 2007 12 14 | 704 | 0.8- | 0.1- |
| 2002 10 31                              | 699        | 0.6-     | 0.8+      | 2005 06 13 | G96         | 0.3+ | 0.2+        | 2007 12 14 | 704 | 0.9+ | 0.0  |
| 2002 10 31                              | 704        | 0.3-     | 1.0+      | 2005 06 13 | G96         | 0.0  | 0.4+        | 2007 12 16 | 691 | 0.2- | 0.0  |
| 2002 10 31                              | 704        | 0.2+     | 0.6+      | 2005 06 13 | G96         | 0.3- | 0.5+        | 2007 12 16 | 691 | 0.2- | 0.2- |
| 2002 10 31                              | 699        | 0.2+     | 0.1+      | 2005 06 13 | G96         | 0.0  | 0.4+        | 2007 12 16 | 691 | 0.1- | 0.0  |
| 2002 10 31                              | 704        | 0.3-     | 0.6+      | 2006 06 03 | 568         | 0.0  | 0.0         |            |     |      |      |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                           |          |                                                                             |             | MPC                                           |             |       |            |     |       |       |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------|-------------|-----------------------------------------------|-------------|-------|------------|-----|-------|-------|
| <i>M</i>                                | 345.05481                                                                                                 | (2000.0) |                                                                             | <b>P</b>    |                                               | <b>Q</b>    |       |            |     |       |       |
| <i>n</i>                                | 0.18324223                                                                                                | $\omega$ | 12.18245                                                                    | +0.92394658 |                                               | −0.38246029 |       |            |     |       |       |
| <i>a</i>                                | 3.0698631                                                                                                 | $\Omega$ | 10.31165                                                                    | +0.34766884 |                                               | +0.83216628 |       |            |     |       |       |
| <i>e</i>                                | 0.1033865                                                                                                 | <i>i</i> | 2.19139                                                                     | +0.15952772 |                                               | +0.40152635 |       |            |     |       |       |
| <i>P</i>                                | 5.38 <th><i>H</i></th> <td>15.6<th><i>G</i></th><td>0.15<th><i>U</i></th><td colspan="2">1</td></td></td> | <i>H</i> | 15.6 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td colspan="2">1</td></td> | <i>G</i>    | 0.15 <th><i>U</i></th> <td colspan="2">1</td> | <i>U</i>    | 1     |            |     |       |       |
| Residuals in seconds of arc             |                                                                                                           |          |                                                                             |             |                                               |             |       |            |     |       |       |
| 2002 10 15                              | 644                                                                                                       | 0.1−     | 0.1−                                                                        | 2005 03 17  | 691                                           | 0.3+        | 0.2+  | 2007 09 14 | 699 | 1.1−  | 0.1+  |
| 2002 10 15                              | 644                                                                                                       | 0.4−     | 0.1−                                                                        | 2005 03 17  | 691                                           | 0.0         | 0.2+  | 2007 09 14 | 699 | 1.1−  | 0.7+  |
| 2002 10 15                              | 644                                                                                                       | 0.3−     | 0.0                                                                         | 2005 03 17  | 691                                           | 0.5+        | 0.2+  | 2007 09 19 | 704 | 0.0   | 0.1−  |
| 2002 10 26                              | 608                                                                                                       | 0.7−     | 0.6+                                                                        | 2005 05 08  | G96                                           | 0.3−        | 0.4+  | 2007 09 19 | 704 | 0.6−  | 0.6+  |
| 2002 10 26                              | 608                                                                                                       | 0.6−     | 0.9+                                                                        | 2005 05 08  | G96                                           | 0.9−        | 0.1+  | 2007 09 19 | 704 | 0.3−  | 1.3+  |
| 2002 10 26                              | 608                                                                                                       | 0.2−     | 0.7+                                                                        | 2005 05 08  | G96                                           | 0.2+        | 0.4+  | 2007 09 19 | 704 | 0.0   | 0.6+  |
| 2002 10 31                              | 644                                                                                                       | 0.0      | 0.8−                                                                        | 2005 05 08  | G96                                           | 0.2+        | 0.3+  | 2007 10 06 | 704 | 0.5−  | 0.4−  |
| 2002 10 31                              | 644                                                                                                       | 0.1+     | 0.4−                                                                        | 2007 09 12  | 699                                           | 0.4−        | 0.2+  | 2007 10 06 | 704 | 0.2+  | 0.2−  |
| 2002 11 12                              | 644                                                                                                       | 0.9+     | 0.6−                                                                        | 2007 09 12  | 699                                           | 0.0         | 0.9+  | 2007 10 06 | 704 | 0.1+  | 0.5+  |
| 2002 11 12                              | 644                                                                                                       | 1.2+     | 0.1+                                                                        | 2007 09 12  | 699                                           | 0.4−        | 0.2−  | 2007 10 15 | 703 | (0.5+ | 2.7+) |
| 2004 01 30                              | 691                                                                                                       | 0.1+     | 0.2+                                                                        | 2007 09 12  | G96                                           | 0.5+        | 0.4−  | 2007 10 15 | 703 | 0.5−  | 0.2+  |
| 2004 01 30                              | 691                                                                                                       | 0.0      | 0.1+                                                                        | 2007 09 12  | G96                                           | 0.5+        | 0.3−  | 2007 10 15 | 703 | 0.0   | 0.6+  |
| 2004 01 30                              | 691                                                                                                       | 0.0      | 0.2+                                                                        | 2007 09 12  | 699                                           | 0.5+        | 0.9+  | 2007 10 15 | 703 | 0.6+  | 1.3+  |
| 2005 03 10                              | G96                                                                                                       | 0.1+     | 0.5+                                                                        | 2007 09 12  | G96                                           | 0.4+        | 0.3−  | 2007 12 06 | G96 | 0.1−  | 0.5−  |
| 2005 03 10                              | G96                                                                                                       | 0.2+     | 0.5+                                                                        | 2007 09 12  | G96                                           | 0.4+        | 0.3−  | 2007 12 06 | G96 | 0.6+  | 0.2−  |
| 2005 03 10                              | G96                                                                                                       | 0.0      | 0.3+                                                                        | 2007 09 14  | 699                                           | (2.0−       | 0.9+) | 2007 12 06 | G96 | 0.1+  | 0.0   |
| 2005 03 10                              | G96                                                                                                       | 0.2−     | 0.3+                                                                        | 2007 09 14  | 699                                           | 0.6−        | 0.3−  | 2007 12 06 | G96 | 0.9−  | 0.1−  |

**(172321)\* 2002 UY<sub>5</sub> = 2004 CM<sub>58</sub>**

Discovered 2002 Oct. 28 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61504)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                    |          |                                                                                      |             |                                                        | MPC         |                         |            |     |      |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|-------------|-------------------------|------------|-----|------|
| <i>M</i>                                | 69.68180                                                                                                           | (2000.0) |                                                                                      | <b>P</b>    |                                                        | <b>Q</b>    |                         |            |     |      |
| <i>n</i>                                | 0.22038452                                                                                                         | $\omega$ | 264.60818                                                                            | +0.99090976 |                                                        | +0.04491674 |                         |            |     |      |
| <i>a</i>                                | 2.7144509                                                                                                          | $\Omega$ | 92.77386                                                                             | +0.00801235 |                                                        | +0.92123607 |                         |            |     |      |
| <i>e</i>                                | 0.0418991                                                                                                          | <i>i</i> | 7.29378                                                                              | −0.13428941 |                                                        | +0.38640210 |                         |            |     |      |
| <i>P</i>                                | 4.47 <th><i>H</i></th> <td>15.9<th><i>G</i></th><td>0.15<th><i>U</i></th><td>0<td colspan="2"></td></td></td></td> | <i>H</i> | 15.9 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>0<td colspan="2"></td></td></td> | <i>G</i>    | 0.15 <th><i>U</i></th> <td>0<td colspan="2"></td></td> | <i>U</i>    | 0 <td colspan="2"></td> |            |     |      |
| Residuals in seconds of arc             |                                                                                                                    |          |                                                                                      |             |                                                        |             |                         |            |     |      |
| 2002 10 04                              | 704                                                                                                                | 1.0+     | 1.1+                                                                                 | 2002 10 30  | 645                                                    | 0.0         | 0.0                     | 2005 04 30 | 691 | 0.0  |
| 2002 10 04                              | 704                                                                                                                | 0.6+     | 1.0+                                                                                 | 2002 10 30  | 645                                                    | 0.0         | 0.0                     | 2005 04 30 | 691 | 0.3+ |
| 2002 10 04                              | 704                                                                                                                | 0.4−     | 0.4−                                                                                 | 2002 10 30  | 704                                                    | 0.6−        | 0.1−                    | 2005 04 30 | 691 | 0.1+ |
| 2002 10 05                              | 645                                                                                                                | 0.1−     | 0.0                                                                                  | 2003 12 22  | 704                                                    | 1.1+        | 0.3+                    | 2005 05 11 | 691 | 0.3+ |
| 2002 10 05                              | 645                                                                                                                | 0.0      | 0.0                                                                                  | 2003 12 22  | 704                                                    | 0.1+        | 0.7+                    | 2005 05 11 | 691 | 0.0  |
| 2002 10 09                              | 699                                                                                                                | 0.1+     | 0.6+                                                                                 | 2003 12 22  | 704                                                    | 0.6+        | 0.2+                    | 2005 05 11 | 691 | 0.4+ |
| 2002 10 09                              | 699                                                                                                                | 0.1−     | 0.3+                                                                                 | 2003 12 22  | 704                                                    | 0.5+        | 0.0                     | 2006 08 20 | 644 | 0.1+ |
| 2002 10 09                              | 699                                                                                                                | 0.6−     | 0.7+                                                                                 | 2003 12 28  | 704                                                    | 1.0+        | 0.7+                    | 2006 08 20 | 644 | 0.4+ |
| 2002 10 09                              | 699                                                                                                                | 0.8−     | 1.1+                                                                                 | 2003 12 28  | 704                                                    | 0.2+        | 0.7+                    | 2006 08 20 | 644 | 0.2+ |
| 2002 10 10                              | 645                                                                                                                | 0.0      | 0.0                                                                                  | 2003 12 28  | 704                                                    | 1.1+        | 0.4+                    | 2007 11 17 | 691 | 0.2+ |
| 2002 10 10                              | 645                                                                                                                | 0.0      | 0.0                                                                                  | 2004 02 10  | 644                                                    | 0.2+        | 0.6+                    | 2007 11 17 | 691 | 0.4+ |
| 2002 10 15                              | 644                                                                                                                | 0.4−     | 0.6+                                                                                 | 2004 02 10  | 644                                                    | 0.3+        | 0.4+                    | 2007 11 17 | 691 | 0.2+ |
| 2002 10 15                              | 644                                                                                                                | 0.2−     | 0.7+                                                                                 | 2004 02 10  | 644                                                    | 0.2+        | 0.3+                    | 2007 12 05 | 704 | 1.0+ |
| 2002 10 15                              | 644                                                                                                                | 0.5−     | 0.7+                                                                                 | 2004 02 15  | 704                                                    | 1.2+        | 1.4+                    | 2007 12 05 | 704 | 0.9+ |
| 2002 10 28                              | 644                                                                                                                | 0.1+     | 0.5+                                                                                 | 2004 02 15  | 704                                                    | (0.4−       | 1.9+)                   | 2007 12 05 | 704 | 1.3+ |
| 2002 10 28                              | 644                                                                                                                | 0.4−     | 0.5+                                                                                 | 2004 02 15  | 704                                                    | (0.7−       | 2.4+)                   | 2007 12 05 | 704 | 1.3+ |
| 2002 10 28                              | 644                                                                                                                | 0.0      | 0.7+                                                                                 | 2004 02 17  | 645                                                    | 0.1−        | 0.1−                    | 2007 12 05 | 704 | 1.5+ |
| 2002 10 29                              | 645                                                                                                                | 0.1−     | 0.0                                                                                  | 2004 02 17  | 645                                                    | 0.1−        | 0.1−                    | 2007 12 15 | 691 | 1.4+ |
| 2002 10 29                              | 645                                                                                                                | 0.0      | 0.0                                                                                  | 2005 04 11  | 691                                                    | 0.1−        | 0.4+                    | 2007 12 15 | 691 | 1.6+ |
| 2002 10 30                              | 704                                                                                                                | 0.1+     | 0.2−                                                                                 | 2005 04 11  | 691                                                    | 0.1−        | 0.1+                    | 2007 12 15 | 691 | 0.5+ |
| 2002 10 30                              | 704                                                                                                                | 0.6+     | 0.0                                                                                  | 2005 04 11  | 691                                                    | 0.0         | 0.1+                    |            |     |      |

**(172322)\* 2002 UQ<sub>22</sub>**

Discovered 2002 Oct. 30 by NEAT at Haleakala.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |       |            |            |             |       |             |            | MPC   |       |      |
|-----------------------------------------|------------|-------|-------|------------|------------|-------------|-------|-------------|------------|-------|-------|------|
| <i>M</i>                                | 24.20842   |       |       | (2000.0)   |            | <b>P</b>    |       | <b>Q</b>    |            |       |       |      |
| <i>n</i>                                | 0.20937845 |       |       | $\omega$   | 25.88391   | +0.66589873 |       | −0.74573346 |            |       |       |      |
| <i>a</i>                                | 2.8087606  |       |       | $\Omega$   | 22.38506   | +0.67432327 |       | +0.58932965 |            |       |       |      |
| <i>e</i>                                | 0.1740229  |       |       | <i>i</i>   | 3.23023    | +0.31916611 |       | +0.31076063 |            |       |       |      |
| <i>P</i>                                | 4.71       |       |       | <i>H</i>   | 15.4       | <i>G</i>    | 0.15  | <i>U</i>    | 0          |       |       |      |
| Residuals in seconds of arc             |            |       |       |            |            |             |       |             |            |       |       |      |
| 2001 07 18                              | 644        | 0.6−  | 0.5+  | 2002 12 11 | 704        | 0.7−        | 1.2+  | 2004 03 31  | 691        | 0.4−  | 0.1+  |      |
| 2001 07 18                              | 644        | 0.7−  | 0.1−  | 2002 12 11 | 704        | 0.1+        | 0.4+  | 2004 03 31  | 691        | 0.0   | 0.5+  |      |
| 2001 07 18                              | 644        | 0.9−  | 0.0   | 2002 12 11 | 704        | 0.9−        | 0.8+  | 2004 04 12  | 691        | 0.3−  | 0.1+  |      |
| 2002 10 30                              | 608        | 0.1−  | 0.9−  | 2002 12 11 | 644        | 0.6−        | 0.4+  | 2004 04 12  | 691        | 0.0   | 0.3+  |      |
| 2002 10 30                              | 608        | 0.2+  | 0.9−  | 2002 12 11 | 704        | 0.0         | 0.1+  | 2004 04 12  | 691        | 0.4+  | 0.1+  |      |
| 2002 10 30                              | 608        | 0.3+  | 0.6−  | 2002 12 11 | 644        | 0.4−        | 0.3+  | 2004 04 24  | 691        | 0.3+  | 0.2+  |      |
| 2002 10 31                              | 699        | 0.9+  | 0.1+  | 2002 12 11 | 704        | 0.0         | 0.1−  | 2004 04 24  | 691        | 0.4+  | 0.2+  |      |
| 2002 10 31                              | 699        | 0.7+  | 0.8+  | 2002 12 11 | 644        | 0.2−        | 0.2+  | 2004 04 24  | 691        | 0.1+  | 0.3+  |      |
| 2002 10 31                              | 699        | 0.9−  | 0.7+  | 2002 12 27 | 644        | 0.5−        | 0.5+  | 2006 08 12  | 644        | 0.4−  | 0.8+  |      |
| 2002 10 31                              | 699        | 0.8+  | 0.1+  | 2002 12 27 | 644        | 0.6−        | 0.5+  | 2006 08 12  | 644        | 0.3−  | 0.5+  |      |
| 2002 11 05                              | 704        | 0.3−  | 0.4−  | 2002 12 27 | 644        | 0.5−        | 0.4+  | 2006 08 12  | 644        | 0.2−  | 0.3+  |      |
| 2002 11 05                              | 704        | 0.1−  | 0.1+  | 2004 02 23 | 704        | (1.8+       | 1.4+) | 2006 08 14  | 644        | 0.7−  | 0.6+  |      |
| 2002 11 05                              | 704        | 0.1+  | 0.3+  | 2004 02 23 | 704        | 0.5+        | 0.1+  | 2006 08 14  | 644        | 0.4−  | 0.2+  |      |
| 2002 11 05                              | 704        | 1.0−  | 0.3−  | 2004 02 23 | 704        | 0.2−        | 1.3−  | 2006 08 14  | 644        | 0.5−  | 0.6+  |      |
| 2002 11 05                              | 699        | 0.3−  | 0.1−  | 2004 02 23 | 704        | 0.1−        | 0.9−  | 2006 08 15  | 644        | 0.4−  | 0.1+  |      |
| 2002 11 05                              | 704        | 0.0   | 0.3+  | 2004 02 23 | 704        | 0.6+        | 0.8−  | 2006 08 15  | 644        | 0.3−  | 0.7+  |      |
| 2002 11 05                              | 699        | 1.1−  | 0.7+  | 2004 03 11 | 644        | 0.3+        | 0.3+  | 2006 08 15  | 644        | 0.3−  | 0.6+  |      |
| 2002 11 05                              | 699        | 0.2−  | 0.1+  | 2004 03 11 | 644        | 0.2+        | 0.3+  | 2006 08 16  | E12        | 0.5+  | 0.5+  |      |
| 2002 11 05                              | 699        | 0.2−  | 0.1−  | 2004 03 11 | 644        | 0.0         | 0.2+  | 2006 08 16  | E12        | 0.3−  | 0.6+  |      |
| 2002 11 08                              | 704        | 0.1−  | 0.1+  | 2004 03 15 | 691        | 0.1+        | 0.3+  | 2006 08 16  | E12        | (0.4+ | 3.0−) |      |
| 2002 11 08                              | 704        | 0.3+  | 0.3−  | 2004 03 15 | 691        | 0.0         | 0.1+  | 2006 08 16  | E12        | 0.1+  | 0.8+  |      |
| 2002 11 08                              | 704        | 0.1−  | 0.2−  | 2004 03 15 | 691        | 0.3−        | 0.2+  | 2006 08 17  | 644        | 0.4−  | 0.6+  |      |
| 2002 11 12                              | 704        | 0.1−  | 0.2−  | 2004 03 15 | 704        | 0.2+        | 0.4−  | 2006 08 17  | 644        | 0.5−  | 0.4+  |      |
| 2002 11 12                              | 704        | 0.2+  | 0.2+  | 2004 03 15 | 704        | (0.2+       | 1.6+) | 2006 08 17  | 644        | 0.5−  | 0.6+  |      |
| 2002 11 12                              | 704        | 0.2−  | 0.4−  | 2004 03 15 | 704        | 0.5+        | 0.0   | 2006 08 20  | 644        | 0.1−  | 0.6+  |      |
| 2002 11 12                              | 704        | 0.1−  | 0.3−  | 2004 03 15 | 704        | (2.2+       | 1.8+) | 2006 08 20  | 644        | 0.4−  | 0.5+  |      |
| 2002 11 12                              | 704        | 0.6−  | 0.1−  | 2004 03 15 | 704        | (1.5−       | 2.1+) | 2006 08 20  | 644        | 0.4−  | 0.6+  |      |
| 2002 11 13                              | 644        | 0.1+  | 0.9+  | 2004 03 18 | 704        | 0.9−        | 0.8+  | 2006 08 28  | 703        | 0.1+  | 0.8+  |      |
| 2002 11 13                              | 644        | 0.2+  | 0.7+  | 2004 03 18 | 704        | 0.1+        | 0.7+  | 2006 08 28  | 703        | 1.0+  | 0.8+  |      |
| 2002 11 13                              | 644        | 0.1+  | 0.8+  | 2004 03 18 | 704        | 0.3+        | 0.8+  | 2006 08 28  | 703        | 0.8−  | 1.4+  |      |
| 2002 11 14                              | 704        | 0.2−  | 1.0+  | 2004 03 18 | 704        | 0.0         | 0.5+  | 2006 08 28  | 703        | 1.2+  | 0.3+  |      |
| 2002 11 14                              | 704        | 0.1+  | 0.2−  | 2004 03 18 | 704        | 0.7−        | 0.6+  | 2006 08 28  | E12        | 0.6+  | 0.5+  |      |
| 2002 11 14                              | 704        | (2.0+ | 1.4−) | 2004 03 18 | 704        | 0.7−        | 0.3+  | 2006 08 28  | E12        | 0.1+  | 0.2+  |      |
| 2002 11 14                              | 704        | 0.0   | 0.6+  | 2004 03 18 | 704        | 0.5−        | 0.4+  | 2006 08 28  | E12        | 0.1+  | 1.4+  |      |
| 2002 11 27                              | 699        | 1.0+  | 0.4+  | 2004 03 18 | 704        | 0.5+        | 0.3+  | 2006 08 28  | E12        | 0.6−  | 0.3+  |      |
| 2002 11 27                              | 699        | 1.3+  | 0.0   | 2004 03 18 | 704        | 0.0         | 0.6+  | 2007 11 06  | G96        | 0.0   | 0.3−  |      |
| 2002 11 27                              | 699        | 0.5+  | 1.3+  | 2004 03 19 | 704        | 0.7+        | 0.3−  | 2007 11 06  | G96        | 0.2−  | 0.5−  |      |
| 2002 11 27                              | 699        | 0.3+  | 0.5+  | 2004 03 19 | 704        | 0.1−        | 0.4−  | 2007 11 06  | G96        | 0.1+  | 0.4−  |      |
| 2002 11 28                              | 699        | 0.1−  | 0.2+  | 2004 03 19 | 704        | 0.0         | 0.4+  | 2007 11 06  | G96        | 0.3−  | 0.2−  |      |
| 2002 11 28                              | 699        | 0.8+  | 0.7−  | 2004 03 20 | 704        | 0.6+        | 0.2+  | 2007 12 05  | 691        | 0.2−  | 0.1−  |      |
| 2002 11 28                              | 699        | 0.9−  | 0.2+  | 0.0        | 2004 03 20 | 704         | 0.9+  | 0.2+        | 2007 12 05 | 691   | 0.1−  | 0.1− |
| 2002 11 28                              | 699        | 0.1+  | 0.1+  | 2004 03 20 | 704        | 0.4+        | 0.2−  | 2007 12 05  | 691        | 0.0   | 0.2−  |      |
| 2002 12 02                              | 704        | 0.3+  | 0.3−  | 2004 03 23 | 691        | 0.2+        | 0.2+  | 2007 12 14  | 704        | 1.3+  | 0.3+  |      |
| 2002 12 02                              | 704        | 0.5+  | 0.5+  | 2004 03 23 | 704        | 0.4+        | 0.8+  | 2007 12 14  | 704        | 1.7+  | 0.6−  |      |
| 2002 12 02                              | 704        | 0.7+  | 0.2−  | 2004 03 23 | 691        | 0.4+        | 0.0   | 2007 12 14  | 704        | 0.2−  | 0.3−  |      |
| 2002 12 02                              | 704        | (0.1− | 1.8+) | 2004 03 23 | 704        | 0.6+        | 1.2+  | 2007 12 15  | 704        | 0.5+  | 0.1−  |      |
| 2002 12 02                              | 608        | (0.5+ | 2.1+) | 2004 03 23 | 704        | (0.1+       | 2.0+) | 2007 12 15  | 704        | 0.1+  | 0.2+  |      |
| 2002 12 02                              | 608        | (0.6+ | 1.9+) | 2004 03 23 | 691        | 0.3+        | 0.2+  | 2007 12 15  | 704        | 0.6+  | 0.1+  |      |
| 2002 12 02                              | 608        | 0.5+  | 1.2+  | 2004 03 23 | 704        | 0.0         | 0.4+  | 2007 12 15  | 704        | 0.4+  | 0.5+  |      |
| 2002 12 06                              | 704        | 0.6−  | 0.2−  | 2004 03 23 | 704        | 0.6+        | 0.6−  | 2007 12 15  | 704        | 0.4+  | 0.5+  |      |
| 2002 12 06                              | 704        | 0.1−  | 0.0   | 2004 03 28 | 704        | 0.1+        | 0.3+  | 2007 12 17  | 691        | 0.3−  | 0.1+  |      |
| 2002 12 06                              | 704        | 0.5−  | 0.2−  | 2004 03 28 | 704        | (1.6+       | 0.1−) | 2007 12 17  | 691        | 0.4−  | 0.1+  |      |
| 2002 12 06                              | 704        | 0.5−  | 0.3−  | 2004 03 28 | 704        | (1.6+       | 0.9+) | 2007 12 17  | 691        | 0.4−  | 0.2+  |      |
| 2002 12 06                              | 704        | 0.4−  | 0.1−  | 2004 03 31 | 691        | 0.1+        | 0.2+  |             |            |       |       |      |

2007 DEC. 24

M.P.O. 129333

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 176.33960  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23674721 | $\omega$ 292.64343 | +0.16818548   | +0.98556874 |
| <i>a</i> | 2.5878919  | $\Omega$ 346.99498 | -0.87023772   | +0.13930835 |
| <i>e</i> | 0.1082672  | <i>i</i> 4.88949   | -0.46303342   | +0.09616362 |
| <i>P</i> | 4.16       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 03 12 | 691 | 0.2-  | 0.8+  | 2005 05 19 | E12 | 0.3+  | 0.3+  | 2006 10 01 | 691 | 0.1+ | 0.1- |
| 1996 03 12 | 691 | 0.3-  | 0.0   | 2005 05 19 | E12 | 1.0+  | 0.4+  | 2006 10 01 | 691 | 0.1- | 0.2+ |
| 1996 03 12 | 691 | 0.2+  | 0.6-  | 2005 05 19 | E12 | 0.2+  | 0.3+  | 2006 10 17 | 703 | 0.6+ | 0.6+ |
| 2002 10 08 | 699 | 0.7+  | 0.9+  | 2006 08 30 | 699 | (1.9+ | 0.1-) | 2006 10 17 | 703 | 0.1+ | 0.6+ |
| 2002 10 08 | 699 | (0.3- | 2.4+) | 2006 08 30 | 699 | 1.0+  | 1.1+  | 2006 10 17 | 703 | 0.7+ | 0.8+ |
| 2002 10 08 | 699 | (0.2+ | 1.7+) | 2006 08 30 | 699 | 0.7-  | 0.4+  | 2006 10 17 | 703 | 0.8+ | 0.2- |
| 2002 10 08 | 699 | (2.0- | 1.6+) | 2006 08 30 | 699 | (0.9+ | 2.1+) | 2006 10 19 | 644 | 0.1- | 0.0  |
| 2002 10 28 | 644 | 0.6-  | 0.3+  | 2006 09 14 | 703 | 0.6-  | 0.7+  | 2006 10 19 | 644 | 0.2+ | 0.2- |
| 2002 10 28 | 644 | 0.4-  | 0.1+  | 2006 09 14 | 703 | 0.5-  | 0.2-  | 2006 10 19 | 644 | 0.2+ | 0.0  |
| 2002 10 28 | 644 | 0.0   | 0.5+  | 2006 09 14 | 703 | 1.1-  | 0.7-  | 2006 11 18 | G96 | 0.0  | 0.3- |
| 2002 10 31 | 644 | 0.1-  | 0.4+  | 2006 09 14 | 703 | 1.0-  | 1.0-  | 2006 11 18 | G96 | 0.4- | 0.6- |
| 2002 10 31 | 644 | 0.3-  | 0.2+  | 2006 09 15 | 683 | 0.0   | 0.5-  | 2006 11 18 | G96 | 0.2- | 0.5- |
| 2002 10 31 | 644 | 0.2-  | 0.5+  | 2006 09 15 | 683 | 0.6+  | 0.7+  | 2006 11 18 | G96 | 0.2- | 0.4- |
| 2002 11 12 | 704 | 0.0   | 0.0   | 2006 09 15 | 683 | 0.8-  | 1.0-  | 2006 12 22 | 461 | 0.4+ | 0.3+ |
| 2002 11 12 | 704 | 0.5+  | 0.7+  | 2006 09 17 | 691 | 0.3-  | 0.0   | 2006 12 22 | 461 | 0.3+ | 0.2- |
| 2002 11 12 | 704 | 0.5+  | 0.2-  | 2006 09 17 | 691 | 0.1-  | 0.2+  | 2006 12 22 | 461 | 0.3- | 0.4+ |
| 2002 11 12 | 704 | 0.2+  | 0.5-  | 2006 09 17 | 691 | 0.0   | 0.3+  | 2007 11 03 | G96 | 0.0  | 0.0  |
| 2004 01 19 | 691 | 0.3+  | 0.3+  | 2006 09 18 | 699 | 1.3-  | 0.6+  | 2007 11 03 | G96 | 0.1+ | 0.1- |
| 2004 01 19 | 691 | 0.2+  | 0.2+  | 2006 09 18 | 699 | 0.1+  | 0.9-  | 2007 11 03 | G96 | 0.6+ | 0.0  |
| 2004 01 19 | 691 | 0.3+  | 0.1+  | 2006 09 18 | 699 | 0.2-  | 0.3-  | 2007 11 03 | G96 | 0.5- | 0.5- |
| 2005 05 12 | 703 | 0.4-  | 0.6+  | 2006 09 18 | 699 | (3.0- | 2.1-) | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2005 05 12 | 703 | 0.2-  | 0.2-  | 2006 09 21 | 683 | 0.6+  | 0.9-  | 2007 11 11 | G96 | 0.1- | 0.4- |
| 2005 05 12 | 703 | 0.6-  | 0.3-  | 2006 09 21 | 683 | 0.6+  | 1.2+  | 2007 11 11 | G96 | 0.3- | 0.5- |
| 2005 05 12 | 703 | 1.2-  | 0.4+  | 2006 09 21 | 683 | 1.1+  | 0.5-  | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2005 05 19 | 644 | 0.7+  | 0.7+  | 2006 09 27 | 691 | 0.1-  | 0.1-  | 2007 12 05 | 691 | 0.2- | 0.1+ |
| 2005 05 19 | 644 | 0.7+  | 0.3+  | 2006 09 27 | 691 | 0.0   | 0.0   | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2005 05 19 | 644 | 0.6+  | 0.4+  | 2006 09 27 | 691 | 0.0   | 0.0   | 2007 12 05 | 691 | 0.1- | 0.0  |
| 2005 05 19 | E12 | 0.3+  | 0.5+  | 2006 10 01 | 691 | 0.0   | 0.1+  |            |     |      |      |

(172324)\* 2002 UM<sub>26</sub> = 2004 DO<sub>5</sub>

Discovered 2002 Oct. 31 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 61517)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.48180  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.21853346 | $\omega$ 51.88698 | -0.43978124   | -0.88226147 |
| <i>a</i> | 2.7297576  | $\Omega$ 64.99362 | +0.75506301   | -0.46446919 |
| <i>e</i> | 0.1349435  | <i>i</i> 10.67989 | +0.48628419   | -0.07670111 |
| <i>P</i> | 4.51       | <i>H</i> 15.8     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 01 16 | 704 | 0.1-  | 0.6+  | 2004 01 28 | 645 | 0.1-  | 0.1-  | 2004 03 26 | 703 | (2.0+ | 3.2+) |
| 1999 01 16 | 704 | 1.0+  | 1.8-  | 2004 01 28 | 645 | 0.1-  | 0.1-  | 2004 03 26 | 703 | 1.0+  | 0.3-  |
| 1999 01 16 | 704 | 1.4+  | 1.5-  | 2004 02 16 | 704 | 0.8+  | 0.6+  | 2004 03 26 | 703 | 0.5-  | 0.0   |
| 1999 01 16 | 704 | 1.6-  | 0.7-  | 2004 02 16 | 704 | 0.9+  | 1.2+  | 2007 11 12 | G96 | 0.3-  | 0.3-  |
| 2002 10 09 | 699 | 0.1-  | 1.4+  | 2004 02 16 | 704 | 0.7+  | 1.2+  | 2007 11 12 | G96 | 0.1-  | 0.1-  |
| 2002 10 09 | 699 | 1.3+  | 0.9+  | 2004 02 16 | 704 | (0.3- | 1.8+) | 2007 11 12 | G96 | 0.4-  | 0.0   |
| 2002 10 09 | 699 | (1.6- | 0.0)  | 2004 02 16 | 704 | (0.2- | 1.5+) | 2007 11 12 | G96 | 0.2+  | 0.1-  |
| 2002 10 09 | 699 | 0.5-  | 0.5+  | 2004 02 18 | 608 | 0.1-  | 0.2-  | 2007 11 20 | 704 | 0.5+  | 0.2+  |
| 2002 10 31 | 704 | 0.6-  | 0.5+  | 2004 02 18 | 608 | 0.1+  | 0.3-  | 2007 11 20 | 704 | 0.0   | 1.2+  |
| 2002 10 31 | 704 | 0.5-  | 0.5+  | 2004 02 18 | 608 | 0.1+  | 0.0   | 2007 11 20 | 704 | 0.3+  | 0.4-  |
| 2002 10 31 | 704 | 0.1-  | 0.4+  | 2004 03 14 | 704 | 0.8+  | 0.2+  | 2007 11 20 | 704 | 1.3+  | 1.2-  |
| 2002 10 31 | 704 | 0.2-  | 0.2+  | 2004 03 14 | 704 | 0.6-  | 0.5+  | 2007 11 20 | 704 | (0.0  | 1.7-) |
| 2002 11 01 | 608 | 0.4-  | 0.6-  | 2004 03 14 | 704 | 0.5+  | 1.2+  | 2007 12 13 | 704 | 0.1-  | 0.5+  |
| 2002 11 01 | 608 | 0.1-  | 0.1+  | 2004 03 14 | 704 | 0.5+  | 0.0   | 2007 12 13 | 704 | 0.2-  | 0.2-  |
| 2002 11 01 | 608 | 0.5-  | 0.2-  | 2004 03 19 | 644 | 0.0   | 0.7+  | 2007 12 13 | 704 | 0.4-  | 0.9+  |
| 2002 11 07 | 704 | (1.7+ | 2.0-) | 2004 03 19 | 644 | 0.1+  | 0.5+  | 2007 12 13 | 704 | 0.0   | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 07 | 704 | 0.5+ | 0.1- | 2004 03 19 | 644 | 0.3+ | 0.4+ | 2007 12 13 | 704 | 0.1- | 0.5+ |
| 2002 11 07 | 704 | 0.5+ | 0.1- | 2004 03 25 | 704 | 0.3+ | 0.2+ | 2007 12 16 | 704 | 0.4- | 0.5+ |
| 2002 11 07 | 704 | 0.4+ | 0.3- | 2004 03 25 | 704 | 0.5- | 0.4+ | 2007 12 16 | 704 | 0.1- | 0.2+ |
| 2002 11 11 | 704 | 1.1- | 0.3- | 2004 03 25 | 704 | 0.0  | 1.1+ | 2007 12 16 | 704 | 0.7- | 0.7- |
| 2002 11 11 | 704 | 0.2+ | 0.0  | 2004 03 25 | 704 | 0.7+ | 0.3+ | 2007 12 16 | 704 | 0.8+ | 0.4+ |
| 2002 11 11 | 704 | 0.9- | 0.6+ | 2004 03 26 | 703 | 0.0  | 0.3- | 2007 12 16 | 704 | 0.2- | 0.4- |

(172325)\* 2002 UW<sub>32</sub> = 1998 WZ<sub>32</sub>

Discovered 2002 Oct. 31 by Uppsala-DLR Asteroid Survey at Kvistaberg.

Id. A. Doppler (*MPO* 38121)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 110.96325  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24330096 | $\omega$ 327.03083 | +0.97300734   | -0.22403352 |
| <i>a</i> | 2.5412077  | $\Omega$ 46.02046  | +0.22487263   | +0.86651916 |
| <i>e</i> | 0.1376301  | <i>i</i> 4.41299   | +0.05185568   | +0.44604208 |
| <i>P</i> | 4.05       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 20 | 699 | 0.8+  | 0.3-  | 2002 12 11 | 704 | 0.4-  | 0.1-  | 2006 11 12 | G96 | 0.1-  | 0.3-  |
| 1998 11 20 | 699 | 0.5+  | 0.7-  | 2002 12 11 | 704 | 0.6-  | 0.5-  | 2006 11 12 | G96 | 0.2+  | 0.4-  |
| 1998 11 20 | 699 | 0.1-  | 0.6+  | 2002 12 12 | 608 | 1.0-  | 1.0-  | 2006 11 12 | G96 | 0.1-  | 0.4-  |
| 1998 11 24 | 704 | 1.1+  | 0.2-  | 2002 12 12 | 608 | 0.9-  | 0.4-  | 2006 11 12 | G96 | 0.0   | 0.4-  |
| 1998 11 24 | 704 | 1.2+  | 1.3-  | 2002 12 12 | 608 | 1.3-  | 1.0-  | 2006 11 12 | G96 | 0.1+  | 0.4-  |
| 1998 11 24 | 704 | 0.8+  | 0.5-  | 2003 02 01 | 704 | 0.4+  | 0.7+  | 2006 11 13 | G96 | 0.1-  | 0.3-  |
| 1998 11 24 | 704 | 0.8+  | 1.0-  | 2003 02 01 | 704 | 0.3-  | 0.5+  | 2006 11 13 | G96 | 0.2+  | 0.2-  |
| 1998 11 24 | 704 | 1.6+  | 0.1-  | 2003 02 01 | 704 | (1.0- | 2.5+) | 2006 11 13 | G96 | 0.1+  | 0.2-  |
| 2002 10 11 | 704 | 0.2-  | 1.0-  | 2003 12 22 | 691 | 0.2+  | 0.2+  | 2006 11 13 | G96 | 0.1-  | 0.2-  |
| 2002 10 11 | 704 | 0.1+  | 0.7-  | 2003 12 22 | 691 | 0.3-  | 0.2+  | 2006 11 15 | 701 | 0.1-  | 0.2-  |
| 2002 10 11 | 704 | 0.4-  | 0.5+  | 2003 12 22 | 691 | 0.3-  | 0.0   | 2006 11 15 | 701 | 0.3+  | 0.2-  |
| 2002 10 11 | 704 | 0.2+  | 0.5+  | 2004 02 29 | 691 | 0.1+  | 0.0   | 2006 11 15 | 701 | 0.7+  | 0.3-  |
| 2002 10 31 | 049 | (2.5- | 1.4-) | 2004 02 29 | 691 | 0.0   | 0.1+  | 2006 11 17 | 703 | 0.3+  | 0.2-  |
| 2002 10 31 | 049 | (2.4- | 1.9-) | 2004 02 29 | 691 | 0.3+  | 0.1+  | 2006 11 17 | 703 | 0.1+  | 0.0   |
| 2002 10 31 | 049 | (2.1- | 1.2-) | 2006 08 28 | 703 | 0.1-  | 0.5+  | 2006 11 17 | 703 | 0.1-  | 0.1+  |
| 2002 11 01 | 644 | 0.2-  | 0.2+  | 2006 08 28 | 703 | 0.4-  | 0.3-  | 2006 11 17 | 703 | 0.2-  | 0.1-  |
| 2002 11 01 | 644 | 0.3-  | 0.1+  | 2006 08 28 | 703 | 0.5-  | 0.5-  | 2006 11 18 | 704 | 1.4+  | 1.3+  |
| 2002 11 01 | 644 | 0.1-  | 0.1-  | 2006 08 28 | 703 | 0.2-  | 0.6+  | 2006 11 18 | 704 | (0.1+ | 1.9+) |
| 2002 11 05 | 704 | 0.4+  | 0.0   | 2006 10 12 | 691 | 0.0   | 0.1+  | 2006 11 18 | 704 | 0.2+  | 0.3+  |
| 2002 11 05 | 704 | 0.9-  | 0.5-  | 2006 10 12 | 691 | 0.1+  | 0.0   | 2006 11 18 | 704 | 0.2+  | 0.6+  |
| 2002 11 05 | 704 | 0.3+  | 0.2-  | 2006 10 12 | 691 | 0.1+  | 0.0   | 2006 11 18 | 704 | 0.1-  | 1.0+  |
| 2002 11 05 | 704 | 0.2+  | 0.0   | 2006 10 16 | 691 | 0.2+  | 0.0   | 2006 11 18 | 704 | 0.7+  | 0.5-  |
| 2002 11 05 | 704 | 0.0   | 0.3-  | 2006 10 16 | 691 | 0.1+  | 0.1-  | 2006 11 18 | 704 | 0.5+  | 0.2+  |
| 2002 11 06 | 704 | 0.6-  | 0.2-  | 2006 10 16 | 691 | 0.0   | 0.1+  | 2006 11 18 | 704 | 0.2+  | 0.7+  |
| 2002 11 06 | 704 | 0.8-  | 0.4-  | 2006 10 20 | 691 | 0.3-  | 0.1-  | 2006 11 21 | 704 | 0.4+  | 0.6+  |
| 2002 11 06 | 704 | 0.5-  | 0.1+  | 2006 10 20 | 691 | 0.1-  | 0.1-  | 2006 11 21 | 704 | 0.5-  | 0.3+  |
| 2002 11 06 | 704 | 0.7-  | 0.0   | 2006 10 20 | 691 | 0.1-  | 0.1-  | 2006 11 21 | 704 | 0.0   | 0.8+  |
| 2002 11 06 | 704 | 0.5-  | 0.1-  | 2006 10 23 | 704 | 1.1-  | 1.0-  | 2006 11 21 | 704 | 0.2-  | 0.9+  |
| 2002 11 14 | 704 | 0.2+  | 0.5+  | 2006 10 23 | 704 | 0.9-  | 0.2-  | 2006 11 21 | 704 | 0.1+  | 0.7+  |
| 2002 11 14 | 704 | 0.4-  | 0.3+  | 2006 10 23 | 704 | 0.2-  | 1.3-  | 2006 11 27 | 703 | 0.0   | 0.4+  |
| 2002 11 14 | 704 | 0.2-  | 0.1+  | 2006 10 23 | 704 | 0.4-  | 0.3-  | 2006 11 27 | 703 | 0.5-  | 0.6+  |
| 2002 11 15 | 704 | 0.1-  | 0.0   | 2006 10 27 | G96 | 0.3+  | 0.4-  | 2006 11 27 | 703 | 0.2-  | 0.5+  |
| 2002 11 15 | 704 | 1.0-  | 0.8-  | 2006 10 27 | G96 | 0.2-  | 0.4-  | 2006 11 27 | 703 | 0.6-  | 0.9+  |
| 2002 11 15 | 704 | 0.6-  | 0.1-  | 2006 10 27 | G96 | 0.0   | 0.2-  | 2006 11 29 | 704 | 0.2-  | 0.0   |
| 2002 11 15 | 704 | 0.3-  | 0.6+  | 2006 10 27 | G96 | 0.0   | 0.4-  | 2006 11 29 | 704 | 0.5-  | 0.3+  |
| 2002 11 23 | 644 | 0.2-  | 0.6-  | 2006 10 28 | 704 | 1.0+  | 0.2-  | 2006 11 29 | 704 | 0.6-  | 0.3+  |
| 2002 11 23 | 644 | 0.8+  | 0.7+  | 2006 10 28 | 704 | 0.1-  | 0.0   | 2006 11 29 | 704 | 0.6-  | 0.4+  |
| 2002 11 23 | 644 | 0.2-  | 0.8-  | 2006 10 28 | 704 | 0.3+  | 0.2+  | 2006 11 29 | 704 | 0.3-  | 0.7+  |
| 2002 11 23 | 644 | 0.1+  | 0.4+  | 2006 10 28 | 704 | 1.0+  | 0.6-  | 2006 12 13 | 644 | 0.3+  | 0.2+  |
| 2002 11 23 | 644 | 0.1+  | 0.8-  | 2006 10 28 | 704 | 0.9+  | 0.7-  | 2006 12 13 | 644 | 0.4+  | 0.0   |
| 2002 11 23 | 644 | 0.4+  | 0.6+  | 2006 10 29 | 704 | 0.3+  | 0.6-  | 2006 12 13 | 644 | 0.3+  | 0.3+  |
| 2002 12 01 | 608 | 0.8-  | 1.3+  | 2006 10 29 | 704 | 0.3+  | 0.2+  | 2006 12 15 | 644 | 0.0   | 0.1-  |
| 2002 12 01 | 608 | 0.9-  | 1.5+  | 2006 10 29 | 704 | 1.1+  | 0.3-  | 2006 12 15 | G96 | 0.2+  | 0.2-  |
| 2002 12 01 | 608 | 1.0-  | 0.9+  | 2006 10 29 | 704 | 0.1-  | 0.2-  | 2006 12 15 | G96 | 0.3+  | 0.3-  |
| 2002 12 02 | 704 | 0.2-  | 0.4-  | 2006 10 29 | 704 | 0.2-  | 0.1-  | 2006 12 15 | G96 | 0.3-  | 0.4-  |
| 2002 12 02 | 704 | 0.2+  | 0.1-  | 2006 11 01 | 691 | 0.1+  | 0.2-  | 2006 12 15 | 644 | 0.3+  | 0.1+  |
| 2002 12 02 | 704 | 0.6+  | 0.4+  | 2006 11 01 | 691 | 0.2+  | 0.2-  | 2006 12 15 | G96 | 0.3+  | 0.2-  |
| 2002 12 02 | 704 | 0.9+  | 0.3+  | 2006 11 01 | 691 | 0.2+  | 0.2-  | 2006 12 15 | 644 | 0.1+  | 0.0   |
| 2002 12 05 | 704 | 0.0   | 0.4+  | 2006 11 10 | 644 | 0.0   | 0.3+  | 2007 01 17 | 644 | 0.1-  | 0.6+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 704 | 0.0  | 0.1+ | 2006 11 10 | 644 | 0.1- | 0.2+ | 2007 01 17 | 644 | 0.1- | 0.1+ |
| 2002 12 05 | 704 | 0.0  | 0.5+ | 2006 11 10 | 644 | 0.1- | 0.2+ | 2007 01 17 | 644 | 0.2+ | 0.3+ |
| 2002 12 05 | 704 | 0.5- | 0.3+ | 2006 11 10 | 644 | 0.0  | 0.3+ | 2007 03 13 | G96 | 0.4+ | 0.5- |
| 2002 12 06 | 704 | 0.4- | 1.2+ | 2006 11 10 | 644 | 0.0  | 0.3+ | 2007 03 13 | G96 | 0.1- | 0.2- |
| 2002 12 06 | 704 | 0.2- | 0.5+ | 2006 11 10 | 644 | 0.1- | 0.2+ | 2007 03 13 | G96 | 0.2- | 0.2- |
| 2002 12 06 | 704 | 0.1+ | 0.6+ | 2006 11 11 | 703 | 0.2+ | 1.1+ | 2007 03 13 | G96 | 0.0  | 0.3- |
| 2002 12 06 | 704 | 0.7+ | 0.3+ | 2006 11 11 | 703 | 0.6- | 1.2+ | 2007 11 09 | 691 | 0.3- | 0.4+ |
| 2002 12 11 | 644 | 0.2- | 0.2- | 2006 11 11 | 703 | 0.4- | 0.3+ | 2007 11 09 | 691 | 0.6- | 0.3- |
| 2002 12 11 | 704 | 0.6- | 0.1- | 2006 11 11 | 703 | 0.3+ | 0.2+ | 2007 11 09 | 691 | 0.1- | 0.4- |
| 2002 12 11 | 644 | 0.3- | 0.2- | 2006 11 12 | G96 | 0.0  | 0.3- | 2007 11 20 | 691 | 0.0  | 0.1- |
| 2002 12 11 | 704 | 0.6- | 0.5+ | 2006 11 12 | G96 | 0.0  | 0.3- | 2007 11 20 | 691 | 0.5+ | 0.5- |
| 2002 12 11 | 644 | 0.1- | 0.1- | 2006 11 12 | G96 | 0.0  | 0.3- | 2007 11 20 | 691 | 0.1- | 0.4- |

**(172326)\* 2002 UL<sub>47</sub> = 2004 CG<sub>45</sub>**

Discovered 2002 Oct. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 75771)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          | P         |             |             | Q        |   |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|--|
| 23.04903 |            |          | (2000.0)  |             |             |          |   |  |
| <i>n</i> | 0.21296008 | $\omega$ | 348.52675 | +0.85027189 | -0.51874367 |          |   |  |
| <i>a</i> | 2.7771793  | $\Omega$ | 43.10539  | +0.49264314 | +0.72472568 |          |   |  |
| <i>e</i> | 0.1234024  | <i>i</i> | 7.49389   | +0.18531174 | +0.45351702 |          |   |  |
| <i>P</i> | 4.63       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 05 | 645 | 0.2- | 0.0  | 2005 04 16 | 691 | 0.4+  | 0.1+  | 2007 11 18 | 704 | 0.1- | 0.3- |
| 2000 05 05 | 645 | 0.2- | 0.1- | 2005 06 01 | G96 | 0.0   | 0.3+  | 2007 11 18 | 704 | 0.1+ | 1.3- |
| 2002 10 06 | 608 | 0.0  | 0.2+ | 2005 06 01 | G96 | 0.3-  | 0.2-  | 2007 11 19 | G96 | 0.0  | 0.5- |
| 2002 10 06 | 608 | 0.1- | 0.9- | 2005 06 01 | G96 | 0.7-  | 0.2-  | 2007 11 19 | G96 | 0.0  | 0.3- |
| 2002 10 06 | 608 | 0.2+ | 0.4- | 2005 06 01 | G96 | 0.1-  | 0.1-  | 2007 11 19 | G96 | 0.2+ | 0.4- |
| 2002 10 31 | 704 | 0.6+ | 0.3+ | 2007 08 10 | 691 | 0.2-  | 0.0   | 2007 11 19 | G96 | 0.4+ | 0.4- |
| 2002 10 31 | 704 | 0.9- | 1.4- | 2007 08 10 | 691 | 0.3-  | 0.1-  | 2007 11 20 | 704 | 0.4+ | 0.8+ |
| 2002 10 31 | 704 | 0.4+ | 0.3+ | 2007 08 10 | 691 | 0.3-  | 0.3-  | 2007 11 20 | 704 | 0.6+ | 0.5+ |
| 2002 10 31 | 704 | 0.0  | 0.7+ | 2007 09 15 | G96 | 0.3+  | 0.0   | 2007 11 20 | 704 | 1.0- | 0.8- |
| 2002 11 06 | 704 | 1.4+ | 0.0  | 2007 09 15 | G96 | 0.1+  | 0.2-  | 2007 12 13 | 704 | 0.3- | 0.3+ |
| 2002 11 06 | 704 | 0.5+ | 0.0  | 2007 09 15 | G96 | 0.6+  | 0.3-  | 2007 12 13 | 704 | 0.3+ | 0.4+ |
| 2002 11 06 | 704 | 0.4+ | 0.3+ | 2007 09 15 | G96 | (1.6+ | 1.7-) | 2007 12 13 | 704 | 0.1- | 0.2+ |
| 2004 02 13 | 691 | 0.6+ | 0.1- | 2007 11 02 | 691 | 0.0   | 0.4-  | 2007 12 13 | 704 | 0.0  | 1.2+ |
| 2004 02 13 | 691 | 0.4+ | 0.0  | 2007 11 02 | 691 | 0.0   | 0.1-  | 2007 12 15 | 704 | 0.7+ | 0.3- |
| 2004 02 13 | 691 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.0   | 0.1-  | 2007 12 15 | 704 | 0.3+ | 0.6+ |
| 2004 02 16 | 691 | 0.1+ | 0.0  | 2007 11 08 | 691 | 0.2+  | 0.6+  | 2007 12 15 | 704 | 0.2+ | 0.7- |
| 2004 02 16 | 691 | 0.1+ | 0.1- | 2007 11 08 | 691 | 0.5-  | 0.2-  | 2007 12 15 | 704 | 0.1- | 0.5+ |
| 2004 02 16 | 691 | 0.2- | 0.1- | 2007 11 08 | 691 | 0.6-  | 0.1-  | 2007 12 15 | 704 | 0.6+ | 0.9+ |
| 2005 04 16 | 691 | 0.4+ | 0.1+ | 2007 11 18 | 704 | 0.5+  | 0.4+  |            |     |      |      |
| 2005 04 16 | 691 | 0.1+ | 0.0  | 2007 11 18 | 704 | 0.4-  | 0.2+  |            |     |      |      |

**(172327)\* 2002 VF**

Discovered 2002 Nov. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          | P         |             |             | Q        |   |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|--|
| 18.95325 |            |          | (2000.0)  |             |             |          |   |  |
| <i>n</i> | 0.21590465 | $\omega$ | 331.72741 | +0.50885905 | -0.85669084 |          |   |  |
| <i>a</i> | 2.7518709  | $\Omega$ | 87.57176  | +0.80489691 | +0.43866743 |          |   |  |
| <i>e</i> | 0.1455300  | <i>i</i> | 4.85267   | +0.30529238 | +0.27138847 |          |   |  |
| <i>P</i> | 4.57       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 05 16 | 691 | 0.2- | 0.0  | 2002 11 07 | 704 | 0.0  | 0.2- | 2004 03 22 | 704 | (0.5- | 2.1+) |
| 1991 05 16 | 691 | 0.2- | 0.0  | 2002 11 11 | 704 | 0.8+ | 0.3+ | 2005 05 19 | G96 | 0.6-  | 0.1+  |
| 1991 05 16 | 691 | 0.0  | 0.2+ | 2002 11 11 | 704 | 0.0  | 0.9+ | 2005 05 19 | G96 | 0.2-  | 0.2+  |
| 2000 05 13 | 691 | 0.3+ | 0.4+ | 2002 11 11 | 704 | 0.1- | 0.2- | 2005 05 19 | G96 | 0.4-  | 0.5+  |
| 2000 05 13 | 691 | 0.0  | 0.4+ | 2002 11 11 | 704 | 1.2+ | 1.1+ | 2005 05 19 | G96 | (1.9- | 0.8+) |
| 2000 05 13 | 691 | 0.9+ | 0.1+ | 2002 11 11 | 704 | 0.0  | 0.7+ | 2007 10 11 | 704 | 0.4+  | 0.2+  |
| 2002 10 02 | 704 | 1.1- | 0.5+ | 2002 11 11 | 644 | 0.1+ | 0.2- | 2007 10 11 | 704 | 0.5-  | 0.1+  |
| 2002 10 02 | 704 | 1.4- | 0.7- | 2002 11 11 | 644 | 0.5+ | 0.1- | 2007 10 11 | 704 | 0.5+  | 0.2+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 02 | 704 | 0.4- | 0.2- | 2002 11 11 | 644 | 0.2-  | 0.1-  | 2007 10 11 | 704 | 0.1+ | 0.1+ |
| 2002 10 02 | 704 | 0.4- | 0.8- | 2002 11 22 | 644 | 0.0   | 0.6+  | 2007 10 11 | 704 | 0.9+ | 0.6- |
| 2002 10 11 | 704 | 0.2- | 0.7+ | 2002 11 22 | 644 | 0.1+  | 0.6+  | 2007 10 11 | 704 | 0.1- | 0.2- |
| 2002 10 11 | 704 | 0.3+ | 0.6+ | 2002 11 22 | 644 | 0.1+  | 0.4+  | 2007 10 11 | 704 | 0.6- | 0.0  |
| 2002 10 11 | 704 | 0.4- | 0.3+ | 2002 12 07 | 704 | 0.3+  | 0.1-  | 2007 10 14 | G96 | 0.2- | 0.3- |
| 2002 10 11 | 704 | 0.0  | 1.0+ | 2002 12 07 | 704 | 0.3-  | 0.1+  | 2007 10 14 | G96 | 0.1+ | 0.3- |
| 2002 10 11 | 704 | 0.2+ | 0.7+ | 2002 12 07 | 704 | 0.8+  | 0.0   | 2007 10 14 | G96 | 0.2- | 0.3- |
| 2002 10 20 | 608 | 0.0  | 1.0- | 2002 12 07 | 704 | 0.1+  | 0.1-  | 2007 10 14 | G96 | 0.4- | 0.3- |
| 2002 10 20 | 608 | 0.1- | 0.5- | 2002 12 11 | 704 | 0.4+  | 0.3+  | 2007 10 19 | G96 | 0.0  | 0.4- |
| 2002 10 20 | 608 | 0.0  | 0.6- | 2002 12 11 | 704 | 0.8+  | 0.3-  | 2007 10 19 | G96 | 0.4- | 0.4- |
| 2002 11 01 | 704 | 0.8- | 1.0+ | 2002 12 11 | 704 | (1.7+ | 1.7-) | 2007 10 19 | G96 | 0.0  | 0.5- |
| 2002 11 01 | 704 | 0.1+ | 0.2+ | 2002 12 11 | 704 | 0.1+  | 0.4+  | 2007 10 19 | G96 | 0.1- | 0.5- |
| 2002 11 01 | 704 | 0.3+ | 0.7+ | 2002 12 11 | 704 | 0.5-  | 0.0   | 2007 11 05 | 704 | 0.6- | 0.9- |
| 2002 11 01 | 704 | 0.5+ | 0.7+ | 2002 12 11 | 704 | 0.3-  | 0.2+  | 2007 11 05 | G96 | 0.1+ | 0.5- |
| 2002 11 02 | 608 | 0.2- | 0.4+ | 2002 12 11 | 704 | 0.0   | 0.8-  | 2007 11 05 | G96 | 0.2- | 0.5- |
| 2002 11 02 | 608 | 0.5- | 0.7+ | 2002 12 11 | 704 | 0.5-  | 0.4+  | 2007 11 05 | 704 | 0.1- | 0.3- |
| 2002 11 02 | 608 | 0.2- | 0.6+ | 2002 12 11 | 704 | 0.5-  | 0.2-  | 2007 11 05 | G96 | 0.0  | 0.4- |
| 2002 11 06 | 699 | 0.2+ | 0.8+ | 2002 12 11 | 704 | 0.3-  | 0.9+  | 2007 11 05 | G96 | 0.1+ | 0.5- |
| 2002 11 06 | 699 | 0.7- | 0.0  | 2002 12 11 | 704 | 0.5-  | 0.8+  | 2007 11 05 | 704 | 0.2- | 0.8- |
| 2002 11 06 | 699 | 0.6+ | 0.2- | 2002 12 11 | 704 | (1.7- | 0.4-) | 2007 11 05 | 704 | 0.1+ | 0.5- |
| 2002 11 06 | 699 | 0.7- | 0.3+ | 2002 12 11 | 704 | 0.4-  | 1.3+  | 2007 12 03 | 691 | 1.2+ | 0.7- |
| 2002 11 06 | 699 | 0.2+ | 0.7- | 2004 03 10 | 644 | 0.0   | 0.2+  | 2007 12 03 | 691 | 0.6- | 0.2- |
| 2002 11 06 | 699 | 1.0+ | 0.1+ | 2004 03 10 | 644 | 0.1+  | 0.1+  | 2007 12 03 | 691 | 0.4- | 0.1- |
| 2002 11 06 | 699 | 0.6+ | 0.6+ | 2004 03 10 | 644 | 0.2+  | 0.1+  | 2007 12 10 | 704 | 1.4+ | 0.7+ |
| 2002 11 06 | 699 | 0.3- | 0.1- | 2004 03 20 | 704 | 0.1-  | 0.3+  | 2007 12 10 | 704 | 0.5- | 1.5+ |
| 2002 11 06 | 608 | 0.9- | 0.3+ | 2004 03 20 | 704 | 0.3+  | 0.5+  | 2007 12 10 | 704 | 1.1- | 0.9+ |
| 2002 11 06 | 608 | 1.1- | 0.5+ | 2004 03 20 | 704 | 0.1+  | 0.6+  | 2007 12 10 | 704 | 0.4+ | 0.3- |
| 2002 11 06 | 608 | 0.5- | 0.4+ | 2004 03 20 | 704 | 0.5+  | 1.0+  | 2007 12 10 | 704 | 0.3- | 0.8+ |
| 2002 11 07 | 704 | 0.5+ | 0.7- | 2004 03 20 | 704 | 0.1-  | 0.1+  | 2007 12 14 | 704 | 0.6- | 0.2+ |
| 2002 11 07 | 704 | 0.7+ | 0.6+ | 2004 03 22 | 704 | 0.2-  | 0.1+  | 2007 12 14 | 704 | 0.4+ | 0.4+ |
| 2002 11 07 | 704 | 0.3+ | 0.1+ | 2004 03 22 | 704 | 0.3+  | 1.4+  | 2007 12 14 | 704 | 0.4- | 0.3+ |
| 2002 11 07 | 704 | 0.1+ | 1.1- | 2004 03 22 | 704 | 0.3+  | 0.3+  | 2007 12 14 | 704 | 0.1- | 0.2- |

**(172328)\* 2002 VV<sub>3</sub> = 2004 CZ<sub>83</sub> = 2004 CW<sub>86</sub>**

Discovered 2002 Nov. 1 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61527)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            |          | P         |             |             | Q        |   |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|--|
| 29.60337 |            |          | (2000.0)  |             |             |          |   |  |
| <i>n</i> | 0.21006083 | $\omega$ | 69.15149  | +0.77238712 | -0.63382770 |          |   |  |
| <i>a</i> | 2.8026746  | $\Omega$ | 330.13705 | +0.54784388 | +0.69748385 |          |   |  |
| <i>e</i> | 0.0388425  | <i>i</i> | 4.72259   | +0.32138018 | +0.33433326 |          |   |  |
| <i>P</i> | 4.69       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 01 | 644 | 0.4+  | 0.2+  | 2004 02 15 | 608 | 0.1+ | 0.4- | 2006 08 28 | 703 | 0.7-  | 0.1+  |
| 2002 11 01 | 644 | 0.4+  | 0.6+  | 2004 02 17 | 704 | 0.4+ | 0.6+ | 2006 08 28 | 703 | 0.4-  | 0.0   |
| 2002 11 01 | 644 | 0.1+  | 0.4+  | 2004 02 17 | 704 | 0.2- | 0.6+ | 2006 08 28 | 703 | 1.3-  | 0.3+  |
| 2002 11 04 | 644 | 0.2-  | 0.5+  | 2004 02 17 | 704 | 0.4+ | 0.7+ | 2006 08 28 | 703 | 1.0-  | 0.6+  |
| 2002 11 04 | 644 | 0.4-  | 0.2+  | 2004 02 17 | 704 | 0.1- | 0.2+ | 2006 08 29 | 704 | (0.0  | 1.5+) |
| 2002 11 04 | 644 | 0.0   | 0.6+  | 2004 02 22 | 691 | 0.2+ | 0.1+ | 2006 08 29 | 704 | 0.1-  | 1.4+  |
| 2002 11 08 | 704 | (1.6- | 0.5-) | 2004 02 22 | 691 | 0.3+ | 0.2+ | 2006 08 29 | 704 | 0.3+  | 1.2+  |
| 2002 11 08 | 704 | 0.4-  | 0.1-  | 2004 02 22 | 691 | 0.1+ | 0.2+ | 2006 08 29 | 704 | 0.6+  | 0.7+  |
| 2002 11 08 | 704 | 0.6+  | 0.3-  | 2004 02 26 | 704 | 0.6- | 0.7+ | 2006 08 30 | 704 | (1.3+ | 3.1+) |
| 2002 11 12 | 704 | 0.1-  | 0.2-  | 2004 02 26 | 704 | 0.9+ | 0.1- | 2006 08 30 | 704 | (1.0- | 1.7+) |
| 2002 11 12 | 704 | 0.1-  | 0.8+  | 2004 02 26 | 704 | 0.6- | 1.0+ | 2006 08 30 | 704 | 0.9+  | 1.1+  |
| 2002 11 12 | 704 | 0.3-  | 0.6-  | 2004 02 26 | 704 | 0.7+ | 0.5+ | 2006 08 30 | 704 | (1.8- | 1.7+) |
| 2002 11 12 | 704 | 0.5-  | 0.4+  | 2004 02 26 | 704 | 0.1+ | 0.7+ | 2006 09 14 | 703 | 0.2-  | 0.1+  |
| 2002 11 14 | 644 | 0.1-  | 0.2+  | 2004 03 18 | 691 | 0.0  | 0.3+ | 2006 09 14 | 703 | (2.1- | 0.5+) |
| 2002 11 14 | 644 | 0.0   | 0.0   | 2004 03 18 | 691 | 0.2+ | 0.4+ | 2006 09 14 | 703 | (1.3- | 1.6-) |
| 2002 11 14 | 644 | 0.0   | 0.2+  | 2004 03 18 | 691 | 0.1+ | 0.3+ | 2006 09 14 | 703 | 0.8-  | 0.6-  |
| 2002 11 24 | 644 | 0.3+  | 0.1-  | 2004 03 27 | 691 | 0.1+ | 0.6+ | 2006 09 25 | 699 | 0.2+  | 0.0   |
| 2002 11 24 | 644 | 0.2+  | 0.3-  | 2004 03 27 | 691 | 0.0  | 0.3+ | 2006 09 25 | 699 | 0.3+  | 0.9+  |
| 2002 11 24 | 644 | 0.3+  | 0.1-  | 2004 03 27 | 691 | 0.2+ | 0.2+ | 2006 09 25 | 699 | 0.5-  | 1.2+  |
| 2002 12 02 | 704 | 0.3-  | 0.5-  | 2006 08 14 | 644 | 0.5- | 0.7+ | 2006 09 25 | 699 | 0.2+  | 0.5-  |
| 2002 12 02 | 704 | 0.4+  | 0.7+  | 2006 08 14 | 644 | 0.5- | 0.6+ | 2006 09 26 | G96 | 0.5-  | 0.1-  |
| 2002 12 02 | 704 | 0.3-  | 0.1+  | 2006 08 14 | 644 | 0.8- | 0.5+ | 2006 09 26 | G96 | 0.3+  | 0.2-  |
| 2002 12 27 | 644 | 0.2-  | 0.1-  | 2006 08 18 | 699 | 1.1- | 1.4+ | 2006 09 26 | G96 | 0.0   | 0.0   |

2007 DEC. 24

M.P.O. 129335

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 27 | 644 | 0.1-  | 0.2+  | 2006 08 18 | 699 | 1.2-  | 0.2-  | 2006 09 26 | G96 | 0.4- | 0.2- |
| 2002 12 27 | 644 | 0.3-  | 0.2+  | 2006 08 18 | 699 | 0.1+  | 1.3+  | 2006 12 11 | 291 | 0.6+ | 0.3+ |
| 2004 02 11 | 703 | 0.1+  | 0.8+  | 2006 08 18 | 699 | 1.1-  | 0.5+  | 2006 12 11 | 291 | 0.2- | 0.3+ |
| 2004 02 11 | 703 | 0.2+  | 0.9+  | 2006 08 18 | 699 | (1.9- | 1.5+) | 2006 12 11 | 291 | 0.0  | 0.4+ |
| 2004 02 11 | 703 | 0.0   | 0.4-  | 2006 08 18 | 699 | (2.0- | 0.3+) | 2007 11 07 | 691 | 0.2+ | 0.4- |
| 2004 02 11 | 703 | 0.6+  | 0.2+  | 2006 08 18 | 699 | 0.5-  | 0.8+  | 2007 11 07 | 691 | 0.3- | 0.4- |
| 2004 02 11 | 699 | 0.4+  | 0.4+  | 2006 08 18 | 699 | (2.2+ | 0.6+) | 2007 11 07 | 691 | 0.0  | 0.2- |
| 2004 02 11 | 699 | (2.1+ | 2.3-) | 2006 08 21 | 644 | 0.3-  | 0.1+  | 2007 12 13 | 704 | 0.5+ | 0.2- |
| 2004 02 11 | 699 | 1.1+  | 0.1+  | 2006 08 21 | 644 | 0.2-  | 0.4+  | 2007 12 13 | 704 | 0.4+ | 0.5- |
| 2004 02 11 | 699 | (1.4- | 1.8-) | 2006 08 21 | 644 | 0.3-  | 0.2+  | 2007 12 13 | 704 | 0.1+ | 0.0  |
| 2004 02 12 | 691 | 0.1+  | 0.0   | 2006 08 25 | 704 | 1.3+  | 0.4+  | 2007 12 13 | 704 | 0.3+ | 0.2+ |
| 2004 02 12 | 691 | 0.1+  | 0.3+  | 2006 08 25 | 704 | 0.3-  | 0.2-  | 2007 12 15 | 704 | 0.9- | 0.7- |
| 2004 02 12 | 691 | 0.0   | 0.2+  | 2006 08 25 | 704 | 0.1+  | 0.0   | 2007 12 15 | 704 | 0.8+ | 0.7- |
| 2004 02 15 | 608 | (0.3+ | 2.6-) | 2006 08 25 | 704 | 0.3+  | 0.4+  | 2007 12 15 | 704 | 0.6- | 0.0  |
| 2004 02 15 | 608 | 0.0   | 0.5-  | 2006 08 25 | 704 | 0.8-  | 0.6+  | 2007 12 15 | 704 | 0.8- | 0.9+ |

**(172329)\* 2002 VE<sub>16</sub> = 2002 VE<sub>138</sub> = 2007 RW<sub>271</sub>**

Discovered 2002 Nov. 4 by Spacewatch at Kitt Peak.

Id. G. V. Williams (d, *MPO* 74503; *MPO* 123890)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |             |   |
|-----|------------|----------|-----------|-----|-------------|-------------|---|
| $M$ | 17.09275   |          | (2000.0)  |     | <b>P</b>    | <b>Q</b>    |   |
| $n$ | 0.20928178 | $\omega$ | 178.53548 |     | +0.71947218 | -0.69337936 |   |
| $a$ | 2.8096255  | $\Omega$ | 225.45126 |     | +0.63664154 | +0.68133749 |   |
| $e$ | 0.1025124  | $i$      | 3.20231   |     | +0.27757401 | +0.23452993 |   |
| $P$ | 4.71       | $H$      | 16.2      | $G$ | 0.15        | $U$         | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 02 | 688 | 0.7+  | 0.2+  | 2002 11 06 | 704 | 1.0+ | 0.7+ | 2007 09 15 | G96 | 0.3+ | 0.2- |
| 2000 05 02 | 688 | 0.2-  | 0.6+  | 2002 11 06 | 608 | 0.3+ | 0.4+ | 2007 09 18 | G96 | 0.3+ | 0.0  |
| 2000 05 02 | 688 | 0.3+  | 1.0+  | 2002 11 06 | 608 | 0.7+ | 0.0  | 2007 09 18 | G96 | 0.5+ | 0.1+ |
| 2002 10 15 | 644 | (0.1- | 1.5+) | 2002 11 06 | 608 | 0.1+ | 0.1+ | 2007 09 18 | G96 | 0.7+ | 0.6- |
| 2002 10 15 | 644 | 0.0   | 0.5+  | 2003 12 19 | 291 | 0.4- | 0.3+ | 2007 09 18 | G96 | 0.4+ | 0.1+ |
| 2002 10 15 | 644 | (0.0  | 1.9+) | 2003 12 19 | 291 | 0.1+ | 0.3+ | 2007 11 02 | 691 | 0.2- | 0.1+ |
| 2002 10 15 | 644 | 0.3-  | 0.9+  | 2003 12 19 | 291 | 0.0  | 0.5+ | 2007 11 02 | 691 | 0.0  | 0.2+ |
| 2002 10 15 | 644 | (0.5- | 1.7+) | 2004 02 22 | 691 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.1- | 0.1- |
| 2002 10 15 | 644 | 0.3-  | 0.7+  | 2004 02 22 | 691 | 0.0  | 0.3+ | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2002 10 30 | 291 | 0.3-  | 0.4+  | 2004 02 22 | 691 | 0.2+ | 0.3+ | 2007 11 14 | 691 | 0.4- | 1.3- |
| 2002 10 30 | 291 | 0.2-  | 0.1+  | 2004 03 21 | 691 | 0.2+ | 0.5- | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2002 10 30 | 291 | 0.0   | 0.2+  | 2004 03 21 | 691 | 0.4+ | 0.1- | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2002 11 04 | 699 | 0.8-  | 0.3+  | 2004 03 21 | 691 | 0.1+ | 0.4- | 2007 11 19 | 691 | 0.8+ | 0.4+ |
| 2002 11 04 | 699 | 0.6+  | 0.0   | 2005 05 11 | 691 | 0.3- | 0.3+ | 2007 11 19 | 691 | 0.3- | 0.1- |
| 2002 11 04 | 699 | 0.5+  | 0.5-  | 2005 05 11 | 691 | 0.1- | 0.1+ | 2007 12 04 | 691 | 0.3- | 0.0  |
| 2002 11 04 | 699 | 0.4-  | 1.1-  | 2005 05 11 | 691 | 0.2+ | 0.5+ | 2007 12 04 | 691 | 0.2- | 0.1- |
| 2002 11 04 | 291 | 0.3-  | 0.1-  | 2006 08 14 | 644 | 0.3+ | 0.5+ | 2007 12 04 | 691 | 0.3- | 0.2+ |
| 2002 11 04 | 291 | 0.3-  | 0.2-  | 2006 08 14 | 644 | 0.2+ | 0.4+ | 2007 12 05 | 704 | 0.3+ | 1.0+ |
| 2002 11 04 | 291 | 0.3-  | 0.0   | 2006 08 14 | 644 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.6+ | 0.1+ |
| 2002 11 06 | 699 | 0.9-  | 0.2-  | 2006 08 14 | E12 | 0.7+ | 0.5+ | 2007 12 05 | 704 | 0.4+ | 1.0+ |
| 2002 11 06 | 699 | 0.7+  | 0.8+  | 2006 08 14 | E12 | 0.3+ | 0.6+ | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2002 11 06 | 699 | 0.4-  | 0.3-  | 2006 08 14 | E12 | 0.1+ | 0.1- | 2007 12 05 | 704 | 0.4+ | 0.5+ |
| 2002 11 06 | 704 | 0.5+  | 0.3+  | 2006 08 14 | E12 | 0.2- | 0.1+ | 2007 12 05 | G96 | 0.4+ | 0.3- |
| 2002 11 06 | 699 | 0.2-  | 0.5+  | 2006 08 14 | E12 | 0.7- | 0.1+ | 2007 12 05 | G96 | 0.2+ | 0.4- |
| 2002 11 06 | 704 | 1.1+  | 0.0   | 2007 09 15 | G96 | 0.6+ | 0.2- | 2007 12 05 | G96 | 0.4+ | 0.3- |
| 2002 11 06 | 704 | 0.1-  | 0.7+  | 2007 09 15 | G96 | 0.1+ | 0.3- | 2007 12 05 | G96 | 0.0  | 0.2- |
| 2002 11 06 | 704 | 0.3+  | 0.8+  | 2007 09 15 | G96 | 0.1+ | 0.2- |            |     |      |      |

**(172330)\* 2002 VH<sub>18</sub>**

Discovered 2002 Nov. 2 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 20.63891   |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.20850898 | $\omega$ | 352.36594 |     | +0.74325780  |     | -0.66259912  |
| $a$ | 2.8165634  | $\Omega$ | 49.56035  |     | +0.62003453  |     | +0.63040905  |
| $e$ | 0.0759121  | $i$      | 6.97011   |     | +0.25124694  |     | +0.40440925  |
| $P$ | 4.73       | $H$      | 15.5      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 02 | 704 | 0.2-  | 0.7+  | 2004 02 16 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 704 | 0.1+  | 1.4+  |
| 2002 10 02 | 704 | 0.2+  | 0.4+  | 2004 02 16 | 691 | 0.1+ | 0.1- | 2007 11 18 | 704 | (0.1+ | 1.7+) |
| 2002 10 02 | 704 | 0.8-  | 0.8+  | 2005 04 11 | G96 | 0.6- | 0.3+ | 2007 11 20 | 704 | 0.5+  | 0.2-  |
| 2002 10 09 | 704 | (1.0+ | 2.0+) | 2005 04 11 | G96 | 0.5- | 0.1+ | 2007 11 20 | 704 | 0.2-  | 0.2+  |
| 2002 10 09 | 704 | 0.5-  | 0.8+  | 2005 04 11 | G96 | 0.1+ | 0.2- | 2007 11 20 | 704 | 0.8-  | 0.7+  |
| 2002 10 09 | 704 | (2.0- | 0.1+) | 2005 04 11 | G96 | 0.5+ | 0.2- | 2007 11 20 | 704 | 0.0   | 0.1+  |
| 2002 11 02 | 608 | 0.1-  | 0.5-  | 2005 05 10 | G96 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.8-  | 0.2-  |
| 2002 11 02 | 608 | 0.1-  | 0.8-  | 2005 05 10 | G96 | 0.2+ | 0.1- | 2007 11 20 | 691 | 0.1+  | 0.2+  |
| 2002 11 02 | 608 | 0.3-  | 0.3-  | 2005 05 10 | G96 | 0.3+ | 0.1- | 2007 11 20 | 691 | 0.4-  | 0.5-  |
| 2002 11 06 | 704 | 0.3+  | 0.5-  | 2005 05 10 | G96 | 0.2- | 0.2- | 2007 11 20 | 691 | 0.1-  | 0.1+  |
| 2002 11 06 | 704 | 0.8+  | 0.1-  | 2007 11 01 | 691 | 0.3- | 0.0  | 2007 12 13 | 704 | 0.2+  | 0.3+  |
| 2002 11 06 | 704 | 0.2-  | 0.6-  | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.0   | 0.2+  |
| 2002 11 06 | 704 | 0.7+  | 0.2-  | 2007 11 01 | 691 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.5+  | 0.0   |
| 2002 11 06 | 704 | 1.0+  | 0.2-  | 2007 11 05 | 691 | 0.1- | 0.2+ | 2007 12 13 | 704 | 0.4+  | 0.2+  |
| 2002 12 10 | 644 | 0.2-  | 0.4+  | 2007 11 05 | 691 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.2+  | 0.4+  |
| 2002 12 10 | 644 | 0.2-  | 0.0   | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 12 15 | 704 | 1.8+  | 0.2-  |
| 2002 12 10 | 644 | 0.3-  | 0.2+  | 2007 11 09 | 691 | 0.0  | 0.3- | 2007 12 15 | 704 | 0.7-  | 0.7-  |
| 2002 12 10 | 644 | 0.3-  | 0.6+  | 2007 11 09 | 691 | 0.1- | 0.2- | 2007 12 15 | 704 | 0.3-  | 0.2-  |
| 2002 12 10 | 644 | 0.2-  | 0.2+  | 2007 11 09 | 691 | 0.1+ | 0.2- | 2007 12 15 | 704 | 0.8+  | 0.7-  |
| 2002 12 10 | 644 | 0.1-  | 0.2+  | 2007 11 18 | 704 | 0.3- | 1.1+ |            |     |       |       |
| 2004 02 16 | 691 | 0.1-  | 0.2+  | 2007 11 18 | 704 | 0.7+ | 0.5- |            |     |       |       |

**(172331)\* 2002 VS<sub>19</sub>**

Discovered 2002 Nov. 4 at Fountain Hills.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 43.21421   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.21532234 | $\omega$ | 327.67335 |     | +0.78136850 |     | -0.61644299 |
| $a$ | 2.7568300  | $\Omega$ | 70.69318  |     | +0.59225878 |     | +0.68334924 |
| $e$ | 0.1277150  | $i$      | 5.91572   |     | +0.19670488 |     | +0.39119287 |
| $P$ | 4.58       | $H$      | 15.2      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 05 | 691 | 0.1+ | 0.4+ | 2002 11 14 | 704 | 0.7+  | 1.0+  | 2004 03 25 | 704 | 0.8- | 1.1+ |
| 2000 05 05 | 691 | 0.5+ | 0.6+ | 2002 11 23 | 644 | 0.0   | 0.3+  | 2004 03 25 | 704 | 0.5- | 0.7- |
| 2000 05 05 | 691 | 0.7+ | 0.7+ | 2002 11 23 | 644 | 0.0   | 0.3+  | 2004 03 25 | 704 | 0.5+ | 0.5+ |
| 2002 09 08 | 599 | 0.2+ | 0.0  | 2002 11 23 | 644 | 0.1+  | 0.4+  | 2005 06 13 | G96 | 0.1- | 0.2+ |
| 2002 09 08 | 599 | 0.3+ | 0.2+ | 2002 12 02 | 704 | 1.0-  | 1.0-  | 2005 06 13 | G96 | 0.6- | 0.1- |
| 2002 09 08 | 599 | 0.4+ | 0.2+ | 2002 12 02 | 704 | (0.2+ | 1.5-) | 2005 06 13 | G96 | 0.1- | 0.0  |
| 2002 10 30 | 608 | 0.6- | 1.2+ | 2002 12 02 | 704 | 0.6-  | 1.3-  | 2005 06 13 | G96 | 0.6- | 0.1- |
| 2002 10 30 | 608 | 0.6- | 1.3+ | 2002 12 02 | 704 | 0.6-  | 1.1-  | 2006 08 16 | 644 | 0.2+ | 0.4+ |
| 2002 10 30 | 608 | 0.1- | 1.0+ | 2002 12 02 | 704 | (0.7- | 1.7-) | 2006 08 16 | 644 | 0.1+ | 0.3+ |
| 2002 11 04 | 678 | 1.1- | 1.0+ | 2002 12 05 | 704 | 0.2-  | 0.2+  | 2006 08 16 | 644 | 0.1+ | 0.1+ |
| 2002 11 04 | 678 | 0.4+ | 0.1+ | 2002 12 05 | 704 | 0.3-  | 0.2-  | 2006 08 16 | 644 | 0.1+ | 0.2+ |
| 2002 11 04 | 678 | 0.7+ | 0.3+ | 2002 12 05 | 704 | 0.3-  | 0.2-  | 2006 08 16 | 644 | 0.1+ | 0.2+ |
| 2002 11 05 | 678 | 0.1- | 1.2- | 2002 12 05 | 704 | 0.5-  | 0.2+  | 2006 08 16 | 644 | 0.1+ | 0.3+ |
| 2002 11 05 | 678 | 0.5- | 0.5- | 2002 12 05 | 704 | 0.5-  | 0.5+  | 2006 09 18 | 699 | 0.8- | 0.5- |
| 2002 11 05 | 699 | 0.3+ | 0.7+ | 2002 12 10 | 704 | 0.9+  | 0.9+  | 2006 09 18 | 699 | 0.1+ | 0.1+ |
| 2002 11 05 | 678 | 0.6- | 0.6+ | 2002 12 10 | 704 | 0.0   | 0.2-  | 2006 09 18 | 699 | 0.7+ | 0.4- |
| 2002 11 05 | 699 | 0.4+ | 0.7+ | 2002 12 10 | 704 | 0.1-  | 0.6-  | 2006 09 18 | 699 | 0.2- | 0.0  |
| 2002 11 05 | 699 | 0.5+ | 0.9+ | 2002 12 10 | 644 | 0.3-  | 0.6+  | 2006 09 20 | 703 | 1.0+ | 0.8+ |
| 2002 11 05 | 699 | 0.2+ | 0.3- | 2002 12 10 | 704 | 0.1-  | 0.1+  | 2006 09 20 | 703 | 0.2+ | 0.9+ |
| 2002 11 06 | 704 | 0.4+ | 0.2+ | 2002 12 10 | 704 | 0.4+  | 0.5+  | 2006 09 20 | 703 | 0.4- | 0.2+ |

**(172332)\* 2002 VW<sub>19</sub>**

Discovered 2002 Nov. 4 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.61753  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.19279645 | $\omega$ | 357.90423 | +0.61883519 |          |          | -0.78420266 |
| <i>a</i> | 2.9675864  | $\Omega$ | 53.86123  | +0.72151816 |          |          | +0.54456463 |
| <i>e</i> | 0.1848690  | <i>i</i> | 3.22894   | +0.31057131 |          |          | +0.29744839 |
| <i>P</i> | 5.11       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 04 | 291 | 0.1-  | 0.3-  | 2007 10 07 | G96 | 0.0   | 0.3-  | 2007 10 30 | 703 | 0.6- | 0.9+ |
| 2002 11 04 | 291 | 0.2+  | 0.1-  | 2007 10 07 | G96 | 0.1-  | 0.3-  | 2007 10 30 | 703 | 0.4+ | 0.3+ |
| 2002 11 04 | 291 | 0.4-  | 0.2-  | 2007 10 07 | G96 | 0.4+  | 0.1-  | 2007 11 05 | 704 | 0.1- | 0.5+ |
| 2002 11 06 | 704 | 0.3-  | 0.5+  | 2007 10 10 | 691 | 0.2-  | 0.0   | 2007 11 05 | 704 | 0.3+ | 0.1+ |
| 2002 11 06 | 704 | 0.1-  | 0.3+  | 2007 10 10 | 691 | 0.0   | 0.0   | 2007 11 05 | 704 | 0.3- | 0.4+ |
| 2002 11 06 | 704 | 0.5-  | 0.0   | 2007 10 10 | 691 | 0.0   | 0.0   | 2007 11 05 | 704 | 0.1+ | 0.7+ |
| 2002 11 13 | 644 | 0.2-  | 0.0   | 2007 10 11 | 704 | 0.0   | 0.8+  | 2007 11 05 | 704 | 0.4+ | 0.4+ |
| 2002 11 13 | 644 | 0.1+  | 0.1-  | 2007 10 11 | 704 | 1.1+  | 0.0   | 2007 11 07 | 703 | 0.2+ | 0.6+ |
| 2002 11 13 | 644 | 0.1-  | 0.0   | 2007 10 11 | 704 | 0.1+  | 0.1-  | 2007 11 07 | 703 | 0.2- | 0.2+ |
| 2002 11 23 | 644 | 0.1+  | 0.3-  | 2007 10 11 | 704 | (0.8+ | 1.7-) | 2007 11 07 | 703 | 0.1- | 0.2+ |
| 2002 11 23 | 644 | 0.1-  | 0.3-  | 2007 10 11 | 704 | 1.0+  | 0.1+  | 2007 11 07 | 703 | 1.1+ | 0.8+ |
| 2002 11 23 | 644 | 0.0   | 0.3-  | 2007 10 15 | 703 | 0.2+  | 0.4+  | 2007 11 09 | G96 | 0.6+ | 0.3- |
| 2002 12 02 | 704 | 0.4+  | 0.4-  | 2007 10 15 | 703 | 0.1-  | 0.8-  | 2007 11 09 | G96 | 0.4+ | 0.2- |
| 2002 12 02 | 704 | 1.4+  | 0.5-  | 2007 10 15 | 703 | 0.1+  | 0.1+  | 2007 11 09 | G96 | 0.2+ | 0.1- |
| 2002 12 02 | 704 | (1.1+ | 1.5-) | 2007 10 15 | 703 | 0.3-  | 0.3+  | 2007 11 09 | G96 | 0.5+ | 0.2- |
| 2002 12 05 | 704 | 0.0   | 0.3-  | 2007 10 18 | 699 | 0.5+  | 0.8-  | 2007 11 14 | 704 | 0.3- | 0.7+ |
| 2002 12 05 | 704 | 0.3+  | 1.4+  | 2007 10 18 | 699 | 0.6+  | 0.0   | 2007 11 14 | 704 | 0.8- | 0.4+ |
| 2002 12 05 | 704 | 0.8+  | 0.3+  | 2007 10 18 | 699 | 0.5-  | 0.5+  | 2007 11 14 | 704 | 0.5- | 0.7+ |
| 2002 12 05 | 704 | 0.4+  | 0.3-  | 2007 10 18 | 699 | 0.6+  | 0.4-  | 2007 11 14 | 704 | 0.5- | 1.2+ |
| 2002 12 28 | 291 | 0.1-  | 0.3+  | 2007 10 18 | 691 | 0.2-  | 0.0   | 2007 11 14 | 704 | 0.5- | 1.3+ |
| 2002 12 28 | 291 | 0.0   | 0.1+  | 2007 10 18 | 691 | 0.0   | 0.1-  | 2007 11 17 | G96 | 0.3+ | 0.3- |
| 2002 12 28 | 291 | 0.0   | 0.1-  | 2007 10 18 | 691 | 0.2-  | 0.3-  | 2007 11 17 | G96 | 0.3+ | 1.1- |
| 2004 03 18 | 691 | 0.0   | 0.1+  | 2007 10 19 | 704 | 0.5-  | 0.5-  | 2007 11 17 | G96 | 0.2+ | 0.4- |
| 2004 03 18 | 691 | 0.0   | 0.0   | 2007 10 19 | 704 | 1.0+  | 0.9+  | 2007 11 17 | G96 | 0.2+ | 0.2- |
| 2004 03 18 | 691 | 0.2+  | 0.3+  | 2007 10 19 | 704 | 0.3-  | 0.1+  | 2007 11 17 | 703 | 0.7- | 0.4+ |
| 2005 05 09 | G96 | 0.5-  | 0.7+  | 2007 10 19 | 704 | 0.2+  | 0.2+  | 2007 11 17 | 703 | 0.4- | 0.3+ |
| 2005 05 09 | G96 | 0.2+  | 0.6+  | 2007 10 19 | 704 | 0.4-  | 0.3+  | 2007 11 17 | 703 | 1.1- | 0.0  |
| 2005 05 09 | G96 | 0.2-  | 0.4+  | 2007 10 20 | 703 | 0.1+  | 0.3+  | 2007 11 17 | 703 | 0.5+ | 0.9- |
| 2005 05 09 | G96 | 0.4-  | 0.4+  | 2007 10 20 | 703 | 0.0   | 0.8+  | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2005 05 13 | G96 | 0.7+  | 0.4+  | 2007 10 20 | 703 | 0.2-  | 0.5+  | 2007 12 05 | 704 | 0.3+ | 1.1+ |
| 2005 05 13 | G96 | 0.7+  | 0.3+  | 2007 10 20 | 703 | 0.4-  | 0.5-  | 2007 12 05 | 704 | 0.4- | 1.0- |
| 2005 05 13 | G96 | 0.4+  | 0.1+  | 2007 10 21 | 704 | 0.0   | 0.3+  | 2007 12 05 | 704 | 0.2- | 0.3+ |
| 2005 05 13 | G96 | 0.2+  | 0.5+  | 2007 10 21 | 704 | 0.7-  | 0.1+  | 2007 12 05 | 704 | 1.6- | 0.2- |
| 2007 10 06 | 704 | 0.8+  | 0.0   | 2007 10 21 | 704 | 0.5-  | 0.1+  | 2007 12 06 | G96 | 0.2+ | 0.7- |
| 2007 10 06 | 704 | 1.3-  | 0.8+  | 2007 10 30 | 691 | 0.1-  | 0.1-  | 2007 12 06 | G96 | 0.0  | 0.5- |
| 2007 10 06 | 704 | 0.6+  | 0.5+  | 2007 10 30 | 691 | 0.1-  | 0.0   | 2007 12 06 | G96 | 0.4+ | 0.6- |
| 2007 10 06 | 704 | 0.5-  | 0.1+  | 2007 10 30 | 691 | 0.1+  | 0.3-  | 2007 12 06 | G96 | 0.2+ | 0.5- |
| 2007 10 06 | 704 | 0.9-  | 0.1-  | 2007 10 30 | 703 | 0.5+  | 0.6+  |            |     |      |      |
| 2007 10 07 | G96 | 0.1+  | 0.3-  | 2007 10 30 | 703 | 0.5+  | 0.3+  |            |     |      |      |

**(172333)\* 2002 VH<sub>23</sub>**

Discovered 2002 Nov. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.75856   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21946537 | $\omega$ | 140.79440 | +0.72955959 |          |          | -0.68061766 |
| <i>a</i> | 2.7220246  | $\Omega$ | 262.23552 | +0.60922396 |          |          | +0.69133017 |
| <i>e</i> | 0.1143257  | <i>i</i> | 3.88310   | +0.31078767 |          |          | +0.24253289 |
| <i>P</i> | 4.49       | <i>H</i> | 15.6      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 10 29 | 691 | 0.0  | 0.5- | 2002 12 02 | 704 | 1.3+  | 0.3+  | 2006 09 01 | 704 | 1.0+ | 0.6+ |
| 1998 10 29 | 691 | 0.6+ | 1.0- | 2002 12 02 | 704 | (1.5+ | 0.3-) | 2006 09 01 | 704 | 0.5- | 0.3+ |
| 1998 10 29 | 691 | 0.5- | 0.1+ | 2002 12 05 | 704 | 1.1-  | 1.5+  | 2006 09 01 | 704 | 1.1+ | 0.9+ |
| 2002 10 31 | 699 | 0.7- | 0.5+ | 2002 12 05 | 704 | 1.1-  | 1.2+  | 2006 09 01 | 704 | 0.5+ | 0.5+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 31 | 699 | 0.3+  | 0.3-  | 2002 12 05 | 704 | (2.1+ | 0.6+) | 2006 09 01 | 704 | 0.4+  | 0.2+  |
| 2002 10 31 | 699 | 0.5-  | 0.3+  | 2002 12 05 | 704 | 1.1+  | 0.1-  | 2006 09 12 | 703 | 0.6-  | 1.0-  |
| 2002 10 31 | 699 | 0.2+  | 0.2+  | 2002 12 05 | 704 | (0.8+ | 1.8+) | 2006 09 12 | 703 | 0.4+  | 0.1-  |
| 2002 11 05 | 704 | (0.2+ | 1.8-) | 2002 12 10 | 704 | 0.2+  | 0.2-  | 2006 09 12 | 703 | 0.3-  | 0.2+  |
| 2002 11 05 | 704 | 0.7-  | 0.1+  | 2002 12 10 | 704 | 0.0   | 0.2+  | 2006 09 12 | 703 | 0.3+  | 0.2+  |
| 2002 11 05 | 704 | 0.4-  | 0.7+  | 2002 12 10 | 704 | 0.4+  | 0.2+  | 2006 09 16 | 699 | 0.4-  | 0.7-  |
| 2002 11 05 | 704 | 0.3-  | 0.5-  | 2002 12 10 | 704 | 0.2-  | 0.4+  | 2006 09 16 | 699 | 0.6-  | 0.3-  |
| 2002 11 06 | 704 | 1.1-  | 0.6-  | 2002 12 10 | 704 | 1.0+  | 0.8+  | 2006 09 16 | 699 | 0.5-  | 1.0+  |
| 2002 11 06 | 704 | 1.4-  | 0.4-  | 2002 12 11 | 644 | 0.5+  | 0.1+  | 2006 09 16 | 699 | 0.0   | 0.4+  |
| 2002 11 06 | 704 | 0.1-  | 0.4-  | 2002 12 11 | 644 | 0.2+  | 0.0   | 2006 09 18 | 703 | 1.0+  | 1.1-  |
| 2002 11 06 | 704 | 1.0-  | 0.2+  | 2002 12 11 | 644 | 0.1+  | 0.2+  | 2006 09 18 | 703 | 0.3-  | 0.7-  |
| 2002 11 07 | 704 | 0.8+  | 0.1-  | 2002 12 27 | 644 | 0.5-  | 0.0   | 2006 09 18 | 703 | (0.5- | 2.0-) |
| 2002 11 07 | 704 | 1.0+  | 0.2-  | 2002 12 27 | 644 | 0.6+  | 0.6+  | 2006 09 18 | 703 | (1.9+ | 1.9-) |
| 2002 11 07 | 704 | 0.0   | 0.3+  | 2002 12 27 | 644 | 0.4+  | 0.0   | 2006 09 20 | 699 | 0.4+  | 1.1-  |
| 2002 11 07 | 704 | (1.2+ | 1.6-) | 2002 12 28 | 291 | 0.2-  | 0.1+  | 2006 09 20 | 699 | 1.0+  | 0.1+  |
| 2002 11 12 | 704 | 0.3+  | 0.0   | 2002 12 28 | 291 | 0.1+  | 0.2-  | 2006 09 20 | 699 | 0.4-  | 0.1+  |
| 2002 11 12 | 704 | 0.1+  | 0.0   | 2002 12 28 | 291 | 0.1+  | 0.0   | 2006 09 20 | 699 | 0.7+  | 0.5-  |
| 2002 11 12 | 704 | 0.3-  | 0.3-  | 2004 03 13 | 644 | 0.3+  | 1.4+  | 2006 09 25 | 704 | 0.4-  | 0.6-  |
| 2002 11 12 | 704 | 0.2+  | 0.2+  | 2004 03 13 | 644 | 0.2+  | 1.0+  | 2006 09 25 | 704 | 0.6-  | 0.0   |
| 2002 11 12 | 704 | 0.5+  | 0.0   | 2004 03 13 | 644 | 0.1+  | 1.3+  | 2006 09 25 | 704 | 0.5+  | 0.7+  |
| 2002 11 14 | 704 | 0.4-  | 0.1+  | 2006 08 24 | 704 | (1.4+ | 1.8-) | 2006 09 25 | 704 | 0.2-  | 0.0   |
| 2002 11 14 | 704 | 0.1-  | 0.7-  | 2006 08 24 | 704 | (1.6+ | 0.6+) | 2006 09 25 | 704 | 1.4-  | 1.1-  |
| 2002 11 14 | 704 | 0.2+  | 0.9+  | 2006 08 24 | 704 | 1.1+  | 0.2+  | 2007 09 15 | G96 | 0.0   | 0.3-  |
| 2002 11 15 | 704 | 0.2-  | 0.6+  | 2006 08 24 | 704 | (0.4- | 1.7+) | 2007 09 15 | G96 | 0.1+  | 0.1+  |
| 2002 11 15 | 704 | 0.7-  | 0.2+  | 2006 08 29 | 703 | 0.4-  | 0.7+  | 2007 09 15 | G96 | 0.2-  | 0.7-  |
| 2002 11 15 | 704 | 0.4-  | 0.2+  | 2006 08 29 | 703 | 0.2-  | 0.3-  | 2007 09 15 | G96 | 0.1-  | 0.0   |
| 2002 11 15 | 704 | 0.7-  | 0.1-  | 2006 08 29 | 703 | 0.4-  | 0.8-  | 2007 10 07 | G96 | 0.6+  | 0.3-  |
| 2002 11 15 | 704 | 0.5-  | 0.4+  | 2006 08 29 | 703 | 0.7-  | 0.4-  | 2007 10 07 | G96 | 0.1+  | 0.1+  |
| 2002 11 24 | 644 | 0.0   | 0.0   | 2006 08 29 | 691 | 0.0   | 0.0   | 2007 10 07 | G96 | 0.8-  | 1.1-  |
| 2002 11 24 | 644 | 0.3-  | 0.2+  | 2006 08 29 | 691 | 0.2+  | 0.0   | 2007 10 07 | G96 | 0.3+  | 0.7-  |
| 2002 11 24 | 644 | 0.3-  | 0.4+  | 2006 08 29 | 691 | 0.0   | 0.1+  | 2007 12 15 | G96 | 0.2+  | 0.1-  |
| 2002 12 02 | 704 | 1.1+  | 0.2-  | 2006 08 30 | 704 | 0.7-  | 0.8+  | 2007 12 15 | G96 | 0.3-  | 0.1-  |
| 2002 12 02 | 704 | (1.6+ | 0.5+) | 2006 08 30 | 704 | 0.0   | 0.4+  | 2007 12 15 | G96 | 0.1-  | 0.2-  |
| 2002 12 02 | 704 | (2.2+ | 0.1+) | 2006 08 30 | 704 | 0.7+  | 0.8+  | 2007 12 15 | G96 | 0.1+  | 0.2-  |

**(172334)\* 2002 VB<sub>25</sub> = 2004 CQ<sub>113</sub>**

Discovered 2002 Nov. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 69413)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.08564   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21491747 | $\omega$ | 130.91853 | +0.68697568 |          |          | -0.72103369 |
| <i>a</i> | 2.7602912  | $\Omega$ | 275.44466 | +0.63643634 |          |          | +0.65703929 |
| <i>e</i> | 0.0181983  | <i>i</i> | 5.21105   | +0.35073237 |          |          | +0.22002226 |
| <i>P</i> | 4.59       | <i>H</i> | 15.8      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 05 | 699 | 0.4-  | 1.0+  | 2002 11 06 | 704 | 0.5+  | 0.0   | 2006 08 25 | 704 | (1.6+ | 0.6+) |
| 2000 04 05 | 699 | (2.3+ | 1.7-) | 2002 11 06 | 704 | (0.8+ | 2.0+) | 2006 08 25 | 704 | 1.0+  | 0.9+  |
| 2000 04 05 | 699 | 0.3-  | 0.5+  | 2002 11 06 | 704 | 0.9+  | 1.2+  | 2006 08 25 | 704 | 0.4+  | 0.2+  |
| 2000 04 05 | 699 | 0.2+  | 0.6+  | 2002 11 08 | 704 | 0.6+  | 0.4-  | 2006 08 29 | 703 | 0.1+  | 0.2+  |
| 2000 04 06 | 699 | 1.2+  | 0.0   | 2002 11 08 | 704 | 0.1+  | 0.9+  | 2006 08 29 | 703 | 0.4+  | 0.2+  |
| 2000 04 06 | 699 | 0.1-  | 0.4+  | 2002 11 08 | 704 | (0.1- | 1.6+) | 2006 08 29 | 703 | 0.4-  | 0.3-  |
| 2000 04 06 | 699 | (0.4+ | 3.0+) | 2004 02 13 | 699 | 1.1+  | 1.1+  | 2006 08 29 | 703 | 0.7-  | 0.5+  |
| 2000 04 06 | 699 | 0.4+  | 0.6+  | 2004 02 13 | 699 | 0.1+  | 1.1+  | 2006 08 30 | 704 | 0.2+  | 1.1+  |
| 2001 06 18 | 691 | 0.1-  | 0.1+  | 2004 02 13 | 699 | 0.0   | 0.8+  | 2006 08 30 | 704 | (0.2+ | 1.9+) |
| 2001 06 18 | 691 | 0.1-  | 0.0   | 2004 02 13 | 699 | (1.6+ | 0.9-) | 2006 08 30 | 704 | 0.4+  | 0.6+  |
| 2001 06 18 | 691 | 0.1-  | 0.3-  | 2004 02 17 | 691 | 0.0   | 0.2-  | 2006 08 30 | 704 | 0.7-  | 1.0+  |
| 2002 10 10 | 704 | 0.8-  | 0.7+  | 2004 02 17 | 691 | 0.1+  | 0.2-  | 2007 12 05 | 691 | 0.4-  | 0.2+  |
| 2002 10 10 | 704 | 1.0-  | 0.3+  | 2004 02 17 | 691 | 0.3+  | 0.2-  | 2007 12 05 | 691 | 0.1-  | 0.6-  |
| 2002 10 10 | 704 | 0.3-  | 0.1+  | 2005 05 12 | 644 | 0.2-  | 0.4+  | 2007 12 05 | 691 | (1.8- | 0.6-) |
| 2002 10 10 | 704 | 0.8-  | 0.6+  | 2005 05 12 | 644 | 0.0   | 0.5+  | 2007 12 14 | 704 | 0.2-  | 0.8+  |
| 2002 11 05 | 704 | 0.8+  | 1.0-  | 2005 05 12 | 644 | 0.5+  | 0.5+  | 2007 12 14 | 704 | 0.1-  | 0.4+  |
| 2002 11 05 | 704 | 0.0   | 0.8-  | 2005 05 16 | 644 | 0.3-  | 0.5+  | 2007 12 14 | 704 | 0.1-  | 0.4+  |
| 2002 11 05 | 704 | 1.1-  | 0.0   | 2005 05 16 | 644 | 0.4-  | 0.3+  | 2007 12 14 | 704 | 0.1+  | 0.6+  |
| 2002 11 06 | 704 | 0.0   | 0.7+  | 2005 05 16 | 644 | 0.2-  | 0.4+  | 2007 12 14 | 704 | 0.2+  | 1.2+  |

2007 DEC. 24

M.P.O. 129337

(172335)\* 2002 VO<sub>32</sub>

Discovered 2002 Nov. 5 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.21300179 | $\omega$ | 353.57107 | +0.49945272 |      | -0.85158599 |   |
| <i>a</i> | 2.7768167  | $\Omega$ | 66.36184  | +0.80239257 |      | +0.38541172 |   |
| <i>e</i> | 0.1425471  | <i>i</i> | 10.00845  | +0.32666979 |      | +0.35532958 |   |
| <i>P</i> | 4.63       | <i>H</i> | 15.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 03 | 704 | 1.1-  | 0.7+  | 2002 12 10 | 704 | 1.0+ | 0.4- | 2006 08 14 | 644 | 0.0   | 0.0   |
| 2002 10 03 | 704 | 0.2+  | 0.3-  | 2002 12 10 | 704 | 0.2- | 0.3- | 2006 08 14 | 644 | 0.1-  | 0.2-  |
| 2002 10 03 | 704 | 0.5-  | 0.3+  | 2002 12 10 | 704 | 0.1+ | 0.5- | 2006 08 16 | 644 | 0.1-  | 0.2+  |
| 2002 10 11 | 704 | 0.2-  | 0.9-  | 2002 12 10 | 704 | 0.7+ | 0.3- | 2006 08 16 | 644 | 0.1+  | 0.2+  |
| 2002 10 11 | 704 | 0.6+  | 0.2-  | 2002 12 11 | 704 | 0.2- | 1.0- | 2006 08 16 | 644 | 0.1+  | 0.2+  |
| 2002 10 11 | 704 | 1.1+  | 0.9-  | 2002 12 11 | 704 | 0.3+ | 0.6- | 2006 08 18 | 644 | 0.6+  | 0.1-  |
| 2002 10 11 | 704 | 0.2+  | 0.2+  | 2002 12 11 | 704 | 0.0  | 0.9- | 2006 08 18 | 644 | 0.1+  | 0.1+  |
| 2002 11 05 | 704 | 0.1+  | 1.0-  | 2002 12 11 | 704 | 0.2- | 1.3- | 2006 08 18 | 644 | 0.0   | 0.2+  |
| 2002 11 05 | 704 | 0.2-  | 0.6-  | 2002 12 11 | 704 | 0.6- | 0.8- | 2006 09 20 | 703 | 0.3+  | 0.5+  |
| 2002 11 05 | 704 | 0.1+  | 0.6-  | 2002 12 27 | 644 | 0.4+ | 0.2- | 2006 09 20 | 703 | 0.1-  | 0.1-  |
| 2002 11 05 | 704 | 0.7+  | 0.2-  | 2002 12 27 | 644 | 0.1+ | 0.3- | 2006 09 20 | 703 | 0.1-  | 0.1+  |
| 2002 11 05 | 704 | 0.2-  | 0.6-  | 2002 12 27 | 644 | 0.0  | 0.0  | 2006 09 20 | 703 | 1.1-  | 0.0   |
| 2002 11 06 | 704 | 0.2+  | 0.3-  | 2002 12 31 | 699 | 0.0  | 0.7+ | 2006 09 26 | 703 | (0.7+ | 2.4+) |
| 2002 11 06 | 704 | 0.5+  | 0.6-  | 2002 12 31 | 704 | 0.2- | 0.1+ | 2006 09 26 | 703 | 0.0   | 1.4+  |
| 2002 11 06 | 704 | 0.2+  | 0.3-  | 2002 12 31 | 699 | 1.0+ | 0.0  | 2006 09 26 | 703 | 0.3-  | 0.9+  |
| 2002 11 06 | 704 | 0.4+  | 0.2-  | 2002 12 31 | 704 | 0.5+ | 0.2+ | 2006 09 26 | 703 | 1.3-  | 0.3+  |
| 2002 11 06 | 704 | 0.3+  | 0.4-  | 2002 12 31 | 699 | 0.2- | 1.1+ | 2006 10 11 | E12 | 0.1+  | 0.5+  |
| 2002 11 14 | 704 | (0.8+ | 1.6-) | 2002 12 31 | 704 | 0.4+ | 0.9+ | 2006 10 11 | E12 | 0.7+  | 0.3+  |
| 2002 11 14 | 704 | 0.6+  | 1.1-  | 2002 12 31 | 704 | 0.2- | 0.1- | 2006 10 11 | E12 | 0.2-  | 0.2+  |
| 2002 11 14 | 704 | 0.2+  | 1.0-  | 2002 12 31 | 699 | 0.6+ | 0.6- | 2006 10 11 | E12 | 0.5-  | 0.4+  |
| 2002 11 14 | 704 | 0.4+  | 1.1-  | 2002 12 31 | 704 | 0.1+ | 0.3+ | 2007 10 25 | G96 | 0.1+  | 0.2-  |
| 2002 11 28 | 699 | 0.3-  | 0.5+  | 2003 01 04 | 704 | 0.3+ | 0.6+ | 2007 10 25 | G96 | 1.1-  | 0.2-  |
| 2002 11 28 | 699 | 0.1+  | 0.9+  | 2003 01 04 | 704 | 0.2- | 0.7+ | 2007 10 25 | G96 | 0.1+  | 0.3-  |
| 2002 11 28 | 699 | 0.1-  | 0.5+  | 2003 01 04 | 704 | 0.7+ | 0.6+ | 2007 10 25 | G96 | 0.4-  | 0.2-  |
| 2002 11 28 | 699 | 0.1-  | 0.2+  | 2003 01 04 | 704 | 0.8+ | 0.8+ | 2007 11 09 | 704 | 0.2+  | 1.0+  |
| 2002 12 02 | 704 | 0.4-  | 1.4+  | 2003 01 04 | 704 | 0.1+ | 1.1+ | 2007 11 09 | 704 | 0.5-  | 0.7+  |
| 2002 12 02 | 704 | 1.0-  | 0.7+  | 2003 02 01 | 644 | 0.2+ | 0.2+ | 2007 11 09 | 704 | 0.0   | 0.7+  |
| 2002 12 02 | 704 | 0.8-  | 0.3+  | 2003 02 01 | 644 | 0.2- | 0.1+ | 2007 12 02 | 704 | 0.3+  | 0.4+  |
| 2002 12 02 | 704 | 0.9-  | 0.6+  | 2003 02 01 | 644 | 0.0  | 0.2+ | 2007 12 02 | 704 | 0.5+  | 0.7+  |
| 2002 12 02 | 704 | 0.3-  | 0.1+  | 2004 03 23 | 704 | 0.5+ | 0.7+ | 2007 12 02 | 704 | 0.4-  | 0.2+  |
| 2002 12 03 | 608 | 0.1+  | 0.5+  | 2004 03 23 | 704 | 0.3+ | 0.9+ | 2007 12 02 | 704 | 0.6-  | 0.6+  |
| 2002 12 03 | 608 | 0.1-  | 1.3+  | 2004 03 23 | 704 | 0.2+ | 1.0+ | 2007 12 16 | 704 | 0.2-  | 0.5+  |
| 2002 12 03 | 608 | (0.4- | 1.8+) | 2004 03 23 | 704 | 0.1+ | 0.4+ | 2007 12 16 | 704 | 0.5+  | 0.3-  |
| 2002 12 04 | 333 | 1.3-  | 0.3+  | 2006 08 14 | 644 | 0.5- | 0.4- | 2007 12 16 | 704 | 0.9+  | 0.5+  |
| 2002 12 04 | 333 | 0.6-  | 0.5+  | 2006 08 14 | 644 | 0.1- | 0.2+ | 2007 12 16 | 704 | 0.8+  | 0.1+  |
| 2002 12 04 | 333 | 1.1-  | 0.3-  | 2006 08 14 | 644 | 0.5- | 0.3+ |            |     |       |       |
| 2002 12 10 | 704 | 0.4-  | 0.5-  | 2006 08 14 | 644 | 0.2+ | 0.2+ |            |     |       |       |

(172336)\* 2002 VE<sub>37</sub>

Discovered 2002 Nov. 2 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.20974418 | $\omega$ | 353.57432 | +0.38033399 |      | -0.91360939 |   |
| <i>a</i> | 2.8054946  | $\Omega$ | 73.99635  | +0.85505092 |      | +0.28812092 |   |
| <i>e</i> | 0.0713422  | <i>i</i> | 8.60058   | +0.35246841 |      | +0.28688713 |   |
| <i>P</i> | 4.70       | <i>H</i> | 15.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 06 30 | 644 | 0.7- | 0.2+ | 2002 11 22 | 644 | 0.0  | 0.0  | 2006 08 24 | 644 | 0.0  | 0.6+ |
| 2001 06 30 | 644 | 0.3- | 0.1- | 2002 11 22 | 644 | 0.1+ | 0.1- | 2006 08 24 | 644 | 0.6+ | 0.2+ |
| 2001 06 30 | 644 | 0.5- | 0.8+ | 2002 11 30 | 608 | 0.1- | 0.9- | 2007 11 02 | 691 | 0.2+ | 0.1+ |
| 2002 10 16 | 699 | 0.4+ | 0.0  | 2002 11 30 | 608 | 0.3- | 1.0- | 2007 11 02 | 691 | 0.2+ | 0.0  |
| 2002 10 16 | 699 | 1.4+ | 0.5+ | 2002 11 30 | 608 | 0.0  | 0.9- | 2007 11 02 | 691 | 0.1+ | 0.1+ |
| 2002 10 16 | 699 | 1.0+ | 0.9+ | 2002 12 01 | 704 | 0.9- | 0.4+ | 2007 11 06 | 691 | 0.0  | 0.1+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 16 | 699 | 0.2- | 0.7+ | 2002 12 01 | 704 | 0.9-  | 0.7+  | 2007 11 06 | 691 | 0.2- | 0.1- |
| 2002 10 28 | 608 | 0.4- | 0.9- | 2002 12 01 | 704 | 1.0-  | 0.9+  | 2007 11 06 | 691 | 0.3+ | 0.3- |
| 2002 10 28 | 608 | 0.5- | 0.7- | 2002 12 01 | 704 | 0.0   | 0.6+  | 2007 11 14 | 704 | 0.6+ | 0.2+ |
| 2002 10 28 | 608 | 0.9- | 0.3- | 2002 12 01 | 704 | 0.9-  | 0.9+  | 2007 11 14 | 704 | 1.6+ | 0.7+ |
| 2002 11 02 | 608 | 0.6+ | 1.3- | 2002 12 07 | 704 | 0.1-  | 0.5+  | 2007 11 14 | 704 | 1.0+ | 0.2+ |
| 2002 11 02 | 608 | 0.6+ | 0.8- | 2002 12 07 | 704 | 0.1+  | 0.9+  | 2007 11 14 | 704 | 1.5+ | 0.2+ |
| 2002 11 02 | 608 | 0.9+ | 0.3- | 2002 12 07 | 704 | 0.8-  | 0.3+  | 2007 11 14 | 691 | 0.1- | 0.1- |
| 2002 11 06 | 699 | 0.6- | 0.2+ | 2002 12 07 | 704 | 0.1-  | 0.3-  | 2007 11 14 | 691 | 0.0  | 0.3- |
| 2002 11 06 | 699 | 0.1- | 0.3+ | 2002 12 07 | 704 | 1.1+  | 0.9+  | 2007 11 14 | 691 | 0.1- | 0.2- |
| 2002 11 06 | 699 | 0.1+ | 0.2+ | 2004 02 16 | 704 | 0.4+  | 1.0+  | 2007 12 04 | G96 | 0.2+ | 0.3- |
| 2002 11 06 | 699 | 0.5- | 0.7+ | 2004 02 16 | 704 | 0.4-  | 0.0   | 2007 12 04 | G96 | 0.4+ | 0.3- |
| 2002 11 07 | 704 | 0.0  | 0.2+ | 2004 02 16 | 704 | (2.2+ | 1.0+) | 2007 12 04 | G96 | 0.1+ | 0.2- |
| 2002 11 07 | 704 | 0.2+ | 0.2- | 2004 02 16 | 704 | 0.9+  | 1.4+  | 2007 12 04 | G96 | 0.0  | 0.2- |
| 2002 11 07 | 704 | 0.0  | 0.1+ | 2004 02 16 | 704 | 0.7+  | 1.0+  | 2007 12 05 | 704 | 0.6- | 0.4+ |
| 2002 11 07 | 704 | 0.1- | 0.0  | 2005 05 15 | G96 | 0.2-  | 0.3+  | 2007 12 05 | 704 | 0.2- | 1.2+ |
| 2002 11 11 | 704 | 0.6- | 0.4+ | 2005 05 15 | G96 | 0.1+  | 0.5+  | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2002 11 11 | 704 | 0.2- | 0.3+ | 2005 05 15 | G96 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.9- | 0.2+ |
| 2002 11 11 | 704 | 0.1- | 0.3+ | 2005 05 15 | G96 | 0.1+  | 0.3+  | 2007 12 05 | 703 | 0.1- | 1.0+ |
| 2002 11 11 | 704 | 0.7- | 1.2+ | 2005 05 19 | G96 | 0.5+  | 0.0   | 2007 12 05 | 703 | 0.2+ | 0.3+ |
| 2002 11 11 | 644 | 0.2+ | 0.7+ | 2005 05 19 | G96 | 0.3+  | 0.6+  | 2007 12 05 | 703 | 1.2- | 0.3+ |
| 2002 11 11 | 644 | 0.0  | 0.3+ | 2005 05 19 | G96 | 0.2+  | 0.5+  | 2007 12 14 | 704 | 0.4+ | 0.7+ |
| 2002 11 11 | 644 | 0.5+ | 0.6+ | 2005 05 19 | G96 | 0.2+  | 0.6+  | 2007 12 14 | 704 | 0.2+ | 0.4+ |
| 2002 11 13 | 644 | 0.7- | 0.2+ | 2005 05 21 | 644 | 0.1+  | 0.4+  | 2007 12 14 | 704 | 0.4+ | 0.4+ |
| 2002 11 13 | 644 | 0.1+ | 0.1+ | 2005 05 21 | 644 | 0.2-  | 0.4+  | 2007 12 14 | 704 | 0.4+ | 1.0+ |
| 2002 11 13 | 644 | 0.4+ | 0.9- | 2005 05 21 | 644 | 0.3+  | 0.1+  | 2007 12 14 | 704 | 0.6+ | 1.1+ |
| 2002 11 21 | 644 | 0.2+ | 0.7+ | 2005 06 06 | 691 | 0.1+  | 0.3+  | 2007 12 15 | 691 | 0.0  | 0.2- |
| 2002 11 21 | 644 | 0.1- | 0.9+ | 2005 06 06 | 691 | 0.2+  | 0.6+  | 2007 12 15 | 691 | 1.5- | 0.4- |
| 2002 11 21 | 644 | 0.1+ | 0.7+ | 2005 06 06 | 691 | 0.3+  | 0.5+  | 2007 12 15 | 691 | 0.2- | 0.2- |
| 2002 11 22 | 644 | 0.4+ | 0.1+ | 2006 08 24 | 644 | 0.6-  | 1.0+  |            |     |      |      |

(172337)\* 2002 VR<sub>38</sub> = 1993 RS<sub>18</sub>

Discovered 2002 Nov. 5 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 41191)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22538394 | $\omega$ | 13.15627  | +0.95202096 |      | +0.30481683 |   |
| <i>a</i> | 2.6741601  | $\Omega$ | 329.05424 | -0.28535990 |      | +0.85200719 |   |
| <i>e</i> | 0.2307778  | <i>i</i> | 3.03812   | -0.11057042 |      | +0.42564122 |   |
| <i>P</i> | 4.37       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 09 15 | 809 | (0.3- | 2.3+) | 2004 02 12 | 691 | 0.1-  | 0.3-  | 2006 08 30 | 704 | 0.2+  | 0.4-  |
| 1993 09 15 | 809 | 0.4-  | 0.9+  | 2004 02 12 | 691 | 0.4+  | 0.5+  | 2006 08 30 | 704 | 0.0   | 0.3+  |
| 1993 09 15 | 809 | 0.8-  | 1.0+  | 2005 04 15 | 691 | (0.4- | 1.8+) | 2006 08 31 | 704 | 0.7-  | 0.6+  |
| 1993 09 22 | 809 | (0.2+ | 3.0+) | 2005 04 15 | 691 | 0.1-  | 0.8+  | 2006 08 31 | 704 | 0.6+  | 0.4+  |
| 1993 09 22 | 809 | (1.2+ | 3.4+) | 2005 04 15 | 691 | 0.6+  | 1.0+  | 2006 08 31 | 704 | 0.9-  | 1.1+  |
| 1993 09 22 | 809 | 0.6+  | 0.7+  | 2006 08 15 | 644 | 0.2-  | 0.4-  | 2006 08 31 | 704 | (1.8+ | 1.5-) |
| 2002 10 12 | 704 | 0.0   | 0.1+  | 2006 08 15 | 644 | 0.1-  | 0.1-  | 2006 09 12 | 699 | 0.3+  | 0.3+  |
| 2002 10 12 | 704 | 0.4+  | 0.1-  | 2006 08 15 | 644 | 0.0   | 0.0   | 2006 09 12 | 699 | 0.1+  | 0.5+  |
| 2002 10 12 | 704 | 0.1+  | 1.5-  | 2006 08 18 | 699 | 0.1+  | 0.3-  | 2006 09 12 | 699 | 0.5+  | 0.6+  |
| 2002 11 05 | 704 | 0.5+  | 0.8+  | 2006 08 18 | 699 | 0.5-  | 0.0   | 2006 09 12 | 699 | 0.2+  | 0.8+  |
| 2002 11 05 | 704 | 1.4+  | 0.1+  | 2006 08 18 | 699 | 0.1-  | 0.0   | 2006 09 12 | 704 | 1.2-  | 0.8+  |
| 2002 11 05 | 704 | 1.0-  | 0.0   | 2006 08 18 | 699 | 0.5-  | 0.3-  | 2006 09 12 | 704 | 0.1+  | 0.8+  |
| 2002 11 05 | 704 | 0.4+  | 0.6+  | 2006 08 19 | 691 | 0.1-  | 0.1+  | 2006 09 12 | 704 | 0.4+  | 0.2-  |
| 2002 11 05 | 704 | 0.5-  | 0.7-  | 2006 08 19 | 691 | 0.1-  | 0.1-  | 2006 09 12 | 704 | 0.4+  | 0.2+  |
| 2002 11 06 | 699 | 0.4+  | 0.4+  | 2006 08 19 | 691 | (1.3- | 2.1-) | 2006 09 12 | 704 | 0.3+  | 0.2+  |
| 2002 11 06 | 699 | 0.6-  | 0.2+  | 2006 08 21 | 704 | 0.8+  | 0.6+  | 2006 09 14 | 703 | 0.0   | 0.4-  |
| 2002 11 06 | 699 | 0.1+  | 0.6+  | 2006 08 21 | 704 | 0.7+  | 1.4+  | 2006 09 14 | 703 | 1.1-  | 0.3-  |
| 2002 11 06 | 699 | 0.1-  | 0.1-  | 2006 08 21 | 704 | (0.8+ | 1.5+) | 2006 09 14 | 644 | 0.1+  | 0.2-  |
| 2002 11 08 | 704 | 0.1-  | 0.4+  | 2006 08 21 | 704 | 0.0   | 0.4+  | 2006 09 14 | 703 | 1.0-  | 0.4-  |
| 2002 11 08 | 704 | 0.0   | 0.1+  | 2006 08 21 | 704 | 0.2+  | 1.4+  | 2006 09 14 | 703 | 0.9-  | 0.4-  |
| 2002 11 08 | 704 | 1.2+  | 0.2+  | 2006 08 27 | 691 | 0.3-  | 0.3-  | 2006 09 14 | 644 | 0.2-  | 0.2-  |
| 2002 11 08 | 704 | 1.5-  | 0.2-  | 2006 08 27 | 691 | 0.2-  | 0.1-  | 2006 09 14 | 644 | 0.3+  | 0.2-  |
| 2002 11 12 | 704 | 0.9-  | 0.5+  | 2006 08 27 | 691 | 0.2-  | 0.3-  | 2006 09 17 | 704 | 0.1+  | 0.5+  |
| 2002 11 12 | 704 | 0.1+  | 0.6+  | 2006 08 28 | 703 | 0.1-  | 0.4-  | 2006 09 17 | 704 | 0.4+  | 0.0   |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 12 | 704 | 1.0−  | 0.0   | 2006 08 28 | 703 | 0.4− | 0.1− | 2006 09 17 | 704 | 0.7+ | 1.4+ |
| 2002 11 12 | 704 | 0.1+  | 0.1+  | 2006 08 28 | 703 | 0.4+ | 0.3− | 2006 09 17 | 704 | 0.9+ | 1.1+ |
| 2002 11 14 | 704 | 0.1−  | 0.7+  | 2006 08 28 | 703 | 0.4− | 0.1− | 2006 09 26 | G96 | 0.3− | 0.2− |
| 2002 11 14 | 704 | 0.0   | 0.5+  | 2006 08 28 | 699 | 0.3− | 0.0  | 2006 09 26 | G96 | 0.1+ | 0.5− |
| 2002 11 14 | 704 | 0.2+  | 0.1+  | 2006 08 28 | 699 | 0.3+ | 0.8− | 2006 09 26 | G96 | 0.1+ | 0.4− |
| 2002 11 14 | 704 | 0.7+  | 0.4−  | 2006 08 28 | 699 | 0.0  | 0.7− | 2006 09 26 | G96 | 0.4+ | 0.3− |
| 2002 11 14 | 704 | 0.2−  | 0.2+  | 2006 08 28 | 699 | 0.7+ | 0.5− | 2007 11 07 | G96 | 0.2− | 0.3− |
| 2002 11 24 | 644 | 0.5−  | 0.0   | 2006 08 29 | 704 | 0.1+ | 0.5− | 2007 11 07 | G96 | 0.1+ | 0.2+ |
| 2002 11 24 | 644 | 0.3−  | 0.1+  | 2006 08 29 | 704 | 0.2+ | 0.4− | 2007 11 07 | G96 | 0.8+ | 0.0  |
| 2002 11 24 | 644 | 0.4−  | 0.1+  | 2006 08 29 | 704 | 0.4+ | 0.4+ | 2007 11 07 | G96 | 0.4+ | 0.3− |
| 2002 12 06 | 704 | 1.3−  | 0.8−  | 2006 08 29 | 704 | 0.7+ | 0.1+ | 2007 12 06 | G96 | 0.5+ | 0.7− |
| 2002 12 06 | 704 | 0.5−  | 0.1+  | 2006 08 30 | 704 | 0.4+ | 0.0  | 2007 12 06 | G96 | 0.3+ | 0.3+ |
| 2002 12 06 | 704 | (1.4+ | 1.9+) | 2006 08 30 | 704 | 0.4+ | 0.1+ | 2007 12 06 | G96 | 0.5+ | 1.1− |
| 2004 02 12 | 691 | 0.0   | 0.7+  | 2006 08 30 | 704 | 0.4+ | 0.2+ | 2007 12 06 | G96 | 0.1− | 0.6− |

**(172338)\* 2002 VX<sub>43</sub>**

Discovered 2002 Nov. 4 by Spacewatch at Kitt Peak.

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 50.91823   |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i>                                | 0.19025024 | <i>ω</i> | 280.14176 |          | +0.86748497 |          | +0.46960696 |
| <i>a</i>                                | 2.9940053  | <i>Ω</i> | 52.04664  |          | −0.33439417 |          | +0.79474464 |
| <i>e</i>                                | 0.1342343  | <i>i</i> | 12.01416  |          | −0.36830743 |          | +0.38451302 |
| <i>P</i>                                | 5.18       | <i>H</i> | 14.9      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |            |      |      |            |            |      |      |      |
|------------|-----|-------|-------|------------|------------|------|------|------------|------------|------|------|------|
| 2002 11 04 | 291 | 0.1−  | 0.2−  | 2005 04 04 | 703        | 0.0  | 0.3+ | 2007 10 24 | G96        | 0.0  | 0.4− |      |
| 2002 11 04 | 291 | 0.3−  | 0.1−  | 2005 04 04 | 703        | 0.3+ | 0.5− | 2007 10 24 | G96        | 0.0  | 0.9− |      |
| 2002 11 04 | 291 | 0.0   | 0.0   | 2005 04 04 | 703        | 1.1+ | 1.1+ | 2007 10 24 | G96        | 0.1+ | 0.8− |      |
| 2002 11 05 | 704 | 0.7−  | 0.6−  | 2005 04 04 | 703        | 0.9− | 0.1− | 2007 10 24 | G96        | 0.3− | 0.5− |      |
| 2002 11 05 | 704 | (2.0− | 0.1−) | 2007 10 07 | 703        | 0.6+ | 0.1+ | 2007 11 03 | 106        | 0.1− | 0.2− |      |
| 2002 11 05 | 704 | (1.6− | 0.6−) | 2007 10 07 | 703        | 0.0  | 0.9− | 2007 11 03 | 106        | 0.4+ | 0.6− |      |
| 2002 11 05 | 704 | (1.7− | 0.8+) | 2007 10 07 | 703        | 1.1+ | 0.0  | 2007 11 03 | 106        | 0.3+ | 0.1+ |      |
| 2002 11 07 | 704 | 0.1+  | 0.3−  | 2007 10 07 | 703        | 0.1+ | 1.1− | 2007 11 03 | 106        | 0.6− | 0.2+ |      |
| 2002 11 07 | 704 | 0.1+  | 0.3−  | 2007 10 08 | 699        | 0.3+ | 0.8+ | 2007 11 04 | 704        | 0.3− | 0.1− |      |
| 2002 11 07 | 704 | 1.0+  | 0.3−  | 2007 10 08 | 699        | 0.2+ | 0.4− | 2007 11 04 | 704        | 0.3− | 0.5+ |      |
| 2002 11 14 | 704 | 0.7−  | 0.1+  | 2007 10 08 | 699        | 1.4+ | 0.1− | 2007 11 04 | 704        | 0.1+ | 0.1+ |      |
| 2002 11 14 | 704 | 0.7+  | 0.3+  | 2007 10 08 | 699        | 0.4− | 0.1− | 2007 11 04 | 704        | 0.2+ | 0.1− |      |
| 2002 11 14 | 704 | 0.1+  | 0.3−  | 2007 10 10 | G96        | 0.1− | 0.3− | 2007 11 04 | 704        | 0.2− | 0.1− |      |
| 2002 12 02 | 608 | (1.7+ | 1.1+) | 2007 10 10 | G96        | 0.1+ | 0.3− | 2007 11 07 | 703        | 0.7− | 0.9+ |      |
| 2002 12 02 | 608 | 1.4+  | 0.1−  | 2007 10 10 | G96        | 0.2− | 0.3− | 2007 11 07 | 703        | 1.1− | 0.0  |      |
| 2002 12 02 | 608 | (1.7+ | 0.9+) | 2007 10 10 | G96        | 0.2+ | 0.4− | 2007 11 07 | 703        | 0.2+ | 0.3+ |      |
| 2002 12 10 | 704 | 0.7+  | 0.1−  | 2007 10 13 | 704        | 0.0  | 1.4+ | 2007 11 07 | 703        | 0.6− | 0.3− |      |
| 2002 12 10 | 704 | 0.2−  | 0.4+  | 2007 10 13 | 704        | 0.0  | 0.3+ | 2007 11 09 | G96        | 0.2− | 0.6− |      |
| 2002 12 10 | 704 | 0.1+  | 0.3+  | 2007 10 13 | 704        | 0.5− | 0.6+ | 2007 11 09 | G96        | 0.0  | 0.5− |      |
| 2002 12 10 | 704 | (0.3+ | 1.6+) | 2007 10 13 | 704        | 0.6− | 0.8+ | 2007 11 09 | G96        | 0.3− | 0.4− |      |
| 2004 01 18 | 644 | 0.1+  | 0.5+  | 2007 10 13 | 704        | 0.5− | 1.1+ | 2007 11 09 | G96        | 0.2− | 0.5− |      |
| 2004 01 18 | 644 | 0.2+  | 0.1+  | 2007 10 19 | 704        | 0.7+ | 0.8+ | 2007 11 14 | 704        | 0.8+ | 0.7+ |      |
| 2004 01 18 | 644 | 0.3+  | 0.2+  | 2007 10 19 | 704        | 1.0+ | 0.9+ | 2007 11 14 | 704        | 0.2+ | 0.7+ |      |
| 2004 01 30 | 699 | (2.6+ | 0.4+) | 2007 10 19 | 704        | 1.0− | 0.3− | 2007 11 14 | 704        | 0.4− | 0.0  |      |
| 2004 01 30 | 699 | 0.9+  | 0.6+  | 0.1−       | 2007 10 19 | 704  | 1.4+ | 0.2+       | 2007 11 14 | 704  | 0.1+ | 0.5+ |
| 2004 01 30 | 699 | 1.3−  | 0.7−  | 2007 10 20 | 704        | 1.1− | 0.7+ | 2007 11 14 | 704        | 0.4+ | 0.2+ |      |
| 2004 01 30 | 699 | (0.4− | 2.0+) | 2007 10 20 | 704        | 0.4− | 0.3− | 2007 12 05 | 704        | 0.6− | 0.4+ |      |
| 2004 02 10 | 644 | 0.0   | 0.1+  | 2007 10 20 | 704        | 0.0  | 0.1− | 2007 12 05 | 704        | 0.1+ | 0.6+ |      |
| 2004 02 10 | 644 | 0.1+  | 0.1−  | 2007 10 20 | 704        | 0.5+ | 0.7− | 2007 12 05 | 704        | 0.8− | 0.7+ |      |
| 2004 02 10 | 644 | 0.1−  | 0.1+  | 2007 10 20 | 704        | 0.2− | 0.1+ |            |            |      |      |      |

**(172339)\* 2002 VL<sub>57</sub>**

Discovered 2002 Nov. 6 by NEAT at Haleakala.

|                                         |            |          |          |          |             |          |             |
|-----------------------------------------|------------|----------|----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC      |             |          |             |
| <i>M</i>                                | 333.09105  |          | (2000.0) | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i>                                | 0.22375986 | <i>ω</i> | 65.40773 |          | −0.59241936 |          | −0.77877145 |
| <i>a</i>                                | 2.6870841  | <i>Ω</i> | 62.51020 |          | +0.62912772 |          | −0.60714836 |
| <i>e</i>                                | 0.1319877  | <i>i</i> | 13.44682 |          | +0.50322720 |          | −0.15775264 |
| <i>P</i>                                | 4.40       | <i>H</i> | 15.5     | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 05 27 | 704 | 0.4+  | 0.8−  | 2003 12 29 | 704 | 1.0+  | 0.3+  | 2004 04 14 | 703 | 0.4−  | 0.8−  |
| 2000 05 27 | 704 | 1.0+  | 0.3−  | 2003 12 29 | 704 | 0.9−  | 1.0+  | 2004 04 14 | 703 | (0.8+ | 1.5+) |
| 2000 05 27 | 704 | 0.4+  | 1.5+  | 2003 12 29 | 704 | 0.4+  | 0.4+  | 2004 04 14 | 703 | 0.3+  | 0.6+  |
| 2002 10 09 | 699 | (1.7− | 0.3−) | 2004 01 28 | 645 | 0.1−  | 0.0   | 2004 04 14 | 703 | 0.2+  | 0.8−  |
| 2002 10 09 | 699 | 0.4+  | 0.1−  | 2004 01 28 | 645 | 0.1−  | 0.1−  | 2006 09 20 | 703 | 1.0+  | 0.7+  |
| 2002 10 09 | 699 | 0.6−  | 1.5+  | 2004 02 16 | 704 | 0.4+  | 0.4+  | 2006 09 20 | 703 | 0.2−  | 0.7−  |
| 2002 10 09 | 699 | (0.0  | 1.8+) | 2004 02 16 | 704 | 0.4+  | 0.8+  | 2006 09 20 | 703 | 0.2+  | 1.1−  |
| 2002 11 06 | 608 | 0.0   | 0.9−  | 2004 02 16 | 704 | 0.1−  | 0.9+  | 2006 09 20 | 703 | 0.0   | 0.6−  |
| 2002 11 06 | 608 | 0.2+  | 0.9−  | 2004 02 16 | 704 | 0.2−  | 0.7+  | 2006 09 26 | 703 | 0.3−  | 0.7+  |
| 2002 11 06 | 608 | 0.2+  | 0.5−  | 2004 02 16 | 704 | 0.1−  | 1.3+  | 2006 09 26 | 703 | 1.0−  | 1.2+  |
| 2002 11 07 | 704 | 0.7+  | 1.2+  | 2004 03 14 | 704 | 0.3−  | 0.3−  | 2006 09 26 | 703 | 0.5−  | 0.0   |
| 2002 11 07 | 704 | 0.5−  | 0.4−  | 2004 03 14 | 704 | 0.4+  | 0.0   | 2006 09 26 | 703 | 1.2−  | 1.3+  |
| 2002 11 07 | 704 | 0.4+  | 0.3+  | 2004 03 14 | 704 | (2.3+ | 0.9+) | 2007 11 17 | 704 | 1.3−  | 0.2+  |
| 2002 11 07 | 704 | 0.0   | 0.4+  | 2004 03 18 | 703 | 0.7−  | 0.1+  | 2007 11 17 | 704 | 1.1−  | 0.3−  |
| 2002 11 07 | 704 | 0.4+  | 0.6−  | 2004 03 18 | 703 | 0.8−  | 0.5−  | 2007 11 17 | 704 | (1.9+ | 0.4+) |
| 2002 11 11 | 704 | 0.8−  | 0.3+  | 2004 03 18 | 703 | 0.8−  | 0.3−  | 2007 11 17 | 704 | 0.5+  | 0.5+  |
| 2002 11 11 | 704 | 1.2+  | 0.5−  | 2004 03 18 | 703 | 0.2+  | 0.4+  | 2007 11 19 | 699 | 0.5+  | 0.0   |
| 2002 11 11 | 704 | 0.2−  | 0.3+  | 2004 04 14 | 704 | (1.8+ | 0.9−) | 2007 11 19 | 699 | 1.0−  | 0.2+  |
| 2002 11 11 | 704 | 0.7−  | 0.7+  | 2004 04 14 | 644 | 0.3+  | 0.1+  | 2007 11 19 | 699 | 0.5−  | 0.2−  |
| 2002 12 01 | 704 | 1.4−  | 0.5+  | 2004 04 14 | 704 | 0.7+  | 0.1−  | 2007 11 19 | 699 | 0.3−  | 0.2−  |
| 2002 12 01 | 704 | 0.3+  | 0.4+  | 2004 04 14 | 644 | 0.7+  | 0.1−  | 2007 12 02 | 704 | 0.1+  | 0.2−  |
| 2002 12 01 | 704 | 0.6−  | 0.4+  | 2004 04 14 | 704 | 1.3+  | 0.3+  | 2007 12 02 | 704 | 1.0+  | 0.6−  |
| 2002 12 01 | 704 | 0.7+  | 1.1−  | 2004 04 14 | 644 | 0.4+  | 0.2+  | 2007 12 02 | 704 | 2.4+  | 0.2+  |
| 2003 12 29 | 704 | 1.3−  | 1.3+  | 2004 04 14 | 704 | 0.5+  | 0.8+  | 2007 12 02 | 704 | 1.2+  | 0.5+  |

**(172340)\* 2002 VN<sub>74</sub>**

Discovered 2002 Nov. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 27.57209   |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i>                                | 0.21969495 | <i>ω</i> | 349.67387 |          | +0.51175295 |          | −0.85145972 |
| <i>a</i>                                | 2.7201279  | <i>Ω</i> | 69.46133  |          | +0.79670519 |          | +0.42042547 |
| <i>e</i>                                | 0.1165843  | <i>i</i> | 7.02729   |          | +0.32151167 |          | +0.31346256 |
| <i>P</i>                                | 4.49       | <i>H</i> | 16.3      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 30 | 644 | 0.4−  | 0.5+  | 2004 02 13 | 691 | 0.1−  | 0.1+  | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 2002 10 30 | 644 | 0.0   | 0.5+  | 2004 02 13 | 691 | 0.2+  | 0.1+  | 2007 11 11 | G96 | 0.3+ | 0.2− |
| 2002 10 30 | 644 | 0.1−  | 0.1+  | 2004 02 29 | 691 | 0.1+  | 0.1+  | 2007 11 11 | G96 | 0.1+ | 0.4− |
| 2002 11 07 | 704 | (0.2+ | 2.0+) | 2004 02 29 | 691 | 0.2+  | 0.2+  | 2007 11 11 | G96 | 0.9+ | 1.2− |
| 2002 11 07 | 704 | 0.3−  | 0.7+  | 2004 02 29 | 691 | 0.1+  | 0.1+  | 2007 11 18 | G96 | 0.0  | 0.4− |
| 2002 11 07 | 704 | 0.2+  | 0.7+  | 2006 08 30 | 699 | 0.8+  | 1.2−  | 2007 11 18 | G96 | 0.1+ | 0.4− |
| 2002 11 11 | 704 | (1.4+ | 1.7+) | 2006 08 30 | 699 | 0.7−  | 0.0   | 2007 11 18 | G96 | 0.3+ | 0.7− |
| 2002 11 11 | 704 | 0.8+  | 1.4−  | 2006 08 30 | 699 | 0.1−  | 0.3−  | 2007 11 18 | G96 | 0.0  | 0.6− |
| 2002 11 11 | 704 | 0.5+  | 1.4−  | 2006 08 30 | 699 | 0.1−  | 0.0   | 2007 12 05 | 691 | 0.6− | 0.2+ |
| 2002 11 22 | 644 | 0.3−  | 0.3+  | 2006 09 20 | 703 | 0.1−  | 0.1+  | 2007 12 05 | 691 | 0.1− | 0.3− |
| 2002 11 22 | 644 | 0.4−  | 0.0   | 2006 09 20 | 703 | 0.6+  | 1.3+  | 2007 12 05 | 691 | 0.2− | 0.1− |
| 2002 11 22 | 644 | 0.3−  | 0.4+  | 2006 09 20 | 703 | (0.3+ | 1.5−) | 2007 12 15 | 704 | 0.2− | 0.5+ |
| 2002 12 01 | 704 | 0.9−  | 0.9+  | 2006 09 20 | 703 | 0.5−  | 1.3−  | 2007 12 15 | 704 | 0.7+ | 0.1+ |
| 2002 12 01 | 704 | 0.4−  | 1.3+  | 2006 09 26 | 703 | 0.5−  | 0.2+  | 2007 12 15 | 704 | 0.4+ | 0.8− |
| 2002 12 01 | 704 | 0.3−  | 0.4+  | 2006 09 26 | 703 | 1.2+  | 0.8+  | 2007 12 15 | 704 | 0.0  | 0.8+ |
| 2002 12 01 | 704 | 0.7+  | 0.0   | 2006 09 26 | 703 | 0.8−  | 0.9+  | 2007 12 15 | 704 | 0.2+ | 0.3+ |
| 2004 02 13 | 691 | 0.1−  | 0.1+  | 2006 09 26 | 703 | (1.7− | 1.1−) |            |     |      |      |



2007 DEC. 24

M.P.O. 129339

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 0.3−  | 0.3+  | 2003 01 11 | 704 | 0.3+  | 0.2+  | 2006 10 27 | 703 | 0.4−  | 0.1−  |
| 2001 09 16 | 704 | 0.1+  | 0.1+  | 2003 01 14 | 704 | 0.4+  | 0.5+  | 2006 11 16 | 703 | 0.6−  | 0.1+  |
| 2001 09 16 | 704 | 0.3+  | 0.5+  | 2003 01 14 | 704 | (2.2+ | 0.1+) | 2006 11 16 | 703 | 0.4−  | 0.9+  |
| 2001 09 16 | 704 | 0.1−  | 0.9−  | 2003 01 14 | 704 | 1.5+  | 0.1+  | 2006 11 16 | 703 | 0.3+  | 0.1+  |
| 2002 11 11 | 704 | 0.0   | 0.0   | 2003 01 21 | 704 | 0.4−  | 0.3−  | 2006 11 16 | 703 | 0.1−  | 0.4+  |
| 2002 11 11 | 704 | (0.6+ | 1.8−) | 2003 01 21 | 704 | 0.1+  | 0.9−  | 2007 01 10 | 704 | (2.1+ | 1.1−) |
| 2002 11 11 | 704 | (1.0− | 1.9−) | 2003 01 21 | 704 | 0.0   | 0.1−  | 2007 01 10 | 704 | 1.3+  | 0.5−  |
| 2002 11 11 | 704 | 0.4−  | 1.0−  | 2003 03 05 | 704 | 0.1+  | 0.2+  | 2007 01 10 | 704 | 0.0   | 0.1+  |
| 2002 11 12 | 704 | 0.3−  | 0.3+  | 2003 03 05 | 704 | 0.0   | 0.3−  | 2007 11 18 | 704 | 0.4+  | 1.2+  |
| 2002 11 12 | 704 | 0.2+  | 0.1−  | 2003 03 05 | 704 | 1.2−  | 0.0   | 2007 11 18 | 704 | 0.9+  | 0.6+  |
| 2002 11 12 | 704 | 0.4−  | 0.3+  | 2006 09 17 | 703 | 0.8−  | 0.4+  | 2007 11 18 | 704 | 1.0+  | 1.0+  |
| 2002 11 12 | 704 | 0.1+  | 0.5+  | 2006 09 17 | 703 | 0.1+  | 0.2+  | 2007 11 18 | 704 | 0.6+  | 0.2+  |
| 2002 11 17 | 704 | 0.2−  | 1.0+  | 2006 09 17 | 703 | 0.1−  | 0.3+  | 2007 11 18 | 704 | 1.1+  | 0.2+  |
| 2002 11 17 | 704 | 0.6−  | 0.5+  | 2006 10 04 | G96 | 0.8+  | 0.1+  | 2007 11 19 | 691 | 0.3−  | 0.3−  |
| 2002 11 17 | 704 | 0.7−  | 0.3+  | 2006 10 04 | G96 | 0.1−  | 0.1−  | 2007 11 19 | 691 | 0.1−  | 0.4−  |
| 2002 11 17 | 704 | 1.4−  | 1.0+  | 2006 10 04 | G96 | 0.0   | 0.2−  | 2007 11 19 | 691 | 0.3−  | 0.1−  |
| 2002 12 28 | 704 | 0.1−  | 0.2−  | 2006 10 04 | G96 | 0.3+  | 0.2−  | 2007 12 03 | 703 | 1.9−  | 0.5−  |
| 2002 12 28 | 704 | 0.3+  | 0.2−  | 2006 10 20 | 703 | 0.6+  | 0.1−  | 2007 12 03 | 703 | 0.3−  | 0.1−  |
| 2002 12 28 | 704 | 0.1−  | 0.0   | 2006 10 20 | 703 | 0.3−  | 0.1−  | 2007 12 03 | 703 | 0.1−  | 0.9+  |
| 2002 12 28 | 704 | 0.1+  | 0.1+  | 2006 10 20 | 703 | 0.2−  | 0.6−  | 2007 12 03 | 703 | 1.0−  | 1.2+  |
| 2003 01 11 | 704 | 0.5+  | 0.2−  | 2006 10 20 | 703 | (1.5− | 0.3−) | 2007 12 06 | 704 | 0.0   | 0.1−  |
| 2003 01 11 | 704 | 0.4+  | 0.5−  | 2006 10 27 | 703 | 0.1+  | 0.0   | 2007 12 06 | 704 | 0.8+  | 0.8−  |
| 2003 01 11 | 704 | 0.6+  | 0.2−  | 2006 10 27 | 703 | 0.2+  | 0.6−  | 2007 12 06 | 704 | 0.8+  | 0.1−  |
| 2003 01 11 | 704 | 0.7+  | 0.2+  | 2006 10 27 | 703 | 0.4+  | 0.3−  | 2007 12 06 | 704 | 0.2+  | 0.1−  |

(172342)\* 2002 VQ<sub>92</sub> = 2004 BB<sub>44</sub>

Discovered 2002 Nov. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 56731)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 254.99316 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.20632358 | <i>ω</i> | 66.56294  | −0.99692836 | +0.00484398 |
| <i>a</i>  | 2.8364174  | <i>Ω</i> | 113.63846 | −0.03313547 | −0.93044277 |
| <i>e</i>  | 0.0892398  | <i>i</i> | 4.89491   | +0.07096393 | −0.36640522 |
| <i>P</i>  | 4.78       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 05 27 | 704 | 0.2+  | 0.8+  | 2004 02 17 | 704 | 0.3+  | 0.3+  | 2006 10 11 | 644 | 0.3−  | 0.9+  |
| 2000 05 27 | 704 | 0.3−  | 1.2+  | 2004 02 17 | 608 | 0.2+  | 1.1−  | 2007 11 04 | 704 | 0.5+  | 1.0+  |
| 2000 05 27 | 704 | 0.3+  | 0.4−  | 2004 02 17 | 608 | 0.4+  | 0.8−  | 2007 11 04 | 704 | 0.4−  | 0.1−  |
| 2000 05 27 | 704 | 0.2−  | 0.6+  | 2004 02 17 | 608 | 0.1−  | 0.4−  | 2007 11 04 | 704 | 0.0   | 0.2+  |
| 2000 05 27 | 704 | 0.4+  | 0.4+  | 2004 02 17 | 691 | 0.8−  | 0.0   | 2007 11 04 | 704 | 0.7+  | 0.9+  |
| 2002 11 11 | 704 | 0.3+  | 1.1+  | 2004 02 17 | 691 | 0.0   | 0.0   | 2007 11 04 | 691 | 0.0   | 0.0   |
| 2002 11 11 | 704 | 0.5−  | 1.3+  | 2004 02 17 | 691 | 0.4+  | 0.2+  | 2007 11 04 | 691 | 0.4−  | 0.1+  |
| 2002 11 11 | 704 | 0.3+  | 1.4+  | 2004 03 14 | 704 | 0.4−  | 0.1+  | 2007 11 04 | 691 | 0.2−  | 0.1−  |
| 2002 11 11 | 704 | 0.0   | 1.2+  | 2004 03 14 | 704 | 0.2+  | 0.3−  | 2007 11 08 | 691 | 0.1−  | 0.0   |
| 2002 11 11 | 704 | (0.3+ | 1.7+) | 2004 03 14 | 704 | 0.6+  | 0.4+  | 2007 11 08 | 691 | 0.3−  | 0.2−  |
| 2002 11 13 | 704 | 1.0−  | 0.3−  | 2004 03 14 | 704 | 0.6+  | 0.3−  | 2007 11 08 | 691 | 0.1−  | 0.2−  |
| 2002 11 13 | 704 | (2.1− | 1.8+) | 2004 03 14 | 704 | 0.4+  | 0.5+  | 2007 11 12 | 704 | 0.7+  | 0.3+  |
| 2002 11 13 | 704 | 0.7−  | 0.4+  | 2004 03 19 | 644 | 0.3+  | 0.3−  | 2007 11 12 | 704 | 0.2+  | 0.3+  |
| 2002 11 13 | 704 | 0.8−  | 0.1+  | 2004 03 19 | 644 | 0.6+  | 0.0   | 2007 11 12 | 704 | 0.5−  | 0.1−  |
| 2002 11 23 | 644 | 0.5+  | 0.3−  | 2004 03 19 | 644 | 0.5+  | 0.1−  | 2007 11 12 | 704 | 0.3+  | 0.5+  |
| 2002 11 23 | 644 | 0.1+  | 0.4−  | 2004 03 20 | 704 | 0.8−  | 1.4+  | 2007 11 12 | 704 | 0.2+  | 0.3+  |
| 2002 11 23 | 644 | 0.7+  | 0.1−  | 2004 03 20 | 704 | 1.1−  | 1.1+  | 2007 11 16 | 704 | (2.8+ | 0.4+) |
| 2003 11 20 | 691 | 0.1−  | 0.1−  | 2004 03 20 | 704 | 0.3−  | 1.4+  | 2007 11 16 | 704 | (3.0+ | 0.8+) |
| 2003 11 20 | 691 | 0.1+  | 0.0   | 2004 03 20 | 704 | 0.1−  | 1.1+  | 2007 11 16 | 704 | (1.7+ | 0.7−) |
| 2003 11 20 | 691 | 0.1+  | 0.1+  | 2004 03 20 | 704 | 0.8−  | 1.1+  | 2007 11 18 | G96 | 0.1+  | 0.4−  |
| 2004 01 22 | 704 | 0.9+  | 0.8−  | 2004 03 22 | 704 | 0.9−  | 0.2+  | 2007 11 18 | G96 | 0.0   | 0.3−  |
| 2004 01 22 | 704 | 1.2+  | 0.5−  | 2004 03 22 | 704 | 0.3−  | 0.6+  | 2007 11 18 | G96 | 0.5−  | 0.5−  |
| 2004 01 22 | 704 | 0.6+  | 0.8+  | 2004 03 22 | 704 | 1.3−  | 0.0   | 2007 12 04 | 704 | 1.0−  | 0.3−  |
| 2004 01 22 | 704 | 0.7+  | 0.7+  | 2006 09 14 | 703 | 0.4−  | 0.0   | 2007 12 04 | 704 | 1.4+  | 1.0−  |
| 2004 01 22 | 704 | 0.4+  | 0.6+  | 2006 09 14 | 703 | 0.3−  | 0.3+  | 2007 12 04 | 704 | 0.2+  | 0.5−  |
| 2004 01 23 | 699 | (1.6+ | 1.4−) | 2006 09 14 | 703 | 0.1+  | 0.6+  | 2007 12 04 | 704 | 0.3+  | 0.6−  |
| 2004 01 23 | 699 | 0.5−  | 0.3+  | 2006 09 14 | 703 | 0.2+  | 0.9+  | 2007 12 04 | 704 | 0.1−  | 0.3−  |
| 2004 01 23 | 699 | 0.4+  | 0.9−  | 2006 09 25 | 699 | (1.5− | 1.6+) | 2007 12 05 | G96 | 0.4+  | 0.4−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 23 | 699 | 0.5+ | 0.0  | 2006 09 25 | 699 | 0.3+ | 0.9+ | 2007 12 05 | G96 | 0.5+ | 0.2− |
| 2004 02 17 | 704 | 0.5+ | 0.5+ | 2006 09 25 | 699 | 0.2− | 0.0  | 2007 12 05 | G96 | 0.6+ | 0.3− |
| 2004 02 17 | 704 | 0.1+ | 0.1− | 2006 09 25 | 699 | 1.4− | 0.9+ | 2007 12 05 | G96 | 0.7+ | 0.4− |
| 2004 02 17 | 704 | 0.3+ | 0.1+ | 2006 10 11 | 644 | 0.2+ | 0.5+ |            |     |      |      |
| 2004 02 17 | 704 | 0.7+ | 0.5+ | 2006 10 11 | 644 | 0.3− | 1.2+ |            |     |      |      |

(172343)\* 2002 VC<sub>97</sub> = 1998 XA<sub>50</sub>

Discovered 2002 Nov. 12 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (MPO 41249)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 341.26731 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.22679077 | <i>ω</i> | 177.75128 | −0.84425159 | −0.53137096 |
| <i>a</i>  | 2.6630897  | <i>Ω</i> | 329.82009 | +0.48952658 | −0.71145893 |
| <i>e</i>  | 0.2336405  | <i>i</i> | 7.99103   | +0.21818107 | −0.45985988 |
| <i>P</i>  | 4.35       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 12 14 | 704 | 0.2+  | 0.1+  | 2004 04 25 | 704 | 1.0+ | 0.7− | 2007 11 18 | 704 | 1.0+  | 1.1+  |
| 1998 12 14 | 704 | 0.4−  | 1.2−  | 2004 04 25 | 704 | 0.8+ | 0.3+ | 2007 11 18 | 704 | 0.7+  | 1.1+  |
| 1998 12 14 | 704 | (0.2− | 2.6−) | 2004 04 25 | 704 | 0.2− | 0.0  | 2007 11 18 | 704 | (2.5+ | 1.4+) |
| 1998 12 14 | 704 | 1.2−  | 1.5−  | 2004 04 25 | 704 | 0.3+ | 0.0  | 2007 11 18 | 704 | (2.5+ | 3.3+) |
| 1998 12 17 | 704 | 0.6−  | 0.0   | 2004 04 25 | 704 | 0.2− | 0.1− | 2007 11 18 | 704 | (0.2+ | 2.6+) |
| 1998 12 17 | 704 | 0.7+  | 0.9−  | 2004 06 05 | 644 | 0.2− | 0.3+ | 2007 11 20 | G96 | 0.5−  | 0.3−  |
| 1998 12 17 | 704 | (1.3− | 2.0−) | 2004 06 05 | 644 | 0.3− | 0.2+ | 2007 11 20 | G96 | 0.1+  | 0.2−  |
| 1998 12 17 | 704 | 0.0   | 1.2−  | 2004 06 05 | 644 | 0.3− | 0.5+ | 2007 11 20 | G96 | 0.1+  | 0.1−  |
| 1998 12 17 | 704 | 2.0−  | 1.3−  | 2006 09 28 | 703 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.1−  | 0.2−  |
| 2002 10 05 | 704 | 0.5+  | 0.7+  | 2006 09 28 | 703 | 0.5− | 0.2− | 2007 11 20 | 704 | 0.2+  | 1.1+  |
| 2002 10 05 | 704 | 0.0   | 0.7+  | 2006 09 28 | 703 | 0.0  | 0.5− | 2007 11 20 | 704 | 0.7+  | 0.2+  |
| 2002 10 05 | 704 | 0.7+  | 0.5+  | 2006 09 28 | 703 | 0.8− | 0.3− | 2007 11 20 | 704 | 1.2+  | 0.7+  |
| 2002 11 12 | 699 | 0.5+  | 0.5+  | 2006 10 11 | 644 | 0.2− | 0.1− | 2007 11 20 | 704 | 0.9+  | 0.3+  |
| 2002 11 12 | 699 | 0.6+  | 0.1+  | 2006 10 11 | 644 | 0.1− | 0.3+ | 2007 11 20 | 704 | 0.3−  | 1.1+  |
| 2002 11 12 | 699 | 0.7+  | 0.1+  | 2006 10 11 | 644 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.7+  | 0.6+  |
| 2002 11 12 | 699 | 0.6+  | 0.4+  | 2006 10 17 | 703 | 0.5+ | 0.2− | 2007 12 14 | 704 | 0.0   | 0.5+  |
| 2002 11 13 | 644 | 0.2+  | 0.4+  | 2006 10 17 | 703 | 1.2− | 0.2− | 2007 12 14 | 704 | 0.4−  | 0.8+  |
| 2002 11 13 | 644 | 0.2+  | 0.4+  | 2006 10 17 | 703 | 1.3− | 0.3+ | 2007 12 14 | 704 | 0.8+  | 0.8+  |
| 2002 11 13 | 644 | 0.1+  | 0.4+  | 2006 10 17 | 703 | 0.9− | 1.0+ | 2007 12 14 | 704 | 0.3−  | 0.5+  |

(172344)\* 2002 VL<sub>104</sub>

Discovered 2002 Nov. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 349.09120 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.19208861 | <i>ω</i> | 166.05485 | +0.58886899 | −0.79387322 |
| <i>a</i>  | 2.9748722  | <i>Ω</i> | 247.65422 | +0.72493039 | +0.60176220 |
| <i>e</i>  | 0.1020492  | <i>i</i> | 9.43716   | +0.35736431 | +0.08745030 |
| <i>P</i>  | 5.13       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 01 | 644 | 0.2+  | 0.2+  | 2007 10 16 | G96 | 0.1− | 0.3− | 2007 11 04 | 704 | 1.1+ | 0.2− |
| 2002 11 01 | 644 | 0.4+  | 0.6+  | 2007 10 16 | G96 | 0.1+ | 0.2− | 2007 11 04 | 704 | 1.2+ | 0.4+ |
| 2002 11 01 | 644 | 0.2+  | 0.7+  | 2007 10 16 | G96 | 0.0  | 0.2− | 2007 11 04 | 704 | 0.7+ | 0.4− |
| 2002 11 12 | 704 | 0.6−  | 0.4−  | 2007 10 16 | G96 | 0.3+ | 0.4− | 2007 11 04 | 704 | 0.7+ | 0.1− |
| 2002 11 12 | 704 | 0.3−  | 0.4−  | 2007 10 16 | G96 | 0.2+ | 0.3− | 2007 11 04 | 704 | 0.3+ | 0.5− |
| 2002 11 12 | 704 | (2.0− | 0.1−) | 2007 10 16 | G96 | 0.1+ | 0.2− | 2007 11 04 | 704 | 0.3+ | 0.1− |
| 2002 11 14 | 704 | 0.7−  | 0.4−  | 2007 10 16 | G96 | 0.4+ | 0.6− | 2007 11 04 | 704 | 0.1+ | 0.6− |
| 2002 11 14 | 704 | 1.0−  | 0.5+  | 2007 10 18 | 699 | 0.8+ | 1.0+ | 2007 11 04 | 704 | 1.1+ | 0.0  |
| 2002 11 14 | 704 | 1.1+  | 0.7−  | 2007 10 18 | 699 | 0.2+ | 0.1− | 2007 11 04 | 704 | 0.6+ | 0.5− |
| 2002 11 14 | 704 | 0.8−  | 0.5−  | 2007 10 18 | 699 | 0.0  | 0.3+ | 2007 11 04 | A77 | 0.9+ | 0.9+ |
| 2002 12 05 | 704 | (1.4+ | 2.2−) | 2007 10 18 | 699 | 0.1− | 0.3− | 2007 11 04 | A77 | 1.2+ | 0.5+ |
| 2002 12 05 | 704 | 0.4+  | 0.2+  | 2007 10 21 | 703 | 0.0  | 0.1+ | 2007 11 05 | A77 | 0.7+ | 0.1+ |
| 2002 12 05 | 704 | 1.2+  | 0.2+  | 2007 10 21 | 691 | 0.1− | 0.1− | 2007 11 07 | 704 | 0.1− | 0.9+ |
| 2005 05 19 | 644 | 0.4−  | 0.3+  | 2007 10 21 | 703 | 0.4+ | 0.0  | 2007 11 07 | 704 | 0.3− | 1.1+ |
| 2005 05 19 | 644 | 0.5+  | 0.3+  | 2007 10 21 | 703 | 0.3− | 0.6− | 2007 11 07 | 704 | 0.0  | 0.6+ |
| 2005 05 19 | 644 | 0.1+  | 0.3+  | 2007 10 21 | 691 | 0.1− | 0.2− | 2007 11 07 | 704 | 0.0  | 0.2+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 09 | G96 | 0.2−  | 0.9−  | 2007 10 21 | 703 | 0.5+ | 0.3− | 2007 11 07 | 704 | 0.4− | 0.7+ |
| 2006 05 09 | G96 | 0.0   | 0.0   | 2007 10 21 | 691 | 0.2− | 0.2− | 2007 11 14 | 691 | 0.1− | 0.3− |
| 2006 05 09 | G96 | 0.4−  | 0.3−  | 2007 10 21 | 703 | 0.0  | 1.1+ | 2007 11 14 | 691 | 0.1− | 0.2− |
| 2006 05 09 | G96 | 0.1−  | 0.1−  | 2007 10 21 | 703 | 1.0− | 0.3− | 2007 11 14 | 691 | 0.1− | 0.3− |
| 2006 05 25 | 691 | 0.0   | 0.2+  | 2007 10 21 | 703 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.4− | 0.6− |
| 2006 05 25 | 691 | 0.1−  | 0.1+  | 2007 10 21 | 703 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.6− | 0.0  |
| 2006 05 25 | 691 | 0.2+  | 0.0   | 2007 10 23 | 704 | 0.5+ | 0.6+ | 2007 11 18 | 691 | 0.4− | 0.2− |
| 2007 09 25 | G96 | 0.1−  | 0.8−  | 2007 10 23 | 704 | 0.5+ | 0.8− | 2007 11 18 | 703 | 0.9− | 0.1+ |
| 2007 09 25 | G96 | 0.2+  | 0.7−  | 2007 10 23 | 704 | 0.5+ | 0.1+ | 2007 11 18 | 703 | 0.4− | 0.1− |
| 2007 09 25 | G96 | 0.2+  | 0.5−  | 2007 11 02 | 691 | 0.6− | 0.4+ | 2007 11 18 | 704 | 0.5+ | 0.2+ |
| 2007 09 25 | G96 | 0.2+  | 0.5−  | 2007 11 02 | 691 | 0.3− | 0.2+ | 2007 11 18 | 703 | 0.7− | 0.2− |
| 2007 10 09 | 704 | (1.6− | 0.9+) | 2007 11 02 | 691 | 0.2− | 0.0  | 2007 11 18 | 704 | 0.3+ | 0.8+ |
| 2007 10 09 | 704 | 0.2−  | 0.5+  | 2007 11 02 | 704 | 0.1+ | 0.9+ | 2007 11 18 | 703 | 0.7− | 0.1− |
| 2007 10 09 | 704 | 0.1−  | 1.1+  | 2007 11 02 | 704 | 0.1− | 0.3+ | 2007 11 18 | 704 | 0.5+ | 0.1+ |
| 2007 10 09 | 704 | 0.1−  | 0.3+  | 2007 11 02 | 704 | 0.3+ | 0.6+ | 2007 11 18 | 704 | 0.1+ | 0.4+ |
| 2007 10 12 | 704 | 0.6+  | 0.0   | 2007 11 02 | 704 | 0.1+ | 0.8+ | 2007 11 18 | 704 | 0.2+ | 0.8+ |
| 2007 10 12 | 704 | 0.5−  | 0.2−  | 2007 11 02 | 704 | 0.6+ | 0.4+ | 2007 12 03 | 703 | 0.2+ | 0.7+ |
| 2007 10 12 | 704 | 0.2+  | 0.3−  | 2007 11 02 | A77 | 0.1+ | 0.1+ | 2007 12 03 | 703 | 0.1+ | 0.4+ |
| 2007 10 12 | 704 | 0.0   | 0.3+  | 2007 11 02 | A77 | 0.2− | 0.4− | 2007 12 03 | 703 | 0.2+ | 0.2− |
| 2007 10 15 | 704 | 0.1+  | 0.3+  | 2007 11 03 | A77 | 0.3+ | 0.2+ | 2007 12 03 | 703 | 0.7+ | 0.1+ |
| 2007 10 15 | 704 | 0.2+  | 0.2−  | 2007 11 04 | 691 | 0.2− | 0.1− | 2007 12 13 | 704 | 0.0  | 0.2− |
| 2007 10 15 | 704 | 0.8+  | 0.2+  | 2007 11 04 | 691 | 0.2− | 0.1− | 2007 12 13 | 704 | 0.5− | 0.9− |
| 2007 10 15 | 704 | 0.4+  | 0.3+  | 2007 11 04 | 691 | 0.3− | 0.1− | 2007 12 13 | 704 | 0.1+ | 0.5− |
| 2007 10 16 | G96 | 0.0   | 0.2−  | 2007 11 04 | 704 | 1.4+ | 1.2+ | 2007 12 13 | 704 | 0.0  | 0.2− |

**(172345)\* 2002 VR<sub>105</sub>**

Discovered 2002 Nov. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 68.39930   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21546229 | $\omega$ | 97.52973  | +0.97869551   | −0.00610819 |
| <i>a</i> | 2.7556361  | $\Omega$ | 262.98129 | −0.07095642   | +0.92790625 |
| <i>e</i> | 0.2198339  | <i>i</i> | 11.93347  | +0.19266626   | +0.37276357 |
| <i>P</i> | 4.57       | <i>H</i> | 14.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 12 | 704 | 0.1+ | 0.0  | 2003 01 05 | 704 | 0.1+  | 0.6+  | 2006 09 13 | 644 | 0.1+ | 0.2+ |
| 2002 11 12 | 704 | 0.7− | 0.9− | 2003 01 05 | 704 | 0.5−  | 1.2+  | 2006 10 29 | 703 | 0.0  | 0.2+ |
| 2002 11 12 | 704 | 0.5− | 0.3+ | 2003 01 05 | 704 | 0.1+  | 0.1−  | 2006 10 29 | 703 | 0.7− | 0.2+ |
| 2002 11 12 | 704 | 0.2− | 0.5− | 2003 01 19 | 644 | 0.0   | 0.7+  | 2006 10 29 | 703 | 0.9− | 1.2+ |
| 2002 11 12 | 704 | 0.6− | 0.6− | 2003 01 19 | 644 | 0.2−  | 0.7+  | 2006 10 29 | 703 | 0.0  | 0.2+ |
| 2002 11 14 | 704 | 0.0  | 0.6− | 2003 01 19 | 644 | 0.7−  | 0.2−  | 2006 11 10 | 704 | 0.7− | 0.6+ |
| 2002 11 14 | 704 | 0.0  | 0.7− | 2005 05 16 | 644 | 0.2−  | 0.5+  | 2006 11 10 | 704 | 0.4− | 0.7− |
| 2002 11 14 | 704 | 0.2+ | 1.2− | 2005 05 16 | 644 | 0.1+  | 0.8+  | 2006 11 10 | 704 | 0.3− | 0.4− |
| 2002 11 14 | 704 | 0.4− | 1.3− | 2005 05 16 | 644 | 0.3+  | 0.5+  | 2006 11 10 | 704 | 0.9+ | 0.5+ |
| 2002 11 14 | 704 | 0.5+ | 0.6− | 2006 06 12 | 644 | 0.1+  | 0.3+  | 2006 11 10 | 704 | 0.1− | 0.5− |
| 2002 12 05 | 699 | 0.3+ | 0.4+ | 2006 06 12 | 644 | 0.1+  | 0.3+  | 2007 11 14 | 704 | 0.3+ | 0.2+ |
| 2002 12 05 | 699 | 0.5− | 0.5− | 2006 06 12 | 644 | 0.1+  | 0.1+  | 2007 11 14 | 704 | 1.5+ | 0.4− |
| 2002 12 05 | 699 | 0.1+ | 0.7− | 2006 06 20 | 703 | 0.7−  | 0.6+  | 2007 11 14 | 704 | 0.1− | 0.5+ |
| 2002 12 05 | 699 | 0.1− | 0.2− | 2006 06 20 | 703 | 0.1−  | 0.8+  | 2007 11 14 | 704 | 1.0+ | 0.3+ |
| 2002 12 06 | 704 | 0.3+ | 0.4+ | 2006 06 20 | 703 | 0.1+  | 0.6+  | 2007 12 04 | 704 | 0.9+ | 1.2+ |
| 2002 12 06 | 704 | 0.0  | 0.4+ | 2006 06 20 | 703 | 0.7+  | 0.5+  | 2007 12 04 | 704 | 0.1− | 1.2+ |
| 2002 12 06 | 704 | 0.3+ | 0.2+ | 2006 06 23 | 699 | 0.9−  | 1.3+  | 2007 12 04 | 704 | 0.0  | 0.9+ |
| 2002 12 06 | 704 | 0.0  | 0.1+ | 2006 06 23 | 699 | 0.3+  | 0.5+  | 2007 12 04 | 704 | 0.2− | 0.2+ |
| 2002 12 11 | 704 | 0.3+ | 0.0  | 2006 06 23 | 699 | 0.5+  | 0.9+  | 2007 12 05 | 704 | 0.7+ | 1.1+ |
| 2002 12 11 | 704 | 0.3+ | 0.2+ | 2006 06 23 | 699 | 0.1−  | 1.0+  | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2002 12 11 | 704 | 0.3+ | 0.1+ | 2006 07 24 | 703 | 0.5−  | 0.5+  | 2007 12 05 | 704 | 0.8+ | 1.0+ |
| 2002 12 11 | 704 | 0.6+ | 1.2+ | 2006 07 24 | 703 | 0.4−  | 1.1−  | 2007 12 06 | 691 | 0.1− | 0.1+ |
| 2002 12 31 | 704 | 0.2− | 0.5− | 2006 07 24 | 703 | 0.7+  | 1.2−  | 2007 12 06 | 691 | 0.2− | 0.0  |
| 2002 12 31 | 704 | 0.4+ | 0.5− | 2006 07 24 | 703 | (2.0− | 0.4+) | 2007 12 06 | 691 | 0.1− | 0.1+ |
| 2002 12 31 | 704 | 0.1+ | 0.0  | 2006 08 22 | 644 | 0.2−  | 0.2+  | 2007 12 14 | A77 | 0.4− | 0.0  |
| 2002 12 31 | 704 | 0.2+ | 0.0  | 2006 08 22 | 644 | 0.2−  | 0.3+  | 2007 12 14 | A77 | 0.3+ | 0.6+ |
| 2002 12 31 | 704 | 0.1+ | 0.2+ | 2006 08 22 | 644 | 0.9−  | 0.1−  | 2007 12 14 | A77 | 0.5+ | 0.3+ |
| 2003 01 05 | 704 | 0.3+ | 0.5+ | 2006 09 13 | 644 | 0.0   | 0.3+  |            |     |      |      |
| 2003 01 05 | 704 | 0.8− | 0.3+ | 2006 09 13 | 644 | 0.0   | 0.1+  |            |     |      |      |

**(172346)\* 2002 VK<sub>106</sub>**

Discovered 2002 Nov. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 20.46728   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21824413 | $\omega$ | 177.35266 | +0.18371073   | −0.97930862 |
| <i>a</i> | 2.7321697  | $\Omega$ | 262.05155 | +0.90028488   | +0.20229477 |
| <i>e</i> | 0.1165546  | <i>i</i> | 4.91660   | +0.39463590   | −0.00560877 |
| <i>P</i> | 4.52       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 11 12 | 704 | 0.1−  | 0.0   | 2004 03 16 | 703 | 0.1−  | 0.3−  | 2006 09 24 | 106 | 0.4+  | 0.3+  |
| 2002 11 12 | 704 | 0.1−  | 0.0   | 2004 03 16 | 703 | (1.7+ | 1.5+) | 2006 09 25 | 704 | 1.0+  | 0.1−  |
| 2002 11 12 | 704 | 0.2+  | 0.3−  | 2004 03 16 | 703 | 1.2+  | 0.8+  | 2006 09 25 | 704 | 0.4+  | 0.5+  |
| 2002 11 12 | 704 | 0.2−  | 0.2+  | 2004 03 16 | 703 | 1.2+  | 1.1−  | 2006 09 25 | 704 | 0.2+  | 0.3+  |
| 2002 11 12 | 704 | 0.2−  | 0.7−  | 2004 03 17 | 704 | 1.0+  | 0.6+  | 2006 09 25 | 704 | 0.4+  | 0.1+  |
| 2002 11 14 | 704 | 0.2−  | 0.5+  | 2004 03 17 | 704 | 0.4+  | 1.1+  | 2006 09 25 | 704 | 0.2−  | 0.2−  |
| 2002 11 14 | 704 | 0.4−  | 0.7−  | 2004 03 17 | 704 | 0.1+  | 0.9+  | 2006 09 29 | 699 | 0.8+  | 0.3+  |
| 2002 11 14 | 704 | 0.0   | 0.4+  | 2004 03 17 | 704 | 0.9+  | 0.7+  | 2006 09 29 | 699 | 0.4−  | 0.3−  |
| 2002 11 14 | 704 | 0.2−  | 0.8+  | 2004 03 19 | 704 | 0.6−  | 0.6+  | 2006 09 29 | 699 | 0.8−  | 0.0   |
| 2002 11 14 | 704 | 0.1+  | 0.3+  | 2004 03 19 | 704 | 0.8−  | 0.7+  | 2006 10 01 | 703 | 0.1−  | 0.5−  |
| 2002 11 24 | 644 | 0.1−  | 0.2−  | 2004 03 19 | 704 | 0.0   | 0.4+  | 2006 10 01 | 703 | 1.4−  | 0.2−  |
| 2002 11 24 | 644 | 0.1+  | 0.1−  | 2004 03 19 | 704 | 0.7−  | 0.6+  | 2006 10 01 | 703 | 1.0−  | 0.6+  |
| 2002 11 24 | 644 | 0.2−  | 0.0   | 2004 03 19 | 704 | 0.1−  | 0.6+  | 2006 10 01 | 703 | 0.1−  | 0.4−  |
| 2002 11 24 | 644 | 0.1−  | 0.2+  | 2004 03 26 | 699 | 0.1−  | 0.7−  | 2006 10 10 | 644 | 0.3+  | 0.2−  |
| 2002 11 24 | 644 | 0.0   | 0.1+  | 2004 03 26 | 699 | 0.6−  | 0.8+  | 2006 10 10 | 644 | 0.0   | 0.1+  |
| 2002 11 24 | 644 | 0.1−  | 0.3+  | 2004 03 26 | 699 | 1.0+  | 0.7+  | 2006 10 10 | 644 | 0.2+  | 0.1−  |
| 2002 11 28 | 699 | 0.2+  | 1.0+  | 2004 03 26 | 699 | 0.3+  | 0.7+  | 2006 10 12 | 644 | 0.2+  | 0.2+  |
| 2002 11 28 | 699 | 0.2−  | 0.0   | 2004 04 19 | 704 | 1.0+  | 1.2+  | 2006 10 12 | 644 | 0.1−  | 0.3+  |
| 2002 11 28 | 699 | 0.4+  | 0.1+  | 2004 04 19 | 704 | 0.7+  | 1.4+  | 2006 10 12 | 644 | 0.1+  | 0.2−  |
| 2002 11 28 | 699 | 0.2+  | 0.3+  | 2004 04 19 | 704 | 0.0   | 1.0+  | 2006 10 17 | 691 | 0.1−  | 0.1+  |
| 2002 12 05 | 704 | 0.2+  | 0.3+  | 2004 04 19 | 704 | (0.3− | 2.0+) | 2006 10 17 | 691 | 0.2+  | 0.1+  |
| 2002 12 05 | 704 | 0.3+  | 0.5+  | 2006 08 29 | 703 | 0.3−  | 0.5+  | 2006 10 17 | 691 | 0.1+  | 0.3+  |
| 2002 12 05 | 704 | 0.3+  | 0.8+  | 2006 08 29 | 703 | 0.2+  | 0.4+  | 2006 10 21 | 691 | 0.0   | 0.2+  |
| 2002 12 05 | 704 | 0.4+  | 0.0   | 2006 08 29 | 703 | 1.4−  | 0.4+  | 2006 10 21 | 691 | 0.1−  | 0.2+  |
| 2002 12 05 | 704 | 0.5+  | 0.3+  | 2006 08 29 | 703 | 1.4−  | 0.3+  | 2006 10 21 | 691 | 0.0   | 0.2+  |
| 2002 12 06 | 291 | 0.0   | 0.2−  | 2006 08 31 | 704 | 0.1−  | 0.2−  | 2006 10 22 | 644 | 0.2+  | 0.2−  |
| 2002 12 06 | 291 | 0.0   | 0.3−  | 2006 08 31 | 704 | 0.1−  | 0.0   | 2006 10 22 | 644 | 0.1+  | 0.0   |
| 2002 12 06 | 291 | 0.1+  | 0.3−  | 2006 08 31 | 704 | 0.2−  | 0.7+  | 2006 10 22 | 644 | 0.2+  | 0.0   |
| 2002 12 06 | 291 | 0.2+  | 0.2−  | 2006 08 31 | 704 | 0.1+  | 0.1+  | 2006 10 23 | 691 | 0.2−  | 0.1+  |
| 2002 12 06 | 291 | 0.2−  | 0.5−  | 2006 08 31 | 704 | 0.0   | 0.5+  | 2006 10 23 | 691 | 0.2−  | 0.1+  |
| 2002 12 06 | 291 | 0.3+  | 0.1−  | 2006 08 31 | 704 | 0.8+  | 0.9−  | 2006 10 23 | 691 | 0.1−  | 0.2+  |
| 2002 12 08 | 333 | 0.1+  | 0.1+  | 2006 08 31 | 704 | 0.2+  | 0.1+  | 2006 10 23 | 691 | 0.0   | 0.0   |
| 2002 12 08 | 333 | 0.1−  | 0.2−  | 2006 08 31 | 704 | 0.5+  | 1.3+  | 2006 10 23 | 691 | 0.0   | 0.1+  |
| 2002 12 08 | 333 | 0.2−  | 0.3−  | 2006 09 01 | 704 | 0.2+  | 0.7−  | 2006 10 23 | 691 | 0.1+  | 0.1−  |
| 2002 12 10 | 704 | 0.4+  | 0.4+  | 2006 09 01 | 704 | 0.0   | 0.6−  | 2006 10 24 | 644 | 0.4+  | 0.0   |
| 2002 12 10 | 704 | 0.6+  | 0.3+  | 2006 09 01 | 704 | 0.2−  | 0.9+  | 2006 10 24 | 644 | 0.5+  | 0.3+  |
| 2002 12 10 | 704 | 0.4−  | 0.2−  | 2006 09 01 | 704 | 0.7−  | 0.9+  | 2006 10 24 | 644 | 0.5+  | 0.3−  |
| 2002 12 10 | 704 | 0.0   | 0.7−  | 2006 09 06 | 644 | 0.1−  | 0.1+  | 2006 10 28 | 691 | 0.0   | 0.0   |
| 2002 12 10 | 704 | 0.0   | 0.1−  | 2006 09 06 | 644 | 0.1−  | 0.0   | 2006 10 28 | 691 | 0.1+  | 0.0   |
| 2002 12 15 | 608 | 0.4+  | 0.3+  | 2006 09 06 | 644 | 0.0   | 0.1+  | 2006 10 28 | 691 | 0.2+  | 0.0   |
| 2002 12 15 | 608 | 0.5+  | 0.6−  | 2006 09 14 | A50 | 0.1+  | 0.3−  | 2006 10 31 | 691 | 0.0   | 0.2+  |
| 2002 12 15 | 608 | 0.4+  | 0.0   | 2006 09 14 | A50 | 0.1−  | 0.1+  | 2006 10 31 | 691 | 0.1+  | 0.0   |
| 2002 12 27 | 644 | 0.3−  | 0.0   | 2006 09 17 | 703 | 0.1+  | 0.3−  | 2006 10 31 | 691 | 0.1+  | 0.3+  |
| 2002 12 27 | 644 | 0.2−  | 0.1+  | 2006 09 17 | 703 | 0.5−  | 0.5−  | 2007 10 26 | G96 | 0.5+  | 0.0   |
| 2002 12 27 | 644 | 0.2−  | 0.2+  | 2006 09 17 | 703 | 0.4−  | 0.1−  | 2007 10 26 | G96 | 0.0   | 0.2−  |
| 2002 12 31 | 699 | 1.5−  | 0.8+  | 2006 09 17 | 703 | 0.8−  | 0.2+  | 2007 10 26 | G96 | 0.4−  | 0.3−  |
| 2002 12 31 | 704 | 0.4−  | 0.1+  | 2006 09 18 | 704 | 0.5+  | 0.1+  | 2007 10 26 | G96 | 0.2+  | 0.0   |
| 2002 12 31 | 699 | 0.2+  | 0.9+  | 2006 09 18 | 704 | 0.6−  | 0.1−  | 2007 11 14 | 704 | (0.5+ | 1.8+) |
| 2002 12 31 | 704 | 0.0   | 0.1+  | 2006 09 18 | 704 | 0.6−  | 0.5+  | 2007 11 14 | 704 | 0.8+  | 0.1−  |
| 2002 12 31 | 699 | (0.4− | 1.8+) | 2006 09 18 | 704 | 0.7+  | 0.7+  | 2007 11 14 | 704 | 0.5−  | 0.3−  |
| 2002 12 31 | 704 | 0.9−  | 0.4+  | 2006 09 18 | 704 | 0.5+  | 0.3−  | 2007 12 05 | 704 | 1.5−  | 2.4+  |
| 2002 12 31 | 704 | 0.2−  | 0.1+  | 2006 09 19 | 699 | 1.1−  | 0.4−  | 2007 12 05 | 704 | 0.6+  | 0.5+  |
| 2002 12 31 | 699 | 0.3−  | 0.7+  | 2006 09 19 | 699 | 1.0−  | 0.1+  | 2007 12 05 | 704 | 0.4+  | 1.4−  |
| 2002 12 31 | 704 | 1.1−  | 0.4+  | 2006 09 19 | 699 | 0.7−  | 0.9+  | 2007 12 05 | 704 | 0.5−  | 1.0+  |
| 2003 01 19 | 644 | 0.0   | 0.3−  | 2006 09 24 | 106 | 0.6−  | 0.3−  | 2007 12 05 | 704 | 0.9+  | 0.4+  |

2007 DEC. 24

M.P.O. 129341

2003 01 19 644 0.5- 0.1- 2006 09 24 106 0.2+ 0.1+  
 2003 01 19 644 0.0 0.5- 2006 09 24 106 0.2+ 0.3-

**(172347)\* 2002 VL<sub>108</sub>**

Discovered 2002 Nov. 12 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | P        |          | Q           |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 24.02778   | (2000.0) |          |             |             |
| <i>n</i> | 0.21454107 | $\omega$ | 59.54076 | +0.37928992 | -0.92521602 |
| <i>a</i> | 2.7635188  | $\Omega$ | 8.19101  | +0.82109621 | +0.33123060 |
| <i>e</i> | 0.0676921  | <i>i</i> | 4.30684  | +0.42654444 | +0.18509893 |
| <i>P</i> | 4.59       | <i>H</i> | 15.5     | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 2002 11 12 704 | 0.5-  | 0.2+  | 2004 03 27 704 | 0.9+  | 0.2+  | 2006 09 30 691 | 0.2- | 0.7+ |
| 2002 11 12 704 | 0.2-  | 0.2-  | 2004 03 27 704 | 0.6+  | 0.6+  | 2006 09 30 691 | 0.5- | 1.1+ |
| 2002 11 12 704 | 0.7+  | 0.8-  | 2004 03 27 704 | 0.5-  | 0.3-  | 2006 09 30 691 | 0.5- | 0.7+ |
| 2002 11 12 704 | 0.0   | 0.5+  | 2004 03 27 704 | 0.3+  | 0.6+  | 2006 09 30 703 | 0.4+ | 0.1+ |
| 2002 11 14 704 | 0.4+  | 0.0   | 2004 03 28 704 | (1.0+ | 2.1+) | 2006 09 30 703 | 0.8- | 0.3+ |
| 2002 11 14 704 | 0.2-  | 0.8-  | 2004 03 28 704 | 0.1+  | 0.9+  | 2006 09 30 703 | 0.4+ | 1.3- |
| 2002 11 14 704 | 1.2+  | 0.3+  | 2004 03 28 704 | 0.6+  | 0.4-  | 2006 09 30 703 | 0.6- | 0.3- |
| 2002 12 02 704 | 0.7+  | 0.1-  | 2004 03 28 704 | 0.6+  | 1.4+  | 2006 10 16 703 | 0.8- | 0.4- |
| 2002 12 02 704 | 0.4+  | 1.3-  | 2004 04 12 703 | 0.1-  | 0.0   | 2006 10 16 703 | 0.2- | 1.1- |
| 2002 12 02 704 | 0.2+  | 1.3-  | 2004 04 12 703 | 1.1-  | 0.3+  | 2006 10 16 703 | 0.7- | 0.9- |
| 2002 12 06 704 | 0.2+  | 0.3+  | 2004 04 12 703 | (2.3+ | 0.0 ) | 2006 10 16 703 | 0.1- | 0.5+ |
| 2002 12 06 704 | 0.2-  | 0.3-  | 2004 04 12 703 | 1.1-  | 1.3+  | 2006 10 27 G96 | 0.0  | 0.1- |
| 2002 12 06 704 | 0.2-  | 0.5-  | 2004 04 13 691 | 0.3+  | 0.2+  | 2006 10 27 G96 | 0.1+ | 0.1- |
| 2002 12 06 704 | 0.2-  | 0.1+  | 2004 04 13 691 | 0.4+  | 0.4+  | 2006 10 27 G96 | 0.5- | 0.2+ |
| 2003 01 05 704 | 0.3-  | 0.0   | 2004 04 13 691 | 0.4+  | 0.3+  | 2006 10 27 G96 | 0.3- | 0.1- |
| 2003 01 05 704 | 0.6-  | 0.4-  | 2004 04 21 691 | 0.2+  | 0.2+  | 2006 11 21 G96 | 0.3- | 0.0  |
| 2003 01 05 704 | 0.2+  | 0.1+  | 2004 04 21 691 | 0.2+  | 0.5+  | 2006 11 21 G96 | 0.5+ | 0.1- |
| 2003 01 05 704 | 0.8-  | 0.7+  | 2004 04 21 691 | 0.3+  | 0.4+  | 2006 11 21 G96 | 0.0  | 0.0  |
| 2003 12 19 691 | 0.2+  | 0.3+  | 2006 07 20 D35 | 0.4+  | 0.7+  | 2006 11 21 G96 | 0.3- | 0.0  |
| 2003 12 19 691 | 0.3+  | 0.0   | 2006 07 20 D35 | 0.0   | 1.2+  | 2006 12 16 G96 | 0.3- | 0.1- |
| 2003 12 19 691 | 0.0   | 0.1+  | 2006 07 20 D35 | 0.2-  | 1.3+  | 2006 12 16 G96 | 0.2- | 0.4+ |
| 2004 02 23 704 | 0.1-  | 0.6+  | 2006 08 27 705 | 0.1+  | 0.2+  | 2006 12 16 G96 | 0.6- | 0.1- |
| 2004 02 23 704 | 0.1-  | 0.6+  | 2006 08 27 705 | 0.1+  | 0.1+  | 2006 12 16 G96 | 0.4- | 0.1- |
| 2004 02 23 704 | (1.7- | 0.2+) | 2006 08 27 691 | 0.1-  | 0.6+  | 2007 11 03 G96 | 0.0  | 0.1+ |
| 2004 02 23 704 | 0.4+  | 0.4+  | 2006 08 27 691 | 0.1+  | 0.5+  | 2007 11 03 G96 | 0.2- | 0.1- |
| 2004 02 23 704 | 0.8-  | 0.4+  | 2006 08 27 691 | 0.2-  | 0.5+  | 2007 11 03 G96 | 0.1- | 0.1- |
| 2004 03 16 704 | (2.4+ | 1.1+) | 2006 09 12 705 | 0.1+  | 0.4+  | 2007 11 03 G96 | 0.3- | 0.2- |
| 2004 03 16 704 | (2.3+ | 2.8+) | 2006 09 12 705 | 0.1+  | 0.3+  | 2007 11 04 G96 | 0.0  | 0.0  |
| 2004 03 16 704 | 0.8+  | 0.8+  | 2006 09 17 704 | (1.1- | 1.6+) | 2007 11 04 G96 | 0.0  | 0.3+ |
| 2004 03 16 704 | 0.3+  | 0.1+  | 2006 09 17 704 | 0.0   | 0.8+  | 2007 11 04 G96 | 0.1- | 0.3- |
| 2004 03 19 704 | 0.2+  | 1.0+  | 2006 09 17 704 | 0.2-  | 0.3+  | 2007 11 04 G96 | 0.2- | 0.1+ |
| 2004 03 19 704 | 0.1-  | 1.4+  | 2006 09 20 644 | 0.3-  | 0.4+  | 2007 11 11 G96 | 0.1- | 0.0  |
| 2004 03 19 704 | 0.9+  | 1.3+  | 2006 09 20 644 | 0.4-  | 0.6+  | 2007 11 11 G96 | 0.3- | 0.2- |
| 2004 03 19 704 | (0.9+ | 1.8+) | 2006 09 20 644 | 0.3-  | 0.4+  | 2007 11 11 G96 | 0.1+ | 0.1- |
| 2004 03 19 704 | 0.7+  | 0.4+  | 2006 09 22 A50 | 0.1+  | 0.0   | 2007 11 11 G96 | 0.0  | 0.2- |
| 2004 03 20 699 | 1.0+  | 0.2-  | 2006 09 22 A50 | 0.1+  | 0.1+  | 2007 12 13 704 | 0.3- | 0.5+ |
| 2004 03 20 699 | (0.2- | 1.6+) | 2006 09 25 699 | 0.6-  | 1.4+  | 2007 12 13 704 | 0.9+ | 0.6+ |
| 2004 03 20 699 | 1.3-  | 0.1-  | 2006 09 25 699 | 0.2-  | 0.7+  | 2007 12 13 704 | 0.6+ | 0.4- |
| 2004 03 20 699 | 0.4+  | 0.6+  | 2006 09 25 699 | 0.2+  | 0.5+  | 2007 12 15 704 | 0.7+ | 0.5+ |
| 2004 03 23 704 | 0.3-  | 0.6+  | 2006 09 25 699 | 0.1+  | 1.1+  | 2007 12 15 704 | 0.1- | 0.4+ |
| 2004 03 23 704 | 0.2+  | 0.3+  | 2006 09 28 704 | 0.7-  | 1.4+  | 2007 12 15 704 | 0.1- | 0.6+ |
| 2004 03 23 704 | 0.1+  | 1.0+  | 2006 09 28 704 | (1.3- | 1.7+) | 2007 12 15 704 | 0.1+ | 0.9+ |
| 2004 03 23 704 | 1.4+  | 1.3+  | 2006 09 28 704 | 1.0-  | 0.4+  | 2007 12 15 704 | 0.4+ | 1.1+ |

**(172348)\* 2002 VU<sub>113</sub>**

Discovered 2002 Nov. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | P        |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 12.24043   | (2000.0) |           |             |             |
| <i>n</i> | 0.19180402 | $\omega$ | 218.49847 | +0.92435296 | -0.38146307 |
| <i>a</i> | 2.9778141  | $\Omega$ | 163.92083 | +0.35648609 | +0.85640315 |
| <i>e</i> | 0.1608545  | <i>i</i> | 1.56926   | +0.13597524 | +0.34793617 |
| <i>P</i> | 5.14       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2000 05 06 I03 | 0.8+ | 0.1- | 2004 02 14 691 | 0.5-  | 0.2+  | 2007 10 21 704 | 0.1+  | 0.0   |
| 2000 05 06 I03 | 0.0  | 0.4+ | 2004 02 14 691 | 0.5+  | 0.2+  | 2007 10 21 704 | 0.2-  | 0.7+  |
| 2000 05 06 I03 | 0.3+ | 0.2+ | 2004 02 22 691 | 0.0   | 0.1-  | 2007 10 21 704 | 0.0   | 0.1+  |
| 2002 11 06 704 | 0.4- | 0.5+ | 2004 02 22 691 | 0.0   | 0.1-  | 2007 10 21 704 | 0.7+  | 0.3+  |
| 2002 11 06 704 | 0.3- | 1.0- | 2004 02 22 691 | 0.2-  | 0.2-  | 2007 10 30 691 | 0.3-  | 0.3-  |
| 2002 11 06 704 | 0.5- | 0.3+ | 2004 03 17 691 | 0.3-  | 0.3+  | 2007 10 30 691 | 0.4-  | 0.3-  |
| 2002 11 06 704 | 0.3- | 0.7+ | 2004 03 17 691 | 0.1+  | 0.1-  | 2007 10 30 691 | 0.6-  | 0.5-  |
| 2002 11 13 644 | 0.2+ | 0.1+ | 2004 03 17 691 | 0.2+  | 0.0   | 2007 11 05 704 | 0.2+  | 0.2+  |
| 2002 11 13 644 | 0.1+ | 0.3- | 2005 05 14 G96 | 0.0   | 0.5+  | 2007 11 05 704 | 0.0   | 0.0   |
| 2002 11 13 644 | 0.0  | 0.3+ | 2005 05 14 G96 | 0.2-  | 0.0   | 2007 11 05 704 | 0.6+  | 0.4+  |
| 2002 11 14 704 | 0.6+ | 0.2- | 2005 05 14 G96 | 0.3-  | 0.1-  | 2007 11 05 704 | 0.2+  | 0.2+  |
| 2002 11 14 704 | 0.5+ | 0.9- | 2005 05 14 G96 | 0.6-  | 0.1-  | 2007 11 05 704 | 0.6+  | 0.4+  |
| 2002 11 14 704 | 0.9- | 0.2- | 2007 10 06 704 | 0.3+  | 0.6+  | 2007 11 07 703 | 0.4+  | 0.4+  |
| 2002 11 15 704 | 0.3- | 0.5+ | 2007 10 06 704 | 0.2+  | 0.0   | 2007 11 07 703 | 0.2+  | 0.1+  |
| 2002 11 15 704 | 0.3- | 0.7- | 2007 10 06 704 | 0.2+  | 0.3+  | 2007 11 07 703 | 0.8+  | 0.1+  |
| 2002 11 15 704 | 0.2- | 1.1- | 2007 10 06 704 | 0.1+  | 0.5+  | 2007 11 07 703 | 0.6+  | 0.3+  |
| 2002 11 15 704 | 0.8+ | 1.0+ | 2007 10 06 691 | 0.1-  | 0.1+  | 2007 11 09 G96 | 0.1-  | 0.5-  |
| 2002 11 23 644 | 0.1- | 0.1+ | 2007 10 06 691 | 0.3-  | 0.0   | 2007 11 09 G96 | 0.2+  | 0.3-  |
| 2002 11 23 644 | 0.3- | 0.2+ | 2007 10 06 691 | 0.2-  | 0.1+  | 2007 11 09 G96 | 0.3+  | 0.3-  |
| 2002 11 23 644 | 0.2- | 0.3+ | 2007 10 14 704 | 0.1-  | 0.7+  | 2007 11 09 G96 | 0.1-  | 0.3-  |
| 2002 11 24 644 | 0.4- | 0.5+ | 2007 10 14 704 | 0.3+  | 0.8+  | 2007 11 11 699 | 0.4+  | 0.4-  |
| 2002 11 24 644 | 0.4- | 0.2+ | 2007 10 14 704 | (2.2+ | 0.2+) | 2007 11 11 699 | 0.4-  | 0.7-  |
| 2002 11 24 644 | 0.2- | 0.3+ | 2007 10 14 704 | 0.1+  | 0.2+  | 2007 11 11 699 | 0.5+  | 0.0   |
| 2002 12 05 704 | 0.7- | 0.1- | 2007 10 14 704 | 0.4+  | 0.5+  | 2007 11 11 699 | (1.0+ | 2.6-) |
| 2002 12 05 704 | 0.1- | 0.4- | 2007 10 14 691 | 0.2-  | 0.1-  | 2007 11 14 704 | 0.1-  | 1.2+  |
| 2002 12 05 704 | 0.2- | 0.1- | 2007 10 14 691 | 0.2-  | 0.1+  | 2007 11 14 704 | 0.2-  | 0.3+  |
| 2002 12 05 704 | 0.2+ | 0.4- | 2007 10 14 691 | 0.2-  | 0.1-  | 2007 11 14 704 | 0.3-  | 0.4+  |
| 2002 12 10 704 | 0.5- | 0.2- | 2007 10 15 703 | 0.6-  | 0.3-  | 2007 11 14 704 | 0.5-  | 0.9+  |
| 2002 12 10 704 | 0.3+ | 0.1- | 2007 10 15 703 | 0.7-  | 0.5+  | 2007 11 14 704 | 0.3+  | 1.1+  |
| 2002 12 10 704 | 0.2- | 0.4- | 2007 10 15 703 | 0.3-  | 0.3-  | 2007 12 05 704 | 0.1+  | 1.0+  |
| 2002 12 10 704 | 0.6+ | 0.1- | 2007 10 15 703 | 0.1+  | 0.1-  | 2007 12 05 704 | 0.3+  | 0.4+  |
| 2003 01 03 291 | 0.5+ | 0.2- | 2007 10 20 703 | 0.1+  | 0.3+  | 2007 12 05 704 | 0.7+  | 0.3+  |
| 2003 01 03 291 | 0.0  | 0.0  | 2007 10 20 703 | 0.7+  | 0.1-  | 2007 12 05 704 | 1.1+  | 0.6-  |
| 2003 01 03 291 | 0.7+ | 0.4- | 2007 10 20 703 | 1.2+  | 0.2-  | 2007 12 05 704 | 0.2+  | 0.3-  |
| 2004 02 14 691 | 0.4+ | 0.2+ | 2007 10 20 703 | 0.2+  | 0.2+  |                |       |       |

**(172349)\* 2002 VO<sub>122</sub>**

Discovered 2002 Nov. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | P        |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 41.08526   | (2000.0) |           |             |             |
| <i>n</i> | 0.21628430 | $\omega$ | 110.73592 | +0.75847896 | -0.63844606 |
| <i>a</i> | 2.7486497  | $\Omega$ | 289.18024 | +0.53450251 | +0.72421904 |
| <i>e</i> | 0.1606511  | <i>i</i> | 7.95744   | +0.37284948 | +0.26056362 |
| <i>P</i> | 4.56       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1998 11 22 691 | 0.1- | 0.4- | 2002 12 31 704 | 0.8+ | 1.2+ | 2006 09 19 699 | 0.9+ | 0.0  |
| 1998 11 22 691 | 0.2- | 0.1- | 2002 12 31 699 | 0.2+ | 0.3- | 2006 09 19 691 | 0.0  | 0.1+ |
| 1998 11 22 691 | 0.3- | 0.4- | 2002 12 31 704 | 0.5+ | 0.1- | 2006 09 19 699 | 0.5- | 0.6+ |
| 2002 11 06 704 | 0.5- | 0.1- | 2003 01 05 704 | 1.3- | 0.4+ | 2006 09 19 691 | 0.2+ | 0.0  |
| 2002 11 06 704 | 0.1+ | 0.2- | 2003 01 05 704 | 0.4- | 0.1+ | 2006 09 19 699 | 0.0  | 1.3+ |
| 2002 11 06 704 | 0.2- | 0.6- | 2003 01 05 704 | 0.7- | 0.2- | 2006 09 19 691 | 0.1+ | 0.0  |
| 2002 11 06 704 | 0.1+ | 0.1- | 2003 01 05 704 | 1.0- | 0.1- | 2006 09 19 699 | 0.1+ | 0.2- |
| 2002 11 06 704 | 0.1- | 0.2+ | 2003 01 05 704 | 0.2- | 0.5+ | 2006 09 23 691 | 0.6- | 0.6- |
| 2002 11 13 644 | 0.1- | 0.2+ | 2003 01 20 644 | 0.2+ | 0.2- | 2006 09 23 691 | 0.3+ | 0.2- |
| 2002 11 13 644 | 0.3- | 0.2+ | 2003 01 20 644 | 0.1+ | 0.1+ | 2006 09 23 691 | 0.1- | 0.1+ |
| 2002 11 13 644 | 0.1- | 0.2+ | 2003 01 20 644 | 0.8+ | 1.0+ | 2006 09 25 704 | 0.2+ | 0.1+ |
| 2002 11 15 704 | 0.1- | 0.2+ | 2003 01 27 608 | 0.2- | 1.0+ | 2006 09 25 704 | 0.7+ | 0.5- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 15 | 704 | 0.6+  | 0.2+  | 2003 01 27 | 608 | 0.5-  | 0.9+  | 2006 09 25 | 704 | 0.4+ | 1.1- |
| 2002 11 15 | 704 | 0.3+  | 0.6+  | 2003 01 27 | 608 | 0.5-  | 0.7+  | 2006 09 25 | 704 | 0.4+ | 0.3- |
| 2002 11 15 | 704 | 0.2+  | 0.6+  | 2004 03 20 | 704 | 0.3+  | 0.7+  | 2006 09 26 | 691 | 0.1+ | 0.0  |
| 2002 11 15 | 704 | 0.2+  | 0.3+  | 2004 03 20 | 704 | 0.1+  | 1.2+  | 2006 09 26 | 691 | 0.1+ | 0.1- |
| 2002 12 05 | 699 | 0.1+  | 0.7+  | 2004 03 20 | 704 | 0.4-  | 0.4+  | 2006 09 26 | 691 | 0.2+ | 0.1+ |
| 2002 12 05 | 699 | 0.4+  | 0.2-  | 2004 03 20 | 704 | 1.3+  | 0.2-  | 2006 10 01 | 691 | 0.2- | 0.1+ |
| 2002 12 05 | 699 | 0.6+  | 0.6-  | 2004 03 20 | 704 | 0.7+  | 0.5+  | 2006 10 01 | 691 | 0.0  | 0.1+ |
| 2002 12 05 | 699 | 0.1+  | 0.6-  | 2006 07 21 | 703 | 0.8+  | 0.0   | 2006 10 01 | 691 | 0.2- | 0.1+ |
| 2002 12 05 | 704 | 0.3+  | 0.6-  | 2006 07 21 | 703 | (1.6+ | 0.8-) | 2007 11 07 | G96 | 0.3- | 0.6- |
| 2002 12 05 | 704 | 0.0   | 0.4-  | 2006 07 21 | 703 | 0.1+  | 0.2+  | 2007 11 07 | G96 | 0.1- | 0.2- |
| 2002 12 05 | 704 | 0.3+  | 0.5-  | 2006 07 21 | 703 | 0.2+  | 0.9+  | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2002 12 05 | 704 | 0.0   | 0.6-  | 2006 08 29 | 703 | 0.5-  | 0.4-  | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2002 12 05 | 704 | 0.3+  | 0.6-  | 2006 08 29 | 703 | 0.2-  | 0.1+  | 2007 11 11 | G96 | 0.3- | 0.8+ |
| 2002 12 09 | 699 | 0.7-  | 0.1+  | 2006 08 29 | 703 | 0.1+  | 0.2+  | 2007 11 11 | G96 | 0.2+ | 0.2- |
| 2002 12 09 | 699 | 0.1+  | 0.0   | 2006 08 29 | 703 | 0.8-  | 0.1-  | 2007 11 11 | G96 | 0.3+ | 0.2- |
| 2002 12 09 | 699 | 0.2+  | 0.2+  | 2006 08 30 | 704 | 1.0+  | 0.3-  | 2007 11 11 | G96 | 0.4+ | 0.1- |
| 2002 12 09 | 699 | 0.3+  | 0.1-  | 2006 08 30 | 704 | 0.3-  | 0.5+  | 2007 11 12 | G96 | 0.2- | 0.0  |
| 2002 12 12 | 644 | 0.1-  | 0.1+  | 2006 08 30 | 704 | 0.2+  | 0.4+  | 2007 11 12 | G96 | 0.0  | 0.2- |
| 2002 12 12 | 644 | 0.2+  | 0.1+  | 2006 08 30 | 704 | 0.2+  | 0.3+  | 2007 11 12 | G96 | 0.0  | 0.1- |
| 2002 12 12 | 644 | 0.1+  | 0.1+  | 2006 08 30 | 704 | 0.4-  | 0.1-  | 2007 11 12 | G96 | 0.2+ | 0.3- |
| 2002 12 14 | 704 | (0.2- | 2.6-) | 2006 09 01 | 704 | 0.1-  | 0.4-  | 2007 11 21 | G96 | 0.0  | 0.1- |
| 2002 12 14 | 704 | 0.7+  | 0.1-  | 2006 09 01 | 704 | 0.1+  | 1.0-  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2002 12 14 | 704 | (1.2+ | 1.7-) | 2006 09 01 | 704 | 0.0   | 0.2+  | 2007 11 21 | G96 | 0.1+ | 0.1- |
| 2002 12 14 | 704 | (0.6+ | 1.7-) | 2006 09 01 | 704 | 0.2-  | 0.1-  | 2007 11 21 | G96 | 0.4+ | 0.1- |
| 2002 12 28 | 699 | 0.5-  | 0.1-  | 2006 09 11 | 703 | 1.5-  | 0.1+  | 2007 12 06 | G96 | 0.3+ | 0.2- |
| 2002 12 28 | 699 | 0.8-  | 0.1+  | 2006 09 11 | 703 | (2.0- | 0.8-) | 2007 12 06 | G96 | 0.2- | 0.2- |
| 2002 12 28 | 699 | 0.1+  | 0.6-  | 2006 09 11 | 703 | 1.3-  | 1.3-  | 2007 12 06 | G96 | 0.1+ | 0.3- |
| 2002 12 28 | 699 | 0.4-  | 0.4-  | 2006 09 11 | 703 | 1.1+  | 0.4+  | 2007 12 06 | G96 | 0.2+ | 0.3- |
| 2002 12 31 | 699 | 0.7-  | 0.5+  | 2006 09 15 | 691 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.4+ | 0.8+ |
| 2002 12 31 | 699 | 0.4-  | 0.2-  | 2006 09 15 | 691 | 0.1-  | 0.6+  | 2007 12 14 | 704 | 0.4- | 1.2+ |
| 2002 12 31 | 704 | 0.3+  | 0.4+  | 2006 09 15 | 691 | (0.4- | 1.7+) | 2007 12 14 | 704 | 0.3- | 0.8+ |
| 2002 12 31 | 704 | 0.4+  | 0.2+  | 2006 09 17 | 691 | 0.1-  | 0.2-  | 2007 12 14 | 704 | 0.5- | 0.5+ |
| 2002 12 31 | 699 | 0.3-  | 0.1-  | 2006 09 17 | 691 | 0.1-  | 0.1+  |            |     |      |      |
| 2002 12 31 | 704 | 0.4+  | 0.3-  | 2006 09 17 | 691 | 0.0   | 0.1+  |            |     |      |      |

**(172350)\* 2002 VN<sub>123</sub> = 2004 CQ<sub>100</sub>**

Discovered 2002 Nov. 14 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 72734)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.21934253 | $\omega$ | 36.18548  | +0.83832293 | -0.54501105 |          |   |
| <i>a</i> | 2.7230408  | $\Omega$ | 356.75230 | +0.42843670 | +0.67373429 |          |   |
| <i>e</i> | 0.2065095  | <i>i</i> | 13.60602  | +0.33713003 | +0.49904415 |          |   |
| <i>P</i> | 4.49       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 01 14 | 704 | 0.4+  | 0.3-  | 2002 11 08 | 704 | 1.0- | 1.2- | 2004 02 17 | 704 | 0.3- | 0.5- |
| 1999 01 14 | 704 | 2.0+  | 0.9+  | 2002 11 08 | 704 | 0.9- | 1.1- | 2004 02 17 | 704 | 0.3+ | 0.1+ |
| 1999 01 14 | 704 | 1.7+  | 0.1-  | 2002 11 08 | 704 | 0.7- | 1.3- | 2004 03 19 | 704 | 0.3+ | 0.6+ |
| 1999 01 14 | 704 | 0.3+  | 0.8-  | 2002 11 08 | 704 | 1.4- | 1.4- | 2004 03 19 | 704 | 0.2- | 0.8+ |
| 2002 10 05 | 704 | 0.5-  | 0.2+  | 2002 11 14 | 644 | 0.2- | 0.1- | 2004 03 19 | 704 | 1.0+ | 0.6+ |
| 2002 10 05 | 704 | 0.4-  | 1.1+  | 2002 11 14 | 644 | 0.4+ | 0.0  | 2004 03 19 | 704 | 0.4+ | 0.6+ |
| 2002 10 05 | 704 | 0.0   | 0.6+  | 2002 11 14 | 644 | 0.1+ | 0.0  | 2006 07 18 | E12 | 0.5+ | 0.8+ |
| 2002 10 05 | 704 | 0.0   | 1.0+  | 2002 11 15 | 704 | 0.2+ | 0.1+ | 2006 07 18 | E12 | 0.8+ | 0.7- |
| 2002 10 05 | 704 | 0.1-  | 0.7+  | 2002 11 15 | 704 | 0.5+ | 0.2+ | 2006 07 18 | E12 | 0.2+ | 0.6+ |
| 2002 10 10 | 704 | 0.5+  | 0.2-  | 2002 11 15 | 704 | 0.7+ | 0.5+ | 2006 08 12 | 644 | 0.5- | 0.8+ |
| 2002 10 10 | 704 | 0.2-  | 0.2+  | 2002 11 15 | 704 | 0.1+ | 0.2+ | 2006 08 12 | 644 | 0.2- | 0.6+ |
| 2002 10 10 | 704 | 0.2-  | 0.8-  | 2002 11 15 | 704 | 0.2+ | 0.5+ | 2006 08 12 | 644 | 0.3+ | 0.6+ |
| 2002 10 10 | 704 | 0.3-  | 0.4-  | 2002 11 25 | 644 | 0.0  | 0.3+ | 2007 09 27 | G96 | 0.6- | 0.3- |
| 2002 10 10 | 704 | 0.5-  | 0.8-  | 2002 11 25 | 644 | 0.5+ | 0.3+ | 2007 09 27 | G96 | 0.1+ | 0.7- |
| 2002 10 15 | 704 | 0.2-  | 0.3-  | 2002 11 25 | 644 | 0.2+ | 0.2+ | 2007 09 27 | G96 | 0.0  | 0.3- |
| 2002 10 15 | 704 | 0.1-  | 0.2+  | 2004 02 15 | 703 | 1.3- | 1.6+ | 2007 09 27 | G96 | 0.0  | 0.2+ |
| 2002 10 15 | 704 | 0.3-  | 0.1+  | 2004 02 15 | 703 | 1.4- | 1.4+ | 2007 12 03 | 704 | 0.2+ | 1.1- |
| 2002 10 15 | 704 | 0.2-  | 0.5+  | 2004 02 15 | 703 | 0.9- | 0.3+ | 2007 12 03 | 704 | 1.0+ | 0.6- |
| 2002 10 15 | 704 | 0.0   | 0.8+  | 2004 02 15 | 703 | 0.3- | 0.4- | 2007 12 03 | 704 | 0.1+ | 0.5- |
| 2002 11 08 | 704 | (0.7- | 1.8-) | 2004 02 17 | 704 | 0.1- | 0.4+ | 2007 12 03 | 704 | 0.8+ | 0.3+ |

**(172351)\* 2002 VG<sub>126</sub>**

Discovered 2002 Nov. 12 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC         |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 68.76486  | $\omega$ | 87.64799  | +0.98376975 | -0.12986729 |          |   |
| <i>a</i> | 2.7359404 | $\Omega$ | 279.79541 | +0.06768114 | +0.90764877 |          |   |
| <i>e</i> | 0.1830758 | <i>i</i> | 7.21844   | +0.16618167 | +0.39913431 |          |   |
| <i>P</i> | 4.53      | <i>H</i> | 15.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 06 | 704 | 1.1+  | 0.9+  | 2002 12 31 | 704 | 0.2- | 0.1- | 2006 08 27 | 699 | 1.0+  | 0.4-  |
| 2002 09 06 | 704 | 0.2+  | 0.8-  | 2002 12 31 | 704 | 0.0  | 0.1- | 2006 08 27 | 699 | 0.4+  | 0.0   |
| 2002 09 06 | 704 | 1.0+  | 0.7-  | 2002 12 31 | 699 | 0.1- | 0.2- | 2006 08 29 | 703 | 0.4+  | 0.5-  |
| 2002 11 12 | 704 | 0.0   | 0.4+  | 2002 12 31 | 704 | 0.5+ | 0.0  | 2006 08 29 | 703 | 0.6+  | 0.1-  |
| 2002 11 12 | 704 | 0.2-  | 0.3+  | 2002 12 31 | 699 | 0.1- | 0.7+ | 2006 08 29 | 703 | 0.3-  | 0.2+  |
| 2002 11 12 | 704 | 0.2+  | 0.1+  | 2002 12 31 | 704 | 0.9+ | 0.7+ | 2006 08 29 | 703 | 0.8-  | 0.3+  |
| 2002 11 12 | 704 | 0.5+  | 0.3+  | 2002 12 31 | 704 | 0.0  | 0.3+ | 2006 08 29 | 704 | 0.0   | 0.7+  |
| 2002 11 12 | 704 | 0.4+  | 0.0   | 2002 12 31 | 699 | 0.3+ | 0.1+ | 2006 08 29 | 704 | 0.1-  | 0.1+  |
| 2002 11 12 | 644 | 0.0   | 0.3-  | 2003 01 05 | 704 | 0.5+ | 0.8+ | 2006 08 29 | 704 | 0.1+  | 0.1+  |
| 2002 11 12 | 644 | 1.1+  | 0.2-  | 2003 01 05 | 704 | 0.3- | 0.2+ | 2006 09 01 | 704 | 0.1-  | 0.2-  |
| 2002 11 12 | 644 | 0.1+  | 0.5-  | 2003 01 05 | 704 | 1.5- | 0.8+ | 2006 09 01 | 704 | 0.6+  | 0.1+  |
| 2002 11 16 | 644 | 0.1+  | 0.2-  | 2003 01 05 | 704 | 0.4+ | 0.3- | 2006 09 01 | 704 | 0.2-  | 0.1+  |
| 2002 11 16 | 644 | 0.0   | 0.2-  | 2003 01 05 | 704 | 0.7+ | 0.8+ | 2006 09 11 | 703 | 1.0-  | 0.6-  |
| 2002 11 16 | 644 | 0.2-  | 0.4-  | 2003 01 05 | 704 | 1.0- | 0.4- | 2006 09 11 | 703 | 0.2-  | 0.7-  |
| 2002 12 02 | 704 | 0.2-  | 0.4-  | 2003 01 05 | 704 | 0.1+ | 0.3- | 2006 09 11 | 703 | 0.2+  | 0.2+  |
| 2002 12 02 | 704 | 0.3-  | 0.1-  | 2005 05 19 | 644 | 0.3+ | 0.7+ | 2006 09 11 | 703 | 0.1-  | 1.3-  |
| 2002 12 02 | 704 | 0.7-  | 0.0   | 2005 05 19 | 644 | 0.4+ | 0.5+ | 2006 09 19 | 699 | 0.8+  | 0.1+  |
| 2002 12 02 | 704 | 0.7-  | 0.3+  | 2005 05 19 | 644 | 0.3+ | 1.0+ | 2006 09 19 | 699 | 0.2-  | 0.3-  |
| 2002 12 02 | 704 | 0.9-  | 0.2+  | 2006 07 21 | 703 | 0.6+ | 1.1- | 2006 09 19 | 699 | 0.4+  | 0.2+  |
| 2002 12 06 | 704 | 0.1+  | 0.1-  | 2006 07 21 | 703 | 0.6- | 0.6- | 2006 09 19 | 699 | 0.3-  | 0.2+  |
| 2002 12 06 | 704 | 0.1+  | 0.5-  | 2006 07 21 | 703 | 0.4+ | 0.2+ | 2006 09 29 | 699 | 0.6+  | 0.8+  |
| 2002 12 06 | 704 | 0.4+  | 0.1+  | 2006 07 21 | 703 | 0.7- | 0.3- | 2006 09 29 | 699 | 0.0   | 0.3+  |
| 2002 12 06 | 704 | 0.5+  | 0.1+  | 2006 07 21 | 703 | 1.0- | 0.5+ | 2006 09 29 | 699 | 0.8-  | 1.0+  |
| 2002 12 06 | 704 | 0.3+  | 0.2+  | 2006 07 21 | 703 | 0.1- | 0.3+ | 2006 09 29 | 699 | 0.5+  | 0.1-  |
| 2002 12 11 | 704 | 0.3-  | 0.1+  | 2006 07 21 | 703 | 0.2+ | 0.4+ | 2006 11 10 | 704 | 0.4+  | 0.7+  |
| 2002 12 11 | 704 | 0.0   | 0.1-  | 2006 07 21 | 703 | 0.6- | 0.2+ | 2006 11 10 | 704 | 1.1+  | 0.5+  |
| 2002 12 11 | 704 | 0.0   | 0.1-  | 2006 07 21 | 644 | 0.2+ | 0.2+ | 2006 11 10 | 704 | 0.2+  | 0.1-  |
| 2002 12 11 | 704 | 0.4-  | 0.1-  | 2006 07 21 | 644 | 0.0  | 0.6+ | 2006 11 10 | 704 | 0.8-  | 0.2-  |
| 2002 12 11 | 644 | 0.4-  | 0.3+  | 2006 07 21 | 644 | 0.2+ | 0.2+ | 2006 11 10 | 704 | 0.1+  | 0.1+  |
| 2002 12 11 | 704 | 0.4-  | 0.0   | 2006 08 17 | 644 | 0.2- | 0.1- | 2007 11 04 | G96 | 0.1+  | 0.0   |
| 2002 12 11 | 644 | 0.0   | 0.1+  | 2006 08 17 | 644 | 0.2- | 0.1- | 2007 11 04 | G96 | 0.2-  | 0.2-  |
| 2002 12 11 | 644 | 0.2-  | 0.1+  | 2006 08 17 | 644 | 0.1- | 0.1- | 2007 11 04 | G96 | 0.3-  | 0.3-  |
| 2002 12 14 | 704 | (3.0- | 0.3+) | 2006 08 21 | 644 | 0.0  | 0.2- | 2007 11 11 | G96 | 1.4+  | 1.2-  |
| 2002 12 14 | 704 | 1.3-  | 1.3-  | 2006 08 21 | 644 | 0.5- | 0.3- | 2007 11 11 | G96 | 0.7+  | 0.5-  |
| 2002 12 14 | 704 | 0.4-  | 0.4-  | 2006 08 21 | 644 | 0.2- | 0.1- | 2007 11 11 | G96 | 0.8-  | 0.3+  |
| 2002 12 14 | 704 | (1.9- | 0.7-) | 2006 08 21 | 644 | 0.2- | 0.2- | 2007 11 11 | G96 | (1.8- | 0.9+) |
| 2002 12 27 | 644 | 0.1+  | 1.1+  | 2006 08 21 | 644 | 0.2- | 0.1- | 2007 12 05 | G96 | 0.4-  | 0.0   |
| 2002 12 27 | 644 | 0.1+  | 1.0+  | 2006 08 21 | 644 | 0.4- | 0.1- | 2007 12 05 | G96 | 0.5-  | 0.1+  |
| 2002 12 27 | 644 | 0.0   | 1.0+  | 2006 08 27 | 699 | 0.4+ | 0.5+ | 2007 12 05 | G96 | 0.1-  | 0.2+  |
| 2002 12 31 | 699 | 0.3-  | 0.2-  | 2006 08 27 | 699 | 0.3+ | 0.0  | 2007 12 05 | G96 | 0.2-  | 0.1+  |

2007 DEC. 24

M.P.O. 129343

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 10 31 | 704 | 0.6+  | 0.7-  | 2002 12 05 | 704 | 0.1-  | 0.1+  | 2006 05 06 | G96 | 0.2- | 0.3- |
| 1997 10 31 | 704 | 1.4+  | 1.9+  | 2002 12 05 | 704 | 0.0   | 0.8+  | 2006 06 21 | 644 | 0.2+ | 0.1+ |
| 1997 11 06 | 704 | 0.1-  | 0.2-  | 2002 12 05 | 704 | 0.2-  | 0.4+  | 2006 06 21 | 644 | 0.4- | 0.0  |
| 1997 11 06 | 704 | (2.9- | 0.5-) | 2002 12 05 | 704 | 0.5-  | 0.3-  | 2006 06 21 | 644 | 0.3- | 0.4+ |
| 1997 11 06 | 704 | 1.1-  | 0.2-  | 2002 12 10 | 704 | 1.5-  | 1.0+  | 2007 11 04 | 704 | 0.1+ | 0.5- |
| 1997 11 06 | 704 | 0.5-  | 1.3-  | 2002 12 10 | 704 | 0.7+  | 0.2+  | 2007 11 04 | 704 | 0.1+ | 0.5- |
| 2002 10 28 | 291 | 0.7-  | 0.3+  | 2002 12 10 | 644 | 1.3+  | 1.1+  | 2007 11 04 | 704 | 1.4- | 0.2+ |
| 2002 10 28 | 291 | 1.5-  | 0.4+  | 2002 12 10 | 644 | 0.1-  | 0.0   | 2007 11 14 | 704 | 0.8+ | 0.2- |
| 2002 10 28 | 291 | (1.8- | 0.2-) | 2002 12 10 | 704 | 0.5+  | 0.8-  | 2007 11 14 | 704 | 0.1- | 1.3- |
| 2002 11 06 | 704 | 0.5+  | 0.8-  | 2002 12 10 | 704 | 0.6+  | 0.3+  | 2007 11 14 | 704 | 0.4+ | 0.3- |
| 2002 11 06 | 704 | 0.3+  | 0.4+  | 2002 12 10 | 644 | (1.7+ | 1.4+) | 2007 11 14 | 704 | 0.1+ | 0.3- |
| 2002 11 06 | 704 | 0.6+  | 0.0   | 2002 12 10 | 644 | 0.1-  | 0.2+  | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2002 11 06 | 704 | 0.0   | 0.3-  | 2002 12 10 | 644 | 0.8+  | 0.6+  | 2007 12 04 | 704 | 0.7+ | 0.2+ |
| 2002 11 14 | 704 | 0.8-  | 0.5+  | 2002 12 10 | 644 | 0.4-  | 0.2+  | 2007 12 04 | 704 | 0.5+ | 0.1+ |
| 2002 11 14 | 704 | 0.1+  | 0.3-  | 2004 02 18 | 691 | 0.2-  | 0.1+  | 2007 12 05 | G96 | 0.2- | 0.2- |
| 2002 11 14 | 704 | 0.0   | 0.2-  | 2004 02 18 | 691 | 0.3+  | 0.1-  | 2007 12 05 | G96 | 0.1- | 0.2- |
| 2002 11 16 | 644 | 0.1-  | 0.5+  | 2004 02 18 | 691 | 0.1-  | 0.4+  | 2007 12 05 | G96 | 0.4+ | 0.3- |
| 2002 11 16 | 644 | 0.1-  | 0.4+  | 2006 05 05 | G96 | 0.1+  | 0.0   | 2007 12 05 | G96 | 0.2+ | 0.6- |
| 2002 11 16 | 644 | 0.1+  | 0.5+  | 2006 05 05 | G96 | 0.5+  | 0.4+  | 2007 12 05 | G96 | 0.3+ | 0.3- |
| 2002 12 02 | 704 | 1.3+  | 0.5-  | 2006 05 05 | G96 | 0.8+  | 0.3+  | 2007 12 05 | G96 | 0.3- | 0.7- |
| 2002 12 02 | 704 | (2.7+ | 0.9-) | 2006 05 05 | G96 | 0.8-  | 0.4+  | 2007 12 05 | G96 | 0.2+ | 0.2- |
| 2002 12 02 | 704 | 1.0+  | 0.9-  | 2006 05 06 | G96 | 0.0   | 0.3-  | 2007 12 05 | G96 | 0.1+ | 0.6- |

(172353)\* 2002 VR<sub>133</sub>

Discovered 2002 Nov. 5 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 70.56327   | (2000.0) |           |
| <i>n</i>                    | 0.22131576 | $\omega$ | 274.86538 |
| <i>a</i>                    | 2.7068311  | $\Omega$ | 101.06889 |
| <i>e</i>                    | 0.0933790  | <i>i</i> | 6.45501   |
| <i>P</i>                    | 4.45       | <i>H</i> | 15.9      |
| Residuals in seconds of arc |            |          |           |
| 2002 11 05                  | 699        | 0.3-     | 0.8+      |
| 2002 11 05                  | 699        | 0.4-     | 0.7+      |
| 2002 11 05                  | 699        | (0.7+    | 2.2+)     |
| 2002 11 05                  | 699        | (2.0-    | 1.4+)     |
| 2002 11 11                  | 704        | 0.8-     | 1.1+      |
| 2002 11 11                  | 704        | (0.0     | 2.1+)     |
| 2002 11 11                  | 704        | (0.0     | 3.2+)     |
| 2002 11 11                  | 704        | (0.3-    | 1.9+)     |
| 2002 11 23                  | 644        | 0.2+     | 0.2+      |
| 2002 11 23                  | 644        | 0.2+     | 0.2+      |
| 2002 11 23                  | 644        | 0.0      | 0.0       |
| 2004 02 17                  | 704        | 0.6-     | 0.3+      |
| 2004 02 17                  | 704        | 0.8+     | 0.5+      |
| 2004 02 17                  | 704        | 1.1+     | 1.4+      |
| 2005 05 15                  | G96        | 0.3-     | 0.1-      |
| 2005 05 15                  | G96        | 0.2-     | 0.0       |
| 2005 05 15                  | G96        | 0.3-     | 0.1-      |

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 70.56327   | (2000.0) |           |
| <i>n</i>                    | 0.22131576 | $\omega$ | 274.86538 |
| <i>a</i>                    | 2.7068311  | $\Omega$ | 101.06889 |
| <i>e</i>                    | 0.0933790  | <i>i</i> | 6.45501   |
| <i>P</i>                    | 4.45       | <i>H</i> | 15.9      |
| Residuals in seconds of arc |            |          |           |
| 2002 11 05                  | 699        | 0.3-     | 0.8+      |
| 2002 11 05                  | 699        | 0.4-     | 0.7+      |
| 2002 11 05                  | 699        | (0.7+    | 2.2+)     |
| 2002 11 05                  | 699        | (2.0-    | 1.4+)     |
| 2002 11 11                  | 704        | 0.8-     | 1.1+      |
| 2002 11 11                  | 704        | (0.0     | 2.1+)     |
| 2002 11 11                  | 704        | (0.0     | 3.2+)     |
| 2002 11 11                  | 704        | (0.3-    | 1.9+)     |
| 2002 11 23                  | 644        | 0.2+     | 0.2+      |
| 2002 11 23                  | 644        | 0.2+     | 0.2+      |
| 2002 11 23                  | 644        | 0.0      | 0.0       |
| 2004 02 17                  | 704        | 0.6-     | 0.3+      |
| 2004 02 17                  | 704        | 0.8+     | 0.5+      |
| 2004 02 17                  | 704        | 1.1+     | 1.4+      |
| 2005 05 15                  | G96        | 0.3-     | 0.1-      |
| 2005 05 15                  | G96        | 0.2-     | 0.0       |
| 2005 05 15                  | G96        | 0.3-     | 0.1-      |

(172354)\* 2002 WY<sub>7</sub> = 1999 GV<sub>55</sub>

Discovered 2002 Nov. 24 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 41287)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 323.07166  | (2000.0) |           |
| <i>n</i>                    | 0.18846746 | $\omega$ | 294.46507 |
| <i>a</i>                    | 3.0128566  | $\Omega$ | 151.11502 |
| <i>e</i>                    | 0.1454531  | <i>i</i> | 1.48277   |
| <i>P</i>                    | 5.23       | <i>H</i> | 15.9      |
| Residuals in seconds of arc |            |          |           |
| 1992 12 24                  | 691        | 0.1+     | 0.3-      |
| 1992 12 24                  | 691        | 0.2+     | 0.2-      |
| 2004 03 12                  | 644        | 0.0      | 0.6+      |
| 2004 03 18                  | 704        | 1.4+     | 0.6+      |
| 2007 10 20                  | 703        | 1.1-     | 1.4+      |
| 2007 10 20                  | 703        | 0.2+     | 0.8+      |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 12 24 | 691 | 0.1+ | 0.3- | 2004 03 12 | 644 | 0.0  | 0.6+ | 2007 10 20 | 703 | 1.1- | 1.4+ |
| 1992 12 24 | 691 | 0.2+ | 0.2- | 2004 03 18 | 704 | 1.4+ | 0.6+ | 2007 10 20 | 703 | 0.2+ | 0.8+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 12 24 | 691 | 0.3- | 0.4- | 2004 03 18 | 704 | (0.1- | 2.8+) | 2007 10 30 | 703 | (0.2+ | 1.8+) |
| 1999 04 07 | 691 | 0.1+ | 0.2- | 2004 03 18 | 704 | (2.2+ | 1.4+) | 2007 10 30 | 703 | 0.8+  | 0.4-  |
| 1999 04 07 | 691 | 0.4- | 0.0  | 2004 03 18 | 704 | 0.6+  | 0.9+  | 2007 10 30 | 703 | 0.4+  | 0.6+  |
| 1999 04 07 | 691 | 0.5+ | 0.5- | 2004 03 19 | 704 | 0.5-  | 0.2-  | 2007 10 30 | 703 | 1.0+  | 0.6-  |
| 1999 04 11 | 691 | 0.6- | 0.2+ | 2004 03 19 | 704 | 0.3+  | 0.8+  | 2007 11 01 | G96 | 0.2+  | 0.2-  |
| 1999 04 11 | 691 | 0.9- | 0.2- | 2004 03 19 | 704 | 0.5+  | 0.4+  | 2007 11 01 | G96 | 0.2+  | 0.1-  |
| 1999 04 11 | 691 | 0.5- | 0.1+ | 2004 03 19 | 704 | 0.6+  | 0.0   | 2007 11 01 | G96 | 0.3+  | 0.2-  |
| 2001 08 24 | 691 | 0.2+ | 0.2+ | 2004 03 19 | 704 | 0.8+  | 0.8+  | 2007 11 01 | G96 | 0.2+  | 0.1-  |
| 2001 08 24 | 691 | 0.1+ | 0.4+ | 2004 03 27 | 291 | 0.4+  | 0.1+  | 2007 11 02 | G96 | 0.1+  | 0.1-  |
| 2001 08 24 | 691 | 0.2- | 0.6+ | 2004 03 27 | 291 | 0.2+  | 0.3+  | 2007 11 02 | G96 | 0.0   | 0.1+  |
| 2002 11 24 | 644 | 0.3+ | 0.6- | 2004 03 27 | 291 | 0.3+  | 0.4+  | 2007 11 02 | G96 | 0.0   | 0.0   |
| 2002 11 24 | 644 | 0.1+ | 0.7- | 2004 04 13 | 691 | 0.2+  | 0.2+  | 2007 11 02 | G96 | 0.1-  | 0.1-  |
| 2002 11 24 | 644 | 0.2+ | 0.6- | 2004 04 13 | 691 | 0.2+  | 0.3+  | 2007 11 05 | 704 | 0.8+  | 0.2-  |
| 2002 11 27 | 699 | 0.3- | 0.1- | 2004 04 13 | 691 | 0.3+  | 0.3+  | 2007 11 05 | 704 | 1.2+  | 0.4+  |
| 2002 11 27 | 699 | 0.1- | 1.0+ | 2007 10 04 | 691 | 0.1-  | 0.1-  | 2007 11 05 | 704 | 0.2+  | 0.2+  |
| 2002 11 27 | 699 | 0.6- | 0.4+ | 2007 10 04 | 691 | 0.6-  | 0.0   | 2007 11 05 | 704 | 0.7+  | 0.4+  |
| 2002 11 27 | 699 | 0.8+ | 0.5- | 2007 10 04 | 691 | 0.0   | 0.3-  | 2007 11 05 | 704 | 0.7+  | 0.2+  |
| 2002 12 05 | 704 | 0.2+ | 0.2+ | 2007 10 08 | 691 | 0.3-  | 0.1+  | 2007 11 07 | G96 | 0.2+  | 0.4-  |
| 2002 12 05 | 704 | 0.1- | 0.7- | 2007 10 08 | 691 | 0.4-  | 0.1+  | 2007 11 07 | G96 | 0.1+  | 0.1-  |
| 2002 12 05 | 704 | 0.1- | 0.1- | 2007 10 08 | 691 | 0.3-  | 0.3-  | 2007 11 07 | G96 | 0.1-  | 0.1-  |
| 2002 12 10 | 704 | 0.5+ | 0.6+ | 2007 10 12 | 691 | 0.4-  | 0.2-  | 2007 11 14 | 704 | 0.1-  | 1.0+  |
| 2002 12 10 | 704 | 0.3- | 0.7+ | 2007 10 12 | 691 | 0.3-  | 0.2-  | 2007 11 14 | 704 | 0.3-  | 0.7+  |
| 2002 12 10 | 704 | 0.4- | 0.2+ | 2007 10 12 | 691 | 0.2-  | 0.1-  | 2007 11 14 | 704 | 0.4-  | 0.6+  |
| 2002 12 10 | 704 | 0.8- | 0.1+ | 2007 10 15 | 703 | 0.8+  | 0.6+  | 2007 11 14 | 704 | 0.0   | 1.5+  |
| 2002 12 11 | 704 | 0.4+ | 0.1- | 2007 10 15 | 703 | (1.5+ | 1.1+) | 2007 11 14 | 704 | 0.5-  | 0.6+  |
| 2002 12 11 | 704 | 0.5+ | 0.3+ | 2007 10 15 | 703 | 0.6+  | 1.1+  | 2007 12 05 | 704 | 0.1+  | 0.9+  |
| 2002 12 11 | 704 | 0.2- | 0.2+ | 2007 10 15 | 703 | 0.3+  | 0.3+  | 2007 12 05 | 704 | 0.3+  | 0.4-  |
| 2004 03 12 | 644 | 0.3- | 0.3+ | 2007 10 20 | 703 | 0.0   | 0.3+  | 2007 12 05 | 704 | 0.1-  | 0.9-  |
| 2004 03 12 | 644 | 0.3- | 0.2+ | 2007 10 20 | 703 | 0.3-  | 0.6+  |            |     |       |       |

(172355)\* 2002 XM

Discovered 2002 Dec. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |          |
|-----------------------------|------------|----------|----------|
| <i>M</i>                    | 341.77488  | (2000.0) |          |
| <i>n</i>                    | 0.20359606 | $\omega$ | 1.00168  |
| <i>a</i>                    | 2.8616936  | $\Omega$ | 94.85725 |
| <i>e</i>                    | 0.1950182  | <i>i</i> | 14.01412 |
| <i>P</i>                    | 4.84       | <i>H</i> | 14.7     |
| Residuals in seconds of arc |            |          |          |
| 2001 07 20                  | 644        | 0.2-     | 0.6+     |
| 2001 07 20                  | 644        | 0.2-     | 0.3+     |
| 2001 07 20                  | 644        | 0.2+     | 0.4+     |
| 2002 10 22                  | 608        | 0.2-     | 0.5+     |
| 2002 10 22                  | 608        | 0.3-     | 1.0+     |
| 2002 10 22                  | 608        | 0.1+     | 1.0+     |
| 2002 10 31                  | 644        | 0.4-     | 0.3+     |
| 2002 10 31                  | 644        | 0.4-     | 0.3+     |
| 2002 10 31                  | 644        | 0.4-     | 0.3+     |
| 2002 11 05                  | 704        | 1.1-     | 0.0      |
| 2002 11 05                  | 704        | 0.8-     | 0.0      |
| 2002 11 05                  | 704        | 1.3-     | 0.2-     |
| 2002 11 05                  | 704        | 1.0-     | 0.2-     |
| 2002 11 05                  | 704        | 0.8-     | 0.6-     |
| 2002 11 12                  | 704        | 0.9+     | 0.1+     |
| 2002 11 12                  | 704        | 0.2+     | 0.0      |
| 2002 11 12                  | 704        | 0.0      | 0.0      |
| 2002 11 12                  | 704        | 0.7-     | 0.3-     |
| 2002 11 12                  | 704        | 0.2+     | 0.1+     |
| 2002 11 24                  | 644        | 0.1+     | 0.3+     |
| 2002 11 24                  | 644        | 0.1-     | 0.3+     |
| 2002 11 24                  | 644        | 0.2+     | 0.3+     |
| 2002 12 01                  | 704        | 0.3+     | 0.3+     |
| 2002 12 01                  | 704        | 0.3+     | 0.3-     |
| 2002 12 01                  | 704        | 0.1+     | 0.1-     |
| 2002 12 01                  | 704        | 0.4+     | 0.0      |

| Residuals in seconds of arc |     |      |      |            |     |      |      |            |     |       |       |
|-----------------------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 07 20                  | 644 | 0.2- | 0.6+ | 2002 12 15 | 704 | 0.1- | 0.2- | 2004 03 22 | 699 | 0.5-  | 0.2+  |
| 2001 07 20                  | 644 | 0.2- | 0.3+ | 2003 01 01 | 704 | 0.5+ | 0.2+ | 2004 03 22 | 699 | 0.4-  | 0.1-  |
| 2001 07 20                  | 644 | 0.2+ | 0.4+ | 2003 01 01 | 704 | 0.4+ | 0.6+ | 2004 03 22 | 699 | 0.5-  | 0.2-  |
| 2002 10 22                  | 608 | 0.2- | 0.5+ | 2003 01 01 | 704 | 0.5+ | 0.7+ | 2004 03 28 | 704 | 0.2+  | 0.8-  |
| 2002 10 22                  | 608 | 0.3- | 1.0+ | 2003 01 01 | 704 | 0.3- | 0.7- | 2004 03 28 | 704 | 0.0   | 0.0   |
| 2002 10 22                  | 608 | 0.1+ | 1.0+ | 2003 01 01 | 704 | 0.8+ | 0.5- | 2004 03 28 | 704 | 0.3+  | 0.6+  |
| 2002 10 31                  | 644 | 0.4- | 0.3+ | 2003 01 05 | 699 | 0.6- | 0.6- | 2004 03 28 | 704 | 0.1+  | 0.7+  |
| 2002 10 31                  | 644 | 0.4- | 0.3+ | 2003 01 05 | 699 | 0.4- | 0.0  | 2004 04 13 | 703 | (3.2+ | 0.5+) |
| 2002 10 31                  | 644 | 0.4- | 0.3+ | 2003 01 05 | 699 | 0.7- | 0.3+ | 2004 04 13 | 703 | 0.0   | 0.4-  |
| 2002 11 05                  | 704 | 1.1- | 0.0  | 2003 01 05 | 699 | 0.4- | 0.6- | 2004 04 13 | 703 | 0.4-  | 0.8+  |
| 2002 11 05                  | 704 | 0.8- | 0.0  | 2003 01 07 | 704 | 0.2+ | 0.5+ | 2004 04 13 | 703 | 0.3-  | 0.7+  |
| 2002 11 05                  | 704 | 1.3- | 0.2- | 2003 01 07 | 704 | 0.9- | 0.7- | 2004 04 15 | 704 | 0.3+  | 0.2+  |
| 2002 11 05                  | 704 | 1.0- | 0.2- | 2003 01 07 | 704 | 0.3- | 0.2- | 2004 04 15 | 704 | 0.1+  | 0.7+  |
| 2002 11 05                  | 704 | 0.8- | 0.6- | 2003 01 07 | 704 | 0.1- | 0.5- | 2004 04 15 | 704 | 0.3+  | 0.9+  |
| 2002 11 12                  | 704 | 0.9+ | 0.1+ | 2003 01 07 | 704 | 0.4+ | 0.4- | 2004 04 24 | 704 | (1.6+ | 0.1-) |
| 2002 11 12                  | 704 | 0.2+ | 0.0  | 2003 01 08 | 704 | 0.2- | 0.6+ | 2004 04 24 | 704 | 0.4+  | 0.2-  |
| 2002 11 12                  | 704 | 0.0  | 0.0  | 2003 01 08 | 704 | 0.2- | 0.4+ | 2004 04 24 | 703 | 0.2-  | 0.4+  |
| 2002 11 12                  | 704 | 0.7- | 0.3- | 2003 01 08 | 704 | 0.0  | 0.1+ | 2004 04 24 | 704 | 0.9+  | 0.1-  |
| 2002 11 12                  | 704 | 0.2+ | 0.1+ | 2003 01 08 | 704 | 0.0  | 0.1- | 2004 04 24 | 703 | 0.1-  | 0.1+  |
| 2002 11 24                  | 644 | 0.1+ | 0.3+ | 2003 01 08 | 704 | 0.2+ | 0.6+ | 2004 04 24 | 703 | 0.3+  | 1.4-  |
| 2002 11 24                  | 644 | 0.1- | 0.3+ | 2003 01 18 | 644 | 0.3- | 0.0  | 2004 04 24 | 704 | 1.2+  | 0.3+  |
| 2002 11 24                  | 644 | 0.2+ | 0.3+ | 2003 01 18 | 644 | 0.4- | 0.2+ | 2004 04 24 | 703 | 0.7+  | 0.6+  |
| 2002 12 01                  | 704 | 0.3+ | 0.3+ | 2003 01 18 | 644 | 0.3- | 0.2- | 2007 11 12 | 704 | 0.6+  | 0.3-  |
| 2002 12 01                  | 704 | 0.3+ | 0.3- | 2003 01 26 | 699 | 0.5+ | 0.4- | 2007 11 12 | 704 | 0.1-  | 0.5-  |
| 2002 12 01                  | 704 | 0.1+ | 0.1- | 2003 01 26 | 699 | 0.2- | 1.0+ | 2007 11 12 | 704 | 0.1+  | 0.5-  |
| 2002 12 01                  | 704 | 0.4+ | 0.0  | 2003 01 26 | 699 | 0.5- | 0.3+ | 2007 11 12 | 704 | 0.6+  | 1.2-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 02 | 704 | 0.0  | 0.1− | 2003 01 26 | 699 | 0.5+ | 0.4+ | 2007 11 19 | D29 | 0.0  | 0.9− |
| 2002 12 02 | 704 | 0.3+ | 0.2+ | 2003 01 27 | 704 | 0.3+ | 0.3− | 2007 11 19 | D29 | 0.2− | 0.5− |
| 2002 12 02 | 704 | 0.3+ | 0.2+ | 2003 01 27 | 704 | 0.4+ | 0.4+ | 2007 11 19 | D29 | 0.2− | 0.5− |
| 2002 12 02 | 704 | 0.1+ | 0.0  | 2003 01 27 | 704 | 0.3+ | 0.6+ | 2007 11 19 | D29 | 0.0  | 0.5− |
| 2002 12 02 | 704 | 0.1+ | 0.1− | 2003 01 27 | 704 | 0.3+ | 0.7+ | 2007 12 04 | 704 | 0.3− | 0.8+ |
| 2002 12 13 | 608 | 0.4+ | 0.2+ | 2003 01 27 | 704 | 1.0+ | 0.3+ | 2007 12 04 | 704 | 1.2− | 0.1− |
| 2002 12 13 | 608 | 0.4+ | 0.1+ | 2003 02 02 | 704 | 0.5+ | 1.1+ | 2007 12 04 | 704 | 1.1+ | 0.5− |
| 2002 12 13 | 608 | 0.2+ | 0.1− | 2003 02 02 | 704 | 0.9− | 0.3+ | 2007 12 04 | 704 | 0.7+ | 0.7− |
| 2002 12 15 | 704 | 0.1+ | 0.6+ | 2003 02 02 | 704 | 0.4− | 0.2+ | 2007 12 04 | 704 | 0.5+ | 0.4− |
| 2002 12 15 | 704 | 0.1+ | 0.9+ | 2003 02 02 | 704 | 0.4− | 0.3− |            |     |      |      |
| 2002 12 15 | 704 | 0.3− | 0.6+ | 2004 03 22 | 699 | 1.3− | 0.4+ |            |     |      |      |

**(172356)\* 2002 XG<sub>7</sub>**

Discovered 2002 Dec. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 300.64862  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.20888607 | $\omega$ | 185.24539 | −0.66804943 | −0.73495850 |            |
| <i>a</i> | 2.8131727  | $\Omega$ | 306.73114 | +0.68788623 | −0.55032013 |            |
| <i>e</i> | 0.0936041  | <i>i</i> | 8.35005   | +0.28376485 | −0.39621176 |            |
| <i>P</i> | 4.72       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 01 15 | 691 | 0.3−  | 0.8−  | 2002 12 31 | 704 | 0.7+  | 1.3+  | 2004 02 26 | 704 | 0.0   | 0.8+  |
| 1999 01 15 | 691 | 0.4−  | 1.0−  | 2002 12 31 | 704 | 0.2+  | 0.6−  | 2004 02 26 | 704 | (1.1− | 1.8+) |
| 1999 01 15 | 691 | 0.3−  | 0.6−  | 2002 12 31 | 704 | 0.1−  | 0.2+  | 2004 02 26 | 704 | 0.3−  | 0.1−  |
| 2002 10 05 | 704 | 0.4−  | 0.1+  | 2003 11 21 | 291 | 0.4+  | 0.8+  | 2004 02 26 | 704 | 0.2+  | 0.0   |
| 2002 10 05 | 704 | 0.8−  | 1.3+  | 2003 11 21 | 291 | 0.4−  | 0.8+  | 2004 03 16 | 704 | 0.6+  | 0.7+  |
| 2002 10 05 | 704 | 0.5+  | 0.6+  | 2003 11 21 | 291 | 0.1−  | 0.8+  | 2004 03 16 | 704 | 0.4+  | 0.8+  |
| 2002 10 05 | 704 | 0.2+  | 0.6+  | 2004 02 12 | 683 | (0.7+ | 2.3−) | 2004 03 16 | 704 | 0.0   | 0.1+  |
| 2002 11 06 | 699 | 0.1−  | 1.4+  | 2004 02 12 | 683 | (1.0− | 1.9−) | 2004 03 16 | 704 | 0.2+  | 0.3+  |
| 2002 11 06 | 699 | (2.0− | 0.7−) | 2004 02 12 | 644 | 0.1−  | 0.7+  | 2004 03 16 | 704 | 0.3−  | 0.5+  |
| 2002 11 06 | 699 | 0.5−  | 0.9+  | 2004 02 12 | 644 | 0.3−  | 0.7+  | 2004 03 19 | 704 | 0.7+  | 1.0+  |
| 2002 11 06 | 699 | 0.7−  | 0.1−  | 2004 02 12 | 644 | 0.6−  | 0.7+  | 2004 03 19 | 704 | 0.1−  | 1.3+  |
| 2002 11 14 | 644 | 0.0   | 0.1−  | 2004 02 13 | 683 | 0.8+  | 0.5−  | 2004 03 19 | 704 | 0.4+  | 1.0+  |
| 2002 11 14 | 644 | 0.2−  | 0.2−  | 2004 02 13 | 683 | 1.1−  | 0.2−  | 2004 03 19 | 704 | 0.4+  | 0.5−  |
| 2002 11 14 | 644 | 0.3−  | 0.1−  | 2004 02 19 | 704 | 0.3+  | 0.0   | 2004 03 19 | 704 | 0.9−  | 0.0   |
| 2002 11 14 | 704 | 0.3−  | 0.8+  | 2004 02 19 | 704 | 0.2+  | 0.6−  | 2004 03 27 | 703 | 0.8+  | 0.3+  |
| 2002 11 14 | 704 | 0.3−  | 0.6+  | 2004 02 19 | 704 | 0.3+  | 0.1+  | 2004 03 27 | 703 | 0.1+  | 0.8+  |
| 2002 11 14 | 704 | 0.1+  | 0.0   | 2004 02 19 | 704 | 0.2+  | 0.2−  | 2004 03 27 | 703 | 0.5−  | 0.5+  |
| 2002 11 24 | 644 | 0.5−  | 0.1+  | 2004 02 19 | 704 | 0.1−  | 0.1−  | 2004 03 27 | 703 | 0.8−  | 0.5+  |
| 2002 11 24 | 644 | 0.4−  | 0.1−  | 2004 02 20 | 704 | 0.4+  | 0.6+  | 2007 11 08 | 704 | 0.4−  | 0.5+  |
| 2002 11 24 | 644 | 0.2−  | 0.0   | 2004 02 20 | 704 | 0.3+  | 0.6+  | 2007 11 08 | 704 | 0.7−  | 0.6−  |
| 2002 12 02 | 704 | 0.2+  | 1.2+  | 2004 02 20 | 704 | 0.6−  | 0.8−  | 2007 11 08 | 704 | 0.0   | 0.2+  |
| 2002 12 02 | 704 | (1.7− | 0.4+) | 2004 02 23 | 704 | 1.2+  | 0.1−  | 2007 11 08 | 704 | 0.1−  | 0.3+  |
| 2002 12 02 | 704 | 0.6−  | 1.0+  | 2004 02 23 | 704 | (0.9+ | 2.1−) | 2007 11 17 | 704 | 0.2+  | 0.0   |
| 2002 12 02 | 704 | 0.2+  | 0.6+  | 2004 02 23 | 704 | 0.3−  | 0.6+  | 2007 11 17 | 704 | 0.5−  | 0.8−  |
| 2002 12 05 | 704 | 0.4+  | 0.3−  | 2004 02 23 | 704 | 1.4+  | 1.2−  | 2007 11 17 | 704 | 0.0   | 0.3−  |
| 2002 12 05 | 704 | 0.0   | 0.3−  | 2004 02 23 | 704 | 1.1+  | 0.8−  | 2007 11 17 | 704 | 0.2+  | 0.2+  |
| 2002 12 05 | 704 | (1.6+ | 0.1−) | 2004 02 23 | 704 | 0.5+  | 0.8−  | 2007 12 16 | 704 | 0.2+  | 0.5−  |
| 2002 12 11 | 644 | 0.0   | 0.4+  | 2004 02 23 | 704 | 1.2+  | 0.9−  | 2007 12 16 | 704 | 0.3+  | 0.5−  |
| 2002 12 11 | 644 | 0.2+  | 0.3+  | 2004 02 23 | 704 | 0.0   | 0.1−  | 2007 12 16 | 704 | 0.2+  | 0.5−  |
| 2002 12 11 | 644 | 0.0   | 0.1+  | 2004 02 23 | 704 | 0.1+  | 0.5−  | 2007 12 16 | 704 | 0.5+  | 0.5−  |
| 2002 12 31 | 704 | 0.2+  | 0.6−  | 2004 02 26 | 704 | 0.0   | 0.8+  | 2007 12 16 | 704 | 0.7+  | 0.7−  |

**(172357)\* 2002 XC<sub>12</sub>**

Discovered 2002 Dec. 3 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 71.14909   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.21610594 | $\omega$ | 44.60760  | +0.98016550 | +0.17264253 |            |
| <i>a</i> | 2.7501618  | $\Omega$ | 305.20996 | −0.19811052 | +0.86662108 |            |
| <i>e</i> | 0.2884346  | <i>i</i> | 6.84049   | +0.00527292 | +0.46814791 |            |
| <i>P</i> | 4.56       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 25 | 691 | 0.4−  | 0.1+  | 2003 01 05 | 704 | 0.1+  | 0.2−  | 2006 07 24 | H06 | 0.4− | 1.3+ |
| 1998 12 25 | 691 | 0.2−  | 0.6−  | 2003 01 05 | 704 | 0.8+  | 0.4−  | 2006 08 10 | 644 | 0.1− | 0.0  |
| 1998 12 25 | 691 | 0.6−  | 0.0   | 2003 01 05 | 704 | 0.5+  | 0.6+  | 2006 08 10 | 644 | 0.0  | 0.2− |
| 2002 09 06 | 704 | 0.5+  | 0.3−  | 2003 01 05 | 704 | 0.1−  | 0.3−  | 2006 08 10 | 644 | 0.1− | 0.0  |
| 2002 09 06 | 704 | 0.2+  | 0.5−  | 2004 01 30 | 691 | 0.4+  | 0.1+  | 2006 08 13 | 644 | 0.0  | 0.0  |
| 2002 09 06 | 704 | 0.9+  | 0.5−  | 2004 01 30 | 691 | 0.5+  | 0.0   | 2006 08 13 | 644 | 0.2− | 0.1+ |
| 2002 10 05 | 704 | 0.1+  | 0.7+  | 2004 01 30 | 691 | 0.6+  | 0.1+  | 2006 08 13 | 644 | 0.1− | 0.1+ |
| 2002 10 05 | 704 | 0.4−  | 0.7+  | 2006 06 30 | 704 | 0.0   | 0.9−  | 2006 08 14 | 644 | 0.1+ | 0.0  |
| 2002 10 05 | 704 | (1.6− | 1.5+) | 2006 06 30 | 704 | 0.1+  | 0.9−  | 2006 08 14 | 644 | 0.6− | 0.4− |
| 2002 11 06 | 704 | 0.1+  | 0.1−  | 2006 06 30 | 704 | 0.1+  | 0.2−  | 2006 08 14 | 644 | 0.0  | 0.1+ |
| 2002 11 06 | 704 | 0.3+  | 0.2−  | 2006 06 30 | 704 | 0.2+  | 0.5−  | 2006 08 20 | 644 | 0.1− | 0.1− |
| 2002 11 06 | 704 | 0.4−  | 0.1−  | 2006 07 17 | H06 | 0.4+  | 0.4+  | 2006 08 20 | 644 | 0.0  | 0.0  |
| 2002 11 06 | 704 | 0.5+  | 0.4+  | 2006 07 17 | H06 | 0.2+  | 0.2+  | 2006 08 20 | 644 | 0.1− | 0.1− |
| 2002 11 15 | 704 | 0.1−  | 0.2+  | 2006 07 17 | H06 | 0.1+  | 0.4+  | 2006 09 08 | 644 | 0.1− | 0.0  |
| 2002 11 15 | 704 | 0.5−  | 0.3−  | 2006 07 18 | H06 | 0.0   | 0.2+  | 2006 09 08 | 644 | 0.3− | 0.3− |
| 2002 11 15 | 704 | 0.6−  | 0.1−  | 2006 07 18 | H06 | 0.2+  | 0.3+  | 2006 09 08 | 644 | 0.6− | 0.1− |
| 2002 11 15 | 704 | 1.4−  | 0.2+  | 2006 07 18 | H06 | 0.7+  | 0.4+  | 2007 11 03 | G96 | 0.1+ | 0.4− |
| 2002 11 15 | 704 | 0.3−  | 0.3−  | 2006 07 18 | 704 | 1.2−  | 0.5−  | 2007 11 03 | G96 | 0.1− | 0.1+ |
| 2002 11 24 | 644 | 0.1−  | 0.0   | 2006 07 18 | 704 | (2.1− | 0.1−) | 2007 11 03 | G96 | 0.1+ | 0.2− |
| 2002 11 24 | 644 | 0.2−  | 0.1+  | 2006 07 18 | 704 | 0.2+  | 0.3−  | 2007 11 03 | G96 | 0.2− | 0.1− |
| 2002 11 24 | 644 | 0.0   | 0.1−  | 2006 07 18 | 704 | 1.3+  | 0.5+  | 2007 11 11 | G96 | 0.2+ | 0.1− |
| 2002 12 03 | 644 | 0.1−  | 0.5+  | 2006 07 20 | 644 | 0.2−  | 0.1+  | 2007 11 11 | G96 | 0.1+ | 0.4− |
| 2002 12 03 | 644 | 0.0   | 0.4+  | 2006 07 20 | 644 | 0.0   | 0.1−  | 2007 11 11 | G96 | 0.4+ | 1.3− |
| 2002 12 03 | 644 | 0.1−  | 0.7+  | 2006 07 20 | 644 | 0.1−  | 0.2+  | 2007 11 11 | G96 | 0.3+ | 1.5− |
| 2002 12 05 | 704 | 0.7+  | 0.0   | 2006 07 21 | 704 | 0.8+  | 0.5−  | 2007 12 04 | 691 | 0.0  | 0.2+ |
| 2002 12 05 | 704 | 0.6+  | 0.6+  | 2006 07 21 | 704 | 0.7+  | 0.3−  | 2007 12 04 | 691 | 0.0  | 0.1− |
| 2002 12 05 | 704 | 0.5+  | 0.7+  | 2006 07 21 | 704 | 0.5−  | 1.2−  | 2007 12 04 | 691 | 1.4− | 0.5− |
| 2002 12 05 | 704 | 0.9+  | 1.0+  | 2006 07 21 | 704 | 0.7−  | 0.6−  | 2007 12 15 | 704 | 0.5+ | 0.1+ |
| 2002 12 05 | 704 | 0.6+  | 0.8+  | 2006 07 21 | 704 | 0.5+  | 1.3−  | 2007 12 15 | 704 | 0.5+ | 0.5+ |
| 2002 12 09 | 699 | 0.5−  | 0.2−  | 2006 07 23 | 644 | 0.2−  | 0.0   | 2007 12 15 | 704 | 0.6+ | 0.6+ |
| 2002 12 09 | 699 | 0.2+  | 0.2−  | 2006 07 23 | 644 | 0.1−  | 0.1−  | 2007 12 17 | 691 | 0.3+ | 0.2− |
| 2002 12 09 | 699 | 0.2−  | 0.5−  | 2006 07 23 | 644 | 0.1+  | 0.1−  | 2007 12 17 | 691 | 0.4− | 0.1− |
| 2002 12 09 | 699 | 0.5−  | 0.2+  | 2006 07 24 | H06 | 0.4+  | 1.0+  | 2007 12 17 | 691 | 0.2− | 0.1− |
| 2003 01 05 | 704 | 0.2+  | 0.0   | 2006 07 24 | H06 | 0.1+  | 0.3+  |            |     |      |      |

**(172358)\* 2002 XS<sub>12</sub> = 2004 EH<sub>55</sub>**

Discovered 2002 Dec. 3 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61640)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 321.69239  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.19313598 | $\omega$ | 203.29292 | −0.17174522 | −0.97059852 |            |
| <i>a</i> | 2.9641073  | $\Omega$ | 256.93487 | +0.92889662 | −0.10253274 |            |
| <i>e</i> | 0.0827050  | <i>i</i> | 9.96983   | +0.32810766 | −0.21777409 |            |
| <i>P</i> | 5.10       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 16 | 704 | 0.6− | 0.1+ | 2002 12 31 | 704 | 0.3−  | 0.4+  | 2007 11 07 | 704 | 0.1+ | 0.2− |
| 2001 09 16 | 704 | 0.4− | 1.2+ | 2003 01 04 | 704 | 0.5−  | 0.1+  | 2007 11 07 | 704 | 0.3+ | 0.2− |
| 2001 09 16 | 704 | 0.3− | 1.1+ | 2003 01 04 | 704 | 0.1−  | 0.3−  | 2007 11 07 | 704 | 0.1+ | 0.4− |
| 2001 09 16 | 704 | 1.2− | 0.4+ | 2003 01 04 | 704 | (2.2− | 1.0−) | 2007 11 07 | 704 | 0.2− | 0.0  |
| 2002 11 28 | 608 | 0.7+ | 1.1+ | 2004 03 14 | 644 | 0.1+  | 0.8+  | 2007 11 17 | 691 | 0.2− | 0.0  |
| 2002 11 28 | 608 | 0.7+ | 1.2+ | 2004 03 14 | 644 | 0.1−  | 0.9+  | 2007 11 17 | 691 | 0.2− | 1.2+ |
| 2002 11 28 | 608 | 0.6+ | 1.0+ | 2004 03 14 | 644 | 0.1−  | 1.0+  | 2007 11 17 | 691 | 0.7− | 0.7− |
| 2002 12 03 | 644 | 0.0  | 0.1− | 2004 03 17 | 704 | 0.1+  | 0.5+  | 2007 11 18 | 704 | 0.2+ | 0.7− |
| 2002 12 03 | 644 | 0.1+ | 0.2− | 2004 03 17 | 704 | 0.5+  | 0.3+  | 2007 11 18 | 704 | 0.3+ | 0.1+ |
| 2002 12 03 | 644 | 0.0  | 0.0  | 2004 03 17 | 704 | 0.8+  | 0.9+  | 2007 11 18 | 704 | 0.1+ | 0.4− |
| 2002 12 05 | 704 | 0.1− | 0.3+ | 2004 03 17 | 704 | 0.5+  | 0.9+  | 2007 11 18 | 704 | 0.4− | 0.1− |
| 2002 12 05 | 704 | 0.0  | 0.1+ | 2004 03 29 | 703 | 0.8+  | 0.5+  | 2007 11 18 | 704 | 0.1− | 0.5− |
| 2002 12 05 | 704 | 0.4− | 0.3− | 2004 03 29 | 703 | (1.6− | 1.6−) | 2007 11 20 | 704 | 0.3+ | 0.5+ |
| 2002 12 10 | 704 | 0.7− | 0.3− | 2004 03 29 | 703 | 0.3+  | 1.3+  | 2007 11 20 | 704 | 0.3+ | 0.1− |
| 2002 12 10 | 704 | 0.2− | 0.2+ | 2004 03 29 | 703 | (0.5+ | 2.3+) | 2007 11 20 | 704 | 1.3+ | 0.3+ |
| 2002 12 10 | 704 | 0.1− | 0.1− | 2006 09 16 | 691 | 0.3+  | 0.6+  | 2007 11 20 | 704 | 0.3− | 0.4− |
| 2002 12 10 | 704 | 0.0  | 0.6− | 2006 09 16 | 691 | 0.1−  | 0.3+  | 2007 11 20 | 704 | 0.1+ | 0.6− |
| 2002 12 10 | 704 | 0.6− | 0.2+ | 2006 09 16 | 691 | 0.0   | 0.1+  | 2007 12 10 | 704 | 0.2− | 1.3+ |
| 2002 12 10 | 704 | 0.2+ | 0.3+ | 2006 09 24 | G92 | 0.5−  | 0.8+  | 2007 12 10 | 704 | 0.6− | 0.2+ |

## 2007 DEC. 24

## M.P.O. 129345

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 10 | 704 | 0.2+ | 0.0  | 2006 09 24 | G92 | 0.3- | 0.1- | 2007 12 10 | 704 | 0.4+ | 1.1+ |
| 2002 12 10 | 704 | 1.0+ | 0.9- | 2006 09 24 | G92 | 0.5- | 0.4+ | 2007 12 10 | 704 | 0.6- | 0.4- |
| 2002 12 10 | 704 | 0.4- | 0.4- | 2007 10 21 | G96 | 0.3+ | 0.6- | 2007 12 10 | 704 | 1.1+ | 0.6+ |
| 2002 12 10 | 704 | 0.8+ | 0.2+ | 2007 10 21 | G96 | 0.4+ | 0.7- | 2007 12 14 | 704 | 0.1- | 1.8+ |
| 2002 12 31 | 704 | 0.0  | 0.1- | 2007 10 21 | G96 | 0.4+ | 0.8- | 2007 12 14 | 704 | 0.4- | 0.5+ |
| 2002 12 31 | 704 | 0.1+ | 0.6- | 2007 10 21 | G96 | 0.1+ | 0.7- | 2007 12 14 | 704 | 0.4- | 0.8- |
| 2002 12 31 | 704 | 0.3- | 0.7- | 2007 11 07 | 704 | 0.3+ | 0.3+ | 2007 12 14 | 704 | 0.4+ | 0.2+ |

(172359)\* 2002 XE<sub>16</sub>

Discovered 2002 Dec. 3 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.85352   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21390196 | $\omega$ | 48.98565  | +0.92834529 | -0.36499885 |
| <i>a</i> | 2.7690207  | $\Omega$ | 332.20638 | +0.27936153 | +0.80994671 |
| <i>e</i> | 0.1217709  | <i>i</i> | 8.67902   | +0.24521859 | +0.45908840 |
| <i>P</i> | 4.61       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 07 | 704 | 0.6-  | 0.4-  | 2004 02 26 | 704 | (0.9+ | 1.8+) | 2006 09 12 | 704 | 0.2-  | 0.7-  |
| 2002 09 07 | 704 | 0.4-  | 0.0   | 2004 02 26 | 704 | (1.4+ | 1.5+) | 2006 09 12 | 704 | 0.4+  | 0.2-  |
| 2002 09 07 | 704 | 1.2+  | 0.3+  | 2004 02 26 | 704 | (0.7+ | 2.7+) | 2006 09 12 | 704 | 0.2-  | 0.0   |
| 2002 10 05 | 704 | 0.2-  | 1.2-  | 2004 02 26 | 704 | 0.7+  | 1.2+  | 2006 09 14 | 703 | 0.4-  | 0.1-  |
| 2002 10 05 | 704 | 0.2-  | 0.0   | 2004 03 15 | 704 | 0.2-  | 1.4+  | 2006 09 14 | 703 | 0.7-  | 1.1-  |
| 2002 10 05 | 704 | 0.5+  | 0.7-  | 2004 03 15 | 704 | 0.9+  | 0.1+  | 2006 09 14 | 703 | 0.8-  | 0.5-  |
| 2002 10 05 | 704 | 0.7-  | 0.5-  | 2004 03 15 | 704 | 1.0+  | 0.2+  | 2006 09 14 | 703 | 0.6-  | 0.3-  |
| 2002 10 05 | 704 | 0.1+  | 1.3-  | 2004 03 15 | 704 | 1.1+  | 0.1+  | 2006 09 17 | 704 | 0.3+  | 0.3+  |
| 2002 10 31 | 704 | 0.9-  | 0.0   | 2004 03 18 | 704 | (0.3+ | 1.7+) | 2006 09 17 | 704 | 0.3+  | 0.2-  |
| 2002 10 31 | 704 | 1.2-  | 0.0   | 2004 03 18 | 704 | 1.4+  | 0.1-  | 2006 09 17 | 704 | 1.2-  | 0.9+  |
| 2002 10 31 | 704 | 0.8-  | 0.1+  | 2004 03 18 | 704 | 1.1+  | 0.3-  | 2006 09 17 | 704 | (1.4- | 2.1+) |
| 2002 10 31 | 704 | (1.8- | 0.0)  | 2004 03 18 | 704 | 0.4+  | 0.4+  | 2006 09 18 | 699 | 0.5-  | 0.7+  |
| 2002 10 31 | 704 | 0.2-  | 0.0   | 2004 03 30 | 691 | 0.3+  | 0.1-  | 2006 09 18 | 699 | 1.5+  | 0.5-  |
| 2002 11 07 | 704 | 0.2+  | 0.3+  | 2004 03 30 | 691 | 0.3+  | 0.0   | 2006 09 18 | 699 | 0.6-  | 0.4+  |
| 2002 11 07 | 704 | 0.5+  | 0.0   | 2004 03 30 | 691 | 0.5+  | 0.0   | 2006 09 18 | 699 | 0.7+  | 0.5+  |
| 2002 11 07 | 704 | 0.4+  | 0.1-  | 2006 08 17 | 704 | 0.2-  | 0.3+  | 2006 09 20 | 704 | 0.5+  | 0.0   |
| 2002 11 07 | 704 | 0.1+  | 0.2-  | 2006 08 17 | 704 | 0.8+  | 0.6+  | 2006 09 20 | 704 | 0.3-  | 0.5+  |
| 2002 11 07 | 704 | 0.2+  | 0.4+  | 2006 08 17 | 704 | 0.3+  | 0.1+  | 2006 09 20 | 704 | 0.6+  | 1.1+  |
| 2002 11 15 | 704 | 0.8-  | 0.3-  | 2006 08 17 | 704 | 0.1+  | 0.2+  | 2006 09 20 | 704 | 0.4+  | 0.9+  |
| 2002 11 15 | 704 | 1.1-  | 0.2+  | 2006 08 18 | 699 | 0.7-  | 1.3+  | 2006 09 20 | 704 | 0.9+  | 1.1+  |
| 2002 11 15 | 704 | 1.0-  | 0.6+  | 2006 08 18 | 699 | 0.4-  | 0.8+  | 2006 09 24 | 699 | 0.4-  | 0.3+  |
| 2002 11 25 | 644 | 0.0   | 0.6+  | 2006 08 18 | 699 | 0.1-  | 0.2+  | 2006 09 24 | 699 | 1.1+  | 0.1-  |
| 2002 11 25 | 644 | 0.0   | 0.7+  | 2006 08 18 | 699 | 0.8-  | 0.3+  | 2006 09 24 | 699 | 0.8-  | 1.1+  |
| 2002 11 25 | 644 | 0.0   | 0.4+  | 2006 08 21 | 704 | 0.6-  | 0.7+  | 2006 09 24 | 699 | 0.3+  | 0.3-  |
| 2002 12 03 | 644 | 0.5+  | 0.1-  | 2006 08 21 | 704 | 0.2-  | 0.2+  | 2006 09 25 | 699 | 0.2-  | 1.2+  |
| 2002 12 03 | 644 | 0.4+  | 0.1+  | 2006 08 21 | 704 | 0.3-  | 0.1-  | 2006 09 25 | 699 | 0.4+  | 0.3+  |
| 2002 12 03 | 644 | 0.7+  | 0.1-  | 2006 08 21 | 704 | 0.2-  | 0.1-  | 2006 09 25 | 699 | 0.2+  | 0.0   |
| 2002 12 06 | 704 | (0.5+ | 2.4-) | 2006 08 21 | 704 | 0.3-  | 0.4+  | 2006 09 25 | 699 | 0.1-  | 0.5+  |
| 2002 12 06 | 704 | (0.4+ | 2.5-) | 2006 08 21 | 644 | 0.4-  | 0.0   | 2006 09 26 | 291 | 0.4-  | 0.4+  |
| 2002 12 06 | 704 | (0.4+ | 2.1-) | 2006 08 21 | 644 | 0.4-  | 0.1-  | 2006 09 26 | 291 | 0.5-  | 0.4+  |
| 2002 12 06 | 704 | (0.2+ | 2.1-) | 2006 08 21 | 644 | 0.3-  | 0.0   | 2006 09 26 | 291 | 0.5-  | 0.3+  |
| 2002 12 06 | 704 | (0.2- | 2.4-) | 2006 08 28 | 703 | (2.9+ | 0.4+) | 2006 09 27 | 704 | 0.9+  | 0.3-  |
| 2002 12 09 | 699 | (1.6+ | 0.7+) | 2006 08 28 | 703 | 0.1-  | 0.0   | 2006 09 27 | 704 | 0.2+  | 1.3+  |
| 2002 12 09 | 699 | 0.4+  | 1.0+  | 2006 08 28 | 703 | 0.4+  | 0.1-  | 2006 09 27 | G96 | 0.1-  | 0.2-  |
| 2002 12 09 | 699 | 0.4-  | 1.2-  | 2006 08 28 | 703 | 0.5-  | 0.3-  | 2006 09 27 | 704 | 0.2-  | 0.3+  |
| 2002 12 09 | 699 | 0.8+  | 0.0   | 2006 08 28 | 703 | 1.0-  | 0.5-  | 2006 09 27 | G96 | 0.2+  | 0.1-  |
| 2002 12 12 | 644 | 0.2+  | 0.1+  | 2006 08 28 | 703 | 0.3-  | 0.2-  | 2006 09 27 | G96 | 0.0   | 0.1-  |
| 2002 12 12 | 644 | 0.8+  | 0.1-  | 2006 08 28 | 703 | 0.3+  | 0.3-  | 2006 09 27 | 704 | 0.1+  | 0.2-  |
| 2002 12 12 | 644 | 0.6+  | 0.1-  | 2006 08 28 | 703 | 0.5-  | 0.5-  | 2006 09 27 | G96 | 0.1-  | 0.0   |
| 2003 01 28 | 644 | 0.3-  | 0.5+  | 2006 08 28 | 699 | 0.5-  | 0.8+  | 2006 09 27 | 704 | 0.2+  | 0.4+  |
| 2003 01 28 | 644 | 0.8+  | 0.4+  | 2006 08 28 | 699 | 0.3-  | 0.7-  | 2007 10 12 | 704 | 0.3-  | 1.1-  |
| 2003 01 28 | 644 | 0.5+  | 0.1+  | 2006 08 28 | 699 | 0.6-  | 0.0   | 2007 10 12 | 704 | 1.4+  | 0.4+  |
| 2004 02 12 | 291 | 0.1+  | 0.6+  | 2006 08 28 | 699 | 0.1-  | 0.8+  | 2007 10 12 | 704 | 0.1-  | 0.8+  |
| 2004 02 12 | 291 | 0.6-  | 0.5+  | 2006 08 29 | 704 | 0.1+  | 0.4+  | 2007 10 12 | 704 | 0.0   | 0.8+  |
| 2004 02 12 | 291 | 0.3-  | 1.0+  | 2006 08 29 | 704 | 0.2-  | 0.1+  | 2007 10 19 | 703 | (0.4+ | 2.1+) |
| 2004 02 18 | 704 | 1.2+  | 0.2-  | 2006 08 29 | 704 | 0.1+  | 0.3+  | 2007 10 19 | 703 | (1.6- | 2.2+) |
| 2004 02 18 | 704 | 0.2+  | 0.6-  | 2006 08 29 | 704 | 0.4+  | 0.6+  | 2007 10 19 | 703 | 0.5-  | 0.3-  |
| 2004 02 18 | 704 | 0.6-  | 0.2+  | 2006 08 31 | 704 | 0.7+  | 1.1+  | 2007 10 19 | 703 | 0.3+  | 0.5-  |
| 2004 02 18 | 704 | 0.8+  | 0.5+  | 2006 08 31 | 704 | 0.4+  | 0.1-  | 2007 12 02 | 704 | 0.1-  | 0.2-  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 18 | 608 | 0.2-  | 1.1+  | 2006 08 31 | 704 | 0.7+ | 0.7+ | 2007 12 02 | 704 | 0.2+ | 0.9+ |
| 2004 02 18 | 608 | 0.5+  | 1.4+  | 2006 08 31 | 704 | 0.2- | 0.8- | 2007 12 02 | 704 | 0.1- | 0.4+ |
| 2004 02 18 | 608 | 0.2+  | 1.3+  | 2006 09 09 | 644 | 0.6- | 0.1- | 2007 12 02 | 704 | 0.3- | 0.7- |
| 2004 02 25 | 333 | 0.2+  | 0.6+  | 2006 09 09 | 644 | 0.2+ | 0.0  | 2007 12 16 | 704 | 0.1+ | 0.3+ |
| 2004 02 25 | 333 | 0.1-  | 0.6+  | 2006 09 09 | 644 | 0.1- | 0.2- | 2007 12 16 | 704 | 0.4+ | 0.1- |
| 2004 02 25 | 333 | 0.1+  | 0.8+  | 2006 09 12 | 704 | 0.7+ | 0.0  | 2007 12 16 | 704 | 0.8- | 0.2+ |
| 2004 02 26 | 704 | (0.6+ | 1.9+) | 2006 09 12 | 704 | 0.4- | 0.1- |            |     |      |      |

(172360)\* 2002 XM<sub>39</sub> = 2004 CO<sub>62</sub>

Discovered 2002 Dec. 9 by W. K. Y. Yeung at Desert Eagle Observatory.

Id. G. V. Williams (*MPO* 61656)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 203.38618  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18540734 | $\omega$ | 147.94993 | -0.90280133 | +0.39346544 |
| <i>a</i> | 3.0459172  | $\Omega$ | 56.19252  | -0.42533376 | -0.75724602 |
| <i>e</i> | 0.0855552  | <i>i</i> | 12.05903  | -0.06356845 | -0.52130933 |
| <i>P</i> | 5.32       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 11 08 | 691 | 0.1+  | 0.3-  | 2004 02 15 | 704 | 0.2-  | 0.7+  | 2007 11 03 | 691 | 0.2-  | 0.4-  |
| 1991 11 08 | 691 | 0.1+  | 0.3-  | 2004 02 15 | 704 | 0.0   | 0.8+  | 2007 11 03 | 691 | 0.3-  | 0.6-  |
| 1991 11 08 | 691 | 0.3+  | 0.5-  | 2004 02 15 | 704 | 0.5-  | 1.2+  | 2007 11 03 | 691 | 0.3-  | 0.3-  |
| 2002 11 24 | 644 | 0.6+  | 0.2-  | 2004 02 15 | 704 | 0.2+  | 0.1-  | 2007 11 05 | 704 | 0.2+  | 0.1-  |
| 2002 11 24 | 644 | 0.0   | 0.0   | 2004 03 25 | 704 | 0.1-  | 0.1+  | 2007 11 05 | 704 | 0.2+  | 0.0   |
| 2002 11 24 | 644 | 0.2+  | 0.1-  | 2004 03 25 | 704 | 1.3+  | 0.5-  | 2007 11 05 | 704 | 0.7-  | 0.1+  |
| 2002 12 06 | 704 | 0.4-  | 0.4-  | 2004 03 25 | 704 | 0.6+  | 0.2-  | 2007 11 05 | 704 | 0.5-  | 0.4-  |
| 2002 12 06 | 704 | 0.4+  | 0.0   | 2004 03 25 | 704 | (2.2+ | 0.5-) | 2007 11 05 | 704 | 0.5-  | 0.7+  |
| 2002 12 06 | 704 | 0.0   | 0.9-  | 2004 03 25 | 704 | 1.2+  | 1.1-  | 2007 11 07 | 703 | 0.9+  | 1.5+  |
| 2002 12 06 | 704 | 0.1+  | 1.1-  | 2004 04 14 | 644 | 0.2+  | 0.1-  | 2007 11 07 | 703 | 1.2+  | 0.2+  |
| 2002 12 09 | 333 | 0.1-  | 0.3-  | 2004 04 14 | 644 | 0.1-  | 0.0   | 2007 11 07 | 703 | 0.5+  | 0.7+  |
| 2002 12 09 | 333 | 0.2-  | 0.3+  | 2004 04 14 | 644 | 0.2+  | 0.2+  | 2007 11 07 | 703 | 0.3+  | 0.4+  |
| 2002 12 09 | 333 | 0.1-  | 0.0   | 2007 10 08 | 691 | 0.1+  | 0.1-  | 2007 11 11 | 699 | 0.5+  | 0.2-  |
| 2002 12 11 | 333 | 0.8+  | 0.2+  | 2007 10 08 | 691 | 0.2-  | 0.2-  | 2007 11 11 | 699 | 1.1+  | 0.2-  |
| 2002 12 11 | 333 | 0.3+  | 0.2+  | 2007 10 08 | 691 | 0.3-  | 0.1-  | 2007 11 11 | 699 | 0.3+  | 0.1+  |
| 2002 12 11 | 333 | 0.6-  | 0.2+  | 2007 10 12 | 691 | 0.3-  | 0.1-  | 2007 11 11 | 699 | (1.7+ | 2.0-) |
| 2003 12 28 | 699 | 0.6+  | 0.9-  | 2007 10 12 | 691 | 0.4-  | 0.1-  | 2007 11 14 | 704 | (1.4+ | 2.0+) |
| 2003 12 28 | 699 | (1.8+ | 0.5-) | 2007 10 12 | 691 | 0.2-  | 0.2-  | 2007 11 14 | 704 | 0.0   | 0.4+  |
| 2003 12 28 | 699 | 0.4+  | 0.1+  | 2007 10 15 | 703 | 0.8-  | 0.4-  | 2007 11 14 | 704 | 1.2+  | 0.4+  |
| 2003 12 28 | 699 | 0.2+  | 0.5+  | 2007 10 15 | 703 | 0.4-  | 0.9+  | 2007 11 14 | 704 | 0.5+  | 1.0+  |
| 2004 01 17 | 644 | 0.3+  | 0.3-  | 2007 10 15 | 703 | 0.6-  | 0.7-  | 2007 11 14 | 704 | 0.6+  | 0.8+  |
| 2004 01 17 | 644 | 0.3+  | 0.3+  | 2007 10 15 | 703 | 0.4+  | 0.1+  | 2007 11 17 | 703 | 0.8-  | 1.2-  |
| 2004 01 17 | 644 | 0.1-  | 0.3+  | 2007 10 16 | 691 | 0.1-  | 0.5+  | 2007 11 17 | 703 | 0.6-  | 0.2+  |
| 2004 01 31 | 704 | 1.3-  | 1.2-  | 2007 10 16 | 691 | 0.4-  | 0.7+  | 2007 11 17 | 703 | (0.6+ | 1.5-) |
| 2004 01 31 | 704 | 1.0-  | 0.4+  | 2007 10 16 | 691 | 0.3-  | 0.0   | 2007 11 17 | 703 | 0.4+  | 0.2-  |
| 2004 01 31 | 704 | 0.3-  | 0.7-  | 2007 10 20 | 703 | 1.3+  | 0.1+  | 2007 12 05 | 703 | 0.3-  | 1.2+  |
| 2004 01 31 | 704 | 0.8-  | 0.5+  | 2007 10 20 | 703 | 0.5+  | 0.5+  | 2007 12 05 | 704 | 0.5+  | 0.0   |
| 2004 02 11 | 644 | 0.2+  | 0.0   | 2007 10 20 | 703 | 0.4-  | 0.0   | 2007 12 05 | 703 | 1.4+  | 0.8+  |
| 2004 02 11 | 644 | 0.2+  | 0.0   | 2007 10 20 | 703 | 0.1-  | 0.7+  | 2007 12 05 | 703 | 0.7-  | 1.1+  |
| 2004 02 11 | 644 | 0.3+  | 0.2+  | 2007 10 30 | 703 | 1.0-  | 0.1-  | 2007 12 05 | 704 | 0.2+  | 0.1-  |
| 2004 02 11 | 644 | 0.3-  | 0.1+  | 2007 10 30 | 703 | (1.7- | 0.4-) | 2007 12 05 | 703 | 0.4+  | 0.9+  |
| 2004 02 11 | 644 | 0.1-  | 0.2+  | 2007 10 30 | 703 | 1.5+  | 0.1-  | 2007 12 05 | 704 | (0.0  | 2.0+) |
| 2004 02 11 | 644 | 0.3-  | 0.1+  | 2007 10 30 | 703 | 0.4+  | 1.3+  | 2007 12 05 | 704 | (1.6+ | 0.2+) |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 21 | 644 | 0.5−  | 0.0   | 2002 12 31 | 704 | 0.4+  | 0.2+  | 2006 08 12 | E12 | 0.8+ | 0.1− |
| 2001 07 21 | 644 | 0.7−  | 0.1+  | 2002 12 31 | 704 | 0.2+  | 0.1+  | 2006 08 12 | E12 | 0.1+ | 0.1− |
| 2001 07 21 | 644 | 0.8−  | 0.1+  | 2003 01 04 | 704 | 0.8+  | 0.2+  | 2006 08 26 | E12 | 0.5− | 0.5+ |
| 2002 12 05 | 704 | 1.1−  | 1.0+  | 2003 01 04 | 704 | 0.5+  | 0.6−  | 2006 08 26 | E12 | 0.3− | 0.4+ |
| 2002 12 05 | 704 | 0.0   | 0.4+  | 2003 01 04 | 704 | 0.7−  | 0.6+  | 2006 08 26 | E12 | 0.1− | 0.1− |
| 2002 12 05 | 704 | 0.2−  | 1.0+  | 2003 01 04 | 704 | 0.1−  | 0.2+  | 2007 11 08 | 691 | 0.2− | 0.2− |
| 2002 12 10 | 704 | (1.6− | 1.8−) | 2003 01 04 | 704 | 0.7−  | 0.0   | 2007 11 08 | 691 | 0.1− | 0.3− |
| 2002 12 10 | 704 | 0.2−  | 0.6+  | 2003 01 27 | 291 | 0.2+  | 0.5−  | 2007 11 08 | 691 | 0.1− | 0.3− |
| 2002 12 10 | 704 | 0.6−  | 0.5+  | 2003 01 27 | 291 | 0.5+  | 0.3−  | 2007 11 12 | 704 | 0.8+ | 0.3− |
| 2002 12 10 | 704 | 0.4−  | 0.8−  | 2003 01 27 | 291 | 0.4+  | 0.3−  | 2007 11 12 | 704 | 0.7+ | 0.2+ |
| 2002 12 10 | 704 | 0.8+  | 0.1−  | 2005 05 15 | 644 | 0.7+  | 0.4+  | 2007 11 12 | 704 | 0.3+ | 0.6− |
| 2002 12 10 | 704 | 0.1+  | 0.3+  | 2005 05 15 | 644 | 0.5+  | 0.9+  | 2007 11 12 | 704 | 0.2+ | 0.0  |
| 2002 12 10 | 704 | 0.1−  | 0.0   | 2005 05 15 | 644 | 0.1−  | 0.9+  | 2007 11 20 | 691 | 0.1− | 0.3− |
| 2002 12 11 | 704 | 0.2+  | 0.6−  | 2006 07 20 | E12 | 0.1+  | 0.2−  | 2007 11 20 | 691 | 0.1− | 0.6− |
| 2002 12 11 | 704 | 0.9−  | 0.3+  | 2006 07 20 | E12 | 0.5+  | 0.2−  | 2007 11 20 | 691 | 0.1− | 0.3− |
| 2002 12 11 | 704 | 0.1+  | 0.6−  | 2006 07 20 | E12 | 0.2−  | 0.3−  | 2007 12 04 | 691 | 0.2− | 0.2− |
| 2002 12 11 | 704 | 0.4+  | 0.6−  | 2006 07 20 | E12 | 0.5−  | 0.2+  | 2007 12 04 | 691 | 0.3− | 1.9+ |
| 2002 12 11 | 704 | 0.6+  | 1.2−  | 2006 07 20 | E12 | 0.4+  | 0.0   | 2007 12 04 | 691 | 0.7− | 1.1+ |
| 2002 12 14 | 704 | 0.5−  | 1.2+  | 2006 07 29 | E12 | 0.3+  | 0.0   | 2007 12 05 | 704 | 0.1− | 0.2− |
| 2002 12 14 | 704 | 0.3+  | 0.2+  | 2006 07 29 | E12 | 0.4+  | 0.3−  | 2007 12 05 | 704 | 0.2− | 0.0  |
| 2002 12 14 | 704 | 1.0−  | 0.2+  | 2006 07 29 | E12 | 0.4−  | 1.0+  | 2007 12 05 | 704 | 2.1+ | 0.1+ |
| 2002 12 14 | 704 | 0.7+  | 0.6+  | 2006 07 29 | E12 | 0.1+  | 0.5+  | 2007 12 05 | 704 | 0.5+ | 0.2− |
| 2002 12 31 | 704 | 0.0   | 0.0   | 2006 08 12 | E12 | (1.7+ | 0.7−) | 2007 12 05 | 704 | 0.1+ | 0.4− |
| 2002 12 31 | 704 | 0.0   | 0.5+  | 2006 08 12 | E12 | 1.1+  | 0.1−  |            |     |      |      |

**(172362)\* 2002 XM<sub>55</sub> = 2004 FY<sub>11</sub>**

Discovered 2002 Dec. 10 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61662)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 268.10474  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.18475883 | $\omega$ | 280.11740 | −0.85785629   |
| <i>a</i> | 3.0530406  | $\Omega$ | 229.79678 | −0.80264021   |
| <i>e</i> | 0.1031729  | <i>i</i> | 8.05563   | +0.07033841   |
| <i>P</i> | 5.33       | <i>H</i> | 14.8      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|-------|-------|
| 2001 09 20 | 704 | 0.2−  | 0.2−  | 2004 04 16 | 704 | 0.4+ | 0.9+  | 2007 10 31 | 691 | 0.1−  | 0.7−  |
| 2001 09 20 | 704 | 0.1−  | 0.2+  | 2004 04 19 | 704 | 0.3+ | 0.6+  | 2007 10 31 | 691 | 0.2−  | 0.3+  |
| 2001 09 20 | 704 | (1.9− | 0.2+) | 2004 04 19 | 704 | 0.1− | 0.6+  | 2007 10 31 | 691 | 0.2−  | 0.2+  |
| 2002 12 10 | 644 | 0.1+  | 0.0   | 2004 04 19 | 704 | 0.1− | 0.4+  | 2007 11 04 | 691 | 0.2−  | 0.1+  |
| 2002 12 10 | 644 | 0.2−  | 0.0   | 2004 04 19 | 704 | 0.2− | 0.3+  | 2007 11 04 | 691 | 0.2−  | 0.0   |
| 2002 12 10 | 644 | 0.1−  | 0.3−  | 2004 04 20 | 703 | 0.7− | 0.2−  | 2007 11 04 | 691 | 0.4−  | 0.1+  |
| 2002 12 11 | 704 | 0.5+  | 0.2−  | 2004 04 20 | 703 | 0.4− | 1.2+  | 2007 11 05 | G96 | 0.2+  | 0.2−  |
| 2002 12 11 | 704 | 0.0   | 0.9−  | 2004 04 20 | 703 | 0.4− | 0.7+  | 2007 11 05 | G96 | 0.3+  | 0.2−  |
| 2002 12 11 | 704 | 0.0   | 0.4−  | 2004 04 20 | 703 | 0.2+ | 0.2+  | 2007 11 05 | G96 | 0.3+  | 0.1−  |
| 2002 12 11 | 704 | 0.3+  | 0.1+  | 2006 08 18 | 644 | 0.2− | 0.6+  | 2007 11 05 | G96 | 0.4+  | 0.2−  |
| 2002 12 12 | 644 | 0.2−  | 0.8−  | 2006 08 18 | 644 | 0.1− | 0.7+  | 2007 11 06 | H07 | 0.4+  | 1.0+  |
| 2002 12 12 | 644 | 0.4−  | 0.9−  | 2006 08 18 | 644 | 0.1+ | 0.7+  | 2007 11 06 | H07 | 0.2−  | 1.0−  |
| 2002 12 12 | 644 | 0.3−  | 1.0−  | 2006 08 29 | 703 | 1.3− | 0.9+  | 2007 11 06 | H07 | 1.3+  | 1.2−  |
| 2004 03 16 | 703 | 0.5+  | 0.6+  | 2006 08 29 | 703 | (0.0 | 1.8+) | 2007 11 06 | H07 | 0.5+  | 0.8+  |
| 2004 03 16 | 703 | 1.0+  | 0.8+  | 2006 08 29 | 703 | 0.6− | 1.3+  | 2007 11 06 | H07 | (0.2+ | 2.5+) |
| 2004 03 16 | 703 | 0.7+  | 0.9+  | 2006 08 29 | 703 | 0.1+ | 1.1+  | 2007 11 06 | H07 | (1.0− | 1.8+) |
| 2004 03 16 | 703 | 0.9+  | 1.0+  | 2006 08 30 | 699 | 0.4+ | 0.5+  | 2007 11 07 | 703 | 0.2−  | 0.7+  |
| 2004 03 17 | 704 | 0.2−  | 1.2+  | 2006 08 30 | 699 | 0.1+ | 0.6−  | 2007 11 07 | 703 | 0.3−  | 0.6+  |
| 2004 03 17 | 704 | (0.2+ | 1.8+) | 2006 08 30 | 699 | 0.3+ | 0.2+  | 2007 11 07 | 703 | 0.1+  | 0.5−  |
| 2004 03 17 | 704 | 0.3−  | 1.2+  | 2006 08 30 | 699 | 0.0  | 0.8+  | 2007 11 07 | 703 | 0.0   | 0.2+  |
| 2004 03 17 | 704 | 0.5−  | 0.8+  | 2007 10 11 | 704 | 0.0  | 0.8+  | 2007 11 11 | 699 | 1.2+  | 0.0   |
| 2004 03 17 | 704 | 0.4−  | 0.2+  | 2007 10 11 | 704 | 0.6+ | 0.3+  | 2007 11 11 | 699 | 0.5+  | 0.9−  |
| 2004 03 26 | 699 | 0.1−  | 0.5−  | 2007 10 11 | 704 | 1.2− | 0.9+  | 2007 11 11 | 699 | 0.3+  | 0.2+  |
| 2004 03 26 | 699 | 0.4−  | 0.3−  | 2007 10 11 | 691 | 0.2− | 0.3+  | 2007 11 11 | 699 | 0.3+  | 0.1+  |
| 2004 03 26 | 699 | 0.6−  | 0.7−  | 2007 10 11 | 691 | 0.3− | 0.4+  | 2007 11 15 | 704 | 0.7+  | 0.1+  |
| 2004 03 26 | 699 | 0.7−  | 0.5+  | 2007 10 11 | 691 | 0.3− | 0.2+  | 2007 11 15 | 704 | 0.6+  | 0.8+  |
| 2004 03 27 | 703 | 0.4+  | 0.9−  | 2007 10 15 | 703 | 0.1+ | 0.3−  | 2007 11 15 | 704 | 0.8+  | 0.1+  |
| 2004 03 27 | 703 | 1.2−  | 0.3−  | 2007 10 15 | 703 | 0.4− | 0.3−  | 2007 11 15 | 704 | 0.6+  | 0.7+  |
| 2004 03 27 | 703 | 0.1+  | 0.3+  | 2007 10 15 | 691 | 0.2− | 0.4+  | 2007 11 15 | 704 | 0.4+  | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 27 | 703 | 0.4+ | 0.9− | 2007 10 15 | 703 | 0.2+ | 0.5− | 2007 11 20 | G96 | 0.6+ | 0.2− |
| 2004 03 28 | 691 | 0.1+ | 0.1+ | 2007 10 15 | 703 | 0.2− | 0.0  | 2007 11 20 | G96 | 0.4+ | 0.2− |
| 2004 03 28 | 691 | 0.0  | 0.2+ | 2007 10 15 | 691 | 0.2− | 0.3+ | 2007 11 20 | G96 | 0.3+ | 0.2− |
| 2004 03 28 | 691 | 0.1− | 0.2+ | 2007 10 15 | 691 | 0.4− | 0.3+ | 2007 11 20 | G96 | 0.2+ | 0.2− |
| 2004 03 31 | 704 | 0.2+ | 0.4+ | 2007 10 19 | 691 | 0.3− | 0.2+ | 2007 12 03 | 703 | 0.7− | 0.2+ |
| 2004 03 31 | 704 | 0.5+ | 0.7+ | 2007 10 19 | 691 | 0.3− | 0.4+ | 2007 12 03 | 703 | 0.5+ | 0.3− |
| 2004 03 31 | 704 | 0.6+ | 0.2− | 2007 10 19 | 691 | 0.3− | 0.2+ | 2007 12 03 | 703 | 0.3− | 0.9+ |
| 2004 03 31 | 704 | 0.5+ | 0.2− | 2007 10 20 | 703 | 0.1+ | 0.2− | 2007 12 03 | 703 | 0.7+ | 0.1+ |
| 2004 04 11 | 644 | 0.5+ | 0.3+ | 2007 10 20 | 703 | 0.2+ | 0.6+ | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2004 04 11 | 644 | 0.4+ | 0.5+ | 2007 10 20 | 703 | 0.2+ | 0.4+ | 2007 12 05 | 691 | 0.1− | 0.2+ |
| 2004 04 11 | 644 | 0.4+ | 0.0  | 2007 10 20 | 703 | 0.8− | 1.3− | 2007 12 05 | 691 | 1.5+ | 1.7− |
| 2004 04 16 | 644 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.3− | 0.3+ | 2007 12 05 | 704 | 0.5+ | 0.3+ |
| 2004 04 16 | 644 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.4− | 0.3+ | 2007 12 05 | 704 | 1.3+ | 0.4+ |
| 2004 04 16 | 704 | 1.4− | 1.0− | 2007 10 30 | 691 | 0.5− | 0.1+ | 2007 12 05 | 704 | 0.2+ | 0.4+ |
| 2004 04 16 | 644 | 0.6+ | 0.4+ | 2007 10 30 | G96 | 0.5+ | 0.1− | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2004 04 16 | 704 | 1.2+ | 0.1+ | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.0  | 0.7+ |
| 2004 04 16 | 704 | 0.6+ | 0.6+ | 2007 10 30 | G96 | 0.1+ | 0.0  |            |     |      |      |
| 2004 04 16 | 704 | 1.0+ | 0.1− | 2007 10 30 | G96 | 0.3+ | 0.2− |            |     |      |      |

**(172363)\* 2002 XK<sub>60</sub>**

Discovered 2002 Dec. 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.93471   | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.21301297 | $\omega$ | 168.49995 | +0.62129992   |
| <i>a</i> | 2.7767195  | $\Omega$ | 243.06202 | +0.71371777   |
| <i>e</i> | 0.0662112  | <i>i</i> | 3.68720   | +0.32340896   |
| <i>P</i> | 4.63       | <i>H</i> | 15.4      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 10 05 | 691 | 0.3− | 0.6− | 2002 12 31 | 704 | 0.9+  | 0.5+  | 2006 09 20 | 691 | 0.1−  | 0.0   |
| 1997 10 05 | 691 | 0.0  | 0.6− | 2002 12 31 | 704 | 0.0   | 1.1−  | 2006 09 20 | 691 | 0.1+  | 0.1+  |
| 1997 10 05 | 691 | 0.4− | 0.2+ | 2002 12 31 | 704 | 0.6+  | 0.2+  | 2006 09 20 | 691 | 0.1+  | 0.3−  |
| 2000 05 29 | 704 | 0.0  | 0.0  | 2003 01 02 | 704 | 0.3+  | 0.0   | 2006 09 25 | 704 | (0.9− | 2.1+) |
| 2000 05 29 | 704 | 1.0+ | 1.1+ | 2003 01 02 | 704 | 0.3−  | 0.5+  | 2006 09 25 | 699 | 0.2+  | 0.4−  |
| 2000 05 29 | 704 | 0.5+ | 1.1+ | 2003 01 02 | 704 | 1.1+  | 1.0+  | 2006 09 25 | 704 | 0.5−  | 0.3+  |
| 2000 05 29 | 704 | 0.1− | 0.7+ | 2004 03 18 | 704 | 1.0+  | 0.1−  | 2006 09 25 | 704 | 0.9−  | 1.0+  |
| 2002 10 31 | 608 | 0.1− | 0.4+ | 2004 03 18 | 704 | 0.4−  | 0.1−  | 2006 09 25 | 699 | 0.2+  | 0.1+  |
| 2002 10 31 | 608 | 0.1− | 0.7+ | 2004 03 18 | 704 | (0.7+ | 1.6+) | 2006 09 25 | 704 | (1.4− | 2.1+) |
| 2002 10 31 | 608 | 0.5− | 0.7+ | 2004 03 18 | 704 | (0.2− | 1.8+) | 2006 09 25 | 699 | 0.0   | 0.0   |
| 2002 11 05 | 704 | 0.2+ | 0.5+ | 2004 03 20 | 704 | 0.5+  | 0.4+  | 2006 09 25 | 699 | 0.8+  | 0.4−  |
| 2002 11 05 | 704 | 0.5+ | 0.3− | 2004 03 20 | 704 | 0.4−  | 0.5−  | 2006 10 17 | 691 | (1.1+ | 1.9+) |
| 2002 11 05 | 704 | 0.2+ | 0.1− | 2004 03 20 | 704 | 0.9+  | 1.0+  | 2006 10 17 | 691 | 0.1−  | 0.1−  |
| 2002 11 05 | 704 | 0.3+ | 0.3− | 2004 03 20 | 704 | 0.6−  | 1.2−  | 2006 10 17 | 691 | 0.2+  | 0.1+  |
| 2002 11 24 | 644 | 0.3+ | 0.1− | 2004 03 20 | 704 | 0.2−  | 0.9+  | 2006 10 22 | 703 | (2.1+ | 0.8−) |
| 2002 11 24 | 644 | 0.2+ | 0.4+ | 2006 09 12 | 703 | 0.3−  | 0.3+  | 2006 10 22 | 703 | 0.6+  | 0.0   |
| 2002 11 24 | 644 | 0.2− | 0.0  | 2006 09 12 | 703 | 0.9−  | 0.1−  | 2006 10 22 | 703 | 0.4−  | 0.2+  |
| 2002 12 05 | 704 | 0.7− | 0.3− | 2006 09 12 | 703 | 0.2+  | 0.3+  | 2006 10 22 | 703 | 0.4−  | 0.1−  |
| 2002 12 05 | 704 | 0.1− | 0.3+ | 2006 09 12 | 703 | 0.1+  | 0.4−  | 2006 11 14 | G96 | 0.2−  | 0.6−  |
| 2002 12 05 | 704 | 0.2− | 0.2− | 2006 09 18 | 704 | 0.2−  | 1.1+  | 2006 11 14 | G96 | 0.8−  | 0.7−  |
| 2002 12 05 | 704 | 0.6− | 0.9+ | 2006 09 18 | 704 | 0.3−  | 1.0+  | 2006 11 14 | G96 | 0.4−  | 0.2+  |
| 2002 12 05 | 704 | 1.3− | 0.6+ | 2006 09 18 | 704 | (1.8+ | 0.1+) | 2006 11 14 | G96 | 0.3+  | 0.1−  |
| 2002 12 10 | 704 | 0.9+ | 0.8+ | 2006 09 18 | 704 | (1.3+ | 2.6−) | 2007 12 06 | G96 | 0.1+  | 0.4−  |
| 2002 12 10 | 704 | 1.1+ | 0.3+ | 2006 09 18 | 704 | 0.3−  | 0.3−  | 2007 12 06 | G96 | 0.6−  | 0.4−  |
| 2002 12 10 | 704 | 0.1+ | 0.5+ | 2006 09 19 | 699 | 0.4−  | 1.2+  | 2007 12 06 | G96 | 0.5−  | 0.5−  |
| 2002 12 10 | 704 | 0.7+ | 1.1+ | 2006 09 19 | 703 | 0.7+  | 0.0   | 2007 12 06 | G96 | 0.8−  | 0.0   |
| 2002 12 10 | 704 | 0.4+ | 0.3+ | 2006 09 19 | 699 | 0.6+  | 0.2−  | 2007 12 06 | 691 | 0.4−  | 0.1+  |
| 2002 12 13 | 704 | 0.1− | 0.9+ | 2006 09 19 | 703 | 0.3+  | 0.5−  | 2007 12 06 | 691 | 0.5−  | 0.1+  |
| 2002 12 13 | 704 | 1.4+ | 1.3+ | 2006 09 19 | 703 | 0.4−  | 0.2−  | 2007 12 06 | 691 | 0.2−  | 0.2+  |
| 2002 12 13 | 704 | 0.6+ | 0.1− | 2006 09 19 | 699 | 0.3+  | 0.6+  | 2007 12 14 | A77 | 0.2+  | 1.3−  |
| 2002 12 13 | 704 | 0.3+ | 0.8− | 2006 09 19 | 703 | 0.1−  | 0.1−  | 2007 12 14 | A77 | 0.4+  | 0.8−  |
| 2002 12 31 | 704 | 0.2− | 0.4− | 2006 09 19 | 699 | 1.0+  | 0.1−  | 2007 12 14 | A77 | 0.3+  | 0.2−  |



2007 DEC. 24

M.P.O. 129347

| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |            | MPC         |       |             |            |     |       |       |
|-----------------------------|-----------------------------------|----------|-----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| <i>M</i>                    | 17.78384                          |          | (2000.0)  |            | <b>P</b>    |       | <b>Q</b>    |            |     |       |       |
| <i>n</i>                    | 0.21234217                        | $\omega$ | 156.49416 |            | +0.01439670 |       | -0.97769237 |            |     |       |       |
| <i>a</i>                    | 2.7825644                         | $\Omega$ | 292.13209 |            | +0.87775530 |       | +0.11272929 |            |     |       |       |
| <i>e</i>                    | 0.1603022                         | <i>i</i> | 13.07440  |            | +0.47889285 |       | -0.17722792 |            |     |       |       |
| <i>P</i>                    | 4.64                              | <i>H</i> | 15.1      |            | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc |                                   |          |           |            |             |       |             |            |     |       |       |
| 2001 08 25                  | 704                               | 1.0+     | 0.9+      | 2003 01 31 | 704         | 0.4+  | 0.1+        | 2007 10 16 | 691 | 0.3-  | 0.2-  |
| 2001 08 25                  | 704                               | 0.5-     | 0.7+      | 2003 01 31 | 704         | 0.6+  | 0.2+        | 2007 10 16 | 691 | 0.0   | 0.1-  |
| 2001 08 25                  | 704                               | 0.4+     | 0.2+      | 2003 01 31 | 704         | 0.5+  | 0.0         | 2007 11 09 | G96 | 0.1+  | 0.4-  |
| 2001 08 25                  | 704                               | 0.3-     | 1.0+      | 2003 02 03 | 704         | 1.0+  | 0.5-        | 2007 11 09 | G96 | 0.1+  | 0.4-  |
| 2001 08 25                  | 704                               | 0.5-     | 1.2+      | 2003 02 03 | 704         | 0.2-  | 0.1-        | 2007 11 09 | G96 | 0.3-  | 0.6-  |
| 2002 12 06                  | 704                               | 0.1-     | 0.0       | 2003 02 03 | 704         | 0.2+  | 0.2-        | 2007 11 09 | G96 | 0.1+  | 0.1-  |
| 2002 12 06                  | 704                               | 0.2-     | 0.2+      | 2003 02 03 | 704         | 0.4+  | 0.2+        | 2007 11 14 | 704 | 0.9-  | 0.6-  |
| 2002 12 06                  | 704                               | 0.2-     | 0.1-      | 2003 02 03 | 704         | 0.5-  | 0.6+        | 2007 11 14 | 704 | 1.0+  | 0.1+  |
| 2002 12 06                  | 704                               | 0.3+     | 0.2-      | 2004 03 25 | E12         | 0.5+  | 1.0+        | 2007 11 14 | 704 | 0.9+  | 0.6+  |
| 2002 12 11                  | 704                               | 0.0      | 0.2-      | 2004 03 25 | E12         | 0.7-  | 1.2+        | 2007 11 14 | 704 | 1.1+  | 0.6+  |
| 2002 12 11                  | 704                               | 0.3-     | 0.4-      | 2004 03 25 | E12         | 0.7-  | 0.6-        | 2007 11 18 | G96 | 0.4+  | 0.4-  |
| 2002 12 11                  | 704                               | 0.0      | 0.0       | 2004 03 25 | E12         | 0.3+  | 0.6+        | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2002 12 11                  | 704                               | 0.1+     | 0.1+      | 2006 09 16 | 703         | 0.1+  | 0.6+        | 2007 11 18 | G96 | 0.2+  | 0.1-  |
| 2002 12 11                  | 704                               | 0.0      | 0.7+      | 2006 09 16 | 703         | (0.3- | 2.3-)       | 2007 11 18 | G96 | 0.0   | 0.4-  |
| 2002 12 13                  | 704                               | 0.1+     | 0.0       | 2006 09 16 | 703         | 0.6-  | 0.6-        | 2007 11 21 | G96 | 0.1-  | 0.4-  |
| 2002 12 13                  | 704                               | 0.2+     | 0.4-      | 2006 09 16 | 703         | 0.4-  | 1.2-        | 2007 11 21 | G96 | 0.2+  | 0.4-  |
| 2002 12 13                  | 704                               | 1.4+     | 0.9-      | 2006 09 21 | 699         | 0.0   | 0.1+        | 2007 11 21 | G96 | 0.2-  | 0.5-  |
| 2002 12 13                  | 704                               | 0.4+     | 0.3-      | 2006 09 21 | 699         | 0.2-  | 0.4-        | 2007 11 21 | 691 | 0.2-  | 0.1-  |
| 2002 12 13                  | 704                               | 0.8+     | 0.0       | 2006 09 21 | 699         | 0.3+  | 0.6+        | 2007 11 21 | 691 | 0.3-  | 0.0   |
| 2002 12 15                  | 704                               | 0.4+     | 0.0       | 2006 09 21 | 699         | 0.5+  | 0.4-        | 2007 11 21 | 691 | 0.5-  | 0.0   |
| 2002 12 15                  | 704                               | 0.9-     | 0.6+      | 2006 09 28 | 703         | 0.4-  | 0.7+        | 2007 12 03 | 703 | 0.3-  | 0.2-  |
| 2002 12 15                  | 704                               | 0.1-     | 0.7+      | 2006 09 28 | 703         | 1.4-  | 0.3-        | 2007 12 03 | 703 | 0.9-  | 1.1+  |
| 2002 12 15                  | 704                               | 1.3-     | 0.7+      | 2006 09 28 | 703         | 0.9-  | 0.1+        | 2007 12 03 | 703 | 0.4-  | 1.0+  |
| 2002 12 15                  | 704                               | 0.5-     | 0.5+      | 2006 09 28 | 703         | 0.8-  | 0.1-        | 2007 12 03 | 703 | 0.5+  | 1.0+  |
| 2003 01 05                  | 704                               | 0.6+     | 0.2-      | 2006 10 16 | 106         | 0.0   | 0.1+        | 2007 12 05 | 704 | 0.7+  | 0.3-  |
| 2003 01 05                  | 704                               | 0.4+     | 0.1+      | 2006 10 16 | 106         | 0.9+  | 0.8+        | 2007 12 05 | 704 | (3.5+ | 0.4-) |
| 2003 01 05                  | 704                               | 0.5+     | 0.5-      | 2006 10 16 | 106         | 0.9+  | 0.3-        | 2007 12 05 | 704 | (1.7+ | 1.4+) |
| 2003 01 09                  | 704                               | 0.6-     | 0.1+      | 2006 10 16 | 106         | 1.0+  | 0.9-        | 2007 12 05 | 704 | 1.4+  | 0.1+  |
| 2003 01 09                  | 704                               | 1.0-     | 0.7+      | 2007 09 25 | G96         | 0.1-  | 0.4-        | 2007 12 14 | 703 | 0.4+  | 0.6+  |
| 2003 01 09                  | 704                               | 0.9-     | 0.5+      | 2007 09 25 | G96         | 0.4+  | 0.5-        | 2007 12 14 | 703 | 1.0+  | 0.4+  |
| 2003 01 09                  | 704                               | 0.8-     | 0.6+      | 2007 09 25 | G96         | 0.2-  | 0.6-        | 2007 12 14 | 703 | 0.1-  | 0.7+  |
| 2003 01 09                  | 704                               | 0.9-     | 1.0+      | 2007 09 25 | G96         | 0.3+  | 0.2-        | 2007 12 14 | 703 | 2.0+  | 0.2-  |
| 2003 01 31                  | 704                               | 0.5+     | 0.2-      | 2007 10 16 | 691         | 0.2-  | 0.2-        |            |     |       |       |

**(172365)\* 2002 XR<sub>64</sub> = 2007 TN<sub>183</sub>**

Discovered 2002 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 128000)

|                                         |            |          |           |            |             |       |             |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC        |             |       |             |            |     |       |       |
| $M$                                     | 72.90617   |          | (2000.0)  |            | <b>P</b>    |       | <b>Q</b>    |            |     |       |       |
| $n$                                     | 0.18270846 | $\omega$ | 264.34979 |            | +0.79016622 |       | +0.58016927 |            |     |       |       |
| $a$                                     | 3.0758390  | $\Omega$ | 60.02945  |            | -0.43204790 |       | +0.75593393 |            |     |       |       |
| $e$                                     | 0.1117298  | $i$      | 13.18448  |            | -0.43470905 |       | +0.30326145 |            |     |       |       |
| $P$                                     | 5.39       | $H$      | 14.7      |            | $G$         | 0.15  | $U$         | 0          |     |       |       |
| Residuals in seconds of arc             |            |          |           |            |             |       |             |            |     |       |       |
| 2001 08 28                              | 644        | 0.4-     | 0.4+      | 2007 10 09 | 699         | (0.2+ | 2.5-)       | 2007 11 12 | 703 | 0.1-  | 0.5-  |
| 2001 08 28                              | 644        | 0.1-     | 0.9+      | 2007 10 09 | 699         | 0.2+  | 0.4+        | 2007 11 12 | 703 | 0.1-  | 0.4-  |
| 2001 08 28                              | 644        | 0.1-     | 0.6+      | 2007 10 09 | 699         | 0.0   | 0.7-        | 2007 11 12 | 703 | 0.7-  | 0.1-  |
| 2001 10 23                              | 644        | 0.3-     | 0.4+      | 2007 10 09 | 699         | 0.9+  | 1.4+        | 2007 11 14 | 691 | 0.1-  | 0.1+  |
| 2001 10 23                              | 644        | 0.4-     | 0.5+      | 2007 10 10 | G96         | 0.6+  | 0.3+        | 2007 11 14 | 691 | 0.4+  | 0.1+  |
| 2001 10 23                              | 644        | 0.3-     | 0.6+      | 2007 10 10 | G96         | 0.4+  | 0.2+        | 2007 11 14 | 691 | 0.1-  | 0.1+  |
| 2002 12 11                              | 704        | 0.7-     | 0.4+      | 2007 10 10 | G96         | 0.3+  | 0.3+        | 2007 11 14 | 704 | 0.2-  | 1.1+  |
| 2002 12 11                              | 704        | 0.5-     | 0.2+      | 2007 10 10 | G96         | 0.7+  | 0.3+        | 2007 11 14 | 704 | 0.4-  | 0.5+  |
| 2002 12 11                              | 704        | 0.3-     | 0.7+      | 2007 10 12 | 691         | 0.5+  | 0.4+        | 2007 11 14 | 704 | 0.1+  | 0.9+  |
| 2002 12 13                              | 704        | 0.7+     | 0.3-      | 2007 10 12 | 691         | 1.4-  | 0.4-        | 2007 11 14 | 704 | (0.6+ | 1.6+) |
| 2002 12 13                              | 704        | 0.4+     | 0.2-      | 2007 10 12 | 691         | 0.1-  | 0.2+        | 2007 11 14 | 704 | 0.4+  | 0.8+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 13 | 704 | 0.1+  | 0.1+  | 2007 10 16 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2002 12 13 | 704 | 0.4+  | 0.1+  | 2007 10 16 | 691 | 0.3-  | 0.2+  | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2002 12 14 | 704 | (0.8+ | 2.4+) | 2007 10 16 | 691 | 0.0   | 0.3+  | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2002 12 14 | 704 | 0.2-  | 0.4+  | 2007 10 20 | 703 | 0.4-  | 0.5+  | 2007 12 03 | 703 | 0.1- | 0.8+ |
| 2002 12 14 | 704 | 0.5-  | 0.2+  | 2007 10 20 | 703 | 1.3+  | 0.6+  | 2007 12 03 | 703 | 0.9+ | 1.4+ |
| 2002 12 14 | 704 | 1.1-  | 1.1+  | 2007 10 20 | 703 | 0.4+  | 0.4-  | 2007 12 03 | 703 | 1.3+ | 2.8+ |
| 2004 01 19 | 691 | 0.0   | 0.0   | 2007 10 20 | 703 | 0.6+  | 1.5+  | 2007 12 03 | 703 | 0.7+ | 1.2+ |
| 2004 01 19 | 691 | 0.1-  | 0.2-  | 2007 10 30 | 691 | 0.2-  | 0.0   | 2007 12 04 | 691 | 0.1- | 0.1+ |
| 2004 01 19 | 691 | 0.3+  | 0.1-  | 2007 10 30 | 691 | 0.2-  | 0.1-  | 2007 12 04 | 691 | 0.2- | 0.3+ |
| 2005 04 02 | 691 | 0.3+  | 0.3+  | 2007 10 30 | 691 | 0.0   | 0.1-  | 2007 12 04 | 691 | 0.3- | 0.1+ |
| 2005 04 02 | 691 | 0.3+  | 0.5+  | 2007 11 03 | 691 | 0.3-  | 0.0   | 2007 12 04 | 699 | 0.0  | 0.0  |
| 2005 04 02 | 691 | 0.3+  | 0.2+  | 2007 11 03 | 691 | 0.0   | 0.2-  | 2007 12 04 | 699 | 0.3+ | 0.8- |
| 2005 04 15 | 691 | 0.2+  | 0.4+  | 2007 11 03 | 691 | 0.1-  | 0.0   | 2007 12 04 | 699 | 0.8- | 1.1- |
| 2005 04 15 | 691 | 0.5+  | 1.0+  | 2007 11 03 | 699 | 0.2+  | 0.0   | 2007 12 04 | 699 | 0.1- | 0.1- |
| 2005 04 15 | 691 | 0.2+  | 0.3+  | 2007 11 03 | 699 | 0.5-  | 0.0   | 2007 12 05 | 704 | 0.2+ | 1.2- |
| 2005 05 02 | 691 | 0.0   | 0.4+  | 2007 11 03 | 699 | (2.1- | 0.9+) | 2007 12 05 | 704 | 0.5+ | 0.9- |
| 2005 05 02 | 691 | 0.1+  | 0.2+  | 2007 11 03 | 699 | 1.3-  | 1.1-  | 2007 12 05 | 704 | 0.9+ | 0.9- |
| 2005 05 02 | 691 | 0.1+  | 0.3+  | 2007 11 05 | 704 | 0.0   | 0.7+  | 2007 12 05 | 704 | 0.6+ | 0.7- |
| 2006 07 18 | E12 | 0.1-  | 0.3+  | 2007 11 05 | 704 | 0.0   | 0.4-  | 2007 12 05 | 704 | 1.2+ | 0.4- |
| 2006 07 18 | E12 | 0.3-  | 0.2+  | 2007 11 05 | 704 | 0.4-  | 0.5-  | 2007 12 06 | 691 | 0.4- | 0.3+ |
| 2006 07 18 | E12 | 0.3-  | 0.6+  | 2007 11 05 | 704 | 0.3-  | 0.5+  | 2007 12 06 | 691 | 0.2- | 0.0  |
| 2006 07 18 | E12 | 0.4-  | 0.7+  | 2007 11 12 | 703 | 0.0   | 0.3+  | 2007 12 06 | 691 | 0.7+ | 0.4- |

**(172366)\* 2002 XB<sub>71</sub>**

Discovered 2002 Dec. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                             |                                   |       |          |            |             |       |             |            |     |       |       |
|-----------------------------|-----------------------------------|-------|----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5 |       |          |            | MPC         |       |             |            |     |       |       |
| <i>M</i>                    | 38.95537                          |       | (2000.0) |            | <b>P</b>    |       | <b>Q</b>    |            |     |       |       |
| <i>n</i>                    | 0.20921829                        |       | $\omega$ | 347.28414  | +0.59600403 |       | -0.79889342 |            |     |       |       |
| <i>a</i>                    | 2.8101939                         |       | $\Omega$ | 66.07523   | +0.74425548 |       | +0.51177148 |            |     |       |       |
| <i>e</i>                    | 0.1426517                         |       | <i>i</i> | 5.07901    | +0.30143486 |       | +0.31600515 |            |     |       |       |
| <i>P</i>                    | 4.71                              |       | <i>H</i> | 15.2       | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc |                                   |       |          |            |             |       |             |            |     |       |       |
| 1997 12 04                  | 704                               | (2.9- | 0.1+)    | 2006 08 21 | 644         | 0.2-  | 0.2+        | 2006 09 30 | 703 | 0.8-  | 0.7-  |
| 1997 12 04                  | 704                               | 0.4-  | 0.5+     | 2006 08 21 | 644         | 0.0   | 0.0         | 2006 09 30 | 703 | 0.0   | 0.6-  |
| 1997 12 04                  | 704                               | 1.7-  | 1.6+     | 2006 08 22 | 644         | 0.2+  | 0.0         | 2006 09 30 | 703 | 0.2+  | 0.1+  |
| 1997 12 04                  | 704                               | (5.7- | 1.1+)    | 2006 08 22 | 644         | 0.4+  | 0.1+        | 2006 09 30 | 703 | 0.0   | 0.1+  |
| 2001 08 19                  | 704                               | 0.1-  | 0.4+     | 2006 08 22 | 644         | 0.3-  | 0.0         | 2006 10 11 | 644 | 0.2-  | 0.1-  |
| 2001 08 19                  | 704                               | 0.6+  | 0.0      | 2006 08 30 | 699         | 0.5+  | 0.2+        | 2006 10 11 | 644 | 0.0   | 0.2-  |
| 2001 08 19                  | 704                               | 0.3+  | 0.3+     | 2006 08 30 | 699         | 0.2+  | 0.5+        | 2006 10 11 | 644 | 0.2-  | 0.0   |
| 2001 08 19                  | 704                               | 0.4+  | 0.5+     | 2006 08 30 | 699         | 0.3+  | 0.1-        | 2006 10 12 | 644 | 0.1+  | 0.2-  |
| 2002 12 05                  | 704                               | (1.7- | 0.3+)    | 2006 08 30 | 699         | 0.4-  | 0.8+        | 2006 10 12 | 644 | 0.1-  | 0.1-  |
| 2002 12 05                  | 704                               | 0.0   | 0.3-     | 2006 09 14 | 703         | 0.4+  | 0.2+        | 2006 10 12 | 644 | 0.0   | 0.2+  |
| 2002 12 05                  | 704                               | 0.6+  | 0.1+     | 2006 09 14 | 703         | (2.4- | 2.3+)       | 2006 10 22 | 644 | 0.5-  | 0.3+  |
| 2002 12 05                  | 704                               | 0.5-  | 0.1+     | 2006 09 14 | 703         | 0.0   | 0.6+        | 2006 10 22 | 644 | 0.6-  | 0.1-  |
| 2002 12 10                  | 704                               | 0.1+  | 0.2+     | 2006 09 19 | 699         | 0.5+  | 0.9-        | 2006 10 22 | 644 | 0.0   | 0.2+  |
| 2002 12 10                  | 704                               | 0.5+  | 0.2-     | 2006 09 19 | 699         | 0.8-  | 0.2+        | 2006 10 24 | 644 | 0.3-  | 0.1+  |
| 2002 12 10                  | 704                               | 0.3-  | 0.2+     | 2006 09 19 | 699         | 0.1+  | 1.4+        | 2006 10 24 | 644 | 0.0   | 0.2+  |
| 2002 12 10                  | 704                               | 1.1+  | 0.1+     | 2006 09 19 | 699         | 0.1-  | 0.7-        | 2006 10 24 | 644 | 0.2-  | 0.1-  |
| 2002 12 14                  | 704                               | 1.2+  | 0.1-     | 2006 09 22 | 704         | 0.8+  | 1.1+        | 2007 09 18 | G96 | 0.2+  | 0.3-  |
| 2002 12 14                  | 704                               | 0.1+  | 0.3+     | 2006 09 22 | 704         | 0.1+  | 0.7-        | 2007 09 18 | G96 | 0.4+  | 0.5-  |
| 2002 12 14                  | 704                               | 0.3+  | 0.1+     | 2006 09 22 | 704         | 1.4+  | 0.6-        | 2007 09 18 | G96 | 0.1+  | 0.7-  |
| 2002 12 14                  | 704                               | 0.7-  | 0.1-     | 2006 09 22 | 704         | 0.0   | 1.2-        | 2007 09 18 | G96 | 1.0-  | 1.1-  |
| 2002 12 14                  | 704                               | 0.6-  | 0.4+     | 2006 09 22 | 704         | 0.6+  | 1.1-        | 2007 11 17 | 703 | (2.2+ | 0.8+) |
| 2003 01 05                  | 704                               | 0.3+  | 0.1-     | 2006 09 25 | 699         | 0.3-  | 0.2-        | 2007 11 17 | 703 | 0.1+  | 0.2-  |
| 2003 01 05                  | 704                               | 0.2+  | 0.1+     | 2006 09 25 | 699         | 0.7+  | 0.0         | 2007 11 17 | 703 | 0.4-  | 0.2-  |
| 2003 01 05                  | 704                               | 0.9-  | 0.3-     | 2006 09 25 | 699         | 0.4+  | 0.6-        | 2007 11 17 | 703 | (0.0  | 1.8+) |
| 2003 01 05                  | 704                               | 0.3+  | 0.2+     | 2006 09 25 | 699         | 0.5+  | 0.4-        | 2007 12 16 | 699 | 0.8+  | 0.6-  |
| 2004 03 28                  | 704                               | 0.4+  | 0.0      | 2006 09 26 | 704         | 0.5-  | 0.8+        | 2007 12 16 | 699 | 0.3+  | 0.8-  |
| 2004 03 28                  | 704                               | 0.4+  | 0.6+     | 2006 09 26 | 704         | 0.4-  | 0.2+        | 2007 12 16 | 699 | 0.3-  | 0.3+  |
| 2004 03 28                  | 704                               | 0.3+  | 1.0+     | 2006 09 26 | 704         | 0.8-  | 0.4-        | 2007 12 16 | 699 | 0.8-  | 0.7+  |
| 2004 03 28                  | 704                               | 0.7-  | 1.1+     | 2006 09 26 | 704         | 1.3-  | 0.4+        |            |     |       |       |
| 2006 08 21                  | 644                               | 0.0   | 0.3+     | 2006 09 26 | 704         | 0.6-  | 0.1+        |            |     |       |       |

**(172367)\* 2002 XL<sub>72</sub> = 2001 RU<sub>52</sub>**

Discovered 2002 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 41348)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           |          | (2000.0) |  |          | <b>P</b>    |  |          | <b>Q</b>    |  |  |
|----------|-----------|----------|----------|--|----------|-------------|--|----------|-------------|--|--|
| <i>n</i> | 346.54865 | $\omega$ | 16.18551 |  |          | +0.32118544 |  |          | −0.94481525 |  |  |
| <i>a</i> | 3.0064610 | $\Omega$ | 55.12272 |  |          | +0.85991599 |  |          | +0.26242247 |  |  |
| <i>e</i> | 0.0921702 | <i>i</i> | 4.51144  |  |          | +0.39671703 |  |          | +0.19610861 |  |  |
| <i>P</i> | 5.21      | <i>H</i> | 15.2     |  | <i>G</i> | 0.15        |  | <i>U</i> | 0           |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 12 | 704 | 1.4−  | 0.1−  | 2004 03 17 | 333 | 0.6+  | 0.1−  | 2007 11 05 | 704 | 1.1− | 0.4+ |
| 2001 09 12 | 704 | 0.9−  | 1.2+  | 2004 03 18 | 691 | 0.2+  | 0.0   | 2007 11 05 | 704 | 1.2− | 0.9+ |
| 2001 09 12 | 704 | 0.5−  | 0.6−  | 2004 03 18 | 691 | 0.3+  | 0.0   | 2007 11 05 | 704 | 0.9− | 0.2+ |
| 2001 09 12 | 704 | (1.7− | 0.3−) | 2004 03 18 | 691 | 0.1+  | 0.1−  | 2007 11 05 | 704 | 0.1+ | 1.0+ |
| 2001 09 16 | 704 | 0.2+  | 0.7+  | 2004 03 20 | 704 | 0.7−  | 0.3+  | 2007 11 06 | D29 | 0.2− | 0.1− |
| 2001 09 16 | 704 | 0.2−  | 0.8+  | 2004 03 20 | 704 | 0.4−  | 0.4−  | 2007 11 06 | D29 | 0.1− | 0.4− |
| 2001 09 16 | 704 | 0.6−  | 0.9+  | 2004 03 20 | 704 | 0.5+  | 0.5+  | 2007 11 06 | D29 | 0.4+ | 0.3− |
| 2002 12 05 | 704 | (2.3+ | 4.6−) | 2004 03 20 | 704 | 0.1−  | 0.8+  | 2007 11 06 | D29 | 0.5− | 0.3+ |
| 2002 12 05 | 704 | 0.1−  | 0.1−  | 2004 03 20 | 704 | 0.4−  | 0.4+  | 2007 11 07 | 691 | 0.4− | 0.0  |
| 2002 12 05 | 704 | 0.1+  | 0.3−  | 2004 03 23 | 704 | 0.9+  | 0.1+  | 2007 11 07 | 691 | 0.3− | 0.1− |
| 2002 12 05 | 704 | 0.4+  | 0.5+  | 2004 03 23 | 704 | 0.0   | 0.7+  | 2007 11 07 | 691 | 0.3− | 0.1− |
| 2002 12 11 | 704 | 0.1−  | 0.3−  | 2004 03 23 | 704 | (1.7+ | 0.2+) | 2007 11 07 | 704 | 0.0  | 0.5− |
| 2002 12 11 | 704 | 0.0   | 0.3−  | 2004 03 23 | 704 | 0.4−  | 0.1−  | 2007 11 07 | 704 | 0.8+ | 0.0  |
| 2002 12 11 | 704 | 0.0   | 0.2−  | 2004 03 28 | 704 | 1.0−  | 0.3−  | 2007 11 07 | 704 | 1.3− | 0.2− |
| 2002 12 11 | 704 | 0.3−  | 0.5+  | 2004 03 28 | 704 | (2.0+ | 0.1+) | 2007 11 07 | 704 | 0.3+ | 0.2+ |
| 2002 12 11 | 704 | 0.1+  | 0.7+  | 2004 03 28 | 704 | 0.4+  | 0.1+  | 2007 11 07 | 704 | 0.2+ | 0.3− |
| 2002 12 11 | 704 | 0.2−  | 0.9+  | 2004 03 28 | 704 | 0.1+  | 0.1−  | 2007 11 14 | 691 | 0.1− | 0.2+ |
| 2002 12 11 | 704 | 0.3+  | 0.3−  | 2004 03 28 | 704 | 0.0   | 0.5+  | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2002 12 11 | 704 | 0.4−  | 0.1+  | 2004 03 30 | 691 | 0.0   | 0.2+  | 2007 11 14 | 691 | 0.1− | 0.2− |
| 2002 12 11 | 704 | 0.3+  | 0.1−  | 2004 03 30 | 691 | 0.1−  | 0.1+  | 2007 11 15 | 704 | 0.1+ | 0.0  |
| 2002 12 11 | 704 | 0.1−  | 0.4−  | 2004 03 30 | 691 | 0.2+  | 0.3+  | 2007 11 15 | 704 | 0.0  | 0.1+ |
| 2002 12 14 | 704 | 0.8+  | 0.8+  | 2006 08 16 | E12 | 0.4−  | 1.0+  | 2007 11 15 | 704 | 0.3+ | 0.3+ |
| 2002 12 14 | 704 | 0.2+  | 0.3−  | 2006 08 16 | E12 | 0.1+  | 0.3+  | 2007 11 15 | 704 | 0.3− | 1.0+ |
| 2002 12 14 | 704 | 0.3−  | 0.4−  | 2006 08 16 | E12 | 0.5+  | 0.9+  | 2007 11 15 | 704 | 0.4+ | 0.1+ |
| 2002 12 14 | 704 | 0.6+  | 0.9−  | 2006 08 16 | E12 | 1.0+  | 0.2+  | 2007 11 16 | 704 | 0.5+ | 0.3+ |
| 2002 12 14 | 704 | 0.4−  | 0.3−  | 2007 09 10 | G96 | 0.0   | 0.1−  | 2007 11 16 | 704 | 0.7+ | 0.2+ |
| 2002 12 14 | 704 | 0.5+  | 0.8−  | 2007 09 10 | G96 | 0.3+  | 0.3−  | 2007 11 16 | 704 | 1.0+ | 1.2+ |
| 2002 12 14 | 704 | 0.4+  | 0.3−  | 2007 09 10 | G96 | 0.1+  | 0.2−  | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2002 12 14 | 704 | 0.2+  | 0.4−  | 2007 09 10 | G96 | 0.7+  | 0.3−  | 2007 11 18 | 691 | 0.1− | 0.1− |
| 2002 12 14 | 704 | 0.1+  | 0.1−  | 2007 09 15 | G96 | 0.5+  | 0.2−  | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2003 01 05 | 704 | (1.6− | 1.0+) | 2007 09 15 | G96 | 0.1−  | 0.2−  | 2007 12 03 | 703 | 0.1− | 0.0  |
| 2003 01 05 | 704 | 0.7+  | 1.3+  | 2007 09 15 | G96 | 0.6+  | 0.2−  | 2007 12 03 | 703 | 0.2+ | 0.3− |
| 2003 01 05 | 704 | 0.8−  | 0.3+  | 2007 09 15 | G96 | 0.1+  | 0.2−  | 2007 12 03 | 703 | 0.8+ | 0.4− |
| 2003 01 05 | 704 | 0.1−  | 1.4+  | 2007 10 19 | 699 | 1.4+  | 0.2+  | 2007 12 10 | 704 | 0.8+ | 0.6+ |
| 2003 01 05 | 704 | (0.1+ | 1.6+) | 2007 10 19 | 699 | 0.6+  | 0.6−  | 2007 12 10 | 704 | 0.5+ | 0.4+ |
| 2004 03 15 | 704 | 1.1−  | 0.9+  | 2007 10 19 | 699 | (0.1+ | 1.8+) | 2007 12 10 | 704 | 0.5− | 0.2+ |
| 2004 03 15 | 704 | (1.0+ | 1.8+) | 2007 10 19 | 699 | (1.5+ | 1.6+) | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2004 03 15 | 704 | 0.1+  | 0.5−  | 2007 11 03 | 691 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.2+ | 0.2− |
| 2004 03 15 | 704 | 0.9+  | 0.4+  | 2007 11 03 | 691 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.5+ | 0.4− |
| 2004 03 17 | 333 | 0.4−  | 0.0   | 2007 11 03 | 691 | 0.2−  | 0.1−  | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2004 03 17 | 333 | 0.5−  | 0.1−  | 2007 11 05 | 704 | (1.6− | 0.5+) | 2007 12 15 | G96 | 0.2− | 0.8− |

**(172368)\* 2002 XC<sub>74</sub>**

Discovered 2002 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           |          | (2000.0) |  |          | <b>P</b>    |  |          | <b>Q</b>    |  |  |
|----------|-----------|----------|----------|--|----------|-------------|--|----------|-------------|--|--|
| <i>n</i> | 292.10279 | $\omega$ | 70.57933 |  |          | −0.61721758 |  |          | −0.77109910 |  |  |
| <i>a</i> | 3.0382015 | $\Omega$ | 58.53350 |  |          | +0.63545387 |  |          | −0.60573770 |  |  |
| <i>e</i> | 0.1311941 | <i>i</i> | 10.56311 |  |          | +0.46394055 |  |          | −0.19618366 |  |  |
| <i>P</i> | 5.30      | <i>H</i> | 14.9     |  | <i>G</i> | 0.15        |  | <i>U</i> | 0           |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 11 02 | 691 | 0.2+  | 0.3−  | 2004 04 15 | 644 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.0   | 0.0   |
| 1991 11 02 | 691 | 0.1−  | 0.7−  | 2004 04 15 | 644 | 0.3+ | 0.1+ | 2007 11 05 | G96 | 0.4+  | 0.1−  |
| 1991 11 02 | 691 | 0.1+  | 0.4−  | 2006 08 28 | E12 | 1.0+ | 0.4+ | 2007 11 07 | 704 | 0.2−  | 1.0+  |
| 2002 12 06 | 704 | 0.4+  | 0.0   | 2006 08 28 | E12 | 0.5+ | 0.3+ | 2007 11 07 | 704 | 0.1−  | 0.5+  |
| 2002 12 06 | 704 | 0.6+  | 0.7−  | 2006 08 28 | E12 | 0.5+ | 0.2+ | 2007 11 07 | 704 | 0.0   | 0.3+  |
| 2002 12 06 | 704 | 0.1+  | 0.5−  | 2006 08 28 | E12 | 0.4− | 1.2+ | 2007 11 07 | 704 | 0.3−  | 0.7+  |
| 2002 12 06 | 704 | 0.4+  | 0.0   | 2007 10 10 | G96 | 0.0  | 0.0  | 2007 11 09 | 291 | 0.5−  | 0.2+  |
| 2002 12 11 | 704 | 0.4+  | 0.0   | 2007 10 10 | G96 | 0.1+ | 0.2+ | 2007 11 09 | 291 | 0.5−  | 0.2+  |
| 2002 12 11 | 704 | 0.5+  | 0.0   | 2007 10 10 | G96 | 0.1+ | 0.2− | 2007 11 09 | 291 | 0.5−  | 0.2+  |
| 2002 12 11 | 704 | 0.5+  | 0.7+  | 2007 10 10 | G96 | 0.2+ | 0.1− | 2007 11 14 | 704 | 0.4−  | 1.1+  |
| 2002 12 11 | 704 | 0.5+  | 0.5+  | 2007 10 15 | 703 | 0.1− | 0.7+ | 2007 11 14 | 704 | 0.5−  | 1.1+  |
| 2002 12 14 | 704 | 0.2+  | 0.2−  | 2007 10 15 | 703 | 0.7+ | 1.0+ | 2007 11 14 | 704 | 1.0−  | 0.6+  |
| 2002 12 14 | 704 | 0.3+  | 0.4−  | 2007 10 15 | 703 | 0.1− | 0.2− | 2007 11 14 | 704 | 1.0−  | 0.8+  |
| 2002 12 14 | 704 | 0.1+  | 1.2−  | 2007 10 15 | 703 | 0.2− | 0.2− | 2007 11 14 | 704 | 0.8−  | 0.4+  |
| 2002 12 14 | 704 | 0.4+  | 1.0−  | 2007 10 20 | 703 | 0.7+ | 0.8+ | 2007 11 15 | 704 | 0.5−  | 0.6+  |
| 2003 01 05 | 704 | (2.9+ | 0.5+) | 2007 10 20 | 703 | 0.6+ | 0.8− | 2007 11 15 | 704 | 0.9−  | 0.4+  |
| 2003 01 05 | 704 | (1.8+ | 1.1−) | 2007 10 20 | 703 | 0.3+ | 0.9+ | 2007 11 15 | 704 | 1.0+  | 0.1+  |
| 2003 01 05 | 704 | 1.3+  | 1.2−  | 2007 10 20 | 703 | 0.1+ | 0.1− | 2007 11 17 | 703 | 0.1−  | 0.4−  |
| 2003 01 05 | 704 | 1.4+  | 0.1−  | 2007 10 21 | 691 | 0.1− | 0.2− | 2007 11 17 | 703 | 0.4+  | 0.6−  |
| 2003 01 05 | 704 | 1.3+  | 1.4−  | 2007 10 21 | 691 | 0.3− | 0.2− | 2007 11 17 | 703 | 0.8−  | 0.0   |
| 2004 03 15 | 704 | 0.2+  | 0.1+  | 2007 10 21 | 691 | 0.2− | 0.2− | 2007 11 17 | 703 | 0.0   | 0.1+  |
| 2004 03 15 | 704 | 1.2+  | 0.2−  | 2007 10 30 | 703 | 0.9+ | 0.8+ | 2007 12 03 | 703 | 0.3−  | 0.2−  |
| 2004 03 15 | 704 | 0.3+  | 1.3+  | 2007 10 30 | 703 | 0.8+ | 1.0+ | 2007 12 03 | 703 | 0.7−  | 0.8−  |
| 2004 03 15 | 704 | 0.1+  | 0.2−  | 2007 10 30 | 703 | 0.4− | 1.1+ | 2007 12 03 | 703 | (1.0− | 1.8+) |
| 2004 03 15 | 704 | 0.0   | 0.9+  | 2007 10 30 | 703 | 0.0  | 0.6+ | 2007 12 03 | 703 | (1.2+ | 1.8+) |
| 2004 03 23 | 704 | 1.2+  | 0.3+  | 2007 11 02 | D29 | 0.6+ | 0.1− | 2007 12 05 | 691 | 0.4−  | 0.2+  |
| 2004 03 23 | 704 | 1.1+  | 0.1−  | 2007 11 02 | D29 | 0.1+ | 0.1− | 2007 12 05 | 691 | 0.1−  | 0.8+  |
| 2004 03 23 | 704 | 0.7+  | 0.2+  | 2007 11 02 | D29 | 0.2+ | 0.2+ | 2007 12 05 | 691 | 0.0   | 0.8−  |
| 2004 03 23 | 704 | 0.6+  | 0.1−  | 2007 11 02 | D29 | 0.7+ | 0.1+ | 2007 12 05 | 704 | 0.6+  | 0.6+  |
| 2004 03 23 | 704 | 0.8+  | 0.4+  | 2007 11 03 | 691 | 0.3− | 0.1+ | 2007 12 05 | 704 | 0.9+  | 0.3+  |
| 2004 03 28 | 703 | 0.1+  | 0.8+  | 2007 11 03 | 691 | 0.4− | 0.0  | 2007 12 05 | 704 | 0.4+  | 0.6+  |
| 2004 03 28 | 703 | 0.3−  | 0.7+  | 2007 11 03 | 691 | 0.4− | 0.0  | 2007 12 05 | 704 | 0.2+  | 0.6+  |
| 2004 03 28 | 703 | 0.1−  | 0.8−  | 2007 11 05 | 704 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.8+  | 0.6+  |
| 2004 03 28 | 703 | 0.7−  | 0.5+  | 2007 11 05 | 704 | 0.4+ | 0.3+ | 2007 12 15 | G96 | 0.4+  | 0.4−  |
| 2004 04 12 | 703 | 0.5−  | 0.4+  | 2007 11 05 | 704 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.1+  | 0.4−  |
| 2004 04 12 | 703 | 0.8−  | 1.2+  | 2007 11 05 | 704 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.3+  | 0.5−  |
| 2004 04 12 | 703 | 1.4−  | 0.9+  | 2007 11 05 | 704 | 0.1+ | 0.3− | 2007 12 15 | G96 | 0.2−  | 0.8−  |
| 2004 04 12 | 703 | 0.8−  | 0.2+  | 2007 11 05 | G96 | 0.4+ | 0.1+ |            |     |       |       |
| 2004 04 15 | 644 | 0.3+  | 0.2+  | 2007 11 05 | G96 | 0.2+ | 0.1− |            |     |       |       |

**(172369)\* 2002 XF<sub>85</sub>**

Discovered 2002 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 5.47781    | (2000.0) |           |             | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-------------|--------------|--------------|
| $n$ | 0.20360458 | $\omega$ | 151.32271 | +0.25530445 | −0.93743084  |              |
| $a$ | 2.8616138  | $\Omega$ | 283.05360 | +0.83421394 | +0.33735252  |              |
| $e$ | 0.1160588  | $i$      | 14.06449  | +0.48878086 | −0.08612020  |              |
| $P$ | 4.84       | $H$      | 15.4      | $G$ 0.15    | $U$ 1        |              |

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M.P.O. 129349

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 11 | 704 | 0.3+ | 0.0  | 2006 08 27 | 699 | 1.0+  | 0.7+  | 2007 12 07 | D29 | 0.2- | 0.4- |
| 2002 12 11 | 704 | 0.0  | 0.5- | 2006 08 27 | 699 | (0.4+ | 3.0+) | 2007 12 07 | D29 | 0.0  | 0.2- |
| 2002 12 15 | 704 | 0.0  | 0.0  | 2006 08 27 | 699 | 0.3+  | 1.2+  | 2007 12 10 | 704 | 0.4+ | 0.6+ |
| 2002 12 15 | 704 | 0.9+ | 0.6- | 2006 08 27 | 699 | 0.4+  | 0.2+  | 2007 12 10 | 704 | 0.7+ | 0.5+ |
| 2002 12 15 | 704 | 0.6+ | 0.5- | 2006 08 30 | 699 | 0.1+  | 0.2+  | 2007 12 10 | 704 | 0.1+ | 0.0  |
| 2002 12 15 | 704 | 0.7+ | 0.0  | 2006 08 30 | 699 | 0.2-  | 0.9-  | 2007 12 10 | 704 | 0.3- | 0.2- |
| 2002 12 15 | 704 | 0.6+ | 0.0  | 2006 08 30 | 699 | 1.3-  | 1.0+  | 2007 12 14 | 704 | 0.5- | 0.2+ |
| 2002 12 30 | 704 | 0.6+ | 0.4- | 2006 08 30 | 699 | 0.4+  | 0.7-  | 2007 12 14 | 704 | 0.1- | 0.1- |
| 2002 12 30 | 704 | 0.1+ | 0.0  | 2006 09 15 | 704 | 0.4+  | 1.4+  | 2007 12 14 | 704 | 0.7- | 0.3+ |
| 2002 12 30 | 704 | 0.4- | 0.1- | 2006 09 15 | 704 | 0.1-  | 1.0+  | 2007 12 14 | 704 | 0.5- | 0.0  |
| 2002 12 30 | 704 | 1.0+ | 0.4+ | 2006 09 15 | 704 | 0.2-  | 0.4+  | 2007 12 14 | 704 | 0.5- | 0.8- |
| 2003 01 05 | 704 | 0.4- | 0.6+ | 2006 09 15 | 704 | (0.2+ | 2.9+) |            |     |      |      |
| 2003 01 05 | 704 | 0.2- | 0.6+ | 2006 09 15 | 704 | 0.3+  | 0.3+  |            |     |      |      |

(172370)\* 2002 XL<sub>85</sub>

Discovered 2002 Dec. 11 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                           |               |          |          |             |             |
|---------------------------|---------------|----------|----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |          | MPC         |             |
| <i>M</i>                  | 308.05913     | (2000.0) |          | <b>P</b>    | <b>Q</b>    |
| <i>n</i>                  | 0.19688471    | $\omega$ | 65.94894 | -0.61431460 | -0.74182730 |
| <i>a</i>                  | 2.9263620     | $\Omega$ | 64.71890 | +0.57169815 | -0.65333364 |
| <i>e</i>                  | 0.0650313     | <i>i</i> | 17.30076 | +0.54385550 | -0.15115359 |
| <i>P</i>                  | 5.01          | <i>H</i> | 14.3     | <i>G</i>    | 0.15        |
|                           |               |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 07 27 | 644 | 0.2+  | 1.0+  | 2003 01 05 | 704 | 0.5+  | 0.2+  | 2004 05 13 | 704 | (1.2+ | 2.6-) |
| 2001 07 27 | 644 | 0.0   | 0.6+  | 2004 02 17 | 704 | (1.8+ | 0.7+) | 2006 10 12 | E12 | 1.3-  | 1.0+  |
| 2001 07 27 | 644 | 0.1-  | 0.7+  | 2004 02 17 | 704 | 0.9+  | 1.0+  | 2006 10 12 | E12 | 0.5+  | 0.3+  |
| 2001 08 19 | 704 | 0.3-  | 1.3+  | 2004 02 17 | 704 | 0.3+  | 0.3+  | 2006 10 12 | E12 | 0.4+  | 1.0+  |
| 2001 08 19 | 704 | 0.8-  | 0.3-  | 2004 02 17 | 704 | (1.0+ | 1.5+) | 2006 10 12 | E12 | 0.1+  | 0.8+  |
| 2001 08 19 | 704 | (0.5- | 2.0+) | 2004 02 17 | 704 | (0.8+ | 1.6+) | 2006 10 22 | 291 | 0.1-  | 0.2+  |
| 2001 08 19 | 704 | (1.1- | 2.8+) | 2004 03 28 | 704 | 0.3+  | 0.7+  | 2006 10 22 | 291 | 0.1-  | 0.2+  |
| 2001 09 11 | 704 | 0.3-  | 0.3+  | 2004 03 28 | 704 | 0.8+  | 0.1+  | 2006 10 22 | 291 | 0.2-  | 0.2+  |
| 2001 09 11 | 704 | 0.1+  | 0.3-  | 2004 03 28 | 704 | 0.2+  | 0.5+  | 2006 10 23 | 291 | 0.4-  | 0.1+  |
| 2001 09 11 | 704 | 0.5-  | 0.4-  | 2004 03 28 | 704 | 0.3-  | 0.5-  | 2006 10 23 | 291 | 0.2-  | 0.2+  |
| 2001 09 11 | 704 | 0.9-  | 0.6+  | 2004 03 28 | 704 | 0.2+  | 0.4+  | 2006 10 23 | 291 | 0.2-  | 0.3+  |
| 2002 12 06 | 704 | 0.3+  | 0.5+  | 2004 04 14 | 704 | 0.8+  | 0.2+  | 2007 10 11 | 704 | (2.0+ | 0.9+) |
| 2002 12 06 | 704 | 0.7+  | 0.1+  | 2004 04 14 | 704 | 0.1+  | 0.7+  | 2007 10 11 | 704 | 0.9+  | 0.0   |
| 2002 12 06 | 704 | 0.9+  | 0.1+  | 2004 04 14 | 704 | 1.4+  | 0.1-  | 2007 10 11 | 704 | (1.9+ | 0.1+) |
| 2002 12 06 | 704 | 0.4+  | 0.6-  | 2004 04 14 | 704 | 0.9+  | 0.3+  | 2007 10 11 | 704 | 0.6+  | 0.1+  |
| 2002 12 11 | 704 | 0.5-  | 0.0   | 2004 04 14 | 704 | 1.1+  | 0.4+  | 2007 11 20 | 704 | (1.7+ | 1.0-) |
| 2002 12 11 | 704 | 0.1+  | 0.4+  | 2004 04 24 | 703 | 0.1-  | 0.8+  | 2007 11 20 | 704 | (1.2+ | 1.7-) |
| 2002 12 11 | 704 | 0.1+  | 0.2+  | 2004 04 24 | 703 | (0.5- | 2.7+) | 2007 11 20 | 704 | (0.5+ | 2.3-) |
| 2002 12 11 | 704 | 0.4+  | 0.7+  | 2004 04 24 | 704 | (0.9+ | 1.8+) | 2007 11 20 | 704 | (1.5+ | 1.6-) |
| 2002 12 11 | 704 | 0.4+  | 0.4+  | 2004 04 24 | 703 | 0.3+  | 0.1-  | 2007 11 29 | D29 | 0.3+  | 0.0   |
| 2002 12 15 | 704 | 0.1-  | 0.4+  | 2004 04 24 | 704 | 0.2-  | 0.5+  | 2007 11 29 | D29 | 0.1-  | 0.3-  |
| 2002 12 15 | 704 | 0.5-  | 0.6+  | 2004 04 24 | 703 | 0.6+  | 0.7+  | 2007 11 29 | D29 | 0.4-  | 0.2-  |
| 2002 12 15 | 704 | 0.1+  | 0.2+  | 2004 04 24 | 704 | 0.6+  | 0.7+  | 2007 11 29 | D29 | 0.7-  | 0.1+  |
| 2002 12 15 | 704 | 0.2-  | 0.6+  | 2004 04 24 | 704 | 0.7-  | 0.9+  | 2007 12 13 | 704 | 0.3-  | 0.1+  |
| 2002 12 15 | 704 | 0.2-  | 0.3+  | 2004 04 24 | 704 | 0.4-  | 0.3+  | 2007 12 13 | 704 | 0.1+  | 0.4+  |
| 2003 01 04 | 704 | 0.9-  | 0.2-  | 2004 04 25 | 699 | 0.2+  | 0.4+  | 2007 12 13 | 704 | 0.2-  | 0.1-  |
| 2003 01 04 | 704 | 0.7-  | 0.1+  | 2004 04 25 | 699 | 1.2-  | 0.1-  | 2007 12 13 | 704 | 0.2-  | 0.3-  |
| 2003 01 04 | 704 | 0.3-  | 0.4+  | 2004 04 25 | 699 | 0.5-  | 0.3+  | 2007 12 13 | 704 | 0.4-  | 0.4-  |
| 2003 01 04 | 704 | 0.8-  | 0.0   | 2004 04 25 | 699 | 0.1-  | 0.3+  | 2007 12 15 | 704 | 0.2+  | 0.4-  |
| 2003 01 05 | 704 | 0.4-  | 0.1+  | 2004 05 13 | 704 | 0.5+  | 1.1+  | 2007 12 15 | 704 | 0.4+  | 0.1-  |
| 2003 01 05 | 704 | 0.4-  | 0.1+  | 2004 05 13 | 704 | 0.2+  | 1.3+  | 2007 12 15 | 704 | 0.4+  | 0.1-  |
| 2003 01 05 | 704 | 0.0   | 0.0   | 2004 05 13 | 704 | 0.5+  | 1.0+  | 2007 12 15 | 704 | 0.4+  | 0.1-  |
| 2003 01 05 | 704 | 0.4+  | 0.4+  | 2004 05 13 | 704 | 0.6+  | 0.5-  | 2007 12 15 | 704 | 0.1+  | 0.5-  |

(172371)\* 2002 XB<sub>93</sub> = 2002 XD<sub>114</sub> = 2004 EO<sub>109</sub>

Discovered 2002 Dec. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (d, MPO 43525), G. V. Williams (MPO 65405)

|                             |               |       |          |            |             |       |       |            |             |      |      |  |
|-----------------------------|---------------|-------|----------|------------|-------------|-------|-------|------------|-------------|------|------|--|
| Epoch 2007 Oct. 27.0 TT =   | JDT 2454400.5 |       |          | MPC        |             |       |       |            |             |      |      |  |
| $M$                         | 13.42774      |       | (2000.0) |            | $P$         |       |       |            | $Q$         |      |      |  |
| $n$                         | 0.19723187    |       | $\omega$ | 60.40507   | +0.63122033 |       |       |            | -0.77559318 |      |      |  |
| $a$                         | 2.9229272     |       | $\Omega$ | 350.45160  | +0.70296909 |       |       |            | +0.57428665 |      |      |  |
| $e$                         | 0.1326942     |       | $i$      | 1.38684    | +0.32771229 |       |       |            | +0.26201159 |      |      |  |
| $P$                         | 5.00          |       | $H$      | 16.2       | $G$         | 0.15  |       | $U$        | 1           |      |      |  |
| Residuals in seconds of arc |               |       |          |            |             |       |       |            |             |      |      |  |
| 1999 03 13                  | 691           | (2.1- | 0.7-)    | 2002 12 31 | 704         | 0.6+  | 1.2+  | 2006 10 20 | G96         | 0.1- | 0.4+ |  |
| 1999 03 13                  | 691           | 0.5-  | 0.7-     | 2002 12 31 | 704         | 0.1+  | 1.2+  | 2007 11 14 | 691         | 0.0  | 0.0  |  |
| 1999 03 13                  | 691           | 0.7-  | 0.1-     | 2004 03 15 | 691         | 0.4+  | 0.1+  | 2007 11 14 | 691         | 0.1- | 0.1- |  |
| 1999 03 20                  | 645           | 0.1-  | 0.1-     | 2004 03 15 | 691         | 0.2+  | 0.3+  | 2007 11 14 | 691         | 0.3- | 0.2- |  |
| 1999 03 20                  | 645           | 0.1-  | 0.1-     | 2004 03 15 | 691         | 0.4+  | 0.4+  | 2007 12 06 | 691         | 0.0  | 0.3- |  |
| 2002 12 05                  | 704           | 0.3-  | 0.7+     | 2004 03 18 | 704         | (2.1+ | 1.6+) | 2007 12 06 | 691         | 0.2- | 0.1+ |  |
| 2002 12 05                  | 704           | 0.3-  | 0.3-     | 2004 03 18 | 704         | 0.3+  | 0.7+  | 2007 12 06 | 691         | 0.3- | 0.1- |  |
| 2002 12 05                  | 704           | 0.2+  | 0.0      | 2004 03 18 | 704         | 1.0+  | 0.2+  | 2007 12 06 | G96         | 0.1+ | 0.4- |  |
| 2002 12 05                  | 704           | 0.0   | 0.2-     | 2004 03 18 | 704         | 0.6-  | 0.1+  | 2007 12 06 | G96         | 0.2+ | 0.1- |  |
| 2002 12 05                  | 704           | 0.2-  | 0.7+     | 2004 03 23 | 691         | 0.2+  | 0.2+  | 2007 12 06 | G96         | 0.2+ | 0.3- |  |
| 2002 12 07                  | 695           | 0.2+  | 0.2-     | 2004 03 23 | 691         | 0.6+  | 0.4+  | 2007 12 06 | G96         | 0.4+ | 0.2- |  |
| 2002 12 07                  | 695           | 0.0   | 0.5-     | 2004 03 23 | 691         | 0.5+  | 0.2+  | 2007 12 14 | 704         | 0.2+ | 0.8+ |  |
| 2002 12 10                  | 704           | 0.7+  | 0.4+     | 2006 08 18 | 644         | 0.1-  | 0.2-  | 2007 12 14 | 704         | 0.2- | 0.2+ |  |
| 2002 12 10                  | 704           | 1.5+  | 0.0      | 2006 08 18 | 644         | 0.2-  | 0.1+  | 2007 12 14 | 704         | 0.1+ | 0.6+ |  |
| 2002 12 10                  | 704           | 0.4-  | 0.3-     | 2006 08 18 | 644         | 0.1-  | 0.5+  | 2007 12 14 | 704         | 0.6- | 0.1+ |  |
| 2002 12 10                  | 704           | 0.9+  | 1.4-     | 2006 10 20 | G96         | 0.4-  | 0.3+  | 2007 12 14 | 704         | 0.0  | 0.5+ |  |
| 2002 12 31                  | 704           | 0.6+  | 0.2+     | 2006 10 20 | G96         | 0.2+  | 0.3+  |            |             |      |      |  |
| 2002 12 31                  | 704           | 0.2-  | 0.3+     | 2006 10 20 | G96         | 0.2+  | 0.2+  |            |             |      |      |  |

(172372)\* 2002 XO<sub>95</sub>

Discovered 2002 Dec. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                           |               |          |           |             |             |
|---------------------------|---------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |           | MPC         |             |
| <i>M</i>                  | 30.27937      | (2000.0) |           | <b>P</b>    | <b>Q</b>    |
| <i>n</i>                  | 0.18995378    | $\omega$ | 132.01487 | +0.99386610 | -0.00015058 |
| <i>a</i>                  | 2.9971197     | $\Omega$ | 228.30954 | -0.03357348 | +0.95239269 |
| <i>e</i>                  | 0.1091351     | <i>i</i> | 8.51656   | +0.10537072 | +0.30487399 |
| <i>P</i>                  | 5.19          | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|                           |               |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 05 11 | 691 | 0.4+  | 0.1-  | 2007 09 25 | G96 | 0.9+  | 0.3-  | 2007 11 06 | 704 | 1.4+  | 0.3+  |
| 2000 05 11 | 691 | 0.0   | 0.0   | 2007 09 25 | G96 | 0.3+  | 0.1-  | 2007 11 06 | 704 | 0.2-  | 1.1+  |
| 2000 05 11 | 691 | 0.4-  | 0.2-  | 2007 10 05 | 691 | 0.1-  | 0.2-  | 2007 11 06 | 704 | 0.5+  | 0.5+  |
| 2002 11 06 | 704 | 0.8-  | 0.1+  | 2007 10 05 | 691 | 0.2-  | 0.2-  | 2007 11 06 | 704 | 0.3+  | 0.2-  |
| 2002 11 06 | 704 | 0.2-  | 0.9+  | 2007 10 05 | 691 | 0.2-  | 0.1+  | 2007 11 06 | 704 | 0.7+  | 1.3+  |
| 2002 11 06 | 704 | 0.5-  | 0.5+  | 2007 10 09 | 691 | 0.2-  | 0.0   | 2007 11 07 | G96 | 0.7+  | 0.6-  |
| 2002 11 06 | 704 | 0.1+  | 0.4+  | 2007 10 09 | 691 | 0.1-  | 0.2-  | 2007 11 07 | G96 | 1.0+  | 0.4-  |
| 2002 11 23 | 644 | 0.1+  | 0.2-  | 2007 10 09 | 691 | 0.2-  | 0.1+  | 2007 11 07 | G96 | 0.5+  | 0.4-  |
| 2002 11 23 | 644 | 0.1-  | 0.4-  | 2007 10 09 | 704 | (1.6- | 1.4-) | 2007 11 07 | G96 | 0.7+  | 0.5-  |
| 2002 11 23 | 644 | 0.2+  | 0.1-  | 2007 10 09 | 704 | 0.2+  | 0.4+  | 2007 11 07 | 291 | 0.4-  | 0.0   |
| 2002 12 05 | 704 | 0.1-  | 1.3-  | 2007 10 09 | 704 | 0.1+  | 0.3+  | 2007 11 07 | 291 | 0.5-  | 0.0   |
| 2002 12 05 | 704 | 0.2-  | 0.0   | 2007 10 12 | 704 | 0.6+  | 1.0+  | 2007 11 07 | 291 | 0.6-  | 0.1+  |
| 2002 12 05 | 704 | 0.3-  | 0.3-  | 2007 10 12 | 704 | 0.1+  | 1.2+  | 2007 11 15 | 704 | (1.9+ | 0.6-) |
| 2002 12 05 | 704 | 0.3+  | 1.0-  | 2007 10 12 | 704 | 0.1+  | 0.1-  | 2007 11 15 | 704 | 0.1-  | 0.3+  |
| 2002 12 05 | 704 | 0.6-  | 0.9-  | 2007 10 12 | 704 | 0.3+  | 0.2+  | 2007 11 15 | 704 | 0.2+  | 0.5+  |
| 2002 12 10 | 704 | 0.6+  | 0.3+  | 2007 10 12 | 704 | 0.2+  | 0.1+  | 2007 11 17 | 703 | 0.9+  | 0.4-  |
| 2002 12 10 | 704 | 0.1+  | 0.1-  | 2007 10 20 | 703 | 0.0   | 0.2-  | 2007 11 17 | 703 | 0.5+  | 0.6+  |
| 2002 12 10 | 644 | 0.5+  | 0.2-  | 2007 10 20 | 703 | 0.4+  | 0.8-  | 2007 11 17 | 703 | 0.5-  | 0.5-  |
| 2002 12 10 | 704 | (0.2+ | 1.7-) | 2007 10 20 | 703 | 0.8+  | 0.0   | 2007 11 17 | 703 | 0.1+  | 0.8+  |
| 2002 12 10 | 704 | (2.1+ | 1.4-) | 2007 10 20 | 703 | 0.4-  | 0.1+  | 2007 12 05 | 704 | 0.1+  | 0.6+  |
| 2002 12 10 | 644 | 0.4+  | 0.0   | 2007 10 21 | 691 | 0.3-  | 0.2-  | 2007 12 05 | 704 | 1.6+  | 0.4-  |
| 2002 12 10 | 644 | 0.4+  | 0.3+  | 2007 10 21 | 691 | 1.4-  | 1.1+  | 2007 12 05 | 704 | 0.0   | 0.1-  |
| 2005 04 16 | 691 | 0.2+  | 0.2+  | 2007 10 21 | 691 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 0.7+  | 0.6+  |
| 2005 04 16 | 691 | 0.1+  | 0.0   | 2007 10 21 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.6+  | 0.2+  |
| 2005 04 16 | 691 | 0.4+  | 0.1+  | 2007 10 21 | 691 | 0.1+  | 0.1+  | 2007 12 06 | G96 | 1.2+  | 0.2+  |
| 2005 05 16 | 291 | 0.1+  | 0.9+  | 2007 10 21 | 691 | 0.2-  | 0.1+  | 2007 12 06 | G96 | 1.2+  | 0.2-  |
| 2005 05 16 | 291 | 0.2-  | 0.7+  | 2007 11 01 | 704 | 1.2-  | 0.2+  | 2007 12 06 | G96 | 1.4+  | 0.2+  |
| 2005 05 16 | 291 | 0.3-  | 0.5+  | 2007 11 01 | 704 | 0.2-  | 0.6+  | 2007 12 06 | G96 | 1.4+  | 0.3+  |

2007 09 25 G96 0.4+ 0.2- 2007 11 01 704 (0.3+ 1.6+)  
 2007 09 25 G96 0.4+ 0.2- 2007 11 01 704 0.4- 0.5+

**(172373)\* 2002 XX<sub>101</sub>**

Discovered 2002 Dec. 5 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.25061   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19588268 | $\omega$ | 55.69622  | +0.90899643   | -0.41659895 |
| <i>a</i> | 2.9363333  | $\Omega$ | 328.91795 | +0.37361041   | +0.82829637 |
| <i>e</i> | 0.1154363  | <i>i</i> | 1.45058   | +0.18477215   | +0.37466042 |
| <i>P</i> | 5.03       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1999 02 08 691 0.5+ 0.1+   | 2002 12 10 704 0.4+ 0.9+   | 2005 05 16 691 0.1- 0.2+ |
| 1999 02 08 691 0.2+ 0.1+   | 2002 12 10 704 1.1+ 0.8+   | 2005 05 16 691 0.5- 0.0  |
| 1999 02 08 691 0.4+ 0.4-   | 2002 12 10 704 0.6+ 0.2+   | 2006 08 20 644 0.3- 0.2+ |
| 1999 03 13 691 0.7- 0.5-   | 2002 12 10 704 0.1+ 0.3+   | 2006 08 20 644 0.0 0.1+  |
| 1999 03 13 691 (6.0+ 5.9-) | 2002 12 10 704 0.5+ 0.5-   | 2006 08 20 644 0.2- 0.4+ |
| 1999 03 13 691 0.3- 0.2-   | 2003 01 10 291 0.0 0.3-    | 2007 11 17 691 0.1- 0.2- |
| 2001 08 27 691 0.0 0.1-    | 2003 01 10 291 0.1+ 0.4-   | 2007 11 17 691 0.0 0.2-  |
| 2001 08 27 691 0.4+ 0.2-   | 2003 01 10 291 0.4- 0.9-   | 2007 11 17 691 0.1- 0.2- |
| 2001 08 27 691 0.1+ 0.2+   | 2004 02 26 704 1.2+ 0.0    | 2007 12 10 704 0.2- 0.0  |
| 2002 10 30 291 0.3- 0.1+   | 2004 02 26 704 (2.0+ 0.7+) | 2007 12 10 704 0.2+ 1.2+ |
| 2002 10 30 291 0.3- 0.2-   | 2004 02 26 704 0.1+ 1.3+   | 2007 12 10 704 0.1- 0.7+ |
| 2002 10 30 291 0.4- 0.1+   | 2004 02 26 704 0.7+ 0.8+   | 2007 12 14 704 0.6+ 0.5+ |
| 2002 12 05 704 0.1+ 0.1+   | 2005 05 10 G96 0.5- 0.2+   | 2007 12 14 704 0.2+ 1.6+ |
| 2002 12 05 704 0.3- 0.4-   | 2005 05 10 G96 0.2- 0.5+   | 2007 12 14 704 0.4+ 0.4+ |
| 2002 12 05 704 0.3- 0.0    | 2005 05 10 G96 0.3- 0.5+   | 2007 12 14 704 0.2+ 1.5+ |
| 2002 12 05 704 0.3+ 1.1+   | 2005 05 10 G96 0.3- 0.4+   | 2007 12 14 704 0.5+ 0.8+ |
| 2002 12 05 704 0.4- 0.6+   | 2005 05 16 691 0.5+ 0.1+   |                          |

**(172374)\* 2002 XB<sub>107</sub>**

Discovered 2002 Dec. 5 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.08775   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19185009 | $\omega$ | 254.73276 | +0.93100027   | -0.36359044 |
| <i>a</i> | 2.9773373  | $\Omega$ | 126.57761 | +0.34841927   | +0.85884076 |
| <i>e</i> | 0.2450879  | <i>i</i> | 2.30204   | +0.10882327   | +0.36082481 |
| <i>P</i> | 5.14       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 1993 01 21 691 0.3- 0.6-   | 2007 09 11 703 1.0+ 1.4+ | 2007 11 13 699 0.6+ 0.4+ |
| 1993 01 21 691 0.2- 0.1-   | 2007 09 11 703 0.2- 0.5+ | 2007 11 13 699 1.1+ 0.7- |
| 1993 01 21 691 0.0 0.9-    | 2007 09 16 704 0.1- 0.1- | 2007 11 13 699 0.6+ 1.1- |
| 1996 08 13 327 0.4+ 1.2-   | 2007 09 16 704 0.0 0.5+  | 2007 11 13 699 0.7+ 0.9- |
| 1996 08 13 327 0.7+ 0.3+   | 2007 09 16 704 0.4- 1.3- | 2007 11 14 704 0.1+ 0.5+ |
| 1996 08 13 327 0.9+ 0.4-   | 2007 10 30 691 0.1- 0.1+ | 2007 11 14 704 0.4- 0.1+ |
| 1998 01 02 704 0.1- 0.3+   | 2007 10 30 691 0.1- 0.1+ | 2007 11 14 704 0.4- 0.5+ |
| 1998 01 02 704 0.1+ 1.2+   | 2007 10 30 691 0.1- 0.1+ | 2007 11 14 704 0.4- 0.1- |
| 1998 01 02 704 0.7+ 1.2+   | 2007 11 01 D35 0.0 0.0   | 2007 11 14 704 0.1+ 0.4+ |
| 1998 01 02 704 (2.1- 0.9-) | 2007 11 01 D35 0.1- 0.5+ | 2007 11 18 G96 0.1+ 0.3- |
| 2001 07 27 608 0.7- 0.3+   | 2007 11 01 D35 0.5+ 0.3+ | 2007 11 18 G96 0.2+ 0.2- |
| 2001 07 27 608 0.8- 0.5+   | 2007 11 02 106 0.7+ 0.9- | 2007 11 18 G96 0.3+ 0.2- |
| 2001 07 27 608 0.7- 0.2+   | 2007 11 02 106 0.1- 0.3- | 2007 11 18 G96 0.4+ 0.3- |
| 2002 12 05 704 0.1+ 0.2-   | 2007 11 02 106 1.1+ 0.9- | 2007 11 19 691 0.1- 0.2- |
| 2002 12 05 704 0.3+ 0.2+   | 2007 11 02 106 0.3+ 0.2- | 2007 11 19 691 0.3- 0.2- |
| 2002 12 05 704 0.2- 0.1-   | 2007 11 03 691 0.3- 0.1- | 2007 11 19 691 0.1+ 0.1- |
| 2002 12 05 704 0.1- 0.1-   | 2007 11 03 691 0.3- 0.0  | 2007 12 03 703 0.0 0.1+  |
| 2002 12 05 704 0.1- 0.1-   | 2007 11 03 691 0.2- 0.1+ | 2007 12 03 703 0.2+ 0.1+ |
| 2002 12 11 704 0.7- 0.1+   | 2007 11 04 704 0.0 0.8+  | 2007 12 03 703 0.4- 0.4- |
| 2002 12 11 704 0.6- 0.8+   | 2007 11 04 704 0.3+ 0.3+ | 2007 11 04 704 0.3- 0.1- |
| 2002 12 11 704 0.3- 0.3+   | 2007 11 04 704 0.1- 0.4+ | 2007 12 03 703 0.3+ 0.2+ |
| 2002 12 11 704 0.1- 0.2+   | 2007 11 04 704 0.2- 0.1+ | 2007 12 03 703 0.2- 0.1+ |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 12 31 704 0.8+ 0.3- | 2007 11 04 704 0.3+ 0.7+ | 2007 12 03 703 0.7+ 0.2+ |
| 2002 12 31 704 0.6+ 0.3+ | 2007 11 04 691 0.4- 0.0  | 2007 12 03 703 0.1- 0.1- |
| 2002 12 31 704 0.4+ 0.3+ | 2007 11 04 691 0.2- 0.0  | 2007 12 04 699 0.4+ 0.2- |
| 2002 12 31 704 0.1- 0.8- | 2007 11 04 691 0.5- 0.1+ | 2007 12 04 704 0.3+ 0.8+ |
| 2004 02 26 695 0.3+ 0.2+ | 2007 11 08 691 0.3- 0.0  | 2007 12 04 704 0.6+ 0.0  |
| 2004 02 26 695 0.3+ 0.2+ | 2007 11 08 691 0.1- 0.2+ | 2007 12 04 699 0.5+ 0.6- |
| 2004 03 18 691 0.1+ 0.1+ | 2007 11 08 691 0.1- 0.0  | 2007 12 04 704 0.0 0.1-  |
| 2004 03 18 691 0.2+ 0.3+ | 2007 11 09 D29 0.3+ 0.2- | 2007 12 04 704 0.1+ 0.2+ |
| 2004 03 18 691 0.2+ 0.3+ | 2007 11 09 D29 0.3+ 0.0  | 2007 12 04 699 0.3+ 0.2- |
| 2007 09 11 703 0.7+ 1.3+ | 2007 11 09 D29 0.6+ 0.0  | 2007 12 04 704 0.2- 0.7+ |
| 2007 09 11 703 0.6+ 0.8+ | 2007 11 09 D29 0.0 0.3-  | 2007 12 04 699 0.4+ 0.1+ |

**(172375)\* 2002 YH<sub>13</sub> = 1995 SM<sub>65</sub> = 2004 GL**

Discovered 2002 Dec. 31 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. M. E. Sansaturio (*MPO* 61683)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 293.50728  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17866094 | $\omega$ | 330.06972 | -0.62323628   | -0.78203270 |
| <i>a</i> | 3.1221204  | $\Omega$ | 158.48306 | +0.71813736   | -0.57290999 |
| <i>e</i> | 0.1257114  | <i>i</i> | 0.18392   | +0.30960502   | -0.24535484 |
| <i>P</i> | 5.52       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1993 04 21 691 (4.2+ 2.3+) | 2004 04 15 699 (1.5- 0.9+) | 2007 10 20 691 0.0 0.1+  |
| 1993 04 21 691 (5.3+ 0.4-) | 2004 04 15 699 0.9- 0.5+   | 2007 10 20 691 0.1+ 0.1- |
| 1995 09 21 691 0.1+ 0.3+   | 2004 04 15 699 0.2- 0.3+   | 2007 10 30 691 0.1- 0.2+ |
| 1995 09 21 691 0.1- 0.1+   | 2004 04 15 699 1.2- 0.3-   | 2007 10 30 691 0.1+ 0.5+ |
| 1995 09 21 691 0.4+ 0.0    | 2004 04 17 704 (2.4+ 1.4+) | 2007 10 30 691 0.1- 0.4+ |
| 1995 09 26 691 0.2- 0.2+   | 2004 04 17 704 1.1+ 0.7+   | 2007 10 30 G96 0.2+ 0.1- |
| 1995 09 26 691 0.4- 0.8+   | 2004 04 17 704 0.8+ 1.3+   | 2007 10 30 G96 0.5+ 0.2- |
| 1995 09 26 691 0.0 0.1+    | 2004 04 25 691 0.2+ 0.2+   | 2007 10 30 G96 0.3+ 0.2- |
| 1996 11 08 691 1.0+ 0.4-   | 2004 04 25 691 0.0 0.1+    | 2007 10 30 G96 0.2+ 0.1- |
| 1996 11 08 691 0.6- 0.3-   | 2004 04 25 691 0.3+ 0.0    | 2007 11 14 691 0.0 0.1-  |
| 1996 11 08 691 0.6- 0.0    | 2004 05 28 691 0.5+ 0.1+   | 2007 11 14 691 0.2- 0.1+ |
| 2002 12 31 704 0.6- 0.0    | 2004 05 28 691 0.3- 0.3+   | 2007 11 14 691 0.1- 0.7+ |
| 2002 12 31 704 0.4- 0.6+   | 2004 05 28 691 0.4+ 0.1+   | 2007 11 15 704 0.6+ 0.6+ |
| 2002 12 31 704 0.1+ 0.1-   | 2006 09 26 G96 0.3- 0.3+   | 2007 11 15 704 0.1+ 0.6+ |
| 2002 12 31 704 0.6- 0.9-   | 2006 09 26 G96 0.6- 0.0    | 2007 11 15 704 0.2- 0.3+ |
| 2003 01 02 704 0.0 0.4+    | 2006 09 26 G96 0.3+ 0.1+   | 2007 11 15 704 0.6+ 1.4+ |
| 2003 01 02 704 0.1- 0.0    | 2006 09 26 G96 0.6- 0.0    | 2007 11 15 704 1.1+ 1.3+ |
| 2003 01 02 704 0.3- 0.1+   | 2007 09 10 G96 0.2+ 0.2-   | 2007 11 18 691 0.1- 0.0  |
| 2003 01 02 704 0.1+ 0.1+   | 2007 09 10 G96 0.1+ 0.0    | 2007 11 18 691 0.1- 0.0  |
| 2003 01 04 704 0.7+ 0.0    | 2007 09 10 G96 0.1+ 0.2+   | 2007 11 18 691 0.3- 0.1- |
| 2003 01 04 704 1.2+ 0.6+   | 2007 09 10 G96 0.0 0.0     | 2007 12 05 691 0.9- 0.7+ |
| 2003 01 04 704 1.0+ 0.9+   | 2007 10 12 691 0.1+ 0.1-   | 2007 12 05 691 0.1- 0.3+ |
| 2003 01 04 704 (1.9+ 0.5+) | 2007 10 12 691 0.1+ 0.0    | 2007 12 05 691 0.3- 0.1- |
| 2004 04 10 673 0.0 0.4+    | 2007 10 12 691 0.1+ 0.1-   | 2007 12 05 704 0.7+ 0.4- |
| 2004 04 10 673 0.4- 0.5+   | 2007 10 16 691 0.1+ 0.2-   | 2007 12 05 704 0.4+ 0.6+ |
| 2004 04 10 673 0.1- 0.4+   | 2007 10 16 691 0.3- 1.2-   | 2007 12 05 704 0.5- 0.1- |
| 2004 04 11 673 0.3+ 0.4+   | 2007 10 16 691 0.2- 0.3-   | 2007 12 05 704 0.1+ 1.1+ |
| 2004 04 11 673 0.3- 0.2+   | 2007 10 20 703 0.0 0.5+    | 2007 12 15 G96 0.8+ 0.7- |
| 2004 04 11 673 0.4- 0.3+   | 2007 10 20 703 0.3- 1.2+   | 2007 12 15 G96 0.7+ 0.7- |
| 2004 04 12 644 0.1+ 0.6+   | 2007 10 20 703 0.6- 0.0    | 2007 12 15 G96 0.5+ 1.1- |
| 2004 04 12 644 0.0 0.5+    | 2007 10 20 703 0.7+ 1.3+   | 2007 12 15 G96 0.8+ 0.7- |
| 2004 04 12 644 0.5+ 0.7+   | 2007 10 20 691 0.1+ 0.1+   |                          |

**(172376)\* 2002 YE<sub>25</sub> = 2007 VH<sub>25</sub>**

Discovered 2002 Dec. 31 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. G. V. Williams (*MPO* 128003)

2007 DEC. 24

M.P.O. 129351

|                                         |            |      |          |            |     |             |       |             |          |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|-------------|-------|-------------|----------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC         |       |             |          |      |      |
| <i>M</i>                                | 357.28099  |      | (2000.0) |            |     | <b>P</b>    |       | <b>Q</b>    |          |      |      |
| <i>n</i>                                | 0.17594193 |      | $\omega$ | 130.79491  |     | +0.61551953 |       | -0.76047045 |          |      |      |
| <i>a</i>                                | 3.1542042  |      | $\Omega$ | 279.99514  |     | +0.64493050 |       | +0.63692949 |          |      |      |
| <i>e</i>                                | 0.0532225  |      | <i>i</i> | 12.12939   |     | +0.45299046 |       | +0.12651296 |          |      |      |
| <i>P</i>                                | 5.60       |      | <i>H</i> | 14.6       |     | <i>G</i>    | 0.15  |             | <i>U</i> | 1    |      |
| Residuals in seconds of arc             |            |      |          |            |     |             |       |             |          |      |      |
| 2001 08 22                              | 644        | 0.5- | 0.6+     | 2006 08 16 | 644 | 0.0         | 0.3-  | 2007 11 03  | G96      | 0.3- | 0.3- |
| 2001 08 22                              | 644        | 0.5- | 0.4+     | 2006 08 30 | 699 | 0.2+        | 0.7-  | 2007 11 03  | G96      | 0.2+ | 0.3- |
| 2001 08 22                              | 644        | 0.2- | 0.2+     | 2006 08 30 | 699 | 2.1+        | 0.5+  | 2007 11 03  | G96      | 0.4- | 0.4- |
| 2001 09 29                              | 644        | 0.0  | 0.6+     | 2006 08 30 | 699 | 0.1+        | 0.0   | 2007 11 08  | 703      | 0.4+ | 0.1+ |
| 2001 09 29                              | 644        | 0.3- | 0.4+     | 2006 08 30 | 699 | (5.8-       | 4.7+) | 2007 11 08  | 703      | 0.1+ | 0.1+ |
| 2001 09 29                              | 644        | 0.0  | 0.6+     | 2006 09 24 | 621 | 0.6+        | 0.3-  | 2007 11 08  | 703      | 0.0  | 0.4- |
| 2002 12 31                              | 704        | 0.1+ | 0.6+     | 2006 09 24 | 621 | 0.5+        | 0.4-  | 2007 11 08  | 703      | 0.8- | 0.0  |
| 2002 12 31                              | 704        | 0.6+ | 0.5+     | 2006 09 24 | 621 | 0.6+        | 0.4-  | 2007 11 09  | 704      | 0.3+ | 0.6- |
| 2002 12 31                              | 704        | 1.3+ | 0.6+     | 2007 10 12 | 699 | 0.5-        | 0.1-  | 2007 11 09  | 704      | 0.1+ | 0.6- |
| 2002 12 31                              | 704        | 0.3+ | 0.2+     | 2007 10 12 | 699 | 0.5-        | 0.5-  | 2007 11 09  | 704      | 0.5+ | 1.0- |
| 2002 12 31                              | 704        | 0.1- | 0.4+     | 2007 10 12 | 699 | 0.1-        | 0.1-  | 2007 11 09  | 704      | 0.0  | 0.9- |
| 2003 01 04                              | 704        | 0.7- | 0.4-     | 2007 10 12 | 699 | 0.5+        | 0.8-  | 2007 11 09  | 704      | 0.2+ | 0.4- |
| 2003 01 04                              | 704        | 0.1- | 0.0      | 2007 10 16 | 703 | 0.7-        | 1.0+  | 2007 11 16  | 704      | 0.1- | 0.7+ |
| 2003 01 04                              | 704        | 0.0  | 0.6+     | 2007 10 16 | 703 | 0.7-        | 0.0   | 2007 11 16  | 704      | 0.1+ | 0.4+ |
| 2003 01 04                              | 704        | 0.0  | 1.1+     | 2007 10 16 | 703 | 0.6+        | 0.2+  | 2007 11 16  | 704      | 0.4- | 1.0+ |
| 2003 01 08                              | 704        | 0.2+ | 0.9+     | 2007 10 16 | 703 | 0.2-        | 0.1-  | 2007 11 16  | 704      | 0.2+ | 0.8+ |
| 2003 01 08                              | 704        | 0.0  | 0.6+     | 2007 11 02 | 703 | 0.2-        | 0.2-  | 2007 11 17  | G96      | 0.0  | 0.4- |
| 2003 01 08                              | 704        | 0.6- | 0.3-     | 2007 11 02 | 703 | 0.4+        | 0.4-  | 2007 11 17  | G96      | 0.4- | 0.4- |
| 2003 01 08                              | 704        | 1.0+ | 1.1+     | 2007 11 02 | 703 | 0.2+        | 0.1-  | 2007 11 17  | G96      | 0.1- | 0.3- |
| 2006 07 21                              | 703        | 0.9+ | 0.8+     | 2007 11 02 | 703 | 0.0         | 0.3+  | 2007 11 17  | G96      | 0.3- | 0.4- |
| 2006 07 21                              | 703        | 0.4- | 1.1-     | 2007 11 03 | G96 | 0.0         | 0.3-  | 2007 12 03  | 704      | 0.4+ | 0.1+ |
| 2006 07 21                              | 703        | 0.6- | 0.1-     | 2007 11 03 | G96 | 0.1-        | 0.4-  | 2007 12 03  | 704      | 1.0+ | 0.4+ |
| 2006 07 21                              | 703        | 0.2+ | 0.9+     | 2007 11 03 | G96 | 0.1-        | 0.3-  | 2007 12 03  | 704      | 0.2- | 0.2- |
| 2006 08 16                              | 644        | 0.1+ | 0.2-     | 2007 11 03 | G96 | 0.2-        | 0.4-  | 2007 12 03  | 704      | 0.9+ | 0.4- |
| 2006 08 16                              | 644        | 0.2+ | 0.3-     | 2007 11 03 | G96 | 0.2-        | 0.4-  | 2007 12 03  | 704      | 0.7+ | 0.3- |

(172377)\* 2002 YT<sub>34</sub>

Discovered 2002 Dec. 31 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

|                                         |            |      |          |            |     |             |       |             |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|-------------|-------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC         |       |             |     |      |      |
| $M$                                     | 64.14035   |      | (2000.0) |            |     | $P$         | $Q$   |             |     |      |      |
| $n$                                     | 0.19942531 |      | $\omega$ | 101.17227  |     | +0.98123049 |       | +0.15317035 |     |      |      |
| $a$                                     | 2.9014552  |      | $\Omega$ | 250.09934  |     | −0.18546340 |       | +0.91598803 |     |      |      |
| $e$                                     | 0.2333172  |      | $i$      | 7.15746    |     | +0.05282086 |       | +0.37081635 |     |      |      |
| $P$                                     | 4.94       |      | $H$      | 14.8       |     | $G$         | 0.15  |             | $U$ | 1    |      |
| Residuals in seconds of arc             |            |      |          |            |     |             |       |             |     |      |      |
| 2001 06 30                              | 608        | 0.2− | 0.5−     | 2003 01 07 | 704 | 1.2+        | 0.4+  | 2006 08 12  | 644 | 0.0  | 0.2+ |
| 2001 06 30                              | 608        | 0.1− | 0.8−     | 2003 01 07 | 704 | 1.1+        | 0.7+  | 2006 08 12  | 644 | 0.0  | 0.2+ |
| 2001 06 30                              | 608        | 0.1− | 1.1−     | 2003 01 07 | 704 | 0.3+        | 1.3+  | 2006 08 12  | 644 | 0.1+ | 0.0  |
| 2001 07 17                              | 608        | 0.4+ | 0.2+     | 2006 05 12 | G96 | 0.2+        | 0.5−  | 2006 08 13  | 644 | 0.4+ | 0.2+ |
| 2001 07 17                              | 608        | 0.5+ | 0.2+     | 2006 05 12 | G96 | 0.0         | 0.0   | 2006 08 13  | 644 | 0.0  | 0.2+ |
| 2001 07 17                              | 608        | 0.1+ | 0.3+     | 2006 05 12 | G96 | 0.6+        | 0.2+  | 2006 08 13  | 644 | 0.1+ | 0.1+ |
| 2001 07 17                              | 608        | 0.5+ | 0.0      | 2006 05 12 | G96 | 0.0         | 0.2−  | 2006 08 13  | 644 | 0.2+ | 0.2+ |
| 2001 07 17                              | 608        | 0.5+ | 0.3+     | 2006 05 25 | 703 | 0.0         | 0.8+  | 2006 08 13  | 644 | 0.1+ | 0.3+ |
| 2001 07 17                              | 608        | 0.4+ | 0.6+     | 2006 05 25 | 703 | 0.8−        | 0.0   | 2006 08 13  | 644 | 0.2+ | 0.1+ |
| 2001 08 25                              | 704        | 0.4− | 0.3−     | 2006 05 25 | 703 | (1.5−       | 0.2+) | 2006 08 30  | 704 | 0.4− | 0.3− |
| 2001 08 25                              | 704        | 0.3− | 0.7−     | 2006 05 25 | 703 | 0.4+        | 0.6+  | 2006 08 30  | 704 | 0.0  | 0.5− |
| 2001 08 25                              | 704        | 0.3− | 0.9−     | 2006 06 11 | 644 | 0.0         | 0.4+  | 2006 08 30  | 704 | 0.5− | 0.1+ |
| 2001 10 14                              | 704        | 0.6− | 0.6−     | 2006 06 11 | 644 | 0.1+        | 0.1+  | 2006 08 30  | 704 | 0.1+ | 0.5+ |
| 2001 10 14                              | 704        | 0.8− | 0.4+     | 2006 06 11 | 644 | 0.0         | 0.4+  | 2007 11 14  | 704 | 1.2+ | 0.5+ |
| 2001 10 14                              | 704        | 0.1− | 0.9−     | 2006 07 18 | 151 | 0.1−        | 0.1+  | 2007 11 14  | 704 | 0.8+ | 0.1− |
| 2002 12 11                              | 704        | 0.2− | 0.3−     | 2006 07 18 | 151 | 0.1+        | 0.0   | 2007 11 14  | 704 | 1.1+ | 0.5− |
| 2002 12 11                              | 704        | 0.1+ | 0.8−     | 2006 07 18 | 151 | 0.3+        | 0.1−  | 2007 11 14  | 704 | 1.2+ | 0.5− |
| 2002 12 11                              | 704        | 0.1− | 0.5−     | 2006 07 21 | 703 | 0.9−        | 0.1−  | 2007 12 04  | 691 | 0.3− | 0.1− |
| 2002 12 31                              | 704        | 0.0  | 0.1+     | 2006 07 21 | 703 | 0.2−        | 0.4−  | 2007 12 04  | 691 | 0.2− | 0.1− |
| 2002 12 31                              | 704        | 0.1+ | 0.2+     | 2006 07 21 | 703 | 0.2−        | 0.2−  | 2007 12 04  | 691 | 0.3− | 0.1− |
| 2002 12 31                              | 704        | 0.7− | 0.1+     | 2006 07 21 | 703 | 0.5−        | 0.2+  | 2007 12 16  | 691 | 0.1+ | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 31 | 704 | 0.7- | 0.1+ | 2006 07 24 | 704 | 0.1- | 0.5+ | 2007 12 16 | 691 | 0.3- | 0.1- |
| 2002 12 31 | 704 | 0.8- | 0.2- | 2006 07 24 | 704 | 0.6+ | 0.1+ | 2007 12 16 | 691 | 0.5- | 0.1- |
| 2003 01 07 | 704 | 0.5+ | 0.6+ | 2006 07 24 | 704 | 0.1+ | 0.3+ |            |     |      |      |
| 2003 01 07 | 704 | 1.0+ | 0.7+ | 2006 07 24 | 704 | 0.1- | 0.6+ |            |     |      |      |

(172378)\* 2002 YK<sub>35</sub>

Discovered 2002 Dec. 31 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |          |            | MPC         |       |             |            |           |       |
|-----------------------------------------|------------|-------|----------|------------|-------------|-------|-------------|------------|-----------|-------|
| <i>M</i>                                | 320.44315  |       | (2000.0) |            | <b>P</b>    |       | <b>Q</b>    |            |           |       |
| <i>n</i>                                | 0.18279901 |       | $\omega$ | 206.89025  | -0.10833290 |       | -0.97124179 |            |           |       |
| <i>a</i>                                | 3.0748232  |       | $\Omega$ | 249.96118  | +0.94786421 |       | -0.03661954 |            |           |       |
| <i>e</i>                                | 0.1240762  |       | <i>i</i> | 13.04316   | +0.29969554 |       | -0.23526241 |            |           |       |
| <i>P</i>                                | 5.39       |       | <i>H</i> | 15.0       | <i>G</i>    | 0.15  | <i>U</i>    | 1          |           |       |
| Residuals in seconds of arc             |            |       |          |            |             |       |             |            |           |       |
| 1996 12 08                              | 691        | 0.3-  | 0.2-     | 2004 03 15 | 644         | 0.4-  | 0.2+        | 2007 11 07 | 704 0.9-  | 0.4+  |
| 1996 12 08                              | 691        | 0.3-  | 0.0      | 2004 03 15 | 644         | 0.5-  | 0.3+        | 2007 11 07 | 704 0.3-  | 0.4-  |
| 1996 12 08                              | 691        | 0.3-  | 0.3-     | 2004 03 15 | 644         | 0.5-  | 0.4+        | 2007 11 09 | 691 0.2-  | 0.1+  |
| 2001 08 22                              | 704        | 0.3+  | 1.0+     | 2007 10 09 | 691         | 0.1-  | 0.1-        | 2007 11 09 | 691 0.1-  | 0.0   |
| 2001 08 22                              | 704        | (0.5+ | 1.6+)    | 2007 10 09 | 691         | 0.0   | 0.1-        | 2007 11 09 | 691 0.1-  | 0.1-  |
| 2001 08 22                              | 704        | 0.8+  | 0.6+     | 2007 10 09 | 691         | 0.1-  | 0.1-        | 2007 11 12 | 703 0.5+  | 0.1+  |
| 2001 08 22                              | 704        | 0.3+  | 1.4+     | 2007 10 12 | 704         | 0.3+  | 0.1-        | 2007 11 12 | 703 0.9+  | 0.0   |
| 2001 08 22                              | 704        | (0.4+ | 1.6+)    | 2007 10 12 | 704         | 0.3-  | 0.5+        | 2007 11 12 | 703 0.2-  | 0.5+  |
| 2001 09 10                              | 644        | 0.5+  | 0.1+     | 2007 10 12 | 704         | 0.4+  | 0.2-        | 2007 11 12 | 703 0.2+  | 1.0+  |
| 2001 09 10                              | 704        | 1.2-  | 0.5-     | 2007 10 12 | 704         | 0.7+  | 0.2-        | 2007 11 15 | 699 0.9+  | 0.3+  |
| 2001 09 10                              | 644        | 0.7+  | 0.4-     | 2007 10 12 | 704         | 0.7-  | 0.4+        | 2007 11 15 | 699 0.3+  | 0.7+  |
| 2001 09 10                              | 704        | 0.2+  | 0.6-     | 2007 10 16 | 703         | 1.0+  | 0.5+        | 2007 11 15 | 699 0.2-  | 0.2+  |
| 2001 09 10                              | 704        | 0.3+  | 0.0      | 2007 10 16 | 703         | 0.9+  | 0.4+        | 2007 11 15 | 699 1.0-  | 0.2+  |
| 2001 09 10                              | 644        | 0.9+  | 0.6-     | 2007 10 16 | 703         | 1.4+  | 1.3+        | 2007 11 18 | 704 0.1-  | 0.2+  |
| 2001 09 10                              | 704        | 0.3-  | 0.3+     | 2007 10 16 | 703         | 0.9+  | 0.5+        | 2007 11 18 | 704 0.1-  | 0.1+  |
| 2001 09 18                              | 645        | 0.1+  | 0.1-     | 2007 10 18 | 691         | 0.3-  | 0.0         | 2007 11 18 | 704 0.0   | 0.0   |
| 2001 09 18                              | 645        | 0.1+  | 0.1-     | 2007 10 18 | 691         | 0.1-  | 0.1-        | 2007 11 18 | 704 0.1-  | 0.0   |
| 2001 09 21                              | 644        | 0.1-  | 0.1+     | 2007 10 18 | 691         | 0.1-  | 0.0         | 2007 11 18 | 704 0.1-  | 0.1-  |
| 2001 09 21                              | 644        | 0.6+  | 0.1-     | 2007 10 21 | 703         | 1.1+  | 0.1+        | 2007 11 20 | 704 0.5+  | 0.3+  |
| 2001 09 21                              | 644        | 0.2+  | 0.3+     | 2007 10 21 | 703         | 0.8-  | 0.1+        | 2007 11 20 | 704 0.1+  | 0.7+  |
| 2001 09 29                              | 644        | 0.5-  | 0.4+     | 2007 10 21 | 703         | 0.3-  | 0.2-        | 2007 11 20 | 704 0.3+  | 0.1+  |
| 2001 09 29                              | 644        | 0.6-  | 0.2+     | 2007 10 21 | 703         | 0.2+  | 0.5+        | 2007 11 20 | 704 0.2+  | 0.7+  |
| 2001 09 29                              | 644        | 0.0   | 0.8+     | 2007 11 02 | 704         | 1.2+  | 1.1+        | 2007 11 20 | 704 0.0   | 0.2-  |
| 2002 12 11                              | 704        | 0.5-  | 1.0-     | 2007 11 02 | 704         | (1.6+ | 0.4+)       | 2007 12 05 | 691 0.4-  | 0.2+  |
| 2002 12 11                              | 704        | 0.8+  | 0.9-     | 2007 11 02 | 704         | 0.2+  | 1.2+        | 2007 12 05 | 691 0.5-  | 0.2+  |
| 2002 12 11                              | 704        | 0.1-  | 0.1+     | 2007 11 02 | 704         | (2.1+ | 1.2+)       | 2007 12 05 | 691 0.1-  | 0.3-  |
| 2002 12 11                              | 704        | 0.3-  | 0.4+     | 2007 11 02 | 703         | 0.1-  | 0.0         | 2007 12 05 | 699 0.6+  | 1.2-  |
| 2002 12 31                              | 704        | 0.3+  | 0.6-     | 2007 11 02 | 703         | 0.6-  | 0.6-        | 2007 12 05 | 699 0.2-  | 1.2-  |
| 2002 12 31                              | 704        | (0.6+ | 1.6-)    | 2007 11 02 | 703         | 0.3-  | 0.7-        | 2007 12 05 | 699 0.7+  | 0.8-  |
| 2002 12 31                              | 704        | 1.4+  | 1.0-     | 2007 11 02 | 703         | 0.8-  | 0.7-        | 2007 12 05 | 699 1.2-  | 0.5+  |
| 2002 12 31                              | 704        | 0.0   | 0.7-     | 2007 11 02 | D29         | 0.4+  | 0.4-        | 2007 12 12 | 704 0.5+  | 1.2-  |
| 2003 01 07                              | 704        | 0.4+  | 0.4-     | 2007 11 02 | D29         | 0.3+  | 0.4+        | 2007 12 12 | 704 (0.2- | 1.9-) |
| 2003 01 07                              | 704        | 0.5+  | 0.4-     | 2007 11 02 | D29         | 0.1-  | 0.1-        | 2007 12 12 | 704 (1.7- | 1.8-) |
| 2003 01 07                              | 704        | 0.5+  | 0.0      | 2007 11 02 | D29         | 0.1+  | 0.2-        | 2007 12 12 | 704 0.4+  | 0.4-  |
| 2003 01 07                              | 704        | 0.6+  | 0.7-     | 2007 11 07 | 691         | 0.2-  | 0.1-        | 2007 12 12 | 704 (0.4- | 1.9-) |
| 2003 01 07                              | 704        | 0.6+  | 0.5-     | 2007 11 07 | 691         | 0.1-  | 0.4+        | 2007 12 15 | 704 0.3-  | 1.3+  |
| 2003 01 27                              | 704        | 0.5+  | 0.1+     | 2007 11 07 | 691         | 0.3-  | 0.0         | 2007 12 15 | 704 0.3-  | 1.1+  |
| 2003 01 27                              | 704        | 1.4-  | 0.5+     | 2007 11 07 | 704         | 0.1+  | 0.3-        | 2007 12 15 | 704 1.1+  | 0.1-  |
| 2003 01 27                              | 704        | 1.0-  | 0.6-     | 2007 11 07 | 704         | 0.1-  | 0.2-        | 2007 12 15 | 704 0.1+  | 0.5+  |
| 2003 01 27                              | 704        | 0.0   | 0.2-     | 2007 11 07 | 704         | 0.2+  | 0.0         | 2007 12 15 | 704 0.3+  | 0.6+  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 347.93524  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18152325 | $\omega$ 191.57437 | +0.55476806   | -0.80804868 |
| <i>a</i> | 3.0892132  | $\Omega$ 225.12086 | +0.78393619   | +0.58747103 |
| <i>e</i> | 0.2301025  | <i>i</i> 16.24414  | +0.27870495   | -0.04398990 |
| <i>P</i> | 5.43       | <i>H</i> 14.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 30 | 644 | 0.2-  | 1.0+  | 2007 10 09 | 704 | (0.9+ | 3.5-) | 2007 11 03 | 699 | 0.6+ | 0.0  |
| 2001 07 30 | 644 | 0.2-  | 0.7+  | 2007 10 09 | 704 | (1.0+ | 2.6-) | 2007 11 03 | 699 | 0.6+ | 0.6+ |
| 2001 07 30 | 644 | 0.0   | 0.8+  | 2007 10 09 | 704 | (0.9+ | 1.9-) | 2007 11 06 | 704 | 0.2+ | 0.8+ |
| 2001 08 04 | 644 | 0.3+  | 0.1+  | 2007 10 09 | 704 | (1.0+ | 2.1-) | 2007 11 06 | 704 | 0.2+ | 0.6+ |
| 2001 08 04 | 644 | 0.0   | 0.5+  | 2007 10 10 | 699 | 0.2+  | 0.2+  | 2007 11 06 | 704 | 0.6+ | 0.7+ |
| 2001 08 04 | 644 | 0.2-  | 0.6+  | 2007 10 10 | 699 | 0.6+  | 0.2+  | 2007 11 06 | 704 | 0.1+ | 0.7+ |
| 2002 11 12 | 704 | 1.3+  | 0.3+  | 2007 10 10 | 699 | 0.6+  | 0.6-  | 2007 11 06 | 704 | 0.6+ | 0.5+ |
| 2002 11 12 | 704 | (1.8+ | 0.2+) | 2007 10 10 | 699 | 1.4+  | 0.1+  | 2007 11 07 | G96 | 0.5+ | 0.2- |
| 2002 11 12 | 704 | (1.6+ | 0.1+) | 2007 10 11 | 691 | 0.1-  | 0.0   | 2007 11 07 | G96 | 0.3+ | 0.3- |
| 2003 01 02 | 704 | 0.1-  | 0.2-  | 2007 10 11 | 691 | 0.2-  | 0.1-  | 2007 11 07 | G96 | 0.7+ | 0.2- |
| 2003 01 02 | 704 | 0.3-  | 0.1-  | 2007 10 11 | 691 | 0.2-  | 0.1+  | 2007 11 07 | G96 | 0.3+ | 0.2- |
| 2003 01 02 | 704 | 0.0   | 0.2+  | 2007 10 12 | 704 | 0.0   | 0.2+  | 2007 11 13 | 699 | 0.5+ | 0.2- |
| 2003 01 02 | 704 | 0.0   | 0.3+  | 2007 10 12 | 704 | 0.2-  | 0.2-  | 2007 11 13 | 699 | 0.4+ | 0.2- |
| 2003 01 02 | 704 | 0.1+  | 0.2+  | 2007 10 12 | 704 | 0.1-  | 0.1+  | 2007 11 13 | 699 | 0.6+ | 0.0  |
| 2003 01 04 | 704 | 0.2-  | 0.3+  | 2007 10 12 | 704 | 0.1+  | 0.6-  | 2007 11 13 | 699 | 0.1- | 0.0  |
| 2003 01 04 | 704 | 0.2-  | 0.2+  | 2007 10 12 | 704 | 0.1-  | 0.2-  | 2007 11 15 | 704 | 0.1- | 0.3+ |
| 2003 01 04 | 704 | 0.1+  | 0.3+  | 2007 10 15 | 704 | 0.2+  | 0.0   | 2007 11 15 | 704 | 0.2- | 0.3+ |
| 2003 01 04 | 704 | 0.3+  | 0.2+  | 2007 10 15 | 704 | 0.1+  | 0.8+  | 2007 11 15 | 704 | 0.2+ | 0.1+ |
| 2003 01 04 | 704 | 0.0   | 0.0   | 2007 10 15 | 704 | 0.3-  | 0.6+  | 2007 11 15 | 704 | 0.7+ | 0.0  |
| 2003 01 07 | 704 | 0.2+  | 0.2+  | 2007 10 15 | 704 | 0.2+  | 0.1-  | 2007 11 15 | 704 | 0.4+ | 0.6+ |
| 2003 01 07 | 704 | 0.3+  | 0.3-  | 2007 10 15 | 704 | 0.3-  | 0.7+  | 2007 11 17 | 703 | 0.0  | 0.3- |
| 2003 01 07 | 704 | 0.8-  | 0.2+  | 2007 10 15 | 691 | 0.2-  | 0.1-  | 2007 11 17 | 703 | 0.2- | 0.2- |
| 2003 01 28 | 704 | 0.2-  | 0.6+  | 2007 10 15 | 691 | 0.2-  | 0.1-  | 2007 11 17 | 703 | 0.3+ | 0.2- |
| 2003 01 28 | 704 | 0.3-  | 0.5+  | 2007 10 15 | 691 | 0.3-  | 0.0   | 2007 11 17 | 703 | 0.3- | 0.1- |
| 2003 01 28 | 704 | 0.5-  | 0.2+  | 2007 10 18 | 699 | (2.7+ | 0.0 ) | 2007 12 05 | 704 | 0.2+ | 0.7+ |
| 2004 03 26 | 704 | 0.5+  | 1.1+  | 2007 10 18 | 699 | 0.7+  | 0.2+  | 2007 12 05 | 703 | 0.5- | 0.3+ |
| 2004 03 26 | 704 | 0.6+  | 0.5+  | 2007 10 18 | 699 | 0.8+  | 0.1-  | 2007 12 05 | 704 | 0.5- | 0.8+ |
| 2004 03 26 | 704 | 0.9+  | 0.5+  | 2007 10 19 | 691 | 0.2-  | 0.2+  | 2007 12 05 | 703 | 0.0  | 0.8- |
| 2004 03 26 | 704 | 0.8+  | 0.3+  | 2007 10 19 | 691 | 0.2-  | 0.0   | 2007 12 05 | 703 | 1.2- | 0.1- |
| 2005 05 15 | G96 | 0.4-  | 0.1+  | 2007 10 19 | 691 | 0.4-  | 0.0   | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2005 05 15 | G96 | 0.1-  | 0.1+  | 2007 10 22 | 704 | 0.3+  | 0.8+  | 2007 12 05 | 703 | 0.3- | 0.7- |
| 2005 05 15 | G96 | 0.4-  | 0.3+  | 2007 10 22 | 704 | 0.4+  | 0.0   | 2007 12 05 | 704 | 0.1- | 0.4+ |
| 2005 05 15 | G96 | 0.4-  | 0.5+  | 2007 10 22 | 704 | 0.7+  | 0.2+  | 2007 12 05 | 704 | 0.1+ | 0.4- |
| 2005 05 19 | G96 | 0.1+  | 0.0   | 2007 10 22 | 704 | 0.7-  | 0.2+  | 2007 12 05 | 106 | 0.5+ | 0.5- |
| 2005 05 19 | G96 | 0.3-  | 0.4+  | 2007 10 22 | 704 | 0.3+  | 0.2-  | 2007 12 05 | 106 | 0.1- | 0.5- |
| 2005 05 19 | G96 | 0.1-  | 0.2+  | 2007 10 30 | 703 | 0.4-  | 0.1-  | 2007 12 05 | 106 | 0.3+ | 0.1- |
| 2005 05 19 | G96 | 0.2-  | 0.2+  | 2007 10 30 | 703 | 0.1-  | 0.0   | 2007 12 05 | 106 | 0.4+ | 0.2+ |
| 2007 09 25 | G96 | 0.2+  | 0.4-  | 2007 10 30 | 703 | 0.0   | 0.1-  | 2007 12 06 | G96 | 0.0  | 0.4- |
| 2007 09 25 | G96 | 0.4+  | 0.3-  | 2007 10 30 | 703 | 0.2-  | 0.2+  | 2007 12 06 | G96 | 0.0  | 0.2- |
| 2007 09 25 | G96 | 0.2+  | 0.5-  | 2007 11 01 | 704 | 0.2-  | 0.0   | 2007 12 06 | G96 | 0.2- | 0.4- |
| 2007 09 25 | G96 | 0.4+  | 0.1-  | 2007 11 01 | 704 | 0.4-  | 0.1-  | 2007 12 16 | 699 | 1.6+ | 0.2- |
| 2007 10 07 | 691 | 0.2-  | 0.3-  | 2007 11 01 | 704 | 0.4-  | 0.1+  | 2007 12 16 | 699 | 0.5- | 0.5- |
| 2007 10 07 | 691 | 0.5-  | 0.0   | 2007 11 01 | 704 | 0.0   | 0.2-  | 2007 12 16 | 699 | 0.3- | 0.2- |
| 2007 10 07 | 691 | 0.4-  | 0.1+  | 2007 11 01 | 704 | 0.1-  | 0.2-  | 2007 12 16 | 699 | 0.1+ | 0.2+ |
| 2007 10 09 | 704 | (1.0+ | 2.7+) | 2007 11 03 | 699 | 0.5+  | 0.3+  |            |     |      |      |

(172380)\* 2003 AH<sub>10</sub>

Discovered 2003 Jan. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.89808  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21195456 | $\omega$ 351.09328 | -0.52105983   | -0.84172612 |
| <i>a</i> | 2.7859557  | $\Omega$ 130.17303 | +0.79404488   | -0.53881168 |
| <i>e</i> | 0.1849572  | <i>i</i> 10.66426  | +0.31303255   | -0.03433834 |
| <i>P</i> | 4.65       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 01 | 704 | 0.0   | 0.2+  | 2003 01 11 | 644 | 0.6+ | 1.1+ | 2005 06 18 | G96 | 0.3+ | 1.0+ |
| 2002 12 01 | 704 | 0.5-  | 0.3+  | 2003 01 27 | 704 | 0.1- | 0.5- | 2005 06 18 | G96 | 0.1- | 0.5+ |
| 2002 12 01 | 704 | 0.6-  | 0.4+  | 2003 01 27 | 704 | 0.1- | 0.6- | 2005 06 18 | G96 | 0.0  | 0.5+ |
| 2002 12 14 | 704 | 0.1+  | 0.2-  | 2003 01 27 | 704 | 0.0  | 0.3- | 2005 07 05 | G96 | 0.5+ | 0.5+ |
| 2002 12 14 | 704 | 1.0+  | 0.5-  | 2003 01 27 | 704 | 0.1- | 0.5- | 2005 07 05 | G96 | 0.2+ | 0.6+ |
| 2002 12 14 | 704 | 0.1+  | 0.1+  | 2003 01 27 | 704 | 0.7+ | 0.3+ | 2005 07 05 | G96 | 1.2- | 1.0- |
| 2002 12 14 | 704 | 0.4-  | 0.5-  | 2003 01 27 | 644 | 0.1- | 1.3- | 2007 11 14 | 704 | 0.5- | 0.7- |
| 2002 12 14 | 704 | 0.3+  | 0.3+  | 2003 01 27 | 644 | 0.1+ | 1.0- | 2007 11 14 | 704 | 0.5+ | 0.4+ |
| 2003 01 01 | 704 | 0.1-  | 1.1-  | 2003 01 27 | 644 | 0.1+ | 1.2- | 2007 11 14 | 704 | 1.2+ | 0.3+ |
| 2003 01 01 | 704 | (1.1- | 1.9-) | 2003 02 02 | 704 | 0.1- | 0.5+ | 2007 11 14 | 704 | 0.2- | 0.3+ |
| 2003 01 01 | 704 | 0.0   | 0.9-  | 2003 02 02 | 704 | 0.9+ | 0.0  | 2007 11 14 | 704 | 1.2- | 0.3+ |
| 2003 01 01 | 704 | 0.1+  | 0.6+  | 2003 02 02 | 704 | 0.1+ | 0.0  | 2007 11 17 | 703 | 0.2+ | 0.3- |
| 2003 01 05 | 704 | 0.2-  | 1.1+  | 2003 02 02 | 704 | 0.3- | 0.2+ | 2007 11 17 | 703 | 1.1- | 0.5- |
| 2003 01 05 | 704 | 0.2-  | 1.3+  | 2003 02 02 | 704 | 0.5+ | 0.4- | 2007 11 17 | 703 | 1.2- | 0.2- |
| 2003 01 05 | 704 | 0.5-  | 0.8+  | 2003 02 03 | 644 | 0.2- | 0.5- | 2007 11 17 | 703 | 1.1- | 0.4+ |
| 2003 01 05 | 704 | (0.3- | 2.0+) | 2003 02 03 | 644 | 0.6- | 1.1- | 2007 12 05 | 704 | 1.0+ | 0.1+ |
| 2003 01 05 | 704 | 0.3-  | 0.6+  | 2003 02 03 | 644 | 0.3- | 0.5- | 2007 12 05 | 704 | 1.1+ | 0.8+ |
| 2003 01 05 | 704 | (0.4- | 1.7+) | 2004 04 16 | 704 | 0.2- | 0.6+ | 2007 12 05 | 704 | 0.5+ | 0.9+ |
| 2003 01 05 | 704 | 0.7-  | 0.8+  | 2004 04 16 | 704 | 0.8+ | 0.0  | 2007 12 05 | 704 | 1.0+ | 1.1+ |
| 2003 01 11 | 644 | 0.3+  | 1.2+  | 2004 04 16 | 704 | 0.3- | 0.1- |            |     |      |      |
| 2003 01 11 | 644 | 0.7+  | 1.1+  | 2005 06 18 | G96 | 0.0  | 0.7+ |            |     |      |      |

(172381)\* 2003 AY<sub>10</sub> = 1999 CT<sub>43</sub>

Discovered 2003 Jan. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 43248)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.59086   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22190529 | $\omega$ 331.36738 | -0.07897735   | -0.97666278 |
| <i>a</i> | 2.7020348  | $\Omega$ 122.50192 | +0.95381176   | -0.13228612 |
| <i>e</i> | 0.1681009  | <i>i</i> 13.69915  | +0.28983738   | +0.16920461 |
| <i>P</i> | 4.44       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 02 10 | 704 | 1.1-  | 1.6-  | 2003 01 01 | 704 | 0.4-  | 1.3+  | 2004 04 21 | 703 | (0.6- | 1.7+) |
| 1999 02 10 | 704 | 0.1-  | 0.1+  | 2003 01 01 | 704 | 0.5-  | 0.8-  | 2004 04 21 | 703 | (1.2- | 2.6+) |
| 1999 02 10 | 704 | 0.4-  | 0.5+  | 2003 01 01 | 704 | 0.5-  | 0.2+  | 2004 04 24 | 704 | (1.8+ | 0.6+) |
| 1999 02 13 | 704 | 1.6+  | 0.7+  | 2003 01 01 | 704 | 1.1-  | 0.7-  | 2004 04 24 | 704 | 1.2+  | 0.3+  |
| 1999 02 13 | 704 | 1.2-  | 0.4+  | 2003 01 05 | 704 | 0.3+  | 0.5-  | 2004 04 24 | 704 | 0.6+  | 0.1-  |
| 1999 02 13 | 704 | 0.9-  | 0.2+  | 2003 01 05 | 704 | 0.2+  | 0.5-  | 2006 09 24 | 699 | 0.8+  | 1.0+  |
| 1999 02 13 | 704 | 0.0   | 0.1-  | 2003 01 05 | 704 | 0.2+  | 0.5-  | 2006 09 24 | 699 | 0.7-  | 0.5+  |
| 1999 02 13 | 704 | 0.9+  | 0.3-  | 2003 01 05 | 704 | 0.7+  | 0.1-  | 2006 09 24 | 699 | 1.4-  | 0.1-  |
| 2002 12 08 | 608 | 0.5+  | 0.0   | 2003 01 05 | 704 | 1.0+  | 0.1-  | 2006 09 24 | 699 | 0.3-  | 0.1-  |
| 2002 12 08 | 608 | 0.8+  | 0.9+  | 2003 01 27 | 704 | 0.2+  | 0.9-  | 2006 10 09 | 644 | 0.5+  | 0.1-  |
| 2002 12 08 | 608 | 0.8+  | 0.1-  | 2003 01 27 | 704 | 0.2-  | 0.4-  | 2006 10 09 | 644 | 0.3-  | 0.1+  |
| 2002 12 14 | 704 | 0.2+  | 0.1+  | 2003 01 27 | 704 | 1.3+  | 1.0+  | 2006 10 09 | 644 | 0.4-  | 0.9+  |
| 2002 12 14 | 704 | 0.5+  | 0.3+  | 2003 01 27 | 704 | (2.8+ | 0.0 ) | 2007 11 14 | 691 | 0.1-  | 0.0   |
| 2002 12 14 | 704 | 0.3+  | 0.2-  | 2003 01 27 | 644 | 0.2-  | 0.3+  | 2007 11 14 | 691 | 0.2-  | 0.2+  |
| 2002 12 14 | 704 | 0.3+  | 0.1+  | 2003 01 27 | 644 | 0.3-  | 0.3+  | 2007 11 14 | 691 | 0.2-  | 0.1+  |
| 2002 12 14 | 704 | 0.1+  | 0.4+  | 2003 01 27 | 644 | 0.0   | 0.2-  | 2007 11 20 | 691 | 0.2-  | 0.1+  |
| 2002 12 16 | 608 | 0.9+  | 1.1-  | 2003 02 02 | 704 | 0.4-  | 0.4+  | 2007 11 20 | 691 | 0.0   | 0.1+  |
| 2002 12 16 | 608 | (0.8+ | 1.7-) | 2003 02 02 | 704 | 0.3-  | 0.5+  | 2007 11 20 | 691 | 0.4-  | 0.2+  |
| 2002 12 16 | 608 | (0.4+ | 2.5-) | 2003 02 02 | 704 | 0.9-  | 0.4+  | 2007 12 13 | 704 | 1.0+  | 1.3+  |
| 2002 12 30 | 608 | 0.7-  | 0.5-  | 2003 02 02 | 704 | 0.0   | 0.3+  | 2007 12 13 | 704 | 0.8+  | 0.4-  |
| 2002 12 30 | 608 | 0.9-  | 0.1-  | 2004 04 21 | 703 | 0.4-  | 0.3+  | 2007 12 13 | 704 | 0.9+  | 0.7+  |
| 2002 12 30 | 608 | 0.4-  | 0.5-  | 2004 04 21 | 703 | 0.3-  | 0.6+  | 2007 12 13 | 704 | 1.3+  | 1.0-  |

2007 DEC. 24

M.P.O. 129353

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 309.90191  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18341237 | $\omega$ 259.38277 | -0.43656597   | -0.89596397 |
| <i>a</i> | 3.0679643  | $\Omega$ 216.85183 | +0.86945798   | -0.39685706 |
| <i>e</i> | 0.2535672  | <i>i</i> 7.81986   | +0.23119902   | -0.19938166 |
| <i>P</i> | 5.37       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 04 | 704 | 1.1-  | 0.2-  | 2007 10 08 | 691 | 0.4- | 0.1- | 2007 10 30 | G96 | 0.1+ | 0.3- |
| 1998 03 04 | 704 | 0.6+  | 0.4+  | 2007 10 08 | 691 | 0.4- | 0.1+ | 2007 10 30 | 703 | 0.7+ | 0.1- |
| 1998 03 04 | 704 | 0.7-  | 0.2+  | 2007 10 08 | 691 | 0.2- | 0.3- | 2007 10 30 | G96 | 0.6+ | 0.3- |
| 1998 03 04 | 704 | 0.6-  | 1.3-  | 2007 10 11 | 704 | 0.1- | 0.5- | 2007 10 30 | G96 | 0.6+ | 0.2- |
| 1998 03 04 | 704 | 0.7-  | 1.3-  | 2007 10 11 | 704 | 0.1+ | 0.1+ | 2007 11 05 | 704 | 0.1- | 0.4+ |
| 2001 09 16 | 704 | 1.0+  | 0.3+  | 2007 10 11 | 704 | 0.0  | 0.7+ | 2007 11 05 | 704 | 0.2+ | 0.2+ |
| 2001 09 16 | 704 | 1.1+  | 0.0   | 2007 10 12 | 691 | 0.2- | 0.0  | 2007 11 05 | 704 | 0.2- | 0.1+ |
| 2001 09 16 | 704 | 0.4+  | 0.0   | 2007 10 12 | 691 | 0.1- | 0.1- | 2007 11 05 | 704 | 0.4+ | 0.1- |
| 2001 10 15 | 645 | 0.1+  | 0.3-  | 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 05 | 704 | 0.3+ | 0.1- |
| 2001 10 15 | 645 | 0.0   | 0.3-  | 2007 10 14 | 704 | 0.8+ | 1.1+ | 2007 11 07 | 703 | 1.0- | 0.2+ |
| 2002 11 07 | 704 | 1.1+  | 0.1+  | 2007 10 14 | 704 | 0.1+ | 0.7+ | 2007 11 07 | 703 | 0.4- | 0.6+ |
| 2002 11 07 | 704 | 0.0   | 0.1-  | 2007 10 14 | 704 | 0.1+ | 0.4+ | 2007 11 07 | 703 | 0.1+ | 0.4+ |
| 2002 11 07 | 704 | 0.2-  | 0.4-  | 2007 10 14 | 704 | 0.8+ | 0.6+ | 2007 11 07 | 703 | 0.5- | 0.3+ |
| 2002 12 01 | 704 | 0.3-  | 0.7-  | 2007 10 14 | 704 | 0.3+ | 1.3+ | 2007 11 09 | G96 | 0.4+ | 0.2- |
| 2002 12 01 | 704 | 0.5-  | 1.1-  | 2007 10 15 | 703 | 1.0- | 0.2- | 2007 11 09 | G96 | 0.5+ | 0.1- |
| 2002 12 01 | 704 | 0.4-  | 0.8-  | 2007 10 15 | 703 | 0.4+ | 0.1+ | 2007 11 09 | G96 | 0.1+ | 0.2- |
| 2002 12 14 | 704 | 0.3+  | 0.1-  | 2007 10 15 | 703 | 1.1+ | 0.1- | 2007 11 09 | G96 | 0.1+ | 0.2- |
| 2002 12 14 | 704 | 0.2+  | 0.5+  | 2007 10 15 | 703 | 0.3+ | 0.7+ | 2007 11 11 | 699 | 0.1+ | 0.2- |
| 2002 12 14 | 704 | 0.0   | 0.2+  | 2007 10 16 | 691 | 0.1+ | 0.1- | 2007 11 11 | 699 | 0.4+ | 0.2- |
| 2002 12 14 | 704 | 0.2+  | 0.7+  | 2007 10 16 | 691 | 0.2+ | 0.3+ | 2007 11 11 | 699 | 0.0  | 0.0  |
| 2003 01 01 | 704 | 0.1+  | 0.1+  | 2007 10 16 | 691 | 0.2- | 0.1- | 2007 11 11 | 699 | 0.3+ | 0.8- |
| 2003 01 01 | 704 | 0.1-  | 0.1+  | 2007 10 20 | 703 | 0.1- | 0.7+ | 2007 11 14 | 704 | 0.3+ | 1.1+ |
| 2003 01 01 | 704 | 0.3-  | 0.7-  | 2007 10 20 | 703 | 0.3- | 0.3- | 2007 11 14 | 704 | 0.1- | 0.4+ |
| 2003 01 01 | 704 | 0.5+  | 0.2-  | 2007 10 20 | 703 | 0.1+ | 0.3- | 2007 11 14 | 704 | 0.6+ | 0.8+ |
| 2003 01 05 | 704 | 1.1-  | 0.9+  | 2007 10 20 | 703 | 0.0  | 0.1- | 2007 11 14 | 704 | 0.3+ | 1.1+ |
| 2003 01 05 | 704 | 0.2+  | 0.3-  | 2007 10 21 | 704 | 0.4+ | 0.5- | 2007 11 14 | 704 | 0.2+ | 0.6+ |
| 2003 01 05 | 704 | 0.8+  | 0.5-  | 2007 10 21 | 691 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.3+ | 1.1- |
| 2003 01 05 | 704 | 0.6+  | 0.5-  | 2007 10 21 | 704 | 0.8- | 0.5+ | 2007 11 17 | 703 | 0.2+ | 0.1- |
| 2003 01 05 | 704 | 1.2+  | 0.6-  | 2007 10 21 | 704 | 0.1+ | 0.3+ | 2007 11 17 | 703 | 0.0  | 0.4+ |
| 2003 01 09 | 704 | 0.2-  | 0.8-  | 2007 10 21 | 691 | 0.9- | 0.3- | 2007 11 17 | 703 | 0.3+ | 0.9- |
| 2003 01 09 | 704 | 0.4+  | 0.1-  | 2007 10 21 | 704 | 0.3- | 0.1+ | 2007 12 05 | 699 | 0.6+ | 0.8- |
| 2003 01 09 | 704 | 0.0   | 0.1+  | 2007 10 21 | 691 | 0.0  | 0.2+ | 2007 12 05 | 699 | 0.2+ | 0.5- |
| 2004 04 23 | 704 | (1.0- | 1.8+) | 2007 10 21 | 704 | 0.0  | 0.8+ | 2007 12 05 | 699 | 1.1+ | 1.2- |
| 2004 04 23 | 704 | 0.6+  | 0.1-  | 2007 10 30 | 691 | 0.4- | 0.1- | 2007 12 05 | 704 | 0.1+ | 0.7+ |
| 2004 04 23 | 704 | (0.0  | 1.6+) | 2007 10 30 | 691 | 0.3- | 0.1- | 2007 12 05 | 699 | 0.4+ | 0.8+ |
| 2004 04 23 | 704 | (0.3+ | 2.1+) | 2007 10 30 | 691 | 0.8- | 0.1+ | 2007 12 05 | 704 | 0.3- | 0.3+ |
| 2006 05 25 | G96 | 0.1+  | 0.6+  | 2007 10 30 | 703 | 0.7+ | 0.1+ | 2007 12 05 | 704 | 0.2- | 0.9+ |
| 2006 05 25 | G96 | 0.1-  | 0.6+  | 2007 10 30 | 703 | 0.4+ | 0.0  | 2007 12 05 | 704 | 0.6- | 0.7+ |
| 2006 05 25 | G96 | 0.0   | 0.3+  | 2007 10 30 | G96 | 0.6+ | 0.1- | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2006 05 25 | G96 | 0.2-  | 0.3+  | 2007 10 30 | 703 | 0.2- | 0.9+ |            |     |      |      |

(172383)\* 2003 AW<sub>15</sub> = 2001 SK<sub>41</sub>

Discovered 2003 Jan. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. M. Kretlow (MPO 43249)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.44991  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21582916 | $\omega$ 183.48244 | -0.91690277   | -0.39323837 |
| <i>a</i> | 2.7525125  | $\Omega$ 333.04001 | +0.36971617   | -0.77250010 |
| <i>e</i> | 0.1097072  | <i>i</i> 8.65337   | +0.15033050   | -0.49860523 |
| <i>P</i> | 4.57       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 21 | 645 | 0.0  | 0.1+ | 2002 12 05 | 704 | 1.0- | 0.3- | 2006 11 15 | 703 | 0.2+  | 1.2+  |
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2003 01 04 | 704 | 0.2+ | 0.3- | 2006 11 15 | 703 | 0.9-  | 0.3+  |
| 2001 09 16 | 704 | 0.3- | 0.8+ | 2003 01 04 | 704 | 0.5- | 0.2- | 2006 11 15 | 703 | 0.2-  | 0.3+  |
| 2001 09 16 | 704 | 0.3+ | 1.2+ | 2003 01 04 | 704 | 0.7- | 0.2- | 2006 11 15 | 703 | (1.7+ | 1.8-) |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 0.6- | 0.8+ | 2003 01 05 | 704 | 0.3-  | 0.3-  | 2006 11 22 | 703 | 0.6-  | 0.4-  |
| 2001 09 18 | 699 | 0.2+ | 0.9+ | 2003 01 05 | 704 | 0.1-  | 0.9-  | 2006 11 22 | 703 | 0.5-  | 0.0   |
| 2001 09 18 | 699 | 0.2+ | 0.0  | 2003 01 05 | 704 | 0.2-  | 0.8-  | 2006 11 22 | 703 | 0.3-  | 0.0   |
| 2001 09 18 | 699 | 1.0- | 0.2- | 2003 01 05 | 704 | 0.1+  | 0.7-  | 2006 11 22 | 703 | 0.0   | 0.6+  |
| 2001 09 18 | 699 | 0.2- | 0.3+ | 2003 01 10 | 704 | 0.3+  | 0.4-  | 2007 11 13 | 703 | 1.0-  | 0.2-  |
| 2001 09 19 | 704 | 0.8- | 0.4- | 2003 01 10 | 704 | 0.0   | 0.1+  | 2007 11 13 | 703 | 0.0   | 0.1+  |
| 2001 09 19 | 704 | 0.5- | 1.0+ | 2003 01 10 | 704 | 0.1+  | 0.1-  | 2007 11 13 | 703 | 0.1-  | 0.6+  |
| 2001 09 19 | 704 | 0.3+ | 1.3+ | 2003 01 10 | 704 | 0.3-  | 0.0   | 2007 11 13 | 703 | (2.3- | 0.1+) |
| 2001 09 19 | 704 | 0.1- | 0.1- | 2003 02 01 | 704 | 0.1-  | 0.0   | 2007 11 20 | G96 | 0.2-  | 0.6-  |
| 2001 09 20 | 704 | 0.6- | 0.7- | 2003 02 01 | 704 | 1.2+  | 0.2-  | 2007 11 20 | G96 | 0.6+  | 0.4-  |
| 2001 09 20 | 704 | 0.5- | 0.7+ | 2003 02 01 | 704 | 1.2+  | 0.7+  | 2007 11 20 | G96 | 0.5-  | 0.3-  |
| 2001 09 20 | 704 | 0.3+ | 0.6+ | 2006 10 19 | 703 | 0.2+  | 1.3+  | 2007 11 20 | G96 | 0.1+  | 0.3+  |
| 2001 10 14 | 704 | 0.1+ | 0.5+ | 2006 10 19 | 703 | 0.3-  | 0.2+  | 2007 12 06 | 704 | 0.3+  | 0.2-  |
| 2001 10 14 | 704 | 0.9+ | 0.2- | 2006 10 19 | 703 | 0.3-  | 1.1-  | 2007 12 06 | 704 | 0.8+  | 0.2-  |
| 2001 10 14 | 704 | 0.1+ | 1.0- | 2006 10 27 | 703 | 0.1+  | 0.2-  | 2007 12 06 | 704 | 1.8+  | 2.5+  |
| 2002 12 05 | 704 | 0.2+ | 0.1- | 2006 10 27 | 703 | 0.2+  | 0.4-  | 2007 12 06 | 704 | 1.0+  | 1.5+  |
| 2002 12 05 | 704 | 0.3+ | 0.3+ | 2006 10 27 | 703 | (2.7+ | 1.1-) |            |     |       |       |
| 2002 12 05 | 704 | 0.5- | 0.5- | 2006 10 27 | 703 | 0.3+  | 0.9-  |            |     |       |       |

(172384)\* 2003 AF<sub>21</sub> = 2004 FL<sub>121</sub>

Discovered 2003 Jan. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 61692)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 308.74149  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.18484396 | $\omega$ 51.83403 | -0.55435169   | -0.81365909 |
| <i>a</i> | 3.0521031  | $\Omega$ 72.71281 | +0.69471616   | -0.56821324 |
| <i>e</i> | 0.0553304  | <i>i</i> 10.56572 | +0.45832703   | -0.12285195 |
| <i>P</i> | 5.33       | <i>H</i> 15.0     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 12 13 | 691 | (3.8- | 1.0+) | 2003 01 13 | 644 | 1.1-  | 1.3+  | 2006 09 26 | 703 | 1.0-  | 0.8+  |
| 1991 12 13 | 691 | 0.8+  | 1.1+  | 2003 01 13 | 644 | 0.4-  | 0.8+  | 2007 11 02 | 691 | (0.3- | 2.8-) |
| 2001 10 15 | 644 | 0.9-  | 1.0+  | 2003 01 13 | 644 | 0.3-  | 1.0+  | 2007 11 02 | 691 | 0.1+  | 0.1+  |
| 2001 10 15 | 644 | 0.9-  | 0.6+  | 2004 03 23 | 704 | 0.9+  | 0.3+  | 2007 11 02 | 691 | 0.9-  | 0.6-  |
| 2001 10 15 | 644 | 0.8-  | 1.0+  | 2004 03 23 | 704 | 0.4+  | 0.5+  | 2007 12 04 | G96 | 0.1+  | 0.2-  |
| 2001 10 23 | 644 | 0.6-  | 0.4-  | 2004 03 23 | 704 | 1.1+  | 0.1+  | 2007 12 04 | G96 | 0.6+  | 0.3-  |
| 2001 10 23 | 644 | 0.9-  | 0.1-  | 2004 03 29 | 703 | 0.3-  | 0.3-  | 2007 12 04 | G96 | 0.6+  | 0.1-  |
| 2001 10 23 | 644 | 0.9-  | 0.0   | 2004 03 29 | 703 | 0.1-  | 1.3+  | 2007 12 04 | G96 | 0.2+  | 0.2-  |
| 2003 01 05 | 704 | 0.2-  | 0.1+  | 2004 03 29 | 703 | 0.7-  | 0.1-  | 2007 12 10 | 704 | 0.4-  | 0.4-  |
| 2003 01 05 | 704 | 0.7+  | 0.1-  | 2004 03 29 | 703 | 0.1+  | 0.7-  | 2007 12 10 | 704 | 0.8+  | 0.6+  |
| 2003 01 05 | 704 | 0.2-  | 0.8+  | 2004 04 16 | 704 | 1.2+  | 0.9+  | 2007 12 10 | 704 | 0.1+  | 0.3-  |
| 2003 01 05 | 704 | 0.0   | 1.1+  | 2004 04 16 | 704 | 0.2+  | 1.3+  | 2007 12 14 | 704 | 0.9+  | 0.1+  |
| 2003 01 07 | 704 | 1.2-  | 0.2-  | 2004 04 16 | 704 | 1.1+  | 0.6+  | 2007 12 14 | 704 | 0.6+  | 0.6+  |
| 2003 01 07 | 704 | (2.1- | 0.2-) | 2004 04 16 | 704 | 0.1+  | 0.3+  | 2007 12 14 | 704 | 1.1+  | 0.3+  |
| 2003 01 07 | 704 | 0.8-  | 0.8-  | 2004 04 17 | 704 | 0.0   | 0.2+  | 2007 12 14 | 704 | 1.1+  | 0.5+  |
| 2003 01 07 | 704 | 0.8-  | 0.7-  | 2004 04 17 | 704 | 0.2+  | 0.1+  | 2007 12 14 | 704 | 0.1+  | 0.8+  |
| 2003 01 07 | 704 | 1.3-  | 0.7-  | 2004 04 17 | 704 | 0.8+  | 0.1-  | 2007 12 15 | 691 | 0.2+  | 0.1-  |
| 2003 01 09 | 704 | (1.3- | 2.1-) | 2004 04 17 | 704 | 0.1+  | 0.4+  | 2007 12 15 | 691 | 0.1+  | 0.1-  |
| 2003 01 09 | 704 | 1.0-  | 0.1-  | 2006 09 20 | 703 | 0.2+  | 0.0   | 2007 12 15 | 691 | 0.3+  | 0.2+  |
| 2003 01 09 | 704 | 1.1-  | 1.0-  | 2006 09 20 | 703 | (2.5+ | 1.5-) | 2007 12 15 | 704 | 1.4+  | 0.8+  |
| 2003 01 09 | 704 | 0.5-  | 0.5+  | 2006 09 20 | 703 | (2.1- | 1.5+) | 2007 12 15 | 704 | 0.4+  | 0.1+  |
| 2003 01 09 | 704 | 1.1-  | 1.2-  | 2006 09 20 | 703 | 1.0-  | 0.9+  | 2007 12 15 | 704 | 0.9+  | 0.6+  |
| 2003 01 09 | 704 | (2.0- | 0.2+) | 2006 09 26 | 703 | (0.1+ | 1.9+) | 2007 12 15 | 704 | 1.0+  | 0.3-  |
| 2003 01 09 | 704 | 0.9-  | 1.3-  | 2006 09 26 | 703 | (0.5- | 1.8+) |            |     |       |       |
| 2003 01 09 | 704 | 0.8-  | 0.1-  | 2006 09 26 | 703 | (0.5+ | 1.7+) |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 241.44992  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17321557 | $\omega$ 131.18725 | -0.99848229   | -0.04291650 |
| <i>a</i> | 3.1872155  | $\Omega$ 46.38415  | +0.02406493   | -0.90369615 |
| <i>e</i> | 0.0635285  | <i>i</i> 2.73255   | +0.04953775   | -0.42601812 |
| <i>P</i> | 5.69       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 21 | 691 | 0.4+ | 0.3+  | 2004 03 27 | 704 | 0.5+ | 0.3+ | 2007 11 03 | 691 | 0.3- | 0.1+ |
| 2001 11 21 | 691 | 0.8- | 0.3+  | 2004 03 29 | 704 | 0.0  | 0.7+ | 2007 11 03 | 691 | 0.3- | 0.2+ |
| 2001 11 21 | 691 | 0.1+ | 0.3+  | 2004 03 29 | 704 | 0.4+ | 0.7+ | 2007 11 05 | 704 | 0.5+ | 0.7+ |
| 2002 12 31 | 704 | 1.1- | 0.2-  | 2004 03 29 | 704 | 1.1+ | 0.4+ | 2007 11 05 | 704 | 0.8+ | 0.1- |
| 2002 12 31 | 704 | 0.9+ | 0.4+  | 2004 04 21 | 704 | 0.1- | 0.5- | 2007 11 05 | 704 | 1.2+ | 0.1+ |
| 2002 12 31 | 704 | (0.0 | 2.0+) | 2004 04 21 | 704 | 0.1- | 0.2+ | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2002 12 31 | 704 | 0.3- | 0.8+  | 2004 04 21 | 704 | 0.0  | 1.1+ | 2007 11 07 | 691 | 0.3- | 0.1+ |
| 2003 01 05 | 704 | 0.4- | 1.2+  | 2006 08 27 | 691 | 0.2- | 0.4+ | 2007 11 07 | 691 | 0.1- | 0.2+ |
| 2003 01 05 | 704 | 0.4+ | 0.4+  | 2006 08 27 | 691 | 0.2- | 0.7+ | 2007 11 12 | A13 | 0.0  | 0.1- |
| 2003 01 05 | 704 | 0.2+ | 0.0   | 2006 08 27 | 691 | 0.3- | 0.3+ | 2007 11 12 | A13 | 0.2+ | 0.1+ |
| 2003 01 05 | 704 | 0.7+ | 0.6+  | 2006 10 19 | 695 | 0.8- | 0.8+ | 2007 11 12 | A13 | 0.1+ | 0.2- |
| 2003 01 07 | 704 | 0.1- | 0.9+  | 2006 10 20 | 695 | 0.5- | 0.4+ | 2007 11 14 | 691 | 0.2- | 0.1- |
| 2003 01 07 | 704 | 0.0  | 0.3-  | 2006 10 20 | 695 | 0.4- | 0.5+ | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2003 01 07 | 704 | 0.1- | 0.7+  | 2007 10 09 | G96 | 0.3+ | 0.2- | 2007 11 14 | 691 | 0.1+ | 0.3- |
| 2003 01 07 | 704 | 0.3- | 0.3-  | 2007 10 09 | G96 | 0.1+ | 0.1- | 2007 11 15 | 704 | 0.4+ | 0.4+ |
| 2004 03 20 | 699 | 0.7- | 0.8+  | 2007 10 09 | G96 | 0.2+ | 0.2- | 2007 11 15 | 704 | 0.0  | 0.8- |
| 2004 03 20 | 699 | 1.1- | 0.4+  | 2007 10 09 | G96 | 0.4+ | 0.4- | 2007 11 15 | 704 | 0.3- | 0.5+ |
| 2004 03 20 | 699 | 1.2+ | 1.0+  | 2007 10 17 | G96 | 0.6+ | 0.2- | 2007 11 15 | 704 | 0.3+ | 0.8- |
| 2004 03 20 | 699 | 0.0  | 0.8+  | 2007 10 17 | G96 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.4+ | 0.5- |
| 2004 03 27 | 704 | 0.6+ | 1.2+  | 2007 10 17 | G96 | 0.3+ | 0.1- | 2007 12 06 | G96 | 0.0  | 0.2- |
| 2004 03 27 | 704 | 1.2+ | 0.1+  | 2007 10 17 | G96 | 0.2- | 0.3- | 2007 12 06 | G96 | 0.1+ | 0.6- |
| 2004 03 27 | 704 | 0.6+ | 0.3+  | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 06 | G96 | 0.2+ | 0.2- |

**(172386)\* 2003 AO<sub>35</sub> = 2001 UN<sub>193</sub>**

Discovered 2003 Jan. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 47248)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 266.09812  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17691990 | $\omega$ 250.29153 | -0.85354186   | -0.46340402 |
| <i>a</i> | 3.1425697  | $\Omega$ 261.46495 | +0.52058395   | -0.77729578 |
| <i>e</i> | 0.1053927  | <i>i</i> 13.93572  | -0.02141606   | -0.42552083 |
| <i>P</i> | 5.57       | <i>H</i> 14.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 19 | 644 | 0.6-  | 0.2+  | 2004 03 26 | 704 | 0.4+ | 0.5+ | 2007 11 02 | 704 | 0.2-  | 0.0   |
| 2001 09 19 | 644 | 0.7-  | 0.6+  | 2004 03 26 | 704 | 0.7+ | 0.5+ | 2007 11 02 | 703 | 0.2+  | 0.0   |
| 2001 09 19 | 644 | 0.5-  | 0.6+  | 2004 03 26 | 704 | 0.7+ | 0.1+ | 2007 11 02 | 703 | 0.2-  | 1.0-  |
| 2001 09 29 | 644 | 0.3+  | 0.1+  | 2004 03 28 | 699 | 0.5+ | 0.2+ | 2007 11 02 | 703 | 0.5-  | 0.0   |
| 2001 09 29 | 644 | 0.2+  | 0.1-  | 2004 03 28 | 699 | 0.1- | 0.4+ | 2007 11 02 | 703 | 0.1+  | 0.8+  |
| 2001 09 29 | 644 | 0.2+  | 0.1-  | 2004 03 28 | 699 | 0.2+ | 0.5+ | 2007 11 08 | 704 | 0.4+  | 1.3+  |
| 2001 10 18 | 704 | 0.2-  | 0.3-  | 2004 03 28 | 699 | 0.9+ | 0.1+ | 2007 11 08 | 704 | 0.1+  | 1.4+  |
| 2001 10 18 | 704 | 0.4+  | 0.3+  | 2004 04 13 | 644 | 0.1- | 0.4+ | 2007 11 08 | 704 | 0.4-  | 1.4+  |
| 2001 10 18 | 704 | 0.5+  | 0.1-  | 2004 04 13 | 644 | 0.1- | 0.5+ | 2007 11 08 | 704 | 0.0   | 0.2+  |
| 2001 10 20 | 699 | 0.3-  | 1.2+  | 2004 04 13 | 644 | 0.0  | 0.1+ | 2007 11 08 | 704 | (0.1- | 1.9+) |
| 2001 10 20 | 699 | 0.0   | 0.5+  | 2004 04 16 | 699 | 0.2+ | 1.0+ | 2007 11 08 | 703 | 0.7-  | 1.4-  |
| 2001 10 20 | 699 | 1.1+  | 0.3-  | 2004 04 16 | 699 | 0.4- | 0.6- | 2007 11 08 | 703 | 0.2-  | 0.7-  |
| 2001 10 20 | 699 | 0.3-  | 0.4+  | 2004 04 16 | 699 | 0.1+ | 0.5+ | 2007 11 08 | 703 | 0.5-  | 0.4-  |
| 2002 11 06 | 704 | 1.0-  | 0.7-  | 2004 04 16 | 699 | 0.6+ | 0.1+ | 2007 11 08 | 703 | 0.5-  | 1.2-  |
| 2002 11 06 | 704 | 0.2+  | 0.3+  | 2004 04 16 | E12 | 0.7- | 1.0+ | 2007 11 16 | G96 | 0.0   | 0.4-  |
| 2002 11 06 | 704 | (1.9- | 0.3-) | 2004 04 16 | E12 | 0.0  | 0.7+ | 2007 11 16 | G96 | 0.1-  | 0.2-  |
| 2002 11 06 | 704 | 1.2-  | 0.4+  | 2004 04 16 | E12 | 0.0  | 0.6+ | 2007 11 16 | G96 | 0.4+  | 0.6-  |
| 2002 12 05 | 704 | 0.3-  | 1.3-  | 2004 04 16 | E12 | 0.1+ | 0.5+ | 2007 11 17 | 704 | 0.2+  | 0.5+  |
| 2002 12 05 | 704 | 0.5-  | 0.7+  | 2004 04 17 | 704 | 0.1- | 1.1- | 2007 11 17 | 704 | 0.1+  | 0.3-  |
| 2002 12 05 | 704 | 0.6+  | 0.9+  | 2004 04 17 | 704 | 0.3+ | 0.9- | 2007 11 17 | 704 | 0.1-  | 0.2-  |
| 2002 12 05 | 704 | 0.1-  | 0.2-  | 2004 04 17 | 704 | 0.1- | 1.2- | 2007 11 17 | 704 | 0.5-  | 0.2+  |
| 2002 12 05 | 704 | 0.2-  | 0.1+  | 2004 04 17 | 704 | 0.0  | 0.8- | 2007 11 17 | 704 | 0.2+  | 0.4+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 07 | 704 | 0.7-  | 0.3-  | 2004 04 23 | 608 | 0.4- | 0.1+ | 2007 12 02 | 704 | 1.2+ | 0.9+ |
| 2003 01 07 | 704 | 0.2+  | 0.3+  | 2004 04 23 | 608 | 0.1+ | 0.2- | 2007 12 02 | 704 | 0.1- | 0.6+ |
| 2003 01 07 | 704 | 0.9+  | 0.1+  | 2004 04 23 | 608 | 0.0  | 0.2+ | 2007 12 02 | 704 | 1.5+ | 0.7+ |
| 2003 01 07 | 704 | 0.1+  | 0.1+  | 2004 05 14 | 703 | 0.3- | 0.1+ | 2007 12 02 | 704 | 0.3+ | 0.0  |
| 2003 01 07 | 704 | 0.7+  | 0.8+  | 2004 05 14 | 703 | 0.1- | 0.6- | 2007 12 02 | 704 | 0.3+ | 0.3- |
| 2003 01 08 | 704 | 0.3-  | 0.2+  | 2004 05 14 | 703 | 0.8- | 0.1+ | 2007 12 05 | 699 | 0.9- | 1.4- |
| 2003 01 08 | 704 | 0.1+  | 0.5-  | 2004 05 14 | 703 | 0.3+ | 0.6- | 2007 12 05 | 699 | 0.4+ | 0.3- |
| 2003 01 08 | 704 | 0.4-  | 0.8-  | 2007 10 16 | 703 | 0.6- | 0.5+ | 2007 12 05 | 699 | 0.5+ | 0.3- |
| 2003 01 08 | 704 | 0.1+  | 0.1-  | 2007 10 16 | 703 | 0.8- | 1.0- | 2007 12 05 | 699 | 0.6+ | 0.4- |
| 2003 01 08 | 704 | 0.7+  | 0.8-  | 2007 10 16 | 703 | 0.1- | 0.6+ | 2007 12 16 | 704 | 0.5+ | 0.4- |
| 2004 03 16 | 644 | 0.3-  | 0.1+  | 2007 10 16 | 703 | 0.6+ | 0.1- | 2007 12 16 | 704 | 0.4- | 0.3+ |
| 2004 03 16 | 644 | 0.2-  | 0.0   | 2007 11 02 | 704 | 0.5- | 0.0  | 2007 12 16 | 704 | 0.1- | 0.6+ |
| 2004 03 16 | 644 | 0.4-  | 0.1+  | 2007 11 02 | 704 | 0.1- | 0.2+ | 2007 12 16 | 704 | 0.3- | 1.1+ |
| 2004 03 26 | 704 | 0.2+  | 1.1+  | 2007 11 02 | 704 | 0.2+ | 0.2+ |            |     |      |      |
| 2004 03 26 | 704 | (1.6+ | 0.1+) | 2007 11 02 | 704 | 0.0  | 0.1- |            |     |      |      |

**(172387)\* 2003 AZ<sub>37</sub>**

Discovered 2003 Jan. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 259.27569  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17804916 | $\omega$ 56.55579  | -0.93885151   | +0.02961426 |
| <i>a</i> | 3.1292680  | $\Omega$ 122.82910 | -0.08949158   | -0.98304262 |
| <i>e</i> | 0.1422163  | <i>i</i> 24.09476  | +0.33248926   | -0.18097018 |
| <i>P</i> | 5.54       | <i>H</i> 14.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 11 19 | 644 | 0.0   | 0.0+  | 2003 03 26 | 704 | 0.0   | 0.6+  | 2005 06 28 | 644 | 0.2-  | 0.9+  |
| 2002 11 19 | 644 | 0.2+  | 0.9+  | 2004 04 12 | A35 | 0.4-  | 1.1+  | 2005 06 28 | 644 | 0.1-  | 0.7+  |
| 2002 11 19 | 644 | 0.7+  | 1.1+  | 2004 04 12 | A35 | 0.4+  | 0.3+  | 2005 06 28 | 644 | 0.1+  | 0.3+  |
| 2003 01 01 | 704 | 0.4+  | 0.4+  | 2004 04 12 | A35 | 0.2-  | 0.2+  | 2005 06 30 | 691 | 0.4+  | 0.5+  |
| 2003 01 01 | 704 | 0.1-  | 0.1+  | 2004 04 14 | 704 | 0.1-  | 0.1-  | 2005 06 30 | 691 | 0.0   | 0.4+  |
| 2003 01 01 | 704 | 0.0   | 0.3+  | 2004 04 14 | 704 | 0.4+  | 0.1-  | 2005 06 30 | 691 | 0.2+  | 0.5+  |
| 2003 01 01 | 704 | 0.3-  | 0.2-  | 2004 04 14 | 704 | 0.3+  | 0.4-  | 2005 07 04 | 644 | 0.2-  | 0.4+  |
| 2003 01 07 | 704 | 0.9+  | 0.5-  | 2004 04 14 | 704 | (1.5+ | 0.8+) | 2005 07 04 | 644 | 0.2-  | 0.2+  |
| 2003 01 07 | 704 | 0.3-  | 0.5+  | 2004 04 14 | 704 | 0.2+  | 0.6+  | 2005 07 04 | 644 | 0.2-  | 0.2+  |
| 2003 01 07 | 704 | 0.7-  | 0.4+  | 2004 04 25 | 699 | 0.0   | 0.1+  | 2005 07 05 | 691 | 0.2-  | 0.3+  |
| 2003 01 07 | 704 | 0.3-  | 0.1+  | 2004 04 25 | 699 | 0.3-  | 0.2-  | 2005 07 05 | 691 | 0.0   | 0.3+  |
| 2003 01 07 | 704 | 0.3+  | 0.2-  | 2004 04 25 | 699 | 0.5-  | 0.2+  | 2005 07 05 | 691 | 0.2-  | 0.3+  |
| 2003 01 08 | 704 | 0.3-  | 0.6+  | 2004 04 25 | 699 | 0.4-  | 0.0   | 2005 07 12 | 703 | (2.3- | 0.4+) |
| 2003 01 08 | 704 | 0.2-  | 0.8+  | 2004 04 25 | 608 | 0.2+  | 1.2+  | 2005 07 12 | 703 | 0.0   | 0.4+  |
| 2003 01 08 | 704 | 0.1+  | 0.5+  | 2004 04 25 | 608 | 0.7+  | 1.4+  | 2005 07 12 | 703 | (1.7- | 0.9+) |
| 2003 01 08 | 704 | 0.3-  | 0.8+  | 2004 04 25 | 608 | 0.4+  | 1.3+  | 2005 07 12 | 703 | 0.3-  | 0.3+  |
| 2003 01 27 | 704 | 0.1+  | 0.7+  | 2004 05 11 | 703 | 0.3-  | 0.3+  | 2005 07 12 | G96 | 0.2+  | 0.0   |
| 2003 01 27 | 704 | 0.3-  | 0.2+  | 2004 05 11 | 703 | 0.3+  | 0.7+  | 2005 07 12 | G96 | 0.3+  | 0.0   |
| 2003 01 27 | 704 | 0.8-  | 0.7-  | 2004 05 11 | 703 | 1.2+  | 0.0   | 2005 07 12 | G96 | 0.0   | 0.2-  |
| 2003 01 27 | 704 | 0.0   | 0.7+  | 2004 05 11 | 703 | (0.4- | 1.7-) | 2005 07 12 | G96 | 0.2+  | 1.3+  |
| 2003 01 27 | 704 | 0.5-  | 0.9+  | 2004 05 12 | 704 | 0.4-  | 0.6+  | 2007 11 14 | G96 | 0.2-  | 0.1+  |
| 2003 02 03 | 704 | 0.8-  | 0.3+  | 2004 05 12 | 704 | 0.1+  | 0.3+  | 2007 11 14 | G96 | 0.3-  | 0.2+  |
| 2003 02 03 | 704 | 0.7+  | 0.1+  | 2004 05 12 | 704 | 0.3+  | 0.1-  | 2007 11 14 | G96 | 0.3-  | 0.1+  |
| 2003 02 03 | 704 | 0.1+  | 0.0   | 2004 05 12 | 704 | 0.3-  | 0.2-  | 2007 11 14 | G96 | 0.3-  | 0.3+  |
| 2003 02 03 | 704 | 0.4-  | 0.0   | 2004 05 12 | 704 | 0.6-  | 0.5-  | 2007 11 20 | 703 | 0.6-  | 1.2+  |
| 2003 02 03 | 704 | 0.3-  | 0.3-  | 2004 05 23 | 703 | 0.4+  | 0.6+  | 2007 11 20 | 703 | 1.3-  | 0.7+  |
| 2003 02 08 | 704 | 0.4-  | 0.0   | 2004 05 23 | 703 | 1.1+  | 0.2-  | 2007 11 20 | 703 | 1.2-  | 0.2-  |
| 2003 02 08 | 704 | 0.6-  | 0.3+  | 2004 05 23 | 703 | 0.5+  | 0.8-  | 2007 11 20 | 703 | 0.9-  | 1.2+  |
| 2003 02 08 | 704 | 0.3-  | 0.0   | 2004 05 23 | 703 | 0.1+  | 0.7+  | 2007 12 05 | 703 | 0.1-  | 0.2+  |
| 2003 02 08 | 704 | 1.4+  | 1.1+  | 2004 06 08 | 703 | 1.4+  | 0.4-  | 2007 12 05 | 703 | 0.2-  | 1.0+  |
| 2003 02 08 | 704 | 0.1-  | 0.1+  | 2004 06 08 | 703 | 1.4+  | 0.3-  | 2007 12 05 | 703 | 0.0   | 0.3+  |
| 2003 03 08 | 704 | (2.8- | 0.6+) | 2004 06 08 | 703 | 0.2-  | 0.2-  | 2007 12 05 | 703 | 0.1-  | 0.4+  |
| 2003 03 08 | 704 | (1.6- | 0.5+) | 2004 06 08 | 703 | 1.4-  | 0.5+  | 2007 12 16 | 699 | 0.6+  | 0.4+  |
| 2003 03 08 | 704 | (1.7- | 1.8+) | 2005 06 15 | G96 | 0.1+  | 0.2+  | 2007 12 16 | 699 | 0.7+  | 0.2+  |
| 2003 03 08 | 704 | (1.3- | 1.5+) | 2005 06 15 | G96 | 0.3-  | 0.3+  | 2007 12 16 | 699 | 0.9+  | 1.2+  |
| 2003 03 26 | 704 | 0.7-  | 0.2+  | 2005 06 15 | G96 | 0.1-  | 0.2+  | 2007 12 16 | 699 | 1.0+  | 0.9-  |
| 2003 03 26 | 704 | 0.2+  | 0.5+  | 2005 06 15 | G96 | 0.0   | 0.1+  |            |     |       |       |



**(172388)\* 2003 AG<sub>45</sub> = 2004 EO<sub>42</sub>**

Discovered 2003 Jan. 5 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. G. V. Williams (*MPO* 61697)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    |               | MPC         |   |
|----------|------------|--------------------|---------------|-------------|---|
| <i>M</i> | 227.97449  | (2000.0)           | <b>P</b>      | <b>Q</b>    |   |
| <i>n</i> | 0.17646104 | $\omega$ 121.15199 | −0.92681529   | +0.33209147 |   |
| <i>a</i> | 3.1480152  | $\Omega$ 78.74081  | −0.37549706   | −0.82446526 |   |
| <i>e</i> | 0.1237544  | <i>i</i> 10.29614  | +0.00392128   | −0.45822733 |   |
| <i>P</i> | 5.59       | <i>H</i> 14.4      | <i>G</i> 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 24 | 644 | 0.4− | 1.0+ | 2004 03 23 | 704 | 0.2+  | 0.4−  | 2004 06 18 | 704 | 0.3+  | 0.8−  |
| 2001 10 24 | 644 | 0.5− | 1.1+ | 2004 03 23 | 704 | 0.4+  | 0.1−  | 2004 06 18 | 704 | 1.1+  | 1.3+  |
| 2001 10 24 | 644 | 0.8− | 0.7+ | 2004 03 29 | 703 | 0.1+  | 0.7+  | 2004 06 18 | 704 | 0.1+  | 0.9+  |
| 2003 01 05 | 704 | 0.1+ | 0.0  | 2004 03 29 | 703 | 0.2−  | 0.1+  | 2005 07 06 | E12 | (0.6+ | 1.8+) |
| 2003 01 05 | 704 | 0.3+ | 0.2+ | 2004 03 29 | 703 | 0.1−  | 0.2+  | 2005 07 06 | E12 | 0.0   | 1.5+  |
| 2003 01 05 | 704 | 0.0  | 0.1− | 2004 03 29 | 703 | 0.1+  | 0.0   | 2005 07 06 | E12 | 0.7−  | 0.8+  |
| 2003 01 05 | 704 | 0.3+ | 0.1− | 2004 04 15 | 704 | (2.0+ | 0.7+) | 2006 09 21 | 012 | (1.6+ | 0.8+) |
| 2003 01 05 | 704 | 0.1+ | 0.1− | 2004 04 15 | 704 | (2.2+ | 1.3+) | 2006 09 21 | 012 | 0.8−  | 0.9+  |
| 2003 01 09 | 704 | 0.4− | 0.3− | 2004 04 15 | 704 | (2.7+ | 0.9+) | 2006 09 21 | 012 | 0.4+  | 1.5+  |
| 2003 01 09 | 704 | 0.4− | 0.2− | 2004 04 15 | 704 | (2.2+ | 0.4+) | 2006 09 21 | 012 | 0.7−  | 0.2−  |
| 2003 01 09 | 704 | 0.0  | 0.5+ | 2004 04 15 | 704 | 1.4+  | 0.3+  | 2006 10 12 | 644 | 0.1−  | 0.7+  |
| 2003 01 10 | 704 | 0.0  | 0.1− | 2004 04 23 | 704 | 0.1−  | 0.8−  | 2006 10 12 | 644 | 0.2−  | 0.7+  |
| 2003 01 10 | 704 | 0.5+ | 0.3− | 2004 04 23 | 704 | 0.0   | 0.2+  | 2006 10 12 | 644 | 0.1−  | 1.0+  |
| 2003 01 10 | 704 | 0.2− | 0.5− | 2004 04 23 | 704 | 0.3−  | 0.5−  | 2007 11 08 | 691 | 0.3−  | 0.1+  |
| 2004 03 15 | 704 | 0.4+ | 0.1+ | 2004 04 23 | 703 | 0.1−  | 1.0+  | 2007 11 08 | 691 | 0.1−  | 0.2+  |
| 2004 03 15 | 704 | 0.8+ | 0.1+ | 2004 04 23 | 703 | 0.1−  | 1.1+  | 2007 11 08 | 691 | 0.2−  | 0.1+  |
| 2004 03 15 | 704 | 0.5+ | 0.2+ | 2004 04 23 | 703 | 0.1−  | 0.2−  | 2007 11 12 | 704 | 0.7+  | 0.1+  |
| 2004 03 15 | 704 | 0.2− | 0.4+ | 2004 04 23 | 703 | 0.3−  | 0.7−  | 2007 11 12 | 704 | 0.0   | 0.2+  |
| 2004 03 15 | 704 | 0.1− | 0.0  | 2004 05 13 | 704 | 0.0   | 0.8+  | 2007 11 12 | 704 | 1.1+  | 0.1+  |
| 2004 03 16 | 704 | 0.4+ | 0.1− | 2004 05 13 | 704 | 0.2+  | 0.1−  | 2007 11 12 | 704 | 0.6−  | 0.6+  |
| 2004 03 16 | 704 | 0.0  | 0.6+ | 2004 05 13 | 704 | 0.0   | 0.2−  | 2007 11 20 | G96 | 0.2+  | 0.1−  |
| 2004 03 16 | 704 | 0.2+ | 0.1− | 2004 05 13 | 704 | 0.0   | 0.0   | 2007 11 20 | G96 | 0.2+  | 0.2−  |
| 2004 03 16 | 704 | 0.1− | 0.2+ | 2004 05 13 | 704 | 0.1−  | 0.3+  | 2007 11 20 | G96 | 0.2−  | 0.1−  |
| 2004 03 16 | 704 | 0.5+ | 0.6+ | 2004 06 11 | 699 | 0.1+  | 1.0+  | 2007 11 20 | G96 | 0.0   | 0.1−  |
| 2004 03 17 | 704 | 0.5− | 0.6+ | 2004 06 11 | 699 | 0.4+  | 0.3+  | 2007 11 20 | G96 | 0.0   | 0.2−  |
| 2004 03 17 | 704 | 0.5+ | 0.6+ | 2004 06 11 | 699 | 0.2−  | 0.4+  | 2007 11 20 | G96 | 0.3−  | 0.5−  |
| 2004 03 17 | 704 | 0.5+ | 0.2+ | 2004 06 11 | 699 | 1.2−  | 1.4+  | 2007 11 20 | G96 | 0.1−  | 0.4−  |
| 2004 03 17 | 704 | 0.3+ | 0.4+ | 2004 06 13 | 703 | (1.7− | 0.6+) | 2007 12 04 | 704 | 0.3+  | 0.4+  |
| 2004 03 17 | 704 | 0.4+ | 0.0  | 2004 06 13 | 703 | 0.2−  | 0.7+  | 2007 12 04 | 704 | 0.7−  | 1.4+  |
| 2004 03 23 | 704 | 0.3+ | 0.2− | 2004 06 13 | 703 | (1.8+ | 0.2+) | 2007 12 04 | 704 | 0.3−  | 2.1+  |
| 2004 03 23 | 704 | 0.5+ | 0.1+ | 2004 06 13 | 703 | 0.8−  | 1.4+  | 2007 12 04 | 704 | 0.4−  | 0.6+  |
| 2004 03 23 | 704 | 0.3+ | 0.1− | 2004 06 18 | 704 | 0.6+  | 0.1+  | 2007 12 04 | 704 | 0.2−  | 1.0+  |

**(172389)\* 2003 AX<sub>50</sub> = 2004 FP<sub>97</sub>**

Discovered 2003 Jan. 5 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Id. A. Doppler (*MPO* 75829)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    |               | MPC         |   |
|----------|------------|--------------------|---------------|-------------|---|
| <i>M</i> | 92.20167   | (2000.0)           | <b>P</b>      | <b>Q</b>    |   |
| <i>n</i> | 0.17811932 | $\omega$ 238.49895 | +0.85354277   | +0.49671208 |   |
| <i>a</i> | 3.1284463  | $\Omega$ 91.28790  | −0.40855135   | +0.82541773 |   |
| <i>e</i> | 0.0368552  | <i>i</i> 9.05225   | −0.32334276   | +0.26825860 |   |
| <i>P</i> | 5.53       | <i>H</i> 14.2      | <i>G</i> 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 16 | 704 | 0.2− | 1.0+ | 2004 03 25 | 704 | 0.6− | 1.3+ | 2007 11 12 | 704 | 0.2+ | 0.0  |
| 2001 10 16 | 704 | 1.0− | 0.2+ | 2004 03 25 | 704 | 0.4+ | 1.1+ | 2007 11 12 | 704 | 0.5− | 0.4+ |
| 2001 10 16 | 704 | 0.3− | 0.0  | 2006 08 16 | 644 | 0.4− | 0.3+ | 2007 11 12 | 704 | 0.2− | 0.4+ |
| 2001 10 16 | 704 | 0.7+ | 1.0+ | 2006 08 16 | 644 | 0.2− | 0.3+ | 2007 11 12 | 704 | 0.7− | 1.1+ |
| 2001 11 18 | 704 | 0.4− | 0.3+ | 2006 08 16 | 644 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.1+ | 0.5− |
| 2001 11 18 | 704 | 0.6− | 0.7+ | 2006 08 22 | 644 | 0.1+ | 0.6+ | 2007 11 18 | G96 | 0.0  | 0.4− |
| 2001 11 18 | 704 | 0.5− | 0.2+ | 2006 08 22 | 644 | 0.4− | 0.3+ | 2007 11 18 | G96 | 0.3+ | 0.5− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 18 | 704 | 0.5−  | 0.8+  | 2006 08 22 | 644 | 0.1−  | 0.8+  | 2007 11 18 | G96 | 0.3+  | 0.5−  |
| 2001 11 18 | 704 | 0.7−  | 0.5+  | 2006 09 14 | 703 | 0.5−  | 0.2−  | 2007 11 21 | 703 | (1.5+ | 1.0−) |
| 2002 12 31 | 704 | 0.0   | 0.7+  | 2006 09 14 | 703 | 1.1−  | 0.7+  | 2007 11 21 | 703 | 1.1+  | 0.8+  |
| 2002 12 31 | 704 | 0.5+  | 0.1+  | 2006 09 14 | 703 | 0.9+  | 1.0+  | 2007 11 21 | 703 | 0.3+  | 0.2−  |
| 2002 12 31 | 704 | 0.3−  | 0.5+  | 2006 09 14 | 703 | 0.6−  | 0.1+  | 2007 11 21 | 703 | 0.2−  | 1.0+  |
| 2003 01 05 | 704 | 0.1+  | 0.7+  | 2006 09 20 | 703 | 0.2−  | 0.2+  | 2007 12 03 | 703 | 0.7−  | 0.1+  |
| 2003 01 05 | 704 | 0.4+  | 0.7+  | 2006 09 20 | 703 | 0.3−  | 0.6−  | 2007 12 03 | 703 | 0.2−  | 0.1+  |
| 2003 01 05 | 704 | 0.6−  | 0.8+  | 2006 09 20 | 703 | 0.4−  | 0.5−  | 2007 12 03 | 703 | 0.0   | 0.1+  |
| 2003 01 05 | 704 | 0.5+  | 0.5+  | 2006 09 20 | 703 | 0.1−  | 0.3−  | 2007 12 03 | 703 | 0.1+  | 0.1+  |
| 2003 01 09 | 704 | 0.5+  | 0.5+  | 2006 09 26 | 703 | (2.0+ | 2.8−) | 2007 12 04 | 704 | 0.3+  | 0.3−  |
| 2003 01 09 | 704 | 0.8+  | 0.0   | 2006 09 26 | 703 | 0.0   | 0.9+  | 2007 12 04 | 704 | 0.2+  | 0.6−  |
| 2003 01 09 | 704 | 0.0   | 0.7−  | 2006 09 26 | 703 | 0.2+  | 1.3+  | 2007 12 04 | 704 | 1.0+  | 0.1+  |
| 2003 01 09 | 704 | 0.2+  | 0.5−  | 2006 09 26 | 703 | 0.8−  | 0.1−  | 2007 12 04 | 704 | 0.0   | 0.1−  |
| 2003 01 09 | 704 | 0.1+  | 0.4−  | 2006 09 26 | 703 | 0.9+  | 0.3+  | 2007 12 04 | 704 | 0.2+  | 0.0   |
| 2004 03 23 | 704 | 0.0   | 0.9+  | 2006 09 26 | 703 | 0.6+  | 1.0+  | 2007 12 05 | G96 | 0.2+  | 0.4−  |
| 2004 03 23 | 704 | 0.5+  | 0.7+  | 2006 09 26 | 703 | 0.3−  | 1.1+  | 2007 12 05 | G96 | 0.0   | 0.5−  |
| 2004 03 23 | 704 | 1.0+  | 1.0+  | 2006 09 26 | 703 | 0.3+  | 0.2+  | 2007 12 05 | G96 | 0.2+  | 0.6−  |
| 2004 03 23 | 704 | 0.6+  | 0.8+  | 2007 11 04 | 691 | 0.3−  | 0.1−  | 2007 12 05 | G96 | 0.1−  | 0.5−  |
| 2004 03 23 | 704 | 0.7+  | 1.4+  | 2007 11 04 | 691 | 0.2−  | 0.2−  | 2007 12 15 | 704 | 0.1−  | 0.3−  |
| 2004 03 25 | 704 | (0.1− | 1.8+) | 2007 11 04 | 691 | 0.3−  | 0.2−  | 2007 12 15 | 704 | 0.5−  | 0.1−  |
| 2004 03 25 | 704 | 0.2−  | 0.2+  | 2007 11 08 | 691 | 0.0   | 0.3−  | 2007 12 15 | 704 | 0.3+  | 0.3+  |
| 2004 03 25 | 704 | 0.0   | 0.7+  | 2007 11 08 | 691 | 0.0   | 0.1−  | 2007 12 15 | 704 | 0.3−  | 0.1−  |
| 2004 03 25 | 704 | 0.4+  | 0.7+  | 2007 11 08 | 691 | 0.5+  | 0.1−  |            |     |       |       |
| 2004 03 25 | 704 | 0.4+  | 1.0+  | 2007 11 12 | 704 | 0.2+  | 0.9+  |            |     |       |       |

**(172390)\* 2003 AO<sub>52</sub>**

Discovered 2003 Jan. 5 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                   |               | MPC         |   |
|----------|------------|-------------------|---------------|-------------|---|
| <i>M</i> | 303.95696  | (2000.0)          | <b>P</b>      | <b>Q</b>    |   |
| <i>n</i> | 0.18465081 | $\omega$ 76.25944 | −0.76745225   | −0.63248361 |   |
| <i>a</i> | 3.0542312  | $\Omega$ 64.39954 | +0.53411603   | −0.72118507 |   |
| <i>e</i> | 0.1407027  | <i>i</i> 6.67286  | +0.35459429   | −0.28258906 |   |
| <i>P</i> | 5.34       | <i>H</i> 15.5     | <i>G</i> 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 23 | 809 | 0.2−  | 0.2−  | 2004 04 19 | 704 | 0.4− | 0.6+ | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2003 01 05 | 704 | 0.0   | 0.7−  | 2004 04 25 | 691 | 0.1− | 0.2+ | 2007 12 06 | G96 | 0.7− | 0.1− |
| 2003 01 05 | 704 | 0.4+  | 0.2−  | 2004 04 25 | 691 | 0.2− | 0.2+ | 2007 12 06 | G96 | 0.7− | 0.1+ |
| 2003 01 05 | 704 | 0.3−  | 1.0−  | 2004 04 25 | 691 | 0.3− | 0.3+ | 2007 12 10 | 704 | 1.0+ | 0.1+ |
| 2003 01 05 | 704 | 0.6−  | 0.1−  | 2004 05 19 | 691 | 0.2+ | 0.0  | 2007 12 10 | 704 | 0.2− | 0.2− |
| 2003 01 05 | 704 | 0.3−  | 0.9−  | 2004 05 19 | 691 | 0.1− | 0.1+ | 2007 12 10 | 704 | 0.4+ | 0.7+ |
| 2003 01 09 | 704 | 1.0+  | 0.2+  | 2004 05 19 | 691 | 0.3+ | 0.1+ | 2007 12 10 | 704 | 0.0  | 0.1+ |
| 2003 01 09 | 704 | 0.2+  | 0.1+  | 2004 05 28 | 691 | 0.1+ | 0.3+ | 2007 12 14 | 704 | 0.7− | 0.4− |
| 2003 01 09 | 704 | 0.4+  | 0.3+  | 2004 05 28 | 691 | 0.1− | 0.2+ | 2007 12 14 | 704 | 0.1+ | 0.1− |
| 2003 01 09 | 704 | 0.7+  | 0.3+  | 2004 05 28 | 691 | 0.6− | 0.1− | 2007 12 14 | 704 | 0.8− | 0.7− |
| 2003 02 01 | 704 | 0.8−  | 1.0−  | 2004 06 08 | 691 | 0.5+ | 0.8− | 2007 12 14 | 704 | 0.2− | 0.7− |
| 2003 02 01 | 704 | 0.9−  | 0.7−  | 2004 06 08 | 691 | 0.4+ | 0.0  | 2007 12 14 | 704 | 1.6+ | 0.8+ |
| 2003 02 01 | 704 | 0.2−  | 0.9+  | 2004 06 08 | 691 | 0.4+ | 0.1− | 2007 12 15 | 691 | 0.2+ | 0.6− |
| 2003 02 01 | 704 | 0.3+  | 0.4+  | 2007 11 14 | 691 | 0.1− | 0.0  | 2007 12 15 | 691 | 0.2− | 0.1− |
| 2003 02 01 | 704 | 0.0   | 0.4+  | 2007 11 14 | 691 | 0.1− | 0.1+ | 2007 12 15 | 691 | 0.3+ | 1.6+ |
| 2004 04 19 | 704 | (0.4+ | 2.3+) | 2007 11 14 | 691 | 0.1− | 0.0  |            |     |      |      |
| 2004 04 19 | 704 | (0.9− | 1.6+) | 2007 12 06 | G96 | 0.8− | 0.1− |            |     |      |      |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 05 12 | 704 | 1.2+  | 0.4-  | 2003 02 04 | 704 | 0.3+  | 0.5+  | 2004 05 22 | 703 | 1.2-  | 0.5-  |
| 1999 05 12 | 704 | 1.1+  | 1.1+  | 2003 02 04 | 704 | 0.9-  | 0.9-  | 2004 05 24 | 704 | 0.7+  | 1.3+  |
| 1999 05 12 | 704 | 0.8-  | 0.4-  | 2003 02 04 | 704 | 0.1-  | 0.2+  | 2004 05 24 | 704 | 0.5+  | 0.4+  |
| 1999 05 12 | 704 | 0.8+  | 0.5-  | 2003 02 04 | 704 | 0.4+  | 0.1+  | 2004 05 24 | 704 | 0.2-  | 0.3+  |
| 2001 10 28 | 644 | 0.2-  | 0.6+  | 2003 02 04 | 704 | (1.9+ | 0.0 ) | 2004 05 24 | 704 | 0.7+  | 0.2+  |
| 2001 10 28 | 644 | 0.9-  | 0.8+  | 2003 02 26 | 704 | 1.1-  | 0.9-  | 2005 08 10 | E12 | 0.6+  | 1.0+  |
| 2001 10 28 | 644 | 1.0-  | 0.4+  | 2003 02 26 | 704 | 0.2+  | 0.9+  | 2005 08 10 | E12 | 0.4-  | 0.6+  |
| 2002 12 31 | 704 | (1.7+ | 0.5+) | 2003 02 26 | 704 | 0.3+  | 0.1+  | 2005 08 10 | E12 | 0.4-  | 0.7+  |
| 2002 12 31 | 704 | (1.6+ | 0.5-) | 2003 02 26 | 704 | 1.2-  | 0.3-  | 2005 08 10 | E12 | 0.8+  | 0.5+  |
| 2002 12 31 | 704 | 0.4-  | 1.1+  | 2003 02 26 | 704 | 1.3-  | 0.3+  | 2006 10 21 | 703 | 0.0   | 0.3-  |
| 2002 12 31 | 704 | 0.3-  | 0.5+  | 2004 04 12 | 703 | 0.2+  | 0.9-  | 2006 10 21 | 703 | 0.2+  | 0.5-  |
| 2003 01 05 | 704 | 0.9+  | 0.7+  | 2004 04 12 | 703 | 0.5-  | 0.1+  | 2006 10 21 | 703 | 0.6-  | 0.3+  |
| 2003 01 05 | 704 | 1.1+  | 0.5+  | 2004 04 12 | 703 | 0.6-  | 0.9+  | 2006 10 21 | 703 | 0.4-  | 1.3+  |
| 2003 01 05 | 704 | 0.7+  | 0.4-  | 2004 04 12 | 703 | 0.4-  | 0.0   | 2007 12 05 | 704 | 1.4+  | 0.9+  |
| 2003 01 09 | 704 | 0.1+  | 0.3+  | 2004 04 16 | 704 | 0.2-  | 0.0   | 2007 12 05 | 704 | (1.9+ | 0.8+) |
| 2003 01 09 | 704 | 0.2-  | 1.0+  | 2004 04 16 | 704 | 0.1-  | 0.3-  | 2007 12 05 | 704 | 0.5+  | 0.4-  |
| 2003 01 09 | 704 | 0.2-  | 0.6+  | 2004 04 16 | 704 | 0.3-  | 0.1+  | 2007 12 14 | 704 | 1.8+  | 0.2+  |
| 2003 01 09 | 704 | 0.4-  | 0.4+  | 2004 04 26 | 704 | 0.8-  | 1.2+  | 2007 12 14 | 704 | 0.4+  | 0.9+  |
| 2003 02 01 | 704 | 0.2+  | 0.4-  | 2004 04 26 | 704 | 0.1+  | 0.2+  | 2007 12 14 | 704 | 1.2+  | 0.6+  |
| 2003 02 01 | 704 | 0.6+  | 0.7-  | 2004 04 26 | 704 | 0.4-  | 0.6+  | 2007 12 15 | 691 | 0.5-  | 0.3+  |
| 2003 02 01 | 704 | 0.3-  | 0.1-  | 2004 05 22 | 703 | 0.6+  | 1.1+  | 2007 12 15 | 691 | 0.2-  | 0.6-  |
| 2003 02 01 | 704 | 0.4+  | 0.2-  | 2004 05 22 | 703 | 0.7+  | 0.9+  | 2007 12 15 | 691 | 0.0   | 0.1+  |
| 2003 02 01 | 704 | 0.0   | 0.3-  | 2004 05 22 | 703 | 0.2+  | 0.8-  |            |     |       |       |

(172392)\* 2003 AA<sub>55</sub>

Discovered 2003 Jan. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 265.49282  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17583694 | $\omega$ | 64.73440  | -0.93758672   |
| <i>a</i> | 3.1554597  | $\Omega$ | 102.86349 | +0.09932598   |
| <i>e</i> | 0.0574110  | <i>i</i> | 17.12273  | +0.33326490   |
| <i>P</i> | 5.61       | <i>H</i> | 14.9      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 19 | 645 | 0.1- | 0.0  | 2003 01 16 | 644 | 0.1+  | 0.9+  | 2004 04 16 | 704 | 0.1+  | 1.1+  |
| 2001 09 19 | 645 | 0.1- | 0.0  | 2003 01 25 | 645 | 0.1-  | 0.2-  | 2004 04 26 | 704 | 0.6+  | 0.1-  |
| 2001 09 21 | 645 | 0.1- | 0.1+ | 2003 01 25 | 645 | 0.1-  | 0.1-  | 2004 04 26 | 704 | 0.6-  | 0.3+  |
| 2001 09 21 | 645 | 0.1- | 0.1+ | 2003 01 25 | 645 | 0.1-  | 0.1-  | 2004 04 26 | 704 | 0.1-  | 0.4+  |
| 2001 12 07 | 704 | 0.3- | 0.9- | 2003 01 25 | 645 | 0.1-  | 0.1-  | 2004 04 26 | 704 | 0.3+  | 0.3+  |
| 2001 12 07 | 704 | 0.8- | 1.3+ | 2003 02 01 | 704 | 0.3-  | 0.8+  | 2004 04 26 | 704 | 0.2-  | 0.8+  |
| 2001 12 07 | 704 | 0.0  | 1.1+ | 2003 02 01 | 704 | 0.8+  | 0.7+  | 2004 05 13 | 704 | 0.5+  | 0.5+  |
| 2001 12 18 | 704 | 0.3- | 0.7+ | 2003 02 01 | 704 | 0.3-  | 0.1-  | 2004 05 13 | 704 | 0.4-  | 0.5+  |
| 2001 12 18 | 704 | 0.1- | 1.2+ | 2003 02 01 | 704 | 0.0   | 1.0+  | 2004 05 13 | 704 | 0.1+  | 0.3+  |
| 2001 12 18 | 704 | 0.3+ | 0.1- | 2003 02 04 | 699 | 0.3+  | 0.6+  | 2004 05 13 | 704 | 0.5-  | 1.2+  |
| 2001 12 18 | 704 | 0.4- | 0.6+ | 2003 02 04 | 699 | 0.2-  | 0.3+  | 2004 05 24 | 703 | 0.3-  | 0.6-  |
| 2001 12 18 | 704 | 0.2- | 0.4+ | 2003 02 04 | 699 | 0.2-  | 0.2+  | 2004 05 24 | 703 | 0.9+  | 0.9-  |
| 2002 01 09 | 645 | 0.0  | 0.1- | 2003 02 04 | 699 | 0.8+  | 0.4+  | 2004 05 24 | 703 | (0.5+ | 1.6-) |
| 2002 01 09 | 645 | 0.1+ | 0.0  | 2003 02 23 | 185 | 0.5+  | 0.4+  | 2004 05 24 | 703 | 0.4-  | 0.8-  |
| 2002 01 13 | 645 | 0.0  | 0.0  | 2003 02 23 | 185 | 0.2-  | 0.1+  | 2006 09 27 | 703 | 0.4+  | 0.5-  |
| 2002 01 13 | 645 | 0.0  | 0.0  | 2003 03 07 | 644 | 0.4+  | 0.8+  | 2006 09 27 | 703 | 1.0+  | 0.6+  |
| 2002 01 14 | 645 | 0.0  | 0.0  | 2003 03 07 | 644 | 0.5+  | 0.2+  | 2006 09 27 | 703 | 0.5+  | 0.1-  |
| 2002 01 14 | 645 | 0.1+ | 0.1+ | 2003 03 07 | 644 | 0.0   | 0.0   | 2006 09 27 | 703 | 0.1+  | 0.8-  |
| 2003 01 05 | 704 | 0.0  | 0.1+ | 2004 03 28 | 704 | (0.7+ | 1.6-) | 2007 11 11 | 704 | 0.6+  | 0.7-  |
| 2003 01 05 | 704 | 0.3+ | 0.4+ | 2004 03 28 | 704 | (1.7+ | 0.8-) | 2007 11 11 | 704 | 0.6+  | 1.0-  |
| 2003 01 05 | 704 | 0.9+ | 0.6- | 2004 03 28 | 704 | 0.2+  | 0.1-  | 2007 11 11 | 704 | 0.5-  | 0.1+  |
| 2003 01 05 | 704 | 0.9+ | 0.9- | 2004 03 28 | 704 | 0.8+  | 0.4-  | 2007 11 11 | 704 | 0.1+  | 0.4+  |
| 2003 01 09 | 704 | 0.3+ | 0.4+ | 2004 04 15 | 704 | 0.1-  | 0.6+  | 2007 11 11 | 704 | 0.3-  | 0.6-  |
| 2003 01 09 | 704 | 0.9+ | 0.1+ | 2004 04 15 | 704 | 0.3-  | 0.6+  | 2007 11 20 | 703 | 0.3+  | 1.4+  |
| 2003 01 09 | 704 | 1.0+ | 1.0+ | 2004 04 15 | 704 | 0.4+  | 1.2+  | 2007 11 20 | 703 | 1.4-  | 0.2+  |
| 2003 01 09 | 704 | 0.4+ | 0.3- | 2004 04 15 | 704 | (0.1+ | 1.6+) | 2007 11 20 | 703 | 0.9-  | 0.3+  |
| 2003 01 09 | 704 | 0.3+ | 0.7+ | 2004 04 15 | 704 | 0.8+  | 1.1+  | 2007 11 20 | 703 | 0.1+  | 0.3+  |
| 2003 01 16 | 644 | 0.1+ | 0.5+ | 2004 04 16 | 704 | 0.6+  | 0.8+  |            |     |       |       |
| 2003 01 16 | 644 | 0.1+ | 0.8+ | 2004 04 16 | 704 | 0.4+  | 1.2+  |            |     |       |       |

(172393)\* 2003 AK<sub>68</sub>

Discovered 2003 Jan. 8 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 300.53966  | (2000.0) | <b>P</b> | <b>Q</b>      |
|----------|------------|----------|----------|---------------|
| <i>n</i> | 0.17180349 | $\omega$ | 51.15036 | -0.54466425   |
| <i>a</i> | 3.2046558  | $\Omega$ | 72.99912 | +0.68938952   |
| <i>e</i> | 0.0739368  | <i>i</i> | 12.15253 | +0.47758030   |
| <i>P</i> | 5.74       | <i>H</i> | 14.8     | <i>G</i> 0.15 |
|          |            |          |          | <i>U</i> 1    |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 20 | 704 | (2.5- | 0.8-) | 2004 04 13 | 691 | 0.2+ | 0.1- | 2007 10 25 | G96 | 0.2+ | 0.3- |
| 2001 10 20 | 704 | 0.9-  | 0.4+  | 2004 04 14 | 699 | 0.2- | 0.2- | 2007 11 08 | 691 | 0.3- | 0.3+ |
| 2001 10 20 | 704 | 0.1-  | 1.2+  | 2004 04 14 | 699 | 1.1+ | 0.7+ | 2007 11 08 | 691 | 0.0  | 0.2+ |
| 2003 01 05 | 699 | 0.0   | 0.8-  | 2004 04 14 | 699 | 0.6+ | 0.2- | 2007 11 08 | 691 | 0.9- | 0.1+ |
| 2003 01 05 | 699 | 0.2+  | 0.4-  | 2004 04 14 | 699 | 1.4- | 0.4- | 2007 11 14 | 704 | 0.1- | 0.6+ |
| 2003 01 05 | 699 | 0.0   | 1.3-  | 2004 04 16 | 704 | 0.4- | 0.6+ | 2007 11 14 | 704 | 0.5+ | 1.1+ |
| 2003 01 05 | 699 | 0.5+  | 0.9+  | 2004 04 16 | 704 | 0.4- | 0.4+ | 2007 11 14 | 704 | 0.6+ | 0.2- |
| 2003 01 08 | 704 | 0.7-  | 0.4+  | 2004 04 16 | 704 | 0.6+ | 0.9+ | 2007 11 14 | 704 | 0.4- | 0.2+ |
| 2003 01 08 | 704 | (1.7+ | 0.7+) | 2004 05 10 | 599 | 0.2- | 0.1- | 2007 11 14 | 704 | 0.6- | 0.6+ |
| 2003 01 08 | 704 | 0.4-  | 0.5+  | 2004 05 10 | 599 | 0.1- | 0.8+ | 2007 11 20 | G96 | 0.3+ | 0.2- |
| 2003 01 08 | 704 | 0.7-  | 0.4-  | 2004 05 10 | 599 | 0.6+ | 0.6+ | 2007 11 20 | G96 | 0.5+ | 0.1- |
| 2003 01 10 | 704 | 0.5+  | 0.3-  | 2004 05 10 | 599 | 0.2+ | 0.5+ | 2007 11 20 | G96 | 0.4+ | 0.1+ |
| 2003 01 10 | 704 | 0.8+  | 0.5-  | 2007 10 24 | G96 | 0.3+ | 0.3- | 2007 11 20 | G96 | 0.7+ | 0.0  |
| 2003 01 10 | 704 | 0.2-  | 0.6+  | 2007 10 24 | G96 | 0.4+ | 0.2- | 2007 12 05 | 704 | 0.6+ | 0.6+ |
| 2003 03 08 | 644 | 0.3+  | 0.0   | 2007 10 24 | G96 | 0.1- | 0.1- | 2007 12 05 | 704 | 0.4- | 0.7+ |
| 2003 03 08 | 644 | 0.5-  | 0.0   | 2007 10 24 | G96 | 0.4+ | 0.3+ | 2007 12 05 | 704 | 0.1- | 0.2+ |
| 2003 03 08 | 644 | 0.3+  | 0.4-  | 2007 10 25 | G96 | 0.5- | 0.7- | 2007 12 05 | 704 | 0.6- | 0.6- |
| 2004 04 13 | 691 | 0.0   | 0.2+  | 2007 10 25 | G96 | 0.6+ | 0.8- | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2004 04 13 | 691 | 0.2+  | 0.0   | 2007 10 25 | G96 | 0.5+ | 0.6- |            |     |      |      |

(172394)\* 2003 AL<sub>78</sub> = 2004 FN<sub>136</sub>

Discovered 2003 Jan. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 61701)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 234.02039  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.17009219 | $\omega$ | 107.55454 | -0.92606128   |
| <i>a</i> | 3.2261146  | $\Omega$ | 86.30670  | -0.33748347   |
| <i>e</i> | 0.0378729  | <i>i</i> | 17.65582  | +0.16886506   |
| <i>P</i> | 5.79       | <i>H</i> | 14.6      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.4+ | 0.3+ | 2004 03 15 | 704 | 1.0+  | 0.6+  | 2004 06 12 | 699 | 0.3+ | 0.2- |
| 2001 10 17 | 704 | 0.8+ | 0.3+ | 2004 03 15 | 704 | 0.2+  | 1.2+  | 2006 09 27 | 703 | 1.0- | 0.2+ |
| 2001 10 17 | 704 | 0.1+ | 0.1+ | 2004 03 27 | 699 | 0.6+  | 0.7+  | 2006 09 27 | 703 | 0.1+ | 0.2+ |
| 2001 10 17 | 704 | 0.1+ | 0.3- | 2004 03 27 | 699 | 0.1-  | 0.5+  | 2006 09 27 | 703 | 0.1- | 0.1+ |
| 2001 11 19 | 699 | 0.1- | 0.4+ | 2004 03 27 | 699 | 0.2-  | 0.9+  | 2006 09 27 | 703 | 0.1+ | 0.3+ |
| 2001 11 19 | 699 | 0.8- | 0.9+ | 2004 03 27 | 699 | 0.1-  | 0.5+  | 2006 10 12 | E12 | 0.6+ | 0.6- |
| 2001 11 19 | 699 | 0.7- | 1.2+ | 2004 03 28 | 704 | 0.2+  | 0.4-  | 2006 10 12 | E12 | 0.4- | 0.5+ |
| 2001 11 19 | 699 | 1.3- | 0.7- | 2004 03 28 | 704 | (3.1+ | 2.0+) | 2006 10 12 | E12 | 0.9- | 0.9+ |
| 2001 12 11 | 704 | 0.2- | 1.0+ | 2004 03 28 | 704 | 1.3+  | 1.3+  | 2006 10 12 | E12 | 1.1- | 0.7+ |
| 2001 12 11 | 704 | 0.3- | 1.0+ | 2004 03 28 | 704 | (1.4+ | 1.6+) | 2007 11 12 | 703 | 0.4+ | 0.0  |
| 2001 12 11 | 704 | 0.3- | 0.8+ | 2004 03 28 | 704 | (1.6+ | 0.7+) | 2007 11 12 | 703 | 1.5- | 0.8- |
| 2001 12 11 | 704 | 0.5- | 0.9+ | 2004 04 10 | 644 | 0.3+  | 0.5+  | 2007 11 12 | 703 | 0.0  | 0.2- |
| 2001 12 11 | 704 | 0.2- | 1.0+ | 2004 04 10 | 644 | 0.3+  | 0.4+  | 2007 11 12 | 703 | 0.3- | 0.5- |
| 2003 01 05 | 699 | 0.5+ | 0.4- | 2004 04 10 | 644 | 0.3+  | 0.9+  | 2007 11 12 | 704 | 0.3- | 0.5- |
| 2003 01 05 | 699 | 0.1+ | 0.5+ | 2004 04 15 | 704 | 0.9+  | 0.0   | 2007 11 12 | 704 | 0.3- | 0.0  |
| 2003 01 05 | 699 | 0.6- | 0.1+ | 2004 04 15 | 704 | 0.3+  | 0.6+  | 2007 11 12 | 704 | 0.3+ | 0.3- |
| 2003 01 05 | 699 | 0.0  | 0.8- | 2004 04 15 | 704 | 0.9+  | 0.5+  | 2007 11 12 | 704 | 1.0+ | 0.4- |
| 2003 01 10 | 704 | 0.2- | 1.1- | 2004 04 15 | 704 | 1.3+  | 1.0+  | 2007 11 12 | 704 | 0.1+ | 0.4+ |
| 2003 01 10 | 704 | 0.5+ | 0.8+ | 2004 04 15 | 704 | 0.5+  | 0.1-  | 2007 11 21 | 703 | 0.8- | 0.1+ |
| 2003 01 10 | 704 | 0.7+ | 0.1- | 2004 04 23 | 608 | 0.4+  | 1.1-  | 2007 11 21 | 703 | 0.3- | 0.2- |
| 2003 01 10 | 704 | 0.2- | 0.5+ | 2004 04 23 | 608 | 0.5+  | 1.1-  | 2007 11 21 | 703 | 0.8- | 0.8+ |

2007 DEC. 24

M.P.O. 129357

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 01 10 | 704 | 0.3+  | 0.7-  | 2004 04 23 | 608 | 0.9+  | 0.3-  | 2007 11 21 | 703 | 0.7-  | 0.1+  |
| 2003 01 10 | 704 | 0.6+  | 0.2+  | 2004 04 24 | 704 | 0.6-  | 0.4+  | 2007 12 03 | D35 | 0.2+  | 0.0   |
| 2003 01 10 | 704 | 0.7+  | 0.4+  | 2004 04 24 | 704 | 0.0   | 0.3-  | 2007 12 03 | D35 | 0.2-  | 0.3-  |
| 2003 01 10 | 704 | 0.3+  | 1.4+  | 2004 04 24 | 704 | 0.3+  | 0.4+  | 2007 12 03 | D35 | 0.0   | 0.3-  |
| 2003 01 10 | 644 | 0.5+  | 1.2+  | 2004 04 24 | 704 | 0.7-  | 0.1+  | 2007 12 04 | 704 | 0.0   | 0.8+  |
| 2003 01 10 | 644 | 0.9+  | 1.5+  | 2004 04 26 | 699 | (1.6+ | 0.3+) | 2007 12 04 | 704 | 0.1+  | 0.5+  |
| 2003 01 10 | 644 | (0.4+ | 1.6+) | 2004 04 26 | 699 | 0.6-  | 0.4-  | 2007 12 04 | 704 | 1.2+  | 0.1-  |
| 2003 01 13 | 704 | 0.9-  | 0.7+  | 2004 04 26 | 699 | 0.6-  | 0.3+  | 2007 12 04 | 704 | 0.1+  | 0.4+  |
| 2003 01 13 | 704 | 0.1-  | 1.4+  | 2004 04 26 | 699 | 1.1-  | 0.3+  | 2007 12 04 | 704 | 0.1-  | 0.6+  |
| 2003 01 13 | 704 | 0.3-  | 1.4+  | 2004 05 13 | 704 | 0.0   | 0.5+  | 2007 12 15 | 704 | 0.3+  | 0.9+  |
| 2003 01 25 | 645 | 0.1-  | 0.4-  | 2004 05 13 | 704 | 0.4+  | 0.5+  | 2007 12 15 | 704 | 0.1+  | 0.1+  |
| 2003 01 25 | 645 | 0.1-  | 0.4-  | 2004 05 13 | 704 | 0.5+  | 0.4-  | 2007 12 15 | 704 | (1.2- | 1.8+) |
| 2003 03 08 | 644 | 0.1-  | 0.5+  | 2004 05 13 | 704 | 0.1-  | 0.1+  | 2007 12 15 | 704 | 0.3+  | 0.2-  |
| 2003 03 08 | 644 | 0.1+  | 0.4+  | 2004 05 13 | 704 | 0.2-  | 0.0   | 2007 12 15 | 704 | 0.3+  | 0.6+  |
| 2003 03 08 | 644 | 0.1+  | 0.3+  | 2004 05 24 | 704 | 0.3+  | 1.2+  | 2007 12 15 | 704 | 0.3+  | 0.7+  |
| 2003 03 08 | 644 | 0.2+  | 0.3+  | 2004 05 24 | 704 | 0.4+  | 1.4+  | 2007 12 15 | 704 | 0.4-  | 1.1+  |
| 2003 03 08 | 644 | 0.1-  | 0.2+  | 2004 05 24 | 704 | (0.5+ | 1.6+) | 2007 12 15 | 704 | 0.1+  | 0.3+  |
| 2003 03 08 | 644 | 0.0   | 0.4+  | 2004 06 12 | 699 | 0.5-  | 0.3+  | 2007 12 15 | 704 | 0.7-  | 1.4+  |
| 2004 03 15 | 704 | 0.2+  | 0.0   | 2004 06 12 | 699 | 0.5+  | 0.9+  |            |     |       |       |
| 2004 03 15 | 704 | 0.3+  | 0.6+  | 2004 06 12 | 699 | 0.8-  | 0.2+  |            |     |       |       |

**(172395)\* 2003 AN<sub>84</sub> = 2007 UM<sub>50</sub>**

Discovered 2003 Jan. 11 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Id. G. V. Williams (*MPO* 128007)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC       |            |          |           |
|-----------|------------|----------|-----------|
| M         |            | P        |           |
| 299.81606 | (2000.0)   |          | Q         |
| <i>n</i>  | 0.17753255 | $\omega$ | 301.00860 |
| <i>a</i>  | 3.1353357  | $\Omega$ | 198.09434 |
| <i>e</i>  | 0.1896651  | <i>i</i> | 9.66781   |
| <i>P</i>  | 5.55       | <i>H</i> | 15.7      |
|           |            | <i>G</i> | 0.15      |
|           |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 11 | 683 | (3.1- | 2.1+) | 2006 08 21 | 691 | 0.2- | 0.1- | 2007 10 25 | G96 | 0.1+ | 0.3- |
| 2003 01 11 | 683 | (2.3+ | 0.3-) | 2006 08 21 | 691 | 0.1+ | 0.4- | 2007 11 08 | G96 | 0.5+ | 0.2- |
| 2003 01 12 | 683 | 0.5+  | 1.4+  | 2006 09 20 | 691 | 0.1+ | 0.1+ | 2007 11 08 | G96 | 0.0  | 0.3- |
| 2003 01 12 | 683 | 0.6+  | 0.8-  | 2006 09 20 | 691 | 0.2+ | 0.7+ | 2007 11 08 | G96 | 0.4+ | 0.1- |
| 2003 01 12 | 683 | 0.5+  | 0.9-  | 2006 09 20 | 691 | 0.2+ | 0.1+ | 2007 11 08 | G96 | 0.3+ | 0.2- |
| 2003 01 13 | 683 | 0.6-  | 0.6+  | 2006 10 20 | 691 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.0  | 1.1- |
| 2003 01 13 | 683 | 0.8+  | 0.0   | 2006 10 20 | 691 | 0.2- | 0.0  | 2007 11 17 | 703 | 0.4+ | 0.9+ |
| 2003 01 13 | 683 | 0.3+  | 1.3+  | 2006 10 20 | 691 | 0.3- | 0.4+ | 2007 11 17 | 703 | 0.0  | 0.5- |
| 2003 01 28 | 704 | 1.0-  | 0.2+  | 2007 10 24 | G96 | 0.2- | 0.1- | 2007 11 17 | 703 | 0.6+ | 0.1- |
| 2003 01 28 | 704 | 0.8-  | 0.8-  | 2007 10 24 | G96 | 0.0  | 0.5- | 2007 11 27 | A13 | 1.0+ | 0.7+ |
| 2003 01 28 | 704 | (1.9- | 0.5+) | 2007 10 24 | G96 | 0.2+ | 0.1+ | 2007 11 27 | A13 | 0.0  | 0.3- |
| 2004 05 23 | 947 | 0.3+  | 0.5+  | 2007 10 24 | G96 | 0.0  | 0.3- | 2007 11 27 | A13 | 0.3+ | 0.3+ |
| 2004 05 23 | 947 | 0.1+  | 1.4-  | 2007 10 25 | G96 | 0.2+ | 0.4- | 2007 12 02 | 704 | 1.7- | 0.1+ |
| 2004 05 23 | 947 | 0.7-  | 1.5-  | 2007 10 25 | G96 | 0.2- | 0.1- | 2007 12 02 | 704 | 0.8- | 1.1- |
| 2006 08 21 | 691 | 0.1+  | 0.5-  | 2007 10 25 | G96 | 0.1+ | 0.3- | 2007 12 02 | 704 | 1.1- | 0.1- |

**(172396)\* 2003 BV<sub>6</sub>**

Discovered 2003 Jan. 25 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC       |            |          |           |
|-----------|------------|----------|-----------|
| M         |            | P        |           |
| 354.96270 | (2000.0)   |          | Q         |
| <i>n</i>  | 0.21710279 | $\omega$ | 9.58189   |
| <i>a</i>  | 2.7417369  | $\Omega$ | 104.08821 |
| <i>e</i>  | 0.1485341  | <i>i</i> | 13.57161  |
| <i>P</i>  | 4.54       | <i>H</i> | 15.3      |
|           |            | <i>G</i> | 0.15      |
|           |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 31 | 608 | 0.7- | 0.1- | 2003 01 08 | 608 | 0.1+  | 0.4+  | 2004 04 19 | 704 | 0.6+ | 0.5+ |
| 2002 10 31 | 608 | 0.6- | 0.1- | 2003 01 08 | 608 | 0.0   | 0.0   | 2004 04 21 | 608 | 0.5- | 0.5- |
| 2002 10 31 | 608 | 0.3- | 0.1- | 2003 01 25 | 699 | (1.4+ | 1.6-) | 2004 04 21 | 608 | 0.2- | 1.1- |
| 2002 11 11 | 699 | 0.5- | 0.6+ | 2003 01 25 | 699 | (1.3+ | 1.9-) | 2004 04 21 | 608 | 0.3- | 0.5- |
| 2002 11 11 | 699 | 0.8+ | 0.7- | 2003 01 25 | 699 | 1.0-  | 1.1+  | 2006 09 27 | 703 | 0.4- | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 11 | 699 | 0.9- | 0.1- | 2003 01 25 | 699 | 1.5- | 0.9- | 2006 09 27 | 703 | (1.4- | 1.8+) |
| 2002 11 11 | 699 | 0.5- | 0.4+ | 2003 01 27 | 704 | 1.2+ | 0.8+ | 2006 09 27 | 703 | (2.6- | 0.3+) |
| 2002 12 01 | 704 | 0.2- | 0.2- | 2003 01 27 | 704 | 1.0+ | 0.6+ | 2006 09 27 | 703 | 0.4+  | 0.7+  |
| 2002 12 01 | 704 | 0.2+ | 0.3- | 2003 01 27 | 704 | 0.3+ | 0.3+ | 2007 02 17 | G96 | 0.1-  | 0.1+  |
| 2002 12 01 | 704 | 0.4+ | 0.0  | 2004 03 15 | 704 | 0.0  | 0.4+ | 2007 02 17 | G96 | 0.3-  | 0.2-  |
| 2002 12 05 | 608 | 0.1- | 0.2+ | 2004 03 15 | 704 | 0.3- | 0.3- | 2007 02 17 | G96 | 0.5-  | 0.1+  |
| 2002 12 05 | 608 | 0.1- | 0.1- | 2004 03 15 | 704 | 1.0+ | 0.3+ | 2007 02 17 | G96 | 0.3-  | 0.0   |
| 2002 12 05 | 608 | 0.2- | 0.2- | 2004 03 15 | 704 | 1.1- | 0.9- | 2007 11 09 | G96 | 0.7-  | 0.9-  |
| 2002 12 14 | 704 | 0.7+ | 0.3+ | 2004 03 15 | 703 | 0.9- | 0.6+ | 2007 11 09 | G96 | 0.8-  | 1.0-  |
| 2002 12 14 | 704 | 0.5+ | 0.6- | 2004 03 15 | 703 | 0.8- | 0.0  | 2007 11 09 | G96 | 0.8-  | 0.7-  |
| 2002 12 14 | 704 | 0.3- | 0.8+ | 2004 03 15 | 703 | 0.0  | 0.2+ | 2007 11 09 | G96 | 0.8-  | 0.9-  |
| 2002 12 14 | 704 | 0.1- | 0.4- | 2004 03 15 | 703 | 0.1+ | 0.4- | 2007 11 15 | 704 | 1.4+  | 1.1-  |
| 2002 12 14 | 704 | 0.1+ | 0.0  | 2004 04 15 | 704 | 0.1- | 0.2- | 2007 11 15 | 704 | 1.1+  | 0.7-  |
| 2003 01 01 | 704 | 0.2+ | 1.4+ | 2004 04 15 | 704 | 1.1+ | 0.0  | 2007 11 15 | 704 | 0.6-  | 0.0   |
| 2003 01 01 | 704 | 0.7- | 0.8+ | 2004 04 15 | 704 | 0.1- | 0.7- | 2007 11 20 | 704 | 1.0+  | 1.2+  |
| 2003 01 01 | 704 | 0.3- | 0.5+ | 2004 04 19 | 704 | 0.1+ | 0.8+ | 2007 11 20 | 704 | 0.0   | 0.8+  |
| 2003 01 01 | 704 | 1.1- | 0.4+ | 2004 04 19 | 704 | 0.6+ | 0.2+ | 2007 11 20 | 704 | 0.2-  | 1.4-  |
| 2003 01 01 | 704 | 0.1- | 0.2- | 2004 04 19 | 704 | 0.5+ | 0.5+ | 2007 12 13 | 704 | 0.3-  | 0.8-  |
| 2003 01 07 | 704 | 0.7+ | 0.1+ | 2004 04 19 | 704 | 0.2+ | 0.6+ | 2007 12 13 | 704 | 0.2+  | 0.2-  |
| 2003 01 07 | 704 | 0.1- | 1.0+ | 2004 04 19 | 704 | 0.5- | 1.2+ | 2007 12 13 | 704 | 0.2-  | 0.1-  |
| 2003 01 07 | 704 | 1.3+ | 0.0  | 2004 04 19 | 704 | 0.6+ | 0.8+ | 2007 12 13 | 704 | 0.3+  | 0.3-  |
| 2003 01 07 | 704 | 0.5+ | 0.5+ | 2004 04 19 | 704 | 0.1+ | 1.5+ | 2007 12 13 | 704 | 0.1+  | 0.1-  |
| 2003 01 07 | 704 | 0.6- | 0.3+ | 2004 04 19 | 704 | 0.6+ | 0.3+ |            |     |       |       |
| 2003 01 08 | 608 | 0.1- | 0.2+ | 2004 04 19 | 704 | 0.7+ | 1.3+ |            |     |       |       |

**(172397)\* 2003 BR<sub>14</sub>**

Discovered 2003 Jan. 26 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC       |            |          |           |
|-----------|------------|----------|-----------|
| M         |            | P        |           |
| 246.83840 | (2000.0)   |          | Q         |
| <i>n</i>  | 0.18605445 | $\omega$ | 274.03706 |
| <i>a</i>  | 3.0388506  | $\Omega$ | 299.74403 |
| <i>e</i>  | 0.1159885  | <i>i</i> | 7.40803   |
| <i>P</i>  | 5.30       | <i>H</i> | 14.8      |
|           |            | <i>G</i> | 0.15      |
|           |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 01 08 | 704 | 1.0+  | 0.1+  | 2003 01 30 | 644 | 0.0   | 0.4+  | 2005 08 06 | 644 | 0.2+  | 1.1+  |
| 2003 01 08 | 704 | 0.7+  | 0.4-  | 2003 01 30 | 644 | 0.1-  | 0.3+  | 2005 11 01 | G96 | 0.4+  | 0.4+  |
| 2003 01 08 | 704 | (1.7+ | 0.7-) | 2003 01 30 | 644 | 0.1+  | 0.3+  | 2005 11 01 | G96 | 0.5-  | 0.5+  |
| 2003 01 08 | 704 | (1.7+ | 0.3-) | 2003 01 31 | 704 | 0.1-  | 1.3-  | 2005 11 01 | G96 | 1.3-  | 0.1+  |
| 2003 01 08 | 704 | 0.8+  | 0.0   | 2003 01 31 | 704 | (0.4+ | 1.8-) | 2005 11 01 | G96 | 0.1-  | 0.1+  |
| 2003 01 26 | 608 | 0.2-  | 0.6+  | 2003 01 31 | 704 | 0.4-  | 0.5+  | 2006 10 14 | 850 | 0.2-  | 0.7+  |
| 2003 01 26 | 608 | 0.2-  | 0.7+  | 2003 02 03 | 704 | 0.5+  | 0.6+  | 2006 10 14 | 850 | (2.2- | 0.0 ) |
| 2003 01 26 | 608 | 0.5+  | 0.4+  | 2003 02 03 | 704 | (2.0+ | 0.3+) | 2006 10 14 | 850 | 0.3-  | 0.4+  |
| 2003 01 27 | 699 | 1.0+  | 0.4-  | 2003 02 03 | 704 | 0.3+  | 0.3+  | 2006 10 19 | 703 | 0.3-  | 0.2+  |
| 2003 01 27 | 699 | 0.8-  | 0.2-  | 2003 02 03 | 704 | 0.6-  | 0.2+  | 2006 10 19 | 703 | 1.3-  | 0.1+  |
| 2003 01 27 | 704 | 0.3-  | 0.1+  | 2003 02 04 | 644 | 0.4+  | 0.5+  | 2006 10 19 | 703 | 0.3+  | 1.1+  |
| 2003 01 27 | 704 | 0.3-  | 0.3+  | 2003 02 04 | 644 | 1.1+  | 0.3+  | 2006 10 19 | 703 | 0.5-  | 0.9-  |
| 2003 01 27 | 704 | 0.2+  | 0.0   | 2003 02 04 | 644 | 0.5+  | 0.0   | 2007 12 04 | G96 | 0.2+  | 0.5-  |
| 2003 01 27 | 704 | 0.1+  | 0.3+  | 2004 04 14 | 644 | 0.4+  | 0.3+  | 2007 12 04 | G96 | 0.1-  | 0.6-  |
| 2003 01 27 | 699 | 0.9+  | 0.2+  | 2004 04 14 | 644 | 0.3+  | 0.3+  | 2007 12 04 | G96 | 0.3-  | 0.5-  |
| 2003 01 27 | 704 | 0.5-  | 0.0   | 2004 04 14 | 644 | 0.6+  | 1.0+  | 2007 12 04 | G96 | 0.6-  | 0.3-  |
| 2003 01 27 | 699 | 0.8-  | 0.4+  | 2004 04 25 | 704 | 1.2-  | 0.4+  | 2007 12 06 | 704 | 0.1-  | 0.1-  |
| 2003 01 28 | 704 | 0.2-  | 0.0   | 2004 04 25 | 704 | (1.8- | 0.8+) | 2007 12 06 | 704 | 0.5+  | 0.6-  |
| 2003 01 28 | 704 | 0.3-  | 0.2+  | 2004 04 25 | 704 | 1.2-  | 0.5+  | 2007 12 06 | 704 | 0.3+  | 0.9-  |
| 2003 01 28 | 704 | 0.7-  | 0.1+  | 2004 05 22 | 704 | 0.3+  | 0.7+  | 2007 12 10 | 704 | 0.1+  | 0.0   |
| 2003 01 28 | 704 | 0.5+  | 0.3+  | 2004 05 22 | 704 | 0.2-  | 0.2-  | 2007 12 10 | 704 | 0.8-  | 0.7+  |
| 2003 01 28 | 704 | 0.6-  | 0.1+  | 2004 05 22 | 704 | 0.8+  | 0.1-  | 2007 12 10 | 704 | 0.4-  | 0.4-  |
| 2003 01 29 | 291 | 0.2+  | 0.0   | 2004 05 22 | 704 | 0.4+  | 0.5+  | 2007 12 14 | 704 | 1.1+  | 1.6+  |
| 2003 01 29 | 291 | 0.1-  | 0.0   | 2005 08 06 | 644 | 0.2+  | 1.1+  | 2007 12 14 | 704 | 0.1+  | 0.2+  |
| 2003 01 29 | 291 | 0.2-  | 0.1-  | 2005 08 06 | 644 | 0.1+  | 1.1+  | 2007 12 14 | 704 | 0.4+  | 1.0+  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.64702  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18329282 | $\omega$ 15.49946  | -0.61099459   | -0.78200422 |
| <i>a</i> | 3.0692982  | $\Omega$ 112.32130 | +0.71143165   | -0.61061731 |
| <i>e</i> | 0.2101154  | <i>i</i> 7.64746   | +0.34720400   | -0.12496361 |
| <i>P</i> | 5.38       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 01 30 | 691 | 0.3- | 0.1+ | 2003 02 08 | 608 | 0.1+ | 0.1+ | 2003 03 23 | 644 | 0.2-  | 0.1+  |
| 1992 01 30 | 691 | 0.0  | 0.2+ | 2003 02 08 | 608 | 0.1- | 0.1+ | 2003 03 26 | 704 | 0.6+  | 1.1+  |
| 1992 01 30 | 691 | 0.0  | 0.5- | 2003 03 05 | 704 | 0.2+ | 0.2- | 2003 03 26 | 704 | (0.1- | 1.6+) |
| 2001 11 18 | 704 | 0.2- | 0.9+ | 2003 03 05 | 704 | 0.3- | 0.4+ | 2003 03 26 | 704 | 1.1-  | 1.0-  |
| 2001 11 18 | 704 | 0.4- | 0.4+ | 2003 03 05 | 704 | 1.0+ | 0.9+ | 2003 03 26 | 704 | 0.1-  | 0.5+  |
| 2001 11 18 | 704 | 0.2- | 0.4+ | 2003 03 05 | 704 | 0.1+ | 0.2+ | 2005 07 05 | 691 | 0.4-  | 0.5+  |
| 2001 11 18 | 645 | 0.0  | 0.1+ | 2003 03 05 | 704 | 0.2- | 0.4+ | 2005 07 05 | 691 | 0.2-  | 0.4+  |
| 2001 11 18 | 645 | 0.0  | 0.1+ | 2003 03 06 | 699 | 0.8+ | 1.0+ | 2005 07 05 | 691 | 0.1-  | 0.3+  |
| 2003 01 27 | 704 | 0.5+ | 0.4- | 2003 03 06 | 699 | 0.4- | 1.2+ | 2006 09 19 | 703 | 0.6-  | 0.8+  |
| 2003 01 27 | 704 | 0.3+ | 0.5- | 2003 03 06 | 699 | 0.4+ | 0.1+ | 2006 09 19 | 703 | 1.3-  | 0.1-  |
| 2003 01 27 | 704 | 0.5- | 0.2+ | 2003 03 06 | 699 | 0.3- | 0.2- | 2006 09 19 | 703 | 0.0   | 1.3-  |
| 2003 01 27 | 704 | 0.9+ | 0.3- | 2003 03 06 | 699 | 1.5+ | 0.2+ | 2006 09 19 | 703 | 0.8+  | 0.2-  |
| 2003 01 27 | 704 | 0.3- | 0.3- | 2003 03 06 | 699 | 0.2- | 0.4+ | 2006 10 02 | 703 | (0.5- | 2.0-) |
| 2003 01 27 | 608 | 0.3+ | 1.1- | 2003 03 06 | 699 | 0.8+ | 0.4- | 2006 10 02 | 703 | 1.0+  | 0.0   |
| 2003 01 27 | 608 | 0.3+ | 1.5- | 2003 03 06 | 699 | 0.1+ | 0.3+ | 2006 10 02 | 703 | 0.6-  | 0.3+  |
| 2003 01 27 | 608 | 0.4+ | 1.1- | 2003 03 07 | 644 | 0.1- | 0.2- | 2006 10 02 | 703 | 0.8+  | 0.2+  |
| 2003 01 28 | 644 | 0.0  | 0.6- | 2003 03 07 | 644 | 0.0  | 0.3- | 2007 11 12 | 704 | 0.5+  | 1.3-  |
| 2003 01 28 | 644 | 0.3+ | 0.3- | 2003 03 07 | 644 | 0.1+ | 0.3- | 2007 11 12 | 704 | 1.5+  | 0.9-  |
| 2003 01 28 | 644 | 0.3+ | 0.3- | 2003 03 08 | 704 | 0.4- | 0.5+ | 2007 11 12 | 704 | 0.5-  | 0.6+  |
| 2003 02 01 | 704 | 0.5- | 0.0  | 2003 03 08 | 704 | 0.2- | 0.6+ | 2007 11 12 | 704 | 0.9+  | 1.4+  |
| 2003 02 01 | 704 | 0.5- | 0.3- | 2003 03 08 | 704 | 0.1- | 0.7+ | 2007 12 04 | 704 | 0.6+  | 0.8+  |
| 2003 02 01 | 704 | 0.1+ | 0.6+ | 2003 03 08 | 704 | 0.3+ | 0.8+ | 2007 12 04 | 704 | 0.3-  | 0.0   |
| 2003 02 01 | 704 | 0.1+ | 0.3+ | 2003 03 08 | 704 | 0.4- | 1.0+ | 2007 12 04 | 704 | 0.6-  | 1.4+  |
| 2003 02 08 | 699 | 0.0  | 0.9+ | 2003 03 14 | 608 | 0.8+ | 0.4+ | 2007 12 16 | 691 | 0.3-  | 0.2-  |
| 2003 02 08 | 699 | 0.1+ | 0.6+ | 2003 03 14 | 608 | 0.5+ | 0.2+ | 2007 12 16 | 691 | 0.3-  | 0.3-  |
| 2003 02 08 | 699 | 0.1- | 0.3+ | 2003 03 14 | 608 | 0.1- | 0.1+ | 2007 12 16 | 691 | 0.3-  | 0.2-  |
| 2003 02 08 | 699 | 0.4- | 0.0  | 2003 03 23 | 644 | 0.7- | 1.0+ |            |     |       |       |
| 2003 02 08 | 608 | 0.3+ | 0.0  | 2003 03 23 | 644 | 0.1- | 0.2+ |            |     |       |       |

(172399)\* 2003 BC<sub>22</sub>

Discovered 2003 Jan. 25 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.45470   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22597118 | $\omega$ 309.32461 | +0.40819137   | -0.88591963 |
| <i>a</i> | 2.6695251  | $\Omega$ 115.25470 | +0.89447993   | +0.33991261 |
| <i>e</i> | 0.2515961  | <i>i</i> 14.09715  | +0.18244303   | +0.31560391 |
| <i>P</i> | 4.36       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 01 06 | 699 | 0.1+ | 0.9- | 2002 12 06 | 699 | 0.7-  | 0.4-  | 2004 03 28 | 704 | (1.0+ | 2.9+) |
| 1999 01 06 | 699 | 0.1+ | 0.6- | 2002 12 06 | 699 | 0.9+  | 1.0-  | 2004 03 28 | 704 | (1.7+ | 2.5+) |
| 1999 01 06 | 699 | 1.1+ | 0.2+ | 2002 12 06 | 644 | 0.5+  | 0.4+  | 2004 03 28 | 704 | (0.2+ | 3.2+) |
| 2002 10 05 | 704 | 1.0- | 0.4+ | 2002 12 06 | 644 | 0.7+  | 0.4+  | 2006 08 20 | 644 | 0.3+  | 0.0   |
| 2002 10 05 | 704 | 1.0- | 0.3+ | 2002 12 06 | 644 | 0.5+  | 0.2+  | 2006 08 20 | 644 | 0.1+  | 0.1-  |
| 2002 10 05 | 704 | 1.5- | 0.5+ | 2002 12 21 | 608 | 0.4-  | 1.0-  | 2006 08 20 | 644 | 0.4+  | 0.0   |
| 2002 10 05 | 704 | 0.9- | 0.7+ | 2002 12 21 | 608 | 0.3-  | 1.1-  | 2006 08 23 | 644 | 0.1-  | 0.2-  |
| 2002 10 05 | 704 | 1.1- | 0.5+ | 2002 12 21 | 608 | 0.2-  | 0.8-  | 2006 08 23 | 644 | 0.0   | 0.0   |
| 2002 10 05 | 644 | 0.1+ | 0.0  | 2003 01 16 | 644 | 0.2-  | 0.8+  | 2006 08 23 | 644 | 0.0   | 0.1+  |
| 2002 10 05 | 644 | 0.1+ | 0.1+ | 2003 01 16 | 644 | 0.1+  | 0.1+  | 2006 09 27 | E12 | 0.0   | 0.1+  |
| 2002 10 05 | 644 | 0.2+ | 0.2+ | 2003 01 16 | 644 | 0.0   | 0.4+  | 2006 09 27 | E12 | 0.2-  | 0.1+  |
| 2002 10 16 | 644 | 0.2+ | 0.3- | 2003 01 25 | 644 | 0.9+  | 1.3+  | 2006 09 27 | E12 | 1.2+  | 0.3+  |
| 2002 10 16 | 644 | 0.2+ | 0.2- | 2003 01 25 | 644 | 0.3+  | 1.2+  | 2006 09 27 | E12 | (2.1- | 1.5+) |
| 2002 10 16 | 644 | 0.2+ | 0.4- | 2003 01 25 | 644 | 0.2+  | 1.2+  | 2007 10 14 | G96 | 0.5+  | 0.3-  |
| 2002 10 29 | 704 | 0.6+ | 1.0+ | 2003 01 28 | 704 | (2.3- | 1.3+) | 2007 10 14 | G96 | 0.1-  | 0.1-  |
| 2002 10 29 | 704 | 0.3- | 0.3- | 2003 01 28 | 704 | (1.7- | 2.2+) | 2007 10 14 | G96 | 0.3-  | 0.3-  |
| 2002 10 29 | 704 | 0.4- | 0.3+ | 2003 01 28 | 704 | (1.3- | 2.1+) | 2007 10 14 | G96 | 0.5+  | 0.1-  |
| 2002 10 29 | 704 | 0.6- | 0.2+ | 2003 01 28 | 704 | (0.3- | 2.0+) | 2007 11 20 | G96 | 0.3-  | 0.1+  |
| 2002 11 05 | 644 | 0.3+ | 0.1- | 2003 01 28 | 704 | (1.1- | 1.7+) | 2007 11 20 | G96 | 0.1+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 05 | 644 | 0.1+ | 0.1- | 2004 03 19 | 644 | 0.1- | 1.1+ | 2007 11 20 | G96 | 0.3+ | 0.1+ |
| 2002 11 05 | 644 | 0.4+ | 0.1- | 2004 03 19 | 644 | 0.1- | 1.1+ | 2007 11 20 | G96 | 0.1- | 0.3- |
| 2002 12 06 | 699 | 0.1+ | 0.2- | 2004 03 19 | 644 | 0.0  | 1.2+ |            |     |      |      |
| 2002 12 06 | 699 | 0.9- | 0.3- | 2004 03 28 | 704 | 0.1+ | 1.0+ |            |     |      |      |

(172400)\* 2003 BH<sub>22</sub>

Discovered 2003 Jan. 25 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.86529   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18998420 | $\omega$ 132.65633 | +0.36799866   | -0.91945737 |
| <i>a</i> | 2.9967998  | $\Omega$ 295.26732 | +0.80202464   | +0.38922971 |
| <i>e</i> | 0.0967397  | <i>i</i> 8.80803   | +0.47046091   | +0.05566299 |
| <i>P</i> | 5.19       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 25 | 704 | 0.7-  | 0.1+  | 2003 01 28 | 704 | 0.1- | 0.3- | 2006 10 17 | 691 | 0.0  | 0.1+ |
| 2001 09 25 | 704 | 0.8+  | 0.3+  | 2003 01 28 | 704 | 0.2+ | 0.5+ | 2006 10 17 | 691 | 0.3- | 0.1+ |
| 2001 09 25 | 704 | 0.1-  | 0.1-  | 2003 01 28 | 704 | 0.4+ | 0.1- | 2006 10 17 | 691 | 0.0  | 0.1+ |
| 2001 09 25 | 704 | 0.8+  | 1.5-  | 2003 01 30 | 644 | 0.3- | 0.1- | 2006 10 20 | 691 | 0.0  | 0.0  |
| 2001 09 25 | 704 | 1.0-  | 0.6-  | 2003 01 30 | 699 | 0.9- | 0.7+ | 2006 10 20 | 691 | 0.2+ | 0.2+ |
| 2001 09 29 | 644 | 0.3+  | 0.6+  | 2003 01 30 | 699 | 0.2- | 1.0+ | 2006 10 20 | 691 | 0.2+ | 0.1+ |
| 2001 09 29 | 644 | 0.5+  | 0.8+  | 2003 01 30 | 699 | 0.3- | 0.6+ | 2006 10 22 | 691 | 0.0  | 0.0  |
| 2001 09 29 | 644 | 0.4+  | 0.4+  | 2003 01 30 | 699 | 0.8- | 1.0+ | 2006 10 22 | 691 | 0.2- | 0.2+ |
| 2001 10 20 | 699 | 0.3-  | 0.8+  | 2003 01 30 | 644 | 0.3+ | 0.2+ | 2006 10 22 | 691 | 0.0  | 0.0  |
| 2001 10 20 | 699 | 0.2-  | 0.6+  | 2003 01 30 | 644 | 0.0  | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.7- |
| 2001 10 20 | 699 | 0.8-  | 0.7+  | 2003 01 31 | 704 | 0.7+ | 0.0  | 2007 11 11 | G96 | 0.1+ | 0.5- |
| 2001 10 20 | 699 | 1.1-  | 0.3-  | 2003 01 31 | 704 | 0.3+ | 0.9- | 2007 11 11 | G96 | 0.1+ | 0.6- |
| 2002 12 10 | 644 | 0.2+  | 0.7+  | 2003 01 31 | 704 | 0.8- | 1.0- | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2002 12 10 | 644 | 0.1-  | 0.7+  | 2003 01 31 | 704 | 0.4+ | 0.0  | 2007 12 05 | 691 | 0.0  | 0.1- |
| 2002 12 10 | 644 | 0.2+  | 1.0+  | 2003 01 31 | 704 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.2- | 0.4- |
| 2003 01 08 | 704 | 0.3+  | 0.5+  | 2003 01 31 | 704 | 1.0+ | 0.7+ | 2007 12 05 | 691 | 0.4- | 0.2- |
| 2003 01 08 | 704 | 0.6+  | 1.1-  | 2003 01 31 | 704 | 0.3+ | 0.2- | 2007 12 10 | 704 | 0.7- | 0.1- |
| 2003 01 08 | 704 | 0.3+  | 0.2+  | 2003 01 31 | 704 | 0.6+ | 0.8- | 2007 12 10 | 704 | 0.7+ | 0.8+ |
| 2003 01 08 | 704 | 0.1+  | 1.0-  | 2003 02 03 | 704 | 0.2+ | 0.5+ | 2007 12 10 | 704 | 0.7+ | 0.2+ |
| 2003 01 08 | 704 | 0.7-  | 0.1+  | 2003 02 03 | 704 | 0.0  | 1.1+ | 2007 12 10 | 704 | 0.1- | 0.4- |
| 2003 01 08 | 704 | 0.7+  | 0.0   | 2003 02 03 | 704 | 0.4- | 0.7+ | 2007 12 14 | 704 | 0.9+ | 0.3+ |
| 2003 01 08 | 704 | (1.6+ | 1.6-) | 2006 08 18 | 291 | 0.1+ | 0.2- | 2007 12 14 | 704 | 0.3+ | 0.8+ |
| 2003 01 25 | 699 | 0.2+  | 0.2-  | 2006 08 18 | 291 | 0.3+ | 0.3- | 2007 12 14 | 704 | 0.4- | 0.0  |
| 2003 01 25 | 699 | 0.7+  | 0.9+  | 2006 08 18 | 291 | 0.1+ | 0.3- | 2007 12 14 | 704 | 1.0- | 1.3- |
| 2003 01 25 | 699 | 1.1-  | 0.3-  | 2006 09 21 | 699 | 0.3+ | 0.0  | 2007 12 15 | 691 | 0.4+ | 0.2+ |
| 2003 01 25 | 699 | 0.2+  | 0.5-  | 2006 09 21 | 699 | 0.5- | 0.3- | 2007 12 15 | 691 | 0.3- | 0.2- |
| 2003 01 28 | 704 | 0.0   | 0.0   | 2006 09 21 | 699 | 0.4- | 0.0  | 2007 12 15 | 691 | 0.2- | 0.3- |
| 2003 01 28 | 704 | 0.1+  | 0.1-  | 2006 09 21 | 699 | 0.6- | 0.8+ |            |     |      |      |

(172401)\* 2003 BG<sub>24</sub> = 2001 TA<sub>143</sub>

Discovered 2003 Jan. 25 by NEAT at Palomar.

Id. G. V. Williams (MPO 43269)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.62606  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17595762 | $\omega$ 296.88101 | -0.36791242   | -0.92946026 |
| <i>a</i> | 3.1540167  | $\Omega$ 174.48871 | +0.92162793   | -0.36839310 |
| <i>e</i> | 0.2179630  | <i>i</i> 16.50022  | +0.12346013   | -0.01975213 |
| <i>P</i> | 5.60       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 03 05 | 809 | 1.1- | 1.1- | 2003 02 01 | 699 | 0.8+ | 0.2- | 2007 11 11 | 703 | 0.8+ | 0.5- |
| 1998 04 24 | 704 | 0.6- | 0.4+ | 2003 02 01 | 699 | 1.3+ | 0.6- | 2007 11 11 | 703 | 0.8- | 0.8+ |
| 1998 04 24 | 704 | 1.9+ | 2.0+ | 2003 02 22 | 644 | 0.0  | 0.1+ | 2007 11 11 | 703 | 1.1- | 0.7+ |
| 1998 04 24 | 704 | 0.1- | 1.1+ | 2003 02 22 | 644 | 0.0  | 0.0  | 2007 11 12 | 704 | 0.4+ | 0.1+ |
| 1998 04 24 | 704 | 0.9+ | 1.2+ | 2003 02 22 | 644 | 0.2- | 0.1+ | 2007 11 12 | 704 | 0.1- | 0.1+ |
| 2001 10 10 | 644 | 0.1- | 0.8+ | 2003 03 09 | 704 | 0.8+ | 0.2- | 2007 11 12 | 704 | 0.3- | 0.2+ |
| 2001 10 10 | 644 | 0.3+ | 1.0+ | 2003 03 09 | 704 | 0.5- | 0.0  | 2007 11 12 | 704 | 1.2- | 0.0  |
| 2001 10 10 | 644 | 0.1+ | 0.9+ | 2003 03 09 | 704 | 1.1+ | 1.2+ | 2007 11 12 | 704 | 0.7+ | 0.9+ |
| 2001 10 16 | 644 | 0.3- | 0.0  | 2003 03 09 | 704 | 0.0  | 0.3+ | 2007 11 14 | 704 | 0.3- | 0.9+ |

2007 DEC. 24

M.P.O. 129359

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 16 | 644 | 0.1+ | 0.1+ | 2004 04 25 | 691 | 0.0  | 0.3+ | 2007 11 14 | 704 | 0.2- | 1.0+ |
| 2001 10 16 | 644 | 0.1- | 0.3+ | 2004 04 25 | 691 | 0.7+ | 0.2+ | 2007 11 14 | 704 | 0.2- | 0.4+ |
| 2003 01 25 | 644 | 0.0  | 0.1+ | 2004 04 25 | 691 | 0.1- | 0.5+ | 2007 11 14 | 704 | 0.5- | 0.7+ |
| 2003 01 25 | 644 | 0.2+ | 0.1+ | 2004 05 19 | 691 | 0.4- | 0.2- | 2007 11 14 | 704 | 0.1- | 0.7+ |
| 2003 01 25 | 644 | 0.1- | 0.2- | 2004 05 19 | 691 | 0.3- | 0.4+ | 2007 11 15 | 703 | 0.1- | 1.0- |
| 2003 01 28 | 704 | 0.5- | 0.4- | 2004 05 19 | 691 | 0.1- | 0.1+ | 2007 11 15 | 703 | 0.3+ | 0.3+ |
| 2003 01 28 | 704 | 0.8- | 0.2- | 2007 10 19 | 704 | 0.2- | 0.3- | 2007 11 15 | 703 | 0.6- | 0.1- |
| 2003 01 28 | 704 | 0.6- | 0.0  | 2007 10 19 | 704 | 0.4+ | 0.3+ | 2007 11 15 | 703 | 0.2+ | 0.1+ |
| 2003 01 28 | 704 | 0.2- | 0.1- | 2007 10 19 | 704 | 1.0+ | 0.6- | 2007 12 05 | 703 | 0.2- | 0.1+ |
| 2003 01 28 | 704 | 0.6- | 0.3- | 2007 10 19 | 704 | 0.1+ | 0.4+ | 2007 12 05 | 703 | 0.3+ | 0.1- |
| 2003 02 01 | 699 | 0.5+ | 0.5+ | 2007 10 19 | 704 | 0.5+ | 0.1- | 2007 12 05 | 703 | 0.4- | 1.0+ |
| 2003 02 01 | 699 | 0.3+ | 0.2- | 2007 11 11 | 703 | 0.1- | 0.3- | 2007 12 05 | 703 | 0.2+ | 0.8+ |

(172402)\* 2003 BJ<sub>51</sub> = 2000 QJ<sub>246</sub>

Discovered 2003 Jan. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 41475)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 289.20762  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.17996774 | $\omega$ | 225.37467 | -0.97519595  | -0.21123510  |
| $a$ | 3.1069883  | $\Omega$ | 302.32387 | +0.21869839  | -0.87349461  |
| $e$ | 0.1780597  | $i$      | 4.48807   | +0.03411557  | -0.43861931  |
| $P$ | 5.48       | $H$      | 15.2      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 04 22 | 704 | 1.3-  | 0.2+  | 2003 01 31 | 704 | 0.4+  | 0.6+  | 2003 02 22 | 699 | 1.0-  | 0.7+  |
| 1998 04 22 | 704 | 0.5-  | 0.4-  | 2003 01 31 | 704 | 0.1+  | 0.1-  | 2003 02 22 | 699 | 0.2-  | 1.2+  |
| 1998 04 22 | 704 | 1.2+  | 0.9-  | 2003 01 31 | 704 | 0.1+  | 0.4+  | 2003 02 22 | 699 | 0.4-  | 0.8+  |
| 1998 04 22 | 704 | (3.9- | 2.4+) | 2003 02 03 | 704 | 0.1+  | 0.3+  | 2003 03 01 | 608 | 0.7-  | 1.5+  |
| 2000 08 26 | 691 | 0.0   | 0.0   | 2003 02 03 | 704 | 0.6+  | 0.5-  | 2003 03 01 | 608 | 0.1-  | 1.2+  |
| 2000 08 26 | 691 | 0.0   | 0.1+  | 2003 02 03 | 704 | 1.3+  | 0.3+  | 2003 03 01 | 608 | 0.0   | 0.3+  |
| 2000 08 26 | 691 | 0.2+  | 0.3+  | 2003 02 03 | 704 | 0.8+  | 0.7+  | 2003 03 05 | 704 | (0.1- | 2.0-) |
| 2000 08 28 | 807 | 0.2+  | 0.7+  | 2003 02 03 | 704 | 1.0+  | 0.4+  | 2003 03 05 | 704 | (0.3+ | 2.0-) |
| 2000 08 28 | 807 | 0.3+  | 0.6+  | 2003 02 03 | 704 | (2.4+ | 1.1-) | 2003 03 05 | 704 | (0.4- | 1.9-) |
| 2001 11 12 | 704 | 1.0-  | 0.7-  | 2003 02 03 | 704 | 1.3+  | 1.0-  | 2003 03 12 | 644 | 0.1+  | 0.0   |
| 2001 11 12 | 704 | 1.0-  | 1.0-  | 2003 02 03 | 704 | 1.0+  | 0.2+  | 2003 03 12 | 644 | 0.1+  | 0.0   |
| 2001 11 12 | 704 | 0.1+  | 0.0   | 2003 02 03 | 704 | 0.6+  | 0.6-  | 2003 03 12 | 644 | 0.2+  | 0.0   |
| 2001 11 12 | 704 | 0.2-  | 0.3-  | 2003 02 03 | 704 | 1.5+  | 0.6+  | 2005 07 04 | G96 | 0.1+  | 0.0   |
| 2003 01 08 | 704 | 0.4+  | 0.4+  | 2003 02 03 | 608 | 0.1-  | 1.1-  | 2005 07 04 | G96 | 0.5-  | 0.2+  |
| 2003 01 08 | 704 | 0.1-  | 0.1+  | 2003 02 03 | 608 | 0.6+  | 0.9-  | 2005 07 04 | G96 | 0.4-  | 0.2+  |
| 2003 01 08 | 704 | 0.4+  | 0.1-  | 2003 02 03 | 608 | 0.4+  | 0.8-  | 2005 07 04 | G96 | 0.3-  | 0.0   |
| 2003 01 08 | 704 | 0.1-  | 0.5+  | 2003 02 07 | 333 | 0.8-  | 0.4-  | 2005 08 27 | 644 | 0.6-  | 0.4+  |
| 2003 01 17 | 644 | 0.4+  | 0.1-  | 2003 02 07 | 333 | 0.9-  | 0.6-  | 2005 08 27 | 644 | 0.6-  | 0.6+  |
| 2003 01 17 | 644 | 0.1+  | 0.3-  | 2003 02 07 | 333 | 0.8-  | 0.8-  | 2005 08 27 | 644 | 0.8-  | 0.4+  |
| 2003 01 17 | 644 | 0.1+  | 0.3-  | 2003 02 08 | 704 | 0.2+  | 0.1+  | 2006 09 27 | 691 | 0.2+  | 0.2+  |
| 2003 01 27 | 704 | 0.2+  | 0.1+  | 2003 02 08 | 704 | 0.2-  | 0.4+  | 2006 09 27 | 691 | 0.0   | 0.2+  |
| 2003 01 27 | 704 | (0.5+ | 2.0+) | 2003 02 08 | 704 | 0.4-  | 0.3+  | 2006 09 27 | 691 | 0.1+  | 0.2+  |
| 2003 01 27 | 704 | 0.3-  | 1.1+  | 2003 02 08 | 704 | 0.5+  | 0.5+  | 2006 10 01 | 691 | 0.1-  | 0.0   |
| 2003 01 27 | 704 | 0.8+  | 0.1+  | 2003 02 08 | 704 | 0.5+  | 0.3+  | 2006 10 01 | 691 | 0.1+  | 0.2+  |
| 2003 01 27 | 704 | (0.1- | 1.6+) | 2003 02 09 | 333 | 0.9-  | 0.2-  | 2006 10 01 | 691 | 0.3-  | 0.2+  |
| 2003 01 27 | 644 | 0.1-  | 0.6+  | 2003 02 09 | 333 | 0.9-  | 0.2-  | 2007 12 10 | 704 | 0.5-  | 0.5+  |
| 2003 01 27 | 644 | 0.0   | 0.5+  | 2003 02 09 | 608 | 0.4-  | 0.2+  | 2007 12 10 | 704 | 0.1+  | 0.3+  |
| 2003 01 27 | 644 | 0.4-  | 0.7+  | 2003 02 09 | 608 | 0.5-  | 0.0   | 2007 12 10 | 704 | 0.6+  | 0.9-  |
| 2003 01 30 | 699 | 0.0   | 0.3+  | 2003 02 09 | 608 | 0.7-  | 0.1-  | 2007 12 10 | 704 | 0.3-  | 1.1-  |
| 2003 01 30 | 699 | 0.2+  | 0.2+  | 2003 02 21 | 644 | 0.2-  | 0.0   | 2007 12 14 | 704 | 0.5+  | 0.9-  |
| 2003 01 30 | 699 | 0.1+  | 0.2+  | 2003 02 21 | 644 | 0.1-  | 0.2+  | 2007 12 14 | 704 | 0.0   | 0.6-  |
| 2003 01 30 | 699 | 0.3+  | 0.3+  | 2003 02 21 | 644 | 0.2-  | 0.2+  | 2007 12 14 | 704 | 0.1-  | 0.9-  |
| 2003 01 31 | 704 | 0.6+  | 0.3-  | 2003 02 22 | 699 | 0.7-  | 0.0   | 2007 12 14 | 704 | 0.4-  | 0.7-  |

(172403)\* 2003 BO<sub>52</sub>

Discovered 2003 Jan. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 285.79611  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18092201 | $\omega$ | 235.02520 | -0.98261012 | -0.14407854 |
| $a$ | 3.0960534  | $\Omega$ | 296.43546 | +0.18174553 | -0.87547437 |
| $e$ | 0.0805838  | $i$      | 7.51607   | -0.03802516 | -0.46128733 |
| $P$ | 5.45       | $H$      | 15.2      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 15 | 704 | 0.3-  | 0.8-  | 2003 02 02 | 704 | (2.1+ | 0.2+) | 2005 07 28 | 644 | 0.2-  | 0.1+  |
| 2001 10 15 | 704 | (2.9- | 0.3-) | 2003 02 02 | 704 | 0.1+  | 0.5+  | 2005 07 28 | 644 | 0.3-  | 0.2+  |
| 2001 10 15 | 704 | (1.9- | 0.8-) | 2003 02 07 | 644 | 0.6+  | 0.3+  | 2005 07 28 | 644 | 0.5-  | 0.3+  |
| 2001 10 15 | 704 | (1.6- | 1.1-) | 2003 02 07 | 644 | 0.5+  | 0.3+  | 2005 08 06 | 644 | 0.2-  | 0.2+  |
| 2001 11 11 | 704 | 0.2-  | 0.9+  | 2003 02 07 | 644 | 0.8+  | 0.3+  | 2005 08 06 | 644 | 0.1-  | 0.4+  |
| 2001 11 11 | 704 | 0.7+  | 0.2+  | 2003 02 09 | 608 | 0.6+  | 0.2+  | 2005 08 06 | 644 | 0.5-  | 0.3+  |
| 2001 11 11 | 704 | (0.4- | 1.5+) | 2003 02 09 | 608 | 0.5+  | 0.5+  | 2006 09 18 | 703 | 0.0   | 0.6-  |
| 2001 11 11 | 704 | 0.0   | 0.4-  | 2003 02 09 | 608 | 0.8+  | 0.1+  | 2006 09 18 | 703 | 1.1-  | 0.7+  |
| 2001 11 11 | 704 | 0.4+  | 0.1+  | 2003 02 19 | 644 | 0.3+  | 0.5+  | 2006 09 18 | 703 | 0.4-  | 0.2-  |
| 2001 11 19 | 699 | 0.7-  | 1.2+  | 2003 02 19 | 644 | 0.2-  | 0.3+  | 2006 09 18 | 703 | (0.1+ | 1.6+) |
| 2001 11 19 | 699 | 0.4-  | 0.2-  | 2003 02 19 | 644 | 0.0   | 0.1+  | 2007 12 04 | G96 | 0.0   | 0.5-  |
| 2001 11 19 | 699 | 0.4-  | 0.9-  | 2003 02 22 | 644 | 0.1+  | 0.2+  | 2007 12 04 | G96 | 0.1+  | 0.7-  |
| 2001 11 19 | 699 | 1.0+  | 0.7-  | 2003 02 22 | 644 | 0.1+  | 0.3+  | 2007 12 04 | G96 | 0.0   | 0.7-  |
| 2001 12 20 | 644 | 0.1-  | 0.8+  | 2003 02 22 | 644 | 0.3+  | 0.3+  | 2007 12 04 | G96 | 0.1+  | 0.4-  |
| 2001 12 20 | 644 | 0.1+  | 0.9+  | 2003 02 22 | 699 | 0.5-  | 1.2+  | 2007 12 05 | 691 | 0.1-  | 0.1-  |
| 2001 12 20 | 644 | 0.0   | 1.2+  | 2003 02 22 | 699 | 0.7-  | 0.5+  | 2007 12 05 | 691 | 0.1-  | 0.1-  |
| 2003 01 27 | 704 | 0.9+  | 0.6+  | 2003 02 22 | 699 | 0.1+  | 0.2+  | 2007 12 05 | 691 | 0.1-  | 0.2-  |
| 2003 01 27 | 704 | 1.0+  | 1.0+  | 2003 02 22 | 699 | 0.2-  | 0.3+  | 2007 12 10 | 704 | 0.4+  | 0.4+  |
| 2003 01 27 | 704 | 0.4+  | 1.4+  | 2005 07 01 | 691 | 0.2-  | 0.4+  | 2007 12 10 | 704 | 0.3-  | 0.2+  |
| 2003 01 28 | 645 | 0.1-  | 0.1-  | 2005 07 01 | 691 | 0.1-  | 0.2+  | 2007 12 10 | 704 | 0.1+  | 0.5+  |
| 2003 01 28 | 645 | 0.1-  | 0.0   | 2005 07 01 | 691 | 0.2-  | 0.1+  | 2007 12 10 | 704 | 0.1-  | 0.6+  |
| 2003 01 30 | 699 | 0.2+  | 0.8+  | 2005 07 09 | 691 | 0.0   | 0.5+  | 2007 12 14 | 704 | 0.8+  | 0.2-  |
| 2003 01 30 | 699 | (0.4- | 1.5+) | 2005 07 09 | 691 | 0.0   | 0.5+  | 2007 12 14 | 704 | 0.0   | 0.3+  |
| 2003 01 30 | 699 | 0.0   | 0.3+  | 2005 07 09 | 691 | 0.1-  | 0.4+  | 2007 12 14 | 704 | 0.3-  | 1.0+  |
| 2003 01 30 | 699 | 0.1+  | 0.3-  | 2005 07 18 | 644 | 0.0   | 0.6+  | 2007 12 14 | 704 | 1.0+  | 0.3+  |
| 2003 02 02 | 704 | 0.2+  | 0.9+  | 2005 07 18 | 644 | 0.3-  | 0.5+  |            |     |       |       |
| 2003 02 02 | 704 | 1.0+  | 0.9+  | 2005 07 18 | 644 | 0.2-  | 0.4+  |            |     |       |       |

(172404)\* 2003 BC<sub>53</sub>

Discovered 2003 Jan. 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 352.94093  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18911734 | $\omega$ | 356.07125 | -0.24965330 | -0.94888086 |
| $a$ | 3.0059505  | $\Omega$ | 108.30529 | +0.89388229 | -0.30251992 |
| $e$ | 0.0760138  | $i$      | 11.73712  | +0.37235423 | +0.09003780 |
| $P$ | 5.21       | $H$      | 15.2      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 19 | 645 | 0.0   | 0.1+  | 2003 01 30 | 699 | 0.0   | 0.8+  | 2004 03 30 | 291 | 0.4+  | 0.8+  |
| 2001 09 19 | 645 | 0.1-  | 0.1+  | 2003 01 30 | 699 | 0.0   | 0.1-  | 2004 03 30 | 291 | 0.3+  | 0.9+  |
| 2001 10 15 | 644 | 0.2-  | 1.1+  | 2003 01 30 | 699 | 0.3-  | 0.4+  | 2006 10 11 | 644 | 0.4-  | 0.3+  |
| 2001 10 15 | 644 | 0.4-  | 0.7+  | 2003 01 30 | 699 | 0.8+  | 0.1+  | 2006 10 11 | 644 | 0.4-  | 0.4+  |
| 2001 10 15 | 644 | 0.7-  | 0.8+  | 2003 02 01 | 704 | 0.1+  | 0.2+  | 2006 10 11 | 644 | 0.4-  | 0.2+  |
| 2001 10 23 | 644 | (1.8- | 0.7-) | 2003 02 01 | 704 | 0.1-  | 0.2+  | 2006 10 21 | 703 | 0.4-  | 0.2-  |
| 2001 10 23 | 644 | (1.6- | 0.2-) | 2003 02 01 | 704 | 0.7+  | 0.4+  | 2006 10 21 | 703 | (2.5- | 0.1-) |
| 2001 10 23 | 644 | 1.3-  | 0.4-  | 2003 02 01 | 704 | 0.5+  | 0.6+  | 2006 10 21 | 703 | 0.6+  | 1.1+  |
| 2002 01 08 | 645 | 0.0   | 0.0   | 2003 02 01 | 704 | 0.5-  | 0.7-  | 2006 10 21 | 703 | 0.5-  | 0.1-  |
| 2002 01 08 | 645 | 0.1+  | 0.0   | 2003 02 02 | 644 | (0.5+ | 1.9+) | 2007 12 01 | D35 | 0.3+  | 0.1-  |
| 2002 01 10 | 209 | 0.2+  | 0.5-  | 2003 02 02 | 644 | 0.2-  | 0.2+  | 2007 12 01 | D35 | 0.8+  | 0.1+  |
| 2002 01 10 | 209 | 0.4-  | 0.5+  | 2003 02 02 | 644 | 0.4+  | 0.0   | 2007 12 01 | D35 | 0.2+  | 0.2+  |
| 2002 01 10 | 209 | 0.6+  | 0.7+  | 2003 02 23 | 699 | 0.1-  | 0.1+  | 2007 12 03 | 691 | 0.1-  | 0.2-  |
| 2003 01 05 | 704 | 0.7+  | 1.3-  | 2003 02 23 | 699 | 0.2+  | 0.5-  | 2007 12 03 | 691 | 0.1-  | 0.1-  |
| 2003 01 05 | 704 | 0.1-  | 0.5-  | 2003 02 23 | 699 | 1.1+  | 0.5+  | 2007 12 03 | 691 | 0.2-  | 0.2-  |
| 2003 01 05 | 704 | 0.6+  | 0.4+  | 2003 02 23 | 699 | (1.9+ | 0.4-) | 2007 12 14 | 704 | 0.8-  | 0.3+  |
| 2003 01 27 | 699 | 0.3-  | 0.0   | 2003 03 05 | 704 | 0.7-  | 1.1+  | 2007 12 14 | 704 | 0.5+  | 0.3-  |
| 2003 01 27 | 699 | 0.1+  | 0.5+  | 2003 03 05 | 704 | 0.7-  | 0.5+  | 2007 12 14 | 704 | 0.1-  | 0.8+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 27 | 699 | 0.2− | 0.6− | 2003 03 05 | 704 | 1.4− | 0.3− | 2007 12 14 | 704 | 0.9+ | 0.2+ |
| 2003 01 27 | 699 | 0.7− | 0.0  | 2004 03 30 | 291 | 0.3+ | 0.9+ | 2007 12 14 | 704 | 0.6+ | 0.5+ |

**(172405)\* 2003 BH<sub>65</sub> = 2006 QN<sub>118</sub>**

Discovered 2003 Jan. 30 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 108661)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.01818   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18504050 | $\omega$ | 79.24302  | +0.95666865 |      | −0.27163433 |   |
| <i>a</i> | 3.0499415  | $\Omega$ | 296.45004 | +0.19962212 |      | +0.87406037 |   |
| <i>e</i> | 0.1468939  | <i>i</i> | 6.72721   | +0.21198137 |      | +0.40278189 |   |
| <i>P</i> | 5.33       | <i>H</i> | 15.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 22 | 704 | 0.2−  | 0.4+  | 2006 08 18 | 644 | 0.2+ | 0.2− | 2006 09 20 | 699 | 0.9− | 0.8+ |
| 2001 08 22 | 704 | 0.1−  | 0.9−  | 2006 08 21 | 691 | 0.2− | 0.2+ | 2006 09 20 | 699 | 0.3− | 0.1+ |
| 2001 08 22 | 704 | (1.5+ | 0.3−) | 2006 08 21 | 691 | 0.0  | 0.3+ | 2006 09 20 | 699 | 0.3+ | 0.3− |
| 2001 09 25 | 704 | (2.0+ | 1.7−) | 2006 08 21 | 691 | 0.1− | 0.3+ | 2006 09 20 | 699 | 0.3− | 0.3+ |
| 2001 09 25 | 704 | 0.4+  | 0.1−  | 2006 08 27 | 699 | 0.0  | 0.6− | 2006 09 29 | 699 | 0.6+ | 0.8− |
| 2001 09 25 | 704 | 1.0+  | 0.5−  | 2006 08 27 | 699 | 0.2− | 0.1− | 2006 09 29 | 699 | 0.1− | 1.0+ |
| 2001 09 25 | 704 | 1.1+  | 0.4−  | 2006 08 27 | 699 | 0.0  | 0.4+ | 2006 09 29 | 699 | 0.9− | 0.3− |
| 2001 09 25 | 704 | (1.7+ | 1.7−) | 2006 08 27 | 699 | 0.9− | 0.7+ | 2006 09 29 | 699 | 0.3− | 0.8+ |
| 2001 10 18 | 704 | 0.2−  | 0.2+  | 2006 08 29 | 703 | 0.6− | 0.5− | 2006 10 11 | 644 | 0.2− | 0.2+ |
| 2001 10 18 | 704 | 0.2−  | 0.1−  | 2006 08 29 | 703 | 0.2− | 0.4− | 2006 10 11 | 644 | 0.1− | 0.1+ |
| 2001 10 18 | 704 | 0.1−  | 0.4−  | 2006 08 29 | 703 | 0.8− | 1.0− | 2006 10 11 | 644 | 0.0  | 0.3+ |
| 2001 10 18 | 704 | 0.6−  | 0.5−  | 2006 08 29 | 703 | 0.9− | 0.2+ | 2006 10 23 | 644 | 0.1− | 0.1+ |
| 2001 10 18 | 704 | 0.1−  | 0.2+  | 2006 08 30 | 704 | 0.3+ | 0.5+ | 2006 10 23 | 644 | 0.4− | 0.0  |
| 2001 11 11 | 699 | 0.2+  | 0.6+  | 2006 08 30 | 704 | 0.4+ | 0.7+ | 2006 10 23 | 644 | 0.1− | 0.1+ |
| 2001 11 11 | 699 | 1.0−  | 0.5+  | 2006 08 30 | 704 | 0.2+ | 0.1− | 2006 11 22 | 291 | 1.0+ | 0.0  |
| 2001 11 11 | 699 | 0.1+  | 0.7−  | 2006 08 30 | 704 | 0.3− | 0.2+ | 2006 11 22 | 291 | 0.7+ | 0.1+ |
| 2001 11 11 | 699 | 0.6−  | 0.0   | 2006 08 30 | 704 | 0.8+ | 0.1− | 2006 11 22 | 291 | 0.7+ | 0.1+ |
| 2001 11 11 | 699 | 0.1−  | 0.4+  | 2006 09 06 | 644 | 0.3+ | 0.1− | 2007 11 06 | G96 | 0.1+ | 0.5− |
| 2001 11 11 | 699 | 0.6+  | 0.1−  | 2006 09 06 | 644 | 0.2+ | 0.1− | 2007 11 06 | G96 | 0.7+ | 0.5− |
| 2001 11 11 | 699 | 0.4−  | 0.1−  | 2006 09 06 | 644 | 0.1− | 0.1− | 2007 11 06 | G96 | 0.1+ | 0.3− |
| 2001 11 11 | 699 | 0.2+  | 0.9−  | 2006 09 12 | 703 | 0.8− | 0.5− | 2007 11 06 | G96 | 0.2+ | 0.3− |
| 2003 01 13 | 291 | 0.3+  | 0.3+  | 2006 09 12 | 703 | 0.1+ | 0.3+ | 2007 12 06 | 704 | 0.1+ | 0.3+ |
| 2003 01 13 | 291 | 0.7+  | 0.5+  | 2006 09 12 | 703 | 0.1− | 0.0  | 2007 12 06 | 704 | 0.2− | 1.3+ |
| 2003 01 13 | 291 | 0.4+  | 0.8+  | 2006 09 12 | 703 | 0.9− | 0.4− | 2007 12 06 | 704 | 0.5+ | 1.1− |
| 2003 01 30 | 644 | 0.1−  | 0.5+  | 2006 09 15 | 704 | 0.2− | 0.4− | 2007 12 06 | 704 | 0.3+ | 0.3+ |
| 2003 01 30 | 644 | 0.0   | 0.3+  | 2006 09 15 | 704 | 0.5− | 1.4+ | 2007 12 10 | 704 | 0.1− | 1.4+ |
| 2003 01 30 | 644 | 0.0   | 0.1−  | 2006 09 15 | 704 | 0.3+ | 0.2− | 2007 12 10 | 704 | 0.2+ | 0.7− |
| 2003 01 31 | 704 | 0.5−  | 0.5+  | 2006 09 15 | 704 | 0.5− | 0.4− | 2007 12 10 | 704 | 0.3− | 0.1+ |
| 2003 01 31 | 704 | 0.6+  | 0.2+  | 2006 09 15 | 704 | 0.3− | 0.1− | 2007 12 14 | 704 | 0.5+ | 0.6+ |
| 2003 01 31 | 704 | 0.7−  | 0.1+  | 2006 09 16 | 644 | 0.1+ | 0.1− | 2007 12 14 | 704 | 0.1+ | 0.6− |
| 2006 07 21 | D35 | 1.0−  | 0.5+  | 2006 09 16 | 644 | 0.1− | 0.4− | 2007 12 14 | 704 | 0.9− | 0.8− |
| 2006 07 21 | D35 | 0.4−  | 0.5+  | 2006 09 16 | 644 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.0  | 1.2− |
| 2006 07 21 | D35 | 0.5−  | 0.4+  | 2006 09 19 | 703 | 0.8− | 0.3− | 2007 12 15 | 691 | 0.4− | 0.1− |
| 2006 08 18 | 644 | 0.1−  | 0.1+  | 2006 09 19 | 703 | 0.4+ | 0.5+ | 2007 12 15 | 691 | 0.0  | 0.1− |
| 2006 08 18 | 644 | 0.1+  | 0.3+  | 2006 09 19 | 703 | 0.6+ | 0.4+ | 2007 12 15 | 691 | 0.4− | 0.2− |

**(172406)\* 2003 BY<sub>67</sub>**

Discovered 2003 Jan. 27 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.80879   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18654581 | $\omega$ | 333.63014 | +0.23151700 |      | −0.97002997 |   |
| <i>a</i> | 3.0335120  | $\Omega$ | 102.91032 | +0.90539311 |      | +0.18710679 |   |
| <i>e</i> | 0.1051366  | <i>i</i> | 4.34037   | +0.35589774 |      | +0.15502552 |   |
| <i>P</i> | 5.28       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 16 | 644 | 0.4− | 0.3+ | 2003 02 21 | 049 | 0.6− | 0.8+ | 2006 11 25 | G96 | 0.2+ | 0.4+ |
| 2001 10 16 | 644 | 0.3− | 0.3+ | 2006 09 18 | 703 | 0.3+ | 0.7− | 2006 11 25 | G96 | 0.4− | 0.0  |
| 2001 10 16 | 644 | 0.5− | 0.4+ | 2006 09 18 | 703 | 0.9− | 0.2+ | 2007 10 19 | G96 | 0.8+ | 0.3− |
| 2001 10 24 | 644 | 0.2+ | 0.6+ | 2006 09 18 | 703 | 1.0− | 0.6+ | 2007 10 19 | G96 | 0.3+ | 0.3− |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 24 | 644 | 0.2+ | 0.2+ | 2006 09 18 | 703 | (0.6− | 1.8+) | 2007 10 19 | G96 | 0.3+ | 0.6− |
| 2001 10 24 | 644 | 0.0  | 0.5+ | 2006 09 30 | 703 | 0.3+  | 0.9−  | 2007 10 19 | G96 | 0.1− | 0.1+ |
| 2003 01 27 | 704 | 0.1− | 0.1− | 2006 09 30 | 703 | 0.3−  | 0.6−  | 2007 11 05 | G96 | 0.7− | 0.5− |
| 2003 01 27 | 704 | 0.8+ | 0.1− | 2006 09 30 | 703 | 0.6+  | 0.2+  | 2007 11 05 | G96 | 0.6+ | 0.4− |
| 2003 01 27 | 704 | 0.8+ | 0.9− | 2006 09 30 | 703 | 0.4+  | 0.6−  | 2007 11 05 | G96 | 0.3+ | 0.8− |
| 2003 01 27 | 704 | 0.1+ | 0.8+ | 2006 09 30 | 703 | 0.5−  | 0.5+  | 2007 11 05 | G96 | 0.6+ | 0.3− |
| 2003 01 31 | 644 | 0.1− | 0.1− | 2006 09 30 | 703 | 0.8+  | 0.9+  | 2007 12 03 | 691 | 0.1+ | 0.5− |
| 2003 01 31 | 644 | 0.0  | 0.4+ | 2006 09 30 | 703 | 0.1+  | 0.3+  | 2007 12 03 | 691 | 0.0  | 0.8− |
| 2003 01 31 | 644 | 0.2− | 0.3+ | 2006 09 30 | 703 | (1.8− | 0.3+) | 2007 12 03 | 691 | 0.6− | 1.1+ |
| 2003 02 21 | 049 | 0.1+ | 1.1+ | 2006 11 25 | G96 | 0.6+  | 0.1−  |            |     |      |      |
| 2003 02 21 | 049 | 0.0  | 1.0+ | 2006 11 25 | G96 | 0.2−  | 0.3−  |            |     |      |      |

**(172407)\* 2003 BN<sub>69</sub> = 2005 QL<sub>156</sub>**

Discovered 2003 Jan. 30 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 85891)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 231.68347  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.21909900 | $\omega$ | 317.95128 | +0.26652121 |      | +0.95562355 |   |
| <i>a</i> | 2.7250582  | $\Omega$ | 326.92457 | −0.81166709 |      | +0.15231515 |   |
| <i>e</i> | 0.1510650  | <i>i</i> | 13.29475  | −0.51977205 |      | +0.25215813 |   |
| <i>P</i> | 4.50       | <i>H</i> | 14.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 07 23 | 704 | 0.1+  | 1.5+  | 2003 02 02 | 644 | 0.2+  | 0.2+  | 2005 09 26 | 644 | 0.4−  | 0.1−  |
| 2000 07 23 | 704 | 1.1+  | 1.7+  | 2003 02 02 | 644 | 0.4+  | 0.2+  | 2005 09 26 | 644 | 0.5−  | 0.3+  |
| 2000 07 23 | 704 | 0.8−  | 0.2+  | 2003 02 04 | 704 | 0.4+  | 1.4+  | 2005 09 30 | 699 | 0.2+  | 0.4−  |
| 2000 09 02 | 704 | 0.2−  | 0.8−  | 2003 02 04 | 704 | 0.4−  | 0.2+  | 2005 09 30 | 699 | 0.2−  | 0.2+  |
| 2000 09 02 | 704 | 1.1−  | 0.2+  | 2003 02 04 | 704 | 0.6−  | 0.2+  | 2005 09 30 | 699 | 0.3+  | 0.3+  |
| 2000 09 02 | 704 | 0.1−  | 0.3−  | 2003 02 04 | 704 | 0.4−  | 1.4+  | 2005 09 30 | 699 | 1.1−  | 0.4+  |
| 2000 09 02 | 704 | 0.1+  | 0.1+  | 2004 07 01 | E12 | 0.4−  | 0.4+  | 2005 10 12 | 704 | 0.1−  | 0.4−  |
| 2000 09 20 | 704 | 0.7−  | 0.5+  | 2004 07 01 | E12 | 0.3+  | 0.4+  | 2005 10 12 | 704 | 0.6−  | 0.3−  |
| 2000 09 20 | 704 | 0.7+  | 0.9+  | 2004 07 01 | E12 | 0.5+  | 0.1−  | 2005 10 12 | 704 | (0.1− | 1.6−) |
| 2000 09 20 | 704 | 0.5−  | 0.2+  | 2004 07 01 | E12 | 0.5+  | 0.3+  | 2005 10 12 | 704 | 0.6+  | 0.3+  |
| 2000 09 20 | 704 | 0.5−  | 1.3−  | 2005 08 30 | 644 | 0.3−  | 0.0   | 2005 10 22 | 644 | 0.0   | 0.3−  |
| 2001 10 25 | 704 | 0.4−  | 0.2−  | 2005 08 30 | 644 | 0.3−  | 0.0   | 2005 10 22 | 644 | 0.1−  | 0.1+  |
| 2001 10 25 | 704 | 1.1+  | 0.3+  | 2005 08 30 | 644 | 0.4−  | 0.0   | 2005 10 22 | 644 | 0.2−  | 0.0   |
| 2001 10 25 | 704 | 0.2−  | 0.6−  | 2005 08 31 | 704 | 0.1+  | 0.6+  | 2005 10 30 | 699 | 0.1−  | 0.4−  |
| 2001 10 25 | 704 | 1.1+  | 0.1+  | 2005 08 31 | 704 | 1.1+  | 1.1+  | 2005 10 30 | 699 | 0.6−  | 0.3+  |
| 2003 01 10 | 704 | 0.6+  | 0.4−  | 2005 08 31 | 704 | 0.3−  | 0.6+  | 2005 10 30 | 699 | (1.2− | 2.0+) |
| 2003 01 10 | 704 | 0.1−  | 0.1−  | 2005 08 31 | 704 | 0.2−  | 0.2+  | 2005 10 30 | 699 | 0.2−  | 0.4−  |
| 2003 01 10 | 704 | (3.2+ | 0.4−) | 2005 09 10 | 699 | 0.1−  | 0.0   | 2007 11 08 | G96 | 0.1−  | 0.3−  |
| 2003 01 10 | 704 | 0.2−  | 0.4+  | 2005 09 10 | 699 | 0.1+  | 0.0   | 2007 11 08 | G96 | 0.8+  | 0.6−  |
| 2003 01 30 | 699 | 0.5+  | 0.9+  | 2005 09 10 | 699 | 0.0   | 0.4+  | 2007 11 08 | G96 | 0.4−  | 0.1−  |
| 2003 01 30 | 699 | 0.6−  | 1.3+  | 2005 09 10 | 699 | 0.7+  | 0.3+  | 2007 11 08 | G96 | 0.6−  | 0.2+  |
| 2003 01 30 | 699 | 1.3+  | 0.7+  | 2005 09 12 | 704 | 0.0   | 0.3−  | 2007 11 20 | G96 | 0.3+  | 0.4−  |
| 2003 01 30 | 699 | (0.1− | 1.7+) | 2005 09 12 | 704 | (1.4− | 1.6+) | 2007 11 20 | G96 | 0.2−  | 0.3−  |
| 2003 01 31 | 644 | 0.4+  | 0.1−  | 2005 09 12 | 704 | 0.4+  | 0.1−  | 2007 11 20 | G96 | 0.4+  | 0.1−  |
| 2003 01 31 | 644 | 0.2+  | 0.2+  | 2005 09 12 | 704 | 0.2+  | 0.8−  | 2007 11 20 | G96 | 0.0   | 0.2−  |
| 2003 01 31 | 644 | 0.0   | 0.2+  | 2005 09 12 | 704 | 0.1+  | 0.0   |            |     |       |       |
| 2003 02 02 | 644 | 0.1+  | 0.0   | 2005 09 26 | 644 | 0.1+  | 0.1−  |            |     |       |       |

**(172408)\* 2003 BL<sub>75</sub> = 2001 XK<sub>260</sub>**

Discovered 2003 Jan. 29 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 41483)

|            |     |        |       |            |     |       |       |            |     |      |      |
|------------|-----|--------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 24 | 704 | 0.8–   | 0.2+  | 2003 01 29 | 644 | 0.4+  | 0.4+  | 2004 05 28 | 691 | 0.1– | 0.6+ |
| 2001 10 24 | 704 | 0.7–   | 1.0+  | 2003 02 01 | 644 | 0.1–  | 0.2+  | 2004 05 28 | 691 | 0.3+ | 0.7+ |
| 2001 11 21 | 704 | (0.2+) | 2.2+) | 2003 02 01 | 644 | 0.2–  | 0.2+  | 2004 05 28 | 691 | 0.8+ | 0.6+ |
| 2001 11 21 | 704 | 1.1–   | 0.9–  | 2003 02 01 | 644 | 0.2–  | 0.2+  | 2007 11 07 | 691 | 0.3– | 0.2– |
| 2001 11 21 | 704 | 1.0–   | 0.8–  | 2003 02 08 | 699 | 0.3+  | 0.7+  | 2007 11 07 | 691 | 0.0  | 0.1– |
| 2001 11 21 | 704 | (0.2–) | 3.3+) | 2003 02 08 | 699 | 0.3+  | 0.8+  | 2007 11 07 | 691 | 0.1– | 0.2– |
| 2001 12 10 | 291 | 0.1+   | 0.6+  | 2003 02 08 | 699 | 0.3+  | 0.1+  | 2007 11 20 | 704 | 1.0+ | 0.2+ |
| 2001 12 10 | 291 | 0.0    | 0.6+  | 2003 02 08 | 699 | 0.2+  | 0.1+  | 2007 11 20 | 704 | 0.4– | 0.8+ |
| 2001 12 10 | 291 | 0.0    | 0.6+  | 2003 02 19 | 644 | 0.0   | 0.1+  | 2007 11 20 | 704 | 0.9– | 0.4– |
| 2001 12 11 | 704 | 0.0    | 0.9+  | 2003 02 19 | 644 | 0.5+  | 0.1–  | 2007 12 13 | 704 | 0.0  | 0.5+ |
| 2001 12 11 | 704 | 0.5–   | 0.9–  | 2003 02 19 | 644 | 0.6+  | 0.3+  | 2007 12 13 | 704 | 0.2– | 0.0  |
| 2001 12 11 | 704 | 0.3–   | 1.1–  | 2003 02 26 | 704 | 0.6+  | 0.5–  | 2007 12 13 | 704 | 0.2+ | 0.2+ |
| 2003 01 24 | 644 | 0.1+   | 0.3+  | 2003 02 26 | 704 | 0.1+  | 0.9+  | 2007 12 15 | 704 | 0.4+ | 0.0  |
| 2003 01 24 | 644 | 0.2–   | 0.3+  | 2003 02 26 | 704 | 1.1+  | 0.6+  | 2007 12 15 | 704 | 1.1+ | 0.2– |
| 2003 01 24 | 644 | 0.2+   | 0.0   | 2003 02 26 | 704 | (0.3+ | 1.7+) | 2007 12 15 | 704 | 0.0  | 0.2+ |
| 2003 01 29 | 644 | 0.1–   | 0.6+  | 2003 03 03 | 644 | 0.2+  | 1.3+  | 2007 12 15 | 704 | 0.4+ | 0.6+ |
| 2003 01 29 | 644 | 0.5+   | 0.5+  | 2003 03 03 | 644 | 0.7+  | 1.0+  | 2007 12 15 | 704 | 0.2– | 0.3+ |
| 2003 01 29 | 644 | 0.0    | 0.3+  | 2003 03 03 | 644 | 0.4+  | 1.1+  |            |     |      |      |

**(172409)\* 2003 BJ<sub>77</sub> = 2004 KB<sub>2</sub>**

Discovered 2003 Jan. 30 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 65441)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> | 313.90439  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.17525860 | $\omega$ | 24.83434 | –0.41171347 |      | –0.91010625 |   |
| <i>a</i> | 3.1623978  | $\Omega$ | 89.50722 | +0.82808450 |      | –0.39509888 |   |
| <i>e</i> | 0.1762930  | <i>i</i> | 2.68766  | +0.38048400 |      | –0.12491391 |   |
| <i>P</i> | 5.62       | <i>H</i> | 15.8     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 31 | 807 | 0.1+  | 0.1–  | 2004 04 25 | 691 | 0.1+ | 0.3+ | 2007 11 03 | 691 | 0.1– | 0.1– |
| 2000 07 31 | 807 | 0.2–  | 0.2–  | 2004 04 25 | 691 | 0.1– | 0.4+ | 2007 11 03 | 691 | 0.1– | 0.0  |
| 2001 09 21 | 704 | 0.5+  | 0.6+  | 2004 05 16 | 691 | 0.1– | 0.4+ | 2007 11 06 | A13 | 0.0  | 0.4– |
| 2001 09 21 | 704 | 0.8+  | 0.4+  | 2004 05 16 | 691 | 0.1+ | 0.0  | 2007 11 06 | A13 | 0.3– | 0.2– |
| 2001 09 21 | 704 | (1.6+ | 0.1–) | 2004 05 16 | 691 | 0.5– | 0.1– | 2007 11 12 | A13 | 0.1+ | 0.4– |
| 2001 10 25 | 691 | 0.2–  | 0.2+  | 2004 05 19 | 691 | 0.2+ | 0.0  | 2007 11 12 | A13 | 0.0  | 0.2– |
| 2001 10 25 | 691 | 0.4–  | 0.0   | 2004 05 19 | 691 | 0.2– | 0.0  | 2007 11 14 | 704 | 0.2– | 0.3– |
| 2001 10 25 | 691 | 0.1–  | 0.3+  | 2004 05 19 | 691 | 0.4– | 0.1+ | 2007 11 14 | 704 | 1.3+ | 0.6– |
| 2003 01 30 | 699 | (1.6+ | 0.4–) | 2004 05 29 | 291 | 0.6+ | 0.3+ | 2007 11 14 | 704 | 0.3– | 0.3+ |
| 2003 01 30 | 699 | (0.1+ | 1.8+) | 2004 05 29 | 291 | 0.7+ | 0.6+ | 2007 11 14 | 704 | 0.0  | 1.2+ |
| 2003 01 30 | 699 | 1.4+  | 0.9+  | 2004 05 29 | 291 | 0.2+ | 0.2+ | 2007 11 14 | 704 | 0.4– | 0.7+ |
| 2003 01 30 | 699 | 0.9+  | 0.5+  | 2006 08 28 | 691 | 0.3– | 0.7+ | 2007 11 17 | A13 | 0.0  | 0.0  |
| 2003 02 01 | 704 | 0.1+  | 0.0   | 2006 08 28 | 691 | 0.3+ | 0.3+ | 2007 11 17 | A13 | 1.0– | 0.2– |
| 2003 02 01 | 704 | 0.4+  | 0.4–  | 2006 08 28 | 691 | 0.3– | 0.3+ | 2007 12 03 | 703 | 0.6+ | 1.0+ |
| 2003 02 01 | 704 | 0.3+  | 0.5–  | 2007 09 14 | G96 | 0.1+ | 0.2+ | 2007 12 03 | 703 | 1.5+ | 1.9+ |
| 2003 02 01 | 704 | 0.2+  | 0.0   | 2007 09 14 | G96 | 0.4– | 0.1+ | 2007 12 03 | 703 | 1.7+ | 2.3+ |
| 2003 02 04 | 704 | 0.4–  | 1.1+  | 2007 09 14 | G96 | 0.2– | 0.3+ | 2007 12 03 | 703 | 1.0+ | 0.1+ |
| 2003 02 04 | 704 | 0.5–  | 1.4+  | 2007 09 14 | G96 | 0.2– | 0.3– | 2007 12 05 | 704 | 0.3– | 0.1– |
| 2003 02 04 | 704 | 0.1–  | 0.5+  | 2007 10 30 | 691 | 0.3– | 0.0  | 2007 12 05 | 704 | 0.1– | 0.4+ |
| 2003 02 04 | 704 | 0.4–  | 0.9+  | 2007 10 30 | 691 | 0.4– | 0.0  | 2007 12 05 | 704 | 0.1– | 0.3+ |
| 2003 02 04 | 704 | 0.6–  | 0.0   | 2007 10 30 | 691 | 0.3– | 0.1– | 2007 12 05 | 704 | 1.1+ | 0.7– |
| 2004 04 25 | 691 | 0.2+  | 0.3+  | 2007 11 03 | 691 | 0.3– | 0.0  |            |     |      |      |

**(172410)\* 2003 CB<sub>2</sub>**

Discovered 2003 Feb. 1 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 215.78602  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.17581727 | $\omega$ | 315.26656 | –0.32838680 |      | +0.85428438 |   |
| <i>a</i> | 3.1556950  | $\Omega$ | 291.59054 | –0.69886208 |      | –0.50673544 |   |
| <i>e</i> | 0.1232358  | <i>i</i> | 25.67998  | –0.63541632 |      | +0.11583344 |   |
| <i>P</i> | 5.61       | <i>H</i> | 14.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 07 13 | 704 | (2.3+ | 0.5+) | 2005 07 03 | G96 | 0.3–  | 0.2+  | 2005 08 27 | 699 | 0.1– | 0.1– |
| 1999 07 13 | 704 | 0.5+  | 0.1+  | 2005 07 03 | G96 | 0.1–  | 0.0   | 2005 08 27 | 699 | 0.9+ | 0.3+ |
| 1999 07 13 | 704 | 0.6+  | 0.4+  | 2005 07 03 | G96 | 0.5–  | 0.1+  | 2005 08 30 | 644 | 0.1+ | 0.2+ |
| 1999 07 13 | 704 | 0.6+  | 0.3+  | 2005 07 03 | G96 | 0.2–  | 0.0   | 2005 08 30 | 644 | 0.1+ | 0.1– |
| 1999 07 21 | 699 | 0.3–  | 0.5–  | 2005 07 03 | 413 | 0.0   | 0.1+  | 2005 08 30 | 644 | 0.0  | 0.1+ |
| 1999 07 21 | 699 | 0.8–  | 0.6–  | 2005 07 03 | 413 | 0.0   | 0.1+  | 2005 09 12 | 704 | 0.4– | 0.4– |
| 1999 07 21 | 699 | 0.8–  | 0.9+  | 2005 07 03 | 198 | 0.2+  | 0.3+  | 2005 09 12 | 704 | 0.3+ | 0.4– |
| 2000 12 01 | 704 | 0.3+  | 0.0   | 2005 07 03 | 198 | 0.2+  | 0.2+  | 2005 09 12 | 704 | 0.6– | 0.3+ |
| 2000 12 01 | 704 | 0.1–  | 0.1–  | 2005 07 03 | 198 | 0.1+  | 0.0   | 2005 09 12 | 704 | 0.0  | 0.3– |
| 2000 12 01 | 704 | 0.9+  | 1.1–  | 2005 07 03 | 198 | 0.1+  | 0.0   | 2005 09 12 | 704 | 0.6– | 0.6+ |
| 2001 12 22 | 704 | 0.2–  | 0.2–  | 2005 07 04 | 673 | 0.2+  | 0.2+  | 2005 10 24 | 644 | 0.1+ | 0.1+ |
| 2001 12 22 | 704 | 0.4–  | 0.7+  | 2005 07 04 | 673 | 0.5+  | 0.1+  | 2005 10 24 | 644 | 0.1+ | 0.2+ |
| 2001 12 22 | 704 | 0.3–  | 0.7–  | 2005 07 04 | 673 | 0.1–  | 0.3+  | 2005 10 24 | 644 | 0.2+ | 0.3+ |
| 2003 02 01 | 699 | 0.0   | 0.8+  | 2005 07 04 | 673 | 0.3+  | 0.1–  | 2007 12 05 | 699 | 0.7+ | 1.0– |
| 2003 02 01 | 699 | 0.3–  | 0.1–  | 2005 07 04 | G96 | 0.0   | 0.1–  | 2007 12 05 | 699 | 0.1– | 0.0  |
| 2003 02 01 | 699 | 0.4–  | 0.6+  | 2005 07 04 | G96 | 0.2+  | 0.1+  | 2007 12 05 | 699 | 0.4+ | 0.7– |
| 2003 02 01 | 699 | 0.2+  | 0.6+  | 2005 07 04 | G96 | 0.3–  | 0.0   | 2007 12 05 | 699 | 0.0  | 0.6+ |
| 2003 02 03 | 704 | (1.7+ | 0.3–) | 2005 07 04 | G96 | 0.3–  | 0.1+  | 2007 12 13 | 704 | 0.6+ | 0.6+ |
| 2003 02 03 | 704 | 0.7–  | 0.6–  | 2005 07 04 | 711 | 0.1–  | 0.4+  | 2007 12 13 | 704 | 0.2+ | 0.2+ |
| 2003 02 03 | 704 | 0.5–  | 0.8–  | 2005 07 04 | 711 | 0.1–  | 0.3+  | 2007 12 13 | 704 | 0.4+ | 0.6+ |
| 2003 02 03 | 704 | 0.7+  | 0.3+  | 2005 07 04 | 711 | 0.3–  | 0.9+  | 2007 12 13 | 704 | 0.3+ | 0.6+ |
| 2003 02 05 | 608 | 1.2+  | 0.7–  | 2005 07 08 | 699 | 0.6–  | 0.1–  | 2007 12 13 | 704 | 0.3+ | 0.9+ |
| 2003 02 05 | 608 | (0.3+ | 2.3–) | 2005 07 08 | 699 | 0.4+  | 0.4–  | 2007 12 14 | D29 | 0.1– | 0.2– |
| 2003 02 05 | 608 | 0.8+  | 1.4–  | 2005 07 08 | 699 | 0.3–  | 0.6+  | 2007 12 14 | D29 | 0.0  | 0.3– |
| 2003 03 08 | 699 | 0.9+  | 1.3+  | 2005 07 08 | 699 | (2.0+ | 0.7–) | 2007 12 14 | D29 | 0.4– | 0.1– |
| 2003 03 08 | 699 | 0.3+  | 0.7–  | 2005 07 08 | 703 | 0.4–  | 0.3–  | 2007 12 14 | D29 | 0.3– | 0.1+ |
| 2003 03 08 | 699 | 1.1+  | 0.1–  | 2005 07 08 | 703 | 1.0–  | 0.7–  | 2007 12 15 | 704 | 0.4– | 0.3+ |
| 2003 03 08 | 699 | 0.0   | 0.4+  | 2005 07 08 | 703 | 0.1–  | 0.1–  | 2007 12 15 | 704 | 0.7– | 0.4+ |
| 2003 03 10 | 704 | (0.0  | 1.5+) | 2005 07 08 | 703 | 0.3+  | 0.4+  | 2007 12 15 | 704 | 0.7– | 0.8+ |
| 2003 03 10 | 704 | 0.5–  | 1.3+  | 2005 07 28 | 704 | 0.1+  | 0.2+  | 2007 12 15 | 704 | 0.2+ | 0.9+ |
| 2003 03 10 | 704 | 0.3–  | 0.8+  | 2005 07 28 | 704 | 0.9–  | 0.6–  | 2007 12 15 | 704 | 0.0  | 0.8+ |
| 2003 03 10 | 704 | 0.2–  | 0.6+  | 2005 07 28 | 704 | 0.8–  | 0.2–  | 2007 12 16 | 704 | 0.3+ | 0.6– |
| 2005 07 03 | 703 | 0.1–  | 0.5+  | 2005 07 28 | 704 | (1.7– | 0.0 ) | 2007 12 16 | 704 | 0.1– | 0.6– |
| 2005 07 03 | 703 | 0.8+  | 0.1+  | 2005 07 28 | 704 | 0.1–  | 0.2–  | 2007 12 16 | 704 | 0.3+ | 0.2+ |
| 2005 07 03 | 703 | 0.5–  | 1.2–  | 2005 08 27 | 699 | 0.3+  | 0.6+  | 2007 12 16 | 704 | 0.6+ | 1.6– |
| 2005 07 03 | 703 | (1.8– | 0.8+) | 2005 08 27 | 699 | 0.1–  | 1.1+  |            |     |      |      |

**(172411)\* 2003 CM<sub>14</sub> = 1998 GD<sub>1</sub>**

Discovered 2003 Feb. 3 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 43302)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 111.79069  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.18393871 | $\omega$ | 217.28360 | +0.94728039 |      | +0.26975666 |   |
| <i>a</i> | 3.0621088  | $\Omega$ | 126.17779 | –0.21717515 |      | +0.93731228 |   |
| <i>e</i> | 0.0531418  | <i>i</i> | 12.36793  | –0.23557339 |      | +0.22062871 |   |
| <i>P</i> | 5.36       | <i>H</i> | 15.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 04 04 | 954 | 0.6– | 0.1+ | 2003 02 03 | 644 | 0.2+ | 0.2+ | 2005 07 15 | 691 | 0.0  | 0.2– |
| 1998 04 04 | 954 | 0.4– | 0.3+ | 2003 02 03 | 644 | 0.5+ | 0.6+ | 2005 07 15 | 691 | 0.0  | 0.0  |
| 1998 04 04 | 954 | 0.6– | 0.4+ | 2003 02 03 | 644 | 0.2+ | 0.0  | 2005 07 15 | 691 | 0.0  | 0.1– |
| 1998 04 04 | 954 | 0.2– | 0.2– | 2003 02 07 | 644 | 0.5+ | 0.8+ | 2005 07 16 | E12 | 0.1– | 0.6+ |
| 1998 04 04 | 954 | 0.3– | 0.3– | 2003 02 07 | 644 | 0.6+ | 0.8+ | 2005 07 16 | E12 | 0.5+ | 0.2+ |
| 1998 04 04 | 954 | 0.5– | 0.3– | 2003 02 07 | 644 | 0.4+ | 0.9+ | 2005 07 16 | E12 | 0.6– | 0.1+ |
| 1998 04 04 | 954 | 0.5– | 0.2+ | 2003 02 23 | 699 | 0.3– | 0.1– | 2005 07 16 | E12 | 0.0  | 0.1– |
| 1998 04 04 | 954 | 0.5– | 0.1+ | 2003 02 23 | 699 | 1.1– | 1.2+ | 2005 08 01 | E12 | 0.1+ | 0.1+ |
| 1998 04 04 | 954 | 0.5– | 0.1+ | 2003 02 23 | 699 | 0.4– | 0.3– | 2005 08 01 | E12 | 0.0  | 0.6+ |
| 1998 04 04 | 954 | 0.5– | 0.1– | 2003 02 23 | 699 | 0.7+ | 0.6+ | 2005 08 01 | E12 | 0.1+ | 0.5+ |
| 1998 04 05 | 954 | 0.1+ | 0.1– | 2003 03 06 | 704 | 1.1+ | 0.3+ | 2005 08 01 | E12 | 0.0  | 0.0  |
| 1998 04 05 | 954 | 0.7+ | 0.4– | 2003 03 06 | 704 | 0.1+ | 0.1+ | 2006 10 23 | 568 | 0.1– | 0.3– |
| 1998 04 05 | 954 | 0.7+ | 0.8– | 2003 03 06 | 704 | 0.5+ | 0.6– | 2006 10 23 | 568 | 0.3– | 0.3– |
| 1998 04 05 | 954 | 0.3+ | 0.5– | 2003 03 06 | 704 | 0.4– | 0.1+ | 2006 10 23 | 568 | 0.1– | 0.4– |
| 1998 04 05 | 954 | 0.2+ | 0.9– | 2005 06 18 | G96 | 0.1– | 0.7+ | 2007 12 06 | 691 | 0.2– | 0.0  |
| 2000 08 26 | 704 | 1.0+ | 0.1– | 2005 06 18 | G96 | 0.1+ | 0.5+ | 2007 12 06 | 691 | 0.4– | 0.0  |
| 2000 08 26 | 704 | 0.2– | 0.3+ | 2005 06 18 | G96 | 0.2– | 0.5+ | 2007 12 06 | 691 | 0.0  | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 26 | 704 | 0.3−  | 1.5+  | 2005 06 18 | G96 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.2− |
| 2003 01 27 | 704 | (0.5− | 2.2+) | 2005 07 04 | G96 | 0.3− | 0.1− | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2003 01 27 | 704 | 0.6+  | 0.6+  | 2005 07 04 | G96 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.6+ | 0.2− |
| 2003 01 27 | 704 | (1.9+ | 2.5+) | 2005 07 04 | G96 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.2− |
| 2003 01 27 | 704 | (0.2+ | 1.6+) | 2005 07 04 | G96 | 0.2+ | 0.1− |            |     |      |      |

**(172412)\* 2003 DC<sub>13</sub> = 2006 QE<sub>131</sub>**

Discovered 2003 Feb. 26 by M. Tichý and M. Kočer at Klet Observatory-KLENOT.

Id. A. Doppler (*MPO* 108678)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 36.10777   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.17037702 | $\omega$ | 85.36064  | +0.94270718 |      | −0.26222147 |   |
| <i>a</i> | 3.2225181  | $\Omega$ | 289.73145 | +0.14450493 |      | +0.87817786 |   |
| <i>e</i> | 0.1572085  | <i>i</i> | 12.65768  | +0.30070167 |      | +0.40005443 |   |
| <i>P</i> | 5.78       | <i>H</i> | 14.9      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 07 11 | 809 | 0.9− | 2.0+ | 2003 02 26 | 246 | 0.5+ | 0.3+ | 2006 08 30 | 704 | (2.1+ | 1.2+) |
| 1994 07 11 | 809 | 1.8− | 1.9+ | 2003 02 26 | 246 | 1.0+ | 0.2+ | 2006 08 30 | 704 | 0.7+  | 0.3+  |
| 1994 07 11 | 809 | 0.2− | 1.5+ | 2003 02 26 | 246 | 1.2+ | 0.6+ | 2006 08 30 | 704 | 0.6+  | 0.8+  |
| 2001 09 25 | 704 | 0.3+ | 0.2− | 2003 02 26 | 246 | 0.4+ | 0.3+ | 2006 08 30 | 704 | 0.4−  | 0.5−  |
| 2001 09 25 | 704 | 0.9+ | 0.0  | 2003 02 27 | 246 | 0.4− | 0.2+ | 2006 08 30 | 704 | 0.6+  | 0.5+  |
| 2001 09 25 | 704 | 0.4+ | 0.7− | 2003 02 27 | 246 | 0.1+ | 0.6+ | 2006 11 10 | 704 | 0.7−  | 1.0+  |
| 2001 09 25 | 704 | 0.5+ | 0.7− | 2003 02 27 | 246 | 0.3− | 0.4+ | 2006 11 10 | 704 | (2.4− | 1.3+) |
| 2001 11 11 | 704 | 0.4− | 0.4− | 2003 02 27 | 246 | 0.0  | 0.1− | 2006 11 10 | 704 | 0.8−  | 0.5−  |
| 2001 11 11 | 704 | 0.5− | 0.0  | 2003 02 27 | 246 | 0.3+ | 0.1− | 2006 11 10 | 704 | 0.3+  | 0.6+  |
| 2001 11 11 | 704 | 0.3− | 0.2+ | 2003 02 27 | 246 | 0.2− | 1.0+ | 2007 11 16 | 704 | 0.9−  | 0.2+  |
| 2001 11 11 | 704 | 0.9− | 0.1+ | 2003 02 27 | 246 | 0.4+ | 0.2+ | 2007 11 16 | 704 | 0.2−  | 0.5+  |
| 2001 11 11 | 704 | 0.6− | 0.7+ | 2006 07 21 | 703 | 0.8− | 0.7− | 2007 11 16 | 704 | 0.4−  | 0.6+  |
| 2001 12 09 | 704 | 0.4+ | 0.2+ | 2006 07 21 | 703 | 0.1+ | 0.6+ | 2007 12 16 | 704 | 0.0   | 0.6+  |
| 2001 12 09 | 704 | 0.7+ | 0.2− | 2006 07 21 | 703 | 0.6− | 0.7− | 2007 12 16 | 704 | 0.0   | 0.3+  |
| 2001 12 09 | 704 | 0.5+ | 0.5+ | 2006 07 21 | 703 | 0.1− | 0.0  | 2007 12 16 | 704 | 0.3+  | 0.4+  |
| 2001 12 09 | 704 | 0.1+ | 0.5+ | 2006 08 21 | 644 | 0.1+ | 0.1+ | 2007 12 16 | 704 | 0.3−  | 0.2−  |
| 2003 01 28 | 645 | 0.0  | 0.0  | 2006 08 21 | 644 | 0.4+ | 0.1+ | 2007 12 16 | 704 | 0.1−  | 0.2+  |
| 2003 01 28 | 645 | 0.0  | 0.0  | 2006 08 21 | 644 | 0.2+ | 0.2+ |            |     |       |       |

**(172413)\* 2003 EH<sub>2</sub> = 2001 VH<sub>87</sub>**

Discovered 2003 Mar. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 47319)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 285.91716  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18143123 | $\omega$ | 216.12070 | −0.99709119 |      | +0.06509813 |   |
| <i>a</i> | 3.0902576  | $\Omega$ | 327.54379 | −0.04007259 |      | −0.89016344 |   |
| <i>e</i> | 0.1208807  | <i>i</i> | 4.23609   | −0.06483317 |      | −0.45096704 |   |
| <i>P</i> | 5.43       | <i>H</i> | 15.4      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 11 | 691 | 0.2+  | 0.3−  | 2003 03 04 | 209 | 0.9+ | 0.1+ | 2006 10 31 | 691 | 0.3+ | 0.3+ |
| 2001 11 11 | 691 | 0.1−  | 0.5−  | 2003 03 04 | 209 | 1.2+ | 0.1− | 2006 10 31 | 691 | 0.3+ | 0.0  |
| 2001 11 11 | 691 | 0.3−  | 0.1−  | 2003 03 05 | 704 | 0.1− | 1.0− | 2006 10 31 | 691 | 0.3− | 0.2+ |
| 2001 11 18 | 291 | 0.3−  | 0.3−  | 2003 03 05 | 704 | 0.5+ | 0.9− | 2006 10 31 | 691 | 0.4− | 0.2+ |
| 2001 11 18 | 291 | 0.4+  | 0.4−  | 2003 03 05 | 704 | 0.5+ | 0.9+ | 2006 10 31 | 691 | 0.3− | 0.4+ |
| 2001 11 18 | 291 | 0.5+  | 0.3−  | 2003 03 05 | 704 | 0.0  | 0.6+ | 2006 11 18 | G96 | 0.1− | 0.1+ |
| 2002 12 07 | 645 | 0.0   | 0.0   | 2003 03 06 | 699 | 0.6− | 0.1+ | 2006 11 18 | G96 | 0.5+ | 0.2− |
| 2002 12 07 | 645 | 0.0   | 0.0   | 2003 03 06 | 699 | 0.3− | 1.2− | 2006 11 18 | G96 | 0.1+ | 0.1+ |
| 2003 01 26 | 699 | 0.1+  | 0.5−  | 2003 03 06 | 699 | 0.8+ | 0.3+ | 2006 11 18 | G96 | 0.1+ | 0.0  |
| 2003 01 26 | 699 | 0.4−  | 1.4+  | 2003 03 06 | 699 | 0.6− | 0.6+ | 2006 11 18 | G96 | 0.2− | 0.0  |
| 2003 01 26 | 699 | (1.5− | 1.1+) | 2003 03 06 | 644 | 0.1+ | 0.3+ | 2006 11 18 | G96 | 0.2− | 0.4− |
| 2003 01 26 | 699 | 0.5−  | 0.1−  | 2003 03 06 | 644 | 0.0  | 0.7+ | 2006 11 18 | G96 | 0.0  | 0.0  |
| 2003 01 26 | 608 | 0.1−  | 0.5−  | 2003 03 06 | 644 | 0.3+ | 0.2+ | 2006 11 18 | G96 | 0.0  | 0.2− |
| 2003 01 26 | 608 | 0.4−  | 0.2−  | 2003 03 06 | 644 | 0.1+ | 0.8+ | 2006 11 25 | G96 | 0.6+ | 0.1− |
| 2003 01 26 | 608 | 0.1−  | 0.1−  | 2003 03 06 | 644 | 0.5+ | 0.5+ | 2006 11 25 | G96 | 0.4− | 0.3− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 02 03 | 704 | 0.7+  | 0.3+  | 2003 03 06 | 644 | 0.4+ | 0.7+ | 2006 11 25 | G96 | 0.3− | 0.3− |
| 2003 02 03 | 704 | 0.5+  | 0.4−  | 2005 09 23 | 691 | 0.3+ | 0.3+ | 2006 11 25 | G96 | 0.8− | 0.1+ |
| 2003 02 03 | 704 | 0.1+  | 0.5−  | 2005 09 23 | 691 | 0.0  | 0.4+ | 2007 11 03 | G96 | 0.3+ | 0.5− |
| 2003 02 03 | 704 | (1.7− | 0.3+) | 2005 09 23 | 691 | 0.1− | 0.4+ | 2007 11 03 | G96 | 0.0  | 0.5− |
| 2003 02 03 | 699 | 1.3−  | 0.3−  | 2005 09 30 | G96 | 0.6− | 0.4− | 2007 11 03 | G96 | 0.1+ | 0.4− |
| 2003 02 03 | 699 | 0.6−  | 0.3+  | 2005 09 30 | G96 | 0.1− | 0.0  | 2007 11 03 | G96 | 0.3+ | 0.2− |
| 2003 02 03 | 699 | 0.5−  | 0.6−  | 2005 09 30 | G96 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.1− | 0.0  |
| 2003 02 03 | 699 | 1.2−  | 0.3+  | 2005 09 30 | G96 | 0.5− | 0.1− | 2007 12 04 | 691 | 0.2− | 0.4+ |
| 2003 02 22 | 644 | 0.1+  | 0.7+  | 2006 10 15 | 691 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.1+ | 0.2+ |
| 2003 02 22 | 644 | 0.4+  | 0.5+  | 2006 10 15 | 691 | 0.5− | 0.1− | 2007 12 15 | 704 | 0.1+ | 0.6+ |
| 2003 02 22 | 644 | 0.3+  | 0.5+  | 2006 10 15 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 1.2+ | 0.3+ |
| 2003 02 26 | 209 | 0.1+  | 0.3+  | 2006 10 21 | 691 | 0.1+ | 0.0  | 2007 12 15 | 704 | 1.0+ | 0.7+ |
| 2003 02 26 | 209 | 0.1+  | 0.3+  | 2006 10 21 | 691 | 0.1− | 0.2+ | 2007 12 17 | 691 | 0.1− | 0.1− |
| 2003 02 26 | 209 | 0.0   | 0.5+  | 2006 10 21 | 691 | 0.2− | 0.1+ | 2007 12 17 | 691 | 0.1− | 0.1− |
| 2003 03 04 | 209 | 0.6+  | 0.4+  | 2006 10 31 | 691 | 0.0  | 0.3+ | 2007 12 17 | 691 | 0.0  | 0.1− |

**(172414)\* 2003 EW<sub>14</sub> = 2001 XH<sub>109</sub>**

Discovered 2003 Mar. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69449)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 267.90045  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.17542570 | $\omega$ | 93.74637 | −0.96890180 |      | +0.23126750 |   |
| <i>a</i> | 3.1603892  | $\Omega$ | 99.64049 | −0.24723909 |      | −0.89027323 |   |
| <i>e</i> | 0.1114060  | <i>i</i> | 5.12128  | −0.01010647 |      | −0.39233777 |   |
| <i>P</i> | 5.62       | <i>H</i> | 15.4     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 07 | 691 | 0.3− | 0.3− | 2003 02 28 | 608 | 0.3+  | 0.5+  | 2006 10 03 | G96 | 0.3+ | 0.2+ |
| 2000 10 07 | 691 | 0.4− | 0.1− | 2003 02 28 | 608 | 0.6+  | 0.7+  | 2006 10 03 | G96 | 0.5− | 0.4+ |
| 2000 10 07 | 691 | 0.0  | 0.1− | 2003 03 06 | 704 | (2.7− | 1.6+) | 2006 10 21 | G96 | 1.3+ | 0.1+ |
| 2001 11 20 | 704 | 0.9+ | 0.1− | 2003 03 06 | 704 | (3.1− | 2.0+) | 2006 10 21 | G96 | 0.5+ | 0.6− |
| 2001 11 20 | 704 | 0.6+ | 0.2− | 2003 03 06 | 704 | (3.5− | 1.4+) | 2006 10 21 | G96 | 0.7+ | 0.3− |
| 2001 11 20 | 704 | 0.4+ | 0.8− | 2003 03 06 | 704 | (1.8− | 1.4+) | 2006 10 21 | G96 | 0.5+ | 0.3− |
| 2001 12 11 | 704 | 0.1− | 0.8− | 2003 03 07 | 699 | 0.7−  | 0.2+  | 2006 10 22 | 691 | 0.4− | 0.0  |
| 2001 12 11 | 704 | 0.1− | 0.5+ | 2003 03 07 | 699 | 1.0−  | 0.4+  | 2006 10 22 | 691 | 0.1+ | 0.1+ |
| 2001 12 11 | 704 | 0.4− | 0.7+ | 2003 03 07 | 699 | 0.0   | 0.2−  | 2006 10 22 | 691 | 0.4+ | 0.3+ |
| 2001 12 11 | 704 | 0.3− | 0.9+ | 2003 03 07 | 699 | 0.4−  | 0.3+  | 2006 11 22 | G96 | 0.1+ | 0.1− |
| 2001 12 17 | 704 | 0.4+ | 0.7+ | 2003 03 08 | 704 | 1.0+  | 0.8−  | 2006 11 22 | G96 | 0.0  | 0.2− |
| 2001 12 17 | 704 | 0.6− | 0.3− | 2003 03 08 | 704 | (1.4+ | 2.6+) | 2006 11 22 | G96 | 0.4+ | 0.1− |
| 2001 12 17 | 704 | 0.5+ | 0.3+ | 2003 03 08 | 704 | (0.1+ | 2.1+) | 2006 11 22 | G96 | 0.2+ | 0.1+ |
| 2001 12 17 | 704 | 0.2− | 0.1+ | 2003 03 08 | 704 | 0.7+  | 0.3+  | 2007 12 03 | 691 | 0.4− | 0.0  |
| 2002 12 14 | 645 | 0.0  | 0.1− | 2005 07 28 | 644 | 0.1−  | 0.2+  | 2007 12 03 | 691 | 0.2+ | 0.2+ |
| 2002 12 14 | 645 | 0.0  | 0.0  | 2005 07 28 | 644 | 0.2−  | 0.4+  | 2007 12 03 | 691 | 0.1− | 0.3+ |
| 2003 01 28 | 645 | 0.0  | 0.1− | 2005 07 28 | 644 | 0.1−  | 0.4+  | 2007 12 15 | 691 | 0.1+ | 0.0  |
| 2003 01 28 | 645 | 0.0  | 0.0  | 2006 10 03 | G96 | 0.3+  | 0.0   | 2007 12 15 | 691 | 0.4− | 0.0  |
| 2003 02 28 | 608 | 0.2+ | 0.8+ | 2006 10 03 | G96 | 0.1+  | 0.1−  | 2007 12 15 | 691 | 0.3− | 0.1− |

**(172415)\* 2003 EZ<sub>39</sub>**

Discovered 2003 Mar. 8 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 286.20072  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.17752918 | $\omega$ | 93.48185  | −0.92713391 |      | +0.24456154 |   |
| <i>a</i> | 3.1353754  | $\Omega$ | 100.82460 | −0.33414679 |      | −0.88249252 |   |
| <i>e</i> | 0.1944722  | <i>i</i> | 16.80208  | +0.16961321 |      | −0.40174197 |   |
| <i>P</i> | 5.55       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 06 17 | 691 | 0.4− | 0.1+ | 2003 04 01 | 699 | 0.6+ | 0.4− | 2006 10 22 | 705 | 0.1+ | 0.1+ |
| 1998 06 17 | 691 | 0.0  | 0.6+ | 2003 04 01 | 699 | 0.5− | 0.3− | 2006 10 29 | 705 | 0.0  | 0.1+ |
| 1998 06 17 | 691 | 0.5+ | 0.6− | 2003 04 01 | 699 | 0.7− | 0.7+ | 2006 10 29 | 705 | 0.1+ | 0.0  |
| 2003 03 08 | 704 | 1.3− | 0.4− | 2003 04 01 | 699 | 0.5+ | 0.4− | 2006 11 01 | 705 | 0.0  | 0.0  |
| 2003 03 08 | 704 | 0.1+ | 0.6− | 2003 04 08 | 644 | 0.4− | 0.2+ | 2006 11 01 | 705 | 0.0  | 0.0  |
| 2003 03 08 | 704 | 0.5− | 0.6− | 2003 04 08 | 644 | 0.1+ | 0.1+ | 2007 11 04 | G96 | 0.3+ | 0.2− |



2007 DEC. 24

M.P.O. 129363

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 03 08 | 704 | 0.3- | 0.4- | 2003 04 08 | 644 | 0.1- | 0.1+ | 2007 11 04 | G96 | 0.3- | 0.1+ |
| 2003 03 08 | 704 | 1.3- | 0.7- | 2006 09 28 | 705 | 0.2- | 0.2- | 2007 11 04 | G96 | 0.0  | 0.3- |
| 2003 03 08 | 704 | 0.5+ | 0.2- | 2006 09 28 | 705 | 0.0  | 0.1- | 2007 11 04 | G96 | 0.4+ | 0.1+ |
| 2003 03 08 | 704 | 0.7- | 0.9- | 2006 09 30 | 705 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.0  | 0.2- |
| 2003 03 08 | 704 | 0.5+ | 0.8- | 2006 09 30 | 705 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.0  | 0.6- |
| 2003 03 08 | 704 | 0.9- | 1.0- | 2006 10 01 | 705 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.7- |
| 2003 03 08 | 704 | 0.5+ | 0.3+ | 2006 10 01 | 705 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.2+ | 0.5- |
| 2003 03 09 | 644 | 0.2+ | 0.4+ | 2006 10 02 | 705 | 0.2- | 0.0  | 2007 11 21 | G96 | 0.2+ | 0.6- |
| 2003 03 09 | 644 | 0.1+ | 0.1+ | 2006 10 02 | 705 | 0.1- | 0.0  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2003 03 09 | 644 | 0.3+ | 0.2+ | 2006 10 03 | 705 | 0.1- | 0.1- | 2007 11 21 | G96 | 0.1- | 0.5- |
| 2003 03 22 | 644 | 0.2- | 0.8+ | 2006 10 03 | 705 | 0.0  | 0.0  | 2007 11 21 | G96 | 0.4+ | 0.3- |
| 2003 03 22 | 644 | 0.1+ | 1.1+ | 2006 10 17 | 705 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.2+ | 0.9+ |
| 2003 03 22 | 644 | 0.6+ | 0.1+ | 2006 10 17 | 705 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.0  | 0.1+ |
| 2003 03 22 | 644 | 0.1+ | 0.7+ | 2006 10 20 | 705 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.6- | 0.2+ |
| 2003 03 22 | 644 | 0.8+ | 0.2+ | 2006 10 20 | 705 | 0.2+ | 0.1+ |            |     |      |      |
| 2003 03 22 | 644 | 1.1+ | 1.3+ | 2006 10 22 | 705 | 0.0  | 0.1+ |            |     |      |      |

(172416)\* 2003 FV<sub>5</sub> = 2005 QA<sub>10</sub>

Discovered 2003 Mar. 26 by CINEOS at Campo Imperatore.

Id. G. V. Williams (MPO 85967)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 146.66008  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.15253987 | $\omega$ 77.59039  | +0.59003767   | +0.80397004 |
| <i>a</i> | 3.4690758  | $\Omega$ 228.82297 | -0.77371914   | +0.53684049 |
| <i>e</i> | 0.0472086  | <i>i</i> 5.64823   | -0.23068211   | +0.25580160 |
| <i>P</i> | 6.46       | <i>H</i> 14.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 11 | 704 | 0.6+ | 0.5- | 2005 09 05 | 703 | 0.3- | 0.2+ | 2006 11 12 | G96 | 0.1+ | 0.3- |
| 1999 10 11 | 704 | 0.7+ | 0.8- | 2005 09 05 | 703 | 0.2- | 0.2+ | 2006 11 17 | 703 | 0.1- | 1.1+ |
| 1999 10 11 | 704 | 0.3+ | 0.6- | 2005 09 11 | 699 | 0.2- | 0.7+ | 2006 11 17 | 703 | 0.0  | 1.2+ |
| 1999 10 11 | 704 | 0.0  | 0.0  | 2005 09 11 | 699 | 0.8- | 0.7+ | 2006 11 17 | 703 | 0.4- | 1.0- |
| 1999 10 11 | 704 | 0.1- | 0.6- | 2005 09 11 | 699 | 1.1- | 0.4+ | 2006 11 17 | 703 | 1.3+ | 0.3+ |
| 2000 11 21 | 704 | 0.8+ | 0.8- | 2005 09 11 | 699 | 1.4- | 0.3+ | 2006 11 21 | 704 | 0.2+ | 0.7+ |
| 2000 11 21 | 704 | 0.7- | 0.1+ | 2006 09 27 | G96 | 0.2- | 0.3- | 2006 11 21 | 704 | 0.5+ | 0.2+ |
| 2000 11 21 | 704 | 0.7- | 1.2+ | 2006 09 27 | G96 | 0.5- | 0.4- | 2006 11 21 | 704 | 0.1+ | 0.8+ |
| 2002 02 06 | 644 | 0.1+ | 0.4+ | 2006 09 27 | G96 | 0.3- | 0.6- | 2006 11 21 | 704 | 0.1- | 0.9+ |
| 2002 02 06 | 644 | 0.1- | 0.4+ | 2006 09 27 | G96 | 0.1- | 0.4- | 2006 11 21 | 704 | 0.3+ | 0.8+ |
| 2002 02 06 | 644 | 0.4- | 1.4+ | 2006 10 12 | 691 | 0.0  | 0.2+ | 2006 11 27 | G96 | 0.0  | 0.4- |
| 2002 02 11 | 704 | 0.9- | 1.1+ | 2006 10 12 | 691 | 0.2+ | 0.0  | 2006 11 27 | G96 | 0.1+ | 0.1- |
| 2002 02 11 | 704 | 0.6- | 0.6+ | 2006 10 12 | 691 | 0.0  | 0.1+ | 2006 11 27 | G96 | 0.3+ | 0.2- |
| 2002 02 11 | 704 | 0.1+ | 0.8+ | 2006 10 16 | 691 | 0.2- | 0.1+ | 2006 11 27 | G96 | 0.1+ | 0.4- |
| 2002 02 11 | 704 | 1.3+ | 0.6+ | 2006 10 16 | 691 | 0.2+ | 0.2+ | 2006 11 27 | 703 | 0.4+ | 0.0  |
| 2003 03 26 | 599 | 0.2+ | 0.1- | 2006 10 16 | 691 | 0.0  | 0.1+ | 2006 11 27 | 703 | 0.8- | 0.2+ |
| 2003 03 26 | 599 | 0.3+ | 0.3+ | 2006 10 20 | 691 | 0.0  | 0.1+ | 2006 11 27 | 703 | 0.8- | 0.0  |
| 2003 03 27 | 599 | 1.0+ | 0.6+ | 2006 10 20 | 691 | 0.0  | 0.1+ | 2006 11 27 | 703 | 0.3- | 0.3+ |
| 2003 03 27 | 599 | 0.2+ | 0.8+ | 2006 10 20 | 691 | 0.0  | 0.1- | 2006 12 12 | G96 | 0.0  | 0.4- |
| 2003 03 28 | 599 | 0.3+ | 1.2+ | 2006 10 28 | 691 | 0.1- | 0.1- | 2006 12 12 | G96 | 0.2- | 0.4- |
| 2003 03 28 | 599 | 0.4+ | 0.1+ | 2006 10 28 | 691 | 0.1- | 0.1+ | 2006 12 12 | G96 | 0.1+ | 0.3- |
| 2003 03 28 | 599 | 0.3+ | 0.2+ | 2006 10 28 | 691 | 0.1- | 0.1+ | 2006 12 12 | G96 | 0.2+ | 0.5- |
| 2003 03 28 | 599 | 0.3+ | 0.5+ | 2006 11 08 | 644 | 0.0  | 0.1+ | 2006 12 15 | G96 | 0.1- | 0.4- |
| 2003 04 08 | 644 | 0.4+ | 0.6+ | 2006 11 08 | 644 | 0.1+ | 0.3+ | 2006 12 15 | G96 | 0.4- | 0.7- |
| 2003 04 08 | 644 | 0.5+ | 0.3+ | 2006 11 08 | 644 | 0.2+ | 0.0  | 2006 12 15 | G96 | 0.1- | 0.5- |
| 2003 04 08 | 644 | 0.5+ | 0.4+ | 2006 11 09 | 644 | 0.1+ | 0.4+ | 2006 12 15 | G96 | 0.2+ | 0.5- |
| 2005 08 25 | 599 | 0.0  | 0.6+ | 2006 11 09 | 644 | 0.1+ | 0.4+ | 2006 12 15 | G96 | 0.6+ | 0.1- |
| 2005 08 25 | 599 | 0.2+ | 0.4+ | 2006 11 09 | 644 | 0.1+ | 0.2+ | 2006 12 15 | G96 | 0.0  | 0.4- |
| 2005 08 25 | 599 | 0.3+ | 0.7+ | 2006 11 10 | 644 | 0.0  | 0.1- | 2006 12 15 | G96 | 0.1- | 0.3- |
| 2005 08 25 | 599 | 0.2+ | 0.5+ | 2006 11 10 | 644 | 0.1+ | 0.2+ | 2006 12 15 | G96 | 0.4+ | 0.2- |
| 2005 08 26 | 599 | 0.1- | 0.4+ | 2006 11 10 | 644 | 0.1- | 0.4+ | 2007 02 06 | G96 | 0.4- | 0.2- |
| 2005 08 26 | 599 | 0.0  | 0.3+ | 2006 11 10 | 644 | 0.3+ | 0.0  | 2007 02 06 | G96 | 0.1+ | 0.3- |
| 2005 08 26 | 599 | 0.3- | 0.6+ | 2006 11 10 | 644 | 0.2- | 0.4+ | 2007 02 06 | G96 | 0.0  | 0.4- |
| 2005 08 26 | 599 | 0.7- | 0.5- | 2006 11 10 | 644 | 0.1- | 0.8+ | 2007 02 06 | G96 | 0.3- | 0.3- |
| 2005 08 27 | 699 | 0.2- | 0.7+ | 2006 11 10 | 644 | 0.4+ | 0.0  | 2007 02 17 | G96 | 0.3- | 0.3- |
| 2005 08 27 | 699 | 0.0  | 1.0+ | 2006 11 10 | 644 | 0.4+ | 0.4+ | 2007 02 17 | G96 | 0.5+ | 1.0- |
| 2005 08 27 | 699 | 0.3+ | 1.1+ | 2006 11 10 | 644 | 0.3- | 0.5+ | 2007 02 17 | G96 | 0.3+ | 0.4- |
| 2005 08 27 | 699 | 0.1- | 0.7+ | 2006 11 11 | 703 | 0.1- | 0.0  | 2007 02 17 | G96 | 0.2- | 0.3- |
| 2005 08 30 | 704 | 0.2- | 0.3+ | 2006 11 11 | 703 | 0.2+ | 1.0- | 2007 12 04 | 704 | 0.3+ | 1.8+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 08 30 | 704 | 0.5- | 0.8+ | 2006 11 11 | 703 | 1.1+ | 0.2- | 2007 12 04 | 704 | 0.2- | 1.5+ |
| 2005 08 30 | 704 | 0.1- | 0.0  | 2006 11 11 | 703 | 0.4+ | 0.0  | 2007 12 04 | 704 | 1.4- | 0.6+ |
| 2005 08 30 | 704 | 1.1- | 0.1- | 2006 11 12 | G96 | 0.4+ | 0.1- | 2007 12 06 | 691 | 0.7+ | 0.9- |
| 2005 09 05 | 703 | 0.5- | 0.4+ | 2006 11 12 | G96 | 0.1+ | 0.4- | 2007 12 06 | 691 | 0.1- | 0.4- |
| 2005 09 05 | 703 | 0.2+ | 0.4+ | 2006 11 12 | G96 | 0.4+ | 0.3- | 2007 12 06 | 691 | 0.6- | 1.4+ |

(172417)\* 2003 FW<sub>37</sub>

Discovered 2003 Mar. 23 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 333.56097  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18720905 | $\omega$ 295.85833 | -0.91142502   | -0.41116940 |
| <i>a</i> | 3.0263430  | $\Omega$ 219.86858 | +0.38570124   | -0.84051099 |
| <i>e</i> | 0.2232497  | <i>i</i> 1.39675   | +0.14331429   | -0.35281865 |
| <i>P</i> | 5.26       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 11 21 | 704 | 0.8-  | 0.4-  | 2003 04 01 | 704 | (1.7+ | 0.4-) | 2006 11 14 | G96 | 0.0  | 0.0  |
| 2001 11 21 | 704 | 0.7+  | 1.2+  | 2003 04 01 | 704 | 0.2-  | 0.0   | 2006 11 14 | G96 | 0.8- | 0.6+ |
| 2001 11 21 | 704 | 0.8-  | 0.2+  | 2003 04 01 | 704 | 0.4-  | 0.5-  | 2006 11 14 | G96 | 0.3- | 0.3+ |
| 2001 11 21 | 704 | 1.0-  | 0.0   | 2003 04 01 | 704 | (0.6+ | 1.5-) | 2006 11 14 | G96 | 0.3- | 0.0  |
| 2001 12 19 | 691 | 0.4+  | 0.3-  | 2003 04 01 | 704 | 0.4-  | 0.4-  | 2006 11 22 | G96 | 0.5- | 0.3+ |
| 2001 12 19 | 691 | 0.2+  | 0.2-  | 2003 04 07 | 691 | 0.4-  | 0.1+  | 2006 11 22 | G96 | 0.9- | 0.0  |
| 2001 12 19 | 691 | 0.1-  | 0.1-  | 2003 04 07 | 691 | 0.6-  | 0.0   | 2006 11 22 | G96 | 0.3+ | 0.4+ |
| 2003 03 23 | 691 | 0.3+  | 0.2+  | 2003 04 07 | 691 | 0.5-  | 0.1+  | 2006 11 22 | G96 | 0.1- | 0.7- |
| 2003 03 23 | 691 | 0.1+  | 1.0+  | 2003 04 29 | 291 | 0.0   | 0.1-  | 2007 11 09 | G96 | 0.1- | 0.6- |
| 2003 03 23 | 691 | 0.3+  | 1.1+  | 2003 04 29 | 291 | 0.4+  | 0.2+  | 2007 11 09 | G96 | 0.4- | 0.4- |
| 2003 03 26 | 691 | 0.4+  | 0.2+  | 2003 04 29 | 291 | 0.1+  | 0.1-  | 2007 11 09 | G96 | 0.3- | 0.4- |
| 2003 03 26 | 691 | 0.6+  | 0.3+  | 2006 10 16 | 691 | 0.7-  | 0.4+  | 2007 11 09 | G96 | 0.1+ | 0.3- |
| 2003 03 26 | 691 | 0.2+  | 0.1+  | 2006 10 16 | 691 | 0.4+  | 0.7+  | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2003 03 27 | 699 | (1.3- | 1.6-) | 2006 10 16 | 691 | 0.3-  | 0.1-  | 2007 11 18 | G96 | 0.4- | 0.0  |
| 2003 03 27 | 699 | 0.1+  | 0.1-  | 2006 10 27 | G96 | 0.0   | 0.4+  | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2003 03 27 | 699 | 0.6-  | 0.1-  | 2006 10 27 | G96 | 0.2-  | 0.2+  | 2007 11 18 | G96 | 0.4- | 0.2- |
| 2003 03 27 | 699 | 0.0   | 0.2-  | 2006 10 27 | G96 | 0.2-  | 0.6+  | 2007 12 06 | G96 | 0.8+ | 1.6- |
| 2003 04 01 | 704 | 0.4+  | 1.0-  | 2006 10 27 | G96 | 0.2-  | 0.4+  | 2007 12 06 | G96 | 0.5- | 0.1+ |
| 2003 04 01 | 704 | 0.1+  | 1.2-  | 2006 10 29 | 691 | 0.3+  | 0.5+  | 2007 12 06 | G96 | 0.2- | 0.7- |
| 2003 04 01 | 704 | 0.0   | 0.4-  | 2006 10 29 | 691 | 0.1+  | 0.1+  | 2007 12 06 | G96 | 0.5- | 0.5- |
| 2003 04 01 | 704 | 1.0+  | 0.1-  | 2006 10 29 | 691 | 0.2+  | 0.2+  |            |     |      |      |

(172418)\* 2003 FV<sub>106</sub>

Discovered 2003 Mar. 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 333.94540  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17387168 | $\omega$ 114.64836 | -0.78863996   | -0.56513064 |
| <i>a</i> | 3.1791924  | $\Omega$ 32.59077  | +0.25884428   | -0.66250279 |
| <i>e</i> | 0.1773828  | <i>i</i> 26.72489  | +0.55771557   | -0.49164765 |
| <i>P</i> | 5.67       | <i>H</i> 14.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 01 | 704 | 0.3-  | 0.2+  | 2003 04 28 | 691 | 0.4+ | 0.8+ | 2006 10 28 | 691 | 0.0  | 0.3+ |
| 2000 10 01 | 704 | 0.6+  | 0.7+  | 2003 04 28 | 704 | 0.7+ | 0.3+ | 2006 10 28 | 691 | 0.3- | 0.3+ |
| 2000 10 01 | 704 | 0.1-  | 1.2+  | 2003 04 28 | 704 | 0.8+ | 0.6+ | 2006 11 01 | 691 | 0.2- | 0.0  |
| 2002 04 02 | 704 | 0.3-  | 0.8-  | 2003 04 28 | 691 | 0.6+ | 0.8+ | 2006 11 01 | 691 | 0.1- | 0.0  |
| 2002 04 02 | 704 | 0.3+  | 0.2+  | 2003 04 28 | 704 | 0.3+ | 1.1+ | 2006 11 01 | 691 | 0.2- | 0.0  |
| 2002 04 02 | 704 | 0.7-  | 0.3-  | 2003 04 28 | 691 | 0.7+ | 0.9+ | 2006 11 09 | 644 | 0.7- | 0.0  |
| 2003 01 31 | 699 | 0.1+  | 1.0+  | 2003 04 29 | 704 | 0.4+ | 0.2+ | 2006 11 09 | 644 | 0.4- | 0.0  |
| 2003 01 31 | 699 | 0.4+  | 0.8+  | 2003 04 29 | 704 | 0.6+ | 0.0  | 2006 11 09 | 644 | 0.3- | 0.1+ |
| 2003 01 31 | 699 | 0.3-  | 0.7+  | 2003 04 29 | 704 | 0.6+ | 0.1+ | 2006 11 10 | 691 | 0.2+ | 0.1+ |
| 2003 01 31 | 699 | 0.1-  | 0.6+  | 2003 04 29 | 704 | 0.9+ | 0.5+ | 2006 11 10 | 691 | 0.1+ | 0.1+ |
| 2003 03 10 | 704 | 1.0+  | 1.3+  | 2003 04 29 | 704 | 0.4+ | 0.5+ | 2006 11 10 | 691 | 0.0  | 0.2+ |
| 2003 03 10 | 704 | 1.2+  | 0.8+  | 2003 05 06 | 703 | 0.5- | 1.4+ | 2006 11 10 | 644 | 0.2- | 0.2+ |
| 2003 03 10 | 704 | (0.7- | 2.0+) | 2003 05 06 | 703 | 0.2- | 0.9+ | 2006 11 10 | 644 | 0.6- | 0.1- |
| 2003 03 11 | A38 | 0.4+  | 0.7+  | 2003 05 06 | 703 | 0.9- | 0.8+ | 2006 11 10 | 644 | 0.4- | 0.1- |
| 2003 03 11 | A38 | (1.6+ | 0.2+) | 2003 05 06 | 703 | 0.1- | 0.6+ | 2006 11 10 | 644 | 0.2- | 0.1+ |
| 2003 03 11 | A38 | 0.1+  | 0.6+  | 2003 05 19 | 699 | 0.4- | 0.4- | 2006 11 10 | 644 | 0.2- | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 03 27 | 699 | 0.4+  | 0.4−  | 2003 05 19 | 699 | 0.6+ | 0.1− | 2006 11 10 | 644 | 0.2− | 0.1+ |
| 2003 03 27 | 699 | 0.4+  | 0.5+  | 2003 05 19 | 699 | 0.8+ | 0.9+ | 2006 11 14 | 703 | 0.1− | 0.0  |
| 2003 03 27 | 699 | 0.0   | 0.0   | 2003 05 19 | 699 | 0.5+ | 0.9+ | 2006 11 14 | 703 | 1.3− | 0.6+ |
| 2003 03 27 | 699 | 0.3+  | 0.2+  | 2004 06 14 | E12 | 0.1− | 0.6+ | 2006 11 14 | 703 | 1.3− | 0.9− |
| 2003 03 30 | 704 | 0.7+  | 0.1−  | 2004 06 14 | E12 | 0.6− | 0.9+ | 2006 11 14 | 703 | 0.1+ | 0.0  |
| 2003 03 30 | 704 | 0.5+  | 0.4+  | 2004 06 14 | E12 | 1.1− | 0.7+ | 2006 11 16 | 704 | 0.2− | 1.0+ |
| 2003 03 30 | 704 | 0.5+  | 0.3+  | 2004 06 14 | E12 | 0.0  | 1.4+ | 2006 11 16 | 704 | 0.6− | 1.2+ |
| 2003 03 30 | 704 | 0.1+  | 0.8+  | 2005 09 30 | E12 | 0.5− | 0.5+ | 2006 11 16 | 704 | 1.2− | 1.0+ |
| 2003 03 30 | 704 | 0.7+  | 0.1−  | 2005 09 30 | E12 | 0.1+ | 0.4+ | 2006 11 16 | 704 | 0.6− | 0.2+ |
| 2003 03 31 | 703 | 0.9+  | 0.5+  | 2005 09 30 | E12 | 0.2− | 0.6+ | 2006 11 16 | 704 | 0.1+ | 1.4+ |
| 2003 03 31 | 703 | 0.5+  | 0.8+  | 2005 09 30 | E12 | 0.6− | 0.3+ | 2006 11 18 | 704 | 0.4− | 1.0+ |
| 2003 03 31 | 703 | 0.1+  | 0.2+  | 2006 09 20 | 704 | 0.4+ | 1.4+ | 2006 11 18 | 704 | 0.1− | 1.0+ |
| 2003 03 31 | 703 | 0.6+  | 0.8+  | 2006 09 20 | 704 | 0.4+ | 1.1+ | 2006 11 18 | 704 | 0.9− | 0.9+ |
| 2003 04 03 | 699 | 0.6+  | 0.3+  | 2006 09 20 | 704 | 0.0  | 0.8+ | 2006 11 18 | 704 | 0.5− | 0.3+ |
| 2003 04 03 | 699 | 0.5+  | 0.5+  | 2006 09 20 | 704 | 0.3+ | 0.7+ | 2006 11 18 | G96 | 0.2− | 0.3− |
| 2003 04 03 | 699 | 0.5+  | 0.1+  | 2006 09 22 | 699 | 0.9− | 0.4− | 2006 11 18 | G96 | 0.1+ | 0.3− |
| 2003 04 03 | 699 | 0.5−  | 0.4−  | 2006 09 22 | 699 | 1.0+ | 0.7+ | 2006 11 18 | 704 | 0.5− | 0.1− |
| 2003 04 04 | 699 | 0.2+  | 0.0   | 2006 09 22 | 699 | 0.3+ | 0.7+ | 2006 11 18 | G96 | 0.1− | 0.2− |
| 2003 04 04 | 699 | 0.8+  | 0.1+  | 2006 09 22 | 699 | 0.9− | 0.1− | 2006 11 18 | G96 | 0.1+ | 0.4− |
| 2003 04 04 | 699 | 0.9+  | 1.3−  | 2006 09 27 | 704 | 0.5− | 0.7− | 2006 11 19 | 704 | 0.2+ | 0.5+ |
| 2003 04 04 | 699 | 0.0   | 0.8−  | 2006 09 27 | G96 | 0.3− | 0.3− | 2006 11 19 | 704 | 0.6+ | 0.1+ |
| 2003 04 07 | 704 | 0.2+  | 0.1+  | 2006 09 27 | 704 | 0.5+ | 0.5+ | 2006 11 19 | 704 | 0.1− | 0.0  |
| 2003 04 07 | 704 | 0.3+  | 0.2−  | 2006 09 27 | G96 | 0.2− | 0.3− | 2006 11 19 | 704 | 0.1+ | 0.4− |
| 2003 04 07 | 704 | 0.1−  | 0.5+  | 2006 09 27 | 704 | 0.2+ | 0.4+ | 2006 11 19 | 704 | 0.2− | 0.4+ |
| 2003 04 07 | 704 | 0.9+  | 0.6+  | 2006 09 27 | G96 | 0.0  | 0.4− | 2006 11 22 | 704 | 0.2− | 0.0  |
| 2003 04 14 | 699 | 0.3+  | 0.4−  | 2006 09 27 | G96 | 0.3− | 0.2− | 2006 11 22 | 704 | 0.8+ | 0.4+ |
| 2003 04 14 | 699 | 0.1+  | 0.2+  | 2006 09 27 | 704 | 0.6− | 0.5+ | 2006 11 22 | 704 | 0.2+ | 0.6+ |
| 2003 04 14 | 699 | 0.5−  | 0.9−  | 2006 09 27 | 704 | 0.6+ | 0.9+ | 2006 11 22 | 704 | 0.5− | 0.8+ |
| 2003 04 14 | 699 | 0.3+  | 0.9+  | 2006 10 04 | 703 | 0.2+ | 0.3+ | 2006 11 22 | 704 | 0.0  | 1.1+ |
| 2003 04 21 | 703 | (0.7− | 1.6−) | 2006 10 04 | 703 | 0.4− | 1.1+ | 2006 12 15 | 644 | 0.1+ | 0.0  |
| 2003 04 21 | 703 | 1.0+  | 0.3−  | 2006 10 04 | 703 | 0.6+ | 0.0  | 2006 12 15 | 644 | 0.1− | 0.2+ |
| 2003 04 21 | 703 | 0.0   | 1.0+  | 2006 10 04 | 703 | 0.5+ | 0.4+ | 2006 12 15 | 644 | 0.1+ | 0.0  |
| 2003 04 21 | 703 | (0.4+ | 1.8−) | 2006 10 11 | 691 | 0.4− | 0.0  | 2007 11 11 | 703 | 0.7+ | 0.5− |
| 2003 04 24 | 699 | 0.7+  | 0.4+  | 2006 10 11 | 691 | 0.4− | 0.1+ | 2007 11 11 | 703 | 0.5+ | 0.1− |
| 2003 04 24 | 699 | 0.1+  | 1.2+  | 2006 10 11 | 691 | 0.3− | 0.1+ | 2007 11 11 | 703 | 0.4+ | 0.3− |
| 2003 04 24 | 699 | 0.3+  | 0.7+  | 2006 10 15 | 691 | 0.3− | 0.3+ | 2007 11 11 | 703 | 0.5− | 1.0− |
| 2003 04 24 | 699 | 0.5−  | 0.5−  | 2006 10 15 | 691 | 0.3− | 0.3+ | 2007 11 21 | 703 | 0.1+ | 0.7+ |
| 2003 04 26 | 608 | 0.6+  | 0.8−  | 2006 10 15 | 691 | 0.2− | 0.0  | 2007 11 21 | 703 | 0.2− | 0.3+ |
| 2003 04 26 | 608 | 0.8+  | 0.7−  | 2006 10 23 | 691 | 0.9− | 0.2+ | 2007 11 21 | 703 | 0.7+ | 0.1+ |
| 2003 04 26 | 608 | 0.9+  | 0.7−  | 2006 10 23 | 691 | 1.2− | 0.2+ | 2007 11 21 | 703 | 0.3− | 0.1+ |
| 2003 04 28 | 704 | 0.8+  | 0.5+  | 2006 10 23 | 691 | 1.0− | 0.3+ |            |     |      |      |
| 2003 04 28 | 704 | 0.5+  | 0.4+  | 2006 10 28 | 691 | 0.1− | 0.3+ |            |     |      |      |

**(172419)\* 2003 GD<sub>21</sub> = 1999 VG<sub>14</sub>**

Discovered 2003 Apr. 4 at Uccle.

Id. K. E. Smalley (*MPO* 47520), G. V. Williams (*ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 301.00207  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.37629964 | $\omega$ | 101.34342 | −0.75685773 | −0.59726779 |
| <i>a</i> | 1.9001163  | $\Omega$ | 42.73785  | +0.33308877 | −0.70187000 |
| <i>e</i> | 0.1272957  | <i>i</i> | 23.02138  | +0.56233287 | −0.38813618 |
| <i>P</i> | 2.62       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 02 | 704 | 0.3− | 0.7− | 2003 04 07 | 012 | 0.4− | 1.0− | 2004 09 14 | 644 | 0.2−  | 0.5+  |
| 1999 11 02 | 704 | 0.4− | 0.4− | 2003 04 07 | 012 | 0.2− | 0.2+ | 2004 09 14 | 644 | 0.4−  | 0.2+  |
| 1999 11 02 | 704 | 0.3− | 0.7+ | 2003 04 07 | 012 | 0.2− | 0.1− | 2004 09 21 | 704 | 1.3−  | 0.1−  |
| 1999 11 03 | 704 | 0.3+ | 0.6+ | 2003 04 07 | 012 | 0.3− | 0.1+ | 2004 09 21 | 704 | (2.1− | 0.9+) |
| 1999 11 03 | 704 | 0.9+ | 1.3+ | 2003 04 07 | 012 | 0.1− | 0.2− | 2004 09 21 | 704 | 0.7−  | 0.5+  |
| 1999 11 03 | 704 | 0.5− | 0.8− | 2003 04 07 | 012 | 0.4− | 0.3− | 2004 10 14 | 699 | 0.6−  | 0.5+  |
| 1999 11 03 | 704 | 1.0+ | 0.4− | 2003 04 07 | 012 | 0.1− | 0.1+ | 2004 10 14 | 699 | 0.7−  | 0.5+  |
| 1999 12 13 | 704 | 0.2− | 0.6− | 2003 04 07 | 012 | 0.5+ | 0.5+ | 2004 10 14 | 699 | 0.2−  | 0.7+  |
| 1999 12 13 | 704 | 0.2+ | 0.3+ | 2003 04 08 | 644 | 0.2− | 0.5+ | 2004 10 14 | 699 | (1.8− | 1.7+) |
| 1999 12 13 | 704 | 0.5+ | 0.5− | 2003 04 08 | 644 | 0.0  | 0.4+ | 2004 10 20 | 703 | 0.6−  | 0.1+  |
| 1999 12 13 | 704 | 0.0  | 1.1− | 2003 04 08 | 644 | 0.1− | 0.5+ | 2004 10 20 | 703 | 0.6−  | 0.7+  |
| 1999 12 13 | 704 | 0.2+ | 0.2+ | 2003 04 22 | 012 | 0.9+ | 1.1+ | 2004 10 20 | 703 | 0.4−  | 0.9+  |
| 2003 04 01 | 012 | 0.1+ | 0.0  | 2003 04 22 | 012 | 1.1+ | 0.5+ | 2004 10 20 | 703 | 0.9−  | 0.5+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 04 01 | 012 | 0.9+ | 0.5+ | 2003 04 22 | 012 | 0.3+  | 0.4+  | 2007 10 23 | 012 | 0.3+ | 0.5− |
| 2003 04 01 | 012 | 0.3− | 0.2− | 2003 04 22 | 012 | (1.6+ | 1.1+) | 2007 10 23 | 012 | 0.1+ | 0.2+ |
| 2003 04 01 | 012 | 0.7− | 0.2+ | 2003 04 22 | 012 | 0.3+  | 1.1+  | 2007 10 23 | 012 | 0.5− | 0.1+ |
| 2003 04 01 | 012 | 0.6+ | 0.4+ | 2003 04 22 | 012 | 0.1+  | 0.3+  | 2007 10 23 | 012 | 0.3+ | 1.4+ |
| 2003 04 01 | 012 | 0.2− | 0.1− | 2003 04 22 | 012 | 0.9+  | 1.1+  | 2007 11 12 | 704 | 1.0− | 0.4+ |
| 2003 04 01 | 012 | 0.2− | 0.1− | 2003 04 24 | 704 | 0.7+  | 0.9+  | 2007 11 12 | 704 | 0.2+ | 1.2+ |
| 2003 04 01 | 012 | 1.1− | 0.3− | 2003 04 24 | 704 | 0.3+  | 0.4+  | 2007 11 12 | 704 | 0.4+ | 0.0  |
| 2003 04 04 | 012 | 0.1+ | 0.1− | 2003 04 24 | 704 | 0.8+  | 0.8+  | 2007 11 12 | 704 | 0.2+ | 0.5+ |
| 2003 04 04 | 012 | 1.0+ | 0.2− | 2003 04 24 | 704 | 0.4+  | 0.6+  | 2007 11 12 | 704 | 0.4− | 0.4+ |
| 2003 04 04 | 012 | 1.0− | 0.6− | 2003 04 24 | 704 | 0.3+  | 0.8+  | 2007 12 06 | 012 | 0.2+ | 0.2− |
| 2003 04 06 | 012 | 0.4− | 0.7− | 2003 05 19 | 012 | 1.3+  | 0.8+  | 2007 12 06 | 012 | 0.6+ | 0.5− |
| 2003 04 06 | 012 | 0.3− | 0.9− | 2003 05 19 | 012 | 0.7+  | 0.4+  | 2007 12 06 | 012 | 0.4+ | 0.4− |
| 2003 04 06 | 012 | 0.2+ | 0.5− | 2003 05 19 | 012 | 0.5+  | 0.2+  | 2007 12 06 | 012 | 0.5− | 1.4+ |
| 2003 04 06 | 012 | 0.4− | 1.0− | 2003 05 19 | 012 | 0.5+  | 0.3+  |            |     |      |      |
| 2003 04 06 | 012 | 0.4− | 0.8− | 2004 09 14 | 644 | 0.4+  | 0.6+  |            |     |      |      |

**(172420)\* 2003 GM<sub>48</sub> = 2006 WB<sub>156</sub>**

Discovered 2003 Apr. 9 by NEAT at Palomar.

Id. A. Doppler (*MPO* 114033)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 174.04197  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.15835888 | $\omega$ | 191.28544 | +0.37833147 | +0.91704352 |
| <i>a</i> | 3.3835644  | $\Omega$ | 101.04346 | −0.83897272 | +0.39725489 |
| <i>e</i> | 0.0502221  | <i>i</i> | 7.38061   | −0.39113944 | +0.03492465 |
| <i>P</i> | 6.22       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 01 27 | 691 | 0.1+ | 0.4− | 2003 05 02 | 691 | 0.1+ | 0.5+ | 2006 10 22 | J95 | 0.1+ | 0.3+ |
| 1996 01 27 | 691 | 0.3+ | 0.3− | 2005 08 27 | 644 | 0.1− | 0.6+ | 2006 11 22 | G96 | 0.1− | 0.0  |
| 2000 11 25 | 691 | 0.3− | 0.0  | 2005 08 27 | 644 | 0.2− | 0.3+ | 2006 11 22 | G96 | 0.0  | 0.0  |
| 2000 11 25 | 691 | 0.4− | 0.2− | 2005 08 27 | 644 | 0.0  | 0.3+ | 2006 11 22 | G96 | 0.0  | 0.0  |
| 2000 11 25 | 691 | 0.3− | 0.0  | 2005 10 03 | 703 | 0.4− | 0.1+ | 2006 11 22 | G96 | 0.4− | 0.0  |
| 2002 01 12 | 644 | 0.1+ | 0.8+ | 2005 10 03 | 703 | 0.7− | 0.4− | 2006 11 27 | 691 | 0.1− | 0.7+ |
| 2002 01 12 | 644 | 0.7+ | 0.6+ | 2005 10 03 | 703 | 1.1− | 0.8+ | 2006 11 27 | 691 | 0.3+ | 0.6+ |
| 2002 01 12 | 644 | 0.1+ | 0.5+ | 2005 10 03 | 703 | 1.0− | 1.3− | 2006 11 27 | 691 | 0.1− | 0.4+ |
| 2003 04 09 | 644 | 0.0  | 0.7− | 2005 10 05 | G96 | 0.4− | 0.5+ | 2007 11 11 | G96 | 0.1− | 0.3− |
| 2003 04 09 | 644 | 0.5+ | 0.6− | 2005 10 05 | G96 | 0.3− | 0.1+ | 2007 11 11 | G96 | 0.2− | 0.3− |
| 2003 04 09 | 644 | 0.2+ | 0.6− | 2005 10 05 | G96 | 0.3− | 0.5+ | 2007 11 11 | G96 | 0.3− | 0.2− |
| 2003 04 11 | 691 | 0.2+ | 0.7+ | 2005 10 05 | G96 | 0.3+ | 0.3+ | 2007 11 11 | G96 | 0.4− | 0.4+ |
| 2003 04 11 | 691 | 0.2+ | 1.0+ | 2005 11 22 | 291 | 0.1− | 0.8+ | 2007 12 14 | G96 | 0.1+ | 0.3− |
| 2003 04 11 | 691 | 0.3+ | 0.7+ | 2005 11 22 | 291 | 0.0  | 0.7+ | 2007 12 14 | G96 | 0.1+ | 0.1− |
| 2003 05 02 | 691 | 0.5+ | 1.0+ | 2005 11 22 | 291 | 0.3+ | 1.0+ | 2007 12 14 | G96 | 0.6− | 0.4− |
| 2003 05 02 | 691 | 0.1− | 0.4+ | 2006 10 22 | J95 | 0.1+ | 0.1+ | 2007 12 14 | G96 | 0.1− | 0.2− |

**(172421)\* 2003 HF**

Discovered 2003 Apr. 23 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT

2007 DEC. 24

M.P.O. 129365

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 04 11 | 699 | 0.6+ | 0.1+ | 2003 04 27 | 704 | 0.6+  | 1.0-  | 2004 12 11 | 704 | 0.3+  | 0.0   |
| 2003 04 23 | 704 | 0.3- | 0.5+ | 2003 05 04 | 118 | 1.1-  | 0.6+  | 2004 12 11 | 704 | 0.4-  | 0.0   |
| 2003 04 23 | 704 | 0.3+ | 0.0  | 2003 05 04 | 118 | 0.0   | 0.3-  | 2004 12 11 | 704 | 0.2-  | 0.5+  |
| 2003 04 23 | 704 | 0.5+ | 0.3- | 2003 05 04 | 118 | 0.8-  | 0.5+  | 2004 12 11 | 704 | 0.4-  | 0.7+  |
| 2003 04 23 | 704 | 0.8+ | 0.0  | 2003 05 04 | 941 | 0.0   | 0.3+  | 2004 12 11 | 704 | 0.2-  | 0.2-  |
| 2003 04 23 | 587 | 0.5- | 0.6+ | 2003 05 04 | 941 | 0.5-  | 0.2+  | 2004 12 11 | 704 | 0.6-  | 0.4+  |
| 2003 04 23 | 587 | 0.5- | 0.1+ | 2003 05 11 | 699 | 0.3-  | 1.1+  | 2004 12 14 | 703 | 0.5+  | 0.2-  |
| 2003 04 23 | 587 | 0.2- | 0.5- | 2003 05 11 | 699 | (1.9- | 0.9+) | 2004 12 14 | 703 | 1.2-  | 0.6-  |
| 2003 04 23 | 587 | 0.4- | 0.2- | 2003 05 11 | 699 | 1.1+  | 0.5-  | 2004 12 14 | 703 | 0.1-  | 0.5-  |
| 2003 04 23 | 246 | 0.2+ | 0.2- | 2003 05 11 | 699 | 0.2-  | 0.7-  | 2004 12 14 | 703 | 0.6+  | 0.4-  |
| 2003 04 23 | 246 | 0.4+ | 0.2- | 2003 05 23 | 560 | 0.5-  | 0.2-  | 2004 12 15 | 704 | 1.0+  | 0.6+  |
| 2003 04 23 | 246 | 0.1- | 0.2+ | 2003 05 23 | 560 | 1.3-  | 0.3+  | 2004 12 15 | 704 | 0.4+  | 0.4+  |
| 2003 04 23 | 246 | 0.1- | 0.4- | 2003 05 23 | 560 | (1.6- | 0.4+) | 2004 12 15 | 704 | (2.0+ | 0.3+) |
| 2003 04 23 | 246 | 0.2+ | 0.4- | 2003 05 25 | 118 | 0.3-  | 0.5+  | 2004 12 15 | 704 | 0.1-  | 1.0+  |
| 2003 04 23 | 246 | 0.3- | 0.3- | 2003 05 25 | 118 | 0.2-  | 0.2+  | 2004 12 20 | 703 | 0.3+  | 0.1+  |
| 2003 04 23 | 246 | 0.5- | 0.5- | 2003 05 25 | 118 | 0.8+  | 0.8+  | 2004 12 20 | 703 | 0.2+  | 0.5-  |
| 2003 04 23 | 246 | 0.0  | 0.1- | 2003 05 30 | 699 | 0.1+  | 0.5+  | 2004 12 20 | 703 | 0.3-  | 0.4-  |
| 2003 04 23 | 557 | 0.3+ | 0.5- | 2003 05 30 | 699 | 0.1+  | 0.7-  | 2004 12 20 | 703 | 0.9-  | 0.8+  |
| 2003 04 23 | 557 | 0.4+ | 0.4- | 2003 05 30 | 699 | 1.3-  | 0.8-  | 2006 06 20 | 808 | 0.7-  | 1.0-  |
| 2003 04 23 | 557 | 0.2- | 0.0  | 2003 05 30 | 699 | 0.2-  | 0.7+  | 2007 11 03 | 704 | 0.4-  | 0.4+  |
| 2003 04 23 | J95 | 0.5+ | 0.9+ | 2003 06 21 | 699 | 0.6+  | 0.4+  | 2007 11 03 | 704 | 0.3-  | 0.9-  |
| 2003 04 24 | J95 | 0.2- | 0.3- | 2003 06 21 | 699 | 0.9+  | 0.3+  | 2007 11 03 | 704 | 1.0+  | 0.5-  |
| 2003 04 24 | 704 | 0.0  | 0.3- | 2003 06 21 | 699 | 0.9+  | 0.6+  | 2007 12 07 | A74 | 0.1-  | 0.2+  |
| 2003 04 24 | 704 | 0.7+ | 1.0- | 2003 06 21 | 699 | 0.3-  | 0.3+  | 2007 12 07 | A74 | 0.1-  | 0.3+  |
| 2003 04 24 | 704 | 0.4+ | 0.0  | 2003 09 05 | 413 | 0.5+  | 0.2+  | 2007 12 07 | A74 | 0.1+  | 0.1-  |

(172422)\* 2003 OW<sub>13</sub>

Discovered 2003 July 28 by J. Broughton at Reedy Creek.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29676674 | $\omega$ | 210.20202 | +0.57589203 | +0.80547348 |
| <i>a</i> | 2.2260038  | $\Omega$ | 95.30888  | -0.71915149 | +0.58048780 |
| <i>e</i> | 0.1771370  | <i>i</i> | 8.07462   | -0.38880522 | +0.11935820 |
| <i>P</i> | 3.32       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 01 | 704 | 0.1- | 0.7+ | 2004 12 12 | 691 | 0.3+ | 0.2- | 2006 05 05 | G96 | 0.3-  | 0.1+  |
| 2000 10 01 | 704 | 0.4- | 0.7+ | 2004 12 12 | 691 | 0.3+ | 0.7+ | 2006 05 20 | 703 | 0.7+  | 0.6+  |
| 2000 10 01 | 704 | 0.7- | 0.8+ | 2004 12 12 | 691 | 0.2+ | 0.2+ | 2006 05 20 | 703 | 0.2+  | 0.5+  |
| 2000 10 01 | 704 | 0.1- | 0.4+ | 2004 12 20 | G96 | 0.3- | 0.5- | 2006 05 20 | 703 | 0.3-  | 0.9-  |
| 2000 10 01 | 704 | 1.1- | 0.0  | 2004 12 20 | G96 | 0.4- | 0.2- | 2006 05 21 | 644 | 0.1-  | 0.2+  |
| 2003 07 02 | 704 | 0.1- | 0.2+ | 2004 12 20 | G96 | 0.1+ | 0.2+ | 2006 05 21 | 644 | 0.1-  | 0.4+  |
| 2003 07 02 | 704 | 0.4- | 0.9+ | 2004 12 20 | G96 | 0.5- | 0.5- | 2006 05 21 | 644 | 0.1+  | 0.5+  |
| 2003 07 02 | 704 | 0.0  | 0.8- | 2006 04 24 | 699 | 0.3+ | 0.7- | 2006 05 30 | 699 | (1.0+ | 1.7+) |
| 2003 07 02 | 704 | 0.8- | 0.2- | 2006 04 24 | 699 | 0.1+ | 1.2+ | 2006 05 30 | 699 | (0.5+ | 3.2+) |
| 2003 07 28 | 428 | 0.0  | 0.1+ | 2006 04 24 | 699 | 0.5+ | 0.6- | 2006 05 30 | 699 | 1.0-  | 0.0   |
| 2003 07 28 | 428 | 0.5+ | 0.0  | 2006 04 24 | 699 | 0.5+ | 1.3+ | 2006 05 30 | 699 | (1.1- | 2.3+) |
| 2003 07 29 | 428 | 0.1+ | 0.0  | 2006 04 30 | 703 | 0.6+ | 0.1+ | 2007 11 04 | 691 | 0.3-  | 0.3+  |
| 2003 07 29 | 428 | 0.6+ | 0.4+ | 2006 04 30 | 703 | 0.3- | 0.6+ | 2007 11 04 | 691 | 0.2-  | 0.2+  |
| 2003 07 29 | 428 | 0.6+ | 0.2- | 2006 04 30 | 703 | 0.4+ | 0.3+ | 2007 11 04 | 691 | 0.1-  | 0.1-  |
| 2003 07 30 | 428 | 0.2- | 0.5- | 2006 04 30 | 703 | 0.1- | 0.2+ | 2007 11 21 | G96 | 0.5+  | 0.0   |
| 2003 07 30 | 428 | 0.4+ | 0.8- | 2006 05 05 | G96 | 0.3- | 0.4+ | 2007 11 21 | G96 | 0.4-  | 0.4-  |
| 2003 08 20 | 428 | 0.5+ | 0.2- | 2006 05 05 | G96 | 0.1- | 0.2+ | 2007 11 21 | G96 | 0.7+  | 0.3+  |
| 2003 08 20 | 428 | 0.6- | 1.3+ | 2006 05 05 | G96 | 0.0  | 0.3+ | 2007 11 21 | G96 | 0.4+  | 0.3-  |

(172423)\* 2003 OK<sub>16</sub>

Discovered 2003 July 26 by CINEOS at Campo Imperatore.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27099139 | $\omega$ | 165.77785 | +0.88557778 | +0.46412497 |
| <i>a</i> | 2.3650068  | $\Omega$ | 166.52273 | -0.43352092 | +0.84013274 |
| <i>e</i> | 0.2539509  | <i>i</i> | 4.53789   | -0.16676813 | +0.28065102 |
| <i>P</i> | 3.64       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 04 28 | 691 | 0.1-  | 0.1-  | 2003 09 18 | 333 | 0.1-  | 0.1-  | 2003 10 16 | 644 | 0.0   | 0.1+  |
| 1995 04 28 | 691 | 0.5+  | 0.1+  | 2003 09 18 | 704 | 0.6-  | 0.3+  | 2003 10 16 | 644 | 0.0   | 0.2+  |
| 1995 04 28 | 691 | 0.3+  | 0.3+  | 2003 09 18 | 704 | 0.9-  | 0.2+  | 2003 10 19 | 704 | 0.0   | 0.5+  |
| 1999 06 14 | 704 | 1.0-  | 0.0   | 2003 09 18 | 704 | 0.6-  | 0.4+  | 2003 10 19 | 704 | 0.4-  | 0.0   |
| 1999 06 14 | 704 | 0.5-  | 0.4-  | 2003 09 18 | 704 | 0.5-  | 0.9+  | 2003 10 19 | 704 | 0.4-  | 0.4-  |
| 1999 06 14 | 704 | 0.9-  | 0.4-  | 2003 09 18 | 704 | 0.6-  | 0.2+  | 2003 10 19 | 704 | 0.1+  | 0.5+  |
| 1999 06 14 | 704 | (2.5+ | 0.1-) | 2003 09 20 | 599 | 0.2+  | 0.1+  | 2003 10 19 | 704 | 0.1-  | 0.7-  |
| 1999 06 14 | 704 | 0.7-  | 0.2-  | 2003 09 20 | 599 | 0.4+  | 0.0   | 2005 03 11 | 691 | 0.1+  | 0.4+  |
| 2003 07 26 | 599 | 0.0   | 0.5+  | 2003 09 20 | 599 | 0.1+  | 0.1+  | 2005 03 11 | 691 | 0.1+  | 0.3+  |
| 2003 07 26 | 599 | 0.8+  | 0.3+  | 2003 09 22 | 699 | 0.2+  | 0.0   | 2005 03 11 | 691 | 0.3+  | 0.3+  |
| 2003 07 26 | 599 | 0.2+  | 0.3+  | 2003 09 22 | 699 | 0.1+  | 0.2-  | 2006 03 25 | 691 | 0.2-  | 0.4+  |
| 2003 07 26 | 599 | 0.7+  | 0.2+  | 2003 09 22 | 699 | 0.1-  | 1.2+  | 2006 03 25 | 691 | 0.0   | 0.8+  |
| 2003 07 30 | 704 | 0.2+  | 0.5-  | 2003 09 22 | 699 | 0.2+  | 0.0   | 2006 03 25 | 691 | 0.3+  | 0.8+  |
| 2003 07 30 | 704 | 0.0   | 0.1+  | 2003 09 26 | 704 | 0.0   | 0.1-  | 2006 04 30 | 699 | 1.4+  | 0.1+  |
| 2003 07 30 | 704 | 0.1+  | 0.8-  | 2003 09 26 | 704 | 0.3+  | 0.5-  | 2006 04 30 | 699 | 0.4+  | 1.0+  |
| 2003 07 30 | 704 | 0.1-  | 0.3-  | 2003 09 26 | 704 | (1.5+ | 1.7-) | 2006 04 30 | 699 | 0.2+  | 0.3-  |
| 2003 08 04 | 704 | 0.9+  | 1.2+  | 2003 09 26 | 704 | 0.1-  | 0.2-  | 2006 04 30 | 699 | 0.7+  | 0.7+  |
| 2003 08 04 | 704 | (0.3+ | 1.8+) | 2003 09 26 | 704 | 0.1-  | 0.7-  | 2007 11 04 | 704 | 1.0+  | 0.7+  |
| 2003 08 04 | 704 | 0.6-  | 0.6+  | 2003 09 29 | 704 | 0.3+  | 0.0   | 2007 11 04 | 704 | 0.5-  | 1.1-  |
| 2003 08 25 | 704 | 0.8+  | 0.6+  | 2003 09 29 | 704 | 0.4-  | 0.1+  | 2007 11 04 | 704 | 0.6-  | 0.4+  |
| 2003 08 25 | 704 | 0.3+  | 0.5+  | 2003 09 29 | 704 | 0.3-  | 0.1-  | 2007 11 04 | 704 | 0.1+  | 0.4+  |
| 2003 08 25 | 704 | 0.7+  | 0.1+  | 2003 09 29 | 704 | 0.5-  | 0.1+  | 2007 11 12 | 704 | 0.2-  | 0.3-  |
| 2003 08 25 | 704 | 1.3+  | 0.7+  | 2003 09 29 | 704 | 0.5-  | 0.0   | 2007 11 12 | 704 | (2.6- | 0.1-) |
| 2003 08 25 | 704 | (1.6+ | 0.1-) | 2003 10 03 | 608 | 0.4-  | 1.0+  | 2007 11 12 | 704 | 0.4-  | 0.7+  |
| 2003 09 02 | 704 | 0.2+  | 0.4+  | 2003 10 03 | 608 | 0.6-  | 0.9+  | 2007 11 12 | 704 | 0.1+  | 0.4-  |
| 2003 09 02 | 704 | 0.3+  | 0.1+  | 2003 10 03 | 608 | 0.7-  | 0.9+  | 2007 11 13 | G96 | 0.5-  | 0.1-  |
| 2003 09 02 | 704 | 0.2+  | 0.2+  | 2003 10 12 | 699 | 0.1+  | 0.1+  | 2007 11 13 | G96 | 0.2-  | 0.0   |
| 2003 09 02 | 704 | 0.4+  | 0.1-  | 2003 10 12 | 699 | 0.3-  | 0.1+  | 2007 11 13 | G96 | 0.4-  | 0.1+  |
| 2003 09 02 | 704 | 0.1+  | 0.0   | 2003 10 12 | 699 | 1.1+  | 0.4+  | 2007 12 04 | 704 | 0.6-  | 0.6-  |
| 2003 09 15 | 699 | 0.2-  | 0.4+  | 2003 10 12 | 699 | 0.9-  | 1.0-  | 2007 12 04 | 704 | 0.0   | 1.0+  |
| 2003 09 15 | 699 | 0.0   | 0.1-  | 2003 10 15 | 699 | 0.2+  | 0.7+  | 2007 12 04 | 704 | 0.3-  | 1.1+  |
| 2003 09 15 | 699 | 0.1+  | 0.1-  | 2003 10 15 | 699 | 0.8-  | 0.1-  | 2007 12 04 | 704 | 0.5+  | 0.5+  |
| 2003 09 15 | 699 | 0.2+  | 0.1-  | 2003 10 15 | 699 | 0.3+  | 0.3-  | 2007 12 04 | 704 | 0.2-  | 0.0   |
| 2003 09 18 | 333 | 0.6-  | 0.2-  | 2003 10 15 | 699 | 0.0   | 0.4+  |            |     |       |       |
| 2003 09 18 | 333 | 0.0   | 0.3-  | 2003 10 16 | 644 | 0.0   | 0.2+  |            |     |       |       |

(172424)\* 2003 OU<sub>17</sub> = 2000 WP<sub>11</sub>

Discovered 2003 July 29 by J. Broughton at Reedy Creek.

Id. M. E. Sansaturio (*MPO* 61720)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29722594 | $\omega$ | 229.52989 | +0.20154445 | +0.97763763 |
| <i>a</i> | 2.2237105  | $\Omega$ | 52.19907  | -0.87409559 | +0.20717994 |
| <i>e</i> | 0.1925072  | <i>i</i> | 4.35769   | -0.44196915 | +0.03607124 |
| <i>P</i> | 3.32       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 27 | 691 | 0.2-  | 0.1+  | 2003 07 30 | 428 | 0.5- | 0.0  | 2006 05 19 | G96 | 0.5- | 0.2- |
| 2000 10 27 | 691 | 0.2-  | 0.1+  | 2003 08 05 | 428 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.4- | 0.1+ |
| 2000 10 27 | 691 | 0.2-  | 0.6+  | 2003 08 05 | 428 | 0.2+ | 0.4+ | 2007 11 03 | 691 | 0.1- | 0.2+ |
| 2000 11 20 | 691 | 0.2+  | 0.3+  | 2006 04 07 | 691 | 0.3+ | 0.2+ | 2007 11 03 | 691 | 0.3+ | 0.6+ |
| 2000 11 20 | 691 | 0.5+  | 0.0   | 2006 04 07 | 691 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2000 11 20 | 691 | 0.4+  | 0.3-  | 2006 04 07 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.3- |
| 2000 11 25 | 691 | 0.1+  | 0.2-  | 2006 04 30 | 699 | 0.2- | 0.4- | 2007 11 14 | 691 | 0.2+ | 0.4+ |
| 2000 11 25 | 691 | 0.4-  | 0.2-  | 2006 04 30 | 699 | 0.3- | 0.0  | 2007 12 15 | G96 | 0.2- | 0.2+ |
| 2000 11 25 | 691 | 0.3-  | 0.2-  | 2006 04 30 | 699 | 0.0  | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.0  |
| 2003 07 29 | 428 | 0.2+  | 0.4+  | 2006 04 30 | 699 | 0.5+ | 1.5+ | 2007 12 15 | G96 | 0.7+ | 0.5+ |
| 2003 07 29 | 428 | 0.2-  | 0.1+  | 2006 05 19 | G96 | 0.1- | 0.1+ | 2007 12 15 | G96 | 0.9+ | 0.2- |
| 2003 07 30 | 428 | (1.8+ | 0.0 ) | 2006 05 19 | G96 | 0.3- | 0.1- |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.11609   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27150333 | $\omega$ | 79.10139  | +0.24188600   | -0.97007420 |
| <i>a</i> | 2.3620329  | $\Omega$ | 356.66952 | +0.68544818   | +0.18625964 |
| <i>e</i> | 0.3592288  | <i>i</i> | 21.34657  | +0.68676921   | +0.15576708 |
| <i>P</i> | 3.63       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 11 | 704 | 0.7-  | 0.6-  | 2003 10 03 | 118 | 0.1-  | 0.7+  | 2004 02 09 | 704 | 1.4+ | 0.1+ |
| 1999 09 11 | 704 | 0.1-  | 0.7-  | 2003 10 03 | 557 | 0.6-  | 1.3-  | 2004 02 09 | 704 | 0.7- | 0.5- |
| 1999 09 11 | 704 | 0.0   | 0.9-  | 2003 10 03 | 118 | 0.3-  | 0.5+  | 2004 02 09 | 704 | 0.0  | 0.4- |
| 1999 09 11 | 704 | 0.4+  | 0.2+  | 2003 10 15 | 704 | 0.3-  | 0.2+  | 2004 03 25 | 704 | 0.4+ | 0.1- |
| 1999 09 11 | 704 | 0.4-  | 0.3-  | 2003 10 15 | 704 | 0.1-  | 0.3+  | 2004 03 25 | 704 | 0.4- | 0.8+ |
| 2003 07 17 | 097 | 0.7+  | 0.2+  | 2003 10 15 | 704 | 0.3-  | 0.0   | 2004 03 25 | 704 | 0.6+ | 0.1+ |
| 2003 07 17 | 097 | 1.3+  | 0.3-  | 2003 10 15 | 704 | 1.1-  | 0.0   | 2004 03 25 | 704 | 0.2+ | 0.3- |
| 2003 07 17 | 097 | 0.7+  | 1.0+  | 2003 11 06 | 704 | 0.3+  | 0.1+  | 2004 03 25 | 704 | 0.0  | 0.4+ |
| 2003 07 25 | 097 | (1.6+ | 2.3+) | 2003 11 06 | 704 | 0.2-  | 0.3-  | 2004 04 12 | 704 | 0.1- | 0.8+ |
| 2003 07 25 | 097 | (2.0+ | 2.3+) | 2003 11 06 | 704 | 0.1+  | 0.3-  | 2004 04 12 | 704 | 0.8+ | 0.4+ |
| 2003 07 25 | 097 | (1.7+ | 1.3+) | 2003 11 06 | 704 | 0.1-  | 0.2-  | 2004 04 12 | 704 | 0.7+ | 0.5+ |
| 2003 07 27 | 097 | (2.5+ | 3.7+) | 2003 11 06 | 704 | 0.2-  | 0.4-  | 2004 04 12 | 704 | 0.8+ | 0.5+ |
| 2003 07 27 | 097 | (1.9+ | 2.7+) | 2003 12 06 | 704 | 0.0   | 0.8-  | 2004 04 12 | 704 | 0.1- | 1.0+ |
| 2003 07 27 | 097 | (2.4+ | 2.4+) | 2003 12 06 | 704 | 0.0   | 0.4-  | 2004 05 12 | 704 | 1.1+ | 0.3- |
| 2003 09 07 | 704 | 0.3-  | 0.2+  | 2003 12 06 | 704 | 0.3-  | 0.5-  | 2004 05 12 | 704 | 1.3+ | 0.2- |
| 2003 09 07 | 704 | 0.2-  | 0.0   | 2003 12 11 | 704 | 0.7+  | 0.2+  | 2004 05 12 | 704 | 0.7+ | 0.8- |
| 2003 09 07 | 704 | 0.0   | 0.4+  | 2003 12 11 | 704 | 0.6+  | 0.2-  | 2004 05 12 | 704 | 1.3+ | 0.6- |
| 2003 09 07 | 704 | 0.0   | 0.3+  | 2003 12 11 | 704 | 0.6+  | 0.8-  | 2006 07 29 | E12 | 0.1+ | 0.3+ |
| 2003 10 02 | 704 | 1.5+  | 0.6-  | 2003 12 11 | 704 | (0.8+ | 1.7-) | 2006 07 29 | E12 | 0.3- | 0.9+ |
| 2003 10 02 | 704 | 1.4+  | 0.7-  | 2003 12 11 | 704 | 0.0   | 1.1-  | 2006 07 29 | E12 | 0.2+ | 0.9+ |
| 2003 10 02 | 704 | (1.6+ | 0.1+) | 2004 01 05 | 704 | 0.3+  | 0.4+  | 2006 07 29 | E12 | 0.6+ | 0.4+ |
| 2003 10 02 | 704 | (1.7+ | 0.1+) | 2004 01 05 | 704 | 0.2+  | 0.7+  | 2006 08 23 | E12 | 0.5- | 1.2+ |
| 2003 10 02 | 704 | 1.4+  | 0.1+  | 2004 01 05 | 704 | 0.2+  | 0.6+  | 2006 08 23 | E12 | 0.7- | 1.0+ |
| 2003 10 02 | 166 | 0.1-  | 0.9+  | 2004 01 05 | 704 | 0.5-  | 0.2-  | 2007 10 17 | 703 | 0.4+ | 0.4+ |
| 2003 10 02 | 166 | 0.5-  | 0.7+  | 2004 01 05 | 704 | (0.1- | 1.7+) | 2007 10 17 | 703 | 0.1- | 0.0  |
| 2003 10 02 | 636 | 0.1-  | 0.5+  | 2004 01 13 | 704 | 1.2-  | 0.3-  | 2007 10 17 | 703 | 0.1- | 0.2+ |
| 2003 10 02 | 166 | 0.1+  | 0.6+  | 2004 01 13 | 704 | 0.4-  | 0.5-  | 2007 10 17 | 703 | 0.1+ | 0.6- |
| 2003 10 02 | 636 | 0.2-  | 0.0   | 2004 01 13 | 704 | 0.5-  | 0.4-  | 2007 11 11 | 703 | 0.6+ | 0.6+ |
| 2003 10 02 | 636 | 0.3-  | 0.2+  | 2004 01 13 | 704 | 0.6+  | 0.1-  | 2007 11 11 | 703 | 0.9+ | 0.7+ |
| 2003 10 02 | 636 | 0.5-  | 1.3+  | 2004 01 13 | 704 | 0.5-  | 0.2-  | 2007 11 11 | 703 | 0.0  | 0.4+ |
| 2003 10 02 | 166 | 0.1-  | 0.5+  | 2004 01 13 | 704 | 0.6+  | 0.1+  | 2007 11 11 | 703 | 0.4+ | 0.5+ |
| 2003 10 02 | 166 | 0.3-  | 0.7+  | 2004 01 13 | 704 | 0.4-  | 0.4-  | 2007 12 16 | 704 | 0.4+ | 0.5+ |
| 2003 10 02 | 166 | 0.7-  | 0.8+  | 2004 01 13 | 704 | 0.6+  | 0.2-  | 2007 12 16 | 704 | 1.7+ | 1.1+ |
| 2003 10 02 | 166 | 0.1-  | 0.1+  | 2004 02 09 | 704 | 1.3+  | 0.3-  | 2007 12 16 | 704 | 0.7+ | 0.9+ |
| 2003 10 03 | 557 | 0.8-  | 0.3+  | 2004 02 09 | 704 | 1.3+  | 0.1-  | 2007 12 16 | 704 | 0.5- | 2.0+ |
| 2003 10 03 | 118 | 0.2-  | 0.5+  | 2004 02 09 | 704 | (1.6+ | 0.3+) | 2007 12 16 | 704 | 0.1- | 0.8+ |
| 2003 10 03 | 557 | 0.4-  | 0.2+  | 2004 02 09 | 704 | 0.6-  | 0.6-  |            |     |      |      |

**(172426)\* 2003 OJ<sub>31</sub>**

Discovered 2003 July 30 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.35952   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26643114 | $\omega$ | 162.69101 | +0.92904073   | +0.36984121 |
| <i>a</i> | 2.3919168  | $\Omega$ | 175.56462 | -0.35295752   | +0.89411214 |
| <i>e</i> | 0.2451272  | <i>i</i> | 7.45963   | -0.11092481   | +0.25254895 |
| <i>P</i> | 3.70       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 07 13 | 704 | 0.1- | 0.3- | 2003 09 18 | 704 | 0.3- | 0.1+ | 2006 05 01 | 691 | 0.8+  | 0.4-  |
| 1999 07 13 | 704 | 1.0+ | 0.6- | 2003 09 18 | 704 | 0.5- | 0.5+ | 2007 10 16 | D29 | (1.6+ | 0.1+) |
| 1999 07 13 | 704 | 0.8+ | 0.1- | 2003 09 22 | 699 | 0.4- | 0.2- | 2007 10 16 | D29 | 0.9+  | 0.1-  |
| 1999 07 13 | 704 | 1.0- | 1.4- | 2003 09 22 | 699 | 0.2+ | 0.3- | 2007 10 16 | D29 | 0.6+  | 0.4-  |
| 2003 07 30 | 704 | 0.0  | 0.2+ | 2003 09 22 | 699 | 0.5+ | 0.4- | 2007 10 16 | D29 | (1.6+ | 0.3-) |
| 2003 07 30 | 704 | 0.6+ | 0.2- | 2003 09 22 | 699 | 0.1+ | 0.0  | 2007 10 24 | G96 | 0.0   | 0.2-  |
| 2003 07 30 | 704 | 0.3+ | 0.4+ | 2003 09 26 | 704 | 0.7+ | 0.0  | 2007 10 24 | G96 | 0.1+  | 0.2-  |
| 2003 07 30 | 704 | 0.3+ | 0.3+ | 2003 09 26 | 704 | 0.0  | 0.1- | 2007 10 24 | G96 | 0.2+  | 0.2+  |
| 2003 08 05 | 704 | 0.8+ | 0.1+ | 2003 09 26 | 704 | 0.3+ | 0.2+ | 2007 10 24 | G96 | 0.2+  | 0.3-  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 08 05 | 704 | 0.9-  | 0.5+  | 2003 09 26 | 704 | 0.0   | 0.5+  | 2007 10 25 | G96 | 0.0   | 0.1-  |
| 2003 08 05 | 704 | 0.5+  | 1.1+  | 2003 09 26 | 704 | 0.1-  | 0.4+  | 2007 10 25 | G96 | 0.3-  | 0.0   |
| 2003 08 05 | 704 | 0.3+  | 0.5-  | 2003 09 27 | 691 | 0.0   | 0.1-  | 2007 10 25 | G96 | 0.2+  | 0.2-  |
| 2003 08 24 | 704 | 0.4-  | 0.3+  | 2003 09 27 | 691 | 0.1+  | 0.0   | 2007 10 25 | G96 | 0.1+  | 0.2-  |
| 2003 08 24 | 704 | 1.4-  | 0.9+  | 2003 09 27 | 691 | 0.0   | 0.0   | 2007 11 04 | G96 | 0.1-  | 0.0   |
| 2003 08 24 | 704 | (1.6- | 0.3-) | 2003 09 29 | 704 | 0.1-  | 0.1-  | 2007 11 04 | G96 | 0.4+  | 0.0   |
| 2003 08 24 | 704 | 0.4-  | 0.1+  | 2003 09 29 | 704 | 0.1-  | 0.0   | 2007 11 04 | G96 | 0.0   | 0.2-  |
| 2003 08 24 | 704 | 0.8-  | 0.4+  | 2003 09 29 | 704 | 0.4-  | 0.0   | 2007 11 09 | 703 | (1.6- | 0.7+) |
| 2003 08 29 | 704 | 0.5+  | 1.0+  | 2003 09 29 | 704 | 0.3-  | 0.1-  | 2007 11 09 | 703 | 0.4-  | 0.4+  |
| 2003 08 29 | 704 | 0.6-  | 1.3+  | 2003 09 29 | 704 | 0.0   | 0.4-  | 2007 11 09 | 703 | 0.1+  | 0.0   |
| 2003 08 29 | 704 | 0.7+  | 0.2+  | 2003 10 16 | 644 | 0.2+  | 0.3+  | 2007 11 09 | 703 | 0.9-  | 0.9-  |
| 2003 09 02 | 704 | 0.4-  | 0.9-  | 2003 10 16 | 644 | 0.0   | 0.3+  | 2007 11 11 | 704 | 0.3+  | 0.9+  |
| 2003 09 02 | 704 | 0.3-  | 0.3-  | 2003 10 16 | 644 | 0.1+  | 0.0   | 2007 11 11 | 704 | 0.6-  | 0.5+  |
| 2003 09 02 | 704 | 0.2-  | 0.3-  | 2003 10 17 | 691 | 0.2-  | 0.3+  | 2007 11 11 | 704 | 0.3-  | 0.2-  |
| 2003 09 02 | 704 | 0.0   | 0.3-  | 2003 10 17 | 691 | 0.2-  | 0.1+  | 2007 11 11 | 704 | 0.6-  | 0.4+  |
| 2003 09 02 | 704 | 0.0   | 0.1+  | 2003 10 17 | 691 | 0.1+  | 0.1+  | 2007 11 14 | 699 | 0.5+  | 0.3+  |
| 2003 09 08 | 699 | 0.6+  | 1.1-  | 2003 10 19 | 704 | 0.0   | 0.4+  | 2007 11 14 | 699 | 0.0   | 0.2+  |
| 2003 09 08 | 699 | 0.4+  | 0.4+  | 2003 10 19 | 704 | 0.2-  | 0.4+  | 2007 11 14 | 699 | 0.3+  | 0.2+  |
| 2003 09 08 | 699 | 0.2-  | 0.3-  | 2003 10 19 | 704 | 0.2+  | 0.6+  | 2007 11 14 | 699 | 0.4+  | 1.2+  |
| 2003 09 08 | 699 | (1.8+ | 1.3+) | 2003 10 19 | 704 | 0.7-  | 0.2+  | 2007 11 17 | 703 | 0.3-  | 1.3-  |
| 2003 09 15 | 699 | 0.3-  | 0.7-  | 2003 10 24 | 704 | 0.2-  | 0.9+  | 2007 11 17 | 703 | 0.2+  | 0.5-  |
| 2003 09 15 | 699 | 0.3+  | 0.2-  | 2003 10 24 | 704 | 0.4+  | 0.8+  | 2007 11 17 | 703 | 0.7+  | 0.7-  |
| 2003 09 15 | 699 | 0.0   | 0.1-  | 2003 10 24 | 704 | (0.2+ | 1.7+) | 2007 11 17 | 703 | 0.3-  | 0.5+  |
| 2003 09 15 | 699 | 0.4-  | 0.4-  | 2003 10 24 | 704 | 0.3-  | 0.3-  | 2007 11 28 | D35 | 1.5+  | 0.2+  |
| 2003 09 16 | 691 | 0.2+  | 0.2-  | 2003 10 24 | 704 | 0.0   | 0.2+  | 2007 11 28 | D35 | 0.0   | 0.0   |
| 2003 09 16 | 691 | 0.2+  | 0.1-  | 2006 04 24 | 691 | 0.3-  | 0.3+  | 2007 11 28 | D35 | 0.2-  | 0.8+  |
| 2003 09 16 | 691 | 0.1+  | 0.0   | 2006 04 24 | 691 | 0.3-  | 0.6+  | 2007 12 05 | 703 | 0.8-  | 0.5+  |
| 2003 09 18 | 704 | 0.7-  | 0.1+  | 2006 04 24 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 703 | 0.0   | 0.2+  |
| 2003 09 18 | 704 | 0.1+  | 0.8-  | 2006 05 01 | 691 | 0.1+  | 0.5+  | 2007 12 05 | 703 | 0.7-  | 0.2+  |
| 2003 09 18 | 704 | 0.0   | 0.2+  | 2006 05 01 | 691 | 0.0   | 0.5+  | 2007 12 05 | 703 | 0.7-  | 0.8+  |

**(172427)\* 2003 PF<sub>4</sub>**

Discovered 2003 Aug. 2 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.79656   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27353400 | $\omega$ | 28.61934  | +0.96995601   | +0.22946454 |
| <i>a</i> | 2.3503282  | $\Omega$ | 317.86253 | -0.23978806   | +0.84565411 |
| <i>e</i> | 0.2353318  | <i>i</i> | 6.91855   | -0.04107341   | +0.48188707 |
| <i>P</i> | 3.60       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 12 14 | 691 | 0.2- | 0.0  | 2003 08 28 | 704 | 0.5- | 0.0  | 2003 09 27 | 699 | 0.3-  | 0.1-  |
| 1993 12 14 | 691 | 0.4+ | 0.7- | 2003 08 31 | 106 | 0.6- | 0.6- | 2003 09 27 | 704 | 0.7-  | 0.2+  |
| 1993 12 14 | 691 | 0.4+ | 0.0  | 2003 08 31 | 106 | 0.2- | 0.3- | 2003 09 27 | 704 | 1.4-  | 0.7+  |
| 1994 01 19 | 691 | 1.3- | 0.1- | 2003 08 31 | 106 | 0.1+ | 0.5- | 2003 10 19 | 704 | (0.8- | 1.6-) |
| 1994 01 19 | 691 | 0.3+ | 0.2- | 2003 09 02 | 704 | 0.7+ | 0.3- | 2003 10 19 | 704 | 0.8+  | 0.2+  |
| 1994 01 19 | 691 | 0.1+ | 0.0  | 2003 09 02 | 704 | 0.5+ | 0.3- | 2003 10 19 | 704 | 0.9+  | 0.3-  |
| 2003 07 02 | 704 | 0.2+ | 0.2+ | 2003 09 02 | 704 | 0.2+ | 0.1- | 2003 11 20 | 704 | 0.4+  | 1.0+  |
| 2003 07 02 | 704 | 0.1- | 0.0  | 2003 09 02 | 704 | 0.3+ | 0.3- | 2003 11 20 | 704 | 0.1-  | 0.5+  |
| 2003 07 02 | 704 | 0.1- | 1.0+ | 2003 09 02 | 704 | 0.9+ | 0.2- | 2003 11 20 | 704 | 0.2-  | 0.5+  |
| 2003 07 02 | 704 | 0.1+ | 0.3+ | 2003 09 07 | 608 | 0.1- | 0.8- | 2003 11 20 | 704 | 1.1+  | 0.9+  |
| 2003 07 24 | 644 | 0.3- | 0.3+ | 2003 09 07 | 608 | 0.3+ | 0.6- | 2003 11 24 | 704 | 0.8-  | 0.2-  |
| 2003 07 24 | 644 | 0.3- | 0.3+ | 2003 09 07 | 608 | 0.5+ | 0.3- | 2003 11 24 | 704 | 0.0   | 0.1+  |
| 2003 07 24 | 644 | 0.2- | 0.3+ | 2003 09 13 | 608 | 0.5+ | 0.5- | 2003 11 24 | 704 | 0.2+  | 0.8+  |
| 2003 08 02 | 608 | 0.0  | 0.3- | 2003 09 13 | 608 | 0.3+ | 0.5- | 2004 12 20 | G96 | 0.0   | 0.1-  |
| 2003 08 02 | 608 | 0.6+ | 0.3- | 2003 09 13 | 608 | 0.1- | 0.6- | 2004 12 20 | G96 | 0.1-  | 0.1+  |
| 2003 08 02 | 608 | 0.1+ | 0.3- | 2003 09 16 | 699 | 0.5+ | 0.1+ | 2004 12 20 | G96 | 0.4+  | 0.1-  |
| 2003 08 04 | 704 | 0.1+ | 0.1+ | 2003 09 16 | 699 | 0.2- | 0.1- | 2004 12 20 | G96 | 0.1-  | 0.2-  |
| 2003 08 04 | 704 | 0.0  | 0.5+ | 2003 09 16 | 699 | 0.0  | 0.4- | 2005 03 08 | G96 | 0.1-  | 0.2-  |
| 2003 08 04 | 704 | 0.3- | 1.0+ | 2003 09 16 | 699 | 0.4- | 0.2- | 2005 03 08 | G96 | 0.1+  | 0.0   |
| 2003 08 04 | 704 | 0.4+ | 0.6+ | 2003 09 18 | 644 | 0.0  | 0.1+ | 2005 03 08 | G96 | 0.4-  | 0.1+  |
| 2003 08 04 | 704 | 0.9+ | 0.3- | 2003 09 18 | 644 | 0.0  | 0.1+ | 2005 03 08 | G96 | 0.1-  | 0.2+  |
| 2003 08 22 | 644 | 0.5- | 0.8+ | 2003 09 18 | 704 | 0.3+ | 0.7- | 2007 11 02 | 704 | 0.4+  | 1.0+  |
| 2003 08 22 | 644 | 0.2- | 0.1+ | 2003 09 18 | 704 | 0.1+ | 0.3+ | 2007 11 02 | 704 | 0.3-  | 1.3+  |
| 2003 08 22 | 644 | 0.4- | 0.2+ | 2003 09 18 | 644 | 0.0  | 0.0  | 2007 11 02 | 704 | 0.2-  | 0.4+  |
| 2003 08 24 | 704 | 0.1- | 0.0  | 2003 09 18 | 704 | 0.1+ | 0.4- | 2007 11 02 | 704 | 0.6-  | 0.4+  |
| 2003 08 24 | 704 | 0.2- | 0.2+ | 2003 09 18 | 704 | 0.1- | 0.3- | 2007 11 17 | 704 | 0.0   | 0.0   |

2007 DEC. 24

M.P.O. 129367

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 24 | 704 | 0.0  | 0.4+ | 2003 09 18 | 704 | 0.1+ | 0.1+ | 2007 11 17 | 704 | 0.1+ | 0.3- |
| 2003 08 24 | 704 | 0.0  | 0.5+ | 2003 09 21 | 608 | 0.1+ | 0.7- | 2007 11 17 | 704 | 0.3+ | 0.2- |
| 2003 08 24 | 704 | 0.1+ | 0.2+ | 2003 09 21 | 608 | 0.0  | 0.5- | 2007 11 17 | 704 | 0.0  | 0.1+ |
| 2003 08 28 | 106 | 0.0  | 0.1- | 2003 09 21 | 608 | 0.1+ | 0.5- | 2007 12 16 | 704 | 0.4- | 0.0  |
| 2003 08 28 | 106 | 0.4+ | 0.5- | 2003 09 27 | 699 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.0  | 0.1+ |
| 2003 08 28 | 106 | 0.4+ | 0.8- | 2003 09 27 | 704 | 0.5- | 0.2- | 2007 12 16 | 704 | 0.2+ | 0.1- |
| 2003 08 28 | 704 | 0.2- | 0.5+ | 2003 09 27 | 699 | 0.1- | 0.3+ | 2007 12 16 | 704 | 0.0  | 0.7+ |
| 2003 08 28 | 704 | 0.2- | 0.4+ | 2003 09 27 | 704 | 0.3- | 0.1- | 2007 12 16 | 704 | 0.7+ | 0.3- |
| 2003 08 28 | 704 | 0.3- | 0.1- | 2003 09 27 | 699 | 0.2+ | 0.1- |            |     |      |      |
| 2003 08 28 | 704 | 0.1- | 0.1- | 2003 09 27 | 704 | 1.0- | 0.1- |            |     |      |      |

(172428)\* 2003 PX<sub>9</sub>

Discovered 2003 Aug. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.27698211 | $\omega$ | 99.77913  | +0.76036094 | +0.64438587 |          |   |
| <i>a</i> | 2.3307815  | $\Omega$ | 220.16674 | -0.63433266 | +0.70984491 |          |   |
| <i>e</i> | 0.1893216  | <i>i</i> | 7.24567   | -0.13954684 | +0.28440651 |          |   |
| <i>P</i> | 3.56       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 05 22 | 691 | 0.5+  | 0.3-  | 2006 04 20 | 703 | 0.0   | 0.7+  | 2007 11 05 | 704 | 0.3+ | 0.4- |
| 1999 05 22 | 691 | 0.2+  | 0.2+  | 2006 04 20 | 703 | (0.1+ | 1.7-) | 2007 11 05 | 704 | 0.6+ | 0.5+ |
| 1999 05 22 | 691 | 0.0   | 0.1+  | 2006 04 20 | 703 | (0.3+ | 3.7+) | 2007 11 05 | 704 | 0.5+ | 0.1+ |
| 2000 11 27 | 704 | 0.3-  | 0.2-  | 2006 05 23 | G96 | 0.6-  | 0.4+  | 2007 11 05 | 704 | 0.6+ | 0.2- |
| 2000 11 27 | 704 | 0.2-  | 0.2-  | 2006 05 23 | G96 | 0.4-  | 0.4+  | 2007 11 05 | 704 | 0.2+ | 0.2- |
| 2000 11 27 | 704 | 1.0-  | 0.7-  | 2006 05 23 | G96 | 0.6-  | 0.3+  | 2007 11 05 | G96 | 0.6+ | 0.3- |
| 2000 11 27 | 704 | 0.3-  | 0.1-  | 2006 05 23 | G96 | 0.4-  | 0.1+  | 2007 11 05 | G96 | 0.4+ | 0.4- |
| 2000 11 27 | 704 | 0.3-  | 0.4-  | 2007 10 12 | 691 | 0.1+  | 0.4-  | 2007 11 05 | G96 | 0.4+ | 0.3- |
| 2003 06 29 | 704 | 0.0   | 0.4+  | 2007 10 12 | 691 | 0.1+  | 0.2-  | 2007 11 05 | G96 | 0.4+ | 0.4- |
| 2003 06 29 | 704 | 0.9+  | 0.3+  | 2007 10 12 | 691 | 0.0   | 0.2-  | 2007 11 07 | 704 | 0.9- | 1.3+ |
| 2003 06 29 | 704 | 0.3-  | 0.5-  | 2007 10 15 | 703 | 1.1+  | 0.3+  | 2007 11 07 | 704 | 0.0  | 0.7+ |
| 2003 06 29 | 704 | 0.1+  | 0.9+  | 2007 10 15 | 703 | 0.4-  | 0.3+  | 2007 11 07 | 704 | 0.8+ | 0.6+ |
| 2003 06 29 | 704 | 0.2+  | 0.8+  | 2007 10 15 | 703 | 0.3-  | 0.3+  | 2007 11 07 | 704 | 0.6+ | 0.5+ |
| 2003 07 24 | 599 | 0.5-  | 0.2+  | 2007 10 15 | 703 | 0.8+  | 0.9+  | 2007 11 07 | 704 | 0.5+ | 0.7+ |
| 2003 07 24 | 599 | 0.3+  | 0.6+  | 2007 10 16 | 691 | 0.0   | 0.3-  | 2007 11 14 | 704 | 0.6- | 0.2+ |
| 2003 07 24 | 599 | 0.2-  | 0.1-  | 2007 10 16 | 691 | 0.1+  | 0.1-  | 2007 11 14 | 704 | 0.0  | 0.6+ |
| 2003 08 01 | 704 | 0.0   | 0.4+  | 2007 10 16 | 691 | 0.0   | 0.2-  | 2007 11 14 | 704 | 0.1+ | 0.4+ |
| 2003 08 01 | 704 | 0.0   | 0.3-  | 2007 10 20 | 703 | 0.5+  | 0.6-  | 2007 11 14 | 704 | 0.4- | 0.2+ |
| 2003 08 01 | 704 | 1.1-  | 0.4+  | 2007 10 20 | 703 | 0.3+  | 1.0+  | 2007 11 14 | 704 | 0.2- | 0.7+ |
| 2003 08 01 | 704 | 0.2-  | 0.1+  | 2007 10 20 | 703 | 0.2+  | 0.2-  | 2007 11 15 | 699 | 0.6- | 0.8+ |
| 2003 08 04 | 947 | 0.2+  | 0.3+  | 2007 10 20 | 703 | 0.1+  | 0.1+  | 2007 11 15 | 704 | 0.6+ | 0.3- |
| 2003 08 04 | 947 | 0.1+  | 0.2-  | 2007 10 30 | 691 | 0.1-  | 0.1-  | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2003 08 04 | 947 | 0.1-  | 0.0   | 2007 10 30 | 691 | 0.1-  | 0.1-  | 2007 11 15 | 699 | 0.1+ | 0.3+ |
| 2003 09 24 | 644 | 0.0   | 0.4+  | 2007 10 30 | 691 | 0.0   | 0.0   | 2007 11 15 | 704 | 0.1- | 0.2+ |
| 2003 09 24 | 644 | 0.1-  | 0.1+  | 2007 10 30 | G96 | 0.3+  | 0.3-  | 2007 11 15 | 704 | 0.5- | 0.5+ |
| 2003 09 24 | 644 | 0.0   | 0.0   | 2007 10 30 | G96 | 0.2+  | 0.4-  | 2007 11 15 | 699 | 0.1+ | 0.1+ |
| 2003 09 24 | 608 | 1.2-  | 0.7-  | 2007 10 30 | G96 | 0.0   | 0.3-  | 2007 11 15 | 704 | 0.4- | 0.9+ |
| 2003 09 24 | 608 | 0.3+  | 0.9-  | 2007 10 30 | G96 | 0.5+  | 0.3-  | 2007 11 15 | 699 | 0.7+ | 0.6- |
| 2003 09 24 | 608 | 0.5-  | 1.1-  | 2007 11 03 | 691 | 0.1-  | 0.0   | 2007 12 04 | 704 | 0.7- | 1.0+ |
| 2003 09 30 | 704 | 0.0   | 0.0   | 2007 11 03 | 691 | 0.2-  | 0.1+  | 2007 12 04 | 704 | 1.1+ | 0.1+ |
| 2003 09 30 | 704 | 0.3+  | 0.1-  | 2007 11 03 | 691 | 0.0   | 0.0   | 2007 12 04 | 704 | 0.1+ | 0.8+ |
| 2003 09 30 | 704 | 0.0   | 0.0   | 2007 11 03 | 699 | 0.4-  | 0.9-  | 2007 12 04 | 704 | 0.2- | 1.9+ |
| 2003 09 30 | 704 | 0.2-  | 0.6-  | 2007 11 03 | 699 | (1.6- | 1.4-) | 2007 12 05 | 691 | 0.4- | 0.0  |
| 2003 09 30 | 704 | 0.7+  | 0.0   | 2007 11 03 | 699 | 0.7-  | 0.4+  | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2006 04 20 | 703 | (3.5- | 0.2-) | 2007 11 03 | 699 | (0.9- | 1.6-) | 2007 12 05 | 691 | 0.2- | 0.1- |

(172429)\* 2003 QN<sub>1</sub>

Discovered 2003 Aug. 19 by CINEOS at Campo Imperatore.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.27394276 | $\omega$ | 128.51552 | +0.78654624 | +0.61741736 |          |   |
| <i>a</i> | 2.3479896  | $\Omega$ | 193.37052 | -0.58134640 | +0.73383964 |          |   |
| <i>e</i> | 0.2423602  | <i>i</i> | 2.94146   | -0.20828196 | +0.28332876 |          |   |
| <i>P</i> | 3.60       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 05 | 691 | 0.0   | 0.2+  | 2003 09 13 | 608 | 0.1- | 0.2+ | 2006 03 26 | G96 | 0.2+ | 0.2+ |
| 1995 04 05 | 691 | 0.1+  | 0.2-  | 2003 09 13 | 608 | 0.1- | 0.1+ | 2006 03 26 | G96 | 0.1- | 0.5+ |
| 1995 04 05 | 691 | 0.0   | 0.0   | 2003 09 13 | 608 | 0.2- | 0.1- | 2006 03 26 | G96 | 0.0  | 0.2+ |
| 2003 07 23 | 599 | 0.4-  | 0.9+  | 2003 09 15 | 699 | 0.3+ | 0.7- | 2006 03 26 | G96 | 0.3+ | 0.2+ |
| 2003 07 23 | 599 | 0.0   | 1.3-  | 2003 09 15 | 699 | 0.6- | 0.6- | 2006 05 02 | G96 | 0.1+ | 0.1+ |
| 2003 08 19 | 599 | 0.0   | 0.0   | 2003 09 15 | 699 | 0.2- | 0.8+ | 2006 05 02 | G96 | 0.2- | 0.3+ |
| 2003 08 19 | 599 | 0.0   | 0.1-  | 2003 09 15 | 699 | 0.5- | 0.9- | 2006 05 02 | G96 | 0.1+ | 0.3+ |
| 2003 08 20 | 599 | 0.0   | 0.1-  | 2003 09 18 | 704 | 0.3+ | 0.1+ | 2006 05 02 | G96 | 0.1- | 0.0  |
| 2003 08 20 | 599 | 0.1+  | 0.1-  | 2003 09 18 | 704 | 0.6- | 0.2+ | 2006 05 24 | G96 | 0.2- | 0.2+ |
| 2003 08 20 | 644 | 0.1+  | 0.5+  | 2003 09 18 | 704 | 0.1- | 0.1- | 2006 05 24 | G96 | 0.5+ | 0.0  |
| 2003 08 20 | 644 | 0.1-  | 0.2-  | 2003 09 18 | 704 | 0.4- | 0.5- | 2006 05 24 | G96 | 0.2+ | 0.2+ |
| 2003 08 20 | 644 | 0.1+  | 0.1-  | 2003 09 18 | 704 | 0.1- | 0.0  | 2007 11 03 | 691 | 0.0  | 1.0- |
| 2003 08 21 | 599 | 0.1-  | 0.3-  | 2003 09 18 | 644 | 0.1- | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2003 08 21 | 599 | 0.1-  | 0.3-  | 2003 09 18 | 644 | 0.1- | 0.4+ | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2003 08 21 | 599 | 0.0   | 0.2-  | 2003 09 18 | 644 | 0.3- | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.2+ |
| 2003 08 21 | 599 | 0.1+  | 0.3-  | 2003 09 19 | 691 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.1- | 0.1+ |
| 2003 08 24 | 704 | 0.2-  | 0.3+  | 2003 09 19 | 691 | 0.0  | 0.1+ | 2007 11 07 | 691 | 0.1- | 0.1+ |
| 2003 08 24 | 704 | 0.6+  | 0.0   | 2003 09 19 | 691 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2003 08 24 | 704 | 0.2+  | 0.2+  | 2003 09 26 | 704 | 0.6+ | 0.5+ | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2003 08 24 | 704 | 0.4-  | 0.1+  | 2003 09 26 | 704 | 0.2- | 1.3+ | 2007 11 07 | 691 | 0.2+ | 0.1+ |
| 2003 08 24 | 704 | 0.1-  | 0.3+  | 2003 09 26 | 704 | 1.5+ | 0.3+ | 2007 11 18 | G96 | 0.5+ | 0.2- |
| 2003 08 28 | 704 | 0.1+  | 0.1+  | 2003 09 26 | 704 | 0.2- | 0.6+ | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2003 08 28 | 704 | 0.7-  | 0.0   | 2003 09 29 | 699 | 0.2- | 1.1- | 2007 11 18 | G96 | 0.2+ | 0.1- |
| 2003 08 28 | 704 | 0.2-  | 0.3+  | 2003 09 29 | 699 | 0.5+ | 0.6+ | 2007 11 18 | G96 | 0.5+ | 0.1- |
| 2003 08 28 | 704 | (3.1- | 1.3+) | 2003 09 29 | 699 | 0.7+ | 0.9- | 2007 11 19 | 691 | 0.4+ | 0.2+ |
| 2003 08 28 | 704 | 0.2-  | 0.3-  | 2003 09 29 | 699 | 0.5- | 0.0  | 2007 11 19 | 691 | 0.4- | 0.4- |
| 2003 09 02 | 704 | 1.1-  | 0.4-  | 2003 09 29 | 704 | 1.0+ | 0.1+ | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2003 09 02 | 704 | 0.9+  | 0.5+  | 2003 09 29 | 704 | 0.3+ | 0.3+ | 2007 12 03 | 703 | 0.2- | 0.9+ |
| 2003 09 02 | 704 | 0.3+  | 0.5+  | 2003 09 29 | 704 | 0.1+ | 0.2- | 2007 12 03 | 703 | 0.1+ | 1.2+ |
| 2003 09 02 | 704 | 0.6+  | 0.3-  | 2003 09 29 | 704 | 0.3+ | 0.2+ | 2007 12 03 | 703 | 0.0  | 0.2- |
| 2003 09 07 | 608 | 0.5-  | 0.2-  | 2003 10 05 | 608 | 0.0  | 0.3+ | 2007 12 03 | 703 | 1.4- | 0.4- |
| 2003 09 07 | 608 | 0.1-  | 0.6-  | 2003 10 05 | 608 | 0.3- | 1.0+ |            |     |      |      |
| 2003 09 07 | 608 | 0.3-  | 0.6-  | 2003 10 05 | 608 | 0.1+ | 0.8+ |            |     |      |      |

(172430)\* 2003 QL<sub>8</sub>

Discovered 2003 Aug. 20 by CINEOS at Campo Imperatore.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.27986844 | $\omega$ | 72.35128  | +0.98172680 | -0.16289091 |          |   |
| <i>a</i> | 2.3147287  | $\Omega$ | 296.92761 | +0.10368990 | +0.89140020 |          |   |
| <i>e</i> | 0.1312663  | <i>i</i> | 6.33526   | +0.15956473 | +0.42293291 |          |   |
| <i>P</i> | 3.52       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 20 | 704 | 0.5- | 0.7+ | 2003 09 02 | 704 | 0.4+ | 0.6+ | 2005 03 17 | G96 | 0.6- | 0.2- |
| 2000 11 20 | 704 | 0.7+ | 0.4- | 2003 09 16 | 699 | 0.0  | 0.4- | 2005 03 17 | G96 | 0.5- | 0.0  |
| 2000 11 20 | 704 | 0.4- | 0.1- | 2003 09 16 | 699 | 0.1- | 0.3- | 2006 06 02 | F84 | 0.6- | 0.7+ |
| 2000 11 20 | 704 | 0.0  | 0.1- | 2003 09 16 | 699 | 0.2+ | 0.4- | 2006 06 02 | F84 | 0.6+ | 0.1+ |
| 2003 08 05 | 704 | 0.7+ | 0.3- | 2003 09 16 | 699 | 0.2+ | 0.3+ | 2006 06 02 | F84 | 0.3- | 0.9+ |
| 2003 08 05 | 704 | 0.1- | 0.2- | 2003 09 18 | 704 | 0.1- | 0.5+ | 2006 06 02 | F84 | 0.1+ | 0.5- |
| 2003 08 05 | 704 | 0.5- | 0.1- | 2003 09 18 | 704 | 0.4- | 0.3- | 2007 11 02 | 704 | 0.7+ | 0.4+ |
| 2003 08 20 | 599 | 0.0  | 0.0  | 2003 09 18 | 704 | 0.1+ | 0.1+ | 2007 11 02 | 704 | 0.3- | 0.4- |
| 2003 08 20 | 599 | 0.1- | 0.0  | 2003 09 18 | 704 | 0.3- | 0.5+ | 2007 11 02 | 704 | 0.3+ | 0.2+ |
| 2003 08 20 | 599 | 0.2- | 0.2+ | 2003 09 18 | 704 | 0.3- | 0.1+ | 2007 11 02 | 704 | 0.2+ | 0.2+ |
| 2003 08 20 | 599 | 0.2- | 0.2+ | 2003 09 23 | 644 | 0.3- | 0.1- | 2007 11 02 | 704 | 0.5- | 0.2- |
| 2003 08 22 | 599 | 0.0  | 0.2+ | 2003 09 23 | 644 | 0.3- | 0.1- | 2007 11 08 | 704 | 0.0  | 1.2+ |
| 2003 08 22 | 599 | 0.1+ | 0.1+ | 2003 09 23 | 644 | 0.2- | 0.3- | 2007 11 08 | 704 | 1.4+ | 0.9- |
| 2003 08 22 | 599 | 0.1+ | 0.1+ | 2003 09 27 | 704 | 0.3- | 0.2+ | 2007 11 08 | 704 | 0.7- | 1.3- |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 22 | 599 | 0.1+ | 0.1+ | 2003 09 27 | 704 | 0.2- | 0.4- | 2007 11 08 | 704 | (0.1- | 1.5-) |
| 2003 08 23 | 106 | 0.0  | 0.3+ | 2003 09 27 | 704 | 0.3- | 0.3+ | 2007 11 17 | 704 | 0.2+  | 0.7+  |
| 2003 08 23 | 106 | 0.1+ | 0.2- | 2003 09 27 | 704 | 0.1- | 0.4- | 2007 11 17 | 704 | (1.7- | 1.3+) |
| 2003 08 23 | 106 | 0.6+ | 0.6- | 2003 09 27 | 704 | 0.4- | 0.6+ | 2007 11 17 | 704 | 0.3-  | 0.8+  |
| 2003 08 24 | 704 | 0.2- | 0.0  | 2003 09 29 | 691 | 0.1+ | 0.1- | 2007 11 17 | 704 | 0.4-  | 0.7+  |
| 2003 08 24 | 704 | 0.4- | 0.1+ | 2003 09 29 | 691 | 0.2+ | 0.1- | 2007 11 20 | 704 | 0.9-  | 0.3+  |
| 2003 08 24 | 704 | 0.0  | 0.1- | 2003 09 29 | 691 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.3-  | 0.2+  |
| 2003 08 24 | 704 | 0.0  | 0.5+ | 2005 02 02 | 703 | 0.1+ | 0.4+ | 2007 11 20 | 704 | 0.9-  | 0.3-  |
| 2003 08 24 | 704 | 0.2- | 0.2+ | 2005 02 02 | 703 | 0.2+ | 0.2- | 2007 11 20 | 704 | 1.3-  | 1.2-  |
| 2003 08 25 | 106 | 0.4- | 1.0- | 2005 02 02 | 703 | 0.2- | 0.6+ | 2007 12 13 | 704 | 0.0   | 0.7+  |
| 2003 08 25 | 106 | 0.2+ | 0.2- | 2005 02 02 | 703 | 0.0  | 0.2+ | 2007 12 13 | 704 | 1.3+  | 0.4-  |
| 2003 08 25 | 106 | 0.7+ | 0.1- | 2005 02 14 | 691 | 0.6+ | 0.3+ | 2007 12 13 | 704 | 0.2+  | 0.3+  |
| 2003 08 28 | 704 | 0.3- | 0.4+ | 2005 02 14 | 691 | 0.0  | 0.1+ | 2007 12 13 | 704 | 0.8+  | 0.1+  |
| 2003 08 28 | 704 | 0.2- | 0.8+ | 2005 02 14 | 691 | 0.8+ | 0.3+ | 2007 12 13 | 704 | 0.4+  | 0.0   |
| 2003 08 28 | 704 | 0.3+ | 0.2+ | 2005 03 17 | G96 | 0.3- | 0.3+ | 2007 12 16 | 704 | 0.1+  | 0.3-  |
| 2003 08 28 | 704 | 0.6+ | 0.1+ | 2005 03 17 | G96 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.5-  | 0.0   |
| 2003 09 02 | 704 | 0.7- | 1.5+ | 2005 03 17 | G96 | 0.6- | 0.2+ | 2007 12 16 | 704 | 0.2-  | 0.5-  |
| 2003 09 02 | 704 | 0.1- | 0.2+ | 2005 03 17 | G96 | 0.5- | 0.2+ | 2007 12 16 | 704 | 0.1+  | 0.3-  |
| 2003 09 02 | 704 | 0.5- | 0.6+ | 2005 03 17 | G96 | 0.6- | 0.1+ | 2007 12 16 | 704 | 0.4+  | 0.3+  |
| 2003 09 02 | 704 | 0.0  | 0.2+ | 2005 03 17 | G96 | 0.5- | 0.0  |            |     |       |       |

**(172431)\* 2003 QO<sub>16</sub>**

Discovered 2003 Aug. 20 by CINEOS at Campo Imperatore.

|                                         |            |          |           |                          |
|-----------------------------------------|------------|----------|-----------|--------------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |                          |
| <i>M</i>                                | 333.90531  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
| <i>n</i>                                | 0.25891480 | $\omega$ | 75.74826  | +0.60643438              |
| <i>a</i>                                | 2.4379874  | $\Omega$ | 336.86394 | +0.70278050              |
| <i>e</i>                                | 0.1371166  | <i>i</i> | 3.64959   | +0.37193670              |
| <i>P</i>                                | 3.81       | <i>H</i> | 16.9      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 08 07 | 691 | 0.4+ | 0.3- | 2005 03 04 | G96 | 0.1+  | 0.2+  | 2007 10 09 | 704 | 0.9-  | 0.2-  |
| 1999 08 07 | 691 | 0.4+ | 0.1- | 2005 03 04 | G96 | 0.3-  | 0.1+  | 2007 10 09 | 699 | 0.2+  | 0.7-  |
| 1999 08 07 | 691 | 0.5- | 0.5+ | 2005 03 04 | G96 | 0.0   | 0.2+  | 2007 10 09 | 704 | 0.5+  | 0.4-  |
| 2003 08 20 | 599 | 0.1+ | 0.0  | 2007 09 13 | 699 | 0.7+  | 1.4-  | 2007 10 09 | 704 | 0.2+  | 0.3-  |
| 2003 08 20 | 599 | 0.2+ | 0.3- | 2007 09 13 | 699 | 0.3+  | 1.0+  | 2007 10 09 | 699 | 0.4+  | 0.1-  |
| 2003 08 21 | 599 | 0.1- | 0.1- | 2007 09 13 | 699 | 0.2+  | 0.6-  | 2007 10 09 | 704 | 0.0   | 0.4-  |
| 2003 08 23 | 644 | 0.2- | 0.3+ | 2007 09 13 | 699 | 0.4-  | 1.2+  | 2007 10 09 | 699 | (0.3- | 1.6-) |
| 2003 08 23 | 644 | 0.1+ | 0.1- | 2007 09 13 | 691 | 0.1-  | 0.3-  | 2007 10 12 | 704 | 1.5-  | 0.6+  |
| 2003 08 23 | 644 | 0.1- | 0.1+ | 2007 09 13 | 691 | 0.1-  | 0.2-  | 2007 10 12 | 704 | 0.6+  | 0.7+  |
| 2003 08 23 | 644 | 0.0  | 0.3+ | 2007 09 13 | 691 | 0.3-  | 0.3-  | 2007 10 12 | 704 | 0.7+  | 0.2+  |
| 2003 08 23 | 644 | 0.0  | 0.2+ | 2007 09 14 | 704 | 0.3-  | 0.2-  | 2007 10 12 | 704 | 0.4-  | 0.6-  |
| 2003 08 23 | 644 | 0.2+ | 0.4+ | 2007 09 14 | 704 | 0.4-  | 0.1+  | 2007 10 14 | G96 | 0.1-  | 0.1-  |
| 2003 08 25 | 807 | 0.5- | 0.3- | 2007 09 14 | 704 | 0.0   | 0.9+  | 2007 10 14 | G96 | 0.3+  | 0.1+  |
| 2003 08 25 | 807 | 0.4- | 0.1+ | 2007 09 22 | 704 | (0.1+ | 1.6+) | 2007 10 14 | G96 | 0.3+  | 0.1+  |
| 2003 09 19 | 461 | 0.4- | 0.1- | 2007 09 22 | 704 | 0.3-  | 1.5+  | 2007 10 14 | G96 | 0.1-  | 0.1-  |
| 2003 09 19 | 461 | 0.5- | 0.0  | 2007 09 22 | 704 | 0.6-  | 1.1+  | 2007 10 15 | 704 | 0.4-  | 0.6+  |
| 2003 09 19 | 461 | 0.6+ | 0.2+ | 2007 09 22 | 704 | 0.3+  | 0.8+  | 2007 10 15 | 704 | 0.7+  | 0.3+  |
| 2003 09 19 | 461 | 0.0  | 0.2+ | 2007 09 22 | 704 | 0.0   | 0.5+  | 2007 10 15 | 704 | 0.5-  | 0.3-  |
| 2003 09 20 | 461 | 0.1- | 0.1- | 2007 10 04 | 703 | 0.4-  | 0.3+  | 2007 10 20 | 704 | 0.4-  | 0.0   |
| 2003 09 20 | 461 | 0.6  | 0.4+ | 2007 10 04 | 703 | 0.0   | 1.0+  | 2007 10 20 | 704 | 0.0   | 0.9-  |
| 2003 09 20 | 461 | 0.1- | 0.6- | 2007 10 04 | 703 | 0.3-  | 1.0+  | 2007 10 20 | 704 | 0.3+  | 0.0   |
| 2003 09 20 | 461 | 0.1- | 0.2+ | 2007 10 04 | 703 | 0.1+  | 0.1-  | 2007 10 20 | 704 | 0.4-  | 1.0+  |
| 2003 09 21 | 461 | 0.6+ | 1.3- | 2007 10 04 | 703 | 0.0   | 0.5-  | 2007 11 11 | G96 | 0.0   | 0.3-  |
| 2003 09 21 | 461 | 0.2+ | 0.3- | 2007 10 04 | 703 | 0.5-  | 0.2+  | 2007 11 11 | G96 | 0.1+  | 0.4-  |
| 2003 09 21 | 461 | 0.1- | 0.5- | 2007 10 04 | 703 | 0.3-  | 0.1+  | 2007 11 11 | G96 | (0.2+ | 1.6-) |
| 2003 09 21 | 461 | 0.1- | 1.1- | 2007 10 04 | 703 | 1.1+  | 0.4+  | 2007 11 11 | G96 | 0.8+  | 1.4-  |
| 2004 12 20 | G96 | 0.0  | 0.2- | 2007 10 07 | 703 | 0.3+  | 0.7+  | 2007 12 15 | G96 | 0.3+  | 0.5-  |
| 2004 12 20 | G96 | 0.1+ | 0.0  | 2007 10 07 | 703 | 0.0   | 0.4+  | 2007 12 15 | G96 | 0.5+  | 0.4-  |
| 2004 12 20 | G96 | 0.3+ | 0.0  | 2007 10 07 | 703 | 0.3+  | 0.6+  | 2007 12 15 | G96 | 0.0   | 0.4-  |
| 2004 12 20 | G96 | 0.0  | 0.4+ | 2007 10 07 | 703 | 0.7+  | 0.8+  | 2007 12 15 | G96 | 0.8+  | 0.4-  |
| 2005 03 04 | G96 | 0.2+ | 0.4+ | 2007 10 09 | 699 | 0.2+  | 0.3+  |            |     |       |       |

**(172432)\* 2003 QD<sub>18</sub> = 1996 TY<sub>39</sub>**

Discovered 2003 Aug. 22 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 50297)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |                          |
|----------|------------|----------|-----------|--------------------------|
| <i>M</i> | 62.92664   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
| <i>n</i> | 0.27848411 | $\omega$ | 280.00943 | +0.91914648              |
| <i>a</i> | 2.3223933  | $\Omega$ | 56.93875  | +0.39174083              |
| <i>e</i> | 0.2239497  | <i>i</i> | 2.82724   | +0.84070602              |
| <i>P</i> | 3.54       | <i>H</i> | 16.8      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 07 | 809 | 1.9+  | 0.2+  | 2003 08 31 | 704 | 0.6-  | 0.9+  | 2005 03 10 | G96 | 0.1- | 0.2- |
| 1996 10 07 | 809 | 1.1+  | 0.1-  | 2003 08 31 | 704 | 0.4-  | 0.9+  | 2005 03 10 | G96 | 0.3+ | 0.1+ |
| 1996 10 07 | 809 | 0.9+  | 1.1-  | 2003 08 31 | 704 | 0.4-  | 0.1-  | 2005 03 10 | G96 | 0.5- | 1.3- |
| 1996 10 08 | 809 | 0.6+  | 1.2-  | 2003 08 31 | 608 | 0.2-  | 0.4-  | 2006 04 24 | 691 | 0.2+ | 0.3+ |
| 1996 10 08 | 809 | 0.9+  | 1.4-  | 2003 08 31 | 608 | 0.2+  | 0.5-  | 2006 04 24 | 691 | 0.2+ | 0.2+ |
| 1996 10 08 | 809 | 0.3+  | 1.9-  | 2003 08 31 | 608 | 0.3-  | 0.5-  | 2006 04 24 | 691 | 0.2- | 0.4+ |
| 1996 10 10 | 809 | (0.9+ | 3.9+) | 2003 09 05 | 608 | 0.4+  | 0.0   | 2006 05 06 | 691 | 0.8+ | 0.1+ |
| 1996 10 10 | 809 | (0.3- | 3.4+) | 2003 09 05 | 608 | 0.6+  | 0.4-  | 2006 05 06 | 691 | 0.9+ | 0.5+ |
| 1996 10 10 | 809 | (0.6- | 2.7+) | 2003 09 05 | 608 | (1.2+ | 1.6-) | 2006 05 06 | 691 | 0.7+ | 0.0  |
| 1999 05 20 | 691 | 0.5-  | 0.3-  | 2003 09 22 | 608 | 1.0-  | 0.8+  | 2006 05 20 | G96 | 0.4- | 0.0  |
| 1999 05 20 | 691 | 0.4-  | 0.3-  | 2003 09 22 | 608 | 0.2-  | 1.0+  | 2006 05 20 | G96 | 0.3- | 0.4- |
| 1999 05 20 | 691 | 0.8-  | 0.2+  | 2003 09 22 | 608 | 0.5-  | 1.1+  | 2006 05 20 | G96 | 0.4+ | 0.4+ |
| 2003 07 25 | 644 | 0.2+  | 0.4+  | 2003 09 25 | 644 | 0.6-  | 0.4+  | 2006 05 20 | G96 | 0.3- | 0.1- |
| 2003 07 25 | 644 | 0.1-  | 0.3+  | 2003 09 25 | 644 | 0.2+  | 0.1+  | 2007 12 05 | G96 | 0.0  | 0.2- |
| 2003 07 25 | 644 | 0.1+  | 0.2+  | 2003 09 25 | 644 | 0.4-  | 0.3+  | 2007 12 05 | G96 | 0.4- | 0.2- |
| 2003 08 22 | 644 | 0.4-  | 0.4+  | 2003 09 25 | 644 | 0.1+  | 0.1+  | 2007 12 05 | G96 | 0.2- | 0.3- |
| 2003 08 22 | 644 | 0.0   | 0.3+  | 2003 09 25 | 644 | 0.4-  | 0.1+  | 2007 12 05 | G96 | 0.3- | 0.3- |
| 2003 08 22 | 644 | 0.1-  | 0.2+  | 2003 09 25 | 644 | 0.3+  | 0.1-  | 2007 12 06 | G96 | 0.2- | 0.0  |
| 2003 08 23 | 704 | 0.5-  | 0.1+  | 2003 09 28 | 704 | 0.6-  | 0.1-  | 2007 12 06 | G96 | 0.0  | 0.2+ |
| 2003 08 23 | 704 | 0.3+  | 0.5+  | 2003 09 28 | 704 | 0.0   | 0.4+  | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2003 08 23 | 704 | 0.3+  | 0.5+  | 2003 09 28 | 704 | 0.3-  | 0.2+  | 2007 12 14 | 704 | 0.5+ | 0.7+ |
| 2003 08 23 | 704 | 0.2+  | 0.5-  | 2003 09 28 | 704 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.0  | 1.0+ |
| 2003 08 26 | 704 | 0.4-  | 0.3-  | 2003 09 28 | 704 | 0.5-  | 0.3-  | 2007 12 14 | 704 | 0.9+ | 0.6- |
| 2003 08 26 | 704 | 0.2+  | 0.9+  | 2005 03 10 | G96 | 0.1-  | 0.1+  | 2007 12 14 | 704 | 0.1- | 1.2+ |
| 2003 08 26 | 704 | 0.1-  | 0.0   | 2005 03 10 | G96 | 0.5-  | 0.1-  | 2007 12 15 | 691 | 0.4- | 0.2- |
| 2003 08 26 | 704 | 0.3-  | 0.4+  | 2005 03 10 | G96 | 0.0   | 0.1-  | 2007 12 15 | 691 | 0.4- | 0.4- |
| 2003 08 31 | 704 | 0.5-  | 0.0   | 2005 03 10 | G96 | 0.4-  | 0.0   | 2007 12 15 | 691 | 0.2+ | 2.2+ |

**(172433)\* 2003 QN<sub>22</sub>**

Discovered 2003 Aug. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |                          |
|----------|------------|----------|-----------|--------------------------|
| <i>M</i> | 59.39665   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
| <i>n</i> | 0.27675118 | $\omega$ | 117.73511 | +0.95428310              |
| <i>a</i> | 2.3320780  | $\Omega$ | 225.12922 | +0.29199708              |
| <i>e</i> | 0.1513154  | <i>i</i> | 3.72706   | +0.88815113              |
| <i>P</i> | 3.56       | <i>H</i> | 16.7      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 20 | 644 | 0.1+ | 0.1+ | 2003 09 23 | 644 | 0.2+ | 0.0  | 2007 11 13 | 691 | 0.3-  | 0.1+  |
| 2003 08 20 | 644 | 0.2+ | 0.1+ | 2003 09 27 | 704 | 0.1- | 0.6+ | 2007 11 14 | 704 | 0.2+  | 0.6-  |
| 2003 08 20 | 644 | 0.1+ | 0.2+ | 2003 09 27 | 704 | 0.1+ | 0.3- | 2007 11 14 | 704 | 0.4+  | 0.1+  |
| 2003 08 24 | 704 | 0.1- | 1.2+ | 2003 09 27 | 704 | 0.3- | 0.0  | 2007 11 14 | 691 | (0.2+ | 2.1-) |
| 2003 08 24 | 704 | 0.6- | 0.7+ | 2003 09 27 | 704 | 0.4+ | 0.3+ | 2007 11 14 | 704 | 0.4-  | 0.2+  |
| 2003 08 24 | 704 | 0.5- | 1.3+ | 2003 09 27 | 704 | 0.2- | 0.3+ | 2007 11 14 | 704 | 1.0+  | 0.5-  |
| 2003 08 24 | 704 | 0.3+ | 0.7+ | 2003 09 30 | 691 | 0.3- | 0.3- | 2007 11 14 | 691 | 0.3-  | 0.2+  |
| 2003 08 28 | 704 | 0.0  | 0.1- | 2003 09 30 | 691 | 0.4- | 0.2- | 2007 11 14 | 704 | 0.4+  | 0.4-  |
| 2003 08 28 | 644 | 0.1- | 0.2- | 2003 09 30 | 691 | 0.2- | 0.4- | 2007 11 14 | 691 | 0.1+  | 0.2+  |
| 2003 08 28 | 704 | 0.2- | 0.5+ | 2005 02 02 | 691 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.1+  | 0.0   |
| 2003 08 28 | 704 | 0.7- | 0.7+ | 2005 02 02 | 691 | 0.1+ | 0.5+ | 2007 11 15 | 704 | 0.4+  | 0.5-  |
| 2003 08 28 | 704 | 0.3- | 0.2- | 2005 02 02 | 691 | 0.2+ | 0.3+ | 2007 11 15 | 704 | 0.4+  | 0.4-  |
| 2003 08 28 | 644 | 0.1+ | 0.0  | 2006 05 19 | G96 | 0.1- | 0.0  | 2007 11 16 | 704 | 2.8+  | 0.7-  |
| 2003 08 28 | 644 | 0.1+ | 0.2+ | 2006 05 19 | G96 | 0.0  | 0.0  | 2007 11 16 | 704 | 0.0   | 1.6-  |
| 2003 09 02 | 704 | 0.3+ | 0.1- | 2006 05 19 | G96 | 0.3+ | 0.2+ | 2007 11 16 | 704 | 0.5+  | 0.0   |
| 2003 09 02 | 704 | 0.3+ | 0.5- | 2006 05 19 | G96 | 0.0  | 0.0  | 2007 11 16 | 704 | 0.2+  | 1.0+  |
| 2003 09 02 | 704 | 0.5+ | 0.5- | 2006 05 20 | 691 | 0.3+ | 0.1+ | 2007 11 17 | 704 | 0.3+  | 0.1-  |
| 2003 09 02 | 704 | 0.9+ | 0.1+ | 2006 05 20 | 691 | 0.2+ | 0.2+ | 2007 11 17 | 704 | 0.0   | 0.9+  |
| 2003 09 16 | 699 | 0.6- | 0.2+ | 2006 05 20 | 691 | 0.1+ | 0.3+ | 2007 11 17 | 704 | 1.0+  | 0.1-  |
| 2003 09 16 | 699 | 0.9- | 1.0+ | 2006 05 28 | 691 | 0.1+ | 0.7+ | 2007 11 17 | 704 | 0.7+  | 0.1+  |

2007 DEC. 24

M.P.O. 129369

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 16 | 699 | 0.7+ | 1.1- | 2006 05 28 | 691 | 0.0  | 0.4+ | 2007 11 17 | 704 | 1.0+ | 1.1+ |
| 2003 09 16 | 699 | 0.6+ | 0.4+ | 2006 05 28 | 691 | 0.4- | 0.5+ | 2007 12 03 | 703 | 0.3- | 0.6+ |
| 2003 09 18 | 704 | 0.5+ | 0.7+ | 2007 09 15 | G96 | 0.5+ | 0.1- | 2007 12 03 | 703 | 0.1+ | 0.8+ |
| 2003 09 18 | 704 | 0.9+ | 0.3+ | 2007 09 15 | G96 | 0.2- | 0.0  | 2007 12 03 | 703 | 0.2- | 0.2+ |
| 2003 09 18 | 704 | 0.3- | 0.8+ | 2007 09 15 | G96 | 0.0  | 0.1- | 2007 12 03 | 703 | 0.6- | 0.8+ |
| 2003 09 18 | 704 | 0.1+ | 0.3+ | 2007 09 15 | G96 | 0.2- | 0.1+ | 2007 12 05 | 704 | 2.0- | 1.1+ |
| 2003 09 18 | 644 | 0.1- | 0.2+ | 2007 11 09 | 691 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.3+ | 0.4+ |
| 2003 09 18 | 644 | 0.1- | 0.0  | 2007 11 09 | 691 | 0.5- | 0.2+ | 2007 12 05 | 704 | 0.5+ | 1.2+ |
| 2003 09 18 | 644 | 0.1- | 0.0  | 2007 11 09 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.9+ | 0.1- |
| 2003 09 23 | 644 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.2- | 0.0  |            |     |      |      |
| 2003 09 23 | 644 | 0.1- | 0.2+ | 2007 11 13 | 691 | 0.4- | 0.1+ |            |     |      |      |

(172434)\* 2003 QG<sub>24</sub>

Discovered 2003 Aug. 21 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q        |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| P        |            |          |           | Q        |             |          |             |
| (2000.0) |            |          |           | (2000.0) |             |          |             |
| <i>M</i> | 33.05606   |          |           | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 0.27744918 | $\omega$ | 185.19981 |          | +0.98722372 |          | -0.15923367 |
| <i>a</i> | 2.3281650  | $\Omega$ | 183.97679 |          | +0.14905426 |          | +0.93580520 |
| <i>e</i> | 0.1319184  | <i>i</i> | 4.82055   |          | +0.05632189 |          | +0.31450479 |
| <i>P</i> | 3.55       | <i>H</i> | 16.7      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 06 15 | 691 | 0.5+  | 0.1-  | 2003 08 26 | 106 | 0.1- | 0.0  | 2007 10 25 | G96 | 0.2+ | 0.2- |
| 1996 06 15 | 691 | 0.1+  | 0.4+  | 2003 08 26 | 106 | 0.3+ | 0.5- | 2007 10 25 | G96 | 0.1+ | 0.4- |
| 1996 06 15 | 691 | 0.7-  | 0.6-  | 2003 08 26 | 106 | 0.1+ | 0.5- | 2007 10 25 | G96 | 0.3+ | 0.4- |
| 1998 01 20 | 696 | 1.0-  | 0.2-  | 2003 08 28 | 608 | 0.6+ | 0.9- | 2007 10 25 | G96 | 0.2- | 0.5- |
| 1998 01 20 | 696 | 0.5-  | 0.8-  | 2003 08 28 | 608 | 0.2- | 0.1+ | 2007 11 04 | 704 | 0.3- | 0.4- |
| 1998 01 20 | 696 | 0.6-  | 0.2-  | 2003 08 28 | 608 | 0.7- | 0.0  | 2007 11 04 | 704 | 0.2- | 1.1+ |
| 2000 11 20 | 704 | 1.0+  | 0.3-  | 2003 09 01 | 704 | 0.6- | 0.9+ | 2007 11 04 | 704 | 0.6- | 0.0  |
| 2000 11 20 | 704 | 0.2-  | 1.2+  | 2003 09 01 | 704 | 0.4- | 0.1+ | 2007 11 04 | 704 | 0.3- | 0.7+ |
| 2000 11 20 | 704 | 0.6+  | 1.9+  | 2003 09 01 | 704 | 1.0- | 1.1+ | 2007 11 04 | 704 | 0.9- | 0.2+ |
| 2002 04 18 | 691 | 0.0   | 0.8+  | 2003 09 01 | 704 | 1.0- | 0.5- | 2007 11 12 | 704 | 0.3- | 0.6+ |
| 2002 04 18 | 691 | 0.3+  | 0.1-  | 2006 05 06 | G96 | 0.1- | 0.1+ | 2007 11 12 | 704 | 1.1+ | 0.4+ |
| 2002 04 18 | 691 | 0.5+  | 0.4+  | 2006 05 06 | G96 | 0.1- | 0.1+ | 2007 11 12 | 704 | 0.1+ | 0.5- |
| 2003 08 05 | 704 | 1.0+  | 0.4+  | 2006 05 06 | G96 | 0.0  | 0.3+ | 2007 11 12 | 704 | 0.4- | 0.4+ |
| 2003 08 05 | 704 | 0.1+  | 0.4+  | 2006 05 06 | G96 | 0.1+ | 0.3+ | 2007 12 04 | 704 | 0.4- | 0.3+ |
| 2003 08 05 | 704 | 1.0+  | 0.1+  | 2006 05 26 | G96 | 0.2+ | 0.2+ | 2007 12 04 | 704 | 0.4+ | 0.1+ |
| 2003 08 05 | 704 | (2.2+ | 1.0+) | 2006 05 26 | G96 | 0.2+ | 0.0  | 2007 12 04 | 704 | 0.9- | 0.1+ |
| 2003 08 21 | 644 | 0.1+  | 0.3+  | 2006 05 26 | G96 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.2- | 0.6+ |
| 2003 08 21 | 644 | 0.3+  | 0.4+  | 2006 05 26 | G96 | 0.9- | 0.8+ | 2007 12 04 | 704 | 0.2+ | 0.3+ |
| 2003 08 21 | 644 | 0.2+  | 0.4+  | 2007 10 24 | G96 | 0.2- | 0.1- | 2007 12 05 | 699 | 0.1+ | 0.3+ |
| 2003 08 24 | 704 | 0.4-  | 0.7+  | 2007 10 24 | G96 | 0.0  | 0.4- | 2007 12 05 | 699 | 1.3+ | 0.5- |
| 2003 08 24 | 704 | 0.8+  | 0.2+  | 2007 10 24 | G96 | 0.1+ | 0.5- | 2007 12 05 | 699 | 0.1- | 0.4+ |
| 2003 08 24 | 704 | 0.3-  | 0.2+  | 2007 10 24 | G96 | 0.1- | 0.3- | 2007 12 05 | 699 | 0.5- | 0.9+ |

(172435)\* 2003 QX<sub>24</sub>

Discovered 2003 Aug. 22 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q        |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| P        |            |          |           | Q        |             |          |             |
| (2000.0) |            |          |           | (2000.0) |             |          |             |
| <i>M</i> | 57.81293   |          |           | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 0.28511372 | $\omega$ | 141.76457 |          | +0.99343641 |          | +0.11239771 |
| <i>a</i> | 2.2862514  | $\Omega$ | 211.80126 |          | -0.11234200 |          | +0.92379503 |
| <i>e</i> | 0.1208820  | <i>i</i> | 2.30925   |          | -0.02152621 |          | +0.36601844 |
| <i>P</i> | 3.46       | <i>H</i> | 17.1      | <i>G</i> | 0.15        | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 21 | 691 | 0.3+ | 0.4+ | 2003 09 01 | 704 | 0.1+ | 0.4+ | 2005 03 11 | G96 | 0.6- | 0.3- |
| 2002 03 21 | 691 | 0.1- | 0.6+ | 2003 09 01 | 704 | 1.2- | 0.6+ | 2005 03 11 | G96 | 0.0  | 0.1- |
| 2002 03 21 | 691 | 0.1- | 0.6+ | 2003 09 01 | 704 | 0.9+ | 1.0+ | 2005 03 11 | G96 | 0.3- | 0.1+ |
| 2002 04 03 | 691 | 0.4+ | 0.0  | 2003 09 24 | 644 | 0.4- | 0.3+ | 2005 04 06 | G96 | 0.7- | 0.1- |
| 2002 04 03 | 691 | 0.2- | 0.6- | 2003 09 24 | 644 | 0.4- | 0.0  | 2005 04 06 | G96 | 0.4- | 0.4+ |
| 2002 04 03 | 691 | 0.4+ | 0.5+ | 2003 09 24 | 644 | 0.2- | 0.2+ | 2005 04 06 | G96 | 0.4- | 0.0  |
| 2003 08 22 | 644 | 0.0  | 0.3+ | 2003 10 01 | 691 | 0.1- | 0.0  | 2005 04 06 | G96 | 0.6- | 0.2- |
| 2003 08 22 | 644 | 0.2- | 0.4+ | 2003 10 01 | 691 | 0.2- | 0.1+ | 2007 09 18 | G96 | 0.5- | 0.6- |
| 2003 08 22 | 644 | 0.2- | 0.4+ | 2003 10 01 | 691 | 0.0  | 0.0  | 2007 09 18 | G96 | 0.1+ | 0.4- |
| 2003 08 24 | 704 | 0.1+ | 0.4+ | 2005 01 13 | 691 | 0.1- | 0.0  | 2007 09 18 | G96 | 0.3- | 0.6- |
| 2003 08 24 | 704 | 0.2+ | 0.2+ | 2005 01 13 | 691 | 0.5+ | 0.1+ | 2007 09 18 | G96 | 0.1+ | 0.2- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 08 24 | 704 | (0.3- | 1.8+) | 2005 01 13 | 691 | 0.1+  | 0.3+  | 2007 11 13 | 691 | 0.2- | 0.1- |
| 2003 08 24 | 704 | 0.5-  | 0.9+  | 2005 02 02 | 691 | 0.2+  | 0.1+  | 2007 11 13 | 691 | 0.2+ | 0.6+ |
| 2003 08 24 | 704 | 0.0   | 1.2+  | 2005 02 02 | 691 | 0.1+  | 0.3+  | 2007 11 13 | 691 | 0.2- | 0.1- |
| 2003 08 28 | 704 | (2.0+ | 0.1+) | 2005 02 02 | 691 | 0.2+  | 0.1-  | 2007 12 05 | 704 | 0.2+ | 0.8+ |
| 2003 08 28 | 704 | 0.6-  | 0.2+  | 2005 02 02 | 703 | 0.6-  | 0.7+  | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2003 08 28 | 704 | 0.2-  | 0.1+  | 2005 02 02 | 703 | 0.9-  | 0.1+  | 2007 12 05 | 704 | 0.5+ | 0.4+ |
| 2003 08 28 | 704 | 0.2+  | 0.4-  | 2005 02 02 | 703 | (0.6+ | 1.7+) | 2007 12 05 | 704 | 0.6+ | 0.1+ |
| 2003 09 01 | 704 | 0.6+  | 0.5+  | 2005 02 02 | 703 | 0.2-  | 0.2-  |            |     |      |      |
| 2003 09 01 | 704 | 0.1+  | 0.1+  | 2005 03 11 | G96 | 0.1-  | 0.0   |            |     |      |      |

(172436)\* 2003 QE<sub>25</sub> = 2002 EG<sub>100</sub>

Discovered 2003 Aug. 22 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 50301)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q        |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| P        |            |          |           | Q        |             |          |             |
| (2000.0) |            |          |           | (2000.0) |             |          |             |
| <i>M</i> | 133.08946  |          |           | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 0.27577135 | $\omega$ | 304.22554 |          | -0.26367333 |          | +0.95617047 |
| <i>a</i> | 2.3375987  | $\Omega$ | 309.96255 |          | -0.82135423 |          | -0.29177103 |
| <i>e</i> | 0.0977756  | <i>i</i> | 9.56312   |          | -0.50581974 |          | -0.02465164 |
| <i>P</i> | 3.57       | <i>H</i> | 16.1      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 05 | 703 | (1.7+ | 0.5+) | 2003 08 28 | 704 | 0.3-  | 0.8+  | 2003 09 23 | 644 | 0.2- | 0.1+ |
| 2002 03 05 | 703 | 0.8+  | 0.1+  | 2003 08 28 | 644 | 0.2-  | 0.2+  | 2003 09 23 | 644 | 0.3- | 0.1+ |
| 2002 03 05 | 703 | 1.5+  | 0.3+  | 2003 08 28 | 644 | 0.1-  | 0.2+  | 2006 05 24 | E12 | 0.5- | 0.4+ |
| 2002 03 05 | 703 | (1.8+ | 0.2-) | 2003 08 28 | 644 | 0.0   | 0.3+  | 2006 05 24 | E12 | 0.5- | 0.3+ |
| 2002 03 06 | 644 | 0.6+  | 0.7+  | 2003 09 02 | 704 | 0.4+  | 0.9+  | 2006 05 24 | E12 | 0.3+ | 0.1+ |
| 2002 03 06 | 644 | 0.3+  | 0.5+  | 2003 09 02 | 704 | 0.0   | 0.5+  | 2006 06 03 | E12 | 0.5+ | 0.7- |
| 2002 03 06 | 644 | 0.5+  | 0.8+  | 2003 09 02 | 704 | 0.5+  | 0.4-  | 2006 06 03 | E12 | 0.3- | 0.6+ |
| 2002 03 17 | 704 | (0.6- | 1.6+) | 2003 09 02 | 704 | 0.3-  | 0.0   | 2006 06 03 | E12 | 0.5+ | 0.0  |
| 2002 03 17 | 704 | 1.1-  | 0.4+  | 2003 09 18 | 644 | 0.1-  | 0.3+  | 2006 06 03 | E12 | 0.5+ | 0.6+ |
| 2002 03 17 | 704 | 0.6-  | 0.2+  | 2003 09 18 | 704 | (1.9- | 0.3+) | 2007 10 16 | 703 | 0.1+ | 0.5+ |
| 2002 04 08 | 644 | 0.4+  | 0.8+  | 2003 09 18 | 644 | 0.2+  | 0.1+  | 2007 10 16 | 703 | 0.1+ | 0.3+ |
| 2002 04 08 | 644 | 0.5+  | 0.8+  | 2003 09 18 | 644 | 0.1+  | 0.3+  | 2007 10 16 | 703 | 0.2+ | 0.5+ |
| 2002 04 08 | 644 | 0.3+  | 1.0+  | 2003 09 18 | 704 | 0.6+  | 0.6+  | 2007 10 16 | 703 | 0.2- | 0.6+ |
| 2003 08 22 | 644 | 0.4-  | 0.2+  | 2003 09 18 | 704 | 0.6-  | 0.8+  | 2007 11 13 | 703 | 0.1- | 0.1- |
| 2003 08 22 | 644 | 0.3-  | 0.0   | 2003 09 18 | 644 | 0.3-  | 0.1+  | 2007 11 13 | 703 | 0.0  | 0.0  |
| 2003 08 22 | 644 | 0.2-  | 0.1+  | 2003 09 18 | 644 | 0.1-  | 0.3+  | 2007 11 13 | 703 | 1.1- | 0.8- |
| 2003 08 24 | 704 | 0.2-  | 1.0-  | 2003 09 18 | 704 | 0.0   | 1.0+  | 2007 11 13 | 703 | 0.5- | 0.3- |
| 2003 08 24 | 704 | 0.9-  | 0.5-  | 2003 09 18 | 644 | 0.3-  | 0.1+  | 2007 12 03 | 704 | 0.5- | 1.8+ |
| 2003 08 24 | 704 | 1.3+  | 0.7-  | 2003 09 23 | 644 | 0.1-  | 0.1-  | 2007 12 03 | 704 | 0.7+ | 0.0  |
| 2003 08 28 | 704 | 0.4+  | 0.1-  | 2003 09 23 | 644 | 0.3-  | 0.1-  | 2007 12 03 | 704 | 0.2+ | 1.0+ |
| 2003 08 28 | 704 | 0.4-  | 0.4-  | 2003 09 23 | 644 | 0.3-  | 0.1-  | 2007 12 03 | 704 | 0.4- | 0.6- |
| 2003 08 28 | 704 | 0.1+  | 0.8+  | 2003 09 23 | 644 | 0.2-  | 0.0   |            |     |      |      |

(172437)\* 2003 QO<sub>37</sub> = 2006 JX<sub>56</sub>

Discovered 2003 Aug. 22 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 100475)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 120.93940  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.28782163 | $\omega$ | 51.42827  | +0.14936720  | +0.98873448  |
| $a$ | 2.2718889  | $\Omega$ | 227.16487 | -0.91124253  | +0.13384980  |
| $e$ | 0.1755771  | $i$      | 0.75581   | -0.38383133  | +0.06699522  |
| $P$ | 3.42       | $H$      | 17.2      | $G$ 0.15     | $U$ 1        |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 22 | 644 | 0.3+ | 0.2+ | 2006 05 16 | E12 | 0.4- | 0.1+ | 2007 10 16 | G96 | 0.8+ | 0.1+ |
| 2003 08 25 | 704 | 0.4+ | 0.3- | 2006 05 16 | E12 | 0.2+ | 0.4+ | 2007 10 16 | G96 | 0.7+ | 0.1+ |
| 2003 08 25 | 704 | 1.0+ | 0.2+ | 2006 05 16 | E12 | 0.3- | 0.3+ | 2007 11 03 | 691 | 0.2- | 0.0  |
| 2003 08 25 | 704 | 0.4+ | 0.5+ | 2006 05 16 | E12 | 0.0  | 0.3- | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2003 08 25 | 704 | 0.3+ | 0.3- | 2006 05 20 | G96 | 0.2- | 0.2- | 2007 11 03 | 691 | 0.1- | 0.0  |
| 2003 08 25 | 704 | 1.1+ | 0.5+ | 2006 05 20 | G96 | 0.4- | 0.0  | 2007 11 07 | 691 | 0.5- | 0.6+ |
| 2003 09 01 | 704 | 1.1+ | 0.4- | 2006 05 20 | G96 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.1- | 0.3+ |
| 2003 09 01 | 704 | 0.0  | 0.4- | 2006 05 20 | G96 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.2- | 0.3+ |
| 2003 09 01 | 704 | 0.5+ | 0.3+ | 2006 05 20 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2003 09 01 | 704 | 0.1- | 0.2- | 2006 05 20 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2003 09 01 | 704 | 0.6- | 0.3+ | 2006 05 20 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2003 09 04 | 691 | 0.4- | 0.0  | 2006 05 20 | E12 | 0.2+ | 0.5+ | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 2003 09 04 | 691 | 0.4- | 0.1+ | 2006 05 20 | E12 | 0.3- | 0.3+ | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2003 09 04 | 691 | 0.4- | 0.0  | 2006 05 20 | E12 | 0.1+ | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2003 09 17 | 699 | 0.0  | 1.3+ | 2006 05 20 | E12 | 0.6+ | 0.0  | 2007 12 04 | G96 | 0.0  | 0.1+ |
| 2003 09 17 | 699 | 0.1- | 0.2+ | 2006 05 25 | 644 | 0.2+ | 0.2- | 2007 12 15 | G96 | 0.5+ | 0.8+ |
| 2003 09 17 | 699 | 0.6- | 0.2- | 2006 05 25 | 644 | 0.1+ | 0.3- | 2007 12 15 | G96 | 0.4- | 0.2+ |
| 2003 09 17 | 699 | 0.0  | 0.9+ | 2006 05 25 | 644 | 0.2+ | 0.2- | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2006 02 27 | G96 | 0.5- | 0.5+ | 2006 05 28 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.9+ | 0.3- |
| 2006 02 27 | G96 | 0.1+ | 0.5+ | 2006 05 28 | 691 | 0.1+ | 0.1- |            |     |      |      |

**(172438)\* 2003 QW<sub>37</sub>**

Discovered 2003 Aug. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |  |  |            |  |  |          |  |  |          |  |  |
|-----------------------------------------|--|--|------------|--|--|----------|--|--|----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |            |  |  |          |  |  |          |  |  |
| <i>M</i>                                |  |  | 76.80688   |  |  | (2000.0) |  |  | MPC      |  |  |
| <i>n</i>                                |  |  | 0.28399939 |  |  | $\omega$ |  |  | <i>P</i> |  |  |
| <i>a</i>                                |  |  | 2.2922278  |  |  | $\Omega$ |  |  | <i>Q</i> |  |  |
| <i>e</i>                                |  |  | 0.1735830  |  |  | <i>i</i> |  |  | <i>U</i> |  |  |
| <i>P</i>                                |  |  | 3.47       |  |  | <i>H</i> |  |  | <i>1</i> |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 11 10 | 691 | 0.2+  | 0.5-  | 2003 08 25 | 807 | 0.1- | 0.6- | 2003 10 24 | 704 | 0.2+  | 0.3-  |
| 1993 11 10 | 691 | 0.0   | 0.5-  | 2003 08 25 | 704 | 0.4- | 0.1+ | 2005 01 15 | 691 | 0.0   | 0.1+  |
| 1996 08 13 | 566 | 0.0   | 0.1-  | 2003 08 30 | 704 | 0.5- | 1.2+ | 2005 01 15 | 691 | 0.2+  | 0.5+  |
| 1996 08 13 | 566 | 0.4-  | 0.1-  | 2003 08 30 | 704 | 0.7- | 0.9- | 2005 01 15 | 691 | 0.4+  | 0.2+  |
| 1996 08 13 | 566 | 0.4+  | 0.1-  | 2003 08 30 | 704 | 0.5- | 0.6- | 2005 03 04 | G96 | 0.2-  | 0.0   |
| 2003 07 24 | 644 | 0.3-  | 0.0   | 2003 09 01 | 704 | 0.8+ | 1.0+ | 2005 03 04 | G96 | 0.4-  | 0.0   |
| 2003 07 24 | 644 | 0.2-  | 0.2+  | 2003 09 01 | 704 | 0.9+ | 0.9+ | 2005 03 04 | G96 | 0.3-  | 0.7+  |
| 2003 07 24 | 644 | 0.2-  | 0.2+  | 2003 09 01 | 704 | 0.6+ | 0.9+ | 2005 03 04 | G96 | 0.9-  | 0.2-  |
| 2003 08 04 | 704 | 0.5-  | 0.6+  | 2003 09 01 | 704 | 0.3+ | 0.7+ | 2007 11 03 | 691 | 0.2-  | 0.1-  |
| 2003 08 04 | 704 | 0.8-  | 1.0+  | 2003 09 01 | 704 | 0.1+ | 0.9+ | 2007 11 03 | 691 | 1.0+  | 0.5+  |
| 2003 08 04 | 704 | 0.2-  | 0.1+  | 2003 09 15 | 699 | 0.6+ | 0.1+ | 2007 11 03 | 691 | 0.8-  | 0.4+  |
| 2003 08 04 | 704 | 0.1+  | 1.1+  | 2003 09 15 | 699 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.2-  | 0.0   |
| 2003 08 04 | 704 | 0.5-  | 0.7+  | 2003 09 15 | 699 | 0.2- | 0.3+ | 2007 11 03 | 691 | 0.2-  | 0.2-  |
| 2003 08 22 | 704 | 0.8+  | 0.1+  | 2003 09 15 | 699 | 0.4- | 0.0  | 2007 11 03 | 691 | 0.3-  | 0.0   |
| 2003 08 22 | 704 | 0.3+  | 0.8+  | 2003 09 15 | 608 | 1.2+ | 1.3- | 2007 11 07 | 704 | (1.9+ | 0.5-) |
| 2003 08 22 | 704 | 0.1+  | 0.5+  | 2003 09 15 | 608 | 0.5+ | 1.3- | 2007 11 07 | 704 | 0.9+  | 0.6+  |
| 2003 08 22 | 704 | 0.8-  | 1.0+  | 2003 09 15 | 608 | 0.6- | 1.3- | 2007 11 07 | 704 | 0.8-  | 0.5+  |
| 2003 08 22 | 704 | 0.2-  | 0.5-  | 2003 09 22 | 699 | 0.1+ | 1.2- | 2007 12 13 | 704 | 0.6-  | 0.3-  |
| 2003 08 22 | 704 | 0.4-  | 0.1-  | 2003 09 22 | 699 | 0.4- | 0.2+ | 2007 12 13 | 704 | 0.1+  | 0.4+  |
| 2003 08 22 | 704 | (1.7- | 1.0+) | 2003 09 22 | 699 | 0.2- | 0.2- | 2007 12 13 | 704 | 0.7-  | 1.0+  |
| 2003 08 22 | 704 | 0.9-  | 0.2+  | 2003 09 22 | 699 | 0.2- | 0.2- | 2007 12 13 | 704 | 0.1+  | 1.0+  |
| 2003 08 25 | 807 | 0.1-  | 0.6-  | 2003 09 24 | 644 | 0.2+ | 0.2+ | 2007 12 13 | 704 | 0.6+  | 0.1-  |
| 2003 08 25 | 704 | (2.1+ | 0.5-) | 2003 09 24 | 644 | 0.0  | 0.1+ | 2007 12 15 | 704 | 1.3+  | 0.1-  |
| 2003 08 25 | 704 | 0.1-  | 0.2-  | 2003 09 24 | 644 | 0.3+ | 0.1+ | 2007 12 15 | 704 | 0.2+  | 0.5+  |
| 2003 08 25 | 704 | 0.1+  | 0.3+  | 2003 10 24 | 704 | 0.8+ | 0.1+ | 2007 12 15 | 704 | 0.6+  | 0.6-  |
| 2003 08 25 | 704 | 0.2-  | 0.4-  | 2003 10 24 | 704 | 0.2+ | 0.9- | 2007 12 15 | 704 | 1.2+  | 0.1+  |

**(172439)\* 2003 QP<sub>40</sub>**

Discovered 2003 Aug. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |  |  |            |  |  |          |  |  |          |  |  |
|-----------------------------------------|--|--|------------|--|--|----------|--|--|----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |            |  |  |          |  |  |          |  |  |
| <i>M</i>                                |  |  | 79.40846   |  |  | (2000.0) |  |  | MPC      |  |  |
| <i>n</i>                                |  |  | 0.28262007 |  |  | $\omega$ |  |  | <i>P</i> |  |  |
| <i>a</i>                                |  |  | 2.2996799  |  |  | $\Omega$ |  |  | <i>Q</i> |  |  |
| <i>e</i>                                |  |  | 0.1388358  |  |  | <i>i</i> |  |  | <i>U</i> |  |  |
| <i>P</i>                                |  |  | 3.49       |  |  | <i>H</i> |  |  | <i>1</i> |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 08 17 | 566 | 0.5- | 0.1- | 2003 09 04 | 691 | 0.1+ | 0.1- | 2007 11 02 | 703 | 0.8-  | 0.3+  |
| 1996 08 17 | 566 | 0.0  | 0.0  | 2003 09 04 | 691 | 0.1+ | 0.1- | 2007 11 02 | 703 | 0.4-  | 0.1+  |
| 1996 08 17 | 566 | 0.6- | 0.0  | 2003 09 15 | 699 | 1.0+ | 0.8- | 2007 11 02 | 703 | 0.5-  | 0.9+  |
| 2003 07 25 | 644 | 0.1- | 0.0  | 2003 09 15 | 699 | 0.6+ | 0.8- | 2007 11 03 | G96 | 0.1-  | 0.5-  |
| 2003 07 25 | 704 | 0.7- | 0.1- | 2003 09 15 | 699 | 0.1+ | 0.1+ | 2007 11 03 | G96 | 0.2-  | 0.3-  |
| 2003 07 25 | 704 | 0.8- | 0.6+ | 2003 09 15 | 699 | 0.5+ | 0.4+ | 2007 11 03 | G96 | 0.1-  | 0.5-  |
| 2003 07 25 | 644 | 0.0  | 0.2- | 2003 09 24 | 644 | 0.1+ | 0.1+ | 2007 11 03 | G96 | 0.3-  | 0.4-  |
| 2003 07 25 | 704 | 0.0  | 0.3- | 2003 09 24 | 644 | 0.2- | 0.2- | 2007 11 08 | 704 | (1.4- | 1.6+) |
| 2003 07 25 | 644 | 0.1- | 0.0  | 2003 09 24 | 644 | 0.4- | 0.2- | 2007 11 08 | 704 | (0.9- | 1.8+) |
| 2003 08 04 | 704 | 0.3- | 0.1- | 2005 01 07 | 599 | 0.9+ | 0.3+ | 2007 11 08 | 704 | 0.3-  | 0.9+  |
| 2003 08 04 | 704 | 0.2+ | 0.3- | 2005 01 07 | 599 | 0.2+ | 0.3+ | 2007 11 08 | 703 | 0.7+  | 0.0   |
| 2003 08 04 | 704 | 0.1- | 0.3+ | 2005 01 07 | 599 | 0.5+ | 0.4+ | 2007 11 08 | 703 | 0.3+  | 0.3+  |
| 2003 08 04 | 704 | 0.3- | 0.2+ | 2005 01 07 | 599 | 0.8+ | 0.1+ | 2007 11 08 | 703 | 0.6-  | 0.3+  |
| 2003 08 22 | 704 | 0.4+ | 0.4+ | 2006 04 29 | E12 | 0.8+ | 0.4+ | 2007 11 08 | 703 | 0.3+  | 0.5+  |
| 2003 08 22 | 704 | 0.6+ | 1.1+ | 2006 04 29 | E12 | 0.2- | 0.5+ | 2007 11 16 | 704 | 1.0-  | 0.5+  |
| 2003 08 22 | 704 | 1.1+ | 0.6- | 2006 04 29 | E12 | 0.2+ | 0.6+ | 2007 11 16 | 704 | 0.1-  | 0.3+  |
| 2003 08 25 | 704 | 0.6+ | 0.2+ | 2006 04 29 | E12 | 0.1+ | 0.5+ | 2007 11 16 | 704 | 0.8+  | 0.6+  |
| 2003 08 25 | 704 | 0.3+ | 0.8+ | 2006 05 30 | E12 | 0.4+ | 0.2+ | 2007 11 20 | G96 | 0.2-  | 0.4-  |
| 2003 08 25 | 704 | 0.4+ | 0.6+ | 2006 05 30 | E12 | 0.5- | 0.7+ | 2007 11 20 | G96 | 0.0   | 0.4-  |
| 2003 08 25 | 704 | 0.2- | 0.6+ | 2006 05 30 | E12 | 0.4- | 1.1+ | 2007 11 20 | G96 | 0.2+  | 0.4-  |
| 2003 08 25 | 704 | 0.4+ | 0.7+ | 2006 05 30 | E12 | 0.2+ | 0.9+ | 2007 11 20 | G96 | 0.1-  | 0.4-  |
| 2003 08 31 | 704 | 0.3- | 0.5+ | 2007 10 21 | 703 | 0.5+ | 1.1+ | 2007 12 02 | 704 | 1.1-  | 0.2-  |
| 2003 08 31 | 704 | 0.2- | 0.5+ | 2007 10 21 | 703 | 0.9+ | 0.6+ | 2007 12 02 | 704 | 0.4-  | 0.6-  |
| 2003 08 31 | 704 | 0.0  | 0.1+ | 2007 10 21 | 703 | 0.4- | 0.7+ | 2007 12 02 | 704 | 0.3-  | 0.8+  |
| 2003 08 31 | 704 | 0.0  | 0.2+ | 2007 10 21 | 703 | 0.2+ | 0.1+ |            |     |       |       |
| 2003 09 04 | 691 | 0.3- | 0.4- | 2007 11 02 | 703 | 0.2- | 0.2- |            |     |       |       |

**(172440)\* 2003 QE<sub>42</sub>**

Discovered 2003 Aug. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |  |  |            |  |  |          |  |  |          |  |  |
|-----------------------------------------|--|--|------------|--|--|----------|--|--|----------|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |            |  |  |          |  |  |          |  |  |
| <i>M</i>                                |  |  | 43.65997   |  |  | (2000.0) |  |  | MPC      |  |  |
| <i>n</i>                                |  |  | 0.26808486 |  |  | $\omega$ |  |  | <i>P</i> |  |  |
| <i>a</i>                                |  |  | 2.3820700  |  |  | $\Omega$ |  |  | <i>Q</i> |  |  |
| <i>e</i>                                |  |  | 0.2091154  |  |  | <i>i</i> |  |  | <i>U</i> |  |  |
| <i>P</i>                                |  |  | 3.68       |  |  | <i>H</i> |  |  | <i>1</i> |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 01 | 691 | 0.4-  | 0.0   | 2003 09 29 | 704 | 0.2-  | 0.1+  | 2003 10 28 | 704 | 0.6+  | 0.2+  |
| 2001 01 01 | 691 | 0.1+  | 0.2-  | 2003 09 29 | 704 | 0.7-  | 0.1-  | 2003 10 28 | 704 | 0.4+  | 0.2+  |
| 2001 01 01 | 691 | 0.0   | 0.4+  | 2003 09 29 | 704 | 0.2-  | 0.3-  | 2003 10 28 | 704 | 0.8+  | 0.3+  |
| 2002 04 14 | 704 | (0.5+ | 1.8+) | 2003 09 29 | 704 | 0.4-  | 0.2-  | 2003 10 28 | 704 | 0.5+  | 0.1+  |
| 2002 04 14 | 704 | (0.8+ | 2.1+) | 2003 09 29 | 704 | 0.1-  | 0.2+  | 2003 10 28 | 704 | 0.5+  | 0.2+  |
| 2002 04 14 | 704 | (0.1- | 1.8+) | 2003 10 01 | 691 | 0.0   | 0.1-  | 2003 11 27 | 703 | 1.0-  | 0.2+  |
| 2002 04 14 | 704 | (0.0  | 1.9+) | 2003 10 01 | 691 | 0.0   | 0.1-  | 2003 11 27 | 703 | 0.9-  | 0.4-  |
| 2002 04 14 | 704 | (0.5+ | 2.4+) | 2003 10 01 | 691 | 0.1-  | 0.1-  | 2003 11 27 | 703 | (2.4- | 0.5-) |
| 2002 04 20 | 691 | 0.0   | 0.5+  | 2003 10 03 | 608 | 1.0+  | 0.8-  | 2003 11 27 | 703 | (1.4+ | 1.9-) |
| 2002 04 20 | 691 | 0.0   | 0.1+  | 2003 10 03 | 608 | 0.5+  | 1.0-  | 2003 11 30 | 704 | 1.0-  | 0.4+  |
| 2002 04 20 | 691 | 0.3-  | 0.1+  | 2003 10 03 | 608 | 1.0+  | 0.6-  | 2003 11 30 | 704 | 0.4-  | 0.2-  |
| 2003 07 30 | 704 | 0.1+  | 0.6+  | 2003 10 14 | 699 | 0.2-  | 0.0   | 2003 11 30 | 704 | 0.9+  | 1.0+  |
| 2003 07 30 | 704 | 0.3-  | 1.1+  | 2003 10 14 | 699 | 0.1-  | 0.2-  | 2003 11 30 | 704 | 1.0+  | 0.1-  |
| 2003 07 30 | 704 | 1.0-  | 0.4+  | 2003 10 14 | 699 | 0.2+  | 0.3+  | 2005 03 03 | 703 | 0.9+  | 0.3+  |
| 2003 07 30 | 704 | 0.9-  | 0.3+  | 2003 10 14 | 699 | 0.5-  | 0.6+  | 2005 03 03 | 703 | 0.9-  | 0.2+  |
| 2003 07 30 | 704 | (1.6- | 1.3+) | 2003 10 17 | 704 | 0.6-  | 0.4+  | 2005 03 03 | 703 | 0.3-  | 0.1-  |
| 2003 08 22 | 704 | 0.4+  | 0.3+  | 2003 10 17 | 704 | 0.7+  | 0.2+  | 2005 03 03 | 703 | 0.1+  | 0.3-  |
| 2003 08 22 | 704 | 0.8-  | 0.4-  | 2003 10 17 | 704 | 0.4+  | 1.4+  | 2005 04 04 | 691 | 0.6+  | 0.3+  |
| 2003 08 22 | 704 | 1.3+  | 0.0   | 2003 10 17 | 704 | 0.3+  | 0.7-  | 2005 04 04 | 691 | 0.1+  | 0.3+  |
| 2003 08 22 | 704 | 0.5-  | 0.9+  | 2003 10 17 | 704 | (3.6- | 1.5+) | 2005 04 04 | 691 | 0.7+  | 0.4+  |



2007 DEC. 24

M.P.O. 129371

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 08 25 | 704 | 0.1+ | 0.5− | 2003 10 18 | 691 | 0.0   | 0.0   | 2005 04 11 | G96 | 0.2+  | 0.1−  |
| 2003 08 25 | 704 | 0.2− | 0.9− | 2003 10 18 | 691 | 0.0   | 0.0   | 2005 04 11 | G96 | 0.2+  | 0.1−  |
| 2003 08 25 | 704 | 0.6− | 0.4− | 2003 10 18 | 691 | 0.1−  | 0.0   | 2005 04 11 | G96 | 0.0   | 0.4−  |
| 2003 08 25 | 704 | 0.3− | 1.0− | 2003 10 21 | 699 | 0.4−  | 0.2−  | 2005 04 11 | G96 | 0.4+  | 0.2−  |
| 2003 08 25 | 704 | 0.4+ | 0.4− | 2003 10 21 | 699 | 0.3−  | 0.2−  | 2007 10 11 | 704 | 0.5+  | 0.0   |
| 2003 09 16 | 691 | 0.1+ | 0.1+ | 2003 10 21 | 699 | 0.5−  | 0.2+  | 2007 10 11 | 704 | 0.1+  | 0.1−  |
| 2003 09 16 | 691 | 0.0  | 0.2+ | 2003 10 21 | 644 | 0.1+  | 0.2−  | 2007 10 11 | 704 | 1.3+  | 0.7−  |
| 2003 09 16 | 691 | 0.1− | 0.1+ | 2003 10 21 | 704 | 0.4−  | 0.5+  | 2007 10 11 | 704 | 0.9+  | 0.1+  |
| 2003 09 17 | 644 | 0.1+ | 0.1+ | 2003 10 21 | 699 | 0.2−  | 0.1+  | 2007 11 20 | 704 | 0.4+  | 0.6−  |
| 2003 09 17 | 644 | 0.1+ | 0.2+ | 2003 10 21 | 704 | 0.3−  | 0.4+  | 2007 11 20 | 704 | 0.5+  | 0.3+  |
| 2003 09 17 | 644 | 0.0  | 0.1+ | 2003 10 21 | 644 | 0.2+  | 0.1−  | 2007 11 20 | 704 | 0.3−  | 0.1+  |
| 2003 09 19 | 106 | 0.4− | 0.2− | 2003 10 21 | 704 | 0.4−  | 0.5+  | 2007 12 05 | 691 | 1.5−  | 0.0   |
| 2003 09 20 | 106 | 0.1− | 0.2− | 2003 10 21 | 704 | 0.3−  | 0.5+  | 2007 12 05 | 691 | (0.7− | 1.8−) |
| 2003 09 20 | 106 | 0.3− | 0.1− | 2003 10 21 | 644 | 0.1+  | 0.0   | 2007 12 05 | 691 | 0.3+  | 0.1−  |
| 2003 09 20 | 704 | 1.1+ | 0.4+ | 2003 10 21 | 704 | 0.2−  | 0.8+  | 2007 12 13 | 704 | 0.1+  | 0.2−  |
| 2003 09 20 | 704 | 0.7+ | 0.0  | 2003 10 23 | 704 | 0.5−  | 0.4+  | 2007 12 13 | 704 | 0.0   | 0.4−  |
| 2003 09 20 | 704 | 0.2+ | 0.1− | 2003 10 23 | 704 | 0.4−  | 0.7+  | 2007 12 13 | 704 | 0.3−  | 0.3+  |
| 2003 09 20 | 704 | 0.6+ | 0.0  | 2003 10 23 | 704 | 0.4−  | 0.0   | 2007 12 13 | 704 | 0.1−  | 0.1−  |
| 2003 09 20 | 704 | 0.8+ | 0.3+ | 2003 10 23 | 704 | 0.8−  | 0.5+  | 2007 12 15 | 704 | 1.2+  | 1.3−  |
| 2003 09 26 | 704 | 0.5+ | 0.1+ | 2003 10 23 | 704 | 0.4−  | 0.5+  | 2007 12 15 | 704 | 0.3−  | 0.7−  |
| 2003 09 26 | 704 | 0.0  | 0.3+ | 2003 10 26 | 703 | 0.5−  | 0.2+  | 2007 12 15 | 704 | 0.0   | 0.3−  |
| 2003 09 26 | 704 | 0.0  | 0.1− | 2003 10 26 | 703 | (1.9− | 1.0−) | 2007 12 15 | 704 | 0.1+  | 0.9+  |
| 2003 09 26 | 704 | 0.3+ | 0.2+ | 2003 10 26 | 703 | 0.8−  | 0.5+  |            |     |       |       |
| 2003 09 26 | 704 | 0.2+ | 0.1+ | 2003 10 26 | 703 | 0.4+  | 0.3−  |            |     |       |       |

**(172441)\* 2003 QR<sub>45</sub> = 2005 EN<sub>63</sub>**

Discovered 2003 Aug. 23 by NEAT at Palomar.

Id. A. Doppler (*MPO* 75897)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 2.14166    |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.28122764 | $\omega$ | 260.04444 | +0.56534315 | −0.82373991 |
| <i>a</i> | 2.3072645  | $\Omega$ | 155.37785 | +0.79138438 | +0.52700616 |
| <i>e</i> | 0.1198359  | <i>i</i> | 5.90896   | +0.23258950 | +0.20908626 |
| <i>P</i> | 3.50       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 03 25 | 691 | 0.1+  | 0.1−  | 2003 09 18 | 699 | 0.8+  | 0.1+  | 2007 10 13 | 704 | 1.0+ | 0.4+ |
| 1998 03 25 | 691 | 0.1+  | 0.0   | 2003 09 18 | 699 | 0.6−  | 0.4−  | 2007 10 13 | 704 | 0.8+ | 0.1+ |
| 1998 03 25 | 691 | 0.2−  | 0.0   | 2003 09 18 | 699 | 0.1+  | 0.4+  | 2007 10 13 | 704 | 0.2+ | 0.3+ |
| 2003 07 25 | 644 | 0.1−  | 0.3+  | 2003 09 24 | 644 | 0.1−  | 0.2+  | 2007 10 13 | 704 | 1.2+ | 0.3− |
| 2003 07 25 | 644 | 0.1+  | 0.4+  | 2003 09 24 | 644 | 0.0   | 0.6+  | 2007 11 03 | G96 | 0.1− | 0.3− |
| 2003 07 25 | 644 | 0.0   | 0.3+  | 2003 09 24 | 644 | 0.0   | 0.2+  | 2007 11 03 | G96 | 0.0  | 0.3− |
| 2003 08 23 | 644 | 0.2−  | 0.5+  | 2004 12 11 | 291 | 0.2+  | 0.4+  | 2007 11 03 | G96 | 0.5− | 0.4− |
| 2003 08 23 | 644 | 0.3−  | 0.5+  | 2004 12 11 | 291 | 0.2−  | 0.6+  | 2007 11 03 | G96 | 0.3− | 0.2− |
| 2003 08 23 | 644 | 0.0   | 0.8+  | 2004 12 11 | 291 | 0.1−  | 0.9+  | 2007 11 11 | 704 | 0.2− | 0.7+ |
| 2003 08 25 | 704 | 0.1+  | 0.3−  | 2005 02 02 | 704 | (2.4+ | 1.4+) | 2007 11 11 | 704 | 0.2− | 0.3− |
| 2003 08 25 | 704 | 0.7−  | 0.5+  | 2005 02 02 | 704 | 1.0+  | 0.3+  | 2007 11 11 | 704 | 0.3− | 0.2− |
| 2003 08 25 | 704 | 0.2−  | 0.1+  | 2005 02 02 | 704 | 0.7+  | 0.7+  | 2007 11 11 | 704 | 0.2− | 0.1− |
| 2003 08 25 | 704 | 0.6+  | 0.7+  | 2005 03 04 | G96 | 0.2−  | 0.0   | 2007 11 11 | 704 | 0.3+ | 0.6− |
| 2003 08 25 | 704 | 0.3+  | 0.1+  | 2005 03 04 | G96 | 0.3−  | 0.0   | 2007 11 17 | 703 | 1.0+ | 0.3+ |
| 2003 08 26 | 106 | 0.1−  | 0.1−  | 2005 03 04 | G96 | 0.3−  | 0.2+  | 2007 11 17 | 703 | 0.4− | 0.0  |
| 2003 08 27 | 106 | 0.4−  | 0.2−  | 2005 03 04 | G96 | 0.3−  | 0.0   | 2007 11 17 | 703 | 0.4+ | 0.4+ |
| 2003 08 27 | 106 | 0.2+  | 0.9−  | 2005 03 08 | 699 | 0.5−  | 0.1+  | 2007 11 17 | 703 | 1.0− | 0.7− |
| 2003 09 01 | 704 | 0.1+  | 0.1+  | 2005 03 08 | 699 | 1.2−  | 0.4−  | 2007 11 20 | 703 | 0.4− | 0.2+ |
| 2003 09 01 | 704 | 0.0   | 0.5+  | 2005 03 08 | 699 | 1.3+  | 0.4+  | 2007 11 20 | 703 | 0.0  | 0.7− |
| 2003 09 01 | 704 | 0.0   | 0.1+  | 2005 03 08 | 699 | 0.1−  | 0.2−  | 2007 11 20 | 703 | 0.1+ | 0.2− |
| 2003 09 01 | 704 | 0.2−  | 0.2+  | 2005 03 08 | 704 | 0.4−  | 0.7−  | 2007 11 20 | 703 | 0.5− | 0.0  |
| 2003 09 01 | 704 | 0.7−  | 0.3+  | 2005 03 08 | 704 | 0.9+  | 0.2+  |            |     |      |      |
| 2003 09 18 | 699 | (0.7+ | 1.6−) | 2005 03 08 | 704 | 1.2+  | 0.1−  |            |     |      |      |

**(172442)\* 2003 QC<sub>48</sub>**

Discovered 2003 Aug. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 88.68905   |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.28090640 | $\omega$ | 71.97620  | +0.67233681 | +0.73463567 |
| <i>a</i> | 2.3090232  | $\Omega$ | 240.62283 | −0.71251171 | +0.60892381 |
| <i>e</i> | 0.1386226  | <i>i</i> | 5.99157   | −0.20072436 | +0.29920265 |
| <i>P</i> | 3.51       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 06 12 | 691 | 0.1− | 0.4+ | 2003 10 24 | 645 | 0.0   | 0.1−  | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 1999 06 12 | 691 | 0.0  | 0.5− | 2003 10 24 | 645 | 0.0   | 0.1−  | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 1999 06 12 | 691 | 0.2+ | 0.6+ | 2006 05 19 | G96 | 0.0   | 0.1−  | 2007 11 05 | G96 | 0.1+ | 0.1− |
| 2003 08 20 | 644 | 0.4+ | 0.3+ | 2006 05 19 | G96 | 0.3−  | 0.0   | 2007 11 05 | G96 | 0.2+ | 0.1+ |
| 2003 08 20 | 644 | 0.1− | 0.6+ | 2006 05 19 | G96 | 0.1−  | 0.1+  | 2007 11 05 | G96 | 0.2+ | 0.1− |
| 2003 08 20 | 644 | 0.2+ | 0.6+ | 2006 05 19 | G96 | 0.1+  | 0.1+  | 2007 11 07 | 691 | 0.2+ | 0.1+ |
| 2003 08 23 | 644 | 0.1− | 0.2+ | 2006 05 28 | 691 | 0.3−  | 0.2+  | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2003 08 23 | 644 | 0.0  | 0.0  | 2006 05 28 | 691 | 0.0   | 0.4−  | 2007 11 07 | 691 | 0.0  | 0.2+ |
| 2003 08 23 | 644 | 0.1+ | 0.3+ | 2006 05 28 | 691 | 0.2−  | 0.0   | 2007 11 14 | 691 | 0.4− | 0.2+ |
| 2003 09 18 | 691 | 0.2− | 0.1+ | 2006 06 01 | 691 | 0.1+  | 0.2+  | 2007 11 14 | 691 | 0.5− | 0.3+ |
| 2003 09 18 | 691 | 0.2− | 0.2+ | 2006 06 01 | 691 | 0.3+  | 0.0   | 2007 11 14 | 691 | 0.1+ | 0.2− |
| 2003 09 18 | 691 | 0.1− | 0.2+ | 2006 06 01 | 691 | 0.2+  | 0.2−  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2003 09 30 | 691 | 0.2+ | 0.3+ | 2007 10 16 | G96 | 0.3+  | 0.4−  | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2003 09 30 | 691 | 0.1+ | 0.3+ | 2007 10 16 | G96 | 0.7+  | 0.2−  | 2007 12 04 | G96 | 0.2+ | 0.3+ |
| 2003 09 30 | 691 | 0.2+ | 0.2+ | 2007 10 16 | G96 | 0.7+  | 0.0   | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2003 09 30 | 704 | 0.4+ | 0.1+ | 2007 10 16 | G96 | (1.5+ | 0.9−) | 2007 12 15 | G96 | 0.4+ | 0.6− |
| 2003 09 30 | 704 | 1.0− | 0.1+ | 2007 10 30 | 691 | 0.6−  | 0.4+  | 2007 12 15 | G96 | 0.5+ | 0.4− |
| 2003 09 30 | 704 | 0.0  | 0.7− | 2007 10 30 | 691 | 0.3−  | 0.3+  | 2007 12 15 | G96 | 0.0  | 0.4− |
| 2003 09 30 | 704 | 0.5+ | 0.2− | 2007 10 30 | 691 | 0.1+  | 0.0   | 2007 12 15 | G96 | 0.6+ | 0.3− |
| 2003 10 23 | 645 | 0.0  | 0.1− | 2007 11 03 | 691 | 0.1+  | 0.1+  |            |     |      |      |
| 2003 10 23 | 645 | 0.0  | 0.1− | 2007 11 03 | 691 | 0.2+  | 0.1+  |            |     |      |      |

**(172443)\* 2003 QX<sub>52</sub> = 2000 VT<sub>60</sub>**

Discovered 2003 Aug. 23 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 50312)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 93.46704   |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.29159984 | $\omega$ | 259.02686 | +0.75861091 | +0.65066669 |
| <i>a</i> | 2.2522220  | $\Omega$ | 60.37181  | −0.58156928 | +0.69961331 |
| <i>e</i> | 0.1427413  | <i>i</i> | 2.22837   | −0.29374592 | +0.29525258 |
| <i>P</i> | 3.38       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 05 | 691 | 0.3+ | 0.9− | 2003 08 23 | 704 | 0.1− | 0.3+ | 2003 09 04 | 608 | 0.1+ | 0.1+ |
| 1995 02 05 | 691 | 0.1− | 0.8− | 2003 08 23 | 704 | 0.7+ | 0.7− | 2005 01 07 | 691 | 0.1+ | 0.3+ |
| 1995 02 05 | 691 | 0.2+ | 0.4− | 2003 08 23 | 704 | 0.4− | 0.3− | 2005 01 07 | 691 | 0.0  | 0.0  |
| 2000 11 01 | 691 | 0.1− | 0.1− | 2003 08 23 | 704 | 0.3+ | 0.2+ | 2005 01 07 | 691 | 0.4+ | 0.1+ |
| 2000 11 01 | 691 | 0.1− | 0.1+ | 2003 08 26 | 704 | 0.6− | 0.2− | 2006 06 04 | G96 | 0.1+ | 0.1+ |
| 2000 11 01 | 691 | 0.4− | 0.2− | 2003 08 26 | 704 | 0.0  | 0.0  | 2006 06 04 | G96 | 0.4+ | 0.1− |
| 2000 11 02 | 704 | 0.9+ | 0.6+ | 2003 08 26 | 704 | 0.1+ | 0.6+ | 2006 06 04 | G96 | 0.2+ | 0.1− |
| 2000 11 02 | 704 | 0.3− | 0.4− | 2003 08 30 | 608 | 0.3+ | 0.0  | 2006 06 04 | G96 | 0.1− | 0.3− |
| 2000 11 02 | 704 | 0.0  | 1.0− | 2003 08 30 | 608 | 0.9+ | 1.4− | 2007 11 06 | 691 | 0.5− | 0.4+ |
| 2000 11 28 | 691 | 0.3− | 0.0  | 2003 08 30 | 608 | 0.3+ | 0.5− | 2007 11 06 | 691 | 0.1− | 0.2+ |
| 2000 11 28 | 691 | 0.0  | 0.4− | 2003 08 31 | 704 | 0.3− | 0.4− | 2007 11 06 | 691 | 0.1+ | 0.1− |
| 2000 11 28 | 691 | 0.3+ | 0.3− | 2003 08 31 | 704 | 0.8− | 0.0  | 2007 12 14 | 704 | 1.2+ | 0.3− |
| 2002 03 12 | 645 | 0.0  | 0.1+ | 2003 08 31 | 704 | 0.1− | 0.5+ | 2007 12 14 | 704 | 0.2+ | 0.5+ |
| 2002 03 12 | 645 | 0.0  | 0.1+ | 2003 08 31 | 704 | 0.5+ | 0.7+ | 2007 12 14 | 704 | 0.8+ | 0.1− |
| 2002 03 13 | 691 | 0.5− | 0.1+ | 2003 08 31 | 704 | 0.0  | 1.0+ | 2007 12 16 | 012 | 0.1+ | 0.3+ |
| 2002 03 13 | 691 | 0.5− | 0.3+ | 2003 08 31 | 608 | 0.1− | 0.3− | 2007 12 16 | 012 | 0.2+ | 0.1− |
| 2002 03 13 | 691 | 0.1− | 0.3− | 2003 08 31 | 608 | 0.3+ | 0.9− | 2007 12 16 | 691 | 0.1+ | 0.2+ |
| 2003 07 25 | 644 | 0.1− | 0.6+ | 2003 08 31 | 608 | 0.4+ | 0.5− | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2003 07 25 | 644 | 0.3− | 0.7+ | 2003 09 04 | 608 | 0.5− | 0.1− | 2007 12 16 | 691 | 0.1+ | 0.6+ |
| 2003 07 25 | 644 | 0.3+ | 0.4+ | 2003 09 04 | 608 | 0.1− | 0.3+ |            |     |      |      |

**(172444)\* 2003 QN<sub>55</sub>**

Discovered 2003 Aug. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |      |             |   |  |
|----------|------------|----------|-----------|-------------|------|-------------|---|--|
| <i>M</i> | 50.97596   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |
| <i>n</i> | 0.27243462 | $\omega$ | 272.92649 | +0.96695007 |      | +0.24924021 |   |  |
| <i>a</i> | 2.3566469  | $\Omega$ | 72.64552  | -0.20580656 |      | +0.88738077 |   |  |
| <i>e</i> | 0.2239885  | <i>i</i> | 3.22702   | -0.15050323 |      | +0.38785912 |   |  |
| <i>P</i> | 3.62       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 01 11 | 691 | 0.1+ | 1.6- | 2003 09 17 | 704 | 0.2+  | 0.0   | 2007 11 02 | 691 | 0.0   | 0.2+  |
| 1994 01 11 | 691 | 0.3- | 0.1+ | 2003 09 17 | 704 | 0.0   | 0.6+  | 2007 11 05 | 704 | 0.2+  | 1.1+  |
| 1994 01 11 | 691 | 0.0  | 0.4- | 2003 09 17 | 704 | 0.1+  | 0.3+  | 2007 11 05 | 704 | 0.2+  | 0.6+  |
| 1994 01 16 | 691 | 1.1- | 0.2- | 2003 09 23 | 608 | 1.0-  | 0.3-  | 2007 11 05 | 704 | 1.2+  | 1.4+  |
| 1994 01 16 | 691 | 0.9+ | 0.2+ | 2003 09 23 | 608 | 0.7-  | 0.2-  | 2007 11 05 | 704 | 0.5+  | 0.7-  |
| 1996 10 18 | 566 | 0.3- | 0.4- | 2003 09 23 | 608 | 0.8-  | 0.3-  | 2007 11 14 | 704 | 0.7-  | 1.4+  |
| 1996 10 18 | 566 | 0.6+ | 0.9- | 2003 09 24 | 644 | 0.2-  | 0.3+  | 2007 11 14 | 704 | 0.6+  | 0.9+  |
| 1996 10 18 | 566 | 0.4+ | 0.8- | 2003 09 24 | 644 | 0.2-  | 0.5+  | 2007 11 14 | 704 | 0.9-  | 0.1+  |
| 2003 08 23 | 704 | 0.2- | 0.0  | 2003 09 24 | 644 | 0.1-  | 0.4+  | 2007 11 14 | 704 | 0.1+  | 0.4-  |
| 2003 08 23 | 704 | 0.1- | 0.0  | 2003 09 24 | 608 | 0.9-  | 0.1-  | 2007 11 19 | 691 | 0.4-  | 0.1-  |
| 2003 08 23 | 704 | 0.0  | 0.0  | 2003 09 24 | 608 | 1.0-  | 0.5-  | 2007 11 19 | 691 | 0.3-  | 0.3+  |
| 2003 08 23 | 644 | 0.4+ | 0.1+ | 2003 09 24 | 608 | 0.9-  | 0.5-  | 2007 11 19 | 691 | 0.6-  | 0.2+  |
| 2003 08 23 | 704 | 0.0  | 0.1- | 2003 09 27 | 699 | 0.9+  | 0.0   | 2007 12 03 | 703 | 0.9+  | 0.9+  |
| 2003 08 23 | 644 | 0.5+ | 0.0  | 2003 09 27 | 699 | 0.4+  | 0.3-  | 2007 12 03 | 703 | (0.5- | 2.1+) |
| 2003 08 23 | 644 | 0.4+ | 0.0  | 2003 09 27 | 699 | (1.5+ | 0.5-) | 2007 12 03 | 703 | (0.3+ | 1.9+) |
| 2003 08 26 | 704 | 0.2+ | 0.1- | 2003 09 27 | 699 | 0.2+  | 0.9+  | 2007 12 03 | 703 | 1.3+  | 0.5+  |
| 2003 08 26 | 704 | 0.3+ | 0.0  | 2003 09 28 | 704 | 0.5-  | 0.5+  | 2007 12 04 | G96 | 0.2+  | 0.1-  |
| 2003 08 26 | 704 | 0.2+ | 0.4+ | 2003 09 28 | 704 | 0.4+  | 0.9+  | 2007 12 04 | G96 | 0.3-  | 0.0   |
| 2003 08 26 | 704 | 0.6+ | 0.2- | 2003 09 28 | 704 | 0.5-  | 1.0+  | 2007 12 04 | G96 | 0.0   | 0.0   |
| 2003 08 27 | 644 | 0.1+ | 0.0  | 2003 09 28 | 704 | 0.0   | 0.6+  | 2007 12 04 | G96 | 0.1+  | 0.0   |
| 2003 08 27 | 644 | 0.0  | 0.0  | 2003 09 28 | 704 | 0.1+  | 0.6+  | 2007 12 04 | G96 | 0.2+  | 0.1-  |
| 2003 08 27 | 644 | 0.1+ | 0.2+ | 2005 02 02 | 691 | 0.4+  | 0.6+  | 2007 12 04 | G96 | 0.2-  | 0.1+  |
| 2003 09 01 | 704 | 0.0  | 0.3+ | 2005 02 02 | 691 | 0.0   | 0.6+  | 2007 12 04 | G96 | 0.1+  | 0.1-  |
| 2003 09 01 | 704 | 0.2+ | 0.4+ | 2005 02 02 | 691 | 0.2-  | 0.6+  | 2007 12 04 | G96 | 0.1+  | 0.2+  |
| 2003 09 01 | 704 | 0.2+ | 0.6+ | 2006 05 01 | 691 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.0   | 1.1+  |
| 2003 09 01 | 704 | 0.2+ | 0.1+ | 2006 05 01 | 691 | 0.2+  | 0.3+  | 2007 12 05 | 704 | 0.2-  | 0.1-  |
| 2003 09 01 | 704 | 0.6- | 0.6+ | 2006 05 01 | 691 | 0.3+  | 0.3+  | 2007 12 05 | 704 | 0.1+  | 0.8+  |
| 2003 09 07 | 608 | 0.2+ | 0.5- | 2006 05 05 | 691 | 0.3+  | 0.4+  | 2007 12 05 | 704 | 0.1+  | 0.5+  |
| 2003 09 07 | 608 | 0.1+ | 0.2+ | 2006 05 05 | 691 | 0.2+  | 0.3+  | 2007 12 05 | 704 | 0.1+  | 1.0+  |
| 2003 09 07 | 608 | 0.2- | 0.2- | 2006 05 05 | 691 | 0.3+  | 0.5+  | 2007 12 14 | 704 | 0.8+  | 0.3+  |
| 2003 09 14 | 608 | 0.4- | 0.7- | 2006 05 06 | 691 | 1.0-  | 0.7+  | 2007 12 14 | 704 | 0.5+  | 0.5-  |
| 2003 09 14 | 608 | 0.3- | 0.2- | 2006 05 06 | 691 | 0.4+  | 0.2+  | 2007 12 14 | 704 | 0.2-  | 0.0   |
| 2003 09 14 | 608 | 0.5- | 0.5- | 2006 05 06 | 691 | 0.4+  | 0.3+  | 2007 12 14 | 704 | 0.1+  | 0.1-  |
| 2003 09 17 | 704 | 0.1- | 0.1+ | 2007 11 02 | 691 | 0.2-  | 0.4+  | 2007 12 14 | 704 | 0.2+  | 0.7+  |
| 2003 09 17 | 704 | 0.4+ | 0.1- | 2007 11 02 | 691 | 0.1-  | 0.2+  |            |     |       |       |

**(172445)\* 2003 QM<sub>57</sub>**

Discovered 2003 Aug. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |      |             |   |  |
|----------|------------|----------|-----------|-------------|------|-------------|---|--|
| <i>M</i> | 43.24083   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |
| <i>n</i> | 0.28432019 | $\omega$ | 326.07147 | +0.96672698 |      | -0.25497579 |   |  |
| <i>a</i> | 2.2905033  | $\Omega$ | 48.71463  | +0.24037974 |      | +0.87784160 |   |  |
| <i>e</i> | 0.2213357  | <i>i</i> | 1.57450   | +0.08750162 |      | +0.40543984 |   |  |
| <i>P</i> | 3.47       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 29 | 704 | 0.2+ | 0.9+ | 2003 08 31 | 704 | 0.4+ | 0.7+ | 2007 11 02 | G96 | 0.5- | 0.2- |
| 2000 11 29 | 704 | 0.2+ | 0.2- | 2003 08 31 | 704 | 0.3+ | 0.6+ | 2007 11 02 | G96 | 0.2- | 0.2- |
| 2000 11 29 | 704 | 0.8+ | 0.3+ | 2003 09 14 | 608 | 0.2+ | 0.6- | 2007 11 11 | G96 | 0.2- | 0.0  |
| 2000 11 29 | 704 | 0.4+ | 0.0  | 2003 09 14 | 608 | 0.1+ | 0.0  | 2007 11 11 | G96 | 0.6- | 0.1+ |
| 2000 11 29 | 704 | 1.6+ | 0.7+ | 2003 09 14 | 608 | 0.2- | 0.1- | 2007 11 11 | G96 | 0.9- | 0.2- |
| 2000 12 31 | 691 | 0.4- | 0.1- | 2003 09 15 | 699 | 0.6- | 0.3+ | 2007 11 11 | G96 | 0.4- | 0.4- |
| 2000 12 31 | 691 | 0.0  | 0.5- | 2003 09 15 | 699 | 0.9+ | 0.5+ | 2007 12 03 | 691 | 1.2- | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 12 31 | 691 | 0.5- | 0.2- | 2003 09 15 | 699 | 1.4- | 0.5- | 2007 12 03 | 691 | 1.1-  | 0.5+  |
| 2002 04 05 | 644 | 0.8+ | 0.4+ | 2003 09 15 | 699 | 0.8- | 0.3- | 2007 12 03 | 691 | 1.7-  | 0.0   |
| 2002 04 05 | 644 | 1.1+ | 0.6+ | 2003 09 25 | 644 | 0.1- | 0.1+ | 2007 12 06 | 704 | 0.0   | 1.1+  |
| 2002 04 05 | 644 | 0.7+ | 0.6+ | 2003 09 25 | 644 | 0.0  | 0.5- | 2007 12 06 | 704 | (0.9- | 1.9+) |
| 2003 08 01 | 608 | 0.6- | 0.7+ | 2003 09 25 | 644 | 0.0  | 0.3- | 2007 12 06 | 704 | (0.4+ | 2.0+) |
| 2003 08 01 | 608 | 0.5- | 0.9+ | 2003 10 24 | 704 | 0.6- | 0.5+ | 2007 12 06 | 704 | 0.6-  | 1.5+  |
| 2003 08 01 | 608 | 0.0  | 0.7+ | 2003 10 24 | 704 | 0.4+ | 0.1- | 2007 12 10 | 704 | 1.0-  | 0.5+  |
| 2003 08 23 | 704 | 0.3+ | 0.1- | 2003 10 24 | 704 | 0.9- | 0.7+ | 2007 12 10 | 704 | 0.6-  | 0.4+  |
| 2003 08 23 | 704 | 0.3- | 0.5- | 2003 10 24 | 704 | 0.2+ | 0.2+ | 2007 12 10 | 704 | 0.2+  | 0.2+  |
| 2003 08 23 | 704 | 0.4- | 0.4+ | 2005 03 11 | 695 | 0.2- | 0.8+ | 2007 12 14 | 704 | (4.2+ | 0.3+) |
| 2003 08 26 | 704 | 1.1+ | 0.4+ | 2005 03 11 | 695 | 0.2- | 0.7+ | 2007 12 14 | 704 | (4.2+ | 0.7+) |
| 2003 08 26 | 704 | 0.1- | 0.6+ | 2006 05 25 | 568 | 0.4- | 1.4+ | 2007 12 14 | 704 | (3.9+ | 0.2-) |
| 2003 08 26 | 704 | 0.1- | 0.3- | 2006 05 25 | 568 | 0.5- | 1.3+ | 2007 12 14 | 704 | (5.0+ | 0.9+) |
| 2003 08 31 | 704 | 0.0  | 0.4+ | 2006 05 25 | 568 | 0.3- | 1.3+ | 2007 12 14 | 704 | (4.5+ | 0.9+) |
| 2003 08 31 | 704 | 0.7+ | 0.8+ | 2007 11 02 | G96 | 0.5- | 0.3- |            |     |       |       |
| 2003 08 31 | 704 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.7- | 0.6- |            |     |       |       |

**(172446)\* 2003 QN<sub>58</sub> = 2000 YV<sub>138</sub>**

Discovered 2003 Aug. 23 by NEAT at Palomar.

Id. M. E. Sansaturio (*MPO* 61721)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          | MPC       |             |      |             |   |  |
|----------|------------|----------|-----------|-------------|------|-------------|---|--|
| <i>M</i> | 355.45456  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |
| <i>n</i> | 0.27021590 | $\omega$ | 346.73085 | +0.61774493 |      | -0.78538808 |   |  |
| <i>a</i> | 2.3695295  | $\Omega$ | 65.10315  | +0.72540147 |      | +0.54975411 |   |  |
| <i>e</i> | 0.1755786  | <i>i</i> | 2.49306   | +0.30361805 |      | +0.28449252 |   |  |
| <i>P</i> | 3.65       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 12 27 | 699 | 0.5-  | 0.4+  | 2005 03 09 | 704 | 0.8- | 0.2+ | 2007 11 13 | 699 | 0.2+  | 0.4-  |
| 2000 12 27 | 699 | 1.8-  | 0.1+  | 2005 04 09 | 691 | 0.3- | 0.5+ | 2007 11 14 | 704 | 0.3+  | 0.0   |
| 2000 12 27 | 699 | 0.9-  | 0.3+  | 2005 04 09 | 691 | 0.3- | 0.0  | 2007 11 14 | 704 | 0.0   | 0.1-  |
| 2000 12 27 | 699 | 1.8-  | 0.7+  | 2005 04 09 | 691 | 0.3- | 0.0  | 2007 11 14 | 704 | 0.5+  | 0.2-  |
| 2000 12 31 | 691 | 0.2+  | 0.1+  | 2007 09 18 | G96 | 0.1- | 0.3- | 2007 11 14 | 704 | 0.2+  | 0.1+  |
| 2000 12 31 | 691 | 0.1+  | 0.1-  | 2007 09 18 | G96 | 0.5- | 0.2- | 2007 11 14 | 704 | 0.1+  | 0.1+  |
| 2000 12 31 | 691 | 0.0   | 0.0   | 2007 09 18 | G96 | 0.2- | 0.4- | 2007 11 16 | B24 | 0.5-  | 0.3+  |
| 2001 01 19 | 704 | 0.4+  | 1.1+  | 2007 09 18 | G96 | 0.3- | 0.4- | 2007 11 16 | B24 | 1.2-  | 0.2-  |
| 2001 01 19 | 704 | (0.1+ | 2.2+) | 2007 10 20 | 703 | 0.3+ | 0.3+ | 2007 11 16 | B24 | (2.5- | 1.6-) |
| 2001 01 19 | 704 | 0.3+  | 0.2-  | 2007 10 20 | 703 | 0.6- | 0.3+ | 2007 11 18 | 691 | 0.0   | 0.3+  |
| 2001 01 19 | 704 | 1.1+  | 0.0   | 2007 10 20 | 703 | 0.7+ | 0.1+ | 2007 11 18 | 691 | 0.0   | 0.3+  |
| 2001 02 21 | 645 | 0.1+  | 0.1-  | 2007 10 20 | 703 | 0.1- | 0.5+ | 2007 11 18 | 691 | 0.0   | 0.2+  |
| 2001 02 21 | 645 | 0.1+  | 0.1-  | 2007 10 20 | 691 | 0.0  | 0.3- | 2007 11 18 | 704 | 0.5+  | 0.0   |
| 2003 08 23 | 644 | 0.3-  | 0.2+  | 2007 10 20 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.9+  | 0.4+  |
| 2003 08 23 | 644 | 0.1-  | 0.0   | 2007 10 20 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.0   | 0.2+  |
| 2003 08 23 | 644 | 0.4-  | 0.3+  | 2007 10 30 | 691 | 0.2- | 0.2- | 2007 11 18 | 704 | 0.2+  | 0.0   |
| 2003 08 26 | 704 | 1.2-  | 0.2+  | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 18 | 704 | 0.1+  | 0.0   |
| 2003 08 26 | 704 | 0.5-  | 0.4+  | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 19 | A50 | 0.1-  | 0.1+  |
| 2003 08 26 | 704 | 1.0-  | 1.2+  | 2007 11 03 | 699 | 0.3- | 0.2- | 2007 11 19 | A50 | 0.5+  | 0.2+  |
| 2003 09 01 | 704 | 0.7+  | 1.0+  | 2007 11 03 | 699 | 0.1+ | 0.2+ | 2007 11 19 | A50 | 0.5-  | 0.1-  |
| 2003 09 01 | 704 | 0.2-  | 0.6+  | 2007 11 03 | 699 | 0.3+ | 0.1- | 2007 11 19 | A50 | 0.0   | 0.4+  |
| 2003 09 01 | 704 | 0.6+  | 1.4+  | 2007 11 03 | 699 | 0.1- | 0.1+ | 2007 12 03 | 703 | 0.6-  | 0.1-  |
| 2005 03 03 | 691 | 0.2+  | 0.1-  | 2007 11 05 | 704 | 0.9- | 0.5- | 2007 12 03 | 703 | 0.9-  | 0.7-  |
| 2005 03 03 | 691 | 0.2+  | 0.0   | 2007 11 05 | 704 | 0.2+ | 0.4- | 2007 12 03 | 703 | (1.8- | 0.1-) |
| 2005 03 03 | 691 | 0.3+  | 0.0   | 2007 11 05 | 704 | 0.5+ | 0.7+ | 2007 12 03 | 703 | 1.1-  | 0.3+  |
| 2005 03 03 | 703 | 0.5+  | 0.1-  | 2007 11 05 | G96 | 0.2+ | 0.1- | 2007 12 15 | G96 | 0.1+  | 0.0   |
| 2005 03 03 | 703 | 0.1-  | 0.6+  | 2007 11 05 | G96 | 0.2+ | 0.1- | 2007 12 15 | G96 | 0.4+  | 0.1-  |
| 2005 03 03 | 703 | 0.5+  | 0.1-  | 2007 11 05 | G96 | 0.4+ | 0.2- | 2007 12 15 | G96 | 0.0   | 0.2-  |
| 2005 03 03 | 703 | 0.1+  | 0.7+  | 2007 11 05 | G96 | 0.4+ | 0.2- | 2007 12 15 | G96 | 0.1+  | 0.2-  |
| 2005 03 09 | 704 | 0.2+  | 1.1+  | 2007 11 13 | 699 | 0.3+ | 0.6- | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2005 03 09 | 704 | 1.4+  | 1.2+  | 2007 11 13 | 699 | 0.0  | 0.3+ | 2007 12 16 | 691 | 0.1-  | 0.1+  |
| 2005 03 09 | 704 | 0.9+  | 0.9+  | 2007 11 13 | 699 | 0.1+ | 0.1+ | 2007 12 16 | 691 | 0.1+  | 0.2+  |

2007 DEC. 24

M.P.O. 129373

|                             |                                   |          |           |             |             |             |
|-----------------------------|-----------------------------------|----------|-----------|-------------|-------------|-------------|
| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           | MPC         |             |             |
| <i>M</i>                    | 77.15419                          | (2000.0) | <b>P</b>  | <b>Q</b>    |             |             |
| <i>n</i>                    | 0.27401494                        | $\omega$ | 291.21949 | +0.76740832 | +0.63861370 |             |
| <i>a</i>                    | 2.3475772                         | $\Omega$ | 29.18225  | -0.53626962 | +0.68810565 |             |
| <i>e</i>                    | 0.1463635                         | <i>i</i> | 6.72163   | -0.35142476 | +0.34450421 |             |
| <i>P</i>                    | 3.60                              | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> 1  |
| Residuals in seconds of arc |                                   |          |           |             |             |             |
| 2002 04 15                  | 704                               | 0.6-     | 0.8+      | 2003 10 18  | 704         | (1.6+ 0.6+) |
| 2002 04 15                  | 704                               | 0.4+     | 0.9+      | 2003 10 18  | 704         | 0.2-        |
| 2002 04 15                  | 704                               | 0.4+     | 0.7+      | 2003 10 18  | 704         | (1.6- 0.4-) |
| 2003 08 23                  | 704                               | 0.2-     | 0.7+      | 2003 10 18  | 704         | 1.3-        |
| 2003 08 23                  | 704                               | 0.3+     | 0.5+      | 2003 10 27  | 699         | (0.5- 2.7-) |
| 2003 08 23                  | 704                               | 0.1+     | 0.9+      | 2003 10 27  | 699         | 0.0         |
| 2003 08 23                  | 704                               | 0.5-     | 0.8+      | 2003 10 27  | 699         | 0.7+        |
| 2003 08 23                  | 704                               | 0.7-     | 0.0       | 2003 10 27  | 699         | 0.0         |
| 2003 08 26                  | 704                               | 0.2-     | 1.2+      | 2006 05 16  | 644         | 0.3+        |
| 2003 08 26                  | 704                               | 0.3+     | 0.1-      | 2006 05 16  | 644         | 0.5+        |
| 2003 08 26                  | 704                               | 0.2-     | 0.2-      | 2006 05 16  | 644         | 0.6+        |
| 2003 08 26                  | 704                               | 0.1-     | 0.7-      | 2006 05 17  | E12         | 0.4-        |
| 2003 08 26                  | 704                               | 0.2+     | 0.5-      | 2006 05 17  | E12         | 0.3-        |
| 2003 08 31                  | 608                               | 0.9-     | 0.5-      | 2006 05 17  | E12         | 0.9+        |
| 2003 08 31                  | 608                               | 0.7-     | 0.6-      | 2006 05 17  | E12         | 0.4+        |
| 2003 08 31                  | 608                               | 0.8-     | 0.5-      | 2006 05 22  | E12         | 0.8-        |
| 2003 09 01                  | 704                               | 0.7+     | 0.5+      | 2006 05 22  | E12         | 0.0         |
| 2003 09 01                  | 704                               | 0.1-     | 0.8-      | 2006 05 22  | E12         | 0.2+        |
| 2003 09 01                  | 704                               | 0.2-     | 0.7-      | 2006 05 22  | E12         | 0.4+        |
| 2003 09 01                  | 704                               | 0.2+     | 0.2+      | 2006 05 24  | 644         | 0.4+        |
| 2003 09 01                  | 704                               | 0.5+     | 0.1-      | 2006 05 24  | 644         | 0.4+        |
| 2003 09 17                  | 699                               | 0.4+     | 0.4-      | 2006 05 24  | 644         | 0.5+        |
| 2003 09 17                  | 699                               | 0.2-     | 0.1-      | 2006 05 29  | E12         | 0.4+        |
| 2003 09 17                  | 699                               | 0.1-     | 0.6-      | 2006 05 29  | E12         | 0.2-        |
| 2003 09 17                  | 699                               | 0.4+     | 0.3-      | 2006 05 29  | E12         | 0.3-        |
| 2003 09 18                  | 699                               | 1.2+     | 0.1+      | 2006 05 29  | E12         | 0.0         |
| 2003 09 18                  | 699                               | 0.5-     | 0.3+      | 2006 05 30  | E12         | 0.1-        |
| 2003 09 18                  | 699                               | 0.2+     | 0.2+      | 2006 05 30  | E12         | 0.6-        |
| 2003 09 18                  | 699                               | 0.6+     | 0.2-      | 2006 05 30  | E12         | 0.6+        |
| 2003 09 21                  | 608                               | 0.1+     | 0.9-      | 2006 05 30  | E12         | 0.1+        |
| 2003 09 21                  | 608                               | 0.4+     | 0.5-      | 2007 08 10  | 691         | 0.4-        |
| 2003 09 21                  | 608                               | 0.3-     | 0.7-      | 2007 08 10  | 691         | 0.4-        |
| 2003 09 24                  | 644                               | 0.2-     | 0.5+      | 2007 08 10  | 691         | 0.4-        |
| 2003 09 24                  | 644                               | 0.1-     | 0.7+      | 2007 09 27  | G96         | 0.5-        |
| 2003 09 24                  | 644                               | 0.1+     | 0.4+      | 2007 09 27  | G96         | 0.6-        |
| 2003 10 16                  | 699                               | 1.0+     | 0.3+      | 2007 09 27  | G96         | 0.2+        |
| 2003 10 16                  | 699                               | 0.5-     | 0.5+      | 2007 09 27  | G96         | 0.4-        |
| 2003 10 16                  | 699                               | 0.1+     | 0.1+      | 2007 10 19  | 703         | 0.8+        |
| 2003 10 16                  | 699                               | 0.3-     | 1.5+      | 2007 10 19  | 703         | 0.7+        |

**(172448)\* 2003 QX<sub>61</sub> = 1978 WF<sub>14</sub> = 1998 HN<sub>2</sub>**

Discovered 2003 Aug. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 50317)

|                                         |            |          |           |             |             |          |      |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |      |            |     |      |      |
| <i>M</i>                                | 43.85297   | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |      |            |     |      |      |
| <i>n</i>                                | 0.27393256 | $\omega$ | 271.40997 | +0.93296346 | −0.35580825 |          |      |            |     |      |      |
| <i>a</i>                                | 2.3480479  | $\Omega$ | 109.43541 | +0.34898992 | +0.85687355 |          |      |            |     |      |      |
| <i>e</i>                                | 0.2345458  | <i>i</i> | 3.31841   | +0.08823386 | +0.37305257 |          |      |            |     |      |      |
| <i>P</i>                                | 3.60       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1    |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |             |          |      |            |     |      |      |
| 1978 11 29                              | 675        | 0.0      | 0.5+      | 2003 10 05  | 691         | 0.0      | 0.0  | 2003 10 27 | 608 | 0.5− | 0.3+ |
| 1978 11 30                              | 675        | (4.6−    | 0.6+)     | 2003 10 05  | 691         | 0.2+     | 0.0  | 2003 10 27 | 608 | 0.4− | 0.1+ |
| 1996 12 17                              | 566        | 1.1−     | 0.7−      | 2003 10 15  | 683         | 0.2+     | 0.5− | 2003 10 27 | 608 | 0.5− | 0.2+ |
| 1996 12 17                              | 566        | 0.3+     | 0.7−      | 2003 10 15  | 683         | 0.1−     | 0.0  | 2003 10 29 | 704 | 0.0  | 0.3+ |
| 1996 12 17                              | 566        | 2.0+     | 0.6−      | 2003 10 15  | 683         | 0.3+     | 0.2+ | 2003 10 29 | 699 | 0.4+ | 0.4− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 31 | 608 | 0.4− | 0.6− | 2006 05 20 | 691 | 0.0  | 0.4+ | 2007 11 15 | 704 | 0.6− | 0.7+ |
| 2003 08 31 | 608 | 0.4− | 1.1− | 2006 05 20 | 691 | 0.2− | 0.2+ | 2007 11 15 | 704 | 0.4+ | 0.6+ |
| 2003 09 14 | 644 | 0.1− | 0.4+ | 2006 05 24 | 691 | 0.2+ | 0.2+ | 2007 12 10 | 704 | 1.7+ | 1.7+ |
| 2003 09 14 | 644 | 0.1+ | 0.3+ | 2006 05 24 | 691 | 0.1+ | 0.1+ | 2007 12 10 | 704 | 1.2+ | 1.0+ |
| 2003 09 14 | 644 | 0.1− | 0.8+ | 2006 05 24 | 691 | 0.2+ | 0.6+ | 2007 12 10 | 704 | 0.1− | 2.2+ |
| 2003 09 28 | 704 | 1.0− | 0.4+ | 2007 11 01 | 691 | 0.1− | 0.0  | 2007 12 10 | 704 | 0.5+ | 0.3+ |
| 2003 09 28 | 704 | 0.3+ | 0.7+ | 2007 11 01 | 691 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.5+ | 0.4− |
| 2003 09 28 | 704 | 0.2− | 0.2− | 2007 11 01 | 691 | 1.0− | 0.4+ | 2007 12 15 | G96 | 1.0+ | 0.3− |
| 2003 09 28 | 704 | 0.7+ | 0.2+ | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.9+ | 0.4− |
| 2003 09 30 | 735 | 0.4− | 0.8+ | 2007 11 05 | 691 | 0.1− | 0.3− | 2007 12 15 | G96 | 1.0+ | 0.4− |
| 2003 09 30 | 735 | 0.4+ | 0.8+ | 2007 11 05 | 691 | 0.2− | 0.1− |            |     |      |      |
| 2003 09 30 | 735 | 0.7+ | 0.3+ | 2007 11 05 | 691 | 0.1− | 0.3+ |            |     |      |      |

**(172450)\* 2003 QR<sub>78</sub> = 1978 WG<sub>19</sub> = 1985 SD<sub>5</sub>**

Discovered 2003 Aug. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 53219), A. Doppler (*MPO* 115776)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| $M$ | 61.04878   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27491965 | $\omega$ | 108.03061 | +0.99710259 | −0.03596221 |
| $a$ | 2.3424241  | $\Omega$ | 254.07183 | +0.00787507 | +0.92525737 |
| $e$ | 0.2508659  | $i$      | 3.99717   | +0.07565986 | +0.37763147 |
| $P$ | 3.59       | $H$      | 15.6      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1978 11 30 | 675 | 0.2+  | 0.9−  | 2003 10 30 | 704 | 0.0   | 0.2−  | 2003 11 26 | 699 | 0.3+  | 0.6+  |
| 1978 12 01 | 675 | 0.5+  | 1.0−  | 2003 10 30 | 704 | 0.0   | 0.2−  | 2003 11 26 | 699 | 0.2−  | 0.3−  |
| 1985 09 21 | 095 | 0.4−  | 0.2−  | 2003 10 30 | 704 | 0.1−  | 0.1−  | 2003 12 01 | 704 | (1.8+ | 0.4+) |
| 1998 03 25 | 704 | 0.1+  | 0.9−  | 2003 10 30 | 704 | 0.6+  | 0.5+  | 2003 12 01 | 704 | 1.2+  | 0.2+  |
| 1998 03 25 | 704 | 0.8−  | 0.1−  | 2003 10 30 | 704 | 0.1−  | 0.1−  | 2003 12 01 | 704 | (2.6+ | 0.1+) |
| 1998 03 25 | 704 | 1.2+  | 0.7−  | 2003 11 02 | 704 | 0.2+  | 0.2+  | 2003 12 01 | 704 | 1.3+  | 0.0   |
| 1998 03 25 | 704 | 0.5−  | 1.1−  | 2003 11 02 | 704 | 0.0   | 0.0   | 2003 12 01 | 704 | 1.3+  | 0.6−  |
| 1998 03 25 | 704 | 1.5+  | 0.3+  | 2003 11 02 | 704 | 0.0   | 0.1+  | 2003 12 13 | 703 | 1.1−  | 0.2+  |
| 1998 03 25 | 704 | 1.0−  | 1.1+  | 2003 11 02 | 704 | 0.0   | 0.1+  | 2003 12 13 | 703 | 1.0−  | 0.4−  |
| 1998 03 25 | 704 | 0.5−  | 0.6−  | 2003 11 02 | 704 | 0.2+  | 0.1+  | 2003 12 13 | 703 | 0.9−  | 1.3−  |
| 1998 03 25 | 704 | (6.1− | 0.0 ) | 2003 11 03 | 704 | 0.3+  | 0.1+  | 2003 12 13 | 703 | 0.8−  | 0.2+  |
| 1998 03 25 | 704 | (4.3− | 1.0+) | 2003 11 03 | 704 | 0.7+  | 0.3+  | 2003 12 17 | 699 | 0.9−  | 0.4+  |
| 2003 08 05 | 704 | 0.2+  | 0.1−  | 2003 11 03 | 704 | 0.1+  | 0.1−  | 2003 12 17 | 699 | 0.1−  | 0.5−  |
| 2003 08 05 | 704 | 0.9+  | 0.2+  | 2003 11 03 | 704 | 0.6+  | 0.4+  | 2003 12 17 | 699 | 0.3−  | 0.6−  |
| 2003 08 05 | 704 | 0.5+  | 0.2−  | 2003 11 03 | 704 | 0.2−  | 0.1+  | 2003 12 17 | 699 | 0.1−  | 0.1+  |
| 2003 08 05 | 704 | 0.3+  | 0.3−  | 2003 11 03 | 704 | 0.3+  | 0.1−  | 2003 12 20 | 704 | 0.3+  | 0.7+  |
| 2003 08 24 | 704 | 0.5−  | 0.0   | 2003 11 03 | 704 | 0.2−  | 0.2−  | 2003 12 20 | 704 | 0.1+  | 1.5+  |
| 2003 08 24 | 704 | 1.0+  | 0.0   | 2003 11 03 | 704 | 0.3+  | 0.3+  | 2003 12 20 | 704 | 0.4+  | 0.6+  |
| 2003 08 24 | 704 | 1.2−  | 1.2+  | 2003 11 03 | 704 | 0.3+  | 0.1+  | 2003 12 20 | 704 | 0.4+  | 0.0   |
| 2003 08 24 | 704 | (0.4+ | 2.4+) | 2003 11 03 | 704 | (2.0+ | 1.2−) | 2003 12 22 | 704 | 0.8−  | 0.2+  |
| 2003 08 28 | 704 | 0.5−  | 0.3−  | 2003 11 04 | 704 | 0.1+  | 0.1+  | 2003 12 22 | 704 | 0.6−  | 0.2+  |
| 2003 08 28 | 704 | 1.1−  | 0.3−  | 2003 11 04 | 704 | 0.3−  | 0.4+  | 2003 12 22 | 704 | 0.6−  | 0.2+  |
| 2003 08 28 | 704 | 0.9−  | 0.5−  | 2003 11 04 | 704 | 0.2+  | 0.1−  | 2003 12 22 | 704 | 0.9−  | 0.2+  |
| 2003 08 28 | 704 | 0.6−  | 0.4−  | 2003 11 04 | 704 | 0.2+  | 0.3+  | 2003 12 22 | 704 | 0.4−  | 0.1+  |
| 2003 08 28 | 704 | 0.6−  | 0.2−  | 2003 11 04 | 704 | 0.9+  | 0.3−  | 2005 03 03 | 703 | 0.4+  | 0.1−  |
| 2003 09 03 | 608 | 0.0   | 1.0−  | 2003 11 04 | 704 | 0.5−  | 1.0+  | 2005 03 03 | 703 | 0.1+  | 0.4−  |
| 2003 09 03 | 608 | 0.0   | 0.8−  | 2003 11 04 | 704 | 1.2+  | 0.1−  | 2005 03 03 | 703 | 0.7−  | 0.6−  |
| 2003 09 03 | 608 | 0.1−  | 1.1−  | 2003 11 04 | 704 | 0.7−  | 0.6+  | 2005 03 03 | 703 | 1.2−  | 0.5+  |
| 2003 10 15 | 699 | 0.4−  | 0.1−  | 2003 11 04 | 704 | 0.6+  | 0.1−  | 2006 06 04 | 704 | 0.3−  | 0.3+  |
| 2003 10 15 | 699 | 0.1+  | 0.1−  | 2003 11 18 | 644 | 0.1+  | 0.3+  | 2006 06 04 | 704 | 0.3+  | 0.4−  |
| 2003 10 15 | 699 | 0.2+  | 0.3−  | 2003 11 18 | 699 | 0.6−  | 0.5−  | 2006 06 04 | 704 | 0.4−  | 0.1−  |
| 2003 10 15 | 699 | 0.9−  | 0.3+  | 2003 11 18 | 644 | 0.2+  | 0.2+  | 2006 06 04 | 704 | 0.5−  | 0.5+  |
| 2003 10 22 | 704 | 0.5−  | 0.2+  | 2003 11 18 | 699 | 0.1−  | 0.0   | 2006 06 30 | D35 | 0.8+  | 0.2−  |
| 2003 10 22 | 704 | 0.1−  | 0.0   | 2003 11 18 | 644 | 0.5+  | 0.3+  | 2006 06 30 | D35 | 0.6−  | 0.5+  |
| 2003 10 22 | 704 | 0.1−  | 0.1+  | 2003 11 18 | 699 | 0.4−  | 0.2−  | 2006 06 30 | D35 | 0.8+  | 0.1+  |
| 2003 10 22 | 704 | 0.1−  | 0.0   | 2003 11 18 | 699 | 0.4−  | 0.2−  | 2007 10 07 | G96 | 0.0   | 0.1+  |
| 2003 10 22 | 704 | 0.1−  | 0.1+  | 2003 11 20 | 704 | 0.0   | 0.7+  | 2007 10 07 | G96 | 0.2+  | 0.0   |
| 2003 10 23 | 608 | 0.6+  | 0.2−  | 2003 11 20 | 704 | 0.2+  | 0.0   | 2007 10 07 | G96 | 0.1−  | 0.2−  |
| 2003 10 23 | 608 | 0.3+  | 0.3−  | 2003 11 20 | 704 | 0.3−  | 0.6+  | 2007 10 07 | G96 | 0.1−  | 0.1−  |
| 2003 10 23 | 608 | 0.4+  | 0.0   | 2003 11 20 | 704 | 0.2+  | 0.5+  | 2007 11 20 | A50 | 0.2+  | 0.6+  |
| 2003 10 24 | 608 | 0.0   | 0.6−  | 2003 11 20 | 704 | 0.2+  | 0.3+  | 2007 11 20 | A50 | 0.8−  | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 608 | 0.3− | 0.5− | 2003 11 24 | 704 | 0.5+ | 0.1+ | 2007 11 20 | A50 | 0.4− | 0.5+ |
| 2003 10 24 | 608 | 0.0  | 0.5− | 2003 11 24 | 704 | 0.8+ | 0.2+ | 2007 11 20 | A50 | 0.4− | 0.3− |
| 2003 10 25 | 704 | 0.1− | 0.5− | 2003 11 24 | 704 | 0.6+ | 0.1+ | 2007 12 04 | 699 | 0.7+ | 0.6− |
| 2003 10 25 | 704 | 0.3− | 0.0  | 2003 11 24 | 704 | 0.5+ | 0.1− | 2007 12 04 | 699 | 0.9+ | 0.5− |
| 2003 10 25 | 704 | 0.3− | 0.0  | 2003 11 24 | 704 | 0.2+ | 0.2− | 2007 12 04 | 699 | 0.0  | 0.5+ |
| 2003 10 25 | 704 | 0.3− | 0.2− | 2003 11 26 | 699 | 0.5− | 0.1+ | 2007 12 04 | 699 | 0.0  | 0.1+ |
| 2003 10 25 | 704 | 0.4− | 0.1− | 2003 11 26 | 699 | 0.2− | 0.2− |            |     |      |      |

**(172451)\* 2003 QV<sub>79</sub>**

Discovered 2003 Aug. 24 by J. Broughton at Reedy Creek.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 152.06476  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.30262717 | $\omega$ | 212.71597 | −0.34889294 | +0.93226034 |
| $a$ | 2.1971722  | $\Omega$ | 37.11672  | −0.82211757 | −0.25542534 |
| $e$ | 0.2736742  | $i$      | 9.12805   | −0.44988489 | −0.25621974 |
| $P$ | 3.26       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 03 | 704 | 0.4− | 0.3− | 2006 04 02 | G96 | 0.2+  | 0.1+  | 2006 05 17 | E12 | 0.0  | 0.3+ |
| 2000 10 03 | 704 | 0.6− | 0.1− | 2006 04 02 | G96 | 0.1−  | 0.1+  | 2006 05 22 | E12 | 0.7+ | 0.2− |
| 2000 10 03 | 704 | 0.7+ | 0.1− | 2006 04 02 | G96 | 0.1+  | 0.0   | 2006 05 22 | E12 | 0.3− | 0.3− |
| 2000 10 03 | 704 | 0.6− | 0.4− | 2006 04 02 | G96 | 0.1−  | 0.1+  | 2006 05 22 | E12 | 0.3+ | 0.1+ |
| 2003 07 01 | 608 | 0.3− | 0.4+ | 2006 04 07 | 704 | 0.4+  | 0.8+  | 2006 05 22 | E12 | 0.2− | 0.1+ |
| 2003 07 01 | 608 | 0.4+ | 0.1+ | 2006 04 07 | 704 | 0.5−  | 0.1−  | 2006 05 29 | E12 | 1.0− | 0.2+ |
| 2003 07 01 | 608 | 0.0  | 0.1+ | 2006 04 07 | 704 | 0.4−  | 0.2+  | 2006 05 29 | E12 | 1.4+ | 0.3+ |
| 2003 07 07 | 644 | 0.3− | 0.3+ | 2006 04 07 | 704 | 0.1−  | 0.1+  | 2006 05 29 | E12 | 0.0  | 0.1− |
| 2003 07 07 | 644 | 0.6− | 0.5+ | 2006 04 07 | E12 | 0.3+  | 0.2+  | 2006 05 30 | E12 | 0.2− | 0.0  |
| 2003 07 07 | 644 | 0.3− | 0.0  | 2006 04 07 | E12 | 0.1+  | 0.7+  | 2006 05 30 | E12 | 0.2− | 0.0  |
| 2003 07 07 | 644 | 0.4− | 0.5+ | 2006 04 07 | E12 | 0.1−  | 0.6+  | 2006 05 30 | E12 | 0.2− | 0.1+ |
| 2003 07 07 | 644 | 0.3− | 0.2+ | 2006 04 07 | E12 | 0.2−  | 0.1+  | 2006 05 30 | E12 | 0.2− | 0.1+ |
| 2003 07 07 | 644 | 0.7− | 0.2+ | 2006 04 21 | 704 | 0.0   | 0.5−  | 2006 05 31 | 428 | 0.6− | 0.0  |
| 2003 08 24 | 428 | 1.1+ | 0.5− | 2006 04 21 | 704 | 1.2−  | 1.2−  | 2006 05 31 | 428 | 0.8− | 0.1+ |
| 2003 08 24 | 428 | 1.2+ | 0.9+ | 2006 04 21 | 704 | 0.1−  | 0.1−  | 2006 06 14 | E12 | 0.3− | 0.4+ |
| 2003 08 26 | 428 | 0.0  | 1.0+ | 2006 04 24 | 704 | 0.1+  | 0.4−  | 2006 06 14 | E12 | 0.2+ | 0.7+ |
| 2003 08 26 | 428 | 0.8− | 0.5− | 2006 04 24 | 704 | 0.1−  | 0.7+  | 2006 06 14 | E12 | 0.8+ | 0.3+ |
| 2003 08 27 | 428 | 0.7+ | 0.1+ | 2006 04 24 | 704 | 0.1−  | 0.1−  | 2006 06 14 | E12 | 0.2− | 0.3− |
| 2003 08 27 | 428 | 0.1− | 0.5+ | 2006 04 24 | 704 | 0.1−  | 0.1+  | 2006 07 30 | E12 | 0.7+ | 0.1+ |
| 2003 09 15 | 428 | 0.2+ | 0.5+ | 2006 04 26 | 704 | 0.9−  | 0.3−  | 2006 07 30 | E12 | 0.2− | 0.6+ |
| 2003 09 15 | 428 | 0.8− | 0.8− | 2006 04 26 | 704 | 0.2−  | 0.3−  | 2006 07 30 | E12 | 0.3− | 0.4− |
| 2006 02 24 | 644 | 0.5+ | 0.2+ | 2006 04 26 | 704 | 0.2+  | 0.4+  | 2006 07 30 | E12 | 0.0  | 0.3− |
| 2006 02 24 | 644 | 0.6+ | 0.1+ | 2006 04 26 | 704 | 0.6+  | 0.6−  | 2007 10 14 | G96 | 0.3+ | 0.2− |
| 2006 02 24 | 644 | 0.6+ | 0.1+ | 2006 04 26 | 704 | 0.3−  | 0.1+  | 2007 10 14 | G96 | 0.1− | 0.2− |
| 2006 02 25 | 703 | 0.7− | 1.1+ | 2006 05 02 | 704 | 0.3+  | 0.3−  | 2007 10 14 | G96 | 0.3+ | 0.5− |
| 2006 02 25 | 703 | 0.5− | 0.3− | 2006 05 02 | 704 | 0.9+  | 0.5+  | 2007 10 14 | G96 | 0.5+ | 0.2− |
| 2006 02 25 | 703 | 0.1+ | 0.7− | 2006 05 02 | 704 | (1.8+ | 0.7+) | 2007 11 02 | 691 | 0.2− | 0.3+ |
| 2006 02 25 | 703 | 0.8+ | 0.4+ | 2006 05 02 | 704 | 0.2+  | 0.2−  | 2007 11 02 | 691 | 0.1+ | 0.4+ |
| 2006 02 28 | 704 | 0.7+ | 0.3− | 2006 05 10 | 644 | 0.2+  | 0.3+  | 2007 11 02 | 691 | 0.3− | 0.0  |
| 2006 02 28 | 704 | 0.0  | 0.9+ | 2006 05 10 | 644 | 0.1+  | 0.2+  | 2007 12 16 | 691 | 0.2− | 0.4+ |
| 2006 02 28 | 704 | 0.5+ | 1.1+ | 2006 05 10 | 644 | 0.1+  | 0.1+  | 2007 12 16 | 691 | 0.2− | 0.6+ |
| 2006 02 28 | 704 | 0.8+ | 0.2+ | 2006 05 17 | E12 | 0.0   | 0.1−  | 2007 12 16 | 691 | 0.2− | 0.5+ |
| 2006 02 28 | 704 | 1.4+ | 0.7+ | 2006 05 17 | E12 | 0.2+  | 0.2−  |            |     |      |      |

2007 DEC. 24

M.P.O. 129375

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 03 11 | 644 | 0.6+  | 0.4+  | 2006 02 27 | G96 | 0.2+  | 0.6+  | 2006 05 26 | G96 | 0.2+  | 0.1+  |
| 2002 03 11 | 644 | 0.4+  | 1.1+  | 2006 02 27 | G96 | 0.2+  | 0.3+  | 2006 06 17 | 691 | 0.2+  | 0.1-  |
| 2002 03 11 | 644 | 0.6+  | 0.7+  | 2006 02 27 | G96 | 0.4-  | 0.4+  | 2006 06 17 | 691 | 0.1-  | 0.1+  |
| 2003 08 27 | 644 | 0.3-  | 0.5+  | 2006 02 27 | G96 | 0.1+  | 1.0+  | 2006 06 17 | 691 | 0.2+  | 0.1-  |
| 2003 08 27 | 644 | 0.2-  | 0.5+  | 2006 04 20 | G96 | 0.0   | 0.5+  | 2007 11 01 | 691 | 0.1+  | 0.1+  |
| 2003 08 27 | 644 | 0.1+  | 0.6+  | 2006 04 20 | G96 | 0.1-  | 0.2+  | 2007 11 01 | 691 | 0.3-  | 0.1-  |
| 2003 08 31 | 704 | 0.1+  | 0.9+  | 2006 04 20 | G96 | 0.0   | 0.3+  | 2007 11 01 | 691 | 0.2-  | 0.1-  |
| 2003 08 31 | 704 | 0.1-  | 0.5-  | 2006 04 20 | G96 | 0.0   | 0.2+  | 2007 11 05 | 691 | 0.0   | 0.0   |
| 2003 08 31 | 704 | 1.3-  | 0.5+  | 2006 05 07 | G96 | 0.2-  | 0.6+  | 2007 11 05 | 691 | 0.3-  | 0.1-  |
| 2003 08 31 | 704 | 0.0   | 0.5+  | 2006 05 07 | G96 | 0.2-  | 0.4+  | 2007 11 05 | 691 | 0.0   | 0.0   |
| 2003 08 31 | 704 | 0.0   | 0.6+  | 2006 05 07 | G96 | 0.2-  | 0.3+  | 2007 11 13 | 691 | 0.1-  | 0.1+  |
| 2003 09 14 | 608 | 0.1-  | 0.3-  | 2006 05 07 | G96 | 0.3-  | 0.2+  | 2007 11 13 | 691 | 0.1+  | 0.1-  |
| 2003 09 14 | 608 | 0.3-  | 0.6-  | 2006 05 07 | G96 | 0.1-  | 0.0   | 2007 11 13 | 691 | 0.1+  | 0.2+  |
| 2003 09 14 | 608 | 0.1-  | 0.2-  | 2006 05 07 | G96 | 0.1-  | 0.4+  | 2007 11 15 | 704 | 1.0+  | 1.1+  |
| 2003 09 16 | 704 | 0.9-  | 0.6+  | 2006 05 07 | G96 | 0.1-  | 0.2+  | 2007 11 15 | 704 | 0.6-  | 1.0+  |
| 2003 09 16 | 704 | 0.7-  | 0.2-  | 2006 05 07 | G96 | 0.2-  | 0.0   | 2007 11 15 | 704 | (0.4+ | 2.0+) |
| 2003 09 16 | 704 | 0.3-  | 0.7+  | 2006 05 20 | 428 | 0.1-  | 0.6+  | 2007 12 15 | 704 | 0.3+  | 0.4+  |
| 2003 09 16 | 704 | 0.5-  | 0.9+  | 2006 05 20 | 428 | (1.1+ | 1.6+) | 2007 12 15 | 704 | 0.6+  | 0.7+  |
| 2003 09 24 | 608 | 1.4+  | 0.2+  | 2006 05 21 | 428 | 1.5+  | 0.1-  | 2007 12 15 | 704 | 0.1-  | 2.1+  |
| 2003 09 24 | 608 | (2.0+ | 0.2-) | 2006 05 21 | E12 | 0.3-  | 0.2+  |            |     |       |       |
| 2003 09 24 | 608 | 1.2+  | 0.0   | 2006 05 21 | E12 | 0.1+  | 0.2+  |            |     |       |       |

(172453)\* 2003 QD<sub>93</sub> = 1995 FD<sub>7</sub>

Discovered 2003 Aug. 27 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 56767)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 87.48892   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.27918777 | <i>ω</i> | 267.41782 | +0.66670866 | +0.74079190 |
| <i>a</i> | 2.3184894  | <i>Ω</i> | 44.76484  | -0.62915057 | +0.61837285 |
| <i>e</i> | 0.1277781  | <i>i</i> | 6.68840   | -0.39958619 | +0.26237829 |
| <i>P</i> | 3.53       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 24 | 691 | 0.3+ | 0.2- | 2006 05 23 | G96 | 0.3- | 0.2+ | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 1995 03 24 | 691 | 0.2- | 0.1+ | 2006 05 23 | G96 | 0.2+ | 0.3+ | 2007 11 09 | 691 | 0.3- | 0.1+ |
| 1995 03 24 | 691 | 0.1- | 0.1- | 2006 05 23 | G96 | 0.0  | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.1- |
| 1995 03 31 | 691 | 0.2+ | 0.3- | 2006 05 24 | 644 | 0.6+ | 0.4+ | 2007 11 13 | 691 | 0.2+ | 0.8+ |
| 1995 03 31 | 691 | 0.3- | 0.1- | 2006 05 24 | 644 | 0.3+ | 0.5+ | 2007 11 13 | 691 | 0.2- | 0.0  |
| 1995 03 31 | 691 | 0.2- | 0.3+ | 2006 05 24 | 644 | 0.4+ | 0.7+ | 2007 11 15 | 704 | 0.2+ | 0.1+ |
| 2002 03 05 | 645 | 0.1+ | 0.2+ | 2006 05 31 | G96 | 0.3- | 0.5+ | 2007 11 15 | 704 | 0.5+ | 0.1+ |
| 2002 03 05 | 645 | 0.2+ | 0.2+ | 2006 05 31 | G96 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.7+ | 0.7- |
| 2003 08 27 | 644 | 0.4- | 0.4+ | 2006 05 31 | G96 | 0.1- | 0.4+ | 2007 11 15 | 704 | 0.1- | 0.6+ |
| 2003 08 27 | 644 | 0.4- | 0.5+ | 2006 05 31 | G96 | 0.3- | 0.4+ | 2007 11 15 | 704 | 0.6+ | 0.5+ |
| 2003 08 27 | 644 | 0.2- | 0.6+ | 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 11 17 | 691 | 0.6- | 0.7- |
| 2003 08 31 | 704 | 0.3- | 1.0+ | 2007 09 14 | G96 | 0.4+ | 0.3- | 2007 11 17 | 691 | 0.1+ | 0.0  |
| 2003 08 31 | 704 | 1.2- | 0.8+ | 2007 09 14 | G96 | 0.5+ | 0.3- | 2007 11 17 | 691 | 0.2+ | 0.2+ |
| 2003 08 31 | 704 | 0.2- | 0.2- | 2007 09 14 | G96 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.2- | 0.5+ |
| 2003 08 31 | 704 | 0.7- | 1.3+ | 2007 10 16 | G96 | 0.5+ | 0.0  | 2007 12 13 | 704 | 0.1+ | 0.3+ |
| 2003 09 27 | 699 | 1.2+ | 1.4+ | 2007 10 16 | G96 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.0  | 0.6+ |
| 2003 09 27 | 699 | 0.8+ | 0.6+ | 2007 10 16 | G96 | 0.3+ | 0.1- | 2007 12 15 | 704 | 0.5+ | 1.0+ |
| 2003 09 27 | 699 | 0.8- | 1.0+ | 2007 10 16 | G96 | 0.6+ | 0.1- | 2007 12 15 | 704 | 0.3+ | 0.0  |
| 2003 09 27 | 699 | 0.6- | 0.8- | 2007 11 05 | 691 | 0.3- | 0.2+ | 2007 12 15 | 704 | 0.1- | 0.0  |
| 2006 05 21 | E12 | 0.2+ | 0.0  | 2007 11 05 | 691 | 0.2- | 0.1+ | 2007 12 15 | 704 | 1.0- | 0.8+ |
| 2006 05 21 | E12 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.4- | 0.1+ |            |     |      |      |
| 2006 05 21 | E12 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.1+ | 0.0  |            |     |      |      |

(172454)\* 2003 QR<sub>101</sub>

Discovered 2003 Aug. 29 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 39.74648   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.28809229 | <i>ω</i> | 306.26125 | +0.82308770 | -0.55373992 |
| <i>a</i> | 2.2704658  | <i>Ω</i> | 87.68842  | +0.55309463 | +0.73121279 |
| <i>e</i> | 0.0766170  | <i>i</i> | 7.24965   | +0.12889132 | +0.39837162 |
| <i>P</i> | 3.42       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 30 | 704 | 0.1+  | 0.2-  | 2003 09 17 | 608 | 1.4+  | 0.5-  | 2005 03 11 | 699 | 0.4-  | 0.1-  |
| 2000 12 30 | 704 | 0.5-  | 0.5+  | 2003 09 19 | 699 | 0.2-  | 0.3+  | 2005 03 11 | 699 | 0.2+  | 0.7+  |
| 2000 12 30 | 704 | 0.4+  | 0.3+  | 2003 09 19 | 699 | 0.1+  | 0.1+  | 2005 03 11 | 699 | 1.4+  | 1.0+  |
| 2000 12 30 | 704 | 0.6+  | 0.4+  | 2003 09 19 | 699 | 0.2-  | 0.1+  | 2005 03 11 | 699 | 0.4-  | 0.5+  |
| 2000 12 30 | 704 | 0.3+  | 0.3-  | 2003 09 19 | 699 | 0.1-  | 0.8+  | 2005 03 16 | 703 | 0.4-  | 0.2+  |
| 2002 04 16 | 704 | 1.3+  | 0.5+  | 2003 09 22 | 608 | 0.4-  | 0.5-  | 2005 03 16 | 703 | 0.3-  | 0.2+  |
| 2002 04 16 | 704 | (2.2+ | 1.0+) | 2003 09 22 | 608 | 0.6-  | 0.5-  | 2005 03 16 | 703 | 0.5-  | 0.6+  |
| 2002 04 16 | 704 | (1.9+ | 2.7+) | 2003 09 22 | 608 | 0.1-  | 0.2-  | 2005 03 16 | 703 | 0.8-  | 0.8+  |
| 2002 05 07 | 644 | 0.7+  | 0.4+  | 2003 09 24 | 644 | 0.1-  | 0.1+  | 2005 04 02 | 703 | 0.9-  | 0.5-  |
| 2002 05 07 | 644 | 1.0+  | 0.4+  | 2003 09 24 | 644 | 0.1-  | 0.2+  | 2005 04 02 | 703 | (0.7- | 1.8+) |
| 2002 05 07 | 644 | 0.8+  | 0.7+  | 2003 09 24 | 644 | 0.1+  | 0.2+  | 2005 04 02 | 703 | 0.4-  | 0.1-  |
| 2003 08 22 | 644 | 0.3-  | 0.1-  | 2003 09 28 | 608 | 0.7+  | 0.3-  | 2005 04 02 | 703 | 0.1+  | 0.4-  |
| 2003 08 22 | 644 | 0.0   | 0.5+  | 2003 09 28 | 608 | 0.3+  | 0.1-  | 2006 06 23 | 644 | 0.1+  | 0.5+  |
| 2003 08 22 | 644 | 0.2+  | 0.4+  | 2003 09 28 | 608 | 0.2+  | 0.1+  | 2006 06 23 | 644 | 0.1+  | 0.8+  |
| 2003 08 29 | 608 | 0.7-  | 0.0   | 2003 10 03 | 608 | 0.3-  | 0.3+  | 2006 06 23 | 644 | 0.0   | 0.7+  |
| 2003 08 29 | 608 | 0.1-  | 0.3+  | 2003 10 03 | 608 | 0.3-  | 0.0   | 2007 12 06 | 704 | 0.6-  | 0.1+  |
| 2003 08 29 | 608 | 0.5-  | 0.0   | 2003 10 03 | 608 | 0.6-  | 0.1+  | 2007 12 06 | 704 | 0.3-  | 0.4+  |
| 2003 09 01 | 704 | 0.7+  | 0.3-  | 2003 10 16 | 699 | 0.8+  | 0.5+  | 2007 12 06 | 704 | 0.0   | 0.1-  |
| 2003 09 01 | 704 | 0.2-  | 0.8-  | 2003 10 16 | 699 | 0.3+  | 0.8+  | 2007 12 06 | 704 | 0.4-  | 0.8-  |
| 2003 09 01 | 704 | 0.8-  | 0.1-  | 2003 10 16 | 699 | 0.4+  | 0.4+  | 2007 12 06 | 704 | (1.8- | 0.5+) |
| 2003 09 01 | 704 | 0.3-  | 0.3-  | 2003 10 16 | 699 | 0.6-  | 0.1+  | 2007 12 10 | 704 | 0.6+  | 0.2+  |
| 2003 09 01 | 704 | 0.2-  | 0.1+  | 2005 03 02 | 703 | 0.5-  | 0.6+  | 2007 12 10 | 704 | 0.5+  | 0.5+  |
| 2003 09 17 | 704 | 0.9-  | 0.2-  | 2005 03 02 | 703 | 0.7+  | 0.9+  | 2007 12 10 | 704 | 0.5+  | 0.4+  |
| 2003 09 17 | 704 | 0.8-  | 1.0+  | 2005 03 02 | 703 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 0.2-  | 0.5+  |
| 2003 09 17 | 704 | 0.8-  | 0.1-  | 2005 03 02 | 703 | 0.4-  | 0.6-  | 2007 12 10 | 704 | 1.3+  | 0.0   |
| 2003 09 17 | 704 | 1.2-  | 0.0   | 2005 03 11 | 703 | (0.3+ | 1.6+) | 2007 12 14 | 704 | 0.7+  | 0.7+  |
| 2003 09 17 | 704 | 0.9-  | 1.3+  | 2005 03 11 | 703 | 0.3+  | 0.3+  | 2007 12 14 | 704 | 0.0   | 0.1+  |
| 2003 09 17 | 608 | 0.6+  | 0.5+  | 2005 03 11 | 703 | 0.6-  | 0.8+  | 2007 12 14 | 704 | 0.2-  | 0.0   |
| 2003 09 17 | 608 | 1.2+  | 0.6+  | 2005 03 11 | 703 | 0.3+  | 1.1+  | 2007 12 14 | 704 | 0.5+  | 0.2+  |

(172455)\* 2003 QT<sub>107</sub>

Discovered 2003 Aug. 30 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 97.36509   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.28430036 | <i>ω</i> | 39.72362  | +0.63343087 | +0.77050346 |
| <i>a</i> | 2.2906098  | <i>Ω</i> | 269.70077 | -0.72684992 | +0.56083780 |
| <i>e</i> | 0.1990368  | <i>i</i> | 4.09115   | -0.26543272 | +0.30296102 |
| <i>P</i> | 3.47       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 30 | 704 | 0.5+ | 0.1+ | 2003 09 19 | 704 | 0.7+  | 0.3-  | 2006 05 21 | E12 | 0.2- | 0.3+ |
| 2003 07 30 | 704 | 0.8+ | 0.1+ | 2003 09 20 | 608 | 0.4+  | 0.1-  | 2006 05 21 | E12 | 0.4+ | 0.7+ |
| 2003 07 30 | 704 | 0.0  | 0.4+ | 2003 09 20 | 608 | 0.4-  | 0.2-  | 2006 05 21 | E12 | 0.3- | 0.5+ |
| 2003 07 30 | 704 | 1.4+ | 0.9- | 2003 09 20 | 608 | 0.0   | 0.3-  | 2006 05 21 | E12 | 0.1- | 0.0  |
| 2003 07 30 | 704 | 0.6+ | 0.5+ | 2003 09 25 | 608 | 1.4-  | 0.7-  | 2006 05 24 | 644 | 0.2+ | 0.2+ |
| 2003 08 24 | 704 | 0.4- | 0.1+ | 2003 09 25 | 608 | 0.6+  | 1.1-  | 2006 05 24 | 644 | 0.2+ | 0.4+ |
| 2003 08 24 | 704 | 0.0  | 0.5- | 2003 09 25 | 608 | 0.1+  | 0.6-  | 2006 05 24 | 644 | 0.1+ | 0.3+ |
| 2003 08 24 | 704 | 0.1- | 0.6+ | 2003 09 30 | 699 | 0.1-  | 0.2-  | 2006 06 01 | G96 | 0.3- | 0.2+ |
| 2003 08 24 | 704 | 0.9- | 0.6+ | 2003 09 30 | 699 | 0.5+  | 1.0-  | 2006 06 01 | G96 | 0.1- | 0.0  |
| 2003 08 24 | 704 | 0.0  | 0.5+ | 2003 09 30 | 691 | 0.2-  | 0.0   | 2006 06 01 | G96 | 0.1+ | 0.2+ |
| 2003 08 30 | 291 | 0.1- | 0.2- | 2003 09 30 | 699 | (2.2- | 0.3-) | 2006 06 17 | 691 | 0.1+ | 0.0  |
| 2003 08 30 | 291 | 0.0  | 0.2- | 2003 09 30 | 691 | 0.0   | 0.2-  | 2006 06 17 | 691 | 0.3- | 0.1- |
| 2003 08 30 | 291 | 0.0  | 0.2- | 2003 09 30 | 699 | 0.4-  | 0.5-  | 2006 06 17 | 691 | 0.2+ | 0.2- |
| 2003 09 03 | 704 | 0.2- | 1.1+ | 2003 09 30 | 691 | 0.2-  | 1.0+  | 2007 11 14 | 691 | 0.3+ | 0.4+ |
| 2003 09 03 | 704 | 0.2+ | 0.8+ | 2003 10 20 | 704 | 0.5+  | 0.4-  | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2003 09 03 | 704 | 0.1- | 1.4+ | 2003 10 20 | 704 | 0.5-  | 0.0   | 2007 11 14 | 691 | 0.1+ | 0.2- |
| 2003 09 03 | 704 | 0.0  | 1.1+ | 2003 10 20 | 704 | 0.8-  | 1.0+  | 2007 12 06 | G96 | 0.6+ | 0.1- |
| 2003 09 16 | 699 | 0.2- | 0.5- | 2003 10 20 | 704 | 0.7-  | 0.2-  | 2007 12 06 | G96 | 0.3+ | 0.1- |
| 2003 09 16 | 699 | 0.2+ | 0.1- | 2003 10 22 | 691 | 0.1+  | 0.2-  | 2007 12 06 | G96 | 0.4+ | 0.1- |
| 2003 09 16 | 699 | 0.4+ | 0.2+ | 2003 10 22 | 691 | 0.2+  | 0.1-  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2003 09 16 | 699 | 0.7+ | 0.4- | 2003 10 22 | 691 | 0.2+  | 0.0   | 2007 12 15 | 691 | 0.0  | 0.1- |
| 2003 09 19 | 704 | 1.2- | 1.4+ | 2005 01 16 | 691 | 0.0   | 0.6+  | 2007 12 15 | 691 | 0.2- | 0.3- |
| 2003 09 19 | 704 | 0.2+ | 0.0  | 2005 01 16 | 691 | 0.2+  | 0.1-  | 2007 12 15 | 691 | 0.4- | 0.0  |
| 2003 09 19 | 704 | 1.1- | 0.3+ | 2005 01 16 | 691 | 0.1+  | 0.3+  |            |     |      |      |

**(172456)\* 2003 RW**

Discovered 2003 Sept. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 112.21145  | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.28552487 | $\omega$ | 60.94858  | +0.52606578 | +0.84583398     |
| <i>a</i> | 2.2840560  | $\Omega$ | 241.05563 | -0.81118487 | +0.46783341     |
| <i>e</i> | 0.1246302  | <i>i</i> | 5.79971   | -0.25540929 | +0.25631382     |
| <i>P</i> | 3.45       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 01 31 | 691 | 0.5-  | 0.8-  | 2003 09 04 | 704 | 0.1+  | 0.4+  | 2003 10 05 | 704 | 0.5+  | 0.6+  |
| 1998 01 31 | 691 | 0.1-  | 0.5-  | 2003 09 04 | 704 | 0.7-  | 0.6-  | 2003 10 05 | 704 | 0.1-  | 0.7+  |
| 1998 01 31 | 691 | (1.0- | 6.2-) | 2003 09 04 | 704 | 0.3-  | 0.5-  | 2003 10 15 | 644 | 0.2-  | 0.1+  |
| 1999 05 13 | 704 | 0.7-  | 0.5+  | 2003 09 04 | 704 | 0.7-  | 0.1+  | 2003 10 15 | 644 | 0.2-  | 0.3+  |
| 1999 05 13 | 704 | 0.1+  | 0.3-  | 2003 09 04 | 704 | 0.6+  | 0.1+  | 2003 10 15 | 644 | 0.0   | 0.3+  |
| 1999 05 13 | 704 | 0.6-  | 1.3+  | 2003 09 04 | 704 | 0.0   | 0.1+  | 2003 10 17 | 699 | 0.2-  | 0.4+  |
| 1999 05 13 | 704 | (6.4- | 0.2-) | 2003 09 04 | 704 | 0.1-  | 0.8+  | 2003 10 17 | 699 | (0.3+ | 1.8-) |
| 2000 12 23 | 691 | 0.6+  | 0.2+  | 2003 09 04 | 704 | 0.2+  | 0.6+  | 2003 10 17 | 699 | 1.2-  | 0.0   |
| 2000 12 23 | 691 | 0.2-  | 0.3+  | 2003 09 16 | 699 | 0.8-  | 0.0   | 2003 10 17 | 699 | 0.3-  | 0.8+  |
| 2000 12 23 | 691 | 0.0   | 0.3+  | 2003 09 16 | 699 | 0.4+  | 1.4-  | 2003 10 20 | 691 | 0.2-  | 0.1-  |
| 2002 03 16 | 704 | 0.5+  | 0.7+  | 2003 09 16 | 699 | 0.2+  | 1.0-  | 2003 10 20 | 691 | 0.1-  | 0.2+  |
| 2002 03 16 | 704 | 0.7+  | 0.9+  | 2003 09 16 | 699 | 0.3+  | 0.2+  | 2003 10 20 | 691 | 0.1-  | 0.1+  |
| 2002 03 16 | 704 | (0.5+ | 1.9+) | 2003 09 18 | 691 | 0.8+  | 1.0-  | 2003 10 20 | 704 | 0.5-  | 0.5+  |
| 2002 04 05 | 644 | 0.9+  | 0.3+  | 2003 09 18 | 691 | 0.1-  | 0.0   | 2003 10 20 | 704 | 0.0   | 0.1+  |
| 2002 04 05 | 644 | 1.0+  | 0.7+  | 2003 09 18 | 691 | 0.1-  | 0.1-  | 2003 10 20 | 704 | 0.1-  | 0.5+  |
| 2002 04 05 | 644 | 0.6+  | 0.6+  | 2003 09 20 | 704 | 0.2-  | 0.1+  | 2003 10 20 | 704 | 0.5-  | 0.7+  |
| 2003 08 22 | 608 | 0.2-  | 0.6-  | 2003 09 20 | 704 | 0.4+  | 0.0   | 2003 10 20 | 704 | 0.9-  | 0.0   |
| 2003 08 22 | 608 | 0.4+  | 0.9-  | 2003 09 20 | 704 | 0.0   | 0.8+  | 2005 03 02 | 703 | (0.5+ | 1.7-) |
| 2003 08 22 | 608 | 0.3-  | 0.4-  | 2003 09 20 | 704 | 0.5-  | 0.1+  | 2005 03 02 | 703 | 0.0   | 1.0+  |
| 2003 09 01 | 704 | 0.9+  | 0.4-  | 2003 09 20 | 704 | 0.7+  | 1.0-  | 2005 03 02 | 703 | 0.2+  | 1.4+  |
| 2003 09 01 | 704 | 0.5-  | 0.1+  | 2003 09 30 | 699 | 0.1-  | 1.2+  | 2005 03 02 | 703 | (0.8+ | 1.7+) |
| 2003 09 01 | 704 | 0.1+  | 0.2-  | 2003 09 30 | 699 | 0.2-  | 0.2-  | 2007 11 06 | 691 | 0.5-  | 0.1-  |
| 2003 09 01 | 704 | 1.1+  | 0.0   | 2003 09 30 | 699 | 0.3-  | 0.1+  | 2007 11 06 | 691 | 0.4-  | 0.2+  |
| 2003 09 03 | 704 | 0.4-  | 0.6+  | 2003 09 30 | 699 | 0.7-  | 0.2-  | 2007 11 06 | 691 | 0.5-  | 0.0   |
| 2003 09 03 | 704 | 0.9+  | 0.6-  | 2003 09 30 | 704 | 1.3+  | 0.6+  | 2007 12 05 | 704 | 0.6+  | 0.3-  |
| 2003 09 03 | 704 | 0.5-  | 1.0+  | 2003 09 30 | 704 | 0.5+  | 0.1+  | 2007 12 05 | 704 | 1.1+  | 0.1+  |
| 2003 09 03 | 704 | 0.4-  | 0.7+  | 2003 09 30 | 704 | (1.8+ | 0.9+) | 2007 12 05 | 704 | 0.9+  | 0.1-  |
| 2003 09 03 | 704 | 0.3+  | 0.1-  | 2003 09 30 | 704 | (0.0  | 2.2+) | 2007 12 05 | 704 | 0.8+  | 0.3+  |
| 2003 09 04 | 704 | 0.3+  | 0.5+  | 2003 09 30 | 704 | 0.4+  | 0.0   |            |     |       |       |
| 2003 09 04 | 704 | 0.4+  | 0.4+  | 2003 10 05 | 704 | 0.8-  | 1.4+  |            |     |       |       |

**(172457)\* 2003 RU<sub>1</sub> = 2002 EQ<sub>132</sub>**

Discovered 2003 Sept. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 53248)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 81.67853   | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.28186792 | $\omega$ | 259.86886 | +0.87271994 | +0.48686500     |
| <i>a</i> | 2.3037691  | $\Omega$ | 70.98833  | -0.43152412 | +0.80406687     |
| <i>e</i> | 0.2355671  | <i>i</i> | 2.20429   | -0.22835683 | +0.34123152     |
| <i>P</i> | 3.50       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 05 15 | 691 | 0.3-  | 0.0   | 2003 10 01 | 699 | 0.3- | 0.1+ | 2005 02 04 | G96 | 0.2+ | 0.1+ |
| 1999 05 15 | 691 | 0.1-  | 0.1-  | 2003 10 01 | 699 | 0.2+ | 0.1- | 2005 02 04 | G96 | 0.1- | 0.3- |
| 1999 05 15 | 691 | 0.4-  | 0.2+  | 2003 10 01 | 699 | 0.0  | 0.2+ | 2006 04 25 | G96 | 0.5- | 0.3- |
| 2002 03 13 | 691 | 0.6+  | 0.6+  | 2003 10 01 | 699 | 0.2- | 0.5- | 2006 04 25 | G96 | 0.3- | 0.1- |
| 2002 03 13 | 691 | 0.7+  | 0.7+  | 2003 10 06 | 699 | 0.9- | 0.1- | 2006 04 25 | G96 | 0.1- | 0.2- |
| 2002 03 13 | 691 | 0.9+  | 0.6+  | 2003 10 06 | 699 | 0.2- | 0.3- | 2006 04 25 | G96 | 0.0  | 0.5+ |
| 2002 03 15 | 644 | 1.1+  | 1.4+  | 2003 10 06 | 699 | 0.5- | 0.1- | 2006 05 19 | G96 | 0.1- | 0.2+ |
| 2002 03 15 | 644 | (1.0+ | 1.6+) | 2003 10 06 | 699 | 0.2- | 0.3+ | 2006 05 19 | G96 | 0.0  | 0.0  |
| 2002 03 15 | 644 | (1.1+ | 2.0+) | 2003 10 18 | 699 | 0.5- | 0.2- | 2006 05 19 | G96 | 0.1- | 0.2+ |
| 2003 09 02 | 704 | 0.1+  | 0.6+  | 2003 10 18 | 699 | 0.5- | 0.5+ | 2006 05 19 | G96 | 0.1- | 0.4+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 02 | 704 | (1.5+ | 0.1-) | 2003 10 18 | 699 | 0.1+  | 0.5+  | 2006 05 19 | G96 | 0.4+  | 0.2+  |
| 2003 09 02 | 704 | 0.6+  | 0.6+  | 2003 10 18 | 699 | 0.5+  | 0.7+  | 2006 05 19 | G96 | 0.2-  | 0.2+  |
| 2003 09 02 | 704 | 0.8-  | 1.2+  | 2003 10 19 | 704 | 0.2-  | 0.2+  | 2006 05 19 | G96 | (2.8- | 0.1-) |
| 2003 09 02 | 704 | 1.0-  | 0.4+  | 2003 10 19 | 704 | 0.1-  | 0.4+  | 2006 05 19 | G96 | (2.7- | 0.0)  |
| 2003 09 03 | 608 | 0.2-  | 0.7-  | 2003 10 19 | 704 | 0.2-  | 0.0   | 2006 05 20 | 691 | 0.1-  | 0.0   |
| 2003 09 03 | 608 | 0.4-  | 0.3-  | 2003 10 19 | 704 | 0.6-  | 0.6+  | 2006 05 20 | 691 | 0.1+  | 0.0   |
| 2003 09 03 | 608 | 0.2-  | 0.3-  | 2003 10 19 | 704 | 0.5-  | 0.3+  | 2006 05 20 | 691 | 0.1-  | 0.1-  |
| 2003 09 18 | 704 | 0.2-  | 0.7+  | 2003 10 24 | 691 | 0.8-  | 0.4+  | 2006 05 20 | E12 | 0.1+  | 0.2+  |
| 2003 09 18 | 704 | 0.3-  | 0.6+  | 2003 10 24 | 691 | 0.4-  | 0.4+  | 2006 05 20 | E12 | 0.0   | 0.7+  |
| 2003 09 18 | 704 | 0.1+  | 0.3+  | 2003 10 24 | 704 | 0.5-  | 0.4+  | 2006 05 20 | E12 | 0.1-  | 0.3-  |
| 2003 09 18 | 704 | 0.0   | 0.0   | 2003 10 24 | 704 | 0.6-  | 0.5+  | 2006 05 20 | E12 | 0.1+  | 0.0   |
| 2003 09 18 | 704 | 0.4-  | 0.4+  | 2003 10 24 | 691 | 0.5-  | 0.4+  | 2006 05 28 | 691 | 0.1+  | 0.1+  |
| 2003 09 18 | 644 | 0.0   | 0.1+  | 2003 10 24 | 704 | 1.0-  | 0.4+  | 2006 05 28 | 691 | 0.2+  | 0.4+  |
| 2003 09 18 | 644 | 0.1+  | 0.2+  | 2003 10 24 | 704 | 1.5-  | 0.3+  | 2006 05 28 | 691 | 0.0   | 0.1-  |
| 2003 09 18 | 644 | 0.1+  | 0.4+  | 2003 10 24 | 704 | (2.4- | 0.1-) | 2006 06 01 | 691 | 0.1-  | 0.0   |
| 2003 09 22 | 699 | 0.6+  | 0.0   | 2003 10 24 | 608 | 0.4+  | 0.4-  | 2006 06 01 | 691 | 0.1+  | 0.0   |
| 2003 09 22 | 699 | 0.1+  | 0.0   | 2003 10 24 | 608 | 0.4-  | 0.9-  | 2006 06 01 | 691 | 0.1-  | 0.2+  |
| 2003 09 22 | 699 | 0.4+  | 0.5+  | 2003 10 24 | 608 | 0.4+  | 0.2-  | 2006 06 15 | 691 | 0.1+  | 0.2-  |
| 2003 09 22 | 699 | 1.4-  | 0.3-  | 2003 11 16 | 645 | 0.1+  | 0.1-  | 2006 06 15 | 691 | 0.0   | 0.0   |
| 2003 09 28 | 704 | 0.1+  | 0.3+  | 2003 11 16 | 645 | 0.1+  | 0.1-  | 2006 06 15 | 691 | 0.2+  | 0.1-  |
| 2003 09 28 | 704 | 0.6-  | 0.7+  | 2003 11 19 | 645 | 0.0   | 0.0   | 2007 12 03 | 691 | 0.1-  | 0.3+  |
| 2003 09 28 | 704 | 0.4-  | 0.5+  | 2003 11 19 | 645 | 0.1+  | 0.0   | 2007 12 03 | 691 | 0.0   | 0.0   |
| 2003 09 28 | 704 | 0.0   | 0.3+  | 2003 11 20 | 645 | 0.1+  | 0.0   | 2007 12 03 | 691 | 0.9-  | 0.9-  |
| 2003 09 28 | 704 | 0.4-  | 0.4+  | 2003 11 20 | 645 | 0.2+  | 0.0   | 2007 12 15 | 691 | 0.1+  | 0.5+  |
| 2003 09 29 | 645 | 0.1+  | 0.1-  | 2005 02 04 | G96 | 0.1-  | 0.1-  | 2007 12 15 | 691 | 0.4-  | 0.1+  |
| 2003 09 29 | 645 | 0.2+  | 0.0   | 2005 02 04 | G96 | 0.1+  | 0.5+  | 2007 12 15 | 691 | 0.4+  | 0.3+  |

**(172458)\* 2003 RF<sub>4</sub> = 2005 CN<sub>41</sub>**

Discovered 2003 Sept. 1 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 86084)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 58.59421   | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.27799888 | $\omega$ | 252.76384 | +0.97977452 | +0.17586947     |
| <i>a</i> | 2.3250949  | $\Omega$ | 97.02754  | -0.12656545 | +0.91413930     |
| <i>e</i> | 0.1342297  | <i>i</i> | 5.51915   | -0.15499381 | +0.36526602     |
| <i>P</i> | 3.55       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 704 | 0.3+  | 0.4+  | 2003 09 27 | 699 | 0.4+ | 1.0- | 2006 06 22 | 644 | 0.1+ | 0.8+ |
| 2000 12 30 | 704 | 0.1+  | 0.8+  | 2003 09 27 | 699 | 0.4- | 0.1+ | 2007 11 04 | 704 | 0.1- | 0.3+ |
| 2000 12 30 | 704 | 0.5-  | 0.0   | 2003 10 16 | 699 | 0.1+ | 0.2- | 2007 11 04 | 704 | 0.4+ | 0.4+ |
| 2002 04 17 | 704 | 0.0   | 0.2-  | 2003 10 16 | 699 | 0.2+ | 0.3- | 2007 11 04 | 704 | 0.0  | 0.4+ |
| 2002 04 17 | 704 | (1.6- | 0.2-) | 2003 10 16 | 699 | 0.2- | 1.0+ | 2007 11 04 | 704 | 0.0  | 0.2+ |
| 2002 04 17 | 704 | 1.0+  | 1.0+  | 2003 10 16 | 699 | 0.1+ | 0.4+ | 2007 11 04 | 704 | 0.5+ | 0.1+ |
| 2002 04 17 | 704 | 0.5+  | 1.2+  | 2004 12 20 | G96 | 0.2- | 0.0  | 2007 11 04 | 691 | 0.2- | 0.1- |
| 2002 04 17 | 704 | 1.3-  | 0.6-  | 2004 12 20 | G96 | 0.4- | 0.1+ | 2007 11 04 | 691 | 0.3- | 0.2- |
| 2003 08 23 | 704 | 0.3-  | 1.1+  | 2004 12 20 | G96 | 0.2- | 0.3- | 2007 11 04 | 691 | 0.4- | 0.1- |
| 2003 08 23 | 704 | 1.4-  | 1.2+  | 2004 12 20 | G96 | 0.3- | 0.1- | 2007 12 04 | 704 | 0.4+ | 0.3+ |
| 2003 08 23 | 704 | (1.2- | 1.9+) | 2005 01 13 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 704 | 0.7+ | 0.2- |
| 2003 08 23 | 704 | 1.4-  | 0.7+  | 2005 01 13 | 691 | 0.4- | 0.6+ | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2003 08 23 | 704 | 0.5-  | 0.9+  | 2005 01 13 | 691 | 0.2+ | 0.3+ | 2007 12 04 | 704 | 0.0  | 0.1- |
| 2003 09 01 | 704 | 0.7-  | 1.2+  | 2005 02 02 | 691 | 0.2+ | 0.3+ | 2007 12 04 | 704 | 0.5+ | 0.1+ |
| 2003 09 01 | 704 | 0.1+  | 1.4+  | 2005 02 02 | 691 | 0.9+ | 0.5+ | 2007 12 05 | G96 | 0.2- | 0.4- |
| 2003 09 01 | 704 | 0.0   | 1.3+  | 2005 02 02 | 691 | 0.1- | 0.5+ | 2007 12 05 | G96 | 0.1- | 0.3- |
| 2003 09 04 | 608 | 0.5-  | 0.5+  | 2006 06 20 | 644 | 0.0  | 0.3+ | 2007 12 05 | G96 | 1.1+ | 0.8+ |
| 2003 09 04 | 608 | 0.5+  | 0.9-  | 2006 06 20 | 644 | 0.1+ | 0.5+ | 2007 12 05 | G96 | 0.1+ | 0.5- |
| 2003 09 04 | 608 | 0.1+  | 0.4-  | 2006 06 20 | 644 | 0.1+ | 0.4+ | 2007 12 05 | G96 | 0.1+ | 0.4- |
| 2003 09 27 | 699 | 0.6+  | 0.6+  | 2006 06 22 | 644 | 0.3+ | 0.6+ | 2007 12 05 | G96 | 0.2- | 0.3- |
| 2003 09 27 | 699 | 0.1-  | 0.2-  | 2006 06 22 | 644 | 0.1+ | 0.6+ | 2007 12 05 | G96 | 0.2- | 0.3- |

2007 DEC. 24

M.P.O. 129377

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.01778   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26866528 | $\omega$ 334.89856 | +0.99960289   | +0.01841691 |
| <i>a</i> | 2.3786380  | $\Omega$ 24.07512  | -0.00712506   | +0.89746448 |
| <i>e</i> | 0.1899206  | <i>i</i> 2.99697   | -0.02726356   | +0.44070208 |
| <i>P</i> | 3.67       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 09 26 | 691 | 0.3-  | 0.7+  | 2003 09 28 | 645 | 0.1+  | 0.1-  | 2003 11 20 | 645 | 0.1+  | 0.2-  |
| 1992 09 26 | 691 | 0.2-  | 0.5+  | 2003 09 29 | 704 | 0.2-  | 0.1-  | 2003 11 20 | 645 | 0.0   | 0.1-  |
| 1992 09 26 | 691 | 0.3-  | 0.4+  | 2003 09 29 | 704 | 0.5-  | 0.3+  | 2003 11 21 | 704 | 0.3-  | 0.5+  |
| 2002 04 14 | 704 | 0.1-  | 0.4-  | 2003 09 29 | 704 | 1.1-  | 0.0   | 2003 11 21 | 704 | 0.4-  | 0.7+  |
| 2002 04 14 | 704 | 0.6+  | 0.3+  | 2003 09 29 | 704 | 0.4-  | 0.1+  | 2003 11 21 | 704 | 0.2-  | 0.2+  |
| 2002 04 14 | 704 | 1.3+  | 0.1-  | 2003 09 29 | 704 | 0.3-  | 0.2+  | 2003 11 21 | 704 | 0.3+  | 1.0+  |
| 2002 04 19 | 291 | 0.2+  | 0.7+  | 2003 09 29 | 691 | 0.4-  | 0.3+  | 2003 11 21 | 704 | (0.1+ | 1.7+) |
| 2002 04 19 | 291 | 0.0   | 0.7+  | 2003 09 29 | 691 | 0.3-  | 0.2+  | 2005 02 09 | 691 | 0.2+  | 0.0   |
| 2002 04 19 | 291 | 0.0   | 0.8+  | 2003 09 29 | 691 | 0.3-  | 0.3+  | 2005 02 09 | 691 | 0.3+  | 0.3+  |
| 2003 09 02 | 704 | 0.9+  | 0.5+  | 2003 10 01 | 699 | 0.2+  | 0.2-  | 2005 02 09 | 691 | 0.5+  | 0.4+  |
| 2003 09 02 | 704 | 0.6-  | 0.4+  | 2003 10 01 | 699 | 0.2+  | 0.0   | 2005 03 14 | G96 | 0.7-  | 0.2+  |
| 2003 09 02 | 704 | 0.4-  | 0.4+  | 2003 10 01 | 699 | 0.3-  | 0.3+  | 2005 03 14 | G96 | 0.4+  | 0.4+  |
| 2003 09 02 | 704 | 0.3-  | 0.5+  | 2003 10 01 | 699 | 0.2-  | 0.2-  | 2005 03 14 | G96 | 0.0   | 0.3-  |
| 2003 09 02 | 704 | 0.8-  | 0.8+  | 2003 10 06 | 699 | 0.1+  | 0.3+  | 2005 03 14 | G96 | 0.1+  | 0.0   |
| 2003 09 05 | 704 | (1.9+ | 0.6+) | 2003 10 06 | 699 | 0.6-  | 0.2+  | 2006 05 23 | G96 | 0.1-  | 0.5+  |
| 2003 09 05 | 704 | 1.5+  | 0.7-  | 2003 10 06 | 699 | 0.5+  | 0.4+  | 2006 05 23 | G96 | 0.1-  | 0.4+  |
| 2003 09 05 | 704 | 0.0   | 0.3-  | 2003 10 06 | 699 | 0.5+  | 0.2+  | 2006 05 23 | G96 | 0.0   | 0.2+  |
| 2003 09 18 | 691 | 0.0   | 0.3+  | 2003 10 15 | 699 | 0.2-  | 0.0   | 2007 11 09 | 691 | 0.1-  | 0.2-  |
| 2003 09 18 | 691 | 0.1-  | 0.3+  | 2003 10 15 | 699 | 0.4-  | 0.1+  | 2007 11 09 | 691 | 0.3-  | 0.2-  |
| 2003 09 18 | 691 | 0.3-  | 0.3+  | 2003 10 15 | 699 | 0.3-  | 0.4+  | 2007 11 09 | 691 | 0.0   | 0.2-  |
| 2003 09 18 | 644 | 0.0   | 0.3+  | 2003 10 15 | 699 | 0.3+  | 0.1-  | 2007 11 13 | 691 | 0.7-  | 0.3+  |
| 2003 09 18 | 644 | 0.2+  | 0.3+  | 2003 10 18 | 645 | 0.0   | 0.0   | 2007 11 13 | 691 | 0.5-  | 0.0   |
| 2003 09 18 | 644 | 0.2+  | 0.4+  | 2003 10 18 | 645 | 0.0   | 0.1-  | 2007 11 13 | 691 | 0.2-  | 0.8-  |
| 2003 09 19 | 704 | 1.0+  | 0.0   | 2003 10 18 | 704 | 1.1-  | 0.6+  | 2007 11 15 | 704 | 0.4+  | 0.0   |
| 2003 09 19 | 704 | 0.4+  | 0.7+  | 2003 10 18 | 704 | (0.7- | 2.4+) | 2007 11 15 | 704 | 0.2+  | 0.1+  |
| 2003 09 19 | 704 | 0.2+  | 1.0+  | 2003 10 18 | 704 | (0.1- | 2.7+) | 2007 11 15 | 704 | 0.4+  | 0.0   |
| 2003 09 19 | 704 | 0.6-  | 0.2+  | 2003 10 18 | 704 | (2.1- | 1.4+) | 2007 11 15 | 704 | 0.5-  | 0.3+  |
| 2003 09 19 | 704 | 0.3+  | 1.0+  | 2003 10 18 | 704 | 1.0-  | 0.6-  | 2007 11 15 | 704 | 0.9+  | 0.2+  |
| 2003 09 19 | 599 | 0.3+  | 0.3+  | 2003 10 19 | 704 | 0.8+  | 0.7-  | 2007 11 20 | 704 | 1.2+  | 0.4+  |
| 2003 09 19 | 599 | 0.2+  | 0.1+  | 2003 10 19 | 704 | 0.6+  | 0.7+  | 2007 11 20 | 704 | 0.2+  | 0.2+  |
| 2003 09 19 | 599 | 0.0   | 0.1+  | 2003 10 19 | 704 | 0.3-  | 0.5-  | 2007 11 20 | 704 | 0.9+  | 1.0+  |
| 2003 09 23 | 608 | 0.1-  | 0.7-  | 2003 10 19 | 704 | 0.4-  | 0.3-  | 2007 11 20 | 704 | 0.5+  | 0.2+  |
| 2003 09 23 | 608 | 0.1+  | 0.5-  | 2003 10 19 | 704 | 0.3+  | 0.6+  | 2007 11 20 | 704 | 0.1+  | 0.3+  |
| 2003 09 23 | 608 | 0.1-  | 0.4-  | 2003 10 22 | 645 | 0.1+  | 0.2-  | 2007 12 06 | D35 | 0.1-  | 0.2+  |
| 2003 09 24 | 608 | 0.4-  | 0.5-  | 2003 10 22 | 645 | 0.1+  | 0.2-  | 2007 12 06 | D35 | 0.0   | 0.2-  |
| 2003 09 24 | 608 | 0.3-  | 0.8-  | 2003 10 23 | 704 | 0.0   | 1.0+  | 2007 12 06 | D35 | 0.2+  | 0.3+  |
| 2003 09 24 | 608 | 0.2-  | 0.6-  | 2003 10 23 | 704 | 0.4-  | 0.4+  | 2007 12 10 | 704 | 0.4+  | 1.1+  |
| 2003 09 26 | 704 | 0.1-  | 0.3+  | 2003 10 23 | 704 | 0.2-  | 0.5+  | 2007 12 10 | 704 | 0.8+  | 1.1+  |
| 2003 09 26 | 704 | 0.2-  | 1.0+  | 2003 10 23 | 704 | 0.2-  | 0.2+  | 2007 12 10 | 704 | 0.4+  | 1.2+  |
| 2003 09 26 | 704 | 0.2-  | 0.6+  | 2003 10 23 | 704 | 0.2-  | 0.1+  | 2007 12 15 | 704 | 0.3-  | 0.5+  |
| 2003 09 26 | 704 | 0.5-  | 0.5+  | 2003 10 24 | 691 | 0.1-  | 0.4+  | 2007 12 15 | 704 | 0.4-  | 0.5+  |
| 2003 09 26 | 704 | 0.2-  | 0.6+  | 2003 10 24 | 645 | 0.1+  | 0.1-  | 2007 12 15 | 704 | 0.1-  | 0.8+  |
| 2003 09 26 | 645 | 0.0   | 0.1-  | 2003 10 24 | 645 | 0.1+  | 0.2-  | 2007 12 15 | 704 | 0.1+  | 0.2+  |
| 2003 09 26 | 645 | 0.0   | 0.1-  | 2003 10 24 | 691 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 0.3-  | 0.3+  |
| 2003 09 28 | 645 | 0.1+  | 0.1-  | 2003 10 24 | 691 | 0.3-  | 0.8+  |            |     |       |       |

(172460)\* 2003 RT<sub>11</sub> = 1996 RB<sub>23</sub>

Discovered 2003 Sept. 15 by J. W. Young at Table Mountain Observatory, Wrightwood.

Id. G. V. Williams (MPO 53262)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.06838  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28007639 | $\omega$ 84.44930  | +0.13586318   | -0.99072361 |
| <i>a</i> | 2.3135828  | $\Omega$ 357.73638 | +0.87842310   | +0.12177591 |
| <i>e</i> | 0.1588241  | <i>i</i> 4.08720   | +0.45816378   | +0.06031052 |
| <i>P</i> | 3.52       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 13 | 691 | 0.7+ | 0.1- | 2003 09 16 | 691 | 0.2- | 0.2+ | 2005 04 04 | 703 | 0.1+ | 0.3- |
| 1996 09 13 | 691 | 0.8+ | 0.3- | 2003 09 16 | 691 | 0.0  | 0.2+ | 2005 04 04 | 703 | 0.1+ | 0.8- |
| 1996 09 13 | 691 | 0.6+ | 0.2- | 2003 09 16 | 691 | 0.0  | 0.3+ | 2005 04 05 | G96 | 0.3- | 0.1+ |
| 1996 09 20 | 691 | 0.7- | 0.6- | 2003 09 28 | 691 | 0.1- | 0.4+ | 2005 04 05 | G96 | 0.3- | 0.1+ |
| 1996 09 20 | 691 | 0.5- | 0.2- | 2003 09 28 | 691 | 0.3- | 0.4+ | 2005 04 05 | G96 | 0.2- | 0.2+ |
| 2000 12 22 | 704 | 0.5- | 0.2- | 2003 09 28 | 691 | 0.3- | 0.5+ | 2005 04 05 | G96 | 0.2- | 0.1+ |
| 2000 12 22 | 704 | 0.3- | 0.2+ | 2003 10 02 | 673 | 0.4- | 0.4+ | 2007 11 02 | 673 | 0.2- | 0.1+ |
| 2000 12 22 | 704 | 0.0  | 0.5+ | 2003 10 02 | 673 | 0.6- | 0.4+ | 2007 11 02 | 673 | 0.2- | 0.1+ |
| 2000 12 22 | 704 | 0.5+ | 0.5+ | 2003 10 02 | 673 | 0.4- | 0.4+ | 2007 11 02 | 673 | 0.2- | 0.0  |
| 2000 12 22 | 704 | 0.2+ | 0.7+ | 2005 03 01 | 691 | 0.4+ | 0.7+ | 2007 12 13 | 673 | 0.2+ | 0.1+ |
| 2001 01 04 | 704 | 0.9- | 0.8- | 2005 03 01 | 691 | 0.2+ | 0.6+ | 2007 12 13 | 673 | 0.2+ | 0.0  |
| 2001 01 04 | 704 | 0.3- | 0.4- | 2005 03 01 | 691 | 0.5+ | 0.5+ | 2007 12 13 | 673 | 0.5+ | 0.1- |
| 2001 01 04 | 704 | 0.9+ | 1.0- | 2005 03 09 | G96 | 0.5- | 0.1+ | 2007 12 13 | 704 | 0.4+ | 0.6- |
| 2003 08 26 | 807 | 0.4- | 0.3+ | 2005 03 09 | G96 | 0.3- | 0.1- | 2007 12 13 | 704 | 0.2- | 0.1- |
| 2003 08 26 | 807 | 0.4- | 0.2+ | 2005 03 09 | G96 | 0.6- | 0.1- | 2007 12 13 | 704 | 0.3+ | 0.4- |
| 2003 09 15 | 673 | 0.2+ | 0.7+ | 2005 03 09 | G96 | 0.6- | 0.0  | 2007 12 13 | 704 | 0.1- | 0.3- |
| 2003 09 15 | 673 | 0.2- | 0.6+ | 2005 03 13 | 691 | 0.2+ | 0.0  | 2007 12 16 | 704 | 0.5+ | 0.1+ |
| 2003 09 15 | 673 | 0.7- | 0.4+ | 2005 03 13 | 691 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.1- | 0.8+ |
| 2003 09 16 | 673 | 0.1- | 0.3+ | 2005 03 13 | 691 | 0.2+ | 0.1+ | 2007 12 16 | 704 | 0.6- | 0.2- |
| 2003 09 16 | 673 | 0.1+ | 0.2+ | 2005 04 04 | 703 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.2- | 1.4+ |
| 2003 09 16 | 673 | 0.1+ | 0.3+ | 2005 04 04 | 703 | 0.0  | 0.3+ |            |     |      |      |

(172461)\* 2003 SE<sub>4</sub>

Discovered 2003 Sept. 16 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.66754  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.27113518 | $\omega$ 95.85898 | -0.20885887   | -0.97794162 |
| <i>a</i> | 2.3641706  | $\Omega$ 6.19872  | +0.88644672   | -0.19055120 |
| <i>e</i> | 0.1452525  | <i>i</i> 1.51701  | +0.41302566   | -0.08555955 |
| <i>P</i> | 3.64       | <i>H</i> 16.8     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|-------|-------|
| 1992 09 23 | 691 | 0.7-  | 0.4+  | 2003 09 29 | 704 | 0.7- | 0.6+  | 2007 11 06 | 691 | 0.3-  | 0.0   |
| 1992 09 23 | 691 | 0.7-  | 0.2+  | 2003 09 29 | 704 | 0.8- | 0.7+  | 2007 11 13 | 703 | 0.1-  | 0.1-  |
| 1992 09 23 | 691 | 0.6-  | 0.1-  | 2003 09 29 | 704 | 0.0  | 0.1-  | 2007 11 13 | 703 | 0.2-  | 0.0   |
| 1996 11 06 | 691 | 0.3+  | 0.3-  | 2003 09 29 | 704 | 0.8- | 0.1-  | 2007 11 13 | 703 | 0.4-  | 0.2-  |
| 1996 11 06 | 691 | 0.4+  | 0.6-  | 2003 09 29 | 691 | 0.3+ | 0.2+  | 2007 11 13 | 703 | (1.6- | 0.2+) |
| 1996 11 06 | 691 | 0.2+  | 0.4-  | 2003 09 29 | 691 | 0.2+ | 0.4+  | 2007 11 15 | 704 | 0.9+  | 1.2+  |
| 2001 01 04 | 704 | 0.3+  | 0.7+  | 2003 09 29 | 691 | 0.3+ | 0.4+  | 2007 11 15 | 704 | 1.0+  | 0.5+  |
| 2001 01 04 | 704 | 0.1+  | 0.6+  | 2003 10 24 | 691 | 0.5+ | 0.3+  | 2007 11 15 | 704 | 0.3-  | 0.1-  |
| 2001 01 04 | 704 | 0.5+  | 0.1-  | 2003 10 24 | 691 | 0.4+ | 0.0   | 2007 11 15 | 704 | 0.3+  | 0.7+  |
| 2001 01 04 | 704 | 0.9+  | 0.7+  | 2003 10 24 | 691 | 0.5+ | 0.2+  | 2007 11 15 | 704 | 0.3-  | 1.3+  |
| 2001 01 04 | 704 | 0.1+  | 0.2+  | 2005 03 04 | G96 | 0.3- | 0.2+  | 2007 11 17 | 691 | 0.1-  | 0.1-  |
| 2001 01 19 | 704 | 0.1-  | 0.2-  | 2005 03 04 | G96 | 0.3+ | 0.0   | 2007 11 17 | 691 | 0.2-  | 0.1-  |
| 2001 01 19 | 704 | (0.4+ | 1.6+) | 2005 03 04 | G96 | 0.4- | 0.7+  | 2007 11 17 | 691 | 0.2-  | 0.1-  |
| 2001 01 19 | 704 | 0.4+  | 0.1+  | 2005 03 04 | G96 | 0.4+ | 0.1+  | 2007 11 20 | 704 | (1.9+ | 0.5+) |
| 2001 01 19 | 704 | 0.5+  | 0.3+  | 2005 03 13 | 703 | 0.9- | 0.1-  | 2007 11 20 | 704 | (2.4+ | 0.8-) |
| 2001 02 17 | 704 | 1.0+  | 0.5+  | 2005 03 13 | 703 | 0.7- | 0.2-  | 2007 11 20 | 704 | (3.0+ | 0.9-) |
| 2001 02 17 | 704 | 1.1+  | 0.3+  | 2005 03 13 | 703 | 0.5+ | 0.0   | 2007 11 20 | 704 | (2.9+ | 0.3-) |
| 2001 02 17 | 704 | 0.2-  | 1.0+  | 2005 03 13 | 703 | (0.0 | 1.8+) | 2007 11 20 | 704 | (2.3+ | 0.6-) |
| 2003 09 16 | 291 | 0.2+  | 0.3+  | 2005 04 04 | G96 | 0.1+ | 0.5+  | 2007 12 10 | 704 | 0.7+  | 0.1+  |
| 2003 09 16 | 291 | 0.4-  | 0.0   | 2005 04 04 | G96 | 0.3+ | 0.2+  | 2007 12 10 | 704 | 0.7+  | 0.5+  |
| 2003 09 16 | 291 | 0.6-  | 0.1+  | 2005 04 04 | G96 | 0.3+ | 0.2+  | 2007 12 10 | 704 | 1.7-  | 0.8+  |
| 2003 09 17 | 691 | 0.3+  | 0.5-  | 2005 04 04 | G96 | 0.3+ | 0.3+  | 2007 12 10 | 704 | 0.2+  | 0.1-  |
| 2003 09 17 | 691 | 0.5+  | 0.1-  | 2005 05 08 | G96 | 0.4- | 0.2+  | 2007 12 14 | 704 | 0.8-  | 0.7-  |
| 2003 09 17 | 691 | 0.2+  | 0.2-  | 2005 05 08 | G96 | 0.0  | 0.2+  | 2007 12 14 | 704 | 0.0   | 0.4-  |
| 2003 09 22 | 699 | 0.9-  | 0.2+  | 2005 05 08 | G96 | 0.5+ | 0.4+  | 2007 12 14 | 704 | 0.0   | 0.3-  |
| 2003 09 22 | 699 | 0.1+  | 0.4-  | 2005 05 08 | G96 | 0.1- | 0.0   | 2007 12 14 | 704 | 0.5-  | 0.4-  |
| 2003 09 22 | 699 | 0.1+  | 0.8+  | 2007 11 06 | 691 | 0.3- | 0.2-  | 2007 12 14 | 704 | 0.7-  | 0.2+  |
| 2003 09 22 | 699 | 0.2-  | 1.1+  | 2007 11 06 | 691 | 0.2- | 0.2-  |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.28462   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26565221 | $\omega$ | 353.55404 | +0.99953841   | +0.03033336 |
| <i>a</i> | 2.3965901  | $\Omega$ | 4.70871   | -0.02687200   | +0.90871902 |
| <i>e</i> | 0.1996042  | <i>i</i> | 1.18122   | -0.01417293   | +0.41630473 |
| <i>P</i> | 3.71       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1977 09 09 | 675 | 1.9- | 0.1- | 2003 09 26 | 704 | 0.2+  | 0.7+  | 2003 10 21 | 683 | 0.6- | 0.5- |
| 1977 09 10 | 675 | 1.7+ | 0.6+ | 2003 09 26 | 704 | 0.1+  | 0.3+  | 2003 10 21 | 683 | 0.1- | 0.3+ |
| 2003 09 16 | 644 | 0.2- | 0.1+ | 2003 09 26 | 704 | 1.0-  | 0.1+  | 2003 10 21 | 683 | 1.1- | 0.2+ |
| 2003 09 16 | 644 | 0.2- | 0.0  | 2003 09 26 | 704 | 0.3-  | 0.9+  | 2003 10 23 | 704 | 0.2+ | 0.9+ |
| 2003 09 16 | 291 | 0.2- | 0.0  | 2003 09 26 | 704 | 0.3+  | 0.2+  | 2003 10 23 | 704 | 0.1+ | 0.6+ |
| 2003 09 16 | 644 | 0.1- | 0.1+ | 2003 09 27 | 691 | 0.1+  | 0.2-  | 2003 10 23 | 704 | 0.3+ | 0.2- |
| 2003 09 16 | 291 | 0.5- | 0.0  | 2003 09 27 | 691 | 0.2+  | 0.2-  | 2003 10 23 | 704 | 0.7+ | 0.3+ |
| 2003 09 16 | 291 | 0.8- | 0.1+ | 2003 09 27 | 691 | 0.1+  | 0.2-  | 2003 10 23 | 704 | 0.3+ | 0.2+ |
| 2003 09 17 | 691 | 0.1+ | 0.0  | 2003 09 29 | 704 | 0.3-  | 0.0   | 2003 10 24 | 691 | 0.0  | 0.2+ |
| 2003 09 17 | 691 | 0.1+ | 0.3- | 2003 09 29 | 704 | 0.4-  | 0.0   | 2003 10 24 | 691 | 0.2- | 0.2+ |
| 2003 09 17 | 691 | 0.2+ | 0.1+ | 2003 09 29 | 704 | 0.4-  | 0.1+  | 2003 10 24 | 691 | 0.0  | 0.2+ |
| 2003 09 19 | 704 | 0.2+ | 1.1+ | 2003 09 29 | 704 | 0.2-  | 0.3-  | 2006 05 26 | G96 | 0.2- | 0.0  |
| 2003 09 19 | 704 | 0.2- | 0.4+ | 2003 09 29 | 704 | 0.2-  | 0.3+  | 2006 05 26 | G96 | 0.1- | 0.1+ |
| 2003 09 19 | 704 | 0.6- | 0.2+ | 2003 10 01 | 699 | 0.2-  | 0.3+  | 2006 05 26 | G96 | 0.2+ | 0.3+ |
| 2003 09 19 | 608 | 0.3- | 0.2+ | 2003 10 01 | 699 | 1.4+  | 0.3-  | 2006 05 26 | G96 | 0.2+ | 0.3+ |
| 2003 09 19 | 608 | 0.3- | 0.1+ | 2003 10 01 | 699 | 0.4+  | 0.1+  | 2007 11 03 | D35 | 0.2- | 0.0  |
| 2003 09 19 | 608 | 0.3- | 0.4+ | 2003 10 01 | 699 | 0.1-  | 0.2+  | 2007 11 03 | D35 | 0.0  | 0.2+ |
| 2003 09 20 | 333 | 0.6+ | 0.5+ | 2003 10 03 | 701 | 1.0+  | 0.8-  | 2007 11 03 | D35 | 0.4- | 0.1- |
| 2003 09 20 | 333 | 0.4+ | 0.4+ | 2003 10 03 | 701 | 1.4+  | 0.4-  | 2007 11 15 | 704 | 0.6+ | 1.4+ |
| 2003 09 20 | 333 | 0.5+ | 0.1+ | 2003 10 03 | 701 | 1.2+  | 0.2-  | 2007 11 15 | 704 | 0.0  | 0.1+ |
| 2003 09 21 | 333 | 0.2- | 0.3+ | 2003 10 04 | 701 | 0.8+  | 0.5+  | 2007 11 15 | 704 | 1.2+ | 0.8+ |
| 2003 09 21 | 333 | 0.9+ | 0.1+ | 2003 10 04 | 701 | 0.2-  | 0.5-  | 2007 12 10 | 704 | 1.0- | 0.3+ |
| 2003 09 21 | 333 | 0.0  | 0.1+ | 2003 10 05 | 608 | 0.1-  | 0.4-  | 2007 12 10 | 704 | 1.8- | 0.1+ |
| 2003 09 21 | 699 | 0.2+ | 0.0  | 2003 10 05 | 608 | 0.2-  | 0.8-  | 2007 12 10 | 704 | 0.8- | 0.4+ |
| 2003 09 21 | 699 | 0.3- | 0.2- | 2003 10 05 | 608 | 0.7+  | 1.2-  | 2007 12 14 | 704 | 0.3+ | 0.2+ |
| 2003 09 21 | 699 | 0.1- | 0.3+ | 2003 10 06 | 699 | 0.0   | 0.8-  | 2007 12 14 | 704 | 1.2+ | 0.3- |
| 2003 09 21 | 699 | 0.3+ | 0.5- | 2003 10 06 | 699 | 1.4+  | 0.3-  | 2007 12 14 | 704 | 0.7+ | 0.0  |
| 2003 09 22 | 699 | 0.3+ | 0.3- | 2003 10 06 | 699 | 1.3-  | 1.4-  | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2003 09 22 | 699 | 0.4- | 0.0  | 2003 10 06 | 699 | 0.2-  | 0.2+  | 2007 12 15 | G96 | 0.3- | 0.3- |
| 2003 09 22 | 699 | 0.3- | 0.5+ | 2003 10 16 | 608 | (0.3- | 2.3+) | 2007 12 15 | G96 | 0.2- | 0.3- |
| 2003 09 22 | 699 | 0.7- | 0.2- | 2003 10 16 | 608 | 0.7+  | 0.3-  | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2003 09 22 | 699 | 0.4- | 0.2- | 2003 10 16 | 608 | 0.3+  | 0.1-  | 2007 12 15 | G96 | 0.0  | 0.2- |
| 2003 09 22 | 699 | 0.3+ | 0.4- | 2003 10 17 | 704 | 0.2-  | 0.0   | 2007 12 15 | G96 | 0.1- | 0.2- |
| 2003 09 22 | 699 | 0.0  | 0.5- | 2003 10 17 | 704 | 0.5+  | 0.1+  | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2003 09 22 | 699 | 0.0  | 0.5- | 2003 10 17 | 704 | 0.6-  | 0.3-  |            |     |      |      |

**(172463)\* 2003 SO<sub>6</sub>**

Discovered 2003 Sept. 17 by W. K. Y. Yeung at Desert Eagle Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 59.76377   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27388847 | $\omega$ | 41.68552  | +0.95884050   | +0.28293426 |
| <i>a</i> | 2.3482998  | $\Omega$ | 301.86401 | -0.26740294   | +0.87140776 |
| <i>e</i> | 0.2205972  | <i>i</i> | 1.61523   | -0.09550165   | +0.40074522 |
| <i>P</i> | 3.60       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 08 04 | 704 | 1.4-  | 0.0   | 2003 09 27 | 704 | 0.5-  | 0.1+  | 2003 11 21 | 699 | 0.4-  | 0.9+  |
| 2003 08 04 | 704 | 1.0-  | 0.5-  | 2003 09 27 | 704 | 0.3-  | 0.1+  | 2003 11 21 | 704 | 0.0   | 0.9+  |
| 2003 08 04 | 704 | 1.2-  | 0.2-  | 2003 10 02 | 291 | 0.1-  | 0.5+  | 2003 11 21 | 699 | (1.7+ | 0.6-) |
| 2003 08 04 | 704 | 0.8-  | 0.5+  | 2003 10 02 | 291 | 0.0   | 0.5+  | 2003 11 21 | 704 | (1.3+ | 1.6-) |
| 2003 08 25 | 704 | 0.7+  | 0.2+  | 2003 10 02 | 683 | 0.3-  | 0.1+  | 2003 11 21 | 704 | 0.5-  | 0.0   |
| 2003 08 25 | 704 | 0.3+  | 0.1-  | 2003 10 02 | 291 | 0.0   | 0.1+  | 2003 12 22 | 704 | 0.8-  | 1.2+  |
| 2003 08 25 | 704 | 0.1-  | 1.3+  | 2003 10 02 | 683 | 0.2+  | 1.0-  | 2003 12 22 | 704 | 0.4-  | 0.0   |
| 2003 08 25 | 704 | 0.6+  | 0.4-  | 2003 10 02 | 683 | 0.6-  | 0.4-  | 2003 12 22 | 704 | 0.6+  | 0.5+  |
| 2003 08 25 | 704 | 1.2-  | 0.2-  | 2003 10 05 | 683 | (1.9- | 0.8-) | 2005 01 19 | 691 | 0.1+  | 0.3+  |
| 2003 09 03 | 704 | 1.3-  | 0.2+  | 2003 10 05 | 683 | (1.8- | 0.8-) | 2005 01 19 | 691 | 0.0   | 0.1+  |
| 2003 09 03 | 704 | (1.6- | 0.1+) | 2003 10 05 | 683 | 0.6-  | 1.0-  | 2005 01 19 | 691 | 0.3+  | 0.2+  |
| 2003 09 03 | 704 | (1.7- | 0.2-) | 2003 10 12 | 699 | 0.6-  | 0.1+  | 2005 03 08 | G96 | 0.1-  | 0.1+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 15 | 699 | 0.1- | 0.3- | 2003 10 12 | 699 | 0.6-  | 0.2+  | 2005 03 08 | G96 | 0.3- | 0.2+ |
| 2003 09 15 | 699 | 0.0  | 0.3+ | 2003 10 12 | 699 | 0.9-  | 0.9+  | 2005 03 08 | G96 | 0.4- | 0.2+ |
| 2003 09 15 | 699 | 0.0  | 0.1+ | 2003 10 12 | 699 | 0.0   | 0.9+  | 2005 03 08 | G96 | 0.5- | 0.1- |
| 2003 09 15 | 699 | 0.2- | 0.1- | 2003 10 15 | 699 | 0.9+  | 0.1+  | 2006 05 01 | 691 | 0.1+ | 0.2- |
| 2003 09 17 | 333 | 0.4+ | 0.0  | 2003 10 15 | 699 | 0.1-  | 0.1+  | 2006 05 01 | 691 | 0.0  | 0.2- |
| 2003 09 17 | 333 | 0.3+ | 0.0  | 2003 10 15 | 699 | 0.6+  | 0.1+  | 2006 05 01 | 691 | 0.1+ | 0.2+ |
| 2003 09 17 | 333 | 0.1+ | 0.2+ | 2003 10 15 | 699 | 0.4+  | 0.1+  | 2006 05 05 | 691 | 0.3- | 0.2+ |
| 2003 09 18 | 333 | 0.5+ | 0.2- | 2003 10 20 | 704 | 0.0   | 1.4+  | 2006 05 05 | 691 | 0.2+ | 0.0  |
| 2003 09 18 | 333 | 0.2+ | 0.3+ | 2003 10 20 | 704 | 0.9+  | 0.3-  | 2006 05 05 | 691 | 0.1+ | 0.0  |
| 2003 09 18 | 333 | 0.1+ | 0.2+ | 2003 10 20 | 704 | 0.5-  | 0.9+  | 2006 06 02 | G96 | 0.0  | 0.0  |
| 2003 09 19 | 704 | 0.4+ | 0.1+ | 2003 10 20 | 704 | 0.0   | 0.1-  | 2006 06 02 | G96 | 0.2- | 0.2+ |
| 2003 09 19 | 704 | 0.2- | 0.0  | 2003 10 20 | 704 | 0.1-  | 1.0-  | 2006 06 02 | G96 | 0.1+ | 0.2+ |
| 2003 09 19 | 704 | 0.2+ | 0.3+ | 2003 10 20 | 704 | (2.1+ | 0.0 ) | 2006 06 02 | G96 | 0.2- | 0.5+ |
| 2003 09 19 | 704 | 0.0  | 0.1+ | 2003 10 20 | 704 | 0.8+  | 0.3+  | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2003 09 19 | 704 | 0.6+ | 0.2+ | 2003 10 20 | 704 | (0.2+ | 1.6+) | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2003 09 19 | 704 | 0.9- | 0.2+ | 2003 10 20 | 704 | 1.4+  | 1.3-  | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2003 09 19 | 704 | 0.1- | 0.1- | 2003 10 20 | 704 | 0.9+  | 0.2+  | 2007 12 14 | 704 | 0.1+ | 0.7+ |
| 2003 09 19 | 704 | 0.4- | 0.2- | 2003 10 22 | 645 | 0.1+  | 0.2-  | 2007 12 14 | 704 | 0.5+ | 0.5+ |
| 2003 09 19 | 704 | 0.2- | 0.3+ | 2003 10 22 | 645 | 0.0   | 0.2-  | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2003 09 19 | 704 | 0.1- | 0.1+ | 2003 10 24 | 691 | 0.1-  | 0.3+  | 2007 12 14 | 704 | 0.3+ | 0.7+ |
| 2003 09 22 | 699 | 0.8+ | 0.3+ | 2003 10 24 | 691 | 0.1+  | 0.4+  | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2003 09 22 | 699 | 0.2+ | 0.2+ | 2003 10 24 | 691 | 0.1+  | 0.4+  | 2007 12 15 | 691 | 0.1- | 0.0  |
| 2003 09 22 | 699 | 0.1+ | 0.0  | 2003 10 24 | 645 | 0.1+  | 0.2-  | 2007 12 15 | 691 | 0.1- | 0.3+ |
| 2003 09 22 | 699 | 0.4+ | 0.2- | 2003 10 24 | 645 | 0.1+  | 0.2-  | 2007 12 15 | 691 | 0.2+ | 0.2- |
| 2003 09 27 | 704 | 0.5- | 0.4+ | 2003 11 21 | 699 | 0.5-  | 0.8+  | 2007 12 16 | 691 | 0.3- | 0.7- |
| 2003 09 27 | 704 | 0.4- | 0.0  | 2003 11 21 | 699 | 0.7-  | 1.1-  | 2007 12 16 | 691 | 0.0  | 0.1- |
| 2003 09 27 | 704 | 0.6- | 0.4+ | 2003 11 21 | 704 | 0.1-  | 1.3+  | 2007 12 16 | 691 | 0.3+ | 0.0  |

**(172464)\* 2003 SQ<sub>10</sub>**

Discovered 2003 Sept. 17 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 330.76637  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27333000 | $\omega$ | 229.41406 | -0.25848182   | -0.96563623 |
| <i>a</i> | 2.3514974  | $\Omega$ | 235.58598 | +0.89592641   | -0.22914667 |
| <i>e</i> | 0.1876382  | <i>i</i> | 1.88171   | +0.36125201   | -0.12263144 |
| <i>P</i> | 3.61       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 04 02 | 691 | 0.3- | 0.4- | 2003 09 18 | 291 | 0.4-  | 0.0   | 2005 04 17 | 691 | 0.7+ | 0.4+ |
| 1994 04 02 | 691 | 0.0  | 0.4- | 2003 09 18 | 291 | 0.2-  | 0.0   | 2005 04 17 | 691 | 0.3- | 0.1+ |
| 1994 04 02 | 691 | 0.0  | 0.5+ | 2003 09 29 | 704 | (2.7+ | 0.6-) | 2007 09 18 | G96 | 0.3+ | 0.1- |
| 1998 04 20 | 688 | 0.6- | 0.6+ | 2003 09 29 | 704 | 0.4+  | 0.3+  | 2007 09 18 | G96 | 0.2+ | 0.0  |
| 1998 04 20 | 688 | 0.6- | 0.2- | 2003 09 29 | 704 | 0.0   | 0.1+  | 2007 09 18 | G96 | 0.0  | 0.3+ |
| 2001 02 02 | 704 | 0.1+ | 0.2+ | 2003 09 29 | 704 | (1.7- | 0.3-) | 2007 09 18 | G96 | 0.3+ | 0.0  |
| 2001 02 02 | 704 | 0.2+ | 0.7+ | 2003 09 29 | 691 | 0.1+  | 0.0   | 2007 11 09 | 691 | 0.0  | 0.1- |
| 2001 02 02 | 704 | 0.1- | 0.0  | 2003 09 29 | 691 | 0.1+  | 0.2+  | 2007 11 09 | 691 | 0.1- | 0.1- |
| 2001 02 02 | 704 | 0.0  | 0.2+ | 2003 09 29 | 691 | 0.0   | 0.1+  | 2007 11 09 | 691 | 0.2- | 0.3- |
| 2001 02 22 | 704 | 0.6+ | 0.2- | 2003 10 24 | 691 | 0.1-  | 0.1+  | 2007 12 04 | 691 | 0.2- | 0.2+ |
| 2001 02 22 | 704 | 0.5+ | 0.6- | 2003 10 24 | 691 | 0.0   | 0.4+  | 2007 12 04 | 691 | 0.3- | 0.4+ |



2007 DEC. 24

M.P.O. 129379

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 03 | 691 | 0.3+ | 0.3+ | 2003 09 29 | 691 | 0.1+  | 0.0   | 2007 11 15 | 704 | 0.6+  | 0.3+  |
| 2001 02 03 | 691 | 0.3+ | 0.0  | 2003 10 24 | 704 | 0.0   | 0.6+  | 2007 11 15 | 704 | 0.8+  | 0.4-  |
| 2001 02 03 | 691 | 0.3+ | 0.0  | 2003 10 24 | 704 | 0.1-  | 0.7+  | 2007 11 15 | 704 | 0.0   | 1.3-  |
| 2001 02 16 | 691 | 0.1- | 0.1+ | 2003 10 24 | 704 | 0.1-  | 0.6+  | 2007 11 15 | 704 | 0.8+  | 0.3+  |
| 2001 02 16 | 691 | 0.3- | 0.4+ | 2003 10 24 | 704 | 0.2-  | 1.0+  | 2007 11 20 | 704 | 0.7+  | 0.3+  |
| 2001 02 16 | 691 | 0.2- | 0.1- | 2003 10 24 | 704 | 0.1+  | 1.3+  | 2007 11 20 | 704 | 0.1-  | 0.2+  |
| 2003 09 17 | 691 | 0.1- | 0.1- | 2005 04 05 | G96 | 0.0   | 0.4+  | 2007 11 20 | 704 | 0.2+  | 0.7+  |
| 2003 09 17 | 691 | 0.0  | 0.1+ | 2005 04 05 | G96 | 0.3+  | 0.1+  | 2007 11 20 | 704 | 0.1+  | 0.4+  |
| 2003 09 17 | 691 | 0.2+ | 0.3- | 2005 04 05 | G96 | 0.4+  | 0.3-  | 2007 11 20 | 704 | 0.0   | 0.4+  |
| 2003 09 18 | 291 | 0.1- | 0.1- | 2005 04 05 | G96 | 0.4-  | 0.4-  | 2007 11 28 | D29 | 0.3+  | 1.2-  |
| 2003 09 18 | 291 | 0.3- | 0.1- | 2005 04 06 | G96 | 0.1+  | 0.0   | 2007 11 28 | D29 | (0.5- | 2.2-) |
| 2003 09 18 | 291 | 0.3- | 0.2- | 2005 04 06 | G96 | 0.3-  | 0.1-  | 2007 11 28 | D29 | 0.8-  | 1.1-  |
| 2003 09 20 | 291 | 0.0  | 0.0  | 2005 04 06 | G96 | 0.3+  | 0.4+  | 2007 11 28 | D29 | 0.4-  | 0.7-  |
| 2003 09 20 | 291 | 0.0  | 0.1+ | 2005 04 06 | G96 | 0.2-  | 0.1-  | 2007 12 05 | G96 | 0.0   | 0.8-  |
| 2003 09 20 | 291 | 0.1+ | 0.1- | 2005 04 07 | G96 | 0.3-  | 0.0   | 2007 12 05 | G96 | 0.4+  | 0.6-  |
| 2003 09 26 | 704 | 0.0  | 0.3+ | 2005 04 07 | G96 | 0.3+  | 0.3+  | 2007 12 05 | G96 | 0.5+  | 0.5-  |
| 2003 09 26 | 704 | 0.6- | 0.0  | 2005 04 07 | G96 | 0.4+  | 0.1+  | 2007 12 06 | D35 | 0.2-  | 0.9-  |
| 2003 09 26 | 704 | 0.4- | 0.5+ | 2005 04 07 | G96 | 0.4+  | 0.3+  | 2007 12 06 | D35 | 0.2-  | 0.1-  |
| 2003 09 26 | 704 | 0.1- | 0.0  | 2005 04 12 | G96 | 0.2-  | 0.1+  | 2007 12 06 | D35 | 0.2-  | 0.1+  |
| 2003 09 27 | 291 | 0.2+ | 0.1+ | 2005 04 12 | G96 | 0.2-  | 0.2+  | 2007 12 10 | 704 | 0.0   | 0.6+  |
| 2003 09 27 | 291 | 0.1+ | 0.1+ | 2005 04 12 | G96 | 0.1+  | 0.0   | 2007 12 10 | 704 | 0.0   | 0.6+  |
| 2003 09 27 | 291 | 0.1+ | 0.1+ | 2005 04 12 | G96 | 0.0   | 0.0   | 2007 12 10 | 704 | 0.8+  | 0.2+  |
| 2003 09 29 | 704 | 0.1- | 0.5+ | 2007 10 11 | 704 | (0.2+ | 1.6+) | 2007 12 14 | 704 | 0.4+  | 0.0   |
| 2003 09 29 | 704 | 0.1+ | 0.6+ | 2007 10 11 | 704 | 0.5-  | 1.4+  | 2007 12 14 | 704 | 0.6+  | 0.3+  |
| 2003 09 29 | 704 | 0.2+ | 0.0  | 2007 10 11 | 704 | 0.5-  | 1.1+  | 2007 12 14 | 704 | 0.2+  | 0.2-  |
| 2003 09 29 | 704 | 0.3+ | 0.1- | 2007 11 01 | 691 | 0.1-  | 0.1-  | 2007 12 14 | 704 | 0.4+  | 0.1-  |
| 2003 09 29 | 704 | 0.8- | 0.5+ | 2007 11 01 | 691 | 0.2-  | 0.3-  | 2007 12 14 | 704 | 0.2+  | 0.0   |
| 2003 09 29 | 691 | 0.1- | 0.1- | 2007 11 01 | 691 | 1.1-  | 0.0   |            |     |       |       |
| 2003 09 29 | 691 | 0.1+ | 0.1- | 2007 11 15 | 704 | 0.6+  | 0.3+  |            |     |       |       |

(172466)\* 2003 SN<sub>17</sub> = 1999 LU<sub>33</sub>

Discovered 2003 Sept. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 53294)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.63259   | (2000.0) | <b>P</b>  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.27405135 | $\omega$ | 122.80122 | +0.85450301 |
| <i>a</i> | 2.3473693  | $\Omega$ | 206.01715 | -0.49803936 |
| <i>e</i> | 0.2505983  | <i>i</i> | 4.27800   | +0.79976358 |
| <i>P</i> | 3.60       | <i>H</i> | 16.3      | -0.30269498 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 06 11 | 703 | 0.2- | 1.0+ | 2003 09 27 | 704 | 0.1- | 0.3- | 2003 12 21 | 704 | 0.1+ | 0.6- |
| 1999 06 11 | 703 | 0.9+ | 0.7- | 2003 09 27 | 704 | 0.1+ | 0.2+ | 2003 12 21 | 704 | 0.3+ | 0.1- |
| 1999 06 11 | 703 | 0.6- | 0.2+ | 2003 09 27 | 704 | 0.1+ | 0.2+ | 2003 12 21 | 704 | 0.9+ | 0.1+ |
| 1999 06 11 | 703 | 0.2- | 0.1+ | 2003 09 27 | 704 | 0.3+ | 0.0  | 2006 04 25 | 644 | 0.5- | 0.2+ |
| 1999 06 11 | 703 | 0.8- | 0.2- | 2003 09 27 | 704 | 0.3- | 0.2- | 2006 04 25 | 644 | 0.4+ | 0.3+ |
| 1999 06 11 | 703 | 0.4+ | 0.8+ | 2003 09 29 | 691 | 0.1- | 0.0  | 2006 04 25 | 644 | 0.3+ | 0.1+ |
| 1999 06 11 | 703 | 0.4- | 0.5+ | 2003 09 29 | 691 | 0.1+ | 0.1- | 2006 05 01 | 704 | 0.8+ | 0.8+ |
| 1999 06 11 | 703 | 0.0  | 0.7+ | 2003 09 29 | 691 | 0.1+ | 0.0  | 2006 05 01 | 704 | 0.9+ | 1.2+ |
| 1999 06 15 | 704 | 0.3- | 0.1- | 2003 10 01 | 699 | 0.2- | 0.4- | 2006 05 01 | 704 | 0.4+ | 0.4+ |
| 1999 06 15 | 704 | 0.4- | 0.2- | 2003 10 01 | 699 | 0.2+ | 0.1+ | 2006 05 01 | 704 | 1.3+ | 1.3+ |
| 1999 06 15 | 704 | 0.6+ | 0.2- | 2003 10 01 | 699 | 0.3- | 0.0  | 2006 05 03 | G96 | 0.4- | 0.0  |
| 1999 06 15 | 704 | 0.3+ | 0.4+ | 2003 10 01 | 699 | 0.2+ | 0.2- | 2006 05 03 | G96 | 0.3- | 0.2- |
| 1999 06 15 | 704 | 0.9+ | 0.2+ | 2003 10 15 | 699 | 0.1+ | 0.1+ | 2006 05 03 | G96 | 0.2- | 0.1+ |
| 2003 07 29 | 704 | 0.2+ | 0.1- | 2003 10 15 | 699 | 0.5- | 0.6- | 2006 05 03 | G96 | 0.1- | 0.1- |
| 2003 07 29 | 704 | 0.2+ | 0.1- | 2003 10 15 | 699 | 0.3- | 0.0  | 2006 05 03 | 246 | 0.1+ | 0.3+ |
| 2003 07 29 | 704 | 0.1- | 0.1- | 2003 10 15 | 699 | 0.2+ | 0.4- | 2006 05 03 | 246 | 0.8+ | 0.2+ |
| 2003 07 29 | 704 | 0.0  | 0.6+ | 2003 10 19 | 704 | 0.1- | 0.9+ | 2006 05 03 | 246 | 0.5+ | 0.8+ |
| 2003 07 29 | 704 | 0.2- | 0.2+ | 2003 10 19 | 704 | 0.1- | 1.0+ | 2006 05 03 | 246 | 0.5+ | 0.1- |
| 2003 08 05 | 704 | 0.4+ | 0.2- | 2003 10 19 | 704 | 0.4- | 0.7+ | 2006 05 03 | 246 | 0.0  | 0.6+ |
| 2003 08 05 | 704 | 1.1- | 0.7+ | 2003 10 19 | 704 | 0.0  | 0.6+ | 2006 05 04 | G96 | 0.1+ | 0.1+ |
| 2003 08 05 | 704 | 0.5- | 0.5- | 2003 10 19 | 704 | 0.5- | 0.7+ | 2006 05 04 | G96 | 0.3- | 0.2+ |
| 2003 08 05 | 704 | 0.0  | 1.1- | 2003 10 20 | 704 | 0.3+ | 0.6+ | 2006 05 04 | G96 | 0.1+ | 0.8+ |
| 2003 08 05 | 704 | 0.5- | 0.8- | 2003 10 20 | 704 | 0.4- | 0.0  | 2006 05 04 | G96 | 0.2- | 0.1+ |
| 2003 09 04 | 704 | 0.8+ | 0.2+ | 2003 10 20 | 704 | 0.1+ | 0.8+ | 2006 05 19 | 703 | 0.5- | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 04 | 704 | 0.9+ | 0.2- | 2003 10 20 | 704 | 0.4- | 0.6+ | 2006 05 19 | 703 | 0.3+  | 0.6+  |
| 2003 09 04 | 704 | 0.6+ | 0.2+ | 2003 10 20 | 704 | 0.1+ | 0.1+ | 2006 05 19 | 703 | 1.2-  | 1.4+  |
| 2003 09 04 | 704 | 1.0+ | 0.3- | 2003 10 24 | 704 | 0.0  | 0.4+ | 2006 05 19 | 703 | 1.2+  | 0.2+  |
| 2003 09 04 | 704 | 0.5+ | 0.6- | 2003 10 24 | 704 | 0.5+ | 1.0+ | 2006 05 23 | G96 | 0.4-  | 0.0   |
| 2003 09 18 | 644 | 0.0  | 0.1- | 2003 10 24 | 704 | 0.0  | 0.2+ | 2006 05 23 | G96 | 0.1-  | 0.1+  |
| 2003 09 18 | 644 | 0.1+ | 0.1- | 2003 10 24 | 704 | 0.0  | 0.6+ | 2006 05 23 | G96 | 0.1-  | 0.2+  |
| 2003 09 18 | 691 | 0.0  | 0.1- | 2003 10 24 | 704 | 0.1+ | 0.2+ | 2006 05 23 | G96 | 0.2+  | 0.1+  |
| 2003 09 18 | 644 | 0.3+ | 0.0  | 2003 10 26 | 683 | 0.0  | 0.2+ | 2006 05 27 | 704 | (2.0+ | 0.2-) |
| 2003 09 18 | 691 | 0.0  | 0.1- | 2003 10 26 | 683 | 0.2+ | 0.0  | 2006 05 27 | 704 | 0.4+  | 0.6+  |
| 2003 09 18 | 608 | 0.2- | 0.5+ | 2003 10 26 | 683 | 0.0  | 0.2- | 2006 05 27 | 704 | 0.3-  | 0.7+  |
| 2003 09 18 | 608 | 0.4- | 0.6+ | 2003 10 26 | 703 | 1.3- | 0.3+ | 2007 11 04 | 704 | 0.5-  | 0.9+  |
| 2003 09 18 | 691 | 0.0  | 0.1- | 2003 10 26 | 703 | 1.3- | 0.2+ | 2007 11 04 | 704 | 0.9-  | 1.2+  |
| 2003 09 18 | 608 | 0.2- | 0.3+ | 2003 10 26 | 703 | 0.3- | 0.0  | 2007 11 04 | 704 | 1.5-  | 0.4+  |
| 2003 09 19 | 333 | 0.1+ | 0.1- | 2003 10 26 | 703 | 0.6- | 0.3- | 2007 11 04 | 704 | 0.2+  | 1.1+  |
| 2003 09 19 | 333 | 0.1+ | 0.1- | 2003 10 27 | 683 | 0.8+ | 0.2- | 2007 11 12 | 704 | (0.7+ | 2.2+) |
| 2003 09 19 | 333 | 0.2- | 0.0  | 2003 10 27 | 683 | 1.3+ | 0.4- | 2007 11 12 | 704 | 0.1-  | 0.1-  |
| 2003 09 20 | 333 | 0.1+ | 0.1- | 2003 10 27 | 683 | 0.1+ | 1.0+ | 2007 11 12 | 704 | 0.8+  | 1.2+  |
| 2003 09 20 | 704 | 0.8- | 0.0  | 2003 11 21 | 699 | 0.2+ | 0.7+ | 2007 11 12 | 704 | 0.7+  | 0.1+  |
| 2003 09 20 | 704 | 0.6- | 0.0  | 2003 11 21 | 704 | 0.2+ | 0.8+ | 2007 12 04 | 704 | 0.3-  | 0.4+  |
| 2003 09 20 | 333 | 0.4+ | 0.2- | 2003 11 21 | 699 | 0.2- | 0.6+ | 2007 12 04 | 704 | 0.5+  | 0.3+  |
| 2003 09 20 | 704 | 0.9- | 0.1+ | 2003 11 21 | 704 | 0.5+ | 0.4- | 2007 12 04 | 704 | 0.1-  | 1.2+  |
| 2003 09 20 | 704 | 0.2- | 0.0  | 2003 11 21 | 699 | 0.8- | 0.1- | 2007 12 04 | 704 | 0.2-  | 0.6+  |
| 2003 09 20 | 704 | 1.0- | 0.2+ | 2003 11 21 | 704 | 0.0  | 0.7+ | 2007 12 05 | G96 | 0.2+  | 0.2+  |
| 2003 09 20 | 333 | 0.2- | 0.0  | 2003 11 21 | 699 | 0.5+ | 0.9+ | 2007 12 05 | G96 | 0.2-  | 0.3+  |
| 2003 09 23 | 608 | 0.2- | 0.6- | 2003 11 21 | 704 | 0.4+ | 0.7+ | 2007 12 05 | G96 | 0.1+  | 0.1-  |
| 2003 09 23 | 608 | 0.1- | 0.6- | 2003 11 21 | 704 | 0.1- | 0.3+ | 2007 12 05 | G96 | 0.5+  | 0.1-  |
| 2003 09 23 | 608 | 0.1- | 0.5- | 2003 12 21 | 704 | 0.7+ | 0.9+ |            |     |       |       |

(172467)\* 2003 SZ<sub>22</sub> = 1978 WD<sub>20</sub> = 2001 BV<sub>24</sub>

Discovered 2003 Sept. 16 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 53298), A. Doppler (*MPO* 115776)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.06060   | (2000.0) | <b>P</b>  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.27562718 | $\omega$ | 114.41764 | +0.88808294 |
| <i>a</i> | 2.3384137  | $\Omega$ | 272.78580 | +0.39996610 |
| <i>e</i> | 0.1856597  | <i>i</i> | 3.07092   | +0.22657407 |
| <i>P</i> | 3.58       | <i>H</i> | 16.1      | +0.33347170 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1978 11 28 | 675 | 0.4+  | 1.6-  | 2003 09 21 | 644 | 0.4+ | 0.2+ | 2003 10 25 | 704 | 0.2-  | 0.3-  |
| 1978 11 29 | 675 | 0.5+  | 1.1-  | 2003 09 21 | 644 | 0.4+ | 0.4+ | 2003 10 30 | 704 | 0.2+  | 0.4+  |
| 2001 01 20 | 704 | 0.4+  | 0.1+  | 2003 09 21 | 644 | 0.6+ | 0.4+ | 2003 10 30 | 704 | 0.1-  | 0.3-  |
| 2001 01 20 | 704 | 0.3-  | 1.1+  | 2003 09 22 | 699 | 0.6- | 0.0  | 2003 10 30 | 704 | 0.8-  | 0.1-  |
| 2001 01 20 | 704 | 0.1+  | 1.2+  | 2003 09 22 | 699 | 0.5- | 0.0  | 2003 10 30 | 704 | 0.1-  | 0.1-  |
| 2001 01 21 | 704 | 0.7-  | 0.1-  | 2003 09 22 | 699 | 0.3- | 0.4- | 2003 10 30 | 704 | 0.9-  | 0.1+  |
| 2001 01 21 | 704 | 0.3+  | 0.2+  | 2003 09 22 | 699 | 0.3- | 0.3- | 2003 11 20 | 704 | 0.1-  | 0.5+  |
| 2001 01 21 | 704 | 0.2-  | 0.1-  | 2003 09 23 | 608 | 0.6- | 0.6- | 2003 11 20 | 704 | 0.1+  | 0.9+  |
| 2001 01 21 | 704 | 0.7-  | 0.6+  | 2003 09 23 | 608 | 0.3- | 0.5- | 2003 11 20 | 704 | 0.1-  | 0.1+  |
| 2001 01 21 | 704 | 0.4+  | 0.5+  | 2003 09 23 | 608 | 0.3- | 0.7- | 2003 11 20 | 704 | (0.3+ | 1.9+) |
| 2001 01 21 | 704 | 0.3-  | 0.0   | 2003 09 27 | 704 | 0.1+ | 0.4- | 2003 11 20 | 704 | 0.4+  | 0.6+  |
| 2001 01 21 | 704 | 0.1-  | 0.3+  | 2003 09 27 | 704 | 0.1- | 0.4- | 2003 11 21 | 699 | 0.3-  | 0.3+  |
| 2001 01 21 | 704 | 0.3+  | 0.7+  | 2003 09 27 | 704 | 0.0  | 0.3- | 2003 11 21 | 699 | 0.2-  | 0.1+  |
| 2001 01 21 | 704 | 0.1+  | 0.0   | 2003 09 27 | 704 | 0.0  | 0.2+ | 2003 11 21 | 699 | 0.4+  | 0.2-  |
| 2001 01 21 | 704 | 0.9+  | 0.2+  | 2003 09 27 | 704 | 0.0  | 0.1- | 2003 11 21 | 699 | 1.3+  | 0.3+  |
| 2001 01 21 | 704 | 0.5-  | 0.0   | 2003 09 29 | 699 | 0.1+ | 0.4- | 2003 11 24 | 704 | 0.0   | 0.3+  |
| 2001 01 21 | 704 | 0.6+  | 0.1-  | 2003 09 29 | 699 | 0.1- | 0.1- | 2003 11 24 | 704 | 1.0+  | 0.7+  |
| 2001 01 21 | 704 | 0.3+  | 0.2-  | 2003 09 29 | 699 | 0.2+ | 0.0  | 2003 11 24 | 704 | 0.4+  | 0.3+  |
| 2001 02 02 | 704 | 0.4+  | 0.4-  | 2003 09 29 | 699 | 0.1+ | 0.2+ | 2003 11 24 | 704 | 0.1+  | 0.6+  |
| 2001 02 02 | 704 | 0.2+  | 0.3-  | 2003 10 06 | 699 | 0.6+ | 0.5+ | 2003 11 28 | 699 | 0.3-  | 0.0   |
| 2001 02 02 | 704 | 0.5+  | 1.0-  | 2003 10 06 | 699 | 0.6- | 0.0  | 2003 11 28 | 699 | 0.7-  | 0.4+  |
| 2002 04 14 | 704 | 0.5+  | 0.5+  | 2003 10 06 | 699 | 0.4+ | 0.4- | 2003 11 28 | 699 | 0.6+  | 0.2+  |
| 2002 04 14 | 704 | (0.9- | 2.0+) | 2003 10 06 | 699 | 0.1- | 0.0  | 2003 11 28 | 699 | 0.5+  | 0.5+  |
| 2002 04 14 | 704 | 0.4+  | 0.3+  | 2003 10 15 | 699 | 0.2- | 0.5- | 2005 03 10 | 703 | 0.7-  | 0.5+  |
| 2002 04 14 | 704 | (0.0- | 2.0+) | 2003 10 15 | 699 | 0.7- | 0.2- | 2005 03 10 | 703 | (0.7+ | 1.6+) |
| 2003 09 16 | 644 | 0.4-  | 0.1+  | 2003 10 15 | 699 | 0.3- | 0.2+ | 2005 03 10 | 703 | 0.8+  | 0.3+  |
| 2003 09 16 | 644 | 0.3-  | 0.2+  | 2003 10 15 | 699 | 0.3+ | 0.3- | 2005 03 10 | 703 | 0.2-  | 0.4+  |
| 2003 09 16 | 644 | 0.3-  | 0.2+  | 2003 10 18 | 691 | 0.2- | 0.1+ | 2007 11 02 | G96 | 0.2+  | 0.3-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 644 | 0.1− | 0.1− | 2003 10 18 | 691 | 0.1+ | 0.1+ | 2007 11 02 | G96 | 0.4+ | 0.3− |
| 2003 09 18 | 644 | 0.2− | 0.4+ | 2003 10 18 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.0  | 0.4− |
| 2003 09 18 | 644 | 0.1− | 0.1− | 2003 10 19 | 644 | 0.4− | 0.5+ | 2007 11 02 | G96 | 0.1+ | 0.2− |
| 2003 09 18 | 644 | 0.2− | 0.2+ | 2003 10 19 | 644 | 0.3− | 0.2+ | 2007 11 05 | G96 | 0.1+ | 0.3− |
| 2003 09 18 | 644 | 0.0  | 0.0  | 2003 10 19 | 644 | 0.5− | 0.4+ | 2007 11 05 | G96 | 0.1+ | 0.3− |
| 2003 09 18 | 644 | 0.1− | 0.2+ | 2003 10 21 | 704 | 0.3+ | 0.3+ | 2007 11 05 | G96 | 0.0  | 0.4− |
| 2003 09 19 | 608 | 0.7+ | 1.2− | 2003 10 21 | 704 | 0.2+ | 0.5+ | 2007 11 05 | G96 | 0.2− | 0.5− |
| 2003 09 19 | 608 | 0.1− | 0.7− | 2003 10 21 | 704 | 0.7+ | 1.0− | 2007 12 04 | 699 | 0.3− | 0.5− |
| 2003 09 19 | 608 | 0.1+ | 0.2− | 2003 10 21 | 704 | 0.1− | 0.0  | 2007 12 04 | 699 | 0.9− | 0.2+ |
| 2003 09 20 | 704 | 0.2+ | 0.4+ | 2003 10 21 | 704 | 0.0  | 0.2− | 2007 12 04 | 699 | 0.4+ | 0.1− |
| 2003 09 20 | 704 | 0.4− | 1.0+ | 2003 10 25 | 704 | 0.1+ | 0.1+ | 2007 12 04 | 699 | 0.5+ | 0.1− |
| 2003 09 20 | 704 | 0.1+ | 1.2+ | 2003 10 25 | 704 | 0.3+ | 0.0  | 2007 12 16 | 691 | 0.0  | 0.1− |
| 2003 09 20 | 704 | 0.5+ | 0.4+ | 2003 10 25 | 704 | 0.2+ | 0.0  | 2007 12 16 | 691 | 0.2− | 0.1+ |
| 2003 09 20 | 704 | 0.1+ | 0.6+ | 2003 10 25 | 704 | 0.0  | 0.3− | 2007 12 16 | 691 | 0.1− | 0.0  |

**(172468)\* 2003 SE<sub>37</sub>**

Discovered 2003 Sept. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 29.02735   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27388081 | $\omega$ 55.92442  | +0.93188343   | −0.35676109 |
| <i>a</i> | 2.3483436  | $\Omega$ 324.84786 | +0.28374202   | +0.82967179 |
| <i>e</i> | 0.1137570  | <i>i</i> 6.55113   | +0.22601713   | +0.42937891 |
| <i>P</i> | 3.60       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 01 08 | 691 | 0.2+  | 0.2−  | 2003 09 23 | 644 | 0.4+  | 0.1+  | 2005 02 09 | 699 | (0.1+ | 2.0+) |
| 1994 01 08 | 691 | 0.1−  | 0.0   | 2003 09 25 | 608 | (0.9+ | 1.5−) | 2005 02 09 | 699 | 0.6+  | 0.4+  |
| 1994 01 08 | 691 | 0.2−  | 0.1−  | 2003 09 25 | 608 | (0.6+ | 2.0−) | 2005 02 09 | 699 | (0.2+ | 1.6+) |
| 2001 01 04 | 704 | 0.1+  | 0.3−  | 2003 09 25 | 608 | 0.2+  | 1.0−  | 2005 02 09 | G96 | 0.1−  | 0.0   |
| 2001 01 04 | 704 | 0.3−  | 0.2+  | 2003 09 26 | 683 | 0.1−  | 0.4−  | 2005 02 09 | G96 | 0.0   | 0.0   |
| 2001 01 04 | 704 | 0.0   | 0.2−  | 2003 09 26 | 683 | 0.2−  | 0.2−  | 2005 02 09 | G96 | 0.1−  | 0.1+  |
| 2001 01 04 | 704 | 0.5+  | 0.4+  | 2003 09 26 | 683 | (1.6− | 0.2+) | 2005 02 09 | G96 | 0.2−  | 0.1+  |
| 2003 08 24 | 704 | 0.0   | 0.7+  | 2003 09 27 | 704 | 0.6+  | 0.0   | 2005 03 08 | 704 | (1.9+ | 0.1+) |
| 2003 08 24 | 704 | 0.9−  | 0.3+  | 2003 09 27 | 704 | 0.2+  | 0.6+  | 2005 03 08 | 704 | 0.7+  | 0.5+  |
| 2003 08 24 | 704 | 0.2−  | 0.3+  | 2003 09 27 | 704 | 0.3+  | 0.1−  | 2005 03 08 | 704 | (2.0+ | 0.2+) |
| 2003 08 24 | 704 | 0.6−  | 0.4+  | 2003 09 27 | 704 | 0.5+  | 0.5+  | 2005 03 08 | 704 | 0.2−  | 0.1+  |
| 2003 08 24 | 704 | 0.4−  | 0.7+  | 2003 09 27 | 683 | 0.3+  | 0.4−  | 2005 03 09 | G96 | 0.1−  | 0.3+  |
| 2003 09 03 | 704 | 0.6−  | 0.4−  | 2003 09 27 | 704 | 0.0   | 0.4+  | 2005 03 09 | G96 | 0.1+  | 0.2+  |
| 2003 09 03 | 704 | 0.2−  | 0.1−  | 2003 09 27 | 683 | 0.5+  | 0.7+  | 2005 03 09 | G96 | 0.1+  | 0.1+  |
| 2003 09 03 | 704 | 0.3−  | 0.2−  | 2003 09 27 | 683 | (1.8− | 0.5−) | 2005 03 09 | G96 | 0.3+  | 0.3+  |
| 2003 09 15 | 699 | 0.6−  | 0.5−  | 2003 09 28 | 683 | 0.4−  | 0.5−  | 2007 11 02 | 704 | 0.8+  | 0.1−  |
| 2003 09 15 | 699 | 0.1−  | 0.6−  | 2003 09 28 | 683 | (2.6− | 0.4+) | 2007 11 02 | 704 | 1.3+  | 0.3−  |
| 2003 09 15 | 699 | (0.4− | 1.8−) | 2003 09 28 | 683 | 1.3−  | 0.1−  | 2007 11 02 | 704 | 0.3+  | 0.9−  |
| 2003 09 15 | 699 | (1.8+ | 0.0 ) | 2003 09 29 | 683 | 0.1+  | 1.1−  | 2007 11 02 | 704 | 1.0−  | 0.1−  |
| 2003 09 16 | 644 | 0.4−  | 0.0   | 2003 09 29 | 683 | (2.0+ | 0.3−) | 2007 11 02 | 704 | 0.3+  | 0.8+  |
| 2003 09 16 | 644 | 0.3−  | 0.0   | 2003 09 29 | 683 | 1.1+  | 0.0   | 2007 11 08 | 704 | 0.2+  | 0.3+  |
| 2003 09 16 | 644 | 0.2−  | 0.0   | 2003 09 30 | 683 | 0.4−  | 0.3+  | 2007 11 08 | 704 | 1.1+  | 0.3+  |
| 2003 09 19 | 704 | 1.0−  | 0.2−  | 2003 09 30 | 683 | (2.0+ | 0.4−) | 2007 11 08 | 704 | 0.2+  | 0.1−  |
| 2003 09 19 | 704 | 0.1+  | 0.4+  | 2003 09 30 | 683 | 1.3+  | 0.4+  | 2007 11 08 | 704 | 0.9+  | 0.1+  |
| 2003 09 19 | 704 | 0.0   | 0.5+  | 2003 10 01 | 683 | (1.9+ | 0.3+) | 2007 11 08 | 703 | 0.6−  | 0.5+  |
| 2003 09 19 | 704 | 0.1+  | 0.2+  | 2003 10 01 | 683 | (3.3+ | 1.1−) | 2007 11 08 | 704 | 0.5+  | 0.3−  |
| 2003 09 19 | 704 | 0.4+  | 0.4+  | 2003 10 01 | 683 | 0.8+  | 0.3−  | 2007 11 08 | 703 | 0.8−  | 0.8−  |
| 2003 09 19 | 608 | 0.6−  | 1.2+  | 2003 10 04 | 683 | 1.2−  | 0.8+  | 2007 11 08 | 703 | 0.1−  | 0.0   |
| 2003 09 19 | 608 | 0.7−  | 1.4+  | 2003 10 04 | 683 | 0.2−  | 0.1+  | 2007 11 08 | 703 | 0.4−  | 0.1−  |
| 2003 09 19 | 608 | 0.8−  | 0.1+  | 2003 10 04 | 683 | 1.2+  | 0.2−  | 2007 11 09 | 704 | 0.5+  | 0.3−  |
| 2003 09 20 | 683 | 1.2+  | 0.6−  | 2003 10 14 | 699 | 0.2+  | 0.7+  | 2007 11 09 | 704 | 0.5−  | 0.1−  |
| 2003 09 20 | 683 | (0.4− | 1.9−) | 2003 10 14 | 699 | 0.8+  | 0.9−  | 2007 11 09 | 704 | 0.1+  | 0.3+  |
| 2003 09 20 | 683 | 0.4−  | 0.2−  | 2003 10 14 | 699 | 0.0   | 0.2−  | 2007 11 09 | 704 | 0.2−  | 0.7−  |
| 2003 09 21 | 683 | (1.7− | 1.7−) | 2003 10 14 | 699 | (0.1+ | 1.6+) | 2007 11 09 | 704 | 0.1+  | 0.2+  |
| 2003 09 21 | 683 | (1.9− | 2.6−) | 2003 10 15 | 644 | 0.1−  | 0.0   | 2007 11 17 | 704 | 0.3−  | 0.1+  |
| 2003 09 21 | 683 | 1.4+  | 0.3−  | 2003 10 15 | 644 | 0.3+  | 0.1−  | 2007 11 17 | 704 | 0.7−  | 0.3+  |
| 2003 09 22 | 699 | 0.2−  | 0.3+  | 2003 10 15 | 644 | 0.0   | 0.0   | 2007 11 17 | 704 | 0.4−  | 0.0   |
| 2003 09 22 | 683 | 0.3−  | 0.6+  | 2003 10 15 | 644 | 0.1+  | 0.2−  | 2007 11 17 | 704 | 0.0   | 0.0   |
| 2003 09 22 | 683 | 0.4−  | 0.8−  | 2003 10 15 | 644 | 0.3+  | 0.1+  | 2007 11 17 | 704 | 0.8−  | 0.2+  |
| 2003 09 22 | 699 | 0.7+  | 0.6−  | 2003 10 15 | 644 | 0.2+  | 0.1−  | 2007 12 16 | 704 | 0.9−  | 0.0   |
| 2003 09 22 | 683 | 0.9−  | 1.3−  | 2005 02 03 | 704 | 0.3+  | 1.3−  | 2007 12 16 | 704 | 0.0   | 0.8+  |
| 2003 09 22 | 699 | 0.1+  | 0.1+  | 2005 02 03 | 704 | 0.2+  | 0.1+  | 2007 12 16 | 704 | 0.2−  | 0.7+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 22 | 699 | 0.0  | 0.2− | 2005 02 03 | 704 | 0.5−  | 1.2+  | 2007 12 16 | 704 | 0.1+ | 0.1+ |
| 2003 09 23 | 644 | 0.1+ | 0.2+ | 2005 02 03 | 704 | 0.1+  | 0.1−  |            |     |      |      |
| 2003 09 23 | 644 | 0.3+ | 0.3+ | 2005 02 09 | 699 | (0.9+ | 1.9+) |            |     |      |      |

**(172469)\* 2003 SF<sub>45</sub>**

Discovered 2003 Sept. 16 by the Lowell Observatory Near-Earth Object

Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 50.94022   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27647857 | $\omega$ 335.96400 | +0.99512916   | −0.09524528 |
| <i>a</i> | 2.3336107  | $\Omega$ 29.53592  | +0.09672343   | +0.89355355 |
| <i>e</i> | 0.2558602  | <i>i</i> 2.95606   | +0.01904053   | +0.43873728 |
| <i>P</i> | 3.56       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 19 | 704 | (0.2− | 1.6+) | 2003 09 28 | 645 | 0.1+  | 0.2−  | 2003 11 16 | 645 | 0.0   | 0.1−  |
| 2001 01 19 | 704 | 0.3−  | 0.5−  | 2003 10 01 | 699 | 0.4−  | 0.8+  | 2003 11 19 | 645 | 0.0   | 0.1+  |
| 2001 01 19 | 704 | (2.0+ | 1.6−) | 2003 10 01 | 699 | 0.6−  | 0.1−  | 2003 11 19 | 645 | 0.0   | 0.2−  |
| 2002 04 04 | 691 | 0.2+  | 0.7+  | 2003 10 01 | 699 | 0.1−  | 0.2−  | 2003 11 20 | 645 | 0.0   | 0.0   |
| 2002 04 04 | 691 | 0.1+  | 1.0+  | 2003 10 01 | 699 | 0.0   | 0.2+  | 2003 11 20 | 645 | 0.1−  | 0.0   |
| 2002 04 04 | 691 | 0.3+  | 0.2+  | 2003 10 06 | 699 | 0.0   | 0.3−  | 2003 11 21 | 699 | 0.3+  | 0.3+  |
| 2002 04 14 | 704 | 1.0+  | 0.3−  | 2003 10 06 | 699 | 0.3−  | 0.0   | 2003 11 21 | 699 | 0.1+  | 1.4+  |
| 2002 04 14 | 704 | 0.3+  | 0.2−  | 2003 10 06 | 699 | 0.0   | 0.7−  | 2003 11 21 | 704 | 0.1−  | 1.5+  |
| 2002 04 14 | 704 | 0.5+  | 0.7+  | 2003 10 06 | 699 | 0.5−  | 0.4−  | 2003 11 21 | 699 | 0.2+  | 0.8+  |
| 2002 05 08 | 291 | 0.3+  | 0.1+  | 2003 10 15 | 699 | 0.0   | 0.6−  | 2003 11 21 | 704 | 0.2−  | 1.0+  |
| 2002 05 08 | 291 | 0.3+  | 0.4+  | 2003 10 15 | 699 | 0.1−  | 0.1+  | 2003 11 21 | 699 | 0.3+  | 0.3+  |
| 2002 05 08 | 291 | 0.1+  | 0.1+  | 2003 10 15 | 699 | 0.2−  | 0.2−  | 2003 11 21 | 704 | 0.2−  | 0.9+  |
| 2003 08 01 | 704 | 0.6−  | 0.3+  | 2003 10 15 | 699 | 0.5+  | 0.6−  | 2003 11 21 | 704 | 0.1+  | 0.9+  |
| 2003 08 01 | 704 | 0.3−  | 0.8+  | 2003 10 16 | 699 | 0.0   | 0.3+  | 2003 11 21 | 704 | 0.1−  | 1.2+  |
| 2003 08 01 | 704 | 0.6−  | 0.1+  | 2003 10 16 | 699 | 0.5−  | 0.6+  | 2003 12 14 | 704 | 0.9+  | 0.3−  |
| 2003 08 01 | 704 | 0.5−  | 0.6+  | 2003 10 16 | 699 | 0.3−  | 0.9+  | 2003 12 14 | 704 | (1.2− | 1.5+) |
| 2003 09 02 | 704 | 0.2+  | 0.5+  | 2003 10 16 | 699 | 0.7−  | 1.4+  | 2003 12 14 | 704 | 0.8−  | 0.3+  |
| 2003 09 02 | 704 | 0.2−  | 1.3+  | 2003 10 18 | 704 | 0.1−  | 0.6+  | 2003 12 14 | 704 | 1.0−  | 0.4+  |
| 2003 09 02 | 704 | 0.8−  | 0.3−  | 2003 10 18 | 704 | 0.5+  | 0.5+  | 2003 12 21 | 704 | 0.1−  | 0.6+  |
| 2003 09 02 | 704 | 0.3−  | 0.1+  | 2003 10 18 | 704 | 0.5+  | 0.4+  | 2003 12 21 | 704 | 0.2−  | 0.1+  |
| 2003 09 02 | 704 | 0.9−  | 0.6+  | 2003 10 18 | 704 | 0.6+  | 0.1+  | 2003 12 21 | 704 | 1.3+  | 0.8+  |
| 2003 09 16 | 699 | 0.1−  | 0.2−  | 2003 10 18 | 704 | 0.2+  | 0.6+  | 2003 12 21 | 704 | 0.2−  | 0.0   |
| 2003 09 16 | 699 | 0.0   | 0.2−  | 2003 10 19 | 704 | 0.4+  | 0.4+  | 2005 04 04 | 691 | 0.3+  | 0.5+  |
| 2003 09 16 | 699 | 0.2−  | 0.4+  | 2003 10 19 | 704 | 0.2−  | 0.8+  | 2005 04 04 | 691 | 0.2+  | 0.6+  |
| 2003 09 16 | 699 | 0.2+  | 0.0   | 2003 10 19 | 704 | 0.1+  | 0.8+  | 2005 04 04 | 691 | 0.0   | 0.8+  |
| 2003 09 18 | 704 | 0.1−  | 0.4+  | 2003 10 19 | 704 | 0.7−  | 0.4+  | 2005 04 11 | G96 | 0.4−  | 0.2+  |
| 2003 09 18 | 704 | 0.1+  | 0.1+  | 2003 10 19 | 704 | 0.3−  | 0.8+  | 2005 04 11 | G96 | 0.5−  | 0.1−  |
| 2003 09 18 | 704 | 0.2−  | 0.0   | 2003 10 20 | 704 | 0.9+  | 1.0+  | 2005 04 11 | G96 | 0.2−  | 0.1+  |
| 2003 09 18 | 704 | 0.6−  | 0.1−  | 2003 10 20 | 704 | (1.7+ | 0.3−) | 2005 04 11 | G96 | 0.6−  | 0.7+  |
| 2003 09 18 | 704 | 0.2−  | 0.3−  | 2003 10 20 | 704 | 0.3−  | 0.8+  | 2006 05 24 | 644 | 0.5+  | 0.1+  |
| 2003 09 22 | 691 | 0.0   | 0.0   | 2003 10 20 | 704 | 0.5+  | 0.7+  | 2006 05 24 | 644 | 0.2+  | 0.5+  |
| 2003 09 22 | 691 | 0.1+  | 0.0   | 2003 10 20 | 704 | 0.1+  | 0.6+  | 2006 05 24 | 644 | 0.2−  | 0.1+  |
| 2003 09 22 | 691 | 0.1+  | 0.0   | 2003 10 20 | 704 | (1.1+ | 2.4+) | 2007 11 02 | G96 | 0.0   | 0.1+  |
| 2003 09 22 | 608 | 1.3−  | 0.9+  | 2003 10 20 | 704 | 0.2+  | 0.9+  | 2007 11 02 | G96 | 0.1+  | 0.0   |
| 2003 09 22 | 608 | 1.1−  | 1.2+  | 2003 10 20 | 704 | 0.2−  | 0.1+  | 2007 11 02 | G96 | 0.2+  | 0.1−  |
| 2003 09 22 | 608 | 1.3−  | 1.2+  | 2003 10 20 | 704 | 0.9−  | 1.1+  | 2007 11 02 | G96 | 0.3+  | 0.2+  |
| 2003 09 26 | 704 | 0.1+  | 0.1−  | 2003 10 20 | 704 | (0.5+ | 1.8+) | 2007 12 14 | D29 | 0.5−  | 0.1−  |
| 2003 09 26 | 704 | 0.4−  | 0.3−  | 2003 10 24 | 704 | 0.0   | 0.3+  | 2007 12 14 | D29 | 0.3−  | 0.4+  |
| 2003 09 26 | 704 | 0.4−  | 0.3−  | 2003 10 24 | 704 | 0.2+  | 1.3+  | 2007 12 14 | D29 | 0.2−  | 0.1−  |
| 2003 09 26 | 704 | 0.3−  | 0.0   | 2003 10 24 | 704 | (0.0  | 1.6+) | 2007 12 14 | D29 | 0.6−  | 0.4+  |
| 2003 09 26 | 704 | 0.4−  | 0.2−  | 2003 10 24 | 704 | (1.1− | 1.6+) | 2007 12 15 | 704 | 0.2+  | 0.1+  |
| 2003 09 28 | 704 | 0.5−  | 1.3−  | 2003 10 24 | 704 | (1.6− | 0.9+) | 2007 12 15 | 704 | 0.8+  | 0.2−  |
| 2003 09 28 | 704 | 0.2−  | 1.5−  | 2003 10 26 | 703 | 0.1−  | 0.6+  | 2007 12 15 | 704 | 0.1−  | 0.1−  |
| 2003 09 28 | 704 | (0.3− | 1.7−) | 2003 10 26 | 703 | 0.7−  | 0.5+  | 2007 12 15 | 704 | 0.4+  | 0.2−  |
| 2003 09 28 | 704 | (2.4+ | 4.5+) | 2003 10 26 | 703 | 0.1+  | 0.4+  | 2007 12 15 | 704 | 0.4+  | 0.9−  |
| 2003 09 28 | 704 | 0.5−  | 1.3−  | 2003 10 26 | 703 | 0.6−  | 0.7+  |            |     |       |       |
| 2003 09 28 | 645 | 0.2+  | 0.2−  | 2003 11 16 | 645 | 0.0   | 0.1−  |            |     |       |       |

2007 DEC. 24

M.P.O. 129381

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.32670    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26995683 | $\omega$ 314.57901 | +0.69244051   | -0.71852205 |
| <i>a</i> | 2.3710452  | $\Omega$ 91.47683  | +0.67904809   | +0.61851628 |
| <i>e</i> | 0.1253667  | <i>i</i> 3.74010   | +0.24376185   | +0.31806238 |
| <i>P</i> | 3.65       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 03 | 704 | 0.3-  | 0.2-  | 2003 10 16 | 644 | 0.0   | 0.6+  | 2007 11 03 | 691 | 0.1+ | 0.2- |
| 2001 01 03 | 704 | (1.8+ | 0.9-) | 2003 10 16 | 644 | 0.1-  | 0.3+  | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2001 01 03 | 704 | 0.1-  | 0.2+  | 2003 10 16 | 644 | 0.5-  | 0.6+  | 2007 11 04 | 704 | 0.2+ | 0.1- |
| 2001 01 03 | 704 | 0.9+  | 1.4+  | 2003 10 16 | 644 | 0.1-  | 0.2+  | 2007 11 04 | 704 | 0.3+ | 0.5- |
| 2001 01 03 | 704 | (1.0+ | 1.7+) | 2003 10 16 | 644 | 0.1-  | 0.4+  | 2007 11 04 | 704 | 0.2+ | 0.3- |
| 2001 01 19 | 704 | 0.1+  | 0.8+  | 2003 10 16 | 644 | 0.2-  | 0.5+  | 2007 11 04 | 704 | 0.0  | 0.2- |
| 2001 01 19 | 704 | 0.0   | 0.2+  | 2003 10 27 | 699 | 0.5-  | 1.3+  | 2007 11 04 | 704 | 0.1+ | 0.3- |
| 2001 01 19 | 704 | 0.0   | 0.7+  | 2003 10 27 | 699 | 0.4+  | 0.2+  | 2007 11 07 | 691 | 0.1- | 0.2- |
| 2001 01 19 | 704 | 0.1+  | 0.4-  | 2003 10 27 | 699 | 0.3+  | 0.3-  | 2007 11 07 | 691 | 0.2- | 0.1- |
| 2001 01 19 | 704 | 0.7-  | 0.5+  | 2003 10 27 | 699 | 0.7-  | 0.8+  | 2007 11 07 | 691 | 1.1- | 0.3+ |
| 2001 01 30 | 691 | 0.3+  | 0.5+  | 2005 03 03 | 703 | 0.4-  | 0.1+  | 2007 11 09 | D29 | 0.7+ | 0.5- |
| 2001 01 30 | 691 | 0.4-  | 0.1-  | 2005 03 03 | 703 | 1.4-  | 1.1+  | 2007 11 09 | D29 | 0.5+ | 0.2- |
| 2001 01 30 | 691 | 0.5+  | 0.3+  | 2005 03 03 | 703 | 0.3+  | 0.2-  | 2007 11 09 | D29 | 0.7+ | 0.2- |
| 2003 08 26 | 704 | 0.0   | 0.9+  | 2005 03 03 | 703 | 0.7-  | 0.1+  | 2007 11 09 | D29 | 0.7+ | 0.3- |
| 2003 08 26 | 704 | 0.7+  | 0.4+  | 2005 03 09 | 704 | (0.8+ | 2.7+) | 2007 11 14 | 704 | 0.6+ | 0.5- |
| 2003 08 26 | 704 | 0.5+  | 0.3-  | 2005 03 09 | 704 | 0.8+  | 0.8+  | 2007 11 14 | 704 | 0.6+ | 0.1+ |
| 2003 08 26 | 704 | 0.6+  | 0.6+  | 2005 03 09 | 704 | 0.3-  | 1.1+  | 2007 11 14 | 704 | 0.1+ | 0.2+ |
| 2003 08 26 | 704 | 0.2+  | 0.4+  | 2005 03 09 | 704 | 0.9+  | 0.3-  | 2007 11 14 | 704 | 0.2+ | 0.2+ |
| 2003 09 16 | 699 | 0.6-  | 0.3+  | 2005 03 10 | 699 | 0.1-  | 0.1-  | 2007 11 14 | 704 | 0.0  | 0.3- |
| 2003 09 16 | 699 | 0.1-  | 0.2+  | 2005 03 10 | 699 | 0.1-  | 0.1-  | 2007 11 18 | G96 | 0.1+ | 0.3- |
| 2003 09 16 | 699 | (1.7+ | 0.1+) | 2005 03 10 | 699 | 0.4-  | 0.1-  | 2007 11 18 | G96 | 0.5+ | 0.3- |
| 2003 09 16 | 699 | 1.4+  | 0.1+  | 2005 03 10 | 699 | 0.2+  | 0.3-  | 2007 11 18 | G96 | 0.4+ | 0.3- |
| 2003 09 17 | 644 | 0.6-  | 0.5+  | 2005 03 12 | 704 | 0.2+  | 0.7+  | 2007 11 18 | G96 | 0.1+ | 0.3- |
| 2003 09 17 | 644 | 0.5-  | 0.4+  | 2005 03 12 | 704 | 0.2+  | 0.9+  | 2007 11 19 | 691 | 0.0  | 0.2- |
| 2003 09 17 | 644 | 0.3-  | 0.6+  | 2005 03 12 | 704 | 0.2+  | 0.1+  | 2007 11 19 | 691 | 0.0  | 0.2- |
| 2003 09 18 | 704 | 1.2-  | 0.1+  | 2005 03 12 | 704 | 0.0   | 0.9+  | 2007 11 19 | 691 | 0.1- | 0.3- |
| 2003 09 18 | 704 | 1.0-  | 0.0   | 2005 03 12 | 704 | 0.3-  | 1.0+  | 2007 11 30 | D35 | 0.4+ | 0.2- |
| 2003 09 18 | 704 | 0.9-  | 0.3+  | 2005 03 16 | 703 | (1.9- | 1.1+) | 2007 11 30 | D35 | 0.2+ | 0.0  |
| 2003 09 18 | 704 | 0.4-  | 0.2+  | 2005 03 16 | 703 | 0.3+  | 0.5-  | 2007 11 30 | D35 | 0.3+ | 0.1- |
| 2003 09 18 | 704 | 0.6-  | 0.6+  | 2005 03 16 | 704 | 0.7-  | 0.8+  | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2003 09 22 | 608 | 0.4-  | 0.5+  | 2005 03 16 | 703 | 0.2-  | 1.1-  | 2007 12 05 | 704 | 0.2- | 0.2- |
| 2003 09 22 | 608 | 0.6-  | 0.2+  | 2005 03 16 | 704 | 0.7+  | 1.5+  | 2007 12 05 | 704 | 0.1+ | 0.8+ |
| 2003 09 22 | 608 | 0.6-  | 0.0   | 2005 03 16 | 703 | 1.0-  | 1.2-  | 2007 12 05 | 704 | 0.1+ | 0.8+ |
| 2003 09 28 | 704 | 0.4+  | 0.2-  | 2005 03 16 | 704 | (1.0+ | 2.2+) | 2007 12 05 | 704 | 0.4- | 0.6+ |
| 2003 09 28 | 704 | 0.1+  | 0.9+  | 2005 04 10 | 691 | 0.5+  | 0.2+  | 2007 12 15 | G96 | 0.7+ | 0.4- |
| 2003 09 28 | 704 | 0.4-  | 0.3+  | 2005 04 10 | 691 | 0.2+  | 0.1+  | 2007 12 15 | G96 | 0.5+ | 0.2- |
| 2003 09 28 | 704 | 0.4-  | 1.4+  | 2005 04 10 | 691 | 0.4+  | 0.5+  | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2003 09 28 | 704 | 0.5+  | 0.1-  | 2007 11 03 | 691 | 0.2-  | 0.1-  | 2007 12 15 | G96 | 0.6+ | 0.4- |

(172471)\* 2003 SW<sub>46</sub> = 2001 DR<sub>61</sub>

Discovered 2003 Sept. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 75940)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.98668   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27175889 | $\omega$ 165.80637 | +0.76376890   | -0.64516818 |
| <i>a</i> | 2.3605518  | $\Omega$ 234.39048 | +0.58975430   | -0.71030282 |
| <i>e</i> | 0.2180623  | <i>i</i> 1.43595   | +0.26238698   | +0.28147453 |
| <i>P</i> | 3.63       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 07 16 | 704 | 0.9+ | 0.1+ | 2003 09 28 | 678 | 0.4+ | 0.1- | 2003 10 24 | 704 | 0.0  | 0.5+ |
| 1999 07 16 | 704 | 0.5+ | 0.3- | 2003 09 28 | 678 | 0.7+ | 0.8+ | 2003 10 24 | 704 | 0.3- | 0.0  |
| 1999 07 16 | 704 | 0.2+ | 0.6- | 2003 09 28 | 678 | 0.1- | 1.1+ | 2003 10 24 | 704 | 0.1+ | 0.0  |
| 1999 07 16 | 704 | 0.3- | 0.5+ | 2003 09 29 | 704 | 0.1- | 0.9+ | 2003 10 24 | 704 | 0.3- | 0.2+ |
| 2001 02 19 | 704 | 0.6+ | 0.0  | 2003 09 29 | 704 | 0.1+ | 1.0+ | 2003 10 24 | 704 | 0.1+ | 0.5- |
| 2001 02 19 | 704 | 0.1+ | 1.1+ | 2003 09 29 | 704 | 0.1+ | 1.3+ | 2003 10 24 | 645 | 0.0  | 0.2- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 19 | 704 | 0.4+  | 0.5+  | 2003 09 29 | 704 | 0.2-  | 0.7+  | 2003 10 24 | 645 | 0.0   | 0.2-  |
| 2001 02 19 | 704 | 0.4+  | 1.5+  | 2003 09 29 | 704 | 0.4-  | 1.0+  | 2003 10 26 | 703 | 0.7+  | 0.8-  |
| 2001 02 22 | 704 | (2.1+ | 0.6+) | 2003 10 01 | 699 | 0.2-  | 0.3+  | 2003 10 26 | 703 | 0.9+  | 0.2-  |
| 2001 02 22 | 704 | 0.3-  | 0.8+  | 2003 10 01 | 699 | 1.1-  | 0.4+  | 2003 10 26 | 703 | (2.7+ | 1.8-) |
| 2001 02 22 | 704 | 0.8+  | 0.5+  | 2003 10 01 | 699 | 0.1+  | 0.2+  | 2003 10 26 | 703 | 1.1+  | 0.1-  |
| 2001 02 22 | 704 | 0.2-  | 0.1+  | 2003 10 01 | 699 | 0.1-  | 0.2-  | 2003 11 20 | 645 | 0.0   | 0.1-  |
| 2003 09 03 | 704 | 0.6-  | 0.8+  | 2003 10 05 | 683 | 0.4-  | 0.1-  | 2003 11 20 | 645 | 0.0   | 0.1-  |
| 2003 09 03 | 704 | 0.1-  | 0.8+  | 2003 10 05 | 683 | 0.6+  | 1.3-  | 2003 11 21 | 704 | 0.7-  | 0.8+  |
| 2003 09 03 | 704 | 0.0   | 0.1-  | 2003 10 05 | 683 | 0.4+  | 0.2-  | 2003 11 21 | 704 | 0.4-  | 1.1+  |
| 2003 09 09 | 608 | 0.2-  | 0.5+  | 2003 10 06 | 683 | 0.1-  | 1.0+  | 2003 11 21 | 704 | 1.1-  | 0.8+  |
| 2003 09 09 | 608 | 0.2-  | 0.3-  | 2003 10 06 | 683 | (1.7+ | 0.6-) | 2003 11 21 | 704 | 0.8-  | 1.2+  |
| 2003 09 09 | 608 | 0.2-  | 0.2+  | 2003 10 06 | 683 | 0.0   | 0.1-  | 2003 11 21 | 704 | 0.7-  | 0.4-  |
| 2003 09 16 | 699 | 0.1-  | 0.8+  | 2003 10 12 | 699 | 1.2+  | 0.1+  | 2003 12 21 | 704 | 0.5+  | 0.3+  |
| 2003 09 16 | 699 | 0.7-  | 0.2-  | 2003 10 12 | 699 | 0.8-  | 0.8+  | 2003 12 21 | 704 | 0.2-  | 0.5+  |
| 2003 09 16 | 699 | 0.6-  | 0.3-  | 2003 10 12 | 699 | 0.4+  | 0.7-  | 2003 12 21 | 704 | 0.2+  | 1.1+  |
| 2003 09 16 | 699 | (0.0  | 2.3-) | 2003 10 12 | 699 | 0.7-  | 0.6+  | 2005 03 11 | G96 | 0.0   | 0.2+  |
| 2003 09 18 | 691 | 0.0   | 0.2+  | 2003 10 15 | 699 | 0.2+  | 0.2-  | 2005 03 11 | G96 | 0.6-  | 0.0   |
| 2003 09 18 | 691 | 0.1+  | 0.2+  | 2003 10 15 | 699 | 0.4-  | 0.6-  | 2005 03 11 | G96 | 0.4-  | 0.0   |
| 2003 09 18 | 691 | 0.2+  | 0.2+  | 2003 10 15 | 699 | 0.2+  | 0.2-  | 2005 03 11 | G96 | 0.2-  | 0.2+  |
| 2003 09 18 | 644 | 0.1-  | 0.2+  | 2003 10 15 | 699 | 0.3+  | 0.7+  | 2005 04 05 | G96 | 0.6-  | 0.5+  |
| 2003 09 18 | 644 | 0.1+  | 0.2+  | 2003 10 15 | 644 | 0.7-  | 0.1+  | 2005 04 05 | G96 | 0.0   | 0.4-  |
| 2003 09 18 | 644 | 0.1+  | 0.3+  | 2003 10 15 | 644 | 0.5-  | 0.2+  | 2005 04 05 | G96 | 0.4+  | 0.3-  |
| 2003 09 19 | 704 | 0.6+  | 0.3+  | 2003 10 15 | 644 | 0.5-  | 0.2+  | 2005 04 05 | G96 | 0.1-  | 0.2+  |
| 2003 09 19 | 704 | 0.2+  | 0.3+  | 2003 10 18 | 645 | 0.0   | 0.2-  | 2007 11 05 | 704 | 0.2-  | 0.2+  |
| 2003 09 19 | 704 | 0.6+  | 0.6+  | 2003 10 18 | 645 | 0.0   | 0.2-  | 2007 11 05 | 704 | 0.5+  | 0.4+  |
| 2003 09 19 | 704 | (3.0+ | 0.8+) | 2003 10 20 | 704 | 0.5-  | 0.2+  | 2007 11 05 | 704 | 0.1+  | 0.4+  |
| 2003 09 22 | 699 | 0.1+  | 0.2-  | 2003 10 20 | 704 | 0.4+  | 0.2+  | 2007 11 05 | 704 | 0.3+  | 0.2+  |
| 2003 09 22 | 699 | 0.5+  | 0.1+  | 2003 10 20 | 704 | 0.5+  | 0.2+  | 2007 12 07 | D29 | 0.6+  | 0.3+  |
| 2003 09 22 | 699 | 0.5+  | 0.0   | 2003 10 20 | 704 | 0.2-  | 0.0   | 2007 12 07 | D29 | 0.2+  | 0.5-  |
| 2003 09 22 | 699 | 0.5+  | 0.2+  | 2003 10 20 | 704 | (1.6- | 3.9-) | 2007 12 07 | D29 | 0.4+  | 0.4-  |
| 2003 09 26 | 704 | 0.0   | 1.0+  | 2003 10 20 | 704 | 0.1-  | 0.2-  | 2007 12 07 | D29 | 0.2-  | 0.3+  |
| 2003 09 26 | 704 | 0.0   | 0.6+  | 2003 10 20 | 704 | 0.0   | 0.1+  | 2007 12 16 | 691 | 0.3+  | 0.0   |
| 2003 09 26 | 704 | 0.2+  | 0.7+  | 2003 10 20 | 704 | 0.5-  | 0.4+  | 2007 12 16 | 691 | 0.4-  | 0.3-  |
| 2003 09 26 | 704 | 0.2+  | 0.8+  | 2003 10 20 | 704 | 0.3-  | 0.2+  | 2007 12 16 | 691 | 0.0   | 0.0   |
| 2003 09 26 | 704 | 0.0   | 0.8+  | 2003 10 20 | 704 | 0.8-  | 0.3+  |            |     |       |       |

(172472)\* 2003 SM<sub>52</sub>

Discovered 2003 Sept. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.07017   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26993217 | $\omega$ 253.47906 | +0.96874556   | +0.24152476 |
| <i>a</i> | 2.3711896  | $\Omega$ 92.51750  | -0.20048823   | +0.89659992 |
| <i>e</i> | 0.1793606  | <i>i</i> 3.24491   | -0.14607024   | +0.37117970 |
| <i>P</i> | 3.65       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 07 16 | 704 | 0.4+ | 0.0  | 2003 10 19 | 704 | 0.6- | 1.2+ | 2005 03 01 | 691 | 0.1+  | 0.3+  |
| 1999 07 16 | 704 | 0.1+ | 0.5+ | 2003 10 19 | 704 | 0.6+ | 0.2- | 2005 03 01 | 691 | 0.0   | 0.7+  |
| 1999 07 16 | 704 | 1.5+ | 0.0  | 2003 10 19 | 704 | 1.4+ | 0.8- | 2005 03 01 | 691 | 0.2+  | 0.1+  |
| 1999 07 16 | 704 | 0.3+ | 0.2+ | 2003 10 20 | 704 | 0.4- | 1.1+ | 2006 03 05 | G96 | (1.6+ | 0.4+) |
| 1999 07 16 | 704 | 0.4- | 0.8+ | 2003 10 20 | 704 | 0.2+ | 0.1+ | 2006 03 05 | G96 | 0.7+  | 0.4+  |
| 2002 04 08 | 644 | 1.0+ | 0.6+ | 2003 10 20 | 704 | 0.1+ | 1.2+ | 2006 03 05 | G96 | 0.8-  | 0.2+  |

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2003 10 01 699 0.3− 0.0  | 2003 10 22 704 0.3− 0.1−   | 2007 12 04 691 0.4− 0.1+ |
| 2003 10 01 699 0.4− 0.2+ | 2003 10 23 704 1.1− 1.3−   | 2007 12 04 691 1.5+ 0.1− |
| 2003 10 01 699 0.3− 0.0  | 2003 10 23 704 1.4− 0.6+   | 2007 12 04 G96 0.4+ 0.4− |
| 2003 10 01 699 0.2− 0.2− | 2003 10 23 704 0.5− 0.9+   | 2007 12 04 G96 0.5+ 0.3− |
| 2003 10 02 691 0.1+ 0.0  | 2003 10 23 704 (2.0− 0.1−) | 2007 12 04 G96 0.2+ 0.2− |
| 2003 10 02 691 0.0 0.0   | 2003 10 25 704 0.5− 0.2−   | 2007 12 04 G96 0.4+ 0.3− |
| 2003 10 02 691 0.0 0.1−  | 2003 10 25 704 1.2− 0.3+   | 2007 12 05 704 0.1− 0.3+ |
| 2003 10 16 106 0.3+ 0.2− | 2003 10 25 704 1.0− 0.1+   | 2007 12 05 704 0.0 0.0   |
| 2003 10 16 106 0.3− 0.5− | 2003 10 25 704 0.6− 0.2−   | 2007 12 05 704 0.3+ 0.0  |
| 2003 10 16 106 0.6− 0.3− | 2003 10 25 704 0.8− 0.0    | 2007 12 05 704 0.0 0.4+  |
| 2003 10 16 699 0.2+ 0.0  | 2005 02 01 691 0.0 0.2+    | 2007 12 05 704 0.2+ 0.1+ |
| 2003 10 16 699 0.1+ 0.3− | 2005 02 01 691 0.1+ 0.4+   | 2007 12 16 691 0.2− 0.0  |
| 2003 10 16 699 0.0 0.0   | 2005 02 01 691 0.8− 0.3+   | 2007 12 16 691 0.2− 0.1− |
| 2003 10 16 699 1.2+ 0.3− | 2005 02 09 691 0.1+ 0.2+   | 2007 12 16 691 0.1+ 0.5+ |
| 2003 10 19 704 0.5+ 0.3+ | 2005 02 09 691 0.1+ 0.3+   |                          |
| 2003 10 19 704 0.8+ 0.9+ | 2005 02 09 691 0.1+ 0.2+   |                          |

**(172473)\* 2003 SB<sub>55</sub>**

Discovered 2003 Sept. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | Q        |           |
|----------|------------|----------|-----------|
| M        |            | Q        |           |
| 53.88519 | (2000.0)   | P        |           |
| <i>n</i> | 0.28473565 | <i>ω</i> | 60.92938  |
| <i>a</i> | 2.2882747  | <i>Ω</i> | 314.78936 |
| <i>e</i> | 0.1424560  | <i>i</i> | 5.48674   |
| <i>P</i> | 3.46       | <i>H</i> | 16.5      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2000 11 30 704 0.1+ 0.1+ | 2003 09 21 644 0.0 0.1+  | 2003 10 20 704 1.4− 1.0−   |
| 2000 11 30 704 0.8+ 0.1− | 2003 09 21 644 0.1− 0.0  | 2003 10 21 644 0.0 0.4+    |
| 2000 11 30 704 0.1− 0.2+ | 2003 09 21 644 0.0 0.0   | 2003 10 21 644 0.0 0.0     |
| 2001 01 04 704 1.1− 0.2+ | 2003 09 21 608 0.2+ 0.5− | 2003 10 21 644 0.2+ 0.1+   |
| 2001 01 04 704 0.5− 0.5+ | 2003 09 21 608 0.2+ 0.9− | 2003 11 20 704 0.1− 0.3−   |
| 2001 01 04 704 0.2− 0.0  | 2003 09 21 608 0.1+ 0.3− | 2003 11 20 704 1.0+ 0.0    |
| 2001 01 04 704 0.8+ 0.4− | 2003 09 27 704 0.4− 0.2− | 2003 11 20 704 0.7− 0.4+   |
| 2001 01 04 704 0.1+ 0.4− | 2003 09 27 704 0.4+ 0.3− | 2003 11 20 704 (1.6+ 0.6−) |
| 2003 08 28 704 0.5+ 0.6+ | 2003 09 27 704 0.1+ 0.3+ | 2005 03 03 683 (2.0− 1.9+) |
| 2003 08 28 704 0.7− 0.4+ | 2003 09 27 704 0.1+ 0.1− | 2005 03 03 683 (4.1− 0.4+) |
| 2003 08 28 704 0.4− 0.1+ | 2003 09 27 704 0.0 0.2+  | 2005 03 03 683 (5.2− 1.7+) |
| 2003 08 28 704 0.1− 0.8+ | 2003 10 03 691 0.0 0.2−  | 2005 03 08 699 0.7+ 1.3+   |
| 2003 09 03 704 0.9+ 0.3+ | 2003 10 03 691 0.2− 0.0  | 2005 03 08 699 0.0 1.4+    |
| 2003 09 03 704 0.5+ 0.5+ | 2003 10 03 691 0.0 0.2−  | 2005 03 08 699 1.2+ 1.0+   |
| 2003 09 03 704 0.1+ 0.3+ | 2003 10 15 644 0.0 0.1+  | 2005 03 08 699 0.8+ 0.8+   |
| 2003 09 03 704 0.4+ 0.6+ | 2003 10 15 644 0.3+ 0.0  | 2005 04 02 691 0.1− 0.2−   |
| 2003 09 16 699 0.2+ 0.4+ | 2003 10 15 644 0.1+ 0.1+ | 2005 04 02 691 0.1+ 0.4+   |
| 2003 09 16 699 0.6− 0.6+ | 2003 10 15 644 0.1+ 0.2+ | 2005 04 02 691 0.2+ 0.2+   |
| 2003 09 16 699 0.7− 0.7− | 2003 10 15 644 0.3+ 0.2+ | 2007 11 12 G96 0.2− 0.6−   |
| 2003 09 16 699 0.3+ 0.5− | 2003 10 15 644 0.1+ 0.0  | 2007 11 12 G96 0.3− 0.5−   |
| 2003 09 17 644 0.1− 0.1+ | 2003 10 17 699 0.1− 0.2− | 2007 11 12 G96 0.3− 0.6−   |
| 2003 09 17 644 0.7− 0.1+ | 2003 10 17 699 0.0 0.0   | 2007 11 12 G96 0.0 0.4−    |
| 2003 09 17 644 0.1− 0.0  | 2003 10 17 699 0.2− 0.3− | 2007 12 13 704 0.3− 0.0    |
| 2003 09 17 644 0.6− 0.3− | 2003 10 17 699 0.0 0.5−  | 2007 12 13 704 0.2− 0.1+   |
| 2003 09 17 644 0.0 0.0   | 2003 10 20 691 0.3+ 0.0  | 2007 12 13 704 0.8− 1.3−   |
| 2003 09 17 644 0.6− 0.0  | 2003 10 20 691 0.2+ 0.1+ | 2007 12 15 704 1.5+ 0.3+   |
| 2003 09 20 704 0.1+ 0.1+ | 2003 10 20 691 0.1+ 0.1+ | 2007 12 15 704 0.5− 0.6+   |
| 2003 09 20 704 0.1− 0.4+ | 2003 10 20 704 1.2− 0.6+ | 2007 12 15 704 0.8− 0.1−   |
| 2003 09 20 704 0.3+ 0.7+ | 2003 10 20 704 1.2− 0.6+ | 2007 12 15 704 0.6− 0.7+   |
| 2003 09 20 704 0.2− 0.8+ | 2003 10 20 704 1.0− 0.5+ |                            |
| 2003 09 20 704 0.2+ 0.7+ | 2003 10 20 704 0.1+ 0.2+ |                            |

**(172474)\* 2003 ST<sub>70</sub>**

Discovered 2003 Sept. 18 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | Q        |           |
|----------|------------|----------|-----------|
| M        |            | Q        |           |
| 25.78237 | (2000.0)   | P        |           |
| <i>n</i> | 0.29023012 | <i>ω</i> | 112.90990 |
| <i>a</i> | 2.2593026  | <i>Ω</i> | 296.73287 |
| <i>e</i> | 0.1140413  | <i>i</i> | 7.25385   |
| <i>P</i> | 3.40       | <i>H</i> | 16.0      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2000 11 19 704 0.0 0.0   | 2003 09 13 608 0.2− 0.6+   | 2005 03 07 704 0.0 0.9+  |
| 2000 11 19 704 0.6+ 0.2− | 2003 09 17 608 0.5− 0.7−   | 2005 04 04 703 1.2+ 1.0− |
| 2000 11 19 704 0.8− 0.1+ | 2003 09 17 608 0.6− 0.4−   | 2005 04 04 703 0.0 0.5+  |
| 2000 11 19 704 0.6+ 0.4+ | 2003 09 17 608 1.1− 0.2+   | 2005 04 04 703 0.1− 0.7+ |
| 2000 11 19 704 0.7− 0.4− | 2003 09 18 691 0.1− 0.2−   | 2005 04 04 703 0.2− 0.8+ |
| 2000 12 04 704 0.1− 0.6− | 2003 09 18 691 0.2− 0.1−   | 2007 11 12 G96 0.1− 0.2− |
| 2000 12 04 704 0.6+ 0.4+ | 2003 09 18 691 0.1+ 0.2−   | 2007 11 12 G96 0.0 0.4−  |
| 2000 12 04 704 0.5+ 0.0  | 2003 09 18 644 0.2+ 0.3+   | 2007 11 12 G96 0.3− 0.4− |
| 2000 12 04 704 0.5+ 0.2+ | 2003 09 18 644 0.2+ 0.1+   | 2007 11 12 G96 0.1− 0.4− |
| 2000 12 19 704 0.8− 0.5+ | 2003 09 18 644 0.4+ 0.2+   | 2007 12 04 699 0.1− 0.8+ |
| 2000 12 19 704 0.2− 0.3− | 2003 09 19 704 0.5− 0.1−   | 2007 12 04 699 1.0− 0.4− |
| 2000 12 19 704 0.0 0.5−  | 2003 09 19 704 0.2− 1.0−   | 2007 12 04 699 0.1− 0.1+ |
| 2000 12 19 704 0.1− 0.9− | 2003 09 19 704 0.0 0.0     | 2007 12 04 699 0.6− 0.9+ |
| 2000 12 19 704 0.2+ 0.3− | 2003 09 19 704 0.2− 0.1+   | 2007 12 05 691 0.3− 0.1+ |
| 2001 01 04 704 0.4− 0.8− | 2003 09 19 704 0.6− 0.0    | 2007 12 05 691 0.3− 0.0  |
| 2001 01 04 704 0.5− 0.2+ | 2003 09 23 644 0.1− 0.2+   | 2007 12 05 691 0.2− 0.1+ |
| 2001 01 04 704 0.1− 0.3− | 2003 09 23 644 0.0 0.3+    | 2007 12 06 704 1.4+ 0.1+ |
| 2001 01 04 704 0.6+ 0.1+ | 2003 09 23 644 0.1− 0.3+   | 2007 12 06 704 0.8+ 0.1− |
| 2001 01 04 704 0.3+ 0.5+ | 2003 09 30 691 0.1+ 0.2+   | 2007 12 06 704 0.4+ 0.9+ |
| 2003 08 05 704 0.3+ 0.1+ | 2003 09 30 691 0.0 0.2+    | 2007 12 06 704 0.2+ 0.3+ |
| 2003 08 05 704 0.8− 0.2+ | 2003 09 30 691 0.0 0.1+    | 2007 12 06 704 1.1+ 0.6+ |
| 2003 08 05 704 0.3+ 0.3− | 2003 09 30 704 0.1− 0.1−   | 2007 12 10 704 0.2− 0.8+ |
| 2003 08 05 704 0.3+ 0.2+ | 2003 09 30 704 0.3+ 0.5−   | 2007 12 10 704 0.3+ 0.5+ |
| 2003 08 05 704 0.8+ 0.6+ | 2003 09 30 704 0.2+ 0.2+   | 2007 12 10 704 0.1+ 0.5+ |
| 2003 08 28 644 0.0 0.2+  | 2003 09 30 704 0.4− 0.6−   | 2007 12 10 704 0.5+ 0.1+ |
| 2003 08 28 644 0.0 0.3+  | 2003 09 30 704 0.0 0.0     | 2007 12 10 704 0.7+ 0.8+ |
| 2003 08 28 644 0.1+ 0.3+ | 2003 11 19 704 0.2− 0.3−   | 2007 12 14 704 0.2+ 1.1− |
| 2003 08 28 608 0.7+ 0.5+ | 2003 11 19 704 1.1− 0.3+   | 2007 12 14 704 0.7+ 1.3− |
| 2003 08 28 608 0.6+ 0.6+ | 2003 11 19 704 0.4− 0.6+   | 2007 12 14 704 0.5− 0.0  |
| 2003 08 28 608 0.6+ 0.2+ | 2003 11 19 704 0.1+ 0.5+   | 2007 12 14 704 0.3+ 0.7− |
| 2003 09 13 608 0.4+ 0.7+ | 2005 03 07 704 0.7+ 1.2+   | 2007 12 14 704 0.1+ 0.2− |
| 2003 09 13 608 0.2− 0.4+ | 2005 03 07 704 (1.1+ 1.5+) |                          |

**(172475)\* 2003 SA<sub>76</sub> = 2003 SH<sub>45</sub>**

Discovered 2003 Sept. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (d, *MPO* 75951)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            | Q        |           |
|----------|------------|----------|-----------|
| M        |            | Q        |           |
| 52.08747 | (2000.0)   | P        |           |
| <i>n</i> | 0.26635808 | <i>ω</i> | 207.14567 |
| <i>a</i> | 2.3923541  | <i>Ω</i> | 134.71770 |
| <i>e</i> | 0.1905283  | <i>i</i> | 1.80839   |
| <i>P</i> | 3.70       | <i>H</i> | 17.3      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 09 02 704 0.1+ 0.8−   | 2003 09 28 645 0.0 0.1−  | 2005 03 10 G96 0.7− 0.4− |
| 2003 09 02 704 0.9+ 1.0+   | 2003 09 28 645 0.0 0.1−  | 2005 03 10 G96 0.0 0.5−  |
| 2003 09 02 704 0.4+ 0.5+   | 2003 09 29 704 1.2− 0.2+ | 2005 03 10 G96 0.4+ 0.1− |
| 2003 09 02 704 (0.3+ 1.5+) | 2003 09 29 704 0.9− 0.4+ | 2005 03 11 G96 0.1− 0.2− |
| 2003 09 02 704 0.8− 0.9+   | 2003 09 29 704 0.1− 0.1− | 2005 03 11 G96 0.1+ 0.1+ |
| 2003 09 16 699 0.5+ 0.7+   | 2003 09 29 704 1.4− 0.5+ | 2005 03 11 G96 0.1− 0.1− |
| 2003 09 16 699 0.1− 1.1+   | 2003 09 29 704 0.4− 0.2− | 2005 03 11 G96 0.2+ 0.4+ |
| 2003 09 16 699 0.2+ 0.5+   | 2003 09 29 645 0.0 0.1−  | 2006 04 24 691 0.0 0.4+  |
| 2003 09 16 699 0.6+ 0.1+   | 2003 09 29 645 0.0 0.1−  | 2006 04 24 691 0.2− 0.2+ |
| 2003 09 18 608 0.9+ 0.3−   | 2003 09 29 691 0.3− 0.2+ | 2006 04 24 691 0.3+ 0.3+ |
| 2003 09 18 691 0.1+ 0.1+   | 2003 09 29 691 0.3− 0.2+ | 2006 05 02 691 0.5− 0.2+ |
| 2003 09 18 608 0.0 0.1−    | 2003 09 29 691 0.2− 0.2+ | 2006 05 02 691 0.1− 0.6+ |
| 2003 09 18 608 0.2+ 0.4−   | 2003 10 01 699 1.2+ 0.6+ | 2006 05 02 691 0.3− 0.7+ |
| 2003 09 18 691 0.0 0.1+    | 2003 10 01 699 0.7− 0.9+ | 2006 05 06 691 0.3+ 0.0  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 18 | 644 | 0.1+  | 0.1+  | 2003 10 01 | 699 | 0.4-  | 0.8+  | 2006 05 06 | 691 | 0.4+ | 0.1- |
| 2003 09 18 | 644 | 0.3+  | 0.0   | 2003 10 01 | 699 | 0.5-  | 0.9+  | 2006 05 06 | 691 | 0.6+ | 0.0  |
| 2003 09 18 | 691 | 1.2+  | 0.2+  | 2003 10 06 | 699 | (1.3+ | 2.1+) | 2006 05 21 | 691 | 0.0  | 0.0  |
| 2003 09 18 | 644 | 0.0   | 0.2+  | 2003 10 06 | 699 | (1.6- | 1.2-) | 2006 05 21 | 691 | 0.3- | 0.1+ |
| 2003 09 19 | 704 | 0.1+  | 0.5+  | 2003 10 06 | 699 | 0.8-  | 0.3+  | 2006 05 21 | 691 | 0.6+ | 0.3+ |
| 2003 09 19 | 704 | 0.2-  | 0.8+  | 2003 10 06 | 699 | 0.2-  | 1.0-  | 2007 10 20 | G96 | 0.3+ | 0.1- |
| 2003 09 19 | 704 | 0.6-  | 1.1+  | 2003 10 16 | 644 | 0.2-  | 0.5+  | 2007 10 20 | G96 | 0.1- | 0.2+ |
| 2003 09 19 | 704 | 0.1+  | 0.8+  | 2003 10 16 | 644 | 0.2-  | 0.3+  | 2007 10 20 | G96 | 0.1- | 0.1+ |
| 2003 09 19 | 704 | 0.4+  | 0.9+  | 2003 10 16 | 644 | 0.0   | 0.3+  | 2007 10 20 | G96 | 0.6+ | 0.0  |
| 2003 09 19 | 599 | 0.2-  | 0.2+  | 2003 10 18 | 699 | 0.4+  | 0.1+  | 2007 11 04 | 691 | 0.1- | 0.3+ |
| 2003 09 19 | 599 | 0.1-  | 0.1+  | 2003 10 18 | 699 | 0.8-  | 0.4-  | 2007 11 04 | 691 | 0.4- | 0.4+ |
| 2003 09 19 | 599 | 0.2-  | 0.0   | 2003 10 18 | 699 | 0.0   | 0.5-  | 2007 11 04 | 691 | 0.2- | 0.2+ |
| 2003 09 23 | 608 | 0.6+  | 0.9-  | 2003 10 18 | 699 | 0.8+  | 0.2-  | 2007 11 05 | 704 | 0.5+ | 0.5+ |
| 2003 09 23 | 608 | 0.9+  | 0.1-  | 2003 10 19 | 704 | 0.1-  | 0.2+  | 2007 11 05 | 704 | 0.8- | 0.1- |
| 2003 09 23 | 608 | 0.3+  | 0.2-  | 2003 10 19 | 704 | 0.0   | 0.8+  | 2007 11 05 | 704 | 0.7+ | 0.9+ |
| 2003 09 24 | 608 | 1.4+  | 1.4-  | 2003 10 19 | 704 | 0.4+  | 0.9+  | 2007 11 05 | 704 | 0.8- | 0.8+ |
| 2003 09 24 | 608 | (1.8+ | 0.2-) | 2003 10 19 | 704 | 0.2-  | 0.0   | 2007 11 08 | 691 | 0.0  | 0.3+ |
| 2003 09 24 | 608 | 1.2+  | 0.8-  | 2003 10 20 | 704 | 0.4-  | 0.6+  | 2007 11 08 | 691 | 0.0  | 0.4+ |
| 2003 09 26 | 704 | 0.2-  | 0.2+  | 2003 10 20 | 704 | 0.3-  | 0.6+  | 2007 11 08 | 691 | 0.0  | 0.4+ |
| 2003 09 26 | 704 | 0.8-  | 0.4+  | 2003 10 20 | 704 | (0.8- | 2.6+) | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2003 09 26 | 704 | 0.6-  | 0.2+  | 2003 10 24 | 704 | 0.4+  | 0.4+  | 2007 11 20 | G96 | 0.5+ | 0.1- |
| 2003 09 26 | 704 | 1.1-  | 0.4+  | 2003 10 24 | 704 | 0.1+  | 0.4+  | 2007 11 20 | G96 | 0.3+ | 0.1- |
| 2003 09 26 | 704 | 1.0-  | 0.2+  | 2003 10 24 | 704 | 0.1+  | 0.3+  | 2007 11 20 | G96 | 0.1+ | 0.1- |
| 2003 09 26 | 645 | 0.1+  | 0.1-  | 2003 10 24 | 704 | 0.1+  | 0.0   |            |     |      |      |
| 2003 09 26 | 645 | 0.1+  | 0.2-  | 2005 03 10 | G96 | 0.4+  | 0.4-  |            |     |      |      |

**(172476)\* 2003 SR<sub>79</sub>**

Discovered 2003 Sept. 19 by Spacewatch at Kitt Peak.

|          |                                   |                    |               |             |  |
|----------|-----------------------------------|--------------------|---------------|-------------|--|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                |               |             |  |
| <i>M</i> | 43.94357                          | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.26908487                        | $\omega$ 44.21631  | +0.99726065   | -0.03719472 |  |
| <i>a</i> | 2.3761647                         | $\Omega$ 317.78999 | +0.00357170   | +0.88757897 |  |
| <i>e</i> | 0.1268136                         | <i>i</i> 5.46072   | +0.07388120   | +0.45915154 |  |
| <i>P</i> | 3.66                              | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 04 | 704 | 0.4- | 0.4- | 2003 09 22 | 106 | 0.1+  | 0.0   | 2005 02 09 | 704 | 0.5+  | 0.6+  |
| 2001 01 04 | 704 | 0.4+ | 1.0+ | 2003 09 22 | 106 | 0.0   | 0.4-  | 2005 03 09 | G96 | 0.1+  | 0.2-  |
| 2001 01 04 | 704 | 0.0  | 0.1+ | 2003 09 22 | 106 | 0.2-  | 0.3-  | 2005 03 09 | G96 | 0.2-  | 0.2-  |
| 2001 01 04 | 704 | 0.6+ | 0.8- | 2003 09 22 | 106 | 0.3-  | 0.0   | 2005 03 09 | G96 | 0.0   | 0.1-  |
| 2001 01 04 | 704 | 0.4- | 0.7+ | 2003 09 22 | 106 | 0.4+  | 0.3-  | 2005 03 09 | G96 | 0.2-  | 0.3-  |
| 2003 08 24 | 704 | 0.7- | 1.0+ | 2003 09 23 | 608 | 0.2-  | 1.1-  | 2005 03 11 | G96 | 0.3-  | 0.0   |
| 2003 08 24 | 704 | 0.7- | 0.8+ | 2003 09 23 | 608 | 0.3+  | 0.8-  | 2005 03 11 | G96 | 0.0   | 0.2+  |
| 2003 08 24 | 704 | 0.9- | 0.1+ | 2003 09 23 | 608 | 0.2-  | 0.8-  | 2005 03 11 | G96 | 0.1+  | 0.1+  |
| 2003 08 24 | 704 | 0.5- | 0.6+ | 2003 09 24 | 608 | (0.3- | 1.6-) | 2005 03 11 | G96 | 0.0   | 0.0   |
| 2003 08 24 | 704 | 0.8- | 1.2+ | 2003 09 24 | 608 | 0.7+  | 1.1-  | 2007 11 02 | 704 | 1.3+  | 0.8+  |
| 2003 09 04 | 704 | 0.1+ | 0.1- | 2003 09 24 | 608 | 0.2+  | 1.2-  | 2007 11 02 | 704 | 0.5+  | 0.8+  |
| 2003 09 04 | 704 | 0.6+ | 0.4+ | 2003 09 27 | 704 | 0.5-  | 0.1+  | 2007 11 02 | 704 | 0.2+  | 0.5+  |
| 2003 09 04 | 704 | 0.5+ | 0.7+ | 2003 09 27 | 704 | 0.2-  | 0.1-  | 2007 11 02 | 704 | 0.3+  | 0.8+  |
| 2003 09 04 | 704 | 0.1- | 0.2+ | 2003 09 27 | 704 | 0.1-  | 0.4+  | 2007 11 07 | 704 | 0.8+  | 0.6+  |
| 2003 09 04 | 704 | 0.1- | 0.7+ | 2003 09 27 | 704 | 0.2-  | 0.0   | 2007 11 07 | 704 | 0.9-  | 0.5+  |
| 2003 09 18 | 608 | 0.6+ | 0.0  | 2003 09 27 | 704 | 0.2-  | 0.2+  | 2007 11 07 | 704 | 0.1+  | 0.1-  |
| 2003 09 18 | 608 | 0.3- | 0.4- | 2003 09 30 | 704 | 0.0   | 0.5+  | 2007 11 07 | 704 | 0.5-  | 0.4+  |
| 2003 09 18 | 608 | 0.2+ | 0.1- | 2003 09 30 | 704 | 0.9+  | 0.2+  | 2007 11 07 | 704 | 0.2+  | 0.4+  |
| 2003 09 19 | 691 | 0.1- | 0.1+ | 2003 09 30 | 704 | 0.5-  | 0.1+  | 2007 11 08 | 703 | 0.9-  | 0.3-  |
| 2003 09 19 | 691 | 0.2- | 0.1+ | 2003 09 30 | 704 | 0.3-  | 0.5-  | 2007 11 08 | 703 | 0.0   | 0.5-  |
| 2003 09 19 | 691 | 0.0  | 0.1+ | 2003 09 30 | 704 | 0.6-  | 0.2+  | 2007 11 08 | 703 | 0.1-  | 0.0   |
| 2003 09 20 | 704 | 0.6+ | 0.6+ | 2003 10 04 | 608 | 0.2+  | 0.8-  | 2007 11 08 | 703 | 0.1+  | 0.2+  |
| 2003 09 20 | 704 | 0.0  | 0.3+ | 2003 10 04 | 608 | 0.4-  | 0.2-  | 2007 11 17 | 704 | (1.1- | 1.6-) |
| 2003 09 20 | 704 | 0.5+ | 0.5+ | 2003 10 04 | 608 | 0.2-  | 1.2-  | 2007 11 17 | 704 | 0.1+  | 0.0   |
| 2003 09 20 | 704 | 0.4+ | 0.3+ | 2003 10 15 | 644 | 0.0   | 0.0   | 2007 11 17 | 704 | 0.2-  | 0.4+  |
| 2003 09 21 | 644 | 0.2- | 0.3+ | 2003 10 15 | 644 | 0.0   | 0.2-  | 2007 11 17 | 704 | 0.2-  | 0.3+  |
| 2003 09 21 | 644 | 0.1- | 0.2+ | 2003 10 15 | 644 | 0.0   | 0.1-  | 2007 11 20 | 704 | 0.5-  | 0.7-  |
| 2003 09 21 | 644 | 0.0  | 0.3+ | 2003 10 21 | 704 | 0.7+  | 0.4+  | 2007 11 20 | 704 | 0.1-  | 1.3-  |
| 2003 09 22 | 106 | 0.6+ | 0.5- | 2003 10 21 | 704 | 0.3-  | 0.6+  | 2007 11 20 | 704 | 0.1-  | 1.4-  |
| 2003 09 22 | 106 | 0.1+ | 0.2+ | 2003 10 21 | 704 | 0.3+  | 0.8+  | 2007 11 20 | 704 | 0.7-  | 0.3-  |
| 2003 09 22 | 106 | 0.2- | 0.3- | 2003 10 21 | 704 | 0.4+  | 0.1-  | 2007 12 16 | 704 | 0.3-  | 0.2-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 22 | 106 | 0.7+ | 0.2- | 2005 02 09 | 704 | 0.2+  | 1.2+  | 2007 12 16 | 704 | 0.7+ | 0.6- |
| 2003 09 22 | 106 | 0.0  | 0.3- | 2005 02 09 | 704 | (2.1+ | 0.3+) | 2007 12 16 | 704 | 0.9+ | 0.8- |
| 2003 09 22 | 106 | 0.2+ | 0.0  | 2005 02 09 | 704 | 0.5+  | 0.4+  |            |     |      |      |
| 2003 09 22 | 106 | 0.2- | 0.2- | 2005 02 09 | 704 | 0.4+  | 0.4+  |            |     |      |      |

**(172477)\* 2003 SM<sub>86</sub>**

Discovered 2003 Sept. 16 by NEAT at Palomar.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |                    | MPC         |          |             |          |            |     |       |       |
|-----------------------------------------|------------|-------|--------------------|-------------|----------|-------------|----------|------------|-----|-------|-------|
| <i>M</i>                                | 65.17125   |       | (2000.0)           | <b>P</b>    |          | <b>Q</b>    |          |            |     |       |       |
| <i>n</i>                                | 0.27336990 |       | $\omega$ 102.80268 | +0.97178947 |          | +0.21631156 |          |            |     |       |       |
| <i>a</i>                                | 2.3512686  |       | $\Omega$ 244.76850 | -0.23570588 |          | +0.90466975 |          |            |     |       |       |
| <i>e</i>                                | 0.1326393  |       | <i>i</i> 5.96412   | +0.00824425 |          | +0.36712662 |          |            |     |       |       |
| <i>P</i>                                | 3.61       |       | <i>H</i>           | 15.9        | <i>G</i> | 0.15        | <i>U</i> | 2          |     |       |       |
| Residuals in seconds of arc             |            |       |                    |             |          |             |          |            |     |       |       |
| 1999 07 13                              | 704        | 0.9+  | 0.0                | 2003 09 30  | 704      | 0.1+        | 0.1+     | 2003 11 30 | 704 | 0.3-  | 0.7+  |
| 1999 07 13                              | 704        | 0.5+  | 0.7+               | 2003 10 01  | 691      | 0.2+        | 0.1-     | 2003 11 30 | 704 | 0.0   | 0.5+  |
| 1999 07 13                              | 704        | 0.1+  | 0.1+               | 2003 10 01  | 691      | 0.1+        | 0.0      | 2005 02 09 | 699 | 1.1+  | 0.5+  |
| 1999 07 13                              | 704        | 0.2+  | 0.7+               | 2003 10 01  | 691      | 0.2+        | 0.1-     | 2005 02 09 | 699 | 1.1-  | 0.3-  |
| 1999 07 13                              | 704        | 0.1-  | 1.1+               | 2003 10 14  | 644      | 0.1-        | 0.0      | 2005 02 09 | 699 | 0.2-  | 0.2-  |
| 2002 04 09                              | 704        | 0.8-  | 1.2+               | 2003 10 14  | 644      | 0.5-        | 0.0      | 2005 02 09 | 699 | 1.0+  | 1.0+  |
| 2002 04 09                              | 704        | (1.7- | 0.9+)              | 2003 10 14  | 644      | 0.2-        | 0.0      | 2005 03 03 | 703 | (1.7+ | 1.4+) |
| 2002 04 09                              | 704        | 0.1-  | 0.1+               | 2003 10 14  | 644      | 0.5-        | 0.0      | 2005 03 03 | 703 | 0.1-  | 0.3+  |
| 2002 04 09                              | 704        | 1.4-  | 0.6-               | 2003 10 14  | 644      | 0.1-        | 0.0      | 2005 03 03 | 703 | 0.3-  | 0.8-  |
| 2002 04 18                              | 644        | 0.2+  | 0.4+               | 2003 10 14  | 644      | 0.2-        | 0.0      | 2005 03 03 | 703 | 0.4-  | 1.4-  |
| 2002 04 18                              | 644        | 0.5+  | 0.6+               | 2003 10 21  | 704      | 0.7-        | 0.9+     | 2007 11 09 | 691 | 0.8+  | 0.5-  |
| 2002 04 18                              | 644        | 0.2+  | 1.0+               | 2003 10 21  | 704      | 0.1-        | 1.1-     | 2007 11 09 | 691 | 0.2+  | 0.2-  |
| 2003 07 29                              | 704        | 0.5+  | 0.3+               | 2003 10 21  | 704      | 0.5+        | 0.7+     | 2007 11 09 | 691 | 0.0   | 0.0   |
| 2003 07 29                              | 704        | 0.6+  | 0.6+               | 2003 10 21  | 704      | 0.5-        | 0.3+     | 2007 11 13 | 691 | 0.1-  | 0.1-  |
| 2003 07 29                              | 704        | 0.1-  | 0.9-               | 2003 10 25  | 106      | 0.1+        | 0.8-     | 2007 11 13 | 691 | 0.2+  | 0.1+  |
| 2003 07 29                              | 704        | 0.3+  | 1.0+               | 2003 10 25  | 106      | 0.5+        | 0.4-     | 2007 11 13 | 691 | 0.1+  | 0.1-  |
| 2003 09 16                              | 644        | 0.1+  | 0.0                | 2003 10 25  | 106      | 0.2-        | 0.1-     | 2007 11 14 | 704 | 1.3+  | 1.0-  |
| 2003 09 16                              | 644        | 0.1+  | 0.1+               | 2003 10 30  | 704      | 0.1+        | 0.5-     | 2007 11 14 | 704 | 0.4+  | 0.3+  |
| 2003 09 16                              | 644        | 0.0   | 0.1+               | 2003 10 30  | 704      | 0.3+        | 0.7+     | 2007 11 14 | 704 | 0.3+  | 0.3-  |
| 2003 09 20                              | 644        | 0.2-  | 0.1-               | 2003 10 30  | 704      | 0.3+        | 0.2+     | 2007 11 14 | 704 | 0.2-  | 1.4-  |
| 2003 09 20                              | 644        | 0.2-  | 0.1-               | 2003 11 01  | 704      | 0.3-        | 0.6+     | 2007 11 14 | 704 | 0.4-  | 0.4+  |
| 2003 09 20                              | 644        | 0.1-  | 0.1-               | 2003 11 01  | 704      | 0.3-        | 0.5-     | 2007 12 04 | 691 | 0.3+  | 0.1+  |
| 2003 09 21                              | 704        | 0.2-  | 0.1+               | 2003 11 01  | 704      | 0.1+        | 0.0      | 2007 12 04 | 691 | 0.3+  | 0.1+  |
| 2003 09 21                              | 704        | 0.4-  | 0.1+               | 2003 11 01  | 704      | 0.1-        | 0.1+     | 2007 12 04 | 691 | 0.0   | 0.1+  |
| 2003 09 21                              | 704        | 0.7-  | 0.1+               | 2003 11 01  | 704      | 0.4-        | 0.1+     | 2007 12 05 | 704 | 0.8-  | 0.2-  |
| 2003 09 21                              | 704        | 0.4-  | 0.3+               | 2003 11 20  | 704      | 0.1+        | 0.2+     | 2007 12 05 | 704 | 0.2-  | 0.6-  |
| 2003 09 21                              | 704        | 0.3-  | 0.3+               | 2003 11 20  | 704      | 0.7-        | 0.4+     | 2007 12 05 | 704 | 0.7-  | 0.5-  |
| 2003 09 25                              | 608        | 0.8-  | 0.7-               | 2003 11 20  | 704      | 0.2-        | 0.8+     | 2007 12 05 | 704 | 0.5-  | 0.5+  |
| 2003 09 25                              | 608        | 0.7-  | 1.1-               | 2003 11 20  | 704      | 0.5+        | 0.4+     | 2007 12 05 | 704 | 0.3+  | 0.4-  |
| 2003 09 25                              | 608        | 0.7-  | 0.9-               | 2003 11 20  | 704      | 0.1-        | 0.4-     | 2007 12 15 | 691 | 0.1-  | 0.1+  |
| 2003 09 30                              | 704        | 0.2+  | 0.1+               | 2003 11 24  | 704      | (6.2-       | 0.9+)    | 2007 12 15 | 691 | 0.7+  | 0.4+  |
| 2003 09 30                              | 704        | 0.8+  | 0.0                | 2003 11 24  | 704      | (6.1-       | 1.4+)    | 2007 12 15 | 691 | 1.5-  | 1.2+  |
| 2003 09 30                              | 704        | 0.4+  | 0.6-               | 2003 11 24  | 704      | (5.8-       | 1.1+)    |            |     |       |       |
| 2003 09 30                              | 704        | 0.1+  | 0.2-               | 2003 11 30  | 704      | 0.5-        | 0.0      |            |     |       |       |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 08 26 | 704 | 0.6− | 0.9+ | 2005 03 04 | 691 | 0.1−  | 0.1−  | 2007 10 16 | 691 | 0.1− | 0.1+ |
| 2003 08 26 | 704 | 0.2− | 1.2+ | 2006 05 20 | 691 | 0.1+  | 0.4+  | 2007 10 16 | 691 | 0.0  | 0.1+ |
| 2003 08 26 | 704 | 0.2− | 0.7+ | 2006 05 20 | 691 | 0.1+  | 0.3+  | 2007 10 24 | G96 | 0.4+ | 0.1− |
| 2003 08 26 | 704 | 1.0+ | 0.5+ | 2006 05 20 | 691 | 0.0   | 0.3+  | 2007 10 24 | G96 | 0.5+ | 0.5− |
| 2003 08 31 | 608 | 0.1− | 1.0− | 2006 05 25 | G96 | 0.2−  | 0.3+  | 2007 10 24 | G96 | 1.1+ | 0.1+ |
| 2003 08 31 | 608 | 0.2− | 0.3− | 2006 05 25 | G96 | 0.1+  | 0.0   | 2007 10 24 | G96 | 0.2+ | 0.2− |
| 2003 08 31 | 608 | 0.7− | 0.9− | 2006 05 25 | G96 | 0.0   | 0.2+  | 2007 10 30 | 691 | 0.1− | 0.3+ |
| 2003 09 17 | 699 | 0.7+ | 0.0  | 2006 05 25 | G96 | 0.3−  | 0.4+  | 2007 10 30 | 691 | 0.1− | 0.1+ |
| 2003 09 17 | 699 | 0.3+ | 0.1+ | 2006 06 04 | 691 | 0.2+  | 0.3+  | 2007 10 30 | 691 | 0.0  | 0.3− |
| 2003 09 17 | 699 | 0.0  | 0.5− | 2006 06 04 | 691 | 0.1+  | 0.2+  | 2007 11 02 | 291 | 0.5− | 0.1+ |
| 2003 09 17 | 699 | 0.2− | 0.5− | 2006 06 04 | 691 | 0.7+  | 0.5+  | 2007 11 02 | 291 | 0.6− | 0.2+ |
| 2003 09 17 | 704 | 0.0  | 0.6+ | 2006 06 19 | G96 | 0.6−  | 0.0   | 2007 11 02 | 291 | 0.7− | 0.1+ |
| 2003 09 17 | 704 | 0.8+ | 0.1− | 2006 06 19 | G96 | 0.7−  | 0.1+  | 2007 11 04 | G96 | 0.2+ | 0.4+ |
| 2003 09 17 | 704 | 0.4+ | 0.5+ | 2006 06 19 | G96 | 0.1−  | 0.1−  | 2007 11 04 | G96 | 0.2+ | 0.2+ |
| 2003 09 17 | 704 | 0.2− | 0.4− | 2006 06 19 | G96 | 0.6−  | 0.4−  | 2007 11 04 | G96 | 0.1+ | 0.1+ |
| 2003 09 21 | 691 | 0.1+ | 0.1− | 2007 10 07 | 703 | 0.3+  | 1.3+  | 2007 11 04 | G96 | 0.4+ | 0.3+ |
| 2003 09 21 | 691 | 0.2+ | 0.1− | 2007 10 07 | 703 | 1.1−  | 0.2+  | 2007 11 09 | G96 | 0.4+ | 0.2+ |
| 2003 09 21 | 691 | 0.2+ | 0.2− | 2007 10 07 | 703 | (0.2+ | 2.2+) | 2007 11 09 | G96 | 0.2+ | 0.2+ |
| 2003 09 21 | 608 | 0.1+ | 0.0  | 2007 10 07 | 703 | 0.6−  | 0.4−  | 2007 11 09 | G96 | 0.2+ | 0.2+ |
| 2003 09 21 | 608 | 0.5− | 0.3− | 2007 10 08 | 691 | 0.1−  | 0.3+  | 2007 11 09 | G96 | 0.1+ | 0.3+ |
| 2003 09 21 | 608 | 0.8− | 0.1+ | 2007 10 08 | 691 | 0.2−  | 0.1+  | 2007 11 14 | 704 | 1.3+ | 0.8+ |
| 2003 09 24 | 644 | 0.0  | 0.1− | 2007 10 08 | 691 | 0.3−  | 0.0   | 2007 11 14 | 704 | 0.5+ | 0.1− |
| 2003 09 24 | 644 | 0.1+ | 0.1− | 2007 10 08 | G96 | 0.3+  | 0.2−  | 2007 11 14 | 704 | 0.0  | 0.1− |
| 2003 09 24 | 644 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.4+  | 0.0   | 2007 11 14 | 704 | 0.3+ | 0.6+ |
| 2003 09 28 | 704 | 0.6− | 0.8+ | 2007 10 08 | G96 | 0.0   | 0.1+  | 2007 11 14 | 704 | 0.0  | 0.9+ |
| 2003 09 28 | 704 | 0.8+ | 0.7+ | 2007 10 08 | G96 | 0.1+  | 0.0   | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2003 09 28 | 704 | 0.6− | 0.7+ | 2007 10 12 | 691 | 0.1−  | 0.2+  | 2007 12 05 | 704 | 0.2− | 0.5− |
| 2003 09 28 | 704 | 0.4+ | 0.2+ | 2007 10 12 | 691 | 0.1−  | 0.2+  | 2007 12 05 | 704 | 0.1− | 0.7− |
| 2003 09 28 | 704 | 0.6− | 0.6+ | 2007 10 12 | 691 | 0.1+  | 0.2+  | 2007 12 05 | 704 | 0.6+ | 0.6+ |
| 2003 09 28 | 608 | 0.4− | 1.0− | 2007 10 13 | 704 | 0.2−  | 1.2−  | 2007 12 05 | 704 | 1.0+ | 1.0+ |

**(172479)\* 2003 SL<sub>95</sub> = 1996 TR<sub>36</sub>**

Discovered 2003 Sept. 19 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 53377)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 57.44054   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.28381006 | $\omega$ | 53.20757  | +0.95202133 | −0.30175815 |
| $a$ | 2.2932471  | $\Omega$ | 324.27547 | +0.24555252 | +0.85260283 |
| $e$ | 0.1769726  | $i$      | 5.00743   | +0.18264540 | +0.42662680 |
| $P$ | 3.47       | $H$      | 16.9      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 10 05 | 691 | 0.1− | 0.0  | 2003 09 21 | 704 | (3.1+ | 0.9+) | 2003 10 21 | 704 | (1.8− | 0.6−) |
| 1996 10 05 | 691 | 0.3− | 0.0  | 2003 09 22 | 699 | 0.4−  | 0.2−  | 2003 10 21 | 704 | 0.9+  | 0.8+  |
| 1996 10 05 | 691 | 0.1− | 0.2+ | 2003 09 22 | 699 | 0.2−  | 0.3−  | 2003 10 26 | 691 | 0.4+  | 0.1−  |
| 1996 10 12 | 691 | 0.2+ | 0.1− | 2003 09 22 | 699 | 0.1−  | 0.1+  | 2003 10 26 | 691 | 0.0   | 0.1+  |
| 1996 10 12 | 691 | 0.3+ | 0.2+ | 2003 09 22 | 699 | 0.1−  | 0.1+  | 2003 10 26 | 691 | 0.3+  | 0.2−  |
| 1996 10 12 | 691 | 0.2+ | 0.2− | 2003 09 25 | 608 | 0.3+  | 0.2+  | 2003 11 24 | 704 | 0.9−  | 0.5+  |
| 1996 10 21 | 691 | 0.1− | 0.1+ | 2003 09 25 | 608 | 0.5−  | 0.3+  | 2003 11 24 | 704 | 0.3−  | 0.2+  |
| 1996 10 21 | 691 | 0.1− | 0.3− | 2003 09 25 | 608 | 0.3−  | 0.2+  | 2003 11 24 | 704 | 0.5−  | 0.5+  |
| 1996 10 21 | 691 | 0.3+ | 0.5− | 2003 09 27 | 704 | 0.3−  | 0.2−  | 2003 11 30 | 704 | (1.9+ | 1.0+) |
| 2001 01 19 | 704 | 0.2− | 0.2− | 2003 09 27 | 704 | 0.9−  | 0.3+  | 2003 11 30 | 704 | 0.8+  | 0.4+  |
| 2001 01 19 | 704 | 0.1+ | 0.7− | 2003 09 27 | 704 | 0.5−  | 0.0   | 2003 11 30 | 704 | (0.4− | 1.7+) |
| 2001 01 19 | 704 | 0.1+ | 0.9− | 2003 09 27 | 704 | 0.3−  | 0.5+  | 2005 03 09 | 691 | 0.1+  | 0.3+  |
| 2001 01 19 | 704 | 0.4+ | 0.3+ | 2003 09 27 | 704 | 0.3−  | 0.6+  | 2005 03 09 | 691 | 0.1+  | 0.4+  |
| 2003 08 24 | 704 | 0.0  | 0.0  | 2003 10 01 | 691 | 0.3−  | 0.2+  | 2005 03 09 | 691 | 0.1+  | 0.3+  |
| 2003 08 24 | 704 | 1.2+ | 0.8− | 2003 10 01 | 691 | 0.1−  | 0.3+  | 2005 03 13 | 691 | 0.0   | 0.2+  |
| 2003 08 24 | 704 | 0.0  | 0.7+ | 2003 10 01 | 691 | 0.2−  | 0.3+  | 2005 03 13 | 691 | 0.4+  | 0.1+  |
| 2003 09 04 | 704 | 0.3+ | 0.7− | 2003 10 06 | 608 | 0.1+  | 0.9−  | 2005 03 13 | 691 | 0.3+  | 0.1+  |
| 2003 09 04 | 704 | 0.1+ | 0.2+ | 2003 10 06 | 608 | 0.7−  | 0.3−  | 2007 11 10 | H55 | 1.3−  | 0.6−  |
| 2003 09 04 | 704 | 1.3− | 0.4− | 2003 10 06 | 608 | 0.1+  | 0.6−  | 2007 11 10 | H55 | 0.7−  | 0.4−  |
| 2003 09 04 | 704 | 0.2− | 0.1+ | 2003 10 14 | 644 | 0.0   | 0.0   | 2007 11 10 | H55 | 0.2−  | 0.3+  |
| 2003 09 04 | 704 | 0.0  | 0.4− | 2003 10 14 | 644 | 0.1+  | 0.2+  | 2007 11 18 | G96 | 0.1+  | 1.5−  |
| 2003 09 17 | 644 | 0.1+ | 0.3+ | 2003 10 14 | 644 | 0.2+  | 0.0   | 2007 11 18 | G96 | 0.4−  | 0.7−  |
| 2003 09 17 | 644 | 0.1+ | 0.4+ | 2003 10 18 | 644 | 0.0   | 0.0   | 2007 11 18 | G96 | 0.1+  | 0.6−  |
| 2003 09 17 | 644 | 0.0  | 0.1+ | 2003 10 18 | 644 | 0.1+  | 0.0   | 2007 11 18 | G96 | 0.4−  | 0.8−  |
| 2003 09 19 | 644 | 0.1− | 0.4+ | 2003 10 18 | 644 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.1+  | 0.6+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 19 | 644 | 0.1−  | 0.3+  | 2003 10 19 | 644 | 0.1+  | 0.0   | 2007 12 15 | 704 | 1.0+ | 0.6+ |
| 2003 09 19 | 644 | 0.1−  | 0.3+  | 2003 10 19 | 644 | 0.0   | 0.0   | 2007 12 15 | 704 | 1.0− | 0.6+ |
| 2003 09 21 | 704 | (2.8+ | 0.7+) | 2003 10 19 | 644 | 0.3+  | 0.2+  | 2007 12 15 | 704 | 0.6+ | 0.4+ |
| 2003 09 21 | 704 | (2.4+ | 0.9+) | 2003 10 21 | 704 | 0.8+  | 1.2+  | 2007 12 15 | 704 | 0.7− | 1.1+ |
| 2003 09 21 | 704 | (3.4+ | 1.7+) | 2003 10 21 | 704 | (2.1− | 0.5−) |            |     |      |      |
| 2003 09 21 | 704 | (2.0+ | 0.8+) | 2003 10 21 | 704 | 0.3+  | 1.0+  |            |     |      |      |

**(172480)\* 2003 SE<sub>97</sub>**

Discovered 2003 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 27.71543   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26207405 | $\omega$ | 328.11471 | +0.95881071 | −0.28185333 |
| $a$ | 2.4183549  | $\Omega$ | 48.29830  | +0.26951480 | +0.86358280 |
| $e$ | 0.2142533  | $i$      | 2.70411   | +0.08968723 | +0.41807110 |
| $P$ | 3.76       | $H$      | 16.7      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 12 04 | 691 | 0.2+  | 0.3−  | 2003 10 14 | 699 | 0.3− | 0.1− | 2007 11 01 | 691 | 0.3−  | 0.3−  |
| 1996 12 04 | 691 | 0.0   | 0.2−  | 2003 10 14 | 699 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.8+  | 0.6+  |
| 1996 12 04 | 691 | 0.4−  | 0.5−  | 2003 10 14 | 699 | 1.0+ | 0.4− | 2007 11 05 | 704 | (1.2+ | 1.7+) |
| 1996 12 14 | 691 | 0.4−  | 0.2−  | 2003 10 14 | 699 | 0.6− | 0.5− | 2007 11 05 | 704 | 0.3+  | 0.9+  |
| 1996 12 14 | 691 | 0.0   | 0.6−  | 2003 10 20 | 704 | 0.4+ | 0.1+ | 2007 11 05 | 704 | 0.2+  | 0.1+  |
| 1996 12 14 | 691 | 0.1+  | 0.2+  | 2003 10 20 | 704 | 0.3− | 0.0  | 2007 11 05 | 704 | 0.4+  | 0.7+  |
| 1999 09 11 | 704 | 1.0+  | 1.5+  | 2003 10 20 | 704 | 0.2+ | 0.4+ | 2007 11 09 | 691 | 0.1−  | 0.3+  |
| 1999 09 11 | 704 | 0.1−  | 0.2−  | 2003 10 21 | 644 | 0.5+ | 0.2− | 2007 11 09 | 691 | 0.0   | 0.8+  |
| 1999 09 11 | 704 | 0.6+  | 1.0−  | 2003 10 21 | 699 | 0.1+ | 0.1− | 2007 11 09 | 691 | 0.1−  | 0.8+  |
| 2003 08 23 | 704 | 0.5−  | 0.8+  | 2003 10 21 | 644 | 0.3+ | 0.0  | 2007 11 14 | 291 | 0.5−  | 0.3−  |
| 2003 08 23 | 704 | 1.0−  | 1.3+  | 2003 10 21 | 699 | 0.1+ | 0.2− | 2007 11 14 | 291 | 0.5−  | 0.3−  |
| 2003 08 23 | 704 | 0.6−  | 1.1+  | 2003 10 21 | 644 | 0.4+ | 0.1− | 2007 11 14 | 291 | 0.4−  | 0.2−  |
| 2003 08 23 | 704 | 0.7−  | 0.4+  | 2003 10 21 | 699 | 0.4+ | 1.4− | 2007 11 14 | 291 | 1.5−  | 0.5+  |
| 2003 08 23 | 704 | 0.6−  | 0.4+  | 2003 10 21 | 699 | 0.0  | 0.5− | 2007 11 14 | 291 | 0.1−  | 0.2+  |
| 2003 09 19 | 704 | 0.3+  | 0.4+  | 2003 10 24 | 704 | 0.0  | 0.5− | 2007 11 14 | 291 | 1.4+  | 0.1+  |
| 2003 09 19 | 704 | 0.6+  | 0.5−  | 2003 10 24 | 704 | 0.4− | 0.0  | 2007 11 14 | 701 | 0.4+  | 0.1−  |
| 2003 09 19 | 704 | (1.8− | 1.5+) | 2003 10 24 | 704 | 0.6− | 0.6− | 2007 11 14 | 701 | 0.0   | 0.2−  |
| 2003 09 19 | 704 | 0.2−  | 0.1−  | 2003 10 24 | 704 | 0.3− | 0.2− | 2007 11 15 | 704 | 0.7+  | 1.1+  |
| 2003 09 19 | 704 | 1.2−  | 0.8+  | 2003 10 24 | 704 | 1.0− | 0.9− | 2007 11 15 | 704 | 0.3+  | 0.4+  |
| 2003 09 19 | 699 | 0.3−  | 0.2−  | 2003 10 28 | 704 | 0.4+ | 0.1+ | 2007 11 15 | 704 | 0.1+  | 0.8+  |
| 2003 09 19 | 699 | 0.2−  | 0.3−  | 2003 10 28 | 704 | 0.4+ | 0.3− | 2007 11 15 | 704 | 0.4+  | 0.0   |
| 2003 09 19 | 699 | 0.4−  | 0.5+  | 2003 10 28 | 704 | 1.1+ | 0.3− | 2007 11 15 | 704 | 0.1−  | 0.1−  |
| 2003 09 19 | 699 | 0.3−  | 0.6+  | 2003 10 28 | 704 | 0.5+ | 0.1+ | 2007 11 28 | D29 | 0.0   | 0.2−  |
| 2003 09 21 | 608 | 0.6−  | 0.6+  | 2003 10 28 | 704 | 0.2+ | 0.3+ | 2007 11 28 | D29 | 0.2+  | 0.2−  |
| 2003 09 21 | 608 | 0.6−  | 0.3+  | 2003 10 29 | 699 | 0.1− | 0.5− | 2007 11 28 | D29 | 0.2−  | 0.3+  |
| 2003 09 21 | 608 | 0.3−  | 0.4+  | 2003 10 29 | 699 | 0.7+ | 0.4− | 2007 11 28 | D29 | 0.2+  | 0.3+  |
| 2003 09 26 | 704 | 0.1+  | 0.2+  | 2003 10 29 | 699 | 0.2− | 0.2− | 2007 12 06 | D35 | 0.2+  | 0.2+  |

2007 DEC. 24

M.P.O. 129385

|                             |                                   |          |           |            |             |          |             |            |     |      |      |
|-----------------------------|-----------------------------------|----------|-----------|------------|-------------|----------|-------------|------------|-----|------|------|
| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |            | MPC         |          |             |            |     |      |      |
| <i>M</i>                    | 52.51707                          |          | (2000.0)  |            | <b>P</b>    |          | <b>Q</b>    |            |     |      |      |
| <i>n</i>                    | 0.26984815                        | $\omega$ | 249.28559 |            | +0.99838448 |          | +0.05466407 |            |     |      |      |
| <i>a</i>                    | 2.3716818                         | $\Omega$ | 107.57827 |            | -0.04417866 |          | +0.91838282 |            |     |      |      |
| <i>e</i>                    | 0.1695261                         | <i>i</i> | 0.93168   |            | -0.03573072 |          | +0.39189902 |            |     |      |      |
| <i>P</i>                    | 3.65                              | <i>H</i> | 16.6      | <i>G</i>   | 0.15        | <i>U</i> | 1           |            |     |      |      |
| Residuals in seconds of arc |                                   |          |           |            |             |          |             |            |     |      |      |
| 2000 12 31                  | 691                               | 0.3-     | 0.5+      | 2003 10 15 | 699         | 0.3-     | 0.3+        | 2003 10 29 | 699 | 0.2- | 0.5- |
| 2000 12 31                  | 691                               | 0.1+     | 0.2+      | 2003 10 15 | 699         | 0.2+     | 0.2-        | 2003 10 29 | 699 | 0.5- | 0.2+ |
| 2000 12 31                  | 691                               | 0.3+     | 0.1-      | 2003 10 15 | 699         | 0.1+     | 0.2+        | 2005 03 04 | G96 | 0.0  | 0.4- |
| 2002 04 18                  | 691                               | 0.3+     | 0.1-      | 2003 10 15 | 699         | 0.2+     | 0.1+        | 2005 03 04 | G96 | 0.0  | 0.2- |
| 2002 04 18                  | 691                               | 0.2+     | 0.6+      | 2003 10 15 | 644         | 0.1-     | 0.0         | 2005 03 04 | G96 | 0.2- | 0.0  |
| 2002 04 18                  | 691                               | 0.2+     | 0.2+      | 2003 10 15 | 644         | 0.2-     | 0.1+        | 2005 03 04 | G96 | 0.3- | 0.2- |
| 2002 05 04                  | 291                               | 0.1+     | 0.8+      | 2003 10 15 | 644         | 0.0      | 0.3+        | 2005 03 04 | G96 | 0.4- | 0.0  |
| 2002 05 04                  | 291                               | 0.1+     | 0.6+      | 2003 10 19 | 691         | 0.1+     | 0.1-        | 2005 03 04 | G96 | 0.2+ | 0.2- |
| 2002 05 04                  | 291                               | 0.0      | 0.7+      | 2003 10 19 | 691         | 0.0      | 0.1-        | 2005 03 04 | G96 | 0.0  | 0.0  |
| 2003 09 19                  | 699                               | 0.1+     | 0.4+      | 2003 10 19 | 691         | 0.1-     | 0.1-        | 2005 03 04 | G96 | 0.4- | 0.4- |
| 2003 09 19                  | 699                               | 0.6+     | 0.1-      | 2003 10 20 | 704         | 0.2+     | 0.0         | 2005 03 10 | G96 | 0.1- | 0.3- |
| 2003 09 19                  | 699                               | 0.5-     | 0.1-      | 2003 10 20 | 704         | 0.2+     | 0.2-        | 2005 03 10 | G96 | 0.1+ | 0.2- |
| 2003 09 19                  | 699                               | 0.4-     | 1.0-      | 2003 10 20 | 704         | 0.2-     | 0.3-        | 2005 03 10 | G96 | 0.1+ | 0.2- |
| 2003 09 20                  | 704                               | 0.4+     | 0.2+      | 2003 10 20 | 704         | 0.0      | 0.2-        | 2005 03 10 | G96 | 0.1+ | 0.1- |
| 2003 09 20                  | 704                               | 0.5+     | 0.4+      | 2003 10 20 | 704         | 0.0      | 0.1+        | 2005 04 04 | G96 | 0.4+ | 0.0  |
| 2003 09 20                  | 704                               | 0.1-     | 0.7+      | 2003 10 21 | 644         | 0.2+     | 0.0         | 2005 04 04 | G96 | 0.2- | 0.2+ |
| 2003 09 20                  | 704                               | 0.1-     | 0.5+      | 2003 10 21 | 644         | 0.0      | 0.0         | 2005 04 04 | G96 | 0.1+ | 0.1- |
| 2003 09 20                  | 704                               | 0.3-     | 0.2+      | 2003 10 21 | 644         | 0.1+     | 0.1-        | 2005 04 04 | G96 | 0.0  | 0.0  |
| 2003 09 21                  | 644                               | 0.2-     | 0.1+      | 2003 10 23 | 704         | 0.3-     | 0.3+        | 2005 04 10 | 695 | 0.3+ | 0.1+ |
| 2003 09 21                  | 644                               | 0.1-     | 0.0       | 2003 10 23 | 704         | 0.2-     | 0.3+        | 2005 04 11 | 695 | 0.2+ | 0.2+ |
| 2003 09 21                  | 644                               | 0.0      | 0.2+      | 2003 10 23 | 704         | 0.0      | 0.1+        | 2005 04 11 | 695 | 0.1+ | 0.1+ |
| 2003 09 21                  | 608                               | 0.1+     | 0.1-      | 2003 10 23 | 704         | 0.3-     | 0.5-        | 2007 11 09 | 691 | 0.2+ | 0.1- |
| 2003 09 21                  | 608                               | 0.3-     | 0.3+      | 2003 10 23 | 704         | 0.2+     | 0.1+        | 2007 11 09 | 691 | 0.5- | 0.9+ |
| 2003 09 21                  | 608                               | 0.8-     | 0.8+      | 2003 10 26 | 703         | 0.2+     | 0.3+        | 2007 11 09 | 691 | 0.1- | 0.0  |
| 2003 09 29                  | 704                               | 0.4+     | 0.7+      | 2003 10 26 | 703         | 0.7-     | 0.6+        | 2007 12 05 | 704 | 0.7+ | 0.5+ |
| 2003 09 29                  | 704                               | 0.3-     | 0.4+      | 2003 10 26 | 703         | 0.4-     | 0.0         | 2007 12 05 | 704 | 0.7+ | 0.1- |
| 2003 09 29                  | 704                               | 0.1+     | 0.9+      | 2003 10 26 | 703         | 0.2+     | 0.5+        | 2007 12 05 | 704 | 0.0  | 0.2- |
| 2003 09 29                  | 704                               | 0.2+     | 1.1+      | 2003 10 29 | 699         | 0.7-     | 0.7-        |            |     |      |      |
| 2003 09 29                  | 704                               | 0.2-     | 0.9+      | 2003 10 29 | 699         | 0.7+     | 0.2-        |            |     |      |      |

(172482)\* 2003 SS<sub>104</sub>

Discovered 2003 Sept. 20 by NEAT at Haleakala.

|                                         |            |       |          |            |     |             |      |             |     |      |      |
|-----------------------------------------|------------|-------|----------|------------|-----|-------------|------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |          |            |     | MPC         |      |             |     |      |      |
| $M$                                     | 50.60442   |       | (2000.0) |            |     | <b>P</b>    |      | <b>Q</b>    |     |      |      |
| $n$                                     | 0.26147162 |       | $\omega$ | 348.18085  |     | +0.95282421 |      | +0.30329799 |     |      |      |
| $a$                                     | 2.4220681  |       | $\Omega$ | 354.12403  |     | −0.26835734 |      | +0.82383391 |     |      |      |
| $e$                                     | 0.1376465  |       | $i$      | 6.54955    |     | −0.14181101 |      | +0.47886116 |     |      |      |
| $P$                                     | 3.77       |       | $H$      | 16.6       |     | $G$         | 0.15 | $U$         | 1   |      |      |
| Residuals in seconds of arc             |            |       |          |            |     |             |      |             |     |      |      |
| 1999 09 07                              | 704        | 0.4+  | 0.0      | 2003 10 16 | 691 | 0.1−        | 0.0  | 2007 11 02  | 704 | 0.0  | 0.2+ |
| 1999 09 07                              | 704        | 0.2−  | 0.2−     | 2003 10 16 | 691 | 0.1−        | 0.1+ | 2007 11 02  | 704 | 0.4+ | 0.2− |
| 1999 09 07                              | 704        | 1.5+  | 0.8−     | 2003 10 16 | 691 | 0.2−        | 0.0  | 2007 11 02  | 704 | 0.3− | 0.4− |
| 1999 10 02                              | 691        | 0.2+  | 0.6−     | 2003 10 19 | 644 | 0.5−        | 0.2+ | 2007 11 02  | 704 | 0.6+ | 0.3+ |
| 1999 10 02                              | 691        | 0.1−  | 0.4−     | 2003 10 19 | 644 | 0.4−        | 0.0  | 2007 11 02  | 704 | 0.8− | 0.3− |
| 1999 10 02                              | 691        | 0.1+  | 0.6−     | 2003 10 19 | 644 | 0.3−        | 0.1+ | 2007 11 02  | 703 | 0.4+ | 0.8− |
| 2001 02 21                              | 645        | 0.0   | 0.2−     | 2003 10 21 | 704 | 1.0−        | 0.2+ | 2007 11 02  | 703 | 1.0− | 0.6− |
| 2001 02 21                              | 645        | 0.1−  | 0.1−     | 2003 10 21 | 704 | 0.3−        | 0.5− | 2007 11 02  | 703 | 0.9− | 0.0  |
| 2003 08 04                              | 704        | 1.3+  | 0.9−     | 2003 10 21 | 704 | 0.3−        | 0.3− | 2007 11 02  | 703 | 0.3− | 0.2+ |
| 2003 08 04                              | 704        | 1.2+  | 0.7+     | 2003 10 21 | 704 | 0.6−        | 0.1− | 2007 11 02  | D29 | 0.1+ | 0.1− |
| 2003 08 04                              | 704        | 1.1+  | 0.1+     | 2003 10 21 | 704 | 0.5−        | 0.2+ | 2007 11 02  | D29 | 0.3+ | 0.2− |
| 2003 08 04                              | 704        | 0.6+  | 0.0      | 2003 10 25 | 704 | 1.0+        | 0.3+ | 2007 11 02  | D29 | 0.1− | 0.5− |
| 2003 08 04                              | 704        | 0.7+  | 0.6+     | 2003 10 25 | 704 | 0.7+        | 0.5+ | 2007 11 02  | D29 | 0.1+ | 0.4− |
| 2003 08 25                              | 704        | 0.1+  | 1.1+     | 2003 10 25 | 704 | 0.8+        | 0.4+ | 2007 11 08  | 704 | 0.5+ | 0.1+ |
| 2003 08 25                              | 704        | 1.2+  | 0.7+     | 2003 10 25 | 704 | 0.9+        | 0.4+ | 2007 11 08  | 704 | 0.2+ | 0.1− |
| 2003 08 25                              | 704        | (0.7+ | 2.1+)    | 2003 10 25 | 704 | 0.4+        | 0.6+ | 2007 11 08  | 704 | 0.7+ | 0.3− |
| 2003 08 25                              | 704        | 0.2−  | 0.5+     | 2003 10 26 | 691 | 0.0         | 0.3− | 2007 11 08  | 704 | 0.4+ | 0.6− |
| 2003 08 25                              | 704        | 0.0   | 0.7+     | 2003 10 26 | 691 | 0.2−        | 0.0  | 2007 11 08  | 704 | 0.7+ | 0.2+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 04 | 704 | 0.3+  | 0.7-  | 2003 10 26 | 691 | 0.1-  | 0.0   | 2007 11 08 | 703 | 0.1+ | 0.2+ |
| 2003 09 04 | 704 | 0.4-  | 0.7-  | 2003 10 30 | 704 | 0.1+  | 0.6+  | 2007 11 08 | 703 | 0.0  | 0.4+ |
| 2003 09 04 | 704 | 1.0-  | 1.0-  | 2003 10 30 | 704 | 0.1-  | 0.2+  | 2007 11 08 | 703 | 1.0- | 0.6- |
| 2003 09 19 | 699 | 0.0   | 0.3+  | 2003 10 30 | 704 | 0.3-  | 0.8+  | 2007 11 08 | 703 | 0.2- | 0.1- |
| 2003 09 19 | 699 | 0.6+  | 0.4-  | 2003 10 30 | 704 | 0.4-  | 0.5+  | 2007 11 15 | 699 | 1.0- | 0.7+ |
| 2003 09 19 | 699 | 0.8-  | 0.3+  | 2003 11 01 | 704 | 0.1+  | 0.3-  | 2007 11 15 | 699 | 0.3- | 0.3- |
| 2003 09 19 | 699 | 0.4-  | 0.2-  | 2003 11 01 | 704 | 0.6-  | 0.1-  | 2007 11 15 | 699 | 1.1- | 1.0- |
| 2003 09 20 | 704 | 0.6+  | 0.9+  | 2003 11 01 | 704 | 0.3+  | 0.1+  | 2007 11 15 | 699 | 0.7- | 0.4- |
| 2003 09 20 | 608 | 0.7+  | 0.3+  | 2003 11 01 | 704 | 0.4-  | 0.0   | 2007 11 15 | G96 | 0.1+ | 0.5- |
| 2003 09 20 | 704 | 0.3-  | 1.4+  | 2003 11 01 | 704 | 0.3-  | 0.2+  | 2007 11 15 | G96 | 0.1- | 0.4- |
| 2003 09 20 | 608 | 0.5+  | 0.0   | 2005 02 02 | 691 | 0.1+  | 0.2+  | 2007 11 15 | G96 | 0.0  | 0.4- |
| 2003 09 20 | 704 | (0.3+ | 1.5+) | 2005 02 02 | 691 | 0.0   | 0.3+  | 2007 11 15 | G96 | 0.0  | 0.4- |
| 2003 09 20 | 608 | 0.4+  | 0.3+  | 2005 02 02 | 691 | 0.2+  | 0.2+  | 2007 11 15 | G96 | 0.2- | 0.4- |
| 2003 09 20 | 704 | 0.6-  | 0.4-  | 2007 10 09 | 704 | 0.2-  | 0.4+  | 2007 11 15 | G96 | 0.1+ | 0.3- |
| 2003 09 20 | 704 | 0.2-  | 1.3+  | 2007 10 09 | 704 | 0.4-  | 0.2-  | 2007 11 15 | G96 | 0.1- | 0.4- |
| 2003 09 21 | 699 | 0.6+  | 0.2-  | 2007 10 09 | 704 | 1.1-  | 0.5+  | 2007 11 17 | 704 | 0.6+ | 0.2- |
| 2003 09 21 | 699 | 0.2+  | 0.6+  | 2007 10 09 | 704 | 1.0-  | 0.5-  | 2007 11 17 | 704 | 1.2+ | 0.3+ |
| 2003 09 21 | 699 | 0.7+  | 0.7+  | 2007 10 09 | 704 | 0.3-  | 0.8-  | 2007 11 17 | 704 | 0.8+ | 0.4- |
| 2003 09 21 | 699 | 0.2+  | 0.8+  | 2007 10 11 | G96 | 0.3-  | 0.0   | 2007 11 17 | 704 | 0.3+ | 0.5- |
| 2003 09 21 | 691 | 0.1-  | 0.1-  | 2007 10 11 | G96 | 0.0   | 0.1+  | 2007 11 17 | 704 | 0.1- | 0.3- |
| 2003 09 21 | 691 | 0.1-  | 0.0   | 2007 10 11 | G96 | 0.3+  | 0.1-  | 2007 11 18 | 704 | 0.9+ | 0.9+ |
| 2003 09 21 | 691 | 0.1-  | 0.1-  | 2007 10 11 | G96 | 0.0   | 0.1-  | 2007 11 18 | 704 | 0.7+ | 0.1+ |
| 2003 09 22 | 699 | 0.4-  | 0.1+  | 2007 10 12 | 704 | 0.5+  | 0.3-  | 2007 11 18 | 704 | 0.6+ | 0.7+ |
| 2003 09 22 | 699 | 0.3+  | 0.7-  | 2007 10 12 | 704 | 0.8+  | 0.0   | 2007 11 18 | 704 | 1.0+ | 0.0  |
| 2003 09 22 | 699 | 0.2-  | 0.7-  | 2007 10 12 | 704 | 0.5+  | 0.9-  | 2007 11 18 | 704 | 0.4+ | 0.7+ |
| 2003 09 22 | 699 | 0.2-  | 0.3-  | 2007 10 12 | 704 | 0.4+  | 0.5-  | 2007 11 30 | A77 | 0.2- | 0.1+ |
| 2003 09 25 | 608 | 0.6-  | 0.8-  | 2007 10 12 | 704 | 0.1+  | 0.7-  | 2007 11 30 | A77 | 0.3- | 0.3+ |
| 2003 09 25 | 608 | 0.8-  | 1.0-  | 2007 10 15 | 704 | 0.2-  | 0.6+  | 2007 11 30 | A77 | 0.4- | 0.1- |
| 2003 09 25 | 608 | 1.0-  | 1.0-  | 2007 10 15 | 704 | 0.6-  | 0.2+  | 2007 12 02 | 704 | 0.4+ | 0.4+ |
| 2003 09 27 | 704 | 0.7-  | 1.0+  | 2007 10 15 | 704 | 0.9-  | 0.9-  | 2007 12 02 | 704 | 0.2+ | 0.5+ |
| 2003 09 27 | 704 | 1.0+  | 0.0   | 2007 10 15 | 704 | 0.8-  | 1.3+  | 2007 12 02 | 704 | 0.2+ | 0.3+ |
| 2003 09 27 | 704 | 0.1+  | 0.2-  | 2007 10 15 | 704 | 1.3-  | 0.7+  | 2007 12 02 | 704 | 0.1+ | 0.2+ |
| 2003 09 27 | 704 | 0.2-  | 1.1+  | 2007 10 18 | 691 | 0.6-  | 0.5+  | 2007 12 02 | 704 | 0.3+ | 0.0  |
| 2003 09 27 | 704 | 0.5+  | 0.2+  | 2007 10 18 | 691 | 0.2-  | 0.3-  | 2007 12 05 | 699 | 0.9+ | 0.4+ |
| 2003 10 06 | 699 | 0.4+  | 0.1+  | 2007 10 18 | 691 | 0.1-  | 0.2-  | 2007 12 05 | 699 | 0.1- | 0.2+ |
| 2003 10 06 | 699 | 0.4-  | 0.1+  | 2007 10 21 | 703 | 1.0+  | 0.2-  | 2007 12 05 | 699 | 0.2- | 0.2- |
| 2003 10 06 | 699 | 0.6-  | 0.7+  | 2007 10 21 | 703 | 0.3-  | 0.6+  | 2007 12 05 | 699 | 0.0  | 0.5- |
| 2003 10 06 | 699 | 0.0   | 0.2-  | 2007 10 21 | 703 | 0.2-  | 0.7-  | 2007 12 16 | 704 | 0.3+ | 0.8+ |
| 2003 10 15 | 699 | 0.3+  | 0.6+  | 2007 10 21 | 703 | (1.6- | 0.5+) | 2007 12 16 | 704 | 0.9+ | 0.0  |
| 2003 10 15 | 699 | 0.8-  | 0.4-  | 2007 10 24 | 704 | 0.0   | 0.6-  | 2007 12 16 | 704 | 0.2+ | 1.6+ |
| 2003 10 15 | 699 | 0.2-  | 0.2+  | 2007 10 24 | 704 | 0.5+  | 0.3+  | 2007 12 16 | 704 | 0.6+ | 0.7- |
| 2003 10 15 | 699 | 0.3+  | 0.2+  | 2007 10 24 | 704 | 1.1+  | 1.2+  | 2007 12 16 | 704 | 0.9+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 691 | 0.0  | 0.3− | 2003 10 29 | 695 | 0.4− | 0.1+ | 2007 11 05 | 704 | 0.0  | 1.2+ |
| 2003 09 21 | 691 | 0.2+ | 0.3− | 2003 10 29 | 695 | 0.3− | 0.2+ | 2007 11 05 | 704 | 0.1− | 0.6+ |
| 2003 09 21 | 691 | 0.1+ | 0.2− | 2003 10 29 | 695 | 0.3− | 0.1+ | 2007 11 05 | 704 | 1.0− | 0.5− |
| 2003 09 22 | 704 | 0.8+ | 0.6+ | 2003 10 30 | 704 | 0.2+ | 0.3+ | 2007 11 14 | 704 | 0.3+ | 1.1+ |
| 2003 09 22 | 704 | 0.8+ | 0.6+ | 2003 10 30 | 704 | 0.2+ | 0.1− | 2007 11 14 | 704 | 0.6+ | 0.0  |
| 2003 09 22 | 704 | 0.1+ | 0.6+ | 2003 10 30 | 704 | 0.1− | 0.4+ | 2007 11 14 | 704 | 0.9+ | 1.1− |
| 2003 09 22 | 704 | 0.8+ | 0.5+ | 2003 11 01 | 704 | 0.2− | 0.3− | 2007 11 19 | 691 | 0.3− | 0.1+ |
| 2003 09 22 | 704 | 0.9+ | 0.8+ | 2003 11 01 | 704 | 0.4− | 0.8− | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2003 09 30 | 704 | 0.3− | 0.1− | 2003 11 01 | 704 | 0.5− | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2003 09 30 | 704 | 0.2− | 0.1− | 2003 11 01 | 704 | 0.5− | 0.0  | 2007 12 04 | 704 | 0.2+ | 1.4+ |
| 2003 09 30 | 704 | 0.4− | 0.2− | 2003 11 20 | 704 | 1.3+ | 0.4+ | 2007 12 04 | 704 | 0.4− | 0.3− |
| 2003 09 30 | 704 | 0.2− | 0.2− | 2003 11 20 | 704 | 0.5+ | 1.0− | 2007 12 04 | 704 | 0.7+ | 0.6+ |
| 2003 09 30 | 704 | 0.5− | 0.2− | 2003 11 20 | 704 | 0.1+ | 0.5− | 2007 12 04 | 704 | 0.5+ | 0.1− |
| 2003 10 02 | 691 | 0.1+ | 0.3− | 2003 11 24 | 704 | 0.2+ | 0.0  | 2007 12 04 | 704 | 0.0  | 0.0  |
| 2003 10 02 | 691 | 0.1− | 0.1− | 2003 11 24 | 704 | 0.6− | 0.4+ | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2003 10 02 | 691 | 0.1+ | 0.4− | 2003 11 24 | 704 | 0.7− | 0.4+ | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2003 10 17 | 699 | 0.5− | 0.4+ | 2003 11 24 | 704 | 0.0  | 0.2− | 2007 12 05 | G96 | 0.6+ | 0.1+ |
| 2003 10 17 | 699 | 0.2− | 0.1− | 2006 04 29 | 701 | 0.1− | 0.5+ | 2007 12 05 | G96 | 0.4+ | 0.1+ |
| 2003 10 17 | 699 | 0.4− | 0.0  | 2006 04 29 | 701 | 0.3− | 0.3+ |            |     |      |      |

**(172484)\* 2003 SC<sub>108</sub>**

Discovered 2003 Sept. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 351.25664  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29188082 | $\omega$ | 176.04299 | −0.34354607 | −0.93612032 |
| <i>a</i> | 2.2507763  | $\Omega$ | 294.03702 | +0.85936432 | −0.28106056 |
| <i>e</i> | 0.0855449  | <i>i</i> | 4.72302   | +0.37877311 | −0.21138522 |
| <i>P</i> | 3.38       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 04 | 704 | 0.8−  | 0.4+  | 2003 09 30 | 704 | 0.4+ | 0.3+ | 2006 08 29 | 703 | 0.5− | 0.3+ |
| 1998 03 04 | 704 | 0.2+  | 0.2+  | 2003 09 30 | 704 | 0.6− | 0.7+ | 2006 08 29 | 703 | 0.2+ | 1.0− |
| 1998 03 04 | 704 | (2.6− | 0.1+) | 2003 09 30 | 704 | 0.1− | 0.6− | 2006 08 29 | 703 | 0.2− | 0.6− |
| 1998 03 04 | 704 | 1.6−  | 0.4−  | 2003 10 03 | 691 | 0.3+ | 0.1− | 2006 09 26 | 691 | 0.0  | 0.2+ |
| 1999 06 15 | 691 | 0.2−  | 0.4+  | 2003 10 03 | 691 | 0.2+ | 0.3− | 2006 09 26 | 691 | 0.1+ | 0.2+ |
| 1999 06 15 | 691 | 0.1−  | 0.2−  | 2003 10 03 | 691 | 0.3+ | 0.2− | 2006 09 26 | 691 | 0.1+ | 0.1+ |
| 1999 06 15 | 691 | 0.7+  | 0.8+  | 2003 10 16 | 644 | 0.1+ | 0.1+ | 2006 09 28 | G96 | 0.0  | 0.6− |
| 2000 12 20 | 704 | 1.0+  | 0.2+  | 2003 10 16 | 644 | 0.1+ | 0.0  | 2006 09 28 | G96 | 0.2− | 0.3− |
| 2000 12 20 | 704 | 0.2−  | 1.2+  | 2003 10 16 | 644 | 0.2+ | 0.2+ | 2006 09 28 | G96 | 0.1+ | 0.7− |
| 2000 12 20 | 704 | 0.9+  | 0.8+  | 2003 10 17 | 699 | 0.3+ | 0.3− | 2006 09 28 | G96 | 0.5+ | 0.0  |
| 2001 01 03 | 704 | 0.2+  | 0.3−  | 2003 10 17 | 699 | 1.1− | 0.6+ | 2006 09 28 | G96 | 0.1+ | 0.4− |
| 2001 01 03 | 704 | 0.1+  | 0.4+  | 2003 10 17 | 699 | 0.2+ | 0.2− | 2006 09 28 | G96 | 0.1− | 0.5− |
| 2001 01 03 | 704 | 0.1−  | 0.1+  | 2003 10 17 | 691 | 0.1− | 0.1− | 2006 09 28 | G96 | 0.2+ | 0.4− |
| 2001 01 03 | 704 | 0.5+  | 0.5+  | 2003 10 17 | 699 | 0.5+ | 0.2+ | 2006 09 28 | G96 | 0.2− | 0.1+ |
| 2001 01 03 | 704 | 0.3−  | 0.1+  | 2003 10 17 | 691 | 0.0  | 0.0  | 2006 10 01 | 691 | 0.0  | 0.0  |
| 2003 09 20 | 644 | 0.2−  | 0.5+  | 2003 10 17 | 691 | 0.4− | 0.2− | 2006 10 01 | 691 | 0.5− | 0.1+ |
| 2003 09 20 | 644 | 0.1+  | 0.1−  | 2003 10 20 | 644 | 0.1− | 0.0  | 2006 10 01 | 691 | 0.0  | 0.3+ |
| 2003 09 20 | 644 | 0.1−  | 0.2+  | 2003 10 20 | 644 | 0.1+ | 0.1+ | 2007 11 09 | G96 | 0.4+ | 0.3− |
| 2003 09 21 | 644 | 0.0   | 0.1+  | 2003 10 20 | 644 | 0.1− | 0.2+ | 2007 11 09 | G96 | 0.2+ | 0.5− |
| 2003 09 21 | 699 | 0.1−  | 0.2+  | 2003 10 26 | 691 | 0.4+ | 0.4+ | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2003 09 21 | 699 | 1.3−  | 0.1+  | 2003 10 26 | 691 | 0.1+ | 0.1− | 2007 11 09 | G96 | 0.9− | 0.4− |
| 2003 09 21 | 699 | 0.0   | 0.3−  | 2003 10 26 | 691 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.4+ | 0.1− |
| 2003 09 21 | 699 | (1.8− | 1.6+) | 2003 11 23 | 695 | 0.2− | 0.1− | 2007 12 14 | 704 | 0.8+ | 0.8+ |
| 2003 09 21 | 644 | 0.2+  | 0.1+  | 2003 11 23 | 695 | 0.1− | 0.1− | 2007 12 14 | 704 | 0.7+ | 0.3+ |
| 2003 09 21 | 644 | 0.2+  | 0.0   | 2003 11 24 | 695 | 0.1− | 0.3− | 2007 12 14 | 704 | 0.5− | 0.4+ |
| 2003 09 21 | 691 | 0.2−  | 0.2−  | 2003 11 24 | 695 | 0.2− | 0.1− | 2007 12 14 | G96 | 0.1− | 0.0  |
| 2003 09 21 | 691 | 0.1−  | 0.1−  | 2006 08 19 | 691 | 0.1− | 0.3+ | 2007 12 14 | G96 | 0.0  | 0.1− |
| 2003 09 21 | 691 | 0.2−  | 0.2−  | 2006 08 19 | 691 | 0.2− | 0.0  | 2007 12 14 | G96 | 0.1+ | 0.1− |
| 2003 09 30 | 704 | 0.3−  | 0.5+  | 2006 08 19 | 691 | 0.1− | 0.0  | 2007 12 14 | G96 | 0.1+ | 0.1− |
| 2003 09 30 | 704 | 0.2+  | 0.3+  | 2006 08 29 | 703 | 0.4+ | 1.3− |            |     |      |      |

**(172485)\* 2003 ST<sub>117</sub>**

Discovered 2003 Sept. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 83.85123   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26975447 | $\omega$ | 46.58652  | +0.72789973 | +0.67747449 |
| <i>a</i> | 2.3722308  | $\Omega$ | 270.46576 | −0.65570655 | +0.64262601 |
| <i>e</i> | 0.1254623  | <i>i</i> | 6.07255   | −0.20052657 | +0.35785489 |
| <i>P</i> | 3.65       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 07 13 | 704 | 1.3−  | 0.3−  | 2003 09 30 | 704 | 0.4−  | 0.6+  | 2006 06 22 | 644 | 0.5+  | 0.9+  |
| 1999 07 13 | 704 | 0.6+  | 0.1−  | 2003 09 30 | 704 | 0.3+  | 0.3+  | 2007 11 02 | 691 | 0.0   | 0.0   |
| 1999 07 13 | 704 | 0.2+  | 1.4−  | 2003 09 30 | 704 | 0.5−  | 0.2−  | 2007 11 02 | 691 | 0.3−  | 0.2+  |
| 1999 07 13 | 704 | 0.3−  | 0.9+  | 2003 10 16 | 691 | 0.0   | 0.1+  | 2007 11 02 | 691 | 0.5−  | 0.0   |
| 1999 07 13 | 704 | 1.7+  | 1.1−  | 2003 10 16 | 691 | 0.1−  | 0.0   | 2007 11 07 | 704 | 0.5−  | 0.6+  |
| 2002 04 09 | 704 | 1.3+  | 0.3+  | 2003 10 16 | 691 | 0.0   | 0.1+  | 2007 11 07 | 704 | 0.2+  | 0.2−  |
| 2002 04 09 | 704 | 1.1+  | 1.1+  | 2003 10 21 | 704 | 0.1+  | 0.4+  | 2007 11 07 | 704 | 0.1+  | 0.1−  |
| 2002 04 09 | 704 | 1.1−  | 0.5+  | 2003 10 21 | 704 | 0.1+  | 0.1−  | 2007 11 07 | 704 | 0.1−  | 0.2−  |
| 2002 04 09 | 704 | 0.1+  | 0.5+  | 2003 10 21 | 704 | 0.3−  | 0.8+  | 2007 11 07 | 704 | (1.9− | 0.7+) |
| 2003 09 16 | 644 | 0.1−  | 0.4+  | 2003 11 01 | 704 | (2.0+ | 0.2+) | 2007 11 17 | 691 | (0.3+ | 2.2−) |
| 2003 09 16 | 644 | 0.1−  | 0.6+  | 2003 11 01 | 704 | 0.7+  | 0.7+  | 2007 11 17 | 691 | 0.3−  | 0.2−  |
| 2003 09 16 | 644 | 0.1−  | 0.4+  | 2003 11 01 | 704 | (2.0+ | 0.2−) | 2007 11 17 | 691 | 0.1+  | 0.2−  |
| 2003 09 21 | 704 | 0.6−  | 0.0   | 2003 11 01 | 704 | 0.3+  | 0.8+  | 2007 11 18 | 704 | 1.0+  | 0.3−  |
| 2003 09 21 | 704 | 0.2−  | 0.4+  | 2003 11 30 | 704 | 0.5+  | 0.4+  | 2007 11 18 | 704 | 0.0   | 1.4−  |
| 2003 09 21 | 704 | 0.1+  | 0.5+  | 2003 11 30 | 704 | 1.2+  | 1.3+  | 2007 11 18 | 704 | 0.5+  | 0.0   |
| 2003 09 21 | 704 | 0.6−  | 0.0   | 2003 11 30 | 704 | 0.2−  | 0.2+  | 2007 11 18 | 704 | 0.2+  | 0.1+  |
| 2003 09 21 | 704 | 0.3−  | 0.4−  | 2003 11 30 | 704 | 0.1+  | 0.5+  | 2007 11 18 | 704 | 0.1+  | 0.3−  |
| 2003 09 25 | 644 | 0.1−  | 0.0   | 2005 01 08 | 599 | 0.0   | 0.6−  | 2007 11 20 | 704 | 0.7+  | 1.2+  |
| 2003 09 25 | 644 | 0.2−  | 0.1−  | 2005 01 08 | 599 | 0.1−  | 0.3+  | 2007 11 20 | 704 | (1.6+ | 1.6+) |
| 2003 09 25 | 608 | 0.6−  | 0.7−  | 2005 01 08 | 599 | 0.3+  | 0.0   | 2007 11 20 | 704 | 0.5+  | 1.0+  |
| 2003 09 25 | 608 | 0.6−  | 0.5−  | 2005 01 08 | 599 | 0.0   | 0.0   | 2007 12 04 | 699 | 0.2+  | 1.1−  |
| 2003 09 25 | 608 | 0.4−  | 0.7−  | 2005 01 13 | 691 | 0.2+  | 0.0   | 2007 12 04 | 699 | 0.5+  | 0.6−  |
| 2003 09 25 | 644 | 0.0   | 0.1−  | 2005 01 13 | 691 | 0.1−  | 0.0   | 2007 12 04 | 699 | 0.2+  | 0.5−  |
| 2003 09 29 | 699 | (1.0− | 1.7−) | 2005 01 13 | 691 | 0.2−  | 0.0   | 2007 12 04 | 699 | (1.9+ | 0.9+) |
| 2003 09 29 | 699 | 0.3+  | 0.1−  | 2005 02 02 | 691 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 0.0   | 0.3+  |
| 2003 09 29 | 699 | 0.0   | 0.3−  | 2005 02 02 | 691 | 0.1−  | 0.1+  | 2007 12 15 | 704 | 0.7+  | 1.0−  |
| 2003 09 29 | 699 | 0.1−  | 0.3−  | 2005 02 02 | 691 | 0.0   | 0.1+  | 2007 12 15 | 704 | 0.4+  | 0.4−  |
| 2003 09 30 | 704 | 0.2+  | 0.4+  | 2006 06 22 | 644 | 0.5−  | 0.4+  | 2007 12 15 | 704 | 0.1−  | 1.2+  |
| 2003 09 30 | 704 | 0.2−  | 0.3+  | 2006 06 22 | 644 | 0.2+  | 0.5+  |            |     |       |       |

**(172486)\* 2003 SO<sub>120</sub> = 2005 CB<sub>67</sub>**

Discovered 2003 Sept. 17 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 75961)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 297.67770  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28885929 | $\omega$ | 117.35474 | −0.77541133 | −0.63078336 |
| <i>a</i> | 2.2664448  | $\Omega$ | 23.57339  | +0.55054775 | −0.69794341 |
| <i>e</i> | 0.1220757  | <i>i</i> | 4.17967   | +0.30924818 | −0.33909785 |
| <i>P</i> | 3.41       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |        |       |            |     |       |       |            |     |      |      |
|------------|-----|--------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1971 03 26 | 675 | 1.2−   | 0.2+  | 2005 03 03 | 703 | 0.1+  | 0.8+  | 2005 03 16 | 704 | 0.2+ | 0.1− |
| 1971 03 26 | 675 | (10.1− | 4.3+) | 2005 03 04 | 704 | (1.6+ | 2.1−) | 2005 03 17 | 704 | 0.2− | 0.2− |
| 1971 03 26 | 675 | 1.2+   | 1.0−  | 2005 03 04 | 704 | 0.8+  | 0.9−  | 2005 03 17 | 704 | 1.0+ | 1.3+ |
| 1971 03 26 | 675 | 1.1−   | 1.2−  | 2005 03 04 | 704 | 0.7+  | 0.3−  | 2005 03 17 | 704 | 0.2+ | 0.2+ |
| 2002 05 11 | 704 | 0.6−   | 0.4−  | 2005 03 04 | 704 | 0.6+  | 0.7−  | 2005 03 17 | 704 | 0.6+ | 0.6+ |
| 2002 05 11 | 704 | 0.9−   | 1.0−  | 2005 03 04 | 704 | (0.3+ | 1.6−) | 2005 03 17 | 704 | 0.7+ | 0.6+ |
| 2002 05 11 | 704 | 0.9−   | 0.2−  | 2005 03 08 | 699 | 0.1−  | 0.5+  | 2005 04 06 | 699 | 0.4+ | 0.7+ |
| 2002 05 11 | 704 | (1.6−  | 0.3−) | 2005 03 08 | 699 | 0.2−  | 0.7+  | 2005 04 06 | 699 | 1.4− | 0.6+ |
| 2002 05 11 | 704 | (2.0−  | 0.0)  | 2005 03 08 | 699 | 0.2−  | 0.2−  | 2005 04 06 | 699 | 1.2+ | 0.0  |
| 2002 05 30 | 644 | 0.2−   | 0.6+  | 2005 03 08 | 699 | 0.2+  | 0.2+  | 2005 04 06 | 699 | 0.2− | 0.3+ |
| 2002 05 30 | 644 | 0.1+   | 0.6+  | 2005 03 09 | 699 | 0.3+  | 0.4+  | 2005 04 06 | 703 | 1.3− | 0.5− |
| 2002 05 30 | 644 | 0.1+   | 0.5+  | 2005 03 09 | 699 | 0.0   | 0.3+  | 2005 04 06 | 703 | 0.1− | 1.0− |
| 2003 09 17 | 691 | 0.1−   | 0.8+  | 2005 03 09 | 699 | 0.2+  | 1.1−  | 2005 04 06 | 703 | 1.0− | 1.1+ |
| 2003 09 17 | 691 | 0.3−   | 0.6+  | 2005 03 09 | 699 | 0.3−  | 0.0   | 2005 04 06 | 703 | 0.2− | 0.7− |
| 2003 09 17 | 691 | 0.2−   | 0.5+  | 2005 03 09 | 704 | 0.5+  | 0.5+  | 2005 04 09 | 691 | 0.1+ | 0.0  |
| 2003 09 20 | 699 | 0.4−   | 0.5+  | 2005 03 09 | 704 | 0.5+  | 0.6−  | 2005 04 09 | 691 | 0.1+ | 0.1+ |
| 2003 09 20 | 699 | 0.2+   | 1.0+  | 2005 03 09 | 704 | 0.5+  | 0.4+  | 2005 04 09 | 691 | 0.2+ | 0.2+ |



2007 DEC. 24

M.P.O. 129387

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 20 | 699 | 0.2+  | 0.1-  | 2005 03 09 | 704 | 0.3+ | 0.6- | 2005 04 09 | 691 | 0.1-  | 0.2+  |
| 2003 09 20 | 699 | 0.3+  | 0.3+  | 2005 03 09 | 704 | 0.0  | 0.7+ | 2005 04 09 | 691 | 0.1-  | 0.0   |
| 2003 09 21 | 608 | 0.6-  | 0.9+  | 2005 03 09 | 704 | 0.1+ | 0.1- | 2005 04 09 | 691 | 0.0   | 0.2+  |
| 2003 09 21 | 608 | 0.2-  | 0.8+  | 2005 03 09 | 704 | 0.1- | 0.5+ | 2005 05 11 | G96 | 0.2-  | 0.1-  |
| 2003 09 21 | 608 | 0.2-  | 0.2+  | 2005 03 09 | 704 | 0.3+ | 0.3- | 2005 05 11 | G96 | 0.4-  | 0.1+  |
| 2005 02 09 | 704 | (1.6+ | 0.1-) | 2005 03 09 | 704 | 0.4- | 0.1- | 2005 05 11 | G96 | 0.0   | 0.4-  |
| 2005 02 09 | 704 | 0.6+  | 0.4+  | 2005 03 09 | 704 | 0.4+ | 0.5- | 2005 05 11 | G96 | 0.1-  | 0.1-  |
| 2005 02 09 | 704 | 0.2+  | 0.8+  | 2005 03 12 | 704 | 0.2+ | 0.4+ | 2007 11 19 | 691 | 0.3-  | 0.4-  |
| 2005 02 09 | 704 | 0.6+  | 0.3-  | 2005 03 12 | 704 | 0.5+ | 0.3+ | 2007 11 19 | 691 | 0.4-  | 0.2-  |
| 2005 02 14 | 704 | 0.2+  | 0.4+  | 2005 03 12 | 704 | 0.5+ | 0.3+ | 2007 11 19 | 691 | 0.1-  | 0.2-  |
| 2005 02 14 | 704 | 0.3+  | 0.0   | 2005 03 12 | 704 | 0.1+ | 0.4+ | 2007 11 20 | 704 | (3.3+ | 0.8+) |
| 2005 02 14 | 704 | 0.6+  | 0.1+  | 2005 03 12 | 704 | 0.2+ | 0.8+ | 2007 11 20 | 704 | 0.9+  | 0.4+  |
| 2005 02 14 | 704 | 0.3+  | 0.5+  | 2005 03 16 | 704 | 0.9+ | 0.4+ | 2007 11 20 | 704 | (3.4+ | 0.5+) |
| 2005 03 03 | 703 | 0.2-  | 0.1-  | 2005 03 16 | 704 | 0.4+ | 0.2+ | 2007 11 20 | 704 | 0.5-  | 0.6-  |
| 2005 03 03 | 703 | 1.0-  | 0.3-  | 2005 03 16 | 704 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.3-  | 1.2+  |
| 2005 03 03 | 703 | 1.3-  | 0.1-  | 2005 03 16 | 704 | 0.3+ | 0.1+ | 2007 12 13 | 704 | 0.6-  | 0.1-  |
| 2005 03 03 | 703 | 0.8-  | 0.5-  | 2005 03 16 | 704 | 0.0  | 0.6+ | 2007 12 13 | 704 | 0.4+  | 1.2-  |
| 2005 03 03 | 703 | 0.6-  | 0.4-  | 2005 03 16 | 704 | 0.5+ | 0.7+ | 2007 12 15 | 704 | 0.1+  | 0.1-  |
| 2005 03 03 | 703 | 0.5-  | 0.0   | 2005 03 16 | 704 | 1.4+ | 0.8+ | 2007 12 15 | 704 | 0.7+  | 0.1+  |
| 2005 03 03 | 703 | (2.9- | 2.0+) | 2005 03 16 | 704 | 0.4+ | 0.3- | 2007 12 15 | 704 | 0.2-  | 0.0   |

(172487)\* 2003 SP<sub>130</sub>

Discovered 2003 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 311.17155  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.29474067 | $\omega$ | 185.49998 | -0.71417819 | -0.68821822 |
| <i>a</i> | 2.2361933  | $\Omega$ | 310.16025 | +0.64840631 | -0.58175528 |
| <i>e</i> | 0.0875670  | <i>i</i> | 9.61824   | +0.26366413 | -0.43349335 |
| <i>P</i> | 3.34       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 30 | 699 | 1.1+  | 0.3+  | 2003 10 17 | 699 | 1.1- | 0.0  | 2005 03 12 | 704 | 0.7+  | 0.0   |
| 2000 11 30 | 699 | 0.9+  | 0.0   | 2003 10 17 | 699 | 0.6- | 0.2+ | 2005 03 12 | 704 | 0.8+  | 0.9+  |
| 2000 11 30 | 704 | 0.3-  | 0.1+  | 2003 10 17 | 699 | 0.3+ | 0.7- | 2005 03 13 | 703 | 0.5-  | 0.2-  |
| 2000 11 30 | 699 | 0.2-  | 1.7+  | 2003 10 17 | 699 | 0.3+ | 0.8- | 2005 03 13 | 703 | 0.1-  | 0.4+  |
| 2000 11 30 | 704 | 0.6-  | 0.3-  | 2003 10 23 | 691 | 0.2- | 0.1- | 2005 03 13 | 703 | 0.5-  | 0.0   |
| 2000 11 30 | 699 | 0.3-  | 0.3+  | 2003 10 23 | 691 | 0.4+ | 0.0  | 2005 03 13 | 703 | 0.2-  | 0.5+  |
| 2000 11 30 | 704 | 1.6-  | 0.5-  | 2003 10 23 | 691 | 0.0  | 0.2- | 2006 07 21 | G96 | 0.3-  | 0.3+  |
| 2000 11 30 | 704 | 1.4-  | 1.5+  | 2005 02 02 | 704 | 0.3+ | 0.1- | 2006 07 21 | G96 | 0.1-  | 0.3+  |
| 2003 09 20 | 704 | 0.2+  | 0.6+  | 2005 02 02 | 704 | 0.4- | 0.2- | 2006 07 21 | G96 | 0.2+  | 0.3+  |
| 2003 09 20 | 704 | 0.1+  | 0.3+  | 2005 02 02 | 704 | 1.3- | 0.2- | 2006 07 21 | G96 | 0.2-  | 0.3+  |
| 2003 09 20 | 704 | 0.6-  | 0.7+  | 2005 03 07 | 704 | 0.1+ | 0.8+ | 2006 08 12 | 644 | 0.3-  | 0.5+  |
| 2003 09 20 | 704 | (0.8+ | 1.9+) | 2005 03 07 | 704 | 0.7+ | 0.5+ | 2006 08 12 | 644 | 0.3-  | 0.7+  |
| 2003 09 20 | 608 | 0.5+  | 0.8-  | 2005 03 07 | 704 | 0.4+ | 0.3+ | 2006 08 12 | 644 | 0.4-  | 0.6+  |
| 2003 09 20 | 608 | 0.6+  | 1.0-  | 2005 03 07 | 704 | 0.1- | 0.6+ | 2006 08 14 | 644 | 0.2-  | 0.5+  |
| 2003 09 20 | 608 | 0.8+  | 0.6-  | 2005 03 07 | 704 | 0.0  | 0.9+ | 2006 08 14 | 644 | 0.2-  | 0.5+  |
| 2003 09 21 | 699 | 0.0   | 0.2+  | 2005 03 08 | 703 | 0.3+ | 0.1+ | 2006 08 14 | 644 | 0.2-  | 0.4+  |
| 2003 09 21 | 699 | (1.8- | 0.2+) | 2005 03 08 | 703 | 0.7- | 0.2+ | 2006 08 20 | 644 | 0.4-  | 0.7+  |
| 2003 09 21 | 699 | 1.0+  | 0.0   | 2005 03 08 | 703 | 0.5+ | 0.2- | 2006 08 20 | 644 | 0.3-  | 0.5+  |
| 2003 09 21 | 644 | 0.0   | 0.7+  | 2005 03 08 | 703 | 0.2- | 0.7+ | 2006 08 20 | 644 | 0.2-  | 0.7+  |
| 2003 09 21 | 699 | 0.4+  | 1.2+  | 2005 03 09 | 704 | 0.8+ | 0.6+ | 2006 08 20 | 644 | 0.5-  | 0.6+  |
| 2003 09 21 | 644 | 0.1+  | 0.5+  | 2005 03 09 | 704 | 0.5+ | 0.5+ | 2006 08 20 | 644 | 0.4-  | 0.7+  |
| 2003 09 21 | 644 | 0.2+  | 0.5+  | 2005 03 09 | 704 | 0.5+ | 0.4+ | 2006 08 20 | 644 | 0.4-  | 0.5+  |
| 2003 09 30 | 704 | (0.3+ | 1.7+) | 2005 03 09 | 704 | 0.8+ | 0.3+ | 2007 11 08 | 704 | (2.0+ | 2.5-) |
| 2003 09 30 | 704 | 1.1-  | 1.3+  | 2005 03 09 | 704 | 0.4+ | 0.3+ | 2007 11 08 | 704 | 0.9+  | 0.9+  |
| 2003 09 30 | 704 | 0.3+  | 0.8+  | 2005 03 10 | 699 | 0.6+ | 0.7+ | 2007 11 08 | 704 | 0.5+  | 1.0+  |
| 2003 09 30 | 704 | 0.8-  | 0.6+  | 2005 03 10 | 699 | 0.5+ | 0.9+ | 2007 12 16 | 704 | 0.9-  | 0.4+  |
| 2003 09 30 | 704 | 0.7-  | 0.2-  | 2005 03 10 | 699 | 1.2+ | 0.9+ | 2007 12 16 | 704 | 0.2-  | 0.2-  |
| 2003 10 04 | 691 | 0.3-  | 0.2+  | 2005 03 10 | 699 | 0.6+ | 0.2+ | 2007 12 16 | 704 | 0.3+  | 0.2-  |
| 2003 10 04 | 691 | 0.1-  | 0.2+  | 2005 03 12 | 704 | 0.5+ | 0.2+ | 2007 12 16 | 704 | 0.3-  | 0.2-  |
| 2003 10 04 | 691 | 0.1-  | 0.3+  | 2005 03 12 | 704 | 0.7+ | 0.8+ | 2007 12 16 | 704 | 0.3-  | 0.4-  |

(172488)\* 2003 ST<sub>131</sub>

Discovered 2003 Sept. 18 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 345.81673  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.26459751 | $\omega$ | 248.44176 | +0.09061076 | -0.99584917 |
| <i>a</i> | 2.4029545  | $\Omega$ | 196.36653 | +0.92463874 | +0.08733608 |
| <i>e</i> | 0.1884133  | <i>i</i> | 1.75079   | +0.36990929 | +0.02562878 |
| <i>P</i> | 3.72       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 26 | 691 | 0.6- | 1.2+ | 2003 09 22 | 291 | 0.1+ | 0.1+ | 2003 11 19 | 644 | 0.2+ | 0.2- |
| 1992 11 26 | 691 | 0.0  | 0.2- | 2003 09 22 | 291 | 0.2+ | 0.2+ | 2003 11 19 | 644 | 0.4+ | 0.4+ |
| 1992 11 26 | 691 | 0.3- | 0.4- | 2003 09 22 | 291 | 0.2+ | 0.3+ | 2005 04 02 | G96 | 0.9- | 0.0  |
| 1996 12 07 | 691 | 0.3- | 0.3- | 2003 10 21 | 699 | 0.3- | 0.0  | 2005 04 02 | G96 | 0.3- | 0.3+ |
| 1996 12 07 | 691 | 0.0  | 0.1- | 2003 10 21 | 699 | 0.2+ | 0.4- | 2005 04 02 | G96 | 0.2- | 0.2+ |
| 1996 12 07 | 691 | 0.0  | 0.1- | 2003 10 21 | 699 | 0.2- | 0.5+ | 2005 04 02 | G96 | 0.1+ | 0.5+ |
| 1997 02 13 | 691 | 0.6+ | 0.3- | 2003 10 21 | 704 | 1.2- | 0.2+ | 2005 04 09 | 691 | 0.1+ | 1.0+ |
| 1997 02 13 | 691 | 0.1+ | 0.1- | 2003 10 21 | 699 | 0.2+ | 0.3+ | 2005 04 09 | 691 | 0.3+ | 0.0  |
| 1997 02 13 | 691 | 0.8+ | 0.4+ | 2003 10 21 | 704 | 0.7- | 0.4- | 2005 04 09 | 691 | 0.3+ | 0.1+ |
| 2001 04 13 | 691 | 0.6+ | 0.1+ | 2003 10 21 | 704 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.2+ | 0.6- |
| 2001 04 13 | 691 | 0.2+ | 0.6+ | 2003 10 26 | 691 | 0.2- | 0.5+ | 2007 09 18 | G96 | 0.3+ | 0.0  |
| 2001 04 13 | 691 | 0.0  | 0.2+ | 2003 10 26 | 691 | 0.2- | 0.1+ | 2007 09 18 | G96 | 0.6- | 0.3- |
| 2001 04 16 | 645 | 0.2- | 0.0  | 2003 10 26 | 691 | 0.0  | 0.0  | 2007 09 18 | G96 | 0.2- | 0.4- |
| 2001 04 16 | 645 | 0.0  | 0.0  | 2003 10 28 | 704 | 1.0- | 0.5- | 2007 12 04 | 704 | 0.2- | 0.9- |
| 2003 09 18 | 691 | 0.3+ | 0.2+ | 2003 10 28 | 704 | 0.4+ | 1.0+ | 2007 12 04 | 704 | 0.4- | 0.7- |
| 2003 09 18 | 691 | 0.2+ | 0.3+ | 2003 10 28 | 704 | 0.0  | 0.3+ | 2007 12 04 | 704 | 0.6- | 0.2- |
| 2003 09 18 | 691 | 0.1+ | 0.1+ | 2003 11 19 | 644 | 0.3- | 0.1+ | 2007 12 04 | 704 | 0.3- | 0.3- |

(172489)\* 2003 SV<sub>138</sub>

Discovered 2003 Sept. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 15.78657   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.27859100 | $\omega$ | 178.55978 | +0.36514876 | -0.92763207 |
| <i>a</i> | 2.3217992  | $\Omega$ | 250.01840 | +0.85329172 | +0.36722030 |
| <i>e</i> | 0.1366522  | <i>i</i> | 4.79252   | +0.37223598 | +0.06817625 |
| <i>P</i> | 3.54       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 03 | 704 | 0.3+  | 1.1-  | 2003 10 15 | 644 | 0.2- | 0.3+ | 2003 11 24 | 704 | 0.8+  | 0.4+  |
| 2001 01 03 | 704 | 0.5-  | 1.2-  | 2003 10 15 | 699 | 0.2- | 0.0  | 2003 11 24 | 704 | 0.7-  | 0.5+  |
| 2001 01 03 | 704 | 0.3+  | 0.0   | 2003 10 15 | 644 | 0.3- | 0.4+ | 2003 11 24 | 704 | 0.3-  | 0.3-  |
| 2001 01 03 | 704 | 0.3+  | 0.1+  | 2003 10 15 | 644 | 0.3- | 0.6+ | 2003 11 24 | 704 | 0.7-  | 0.9-  |
| 2001 01 20 | 704 | 1.4+  | 0.3+  | 2003 10 18 | 691 | 0.1+ | 0.0  | 2003 12 10 | 644 | 0.1+  | 0.2-  |
| 2001 01 20 | 704 | 0.3+  | 0.7+  | 2003 10 18 | 691 | 0.1+ | 0.0  | 2003 12 10 | 644 | 0.1-  | 0.0   |
| 2001 01 20 | 704 | 0.2+  | 0.7+  | 2003 10 18 | 691 | 0.1+ | 0.0  | 2003 12 10 | 644 | 0.0   | 0.2+  |
| 2001 02 01 | 699 | 0.2-  | 0.9+  | 2003 10 20 | 644 | 0.0  | 0.2- | 2003 12 22 | 704 | 0.5+  | 0.4+  |
| 2001 02 01 | 699 | (2.1- | 1.3+) | 2003 10 20 | 644 | 0.3+ | 0.0  | 2003 12 22 | 704 | 0.1+  | 1.1+  |
| 2001 02 01 | 704 | 0.6+  | 0.9+  | 2003 10 20 | 644 | 0.2+ | 0.2- | 2003 12 22 | 704 | 0.7-  | 0.4+  |
| 2001 02 01 | 699 | 0.4-  | 0.1+  | 2003 10 21 | 699 | 0.7- | 0.0  | 2005 04 03 | 644 | 0.5+  | 0.7+  |
| 2001 02 01 | 704 | 0.3-  | 0.7+  | 2003 10 21 | 699 | 0.2- | 0.8- | 2005 04 03 | 644 | 0.2+  | 0.2+  |
| 2001 02 01 | 704 | 0.1+  | 0.6+  | 2003 10 21 | 699 | 0.5+ | 0.2- | 2005 04 03 | 644 | 0.9+  | 0.4+  |
| 2001 02 01 | 699 | 0.3-  | 1.2+  | 2003 10 21 | 704 | 0.2+ | 0.1+ | 2005 04 05 | 699 | 0.0   | 0.4+  |
| 2003 09 20 | 644 | 0.1+  | 0.3+  | 2003 10 21 | 699 | 0.5+ | 0.3- | 2005 04 05 | 699 | (2.0+ | 1.6+) |
| 2003 09 20 | 644 | 0.2+  | 0.3+  | 2003 10 21 | 704 | 0.0  | 0.0  | 2005 04 05 | 699 | (1.8+ | 0.5+) |
| 2003 09 20 | 644 | 0.0   | 0.3+  | 2003 10 21 | 704 | 0.7+ | 0.2+ | 2005 04 05 | 699 | (1.4+ | 2.4+) |
| 2003 09 22 | 704 | 0.8-  | 0.8+  | 2003 10 21 | 704 | 0.1- | 0.2+ | 2005 04 14 | 703 | 0.3-  | 0.7-  |
| 2003 09 22 | 704 | 0.4-  | 0.2+  | 2003 10 21 | 704 | 0.5+ | 0.1- | 2005 04 14 | 703 | (0.8- | 1.6+) |
| 2003 09 22 | 704 | 0.1+  | 1.0+  | 2003 10 27 | 691 | 0.1- | 0.1- | 2005 04 14 | 703 | 0.3-  | 1.2+  |
| 2003 09 22 | 704 | 0.2-  | 0.1+  | 2003 10 27 | 691 | 0.1- | 0.3- | 2005 04 14 | 703 | 1.0-  | 0.2+  |
| 2003 09 22 | 704 | 0.5-  | 0.6-  | 2003 10 27 | 691 | 0.0  | 0.0  | 2005 05 06 | G96 | 0.3+  | 0.1+  |
| 2003 09 22 | 608 | 0.0   | 0.5+  | 2003 10 30 | 704 | 0.1+ | 0.7+ | 2005 05 06 | G96 | 0.1-  | 0.3+  |
| 2003 09 22 | 608 | 0.1+  | 0.5+  | 2003 10 30 | 704 | 0.3+ | 0.5- | 2005 05 06 | G96 | 0.3+  | 0.5+  |
| 2003 09 22 | 608 | 0.2-  | 0.7+  | 2003 10 30 | 704 | 0.5+ | 0.4+ | 2005 05 06 | G96 | 0.4+  | 0.4+  |
| 2003 09 27 | 704 | 0.6-  | 0.3+  | 2003 11 01 | 704 | 0.5+ | 0.9+ | 2006 08 13 | 644 | 0.1+  | 0.7+  |
| 2003 09 27 | 704 | 0.1+  | 0.2+  | 2003 11 01 | 704 | 0.5+ | 0.7+ | 2006 08 13 | 644 | 0.2-  | 0.5+  |
| 2003 09 27 | 704 | 0.4-  | 0.4+  | 2003 11 01 | 704 | 0.8+ | 0.4- | 2006 08 13 | 644 | 0.2+  | 1.0+  |
| 2003 09 27 | 704 | 0.2-  | 0.1-  | 2003 11 01 | 704 | 1.2+ | 0.5- | 2007 10 07 | G96 | 0.3-  | 0.8-  |
| 2003 09 27 | 704 | 0.1+  | 0.1+  | 2003 11 01 | 704 | 0.5+ | 0.2+ | 2007 10 07 | G96 | 0.5-  | 0.8-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 01 | 691 | 0.1− | 0.2− | 2003 11 20 | 704 | (2.2− | 0.1+) | 2007 10 07 | G96 | 0.0  | 1.0− |
| 2003 10 01 | 691 | 0.1− | 0.2− | 2003 11 20 | 704 | 1.4−  | 0.4+  | 2007 10 07 | G96 | 0.4− | 0.6− |
| 2003 10 01 | 691 | 0.0  | 0.3− | 2003 11 20 | 704 | 1.1−  | 0.8+  | 2007 12 16 | G99 | 0.2− | 0.4− |
| 2003 10 15 | 699 | 1.3− | 0.3+ | 2003 11 20 | 704 | 1.1−  | 0.6+  | 2007 12 16 | G99 | 0.1+ | 0.0  |
| 2003 10 15 | 699 | 0.4+ | 0.5+ | 2003 11 20 | 704 | 0.0   | 0.1−  | 2007 12 16 | G99 | 0.2− | 0.6− |
| 2003 10 15 | 699 | 0.1+ | 0.7− | 2003 11 24 | 704 | 0.2+  | 0.2+  | 2007 12 16 | G99 | 0.2+ | 0.4− |

**(172490)\* 2003 SV<sub>139</sub> = 2000 YR<sub>130</sub>**

Discovered 2003 Sept. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 53413)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.31230  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.28494988 | $\omega$ | 166.19983 | −0.06020453 | −0.99798009 |          |          |
| <i>a</i> | 2.2871276  | $\Omega$ | 287.24878 | +0.91379147 | −0.04692824 |          |          |
| <i>e</i> | 0.1195590  | <i>i</i> | 1.21657   | +0.40169711 | −0.04281908 |          |          |
| <i>P</i> | 3.46       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 05 | 691 | 1.0−  | 0.2−  | 2005 03 11 | G96 | 0.3− | 0.0  | 2006 07 21 | G96 | 0.5+ | 0.1− |
| 1996 09 05 | 691 | 1.1−  | 0.2−  | 2005 03 11 | G96 | 0.3+ | 0.3+ | 2006 07 21 | G96 | 0.4+ | 0.1− |
| 1996 09 05 | 691 | 1.0−  | 0.1+  | 2005 03 11 | G96 | 0.1− | 0.5+ | 2007 11 05 | G96 | 0.0  | 0.3− |
| 2000 12 30 | 704 | 0.8−  | 0.9−  | 2005 03 11 | G96 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.0  | 0.2− |
| 2000 12 30 | 704 | 1.1+  | 0.2+  | 2005 03 17 | 691 | 0.6+ | 0.5+ | 2007 11 05 | G96 | 0.1− | 0.0  |
| 2000 12 30 | 704 | 1.6+  | 1.3+  | 2005 03 17 | 691 | 0.4+ | 0.5+ | 2007 11 05 | G96 | 0.4− | 0.1+ |
| 2001 01 03 | 691 | 0.4+  | 0.0   | 2005 03 17 | 691 | 0.3+ | 0.5+ | 2007 11 18 | G96 | 0.3+ | 0.1− |
| 2001 01 03 | 691 | 0.5+  | 0.4+  | 2005 04 05 | G96 | 0.1− | 0.0  | 2007 11 18 | G96 | 0.1− | 0.0  |
| 2001 01 03 | 691 | 0.6+  | 0.2+  | 2005 04 05 | G96 | 0.3− | 0.2− | 2007 11 18 | G96 | 0.3− | 0.0  |
| 2002 06 06 | 291 | 0.2+  | 0.1+  | 2005 04 05 | G96 | 0.1− | 0.4− | 2007 11 18 | G96 | 0.3− | 0.1+ |
| 2002 06 06 | 291 | 0.0   | 0.1+  | 2005 04 05 | G96 | 0.4− | 0.1+ | 2007 12 03 | 691 | 0.6− | 0.0  |
| 2002 06 06 | 291 | 0.2+  | 0.4+  | 2005 04 06 | G96 | 0.4+ | 0.7− | 2007 12 03 | 691 | 0.5− | 0.0  |
| 2003 09 18 | 691 | 0.3+  | 0.5+  | 2005 04 06 | G96 | 0.2+ | 0.2− | 2007 12 03 | 691 | 1.1− | 0.3− |
| 2003 09 18 | 691 | 0.3+  | 0.4+  | 2005 04 06 | G96 | 0.0  | 0.3− | 2007 12 10 | 704 | 0.5+ | 0.6+ |
| 2003 09 18 | 691 | 0.4+  | 0.3+  | 2005 04 06 | G96 | 0.8− | 0.2− | 2007 12 10 | 704 | 1.0− | 0.4− |
| 2003 09 22 | 644 | 0.6+  | 0.5+  | 2005 04 07 | G96 | 0.3− | 0.3+ | 2007 12 10 | 704 | 0.4+ | 0.2− |
| 2003 09 22 | 644 | 0.9+  | 0.2+  | 2005 04 07 | G96 | 0.0  | 0.1+ | 2007 12 10 | 704 | 0.4+ | 1.0+ |
| 2003 09 22 | 644 | 0.4+  | 0.5+  | 2005 04 07 | G96 | 0.0  | 0.0  | 2007 12 14 | 704 | 1.5+ | 0.4+ |
| 2003 09 29 | 704 | (0.1− | 1.7+) | 2005 04 07 | G96 | 0.2− | 0.3+ | 2007 12 14 | 704 | 1.6+ | 0.4− |
| 2003 09 29 | 704 | (0.5+ | 2.7+) | 2005 04 12 | G96 | 0.1+ | 0.1− | 2007 12 14 | 704 | 0.2− | 0.3+ |
| 2003 09 29 | 704 | 0.2+  | 0.4−  | 2005 04 12 | G96 | 0.2− | 0.1+ | 2007 12 14 | 704 | 0.3+ | 0.5− |
| 2003 09 29 | 704 | (0.5− | 1.7−) | 2005 04 12 | G96 | 0.3− | 0.1+ | 2007 12 14 | 704 | 1.0+ | 1.0− |
| 2003 09 30 | 049 | 0.0   | 1.4+  | 2005 04 12 | G96 | 0.1− | 0.0  | 2007 12 17 | 691 | 0.3− | 0.1+ |
| 2003 09 30 | 049 | 0.4+  | 0.7+  | 2006 07 21 | G96 | 0.2+ | 0.1− | 2007 12 17 | 691 | 0.4− | 0.2+ |
| 2003 09 30 | 049 | 0.3+  | 0.5+  | 2006 07 21 | G96 | 0.1+ | 0.1− | 2007 12 17 | 691 | 0.5− | 0.3+ |

**(172491)\* 2003 SF<sub>142</sub>**

Discovered 2003 Sept. 20 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.86922  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.28465789 | $\omega$ | 37.94410  | +0.44023684 | +0.88991213 |          |          |
| <i>a</i> | 2.2886914  | $\Omega$ | 258.46160 | −0.85071592 | +0.37088865 |          |          |
| <i>e</i> | 0.1825794  | <i>i</i> | 6.99754   | −0.28718278 | +0.26551463 |          |          |
| <i>P</i> | 3.46       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 05 13 | 704 | 0.9− | 0.9+ | 2003 09 20 | 691 | 0.0  | 0.4− | 2006 06 15 | 644 | 0.2− | 0.2+ |
| 1999 05 13 | 699 | 0.1+ | 0.5− | 2003 09 20 | 691 | 0.1− | 0.3− | 2006 06 15 | 644 | 0.0  | 0.3− |
| 1999 05 13 | 704 | 1.2+ | 1.5+ | 2003 09 20 | 691 | 0.2+ | 0.3− | 2006 06 15 | 644 | 0.1+ | 0.4+ |
| 1999 05 13 | 704 | 1.3+ | 1.0− | 2003 09 22 | 644 | 0.4+ | 0.3− | 2006 06 15 | E12 | 0.4+ | 0.1− |
| 1999 05 13 | 699 | 0.3+ | 0.7− | 2003 09 22 | 644 | 0.0  | 0.3− | 2006 06 15 | E12 | 0.4+ | 0.3+ |
| 1999 05 13 | 704 | 1.7− | 0.2+ | 2003 09 22 | 644 | 0.1+ | 0.5− | 2006 06 15 | E12 | 0.5+ | 0.1− |
| 1999 05 13 | 699 | 0.7− | 0.8+ | 2003 09 30 | 704 | 0.1+ | 0.6− | 2006 06 15 | E12 | 0.5− | 0.3+ |
| 2000 11 29 | 704 | 0.1+ | 0.1− | 2003 09 30 | 704 | 1.1− | 0.1+ | 2006 07 22 | G96 | 0.3− | 0.5− |
| 2000 11 29 | 704 | 1.0+ | 0.7− | 2003 09 30 | 704 | 0.5− | 0.1+ | 2006 07 22 | G96 | 0.1− | 0.1− |
| 2000 11 29 | 704 | 0.2+ | 0.3+ | 2003 09 30 | 704 | 0.3− | 0.0  | 2006 07 22 | G96 | 0.4− | 0.1− |
| 2003 08 25 | 644 | 0.1− | 0.0  | 2003 09 30 | 704 | 0.0  | 0.5+ | 2006 07 22 | G96 | 0.1− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 25 | 644 | 0.1− | 0.0  | 2003 10 15 | 644 | 0.2+ | 0.2− | 2007 11 05 | 691 | 0.2+ | 0.5− |
| 2003 08 25 | 644 | 0.1+ | 0.2− | 2003 10 15 | 644 | 0.2+ | 0.2− | 2007 11 05 | 691 | 0.1− | 0.0  |
| 2003 09 04 | 704 | 0.4− | 0.2− | 2003 10 15 | 644 | 0.2+ | 0.0  | 2007 11 05 | 691 | 0.6+ | 1.2+ |
| 2003 09 04 | 704 | 0.2− | 0.4− | 2003 10 17 | 699 | 0.7− | 0.1+ | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2003 09 04 | 704 | 0.6− | 0.4− | 2003 10 17 | 699 | 0.8+ | 0.4− | 2007 11 09 | 691 | 0.2+ | 0.1− |
| 2003 09 04 | 704 | 0.5− | 0.3− | 2003 10 17 | 699 | 0.1+ | 0.7− | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2003 09 04 | 704 | 0.4− | 0.4+ | 2003 10 17 | 699 | 0.4− | 1.3+ | 2007 12 04 | 291 | 0.2− | 0.1+ |
| 2003 09 20 | 704 | 0.3− | 0.6+ | 2003 10 21 | 699 | 0.4+ | 0.9+ | 2007 12 04 | 291 | 0.4− | 0.1+ |
| 2003 09 20 | 704 | 0.5+ | 0.8+ | 2003 10 21 | 699 | 0.8+ | 0.3+ | 2007 12 04 | 291 | 0.1− | 0.1− |
| 2003 09 20 | 704 | 0.3− | 0.5+ | 2003 10 21 | 699 | 0.7+ | 0.4+ | 2007 12 04 | G96 | 0.5+ | 0.0  |
| 2003 09 20 | 704 | 0.3− | 0.4+ | 2003 10 21 | 699 | 0.0  | 0.6+ | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 2003 09 20 | 704 | 0.2− | 0.6+ | 2006 05 17 | E12 | 0.5+ | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 2003 09 20 | 704 | 0.2+ | 0.2+ | 2006 05 17 | E12 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.1− |
| 2003 09 20 | 704 | 0.3− | 0.7+ | 2006 05 17 | E12 | 0.2− | 0.1+ | 2007 12 05 | 291 | 0.3− | 0.1− |
| 2003 09 20 | 704 | 1.2+ | 0.5− | 2006 05 17 | E12 | 0.1+ | 0.2+ | 2007 12 05 | 291 | 0.3− | 0.0  |
| 2003 09 20 | 704 | 0.2− | 0.5+ | 2006 05 30 | 428 | 0.2− | 0.0  | 2007 12 05 | 291 | 0.3− | 0.1− |
| 2003 09 20 | 704 | 0.4+ | 0.5+ | 2006 05 30 | 428 | 0.5+ | 0.4− |            |     |      |      |

**(172492)\* 2003 SL<sub>146</sub> = 2001 FR<sub>103</sub>**

Discovered 2003 Sept. 20 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 53421)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.48369    |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.26863103 | $\omega$ | 139.97074 | +0.30556882 | −0.94930793 |          |          |
| <i>a</i> | 2.3788402  | $\Omega$ | 292.12297 | +0.85196046 | +0.30718539 |          |          |
| <i>e</i> | 0.1755473  | <i>i</i> | 4.56751   | +0.42519534 | +0.06672016 |          |          |
| <i>P</i> | 3.67       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 23 | 645 | 0.0   | 0.0   | 2003 09 30 | 704 | 0.2−  | 0.0   | 2003 12 20 | 704 | 0.0   | 0.0   |
| 2000 12 23 | 645 | 0.0   | 0.1+  | 2003 10 15 | 699 | 0.9−  | 0.7+  | 2003 12 20 | 704 | 0.1+  | 0.3+  |
| 2001 01 26 | 704 | 0.2+  | 0.0   | 2003 10 15 | 699 | 0.3−  | 0.2−  | 2003 12 23 | 704 | 1.0+  | 0.1+  |
| 2001 01 26 | 704 | 1.0+  | 0.2+  | 2003 10 15 | 699 | 0.6+  | 0.0   | 2003 12 23 | 704 | 0.6−  | 0.3+  |
| 2001 01 26 | 704 | 0.9+  | 0.0   | 2003 10 15 | 699 | (1.8+ | 0.3−) | 2003 12 23 | 704 | 0.4+  | 0.0   |
| 2001 01 26 | 704 | 0.3+  | 0.4+  | 2003 10 17 | 691 | 0.1+  | 0.2−  | 2003 12 23 | 704 | 0.2+  | 0.5−  |
| 2001 01 26 | 704 | 0.3+  | 0.4+  | 2003 10 17 | 691 | 0.1+  | 0.2−  | 2003 12 23 | 704 | 0.4−  | 0.3+  |
| 2001 02 19 | 704 | 0.7−  | 1.0+  | 2003 10 17 | 691 | 0.1+  | 0.3−  | 2005 04 11 | 699 | 0.6+  | 1.0+  |
| 2001 02 19 | 704 | 0.3+  | 0.2−  | 2003 10 20 | 644 | 0.1+  | 0.1−  | 2005 04 11 | 699 | 0.6−  | 0.8+  |
| 2001 02 19 | 704 | 0.4+  | 0.1+  | 2003 10 20 | 644 | 0.1+  | 0.3−  | 2005 04 11 | 699 | 0.6−  | 0.3+  |
| 2001 03 18 | 704 | 1.1−  | 0.7+  | 2003 10 20 | 644 | 0.4+  | 0.2−  | 2005 04 11 | 699 | 1.0+  | 1.0+  |
| 2001 03 18 | 704 | 0.5−  | 0.9+  | 2003 10 21 | 704 | 0.1+  | 0.7−  | 2005 05 01 | 644 | 0.9+  | 0.3+  |
| 2001 03 18 | 704 | 0.3−  | 0.2−  | 2003 10 21 | 704 | 0.7−  | 1.4+  | 2005 05 01 | 644 | 0.6+  | 0.6+  |
| 2001 03 18 | 704 | 0.5−  | 0.4+  | 2003 10 21 | 704 | 1.2+  | 0.1+  | 2005 05 01 | 644 | 0.6+  | 0.6+  |
| 2001 03 19 | 608 | 0.4+  | 0.8−  | 2003 10 21 | 704 | 0.6+  | 0.2+  | 2007 10 09 | 704 | (0.1− | 3.1−) |
| 2001 03 19 | 608 | 0.3+  | 1.1−  | 2003 10 21 | 704 | 0.9+  | 0.5−  | 2007 10 09 | 704 | 0.2−  | 0.7−  |
| 2001 03 19 | 608 | 0.2+  | 0.8−  | 2003 10 27 | 691 | 0.0   | 0.1−  | 2007 10 09 | 704 | 0.2+  | 0.6+  |
| 2003 09 17 | 644 | 0.2−  | 0.1+  | 2003 10 27 | 691 | 0.1+  | 0.1−  | 2007 10 12 | 704 | 0.1−  | 0.0   |
| 2003 09 17 | 644 | 0.2−  | 0.0   | 2003 10 27 | 691 | 0.0   | 0.0   | 2007 10 12 | 704 | 1.0+  | 1.0−  |
| 2003 09 17 | 644 | 0.1−  | 0.1+  | 2003 10 30 | 704 | (0.2+ | 1.9+) | 2007 10 12 | 704 | 0.2+  | 0.4+  |
| 2003 09 20 | 644 | 0.2−  | 0.0   | 2003 10 30 | 704 | 0.3−  | 0.3+  | 2007 10 12 | 704 | 0.6+  | 0.8−  |
| 2003 09 20 | 644 | 0.4−  | 0.3−  | 2003 10 30 | 704 | 0.3+  | 0.2+  | 2007 12 04 | G96 | 0.3−  | 0.4−  |
| 2003 09 20 | 644 | 0.0   | 0.0   | 2003 10 30 | 704 | 0.4−  | 0.7+  | 2007 12 04 | G96 | 0.2+  | 1.0−  |
| 2003 09 20 | 644 | 0.4−  | 0.0   | 2003 11 01 | 704 | 0.5+  | 0.7+  | 2007 12 04 | G96 | 0.1+  | 0.1−  |
| 2003 09 20 | 644 | 0.0   | 0.1−  | 2003 11 01 | 704 | 0.6+  | 0.0   | 2007 12 04 | G96 | 0.3−  | 0.1+  |
| 2003 09 20 | 644 | 0.3−  | 0.1+  | 2003 11 01 | 704 | 1.1−  | 0.8+  | 2007 12 05 | 691 | 0.1−  | 0.1−  |
| 2003 09 21 | 699 | 0.5−  | 0.4+  | 2003 11 01 | 704 | 0.2−  | 0.1+  | 2007 12 05 | 691 | 0.1−  | 0.4−  |
| 2003 09 21 | 699 | 0.1+  | 0.1−  | 2003 11 20 | 704 | 0.1+  | 0.7+  | 2007 12 05 | 691 | 0.2+  | 0.2−  |
| 2003 09 21 | 699 | 0.2−  | 0.5+  | 2003 11 20 | 704 | 0.4−  | 0.9+  | 2007 12 06 | 704 | 0.2+  | 0.3+  |
| 2003 09 21 | 699 | 0.1−  | 0.2+  | 2003 11 20 | 704 | 0.2−  | 0.2−  | 2007 12 06 | 704 | 0.4−  | 0.5+  |
| 2003 09 22 | 704 | 0.5+  | 0.5+  | 2003 11 20 | 704 | 0.3−  | 0.1+  | 2007 12 06 | 704 | 0.3−  | 0.1+  |
| 2003 09 22 | 704 | 0.7−  | 0.3+  | 2003 11 20 | 704 | 0.7−  | 0.5−  | 2007 12 06 | 704 | 0.0   | 0.2+  |
| 2003 09 22 | 704 | 0.7−  | 0.1−  | 2003 11 24 | 704 | 0.7+  | 0.5+  | 2007 12 06 | 704 | 0.6−  | 0.2+  |
| 2003 09 22 | 704 | 0.7−  | 0.9+  | 2003 11 24 | 704 | 0.4+  | 0.1−  | 2007 12 10 | 704 | 0.2+  | 0.2+  |
| 2003 09 22 | 704 | 1.0−  | 0.9+  | 2003 11 24 | 704 | (2.0+ | 0.3−) | 2007 12 10 | 704 | 0.1−  | 0.1+  |
| 2003 09 22 | 608 | 0.5−  | 0.4+  | 2003 11 24 | 704 | 0.6+  | 0.2−  | 2007 12 10 | 704 | 0.6+  | 0.1−  |
| 2003 09 22 | 608 | 0.1−  | 0.5+  | 2003 12 17 | 699 | 0.3−  | 0.4+  | 2007 12 10 | 704 | 0.3+  | 0.1−  |
| 2003 09 22 | 608 | (2.8− | 0.7+) | 2003 12 17 | 699 | 0.4−  | 0.4−  | 2007 12 14 | 704 | 0.1+  | 0.1−  |

2007 DEC. 24

M.P.O. 129389

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 30 | 704 | 0.1− | 0.6+ | 2003 12 17 | 699 | 0.2+  | 0.2+  | 2007 12 14 | 704 | 0.2− | 0.0  |
| 2003 09 30 | 704 | 0.0  | 0.0  | 2003 12 17 | 699 | 0.8−  | 0.5+  | 2007 12 14 | 704 | 0.4− | 0.4+ |
| 2003 09 30 | 704 | 0.0  | 0.3+ | 2003 12 20 | 704 | 0.9+  | 0.2+  | 2007 12 14 | 704 | 0.5− | 0.7+ |
| 2003 09 30 | 704 | 0.3− | 0.5+ | 2003 12 20 | 704 | (1.1+ | 1.7+) | 2007 12 14 | 704 | 0.1− | 0.1− |

**(172493)\* 2003 SB<sub>151</sub> = 2002 GD<sub>176</sub>**

Discovered 2003 Sept. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 53427)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 65.50337   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.27884104 | $\omega$ | 276.13342 | +0.96910749  | +0.21106072  |
| $a$ | 2.3204110  | $\Omega$ | 71.73600  | −0.13706035  | +0.89100605  |
| $e$ | 0.1851462  | $i$      | 7.72269   | −0.20504909  | +0.40194725  |
| $P$ | 3.53       | $H$      | 15.8      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.2−  | 0.3+  | 2003 09 19 | 699 | 0.0  | 0.2+ | 2003 10 29 | 608 | 0.1+ | 0.2− |
| 2001 01 04 | 704 | 0.3−  | 0.9−  | 2003 09 19 | 699 | 0.1+ | 0.1+ | 2003 10 29 | 608 | 0.8− | 0.7− |
| 2001 01 04 | 704 | 0.2+  | 0.2−  | 2003 09 19 | 699 | 0.0  | 0.4− | 2003 10 29 | 608 | 1.0− | 0.4− |
| 2001 01 19 | 704 | 0.1+  | 0.3+  | 2003 09 23 | 608 | 0.4− | 0.5+ | 2003 11 21 | 699 | 0.7+ | 0.9+ |
| 2001 01 19 | 704 | 0.4+  | 0.1−  | 2003 09 23 | 608 | 0.5− | 0.7+ | 2003 11 21 | 699 | 0.2− | 1.0− |
| 2001 01 19 | 704 | 0.1−  | 0.0   | 2003 09 23 | 608 | 0.4− | 0.8+ | 2003 11 21 | 699 | 0.4− | 0.5− |
| 2002 04 12 | 704 | 1.4+  | 0.2+  | 2003 09 24 | 608 | 0.0  | 0.4+ | 2003 11 21 | 699 | 0.2+ | 0.4− |
| 2002 04 12 | 704 | 0.5+  | 0.6+  | 2003 09 24 | 608 | 0.2− | 0.6+ | 2006 06 04 | G96 | 0.1+ | 0.2+ |
| 2002 04 12 | 704 | 0.5+  | 0.1+  | 2003 09 24 | 608 | 0.0  | 0.4+ | 2006 06 04 | G96 | 0.3− | 0.0  |
| 2002 04 16 | 704 | 0.1−  | 0.1+  | 2003 10 04 | 608 | 0.6+ | 0.4+ | 2006 06 04 | G96 | 0.4+ | 0.3+ |
| 2002 04 16 | 704 | 0.0   | 0.6+  | 2003 10 04 | 608 | 0.1+ | 0.2+ | 2006 06 04 | G96 | 0.2− | 0.1+ |
| 2002 04 16 | 704 | 1.0−  | 1.0+  | 2003 10 04 | 608 | 0.8+ | 0.3+ | 2007 11 05 | 704 | 0.3− | 0.2− |
| 2003 09 01 | 704 | 0.3+  | 0.2+  | 2003 10 17 | 644 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.6+ | 0.3+ |
| 2003 09 01 | 704 | 0.1+  | 1.0−  | 2003 10 17 | 644 | 0.1− | 0.0  | 2007 11 05 | 704 | 0.5+ | 0.7+ |
| 2003 09 01 | 704 | 0.2−  | 0.5−  | 2003 10 17 | 644 | 0.0  | 0.2+ | 2007 12 10 | 704 | 0.2− | 0.1+ |
| 2003 09 01 | 704 | 0.2−  | 0.4−  | 2003 10 18 | 704 | 0.9− | 0.5+ | 2007 12 10 | 704 | 0.4− | 0.2+ |
| 2003 09 01 | 704 | 0.4−  | 1.2−  | 2003 10 18 | 704 | 0.9+ | 0.6− | 2007 12 10 | 704 | 0.2− | 0.5+ |
| 2003 09 17 | 704 | 0.9−  | 0.5+  | 2003 10 18 | 704 | 0.1+ | 0.3− | 2007 12 14 | 704 | 0.2+ | 0.0  |
| 2003 09 17 | 704 | 1.2+  | 0.4+  | 2003 10 18 | 704 | 0.1− | 0.5+ | 2007 12 14 | 704 | 0.3+ | 0.8+ |
| 2003 09 17 | 704 | 0.5−  | 0.3+  | 2003 10 24 | 608 | 0.3+ | 0.6+ | 2007 12 14 | 704 | 0.5− | 0.4− |
| 2003 09 17 | 704 | (0.1+ | 1.6+) | 2003 10 24 | 608 | 0.1− | 0.7+ |            |     |      |      |
| 2003 09 19 | 699 | 0.2+  | 0.2+  | 2003 10 24 | 608 | 0.5+ | 1.1− |            |     |      |      |

**(172494)\* 2003 SH<sub>151</sub> = 2000 YU<sub>66</sub>**

Discovered 2003 Sept. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 53427)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |            |                    | MPC         |             |  |
|-----|------------|--------------------|-------------|-------------|--|
| $M$ | 78.56085   | (2000.0)           | $P$         | $Q$         |  |
| $n$ | 0.27362452 | $\omega$ 244.24928 | +0.80035996 | +0.58618637 |  |
| $a$ | 2.3498098  | $\Omega$ 79.61556  | −0.49401188 | +0.76366482 |  |
| $e$ | 0.1384744  | $i$ 7.34419        | −0.33967072 | +0.27055790 |  |
| $P$ | 3.60       | $H$ 16.5           | $G$ 0.15    | $U$ 0       |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 691 | 0.5− | 0.5+ | 2006 05 24 | 644 | 0.1+ | 0.1+ | 2007 11 04 | 704 | 0.4+ | 0.4+ |
| 2000 12 30 | 691 | 0.2− | 0.1+ | 2006 05 24 | 644 | 0.0  | 0.5+ | 2007 11 04 | 704 | 0.6+ | 0.0  |
| 2000 12 30 | 691 | 0.3− | 0.2+ | 2006 05 24 | 644 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.3− | 0.1+ |
| 2001 01 04 | 691 | 0.5+ | 0.2+ | 2006 06 14 | 644 | 0.2− | 0.2+ | 2007 11 07 | 691 | 0.3+ | 0.4+ |
| 2001 01 04 | 691 | 0.3+ | 0.7+ | 2006 06 14 | 644 | 0.1+ | 0.5+ | 2007 11 07 | 691 | 0.1− | 0.0  |
| 2001 01 04 | 691 | 0.3+ | 1.3− | 2006 06 14 | 644 | 0.5+ | 0.5+ | 2007 11 18 | G96 | 0.3+ | 0.2− |
| 2002 04 16 | 704 | 0.7+ | 0.1+ | 2006 06 20 | 691 | 0.1+ | 0.3+ | 2007 11 18 | G96 | 0.1+ | 0.2− |
| 2002 04 16 | 704 | 0.1+ | 0.9+ | 2006 06 20 | 691 | 0.3+ | 0.3+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2002 04 16 | 704 | 0.2− | 1.5+ | 2006 06 20 | 691 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.3− |
| 2003 09 17 | 704 | 0.3− | 0.1− | 2006 06 22 | 644 | 0.5+ | 0.1+ | 2007 11 19 | 691 | 0.0  | 0.2− |
| 2003 09 17 | 704 | 0.3+ | 0.6− | 2006 06 22 | 644 | 0.2+ | 0.2+ | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2003 09 17 | 704 | 0.5− | 0.1− | 2006 06 22 | 644 | 0.1− | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2003 09 17 | 704 | 0.7+ | 0.2− | 2006 07 21 | G96 | 0.2− | 0.0  | 2007 12 03 | 703 | 0.6− | 0.8+ |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 19 | 699 | 1.0+  | 0.5+  | 2006 07 21 | G96 | 0.5− | 0.1+ | 2007 12 03 | 703 | 0.1+  | 0.3+  |
| 2003 09 19 | 699 | 0.8−  | 0.3+  | 2006 07 21 | G96 | 0.4− | 0.2+ | 2007 12 03 | 703 | 0.2+  | 0.7+  |
| 2003 09 19 | 699 | 0.7−  | 0.4+  | 2006 07 21 | G96 | 0.2− | 0.0  | 2007 12 03 | 703 | (0.7+ | 1.6+) |
| 2003 09 19 | 699 | (0.8− | 1.8−) | 2007 10 30 | 691 | 0.6− | 0.3+ | 2007 12 05 | 704 | 1.0−  | 0.2+  |
| 2003 09 24 | 644 | 0.2−  | 0.1+  | 2007 10 30 | 691 | 0.3− | 0.0  | 2007 12 05 | 704 | 0.4+  | 0.3+  |
| 2003 09 24 | 644 | 0.0   | 0.3+  | 2007 10 30 | 691 | 0.1− | 0.0  | 2007 12 05 | 704 | 0.2+  | 0.2+  |
| 2003 09 24 | 644 | 0.1−  | 0.4+  | 2007 11 03 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.0   | 0.4+  |
| 2003 10 18 | 699 | 0.4−  | 0.8−  | 2007 11 03 | 691 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.4+  | 0.3−  |
| 2003 10 18 | 699 | 0.1+  | 0.1+  | 2007 11 03 | 691 | 0.2− | 0.2+ | 2007 12 15 | G96 | 0.2+  | 0.1−  |
| 2003 10 18 | 699 | 0.1−  | 0.3+  | 2007 11 04 | 704 | 1.3+ | 0.1− | 2007 12 15 | G96 | 0.1+  | 0.3−  |
| 2003 10 18 | 699 | 0.2+  | 0.5+  | 2007 11 04 | 704 | 1.1+ | 0.7+ | 2007 12 15 | G96 | 0.0   | 0.3−  |

**(172495)\* 2003 SR<sub>155</sub> = 2001 BV<sub>3</sub>**

Discovered 2003 Sept. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 53430)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 8.12935    |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
|-----|------------|----------|----------|--------------|--------------|-----|---|
| $n$ | 0.27582147 | $\omega$ | 63.98202 | +0.42308654  | −0.90608655  |     |   |
| $a$ | 2.3373155  | $\Omega$ | 0.99649  | +0.77889895  | +0.36244163  |     |   |
| $e$ | 0.0840228  | $i$      | 7.34656  | +0.46294082  | +0.21827329  |     |   |
| $P$ | 3.57       | $H$      | 16.6     | $G$          | 0.15         | $U$ | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 18 | 704 | 0.0   | 0.7−  | 2003 10 18 | 608 | 0.3− | 0.8− | 2005 03 04 | G96 | 0.1−  | 0.1+  |
| 2001 01 18 | 704 | 0.4+  | 0.4−  | 2003 10 20 | 644 | 0.0  | 0.0  | 2005 03 04 | G96 | 0.1+  | 0.0   |
| 2001 01 18 | 704 | 0.5+  | 1.1−  | 2003 10 20 | 644 | 0.2+ | 0.0  | 2005 03 12 | 691 | 0.4+  | 0.5+  |
| 2001 01 18 | 704 | 0.2−  | 1.2−  | 2003 10 20 | 644 | 0.2+ | 0.2+ | 2005 03 12 | 691 | 0.5+  | 0.4+  |
| 2001 01 19 | 704 | 0.5+  | 0.4+  | 2003 10 21 | 699 | 0.3+ | 0.8− | 2005 03 12 | 691 | 0.5+  | 0.4+  |
| 2001 01 19 | 704 | 0.2−  | 0.6−  | 2003 10 21 | 699 | 0.4+ | 0.5+ | 2005 03 16 | 691 | 0.2+  | 0.5+  |
| 2001 01 19 | 704 | (1.7− | 0.0 ) | 2003 10 21 | 699 | 0.1+ | 0.2+ | 2005 03 16 | 691 | 0.3+  | 0.5+  |
| 2001 01 19 | 704 | 0.4+  | 0.3−  | 2003 10 21 | 704 | 0.6− | 0.5+ | 2005 03 16 | 691 | 0.1+  | 0.4+  |
| 2001 02 22 | 645 | 0.1−  | 0.0   | 2003 10 21 | 699 | 0.0  | 0.2− | 2005 03 17 | 703 | 1.1−  | 1.0−  |
| 2001 02 22 | 645 | 0.1−  | 0.1−  | 2003 10 21 | 704 | 0.8− | 0.7+ | 2005 03 17 | 703 | 0.7−  | 0.9−  |
| 2003 09 17 | 644 | 0.1−  | 0.1−  | 2003 10 21 | 704 | 0.1− | 0.2− | 2005 03 17 | 703 | (1.8− | 3.7−) |
| 2003 09 17 | 644 | 0.0   | 0.2+  | 2003 10 21 | 704 | 0.6− | 0.3− | 2005 03 17 | 703 | (2.2+ | 4.1−) |
| 2003 09 17 | 644 | 0.0   | 0.2+  | 2003 10 21 | 704 | 1.0− | 1.0+ | 2005 05 14 | G96 | 0.4−  | 0.1−  |
| 2003 09 19 | 699 | 0.9+  | 0.3+  | 2003 10 25 | 704 | 0.2+ | 0.2+ | 2005 05 14 | G96 | 0.1−  | 0.2−  |
| 2003 09 19 | 699 | 0.9+  | 0.6−  | 2003 10 25 | 704 | 0.1+ | 0.2+ | 2005 05 14 | G96 | 0.0   | 0.1−  |
| 2003 09 19 | 699 | (1.3+ | 2.0+) | 2003 10 25 | 704 | 0.4− | 0.1+ | 2005 05 14 | G96 | 0.1+  | 0.0   |
| 2003 09 19 | 699 | (1.5+ | 0.3+) | 2003 10 25 | 704 | 0.1+ | 0.2+ | 2007 11 02 | 704 | (0.4− | 1.9+) |
| 2003 09 22 | 644 | 0.0   | 0.2+  | 2003 10 25 | 704 | 0.6+ | 0.1+ | 2007 11 02 | 704 | 0.8−  | 0.6+  |
| 2003 09 22 | 644 | 0.1+  | 0.4+  | 2003 10 30 | 704 | 0.4− | 0.1− | 2007 11 02 | 704 | 0.7−  | 1.4+  |
| 2003 09 22 | 644 | 0.2+  | 0.6+  | 2003 10 30 | 704 | 0.1− | 0.5− | 2007 11 02 | 704 | 0.4+  | 0.5+  |
| 2003 09 27 | 704 | 0.2−  | 1.4+  | 2003 10 30 | 704 | 0.0  | 1.5+ | 2007 11 02 | 704 | 0.1+  | 1.1+  |
| 2003 09 27 | 704 | 0.7−  | 0.2−  | 2003 11 01 | 704 | 1.0− | 0.9− | 2007 11 08 | 704 | 0.6+  | 0.7+  |
| 2003 09 27 | 704 | 0.1+  | 0.2−  | 2003 11 01 | 704 | 0.2− | 0.0  | 2007 11 08 | 704 | 1.1+  | 0.4−  |
| 2003 09 27 | 704 | 0.8−  | 1.4+  | 2003 11 01 | 704 | 0.1+ | 0.5+ | 2007 11 08 | 704 | 0.5+  | 0.9+  |
| 2003 09 27 | 704 | 0.6−  | 0.7+  | 2003 11 01 | 704 | 0.3+ | 0.0  | 2007 12 02 | 704 | 0.3+  | 0.5−  |
| 2003 10 17 | 699 | (0.5− | 2.0−) | 2003 11 01 | 704 | 1.0+ | 0.3+ | 2007 12 02 | 704 | 0.2+  | 0.8−  |
| 2003 10 18 | 608 | 0.5−  | 0.3−  | 2005 03 04 | G96 | 0.3− | 0.1+ | 2007 12 02 | 704 | 0.9−  | 0.1+  |
| 2003 10 18 | 608 | 0.1−  | 0.7−  | 2005 03 04 | G96 | 0.2− | 0.6+ | 2007 12 02 | 704 | 0.4−  | 0.9−  |

**(172496)\* 2003 SC<sub>165</sub>**

Discovered 2003 Sept. 20 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |
|-----|
|-----|

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 04 25 | 691 | 0.6−  | 0.1−  | 2003 10 20 | 704 | 0.6−  | 1.4+  | 2003 11 19 | 644 | 0.4+ | 0.2+ |
| 1995 04 25 | 691 | 0.1−  | 0.3−  | 2003 10 20 | 691 | 0.1+  | 0.1−  | 2005 03 18 | 703 | 0.1− | 1.0− |
| 1995 04 25 | 691 | 0.3+  | 0.2+  | 2003 10 20 | 683 | (0.7− | 1.7−) | 2005 03 18 | 703 | 0.7− | 0.4+ |
| 2000 12 30 | 704 | 0.3+  | 0.7+  | 2003 10 20 | 704 | (1.7+ | 1.1+) | 2005 03 18 | 703 | 0.5− | 1.3+ |
| 2000 12 30 | 704 | 0.4−  | 1.1−  | 2003 10 20 | 683 | (2.9− | 1.9−) | 2005 03 18 | 703 | 0.8+ | 0.5+ |
| 2000 12 30 | 704 | 0.7+  | 0.1+  | 2003 10 20 | 704 | 0.0   | 0.7+  | 2005 04 11 | 699 | 1.0+ | 0.3+ |
| 2000 12 30 | 704 | 0.1+  | 0.4+  | 2003 10 20 | 691 | 0.1−  | 0.1−  | 2005 04 11 | 699 | 0.8+ | 1.3− |
| 2002 05 18 | 644 | 0.1+  | 0.8−  | 2003 10 20 | 704 | 0.6+  | 0.1+  | 2005 04 11 | 699 | 0.5− | 0.5+ |
| 2002 05 18 | 644 | 0.6+  | 0.6−  | 2003 10 20 | 704 | 0.5+  | 0.9+  | 2005 04 11 | 699 | 1.1+ | 0.8+ |
| 2002 05 18 | 644 | 0.2−  | 0.7−  | 2003 10 20 | 691 | 0.0   | 0.0   | 2006 08 17 | 644 | 0.3− | 0.0  |
| 2003 09 20 | 699 | 0.6+  | 0.2+  | 2003 10 21 | 683 | (0.9+ | 1.9−) | 2006 08 17 | 644 | 0.1− | 0.3+ |
| 2003 09 20 | 699 | 0.3−  | 0.5−  | 2003 10 21 | 683 | (2.6+ | 0.6−) | 2006 08 17 | 644 | 0.4− | 0.1+ |
| 2003 09 20 | 699 | 0.0   | 0.5−  | 2003 10 21 | 683 | 1.0−  | 0.9−  | 2007 10 07 | G96 | 0.1− | 0.5− |
| 2003 09 20 | 699 | (2.0+ | 1.7+) | 2003 10 22 | 683 | 0.4−  | 1.4−  | 2007 10 07 | G96 | 0.2− | 0.6− |
| 2003 09 22 | 644 | 0.1+  | 0.2−  | 2003 10 22 | 683 | 1.3+  | 0.1−  | 2007 10 07 | G96 | 0.2+ | 0.2− |
| 2003 09 22 | 644 | 0.1+  | 0.4−  | 2003 10 22 | 683 | (1.7− | 0.7−) | 2007 10 07 | G96 | 0.1− | 0.3+ |
| 2003 09 22 | 644 | 0.1−  | 0.5−  | 2003 10 27 | 704 | 0.8−  | 0.0   | 2007 11 08 | G96 | 0.5− | 0.1+ |
| 2003 09 28 | 704 | 0.1−  | 0.1−  | 2003 10 27 | 704 | 0.4−  | 0.1−  | 2007 11 08 | G96 | 0.0  | 0.0  |
| 2003 09 28 | 704 | 0.1−  | 0.9+  | 2003 10 27 | 704 | 0.1−  | 0.2−  | 2007 11 08 | G96 | 0.5− | 0.2− |
| 2003 09 28 | 704 | 0.7−  | 1.3+  | 2003 10 27 | 704 | 0.5−  | 1.0+  | 2007 11 08 | G96 | 0.2− | 0.2− |
| 2003 09 28 | 704 | 0.3−  | 0.6+  | 2003 10 29 | 699 | 0.0   | 0.5−  | 2007 11 21 | G96 | 0.6− | 0.2− |
| 2003 09 28 | 704 | 0.6−  | 0.2+  | 2003 10 29 | 699 | 0.5+  | 0.2+  | 2007 11 21 | G96 | 0.2− | 0.4− |
| 2003 10 19 | 683 | 1.1+  | 0.6−  | 2003 10 29 | 699 | 0.3+  | 0.4−  | 2007 11 21 | G96 | 0.4− | 0.1+ |
| 2003 10 19 | 683 | 0.1−  | 0.8−  | 2003 10 29 | 699 | 0.6+  | 0.3+  | 2007 11 21 | G96 | 0.0  | 0.1− |
| 2003 10 19 | 683 | (1.2− | 2.1−) | 2003 11 19 | 644 | 0.4+  | 0.5+  |            |     |      |      |
| 2003 10 20 | 683 | 0.3+  | 1.0−  | 2003 11 19 | 644 | 0.5+  | 0.2−  |            |     |      |      |

(172497)\* 2003 SB<sub>168</sub> = 2000 WL<sub>98</sub>

Discovered 2003 Sept. 23 by NEAT at Haleakala.

Id. G. V. Williams (*MPO* 53441)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 47.70852   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.28435530 | $\omega$ | 309.05984 | +0.96168532  | -0.26351310  |
| $a$ | 2.2903147  | $\Omega$ | 66.33592  | +0.27006390  | +0.86306421  |
| $e$ | 0.1910722  | $i$      | 4.73744   | +0.04718926  | +0.43090721  |
| $P$ | 3.47       | $H$      | 16.1      | $G$          | 0.15         |
|     |            |          |           | $U$          | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.2+ | 0.2+ | 2003 09 24 | 608 | 0.0   | 0.4−  | 2007 11 11 | G96 | 0.2+ | 0.2− |
| 2000 11 21 | 704 | 0.6+ | 0.6− | 2003 09 24 | 608 | 0.2+  | 0.9−  | 2007 11 11 | G96 | 0.0  | 0.3− |
| 2000 11 21 | 704 | 0.1+ | 0.4+ | 2003 09 24 | 608 | 0.1+  | 0.7−  | 2007 11 11 | G96 | 0.0  | 0.3− |
| 2000 11 29 | 704 | 0.4− | 0.4+ | 2003 09 25 | 644 | 0.0   | 0.4+  | 2007 12 04 | 699 | 0.6+ | 0.5− |
| 2000 11 29 | 704 | 0.4+ | 0.7+ | 2003 09 25 | 644 | 0.1+  | 0.1+  | 2007 12 04 | 699 | 0.0  | 0.3− |
| 2000 11 29 | 704 | 1.0− | 0.2+ | 2003 09 25 | 644 | 0.0   | 0.2+  | 2007 12 04 | 699 | 0.5+ | 0.0  |
| 2000 11 29 | 704 | 0.2+ | 0.1+ | 2003 09 29 | 699 | 0.1+  | 0.1+  | 2007 12 04 | 699 | 0.5+ | 0.2− |
| 2000 12 20 | 704 | 0.2− | 0.0  | 2003 09 29 | 699 | 0.2+  | 1.0−  | 2007 12 05 | 691 | 0.6− | 0.1− |
| 2000 12 20 | 704 | 0.2− | 0.1− | 2003 09 29 | 699 | 0.4+  | 0.2−  | 2007 12 05 | 691 | 0.5− | 0.2− |
| 2000 12 20 | 704 | 0.4+ | 0.0  | 2003 09 29 | 699 | 0.3−  | 0.1+  | 2007 12 05 | 691 | 0.6− | 0.1− |
| 2003 08 23 | 644 | 0.2− | 0.3+ | 2003 10 14 | 699 | 1.2+  | 0.6−  | 2007 12 06 | 704 | 0.9+ | 0.2+ |
| 2003 08 23 | 644 | 0.1− | 0.4+ | 2003 10 14 | 699 | (0.3− | 1.6+) | 2007 12 06 | 704 | 1.0+ | 0.9+ |
| 2003 08 23 | 644 | 0.0  | 0.4+ | 2003 10 14 | 699 | 1.1+  | 1.2+  | 2007 12 06 | 704 | 0.4− | 0.7+ |
| 2003 08 31 | 704 | 0.6+ | 0.1− | 2003 10 14 | 699 | 1.0+  | 0.4−  | 2007 12 06 | 704 | 1.3+ | 0.3− |
| 2003 08 31 | 704 | 0.7− | 0.3+ | 2003 11 22 | 704 | 0.4−  | 0.6−  | 2007 12 10 | 704 | 0.2− | 1.2+ |
| 2003 08 31 | 704 | 0.1− | 0.7+ | 2003 11 22 | 704 | 0.7−  | 0.3+  | 2007 12 10 | 704 | 0.6+ | 0.5+ |
| 2003 08 31 | 704 | 0.3− | 0.0  | 2003 11 22 | 704 | 0.1+  | 0.4−  | 2007 12 10 | 704 | 0.2+ | 0.3− |
| 2003 08 31 | 704 | 0.0  | 0.2− | 2005 03 16 | 703 | 0.4−  | 0.0   | 2007 12 10 | 704 | 0.2− | 0.5+ |
| 2003 09 16 | 704 | 0.2− | 0.7+ | 2005 03 16 | 703 | 0.8+  | 0.9+  | 2007 12 10 | 704 | 1.1− | 0.4+ |
| 2003 09 16 | 704 | 0.6− | 0.9+ | 2005 03 16 | 703 | 0.2−  | 0.5+  | 2007 12 15 | 704 | 0.7+ | 0.4+ |
| 2003 09 16 | 704 | 0.1+ | 0.9+ | 2005 03 16 | 703 | 0.1−  | 0.5−  | 2007 12 15 | 704 | 0.4+ | 0.4+ |
| 2003 09 16 | 704 | 0.1+ | 0.5+ | 2007 11 02 | G96 | 0.1−  | 0.5−  | 2007 12 15 | 704 | 1.7+ | 0.4+ |
| 2003 09 16 | 704 | 0.8− | 1.1+ | 2007 11 02 | G96 | 0.2+  | 0.4−  | 2007 12 15 | 704 | 0.1− | 0.3− |
| 2003 09 23 | 608 | 0.2− | 1.3− | 2007 11 02 | G96 | 0.0   | 0.3−  | 2007 12 15 | 704 | 0.3− | 0.0  |
| 2003 09 23 | 608 | 0.3− | 0.6− | 2007 11 02 | G96 | 0.2+  | 0.2−  |            |     |      |      |
| 2003 09 23 | 608 | 0.7− | 0.6− | 2007 11 11 | G96 | 0.2+  | 0.6−  |            |     |      |      |

(172498)\* 2003 SB<sub>169</sub>

Discovered 2003 Sept. 23 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 45.54138   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.27726402 | $\omega$ | 316.88653 | +0.95609193  | −0.28399556  |
| $a$ | 2.3292014  | $\Omega$ | 59.74474  | +0.28647516  | +0.85359246  |
| $e$ | 0.2543979  | $i$      | 4.80476   | +0.06180774  | +0.43672237  |
| $P$ | 3.55       | $H$      | 15.7      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 04 | 704 | 0.2+  | 0.5−  | 2003 10 19 | 704 | 0.2−  | 0.1+  | 2003 12 21 | 704 | 0.4+  | 0.3−  |
| 2001 01 04 | 704 | 0.6+  | 0.5+  | 2003 10 19 | 704 | 0.1−  | 0.2+  | 2003 12 21 | 704 | 0.7+  | 0.1−  |
| 2001 01 04 | 704 | 0.8+  | 1.0−  | 2003 10 19 | 704 | 0.0   | 0.6+  | 2003 12 21 | 704 | 0.8−  | 0.4+  |
| 2001 01 04 | 704 | (0.5+ | 1.7−) | 2003 10 24 | 608 | 0.2+  | 1.1−  | 2003 12 24 | 704 | 0.2+  | 0.3+  |
| 2001 02 21 | 699 | (0.4+ | 1.7+) | 2003 10 24 | 608 | 0.0   | 0.9−  | 2003 12 24 | 704 | 0.4−  | 0.0   |
| 2001 02 21 | 699 | (1.5+ | 1.6+) | 2003 10 24 | 608 | 0.0   | 0.9−  | 2003 12 24 | 704 | 0.3−  | 0.3−  |
| 2001 02 21 | 699 | 0.8−  | 1.3+  | 2003 10 27 | 704 | 1.2+  | 0.2−  | 2003 12 24 | 704 | 0.4−  | 0.1+  |
| 2001 02 21 | 699 | (3.0− | 2.7+) | 2003 10 27 | 704 | 1.2+  | 0.3+  | 2003 12 24 | 704 | 0.7+  | 0.1+  |
| 2003 09 18 | 704 | 0.1+  | 0.8+  | 2003 10 27 | 704 | 0.9+  | 0.6+  | 2004 01 21 | 704 | 0.6−  | 0.7+  |
| 2003 09 18 | 704 | 0.5−  | 0.2+  | 2003 10 27 | 704 | 1.4+  | 0.2+  | 2004 01 21 | 704 | 0.4+  | 0.4−  |
| 2003 09 18 | 644 | 0.0   | 0.3+  | 2003 10 27 | 704 | 0.1+  | 0.7+  | 2004 01 21 | 704 | 0.6+  | 1.1+  |
| 2003 09 18 | 704 | 0.1−  | 0.3+  | 2003 11 21 | 699 | 0.3+  | 0.5−  | 2004 01 21 | 704 | (0.8+ | 2.0−) |
| 2003 09 18 | 704 | 0.3−  | 0.2+  | 2003 11 21 | 699 | 0.6−  | 0.5−  | 2005 03 08 | 699 | (4.4+ | 0.1−) |
| 2003 09 18 | 704 | 0.1−  | 0.1−  | 2003 11 21 | 699 | 0.2+  | 0.8−  | 2005 03 08 | 699 | (3.7+ | 0.2+) |
| 2003 09 18 | 644 | 0.2+  | 0.2+  | 2003 11 21 | 699 | 0.4−  | 0.1−  | 2005 03 08 | 699 | 0.7−  | 0.3+  |
| 2003 09 18 | 644 | 0.3+  | 0.2+  | 2003 11 22 | 704 | 0.2−  | 0.9−  | 2005 03 08 | 699 | 0.1−  | 1.0+  |
| 2003 09 23 | 608 | 0.2−  | 0.2+  | 2003 11 22 | 704 | 0.1+  | 0.5−  | 2007 10 14 | 704 | 1.1+  | 0.2−  |
| 2003 09 23 | 608 | 0.0   | 0.2+  | 2003 11 22 | 704 | 0.3−  | 0.9−  | 2007 10 14 | 704 | 0.2−  | 0.6−  |
| 2003 09 23 | 608 | 0.0   | 0.3+  | 2003 11 22 | 704 | 0.2+  | 1.1−  | 2007 10 14 | 704 | 0.4−  | 0.1−  |
| 2003 09 24 | 608 | 0.4−  | 0.2+  | 2003 11 22 | 704 | 0.4−  | 1.1−  | 2007 11 18 | 704 | 0.5−  | 0.1−  |
| 2003 09 24 | 608 | 0.5−  | 0.4+  | 2003 12 05 | 703 | 0.6−  | 0.2+  | 2007 11 18 | 704 | 0.0   | 0.2−  |
| 2003 09 24 | 608 | 0.3−  | 0.2+  | 2003 12 05 | 703 | 1.4−  | 0.9+  | 2007 11 18 | 704 | 0.4−  | 0.0   |
| 2003 10 04 | 608 | 0.0   | 0.2+  | 2003 12 05 | 703 | 0.4+  | 1.0+  | 2007 11 18 | 704 | 0.6−  | 0.5+  |
| 2003 10 04 | 608 | 0.2−  | 0.1+  | 2003 12 05 | 703 | 0.1−  | 0.3+  | 2007 11 18 | 704 | 0.5+  | 0.2+  |
| 2003 10 04 | 608 | 0.4+  | 0.4+  | 2003 12 14 | 704 | 1.1−  | 0.1−  | 2007 12 13 | 704 | 0.1−  | 0.3−  |
| 2003 10 16 | 644 | 0.0   | 0.1+  | 2003 12 14 | 704 | 1.3−  | 0.2+  | 2007 12 13 | 704 | 0.8+  | 0.7+  |
| 2003 10 16 | 644 | 0.1+  | 0.1+  | 2003 12 14 | 704 | 0.8−  | 0.3−  | 2007 12 13 | 704 | 0.1−  | 0.1−  |
| 2003 10 16 | 644 | 0.2+  | 0.1+  | 2003 12 14 | 704 | 1.1−  | 0.0   | 2007 12 13 | 704 | 0.2−  | 0.4−  |
| 2003 10 16 | 699 | 0.7−  | 0.4−  | 2003 12 17 | 012 | 0.2+  | 0.4−  | 2007 12 13 | 704 | 0.0   | 1.3+  |
| 2003 10 16 | 699 | 0.1−  | 0.3−  | 2003 12 17 | 012 | (0.7− | 2.0−) | 2007 12 15 | 704 | 0.1+  | 0.3+  |
| 2003 10 16 | 699 | 0.1−  | 0.4−  | 2003 12 17 | 012 | (1.2− | 1.6−) | 2007 12 15 | 704 | 0.1+  | 0.2−  |
| 2003 10 16 | 699 | 0.2+  | 0.6−  | 2003 12 17 | 012 | (0.7− | 1.9−) | 2007 12 15 | 704 | 0.2+  | 0.5−  |
| 2003 10 19 | 704 | 0.1+  | 0.3+  | 2003 12 21 | 704 | 0.8+  | 0.6+  | 2007 12 15 | 704 | 0.2+  | 0.1−  |
| 2003 10 19 | 704 | 0.2+  | 0.4+  | 2003 12 21 | 704 | (0.1− | 1.5−) | 2007 12 15 | 704 | 0.2+  | 0.3−  |

(172499)\* 2003 SJ<sub>169</sub>

Discovered 2003 Sept. 23 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |         |  |
|----------|---------|--|
| <i>M</i> | 7.12842 |  |
|----------|---------|--|

2007 DEC. 24

M.P.O. 129391

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 23 | 608 | 0.4− | 0.4− | 2007 09 10 | G96 | 0.2+  | 0.1−  | 2007 11 14 | 704 | 0.1− | 0.3− |
| 2003 09 23 | 608 | 0.1+ | 0.6− | 2007 09 10 | G96 | 0.6+  | 0.5−  | 2007 11 14 | 704 | 0.1+ | 0.1− |
| 2003 09 23 | 608 | 0.4− | 0.5− | 2007 09 10 | G96 | 0.2−  | 0.2−  | 2007 11 18 | 691 | 0.2− | 0.3− |
| 2003 09 24 | 608 | 0.4− | 0.5− | 2007 09 10 | G96 | 0.2+  | 0.7−  | 2007 11 18 | 691 | 0.2− | 0.3− |
| 2003 09 24 | 608 | 0.3+ | 1.4− | 2007 10 15 | G96 | 0.3+  | 0.3−  | 2007 11 18 | 691 | 0.3− | 0.2− |
| 2003 09 24 | 608 | 0.3− | 0.4− | 2007 10 15 | G96 | 0.2+  | 0.3−  | 2007 12 03 | 703 | 0.1− | 0.1+ |
| 2003 09 27 | 333 | 0.4− | 0.5+ | 2007 10 15 | G96 | 0.1−  | 0.3−  | 2007 12 03 | 703 | 0.3− | 0.4+ |
| 2003 09 27 | 333 | 0.2− | 0.3+ | 2007 10 15 | G96 | 0.4+  | 0.3−  | 2007 12 03 | 703 | 0.0  | 0.2+ |
| 2003 09 27 | 333 | 0.2− | 0.4+ | 2007 10 24 | G96 | 0.2+  | 0.5−  | 2007 12 03 | 703 | 0.2+ | 0.2+ |
| 2003 09 28 | 333 | 0.4− | 0.2+ | 2007 10 24 | G96 | 0.1−  | 0.2−  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2003 09 28 | 333 | 0.1+ | 0.3+ | 2007 10 24 | G96 | 0.3−  | 0.5−  | 2007 12 04 | G96 | 0.3− | 0.1− |
| 2003 09 28 | 704 | 0.8− | 1.1+ | 2007 10 24 | G96 | 0.0   | 0.3−  | 2007 12 04 | G96 | 0.3+ | 0.3− |
| 2003 09 28 | 333 | 0.2− | 0.4+ | 2007 10 25 | G96 | 0.8+  | 1.2+  | 2007 12 04 | G96 | 0.0  | 0.2− |
| 2003 09 28 | 704 | 0.2+ | 1.0+ | 2007 10 25 | G96 | 0.3+  | 0.4−  | 2007 12 10 | 704 | 0.7+ | 1.8+ |
| 2003 09 28 | 704 | 0.0  | 1.2+ | 2007 10 25 | G96 | 0.4+  | 0.5−  | 2007 12 10 | 704 | 0.8− | 1.1+ |
| 2003 09 28 | 704 | 0.1+ | 1.0+ | 2007 10 25 | G96 | 0.1+  | 0.5−  | 2007 12 10 | 704 | 1.2+ | 0.0  |
| 2003 09 28 | 704 | 0.1+ | 1.0+ | 2007 11 03 | 699 | 0.8−  | 1.0+  | 2007 12 10 | 704 | 1.1+ | 0.5+ |
| 2003 09 30 | 333 | 0.3+ | 1.2+ | 2007 11 03 | 699 | 0.2+  | 0.3−  | 2007 12 14 | 704 | 1.1− | 0.3− |
| 2003 09 30 | 333 | 0.5+ | 0.6+ | 2007 11 03 | 699 | 0.3+  | 0.9+  | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2003 09 30 | 333 | 0.6+ | 0.9+ | 2007 11 03 | 699 | (1.9− | 1.1+) | 2007 12 14 | 704 | 0.9+ | 0.6+ |
| 2003 10 16 | 699 | 0.3− | 0.7+ | 2007 11 05 | 704 | 0.3+  | 0.2−  | 2007 12 14 | 704 | 0.1+ | 0.2+ |
| 2003 10 16 | 699 | 1.2− | 0.2− | 2007 11 05 | 704 | 0.1+  | 0.1−  | 2007 12 14 | 704 | 0.5+ | 0.1− |
| 2003 10 16 | 699 | 0.7− | 0.0  | 2007 11 05 | 704 | 0.1+  | 0.8+  |            |     |      |      |
| 2003 10 16 | 699 | 0.4+ | 0.2− | 2007 11 05 | 704 | (0.0  | 2.0+) |            |     |      |      |

(172500)\* 2003 SH<sub>171</sub> = 2002 JJ<sub>125</sub>

Discovered 2003 Sept. 18 by CINEOS at Campo Imperatore.

Id. K. E. Smalley (MPO 53444)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 41.55662   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26969012 | $\omega$ | 333.75456 | +0.99134024 | −0.11146245 |
| <i>a</i> | 2.3726082  | $\Omega$ | 32.87568  | +0.13123233 | +0.86003537 |
| <i>e</i> | 0.1519270  | <i>i</i> | 7.34873   | −0.00475433 | +0.49791092 |
| <i>P</i> | 3.65       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 22 | 645 | 0.0  | 0.2+ | 2003 10 06 | 699 | 0.8−  | 0.4+  | 2003 11 21 | 704 | 0.3+  | 0.1+  |
| 2001 02 22 | 645 | 0.0  | 0.2+ | 2003 10 06 | 699 | 1.1+  | 0.6+  | 2003 11 21 | 699 | 0.4−  | 0.0   |
| 2002 04 06 | 807 | 0.7+ | 0.0  | 2003 10 06 | 699 | 1.4−  | 0.4+  | 2003 11 21 | 704 | 1.1+  | 0.5+  |
| 2002 04 06 | 807 | 0.8+ | 0.2+ | 2003 10 14 | 644 | 0.3−  | 0.5+  | 2003 11 21 | 699 | 0.3+  | 0.2+  |
| 2002 04 12 | 691 | 0.0  | 0.5+ | 2003 10 14 | 644 | 0.2−  | 0.4+  | 2003 11 21 | 704 | 1.0+  | 0.7+  |
| 2002 04 12 | 691 | 0.3+ | 0.6+ | 2003 10 14 | 644 | 0.3−  | 0.4+  | 2003 11 21 | 704 | 0.5+  | 0.2+  |
| 2002 04 12 | 691 | 0.2+ | 0.5+ | 2003 10 16 | 644 | 0.2−  | 0.3+  | 2007 08 10 | 691 | 0.4−  | 0.2+  |
| 2002 05 07 | 644 | 1.0+ | 1.0+ | 2003 10 16 | 644 | 0.0   | 0.2+  | 2007 08 10 | 691 | 0.7−  | 0.1−  |
| 2002 05 07 | 644 | 0.6+ | 0.2+ | 2003 10 16 | 699 | 1.0−  | 0.0   | 2007 08 10 | 691 | 0.6−  | 0.3−  |
| 2002 05 07 | 644 | 0.4+ | 0.9+ | 2003 10 16 | 699 | 0.2−  | 0.0   | 2007 10 12 | 704 | 0.3+  | 0.1−  |
| 2002 05 11 | 704 | 0.0  | 0.6+ | 2003 10 16 | 644 | 0.2−  | 0.3+  | 2007 10 12 | 704 | 1.1+  | 0.7−  |
| 2002 05 11 | 704 | 0.9− | 0.7+ | 2003 10 16 | 699 | 0.8−  | 0.4−  | 2007 10 12 | 704 | 1.2+  | 1.3+  |
| 2002 05 11 | 704 | 0.4+ | 0.9+ | 2003 10 16 | 699 | 0.1+  | 0.2−  | 2007 10 12 | 704 | 1.4+  | 0.2+  |
| 2003 09 18 | 599 | 0.0  | 0.1− | 2003 10 18 | 699 | 0.6+  | 0.2−  | 2007 11 03 | 691 | 0.3−  | 0.1+  |
| 2003 09 18 | 599 | 0.0  | 0.0  | 2003 10 18 | 699 | 0.5+  | 0.7−  | 2007 11 03 | 691 | 0.5−  | 0.0   |
| 2003 09 18 | 599 | 0.3+ | 0.3+ | 2003 10 18 | 699 | 0.4−  | 0.1+  | 2007 11 03 | 691 | 0.2−  | 0.3+  |
| 2003 09 18 | 599 | 0.2+ | 0.2− | 2003 10 18 | 699 | 0.1−  | 0.2−  | 2007 11 07 | 704 | 0.2+  | 0.9−  |
| 2003 09 18 | 704 | 0.5+ | 0.6+ | 2003 10 19 | 704 | 0.2−  | 0.7+  | 2007 11 07 | 704 | 0.0   | 0.3−  |
| 2003 09 18 | 704 | 0.0  | 0.3+ | 2003 10 19 | 704 | 0.5−  | 1.3+  | 2007 11 07 | 704 | 0.5+  | 0.5+  |
| 2003 09 18 | 704 | 0.5− | 0.1− | 2003 10 19 | 704 | 0.3−  | 0.4+  | 2007 11 07 | 704 | 0.3−  | 0.2+  |
| 2003 09 18 | 704 | 0.0  | 0.9+ | 2003 10 19 | 704 | 0.3+  | 0.9+  | 2007 11 17 | 704 | 0.0   | 0.1+  |
| 2003 09 18 | 704 | 0.6+ | 0.2− | 2003 10 19 | 704 | 0.2+  | 0.8+  | 2007 11 17 | 704 | 0.9+  | 0.8−  |
| 2003 09 18 | 644 | 0.3+ | 0.1+ | 2003 10 24 | 704 | 0.5+  | 0.1−  | 2007 11 17 | 704 | 0.1+  | 0.9−  |
| 2003 09 18 | 644 | 0.1+ | 0.3+ | 2003 10 24 | 704 | 0.7+  | 0.9+  | 2007 11 17 | 704 | 0.2+  | 1.1−  |
| 2003 09 18 | 644 | 0.4+ | 0.4+ | 2003 10 24 | 704 | 0.1−  | 0.8+  | 2007 11 17 | 704 | 0.8+  | 1.2−  |
| 2003 09 22 | 699 | 0.9− | 0.3+ | 2003 10 24 | 704 | 0.4+  | 1.0+  | 2007 11 20 | 704 | (2.1− | 0.7+) |
| 2003 09 22 | 699 | 0.4+ | 0.2− | 2003 10 24 | 704 | (0.1− | 1.8+) | 2007 11 20 | 704 | 1.1−  | 1.1+  |
| 2003 09 22 | 699 | 0.1− | 0.3− | 2003 10 24 | 608 | 0.5−  | 0.1−  | 2007 11 20 | 704 | 0.0   | 0.7+  |
| 2003 09 22 | 699 | 0.1+ | 0.1+ | 2003 10 24 | 608 | 0.2−  | 0.7−  | 2007 11 20 | 704 | (0.5− | 1.6+) |
| 2003 09 25 | 608 | 0.1− | 0.8− | 2003 10 24 | 608 | 0.5−  | 0.8+  | 2007 11 28 | D29 | 0.3−  | 1.0−  |
| 2003 09 25 | 608 | 0.1+ | 0.9− | 2003 10 28 | 704 | 0.7−  | 0.6+  | 2007 11 28 | D29 | 1.0+  | 0.2−  |

|            |     |      |       |            |     |       |       |            |     |      |      |
|------------|-----|------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 25 | 608 | 0.2+ | 0.9−  | 2003 10 28 | 704 | 1.1−  | 0.4+  | 2007 11 28 | D29 | 0.0  | 0.3− |
| 2003 09 28 | 704 | 0.0  | 0.3+  | 2003 10 28 | 704 | 0.9−  | 1.0+  | 2007 11 28 | D29 | 0.3+ | 0.6− |
| 2003 09 28 | 704 | 0.3+ | 0.5+  | 2003 10 28 | 704 | (2.0− | 0.2−) | 2007 12 16 | 704 | 0.2− | 0.1+ |
| 2003 09 28 | 704 | 0.5+ | 0.2−  | 2003 10 29 | 608 | 0.7−  | 0.3−  | 2007 12 16 | 704 | 0.3+ | 0.3− |
| 2003 09 28 | 704 | 0.3− | 0.4+  | 2003 10 29 | 608 | 0.4−  | 0.3−  | 2007 12 16 | 704 | 0.5+ | 0.1+ |
| 2003 10 05 | 608 | (0.0 | 1.9−) | 2003 10 29 | 608 | 0.1−  | 0.3−  | 2007 12 16 | 704 | 0.8+ | 0.2+ |
| 2003 10 05 | 608 | 0.2− | 1.0−  | 2003 11 21 | 699 | 0.3−  | 1.2−  | 2007 12 16 | 704 | 0.6+ | 0.4+ |
| 2003 10 05 | 608 | 0.1+ | 0.5+  | 2003 11 21 | 704 | (2.4− | 0.9−) |            |     |      |      |
| 2003 10 06 | 699 | 0.5− | 0.8+  | 2003 11 21 | 699 | 1.4−  | 0.1+  |            |     |      |      |

(172501)\* 2003 SV<sub>178</sub>

Discovered 2003 Sept. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 337.36598  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26228213 | $\omega$ | 214.20778 | +0.24652875 | −0.96884541 |
| <i>a</i> | 2.4170757  | $\Omega$ | 221.53412 | +0.89696948 | +0.23736664 |
| <i>e</i> | 0.2131956  | <i>i</i> | 2.04918   | +0.36697320 | +0.07067988 |
| <i>P</i> | 3.76       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 23 | 645 | 0.0  | 0.1− | 2005 04 05 | G96 | 0.3− | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.2− |
| 2000 12 23 | 645 | 0.0  | 0.0  | 2005 04 05 | G96 | 0.1− | 0.1+ | 2007 10 30 | G96 | 0.2− | 0.3− |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2005 04 05 | G96 | 0.0  | 0.3+ | 2007 10 31 | 691 | 0.1− | 0.1− |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2005 04 05 | G96 | 0.2− | 0.4+ | 2007 10 31 | 691 | 0.1− | 0.2− |
| 2003 08 23 | 599 | 0.2+ | 0.1− | 2005 05 12 | 291 | 0.4+ | 0.1+ | 2007 10 31 | 691 | 0.0  | 0.1+ |
| 2003 08 23 | 599 | 0.2+ | 0.4+ | 2005 05 12 | 291 | 0.2+ | 0.4+ | 2007 11 04 | 691 | 0.3− | 0.1− |
| 2003 08 23 | 599 | 0.3+ | 0.0  | 2005 05 12 | 291 | 0.5+ | 0.2+ | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2003 09 03 | 704 | 0.6− | 0.2− | 2007 09 16 | 704 | 0.3+ | 0.0  | 2007 11 04 | 691 | 0.3− | 0.0  |
| 2003 09 03 | 704 | 1.2− | 1.2− | 2007 09 16 | 704 | 0.3− | 0.2− | 2007 11 05 | 704 | 0.1+ | 0.5+ |
| 2003 09 03 | 704 | 1.5− | 1.3− | 2007 09 16 | 704 | 0.6+ | 0.6− | 2007 11 05 | 704 | 0.3− | 0.6+ |
| 2003 09 19 | 704 | 0.5+ | 0.0  | 2007 09 19 | 291 | 0.6− | 0.1+ | 2007 11 05 | 704 | 0.5+ | 0.7+ |
| 2003 09 19 | 704 | 0.3+ | 0.5+ | 2007 09 19 | 291 | 0.6− | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2003 09 19 | 704 | 0.1+ | 0.5+ | 2007 09 19 | 291 | 0.6− | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 2003 09 19 | 704 | 1.0+ | 0.4+ | 2007 10 06 | 691 | 0.3− | 0.1− | 2007 11 05 | 704 | 0.3+ | 0.3+ |
| 2003 09 19 | 704 | 0.2+ | 0.2+ | 2007 10 06 | 691 | 0.2− | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 2003 09 22 | 699 | 0.8− | 0.1+ | 2007 10 06 | 691 | 0.2− | 0.1− | 2007 11 05 | G96 | 0.3+ | 0.1− |
| 2003 09 22 | 699 | 0.4+ | 0.1− | 2007 10 14 | 704 | 0.8+ | 0.1+ | 2007 11 05 | 704 | 0.0  | 0.4+ |
| 2003 09 22 | 699 | 0.1− | 0.3+ | 2007 10 14 | 704 | 0.3+ | 1.1+ | 2007 11 07 | 703 | 0.3+ | 0.4+ |
| 2003 09 22 | 699 | 0.6+ | 0.1+ | 2007 10 14 | 704 | 1.1+ | 0.3+ | 2007 11 07 | 703 | 0.2− | 0.3+ |
| 2003 09 26 | 704 | 0.0  | 1.0+ | 2007 10 14 | 691 | 0.5+ | 0.1− | 2007 11 07 | 703 | 0.4− | 0.2+ |
| 2003 09 26 | 704 | 0.2+ | 0.8+ | 2007 10 14 | 691 | 0.2− | 0.2− | 2007 11 07 | 703 | 0.9− | 0.6+ |
| 2003 09 26 | 704 | 0.1+ | 0.5+ | 2007 10 14 | 691 | 0.1− | 0.5− | 2007 11 14 | 704 | 0.3+ | 0.4+ |
| 2003 09 26 | 645 | 0.0  | 0.1− | 2007 10 15 | 703 | 0.1+ | 0.0  | 2007 11 14 | 704 | 0.4+ | 0.2+ |
| 2003 09 26 | 645 | 0.0  | 0.1− | 2007 10 15 | 703 | 0.5+ | 0.3− | 2007 11 14 | 704 | 0.3+ | 0.6+ |
| 2003 09 26 | 704 | 1.0− | 0.4+ | 2007 10 15 | 703 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 0.3+ | 0.3+ |
| 2003 09 27 | 691 | 0.1+ | 0.3+ | 2007 10 15 | 703 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.4+ | 0.7+ |
| 2003 09 27 | 691 | 0.2+ | 0.4+ | 2007 10 18 | 691 | 0.1− | 0.1− | 2007 11 17 | G96 | 0.9+ | 0.8− |
| 2003 09 27 | 691 | 0.2+ | 0.4+ | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 17 | G96 | 0.5+ | 0.7− |
| 2003 09 29 | 704 | 0.5+ | 0.6+ | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 17 | G96 | 0.5+ | 0.8− |
| 2003 09 29 | 704 | 0.6− | 0.3+ | 2007 10 20 | 703 | 1.0+ | 0.1+ | 2007 11 17 | G96 | 0.7+ | 0.8− |
| 2003 09 29 | 704 | 0.3− | 0.6+ | 2007 10 20 | 703 | 0.5+ | 0.0  | 2007 11 17 | 703 | 0.2− | 0.1− |
| 2003 09 29 | 704 | 0.2− | 0.6+ | 2007 10 20 | 703 | 0.2+ | 0.5+ | 2007 11 17 | 703 | 0.2+ | 0.0  |
| 2003 09 29 | 704 | 0.2− | 0.1− | 2007 10 20 | 703 | 0.3− | 0.3+ | 2007 11 17 | 703 | 0.1+ | 0.3+ |
| 2003 09 29 | 645 | 0.1− | 0.1− | 2007 10 22 | 704 | 0.2− | 0.4+ | 2007 11 17 | 703 | 0.2− | 0.3+ |
| 2003 09 29 | 645 | 0.0  | 0.1− | 2007 10 22 | 704 | 0.0  | 0.3+ | 2007 12 05 | 699 | 0.2− | 0.8+ |
| 2003 10 24 | 704 | 0.7+ | 1.0+ | 2007 10 22 | 704 | 1.0+ | 0.1+ | 2007 12 05 | 699 | 0.2− | 0.5− |
| 2003 10 24 | 704 | 0.7+ | 1.1+ | 2007 10 22 | 704 | 0.3+ | 1.2+ | 2007 12 05 | 699 | 0.3+ | 0.3− |
| 2003 10 24 | 704 | 0.3+ | 0.6+ | 2007 10 30 | 703 | 0.6− | 0.4− | 2007 12 05 | 704 | 0.4+ | 0.4+ |
| 2003 10 24 | 704 | 0.6− | 0.9+ | 2007 10 30 | 703 | 0.3+ | 0.1+ | 2007 12 05 | 699 | 0.2− | 0.2+ |
| 2003 10 24 | 704 | 0.6− | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.2− | 2007 12 05 | 704 | 0.4− | 0.5− |
| 2005 03 17 | 691 | 0.3+ | 0.5+ | 2007 10 30 | 703 | 0.1+ | 1.1+ | 2007 12 05 | 704 | 0.3+ | 0.3+ |
| 2005 03 17 | 691 | 0.3− | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.4− | 2007 12 05 | 704 | 0.3− | 0.4+ |
| 2005 03 17 | 691 | 0.2+ | 0.6+ | 2007 10 30 | 703 | 0.1− | 0.5+ |            |     |      |      |

**(172502)\* 2003 SZ<sub>180</sub>**

Discovered 2003 Sept. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |            | (2000.0) |           | $P$         |             | $Q$ |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.26179950 | $\omega$ | 40.20392  | +0.93689176 | +0.34064463 |     |   |
| $a$ | 2.4200454  | $\Omega$ | 299.71350 | −0.33951713 | +0.83273676 |     |   |
| $e$ | 0.1448853  | $i$      | 5.19954   | −0.08343828 | +0.43647535 |     |   |
| $P$ | 3.76       | $H$      | 16.2      | $G$         | 0.15        | $U$ | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 03 18 | 691 | 0.0   | 0.1−  | 2003 10 17 | 699 | 0.0   | 0.1−  | 2007 11 03 | 704 | 1.0+  | 0.7−  |
| 1994 03 18 | 691 | 0.4+  | 0.9−  | 2003 10 18 | 644 | 0.6−  | 0.3+  | 2007 11 03 | 704 | 0.2−  | 0.3+  |
| 1994 03 18 | 691 | 1.0−  | 0.1−  | 2003 10 18 | 644 | 0.6−  | 0.1+  | 2007 11 03 | 704 | (0.1+ | 1.6+) |
| 1999 10 13 | 704 | 1.1+  | 0.1−  | 2003 10 18 | 644 | 0.6−  | 0.3+  | 2007 11 03 | 704 | 0.6+  | 1.0+  |
| 1999 10 13 | 704 | 0.4+  | 0.7−  | 2003 10 19 | 644 | 0.0   | 0.0   | 2007 11 03 | 704 | 0.5−  | 0.1−  |
| 1999 10 13 | 704 | 1.4−  | 0.1−  | 2003 10 19 | 644 | 0.0   | 0.1+  | 2007 11 05 | 691 | 0.4−  | 0.4−  |
| 1999 10 13 | 704 | 0.0   | 0.3−  | 2003 10 19 | 644 | 0.1+  | 0.1+  | 2007 11 05 | 691 | 0.1−  | 0.1−  |
| 1999 10 13 | 704 | 1.0−  | 1.5−  | 2003 10 21 | 644 | 0.2−  | 0.1−  | 2007 11 05 | 691 | 0.1−  | 0.1−  |
| 2003 09 04 | 704 | (0.9− | 1.8+) | 2003 10 21 | 644 | 0.3−  | 0.3−  | 2007 11 08 | 704 | 0.5+  | 0.6+  |
| 2003 09 04 | 704 | 1.5+  | 0.9+  | 2003 10 21 | 644 | 0.0   | 0.1−  | 2007 11 08 | 704 | 0.0   | 0.4+  |
| 2003 09 04 | 704 | (1.5+ | 0.6−) | 2003 10 21 | 704 | 0.1−  | 0.8+  | 2007 11 08 | 704 | 0.0   | 0.9+  |
| 2003 09 04 | 704 | 1.1−  | 0.2+  | 2003 10 21 | 704 | 0.2+  | 0.2+  | 2007 11 08 | 704 | 0.2+  | 0.2+  |
| 2003 09 20 | 704 | 0.1+  | 0.2+  | 2003 10 21 | 704 | 0.6+  | 0.0   | 2007 11 08 | 704 | 0.7−  | 0.1+  |
| 2003 09 20 | 704 | 0.5+  | 0.7+  | 2003 10 21 | 704 | (1.7− | 0.6−) | 2007 11 08 | 703 | 0.1+  | 1.0−  |
| 2003 09 20 | 704 | 0.1−  | 0.4+  | 2003 10 21 | 704 | 0.7−  | 0.0   | 2007 11 08 | 703 | 0.2+  | 0.4−  |
| 2003 09 20 | 704 | 0.4+  | 0.3+  | 2004 12 18 | G96 | 0.0   | 0.5−  | 2007 11 08 | 703 | 0.2−  | 0.9−  |
| 2003 09 20 | 704 | 0.2+  | 0.5+  | 2004 12 18 | G96 | 0.4−  | 0.6−  | 2007 11 08 | 703 | 1.2−  | 0.2−  |
| 2003 09 21 | 644 | 1.1+  | 0.1+  | 2004 12 18 | G96 | 0.4−  | 0.4−  | 2007 11 17 | 704 | 0.6+  | 0.3+  |
| 2003 09 21 | 644 | 0.6+  | 0.7−  | 2004 12 18 | G96 | 0.3−  | 0.5+  | 2007 11 17 | G96 | 0.4+  | 0.3−  |
| 2003 09 21 | 644 | 0.3+  | 0.1+  | 2005 01 17 | 691 | 0.2+  | 0.2−  | 2007 11 17 | 704 | 0.2+  | 0.6+  |
| 2003 09 22 | 699 | 0.4−  | 0.1−  | 2005 01 17 | 691 | 0.5+  | 0.2+  | 2007 11 17 | G96 | 0.2+  | 0.3−  |
| 2003 09 22 | 699 | 0.7−  | 0.1−  | 2005 01 17 | 691 | 0.2+  | 0.0   | 2007 11 17 | G96 | 0.5+  | 0.5−  |
| 2003 09 22 | 699 | 1.0+  | 0.2−  | 2005 02 04 | 691 | 0.1+  | 0.5+  | 2007 11 17 | 704 | 0.7+  | 0.5+  |
| 2003 09 22 | 699 | 0.2−  | 0.3−  | 2005 02 04 | 691 | 0.2+  | 0.2+  | 2007 11 17 | G96 | 0.4+  | 0.4−  |
| 2003 09 29 | 699 | 0.7−  | 0.3−  | 2005 02 04 | 691 | 0.2+  | 0.3+  | 2007 11 17 | 704 | 0.1+  | 0.3+  |
| 2003 09 29 | 699 | 0.1+  | 0.7−  | 2005 03 11 | G96 | 0.2−  | 0.1+  | 2007 11 17 | 704 | 0.2+  | 1.0+  |
| 2003 09 29 | 699 | 0.5−  | 0.5−  | 2005 03 11 | G96 | 0.3−  | 0.3−  | 2007 11 20 | 704 | 1.2−  | 0.2−  |
| 2003 09 29 | 699 | 0.6−  | 0.4−  | 2005 03 11 | G96 | 1.3−  | 0.7+  | 2007 11 20 | 691 | 0.2−  | 0.2−  |
| 2003 09 30 | 704 | 0.5+  | 0.1+  | 2005 03 11 | G96 | 0.0   | 0.3+  | 2007 11 20 | 704 | 1.0−  | 0.0   |
| 2003 09 30 | 704 | 0.4+  | 0.1−  | 2007 10 10 | 699 | (0.6− | 1.8+) | 2007 11 20 | 704 | 1.4+  | 0.4+  |
| 2003 09 30 | 704 | 0.4+  | 0.2+  | 2007 10 10 | 699 | 0.8−  | 0.7+  | 2007 11 20 | 691 | 0.1−  | 0.1−  |
| 2003 09 30 | 704 | 0.1−  | 0.4−  | 2007 10 10 | 699 | 1.2−  | 0.1−  | 2007 11 20 | 704 | 0.3+  | 0.6−  |
| 2003 09 30 | 704 | 0.0   | 0.5−  | 2007 10 10 | 699 | 0.8−  | 0.4+  | 2007 11 20 | 691 | 0.1+  | 0.2−  |
| 2003 10 14 | 644 | 0.2−  | 0.2+  | 2007 10 21 | 703 | 0.4+  | 0.9+  | 2007 12 03 | 704 | 0.7+  | 1.0−  |
| 2003 10 14 | 644 | 0.1−  | 0.2+  | 2007 10 21 | 703 | 1.2−  | 0.0   | 2007 12 03 | 704 | 1.3+  | 0.1+  |
| 2003 10 14 | 644 | 0.1+  | 0.1+  | 2007 10 21 | 703 | 0.6+  | 0.4+  | 2007 12 03 | 704 | 0.8+  | 1.4−  |
| 2003 10 15 | 644 | 0.0   | 0.3+  | 2007 10 21 | 703 | 0.9−  | 0.3−  | 2007 12 03 | 704 | 1.3+  | 0.7−  |
| 2003 10 15 | 644 | 0.1−  | 0.2+  | 2007 11 02 | 704 | 0.3+  | 0.3+  | 2007 12 03 | 704 | 1.4+  | 1.5−  |
| 2003 10 15 | 644 | 0.2−  | 0.4+  | 2007 11 02 | 704 | 0.5+  | 0.2+  | 2007 12 13 | 704 | 0.6−  | 1.0+  |
| 2003 10 16 | 644 | 0.2−  | 0.2+  | 2007 11 02 | 704 | 0.2−  | 1.3−  | 2007 12 13 | 704 | 0.2−  | 0.7+  |
| 2003 10 16 | 644 | 0.0   | 0.3+  | 2007 11 02 | 704 | 0.6+  | 0.2−  | 2007 12 13 | 704 | 0.6−  | 0.5+  |
| 2003 10 16 | 644 | 0.3+  | 0.4+  | 2007 11 02 | 703 | 0.2−  | 0.1+  | 2007 12 13 | 704 | 1.2−  | 0.9+  |
| 2003 10 17 | 699 | (1.6+ | 0.2−) | 2007 11 02 | 703 | 0.6+  | 0.1+  | 2007 12 13 | 704 | 0.1+  | 0.5+  |
| 2003 10 17 | 699 | (0.2+ | 1.5+) | 2007 11 02 | 703 | 1.0−  | 0.5−  |            |     |       |       |
| 2003 10 17 | 699 | 0.7+  | 0.8+  | 2007 11 02 | 703 | 0.1−  | 0.5−  |            |     |       |       |

**(172503)\* 2003 SK<sub>184</sub>**

Discovered 2003 Sept. 21 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ |            | (2000.0) |           | $P$         |             | $Q$ |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.29288442 | $\omega$ | 139.06713 | −0.85876477 | −0.51216939 |     |   |
| $a$ | 2.2456317  | $\Omega$ | 10.15386  | +0.44634449 | −0.76155027 |     |   |
| $e$ | 0.0605005  | $i$      | 4.66522   | +0.25159425 | −0.39714443 |     |   |
| $P$ | 3.37       | $H$      | 16.2      | $G$         | 0.15        | $U$ | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 05 | 104 | 0.0  | 0.3− | 2005 01 07 | 704 | 0.3− | 0.7+ | 2005 03 18 | 704 | 0.9− | 0.5+ |
| 1995 04 05 | 104 | 0.7− | 0.4− | 2005 01 07 | 704 | 0.1− | 0.8+ | 2005 03 18 | 704 | 0.3− | 0.0  |
| 1995 04 05 | 104 | 0.2+ | 0.8− | 2005 02 04 | 644 | 0.1+ | 0.1+ | 2005 03 18 | 704 | 0.7− | 0.6− |
| 1995 04 05 | 104 | 0.2− | 0.7− | 2005 02 04 | 644 | 0.1− | 0.1+ | 2005 04 04 | G96 | 0.1− | 0.1− |
| 1995 04 05 | 104 | 0.2− | 0.4− | 2005 02 04 | 644 | 0.2− | 0.2+ | 2005 04 04 | G96 | 0.3− | 0.2− |
| 2000 11 30 | 704 | 0.1+ | 0.6− | 2005 03 03 | 703 | 0.6− | 0.3+ | 2005 04 04 | G96 | 0.2− | 0.0  |
| 2000 11 30 | 704 | 0.5− | 0.1− | 2005 03 03 | 703 | 0.3− | 0.1− | 2005 04 04 | G96 | 0.2− | 0.2− |
| 2000 11 30 | 704 | 0.3− | 0.3− | 2005 03 03 | 703 | 0.1+ | 0.7+ | 2005 04 04 | 704 | 0.0  | 0.1− |
| 2003 09 21 | 699 | 1.0− | 1.0+ | 2005 03 03 | 703 | 0.2− | 0.2+ | 2005 04 04 | 704 | 0.5− | 1.1+ |
| 2003 09 21 | 699 | 0.0  | 0.0  | 2005 03 07 | 704 | 0.1+ | 0.2− | 2005 04 04 | 704 | 0.1− | 0.7+ |
| 2003 09 21 | 699 | 1.3+ | 0.4+ | 2005 03 07 | 704 | 0.6+ | 0.2− | 2005 04 09 | 699 | 0.1+ | 0.2− |
| 2003 09 21 | 699 | 1.0− | 0.2− | 2005 03 07 | 704 | 0.3+ | 0.6+ | 2005 04 09 | 699 | 0.4+ | 0.1− |
| 2003 09 21 | 691 | 0.1− | 0.1+ | 2005 03 07 | 704 | 0.5+ | 0.4+ | 2005 04 09 | 699 | 0.4+ | 0.1+ |
| 2003 09 21 | 691 | 0.0  | 0.1+ | 2005 03 07 | 704 | 0.5+ | 0.2− | 2005 04 09 | 699 | 0.6+ | 0.5− |
| 2003 09 21 | 644 | 0.2− | 0.5+ | 2005 03 08 | 699 | 0.5+ | 0.4+ | 2005 04 16 | 691 | 0.2+ | 0.5+ |
| 2003 09 21 | 691 | 0.0  | 0.0  | 2005 03 08 | 699 | 0.4+ | 0.5+ | 2005 04 16 | 691 | 0.4+ | 0.3+ |
| 2003 09 21 | 644 | 0.1+ | 0.1+ | 2005 03 08 | 699 | 0.2+ | 0.3+ | 2005 04 16 | 691 | 0.3+ | 0.7+ |
| 2003 09 21 | 644 | 0.2− | 0.4+ | 2005 03 08 | 699 | 0.7+ | 0.5+ | 2005 05 04 | G96 | 0.1− | 0.0  |
| 2003 09 22 | 699 | 0.7− | 0.2− | 2005 03 09 | 699 | 0.4+ | 0.2+ | 2005 05 04 | G96 | 0.3− | 0.1+ |
| 2003 09 22 | 699 | 0.6+ | 1.0+ | 2005 03 09 | 699 | 0.5+ | 0.6+ | 2005 05 04 | G96 | 0.3− | 0.3+ |
| 2003 09 22 | 699 | 1.0− | 0.1+ | 2005 03 09 | 699 | 0.9+ | 0.2+ | 2005 05 04 | G96 | 0.3− | 0.2+ |
| 2003 09 22 | 699 | 0.0  | 0.3− | 2005 03 09 | 699 | 0.6+ | 0.7+ | 2005 05 13 | G96 | 0.3− | 0.1+ |
| 2003 09 29 | 704 | 0.2− | 0.1− | 2005 03 09 | 704 | 0.0  | 0.1− | 2005 05 13 | G96 | 0.2− | 0.0  |
| 2003 09 29 | 704 | 1.2− | 0.4+ | 2005 03 09 | 704 | 0.4+ | 0.2+ | 2005 05 13 | G96 | 0.2− | 0.3+ |
| 2003 09 29 | 704 | 0.8− | 0.9+ | 2005 03 09 | 704 | 0.0  | 0.7+ | 2005 05 13 | G96 | 0.4− | 0.1+ |
| 2003 09 29 | 704 | 1.0− | 0.8+ | 2005 03 09 | 704 | 0.3+ | 0.2+ | 2006 08 17 | 644 | 0.7− | 0.7+ |
| 2003 10 06 | 699 | 0.1− | 0.3− | 2005 03 09 | 704 | 0.1+ | 0.1− | 2006 08 17 | 644 | 0.1− | 0.4+ |
| 2003 10 06 | 699 | 0.5− | 1.0+ | 2005 03 12 | 704 | 0.8+ | 0.1+ | 2006 08 17 | 644 | 0.4− | 0.4+ |
| 2003 10 06 | 699 | 0.4+ | 0.3− | 2005 03 12 | 704 | 0.2− | 0.1+ | 2006 08 17 | 644 | 0.1− | 0.5+ |
| 2003 10 06 | 699 | 0.1+ | 0.2− | 2005 03 12 | 704 | 0.8+ | 0.0  | 2006 08 17 | 644 | 0.3− | 0.6+ |
| 2003 10 20 | 691 | 0.0  | 0.0  | 2005 03 12 | 704 | 0.2− | 0.3− | 2006 08 17 | 644 | 0.2− | 0.5+ |
| 2003 10 20 | 691 | 0.0  | 0.0  | 2005 03 12 | 704 | 0.6+ | 0.1+ | 2007 11 12 | G96 | 0.8− | 0.1− |
| 2003 10 20 | 691 | 0.1+ | 0.2+ | 2005 03 14 | 704 | 0.2+ | 0.3+ | 2007 11 12 | G96 | 0.1− | 0.6− |
| 2003 10 21 | 644 | 0.2+ | 0.2+ | 2005 03 14 | 704 | 0.0  | 0.2− | 2007 11 12 | G96 | 0.2− | 0.4− |
| 2003 10 21 | 644 | 0.1+ | 0.2+ | 2005 03 14 | 704 | 0.1− | 0.0  | 2007 11 12 | G96 | 0.2− | 0.7− |
| 2003 10 21 | 644 | 0.2− | 0.3+ | 2005 03 14 | 704 | 0.9+ | 0.0  | 2007 12 13 | 704 | 0.4− | 0.7+ |
| 2003 10 23 | 704 | 0.3− | 1.0+ | 2005 03 14 | 704 | 0.1− | 0.4+ | 2007 12 13 | 704 | 0.0  | 0.1− |
| 2003 10 23 | 704 | 0.4+ | 1.2+ | 2005 03 16 | G96 | 0.4− | 0.1+ | 2007 12 13 | 704 | 0.4− | 0.1+ |
| 2003 10 23 | 704 | 0.5+ | 1.0+ | 2005 03 16 | G96 | 0.3− | 0.0  | 2007 12 13 | 704 | 0.7− | 0.1− |
| 2003 10 23 | 704 | 0.1− | 1.4+ | 2005 03 16 | G96 | 1.0− | 0.1− | 2007 12 13 | 704 | 0.5− | 0.4− |
| 2003 10 23 | 704 | 0.1− | 1.2+ | 2005 03 16 | G96 | 0.8+ | 0.5− | 2007 12 16 | 704 | 1.3+ | 0.4+ |
| 2003 10 28 | 704 | 0.3+ | 0.7− | 2005 03 17 | 704 | 0.3+ | 0.6+ | 2007 12 16 | 704 | 0.9+ | 0.9− |
| 2003 10 28 | 704 | 0.5− | 0.5− | 2005 03 17 | 704 | 0.3+ | 0.0  | 2007 12 16 | 704 | 0.2+ | 0.6− |
| 2003 10 28 | 704 | 0.3− | 0.3− | 2005 03 17 | 704 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.3+ | 0.4+ |
| 2005 01 07 | 704 | 0.0  | 1.2+ | 2005 03 17 | 704 | 0.1− | 0.0  | 2007 12 16 | 704 | 0.5+ | 0.3− |

2007 DEC. 24

M.P.O. 129393

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 30 | 704 | 0.7-  | 0.3-  | 2003 10 23 | 645 | 0.1+  | 0.0   | 2005 03 14 | 704 | 1.2+ | 0.3+ |
| 2000 12 30 | 704 | 0.6+  | 0.7-  | 2003 10 24 | 691 | 0.0   | 0.0   | 2005 04 13 | 691 | 0.1- | 0.3+ |
| 2000 12 30 | 704 | 0.2+  | 0.3-  | 2003 10 24 | 691 | 0.1-  | 0.3+  | 2005 04 13 | 691 | 0.0  | 0.3+ |
| 2000 12 30 | 704 | 0.3-  | 0.3-  | 2003 10 24 | 645 | 0.1-  | 0.0   | 2005 04 13 | 691 | 0.2- | 0.0  |
| 2001 01 03 | 704 | 0.1-  | 1.4-  | 2003 10 24 | 645 | 0.1-  | 0.1-  | 2005 05 06 | G96 | 0.5- | 0.7- |
| 2001 01 03 | 704 | 0.0   | 0.0   | 2003 10 24 | 704 | 1.2+  | 0.9+  | 2005 05 06 | G96 | 0.3- | 0.0  |
| 2001 01 03 | 704 | 0.5+  | 0.2-  | 2003 10 24 | 704 | (2.2+ | 2.0+) | 2005 05 06 | G96 | 0.1- | 0.4- |
| 2001 01 03 | 704 | 0.1+  | 0.5-  | 2003 10 24 | 691 | 0.2-  | 0.2+  | 2005 05 06 | G96 | 0.2- | 0.3+ |
| 2001 01 03 | 704 | 0.6-  | 0.4-  | 2003 10 24 | 704 | (1.9+ | 0.5+) | 2007 11 02 | 691 | 0.1- | 0.1- |
| 2003 09 17 | 691 | 0.1+  | 0.1-  | 2005 03 01 | 691 | 0.0   | 0.0   | 2007 11 02 | 691 | 0.1- | 0.2+ |
| 2003 09 17 | 691 | 0.2+  | 0.2-  | 2005 03 01 | 691 | 0.1-  | 0.4+  | 2007 11 02 | 691 | 0.0  | 0.1- |
| 2003 09 17 | 691 | 0.2+  | 0.4-  | 2005 03 01 | 691 | 0.0   | 0.1+  | 2007 11 19 | 691 | 0.5- | 0.1+ |
| 2003 09 21 | 699 | 0.3+  | 0.1-  | 2005 03 03 | 703 | 0.8-  | 0.5-  | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2003 09 21 | 699 | 0.0   | 0.2+  | 2005 03 03 | 703 | 0.3-  | 0.4+  | 2007 11 19 | 691 | 0.1+ | 0.1- |
| 2003 09 21 | 699 | 0.3-  | 0.5+  | 2005 03 03 | 703 | (1.7+ | 2.0-) | 2007 12 05 | 704 | 0.2+ | 0.5+ |
| 2003 09 21 | 699 | 1.0+  | 1.1+  | 2005 03 03 | 703 | 0.2-  | 0.2-  | 2007 12 05 | 704 | 0.2+ | 0.7+ |
| 2003 09 22 | 699 | 0.6-  | 0.8+  | 2005 03 08 | 699 | 0.5+  | 1.0+  | 2007 12 05 | 704 | 0.6+ | 0.6+ |
| 2003 09 22 | 699 | (1.7- | 0.8+) | 2005 03 08 | 699 | 0.8+  | 0.8+  | 2007 12 05 | 704 | 0.4+ | 0.7+ |
| 2003 09 22 | 699 | 0.1-  | 1.3+  | 2005 03 08 | 699 | 0.1-  | 0.3-  | 2007 12 05 | 704 | 0.1- | 0.9+ |
| 2003 09 22 | 699 | 0.1+  | 0.1+  | 2005 03 08 | 699 | 0.7+  | 0.1-  | 2007 12 05 | G96 | 0.4+ | 0.4- |
| 2003 09 29 | 704 | 0.3-  | 0.0   | 2005 03 14 | 704 | 0.5-  | 1.0-  | 2007 12 05 | G96 | 0.2+ | 0.2- |
| 2003 09 29 | 704 | 0.1-  | 0.4+  | 2005 03 14 | 704 | 1.4+  | 0.9+  | 2007 12 05 | G96 | 0.0  | 0.2- |
| 2003 09 29 | 704 | 0.7-  | 0.0   | 2005 03 14 | 704 | 0.4+  | 0.6-  |            |     |      |      |
| 2003 10 23 | 645 | 0.0   | 0.0   | 2005 03 14 | 704 | 0.5+  | 0.3-  |            |     |      |      |

(172505)\* 2003 SC<sub>202</sub> = 2002 GN<sub>116</sub>

Discovered 2003 Sept. 22 by V. Reddy at the Goodricke-Pigott Observatory, Tucson.

Id. G. V. Williams (MPO 53465)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 88.68006   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28614567 | $\omega$ 243.80439 | +0.96838871   | +0.22638998 |
| <i>a</i> | 2.2807513  | $\Omega$ 102.96435 | -0.17270242   | +0.91147348 |
| <i>e</i> | 0.1711427  | <i>i</i> 6.17017   | -0.17999217   | +0.34345840 |
| <i>P</i> | 3.44       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 22 | 691 | 0.3-  | 0.8-  | 2003 09 25 | 608 | 0.4+  | 1.5-  | 2003 10 28 | 608 | 0.7-  | 0.3+  |
| 2000 11 22 | 691 | 1.4-  | 0.2-  | 2003 09 25 | 608 | 0.1-  | 0.2-  | 2003 10 28 | 608 | 0.8-  | 0.2+  |
| 2000 11 22 | 691 | 0.8-  | 0.5-  | 2003 09 25 | 608 | 0.1-  | 0.4-  | 2003 11 03 | 608 | 0.6+  | 0.8-  |
| 2000 11 30 | 691 | 0.9+  | 0.3+  | 2003 09 28 | 699 | 0.1-  | 0.1-  | 2003 11 03 | 608 | 0.2+  | 1.1+  |
| 2000 11 30 | 691 | 0.8+  | 0.4+  | 2003 09 28 | 699 | 0.5+  | 0.3+  | 2003 11 03 | 608 | (0.9+ | 1.8+) |
| 2000 11 30 | 691 | 0.7+  | 0.2+  | 2003 09 28 | 699 | 0.1+  | 0.0   | 2003 11 23 | 703 | 1.2-  | 0.7-  |
| 2002 03 14 | 691 | 0.4+  | 0.4+  | 2003 09 28 | 699 | 0.2+  | 0.0   | 2003 11 23 | 703 | 0.4+  | 0.9+  |
| 2002 03 14 | 691 | 0.1-  | 0.5+  | 2003 09 30 | 645 | 0.0   | 0.1-  | 2003 11 23 | 703 | 0.1-  | 0.3+  |
| 2002 03 14 | 691 | 0.0   | 0.1+  | 2003 09 30 | 645 | 0.1+  | 0.1-  | 2003 11 23 | 703 | 0.9-  | 0.1-  |
| 2002 04 11 | 704 | 1.3+  | 0.5+  | 2003 10 15 | 699 | 0.2-  | 0.2+  | 2003 11 24 | 644 | 0.1-  | 0.4+  |
| 2002 04 11 | 704 | 0.7-  | 1.2+  | 2003 10 15 | 699 | 0.4+  | 0.3+  | 2003 11 24 | 644 | 0.0   | 0.4+  |
| 2002 04 11 | 704 | 0.5+  | 0.3+  | 2003 10 15 | 699 | 0.4-  | 0.0   | 2003 11 24 | 644 | 0.1-  | 0.2+  |
| 2002 04 11 | 704 | (1.1+ | 1.6+) | 2003 10 15 | 699 | 0.6+  | 0.5+  | 2003 11 24 | 703 | 0.9-  | 1.0+  |
| 2002 04 13 | 644 | (0.1+ | 1.8+) | 2003 10 16 | 644 | 0.1+  | 0.1+  | 2003 11 24 | 703 | 0.2-  | 1.1+  |
| 2002 04 13 | 644 | (0.1- | 1.6+) | 2003 10 16 | 644 | 0.1+  | 0.1+  | 2003 11 24 | 703 | 0.3-  | 0.6+  |
| 2002 04 13 | 644 | (0.4- | 1.6+) | 2003 10 16 | 644 | 0.1+  | 0.1+  | 2003 11 24 | 703 | 0.5-  | 0.7+  |
| 2003 08 23 | 704 | 1.2-  | 1.3+  | 2003 10 19 | 704 | (0.3- | 1.7-) | 2003 12 19 | 644 | 0.2-  | 0.4+  |
| 2003 08 23 | 704 | 0.7-  | 1.4+  | 2003 10 19 | 704 | 0.4+  | 0.2+  | 2003 12 19 | 644 | 0.1+  | 0.6+  |
| 2003 08 23 | 704 | 0.4-  | 0.9+  | 2003 10 19 | 704 | 0.2-  | 0.2+  | 2003 12 19 | 644 | 0.4-  | 0.3+  |
| 2003 08 23 | 704 | 0.6-  | 0.8+  | 2003 10 19 | 704 | 0.0   | 0.4+  | 2003 12 22 | 704 | 1.0+  | 0.9+  |
| 2003 08 23 | 704 | (1.2- | 1.6+) | 2003 10 19 | 704 | 0.2+  | 0.7-  | 2003 12 22 | 704 | 0.6+  | 0.6+  |
| 2003 09 03 | 704 | 0.6-  | 0.1+  | 2003 10 20 | 644 | 0.2-  | 0.0   | 2003 12 22 | 704 | 0.0   | 0.4+  |
| 2003 09 03 | 704 | 0.4-  | 0.1+  | 2003 10 20 | 644 | 0.1-  | 0.0   | 2007 10 07 | G96 | 0.2-  | 0.2+  |
| 2003 09 03 | 704 | 0.1+  | 0.3-  | 2003 10 20 | 691 | 0.0   | 0.0   | 2007 10 07 | G96 | 0.0   | 0.1+  |
| 2003 09 03 | 704 | 0.1+  | 0.2-  | 2003 10 20 | 644 | 0.3+  | 0.0   | 2007 10 07 | G96 | 0.1-  | 0.2-  |
| 2003 09 19 | 704 | 0.1-  | 0.3+  | 2003 10 20 | 691 | 0.1-  | 0.1-  | 2007 10 07 | G96 | 0.1+  | 0.2-  |
| 2003 09 19 | 704 | 0.1+  | 0.4+  | 2003 10 20 | 691 | 0.1+  | 0.1+  | 2007 11 08 | G96 | 0.2+  | 0.1-  |
| 2003 09 19 | 704 | 0.9-  | 0.1-  | 2003 10 23 | 645 | 0.0   | 0.1-  | 2007 11 08 | G96 | 0.1-  | 0.0   |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 683 | 0.6-  | 0.6+  | 2003 10 23 | 645 | 0.1+ | 0.1- | 2007 11 08 | G96 | 0.2+ | 0.1- |
| 2003 09 21 | 683 | 0.6+  | 1.2+  | 2003 10 27 | 699 | 0.0  | 0.4+ | 2007 11 08 | G96 | 0.3+ | 0.1+ |
| 2003 09 21 | 683 | 0.7+  | 0.7+  | 2003 10 27 | 699 | 0.0  | 0.3+ | 2007 12 06 | G96 | 0.1- | 0.4+ |
| 2003 09 22 | 683 | (0.1- | 1.6+) | 2003 10 27 | 699 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.1- | 0.2- |
| 2003 09 22 | 683 | (1.1+ | 1.8+) | 2003 10 27 | 699 | 0.4- | 0.3+ | 2007 12 06 | G96 | 0.1- | 0.2- |
| 2003 09 22 | 683 | 1.3-  | 0.1-  | 2003 10 28 | 608 | 0.7- | 0.3+ | 2007 12 06 | G96 | 0.1- | 0.2+ |

(172506)\* 2003 SB<sub>204</sub>

Discovered 2003 Sept. 22 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 89.21498   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30087767 | $\omega$ 161.70686 | +0.96822283   | -0.24998493 |
| <i>a</i> | 2.2056812  | $\Omega$ 212.77246 | +0.22775554   | +0.89331107 |
| <i>e</i> | 0.1012409  | <i>i</i> 0.76390   | +0.10330517   | +0.37350083 |
| <i>P</i> | 3.28       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 16 | 691 | 0.1+ | 0.3- | 2003 10 21 | 699 | 0.7-  | 0.3-  | 2006 07 25 | G96 | 0.6- | 0.0  |
| 2000 11 16 | 691 | 0.0  | 0.6- | 2003 10 21 | 704 | 0.1-  | 0.9+  | 2006 08 13 | D35 | 0.6+ | 0.2+ |
| 2000 11 16 | 691 | 0.1- | 0.4- | 2003 10 21 | 704 | 0.5-  | 0.5+  | 2006 08 13 | D35 | 0.7+ | 0.2+ |
| 2002 04 06 | 807 | 0.0  | 0.3+ | 2003 10 21 | 704 | (1.8- | 1.8+) | 2006 08 13 | D35 | 0.5+ | 0.2+ |
| 2002 04 06 | 807 | 0.2- | 0.4+ | 2003 10 23 | 701 | 0.3+  | 0.4-  | 2006 08 16 | 644 | 0.0  | 0.2- |
| 2003 09 16 | 691 | 0.1+ | 0.3- | 2003 10 23 | 704 | 0.9-  | 0.9+  | 2006 08 16 | 644 | 0.2+ | 0.1- |
| 2003 09 16 | 691 | 0.0  | 0.1- | 2003 10 23 | 701 | 0.6+  | 0.5-  | 2006 08 16 | 644 | 0.1+ | 0.0  |
| 2003 09 16 | 691 | 0.4+ | 0.2- | 2003 10 23 | 704 | 0.9-  | 0.8+  | 2006 08 19 | 699 | 0.8- | 0.1+ |
| 2003 09 17 | 644 | 0.3+ | 0.0  | 2003 10 23 | 704 | 0.5-  | 1.0+  | 2006 08 19 | 699 | 0.5- | 0.0  |
| 2003 09 17 | 644 | 0.4+ | 0.3+ | 2003 10 23 | 704 | 1.0-  | 0.2+  | 2006 08 19 | 699 | 0.3- | 0.9- |
| 2003 09 17 | 644 | 0.4+ | 0.2+ | 2003 10 23 | 704 | 1.0-  | 0.8+  | 2006 08 19 | 699 | 0.4- | 0.8- |
| 2003 09 22 | 291 | 0.1- | 0.0  | 2003 10 26 | 703 | 0.6-  | 1.3+  | 2006 08 19 | A50 | 0.3+ | 0.1- |
| 2003 09 22 | 291 | 0.1- | 0.0  | 2003 10 26 | 703 | 1.1+  | 0.9-  | 2006 08 19 | A50 | 0.2+ | 0.1- |
| 2003 09 22 | 291 | 0.2- | 0.0  | 2003 10 26 | 703 | 0.5-  | 0.1-  | 2006 08 28 | 703 | 0.3- | 0.6- |
| 2003 09 26 | 704 | 0.4+ | 1.2+ | 2003 10 26 | 703 | 1.5+  | 0.8-  | 2006 08 28 | 703 | 0.2+ | 0.2- |
| 2003 09 26 | 704 | 0.0  | 0.4+ | 2003 10 28 | 704 | 1.0-  | 0.2+  | 2006 08 28 | 703 | 1.2+ | 0.7- |
| 2003 09 26 | 704 | 0.7+ | 0.9+ | 2003 10 28 | 704 | 0.9-  | 0.3-  | 2006 08 28 | 703 | 0.4- | 0.0  |
| 2003 09 26 | 704 | 0.8+ | 1.3+ | 2003 10 28 | 704 | 0.4-  | 0.0   | 2006 09 14 | 644 | 0.3- | 0.7+ |
| 2003 09 28 | 691 | 0.0  | 0.1- | 2003 10 28 | 704 | 0.5-  | 0.1-  | 2006 09 14 | 644 | 0.2+ | 0.5+ |
| 2003 09 28 | 691 | 0.1- | 0.1- | 2003 10 28 | 704 | 0.5-  | 0.4+  | 2006 09 14 | 644 | 0.4- | 0.0  |
| 2003 09 28 | 691 | 0.1+ | 0.1- | 2003 11 01 | 704 | (2.3- | 0.4+) | 2006 10 17 | G96 | 1.0+ | 0.4+ |
| 2003 09 29 | 704 | 0.3- | 0.0  | 2003 11 01 | 704 | (2.4+ | 0.6+) | 2006 10 17 | G96 | 0.6+ | 0.4+ |
| 2003 09 29 | 704 | 0.1- | 0.5+ | 2003 11 01 | 704 | 0.1+  | 0.1+  | 2006 10 17 | G96 | 0.2- | 0.7- |
| 2003 09 29 | 704 | 0.1- | 0.4+ | 2003 11 01 | 704 | 1.2+  | 0.3-  | 2006 10 17 | G96 | 1.0- | 0.2- |
| 2003 09 29 | 704 | 0.3- | 0.1+ | 2003 11 01 | 704 | (1.7+ | 0.8-) | 2006 10 28 | G96 | 0.6+ | 0.4- |
| 2003 09 29 | 704 | 0.2+ | 0.3- | 2005 04 05 | G96 | 0.5+  | 0.0   | 2006 10 28 | G96 | 0.5+ | 0.0  |
| 2003 10 16 | 691 | 0.0  | 0.0  | 2005 04 05 | G96 | 0.2+  | 0.3+  | 2006 10 28 | G96 | 0.6+ | 0.0  |
| 2003 10 16 | 691 | 0.1- | 0.0  | 2005 04 05 | G96 | 0.4+  | 0.0   | 2006 10 28 | G96 | 0.5+ | 0.6- |
| 2003 10 16 | 691 | 0.0  | 0.1- | 2005 04 05 | G96 | 0.1-  | 0.3+  | 2007 11 09 | G96 | 0.8- | 1.1- |
| 2003 10 19 | 704 | 0.1- | 0.1- | 2006 07 18 | G96 | 0.0   | 0.6-  | 2007 11 09 | G96 | 0.4+ | 0.1- |
| 2003 10 19 | 704 | 0.0  | 0.2+ | 2006 07 18 | G96 | 0.4-  | 0.5-  | 2007 11 09 | G96 | 0.8- | 0.3- |
| 2003 10 19 | 704 | 0.2- | 0.8+ | 2006 07 18 | G96 | 0.3-  | 0.4-  | 2007 11 09 | G96 | 0.2- | 0.2+ |
| 2003 10 21 | 699 | 0.6+ | 0.4+ | 2006 07 18 | G96 | 0.2-  | 0.1-  | 2007 12 05 | G96 | 0.3+ | 0.3+ |
| 2003 10 21 | 699 | 0.1- | 0.5+ | 2006 07 25 | G96 | 0.3+  | 0.2-  | 2007 12 05 | G96 | 0.1+ | 0.2+ |
| 2003 10 21 | 699 | 0.0  | 0.4+ | 2006 07 25 | G96 | 0.0   | 0.2-  | 2007 12 05 | G96 | 0.0  | 0.3- |
| 2003 10 21 | 704 | 0.6- | 0.2+ | 2006 07 25 | G96 | 0.3+  | 0.3-  | 2007 12 05 | G96 | 0.3- | 0.7- |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 03 24 | 691 | 0.6+ | 0.1- | 2006 03 26 | 691 | 0.0   | 0.8+  | 2007 10 12 | 704 | 0.2+  | 0.7+  |
| 1999 07 13 | 704 | 0.1- | 0.7+ | 2006 05 06 | G96 | 0.0   | 0.5+  | 2007 10 12 | 704 | 0.3+  | 0.3+  |
| 1999 07 13 | 704 | 0.1- | 0.7- | 2006 05 06 | G96 | 0.0   | 0.4+  | 2007 10 12 | 704 | 0.2+  | 0.9+  |
| 1999 07 13 | 704 | 0.6+ | 0.4- | 2006 05 06 | G96 | 0.1-  | 0.4+  | 2007 10 12 | 704 | 0.2+  | 0.1+  |
| 1999 07 13 | 704 | 0.1- | 0.1+ | 2006 05 06 | G96 | 0.1-  | 0.4+  | 2007 10 12 | 704 | 0.8+  | 0.9+  |
| 2003 08 28 | 704 | 0.4- | 0.1- | 2006 05 22 | G96 | 0.0   | 0.0   | 2007 10 12 | 704 | 0.3+  | 0.1+  |
| 2003 08 28 | 704 | 1.2+ | 0.7+ | 2006 05 22 | G96 | 0.3+  | 0.2-  | 2007 10 12 | 704 | 0.4+  | 0.2+  |
| 2003 08 28 | 704 | 0.1+ | 1.2+ | 2006 05 22 | G96 | 0.3-  | 0.0   | 2007 10 12 | 704 | 0.3-  | 0.4-  |
| 2003 09 02 | 704 | 0.3- | 0.6- | 2006 05 22 | G96 | 0.2+  | 0.2+  | 2007 10 13 | 703 | 1.3-  | 0.3+  |
| 2003 09 02 | 704 | 0.3- | 0.2+ | 2007 09 15 | 699 | 0.0   | 1.4-  | 2007 10 13 | 703 | 1.3-  | 0.3+  |
| 2003 09 02 | 704 | 0.0  | 0.3- | 2007 09 15 | 699 | 0.0   | 0.1-  | 2007 10 13 | 703 | 0.9-  | 0.0   |
| 2003 09 02 | 704 | 0.3+ | 0.6+ | 2007 09 15 | 691 | 0.4-  | 0.0   | 2007 10 13 | 703 | 0.4-  | 0.1+  |
| 2003 09 02 | 704 | 0.5- | 0.0  | 2007 09 15 | 699 | 1.3+  | 0.4+  | 2007 10 15 | 704 | (0.1- | 2.8+) |
| 2003 09 18 | 704 | 0.4+ | 0.8+ | 2007 09 15 | 691 | 0.7-  | 0.5-  | 2007 10 15 | 704 | 0.0   | 0.5+  |
| 2003 09 18 | 704 | 0.5- | 0.3- | 2007 09 15 | 691 | 0.3-  | 0.1+  | 2007 10 15 | 704 | 0.3-  | 1.5+  |
| 2003 09 18 | 704 | 0.4+ | 0.3+ | 2007 09 15 | 699 | 0.1-  | 0.6+  | 2007 10 15 | 704 | 1.2+  | 0.3+  |
| 2003 09 18 | 704 | 0.4- | 0.0  | 2007 09 24 | 691 | 0.2-  | 0.1-  | 2007 10 16 | G96 | 0.2-  | 0.2-  |
| 2003 09 21 | 608 | 0.9+ | 1.2- | 2007 09 24 | 691 | 0.4-  | 0.1+  | 2007 10 16 | G96 | 0.0   | 0.2-  |
| 2003 09 21 | 608 | 0.7+ | 0.8- | 2007 09 24 | 691 | 0.3-  | 0.0   | 2007 10 16 | G96 | 0.0   | 0.3-  |
| 2003 09 21 | 608 | 0.9+ | 0.4- | 2007 10 07 | 703 | (1.1+ | 2.0-) | 2007 10 16 | G96 | 0.1+  | 0.2-  |
| 2003 09 23 | 644 | 0.6- | 0.3+ | 2007 10 07 | 703 | 0.3-  | 0.1+  | 2007 10 20 | 703 | 0.1-  | 1.0+  |
| 2003 09 23 | 644 | 0.7- | 0.2+ | 2007 10 07 | 703 | 0.5+  | 0.8+  | 2007 10 20 | 703 | 0.3+  | 0.8+  |
| 2003 09 23 | 644 | 0.6- | 0.3+ | 2007 10 07 | 703 | 0.8+  | 0.2+  | 2007 10 20 | 703 | 0.7+  | 1.2+  |
| 2003 09 27 | 699 | 1.1+ | 0.3- | 2007 10 09 | 704 | 0.1-  | 0.1-  | 2007 10 20 | 703 | 0.0   | 0.0   |
| 2003 09 27 | 704 | 1.1- | 0.2- | 2007 10 09 | 704 | 0.9+  | 0.7+  | 2007 12 06 | G96 | 0.2+  | 0.0   |
| 2003 09 27 | 699 | 0.9- | 1.4+ | 2007 10 09 | 704 | 0.9+  | 0.8+  | 2007 12 06 | G96 | 0.4-  | 0.5-  |
| 2003 09 27 | 704 | 0.3- | 0.5+ | 2007 10 09 | 704 | 0.1+  | 0.7+  | 2007 12 06 | G96 | 0.4-  | 0.2-  |
| 2003 09 27 | 699 | 1.1- | 0.0  | 2007 10 09 | 699 | 0.5+  | 0.4-  | 2007 12 06 | G96 | 0.2+  | 0.3-  |
| 2003 09 27 | 704 | 0.5- | 0.1- | 2007 10 09 | 704 | 0.7+  | 0.1+  | 2007 12 13 | 701 | 1.2-  | 0.4-  |
| 2003 09 27 | 699 | 0.6+ | 0.5- | 2007 10 09 | 699 | 0.1+  | 0.0   | 2007 12 13 | 701 | 1.6+  | 1.0+  |
| 2003 09 27 | 704 | 0.2+ | 0.2- | 2007 10 09 | 699 | 0.2-  | 0.1+  | 2007 12 13 | 701 | 0.4+  | 0.8-  |
| 2003 09 27 | 704 | 0.8+ | 0.3+ | 2007 10 09 | 699 | 0.2+  | 0.4-  |            |     |       |       |

**(172508)\* 2003 SU<sub>212</sub> = 1998 HD<sub>31</sub>**

Discovered 2003 Sept. 25 by NEAT at Haleakala.

Id. A. Doppler (*MPO* 69559)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 344.03273  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.25790750 | $\omega$ | 333.76549 | +0.57989386   |
| <i>a</i> | 2.4443313  | $\Omega$ | 80.41551  | +0.77220576   |
| <i>e</i> | 0.2344765  | <i>i</i> | 8.97173   | +0.25965628   |
| <i>P</i> | 3.82       | <i>H</i> | 16.3      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 2    |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 04 22 | 691 | 0.4-  | 0.7+  | 2003 10 24 | 699 | 0.2+ | 0.3+ | 2007 10 19 | 703 | 0.6-  | 0.1-  |
| 1998 04 22 | 691 | 0.1+  | 0.4+  | 2003 10 24 | 699 | 0.5- | 1.1- | 2007 10 19 | 703 | 0.1+  | 0.2-  |
| 1998 04 22 | 691 | 0.1-  | 0.5+  | 2003 10 24 | 699 | 0.5- | 0.2- | 2007 10 19 | 703 | 0.3-  | 0.1+  |
| 1998 04 30 | 691 | 0.4+  | 0.7+  | 2005 03 16 | 703 | 0.3- | 0.2+ | 2007 10 19 | 703 | 0.1-  | 0.2+  |
| 1998 04 30 | 691 | 0.1+  | 0.5-  | 2005 03 16 | 703 | 0.3+ | 1.0- | 2007 11 02 | 703 | 0.2-  | 0.1-  |
| 1998 04 30 | 691 | 0.6+  | 0.7+  | 2005 03 16 | 703 | 0.0  | 0.4- | 2007 11 02 | 703 | 0.1-  | 0.2+  |
| 2003 08 21 | 608 | 0.1+  | 0.8+  | 2005 03 16 | 703 | 0.4+ | 0.6+ | 2007 11 02 | 703 | 0.0   | 0.3-  |
| 2003 08 21 | 608 | 0.1-  | 0.5+  | 2007 10 08 | 699 | 0.3+ | 0.5- | 2007 11 02 | 703 | 1.0-  | 0.4+  |
| 2003 08 21 | 608 | 0.2+  | 0.3-  | 2007 10 08 | 699 | 0.1- | 0.5- | 2007 11 11 | 703 | 0.5-  | 0.5+  |
| 2003 08 31 | 704 | 0.6+  | 0.1-  | 2007 10 08 | 699 | 0.5+ | 0.3- | 2007 11 11 | 703 | 0.0   | 0.0   |
| 2003 08 31 | 704 | 0.0   | 0.1+  | 2007 10 10 | 703 | 0.4+ | 0.6+ | 2007 11 11 | 703 | 0.2-  | 0.4+  |
| 2003 08 31 | 704 | 1.3-  | 1.0+  | 2007 10 10 | 703 | 0.6+ | 0.4+ | 2007 11 11 | 703 | 0.9-  | 0.1+  |
| 2003 08 31 | 704 | 0.5-  | 0.4+  | 2007 10 10 | 703 | 0.4+ | 0.0  | 2007 11 17 | 703 | 0.4+  | 0.4-  |
| 2003 09 03 | 608 | 0.2+  | 0.1+  | 2007 10 10 | 703 | 0.7+ | 0.0  | 2007 11 17 | 703 | 0.3+  | 0.0   |
| 2003 09 03 | 608 | 1.0+  | 0.2-  | 2007 10 10 | 703 | 0.5- | 0.2- | 2007 11 17 | 703 | 0.2+  | 0.0   |
| 2003 09 03 | 608 | 0.3+  | 0.6+  | 2007 10 10 | 703 | 0.3+ | 0.0  | 2007 11 17 | 703 | 0.3-  | 0.2-  |
| 2003 09 25 | 644 | 0.3-  | 0.1-  | 2007 10 10 | 703 | 1.2+ | 0.2- | 2007 11 29 | 704 | 0.5-  | 0.5+  |
| 2003 09 25 | 644 | 0.1+  | 0.5-  | 2007 10 10 | 703 | 1.0+ | 0.2- | 2007 11 29 | 704 | 1.3-  | 0.6+  |
| 2003 09 25 | 644 | 0.0   | 0.7-  | 2007 10 15 | 703 | 0.5+ | 0.1+ | 2007 11 29 | 704 | 0.2-  | 0.5+  |
| 2003 09 25 | 608 | 0.8+  | 0.7-  | 2007 10 15 | 703 | 0.2- | 0.2- | 2007 11 29 | 704 | (0.6- | 1.7+) |
| 2003 09 25 | 608 | 0.6+  | 1.2-  | 2007 10 15 | 703 | 0.4- | 0.3- | 2007 11 29 | 704 | 0.7-  | 0.6+  |
| 2003 09 25 | 608 | 0.6+  | 0.6-  | 2007 10 15 | 703 | 0.1+ | 0.0  | 2007 12 03 | 704 | 0.0   | 0.5+  |
| 2003 09 27 | 699 | (1.6- | 0.8-) | 2007 10 17 | 699 | 0.0  | 0.2- | 2007 12 03 | 704 | 1.2-  | 1.5+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 699 | 0.5-  | 0.4+  | 2007 10 17 | 699 | 0.3+ | 0.4- | 2007 12 03 | 704 | 0.5- | 0.5+ |
| 2003 09 27 | 699 | 0.8+  | 0.3+  | 2007 10 17 | 699 | 0.4+ | 0.5- | 2007 12 03 | 704 | 0.9- | 0.8+ |
| 2003 09 27 | 699 | 1.0-  | 0.9+  | 2007 10 18 | 704 | 0.7- | 0.3+ | 2007 12 06 | 703 | 0.5+ | 1.9+ |
| 2003 10 02 | 608 | (1.7+ | 0.6-) | 2007 10 18 | 704 | 0.1- | 0.5- | 2007 12 06 | 703 | 0.3+ | 0.7+ |
| 2003 10 02 | 608 | (2.2+ | 0.7-) | 2007 10 18 | 704 | 0.6- | 0.5+ | 2007 12 06 | 703 | 0.6+ | 0.8+ |
| 2003 10 02 | 608 | (1.9+ | 0.4-) | 2007 10 18 | 704 | 0.3- | 0.5- | 2007 12 06 | 703 | 0.1- | 0.4+ |
| 2003 10 24 | 699 | 0.5-  | 0.3+  | 2007 10 18 | 704 | 0.3- | 0.5+ |            |     |      |      |

**(172509)\* 2003 SS<sub>218</sub>**

Discovered 2003 Sept. 28 by W. K. Y. Yeung at Desert Eagle Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 114.04897  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.22207106 | $\omega$ | 30.85400  | -0.26858759   |
| <i>a</i> | 2.7006901  | $\Omega$ | 224.14618 | -0.92437382   |
| <i>e</i> | 0.0743231  | <i>i</i> | 13.43270  | -0.27091281   |
| <i>P</i> | 4.44       | <i>H</i> | 16.1      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 11 28 | 691 | 0.4- | 0.3- | 2002 08 31 | 644 | 0.2+ | 0.3+ | 2003 11 15 | 691 | 0.2+ | 0.0  |
| 1994 11 28 | 691 | 0.3+ | 0.7- | 2002 08 31 | 644 | 0.1+ | 0.3+ | 2006 06 18 | 644 | 0.5+ | 0.1- |
| 1994 11 28 | 691 | 0.2+ | 0.3- | 2002 08 31 | 644 | 0.3+ | 0.8+ | 2006 06 18 | 644 | 0.6- | 0.1+ |
| 2001 03 20 | 608 | 0.0  | 0.9- | 2002 09 05 | 645 | 0.0  | 0.2- | 2006 06 18 | 644 | 0.4- | 0.2+ |
| 2001 03 20 | 608 | 0.1+ | 0.6- | 2002 09 05 | 645 | 0.0  | 0.2- | 2007 09 12 | 703 | 1.4- | 0.3+ |
| 2001 03 20 | 608 | 0.2- | 0.3- | 2003 09 28 | 333 | 0.2- | 0.4- | 2007 09 12 | 703 | 0.1- | 1.1+ |
| 2002 07 09 | 644 | 0.1+ | 0.4+ | 2003 09 28 | 333 | 0.0  | 0.6- | 2007 09 12 | 703 | 0.3+ | 1.3+ |
| 2002 07 09 | 644 | 0.3+ | 0.3+ | 2003 09 28 | 333 | 0.6- | 0.7- | 2007 09 12 | 703 | 0.4+ | 1.1+ |
| 2002 07 09 | 644 | 0.2+ | 0.5+ | 2003 09 29 | 333 | 0.1- | 0.4- | 2007 10 08 | 703 | 0.0  | 0.9+ |
| 2002 07 19 | 644 | 0.2+ | 0.6+ | 2003 09 29 | 333 | 0.7- | 0.1+ | 2007 10 08 | 703 | 1.0+ | 0.5+ |
| 2002 07 19 | 644 | 0.0  | 0.4+ | 2003 09 29 | 333 | 0.2+ | 0.5- | 2007 10 08 | 703 | 0.2- | 0.8- |
| 2002 07 19 | 644 | 0.1+ | 0.4+ | 2003 10 20 | 691 | 0.1- | 0.2+ | 2007 10 08 | 703 | 0.2+ | 1.2+ |
| 2002 08 12 | 704 | 0.4- | 0.7+ | 2003 10 20 | 691 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.2+ | 1.4- |
| 2002 08 12 | 704 | 0.7+ | 0.9- | 2003 10 20 | 691 | 0.1- | 0.2+ | 2007 12 15 | G96 | 0.1+ | 1.1- |
| 2002 08 12 | 704 | 0.1- | 0.5- | 2003 11 15 | 691 | 0.0  | 0.5+ | 2007 12 15 | G96 | 0.5- | 0.3- |
| 2002 08 12 | 704 | 0.2- | 0.3- | 2003 11 15 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.1- | 0.1- |

**(172510)\* 2003 ST<sub>224</sub>**

Discovered 2003 Sept. 28 by R. A. Tucker at the Goodricke-Pigott

Observatory, Tucson.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.65237   | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.26818457 | $\omega$ | 263.09062 | +0.87308719   |
| <i>a</i> | 2.3814796  | $\Omega$ | 68.23168  | -0.40087317   |
| <i>e</i> | 0.1652005  | <i>i</i> | 5.50088   | -0.27752380   |
| <i>P</i> | 3.68       | <i>H</i> | 16.6      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 10 01 | 691 | 0.3-  | 0.3-  | 2003 10 20 | 704 | 0.3+  | 1.2+  | 2006 05 20 | E12 | 0.3-  | 0.0   |
| 1992 10 01 | 691 | 0.0   | 0.1+  | 2003 10 22 | 645 | 0.0   | 0.2-  | 2006 05 24 | 644 | 0.1-  | 0.4+  |
| 1992 10 01 | 691 | 0.0   | 0.2+  | 2003 10 22 | 645 | 0.0   | 0.2-  | 2006 05 24 | 644 | 0.5+  | 0.3+  |
| 2002 04 16 | 704 | 0.0   | 0.2-  | 2003 10 22 | 608 | 0.6-  | 0.7-  | 2006 05 24 | 644 | 0.4+  | 0.4+  |
| 2002 04 16 | 704 | 0.7+  | 0.2+  | 2003 10 22 | 608 | 0.1-  | 0.9-  | 2006 06 04 | 704 | 0.3+  | 0.6+  |
| 2002 04 16 | 704 | 0.8+  | 0.9+  | 2003 10 22 | 608 | 0.0   | 0.4+  | 2006 06 04 | 704 | 0.6-  | 0.3+  |
| 2003 09 27 | 683 | 0.1+  | 1.3-  | 2003 10 23 | 735 | 0.0   | 0.2+  | 2006 06 04 | 704 | 0.1-  | 1.0-  |
| 2003 09 27 | 683 | 1.4+  | 0.6+  | 2003 10 23 | 735 | 0.6-  | 0.5+  | 2006 07 16 | F84 | 0.1-  | 0.0   |
| 2003 09 27 | 683 | 0.0   | 1.2-  | 2003 10 23 | 735 | (1.9- | 0.5+) | 2006 07 16 | F84 | 0.2-  | 0.3+  |
| 2003 09 28 | 704 | (1.6- | 1.2+) | 2003 10 23 | 691 | 0.0   | 0.3+  | 2007 11 05 | 704 | 0.2+  | 0.7+  |
| 2003 09 28 | 704 | 0.1+  | 0.8+  | 2003 10 23 | 691 | 0.0   | 0.4+  | 2007 11 05 | 704 | 0.1+  | 0.4-  |
| 2003 09 28 | 704 | 0.7+  | 0.7+  | 2003 10 23 | 691 | 0.1-  | 0.3+  | 2007 11 05 | 704 | 0.3-  | 0.2+  |
| 2003 09 28 | 704 | 0.0   | 0.0   | 2003 10 24 | 735 | 0.1-  | 0.7+  | 2007 11 05 | 704 | 0.3+  | 0.8+  |
| 2003 09 28 | 704 | 0.5+  | 0.8+  | 2003 10 24 | 735 | 0.0   | 0.8+  | 2007 11 14 | 691 | 0.2-  | 0.3-  |
| 2003 09 28 | 683 | 0.0   | 0.7-  | 2003 10 24 | 735 | 0.4+  | 0.6+  | 2007 11 14 | 691 | 0.4-  | 0.3-  |
| 2003 09 28 | 683 | 0.5-  | 0.3-  | 2003 10 24 | 645 | 0.0   | 0.2-  | 2007 11 14 | 691 | (0.2+ | 3.1-) |
| 2003 09 28 | 683 | (1.6- | 1.1-) | 2003 10 24 | 645 | 0.0   | 0.2-  | 2007 11 19 | 691 | 0.3-  | 0.2-  |
| 2003 09 30 | 683 | 0.9+  | 0.3+  | 2003 10 27 | 704 | 0.5+  | 0.5+  | 2007 11 19 | 691 | 0.3-  | 0.2-  |
| 2003 09 30 | 683 | 1.4-  | 0.1+  | 2003 10 27 | 704 | 0.5+  | 0.8+  | 2007 11 19 | 691 | 0.2-  | 0.0   |



## 2007 DEC. 24

M.P.O. 129395

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 30 | 683 | 0.3+  | 1.0+  | 2003 10 27 | 704 | 0.4+ | 0.6+ | 2007 12 04 | G96 | 0.5- | 0.2+ |
| 2003 10 02 | 683 | 1.5-  | 0.1+  | 2003 10 27 | 704 | 0.5+ | 0.9+ | 2007 12 04 | G96 | 0.3+ | 0.6+ |
| 2003 10 02 | 683 | (3.1- | 1.5+) | 2003 10 27 | 704 | 0.6+ | 0.8+ | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2003 10 02 | 683 | (2.4- | 0.8-) | 2003 10 29 | 699 | 0.7- | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.1- |
| 2003 10 04 | 683 | 0.4+  | 0.2+  | 2003 10 29 | 699 | 0.1+ | 0.5- | 2007 12 05 | 704 | 1.0+ | 0.6+ |
| 2003 10 04 | 683 | 0.3-  | 1.2+  | 2003 10 29 | 699 | 0.5+ | 0.5- | 2007 12 05 | 704 | 0.5+ | 0.1+ |
| 2003 10 04 | 683 | 0.8+  | 0.5+  | 2003 10 29 | 699 | 0.7+ | 1.5+ | 2007 12 05 | 704 | 0.2+ | 0.5+ |
| 2003 10 15 | 699 | (2.1- | 0.6-) | 2005 02 09 | G96 | 0.4+ | 0.5- | 2007 12 14 | 704 | 1.0- | 1.1+ |
| 2003 10 15 | 699 | (1.3- | 1.6+) | 2005 02 09 | G96 | 0.4+ | 0.6- | 2007 12 14 | 704 | 0.1- | 0.8+ |
| 2003 10 15 | 699 | 0.4-  | 0.0   | 2005 02 09 | G96 | 0.0  | 0.5- | 2007 12 14 | 704 | 1.1+ | 2.7+ |
| 2003 10 15 | 699 | 0.3+  | 0.1-  | 2005 02 09 | G96 | 0.3+ | 0.4- | 2007 12 14 | 704 | 0.0  | 0.2- |
| 2003 10 16 | 644 | 0.2-  | 0.3+  | 2006 05 20 | G96 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 0.6- | 0.7+ |
| 2003 10 16 | 644 | 0.0   | 0.2+  | 2006 05 20 | G96 | 0.3- | 0.3+ | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2003 10 16 | 644 | 0.0   | 0.3+  | 2006 05 20 | G96 | 0.1- | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.1- |
| 2003 10 20 | 704 | 0.2+  | 1.0+  | 2006 05 20 | G96 | 0.1+ | 0.4+ | 2007 12 15 | G96 | 0.3- | 0.1+ |
| 2003 10 20 | 704 | 0.2+  | 0.4+  | 2006 05 20 | E12 | 0.4- | 0.5+ | 2007 12 15 | G96 | 0.1- | 0.1- |
| 2003 10 20 | 704 | 0.6+  | 0.8+  | 2006 05 20 | E12 | 0.1- | 0.2+ |            |     |      |      |
| 2003 10 20 | 704 | 0.0   | 0.5+  | 2006 05 20 | E12 | 0.0  | 0.2- |            |     |      |      |

(172511)\* 2003 SZ<sub>224</sub>

Discovered 2003 Sept. 25 by NEAT at Haleakala.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 357.56356  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.26178449 | $\omega$ | 251.11342 | +0.46641516 | -0.88448567 |          |   |
| <i>a</i>                                | 2.4201379  | $\Omega$ | 171.05670 | +0.83768995 | +0.43733111 |          |   |
| <i>e</i>                                | 0.1103107  | <i>i</i> | 4.39617   | +0.28413455 | +0.16256258 |          |   |
| <i>P</i>                                | 3.76       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 07 03 | 691 | 0.4-  | 0.1-  | 2003 09 28 | 691 | 0.2+ | 0.2+ | 2005 03 01 | 691 | 0.5+  | 0.1-  |
| 1995 07 03 | 691 | 0.1-  | 0.5-  | 2003 09 28 | 691 | 0.1+ | 0.1+ | 2005 03 01 | 691 | 0.1+  | 0.0   |
| 1995 07 03 | 691 | 0.2-  | 0.1-  | 2003 10 06 | 608 | 0.0  | 0.4- | 2005 03 12 | 691 | 0.0   | 0.0   |
| 1998 06 29 | 691 | 0.3-  | 0.6+  | 2003 10 06 | 608 | 0.3- | 0.3- | 2005 03 12 | 691 | 0.4+  | 0.0   |
| 1998 06 29 | 691 | (2.0- | 4.2+) | 2003 10 06 | 608 | 0.3- | 0.8- | 2005 03 12 | 691 | 0.4+  | 0.0   |
| 1998 06 29 | 691 | 0.3-  | 0.2+  | 2003 10 21 | 704 | 0.3- | 0.2+ | 2005 03 16 | 691 | 0.2+  | 0.2+  |
| 1999 09 05 | 691 | 0.0   | 0.0   | 2003 10 21 | 704 | 0.2+ | 0.1+ | 2005 03 16 | 691 | 0.2+  | 0.1+  |
| 1999 09 05 | 691 | 0.1+  | 0.2-  | 2003 10 21 | 704 | 0.3- | 0.1+ | 2005 03 16 | 691 | 0.1+  | 0.2+  |
| 1999 09 05 | 691 | 0.1-  | 0.2-  | 2003 10 21 | 704 | 0.3+ | 0.9+ | 2005 04 04 | 703 | 0.3-  | 0.6+  |
| 1999 09 18 | 691 | 0.4+  | 0.2+  | 2003 10 21 | 704 | 0.0  | 0.7+ | 2005 04 04 | G96 | 0.1-  | 0.1-  |
| 1999 09 18 | 691 | 0.3+  | 0.3+  | 2003 10 21 | 644 | 0.2- | 0.3+ | 2005 04 04 | 703 | (1.8- | 0.9+) |
| 1999 09 18 | 691 | 0.4+  | 0.4+  | 2003 10 21 | 644 | 0.3- | 0.2+ | 2005 04 04 | G96 | 0.2-  | 0.1-  |
| 1999 10 08 | 704 | 0.6+  | 0.1-  | 2003 10 21 | 644 | 0.2- | 0.2+ | 2005 04 04 | 703 | 1.1-  | 0.7+  |
| 1999 10 08 | 704 | 0.2-  | 1.6+  | 2003 10 22 | 704 | 0.0  | 0.3- | 2005 04 04 | G96 | 0.5-  | 0.2+  |
| 1999 10 08 | 704 | 0.4+  | 1.1+  | 2003 10 22 | 704 | 0.4- | 0.4+ | 2005 04 04 | G96 | 0.2-  | 0.1-  |
| 2003 09 20 | 699 | 0.2-  | 0.3+  | 2003 10 22 | 704 | 0.5+ | 0.2+ | 2005 04 04 | 703 | 0.5-  | 0.2-  |
| 2003 09 20 | 699 | 0.0   | 0.4+  | 2003 10 25 | 704 | 1.1+ | 0.1+ | 2005 04 09 | G96 | 0.2-  | 0.2+  |
| 2003 09 20 | 699 | 0.2-  | 0.8+  | 2003 10 25 | 704 | 0.6+ | 0.5+ | 2005 04 09 | G96 | 0.3-  | 0.1+  |
| 2003 09 20 | 699 | 0.4-  | 0.2+  | 2003 10 25 | 704 | 0.5+ | 0.5+ | 2005 04 09 | G96 | 0.3-  | 0.9-  |
| 2003 09 25 | 608 | 0.2-  | 0.4-  | 2003 10 28 | 608 | 0.5- | 0.1+ | 2005 04 09 | G96 | 0.1-  | 0.1+  |
| 2003 09 25 | 608 | 0.2-  | 0.5-  | 2003 10 28 | 608 | 0.1- | 0.1- | 2007 11 13 | G96 | 0.2-  | 0.3-  |
| 2003 09 25 | 608 | 0.6-  | 0.3+  | 2003 10 28 | 608 | 0.0  | 0.2- | 2007 11 13 | G96 | 0.1+  | 0.3-  |
| 2003 09 26 | 704 | (1.5- | 0.6-) | 2003 10 29 | 704 | 0.1- | 0.1+ | 2007 11 13 | G96 | 0.2-  | 0.3-  |
| 2003 09 26 | 704 | 0.4+  | 0.4-  | 2003 10 29 | 704 | 1.1- | 0.8+ | 2007 11 13 | G96 | 0.2+  | 0.3-  |
| 2003 09 26 | 704 | 0.3-  | 0.6+  | 2003 10 29 | 704 | 1.0- | 0.0  | 2007 12 05 | 699 | 0.1-  | 0.2+  |
| 2003 09 26 | 704 | 0.2-  | 0.0   | 2003 11 18 | 699 | 0.0  | 0.8+ | 2007 12 05 | 699 | 0.5-  | 0.3-  |
| 2003 09 28 | 291 | 0.1+  | 0.3+  | 2003 11 18 | 699 | 0.3+ | 0.7- | 2007 12 05 | 699 | 0.7-  | 0.2-  |
| 2003 09 28 | 291 | 0.1+  | 0.1+  | 2003 11 18 | 699 | 0.0  | 0.3- | 2007 12 05 | 699 | 0.2-  | 0.1-  |
| 2003 09 28 | 291 | 0.5-  | 1.1-  | 2003 11 18 | 699 | 0.4- | 0.1+ |            |     |       |       |
| 2003 09 28 | 691 | 0.2+  | 0.1+  | 2005 03 01 | 691 | 0.2+ | 0.0  |            |     |       |       |

(172512)\* 2003 SN<sub>231</sub>

Discovered 2003 Sept. 24 by NEAT at Palomar.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 96.55820   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.27467516 | $\omega$ | 251.35107 | +0.54275373 | +0.83696103 |          |   |
| <i>a</i>                                | 2.3438139  | $\Omega$ | 51.72319  | -0.73300823 | +0.51277840 |          |   |
| <i>e</i>                                | 0.1112167  | <i>i</i> | 5.12344   | -0.41002112 | +0.19119242 |          |   |
| <i>P</i>                                | 3.59       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 13 | 644 | 0.7+  | 1.0+  | 2006 06 22 | 644 | 1.2- | 0.2+ | 2007 11 05 | D29 | 0.0   | 0.1+  |
| 2002 04 13 | 644 | 0.1+  | 0.8+  | 2006 06 22 | 644 | 0.2+ | 0.6+ | 2007 11 05 | D29 | 0.6+  | 0.5-  |
| 2002 04 13 | 644 | 0.6+  | 0.8+  | 2006 06 22 | 644 | 0.4+ | 0.6+ | 2007 11 15 | 704 | 0.2+  | 0.5+  |
| 2003 09 24 | 644 | 0.1-  | 0.0   | 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 11 15 | 704 | (0.8- | 1.8-) |
| 2003 09 24 | 644 | 0.2+  | 0.3+  | 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.8-  | 0.6-  |
| 2003 09 24 | 644 | 0.2+  | 0.4+  | 2007 09 10 | G96 | 0.2+ | 0.1- | 2007 11 15 | 704 | 0.1-  | 0.3-  |
| 2003 09 28 | 704 | 0.3-  | 0.2+  | 2007 09 10 | G96 | 0.2+ | 0.1- | 2007 11 15 | 704 | 0.6-  | 0.7+  |
| 2003 09 28 | 704 | 1.1+  | 1.0+  | 2007 10 09 | G96 | 0.6+ | 0.2- | 2007 11 18 | 691 | 0.0   | 0.0   |
| 2003 09 28 | 704 | 0.1+  | 0.7+  | 2007 10 09 | G96 | 0.3+ | 0.4- | 2007 11 18 | 691 | 0.1-  | 0.1+  |
| 2003 09 28 | 704 | 0.3+  | 0.3+  | 2007 10 09 | G96 | 0.7+ | 0.3- | 2007 11 18 | 691 | 0.3-  | 0.1+  |
| 2003 09 28 | 704 | 0.5-  | 0.2-  | 2007 10 09 | G96 | 0.5+ | 0.2- | 2007 12 03 | 703 | 1.0-  | 0.1+  |
| 2003 09 28 | 608 | 0.6-  | 0.1-  | 2007 10 17 | G96 | 0.6+ | 0.3- | 2007 12 03 | 703 | 0.6+  | 0.2+  |
| 2003 09 28 | 608 | 0.1-  | 0.5-  | 2007 10 17 | G96 | 0.3+ | 0.3- | 2007 12 03 | 703 | 0.4-  | 0.7-  |
| 2003 09 28 | 608 | 0.2-  | 0.9-  | 2007 10 17 | G96 | 0.6+ | 0.2- | 2007 12 03 | 703 | 0.2+  | 0.1-  |
| 2003 10 16 | 699 | 0.8-  | 0.2-  | 2007 10 17 | G96 | 0.3+ | 0.0  | 2007 12 05 | H07 | 0.5+  | 0.7-  |
| 2003 10 16 | 699 | 0.6+  | 1.0+  | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 05 | H07 | 0.2-  | 0.2+  |
| 2003 10 16 | 699 | (0.5+ | 1.7-) | 2007 10 30 | 691 | 0.4- | 0.1- | 2007 12 05 | H07 | 0.3-  | 1.0+  |
| 2003 10 16 | 699 | 0.9-  | 0.0   | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.1+  | 0.1-  |
| 2006 05 29 | 428 | 1.4+  | 0.8+  | 2007 11 03 | 691 | 0.2- | 0.1- | 2007 12 06 | G96 | 0.3+  | 0.1-  |
| 2006 05 29 | 428 | 0.1-  | 0.2-  | 2007 11 03 | 691 | 0.1- | 0.2+ | 2007 12 06 | G96 | 0.6+  | 0.1+  |
| 2006 06 01 | 428 | (0.2+ | 1.5-) | 2007 11 03 | 691 | 0.2+ | 0.8+ | 2007 12 06 | G96 | 0.3+  | 0.4-  |
| 2006 06 01 | 428 | 0.1+  | 1.4-  | 2007 11 05 | D29 | 0.6+ | 0.1+ |            |     |       |       |
| 2006 06 01 | 428 | 0.6-  | 0.1+  | 2007 11 05 | D29 | 0.3+ | 0.4- |            |     |       |       |

(172513)\* 2003 SU<sub>241</sub> = 2005 GN<sub>89</sub>

Discovered 2003 Sept. 27 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 76006)

|                                         |            |          |          |             |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
| <i>M</i>                                | 327.43314  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.27126268 | $\omega$ | 31.69714 | -0.26751250 | -0.96338914 |          |   |
| <i>a</i>                                | 2.3634297  | $\Omega$ | 73.82434 | +0.88011523 | -0.25184363 |          |   |
| <i>e</i>                                | 0.1924152  | <i>i</i> | 1.06461  | +0.39221710 | -0.09195730 |          |   |
| <i>P</i>                                | 3.63       | <i>H</i> | 17.7     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 19 | 691 | 0.1-  | 0.0   | 2003 10 24 | 691 | 0.1+ | 0.2+ | 2007 09 15 | G96 | 0.2+ | 0.2- |
| 1996 11 19 | 691 | 0.1-  | 0.1+  | 2003 10 24 | 691 | 0.0  | 0.4+ | 2007 09 15 | G96 | 0.0  | 0.4- |
| 1996 11 19 | 691 | 0.1-  | 0.1-  | 2005 03 09 | G96 | 0.2- | 0.2+ | 2007 11 14 | 691 | 0.0  | 0.2- |
| 2001 02 02 | 704 | 0.2+  | 0.8+  | 2005 03 09 | G96 | 0.0  | 0.2- | 2007 11 14 | 691 | 0.2- | 0.1- |
| 2001 02 02 | 704 | 1.0+  | 0.3+  | 2005 03 09 | G96 | 0.2- | 0.0  | 2007 11 14 | 691 | 0.3- | 0.3- |
| 2001 02 02 | 704 | (1.9+ | 0.3+) | 2005 03 09 | G96 | 0.5- | 0.3- | 2007 11 19 | 691 | 0.0  | 0.4- |
| 2001 02 02 | 704 | 1.0+  | 0.1+  | 2005 04 05 | G96 | 0.2- | 0.1+ | 2007 11 19 | 691 | 0.1+ | 0.2- |
| 2003 09 27 | 691 | 0.2+  | 0.2+  | 2005 04 05 | G96 | 0.0  | 0.6+ | 2007 11 19 | 691 | 0.2- | 0.0  |
| 2003 09 27 | 691 | 0.1+  | 0.1+  | 2005 04 05 | G96 | 0.9- | 0.4- | 2007 12 03 | 703 | 0.4- | 0.1+ |
| 2003 09 27 | 691 | 0.1+  | 0.3+  | 2005 04 05 | G96 | 0.3+ | 0.1+ | 2007 12 03 | 703 | 0.1+ | 0.1- |
| 2003 09 29 | 691 | 0.2+  | 0.3+  | 2005 04 11 | 691 | 0.2+ | 0.4+ | 2007 12 03 | 703 | 0.2+ | 0.0  |
| 2003 09 29 | 691 | 0.1-  | 0.4+  | 2005 04 11 | 691 | 0.4+ | 0.4+ | 2007 12 03 | 703 | 0.8- | 0.5+ |
| 2003 09 29 | 691 | 0.1-  | 0.4+  | 2005 04 11 | 691 | 0.3+ | 0.3+ | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2003 10 18 | 645 | 0.0   | 0.0   | 2005 04 18 | 691 | 0.1- | 0.4+ | 2007 12 05 | 704 | 0.6+ | 0.2- |
| 2003 10 18 | 645 | 0.0   | 0.0   | 2005 04 18 | 691 | 0.1- | 0.4+ | 2007 12 05 | 704 | 0.1+ | 0.3- |
| 2003 10 19 | 645 | 0.0   | 0.1+  | 2005 04 18 | 691 | 0.2+ | 0.1- | 2007 12 05 | 704 | 0.2- | 0.1- |
| 2003 10 19 | 645 | 0.0   | 0.0   | 2005 05 06 | G96 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.5+ | 0.1+ |
| 2003 10 22 | 645 | 0.1-  | 0.0   | 2005 05 06 | G96 | 0.3- | 0.2- | 2007 12 14 | 704 | 0.4+ | 1.3+ |
| 2003 10 22 | 645 | 0.0   | 0.1+  | 2005 05 06 | G96 | 0.4+ | 0.3- | 2007 12 14 | 704 | 0.2+ | 0.9+ |
| 2003 10 24 | 691 | 0.5-  | 0.1+  | 2005 05 06 | G96 | 0.5- | 0.1+ | 2007 12 14 | 704 | 0.3+ | 2.0+ |
| 2003 10 24 | 645 | 0.0   | 0.0   | 2007 09 15 | G96 | 0.0  | 0.2- | 2007 12 14 | 704 | 0.5+ | 0.3+ |
| 2003 10 24 | 645 | 0.1-  | 0.0   | 2007 09 15 | G96 | 0.1+ | 0.5- | 2007 12 14 | 704 | 0.2+ | 0.0  |

**(172514)\* 2003 SV<sub>242</sub> = 2001 FE<sub>188</sub>**

Discovered 2003 Sept. 27 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76006)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.15017  |          | (2000.0) |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.25793405 | $\omega$ | 55.35751 |          | -0.29976872 |          | -0.95325976 |
| <i>a</i> | 2.4441636  | $\Omega$ | 52.13113 |          | +0.85883778 |          | -0.28693629 |
| <i>e</i> | 0.1380538  | <i>i</i> | 2.75005  |          | +0.41537500 |          | -0.09467524 |
| <i>P</i> | 3.82       | <i>H</i> | 17.4     | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 16 | 691 | 0.2+ | 0.0  | 2005 03 12 | 691 | 0.2+ | 0.2+ | 2007 11 11 | G96 | 0.4+ | 0.4- |
| 2001 03 16 | 691 | 0.2+ | 0.3+ | 2005 03 12 | 691 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.5+ | 0.3- |
| 2001 03 16 | 691 | 0.1- | 0.5+ | 2005 04 01 | 691 | 0.1+ | 0.0  | 2007 11 11 | G96 | 0.6+ | 0.3+ |
| 2003 09 27 | 691 | 0.4- | 0.1+ | 2005 04 01 | 691 | 0.3- | 0.0  | 2007 11 11 | G96 | 0.7+ | 0.4- |
| 2003 09 27 | 691 | 0.6- | 0.0  | 2005 04 01 | 691 | 0.2+ | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.1- |
| 2003 09 27 | 691 | 0.1- | 0.1+ | 2007 09 18 | G96 | 0.4- | 0.6- | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2003 09 29 | 691 | 0.0  | 0.0  | 2007 09 18 | G96 | 0.4- | 0.4- | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2003 09 29 | 691 | 0.5+ | 0.0  | 2007 09 18 | G96 | 0.0  | 0.5- | 2007 11 15 | 704 | 0.1- | 1.1+ |
| 2003 09 29 | 691 | 0.2- | 0.1- | 2007 09 18 | G96 | 0.3+ | 0.5- | 2007 11 15 | 704 | 0.5+ | 0.5+ |
| 2003 10 16 | 691 | 0.1+ | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 15 | 704 | 0.2+ | 0.3+ |
| 2003 10 16 | 691 | 0.1- | 0.3+ | 2007 10 30 | 691 | 0.4- | 0.3- | 2007 11 15 | 704 | 0.1- | 0.6+ |
| 2003 10 16 | 691 | 0.1+ | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 0.8- | 0.7+ |
| 2003 10 18 | 691 | 0.3- | 0.3+ | 2007 11 03 | 691 | 0.1+ | 0.1- | 2007 12 05 | 691 | 0.2- | 0.1- |
| 2003 10 18 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 12 05 | 691 | 0.2- | 0.3- |
| 2003 10 18 | 691 | 0.2- | 0.5+ | 2007 11 03 | 691 | 0.2+ | 0.0  | 2007 12 05 | 691 | 0.3+ | 0.4- |
| 2003 10 21 | 644 | 0.0  | 0.5+ | 2007 11 07 | 704 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.8+ | 0.5- |
| 2003 10 21 | 644 | 0.0  | 0.3+ | 2007 11 07 | 704 | 1.2+ | 1.4+ | 2007 12 15 | G96 | 0.4+ | 0.9- |
| 2003 10 21 | 644 | 0.4+ | 0.3+ | 2007 11 07 | 704 | 0.4+ | 0.7- | 2007 12 15 | G96 | 0.8+ | 0.8- |
| 2005 03 12 | 691 | 0.2+ | 0.1+ | 2007 11 07 | 704 | 0.8- | 0.8+ | 2007 12 15 | G96 | 0.3- | 0.2- |

**(172515)\* 2003 SC<sub>247</sub>**

Discovered 2003 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.70893   |          | (2000.0) |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.26292726 | $\omega$ | 1.86800  |          | +0.95058540 |          | -0.31040263 |
| <i>a</i> | 2.4131203  | $\Omega$ | 16.21955 |          | +0.28455899 |          | +0.86320254 |
| <i>e</i> | 0.1820945  | <i>i</i> | 1.25799  |          | +0.12415143 |          | +0.39816025 |
| <i>P</i> | 3.75       | <i>H</i> | 16.4     | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 11 | 691 | 0.1+ | 0.2+ | 2003 10 19 | 691 | 0.0   | 0.1-  | 2005 04 12 | 691 | 0.5+  | 0.4+  |
| 1999 10 11 | 691 | 0.1- | 0.3- | 2003 10 20 | 704 | 0.6-  | 0.0   | 2005 04 12 | 691 | 0.2+  | 0.6+  |
| 1999 10 11 | 691 | 0.5+ | 0.1+ | 2003 10 20 | 704 | 0.9-  | 0.1-  | 2005 04 12 | 691 | 0.3+  | 0.3+  |
| 2001 02 01 | 691 | 0.1+ | 0.1- | 2003 10 20 | 704 | 0.2-  | 0.5-  | 2007 09 14 | G96 | 0.2+  | 0.1-  |
| 2001 02 01 | 691 | 0.1+ | 0.0  | 2003 10 20 | 704 | (1.6- | 0.5+) | 2007 09 14 | G96 | 0.0   | 0.3-  |
| 2001 02 01 | 691 | 0.0  | 0.0  | 2003 10 20 | 704 | 1.4-  | 0.0   | 2007 09 14 | G96 | 0.3+  | 0.1-  |
| 2003 09 17 | 644 | 0.3+ | 0.3+ | 2003 10 21 | 644 | 0.1+  | 0.1+  | 2007 09 14 | G96 | 0.5+  | 0.0   |
| 2003 09 17 | 644 | 0.2+ | 0.2+ | 2003 10 21 | 644 | 0.2-  | 0.0   | 2007 11 06 | 691 | 0.1-  | 0.1-  |
| 2003 09 17 | 644 | 0.2+ | 0.4+ | 2003 10 21 | 644 | 0.0   | 0.1-  | 2007 11 06 | 691 | 0.0   | 0.1-  |
| 2003 09 20 | 704 | 0.3- | 1.2+ | 2003 10 23 | 704 | 0.4-  | 0.2-  | 2007 11 06 | 691 | 0.0   | 0.1-  |
| 2003 09 20 | 704 | 0.4- | 0.8+ | 2003 10 23 | 704 | 0.4-  | 0.5+  | 2007 11 13 | 703 | 0.5+  | 0.7+  |
| 2003 09 20 | 704 | 0.5- | 0.8+ | 2003 10 23 | 704 | 0.4-  | 0.5+  | 2007 11 13 | 703 | 0.3-  | 0.4+  |
| 2003 09 20 | 608 | 0.6- | 0.4+ | 2003 10 23 | 704 | 0.0   | 0.5+  | 2007 11 13 | 703 | 0.1+  | 0.0   |
| 2003 09 20 | 704 | 0.4- | 1.1+ | 2003 10 23 | 704 | 0.4-  | 0.6-  | 2007 11 15 | 704 | 0.7-  | 0.0   |
| 2003 09 20 | 608 | 0.2- | 0.8+ | 2003 10 28 | 704 | 0.1+  | 0.2+  | 2007 11 15 | 704 | 1.0+  | 0.1+  |
| 2003 09 20 | 704 | 0.5- | 1.0+ | 2003 10 28 | 704 | 0.4-  | 0.5+  | 2007 11 15 | 704 | 0.7-  | 0.0   |
| 2003 09 20 | 608 | 0.5- | 0.5+ | 2003 10 28 | 704 | 0.3-  | 0.4-  | 2007 11 15 | 704 | (2.5+ | 0.6+) |
| 2003 09 26 | 704 | 0.2+ | 0.2- | 2003 10 28 | 704 | 0.3-  | 0.2+  | 2007 11 15 | 704 | 0.4+  | 0.5-  |
| 2003 09 26 | 704 | 0.4+ | 0.6+ | 2003 10 28 | 704 | 0.7-  | 0.3+  | 2007 11 15 | 704 | 0.9+  | 0.3-  |
| 2003 09 26 | 704 | 0.0  | 0.4+ | 2005 03 03 | 691 | 0.2-  | 0.4+  | 2007 11 17 | 691 | 0.0   | 0.1-  |
| 2003 09 29 | 704 | 0.8+ | 0.1+ | 2005 03 03 | 691 | 0.2+  | 0.1-  | 2007 11 17 | 691 | 0.0   | 0.1-  |
| 2003 09 29 | 704 | 0.7+ | 0.0  | 2005 03 03 | 691 | 0.1-  | 0.5+  | 2007 11 17 | 691 | 0.5-  | 0.9-  |
| 2003 09 29 | 704 | 0.7+ | 0.4+ | 2005 03 04 | G96 | 0.5-  | 0.0   | 2007 12 10 | 704 | 0.7+  | 0.0   |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 29 | 704 | 0.7+ | 0.2- | 2005 03 04 | G96 | 0.5- | 0.0  | 2007 12 10 | 704 | 0.7+ | 0.2+ |
| 2003 09 29 | 704 | 0.6+ | 0.0  | 2005 03 04 | G96 | 0.3- | 0.1- | 2007 12 10 | 704 | 0.1+ | 0.2+ |
| 2003 09 30 | 691 | 0.2- | 0.0  | 2005 03 04 | G96 | 0.3- | 0.0  | 2007 12 10 | 704 | 0.3- | 0.8- |
| 2003 09 30 | 691 | 0.1+ | 0.1+ | 2005 03 10 | G96 | 0.2- | 0.1+ | 2007 12 14 | 704 | 0.8+ | 1.1+ |
| 2003 09 30 | 691 | 0.0  | 0.1+ | 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 12 14 | 704 | 0.3- | 0.8+ |
| 2003 10 15 | 699 | 0.3- | 0.5- | 2005 03 10 | G96 | 0.2- | 0.2+ | 2007 12 14 | 704 | 0.5- | 0.1+ |
| 2003 10 15 | 699 | 0.3+ | 0.0  | 2005 03 10 | G96 | 0.2- | 0.1- | 2007 12 14 | 704 | 0.3- | 0.5+ |
| 2003 10 15 | 699 | 0.2+ | 0.8- | 2005 04 04 | 691 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.3+ | 0.2- |
| 2003 10 15 | 699 | 0.1- | 0.4+ | 2005 04 04 | 691 | 0.4+ | 0.5+ | 2007 12 15 | G96 | 0.8+ | 0.6- |
| 2003 10 15 | 644 | 0.2- | 0.0  | 2005 04 04 | 691 | 0.2+ | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.1- |
| 2003 10 15 | 644 | 0.0  | 0.2- | 2005 04 04 | G96 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.5+ | 0.1- |
| 2003 10 15 | 644 | 0.2- | 0.2+ | 2005 04 04 | G96 | 0.2- | 0.2+ | 2007 12 15 | G96 | 0.1+ | 0.3- |
| 2003 10 19 | 691 | 0.1- | 0.1+ | 2005 04 04 | G96 | 0.2- | 0.1- |            |     |      |      |
| 2003 10 19 | 691 | 0.1- | 0.0  | 2005 04 04 | G96 | 0.0  | 0.2- |            |     |      |      |

**(172516)\* 2003 SN<sub>247</sub>**

Discovered 2003 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 68.73672   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.26986788 | $\omega$ | 292.36738 |          | +0.88079332 |          | +0.47304427 |
| <i>a</i> | 2.3715662  | $\Omega$ | 39.40896  |          | -0.42149259 |          | +0.80329909 |
| <i>e</i> | 0.1973334  | <i>i</i> | 1.87669   |          | -0.21574782 |          | +0.36185589 |
| <i>P</i> | 3.65       | <i>H</i> | 16.6      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 06 | 291 | 0.2+ | 1.0+ | 2003 09 29 | 704 | 0.3-  | 1.1+  | 2005 02 04 | G96 | 0.1- | 0.1- |
| 2002 04 06 | 291 | 0.0  | 0.7+ | 2003 09 29 | 704 | 0.1+  | 0.3+  | 2005 02 04 | G96 | 0.4- | 0.1- |
| 2002 04 06 | 291 | 0.9+ | 1.3+ | 2003 09 29 | 704 | 0.9-  | 0.3-  | 2005 02 04 | G96 | 0.3- | 0.2- |
| 2002 04 18 | 691 | 0.1+ | 0.4- | 2003 09 29 | 704 | 1.4-  | 0.0   | 2005 02 04 | G96 | 0.3- | 0.0  |
| 2002 04 18 | 691 | 0.1- | 0.4- | 2003 09 29 | 704 | 0.8-  | 0.9-  | 2005 03 10 | G96 | 0.1- | 0.5+ |
| 2002 04 18 | 691 | 0.2+ | 0.3- | 2003 09 29 | 704 | 0.9-  | 0.1-  | 2005 03 10 | G96 | 0.4- | 0.4+ |
| 2003 09 17 | 644 | 0.3+ | 0.6+ | 2003 09 29 | 704 | 0.6-  | 0.5-  | 2005 03 10 | G96 | 0.6- | 0.2+ |
| 2003 09 17 | 644 | 0.2+ | 0.3+ | 2003 09 30 | 691 | 0.0   | 0.2+  | 2005 03 10 | G96 | 0.2- | 0.0  |
| 2003 09 17 | 644 | 0.1+ | 0.3+ | 2003 09 30 | 691 | 0.1-  | 0.3+  | 2006 05 24 | 691 | 0.0  | 0.2+ |
| 2003 09 19 | 699 | 0.1+ | 0.5+ | 2003 09 30 | 691 | 0.1-  | 0.3+  | 2006 05 24 | 691 | 0.1+ | 0.1+ |
| 2003 09 19 | 699 | 0.7- | 0.2+ | 2003 10 15 | 699 | 0.0   | 0.4+  | 2006 05 24 | 691 | 0.1- | 0.1+ |
| 2003 09 19 | 699 | 0.1- | 0.9+ | 2003 10 15 | 699 | 0.7-  | 1.4+  | 2007 09 18 | G96 | 0.2- | 0.0  |
| 2003 09 19 | 699 | 0.5+ | 0.7+ | 2003 10 15 | 699 | 1.0+  | 1.0-  | 2007 09 18 | G96 | 0.2+ | 0.3- |
| 2003 09 21 | 644 | 0.1- | 0.3+ | 2003 10 15 | 699 | (0.8+ | 1.8+) | 2007 09 18 | G96 | 0.1+ | 0.0  |
| 2003 09 21 | 644 | 0.0  | 0.2+ | 2003 10 20 | 704 | 1.3+  | 0.4+  | 2007 09 18 | G96 | 0.5- | 0.3+ |
| 2003 09 21 | 644 | 0.0  | 0.6+ | 2003 10 20 | 704 | 0.2+  | 0.8+  | 2007 11 01 | 691 | 0.1- | 0.1- |
| 2003 09 26 | 704 | 0.2- | 0.4+ | 2003 10 20 | 704 | 1.0+  | 0.3-  | 2007 11 01 | 691 | 0.1+ | 0.2- |
| 2003 09 26 | 704 | 0.5- | 0.3- | 2003 10 23 | 704 | 0.0   | 0.3-  | 2007 11 01 | 691 | 0.1+ | 0.1- |
| 2003 09 26 | 704 | 0.2- | 0.5+ | 2003 10 23 | 704 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.1- | 0.7+ |
| 2003 09 26 | 704 | 0.1- | 0.2+ | 2003 10 23 | 704 | 0.1-  | 0.6-  | 2007 12 14 | 704 | 0.6+ | 0.2+ |
| 2003 09 26 | 704 | 0.0  | 0.4+ | 2003 10 23 | 704 | 0.2+  | 0.0   | 2007 12 14 | 704 | 0.2+ | 1.0+ |
| 2003 09 29 | 704 | 1.3- | 1.0- | 2003 10 23 | 704 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.7+ | 0.7+ |
| 2003 09 29 | 704 | 0.6+ | 0.7- | 2005 02 02 | 691 | 0.1-  | 0.1+  | 2007 12 15 | G96 | 0.4+ | 0.3+ |
| 2003 09 29 | 704 | 0.3- | 0.6- | 2005 02 02 | 691 | 0.0   | 0.2-  | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2003 09 29 | 704 | 0.8+ | 0.1- | 2005 02 02 | 691 | 0.2+  | 0.0   | 2007 12 15 | G96 | 1.5- | 0.9+ |

**(172517)\* 2003 SQ<sub>247</sub> = 2002 EZ<sub>109</sub>**

Discovered 2003 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

2007 DEC. 24

M.P.O. 129397

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 03 09 691 0.1+ 0.6+ | 2003 09 30 691 0.0 0.0   | 2006 08 12 644 0.4- 0.3+ |
| 2002 03 09 691 0.2- 0.6+ | 2003 10 15 644 0.1- 0.1+ | 2006 08 12 644 0.4- 0.3+ |
| 2002 03 09 691 0.1+ 0.7+ | 2003 10 15 644 0.0 0.1+  | 2006 08 12 644 0.3- 0.5+ |
| 2002 03 12 644 0.7+ 0.3+ | 2003 10 15 644 0.1- 0.2+ | 2006 08 12 644 0.4- 0.5+ |
| 2002 03 12 644 0.6+ 0.5+ | 2003 10 19 691 0.3- 0.0  | 2006 08 12 644 0.1- 0.3+ |
| 2002 03 12 644 1.0+ 0.6+ | 2003 10 19 691 0.1+ 0.1- | 2006 08 14 644 0.2- 0.3+ |
| 2003 09 17 644 0.3- 0.5+ | 2003 10 19 691 0.1- 0.2- | 2006 08 14 644 0.0 0.4+  |
| 2003 09 17 644 0.7- 0.1+ | 2003 10 28 704 0.1- 0.8+ | 2006 08 14 644 0.1- 0.2+ |
| 2003 09 17 644 0.4+ 0.0  | 2003 10 28 704 0.8- 0.3+ | 2006 08 19 644 0.1- 0.2+ |
| 2003 09 21 644 0.1- 0.2+ | 2003 10 28 704 0.6- 0.5- | 2006 08 19 644 0.1- 0.1+ |
| 2003 09 21 644 0.1- 0.5+ | 2003 10 28 704 0.4- 0.4+ | 2006 08 19 644 0.1- 0.3+ |
| 2003 09 21 644 0.2+ 0.0  | 2005 02 02 691 0.9+ 0.5+ | 2006 08 23 704 0.2- 0.2+ |
| 2003 09 26 704 0.2+ 0.7+ | 2005 02 02 691 0.2+ 0.2+ | 2006 08 23 704 0.4+ 0.4- |
| 2003 09 26 704 0.3- 0.4+ | 2005 02 02 691 0.2+ 0.4+ | 2006 08 23 704 0.2- 0.0  |
| 2003 09 26 704 0.6+ 0.4- | 2005 02 09 G96 0.6+ 0.2- | 2007 11 18 G96 0.1+ 0.0  |
| 2003 09 26 704 1.1- 1.3+ | 2005 02 09 G96 0.4+ 0.3+ | 2007 11 18 G96 0.1+ 0.2- |
| 2003 09 29 704 0.1+ 1.3+ | 2005 02 09 G96 0.4+ 0.2- | 2007 11 18 G96 1.1+ 0.2- |
| 2003 09 29 704 0.2+ 0.6+ | 2005 02 09 G96 0.2+ 0.2+ | 2007 11 18 G96 0.8+ 0.1- |
| 2003 09 29 704 0.5+ 0.8+ | 2006 07 21 644 0.4+ 0.3+ | 2007 12 05 691 0.9- 0.4- |
| 2003 09 29 704 0.4+ 0.4+ | 2006 07 21 644 0.0 0.3+  | 2007 12 05 691 0.1- 0.3- |
| 2003 09 30 691 0.0 0.1+  | 2006 07 21 644 0.4+ 0.4+ | 2007 12 05 691 0.4- 0.2- |
| 2003 09 30 691 0.0 0.0   | 2006 08 12 644 0.3- 0.2+ |                          |

(172518)\* 2003 SD<sub>251</sub>

Discovered 2003 Sept. 26 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 122.30445  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27638714 | $\omega$ 237.04860 | +0.31457243   | +0.94836158 |
| <i>a</i> | 2.3341253  | $\Omega$ 51.34011  | -0.85259375   | +0.30112433 |
| <i>e</i> | 0.1902446  | <i>i</i> 2.98590   | -0.41728657   | +0.09967176 |
| <i>P</i> | 3.57       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1999 07 16 704 0.9- 0.4-   | 2003 09 27 691 0.1- 0.4-   | 2003 10 28 608 0.5+ 0.7- |
| 1999 07 16 704 0.4- 0.7+   | 2003 09 29 704 0.7+ 0.4-   | 2003 11 19 644 0.3+ 0.6+ |
| 1999 07 16 704 0.4- 0.3+   | 2003 09 29 704 0.1+ 0.2-   | 2003 11 19 644 0.2- 0.7+ |
| 1999 07 16 704 0.8- 0.6-   | 2003 09 29 704 0.5+ 0.6+   | 2003 11 19 644 0.5+ 0.5+ |
| 2000 12 30 691 0.1- 0.5-   | 2003 09 29 704 0.5- 0.1-   | 2003 11 24 691 0.2+ 0.1+ |
| 2000 12 30 691 0.2- 0.4-   | 2003 10 16 691 0.3+ 0.2+   | 2003 11 24 691 0.1+ 0.3+ |
| 2000 12 30 691 0.2- 0.6-   | 2003 10 16 691 0.0 0.2+    | 2003 11 24 691 0.2+ 0.2+ |
| 2002 03 16 704 1.3+ 0.8+   | 2003 10 16 691 0.3+ 0.1+   | 2005 01 13 691 0.5+ 0.3+ |
| 2002 03 16 704 (1.7+ 0.7+) | 2003 10 18 691 0.0 0.2+    | 2005 01 13 691 0.0 0.2+  |
| 2002 03 16 704 0.4+ 0.7+   | 2003 10 18 691 0.4+ 0.2+   | 2005 01 13 691 0.1+ 0.2- |
| 2002 03 16 704 0.5+ 0.7+   | 2003 10 18 691 0.1- 0.4+   | 2005 01 18 691 0.5+ 0.2+ |
| 2002 04 15 704 0.4+ 0.7+   | 2003 10 21 699 0.7- 1.5+   | 2005 01 18 691 0.6- 0.6+ |
| 2002 04 15 704 0.5+ 1.0+   | 2003 10 21 699 (1.8+ 0.7+) | 2005 01 18 691 0.9+ 0.1+ |
| 2002 04 15 704 (0.5+ 1.6+) | 2003 10 21 699 0.7+ 0.3+   | 2007 11 01 691 0.5- 0.0  |
| 2003 09 20 699 0.8- 0.4-   | 2003 10 21 699 0.5- 0.1-   | 2007 11 01 691 0.2- 0.1- |
| 2003 09 20 699 0.3+ 0.5+   | 2003 10 21 644 0.1- 0.5+   | 2007 11 01 691 0.0 0.0   |
| 2003 09 20 699 0.1+ 0.7+   | 2003 10 21 704 0.5- 0.1+   | 2007 11 05 691 0.1- 0.0  |
| 2003 09 20 699 0.9- 0.4+   | 2003 10 21 704 0.0 1.0+    | 2007 11 05 691 0.2- 0.3- |
| 2003 09 21 599 0.2+ 0.2+   | 2003 10 21 644 0.2- 0.1+   | 2007 11 05 691 0.5- 0.2+ |
| 2003 09 21 599 0.3+ 0.1-   | 2003 10 21 704 1.3- 1.1+   | 2007 11 13 691 0.3- 0.6- |
| 2003 09 21 599 0.2+ 0.0    | 2003 10 21 704 0.9- 0.6+   | 2007 11 13 691 0.3- 0.1- |
| 2003 09 21 599 0.2+ 0.2+   | 2003 10 21 644 0.1- 0.4+   | 2007 11 13 691 0.4- 0.1- |
| 2003 09 26 704 (0.1+ 1.7+) | 2003 10 24 704 0.3- 0.8+   | 2007 12 06 G96 0.4- 0.2- |
| 2003 09 26 704 0.6- 1.0+   | 2003 10 24 704 0.2- 0.5+   | 2007 12 06 G96 1.2+ 0.3- |
| 2003 09 26 704 0.4+ 0.1-   | 2003 10 24 704 0.2+ 0.1-   | 2007 12 06 G96 0.2+ 0.2- |
| 2003 09 26 704 0.1- 0.2-   | 2003 10 24 704 0.8+ 0.4+   | 2007 12 06 G96 0.3+ 0.2- |
| 2003 09 27 691 0.1- 0.2-   | 2003 10 28 608 0.4+ 0.7-   |                          |
| 2003 09 27 691 0.1- 0.2-   | 2003 10 28 608 0.2+ 1.1-   |                          |

(172519)\* 2003 SQ<sub>255</sub>

Discovered 2003 Sept. 27 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.56018  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26909925 | $\omega$ 72.63000 | +0.22801629   | -0.97365272 |
| <i>a</i> | 2.3760800  | $\Omega$ 4.19313  | +0.87706711   | +0.20406150 |
| <i>e</i> | 0.1623707  | <i>i</i> 2.34414  | +0.42280239   | +0.10178053 |
| <i>P</i> | 3.66       | <i>H</i> 16.7     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1994 04 15 691 0.4+ 0.1-   | 2003 10 24 704 0.4- 0.8+   | 2005 04 09 691 0.3+ 0.8+ |
| 1994 04 15 691 0.2- 0.2+   | 2003 10 25 704 0.0 0.3+    | 2005 04 09 691 0.2- 0.1- |
| 1994 04 15 691 0.2- 0.2+   | 2003 10 25 704 0.2- 0.2+   | 2005 04 09 691 0.2+ 0.5+ |
| 2003 09 20 644 0.4- 0.0    | 2003 10 25 704 0.0 0.4+    | 2005 04 09 691 0.5+ 0.6+ |
| 2003 09 20 644 0.1- 0.0    | 2003 10 25 704 0.1+ 0.2+   | 2005 04 09 691 0.1+ 0.1+ |
| 2003 09 20 644 0.1- 0.3+   | 2003 10 25 704 0.1- 0.0    | 2005 04 17 691 0.2+ 0.6+ |
| 2003 09 22 691 0.2- 0.1+   | 2003 10 26 291 0.1+ 0.2+   | 2005 04 17 691 0.3+ 0.4+ |
| 2003 09 22 691 0.3- 0.1-   | 2003 10 26 291 0.1- 0.2+   | 2005 04 17 691 0.4+ 0.6+ |
| 2003 09 22 691 0.2- 0.1+   | 2003 10 26 291 0.1+ 0.1+   | 2005 05 12 G96 0.0 0.3+  |
| 2003 09 27 691 0.0 0.1-    | 2003 10 29 704 0.6+ 0.7+   | 2005 05 12 G96 0.1- 0.4+ |
| 2003 09 27 691 0.3- 0.1-   | 2003 10 29 704 0.4+ 0.2+   | 2005 05 12 G96 0.7- 0.1+ |
| 2003 09 27 691 0.1- 0.1+   | 2003 10 29 704 0.0 0.4+    | 2005 05 12 G96 0.0 0.2+  |
| 2003 09 27 691 0.2- 0.0    | 2003 10 29 704 0.1- 0.8+   | 2007 11 06 G96 0.1- 0.3- |
| 2003 09 27 691 0.3- 0.0    | 2003 11 01 704 1.0- 0.9+   | 2007 11 06 G96 0.3+ 0.4- |
| 2003 09 27 691 0.2- 0.1+   | 2003 11 01 704 0.1+ 0.6+   | 2007 11 06 G96 0.3- 0.1- |
| 2003 09 29 704 (1.9- 1.4+) | 2003 11 01 704 0.2+ 0.5+   | 2007 11 06 G96 0.8- 0.3- |
| 2003 09 29 704 0.2+ 0.4-   | 2003 11 01 704 0.1+ 0.8+   | 2007 12 05 691 0.3- 0.2- |
| 2003 09 29 704 1.4+ 0.3+   | 2003 11 01 704 (1.0- 1.6+) | 2007 12 05 691 0.4- 0.2- |
| 2003 09 29 704 0.7- 0.7+   | 2003 11 20 704 0.5+ 0.0    | 2007 12 05 691 0.1- 0.2- |
| 2003 10 21 699 0.0 0.1+    | 2003 11 20 704 0.3+ 0.3+   | 2007 12 06 704 0.0 0.1+  |
| 2003 10 21 699 0.5- 0.5+   | 2003 11 20 704 0.5+ 0.1-   | 2007 12 06 704 0.0 0.0   |
| 2003 10 21 699 0.1- 0.7-   | 2003 12 22 704 0.6+ 1.5+   | 2007 12 06 704 0.7+ 0.2- |
| 2003 10 21 699 0.1- 0.2-   | 2003 12 22 704 0.4+ 0.5+   | 2007 12 06 704 0.4+ 0.0  |
| 2003 10 21 704 0.1- 0.9+   | 2003 12 22 704 0.3+ 1.0+   | 2007 12 06 704 0.0 0.4-  |
| 2003 10 21 704 0.7- 0.1-   | 2003 12 22 704 0.4+ 0.5-   | 2007 12 10 704 0.6+ 0.1- |
| 2003 10 21 704 0.2- 0.2+   | 2005 03 11 G96 0.0 0.2+    | 2007 12 10 704 0.3+ 0.8+ |
| 2003 10 24 704 0.2- 0.6+   | 2005 03 11 G96 0.2- 0.0    | 2007 12 10 704 0.2+ 0.2+ |
| 2003 10 24 704 0.1- 0.7+   | 2005 03 11 G96 0.0 0.3+    | 2007 12 10 704 0.3+ 0.5+ |
| 2003 10 24 704 0.1- 0.7+   | 2005 03 11 G96 0.4- 0.0    | 2007 12 10 704 0.3+ 0.1- |
| 2003 10 24 704 0.2- 0.8+   | 2005 04 09 691 0.4+ 0.1-   |                          |

(172520)\* 2003 SL<sub>261</sub>

Discovered 2003 Sept. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 90.04804   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26840442 | $\omega$ 75.14765  | +0.60280452   | +0.79703478 |
| <i>a</i> | 2.3801789  | $\Omega$ 231.98344 | -0.74888160   | +0.54921173 |
| <i>e</i> | 0.1597531  | <i>i</i> 2.68522   | -0.27532355   | +0.25120119 |
| <i>P</i> | 3.67       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2002 04 09 691 0.2+ 0.4+   | 2006 05 07 G96 0.3- 0.1+ | 2007 10 16 G96 0.1+ 0.0  |
| 2002 04 09 691 0.0 0.4+    | 2006 05 07 G96 0.5- 0.1+ | 2007 10 16 G96 0.3- 0.1+ |
| 2002 04 09 691 0.3+ 0.2+   | 2006 05 07 G96 0.0 0.2-  | 2007 10 16 G96 0.2+ 0.1+ |
| 2003 09 27 704 0.1+ 0.1+   | 2006 05 07 G96 0.3- 0.1+ | 2007 10 16 G96 0.2+ 0.0  |
| 2003 09 27 704 (2.0- 0.7+) | 2006 05 20 G96 0.3+ 0.0  | 2007 10 30 691 0.1+ 0.0  |
| 2003 09 27 704 (1.8- 1.6+) | 2006 05 20 G96 0.0 0.2-  | 2007 10 30 691 0.4- 0.2+ |
| 2003 09 27 704 0.3+ 1.1+   | 2006 05 20 G96 0.2- 0.2- | 2007 10 30 691 0.2+ 0.5+ |
| 2003 09 30 691 0.2+ 0.0    | 2006 05 20 G96 0.2+ 0.3- | 2007 11 03 691 0.1- 0.3+ |
| 2003 09 30 691 0.2+ 0.0    | 2006 05 24 691 0.3+ 0.1- | 2007 11 03 691 0.2- 0.4+ |
| 2003 09 30 691 0.1+ 0.2+   | 2006 05 24 691 0.3+ 0.1- | 2007 11 03 691 0.4- 0.3- |
| 2003 10 15 699 (2.2+ 1.1+) | 2006 05 24 691 0.2+ 0.5+ | 2007 11 14 691 0.2- 0.1- |
| 2003 10 15 699 0.5+ 0.0    | 2006 05 28 691 0.2+ 0.1- | 2007 11 14 691 0.0 0.3+  |
| 2003 10 15 699 0.1- 0.1+   | 2006 05 28 691 0.5+ 0.1+ | 2007 11 14 691 0.1+ 0.2+ |
| 2003 10 15 699 1.2+ 0.3-   | 2006 05 28 691 0.9- 0.0  | 2007 12 06 G96 0.6+ 0.1- |
| 2003 10 19 691 0.2- 0.0    | 2006 06 01 691 0.3+ 0.1+ | 2007 12 06 G96 0.2- 0.9- |
| 2003 10 19 691 0.3- 0.0    | 2006 06 01 691 0.9- 0.7+ | 2007 12 06 G96 1.1+ 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 19 | 691 | 0.2− | 0.1− | 2006 06 01 | 691 | 0.3+ | 0.1+ | 2007 12 06 | G96 | 0.3+ | 0.1+ |
| 2003 10 24 | 704 | 0.9− | 0.9+ | 2007 09 14 | G96 | 0.4+ | 0.2− | 2007 12 15 | G96 | 0.2− | 0.9+ |
| 2003 10 24 | 704 | 0.5− | 0.7+ | 2007 09 14 | G96 | 0.4+ | 0.1− | 2007 12 15 | G96 | 0.2− | 0.1+ |
| 2003 10 24 | 704 | 0.8− | 0.1− | 2007 09 14 | G96 | 0.5+ | 0.3+ | 2007 12 15 | G96 | 0.3+ | 0.4− |
| 2003 10 24 | 704 | 0.6− | 0.4+ | 2007 09 14 | G96 | 0.0  | 0.2− | 2007 12 15 | G96 | 0.3+ | 0.0  |

**(172521)\* 2003 SG<sub>266</sub>**

Discovered 2003 Sept. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27935571 | <i>ω</i> | 105.24842 | +0.53438693 | −0.84520361 |          |   |
| <i>a</i> | 2.3175601  | <i>Ω</i> | 312.44651 | +0.77135762 | +0.49144812 |          |   |
| <i>e</i> | 0.1459763  | <i>i</i> | 0.60882   | +0.34559808 | +0.21002289 |          |   |
| <i>P</i> | 3.53       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 11 06 | 691 | 0.2− | 0.1− | 2003 09 21 | 644 | 0.2+  | 0.4+  | 2005 03 17 | 691 | 0.2+ | 0.2+ |
| 1996 11 06 | 691 | 0.1+ | 0.0  | 2003 09 29 | 704 | 0.0   | 1.1+  | 2005 04 05 | G96 | 0.2− | 0.0  |
| 1996 11 06 | 691 | 0.2+ | 0.1− | 2003 09 29 | 704 | 0.1+  | 0.6+  | 2005 04 05 | G96 | 0.2− | 0.1− |
| 2000 12 22 | 691 | 0.4− | 0.0  | 2003 09 29 | 704 | 0.1−  | 0.8+  | 2005 04 05 | G96 | 0.0  | 0.3− |
| 2000 12 22 | 691 | 0.5− | 0.1− | 2003 09 29 | 704 | 0.1−  | 0.2+  | 2005 04 05 | G96 | 0.1+ | 0.2+ |
| 2000 12 22 | 691 | 0.3− | 0.4− | 2003 09 29 | 704 | 0.3−  | 1.4+  | 2005 04 06 | G96 | 0.1− | 0.4− |
| 2001 01 21 | 704 | 0.1− | 0.7− | 2003 09 30 | 691 | 0.2−  | 0.1+  | 2005 04 06 | G96 | 0.2+ | 1.0− |
| 2001 01 21 | 704 | 0.3− | 0.4− | 2003 09 30 | 691 | 0.2−  | 0.0   | 2005 04 06 | G96 | 0.1− | 0.2+ |
| 2001 01 21 | 704 | 1.2+ | 0.8+ | 2003 09 30 | 691 | 0.2−  | 0.1+  | 2005 04 06 | G96 | 0.2− | 0.0  |
| 2001 01 21 | 704 | 0.3+ | 0.3+ | 2003 10 15 | 699 | 1.2+  | 1.1+  | 2007 11 04 | G96 | 0.1− | 0.2− |
| 2001 01 21 | 704 | 0.2+ | 0.4+ | 2003 10 15 | 699 | 0.8+  | 0.2−  | 2007 11 04 | G96 | 0.1+ | 0.4− |
| 2001 01 21 | 704 | 1.2+ | 0.2+ | 2003 10 15 | 699 | 1.2+  | 0.1−  | 2007 11 04 | G96 | 0.2− | 0.5− |
| 2001 01 21 | 704 | 1.4+ | 0.4+ | 2003 10 15 | 699 | (1.3+ | 1.6+) | 2007 11 04 | G96 | 0.4− | 0.6− |
| 2001 01 21 | 704 | 1.1+ | 0.9+ | 2003 10 19 | 691 | 0.2−  | 0.1+  | 2007 11 11 | G96 | 0.0  | 0.6− |
| 2001 01 21 | 704 | 0.9+ | 0.2+ | 2003 10 19 | 691 | 0.3−  | 0.0   | 2007 11 11 | G96 | 0.6+ | 0.5− |
| 2001 01 21 | 704 | 0.1+ | 0.8+ | 2003 10 19 | 691 | 0.2−  | 0.1−  | 2007 11 11 | G96 | 0.4− | 0.2− |
| 2001 01 21 | 704 | 1.3+ | 1.4+ | 2003 10 28 | 704 | 0.0   | 0.3+  | 2007 11 11 | G96 | 0.1− | 0.5− |
| 2001 02 19 | 691 | 0.2− | 0.2+ | 2003 10 28 | 704 | 0.6−  | 0.1+  | 2007 11 21 | G96 | 0.5− | 0.5− |
| 2001 02 19 | 691 | 0.2− | 0.1+ | 2003 10 28 | 704 | 0.1−  | 0.3+  | 2007 11 21 | G96 | 0.1+ | 0.6− |
| 2001 02 19 | 691 | 0.2− | 0.3+ | 2003 10 28 | 704 | 0.5−  | 0.4−  | 2007 11 21 | G96 | 0.2− | 0.6− |
| 2003 09 21 | 644 | 0.1+ | 0.4+ | 2005 03 17 | 691 | 0.3+  | 0.5+  | 2007 11 21 | G96 | 0.2− | 0.8− |
| 2003 09 21 | 644 | 0.1+ | 0.2+ | 2005 03 17 | 691 | 0.0   | 0.5+  |            |     |      |      |

**(172522)\* 2003 SP<sub>269</sub>**

Discovered 2003 Sept. 28 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26966125 | <i>ω</i> | 274.21600 | +0.93922627 | +0.33984767 |          |   |
| <i>a</i> | 2.3727776  | <i>Ω</i> | 65.92219  | −0.29009134 | +0.86131131 |          |   |
| <i>e</i> | 0.2149447  | <i>i</i> | 3.04855   | −0.18357839 | +0.37768557 |          |   |
| <i>P</i> | 3.65       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 14 | 691 | 0.1−  | 0.5+  | 2003 10 19 | 691 | 0.2−  | 0.3+  | 2006 05 20 | G96 | 0.4+ | 0.1− |
| 2001 01 14 | 691 | 0.2+  | 0.9+  | 2003 10 19 | 691 | 0.1−  | 0.3+  | 2006 05 20 | 691 | 0.0  | 0.5+ |
| 2001 01 14 | 691 | 0.1+  | 1.1+  | 2003 10 19 | 691 | 0.1−  | 0.3+  | 2006 05 20 | 691 | 0.1− | 0.5+ |
| 2003 09 19 | 704 | 1.4+  | 0.5+  | 2003 10 20 | 704 | 0.1+  | 1.0+  | 2006 05 20 | 691 | 0.2− | 0.5+ |
| 2003 09 19 | 704 | 0.4+  | 0.8+  | 2003 10 20 | 704 | 0.5+  | 1.1+  | 2006 05 28 | 691 | 0.3+ | 0.6+ |
| 2003 09 19 | 704 | (1.0− | 2.2+) | 2003 10 20 | 704 | 0.4−  | 0.1+  | 2006 05 28 | 691 | 0.6+ | 0.6+ |
| 2003 09 28 | 704 | 0.1−  | 1.1+  | 2003 10 20 | 704 | (0.2− | 2.2+) | 2006 05 28 | 691 | 0.3+ | 0.4+ |
| 2003 09 28 | 704 | 1.2−  | 0.6+  | 2003 10 22 | 645 | 0.1−  | 0.2−  | 2006 06 19 | G96 | 0.0  | 0.2− |
| 2003 09 28 | 699 | 0.1+  | 1.1+  | 2003 10 22 | 645 | 0.1−  | 0.2−  | 2006 06 19 | G96 | 0.5− | 0.2− |
| 2003 09 28 | 704 | 1.4−  | 0.3+  | 2003 10 24 | 645 | 0.0   | 0.1−  | 2006 06 19 | G96 | 0.3− | 0.4+ |
| 2003 09 28 | 699 | 0.1−  | 0.4−  | 2003 10 24 | 645 | 0.0   | 0.1−  | 2006 06 19 | G96 | 0.2− | 0.3− |
| 2003 09 28 | 704 | (0.0  | 2.7−) | 2003 10 25 | 704 | 0.7−  | 0.6+  | 2007 11 06 | 691 | 0.1− | 0.3+ |
| 2003 09 28 | 699 | 0.4−  | 0.4+  | 2003 10 25 | 704 | 0.4−  | 0.8+  | 2007 11 06 | 691 | 0.3− | 0.6+ |
| 2003 09 28 | 704 | 0.3−  | 0.1−  | 2003 10 25 | 704 | 0.4−  | 0.4+  | 2007 11 06 | 691 | 0.7− | 0.3− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 699 | 0.2−  | 0.6+  | 2003 10 25 | 704 | 0.6− | 0.8+ | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2003 09 28 | 683 | (1.4− | 2.7−) | 2003 10 25 | 704 | 0.3+ | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.3− |
| 2003 09 28 | 683 | (1.8+ | 3.2−) | 2003 10 28 | 704 | 1.0+ | 0.4− | 2007 11 18 | 691 | 0.1− | 0.1+ |
| 2003 09 28 | 683 | (1.3+ | 1.8−) | 2003 10 28 | 704 | 0.3+ | 1.1+ | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2003 09 30 | 683 | 0.3+  | 0.7−  | 2003 10 28 | 704 | 0.2+ | 0.6+ | 2007 12 05 | 704 | 0.3+ | 0.5+ |
| 2003 09 30 | 683 | 0.7+  | 1.2+  | 2003 10 28 | 704 | 0.5+ | 0.4+ | 2007 12 05 | 704 | 0.1+ | 0.1− |
| 2003 09 30 | 683 | 0.6+  | 1.2+  | 2003 10 29 | 699 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.6− | 0.3+ |
| 2003 10 04 | 683 | 0.6+  | 0.4−  | 2003 10 29 | 699 | 1.4− | 0.7+ | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2003 10 04 | 683 | (1.8+ | 0.6+) | 2003 10 29 | 699 | 0.6+ | 0.2− | 2007 12 05 | 703 | 0.7− | 0.3− |
| 2003 10 04 | 683 | 1.5+  | 0.7+  | 2003 10 29 | 699 | 1.3+ | 0.1+ | 2007 12 05 | 703 | 0.2+ | 0.3+ |
| 2003 10 05 | 683 | (2.6+ | 0.1−) | 2005 02 02 | 691 | 0.1+ | 0.2− | 2007 12 05 | 703 | 0.6+ | 0.7− |
| 2003 10 05 | 683 | 1.3+  | 1.3+  | 2005 02 02 | 691 | 0.5+ | 0.5+ | 2007 12 05 | 703 | 0.0  | 0.7− |
| 2003 10 05 | 683 | (2.2+ | 0.9+) | 2005 02 02 | 691 | 0.0  | 0.2+ | 2007 12 14 | 704 | 0.3+ | 0.6+ |
| 2003 10 15 | 699 | 0.4−  | 0.2−  | 2005 02 09 | G96 | 0.2+ | 0.0  | 2007 12 14 | 704 | 1.1− | 1.1− |
| 2003 10 15 | 699 | 0.5+  | 0.2+  | 2005 02 09 | G96 | 0.3− | 0.1− | 2007 12 14 | 704 | 0.6− | 0.6+ |
| 2003 10 15 | 699 | 0.4−  | 0.8+  | 2005 02 09 | G96 | 0.3− | 0.3− | 2007 12 14 | 704 | 1.0− | 0.2+ |
| 2003 10 15 | 699 | 0.5−  | 0.6−  | 2005 02 09 | G96 | 0.2+ | 0.1− | 2007 12 14 | 704 | 0.0  | 0.5+ |
| 2003 10 15 | 644 | 0.2−  | 0.2+  | 2006 05 20 | G96 | 0.2+ | 0.2+ | 2007 12 15 | 691 | 1.6+ | 0.5− |
| 2003 10 15 | 644 | 0.1+  | 0.4+  | 2006 05 20 | G96 | 0.1− | 0.4+ | 2007 12 15 | 691 | 0.0  | 0.2− |
| 2003 10 15 | 644 | 0.2+  | 0.4+  | 2006 05 20 | G96 | 0.1+ | 0.1+ | 2007 12 15 | 691 | 0.1+ | 0.2− |

**(172523)\* 2003 SO<sub>291</sub>**

Discovered 2003 Sept. 30 by W. K. Y. Yeung at Desert Eagle Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26200032 | <i>ω</i> | 275.02195 | +0.95567166 | +0.29253104 |          |   |
| <i>a</i> | 2.4188086  | <i>Ω</i> | 67.97167  | −0.25383266 | +0.87608742 |          |   |
| <i>e</i> | 0.2159415  | <i>i</i> | 2.06642   | −0.14920009 | +0.38327069 |          |   |
| <i>P</i> | 3.76       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |        |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|--------|-------|
| 1999 09 04 | 699 | 0.2−  | 0.3+  | 2003 10 23 | 699 | 1.2+  | 0.2−  | 2006 05 07 | G96 | 0.0    | 0.2+  |
| 1999 09 04 | 699 | 1.0+  | 0.3+  | 2003 10 23 | 699 | 0.5−  | 0.1−  | 2006 05 07 | G96 | 0.0    | 0.0   |
| 1999 09 04 | 699 | 0.5+  | 0.0   | 2003 10 23 | 699 | 0.2−  | 0.8+  | 2006 05 07 | G96 | 0.4−   | 0.5+  |
| 1999 09 07 | 704 | 0.7−  | 0.0   | 2003 10 26 | 703 | 1.0+  | 1.1+  | 2006 05 07 | G96 | 0.1+   | 0.2+  |
| 1999 09 07 | 704 | 1.1−  | 0.4−  | 2003 10 26 | 703 | 0.4+  | 0.3−  | 2006 05 19 | G96 | 0.1+   | 0.2+  |
| 1999 09 07 | 704 | 0.2+  | 0.1−  | 2003 10 26 | 703 | 1.2−  | 0.3+  | 2006 05 19 | G96 | 1.1+   | 1.4+  |
| 1999 09 07 | 704 | 0.3−  | 0.5+  | 2003 10 26 | 703 | 0.2−  | 0.2−  | 2006 05 19 | G96 | 0.4−   | 0.0   |
| 1999 09 07 | 704 | 0.0   | 0.5+  | 2003 10 28 | 704 | 0.3+  | 0.3−  | 2006 05 19 | G96 | 0.3−   | 0.2+  |
| 2003 09 30 | 333 | 0.3+  | 0.1−  | 2003 10 28 | 704 | 0.5−  | 0.9−  | 2006 05 19 | G96 | 0.5−   | 0.4+  |
| 2003 09 30 | 333 | 0.2−  | 0.4−  | 2003 10 28 | 704 | 0.4−  | 0.3−  | 2006 05 19 | G96 | 0.1+   | 0.3+  |
| 2003 09 30 | 333 | 0.9−  | 0.1+  | 2003 10 28 | 704 | 0.2+  | 0.1+  | 2006 05 19 | G96 | 0.1+   | 0.4+  |
| 2003 10 02 | 691 | 0.3−  | 0.1−  | 2003 10 28 | 704 | 0.7+  | 0.5−  | 2006 05 19 | G96 | 0.0    | 0.2+  |
| 2003 10 02 | 691 | 0.1−  | 0.2−  | 2003 11 01 | 704 | 0.4+  | 0.3+  | 2006 06 01 | 691 | 0.2+   | 0.2+  |
| 2003 10 02 | 691 | 0.4−  | 0.1−  | 2003 11 01 | 704 | 0.2+  | 0.7+  | 2006 06 01 | 691 | 0.2+   | 0.2+  |
| 2003 10 15 | 699 | 0.8+  | 1.3−  | 2003 11 01 | 704 | 0.4+  | 0.8+  | 2006 06 01 | 691 | 0.1+   | 0.2+  |
| 2003 10 15 | 699 | 0.2+  | 0.5+  | 2003 11 01 | 704 | 0.8+  | 0.7+  | 2007 11 13 | 691 | 1.0−   | 0.2+  |
| 2003 10 15 | 699 | 0.1−  | 0.7−  | 2003 11 01 | 704 | 1.0+  | 0.1−  | 2007 11 13 | 691 | 0.4−   | 0.1+  |
| 2003 10 15 | 699 | (0.9− | 1.7+) | 2003 11 18 | 644 | 0.3+  | 0.2+  | 2007 11 13 | 691 | 0.2−   | 0.1+  |
| 2003 10 18 | 291 | 0.3−  | 0.0   | 2003 11 18 | 644 | 0.0   | 0.0   | 2007 11 15 | 704 | 1.3+   | 0.4+  |
| 2003 10 18 | 291 | 0.3−  | 0.1+  | 2003 11 18 | 644 | 0.1−  | 0.3+  | 2007 11 15 | 704 | 0.9+   | 1.5+  |
| 2003 10 18 | 291 | 0.0   | 0.1+  | 2003 11 19 | 703 | (0.0  | 1.7+) | 2007 11 15 | 704 | 1.1+   | 0.5+  |
| 2003 10 21 | 691 | 0.2+  | 0.0   | 2003 11 19 | 703 | 0.1+  | 1.2+  | 2007 12 04 | G96 | 0.2+   | 0.2+  |
| 2003 10 21 | 691 | 0.1+  | 0.1+  | 2003 11 19 | 703 | 0.2+  | 0.8−  | 2007 12 04 | G96 | 0.5+   | 0.1+  |
| 2003 10 21 | 691 | 0.0   | 0.1+  | 2003 11 19 | 703 | (2.6− | 0.5+) | 2007 12 04 | G96 | 0.0    | 0.2+  |
| 2003 10 21 | 644 | 0.2+  | 0.2+  | 2003 11 20 | 695 | 0.2−  | 0.0   | 2007 12 04 | G96 | 0.3+   | 0.3+  |
| 2003 10 21 | 644 | 0.0   | 0.1+  | 2003 11 20 | 695 | 0.0   | 0.1+  | 2007 12 16 | 704 | 0.7+   | 1.1+  |
| 2003 10 21 | 644 | 0.0   | 0.3+  | 2003 12 22 | 333 | 1.2−  | 0.1−  | 2007 12 16 | 704 | (0.2+) | 2.0+) |
| 2003 10 23 | 699 | 1.0+  | 0.7−  | 2003 12 22 | 333 | 0.3−  | 0.3+  | 2007 12 16 | 704 | (0.5−  | 1.9+) |

2007 DEC. 24

M.P.O. 129399

|                                         |            |      |          |            |             |      |             |            |          |      |      |
|-----------------------------------------|------------|------|----------|------------|-------------|------|-------------|------------|----------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            | MPC         |      |             |            |          |      |      |
| <i>M</i>                                | 65.80045   |      | (2000.0) |            | <b>P</b>    |      | <b>Q</b>    |            |          |      |      |
| <i>n</i>                                | 0.26937666 |      | $\omega$ | 249.12593  | +0.89512773 |      | +0.44377376 |            |          |      |      |
| <i>a</i>                                | 2.3744484  |      | $\Omega$ | 84.50843   | -0.39148649 |      | +0.82813227 |            |          |      |      |
| <i>e</i>                                | 0.1954601  |      | <i>i</i> | 2.45040    | -0.21327137 |      | +0.34243508 |            |          |      |      |
| <i>P</i>                                | 3.66       |      | <i>H</i> | 17.5       | <i>G</i>    | 0.15 | <i>U</i>    | 0          |          |      |      |
| Residuals in seconds of arc             |            |      |          |            |             |      |             |            |          |      |      |
| 2003 09 28                              | 704        | 0.7- | 0.4+     | 2003 10 20 | 704         | 0.1- | 1.2+        | 2006 05 25 | G96 0.3- | 0.1+ |      |
| 2003 09 28                              | 333        | 0.0  | 0.1-     | 2003 10 20 | 704         | (0.0 | 1.5+)       | 2006 05 25 | G96      | 0.1+ | 0.4- |
| 2003 09 28                              | 704        | 1.1- | 0.3+     | 2003 10 23 | 645         | 0.0  | 0.1-        | 2006 05 28 | 691      | 0.1- | 0.4+ |
| 2003 09 28                              | 333        | 0.1- | 0.2-     | 2003 10 23 | 645         | 0.0  | 0.1-        | 2006 05 28 | 691      | 0.7+ | 0.0  |
| 2003 09 28                              | 699        | 0.3- | 0.1-     | 2003 10 24 | 645         | 0.0  | 0.0         | 2006 05 28 | 691      | 0.1+ | 0.3+ |
| 2003 09 28                              | 704        | 0.4- | 0.1-     | 2003 10 24 | 645         | 0.0  | 0.1+        | 2006 06 04 | 691      | 0.1- | 0.3- |
| 2003 09 28                              | 699        | 0.2- | 0.8-     | 2005 02 02 | 691         | 0.2+ | 0.0         | 2006 06 04 | 691      | 0.3- | 0.2+ |
| 2003 09 28                              | 704        | 0.5- | 0.5+     | 2005 02 02 | 691         | 0.1+ | 0.5+        | 2006 06 04 | 691      | 0.1+ | 0.1+ |
| 2003 09 28                              | 333        | 0.3- | 0.3-     | 2005 02 02 | 691         | 0.1+ | 0.4-        | 2006 06 19 | G96      | 1.0- | 0.3- |
| 2003 09 28                              | 699        | 0.0  | 0.5+     | 2005 02 04 | G96         | 0.2+ | 0.1+        | 2006 06 19 | G96      | 0.6- | 0.8- |
| 2003 09 28                              | 704        | 0.6- | 0.0      | 2005 02 04 | G96         | 0.6- | 0.1+        | 2006 06 19 | G96      | 0.6- | 0.6- |
| 2003 09 28                              | 699        | 0.1- | 0.2+     | 2005 02 04 | G96         | 0.1- | 0.4+        | 2006 06 19 | G96      | 0.2- | 0.6- |
| 2003 10 01                              | 699        | 0.7- | 0.7+     | 2005 02 04 | G96         | 0.6- | 0.0         | 2007 11 02 | 691      | 0.1- | 0.2+ |
| 2003 10 01                              | 699        | 1.2+ | 0.6+     | 2006 04 24 | G96         | 0.1- | 0.5-        | 2007 11 02 | 691      | 0.0  | 0.1+ |
| 2003 10 01                              | 699        | 0.8+ | 0.6-     | 2006 04 24 | G96         | 0.9+ | 0.2-        | 2007 11 02 | 691      | 0.3- | 0.0  |
| 2003 10 01                              | 699        | 0.2+ | 0.2-     | 2006 04 24 | G96         | 0.9- | 0.5-        | 2007 11 02 | 691      | 0.1+ | 0.6+ |
| 2003 10 15                              | 699        | 0.9+ | 1.1-     | 2006 04 24 | G96         | 0.4+ | 1.0-        | 2007 11 02 | 691      | 0.3- | 0.0  |
| 2003 10 15                              | 699        | 0.7- | 0.5+     | 2006 05 20 | 691         | 0.1- | 0.3+        | 2007 11 02 | 691      | 0.3- | 0.3+ |
| 2003 10 15                              | 699        | 0.8- | 1.0+     | 2006 05 20 | 691         | 0.1+ | 0.2+        | 2007 12 04 | G96      | 0.0  | 0.1+ |
| 2003 10 15                              | 699        | 0.5- | 0.9+     | 2006 05 20 | 691         | 0.3+ | 1.2+        | 2007 12 04 | G96      | 0.8+ | 0.1+ |
| 2003 10 19                              | 645        | 0.1+ | 0.1-     | 2006 05 24 | 691         | 0.2+ | 0.2+        | 2007 12 04 | G96      | 0.3+ | 0.2+ |
| 2003 10 19                              | 645        | 0.1+ | 0.1-     | 2006 05 24 | 691         | 0.1+ | 0.4+        | 2007 12 05 | 704      | 0.6- | 0.6+ |
| 2003 10 20                              | 704        | 0.4+ | 1.2+     | 2006 05 24 | 691         | 0.2+ | 0.3+        | 2007 12 05 | 704      | 0.7+ | 0.3+ |
| 2003 10 20                              | 704        | 0.8+ | 0.7+     | 2006 05 25 | G96         | 0.2- | 0.1-        | 2007 12 05 | 704      | 0.5+ | 1.1+ |
| 2003 10 20                              | 704        | 0.2- | 0.9+     | 2006 05 25 | G96         | 0.4- | 0.0         | 2007 12 05 | 704      | 0.3+ | 0.6+ |

(172525)\* 2003 TY<sub>1</sub>

Discovered 2003 Oct. 4 at Junk Bond Observatory, Sierra Vista.

|                                         |            |             |          |             |      |             |      |            |     |             |
|-----------------------------------------|------------|-------------|----------|-------------|------|-------------|------|------------|-----|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |          |             | MPC  |             |      |            |     |             |
| <i>M</i>                                | 37.01148   | (2000.0)    |          | <b>P</b>    |      | <b>Q</b>    |      |            |     |             |
| <i>n</i>                                | 0.27400572 | $\omega$    | 11.90552 | +0.78911432 |      | −0.61356053 |      |            |     |             |
| <i>a</i>                                | 2.3476299  | $\Omega$    | 26.01015 | +0.55799070 |      | +0.69629247 |      |            |     |             |
| <i>e</i>                                | 0.0196323  | <i>i</i>    | 3.79415  | +0.25679753 |      | +0.37245171 |      |            |     |             |
| <i>P</i>                                | 3.60       | <i>H</i>    | 16.0     | <i>G</i>    | 0.15 | <i>U</i>    | 1    |            |     |             |
| Residuals in seconds of arc             |            |             |          |             |      |             |      |            |     |             |
| 1998 03 29                              | 704        | 0.1+        | 1.2−     | 2003 11 03  | 704  | 0.8−        | 0.4− | 2005 03 16 | G96 | 0.4− 0.1−   |
| 1998 03 29                              | 704        | 1.0−        | 0.7−     | 2003 11 03  | 704  | 0.3+        | 0.3− | 2005 03 16 | G96 | 1.0− 0.2−   |
| 1998 03 29                              | 704        | (2.4+ 0.4−) |          | 2003 11 03  | 704  | 1.4+        | 0.3+ | 2005 03 16 | G96 | (0.2+ 1.9−) |
| 1998 03 29                              | 704        | 1.5+ 0.0    |          | 2003 11 03  | 704  | 0.6−        | 0.4+ | 2005 03 17 | 704 | 0.6+ 0.0    |
| 1999 09 07                              | 704        | 1.4− 1.6−   |          | 2003 11 03  | 704  | 1.0−        | 0.5+ | 2005 03 17 | 704 | 0.1− 0.8+   |
| 1999 09 07                              | 704        | 1.4− 1.1−   |          | 2003 11 18  | 644  | 0.1−        | 0.7+ | 2005 03 17 | 704 | 0.4+ 0.0    |
| 1999 09 07                              | 704        | 0.0 1.3+    |          | 2003 11 18  | 644  | 0.2+        | 0.1+ | 2005 03 18 | 704 | 0.2+ 0.2+   |
| 2001 01 19                              | 704        | 0.4+ 0.4+   |          | 2003 11 18  | 644  | 0.1+        | 0.1+ | 2005 03 18 | 704 | 0.2+ 0.8+   |
| 2001 01 19                              | 704        | 0.1+ 0.7+   |          | 2003 11 18  | 699  | 0.4+ 0.0    |      | 2005 03 18 | 704 | (0.2− 1.7+) |
| 2001 01 19                              | 704        | 0.6− 0.3−   |          | 2003 11 18  | 699  | 0.4+ 1.0−   |      | 2005 03 18 | 704 | 1.0+ 0.2+   |
| 2001 01 19                              | 704        | 0.1− 1.0−   |          | 2003 11 18  | 699  | 0.4+ 0.5+   |      | 2005 03 18 | 704 | 0.2− 0.1+   |
| 2003 09 29                              | 704        | 0.1− 0.4+   |          | 2003 11 18  | 699  | 0.1− 0.2−   |      | 2005 03 18 | 704 | 0.4− 0.6−   |
| 2003 09 29                              | 704        | 0.4+ 1.0+   |          | 2003 11 21  | 704  | 0.0 0.0     |      | 2005 03 18 | 704 | 0.5− 0.1−   |
| 2003 09 29                              | 704        | 0.4+ 0.5+   |          | 2003 11 21  | 704  | 0.4+ 0.6+   |      | 2005 03 18 | 704 | 0.8+ 0.9+   |
| 2003 09 29                              | 704        | 0.2− 0.3+   |          | 2003 11 21  | 704  | 0.2− 0.0    |      | 2005 03 30 | 703 | (0.2+ 1.7−) |
| 2003 10 02                              | 691        | 0.0 0.0     |          | 2003 11 21  | 704  | 0.2− 0.8+   |      | 2005 03 30 | 703 | 0.0 1.0−    |
| 2003 10 02                              | 691        | 0.0 0.0     |          | 2003 11 21  | 704  | 0.4− 0.1+   |      | 2005 03 30 | 703 | 0.4+ 0.6−   |
| 2003 10 02                              | 691        | 0.0 0.1+    |          | 2003 11 26  | 699  | 0.6+ 0.9−   |      | 2005 03 30 | 703 | 0.5− 0.0    |
| 2003 10 04                              | 701        | 0.4− 0.7+   |          | 2003 11 26  | 699  | 1.2− 0.7+   |      | 2005 04 01 | 699 | (0.5+ 1.9+) |
| 2003 10 04                              | 701        | 0.5+ 0.6+   |          | 2003 11 26  | 699  | 0.5− 0.7+   |      | 2005 04 01 | 699 | 0.3− 0.5−   |
| 2003 10 04                              | 701        | 0.1− 0.5+   |          | 2003 11 26  | 699  | 0.2− 0.3+   |      | 2005 04 01 | 699 | 0.5+ 1.1+   |
| 2003 10 05                              | 701        | 1.5+ 0.5+   |          | 2003 11 26  | 699  | 1.2+ 0.5+   |      | 2005 04 01 | 699 | 0.3+ 0.2−   |

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2003 10 05 | 701 | (0.6- 2.6+) | 2003 11 26 | 699 | 0.6+ 0.3+   | 2005 04 04 | 704 | 0.1- 0.1+   |
| 2003 10 05 | 701 | 0.6- 0.2-   | 2003 11 26 | 699 | 0.2+ 0.4-   | 2005 04 04 | 704 | 0.8+ 1.0+   |
| 2003 10 05 | 701 | 1.4+ 0.7+   | 2003 11 26 | 699 | (0.3+ 2.2+) | 2005 04 04 | 704 | (1.0- 1.7+) |
| 2003 10 05 | 701 | 0.1+ 0.1+   | 2003 12 01 | 704 | 0.1- 0.9+   | 2005 04 04 | 704 | (0.2+ 2.1+) |
| 2003 10 06 | 701 | 0.6+ 0.3-   | 2003 12 01 | 704 | 0.8+ 0.0    | 2005 04 16 | 703 | 0.4- 1.2+   |
| 2003 10 06 | 701 | 0.3- 0.6-   | 2003 12 01 | 704 | 0.8+ 0.7-   | 2005 04 16 | 703 | 0.3+ 0.1+   |
| 2003 10 06 | 701 | 0.7+ 0.4-   | 2005 03 01 | 691 | 0.1+ 0.2+   | 2005 04 16 | 703 | 0.6- 0.8-   |
| 2003 10 06 | 701 | 0.2+ 1.3-   | 2005 03 01 | 691 | 0.0 0.3+    | 2005 04 16 | 703 | 0.9- 1.1-   |
| 2003 10 23 | 699 | 0.3- 0.0    | 2005 03 01 | 691 | 0.1+ 0.4+   | 2006 08 12 | 644 | 0.1+ 0.4+   |
| 2003 10 23 | 699 | 0.2- 0.1-   | 2005 03 03 | 703 | 0.0 0.2-    | 2006 08 12 | 644 | 0.6- 0.6+   |
| 2003 10 23 | 699 | 1.0- 0.4-   | 2005 03 03 | 703 | 0.6- 0.1-   | 2006 08 12 | 644 | 0.0 0.5+    |
| 2003 10 23 | 699 | 1.4- 0.1+   | 2005 03 03 | 703 | 0.9- 0.5-   | 2006 08 13 | 644 | 0.5+ 0.6+   |
| 2003 10 23 | 704 | 0.1- 0.2+   | 2005 03 03 | 703 | 0.2+ 0.5-   | 2006 08 13 | 644 | 0.0 0.5+    |
| 2003 10 23 | 704 | 0.0 0.2+    | 2005 03 08 | 699 | 0.4+ 0.6+   | 2006 08 13 | 644 | 0.0 0.6+    |
| 2003 10 23 | 704 | 0.4- 0.4-   | 2005 03 08 | 699 | 0.0 0.5+    | 2007 12 13 | 704 | 0.5- 0.8-   |
| 2003 10 23 | 704 | 0.5- 0.2-   | 2005 03 08 | 699 | 0.8- 0.0    | 2007 12 13 | 704 | 0.2- 0.2-   |
| 2003 10 23 | 704 | 0.3- 0.1+   | 2005 03 08 | 699 | 0.3- 0.3+   | 2007 12 13 | 704 | 0.1+ 0.3-   |
| 2003 10 29 | 704 | 0.2+ 0.2+   | 2005 03 09 | 704 | 0.7+ 0.1-   | 2007 12 13 | 704 | 0.2- 0.2-   |
| 2003 10 29 | 704 | 0.1- 0.5+   | 2005 03 09 | 704 | 0.0 0.5+    | 2007 12 13 | 704 | 0.1- 0.2-   |
| 2003 10 29 | 704 | 0.5- 0.0    | 2005 03 09 | 704 | 1.4+ 0.7-   | 2007 12 15 | 704 | 0.9+ 0.5-   |
| 2003 10 29 | 704 | 0.7- 0.0    | 2005 03 09 | 704 | 0.2- 0.2+   | 2007 12 15 | 704 | 0.1+ 0.8-   |
| 2003 11 01 | 704 | 0.0 0.3+    | 2005 03 12 | 704 | 0.1+ 0.7+   | 2007 12 15 | 704 | 0.8- 0.5-   |
| 2003 11 01 | 704 | 0.5+ 0.2+   | 2005 03 12 | 704 | 0.8+ 0.7+   | 2007 12 15 | 704 | 0.9- 0.6-   |
| 2003 11 01 | 704 | 0.2+ 0.4-   | 2005 03 12 | 704 | 0.9+ 0.5+   | 2007 12 15 | 704 | 0.0 0.3+    |
| 2003 11 01 | 704 | 0.9+ 1.1+   | 2005 03 12 | 704 | 0.2+ 0.0    | 2007 12 15 | 704 | 0.8- 0.5-   |
| 2003 11 01 | 704 | 0.7+ 0.0    | 2005 03 12 | 704 | 0.5+ 0.5+   | 2007 12 15 | 704 | 0.6+ 0.1-   |
| 2003 11 02 | 704 | 0.6- 0.1-   | 2005 03 16 | 704 | 0.6- 0.7+   | 2007 12 15 | 704 | 0.5- 1.0-   |
| 2003 11 02 | 704 | 0.6- 0.3+   | 2005 03 16 | 704 | 0.2+ 0.9+   | 2007 12 15 | 704 | 0.3- 0.3+   |
| 2003 11 02 | 704 | 1.2- 0.5+   | 2005 03 16 | 704 | 1.5+ 0.0    | 2007 12 15 | 704 | 0.8+ 0.8+   |
| 2003 11 02 | 704 | 1.0- 0.4+   | 2005 03 16 | 704 | (0.6- 2.7+) | 2007 12 15 | 704 | 0.3- 0.3+   |
| 2003 11 02 | 704 | 0.7+ 0.4+   | 2005 03 16 | G96 | 0.2- 0.0    |            |     |             |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 15 | 699 | 0.5−  | 0.7−  | 2005 04 12 | G96 | 0.0  | 0.5+ | 2007 12 13 | 704 | 0.6+ | 0.3+ |
| 2003 10 16 | 644 | 0.6−  | 0.3+  | 2005 04 12 | G96 | 0.3− | 0.5+ | 2007 12 16 | 704 | 0.1+ | 0.9+ |
| 2003 10 16 | 644 | 0.4−  | 0.2+  | 2005 04 12 | G96 | 0.3− | 0.3+ | 2007 12 16 | 704 | 1.4− | 0.8+ |
| 2003 10 16 | 644 | 0.3−  | 0.1−  | 2005 04 12 | G96 | 0.2− | 0.4+ | 2007 12 16 | 704 | 1.4− | 0.1− |
| 2003 10 20 | 704 | (1.6+ | 1.0+) | 2005 04 14 | 691 | 0.2+ | 0.3+ | 2007 12 16 | 704 | 0.6− | 0.2− |
| 2003 10 20 | 704 | 0.0   | 0.6+  | 2005 04 14 | 691 | 0.4+ | 0.6+ | 2007 12 16 | 704 | 0.9− | 1.3+ |

**(172527)\* 2003 TT<sub>4</sub>**

Discovered 2003 Oct. 1 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 286.95403  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27193043 | <i>ω</i> | 260.89635 | −0.82368852   | −0.55164144 |
| <i>a</i> | 2.3595590  | <i>Ω</i> | 245.52048 | +0.56022390   | −0.75589130 |
| <i>e</i> | 0.0929275  | <i>i</i> | 8.29231   | +0.08767209   | −0.35259051 |
| <i>P</i> | 3.62       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 12 05 | 691 | 0.3− | 1.4− | 2005 01 19 | 703 | 0.7−  | 0.2+  | 2007 11 14 | 704 | 0.4+ | 0.5+ |
| 1996 12 05 | 691 | 0.5− | 0.0  | 2005 01 19 | 703 | 1.3−  | 0.2−  | 2007 11 14 | 704 | 0.5− | 1.1+ |
| 1996 12 05 | 691 | 0.8+ | 0.0  | 2005 01 19 | 703 | (1.6− | 0.3+) | 2007 11 14 | 704 | 0.1+ | 1.1+ |
| 2001 01 04 | 704 | 0.9+ | 0.3+ | 2005 03 08 | 703 | 0.6−  | 0.6−  | 2007 11 14 | 704 | 0.6+ | 0.5+ |
| 2001 01 04 | 704 | 0.9+ | 0.1− | 2005 03 08 | 703 | 0.6−  | 0.3−  | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2001 01 04 | 704 | 0.6+ | 1.1+ | 2005 03 08 | 703 | 0.4+  | 0.1−  | 2007 11 14 | 691 | 0.0  | 0.1− |
| 2001 01 04 | 704 | 0.0  | 0.7+ | 2005 03 08 | 703 | 0.2+  | 1.0−  | 2007 11 14 | 691 | 0.1+ | 0.1− |
| 2001 01 19 | 704 | 0.2− | 0.9+ | 2005 04 03 | 644 | 0.5+  | 0.5+  | 2007 11 19 | 691 | 0.1− | 0.2− |
| 2001 01 19 | 704 | 0.3+ | 0.7+ | 2005 04 03 | 644 | 0.6+  | 0.4+  | 2007 11 19 | 691 | 0.0  | 0.2− |
| 2001 01 19 | 704 | 0.3− | 0.8+ | 2005 04 03 | 644 | 0.8+  | 0.9+  | 2007 11 19 | 691 | 0.1− | 0.1− |
| 2003 10 01 | 691 | 0.1− | 0.1+ | 2005 04 05 | 703 | 0.4+  | 0.7−  | 2007 12 05 | 704 | 0.5+ | 0.4+ |
| 2003 10 01 | 691 | 0.3− | 0.1+ | 2005 04 05 | 703 | (1.6− | 1.0+) | 2007 12 05 | 704 | 1.0+ | 0.5+ |
| 2003 10 01 | 691 | 0.2+ | 0.3+ | 2005 04 05 | 703 | (2.2+ | 0.7+) | 2007 12 05 | 704 | 0.5+ | 0.4+ |
| 2003 10 03 | 691 | 0.0  | 0.0  | 2005 04 05 | 703 | (2.1+ | 0.9+) | 2007 12 05 | 704 | 0.5+ | 0.4+ |
| 2003 10 03 | 691 | 0.2− | 0.1− | 2007 11 01 | 691 | 0.2−  | 0.0   | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2003 10 03 | 691 | 0.3− | 0.2+ | 2007 11 01 | 691 | 0.2−  | 0.2+  | 2007 12 05 | G96 | 0.3+ | 0.2+ |
| 2003 10 27 | 691 | 0.7+ | 0.5+ | 2007 11 01 | 691 | 0.5−  | 0.7−  | 2007 12 05 | G96 | 0.2+ | 0.3− |
| 2003 10 27 | 691 | 0.2− | 0.2+ | 2007 11 02 | 691 | 0.0   | 0.2−  | 2007 12 05 | G96 | 0.3+ | 0.3− |
| 2003 10 27 | 691 | 0.1− | 0.1+ | 2007 11 02 | 691 | 0.2−  | 0.1−  | 2007 12 05 | G96 | 0.0  | 0.3− |
| 2005 01 19 | 703 | 1.0− | 0.1− | 2007 11 02 | 691 | 0.1−  | 0.1−  |            |     |      |      |

**(172528)\* 2003 TL<sub>13</sub>**

Discovered 2003 Oct. 14 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.83676  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25311077 | <i>ω</i> | 261.63143 | +0.39002664   | −0.91712868 |
| <i>a</i> | 2.4751164  | <i>Ω</i> | 164.60703 | +0.91855087   | +0.38128035 |
| <i>e</i> | 0.2096608  | <i>i</i> | 18.03614  | +0.06437018   | +0.11619071 |
| <i>P</i> | 3.89       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 14 | 704 | 1.0− | 0.6+ | 2003 10 19 | 704 | 0.0   | 0.4−  | 2005 04 08 | 704 | 0.8+  | 0.7+  |
| 1999 09 14 | 704 | 1.6− | 1.2+ | 2003 10 21 | 608 | (1.5− | 1.2−) | 2005 04 08 | 704 | 1.0+  | 0.6+  |
| 1999 09 14 | 704 | 0.4− | 0.6+ | 2003 10 21 | 608 | 1.0−  | 0.9−  | 2007 10 18 | 704 | (0.8− | 1.5−) |
| 1999 10 08 | 704 | 0.2− | 0.3− | 2003 10 21 | 608 | 0.9−  | 0.9−  | 2007 10 18 | 704 | 0.5−  | 1.5+  |
| 1999 10 08 | 704 | 0.5− | 0.5− | 2003 11 20 | 644 | 0.3−  | 0.2−  | 2007 10 18 | 704 | 0.0   | 1.2+  |
| 1999 10 08 | 704 | 0.4− | 0.4− | 2003 11 20 | 644 | 0.1+  | 0.2+  | 2007 10 18 | 704 | 0.3+  | 0.0   |
| 1999 10 08 | 704 | 0.8− | 0.4+ | 2003 11 20 | 644 | 0.1−  | 0.2+  | 2007 10 18 | 703 | 1.2+  | 0.4+  |
| 1999 11 10 | 704 | 1.0+ | 0.2− | 2003 11 20 | 644 | 0.3−  | 0.2+  | 2007 10 18 | 703 | 0.3−  | 0.4−  |
| 1999 11 10 | 704 | 1.6+ | 0.5− | 2003 11 20 | 644 | 0.0   | 0.6+  | 2007 10 18 | 703 | (1.6+ | 1.4−) |
| 1999 11 10 | 704 | 1.1+ | 0.3+ | 2003 11 20 | 644 | 0.4−  | 0.2−  | 2007 10 18 | 703 | 0.3+  | 0.2+  |
| 1999 11 10 | 704 | 1.5+ | 0.5+ | 2003 11 26 | 704 | 0.0   | 0.3+  | 2007 11 20 | 703 | 0.1−  | 0.5+  |
| 2001 03 19 | 645 | 0.1− | 0.0  | 2003 11 26 | 704 | 0.4+  | 0.8+  | 2007 11 20 | 703 | 0.2−  | 0.3−  |
| 2001 03 19 | 645 | 0.0  | 0.0  | 2003 11 26 | 704 | 0.6+  | 0.4−  | 2007 11 20 | 703 | 0.3−  | 0.1−  |
| 2003 09 22 | 699 | 0.0  | 0.6+ | 2003 11 26 | 704 | 0.8+  | 0.2−  | 2007 11 20 | 703 | 0.8+  | 0.6+  |
| 2003 09 22 | 699 | 0.9− | 0.9+ | 2003 12 14 | 644 | 0.3−  | 0.5−  | 2007 12 06 | 703 | 0.1−  | 0.5−  |
| 2003 09 22 | 699 | 0.7+ | 0.2+ | 2003 12 14 | 644 | 0.4−  | 0.3−  | 2007 12 06 | 703 | 0.3−  | 0.3−  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 699 | 0.8+  | 0.2−  | 2003 12 14 | 644 | 0.0  | 0.0  | 2007 12 06 | 703 | 0.1+ | 0.3− |
| 2003 10 14 | 699 | (1.8+ | 0.9+) | 2003 12 25 | 703 | 0.1+ | 1.1+ | 2007 12 06 | 703 | 0.1− | 0.7− |
| 2003 10 14 | 699 | 0.1−  | 0.3+  | 2003 12 25 | 703 | 0.7+ | 0.9+ | 2007 12 16 | 704 | 0.9− | 0.3+ |
| 2003 10 14 | 699 | 0.5−  | 0.1+  | 2003 12 25 | 703 | 0.1+ | 1.2+ | 2007 12 16 | 704 | 0.4+ | 0.0  |
| 2003 10 14 | 699 | (0.7− | 1.9−) | 2003 12 25 | 703 | 0.4+ | 0.5+ | 2007 12 16 | 704 | 0.1+ | 0.2− |
| 2003 10 19 | 704 | 0.3+  | 0.7−  | 2004 01 15 | 644 | 0.4− | 0.2− | 2007 12 16 | 699 | 0.2+ | 0.2− |
| 2003 10 19 | 704 | 0.3−  | 0.5−  | 2004 01 15 | 644 | 0.5− | 0.4− | 2007 12 16 | 699 | 0.0  | 1.0− |
| 2003 10 19 | 704 | 0.1+  | 0.6−  | 2004 01 15 | 644 | 0.1− | 0.0  | 2007 12 16 | 699 | 0.1+ | 0.4− |
| 2003 10 19 | 704 | 0.2−  | 0.6−  | 2005 04 08 | 704 | 0.9− | 0.6+ | 2007 12 16 | 699 | 0.3+ | 0.1+ |

**(172529)\* 2003 TK<sub>26</sub> = 2001 AL<sub>42</sub> = 2005 EP<sub>283</sub>**

Discovered 2003 Oct. 1 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 76039)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.14577  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27277034 | <i>ω</i> | 358.02924 | +0.37323610   | −0.91809887 |
| <i>a</i> | 2.3547128  | <i>Ω</i> | 70.03522  | +0.85311088   | +0.28315625 |
| <i>e</i> | 0.0797732  | <i>i</i> | 8.15807   | +0.36454991   | +0.27733915 |
| <i>P</i> | 3.61       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 04 | 699 | 0.7+  | 0.3−  | 2005 03 11 | 703 | 0.3−  | 0.2+  | 2007 11 14 | 704 | 0.5+  | 0.6+  |
| 2001 01 04 | 699 | 0.1−  | 0.1+  | 2005 03 11 | 703 | 0.3+  | 0.4+  | 2007 11 18 | 691 | 0.7−  | 0.2+  |
| 2001 01 04 | 699 | 0.9−  | 0.2+  | 2005 03 16 | 703 | 0.5−  | 0.5+  | 2007 11 18 | 691 | 0.2−  | 0.0   |
| 2001 01 04 | 699 | 0.0   | 0.5+  | 2005 03 16 | 703 | (0.1+ | 2.4+) | 2007 11 18 | 691 | 0.2−  | 0.0   |
| 2001 01 05 | 704 | (0.9+ | 1.6+) | 2005 03 16 | 703 | 0.8−  | 0.0   | 2007 12 03 | 703 | 0.3+  | 0.1−  |
| 2001 01 05 | 704 | 0.5+  | 0.6+  | 2005 03 16 | 703 | 0.1−  | 0.9−  | 2007 12 03 | 703 | 0.4−  | 0.1+  |
| 2001 01 05 | 704 | 0.3+  | 0.2−  | 2005 04 02 | 703 | (2.5− | 0.5+) | 2007 12 03 | G96 | (2.0− | 1.2+) |
| 2001 01 05 | 704 | 0.1+  | 0.5−  | 2005 04 02 | 703 | 0.6−  | 0.7+  | 2007 12 04 | 703 | 0.1+  | 0.2−  |
| 2001 01 05 | 704 | 0.3+  | 0.2−  | 2005 04 02 | 703 | (3.2− | 0.6+) | 2007 12 04 | G96 | 0.4+  | 0.2−  |
| 2002 06 07 | 291 | 0.2+  | 0.2+  | 2005 04 02 | 703 | 1.0−  | 0.2+  | 2007 12 04 | G96 | 0.2+  | 0.0   |
| 2002 06 07 | 291 | 0.3+  | 0.3+  | 2007 10 20 | G96 | 0.4+  | 0.4−  | 2007 12 04 | G96 | 0.4+  | 0.2−  |
| 2002 06 07 | 291 | 0.3+  | 0.3+  | 2007 10 20 | G96 | 0.6+  | 0.3−  | 2007 12 05 | 704 | 0.4+  | 0.6+  |
| 2003 09 17 | 704 | 0.4−  | 0.2+  | 2007 10 20 | G96 | 0.1+  | 0.2−  | 2007 12 05 | 704 | 0.2+  | 0.5+  |
| 2003 09 17 | 704 | 0.3−  | 0.4+  | 2007 11 05 | 704 | 1.2+  | 0.7+  | 2007 12 05 | 704 | 0.9+  | 0.4+  |
| 2003 09 17 | 704 | 0.6−  | 0.1+  | 2007 11 05 | 704 | 0.4+  | 0.4+  | 2007 12 05 | 704 | 0.4+  | 0.2+  |
| 2003 09 17 | 704 | (1.4− | 1.9+) | 2007 11 05 | 704 | 1.1+  | 1.4+  | 2007 12 14 | 704 | 0.0   | 0.1+  |
| 2003 10 01 | 699 | 0.2−  | 0.4−  | 2007 11 09 | 691 | 0.2−  | 0.0   | 2007 12 14 | 704 | 0.3+  | 0.4+  |
| 2003 10 01 | 699 | 0.4+  | 0.3−  | 2007 11 09 | 691 | 0.0   | 0.0   | 2007 12 14 | 704 | 0.4+  | 0.2+  |
| 2003 10 01 | 699 | 0.1−  | 0.2−  | 2007 11 09 | 691 | 0.2−  | 0.1+  | 2007 12 14 | 704 | 0.2+  | 0.9+  |
| 2003 10 01 | 699 | 0.6−  | 0.3−  | 2007 11 13 | 691 | 0.2−  | 0.1+  | 2007 12 14 | 704 | 0.1−  | 0.3+  |
| 2003 10 18 | 699 | 0.1+  | 0.6+  | 2007 11 13 | 691 | 0.3−  | 0.1+  | 2007 12 15 | G96 | 0.1−  | 0.3−  |
| 2003 10 18 | 699 | 0.1+  | 0.2−  | 2007 11 13 | 691 | 0.1−  | 0.1−  | 2007 12 15 | G96 | 0.2+  | 0.1−  |
| 2003 10 18 | 699 | 0.3−  | 0.6+  | 2007 11 14 | 704 | 0.1−  | 0.3−  | 2007 12 15 | G96 | 0.0   | 0.1+  |
| 2003 10 18 | 699 | 0.2−  | 0.6−  | 2007 11 14 | 704 | 0.0   | 0.7−  | 2007 12 15 | G96 | 0.1+  | 0.4−  |
| 2005 03 11 | 703 | 0.3+  | 0.8+  | 2007 11 14 | 704 | 0.1+  | 0.8−  |            |     |       |       |
| 2005 03 11 | 703 | 0.2+  | 0.6−  | 2007 11 14 | 704 | 0.4+  | 0.4−  |            |     |       |       |

**(172530)\* 2003 TF<sub>50</sub> = 2002 EH<sub>110</sub>**

Discovered 2003 Oct. 3 by NEAT at Haleakala.

Id. A. Doppler (*MPO* 69565)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 128.52987  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28249725 | <i>ω</i> | 230.15962 | +0.29465488 | +0.95212000 |
| <i>a</i> | 2.3003464  | <i>Ω</i> | 57.15983  | −0.84444524 | +0.29936412 |
| <i>e</i> | 0.1636014  | <i>i</i> | 5.56815   | −0.44731504 | +0.06203    |

2007 DEC. 24

M.P.O. 129401

|            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 03 09 | 699 | 0.1+  | 0.4+  | 2003 10 19 | 645 | 0.1+  | 0.1-  |
| 2002 03 09 | 699 | 0.5+  | 0.3+  | 2003 10 19 | 645 | 0.1+  | 0.1-  |
| 2002 03 09 | 699 | 0.8-  | 0.8+  | 2003 10 20 | 704 | 0.4-  | 0.7+  |
| 2002 03 12 | 704 | 0.2-  | 0.5+  | 2003 10 20 | 704 | 0.3+  | 0.6+  |
| 2002 03 12 | 704 | 1.1+  | 0.4-  | 2003 10 20 | 704 | 0.5+  | 0.1-  |
| 2002 03 12 | 704 | 0.3+  | 1.3-  | 2003 10 20 | 704 | 0.2+  | 0.1+  |
| 2002 04 16 | 704 | 0.8-  | 0.9+  | 2003 10 20 | 704 | 0.1+  | 0.1-  |
| 2002 04 16 | 704 | 0.5-  | 0.1+  | 2003 10 22 | 645 | 0.1-  | 0.0   |
| 2002 04 16 | 704 | (0.5- | 2.0+) | 2003 10 22 | 645 | 0.1-  | 0.0   |
| 2002 04 16 | 704 | 0.5-  | 1.4+  | 2003 10 24 | 645 | 0.0   | 0.0   |
| 2003 09 03 | 704 | 0.1-  | 0.0   | 2003 10 24 | 645 | 0.1+  | 0.0   |
| 2003 09 03 | 704 | 0.5+  | 0.4+  | 2003 10 25 | 704 | 0.3-  | 0.6+  |
| 2003 09 03 | 704 | 0.6-  | 0.6+  | 2003 10 25 | 704 | 0.2+  | 0.2+  |
| 2003 09 03 | 704 | 0.2-  | 1.1+  | 2003 10 25 | 704 | 0.1-  | 0.4+  |
| 2003 09 28 | 704 | 0.4-  | 0.4+  | 2003 10 25 | 704 | 0.1-  | 0.9+  |
| 2003 09 28 | 704 | 0.1+  | 0.3+  | 2003 10 25 | 704 | 0.2-  | 0.6+  |
| 2003 09 28 | 704 | 0.2+  | 1.1+  | 2003 10 29 | 699 | (2.3- | 0.7+) |
| 2003 09 28 | 704 | 0.3-  | 0.6+  | 2003 10 29 | 699 | 0.0   | 1.4+  |
| 2003 10 03 | 608 | 0.5-  | 1.0-  | 2003 10 29 | 699 | 0.2-  | 0.4-  |
| 2003 10 03 | 608 | 1.3-  | 0.1-  | 2003 10 29 | 699 | 0.6+  | 0.4+  |

(172531)\* 2003 TW<sub>57</sub> = 2002 GQ<sub>157</sub>

Discovered 2003 Oct. 15 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (MPO 69565)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 78.70787   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26416785 | $\omega$ | 182.14022 | +0.75172576 | +0.65587482 |
| <i>a</i> | 2.4055594  | $\Omega$ | 136.61109 | -0.60355924 | +0.72628525 |
| <i>e</i> | 0.1730903  | <i>i</i> | 5.74992   | -0.26575295 | +0.20576189 |
| <i>P</i> | 3.73       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 04 13 | 644 | 0.0   | 0.6+  | 2003 10 20 | 704 | 0.1-  | 0.2+  | 2006 05 22 | 691 | 0.0   | 0.6+  |
| 2002 04 13 | 644 | 0.0   | 0.1+  | 2003 10 20 | 704 | 0.8+  | 1.1+  | 2006 05 22 | 691 | 0.2+  | 0.4+  |
| 2002 04 13 | 644 | 0.1-  | 0.7+  | 2003 10 20 | 704 | 0.1+  | 0.8+  | 2006 05 22 | 691 | 0.1+  | 0.6+  |
| 2002 04 16 | 704 | 1.1+  | 0.0   | 2003 10 20 | 691 | 0.1-  | 0.1+  | 2006 05 25 | G96 | 0.2-  | 0.2+  |
| 2002 04 16 | 704 | 0.8+  | 0.7+  | 2003 10 20 | 691 | 0.1-  | 0.3+  | 2006 05 25 | G96 | 0.2-  | 0.3+  |
| 2002 04 16 | 704 | (0.4- | 1.6+) | 2003 10 20 | 691 | 0.2-  | 0.2+  | 2006 05 25 | G96 | 0.4-  | 0.1+  |
| 2003 09 19 | 599 | 0.2-  | 0.9+  | 2003 10 24 | 645 | 0.1-  | 0.0   | 2006 05 25 | G96 | 0.5-  | 0.1+  |
| 2003 09 19 | 599 | 0.8+  | 0.4-  | 2003 10 24 | 645 | 0.0   | 0.0   | 2006 05 26 | 691 | 0.3+  | 0.3+  |
| 2003 09 19 | 599 | (0.5+ | 1.6+) | 2003 10 28 | 608 | 0.8-  | 1.1+  | 2006 05 26 | 691 | 0.1+  | 0.2+  |
| 2003 09 28 | 704 | 0.1-  | 0.9+  | 2003 10 28 | 608 | 0.1-  | 0.1+  | 2006 05 26 | 691 | 0.2+  | 0.2+  |
| 2003 09 28 | 704 | 0.7-  | 0.8+  | 2003 10 28 | 608 | 0.5-  | 0.5+  | 2006 05 30 | 691 | 0.3+  | 0.4+  |
| 2003 09 28 | 704 | 0.3-  | 0.4+  | 2003 11 28 | 645 | 0.0   | 0.0   | 2006 05 30 | 691 | 0.7-  | 1.3-  |
| 2003 09 28 | 704 | 0.9-  | 1.4+  | 2003 11 28 | 645 | 0.0   | 0.1-  | 2006 05 30 | 691 | 0.4+  | 0.4+  |
| 2003 09 28 | 704 | 0.2-  | 0.8+  | 2005 03 13 | 691 | 0.2+  | 0.4+  | 2007 11 09 | 703 | 0.6-  | 0.6+  |
| 2003 09 28 | 699 | 0.9+  | 1.1-  | 2005 03 13 | 691 | 0.2+  | 0.6+  | 2007 11 09 | 703 | (0.4- | 2.1+) |
| 2003 09 28 | 699 | 0.1-  | 0.4-  | 2005 03 13 | 691 | 0.2-  | 0.1+  | 2007 11 09 | 703 | 0.9+  | 1.0+  |
| 2003 09 28 | 699 | 1.3+  | 1.2-  | 2006 05 09 | G96 | 0.3-  | 0.2+  | 2007 11 09 | 703 | 1.1-  | 0.5+  |
| 2003 09 28 | 699 | 1.1+  | 0.5-  | 2006 05 09 | G96 | 0.4-  | 0.2+  | 2007 11 18 | 703 | 0.8+  | 0.4+  |
| 2003 10 15 | 699 | 0.1+  | 0.9+  | 2006 05 09 | G96 | 0.3-  | 0.2+  | 2007 11 18 | 703 | 1.2-  | 0.8+  |
| 2003 10 15 | 699 | 0.0   | 0.0   | 2006 05 09 | G96 | 0.0   | 0.3+  | 2007 11 18 | 703 | (0.0  | 1.7+) |
| 2003 10 15 | 699 | 0.1-  | 0.2+  | 2006 05 20 | 703 | 0.9+  | 0.4+  | 2007 11 18 | 703 | 0.4-  | 0.4+  |
| 2003 10 15 | 699 | 0.2+  | 0.3+  | 2006 05 20 | 703 | 0.6-  | 0.3+  | 2007 12 03 | 704 | 0.8+  | 0.3+  |
| 2003 10 17 | 644 | 0.5-  | 0.1-  | 2006 05 20 | 703 | 0.4+  | 0.7+  | 2007 12 03 | 704 | 0.3+  | 0.4+  |
| 2003 10 17 | 644 | 0.3-  | 0.1-  | 2006 05 20 | 703 | (2.3+ | 1.0+) | 2007 12 03 | 704 | 0.4+  | 0.3+  |
| 2003 10 17 | 644 | 0.2-  | 0.5+  | 2006 05 20 | 644 | 0.2-  | 0.3+  | 2007 12 03 | 704 | 0.1-  | 0.9+  |
| 2003 10 20 | 704 | 0.1+  | 0.6+  | 2006 05 20 | 644 | 0.1-  | 0.4+  | 2007 12 03 | 704 | 0.0   | 0.4+  |
| 2003 10 20 | 704 | (1.6- | 0.2+) | 2006 05 20 | 644 | 0.1-  | 0.3+  |            |     |       |       |

(172532)\* 2003 UN<sub>8</sub>

Discovered 2003 Oct. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 359.36181  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.25990967 | $\omega$ | 34.10668 | +0.30079509 | -0.94686906 |
| <i>a</i> | 2.4317621  | $\Omega$ | 38.73943 | +0.82939311 | +0.20079301 |
| <i>e</i> | 0.2175089  | <i>i</i> | 10.48216 | +0.47077530 | +0.25123923 |
| <i>P</i> | 3.79       | <i>H</i> | 16.3     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 08 | 704 | 0.3+  | 0.2-  | 2003 10 24 | 621 | 0.2+ | 0.5- | 2003 12 17 | 644 | 0.1+ | 0.2- |
| 1999 10 08 | 704 | 0.7+  | 0.5-  | 2003 10 24 | 448 | 0.0  | 0.3- | 2003 12 17 | 644 | 0.2- | 0.4- |
| 1999 10 08 | 704 | 0.7-  | 0.7+  | 2003 10 24 | 448 | 0.1+ | 0.2- | 2003 12 17 | 644 | 0.1+ | 0.0  |
| 2003 09 29 | 704 | 0.4+  | 0.2+  | 2003 10 24 | 448 | 0.1+ | 0.3- | 2003 12 19 | 704 | 1.0+ | 0.2+ |
| 2003 09 29 | 704 | 0.7+  | 1.2+  | 2003 10 24 | 608 | 0.0  | 1.5- | 2003 12 19 | 704 | 0.0  | 0.2+ |
| 2003 09 29 | 704 | 0.1-  | 0.2+  | 2003 10 24 | 608 | 0.3- | 1.0- | 2003 12 19 | 704 | 0.4+ | 0.4+ |
| 2003 09 29 | 704 | 0.4+  | 0.3+  | 2003 10 24 | 608 | 0.1+ | 1.4- | 2003 12 19 | 704 | 0.2- | 1.5+ |
| 2003 09 29 | 704 | 0.0   | 0.7+  | 2003 10 29 | 704 | 0.5- | 0.7+ | 2003 12 23 | 704 | 0.4- | 0.1+ |
| 2003 10 16 | 699 | 0.4+  | 0.2+  | 2003 10 29 | 703 | 0.7- | 0.0  | 2003 12 23 | 704 | 0.2+ | 0.4+ |
| 2003 10 16 | 699 | 0.3+  | 0.2+  | 2003 10 29 | 704 | 0.3- | 0.4+ | 2003 12 23 | 704 | 0.6+ | 0.3+ |
| 2003 10 16 | 699 | 0.5-  | 0.0   | 2003 10 29 | 703 | 1.0- | 0.3+ | 2003 12 23 | 704 | 0.0  | 0.6+ |
| 2003 10 16 | 699 | 0.2+  | 0.4+  | 2003 10 29 | 703 | 1.1- | 0.5+ | 2003 12 23 | 704 | 0.1+ | 0.4+ |
| 2003 10 19 | 049 | (3.1- | 1.0-) | 2003 10 29 | 704 | 0.7- | 1.0+ | 2003 12 28 | 704 | 0.2+ | 0.2- |
| 2003 10 19 | 049 | (2.0- | 1.3-) | 2003 10 29 | 703 | 1.0- | 0.3- | 2003 12 28 | 704 | 0.5+ | 0.0  |
| 2003 10 19 | 049 | (2.3- | 1.1-) | 2003 10 29 | 704 | 0.2- | 1.0+ | 2003 12 28 | 704 | 0.5+ | 0.5- |
| 2003 10 19 | 691 | 0.1-  | 0.2-  | 2003 10 29 | 704 | 0.6- | 0.7+ | 2005 03 14 | G96 | 0.1- | 0.1- |
| 2003 10 19 | 691 | 0.2+  | 0.1-  | 2003 10 30 | 704 | 0.3- | 0.8+ | 2005 03 14 | G96 | 0.4+ | 0.2+ |
| 2003 10 19 | 691 | 0.2+  | 0.1-  | 2003 10 30 | 704 | 0.2+ | 0.2+ | 2005 03 14 | G96 | 0.4- | 0.1+ |
| 2003 10 20 | 644 | 0.0   | 0.1+  | 2003 10 30 | 704 | 0.1+ | 0.7+ | 2005 03 14 | G96 | 0.5+ | 0.1+ |
| 2003 10 20 | 644 | 0.1+  | 0.1-  | 2003 10 30 | 704 | 0.1- | 0.9+ | 2005 04 10 | G96 | 0.4+ | 0.7+ |
| 2003 10 20 | 644 | 0.4+  | 0.1+  | 2003 10 30 | 704 | 0.7+ | 0.6+ | 2005 04 10 | G96 | 0.0  | 0.5+ |
| 2003 10 21 | 704 | 0.2+  | 0.1-  | 2003 11 02 | 704 | 0.7+ | 0.1- | 2005 04 10 | G96 | 0.0  | 0.6+ |
| 2003 10 21 | 704 | 0.5+  | 0.2-  | 2003 11 02 | 704 | 0.2+ | 0.4+ | 2005 04 10 | G96 | 0.1- | 0.7+ |
| 2003 10 21 | 704 | 0.1+  | 0.4+  | 2003 11 02 | 704 | 0.4+ | 0.4+ | 2005 05 08 | G96 | 0.3+ | 0.1+ |
| 2003 10 21 | 704 | 1.2+  | 0.4-  | 2003 11 02 | 704 | 1.3+ | 0.5- | 2005 05 08 | G96 | 0.2- | 0.5- |
| 2003 10 21 | 704 | 0.1-  | 0.7+  | 2003 11 02 | 704 | 0.1+ | 0.4+ | 2005 05 08 | G96 | 0.9+ | 0.2+ |
| 2003 10 22 | 049 | 0.4-  | 0.4+  | 2003 11 18 | 644 | 0.1- | 0.1+ | 2005 05 08 | G96 | 0.5+ | 0.3+ |
| 2003 10 22 | 049 | 0.2+  | 0.0   | 2003 11 18 | 644 | 0.2- | 0.2+ | 2007 11 02 | 704 | 0.9+ | 0.9- |
| 2003 10 22 | 049 | 0.6-  | 0.1-  | 2003 11 18 | 644 | 0.1+ | 0.2+ | 2007 11 02 | 704 | 0.4- | 0.2+ |
| 2003 10 22 | 695 | 0.1-  | 0.1-  | 2003 11 20 | 704 | 0.4- | 0.5+ | 2007 11 02 | 704 | 1.0- | 0.3- |
| 2003 10 22 | 291 | 0.2-  | 0.1-  | 2003 11 20 | 704 | 0.5- | 0.6+ | 2007 11 08 | 704 | 1.2+ | 0.9+ |
| 2003 10 22 | 291 | 0.2-  | 0.1-  | 2003 11 20 | 704 | 0.4- | 0.0  | 2007 11 08 | 704 | 1.2+ | 0.7+ |
| 2003 10 22 | 695 | 0.0   | 0.2-  | 2003 11 20 | 704 | 0.4- | 0.0  | 2007 11 08 | 704 | 0.9+ | 0.6+ |
| 2003 10 22 | 291 | 0.3-  | 0.1-  | 2003 11 20 | 704 | 0.2- | 0.1+ | 2007 11 08 | 704 | 1.0+ | 0.3- |
| 2003 10 22 | 049 | 0.1+  | 0.6-  | 2003 11 21 | 691 | 0.1- | 0.1- | 2007 12 03 | 704 | 0.5+ | 0.3+ |
| 2003 10 22 | 049 | 0.1-  | 0.8-  | 2003 11 21 | 691 | 0.2- | 0.0  | 2007 12 03 | 704 | 0.4- | 0.2- |
| 2003 10 22 | 049 | 0.1+  | 0.6-  | 2003 11 21 | 691 | 0.1- | 0.0  | 2007 12 03 | 704 | 0.1- | 0.2+ |
| 2003 10 23 | 699 | 0.3-  | 0.0   | 2003 11 24 | 704 | 0.3+ | 0.1- | 2007 12 03 | 704 | 0.2+ | 0.0  |
| 2003 10 23 | 699 | 0.0   | 0.6-  | 2003 11 24 | 704 | 0.0  | 0.6+ | 2007 12 03 | 704 | 0.8+ | 0.5- |
| 2003 10 23 | 704 | 0.3+  | 0.5+  | 2003 11 24 | 699 | 0.3- | 0.1- | 2007 12 05 | 699 | 0.5- | 0.7- |
| 2003 10 23 | 699 | 0.7+  | 0.3+  | 2003 11 24 | 704 | 0.1+ | 0.1+ | 2007 12 05 | 699 | 0.5+ | 0.0  |
| 2003 10 23 | 704 | 0.1+  | 0.4-  | 2003 11 24 | 704 | 0.2- | 0.1+ | 2007 12 05 | 699 | 0.2+ | 0.1- |
| 2003 10 23 | 704 | 0.2+  | 0.3+  | 2003 11 24 | 699 | 0.3- | 0.6- | 2007 12 05 | 699 | 0.3- | 0.2- |
| 2003 10 23 | 699 | 0.8-  | 0.1-  | 2003 11 24 | 704 | 0.0  | 0.4+ | 2007 12 17 | 703 | 0.8- | 0.1- |
| 2003 10 23 | 704 | 0.1-  | 0.6+  | 2003 11 24 | 699 | 0.1- | 0.0  | 2007 12 17 | 703 | 0.8- | 0.2- |
| 2003 10 24 | 621 | 0.3+  | 0.9-  | 2003 11 24 | 699 | 0.5- | 0.3- | 2007 12 17 | 703 | 0.8- | 0.3- |
| 2003 10 24 | 621 | 0.0   | 0.4-  | 2003 12 17 | 644 | 0.0  | 0.5- | 2007 12 17 | 703 | 1.3- | 0.8- |
| 2003 10 24 | 621 | 0.7+  | 0.4-  | 2003 12 17 | 644 | 0.1+ | 0.2+ |            |     |      |      |
| 2003 10 24 | 621 | 0.1+  | 0.4-  | 2003 12 17 | 644 | 0.2+ | 0.2- |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 330.96703  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26801501 | $\omega$ 203.23865 | -0.21086091   | -0.97747836 |
| <i>a</i> | 2.3824839  | $\Omega$ 258.93502 | +0.89822098   | -0.19028315 |
| <i>e</i> | 0.1429825  | <i>i</i> 0.50128   | +0.38566403   | -0.09125991 |
| <i>P</i> | 3.68       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 03 | 691 | 0.1- | 0.2+ | 2003 10 21 | 644 | 0.0  | 0.3+ | 2005 04 05 | 699 | 0.3- | 0.8- |
| 2001 02 03 | 691 | 0.1+ | 0.7+ | 2003 10 21 | 644 | 0.9- | 0.3+ | 2005 04 09 | 691 | 0.2+ | 0.1- |
| 2001 02 03 | 691 | 0.1+ | 0.1+ | 2003 10 21 | 704 | 1.4- | 1.1+ | 2005 04 09 | 691 | 0.4+ | 0.2+ |
| 2001 02 22 | 704 | 0.1+ | 0.8+ | 2003 10 21 | 704 | 0.4- | 1.5+ | 2005 04 09 | 691 | 0.0  | 0.1- |
| 2001 02 22 | 704 | 0.3+ | 0.1- | 2003 10 21 | 644 | 0.2+ | 0.3+ | 2005 05 08 | G96 | 0.4- | 0.1- |
| 2001 02 22 | 704 | 1.4+ | 0.9+ | 2003 10 21 | 704 | 0.4- | 0.0  | 2005 05 08 | G96 | 0.3- | 0.1- |
| 2001 02 22 | 704 | 0.3- | 0.0  | 2003 10 23 | 704 | 0.6- | 0.7+ | 2005 05 08 | G96 | 0.1- | 0.1- |
| 2003 10 16 | 691 | 0.1+ | 0.2+ | 2003 10 23 | 704 | 0.1+ | 0.5+ | 2005 05 08 | G96 | 0.5- | 0.1- |
| 2003 10 16 | 691 | 0.1+ | 0.2+ | 2003 10 23 | 704 | 0.7- | 0.7+ | 2007 11 02 | 673 | 0.4- | 0.2+ |
| 2003 10 16 | 691 | 0.1- | 0.2+ | 2005 03 10 | G96 | 0.6- | 0.1- | 2007 11 02 | 673 | 0.3- | 0.2+ |
| 2003 10 20 | 673 | 0.1+ | 0.4+ | 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 11 02 | 673 | 0.3- | 0.1+ |
| 2003 10 20 | 673 | 0.2+ | 0.4+ | 2005 03 10 | G96 | 0.1- | 0.2+ | 2007 12 04 | 691 | 0.5- | 0.0  |
| 2003 10 20 | 926 | 0.0  | 0.4+ | 2005 03 10 | G96 | 0.0  | 0.3- | 2007 12 04 | 691 | 0.4- | 0.1- |
| 2003 10 20 | 926 | 0.0  | 0.1+ | 2005 03 13 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 691 | 0.6+ | 1.5- |
| 2003 10 20 | 926 | 0.2+ | 0.3+ | 2005 03 13 | 691 | 0.1+ | 0.5+ | 2007 12 05 | 704 | 0.8+ | 0.3+ |
| 2003 10 20 | 673 | 0.1+ | 0.4+ | 2005 03 13 | 691 | 0.1- | 0.4+ | 2007 12 05 | 704 | 0.3+ | 1.1- |
| 2003 10 21 | 673 | 0.4- | 0.1+ | 2005 04 05 | 699 | 0.2+ | 1.2+ | 2007 12 05 | 704 | 0.6+ | 0.7- |
| 2003 10 21 | 673 | 0.3- | 0.1+ | 2005 04 05 | 699 | 0.1- | 1.2- | 2007 12 05 | 704 | 0.1- | 0.3+ |
| 2003 10 21 | 673 | 0.4- | 0.3+ | 2005 04 05 | 699 | 0.4+ | 0.2+ | 2007 12 05 | 704 | 0.7+ | 0.1- |

(172534)\* 2003 UT<sub>11</sub> = 1999 LB<sub>28</sub>

Discovered 2003 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 53522)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 99.14405   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28021437 | $\omega$ 238.69667 | +0.74242428   | +0.64379248 |
| <i>a</i> | 2.3128233  | $\Omega$ 80.54144  | -0.53289849   | +0.73514767 |
| <i>e</i> | 0.2686791  | <i>i</i> 10.82778  | -0.40598693   | +0.21234205 |
| <i>P</i> | 3.52       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 06 10 | 704 | 0.1+ | 0.4- | 2003 10 22 | 704 | 0.1-  | 0.5+  | 2006 05 28 | 704 | 0.6+  | 1.1+  |
| 1999 06 10 | 704 | 0.1+ | 0.0  | 2003 10 24 | 683 | (0.1- | 2.2-) | 2006 05 28 | 704 | 0.7-  | 0.6+  |
| 1999 06 10 | 704 | 0.2- | 0.3+ | 2003 10 24 | 683 | 0.4-  | 1.4-  | 2006 06 14 | 644 | 0.1+  | 0.0   |
| 1999 06 10 | 704 | 0.9- | 0.3- | 2003 10 24 | 683 | (2.9+ | 1.0+) | 2006 06 14 | 644 | 0.2-  | 0.4-  |
| 1999 06 10 | 704 | 0.7- | 0.3+ | 2003 10 25 | 683 | 0.2-  | 0.2-  | 2006 06 14 | 644 | 0.0   | 0.1-  |
| 1999 06 10 | 704 | 0.5- | 0.2+ | 2003 10 25 | 683 | 0.3+  | 0.7+  | 2006 06 14 | 644 | 0.0   | 0.1-  |
| 1999 06 10 | 704 | 0.6- | 0.1- | 2003 10 25 | 683 | 1.3-  | 1.0-  | 2006 06 14 | 644 | 0.3-  | 0.3-  |
| 1999 06 10 | 704 | 0.3+ | 0.0  | 2003 10 27 | 683 | 0.3-  | 1.4+  | 2006 06 14 | 644 | 0.3-  | 0.1-  |
| 1999 06 10 | 704 | 0.4+ | 0.2- | 2003 10 27 | 683 | 0.8+  | 0.5+  | 2006 06 15 | E12 | 0.3-  | 0.3+  |
| 1999 06 10 | 704 | 0.1- | 0.2+ | 2003 10 27 | 683 | 1.1-  | 0.7-  | 2006 06 15 | E12 | 0.6-  | 0.3+  |
| 1999 06 15 | 704 | 0.5+ | 0.7+ | 2003 11 04 | 683 | 0.1-  | 1.3-  | 2006 06 15 | E12 | 0.5-  | 0.0   |
| 1999 06 15 | 704 | 1.0+ | 0.1+ | 2003 11 04 | 683 | 1.0-  | 0.5-  | 2006 06 15 | E12 | 0.3+  | 1.0-  |
| 1999 06 15 | 704 | 0.9+ | 1.5+ | 2003 11 04 | 683 | 1.0+  | 0.8+  | 2006 06 16 | 644 | 0.4-  | 0.1+  |
| 1999 06 15 | 704 | 0.7+ | 0.7+ | 2003 11 19 | 644 | 0.2+  | 0.4+  | 2006 06 16 | 644 | 0.3-  | 0.1-  |
| 2003 10 18 | 683 | 0.3+ | 0.4- | 2003 11 19 | 644 | 0.0   | 0.4+  | 2006 06 16 | 644 | 0.4-  | 0.1-  |
| 2003 10 18 | 683 | 1.5- | 1.3- | 2003 11 19 | 644 | 0.2-  | 0.5+  | 2006 06 20 | 691 | (0.1- | 1.7+) |
| 2003 10 18 | 683 | 0.1+ | 0.9- | 2003 11 23 | 699 | (2.9+ | 0.7+) | 2006 06 20 | 691 | 0.1+  | 0.2+  |
| 2003 10 20 | 704 | 0.0  | 0.3- | 2003 11 23 | 699 | 0.1+  | 1.0+  | 2006 06 20 | 691 | 0.4+  | 0.0   |
| 2003 10 20 | 704 | 0.1+ | 0.4+ | 2003 11 23 | 699 | 0.9+  | 0.9+  | 2007 11 02 | G96 | 0.6-  | 0.3+  |
| 2003 10 20 | 704 | 1.3+ | 0.5- | 2003 11 23 | 699 | 0.8-  | 0.2+  | 2007 11 02 | G96 | 0.4+  | 0.6+  |
| 2003 10 20 | 704 | 0.4- | 0.4- | 2006 05 25 | 704 | (2.2+ | 0.6-) | 2007 11 02 | G96 | 0.2-  | 0.0   |
| 2003 10 21 | 704 | 0.3+ | 0.8+ | 2006 05 25 | 704 | 1.0+  | 0.2-  | 2007 11 02 | G96 | 0.2-  | 0.7+  |
| 2003 10 21 | 704 | 0.7+ | 1.2+ | 2006 05 25 | 704 | 1.4+  | 0.1-  | 2007 12 04 | G96 | 0.3-  | 0.5-  |
| 2003 10 21 | 704 | 0.5+ | 0.3+ | 2006 05 25 | 704 | (1.6+ | 0.1-) | 2007 12 04 | G96 | 0.2+  | 0.2-  |
| 2003 10 21 | 704 | 0.3- | 0.8+ | 2006 05 25 | 704 | (1.9+ | 0.1-) | 2007 12 04 | G96 | 0.2+  | 0.2+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 683 | (1.5+ | 0.4+) | 2006 05 26 | G96 | 0.3- | 0.2- | 2007 12 04 | G96 | 0.3- | 0.8- |
| 2003 10 22 | 704 | 0.4+  | 0.2+  | 2006 05 26 | G96 | 0.1- | 0.1- | 2007 12 05 | 691 | 0.1- | 0.3+ |
| 2003 10 22 | 683 | (1.6- | 0.4+) | 2006 05 26 | G96 | 0.5- | 0.1- | 2007 12 05 | 691 | 0.2- | 0.6+ |
| 2003 10 22 | 704 | 0.8-  | 0.8+  | 2006 05 26 | G96 | 0.3- | 0.0  | 2007 12 05 | 691 | 0.5+ | 0.1+ |
| 2003 10 22 | 683 | 0.0   | 0.4+  | 2006 05 28 | 704 | 0.3+ | 0.4+ |            |     |      |      |
| 2003 10 22 | 704 | 0.6+  | 0.5-  | 2006 05 28 | 704 | 0.5+ | 1.5+ |            |     |      |      |

(172535)\* 2003 UV<sub>21</sub>

Discovered 2003 Oct. 21 by J. V. McClusky at Kingsnake Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.94287   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27469873 | $\omega$ 67.69818  | +0.94701170   | +0.27847593 |
| <i>a</i> | 2.3436798  | $\Omega$ 275.83891 | -0.32034832   | +0.85511939 |
| <i>e</i> | 0.2395789  | <i>i</i> 9.25898   | +0.02336233   | +0.43728935 |
| <i>P</i> | 3.59       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 08 | 699 | (0.5- | 3.4+) | 2003 10 29 | 446 | 0.4+  | 0.3-  | 2005 03 04 | 703 | 0.3+ | 0.7+ |
| 2003 07 08 | 699 | 0.3+  | 0.4-  | 2003 10 29 | 446 | 0.3+  | 0.2-  | 2005 03 04 | 703 | 0.5+ | 0.4- |
| 2003 07 08 | 699 | 1.0-  | 0.8-  | 2003 11 03 | 704 | 0.2+  | 0.0   | 2006 06 14 | 644 | 0.3+ | 0.7+ |
| 2003 07 08 | 699 | (2.1- | 0.1+) | 2003 11 03 | 704 | 0.1-  | 0.1+  | 2006 06 14 | 644 | 0.0  | 1.2+ |
| 2003 09 07 | 704 | 0.2+  | 0.6+  | 2003 11 03 | 704 | 0.4+  | 0.3+  | 2006 06 14 | 644 | 0.3+ | 0.4+ |
| 2003 09 07 | 704 | 0.4+  | 0.7+  | 2003 11 03 | 704 | (2.7- | 0.8+) | 2006 06 22 | 644 | 0.2- | 0.9+ |
| 2003 09 07 | 704 | (1.7+ | 1.3+) | 2003 11 19 | 704 | 0.1-  | 0.3+  | 2006 06 22 | 644 | 0.2- | 0.6+ |
| 2003 09 07 | 704 | 0.8+  | 0.3+  | 2003 11 19 | 704 | 0.4-  | 0.8+  | 2006 06 22 | 644 | 0.2+ | 0.9+ |
| 2003 10 03 | 691 | 0.1+  | 0.0   | 2003 11 19 | 704 | 0.5-  | 0.3+  | 2006 07 22 | E12 | 0.1+ | 0.3+ |
| 2003 10 03 | 691 | 0.1+  | 0.1-  | 2003 11 19 | 704 | 0.1-  | 0.4+  | 2006 07 22 | E12 | 0.5- | 0.5+ |
| 2003 10 03 | 691 | 0.0   | 0.1-  | 2003 11 24 | 699 | 0.6-  | 0.3-  | 2006 07 22 | E12 | 0.2- | 0.8+ |
| 2003 10 16 | 644 | 0.0   | 0.1+  | 2003 11 24 | 699 | 0.2+  | 0.0   | 2006 07 22 | E12 | 0.6+ | 0.2- |
| 2003 10 16 | 644 | 0.0   | 0.0   | 2003 11 24 | 699 | 0.1-  | 0.2+  | 2007 11 02 | G96 | 0.3+ | 0.2- |
| 2003 10 16 | 644 | 0.1-  | 0.1+  | 2003 11 24 | 699 | 0.2+  | 0.0   | 2007 11 02 | G96 | 0.7+ | 0.4- |
| 2003 10 16 | 644 | 0.0   | 0.1+  | 2003 12 15 | 703 | 0.3-  | 1.3+  | 2007 11 02 | G96 | 0.1- | 0.5- |
| 2003 10 16 | 644 | 0.1-  | 0.3+  | 2003 12 15 | 703 | 0.6-  | 1.2+  | 2007 11 02 | G96 | 0.3+ | 0.3- |
| 2003 10 16 | 644 | 0.1+  | 0.1+  | 2003 12 15 | 703 | 0.6-  | 0.8+  | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2003 10 17 | 699 | 0.1-  | 0.7-  | 2003 12 15 | 703 | 0.6-  | 1.0+  | 2007 11 11 | G96 | 0.2- | 0.4- |
| 2003 10 17 | 699 | 0.6-  | 0.4-  | 2003 12 17 | 644 | 0.0   | 0.3+  | 2007 11 11 | G96 | 0.3+ | 0.4- |
| 2003 10 17 | 699 | 0.2-  | 0.1-  | 2003 12 17 | 644 | 0.1+  | 0.4+  | 2007 11 11 | G96 | 0.2+ | 0.1- |
| 2003 10 17 | 699 | 0.5-  | 0.5-  | 2003 12 17 | 644 | 0.3+  | 0.6+  | 2007 11 18 | G96 | 0.3+ | 0.2- |
| 2003 10 18 | 644 | 0.4-  | 0.3-  | 2003 12 19 | 704 | 0.3-  | 0.0   | 2007 11 18 | G96 | 0.5+ | 0.3- |
| 2003 10 18 | 644 | 0.3+  | 0.0   | 2003 12 19 | 704 | 0.4-  | 0.2+  | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2003 10 18 | 644 | 0.0   | 0.1+  | 2003 12 19 | 704 | 0.2-  | 0.2-  | 2007 11 18 | G96 | 0.3+ | 0.4- |
| 2003 10 19 | 644 | 0.3-  | 0.2+  | 2003 12 19 | 704 | 0.7-  | 0.1-  | 2007 12 03 | 691 | 1.1- | 0.6- |
| 2003 10 19 | 644 | 0.2-  | 0.1+  | 2003 12 19 | 704 | 0.4-  | 0.1-  | 2007 12 03 | 691 | 0.3- | 0.0  |
| 2003 10 19 | 644 | 0.0   | 0.3+  | 2003 12 23 | 704 | 0.0   | 0.7+  | 2007 12 03 | 691 | 0.1- | 0.3+ |
| 2003 10 21 | 446 | 0.1-  | 0.4-  | 2003 12 23 | 704 | 0.7+  | 0.4+  | 2007 12 05 | 704 | 0.1+ | 0.2- |
| 2003 10 21 | 446 | 0.1+  | 0.4-  | 2003 12 23 | 704 | 0.1-  | 0.3+  | 2007 12 05 | 704 | 0.0  | 0.2- |
| 2003 10 22 | 446 | 0.2+  | 0.3-  | 2003 12 23 | 704 | 1.0+  | 0.9+  | 2007 12 05 | 704 | 0.2+ | 0.4- |
| 2003 10 22 | 446 | 0.2+  | 0.2-  | 2003 12 28 | 704 | 0.0   | 0.0   | 2007 12 05 | 704 | 1.1+ | 0.4+ |
| 2003 10 22 | 446 | 0.1+  | 0.2-  | 2003 12 28 | 704 | 0.0   | 0.4-  | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2003 10 23 | 446 | 0.1-  | 0.2-  | 2003 12 28 | 704 | 0.4+  | 0.2+  | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2003 10 23 | 446 | 0.2+  | 0.0   | 2003 12 28 | 704 | 0.1-  | 0.7-  | 2007 12 16 | 691 | 0.5+ | 1.1+ |
| 2003 10 28 | 446 | 0.3+  | 0.0   | 2005 03 04 | 703 | 0.4+  | 0.2+  |            |     |      |      |
| 2003 10 28 | 446 | 0.1-  | 0.1-  | 2005 03 04 | 703 | 0.7-  | 0.3+  |            |     |      |      |



2007 DEC. 24

M.P.O. 129403

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 22 | 644 | 0.0  | 0.3− | 2003 10 24 | 683 | 0.9−  | 0.0   | 2005 03 16 | G96 | 0.1+ | 0.4+ |
| 2003 09 22 | 644 | 0.2− | 0.4− | 2003 10 24 | 683 | 1.0−  | 1.0−  | 2006 05 21 | 691 | 0.3+ | 0.4+ |
| 2003 09 22 | 644 | 0.1− | 0.5− | 2003 10 24 | 683 | 0.9+  | 0.3+  | 2006 05 21 | 691 | 0.1− | 0.1+ |
| 2003 09 28 | 704 | 0.1+ | 0.2− | 2003 10 25 | 683 | (2.1+ | 1.2−) | 2006 05 21 | 691 | 0.4− | 0.5+ |
| 2003 09 28 | 704 | 0.6− | 0.1− | 2003 10 25 | 683 | 0.1−  | 0.1−  | 2006 05 29 | 691 | 0.4+ | 0.8+ |
| 2003 09 28 | 704 | 0.3− | 0.3+ | 2003 10 25 | 683 | 0.5+  | 0.1−  | 2006 05 29 | 691 | 0.1− | 0.3+ |
| 2003 09 28 | 704 | 0.3− | 0.0  | 2003 10 26 | 683 | 1.2−  | 0.7+  | 2006 05 29 | 691 | 0.3+ | 0.1+ |
| 2003 09 28 | 704 | 0.4+ | 0.3− | 2003 10 26 | 683 | 1.4−  | 1.3+  | 2007 11 04 | 704 | 0.7− | 0.9+ |
| 2003 10 15 | 699 | 0.2+ | 0.2− | 2003 10 26 | 683 | (2.3− | 0.1−) | 2007 11 04 | 704 | 1.4− | 0.1− |
| 2003 10 15 | 699 | 1.2− | 0.6+ | 2003 10 27 | 704 | 0.4+  | 1.1+  | 2007 11 04 | 704 | 0.4− | 0.3+ |
| 2003 10 15 | 699 | 0.7− | 0.1− | 2003 10 27 | 704 | 0.1+  | 0.1+  | 2007 11 04 | 704 | 0.5+ | 0.4+ |
| 2003 10 15 | 699 | 0.1− | 0.2+ | 2003 10 27 | 704 | 0.1+  | 0.5−  | 2007 11 12 | 704 | 0.4+ | 1.0+ |
| 2003 10 19 | 683 | 0.1− | 0.5− | 2003 10 27 | 704 | 0.7+  | 0.9+  | 2007 11 12 | 704 | 0.3+ | 0.3+ |
| 2003 10 19 | 683 | 0.8+ | 1.5− | 2003 11 19 | 644 | 0.2+  | 0.2+  | 2007 11 12 | 704 | 0.6+ | 0.8+ |
| 2003 10 19 | 683 | 0.7+ | 0.4− | 2003 11 19 | 644 | 0.0   | 0.1+  | 2007 11 12 | 704 | 0.1− | 0.9+ |
| 2003 10 20 | 704 | 0.5− | 0.4+ | 2003 11 19 | 644 | 0.1+  | 0.6+  | 2007 11 21 | A50 | 0.7+ | 0.6+ |
| 2003 10 20 | 704 | 0.4− | 0.1− | 2003 11 19 | 644 | 0.3+  | 0.4+  | 2007 11 21 | A50 | 0.5+ | 0.6+ |
| 2003 10 20 | 704 | 0.5+ | 0.6+ | 2003 11 19 | 644 | 0.2+  | 0.2+  | 2007 11 21 | A50 | 0.7− | 1.0− |
| 2003 10 22 | 683 | 1.0+ | 1.4− | 2003 11 19 | 644 | 0.2+  | 0.3+  | 2007 12 04 | 704 | 0.5− | 0.2− |
| 2003 10 22 | 683 | 0.3+ | 0.2+ | 2005 03 10 | 695 | 1.1+  | 0.2+  | 2007 12 04 | 704 | 0.5+ | 0.2+ |
| 2003 10 22 | 683 | 0.6− | 0.6− | 2005 03 10 | 695 | 0.7+  | 0.4+  | 2007 12 04 | 704 | 0.8− | 0.6+ |
| 2003 10 23 | 683 | 0.3+ | 0.2+ | 2005 03 16 | G96 | 0.3−  | 0.5+  | 2007 12 04 | 704 | 0.3− | 0.8+ |
| 2003 10 23 | 683 | 0.9+ | 1.2+ | 2005 03 16 | G96 | 0.1−  | 0.8−  |            |     |      |      |
| 2003 10 23 | 683 | 0.2+ | 0.1− | 2005 03 16 | G96 | 0.8−  | 0.0   |            |     |      |      |

(172537)\* 2003 UH<sub>27</sub> = 2003 US<sub>312</sub>

Discovered 2003 Oct. 23 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Id. A. Doppler (d, *MPO* 87831)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 116.39794  |          | (2000.0)  | $P$         | $Q$         |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.29496292 | $\omega$ | 216.43033 | +0.88154605 | +0.46201373 |
| $a$ | 2.2350699  | $\Omega$ | 115.77953 | −0.40368176 | +0.84428585 |
| $e$ | 0.1708158  | $i$      | 6.18754   | −0.24478070 | +0.27152296 |
| $P$ | 3.34       | $H$      | 17.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 05 13 | 704 | 0.4+  | 1.4+  | 2003 10 22 | 644 | 0.0   | 0.3+  | 2006 07 21 | 704 | (0.1− | 1.9−) |
| 1999 05 13 | 704 | 0.2+  | 0.3−  | 2003 10 22 | 644 | 0.1+  | 0.3+  | 2006 07 21 | 704 | 0.0   | 0.7+  |
| 1999 05 13 | 704 | (1.9− | 2.2+) | 2003 10 23 | 683 | (0.4+ | 1.7−) | 2006 07 21 | 704 | 0.5−  | 1.2+  |
| 1999 05 13 | 704 | 0.3+  | 0.2+  | 2003 10 23 | 683 | 0.7−  | 1.1−  | 2006 07 21 | 704 | 0.9+  | 0.6−  |
| 1999 05 13 | 704 | (6.7− | 2.8+) | 2003 10 23 | 683 | 0.1+  | 0.5−  | 2006 07 25 | 644 | 1.0−  | 0.3+  |
| 2003 08 23 | 704 | 0.8+  | 1.0−  | 2003 10 24 | 683 | 0.8−  | 0.0   | 2006 07 25 | 644 | 0.0   | 0.3−  |
| 2003 08 23 | 704 | 0.6−  | 0.3−  | 2003 10 24 | 683 | 0.7+  | 0.7+  | 2006 07 25 | 644 | 0.0   | 0.3−  |
| 2003 08 23 | 704 | 0.6−  | 0.2+  | 2003 10 24 | 683 | (1.6− | 0.8+) | 2006 08 14 | 644 | 0.1−  | 0.1+  |
| 2003 09 22 | 644 | 0.2−  | 0.1+  | 2003 10 25 | 683 | 0.1−  | 0.9−  | 2006 08 14 | 644 | 0.1−  | 0.1−  |
| 2003 09 22 | 644 | 0.0   | 0.2+  | 2003 10 25 | 683 | (1.4+ | 2.5+) | 2006 08 14 | 644 | 0.1−  | 0.1+  |
| 2003 09 22 | 644 | 0.2+  | 0.3+  | 2003 10 25 | 683 | (3.7+ | 1.3+) | 2006 08 15 | 644 | 0.0   | 0.2+  |
| 2003 10 15 | 699 | 0.5+  | 1.0+  | 2003 10 25 | 608 | 0.0   | 0.2+  | 2006 08 15 | 644 | 0.0   | 0.3+  |
| 2003 10 15 | 699 | 0.5+  | 0.0   | 2003 10 25 | 608 | 0.2−  | 0.5+  | 2006 08 15 | 644 | 0.2−  | 0.1+  |
| 2003 10 15 | 699 | 0.2+  | 1.3−  | 2003 10 25 | 608 | 0.3−  | 0.1−  | 2006 08 19 | 644 | 0.2+  | 0.0   |
| 2003 10 15 | 699 | 0.5−  | 1.3+  | 2003 10 27 | 683 | (1.6+ | 1.7+) | 2006 08 19 | 644 | 0.3+  | 0.0   |
| 2003 10 18 | 683 | 0.6+  | 0.3−  | 2003 10 27 | 683 | (1.3− | 2.4+) | 2006 08 19 | 644 | 0.2+  | 0.0   |
| 2003 10 18 | 683 | (0.0  | 1.8−) | 2003 10 27 | 683 | 0.5−  | 1.0+  | 2006 08 21 | 644 | 0.1−  | 0.0   |
| 2003 10 18 | 683 | 0.3−  | 1.4−  | 2005 02 09 | 691 | 0.1+  | 0.6+  | 2006 08 21 | 644 | 0.2−  | 0.1+  |
| 2003 10 18 | 608 | 0.2+  | 0.2−  | 2005 02 09 | 691 | 0.0   | 0.5+  | 2006 08 21 | 644 | 0.3−  | 0.0   |
| 2003 10 18 | 608 | 0.1−  | 0.3−  | 2005 02 09 | 691 | 0.1+  | 0.3+  | 2006 08 23 | 704 | 0.0   | 0.3−  |
| 2003 10 18 | 608 | 0.1−  | 0.3−  | 2006 05 07 | G96 | 0.3−  | 0.1−  | 2006 08 23 | 704 | 0.4+  | 0.6−  |
| 2003 10 19 | 683 | (0.4+ | 1.7−) | 2006 05 07 | G96 | 0.1−  | 0.4−  | 2006 08 23 | 704 | 0.8+  | 0.4−  |
| 2003 10 19 | 683 | (0.1− | 2.0−) | 2006 05 07 | G96 | 0.3−  | 0.0   | 2006 08 23 | 704 | 0.4+  | 0.2−  |
| 2003 10 19 | 683 | 0.2+  | 0.5−  | 2006 05 07 | G96 | 0.6−  | 0.0   | 2006 08 23 | 704 | 0.3+  | 1.2−  |
| 2003 10 20 | 704 | 0.1+  | 0.1+  | 2006 05 25 | G96 | 0.0   | 0.2−  | 2006 08 24 | 644 | 0.1+  | 0.4+  |
| 2003 10 20 | 704 | 0.0   | 0.2+  | 2006 05 25 | G96 | 0.0   | 0.1−  | 2006 08 24 | 644 | 0.2−  | 0.4+  |
| 2003 10 20 | 704 | 0.2+  | 0.4+  | 2006 05 25 | G96 | 0.0   | 0.1+  | 2006 08 24 | 644 | 0.1−  | 0.1+  |
| 2003 10 20 | 704 | 0.3−  | 0.2+  | 2006 05 25 | G96 | 0.1−  | 0.0   | 2006 08 24 | 644 | 0.1+  | 0.2+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 704 | 0.3− | 0.2− | 2006 06 05 | G96 | 0.1− | 0.4− | 2006 08 24 | 644 | 0.0  | 0.1+ |
| 2003 10 21 | 704 | 0.4+ | 0.8+ | 2006 06 05 | G96 | 0.2− | 0.3− | 2006 08 24 | 644 | 0.1− | 0.2+ |
| 2003 10 21 | 704 | 0.5− | 0.6+ | 2006 06 05 | G96 | 0.4− | 0.1− | 2006 09 15 | 644 | 0.3+ | 0.3+ |
| 2003 10 21 | 704 | 0.4+ | 0.7+ | 2006 06 05 | G96 | 0.1− | 0.5− | 2006 09 15 | 644 | 0.1+ | 0.3+ |
| 2003 10 21 | 704 | 0.4− | 1.4+ | 2006 06 19 | G96 | 0.4− | 0.2− | 2006 09 15 | 644 | 0.3+ | 0.3+ |
| 2003 10 22 | 683 | 0.5− | 0.6− | 2006 06 19 | G96 | 0.2− | 0.4− | 2007 11 08 | G96 | 0.0  | 0.1− |
| 2003 10 22 | 683 | 1.2− | 0.3+ | 2006 06 19 | G96 | 0.1− | 0.2− | 2007 11 08 | G96 | 0.1+ | 0.2− |
| 2003 10 22 | 704 | 0.3+ | 0.1+ | 2006 06 19 | G96 | 0.5− | 0.3− | 2007 11 08 | G96 | 0.7+ | 0.5− |
| 2003 10 22 | 683 | 1.1+ | 0.1+ | 2006 06 20 | 691 | 0.1+ | 0.2+ | 2007 11 08 | G96 | 0.2+ | 0.1+ |
| 2003 10 22 | 644 | 0.1− | 0.5+ | 2006 06 20 | 691 | 0.1− | 0.4+ | 2007 12 14 | G96 | 0.4− | 0.1+ |
| 2003 10 22 | 704 | 0.1− | 0.4− | 2006 06 20 | 691 | 0.3+ | 0.5+ | 2007 12 14 | G96 | 0.6+ | 0.0  |
| 2003 10 22 | 704 | 0.1− | 0.4+ | 2006 07 19 | D35 | 0.4− | 0.2− | 2007 12 14 | G96 | 0.6+ | 0.1− |
| 2003 10 22 | 704 | 0.0  | 0.1− | 2006 07 19 | D35 | 0.2− | 0.8+ | 2007 12 14 | G96 | 0.2+ | 0.5+ |
| 2003 10 22 | 704 | 0.0  | 0.8+ | 2006 07 19 | D35 | 0.3− | 0.1− |            |     |      |      |

(172538)\* 2003 UZ<sub>36</sub>

Discovered 2003 Oct. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 354.62508  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.26409197 | $\omega$ | 121.33336 | +0.26253387  | −0.96180316  |
| $a$ | 2.4060201  | $\Omega$ | 313.23625 | +0.84520601  | +0.26798032  |
| $e$ | 0.0817311  | $i$      | 6.10880   | +0.46551344  | +0.05586806  |
| $P$ | 3.73       | $H$      | 16.0      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 04 | 704 | 0.2+  | 0.1−  | 2003 10 24 | 704 | 0.5−  | 0.3+  | 2005 04 09 | G92 | (0.2+ | 1.6+) |
| 1999 10 04 | 704 | 1.3−  | 0.2+  | 2003 10 24 | 704 | 0.0   | 0.0   | 2005 04 09 | G92 | 0.1−  | 0.4+  |
| 1999 10 04 | 704 | 0.1+  | 0.1−  | 2003 10 24 | 704 | 0.3−  | 0.1+  | 2006 08 13 | 644 | 0.7−  | 0.3+  |
| 2001 02 19 | 699 | 0.4−  | 0.6+  | 2003 11 02 | 704 | 0.5+  | 0.2+  | 2006 08 13 | 644 | 0.5−  | 0.5+  |
| 2001 02 19 | 699 | 0.5−  | 0.4−  | 2003 11 02 | 704 | 0.3+  | 0.1−  | 2006 08 13 | 644 | 0.1+  | 0.8+  |
| 2001 02 19 | 699 | 0.1+  | 1.0+  | 2003 11 02 | 704 | 1.2−  | 1.3−  | 2006 08 14 | 644 | 0.0   | 0.8+  |
| 2001 02 19 | 699 | 0.5+  | 0.5+  | 2003 11 02 | 704 | 0.3+  | 0.1−  | 2006 08 14 | 644 | 0.4−  | 0.3+  |
| 2001 02 19 | 704 | 0.4+  | 0.1+  | 2003 11 14 | 644 | 0.4+  | 0.0   | 2006 08 14 | 644 | 0.2+  | 0.3+  |
| 2001 02 19 | 704 | 0.5−  | 0.8−  | 2003 11 14 | 644 | 0.4+  | 0.1+  | 2006 08 14 | 644 | 0.5−  | 0.5+  |
| 2001 02 19 | 704 | 0.6−  | 0.1−  | 2003 11 14 | 644 | 0.2+  | 0.1+  | 2006 08 14 | 644 | 0.1+  | 0.4+  |
| 2003 09 30 | 704 | 0.4+  | 0.3+  | 2003 11 19 | 704 | 0.3+  | 0.1+  | 2006 08 14 | 644 | 0.4−  | 0.3+  |
| 2003 09 30 | 704 | 0.4+  | 0.8+  | 2003 11 19 | 704 | 0.0   | 0.1−  | 2006 10 19 | G96 | 0.8+  | 0.9−  |
| 2003 09 30 | 704 | 0.2+  | 0.3+  | 2003 11 19 | 704 | 0.2+  | 0.2−  | 2006 10 19 | G96 | 0.1−  | 0.2+  |
| 2003 09 30 | 704 | 0.4+  | 0.4+  | 2003 11 19 | 704 | 0.0   | 0.3+  | 2006 10 19 | G96 | 1.0−  | 0.1+  |
| 2003 09 30 | 704 | 0.1−  | 0.3−  | 2003 11 19 | 704 | 0.3−  | 0.2+  | 2006 10 19 | G96 | 0.6+  | 0.0   |
| 2003 10 16 | 644 | 0.0   | 0.4+  | 2003 11 21 | 691 | 0.1−  | 0.0   | 2007 11 17 | 704 | 0.5+  | 0.1−  |
| 2003 10 16 | 644 | 0.0   | 0.3+  | 2003 11 21 | 691 | 0.1−  | 0.0   | 2007 11 17 | 704 | 1.7+  | 0.1+  |
| 2003 10 16 | 644 | 0.0   | 0.2+  | 2003 11 21 | 691 | 0.1−  | 0.0   | 2007 11 17 | 704 | 1.0+  | 0.9+  |
| 2003 10 16 | 644 | 0.1+  | 0.2+  | 2003 11 21 | 644 | 0.2+  | 0.1+  | 2007 11 17 | 704 | 0.4+  | 0.0   |
| 2003 10 16 | 644 | 0.1−  | 0.4+  | 2003 11 21 | 644 | 0.1+  | 0.3+  | 2007 11 19 | D29 | 0.1−  | 0.2+  |
| 2003 10 16 | 644 | 0.2−  | 0.1+  | 2003 11 21 | 644 | 0.1+  | 0.3+  | 2007 11 20 | 704 | 0.2−  | 0.0   |
| 2003 10 18 | 644 | 0.1−  | 0.2+  | 2005 04 06 | G92 | 0.4+  | 0.3+  | 2007 11 20 | 704 | 0.5−  | 0.6−  |
| 2003 10 18 | 644 | 0.2+  | 0.0   | 2005 04 06 | 699 | (0.7+ | 1.6+) | 2007 11 20 | 704 | 0.5−  | 0.6−  |
| 2003 10 18 | 644 | 0.2−  | 0.1+  | 2005 04 06 | 699 | (0.4− | 2.0+) | 2007 11 20 | 704 | 0.3+  | 0.1+  |
| 2003 10 22 | 704 | (1.7− | 0.6+) | 2005 04 06 | G92 | 0.8+  | 0.3−  | 2007 12 13 | 704 | 0.2+  | 0.1−  |
| 2003 10 22 | 704 | 1.1+  | 1.0−  | 2005 04 06 | 699 | 0.3+  | 0.2+  | 2007 12 13 | 704 | 0.0   | 0.3+  |
| 2003 10 22 | 704 | 0.1+  | 1.1+  | 2005 04 06 | G92 | 0.8+  | 0.4+  | 2007 12 13 | 704 | 1.1−  | 0.2−  |
| 2003 10 22 | 704 | 1.5+  | 0.3+  | 2005 04 06 | 699 | 1.5+  | 0.3+  | 2007 12 13 | 704 | 0.6+  | 0.3+  |
| 2003 12 22 | 691 | 0.1−  | 0.0   | 2005 04 09 | G92 | 0.1−  | 0.5+  | 2007 12 16 | 704 | 1.2−  | 0.9+  |
| 2003 12 22 | 691 | 0.1−  | 0.1−  | 2005 04 09 | G92 | 0.1−  | 0.6+  | 2007 12 16 | 704 | 0.2+  | 0.2−  |
| 2003 12 22 | 691 | 0.1−  | 0.2−  | 2005 04 09 | G92 | 0.1+  | 0.4+  | 2007 12 16 | 704 | 1.6−  | 0.8+  |
| 2003 10 24 | 704 | 0.1−  | 0.4+  | 2005 04 09 | G92 | 0.5+  | 0.6+  | 2007 12 16 | 704 | 1.0−  | 0.2+  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.71874    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26281278 | $\omega$ | 93.61670  | +0.50455838 | -0.86135490 |
| <i>a</i> | 2.4138210  | $\Omega$ | 325.87454 | +0.74444994 | +0.46868621 |
| <i>e</i> | 0.1001786  | <i>i</i> | 6.04344   | +0.43728151 | +0.19596166 |
| <i>P</i> | 3.75       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 01 10 | 566 | 0.6+ | 0.7- | 2003 10 18 | 699 | 0.6+ | 0.6- | 2003 11 19 | 704 | 0.5-  | 0.2+  |
| 1997 01 10 | 566 | 0.7- | 0.7- | 2003 10 18 | 644 | 0.4- | 0.4- | 2003 11 19 | 704 | 0.1+  | 0.2+  |
| 1997 01 10 | 566 | 0.1+ | 0.6- | 2003 10 18 | 644 | 0.3- | 0.2- | 2003 11 24 | 699 | 1.3-  | 0.4+  |
| 1999 10 04 | 704 | 0.8+ | 0.7+ | 2003 10 18 | 644 | 0.3- | 0.3- | 2003 11 24 | 699 | 0.6+  | 0.7-  |
| 1999 10 04 | 704 | 0.3+ | 0.4+ | 2003 10 22 | 704 | 0.1+ | 1.2+ | 2003 11 24 | 699 | 1.0+  | 0.8-  |
| 1999 10 04 | 704 | 1.0+ | 0.6- | 2003 10 22 | 704 | 0.2- | 0.0  | 2003 11 24 | 699 | 0.7+  | 0.3-  |
| 1999 10 04 | 704 | 1.3+ | 0.3- | 2003 10 22 | 704 | 0.1- | 0.1- | 2005 03 13 | 703 | (1.4- | 2.0-) |
| 1999 10 19 | 704 | 0.6+ | 0.8- | 2003 10 22 | 704 | 0.1+ | 0.9- | 2005 03 13 | 703 | 0.3+  | 0.4-  |
| 1999 10 19 | 704 | 0.4+ | 0.5+ | 2003 10 22 | 704 | 0.1+ | 0.4+ | 2005 03 13 | 703 | (2.4- | 0.7-) |
| 1999 10 19 | 704 | 1.2- | 0.2- | 2003 10 24 | 691 | 0.1+ | 0.2- | 2005 03 13 | 703 | 1.0-  | 0.2+  |
| 1999 10 19 | 704 | 0.6- | 0.1+ | 2003 10 24 | 691 | 0.1+ | 0.2- | 2007 11 17 | 704 | 0.4-  | 0.3-  |
| 2001 01 19 | 691 | 0.3+ | 0.2+ | 2003 10 24 | 691 | 0.2+ | 0.2- | 2007 11 17 | 704 | 0.1+  | 0.0   |
| 2001 01 19 | 691 | 0.3+ | 0.2+ | 2003 11 03 | 704 | 0.1- | 0.4+ | 2007 11 17 | 704 | 0.1+  | 0.4-  |
| 2001 01 19 | 691 | 0.2+ | 0.0  | 2003 11 03 | 704 | 0.5- | 0.7+ | 2007 11 17 | 704 | 0.3-  | 0.0   |
| 2001 02 20 | 645 | 0.2- | 0.1- | 2003 11 03 | 704 | 0.4- | 0.8+ | 2007 11 17 | 704 | 0.3-  | 0.1+  |
| 2001 02 20 | 645 | 0.1- | 0.1- | 2003 11 03 | 704 | 0.9- | 0.6+ | 2007 11 20 | 704 | 0.1+  | 0.0   |
| 2001 02 20 | 704 | 0.4+ | 0.2+ | 2003 11 03 | 704 | 0.1+ | 0.3+ | 2007 11 20 | 704 | 0.5+  | 0.0   |
| 2001 02 20 | 704 | 0.8- | 0.5+ | 2003 11 14 | 644 | 0.2- | 0.0  | 2007 11 20 | 704 | 0.2-  | 0.0   |
| 2001 02 20 | 704 | 0.5- | 0.0  | 2003 11 14 | 644 | 0.2- | 0.0  | 2007 11 20 | 704 | 0.6+  | 0.1+  |
| 2001 02 20 | 704 | 0.8+ | 0.0  | 2003 11 14 | 644 | 0.2- | 0.1- | 2007 11 20 | 704 | 1.3-  | 0.1-  |
| 2001 02 20 | 704 | 0.2- | 0.6+ | 2003 11 19 | 699 | 1.3- | 0.2- | 2007 12 02 | 704 | 0.7+  | 0.7+  |
| 2003 10 17 | 599 | 0.1- | 0.2- | 2003 11 19 | 699 | 0.8+ | 0.1- | 2007 12 02 | 704 | 1.4+  | 0.3-  |
| 2003 10 17 | 599 | 0.5- | 0.2- | 2003 11 19 | 699 | 0.4- | 0.3- | 2007 12 02 | 704 | 1.2+  | 0.1+  |
| 2003 10 17 | 599 | 0.4- | 0.1- | 2003 11 19 | 699 | 0.2+ | 0.7- | 2007 12 16 | 704 | 0.4+  | 0.4+  |
| 2003 10 18 | 699 | 0.0  | 0.4- | 2003 11 19 | 704 | 0.2+ | 0.6- | 2007 12 16 | 704 | 0.3+  | 1.6+  |
| 2003 10 18 | 699 | 0.4+ | 0.2- | 2003 11 19 | 704 | 0.5- | 0.1- | 2007 12 16 | 704 | 0.5-  | 1.7+  |
| 2003 10 18 | 699 | 0.1+ | 0.0  | 2003 11 19 | 704 | 0.3- | 0.2- | 2007 12 16 | 704 | 0.3+  | 0.7+  |

**(172540)\* 2003 UV<sub>40</sub> = 2001 DU<sub>15</sub>**

Discovered 2003 Oct. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 53529)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.25787  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.26559477 | $\omega$ | 43.52019 | +0.23167943 | -0.97129901 |
| <i>a</i> | 2.3969356  | $\Omega$ | 33.19161 | +0.86339263 | +0.17979168 |
| <i>e</i> | 0.0668217  | <i>i</i> | 5.64811  | +0.44819394 | +0.15573434 |
| <i>P</i> | 3.71       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 16 | 704 | 0.8+  | 0.3-  | 2003 11 01 | 704 | 0.2+ | 0.3- | 2005 04 06 | G96 | 0.1-  | 0.0   |
| 2001 02 16 | 704 | 0.3+  | 0.5-  | 2003 11 01 | 704 | 0.2+ | 0.7+ | 2005 04 06 | G96 | 0.2+  | 0.3-  |
| 2001 02 16 | 704 | 0.7+  | 0.1+  | 2003 11 01 | 704 | 0.7- | 0.7- | 2005 04 06 | G96 | 0.2+  | 0.2-  |
| 2001 02 16 | 704 | 0.3-  | 0.5+  | 2003 11 01 | 704 | 0.6+ | 1.0+ | 2005 04 12 | 695 | 0.2-  | 0.6+  |
| 2001 02 20 | 704 | 0.1-  | 0.6-  | 2003 11 18 | 644 | 0.1- | 0.3+ | 2005 04 12 | 695 | (1.6- | 1.7-) |
| 2001 02 20 | 704 | 0.1+  | 0.5-  | 2003 11 18 | 644 | 0.1- | 0.2+ | 2005 05 02 | 691 | 0.5+  | 0.4+  |
| 2001 02 20 | 704 | 0.9+  | 0.1-  | 2003 11 18 | 644 | 0.4- | 0.3+ | 2005 05 02 | 691 | 0.4+  | 0.5+  |
| 2003 10 16 | 699 | 0.6-  | 0.8+  | 2003 11 19 | 699 | 0.2+ | 0.1- | 2005 05 02 | 691 | 0.4+  | 0.4+  |
| 2003 10 16 | 699 | 0.1+  | 0.6-  | 2003 11 19 | 699 | 0.0  | 1.2+ | 2005 05 06 | G96 | 0.5-  | 0.5+  |
| 2003 10 16 | 699 | (1.8- | 0.1-) | 2003 11 19 | 699 | 0.3- | 0.0  | 2005 05 06 | G96 | 0.0   | 0.5+  |
| 2003 10 16 | 699 | 0.4+  | 0.1-  | 2003 11 19 | 699 | 0.0  | 0.4+ | 2005 05 06 | G96 | 0.2+  | 0.1+  |
| 2003 10 19 | 691 | 0.3-  | 0.1-  | 2003 11 20 | 704 | 0.1- | 0.3+ | 2005 05 06 | G96 | 0.1-  | 0.0   |
| 2003 10 19 | 691 | 0.0   | 0.1-  | 2003 11 20 | 704 | 0.2- | 0.6+ | 2005 05 10 | 691 | 0.2+  | 0.3+  |
| 2003 10 19 | 691 | 0.2-  | 0.1+  | 2003 11 20 | 704 | 0.3+ | 0.8- | 2005 05 10 | 691 | 0.3+  | 0.1+  |
| 2003 10 23 | 699 | 0.0   | 0.4+  | 2003 11 20 | 704 | 0.6- | 0.2- | 2005 05 10 | 691 | 0.3+  | 0.1+  |
| 2003 10 23 | 699 | 0.4+  | 0.5-  | 2003 11 20 | 704 | 0.1- | 0.0  | 2006 07 31 | E12 | 0.5-  | 1.4+  |
| 2003 10 23 | 699 | 0.1-  | 0.2+  | 2003 11 24 | 704 | 0.0  | 0.1- | 2006 07 31 | E12 | 1.0+  | 0.3+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 23 | 699 | 0.3- | 0.2+ | 2003 11 24 | 704 | 0.3+  | 0.1-  | 2006 07 31 | E12 | 0.5- | 0.1- |
| 2003 10 24 | 704 | 0.7+ | 1.0+ | 2003 11 24 | 704 | 0.3-  | 0.2-  | 2006 07 31 | E12 | 0.4+ | 0.4+ |
| 2003 10 24 | 704 | 0.9- | 0.6+ | 2003 11 24 | 699 | 0.3+  | 0.4-  | 2006 08 14 | 644 | 0.2+ | 0.9+ |
| 2003 10 24 | 704 | 0.8- | 0.9+ | 2003 11 24 | 704 | 0.1-  | 0.1+  | 2006 08 14 | 644 | 0.0  | 1.0+ |
| 2003 10 24 | 704 | 1.0- | 0.6+ | 2003 11 24 | 704 | 0.5-  | 0.3-  | 2006 08 14 | 644 | 0.1- | 0.4+ |
| 2003 10 24 | 704 | 0.5- | 0.4+ | 2003 11 24 | 699 | (1.9- | 1.0-) | 2007 11 20 | 704 | 0.8+ | 0.2- |
| 2003 10 24 | 704 | 0.9+ | 0.3- | 2003 11 24 | 699 | 0.2+  | 0.2-  | 2007 11 20 | 704 | 0.4- | 0.0  |
| 2003 10 24 | 704 | 0.7- | 0.1+ | 2003 11 24 | 699 | 0.6+  | 0.2+  | 2007 11 20 | 704 | 0.7+ | 0.4+ |
| 2003 10 24 | 704 | 0.1+ | 0.3+ | 2005 03 18 | 703 | 0.1+  | 0.2+  | 2007 11 20 | 704 | 0.2+ | 0.5+ |
| 2003 10 24 | 704 | 1.1+ | 0.9- | 2005 03 18 | 703 | 0.6-  | 0.1-  | 2007 12 13 | 704 | 0.1- | 0.4- |
| 2003 10 29 | 704 | 0.4+ | 0.1+ | 2005 03 18 | 703 | 0.4+  | 0.3+  | 2007 12 13 | 704 | 0.6- | 0.2- |
| 2003 10 29 | 703 | 0.8- | 0.1+ | 2005 03 18 | 703 | 0.8-  | 0.8-  | 2007 12 13 | 704 | 0.4- | 0.6- |
| 2003 10 29 | 703 | 0.8- | 0.8+ | 2005 04 01 | 691 | 0.6-  | 0.2+  | 2007 12 13 | 704 | 0.8+ | 0.9- |
| 2003 10 29 | 703 | 0.3+ | 0.1- | 2005 04 01 | 691 | 0.2+  | 0.4+  | 2007 12 13 | 704 | 0.3- | 0.7- |
| 2003 10 29 | 704 | 0.2+ | 0.1+ | 2005 04 01 | 691 | 0.1+  | 0.2+  | 2007 12 15 | 704 | 0.1+ | 0.2+ |
| 2003 10 29 | 703 | 1.4- | 0.3+ | 2005 04 04 | 703 | 0.3-  | 0.3+  | 2007 12 15 | 704 | 0.0  | 0.2+ |
| 2003 10 29 | 704 | 0.6- | 0.5+ | 2005 04 04 | 703 | 0.7+  | 0.2+  | 2007 12 15 | 704 | 0.0  | 0.3- |
| 2003 10 29 | 704 | 0.2- | 0.0  | 2005 04 04 | 703 | 0.5-  | 0.2+  | 2007 12 15 | 704 | 0.0  | 0.5- |
| 2003 10 30 | 704 | 0.4- | 0.7+ | 2005 04 04 | 703 | 1.2-  | 0.8-  | 2007 12 15 | 704 | 0.2+ | 0.4- |
| 2003 10 30 | 704 | 0.3- | 1.0+ | 2005 04 05 | 699 | 0.3+  | 0.4+  | 2007 12 16 | 704 | 0.1+ | 0.3+ |
| 2003 10 30 | 704 | 0.4- | 0.1+ | 2005 04 05 | 699 | 0.3-  | 1.3+  | 2007 12 16 | 704 | 1.0+ | 0.6+ |
| 2003 10 30 | 704 | 0.1- | 0.4+ | 2005 04 05 | 699 | 0.1+  | 0.4+  | 2007 12 16 | 704 | 0.1+ | 0.7+ |
| 2003 10 30 | 704 | 0.3+ | 0.9+ | 2005 04 05 | 699 | 0.4-  | 0.8+  | 2007 12 16 | 704 | 0.6- | 0.5+ |
| 2003 11 01 | 704 | 1.0+ | 0.7+ | 2005 04 06 | G96 | 0.1+  | 0.3-  |            |     |      |      |

**(172541)\* 2003 UM<sub>48</sub> = 2001 DQ<sub>9</sub>**

Discovered 2003 Oct. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 53531)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.74121   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27490789 | $\omega$ | 328.88263 | +0.47290136 | -0.87330608 |
| <i>a</i> | 2.3424909  | $\Omega$ | 92.66307  | +0.83058396 | +0.39748922 |
| <i>e</i> | 0.1052068  | <i>i</i> | 6.72920   | +0.29409962 | +0.28167146 |
| <i>P</i> | 3.59       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 02 | 699 | 0.5+ | 0.1+ | 2003 10 21 | 704 | 0.2-  | 0.3-  | 2003 11 21 | 699 | 0.3+  | 0.1-  |
| 2001 02 02 | 699 | 0.8- | 0.1- | 2003 10 21 | 644 | 0.2+  | 0.1+  | 2003 12 13 | 703 | (0.7- | 2.4+) |
| 2001 02 02 | 699 | 0.3+ | 1.0+ | 2003 10 21 | 644 | 0.0   | 0.0   | 2003 12 13 | 703 | 1.3-  | 0.1+  |
| 2001 02 02 | 699 | 0.3+ | 0.7+ | 2003 10 21 | 644 | 0.2-  | 0.2-  | 2003 12 13 | 703 | 0.7-  | 0.4+  |
| 2001 02 16 | 704 | 0.3+ | 0.4- | 2003 10 22 | 608 | 0.6+  | 0.6-  | 2003 12 13 | 703 | 0.4-  | 0.4-  |
| 2001 02 16 | 704 | 0.1+ | 0.2+ | 2003 10 22 | 608 | 1.0+  | 1.3-  | 2003 12 22 | 704 | 0.0   | 0.7+  |
| 2001 02 16 | 704 | 0.2- | 0.4+ | 2003 10 22 | 608 | 0.4+  | 1.2-  | 2003 12 22 | 704 | 0.2+  | 0.2+  |
| 2001 02 16 | 704 | 0.4+ | 0.2+ | 2003 10 23 | 699 | (1.6- | 0.9+) | 2003 12 22 | 704 | 0.2-  | 0.5+  |
| 2001 02 16 | 704 | 0.2+ | 0.2+ | 2003 10 23 | 699 | 0.9-  | 0.9+  | 2006 08 14 | 644 | 0.3-  | 0.5+  |
| 2001 02 19 | 704 | 0.4- | 0.4+ | 2003 10 23 | 699 | 0.2+  | 0.1-  | 2006 08 14 | 644 | 0.1-  | 0.7+  |
| 2001 02 19 | 704 | 0.3- | 0.1- | 2003 10 23 | 699 | 0.2+  | 0.6-  | 2006 08 14 | 644 | 0.1-  | 0.8+  |
| 2001 02 19 | 704 | 0.2+ | 0.3+ | 2003 10 26 | 608 | 0.1-  | 0.8-  | 2007 11 04 | G96 | 0.5-  | 0.8-  |
| 2003 10 16 | 699 | 0.3- | 0.7- | 2003 10 26 | 608 | 0.4+  | 0.2-  | 2007 11 04 | G96 | 0.1+  | 0.4-  |
| 2003 10 16 | 699 | 0.6+ | 0.7- | 2003 10 26 | 608 | 0.6+  | 0.1-  | 2007 11 04 | G96 | 0.3-  | 0.3-  |
| 2003 10 16 | 699 | 0.0  | 0.5+ | 2003 10 27 | 704 | 0.8+  | 0.4+  | 2007 11 04 | G96 | 0.3+  | 0.3-  |
| 2003 10 16 | 699 | 0.2- | 0.8+ | 2003 10 27 | 704 | 0.5-  | 1.0+  | 2007 11 08 | G96 | 0.2-  | 0.4-  |
| 2003 10 18 | 644 | 0.3- | 0.4+ | 2003 10 27 | 704 | 0.1-  | 0.5+  | 2007 11 08 | G96 | 0.0   | 0.3-  |
| 2003 10 18 | 644 | 0.1- | 0.2+ | 2003 10 29 | 691 | 0.1+  | 0.2+  | 2007 11 08 | G96 | 0.2-  | 0.4-  |
| 2003 10 18 | 644 | 0.1- | 0.3+ | 2003 10 29 | 691 | 0.0   | 0.1+  | 2007 11 08 | G96 | 0.1+  | 0.2-  |
| 2003 10 19 | 644 | 0.0  | 0.0  | 2003 10 29 | 691 | 0.0   | 0.2+  | 2007 11 21 | G96 | 0.1-  | 0.5-  |
| 2003 10 19 | 644 | 0.1- | 0.3+ | 2003 11 19 | 644 | 0.1-  | 0.2-  | 2007 11 21 | G96 | 0.4-  | 0.3-  |
| 2003 10 19 | 644 | 0.1+ | 0.3+ | 2003 11 19 | 644 | 0.2-  | 0.2-  | 2007 11 21 | G96 | 0.4+  | 0.4-  |
| 2003 10 19 | 644 | 0.1- | 0.3+ | 2003 11 19 | 644 | 0.1-  | 0.0   | 2007 11 21 | G96 | 0.1+  | 0.3-  |
| 2003 10 19 | 644 | 0.2+ | 0.5+ | 2003 11 19 | 644 | 0.3-  | 0.0   | 2007 12 14 | 704 | 0.9-  | 0.4-  |
| 2003 10 19 | 644 | 0.3- | 0.1+ | 2003 11 19 | 644 | 0.3-  | 0.0   | 2007 12 14 | 704 | 0.4+  | 0.3+  |
| 2003 10 21 | 704 | 0.8- | 0.2+ | 2003 11 19 | 644 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.1-  | 0.5+  |
| 2003 10 21 | 704 | 0.1+ | 0.0  | 2003 11 21 | 699 | 0.4+  | 0.1-  | 2007 12 14 | 704 | 1.1+  | 1.0+  |
| 2003 10 21 | 704 | 0.3- | 0.2- | 2003 11 21 | 699 | 0.2+  | 0.3-  |            |     |       |       |
| 2003 10 21 | 704 | 0.0  | 0.4- | 2003 11 21 | 699 | 0.9+  | 0.1-  |            |     |       |       |

2007 DEC. 24

M.P.O. 129405

(172542)\* 2003 UU<sub>48</sub>

Discovered 2003 Oct. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 354.06787  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23566633 | $\omega$ | 219.95136 | +0.95658410 | -0.28802543 |
| $a$ | 2.5957988  | $\Omega$ | 156.67294 | +0.28780845 | +0.90936175 |
| $e$ | 0.3067759  | $i$      | 6.46551   | +0.04596899 | +0.30017089 |
| $P$ | 4.18       | $H$      | 16.8      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |      |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|------|
| 1999 12 14 | 704 | (2.3- 1.3+) | 2003 11 23 | 683 | (0.7+ 1.9-) | 2007 09 11 | G96 | 0.2+        | 0.3- |
| 1999 12 14 | 704 | 0.1+ 1.3+   | 2003 11 23 | 703 | 0.2+ 1.0+   | 2007 09 11 | G96 | 0.1-        | 0.3- |
| 1999 12 14 | 704 | 0.5- 0.4+   | 2006 04 30 | 691 | 0.1+ 0.6+   | 2007 09 11 | G96 | 0.2+        | 0.2- |
| 1999 12 14 | 704 | 0.2+ 0.7-   | 2006 04 30 | 691 | 0.5+ 0.5+   | 2007 09 11 | G96 | 0.1-        | 0.2- |
| 2000 01 07 | 704 | 0.5+ 0.1+   | 2006 04 30 | 691 | 0.1+ 0.7+   | 2007 09 12 | G96 | 0.0         | 0.2- |
| 2000 01 07 | 704 | 1.4- 1.1+   | 2007 08 09 | 704 | 0.7+ 0.4+   | 2007 09 12 | G96 | 0.3-        | 0.2- |
| 2000 01 07 | 704 | 0.1- 0.6+   | 2007 08 09 | 704 | 0.6+ 0.8+   | 2007 09 12 | G96 | 0.1+        | 0.3- |
| 2003 08 26 | 704 | 0.3+ 0.1+   | 2007 08 09 | 704 | 0.1+ 0.6+   | 2007 09 12 | G96 | 0.1-        | 0.2- |
| 2003 08 26 | 704 | 0.5- 0.6+   | 2007 08 09 | 704 | 0.6+ 0.7+   | 2007 09 16 | 704 | 0.6-        | 1.4+ |
| 2003 08 26 | 704 | 0.1- 0.7+   | 2007 08 09 | 704 | 0.8+ 0.4+   | 2007 09 16 | 704 | 0.3+        | 1.2+ |
| 2003 08 26 | 704 | (0.7+ 1.7+) | 2007 08 10 | 691 | 0.4- 0.2-   | 2007 09 16 | 704 | (2.0+ 0.6+) |      |
| 2003 09 20 | 704 | 0.7+ 0.5+   | 2007 08 10 | 691 | 0.2- 0.3-   | 2007 09 16 | 704 | 1.3+        | 1.0- |
| 2003 09 20 | 704 | 0.5+ 0.0    | 2007 08 10 | 691 | 0.5- 0.1+   | 2007 09 18 | 699 | 0.2-        | 0.3+ |
| 2003 09 20 | 704 | 0.7+ 0.2-   | 2007 08 14 | 704 | 1.2+ 0.5+   | 2007 09 18 | 699 | 0.1+        | 0.4+ |
| 2003 09 20 | 704 | 0.6+ 0.0    | 2007 08 14 | 704 | 0.4+ 0.1+   | 2007 09 18 | 699 | 0.5+        | 0.2+ |
| 2003 09 20 | 699 | 0.3- 0.1-   | 2007 08 14 | 704 | 0.5- 0.2-   | 2007 09 19 | 704 | 0.8+        | 0.5+ |
| 2003 09 20 | 699 | 0.2- 0.5+   | 2007 08 14 | 704 | 0.1+ 0.1+   | 2007 09 19 | 704 | 0.5+        | 1.5+ |
| 2003 09 20 | 699 | 1.1- 0.1-   | 2007 08 14 | 704 | 0.4+ 0.6+   | 2007 09 19 | 704 | 0.9+        | 0.8+ |
| 2003 09 20 | 699 | 0.5+ 0.4-   | 2007 08 21 | 699 | 1.3- 0.4+   | 2007 09 19 | 704 | 0.9+        | 0.6+ |
| 2003 09 28 | 704 | (1.7- 1.8+) | 2007 08 21 | 699 | 0.3+ 0.3+   | 2007 09 19 | 704 | 0.9+        | 0.7+ |
| 2003 09 28 | 704 | 0.6- 0.8+   | 2007 08 21 | 699 | 0.4+ 0.6-   | 2007 09 20 | 691 | 0.1-        | 0.0  |
| 2003 09 28 | 704 | 0.6+ 0.5+   | 2007 08 21 | 699 | 0.1- 0.4+   | 2007 09 20 | 691 | 0.2-        | 0.1- |
| 2003 09 28 | 704 | 0.2- 1.0+   | 2007 08 22 | 699 | 0.3+ 0.0    | 2007 09 20 | 691 | 0.2-        | 0.3+ |
| 2003 10 03 | 608 | 0.4- 0.9+   | 2007 08 22 | 699 | 0.6- 0.0    | 2007 10 04 | 703 | 0.2+        | 0.4+ |
| 2003 10 03 | 608 | 0.3- 0.9+   | 2007 08 22 | 699 | 0.6- 0.1-   | 2007 10 04 | 703 | 0.5+        | 0.3- |
| 2003 10 03 | 608 | 0.5- 1.0+   | 2007 08 22 | 699 | 0.1+ 0.7+   | 2007 10 04 | 703 | 1.0+        | 0.1- |
| 2003 10 16 | 699 | 0.7+ 0.5-   | 2007 08 23 | 691 | 0.3- 0.2-   | 2007 10 04 | 703 | 0.4-        | 1.3- |
| 2003 10 16 | 699 | 0.5+ 0.1-   | 2007 08 23 | 691 | 0.4- 0.2-   | 2007 10 14 | G96 | 0.0         | 0.6- |
| 2003 10 16 | 699 | 0.2- 0.1+   | 2007 08 23 | 691 | 0.2- 0.5-   | 2007 10 14 | G96 | 0.1-        | 0.4- |
| 2003 10 16 | 699 | 0.4- 0.5-   | 2007 09 03 | 703 | 0.8- 0.5+   | 2007 10 14 | G96 | 0.3+        | 0.5- |
| 2003 10 19 | 608 | 0.4+ 1.0-   | 2007 09 03 | 703 | (0.0 1.6+)  | 2007 10 14 | G96 | 0.1+        | 0.4- |
| 2003 10 19 | 608 | 0.2- 0.6-   | 2007 09 03 | 703 | 0.2- 0.2-   | 2007 10 15 | G96 | 0.1+        | 0.4- |
| 2003 10 19 | 608 | 0.3+ 0.3-   | 2007 09 03 | 703 | 0.3- 0.5-   | 2007 10 15 | G96 | 0.1+        | 0.5- |
| 2003 10 20 | 704 | 0.6- 0.2+   | 2007 09 03 | 775 | 0.1- 0.5-   | 2007 10 15 | G96 | 0.0         | 0.4- |
| 2003 10 20 | 704 | 0.2- 0.1+   | 2007 09 03 | 775 | 0.1+ 0.9-   | 2007 10 15 | G96 | 0.1-        | 0.4- |
| 2003 10 20 | 704 | 0.6+ 0.2-   | 2007 09 03 | 775 | 0.3+ 1.0-   | 2007 10 18 | 699 | 0.3+        | 0.1- |
| 2003 10 20 | 704 | 0.3+ 0.4-   | 2007 09 06 | 704 | 0.7+ 0.2+   | 2007 10 18 | 699 | 0.8-        | 0.7- |
| 2003 10 20 | 704 | 0.2+ 0.3-   | 2007 09 06 | 699 | 0.3+ 0.7-   | 2007 10 18 | 699 | 0.4-        | 0.3+ |
| 2003 11 15 | 683 | 0.1- 0.5+   | 2007 09 06 | 704 | 0.6- 0.3+   | 2007 10 18 | 699 | 0.3+        | 0.6+ |
| 2003 11 15 | 683 | 0.4+ 0.5+   | 2007 09 06 | 704 | 0.4- 0.2-   | 2007 12 04 | 704 | 0.7-        | 0.6+ |
| 2003 11 15 | 683 | (2.8- 0.4-) | 2007 09 06 | 699 | 0.0 0.0     | 2007 12 04 | 704 | 0.4+        | 0.3- |
| 2003 11 23 | 703 | 0.9- 0.6+   | 2007 09 06 | 704 | 0.0 1.5+    | 2007 12 04 | 704 | 0.2+        | 0.9+ |
| 2003 11 23 | 703 | 0.8- 0.6-   | 2007 09 06 | 704 | 0.4+ 0.4+   | 2007 12 04 | 704 | 0.7+        | 0.1+ |
| 2003 11 23 | 683 | 0.8+ 1.1-   | 2007 09 06 | 699 | 0.1+ 0.3-   |            |     |             |      |
| 2003 11 23 | 703 | 0.8- 0.5+   | 2007 09 06 | 699 | 0.2- 0.1+   |            |     |             |      |

(172543)\* 2003 UX<sub>49</sub> = 1994 JQ<sub>2</sub>Discovered 2003 Oct. 16 by NEAT at Haleakala.  
Id. G. V. Williams (MPO 56979)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 37.75696   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24572881 | $\omega$ | 253.88960 | +0.92982943 | +0.30952753 |
| $a$ | 2.5244416  | $\Omega$ | 87.74457  | -0.21227147 | +0.89293492 |
| $e$ | 0.1982964  | $i$      | 11.48882  | -0.30059617 | +0.32689438 |
| $P$ | 4.01       | $H$      | 16.6      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |      |      |
|------------|-----|-------------|------------|-----|-----------|------------|-----|------|------|
| 1994 05 01 | 691 | 0.2+ 0.1-   | 2003 10 22 | 645 | 0.0 0.1-  | 2007 10 19 | 703 | 0.5+ | 0.9+ |
| 1994 05 01 | 691 | 0.6+ 0.0    | 2003 10 24 | 645 | 0.1+ 0.0  | 2007 10 19 | 703 | 0.7+ | 1.1+ |
| 1994 05 01 | 691 | 0.2+ 0.3-   | 2003 10 24 | 645 | 0.1+ 0.0  | 2007 10 19 | 703 | 0.5- | 0.6+ |
| 1994 05 09 | 691 | (2.6- 1.8+) | 2003 11 19 | 644 | 0.2+ 0.4+ | 2007 10 19 | 703 | 0.9+ | 1.2+ |
| 1994 05 09 | 691 | 0.6- 0.6+   | 2003 11 19 | 644 | 0.1- 0.3+ | 2007 10 31 | 703 | 1.0+ | 0.1+ |
| 1994 05 09 | 691 | 0.2- 0.1+   | 2003 11 19 | 644 | 0.0 0.2+  | 2007 10 31 | 703 | 0.4- | 1.4+ |
| 1999 10 04 | 703 | 0.4- 0.7-   | 2003 11 23 | 699 | 0.1- 0.3+ | 2007 10 31 | 703 | 1.0+ | 0.3+ |
| 1999 10 04 | 703 | 0.8- 0.0    | 2003 11 23 | 699 | 0.1- 0.8- | 2007 10 31 | 703 | 0.8- | 1.2+ |
| 1999 10 04 | 703 | 0.4+ 1.8+   | 2003 11 23 | 699 | 0.1- 0.7- | 2007 11 07 | 703 | 0.8- | 0.2- |
| 1999 10 04 | 703 | 1.0- 0.4-   | 2003 11 23 | 699 | 1.3- 0.1+ | 2007 11 07 | 703 | 0.1- | 0.2- |
| 1999 10 09 | 704 | 0.9+ 0.1-   | 2006 05 05 | G96 | 0.1- 0.3- | 2007 11 07 | 703 | 0.2- | 0.4- |
| 1999 10 09 | 704 | 0.2+ 0.2+   | 2006 05 05 | G96 | 0.2+ 0.2- | 2007 11 07 | 703 | 1.1- | 0.1+ |
| 1999 10 09 | 704 | 0.5- 0.4+   | 2006 05 05 | G96 | 0.2- 0.1+ | 2007 11 15 | 703 | 0.5+ | 0.4+ |
| 1999 10 09 | 704 | 0.2+ 0.3-   | 2006 05 05 | G96 | 0.1+ 0.0  | 2007 11 15 | 703 | 0.2+ | 0.5+ |
| 1999 10 09 | 704 | 0.8- 1.4+   | 2007 10 08 | 699 | 0.5+ 0.2- | 2007 11 15 | 703 | 0.4- | 0.0  |
| 2003 10 16 | 608 | 0.6+ 0.8-   | 2007 10 08 | 699 | 0.8- 0.9+ | 2007 11 15 | 703 | 1.2- | 0.3+ |
| 2003 10 16 | 608 | 0.8+ 0.6-   | 2007 10 08 | 699 | 0.9- 0.5- | 2007 12 03 | 704 | 0.0  | 0.7+ |
| 2003 10 16 | 608 | 0.8+ 0.7-   | 2007 10 08 | 699 | 0.5- 0.6- | 2007 12 03 | 704 | 0.5+ | 0.6+ |
| 2003 10 19 | 608 | 0.4+ 1.2-   | 2007 10 10 | 703 | 0.2+ 0.7+ | 2007 12 03 | 704 | 0.5- | 0.4+ |
| 2003 10 19 | 608 | 0.1+ 1.4-   | 2007 10 10 | 703 | 0.5- 0.8+ | 2007 12 03 | 704 | 0.3+ | 0.6+ |
| 2003 10 19 | 608 | (0.0 1.5-)  | 2007 10 10 | 703 | 1.2- 1.1+ | 2007 12 03 | 704 | 0.3+ | 0.5+ |
| 2003 10 20 | 704 | 0.5- 0.2+   | 2007 10 10 | 703 | 0.8+ 0.9+ | 2007 12 06 | 703 | 0.3- | 0.2- |
| 2003 10 20 | 704 | 0.3- 1.1-   | 2007 10 18 | 704 | 0.3+ 0.2+ | 2007 12 06 | 703 | 0.0  | 0.5- |
| 2003 10 20 | 704 | 0.9- 0.4+   | 2007 10 18 | 704 | 0.3- 1.0- | 2007 12 06 | 703 | 0.8- | 0.7- |
| 2003 10 20 | 704 | (1.7- 0.3+) | 2007 10 18 | 704 | 0.1+ 0.3- | 2007 12 06 | 703 | 1.7- | 0.0  |
| 2003 10 20 | 704 | 0.1- 0.1-   | 2007 10 18 | 704 | 0.5- 0.0  |            |     |      |      |
| 2003 10 22 | 645 | 0.1+ 0.1-   | 2007 10 18 | 704 | 0.2- 1.4- |            |     |      |      |

(172544)\* 2003 UX<sub>52</sub> = 2003 UP<sub>284</sub>

Discovered 2003 Oct. 18 by NEAT at Palomar.

Id. A. Doppler (d, MPO 76064)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 67.75704   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27373367 | $\omega$ | 6.52046   | +0.99450488 | +0.09940438 |
| $a$ | 2.3491851  | $\Omega$ | 347.62975 | -0.10163931 | +0.84158494 |
| $e$ | 0.1905671  | $i$      | 8.81930   | -0.02508959 | +0.53089881 |
| $P$ | 3.60       | $H$      | 15.7      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 1999 09 11 | 704 | 0.2- 1.7+   | 2003 10 19 | 644 | 0.3- 0.1- | 2003 12 28 | 704 | 1.1- 0.1+   |
| 1999 09 11 | 704 | 0.7- 1.3+   | 2003 10 19 | 644 | 0.1- 0.2- | 2003 12 28 | 704 | 0.7+ 0.5+   |
| 1999 09 11 | 704 | 0.2- 0.5+   | 2003 10 19 | 644 | 0.2- 0.0  | 2003 12 28 | 704 | 0.9- 0.1-   |
| 2001 02 16 | 704 | 0.2+ 0.6+   | 2003 10 19 | 644 | 0.0 0.1-  | 2003 12 29 | 704 | 0.6- 0.0    |
| 2001 02 16 | 704 | 0.1- 0.6+   | 2003 10 19 | 644 | 0.3- 0.1+ | 2003 12 29 | 704 | 0.4+ 0.2-   |
| 2001 02 16 | 704 | 0.6+ 0.2+   | 2003 10 19 | 644 | 0.0 0.2-  | 2003 12 29 | 704 | 0.0 0.1-    |
| 2001 02 16 | 704 | 0.1+ 0.7-   | 2003 10 21 | 691 | 0.0 0.2-  | 2005 03 03 | 703 | 0.4- 0.1+   |
| 2001 02 16 | 704 | 0.3- 0.0    | 2003 10 21 | 691 | 0.0 0.1-  | 2005 03 03 | 703 | 0.1+ 0.9+   |
| 2003 07 29 | 704 | 0.1+ 0.1+   | 2003 10 21 | 691 | 0.1+ 0.1- | 2005 03 03 | 703 | 0.5- 0.8+   |
| 2003 07 29 | 704 | 1.0- 0.4+   | 2003 10 22 | 704 | 0.4+ 0.4- | 2005 03 03 | 703 | 0.4+ 0.1+   |
| 2003 07 29 | 704 | (1.0- 1.6+) | 2003 10 22 | 704 | 0.5+ 0.3+ | 2005 03 08 | 699 | 0.2+ 0.5-   |
| 2003 08 24 | 704 | (2.0- 2.0+) | 2003 10 22 | 704 | 0.3+ 0.4+ | 2005 03 08 | 699 | 0.1- 1.2+   |
| 2003 08 24 | 704 | 0.6+ 0.8+   | 2003 10 22 | 704 | 0.2+ 0.1+ | 2005 03 08 | 699 | 0.2+ 0.9+   |
| 2003 08 24 | 704 | (1.8+ 0.6+) | 2003 10 22 | 704 | 0.1+ 0.2+ | 2005 03 08 | 699 | 0.2+ 0.5+   |
| 2003 08 24 | 704 | 0.6- 0.7+   | 2003 11 02 | 704 | 0.2- 0.2- | 2005 03 08 | 704 | 0.2+ 0.8-   |
| 2003 08 24 | 704 | 1.4+ 0.7-   | 2003 11 02 | 704 | 0.0 0.3-  | 2005 03 08 | 704 | (2.0+ 0.9-) |
| 2003 09 03 | 608 | 0.1- 0.7-   | 2003 11 02 | 704 | 0.6- 0.0  | 2005 03 08 | 704 | 1.0+ 0.8+   |
| 2003 09 03 | 608 | 0.4+ 1.3-   | 2003 11 02 | 704 | 0.6- 0.2- | 2005 03 08 | 704 | 0.6- 0.3+   |
| 2003 09 03 | 608 | (0.3- 2.0-) | 2003 11 20 | 704 | 0.3- 0.2- | 2005 03 17 | 703 | 1.2- 0.3-   |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 704 | 0.3+ | 0.3+ | 2003 11 20 | 704 | 0.0  | 0.2- | 2005 03 17 | 703 | 0.2+ | 1.3- |
| 2003 09 22 | 704 | 0.0  | 0.1- | 2003 11 20 | 704 | 0.1+ | 0.4- | 2005 03 17 | 703 | 0.6+ | 0.1+ |
| 2003 09 22 | 704 | 0.3+ | 0.0  | 2003 11 20 | 704 | 0.5- | 0.1- | 2005 03 17 | 703 | 0.4- | 1.4- |
| 2003 09 22 | 704 | 0.2- | 0.1- | 2003 11 20 | 704 | 0.1- | 0.3- | 2005 04 02 | 691 | 0.2+ | 0.1+ |
| 2003 09 22 | 704 | 0.3- | 0.2+ | 2003 11 21 | 644 | 0.1- | 0.0  | 2005 04 02 | 691 | 0.4+ | 0.1+ |
| 2003 09 30 | 704 | 0.0  | 0.0  | 2003 11 21 | 644 | 0.1- | 0.2- | 2005 04 02 | 691 | 0.3+ | 0.3+ |
| 2003 09 30 | 704 | 0.1- | 0.0  | 2003 11 21 | 644 | 0.1+ | 0.1- | 2005 04 02 | G96 | 0.3- | 0.1- |
| 2003 09 30 | 704 | 0.2+ | 0.1- | 2003 11 24 | 703 | 0.9+ | 0.2- | 2005 04 02 | G96 | 0.2- | 0.0  |
| 2003 09 30 | 704 | 0.2+ | 0.1- | 2003 11 24 | 703 | 0.3+ | 0.0  | 2005 04 02 | G96 | 0.2- | 0.1- |
| 2003 09 30 | 704 | 0.1+ | 0.2- | 2003 11 24 | 703 | 0.0  | 0.6+ | 2005 04 02 | G96 | 0.4- | 0.2- |
| 2003 10 05 | 704 | 0.0  | 1.3+ | 2003 11 24 | 703 | 0.2- | 0.3- | 2005 05 04 | G96 | 0.0  | 0.2+ |
| 2003 10 05 | 704 | 0.1- | 0.9+ | 2003 12 15 | 703 | 0.4- | 0.2- | 2005 05 04 | G96 | 0.0  | 0.1- |
| 2003 10 05 | 704 | 0.5+ | 0.4+ | 2003 12 15 | 703 | 0.8- | 0.4+ | 2005 05 04 | G96 | 0.1- | 0.3- |
| 2003 10 05 | 704 | 0.5+ | 0.5+ | 2003 12 15 | 703 | 0.8+ | 0.0  | 2005 05 04 | G96 | 0.4- | 0.3- |
| 2003 10 05 | 704 | 0.1+ | 0.4+ | 2003 12 15 | 703 | 0.0  | 0.2+ | 2007 11 03 | 704 | 0.1+ | 0.5+ |
| 2003 10 17 | 699 | 0.4- | 0.1- | 2003 12 17 | 644 | 0.3+ | 0.1+ | 2007 11 03 | 704 | 0.4+ | 0.2- |
| 2003 10 17 | 699 | 0.1- | 0.1- | 2003 12 17 | 644 | 0.2+ | 0.1+ | 2007 11 03 | 704 | 0.1+ | 0.1+ |
| 2003 10 17 | 699 | 0.2- | 0.5+ | 2003 12 17 | 644 | 0.4+ | 0.1+ | 2007 11 03 | 704 | 0.1+ | 0.2+ |
| 2003 10 17 | 699 | 0.5- | 0.2+ | 2003 12 18 | 704 | 0.6- | 0.1+ | 2007 12 02 | 704 | 0.3- | 0.2- |
| 2003 10 18 | 644 | 0.0  | 0.1- | 2003 12 18 | 704 | 0.8- | 0.8+ | 2007 12 02 | 704 | 0.3- | 0.3+ |
| 2003 10 18 | 644 | 0.1+ | 0.1- | 2003 12 18 | 704 | 0.1+ | 0.1+ | 2007 12 02 | 704 | 0.4+ | 0.6- |
| 2003 10 18 | 644 | 0.2+ | 0.1- | 2003 12 18 | 704 | 0.4+ | 0.4+ | 2007 12 02 | 704 | 0.2- | 0.0  |

**(172545)\* 2003 UX<sub>53</sub>**

Discovered 2003 Oct. 18 by NEAT at Palomar.

|                                         |            |          |           |             |             |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |
| $M$                                     | 34.73599   | (2000.0) |           | <b>P</b>    | <b>Q</b>    |
| $n$                                     | 0.26483399 | $\omega$ | 56.88526  | +0.87330865 | -0.48498959 |
| $a$                                     | 2.4015238  | $\Omega$ | 332.04554 | +0.40785467 | +0.77951628 |
| $e$                                     | 0.1132481  | $i$      | 5.63292   | +0.26643305 | +0.39640820 |
| $P$                                     | 3.72       | $H$      | 16.6      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 07 | 704 | 0.1- | 1.9+ | 2003 10 18 | 644 | 0.3-  | 0.1-  | 2003 12 17 | 644 | 0.3+  | 0.3+  |
| 1999 09 07 | 704 | 0.2- | 1.1+ | 2003 10 18 | 644 | 0.2+  | 0.2+  | 2003 12 17 | 644 | 0.5+  | 0.3-  |
| 1999 09 07 | 704 | 1.6- | 1.5+ | 2003 10 19 | 644 | 0.3-  | 0.0   | 2003 12 17 | 644 | 0.1+  | 0.2-  |
| 1999 09 07 | 704 | 0.8+ | 0.7+ | 2003 10 19 | 644 | 0.1-  | 0.0   | 2005 03 13 | 691 | 0.1+  | 0.5+  |
| 1999 10 13 | 704 | 0.3- | 0.4+ | 2003 10 19 | 644 | 0.1-  | 0.1+  | 2005 03 13 | 691 | 0.2+  | 0.2+  |
| 1999 10 13 | 704 | 0.5+ | 0.1+ | 2003 10 21 | 644 | 0.1-  | 0.1+  | 2005 03 13 | 691 | 0.1+  | 0.2+  |
| 1999 10 13 | 704 | 0.1+ | 0.1- | 2003 10 21 | 644 | 0.0   | 0.1+  | 2005 03 17 | 691 | 0.6+  | 0.2+  |
| 1999 10 13 | 704 | 0.4- | 0.2- | 2003 10 21 | 644 | 0.0   | 0.1+  | 2005 03 17 | 691 | 0.2+  | 0.6+  |
| 1999 10 13 | 704 | 1.1- | 0.1- | 2003 10 22 | 704 | 0.6-  | 0.0   | 2005 03 17 | 691 | 0.1-  | 0.3+  |
| 2001 01 18 | 691 | 0.0  | 0.3- | 2003 10 22 | 704 | 0.2+  | 0.0   | 2007 11 17 | 704 | (2.1+ | 1.4+) |
| 2001 01 18 | 691 | 0.6- | 0.4- | 2003 10 22 | 704 | 0.5-  | 0.2+  | 2007 11 17 | 704 | 0.1+  | 0.3+  |
| 2001 01 18 | 691 | 0.1+ | 0.1+ | 2003 10 22 | 704 | 0.5-  | 0.3+  | 2007 11 17 | 704 | 0.3+  | 0.6+  |
| 2001 02 13 | 691 | 0.1- | 0.0  | 2003 10 22 | 704 | 0.3+  | 0.2-  | 2007 11 17 | 704 | 0.2+  | 0.1+  |
| 2001 02 13 | 691 | 0.5+ | 0.2- | 2003 11 19 | 699 | 0.1+  | 1.3-  | 2007 11 20 | 704 | 0.9-  | 0.3-  |
| 2001 02 13 | 691 | 0.2- | 0.5+ | 2003 11 19 | 699 | 0.1+  | 0.1+  | 2007 11 20 | 704 | 0.2-  | 0.1-  |
| 2003 09 30 | 704 | 0.3- | 0.2+ | 2003 11 19 | 699 | 0.7+  | 0.5+  | 2007 11 20 | 704 | 0.6+  | 0.2+  |
| 2003 09 30 | 704 | 0.7+ | 0.2- | 2003 11 19 | 699 | (0.8+ | 1.9+) | 2007 12 13 | 704 | 0.0   | 0.3-  |
| 2003 09 30 | 704 | 0.3+ | 0.1+ | 2003 11 19 | 704 | 0.5-  | 0.6+  | 2007 12 13 | 704 | 0.3-  | 0.1-  |
| 2003 09 30 | 704 | 0.8+ | 0.6+ | 2003 11 19 | 704 | 0.1-  | 0.2+  | 2007 12 13 | 704 | 0.2+  | 0.1-  |
| 2003 10 05 | 704 | 0.1+ | 0.2- | 2003 11 19 | 704 | 0.5-  | 0.7+  | 2007 12 13 | 704 | 0.1+  | 0.0   |
| 2003 10 05 | 704 | 0.5+ | 0.3+ | 2003 11 19 | 704 | 0.5-  | 0.4+  | 2007 12 16 | 704 | 0.1+  | 0.5+  |
| 2003 10 05 | 704 | 1.2- | 0.7- | 2003 11 24 | 691 | 0.2+  | 0.1-  | 2007 12 16 | 704 | 0.0   | 0.6-  |
| 2003 10 05 | 704 | 0.9- | 0.7- | 2003 11 24 | 691 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.5+  | 0.6+  |
| 2003 10 18 | 644 | 0.3- | 0.3+ | 2003 11 24 | 691 | 0.1-  | 0.1-  |            |     |       |       |

**(172546)\* 2003 UH<sub>56</sub>**

Discovered 2003 Oct. 19 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 81.17540   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28444200 | $\omega$ | 256.86138 | +0.99283407 | +0.01169224 |
| $a$ | 2.2898493  | $\Omega$ | 102.37403 | +0.03349656 | +0.92807680 |
| $e$ | 0.1568572  | $i$      | 6.99347   | -0.11471046 | +0.37220524 |
| $P$ | 3.47       | $H$      | 17.0      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 20 | 691 | 0.3-  | 0.0   | 2003 10 20 | 704 | 0.2-  | 0.0   | 2003 12 22 | 704 | 0.3-  | 0.5+  |
| 2000 12 20 | 691 | 0.0   | 0.1+  | 2003 10 24 | 704 | 0.1-  | 0.1+  | 2003 12 22 | 704 | 0.6-  | 0.1-  |
| 2000 12 20 | 691 | 0.0   | 0.2+  | 2003 10 24 | 704 | 0.9-  | 0.7+  | 2005 03 13 | 152 | 0.7+  | 0.3+  |
| 2001 01 03 | 704 | 0.7-  | 0.7-  | 2003 10 24 | 704 | 0.1+  | 0.2+  | 2005 03 13 | 152 | 0.4-  | 0.6+  |
| 2001 01 03 | 704 | 0.2+  | 0.2+  | 2003 10 24 | 704 | 0.7+  | 0.3+  | 2005 03 13 | 152 | 0.1+  | 0.3+  |
| 2001 01 03 | 704 | 0.8+  | 0.4+  | 2003 10 24 | 704 | 0.0   | 0.5+  | 2005 03 16 | 703 | 1.0+  | 0.8+  |
| 2003 10 15 | 699 | 0.0   | 0.3-  | 2003 10 27 | 699 | 0.6+  | 0.8+  | 2005 03 16 | 703 | 0.7+  | 0.2+  |
| 2003 10 15 | 699 | 0.1+  | 0.6+  | 2003 10 27 | 699 | 0.6-  | 0.1-  | 2005 03 16 | 703 | 0.3+  | 0.0   |
| 2003 10 15 | 699 | 0.0   | 1.1+  | 2003 10 27 | 699 | 0.1+  | 0.7+  | 2005 03 16 | 703 | (1.5+ | 1.9+) |
| 2003 10 15 | 699 | 0.1-  | 0.4-  | 2003 10 27 | 699 | 0.1+  | 0.1+  | 2006 06 18 | 644 | 0.5-  | 0.1+  |
| 2003 10 16 | 683 | 0.5-  | 0.8-  | 2003 10 30 | 608 | 0.1+  | 1.4-  | 2006 06 18 | 644 | 0.1-  | 0.0   |
| 2003 10 16 | 683 | 0.6+  | 0.4+  | 2003 10 30 | 608 | (0.4+ | 1.6-) | 2006 06 18 | 644 | 0.1-  | 0.1+  |
| 2003 10 16 | 683 | 0.6+  | 1.3+  | 2003 10 30 | 608 | (0.1- | 1.8-) | 2006 06 22 | 644 | 0.2+  | 0.6-  |
| 2003 10 17 | 683 | 0.1+  | 0.3-  | 2003 11 19 | 703 | 0.9-  | 0.5-  | 2006 06 22 | 644 | 0.3-  | 0.0   |
| 2003 10 17 | 683 | 0.9+  | 0.7+  | 2003 11 19 | 703 | 0.3-  | 0.3-  | 2006 06 22 | 644 | 0.1-  | 0.1-  |
| 2003 10 17 | 683 | 0.1-  | 0.9-  | 2003 11 19 | 703 | 0.2+  | 0.7-  | 2007 11 08 | G96 | 0.1+  | 0.1-  |
| 2003 10 18 | 683 | 0.2-  | 0.4-  | 2003 11 19 | 703 | (0.2+ | 1.7-) | 2007 11 08 | G96 | 0.1-  | 0.0   |
| 2003 10 18 | 683 | (1.8+ | 0.6+) | 2003 11 19 | 644 | 0.4+  | 0.1-  | 2007 11 08 | G96 | 0.2+  | 0.4-  |
| 2003 10 18 | 683 | 0.8-  | 0.5-  | 2003 11 19 | 644 | 0.3+  | 0.1-  | 2007 11 08 | G96 | 0.0   | 0.0   |
| 2003 10 19 | 683 | 0.5-  | 1.4+  | 2003 11 19 | 644 | 0.3+  | 0.2-  | 2007 11 11 | G96 | 0.0   | 0.5-  |
| 2003 10 19 | 683 | (0.3+ | 2.3+) | 2003 11 23 | 699 | 0.2+  | 0.5-  | 2007 11 11 | G96 | 0.8-  | 0.6-  |
| 2003 10 19 | 683 | (1.8- | 0.6+) | 2003 11 23 | 699 | 0.6+  | 0.6-  | 2007 11 11 | G96 | 0.4-  | 0.7-  |
| 2003 10 20 | 683 | 0.3-  | 0.9+  | 2003 11 23 | 699 | 0.3+  | 0.5+  | 2007 11 11 | G96 | 0.7-  | 0.6-  |
| 2003 10 20 | 683 | (0.3- | 1.6+) | 2003 11 23 | 699 | (0.5+ | 1.6-) | 2007 12 14 | G96 | 0.4+  | 0.2-  |
| 2003 10 20 | 704 | 0.3-  | 0.3-  | 2003 11 26 | 699 | 0.6+  | 0.7-  | 2007 12 14 | G96 | 0.1-  | 0.4-  |
| 2003 10 20 | 683 | (1.7- | 0.4+) | 2003 11 26 | 699 | 0.9-  | 0.2+  | 2007 12 14 | G96 | 0.1-  | 0.1-  |
| 2003 10 20 | 704 | 0.3+  | 0.7+  | 2003 11 26 | 699 | 0.5+  | 0.1+  | 2007 12 14 | G96 | 0.4+  | 0.2-  |
| 2003 10 20 | 704 | 0.4-  | 0.9+  | 2003 11 26 | 699 | 0.7-  | 1.1-  |            |     |       |       |
| 2003 10 20 | 704 | 0.8+  | 0.1-  | 2003 12 22 | 704 | 0.1-  | 0.4-  |            |     |       |       |

**(172547)\* 2003 UU<sub>60</sub> = 1997 YD<sub>16</sub>**

Discovered 2003 Oct. 16 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 56989)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |          |   |
|-----|------------|----------|-----------|-------------|-------------|----------|---|
| $M$ | 111.22905  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
| $n$ | 0.29552030 | $\omega$ | 218.55590 | +0.76952938 | +0.63044814 |          |   |
| $a$ | 2.2322586  | $\Omega$ | 102.05367 | -0.55708051 | +0.74062724 |          |   |
| $e$ | 0.2460314  | $i$      | 5.97400   | -0.31222721 | +0.23239283 |          |   |
| $P$ | 3.34       | $H$      | 16.3      | $G$         | 0.15        | $U$      | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |        |
|------------|-----|------|------|------------|-----|--------|
| 1997 12 29 | 691 | 0.3- | 0.1- | 2003 09 18 | 704 | 0.5+</ |
|------------|-----|------|------|------------|-----|--------|

2007 DEC. 24

M.P.O. 129407

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 23 | 608 | 0.2+ | 0.4- | 2003 10 19 | 704 | 0.0  | 0.7+ | 2007 12 10 | 704 | 0.2+ | 0.0  |
| 2003 09 02 | 704 | 0.1- | 0.7+ | 2003 10 19 | 704 | 0.0  | 1.2+ | 2007 12 10 | 704 | 0.0  | 0.1- |
| 2003 09 02 | 704 | 0.1- | 0.0  | 2003 10 19 | 704 | 0.2+ | 0.4+ | 2007 12 10 | 704 | 1.4+ | 1.0+ |
| 2003 09 02 | 704 | 0.1+ | 0.1+ | 2003 10 19 | 704 | 0.9- | 0.8- | 2007 12 15 | 691 | 0.7- | 0.1- |
| 2003 09 02 | 704 | 0.1- | 0.1+ | 2003 10 29 | 699 | 0.3- | 0.4+ | 2007 12 15 | 691 | 0.6- | 0.1+ |
| 2003 09 02 | 704 | 0.5- | 0.7- | 2003 10 29 | 699 | 0.3+ | 0.6+ | 2007 12 15 | 691 | 0.1+ | 0.2+ |

**(172548)\* 2003 UA<sub>80</sub> = 1997 CA<sub>10</sub>**

Discovered 2003 Oct. 17 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Id. G. V. Williams (*MPO* 57002)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.40727   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.25724341 | $\omega$ | 242.20525 | +0.99371930 | -0.06535787 |
| <i>a</i> | 2.4485363  | $\Omega$ | 121.41237 | +0.09293902 | +0.93412855 |
| <i>e</i> | 0.1305216  | <i>i</i> | 6.10954   | -0.06232401 | +0.35090198 |
| <i>P</i> | 3.83       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 02 02 | 691 | 0.0   | 0.1-  | 2003 10 20 | 704 | 0.4+ | 0.2- | 2007 11 09 | 703 | 0.6+  | 0.4+  |
| 1997 02 02 | 691 | 0.2+  | 0.3-  | 2003 10 20 | 704 | 0.5- | 0.2- | 2007 11 09 | 703 | 0.4-  | 1.0+  |
| 1997 02 02 | 691 | 0.2+  | 0.0   | 2003 10 21 | 691 | 0.0  | 0.3+ | 2007 11 11 | 704 | 0.5-  | 0.6+  |
| 1997 02 06 | 691 | 0.4-  | 0.2-  | 2003 10 21 | 691 | 0.1- | 0.2+ | 2007 11 11 | 704 | (1.7- | 1.8-) |
| 1997 02 06 | 691 | 1.2-  | 1.1+  | 2003 10 21 | 691 | 0.2- | 0.1- | 2007 11 11 | 704 | 0.4-  | 0.3+  |
| 1997 02 06 | 691 | 0.0   | 0.5-  | 2003 11 19 | 644 | 0.1+ | 0.5+ | 2007 11 11 | 704 | 1.4-  | 0.5+  |
| 1999 09 08 | 703 | (2.3- | 0.0 ) | 2003 11 19 | 644 | 0.2+ | 0.4+ | 2007 11 17 | 703 | 0.1-  | 0.5+  |
| 1999 09 08 | 703 | 1.3-  | 0.5+  | 2003 11 19 | 644 | 0.3+ | 0.5+ | 2007 11 17 | 703 | 0.3-  | 0.3+  |
| 1999 09 08 | 703 | 0.6-  | 0.3+  | 2003 11 20 | 645 | 0.1+ | 0.1- | 2007 11 17 | 703 | 1.1+  | 0.0   |
| 1999 09 08 | 703 | 0.6+  | 0.8+  | 2003 11 20 | 645 | 0.1+ | 0.1- | 2007 11 17 | 703 | 0.6-  | 0.0   |
| 2001 02 01 | 691 | 0.8+  | 0.2-  | 2005 02 09 | 691 | 0.3+ | 0.2+ | 2007 11 18 | G96 | 0.4+  | 0.3-  |
| 2001 02 01 | 691 | 0.3+  | 0.0   | 2005 02 09 | 691 | 0.5- | 0.4+ | 2007 11 18 | G96 | 0.0   | 0.4-  |
| 2001 02 01 | 691 | 0.4+  | 0.2-  | 2005 02 09 | 691 | 0.2+ | 0.1- | 2007 11 18 | G96 | 0.0   | 0.5-  |
| 2002 05 10 | 644 | 0.1+  | 1.0+  | 2006 06 16 | 644 | 0.1- | 0.3+ | 2007 11 18 | G96 | 0.2+  | 0.2-  |
| 2002 05 10 | 644 | 0.3-  | 1.2+  | 2006 06 16 | 644 | 0.0  | 0.4+ | 2007 11 20 | 703 | 0.4-  | 0.1-  |
| 2002 05 10 | 644 | 0.6+  | 1.4+  | 2006 06 16 | 644 | 0.3- | 0.3+ | 2007 11 20 | 703 | 0.7-  | 0.3-  |
| 2003 10 15 | 683 | (0.1- | 1.7-) | 2007 10 17 | G96 | 0.0  | 0.2- | 2007 11 20 | 703 | 1.0-  | 0.6+  |
| 2003 10 15 | 699 | (1.5- | 0.8-) | 2007 10 17 | G96 | 0.3+ | 0.1- | 2007 11 20 | 703 | 0.9-  | 0.8+  |
| 2003 10 15 | 683 | (2.1+ | 0.2-) | 2007 10 17 | G96 | 0.1+ | 0.1- | 2007 11 29 | 704 | 0.2-  | 0.7+  |
| 2003 10 15 | 683 | (1.6- | 0.3-) | 2007 10 17 | G96 | 0.3+ | 0.1- | 2007 11 29 | 704 | (1.0+ | 1.7+) |
| 2003 10 15 | 699 | 0.0   | 0.3+  | 2007 11 02 | G96 | 0.0  | 0.1- | 2007 11 29 | 704 | 0.9-  | 0.2-  |
| 2003 10 15 | 699 | 1.2-  | 0.4+  | 2007 11 02 | G96 | 0.5+ | 0.1+ | 2007 11 29 | 704 | 0.3+  | 0.9+  |
| 2003 10 15 | 699 | 0.0   | 1.2-  | 2007 11 02 | G96 | 0.1- | 0.1- | 2007 12 05 | 699 | 0.2+  | 0.3-  |
| 2003 10 17 | 683 | 0.9+  | 0.5-  | 2007 11 02 | G96 | 0.1+ | 0.2- | 2007 12 05 | 703 | 0.4+  | 0.4+  |
| 2003 10 17 | 683 | 1.2+  | 1.4+  | 2007 11 02 | 703 | 0.3- | 0.0  | 2007 12 05 | 703 | 1.1+  | 1.3+  |
| 2003 10 17 | 683 | 1.1-  | 0.3-  | 2007 11 02 | 703 | 0.4- | 0.5- | 2007 12 05 | 703 | 0.7+  | 0.1-  |
| 2003 10 20 | 683 | 0.8+  | 0.6-  | 2007 11 02 | 703 | 0.1- | 0.5- | 2007 12 05 | 699 | 0.2-  | 0.0   |
| 2003 10 20 | 683 | 0.8+  | 0.4+  | 2007 11 02 | 703 | 0.3- | 0.7- | 2007 12 05 | 703 | 0.4+  | 0.2-  |
| 2003 10 20 | 704 | 0.5+  | 0.1-  | 2007 11 09 | 703 | 0.0  | 0.5+ | 2007 12 05 | 699 | 0.3-  | 0.5+  |
| 2003 10 20 | 704 | (3.0- | 0.6-) | 2007 11 09 | 703 | 1.0- | 0.2- | 2007 12 05 | 699 | 0.3-  | 0.2+  |

**(172549)\* 2003 UR<sub>88</sub>**

Discovered 2003 Oct. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.84141   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24084814 | $\omega$ | 243.07589 | +0.85479962 | +0.44537793 |
| <i>a</i> | 2.5584318  | $\Omega$ | 89.42472  | -0.32886273 | +0.86195312 |
| <i>e</i> | 0.1240442  | <i>i</i> | 15.44952  | -0.40145598 | +0.24222987 |
| <i>P</i> | 4.09       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 05 | 704 | 1.0+  | 1.3+  | 2003 11 23 | 644 | 0.8+ | 0.0  | 2007 10 18 | 704 | 1.0+ | 0.9+ |
| 1999 12 05 | 704 | 0.1+  | 0.7+  | 2003 11 30 | 703 | 0.5- | 0.6- | 2007 10 18 | 704 | 0.2- | 0.5+ |
| 1999 12 05 | 704 | (2.7+ | 0.9+) | 2003 11 30 | 703 | 0.3- | 1.2- | 2007 10 18 | 704 | 0.1+ | 0.4- |
| 1999 12 05 | 704 | 0.1-  | 1.5+  | 2003 11 30 | 703 | 0.4- | 0.4+ | 2007 10 20 | 703 | 0.1+ | 0.1+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 19 | 699 | 0.5-  | 0.2+  | 2003 11 30 | 703 | 0.2+  | 0.5+  | 2007 10 20 | 703 | 0.2+ | 0.6- |
| 2003 10 19 | 699 | 1.0-  | 0.8-  | 2006 05 25 | G96 | 0.0   | 0.2+  | 2007 10 20 | 703 | 0.3- | 0.4- |
| 2003 10 19 | 699 | 0.3+  | 0.6-  | 2006 05 25 | G96 | 0.1-  | 0.1-  | 2007 10 20 | 703 | 0.2+ | 0.6- |
| 2003 10 19 | 699 | 0.2-  | 0.4-  | 2006 05 25 | G96 | 0.0   | 0.0   | 2007 11 02 | 703 | 0.9+ | 0.3+ |
| 2003 10 20 | 704 | 0.0   | 0.2-  | 2006 05 25 | G96 | 0.0   | 0.1-  | 2007 11 02 | 703 | 0.1+ | 0.2+ |
| 2003 10 20 | 704 | 0.1-  | 0.1-  | 2006 05 25 | G96 | 0.0   | 0.0   | 2007 11 02 | 703 | 0.1- | 0.4- |
| 2003 10 20 | 704 | 0.8-  | 0.7-  | 2006 05 25 | G96 | 0.1+  | 0.1-  | 2007 11 02 | 703 | 0.8+ | 0.2- |
| 2003 10 20 | 704 | 0.2-  | 0.2+  | 2006 05 25 | G96 | 0.4-  | 0.2-  | 2007 11 11 | 703 | 0.6- | 0.6+ |
| 2003 10 20 | 704 | 0.2-  | 0.3+  | 2006 05 25 | G96 | 0.3-  | 0.0   | 2007 11 11 | 703 | 0.3- | 0.2- |
| 2003 11 19 | 703 | 0.2+  | 0.9-  | 2006 06 21 | 691 | 0.1+  | 0.2+  | 2007 11 11 | 703 | 0.3- | 0.2- |
| 2003 11 19 | 703 | 0.7-  | 0.0   | 2006 06 21 | 691 | 0.1+  | 0.2+  | 2007 11 11 | 703 | 0.5- | 0.0  |
| 2003 11 19 | 703 | 0.1-  | 0.1+  | 2006 06 21 | 691 | 0.1+  | 0.1-  | 2007 11 18 | 703 | 0.5- | 0.2+ |
| 2003 11 19 | 703 | 0.9-  | 0.3-  | 2006 06 23 | 644 | 0.2-  | 0.1-  | 2007 11 18 | 703 | 0.0  | 0.0  |
| 2003 11 21 | 699 | 0.3-  | 0.0   | 2006 06 23 | 644 | 0.3+  | 0.2+  | 2007 11 18 | 703 | 0.6- | 0.7+ |
| 2003 11 21 | 699 | 0.5+  | 0.0   | 2006 06 23 | 644 | 0.3-  | 0.0   | 2007 11 18 | 703 | 0.0  | 0.5+ |
| 2003 11 21 | 699 | 1.0+  | 0.0   | 2007 10 15 | 703 | (1.6- | 0.5-) | 2007 12 06 | 703 | 0.6+ | 0.4- |
| 2003 11 21 | 699 | (1.3- | 2.9-) | 2007 10 15 | 703 | 0.0   | 0.3+  | 2007 12 06 | 703 | 0.8+ | 0.5- |
| 2003 11 23 | 644 | 0.0   | 0.2+  | 2007 10 15 | 703 | 0.5+  | 0.7+  | 2007 12 06 | 703 | 0.3+ | 0.1- |
| 2003 11 23 | 644 | 0.0   | 0.3-  | 2007 10 15 | 703 | 0.1-  | 0.3+  | 2007 12 06 | 703 | 0.1- | 0.1+ |

**(172550)\* 2003 UC<sub>92</sub>**

Discovered 2003 Oct. 20 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.15711  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.27633545 | $\omega$ | 45.95009 | -0.31544958 | -0.93849704 |
| <i>a</i> | 2.3344164  | $\Omega$ | 62.92202 | +0.81932079 | -0.34401244 |
| <i>e</i> | 0.1526193  | <i>i</i> | 9.07313  | +0.47875360 | -0.02964355 |
| <i>P</i> | 3.57       | <i>H</i> | 16.5     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 05 | 704 | 0.8-  | 0.3+  | 2003 10 21 | 291 | 0.4-  | 0.2+  | 2005 04 15 | 691 | 0.1+  | 0.2+  |
| 2001 01 05 | 704 | 0.3-  | 0.5-  | 2003 10 21 | 291 | 0.4-  | 0.3+  | 2005 04 17 | 691 | 0.0   | 0.3+  |
| 2001 01 05 | 704 | 0.4+  | 0.7+  | 2003 10 27 | 699 | 0.3+  | 1.4+  | 2005 04 17 | 691 | 0.1+  | 0.5+  |
| 2001 02 16 | 699 | 0.6+  | 0.3+  | 2003 10 27 | 699 | 0.1+  | 0.8-  | 2005 04 17 | 691 | 0.0   | 0.4+  |
| 2001 02 16 | 699 | (0.6- | 1.8+) | 2003 10 27 | 704 | 0.1+  | 0.7-  | 2007 11 12 | G96 | 0.1-  | 0.6-  |
| 2001 02 16 | 699 | 0.6+  | 1.4+  | 2003 10 27 | 699 | (0.4- | 1.9+) | 2007 11 12 | G96 | 0.4+  | 0.5-  |
| 2001 02 16 | 699 | 0.6-  | 0.6+  | 2003 10 27 | 704 | 0.8-  | 0.9+  | 2007 11 12 | G96 | 0.3-  | 0.6-  |
| 2001 02 16 | 704 | 0.7+  | 0.7+  | 2003 10 27 | 699 | (1.0- | 1.8+) | 2007 11 12 | G96 | 0.1+  | 0.4-  |
| 2001 02 16 | 704 | 0.2-  | 0.3+  | 2003 10 27 | 704 | 0.1+  | 1.1+  | 2007 11 20 | 704 | (0.1+ | 2.4-) |
| 2001 02 16 | 704 | 0.2+  | 0.5+  | 2003 11 16 | 703 | 0.4-  | 1.3+  | 2007 11 20 | 704 | 0.9-  | 0.4+  |
| 2001 02 16 | 704 | 0.1+  | 0.0   | 2003 11 16 | 703 | 0.4+  | 0.5-  | 2007 11 20 | 704 | 0.2+  | 0.7-  |
| 2001 03 18 | 699 | (0.7+ | 1.8+) | 2003 11 16 | 703 | 0.3+  | 1.2+  | 2007 11 20 | 704 | 0.3-  | 0.2+  |
| 2001 03 18 | 699 | 0.9+  | 1.2-  | 2003 11 16 | 703 | 0.3-  | 0.1-  | 2007 12 05 | 699 | 0.0   | 0.4-  |
| 2001 03 18 | 699 | (1.0+ | 1.9-) | 2003 11 26 | 699 | 0.7-  | 0.1+  | 2007 12 05 | 699 | 0.1-  | 0.1+  |
| 2001 03 18 | 699 | (0.0  | 1.8-) | 2003 11 26 | 699 | 0.3-  | 0.1-  | 2007 12 05 | 699 | (1.4+ | 1.9-) |
| 2003 10 20 | 644 | 0.0   | 0.5+  | 2003 11 26 | 699 | 1.1-  | 0.7-  | 2007 12 05 | 699 | 0.4-  | 0.6-  |
| 2003 10 20 | 644 | 0.2+  | 0.8+  | 2003 11 26 | 699 | 1.3+  | 0.4+  | 2007 12 16 | 704 | 0.0   | 0.5-  |
| 2003 10 20 | 691 | 0.1-  | 0.2+  | 2005 02 09 | 691 | 0.0   | 0.4+  | 2007 12 16 | 704 | 0.4+  | 0.8-  |
| 2003 10 20 | 644 | 0.1+  | 0.8+  | 2005 02 09 | 691 | 0.5+  | 0.0   | 2007 12 16 | 704 | 0.4+  | 0.1-  |
| 2003 10 20 | 691 | 0.2-  | 0.2+  | 2005 02 09 | 691 | 0.3+  | 0.4+  | 2007 12 16 | 704 | 0.4+  | 0.1-  |
| 2003 10 20 | 691 | 0.1-  | 0.4+  | 2005 04 15 | 691 | 0.2+  | 0.1+  |            |     |       |       |
| 2003 10 21 | 291 | 0.3-  | 0.2+  | 2005 04 15 | 691 | 0.1+  | 0.4+  |            |     |       |       |

**(172551)\* 2003 UC<sub>94</sub> = 2002 LD<sub>42</sub>**

Discovered 2003 Oct. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 57015)

Epoch 2007 Oct. 27.0 TT = JDT 2454400

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 19 | 645 | 0.1+  | 0.2+  | 2003 10 21 | 704 | 0.4+  | 0.1-  | 2007 06 12 | 703 | 0.4+  | 0.4-  |
| 2001 03 19 | 645 | 0.1+  | 0.2+  | 2003 10 21 | 704 | 0.4+  | 0.5+  | 2007 06 12 | 703 | 0.5-  | 0.3+  |
| 2002 06 10 | 644 | 0.5-  | 0.4+  | 2003 10 21 | 644 | 0.3+  | 0.1+  | 2007 06 12 | 703 | 0.4-  | 1.3-  |
| 2002 06 10 | 644 | 0.5-  | 0.7+  | 2003 10 21 | 644 | 0.4+  | 0.3+  | 2007 06 19 | 703 | 0.5-  | 0.6+  |
| 2002 06 10 | 704 | 0.7-  | 0.1-  | 2003 10 21 | 644 | 0.4+  | 0.1+  | 2007 06 19 | 703 | 1.4-  | 0.8+  |
| 2002 06 10 | 644 | 0.1-  | 0.6+  | 2003 10 24 | 704 | 0.2+  | 0.5+  | 2007 06 19 | 703 | 0.4+  | 1.2+  |
| 2002 06 10 | 704 | 0.1+  | 0.4-  | 2003 10 24 | 704 | 0.0   | 0.6+  | 2007 06 19 | 703 | (2.0- | 0.9+) |
| 2002 06 10 | 704 | 0.4-  | 0.1-  | 2003 10 24 | 704 | 0.0   | 0.7+  | 2007 08 16 | 704 | 0.2-  | 1.0+  |
| 2002 06 10 | 704 | (0.1+ | 1.9+) | 2003 10 24 | 704 | 0.0   | 0.4-  | 2007 08 16 | 704 | 0.8+  | 0.4+  |
| 2002 06 14 | 704 | 0.4+  | 0.9+  | 2003 10 24 | 704 | 0.1+  | 0.6+  | 2007 08 16 | 704 | 0.4+  | 1.0+  |
| 2002 06 14 | 704 | 0.1+  | 0.4+  | 2003 10 26 | 691 | 0.3-  | 0.1-  | 2007 08 16 | 704 | 0.5+  | 0.3+  |
| 2002 06 14 | 704 | 0.0   | 0.6+  | 2003 10 26 | 691 | 0.0   | 0.0   | 2007 08 16 | 704 | 0.4+  | 0.2+  |
| 2002 06 14 | 704 | 1.4+  | 0.8+  | 2003 10 26 | 691 | 0.2-  | 0.2-  | 2007 09 05 | 703 | 0.1-  | 0.9+  |
| 2003 09 20 | 644 | 0.3+  | 0.1+  | 2003 10 30 | 704 | 0.7-  | 0.7+  | 2007 09 05 | 703 | 0.4+  | 0.1+  |
| 2003 09 20 | 644 | 0.2-  | 0.4+  | 2003 10 30 | 704 | (1.1- | 1.6+) | 2007 09 05 | 703 | 0.9+  | 0.7+  |
| 2003 09 20 | 644 | 0.3+  | 0.1+  | 2003 10 30 | 704 | 0.1+  | 0.5+  | 2007 09 05 | 703 | 0.3-  | 0.1+  |
| 2003 09 20 | 644 | 0.3-  | 0.3+  | 2003 10 30 | 704 | 0.5+  | 0.8+  | 2007 09 15 | 699 | 1.1-  | 0.6-  |
| 2003 09 20 | 644 | 0.3+  | 0.2+  | 2003 11 01 | 704 | (1.6- | 0.7-) | 2007 09 15 | 699 | 0.6-  | 0.4+  |
| 2003 09 20 | 644 | 0.1-  | 0.4+  | 2003 11 01 | 704 | 0.3-  | 0.5-  | 2007 09 15 | 699 | 0.1-  | 1.1+  |
| 2003 09 21 | 699 | (0.5- | 1.6+) | 2003 11 01 | 704 | 1.0-  | 0.2+  | 2007 09 15 | 699 | 0.5+  | 0.3-  |
| 2003 09 21 | 699 | 0.9-  | 0.0   | 2003 11 01 | 704 | 1.1-  | 0.2+  | 2007 09 19 | 683 | (1.8+ | 0.0 ) |
| 2003 09 21 | 699 | (1.8- | 0.1+) | 2003 11 01 | 704 | 0.5-  | 1.1+  | 2007 09 19 | 683 | 1.0+  | 1.4-  |
| 2003 09 21 | 699 | 0.9-  | 1.4-  | 2006 05 31 | G96 | 0.2-  | 0.1+  | 2007 09 19 | 683 | 1.0-  | 0.0   |
| 2003 10 18 | 691 | 0.2+  | 0.1+  | 2006 05 31 | G96 | 0.5-  | 0.4+  | 2007 10 25 | G96 | 0.0   | 0.1-  |
| 2003 10 18 | 691 | 0.2+  | 0.1+  | 2006 05 31 | G96 | 0.0   | 0.3+  | 2007 10 25 | G96 | 0.2+  | 0.3-  |
| 2003 10 18 | 691 | 0.1+  | 0.1-  | 2006 05 31 | G96 | 0.3-  | 0.3+  | 2007 10 25 | G96 | 0.1-  | 0.4-  |
| 2003 10 21 | 699 | 0.3+  | 0.9-  | 2006 06 19 | G96 | 0.0   | 0.1+  | 2007 10 25 | G96 | 0.5-  | 0.3-  |
| 2003 10 21 | 699 | 0.7-  | 1.3+  | 2006 06 19 | G96 | 0.1-  | 0.0   | 2007 12 05 | G96 | 0.1-  | 0.5-  |
| 2003 10 21 | 699 | 0.2-  | 0.6+  | 2006 06 19 | G96 | 0.3-  | 0.3-  | 2007 12 05 | G96 | 0.3+  | 0.5+  |
| 2003 10 21 | 699 | 0.3+  | 0.0   | 2006 06 19 | G96 | 0.1+  | 0.1+  | 2007 12 05 | G96 | 0.6+  | 0.6-  |
| 2003 10 21 | 704 | 0.1+  | 0.6+  | 2007 06 12 | 703 | 0.3+  | 0.5-  | 2007 12 05 | G96 | 0.2-  | 0.6-  |

(172552)\* 2003 UL<sub>95</sub> = 2005 EX<sub>162</sub>

Discovered 2003 Oct. 18 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 76078)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |
|----------|------------|----------|----------|
| (2000.0) |            |          |          |
| <i>M</i> | 343.33121  | <i>P</i> | <i>Q</i> |
| <i>n</i> | 0.25915562 | $\omega$ | 44.74499 |
| <i>a</i> | 2.4364769  | $\Omega$ | 27.03056 |
| <i>e</i> | 0.1089517  | <i>i</i> | 2.94849  |
| <i>P</i> | 3.80       | <i>H</i> | 16.7     |
|          |            | <i>G</i> | 0.15     |
|          |            | <i>U</i> | 1        |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 01 09 | 691 | 0.1+  | 0.1-  | 2003 10 28 | 704 | 1.2-  | 0.6-  | 2005 04 04 | G96 | 0.2- | 0.0  |
| 1997 01 09 | 691 | 0.4-  | 0.6-  | 2003 10 28 | 704 | (0.6- | 1.8+) | 2007 09 09 | G96 | 0.4- | 0.2- |
| 1997 01 09 | 691 | 0.1-  | 0.5-  | 2003 10 28 | 704 | 0.5+  | 0.3+  | 2007 09 09 | G96 | 0.5- | 0.8- |
| 2003 09 19 | 691 | 0.2-  | 0.4+  | 2005 03 10 | G96 | 0.1-  | 0.3-  | 2007 09 09 | G96 | 0.0  | 0.2- |
| 2003 09 19 | 691 | 0.2-  | 0.3+  | 2005 03 10 | G96 | 0.2-  | 0.2-  | 2007 09 09 | G96 | 0.3+ | 0.4- |
| 2003 09 19 | 691 | 0.0   | 0.4+  | 2005 03 10 | G96 | 0.3-  | 0.0   | 2007 11 05 | D29 | 0.4- | 0.0  |
| 2003 10 18 | 691 | 0.2+  | 0.0   | 2005 03 10 | G96 | 0.2-  | 0.2-  | 2007 11 05 | D29 | 1.4+ | 0.3- |
| 2003 10 18 | 691 | 0.1+  | 0.1-  | 2005 03 11 | 691 | 0.1+  | 0.1+  | 2007 11 05 | D29 | 0.3- | 0.2- |
| 2003 10 18 | 691 | 0.0   | 0.1+  | 2005 03 11 | 691 | 0.1+  | 0.6+  | 2007 11 05 | D29 | 0.0  | 0.0  |
| 2003 10 21 | 699 | 0.4+  | 0.4-  | 2005 03 11 | 691 | 0.3+  | 0.0   | 2007 11 15 | 704 | 0.0  | 0.7- |
| 2003 10 21 | 699 | 0.3+  | 0.4+  | 2005 03 12 | 691 | 0.3+  | 0.4+  | 2007 11 15 | 704 | 0.5+ | 0.3+ |
| 2003 10 21 | 699 | 0.2+  | 1.0+  | 2005 03 12 | 691 | 0.2+  | 0.2+  | 2007 11 15 | 704 | 0.3- | 0.2- |
| 2003 10 21 | 644 | 0.3+  | 0.1+  | 2005 03 12 | 691 | 0.1+  | 0.3+  | 2007 11 15 | 704 | 0.3- | 0.0  |
| 2003 10 21 | 699 | 0.5+  | 0.2-  | 2005 03 16 | 691 | 0.2+  | 0.2+  | 2007 11 15 | 704 | 0.2- | 0.3- |
| 2003 10 21 | 704 | 0.7-  | 0.2+  | 2005 03 16 | G96 | 0.4-  | 0.5-  | 2007 12 03 | 703 | 1.2+ | 0.3- |
| 2003 10 21 | 704 | 0.2+  | 1.2+  | 2005 03 16 | G96 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.0  | 0.5- |
| 2003 10 21 | 644 | 0.1+  | 0.3+  | 2005 03 16 | 691 | 0.3+  | 0.2+  | 2007 12 03 | 703 | 0.8- | 0.7- |
| 2003 10 21 | 704 | 0.6+  | 0.4+  | 2005 03 16 | G96 | 0.7-  | 0.0   | 2007 12 03 | 703 | 0.0  | 0.0  |
| 2003 10 21 | 704 | (1.6- | 0.5+) | 2005 03 16 | G96 | 0.2-  | 0.2+  | 2007 12 04 | 699 | 0.5+ | 0.3+ |
| 2003 10 21 | 644 | 0.4+  | 0.2+  | 2005 03 16 | 691 | 0.1+  | 0.4+  | 2007 12 04 | 699 | 0.1+ | 0.0  |
| 2003 10 21 | 704 | 0.5+  | 0.4+  | 2005 03 17 | 703 | (1.5- | 0.9-) | 2007 12 04 | 699 | 0.1- | 0.3- |
| 2003 10 24 | 704 | 0.4-  | 0.9-  | 2005 03 17 | 703 | 0.1-  | 0.7-  | 2007 12 04 | 699 | 0.4- | 0.5- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 704 | 1.4-  | 0.2-  | 2005 03 17 | 703 | 0.6- | 1.1+ | 2007 12 15 | 704 | 0.1- | 1.0+ |
| 2003 10 24 | 704 | (2.0- | 0.3-) | 2005 03 17 | 703 | 0.8+ | 0.1+ | 2007 12 15 | 704 | 0.1+ | 0.9+ |
| 2003 10 24 | 704 | 0.7-  | 0.0   | 2005 04 04 | G96 | 0.2- | 0.1- | 2007 12 15 | 704 | 0.2- | 1.1+ |
| 2003 10 24 | 704 | 0.6-  | 0.1-  | 2005 04 04 | G96 | 0.2- | 0.1+ | 2007 12 15 | 704 | 1.4- | 0.9+ |
| 2003 10 28 | 704 | 0.9-  | 0.1+  | 2005 04 04 | G96 | 0.2- | 0.1- | 2007 12 15 | 704 | 0.3+ | 1.4+ |

(172553)\* 2003 UX<sub>100</sub>

Discovered 2003 Oct. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| (2000.0) |            |          |           |
| <i>M</i> | 266.00557  | <i>P</i> | <i>Q</i>  |
| <i>n</i> | 0.27057836 | $\omega$ | 288.62840 |
| <i>a</i> | 2.3674129  | $\Omega$ | 229.68286 |
| <i>e</i> | 0.0547800  | <i>i</i> | 5.91806   |
| <i>P</i> | 3.64       | <i>H</i> | 16.3      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 04 22 | 704 | 0.1+  | 0.5-  | 2003 10 27 | 291 | 0.0   | 0.1+  | 2007 09 14 | G96 | 0.6+ | 0.1- |
| 1998 04 22 | 704 | 0.5-  | 1.4+  | 2005 03 04 | 703 | 0.6+  | 0.1-  | 2007 09 14 | G96 | 0.4+ | 0.4- |
| 1998 04 22 | 704 | 0.4-  | 0.3-  | 2005 03 04 | 703 | 0.3-  | 0.5+  | 2007 09 14 | G96 | 0.3+ | 0.2- |
| 1998 04 22 | 704 | (2.2+ | 0.7+) | 2005 03 04 | 703 | 0.4+  | 0.8+  | 2007 09 14 | G96 | 0.2+ | 0.1- |
| 1998 04 22 | 704 | 0.4-  | 0.4+  | 2005 03 04 | 703 | 0.6+  | 0.1+  | 2007 11 01 | 691 | 0.2- | 0.1- |
| 2003 09 17 | 644 | 0.2+  | 0.2-  | 2005 03 10 | 699 | 0.2+  | 0.7+  | 2007 11 01 | 691 | 0.2- | 0.1- |
| 2003 09 17 | 644 | 0.2+  | 0.4+  | 2005 03 10 | 699 | 1.3+  | 0.2-  | 2007 11 01 | 691 | 0.0  | 0.3- |
| 2003 09 17 | 644 | 0.1+  | 0.1+  | 2005 03 10 | 699 | 0.9+  | 0.0   | 2007 11 09 | 691 | 0.1- | 0.0  |
| 2003 09 27 | 704 | 0.7-  | 0.3-  | 2005 03 10 | 703 | 0.9-  | 0.1-  | 2007 11 09 | 691 | 0.1- | 0.0  |
| 2003 09 27 | 704 | 1.0+  | 0.7-  | 2005 03 10 | 703 | 0.2+  | 0.3+  | 2007 11 09 | 691 | 0.3+ | 0.3+ |
| 2003 09 27 | 704 | 0.2+  | 0.8+  | 2005 03 10 | 703 | 0.2-  | 0.0   | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2003 09 27 | 704 | 0.2+  | 0.3-  | 2005 03 10 | 699 | 0.5+  | 0.3+  | 2007 11 13 | 691 | 0.2- | 0.1- |
| 2003 10 03 | 691 | 0.0   | 0.0   | 2005 03 10 | 703 | 0.3+  | 0.4+  | 2007 11 13 | 691 | 0.1- | 0.2+ |
| 2003 10 03 | 691 | 0.1+  | 0.1+  | 2005 03 11 | 704 | 0.2-  | 1.3+  | 2007 11 14 | 691 | 0.3- | 0.3+ |
| 2003 10 03 | 691 | 0.0   | 0.2+  | 2005 03 11 | 704 | 0.9+  | 0.4-  | 2007 11 14 | 691 | 0.1- | 0.1- |
| 2003 10 14 | 699 | 0.3+  | 0.1+  | 2005 03 11 | 704 | 0.3-  | 0.4-  | 2007 11 14 | 691 | 0.2- | 0.1- |
| 2003 10 14 | 699 | (2.0- | 1.1+) | 2005 03 11 | 704 | (1.9+ | 0.1-) | 2007 11 18 | G96 | 0.6+ | 0.2- |
| 2003 10 14 | 699 | (2.0- | 0.6+) | 2005 03 17 | 703 | 0.4+  | 1.2+  | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2003 10 14 | 699 | 0.3-  | 1.0-  | 2005 03 17 | 703 | 0.5-  | 0.3+  | 2007 11 18 | G96 | 0.1+ | 0.3- |
| 2003 10 20 | 644 | 0.2-  | 0.1+  | 2005 03 17 | 703 | 0.1-  | 0.0   | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2003 10 20 | 644 | 0.0   | 0.3+  | 2005 03 17 | 703 | 0.5+  | 1.0+  | 2007 12 03 | 703 | 0.2- | 0.1- |
| 2003 10 20 | 644 | 0.3+  | 0.1+  | 2005 04 04 | 703 | 0.5-  | 0.7-  | 2007 12 03 | 703 | 0.2+ | 0.1- |
| 2003 10 21 | 704 | (1.0+ | 1.8+) | 2005 04 04 | 703 | 0.3+  | 0.9+  | 2007 12 03 | 703 | 0.5- | 0.3- |
| 2003 10 21 | 704 | 0.7-  | 1.0+  | 2005 04 04 | 703 | 0.6-  | 0.3+  | 2007 12 03 | 703 | 0.1- | 0.2+ |
| 2003 10 21 | 704 | 0.5+  | 0.5+  | 2005 04 04 | 703 | 0.0   | 0.1+  | 2007 12 03 | 703 | 1.9+ | 0.7- |
| 2003 10 21 | 704 | 0.0   | 0.8+  | 2005 04 06 | 699 | 0.2+  | 0.1+  | 2007 12 03 | 703 | 0.6+ | 0.4+ |
| 2003 10 25 | 704 | 0.3+  | 1.0+  | 2005 04 06 | 699 | 0.8+  | 0.8+  | 2007 12 03 | 703 | 0.6+ | 0.1+ |
| 2003 10 25 | 704 | 0.6-  | 0.3-  | 2005 04 06 | 699 | 0.0   | 0.8-  | 2007 12 03 | 703 | 1.1+ | 0.1+ |
| 2003 10 25 | 704 | 0.1-  | 0.2+  | 2005 04 06 | 699 | 0.1-  | 0.3-  | 2007 12 04 | 704 | 1.0- | 0.9+ |
| 2003 10 25 | 704 | 0.4+  | 0.3+  | 2006 06 04 | 691 | 0.4-  | 1.3+  | 2007 12 04 | 704 | 0.1- | 1.4+ |
| 2003 10 26 | 691 | 0.2+  | 0.1-  | 2006 06 04 | 691 | 0.1+  | 0.4+  | 2007 12 04 | 704 | 0.9- | 1.3+ |
| 2003 10 26 | 691 | 0.2-  | 0.5-  | 2006 06 04 | 691 | 0.4-  | 0.4+  | 2007 12 04 | 704 | 0.4- | 1.1+ |
| 2003 10 26 | 691 | 0.3-  | 0.6+  | 2007 08 24 | 691 | 0.3-  | 0.2-  | 2007 12 04 | 704 | 0.1- | 0.6+ |
| 2003 10 27 | 291 | 0.1-  | 0.0   | 2007 08 24 | 691 | 0.5-  | 0.4+  |            |     |      |      |
| 2003 10 27 | 291 | 0.1+  | 0.1+  | 2007 08 24 | 691 | 0.2-  | 0.3-  |            |     |      |      |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 18 | 704 | 0.1+  | 0.5+  | 2005 03 01 | 691 | 0.2+  | 0.1+  | 2005 04 06 | G96 | 0.2- | 0.3- |
| 2001 01 18 | 704 | 0.0   | 0.4-  | 2005 03 01 | 691 | 0.1+  | 0.4+  | 2005 04 06 | G96 | 0.3- | 0.1- |
| 2001 02 01 | 699 | 0.2+  | 0.2-  | 2005 03 01 | 691 | 0.3+  | 0.2+  | 2005 04 12 | G96 | 0.1- | 0.0  |
| 2001 02 01 | 699 | (1.7- | 0.0 ) | 2005 03 09 | 699 | 1.2-  | 1.5-  | 2005 04 12 | G96 | 0.3- | 0.1- |
| 2001 02 01 | 699 | 0.4-  | 0.7-  | 2005 03 09 | 699 | 0.1+  | 0.8+  | 2005 04 12 | G96 | 0.4- | 0.1- |
| 2001 02 01 | 699 | 0.7-  | 0.2-  | 2005 03 09 | G96 | 0.1-  | 0.0   | 2005 04 12 | G96 | 0.4- | 0.2- |
| 2003 09 18 | 691 | 0.1-  | 0.3+  | 2005 03 09 | 699 | 0.3+  | 1.2+  | 2005 05 14 | G96 | 0.4- | 0.0  |
| 2003 09 18 | 691 | 0.1-  | 0.3+  | 2005 03 09 | G96 | 0.1-  | 0.1-  | 2005 05 14 | G96 | 0.4- | 0.0  |
| 2003 09 18 | 691 | 0.3-  | 0.3-  | 2005 03 09 | G96 | 0.4-  | 0.1+  | 2005 05 14 | G96 | 0.2- | 0.3- |
| 2003 09 28 | 691 | 0.0   | 0.3+  | 2005 03 09 | G96 | 0.4-  | 0.0   | 2005 05 14 | G96 | 0.2+ | 0.2- |
| 2003 09 28 | 691 | 0.3+  | 0.3+  | 2005 03 09 | 699 | 0.5+  | 0.2+  | 2007 11 17 | 704 | 0.2- | 0.4- |
| 2003 09 28 | 691 | 0.1+  | 0.3+  | 2005 03 12 | 691 | 0.3+  | 0.3+  | 2007 11 17 | 704 | 0.2+ | 0.6- |
| 2003 10 18 | 691 | 0.0   | 0.3+  | 2005 03 12 | 691 | 0.1+  | 0.2+  | 2007 11 17 | 704 | 1.1+ | 0.2+ |
| 2003 10 18 | 691 | 0.0   | 0.2+  | 2005 03 12 | 691 | 0.0   | 0.5+  | 2007 11 17 | 704 | 0.4+ | 0.2+ |
| 2003 10 18 | 691 | 0.1-  | 0.1+  | 2005 03 13 | 703 | 0.3-  | 0.1-  | 2007 11 20 | 704 | 0.5+ | 0.7- |
| 2003 10 21 | 644 | 0.0   | 0.3+  | 2005 03 13 | 703 | (0.6- | 2.0+) | 2007 11 20 | 704 | 0.1- | 0.6- |
| 2003 10 21 | 644 | 0.0   | 0.4+  | 2005 03 13 | 703 | 0.4+  | 0.0   | 2007 11 20 | 704 | 0.9- | 1.1- |
| 2003 10 21 | 644 | 0.1+  | 0.4+  | 2005 03 13 | 703 | (0.6+ | 1.6+) | 2007 11 20 | 704 | 0.1- | 1.1- |
| 2003 10 25 | 704 | 0.8-  | 0.9-  | 2005 03 16 | 691 | 0.2+  | 0.3+  | 2007 12 16 | 704 | 0.9- | 0.0  |
| 2003 10 25 | 704 | 0.7-  | 0.2-  | 2005 03 16 | 691 | 0.3+  | 0.1+  | 2007 12 16 | 704 | 0.7+ | 0.8+ |
| 2003 10 25 | 704 | 1.0-  | 0.1-  | 2005 03 16 | 691 | 0.1+  | 0.2+  | 2007 12 16 | 704 | 0.6- | 0.2+ |
| 2003 10 25 | 704 | 0.6-  | 0.6-  | 2005 04 05 | G96 | 0.4+  | 0.1-  | 2007 12 16 | 704 | 0.3+ | 0.6- |
| 2003 10 27 | 691 | 0.3+  | 0.2+  | 2005 04 05 | G96 | 0.3+  | 0.3-  |            |     |      |      |

**(172555)\* 2003 US<sub>109</sub>**

Discovered 2003 Oct. 19 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.24313646 | $\omega$ | 95.02146  | +0.94108475 |      | +0.25174224 |   |
| <i>a</i> | 2.5423538  | $\Omega$ | 250.54003 | -0.31479956 |      | +0.89606360 |   |
| <i>e</i> | 0.1599100  | <i>i</i> | 13.85584  | +0.12353434 |      | +0.36564445 |   |
| <i>P</i> | 4.05       | <i>H</i> | 16.1      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 12 14 | 691 | 0.2-  | 0.7-  | 2003 11 03 | 704 | 0.1+  | 0.0   | 2006 07 21 | G96 | 0.5+  | 1.1-  |
| 1991 12 14 | 691 | 0.8+  | 0.7-  | 2003 11 03 | 704 | 0.7+  | 0.7+  | 2006 07 21 | G96 | 0.4+  | 0.7-  |
| 1991 12 14 | 691 | 0.2-  | 0.6-  | 2003 11 03 | 704 | (1.2- | 2.0+) | 2006 07 21 | G96 | 0.2-  | 0.3+  |
| 1996 01 24 | 691 | 0.1-  | 0.1-  | 2003 11 03 | 704 | 0.4-  | 0.6+  | 2007 10 21 | 703 | 0.0   | 0.9-  |
| 1996 01 24 | 691 | 0.0   | 0.2+  | 2003 11 14 | 644 | 0.1-  | 0.2+  | 2007 10 21 | 703 | 0.1+  | 0.9-  |
| 1996 01 24 | 691 | 0.1-  | 0.1-  | 2003 11 14 | 644 | 0.2-  | 0.3+  | 2007 10 21 | 703 | 0.7+  | 1.2-  |
| 2002 06 07 | 644 | 0.5-  | 1.0-  | 2003 11 14 | 644 | 0.0   | 0.3+  | 2007 10 21 | 703 | 0.6-  | 0.5-  |
| 2002 06 07 | 644 | 0.4-  | 1.3-  | 2003 11 19 | 699 | (0.7- | 2.3+) | 2007 11 01 | 703 | 0.6+  | 0.0   |
| 2002 06 07 | 644 | 0.2-  | 1.2-  | 2003 11 19 | 699 | 0.9-  | 0.5+  | 2007 11 01 | 703 | 0.9+  | 0.4-  |
| 2003 10 18 | 699 | 0.1-  | 0.0   | 2003 11 19 | 699 | 0.1-  | 0.2+  | 2007 11 01 | 703 | 0.4-  | 0.8-  |
| 2003 10 18 | 699 | 0.4-  | 0.3+  | 2003 11 19 | 699 | 0.0   | 0.4+  | 2007 11 03 | 704 | 1.1+  | 0.9-  |
| 2003 10 18 | 699 | 0.5+  | 0.2-  | 2003 11 19 | 704 | 0.4+  | 0.2+  | 2007 11 03 | 704 | 0.9+  | 0.4+  |
| 2003 10 18 | 699 | 0.0   | 0.4-  | 2003 11 19 | 704 | 0.4+  | 0.2+  | 2007 11 03 | 704 | 0.1+  | 0.1+  |
| 2003 10 19 | 644 | 0.0   | 0.2-  | 2003 11 19 | 703 | 0.3-  | 0.7+  | 2007 11 03 | 704 | 0.2+  | 0.2-  |
| 2003 10 19 | 644 | 0.2+  | 0.2-  | 2003 11 19 | 704 | 0.6+  | 0.3+  | 2007 11 03 | 704 | 0.1+  | 0.1+  |
| 2003 10 19 | 644 | 0.1-  | 0.3-  | 2003 11 19 | 704 | 0.6+  | 0.5+  | 2007 11 09 | 704 | (0.1- | 1.6+) |
| 2003 10 19 | 644 | 0.1+  | 0.1-  | 2003 11 19 | 703 | 0.3+  | 0.2-  | 2007 11 09 | 704 | 0.5+  | 0.0   |
| 2003 10 19 | 644 | 0.1+  | 0.3-  | 2003 11 19 | 704 | 0.3+  | 0.7+  | 2007 11 09 | 704 | 0.0   | 0.2-  |
| 2003 10 19 | 644 | 0.0   | 0.2-  | 2003 11 19 | 703 | 0.9-  | 0.8-  | 2007 11 09 | 704 | 0.3+  | 0.2+  |
| 2003 10 19 | 644 | 0.4+  | 0.1+  | 2003 11 19 | 703 | 0.4-  | 0.6+  | 2007 11 09 | 704 | 0.3+  | 0.7+  |
| 2003 10 19 | 644 | 0.2+  | 0.2-  | 2003 11 24 | 704 | 0.6-  | 0.5-  | 2007 11 09 | 703 | 1.0+  | 0.8-  |
| 2003 10 19 | 644 | 0.0   | 0.2-  | 2003 11 24 | 704 | 0.3-  | 0.8-  | 2007 11 09 | 703 | 0.8-  | 0.2+  |
| 2003 10 21 | 644 | 0.0   | 0.0   | 2003 11 24 | 704 | 0.5-  | 0.1-  | 2007 11 09 | 703 | 0.6-  | 0.6-  |
| 2003 10 21 | 644 | 0.1-  | 0.1-  | 2003 11 24 | 704 | 1.0-  | 0.7+  | 2007 11 09 | 703 | 0.9-  | 0.3+  |
| 2003 10 21 | 644 | 0.0   | 0.1-  | 2004 01 13 | 699 | (3.5+ | 1.9-) | 2007 11 16 | 704 | 0.2-  | 0.2-  |
| 2003 10 22 | 704 | (1.6- | 1.1+) | 2004 01 13 | 699 | (1.7+ | 0.9+) | 2007 11 16 | 704 | 0.0   | 0.4+  |
| 2003 10 22 | 704 | 0.6-  | 0.4-  | 2004 01 13 | 699 | (1.9+ | 0.3+) | 2007 11 16 | 704 | 0.2+  | 0.4+  |
| 2003 10 22 | 704 | (2.6- | 0.9+) | 2004 01 13 | 699 | 0.7-  | 1.4+  | 2007 11 16 | 704 | (1.7+ | 0.5+) |
| 2003 10 22 | 704 | 1.4-  | 1.4+  | 2006 06 01 | G96 | 0.5+  | 0.3-  | 2007 12 02 | 704 | 0.1+  | 0.9+  |
| 2003 10 30 | 704 | 0.3-  | 0.2+  | 2006 06 01 | G96 | 0.3+  | 0.2-  | 2007 12 02 | 704 | 0.7+  | 0.5-  |
| 2003 10 30 | 704 | 0.9+  | 0.1+  | 2006 06 01 | G96 | 0.1+  | 0.1-  | 2007 12 02 | 704 | 0.6-  | 0.4+  |
| 2003 10 30 | 704 | 0.7-  | 0.7+  | 2006 06 01 | G96 | 0.0   | 0.1-  |            |     |       |       |
| 2003 10 30 | 704 | 0.9-  | 0.4+  | 2006 07 21 | G96 | 0.5-  | 0.1+  |            |     |       |       |

**(172556)\* 2003 UZ<sub>112</sub>**

Discovered 2003 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.26722599 | $\omega$ | 235.48433 | +0.60791017 |      | +0.78203123 |   |
| <i>a</i> | 2.3871713  | $\Omega$ | 72.54780  | -0.67310685 |      | +0.59934666 |   |
| <i>e</i> | 0.2390455  | <i>i</i> | 8.27971   | -0.42115602 |      | +0.17091148 |   |
| <i>P</i> | 3.69       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 07 14 | 704 | 1.0-  | 1.2+  | 2003 10 27 | 704 | 0.5+  | 0.0   | 2006 06 13 | 644 | 0.3+ | 0.2+ |
| 1999 07 14 | 704 | 0.4+  | 0.0   | 2003 11 19 | 644 | 0.4-  | 0.4+  | 2006 06 13 | 644 | 0.2+ | 0.4+ |
| 1999 07 14 | 704 | 1.2+  | 0.5-  | 2003 11 19 | 644 | 0.0   | 0.3+  | 2006 06 13 | 644 | 0.6+ | 0.1+ |
| 2003 08 23 | 704 | (1.2+ | 2.2-) | 2003 11 19 | 644 | 0.2-  | 0.2+  | 2006 06 20 | 644 | 0.0  | 0.0  |
| 2003 08 23 | 704 | 0.7-  | 0.4-  | 2006 04 21 | 691 | 0.2+  | 0.1+  | 2006 06 20 | 644 | 0.1+ | 0.1+ |
| 2003 08 23 | 704 | 0.5-  | 0.1+  | 2006 04 21 | 691 | 0.2+  | 0.4+  | 2006 06 20 | 644 | 0.3- | 0.5+ |
| 2003 09 22 | 644 | 0.5-  | 0.5+  | 2006 04 21 | 691 | 0.5+  | 0.3+  | 2007 11 02 | 691 | 0.4+ | 0.2+ |
| 2003 09 22 | 644 | 0.5-  | 0.3+  | 2006 04 29 | 691 | 0.2+  | 0.2+  | 2007 11 02 | 691 | 0.1+ | 0.2+ |
| 2003 09 22 | 644 | 0.3-  | 0.3+  | 2006 04 29 | 691 | 0.1-  | 0.4+  | 2007 11 02 | 691 | 0.2+ | 0.0  |
| 2003 10 20 | 704 | 0.1-  | 0.1+  | 2006 04 29 | 691 | 0.1+  | 0.2+  | 2007 11 14 | 691 | 0.7- | 0.6+ |
| 2003 10 20 | 704 | 0.8-  | 0.4+  | 2006 05 03 | 691 | 0.2+  | 0.2+  | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2003 10 20 | 704 | 0.8+  | 0.9+  | 2006 05 03 | 691 | 0.2+  | 0.3+  | 2007 11 14 | 691 | 0.5- | 0.2+ |
| 2003 10 20 | 704 | 0.2+  | 0.2+  | 2006 05 03 | 691 | 0.1+  | 0.2+  | 2007 12 04 | G96 | 0.5+ | 0.1- |
| 2003 10 20 | 704 | 0.4-  | 0.5+  | 2006 05 19 | 703 | 1.1-  | 0.6+  | 2007 12 04 | G96 | 0.9+ | 0.1- |
| 2003 10 22 | 691 | 0.1-  | 0.1-  | 2006 05 19 | 703 | (1.8- | 1.0-) | 2007 12 04 | G96 | 0.5+ | 0.1- |
| 2003 10 22 | 691 | 0.1+  | 0.2-  | 2006 05 19 | 703 | 0.1-  | 0.2-  | 2007 12 04 | G96 | 0.7+ | 0.1- |
| 2003 10 22 | 691 | 0.3-  | 0.0   | 2006 05 19 | 703 | 1.2-  | 0.9-  | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2003 10 27 | 704 | 0.5+  | 0.2+  | 2006 05 19 | 703 | 0.6+  | 0.8-  | 2007 12 05 | 704 | 0.4+ | 0.1- |
| 2003 10 27 | 704 | 1.3-  | 0.5+  | 2006 05 19 | 703 | 1.1-  | 0.5-  | 2007 12 05 | 704 | 0.0  | 1.0+ |
| 2003 10 27 | 704 | 0.7-  | 0.9+  | 2006 05 19 | 703 | 0.5-  | 0.9+  | 2007 12 05 | 704 | 0.0  | 0.3+ |

**(172557)\* 2003 UC<sub>116</sub> = 2001 BQ<sub>16</sub>**

Discovered 2003 Oct. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69571)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.26906227 | $\omega$ | 112.81291 | -0.22118944 |      | -0.97502623 |   |
| <i>a</i> | 2.3762977  | $\Omega$ | 349.90416 | +0.84776549 |      | -0.18211381 |   |
| <i>e</i> | 0.0919802  | <i>i</i> | 6.54375   | +0.48204658 |      | -0.12711572 |   |
| <i>P</i> | 3.66       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 18 | 704 | 0.4-  | 0.6-  | 2005 03 04 | 691 | 0.2+ | 0.2+ | 2007 11 08 | 703 | 0.3+ | 0.7+ |
| 2001 01 18 | 704 | 0.2+  | 0.9-  | 2005 03 11 | G96 | 0.2- | 0.2- | 2007 11 08 | 703 | 0.3+ | 0.1+ |
| 2001 01 18 | 704 | 0.7-  | 0.4-  | 2005 03 11 | G96 | 0.3- | 0.1- | 2007 11 08 | 703 | 0.7- | 0.0  |
| 2001 01 18 | 704 | 1.3-  | 0.2+  | 2005 03 11 | G96 | 0.2- | 0.1- | 2007 11 09 | 704 | 0.6- | 0.5- |
| 2001 01 21 | 704 | 0.1-  | 0.0   | 2005 03 11 | G96 | 0.1- | 0.0  | 2007 11 09 | 704 | 0.0  | 0.8- |
| 2001 01 21 | 704 | 0.7+  | 0.1-  | 2005 03 12 | 691 | 0.1+ | 0.2+ | 2007 11 09 | 704 | 1.0- | 0.2+ |
| 2001 01 21 | 704 | 0.2-  | 0.1-  | 2005 03 12 | 691 | 0.4+ | 0.2+ | 2007 11 09 | 704 | 0.3- | 0.3- |
| 2001 01 21 | 704 | 0.1+  | 0.1-  | 2005 03 12 | 691 | 0.2+ | 0.2+ | 2007 11 09 | 704 | 0.6- | 0.3- |
| 2001 01 21 | 704 | 0.1+  | 0.2+  | 2005 03 13 | 703 | 0.5+ | 0.2- | 2007 11 09 | 704 | 0.3- | 0.4- |
| 2001 02 21 | 704 | 0.6+  | 0.9-  | 2005 03 13 | 703 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.6- | 0.1- |
| 2001 02 21 | 704 | 0.4+  | 0.8+  | 2005 03 13 | 703 | 0.1+ | 0.8+ | 2007 11 09 | 704 | 0.6+ | 0.1- |
| 2001 02 21 | 704 | 0.5+  | 0.9+  | 2005 03 13 | 703 | 0.3+ | 0.1+ | 2007 11 09 | 704 | 0.2- | 0.5- |
| 2001 02 21 | 704 | 0.9-  | 0.3-  | 2005 03 16 | 691 | 0.1+ | 0.1+ | 2007 11 09 | 704 | 0.1- | 0.8- |
| 2003 09 27 | 704 | (0.8+ | 1.8+) | 2005 03 16 | 691 | 0.1+ | 0.2+ | 2007 11 11 | 704 | 1.1+ | 0.1  |
| 2003 09 27 | 704 | 0.1-  | 1.1+  | 2005 03 16 | 691 | 0.0  | 0.1+ | 2007 11 11 | 704 | 0.4+ | 0.7- |
| 2003 09 27 | 704 | 0.4-  | 0.6+  | 2005 04 04 | 703 | 0.6- | 0.9+ | 2007 11 11 | 704 | 0.1+ | 0.2- |
| 2003 09 27 | 704 | 1.5-  | 1.2+  | 2005 04 04 | 703 | 0.7- | 1.0+ | 2007 11 11 | 704 | 0.9+ | 0.5- |
| 2003 09 27 | 704 | 0.8-  | 1.3+  | 2005 04 04 | 703 | 0.3+ | 0.5+ | 2007 11 11 | 704 | 0.6- | 1.0- |
| 2003 10 21 | 704 | 0.7-  | 0.6+  | 2005 04 04 | 703 | 0.2+ | 1.0+ | 2007 11 12 | 704 | 1.2- | 0.5+ |
| 2003 10 21 | 704 | 0.5-  | 0.6-  | 2005 04 09 | 699 | 0.7+ | 0.3+ | 2007 11 12 | 704 | 0.6- | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 21 | 704 | 0.3+ | 1.4+ | 2005 04 09 | 699 | 0.2-  | 1.0+  | 2007 11 12 | 704 | 0.0  | 0.3+ |
| 2003 10 21 | 704 | 0.6- | 0.8+ | 2005 04 09 | 699 | (0.2- | 1.8+) | 2007 11 12 | 704 | 0.2- | 0.9- |
| 2003 10 21 | 704 | 0.4- | 0.5+ | 2005 04 09 | 699 | (2.1+ | 0.2-) | 2007 11 12 | 704 | 0.6+ | 0.7- |
| 2003 10 22 | 691 | 0.1+ | 0.3+ | 2005 04 12 | G96 | 0.5-  | 0.5+  | 2007 11 17 | 704 | 0.3- | 0.5+ |
| 2003 10 22 | 691 | 0.0  | 0.0  | 2005 04 12 | G96 | 1.1+  | 0.4+  | 2007 11 17 | 704 | 0.9- | 0.6+ |
| 2003 10 22 | 691 | 0.1- | 0.1+ | 2005 04 12 | G96 | 0.1-  | 0.0   | 2007 11 17 | 704 | 1.2- | 0.6- |
| 2003 10 25 | 704 | 0.3- | 0.7+ | 2005 04 12 | G96 | 0.1+  | 0.2+  | 2007 11 17 | 704 | 1.1+ | 0.7+ |
| 2003 10 25 | 704 | 0.8- | 1.1+ | 2007 11 02 | 704 | 0.8-  | 0.9+  | 2007 11 17 | 704 | 0.1+ | 0.6+ |
| 2003 10 25 | 704 | 0.1- | 0.4+ | 2007 11 02 | 704 | 0.4+  | 1.0-  | 2007 12 16 | 704 | 1.1+ | 1.1+ |
| 2003 10 25 | 704 | 1.0- | 0.4+ | 2007 11 02 | 704 | 0.2+  | 0.1-  | 2007 12 16 | 704 | 0.4+ | 0.1+ |
| 2003 10 25 | 704 | 0.3- | 1.2+ | 2007 11 02 | 704 | 0.1-  | 0.7-  | 2007 12 16 | 704 | 0.5+ | 0.1- |
| 2005 03 04 | 691 | 0.2+ | 0.1- | 2007 11 02 | 704 | 0.4+  | 0.1-  | 2007 12 16 | 704 | 0.6+ | 0.3+ |
| 2005 03 04 | 691 | 0.4+ | 0.1+ | 2007 11 08 | 703 | 1.1+  | 0.4+  |            |     |      |      |

**(172558)\* 2003 UM<sub>133</sub> = 2005 GL<sub>43</sub>**

Discovered 2003 Oct. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 86139)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           |          | (2000.0)  |             |             | <b>P</b> |   | <b>Q</b> |  |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|----------|--|
| <i>n</i> | 334.21933 | $\omega$ | 14.44985  | -0.51185732 | -0.85043676 |          |   |          |  |
| <i>a</i> | 2.2906581 | $\Omega$ | 106.46645 | +0.77507349 | -0.51815777 |          |   |          |  |
| <i>e</i> | 0.0511496 | <i>i</i> | 7.27802   | +0.37049044 | -0.09093873 |          |   |          |  |
| <i>P</i> | 3.47      | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 0 |          |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 29 | 691 | 0.2-  | 0.1-  | 2003 10 22 | 704 | 0.1- | 0.6+ | 2005 05 03 | 703 | 0.1+  | 0.0   |
| 2000 11 29 | 691 | 0.7-  | 0.2-  | 2003 11 28 | 645 | 0.1+ | 0.1+ | 2005 05 03 | 703 | 0.8-  | 1.1+  |
| 2000 11 29 | 691 | 0.7-  | 0.3-  | 2003 11 28 | 645 | 0.1+ | 0.1+ | 2005 05 03 | 703 | 0.4+  | 0.5+  |
| 2000 12 17 | 691 | 0.1+  | 0.2-  | 2005 03 18 | 703 | 0.0  | 0.2+ | 2005 05 03 | 703 | 0.3+  | 1.1+  |
| 2000 12 17 | 691 | 0.1+  | 0.1-  | 2005 03 18 | 703 | 0.1- | 0.3+ | 2006 08 16 | E12 | (1.2- | 1.9-) |
| 2000 12 17 | 691 | (2.5+ | 2.7+) | 2005 03 18 | 703 | 0.2+ | 0.5- | 2006 08 16 | E12 | 1.0-  | 1.5-  |
| 2000 12 30 | 704 | 0.3+  | 0.2+  | 2005 03 18 | 703 | 0.2- | 0.4- | 2006 08 16 | E12 | 0.1-  | 0.2-  |
| 2000 12 30 | 704 | 0.5+  | 0.0   | 2005 04 05 | 699 | 0.8+ | 0.4+ | 2006 08 16 | E12 | 0.8+  | 0.5-  |
| 2000 12 30 | 704 | 0.9+  | 0.1-  | 2005 04 05 | 699 | 1.0+ | 0.4+ | 2006 08 20 | 644 | 0.3-  | 0.2+  |
| 2000 12 30 | 704 | 0.9+  | 0.5+  | 2005 04 05 | 699 | 0.6+ | 0.4- | 2006 08 20 | 644 | 0.0   | 0.1+  |
| 2003 10 20 | 683 | 0.1-  | 1.1-  | 2005 04 05 | 699 | 0.6+ | 0.6+ | 2006 08 20 | 644 | 0.2-  | 0.2+  |
| 2003 10 20 | 704 | 0.1+  | 0.9+  | 2005 04 06 | 703 | 0.8+ | 0.5- | 2006 08 21 | F84 | (1.3- | 2.3-) |
| 2003 10 20 | 683 | 1.0-  | 0.2-  | 2005 04 06 | 703 | 0.7- | 0.1- | 2006 08 21 | F84 | (2.0- | 0.5-) |
| 2003 10 20 | 704 | 0.1+  | 0.5+  | 2005 04 06 | 703 | 0.7+ | 0.4- | 2006 08 22 | F84 | 0.7-  | 0.0   |
| 2003 10 20 | 704 | 0.3+  | 0.6-  | 2005 04 06 | 703 | 0.1- | 1.1- | 2006 08 22 | F84 | 0.1-  | 0.6-  |
| 2003 10 20 | 704 | 0.3-  | 0.4+  | 2005 04 08 | 704 | 0.2+ | 0.6+ | 2007 11 11 | G96 | 0.1-  | 0.0   |
| 2003 10 20 | 704 | 0.1-  | 0.1+  | 2005 04 08 | 704 | 0.6+ | 0.0  | 2007 11 11 | G96 | 0.1-  | 0.1-  |
| 2003 10 21 | 704 | 0.5-  | 0.9+  | 2005 04 08 | 704 | 0.2- | 0.7+ | 2007 11 11 | G96 | 0.1+  | 0.3-  |
| 2003 10 21 | 704 | (1.6+ | 1.1+) | 2005 04 08 | 704 | 0.8+ | 0.5+ | 2007 11 11 | G96 | 0.3-  | 0.1+  |
| 2003 10 21 | 704 | (1.9+ | 1.5+) | 2005 04 08 | 704 | 0.1+ | 1.2+ | 2007 12 05 | G96 | 0.0   | 0.2+  |
| 2003 10 22 | 704 | 0.4-  | 0.4+  | 2005 04 16 | 703 | 0.2- | 0.5+ | 2007 12 05 | G96 | 0.1-  | 0.1-  |
| 2003 10 22 | 704 | 0.9-  | 1.0+  | 2005 04 16 | 703 | 0.1+ | 0.2- | 2007 12 05 | G96 | 0.1-  | 0.0   |
| 2003 10 22 | 704 | 0.4+  | 0.8+  | 2005 04 16 | 703 | 0.9- | 0.3- | 2007 12 05 | G96 | 0.2+  | 0.2-  |
| 2003 10 22 | 704 | 0.2-  | 0.6+  | 2005 04 16 | 703 | 1.0- | 0.7+ |            |     |       |       |

**(172559)\* 2003 UZ<sub>133</sub>**

Discovered 2003 Oct. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           |          | (2000.0)  |             |             | <b>P</b> |   | <b>Q</b> |  |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|----------|--|
| <i>n</i> | 349.18714 | $\omega$ | 160.88557 | +0.25208485 | -0.95783220 |          |   |          |  |
| <i>a</i> | 2.4344398 | $\Omega$ | 274.32773 | +0.86886894 | +0.28675906 |          |   |          |  |
| <i>e</i> | 0.2082772 | <i>i</i> | 7.94796   | +0.42605162 | -0.01807540 |          |   |          |  |
| <i>P</i> | 3.80      | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 1 |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 09 | 704 | 0.8+ | 0.0  | 2003 11 02 | 704 | 0.3- | 0.3+ | 2007 10 15 | 704 | 0.2+ | 0.6+ |
| 1999 09 09 | 704 | 0.3- | 0.6- | 2003 11 02 | 704 | 1.2- | 0.0  | 2007 10 15 | 704 | 0.3+ | 0.4+ |
| 1999 09 09 | 704 | 0.6+ | 0.2+ | 2003 11 18 | 644 | 0.3+ | 0.2- | 2007 10 15 | 704 | 0.3+ | 0.3+ |
| 1999 09 09 | 704 | 0.4- | 0.1+ | 2003 11 18 | 644 | 0.1+ | 0.1+ | 2007 11 07 | 704 | 0.2+ | 0.0  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 09 09 | 704 | 0.2-  | 0.0   | 2003 11 18 | 644 | 0.1+  | 0.0   | 2007 11 07 | 704 | 0.4+  | 0.6-  |
| 1999 10 19 | 704 | 0.0   | 0.5+  | 2003 11 19 | 704 | 0.6+  | 0.6-  | 2007 11 07 | 704 | 0.0   | 0.4-  |
| 1999 10 19 | 704 | 0.0   | 0.7-  | 2003 11 19 | 704 | 0.4-  | 0.2-  | 2007 11 07 | 704 | 0.3+  | 0.1-  |
| 1999 10 19 | 704 | 0.5-  | 0.2+  | 2003 11 19 | 704 | 0.1-  | 0.4+  | 2007 11 07 | 704 | 0.7-  | 1.0-  |
| 1999 10 19 | 704 | 0.2+  | 1.0+  | 2003 11 19 | 704 | 0.1+  | 0.0   | 2007 11 11 | D29 | 0.1-  | 0.4-  |
| 1999 10 19 | 704 | 0.4+  | 0.1+  | 2003 11 27 | 703 | (1.9- | 1.0-) | 2007 11 11 | D29 | 0.4+  | 0.4-  |
| 2001 03 24 | 699 | 0.3-  | 0.1+  | 2003 11 27 | 703 | 1.0+  | 0.5-  | 2007 11 11 | D29 | 0.1+  | 0.5-  |
| 2001 03 24 | 699 | 0.1+  | 0.2-  | 2003 11 27 | 703 | 0.0   | 0.0   | 2007 11 11 | D29 | 0.1+  | 0.3-  |
| 2001 03 24 | 699 | 0.2-  | 0.2+  | 2003 11 27 | 703 | (1.6+ | 0.6-) | 2007 11 18 | 704 | 1.1+  | 1.1+  |
| 2001 03 24 | 699 | 0.1+  | 0.1-  | 2003 12 10 | 644 | 0.0   | 0.1-  | 2007 11 18 | 704 | 0.6-  | 1.0+  |
| 2003 09 20 | 704 | 0.2+  | 0.7+  | 2003 12 10 | 644 | 0.2+  | 0.3+  | 2007 11 18 | 704 | 0.1-  | 0.1+  |
| 2003 09 20 | 704 | (0.3- | 2.3-) | 2003 12 10 | 644 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 0.0   | 0.4+  |
| 2003 09 20 | 704 | 0.6-  | 0.4+  | 2003 12 15 | 703 | 0.0   | 0.2+  | 2007 11 18 | 704 | 0.1-  | 0.3-  |
| 2003 09 20 | 704 | 1.3-  | 0.4+  | 2003 12 15 | 703 | 0.2+  | 0.4-  | 2007 11 20 | 704 | 0.1-  | 0.2-  |
| 2003 09 29 | 699 | 0.4-  | 1.2-  | 2003 12 15 | 703 | 0.6-  | 0.4+  | 2007 11 20 | 704 | 0.1+  | 0.0   |
| 2003 09 29 | 699 | 0.1+  | 0.3+  | 2003 12 15 | 703 | 1.1-  | 0.5-  | 2007 11 20 | 704 | 0.4-  | 0.4-  |
| 2003 09 29 | 699 | 0.6-  | 0.2-  | 2003 12 16 | 049 | 0.1+  | 0.2-  | 2007 11 20 | 704 | 0.2-  | 0.0   |
| 2003 09 29 | 699 | 0.1-  | 0.5+  | 2003 12 16 | 049 | 0.1+  | 0.3+  | 2007 11 28 | D29 | 0.0   | 0.3-  |
| 2003 10 05 | 704 | 0.0   | 0.2-  | 2003 12 16 | 049 | 0.2-  | 0.2+  | 2007 11 28 | D29 | 0.3+  | 0.4-  |
| 2003 10 05 | 704 | 0.0   | 0.0   | 2003 12 23 | 704 | (0.4+ | 1.8-) | 2007 11 28 | D29 | 0.3+  | 0.5-  |
| 2003 10 05 | 704 | 0.0   | 0.2-  | 2003 12 23 | 704 | 0.1+  | 0.9+  | 2007 11 28 | D29 | 0.1+  | 0.3-  |
| 2003 10 05 | 704 | 0.4-  | 0.0   | 2003 12 23 | 704 | 0.2+  | 0.6+  | 2007 12 03 | A24 | 0.3-  | 0.4-  |
| 2003 10 05 | 704 | 0.1-  | 0.2-  | 2003 12 23 | 704 | 0.6+  | 0.7+  | 2007 12 03 | A24 | 0.0   | 0.1-  |
| 2003 10 20 | 644 | 0.4-  | 0.6-  | 2003 12 23 | 704 | 0.5+  | 0.7+  | 2007 12 03 | A24 | 0.1-  | 0.3-  |
| 2003 10 20 | 644 | 0.0   | 0.5-  | 2003 12 28 | 704 | 0.3+  | 0.9+  | 2007 12 03 | A24 | 0.1-  | 0.4-  |
| 2003 10 20 | 644 | 0.0   | 0.0   | 2003 12 28 | 704 | 0.0   | 0.8+  | 2007 12 03 | A24 | 0.1-  | 0.4-  |
| 2003 10 20 | 644 | 0.0   | 0.0   | 2003 12 28 | 704 | 0.1-  | 0.9+  | 2007 12 03 | A24 | 0.1-  | 0.6-  |
| 2003 10 20 | 644 | 0.1+  | 0.0   | 2003 12 28 | 704 | 0.1-  | 0.6+  | 2007 12 04 | A24 | 0.6+  | 0.5-  |
| 2003 10 20 | 644 | 0.1+  | 0.0   | 2004 01 19 | 608 | 0.1-  | 0.1+  | 2007 12 04 | A24 | (1.8+ | 0.5-) |
| 2003 10 22 | 704 | 0.4+  | 0.2+  | 2004 01 19 | 608 | 0.8-  | 0.8+  | 2007 12 04 | A24 | 0.5+  | 0.2-  |
| 2003 10 22 | 704 | 0.3+  | 0.3+  | 2004 01 19 | 608 | 0.6-  | 0.5+  | 2007 12 04 | A24 | 0.5+  | 0.2-  |
| 2003 10 22 | 704 | 0.3+  | 0.1+  | 2005 05 01 | 644 | 0.4+  | 0.5+  | 2007 12 13 | 704 | 0.3+  | 0.2-  |
| 2003 10 22 | 704 | 0.3+  | 0.4+  | 2005 05 01 | 644 | 0.2+  | 0.5+  | 2007 12 13 | 704 | 0.2-  | 0.1+  |
| 2003 10 22 | 704 | 0.3+  | 0.1+  | 2005 05 01 | 644 | 0.2+  | 0.8+  | 2007 12 13 | 704 | 0.4-  | 0.0   |
| 2003 10 29 | 699 | 0.0   | 0.7-  | 2007 10 09 | 704 | 0.8-  | 0.3-  | 2007 12 13 | 704 | 0.5-  | 0.5+  |
| 2003 10 29 | 699 | (1.7+ | 0.9-) | 2007 10 09 | 704 | 0.7-  | 0.1-  | 2007 12 13 | 704 | 0.1+  | 0.0   |
| 2003 10 29 | 699 | 0.8+  | 0.1+  | 2007 10 09 | 704 | 0.7-  | 0.5-  | 2007 12 15 | 704 | 0.4+  | 0.4+  |
| 2003 10 29 | 699 | 0.2+  | 0.6-  | 2007 10 09 | 704 | 0.4-  | 0.1-  | 2007 12 15 | 704 | 0.2+  | 0.4+  |
| 2003 11 02 | 704 | 0.1-  | 0.0   | 2007 10 09 | 704 | 0.6-  | 0.5-  | 2007 12 15 | 704 | 0.7+  | 1.0+  |
| 2003 11 02 | 704 | 0.6-  | 0.1+  | 2007 10 15 | 704 | 0.0   | 0.5+  | 2007 12 15 | 704 | 0.4+  | 0.4+  |
| 2003 11 02 | 704 | 0.9-  | 0.0   | 2007 10 15 | 704 | 0.7+  | 0.4-  | 2007 12 15 | 704 | 0.1-  | 0.4+  |

**(172560)\* 2003 UU<sub>134</sub> = 1999 RO<sub>203</sub>**

Discovered 2003 Oct. 20 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 57056)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 77.09241   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.26381268 | $\omega$ | 49.49832  | +0.91219062  | +0.40306469  |
| $a$ | 2.4077179  | $\Omega$ | 286.61598 | -0.39538944  | +0.81850029  |
| $e$ | 0.1443434  | $i$      | 4.41734   | -0.10758932  | +0.40938506  |
| $P$ | 3.74       | $H$      | 16.2      | $G$ 0.15     | $U$ 2        |



2007 DEC. 24

M.P.O. 129411

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 18 | 699 | 1.0+ | 0.8- | 2003 11 20 | 704 | 0.6+ | 1.1+ | 2007 12 05 | 691 | 1.2+ | 0.1- |
| 2003 10 18 | 699 | 1.2+ | 0.2- | 2003 11 20 | 704 | 1.5+ | 0.8+ | 2007 12 05 | 691 | 0.2+ | 0.3- |
| 2003 10 20 | 644 | 0.1+ | 0.1- | 2003 11 20 | 704 | 0.4- | 0.2+ | 2007 12 14 | 704 | 0.6+ | 0.4- |
| 2003 10 20 | 644 | 0.1- | 0.1+ | 2003 11 20 | 704 | 0.6- | 0.5+ | 2007 12 14 | 704 | 0.2+ | 0.6+ |
| 2003 10 20 | 644 | 0.0  | 0.2+ | 2003 11 20 | 704 | 0.1+ | 0.3+ | 2007 12 14 | 704 | 0.4+ | 0.3+ |
| 2003 10 22 | 704 | 0.1+ | 0.5- | 2003 11 20 | 704 | 0.2- | 0.3+ | 2007 12 14 | 704 | 0.4+ | 0.5- |
| 2003 10 22 | 704 | 0.3- | 1.1- | 2003 11 20 | 704 | 0.4- | 0.0  | 2007 12 14 | 704 | 0.2- | 0.0  |
| 2003 10 22 | 704 | 0.7- | 0.6- | 2003 11 21 | 691 | 0.1- | 0.0  | 2007 12 16 | 691 | 0.3- | 0.2- |
| 2003 10 22 | 704 | 0.1- | 0.5- | 2003 11 21 | 691 | 0.1+ | 0.0  | 2007 12 16 | 691 | 0.1- | 0.2- |
| 2003 10 23 | 699 | 1.0+ | 0.7+ | 2003 11 21 | 691 | 0.1- | 0.0  | 2007 12 16 | 691 | 0.2- | 0.4- |
| 2003 10 23 | 699 | 0.6- | 1.1+ | 2003 11 24 | 704 | 0.7+ | 0.3- |            |     |      |      |
| 2003 10 23 | 699 | 0.1+ | 0.1+ | 2003 11 24 | 704 | 0.1+ | 0.8+ |            |     |      |      |

**(172561)\* 2003 UW<sub>134</sub> = 1997 EZ<sub>6</sub>**

Discovered 2003 Oct. 20 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 57056)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 1.94878    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.25567706 | $\omega$ | 159.25492 | +0.55273666 |      | -0.82796212 |   |
| <i>a</i> | 2.4585264  | $\Omega$ | 257.07783 | +0.75025325 |      | +0.54384442 |   |
| <i>e</i> | 0.1221477  | <i>i</i> | 5.57345   | +0.36277023 |      | +0.13679174 |   |
| <i>P</i> | 3.85       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 03 03 | 691 | 0.2+  | 0.3-  | 2003 11 02 | 704 | 0.6+  | 0.5-  | 2003 12 27 | 704 | 0.1-  | 0.0   |
| 1997 03 03 | 691 | 0.3-  | 0.1-  | 2003 11 02 | 704 | 1.1+  | 0.7+  | 2004 01 21 | 704 | 0.9+  | 0.3+  |
| 1997 03 03 | 691 | 0.2-  | 0.2-  | 2003 11 02 | 704 | 0.4+  | 0.4+  | 2004 01 21 | 704 | 0.3+  | 0.7-  |
| 1997 03 08 | 691 | 0.1-  | 0.2-  | 2003 11 05 | 704 | 1.1-  | 0.5+  | 2004 01 21 | 704 | 0.3-  | 0.2-  |
| 1997 03 08 | 691 | 0.1-  | 0.1-  | 2003 11 05 | 704 | 0.9-  | 0.1+  | 2007 11 02 | 691 | (0.5+ | 2.5-) |
| 1997 03 08 | 691 | 0.1-  | 0.3-  | 2003 11 05 | 704 | 0.8-  | 0.0   | 2007 11 02 | 691 | 0.0   | 0.1+  |
| 1999 10 10 | 704 | 0.5-  | 0.3+  | 2003 11 05 | 704 | 1.4-  | 0.1+  | 2007 11 02 | 691 | 0.1-  | 0.1-  |
| 1999 10 10 | 704 | 0.5-  | 0.9+  | 2003 11 05 | 704 | 1.0-  | 0.7+  | 2007 11 03 | D35 | 0.0   | 0.1-  |
| 1999 10 10 | 704 | 0.5-  | 1.1+  | 2003 11 06 | 704 | 0.4-  | 1.0+  | 2007 11 03 | D35 | 0.5+  | 0.0   |
| 1999 10 10 | 704 | 1.3-  | 0.4+  | 2003 11 06 | 704 | 0.5+  | 0.4-  | 2007 11 03 | D35 | 0.1+  | 0.1+  |
| 1999 10 10 | 704 | 0.4+  | 1.8+  | 2003 11 06 | 704 | (1.8+ | 0.2+) | 2007 11 03 | D35 | 0.4+  | 0.4-  |
| 1999 10 14 | 645 | 0.1+  | 0.4-  | 2003 11 18 | 644 | 0.3-  | 0.0   | 2007 11 03 | D35 | 0.2+  | 0.1-  |
| 1999 10 14 | 645 | 0.1+  | 0.4-  | 2003 11 18 | 644 | 0.3-  | 0.2+  | 2007 11 03 | D35 | 0.1-  | 0.3+  |
| 2003 10 18 | 699 | 0.2-  | 0.4-  | 2003 11 18 | 644 | 0.2-  | 0.0   | 2007 11 06 | 691 | 0.1+  | 0.1-  |
| 2003 10 18 | 699 | 0.9-  | 0.9+  | 2003 11 19 | 699 | 0.2+  | 0.1+  | 2007 11 06 | 691 | 0.2-  | 0.0   |
| 2003 10 18 | 699 | 0.2-  | 0.3-  | 2003 11 19 | 703 | 0.2+  | 1.1-  | 2007 11 06 | 691 | 0.3-  | 0.0   |
| 2003 10 18 | 699 | 0.3-  | 0.2+  | 2003 11 19 | 699 | 0.0   | 0.2+  | 2007 11 10 | D29 | 0.2+  | 0.1-  |
| 2003 10 20 | 644 | 0.7+  | 0.3-  | 2003 11 19 | 703 | (0.2+ | 2.6+) | 2007 11 10 | D29 | 0.3+  | 0.6-  |
| 2003 10 20 | 644 | 0.1+  | 0.2-  | 2003 11 19 | 703 | (1.8- | 2.2-) | 2007 11 10 | D29 | 1.0-  | 0.6-  |
| 2003 10 20 | 644 | 0.4+  | 0.2-  | 2003 11 19 | 699 | (0.3- | 1.6-) | 2007 11 10 | D29 | 0.7+  | 0.6+  |
| 2003 10 22 | 704 | 1.4+  | 0.4+  | 2003 11 19 | 703 | 0.4+  | 1.1-  | 2007 11 15 | 704 | 0.2+  | 0.3+  |
| 2003 10 22 | 704 | 0.7+  | 0.1-  | 2003 11 19 | 699 | 0.1-  | 0.4+  | 2007 11 15 | 704 | 1.0+  | 0.2+  |
| 2003 10 22 | 704 | 0.1+  | 0.4+  | 2003 11 20 | 704 | 0.1-  | 0.4+  | 2007 11 15 | 704 | 0.3-  | 0.5+  |
| 2003 10 22 | 704 | 0.4+  | 0.5-  | 2003 11 20 | 704 | 0.2-  | 0.1+  | 2007 11 15 | 704 | 0.7+  | 0.1+  |
| 2003 10 23 | 699 | 1.0+  | 0.7-  | 2003 11 20 | 704 | 0.0   | 0.6+  | 2007 11 17 | 691 | 0.2-  | 0.3-  |
| 2003 10 23 | 699 | 0.0   | 0.2+  | 2003 11 20 | 704 | 0.0   | 0.3+  | 2007 11 17 | 691 | 0.2-  | 0.5-  |
| 2003 10 23 | 699 | 0.1-  | 0.9+  | 2003 11 20 | 704 | 0.0   | 0.1+  | 2007 11 17 | 691 | 0.2   | 0.4-  |
| 2003 10 23 | 699 | 0.8+  | 0.2-  | 2003 11 21 | 691 | (1.7+ | 2.3-) | 2007 12 04 | G96 | 0.2+  | 0.3   |
| 2003 10 25 | 704 | 0.5+  | 0.1-  | 2003 11 21 | 691 | 0.1+  | 0.1+  | 2007 12 04 | G96 | 0.3+  | 0.2-  |
| 2003 10 25 | 704 | (1.7+ | 0.7+) | 2003 11 21 | 691 | 0.0   | 0.1+  | 2007 12 04 | G96 | 0.3+  | 0.2-  |
| 2003 10 25 | 704 | (4.4+ | 4.1-) | 2003 11 24 | 704 | 0.2-  | 0.1-  | 2007 12 04 | G96 | 0.2   | 0.2-  |
| 2003 10 25 | 704 | (0.0  | 1.5+) | 2003 11 24 | 704 | 0.3+  | 0.4+  | 2007 12 05 | 704 | 0.4-  | 1.5+  |
| 2003 10 25 | 704 | 0.3+  | 0.4+  | 2003 11 24 | 699 | 0.4-  | 0.1-  | 2007 12 05 | 704 | 0.2-  | 1.1+  |
| 2003 10 30 | 704 | 0.2+  | 1.3+  | 2003 11 24 | 704 | 0.5-  | 0.3+  | 2007 12 05 | 704 | 0.6-  | 1.0+  |
| 2003 10 30 | 704 | 0.2-  | 0.1+  | 2003 11 24 | 704 | 0.5-  | 0.5+  | 2007 12 05 | 704 | 0.9-  | 0.9+  |
| 2003 10 30 | 704 | 0.6-  | 0.1-  | 2003 11 24 | 699 | 0.5-  | 0.3+  | 2007 12 05 | 704 | 0.8-  | 1.1+  |
| 2003 10 30 | 704 | 0.0   | 0.6+  | 2003 11 24 | 704 | 0.0   | 0.3+  | 2007 12 14 | 704 | 0.6+  | 0.6+  |
| 2003 10 30 | 704 | 0.0   | 0.6+  | 2003 11 24 | 699 | 0.1+  | 0.4+  | 2007 12 14 | 704 | 0.2+  | 0.4+  |
| 2003 11 01 | 704 | (1.7- | 0.2+) | 2003 11 24 | 699 | 0.8+  | 0.0   | 2007 12 14 | 704 | 0.1+  | 0.2+  |
| 2003 11 01 | 704 | 0.1-  | 0.8-  | 2003 12 01 | 703 | 0.3-  | 0.5-  | 2007 12 14 | 704 | 0.2+  | 0.4+  |
| 2003 11 01 | 704 | 0.2+  | 0.0   | 2003 12 01 | 703 | (2.3+ | 1.1+) | 2007 12 14 | 704 | 0.1-  | 0.0   |
| 2003 11 01 | 704 | 0.6-  | 0.1+  | 2003 12 01 | 703 | 0.5+  | 0.8-  | 2007 12 15 | G96 | 0.4+  | 0.3-  |
| 2003 11 01 | 704 | 0.2-  | 0.8+  | 2003 12 01 | 703 | 0.1-  | 0.0   | 2007 12 15 | G96 | 0.4+  | 0.3-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 02 | 704 | 0.4+ | 0.5+ | 2003 12 27 | 704 | 0.5+ | 0.2+ | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2003 11 02 | 704 | 0.3+ | 0.9+ | 2003 12 27 | 704 | 0.2+ | 0.4+ | 2007 12 15 | G96 | 0.0  | 0.4- |

**(172562)\* 2003 UM<sub>147</sub>**

Discovered 2003 Oct. 18 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 18.69254   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.23506578 | $\omega$ | 298.91701 | +0.98225084 |      | -0.08818788 |   |
| <i>a</i> | 2.6002181  | $\Omega$ | 66.56134  | +0.15565967 |      | +0.87568937 |   |
| <i>e</i> | 0.1207382  | <i>i</i> | 10.39519  | -0.10465828 |      | +0.47475365 |   |
| <i>P</i> | 4.19       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 10 18 | 699 | 0.4-  | 0.6+  | 2003 11 21 | 704 | 0.0   | 0.7-  | 2007 10 17 | 699 | 0.1+  | 0.4+  |
| 2003 10 18 | 699 | 1.1-  | 0.0   | 2003 11 21 | 704 | 0.6+  | 0.1+  | 2007 10 17 | 699 | 1.0+  | 0.1-  |
| 2003 10 18 | 699 | 0.1+  | 0.0   | 2003 11 21 | 704 | 0.1+  | 0.1-  | 2007 10 17 | 699 | 0.3-  | 0.3-  |
| 2003 10 18 | 699 | (1.8- | 1.2+) | 2003 11 24 | 699 | 0.1+  | 0.3-  | 2007 10 19 | 704 | 0.5-  | 0.0   |
| 2003 10 21 | 704 | 0.5-  | 1.1+  | 2003 11 24 | 703 | 0.4+  | 0.2-  | 2007 10 19 | 704 | 0.1-  | 0.1+  |
| 2003 10 21 | 704 | 0.2-  | 0.8-  | 2003 11 24 | 699 | 0.7-  | 0.4-  | 2007 10 19 | 704 | 0.3+  | 0.6+  |
| 2003 10 21 | 704 | 0.2-  | 0.0   | 2003 11 24 | 703 | 0.3-  | 0.5-  | 2007 10 19 | 699 | 0.7+  | 0.1-  |
| 2003 10 21 | 704 | 0.5-  | 0.2-  | 2003 11 24 | 699 | 1.1+  | 0.5-  | 2007 10 19 | 704 | 0.1-  | 0.7+  |
| 2003 10 24 | 704 | 0.3-  | 0.2+  | 2003 11 24 | 703 | 0.0   | 1.0+  | 2007 10 19 | 704 | 0.5+  | 0.5+  |
| 2003 10 24 | 704 | 0.6-  | 0.0   | 2003 11 24 | 699 | 0.3-  | 0.3-  | 2007 10 19 | 699 | 0.3+  | 0.5+  |
| 2003 10 24 | 704 | 0.1+  | 0.1+  | 2003 11 24 | 703 | (2.6+ | 1.0+) | 2007 10 19 | 703 | 0.0   | 0.4-  |
| 2003 10 24 | 704 | 0.5-  | 0.6+  | 2003 12 17 | 703 | (1.5- | 1.0-) | 2007 10 19 | 703 | 0.2-  | 0.5-  |
| 2003 10 24 | 704 | 0.5-  | 0.5+  | 2003 12 17 | 703 | 1.4-  | 0.8+  | 2007 10 19 | 703 | 0.9-  | 0.3-  |
| 2003 10 29 | 699 | 0.1+  | 0.5-  | 2003 12 17 | 703 | (2.7- | 1.0-) | 2007 10 19 | 699 | 0.8+  | 0.2+  |
| 2003 10 29 | 699 | 0.1-  | 0.6-  | 2003 12 17 | 703 | 1.1-  | 0.5+  | 2007 10 19 | 699 | 0.3+  | 0.8+  |
| 2003 10 29 | 699 | 0.1-  | 0.2-  | 2003 12 18 | 691 | 0.2+  | 0.0   | 2007 10 31 | 703 | 1.3-  | 0.3-  |
| 2003 10 29 | 699 | 0.8+  | 0.0   | 2003 12 18 | 691 | 0.2+  | 0.2-  | 2007 10 31 | 703 | 0.6-  | 0.0   |
| 2003 10 29 | 608 | 0.7-  | 0.6-  | 2003 12 18 | 691 | 0.2+  | 0.0   | 2007 10 31 | 703 | 1.3-  | 0.8-  |
| 2003 10 29 | 608 | 0.5-  | 0.2-  | 2004 01 12 | 644 | 0.8-  | 0.3+  | 2007 10 31 | 703 | 1.5-  | 0.3+  |
| 2003 10 29 | 608 | 0.9-  | 0.2-  | 2004 01 12 | 644 | 0.6-  | 0.0   | 2007 11 07 | 703 | 0.4+  | 0.5-  |
| 2003 11 01 | 704 | 0.6+  | 0.3-  | 2004 01 12 | 644 | 0.5-  | 0.1+  | 2007 11 07 | 703 | (1.4+ | 1.5+) |
| 2003 11 01 | 704 | 1.2+  | 0.5+  | 2005 03 09 | 703 | 0.2+  | 0.5+  | 2007 11 07 | 703 | 0.2-  | 0.7-  |
| 2003 11 01 | 704 | 0.4+  | 0.2-  | 2005 03 09 | 703 | 0.1-  | 0.4+  | 2007 11 07 | 703 | 0.3+  | 0.1+  |
| 2003 11 01 | 704 | 0.5+  | 0.1+  | 2005 03 09 | 703 | 0.3+  | 0.1-  | 2007 11 11 | 704 | 0.2-  | 0.6+  |
| 2003 11 16 | 703 | 0.1+  | 0.2-  | 2005 03 09 | 703 | (2.1- | 1.6+) | 2007 11 11 | 704 | 0.4-  | 0.7+  |
| 2003 11 16 | 703 | 0.3-  | 0.1-  | 2006 05 02 | 673 | 0.4+  | 0.1+  | 2007 11 11 | 704 | 0.3-  | 0.0   |
| 2003 11 16 | 703 | 1.0+  | 0.4+  | 2006 05 02 | 673 | 0.3+  | 0.2+  | 2007 11 11 | 704 | 0.2-  | 0.3+  |
| 2003 11 16 | 703 | 0.5-  | 0.5+  | 2006 05 02 | 673 | 0.3-  | 0.1+  | 2007 11 11 | 704 | 0.5-  | 0.5+  |
| 2003 11 18 | 691 | 0.2+  | 0.1+  | 2006 05 07 | 673 | 0.1-  | 0.4+  | 2007 11 17 | 703 | 1.0+  | 0.0   |
| 2003 11 18 | 691 | 0.3+  | 0.1+  | 2006 05 07 | 673 | 0.0   | 0.4+  | 2007 11 17 | 703 | (0.2+ | 1.7-) |
| 2003 11 18 | 691 | 0.1+  | 0.2-  | 2006 05 07 | 673 | 0.0   | 0.2+  | 2007 11 17 | 703 | 0.4+  | 0.4-  |
| 2003 11 19 | 599 | 0.1+  | 0.3+  | 2007 10 10 | 703 | 0.9+  | 0.1-  | 2007 11 17 | 703 | 0.6+  | 1.3-  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 11 04 | 704 | 0.6−  | 0.6−  | 2003 10 28 | 704 | 1.3+  | 0.9+  | 2007 10 11 | 699 | 0.5+  | 0.1−  |
| 1999 11 12 | 704 | 0.1+  | 0.2−  | 2003 10 28 | 704 | 0.2−  | 0.1+  | 2007 10 11 | 699 | 0.3+  | 0.3−  |
| 1999 11 12 | 704 | 0.6+  | 0.1−  | 2003 10 28 | 704 | 0.3+  | 0.7+  | 2007 10 11 | 699 | (2.9+ | 0.5−) |
| 1999 11 12 | 704 | 0.4+  | 1.0+  | 2003 10 29 | 699 | (1.8− | 0.5+) | 2007 10 13 | 704 | 0.8−  | 0.7+  |
| 1999 11 12 | 704 | 0.3+  | 0.3−  | 2003 10 29 | 699 | 0.1−  | 0.0   | 2007 10 13 | 704 | 0.3−  | 0.5+  |
| 2002 04 08 | 644 | 0.0   | 1.0+  | 2003 10 29 | 699 | 0.3−  | 0.1+  | 2007 10 13 | 704 | 0.7−  | 0.0   |
| 2002 04 08 | 644 | 0.5+  | 0.6+  | 2003 10 29 | 699 | 0.4−  | 0.0   | 2007 10 13 | 704 | 0.7−  | 0.2+  |
| 2002 04 08 | 644 | 0.6+  | 0.9+  | 2007 09 05 | 703 | 0.2+  | 0.7−  | 2007 10 13 | 704 | 0.2+  | 0.2−  |
| 2003 09 17 | 644 | 0.0   | 0.2−  | 2007 09 05 | 703 | 0.7−  | 0.9−  | 2007 10 15 | 703 | 0.2+  | 0.3+  |
| 2003 09 17 | 644 | 0.2+  | 0.3−  | 2007 09 05 | 703 | (2.2+ | 0.9+) | 2007 10 15 | 703 | 1.2−  | 0.6−  |
| 2003 09 17 | 644 | 0.0   | 0.0   | 2007 09 05 | 703 | 0.8+  | 0.4−  | 2007 10 15 | 703 | 0.8−  | 0.9+  |
| 2003 09 28 | 704 | (1.8− | 0.4−) | 2007 09 11 | D29 | 0.3−  | 1.2+  | 2007 10 15 | 703 | 0.5+  | 0.5+  |
| 2003 09 28 | 704 | 0.7−  | 0.3+  | 2007 09 11 | D29 | (3.8− | 0.3+) | 2007 10 16 | G96 | 0.8+  | 0.8−  |
| 2003 09 28 | 704 | 0.6+  | 0.3+  | 2007 09 14 | 703 | 0.6+  | 0.7+  | 2007 10 16 | G96 | 0.4+  | 0.4−  |
| 2003 09 28 | 704 | 0.1+  | 0.8−  | 2007 09 14 | 703 | 0.1+  | 0.0   | 2007 10 16 | G96 | 0.5+  | 0.3−  |
| 2003 10 05 | 691 | 0.1−  | 0.5−  | 2007 09 14 | 703 | 0.0   | 0.1−  | 2007 10 16 | G96 | 0.0   | 0.4−  |
| 2003 10 05 | 691 | 0.0   | 0.6−  | 2007 09 14 | 703 | 0.0   | 0.0   | 2007 11 03 | 291 | 0.2+  | 0.1−  |
| 2003 10 05 | 691 | 0.2−  | 0.3−  | 2007 09 15 | A50 | 0.9+  | 0.4+  | 2007 11 03 | 291 | 0.2+  | 0.0   |
| 2003 10 15 | 699 | 1.0−  | 0.4−  | 2007 09 15 | A50 | 0.6+  | 0.1−  | 2007 11 03 | 291 | 0.1+  | 0.0   |
| 2003 10 15 | 699 | (0.1− | 1.9−) | 2007 09 15 | A50 | 0.1−  | 0.1+  | 2007 11 04 | 704 | 0.6−  | 0.5+  |
| 2003 10 15 | 699 | 0.6−  | 0.8+  | 2007 09 15 | A50 | 0.2+  | 0.2+  | 2007 11 04 | 704 | 0.7−  | 0.6+  |
| 2003 10 15 | 699 | 0.1+  | 0.6+  | 2007 09 15 | 699 | 0.5−  | 0.1+  | 2007 11 04 | 704 | (1.5− | 0.2−) |
| 2003 10 20 | 704 | 0.5−  | 1.1+  | 2007 09 15 | 699 | 0.5−  | 0.1+  | 2007 11 17 | G96 | 0.1−  | 0.2−  |
| 2003 10 20 | 704 | 0.4−  | 0.0   | 2007 09 15 | 699 | 0.6−  | 0.4−  | 2007 11 17 | G96 | 0.3+  | 0.1−  |
| 2003 10 20 | 704 | 0.6−  | 1.0+  | 2007 09 15 | 699 | 0.3−  | 0.6−  | 2007 11 17 | G96 | 0.2+  | 0.3−  |
| 2003 10 20 | 704 | 0.2−  | 1.4+  | 2007 10 04 | 703 | 0.6+  | 0.4+  | 2007 11 17 | G96 | 0.5+  | 0.3−  |
| 2003 10 20 | 704 | 0.6−  | 0.2−  | 2007 10 04 | 703 | 0.5+  | 0.1+  | 2007 12 05 | 704 | 0.0   | 0.6+  |
| 2003 10 22 | 608 | 0.7−  | 0.4−  | 2007 10 04 | 703 | 0.1+  | 0.4+  | 2007 12 05 | 704 | 0.6−  | 0.5−  |
| 2003 10 22 | 608 | 0.1+  | 0.9−  | 2007 10 04 | 703 | 0.5−  | 0.2+  | 2007 12 05 | 704 | 0.1−  | 0.6+  |
| 2003 10 22 | 608 | 0.4−  | 0.5−  | 2007 10 07 | 704 | 0.7+  | 0.6+  | 2007 12 05 | 704 | 0.4−  | 0.3+  |
| 2003 10 23 | 691 | 0.0   | 0.0   | 2007 10 07 | 704 | 0.7−  | 0.4+  |            |     |       |       |
| 2003 10 23 | 691 | 0.1+  | 0.2−  | 2007 10 07 | 704 | 0.2−  | 0.7+  |            |     |       |       |

**(172564)\* 2003 UU<sub>161</sub> = 1998 MF<sub>49</sub>**

Discovered 2003 Oct. 21 by NEAT at Palomar.

Id. A. Doppler (*MPO* 86141)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 12.33215   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.23808754 | $\omega$ | 177.05845 | +0.99219417  | +0.12451191  |
| $a$ | 2.5781703  | $\Omega$ | 175.77036 | −0.11623528  | +0.94342981  |
| $e$ | 0.2046356  | $i$      | 5.36213   | −0.04516725  | +0.30730599  |
| $P$ | 4.14       | $H$      | 16.4      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 06 23 | 691 | 0.6+  | 0.6+  | 2006 04 02 | 691 | 0.1+  | 0.4+  | 2007 10 04 | G96 | 0.0   | 0.5−  |
| 1998 06 23 | 691 | 0.4−  | 0.7+  | 2006 04 02 | 691 | 0.1+  | 0.2+  | 2007 10 04 | G96 | 0.0   | 0.7−  |
| 1998 06 23 | 691 | 0.1+  | 0.1+  | 2007 09 04 | 703 | 0.2+  | 0.6−  | 2007 10 06 | 704 | 0.9+  | 0.2+  |
| 1998 06 30 | 691 | 0.5+  | 0.3−  | 2007 09 04 | 703 | 0.0   | 0.8−  | 2007 10 06 | 704 | (0.6− | 2.3−) |
| 1998 06 30 | 691 | 0.4−  | 0.1−  | 2007 09 04 | 703 | 0.0   | 0.7−  | 2007 10 06 | 704 | 0.1−  | 0.2+  |
| 1998 06 30 | 691 | 0.2−  | 0.4+  | 2007 09 04 | 703 | 0.0   | 0.7−  | 2007 10 06 | 704 | 1.1−  | 1.5−  |
| 2003 09 20 | 704 | 0.4−  | 1.0+  | 2007 09 05 | 699 | (0.6− | 1.6−) | 2007 10 08 | 699 | 0.5+  | 0.5−  |
| 2003 09 20 | 699 | 0.2+  | 0.3−  | 2007 09 05 | 699 | 1.0+  | 0.3−  | 2007 10 08 | 699 | (0.2− | 2.2−) |
| 2003 09 20 | 704 | 0.8+  | 1.2+  | 2007 09 05 | 699 | 0.4−  | 0.3+  | 2007 10 08 | 699 | 0.1−  | 0.2−  |
| 2003 09 20 | 699 | 0.1−  | 0.0   | 2007 09 13 | 704 | 0.7+  | 0.0   | 2007 10 08 | 699 | 0.4+  | 0.5−  |
| 2003 09 20 | 704 | (0.6− | 2.1+) | 2007 09 13 | 704 | 1.1−  | 0.6+  | 2007 10 11 | 704 | 0.4−  | 0.1−  |
| 2003 09 20 | 699 | 0.2+  | 0.7+  | 2007 09 13 | 704 | 0.2−  | 0.4+  | 2007 10 11 | 704 | 0.4−  | 0.1+  |
| 2003 09 20 | 704 | 0.5−  | 0.6+  | 2007 09 13 | 704 | 0.0   | 0.2+  | 2007 10 11 | 704 | 0.3−  | 0.1−  |
| 2003 09 20 | 699 | (1.9− | 1.3+) | 2007 09 13 | 699 | 0.2+  | 0.6−  | 2007 10 11 | 704 | 0.2−  | 0.1+  |
| 2003 09 28 | 704 | 0.1−  | 0.2+  | 2007 09 13 | 699 | 0.3−  | 0.2+  | 2007 10 12 | G96 | 0.0   | 0.5−  |
| 2003 09 28 | 704 | 1.2+  | 0.4−  | 2007 09 13 | 699 | 0.1+  | 0.1−  | 2007 10 12 | G96 | 0.0   | 0.5−  |
| 2003 09 28 | 704 | 1.0+  | 0.2+  | 2007 09 13 | 699 | 0.5+  | 1.2−  | 2007 10 12 | G96 | 0.0   | 0.5−  |
| 2003 09 28 | 704 | 0.7+  | 0.2+  | 2007 09 14 | 699 | 0.1−  | 0.8−  | 2007 10 12 | G96 | 0.0   | 0.4−  |
| 2003 09 28 | 704 | 0.4+  | 1.1+  | 2007 09 14 | 699 | 0.7+  | 0.7−  | 2007 10 15 | 703 | 0.6+  | 0.7+  |
| 2003 10 21 | 699 | 0.1+  | 0.8+  | 2007 09 14 | 699 | 0.1−  | 0.1−  | 2007 10 15 | 703 | 0.6+  | 0.5+  |
| 2003 10 21 | 699 | 0.3+  | 0.1−  | 2007 09 14 | 699 | 0.0   | 0.0   | 2007 10 15 | 703 | 1.0+  | 1.2+  |
| 2003 10 21 | 699 | 0.3+  | 0.4+  | 2007 09 15 | 704 | 0.3−  | 0.6+  | 2007 10 15 | 703 | 0.2−  | 0.6+  |
| 2003 10 21 | 644 | 0.3−  | 0.0   | 2007 09 15 | 704 | 0.6+  | 0.5+  | 2007 10 18 | 704 | 0.8−  | 1.2+  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 21 | 699 | 0.1−  | 0.3−  | 2007 09 15 | 704 | 0.2+ | 0.2− | 2007 10 18 | 704 | 1.1−  | 0.8+  |
| 2003 10 21 | 644 | 0.3−  | 0.1+  | 2007 09 16 | 704 | 0.2+ | 0.6+ | 2007 10 18 | 704 | 1.1−  | 0.5+  |
| 2003 10 21 | 644 | 0.2−  | 0.0   | 2007 09 16 | 704 | 0.5+ | 0.2− | 2007 10 18 | 704 | 0.6−  | 0.3+  |
| 2003 10 23 | 608 | 0.7−  | 0.6+  | 2007 09 16 | 704 | 0.0  | 0.1− | 2007 10 18 | 704 | (1.6− | 1.1+) |
| 2003 10 23 | 608 | 1.1−  | 0.7+  | 2007 09 16 | 704 | 0.3+ | 0.2+ | 2007 11 17 | G96 | 0.0   | 0.9−  |
| 2003 10 23 | 608 | 0.8−  | 0.0   | 2007 09 16 | 704 | 0.2+ | 0.1− | 2007 11 17 | G96 | 0.7+  | 0.2−  |
| 2003 10 25 | 704 | 0.5−  | 0.2+  | 2007 09 19 | 704 | 0.0  | 0.4+ | 2007 11 17 | G96 | 0.4+  | 0.4−  |
| 2003 10 25 | 704 | 0.2−  | 0.2+  | 2007 09 19 | 704 | 0.4− | 0.6− | 2007 11 17 | G96 | 0.5−  | 0.5−  |
| 2003 10 25 | 704 | 0.4−  | 0.1+  | 2007 09 19 | 704 | 0.1+ | 0.4− | 2007 12 04 | 704 | 1.5−  | 2.4+  |
| 2003 10 25 | 704 | 0.1−  | 0.5+  | 2007 09 19 | 704 | 0.0  | 0.4− | 2007 12 04 | 704 | 0.6−  | 2.5+  |
| 2003 10 25 | 704 | 0.4−  | 0.5+  | 2007 09 19 | 704 | 0.2− | 0.4− | 2007 12 04 | 704 | 0.4+  | 1.2+  |
| 2003 11 18 | 699 | 0.1+  | 0.6+  | 2007 10 02 | D35 | 0.0  | 0.1+ | 2007 12 04 | 704 | 0.5+  | 1.5+  |
| 2003 11 18 | 699 | 0.4−  | 0.2+  | 2007 10 02 | D35 | 0.1− | 0.2+ | 2007 12 05 | 704 | 1.3+  | 0.6−  |
| 2003 11 18 | 699 | 0.8−  | 0.7+  | 2007 10 02 | D35 | 0.5− | 0.2− | 2007 12 05 | 704 | 0.6+  | 0.5−  |
| 2003 11 18 | 699 | (1.6− | 1.2−) | 2007 10 04 | G96 | 0.1+ | 0.6− | 2007 12 05 | 704 | 0.5+  | 0.6−  |
| 2006 04 02 | 691 | 0.2+  | 0.5+  | 2007 10 04 | G96 | 0.0  | 0.5− |            |     |       |       |

**(172565)\* 2003 UZ<sub>164</sub> = 1999 RB<sub>7</sub>**

Discovered 2003 Oct. 21 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 53540)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 18.22317   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.25330301 | $\omega$ | 12.38587 | +0.94683495 | −0.32169327 |
| $a$ | 2.4738639  | $\Omega$ | 6.38401  | +0.29191707 | +0.85366530 |
| $e$ | 0.1996936  | $i$      | 2.12569  | +0.13523310 | +0.40959614 |
| $P$ | 3.89       | $H$      | 18.1     | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|-------|-------|
| 1995 09 19 | 691 | 0.1−  | 0.4+  | 2003 10 16 | 691 | 0.1− | 0.3+  | 2007 10 11 | 691 | 0.0   | 0.1+  |
| 1995 09 19 | 691 | 0.0   | 0.3+  | 2003 10 21 | 644 | 0.2+ | 0.6+  | 2007 10 15 | 691 | 0.0   | 0.2−  |
| 1995 09 19 | 691 | 0.1−  | 0.5+  | 2003 10 21 | 644 | 0.3− | 0.1+  | 2007 10 15 | 691 | 0.2−  | 0.1−  |
| 1995 09 25 | 691 | (6.5+ | 2.6+) | 2003 10 21 | 644 | 0.1− | 0.0   | 2007 10 15 | 691 | 0.1−  | 0.2+  |
| 1995 09 25 | 691 | 0.0   | 0.3+  | 2003 10 23 | 608 | 0.4+ | 0.4+  | 2007 11 04 | J87 | 0.7+  | 0.3−  |
| 1995 09 25 | 691 | 0.4−  | 0.1−  | 2003 10 23 | 608 | 0.0  | 0.1−  | 2007 11 04 | J87 | 0.4+  | 0.1+  |
| 1999 09 03 | 691 | 0.4+  | 0.6−  | 2003 10 23 | 608 | 0.6+ | 0.0   | 2007 11 04 | J87 | 0.7+  | 0.4−  |
| 1999 09 03 | 691 | 0.1+  | 0.1−  | 2003 10 24 | 704 | 1.2− | 0.4−  | 2007 11 08 | 691 | 0.2−  | 0.2+  |
| 1999 09 03 | 691 | 0.3+  | 0.3−  | 2003 10 24 | 704 | 1.3+ | 0.1−  | 2007 11 08 | 691 | 0.2+  | 0.2+  |
| 1999 09 08 | 691 | 0.0   | 0.1−  | 2003 10 24 | 704 | 0.1+ | 0.7+  | 2007 11 08 | 691 | 0.4−  | 0.5−  |
| 1999 09 08 | 691 | 0.4−  | 0.3−  | 2003 10 24 | 704 | (0.0 | 1.5+) | 2007 11 15 | 704 | 0.7−  | 0.8−  |
| 1999 09 08 | 691 | 0.0   | 0.2−  | 2003 10 24 | 704 | 0.1− | 0.3−  | 2007 11 15 | 704 | 0.9+  | 1.3−  |
| 2003 09 22 | 691 | 0.0   | 0.2+  | 2003 10 25 | 291 | 0.1+ | 0.0   | 2007 11 15 | 704 | (2.2− | 0.3−) |
| 2003 09 22 | 691 | 0.1−  | 0.1−  | 2003 10 25 | 291 | 0.1+ | 0.0   | 2007 11 15 | 704 | 0.3−  | 0.5−  |
| 2003 09 22 | 691 | 0.2+  | 0.0   | 2003 10 25 | 291 | 0.3+ | 0.0   | 2007 12 06 | 691 | 0.0   | 0.1+  |
| 2003 09 27 | 691 | 0.1+  | 0.3+  | 2003 11 24 | 691 | 0.5− | 0.5−  | 2007 12 06 | 691 | 0.3+  | 0.9+  |
| 2003 09 27 | 691 | 0.3+  | 0.2−  | 2003 11 24 | 691 | 0.1+ | 0.2−  | 2007 12 06 | 691 | 0.3−  | 0.0   |
| 2003 09 27 | 691 | 0.3−  | 0.2+  | 2003 11 24 | 691 | 0.2− | 0.2−  | 2007 12 16 | 691 | 0.0   | 0.0   |
| 2003 10 16 | 691 | 0.0   | 0.3+  | 2007 10 11 | 691 | 0.1− | 0.2−  | 2007 12 16 | 691 | 0.1+  | 0.2+  |
| 2003 10 16 | 691 | 0.1+  | 0.2+  | 2007 10 11 | 691 | 0.2+ | 0.1−  | 2007 12 16 | 691 | 0.1−  | 0.1+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 08 13 | 699 | 0.6+  | 0.3-  | 2003 11 19 | 644 | 0.4+  | 0.3+  | 2006 05 25 | 704 | 0.6- | 0.1- |
| 1999 08 13 | 699 | 0.2-  | 0.2-  | 2003 11 21 | 704 | 0.1-  | 0.2+  | 2006 05 25 | 704 | 0.1+ | 1.4+ |
| 2003 10 16 | 291 | 0.6-  | 0.4+  | 2003 11 21 | 704 | 0.9+  | 0.2-  | 2006 05 28 | 704 | 0.3- | 0.5+ |
| 2003 10 16 | 291 | 0.4-  | 0.5+  | 2003 11 21 | 704 | 0.7+  | 0.6+  | 2006 05 28 | 704 | 1.5+ | 0.5+ |
| 2003 10 16 | 291 | 0.6-  | 0.3+  | 2003 11 21 | 704 | 0.2+  | 0.9+  | 2006 05 28 | 704 | 0.0  | 0.9+ |
| 2003 10 21 | 644 | 0.2-  | 0.5+  | 2003 11 21 | 691 | 0.0   | 0.2+  | 2006 05 28 | 704 | 0.3+ | 0.9+ |
| 2003 10 21 | 644 | 0.0   | 0.7+  | 2003 11 21 | 704 | 0.0   | 0.3+  | 2006 05 28 | 704 | 0.1+ | 0.8+ |
| 2003 10 21 | 644 | 0.0   | 0.9+  | 2003 11 21 | 691 | 0.0   | 0.2+  | 2006 06 02 | 691 | 0.2+ | 0.1+ |
| 2003 10 23 | 699 | 0.3+  | 1.0+  | 2003 11 21 | 691 | 0.1-  | 0.1+  | 2006 06 02 | 691 | 0.2+ | 0.2+ |
| 2003 10 23 | 699 | 0.2-  | 0.3-  | 2003 11 30 | 691 | 0.1-  | 0.2+  | 2006 06 02 | 691 | 0.2+ | 0.2+ |
| 2003 10 23 | 699 | 0.2-  | 0.7+  | 2003 11 30 | 691 | 0.3-  | 0.1+  | 2006 06 16 | 644 | 0.0  | 0.0  |
| 2003 10 23 | 699 | 0.6-  | 0.4+  | 2003 11 30 | 691 | 0.1-  | 0.2+  | 2006 06 16 | 644 | 0.2- | 0.2+ |
| 2003 10 23 | 291 | 0.1+  | 0.2+  | 2006 03 23 | G96 | 0.1-  | 0.1+  | 2006 06 16 | 644 | 0.1- | 0.0  |
| 2003 10 23 | 291 | 0.1+  | 0.0   | 2006 03 23 | G96 | 0.3-  | 0.2+  | 2006 06 19 | 691 | 0.1- | 0.3+ |
| 2003 10 23 | 291 | 0.1+  | 0.1+  | 2006 03 23 | G96 | 0.1+  | 0.4+  | 2006 06 19 | 691 | 0.1- | 0.4+ |
| 2003 10 26 | 608 | 0.4+  | 0.4+  | 2006 03 23 | G96 | 0.1-  | 0.3+  | 2006 06 19 | 691 | 0.1+ | 0.2+ |
| 2003 10 26 | 608 | 0.5+  | 0.4-  | 2006 04 02 | G96 | 0.1+  | 0.2+  | 2006 06 21 | 644 | 0.2- | 0.0  |
| 2003 10 26 | 608 | 1.0+  | 0.7-  | 2006 04 02 | G96 | 0.7+  | 0.2+  | 2006 06 21 | 644 | 0.2+ | 0.1+ |
| 2003 10 28 | 704 | 0.1-  | 0.2-  | 2006 04 02 | G96 | 0.8+  | 0.2+  | 2006 06 21 | 644 | 0.0  | 0.0  |
| 2003 10 28 | 704 | 0.3+  | 0.5-  | 2006 04 02 | G96 | 0.4+  | 0.1+  | 2006 07 22 | 644 | 0.4+ | 0.2+ |
| 2003 10 28 | 704 | 0.3+  | 0.0   | 2006 04 23 | 704 | 0.4-  | 0.4+  | 2006 07 22 | 644 | 0.5- | 0.1- |
| 2003 10 28 | 704 | 0.2-  | 0.3-  | 2006 04 23 | 704 | 0.4-  | 0.3-  | 2006 07 22 | 644 | 0.2- | 0.0  |
| 2003 10 28 | 704 | 0.4-  | 0.4-  | 2006 04 23 | 704 | (1.2+ | 1.7+) | 2007 11 08 | 691 | 0.0  | 0.1+ |
| 2003 10 29 | 703 | 0.1+  | 1.1-  | 2006 04 23 | 704 | 1.2+  | 0.8+  | 2007 11 08 | 691 | 0.0  | 0.2+ |
| 2003 10 29 | 703 | (1.6- | 0.6-) | 2006 05 01 | 704 | 0.7+  | 1.3+  | 2007 11 08 | 691 | 0.4- | 0.1- |
| 2003 10 29 | 703 | 0.2-  | 1.1-  | 2006 05 01 | 704 | 0.4-  | 1.4+  | 2007 11 20 | 691 | 0.4+ | 0.2- |
| 2003 10 29 | 703 | 0.1+  | 1.4-  | 2006 05 01 | 704 | (0.9- | 1.9+) | 2007 11 20 | 691 | 0.1+ | 0.1+ |
| 2003 11 01 | 704 | 0.4-  | 0.1-  | 2006 05 01 | 704 | (1.3- | 2.7+) | 2007 11 20 | 691 | 0.4- | 0.5+ |
| 2003 11 01 | 704 | 1.3-  | 1.2+  | 2006 05 08 | E12 | 0.2-  | 0.4-  | 2007 12 05 | G96 | 0.8+ | 0.3- |
| 2003 11 01 | 704 | 0.9+  | 0.5+  | 2006 05 08 | E12 | 0.4-  | 0.0   | 2007 12 05 | G96 | 0.5+ | 0.1- |
| 2003 11 01 | 704 | 0.4+  | 0.5+  | 2006 05 08 | E12 | 0.0   | 0.3-  | 2007 12 05 | G96 | 0.5+ | 0.0  |
| 2003 11 18 | 644 | 0.3-  | 0.6+  | 2006 05 08 | E12 | 0.2+  | 0.7+  | 2007 12 05 | G96 | 0.2+ | 1.2- |
| 2003 11 18 | 644 | 0.3-  | 0.4+  | 2006 05 19 | 703 | 0.8-  | 0.4-  |            |     |      |      |

**(172567)\* 2003 UX<sub>166</sub> = 2005 CW<sub>49</sub>**

Discovered 2003 Oct. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 72959)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |
|----------|------------|----------|-----------|
| <i>M</i> | 233.81634  | (2000.0) |           |
| <i>n</i> | 0.28152138 | $\omega$ | 15.51063  |
| <i>a</i> | 2.3056593  | $\Omega$ | 191.08599 |
| <i>e</i> | 0.1729070  | <i>i</i> | 2.08750   |
| <i>P</i> | 3.50       | <i>H</i> | 16.0      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 02 24 | 566 | 0.8-  | 0.0   | 2005 02 04 | 699 | 1.0+ | 0.3- | 2005 03 10 | G96 | 0.3-  | 0.1-  |
| 1998 02 24 | 566 | 0.5-  | 0.3-  | 2005 02 04 | 699 | 0.4- | 0.6+ | 2005 03 11 | 695 | 0.3-  | 0.1+  |
| 1998 02 24 | 566 | 1.0-  | 0.1-  | 2005 02 09 | 699 | 0.1- | 0.0  | 2005 03 11 | 695 | 0.4-  | 0.2+  |
| 1998 03 03 | 704 | 0.4+  | 1.7-  | 2005 02 09 | 699 | 0.1- | 0.4+ | 2005 03 14 | 704 | 0.7+  | 0.5+  |
| 1998 03 03 | 704 | 0.7+  | 1.1-  | 2005 02 09 | 699 | 0.4+ | 0.2+ | 2005 03 14 | 704 | 0.7+  | 0.5+  |
| 1998 03 03 | 704 | 0.5-  | 1.5-  | 2005 02 09 | 704 | 0.3- | 0.5+ | 2005 03 14 | 704 | 1.1+  | 0.2+  |
| 1998 03 03 | 704 | 0.1-  | 0.8-  | 2005 02 09 | 704 | 0.6- | 0.3+ | 2005 03 16 | 704 | 1.0+  | 0.2+  |
| 1998 03 03 | 704 | (3.3- | 2.6-) | 2005 02 09 | 699 | 0.3- | 0.3+ | 2005 03 16 | 704 | 0.1+  | 0.2+  |
| 1998 03 04 | 704 | 0.7+  | 0.7-  | 2005 02 09 | 704 | 0.2- | 0.5+ | 2005 03 16 | 704 | 0.2+  | 0.1+  |
| 1998 03 04 | 704 | 0.1-  | 0.4-  | 2005 02 09 | 704 | 0.0  | 0.4+ | 2005 03 16 | 704 | 0.7+  | 0.1+  |
| 1998 03 04 | 704 | 1.6-  | 0.0   | 2005 02 09 | 704 | 0.4- | 0.7+ | 2005 03 16 | 704 | 0.1-  | 0.5-  |
| 1998 03 04 | 704 | 0.7+  | 1.0-  | 2005 02 14 | 691 | 0.1- | 0.1+ | 2005 03 17 | 704 | 0.2+  | 0.3-  |
| 1998 03 04 | 704 | 0.3-  | 0.8-  | 2005 02 14 | 691 | 0.2- | 0.1+ | 2005 03 17 | 704 | 0.8+  | 0.0   |
| 2003 09 29 | 333 | (1.7+ | 0.1+) | 2005 02 14 | 691 | 0.3- | 0.3+ | 2005 03 17 | 704 | 0.5+  | 0.2-  |
| 2003 09 29 | 333 | 0.3+  | 0.0   | 2005 03 01 | 691 | 0.1+ | 0.2+ | 2005 03 17 | 704 | 0.2+  | 0.4-  |
| 2003 09 29 | 333 | 0.9-  | 0.7-  | 2005 03 01 | 691 | 0.0  | 0.0  | 2005 03 17 | 704 | 0.7-  | 0.1+  |
| 2003 09 29 | 691 | 0.3-  | 0.3+  | 2005 03 01 | 691 | 0.1+ | 0.7- | 2006 08 28 | 699 | (2.1+ | 0.2+) |
| 2003 09 29 | 691 | 0.1-  | 0.3+  | 2005 03 08 | 704 | 0.2+ | 0.0  | 2006 08 28 | 699 | 0.7+  | 0.8+  |
| 2003 09 29 | 691 | 0.1-  | 0.2+  | 2005 03 08 | 704 | 0.3+ | 0.1- | 2006 08 28 | 699 | 0.0   | 1.2+  |
| 2003 10 22 | 704 | 0.4-  | 0.6+  | 2005 03 08 | 704 | 0.1+ | 0.3+ | 2006 08 28 | 699 | 0.3-  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 22 | 704 | 0.4- | 0.3- | 2005 03 08 | 704 | 0.1+ | 0.3+ | 2006 09 14 | 703 | (0.7- | 3.0-) |
| 2003 10 22 | 704 | 0.4- | 0.2+ | 2005 03 08 | 704 | 0.1- | 0.0  | 2006 09 14 | 703 | (0.9+ | 1.7-) |
| 2003 10 23 | 291 | 0.1+ | 0.3- | 2005 03 09 | G96 | 0.4- | 0.1- | 2006 09 14 | 703 | 0.0   | 0.4+  |
| 2003 10 23 | 291 | 0.1+ | 0.2- | 2005 03 09 | G96 | 0.4- | 0.1- | 2006 09 14 | 703 | (2.7- | 0.3+) |
| 2003 10 23 | 291 | 0.1+ | 0.2- | 2005 03 09 | G96 | 0.5- | 0.1- | 2006 09 27 | G96 | 0.1+  | 0.2-  |
| 2003 10 28 | 704 | 0.4+ | 0.3- | 2005 03 09 | G96 | 0.1- | 0.4- | 2006 09 27 | G96 | 0.0   | 0.2-  |
| 2003 10 28 | 704 | 0.8+ | 0.7+ | 2005 03 09 | 704 | 0.5+ | 1.5+ | 2006 09 27 | G96 | 0.6-  | 0.0   |
| 2003 10 28 | 704 | 0.2- | 0.1- | 2005 03 09 | 704 | 0.5- | 0.0  | 2006 09 27 | G96 | 0.1-  | 0.2-  |
| 2005 02 02 | 703 | 0.3+ | 0.4+ | 2005 03 09 | 704 | 0.3+ | 0.4+ | 2007 11 06 | 691 | 0.8+  | 0.1+  |
| 2005 02 02 | 704 | 0.5+ | 0.3+ | 2005 03 09 | 704 | 0.7+ | 0.4- | 2007 11 06 | 691 | 0.5-  | 0.3-  |
| 2005 02 02 | 703 | 0.0  | 0.8+ | 2005 03 09 | 704 | 0.0  | 0.2- | 2007 11 06 | 691 | 0.4-  | 0.4-  |
| 2005 02 02 | 703 | 0.1+ | 1.0+ | 2005 03 10 | 699 | 0.7+ | 0.1- | 2007 12 05 | 704 | 0.0   | 0.3-  |
| 2005 02 02 | 704 | 0.2- | 0.1+ | 2005 03 10 | 699 | 1.0+ | 0.5+ | 2007 12 05 | 704 | 0.4+  | 0.0   |
| 2005 02 02 | 703 | 0.5- | 1.0+ | 2005 03 10 | 699 | 0.1- | 0.5+ | 2007 12 05 | 704 | 0.1+  | 0.0   |
| 2005 02 02 | 704 | 0.2- | 0.8+ | 2005 03 10 | 699 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.6+  | 0.2-  |
| 2005 02 02 | 704 | 0.2- | 0.6+ | 2005 03 10 | G96 | 0.2- | 0.1- | 2007 12 05 | 704 | 0.6+  | 0.6+  |
| 2005 02 04 | 699 | 0.2+ | 0.3- | 2005 03 10 | G96 | 0.1- | 0.1- |            |     |       |       |
| 2005 02 04 | 699 | 0.0  | 0.2+ | 2005 03 10 | G96 | 0.3- | 0.1- |            |     |       |       |

**(172568)\* 2003 UB<sub>171</sub>**

Discovered 2003 Oct. 19 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |
|----------|------------|----------|----------|
| <i>M</i> | 6.88494    | (2000.0) |          |
| <i>n</i> | 0.25901666 | $\omega$ | 23.07049 |
| <i>a</i> | 2.4373483  | $\Omega$ | 25.26495 |
| <i>e</i> | 0.1186637  | <i>i</i> | 2.63561  |
| <i>P</i> | 3.81       | <i>H</i> | 17.3     |
|          |            | <i>G</i> | 0.15     |
|          |            | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 02 03 | 691 | 0.2+  | 0.5-  | 2003 12 01 | 291 | 0.5+ | 0.1+ | 2007 10 16 | G96 | 0.3+ | 0.5- |
| 1997 02 03 | 691 | 0.0   | 0.2-  | 2003 12 01 | 291 | 0.1+ | 0.2+ | 2007 10 16 | G96 | 0.3+ | 0.5- |
| 1997 02 03 | 691 | 0.0   | 1.3+  | 2003 12 01 | 291 | 0.1- | 0.2+ | 2007 10 16 | G96 | 0.1+ | 0.3- |
| 2003 09 28 | 691 | 0.3-  | 0.0   | 2005 03 10 | 695 | 0.0  | 0.1+ | 2007 10 16 | G96 | 0.0  | 0.5- |
| 2003 09 28 | 691 | 0.3+  | 0.1-  | 2005 03 10 | G96 | 0.2- | 0.1- | 2007 11 06 | 691 | 0.3- | 0.1+ |
| 2003 09 28 | 691 | 0.1-  | 0.6+  | 2005 03 10 | G96 | 0.2- | 0.2- | 2007 11 06 | 691 | 0.0  | 0.2- |
| 2003 10 19 | 691 | 0.1+  | 0.1-  | 2005 03 10 | G96 | 0.1+ | 0.2- | 2007 11 06 | 691 | 0.4- | 0.4- |
| 2003 10 19 | 691 | 0.2-  | 0.2-  | 2005 03 10 | G96 | 0.2- | 0.3- | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2003 10 19 | 691 | 0.2-  | 0.1+  | 2005 03 10 | 695 | 0.3+ | 0.1+ | 2007 11 17 | 691 | 0.1- | 0.2- |
| 2003 10 22 | 704 | 0.2-  | 0.1+  | 2005 04 04 | G96 | 0.2- | 0.1+ | 2007 11 17 | 691 | 0.1- | 0.1- |
| 2003 10 22 | 704 | (1.9+ | 0.7+) | 2005 04 04 | G96 | 0.4- | 0.4- | 2007 12 15 | 704 | 0.5+ | 0.9+ |
| 2003 10 22 | 704 | 0.7-  | 0.5+  | 2005 04 04 | G96 | 0.3- | 0.1- | 2007 12 15 | 704 | 0.9+ | 0.4+ |
| 2003 10 22 | 704 | 0.6-  | 0.1+  | 2005 04 04 | G96 | 0.2+ | 0.1- | 2007 12 15 | 704 | 0.4+ | 0.5+ |
| 2003 10 23 | 699 | 0.3-  | 0.3+  | 2005 04 11 | G96 | 0.1+ | 0.4- | 2007 12 15 | 704 | 0.1+ | 0.7- |
| 2003 10 23 | 699 | 0.6+  | 0.4-  | 2005 04 11 | G96 | 0.1+ | 0.1- | 2007 12 15 | 704 | 0.9+ | 0.1+ |
| 2003 10 23 | 699 | 0.2+  | 0.3-  | 2005 04 11 | G96 | 0.0  | 0.1- |            |     |      |      |
| 2003 10 23 | 699 | 0.1+  | 1.1-  | 2005 04 11 | G96 | 0.1- | 0.2- |            |     |      |      |

**(172569)\* 2003 UB<sub>175</sub>**

Discovered 2003 Oct. 21 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |         |          |  |
|----------|---------|----------|--|
| <i>M</i> | 2.63992 | (2000.0) |  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 23 | 699 | 0.4− | 0.1+ | 2005 03 14 | G96 | 0.9− | 0.0  | 2007 11 21 | G96 | 0.4− | 0.0  |
| 2003 10 23 | 699 | 0.1+ | 0.4+ | 2005 03 14 | G96 | 0.2+ | 0.1+ | 2007 12 14 | G96 | 0.3+ | 0.7− |
| 2003 10 23 | 699 | 0.2+ | 1.3− | 2005 03 14 | G96 | 0.4− | 0.0  | 2007 12 14 | G96 | 0.0  | 0.4− |
| 2003 10 24 | 704 | 0.7− | 0.8+ | 2005 04 11 | G96 | 0.0  | 0.1+ | 2007 12 14 | G96 | 0.3+ | 0.3− |
| 2003 10 24 | 704 | 0.4− | 0.6+ | 2005 04 11 | G96 | 0.0  | 0.3+ | 2007 12 14 | G96 | 0.1− | 0.5− |

(172570)\* 2003 UX<sub>178</sub> = 2003 SO<sub>189</sub> = 2003 UB<sub>293</sub>

Discovered 2003 Oct. 21 by NEAT at Palomar.

Id. A. Doppler (d, MPO 76118)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.26345634 | <i>ω</i> | 41.59056 | +0.03830449 |      | −0.99862950 |   |
| <i>a</i> | 2.4098885  | <i>Ω</i> | 46.24775 | +0.90327896 |      | +0.01934016 |   |
| <i>e</i> | 0.1672804  | <i>i</i> | 2.82998  | +0.42734049 |      | +0.04863203 |   |
| <i>P</i> | 3.74       | <i>H</i> | 17.5     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 20 | 645 | 0.1+ | 0.0  | 2003 10 28 | 704 | 0.0  | 0.5− | 2007 09 18 | G96 | 0.2+  | 0.2+  |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2003 10 28 | 704 | 0.4− | 0.5− | 2007 09 18 | G96 | 0.3+  | 0.1+  |
| 2001 03 04 | 691 | 0.0  | 0.2+ | 2003 10 28 | 704 | 0.2− | 1.1− | 2007 09 18 | G96 | 0.4+  | 0.2−  |
| 2001 03 04 | 691 | 0.1+ | 0.4+ | 2003 10 28 | 704 | 0.2− | 0.1− | 2007 09 18 | G96 | 0.1−  | 0.1−  |
| 2001 03 04 | 691 | 0.2− | 0.2+ | 2003 10 28 | 704 | 0.2+ | 0.5+ | 2007 12 05 | G91 | 0.0   | 0.2−  |
| 2003 09 22 | 691 | 0.0  | 0.1+ | 2003 11 19 | 644 | 0.1− | 0.0  | 2007 12 05 | G91 | 0.2+  | 0.2−  |
| 2003 09 22 | 691 | 0.1− | 0.1+ | 2003 11 19 | 644 | 0.2− | 0.2+ | 2007 12 05 | G91 | 0.0   | 0.1+  |
| 2003 09 22 | 691 | 0.0  | 0.7− | 2003 11 19 | 644 | 0.2− | 0.9− | 2007 12 06 | G91 | 0.1+  | 0.1−  |
| 2003 10 16 | 691 | 0.1+ | 0.4+ | 2003 11 24 | 691 | 0.2+ | 0.0  | 2007 12 06 | G91 | 0.1+  | 0.1−  |
| 2003 10 16 | 691 | 0.1− | 0.4+ | 2003 11 24 | 691 | 0.1+ | 0.0  | 2007 12 06 | G91 | 0.8−  | 0.2−  |
| 2003 10 16 | 691 | 0.2+ | 0.3+ | 2003 11 24 | 691 | 0.2+ | 0.0  | 2007 12 10 | 704 | 0.1+  | 0.4+  |
| 2003 10 21 | 644 | 0.7− | 0.7+ | 2005 04 05 | G96 | 0.2− | 0.3+ | 2007 12 10 | 704 | 0.3−  | 1.2+  |
| 2003 10 21 | 704 | 0.0  | 0.3+ | 2005 04 05 | G96 | 0.2− | 0.5+ | 2007 12 10 | 704 | (0.7− | 4.5+) |
| 2003 10 21 | 644 | 0.3− | 0.6+ | 2005 04 05 | G96 | 0.7− | 0.2+ | 2007 12 10 | 704 | 0.1−  | 0.4+  |
| 2003 10 21 | 704 | 0.4− | 0.2+ | 2005 04 05 | G96 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.4+  | 0.1+  |
| 2003 10 21 | 704 | 1.0− | 0.4− | 2005 04 06 | G96 | 0.4− | 0.5− | 2007 12 14 | 704 | 0.5+  | 0.6+  |
| 2003 10 21 | 704 | 0.1− | 0.0  | 2005 04 06 | G96 | 0.5− | 0.2+ | 2007 12 14 | 704 | 0.6+  | 0.7+  |
| 2003 10 21 | 644 | 0.2+ | 0.5+ | 2005 04 06 | G96 | 0.5− | 0.1+ | 2007 12 14 | 704 | 0.8+  | 0.7+  |
| 2003 10 24 | 704 | 0.4− | 0.6− | 2005 04 06 | G96 | 0.5− | 0.2− | 2007 12 14 | 704 | 0.0   | 0.5+  |
| 2003 10 24 | 704 | 0.0  | 0.9+ | 2005 04 07 | G96 | 0.1− | 0.4+ | 2007 12 15 | G91 | 0.0   | 0.2−  |
| 2003 10 24 | 704 | 0.1− | 0.7+ | 2005 04 07 | G96 | 0.3− | 0.4+ | 2007 12 15 | G91 | 0.0   | 0.0   |
| 2003 10 24 | 704 | 0.9− | 0.8+ | 2005 04 07 | G96 | 0.7+ | 0.7+ | 2007 12 15 | G91 | 0.6−  | 0.7−  |
| 2003 10 24 | 704 | 0.3− | 0.5+ | 2005 04 07 | G96 | 0.3− | 0.1+ | 2007 12 16 | G91 | 0.2+  | 0.0   |
| 2003 10 25 | 691 | 0.0  | 0.2+ | 2005 04 09 | G91 | 0.2+ | 0.0  | 2007 12 16 | G91 | 0.1+  | 0.1−  |
| 2003 10 25 | 691 | 0.0  | 0.3+ | 2005 04 09 | G91 | 0.3+ | 0.3+ | 2007 12 16 | G91 | 0.2+  | 0.1−  |
| 2003 10 25 | 691 | 0.0  | 0.2+ | 2005 04 09 | G91 | 0.7+ | 0.3+ |            |     |       |       |

(172571)\* 2003 UD<sub>179</sub>

Discovered 2003 Oct. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.28473878 | <i>ω</i> | 62.29961 | −0.22427297 |      | −0.97297909 |   |
| <i>a</i> | 2.2882579  | <i>Ω</i> | 40.78084 | +0.86190153 |      | −0.22432600 |   |
| <i>e</i> | 0.0883026  | <i>i</i> | 4.82096  | +0.45478279 |      | −0.05467663 |   |
| <i>P</i> | 3.46       | <i>H</i> | 16.4     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 03 25 | 704 | 1.8−  | 0.3−  | 2003 11 01 | 704 | 0.2+ | 0.5+ | 2005 04 10 | 691 | 0.2+  | 0.1+  |
| 1998 03 25 | 704 | 0.5+  | 1.8+  | 2003 11 01 | 704 | 0.3+ | 0.4+ | 2005 04 10 | 691 | 0.1+  | 0.3+  |
| 1998 03 25 | 704 | 1.0+  | 0.4+  | 2003 11 01 | 704 | 0.8− | 0.7+ | 2005 04 11 | 691 | 0.4+  | 0.2+  |
| 1998 03 25 | 704 | 0.8−  | 1.1+  | 2003 11 01 | 704 | 1.1+ | 0.1+ | 2005 04 11 | 691 | 0.2+  | 0.8+  |
| 1998 03 25 | 704 | 1.2+  | 0.9+  | 2003 11 16 | 291 | 0.6− | 0.4+ | 2005 04 11 | 691 | 0.4+  | 0.3+  |
| 1998 03 29 | 704 | 0.7+  | 0.8−  | 2003 11 16 | 291 | 1.0− | 0.9+ | 2005 04 11 | 691 | 0.2+  | 0.2+  |
| 1998 03 29 | 704 | 1.6−  | 1.1−  | 2003 11 16 | 291 | 0.7− | 0.4+ | 2005 04 11 | 691 | 0.2−  | 0.8+  |
| 1998 03 29 | 704 | 0.4−  | 0.9−  | 2003 11 21 | 704 | 0.0  | 0.8+ | 2005 04 11 | 691 | 1.3+  | 0.4+  |
| 1998 03 29 | 704 | (3.7− | 0.8+) | 2003 11 21 | 704 | 0.6− | 0.4+ | 2005 04 12 | 704 | 0.0   | 0.4+  |
| 2001 01 04 | 704 | 0.6+  | 1.0−  | 2003 11 21 | 704 | 0.2− | 0.8+ | 2005 04 12 | 704 | (0.1− | 1.8+) |

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.2− | 0.1−  | 2003 11 21 | 704 | 0.2+ | 1.0+ | 2005 04 12 | 704 | 0.8+ | 0.4+ |
| 2001 01 04 | 704 | 0.2− | 1.0+  | 2003 11 21 | 704 | 0.1+ | 0.3+ | 2005 04 12 | 704 | 0.2+ | 0.3+ |
| 2001 01 04 | 704 | 0.7+ | 0.4−  | 2003 11 28 | 691 | 0.3− | 0.0  | 2005 04 14 | 691 | 0.1+ | 0.4+ |
| 2003 10 21 | 704 | 0.3− | 0.5+  | 2003 11 28 | 691 | 0.0  | 0.4+ | 2005 04 14 | 691 | 0.0  | 0.2+ |
| 2003 10 21 | 704 | 0.4− | 0.2−  | 2003 11 28 | 691 | 0.1− | 0.2+ | 2005 04 14 | 691 | 0.3+ | 0.3+ |
| 2003 10 21 | 704 | 0.3+ | 0.6+  | 2005 03 11 | 691 | 0.0  | 0.0  | 2005 04 15 | 699 | 0.2− | 0.4+ |
| 2003 10 21 | 704 | (0.0 | 1.5+) | 2005 03 11 | 691 | 0.6+ | 0.1+ | 2005 04 15 | 699 | 0.7+ | 0.7+ |
| 2003 10 21 | 704 | 0.2+ | 0.8+  | 2005 03 11 | 691 | 0.1+ | 0.0  | 2005 04 15 | 699 | 0.4− | 0.5+ |
| 2003 10 21 | 644 | 0.3− | 0.9+  | 2005 03 14 | G96 | 0.8− | 0.2− | 2005 04 15 | 699 | 0.0  | 1.2+ |
| 2003 10 21 | 644 | 0.2− | 0.5+  | 2005 03 14 | G96 | 0.6− | 0.1− | 2005 06 13 | G96 | 0.6+ | 0.3− |
| 2003 10 21 | 644 | 0.8− | 0.7+  | 2005 03 14 | G96 | 0.2− | 0.3− | 2005 06 13 | G96 | 0.9− | 0.3− |
| 2003 10 23 | 699 | 0.2− | 1.4+  | 2005 03 14 | G96 | 0.5− | 0.0  | 2005 06 13 | G96 | 0.3− | 0.2− |
| 2003 10 23 | 699 | 0.5+ | 0.4+  | 2005 03 17 | 691 | 0.2+ | 0.2+ | 2005 06 13 | G96 | 0.7− | 0.0  |
| 2003 10 23 | 699 | 0.0  | 0.2+  | 2005 03 17 | 691 | 0.2+ | 0.5+ | 2006 08 17 | 644 | 0.6− | 0.6+ |
| 2003 10 23 | 699 | 0.6− | 0.7+  | 2005 03 17 | 691 | 0.2+ | 0.4+ | 2006 08 17 | 644 | 0.1+ | 0.6+ |
| 2003 10 24 | 291 | 0.3− | 0.3+  | 2005 04 05 | G96 | 0.2− | 0.1− | 2006 08 17 | 644 | 0.4− | 0.6+ |
| 2003 10 24 | 291 | 0.1− | 0.1+  | 2005 04 05 | G96 | 0.3− | 0.7+ | 2006 08 20 | 644 | 0.9− | 0.6+ |
| 2003 10 24 | 291 | 0.2− | 0.1+  | 2005 04 05 | G96 | 0.8+ | 0.4+ | 2006 08 20 | 644 | 0.4− | 0.3+ |
| 2003 10 24 | 608 | 0.0  | 0.9+  | 2005 04 05 | G96 | 0.3− | 0.1+ | 2006 08 20 | 644 | 0.3− | 0.6+ |
| 2003 10 24 | 608 | 0.3− | 0.5+  | 2005 04 06 | G96 | 0.0  | 0.2− | 2007 10 26 | G96 | 0.1+ | 0.2+ |
| 2003 10 24 | 608 | 0.0  | 0.6+  | 2005 04 06 | G96 | 0.9− | 0.2− | 2007 10 26 | G96 | 0.1− | 0.3+ |
| 2003 10 28 | 704 | 0.6+ | 0.2+  | 2005 04 06 | G96 | 0.1+ | 0.5− | 2007 10 26 | G96 | 0.5− | 0.2+ |
| 2003 10 28 | 704 | 1.0+ | 0.5+  | 2005 04 06 | G96 | 0.1− | 0.3+ | 2007 10 26 | G96 | 0.2− | 0.4− |
| 2003 10 28 | 704 | 0.7+ | 0.1−  | 2005 04 09 | 691 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.7− | 0.9− |
| 2003 10 28 | 704 | 0.3+ | 0.3−  | 2005 04 09 | 691 | 0.5− | 0.0  | 2007 12 13 | 704 | 0.1− | 0.6− |
| 2003 10 28 | 704 | 0.9+ | 0.8−  | 2005 04 09 | 691 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.4− | 1.3− |
| 2003 11 01 | 704 | 0.0  | 0.5+  | 2005 04 10 | 691 | 0.3+ | 0.3+ | 2007 12 13 | 704 | 1.3− | 0.6− |

(172572)\* 2003 UJ<sub>190</sub> = 2002 JZ<sub>128</sub>

Discovered 2003 Oct. 22 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 57120)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.26520216 | <i>ω</i> | 237.11575 | +0.48881291 |      | +0.86901074 |   |
| <i>a</i> | 2.3993007  | <i>Ω</i> | 62.33051  | −0.76868728 |      | +0.47061253 |   |
| <i>e</i> | 0.1396948  | <i>i</i> | 4.96800   | −0.41253097 |      | +0.15278805 |   |
| <i>P</i> | 3.72       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 23 | 691 | 0.0   | 0.0   | 2003 10 24 | 704 | 0.3+ | 1.1+ | 2005 03 13 | G96 | 0.1− | 0.3+ |
| 1992 11 23 | 691 | 0.2−  | 0.0   | 2003 10 24 | 704 | 0.0  | 1.2+ | 2005 03 13 | G96 | 0.1− | 0.4+ |
| 1992 11 23 | 691 | 0.2+  | 0.0   | 2003 10 24 | 691 | 0.0  | 0.1− | 2005 03 13 | G96 | 0.1− | 0.3+ |
| 2002 04 22 | 644 | 0.1−  | 1.4+  | 2003 10 24 | 704 | 0.4+ | 0.6+ | 2005 03 13 | G96 | 0.3− | 0.3+ |
| 2002 04 22 | 644 | 0.0   | 1.1+  | 2003 10 24 | 691 | 0.1− | 0.1− | 2007 09 18 | G96 | 0.5− | 0.3− |
| 2002 04 22 | 644 | 0.3−  | 0.8+  | 2003 10 24 | 691 | 0.3− | 0.2+ | 2007 09 18 | G96 | 0.3+ | 0.1− |
| 2002 05 08 | 699 | 0.2+  | 1.2+  | 2003 10 28 | 704 | 0.6− | 0.8+ | 2007 09 18 | G96 | 0.3− | 0.0  |
| 2002 05 08 | 699 | (2.1+ | 1.6+) | 2003 10 28 | 704 | 0.6− | 0.6+ | 2007 09 18 | G96 | 1.0− | 0.2+ |
| 2002 05 08 | 699 | (1.3+ | 1.5+) | 2003 10 28 | 704 | 0.3− | 0.5+ | 2007 12 14 | 704 | 0.1+ | 1.1− |
| 2002 05 08 | 699 | 0.1+  | 0.3+  | 2003 10 28 | 704 | 0.7− | 0.3− | 2007 12 14 | 704 | 0.2− | 0.5+ |
| 2002 05 10 | 704 | 0.8+  | 0.6+  | 2003 11 30 | 691 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.2+ | 1.6+ |
| 2002 05 10 | 704 | 0.7+  | 0.6+  | 2003 11 30 | 691 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.5+ | 0.1− |
| 2002 05 10 | 704 | 0.6+  | 0.1+  | 2003 11 30 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.1+ |
| 2002 05 10 | 704 | 0.6+  | 0.1+  | 2005 02 09 | G96 | 0.2+ | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2003 10 22 | 691 | 0.1−  | 0.2+  | 2005 02 09 | G96 | 0.2− | 0.4− | 2007 12 15 | G96 | 0.9+ | 0.0  |
| 2003 10 22 | 691 | 0.0   | 0.0   | 2005 02 09 | G96 | 0.1+ | 0.2− |            |     |      |      |
| 2003 10 22 | 691 | 0.0   | 0.0   | 2005 02 09 | G96 | 0.2+ | 0.2− |            |     |      |      |

2007 DEC. 24

M.P.O. 129415

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.01310  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.25721801 | $\omega$ | 4.64925  | +0.34358726 | -0.93843123 |
| <i>a</i> | 2.4486975  | $\Omega$ | 65.25869 | +0.86034406 | +0.29917456 |
| <i>e</i> | 0.1725454  | <i>i</i> | 2.27051  | +0.37650484 | +0.17274668 |
| <i>P</i> | 3.83       | <i>H</i> | 17.0     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 14 | 691 | 0.2-  | 0.4+  | 2003 11 01 | 704 | 0.4+ | 0.4- | 2005 04 10 | G96 | 0.1- | 0.3+ |
| 2001 03 14 | 691 | 0.1+  | 0.1+  | 2003 11 01 | 704 | 0.6+ | 0.4- | 2005 04 10 | G96 | 0.4- | 0.1+ |
| 2001 03 14 | 691 | 0.3+  | 0.2-  | 2003 11 18 | 644 | 0.2- | 0.1+ | 2005 04 10 | G96 | 0.5- | 0.3- |
| 2003 10 21 | 704 | 0.1-  | 0.9+  | 2003 11 18 | 644 | 0.2- | 0.4+ | 2007 09 15 | G96 | 0.1+ | 0.4- |
| 2003 10 21 | 704 | 0.5-  | 1.2+  | 2003 11 18 | 644 | 0.3- | 0.2+ | 2007 09 15 | G96 | 0.3+ | 0.2- |
| 2003 10 21 | 704 | (1.7- | 0.9+) | 2003 11 19 | 691 | 0.1- | 0.0  | 2007 09 15 | G96 | 0.6- | 0.6+ |
| 2003 10 21 | 691 | 0.0   | 0.2+  | 2003 11 19 | 691 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.2- |
| 2003 10 21 | 691 | 0.2-  | 0.2+  | 2003 11 19 | 691 | 0.1- | 0.1- | 2007 11 14 | 704 | 0.5+ | 0.6- |
| 2003 10 21 | 691 | 0.1-  | 0.2+  | 2003 11 21 | 704 | 0.8+ | 0.1- | 2007 11 14 | 704 | 0.2+ | 0.0  |
| 2003 10 24 | 704 | 0.1+  | 0.8+  | 2003 11 21 | 704 | 0.6- | 1.3+ | 2007 11 14 | 704 | 0.6- | 0.1- |
| 2003 10 24 | 704 | 0.3+  | 0.2+  | 2003 11 21 | 704 | 0.1- | 0.5+ | 2007 11 28 | D29 | 0.8+ | 0.7- |
| 2003 10 24 | 704 | 0.3-  | 0.5+  | 2003 11 21 | 704 | 0.1+ | 0.3+ | 2007 11 28 | D29 | 0.1- | 0.8- |
| 2003 10 24 | 704 | 0.6+  | 0.2+  | 2003 11 21 | 704 | 0.5+ | 0.7+ | 2007 11 28 | D29 | 0.3+ | 0.9- |
| 2003 10 24 | 704 | 0.4-  | 0.0   | 2003 11 21 | 699 | 0.0  | 0.1- | 2007 11 28 | D29 | 0.5- | 0.4+ |
| 2003 10 26 | 703 | 0.7+  | 0.4-  | 2003 11 21 | 699 | 0.4- | 0.2- | 2007 12 04 | G96 | 0.0  | 0.5- |
| 2003 10 26 | 703 | 0.6-  | 0.2-  | 2003 11 21 | 699 | 0.5- | 0.2- | 2007 12 04 | G96 | 0.2+ | 0.6- |
| 2003 10 26 | 703 | (3.4- | 0.8-) | 2003 11 21 | 699 | 0.7- | 0.2+ | 2007 12 04 | G96 | 0.1+ | 0.6- |
| 2003 10 26 | 703 | (5.0- | 0.7-) | 2005 03 09 | G96 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.2- | 0.2- |
| 2003 10 28 | 704 | 0.1+  | 0.1-  | 2005 03 09 | G96 | 0.0  | 0.3+ | 2007 12 05 | 704 | 0.5+ | 0.5- |
| 2003 10 28 | 704 | 0.3+  | 0.1-  | 2005 03 09 | G96 | 0.4- | 0.2+ | 2007 12 05 | 704 | 0.3- | 0.8- |
| 2003 10 28 | 704 | 0.6+  | 0.1-  | 2005 03 09 | G96 | 0.2+ | 0.3- | 2007 12 14 | 704 | 0.1- | 0.4+ |
| 2003 10 28 | 704 | 0.5+  | 0.4-  | 2005 04 02 | 691 | 0.4+ | 0.3- | 2007 12 14 | 704 | 0.3+ | 0.7+ |
| 2003 11 01 | 704 | 0.8-  | 0.4-  | 2005 04 02 | 691 | 0.1- | 0.2+ | 2007 12 14 | 704 | 0.2- | 0.9+ |
| 2003 11 01 | 704 | 0.0   | 0.0   | 2005 04 02 | 691 | 0.1+ | 0.6+ | 2007 12 14 | 704 | 0.2- | 0.3+ |
| 2003 11 01 | 704 | 0.4-  | 0.8-  | 2005 04 10 | G96 | 0.1- | 0.4+ | 2007 12 14 | 704 | 0.2- | 0.1+ |

(172574)\* 2003 UA<sub>207</sub>

Discovered 2003 Oct. 22 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.06093   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.26568665 | $\omega$ | 35.27953 | +0.55335326 | -0.83245211 |
| <i>a</i> | 2.3963830  | $\Omega$ | 21.16847 | +0.74479348 | +0.47906969 |
| <i>e</i> | 0.1395098  | <i>i</i> | 4.55840  | +0.37293812 | +0.27841647 |
| <i>P</i> | 3.71       | <i>H</i> | 16.8     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 15 | 704 | 0.1+ | 0.9- | 2003 11 21 | 644 | 0.0   | 0.1-  | 2005 04 02 | G96 | 0.0  | 0.2+ |
| 1999 10 15 | 704 | 0.3+ | 0.2- | 2003 11 24 | 704 | 0.4-  | 0.1+  | 2005 04 05 | G96 | 0.0  | 0.2- |
| 1999 10 15 | 704 | 0.2- | 0.7- | 2003 11 24 | 704 | 0.6-  | 0.1-  | 2005 04 05 | G96 | 0.1- | 0.3+ |
| 1999 10 15 | 704 | 0.1- | 0.3+ | 2003 11 24 | 704 | 0.0   | 0.2+  | 2005 04 05 | G96 | 0.0  | 0.1- |
| 2001 02 20 | 645 | 0.0  | 0.1- | 2003 11 24 | 704 | 0.4-  | 0.2+  | 2005 04 05 | G96 | 0.2- | 0.3+ |
| 2001 02 20 | 645 | 0.1- | 0.1- | 2003 11 24 | 704 | 0.1-  | 0.5+  | 2005 04 09 | 691 | 0.2+ | 0.2+ |
| 2003 10 22 | 704 | 0.4+ | 0.7+ | 2003 12 04 | 704 | 0.3-  | 0.6+  | 2005 04 09 | 691 | 0.1+ | 0.3+ |
| 2003 10 22 | 704 | 0.0  | 0.5+ | 2003 12 04 | 704 | 0.1+  | 0.2-  | 2005 04 09 | 691 | 0.4+ | 0.2+ |
| 2003 10 22 | 704 | 0.0  | 0.5+ | 2003 12 04 | 704 | 0.2-  | 0.4+  | 2005 04 09 | G96 | 0.4+ | 0.3+ |
| 2003 10 24 | 704 | 0.1- | 0.2+ | 2003 12 04 | 704 | 0.4+  | 0.0   | 2005 04 09 | G96 | 0.1+ | 0.4+ |
| 2003 10 24 | 704 | 0.2+ | 0.3+ | 2003 12 04 | 704 | 0.4+  | 0.7+  | 2005 04 09 | G96 | 0.6+ | 0.2+ |
| 2003 10 24 | 704 | 0.4+ | 0.4+ | 2003 12 15 | 703 | 0.3+  | 0.1+  | 2005 04 09 | G96 | 0.4+ | 0.0  |
| 2003 10 24 | 704 | 0.2- | 0.2+ | 2003 12 15 | 703 | 1.4-  | 0.3+  | 2005 05 12 | G96 | 0.2- | 0.1- |
| 2003 10 24 | 704 | 0.0  | 0.1+ | 2003 12 15 | 703 | (2.4- | 0.2-) | 2005 05 12 | G96 | 0.7- | 0.0  |
| 2003 10 29 | 704 | 0.2+ | 0.7+ | 2003 12 15 | 703 | (1.8- | 0.8+) | 2005 05 12 | G96 | 0.5+ | 0.0  |
| 2003 10 29 | 704 | 0.7+ | 0.4- | 2003 12 18 | 704 | 0.1-  | 0.6-  | 2005 05 12 | G96 | 0.0  | 0.2+ |
| 2003 10 29 | 704 | 0.2+ | 0.3+ | 2003 12 18 | 704 | 0.1-  | 0.4+  | 2007 11 03 | G96 | 0.2- | 0.2- |
| 2003 10 29 | 704 | 0.3+ | 0.3+ | 2003 12 18 | 704 | 0.0   | 0.9-  | 2007 11 03 | G96 | 0.2+ | 0.2- |
| 2003 10 29 | 704 | 0.1- | 0.4- | 2003 12 18 | 704 | 0.1+  | 0.2-  | 2007 11 03 | G96 | 0.1+ | 0.2- |
| 2003 11 19 | 699 | 0.1+ | 0.1+ | 2003 12 18 | 704 | 0.2+  | 0.1-  | 2007 11 03 | G96 | 0.0  | 0.1- |
| 2003 11 19 | 699 | 0.6- | 0.2+ | 2003 12 23 | 704 | 0.2+  | 0.2-  | 2007 11 11 | G96 | 0.0  | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 699 | 0.3+ | 0.2+ | 2003 12 23 | 704 | 1.2- | 0.9- | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2003 11 19 | 699 | 0.1+ | 0.1- | 2003 12 23 | 704 | 0.1- | 0.6+ | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2003 11 20 | 704 | 0.1- | 0.2+ | 2003 12 28 | 691 | 0.0  | 0.1- | 2007 11 11 | G96 | 0.6- | 0.2- |
| 2003 11 20 | 704 | 0.1+ | 0.2+ | 2003 12 28 | 691 | 0.1- | 0.3- | 2007 12 05 | 691 | 0.4- | 0.1- |
| 2003 11 20 | 704 | 0.0  | 0.8+ | 2003 12 28 | 691 | 0.0  | 0.1- | 2007 12 05 | 691 | 0.4- | 0.1- |
| 2003 11 20 | 704 | 0.2- | 0.2+ | 2005 03 08 | G96 | 0.4- | 0.0  | 2007 12 05 | 691 | 0.4- | 0.0  |
| 2003 11 20 | 704 | 0.2+ | 0.5+ | 2005 03 08 | G96 | 0.5+ | 0.2+ | 2007 12 16 | 704 | 1.1+ | 0.5+ |
| 2003 11 20 | 691 | 0.1+ | 0.1- | 2005 03 08 | G96 | 0.1- | 0.1- | 2007 12 16 | 704 | 0.1+ | 0.7+ |
| 2003 11 20 | 691 | 0.1+ | 0.0  | 2005 03 08 | G96 | 0.5- | 0.1+ | 2007 12 16 | 704 | 0.4+ | 0.5+ |
| 2003 11 20 | 691 | 0.3+ | 0.1- | 2005 04 02 | G96 | 0.1- | 0.4+ | 2007 12 16 | 704 | 0.8+ | 0.2+ |
| 2003 11 21 | 644 | 0.1+ | 0.2- | 2005 04 02 | G96 | 0.3- | 0.5+ | 2007 12 16 | 704 | 1.0+ | 0.5+ |
| 2003 11 21 | 644 | 0.1- | 0.0  | 2005 04 02 | G96 | 0.1- | 0.0  |            |     |      |      |

(172575)\* 2003 UO<sub>222</sub>

Discovered 2003 Oct. 22 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 72.78895   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27711560 | $\omega$ | 24.67184  | +0.98815774 | -0.15269935 |
| <i>a</i> | 2.3300330  | $\Omega$ | 344.08970 | +0.13006629 | +0.88568776 |
| <i>e</i> | 0.1532806  | <i>i</i> | 3.15199   | +0.08140669 | +0.43845193 |
| <i>P</i> | 3.56       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 08 13 | 699 | 0.2-  | 1.0+  | 2003 11 19 | 703 | 0.5-  | 0.1-  | 2003 11 24 | 704 | 0.6+ | 1.3- |
| 1999 08 13 | 699 | 0.0   | 0.8+  | 2003 11 19 | 703 | 0.6-  | 0.6-  | 2003 11 24 | 704 | 0.8+ | 0.6- |
| 1999 08 13 | 699 | 0.6-  | 0.3-  | 2003 11 19 | 703 | 0.6-  | 0.2+  | 2003 11 24 | 704 | 0.6+ | 0.7- |
| 1999 09 07 | 691 | 0.0   | 0.3-  | 2003 11 19 | 703 | 0.8-  | 0.4-  | 2003 11 24 | 704 | 0.7+ | 0.8- |
| 1999 09 07 | 691 | 0.1+  | 0.1-  | 2003 11 20 | 704 | 0.1+  | 0.4+  | 2003 11 24 | 704 | 0.4+ | 1.2- |
| 1999 09 07 | 691 | 0.1+  | 0.2+  | 2003 11 20 | 704 | 0.0   | 0.4+  | 2003 12 01 | 691 | 0.0  | 0.3- |
| 2000 12 27 | 691 | 0.5+  | 0.6-  | 2003 11 20 | 704 | 0.2+  | 0.4+  | 2003 12 01 | 691 | 0.0  | 0.2- |
| 2000 12 27 | 691 | 0.6-  | 0.2+  | 2003 11 20 | 704 | 0.2+  | 0.8+  | 2003 12 01 | 691 | 0.1+ | 0.3- |
| 2000 12 27 | 691 | 0.1+  | 0.4+  | 2003 11 20 | 704 | 0.0   | 0.0   | 2003 12 19 | 691 | 0.2+ | 0.1+ |
| 2003 10 22 | 704 | 0.1+  | 0.5-  | 2003 11 21 | 644 | 0.0   | 0.3+  | 2003 12 19 | 691 | 0.2+ | 0.2+ |
| 2003 10 22 | 704 | 0.1+  | 0.2-  | 2003 11 21 | 644 | 0.4+  | 0.1+  | 2003 12 19 | 691 | 0.1+ | 0.1+ |
| 2003 10 22 | 704 | 0.8-  | 0.3+  | 2003 11 21 | 644 | 0.1+  | 0.1+  | 2003 12 19 | 704 | 0.3+ | 0.7+ |
| 2003 10 22 | 704 | 0.6-  | 0.4-  | 2003 11 21 | 644 | 0.2-  | 0.0   | 2003 12 19 | 704 | 0.3+ | 0.4+ |
| 2003 10 22 | 704 | 0.2-  | 0.4+  | 2003 11 21 | 644 | 0.2+  | 0.2+  | 2003 12 19 | 704 | 0.1+ | 0.3+ |
| 2003 10 25 | 704 | (1.8+ | 0.2+) | 2003 11 21 | 644 | 0.1+  | 0.1-  | 2003 12 19 | 704 | 0.6- | 0.9- |
| 2003 10 25 | 704 | 0.3-  | 0.1+  | 2003 11 22 | 704 | 0.3-  | 0.6+  | 2003 12 19 | 704 | 0.6- | 0.5+ |
| 2003 10 25 | 704 | 0.4-  | 0.2+  | 2003 11 22 | 704 | 0.3+  | 0.5+  | 2005 03 11 | G96 | 0.2- | 0.2+ |
| 2003 10 25 | 704 | 0.3-  | 0.1+  | 2003 11 22 | 704 | 0.2-  | 0.6+  | 2005 03 11 | G96 | 0.0  | 0.5+ |
| 2003 10 30 | 704 | 0.4-  | 0.2+  | 2003 11 23 | 704 | 0.4-  | 0.3-  | 2005 03 11 | G96 | 0.2+ | 0.1+ |
| 2003 10 30 | 704 | 0.0   | 0.1+  | 2003 11 23 | 704 | 0.3+  | 0.4+  | 2005 03 11 | G96 | 0.1- | 0.2+ |
| 2003 10 30 | 704 | 0.3-  | 0.1+  | 2003 11 23 | 704 | 1.1-  | 0.2+  | 2005 04 05 | G96 | 0.1- | 0.2+ |
| 2003 10 30 | 704 | 0.1-  | 0.4+  | 2003 11 23 | 704 | 1.1-  | 0.2-  | 2005 04 05 | G96 | 0.1+ | 0.3- |
| 2003 11 02 | 704 | 0.8+  | 0.6-  | 2003 11 23 | 704 | 0.7-  | 0.3+  | 2005 04 05 | G96 | 0.2- | 0.3+ |
| 2003 11 02 | 704 | 0.6+  | 0.7+  | 2003 11 24 | 699 | 0.6+  | 0.9-  | 2005 04 05 | G96 | 0.1+ | 0.4+ |
| 2003 11 02 | 704 | 0.9+  | 0.6+  | 2003 11 24 | 699 | (1.2+ | 2.7-) | 2007 11 12 | G96 | 0.5+ | 0.0  |
| 2003 11 02 | 704 | 0.6+  | 0.0   | 2003 11 24 | 699 | 0.3-  | 0.5+  | 2007 11 12 | G96 | 0.8+ | 0.1+ |
| 2003 11 14 | 644 | 0.0   | 0.1+  | 2003 11 24 | 704 | 0.3-  | 0.3+  | 2007 11 12 | G96 | 0.1+ | 0.4- |
| 2003 11 14 | 644 | 0.2-  | 0.2-  | 2003 11 24 | 699 | 0.6-  | 0.6+  | 2007 11 12 | G96 | 0.5+ | 0.0  |
| 2003 11 14 | 644 | 0.1-  | 0.1+  | 2003 11 24 | 704 | 0.4-  | 0.4+  | 2007 12 14 | G96 | 0.0  | 0.1- |
| 2003 11 18 | 691 | 0.1+  | 0.1-  | 2003 11 24 | 704 | 0.3-  | 0.5+  | 2007 12 14 | G96 | 0.1+ | 0.1- |
| 2003 11 18 | 691 | 0.1+  | 0.2-  | 2003 11 24 | 704 | 0.4-  | 0.0   | 2007 12 14 | G96 | 0.5- | 0.1- |
| 2003 11 18 | 691 | 0.1+  | 0.0   | 2003 11 24 | 704 | 0.0   | 0.2+  | 2007 12 14 | G96 | 0.1- | 0.0  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.80110  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25468256 | $\omega$ | 181.18130 | +0.19698712   | -0.97633754 |
| <i>a</i> | 2.4649223  | $\Omega$ | 257.46280 | +0.90025290   | +0.21617219 |
| <i>e</i> | 0.0593193  | <i>i</i> | 5.24441   | +0.38825352   | -0.00588204 |
| <i>P</i> | 3.87       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 18 | 608 | 0.4+ | 0.3- | 2003 11 20 | 704 | 0.2+  | 0.1+  | 2007 11 02 | 691 | 0.4-  | 0.6+  |
| 2001 02 18 | 608 | 0.6+ | 0.0  | 2003 11 20 | 704 | 0.2-  | 0.0   | 2007 11 06 | D29 | 0.0   | 0.1+  |
| 2001 02 18 | 608 | 0.4+ | 0.3- | 2003 11 20 | 704 | 0.3+  | 1.1+  | 2007 11 06 | D29 | 0.4+  | 0.5-  |
| 2001 03 20 | 608 | 0.8- | 0.3- | 2003 11 20 | 704 | 0.7-  | 0.2-  | 2007 11 06 | D29 | 0.2+  | 0.2-  |
| 2001 03 20 | 608 | 1.0- | 0.3- | 2003 11 24 | 691 | 0.2+  | 0.0   | 2007 11 06 | D29 | 0.2-  | 0.1-  |
| 2001 03 20 | 608 | 0.7- | 0.5- | 2003 11 24 | 704 | 0.2+  | 0.2-  | 2007 11 15 | 704 | 0.0   | 0.1-  |
| 2003 10 23 | 699 | 0.1- | 0.5- | 2003 11 24 | 704 | 0.6+  | 0.8-  | 2007 11 15 | 704 | 0.2+  | 0.4+  |
| 2003 10 23 | 699 | 0.3- | 0.2+ | 2003 11 24 | 691 | 0.1+  | 0.1-  | 2007 11 15 | 704 | 0.5+  | 0.2-  |
| 2003 10 23 | 699 | 0.5- | 0.3- | 2003 11 24 | 704 | 0.0   | 0.0   | 2007 11 15 | 704 | 0.3+  | 0.3+  |
| 2003 10 23 | 699 | 0.6+ | 0.5- | 2003 11 24 | 704 | 0.6-  | 0.1-  | 2007 11 15 | 704 | (1.5+ | 0.0 ) |
| 2003 10 25 | 704 | 0.1- | 1.0- | 2003 11 24 | 704 | 0.1-  | 0.4+  | 2007 11 20 | 704 | (2.3+ | 0.7-) |
| 2003 10 25 | 704 | 0.4- | 1.1- | 2003 11 24 | 691 | 0.1+  | 0.0   | 2007 11 20 | 704 | 0.3+  | 1.0-  |
| 2003 10 25 | 704 | 0.4- | 0.0  | 2003 11 30 | 691 | 0.1+  | 0.1-  | 2007 11 20 | 704 | 0.3-  | 0.4+  |
| 2003 10 25 | 704 | 0.2- | 0.9- | 2003 11 30 | 691 | 0.1+  | 0.3-  | 2007 11 20 | 704 | 0.3+  | 0.2+  |
| 2003 10 25 | 704 | 0.0  | 1.2- | 2003 11 30 | 691 | 0.3+  | 0.4-  | 2007 11 20 | 704 | 0.2+  | 0.7+  |
| 2003 11 02 | 704 | 0.1+ | 1.4+ | 2005 04 02 | 644 | 0.1+  | 0.5+  | 2007 12 03 | 703 | 0.3-  | 1.0+  |
| 2003 11 02 | 704 | 0.9- | 0.8+ | 2005 04 02 | 644 | 0.1+  | 0.6+  | 2007 12 03 | 703 | 0.2+  | 0.4+  |
| 2003 11 02 | 704 | 0.0  | 0.3- | 2005 04 02 | 644 | 0.8+  | 0.6+  | 2007 12 03 | 703 | 0.3-  | 0.2+  |
| 2003 11 02 | 704 | 0.6- | 0.3+ | 2007 10 19 | 699 | (1.8+ | 0.2+) | 2007 12 03 | 703 | 0.1+  | 0.4-  |
| 2003 11 02 | 704 | 0.4- | 0.4+ | 2007 10 19 | 699 | 0.2+  | 0.1+  | 2007 12 14 | 704 | 1.0+  | 0.4+  |
| 2003 11 03 | 704 | 0.5+ | 0.4+ | 2007 10 19 | 699 | 0.3-  | 0.5+  | 2007 12 14 | 704 | 0.6+  | 0.1+  |
| 2003 11 03 | 704 | 0.1- | 1.0+ | 2007 10 19 | 699 | 0.1+  | 0.9+  | 2007 12 14 | 704 | 0.3+  | 0.0   |
| 2003 11 03 | 704 | 0.1+ | 0.0  | 2007 10 21 | G96 | 0.4+  | 0.2-  | 2007 12 14 | 704 | 1.0+  | 0.3+  |
| 2003 11 03 | 704 | 1.1+ | 0.6+ | 2007 10 21 | G96 | 0.1-  | 0.0   | 2007 12 15 | G96 | 0.1+  | 0.6-  |
| 2003 11 18 | 644 | 0.2- | 0.4+ | 2007 10 21 | G96 | 0.2+  | 0.2-  | 2007 12 15 | G96 | 0.4+  | 0.6-  |
| 2003 11 18 | 644 | 0.3- | 0.2+ | 2007 10 21 | G96 | 0.3+  | 0.2-  | 2007 12 15 | G96 | 0.1+  | 0.3-  |
| 2003 11 18 | 644 | 0.0  | 0.0  | 2007 11 02 | 691 | 1.0-  | 0.3+  | 2007 12 15 | G96 | 0.3+  | 0.4-  |
| 2003 11 20 | 704 | 0.6+ | 0.1+ | 2007 11 02 | 691 | 0.2-  | 0.1-  |            |     |       |       |

(172577)\* 2003 UF<sub>240</sub> = 1999 TY<sub>298</sub> = 2005 GY<sub>116</sub>

Discovered 2003 Oct. 24 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 76154)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.64752  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26404454 | $\omega$ | 189.34959 | -0.14034695   | -0.99004016 |
| <i>a</i> | 2.4063082  | $\Omega$ | 268.71891 | +0.90911715   | -0.12441849 |
| <i>e</i> | 0.1580680  | <i>i</i> | 0.63615   | +0.39218457   | -0.06588260 |
| <i>P</i> | 3.73       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 02 | 691 | 0.0   | 0.2+  | 2003 10 28 | 704 | 0.0  | 0.2- | 2005 04 12 | 691 | 0.6+ | 0.8+ |
| 1999 10 02 | 691 | 0.0   | 0.3-  | 2003 10 28 | 704 | 0.0  | 0.6- | 2005 04 12 | 691 | 0.4+ | 0.3+ |
| 1999 10 02 | 691 | 0.2-  | 0.1-  | 2003 10 28 | 704 | 0.6- | 0.1- | 2005 05 12 | G96 | 0.4- | 0.1+ |
| 1999 10 10 | 691 | 1.0-  | 0.3+  | 2003 11 01 | 704 | 0.7- | 1.2+ | 2005 05 12 | G96 | 0.3- | 0.0  |
| 1999 10 10 | 691 | 0.2-  | 0.5+  | 2003 11 01 | 704 | 0.7+ | 0.5+ | 2005 05 12 | G96 | 0.4- | 0.0  |
| 1999 10 10 | 691 | 0.2-  | 0.4+  | 2003 11 01 | 704 | 0.6+ | 1.0+ | 2005 05 12 | G96 | 0.1+ | 0.3+ |
| 2001 03 18 | 699 | (1.0- | 1.8+) | 2003 11 01 | 704 | 0.2+ | 0.0  | 2007 12 03 | 691 | 1.6- | 0.4- |
| 2001 03 18 | 699 | 0.2-  | 0.3-  | 2003 11 01 | 704 | 0.3- | 0.5+ | 2007 12 03 | 691 | 0.1+ | 0.1+ |
| 2001 03 18 | 699 | 1.1-  | 1.2+  | 2003 11 02 | 704 | 0.1+ | 1.0+ | 2007 12 03 | 691 | 0.0  | 0.2+ |
| 2001 03 18 | 699 | 0.6-  | 0.4-  | 2003 11 02 | 704 | 0.1- | 0.7+ | 2007 12 05 | 704 | 0.7+ | 0.6+ |
| 2001 04 16 | 645 | 0.1-  | 0.1-  | 2003 11 02 | 704 | 1.0+ | 0.4+ | 2007 12 05 | 704 | 0.7+ | 0.3- |
| 2001 04 16 | 645 | 0.1+  | 0.1-  | 2005 03 11 | G96 | 0.6- | 0.0  | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2003 10 24 | 704 | 0.4+  | 0.4+  | 2005 03 11 | G96 | 0.4- | 0.0  | 2007 12 05 | 704 | 0.3+ | 0.4- |
| 2003 10 24 | 704 | 0.8+  | 0.1-  | 2005 03 11 | G96 | 0.1- | 0.5+ | 2007 12 14 | 704 | 0.1+ | 0.3+ |
| 2003 10 24 | 704 | 0.5+  | 0.3+  | 2005 03 11 | G96 | 0.2+ | 0.0  | 2007 12 14 | 704 | 0.6+ | 0.9+ |
| 2003 10 24 | 704 | 0.1-  | 0.3+  | 2005 04 11 | 691 | 0.2+ | 0.5+ | 2007 12 14 | 704 | 0.9+ | 1.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 704 | 0.8+ | 0.1- | 2005 04 11 | 691 | 0.2+ | 0.3+ | 2007 12 14 | 704 | 0.1- | 1.0+ |
| 2003 10 28 | 704 | 0.3+ | 0.6- | 2005 04 11 | 691 | 0.2+ | 0.3+ |            |     |      |      |
| 2003 10 28 | 704 | 0.2+ | 0.0  | 2005 04 12 | 691 | 0.2+ | 0.4+ |            |     |      |      |

(172578)\* 2003 UR<sub>246</sub>

Discovered 2003 Oct. 24 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.81481   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28010464 | $\omega$ | 15.37611 | +0.10951201   | -0.99188409 |
| <i>a</i> | 2.3134272  | $\Omega$ | 68.37105 | +0.90447763   | +0.07248732 |
| <i>e</i> | 0.1441249  | <i>i</i> | 3.98482  | +0.41222244   | +0.10445833 |
| <i>P</i> | 3.52       | <i>H</i> | 16.5     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 17 | 704 | 0.5-  | 1.1+  | 2003 11 02 | 704 | 0.5+ | 0.4- | 2003 12 21 | 704 | 0.3-  | 0.5+  |
| 2001 02 17 | 704 | 0.9-  | 1.0+  | 2003 11 15 | 644 | 0.0  | 0.3+ | 2004 01 17 | 644 | 0.2+  | 0.5+  |
| 2001 02 17 | 704 | 0.3+  | 0.1-  | 2003 11 15 | 644 | 0.0  | 0.2+ | 2004 01 17 | 644 | 0.3+  | 0.2+  |
| 2001 02 17 | 704 | 0.7+  | 1.0+  | 2003 11 15 | 644 | 0.0  | 0.4+ | 2004 01 17 | 644 | 0.1+  | 0.3+  |
| 2001 03 03 | 704 | 0.6+  | 1.0+  | 2003 11 16 | 703 | 0.4- | 0.6- | 2004 01 24 | 704 | 1.3-  | 1.4+  |
| 2001 03 03 | 704 | 1.0+  | 0.0   | 2003 11 16 | 703 | 0.4- | 0.5- | 2004 01 24 | 704 | 0.1-  | 0.1-  |
| 2001 03 03 | 704 | 0.0   | 1.0+  | 2003 11 16 | 703 | 0.9- | 0.1- | 2004 01 24 | 704 | (1.0- | 1.9-) |
| 2001 03 03 | 704 | 0.4+  | 0.0   | 2003 11 16 | 703 | 0.2- | 0.5+ | 2005 05 11 | G96 | 0.2-  | 0.1+  |
| 2001 03 03 | 704 | 0.1+  | 0.6-  | 2003 11 19 | 699 | 0.8+ | 0.6- | 2005 05 11 | G96 | 0.3-  | 0.7+  |
| 2001 03 21 | 608 | 0.2-  | 1.1-  | 2003 11 19 | 699 | 0.5- | 0.2+ | 2005 05 11 | G96 | 0.4-  | 0.4+  |
| 2001 03 21 | 608 | 0.2-  | 1.0-  | 2003 11 19 | 699 | 0.1+ | 0.4+ | 2005 05 11 | G96 | 0.3-  | 0.3+  |
| 2001 03 21 | 608 | 0.2+  | 1.1-  | 2003 11 19 | 699 | 0.1+ | 0.3+ | 2005 05 12 | 691 | 0.5+  | 0.7+  |
| 2003 10 24 | 704 | (2.1+ | 0.0 ) | 2003 11 21 | 704 | 0.5- | 0.1- | 2005 05 12 | 691 | 0.3+  | 0.1+  |
| 2003 10 24 | 704 | 0.9+  | 0.1+  | 2003 11 21 | 704 | 1.1- | 0.0  | 2005 05 12 | 691 | 0.4+  | 0.4+  |
| 2003 10 24 | 704 | 1.3+  | 0.0   | 2003 11 21 | 704 | 1.1- | 0.1- | 2005 06 13 | G96 | 0.1-  | 0.5+  |
| 2003 10 26 | 691 | 0.1-  | 0.2+  | 2003 11 21 | 704 | 0.6- | 0.4- | 2005 06 13 | G96 | 0.5-  | 0.2+  |
| 2003 10 26 | 691 | 0.1-  | 0.1+  | 2003 11 21 | 704 | 0.4- | 0.3- | 2005 06 13 | G96 | 1.4-  | 0.1+  |
| 2003 10 26 | 691 | 0.3+  | 0.2+  | 2003 11 24 | 699 | 0.3+ | 0.3- | 2005 06 13 | G96 | 0.3-  | 0.3+  |
| 2003 10 29 | 699 | 0.4-  | 0.8-  | 2003 11 24 | 699 | 0.0  | 0.1+ | 2006 08 18 | 644 | 0.0   | 0.9+  |
| 2003 10 29 | 699 | 0.1+  | 1.1+  | 2003 11 24 | 699 | 0.1- | 0.5- | 2006 08 18 | 644 | 0.0   | 0.8+  |
| 2003 10 29 | 699 | 1.0+  | 0.4+  | 2003 11 24 | 699 | 0.0  | 0.5- | 2006 08 18 | 644 | 0.2-  | 0.9+  |
| 2003 10 29 | 703 | 0.0   | 0.0   | 2003 12 19 | 704 | 0.7- | 0.4- | 2007 10 09 | G96 | 0.1+  | 0.3-  |
| 2003 10 29 | 699 | 0.4+  | 0.1+  | 2003 12 19 | 704 | 0.2+ | 0.1+ | 2007 10 09 | G96 | 0.2-  | 0.5-  |
| 2003 10 29 | 703 | 0.7-  | 1.1+  | 2003 12 19 | 704 | 0.1+ | 0.4+ | 2007 10 09 | G96 | 0.4-  | 0.3-  |
| 2003 10 29 | 703 | 0.5-  | 0.1+  | 2003 12 19 | 704 | 0.0  | 0.1+ | 2007 10 09 | G96 | 0.7+  | 0.5-  |
| 2003 10 29 | 703 | 0.4-  | 0.1+  | 2003 12 19 | 704 | 0.2+ | 0.5+ | 2007 11 20 | G96 | 0.6-  | 0.2-  |
| 2003 11 02 | 704 | 0.6+  | 0.4+  | 2003 12 21 | 704 | 0.4- | 0.3- | 2007 11 20 | G96 | 0.2+  | 0.6-  |
| 2003 11 02 | 704 | 0.6+  | 0.2+  | 2003 12 21 | 704 | 0.2+ | 0.8+ | 2007 11 20 | G96 | 0.2+  | 0.4-  |
| 2003 11 02 | 704 | 0.1-  | 0.1+  | 2003 12 21 | 704 | 0.4+ | 0.4+ | 2007 11 20 | G96 | 0.2-  | 0.3-  |
| 2003 11 02 | 704 | 0.1-  | 0.1-  | 2003 12 21 | 704 | 0.2+ | 0.1+ |            |     |       |       |

(172579)\* 2003 UC<sub>249</sub>

Discovered 2003 Oct. 25 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 63.05751   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21834712 | $\omega$ | 60.67687  | +0.13979566   | +0.97452627 |
| <i>a</i> | 2.7313105  | $\Omega$ | 218.62951 | -0.97766784   | +0.10777951 |
| <i>e</i> | 0.0459628  | <i>i</i> | 16.31510  | -0.15691646   | +0.19667774 |
| <i>P</i> | 4.51       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 04 30 | 704 | 0.3-  | 0.1-  | 2003 10 25 | 704 | 0.3- | 0.1+ | 2006 06 15 | D35 | (1.2+ | 1.8+) |
| 1997 04 30 | 704 | 0.5+  | 0.1-  | 2003 10 25 | 704 | 0.0  | 0.5- | 2006 06 15 | D35 | 0.0   | 0.1+  |
| 1997 04 30 | 704 | 0.4-  | 0.2-  | 2003 10 28 | 704 | 0.5+ | 0.0  | 2007 09 05 | 699 | 0.7+  | 0.8+  |
| 1997 04 30 | 704 | (4.0- | 0.4+) | 2003 10 28 | 704 | 0.3+ | 0.2+ | 2007 09 05 | 699 | 1.0+  | 0.4+  |
| 1997 05 27 | 910 | 0.1-  | 0.8-  | 2003 10 28 | 704 | 0.3- | 0.1- | 2007 09 05 | 699 | 1.0+  | 1.0+  |
| 1997 05 27 | 910 | 0.1+  | 1.0-  | 2003 10 28 | 704 | 0.3+ | 0.3- | 2007 09 05 | 699 | 0.6+  | 0.3+  |
| 1997 05 27 | 910 | 0.1+  | 0.6-  | 2003 10 30 | 704 | 0.7+ | 0.4- | 2007 09 13 | 703 | 0.9+  | 0.2+  |
| 2001 03 21 | 699 | (1.6+ | 2.8+) | 2003 10 30 | 704 | 0.1- | 0.4+ | 2007 09 13 | 703 | 0.1-  | 1.1+  |

2007 DEC. 24

M.P.O. 129417

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 21 | 699 | 0.8+  | 0.3+  | 2003 10 30 | 704 | 0.3-  | 0.1+  | 2007 09 13 | 703 | (0.6- | 1.8+) |
| 2001 03 21 | 699 | 0.3-  | 1.2+  | 2003 11 02 | 691 | 0.3+  | 0.1+  | 2007 09 13 | 703 | 0.0   | 0.5+  |
| 2001 03 21 | 699 | 1.1+  | 0.3+  | 2003 11 02 | 691 | 0.1-  | 0.1+  | 2007 09 17 | 704 | 0.6-  | 1.3-  |
| 2003 09 30 | 691 | 0.0   | 0.1+  | 2003 11 02 | 691 | 0.1+  | 0.1+  | 2007 09 17 | 704 | 0.4-  | 0.2-  |
| 2003 09 30 | 691 | 0.1-  | 0.3+  | 2006 04 19 | 644 | 0.3+  | 0.8+  | 2007 09 17 | 704 | 0.5-  | 0.3+  |
| 2003 09 30 | 691 | 0.0   | 0.2+  | 2006 04 19 | 644 | 0.5-  | 0.4+  | 2007 09 17 | 704 | 1.2-  | 0.3-  |
| 2003 10 17 | 691 | 0.1-  | 0.2-  | 2006 04 19 | 644 | 0.1+  | 0.1-  | 2007 09 17 | 704 | 1.0-  | 0.1+  |
| 2003 10 17 | 691 | 0.1-  | 0.0   | 2006 04 30 | 699 | (2.6+ | 2.7+) | 2007 12 05 | G96 | 0.9+  | 0.3-  |
| 2003 10 17 | 691 | 0.3-  | 0.2-  | 2006 04 30 | 699 | 0.6+  | 0.2-  | 2007 12 05 | G96 | 0.3-  | 0.3-  |
| 2003 10 17 | 691 | 0.1-  | 0.2-  | 2006 04 30 | 699 | 0.2-  | 0.3+  | 2007 12 05 | G96 | 0.1+  | 0.0   |
| 2003 10 17 | 691 | 0.3-  | 0.1-  | 2006 04 30 | 699 | 0.5-  | 0.4-  | 2007 12 05 | G96 | 0.1-  | 0.0   |
| 2003 10 17 | 691 | 0.0   | 0.0   | 2006 05 04 | G96 | 0.4-  | 0.3-  | 2007 12 05 | G96 | 0.8+  | 0.3+  |
| 2003 10 25 | 704 | 0.3+  | 0.7-  | 2006 05 04 | G96 | 0.1-  | 0.1+  | 2007 12 05 | G96 | 0.1+  | 0.2-  |
| 2003 10 25 | 704 | 0.2+  | 0.0   | 2006 05 04 | G96 | 0.4-  | 0.5+  | 2007 12 05 | G96 | 0.1-  | 0.2+  |
| 2003 10 25 | 704 | (1.6+ | 0.2+) | 2006 05 04 | G96 | 0.1-  | 0.2+  | 2007 12 05 | G96 | 0.7-  | 0.2-  |

**(172580)\* 2003 UQ<sub>249</sub> = 2005 GC<sub>202</sub>**

Discovered 2003 Oct. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 76158)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 4.25105    | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |   |
| <i>n</i> | 0.25793784 | $\omega$ | 226.28523 | +0.51911513 | -0.85448325 |          |   |
| <i>a</i> | 2.4441396  | $\Omega$ | 192.48428 | +0.80775854 | +0.49790882 |          |   |
| <i>e</i> | 0.0492118  | <i>i</i> | 5.15908   | +0.27936647 | +0.14813903 |          |   |
| <i>P</i> | 3.82       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 25 | 704 | 0.2-  | 0.3-  | 2005 03 13 | 691 | 0.2+ | 0.3+ | 2006 05 04 | G96 | 0.1-  | 0.0   |
| 2003 10 25 | 704 | 0.3-  | 1.4-  | 2005 03 13 | 691 | 0.4+ | 0.3+ | 2006 07 21 | 644 | 0.3-  | 0.4+  |
| 2003 10 25 | 704 | 0.3+  | 1.0+  | 2005 03 13 | 691 | 0.2+ | 0.3+ | 2006 07 21 | 644 | 0.0   | 0.6+  |
| 2003 10 25 | 704 | 0.4+  | 0.3+  | 2005 04 05 | G96 | 0.4- | 0.5- | 2006 07 21 | 644 | 0.2+  | 0.0   |
| 2003 10 25 | 704 | 0.1+  | 0.7+  | 2005 04 05 | G96 | 0.0  | 0.2- | 2007 11 04 | 691 | 0.2-  | 0.1+  |
| 2003 10 27 | 608 | 0.0   | 0.4-  | 2005 04 05 | G96 | 0.2- | 0.4- | 2007 11 04 | 691 | 0.1-  | 0.0   |
| 2003 10 27 | 608 | 1.0+  | 0.7-  | 2005 04 05 | G96 | 0.7- | 0.5- | 2007 11 04 | 691 | 0.1-  | 0.2+  |
| 2003 10 27 | 608 | 0.7+  | 0.3-  | 2005 04 11 | 695 | 0.2- | 0.1+ | 2007 11 12 | 704 | 1.1+  | 0.9-  |
| 2003 11 05 | 699 | 1.3-  | 0.2+  | 2005 04 11 | 695 | 0.0  | 0.0  | 2007 11 12 | 704 | 1.3+  | 0.4-  |
| 2003 11 05 | 699 | 0.7-  | 0.5+  | 2005 05 04 | G96 | 0.1- | 0.2- | 2007 11 12 | 704 | (0.5+ | 1.8-) |
| 2003 11 05 | 699 | 0.2+  | 1.1+  | 2005 05 04 | G96 | 0.3- | 0.3- | 2007 11 12 | 704 | 0.3+  | 0.5+  |
| 2003 11 05 | 699 | 0.0   | 0.9-  | 2005 05 04 | G96 | 0.5- | 0.5- | 2007 12 04 | 704 | 0.4-  | 0.5-  |
| 2003 11 19 | 699 | 0.1+  | 0.4+  | 2005 05 04 | G96 | 0.4- | 0.7- | 2007 12 04 | 704 | 0.1+  | 0.1+  |
| 2003 11 19 | 699 | 0.9-  | 1.0+  | 2006 05 04 | G96 | 0.4+ | 0.2+ | 2007 12 04 | 704 | 0.1-  | 0.6+  |
| 2003 11 19 | 699 | 0.5+  | 0.9-  | 2006 05 04 | G96 | 0.2- | 0.5+ | 2007 12 04 | 704 | 0.8-  | 0.3+  |
| 2003 11 19 | 699 | (0.1- | 1.8+) | 2006 05 04 | G96 | 0.3- | 0.4+ | 2007 12 04 | 704 | 0.0   | 0.4+  |

**(172581)\* 2003 UC<sub>250</sub>**

Discovered 2003 Oct. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 262.28707  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |   |
| <i>n</i> | 0.25586981 | $\omega$ | 267.57447 | -0.91039460 | -0.40449309 |          |   |
| <i>a</i> | 2.4572915  | $\Omega$ | 248.55537 | +0.40694891 | -0.83749386 |          |   |
| <i>e</i> | 0.0652966  | <i>i</i> | 5.36261   | +0.07466096 | -0.36740901 |          |   |
| <i>P</i> | 3.85       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 13 | 645 | 0.0  | 0.1- | 2003 11 19 | 691 | 0.2+ | 0.1- | 2007 11 03 | 691 | 0.6- | 0.2+ |
| 1999 10 13 | 645 | 0.0  | 0.1- | 2003 11 19 | 691 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.5+ | 0.5+ |
| 1999 10 14 | 645 | 0.1- | 0.1- | 2003 11 20 | 704 | 0.2+ | 0.2+ | 2007 11 03 | 691 | 0.3- | 0.0  |
| 1999 10 14 | 645 | 0.0  | 0.1- | 2003 11 20 | 704 | 0.7+ | 0.3- | 2007 11 07 | 691 | 0.4- | 0.0  |
| 2001 02 22 | 645 | 0.1- | 0.1- | 2003 11 20 | 704 | 0.5+ | 1.4+ | 2007 11 07 | 691 | 0.2- | 0.1- |
| 2001 02 22 | 645 | 0.1- | 0.1- | 2003 11 20 | 704 | 0.6- | 0.6+ | 2007 11 07 | 691 | 0.2- | 0.1- |
| 2003 10 03 | 691 | 0.1- | 0.1+ | 2005 03 07 | 704 | 0.3- | 0.2- | 2007 11 14 | 691 | 0.2- | 0.3+ |
| 2003 10 03 | 691 | 0.1- | 0.2+ | 2005 03 07 | 704 | 0.2+ | 0.5+ | 2007 11 14 | 691 | 0.1- | 0.3- |
| 2003 10 03 | 691 | 0.0  | 0.4+ | 2005 03 07 | 704 | 0.6+ | 1.1+ | 2007 11 14 | 691 | 0.6+ | 0.3+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 25 | 704 | (0.5- | 1.6+) | 2005 03 13 | 703 | 0.5-  | 0.4-  | 2007 11 15 | 704 | 0.1- | 1.4+ |
| 2003 10 25 | 704 | 0.5+  | 1.1+  | 2005 03 13 | 703 | (2.4- | 1.9-) | 2007 11 15 | 704 | 0.5+ | 0.6+ |
| 2003 10 25 | 704 | 0.3-  | 0.7+  | 2005 03 13 | 703 | (0.1- | 2.7-) | 2007 11 15 | 704 | 0.3- | 0.5+ |
| 2003 10 27 | 704 | 0.8+  | 1.1+  | 2005 03 13 | 703 | (2.8- | 3.2-) | 2007 11 15 | 704 | 0.3- | 0.4+ |
| 2003 10 27 | 704 | 0.0   | 0.3-  | 2005 04 09 | 704 | 1.1+  | 1.4+  | 2007 11 15 | 704 | 0.3- | 0.8+ |
| 2003 10 27 | 704 | 1.1+  | 0.7+  | 2005 04 09 | 704 | 0.1-  | 0.4+  | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2003 10 27 | 704 | 0.8+  | 0.1+  | 2005 04 09 | 704 | 0.4+  | 1.3+  | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2003 11 18 | 699 | (0.1+ | 2.2+) | 2005 04 09 | 704 | 0.9+  | 0.7+  | 2007 11 18 | 691 | 0.1- | 0.3- |
| 2003 11 18 | 699 | 0.2+  | 0.5+  | 2005 03 13 | G96 | 0.3+  | 0.4-  | 2007 12 06 | G96 | 0.1- | 0.7- |
| 2003 11 18 | 699 | 0.1-  | 0.5+  | 2007 10 14 | G96 | 0.5-  | 0.3-  | 2007 12 06 | G96 | 0.1+ | 0.4- |
| 2003 11 18 | 699 | 1.2+  | 0.5+  | 2007 10 14 | G96 | 0.1-  | 0.2-  | 2007 12 06 | G96 | 1.2+ | 0.4- |
| 2003 11 19 | 691 | 0.1+  | 0.1-  | 2007 10 14 | G96 | 0.8+  | 0.0   | 2007 12 06 | G96 | 0.2- | 0.5- |

**(172582)\* 2003 UE<sub>252</sub>**

Discovered 2003 Oct. 26 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 354.09801  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |   |
| <i>n</i> | 0.26756438 | $\omega$ | 239.03306 | +0.07681067 | -0.99694294 |          |   |
| <i>a</i> | 2.3851581  | $\Omega$ | 206.57296 | +0.92533915 | +0.07662524 |          |   |
| <i>e</i> | 0.1624599  | <i>i</i> | 1.83369   | +0.37127830 | +0.01527566 |          |   |
| <i>P</i> | 3.68       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 06 | 704 | 0.1- | 0.9- | 2003 10 30 | 704 | 0.5+ | 0.4- | 2005 04 15 | 691 | 0.1+ | 0.4+ |
| 1999 10 06 | 704 | 0.1+ | 0.1- | 2003 11 01 | 704 | 0.2+ | 0.1- | 2005 04 17 | 691 | 0.1+ | 0.3+ |
| 1999 10 06 | 704 | 0.6+ | 0.8- | 2003 11 01 | 704 | 1.1+ | 1.1+ | 2005 04 17 | 691 | 0.1- | 0.3+ |
| 2001 03 26 | 691 | 0.6+ | 0.2- | 2003 11 01 | 704 | 0.9+ | 0.9+ | 2005 04 17 | 691 | 0.1+ | 0.2+ |
| 2001 03 26 | 691 | 1.0- | 0.2- | 2003 11 01 | 704 | 0.7+ | 1.1+ | 2005 05 04 | 568 | 0.1+ | 0.5+ |
| 2001 03 26 | 691 | 0.2+ | 0.0  | 2003 11 18 | 644 | 0.4+ | 0.4+ | 2005 05 04 | 568 | 0.1+ | 0.4+ |
| 2003 10 02 | 691 | 0.5- | 0.3+ | 2003 11 18 | 644 | 0.4+ | 0.3+ | 2005 05 04 | 568 | 0.0  | 0.5+ |
| 2003 10 02 | 691 | 0.2- | 0.3+ | 2003 11 18 | 644 | 0.2+ | 0.2+ | 2005 05 05 | 568 | 0.1- | 0.9+ |
| 2003 10 02 | 691 | 0.6- | 0.2+ | 2003 11 21 | 704 | 0.0  | 0.3+ | 2005 05 08 | G96 | 0.1- | 0.2+ |
| 2003 10 02 | 691 | 0.1- | 0.1+ | 2003 11 21 | 704 | 1.1- | 0.7- | 2005 05 08 | G96 | 0.0  | 0.2+ |
| 2003 10 02 | 691 | 0.9- | 0.4+ | 2003 11 21 | 704 | 0.2- | 0.7+ | 2005 05 08 | G96 | 0.2- | 0.3+ |
| 2003 10 02 | 691 | 0.1- | 0.1+ | 2003 11 21 | 704 | 0.0  | 1.2+ | 2005 05 08 | G96 | 0.0  | 0.2+ |
| 2003 10 21 | 691 | 0.1+ | 0.5+ | 2003 11 21 | 704 | 0.6- | 1.0+ | 2007 11 19 | G96 | 0.2+ | 0.2- |
| 2003 10 21 | 691 | 0.1+ | 0.3+ | 2005 03 11 | G96 | 0.2- | 0.3+ | 2007 11 19 | G96 | 0.0  | 0.3- |
| 2003 10 21 | 691 | 0.2+ | 0.2+ | 2005 03 11 | G96 | 0.2- | 0.0  | 2007 11 19 | G96 | 0.1- | 0.3- |
| 2003 10 26 | 703 | 1.2- | 0.1- | 2005 03 11 | G96 | 0.3+ | 0.1+ | 2007 11 19 | G96 | 0.3+ | 0.3- |
| 2003 10 26 | 703 | 0.1+ | 0.1+ | 2005 03 11 | G96 | 0.1- | 0.1- | 2007 12 04 | 704 | 0.6+ | 0.2+ |
| 2003 10 26 | 703 | 0.5- | 1.2- | 2005 04 02 | G96 | 0.3- | 0.4- | 2007 12 04 | 704 | 0.6+ | 0.3- |
| 2003 10 26 | 703 | 0.4- | 0.6+ | 2005 04 02 | G96 | 0.4- | 0.4- | 2007 12 04 | 704 | 1.0+ | 0.3- |
| 2003 10 28 | 704 | 0.5+ | 0.5- | 2005 04 02 | G96 | 0.2+ | 0.2- | 2007 12 04 | 691 | 0.2- | 0.2+ |
| 2003 10 28 | 704 | 0.7+ | 1.0- | 2005 04 02 | G96 | 0.4- | 0.6- | 2007 12 04 | 691 | 0.1- | 0.1+ |
| 2003 10 28 | 704 | 0.5+ | 0.0  | 2005 04 12 | 691 | 0.5+ | 1.1+ | 2007 12 04 | 691 | 0.2- | 0.1- |
| 2003 10 28 | 704 | 0.4+ | 0.1- | 2005 04 12 | 691 | 0.3- | 1.1- | 2007 12 16 | 691 | 0.4- | 0.1+ |
| 2003 10 30 | 704 | 0.9+ | 0.3- | 2005 04 12 | 691 | 0.3+ | 0.1+ | 2007 12 16 | 691 | 0.1+ | 0.0  |
| 2003 10 30 | 704 | 0.5+ | 0.1- | 2005 04 15 | 691 | 0.3+ | 0.8+ | 2007 12 16 | 691 | 0.0  | 0.2- |
| 2003 10 30 | 704 | 0.3+ | 0.1- | 2005 04 15 | 691 | 0.5+ | 0.7+ |            |     |      |      |

**(172583)\* 2003 UZ<sub>264</sub> = 1995 WM<sub>14</sub>**

Discovered 2003 Oct. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57197)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |  |  |
|-----|--|--|
|-----|--|--|

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 11 28 | 691 | 0.0  | 0.1− | 2003 12 01 | 703 | 0.6− | 0.5− | 2007 11 05 | 704 | 0.0  | 0.4+ |
| 1995 11 28 | 691 | 0.0  | 0.2− | 2003 12 01 | 703 | 0.0  | 0.3+ | 2007 11 05 | 704 | 0.1− | 1.2+ |
| 1995 11 28 | 691 | 0.2− | 0.4− | 2003 12 01 | 703 | 0.5+ | 0.4+ | 2007 11 06 | D29 | 0.3+ | 0.3− |
| 2001 05 23 | 807 | 0.3+ | 0.7+ | 2003 12 01 | 704 | 0.7+ | 0.4+ | 2007 11 06 | D29 | 0.5+ | 0.3− |
| 2001 05 24 | 807 | 0.0  | 0.8+ | 2003 12 01 | 703 | 0.0  | 0.4+ | 2007 11 06 | D29 | 0.2+ | 0.3− |
| 2003 10 19 | 699 | 0.5− | 0.6+ | 2003 12 01 | 704 | 0.6+ | 0.4+ | 2007 11 06 | D29 | 0.4+ | 0.6− |
| 2003 10 19 | 699 | 0.8− | 0.9+ | 2003 12 01 | 704 | 0.9+ | 0.2+ | 2007 11 09 | 703 | 0.1− | 0.1+ |
| 2003 10 19 | 699 | 0.4+ | 0.6− | 2003 12 22 | 704 | 0.2− | 0.1− | 2007 11 09 | 703 | 0.6+ | 0.1+ |
| 2003 10 19 | 699 | 1.0+ | 0.7+ | 2003 12 22 | 704 | 0.3+ | 0.1+ | 2007 11 09 | 703 | 0.4− | 0.4+ |
| 2003 10 27 | 704 | 0.2− | 0.2+ | 2003 12 22 | 704 | 0.3+ | 0.6+ | 2007 11 09 | 703 | 0.3− | 0.6+ |
| 2003 10 27 | 704 | 0.7+ | 0.3− | 2003 12 22 | 704 | 0.4+ | 0.0  | 2007 11 12 | 704 | 0.4+ | 0.2+ |
| 2003 10 27 | 704 | 0.2+ | 0.5+ | 2006 05 21 | 691 | 0.2+ | 0.5+ | 2007 11 12 | 704 | 0.5+ | 0.9+ |
| 2003 10 27 | 704 | 0.0  | 0.6− | 2006 05 21 | 691 | 0.0  | 0.6+ | 2007 11 12 | 704 | 0.7− | 0.1+ |
| 2003 10 29 | 704 | 0.2+ | 0.2− | 2006 05 21 | 691 | 0.0  | 0.2+ | 2007 11 12 | 704 | 0.1+ | 0.8+ |
| 2003 10 29 | 704 | 0.7+ | 0.1+ | 2006 05 25 | 691 | 0.2+ | 0.0  | 2007 11 12 | 704 | 0.8+ | 0.6+ |
| 2003 10 29 | 704 | 0.4+ | 0.2+ | 2006 05 25 | 691 | 0.0  | 0.1+ | 2007 11 20 | 703 | 0.5+ | 1.1+ |
| 2003 10 29 | 704 | 0.6+ | 0.0  | 2006 05 25 | 691 | 0.0  | 0.0  | 2007 11 20 | 691 | 0.5− | 0.6− |
| 2003 11 01 | 704 | 0.5− | 0.7+ | 2007 10 18 | D35 | 0.2+ | 0.2− | 2007 11 20 | 703 | 0.1+ | 0.5+ |
| 2003 11 01 | 704 | 0.0  | 1.0+ | 2007 10 18 | D35 | 0.2+ | 0.2− | 2007 11 20 | 703 | 0.3− | 0.8+ |
| 2003 11 01 | 704 | 0.2− | 0.4− | 2007 10 18 | D35 | 0.2+ | 0.4− | 2007 11 20 | 703 | 0.8− | 0.1+ |
| 2003 11 18 | 644 | 0.1− | 0.3+ | 2007 11 01 | 691 | 0.3− | 0.1+ | 2007 11 20 | 691 | 0.2− | 0.2− |
| 2003 11 18 | 644 | 0.4− | 0.2+ | 2007 11 01 | 691 | 0.2− | 0.1− | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2003 11 18 | 644 | 0.1− | 0.0  | 2007 11 01 | 691 | 0.2− | 0.0  | 2007 11 20 | 703 | 0.1− | 1.1− |
| 2003 11 19 | 699 | 0.2+ | 0.0  | 2007 11 04 | 704 | 0.0  | 0.4+ | 2007 11 20 | 703 | 0.3− | 0.6− |
| 2003 11 19 | 699 | 0.8− | 0.1+ | 2007 11 04 | 704 | 0.8− | 1.0− | 2007 11 20 | 703 | 0.3− | 0.5+ |
| 2003 11 19 | 699 | 0.7− | 0.2+ | 2007 11 04 | 704 | 0.7− | 0.5+ | 2007 11 20 | 703 | 0.5− | 0.2− |
| 2003 11 19 | 699 | 0.5+ | 0.6− | 2007 11 04 | 704 | 0.5− | 0.3+ | 2007 12 04 | 704 | 0.1− | 0.7+ |
| 2003 11 24 | 699 | 0.1− | 0.8+ | 2007 11 04 | 704 | 0.3− | 0.3+ | 2007 12 04 | 704 | 0.1− | 0.3+ |
| 2003 11 24 | 699 | 1.2+ | 1.2− | 2007 11 05 | 691 | 0.0  | 0.2+ | 2007 12 04 | 704 | 0.0  | 0.5− |
| 2003 11 24 | 699 | 0.8+ | 0.6− | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.4− | 0.2+ |
| 2003 11 24 | 699 | 0.5+ | 0.5− | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 12 04 | 704 | 0.0  | 0.8+ |

**(172584)\* 2003 UO<sub>267</sub>**

Discovered 2003 Oct. 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 12.53675   |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.26769707 | $\omega$ | 14.68750 |     | +0.37052723 |     | −0.92702680 |
| $a$ | 2.3843699  | $\Omega$ | 53.59676 |     | +0.84478190 |     | +0.31052302 |
| $e$ | 0.1159490  | $i$      | 4.11202  |     | +0.38607398 |     | +0.21023029 |
| $P$ | 3.68       | $H$      | 16.2     | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 11 24 | 691 | (0.2+ | 2.3−) | 2003 11 19 | 699 | 0.2+  | 0.1+  | 2005 04 19 | 691 | 0.2+ | 0.2+ |
| 1992 11 24 | 691 | 0.2+  | 0.6−  | 2003 11 19 | 699 | 0.1+  | 0.2+  | 2005 05 08 | 691 | 0.0  | 0.2+ |
| 1992 11 24 | 691 | 0.3+  | 1.0−  | 2003 11 21 | 704 | 0.5+  | 1.3+  | 2005 05 08 | 691 | 0.4− | 0.1+ |
| 2001 02 17 | 704 | 0.4−  | 0.0   | 2003 11 21 | 704 | 0.8−  | 0.1+  | 2005 05 08 | 691 | 0.1− | 0.2+ |
| 2001 02 17 | 704 | 0.1−  | 0.5−  | 2003 11 21 | 704 | 0.5+  | 1.1+  | 2007 11 11 | G96 | 0.1− | 0.5− |
| 2001 02 17 | 704 | 0.6−  | 0.0   | 2003 11 21 | 704 | 0.5+  | 0.9+  | 2007 11 11 | G96 | 0.1+ | 0.5− |
| 2001 02 17 | 704 | 1.1+  | 0.7−  | 2003 11 21 | 704 | 0.2−  | 0.8+  | 2007 11 11 | G96 | 0.3+ | 0.5− |
| 2003 10 20 | 691 | 0.1−  | 0.3+  | 2003 11 24 | 699 | 0.1−  | 0.5+  | 2007 11 11 | G96 | 0.1− | 0.4− |
| 2003 10 20 | 691 | 0.4−  | 0.3+  | 2003 11 24 | 703 | 0.1−  | 1.5−  | 2007 11 18 | 704 | 0.6− | 0.4+ |
| 2003 10 20 | 691 | 0.3−  | 0.2+  | 2003 11 24 | 699 | 0.1−  | 0.0   | 2007 11 18 | 704 | 0.5− | 0.8+ |
| 2003 10 28 | 704 | 0.2−  | 0.6+  | 2003 11 24 | 703 | 0.2−  | 0.1+  | 2007 11 18 | 704 | 0.5+ | 0.7+ |
| 2003 10 28 | 704 | 0.1−  | 0.9+  | 2003 11 24 | 699 | 0.1+  | 0.4−  | 2007 11 18 | 704 | 0.1+ | 1.0+ |
| 2003 10 28 | 704 | 0.7−  | 0.9+  | 2003 11 24 | 703 | 0.9+  | 0.2−  | 2007 11 18 | 704 | 0.4+ | 0.5− |
| 2003 10 28 | 704 | 0.5−  | 1.0+  | 2003 11 24 | 703 | (1.5− | 1.1−) | 2007 12 04 | 699 | 0.4+ | 0.4− |
| 2003 10 28 | 608 | 0.6−  | 0.3+  | 2003 11 24 | 699 | 0.3+  | 0.3−  | 2007 12 04 | 699 | 0.9− | 0.1+ |
| 2003 10 28 | 608 | 0.2−  | 0.1+  | 2004 01 12 | 644 | 0.0   | 0.7+  | 2007 12 04 | 699 | 0.5− | 1.2− |
| 2003 10 28 | 608 | 0.4−  | 0.5+  | 2004 01 12 | 644 | 0.3+  | 0.6+  | 2007 12 04 | 699 | 0.0  | 0.3+ |
| 2003 10 29 | 699 | 0.4+  | 0.0   | 2004 01 12 | 644 | 0.0   | 0.4+  | 2007 12 05 | 691 | 0.3− | 0.1− |
| 2003 10 29 | 703 | 0.3+  | 0.1+  | 2005 03 09 | G96 | 0.5−  | 0.3−  | 2007 12 05 | 691 | 0.2− | 0.1− |
| 2003 10 29 | 703 | 0.5−  | 0.2+  | 2005 03 09 | G96 | 0.0   | 0.1−  | 2007 12 05 | 691 | 0.1− | 0.2− |
| 2003 10 29 | 703 | 0.0   | 0.1+  | 2005 03 09 | G96 | (1.6− | 0.1+) | 2007 12 13 | 704 | 0.2+ | 0.6+ |
| 2003 10 29 | 699 | 0.2+  | 0.6+  | 2005 03 09 | G96 | 0.3−  | 0.2−  | 2007 12 13 | 704 | 1.0+ | 0.1+ |
| 2003 10 29 | 703 | 0.4−  | 0.6+  | 2005 04 01 | 691 | 0.1+  | 0.0   | 2007 12 13 | 704 | 0.5+ | 0.2+ |
| 2003 10 29 | 699 | 0.1−  | 0.4+  | 2005 04 01 | 691 | 0.3+  | 0.2+  | 2007 12 13 | 704 | 0.6+ | 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 29 | 699 | 0.2+ | 0.3− | 2005 04 01 | 691 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.3+ | 0.3+ |
| 2003 11 16 | 691 | 0.0  | 0.0  | 2005 04 12 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.1+ | 0.5+ |
| 2003 11 16 | 691 | 0.1− | 0.0  | 2005 04 12 | 691 | 0.1− | 0.0  | 2007 12 15 | 704 | 0.1+ | 0.2+ |
| 2003 11 16 | 691 | 0.1+ | 0.1− | 2005 04 12 | 691 | 0.3+ | 0.4+ | 2007 12 15 | 704 | 0.5− | 0.3+ |
| 2003 11 19 | 699 | 0.1− | 0.3+ | 2005 04 19 | 691 | 0.1+ | 0.1+ | 2007 12 15 | 704 | 0.1− | 0.1+ |
| 2003 11 19 | 699 | 0.1− | 0.8− | 2005 04 19 | 691 | 0.2+ | 0.2+ | 2007 12 15 | 704 | 0.3+ | 0.3+ |

**(172585)\* 2003 UR<sub>271</sub>**

Discovered 2003 Oct. 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 345.23859  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.26046306 | $\omega$ | 34.35751 |     | +0.07363120 |     | −0.99635485 |
| $a$ | 2.4283165  | $\Omega$ | 51.45840 |     | +0.90218411 |     | +0.04813996 |
| $e$ | 0.1697289  | $i$      | 3.15701  |     | +0.42502033 |     | +0.07042416 |
| $P$ | 3.78       | $H$      | 17.4     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 15 | 691 | 0.0  | 0.2+ | 2003 11 19 | 644 | 0.0  | 0.2+ | 2005 05 08 | G96 | 0.3− | 0.1− |
| 2001 03 15 | 691 | 0.3+ | 0.2+ | 2003 11 19 | 644 | 0.1+ | 0.1− | 2007 09 18 | G96 | 0.1− | 0.4− |
| 2001 03 15 | 691 | 0.3+ | 0.2+ | 2003 11 19 | 644 | 0.1− | 0.3+ | 2007 09 18 | G96 | 0.2− | 0.4− |
| 2001 04 16 | 645 | 0.0  | 0.1− | 2003 11 21 | 704 | 0.8+ | 1.1+ | 2007 09 18 | G96 | 0.3− | 0.3− |
| 2001 04 16 | 645 | 0.1− | 0.0  | 2003 11 21 | 704 | 0.4− | 0.7+ | 2007 09 18 | G96 | 0.5− | 0.7− |
| 2003 10 21 | 691 | 0.0  | 0.1+ | 2003 11 21 | 704 | 0.3− | 0.7+ | 2007 11 18 | 691 | 0.0  | 0.2− |
| 2003 10 21 | 691 | 0.0  | 0.1+ | 2005 03 13 | G96 | 0.1− | 0.0  | 2007 11 18 | 691 | 0.2− | 0.2− |
| 2003 10 21 | 691 | 0.0  | 0.0  | 2005 03 13 | G96 | 0.1− | 0.1− | 2007 11 18 | 691 | 0.2− | 0.1− |
| 2003 10 21 | 691 | 0.0  | 0.0  | 2005 03 13 | G96 | 0.5− | 0.1+ | 2007 12 05 | 691 | 0.1− | 0.2− |
| 2003 10 21 | 691 | 0.1− | 0.1+ | 2005 03 13 | G96 | 0.2− | 0.3+ | 2007 12 05 | 691 | 0.1+ | 0.1− |
| 2003 10 21 | 691 | 0.3− | 0.0  | 2005 04 04 | G96 | 0.4− | 0.2+ | 2007 12 05 | 691 | 0.1+ | 0.2− |
| 2003 10 28 | 704 | 0.2+ | 0.4− | 2005 04 04 | G96 | 0.1− | 0.2− | 2007 12 10 | 704 | 0.8+ | 0.7− |
| 2003 10 28 | 704 | 0.1− | 0.9+ | 2005 04 04 | G96 | 0.4− | 0.0  | 2007 12 10 | 704 | 0.2− | 0.4− |
| 2003 10 28 | 704 | 0.2+ | 1.0+ | 2005 04 04 | G96 | 0.2− | 0.0  | 2007 12 10 | 704 | 0.7+ | 0.3− |
| 2003 10 28 | 704 | 0.3+ | 0.4+ | 2005 04 05 | 461 | 0.7+ | 0.8+ | 2007 12 14 | 704 | 0.4+ | 0.1− |
| 2003 10 28 | 704 | 0.5+ | 0.4+ | 2005 04 05 | 461 | 0.3+ | 0.6+ | 2007 12 14 | 704 | 1.6+ | 2.1− |
| 2003 11 01 | 704 | 0.7− | 0.3− | 2005 04 06 | 691 | 0.0  | 0.2+ | 2007 12 14 | 704 | 0.2− | 0.4+ |
| 2003 11 01 | 704 | 0.3− | 0.5+ | 2005 04 06 | 691 | 0.5+ | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.2+ |
| 2003 11 01 | 704 | 0.1− | 0.5− | 2005 04 06 | 691 | 0.7+ | 0.1+ | 2007 12 14 | 704 | 0.2+ | 0.0  |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2005 05 08 | G96 | 1.1− | 0.6+ | 2007 12 16 | 691 | 0.5− | 0.4+ |
| 2003 11 19 | 691 | 0.1− | 0.1+ | 2005 05 08 | G96 | 0.8− | 0.7+ | 2007 12 16 | 691 | 0.2+ | 0.6+ |
| 2003 11 19 | 691 | 0.2− | 0.2+ | 2005 05 08 | G96 | 0.3− | 0.4− | 2007 12 16 | 691 | 0.1− | 0.1− |

**(172586)\* 2003 UR<sub>274</sub> = 2003 UM<sub>284</sub>**

Discovered 2003 Oct. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (d, *MPO* 57209)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 344.55087  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.25856440 | $\omega$ | 193.63620 |     | +0.27450699 |     | −0.95840833 |
| $a$ | 2.4401896  | $\Omega$ | 240.48049 |     | +0.89044000 |     | +0.28401654 |
| $e$ | 0.1022172  | $i$      | 5.14917   |     | +0.36299108 |     | +0.02807259 |
| $P$ | 3.81       | $H$      | 16.0      | $G$ | 0.15        | $U$ | 1           |



2007 DEC. 24

M.P.O. 129419

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 10 25 | 704 | 0.2−  | 0.1−  | 2003 12 21 | 704 | 1.0+  | 0.8+  | 2007 11 14 | 704 | 0.8+  | 0.8+  |
| 2003 10 25 | 704 | 0.3+  | 0.1+  | 2003 12 21 | 704 | 0.5+  | 1.1+  | 2007 11 14 | 691 | 0.2−  | 0.1−  |
| 2003 10 25 | 704 | 0.3+  | 0.1+  | 2003 12 21 | 704 | 0.8+  | 0.6+  | 2007 11 14 | 704 | 0.1+  | 0.4+  |
| 2003 10 25 | 704 | 0.3−  | 0.1−  | 2003 12 21 | 704 | 0.8+  | 1.2+  | 2007 11 15 | 704 | 0.4+  | 0.1−  |
| 2003 10 25 | 704 | 0.2−  | 0.3−  | 2003 12 21 | 704 | 0.7+  | 1.1+  | 2007 11 15 | 704 | (3.6+ | 2.4−) |
| 2003 10 27 | 291 | 0.3−  | 0.1−  | 2005 03 03 | 691 | 0.2+  | 1.0+  | 2007 11 15 | 704 | 0.9+  | 0.6−  |
| 2003 10 27 | 291 | 0.8−  | 0.4+  | 2005 03 03 | 691 | 0.2+  | 0.2+  | 2007 11 15 | 704 | 0.2−  | 0.6−  |
| 2003 10 27 | 291 | 1.0−  | 0.1+  | 2005 03 03 | 691 | 0.2+  | 0.5+  | 2007 11 15 | 704 | 0.2−  | 0.3−  |
| 2003 10 29 | 699 | 1.0−  | 1.2+  | 2005 04 02 | 644 | 0.4+  | 0.8+  | 2007 11 17 | 185 | 0.7−  | 0.1−  |
| 2003 10 29 | 699 | 0.2+  | 0.0   | 2005 04 02 | 644 | 0.3+  | 0.6+  | 2007 11 18 | 185 | 0.5+  | 0.2−  |
| 2003 10 29 | 699 | 0.6−  | 0.4+  | 2005 04 02 | 644 | 0.3+  | 0.4+  | 2007 11 18 | 185 | 0.3−  | 0.2−  |
| 2003 10 29 | 699 | 0.6−  | 0.3−  | 2007 08 24 | 691 | (1.6− | 2.5−) | 2007 11 18 | 185 | 0.4+  | 0.3−  |
| 2003 10 30 | 704 | 0.6−  | 0.1−  | 2007 08 24 | 691 | 0.2−  | 0.2−  | 2007 12 03 | 703 | 0.1+  | 0.9−  |
| 2003 10 30 | 704 | 0.1+  | 0.1+  | 2007 08 24 | 691 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.6+  | 0.2−  |
| 2003 10 30 | 704 | 0.2+  | 1.1+  | 2007 09 27 | G96 | 0.3+  | 0.4−  | 2007 12 03 | 703 | 0.5+  | 0.1−  |
| 2003 11 01 | 704 | 0.8+  | 1.0+  | 2007 09 27 | G96 | 0.5+  | 0.4−  | 2007 12 03 | 703 | 0.4+  | 0.0   |
| 2003 11 01 | 704 | 0.7+  | 1.1+  | 2007 09 27 | G96 | 0.2+  | 0.6−  | 2007 12 05 | 704 | 0.7+  | 0.1−  |
| 2003 11 01 | 704 | (1.6− | 0.1+) | 2007 09 27 | G96 | 0.4+  | 0.3−  | 2007 12 05 | 704 | 0.5+  | 0.1+  |
| 2003 11 01 | 704 | 0.8+  | 0.5+  | 2007 10 30 | 691 | 0.3−  | 0.3−  | 2007 12 05 | 704 | 0.6+  | 0.2−  |
| 2003 11 01 | 704 | 1.1+  | 0.6+  | 2007 10 30 | 691 | 0.0   | 0.2−  | 2007 12 05 | 704 | 0.4−  | 0.2−  |
| 2003 11 18 | 644 | 0.8+  | 0.2+  | 2007 10 30 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.6+  | 0.5−  |
| 2003 11 18 | 644 | 0.3+  | 0.4+  | 2007 11 03 | 691 | 0.2−  | 0.1−  | 2007 12 15 | G96 | 0.2+  | 0.6−  |
| 2003 11 18 | 644 | 0.4+  | 0.4+  | 2007 11 03 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.1+  | 0.5−  |
| 2003 11 18 | 699 | 1.4−  | 0.3+  | 2007 11 03 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.1+  | 0.7−  |
| 2003 11 18 | 699 | 0.7−  | 0.7+  | 2007 11 05 | 704 | 0.1+  | 0.6+  |            |     |       |       |

(172587)\* 2003 UW<sub>275</sub>

Discovered 2003 Oct. 29 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.99471  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24136071 | $\omega$ | 355.02246 | +0.66850149 | −0.69597410 |
| <i>a</i> | 2.5548084  | $\Omega$ | 52.72840  | +0.69320706 | +0.45542774 |
| <i>e</i> | 0.1723693  | <i>i</i> | 19.23451  | +0.26938769 | +0.55516271 |
| <i>P</i> | 4.08       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 03 03 | 691 | 0.0   | 0.1−  | 2003 11 19 | 699 | 0.0   | 0.1−  | 2007 10 21 | 683 | (3.4+ | 2.8−) |
| 1997 03 03 | 691 | 0.5+  | 0.3+  | 2003 11 19 | 699 | 0.1+  | 0.0   | 2007 10 30 | 703 | 0.1+  | 0.2−  |
| 1997 03 03 | 691 | 0.2−  | 0.3+  | 2003 11 19 | 699 | 0.0   | 0.4−  | 2007 10 30 | 703 | 0.6−  | 0.5−  |
| 1999 12 15 | 704 | 0.8+  | 0.4−  | 2003 11 24 | 704 | 0.0   | 0.2+  | 2007 10 30 | 703 | 0.2+  | 0.0   |
| 1999 12 15 | 704 | 0.9+  | 0.1−  | 2003 11 24 | 704 | 0.2+  | 0.2−  | 2007 10 30 | 703 | 0.1−  | 0.4−  |
| 1999 12 15 | 704 | 1.5+  | 0.3+  | 2003 11 24 | 704 | 0.3+  | 0.4−  | 2007 11 04 | 704 | 0.7+  | 0.3+  |
| 1999 12 15 | 704 | 0.6+  | 0.6−  | 2003 11 24 | 704 | 0.1−  | 0.0   | 2007 11 04 | 704 | 0.5+  | 0.7+  |
| 1999 12 15 | 704 | (2.4+ | 0.3+) | 2003 11 24 | 704 | 0.0   | 0.2+  | 2007 11 04 | 704 | 0.3+  | 0.0   |
| 2003 09 28 | 704 | 0.6−  | 0.4−  | 2003 12 01 | 691 | 0.0   | 0.4−  | 2007 11 04 | 704 | 0.3+  | 0.3+  |
| 2003 09 28 | 704 | 0.4−  | 0.0   | 2003 12 01 | 691 | 0.1+  | 0.4−  | 2007 11 04 | 704 | 0.4+  | 0.4+  |
| 2003 09 28 | 704 | 0.1+  | 0.3+  | 2003 12 01 | 691 | 0.1+  | 0.4−  | 2007 11 07 | 704 | 0.4+  | 0.8+  |
| 2003 09 28 | 704 | 0.0   | 0.4−  | 2003 12 17 | 644 | 0.1−  | 0.3+  | 2007 11 07 | 704 | 0.0   | 0.6+  |
| 2003 09 28 | 704 | 0.5−  | 0.4+  | 2003 12 17 | 644 | 0.3+  | 0.2+  | 2007 11 07 | 704 | 0.4+  | 0.1+  |
| 2003 10 18 | 699 | (0.1+ | 1.6−) | 2003 12 17 | 644 | 0.2+  | 0.2+  | 2007 11 07 | 704 | 0.2−  | 0.4+  |
| 2003 10 18 | 699 | 0.5−  | 0.1−  | 2003 12 18 | 704 | 0.1−  | 1.2+  | 2007 11 07 | 704 | 0.5+  | 0.8+  |
| 2003 10 18 | 699 | 0.8−  | 0.2−  | 2003 12 18 | 704 | 0.4+  | 0.4+  | 2007 11 07 | 704 | 0.4−  | 0.6+  |
| 2003 10 18 | 699 | 0.1+  | 1.2−  | 2003 12 18 | 704 | 0.2+  | 0.1+  | 2007 11 07 | 704 | 0.7+  | 0.3+  |
| 2003 10 24 | 704 | 1.0+  | 0.1+  | 2003 12 18 | 704 | 0.6−  | 0.1−  | 2007 11 07 | 704 | 0.2+  | 0.4+  |
| 2003 10 24 | 704 | 0.2+  | 0.1+  | 2003 12 18 | 704 | 0.1+  | 0.4−  | 2007 11 07 | 704 | 0.5−  | 0.3+  |
| 2003 10 24 | 704 | 0.8+  | 0.2+  | 2003 12 23 | 704 | (2.8+ | 1.1+) | 2007 11 07 | 704 | 0.7−  | 0.6+  |
| 2003 10 24 | 704 | 0.4+  | 0.4+  | 2003 12 23 | 704 | 0.9+  | 0.5+  | 2007 11 10 | 703 | 0.5−  | 0.6+  |
| 2003 10 24 | 704 | 0.4+  | 0.5+  | 2003 12 23 | 704 | 0.9+  | 0.3+  | 2007 11 10 | 703 | 0.4−  | 0.3+  |
| 2003 10 24 | 608 | 0.6−  | 1.2−  | 2003 12 23 | 704 | 0.8+  | 0.5+  | 2007 11 10 | 703 | 0.1−  | 0.1−  |
| 2003 10 24 | 608 | (0.8+ | 1.6−) | 2003 12 23 | 704 | 1.3+  | 0.5+  | 2007 11 10 | 703 | 0.4−  | 0.8−  |
| 2003 10 24 | 608 | 0.5+  | 1.2−  | 2003 12 28 | 704 | 0.0   | 0.4+  | 2007 11 11 | 699 | 0.2−  | 0.5−  |
| 2003 10 28 | 608 | 0.4+  | 0.5+  | 2003 12 28 | 704 | 0.1+  | 0.3+  | 2007 11 11 | 699 | 1.0+  | 0.7−  |
| 2003 10 28 | 608 | 0.1+  | 0.1−  | 2003 12 28 | 704 | 0.3−  | 0.1+  | 2007 11 11 | 699 | 0.2−  | 0.0   |
| 2003 10 28 | 608 | 0.1+  | 0.4−  | 2003 12 28 | 699 | 0.9−  | 0.1+  | 2007 11 11 | 699 | 0.3−  | 0.0   |
| 2003 10 29 | 699 | 0.6+  | 0.6−  | 2003 12 28 | 699 | (1.5+ | 0.2+) | 2007 11 12 | 704 | 0.0   | 0.1+  |
| 2003 10 29 | 703 | 0.0   | 0.1+  | 2003 12 28 | 699 | 0.5+  | 0.7−  | 2007 11 12 | 704 | 0.0   | 0.1+  |
| 2003 10 29 | 703 | 0.8−  | 1.2+  | 2003 12 28 | 699 | 0.8−  | 0.7−  | 2007 11 12 | 704 | 0.1−  | 0.2−  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 10 29 | 699 | 0.2− | 0.5− | 2004 01 11 | 644 | 0.1+  | 0.2+  | 2007 11 12 | 704 | 0.1+  | 0.0   |
| 2003 10 29 | 703 | 1.2− | 0.5− | 2004 01 11 | 644 | 0.2+  | 0.2+  | 2007 11 12 | 704 | 0.0   | 0.4+  |
| 2003 10 29 | 703 | 1.5− | 0.2+ | 2004 01 11 | 644 | 0.2+  | 0.4+  | 2007 11 13 | G96 | 0.3−  | 0.8−  |
| 2003 10 29 | 699 | 0.5+ | 0.3− | 2005 04 02 | 703 | 0.0   | 0.7+  | 2007 11 13 | G96 | 0.1−  | 0.7−  |
| 2003 10 29 | 699 | 0.2+ | 0.1− | 2005 04 02 | 703 | 0.2+  | 0.8+  | 2007 11 13 | G96 | 0.3−  | 0.8−  |
| 2003 11 02 | 704 | 0.7− | 0.5+ | 2005 04 02 | 703 | 0.0   | 0.1+  | 2007 11 13 | G96 | 0.1−  | 0.8−  |
| 2003 11 02 | 704 | 0.8− | 0.1+ | 2005 04 02 | 703 | 0.3+  | 0.2−  | 2007 11 18 | 703 | 0.2+  | 0.3+  |
| 2003 11 02 | 704 | 0.5− | 0.3+ | 2005 04 16 | 703 | 0.6+  | 0.1−  | 2007 11 18 | 703 | 0.5−  | 0.2+  |
| 2003 11 02 | 704 | 1.1− | 0.3+ | 2005 04 16 | 703 | (1.8+ | 3.4+) | 2007 11 18 | 703 | 1.0−  | 1.1−  |
| 2003 11 02 | 704 | 0.4− | 0.7+ | 2005 04 16 | 703 | (0.1+ | 2.4−) | 2007 11 18 | 703 | 0.4−  | 0.1−  |
| 2003 11 05 | 699 | 0.4+ | 0.3+ | 2005 04 16 | 703 | (1.8+ | 0.4−) | 2007 12 05 | 704 | 0.0   | 0.0   |
| 2003 11 05 | 699 | 0.8+ | 1.4+ | 2007 10 19 | 699 | 0.0   | 0.0   | 2007 12 05 | 703 | 0.6+  | 1.0+  |
| 2003 11 05 | 699 | 1.4+ | 1.4+ | 2007 10 19 | 699 | 0.1−  | 0.3+  | 2007 12 05 | 704 | (0.1− | 1.6−) |
| 2003 11 05 | 699 | 0.7+ | 0.1+ | 2007 10 19 | 704 | 0.0   | 0.7+  | 2007 12 05 | 703 | 0.9+  | 0.6+  |
| 2003 11 15 | 691 | 0.0  | 0.1− | 2007 10 19 | 704 | 0.2−  | 0.4+  | 2007 12 05 | 703 | 0.7+  | 1.3+  |
| 2003 11 15 | 691 | 0.1− | 0.1− | 2007 10 19 | 699 | 0.4−  | 0.7−  | 2007 12 05 | 704 | (0.4− | 1.8−) |
| 2003 11 15 | 691 | 0.1− | 0.1− | 2007 10 19 | 683 | 0.3−  | 0.2−  | 2007 12 05 | 703 | 0.0   | 0.2+  |
| 2003 11 15 | 644 | 0.2− | 0.1+ | 2007 10 19 | 704 | 0.2+  | 0.2+  | 2007 12 05 | 704 | 0.0   | 0.1−  |
| 2003 11 15 | 644 | 0.2− | 0.1− | 2007 10 19 | 683 | 0.5−  | 0.7+  | 2007 12 05 | 704 | 0.0   | 0.1+  |
| 2003 11 15 | 644 | 0.4+ | 0.3+ | 2007 10 19 | 704 | 0.3+  | 0.2+  | 2007 12 05 | 106 | 0.2+  | 0.0   |
| 2003 11 16 | 703 | 0.1− | 0.2− | 2007 10 19 | 699 | 0.5−  | 0.4−  | 2007 12 05 | 106 | 0.0   | 0.1+  |
| 2003 11 16 | 703 | 0.2+ | 0.6− | 2007 10 19 | 683 | 0.1−  | 1.0+  | 2007 12 05 | 106 | 0.4−  | 0.2−  |
| 2003 11 16 | 703 | 0.4− | 0.9− | 2007 10 19 | 704 | 0.3+  | 0.2+  | 2007 12 05 | 106 | 0.1−  | 0.2+  |
| 2003 11 16 | 703 | 0.1+ | 0.2− | 2007 10 20 | 683 | 0.5+  | 0.2−  | 2007 12 14 | 703 | 0.3+  | 0.5+  |
| 2003 11 18 | 291 | 0.3− | 0.1− | 2007 10 20 | 683 | 0.1+  | 0.4−  | 2007 12 14 | 703 | 0.7−  | 0.1+  |
| 2003 11 18 | 291 | 0.4− | 0.0  | 2007 10 20 | 683 | (2.6− | 2.1−) | 2007 12 14 | 703 | 1.0−  | 0.5+  |
| 2003 11 18 | 291 | 0.7− | 0.0  | 2007 10 21 | 683 | 0.4+  | 0.8−  | 2007 12 14 | 703 | 0.7−  | 0.4−  |
| 2003 11 19 | 699 | 0.2− | 0.1− | 2007 10 21 | 683 | (0.3+ | 2.1−) |            |     |       |       |

(172588)\* 2003 UJ<sub>282</sub> = 2001 CM<sub>25</sub>

Discovered 2003 Oct. 29 by the Lowell Observatory Near-Earth Object Search

at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 57219)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.09767   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28642425 | $\omega$ | 338.99296 | −0.03856540 | −0.99491116 |
| <i>a</i> | 2.2792722  | $\Omega$ | 113.12015 | +0.93062746 | −0.06968684 |
| <i>e</i> | 0.1169502  | <i>i</i> | 5.80898   | +0.36393028 | +0.07277038 |
| <i>P</i> | 3.44       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 31 | 691 | 0.2+  | 0.1+  | 2003 11 16 | 703 | 0.9−  | 0.5−  | 2005 05 10 | 691 | 0.1+ | 0.2+ |
| 2001 01 31 | 691 | 0.1+  | 0.0   | 2003 11 16 | 703 | 0.9+  | 0.8−  | 2005 05 10 | 691 | 0.0  | 0.3+ |
| 2001 01 31 | 691 | 0.4+  | 0.2+  | 2003 11 18 | 691 | 0.1+  | 0.2+  | 2005 05 14 | 691 | 0.3− | 0.2+ |
| 2001 02 01 | 704 | 0.2+  | 0.4+  | 2003 11 18 | 691 | 0.1+  | 0.0   | 2005 05 14 | 691 | 0.0  | 0.3+ |
| 2001 02 01 | 704 | 0.2+  | 1.1+  | 2003 11 18 | 691 | 0.1+  | 0.1+  | 2005 05 14 | 691 | 0.1+ | 0.4+ |
| 2001 02 01 | 704 | 0.3−  | 0.8+  | 2003 11 21 | 699 | 0.3−  | 0.1+  | 2006 08 16 | 644 | 0.4− | 0.4+ |
| 2001 02 01 | 704 | 0.4−  | 1.5+  | 2003 11 21 | 699 | 0.1+  | 0.5+  | 2006 08 16 | 644 | 0.3− | 1.1+ |
| 2001 02 02 | 699 | 0.8−  | 0.7−  | 2003 11 21 | 699 | 0.1+  | 0.2+  | 2006 08 16 | 644 | 0.5− | 0.6+ |
| 2001 02 02 | 699 | 0.1−  | 0.3+  | 2003 11 21 | 699 | 0.5−  | 0.5+  | 2006 08 16 | 644 | 0.4− | 0.6+ |
| 2001 02 02 | 699 | (0.7− | 1.7+) | 2003 11 30 | 704 | 0.5−  | 0.3+  | 2006 08 16 | 644 | 0.3− | 0.7+ |
| 2001 02 02 | 699 | 0.5−  | 0.0   | 2003 11 30 | 704 | 0.3−  | 0.3+  | 2006 08 16 | 644 | 0.6− | 0.9+ |
| 2003 10 29 | 699 | 0.3+  | 0.4+  | 2003 11 30 | 704 | 0.9+  | 0.4+  | 2006 08 22 | 644 | 0.4− | 0.5+ |
| 2003 10 29 | 699 | 0.5+  | 0.5−  | 2003 11 30 | 704 | 0.3−  | 0.5+  | 2006 08 22 | 644 | 0.3− | 0.3+ |
| 2003 10 29 | 699 | 0.4−  | 0.6+  | 2003 11 30 | 704 | 0.2−  | 0.5−  | 2006 08 22 | 644 | 0.2− | 0.6+ |
| 2003 10 29 | 699 | (2.6− | 0.1+) | 2003 12 22 | 704 | 0.1−  | 0.6+  | 2006 08 30 | 699 | 0.6+ | 0.7+ |
| 2003 11 01 | 704 | (0.7− | 2.9+) | 2003 12 22 | 704 | 0.5−  | 0.7+  | 2006 08 30 | 699 | 0.2+ | 0.0  |
| 2003 11 01 | 704 | 0.3−  | 1.3+  | 2003 12 22 | 704 | (1.2− | 1.8+) | 2006 08 30 | 699 | 0.1− | 0.0  |
| 2003 11 01 | 704 | (2.3+ | 0.2−) | 2003 12 22 | 704 | 0.3−  | 0.3+  | 2006 08 30 | 699 | 0.2+ | 0.5+ |
| 2003 11 01 | 704 | 1.3−  | 0.6+  | 2004 01 12 | 644 | 0.1−  | 0.4+  | 2007 10 16 | G96 | 0.1− | 0.2+ |
| 2003 11 05 | 699 | 1.1+  | 0.4+  | 2004 01 12 | 644 | 0.1−  | 0.5+  | 2007 10 16 | G96 | 0.3+ | 0.2+ |
| 2003 11 05 | 699 | 0.8−  | 0.4+  | 2004 01 12 | 644 | 0.2−  | 0.4+  | 2007 10 16 | G96 | 0.6− | 0.0  |
| 2003 11 05 | 699 | 0.5+  | 0.3+  | 2005 04 30 | 691 | 0.0   | 0.7+  | 2007 10 16 | G96 | 0.3+ | 0.0  |
| 2003 11 05 | 699 | 0.1+  | 0.2+  | 2005 04 30 | 691 | 0.2−  | 0.3+  | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2003 11 16 | 703 | 1.4−  | 0.4+  | 2005 04 30 | 691 | 0.2−  | 0.4+  | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2003 11 16 | 703 | 0.1−  | 1.2−  | 2005 05 10 | 691 | 1.3+  | 0.1−  | 2007 11 20 | 691 | 0.3+ | 0.1− |

**(172589)\* 2003 UM<sub>282</sub> = 1999 TE<sub>231</sub>**

Discovered 2003 Oct. 29 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 57219)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 53.82743  | $\omega$ | 255.94528 | +0.92448364 | −0.37328273 |          |   |
| <i>a</i> | 2.3934950 | $\Omega$ | 125.91736 | +0.37614060 | +0.86012951 |          |   |
| <i>e</i> | 0.0809792 | <i>i</i> | 5.48387   | +0.06203430 | +0.34761650 |          |   |
| <i>P</i> | 3.70      | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 05 | 703 | 0.2+  | 0.1−  | 2003 11 19 | 699 | 0.5+  | 0.1+  | 2006 07 18 | D35 | 0.7− | 0.8+ |
| 1999 10 05 | 703 | 0.3+  | 1.4+  | 2003 11 19 | 699 | 0.9−  | 0.1−  | 2006 07 18 | D35 | 0.3− | 0.7+ |
| 1999 10 05 | 703 | 0.4+  | 0.6+  | 2003 11 19 | 699 | 0.4+  | 0.1+  | 2006 07 20 | 644 | 0.1− | 0.3+ |
| 1999 10 05 | 703 | 1.4+  | 0.6+  | 2003 11 19 | 699 | 0.8−  | 0.2+  | 2006 07 20 | 644 | 0.1+ | 0.3+ |
| 1999 10 08 | 704 | 0.2−  | 0.4−  | 2003 11 24 | 699 | 0.1−  | 0.2−  | 2006 07 20 | 644 | 0.1− | 0.2+ |
| 1999 10 08 | 704 | 0.2−  | 0.8−  | 2003 11 24 | 699 | 0.6−  | 0.3+  | 2006 08 13 | 644 | 0.4− | 0.1+ |
| 1999 10 08 | 704 | 0.6+  | 0.0   | 2003 11 24 | 699 | 0.6+  | 0.8+  | 2006 08 13 | 644 | 0.0  | 0.1− |
| 1999 10 08 | 704 | 0.3−  | 0.6−  | 2003 11 24 | 699 | 1.2+  | 0.3−  | 2006 08 13 | 644 | 0.1+ | 0.2− |
| 2001 02 17 | 691 | 0.2−  | 0.2+  | 2003 11 26 | 691 | 0.2−  | 0.1+  | 2006 08 13 | 644 | 0.6− | 0.0  |
| 2001 02 17 | 704 | 0.6+  | 0.9+  | 2003 11 26 | 691 | 0.0   | 0.1+  | 2006 08 13 | 644 | 0.2− | 0.4+ |
| 2001 02 17 | 691 | 0.4−  | 0.2+  | 2003 11 26 | 691 | 0.0   | 0.0   | 2006 08 13 | 644 | 0.1+ | 0.1+ |
| 2001 02 17 | 704 | 0.2+  | 0.4+  | 2003 12 20 | 704 | 0.2−  | 0.4+  | 2006 08 20 | 644 | 0.2+ | 0.1− |
| 2001 02 17 | 704 | 1.0+  | 0.2−  | 2003 12 20 | 704 | 0.5−  | 0.2+  | 2006 08 20 | 644 | 0.0  | 0.0  |
| 2001 02 17 | 691 | 0.6−  | 0.2+  | 2003 12 20 | 704 | 1.1+  | 0.4+  | 2006 08 20 | 644 | 0.1+ | 0.3+ |
| 2001 02 17 | 704 | 0.9+  | 1.2−  | 2003 12 20 | 704 | 0.6+  | 0.0   | 2007 12 04 | 699 | 1.0− | 0.2− |
| 2003 10 29 | 699 | 0.0   | 0.0   | 2003 12 21 | 691 | 0.2−  | 0.4+  | 2007 12 04 | 699 | 0.3− | 0.0  |
| 2003 10 29 | 699 | 0.1+  | 0.2−  | 2003 12 21 | 691 | 0.2−  | 0.1+  | 2007 12 04 | 704 | 0.8+ | 1.1− |
| 2003 10 29 | 699 | 0.0   | 0.5+  | 2003 12 21 | 691 | 0.1−  | 0.3+  | 2007 12 04 | 704 | 1.6+ | 0.4− |
| 2003 10 29 | 699 | 0.5+  | 0.5+  | 2003 12 22 | 704 | 0.6−  | 0.1−  | 2007 12 04 | 699 | 0.1+ | 0.2− |
| 2003 11 01 | 704 | 1.1−  | 0.4+  | 2003 12 22 | 704 | 0.2−  | 0.2−  | 2007 12 04 | 704 | 0.9+ | 0.8+ |
| 2003 11 01 | 704 | 0.7+  | 0.7+  | 2003 12 22 | 704 | 0.2+  | 0.0   | 2007 12 04 | 704 | 0.1− | 0.9+ |
| 2003 11 01 | 704 | 0.3+  | 0.3+  | 2003 12 22 | 704 | 0.3−  | 0.7−  | 2007 12 04 | 699 | 0.5− | 0.3− |
| 2003 11 01 | 704 | 0.4−  | 0.3+  | 2003 12 22 | 704 | 0.0   | 0.1−  | 2007 12 06 | G96 | 0.2+ | 0.1− |
| 2003 11 01 | 704 | 0.8+  | 0.6+  | 2005 03 11 | 691 | 0.2+  | 0.3+  | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2003 11 16 | 703 | (2.1+ | 0.3−) | 2005 03 11 | 691 | 0.2+  | 0.2+  | 2007 12 06 | G96 | 0.4+ | 0.3− |
| 2003 11 16 | 703 | (2.2− | 0.5+) | 2005 03 11 | 691 | 0.5+  | 0.3+  | 2007 12 06 | G96 | 0.1+ | 0.3− |
| 2003 11 16 | 703 | 1.4−  | 0.0   | 2005 03 18 | 703 | 0.5−  | 0.7+  | 2007 12 06 | 691 | 0.8− | 0.0  |
| 2003 11 16 | 703 | 0.9−  | 0.8−  | 2005 03 18 | 703 | 1.3+  | 1.4+  | 2007 12 06 | 691 | 0.7+ | 0.7− |
| 2003 11 18 | 644 | 0.5−  | 0.4+  | 2005 03 18 | 703 | (2.0+ | 2.1+) | 2007 12 06 | 691 | 0.0  | 0.3− |
| 2003 11 18 | 644 | 0.2−  | 0.4+  | 2005 03 18 | 703 | 0.4−  | 1.0−  |            |     |      |      |
| 2003 11 18 | 644 | 0.1+  | 0.2+  | 2006 07 18 | D35 | 0.3−  | 0.4+  |            |     |      |      |

**(172590)\* 2003 UK<sub>283</sub> = 1996 XK<sub>27</sub> = 1999 NP<sub>49</sub>**

Discovered 2003 Oct. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57221)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 50.41164  | $\omega$ | 95.10250  | +0.98428522 | −0.12636773 |          |   |
| <i>a</i> | 2.3901363 | $\Omega$ | 272.19651 | +0.06739081 | +0.91443811 |          |   |
| <i>e</i> | 0.2898588 | <i>i</i> | 7.09038   | +0.16322094 | +0.38449206 |          |   |
| <i>P</i> | 3.70      | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 07 | 691 | 0.5+ | 0.2+ | 2003 11 03 | 704 | 0.5+ | 0.5− | 2003 12 18 | 704 | 0.2+ | 0.2+ |
| 1996 12 07 | 691 | 0.6+ | 0.0  | 2003 11 18 | 691 | 0.0  | 0.1+ | 2003 12 18 | 704 | 0.5− | 0.8+ |
| 1996 12 07 | 691 | 0.4+ | 0.1+ | 2003 11 18 | 691 | 0.3+ | 0.2+ | 2003 12 18 | 704 | 0.6− | 0.3− |
| 1996 12 15 | 691 | 0.8− | 0.4− | 2003 11 18 | 691 | 0.1− | 0.1+ | 2003 12 18 | 704 | 0.4− | 0.1+ |
| 1996 12 15 | 691 | 0.5− | 0.0  | 2003 11 19 | 704 | 0.0  | 0.0  | 2003 12 22 | 704 | 0.2− | 0.0  |
| 1996 12 15 | 691 | 0.0  | 0.2+ | 2003 11 19 | 704 | 0.4+ | 0.5− | 2003 12 22 | 704 | 0.1− | 0.3+ |
| 1999 07 13 | 704 | 0.1− | 0.1+ | 2003 11 19 | 704 | 0.3+ | 0.6− | 2003 12 22 | 704 | 0.3− | 0.6− |
| 1999 07 13 | 704 | 0.1− | 0.7− | 2003 11 19 | 704 | 0.6+ | 0.2− | 2003 12 22 | 704 | 0.1− | 0.5− |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 07 13 | 704 | 0.3−  | 0.9+  | 2003 11 19 | 704 | 0.1+  | 0.0   | 2003 12 22 | 704 | 0.0  | 0.7− |
| 1999 07 13 | 704 | 0.6+  | 0.6+  | 2003 11 26 | 704 | (2.3+ | 1.3−) | 2003 12 27 | 704 | 0.2+ | 0.6+ |
| 1999 07 13 | 704 | 0.9−  | 0.0   | 2003 11 26 | 704 | 0.1+  | 0.1−  | 2003 12 27 | 704 | 0.0  | 0.1− |
| 1999 07 19 | 704 | 0.3+  | 0.5−  | 2003 11 26 | 704 | (2.0+ | 0.9−) | 2003 12 27 | 704 | 0.2− | 0.3+ |
| 1999 07 19 | 704 | 0.3+  | 0.3−  | 2003 11 26 | 704 | 0.2−  | 0.1−  | 2003 12 27 | 704 | 0.3+ | 0.2+ |
| 1999 07 19 | 704 | (0.3+ | 2.2+) | 2003 11 26 | 704 | 0.5−  | 0.1−  | 2003 12 27 | 704 | 0.0  | 0.9+ |
| 2001 02 20 | 645 | 0.0   | 0.1+  | 2003 11 26 | 704 | (1.9+ | 1.0−) | 2004 01 17 | 644 | 0.0  | 0.2+ |
| 2001 02 20 | 645 | 0.1+  | 0.0   | 2003 11 26 | 704 | 0.2−  | 0.3−  | 2004 01 17 | 644 | 0.1− | 0.5+ |
| 2003 09 07 | 704 | 0.8−  | 0.9−  | 2003 11 26 | 704 | (2.0+ | 1.0−) | 2004 01 17 | 644 | 0.1+ | 0.5+ |
| 2003 09 07 | 704 | 0.6−  | 0.6−  | 2003 11 26 | 704 | 0.4−  | 0.3+  | 2007 10 15 | G96 | 0.6+ | 0.8+ |
| 2003 09 07 | 704 | 0.5+  | 0.5−  | 2003 11 26 | 704 | (2.2+ | 1.1−) | 2007 10 15 | G96 | 0.4+ | 0.7− |
| 2003 09 07 | 704 | 0.6+  | 0.3+  | 2003 12 04 | 704 | 0.2−  | 0.4+  | 2007 10 15 | G96 | 0.1+ | 0.6− |
| 2003 09 30 | 704 | (1.8− | 1.8+) | 2003 12 04 | 704 | 0.1+  | 0.2+  | 2007 10 15 | G96 | 0.1− | 0.2− |
| 2003 09 30 | 704 | 1.1+  | 0.7−  | 2003 12 04 | 704 | 0.3+  | 0.0   | 2007 11 04 | G96 | 0.3+ | 0.3− |
| 2003 09 30 | 704 | 0.0   | 1.0+  | 2003 12 04 | 704 | 0.3+  | 0.2+  | 2007 11 04 | G96 | 0.1+ | 0.3− |
| 2003 09 30 | 704 | 0.3−  | 1.5+  | 2003 12 04 | 704 | 0.1+  | 0.1+  | 2007 11 04 | G96 | 0.4+ | 0.5− |
| 2003 09 30 | 704 | 0.1+  | 0.4−  | 2003 12 15 | 703 | 0.0   | 0.5+  | 2007 11 04 | G96 | 0.3− | 0.7− |
| 2003 10 30 | 704 | 0.5+  | 0.3−  | 2003 12 15 | 703 | 1.2−  | 0.5+  | 2007 12 03 | 691 | 0.4− | 0.2+ |
| 2003 10 30 | 704 | 0.3−  | 0.3+  | 2003 12 15 | 703 | 0.9−  | 0.6−  | 2007 12 03 | 691 | 0.1− | 0.4+ |
| 2003 10 30 | 704 | 0.1+  | 0.2−  | 2003 12 15 | 703 | 0.9−  | 0.2+  | 2007 12 03 | 691 | 0.3− | 0.1− |
| 2003 10 30 | 704 | 0.1−  | 0.2+  | 2003 12 17 | 691 | 0.2−  | 0.3−  | 2007 12 05 | G96 | 0.5+ | 0.2− |
| 2003 10 30 | 704 | 0.6+  | 0.6+  | 2003 12 17 | 691 | 0.0   | 0.3−  | 2007 12 05 | G96 | 0.6+ | 0.3− |
| 2003 11 03 | 704 | 0.5+  | 0.3+  | 2003 12 17 | 691 | 0.1−  | 0.3−  | 2007 12 05 | G96 | 0.1+ | 0.0  |
| 2003 11 03 | 704 | 1.1+  | 0.1−  | 2003 12 17 | 644 | 0.4−  | 0.0   | 2007 12 05 | G96 | 0.1+ | 0.1+ |
| 2003 11 03 | 704 | 0.0   | 0.3+  | 2003 12 17 | 644 | 0.6−  | 0.0   |            |     |      |      |
| 2003 11 03 | 704 | 0.1+  | 0.4+  | 2003 12 17 | 644 | 0.2−  | 0.0   |            |     |      |      |

**(172591)\* 2003 UP<sub>290</sub> = 2005 JF<sub>70</sub>**

Discovered 2003 Oct. 23 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 86152)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 304.12438 | $\omega$ | 137.33967 | −0.86915448 | −0.49444616 |          |   |
| <i>a</i> | 2.3797816 | $\Omega$ | 13.03714  | +0.44139579 | −0.78442099 |          |   |
| <i>e</i> | 0.1397336 | <i>i</i> | 2.45648   | +0.22302520 | −0.37444186 |          |   |
| <i>P</i> | 3.67      | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 20 | 645 | 0.1−  | 0.0   | 2005 05 07 | 691 | 0.1− | 0.0  | 2007 11 06 | G96 | 0.4−  | 0.5−  |
| 2001 02 20 | 645 | 0.1−  | 0.0   | 2005 05 07 | 691 | 0.1− | 0.1+ | 2007 12 05 | 691 | 0.1+  | 0.2−  |
| 2001 02 22 | 704 | (0.4+ | 1.5+) | 2005 05 07 | 691 | 0.0  | 0.2+ | 2007 12 05 | 691 | 0.3−  | 0.1+  |
| 2001 02 22 | 704 | 0.2+  | 0.9+  | 2005 05 11 | 691 | 0.3− | 0.2+ | 2007 12 05 | 691 | 0.1−  | 0.1−  |
| 2001 02 22 | 704 | 0.6+  | 1.2+  | 2005 05 11 | 691 | 0.8+ | 0.3+ | 2007 12 05 | 691 | 0.2−  | 0.2−  |
| 2001 02 22 | 704 | 1.0+  | 0.3+  | 2005 05 11 | 691 | 0.2− | 0.2+ | 2007 12 05 | 691 | 0.5−  | 0.1+  |
| 2001 03 02 | 699 | 1.0+  | 1.2+  | 2006 08 28 | 691 | 0.0  | 0.3+ | 2007 12 05 | 691 | 0.2−  | 0.1−  |
| 2001 03 02 | 699 | 0.8+  | 0.4+  | 2006 08 28 | 691 | 0.2− | 0.5+ | 2007 12 06 | 704 | (1.7+ | 0.3−) |
| 2001 03 02 | 699 | 0.1+  | 0.9+  | 2006 08 28 | 691 | 0.3− | 0.5+ | 2007 12 06 | 704 | (1.8+ | 0.5+) |
| 2001 03 02 | 699 | 1.0+  | 0.8+  | 2006 08 28 | 691 | 0.1+ | 0.6+ | 2007 12 06 | 704 | 1.2+  | 0.3+  |
| 2001 03 18 | 699 | 0.2+  | 1.1+  | 2006 08 28 | 691 | 0.2− | 0.3+ | 2007 12 15 | 704 | 2.3+  | 0.8+  |
| 2001 03 18 | 699 | 0.5+  | 0.5−  | 2006 08 28 | 691 | 0.1− | 0.5+ | 2007 12 15 | 704 | 1.5+  | 1.5+  |
| 2001 03 18 | 699 | 0.9+  | 0.2+  | 2006 09 30 | G96 | 0.1+ | 0.1− | 2007 12 15 | 704 | 2.1+  | 0.2−  |
| 2001 03 18 | 699 | (0.7+ | 2.0−) | 2006 09 30 | G96 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.6+  | 1.4+  |
| 2003 10 23 | 691 | 0.0   | 0.1−  | 2006 09 30 | G96 | 0.8− | 0.1− | 2007 12 15 | 704 | 1.2+  | 1.1+  |
| 2003 10 23 | 691 | 0.4−  | 0.5+  | 2006 09 30 | G96 | 0.5+ | 0.2− | 2007 12 17 | 691 | 0.2−  | 0.1+  |
| 2003 10 23 | 691 | 0.1−  | 0.3+  | 2007 11 06 | G96 | 0.2− | 0.2− | 2007 12 17 | 691 | 0.4−  | 0.0   |
| 2003 10 24 | 695 | 0.0   | 0.2+  | 2007 11 06 | G96 | 0.4+ | 0.3− | 2007 12 17 | 691 | 0.3−  | 0.1−  |
| 2003 10 24 | 695 | 0.1+  | 0.1+  | 2007 11 06 | G96 | 0.1− | 0.3− |            |     |       |       |

2007 DEC. 24

M.P.O. 129421

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 255.19611  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26067165 | $\omega$ | 243.84322 | -0.96450073   | -0.26372420 |
| <i>a</i> | 2.4270209  | $\Omega$ | 280.86312 | +0.24699931   | -0.88253606 |
| <i>e</i> | 0.0956919  | <i>i</i> | 0.79971   | +0.09343273   | -0.38933231 |
| <i>P</i> | 3.78       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 11 28 | 691 | 0.2+  | 1.3-  | 2005 03 08 | G96 | 0.1+  | 0.0   | 2007 10 30 | 691 | 0.1- | 0.3+ |
| 1992 11 28 | 691 | 0.2-  | 0.6-  | 2005 03 08 | G96 | 0.0   | 0.0   | 2007 10 30 | 691 | 0.1+ | 0.3+ |
| 1992 11 28 | 691 | 0.4+  | 0.2-  | 2005 03 10 | 683 | (0.2- | 2.0-) | 2007 10 30 | 691 | 0.1+ | 0.0  |
| 2003 10 16 | 691 | 0.2+  | 0.1+  | 2005 03 10 | 683 | (1.4+ | 1.8-) | 2007 11 03 | 691 | 0.2+ | 0.1+ |
| 2003 10 16 | 691 | 0.7+  | 0.3+  | 2005 03 10 | 683 | 1.4-  | 1.0-  | 2007 11 03 | 691 | 0.1- | 0.2+ |
| 2003 10 16 | 691 | 0.4+  | 0.3+  | 2005 04 02 | G96 | 0.0   | 0.2+  | 2007 11 03 | 691 | 0.2- | 0.2+ |
| 2003 10 25 | 291 | 0.1+  | 0.2+  | 2005 04 02 | G96 | 0.2+  | 0.3+  | 2007 11 07 | 691 | 0.2- | 0.0  |
| 2003 10 25 | 291 | 0.1+  | 0.1+  | 2005 04 02 | G96 | 0.2+  | 0.0   | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2003 10 25 | 291 | 0.0   | 0.2+  | 2005 04 02 | G96 | 0.1+  | 0.0   | 2007 11 07 | 691 | 0.2+ | 0.0  |
| 2003 11 16 | 291 | 0.4-  | 0.6-  | 2005 04 04 | 703 | 0.1-  | 1.2-  | 2007 11 14 | 691 | 0.2+ | 0.2- |
| 2003 11 16 | 291 | 0.1-  | 0.6-  | 2005 04 04 | 703 | 0.4+  | 0.7-  | 2007 11 14 | 691 | 0.3- | 0.4+ |
| 2003 11 16 | 291 | 0.7-  | 0.8-  | 2005 04 04 | 703 | 0.3+  | 0.9+  | 2007 11 14 | 691 | 0.3+ | 0.2+ |
| 2005 03 03 | 703 | 0.1+  | 1.0-  | 2005 04 04 | 703 | 1.4-  | 0.6-  | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2005 03 03 | 703 | 1.3+  | 1.1+  | 2005 04 12 | G96 | 0.2-  | 0.0   | 2007 11 18 | 691 | 0.1+ | 0.4+ |
| 2005 03 03 | 703 | 0.3-  | 1.2+  | 2005 04 12 | G96 | 0.1-  | 0.0   | 2007 11 18 | 691 | 0.3- | 0.2+ |
| 2005 03 03 | 703 | (0.8+ | 2.2+) | 2005 04 12 | G96 | 0.1+  | 0.2+  | 2007 12 04 | 691 | 0.1- | 0.2- |
| 2005 03 08 | 683 | (1.3- | 2.5+) | 2005 04 12 | G96 | 0.2-  | 0.1-  | 2007 12 04 | 691 | 0.6- | 0.7+ |
| 2005 03 08 | 683 | 1.3+  | 0.7-  | 2005 05 08 | G96 | 0.1-  | 0.1+  | 2007 12 04 | 691 | 0.1+ | 0.2+ |
| 2005 03 08 | 704 | 0.6+  | 0.4-  | 2005 05 08 | G96 | 0.2-  | 0.1-  | 2007 12 06 | 691 | 0.0  | 0.2- |
| 2005 03 08 | 683 | 1.2-  | 0.9+  | 2005 05 08 | G96 | 0.4-  | 0.2-  | 2007 12 06 | 691 | 0.3- | 0.7- |
| 2005 03 08 | 704 | 0.3-  | 0.9+  | 2005 05 08 | G96 | 0.4-  | 0.3-  | 2007 12 06 | 691 | 0.0  | 0.9+ |
| 2005 03 08 | 704 | 0.7+  | 0.9+  | 2005 05 13 | G96 | 0.1-  | 0.1-  | 2007 12 15 | G96 | 0.2- | 0.1- |
| 2005 03 08 | G96 | 0.1+  | 0.0   | 2005 05 13 | G96 | 0.2-  | 0.3+  | 2007 12 15 | G96 | 0.2- | 0.3- |
| 2005 03 08 | 704 | 0.9+  | 0.5+  | 2005 05 13 | G96 | 0.3+  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.5- |
| 2005 03 08 | G96 | 0.1+  | 0.1-  | 2005 05 13 | G96 | 0.1-  | 0.1+  | 2007 12 15 | G96 | 0.6- | 0.1- |

(172593)\* 2003 VM

Discovered 2003 Nov. 5 by K. Sárneczky and S. Mészáros at the Piszkéstető Station of the University of Szeged.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.66346   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23128786 | $\omega$ | 342.48112 | +0.80927028   | -0.55196676 |
| <i>a</i> | 2.6284567  | $\Omega$ | 52.72930  | +0.56467625   | +0.63660732 |
| <i>e</i> | 0.1303773  | <i>i</i> | 14.63278  | +0.16193314   | +0.53857573 |
| <i>P</i> | 4.26       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 05 22 | 691 | 0.0  | 0.0  | 2003 12 17 | 704 | 0.1-  | 0.0   | 2005 04 01 | 461 | 0.6-  | 0.1+  |
| 2001 05 22 | 691 | 0.2+ | 0.1- | 2003 12 17 | 704 | 0.8-  | 0.2+  | 2005 04 02 | 461 | 0.6-  | 0.4-  |
| 2001 05 22 | 691 | 0.2+ | 0.1- | 2003 12 17 | 704 | 0.3+  | 0.2+  | 2005 04 02 | 461 | 1.1-  | 0.4+  |
| 2001 05 27 | 608 | 0.3- | 0.3- | 2003 12 26 | 461 | 0.2-  | 0.0   | 2005 05 13 | 691 | 0.1+  | 0.1-  |
| 2003 11 03 | 461 | 0.8- | 0.1+ | 2003 12 26 | 461 | 0.2-  | 0.2-  | 2005 05 13 | 691 | 0.2+  | 0.3+  |
| 2003 11 03 | 461 | 0.1- | 0.0  | 2003 12 26 | 461 | 0.0   | 0.2-  | 2005 05 13 | 691 | 0.3+  | 0.0   |
| 2003 11 05 | 461 | 0.7- | 0.6+ | 2003 12 26 | 461 | 0.3+  | 0.5-  | 2006 07 20 | E12 | (0.5- | 1.6+) |
| 2003 11 05 | 461 | 0.2+ | 0.2- | 2003 12 27 | 461 | 0.5-  | 0.0   | 2006 07 20 | E12 | 0.3-  | 0.3+  |
| 2003 11 05 | 461 | 0.0  | 0.1+ | 2003 12 27 | 461 | 0.3-  | 0.3-  | 2006 07 20 | E12 | 0.4-  | 0.8+  |
| 2003 11 05 | 461 | 0.2- | 0.1+ | 2003 12 27 | 461 | 0.2-  | 0.1+  | 2006 07 20 | E12 | 0.1-  | 0.4+  |
| 2003 11 06 | 461 | 0.5+ | 0.2+ | 2003 12 27 | 461 | 0.0   | 0.3-  | 2006 07 20 | E12 | 0.1+  | 0.8+  |
| 2003 11 06 | 461 | 0.8+ | 0.7+ | 2003 12 29 | 703 | 0.4-  | 0.1+  | 2007 09 18 | G96 | 1.0-  | 0.3-  |
| 2003 11 06 | 461 | 0.3+ | 0.2- | 2003 12 29 | 704 | (1.7+ | 0.6-) | 2007 09 18 | G96 | 0.3-  | 0.0   |
| 2003 11 06 | 461 | 0.0  | 1.1+ | 2003 12 29 | 703 | 0.7-  | 0.8-  | 2007 09 18 | G96 | 0.1+  | 0.8-  |
| 2003 11 06 | 461 | 0.2+ | 0.4- | 2003 12 29 | 704 | (0.7+ | 1.8+) | 2007 09 18 | G96 | 0.1-  | 0.0   |
| 2003 11 09 | 461 | 0.0  | 0.1+ | 2003 12 29 | 703 | 0.9-  | 0.8-  | 2007 11 07 | 704 | 0.2+  | 0.4-  |
| 2003 11 09 | 461 | 0.2- | 0.0  | 2003 12 29 | 704 | 1.3+  | 1.2+  | 2007 11 07 | 704 | 0.1-  | 0.2-  |
| 2003 11 09 | 461 | 0.0  | 0.3- | 2003 12 29 | 703 | 0.7-  | 0.4-  | 2007 11 07 | 704 | 0.0   | 0.5-  |
| 2003 12 04 | 704 | 0.4- | 0.5- | 2003 12 29 | 704 | 1.0+  | 0.2+  | 2007 11 07 | 704 | 0.5+  | 0.0   |
| 2003 12 04 | 704 | 0.3+ | 0.9+ | 2003 12 29 | 704 | (1.6+ | 1.6+) | 2007 11 20 | 704 | 0.1+  | 0.2+  |
| 2003 12 04 | 704 | 0.2+ | 1.3+ | 2003 12 30 | 704 | 0.9+  | 0.1-  | 2007 11 20 | 704 | 1.0+  | 0.5-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 04 | 704 | 0.2- | 0.4+ | 2003 12 30 | 704 | 0.1- | 0.7+ | 2007 11 20 | 704 | 0.3- | 0.5+ |
| 2003 12 04 | 704 | 0.9+ | 0.0  | 2003 12 30 | 704 | 0.5- | 0.2+ | 2007 12 02 | 704 | 0.2+ | 0.5+ |
| 2003 12 04 | 704 | 0.3- | 0.8+ | 2003 12 30 | 704 | 0.3+ | 0.2- | 2007 12 02 | 704 | 0.1+ | 0.8+ |
| 2003 12 04 | 704 | 0.3+ | 0.2- | 2003 12 30 | 704 | 0.5+ | 0.2- | 2007 12 02 | 704 | 0.4+ | 0.3+ |
| 2003 12 04 | 704 | 0.4- | 0.6+ | 2005 04 01 | 461 | 0.7+ | 0.2- | 2007 12 02 | 704 | 0.1- | 0.5- |
| 2003 12 17 | 704 | 0.5- | 0.0  | 2005 04 01 | 461 | 1.3- | 0.0  |            |     |      |      |

(172594)\* 2003 WL<sub>s</sub>

Discovered 2003 Nov. 16 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 338.97994  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26576397 | $\omega$ | 142.96956 | -0.25915456   | -0.96376351 |
| <i>a</i> | 2.3959182  | $\Omega$ | 321.93421 | +0.85975374   | -0.20036352 |
| <i>e</i> | 0.0840180  | <i>i</i> | 5.88671   | +0.44007093   | -0.17610894 |
| <i>P</i> | 3.71       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|------|
| 1999 10 10 | 704 | 0.3+ | 0.6- | 2003 11 16 | 691 | 0.1+  | 0.3-  | 2005 05 01 | 644 | 0.4+  | 0.1- |
| 1999 10 10 | 704 | 0.3- | 0.2- | 2003 11 19 | 704 | 0.6+  | 0.1-  | 2006 08 12 | 644 | 0.5-  | 0.4+ |
| 1999 10 10 | 704 | 0.1- | 0.0  | 2003 11 19 | 704 | 0.3-  | 0.1-  | 2006 08 12 | 644 | 0.2+  | 0.3+ |
| 1999 10 10 | 704 | 0.2+ | 0.8+ | 2003 11 19 | 704 | 0.4-  | 0.3+  | 2006 08 12 | 644 | 0.4-  | 0.0  |
| 1999 10 10 | 704 | 0.4- | 0.1+ | 2003 11 19 | 704 | 0.6+  | 0.6-  | 2006 08 20 | 644 | 0.0   | 0.4+ |
| 2001 03 02 | 699 | 0.8- | 0.6- | 2003 11 19 | 704 | 0.1-  | 0.1-  | 2006 08 20 | 644 | 0.0   | 0.6+ |
| 2001 03 02 | 699 | 0.0  | 1.3+ | 2003 12 18 | 703 | 0.1-  | 1.2+  | 2006 08 20 | 644 | 0.3+  | 0.4+ |
| 2001 03 02 | 699 | 0.6+ | 0.7+ | 2003 12 18 | 703 | 1.2-  | 1.0+  | 2006 08 28 | 703 | 1.3-  | 1.0- |
| 2001 03 02 | 699 | 0.2- | 0.3+ | 2003 12 18 | 703 | 0.3-  | 1.5+  | 2006 08 28 | 703 | 0.2-  | 0.7+ |
| 2001 03 21 | 608 | 0.3+ | 0.4+ | 2003 12 18 | 703 | (5.0- | 5.2+) | 2006 08 28 | 703 | 0.2-  | 0.9+ |
| 2001 03 21 | 608 | 0.1- | 0.1+ | 2003 12 19 | 691 | 0.1+  | 0.0   | 2006 08 28 | 703 | (1.7- | 0.0) |
| 2001 03 21 | 608 | 0.2+ | 0.0  | 2003 12 19 | 691 | 0.0   | 0.1+  | 2007 12 05 | 691 | 0.1+  | 0.4- |
| 2003 11 03 | 704 | 0.5+ | 0.9- | 2003 12 19 | 691 | 0.0   | 0.0   | 2007 12 05 | 691 | 0.0   | 0.3- |
| 2003 11 03 | 704 | 0.2+ | 0.8+ | 2003 12 28 | 704 | 0.3-  | 0.9+  | 2007 12 05 | 691 | 0.7-  | 0.5+ |
| 2003 11 03 | 704 | 0.1+ | 0.1- | 2003 12 28 | 704 | 0.2+  | 0.6+  | 2007 12 15 | 704 | 0.5-  | 0.3- |
| 2003 11 03 | 704 | 0.7+ | 0.3- | 2003 12 28 | 704 | 0.7-  | 0.1-  | 2007 12 15 | 704 | 0.1-  | 0.3+ |
| 2003 11 03 | 704 | 0.7+ | 0.8- | 2003 12 28 | 704 | 0.3-  | 0.7+  | 2007 12 15 | 704 | 1.0+  | 0.7+ |
| 2003 11 16 | 691 | 0.0  | 0.1- | 2005 05 01 | 644 | 1.1+  | 0.1+  | 2007 12 15 | 704 | 0.8+  | 0.3+ |
| 2003 11 16 | 691 | 0.1- | 0.1- | 2005 05 01 | 644 | 0.3+  | 0.3+  |            |     |       |      |

(172595)\* 2003 WS<sub>16</sub> = 1999 TZ<sub>154</sub>

Discovered 2003 Nov. 18 by NEAT at Palomar.

Id. A. Doppler (MPO 76192)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.93215   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25547508 | $\omega$ | 292.83997 | +0.93912360   | +0.34097295 |
| <i>a</i> | 2.4598220  | $\Omega$ | 47.25263  | -0.29036657   | +0.85337556 |
| <i>e</i> | 0.2030409  | <i>i</i> | 3.29756   | -0.18366848   | +0.39431916 |
| <i>P</i> | 3.86       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 07 | 704 | 1.3+ | 1.0- | 2003 11 18 | 644 | 0.1-  | 0.6+  | 2007 11 02 | 691 | 0.4- | 0.1- |
| 1999 10 07 | 704 | 0.2+ | 1.1- | 2003 11 19 | 699 | 1.1+  | 0.8+  | 2007 11 05 | G96 | 0.1- | 0.2- |
| 1999 10 07 | 704 | 0.6+ | 0.2+ | 2003 11 19 | 699 | 0.1+  | 0.6+  | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 1999 10 09 | 704 | 0.5- | 0.6+ | 2003 11 19 | 699 | 0.9+  | 0.9-  | 2007 11 05 | G96 | 0.1+ | 0.4- |
| 1999 10 09 | 704 | 0.8- | 1.0+ | 2003 11 19 | 699 | (1.6- | 1.1+) | 2007 11 05 | G96 | 0.5+ | 0.9+ |
| 1999 10 09 | 704 | 0.3+ | 1.0- | 2003 11 20 | 291 | 0.1+  | 0.4+  | 2007 11 06 | 691 | 0.3- | 0.0  |
| 1999 10 09 | 704 | 1.3+ | 0.9- | 2003 11 20 | 291 | 0.0   | 0.1+  | 2007 11 06 | 691 | 0.2- | 0.0  |
| 1999 10 09 | 704 | 0.5- | 1.3- | 2003 11 20 | 291 | 0.3-  | 0.1+  | 2007 11 06 | 691 | 0.4+ | 0.9- |
| 1999 11 28 | 691 | 0.2- | 0.1+ | 2006 05 26 | G96 | 0.3+  | 0.3+  | 2007 11 17 | 691 | 0.1- | 0.3+ |
| 1999 11 28 | 691 | 0.4- | 0.2+ | 2006 05 26 | G96 | 0.5-  | 0.0   | 2007 11 17 | 691 | 0.3- | 0.1+ |
| 1999 11 28 | 691 | 0.3- | 0.2+ | 2006 05 26 | G96 | 0.7+  | 0.4+  | 2007 11 17 | 691 | 0.2- | 0.1- |
| 2003 10 24 | 704 | 0.4+ | 0.2+ | 2006 05 26 | G96 | 0.2-  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.2- |
| 2003 10 24 | 704 | 0.5+ | 0.5+ | 2007 10 16 | G96 | 0.2+  | 0.1+  | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2003 10 24 | 704 | 0.6- | 0.1- | 2007 10 16 | G96 | 0.1+  | 0.2-  | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2003 10 24 | 704 | 0.7- | 0.9+ | 2007 10 16 | G96 | 0.0   | 0.0   | 2007 12 15 | G96 | 0.4+ | 0.1- |
| 2003 10 24 | 704 | 0.3+ | 0.4+ | 2007 10 16 | G96 | 0.2+  | 0.1-  | 2007 12 16 | 704 | 1.3+ | 0.3- |

2003 11 18 644 0.0 0.5+ 2007 11 02 691 0.5- 0.0 2007 12 16 704 1.4+ 0.1+  
 2003 11 18 644 0.1+ 0.7+ 2007 11 02 691 0.5- 0.0 2007 12 16 704 1.4+ 0.4-

**(172596)\* 2003 WA<sub>21</sub>**

Discovered 2003 Nov. 19 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 73.07658   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26819420 | $\omega$ | 56.03268  | +0.99718624   | -0.00982354 |
| <i>a</i> | 2.3814225  | $\Omega$ | 304.42279 | -0.02417790   | +0.89625159 |
| <i>e</i> | 0.1370878  | <i>i</i> | 5.16901   | +0.07095791   | +0.44343725 |
| <i>P</i> | 3.67       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 08 | 704 | 1.5+  | 0.4+  | 2003 11 24 | 704 | 0.2-  | 0.2+  | 2006 07 23 | 644 | 0.0  | 0.5+ |
| 1999 09 08 | 704 | (2.5+ | 0.1+) | 2003 11 24 | 704 | 0.1-  | 0.3+  | 2006 07 23 | 644 | 0.1- | 0.4+ |
| 1999 09 08 | 704 | 0.2+  | 0.5-  | 2003 11 24 | 704 | 0.3-  | 0.5+  | 2007 11 03 | G96 | 0.3+ | 0.5- |
| 1999 10 04 | 704 | 0.6-  | 0.2-  | 2003 12 04 | 704 | 0.2-  | 0.2+  | 2007 11 03 | G96 | 0.3- | 0.4- |
| 1999 10 04 | 704 | 0.1-  | 0.8+  | 2003 12 04 | 704 | 0.0   | 0.7+  | 2007 11 03 | G96 | 0.0  | 0.1- |
| 1999 10 04 | 704 | 0.9+  | 0.7+  | 2003 12 04 | 704 | 0.4+  | 0.4+  | 2007 11 03 | G96 | 0.1- | 0.5- |
| 2002 06 06 | 704 | 0.1-  | 0.7+  | 2003 12 04 | 704 | 0.9-  | 0.4+  | 2007 11 11 | G96 | 0.3+ | 0.3- |
| 2002 06 06 | 704 | 0.2-  | 1.0-  | 2003 12 17 | 644 | 0.1+  | 0.4+  | 2007 11 11 | G96 | 0.1+ | 0.2- |
| 2002 06 06 | 704 | 0.5-  | 0.5-  | 2003 12 17 | 644 | 0.2-  | 0.7+  | 2007 11 11 | G96 | 0.2+ | 0.2- |
| 2002 06 06 | 704 | 1.0-  | 0.0   | 2003 12 17 | 644 | 0.2-  | 0.0   | 2007 11 11 | G96 | 0.0  | 0.1- |
| 2003 10 22 | 704 | 0.3-  | 0.2-  | 2003 12 23 | 704 | (1.6+ | 0.7-) | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 2003 10 22 | 704 | 0.3-  | 0.8-  | 2003 12 23 | 704 | 0.2+  | 1.0+  | 2007 11 11 | G96 | 0.0  | 0.3- |
| 2003 10 22 | 704 | 0.1+  | 0.5-  | 2003 12 23 | 704 | 0.5+  | 0.7-  | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2003 11 19 | 704 | 0.9-  | 0.1+  | 2003 12 23 | 704 | 0.2+  | 0.3+  | 2007 11 11 | G96 | 0.1- | 0.2- |
| 2003 11 19 | 704 | 0.2+  | 0.6-  | 2003 12 23 | 704 | 0.2+  | 0.5+  | 2007 12 04 | 691 | 0.3- | 0.1- |
| 2003 11 19 | 704 | 0.0   | 0.1-  | 2003 12 28 | 704 | 0.9-  | 0.2-  | 2007 12 04 | 691 | 0.3- | 0.0  |
| 2003 11 19 | 704 | 0.3+  | 0.7-  | 2003 12 28 | 704 | 0.4-  | 0.8+  | 2007 12 04 | 691 | 0.3- | 0.2- |
| 2003 11 19 | 704 | 0.1+  | 0.5-  | 2003 12 28 | 704 | 1.1-  | 0.7-  | 2007 12 06 | 704 | 0.6+ | 0.9+ |
| 2003 11 20 | 704 | 0.6-  | 0.0   | 2004 01 11 | 644 | 0.4-  | 0.3+  | 2007 12 06 | 704 | 0.6- | 0.7+ |
| 2003 11 20 | 704 | 0.4+  | 0.8+  | 2004 01 11 | 644 | 0.1-  | 0.2+  | 2007 12 06 | 704 | 0.7+ | 1.1+ |
| 2003 11 20 | 704 | 0.0   | 0.5-  | 2004 01 11 | 644 | 0.0   | 0.4+  | 2007 12 10 | 704 | 0.4+ | 0.4- |
| 2003 11 20 | 704 | 0.2+  | 0.3-  | 2004 01 17 | 644 | 0.3-  | 0.2+  | 2007 12 10 | 704 | 1.1+ | 0.2- |
| 2003 11 20 | 704 | 0.1-  | 0.4+  | 2004 01 17 | 644 | 0.1-  | 0.1+  | 2007 12 10 | 704 | 1.0+ | 1.2- |
| 2003 11 20 | 691 | 0.1+  | 0.0   | 2004 01 17 | 644 | 0.2+  | 0.2+  | 2007 12 10 | 704 | 0.0  | 0.1+ |
| 2003 11 20 | 691 | 0.1-  | 0.2-  | 2005 03 08 | 691 | 0.3+  | 0.3+  | 2007 12 10 | 704 | 1.0+ | 0.9- |
| 2003 11 20 | 691 | 0.0   | 0.3-  | 2005 03 08 | 691 | 0.1-  | 0.2-  | 2007 12 14 | 704 | 0.7+ | 0.5+ |
| 2003 11 24 | 704 | 0.3-  | 0.5+  | 2005 03 08 | 691 | 0.2+  | 0.3+  | 2007 12 14 | 704 | 0.2- | 0.1- |
| 2003 11 24 | 704 | 0.7-  | 0.2+  | 2006 07 23 | 644 | 0.2-  | 0.4+  | 2007 12 14 | 704 | 0.1+ | 0.4- |

**(172597)\* 2003 WC<sub>28</sub> = 2000 AO<sub>247</sub>**

Discovered 2003 Nov. 16 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 57262)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 210.74867  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21289995 | $\omega$ | 211.21806 | -0.90626386   | -0.42036489 |
| <i>a</i> | 2.7777021  | $\Omega$ | 303.85990 | +0.39803857   | -0.81319541 |
| <i>e</i> | 0.0723066  | <i>i</i> | 3.07102   | +0.14230638   | -0.40250040 |
| <i>P</i> | 4.63       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 02 | 691 | 0.4- | 0.0  | 2005 02 09 | 704 | 0.0   | 0.5+  | 2005 03 17 | 703 | 0.7-  | 0.0   |
| 2000 01 02 | 691 | 0.2- | 0.2- | 2005 02 09 | 704 | 0.9+  | 1.0+  | 2005 03 30 | 703 | 0.9+  | 1.2+  |
| 2000 01 02 | 691 | 0.3- | 0.0  | 2005 02 09 | 704 | 0.6+  | 1.0+  | 2005 03 30 | 703 | 0.9+  | 1.2-  |
| 2000 01 10 | 691 | 0.1+ | 0.1- | 2005 02 09 | 704 | (1.1+ | 1.6+) | 2005 03 30 | 703 | (1.9- | 0.1-) |
| 2000 01 10 | 691 | 0.3+ | 0.1- | 2005 03 08 | 699 | 0.1-  | 0.3-  | 2005 03 30 | 703 | 0.2-  | 0.3-  |
| 2000 01 10 | 691 | 0.4+ | 0.0  | 2005 03 08 | 699 | 0.8+  | 0.2-  | 2007 09 21 | A50 | (3.6+ | 1.4+) |
| 2003 10 25 | 704 | 0.6- | 0.1+ | 2005 03 08 | 699 | 0.0   | 0.1+  | 2007 10 05 | 691 | 0.2-  | 0.3+  |
| 2003 10 25 | 704 | 0.5- | 0.5- | 2005 03 08 | 699 | 0.5+  | 0.1-  | 2007 10 05 | 691 | 0.0   | 0.3+  |
| 2003 10 25 | 704 | 0.2+ | 0.9+ | 2005 03 08 | 704 | 0.6+  | 0.8+  | 2007 10 05 | 691 | 0.0   | 0.2+  |
| 2003 11 16 | 691 | 0.4+ | 0.2- | 2005 03 08 | 704 | 0.2+  | 0.1+  | 2007 10 08 | 691 | 0.0   | 0.1+  |
| 2003 11 16 | 691 | 0.2+ | 0.3- | 2005 03 08 | 704 | 0.5-  | 0.2-  | 2007 10 08 | 691 | 0.0   | 0.2+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 16 | 691 | 0.1+  | 0.4-  | 2005 03 08 | 704 | 0.5+ | 0.5+ | 2007 10 08 | 691 | 0.2- | 0.5+ |
| 2003 11 20 | 704 | 0.2-  | 0.1+  | 2005 03 08 | 704 | 0.7- | 0.6+ | 2007 10 19 | 691 | 0.3- | 0.2+ |
| 2003 11 20 | 704 | 0.2-  | 0.5+  | 2005 03 12 | 704 | 0.4- | 0.2+ | 2007 10 19 | 691 | 0.1- | 0.3+ |
| 2003 11 20 | 704 | (0.9+ | 2.1+) | 2005 03 12 | 704 | 0.1+ | 0.9+ | 2007 10 19 | 691 | 0.4- | 0.2+ |
| 2003 11 30 | 691 | 0.1-  | 0.1-  | 2005 03 12 | 704 | 0.3+ | 0.3+ | 2007 12 06 | G96 | 0.2+ | 0.3- |
| 2003 11 30 | 691 | 0.1-  | 0.2+  | 2005 03 12 | 704 | 0.3+ | 0.8+ | 2007 12 06 | G96 | 0.0  | 0.1- |
| 2003 11 30 | 691 | 0.1-  | 0.1-  | 2005 03 12 | 704 | 0.1+ | 0.6+ | 2007 12 06 | G96 | 0.5+ | 0.4- |
| 2005 02 02 | 691 | 0.1+  | 0.4+  | 2005 03 17 | 703 | 0.8- | 0.4- | 2007 12 06 | G96 | 0.2- | 0.2+ |
| 2005 02 02 | 691 | 0.0   | 0.3+  | 2005 03 17 | 703 | 0.8- | 0.7- |            |     |      |      |
| 2005 02 02 | 691 | 0.3+  | 0.2+  | 2005 03 17 | 703 | 0.1- | 0.3- |            |     |      |      |

**(172598)\* 2003 WK<sub>31</sub>**

Discovered 2003 Nov. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 292.33760  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26145991 | $\omega$ | 220.75802 | -0.70340011   | -0.70482272 |
| <i>a</i> | 2.4221404  | $\Omega$ | 274.16634 | +0.67373891   | -0.61990997 |
| <i>e</i> | 0.0616478  | <i>i</i> | 5.28932   | +0.22650421   | -0.34487180 |
| <i>P</i> | 3.77       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 26 | 704 | 0.0  | 1.3- | 2003 10 22 | 704 | 0.3+  | 0.4+  | 2005 04 05 | 599 | 0.5-  | 0.4-  |
| 2001 01 26 | 704 | 0.6+ | 0.2- | 2003 10 22 | 704 | 0.2-  | 1.0+  | 2005 04 13 | 699 | 0.3+  | 1.4+  |
| 2001 01 26 | 704 | 1.3+ | 0.3+ | 2003 10 22 | 704 | 0.5+  | 0.5+  | 2005 04 13 | 699 | (1.9+ | 1.9+) |
| 2001 01 26 | 704 | 0.2- | 0.0  | 2003 10 22 | 704 | 0.3+  | 0.3-  | 2005 04 13 | 699 | 1.1-  | 0.5+  |
| 2001 01 26 | 704 | 0.5+ | 0.2- | 2003 11 18 | 644 | 0.3-  | 0.5+  | 2005 04 13 | 699 | 1.1+  | 0.0   |
| 2001 02 18 | 608 | 0.2- | 1.3+ | 2003 11 18 | 644 | 0.4-  | 0.1-  | 2007 11 20 | 704 | 0.1+  | 0.4+  |
| 2001 02 18 | 608 | 0.7- | 1.1+ | 2003 11 18 | 644 | 0.4-  | 0.0   | 2007 11 20 | 704 | 0.4-  | 0.0   |
| 2001 02 18 | 608 | 0.2- | 1.0+ | 2003 11 20 | 704 | 0.0   | 0.2+  | 2007 11 20 | 704 | 0.5+  | 0.2+  |
| 2001 02 19 | 704 | 0.2+ | 0.2- | 2003 11 20 | 704 | 1.1+  | 0.4+  | 2007 11 20 | 704 | 0.4-  | 0.0   |
| 2001 02 19 | 704 | 0.3+ | 0.7+ | 2003 11 20 | 704 | 0.3-  | 0.6+  | 2007 11 20 | 704 | 0.1-  | 0.3-  |
| 2001 02 19 | 704 | 1.3+ | 0.2- | 2003 11 20 | 704 | 0.4+  | 0.1+  | 2007 12 10 | 704 | 0.1-  | 0.1-  |
| 2001 02 20 | 645 | 0.2- | 0.1- | 2003 11 24 | 704 | 0.3-  | 0.9+  | 2007 12 10 | 704 | 0.2+  | 0.7+  |
| 2001 02 20 | 645 | 0.1- | 0.1- | 2003 11 24 | 704 | 0.5+  | 0.2+  | 2007 12 10 | 704 | 0.4+  | 0.8+  |
| 2001 03 15 | 699 | 1.2+ | 0.2+ | 2003 11 24 | 704 | 0.5-  | 0.5-  | 2007 12 14 | 704 | 0.1-  | 0.4-  |
| 2001 03 15 | 699 | 0.4- | 0.4- | 2003 11 24 | 704 | 0.0   | 0.6+  | 2007 12 14 | 704 | 0.6-  | 0.9-  |
| 2001 03 15 | 699 | 0.5- | 0.3- | 2005 03 17 | 704 | 1.1+  | 0.5+  | 2007 12 14 | 704 | 0.3-  | 0.2+  |
| 2001 03 15 | 699 | 0.6+ | 0.5+ | 2005 03 17 | 704 | 1.3+  | 1.0+  | 2007 12 14 | 704 | 0.4-  | 0.1-  |
| 2001 03 24 | 608 | 0.2+ | 0.4- | 2005 03 17 | 704 | 1.0+  | 1.0+  | 2007 12 15 | G96 | 0.4+  | 0.4-  |
| 2001 03 24 | 608 | 0.1+ | 0.4- | 2005 03 17 | 704 | 0.3+  | 1.2+  | 2007 12 15 | G96 | 0.0   | 0.6-  |
| 2001 03 24 | 608 | 0.4+ | 0.4- | 2005 03 17 | 704 | 0.0   | 1.0+  | 2007 12 15 | G96 | 0.3+  | 0.3-  |
| 2003 10 03 | 691 | 0.1- | 0.1- | 2005 04 05 | 599 | 0.6-  | 1.1-  | 2007 12 15 | G96 | 0.4+  | 0.4-  |
| 2003 10 03 | 691 | 0.3- | 0.1+ | 2005 04 05 | 599 | (0.7+ | 1.9-) |            |     |       |       |
| 2003 10 03 | 691 | 0.2- | 0.0  | 2005 04 05 | 599 | 0.6-  | 0.2-  |            |     |       |       |

**(172599)\* 2003 WO<sub>31</sub>**

Discovered 2003 Nov. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 183.56523  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25458081 | $\omega$ | 325.99128 | -0.68798289   | +0.72005015 |
| <i>a</i> | 2.4655791  | $\Omega$ | 260.35359 | -0.64372456   | -0.66311416 |
| <i>e</i> | 0.1007397  | <i>i</i> | 5.27255   | -0.33510929   | -0.20446856 |
| <i>P</i> | 3.87       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 25 | 704 | 0.9- | 0.7- | 2005 02 14 | 703 | 0.2- | 0.1- | 2007 11 18 | 704 | (2.2+ | 0.1-) |
| 2003 10 25 | 704 | 0.5+ | 0.6- | 2005 03 17 | 703 | 0.1+ | 0.6- | 2007 11 18 | 704 | 0.6+  | 0.6+  |
| 2003 10 25 | 704 | 0.7+ | 1.2+ | 2005 03 17 | 703 | 0.6+ | 0.2- | 2007 11 18 |     |       |       |

2007 DEC. 24

M.P.O. 129423

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 24 | 704 | 0.5+ | 0.0  | 2006 06 22 | 691 | 0.0   | 0.0   | 2007 12 05 | 691 | 0.2+ | 0.3- |
| 2003 11 24 | 704 | 0.2- | 1.1- | 2006 08 12 | 644 | 0.2+  | 0.4-  | 2007 12 15 | 691 | 0.3- | 0.5- |
| 2005 02 14 | 703 | 0.4- | 0.1+ | 2006 08 12 | 644 | 0.5+  | 0.3-  | 2007 12 15 | 691 | 0.1- | 0.1- |
| 2005 02 14 | 703 | 0.1+ | 0.1- | 2006 08 12 | 644 | 0.0   | 0.4-  | 2007 12 15 | 691 | 0.2- | 0.2+ |
| 2005 02 14 | 703 | 0.3- | 0.5- | 2007 11 18 | 704 | (1.4+ | 2.0+) |            |     |      |      |

**(172600)\* 2003 WY<sub>35</sub> = 2005 EX<sub>263</sub>**

Discovered 2003 Nov. 19 by the Catalina Sky Survey.

Id. A. Doppler (*MPO* 76201)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $M$ | 63.80755   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
| $n$ | 0.24157323 | $\omega$ | 32.47753  | +0.82561988  | +0.55985221  |     |   |
| $a$ | 2.5533098  | $\Omega$ | 293.32034 | -0.53260954  | +0.73229335  |     |   |
| $e$ | 0.1052989  | $i$      | 4.37947   | -0.18622269  | +0.38770085  |     |   |
| $P$ | 4.08       | $H$      | 16.5      | $G$          | 0.15         | $U$ | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 23 | 645 | 0.0  | 0.1- | 2007 10 09 | 704 | 0.1-  | 1.2+  | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2000 12 23 | 645 | 0.1- | 0.0  | 2007 10 09 | 704 | 0.0   | 0.8+  | 2007 11 04 | 691 | 0.0  | 0.3- |
| 2001 02 20 | 645 | 0.0  | 0.1+ | 2007 10 09 | 704 | 0.1+  | 1.4+  | 2007 11 07 | 704 | 0.5+ | 0.5+ |
| 2001 02 20 | 645 | 0.1+ | 0.0  | 2007 10 09 | 691 | 0.0   | 0.0   | 2007 11 07 | 704 | 0.5+ | 0.8+ |
| 2003 10 25 | 704 | 0.1+ | 1.2- | 2007 10 09 | 691 | 0.1-  | 0.1+  | 2007 11 07 | 704 | 0.5+ | 0.6+ |
| 2003 10 25 | 704 | 0.2- | 0.3+ | 2007 10 09 | 691 | 0.1+  | 0.0   | 2007 11 07 | 704 | 0.9+ | 0.1- |
| 2003 10 25 | 704 | 0.4- | 0.3+ | 2007 10 12 | 704 | 0.4-  | 0.6+  | 2007 11 07 | 704 | 0.1+ | 0.5+ |
| 2003 11 19 | 703 | 1.2- | 0.8- | 2007 10 12 | 704 | 0.5-  | 0.5-  | 2007 11 07 | 703 | 0.6- | 0.5+ |
| 2003 11 19 | 703 | 0.3- | 0.2+ | 2007 10 12 | 704 | 0.4+  | 1.3+  | 2007 11 07 | 703 | 0.1- | 0.7- |
| 2003 11 19 | 703 | 1.0- | 1.1- | 2007 10 12 | 704 | 0.4+  | 0.3+  | 2007 11 07 | 703 | 0.6- | 0.2- |
| 2003 11 19 | 703 | 1.1- | 0.4- | 2007 10 15 | 704 | 0.2-  | 0.5-  | 2007 11 07 | 703 | 0.5- | 0.3- |
| 2003 11 20 | 704 | 0.3+ | 0.3- | 2007 10 15 | 704 | 0.4+  | 0.6+  | 2007 11 11 | G96 | 0.3+ | 0.3- |
| 2003 11 20 | 704 | 0.6+ | 0.1- | 2007 10 15 | 704 | 1.0-  | 1.3-  | 2007 11 11 | G96 | 0.7+ | 0.1- |
| 2003 11 20 | 704 | 0.2- | 0.1+ | 2007 10 15 | 704 | 0.4+  | 0.0   | 2007 11 11 | G96 | 0.4+ | 0.2- |
| 2003 11 20 | 704 | 0.3+ | 0.5+ | 2007 10 15 | 704 | 0.6-  | 0.3-  | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2003 11 20 | 704 | 1.0+ | 0.2- | 2007 10 21 | 703 | 0.6-  | 0.3-  | 2007 11 14 | 691 | 0.1- | 0.2+ |
| 2003 11 21 | 644 | 0.0  | 0.3- | 2007 10 21 | 691 | 0.0   | 0.1-  | 2007 11 14 | 691 | 0.1- | 0.2+ |
| 2003 11 21 | 644 | 0.2- | 0.0  | 2007 10 21 | 703 | (1.7+ | 0.7-) | 2007 11 18 | 691 | 0.4- | 0.2+ |
| 2003 11 21 | 644 | 0.2- | 0.2- | 2007 10 21 | 703 | 0.1+  | 0.7+  | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 2003 11 24 | 704 | 0.1- | 0.1- | 2007 10 21 | 691 | 0.1-  | 0.1-  | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2003 11 24 | 704 | 0.1+ | 0.3+ | 2007 10 21 | 703 | 0.3+  | 1.4+  | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2003 11 24 | 704 | 0.4+ | 0.1+ | 2007 10 21 | 691 | 0.0   | 0.0   | 2007 11 18 | 691 | 0.3- | 0.1+ |
| 2003 11 24 | 704 | 0.6+ | 0.5+ | 2007 11 02 | 691 | 0.1+  | 0.2-  | 2007 11 18 | 691 | 1.0- | 0.6+ |
| 2003 11 24 | 704 | 0.3- | 0.8- | 2007 11 02 | 691 | 0.1+  | 0.1-  | 2007 11 18 | 703 | 1.0+ | 0.2- |
| 2003 11 24 | 704 | 0.4+ | 0.1+ | 2007 11 02 | 691 | 0.1+  | 0.1+  | 2007 11 18 | 703 | 0.2+ | 0.2+ |
| 2003 11 24 | 704 | 0.3+ | 0.2- | 2007 11 02 | 704 | 0.3+  | 0.1-  | 2007 11 18 | 704 | 0.1+ | 0.4+ |
| 2003 11 24 | 704 | 0.7+ | 0.1+ | 2007 11 02 | 704 | 0.3+  | 0.4+  | 2007 11 18 | 703 | 0.3+ | 0.5+ |
| 2003 11 24 | 704 | 0.8+ | 0.5+ | 2007 11 02 | 704 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 0.3+ | 0.5- |
| 2005 03 13 | G96 | 0.1+ | 0.4- | 2007 11 02 | 704 | 0.4+  | 0.5+  | 2007 11 18 | 703 | 0.3+ | 0.4- |
| 2005 03 13 | G96 | 0.1+ | 0.1- | 2007 11 02 | 704 | 0.5+  | 0.2-  | 2007 11 18 | 704 | 0.6+ | 0.4+ |
| 2005 03 13 | G96 | 0.3+ | 0.0  | 2007 11 02 | 703 | 0.6-  | 1.4-  | 2007 11 18 | 704 | 0.2+ | 0.2+ |
| 2005 03 13 | G96 | 0.0  | 0.1- | 2007 11 02 | 703 | 0.9-  | 0.0   | 2007 11 18 | 704 | 0.3+ | 0.3- |
| 2005 03 17 | G96 | 0.0  | 0.0  | 2007 11 02 | 703 | 0.3-  | 1.3-  | 2007 11 19 | 291 | 0.3- | 0.0  |
| 2005 03 17 | G96 | 0.5- | 0.1- | 2007 11 02 | 703 | 0.2-  | 0.7-  | 2007 11 19 | 291 | 0.1+ | 0.2+ |
| 2005 03 17 | G96 | 0.2- | 0.3- | 2007 11 03 | 704 | 0.2-  | 0.8-  | 2007 11 19 | 291 | 0.0  | 0.1+ |
| 2005 03 17 | G96 | 0.1- | 0.0  | 2007 11 03 | 704 | 1.0+  | 0.7-  | 2007 12 05 | 699 | 0.5- | 0.3+ |
| 2007 10 06 | D29 | 0.7+ | 0.9- | 2007 11 03 | 704 | 0.2+  | 0.8-  | 2007 12 05 | 699 | 1.3+ | 0.3- |
| 2007 10 06 | D29 | 0.2+ | 0.1+ | 2007 11 03 | 704 | 0.6+  | 1.5-  | 2007 12 05 | 699 | 0.7+ | 0.2- |
| 2007 10 06 | D29 | 0.3+ | 0.2- | 2007 11 03 | 704 | (0.2- | 2.6-) | 2007 12 05 | 699 | 0.1- | 0.8- |
| 2007 10 09 | 704 | 0.4+ | 0.8+ | 2007 11 04 | 691 | 0.2+  | 0.0   |            |     |      |      |

**(172601)\* 2003 WG<sub>43</sub>**

Discovered 2003 Nov. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 80.97415   |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.27890098 | $\omega$ | 71.19897  | +0.99317648 | +0.07814404 |
| $a$ | 2.3200785  | $\Omega$ | 284.24738 | -0.10732725 | +0.90284526 |
| $e$ | 0.1281320  | $i$      | 5.12420   | +0.04562168 | +0.42280486 |
| $P$ | 3.53       | $H$      | 17.0      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 01 19 | 691 | 0.3- | 0.4+ | 2003 10 23 | 691 | 0.2- | 0.3+ | 2006 06 17 | 691 | 0.0  | 0.2+ |
| 1994 01 19 | 691 | 1.2- | 0.7+ | 2003 10 23 | 691 | 0.1+ | 0.4+ | 2006 06 17 | 691 | 0.0  | 0.0  |
| 1994 01 19 | 691 | 0.2+ | 0.2+ | 2003 10 30 | 704 | 0.2- | 0.6+ | 2006 06 17 | 691 | 0.1- | 0.1+ |
| 1996 12 03 | 691 | 0.1+ | 0.8- | 2003 10 30 | 704 | 1.0- | 1.2+ | 2006 06 22 | G96 | 0.4- | 0.2+ |
| 1996 12 03 | 691 | 0.2+ | 0.8- | 2003 10 30 | 704 | 1.2- | 0.4+ | 2006 06 22 | G96 | 0.3- | 0.1+ |
| 1996 12 03 | 691 | 0.4+ | 0.8- | 2003 11 18 | 644 | 0.1+ | 0.6+ | 2006 06 22 | G96 | 0.2+ | 0.1+ |
| 2001 01 19 | 691 | 1.0+ | 0.0  | 2003 11 18 | 644 | 0.5+ | 0.3+ | 2006 06 22 | G96 | 0.2- | 0.7+ |
| 2001 01 19 | 691 | 0.9+ | 0.2+ | 2003 11 18 | 644 | 0.0  | 0.4+ | 2007 10 15 | G96 | 0.6- | 0.6- |
| 2001 01 19 | 691 | 0.9+ | 0.5+ | 2003 11 19 | 699 | 0.4- | 0.3- | 2007 10 15 | G96 | 0.2- | 0.1- |
| 2003 09 30 | 704 | 0.6- | 0.1+ | 2003 11 19 | 699 | 0.6- | 0.5- | 2007 10 15 | G96 | 0.1+ | 0.1- |
| 2003 09 30 | 704 | 1.3- | 0.3+ | 2003 11 19 | 699 | 0.4+ | 0.2- | 2007 10 15 | G96 | 0.1- | 0.2- |
| 2003 09 30 | 704 | 0.3- | 0.3+ | 2003 11 19 | 699 | 0.7+ | 0.1- | 2007 11 11 | G96 | 0.0  | 0.2- |
| 2003 09 30 | 704 | 1.0+ | 1.2+ | 2003 11 19 | 644 | 0.0  | 0.6+ | 2007 11 11 | G96 | 0.5- | 0.4- |
| 2003 10 05 | 704 | 0.7+ | 0.2- | 2003 11 19 | 644 | 0.0  | 0.3+ | 2007 11 11 | G96 | 0.5- | 0.1- |
| 2003 10 05 | 704 | 0.6- | 0.8+ | 2003 11 19 | 644 | 0.0  | 0.2+ | 2007 11 11 | G96 | 0.2- | 0.1- |
| 2003 10 05 | 704 | 0.2+ | 0.5+ | 2005 03 08 | 691 | 0.0  | 0.1+ | 2007 12 03 | 691 | 0.5- | 0.0  |
| 2003 10 05 | 704 | 1.2+ | 0.1+ | 2005 03 08 | 691 | 0.2+ | 0.2- | 2007 12 03 | 691 | 0.8- | 0.1+ |
| 2003 10 23 | 691 | 0.2- | 0.3+ | 2005 03 08 | 691 | 0.2+ | 0.1- | 2007 12 03 | 691 | 0.4- | 0.1+ |

**(172602)\* 2003 WA<sub>49</sub> = 1998 LN<sub>3</sub>**

Discovered 2003 Nov. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 57281)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 205.00129  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.26510548 | $\omega$ | 172.59827 | -0.74637752  | +0.66153638  |
| $a$ | 2.3998840  | $\Omega$ | 49.08525  | -0.61543142  | -0.64446953  |
| $e$ | 0.1163177  | $i$      | 5.52321   | -0.25330766  | -0.38344314  |
| $P$ | 3.72       | $H$      | 16.6      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 05 22 | 704 | 0.1-  | 1.3+  | 2003 11 19 | 291 | 0.1-  | 0.2+  | 2005 03 16 | 703 | 0.1+ | 1.0+ |
| 1998 05 22 | 704 | 0.0   | 1.7+  | 2003 11 19 | 291 | 0.0   | 0.2+  | 2005 03 16 | 703 | 0.9+ | 0.7+ |
| 1998 05 22 | 704 | 0.5+  | 0.2-  | 2003 11 19 | 291 | 0.2-  | 0.3+  | 2005 03 16 | 703 | 0.5- | 0.1+ |
| 1998 05 22 | 704 | (4.3- | 0.1-) | 2003 11 21 | 691 | 0.1-  | 0.3+  | 2006 08 23 | 644 | 0.7+ | 0.2+ |
| 1998 06 01 | 809 | (1.9+ | 4.2+) | 2003 11 21 | 691 | 0.6-  | 0.9-  | 2006 08 23 | 644 | 0.1- | 0.3+ |
| 1998 06 01 | 809 | (2.3+ | 4.7+) | 2003 11 21 | 691 | 0.1+  | 0.2+  | 2006 08 23 | 644 | 0.2+ | 0.4+ |
| 1998 06 01 | 809 | (1.1+ | 3.8+) | 2005 03 02 | 703 | 0.2-  | 0.0   | 2007 09 15 | G96 | 0.6- | 0.3- |
| 1998 06 02 | 809 | 0.4+  | 1.6+  | 2005 03 02 | 703 | 0.7-  | 0.1-  | 2007 09 15 | G96 | 0.9- | 0.3- |
| 1998 06 02 | 809 | 0.4-  | 0.4-  | 2005 03 02 | 703 | 0.2-  | 0.6+  | 2007 09 15 | G96 | 0.5+ | 0.2- |
| 1998 06 02 | 809 | 0.5+  | 1.4+  | 2005 03 02 | 703 | 1.2-  | 0.1-  | 2007 09 15 | G96 | 0.2+ | 0.0  |
| 2001 02 22 | 645 | 0.0   | 0.1-  | 2005 03 11 | 699 | 0.4+  | 1.1-  | 2007 11 17 | 691 | 0.6- | 0.1+ |
| 2001 02 22 | 645 | 0.0   | 0.1-  | 2005 03 11 | 699 | 1.0+  | 1.0-  | 2007 11 17 | 691 | 0.3- | 0.0  |
| 2003 10 22 | 691 | 0.2+  | 0.2+  | 2005 03 11 | 699 | 0.9+  | 0.9+  | 2007 11 17 | 691 | 0.6- | 0.1+ |
| 2003 10 22 | 691 | 0.2+  | 0.0   | 2005 03 11 | 699 | 0.2-  | 0.7+  | 2007 12 14 | 704 | 1.0+ | 1.1+ |
| 2003 10 22 | 691 | 0.9+  | 0.2+  | 2005 03 11 | 699 | 1.4+  | 0.1-  | 2007 12 14 | 704 | 0.1- | 1.5+ |
| 2003 10 28 | 704 | 0.1-  | 1.2+  | 2005 03 11 | 699 | 0.1-  | 0.5+  | 2007 12 14 | 704 | 0.0  | 0.6+ |
| 2003 10 28 | 704 | (2.0- | 0.4-) | 2005 03 11 | 699 | (2.5- | 0.5-) | 2007 12 14 | 704 | 1.1+ | 1.1+ |
| 2003 10 28 | 704 | 1.0+  | 0.1-  | 2005 03 11 | 699 | 0.9+  | 0.7+  |            |     |      |      |
| 2003 10 28 | 704 | 0.5-  | 0.4+  | 2005 03 16 | 703 | 0.1+  | 1.2+  |            |     |      |      |

**(172603)\* 2003 WX<sub>54</sub> = 1999 RW<sub>228</sub>**

Discovered 2003 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57283)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                   |          |           |            |                                                       | MPC      |             |            |     |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------|-----------|------------|-------------------------------------------------------|----------|-------------|------------|-----|
| <i>M</i>                                | 68.63085                                                                                                          |          | (2000.0)  |            | <b>P</b>                                              |          | <b>Q</b>    |            |     |
| <i>n</i>                                | 0.27165736                                                                                                        | $\omega$ | 94.92229  |            | +0.98338659                                           |          | −0.14019081 |            |     |
| <i>a</i>                                | 2.3611400                                                                                                         | $\Omega$ | 273.16978 |            | +0.08304012                                           |          | +0.91231780 |            |     |
| <i>e</i>                                | 0.1417381                                                                                                         | <i>i</i> | 6.63194   |            | +0.16141608                                           |          | +0.38473728 |            |     |
| <i>P</i>                                | 3.63 <th><i>H</i></th> <td>16.6</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>1</td><td></td><td></td></td> | <i>H</i> | 16.6      | <i>G</i>   | 0.15 <th><i>U</i></th> <td>1</td> <td></td> <td></td> | <i>U</i> | 1           |            |     |
| Residuals in seconds of arc             |                                                                                                                   |          |           |            |                                                       |          |             |            |     |
| 1999 09 05                              | 703                                                                                                               | 0.5+     | 0.3+      | 2003 11 20 | 704                                                   | 1.0−     | 0.1+        | 2003 12 18 | 704 |
| 1999 09 05                              | 703                                                                                                               | 0.8+     | 0.9+      | 2003 11 20 | 704                                                   | 1.4−     | 0.2+        | 2003 12 18 | 704 |
| 1999 09 05                              | 703                                                                                                               | 0.5−     | 0.4+      | 2003 11 20 | 704                                                   | 0.4−     | 0.0         | 2003 12 18 | 704 |
| 1999 09 05                              | 703                                                                                                               | 0.3−     | 0.0       | 2003 11 20 | 704                                                   | 0.0      | 0.3+        | 2003 12 18 | 704 |
| 1999 09 11                              | 704                                                                                                               | 0.7+     | 0.9−      | 2003 11 21 | 291                                                   | 0.2+     | 0.2+        | 2003 12 18 | 704 |
| 1999 09 11                              | 704                                                                                                               | 0.4+     | 0.7−      | 2003 11 21 | 291                                                   | 0.3+     | 0.3+        | 2006 05 23 | G96 |
| 1999 09 11                              | 704                                                                                                               | 0.6+     | 0.8−      | 2003 11 21 | 291                                                   | 0.2+     | 0.2+        | 2006 05 23 | G96 |
| 1999 09 11                              | 704                                                                                                               | 0.9+     | 0.5−      | 2003 11 24 | 699                                                   | 0.5−     | 0.0         | 2006 05 23 | G96 |
| 1999 09 11                              | 704                                                                                                               | 0.4+     | 1.4−      | 2003 11 24 | 699                                                   | 0.2+     | 0.1−        | 2006 05 23 | G96 |
| 1999 10 07                              | 703                                                                                                               | (1.5−    | 3.7+)     | 2003 11 24 | 699                                                   | 0.2−     | 0.0         | 2006 06 18 | 691 |
| 1999 10 07                              | 703                                                                                                               | 1.4−     | 0.4+      | 2003 11 24 | 704                                                   | (0.2+    | 3.5−)       | 2006 06 18 | 691 |
| 1999 10 07                              | 703                                                                                                               | 0.2−     | 0.1+      | 2003 11 24 | 704                                                   | 0.2−     | 0.5+        | 2006 06 18 | 691 |
| 1999 10 07                              | 703                                                                                                               | 1.7−     | 0.8+      | 2003 11 24 | 704                                                   | 0.0      | 0.3−        | 2007 10 07 | G96 |
| 2003 11 03                              | 704                                                                                                               | 0.0      | 0.2+      | 2003 11 24 | 699                                                   | 0.6−     | 0.2+        | 2007 10 07 | G96 |
| 2003 11 03                              | 704                                                                                                               | 0.1−     | 0.1−      | 2003 11 24 | 704                                                   | 0.6+     | 1.0−        | 2007 10 07 | G96 |
| 2003 11 03                              | 704                                                                                                               | 1.2+     | 0.8−      | 2003 11 24 | 704                                                   | 0.3−     | 0.3+        | 2007 10 07 | G96 |
| 2003 11 14                              | 644                                                                                                               | 0.5−     | 0.0       | 2003 11 24 | 704                                                   | 0.3+     | 0.1+        | 2007 11 11 | G96 |
| 2003 11 14                              | 644                                                                                                               | 0.2−     | 0.4+      | 2003 11 24 | 704                                                   | 0.8+     | 0.1+        | 2007 11 11 | G96 |
| 2003 11 14                              | 644                                                                                                               | 0.3−     | 0.8+      | 2003 11 24 | 704                                                   | 0.2+     | 0.3+        | 2007 11 11 | G96 |
| 2003 11 19                              | 699                                                                                                               | 0.2−     | 0.3+      | 2003 11 24 | 704                                                   | 0.2+     | 0.1−        | 2007 11 11 | G96 |
| 2003 11 19                              | 699                                                                                                               | 0.0      | 0.9+      | 2003 11 24 | 704                                                   | 0.2−     | 0.3+        | 2007 12 05 | G96 |
| 2003 11 19                              | 699                                                                                                               | 0.5+     | 0.6+      | 2003 12 01 | 691                                                   | 0.0      | 0.1+        | 2007 12 05 | G96 |
| 2003 11 19                              | 699                                                                                                               | 1.2+     | 1.3−      | 2003 12 01 | 691                                                   | 0.3−     | 0.1−        | 2007 12 05 | G96 |
| 2003 11 20                              | 704                                                                                                               | 1.1−     | 0.6−      | 2003 12 01 | 691                                                   | 0.2−     | 0.1−        | 2007 12 05 | G96 |

**(172604)\* 2003 WB<sub>66</sub> = 1997 ER**

Discovered 2003 Nov. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 65514)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |      |             |            |     |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|
| <i>M</i>                                | 321.91931  |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |     |
| <i>n</i>                                | 0.25526489 | $\omega$ | 123.77103 |            | −0.40615536 |      | −0.91360366 |            |     |
| <i>a</i>                                | 2.4611722  | $\Omega$ | 350.13665 |            | +0.79712107 |      | −0.34397699 |            |     |
| <i>e</i>                                | 0.0732645  | <i>i</i> | 6.41386   |            | +0.44680625 |      | −0.21681371 |            |     |
| <i>P</i>                                | 3.86       | <i>H</i> | 16.4      |            | <i>G</i>    | 0.15 | <i>U</i>    | 0          |     |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |     |
| 1997 03 02                              | 684        | 0.2−     | 1.2−      | 2003 11 21 | 704         | 0.6− | 0.7+        | 2005 04 16 | 691 |
| 1997 03 02                              | 684        | 0.5−     | 1.2−      | 2003 11 21 | 704         | 0.1− | 0.8+        | 2005 04 16 | 691 |
| 1997 03 03                              | 684        | 0.1+     | 1.4−      | 2003 11 21 | 704         | 0.3− | 0.3+        | 2006 08 14 | 644 |
| 1997 03 03                              | 684        | 0.2−     | 0.1−      | 2003 11 21 | 704         | 0.5+ | 0.7+        | 2006 08 14 | 644 |
| 1997 03 03                              | 684        | 0.0      | 0.8−      | 2003 11 21 | 704         | 0.1− | 0.0         | 2006 08 14 | 644 |
| 2001 03 23                              | 699        | 1.3−     | 1.3+      | 2003 12 18 | 691         | 0.2− | 0.0         | 2006 08 21 | 807 |
| 2001 03 23                              | 699        | (0.8+    | 2.2+)     | 2003 12 18 | 691         | 0.1+ | 0.0         | 2006 08 21 | 807 |
| 2001 03 23                              | 699        | 0.4−     | 0.1−      | 2003 12 18 | 691         | 0.0  | 0.0         | 2007 11 17 | 704 |
| 2001 03 23                              | 699        | 0.7−     | 0.6+      | 2003 12 28 | 691         | 0.3− | 0.1+        | 2007 11 17 | 704 |
| 2002 08 06                              | 644        | 0.2+     | 0.2+      | 2003 12 28 | 691         | 0.2− | 0.1−        | 2007 11 17 | 704 |
| 2002 08 06                              | 644        | 0.1+     | 0.5+      | 2003 12 28 | 691         | 0.1+ | 0.0         | 2007 11 17 | 704 |
| 2002 08 06                              | 644        | 0.4+     | 0.3+      | 2005 04 12 | 691         | 0.1+ | 0.4+        | 2007 12 16 | 704 |
| 2003 11 19                              | 704        | 0.2−     | 0.3−      | 2005 04 12 | 691         | 0.2+ | 0.1+        | 2007 12 16 | 704 |
| 2003 11 19                              | 704        | 1.1+     | 0.3+      | 2005 04 12 | 691         | 0.2+ | 0.3+        | 2007 12 16 | 704 |
| 2003 11 19                              | 704        | 0.6−     | 0.6+      | 2005 04 16 | 691         | 0.2+ | 0.3+        |            |     |

**(172605)\* 2003 WM<sub>73</sub>**

Discovered 2003 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                                         |       |          |            |          | MPC         |          |             |     |      |      |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|------------|----------|-------------|----------|-------------|-----|------|------|
| $M$                                     | 294.65291                                                                                                                                               |       | (2000.0) |            | <b>P</b> |             | <b>Q</b> |             |     |      |      |
| $n$                                     | 0.24578786                                                                                                                                              |       | $\omega$ | 125.38436  |          | −0.79777983 |          | −0.60278665 |     |      |      |
| $a$                                     | 2.5240373                                                                                                                                               |       | $\Omega$ | 17.55939   |          | +0.53707286 |          | −0.72096878 |     |      |      |
| $e$                                     | 0.1410785                                                                                                                                               |       | $i$      | 2.65708    |          | +0.27404397 |          | −0.34183663 |     |      |      |
| $P$                                     | 4.01 <th><math>H</math></th> <td colspan="2">16.1</td> <th><math>G</math></th> <td colspan="2">0.15</td> <th><math>U</math></th> <td colspan="2">1</td> |       | $H$      | 16.1       |          | $G$         | 0.15     |             | $U$ | 1    |      |
| Residuals in seconds of arc             |                                                                                                                                                         |       |          |            |          |             |          |             |     |      |      |
| 2002 08 08                              | 644                                                                                                                                                     | 0.0   | 0.6+     | 2003 12 04 | 704      | (1.6−       | 0.1−)    | 2005 03 11  | G96 | 1.2+ | 1.5− |
| 2002 08 08                              | 644                                                                                                                                                     | 0.0   | 0.3+     | 2003 12 04 | 704      | 1.2−        | 0.1+     | 2005 05 19  | 644 | 0.2− | 0.2+ |
| 2002 08 08                              | 644                                                                                                                                                     | 0.2+  | 0.2+     | 2003 12 04 | 704      | 0.3−        | 0.1−     | 2005 05 19  | 644 | 0.3+ | 0.0+ |
| 2002 08 18                              | 644                                                                                                                                                     | 0.5+  | 0.4−     | 2003 12 14 | 691      | 0.3−        | 0.2+     | 2005 05 19  | 644 | 0.3− | 0.1+ |
| 2002 08 18                              | 644                                                                                                                                                     | 0.0   | 0.4−     | 2003 12 14 | 691      | 0.1+        | 0.0      | 2007 11 15  | 704 | 0.6− | 0.5− |
| 2002 08 18                              | 644                                                                                                                                                     | 0.3+  | 0.3−     | 2003 12 14 | 691      | 0.1+        | 0.1+     | 2007 11 15  | 704 | 0.2− | 0.1− |
| 2002 08 28                              | 644                                                                                                                                                     | 0.2+  | 0.0      | 2003 12 17 | 644      | 0.2+        | 0.0      | 2007 11 15  | 704 | 0.6− | 0.8+ |
| 2002 08 28                              | 644                                                                                                                                                     | 0.6−  | 0.4+     | 2003 12 17 | 644      | 0.2+        | 0.1+     | 2007 11 15  | 704 | 0.5+ | 0.9+ |
| 2002 08 28                              | 644                                                                                                                                                     | 0.4−  | 0.6−     | 2003 12 17 | 644      | 0.5+        | 0.2+     | 2007 11 15  | 704 | 0.5− | 0.3− |
| 2002 09 15                              | 644                                                                                                                                                     | 0.1−  | 0.0      | 2003 12 18 | 704      | 0.7+        | 0.3+     | 2007 11 17  | 691 | 0.3− | 0.5+ |
| 2002 09 15                              | 644                                                                                                                                                     | 0.2−  | 0.3−     | 2003 12 18 | 704      | 0.7+        | 0.7+     | 2007 11 17  | 691 | 0.5− | 0.2− |
| 2002 09 15                              | 644                                                                                                                                                     | 0.5+  | 0.2−     | 2003 12 18 | 704      | 1.5+        | 0.1−     | 2007 11 17  | 691 | 0.3− | 0.3− |
| 2003 11 20                              | 704                                                                                                                                                     | 0.3−  | 0.2−     | 2003 12 18 | 704      | 0.6+        | 0.3+     | 2007 11 20  | 704 | 1.0+ | 0.2− |
| 2003 11 20                              | 704                                                                                                                                                     | 0.1−  | 0.3−     | 2003 12 18 | 704      | 0.1+        | 0.1−     | 2007 11 20  | 704 | 0.8+ | 0.2+ |
| 2003 11 20                              | 704                                                                                                                                                     | (1.9+ | 1.9−)    | 2003 12 19 | 691      | 0.2+        | 0.0      | 2007 11 20  | 704 | 1.3+ | 0.6+ |
| 2003 11 20                              | 704                                                                                                                                                     | 0.1+  | 0.5−     | 2003 12 19 | 691      | 0.0         | 0.1+     | 2007 11 20  | 704 | 1.4+ | 0.1− |
| 2003 11 20                              | 704                                                                                                                                                     | 0.9+  | 0.3+     | 2003 12 19 | 691      | 0.3+        | 0.0      | 2007 12 06  | D35 | 0.5− | 0.1− |
| 2003 11 21                              | 704                                                                                                                                                     | 0.8−  | 0.5+     | 2003 12 27 | 704      | 0.3−        | 0.1+     | 2007 12 06  | D35 | 0.2− | 0.2+ |
| 2003 11 21                              | 704                                                                                                                                                     | (1.5+ | 0.2+)    | 2003 12 27 | 704      | 0.4−        | 0.8−     | 2007 12 06  | D35 | 0.5− | 0.0  |
| 2003 11 21                              | 704                                                                                                                                                     | 0.7+  | 0.0      | 2003 12 27 | 704      | 0.2+        | 1.1−     | 2007 12 10  | 704 | 0.7+ | 0.5− |
| 2003 11 21                              | 704                                                                                                                                                     | 0.5−  | 0.6+     | 2003 12 29 | 691      | 0.3+        | 0.1−     | 2007 12 10  | 704 | 0.2+ | 0.2− |
| 2003 11 26                              | 691                                                                                                                                                     | 1.5−  | 0.1−     | 2003 12 29 | 691      | 0.2+        | 0.0      | 2007 12 10  | 704 | 0.1+ | 0.6− |
| 2003 11 26                              | 691                                                                                                                                                     | (2.6− | 0.8+)    | 2003 12 29 | 691      | 0.2+        | 0.0      | 2007 12 10  | 704 | 0.3+ | 0.5− |
| 2003 11 26                              | 691                                                                                                                                                     | (1.8− | 0.8+)    | 2005 03 11 | G96      | 0.5−        | 0.4+     | 2007 12 15  | 704 | 0.4+ | 0.4+ |
| 2003 12 04                              | 704                                                                                                                                                     | 0.1+  | 1.3−     | 2005 03 11 | G96      | 0.3−        | 0.2+     | 2007 12 15  | 704 | 0.0  | 1.3+ |
| 2003 12 04                              | 704                                                                                                                                                     | 0.1+  | 0.6−     | 2005 03 11 | G96      | 0.4−        | 0.2+     | 2007 12 15  | 704 | 0.5+ | 0.5+ |

**(172606)\* 2003 WB<sub>81</sub> = 1999 TL<sub>139</sub>**

Discovered 2003 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57310)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |             | MPC  |             |            |     |      |      |
|-----------------------------------------|------------|----------|----------|------------|-------------|------|-------------|------------|-----|------|------|
| $M$                                     | 347.95398  |          | (2000.0) |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| $n$                                     | 0.26068571 | $\omega$ | 86.76620 |            | −0.20009422 |      | −0.97970373 |            |     |      |      |
| $a$                                     | 2.4269336  | $\Omega$ | 14.79261 |            | +0.87930958 |      | −0.18494481 |            |     |      |      |
| $e$                                     | 0.1589912  | $i$      | 2.68357  |            | +0.43217701 |      | −0.07730471 |            |     |      |      |
| $P$                                     | 3.78       | $H$      | 16.7     |            | $G$         | 0.15 | $U$         | 1          |     |      |      |
| Residuals in seconds of arc             |            |          |          |            |             |      |             |            |     |      |      |
| 1999 10 06                              | 704        | 0.3−     | 0.4−     | 2003 11 24 | 704         | 1.0+ | 0.0         | 2005 05 11 | 691 | 0.0  | 0.1+ |
| 1999 10 06                              | 704        | 0.1−     | 0.7−     | 2003 11 24 | 704         | 0.2+ | 0.5+        | 2005 05 11 | 691 | 0.0  | 0.0  |
| 1999 10 06                              | 704        | 0.2−     | 0.3−     | 2003 11 24 | 704         | 0.0  | 0.4+        | 2007 11 03 | G96 | 0.1− | 0.0  |
| 1999 10 06                              | 704        | 0.6+     | 0.6−     | 2003 11 24 | 704         | 0.1+ | 0.3+        | 2007 11 03 | G96 | 0.0  | 0.3− |
| 1999 10 06                              | 704        | 0.5+     | 0.2−     | 2003 11 24 | 704         | 0.3− | 0.3+        | 2007 11 03 | G96 | 0.1+ | 0.3− |
| 1999 10 10                              | 704        | 1.1+     | 0.2+     | 2003 11 30 | 691         | 0.0  | 0.1+        | 2007 11 03 | G96 | 0.0  | 0.1− |
| 1999 10 10                              | 704        | 0.2−     | 0.1−     | 2003 11 30 | 691         | 0.2+ | 0.1+        | 2007 11 11 | G96 | 0.2− | 0.3− |
| 1999 10 10                              | 704        | 0.8−     | 0.5+     | 2003 11 30 | 691         | 0.1− | 0.0         | 2007 11 11 | G96 | 0.2− | 0.6− |
| 1999 10 10                              | 704        | 0.4−     | 0.1−     | 2003 12 18 | 704         | 0.4+ | 0.1−        | 2007 11 11 | G96 | 0.6− | 0.2− |
| 1999 10 13                              | 645        | 0.1−     | 0.0      | 2003 12 18 | 704         | 0.3+ | 0.2+        | 2007 11 11 | G96 | 0.4+ | 0.5− |
| 1999 10 13                              | 645        | 0.1−     | 0.0      | 2003 12 18 | 704         | 0.2+ | 0.1−        | 2007 12 13 | 704 | 0.5+ | 0.2+ |
| 1999 10 14                              | 645        | 0.1+     | 0.0      | 2003 12 18 | 704         | 0.3+ | 0.5−        | 2007 12 13 | 704 | 0.1+ | 0.6− |
| 1999 10 14                              | 645        | 0.0      | 0.0      | 2003 12 22 | 704         | 0.6+ | 1.4+        | 2007 12 13 | 704 | 0.1− | 0.0  |
| 2001 04 29                              | 691        | 0.2−     | 0.3+     | 2003 12 22 | 704         | 0.0  | 0.2−        | 2007 12 13 | 704 | 0.7− | 0.2− |
| 2001 04 29                              | 691        | 0.1+     | 0.1+     | 2003 12 22 | 704         | 0.1+ | 0.6−        | 2007 12 13 | 704 | 0.1− | 0.2+ |
| 2001 04 29                              | 691        | 0.4+     | 0.3−     | 2003 12 22 | 704         | 0.3− | 0.3+        | 2007 12 15 | 704 | 0.2− | 0.1+ |
| 2001 05 22                              | 807        | 0.4−     | 0.1−     | 2003 12 22 | 704         | 0.1− | 0.4+        | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 2001 05 22                              | 807        | 0.4−     | 0.0      | 2003 12 27 | 691         | 0.2− | 0.1+        | 2007 12 15 | 704 | 0.1− | 0.3− |

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|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.6−  | 0.4+  | 2003 12 27 | 691 | 0.0   | 0.3−  | 2007 12 15 | 704 | 0.2− | 0.7+ |
| 2003 11 20 | 704 | (1.6+ | 1.0+) | 2003 12 27 | 704 | 1.1−  | 0.5−  | 2007 12 15 | 704 | 0.6− | 0.2+ |
| 2003 11 20 | 704 | 0.3−  | 0.7+  | 2003 12 27 | 691 | 0.3−  | 0.2−  | 2007 12 16 | 704 | 0.4+ | 0.5− |
| 2003 11 20 | 704 | 0.4−  | 0.9+  | 2003 12 27 | 704 | 0.3+  | 0.5+  | 2007 12 16 | 704 | 0.7+ | 0.4− |
| 2003 11 20 | 704 | 0.1−  | 0.5−  | 2003 12 27 | 704 | (0.9− | 1.7−) | 2007 12 16 | 704 | 0.7+ | 0.8+ |
| 2003 11 21 | 644 | 0.1−  | 0.1+  | 2003 12 27 | 704 | 0.1−  | 0.5−  | 2007 12 16 | 704 | 0.7+ | 0.3− |
| 2003 11 21 | 644 | 0.1−  | 0.3+  | 2003 12 27 | 704 | 0.6−  | 0.5−  | 2007 12 16 | 704 | 0.2+ | 0.2− |
| 2003 11 21 | 644 | 0.1−  | 0.2+  | 2005 05 11 | 691 | 0.1−  | 0.1+  |            |     |      |      |

(172607)\* 2003 WS<sub>83</sub>

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 259.05949  | (2000.0) | <i>P</i>  | <i>Q</i>    | <i>U</i>    | <i>U</i> | <i>U</i> |
| <i>n</i> | 0.21963090 | <i>ω</i> | 214.80235 | −0.11691787 | −0.98568662 |          |          |
| <i>a</i> | 2.7206568  | <i>Ω</i> | 242.18788 | +0.93952384 | −0.07013513 |          |          |
| <i>e</i> | 0.0518141  | <i>i</i> | 7.89287   | +0.32190863 | −0.15330672 |          |          |
| <i>P</i> | 4.49       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 20 | 644 | 0.1− | 0.1+ | 2003 11 21 | 699 | 0.4+ | 0.7− | 2005 03 10 | 703 | 0.1+  | 0.1−  |
| 2003 09 20 | 644 | 0.4− | 0.0  | 2003 11 21 | 699 | 0.3− | 0.3+ | 2005 03 10 | 703 | 0.6+  | 0.6+  |
| 2003 09 20 | 644 | 0.0  | 0.1+ | 2003 11 21 | 699 | 0.9− | 0.5− | 2005 03 10 | 703 | 0.0   | 0.0   |
| 2003 09 30 | 691 | 0.0  | 0.1+ | 2003 11 21 | 699 | 0.3+ | 0.3− | 2005 03 10 | 703 | (1.9+ | 0.8−) |
| 2003 09 30 | 691 | 0.0  | 0.1− | 2003 11 22 | 691 | 0.1+ | 0.2− | 2006 05 20 | G96 | 0.0   | 0.5+  |
| 2003 09 30 | 691 | 0.1− | 0.1− | 2003 11 22 | 691 | 0.0  | 0.2− | 2006 05 20 | G96 | 0.1−  | 0.4+  |
| 2003 10 17 | 691 | 0.2− | 0.1− | 2003 11 22 | 691 | 0.0  | 0.0  | 2006 05 20 | G96 | 0.3+  | 0.4+  |
| 2003 10 17 | 691 | 0.0  | 0.0  | 2005 01 13 | 703 | 0.4+ | 0.3− | 2006 05 20 | G96 | 0.3−  | 0.5+  |
| 2003 10 17 | 691 | 0.0  | 0.1− | 2005 01 13 | 703 | 0.0  | 0.5+ | 2007 09 05 | A77 | (1.5+ | 1.6−) |
| 2003 10 30 | 704 | 0.3+ | 0.3− | 2005 01 13 | 703 | 0.0  | 1.5+ | 2007 09 05 | A77 | 1.6+  | 0.8−  |
| 2003 10 30 | 704 | 0.1+ | 0.1− | 2005 01 13 | 703 | 0.7− | 0.4+ | 2007 09 05 | A77 | (0.1− | 1.9−) |
| 2003 10 30 | 704 | 0.1− | 0.5+ | 2005 02 12 | 809 | 0.4+ | 0.2− | 2007 09 11 | 703 | 0.0   | 1.1+  |
| 2003 10 30 | 704 | 0.6+ | 0.4+ | 2005 02 12 | 809 | 0.4+ | 0.1− | 2007 09 11 | 703 | 0.4−  | 1.3+  |
| 2003 11 02 | 691 | 0.0  | 0.1+ | 2005 02 12 | 809 | 0.6+ | 0.2− | 2007 09 11 | 703 | 0.7−  | 1.4+  |
| 2003 11 02 | 691 | 0.3+ | 0.2+ | 2005 02 12 | 809 | 0.4+ | 0.1− | 2007 09 11 | 703 | (0.5+ | 1.8+) |
| 2003 11 02 | 691 | 0.2+ | 0.3+ | 2005 02 14 | 703 | 0.2− | 1.3+ | 2007 12 06 | G96 | 0.8−  | 0.3+  |
| 2003 11 21 | 704 | 0.1− | 1.0+ | 2005 02 14 | 703 | 0.3+ | 1.1+ | 2007 12 06 | G96 | 0.7−  | 0.8−  |
| 2003 11 21 | 704 | 0.7− | 1.2+ | 2005 02 14 | 703 | 1.1− | 0.8− | 2007 12 06 | G96 | 0.2−  | 0.2+  |
| 2003 11 21 | 704 | 0.1− | 0.3− | 2005 02 14 | 703 | 0.1− | 0.4− | 2007 12 06 | G96 | 0.6−  | 0.0   |

(172608)\* 2003 WA<sub>86</sub> = 2001 FQ<sub>82</sub>

Discovered 2003 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57316)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 31.13150   | (2000.0) | <i>P</i>  | <i>Q</i>    | <i>U</i>    | <i>U</i> | <i>U</i> |
| <i>n</i> | 0.24077073 | <i>ω</i> | 43.51961  | +0.98464943 | −0.11635209 |          |          |
| <i>a</i> | 2.5589802  | <i>Ω</i> | 322.57295 | +0.02710703 | +0.83830156 |          |          |
| <i>e</i> | 0.1910905  | <i>i</i> | 12.36148  | +0.17242598 | +0.53264687 |          |          |
| <i>P</i> | 4.09       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1982 09 12 | 260 | 1.4+ | 0.2− | 2003 11 23 | 704 | 0.0  | 0.4+ | 2004 01 19 | 704 | 0.7− | 0.5+ |
| 1982 09 12 | 260 | 1.3− | 0.3+ | 2003 11 23 | 704 | 0.2+ | 0.2+ | 2004 01 19 | 704 | 0.3+ | 0.3+ |
| 1999 12 13 | 704 | 0.1+ | 0.5− | 2003 11 23 | 704 | 0.0  | 0.4+ | 2004 01 19 | 704 | 0.5− | 0.7+ |
| 1999 12 13 | 704 | 0.2− | 0.4− | 2003 11 23 | 704 | 0.1− | 0.7+ | 2004 01 19 | 704 | 1.0+ | 0.1+ |
| 1999 12 13 | 704 | 0.4− | 0.4− | 2003 12 04 | 704 | 0.1+ | 0.2− | 2004 03 20 | 704 | 0.4+ | 0.4+ |
| 1999 12 13 | 704 | 0.0  | 0.2− | 2003 12 04 | 704 | 0.1+ | 0.2+ | 2004 03 20 | 704 | 0.4+ | 0.0  |
| 1999 12 13 | 704 | 0.4− | 0.4+ | 2003 12 04 | 704 | 0.5+ | 0.2+ | 2004 03 20 | 704 | 0.1− | 0.1+ |
| 1999 12 30 | 704 | 1.7− | 0.9− | 2003 12 04 | 704 | 0.1+ | 0.4− | 2005 03 07 | 704 | 0.7− | 0.0  |
| 1999 12 30 | 704 | 0.3− | 0.6− | 2003 12 04 | 704 | 0.2+ | 0.6+ | 2005 03 07 | 704 | 0.2+ | 0.7− |
| 1999 12 30 | 704 | 0.2+ | 0.3− | 2003 12 05 | 704 | 0.0  | 0.1+ | 2005 03 07 | 704 | 0.5+ | 0.7− |
| 1999 12 30 | 704 | 0.5− | 0.3+ | 2003 12 05 | 704 | 0.4− | 0.0  | 2005 03 07 | 704 | 0.5− | 0.3− |
| 2000 01 29 | 704 | 0.4− | 0.5+ | 2003 12 05 | 704 | 0.1− | 0.5− | 2005 03 07 | 704 | 0.6+ | 0.1+ |
| 2000 01 29 | 704 | 0.3− | 0.4+ | 2003 12 05 | 704 | 0.3+ | 0.0  | 2005 04 02 | 644 | 0.1+ | 0.9+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 01 29 | 704 | 0.6−  | 0.5−  | 2003 12 15 | 704 | 0.5+  | 0.2−  | 2005 04 02 | 644 | 0.1+ | 0.5+ |
| 2000 01 29 | 704 | 2.0−  | 0.7−  | 2003 12 15 | 704 | 0.5+  | 0.1+  | 2005 04 02 | 644 | 0.1+ | 0.5+ |
| 2001 03 23 | 704 | 0.3−  | 1.0−  | 2003 12 15 | 704 | 0.6+  | 0.4−  | 2007 09 16 | 106 | 0.7− | 0.3− |
| 2001 03 23 | 704 | 0.2−  | 0.2−  | 2003 12 15 | 704 | 0.1+  | 0.2−  | 2007 09 16 | 106 | 0.1− | 0.4+ |
| 2001 03 23 | 704 | 0.5+  | 0.3+  | 2003 12 15 | 704 | 0.3+  | 0.7−  | 2007 09 16 | 106 | 0.5− | 0.2+ |
| 2001 03 26 | 704 | 0.8+  | 0.4+  | 2003 12 29 | 704 | 0.8+  | 0.6−  | 2007 09 16 | 106 | 0.2+ | 0.1− |
| 2001 03 26 | 704 | 0.1−  | 1.2+  | 2003 12 29 | 704 | 0.7+  | 0.1−  | 2007 11 21 | 703 | 0.7− | 0.2+ |
| 2001 03 26 | 704 | (2.3+ | 2.0+) | 2003 12 29 | 704 | 0.8+  | 0.1−  | 2007 11 21 | 703 | 0.7− | 0.4+ |
| 2003 10 16 | 704 | 0.1+  | 0.0   | 2003 12 29 | 704 | 0.7+  | 0.4−  | 2007 11 21 | 703 | 0.2− | 0.5+ |
| 2003 10 16 | 704 | 0.9+  | 0.2+  | 2003 12 29 | 704 | 0.6+  | 0.2−  | 2007 11 21 | 703 | 0.6− | 0.1− |
| 2003 10 16 | 704 | 0.2+  | 0.7+  | 2004 01 02 | 704 | 0.2−  | 0.1−  | 2007 12 07 | 951 | 0.2− | 0.3− |
| 2003 11 20 | 704 | 0.5+  | 0.4+  | 2004 01 02 | 704 | 0.6−  | 0.3+  | 2007 12 07 | 951 | 0.2− | 0.2− |
| 2003 11 20 | 704 | 0.9+  | 0.7+  | 2004 01 02 | 704 | 0.1−  | 0.4+  | 2007 12 07 | 951 | 0.1− | 0.5− |
| 2003 11 20 | 704 | 0.0   | 0.3−  | 2004 01 02 | 704 | (1.6+ | 0.1+) |            |     |      |      |
| 2003 11 20 | 704 | 0.0   | 0.1+  | 2004 01 19 | 704 | 0.3+  | 0.8+  |            |     |      |      |

(172609)\* 2003 WA<sub>87</sub> = 1999 TY<sub>206</sub>

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57317)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 32.26296   | (2000.0) | <i>P</i>  | <i>Q</i>    | <i>U</i>    | <i>U</i> | <i>U</i> |
| <i>n</i> | 0.26836079 | <i>ω</i> | 139.76754 | +0.45171258 | −0.80232721 |          |          |
| <i>a</i> | 2.3804369  | <i>Ω</i> | 279.98349 | +0.68237428 | +0.59242903 |          |          |
| <i>e</i> | 0.1649602  | <i>i</i> | 23.33842  | +0.57473567 | −0.07279353 |          |          |
| <i>P</i> | 3.67       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 10 14 | 704 | 0.0   | 0.9−  | 2003 12 18 | 704 | 0.4+ | 0.5+ | 2006 04 26 | E12 | 0.2+  | 0.5+  |
| 1999 10 14 | 704 | (0.9− | 2.1−) | 2003 12 18 | 704 | 0.6+ | 0.0  | 2006 04 26 | E12 | 0.6−  | 0.6+  |
| 1999 10 14 | 704 | 0.2+  | 1.4−  | 2003 12 18 | 704 | 0.2+ | 0.3+ | 2006 04 26 | E12 | 1.0−  | 0.4−  |
| 1999 10 14 | 704 | 0.4−  | 0.8−  | 2003 12 19 | 704 | 0.7+ | 0.4+ | 2006 04 26 | E12 | 0.9−  | 0.1+  |
| 1999 10 14 | 704 | 0.9−  | 1.3−  | 2003 12 19 | 704 | 1.3− | 0.1+ | 2006 06 21 | 644 | 0.4−  | 0.4+  |
| 1999 10 16 | 704 | 0.5+  | 0.4−  | 2003 12 19 | 704 | 0.2+ | 0.2− | 2006 06 21 | 644 | 0.0   | 0.2+  |
| 1999 10 16 | 704 | 1.1+  | 0.5−  | 2003 12 19 | 704 | 0.2− | 0.4− | 2006 06 21 | 644 | 0.2−  | 0.1+  |
| 1999 10 16 | 704 | 0.8+  | 0.3−  | 2003 12 27 | 704 | 0.0  | 0.5+ | 2006 06 22 | 644 | 0.5−  | 0.5+  |
| 1999 10 16 | 704 | 0.1+  | 0.4−  | 2003 12 27 | 704 | 0.3+ | 0.8+ | 2006 06 22 | 644 | 0.1−  | 0.4+  |
| 1999 11 11 | 699 | 0.2−  | 0.7+  | 2003 12 27 | 704 | 0.2− | 0.3+ | 2006 06 22 | 644 | 0.6−  | 0.4+  |
| 1999 11 11 | 699 | 0.8−  | 1.7+  | 2003 12 27 | 704 | 0.4− | 0.5+ | 2006 06 22 | 644 | 0.3−  | 0.2+  |
| 1999 11 11 | 699 | 1.1+  | 0.6+  | 2003 12 27 | 704 | 0.1− | 0.6+ | 2006 06 22 | 644 | 0.2−  | 0.3+  |
| 2003 11 21 | 704 | 0.2−  | 0.2+  | 2003 12 29 | 704 | 0.3+ | 0.6+ | 2006 06 22 | 644 | 0.0   | 0.4+  |
| 2003 11 21 | 704 | 0.2−  | 0.0   | 2003 12 29 | 704 | 0.4+ | 0.5+ | 2006 07 01 | 703 | 0.7−  | 0.2−  |
| 2003 11 21 | 704 | (1.8− | 1.4+) | 2003 12 29 | 704 | 0.0  | 0.9+ | 2006 07 01 | 703 | 0.9−  | 0.0   |
| 2003 11 21 | 704 | 1.1−  | 0.7+  | 2003 12 29 | 704 | 0.2+ | 0.7+ | 2006 07 01 | 703 | 0.6−  | 0.6+  |
| 2003 11 23 | 704 | 0.0   | 0.1−  | 2003 12 29 | 704 | 0.3+ | 0.6+ | 2006 07 01 | 703 | 1.4+  | 0.1−  |
| 2003 11 23 | 704 | (1.0+ | 2.2−) | 2004 01 22 | 704 | 0.4+ | 0.4− | 2006 08 22 | 644 | 0.4−  | 0.3+  |
| 2003 11 23 | 704 | 1.3+  | 1.0−  | 2004 01 22 | 704 | 0.3+ | 0.8− | 2006 08 22 | 644 | 0.2−  | 0.2+  |
| 2003 12 05 | 704 | 0.3+  | 1.0−  | 2004 01 22 | 704 | 0.4− | 0.1+ | 2006 08 22 | 644 | 0.9+  | 0.1−  |
| 2003 12 05 | 704 | 0.2+  | 0.4−  | 2004 01 22 | 704 | 0.3+ | 0.3− | 2006 08 23 | 644 | 0.2−  | 0.3+  |
| 2003 12 05 | 704 | 0.0   | 0.9−  | 2004 01 22 | 704 | 0.7− | 0.6− | 2006 08 23 | 644 | 0.1−  | 0.3+  |
| 2003 12 05 | 704 | 0.3+  | 0.4−  | 2004 02 10 | 644 | 0.1− | 0.1− | 2006 08 23 | 644 | 0.3+  | 0.3+  |
| 2003 12 05 | 704 | 0.1−  | 0.8−  | 2004 02 10 | 644 | 0.1+ | 0.2+ | 2007 10 21 | 691 | 0.5−  | 0.1+  |
| 2003 12 17 | 704 | 0.1+  | 0.1−  | 2004 02 10 | 644 | 0.1+ | 0.1− | 2007 10 21 | 691 | 0.3−  | 0.3+  |
| 2003 12 17 | 704 | 1.0−  | 0.6+  | 2004 02 16 | 704 | 0.2− | 0.3− | 2007 10 21 | 691 | 0.4−  | 0.3+  |
| 2003 12 17 | 704 | 0.1+  | 0.1+  | 2004 02 16 | 704 | 0.5− | 0.2− | 2007 12 05 | 683 | 0.4+  | 1.4−  |
| 2003 12 17 | 704 | 0.3+  | 0.2+  | 2004 02 16 | 704 | 0.1− | 0.5+ | 2007 12 05 | 683 | (0.7− | 2.1−) |
| 2003 12 17 | 704 | 1.3−  | 0.6+  | 2004 02 16 | 704 | 0.5− | 0.3− | 2007 12 05 | 683 | 0.6+  | 0.6+  |
| 2003 12 18 | 704 | 0.3+  | 0.3+  | 2004 02 16 | 704 | 0.1− | 0.5+ | 2007 12 14 | 704 | 0.8+  | 0.4−  |
| 2003 12 18 | 704 | 0.2+  | 0.4+  | 2004 02 22 | 704 | 0.9− | 0.4− | 2007 12 14 | 704 | 0.9+  | 0.0   |
| 2003 12 18 | 704 | 0.2−  | 0.3−  | 2004 02 22 | 704 | 0.2− | 0.3+ | 2007 12 14 | 704 | 0.1−  | 0.2−  |
| 2003 12 18 | 704 | 0.7+  | 0.1+  | 2004 02 22 | 704 | 0.2+ | 1.0+ |            |     |       |       |
| 2003 12 18 | 704 | 0.4+  | 0.2+  | 2004 02 22 | 704 | 0.1+ | 0.6+ |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.12116   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22064898 | $\omega$ | 136.85803 | +0.90507952   | +0.42501831 |
| <i>a</i> | 2.7122815  | $\Omega$ | 198.00438 | -0.40129150   | +0.84291349 |
| <i>e</i> | 0.1865582  | <i>i</i> | 2.55942   | -0.14069897   | +0.32993377 |
| <i>P</i> | 4.47       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 02 10 | 691 | 0.3+  | 0.1+  | 2003 11 30 | 691 | 0.3- | 0.2+ | 2007 09 15 | 704 | 0.4- | 1.1+ |
| 1996 02 10 | 691 | 0.6-  | 1.2+  | 2003 12 20 | 333 | 0.8+ | 0.3- | 2007 09 15 | G96 | 0.2+ | 0.3- |
| 1996 02 10 | 691 | 0.6+  | 0.2-  | 2003 12 20 | 333 | 1.2+ | 0.5+ | 2007 09 15 | G96 | 0.2+ | 0.2- |
| 1998 08 23 | 691 | 0.3-  | 0.1+  | 2003 12 21 | 691 | 0.0  | 0.1- | 2007 09 16 | 704 | 0.0  | 0.1- |
| 1998 08 23 | 691 | 0.0   | 0.2+  | 2003 12 21 | 691 | 0.2- | 0.1- | 2007 09 16 | 704 | 0.6- | 0.3- |
| 1998 08 23 | 691 | 0.1-  | 0.2-  | 2003 12 21 | 691 | 0.2- | 0.3- | 2007 09 16 | 704 | 0.6+ | 0.3+ |
| 1998 08 24 | 910 | 0.5+  | 0.4+  | 2006 03 24 | G96 | 0.2- | 0.6+ | 2007 09 16 | 704 | 0.0  | 0.9+ |
| 1998 08 24 | 910 | 0.3+  | 0.3+  | 2006 03 24 | G96 | 0.8- | 0.1- | 2007 09 16 | 704 | 0.4- | 0.3- |
| 1998 08 24 | 910 | 0.3+  | 0.4+  | 2006 03 24 | G96 | 0.9- | 0.5+ | 2007 09 19 | 704 | 0.3+ | 0.6+ |
| 2003 11 19 | 699 | 1.1+  | 0.6+  | 2006 03 24 | G96 | 0.9- | 0.2+ | 2007 09 19 | 704 | 1.0- | 0.3+ |
| 2003 11 19 | 699 | 1.2+  | 0.4-  | 2006 04 19 | G96 | 0.4- | 0.5+ | 2007 09 19 | 704 | 0.1- | 0.8+ |
| 2003 11 19 | 699 | 0.0   | 0.4+  | 2006 04 19 | G96 | 0.7- | 0.4+ | 2007 09 19 | 704 | 0.2- | 0.1- |
| 2003 11 19 | 699 | 0.3-  | 0.8-  | 2006 04 19 | G96 | 0.3- | 0.2+ | 2007 09 19 | 704 | 1.1- | 0.2+ |
| 2003 11 21 | 704 | 0.1-  | 0.1-  | 2006 04 19 | G96 | 0.7- | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.1- |
| 2003 11 21 | 704 | 0.2+  | 0.0   | 2006 04 26 | 691 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.1- | 0.1- |
| 2003 11 21 | 704 | 0.5+  | 0.2+  | 2006 04 26 | 691 | 0.7+ | 0.4+ | 2007 10 30 | G96 | 0.1- | 0.1- |
| 2003 11 24 | 699 | 0.3-  | 0.1-  | 2006 04 26 | 691 | 0.6+ | 0.2- | 2007 10 30 | G96 | 0.0  | 0.2- |
| 2003 11 24 | 699 | (1.6+ | 1.8+) | 2007 09 15 | 704 | 0.1- | 0.7+ | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2003 11 24 | 699 | 0.1-  | 1.2+  | 2007 09 15 | 704 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.6+ | 0.3+ |
| 2003 11 24 | 699 | 0.7-  | 0.1+  | 2007 09 15 | 704 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2003 11 30 | 691 | 0.1+  | 0.1+  | 2007 09 15 | G96 | 0.1+ | 0.1- | 2007 12 06 | G96 | 0.2+ | 0.2+ |
| 2003 11 30 | 691 | 0.2-  | 0.1+  | 2007 09 15 | G96 | 0.4+ | 0.2- |            |     |      |      |

**(172611)\* 2003 WD<sub>99</sub> = 2002 NF<sub>17</sub>**

Discovered 2003 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 69592)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 98.31878   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23099999 | $\omega$ | 29.92734  | +0.04709667   | +0.86980617 |
| <i>a</i> | 2.6306399  | $\Omega$ | 246.85056 | -0.98925074   | -0.02752860 |
| <i>e</i> | 0.1718586  | <i>i</i> | 32.28621  | -0.13843727   | +0.49262502 |
| <i>P</i> | 4.27       | <i>H</i> | 14.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 06 20 | 704 | 0.2-  | 0.8-  | 2003 11 24 | 704 | 0.9+  | 0.6-  | 2006 06 04 | 704 | 1.0+  | 0.5+  |
| 2002 06 20 | 704 | 0.0   | 0.6-  | 2003 11 24 | 704 | 0.3+  | 0.2+  | 2006 06 04 | 704 | 0.8+  | 0.2+  |
| 2002 06 20 | 704 | 0.5+  | 1.2-  | 2003 11 24 | 704 | 1.1+  | 0.6-  | 2006 06 24 | 704 | 0.1+  | 1.1+  |
| 2002 06 20 | 704 | 0.7+  | 1.0+  | 2003 11 24 | 704 | 0.6+  | 0.5+  | 2006 06 24 | 704 | 1.1+  | 0.5+  |
| 2002 06 20 | 704 | 0.2-  | 0.6-  | 2003 11 24 | 704 | 0.4-  | 0.1+  | 2006 06 24 | 704 | 0.2-  | 0.8+  |
| 2002 07 13 | 704 | 1.4-  | 0.3+  | 2003 11 24 | 704 | 0.4+  | 0.6-  | 2006 06 24 | 704 | (0.0  | 1.6+) |
| 2002 07 13 | 704 | 0.0   | 0.4-  | 2003 11 24 | 704 | 0.6+  | 0.4+  | 2006 08 01 | E12 | 0.4-  | 0.6+  |
| 2002 07 13 | 704 | 0.0   | 0.0   | 2003 12 19 | 704 | 0.3+  | 0.7+  | 2006 08 01 | E12 | (2.1- | 0.1+) |
| 2002 07 13 | 704 | 0.0   | 0.5-  | 2003 12 19 | 704 | 0.1+  | 0.1-  | 2006 08 01 | E12 | 0.5-  | 0.0   |
| 2002 07 14 | 704 | 0.0   | 0.8+  | 2003 12 19 | 704 | 0.1-  | 0.2+  | 2006 08 01 | E12 | 0.5-  | 0.2-  |
| 2002 07 14 | 704 | 0.0   | 0.4+  | 2003 12 19 | 704 | 0.5-  | 0.9+  | 2006 09 11 | 703 | 0.3-  | 1.3+  |
| 2002 07 14 | 704 | 0.1+  | 0.2+  | 2004 01 21 | 704 | 0.4+  | 0.0   | 2006 09 11 | 703 | 1.0+  | 0.3-  |
| 2002 07 14 | 704 | 0.0   | 0.2+  | 2004 01 21 | 704 | 1.4-  | 0.2-  | 2006 09 11 | 703 | (0.0  | 2.2+) |
| 2002 07 14 | 704 | 0.1-  | 0.3+  | 2004 01 21 | 704 | 0.5-  | 1.3+  | 2006 09 11 | 703 | 1.3+  | 1.3+  |
| 2002 08 01 | 704 | (3.6+ | 3.0+) | 2004 01 21 | 704 | 0.6-  | 1.0-  | 2007 10 16 | 703 | 0.3-  | 0.3+  |
| 2002 08 01 | 704 | (4.0+ | 2.8+) | 2006 05 20 | E12 | 0.7-  | 0.1-  | 2007 10 16 | 703 | 0.0   | 0.0   |
| 2002 08 01 | 704 | (4.3+ | 2.7+) | 2006 05 20 | E12 | (2.4- | 0.1+) | 2007 10 16 | 703 | 0.5-  | 0.3+  |
| 2002 08 01 | 704 | (4.0+ | 2.6+) | 2006 05 20 | E12 | 0.6-  | 0.9-  | 2007 10 16 | 703 | 0.2-  | 0.4+  |
| 2002 08 01 | 704 | (4.2+ | 3.5+) | 2006 05 20 | E12 | 1.2-  | 0.4-  | 2007 11 04 | 703 | 0.9-  | 0.8-  |
| 2003 11 20 | 704 | 0.3+  | 0.2-  | 2006 05 27 | 704 | 0.2-  | 0.0   | 2007 11 04 | 703 | 0.4+  | 0.2-  |
| 2003 11 20 | 704 | 0.2-  | 0.2+  | 2006 05 27 | 704 | 0.2+  | 0.5-  | 2007 11 04 | 703 | 0.1-  | 1.2-  |
| 2003 11 20 | 704 | 0.1+  | 0.0   | 2006 05 27 | 704 | 0.6+  | 0.3-  | 2007 11 04 | 703 | 0.1-  | 0.9-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.7+ | 0.1- | 2006 05 27 | 704 | 0.2+ | 0.1- | 2007 11 19 | 703 | 0.4- | 1.0- |
| 2003 11 20 | 704 | 0.2+ | 0.0  | 2006 05 27 | 704 | 0.3- | 0.8- | 2007 11 19 | 703 | 0.4- | 0.2+ |
| 2003 11 24 | 704 | 0.1- | 0.3- | 2006 06 04 | 704 | 0.4- | 0.0  | 2007 11 19 | 703 | 0.0  | 0.4- |
| 2003 11 24 | 704 | 0.1+ | 0.2+ | 2006 06 04 | 704 | 0.9+ | 0.4- | 2007 11 19 | 703 | 0.4+ | 0.9+ |
| 2003 11 24 | 704 | 0.2- | 0.5+ | 2006 06 04 | 704 | 0.7- | 0.2- |            |     |      |      |

**(172612)\* 2003 WN<sub>99</sub>**

Discovered 2003 Nov. 20 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 300.73613  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24529440 | $\omega$ | 1.66867   | -0.20221874   | -0.95062322 |
| <i>a</i> | 2.5274212  | $\Omega$ | 100.04672 | +0.89573515   | -0.27671818 |
| <i>e</i> | 0.0336788  | <i>i</i> | 13.83268  | +0.39593701   | +0.14050813 |
| <i>P</i> | 4.02       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 20 | 699 | 0.4+  | 0.5+  | 2003 11 29 | 704 | 0.3-  | 0.0   | 2007 10 20 | 704 | 0.3+  | 0.9+  |
| 2001 03 20 | 699 | 0.2+  | 0.5+  | 2003 11 29 | 704 | (2.1+ | 1.2-) | 2007 10 20 | 704 | 0.1-  | 0.5+  |
| 2001 03 20 | 699 | 0.3+  | 0.8+  | 2003 11 29 | 704 | 0.5+  | 0.2+  | 2007 10 20 | 704 | 0.5+  | 0.3+  |
| 2001 03 20 | 699 | (1.5- | 2.1+) | 2003 11 29 | 704 | 0.5+  | 0.4+  | 2007 10 20 | 704 | 0.8-  | 0.0   |
| 2002 07 05 | 704 | 0.4+  | 0.4+  | 2003 11 29 | 704 | 0.1+  | 0.3-  | 2007 10 20 | 703 | 0.9-  | 1.5-  |
| 2002 07 05 | 704 | 0.5-  | 1.0+  | 2005 03 08 | 704 | 1.2+  | 1.0+  | 2007 10 20 | 703 | 0.3+  | 0.5+  |
| 2002 07 05 | 704 | (0.5+ | 1.7+) | 2005 03 08 | 704 | 0.3+  | 0.0   | 2007 10 20 | 703 | 1.0+  | 0.2-  |
| 2002 07 05 | 704 | (0.2+ | 2.6+) | 2005 03 08 | 704 | 1.1+  | 0.4+  | 2007 10 20 | 703 | 0.0   | 0.2-  |
| 2003 10 19 | 704 | 0.9-  | 0.2-  | 2005 03 08 | 704 | (2.5- | 0.5-) | 2007 11 02 | 703 | 0.3-  | 0.2+  |
| 2003 10 19 | 704 | 0.1-  | 0.5-  | 2005 03 08 | 704 | 0.3-  | 0.1+  | 2007 11 02 | 703 | 0.3-  | 0.3+  |
| 2003 10 19 | 704 | 0.2+  | 0.6-  | 2005 04 01 | 703 | 0.1-  | 0.1+  | 2007 11 02 | 703 | 0.8-  | 0.2+  |
| 2003 10 19 | 704 | 0.3+  | 0.1-  | 2005 04 01 | 703 | 0.8-  | 0.5-  | 2007 11 02 | 703 | 0.1-  | 1.4+  |
| 2003 10 19 | 699 | 0.8+  | 0.3-  | 2005 04 01 | 703 | 1.1-  | 0.3-  | 2007 11 11 | 703 | 0.3+  | 0.5+  |
| 2003 10 19 | 699 | 0.0   | 0.9-  | 2005 04 01 | 703 | 0.1+  | 0.3-  | 2007 11 11 | 703 | 0.4+  | 0.3+  |
| 2003 10 19 | 699 | 0.9-  | 0.3+  | 2005 04 02 | 699 | 0.0   | 0.6+  | 2007 11 11 | 703 | 0.1-  | 1.1+  |
| 2003 10 19 | 699 | (0.8- | 1.8-) | 2005 04 02 | 699 | 0.6+  | 0.2-  | 2007 11 11 | 703 | (0.5- | 1.8+) |
| 2003 11 20 | 703 | (0.0  | 1.7-) | 2005 04 02 | 699 | 0.3-  | 0.2+  | 2007 11 18 | 703 | 1.2-  | 0.6+  |
| 2003 11 20 | 703 | (0.8+ | 1.7-) | 2005 04 02 | 699 | 0.0   | 0.5-  | 2007 11 18 | 703 | 0.8-  | 0.6+  |
| 2003 11 20 | 703 | 0.0   | 1.4-  | 2005 05 10 | 703 | 0.4-  | 0.4-  | 2007 11 18 | 703 | 0.9-  | 1.0+  |
| 2003 11 20 | 703 | (0.4+ | 1.6-) | 2005 05 10 | 703 | 0.8-  | 0.5-  | 2007 11 18 | 703 | 0.1+  | 0.5-  |
| 2003 11 20 | 644 | 0.3+  | 0.2-  | 2005 05 10 | 703 | (1.7- | 0.2-) | 2007 12 06 | 703 | 0.9+  | 0.9-  |
| 2003 11 20 | 644 | 0.3+  | 0.0   | 2005 05 10 | 703 | (1.2- | 2.2-) | 2007 12 06 | 703 | 0.3-  | 0.2-  |
| 2003 11 20 | 644 | 0.7+  | 0.2+  | 2007 10 19 | 703 | 0.4-  | 0.1-  | 2007 12 06 | 703 | 0.6+  | 1.0-  |
| 2003 11 24 | 644 | 0.0   | 0.2-  | 2007 10 19 | 703 | 0.1-  | 0.1-  | 2007 12 06 | 703 | 0.0   | 0.1+  |
| 2003 11 24 | 644 | 0.3+  | 0.1+  | 2007 10 19 | 703 | 0.8+  | 0.0   |            |     |       |       |
| 2003 11 24 | 644 | 0.0   | 0.2-  | 2007 10 19 | 703 | 0.1+  | 1.1+  |            |     |       |       |

**(172613)\* 2003 WE<sub>101</sub>**

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 186.82784  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28984430 | $\omega$ | 316.88000 | -0.06829045   | +0.99353488 |
| <i>a</i> | 2.2613071  | $\Omega$ | 308.99575 | -0.80668301   | -0.10274466 |
| <i>e</i> | 0.1357429  | <i>i</i> | 6.70114   | -0.46875777   | +0.04829047 |
| <i>P</i> | 3.40       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 07 14 | 704 | 0.4- | 0.1+ | 2005 03 03 | 703 | 0.3-  | 0.7+  | 2006 09 20 | 699 | 0.3-  | 0.6+  |
| 1999 07 14 | 704 | 0.9+ | 0.1- | 2005 03 03 | 703 | (1.8- | 0.7+) | 2006 09 20 | 699 | 0.7+  | 0.9+  |
| 1999 07 14 | 704 | 0.8+ | 0.1+ | 2006 08 29 | 703 | 0.2-  | 0.3+  | 2006 09 20 | 699 | 1.2-  | 0.2-  |
| 1999 07 14 | 704 | 0.5- | 0.3- | 2006 08 29 | 703 | 0.1+  | 0.4-  | 2006 09 30 | 699 | 0.7-  | 0.4-  |
| 1999 07 14 | 704 | 0.1- | 0.5- | 2006 08 29 | 703 | 0.7-  | 0.5-  | 2006 09 30 | 699 | 0.6+  | 0.2-  |
| 2002 05 11 | 644 | 0.4+ | 0.3+ | 2006 08 29 | 703 | 0.2+  | 0.1-  | 2006 09 30 | 699 | (2.3+ | 0.1-) |
| 2002 05 11 | 644 | 0.1- | 0.3+ | 2006 08 30 | 704 | 0.4+  | 0.2+  | 2006 09 30 | 699 | 0.7-  | 0.2-  |
| 2002 05 11 | 644 | 0.1- | 0.1+ | 2006 08 30 | 704 | 0.5+  | 0.0   | 2006 10 23 | 644 | 0.1+  | 0.2-  |
| 2003 10 23 | 691 | 0.0  | 0.2- | 2006 08 30 | 704 | (1.7+ | 0.6+) | 2006 10 23 | 644 | 0.1-  | 0.0   |
| 2003 10 23 | 691 | 0.1- | 0.4- | 2006 08 30 | 704 | 0.6+  | 1.1+  | 2006 10 23 | 644 | 0.0   | 0.1+  |
| 2003 10 23 | 691 | 0.1- | 0.5- | 2006 08 30 | 704 | 0.2+  | 0.5+  | 2007 11 03 | G96 | 0.7+  | 0.3-  |



2007 DEC. 24

M.P.O. 129427

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 21 | 704 | 0.6+ | 0.7+ | 2006 09 12 | 703 | 0.5-  | 0.2+  | 2007 11 03 | G96 | 0.3- | 0.1- |
| 2003 11 21 | 704 | 0.2- | 0.7- | 2006 09 12 | 703 | 0.7-  | 0.7+  | 2007 11 03 | G96 | 0.2- | 0.0  |
| 2003 11 21 | 704 | 0.1+ | 0.1+ | 2006 09 12 | 703 | (1.5- | 1.0+) | 2007 11 03 | G96 | 0.3+ | 0.0  |
| 2003 11 21 | 704 | 0.6- | 0.5+ | 2006 09 12 | 703 | 0.6-  | 1.4-  | 2007 11 11 | G96 | 0.1- | 0.3- |
| 2003 11 24 | 691 | 0.1- | 0.1+ | 2006 09 13 | 644 | 0.4-  | 0.2-  | 2007 11 11 | G96 | 0.0  | 0.4- |
| 2003 11 24 | 691 | 0.2- | 0.1- | 2006 09 13 | 644 | 0.2-  | 0.1+  | 2007 11 11 | G96 | 0.5+ | 0.2+ |
| 2003 11 24 | 691 | 0.0  | 0.1- | 2006 09 13 | 644 | 0.1+  | 0.0   | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 2003 12 18 | 291 | 0.1+ | 0.2+ | 2006 09 18 | 703 | 0.3-  | 0.8+  | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2003 12 18 | 291 | 0.2+ | 0.3+ | 2006 09 18 | 703 | 0.2+  | 0.8+  | 2007 12 05 | 691 | 0.3- | 0.3+ |
| 2003 12 18 | 291 | 0.1+ | 0.2+ | 2006 09 18 | 703 | 0.3-  | 0.4+  | 2007 12 05 | 691 | 0.4+ | 0.0  |
| 2005 03 03 | 703 | 0.5+ | 0.3+ | 2006 09 18 | 703 | 0.8+  | 0.0   |            |     |      |      |
| 2005 03 03 | 703 | 0.2+ | 0.5+ | 2006 09 20 | 699 | 0.4+  | 0.5+  |            |     |      |      |

(172614)\* 2003 WY<sub>119</sub>

Discovered 2003 Nov. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 64.31066   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.27839524 | $\omega$ | 103.10864 | +0.81142094 |      | -0.58340151 |   |
| <i>a</i>                                | 2.3228875  | $\Omega$ | 292.59224 | +0.52038201 |      | +0.74856102 |   |
| <i>e</i>                                | 0.1670860  | <i>i</i> | 2.18470   | +0.26608012 |      | +0.31511755 |   |
| <i>P</i>                                | 3.54       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 08 22 | 703 | 0.6+  | 0.6-  | 2003 12 05 | 704 | 0.0  | 0.8+ | 2006 06 19 | G96 | 0.5-  | 0.3-  |
| 1999 08 22 | 703 | 0.4+  | 0.5+  | 2003 12 05 | 704 | 0.2- | 0.0  | 2006 06 19 | G96 | 0.1+  | 0.3-  |
| 1999 08 22 | 703 | 1.1-  | 0.1+  | 2003 12 05 | 704 | 0.3- | 0.2+ | 2006 07 21 | G96 | 0.2+  | 0.2-  |
| 1999 08 22 | 703 | 0.4+  | 0.0   | 2003 12 05 | 704 | 0.0  | 1.0- | 2006 07 21 | G96 | 0.1-  | 0.0   |
| 1999 08 22 | 703 | 0.2-  | 0.0   | 2003 12 14 | 644 | 0.2- | 0.2- | 2006 07 21 | G96 | 0.0   | 0.0   |
| 1999 08 22 | 703 | (1.3+ | 2.4-) | 2003 12 14 | 644 | 0.1- | 0.0  | 2006 07 21 | G96 | 0.1+  | 0.3+  |
| 1999 08 22 | 703 | 0.3-  | 0.8+  | 2003 12 14 | 644 | 0.1+ | 0.2+ | 2006 07 25 | G96 | 0.2+  | 0.1+  |
| 1999 08 22 | 703 | 0.4+  | 0.0   | 2003 12 18 | 704 | 0.1+ | 0.3- | 2006 07 25 | G96 | 0.1-  | 0.0   |
| 1999 09 07 | 704 | 1.1-  | 1.1+  | 2003 12 18 | 704 | 0.0  | 0.2+ | 2006 07 25 | G96 | 0.3-  | 0.2+  |
| 1999 09 07 | 704 | 0.4+  | 0.5+  | 2003 12 18 | 704 | 0.2- | 0.1+ | 2006 07 25 | G96 | 0.1-  | 0.0   |
| 1999 09 07 | 704 | 0.1-  | 0.2-  | 2003 12 18 | 704 | 0.4- | 0.1- | 2006 08 29 | 704 | 0.6+  | 0.6+  |
| 2001 02 20 | 645 | 0.1+  | 0.1+  | 2003 12 22 | 704 | 0.3+ | 0.6- | 2006 08 29 | 704 | 0.4-  | 0.5+  |
| 2001 02 20 | 645 | 0.1+  | 0.1+  | 2003 12 22 | 704 | 0.2- | 1.2- | 2006 08 29 | 704 | (0.4+ | 1.7+) |
| 2003 10 05 | 704 | (1.6- | 0.1+) | 2003 12 22 | 704 | 0.5- | 0.3- | 2006 08 29 | 704 | 0.8+  | 1.5+  |
| 2003 10 05 | 704 | 0.5+  | 0.1+  | 2003 12 22 | 704 | 0.8- | 0.1- | 2006 08 29 | 704 | 0.2+  | 0.9+  |
| 2003 10 05 | 704 | (1.3+ | 1.7+) | 2003 12 24 | 704 | 0.5+ | 0.0  | 2006 10 22 | G96 | 0.2-  | 0.1-  |
| 2003 10 05 | 704 | 0.5+  | 0.0   | 2003 12 24 | 704 | 0.3- | 1.0+ | 2006 10 22 | G96 | 0.1+  | 0.0   |
| 2003 11 20 | 704 | 0.1-  | 0.2-  | 2003 12 24 | 704 | 0.2+ | 1.2+ | 2006 10 22 | G96 | 0.1-  | 0.3-  |
| 2003 11 20 | 704 | 0.3-  | 0.3-  | 2003 12 27 | 704 | 0.4+ | 0.2- | 2006 10 22 | G96 | 0.3-  | 0.2-  |
| 2003 11 20 | 704 | 0.4-  | 0.5-  | 2003 12 27 | 704 | 0.1- | 0.2- | 2006 11 17 | G96 | 0.3+  | 0.1+  |
| 2003 11 20 | 704 | 0.1-  | 0.4-  | 2003 12 27 | 704 | 0.5+ | 0.1- | 2006 11 17 | G96 | 0.3-  | 0.2-  |
| 2003 11 20 | 704 | 0.6-  | 0.0   | 2003 12 27 | 704 | 0.4+ | 0.2- | 2006 11 17 | G96 | 0.4-  | 0.2-  |
| 2003 11 24 | 704 | 0.6+  | 1.0+  | 2003 12 27 | 704 | 0.8+ | 0.4- | 2006 11 17 | G96 | 0.6-  | 0.4-  |
| 2003 11 24 | 704 | 0.3+  | 1.4+  | 2003 12 29 | 691 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.4-  | 0.2-  |
| 2003 11 24 | 704 | 0.5+  | 0.7+  | 2003 12 29 | 691 | 0.3- | 0.2+ | 2007 11 11 | G96 | 0.0   | 0.1-  |
| 2003 11 24 | 704 | 0.2+  | 0.3+  | 2003 12 29 | 691 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.2+  | 0.3-  |
| 2003 11 24 | 704 | 0.3-  | 0.9+  | 2004 01 17 | 644 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.0   | 0.4-  |
| 2003 11 29 | 691 | 0.0   | 0.1-  | 2004 01 17 | 644 | 0.1- | 0.1+ | 2007 12 05 | G96 | 0.6+  | 0.0   |
| 2003 11 29 | 691 | 0.1-  | 0.0   | 2004 01 17 | 644 | 0.1+ | 0.1+ | 2007 12 05 | G96 | 0.6+  | 0.2-  |
| 2003 11 29 | 691 | 0.1+  | 0.4-  | 2005 03 17 | G96 | 0.4- | 0.3+ | 2007 12 05 | G96 | 0.7+  | 0.2-  |
| 2003 12 04 | 704 | 0.4+  | 0.1+  | 2005 03 17 | G96 | 0.8- | 0.1+ | 2007 12 05 | G96 | 0.3+  | 0.1-  |
| 2003 12 04 | 704 | 0.0   | 0.5+  | 2005 03 17 | G96 | 0.1- | 0.4+ | 2007 12 14 | G96 | 0.1-  | 0.1-  |
| 2003 12 04 | 704 | 0.2+  | 1.4-  | 2005 03 17 | G96 | 0.3- | 0.2+ | 2007 12 14 | G96 | 0.1+  | 0.1+  |
| 2003 12 04 | 704 | 0.3+  | 0.6+  | 2006 06 19 | G96 | 0.0  | 0.5- | 2007 12 14 | G96 | 0.2-  | 0.0   |
| 2003 12 04 | 704 | 0.2-  | 0.4+  | 2006 06 19 | G96 | 0.5- | 0.1- | 2007 12 14 | G96 | 0.1-  | 0.1-  |

(172615)\* 2003 WB<sub>132</sub> = 2005 GD<sub>22</sub>Discovered 2003 Nov. 19 by Spacewatch at Kitt Peak.  
Id. A. Doppler (MPO 115781)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> | 307.54794  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.26869024 | $\omega$ | 71.30819 | -0.79007036 |      | -0.60601649 |   |
| <i>a</i> | 2.3784907  | $\Omega$ | 71.28548 | +0.51925859 |      | -0.74168236 |   |
| <i>e</i> | 0.0201016  | <i>i</i> | 5.59695  | +0.32582102 |      | -0.28749136 |   |
| <i>P</i> | 3.67       | <i>H</i> | 16.5     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 27 | 691 | 0.3+ | 0.4- | 2003 12 21 | 704 | 0.8- | 1.3- | 2005 07 11 | 291 | 0.2+ | 0.1- |
| 1992 11 27 | 691 | 0.5- | 0.6- | 2003 12 21 | 704 | 0.3+ | 1.3+ | 2005 07 12 | 291 | 0.1+ | 0.3+ |
| 1992 11 27 | 691 | 0.5+ | 0.2+ | 2003 12 21 | 704 | 0.4- | 1.4+ | 2005 07 12 | 291 | 0.2+ | 0.6+ |
| 2001 02 17 | 704 | 1.1- | 0.3+ | 2003 12 21 | 704 | 0.2+ | 0.8+ | 2005 07 12 | 291 | 0.1+ | 0.0  |
| 2001 02 17 | 704 | 0.2+ | 0.1+ | 2005 04 01 | 699 | 0.5- | 0.5- | 2006 08 24 | 644 | 0.5- | 0.5+ |
| 2001 02 17 | 704 | 0.3+ | 0.7+ | 2005 04 01 | 699 | 1.4- | 0.9+ | 2006 08 24 | 644 | 0.0  | 0.1+ |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2005 04 01 | 699 | 0.1+ | 0.9- | 2006 08 24 | 644 | 0.6- | 0.5+ |
| 2003 11 19 | 691 | 0.1- | 0.3+ | 2005 04 01 | 699 | 1.3- | 0.6+ | 2007 11 05 | G96 | 0.0  | 0.3- |
| 2003 11 19 | 691 | 0.2- | 0.0  | 2005 05 04 | 691 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.2- | 0.3- |
| 2003 11 23 | 704 | 0.3+ | 1.0- | 2005 05 04 | 691 | 0.1- | 0.2+ | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2003 11 23 | 704 | 0.6+ | 0.2+ | 2005 05 04 | 691 | 0.3+ | 0.2- | 2007 11 05 | G96 | 0.1+ | 0.5- |
| 2003 11 23 | 704 | 0.1- | 0.8+ | 2005 05 15 | 644 | 0.1+ | 0.0  | 2007 12 10 | 704 | 0.7- | 0.6+ |
| 2003 12 19 | 691 | 0.1- | 0.2+ | 2005 05 15 | 644 | 0.2- | 0.1+ | 2007 12 10 | 704 | 1.0+ | 0.4+ |
| 2003 12 19 | 691 | 0.0  | 0.1+ | 2005 05 15 | 644 | 0.3+ | 0.1- | 2007 12 10 | 704 | 0.2+ | 0.2- |
| 2003 12 19 | 691 | 0.0  | 0.1+ | 2005 07 11 | 291 | 0.3+ | 0.4- |            |     |      |      |
| 2003 12 21 | 704 | 0.2- | 0.3+ | 2005 07 11 | 291 | 0.5+ | 0.1+ |            |     |      |      |

(172616)\* 2003 WX<sub>137</sub> = 2000 AZ<sub>13</sub>

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 57377)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 10.43572   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.24431306 | $\omega$ | 330.87589 | +0.76534771 |      | -0.64216820 |   |
| <i>a</i> | 2.5341847  | $\Omega$ | 69.14294  | +0.59908872 |      | +0.68628401 |   |
| <i>e</i> | 0.2092077  | <i>i</i> | 2.64731   | +0.23523518 |      | +0.34151759 |   |
| <i>P</i> | 4.03       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 03 | 704 | 0.1+ | 0.3- | 2004 02 15 | 704 | 1.2-  | 0.3+  | 2007 11 14 | 691 | 0.0   | 0.1-  |
| 2000 01 03 | 704 | 0.2+ | 0.1+ | 2004 02 15 | 704 | 0.1+  | 0.1+  | 2007 11 14 | 691 | 0.2-  | 0.1+  |
| 2000 01 03 | 704 | 0.4- | 0.3- | 2005 03 12 | 691 | 0.2+  | 0.2-  | 2007 11 15 | 704 | 0.5+  | 0.3+  |
| 2000 01 03 | 704 | 0.0  | 0.0  | 2005 03 12 | 691 | 0.0   | 0.4+  | 2007 11 15 | 704 | (1.6+ | 0.3-) |
| 2000 01 03 | 704 | 0.6- | 1.1- | 2005 03 12 | 691 | 0.2-  | 0.3-  | 2007 11 15 | 704 | 1.3+  | 0.1+  |
| 2000 01 04 | 704 | 0.4- | 1.1- | 2005 05 12 | 691 | 0.4+  | 0.2+  | 2007 11 15 | 704 | 1.5+  | 0.2-  |
| 2000 01 04 | 704 | 0.2+ | 0.6- | 2005 05 12 | 691 | 0.4+  | 0.0   | 2007 11 15 | 704 | 1.4+  | 0.0   |
| 2000 01 04 | 704 | 0.0  | 0.9- | 2005 05 12 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 691 | 0.1-  | 0.0   |
| 2000 01 04 | 704 | 0.2- | 0.1+ | 2007 09 16 | 704 | 0.1-  | 0.1-  | 2007 11 18 | 691 | 0.3+  | 0.3+  |
| 2001 04 16 | 691 | 0.0  | 0.0  | 2007 09 16 | 704 | 0.6+  | 1.1-  | 2007 11 18 | 691 | (1.6+ | 0.9-) |
| 2001 04 16 | 691 | 0.2- | 0.2+ | 2007 09 16 | 704 | 0.3+  | 1.1-  | 2007 12 03 | 703 | 0.1+  | 0.3+  |
| 2001 04 16 | 691 | 0.1- | 0.4+ | 2007 09 16 | 704 | 0.1-  | 0.4-  | 2007 12 03 | 703 | 0.2-  | 0.4+  |
| 2003 11 21 | 704 | 0.7+ | 0.4+ | 2007 09 19 | 704 | 0.3+  | 0.9+  | 2007 12 03 | 703 | 0.7+  | 0.3+  |
| 2003 11 21 | 704 | 0.3+ | 0.5+ | 2007 09 19 | 704 | 0.0   | 0.4+  | 2007 12 03 | 703 | 0.1-  | 0.1+  |
| 2003 11 21 | 704 | 0.3+ | 0.2+ | 2007 09 19 | 704 | 0.7+  | 0.1+  | 2007 12 04 | G96 | 0.3+  | 0.2-  |
| 2003 11 21 | 704 | 0.4+ | 0.1+ | 2007 09 19 | 704 | 0.8-  | 0.6+  | 2007 12 04 | G96 | 0.2+  | 0.2-  |
| 2003 11 21 | 704 | 0.5+ | 0.7+ | 2007 10 06 | 704 | 0.9+  | 0.3-  | 2007 12 04 | G96 | 0.2+  | 0.4-  |
| 2003 11 23 | 704 | 0.3+ | 0.2- | 2007 10 06 | 704 | 0.5+  | 0.2+  | 2007 12 04 | G96 | 0.5+  | 0.3-  |
| 2003 11 23 | 704 | 0.2- | 0.0  | 2007 10 06 | 704 | 0.1+  | 0.6-  | 2007 12 05 | 704 | (0.8- | 1.5-) |
| 2003 11 23 | 704 | 0.3+ | 0.6+ | 2007 10 06 | 704 | 0.8-  | 0.2+  | 2007 12 05 | 704 | 0.5-  | 0.1-  |
| 2003 11 23 | 704 | 0.2+ | 0.7+ | 2007 10 11 | 704 | (1.9- | 0.0 ) | 2007 12 05 | 704 | 0.5-  | 0.2+  |
| 2003 11 23 | 704 | 0.2- | 0.4+ | 2007 10 11 | 704 | 0.1-  | 0.7+  | 2007 12 05 | 704 | 0.7-  | 0.1+  |
| 2003 12 18 | 704 | 0.1+ | 0.7- | 2007 10 11 | 704 | 0.1-  | 0.3+  | 2007 12 05 | 704 | 0.6-  | 0.7+  |
| 2003 12 18 | 704 | 0.1+ | 0.6- | 2007 10 11 | 704 | 0.0   | 0.6+  | 2007 12 10 | 704 | 0.1-  | 0.2+  |
| 2003 12 18 | 704 | 0.0  | 0.4- | 2007 10 11 | 704 | 0.0   | 1.5+  | 2007 12 10 | 704 | 0.2+  | 0.6+  |
| 2003 12 18 | 704 | 0.3+ | 0.1- | 2007 10 14 | 704 | 0.3-  | 1.1-  | 2007 12 10 | 704 | 0.2+  | 0.0   |
| 2003 12 18 | 704 | 0.4+ | 0.4- | 2007 10 14 | 704 | (0.4- | 2.2-) | 2007 12 10 | 704 | 0.1+  | 0.4+  |
| 2003 12 21 | 704 | 0.3- | 0.3- | 2007 10 14 | 704 | (0.0  | 1.6-) | 2007 12 14 | 704 | 0.3+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 704 | 0.5+ | 0.0  | 2007 10 14 | 704 | 0.5− | 0.9− | 2007 12 14 | 704 | 0.2+ | 0.2+ |
| 2003 12 21 | 704 | 0.2− | 0.1− | 2007 11 05 | 704 | 0.2− | 0.3+ | 2007 12 14 | 704 | 0.3− | 0.1+ |
| 2003 12 21 | 704 | 0.3+ | 0.2− | 2007 11 05 | 704 | 0.3− | 0.3+ | 2007 12 14 | 704 | 0.1+ | 0.2+ |
| 2003 12 24 | 704 | 0.2− | 1.2+ | 2007 11 05 | 704 | 0.3− | 0.7+ | 2007 12 14 | 704 | 0.5− | 0.7+ |
| 2003 12 24 | 704 | 0.5− | 0.8+ | 2007 11 05 | 704 | 0.8− | 0.2+ | 2007 12 15 | G96 | 0.2+ | 0.4− |
| 2003 12 24 | 704 | 0.9+ | 0.8+ | 2007 11 05 | 704 | 0.6− | 0.3+ | 2007 12 15 | G96 | 0.4+ | 0.3− |
| 2003 12 29 | 691 | 0.1− | 0.1− | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2003 12 29 | 691 | 0.0  | 0.2− | 2007 11 13 | 691 | 0.3− | 0.1− | 2007 12 15 | G96 | 0.4+ | 0.5− |
| 2003 12 29 | 691 | 0.2+ | 0.3− | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.1+ | 0.4− |
| 2004 01 16 | 644 | 0.1+ | 0.1− | 2007 11 14 | 691 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.1+ | 0.2− |
| 2004 01 16 | 644 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.3− | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.3− |
| 2004 01 16 | 644 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.5+ | 0.2− |
| 2004 02 15 | 704 | 0.2+ | 0.2+ | 2007 11 14 | 691 | 0.2− | 0.1+ |            |     |      |      |

**(172617)\* 2003 WG<sub>139</sub>**

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.24576590 | <i>ω</i> | 192.48107 | −0.13088750 | −0.97616225 |          |   |
| <i>a</i> | 2.5241876  | <i>Ω</i> | 265.22914 | +0.92387213 | −0.05674965 |          |   |
| <i>e</i> | 0.0539524  | <i>i</i> | 10.00516  | +0.35962306 | −0.20949162 |          |   |
| <i>P</i> | 4.01       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 31 | 691 | 0.0  | 0.0  | 2003 12 18 | 704 | 0.3+ | 0.0  | 2006 08 02 | 941 | 0.1+ | 0.1− |
| 1999 12 31 | 691 | 0.2− | 0.2− | 2003 12 21 | 704 | 0.3− | 0.3+ | 2006 08 02 | 941 | 0.1− | 0.1+ |
| 1999 12 31 | 691 | 0.9+ | 0.2− | 2003 12 21 | 704 | 0.7− | 0.1− | 2006 08 04 | 941 | 0.5+ | 0.5+ |
| 2002 08 04 | 644 | 0.2− | 0.3+ | 2003 12 21 | 704 | 0.5− | 0.3+ | 2006 08 04 | 941 | 0.0  | 0.2+ |
| 2002 08 04 | 644 | 0.2− | 0.2+ | 2003 12 25 | 691 | 0.4− | 0.4+ | 2006 08 04 | 941 | 0.1− | 0.2− |
| 2002 08 04 | 644 | 0.3− | 0.3+ | 2003 12 25 | 691 | 0.4− | 0.3+ | 2007 11 07 | 691 | 0.4− | 0.0  |
| 2002 08 15 | 644 | 0.3− | 0.3− | 2003 12 25 | 691 | 0.6− | 0.3+ | 2007 11 07 | 691 | 0.3− | 0.0  |
| 2002 08 15 | 644 | 0.5− | 0.1+ | 2004 01 21 | 704 | 0.4− | 1.1+ | 2007 11 07 | 691 | 0.2− | 0.1+ |
| 2002 08 15 | 644 | 0.1− | 0.1− | 2004 01 21 | 704 | 0.7+ | 0.4− | 2007 12 06 | G96 | 0.2+ | 0.0  |
| 2002 08 25 | 644 | 0.1− | 0.2+ | 2004 01 21 | 704 | 0.4− | 0.2− | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2002 08 25 | 644 | 0.2− | 0.4+ | 2004 01 21 | 704 | 0.9− | 1.0+ | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2002 08 25 | 644 | 0.1+ | 0.2+ | 2005 05 12 | 644 | 0.0  | 0.2+ | 2007 12 06 | G96 | 0.2+ | 0.2− |
| 2003 11 21 | 704 | 1.0+ | 1.0+ | 2005 05 12 | 644 | 0.0  | 0.3+ | 2007 12 10 | 704 | 0.7+ | 0.5+ |
| 2003 11 21 | 704 | 1.0+ | 0.3− | 2005 05 12 | 644 | 0.1+ | 0.5+ | 2007 12 10 | 704 | 0.5+ | 0.2+ |
| 2003 11 21 | 704 | 0.4+ | 0.9+ | 2005 05 12 | 644 | 0.0  | 0.0  | 2007 12 10 | 704 | 0.4+ | 0.4+ |
| 2003 11 23 | 704 | 0.3+ | 0.6− | 2005 05 12 | 644 | 0.2+ | 0.5+ | 2007 12 14 | 704 | 0.2+ | 0.8+ |
| 2003 11 23 | 704 | 0.3− | 0.2− | 2005 05 12 | 644 | 1.0+ | 0.3+ | 2007 12 14 | 704 | 0.6+ | 1.7+ |
| 2003 11 23 | 704 | 0.8+ | 0.2− | 2005 05 16 | 644 | 0.1− | 0.1+ | 2007 12 14 | 704 | 0.0  | 0.1− |
| 2003 12 18 | 704 | 0.1− | 0.5− | 2005 05 16 | 644 | 0.3− | 0.1+ | 2007 12 14 | 704 | 1.0+ | 0.1+ |
| 2003 12 18 | 704 | 0.2− | 0.2+ | 2005 05 16 | 644 | 0.1− | 0.8+ | 2007 12 15 | 691 | 0.2− | 0.1− |
| 2003 12 18 | 704 | 0.2− | 0.0  | 2006 08 02 | 941 | 0.1+ | 0.3+ | 2007 12 15 | 691 | 0.1− | 0.1− |
| 2003 12 18 | 704 | 0.2− | 0.5+ | 2006 08 02 | 941 | 0.2+ | 0.3+ | 2007 12 15 | 691 | 0.6+ | 1.2− |

**(172618)\* 2003 WH<sub>139</sub> = 1994 XO<sub>3</sub>**

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 86171)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.22432119 | <i>ω</i> | 273.53815 | +0.92720592 | +0.26826060 |          |   |
| <i>a</i> | 2.6825996  | <i>Ω</i> | 71.03624  | −0.12271264 | +0.87692956 |          |   |
| <i>e</i> | 0.0969678  | <i>i</i> | 16.04503  | −0.35387963 | +0.39878666 |          |   |
| <i>P</i> | 4.39       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 12 02 | 691 | 0.3− | 0.4− | 2003 12 21 | 704 | 1.1+ | 0.4+ | 2007 10 19 | 704 | 0.8+ | 0.5− |
| 1994 12 02 | 691 | 0.3− | 0.3− | 2003 12 21 | 704 | 0.2− | 0.2+ | 2007 10 19 | 703 | 0.5+ | 0.3− |
| 1994 12 02 | 691 | 0.2+ | 0.0  | 2003 12 21 | 704 | 0.0  | 0.4+ | 2007 10 19 | 703 | 0.4+ | 0.3+ |
| 1994 12 03 | 691 | 0.2+ | 0.1− | 2003 12 22 | 704 | 0.8+ | 1.0+ | 2007 10 19 | 703 | 0.2− | 0.4+ |
| 1994 12 03 | 691 | 0.4+ | 0.1+ | 2003 12 22 | 704 | 0.5+ | 0.2− | 2007 10 31 | 703 | 0.3− | 0.1− |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 12 03 | 691 | 0.2+ | 0.1− | 2003 12 22 | 704 | 0.8+  | 0.4+  | 2007 10 31 | 703 | 0.3+ | 0.7+ |
| 2001 05 23 | 699 | 0.5+ | 0.4+ | 2003 12 22 | 704 | (0.3− | 2.5+) | 2007 10 31 | 703 | 0.1+ | 0.4− |
| 2001 05 23 | 699 | 0.7+ | 1.4+ | 2003 12 22 | 704 | 1.3+  | 0.4+  | 2007 10 31 | 703 | 0.1− | 0.1+ |
| 2001 05 23 | 699 | 0.4+ | 0.3+ | 2003 12 27 | 704 | 1.0−  | 0.3−  | 2007 11 07 | 703 | 0.4− | 0.7+ |
| 2001 05 23 | 699 | 0.3− | 0.3+ | 2003 12 27 | 704 | 0.5−  | 0.4+  | 2007 11 07 | 703 | 0.5− | 0.7+ |
| 2003 11 21 | 704 | 1.0− | 0.4− | 2003 12 27 | 704 | 0.2−  | 0.1+  | 2007 11 07 | 703 | 1.3+ | 0.3+ |
| 2003 11 21 | 704 | 0.7− | 0.1− | 2003 12 27 | 704 | 0.2−  | 0.4+  | 2007 11 07 | 703 | 0.3− | 0.7− |
| 2003 11 21 | 704 | 1.3− | 0.7− | 2003 12 27 | 704 | 0.4−  | 0.3+  | 2007 11 15 | 703 | 0.0  | 0.1− |
| 2003 11 21 | 704 | 1.0− | 0.0  | 2007 10 08 | 699 | 0.3+  | 1.0+  | 2007 11 15 | 703 | 0.1− | 0.8+ |
| 2003 11 23 | 704 | 0.9− | 0.4+ | 2007 10 08 | 699 | 0.1+  | 0.8−  | 2007 11 15 | 703 | 0.7− | 0.2− |
| 2003 11 23 | 704 | 0.4+ | 0.9− | 2007 10 08 | 699 | 1.0−  | 0.2+  | 2007 11 15 | 703 | 0.3− | 0.2− |
| 2003 11 23 | 704 | 0.2+ | 0.9− | 2007 10 08 | 699 | 0.4+  | 0.3−  | 2007 11 29 | 704 | 0.1+ | 0.2+ |
| 2003 12 04 | 704 | 0.4+ | 0.9+ | 2007 10 10 | 703 | 0.4−  | 0.3+  | 2007 11 29 | 704 | 0.2− | 0.9+ |
| 2003 12 04 | 704 | 0.9− | 1.5+ | 2007 10 10 | 703 | 1.1−  | 0.2+  | 2007 11 29 | 704 | 0.5+ | 0.7+ |
| 2003 12 04 | 704 | 0.6− | 0.5+ | 2007 10 10 | 703 | 0.3−  | 0.1−  | 2007 12 06 | 703 | 0.0  | 0.2− |
| 2003 12 18 | 704 | 0.6+ | 0.2− | 2007 10 10 | 703 | 0.5−  | 0.2+  | 2007 12 06 | 703 | 0.2− | 1.3− |
| 2003 12 18 | 704 | 0.7+ | 0.5− | 2007 10 19 | 704 | 0.5−  | 0.7+  | 2007 12 06 | 703 | 0.4− | 0.4− |
| 2003 12 18 | 704 | 0.1+ | 0.7− | 2007 10 19 | 704 | 0.1−  | 0.5+  | 2007 12 06 | 703 | 1.0+ | 0.1+ |
| 2003 12 21 | 704 | 1.3+ | 0.2+ | 2007 10 19 | 704 | 0.7−  | 0.0   |            |     |      |      |

**(172619)\* 2003 WO<sub>139</sub>**

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.23887860 | <i>ω</i> | 341.63504 | +0.85370786 | −0.51829949 |          |   |
| <i>a</i> | 2.5724754  | <i>Ω</i> | 49.68965  | +0.48569442 | +0.75751670 |          |   |
| <i>e</i> | 0.1574841  | <i>i</i> | 3.79591   | +0.18783989 | +0.39690565 |          |   |
| <i>P</i> | 4.13       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 01 30 | 691 | 0.2−  | 0.2−  | 2003 12 27 | 704 | 0.4−  | 0.1−  | 2007 11 06 | D29 | 0.4+ | 0.6− |
| 1992 01 30 | 691 | 0.1+  | 0.6−  | 2003 12 27 | 704 | 0.1−  | 0.3+  | 2007 11 06 | D29 | 0.2− | 0.1+ |
| 1992 01 30 | 691 | 0.2−  | 0.4−  | 2003 12 27 | 704 | 0.0   | 0.1+  | 2007 11 06 | D29 | 0.4− | 0.6− |
| 2000 01 04 | 704 | 0.3+  | 1.1−  | 2003 12 27 | 704 | 0.2−  | 0.3+  | 2007 11 06 | D29 | 0.0  | 0.1− |
| 2000 01 04 | 704 | 0.3+  | 1.7−  | 2003 12 29 | 704 | 0.4+  | 0.3+  | 2007 11 06 | D29 | 0.6+ | 0.7− |
| 2000 01 04 | 704 | 1.1−  | 1.1−  | 2003 12 29 | 704 | 0.7−  | 0.0   | 2007 11 06 | D29 | 0.0  | 0.2− |
| 2000 01 04 | 704 | 0.5+  | 0.5+  | 2003 12 29 | 704 | 0.9+  | 0.8+  | 2007 11 07 | 691 | 0.3− | 0.1+ |
| 2000 01 04 | 704 | 0.7−  | 1.2−  | 2003 12 29 | 704 | 0.6+  | 0.3+  | 2007 11 07 | 691 | 0.4− | 0.0  |
| 2003 11 21 | 704 | 0.9+  | 0.4+  | 2005 03 10 | 691 | 0.3−  | 0.4+  | 2007 11 07 | 691 | 0.3− | 0.0  |
| 2003 11 21 | 704 | 0.5+  | 0.4+  | 2005 03 10 | 691 | 0.0   | 0.4+  | 2007 11 07 | 704 | 0.0  | 0.1− |
| 2003 11 21 | 704 | 0.7+  | 0.9+  | 2005 03 10 | 691 | 0.3−  | 0.5+  | 2007 11 07 | 704 | 0.6+ | 0.3+ |
| 2003 11 21 | 704 | 0.2−  | 0.7+  | 2005 03 11 | 691 | 0.7+  | 0.0   | 2007 11 07 | 704 | 0.5+ | 0.3+ |
| 2003 11 23 | 704 | 0.8−  | 0.2−  | 2005 03 11 | 691 | 0.5+  | 0.1+  | 2007 11 07 | 704 | 0.4+ | 0.1+ |
| 2003 11 23 | 704 | 0.2−  | 0.3−  | 2005 03 11 | 691 | 0.4+  | 0.4+  | 2007 11 07 | 704 | 0.1+ | 0.4+ |
| 2003 11 23 | 704 | 0.7−  | 0.2−  | 2005 05 12 | G96 | 0.2+  | 0.1−  | 2007 11 13 | 699 | 0.4+ | 0.5− |
| 2003 11 23 | 704 | 0.9−  | 0.8+  | 2005 05 12 | G96 | 0.1−  | 0.0   | 2007 11 13 | 699 | 0.4+ | 0.6+ |
| 2003 12 04 | 704 | 0.1−  | 0.5+  | 2005 05 12 | G96 | 0.2−  | 0.1+  | 2007 11 13 | 699 | 0.3+ | 1.1− |
| 2003 12 04 | 704 | 0.7+  | 0.5−  | 2005 05 12 | G96 | 0.3−  | 0.1+  | 2007 11 13 | 699 | 0.4− | 0.4− |
| 2003 12 04 | 704 | 1.3+  | 0.4+  | 2007 09 08 | 703 | 0.8+  | 0.8+  | 2007 11 14 | 691 | 0.4− | 0.1− |
| 2003 12 04 | 704 | 0.6−  | 0.0   | 2007 09 08 | 703 | (0.0  | 1.8+) | 2007 11 14 | 691 | 0.7− | 0.4− |
| 2003 12 04 | 704 | 0.8+  | 0.3−  | 2007 09 08 | 703 | (1.7+ | 0.1−) | 2007 11 14 | 691 | 0.5− | 0.1− |
| 2003 12 18 | 704 | 1.0+  | 0.7−  | 2007 09 08 | 703 | (1.9+ | 0.9+) | 2007 11 15 | 704 | 0.9+ | 0.5+ |
| 2003 12 18 | 704 | 0.0   | 0.3−  | 2007 09 10 | G96 | 0.4+  | 0.0   | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 2003 12 18 | 704 | 0.5−  | 0.8+  | 2007 09 10 | G96 | 0.2−  | 0.0   | 2007 11 15 | 704 | 0.0  | 0.1+ |
| 2003 12 18 | 704 | 0.3−  | 0.2−  | 2007 09 10 | G96 | 0.0   | 0.0   | 2007 11 15 | 704 | 0.4+ | 0.1− |
| 2003 12 18 | 704 | 0.7−  | 0.7+  | 2007 09 10 | G96 | 0.0   | 0.1−  | 2007 11 15 | 704 | 0.2+ | 0.4+ |
| 2003 12 19 | 704 | 0.0   | 0.5−  | 2007 09 13 | 704 | (0.6− | 2.5+) | 2007 11 16 | 704 | 0.5+ | 0.2− |
| 2003 12 19 | 704 | 0.2+  | 0.6+  | 2007 09 13 | 704 | 0.5+  | 0.1+  | 2007 11 16 | 704 | 0.1+ | 0.1− |
| 2003 12 19 | 704 | 0.1+  | 0.1+  | 2007 09 13 | 704 | 1.3−  | 0.7+  | 2007 11 16 | 704 | 0.1+ | 0.5− |
| 2003 12 19 | 704 | 0.4+  | 0.1−  | 2007 09 13 | 704 | 0.5−  | 0.9+  | 2007 11 16 | 704 | 0.5+ | 0.4− |
| 2003 12 21 | 704 | (0.3+ | 1.9+) | 2007 09 19 | 704 | 0.1+  | 0.8+  | 2007 12 03 | 703 | 0.0  | 0.1− |
| 2003 12 21 | 704 | (0.3+ | 1.6+) | 2007 09 19 | 704 | 0.3−  | 0.2−  | 2007 12 03 | 703 | 0.2+ | 0.3− |
| 2003 12 21 | 704 | (0.7+ | 2.2+) | 2007 09 19 | 704 | 0.3+  | 0.2+  | 2007 12 03 | 703 | 0.8+ | 0.2+ |
| 2003 12 21 | 704 | (0.4+ | 2.0+) | 2007 10 23 | 704 | 0.8−  | 0.9+  | 2007 12 03 | 703 | 0.2− | 0.4+ |
| 2003 12 22 | 704 | (1.6− | 1.8+) | 2007 10 23 | 704 | (0.2+ | 2.1+) | 2007 12 10 | 704 | 0.1− | 0.1− |
| 2003 12 22 | 704 | (1.0− | 2.1+) | 2007 10 23 | 704 | (0.1− | 1.7+) | 2007 12 10 | 704 | 2.8+ | 0.7+ |

2007 DEC. 24

M.P.O. 129429

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 704 | 0.9+ | 1.3+ | 2007 10 23 | 704 | 0.4- | 1.4+ | 2007 12 10 | 704 | 0.4- | 0.4+ |
| 2003 12 22 | 704 | 0.1+ | 0.7+ | 2007 10 23 | 704 | 0.6- | 0.8- | 2007 12 10 | 704 | 0.5+ | 0.1- |
| 2003 12 22 | 704 | 0.1- | 0.9+ | 2007 11 05 | 704 | 0.2- | 0.0  | 2007 12 14 | 704 | 0.3+ | 0.0  |
| 2003 12 27 | 704 | 0.0  | 0.3- | 2007 11 05 | 704 | 0.1- | 0.1+ | 2007 12 14 | 704 | 0.5+ | 0.1+ |
| 2003 12 27 | 704 | 0.8- | 0.1+ | 2007 11 05 | 704 | 0.6- | 0.2- | 2007 12 14 | 704 | 0.2+ | 0.4+ |
| 2003 12 27 | 704 | 0.1- | 0.3+ | 2007 11 05 | 704 | 1.0- | 0.1+ | 2007 12 14 | 704 | 0.4+ | 0.5- |
| 2003 12 27 | 704 | 1.0- | 0.2- | 2007 11 05 | 704 | 0.0  | 0.2+ | 2007 12 14 | 704 | 1.6+ | 0.3+ |
| 2003 12 27 | 704 | 0.4- | 0.8+ | 2007 11 06 | D29 | 0.5+ | 0.6- |            |     |      |      |
| 2003 12 27 | 704 | 0.3- | 0.1+ | 2007 11 06 | D29 | 0.0  | 0.2+ |            |     |      |      |

(172620)\* 2003 WD<sub>140</sub>

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.23288393 | $\omega$ | 298.58592 | +0.89378141 | +0.44805713 |          |   |
| <i>a</i>                                | 2.6164335  | $\Omega$ | 34.80572  | -0.39829233 | +0.81342389 |          |   |
| <i>e</i>                                | 0.1605398  | <i>i</i> | 2.00699   | -0.20619896 | +0.37092640 |          |   |
| <i>P</i>                                | 4.23       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 20 | 645 | 0.1+  | 0.1+  | 2007 10 06 | 691 | 0.3- | 0.2+ | 2007 10 30 | 703 | (0.8+ | 1.6+) |
| 2001 02 20 | 645 | 0.1+  | 0.2+  | 2007 10 06 | 691 | 0.1- | 0.1+ | 2007 10 30 | 703 | 1.1+  | 0.6+  |
| 2003 11 21 | 704 | 1.1+  | 0.3-  | 2007 10 08 | 704 | 0.0  | 0.2- | 2007 10 31 | G96 | 0.4+  | 0.1-  |
| 2003 11 21 | 704 | (1.9+ | 0.4+) | 2007 10 08 | 704 | 0.6- | 0.4+ | 2007 10 31 | G96 | 0.4+  | 0.2-  |
| 2003 11 21 | 704 | 0.4+  | 1.0+  | 2007 10 08 | 704 | 0.5+ | 0.3- | 2007 10 31 | G96 | 0.1-  | 0.3-  |
| 2003 11 21 | 704 | 1.1+  | 0.7+  | 2007 10 08 | 704 | 0.0  | 0.7+ | 2007 10 31 | G96 | 0.5+  | 0.3-  |
| 2003 11 23 | 704 | 0.1+  | 0.3+  | 2007 10 10 | 691 | 0.2- | 0.1- | 2007 11 02 | G96 | 0.2+  | 0.1-  |
| 2003 11 23 | 704 | 0.9-  | 0.2-  | 2007 10 10 | 691 | 0.1- | 0.3+ | 2007 11 02 | G96 | 0.2+  | 0.3-  |
| 2003 11 23 | 704 | 1.1-  | 0.6+  | 2007 10 10 | 691 | 0.0  | 0.3+ | 2007 11 02 | G96 | 0.2+  | 0.1-  |
| 2003 12 14 | 691 | 0.2+  | 0.2-  | 2007 10 11 | 704 | 0.7- | 0.6+ | 2007 11 02 | G96 | 0.1+  | 0.3-  |
| 2003 12 14 | 691 | 0.3+  | 0.2-  | 2007 10 11 | 704 | 0.5- | 0.5+ | 2007 11 03 | 699 | 0.4+  | 0.0   |
| 2003 12 14 | 691 | 0.1+  | 0.4-  | 2007 10 11 | 704 | 0.3- | 0.2+ | 2007 11 03 | 699 | 0.0   | 0.2+  |
| 2003 12 22 | 704 | 1.0+  | 0.3-  | 2007 10 11 | 704 | 0.2- | 0.5+ | 2007 11 03 | 699 | 0.0   | 0.3-  |
| 2003 12 22 | 704 | 0.2-  | 0.1+  | 2007 10 11 | 704 | 0.3- | 0.8+ | 2007 11 03 | 699 | 0.3-  | 0.4+  |
| 2003 12 22 | 704 | 0.8+  | 0.4+  | 2007 10 14 | 704 | 0.0  | 0.7+ | 2007 11 04 | G96 | 0.1+  | 0.6-  |
| 2003 12 27 | 691 | 0.5-  | 0.5-  | 2007 10 14 | 704 | 0.6- | 0.5+ | 2007 11 04 | G96 | 0.0   | 0.7-  |
| 2003 12 27 | 691 | 0.5-  | 0.6-  | 2007 10 14 | 704 | 0.2+ | 0.8+ | 2007 11 04 | G96 | 0.2+  | 0.7-  |
| 2003 12 27 | 691 | 0.0   | 0.1-  | 2007 10 14 | 704 | 0.3- | 1.1+ | 2007 11 04 | G96 | 0.1-  | 0.5-  |
| 2005 03 16 | G96 | 0.0   | 0.4+  | 2007 10 14 | 704 | 0.4+ | 0.4+ | 2007 11 06 | 704 | 0.8+  | 0.0   |
| 2005 03 16 | G96 | 0.2-  | 0.1-  | 2007 10 14 | 691 | 0.5- | 0.0  | 2007 11 06 | 704 | 0.3+  | 0.3+  |
| 2005 03 16 | G96 | 0.2+  | 0.3+  | 2007 10 14 | 691 | 0.2- | 0.1- | 2007 11 06 | 704 | 1.1+  | 0.1-  |
| 2005 03 16 | G96 | 0.2+  | 0.0   | 2007 10 14 | 691 | 0.2- | 0.3- | 2007 11 06 | 704 | 1.2+  | 0.0   |
| 2005 04 04 | G96 | 0.1-  | 0.1+  | 2007 10 15 | 703 | 0.1+ | 0.1+ | 2007 11 13 | 699 | 0.0   | 0.8-  |
| 2005 04 04 | G96 | 0.0   | 0.0   | 2007 10 15 | 703 | 0.2- | 0.2- | 2007 11 13 | 699 | 0.5-  | 0.6-  |
| 2005 04 04 | G96 | 0.2+  | 0.3+  | 2007 10 15 | 703 | 0.2+ | 0.3+ | 2007 11 13 | 699 | 1.5-  | 0.4-  |
| 2005 04 04 | G96 | 0.2+  | 0.0   | 2007 10 15 | 703 | 1.1+ | 0.6+ | 2007 11 13 | 699 | 0.7-  | 1.4-  |
| 2006 05 20 | E12 | 0.2+  | 0.7+  | 2007 10 18 | 691 | 0.1- | 0.1+ | 2007 11 15 | 704 | 0.3+  | 0.1-  |
| 2006 05 20 | E12 | 0.1+  | 0.3+  | 2007 10 18 | 691 | 0.2- | 0.1+ | 2007 11 15 | 704 | 0.6+  | 0.6+  |
| 2006 05 20 | E12 | 0.1+  | 0.3+  | 2007 10 18 | 691 | 0.2- | 0.0  | 2007 11 15 | 704 | 0.7-  | 0.4-  |
| 2006 05 20 | E12 | 0.0   | 0.3-  | 2007 10 20 | 703 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 0.5+  | 0.4+  |
| 2006 05 23 | G96 | 0.1-  | 0.0   | 2007 10 20 | 703 | 0.5- | 0.2+ | 2007 11 15 | 704 | 0.0   | 0.1+  |
| 2006 05 23 | G96 | 0.1-  | 0.2+  | 2007 10 20 | 703 | 0.2- | 1.3+ | 2007 11 17 | 703 | 0.7-  | 0.1-  |
| 2006 05 23 | G96 | 0.2-  | 0.0   | 2007 10 20 | 703 | 0.2+ | 0.7+ | 2007 11 17 | 703 | 0.2+  | 0.1-  |
| 2007 10 06 | 704 | 0.3-  | 1.0+  | 2007 10 30 | 703 | 0.6+ | 0.4- | 2007 11 17 | 703 | 0.6+  | 0.2-  |
| 2007 10 06 | 704 | 0.3+  | 0.8+  | 2007 10 30 | 703 | 0.1- | 0.4- | 2007 11 17 | 703 | 0.1-  | 0.0   |
| 2007 10 06 | 704 | 0.4-  | 0.3+  | 2007 10 30 | 703 | 0.2- | 0.4- | 2007 12 05 | G96 | 0.4+  | 0.2-  |
| 2007 10 06 | 704 | 0.1-  | 1.0+  | 2007 10 30 | 703 | 0.0  | 0.1- | 2007 12 05 | G96 | 0.2+  | 0.2-  |
| 2007 10 06 | 704 | 0.6+  | 1.3+  | 2007 10 30 | 703 | 0.6+ | 0.8+ | 2007 12 05 | G96 | 0.2+  | 0.2-  |
| 2007 10 06 | 691 | 0.1-  | 0.1+  | 2007 10 30 | 703 | 1.4+ | 0.4+ | 2007 12 05 | G96 | 0.2+  | 0.2-  |

(172621)\* 2003 WO<sub>141</sub>

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.24156365 | $\omega$ | 216.64435 | -0.42031717 | -0.87513957 |          |   |
| <i>a</i>                                | 2.5533773  | $\Omega$ | 259.33421 | +0.87962846 | -0.32815202 |          |   |
| <i>e</i>                                | 0.0704477  | <i>i</i> | 14.11868  | +0.22268195 | -0.35559385 |          |   |
| <i>P</i>                                | 4.08       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 14 | 704 | 0.4-  | 0.0   | 2003 12 19 | 704 | 0.4+ | 0.4- | 2005 05 12 | 644 | 0.0  | 0.1+ |
| 1999 12 14 | 704 | 0.6-  | 0.2+  | 2003 12 19 | 704 | 0.5+ | 0.2- | 2006 08 22 | 644 | 0.3- | 0.3- |
| 1999 12 14 | 704 | 0.4-  | 1.5+  | 2003 12 19 | 704 | 0.1- | 0.1+ | 2006 08 22 | 644 | 0.1+ | 0.2+ |
| 2000 01 07 | 704 | 0.4-  | 0.3-  | 2003 12 19 | 704 | 0.0  | 0.2- | 2006 08 22 | 644 | 0.4- | 0.2- |
| 2000 01 07 | 704 | 0.1-  | 0.4+  | 2003 12 19 | 704 | 0.3- | 0.3- | 2006 08 27 | 691 | 0.2- | 0.2- |
| 2000 01 07 | 704 | 0.6+  | 0.0   | 2003 12 22 | 704 | 0.9+ | 0.1- | 2006 08 27 | 691 | 0.0  | 0.2- |
| 2002 09 03 | 644 | 0.7-  | 0.7+  | 2003 12 22 | 704 | 0.5+ | 0.2+ | 2006 08 27 | 691 | 0.2+ | 0.2- |
| 2002 09 03 | 644 | 0.4-  | 0.8+  | 2003 12 22 | 704 | 1.1+ | 0.1- | 2006 08 29 | 691 | 0.2- | 0.1- |
| 2002 09 03 | 644 | 0.5-  | 1.2+  | 2003 12 22 | 704 | 0.4- | 0.8- | 2006 08 29 | 691 | 0.1- | 0.0  |
| 2002 09 10 | 644 | 0.4-  | 1.1+  | 2003 12 22 | 704 | 0.8+ | 0.1+ | 2006 08 29 | 691 | 1.0+ | 0.0  |
| 2002 09 10 | 644 | 0.4-  | 1.1+  | 2005 05 11 | 644 | 0.2+ | 0.6+ | 2007 12 05 | 704 | 0.9- | 1.4+ |
| 2002 09 10 | 644 | 0.8-  | 1.0+  | 2005 05 11 | 644 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 1.2- | 0.8+ |
| 2003 11 21 | 704 | 0.1-  | 0.4+  | 2005 05 11 | 644 | 0.5- | 0.4+ | 2007 12 05 | 704 | 1.7+ | 0.5+ |
| 2003 11 21 | 704 | (0.4- | 1.7+) | 2005 05 12 | 644 | 0.2+ | 0.4+ | 2007 12 05 | 704 | 0.7+ | 0.6+ |
| 2003 11 21 | 704 | 0.4+  | 0.7+  | 2005 05 12 | 644 | 0.1+ | 0.4+ | 2007 12 05 | 704 | 0.1+ | 0.1- |
| 2003 11 23 | 704 | 0.7+  | 0.2+  | 2005 05 12 | 644 | 0.4+ | 0.3+ | 2007 12 15 | 691 | 0.8- | 0.7- |
| 2003 11 23 | 704 | 0.1-  | 0.9+  | 2005 05 12 | 644 | 0.2- | 0.9+ | 2007 12 15 | 691 | 0.0  | 0.0  |
| 2003 11 23 | 704 | (1.6- | 1.3+) | 2005 05 12 | 644 | 0.1- | 0.5+ | 2007 12 15 | 691 | 0.1+ | 0.2+ |

(172622)\* 2003 WY<sub>144</sub> = 2005 JZ<sub>112</sub>

Discovered 2003 Nov. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 76255)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.23705300 | $\omega$ | 263.50742 | -0.75338213 | -0.65534254 |          |   |
| <i>a</i>                                | 2.5856660  | $\Omega$ | 235.53163 | +0.62633266 | -0.69001088 |          |   |
| <i>e</i>                                | 0.0796391  | <i>i</i> | 3.77193   | +0.20030666 | -0.30726396 |          |   |
| <i>P</i>                                | 4.16       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 1999 12 07 | 704 | (0.7- 2.4-) | 2005 03 14 | G96 | 0.2- 0.2- | 2007 10 08 | 691 | 0.5+ 0.3+ |
| 1999 12 07 | 704 | 0.7- 1.5-   | 2005 03 14 | G96 | 0.5- 0.2+ | 2007 10 12 | 691 | 0.2- 0.2- |
| 1999 12 07 | 704 | 0.2- 1.0-   | 2005 04 03 | 644 | 0.2+ 0.3+ | 2007 10 12 | 691 | 0.0 0.2+  |
| 1999 12 07 | 704 | 1.4+ 1.8+   | 2005 04 03 | 644 | 0.6+ 0.3+ | 2007 10 12 | 691 | 0.1- 0.3+ |
| 2001 04 30 | 691 | 0.1- 0.1-   | 2005 04 03 | 644 | 0.7+ 0.6+ | 2007 10 16 | 691 | 0.5- 0.4+ |
| 2001 04 30 | 691 | 0.2- 0.8+   | 2005 04 30 | 691 | 0.3+ 0.2+ | 2007 10 16 | 691 | 0.1- 0.1+ |
| 2001 04 30 | 691 | 0.1+ 0.7+   | 2005 04 30 | 691 | 0.2- 0.1+ | 2007 10 16 | 691 | 0.2- 0.2+ |
| 2003 11 21 | 704 | 0.9+ 0.1+   | 2005 04 30 | 691 | 0.0 0.0   | 2007 10 21 | 691 | 1.1- 0.3- |
| 2003 11 21 | 704 | (0.3+ 2.7+) | 2005 05 10 | 691 | 0.5+ 0.2+ | 2007 10 21 | 691 | 0.3+ 0.3- |
| 2003 11 21 | 704 | (1.5- 1.1+) | 2005 05 10 | 691 | 0.5+ 0.4+ | 2007 10 21 | 691 | 0.1+ 0.8+ |
| 2003 11 21 | 704 | 0.2+ 1.1+   | 2005 05 10 | 691 | 0.2+ 0.2+ | 2007 10 31 | G96 | 0.6+ 0.1- |
| 2003 11 24 | 699 | 1.1- 0.4+   | 2005 05 14 | G96 | 0.3- 0.0  | 2007 10 31 | G96 | 0.9+ 0.1+ |
| 2003 11 24 | 699 | (0.0 1.9+)  | 2005 05 14 | G96 | 0.1- 0.1- | 2007 10 31 | G96 | 0.6+ 0.3+ |
| 2003 11 24 | 699 | 0.0 0.3-    | 2005 05 14 | G96 | 0.1- 0.1+ | 2007 10 31 | G96 | 0.4+ 0.0  |
| 2003 11 24 | 699 | 0.3- 0.1+   | 2005 05 14 | G96 | 0.1- 0.1+ | 2007 11 15 | 704 | 0.1+ 0.2- |
| 2003 11 30 | 691 | 0.3- 0.1+   | 2006 06 19 | 691 | 0.2+ 0.2+ | 2007 11 15 | 704 | 0.0 0.7+  |
| 2003 11 30 | 691 | 0.0 0.1+    | 2006 06 19 | 691 | 0.0 0.6+  | 2007 11 15 | 704 | 1.2- 0.3+ |
| 2003 11 30 | 691 | 0.1- 0.2+   | 2006 06 19 | 691 | 0.0 0.2+  | 2007 12 15 | G96 | 0.7+ 0.1+ |
| 2003 12 18 | 691 | 0.4+ 0.0    | 2007 10 04 | 691 | 0.1- 0.2+ | 2007 12 15 | G96 | 1.0+ 0.1- |
| 2003 12 18 | 691 | 0.2+ 0.2+   | 2007 10 04 | 691 | 0.0 0.1-  | 2007 12 15 | G96 | 0.3+ 0.4- |
| 2003 12 18 | 691 | 0.2+ 0.1+   | 2007 10 04 | 691 | 1.0- 0.2+ | 2007 12 15 | G96 | 0.1+ 0.4- |
| 2005 03 14 | G96 | 0.5- 0.0    | 2007 10 08 | 691 | 0.0 0.1+  |            |     |           |
| 2005 03 14 | G96 | 0.2- 0.1-   | 2007 10 08 | 691 | 0.3+ 0.2+ |            |     |           |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 195.93093  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28036913 | $\omega$ | 15.42440  | -0.20744069 | +0.97769407 |
| <i>a</i> | 2.3119721  | $\Omega$ | 242.61269 | -0.90139956 | -0.20410447 |
| <i>e</i> | 0.0676910  | <i>i</i> | 2.12371   | -0.38006209 | -0.04955467 |
| <i>P</i> | 3.52       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 06 | 704 | 0.8-  | 0.3-  | 2003 12 21 | 291 | 1.2+  | 0.1-  | 2006 08 29 | 691 | 0.4-  | 0.4+  |
| 1999 10 06 | 704 | 0.4-  | 0.0   | 2003 12 21 | 291 | 0.1-  | 0.1+  | 2006 08 29 | 691 | 0.2-  | 0.3+  |
| 1999 10 06 | 704 | 1.3-  | 0.4+  | 2005 03 04 | 703 | 0.2-  | 0.2-  | 2006 08 29 | 691 | 0.1+  | 0.8-  |
| 1999 10 06 | 704 | 0.4+  | 0.4-  | 2005 03 04 | 703 | 0.9+  | 0.3-  | 2006 09 17 | 703 | (0.2- | 2.4+) |
| 1999 10 06 | 704 | 0.9-  | 0.5+  | 2005 03 04 | 703 | 0.7+  | 0.4+  | 2006 09 17 | 703 | 0.5-  | 0.1-  |
| 2000 12 26 | 691 | 0.1-  | 0.6+  | 2005 03 04 | 703 | (1.9+ | 2.2+) | 2006 09 17 | 703 | (1.8- | 0.7+) |
| 2000 12 26 | 691 | 0.2+  | 0.2+  | 2005 03 09 | 699 | 0.1+  | 0.8+  | 2006 09 17 | 703 | (0.1+ | 1.6+) |
| 2000 12 26 | 691 | 0.1-  | 0.3+  | 2005 03 09 | 699 | 0.0   | 0.3+  | 2006 09 28 | G96 | 0.1-  | 0.2+  |
| 2003 10 20 | 691 | 0.1+  | 0.2+  | 2005 03 09 | 699 | 1.2+  | 1.0+  | 2006 09 28 | G96 | 0.0   | 0.3+  |
| 2003 10 20 | 691 | 0.2-  | 0.1+  | 2005 03 09 | 699 | 0.7-  | 1.2+  | 2006 09 28 | G96 | 0.2-  | 0.1+  |
| 2003 10 20 | 691 | 0.2-  | 0.3+  | 2005 03 17 | 691 | 0.2+  | 0.1+  | 2006 09 28 | G96 | 0.1-  | 0.0   |
| 2003 11 15 | 691 | 0.1-  | 0.0   | 2005 03 17 | 691 | 0.3+  | 0.0   | 2006 11 16 | G96 | 0.4+  | 0.4+  |
| 2003 11 15 | 691 | 0.1+  | 0.2+  | 2005 03 17 | 691 | 0.1+  | 0.1-  | 2006 11 16 | G96 | 0.4+  | 0.3-  |
| 2003 11 15 | 691 | 0.1-  | 0.4+  | 2005 03 17 | 703 | 0.6+  | 0.8+  | 2006 11 16 | G96 | 0.5-  | 0.1-  |
| 2003 11 21 | 704 | (0.4+ | 2.3+) | 2005 03 17 | 703 | 0.3-  | 1.1-  | 2006 11 16 | G96 | 0.7+  | 0.1-  |
| 2003 11 21 | 704 | 0.3+  | 0.7+  | 2005 03 17 | 703 | 0.4+  | 0.5+  | 2007 11 11 | G96 | 0.5-  | 0.7-  |
| 2003 11 21 | 704 | 0.6-  | 0.7+  | 2005 03 17 | 703 | 0.2-  | 0.7+  | 2007 11 11 | G96 | 0.6-  | 0.2-  |
| 2003 11 29 | 691 | 0.4-  | 0.0   | 2006 08 24 | 704 | 0.5+  | 0.2+  | 2007 11 11 | G96 | 0.1-  | 0.0   |
| 2003 11 29 | 691 | 0.3-  | 0.1+  | 2006 08 24 | 704 | 1.2+  | 0.2-  | 2007 11 11 | G96 | 0.2-  | 0.6-  |
| 2003 11 29 | 691 | 0.2-  | 0.1+  | 2006 08 24 | 704 | 0.8+  | 0.7+  | 2007 12 03 | 691 | 0.4-  | 0.2-  |
| 2003 12 01 | 291 | 0.3+  | 0.3-  | 2006 08 28 | 703 | 0.7+  | 1.0+  | 2007 12 03 | 691 | 0.5-  | 0.2-  |
| 2003 12 01 | 291 | 0.4+  | 0.3-  | 2006 08 28 | 703 | 1.1-  | 0.9+  | 2007 12 03 | 691 | 0.5-  | 0.1-  |
| 2003 12 01 | 291 | 0.5+  | 0.3-  | 2006 08 28 | 703 | 0.6-  | 0.7+  |            |     |       |       |
| 2003 12 21 | 291 | 0.5+  | 0.0   | 2006 08 28 | 703 | 0.7-  | 0.1-  |            |     |       |       |

(172624)\* 2003 WR<sub>159</sub>

Discovered 2003 Nov. 29 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 287.99894  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22506409 | $\omega$ | 231.20264 | -0.96394695 | -0.19399733 |
| <i>a</i> | 2.6766931  | $\Omega$ | 296.92239 | +0.25894921 | -0.84144807 |
| <i>e</i> | 0.2026356  | <i>i</i> | 11.78668  | -0.06125018 | -0.50431159 |
| <i>P</i> | 4.38       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 10 06 | 691 | 0.3+  | 0.0   | 2003 12 21 | 704 | 0.1+ | 0.5+ | 2004 02 17 | 691 | 0.2+  | 0.1-  |
| 1997 10 06 | 691 | 0.2+  | 0.7-  | 2003 12 21 | 704 | 0.4- | 0.0  | 2004 02 17 | 691 | 0.2+  | 0.2-  |
| 1997 10 06 | 691 | 0.1+  | 0.3-  | 2003 12 21 | 704 | 0.0  | 0.1+ | 2004 02 17 | 691 | 0.2+  | 0.1-  |
| 2000 05 10 | 704 | 0.0   | 0.1+  | 2003 12 21 | 704 | 0.2+ | 0.5+ | 2004 02 18 | 704 | 0.5-  | 0.4+  |
| 2000 05 10 | 704 | 0.8-  | 0.9+  | 2004 01 05 | 699 | 0.6- | 1.2- | 2004 02 18 | 704 | 0.3-  | 0.3+  |
| 2000 05 10 | 704 | 0.2+  | 0.1-  | 2004 01 05 | 699 | 0.1- | 0.2+ | 2004 02 18 | 704 | 1.0-  | 1.0+  |
| 2000 05 10 | 704 | 0.2-  | 0.4+  | 2004 01 05 | 699 | 0.0  | 0.8- | 2004 02 18 | 704 | 0.2-  | 0.2+  |
| 2000 05 10 | 704 | 0.8+  | 0.2+  | 2004 01 05 | 703 | 0.3- | 0.6- | 2004 04 15 | 704 | 0.2-  | 0.4+  |
| 2001 08 17 | 644 | 0.4-  | 1.1+  | 2004 01 05 | 699 | 0.2- | 0.2- | 2004 04 15 | 704 | 0.1+  | 0.2+  |
| 2001 08 17 | 644 | 0.3-  | 1.0+  | 2004 01 05 | 703 | 1.2+ | 0.2+ | 2004 04 15 | 704 | 0.1+  | 0.5+  |
| 2001 08 17 | 644 | 0.4-  | 1.0+  | 2004 01 05 | 703 | 0.2- | 0.0  | 2004 04 15 | 704 | 0.7+  | 0.6-  |
| 2002 10 06 | 704 | 0.2+  | 1.1+  | 2004 01 05 | 703 | 0.4+ | 0.4- | 2004 04 15 | 703 | (0.8+ | 2.0+) |
| 2002 10 06 | 704 | (1.4+ | 2.4-) | 2004 01 16 | 699 | 0.2+ | 0.7+ | 2004 04 15 | 704 | 1.3-  | 1.1-  |
| 2002 10 06 | 704 | (0.4+ | 1.6+) | 2004 01 16 | 699 | 0.4- | 1.4- | 2004 04 15 | 703 | (0.7- | 3.3+) |
| 2002 10 06 | 704 | (0.2- | 2.4+) | 2004 01 16 | 699 | 1.2- | 0.8- | 2004 04 15 | 703 | 0.3-  | 0.5+  |
| 2003 10 24 | 704 | 0.6-  | 0.3-  | 2004 01 16 | 699 | 0.9- | 0.3- | 2004 04 15 | 703 | 0.6-  | 0.3+  |
| 2003 10 24 | 704 | (0.4- | 2.3+) | 2004 01 22 | 644 | 0.2- | 0.1- | 2004 05 14 | 704 | (0.7- | 1.8+) |
| 2003 10 24 | 704 | 0.0   | 0.3+  | 2004 01 22 | 644 | 0.2- | 0.0  | 2004 05 14 | 704 | (1.5- | 0.4+) |
| 2003 10 24 | 704 | 0.3+  | 0.2+  | 2004 01 22 | 644 | 0.1+ | 0.2- | 2004 05 14 | 704 | 0.2+  | 0.5+  |
| 2003 10 29 | 704 | 1.1-  | 0.1-  | 2004 01 23 | 704 | 0.2+ | 0.0  | 2004 05 14 | 704 | 0.2-  | 0.6+  |
| 2003 10 29 | 704 | (1.8+ | 0.9+) | 2004 01 23 | 704 | 0.1+ | 0.4- | 2006 09 16 | 703 | 0.2-  | 0.5-  |
| 2003 10 29 | 704 | 0.3-  | 0.4-  | 2004 01 23 | 704 | 0.5+ | 0.1- | 2006 09 16 | 703 | 0.2-  | 0.0   |
| 2003 10 29 | 704 | 0.2-  | 0.2-  | 2004 01 23 | 704 | 0.0  | 0.2- | 2006 09 16 | 703 | 0.7-  | 0.9-  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 29 | 704 | 0.2+  | 0.3-  | 2004 01 23 | 704 | 0.1+ | 0.1+ | 2006 09 16 | 703 | 0.9-  | 1.1-  |
| 2003 11 21 | 704 | 0.0   | 0.6+  | 2004 01 28 | 608 | 0.5+ | 0.7- | 2006 09 21 | 699 | 0.7+  | 0.7+  |
| 2003 11 21 | 704 | 0.2-  | 0.1-  | 2004 01 28 | 608 | 0.1+ | 0.6- | 2006 09 21 | 699 | 0.6+  | 0.6+  |
| 2003 11 21 | 704 | 0.3-  | 0.4+  | 2004 01 28 | 608 | 0.6+ | 0.5- | 2006 09 21 | 699 | (0.4+ | 3.1+) |
| 2003 11 29 | 703 | 1.4-  | 0.2-  | 2004 01 29 | 704 | 0.1+ | 0.2- | 2006 09 21 | 699 | (1.2- | 1.9+) |
| 2003 11 29 | 703 | 0.2+  | 0.3+  | 2004 01 29 | 699 | 0.5- | 0.2+ | 2006 09 27 | 703 | (0.0  | 1.6+) |
| 2003 11 29 | 703 | (3.1+ | 1.5-) | 2004 01 29 | 704 | 0.0  | 0.0  | 2006 09 27 | 703 | (0.6+ | 1.8+) |
| 2003 11 29 | 703 | (0.0  | 2.0+) | 2004 01 29 | 699 | 0.2- | 0.2- | 2006 09 27 | 703 | 0.7+  | 1.0+  |
| 2003 12 01 | 704 | 0.2+  | 0.6+  | 2004 01 29 | 704 | 0.0  | 0.1+ | 2006 09 27 | 703 | (0.3- | 1.7+) |
| 2003 12 01 | 704 | 0.4+  | 0.4+  | 2004 01 29 | 699 | 0.4- | 0.1- | 2007 11 17 | 704 | 0.1+  | 0.4+  |
| 2003 12 01 | 704 | 1.0+  | 0.7+  | 2004 01 29 | 704 | 0.1+ | 0.2+ | 2007 11 17 | 704 | 0.2+  | 0.1-  |
| 2003 12 01 | 704 | 0.5+  | 1.0+  | 2004 01 29 | 704 | 0.1+ | 0.0  | 2007 11 17 | 704 | 0.2+  | 0.1+  |
| 2003 12 17 | 703 | 0.6-  | 0.4+  | 2004 01 29 | 699 | 0.3- | 0.1- | 2007 11 17 | 704 | 0.0   | 0.3-  |
| 2003 12 17 | 703 | (2.5+ | 0.8+) | 2004 02 11 | 644 | 0.1+ | 0.0  | 2007 12 02 | 704 | 0.0   | 0.8+  |
| 2003 12 17 | 703 | 0.3-  | 0.8-  | 2004 02 11 | 644 | 0.1+ | 0.1- | 2007 12 02 | 704 | 0.1-  | 0.6+  |
| 2003 12 17 | 703 | 1.0-  | 0.5-  | 2004 02 11 | 644 | 0.3+ | 0.0  | 2007 12 02 | 704 | 0.5+  | 0.4+  |
| 2003 12 20 | 704 | 0.1+  | 0.0   | 2004 02 13 | 333 | 0.2- | 0.2- | 2007 12 02 | 704 | 1.2+  | 0.7+  |
| 2003 12 20 | 704 | 0.2+  | 0.2+  | 2004 02 13 | 333 | 0.5- | 0.2- | 2007 12 02 | 704 | 0.3+  | 0.9+  |
| 2003 12 20 | 704 | 0.6+  | 0.5+  | 2004 02 13 | 333 | 0.5- | 0.2- | 2007 12 16 | 704 | 0.8-  | 0.1+  |
| 2003 12 20 | 704 | 0.5+  | 0.1+  | 2004 02 14 | 608 | 0.7+ | 0.8+ | 2007 12 16 | 704 | 0.5-  | 0.2-  |
| 2003 12 20 | 704 | 0.7+  | 0.1+  | 2004 02 14 | 608 | 0.9+ | 0.5+ | 2007 12 16 | 704 | 0.6-  | 0.1+  |
| 2003 12 21 | 704 | 0.2+  | 0.1-  | 2004 02 14 | 608 | 0.7+ | 0.0  | 2007 12 16 | 704 | 0.4-  | 0.1+  |

(172625)\* 2003 WF<sub>174</sub>

Discovered 2003 Nov. 19 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 217.72160  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23031675 | $\omega$ | 310.19699 | -0.96442847 | -0.18949643 |
| <i>a</i> | 2.6358399  | $\Omega$ | 219.89670 | +0.22247256 | -0.95841446 |
| <i>e</i> | 0.1543982  | <i>i</i> | 16.69923  | -0.14277143 | -0.21338422 |
| <i>P</i> | 4.28       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 31 | 645 | 0.1+ | 0.1+ | 2005 02 01 | 704 | 0.6-  | 0.6-  | 2005 04 11 | 699 | 0.2+ | 0.2+ |
| 2002 10 31 | 645 | 0.1- | 0.1+ | 2005 02 01 | 704 | (1.8- | 1.2-) | 2005 04 11 | 699 | 0.3- | 0.7+ |
| 2003 10 02 | 691 | 0.1- | 0.0  | 2005 02 01 | 704 | 0.7-  | 0.3+  | 2005 04 11 | 699 | 0.3+ | 0.4+ |
| 2003 10 02 | 691 | 0.1- | 0.2- | 2005 03 02 | 704 | 1.4+  | 0.4+  | 2007 10 14 | 703 | 0.8- | 0.1+ |
| 2003 10 02 | 691 | 0.3- | 0.1- | 2005 03 02 | 704 | 0.3+  | 1.1+  | 2007 10 14 | 703 | 0.8- | 0.7- |
| 2003 10 21 | 691 | 0.0  | 0.3+ | 2005 03 02 | 704 | 0.7+  | 0.1-  | 2007 10 14 | 703 | 0.1+ | 0.9+ |
| 2003 10 21 | 691 | 0.1- | 0.1- | 2005 03 02 | 704 | 0.2+  | 0.1-  | 2007 10 14 | 703 | 0.1+ | 0.1- |
| 2003 10 21 | 691 | 0.3+ | 0.1- | 2005 03 02 | 704 | 0.2-  | 0.7+  | 2007 10 15 | G96 | 0.6+ | 0.2- |
| 2003 10 28 | 704 | 0.5+ | 0.1- | 2005 03 13 | 699 | 0.6-  | 0.0   | 2007 10 15 | G96 | 0.6+ | 0.4- |
| 2003 10 28 | 704 | 0.8+ | 0.8+ | 2005 03 13 | 699 | 0.2-  | 0.2+  | 2007 10 15 | G96 | 0.1+ | 0.1- |
| 2003 10 28 | 704 | 0.8+ | 0.2- | 2005 03 13 | 699 | 0.9-  | 0.4+  | 2007 10 15 | G96 | 0.1+ | 0.3- |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2005 03 13 | 699 | 1.4-  | 0.9-  | 2007 12 15 | G96 | 0.2- | 0.1- |
| 2003 11 19 | 691 | 0.2- | 0.0  | 2005 03 17 | 704 | 0.7+  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.5+ |
| 2003 11 19 | 691 | 0.2- | 0.1+ | 2005 03 17 | 704 | 1.3+  | 0.1-  | 2007 12 15 | G96 | 0.4- | 0.1+ |
| 2003 11 20 | 695 | 0.1+ | 0.2- | 2005 03 17 | 704 | 1.4+  | 0.3+  | 2007 12 15 | G96 | 0.7+ | 0.0  |
| 2003 11 20 | 695 | 0.1- | 0.3- | 2005 03 17 | 704 | 0.0   | 0.2-  |            |     |      |      |
| 2005 02 01 | 704 | 0.1- | 0.2+ | 2005 04 11 | 699 | 1.1-  | 1.0-  |            |     |      |      |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 31 | 699 | 0.6+ | 0.3+ | 2003 12 19 | 704 | 0.1+  | 0.4+  | 2007 11 14 | 699 | 0.8-  | 0.7-  |
| 1999 12 31 | 699 | 0.2+ | 0.3+ | 2003 12 19 | 704 | 0.3+  | 0.4+  | 2007 11 14 | 699 | 1.0-  | 0.5+  |
| 1999 12 31 | 699 | 0.7+ | 0.2+ | 2003 12 19 | 704 | 1.2+  | 0.4-  | 2007 11 14 | 699 | 0.3-  | 0.1-  |
| 2001 02 24 | 608 | 0.3+ | 0.4+ | 2003 12 19 | 704 | 0.4+  | 0.3+  | 2007 11 14 | 699 | 0.3+  | 0.5-  |
| 2001 02 24 | 608 | 0.1- | 0.5- | 2003 12 23 | 704 | 0.1+  | 0.7-  | 2007 12 02 | 704 | (0.0  | 1.6-) |
| 2001 02 24 | 608 | 0.0  | 0.3- | 2003 12 23 | 704 | 0.8+  | 0.2-  | 2007 12 02 | 704 | 0.9+  | 1.5+  |
| 2001 03 21 | 608 | 0.1- | 0.4+ | 2003 12 23 | 704 | (0.2- | 1.7-) | 2007 12 02 | 704 | (0.1- | 2.2+) |
| 2001 03 21 | 608 | 0.4+ | 0.2+ | 2003 12 23 | 704 | 0.0   | 1.1-  | 2007 12 05 | 699 | 0.3-  | 0.5+  |
| 2001 03 21 | 608 | 0.0  | 0.5- | 2003 12 23 | 704 | 0.2+  | 0.5-  | 2007 12 05 | 699 | 0.8+  | 0.4+  |
| 2001 04 18 | 608 | 1.3- | 0.5+ | 2003 12 28 | 704 | 0.3-  | 1.1+  | 2007 12 05 | 699 | 1.0+  | 0.3-  |
| 2002 05 16 | 644 | 0.2- | 0.6+ | 2003 12 28 | 704 | 0.1+  | 0.5+  | 2007 12 05 | 699 | 0.8-  | 0.5+  |
| 2002 06 13 | 644 | 0.1- | 0.7+ | 2003 12 28 | 691 | 0.2-  | 0.0   | 2007 12 14 | D29 | 0.4-  | 0.6-  |
| 2002 06 13 | 644 | 0.2- | 0.5+ | 2003 12 28 | 704 | 0.1-  | 1.1+  | 2007 12 14 | D29 | 0.5-  | 0.1-  |
| 2002 06 13 | 644 | 0.1- | 0.5+ | 2003 12 28 | 704 | 0.2-  | 0.8+  | 2007 12 14 | D29 | 0.2+  | 0.3-  |
| 2002 06 18 | 644 | 0.2- | 0.4+ | 2003 12 28 | 704 | 0.2-  | 0.7+  | 2007 12 14 | D29 | 0.2-  | 0.2-  |
| 2002 06 18 | 644 | 0.2- | 0.5+ | 2003 12 28 | 691 | 0.0   | 0.1+  | 2007 12 16 | 704 | 0.2+  | 0.5+  |
| 2002 06 18 | 644 | 0.3- | 0.6+ | 2003 12 28 | 691 | 0.2-  | 0.0   | 2007 12 16 | 704 | 0.5+  | 0.6-  |
| 2003 12 01 | 703 | 0.9- | 0.5- | 2004 01 31 | 704 | 0.2-  | 0.3+  | 2007 12 16 | 704 | 0.2+  | 0.8+  |
| 2003 12 01 | 703 | 0.9- | 0.6+ | 2004 01 31 | 704 | 0.2+  | 0.3-  | 2007 12 16 | 704 | 0.7+  | 0.2-  |
| 2003 12 01 | 703 | 1.0- | 0.6+ | 2004 01 31 | 704 | 0.3+  | 0.8-  | 2007 12 16 | 704 | 0.3+  | 0.6+  |
| 2003 12 01 | 703 | 0.3+ | 0.0  | 2004 01 31 | 704 | 0.1+  | 0.1-  | 2007 12 16 | 704 | 0.3+  | 0.0   |
| 2003 12 04 | 704 | 0.4- | 1.2+ | 2004 01 31 | 704 | 0.5-  | 1.3-  | 2007 12 16 | 704 | 0.1+  | 0.4+  |
| 2003 12 04 | 704 | 0.7+ | 0.3+ | 2004 02 15 | 704 | 0.2-  | 1.0+  | 2007 12 16 | 704 | 0.2+  | 0.2-  |
| 2003 12 04 | 704 | 0.6- | 0.8+ | 2004 02 15 | 704 | 0.1+  | 0.2+  | 2007 12 16 | 704 | 0.6+  | 0.4+  |
| 2003 12 04 | 704 | 0.5- | 0.4+ | 2004 02 15 | 704 | 0.3+  | 0.6+  | 2007 12 16 | 704 | 0.2+  | 0.5-  |
| 2003 12 18 | 704 | 0.5+ | 0.4- | 2004 02 15 | 704 | 0.3+  | 0.5-  |            |     |       |       |

**(172627)\* 2003 XP<sub>10</sub>**

Discovered 2003 Dec. 9 by J. W. Young at Table Mountain Observatory, Wrightwood.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 356.73800  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.22761456 | $\omega$ | 320.32931 | +0.36559205 |      | -0.82070504 |   |
| <i>a</i>                                | 2.6566603  | $\Omega$ | 104.03480 | +0.92671196 |      | +0.27692143 |   |
| <i>e</i>                                | 0.0750840  | <i>i</i> | 26.90959  | +0.08687578 |      | +0.49975770 |   |
| <i>P</i>                                | 4.33       | <i>H</i> | 15.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 21 | 704 | 0.6+  | 0.4-  | 2003 12 22 | 704 | 0.9+  | 0.9+  | 2005 05 02 | 703 | 0.0  | 0.3- |
| 2003 11 21 | 704 | 0.7+  | 0.9-  | 2003 12 22 | 704 | (1.6+ | 0.9+) | 2005 05 02 | 703 | 0.9- | 0.3- |
| 2003 11 21 | 704 | 0.7+  | 0.5+  | 2003 12 25 | 608 | 0.8-  | 0.4-  | 2005 05 10 | 703 | 0.9+ | 0.4+ |
| 2003 11 21 | 704 | 0.1-  | 0.1-  | 2003 12 25 | 608 | 0.6-  | 0.7-  | 2005 05 10 | 703 | 0.2+ | 0.1- |
| 2003 11 21 | 704 | 0.7+  | 0.2-  | 2003 12 25 | 608 | 0.3-  | 0.4-  | 2005 05 10 | 703 | 0.2+ | 0.4+ |
| 2003 12 09 | 673 | 0.2-  | 0.0   | 2003 12 27 | 691 | 0.2-  | 0.0   | 2005 05 10 | 703 | 0.2- | 0.3+ |
| 2003 12 09 | 673 | 0.7-  | 0.2+  | 2003 12 27 | 703 | 0.8-  | 0.1+  | 2006 07 26 | E12 | 0.1- | 0.3+ |
| 2003 12 09 | 673 | 0.0   | 0.3+  | 2003 12 27 | 704 | 0.4-  | 0.2+  | 2006 07 26 | E12 | 0.1- | 0.5+ |
| 2003 12 10 | 673 | 0.1+  | 0.3-  | 2003 12 27 | 703 | 0.3+  | 0.9+  | 2006 07 26 | E12 | 0.1+ | 0.6+ |
| 2003 12 10 | 673 | 0.4-  | 0.9+  | 2003 12 27 | 704 | 0.3+  | 0.3+  | 2006 07 26 | E12 | 0.2+ | 0.7+ |
| 2003 12 10 | 673 | 0.4-  | 1.5+  | 2003 12 27 | 691 | 0.1-  | 0.1+  | 2007 09 12 | 673 | 0.1- | 0.1- |
| 2003 12 13 | 673 | 0.3-  | 0.1+  | 2003 12 27 | 703 | 0.2+  | 1.3+  | 2007 09 12 | 673 | 0.1- | 0.0  |
| 2003 12 13 | 673 | 0.2-  | 0.0   | 2003 12 27 | 704 | 0.4-  | 1.2+  | 2007 09 12 | 673 | 0.2- | 0.3+ |
| 2003 12 13 | 673 | 0.2-  | 0.0   | 2003 12 27 | 703 | 0.5+  | 1.0+  | 2007 11 02 | 673 | 0.3+ | 0.6- |
| 2003 12 17 | 673 | 0.1-  | 0.2-  | 2003 12 27 | 704 | 0.2+  | 0.2+  | 2007 11 02 | 673 | 0.0  | 0.4- |
| 2003 12 17 | 673 | 0.0   | 0.2-  | 2003 12 27 | 691 | 0.1-  | 0.0   | 2007 11 02 | 673 | 0.4+ | 0.4- |
| 2003 12 17 | 673 | 0.1+  | 0.4-  | 2003 12 27 | 704 | 0.3+  | 0.5+  | 2007 11 20 | 703 | 0.3+ | 0.1+ |
| 2003 12 18 | 291 | 0.7-  | 0.1+  | 2004 01 31 | 704 | 0.4-  | 0.1-  | 2007 11 20 | 703 | 0.1+ | 0.2+ |
| 2003 12 18 | 291 | 0.4-  | 0.1-  | 2004 01 31 | 704 | 0.0   | 1.0-  | 2007 11 20 | 703 | 0.0  | 0.1+ |
| 2003 12 18 | 291 | 1.1+  | 0.3-  | 2004 01 31 | 704 | 0.8-  | 0.2-  | 2007 11 20 | 703 | 0.2+ | 1.1- |
| 2003 12 19 | 704 | 0.1-  | 0.1-  | 2004 01 31 | 704 | 0.2-  | 0.7-  | 2007 12 05 | 703 | 0.1- | 0.1- |
| 2003 12 19 | 704 | 0.0   | 0.3-  | 2004 02 14 | 704 | 1.1-  | 0.2-  | 2007 12 05 | 703 | 0.2- | 0.5+ |
| 2003 12 19 | 704 | 0.0   | 0.5-  | 2004 02 14 | 704 | 0.2-  | 0.9-  | 2007 12 05 | 703 | 0.2+ | 0.3- |
| 2003 12 19 | 704 | 0.2+  | 0.7-  | 2004 02 14 | 704 | 0.0   | 0.5-  | 2007 12 05 | 703 | 0.4- | 0.0  |
| 2003 12 19 | 704 | 0.1-  | 0.6-  | 2004 02 14 | 704 | 0.3+  | 1.1-  | 2007 12 15 | 699 | 1.2+ | 1.1+ |
| 2003 12 19 | 608 | 1.3+  | 1.4+  | 2004 04 07 | 673 | 0.0   | 0.5+  | 2007 12 15 | 699 | 0.7+ | 0.5- |
| 2003 12 19 | 608 | 1.4+  | 1.0+  | 2004 04 07 | 673 | 0.1+  | 0.4+  | 2007 12 15 | 699 | 1.3- | 0.7- |
| 2003 12 19 | 608 | (1.1+ | 1.6+) | 2004 04 07 | 673 | 0.0   | 0.3+  | 2007 12 15 | 699 | 0.2- | 0.2+ |

|            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 22 | 704 | 0.5+ | 0.7+ | 2005 05 02 | 703 | (0.6+ | 2.2+) |
| 2003 12 22 | 704 | 0.8+ | 0.1- | 2005 05 02 | 703 | 0.1-  | 0.6-  |

**(172628)\* 2003 XD<sub>16</sub>**

Discovered 2003 Dec. 14 by NEAT at Palomar.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 117.51634  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.26023558 | $\omega$ | 251.08159 | +0.69721432 |      | +0.70751479 |   |
| <i>a</i>                                | 2.4297314  | $\Omega$ | 63.68896  | -0.59971145 |      | +0.66385313 |   |
| <i>e</i>                                | 0.1271382  | <i>i</i> | 7.39602   | -0.39273193 |      | +0.24232590 |   |
| <i>P</i>                                | 3.79       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 07 | 691 | 0.1+  | 0.0   | 2003 12 20 | 704 | 0.5-  | 0.2-  | 2006 08 25 | E12 | 0.4-  | 0.5+  |
| 1999 12 07 | 691 | 0.1+  | 0.2-  | 2003 12 22 | 704 | 0.6+  | 0.2+  | 2006 08 25 | E12 | 0.2-  | 0.4+  |
| 1999 12 07 | 691 | 0.1+  | 0.2-  | 2003 12 22 | 704 | 0.1+  | 0.1+  | 2006 08 25 | E12 | 0.1+  | 0.3+  |
| 2003 11 21 | 704 | 0.6+  | 0.1+  | 2003 12 22 | 704 | 1.4+  | 0.2-  | 2006 08 25 | E12 | 0.2-  | 0.7+  |
| 2003 11 21 | 704 | 0.3+  | 0.5-  | 2003 12 22 | 704 | 1.2+  | 0.2-  | 2006 08 26 | E12 | 0.0   | 0.3+  |
| 2003 11 21 | 704 | 0.6+  | 0.7+  | 2003 12 27 | 704 | 0.8-  | 0.3+  | 2006 08 26 | E12 | 0.4-  | 0.8+  |
| 2003 11 21 | 704 | 0.5+  | 0.8-  | 2003 12 27 | 704 | 1.1+  | 0.3+  | 2006 08 26 | E12 | 0.2-  | 1.1+  |
| 2003 12 14 | 644 | 0.8-  | 0.1+  | 2003 12 27 | 704 | (2.3+ | 0.8+) | 2006 08 26 | E12 | 0.3+  | 0.3+  |
| 2003 12 14 | 644 | 0.4-  | 0.0   | 2003 12 27 | 704 | (0.7+ | 1.9-) | 2006 09 12 | E12 | 0.1-  | 0.8+  |
| 2003 12 14 | 644 | 0.4-  | 0.2-  | 2003 12 27 | 704 | (2.3+ | 0.9-) | 2006 09 12 | E12 | 0.7-  | 1.3+  |
| 2003 12 17 | 691 | 0.1-  | 0.3+  | 2003 12 29 | 691 | 0.1-  | 0.2-  | 2006 09 12 | E12 | 0.3-  | 0.7+  |
| 2003 12 17 | 691 | 0.2-  | 0.1+  | 2003 12 29 | 691 | 0.2-  | 0.1+  | 2006 09 12 | E12 | 0.4+  | 0.1-  |
| 2003 12 17 | 691 | 0.4-  | 0.2+  | 2003 12 29 | 691 | 0.2-  | 0.2-  | 2007 11 06 | G96 | 0.0   | 0.0   |
| 2003 12 18 | 704 | (1.4+ | 2.5+) | 2004 01 16 | 644 | 0.1+  | 0.3+  | 2007 11 06 | G96 | 0.1-  | 0.2-  |
| 2003 12 18 | 704 | 0.7+  | 0.6+  | 2004 01 16 | 644 | 0.0   | 0.4+  | 2007 11 06 | G96 | 0.3+  | 0.0   |
| 2003 12 18 | 704 | 1.4+  | 1.1+  | 2004 01 16 | 644 | 0.3-  | 0.3+  | 2007 11 06 | G96 | 0.3-  | 0.4-  |
| 2003 12 18 | 704 | (0.8- | 1.9+) | 2005 03 16 | 703 | 0.2+  | 0.5-  | 2007 12 13 | 704 | 0.3+  | 0.2+  |
| 2003 12 19 | 704 | 0.0   | 0.2-  | 2005 03 16 | 703 | 0.1-  | 0.4-  | 2007 12 13 | 704 | (1.6- | 0.4+) |
| 2003 12 19 | 704 | 0.5-  | 0.8+  | 2005 03 16 | 703 | 0.2+  | 1.0+  | 2007 12 13 | 704 | 0.0   | 0.0   |
| 2003 12 19 | 704 | 0.7-  | 0.5+  | 2005 03 16 | 703 | 0.4+  | 0.7+  | 2007 12 13 | 704 | 0.2+  | 0.9+  |
| 2003 12 20 | 704 | 0.3-  | 0.1+  | 2005 04 17 | 691 | 0.4+  | 0.3+  | 2007 12 15 | 704 | 0.4+  | 0.4+  |
| 2003 12 20 | 704 | 0.0   | 0.1-  | 2005 04 17 | 691 | 0.1-  | 0.3+  | 2007 12 15 | 704 | 0.2-  | 0.5+  |
| 2003 12 20 | 704 | 0.0   | 0.1-  | 2005 04 17 | 691 | 0.1+  | 0.7+  | 2007 12 15 | 704 | 0.4-  | 0.1+  |

**(172629)\* 2003 XD<sub>17</sub> = 2000 CK<sub>14</sub>**

Discovered 2003 Dec. 14 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 57436)

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 341.63080  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.22751020 | $\omega$ | 178.60969 | +0.69750014 |      | -0.71519315 |   |
| <i>a</i>                                | 2.6574727  | $\Omega$ | 227.16089 | +0.65686467 |      | +0.66302404 |   |
| <i>e</i>                                | 0.2186780  | <i>i</i> | 3.48987   | +0.28639547 |      | +0.22112867 |   |
| <i>P</i>                                | 4.33       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 02 | 704 | 0.1-  | 0.4+  | 2005 05 14 | G96 | 0.1- | 0.2+ | 2007 10 12 | 704 | 0.3+ | 0.3+ |
| 2000 02 02 | 704 | 0.0   | 0.8+  | 2005 05 14 | G96 | 0.0  | 0.4+ | 2007 10 12 | 704 | 0.0  | 0.1+ |
| 2000 02 02 | 704 | 0.7+  | 0.3+  | 2005 05 14 | G96 | 0.4+ | 0.7+ | 2007 10 12 | 704 | 0.0  | 0.3+ |
| 2000 02 02 | 704 | 0.6+  | 0.9+  | 2007 09 11 | 691 | 0.7+ | 0.2+ | 2007 10 12 | 704 | 0.0  | 0.2+ |
| 2000 02 02 | 704 | 0.0   | 1.3+  | 2007 09 11 | 691 | 0.4+ | 0.1- | 2007 10 14 | G96 | 0.1+ | 0.1- |
| 2000 02 04 | 704 | 0.4-  | 0.9+  | 2007 09 11 | 691 | 0.4+ | 0.0  | 2007 10 14 | G96 | 0.1+ | 0.1- |
| 2000 02 04 | 704 | 0.4-  | 0.5-  | 2007 09 13 | 151 | 0.4- | 0.1- | 2007 10 14 | G96 | 0.1+ | 0.0  |
| 2000 02 04 | 704 | 0.6-  | 0.3-  | 2007 09 13 | 151 | 0.4- | 0.1- | 2007 10 14 | G96 | 0.4+ | 0.2- |
| 2000 02 04 | 704 | 0.5+  | 0.1+  | 2007 09 13 | 151 | 0.3- | 0.1- | 2007 10 15 | 704 | 0.2- | 0.4+ |
| 2000 02 04 | 704 | 0.0   | 0.5+  | 2007 09 13 | 151 | 0.3- | 0.2- | 2007 10 15 | 704 | 0.1+ | 0.1+ |
| 2001 04 26 | 691 | 0.2+  | 0.4+  | 2007 09 13 | 151 | 0.4- | 0.3- | 2007 10 15 | 704 | 0.4+ | 0.4+ |
| 2001 04 26 | 691 | 0.1-  | 0.2+  | 2007 09 13 | 699 | 0.4+ | 0.7+ | 2007 10 15 | 704 | 0.1- | 0.1- |
| 2001 04 26 | 691 | 0.5+  | 0.5+  | 2007 09 13 | 699 | 0.2+ | 0.9+ | 2007 10 15 | 704 | 0.1- | 0.1- |
| 2003 11 23 | 704 | (1.7+ | 1.2+) | 2007 09 13 | 699 | 0.2- | 0.5+ | 2007 10 17 | 699 | 0.6- | 0.6- |
| 2003 11 23 | 704 | 1.1+  | 1.0+  | 2007 09 13 | 699 | 0.6- | 0.4+ | 2007 10 17 | 699 | 0.0  | 0.3+ |
| 2003 11 23 | 704 | 1.4+  | 0.2+  | 2007 09 14 | 704 | 0.4+ | 0.8+ | 2007 10 17 | 699 | 0.2- | 0.1+ |
| 2003 11 23 | 704 | 1.3+  | 0.8+  | 2007 09 14 | 704 | 0.1+ | 0.4+ | 2007 10 17 | 683 | 0.4- | 0.2+ |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 11 23 | 704 | 1.5+  | 0.9+  | 2007 09 14 | 704 | 0.0   | 0.4+  | 2007 10 17 | 683 | 0.4-  | 0.1-  |
| 2003 12 01 | 704 | 0.5-  | 0.0   | 2007 09 14 | 704 | 1.0+  | 0.3+  | 2007 10 17 | 699 | 0.5-  | 0.1-  |
| 2003 12 01 | 704 | (8.3+ | 2.1-) | 2007 09 14 | 704 | (2.1+ | 0.2-) | 2007 10 17 | 683 | 0.6+  | 0.6-  |
| 2003 12 01 | 704 | 0.3-  | 0.9-  | 2007 09 14 | 699 | 0.1-  | 0.2+  | 2007 10 19 | 704 | 0.7-  | 0.1-  |
| 2003 12 01 | 704 | 0.2+  | 0.5-  | 2007 09 14 | 699 | 0.1-  | 0.2-  | 2007 10 19 | 704 | 0.4-  | 0.0   |
| 2003 12 01 | 704 | (1.0- | 1.5-) | 2007 09 14 | 699 | 0.0   | 0.1+  | 2007 10 19 | 704 | 0.3+  | 0.4+  |
| 2003 12 14 | 644 | 0.1-  | 0.2+  | 2007 09 14 | 699 | 0.3-  | 0.6+  | 2007 10 19 | 704 | 0.3-  | 0.4-  |
| 2003 12 14 | 644 | 0.1+  | 0.3+  | 2007 09 15 | 691 | 0.3-  | 0.1+  | 2007 10 19 | 704 | 0.3-  | 0.9-  |
| 2003 12 14 | 644 | 0.1+  | 0.5+  | 2007 09 15 | 691 | 0.4-  | 0.0   | 2007 10 20 | 703 | 0.5+  | 0.5+  |
| 2003 12 17 | 691 | 0.1-  | 0.1-  | 2007 09 15 | 691 | 0.2-  | 0.1-  | 2007 10 20 | 704 | 0.1+  | 0.1-  |
| 2003 12 17 | 691 | 0.1-  | 0.1+  | 2007 09 17 | 704 | 0.2+  | 0.1-  | 2007 10 20 | 683 | 0.4+  | 0.9-  |
| 2003 12 17 | 691 | 0.0   | 0.1-  | 2007 09 17 | 704 | 0.2+  | 1.2+  | 2007 10 20 | 703 | 0.6-  | 0.6+  |
| 2003 12 19 | 704 | 0.5+  | 0.0   | 2007 09 17 | 704 | (0.0  | 1.7+) | 2007 10 20 | 703 | 0.6-  | 0.0   |
| 2003 12 19 | 704 | 0.5+  | 0.2-  | 2007 09 17 | 704 | (0.3+ | 1.5+) | 2007 10 20 | 703 | 0.2-  | 0.8+  |
| 2003 12 19 | 704 | 0.8+  | 0.2+  | 2007 09 17 | 704 | 0.2+  | 1.1+  | 2007 10 20 | 704 | 0.0   | 0.3+  |
| 2003 12 19 | 704 | 0.2+  | 0.4-  | 2007 09 22 | 704 | 0.1-  | 0.9+  | 2007 10 20 | 683 | 0.5+  | 1.1-  |
| 2003 12 19 | 704 | 0.2-  | 0.1-  | 2007 09 22 | 704 | 0.1+  | 0.1+  | 2007 10 20 | 704 | 0.0   | 0.4+  |
| 2003 12 21 | 704 | 0.6-  | 0.7-  | 2007 09 22 | 704 | 0.6-  | 0.7+  | 2007 10 20 | 683 | (0.9+ | 1.6-) |
| 2003 12 21 | 704 | 0.8-  | 0.7-  | 2007 09 22 | 704 | 0.6-  | 0.4+  | 2007 10 20 | 704 | 0.0   | 0.2+  |
| 2003 12 21 | 704 | 0.9-  | 0.6-  | 2007 09 22 | 704 | 0.1-  | 0.5+  | 2007 10 20 | 704 | 0.5+  | 0.0   |
| 2003 12 21 | 704 | 1.0-  | 1.5-  | 2007 10 02 | A77 | 0.5-  | 0.4+  | 2007 10 21 | 683 | 0.0   | 0.0   |
| 2003 12 23 | 704 | 0.4+  | 0.1+  | 2007 10 02 | A77 | 0.2-  | 0.4+  | 2007 10 21 | 683 | 0.5-  | 1.3+  |
| 2003 12 23 | 704 | 0.2-  | 0.3+  | 2007 10 02 | A77 | 0.0   | 0.6+  | 2007 10 21 | 683 | (3.2- | 2.1+) |
| 2003 12 23 | 704 | 0.6+  | 0.0   | 2007 10 07 | 703 | 0.4+  | 0.2+  | 2007 11 02 | 699 | 1.0+  | 0.0   |
| 2003 12 23 | 704 | 0.4-  | 0.3+  | 2007 10 07 | 703 | 0.4-  | 0.0   | 2007 11 02 | 699 | 0.9+  | 0.2-  |
| 2003 12 23 | 704 | 0.2-  | 0.0   | 2007 10 07 | 703 | 0.1+  | 0.2-  | 2007 11 02 | 699 | 0.2+  | 1.1-  |
| 2003 12 24 | 608 | 0.4-  | 0.7+  | 2007 10 07 | 703 | 0.4+  | 0.1-  | 2007 11 02 | 699 | 0.5-  | 0.5+  |
| 2003 12 24 | 608 | 0.7-  | 0.5+  | 2007 10 08 | 699 | 0.6+  | 0.1-  | 2007 11 07 | G96 | 0.1-  | 0.3-  |
| 2003 12 24 | 608 | 0.3-  | 0.8+  | 2007 10 08 | 699 | 0.1+  | 0.2-  | 2007 11 07 | G96 | 0.0   | 0.2-  |
| 2003 12 24 | 106 | 0.1-  | 0.1-  | 2007 10 08 | 699 | 0.4+  | 0.2-  | 2007 11 07 | G96 | 0.1-  | 0.1-  |
| 2003 12 24 | 106 | 0.6-  | 0.1-  | 2007 10 08 | 699 | 0.1-  | 0.6-  | 2007 11 07 | G96 | 0.0   | 0.3-  |
| 2003 12 24 | 106 | 0.1+  | 0.3-  | 2007 10 09 | 704 | 0.5+  | 0.5-  | 2007 12 04 | G96 | 0.4+  | 0.3-  |
| 2005 03 14 | G96 | 1.1+  | 0.4-  | 2007 10 09 | 704 | 0.4+  | 0.1+  | 2007 12 04 | G96 | 0.0   | 0.3-  |
| 2005 03 14 | G96 | 0.9-  | 0.7+  | 2007 10 09 | 704 | 0.2+  | 0.1-  | 2007 12 04 | G96 | 0.2+  | 0.3-  |
| 2005 03 14 | G96 | 0.1+  | 0.4+  | 2007 10 09 | 704 | 0.2+  | 0.0   | 2007 12 04 | G96 | 0.4+  | 1.1-  |
| 2005 03 14 | G96 | 0.1+  | 0.4+  | 2007 10 09 | 704 | 0.3+  | 0.6-  |            |     |       |       |
| 2005 05 14 | G96 | 0.1-  | 0.4+  | 2007 10 12 | 704 | 0.3+  | 0.1+  |            |     |       |       |

**(172630)\* 2003 XJ<sub>17</sub>**

Discovered 2003 Dec. 15 by Spacewatch at Kitt Peak.

|                                         |            |          |           |            |             |             |      |            |     |          |       |
|-----------------------------------------|------------|----------|-----------|------------|-------------|-------------|------|------------|-----|----------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |             |      |            |     |          |       |
| MPC                                     |            |          |           | MPC        |             |             |      | MPC        |     |          |       |
| <i>M</i>                                | 118.79281  |          | (2000.0)  | <i>P</i>   |             | <i>Q</i>    |      | <i>P</i>   |     | <i>Q</i> |       |
| <i>n</i>                                | 0.24021042 | $\omega$ | 194.86468 |            | +0.27272347 | +0.94262069 |      |            |     |          |       |
| <i>a</i>                                | 2.5629580  | $\Omega$ | 91.24797  |            | -0.86188074 | +0.32832315 |      |            |     |          |       |
| <i>e</i>                                | 0.1440786  | <i>i</i> | 11.10622  |            | -0.42753187 | -0.06058170 |      |            |     |          |       |
| <i>P</i>                                | 4.10       | <i>H</i> | 16.2      | <i>G</i>   | 0.15        | <i>U</i>    | 2    |            |     |          |       |
| Residuals in seconds of arc             |            |          |           |            |             |             |      |            |     |          |       |
| 1999 12 27                              | 691        | 0.4+     | 0.1-      | 2003 12 28 | 691         | 0.1-        | 0.2+ | 2007 11 12 | 704 | (0.2+    | 1.6+) |
| 1999 12 27                              | 691        | 0.7-     | 0.5-      | 2006 05 24 | 644         | 0.2+        | 0.1+ | 2007 11 12 | 704 | (1.5-    | 0.4-) |
| 1999 12 27                              | 691        | 0.2-     | 0.3-      | 2006 05 24 | 644         | 0.4+        | 0.2+ | 2007 11 12 | 704 | 0.5+     | 0.0   |
| 2002 07 16                              | 644        | 0.2+     | 0.7+      | 2006 05 24 | 644         | 0.1-        | 0.2+ | 2007 11 12 | 704 | 0.6-     | 0.1-  |
| 2002 07 16                              | 644        | 0.1-     | 0.3+      | 2006 06 23 | 644         | 0.1+        | 0.1+ | 2007 11 17 | 703 | 1.0-     | 0.3+  |
| 2002 07 16                              | 644        | 0.1-     | 0.6+      | 2006 06 23 | 644         | 0.4+        | 0.1+ | 2007 11 17 | 703 | 0.9-     | 0.1-  |
| 2002 07 29                              | 644        | 0.4-     | 0.2-      | 2006 06 23 | 644         | 0.1+        | 0.2+ | 2007 11 17 | 703 | 0.3-     | 1.3+  |
| 2002 07 29                              | 644        | 0.1-     | 0.5-      | 2006 07 04 | D35         | 0.0         | 0.0  | 2007 11 17 | 703 | (1.6-    | 0.6-) |
| 2002 07 29                              | 644        | 0.0      | 0.5-      | 2006 07 04 | D35         | 0.2-        | 0.3- | 2007 11 18 | 703 | 1.2+     | 0.4-  |
| 2003 11 23                              | 691        | 0.4+     | 0.1+      | 2006 07 04 | D35         | 0.4-        | 0.2- | 2007 11 18 | 703 | 1.1-     | 0.2+  |
| 2003 11 23                              | 691        | 0.1+     | 0.1+      | 2006 07 19 | 644         | 0.1-        | 0.2- | 2007 11 18 | 703 | 0.7-     | 0.7+  |
| 2003 11 23                              | 691        | 0.6+     | 0.1-      | 2006 07 19 | 644         | 0.2-        | 0.1- | 2007 11 18 | 703 | 0.6-     | 1.2+  |
| 2003 12 15                              | 691        | 0.2+     | 0.2-      | 2006 07 19 | 644         | 0.1+        | 0.1- | 2007 12 04 | 704 | 1.7+     | 1.0-  |
| 2003 12 15                              | 691        | 0.3-     | 0.3+      | 2006 07 23 | 644         | 0.1+        | 0.2+ | 2007 12 04 | 704 | 0.7+     | 1.3+  |
| 2003 12 15                              | 691        | 0.3+     | 0.1+      | 2006 07 23 | 644         | 0.0         | 0.1- | 2007 12 04 | 704 | 0.7+     | 2.3+  |
| 2003 12 17                              | 691        | 0.1+     | 0.3-      | 2006 07 23 | 644         | 0.4+        | 0.7- | 2007 12 05 | 699 | 2.3-     | 0.1-  |
| 2003 12 17                              | 691        | 0.2+     | 0.1+      | 2006 07 29 | E12         | 0.1+        | 0.7- | 2007 12 05 | 699 | 0.6-     | 0.7-  |
| 2003 12 17                              | 691        | 0.3+     | 1.1-      | 2006 07 29 | E12         | 0.2-        | 0.3- | 2007 12 05 | 699 | 1.0-     | 0.4-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 691 | 0.0  | 0.1- | 2006 07 29 | E12 | 0.3- | 0.2- | 2007 12 05 | 699 | 1.2- | 0.5+ |
| 2003 12 28 | 691 | 0.2+ | 0.0  | 2006 07 29 | E12 | 0.2+ | 0.2- |            |     |      |      |

**(172631)\* 2003 XX<sub>20</sub> = 2002 RW<sub>3</sub>**

Discovered 2003 Dec. 14 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 57440)

|                                         |            |          |           |            |             |             |      |            |     |          |       |
|-----------------------------------------|------------|----------|-----------|------------|-------------|-------------|------|------------|-----|----------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |             |      |            |     |          |       |
| MPC                                     |            |          |           | MPC        |             |             |      | MPC        |     |          |       |
| <i>M</i>                                | 185.27089  |          | (2000.0)  | <i>P</i>   |             | <i>Q</i>    |      | <i>P</i>   |     | <i>Q</i> |       |
| <i>n</i>                                | 0.23892986 | $\omega$ | 321.93672 |            | -0.63988204 | +0.73837252 |      |            |     |          |       |
| <i>a</i>                                | 2.5721074  | $\Omega$ | 267.21612 |            | -0.64237617 | -0.66604402 |      |            |     |          |       |
| <i>e</i>                                | 0.0323799  | <i>i</i> | 12.31132  |            | -0.42178647 | -0.10578933 |      |            |     |          |       |
| <i>P</i>                                | 4.13       | <i>H</i> | 16.2      | <i>G</i>   | 0.15        | <i>U</i>    | 0    |            |     |          |       |
| Residuals in seconds of arc             |            |          |           |            |             |             |      |            |     |          |       |
| 2000 01 05                              | 691        | 0.1-     | 0.4-      | 2003 12 04 | 704         | 0.0         | 0.9- | 2005 03 19 | E12 | 0.1+     | 0.4-  |
| 2000 01 05                              | 691        | 0.3-     | 0.4-      | 2003 12 04 | 704         | 0.6+        | 0.5- | 2005 03 19 | E12 | 0.3-     | 0.3+  |
| 2000 01 05                              | 691        | 0.1-     | 0.5-      | 2003 12 04 | 704         | 0.7-        | 0.8+ | 2005 03 19 | E12 | 0.0      | 0.4-  |
| 2002 08 13                              | 699        | 0.2-     | 0.4+      | 2003 12 14 | 691         | 0.5-        | 0.4+ | 2007 10 19 | 703 | 0.9-     | 0.9-  |
| 2002 08 13                              | 699        | 0.1+     | 0.2+      | 2003 12 14 | 691         | 0.0         | 0.6+ | 2007 10 19 | 703 | 0.2+     | 0.1-  |
| 2002 08 13                              | 699        | 1.3+     | 0.2+      | 2003 12 14 | 691         | 0.8-        | 0.2+ | 2007 10 19 | 703 | 1.4+     | 1.4+  |
| 2002 08 13                              | 699        | 0.3-     | 1.1+      | 2003 12 18 | 704         | 0.9+        | 0.6+ | 2007 10 19 | 703 | (0.3-    | 2.9+) |
| 2002 08 25                              | 644        | 0.1-     | 0.4+      | 2003 12 18 | 704         | 0.0         | 0.5+ | 2007 11 13 | 703 | 1.1+     | 0.4+  |
| 2002 08 25                              | 644        | 0.1+     | 0.6+      | 2003 12 18 | 704         | 1.0+        | 0.6- | 2007 11 13 | 703 | 0.1+     | 0.3-  |
| 2002 08 25                              | 644        | 0.2+     | 0.5+      | 2003 12 18 | 704         | 0.1-        | 0.1- | 2007 11 13 | 703 | 0.4+     | 0.4+  |
| 2002 09 02                              | 644        | 0.1-     | 0.2+      | 2003 12 19 | 691         | 0.2+        | 0.2+ | 2007 11 13 | 703 | 0.8-     | 0.0   |
| 2002 09 02                              | 644        | 0.2-     | 0.5+      | 2003 12 19 | 691         | 0.2+        | 0.1+ | 2007 11 17 | 704 | 1.5-     | 0.8-  |
| 2002 09 02                              | 644        | 0.4-     | 0.4+      | 2003 12 19 | 691         | 0.3+        | 0.2- | 2007 11 17 | 704 | 1.0-     | 0.0   |
| 2002 09 04                              | 644        | 0.0      | 0.3+      | 2003 12 22 | 704         | 0.2+        | 0.2+ | 2007 11 17 | 704 | 0.6-     | 0.0   |
| 2002 09 04                              | 644        | 0.1-     | 0.7+      | 2003 12 22 | 704         | 0.0         | 0.2+ | 2007 12 13 | 704 | 0.5-     | 0.6-  |
| 2002 09 04                              | 644        | 0.2+     | 0.8+      | 2003 12 22 | 704         | 0.4+        | 0.1+ | 2007 12 13 | 704 | 0.0      | 0.7+  |
| 2002 10 11                              | 645        | 0.0      | 0.2-      | 2003 12 22 | 704         | 0.3-        | 0.0  | 2007 12 13 | 704 | 0.1-     | 0.6+  |
| 2002 10 11                              | 645        | 0.0      | 0.2-      | 2003 12 29 | 691         | 0.2+        | 0.1- | 2007 12 13 | 704 | 0.3+     | 0.4-  |
| 2003 11 20                              | 704        | 0.6+     | 0.3+      | 2003 12 29 | 691         | 0.4+        | 0.1- | 2007 12 15 | 704 | 0.7+     | 0.5+  |
| 2003 11 20                              | 704        | 0.1-     | 0.7-      | 2003 12 29 | 691         | 0.1-        | 0.0  | 2007 12 15 | 704 | 0.4+     | 0.0   |
| 2003 11 20                              | 704        | 0.3+     | 0.0       | 2005 03 19 | E12         | 0.1-        | 0.1+ | 2007 12 15 | 704 | 1.0+     | 0.3+  |

**(172632)\* 2003 XV<sub>29</sub> = 2002 PR<sub>3</sub>**

Discovered 2003 Dec. 1 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 69600)

|                                         |            |      |      |            |           |      |             |            |             |          |      |  |
|-----------------------------------------|------------|------|------|------------|-----------|------|-------------|------------|-------------|----------|------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |            |           |      |             |            |             | MPC      |      |  |
| <i>M</i>                                | 110.93382  |      |      | (2000.0)   |           |      | <b>P</b>    |            | <b>Q</b>    |          |      |  |
| <i>n</i>                                | 0.24050483 |      |      | $\omega$   | 226.23379 |      | +0.26747138 |            | +0.95739630 |          |      |  |
| <i>a</i>                                | 2.5608660  |      |      | $\Omega$   | 59.57655  |      | −0.84382192 |            | +0.28727996 |          |      |  |
| <i>e</i>                                | 0.1807172  |      |      | <i>i</i>   | 7.25281   |      | −0.46521353 |            | +0.02936927 |          |      |  |
| <i>P</i>                                | 4.10       |      |      | <i>H</i>   | 16.3      |      | <i>G</i>    | 0.15       |             | <i>U</i> | 1    |  |
| Residuals in seconds of arc             |            |      |      |            |           |      |             |            |             |          |      |  |
| 1994 09 06                              | 691        | 0.1− | 0.2− | 2003 11 19 | 691       | 0.3− | 0.0         | 2007 10 15 | G96         | 0.7+     | 0.6− |  |
| 1994 09 06                              | 691        | 0.1+ | 0.1+ | 2003 11 19 | 691       | 0.3− | 0.3+        | 2007 10 15 | G96         | 0.1+     | 0.3− |  |
| 1994 09 06                              | 691        | 0.1+ | 0.0  | 2003 11 19 | 691       | 0.1+ | 0.0         | 2007 10 30 | 691         | 0.0      | 0.0  |  |
| 2002 06 13                              | 644        | 0.1+ | 0.5+ | 2003 12 01 | 691       | 0.1− | 0.0         | 2007 10 30 | 691         | 0.3−     | 0.3+ |  |
| 2002 06 13                              | 644        | 0.1+ | 0.5+ | 2003 12 01 | 691       | 0.1− | 0.0         | 2007 10 30 | 691         | 0.2−     | 0.0  |  |
| 2002 06 13                              | 644        | 0.2+ | 0.6+ | 2003 12 01 | 691       | 0.1− | 0.0         | 2007 11 03 | 691         | 0.3−     | 0.5+ |  |
| 2002 07 06                              | 644        | 0.3− | 0.1− | 2003 12 14 | 691       | 0.1+ | 0.4+        | 2007 11 03 | 691         | 0.2−     | 0.1+ |  |
| 2002 07 06                              | 644        | 0.1− | 0.3− | 2003 12 14 | 691       | 0.6+ | 0.1+        | 2007 11 03 | 691         | 0.6−     | 0.3− |  |
| 2002 07 06                              | 644        | 0.0  | 0.4− | 2003 12 14 | 691       | 0.1+ | 0.6−        | 2007 11 14 | 691         | 0.2+     | 0.1− |  |
| 2002 08 03                              | 644        | 0.1− | 0.2+ | 2007 10 14 | G96       | 0.4+ | 0.3−        | 2007 11 14 | 691         | 0.1−     | 0.1− |  |
| 2002 08 03                              | 644        | 0.1+ | 0.1− | 2007 10 14 | G96       | 0.5+ | 0.1+        | 2007 11 14 | 691         | 0.3+     | 0.2+ |  |
| 2002 08 03                              | 644        | 0.0  | 0.1− | 2007 10 14 | G96       | 0.1+ | 0.1−        | 2007 12 04 | G96         | 0.4+     | 0.2− |  |
| 2002 08 05                              | 644        | 0.1+ | 0.1− | 2007 10 14 | G96       | 0.2+ | 0.2−        | 2007 12 04 | G96         | 0.4+     | 0.2+ |  |
| 2002 08 05                              | 644        | 0.0  | 0.2− | 2007 10 15 | G96       | 0.3+ | 0.1−        | 2007 12 04 | G96         | 0.4+     | 0.0  |  |
| 2002 08 05                              | 644        | 0.1− | 0.1− | 2007 10 15 | G96       | 0.7+ | 0.5−        | 2007 12 04 | G96         | 0.4+     | 0.1− |  |

2007 DEC. 24

M.P.O. 129433

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 241.09540  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25909032 | $\omega$ 319.78810 | -0.66040994   | +0.74730514 |
| <i>a</i> | 2.4368862  | $\Omega$ 268.74755 | -0.66870134   | -0.62978753 |
| <i>e</i> | 0.0733061  | <i>i</i> 4.21272   | -0.34160977   | -0.21190254 |
| <i>P</i> | 3.80       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.7- | 0.3+ | 2005 05 06 | 460 | (2.1- | 1.1-) | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2002 09 13 | 644 | 0.7- | 0.3+ | 2005 05 07 | 460 | 0.6+  | 0.3-  | 2007 11 11 | G96 | 0.1+ | 0.2- |
| 2002 09 13 | 644 | 0.5- | 0.2+ | 2005 05 07 | 460 | 0.6-  | 0.4+  | 2007 11 11 | G96 | 0.1- | 0.0  |
| 2003 12 20 | 460 | 0.6+ | 0.3- | 2006 09 24 | 104 | 0.6+  | 0.4+  | 2007 11 11 | G96 | 0.1+ | 0.1- |
| 2003 12 20 | 460 | 0.2- | 0.2+ | 2006 09 24 | 104 | (1.6- | 0.8+) | 2007 11 11 | G96 | 0.2+ | 0.2+ |
| 2003 12 20 | 460 | 0.3+ | 0.9- | 2006 10 04 | G96 | 0.3+  | 0.4-  | 2007 11 11 | G96 | 0.2- | 0.4- |
| 2003 12 21 | 460 | 0.7+ | 0.0  | 2006 10 04 | G96 | 0.3+  | 0.3-  | 2007 11 12 | G96 | 0.4- | 0.1- |
| 2003 12 21 | 460 | 0.4+ | 0.5+ | 2006 10 04 | G96 | 0.1+  | 0.2-  | 2007 11 12 | G96 | 0.4- | 0.3- |
| 2003 12 24 | 460 | 0.0  | 0.5+ | 2006 10 04 | G96 | 0.1+  | 0.3-  | 2007 11 12 | G96 | 1.3- | 0.4+ |
| 2003 12 24 | 460 | 0.8- | 0.2+ | 2006 10 17 | 703 | 0.5-  | 0.7-  | 2007 11 12 | G96 | 0.4+ | 0.3- |
| 2003 12 24 | 460 | 0.4- | 0.4- | 2006 10 17 | 703 | 0.4-  | 0.4-  | 2007 11 13 | G96 | 0.0  | 0.1- |
| 2003 12 30 | 460 | 0.6- | 0.4+ | 2006 10 17 | 703 | 0.9+  | 1.3+  | 2007 11 13 | G96 | 0.0  | 0.1+ |
| 2003 12 30 | 460 | 0.2+ | 0.4+ | 2006 10 17 | 703 | 1.0+  | 0.4-  | 2007 11 13 | G96 | 0.0  | 0.2+ |
| 2004 01 22 | 460 | 0.5+ | 0.3+ | 2006 10 21 | 460 | 0.6+  | 0.1-  | 2007 11 13 | G96 | 0.1+ | 0.2+ |
| 2004 01 22 | 460 | 0.4- | 0.2- | 2006 10 21 | 460 | 0.2-  | 0.1+  | 2007 12 15 | G96 | 0.0  | 0.4+ |
| 2004 02 13 | 460 | 1.0+ | 0.1- | 2006 10 21 | 460 | 1.0-  | 0.0   | 2007 12 15 | G96 | 0.1+ | 0.2- |
| 2004 02 13 | 460 | 0.0  | 0.9+ | 2007 11 11 | G96 | 0.1+  | 0.4-  | 2007 12 15 | G96 | 0.5- | 0.1- |
| 2005 05 06 | 460 | 0.4+ | 0.2- | 2007 11 11 | G96 | 0.3-  | 0.2+  | 2007 12 15 | G96 | 0.3- | 0.1- |

(172634)\* 2003 YY<sub>13</sub>

Discovered 2003 Dec. 17 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.65531   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23427372 | $\omega$ 312.23461 | +0.66211840   | -0.64052189 |
| <i>a</i> | 2.6060756  | $\Omega$ 91.67252  | +0.74932131   | +0.55837674 |
| <i>e</i> | 0.1208409  | <i>i</i> 22.90340  | +0.01080740   | +0.52720691 |
| <i>P</i> | 4.21       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 06 15 | 645 | 0.0  | 0.0  | 2003 12 29 | 704 | 0.3+  | 0.4-  | 2005 04 14 | 703 | 0.4-  | 0.8+  |
| 2001 06 15 | 645 | 0.1- | 0.0  | 2003 12 29 | 704 | 0.6+  | 0.1+  | 2005 04 14 | 703 | 0.3+  | 0.8+  |
| 2003 10 29 | 704 | 0.7- | 0.8- | 2003 12 29 | 704 | 0.3+  | 0.1-  | 2005 05 03 | 703 | 0.1-  | 0.0   |
| 2003 10 29 | 704 | 0.6- | 0.5- | 2003 12 29 | 704 | 0.1-  | 0.1-  | 2005 05 03 | 703 | 0.6+  | 0.4+  |
| 2003 10 29 | 704 | 0.7+ | 0.3+ | 2003 12 30 | 704 | 0.5+  | 0.4+  | 2005 05 03 | 703 | (0.7- | 2.6-) |
| 2003 10 29 | 704 | 0.7- | 0.1+ | 2003 12 30 | 704 | 0.3+  | 0.2+  | 2005 05 03 | 703 | 0.7+  | 0.3-  |
| 2003 12 04 | 704 | 0.2+ | 0.1- | 2003 12 30 | 704 | 0.0   | 0.3+  | 2006 07 26 | E12 | 0.3-  | 0.7+  |
| 2003 12 04 | 704 | 0.6+ | 0.9+ | 2003 12 30 | 704 | 0.0   | 0.1+  | 2006 07 26 | E12 | 0.4+  | 0.6+  |
| 2003 12 04 | 704 | 0.5+ | 0.1+ | 2003 12 30 | 704 | 0.4+  | 0.1+  | 2006 07 26 | E12 | 0.5-  | 0.7+  |
| 2003 12 17 | 703 | 0.3- | 0.4- | 2004 01 16 | 204 | 0.3-  | 0.6-  | 2006 07 26 | E12 | 0.0   | 0.2+  |
| 2003 12 17 | 703 | 1.1- | 0.9- | 2004 01 16 | 644 | 0.1-  | 0.1+  | 2006 08 23 | E12 | 0.1+  | 0.8+  |
| 2003 12 17 | 703 | 0.9- | 0.6- | 2004 01 16 | 644 | 0.0   | 0.1+  | 2006 08 23 | E12 | 0.6+  | 0.4+  |
| 2003 12 17 | 703 | 1.4- | 0.2+ | 2004 01 16 | 644 | 0.1-  | 0.1+  | 2006 08 23 | E12 | 0.2+  | 0.7+  |
| 2003 12 18 | 704 | 0.9+ | 0.1+ | 2004 01 19 | 704 | 0.2-  | 0.2+  | 2006 08 23 | E12 | 0.7+  | 0.4+  |
| 2003 12 18 | 704 | 0.4+ | 0.2+ | 2004 01 19 | 704 | 0.2-  | 1.4+  | 2007 11 04 | 704 | 0.5+  | 0.9+  |
| 2003 12 18 | 704 | 1.0- | 0.0  | 2004 01 19 | 704 | 0.1+  | 1.3+  | 2007 11 04 | 704 | 0.5-  | 0.0   |
| 2003 12 18 | 704 | 0.2+ | 0.5+ | 2004 01 19 | 704 | 0.2-  | 0.3+  | 2007 11 04 | 704 | 0.2+  | 0.0   |
| 2003 12 18 | 704 | 1.1- | 0.5+ | 2004 01 19 | 704 | 0.3-  | 0.1-  | 2007 11 04 | 704 | 0.4-  | 0.3+  |
| 2003 12 28 | 704 | 0.4+ | 0.5- | 2004 02 09 | 644 | 0.2-  | 0.1+  | 2007 12 04 | 704 | 0.3+  | 0.6-  |
| 2003 12 28 | 704 | 0.5+ | 0.4- | 2004 02 09 | 644 | 0.0   | 0.0   | 2007 12 04 | 691 | 0.1-  | 0.0   |
| 2003 12 28 | 704 | 0.2- | 0.3- | 2004 02 09 | 644 | 0.0   | 0.4+  | 2007 12 04 | 704 | 0.5-  | 0.4-  |
| 2003 12 28 | 704 | 0.5- | 0.6- | 2004 02 10 | 704 | 0.5+  | 0.3-  | 2007 12 04 | 704 | 1.1-  | 0.3+  |
| 2003 12 28 | 704 | 0.1+ | 0.2+ | 2004 02 10 | 704 | 0.7-  | 0.2-  | 2007 12 04 | 691 | 0.0   | 0.0   |
| 2003 12 29 | 703 | 0.7+ | 0.1- | 2004 02 10 | 704 | 0.9+  | 0.8+  | 2007 12 04 | 704 | 0.3-  | 0.3+  |
| 2003 12 29 | 703 | 0.6+ | 0.0  | 2004 02 10 | 704 | 1.1+  | 0.0   | 2007 12 04 | 691 | 0.1+  | 0.0   |
| 2003 12 29 | 703 | 0.5+ | 0.6+ | 2004 02 10 | 704 | 0.1+  | 0.8+  | 2007 12 04 | 704 | 0.1+  | 0.1-  |
| 2003 12 29 | 703 | 0.1+ | 0.0  | 2005 04 14 | 703 | 0.4+  | 0.1+  |            |     |       |       |
| 2003 12 29 | 704 | 0.1+ | 0.3+ | 2005 04 14 | 703 | (0.1+ | 1.9+) |            |     |       |       |

(172635)\* 2003 YV<sub>14</sub> = 1990 UV<sub>8</sub>

Discovered 2003 Dec. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 89494)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.12211   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23708632 | $\omega$ 260.69994 | +0.79736466   | +0.57075858 |
| <i>a</i> | 2.5854236  | $\Omega$ 64.25299  | -0.43198012   | +0.76666254 |
| <i>e</i> | 0.3001499  | <i>i</i> 12.57301  | -0.42142944   | +0.29404625 |
| <i>P</i> | 4.16       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1990 10 24 | 809 | 0.0   | 0.6+  | 2006 04 28 | 704 | 0.2- | 0.6+ | 2006 06 04 | G96 | 0.2- | 0.0  |
| 1990 10 24 | 809 | 0.5-  | 0.5+  | 2006 04 28 | 704 | 0.5+ | 0.6+ | 2006 06 04 | G96 | 0.2- | 0.3- |
| 1990 10 24 | 809 | 0.5-  | 0.1+  | 2006 04 28 | 704 | 0.2- | 0.9+ | 2006 06 15 | E12 | 0.7- | 0.4+ |
| 1999 12 12 | 704 | 1.1-  | 2.0-  | 2006 04 28 | 704 | 0.8- | 0.4- | 2006 06 15 | E12 | 0.9+ | 0.4+ |
| 1999 12 12 | 704 | 0.6-  | 2.0-  | 2006 05 01 | 704 | 0.2+ | 0.0  | 2006 06 15 | E12 | 0.1+ | 0.1+ |
| 1999 12 12 | 704 | 0.4+  | 1.3-  | 2006 05 01 | 704 | 0.2+ | 0.1- | 2006 06 15 | E12 | 0.2+ | 0.3+ |
| 2003 11 20 | 704 | 0.9+  | 0.5+  | 2006 05 01 | 704 | 0.2- | 0.8+ | 2006 06 16 | 644 | 0.2+ | 0.2+ |
| 2003 11 20 | 704 | 0.0   | 0.6+  | 2006 05 01 | 704 | 0.2- | 0.1- | 2006 06 16 | 644 | 0.1+ | 0.1- |
| 2003 11 20 | 704 | 1.1+  | 0.6+  | 2006 05 06 | G96 | 0.4- | 0.3+ | 2006 06 16 | 644 | 0.1+ | 0.1+ |
| 2003 11 20 | 704 | 0.1+  | 0.1+  | 2006 05 06 | G96 | 0.3- | 0.4+ | 2006 06 19 | 644 | 0.1- | 0.1+ |
| 2003 12 17 | 704 | 0.5-  | 0.1-  | 2006 05 06 | G96 | 0.2- | 0.1+ | 2006 06 19 | 644 | 0.0  | 0.0  |
| 2003 12 17 | 704 | 0.9-  | 0.1-  | 2006 05 06 | G96 | 0.2- | 0.0  | 2006 06 19 | 644 | 0.3+ | 0.3- |
| 2003 12 17 | 704 | 0.7-  | 0.0   | 2006 05 16 | E12 | 0.4+ | 0.3- | 2006 06 27 | E12 | 0.2+ | 0.0  |
| 2003 12 17 | 704 | 0.7-  | 0.4+  | 2006 05 16 | E12 | 0.4- | 0.4- | 2006 06 27 | E12 | 0.3- | 0.3+ |
| 2003 12 17 | 704 | 0.4-  | 0.0   | 2006 05 16 | E12 | 0.6- | 0.3- | 2006 06 27 | E12 | 0.2- | 0.6+ |
| 2003 12 18 | 704 | 0.8-  | 0.1-  | 2006 05 16 | E12 | 0.2+ | 0.2- | 2006 06 27 | E12 | 0.4+ | 0.1+ |
| 2003 12 18 | 704 | 0.5+  | 0.7+  | 2006 05 19 | G96 | 0.1+ | 0.0  | 2006 07 03 | E12 | 0.4+ | 0.1- |
| 2003 12 18 | 704 | 0.5+  | 0.3+  | 2006 05 19 | G96 | 0.1+ | 0.0  | 2006 07 03 | E12 | 0.0  | 0.2+ |
| 2003 12 19 | 704 | 0.2-  | 0.3-  | 2006 05 19 | G96 | 0.2- | 0.0  | 2006 07 03 | E12 | 0.0  | 0.6+ |
| 2003 12 19 | 704 | 0.3+  | 0.6-  | 2006 05 25 | 704 | 0.6- | 0.3- | 2006 07 03 | E12 | 0.0  | 0.6+ |
| 2003 12 19 | 704 | 0.0   | 0.9+  | 2006 05 25 | 704 | 0.2+ | 0.9- | 2006 07 30 | E12 | 0.2+ | 0.5+ |
| 2003 12 29 | 704 | 0.0   | 0.5+  | 2006 05 25 | 704 | 0.9+ | 0.4- | 2006 07 30 | E12 | 0.3- | 0.6+ |
| 2003 12 29 | 704 | 0.8+  | 0.2+  | 2006 05 25 | 704 | 0.9+ | 0.7- | 2006 07 30 | E12 | 0.7+ | 0.4+ |
| 2003 12 29 | 704 | 0.2-  | 0.1-  | 2006 05 25 | 704 | 0.8+ | 0.6- | 2006 07 30 | E12 | 0.2+ | 0.2+ |
| 2004 01 16 | 691 | 0.3+  | 0.0   | 2006 05 27 | 704 | 0.1+ | 0.6+ | 2007 12 06 | 691 | 0.3- | 0.2+ |
| 2004 01 16 | 691 | 0.5+  | 0.1-  | 2006 05 27 | 704 | 0.8+ | 1.0+ | 2007 12 06 | 691 | 1.2- | 0.4+ |
| 2004 01 16 | 691 | 0.3+  | 0.1-  | 2006 05 27 | 704 | 0.2+ | 1.4+ | 2007 12 06 | 691 | 0.1- | 0.0  |
| 2004 12 09 | 291 | 0.3+  | 0.1+  | 2006 05 27 | 704 | 0.7+ | 0.1+ | 2007 12 13 | 704 | 0.3+ | 0.8+ |
| 2004 12 09 | 291 | 0.1-  | 0.3+  | 2006 05 28 | 608 | 0.5+ | 0.0  | 2007 12 13 | 704 | 0.5+ | 0.4+ |
| 2004 12 09 | 291 | 0.2-  | 0.3+  | 2006 05 28 | 608 | 0.6+ | 0.3- | 2007 12 13 | 704 | 0.1- | 0.5+ |
| 2005 03 09 | 703 | (1.6- | 0.1-) | 2006 05 28 | 608 | 0.4+ | 0.2- | 2007 12 13 | 704 | 0.2+ | 0.7+ |
| 2005 03 09 | 703 | (1.7- | 1.1-) | 2006 06 04 | 704 | 0.0  | 0.3- | 2007 12 13 | 704 | 0.4+ | 0.9+ |
| 2005 03 09 | 703 | (2.3- | 1.7-) | 2006 06 04 | 704 | 0.2- | 0.4+ | 2007 12 15 | 704 | 0.1- | 0.0  |
| 2005 03 09 | 703 | (0.6- | 1.6-) | 2006 06 04 | 704 | 0.0  | 0.2+ | 2007 12 15 | 704 | 0.2+ | 0.7+ |
| 2006 04 20 | E12 | 0.8-  | 0.0   | 2006 06 04 | 704 | 0.1+ | 0.3- | 2007 12 15 | 704 | 0.8+ | 0.1- |
| 2006 04 20 | E12 | 0.4-  | 0.1-  | 2006 06 04 | G96 | 0.2- | 0.1+ | 2007 12 15 | 704 | 0.1- | 0.4+ |
| 2006 04 20 | E12 | 0.5-  | 0.4+  | 2006 06 04 | G96 | 0.1- | 0.1+ | 2007 12 15 | 704 | 0.9+ | 0.4+ |
| 2006 04 20 | E12 | 0.2-  | 0.1-  | 2006 06 04 | 704 | 0.2- | 0.4- |            |     |      |      |

(172636)\* 2003 YZ<sub>14</sub> = 1998 QW<sub>88</sub>

Discovered 2003 Dec. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 69606)

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 02 17 | 691 | 0.7+ | 0.3+ | 2002 07 22 | 608 | 0.7- | 0.4- | 2003 12 29 | 704 | 0.8-  | 0.7+  |
| 1996 02 17 | 691 | 1.1+ | 0.5+ | 2002 08 13 | 704 | 0.1+ | 0.3- | 2003 12 29 | 704 | 0.1+  | 1.5+  |
| 1996 02 17 | 691 | 0.4+ | 0.0  | 2002 08 13 | 704 | 0.1- | 0.1+ | 2003 12 29 | 704 | 0.2-  | 0.0   |
| 1998 08 24 | 704 | 1.2- | 1.6+ | 2002 08 13 | 704 | 0.3+ | 0.6- | 2003 12 29 | 704 | 0.3-  | 0.9+  |
| 1998 08 24 | 704 | 0.1+ | 0.9+ | 2002 08 13 | 704 | 0.7+ | 0.7- | 2003 12 29 | 704 | 0.0   | 0.3+  |
| 1998 08 24 | 704 | 1.3+ | 0.3- | 2002 08 18 | 644 | 0.2- | 0.2- | 2004 01 16 | 691 | 0.0   | 0.0   |
| 1998 08 24 | 704 | 1.9- | 0.0  | 2002 08 18 | 644 | 0.0  | 0.0  | 2004 01 16 | 691 | 0.2-  | 0.2-  |
| 1998 08 24 | 704 | 0.8- | 1.6+ | 2002 08 18 | 644 | 0.0  | 0.0  | 2004 01 16 | 691 | 0.1-  | 0.0   |
| 1998 08 27 | 704 | 1.0- | 0.7+ | 2002 09 05 | 704 | 0.2+ | 0.3- | 2005 03 13 | 703 | 0.8+  | 0.9-  |
| 1998 08 27 | 704 | 0.3- | 0.7+ | 2002 09 05 | 704 | 0.7- | 0.1+ | 2005 03 13 | 703 | 0.5+  | 0.6-  |
| 1998 08 27 | 704 | 0.9- | 0.8+ | 2002 09 05 | 704 | 0.6- | 0.4- | 2005 03 13 | 703 | 0.2-  | 0.2-  |
| 1998 08 27 | 704 | 0.2+ | 0.2+ | 2002 09 05 | 704 | 0.4+ | 0.8- | 2005 03 13 | 703 | 0.9+  | 0.9+  |
| 1998 08 27 | 704 | 0.5+ | 0.8- | 2002 09 05 | 704 | 0.4- | 0.3- | 2005 03 13 | 703 | (1.2- | 1.8+) |
| 1998 10 15 | 699 | 1.0- | 0.3+ | 2002 10 03 | 704 | 0.6+ | 1.0- | 2005 03 13 | 703 | 1.5-  | 0.1-  |
| 1998 10 15 | 699 | 0.1+ | 0.4+ | 2002 10 03 | 704 | 0.1+ | 0.6- | 2005 03 13 | 703 | 0.9-  | 0.3+  |
| 1998 10 15 | 699 | 1.0+ | 0.2+ | 2002 10 03 | 704 | 0.1- | 0.0  | 2005 03 13 | 703 | 0.6-  | 0.4+  |
| 2002 07 05 | 704 | 0.2+ | 1.1+ | 2003 12 01 | 691 | 0.1- | 0.1- | 2007 11 08 | 703 | 0.9+  | 0.6+  |
| 2002 07 05 | 704 | 1.2+ | 0.7- | 2003 12 01 | 691 | 0.3- | 0.1- | 2007 11 08 | 703 | 0.5+  | 0.3+  |
| 2002 07 05 | 704 | 0.1- | 1.0- | 2003 12 01 | 691 | 0.3- | 0.0  | 2007 11 08 | 703 | 0.2+  | 0.5+  |
| 2002 07 05 | 704 | 0.7- | 0.6- | 2003 12 17 | 704 | 0.2- | 0.6- | 2007 11 08 | 703 | 0.8+  | 0.2-  |
| 2002 07 05 | 704 | 0.2- | 1.0+ | 2003 12 17 | 704 | 0.1- | 0.5- | 2007 11 21 | 703 | 0.1-  | 0.0   |
| 2002 07 05 | 644 | 0.0  | 0.6+ | 2003 12 17 | 704 | 0.5- | 0.8- | 2007 11 21 | 703 | 1.1+  | 0.4-  |
| 2002 07 05 | 644 | 0.1+ | 0.8+ | 2003 12 17 | 704 | 0.7- | 0.5+ | 2007 11 21 | 703 | 0.3-  | 0.9-  |
| 2002 07 05 | 644 | 0.1+ | 0.9+ | 2003 12 17 | 704 | 0.7- | 0.2+ | 2007 11 21 | 703 | 0.9+  | 0.2-  |
| 2002 07 22 | 644 | 0.0  | 0.3+ | 2003 12 18 | 704 | 0.6- | 0.6+ | 2007 12 03 | 704 | 0.6+  | 0.4-  |
| 2002 07 22 | 644 | 0.0  | 0.4+ | 2003 12 18 | 704 | 0.7- | 0.9- | 2007 12 03 | 704 | 0.4+  | 0.2-  |
| 2002 07 22 | 644 | 0.3- | 0.4+ | 2003 12 18 | 704 | 0.5- | 1.2- | 2007 12 03 | 704 | 0.3+  | 0.2+  |
| 2002 07 22 | 608 | 0.2+ | 0.6- | 2003 12 18 | 704 | 0.2- | 0.1- | 2007 12 03 | 704 | 0.6+  | 0.2-  |
| 2002 07 22 | 608 | 0.2+ | 0.3- | 2003 12 18 | 704 | 1.1- | 1.1+ | 2007 12 03 | 704 | 0.5+  | 0.1-  |

(172637)\* 2003 YK<sub>21</sub>

Discovered 2003 Dec. 17 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.40051   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22146942 | $\omega$ | 48.12488  | +0.99767615 | -0.05157998 |
| <i>a</i> | 2.7055789  | $\Omega$ | 314.77824 | +0.02694540 | +0.89880329 |
| <i>e</i> | 0.1976489  | <i>i</i> | 3.59567   | +0.06257998 | +0.43530695 |
| <i>P</i> | 4.45       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 11 15 | 699 | 0.1+ | 0.7+ | 2003 12 17 | 691 | 0.1- | 0.1- | 2007 11 07 | 704 | 0.6+  | 0.7+  |
| 1998 11 15 | 699 | 0.2- | 0.3- | 2003 12 19 | 691 | 0.2+ | 0.2+ | 2007 11 13 | 703 | 0.9+  | 1.0-  |
| 1998 11 15 | 699 | 0.2+ | 0.4+ | 2003 12 19 | 691 | 0.2+ | 0.1+ | 2007 11 13 | 703 | 0.3-  | 0.1+  |
| 2001 05 23 | 807 | 0.3+ | 0.5+ | 2003 12 19 | 691 | 0.0  | 0.2+ | 2007 11 13 | 703 | 0.5-  | 0.3+  |
| 2001 05 24 | 807 | 0.7+ | 0.2+ | 2003 12 21 | 691 | 0.2+ | 0.1- | 2007 11 13 | 703 | 1.1-  | 0.4+  |
| 2002 08 08 | 644 | 0.3- | 0.4+ | 2003 12 21 | 691 | 0.2- | 0.1- | 2007 11 18 | 704 | 0.4+  | 0.2+  |
| 2002 08 08 | 644 | 0.2- | 0.0  | 2003 12 21 | 691 | 0.2+ | 0.0  | 2007 11 18 | 704 | 0.4+  | 0.3-  |
| 2002 08 08 | 644 | 0.1+ | 0.3+ | 2004 01 13 | 699 | 0.4+ | 0.5- | 2007 11 18 | 704 | 0.4-  | 0.5-  |
| 2002 08 12 | 699 | 1.1+ | 0.7+ | 2004 01 13 | 699 | 0.1- | 0.3+ | 2007 11 18 | 704 | 0.4+  | 0.0   |
| 2002 08 12 | 699 | 0.5- | 0.2+ | 2004 01 13 | 699 | 0.4- | 0.4- | 2007 11 18 | 704 | 0.2+  | 0.0   |
| 2002 08 12 | 699 | 0.3- | 0.1- | 2004 01 13 | 699 | 0.3+ | 0.4- | 2007 11 20 | 691 | (1.9- | 1.4+) |
| 2002 08 12 | 699 | 0.2+ | 0.4+ | 2004 01 15 | 691 | 0.2- | 0.2+ | 2007 11 20 | 691 | 0.2-  | 0.2+  |
| 2002 08 16 | 608 | 0.2- | 0.2+ | 2004 01 15 | 691 | 0.3- | 0.2+ | 2007 11 20 | 691 | 0.1+  | 0.2-  |
| 2002 08 16 | 608 | 0.0  | 0.1- | 2004 01 15 | 691 | 0.2- | 0.3+ | 2007 11 20 | 691 | 0.1+  | 0.0   |
| 2002 08 16 | 608 | 0.1- | 0.2- | 2004 01 22 | 704 | 0.8- | 1.1+ | 2007 11 20 | 691 | 0.2+  | 0.1-  |
| 2002 08 17 | 644 | 0.1- | 0.3+ | 2004 01 22 | 704 | 0.2+ | 0.3+ | 2007 11 20 | 691 | 0.3+  | 0.1-  |
| 2002 08 17 | 644 | 0.3- | 0.2+ | 2004 01 22 | 704 | 0.4+ | 0.6+ | 2007 12 12 | 704 | 0.1-  | 0.3-  |
| 2002 08 17 | 644 | 0.1- | 0.2+ | 2007 10 24 | 704 | 0.0  | 0.4- | 2007 12 12 | 704 | 0.2-  | 0.2+  |
| 2002 09 05 | 704 | 0.0  | 0.2- | 2007 10 24 | 704 | 0.1- | 1.0- | 2007 12 12 | 704 | 0.2-  | 0.1+  |
| 2002 09 05 | 704 | 0.0  | 0.1- | 2007 10 24 | 704 | 0.9+ | 0.1+ | 2007 12 12 | 704 | 0.7-  | 0.1+  |
| 2002 09 05 | 704 | 0.8- | 1.4+ | 2007 10 24 | 704 | 1.2+ | 0.9- | 2007 12 12 | 704 | 0.5-  | 0.4+  |
| 2002 09 14 | 644 | 0.4- | 0.1+ | 2007 11 02 | 691 | 0.1- | 0.3- | 2007 12 13 | 704 | 0.3+  | 1.0+  |
| 2002 09 14 | 644 | 0.3- | 0.2+ | 2007 11 02 | 691 | 0.2- | 0.4- | 2007 12 13 | 704 | 0.7-  | 0.4+  |
| 2002 09 14 | 644 | 0.6- | 0.3+ | 2007 11 02 | 691 | 0.1+ | 0.2- | 2007 12 13 | 704 | 0.5-  | 0.3+  |
| 2002 09 16 | 608 | 0.0  | 0.6- | 2007 11 06 | D29 | 0.6+ | 0.4- | 2007 12 13 | 704 | 0.9-  | 0.0   |
| 2002 09 16 | 608 | 0.1+ | 0.7- | 2007 11 06 | D29 | 0.3+ | 0.4- | 2007 12 13 | 704 | (1.6- | 0.0 ) |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 16 | 608 | 0.2- | 1.4- | 2007 11 06 | D29 | 0.6+ | 0.9- | 2007 12 15 | 704 | 0.5- | 0.7+ |
| 2002 10 11 | 704 | 0.1+ | 0.1+ | 2007 11 06 | D29 | 0.9+ | 0.1- | 2007 12 15 | 704 | 0.6- | 0.5+ |
| 2002 10 11 | 704 | 0.0  | 0.7+ | 2007 11 07 | 704 | 0.5- | 1.3+ | 2007 12 15 | 704 | 0.4- | 0.4+ |
| 2002 10 11 | 704 | 1.0+ | 0.9+ | 2007 11 07 | 704 | 0.2+ | 0.7+ | 2007 12 15 | 704 | 0.4- | 0.6+ |
| 2003 12 17 | 691 | 0.4+ | 0.4- | 2007 11 07 | 704 | 0.7+ | 0.0  | 2007 12 15 | 704 | 0.4- | 0.2+ |
| 2003 12 17 | 691 | 0.1- | 0.1+ | 2007 11 07 | 704 | 0.5- | 0.1- |            |     |      |      |

(172638)\* 2003 YM<sub>21</sub> = 2003 YE<sub>178</sub>

Discovered 2003 Dec. 17 by Spacewatch at Kitt Peak.

Id. G. V. Williams (d, *MPO* 76300)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 111.78797  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17071301 | $\omega$ | 153.12852 | -0.32577406 | +0.93337885 |
| <i>a</i> | 3.2182885  | $\Omega$ | 97.54361  | -0.89245100 | -0.25101172 |
| <i>e</i> | 0.1249117  | <i>i</i> | 8.73690   | -0.31209370 | -0.25650934 |
| <i>P</i> | 5.77       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 01 29 | 691 | 0.2- | 0.4- | 2003 12 17 | 691 | 0.2-  | 0.2-  | 2005 04 05 | 699 | 0.7-  | 0.6+  |
| 1993 01 29 | 691 | 0.1+ | 0.1+ | 2003 12 19 | 691 | 0.1-  | 0.3+  | 2005 04 08 | H06 | 0.3-  | 0.2+  |
| 1993 01 29 | 691 | 0.0  | 0.4- | 2003 12 19 | 691 | 0.0   | 0.0   | 2005 04 08 | H06 | 0.4-  | 0.4+  |
| 2001 08 12 | 644 | 0.8- | 0.2+ | 2003 12 19 | 691 | 0.2-  | 0.2+  | 2005 04 08 | H06 | 0.1+  | 0.4-  |
| 2001 08 12 | 644 | 0.3- | 0.9- | 2003 12 21 | 691 | 0.3-  | 0.1-  | 2005 04 08 | 704 | 0.6+  | 1.1+  |
| 2001 08 12 | 644 | 0.2- | 0.2+ | 2003 12 21 | 691 | 0.0   | 0.1+  | 2005 04 08 | 704 | 0.2+  | 0.6-  |
| 2001 08 20 | 608 | 0.4- | 0.4- | 2003 12 21 | 691 | 0.2+  | 0.2+  | 2005 04 08 | 704 | 0.6+  | 0.4-  |
| 2001 08 20 | 608 | 0.2- | 0.2+ | 2004 01 13 | 699 | 1.4+  | 0.4-  | 2005 04 08 | 704 | 0.9+  | 0.7+  |
| 2001 08 20 | 608 | 0.4- | 0.6+ | 2004 01 13 | 699 | 0.5-  | 0.2-  | 2005 04 08 | 704 | (1.8+ | 0.1-) |
| 2001 09 26 | 644 | 0.9- | 0.4+ | 2004 01 13 | 699 | 1.0+  | 0.1-  | 2005 04 09 | H06 | 0.4+  | 0.2-  |
| 2001 09 26 | 644 | 0.2- | 0.9- | 2004 01 13 | 699 | 0.6-  | 0.5+  | 2005 04 09 | H06 | 0.2+  | 0.1+  |
| 2001 09 26 | 644 | 0.4- | 0.0  | 2004 01 22 | 704 | 0.6+  | 0.0   | 2005 04 09 | H06 | 0.2+  | 0.2+  |
| 2001 10 10 | 644 | 0.4+ | 0.5+ | 2004 01 22 | 704 | 0.6-  | 1.0+  | 2005 04 09 | 699 | (2.2+ | 0.4+) |
| 2001 10 10 | 644 | 0.6+ | 0.8+ | 2004 01 22 | 704 | 0.3-  | 0.3-  | 2005 04 09 | 699 | 0.6+  | 0.4+  |
| 2001 10 10 | 644 | 0.3- | 0.0  | 2005 03 18 | 704 | 0.1+  | 1.3+  | 2005 04 09 | 699 | 0.9+  | 0.5+  |
| 2001 10 15 | 644 | 0.3- | 0.8+ | 2005 03 18 | 704 | 0.5+  | 1.0+  | 2005 04 09 | 699 | 0.8+  | 0.3-  |
| 2001 10 15 | 644 | 0.0  | 0.7+ | 2005 03 18 | 703 | 0.1+  | 0.4+  | 2005 04 16 | 703 | 0.1-  | 1.1+  |
| 2001 10 15 | 644 | 0.0  | 0.1+ | 2005 03 18 | 704 | 0.4+  | 0.6+  | 2005 04 16 | 703 | 0.2-  | 0.0   |
| 2001 10 23 | 644 | 0.0  | 0.6+ | 2005 03 18 | 703 | 0.6-  | 0.3-  | 2005 04 16 | 703 | 0.2-  | 1.4-  |
| 2001 10 23 | 644 | 0.8+ | 0.2+ | 2005 03 18 | 703 | 0.2+  | 0.3-  | 2005 04 16 | 703 | 0.5-  | 0.2+  |
| 2001 10 23 | 644 | 0.2- | 0.5+ | 2005 03 18 | 703 | 0.3-  | 0.0   | 2007 09 12 | 703 | 0.5+  | 1.1+  |
| 2001 10 24 | 644 | 0.3- | 0.2+ | 2005 03 30 | 703 | (0.1+ | 2.5+) | 2007 09 12 | 703 | 0.0   | 0.8+  |
| 2001 10 24 | 644 | 0.4+ | 0.8- | 2005 03 30 | 703 | 0.2+  | 0.3+  | 2007 09 12 | 703 | 0.3-  | 0.2+  |
| 2001 10 24 | 644 | 0.3+ | 0.4- | 2005 03 30 | 703 | 0.9-  | 0.3-  | 2007 09 12 | 703 | 0.8-  | 0.4+  |
| 2002 12 10 | 644 | 1.2+ | 0.6+ | 2005 03 30 | 703 | 1.5+  | 0.4+  | 2007 12 06 | G96 | 0.4+  | 0.1-  |
| 2002 12 10 | 644 | 0.2- | 0.3+ | 2005 04 05 | 699 | 0.7-  | 0.5+  | 2007 12 06 | G96 | 0.4+  | 0.1-  |
| 2003 12 17 | 691 | 0.0  | 0.2- | 2005 04 05 | 699 | 1.1-  | 0.5+  | 2007 12 06 | G96 | 0.0   | 0.0   |
| 2003 12 17 | 691 | 0.0  | 0.2+ | 2005 04 05 | 699 | 0.3+  | 0.4-  | 2007 12 06 | G96 | 0.2+  | 0.1+  |



2007 DEC. 24

M.P.O. 129435

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 599 | 0.1− | 0.0  | 2005 05 14 | G96 | 0.1− | 0.3+ | 2006 10 01 | 691 | 0.1− | 0.0  |
| 2003 11 19 | 599 | 0.0  | 0.2− | 2005 05 14 | G96 | 0.4− | 0.0  | 2006 10 01 | 691 | 0.3+ | 0.2+ |
| 2003 11 19 | 599 | 0.5− | 0.2+ | 2005 05 14 | G96 | 0.0  | 0.2+ | 2007 10 14 | G96 | 0.4− | 0.1+ |
| 2003 12 18 | 691 | 0.2− | 0.8− | 2005 05 14 | G96 | 0.1+ | 0.1+ | 2007 10 14 | G96 | 0.6− | 0.5− |
| 2003 12 18 | 691 | 0.1+ | 0.0  | 2005 06 13 | G96 | 0.3+ | 0.0  | 2007 10 14 | G96 | 0.2+ | 0.3− |
| 2003 12 18 | 691 | 0.2+ | 0.2− | 2005 06 13 | G96 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.1+ | 0.4− |
| 2003 12 21 | 291 | 0.2− | 0.4+ | 2005 06 13 | G96 | 0.0  | 0.1+ | 2007 11 16 | H55 | 0.1+ | 0.3+ |
| 2003 12 21 | 291 | 0.1+ | 0.5+ | 2005 06 13 | G96 | 0.1− | 0.2+ | 2007 11 16 | H55 | 0.3− | 0.2+ |
| 2003 12 21 | 291 | 0.1− | 0.4+ | 2006 09 12 | 705 | 0.2+ | 0.1+ | 2007 11 16 | H55 | 0.1+ | 0.2+ |

(172640)\* 2003 YY<sub>44</sub>

Discovered 2003 Dec. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 107.94180  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28464774 | $\omega$ | 233.04006 | +0.95721403 | +0.25574549 |
| <i>a</i> | 2.2887458  | $\Omega$ | 111.78817 | −0.19667610 | +0.91819165 |
| <i>e</i> | 0.1405145  | <i>i</i> | 8.38513   | −0.21227299 | +0.30251999 |
| <i>P</i> | 3.46       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 07 14 | 704 | 0.6−  | 0.9+  | 2003 11 23 | 699 | 0.2+  | 0.7−  | 2006 08 16 | E12 | 0.0  | 0.5− |
| 1999 07 14 | 704 | 0.4−  | 0.4+  | 2003 11 23 | 699 | (0.6− | 2.1−) | 2006 08 16 | E12 | 0.3− | 0.2− |
| 1999 07 14 | 704 | 0.5+  | 0.2+  | 2003 11 23 | 699 | 0.6+  | 0.2−  | 2006 08 16 | E12 | 0.4− | 0.0  |
| 1999 07 14 | 704 | 0.1−  | 0.2+  | 2003 11 23 | 699 | 0.0   | 1.0+  | 2006 08 16 | E12 | 0.1− | 0.3− |
| 2001 01 31 | 691 | 0.0   | 0.4−  | 2003 11 30 | 704 | 0.2−  | 0.1+  | 2006 08 17 | 644 | 0.1− | 0.2− |
| 2001 01 31 | 691 | 0.4−  | 0.8−  | 2003 11 30 | 704 | 0.5−  | 0.7−  | 2006 08 17 | 644 | 0.1− | 0.2− |
| 2001 01 31 | 691 | 0.3−  | 0.1+  | 2003 11 30 | 704 | (0.6− | 2.3−) | 2006 08 17 | 644 | 0.0  | 0.1− |
| 2002 03 22 | 691 | 0.1+  | 0.0   | 2003 11 30 | 704 | 0.1−  | 0.8−  | 2006 08 20 | 644 | 0.1+ | 0.1+ |
| 2002 03 22 | 691 | 0.5+  | 0.0   | 2003 11 30 | 704 | 0.4−  | 0.2−  | 2006 08 20 | 644 | 0.2+ | 0.0  |
| 2002 03 22 | 691 | 0.2+  | 0.1−  | 2003 12 20 | 703 | 0.9−  | 0.4+  | 2006 08 20 | 644 | 0.1+ | 0.1+ |
| 2002 05 08 | 704 | 0.0   | 0.4+  | 2003 12 20 | 703 | (0.6− | 2.0+) | 2006 08 24 | 644 | 0.1+ | 0.1+ |
| 2002 05 08 | 704 | 0.8−  | 1.1+  | 2003 12 20 | 703 | 1.5−  | 0.2+  | 2006 08 24 | 644 | 0.1+ | 0.1+ |
| 2002 05 08 | 704 | 0.8+  | 0.4+  | 2003 12 20 | 704 | (0.5− | 2.2+) | 2006 08 24 | 644 | 0.2+ | 0.2+ |
| 2002 05 08 | 704 | 0.1−  | 1.0+  | 2003 12 20 | 703 | (4.2− | 1.9+) | 2006 08 28 | E12 | 0.3− | 0.5− |
| 2002 05 08 | 704 | 1.3+  | 1.4+  | 2003 12 20 | 704 | 0.9−  | 1.3+  | 2006 08 28 | E12 | 0.5− | 0.1− |
| 2003 09 29 | 699 | 0.8−  | 0.0   | 2003 12 20 | 704 | (0.4+ | 1.5+) | 2006 08 28 | E12 | 0.0  | 0.2− |
| 2003 09 29 | 699 | 0.5+  | 0.2+  | 2003 12 20 | 704 | (0.7− | 1.9+) | 2006 08 28 | E12 | 0.6− | 0.4− |
| 2003 09 29 | 699 | 0.4+  | 0.1+  | 2003 12 21 | 691 | 0.1−  | 0.3+  | 2007 11 08 | G96 | 0.0  | 0.6+ |
| 2003 09 29 | 699 | 1.0+  | 0.0   | 2003 12 21 | 691 | 0.1−  | 0.3+  | 2007 11 08 | G96 | 0.1− | 0.1+ |
| 2003 10 29 | 699 | 1.0+  | 0.1+  | 2003 12 21 | 691 | 0.2−  | 0.3+  | 2007 11 08 | G96 | 0.4+ | 0.2+ |
| 2003 10 29 | 699 | 0.7+  | 0.0   | 2004 01 18 | 644 | 0.3−  | 0.9+  | 2007 11 08 | G96 | 0.4− | 0.1+ |
| 2003 10 29 | 699 | 0.2+  | 1.3+  | 2004 01 18 | 644 | 0.1+  | 0.7+  | 2007 12 15 | G96 | 0.2− | 0.3+ |
| 2003 10 29 | 699 | (3.3− | 1.0+) | 2004 01 18 | 644 | 0.3−  | 0.8+  | 2007 12 15 | G96 | 0.7+ | 0.6+ |
| 2003 11 01 | 704 | 0.5+  | 0.4−  | 2006 06 22 | 699 | (1.6− | 2.1+) | 2007 12 15 | G96 | 0.0  | 0.4+ |
| 2003 11 01 | 704 | 1.1+  | 0.3+  | 2006 06 22 | 699 | 0.2+  | 0.3+  | 2007 12 15 | G96 | 0.2− | 0.1− |
| 2003 11 01 | 704 | 0.7+  | 0.3−  | 2006 06 22 | 699 | 0.0   | 0.1+  |            |     |      |      |
| 2003 11 01 | 704 | 1.0+  | 0.1+  | 2006 06 22 | 699 | 0.5+  | 0.3−  |            |     |      |      |

(172641)\* 2003 YJ<sub>46</sub> = 2005 JD<sub>28</sub>

Discovered 2003 Dec. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 76312)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 270.30575  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.23944951 | $\omega$ | 96.66470 | −0.96042184 | −0.18378473 |
| <i>a</i> | 2.5683848  | $\Omega$ | 72.90193 | +0.07312273 | −0.89144262 |
| <i>e</i> | 0.0678018  | <i>i</i> | 12.64999 | +0.26878050 | −0.41418985 |
| <i>P</i> | 4.12       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 04 | 645 | 0.1− | 0.2− | 2005 05 08 | 691 | 0.1+ | 0.1− | 2005 06 23 | 644 | 0.3+ | 0.2+ |
| 2000 04 04 | 645 | 0.1− | 0.2− | 2005 05 08 | 691 | 0.1+ | 0.1− | 2005 06 23 | 644 | 0.5− | 0.1+ |
| 2000 04 05 | 645 | 0.1+ | 0.1+ | 2005 05 08 | 691 | 0.2+ | 0.0  | 2005 06 27 | 644 | 0.1+ | 0.5+ |
| 2000 04 05 | 645 | 0.0  | 0.0  | 2005 05 14 | 644 | 0.2+ | 0.0  | 2005 06 27 | 644 | 0.2+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 17 | 704 | 1.2− | 0.6− | 2005 05 14 | 644 | 0.1− | 0.1− | 2005 06 27 | 644 | 0.2− | 0.2+ |
| 2003 12 17 | 704 | 1.0+ | 0.8− | 2005 05 14 | 644 | 0.2− | 0.2− | 2007 11 06 | 691 | 0.7− | 0.2− |
| 2003 12 17 | 704 | 0.3+ | 0.2+ | 2005 05 17 | G96 | 0.0  | 0.1+ | 2007 11 06 | 691 | 0.4− | 0.1− |
| 2003 12 17 | 704 | 0.5+ | 0.3+ | 2005 05 17 | G96 | 0.4− | 0.3− | 2007 11 06 | 691 | 0.0  | 0.1− |
| 2003 12 21 | 704 | 0.5− | 0.2− | 2005 05 17 | G96 | 0.5− | 0.0  | 2007 12 05 | 691 | 0.1− | 0.2+ |
| 2003 12 21 | 704 | 0.2+ | 0.6− | 2005 05 17 | G96 | 0.7− | 0.2+ | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2003 12 21 | 704 | 0.3+ | 0.1+ | 2005 05 19 | G96 | 0.0  | 0.1− | 2007 12 05 | 691 | 0.0  | 0.4+ |
| 2003 12 21 | 704 | 0.1− | 0.3− | 2005 05 19 | G96 | 0.1+ | 0.4− | 2007 12 10 | 704 | 0.0  | 0.3+ |
| 2003 12 28 | 704 | 0.6+ | 1.2+ | 2005 05 19 | G96 | 0.1− | 0.3− | 2007 12 10 | 704 | 1.0+ | 0.5+ |
| 2003 12 28 | 704 | 0.3+ | 0.7+ | 2005 05 19 | G96 | 0.0  | 0.3− | 2007 12 10 | 704 | 0.1− | 1.3+ |
| 2003 12 28 | 704 | 0.1+ | 0.8+ | 2005 06 03 | 691 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.5+ | 0.5+ |
| 2003 12 28 | 704 | 0.1+ | 0.7+ | 2005 06 03 | 691 | 0.5+ | 0.2+ | 2007 12 15 | 704 | 0.1− | 0.3+ |
| 2003 12 28 | 704 | 0.6+ | 0.7+ | 2005 06 03 | 691 | 0.4− | 0.2+ | 2007 12 15 | 704 | 0.3+ | 0.3− |
| 2005 05 03 | 704 | 0.7+ | 0.3+ | 2005 06 16 | G96 | 0.4− | 0.2+ | 2007 12 15 | 704 | 0.2+ | 0.3− |
| 2005 05 03 | 704 | 1.1+ | 0.6+ | 2005 06 16 | G96 | 0.7− | 0.4+ | 2007 12 15 | 704 | 0.0  | 0.3− |
| 2005 05 03 | 704 | 0.3− | 0.0  | 2005 06 16 | G96 | 0.5− | 0.5− |            |     |      |      |
| 2005 05 03 | 704 | 0.9+ | 0.9+ | 2005 06 23 | 644 | 0.1+ | 0.4+ |            |     |      |      |

(172642)\* 2003 YA<sub>47</sub> = 2002 PS<sub>17</sub> = 2005 GS<sub>212</sub>

Discovered 2003 Dec. 17 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 86196)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.67080   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23166643 | $\omega$ | 142.50048 | +0.98975075 | −0.14033491 |
| <i>a</i> | 2.6255925  | $\Omega$ | 225.58923 | +0.12041342 | +0.91968764 |
| <i>e</i> | 0.0607863  | <i>i</i> | 2.12194   | +0.07677285 | +0.36671618 |
| <i>P</i> | 4.25       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 11 01 | 691 | 0.0   | 0.7−  | 2005 04 12 | 695 | 0.3+ | 0.2+ | 2007 11 09 | G96 | 0.6+  | 0.2−  |
| 1994 11 01 | 691 | 0.1+  | 0.3−  | 2007 10 11 | 704 | 0.0  | 1.0+ | 2007 11 09 | G96 | 0.1+  | 0.2−  |
| 1994 11 01 | 691 | 0.3−  | 0.1−  | 2007 10 11 | 704 | 0.2− | 1.3+ | 2007 11 09 | G96 | 0.2+  | 0.0   |
| 1995 12 26 | 691 | 0.1−  | 0.1−  | 2007 10 11 | 704 | 0.0  | 0.2+ | 2007 11 09 | G96 | 0.3+  | 0.2−  |
| 1995 12 26 | 691 | 0.3+  | 0.2−  | 2007 10 11 | 704 | 1.2+ | 0.7+ | 2007 11 09 | G96 | 0.1+  | 0.2−  |
| 1995 12 26 | 691 | 0.1+  | 0.5−  | 2007 10 14 | 691 | 0.2− | 0.3+ | 2007 11 09 | G96 | 0.4+  | 0.2−  |
| 2002 08 06 | 644 | 0.2+  | 0.7+  | 2007 10 14 | 691 | 0.2− | 0.3− | 2007 11 09 | G96 | 0.5+  | 0.1−  |
| 2002 08 06 | 644 | 0.2+  | 0.6+  | 2007 10 14 | 691 | 0.2− | 0.3− | 2007 11 09 | G96 | 0.0   | 0.1−  |
| 2002 08 06 | 644 | 0.3+  | 0.6+  | 2007 10 18 | 691 | 0.0  | 0.8+ | 2007 11 11 | G96 | 0.6+  | 0.1+  |
| 2002 08 07 | 644 | 0.0   | 0.6+  | 2007 10 18 | 691 | 0.2− | 0.2− | 2007 11 11 | G96 | 0.5+  | 0.1+  |
| 2002 08 07 | 644 | 0.0   | 0.7+  | 2007 10 18 | 691 | 0.1− | 0.3− | 2007 11 11 | G96 | 0.3+  | 0.0   |
| 2002 08 07 | 644 | 0.3+  | 0.8+  | 2007 10 20 | 703 | 0.5+ | 0.2− | 2007 11 11 | G96 | 0.6+  | 0.1+  |
| 2003 11 21 | 704 | 0.2+  | 1.2+  | 2007 10 20 | 703 | 0.0  | 0.5+ | 2007 11 11 | 699 | 0.3+  | 1.1−  |
| 2003 11 21 | 704 | (1.8+ | 0.5−) | 2007 10 20 | 703 | 0.9− | 0.0  | 2007 11 11 | 699 | 1.3+  | 0.9+  |
| 2003 11 21 | 704 | (3.0+ | 0.5−) | 2007 10 20 | 703 | 0.1+ | 0.1− | 2007 11 11 | 699 | 0.3−  | 0.4+  |
| 2003 11 21 | 704 | (2.0+ | 0.6−) | 2007 10 30 | G96 | 0.1+ | 0.4− | 2007 11 11 | 699 | 0.2+  | 0.4+  |
| 2003 12 17 | 691 | 0.2+  | 0.4−  | 2007 10 30 | G96 | 0.0  | 0.5− | 2007 11 15 | 704 | 0.8−  | 0.1−  |
| 2003 12 17 | 691 | 0.3−  | 0.3−  | 2007 10 30 | G96 | 0.0  | 0.4− | 2007 11 15 | 704 | 0.1+  | 1.2+  |
| 2003 12 17 | 691 | 0.1+  | 0.1−  | 2007 10 30 | G96 | 0.1− | 0.3− | 2007 11 15 | 704 | 0.1−  | 0.6+  |
| 2003 12 19 | 704 | 0.1−  | 0.6+  | 2007 11 03 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 0.5−  | 0.9+  |
| 2003 12 19 | 704 | 0.4+  | 0.1+  | 2007 11 03 | 691 | 0.4− | 0.1+ | 2007 11 15 | 704 | 0.2+  | 0.3+  |
| 2003 12 19 | 704 | 0.4+  | 0.1−  | 2007 11 03 | 691 | 0.9− | 0.1− | 2007 11 17 | 703 | 0.3−  | 0.7+  |
| 2003 12 19 | 704 | 0.7+  | 0.3+  | 2007 11 05 | 704 | 0.2− | 0.7+ | 2007 11 17 | 703 | (1.2− | 1.8+) |
| 2003 12 21 | 704 | 0.5−  | 0.0   | 2007 11 05 | 704 | 0.1+ | 0.5+ | 2007 11 17 | 703 | 0.1−  | 0.1+  |
| 2003 12 21 | 704 | 0.4+  | 1.2+  | 2007 11 05 | 704 | 0.1+ | 0.6+ | 2007 11 17 | 703 | 1.0−  | 0.3−  |
| 2003 12 21 | 704 | (0.7− | 1.7+) | 2007 11 05 | 704 | 0.5+ | 0.8+ | 2007 12 05 | 704 | 0.5+  | 0.3+  |
| 2005 03 12 | 691 | 0.1+  | 0.5+  | 2007 11 07 | 703 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.5−  | 0.4+  |
| 2005 03 12 | 691 | 0.1−  | 0.5+  | 2007 11 07 | 703 | 0.6− | 0.2− | 2007 12 05 | 704 | 0.7−  | 0.5+  |
| 2005 03 12 | 691 | 0.3+  | 0.5+  | 2007 11 07 | 703 | 0.3+ | 0.0  | 2007 12 05 | 704 | 0.7+  | 1.0+  |
| 2005 04 12 | G96 | 0.1−  | 0.3+  | 2007 11 07 | 703 | 0.4− | 0.4− | 2007 12 05 | 704 | 0.4−  | 1.6+  |
| 2005 04 12 | G96 | 0.3−  | 0.2+  | 2007 11 09 | G96 | 0.4+ | 0.5+ | 2007 12 06 | G96 | 0.6+  | 0.3−  |
| 2005 04 12 | G96 | 0.4−  | 0.1−  | 2007 11 09 | G96 | 0.2+ | 0.3− | 2007 12 06 | G96 | 0.8+  | 0.1−  |
| 2005 04 12 | G96 | 0.1−  | 0.2+  | 2007 11 09 | G96 | 0.5+ | 0.4− | 2007 12 06 | G96 | 0.1−  | 0.1−  |
| 2005 04 12 | 695 | 0.1+  | 0.1+  | 2007 11 09 | G96 | 0.3+ | 0.4− | 2007 12 06 | G96 | 0.6+  | 0.3−  |

**(172643)\* 2003 YY<sub>47</sub> = 1994 NU<sub>6</sub> = 2005 EH<sub>179</sub>**

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 76313)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | <i>P</i> |           | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| 71.49813 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.24548062 | $\omega$ | 58.94873  | +0.94974674 | +0.31247287 |
| <i>a</i> | 2.5261429  | $\Omega$ | 282.83750 | −0.29326479 | +0.86760375 |
| <i>e</i> | 0.1286219  | <i>i</i> | 1.08656   | −0.10943901 | +0.38681318 |
| <i>P</i> | 4.02       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 07 11 | 809 | 1.1+  | 0.3−  | 2003 12 21 | 704 | (0.4− | 2.8+) | 2005 04 12 | G96 | 0.1−  | 0.6−  |
| 1994 07 11 | 809 | 0.2+  | 0.2+  | 2003 12 21 | 704 | (0.4+ | 1.7+) | 2007 11 05 | 704 | (2.2+ | 0.1−) |
| 1994 07 11 | 809 | 1.6+  | 1.1−  | 2003 12 24 | 704 | 0.8−  | 0.5+  | 2007 11 05 | 704 | 0.1+  | 0.5+  |
| 1994 07 12 | 809 | 0.9−  | 1.7+  | 2003 12 24 | 704 | 1.3−  | 0.0   | 2007 11 05 | 704 | 0.7+  | 0.4+  |
| 1994 07 12 | 809 | 0.1−  | 0.7+  | 2003 12 24 | 704 | (0.8− | 1.6+) | 2007 11 05 | 704 | 0.9+  | 0.8+  |
| 1994 07 12 | 809 | 0.4+  | 0.6+  | 2005 03 03 | 691 | 0.2−  | 0.1−  | 2007 11 14 | 691 | 0.4+  | 0.2+  |
| 1999 12 15 | 703 | (2.9− | 1.4+) | 2005 03 03 | 691 | 0.3−  | 0.1+  | 2007 11 14 | 691 | 0.3+  | 0.3+  |
| 1999 12 15 | 703 | (0.4− | 2.1+) | 2005 03 03 | 691 | 0.2+  | 0.0   | 2007 11 14 | 691 | 0.5+  | 0.3+  |
| 1999 12 15 | 703 | 0.6−  | 0.5+  | 2005 03 09 | 691 | 0.3+  | 0.4+  | 2007 12 05 | 704 | 1.4−  | 0.8−  |
| 1999 12 15 | 703 | 0.8−  | 0.4+  | 2005 03 09 | 691 | 0.4+  | 0.1+  | 2007 12 05 | 704 | 1.1−  | 0.2+  |
| 2002 06 12 | 644 | 0.2−  | 0.9+  | 2005 03 09 | 691 | 0.2+  | 0.0   | 2007 12 05 | 704 | 1.0−  | 0.2+  |
| 2002 06 12 | 644 | 0.4−  | 1.0+  | 2005 03 13 | 691 | 0.2+  | 0.0   | 2007 12 05 | 704 | 0.7−  | 0.4−  |
| 2002 06 12 | 644 | 0.4−  | 0.6+  | 2005 03 13 | 691 | 0.2−  | 0.4+  | 2007 12 05 | 704 | 1.4−  | 0.2+  |
| 2002 06 22 | 644 | 0.9−  | 0.0   | 2005 03 13 | 691 | 0.1+  | 0.2+  | 2007 12 14 | 704 | 0.3+  | 0.1−  |
| 2002 06 22 | 644 | 0.8−  | 0.3+  | 2005 04 06 | G96 | 0.3−  | 0.5−  | 2007 12 14 | 704 | 0.8+  | 0.1−  |
| 2002 06 22 | 644 | 0.7−  | 0.3+  | 2005 04 06 | G96 | 0.1−  | 0.4−  | 2007 12 14 | 704 | 0.9+  | 0.9+  |
| 2003 12 18 | 704 | 0.2−  | 0.4−  | 2005 04 06 | G96 | 0.5−  | 0.4−  | 2007 12 14 | 704 | 0.6+  | 0.4+  |
| 2003 12 18 | 704 | 0.3−  | 0.3+  | 2005 04 06 | G96 | 0.4−  | 0.6−  | 2007 12 15 | 691 | 0.2+  | 0.1−  |
| 2003 12 18 | 704 | 0.5−  | 0.1+  | 2005 04 12 | G96 | 0.0   | 0.0   | 2007 12 15 | 691 | 0.3+  | 0.1+  |
| 2003 12 18 | 704 | 1.0−  | 0.6+  | 2005 04 12 | G96 | 0.3+  | 0.1+  | 2007 12 15 | 691 | 0.2+  | 0.7−  |
| 2003 12 21 | 704 | (0.1− | 2.0+) | 2005 04 12 | G96 | 0.3−  | 0.3−  |            |     |       |       |

**(172644)\* 2003 YA<sub>48</sub> = 2005 GQ<sub>55</sub>**

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 76313)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |          | <i>Q</i>    |             |
|-----------|------------|----------|----------|-------------|-------------|
| 274.60985 |            | (2000.0) |          |             |             |
| <i>n</i>  | 0.24429226 | $\omega$ | 92.51546 | −0.90240989 | −0.43045869 |
| <i>a</i>  | 2.5343285  | $\Omega$ | 61.98843 | +0.38626921 | −0.82775220 |
| <i>e</i>  | 0.0204962  | <i>i</i> | 1.23438  | +0.19092535 | −0.35990500 |
| <i>P</i>  | 4.03       | <i>H</i> | 15.9     | <i>G</i>    | 0.15        |
|           |            |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |       |            |     |       |       |            |     |      |      |
|------------|-----|------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 04 30 | 691 | 0.1− | 0.3+  | 2005 04 06 | G96 | 0.6+  | 0.3−  | 2006 08 16 | 644 | 0.2− | 0.4+ |
| 1997 04 30 | 691 | 0.2+ | 0.1+  | 2005 04 06 | G96 | 0.8−  | 1.1+  | 2006 08 16 | 644 | 0.4− | 0.5+ |
| 1997 04 30 | 691 | 0.1+ | 0.2+  | 2005 04 06 | G96 | (2.1+ | 0.3+) | 2006 08 20 | 644 | 0.1− | 0.6+ |
| 2001 04 27 | 608 | 1.1− | 0.9+  | 2005 04 07 | G96 | 0.3−  | 0.1−  | 2006 08 20 | 644 | 0.1− | 0.4+ |
| 2001 04 27 | 608 | 1.4− | 1.0+  | 2005 04 07 | G96 | 0.1−  | 0.0   | 2006 08 20 | 644 | 0.1− | 0.6+ |
| 2001 04 27 | 608 | 0.4− | 1.1+  | 2005 04 07 | G96 | 0.3−  | 0.0   | 2006 10 20 | G96 | 0.2+ | 0.1+ |
| 2002 08 29 | 644 | 0.0  | 1.5+  | 2005 04 07 | G96 | 0.3−  | 0.0   | 2006 10 20 | G96 | 0.3− | 0.1− |
| 2002 08 29 | 644 | (0.0 | 1.7+) | 2005 04 09 | 691 | 0.2+  | 0.0   | 2006 10 20 | G96 | 0.1− | 0.2+ |
| 2002 08 29 | 644 | 0.0  | 1.5+  | 2005 04 09 | 691 | 0.2+  | 0.2+  | 2006 10 20 | G96 | 0.5− | 0.5− |
| 2003 12 18 | 704 | 0.0  | 0.3+  | 2005 04 09 | 691 | (2.4+ | 1.0−) | 2007 11 15 | 704 | 1.0+ | 1.1− |
| 2003 12 18 | 704 | 0.2+ | 0.2+  | 2005 04 11 | 691 | 0.6+  | 0.1+  | 2007 11 15 | 704 | 0.6+ | 1.1+ |
| 2003 12 18 | 704 | 0.1− | 0.9+  | 2005 04 11 | 691 | 0.4+  | 0.1+  | 2007 11 15 | 704 | 0.3+ | 0.9+ |
| 2003 12 18 | 704 | 0.3− | 0.0   | 2005 04 11 | 691 | 0.5+  | 0.0   | 2007 11 15 | 704 | 0.4− | 0.7+ |
| 2003 12 18 | 704 | 0.4+ | 0.1+  | 2005 04 11 | 699 | (1.5+ | 0.5−) | 2007 12 04 | G96 | 0.0  | 0.2− |
| 2003 12 21 | 704 | 0.5+ | 0.3+  | 2005 04 11 | 699 | 0.6−  | 0.4+  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2003 12 21 | 704 | 0.0  | 0.3+  | 2005 04 11 | 699 | 1.1+  | 0.4+  | 2007 12 04 | G96 | 0.5− | 1.1− |
| 2003 12 21 | 704 | 0.5+ | 0.1+  | 2005 04 11 | 699 | 0.5+  | 0.3+  | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2003 12 21 | 704 | 0.1− | 0.2+  | 2005 04 12 | 704 | 0.8+  | 0.5+  | 2007 12 05 | 704 | 0.8− | 1.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 691 | 0.1+ | 0.1+ | 2005 04 12 | 704 | 1.1+ | 0.3+ | 2007 12 05 | 704 | 1.4− | 0.2− |
| 2003 12 25 | 691 | 0.1+ | 0.1+ | 2005 04 12 | 704 | 1.1+ | 0.3+ | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2003 12 25 | 691 | 0.2+ | 0.0  | 2005 04 12 | 704 | 0.6+ | 0.3+ | 2007 12 05 | 704 | 0.2− | 0.5+ |
| 2005 03 09 | G96 | 0.3− | 0.1+ | 2005 05 08 | G96 | 0.2− | 0.1+ | 2007 12 05 | 704 | 1.0− | 0.4+ |
| 2005 03 09 | G96 | 0.4− | 0.4− | 2005 05 08 | G96 | 0.2− | 0.0  | 2007 12 05 | 703 | 0.5− | 0.2− |
| 2005 03 09 | G96 | 0.6− | 1.0− | 2005 05 08 | G96 | 0.4− | 0.0  | 2007 12 05 | 703 | 0.5− | 0.6− |
| 2005 03 09 | G96 | 0.3− | 0.6− | 2005 05 08 | G96 | 0.0  | 0.3− | 2007 12 05 | 703 | 0.3− | 0.5− |
| 2005 04 05 | G96 | 0.3− | 0.2− | 2005 06 13 | G96 | 0.2+ | 0.4− | 2007 12 05 | 703 | 1.2− | 0.1− |
| 2005 04 05 | G96 | 0.2− | 0.1− | 2005 06 13 | G96 | 0.6− | 0.2− | 2007 12 14 | 704 | 0.1− | 1.3+ |
| 2005 04 05 | G96 | 0.3− | 0.3− | 2005 06 13 | G96 | 0.3− | 0.5− | 2007 12 14 | 704 | 0.1+ | 0.1− |
| 2005 04 05 | G96 | 0.5− | 0.1− | 2005 06 13 | G96 | 0.8− | 0.7− | 2007 12 14 | 704 | 0.6+ | 0.9+ |
| 2005 04 06 | G96 | 1.4− | 0.4+ | 2006 08 16 | 644 | 0.3− | 0.5+ | 2007 12 14 | 704 | 0.4+ | 0.8+ |

**(172645)\* 2003 YU<sub>52</sub> = 2006 PE<sub>9</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 103585)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | <i>P</i> |           | <i>Q</i>    |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 350.46052 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.25482095 | $\omega$ | 123.93441 | +0.03192223 | −0.99687143 |
| <i>a</i>  | 2.4640299  | $\Omega$ | 324.02380 | +0.87159338 | +0.06317243 |
| <i>e</i>  | 0.0297316  | <i>i</i> | 7.07028   | +0.48918908 | −0.04750374 |
| <i>P</i>  | 3.87       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|           |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 07 | 703 | 0.1+  | 1.2+  | 2003 12 19 | 704 | (1.5+ | 0.9−) | 2006 08 16 | 644 | 0.2− | 0.3+ |
| 1999 12 07 | 703 | 0.5−  | 0.7+  | 2003 12 19 | 704 | 0.4+  | 0.3+  | 2006 08 16 | 644 | 0.0  | 0.5+ |
| 1999 12 07 | 703 | 0.3+  | 0.8+  | 2003 12 19 | 704 | 0.6−  | 1.0−  | 2006 08 16 | 644 | 0.0  | 0.5+ |
| 1999 12 07 | 703 | 0.4+  | 0.4−  | 2003 12 21 | 704 | 1.3−  | 0.2+  | 2006 09 13 | 644 | 0.1+ | 0.4+ |
| 2001 03 05 | 608 | 0.5−  | 0.3+  | 2003 12 21 | 704 | 0.4−  | 0.2+  | 2006 09 13 | 644 | 0.2+ | 0.4+ |
| 2001 03 05 | 608 | 0.3+  | 0.2+  | 2003 12 21 | 704 | 0.2−  | 0.3+  | 2006 09 13 | 644 | 0.1− | 0.2+ |
| 2001 03 05 | 608 | 0.1+  | 0.1+  | 2003 12 21 | 704 | 0.4−  | 0.9−  | 2006 09 27 | G96 | 0.1− | 0.2− |
| 2001 03 24 | 699 | 0.6+  | 1.2+  | 2003 12 21 | 704 | 0.0   | 0.8−  | 2006 09 27 | G96 | 0.3− | 0.1− |
| 2001 03 24 | 699 | (0.5− | 1.8−) | 2005 04 06 | 699 | (2.8+ | 0.1+) | 2006 09 27 | G96 | 0.0  | 0.1+ |
| 2001 03 24 | 699 | 1.2+  | 0.1+  | 2005 04 06 | 699 | 0.4−  | 0.9+  | 2006 09 27 | G96 | 0.1− | 0.5+ |
| 2001 03 24 | 699 | 1.4+  | 0.6+  | 2005 04 06 | 699 | 0.7−  | 0.7+  | 2007 12 02 | 704 | 0.8+ | 0.4+ |
| 2002 08 08 | 644 | 0.2−  | 0.3+  | 2005 04 06 | 699 | (1.6+ | 0.1−) | 2007 12 02 | 704 | 0.2+ | 0.8+ |
| 2002 08 08 | 644 | 0.1−  | 0.1−  | 2006 08 13 | 644 | 0.2+  | 0.3−  | 2007 12 02 | 704 | 0.4+ | 0.9+ |
| 2002 08 08 | 644 | 0.6−  | 0.0   | 2006 08 13 | 644 | 0.3−  | 0.4+  | 2007 12 16 | 704 | 0.4+ | 0.0  |
| 2003 12 03 | 704 | (1.2  | 2.1+) | 2006 08 13 | 644 | 0.2+  | 0.4+  | 2007 12 16 | 704 | 0.1+ | 0.6+ |
| 2003 12 03 | 704 | 0.2−  | 0.1−  | 2006 08 15 | 644 | 0.2−  | 0.5+  | 2007 12 16 | 704 | 0.0  | 0.5− |
| 2003 12 03 | 704 | 0.1+  | 0.1+  | 2006 08 15 | 644 | 0.1−  | 0.4+  |            |     |      |      |
| 2003 12 03 | 704 | 0.2−  | 0.6+  | 2006 08 15 | 644 | 0.1−  | 0.3+  |            |     |      |      |

**(172646)\* 2003 YK<sub>54</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | <i>P</i> |           | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| 87.30948 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.24165241 | $\omega$ | 48.61933  | +0.58317450 | +0.80839376 |
| <i>a</i> | 2.5527521  | $\Omega$ | 257.22912 | −0.76766535 | +0.51618781 |
| <i>e</i> | 0.1822061  | <i>i</i> | 4.70781   | −0.26570173 | +0.28293051 |
| <i>P</i> | 4.08       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 03 11 | 691 | 0.2− | 0.0  | 2003 12 01 | 691 | 0.2+ | 0.3+ | 2007 11 13 | 699 | 0.3+ | 0.2− |
| 1997 03 11 | 691 | 0.6− | 0.6− | 2003 12 01 | 691 | 0.2+ | 0.3+ | 2007 11 13 | 699 | 0.1− | 0.6− |
| 1997 03 11 | 691 | 0.6− | 0.7− | 2003 12 19 | 704 | 0.0  | 1.4− | 2007 11 13 | 703 | 0.6− | 0.7+ |
| 1999 12 07 | 704 | 0.7+ | 0.6− | 2003 12 19 | 704 | 0.5+ | 0.0  | 2007 11 13 | 703 | 0.5− | 0.6+ |
| 1999 12 07 | 704 | 0.9+ | 0.8− | 2003 12 19 | 704 | 0.5− | 0.5− | 2007 11 13 | 703 | 0.4− | 0.3+ |
| 1999 12 07 | 704 | 0.2− | 0.6+ | 2003 12 21 | 704 | 1.2− | 0.6− | 2007 11 13 | 703 | 0.4− | 0.0  |
| 1999 12 07 | 704 | 0.9+ | 0.4+ | 2003 12 21 | 704 | 0.1+ | 0.8− | 2007 11 15 | 704 | 1.0− | 0.1− |
| 2000 12 23 | 645 | 0.1+ | 0.1+ | 2003 12 21 | 704 | 0.3+ | 0.5+ | 2007 11 15 | 704 | 1.0+ | 1.0+ |
| 2000 12 23 | 645 | 0.1+ | 0.0  | 2003 12 21 | 704 | 0.2+ | 0.8− | 2007 11 15 | 704 | 0.2+ | 0.4− |
| 2001 02 20 | 645 | 0.1+ | 0.2+ | 2003 12 21 | 704 | 0.7− | 1.1+ | 2007 11 15 | 704 | 0.5+ | 0.2+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.1+  | 0.1+  | 2006 06 04 | 704 | 0.5+ | 0.3- | 2007 11 15 | 704 | 0.8+ | 0.8+ |
| 2002 06 18 | 704 | 0.3-  | 0.4+  | 2006 06 04 | 704 | 0.3+ | 0.7- | 2007 12 03 | 703 | 1.0- | 0.2+ |
| 2002 06 18 | 704 | 0.0   | 0.6+  | 2006 06 04 | 704 | 0.2+ | 1.4+ | 2007 12 03 | 703 | 0.2- | 0.1+ |
| 2002 06 18 | 704 | 0.6-  | 1.2+  | 2006 06 04 | 704 | 0.0  | 0.3+ | 2007 12 03 | 703 | 0.1+ | 0.4- |
| 2002 06 18 | 704 | 0.1+  | 0.7+  | 2007 10 14 | G96 | 0.0  | 0.1- | 2007 12 03 | 703 | 0.0  | 0.0  |
| 2003 11 23 | 704 | 1.2-  | 0.5-  | 2007 10 14 | G96 | 0.3- | 0.1- | 2007 12 10 | 704 | 0.3- | 0.6- |
| 2003 11 23 | 704 | (0.3- | 1.5+) | 2007 10 14 | G96 | 0.1- | 0.0  | 2007 12 10 | 704 | 0.5+ | 0.2+ |
| 2003 11 23 | 704 | 0.6+  | 0.6+  | 2007 10 14 | G96 | 0.1+ | 0.4- | 2007 12 10 | 704 | 0.8- | 0.1- |
| 2003 11 23 | 704 | 0.3+  | 1.4+  | 2007 11 13 | 699 | 0.4- | 0.8- |            |     |      |      |
| 2003 12 01 | 691 | 0.1+  | 0.1+  | 2007 11 13 | 699 | 0.0  | 0.3+ |            |     |      |      |

**(172647)\* 2003 YC<sub>56</sub> = 2000 AN<sub>224</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57495)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |          |
|-----------------------------|------------|----------|----------|
| <i>M</i>                    | 309.93138  | (2000.0) |          |
| <i>n</i>                    | 0.25582749 | $\omega$ | 46.89821 |
| <i>a</i>                    | 2.4575625  | $\Omega$ | 91.11869 |
| <i>e</i>                    | 0.0498654  | <i>i</i> | 7.72946  |
| <i>P</i>                    | 3.85       | <i>H</i> | 16.1     |
|                             |            |          |          |
| Residuals in seconds of arc |            |          |          |
| <i>n</i>                    | 0.25582749 | $\omega$ | 46.89821 |
| <i>a</i>                    | 2.4575625  | $\Omega$ | 91.11869 |
| <i>e</i>                    | 0.0498654  | <i>i</i> | 7.72946  |
| <i>P</i>                    | 3.85       | <i>H</i> | 16.1     |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 11 | 691 | 0.6+  | 0.3+  | 2003 12 24 | 704 | (1.0- | 1.6+) | 2007 11 05 | G96 | 0.3-  | 0.0   |
| 2000 01 11 | 691 | 0.4+  | 0.4+  | 2003 12 24 | 704 | (0.5+ | 1.7+) | 2007 11 05 | G96 | 0.1-  | 0.0   |
| 2000 01 11 | 691 | 0.4+  | 0.2+  | 2003 12 24 | 704 | (0.9+ | 2.4+) | 2007 11 05 | G96 | 0.2-  | 0.1-  |
| 2000 01 12 | 691 | 0.6-  | 1.0-  | 2004 01 21 | 704 | 0.7+  | 0.2-  | 2007 11 05 | G96 | 0.2+  | 0.3-  |
| 2000 01 12 | 691 | 0.6-  | 0.8-  | 2004 01 21 | 704 | 0.3+  | 0.1-  | 2007 12 03 | 691 | 0.2-  | 0.1+  |
| 2000 01 12 | 691 | 0.6-  | 0.8-  | 2004 01 21 | 704 | 0.1+  | 0.0   | 2007 12 03 | 691 | 0.4-  | 0.1-  |
| 2001 04 17 | 699 | 1.1+  | 0.1+  | 2004 01 21 | 704 | 0.1+  | 0.2-  | 2007 12 03 | 691 | 0.0   | 0.1+  |
| 2001 04 17 | 699 | 1.0+  | 0.1-  | 2005 04 14 | 691 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 1.1-  | 1.0+  |
| 2001 04 17 | 699 | 0.3+  | 0.3+  | 2005 04 14 | 691 | 0.2-  | 0.1-  | 2007 12 10 | 704 | 0.0   | 0.2-  |
| 2001 04 17 | 699 | 0.3-  | 0.7+  | 2005 04 14 | 691 | 0.2-  | 0.2-  | 2007 12 10 | 704 | 0.3+  | 0.5+  |
| 2003 12 19 | 704 | 0.3+  | 0.3-  | 2005 04 18 | 691 | 0.2-  | 0.1-  | 2007 12 10 | 704 | 0.6+  | 0.7+  |
| 2003 12 19 | 704 | 0.3+  | 1.3+  | 2005 04 18 | 691 | 0.3-  | 0.0   | 2007 12 10 | 704 | 0.2-  | 0.9+  |
| 2003 12 19 | 704 | 0.2+  | 0.0   | 2005 04 18 | 691 | 0.1+  | 0.0   | 2007 12 14 | 704 | 1.2+  | 0.3-  |
| 2003 12 19 | 704 | 0.6+  | 0.0   | 2005 05 03 | 704 | 1.1+  | 1.0+  | 2007 12 14 | 704 | 0.4+  | 0.9+  |
| 2003 12 21 | 704 | 0.7+  | 0.8+  | 2005 05 03 | 704 | 0.3+  | 0.7+  | 2007 12 14 | 704 | 1.2+  | 1.0+  |
| 2003 12 21 | 704 | (1.0+ | 1.6+) | 2005 05 03 | 704 | 0.2+  | 0.3+  | 2007 12 15 | 691 | 0.1-  | 0.1-  |
| 2003 12 21 | 704 | (0.3+ | 1.7+) | 2006 08 24 | 644 | 0.4-  | 1.0+  | 2007 12 15 | 691 | 0.4-  | 0.2+  |
| 2003 12 21 | 704 | 0.3+  | 0.4+  | 2006 08 24 | 644 | 0.4-  | 1.1+  | 2007 12 15 | 691 | (1.7+ | 2.6+) |
| 2003 12 21 | 704 | 0.3+  | 0.8+  | 2006 08 24 | 644 | 0.2+  | 1.1+  |            |     |       |       |

**(172648)\* 2003 YM<sub>56</sub> = 2001 KU<sub>60</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69609)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |          |
|-----------------------------|------------|----------|----------|
| <i>M</i>                    | 332.38824  | (2000.0) |          |
| <i>n</i>                    | 0.26028869 | $\omega$ | 31.38903 |
| <i>a</i>                    | 2.4294009  | $\Omega$ | 99.98416 |
| <i>e</i>                    | 0.1590658  | <i>i</i> | 3.07746  |
| <i>P</i>                    | 3.79       | <i>H</i> | 16.4     |
|                             |            |          |          |
| Residuals in seconds of arc |            |          |          |
| <i>n</i>                    | 0.26028869 | $\omega$ | 31.38903 |
| <i>a</i>                    | 2.4294009  | $\Omega$ | 99.98416 |
| <i>e</i>                    | 0.1590658  | <i>i</i> | 3.07746  |
| <i>P</i>                    | 3.79       | <i>H</i> | 16.4     |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 06 27 | 691 | 0.1+ | 0.7+ | 2003 12 19 | 704 | 0.3- | 0.1- | 2005 02 12 | 809 | 0.5- | 0.0  |
| 1998 06 27 | 691 | 0.2+ | 0.7+ | 2003 12 19 | 704 | 0.0  | 0.4- | 2005 02 12 | 809 | 0.4- | 0.1+ |
| 1998 06 27 | 691 | 0.1- | 0.4+ | 2003 12 19 | 704 | 0.1+ | 0.0  | 2005 06 16 | G96 | 0.4- | 0.4+ |
| 1999 11 01 | 703 | 0.4+ | 1.5+ | 2003 12 21 | 704 | 0.5- | 0.2+ | 2005 06 16 | G96 | 0.6- | 0.5+ |
| 1999 11 01 | 703 | 0.2- | 0.6+ | 2003 12 21 | 704 | 0.7+ | 0.4+ | 2005 06 16 | G96 | 0.5- | 0.3+ |
| 1999 11 01 | 703 | 0.5+ | 0.6+ | 2003 12 21 | 704 | 0.4- | 0.2+ | 2005 06 16 | G96 | 0.3- | 0.3+ |
| 1999 11 01 | 703 | 1.9+ | 0.7- | 2003 12 21 | 704 | 0.2- | 0.1- | 2005 06 27 | G96 | 0.8+ | 0.0  |
| 1999 12 07 | 704 | 0.9- | 1.3- | 2003 12 21 | 704 | 0.2+ | 0.7+ | 2005 06 27 | G96 | 0.0  | 0.6+ |
| 1999 12 07 | 704 | 0.9- | 0.3- | 2003 12 21 | 704 | 0.8- | 0.4+ | 2005 06 27 | G96 | 0.2- | 0.5+ |
| 1999 12 07 | 704 | 0.1- | 0.1+ | 2003 12 21 | 704 | 0.3+ | 0.8+ | 2005 06 27 | G96 | 0.0  | 0.5+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 07 | 704 | 1.1- | 0.4+ | 2003 12 21 | 704 | 0.5- | 0.4+ | 2007 10 07 | G96 | 0.2+ | 0.5- |
| 2001 05 17 | 691 | 0.3+ | 0.3+ | 2003 12 21 | 704 | 0.1- | 0.7+ | 2007 10 07 | G96 | 0.2- | 0.2- |
| 2001 05 17 | 691 | 0.2+ | 0.4+ | 2003 12 22 | 704 | 0.5- | 0.3+ | 2007 10 07 | G96 | 0.0  | 0.8- |
| 2001 05 17 | 691 | 0.2+ | 0.3+ | 2003 12 22 | 704 | 0.1- | 0.4+ | 2007 10 07 | G96 | 0.8- | 0.5- |
| 2001 05 24 | 699 | 0.6+ | 0.2+ | 2003 12 22 | 704 | 0.1+ | 0.5+ | 2007 12 03 | 703 | 0.6+ | 0.6+ |
| 2001 05 24 | 699 | 0.7- | 0.1- | 2003 12 22 | 704 | 0.2+ | 0.2+ | 2007 12 03 | 703 | 0.1+ | 0.4- |
| 2001 05 24 | 699 | 0.6- | 0.2+ | 2003 12 22 | 704 | 1.4- | 1.1+ | 2007 12 03 | 703 | 1.2- | 0.8+ |
| 2001 05 24 | 699 | 0.8- | 1.3- | 2004 01 21 | 704 | 0.4+ | 0.4+ | 2007 12 03 | 703 | 0.1- | 1.8- |
| 2003 11 21 | 704 | 0.7- | 0.7+ | 2004 01 21 | 704 | 0.2+ | 0.8+ | 2007 12 06 | 704 | 1.1+ | 0.6+ |
| 2003 11 21 | 704 | 0.1- | 0.9- | 2004 01 21 | 704 | 0.3+ | 0.1- | 2007 12 06 | 704 | 0.8+ | 2.4+ |
| 2003 11 21 | 704 | 0.2- | 0.6- | 2004 01 21 | 704 | 0.4+ | 0.5+ | 2007 12 06 | 704 | 1.1+ | 0.5- |
| 2003 12 19 | 704 | 0.2- | 0.3- | 2004 01 21 | 704 | 0.6- | 1.0+ | 2007 12 06 | 704 | 1.1+ | 1.5+ |
| 2003 12 19 | 704 | 1.2+ | 0.8- | 2005 02 12 | 809 | 0.5- | 0.0  |            |     |      |      |

**(172649)\* 2003 YO<sub>58</sub> = 2000 AM<sub>184</sub> = 2001 NF**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69610)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 233.13821  | (2000.0) |           |
| <i>n</i>                    | 0.23602854 | $\omega$ | 292.12347 |
| <i>a</i>                    | 2.5931424  | $\Omega$ | 264.36465 |
| <i>e</i>                    | 0.0447011  | <i>i</i> | 13.88916  |
| <i>P</i>                    | 4.18       | <i>H</i> | 14.9      |
|                             |            |          |           |
| Residuals in seconds of arc |            |          |           |
| <i>n</i>                    | 0.23602854 | $\omega$ | 292.12347 |
| <i>a</i>                    | 2.5931424  | $\Omega$ | 264.36465 |
| <i>e</i>                    | 0.0447011  | <i>i</i> | 13.88916  |
| <i>P</i>                    | 4.18       | <i>H</i> | 14.9      |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 07 | 704 | 0.5+ | 0.4+ | 2003 12 19 | 704 | 0.2+  | 0.7+  | 2007 11 18 | 704 | 0.1+  | 0.5-  |
| 2000 01 07 | 704 | 0.8+ | 1.1+ | 2003 12 19 | 704 | 0.3+  | 0.4+  | 2007 11 18 | 704 | 0.6+  | 0.0   |
| 2000 01 07 | 704 | 0.5- | 0.2- | 2003 12 19 | 704 | 0.5+  | 0.1-  | 2007 11 18 | G96 | 0.0   | 0.4-  |
| 2000 01 07 | 704 | 0.6- | 0.3+ | 2003 12 19 | 704 | 0.3+  | 0.5+  | 2007 11 18 | 704 | 0.4+  | 0.1-  |
| 2000 01 11 | 704 | 0.5+ | 0.7- | 2003 12 21 | 704 | 0.9+  | 0.9-  | 2007 11 18 | G96 | 0.3+  | 0.3-  |
| 2000 01 11 | 704 | 0.1+ | 0.5- | 2003 12 21 | 704 | 0.0   | 0.5-  | 2007 11 18 | G96 | 0.1-  | 0.5-  |
| 2000 01 11 | 704 | 1.0- | 0.1- | 2003 12 21 | 704 | 0.1+  | 0.3-  | 2007 11 18 | G96 | 0.4-  | 0.4-  |
| 2000 01 11 | 704 | 1.0- | 0.1+ | 2003 12 21 | 704 | 0.1-  | 0.4-  | 2007 11 20 | 704 | 0.3-  | 0.1+  |
| 2001 05 21 | 704 | 0.6+ | 0.4+ | 2003 12 21 | 704 | 0.1+  | 0.1+  | 2007 11 20 | 704 | (0.3- | 1.5+) |
| 2001 05 21 | 704 | 1.0- | 0.6- | 2003 12 23 | 704 | 0.2+  | 0.0   | 2007 11 20 | 704 | (0.1- | 1.7+) |
| 2001 05 21 | 704 | 0.1- | 0.4+ | 2003 12 23 | 704 | 0.5+  | 0.0   | 2007 11 20 | 704 | 0.4+  | 0.1+  |
| 2001 05 21 | 704 | 0.7- | 1.4+ | 2003 12 23 | 704 | 0.2+  | 0.5+  | 2007 11 20 | 704 | 0.1+  | 1.3+  |
| 2001 07 08 | 644 | 0.1- | 0.6+ | 2003 12 23 | 704 | 0.6+  | 0.4-  | 2007 11 20 | 691 | 0.4-  | 0.1-  |
| 2001 07 08 | 644 | 0.1- | 0.3+ | 2003 12 23 | 704 | 0.6+  | 0.0   | 2007 11 20 | 691 | 0.1+  | 0.3+  |
| 2001 07 08 | 644 | 0.1- | 0.6+ | 2005 05 11 | 644 | 0.9+  | 0.7+  | 2007 11 20 | 691 | 0.4-  | 0.3-  |
| 2001 07 11 | 644 | 0.1- | 0.2+ | 2005 05 11 | 644 | 0.8+  | 0.6+  | 2007 12 10 | 704 | 0.9+  | 1.1+  |
| 2001 07 11 | 644 | 0.4- | 0.3+ | 2005 05 11 | 644 | 0.7+  | 0.7+  | 2007 12 10 | 704 | 0.7+  | 1.2+  |
| 2001 07 11 | 644 | 0.1+ | 0.2+ | 2007 11 07 | 691 | 0.3-  | 0.0   | 2007 12 10 | 704 | 0.8+  | 0.1+  |
| 2002 09 11 | 644 | 0.1+ | 0.9+ | 2007 11 07 | 704 | 0.3-  | 0.6-  | 2007 12 10 | 704 | 0.9-  | 0.4+  |
| 2002 09 11 | 644 | 0.1+ | 1.0+ | 2007 11 07 | 691 | 0.1-  | 0.1-  | 2007 12 14 | 704 | 0.3+  | 2.0+  |
| 2002 09 11 | 644 | 0.6- | 1.4+ | 2007 11 07 | 704 | 0.3+  | 0.4-  | 2007 12 14 | 704 | 0.1-  | 1.3+  |
| 2003 11 23 | 704 | 1.0- | 0.3- | 2007 11 07 | 704 | 0.6-  | 0.4-  | 2007 12 14 | 704 | 0.2+  | 1.2+  |
| 2003 11 23 | 704 | 0.7- | 0.2- | 2007 11 07 | 691 | 0.6-  | 0.2-  | 2007 12 14 | 704 | 0.4+  | 1.4+  |
| 2003 11 23 | 704 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.1-  | 0.4-  | 2007 12 14 | 704 | 0.5+  | 1.5+  |
| 2003 12 19 | 704 | 0.3+ | 0.3+ | 2007 11 18 | 704 | (2.4+ | 1.4-) |            |     |       |       |

**(172650)\* 2003 YV<sub>66</sub> = 2000 GF<sub>152</sub> = 2002 TR<sub>165</sub>**

Discovered 2003 Dec. 20 by NEAT at Haleakala.

Id. G. V. Williams (*MPO* 57507), A. Doppler (*MPO* 76325)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC |
|-----|
|-----|

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 1993 07 22 | 691 | 0.2−  | 0.2+  | 2003 12 21 | 704 | 0.4+  | 0.3−  | 2004 02 17 | 704 | 0.4− | 0.1+  |
| 2000 04 06 | 699 | 0.9+  | 0.3+  | 2003 12 21 | 704 | 0.5+  | 0.4−  | 2004 02 17 | 704 | 0.3+ | 0.4+  |
| 2000 04 06 | 699 | 0.1−  | 0.0   | 2004 01 04 | 699 | 0.9−  | 0.8−  | 2004 02 17 | 608 | 1.2+ | 0.7+  |
| 2000 04 06 | 699 | 1.0+  | 0.4−  | 2004 01 04 | 699 | 0.1+  | 1.0+  | 2004 02 17 | 608 | 1.3+ | 0.4+  |
| 2000 04 06 | 699 | 0.1−  | 0.0   | 2004 01 04 | 699 | 0.4−  | 1.0−  | 2004 02 17 | 608 | 0.7+ | 0.6+  |
| 2000 04 07 | 704 | 0.8+  | 0.5+  | 2004 01 04 | 699 | 0.6−  | 0.2+  | 2004 02 23 | 704 | (0.0 | 1.8−) |
| 2000 04 07 | 704 | 0.4+  | 1.6+  | 2004 01 21 | 704 | 0.8−  | 0.3−  | 2004 02 23 | 704 | 0.4+ | 1.2−  |
| 2000 04 07 | 704 | 1.3+  | 1.4+  | 2004 01 21 | 704 | 0.2−  | 0.3+  | 2004 02 23 | 704 | 0.1− | 1.3−  |
| 2000 04 07 | 704 | 0.0   | 0.2+  | 2004 01 21 | 704 | 0.6−  | 0.0   | 2004 02 23 | 704 | 0.4+ | 1.5−  |
| 2000 04 07 | 704 | 0.0   | 0.4+  | 2004 01 24 | 704 | 0.2−  | 0.6−  | 2004 02 26 | 704 | 0.1− | 0.6−  |
| 2002 09 03 | 644 | 0.3−  | 0.6+  | 2004 01 24 | 704 | 0.2−  | 0.3−  | 2004 02 26 | 704 | 0.5− | 0.8−  |
| 2002 09 03 | 644 | 0.1−  | 0.7+  | 2004 01 24 | 704 | 0.4−  | 0.6−  | 2004 02 26 | 704 | 0.9− | 0.3−  |
| 2002 09 03 | 644 | 0.0   | 0.6+  | 2004 01 24 | 704 | 0.6−  | 0.3−  | 2004 02 26 | 704 | 0.1+ | 1.4−  |
| 2002 10 02 | 049 | 0.4+  | 0.2+  | 2004 01 24 | 704 | 0.3+  | 0.5−  | 2004 02 26 | 704 | 0.6− | 0.5−  |
| 2002 10 02 | 049 | 0.5+  | 0.1+  | 2004 01 26 | 699 | 0.9−  | 0.6+  | 2004 03 11 | 644 | 0.4+ | 0.0   |
| 2002 10 02 | 049 | 0.6+  | 0.2−  | 2004 01 26 | 699 | 0.3−  | 0.5+  | 2004 03 11 | 644 | 0.1+ | 0.1−  |
| 2002 10 03 | 644 | 0.1+  | 1.0+  | 2004 01 26 | 699 | 0.4−  | 0.9+  | 2004 03 11 | 644 | 0.2+ | 0.1−  |
| 2002 10 03 | 644 | 0.3+  | 1.0+  | 2004 01 26 | 699 | 0.7−  | 0.5−  | 2006 08 16 | 644 | 0.2− | 0.1+  |
| 2002 10 03 | 644 | 0.5−  | 0.6+  | 2004 01 29 | 704 | 0.0   | 1.1+  | 2006 08 16 | 644 | 0.1− | 0.4+  |
| 2002 10 06 | 704 | (0.5− | 1.8+) | 2004 01 29 | 704 | 0.4−  | 0.8+  | 2006 08 16 | 644 | 0.3− | 0.4+  |
| 2002 10 06 | 704 | 1.0−  | 0.0   | 2004 01 29 | 704 | 0.7+  | 0.3+  | 2006 08 19 | 699 | 0.4− | 0.2−  |
| 2002 10 06 | 704 | 0.2−  | 1.1−  | 2004 01 29 | 704 | 0.1+  | 0.4+  | 2006 08 19 | 699 | 0.2+ | 1.0+  |
| 2002 10 06 | 704 | 0.8−  | 0.2−  | 2004 01 29 | 704 | 0.1−  | 0.6+  | 2006 08 19 | 699 | 0.5+ | 1.2−  |
| 2003 10 29 | 704 | 0.4+  | 0.9+  | 2004 01 30 | 704 | 0.4−  | 1.2+  | 2006 08 19 | 699 | 0.2+ | 0.3+  |
| 2003 10 29 | 704 | 1.0+  | 0.4−  | 2004 01 30 | 704 | 0.1+  | 0.4+  | 2007 11 16 | 704 | 0.3+ | 0.4−  |
| 2003 10 29 | 704 | 0.9−  | 0.1+  | 2004 01 30 | 704 | 0.5+  | 0.1+  | 2007 11 16 | 704 | 0.6+ | 0.4+  |
| 2003 10 29 | 704 | 0.8+  | 0.6+  | 2004 01 30 | 704 | (0.7− | 2.7−) | 2007 11 16 | 704 | 0.1− | 0.4−  |
| 2003 10 29 | 704 | 0.5+  | 0.3+  | 2004 01 30 | 704 | 0.0   | 0.4+  | 2007 11 16 | 704 | 0.3+ | 0.3+  |
| 2003 11 20 | 704 | 0.3−  | 0.4−  | 2004 01 31 | 704 | 0.1+  | 0.6+  | 2007 12 01 | B15 | 0.2− | 0.4−  |
| 2003 11 20 | 704 | 0.6+  | 0.4+  | 2004 01 31 | 704 | 0.5+  | 0.6+  | 2007 12 01 | B15 | 0.1− | 0.2−  |
| 2003 11 20 | 704 | 1.2−  | 0.4+  | 2004 01 31 | 704 | 0.1+  | 1.1+  | 2007 12 03 | 704 | 0.1− | 0.3+  |
| 2003 11 20 | 704 | 0.0   | 0.2+  | 2004 01 31 | 704 | 0.1+  | 0.6+  | 2007 12 03 | 704 | 0.1− | 0.5+  |
| 2003 11 20 | 704 | 0.0   | 0.4−  | 2004 01 31 | 704 | 0.1−  | 0.9+  | 2007 12 03 | 704 | 0.0  | 0.8+  |
| 2003 12 20 | 608 | 0.1−  | 0.6−  | 2004 02 01 | 608 | 0.1−  | 0.6−  | 2007 12 03 | 704 | 0.3− | 0.6+  |
| 2003 12 20 | 608 | 0.3−  | 0.4−  | 2004 02 01 | 608 | 0.7+  | 0.2+  | 2007 12 03 | 704 | 0.1− | 0.2+  |
| 2003 12 20 | 608 | 0.0   | 1.0−  | 2004 02 01 | 608 | 0.2+  | 0.7+  |            |     |      |       |
| 2003 12 21 | 704 | 1.2+  | 0.1+  | 2004 02 17 | 704 | 0.1+  | 0.0   |            |     |      |       |

**(172651)\* 2003 YM<sub>71</sub> = 2005 EB<sub>162</sub>**

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.  
Id. G. V. Williams (*MPO* 76327)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 251.63652  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.22435071 | $\omega$ | 101.17875 | −0.87388195 | −0.48439556 |
| <i>a</i> | 2.6823643  | $\Omega$ | 49.86243  | +0.42239531 | −0.79845290 |
| <i>e</i> | 0.0535612  | <i>i</i> | 3.08364   | +0.24065025 | −0.35753869 |
| <i>P</i> | 4.39       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 02 02 | 704 | 0.3−  | 0.6−  | 2005 04 09 | 704 | 0.2+  | 0.0   | 2007 10 30 | G96 | 0.4+  | 0.1−  |
| 2000 02 02 | 704 | 0.4+  | 1.0−  | 2005 04 11 | G96 | 0.3−  | 0.1+  | 2007 10 30 | 703 | 1.3+  | 1.1+  |
| 2000 02 02 | 704 | 0.4+  | 0.4+  | 2005 04 11 | G96 | 0.4−  | 0.0   | 2007 10 30 | G96 | 0.4+  | 0.1−  |
| 2000 02 02 | 704 | 0.8+  | 0.9+  | 2005 04 11 | G96 | 0.4−  | 0.0   | 2007 10 30 | 703 | 0.1+  | 1.2+  |
| 2000 02 02 | 704 | 1.3−  | 0.3+  | 2005 04 11 | G96 | 0.4−  | 0.1+  | 2007 10 30 | G96 | 0.4+  | 0.1−  |
| 2003 12 18 | 704 | 0.2+  | 0.2−  | 2005 04 12 | 691 | 0.1+  | 0.2+  | 2007 10 30 | G96 | 0.4+  | 0.2−  |
| 2003 12 18 | 704 | (2.3+ | 1.2+) | 2005 04 12 | 691 | 0.1−  | 0.2+  | 2007 11 02 | G96 | 0.3+  | 0.0   |
| 2003 12 18 | 704 | 0.7+  | 0.5−  | 2005 04 12 | 691 | 0.1+  | 0.3+  | 2007 11 02 | G96 | 0.1+  | 0.0   |
| 2003 12 18 | 704 | 0.8+  | 0.4−  | 2005 04 12 | 704 | 1.4−  | 0.3+  | 2007 11 02 | G96 | 0.3+  | 0.1−  |
| 2003 12 22 | 704 | 0.1+  | 0.3−  | 2005 04 12 | 704 | 0.6−  | 0.5+  | 2007 11 02 | G96 | 0.2+  | 0.1+  |
| 2003 12 22 | 704 | 0.4−  | 0.2−  | 2005 04 12 | 704 | 0.4−  | 0.9−  | 2007 11 04 | G96 | 0.6+  | 0.5−  |
| 2003 12 22 | 704 | 0.5−  | 0.8+  | 2005 04 12 | 704 | 0.6−  | 0.1−  | 2007 11 04 | G96 | 0.3+  | 0.7−  |
| 2003 12 22 | 704 | 0.5+  | 0.8+  | 2005 04 18 | 703 | (1.7− | 0.3+) | 2007 11 04 | G96 | 0.4+  | 0.6−  |
| 2003 12 27 | 704 | 1.0−  | 0.4−  | 2005 04 18 | 703 | 0.5+  | 0.1−  | 2007 11 05 | 704 | (0.9− | 1.8+) |
| 2003 12 27 | 704 | 0.1−  | 0.1+  | 2005 04 18 | 703 | (5.6− | 3.7−) | 2007 11 05 | 704 | 0.2+  | 1.3+  |
| 2003 12 27 | 704 | 0.0   | 0.5−  | 2005 04 18 | 703 | (2.5− | 2.8−) | 2007 11 05 | 704 | 1.1−  | 1.2+  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 03 09 | G96 | 0.4− | 0.4− | 2005 05 10 | G96 | 0.3−  | 0.4+  | 2007 11 05 | 704 | (1.8− | 0.6+) |
| 2005 03 09 | G96 | 0.3− | 0.2+ | 2005 05 10 | G96 | 0.1+  | 0.5+  | 2007 11 05 | 704 | 1.2−  | 0.4+  |
| 2005 03 09 | G96 | 0.3− | 0.3− | 2005 05 10 | G96 | 0.2+  | 0.1+  | 2007 11 07 | 703 | 1.2−  | 0.6+  |
| 2005 03 09 | G96 | 0.6+ | 0.2− | 2005 05 10 | G96 | 0.1+  | 0.0   | 2007 11 07 | 703 | 1.1−  | 0.9+  |
| 2005 03 12 | 691 | 0.0  | 0.3− | 2007 10 04 | 691 | 0.1−  | 0.0   | 2007 11 07 | 703 | 1.1+  | 0.3+  |
| 2005 03 12 | 691 | 0.0  | 0.3− | 2007 10 04 | 691 | 0.8−  | 0.2−  | 2007 11 07 | 703 | 0.4−  | 0.8−  |
| 2005 03 12 | 691 | 0.1+ | 0.3− | 2007 10 04 | 691 | 0.4−  | 0.2−  | 2007 11 17 | 703 | 0.2+  | 0.5+  |
| 2005 04 02 | 691 | 0.1+ | 0.2+ | 2007 10 14 | 704 | 1.0+  | 0.3+  | 2007 11 17 | 703 | 1.2−  | 1.2−  |
| 2005 04 02 | 691 | 0.2+ | 0.0  | 2007 10 14 | 704 | 0.5+  | 0.1+  | 2007 11 17 | 703 | 0.5+  | 0.6−  |
| 2005 04 02 | 691 | 0.3+ | 0.1+ | 2007 10 14 | 704 | 0.6+  | 0.8+  | 2007 11 17 | 703 | 0.2+  | 0.1+  |
| 2005 04 02 | 644 | 0.5+ | 0.4+ | 2007 10 14 | 691 | 0.4−  | 0.1+  | 2007 12 05 | 704 | 0.8+  | 0.2+  |
| 2005 04 02 | 644 | 0.5+ | 0.3+ | 2007 10 14 | 691 | 0.4−  | 0.1+  | 2007 12 05 | 704 | 0.3+  | 0.6−  |
| 2005 04 02 | 644 | 0.7+ | 0.3+ | 2007 10 14 | 691 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.2+  | 1.6−  |
| 2005 04 07 | 704 | 0.5+ | 0.5+ | 2007 10 15 | 703 | 0.7+  | 0.6+  | 2007 12 05 | G96 | 0.8+  | 0.3−  |
| 2005 04 07 | 704 | 0.8+ | 0.7− | 2007 10 15 | 703 | 0.0   | 0.1−  | 2007 12 05 | G96 | 0.5+  | 0.3−  |
| 2005 04 07 | 704 | 0.1− | 0.4− | 2007 10 15 | 703 | (0.5+ | 2.0+) | 2007 12 05 | G96 | 0.2+  | 0.3−  |
| 2005 04 09 | 704 | 0.7+ | 1.2+ | 2007 10 15 | 703 | (2.5+ | 0.9+) | 2007 12 05 | 704 | 0.7−  | 1.1+  |
| 2005 04 09 | 704 | 0.3+ | 0.6+ | 2007 10 30 | 703 | 0.7−  | 1.3+  | 2007 12 05 | G96 | 0.4+  | 0.2−  |
| 2005 04 09 | 704 | 0.3− | 1.0+ | 2007 10 30 | 703 | 0.8+  | 0.5+  |            |     |       |       |

**(172652)\* 2003 YE<sub>77</sub>**

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 335.22557  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.25864336 | $\omega$ | 178.83658 | −0.66956204 | −0.74029295 |
| <i>a</i> | 2.4396929  | $\Omega$ | 313.19276 | +0.68079412 | −0.57913333 |
| <i>e</i> | 0.1596427  | <i>i</i> | 4.75541   | +0.29699502 | −0.34142486 |
| <i>P</i> | 3.81       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 08 27 | 691 | 0.6−  | 0.6+  | 2003 12 27 | 704 | 0.2− | 0.6+ | 2006 11 14 | 291 | 0.2−  | 0.2−  |
| 1998 08 27 | 691 | 0.5−  | 0.8+  | 2004 01 22 | 704 | 0.0  | 0.2+ | 2006 11 21 | 291 | 0.5+  | 0.0   |
| 1998 08 27 | 691 | 0.3−  | 0.6+  | 2004 01 22 | 704 | 1.0− | 0.3+ | 2006 11 21 | 291 | 0.2+  | 0.1+  |
| 2000 01 03 | 704 | 0.6+  | 0.4−  | 2004 01 22 | 704 | 0.8− | 0.0  | 2006 11 21 | 291 | 0.4+  | 0.1−  |
| 2000 01 03 | 704 | (2.4+ | 1.2−) | 2004 01 22 | 704 | 0.1+ | 0.4− | 2006 11 22 | 291 | 0.0   | 0.1+  |
| 2000 01 03 | 704 | 1.2+  | 0.8−  | 2004 01 22 | 704 | 0.2− | 0.1− | 2006 11 22 | 291 | 0.6+  | 0.2−  |
| 2000 01 03 | 704 | 0.3−  | 0.5−  | 2005 01 20 | 809 | 1.2+ | 1.0+ | 2006 11 22 | 291 | 0.4+  | 0.2−  |
| 2002 08 28 | 644 | 0.2−  | 0.6+  | 2005 01 20 | 809 | 1.2+ | 0.6+ | 2007 11 12 | G96 | 0.4−  | 0.1+  |
| 2002 08 28 | 644 | 0.1+  | 0.8+  | 2005 01 20 | 809 | 0.2+ | 0.1+ | 2007 11 12 | G96 | 0.4−  | 0.2−  |
| 2002 08 28 | 644 | 0.3−  | 0.7+  | 2006 10 02 | G96 | 0.1− | 0.2− | 2007 11 12 | G96 | 0.0   | 0.3−  |
| 2003 10 25 | 704 | 0.1+  | 0.4−  | 2006 10 02 | G96 | 0.5− | 0.3− | 2007 11 12 | G96 | 0.8−  | 0.0   |
| 2003 10 25 | 704 | 0.0   | 0.3−  | 2006 10 02 | G96 | 0.5− | 0.3− | 2007 11 20 | 704 | (2.4− | 1.0−) |
| 2003 10 25 | 704 | 0.1+  | 0.7+  | 2006 10 02 | G96 | 0.4− | 0.3− | 2007 11 20 | 704 | 0.0   | 0.4+  |
| 2003 12 18 | 704 | 0.9+  | 0.2−  | 2006 10 27 | 291 | 0.4− | 0.5+ | 2007 11 20 | 704 | (0.2+ | 1.5+) |
| 2003 12 18 | 704 | 0.1+  | 0.1−  | 2006 10 27 | 291 | 0.2− | 0.4− | 2007 11 20 | 704 | 0.5+  | 0.8+  |
| 2003 12 18 | 704 | 0.4−  | 0.5+  | 2006 10 27 | 291 | 0.6− | 0.0  | 2007 12 06 | 704 | 0.7+  | 1.5+  |
| 2003 12 18 | 704 | 0.4+  | 0.6+  | 2006 11 10 | 291 | 0.2− | 0.0  | 2007 12 06 | 704 | 0.4+  | 1.1+  |
| 2003 12 18 | 704 | 0.3+  | 0.0   | 2006 11 10 | 291 | 0.2+ | 0.1+ | 2007 12 06 | 704 | 0.3+  | 1.4+  |
| 2003 12 22 | 704 | 0.2+  | 0.4−  | 2006 11 10 | 291 | 0.3+ | 0.3+ | 2007 12 06 | 704 | 0.4+  | 0.9+  |
| 2003 12 22 | 704 | 0.2+  | 0.1−  | 2006 11 11 | 291 | 0.0  | 0.3− | 2007 12 14 | 704 | 0.2−  | 0.0   |
| 2003 12 22 | 704 | 0.4−  | 0.1−  | 2006 11 11 | 291 | 0.2+ | 0.1− | 2007 12 14 | 704 | 0.5+  | 0.9+  |
| 2003 12 22 | 704 | 0.1+  | 0.1−  | 2006 11 11 | 291 | 0.4+ | 0.2− | 2007 12 14 | 704 | 0.5+  | 0.8+  |
| 2003 12 27 | 704 | 0.2+  | 0.8+  | 2006 11 14 | 291 | 0.1− | 0.1− | 2007 12 14 | 704 | 0.5+  | 1.0+  |
| 2003 12 27 | 704 | 0.3−  | 0.9+  | 2006 11 14 | 291 | 0.0  | 0.0  |            |     |       |       |

2007 DEC. 24

M.P.O. 129439

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.27004   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.23965031 | $\omega$ | 80.25490  | +0.63512244 |      | -0.77195063 |   |
| <i>a</i> | 2.5669498  | $\Omega$ | 330.26352 | +0.68591721 |      | +0.57954614 |   |
| <i>e</i> | 0.1425095  | <i>i</i> | 3.08313   | +0.35515780 |      | +0.26118670 |   |
| <i>P</i> | 4.11       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 1994 08 11 | 809 | (3.5+ 0.5+) | 2003 12 22 | 704 | 0.1- 0.2+ | 2005 04 15 | 691 | 0.4+ 0.2+ |
| 1994 08 11 | 809 | 0.3- 0.5+   | 2003 12 27 | 704 | 0.2- 0.4+ | 2005 04 15 | 691 | 0.5- 1.4+ |
| 1994 08 11 | 809 | 1.5+ 0.0    | 2003 12 27 | 704 | 0.5- 0.4- | 2007 11 07 | 691 | 0.0 0.0   |
| 1994 09 01 | 691 | 0.2- 0.5+   | 2003 12 27 | 704 | 0.8- 0.4+ | 2007 11 07 | 691 | 0.7- 0.4+ |
| 1994 09 01 | 691 | 0.4- 0.2-   | 2003 12 27 | 704 | 1.1- 0.0  | 2007 11 07 | 691 | 0.1+ 0.1+ |
| 1994 09 01 | 691 | 0.5- 0.3+   | 2003 12 30 | 704 | 0.8+ 0.6+ | 2007 11 20 | 704 | 0.1- 0.3+ |
| 1994 09 08 | 691 | 0.0 0.6+    | 2003 12 30 | 704 | 0.8+ 0.1+ | 2007 11 20 | 704 | 0.4+ 0.5+ |
| 1994 09 08 | 691 | 0.0 0.6+    | 2003 12 30 | 704 | 0.7+ 0.2+ | 2007 11 20 | 704 | 0.1+ 1.0+ |
| 1994 09 08 | 691 | 0.2- 0.4+   | 2003 12 30 | 704 | 0.5+ 0.2+ | 2007 11 20 | 704 | 0.5+ 0.8- |
| 1995 12 27 | 691 | 0.4- 0.1+   | 2003 12 30 | 704 | 0.5+ 0.1+ | 2007 12 13 | 704 | 0.3- 1.4+ |
| 1995 12 27 | 691 | 0.1- 0.2-   | 2005 03 17 | G96 | 1.1- 0.2+ | 2007 12 13 | 704 | 1.2- 1.0+ |
| 1995 12 27 | 691 | 0.2- 0.4-   | 2005 03 17 | G96 | 0.7- 0.2- | 2007 12 13 | 704 | 0.9- 0.4+ |
| 2003 12 18 | 704 | 1.1+ 0.1+   | 2005 03 17 | G96 | 0.5+ 0.5+ | 2007 12 13 | 704 | 0.1- 0.5- |
| 2003 12 18 | 704 | 0.6+ 0.2+   | 2005 03 17 | G96 | 0.8- 0.0  | 2007 12 13 | 704 | 0.0 0.8+  |
| 2003 12 18 | 704 | 0.3+ 0.8-   | 2005 04 11 | 691 | 0.2+ 0.1+ | 2007 12 15 | 704 | 0.2+ 0.8+ |
| 2003 12 18 | 704 | 0.4+ 0.1-   | 2005 04 11 | 691 | 0.5+ 0.6+ | 2007 12 15 | 704 | 0.3+ 0.6+ |
| 2003 12 18 | 704 | (1.9+ 0.0 ) | 2005 04 11 | 691 | 0.3+ 0.3+ | 2007 12 15 | 704 | 0.2+ 1.2+ |
| 2003 12 22 | 704 | 0.1- 0.0    | 2005 04 15 | 691 | 0.1+ 0.4+ | 2007 12 15 | 704 | 0.3+ 0.6+ |
| 2003 12 22 | 704 | 0.1+ 0.2+   | 2005 04 15 | 691 | 0.3+ 0.1+ | 2007 12 15 | 704 | 0.3+ 0.7+ |
| 2003 12 22 | 704 | 0.1+ 0.3+   | 2005 04 15 | 691 | 0.2+ 0.2+ |            |     |           |
| 2003 12 22 | 704 | 0.2+ 0.8+   | 2005 04 15 | 691 | 0.5+ 0.1+ |            |     |           |

(172654)\* 2003 YL<sub>80</sub> = 2002 TS<sub>157</sub>

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 69612)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 209.54257  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22244581 | $\omega$ | 126.69447 | -0.75253612 |      | +0.61121172 |   |
| <i>a</i> | 2.6976560  | $\Omega$ | 92.31616  | -0.65487555 |      | -0.65526472 |   |
| <i>e</i> | 0.0709015  | <i>i</i> | 14.20388  | -0.06947953 |      | -0.44390131 |   |
| <i>P</i> | 4.43       | <i>H</i> | 15.4      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2000 03 04 | 704 | 0.6+ 0.6+   | 2003 12 28 | 704 | 0.3+ 0.3+ | 2005 05 31 | 699 | 0.4- 1.2+   |
| 2000 03 04 | 704 | 1.1+ 0.3+   | 2004 01 16 | 691 | 0.1- 0.2- | 2005 05 31 | 699 | 0.1+ 1.3+   |
| 2000 03 04 | 704 | 1.4+ 0.7+   | 2004 01 16 | 691 | 0.1- 0.2- | 2005 06 07 | 699 | 0.1+ 0.0    |
| 2000 03 04 | 704 | (2.5+ 0.3-) | 2004 01 16 | 691 | 0.2- 0.2- | 2005 06 07 | 699 | 0.0 1.0+    |
| 2000 03 04 | 704 | 1.9+ 0.3-   | 2005 05 04 | 703 | 0.8- 0.3+ | 2005 06 07 | 699 | (1.0+ 1.7+) |
| 2002 10 05 | 644 | 0.6- 1.1+   | 2005 05 04 | 703 | 0.9- 0.4- | 2005 06 07 | 699 | 0.2- 0.2-   |
| 2002 10 05 | 644 | 0.5- 0.6+   | 2005 05 04 | 703 | 0.9- 0.7- | 2005 06 23 | 644 | 0.1+ 0.0    |
| 2002 10 05 | 644 | 0.7- 0.6+   | 2005 05 04 | 703 | 0.5- 0.5- | 2005 06 23 | 644 | 0.2+ 0.1-   |
| 2002 10 06 | 644 | 0.5- 1.0+   | 2005 05 11 | 699 | 0.9+ 0.4+ | 2005 06 23 | 644 | 0.4+ 0.1+   |
| 2002 10 06 | 644 | 0.5- 0.9+   | 2005 05 11 | 699 | 1.1+ 0.1- | 2005 06 29 | 644 | 0.3+ 0.3+   |
| 2002 10 06 | 644 | 1.3- 0.7+   | 2005 05 11 | 699 | 1.1+ 0.4- | 2005 06 29 | 644 | 0.4+ 0.1+   |
| 2003 12 18 | 704 | 0.2+ 0.4-   | 2005 05 11 | 703 | 0.9+ 0.0  | 2005 06 29 | 644 | 0.3+ 0.5+   |
| 2003 12 18 | 704 | 0.3- 0.6-   | 2005 05 11 | 703 | 0.3- 0.2+ | 2007 11 12 | 704 | 0.5+ 0.7+   |
| 2003 12 18 | 704 | 1.4- 0.6-   | 2005 05 11 | 699 | 1.0+ 0.7+ | 2007 11 12 | 704 | (2.0+ 0.4-) |
| 2003 12 22 | 704 | 0.4- 0.2+   | 2005 05 11 | 703 | 0.8- 0.9+ | 2007 11 12 | 704 | 1.3+ 1.1-   |
| 2003 12 22 | 704 | 1.3- 0.7+   | 2005 05 11 | 703 | 0.1- 0.8- | 2007 12 04 | 704 | 0.8+ 1.2+   |
| 2003 12 22 | 704 | 0.4- 1.0+   | 2005 05 15 | 644 | 0.2+ 0.0  | 2007 12 04 | 704 | (1.5+ 0.9+) |
| 2003 12 22 | 704 | 1.3- 1.0+   | 2005 05 15 | 644 | 0.0 0.2+  | 2007 12 04 | 704 | 1.4+ 0.3+   |
| 2003 12 22 | 704 | 0.5- 1.3+   | 2005 05 15 | 644 | 0.0 0.0   | 2007 12 04 | 704 | 1.2+ 1.3+   |
| 2003 12 28 | 704 | 0.9- 0.0    | 2005 05 31 | 699 | 0.4- 0.5+ |            |     |             |
| 2003 12 28 | 704 | 0.2+ 0.1+   | 2005 05 31 | 699 | 0.5- 1.0+ |            |     |             |

(172655)\* 2003 YX<sub>80</sub>

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.13679  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.23946492 | $\omega$ | 47.12236 | -0.28222483 |      | -0.95707471 |   |
| <i>a</i> | 2.5682746  | $\Omega$ | 59.38167 | +0.85631439 |      | -0.28233794 |   |
| <i>e</i> | 0.1196005  | <i>i</i> | 4.39906  | +0.43252145 |      | -0.06552325 |   |
| <i>P</i> | 4.12       | <i>H</i> | 16.6     | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2002 08 20 | 644 | 0.2- 0.2-   | 2003 12 28 | 704 | 0.4- 0.1+   | 2007 11 02 | G96 | 0.1- 0.4-   |
| 2002 08 20 | 644 | 0.1- 0.3+   | 2004 01 16 | 703 | 0.6- 0.4+   | 2007 11 19 | D35 | 0.2- 0.4-   |
| 2002 08 20 | 644 | 0.8+ 0.2+   | 2004 01 16 | 703 | 1.1- 0.3-   | 2007 11 19 | D35 | 0.2+ 0.3-   |
| 2002 09 16 | 644 | 0.2- 0.2+   | 2004 01 16 | 703 | 0.3- 0.1-   | 2007 11 19 | D35 | 0.2+ 0.3-   |
| 2002 09 16 | 644 | 0.2- 0.6-   | 2004 01 16 | 703 | 1.1- 0.4-   | 2007 12 05 | 691 | 0.3- 0.3-   |
| 2002 09 16 | 644 | 0.1- 0.2+   | 2004 01 31 | 704 | 0.4+ 0.1-   | 2007 12 05 | 691 | 0.4- 0.0    |
| 2003 12 18 | 704 | 0.0 0.1+    | 2004 01 31 | 704 | 0.0 0.2-    | 2007 12 05 | 691 | 0.4- 0.1-   |
| 2003 12 18 | 704 | 0.8+ 0.5+   | 2004 01 31 | 704 | 0.6+ 0.6+   | 2007 12 06 | 704 | (1.6+ 0.5-) |
| 2003 12 18 | 704 | 0.1+ 0.7+   | 2004 01 31 | 704 | 0.2- 0.2+   | 2007 12 06 | 704 | 1.3+ 0.2-   |
| 2003 12 18 | 704 | (0.3+ 2.0+) | 2004 02 10 | 106 | 0.5- 0.0    | 2007 12 06 | 704 | 1.0+ 0.9+   |
| 2003 12 21 | 645 | 0.1- 0.2-   | 2004 02 10 | 106 | 0.5+ 0.5-   | 2007 12 06 | 704 | 0.1+ 0.5-   |
| 2003 12 21 | 645 | 0.1- 0.2-   | 2004 02 10 | 106 | 0.2+ 0.1+   | 2007 12 06 | 704 | 0.7+ 0.6+   |
| 2003 12 22 | 704 | 0.3+ 0.4+   | 2004 02 11 | 699 | 0.2- 0.7+   | 2007 12 10 | 704 | 0.2+ 0.3+   |
| 2003 12 22 | 704 | 0.4+ 1.1+   | 2004 02 11 | 699 | 0.2+ 0.1+   | 2007 12 10 | 704 | 0.4+ 0.8+   |
| 2003 12 22 | 704 | 0.5+ 0.5+   | 2004 02 11 | 699 | (2.0+ 1.6+) | 2007 12 10 | 704 | 0.2+ 0.1-   |
| 2003 12 22 | 704 | 0.4+ 0.5+   | 2004 02 11 | 699 | 1.3+ 0.5+   | 2007 12 10 | 704 | 0.6+ 0.1+   |
| 2003 12 23 | 704 | (1.9- 0.9+) | 2004 02 15 | 704 | (0.0 2.0+)  | 2007 12 10 | 704 | 0.2+ 0.4+   |
| 2003 12 23 | 704 | 0.3+ 0.3+   | 2004 02 15 | 704 | 1.1+ 1.0+   | 2007 12 13 | 704 | 0.9+ 0.2+   |
| 2003 12 23 | 704 | 0.1+ 0.6+   | 2004 02 15 | 704 | (3.0+ 1.3+) | 2007 12 13 | 704 | 0.5- 0.6+   |
| 2003 12 23 | 704 | 0.2- 0.5+   | 2006 09 18 | 568 | 0.1- 0.0    | 2007 12 13 | 704 | 0.8- 0.6+   |
| 2003 12 23 | 704 | 0.9- 0.1-   | 2006 09 18 | 568 | 0.1- 0.1+   | 2007 12 13 | 704 | 0.6- 1.4+   |
| 2003 12 28 | 704 | 1.3+ 1.3-   | 2006 09 18 | 568 | 0.0 0.0     | 2007 12 15 | 704 | 0.1+ 1.9+   |
| 2003 12 28 | 704 | 0.1- 0.9+   | 2007 11 02 | G96 | 0.0 0.5-    | 2007 12 15 | 704 | 0.4+ 0.1-   |
| 2003 12 28 | 704 | 0.2- 0.8+   | 2007 11 02 | G96 | 0.5+ 0.3-   | 2007 12 15 | 704 | 0.1+ 0.0    |
| 2003 12 28 | 704 | 0.5- 0.8-   | 2007 11 02 | G96 | 0.4+ 0.7-   |            |     |             |

(172656)\* 2003 YD<sub>82</sub> = 2000 JD<sub>69</sub> = 2002 TR<sub>369</sub>

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 57522)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 243.43334  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22712568 | $\omega$ | 116.60867 | -0.85503930 |      | +0.46643640 |   |
| <i>a</i> | 2.6604712  | $\Omega$ | 91.95228  | -0.51854873 |      | -0.76580338 |   |
| <i>e</i> | 0.2262011  | <i>i</i> | 13.10438  | -0.00387414 |      | -0.44269885 |   |
| <i>P</i> | 4.34       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2000 03 15 | 704 | 0.1+ 0.3+   | 2003 12 22 | 704 | 0.4+ 0.4+ | 2004 02 14 | 704 | 0.4- 0.7-   |
| 2000 03 15 | 704 | 0.0 0.4+    | 2003 12 22 | 704 | 0.8+ 0.2- | 2005 06 04 | 704 | (2.2- 0.9+) |
| 2000 03 15 | 704 | 0.2- 0.2-   | 2003 12 22 | 704 | 0.9+ 0.0  | 2005 06 04 | 704 | 0.4- 0.4+   |
| 2000 03 15 | 704 | 0.5+ 0.4+   | 2003 12 22 | 704 | 0.3+ 0.7+ | 2005 06 04 | 704 | 0.4+ 0.6+   |
| 2000 03 15 | 704 | 0.3- 0.6+   | 2003 12 22 | 704 | 0.1+ 0.3+ | 2005 06 04 | 704 | 0.1- 0.0    |
| 2000 05 01 | 704 | (1.7+ 2.3+) | 2003 12 22 | 704 | 0.9+ 0.2- | 2005 06 11 | 704 | 0.7+ 0.2+   |
| 2000 05 01 | 704 | 0.3+ 1.1+   | 2003 12 22 | 704 | 1.0- 0.5+ | 2005 06 11 | 704 | 0.5+ 0.0    |
| 2000 05 01 | 704 | 0.7+ 1.3+   | 2003 12 22 | 704 | 0.9+ 0.6- | 2005 06 11 | 704 | 0.1- 0.6+   |
| 2000 05 01 | 704 | 0.1- 0.3+   | 2003 12 27 | 704 | 0.3+ 0.3+ | 2005 06 18 | G96 | 0.6- 0.4+   |
| 2000 05 04 | 699 | 0.2- 0.3+   | 2003 12 27 | 704 | 0.1+ 0.2+ | 2005 06 18 | G96 | 0.4- 1.0+   |
| 2000 05 04 | 699 | 0.1- 0.9+   | 2003 12 27 | 704 | 0.4+ 0.6+ | 2005 06 18 | G96 | 0.3+ 1.3+   |
| 2000 05 04 | 699 | (2.2- 1.8+) | 2003 12 27 | 704 | 0.8+ 0.5+ | 2005 06 18 | G96 | 0.0 0.4+    |
| 2000 05 04 | 699 | 0.3- 0.4+   | 2003 12 27 | 704 | 0.7+ 0.3- | 2007 11 20 | 691 | 0.3- 0.1-   |
| 2001 07 21 | 644 | 0.2+ 0.2-   | 2003 12 28 | 704 | 0.1+ 0.7+ | 2007 11 20 | 691 | 0.3- 0.3-   |
| 2001 07 21 | 644 | 0.2+ 0.1+   | 2003 12 28 | 704 | 0.6- 1.0+ | 2007 11 20 | 691 | 0.0 1.1-    |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 21 | 644 | 0.4−  | 0.8+  | 2003 12 28 | 704 | 0.1+  | 0.5+  | 2007 12 04 | 704 | 0.2+ | 0.1− |
| 2002 10 10 | 645 | 0.0   | 0.1+  | 2003 12 28 | 704 | 0.0   | 1.0+  | 2007 12 04 | 704 | 0.5− | 0.6+ |
| 2002 10 10 | 645 | 0.1−  | 0.1+  | 2003 12 28 | 704 | 0.2+  | 0.0   | 2007 12 04 | 704 | 0.8+ | 0.2− |
| 2002 10 11 | 645 | 0.1−  | 0.1+  | 2004 01 16 | 703 | 1.5−  | 0.7+  | 2007 12 04 | 704 | 0.3− | 0.3− |
| 2002 10 11 | 645 | 0.0   | 0.1+  | 2004 01 16 | 703 | (0.0  | 1.9+) | 2007 12 05 | G96 | 0.0  | 0.2− |
| 2003 12 18 | 704 | 0.3+  | 1.1+  | 2004 01 16 | 703 | 1.3−  | 0.5+  | 2007 12 05 | G96 | 0.2+ | 0.0− |
| 2003 12 18 | 704 | 0.7+  | 0.0   | 2004 01 16 | 703 | 1.5−  | 1.0−  | 2007 12 05 | G96 | 0.2− | 0.5+ |
| 2003 12 18 | 704 | 1.0+  | 0.4+  | 2004 02 14 | 704 | 0.8−  | 0.9−  | 2007 12 05 | G96 | 1.5+ | 0.4+ |
| 2003 12 18 | 704 | (0.9+ | 2.0+) | 2004 02 14 | 704 | (2.6+ | 1.8+) |            |     |      |      |
| 2003 12 22 | 704 | 1.1+  | 0.4+  | 2004 02 14 | 704 | 0.2−  | 0.9−  |            |     |      |      |

**(172657)\* 2003 YH<sub>82</sub> = 1992 DF<sub>11</sub> = 1996 AO<sub>13</sub>**

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69612)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC         |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 295.32925 | <i>ω</i> | 104.55072 | −0.88685498 | −0.45985329 |          |   |
| <i>a</i> | 2.5703766 | <i>Ω</i> | 48.09370  | +0.39723960 | −0.80856036 |          |   |
| <i>e</i> | 0.0748638 | <i>i</i> | 3.46494   | +0.23598506 | −0.36710366 |          |   |
| <i>P</i> | 4.12      | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 02 29 | 809 | 0.3−  | 0.3+  | 2003 12 22 | 704 | 0.4+ | 0.5+ | 2005 05 28 | 599 | 0.1+  | 0.7+  |
| 1992 03 03 | 809 | 0.6−  | 0.1−  | 2003 12 22 | 704 | 0.7− | 0.4+ | 2005 05 28 | 599 | 0.1+  | 0.4+  |
| 1996 01 15 | 691 | 0.0   | 0.1−  | 2003 12 22 | 704 | 0.4+ | 0.4+ | 2006 09 14 | 703 | (3.3+ | 0.7−) |
| 1996 01 15 | 691 | 0.2+  | 0.2−  | 2003 12 27 | 704 | 0.4+ | 0.1+ | 2006 09 14 | 703 | 1.0−  | 0.2+  |
| 1996 01 15 | 691 | 0.1−  | 0.1+  | 2003 12 27 | 704 | 0.2+ | 0.4− | 2006 09 14 | 703 | 1.2−  | 0.4−  |
| 1996 01 24 | 691 | 0.1+  | 0.2−  | 2003 12 27 | 704 | 0.3+ | 0.6− | 2006 09 14 | 703 | 0.9+  | 1.2+  |
| 1996 01 24 | 691 | 0.1−  | 0.2−  | 2003 12 27 | 704 | 0.2+ | 0.1+ | 2006 09 30 | 291 | 0.1+  | 0.0   |
| 1996 01 24 | 691 | 0.2−  | 0.3−  | 2003 12 27 | 704 | 0.2+ | 0.3+ | 2006 09 30 | 291 | 0.2−  | 0.3+  |
| 2000 02 11 | 704 | 0.0   | 0.2+  | 2004 01 22 | 704 | 0.4+ | 0.7+ | 2006 09 30 | 291 | 0.3+  | 0.1+  |
| 2000 02 11 | 704 | 0.0   | 0.3+  | 2004 01 22 | 704 | 0.2− | 0.7+ | 2007 12 05 | 691 | 0.2−  | 0.2−  |
| 2000 02 11 | 704 | 1.0+  | 1.6+  | 2004 01 22 | 704 | 0.2+ | 0.3+ | 2007 12 05 | 691 | 0.1−  | 0.4−  |
| 2003 12 18 | 704 | (0.4+ | 1.6+) | 2004 01 22 | 704 | 0.5+ | 0.4+ | 2007 12 05 | 691 | 0.3−  | 0.2−  |
| 2003 12 18 | 704 | 0.5−  | 0.5+  | 2005 05 27 | 599 | 0.4− | 0.8+ | 2007 12 15 | 704 | 0.3−  | 0.4−  |
| 2003 12 18 | 704 | 0.1−  | 1.4+  | 2005 05 27 | 599 | 0.8+ | 0.3− | 2007 12 15 | 704 | 0.3+  | 0.5+  |
| 2003 12 18 | 704 | 0.7+  | 1.3+  | 2005 05 27 | 599 | 0.4+ | 0.9+ | 2007 12 15 | 704 | 0.1−  | 0.5+  |
| 2003 12 22 | 704 | 0.4+  | 0.6+  | 2005 05 28 | 599 | 0.2− | 0.3+ | 2007 12 15 | 704 | 0.2−  | 0.2+  |
| 2003 12 22 | 704 | 0.5−  | 0.0   | 2005 05 28 | 599 | 0.0  | 0.8+ | 2007 12 15 | 704 | 1.0+  | 0.4+  |

**(172658)\* 2003 YV<sub>83</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC         |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 338.92123 | <i>ω</i> | 355.75752 | +0.84169693 | −0.53932151 |          |   |
| <i>a</i> | 2.7340832 | <i>Ω</i> | 36.91829  | +0.49666208 | +0.75438869 |          |   |
| <i>e</i> | 0.0872589 | <i>i</i> | 2.48555   | +0.21183261 | +0.37420585 |          |   |
| <i>P</i> | 4.52      | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 25 | 645 | 0.1+  | 0.3−  | 2003 12 27 | 704 | 0.6− | 0.2+ | 2007 09 16 | 704 | (0.1− | 2.2+) |
| 1998 09 25 | 645 | 0.1+  | 0.2−  | 2003 12 27 | 704 | 1.2− | 0.0  | 2007 09 16 | 704 | 0.3+  | 0.5+  |
| 2003 11 21 | 704 | 0.3+  | 0.7−  | 2003 12 27 | 704 | 0.1+ | 0.1− | 2007 09 16 | 704 | 0.5+  | 1.4+  |
| 2003 11 21 | 704 | 0.4+  | 0.1−  | 2003 12 27 | 704 | 0.3− | 0.9+ | 2007 09 16 | 704 | 0.2−  | 0.4+  |
| 2003 11 21 | 704 | 0.3−  | 0.3+  | 2005 03 16 | G96 | 0.1− | 0.0  | 2007 09 18 | 704 | 0.3−  | 0.5−  |
| 2003 11 21 | 704 | 0.1+  | 0.2+  | 2005 03 16 | G96 | 0.1− | 0.1− | 2007 09 18 | 704 | 0.1−  | 0.2+  |
| 2003 11 21 | 704 | 0.1−  | 0.4−  | 2005 03 16 | G96 | 0.2+ | 0.5+ | 2007 09 18 | 704 | 0.3−  | 0.7+  |
| 2003 11 26 | 704 | 0.5−  | 0.2+  | 2005 03 16 | G96 | 0.3+ | 0.0  | 2007 09 18 | 704 | 0.5−  | 0.7+  |
| 2003 11 26 | 704 | (2.0− | 0.5+) | 2005 05 10 | G96 | 0.2+ | 0.6− | 2007 10 11 | 704 | 0.5−  | 1.6+  |
| 2003 11 26 | 704 | (1.6− | 1.0+) | 2005 05 10 | G96 | 0.1+ | 0.3+ | 2007 10 11 | 704 | 0.8−  | 1.4+  |
| 2003 11 26 | 704 | (1.7− | 0.0)  | 2005 05 10 | G96 | 0.2− | 0.1+ | 2007 10 11 | 704 | 0.7−  | 1.3+  |
| 2003 11 26 | 704 | (2.2− | 0.5+) | 2005 05 10 | G96 | 0.0  | 0.1+ | 2007 10 12 | G96 | 0.2−  | 0.1+  |
| 2003 12 01 | 691 | 0.2+  | 0.4−  | 2007 09 11 | D29 | 0.2− | 0.3− | 2007 10 12 | G96 | 0.2+  | 0.2+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 01 | 691 | 0.0  | 0.3− | 2007 09 11 | D29 | 0.3+  | 0.3−  | 2007 10 12 | G96 | 0.2+ | 0.0  |
| 2003 12 01 | 691 | 0.0  | 0.3− | 2007 09 11 | D29 | 0.6−  | 0.1+  | 2007 10 12 | G96 | 0.4− | 0.0  |
| 2003 12 19 | 704 | 0.2− | 0.1+ | 2007 09 11 | D29 | 0.2+  | 0.2−  | 2007 10 15 | 703 | 1.0− | 0.5+ |
| 2003 12 19 | 704 | 0.5+ | 0.1+ | 2007 09 13 | 704 | 1.1+  | 1.0+  | 2007 10 15 | 703 | 1.4− | 0.2− |
| 2003 12 19 | 704 | 0.6+ | 0.1− | 2007 09 13 | 704 | 0.4−  | 0.0   | 2007 10 15 | 703 | 0.5+ | 1.0+ |
| 2003 12 19 | 704 | 0.1+ | 0.4+ | 2007 09 13 | 704 | (2.8− | 1.1+) | 2007 10 15 | 703 | 0.8+ | 0.5+ |
| 2003 12 22 | 704 | 0.2− | 0.9+ | 2007 09 13 | G96 | 0.2−  | 0.1+  | 2007 12 04 | G96 | 0.7+ | 0.9+ |
| 2003 12 22 | 704 | 0.1− | 1.1+ | 2007 09 13 | G96 | 0.0   | 0.1+  | 2007 12 04 | G96 | 0.6− | 0.2− |
| 2003 12 22 | 704 | 0.3− | 0.6+ | 2007 09 13 | G96 | 0.3−  | 0.0   | 2007 12 04 | G96 | 0.4− | 0.4− |
| 2003 12 22 | 704 | 0.3+ | 0.3− | 2007 09 13 | G96 | 0.3−  | 0.1−  | 2007 12 04 | G96 | 0.1− | 0.1+ |
| 2003 12 27 | 704 | 0.1+ | 1.0+ | 2007 09 16 | 704 | 0.4−  | 0.0   |            |     |      |      |

**(172659)\* 2003 YW<sub>92</sub> = 1997 CO<sub>3</sub> = 1999 TV<sub>275</sub>**

Discovered 2003 Dec. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (*MPO* 65531)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 15.33315   | <i>ω</i> | 129.81779 | −0.13204299 | −0.99106397 |          |   |
| <i>a</i> | 0.27330194 | <i>Ω</i> | 327.75502 | +0.89828884 | −0.11158137 |          |   |
| <i>e</i> | 2.3516584  | <i>i</i> | 2.02903   | +0.41909642 | −0.07308761 |          |   |
| <i>P</i> | 0.1310575  | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 02 02 | 691 | 0.3+ | 0.2+ | 2003 11 24 | 704 | 0.0  | 0.2+ | 2005 02 09 | 809 | 0.1− | 0.1+ |
| 1997 02 02 | 691 | 0.5− | 0.5− | 2003 12 04 | 704 | 0.6+ | 0.6+ | 2005 02 09 | 809 | 0.4− | 0.1+ |
| 1997 02 02 | 691 | 0.0  | 0.2− | 2003 12 04 | 704 | 0.0  | 0.2− | 2006 08 27 | 691 | 0.0  | 0.1+ |
| 1997 02 04 | 691 | 0.1− | 0.1− | 2003 12 04 | 704 | 0.2+ | 0.3− | 2006 08 27 | 691 | 0.1− | 0.1− |
| 1997 02 04 | 691 | 0.1− | 0.4− | 2003 12 21 | 704 | 1.1− | 0.2− | 2006 08 27 | 691 | 0.0  | 0.4+ |
| 1997 02 04 | 691 | 0.1− | 0.4− | 2003 12 21 | 704 | 0.9− | 0.6+ | 2006 09 27 | G96 | 0.2+ | 0.1+ |
| 1999 10 06 | 704 | 1.1+ | 0.2− | 2003 12 21 | 704 | 1.3− | 0.3− | 2006 09 27 | G96 | 0.0  | 0.4− |
| 1999 10 06 | 704 | 0.3+ | 0.9− | 2003 12 21 | 704 | 0.9− | 0.5+ | 2006 09 27 | G96 | 0.5− | 0.3− |
| 1999 10 06 | 704 | 0.1− | 1.0− | 2003 12 22 | 704 | 0.7+ | 0.5+ | 2006 09 27 | G96 | 0.1− | 0.3− |
| 1999 10 06 | 704 | 1.0+ | 0.6− | 2003 12 22 | 704 | 1.0+ | 0.4+ | 2007 10 16 | G96 | 0.2+ | 0.3− |
| 1999 10 06 | 704 | 0.8+ | 0.2+ | 2003 12 22 | 704 | 0.4− | 0.4− | 2007 10 16 | G96 | 0.2− | 0.1− |
| 1999 10 13 | 704 | 0.1− | 1.1− | 2003 12 27 | 704 | 0.2− | 0.8+ | 2007 10 16 | G96 | 0.4+ | 0.4− |
| 1999 10 13 | 704 | 0.7+ | 1.0− | 2003 12 27 | 704 | 0.1− | 1.4+ | 2007 10 16 | G96 | 0.4+ | 0.4+ |
| 1999 10 13 | 704 | 1.3− | 0.7+ | 2003 12 27 | 704 | 0.4+ | 1.1+ | 2007 12 14 | G96 | 0.1+ | 0.2− |
| 2003 11 24 | 704 | 0.1+ | 0.2+ | 2003 12 27 | 704 | 0.1+ | 1.1+ | 2007 12 14 | G96 | 0.1+ | 0.1− |
| 2003 11 24 | 704 | 0.3+ | 0.2− | 2003 12 27 | 704 | 0.3− | 1.0+ | 2007 12 14 | G96 | 0.1+ | 0.6− |
| 2003 11 24 | 704 | 0.4+ | 1.1− | 2005 02 09 | 809 | 0.1− | 0.3+ | 2007 12 14 | G96 | 0.1+ | 0.4+ |

**(172660)\* 2003 YE<sub>94</sub>**

Discovered 2003 Dec. 21 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 298.87701  | <i>ω</i> | 53.88911 | −0.71410059 | −0.69672614 |          |   |
| <i>a</i> | 0.22513541 | <i>Ω</i> | 81.83557 | +0.61815404 | −0.67321308 |          |   |
| <i>e</i> | 2.6761278  | <i>i</i> | 3.94296  | +0.32855125 | −0.24770310 |          |   |
| <i>P</i> | 0.1289792  | <i>H</i> | 16.1     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 04 18 | 691 | 0.0   | 0.2−  | 2004 01 22 | 704 | 0.1+ | 0.6+ | 2007 11 14 | 691 | 0.2−  | 0.1−  |
| 1996 04 18 | 691 | 0.1−  | 0.1+  | 2004 01 30 | 704 | 1.0− | 0.1+ | 2007 11 14 | 704 | 0.1−  | 0.1−  |
| 1996 04 18 | 691 | 0.0   | 0.0   | 2004 01 30 | 704 | 0.0  | 0.5− | 2007 11 14 | 691 | 0.3−  | 0.4+  |
| 2003 12 21 | 691 | 0.3+  | 0.4−  | 2004 01 30 | 704 | 0.7− | 0.1− | 2007 11 15 | 704 | 0.4+  | 0.0   |
| 2003 12 21 | 691 | 0.2+  | 0.3−  | 2004 02 11 | 699 | 0.1− | 0.2− | 2007 11 15 | 704 | 0.1+  | 0.7+  |
| 2003 12 21 | 691 | 0.2+  | 0.2−  | 2004 02 11 | 699 | 0.3− | 0.3− | 2007 11 15 | 704 | 1.0+  | 0.2+  |
| 2003 12 22 | 704 | 0.1−  | 0.6−  | 2004 02 11 | 699 | 0.4− | 0.7− | 2007 11 15 | 704 | (2.1+ | 1.1+) |
| 2003 12 22 | 704 | 0.2−  | 0.1−  | 2004 02 11 | 699 | 0.4+ | 0.5+ | 2007 11 18 | 691 | 0.1−  | 0.0   |
| 2003 12 22 | 704 | 0.5+  | 0.8+  | 2004 02 15 | 704 | 0.4+ | 0.0  | 2007 11 18 | 691 | 0.3−  | 0.1−  |
| 2003 12 22 | 704 | (1.4+ | 1.6+) | 2004 02 15 | 704 | 0.6− | 0.3+ | 2007 11 18 | 691 | 0.0   | 0.1+  |
| 2003 12 22 | 704 | (0.6+ | 2.5+) | 2004 02 15 | 704 | 0.4+ | 0.6− | 2007 11 30 | D35 | 0.2+  | 1.1+  |
| 2003 12 27 | 704 | 0.5+  | 0.6+  | 2004 02 15 | 704 | 0.6− | 0.1+ | 2007 11 30 | D35 | 0.6+  | 0.2−  |
| 2003 12 27 | 704 | 0.3−  | 0.7+  | 2004 02 15 | 704 | 0.9− | 0.4− | 2007 11 30 | D35 | 1.1+  | 0.4+  |

2007 DEC. 24

M.P.O. 129441

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 27 | 704 | 0.5− | 0.7+ | 2005 02 16 | 809 | 0.1+  | 0.1−  | 2007 12 03 | 703 | 0.5− | 0.9− |
| 2003 12 27 | 704 | 0.3− | 0.5+ | 2005 02 16 | 809 | 0.0   | 0.1+  | 2007 12 03 | 703 | 0.7+ | 0.1− |
| 2004 01 16 | 644 | 0.1− | 0.0  | 2005 06 13 | G96 | 0.3+  | 0.8+  | 2007 12 03 | 703 | 0.4+ | 0.7− |
| 2004 01 16 | 644 | 0.0  | 0.1+ | 2005 06 13 | G96 | 0.1−  | 0.4−  | 2007 12 03 | 703 | 0.6+ | 0.2− |
| 2004 01 16 | 644 | 0.2+ | 0.1+ | 2005 06 13 | G96 | 0.4+  | 0.1+  | 2007 12 05 | 704 | 0.1+ | 0.5− |
| 2004 01 17 | 644 | 0.2+ | 0.3+ | 2005 06 13 | G96 | 0.5−  | 0.3+  | 2007 12 05 | 704 | 0.2− | 1.2− |
| 2004 01 17 | 644 | 0.3+ | 0.3+ | 2007 11 14 | 704 | (1.6+ | 0.2−) | 2007 12 05 | 704 | 0.2− | 0.1+ |
| 2004 01 17 | 644 | 0.3+ | 0.4+ | 2007 11 14 | 704 | 0.4+  | 0.6+  | 2007 12 05 | 704 | 0.6− | 0.1+ |
| 2004 01 22 | 704 | 0.1− | 1.1+ | 2007 11 14 | 691 | 0.3−  | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.1− |
| 2004 01 22 | 704 | 0.3+ | 0.0  | 2007 11 14 | 704 | 0.5+  | 0.3+  |            |     |      |      |
| 2004 01 22 | 704 | 0.3+ | 0.3+ | 2007 11 14 | 704 | 0.2−  | 0.0   |            |     |      |      |

**(172661)\* 2003 YE<sub>96</sub> = 2005 GM<sub>181</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 76337)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 53.24096   | (2000.0) |           |
| <i>n</i>                    | 0.25883388 | $\omega$ | 262.88340 |
| <i>a</i>                    | 2.4384955  | $\Omega$ | 126.01110 |
| <i>e</i>                    | 0.0901320  | <i>i</i> | 3.14053   |
| <i>P</i>                    | 3.81       | <i>H</i> | 16.8      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 0         |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 12 05 | 703 | 0.8+ | 0.9− | 2003 12 23 | 704 | 0.1− | 0.0  | 2006 08 20 | 644 | 0.2+  | 0.6+  |
| 1999 12 05 | 703 | 0.4+ | 0.6+ | 2003 12 23 | 704 | 0.9+ | 0.1− | 2006 08 20 | 644 | 0.4+  | 0.5+  |
| 1999 12 05 | 703 | 0.5− | 1.0+ | 2003 12 23 | 704 | 0.1+ | 0.8+ | 2006 08 28 | 699 | (1.9− | 0.6+) |
| 1999 12 05 | 703 | 0.5− | 0.3− | 2003 12 23 | 704 | 0.8+ | 0.4+ | 2006 08 28 | 699 | 0.3−  | 1.0+  |
| 2001 03 15 | 691 | 0.0  | 0.2+ | 2004 01 13 | 691 | 0.1+ | 0.2+ | 2006 08 28 | 699 | 0.4−  | 0.3+  |
| 2001 03 15 | 691 | 0.1+ | 0.0  | 2004 01 13 | 691 | 0.1+ | 0.2+ | 2006 08 28 | 699 | 0.5−  | 0.0   |
| 2001 03 15 | 691 | 0.1− | 0.1+ | 2004 01 13 | 691 | 0.2+ | 0.1+ | 2006 08 28 | 703 | 0.9−  | 0.1−  |
| 2001 04 16 | 645 | 0.1− | 0.1− | 2005 04 12 | 691 | 0.4+ | 0.0  | 2006 08 28 | 703 | 0.8+  | 0.6+  |
| 2001 04 16 | 645 | 0.1− | 0.0  | 2005 04 12 | 691 | 0.0  | 0.1− | 2006 08 28 | 703 | 0.2−  | 0.5+  |
| 2002 07 14 | 704 | 1.2− | 0.6+ | 2005 04 12 | 691 | 0.1− | 0.0  | 2006 08 28 | 703 | 0.7−  | 0.3−  |
| 2002 07 14 | 704 | 0.0  | 0.6− | 2005 04 19 | 691 | 0.1− | 0.5+ | 2007 12 03 | 691 | 0.2−  | 0.3+  |
| 2002 07 14 | 704 | 0.3− | 0.2− | 2005 04 19 | 691 | 0.7+ | 0.3+ | 2007 12 03 | 691 | 0.3−  | 0.2+  |
| 2002 07 14 | 704 | 0.1+ | 0.0  | 2005 04 19 | 691 | 0.6+ | 0.3− | 2007 12 03 | 691 | 0.4−  | 0.0   |
| 2002 07 14 | 704 | 0.3+ | 0.4− | 2005 05 07 | 691 | 0.1+ | 0.0  | 2007 12 05 | G96 | 0.2+  | 0.1+  |
| 2003 12 19 | 704 | 0.1− | 0.1− | 2005 05 07 | 691 | 0.0  | 0.0  | 2007 12 05 | G96 | 0.0   | 0.2−  |
| 2003 12 19 | 704 | 0.1− | 0.3− | 2005 05 07 | 691 | 0.1+ | 0.1+ | 2007 12 05 | G96 | 0.1−  | 0.1−  |
| 2003 12 19 | 704 | 0.1− | 0.2− | 2006 08 20 | 644 | 0.1+ | 0.4+ | 2007 12 05 | G96 | 0.2−  | 0.0   |

**(172662)\* 2003 YX<sub>97</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 336.92803  | (2000.0) |           |
| <i>n</i>                    | 0.23926566 | $\omega$ | 324.19077 |
| <i>a</i>                    | 2.5697003  | $\Omega$ | 123.12222 |
| <i>e</i>                    | 0.0418406  | <i>i</i> | 2.72092   |
| <i>P</i>                    | 4.12       | <i>H</i> | 16.5      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 1         |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 08 | 691 | 0.1− | 0.2+ | 2004 01 28 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.6− | 0.1− |
| 1994 09 08 | 691 | 0.1− | 0.4+ | 2004 01 28 | 691 | 0.0  | 0.4− | 2007 11 18 | G96 | 0.3+ | 0.3− |
| 2001 05 02 | 644 | 0.7+ | 0.5− | 2005 03 16 | G96 | 0.6− | 0.6+ | 2007 11 18 | G96 | 0.1− | 0.2− |
| 2001 05 02 | 644 | 0.5+ | 0.5− | 2005 03 16 | G96 | 0.2− | 0.2+ | 2007 11 18 | G96 | 0.1− | 0.1− |
| 2001 05 02 | 644 | 1.0+ | 0.4− | 2005 03 16 | G96 | 0.1+ | 0.5− | 2007 11 18 | G96 | 0.1− | 0.1− |
| 2001 05 23 | 691 | 0.1− | 0.4+ | 2005 03 16 | G96 | 0.4+ | 0.3+ | 2007 12 03 | 703 | 0.6+ | 0.1− |
| 2001 05 23 | 691 | 0.1− | 0.2+ | 2005 04 10 | 695 | 0.0  | 0.2+ | 2007 12 03 | 703 | 0.1+ | 0.8+ |
| 2001 05 23 | 691 | 0.3− | 0.1+ | 2005 04 10 | 695 | 0.1+ | 0.3+ | 2007 12 03 | 703 | 0.1− | 0.7+ |
| 2003 12 19 | 704 | 0.3− | 0.1+ | 2005 04 18 | 691 | 0.2+ | 0.3+ | 2007 12 03 | 703 | 0.4+ | 0.4+ |
| 2003 12 19 | 704 | 0.1+ | 0.5+ | 2005 04 18 | 691 | 0.4− | 0.1− | 2007 12 04 | 704 | 1.1+ | 0.4+ |
| 2003 12 19 | 704 | 0.3− | 1.1+ | 2005 04 18 | 691 | 0.3+ | 0.3+ | 2007 12 04 | 704 | 0.6+ | 0.5+ |
| 2003 12 23 | 704 | 0.3− | 0.7+ | 2005 05 13 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.3+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 23 | 704 | 1.0+ | 0.7+ | 2005 05 13 | 691 | 0.4+ | 0.2− | 2007 12 04 | 704 | 0.5− | 0.1− |
| 2003 12 23 | 704 | 0.4− | 1.1− | 2005 05 13 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.2+ | 0.5+ |
| 2003 12 23 | 704 | 0.3− | 0.5+ | 2007 11 04 | 691 | 0.2− | 0.1+ |            |     |      |      |
| 2004 01 28 | 691 | 0.2+ | 0.2− | 2007 11 04 | 691 | 0.2− | 0.1− |            |     |      |      |

**(172663)\* 2003 YP<sub>101</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |          |
|-----------------------------|------------|----------|----------|
| <i>M</i>                    | 273.38068  | (2000.0) |          |
| <i>n</i>                    | 0.23290358 | $\omega$ | 88.66818 |
| <i>a</i>                    | 2.6162863  | $\Omega$ | 98.81968 |
| <i>e</i>                    | 0.1024017  | <i>i</i> | 14.32151 |
| <i>P</i>                    | 4.23       | <i>H</i> | 15.4     |
| Residuals in seconds of arc |            |          |          |
| <i>G</i>                    | 0.15       | <i>U</i> | 2        |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 24 | 561 | 0.7+ | 0.5− | 2003 12 29 | 704 | 0.3+  | 0.0   | 2004 02 14 | 704 | 0.1+  | 0.2+  |
| 1998 11 24 | 561 | 0.3+ | 0.1− | 2003 12 29 | 704 | 0.2−  | 0.1−  | 2004 02 14 | 704 | 0.4+  | 0.1+  |
| 1998 11 24 | 561 | 0.4− | 0.0  | 2004 01 04 | 699 | (1.8− | 0.2−) | 2004 02 16 | 703 | 0.2−  | 0.1+  |
| 2000 02 03 | 704 | 1.3− | 1.2+ | 2004 01 04 | 699 | 0.5−  | 0.4+  | 2004 02 16 | 703 | 1.5−  | 0.2−  |
| 2000 02 03 | 704 | 1.1− | 0.2− | 2004 01 04 | 699 | (2.2− | 1.4+) | 2004 02 16 | 703 | 0.9−  | 0.2−  |
| 2000 02 03 | 704 | 0.3+ | 0.0  | 2004 01 04 | 699 | 1.1−  | 0.5−  | 2004 02 16 | 703 | 0.6−  | 0.1+  |
| 2000 02 03 | 704 | 1.0+ | 1.0− | 2004 01 13 | 699 | 0.5−  | 0.6+  | 2004 04 09 | 703 | 0.3+  | 0.6−  |
| 2000 03 04 | 704 | 1.9+ | 0.2+ | 2004 01 13 | 699 | 0.8−  | 0.6−  | 2004 04 09 | 703 | 1.5−  | 0.5+  |
| 2000 03 04 | 704 | 1.3+ | 0.1+ | 2004 01 13 | 699 | 0.1−  | 0.5−  | 2004 04 09 | 703 | 1.4−  | 0.2+  |
| 2000 03 04 | 704 | 1.9+ | 0.1+ | 2004 01 13 | 699 | 1.1+  | 1.0+  | 2004 04 09 | 703 | 1.2−  | 0.5−  |
| 2000 03 04 | 704 | 1.6+ | 0.4− | 2004 01 17 | 644 | 0.0   | 0.2−  | 2006 09 22 | 703 | (2.3− | 0.2−) |
| 2000 03 04 | 704 | 0.7+ | 0.6+ | 2004 01 17 | 644 | 0.1−  | 0.0   | 2006 09 22 | 703 | 0.5−  | 0.9−  |
| 2000 05 01 | 704 | 0.4− | 0.1+ | 2004 01 17 | 644 | 0.1−  | 0.1−  | 2006 09 22 | 703 | 0.4+  | 0.3−  |
| 2000 05 01 | 704 | 0.9− | 0.3− | 2004 01 30 | 703 | 0.2−  | 0.8+  | 2006 09 22 | 703 | (0.9− | 1.7+) |
| 2000 05 01 | 704 | 1.6− | 0.2+ | 2004 01 30 | 703 | 0.2+  | 0.5+  | 2007 11 06 | G96 | 0.4−  | 0.2−  |
| 2000 05 01 | 704 | 1.1− | 0.1− | 2004 01 30 | 703 | (0.7+ | 1.6−) | 2007 11 06 | G96 | 0.2−  | 0.5−  |
| 2002 10 05 | 644 | 0.8− | 1.3+ | 2004 01 30 | 703 | 0.4−  | 0.2−  | 2007 11 06 | G96 | 0.4−  | 0.4−  |
| 2002 10 05 | 644 | 0.7− | 1.3+ | 2004 01 31 | 704 | 0.3−  | 0.2−  | 2007 11 06 | G96 | 0.0   | 0.5−  |
| 2002 10 05 | 644 | 0.9− | 1.3+ | 2004 01 31 | 704 | 0.8+  | 0.8−  | 2007 11 19 | G96 | 0.2−  | 0.5−  |
| 2003 12 19 | 704 | 0.5+ | 0.2− | 2004 01 31 | 704 | (1.6− | 0.5+) | 2007 11 19 | G96 | 0.4+  | 0.4−  |
| 2003 12 19 | 704 | 0.0  | 0.1− | 2004 01 31 | 704 | 0.1−  | 0.6+  | 2007 11 19 | G96 | 0.6+  | 0.2−  |
| 2003 12 19 | 704 | 0.2− | 0.2− | 2004 02 02 | 704 | 0.3−  | 0.0   | 2007 11 19 | G96 | 0.2+  | 0.5−  |
| 2003 12 23 | 704 | 0.2+ | 0.0  | 2004 02 02 | 704 | 0.4+  | 0.3−  | 2007 12 04 | G96 | 0.4+  | 0.2−  |
| 2003 12 23 | 704 | 0.2+ | 0.7+ | 2004 02 02 | 704 | 0.9+  | 0.1+  | 2007 12 04 | G96 | 0.2+  | 0.1−  |
| 2003 12 23 | 704 | 0.2+ | 0.3+ | 2004 02 02 | 704 | 0.1+  | 0.4+  | 2007 12 04 | G96 | 0.2+  | 0.4−  |
| 2003 12 23 | 704 | 0.3− | 0.1+ | 2004 02 03 | 704 | 1.0−  | 0.6−  | 2007 12 04 | G96 | 0.6+  | 0.1−  |
| 2003 12 23 | 704 | 0.1− | 0.3+ | 2004 02 03 | 704 | 0.2+  | 0.5+  | 2007 12 04 | 691 | 0.3+  | 0.1−  |
| 2003 12 27 | 704 | 0.2− | 0.1− | 2004 02 03 | 704 | 0.6+  | 0.1−  | 2007 12 04 | 691 | 0.1+  | 0.2−  |
| 2003 12 27 | 704 | 0.1+ | 1.0+ | 2004 02 13 | 699 | 0.3−  | 0.1−  | 2007 12 04 | 691 | 0.1−  | 0.2−  |
| 2003 12 27 | 704 | 0.5− | 0.1+ | 2004 02 13 | 699 | 0.4−  | 0.1−  | 2007 12 10 | 704 | 2.0+  | 0.2−  |
| 2003 12 27 | 704 | 0.4+ | 0.3+ | 2004 02 13 | 699 | 0.1−  | 0.3−  | 2007 12 10 | 704 | 0.1+  | 0.4−  |
| 2003 12 27 | 704 | 0.5+ | 1.1+ | 2004 02 13 | 699 | 0.0   | 0.4−  | 2007 12 10 | 704 | 0.7+  | 1.5+  |
| 2003 12 29 | 704 | 0.3+ | 0.3+ | 2004 02 14 | 704 | 0.7+  | 0.1+  | 2007 12 10 | 704 | 0.4−  | 1.2+  |
| 2003 12 29 | 704 | 0.3+ | 0.2− | 2004 02 14 | 704 | 0.1−  | 0.4−  |            |     |       |       |
| 2003 12 29 | 704 | 0.8− | 0.2− | 2004 02 14 | 704 | 0.0   | 0.1+  |            |     |       |       |

**(172664)\* 2003 YA<sub>103</sub> = 2000 CW<sub>26</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69613)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC                         |            |          |           |
|-----------------------------|------------|----------|-----------|
| <i>M</i>                    | 272.84443  | (2000.0) |           |
| <i>n</i>                    | 0.23279365 | $\omega$ | 353.91997 |
| <i>a</i>                    | 2.6171099  | $\Omega$ | 180.17464 |
| <i>e</i>                    | 0.1718860  | <i>i</i> | 3.85132   |
| <i>P</i>                    | 4.23       | <i>H</i> | 16.1      |
| Residuals in seconds of arc |            |          |           |
| <i>G</i>                    | 0.15       | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 02 02 | 704 | 0.2+ | 0.1+ | 2002 11 08 | 645 | 0.1+  | 0.0   | 2006 09 23 | 691 | 0.4- | 0.2+ |
| 2000 02 02 | 704 | 0.2+ | 0.2- | 2003 12 01 | 704 | 0.4+  | 1.0+  | 2006 09 23 | 691 | 0.3- | 0.4+ |
| 2000 02 02 | 704 | 0.0  | 0.1+ | 2003 12 01 | 704 | (1.9+ | 0.4+) | 2006 09 23 | 691 | 0.1- | 0.4+ |
| 2000 02 02 | 704 | 0.3- | 0.4+ | 2003 12 01 | 704 | 0.1-  | 0.8+  | 2006 10 16 | G96 | 0.5- | 0.2+ |
| 2000 02 02 | 704 | 0.1+ | 0.4+ | 2003 12 01 | 704 | 1.0-  | 1.3+  | 2006 10 16 | G96 | 0.8+ | 0.2- |
| 2000 02 04 | 704 | 0.4- | 0.0  | 2003 12 19 | 704 | 0.7-  | 0.0   | 2006 10 16 | G96 | 0.0  | 0.2+ |
| 2000 02 04 | 704 | 0.4+ | 0.7+ | 2003 12 19 | 704 | 0.2+  | 0.0   | 2006 10 16 | G96 | 0.2+ | 0.0  |
| 2000 02 04 | 704 | 0.3- | 0.2- | 2003 12 19 | 704 | 0.1-  | 0.5-  | 2007 12 04 | 704 | 0.3- | 0.5- |
| 2000 02 04 | 704 | 0.4+ | 0.8- | 2003 12 23 | 704 | 0.0   | 0.8+  | 2007 12 04 | 704 | 0.7+ | 0.0  |
| 2000 02 04 | 704 | 0.4+ | 1.1- | 2003 12 23 | 704 | 0.2-  | 0.3+  | 2007 12 04 | 704 | 1.1+ | 0.5- |
| 2000 03 05 | 704 | 1.0+ | 1.5- | 2003 12 23 | 704 | 0.3-  | 0.1+  | 2007 12 04 | 704 | 1.0+ | 0.1+ |
| 2000 03 05 | 704 | 0.3+ | 0.4+ | 2003 12 23 | 704 | 0.3-  | 0.1-  | 2007 12 04 | 704 | 0.9+ | 0.1+ |
| 2000 03 05 | 704 | 0.0  | 1.9+ | 2003 12 23 | 704 | 0.6-  | 0.3-  | 2007 12 06 | G96 | 0.2+ | 0.9- |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2004 01 23 | 704 | 0.8-  | 1.2+  | 2007 12 06 | G96 | 0.1+ | 0.7- |
| 2002 10 30 | 645 | 0.0  | 0.1- | 2004 01 23 | 704 | 0.4-  | 0.6+  | 2007 12 06 | G96 | 0.1- | 0.7- |
| 2002 11 08 | 645 | 0.0  | 0.0  | 2004 01 23 | 704 | 0.7-  | 0.3+  | 2007 12 06 | G96 | 0.3+ | 1.0- |

**(172665)\* 2003 YE<sub>103</sub> = 2000 AV<sub>195</sub>**

Discovered 2003 Dec. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 65532)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 266.39692  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.23882407 | $\omega$ | 255.98247 | -0.93510049 | +0.00117041 |
| $a$ | 2.5728669  | $\Omega$ | 283.15784 | +0.16811562 | -0.87884487 |
| $e$ | 0.0153103  | $i$      | 21.34207  | -0.31196829 | -0.47710619 |
| $P$ | 4.13       | $H$      | 15.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 08 | 704 | 1.1- | 0.6+ | 2002 10 10 | 644 | 0.0   | 0.7+  | 2004 01 23 | 704 | 1.0+  | 1.1-  |
| 2000 01 08 | 704 | 1.1- | 1.1- | 2002 10 14 | 644 | 0.3-  | 0.2+  | 2006 08 13 | 644 | 0.1-  | 0.2+  |
| 2000 01 08 | 704 | 0.2+ | 0.9+ | 2002 10 14 | 644 | 0.5-  | 0.1-  | 2006 08 13 | 644 | 0.0   | 0.5+  |
| 2000 01 08 | 704 | 0.7+ | 0.2- | 2002 10 14 | 644 | 0.2-  | 0.0   | 2006 08 13 | 644 | 0.5+  | 0.4+  |
| 2000 01 11 | 704 | 0.2+ | 0.5+ | 2003 12 19 | 704 | 0.5+  | 0.9+  | 2006 10 20 | 703 | 0.3+  | 0.1-  |
| 2000 01 11 | 704 | 0.1+ | 1.1+ | 2003 12 19 | 704 | 0.1+  | 0.7+  | 2006 10 20 | 703 | 0.3+  | 0.7-  |
| 2000 01 11 | 704 | 0.6+ | 0.1+ | 2003 12 19 | 704 | 0.4+  | 1.3+  | 2006 10 20 | 703 | 0.4+  | 0.3+  |
| 2002 07 27 | 644 | 0.5- | 0.1+ | 2003 12 23 | 704 | 0.5+  | 0.1-  | 2006 10 20 | 703 | 0.0   | 0.0   |
| 2002 07 27 | 644 | 0.1+ | 0.0  | 2003 12 23 | 704 | 1.2+  | 0.7+  | 2007 12 05 | 691 | 0.1-  | 0.0   |
| 2002 09 20 | 644 | 0.4- | 0.0  | 2003 12 23 | 704 | 0.1+  | 0.1+  | 2007 12 05 | 691 | 1.0-  | 0.3-  |
| 2002 09 20 | 644 | 0.2- | 0.4+ | 2003 12 23 | 704 | 0.9+  | 0.2+  | 2007 12 05 | 691 | 1.0-  | 1.3-  |
| 2002 09 27 | 644 | 0.3- | 0.1+ | 2003 12 23 | 704 | 0.7+  | 0.4+  | 2007 12 14 | 704 | 0.5+  | 0.8+  |
| 2002 09 27 | 644 | 0.0  | 0.1- | 2004 01 14 | 644 | 0.3+  | 0.8+  | 2007 12 14 | 704 | 0.8+  | 0.2+  |
| 2002 09 27 | 644 | 0.4- | 0.1- | 2004 01 14 | 644 | 0.0   | 0.7+  | 2007 12 14 | 704 | 0.4+  | 0.4-  |
| 2002 09 28 | 644 | 0.1- | 0.1- | 2004 01 14 | 644 | 0.5+  | 0.8+  | 2007 12 14 | 704 | 0.1-  | 0.3-  |
| 2002 09 28 | 644 | 0.1+ | 0.1+ | 2004 01 23 | 704 | (0.9+ | 1.9-) | 2007 12 15 | 704 | (1.6+ | 1.0-) |
| 2002 10 10 | 644 | 0.1- | 0.5+ | 2004 01 23 | 704 | (0.4+ | 2.0-) | 2007 12 15 | 704 | (2.2+ | 0.7-) |
| 2002 10 10 | 644 | 0.0  | 0.5+ | 2004 01 23 | 704 | 1.5+  | 0.9-  |            |     |       |       |

**(172666)\* 2003 YB<sub>113</sub> = 2000 ER<sub>179</sub>**

Discovered 2003 Dec. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57544)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 294.59391  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.22586718 | $\omega$ | 59.37251 | -0.61590368  | -0.77272433  |
| $a$ | 2.6703445  | $\Omega$ | 69.44217 | +0.65501943  | -0.61052188  |
| $e$ | 0.0483495  | $i$      | 9.43516  | +0.43773530  | -0.17366675  |
| $P$ | 4.36       | $H$      | 15.4     | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 04 | 704 | 0.9- | 0.7+ | 2005 04 11 | 691 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.3- | 0.0  |
| 2000 03 04 | 704 | 0.1- | 0.9+ | 2005 04 15 | 691 | 0.1+ | 0.4+ | 2007 11 13 | 699 | 0.2- | 0.3+ |
| 2000 03 04 | 704 | 1.0- | 0.8+ | 2005 04 15 | 691 | 0.1+ | 0.4+ | 2007 11 13 | 699 | 0.4+ | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 12 | 704 | 0.4+ | 0.7- | 2005 04 15 | 691 | 0.0   | 0.3+  | 2007 11 13 | 699 | 0.3+ | 0.5- |
| 2000 03 12 | 704 | 1.6+ | 1.4- | 2005 05 03 | 704 | (2.1- | 1.0+) | 2007 11 13 | 699 | 0.2+ | 0.2+ |
| 2000 03 12 | 704 | 0.5+ | 0.5- | 2005 05 03 | 704 | 0.4+  | 0.1-  | 2007 11 14 | 704 | 0.5+ | 1.2+ |
| 2000 03 12 | 704 | 0.5+ | 0.4+ | 2005 05 03 | 704 | 1.4+  | 0.2-  | 2007 11 14 | 704 | 0.5+ | 0.6+ |
| 2002 09 17 | 644 | 0.4- | 1.0+ | 2005 05 11 | 691 | 0.3+  | 0.5+  | 2007 11 14 | 704 | 0.0  | 0.8+ |
| 2002 09 17 | 644 | 0.9- | 0.9+ | 2005 05 11 | 691 | 0.3+  | 0.5+  | 2007 11 14 | 704 | 0.4+ | 0.7+ |
| 2002 09 17 | 644 | 0.8- | 1.1+ | 2005 05 11 | 691 | 0.1+  | 0.4+  | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2003 12 18 | 704 | 0.8+ | 0.4- | 2007 10 20 | G96 | 0.3+  | 0.1+  | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2003 12 18 | 704 | 1.0- | 1.0- | 2007 10 20 | G96 | 0.5+  | 0.0   | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2003 12 18 | 704 | 0.7- | 0.1+ | 2007 10 20 | G96 | 0.2+  | 0.1+  | 2007 12 03 | 703 | 0.2- | 0.3- |
| 2003 12 18 | 704 | 1.5+ | 1.5- | 2007 10 20 | G96 | 0.3+  | 0.2+  | 2007 12 03 | 703 | 0.1+ | 0.4- |
| 2003 12 23 | 704 | 0.2- | 0.5+ | 2007 10 24 | G96 | 0.4+  | 0.1-  | 2007 12 03 | 703 | 0.4+ | 0.2- |
| 2003 12 23 | 704 | 0.5+ | 0.8+ | 2007 10 24 | G96 | 0.2+  | 0.1-  | 2007 12 03 | 703 | 0.3- | 0.6- |
| 2003 12 23 | 704 | 0.1+ | 0.3+ | 2007 10 24 | G96 | 0.2-  | 0.4-  | 2007 12 04 | G96 | 0.4+ | 0.1- |
| 2003 12 23 | 704 | 0.8+ | 0.0  | 2007 10 24 | G96 | 0.7+  | 0.1+  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2003 12 23 | 704 | 0.9- | 0.9+ | 2007 11 04 | 691 | 0.3-  | 0.2+  | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2003 12 27 | 691 | 0.1- | 0.1- | 2007 11 04 | 691 | 0.2-  | 0.1+  | 2007 12 04 | G96 | 0.2+ | 0.1- |
| 2003 12 27 | 691 | 0.2+ | 0.1- | 2007 11 04 | 691 | 0.2-  | 0.0   | 2007 12 05 | 704 | 0.0  | 0.3+ |
| 2003 12 27 | 691 | 0.1- | 0.1- | 2007 11 05 | 704 | 0.8-  | 0.7+  | 2007 12 05 | 704 | 0.0  | 0.7+ |
| 2003 12 28 | 704 | 0.9- | 0.1+ | 2007 11 05 | 704 | 0.7-  | 0.1+  | 2007 12 05 | 704 | 0.5+ | 1.1+ |
| 2003 12 28 | 704 | 0.0  | 0.7+ | 2007 11 05 | 704 | 0.4+  | 1.4+  | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2003 12 28 | 704 | 0.5- | 0.4- | 2007 11 05 | 691 | (2.7+ | 0.6-) | 2007 12 15 | G96 | 0.2+ | 0.6- |
| 2003 12 28 | 704 | 0.4- | 0.2- | 2007 11 05 | 691 | 0.2-  | 0.2+  | 2007 12 15 | G96 | 0.0  | 0.6- |
| 2003 12 28 | 704 | 0.0  | 0.3- | 2007 11 05 | 691 | 0.1-  | 0.2+  | 2007 12 15 | G96 | 0.3+ | 0.0  |
| 2005 04 11 | 691 | 0.1+ | 0.4+ | 2007 11 09 | 691 | 0.2-  | 0.3+  | 2007 12 15 | G96 | 0.2+ | 0.3- |
| 2005 04 11 | 691 | 0.2- | 0.0  | 2007 11 09 | 691 | 0.3-  | 0.4+  |            |     |      |      |

**(172667)\* 2003 YY<sub>113</sub> = 1999 XA<sub>223</sub>**

Discovered 2003 Dec. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57545)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 290.49594  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|----------|-------------|-------------|
| $n$ | 0.23688554 | $\omega$ | 54.28671 | -0.78166226 | -0.57003071 |
| $a$ | 2.5868843  | $\Omega$ | 89.62436 | +0.45852209 | -0.80030904 |
| $e$ | 0.0877279  | $i$      | 14.66246 | +0.42280208 | -0.18593126 |
| $P$ | 4.16       | $H$      | 15.4     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 15 | 704 | 0.1+  | 0.0   | 2004 01 22 | 704 | 1.3-  | 0.0   | 2005 06 13 | 691 | 0.3+ | 0.7+ |
| 1999 12 15 | 704 | 0.1+  | 0.0   | 2004 01 22 | 704 | (1.6- | 0.0)  | 2005 06 13 | 691 | 0.1+ | 0.1+ |
| 1999 12 15 | 704 | 0.3+  | 0.8+  | 2004 01 22 | 704 | (1.6- | 0.1-) | 2005 06 13 | 691 | 0.4+ | 0.1+ |
| 1999 12 15 | 704 | 0.1-  | 1.2-  | 2005 04 15 | 703 | 1.2-  | 0.5+  | 2007 11 04 | 704 | 0.5+ | 0.0  |
| 1999 12 15 | 704 | 1.7-  | 1.4-  | 2005 04 15 | 703 | 1.3-  | 1.4+  | 2007 11 04 | 704 | 1.0+ | 0.8+ |
| 1999 12 16 | 704 | 0.9+  | 0.4-  | 2005 04 15 | 703 | 0.3-  | 1.0+  | 2007 11 04 | 704 | 0.6+ | 0.3+ |
| 1999 12 16 | 704 | 0.1+  | 0.9-  | 2005 04 15 | 703 | (2.0+ | 0.3+) | 2007 11 04 | 704 | 0.5- | 0.4- |
| 1999 12 16 | 704 | 0.0   | 0.1+  | 2005 05 07 | 170 | 0.4+  | 0.1+  | 2007 11 04 | 704 | 0.1+ | 0.1+ |
| 1999 12 16 | 704 | 0.1+  | 0.8-  | 2005 05 07 | 170 | 0.4+  | 0.1+  | 2007 11 08 | G96 | 0.5+ | 0.1- |
| 1999 12 16 | 704 | 0.4-  | 0.9-  | 2005 05 07 | 170 | 0.4+  | 0.1+  | 2007 11 08 | G96 | 0.3+ | 0.1- |
| 2002 09 10 | 644 | 0.2-  | 0.4+  | 2005 05 07 | 170 | 0.5+  | 0.3+  | 2007 11 08 | G96 | 0.1+ | 0.0  |
| 2002 09 10 | 644 | 0.5-  | 0.4+  | 2005 05 07 | 170 | 0.3+  | 0.3+  | 2007 11 08 | G96 | 0.1- | 0.2- |
| 2002 09 10 | 644 | 0.1-  | 0.2+  | 2005 05 12 | 703 | 0.0   | 0.8-  | 2007 11 12 | 704 | 0.5+ | 0.2+ |
| 2003 12 18 | 704 | 0.4-  | 0.6+  | 2005 05 12 | 703 | 0.6-  | 0.1+  | 2007 11 12 | 704 | 0.4+ | 1.0+ |
| 2003 12 18 | 704 | 0.0   | 0.4+  | 2005 05 12 | 703 | (0.0  | 2.3+) | 2007 11 12 | 704 | 0.7- | 0.7+ |
| 2003 12 18 | 704 | 0.0   | 0.7+  | 2005 05 12 | 703 | 0.2+  | 0.1+  | 2007 11 12 | 704 | 1.0- | 0.1- |
| 2003 12 18 | 704 | (0.1- | 2.3+) | 2005 05 14 | 170 | 0.3+  | 0.3-  | 2007 11 21 | 703 | 0.6- | 0.8+ |
| 2003 12 18 | 704 | 0.4+  | 0.0   | 2005 05 14 | 170 | 0.3+  | 0.0   | 2007 11 21 | 703 | 0.1+ |      |



**(172668)\* 2003 YT<sub>115</sub> = 1998 SK<sub>165</sub> = 2005 FM<sub>1</sub>**

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 76342)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |          |             |   |
|-----|------------|----------|-----------|-------------|----------|-------------|---|
| $M$ | 80.63359   |          | (2000.0)  |             | <b>P</b> | <b>Q</b>    |   |
| $n$ | 0.23565581 | $\omega$ | 285.93460 | +0.87719034 |          | +0.46996533 |   |
| $a$ | 2.5958760  | $\Omega$ | 46.15331  | -0.37162796 |          | +0.79422883 |   |
| $e$ | 0.2085640  | $i$      | 7.83665   | -0.30402264 |          | +0.38514043 |   |
| $P$ | 4.18       | $H$      | 15.1      | $G$         | 0.15     | $U$         | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 09 24 | 699 | 0.4+  | 0.3-  | 2002 10 04 | 704 | 0.4-  | 0.4+  | 2005 03 17 | 703 | 0.2-  | 0.3-  |
| 1998 09 24 | 699 | 0.6+  | 0.1-  | 2003 12 27 | 704 | 0.1+  | 0.2+  | 2005 04 11 | 699 | 0.2-  | 0.2+  |
| 1998 09 24 | 699 | 0.1+  | 0.3+  | 2003 12 27 | 704 | 0.0   | 0.6+  | 2005 04 11 | 699 | 0.2-  | 0.9+  |
| 1998 09 27 | 699 | 0.4-  | 0.8-  | 2003 12 27 | 704 | 0.4-  | 0.3-  | 2005 04 11 | 699 | (1.7- | 0.7-) |
| 1998 09 27 | 699 | 0.8-  | 0.1-  | 2003 12 28 | 691 | 0.2-  | 0.0   | 2005 04 11 | 699 | 1.5+  | 0.8+  |
| 1998 09 27 | 699 | 0.7+  | 0.1+  | 2003 12 28 | 691 | 0.0   | 0.1+  | 2006 06 09 | 644 | 0.0   | 0.4+  |
| 2002 08 13 | 704 | 0.2-  | 1.3+  | 2003 12 28 | 691 | 0.0   | 0.4+  | 2006 06 09 | 644 | 0.0   | 0.4+  |
| 2002 08 13 | 704 | 0.0   | 0.6+  | 2003 12 29 | 704 | 0.0   | 0.2+  | 2006 06 09 | 644 | 0.6-  | 0.5+  |
| 2002 08 13 | 704 | 0.4-  | 1.0+  | 2003 12 29 | 704 | 0.3-  | 0.4+  | 2007 11 20 | 704 | 0.6+  | 1.5-  |
| 2002 08 13 | 704 | 0.3+  | 0.9+  | 2003 12 29 | 704 | 0.2+  | 0.2-  | 2007 11 20 | 704 | 1.6-  | 0.8-  |
| 2002 08 13 | 704 | (0.3+ | 1.7+) | 2003 12 29 | 704 | 0.1-  | 0.3-  | 2007 11 20 | 704 | 1.2+  | 1.4-  |
| 2002 08 13 | 644 | 0.1-  | 0.0   | 2005 03 03 | 703 | 0.3-  | 0.2-  | 2007 12 13 | 704 | 0.0   | 1.0+  |
| 2002 08 13 | 644 | 0.1-  | 0.1+  | 2005 03 03 | 703 | (1.9+ | 1.0+) | 2007 12 13 | 704 | 0.1-  | 0.7+  |
| 2002 08 13 | 644 | 0.2-  | 0.1+  | 2005 03 03 | 703 | 0.9+  | 0.6+  | 2007 12 13 | 704 | 0.9-  | 0.8+  |
| 2002 08 20 | 644 | 0.1-  | 0.0   | 2005 03 03 | 703 | 0.3-  | 1.0+  | 2007 12 13 | 704 | 0.4-  | 0.0   |
| 2002 08 20 | 644 | 0.1-  | 0.1-  | 2005 03 16 | 703 | 0.5+  | 0.5+  | 2007 12 15 | 704 | 0.2-  | 0.6+  |
| 2002 08 20 | 644 | 0.4-  | 0.0   | 2005 03 16 | 703 | 0.3-  | 0.0   | 2007 12 15 | 704 | 1.3+  | 1.4+  |
| 2002 08 31 | 704 | 0.3-  | 0.2+  | 2005 03 16 | 703 | 0.6-  | 0.5+  | 2007 12 15 | 704 | 0.7+  | 0.9+  |
| 2002 08 31 | 704 | 0.1+  | 0.3-  | 2005 03 16 | 703 | 0.2+  | 0.0   | 2007 12 15 | 704 | 0.0   | 0.8+  |
| 2002 08 31 | 704 | 0.7-  | 0.5+  | 2005 03 17 | 703 | 0.8-  | 0.5-  | 2007 12 15 | 704 | 0.1+  | 0.4+  |
| 2002 10 04 | 704 | 0.2-  | 0.6+  | 2005 03 17 | 703 | 1.1+  | 0.4+  |            |     |       |       |
| 2002 10 04 | 704 | 0.8+  | 0.9+  | 2005 03 17 | 703 | 1.0+  | 0.2+  |            |     |       |       |

**(172669)\* 2003 YR<sub>118</sub> = 2002 PC<sub>78</sub>**

Discovered 2003 Dec. 27 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 57548)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |     |             |             |   |
|-----|------------|----------|----------|-----|-------------|-------------|---|
| $M$ | 12.79074   |          | (2000.0) |     | <b>P</b>    | <b>Q</b>    |   |
| $n$ | 0.24009891 | $\omega$ | 10.73596 |     | +0.54455250 | -0.83524856 |   |
| $a$ | 2.5637515  | $\Omega$ | 46.32130 |     | +0.76148750 | +0.45421920 |   |
| $e$ | 0.1257386  | $i$      | 6.05635  |     | +0.35156701 | +0.30991091 |   |
| $P$ | 4.11       | $H$      | 16.0     | $G$ | 0.15        | $U$         | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 11 | 644 | 0.3- | 1.0+ | 2003 12 27 | 691 | 0.0  | 0.1+ | 2005 05 01 | 644 | 0.2+ | 0.2+ |
| 2002 08 11 | 644 | 0.5- | 0.6+ | 2003 12 27 | 691 | 0.1- | 0.1- | 2005 05 01 | 644 | 0.2+ | 0.1+ |
| 2002 08 11 | 644 | 0.2- | 0.5+ | 2003 12 28 | 704 | 0.4- | 0.3- | 2005 05 11 | G96 | 0.4- | 0.2- |
| 2002 08 13 | 644 | 0.1+ | 0.4+ | 2003 12 28 | 704 | 0.5- | 0.3- | 2005 05 11 | G96 | 0.6- | 0.2- |
| 2002 08 13 | 644 | 0.2- | 0.2+ | 2003 12 28 | 704 | 0.3- | 0.2- | 2005 05 11 | G96 | 0.3- | 0.1- |
| 2002 08 13 | 644 | 0.1+ | 0.1+ | 2003 12 28 | 704 | 0.5- | 0.4- | 2005 05 11 | G96 | 0.1- | 0.1+ |
| 2003 12 18 | 704 | 0.3+ | 0.8+ | 2003 12 28 | 704 | 0.7- | 0.1- | 2007 11 20 | 704 | 0.3- | 0.4+ |
| 2003 12 18 | 704 | 1.0+ | 0.0  | 2005 03 14 | G96 | 0.6- | 0.2- | 2007 11 20 | 704 | 0.3+ | 0.5- |
| 2003 12 18 | 704 | 0.4+ | 0.0  | 2005 03 14 | G96 | 0.8- | 0.2+ | 2007 11 20 | 704 | 0.7- | 0.6+ |
| 2003 12 18 | 704 | 0.5+ | 0.1+ | 2005 03 14 | G96 | 0.6- | 0.1- | 2007 11 20 | 704 | 0.0  | 1.3+ |
| 2003 12 18 | 691 | 0.2+ | 0.2+ | 2005 03 14 | G96 | 0.6- | 0.1- | 2007 11 20 | 704 | 0.0  | 0.1- |
| 2003 12 18 | 691 | 0.0  | 0.1- | 2005 04 10 | G96 | 0.0  | 0.0  | 2007 12 13 | A77 | 0.5- | 0.1+ |
| 2003 12 18 | 691 | 0.1+ | 0.0  | 2005 04 10 | G96 | 0.3- | 0.0  | 2007 12 13 | A77 | 0.6+ | 0.5+ |
| 2003 12 23 | 704 | 0.1+ | 0.1+ | 2005 04 10 | G96 | 0.2- | 0.1+ | 2007 12 13 | A77 | 0.2+ | 0.1- |
| 2003 12 23 | 704 | 0.3- | 0.1- | 2005 04 10 | G96 | 0.3- | 0.4- | 2007 12 15 | 704 | 0.4+ | 0.1+ |
| 2003 12 23 | 704 | 0.0  | 0.0  | 2005 04 16 | 691 | 0.5+ | 0.0  | 2007 12 15 | 704 | 0.4- | 0.8+ |
| 2003 12 23 | 704 | 0.3- | 0.1- | 2005 04 16 | 691 | 0.3+ | 0.3+ | 2007 12 15 | 704 | 1.7- | 1.2- |
| 2003 12 23 | 704 | 0.7- | 0.6+ | 2005 04 16 | 691 | 0.5+ | 0.5+ | 2007 12 15 | 704 | 1.1- | 0.8+ |
| 2003 12 27 | 691 | 0.2+ | 0.1+ | 2005 05 01 | 644 | 0.0  | 0.1- | 2007 12 15 | 704 | 0.1- | 0.0  |

**(172670)\* 2003 YD<sub>119</sub>**

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |          |             |          |
|-----|------------|----------|----------|-------------|----------|-------------|----------|
| $M$ | 300.74088  |          | (2000.0) |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.22620851 | $\omega$ | 34.59687 | -0.46888997 |          | -0.84594936 |          |
| $a$ | 2.6676576  | $\Omega$ | 84.58585 | +0.74177559 |          | -0.53325832 |          |
| $e$ | 0.1118806  | $i$      | 14.78130 | +0.47949053 |          | -0.00229235 |          |
| $P$ | 4.36       | $H$      | 15.1     | $G$         | 0.15     | $U$         | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 04 | 699 | 1.6- | 0.6+ | 2003 12 28 | 704 | 0.3+  | 0.3+  | 2007 10 20 | 704 | 0.1+ | 0.2- |
| 2000 05 04 | 699 | 0.2+ | 0.6+ | 2003 12 30 | 704 | 0.6-  | 0.7-  | 2007 10 30 | 703 | 0.5+ | 0.5+ |
| 2000 05 04 | 699 | 1.4+ | 1.3- | 2003 12 30 | 704 | 0.4-  | 0.6-  | 2007 10 30 | 703 | 1.4+ | 0.2+ |
| 2000 05 04 | 699 | 0.8+ | 0.6- | 2003 12 30 | 704 | 0.8-  | 0.7-  | 2007 10 30 | 703 | 0.3- | 0.3- |
| 2002 09 10 | 644 | 0.5- | 0.1+ | 2003 12 30 | 704 | 0.5-  | 0.6-  | 2007 10 30 | 703 | 0.4- | 0.4+ |
| 2002 09 10 | 644 | 0.6- | 0.2+ | 2003 12 30 | 704 | 0.4-  | 0.3-  | 2007 11 05 | D29 | 0.0  | 0.0  |
| 2002 09 10 | 644 | 0.3- | 0.1+ | 2004 01 19 | 704 | (5.6+ | 0.3+) | 2007 11 05 | D29 | 0.2- | 0.3+ |
| 2003 11 21 | 704 | 0.3+ | 1.1+ | 2004 01 19 | 704 | (6.1+ | 0.1-) | 2007 11 05 | D29 | 0.8- | 0.4+ |
| 2003 11 21 | 704 | 0.0  | 0.6- | 2004 01 19 | 704 | (7.3+ | 0.4+) | 2007 11 05 | D29 | 0.1- | 0.0  |
| 2003 11 21 | 704 | 1.4+ | 1.2+ | 2004 01 19 | 704 | (6.2+ | 0.5+) | 2007 11 07 | 703 | 0.5+ | 0.7- |
| 2003 11 21 | 704 | 0.2- | 0.4+ | 2004 01 19 | 704 | (7.1+ | 0.2-) | 2007 11 07 | 703 | 0.8- | 0.1- |
| 2003 11 21 | 704 | 0.4- | 0.7- | 2005 04 16 | 691 | 0.5+  | 0.2+  | 2007 11 07 | 703 | 1.2- | 0.2- |
| 2003 12 04 | 704 | 1.2- | 0.0  | 2005 04 16 | 691 | 0.5+  | 0.1+  | 2007 11 11 | 704 | 0.9+ | 0.5- |
| 2003 12 04 | 704 | 0.3+ | 0.4- | 2005 04 16 | 691 | 0.5+  | 0.3+  | 2007 11 11 | 704 | 0.8+ | 0.2- |
| 2003 12 04 | 704 | 0.3- | 0.5+ | 2005 05 06 | 703 | 0.2-  | 0.2+  | 2007 11 11 | 704 | 0.0  | 0.5+ |
| 2003 12 04 | 704 | 0.4- | 1.1+ | 2005 05 06 | 703 | 0.8-  | 0.7+  | 2007 11 15 | G96 | 0.5- | 0.2- |
| 2003 12 04 | 704 | 0.3- | 0.1- | 2005 05 06 | 703 | 0.4-  | 0.5+  | 2007 11 15 | G96 | 0.1- | 0.5- |
| 2003 12 18 | 704 | 0.4+ | 0.0  | 2005 05 06 | 703 | 1.0-  | 0.0   | 2007 11 15 | G96 | 0.3+ | 0.6- |
| 2003 12 18 | 704 | 0.1+ | 0.2- | 2005 05 15 | 644 | 0.1+  | 0.1+  | 2007 11 15 | G96 | 0.4- | 0.2- |
| 2003 12 18 | 704 | 0.0  | 0.2- | 2005 05 15 | 644 | 0.1+  | 0.0   | 2007 11 20 | 703 | 0.8- | 0.7+ |
| 2003 12 18 | 704 | 0.1+ | 0.3+ | 2005 05 15 | 644 | 0.3+  | 0.2+  | 2007 11 20 | 703 | 0.9- | 0.4+ |
| 2003 12 18 | 704 | 0.2+ | 0.1+ | 2005 05 31 | 699 | 0.4-  | 0.3+  | 2007 11 20 | 703 | 1.1- | 0.7+ |
| 2003 12 27 | 704 | 0.4+ | 1.2+ | 2005 05 31 | 699 | 0.5+  | 1.2+  | 2007 12 06 | 703 | 0.5- | 0.9+ |
| 2003 12 27 | 704 | 0.2- | 0.5+ | 2005 05 31 | 699 | 0.7-  | 0.0   | 2007 12 06 | 703 | 0.5+ | 0.1+ |
| 2003 12 27 | 704 | 0.0  | 0.0  | 2005 05 31 | 699 | 0.7-  | 1.2+  | 2007 12 06 | 703 | 0.1- | 0.1+ |
| 2003 12 27 | 704 | 0.1+ | 0.8+ | 2006 08 26 | E12 | 0.8+  | 0.9+  | 2007 12 06 | 703 | 0.2- | 0.8+ |
| 2003 12 27 | 704 | 0.3+ | 0.8+ | 2006 08 26 | E12 | 0.0   | 0.2-  | 2007 12 15 | 699 | 1.3+ | 0.3- |
| 2003 12 28 | 704 | 0.2- | 0.3- | 2006 08 26 | E12 | 0.3-  | 1.4+  | 2007 12 15 | 699 | 0.7+ | 0.7- |
| 2003 12 28 | 704 | 0.1- | 0.3+ | 2006 08 26 | E12 | 0.3+  | 0.8+  | 2007 12 15 | 699 | 0.5+ | 0.2+ |
| 2003 12 28 | 704 | 0.7+ | 0.6+ | 2007 10 20 | 704 | 0.1+  | 0.2+  | 2007 12 15 | 699 | 0.1- | 0.2- |
| 2003 12 28 | 704 | 0.6+ | 0.4+ | 2007 10 20 | 704 | 0.6+  | 1.0+  |            |     |      |      |

**(172671)\* 2003 YS<sub>119</sub> = 2000 EQ<sub>164</sub>**

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57549)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 314.97891  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.23012856 | $\omega$ | 142.72405 | -0.50707329 |          | -0.86149766 |          |
| $a$ | 2.6372768  | $\Omega$ | 337.70793 | +0.77304728 |          | -0.44102438 |          |
| $e$ | 0.2302275  | $i$      | 3.99512   | +0.38114903 |          | -0.25163322 |          |
| $P$ | 4.28       | $H$      | 17.0      | $G$         | 0.15     | $U$         | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 03 | 704 | 1.2+ | 0.7+ | 2003 12 27 | 704 | 0.5- | 0.4+ | 2007 11 07 | 704 | (0.7- | 2.0+) |
| 2000 03 03 | 704 | 0.6+ | 1.2+ | 2003 12 27 | 704 | 0.2+ | 0.0  | 2007 11 07 | 704 | 0.2-  | 0.4-  |
| 2000 03 03 | 704 | 1.3+ | 0.4- | 2003 12 27 | 704 | 0.1- | 0.7+ | 2007 11 07 | 704 | 0.1+  | 0.1-  |
| 2000 03 03 | 704 | 0.9+ | 0.4- | 2003 12 27 | 704 | 1.3+ | 0.6+ | 2007 11 07 | 704 | 0.4-  | 0.3-  |
| 2000 03 11 | 704 | 0.2+ | 0.0  | 2003 12 27 | 704 | 0.5- | 0.3+ | 2007 11 12 | G96 | 0.1+  | 0.4-  |
| 2000 03 11 | 704 | 0.0  | 0.2- | 2003 12 28 | 704 | 0.2+ | 1.3- | 2007 11 12 | G96 | 0.1+  | 0.3-  |
| 2000 03 11 | 704 | 0.3+ | 0.1- | 2003 12 28 | 704 | 0.1- | 1.2- | 2007 11 12 | G96 | 0.4+  | 0.4-  |
| 2000 03 11 | 704 | 0.3- | 0.7+ | 2003 12 28 | 704 | 0.0  | 0.1+ | 2007 11 12 | G96 | 0.3+  | 0.5-  |
| 2000 03 11 | 704 | 0.2+ | 0.3- | 2003 12 28 | 704 | 0.3- | 0.8- | 2007 11 18 | 704 | 0.0   | 0.7-  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 05 | 704 | 0.4+  | 0.4+  | 2003 12 28 | 704 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 0.3+ | 0.4- |
| 2000 04 05 | 704 | 0.4-  | 1.2+  | 2004 01 18 | 691 | 0.2-  | 0.0   | 2007 11 18 | 704 | 0.7+ | 0.2+ |
| 2000 04 05 | 704 | 0.5+  | 0.8+  | 2004 01 18 | 691 | 0.3-  | 0.1+  | 2007 11 18 | 704 | 0.3- | 0.8- |
| 2000 04 05 | 704 | 0.2-  | 0.0   | 2004 01 18 | 691 | 0.2-  | 0.0   | 2007 11 20 | G96 | 0.0  | 0.5- |
| 2000 05 05 | 645 | 0.1-  | 0.1+  | 2004 01 20 | 704 | 0.0   | 0.4+  | 2007 11 20 | G96 | 0.4+ | 0.5- |
| 2000 05 05 | 645 | 0.0   | 0.1-  | 2004 01 20 | 704 | 0.6+  | 0.2+  | 2007 11 20 | G96 | 0.5+ | 0.0  |
| 2002 08 31 | 291 | 0.4-  | 0.5+  | 2004 01 20 | 704 | 0.6+  | 0.4+  | 2007 11 20 | G96 | 0.8+ | 0.2+ |
| 2002 08 31 | 291 | 0.1-  | 0.9+  | 2004 01 20 | 704 | 0.6+  | 0.6+  | 2007 12 13 | 704 | 0.2+ | 0.6+ |
| 2002 08 31 | 291 | 0.3-  | 0.2+  | 2004 01 22 | 704 | 0.1-  | 0.3-  | 2007 12 13 | 704 | 0.1- | 0.1+ |
| 2003 12 18 | 704 | 1.2+  | 0.5-  | 2004 01 22 | 704 | 0.4-  | 0.4-  | 2007 12 13 | 704 | 0.2- | 1.0+ |
| 2003 12 18 | 704 | 0.2-  | 0.1+  | 2004 01 22 | 704 | 0.4-  | 0.3+  | 2007 12 13 | 704 | 0.1+ | 0.3+ |
| 2003 12 18 | 704 | (1.1- | 1.9+) | 2004 01 22 | 704 | 0.4-  | 0.3+  | 2007 12 13 | 704 | 0.0  | 0.8+ |
| 2003 12 22 | 704 | 0.6+  | 1.2+  | 2004 01 22 | 704 | 0.3-  | 0.3+  | 2007 12 15 | 704 | 0.8- | 0.2- |
| 2003 12 22 | 704 | 0.2+  | 0.1-  | 2004 02 15 | 704 | (0.2+ | 2.0+) | 2007 12 15 | 704 | 0.2- | 0.2- |
| 2003 12 22 | 704 | 0.6+  | 0.3+  | 2004 02 15 | 704 | 0.1+  | 0.7+  | 2007 12 15 | 704 | 0.9- | 1.0+ |
| 2003 12 22 | 704 | 0.1+  | 0.9+  | 2004 02 15 | 704 | 0.6-  | 1.2-  | 2007 12 15 | 704 | 0.3- | 0.5- |
| 2003 12 22 | 704 | 0.0   | 0.0   | 2004 02 15 | 704 | 0.2+  | 0.4-  | 2007 12 15 | 704 | 0.3- | 0.4+ |

**(172672)\* 2003 YV<sub>125</sub>**

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 323.74274  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21926285 | $\omega$ | 6.65095  | +0.57256539 | -0.79827288 |
| $a$ | 2.7237005  | $\Omega$ | 48.61095 | +0.74026323 | +0.40538564 |
| $e$ | 0.1424205  | $i$      | 14.42502 | +0.35239074 | +0.44544684 |
| $P$ | 4.50       | $H$      | 15.3     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 04 14 | 691 | 0.0  | 0.0  | 2003 12 04 | 704 | 0.9- | 0.4+ | 2005 03 30 | 703 | 0.6+  | 0.8+  |
| 2001 04 14 | 691 | 0.1- | 0.1+ | 2003 12 17 | 704 | 0.1+ | 0.2+ | 2005 03 30 | 703 | (1.8- | 5.7-) |
| 2001 04 14 | 691 | 0.3+ | 0.3+ | 2003 12 17 | 704 | 0.1- | 0.5+ | 2005 04 06 | 703 | 0.4-  | 1.4-  |
| 2001 05 30 | 691 | 0.4+ | 0.3+ | 2003 12 17 | 704 | 0.2- | 0.1+ | 2005 04 06 | 703 | (1.6- | 0.1-) |
| 2001 05 30 | 691 | 0.1+ | 0.1+ | 2003 12 17 | 704 | 0.6+ | 0.2- | 2005 04 06 | 703 | 1.1-  | 0.8-  |
| 2001 05 30 | 691 | 0.0  | 0.3+ | 2003 12 17 | 704 | 0.1+ | 0.0  | 2005 04 06 | 703 | 1.1-  | 0.1+  |
| 2003 10 05 | 704 | 1.0- | 0.8+ | 2003 12 25 | 691 | 0.0  | 0.0  | 2005 04 06 | 703 | 0.1-  | 0.5-  |
| 2003 10 05 | 704 | 0.0  | 0.5- | 2003 12 25 | 691 | 0.1+ | 0.2- | 2005 04 06 | 703 | 0.6-  | 0.5+  |
| 2003 10 05 | 704 | 0.2+ | 0.3- | 2003 12 25 | 691 | 0.1+ | 0.0  | 2005 04 06 | 703 | 1.1-  | 0.3-  |
| 2003 10 05 | 704 | 0.7- | 0.7- | 2003 12 27 | 704 | 0.4+ | 0.1+ | 2005 04 06 | 703 | 0.7+  | 0.4+  |
| 2003 10 25 | 704 | 0.6- | 0.2- | 2003 12 27 | 704 | 0.2+ | 0.6+ | 2007 10 02 | E12 | 0.7+  | 0.4-  |
| 2003 10 25 | 704 | 0.2- | 0.3- | 2003 12 27 | 704 | 0.7+ | 0.6+ | 2007 10 02 | E12 | 0.1-  | 0.4-  |
| 2003 10 25 | 704 | 0.6- | 0.0  | 2003 12 29 | 704 | 0.2- | 0.1+ | 2007 10 02 | E12 | 0.3+  | 0.3-  |
| 2003 10 25 | 704 | 0.1+ | 0.2+ | 2003 12 29 | 704 | 0.0  | 0.1+ | 2007 10 02 | E12 | 0.5-  | 0.3-  |
| 2003 11 03 | 704 | 0.8- | 0.1- | 2003 12 29 | 704 | 0.0  | 0.4+ | 2007 10 11 | 703 | 0.6+  | 0.1-  |
| 2003 11 03 | 704 | 0.5- | 0.3- | 2003 12 29 | 704 | 0.2+ | 0.9+ | 2007 10 11 | 703 | 0.8+  | 0.2-  |
| 2003 11 03 | 704 | 0.1+ | 0.7- | 2003 12 29 | 704 | 0.8+ | 0.6+ | 2007 10 11 | 703 | 0.3+  | 0.5-  |
| 2003 11 03 | 704 | 0.1- | 0.4+ | 2005 03 03 | 703 | 0.4- | 0.8- | 2007 10 12 | 703 | 0.4-  | 0.4+  |
| 2003 11 03 | 704 | 0.7+ | 0.6- | 2005 03 03 | 703 | 0.6+ | 0.6- | 2007 10 12 | 703 | 0.0   | 0.1+  |
| 2003 11 20 | 704 | 0.1+ | 0.3+ | 2005 03 03 | 703 | 0.0  | 0.7- | 2007 10 12 | 703 | 0.8+  | 0.0   |
| 2003 11 20 | 704 | 0.0  | 0.1+ | 2005 03 03 | 703 | 0.3- | 0.7+ | 2007 10 12 | 703 | 0.6-  | 0.0   |
| 2003 11 20 | 704 | 0.4+ | 0.1+ | 2005 03 16 | 703 | 0.6- | 0.6- | 2007 12 05 | 704 | 0.0   | 0.6-  |
| 2003 11 20 | 704 | 0.3- | 0.1- | 2005 03 16 | 703 | 0.2+ | 0.0  | 2007 12 05 | 704 | 0.1-  | 0.0   |
| 2003 11 20 | 704 | 0.4- | 0.6- | 2005 03 16 | 703 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.3-  | 0.1-  |
| 2003 12 04 | 704 | 0.1- | 0.7+ | 2005 03 16 | 703 | 0.6+ | 1.1- | 2007 12 05 | 704 | 0.0   | 0.1-  |
| 2003 12 04 | 704 | 0.5- | 0.5+ | 2005 03 30 | 703 | 0.3- | 0.8- |            |     |       |       |
| 2003 12 04 | 704 | 0.6- | 0.5+ | 2005 03 30 | 703 | 0.2- | 0.3+ |            |     |       |       |

**(172673)\* 2003 YH<sub>126</sub> = 2001 FH<sub>179</sub>**

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 57552)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|                             |            |          |           |            |             |       |             |            |     |      |      |
|-----------------------------|------------|----------|-----------|------------|-------------|-------|-------------|------------|-----|------|------|
| <i>M</i>                    | 76.11480   |          | (2000.0)  |            | <b>P</b>    |       | <b>Q</b>    |            |     |      |      |
| <i>n</i>                    | 0.23043933 | $\omega$ | 266.57354 |            | +0.71371228 |       | +0.67690447 |            |     |      |      |
| <i>a</i>                    | 2.6349051  | $\Omega$ | 50.72540  |            | -0.51396558 |       | +0.68074068 |            |     |      |      |
| <i>e</i>                    | 0.2072781  | <i>i</i> | 13.44878  |            | -0.47587200 |       | +0.27998655 |            |     |      |      |
| <i>P</i>                    | 4.28       | <i>H</i> | 15.0      |            | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |      |      |
| Residuals in seconds of arc |            |          |           |            |             |       |             |            |     |      |      |
| 1994 11 30                  | 691        | 0.5+     | 0.5-      | 2007 09 14 | G96         | 0.1-  | 0.3-        | 2007 11 03 | 106 | 0.3+ | 0.4- |
| 1994 11 30                  | 691        | 0.2+     | 0.1-      | 2007 09 14 | G96         | 0.3+  | 0.2-        | 2007 11 03 | 106 | 0.1- | 0.5- |
| 1994 11 30                  | 691        | 0.2+     | 0.9-      | 2007 09 14 | G96         | 0.1+  | 0.2+        | 2007 11 05 | 691 | 0.4- | 0.0  |
| 1998 09 27                  | 699        | 0.1-     | 0.5-      | 2007 09 16 | 704         | 0.5+  | 0.4+        | 2007 11 05 | 691 | 0.3- | 0.2- |
| 1998 09 27                  | 699        | 0.0      | 0.3+      | 2007 09 16 | 704         | 0.7-  | 0.6+        | 2007 11 05 | 691 | 0.3- | 0.1+ |
| 1998 09 27                  | 699        | 0.2+     | 0.3-      | 2007 09 16 | 704         | 0.5-  | 0.3+        | 2007 11 06 | 704 | 0.2- | 0.8+ |
| 1999 12 12                  | 704        | (2.1-    | 0.7-)     | 2007 09 16 | 704         | 1.0-  | 0.0         | 2007 11 06 | 704 | 0.2+ | 0.1- |
| 1999 12 12                  | 704        | 0.2-     | 0.4-      | 2007 09 16 | 704         | 0.0   | 0.0         | 2007 11 06 | 704 | 0.7+ | 0.8- |
| 1999 12 12                  | 704        | 0.5+     | 0.4-      | 2007 09 19 | 704         | 0.6+  | 1.5+        | 2007 11 06 | 704 | 0.5- | 0.9+ |
| 2000 04 25                  | 645        | 0.0      | 0.3-      | 2007 09 19 | 704         | (0.1- | 1.7+)       | 2007 11 08 | D29 | 0.2- | 0.1- |
| 2000 04 25                  | 645        | 0.0      | 0.2-      | 2007 09 19 | 704         | 0.2-  | 0.7+        | 2007 11 08 | D29 | 0.3+ | 0.3- |
| 2001 03 20                  | 699        | 0.4+     | 0.7+      | 2007 09 19 | 704         | 0.8+  | 0.6-        | 2007 11 08 | D29 | 0.1+ | 0.0  |
| 2001 03 20                  | 699        | 0.7+     | 0.3+      | 2007 10 06 | 704         | 0.3+  | 0.2+        | 2007 11 08 | D29 | 0.3- | 0.2- |
| 2001 03 20                  | 699        | 0.1-     | 0.4-      | 2007 10 06 | 704         | 0.0   | 1.0+        | 2007 11 09 | 691 | 0.5- | 0.3+ |
| 2001 03 20                  | 699        | 1.2+     | 0.7+      | 2007 10 06 | 704         | 0.1+  | 0.8+        | 2007 11 09 | 691 | 0.4- | 0.1+ |
| 2001 03 24                  | 608        | 0.4+     | 0.1-      | 2007 10 06 | 704         | 0.0   | 0.3-        | 2007 11 09 | 691 | 0.4- | 0.1+ |
| 2001 03 24                  | 608        | 0.1-     | 0.6+      | 2007 10 06 | 704         | 0.5-  | 0.6+        | 2007 11 15 | 704 | 0.5+ | 0.0  |
| 2001 03 24                  | 608        | 0.0      | 0.4+      | 2007 10 11 | 704         | (2.0+ | 0.4-)       | 2007 11 15 | 704 | 0.6+ | 0.1+ |
| 2003 11 19                  | 704        | 0.3+     | 0.6+      | 2007 10 11 | 704         | 1.5+  | 0.4+        | 2007 11 15 | 704 | 0.4+ | 0.4+ |
| 2003 11 19                  | 704        | 0.3-     | 0.3+      | 2007 10 11 | 704         | (2.7+ | 1.4+)       | 2007 11 15 | 704 | 0.7+ | 0.0  |
| 2003 11 19                  | 704        | 0.0      | 0.0       | 2007 10 11 | 704         | 1.4-  | 0.7+        | 2007 11 15 | 704 | 0.5+ | 0.2+ |
| 2003 11 19                  | 704        | 0.3+     | 0.1-      | 2007 10 11 | 704         | 0.2+  | 0.2+        | 2007 11 17 | 691 | 0.3- | 0.1+ |
| 2003 11 19                  | 704        | 0.1-     | 0.3+      | 2007 10 11 | 704         | 0.3+  | 0.1+        | 2007 11 17 | 691 | 0.2- | 0.1+ |
| 2003 12 03                  | 704        | 0.5-     | 0.6+      | 2007 10 11 | 704         | 0.9+  | 0.2-        | 2007 11 17 | 691 | 0.3- | 0.1+ |
| 2003 12 03                  | 704        | 1.0-     | 0.3+      | 2007 10 11 | 704         | 1.3+  | 0.3+        | 2007 11 18 | 704 | 0.2- | 0.2- |
| 2003 12 03                  | 704        | 0.1-     | 0.1-      | 2007 10 11 | 704         | 0.1+  | 0.1+        | 2007 11 18 | 704 | 0.1+ | 0.1+ |
| 2003 12 03                  | 704        | 0.1+     | 1.4+      | 2007 10 11 | 704         | 0.5+  | 0.0         | 2007 11 18 | 704 | 1.2- | 0.6- |
| 2003 12 17                  | 704        | 0.1-     | 0.3-      | 2007 10 12 | 704         | 0.8+  | 0.4+        | 2007 11 18 | 704 | 0.1- | 0.0  |
| 2003 12 17                  | 704        | 0.3+     | 0.2+      | 2007 10 12 | 704         | 0.5+  | 0.2+        | 2007 11 20 | 704 | 0.8+ | 0.5- |
| 2003 12 17                  | 704        | 0.0      | 0.2-      | 2007 10 12 | 704         | 0.4+  | 0.8+        | 2007 11 20 | 704 | 1.0+ | 0.4- |
| 2003 12 17                  | 704        | 0.0      | 0.4-      | 2007 10 12 | 704         | 1.1+  | 0.5-        | 2007 11 20 | 704 | 1.1+ | 0.0  |
| 2003 12 17                  | 704        | 0.1+     | 0.3-      | 2007 10 12 | 704         | 0.8+  | 0.2-        | 2007 11 20 | 704 | 0.6+ | 0.3- |
| 2003 12 27                  | 704        | 0.8+     | 0.1-      | 2007 10 16 | G96         | 0.2+  | 0.4-        | 2007 11 20 | 704 | 0.8+ | 0.1+ |
| 2003 12 27                  | 704        | 0.6-     | 0.3+      | 2007 10 16 | G96         | 0.1-  | 0.3-        | 2007 12 12 | 704 | 0.3- | 0.3+ |
| 2003 12 27                  | 704        | 0.3+     | 0.4+      | 2007 10 16 | G96         | 0.3+  | 0.4-        | 2007 12 12 | 704 | 0.1- | 0.3- |
| 2003 12 27                  | 704        | 0.4-     | 0.2+      | 2007 10 16 | G96         | 0.1+  | 0.3-        | 2007 12 12 | 704 | 0.4- | 0.2- |
| 2003 12 27                  | 704        | 0.5+     | 0.5+      | 2007 10 19 | 699         | 0.3+  | 0.3-        | 2007 12 12 | 704 | 0.4+ | 0.1+ |
| 2003 12 29                  | 704        | 0.1+     | 0.7+      | 2007 10 19 | 699         | 0.1-  | 0.1-        | 2007 12 12 | 704 | 0.5+ | 0.3+ |
| 2003 12 29                  | 704        | 0.0      | 0.2+      | 2007 10 19 | 699         | 0.3-  | 0.3-        | 2007 12 13 | 704 | 0.2+ | 0.0  |
| 2003 12 29                  | 704        | 0.2-     | 0.2+      | 2007 10 19 | 699         | 1.1+  | 0.4+        | 2007 12 13 | 704 | 0.4- | 0.2+ |
| 2003 12 29                  | 704        | 0.0      | 0.4+      | 2007 10 23 | 704         | 0.0   | 0.3+        | 2007 12 13 | 704 | 0.2+ | 0.1+ |
| 2005 03 09                  | 703        | 0.3-     | 0.4+      | 2007 10 23 | 704         | 0.4-  | 1.4-        | 2007 12 13 | 704 | 0.3+ | 0.3+ |
| 2005 03 09                  | 703        | 0.5-     | 0.3+      | 2007 10 23 | 704         | 0.2+  | 0.5-        | 2007 12 13 | 704 | 0.1- | 0.4+ |
| 2005 03 09                  | 703        | (0.9-    | 2.0-)     | 2007 10 23 | 704         | 0.6+  | 0.4+        | 2007 12 15 | 704 | 0.0  | 0.4+ |
| 2005 03 09                  | 703        | 0.8-     | 0.9-      | 2007 10 23 | 704         | 0.9+  | 0.7+        | 2007 12 15 | 704 | 0.1+ | 0.7+ |
| 2007 09 08                  | 703        | 0.0      | 0.5-      | 2007 11 01 | 691         | 0.4-  | 0.1-        | 2007 12 15 | 704 | 0.2+ | 0.8+ |
| 2007 09 08                  | 703        | (0.6-    | 1.6-)     | 2007 11 01 | 691         | 0.5-  | 0.0         | 2007 12 15 | 704 | 0.0  | 0.6+ |
| 2007 09 08                  | 703        | 0.7-     | 0.5-      | 2007 11 01 | 691         | 0.4-  | 0.1-        | 2007 12 15 | 704 | 0.3- | 1.1+ |
| 2007 09 08                  | 703        | 0.3-     | 0.6+      | 2007 11 03 | 106         | 0.1-  | 0.4-        |            |     |      |      |
| 2007 09 14                  | G96        | 1.1+     | 1.2-      | 2007 11 03 | 106         | 0.1-  | 0.6-        |            |     |      |      |

2007 DEC. 24

M.P.O. 129445

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 209.73578  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23008946 | $\omega$ 143.55439 | -0.74086973   | +0.62561080 |
| <i>a</i> | 2.6375755  | $\Omega$ 77.03702  | -0.66013496   | -0.61117408 |
| <i>e</i> | 0.0875666  | <i>i</i> 14.52333  | -0.12383007   | -0.48484778 |
| <i>P</i> | 4.28       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |        |      |            |     |      |      |
|------------|-----|------|------|------------|-----|--------|------|------------|-----|------|------|
| 1994 12 01 | 691 | 0.1- | 0.3+ | 2003 12 29 | 704 | 0.3+   | 0.1+ | 2005 06 03 | 703 | 1.0- | 0.2+ |
| 1994 12 01 | 691 | 0.0  | 0.2+ | 2003 12 29 | 704 | 0.2-   | 0.2- | 2005 06 03 | 703 | 0.3+ | 0.1- |
| 1994 12 01 | 691 | 0.1- | 0.2- | 2003 12 29 | 704 | 0.3-   | 0.0  | 2005 06 03 | 703 | 0.2+ | 0.0  |
| 2000 01 02 | 704 | 0.7- | 0.1- | 2003 12 29 | 704 | 0.3-   | 0.6- | 2005 06 03 | 703 | 1.2- | 0.2+ |
| 2000 01 02 | 704 | 0.4+ | 0.8- | 2003 12 29 | 704 | 0.4-   | 0.2- | 2007 08 10 | 291 | 0.1+ | 0.5+ |
| 2000 01 02 | 704 | 0.5- | 0.2- | 2005 04 09 | 704 | 0.5+   | 0.2+ | 2007 08 10 | 291 | 0.6- | 0.2+ |
| 2000 01 29 | 704 | 0.0  | 1.0- | 2005 04 09 | 704 | 0.7+   | 0.7+ | 2007 08 10 | 291 | 0.0  | 0.4+ |
| 2000 01 29 | 704 | 0.0  | 0.0  | 2005 04 09 | 704 | 0.3+   | 0.2+ | 2007 11 14 | 704 | 0.9+ | 1.0- |
| 2000 01 29 | 704 | 0.7- | 0.9- | 2005 04 09 | 704 | 0.5-   | 0.5+ | 2007 11 14 | 704 | 0.9- | 0.4- |
| 2000 01 29 | 704 | 0.5- | 0.8- | 2005 04 18 | 703 | 0.3+   | 0.1+ | 2007 11 14 | 704 | 0.8- | 0.9+ |
| 2000 01 29 | 704 | 0.3- | 0.6+ | 2005 04 18 | 703 | 0.3+   | 0.3- | 2007 11 14 | 691 | 0.3- | 0.0  |
| 2003 12 23 | 704 | 1.1+ | 0.4+ | 2005 04 18 | 703 | 0.0    | 0.0  | 2007 11 14 | 691 | 0.2- | 0.2+ |
| 2003 12 23 | 704 | 0.6+ | 0.3+ | 2005 04 18 | 703 | 0.3+   | 0.5+ | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2003 12 23 | 704 | 1.0+ | 0.3+ | 2005 05 04 | 703 | 0.6-   | 0.3+ | 2007 12 05 | 704 | 0.3- | 0.4+ |
| 2003 12 23 | 704 | 1.2+ | 0.1+ | 2005 05 04 | 703 | 0.2+   | 0.0  | 2007 12 05 | 704 | 0.0  | 0.6+ |
| 2003 12 23 | 704 | 0.2+ | 0.1- | 2005 05 04 | 703 | 0.4-   | 0.5- | 2007 12 05 | 704 | 0.3- | 0.5+ |
| 2003 12 28 | 704 | 0.6+ | 0.9+ | 2005 05 11 | 699 | 0.1+   | 0.8+ | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2003 12 28 | 704 | 0.3- | 0.6+ | 2005 05 11 | 699 | 0.1+   | 0.1- | 2007 12 05 | 704 | 0.3- | 0.2+ |
| 2003 12 28 | 704 | 0.9+ | 0.1- | 2005 05 11 | 699 | 0.7+   | 0.9+ | 2007 12 05 | G96 | 0.4+ | 0.5- |
| 2003 12 28 | 704 | 0.1+ | 0.9+ | 2005 05 14 | 704 | 1.0+   | 0.4+ | 2007 12 05 | G96 | 0.0  | 0.4- |
| 2003 12 29 | 704 | 1.0- | 0.1+ | 2005 05 14 | 704 | 0.8+   | 0.1- | 2007 12 05 | G96 | 0.1+ | 0.4- |
| 2003 12 29 | 704 | 0.1+ | 0.5- | 2005 05 14 | 704 | (3.2+) | 0.3- | 2007 12 05 | G96 | 0.2+ | 0.3- |
| 2003 12 29 | 704 | 0.1+ | 0.7+ | 2005 05 14 | 704 | 0.7+   | 0.2+ |            |     |      |      |
| 2003 12 29 | 704 | 0.0  | 0.4- | 2005 05 14 | 704 | 0.3+   | 0.8+ |            |     |      |      |

(172675)\* 2003 YM<sub>134</sub>

Discovered 2003 Dec. 28 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.68378    | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22625093 | $\omega$ 334.56985 | +0.66686062   | -0.71125774 |
| <i>a</i> | 2.6673241  | $\Omega$ 72.73290  | +0.71727293   | +0.53179066 |
| <i>e</i> | 0.1702717  | <i>i</i> 13.46038  | +0.20203084   | +0.45968589 |
| <i>P</i> | 4.36       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 09 27 | 699 | 0.4-  | 1.3+  | 2004 01 19 | 704 | 0.2-  | 0.3+  | 2007 11 13 | 699 | 0.2+ | 0.1+ |
| 1998 09 27 | 699 | 0.0   | 0.9+  | 2004 01 19 | 704 | 0.8+  | 0.5+  | 2007 11 13 | 699 | 0.3- | 0.5- |
| 1998 09 27 | 699 | 1.1-  | 0.5+  | 2004 02 02 | 704 | 0.4-  | 0.4+  | 2007 11 13 | 699 | 0.4- | 0.3- |
| 2001 05 24 | 691 | 0.3+  | 0.3+  | 2004 02 02 | 704 | 0.4+  | 0.2+  | 2007 11 20 | G96 | 0.3- | 0.3- |
| 2001 05 24 | 691 | 0.3+  | 0.3+  | 2004 02 02 | 704 | 0.3+  | 0.1-  | 2007 11 20 | G96 | 0.1- | 0.4- |
| 2001 05 24 | 691 | 0.3+  | 0.4+  | 2007 10 21 | 704 | 0.0   | 0.1+  | 2007 11 20 | G96 | 0.3- | 0.4- |
| 2001 06 11 | 691 | 0.4-  | 0.0   | 2007 10 21 | 704 | 0.1+  | 0.6-  | 2007 11 20 | G96 | 0.0  | 0.4- |
| 2001 06 11 | 691 | 0.1-  | 0.3+  | 2007 10 21 | 704 | 0.0   | 0.3+  | 2007 11 21 | G96 | 0.1+ | 0.3- |
| 2001 06 11 | 691 | 0.1-  | 0.5-  | 2007 10 21 | 704 | 1.4+  | 0.2-  | 2007 11 21 | G96 | 0.2- | 0.3- |
| 2003 12 04 | 704 | (2.0+ | 0.8+) | 2007 11 04 | 704 | 0.1+  | 0.0   | 2007 11 21 | G96 | 0.1+ | 0.4- |
| 2003 12 04 | 704 | 0.7+  | 0.3-  | 2007 11 04 | 704 | 0.1-  | 0.1-  | 2007 11 21 | G96 | 0.2- | 0.3- |
| 2003 12 04 | 704 | 0.3+  | 0.4+  | 2007 11 04 | 704 | 0.2-  | 0.1-  | 2007 12 03 | 703 | 0.4+ | 0.4+ |
| 2003 12 04 | 704 | 0.3-  | 0.2-  | 2007 11 04 | 704 | 0.1-  | 0.1-  | 2007 12 03 | 703 | 0.3- | 0.2- |
| 2003 12 28 | 704 | 0.1-  | 0.1-  | 2007 11 04 | 704 | 0.0   | 0.2+  | 2007 12 03 | 703 | 0.2- | 0.4- |
| 2003 12 28 | 704 | 0.5-  | 0.4+  | 2007 11 05 | 704 | 0.2-  | 0.2-  | 2007 12 03 | 703 | 0.4+ | 0.1+ |
| 2003 12 28 | 704 | 0.1+  | 0.3-  | 2007 11 05 | 704 | 0.0   | 0.1-  | 2007 12 04 | 699 | 0.0  | 0.1+ |
| 2003 12 28 | 704 | 0.3-  | 0.1+  | 2007 11 05 | 704 | 0.1+  | 0.3-  | 2007 12 04 | 699 | 0.9- | 0.5+ |
| 2003 12 28 | 704 | 0.0   | 0.5+  | 2007 11 05 | 704 | 0.2+  | 0.2+  | 2007 12 04 | 699 | 0.6+ | 0.2- |
| 2003 12 29 | 703 | 0.4+  | 0.5-  | 2007 11 05 | 704 | 0.0   | 0.3-  | 2007 12 04 | 699 | 0.0  | 0.7- |
| 2003 12 29 | 703 | 0.2+  | 0.1-  | 2007 11 07 | 704 | (1.7+ | 0.4+) | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2003 12 29 | 703 | 0.2-  | 0.4-  | 2007 11 07 | 704 | 1.0-  | 0.2+  | 2007 12 05 | 704 | 0.6+ | 0.6+ |
| 2003 12 29 | 703 | 0.1+  | 0.5+  | 2007 11 07 | 704 | 0.9+  | 0.7+  | 2007 12 05 | 704 | 0.7- | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 30 | 704 | 0.6+ | 0.4+ | 2007 11 07 | 704 | 0.9+ | 0.7+ | 2007 12 05 | 704 | 0.2- | 0.3+ |
| 2003 12 30 | 704 | 1.0- | 0.2- | 2007 11 07 | 704 | 0.5- | 0.6- | 2007 12 05 | 704 | 0.1- | 0.3+ |
| 2003 12 30 | 704 | 0.0  | 0.1+ | 2007 11 08 | D29 | 0.3- | 0.1- | 2007 12 13 | A77 | 0.2- | 0.2+ |
| 2003 12 30 | 704 | 0.7- | 0.2- | 2007 11 08 | D29 | 0.5- | 0.0  | 2007 12 13 | A77 | 0.3+ | 0.2+ |
| 2003 12 30 | 704 | 0.1+ | 0.2+ | 2007 11 08 | D29 | 0.5+ | 0.2+ | 2007 12 13 | A77 | 0.8- | 1.9+ |
| 2004 01 16 | 644 | 0.0  | 0.1- | 2007 11 08 | D29 | 0.4+ | 0.6- | 2007 12 15 | G96 | 0.5+ | 0.1+ |
| 2004 01 16 | 644 | 0.1- | 0.0  | 2007 11 12 | 704 | 0.2+ | 0.2- | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2004 01 16 | 644 | 0.0  | 0.0  | 2007 11 12 | 704 | 0.2+ | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2004 01 19 | 704 | 0.8+ | 0.0  | 2007 11 12 | 704 | 0.2+ | 0.8+ | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2004 01 19 | 704 | 0.5- | 0.2+ | 2007 11 12 | 704 | 0.3- | 0.0  |            |     |      |      |
| 2004 01 19 | 704 | 0.2- | 0.2+ | 2007 11 13 | 699 | 0.6- | 0.1- |            |     |      |      |

(172676)\* 2003 YD<sub>136</sub>

Discovered 2003 Dec. 30 by G. Hug at Sandlot Observatory, Scranton.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 142.21214  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25646547 | $\omega$ 209.20652 | +0.50672621   | +0.82876037 |
| <i>a</i> | 2.4534852  | $\Omega$ 92.17222  | -0.73765805   | +0.55936204 |
| <i>e</i> | 0.0614462  | <i>i</i> 13.74644  | -0.44619407   | +0.01644282 |
| <i>P</i> | 3.84       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 07 16 | 644 | 0.2-  | 0.5+  | 2004 01 19 | H36 | 0.8+  | 0.6-  | 2005 05 08 | 703 | 0.3+  | 0.4+  |
| 2002 07 16 | 644 | 0.1+  | 0.4+  | 2004 01 22 | H36 | (1.6- | 0.7-) | 2005 05 08 | 703 | 0.3-  | 0.4-  |
| 2002 07 16 | 644 | 0.1-  | 0.2+  | 2004 01 22 | H36 | 1.4-  | 0.3-  | 2006 08 15 | E12 | 0.5-  | 0.2+  |
| 2002 07 29 | 644 | 0.5-  | 1.0+  | 2005 03 08 | 704 | 1.1+  | 0.3+  | 2006 08 15 | E12 | 0.1+  | 0.3+  |
| 2002 07 29 | 644 | 0.3-  | 0.3+  | 2005 03 08 | 704 | 1.5+  | 0.1-  | 2006 08 15 | E12 | 1.0-  | 0.2+  |
| 2002 07 29 | 644 | 0.2-  | 0.3+  | 2005 03 08 | 704 | 0.2+  | 0.6-  | 2006 08 15 | E12 | 0.1+  | 0.6+  |
| 2003 12 23 | 704 | 0.3-  | 0.1+  | 2005 03 18 | 703 | 0.3+  | 0.4+  | 2006 08 28 | E12 | 0.4+  | 0.6+  |
| 2003 12 23 | 704 | 0.2-  | 1.2+  | 2005 03 18 | 703 | 0.8-  | 1.0+  | 2006 08 28 | E12 | 0.4+  | 0.8+  |
| 2003 12 23 | 704 | 0.4-  | 0.1+  | 2005 03 18 | 703 | 0.7-  | 0.8+  | 2006 08 28 | E12 | 0.2-  | 0.9+  |
| 2003 12 23 | 704 | 0.5-  | 1.1+  | 2005 03 18 | 703 | (0.4+ | 1.7-) | 2006 08 28 | E12 | 0.1+  | 1.0+  |
| 2003 12 30 | H36 | 0.5+  | 0.5-  | 2005 04 06 | 703 | 0.1+  | 1.0+  | 2007 12 10 | 704 | (1.8+ | 1.1+) |
| 2003 12 30 | H36 | 0.5-  | 0.5-  | 2005 04 06 | 703 | 0.5+  | 0.2-  | 2007 12 10 | 704 | 0.5+  | 0.8+  |
| 2003 12 30 | H36 | 0.5+  | 0.0   | 2005 04 06 | 703 | 0.6+  | 0.1-  | 2007 12 10 | 704 | 0.6+  | 0.8+  |
| 2003 12 30 | H36 | 0.1+  | 0.5-  | 2005 04 06 | 703 | 0.5+  | 0.6+  | 2007 12 10 | 704 | 1.0+  | 1.3+  |
| 2003 12 30 | H36 | 0.8+  | 0.4+  | 2005 04 12 | 699 | 1.1-  | 1.2-  | 2007 12 14 | 704 | 1.4+  | 0.9+  |
| 2003 12 31 | H36 | 0.7+  | 1.1+  | 2005 04 12 | 699 | 0.1-  | 0.7+  | 2007 12 14 | 704 | (2.0+ | 0.2+) |
| 2003 12 31 | H36 | 1.4+  | 0.3-  | 2005 04 12 | 699 | 0.9+  | 0.1+  | 2007 12 14 | 704 | 0.6+  | 0.3+  |
| 2003 12 31 | H36 | (1.7- | 0.2-) | 2005 04 12 | 699 | 0.4-  | 0.8+  | 2007 12 15 | 691 | 0.2-  | 0.0   |
| 2003 12 31 | H36 | 0.4+  | 0.4-  | 2005 04 16 | 703 | 0.1-  | 0.2-  | 2007 12 15 | 691 | 0.4-  | 0.1-  |
| 2003 12 31 | H36 | 0.1-  | 0.4-  | 2005 04 16 | 703 | 0.5+  | 0.5+  | 2007 12 15 | 691 | 0.2-  | 0.2+  |
| 2004 01 11 | H36 | 0.1-  | 0.4+  | 2005 04 16 | 703 | 0.3+  | 0.5-  | 2007 12 15 | 691 | 0.3-  | 0.1+  |
| 2004 01 11 | H36 | 1.1-  | 1.3-  | 2005 04 16 | 703 | 0.2-  | 0.3+  | 2007 12 15 | 691 | 0.3-  | 0.2-  |
| 2004 01 19 | H36 | 0.2-  | 0.4-  | 2005 05 08 | 703 | 0.4-  | 0.8+  | 2007 12 15 | 691 | 0.1+  | 0.8+  |
| 2004 01 19 | H36 | 0.9+  | 0.4-  | 2005 05 08 | 703 | 0.2+  | 0.9+  |            |     |       |       |

(172677)\* 2003 YA<sub>137</sub>

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 276.73938  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19093341 | $\omega$ 149.49061 | +0.09942275   | -0.98403403 |
| <i>a</i> | 2.9868593  | $\Omega$ 294.45112 | +0.87705780   | +0.15673638 |
| <i>e</i> | 0.0774603  | <i>i</i> 9.33261   | +0.46998376   | -0.08432523 |
| <i>P</i> | 5.16       | <i>H</i> 14.7      | <i>G</i> 0.15 | <i>U</i> 1  |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.1+ | 0.4+ | 2003 12 30 | 704 | 0.0  | 0.3+ |
| 2003 11 20 | 704 | 0.2- | 0.6+ | 2004 01 22 | 704 | 1.2+ | 0.2+ |
| 2003 11 20 | 704 | 1.1- | 0.1+ | 2004 01 22 | 704 | 1.1+ | 0.1- |
| 2003 12 18 | 704 | 0.2- | 0.6- | 2004 01 22 | 704 | 0.6+ | 0.3+ |
| 2003 12 18 | 704 | 0.0  | 0.7- | 2004 01 22 | 704 | 0.7- | 0.9- |
| 2003 12 18 | 704 | 0.3+ | 0.1- | 2005 03 17 | 599 | 0.7+ | 0.7+ |
| 2003 12 18 | 704 | 0.2- | 0.5- | 2005 03 18 | 599 | 0.1+ | 1.0+ |
| 2003 12 18 | 704 | 0.1+ | 0.1- | 2005 03 18 | 599 | 0.1- | 0.7+ |
| 2003 12 27 | 704 | 0.7- | 1.0+ | 2005 04 14 | 703 | 0.4- | 0.7+ |

(172678)\* 2003 YM<sub>137</sub>

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 305.61776  |          | <i>P</i>  | (2000.0)    |             | <i>Q</i> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23435491 | $\omega$ | 126.82566 | -0.91125610 | +0.40928555 |          |   |
| <i>a</i> | 2.6054736  | $\Omega$ | 77.37479  | -0.39122488 | -0.82552814 |          |   |
| <i>e</i> | 0.6849725  | <i>i</i> | 2.69018   | -0.12866786 | -0.38857255 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 18.7      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 12 21 | 645 | 0.0  | 0.1- | 2004 02 09 | 185 | 0.5-  | 0.1+  | 2004 02 18 | 127 | 0.0   | 0.0   |
| 2003 12 21 | 645 | 0.0  | 0.1- | 2004 02 09 | 185 | 0.6-  | 0.2+  | 2004 02 19 | H72 | 0.0   | 0.5-  |
| 2003 12 21 | 691 | 0.0  | 0.0  | 2004 02 09 | 185 | 0.5-  | 0.3+  | 2004 02 19 | H72 | 0.3-  | 0.0   |
| 2003 12 21 | 691 | 0.2+ | 0.1+ | 2004 02 09 | 151 | 0.4-  | 0.1+  | 2004 02 19 | H72 | 0.0   | 0.2+  |
| 2003 12 21 | 691 | 0.1+ | 0.2+ | 2004 02 09 | 151 | 0.3-  | 0.0   | 2004 02 19 | H72 | 0.2+  | 0.1-  |
| 2003 12 27 | 704 | 0.1- | 1.0+ | 2004 02 09 | 151 | 0.3-  | 0.0   | 2004 02 19 | H72 | 0.3-  | 0.0   |
| 2003 12 27 | 704 | 0.2+ | 0.5+ | 2004 02 09 | 151 | 0.4-  | 0.0   | 2004 02 19 | H72 | 0.9+  | 0.1+  |
| 2003 12 27 | 704 | 0.1+ | 1.1+ | 2004 02 09 | 204 | 0.1+  | 0.0   | 2004 02 19 | H72 | 0.4-  | 0.3-  |
| 2003 12 27 | 704 | 0.3+ | 1.1+ | 2004 02 09 | 204 | 0.2+  | 0.1+  | 2004 02 19 | H72 | 0.1+  | 0.2-  |
| 2003 12 27 | 704 | 0.0  | 1.1+ | 2004 02 09 | 204 | 0.3+  | 0.1+  | 2004 02 19 | H72 | 0.6+  | 0.2-  |
| 2003 12 29 | 699 | 0.1- | 0.9+ | 2004 02 09 | 204 | 0.7+  | 0.0   | 2004 02 19 | H72 | 0.5+  | 0.2-  |
| 2003 12 29 | 699 | 0.3+ | 0.5+ | 2004 02 10 | 649 | 0.0   | 0.1-  | 2004 02 19 | H72 | 0.2-  | 0.6-  |
| 2003 12 29 | 699 | 0.8+ | 0.2+ | 2004 02 10 | 649 | 0.1-  | 0.1-  | 2004 02 19 | H72 | 0.5-  | 0.4-  |
| 2003 12 29 | 699 | 0.0  | 0.5+ | 2004 02 10 | 649 | 0.1+  | 0.1-  | 2004 02 19 | 750 | 0.6-  | 0.1-  |
| 2004 01 13 | 699 | 0.3+ | 0.0  | 2004 02 10 | 379 | 0.2-  | 0.4+  | 2004 02 19 | 750 | 0.1+  | 0.0   |
| 2004 01 13 | 699 | 0.0  | 0.1- | 2004 02 10 | 379 | 0.5-  | 0.2+  | 2004 02 19 | 750 | 0.0   | 0.2-  |
| 2004 01 13 | 699 | 0.3+ | 0.4+ | 2004 02 10 | 379 | 0.4-  | 0.2+  | 2004 02 19 | 750 | 0.4-  | 0.2-  |
| 2004 01 13 | 699 | 0.4- | 0.3- | 2004 02 10 | 176 | 0.0   | 0.0   | 2004 02 19 | 750 | 0.1+  | 0.1-  |
| 2004 01 18 | 691 | 0.1+ | 0.0  | 2004 02 10 | 176 | 0.0   | 0.1-  | 2004 02 19 | 750 | 0.5-  | 0.1-  |
| 2004 01 18 | 691 | 0.0  | 0.0  | 2004 02 10 | 176 | 0.0   | 0.1-  | 2004 02 19 | 750 | 0.1+  | 0.3-  |
| 2004 01 18 | 691 | 0.2+ | 0.1- | 2004 02 10 | 176 | 0.0   | 0.1-  | 2004 02 19 | 750 | 0.7-  | 0.1+  |
| 2004 01 18 | A17 | 0.1- | 0.7- | 2004 02 10 | 176 | 0.1-  | 0.2-  | 2004 02 20 | H72 | (1.7- | 0.7-) |
| 2004 01 18 | A17 | 0.2- | 0.3+ | 2004 02 10 | 084 | 0.1-  | 0.1-  | 2004 02 20 | H72 | (1.3- | 1.8+) |
| 2004 01 18 | 611 | 0.4+ | 0.3+ | 2004 02 11 | H67 | 0.1+  | 0.2+  | 2004 02 20 | H72 | 0.7+  | 0.1+  |
| 2004 01 18 | 611 | 0.2+ | 0.5- | 2004 02 11 | H67 | 0.2-  | 0.2-  | 2004 02 20 | H72 | 0.3-  | 0.0   |
| 2004 01 18 | 938 | 0.1+ | 0.3- | 2004 02 11 | H67 | 0.1-  | 0.0   | 2004 02 20 | H72 | 0.3-  | 0.1-  |
| 2004 01 18 | 611 | 0.3+ | 0.3+ | 2004 02 11 | 704 | 1.0-  | 0.3+  | 2004 02 20 | H72 | 0.3-  | 0.4+  |
| 2004 01 18 | 143 | 0.1- | 0.1+ | 2004 02 11 | 704 | 0.1+  | 0.1+  | 2004 02 20 | H72 | 0.8-  | 0.4-  |
| 2004 01 18 | 143 | 0.4+ | 0.2- | 2004 02 11 | 704 | 0.2+  | 0.1+  | 2004 02 20 | H72 | 0.1-  | 0.6+  |
| 2004 01 18 | 611 | 0.9+ | 0.3+ | 2004 02 11 | 704 | 1.1-  | 0.4+  | 2004 02 20 | H72 | 0.0   | 0.3+  |
| 2004 01 18 | 143 | 0.1- | 0.1- | 2004 02 11 | 379 | 0.1-  | 0.6+  | 2004 02 20 | H72 | 0.3-  | 0.3-  |
| 2004 01 18 | A17 | 0.5- | 0.4- | 2004 02 11 | 379 | 0.7-  | 0.5+  | 2004 02 20 | H72 | 0.2+  | 0.2+  |
| 2004 01 18 | A17 | 0.2+ | 0.3- | 2004 02 11 | 104 | 0.0   | 0.3-  | 2004 02 20 | H72 | 0.6-  | 1.0+  |
| 2004 01 18 | 938 | 0.1- | 0.2+ | 2004 02 11 | 104 | 0.0   | 0.1+  | 2004 02 20 | H72 | 1.1+  | 0.2+  |
| 2004 01 18 | 938 | 0.1- | 0.3- | 2004 02 11 | 104 | 0.3-  | 0.3+  | 2004 02 20 | H72 | 0.3+  | 0.3+  |
| 2004 01 20 | D85 | 0.4+ | 0.2- | 2004 02 11 | 203 | 0.0   | 0.1-  | 2004 02 20 | H72 | (1.9+ | 1.3-) |
| 2004 01 20 | D85 | 0.1+ | 0.5- | 2004 02 11 | 203 | 0.0   | 0.1-  | 2004 02 20 | H72 | 0.4-  | 0.1+  |
| 2004 01 20 | D85 | 0.1- | 0.2- | 2004 02 12 | H72 | 0.3+  | 0.2+  | 2004 02 20 | 127 | 0.3-  | 0.3+  |
| 2004 01 20 | 587 | 0.5- | 0.2+ | 2004 02 12 | H72 | 0.1+  | 0.4-  | 2004 02 20 | 127 | 0.2+  | 0.4+  |
| 2004 01 20 | 587 | 0.5- | 0.0  | 2004 02 12 | H72 | 0.1-  | 0.1+  | 2004 02 20 | 127 | 0.2+  | 0.0   |
| 2004 01 20 | 587 | 0.4+ | 0.5+ | 2004 02 12 | H72 | 0.2+  | 0.4+  | 2004 02 20 | 127 | 0.0   | 0.4+  |
| 2004 01 21 | 939 | 0.2- | 0.3- | 2004 02 12 | H72 | 0.0   | 1.1+  | 2004 02 20 | 046 | 0.2+  | 0.3+  |
| 2004 01 22 | 939 | 0.3- | 0.1- | 2004 02 12 | H72 | (2.9- | 2.5+) | 2004 02 20 | 046 | 0.1+  | 0.2-  |
| 2004 01 22 | 939 | 0.4- | 0.0  | 2004 02 12 | H72 | (1.7+ | 0.7+) | 2004 02 20 | 046 | 0.1+  | 0.1+  |
| 2004 01 23 | A41 | 0.6- | 1.1+ | 2004 02 12 | 932 | 0.0   | 0.0   | 2004 02 20 | 046 | 0.3+  | 0.3+  |
| 2004 01 23 | A41 | 0.8- | 0.7+ | 2004 02 12 | 932 | 0.4+  | 0.1-  | 2004 02 20 | 046 | 0.2-  | 0.4+  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 01 23 | A41 | 0.8-  | 0.5+  | 2004 02 12 | 932 | 0.0  | 0.2+ | 2004 02 20 | 046 | 0.2-  | 1.0+  |
| 2004 01 24 | H72 | (1.6+ | 0.1-) | 2004 02 12 | 379 | 0.0  | 0.4+ | 2004 02 21 | 379 | (1.7+ | 0.9-) |
| 2004 01 24 | H72 | 0.2-  | 0.4-  | 2004 02 12 | 379 | 0.6- | 0.0  | 2004 02 21 | 379 | 0.8+  | 0.3-  |
| 2004 01 24 | H72 | 0.5+  | 0.4-  | 2004 02 12 | 379 | 0.3- | 0.3+ | 2004 02 21 | 379 | (1.7+ | 0.0 ) |
| 2004 01 24 | H72 | 1.2-  | 1.2+  | 2004 02 12 | 379 | 0.0  | 0.1+ | 2004 02 21 | 084 | 0.1+  | 0.3+  |
| 2004 01 25 | A16 | (1.8- | 0.8+) | 2004 02 12 | 379 | 0.3+ | 0.2- | 2004 02 21 | 785 | (1.8+ | 0.3-) |
| 2004 01 26 | 379 | 0.1+  | 0.1-  | 2004 02 12 | 939 | 0.3- | 0.4- | 2004 02 22 | 785 | 0.3+  | 0.1-  |
| 2004 01 26 | 379 | 0.1-  | 0.1+  | 2004 02 12 | 939 | 0.2- | 0.4- | 2004 02 22 | 785 | 0.7-  | 0.2-  |
| 2004 01 26 | 379 | 0.4-  | 0.4-  | 2004 02 12 | 939 | 0.2- | 0.4- | 2004 02 22 | H41 | 0.2-  | 0.4-  |
| 2004 01 26 | 379 | 0.0   | 0.3-  | 2004 02 14 | 750 | 0.1- | 0.3- | 2004 02 22 | H41 | 0.9+  | 0.3+  |
| 2004 01 28 | 379 | 0.0   | 0.6-  | 2004 02 14 | 750 | 0.2- | 0.1+ | 2004 02 22 | H41 | 0.6+  | 0.2-  |
| 2004 01 28 | 379 | 0.3-  | 0.3-  | 2004 02 14 | 750 | 0.3- | 0.0  | 2004 02 22 | H41 | 0.3+  | 0.4+  |
| 2004 01 28 | 379 | 0.0   | 0.3+  | 2004 02 14 | 750 | 0.0  | 0.1+ | 2004 02 22 | H41 | 0.8+  | 0.3+  |
| 2004 01 28 | 379 | 0.4-  | 0.5+  | 2004 02 14 | 830 | 0.2+ | 0.2- | 2004 02 22 | H41 | 0.2+  | 0.5+  |
| 2004 01 29 | 379 | 0.5+  | 0.4-  | 2004 02 14 | 830 | 0.2+ | 0.1+ | 2004 02 24 | 670 | 0.4+  | 0.1+  |
| 2004 01 29 | 379 | 0.3+  | 0.1+  | 2004 02 14 | 830 | 0.3+ | 0.3+ | 2004 02 24 | 670 | 0.4+  | 0.3+  |
| 2004 01 29 | 379 | 0.2+  | 0.3-  | 2004 02 14 | 830 | 0.4+ | 0.1+ | 2004 02 25 | J95 | 0.2+  | 0.4-  |
| 2004 01 29 | 379 | 0.2-  | 0.2-  | 2004 02 14 | 106 | 1.3+ | 1.2- | 2004 02 25 | J95 | 0.4+  | 0.0   |
| 2004 01 29 | 379 | 0.2-  | 0.1+  | 2004 02 14 | 106 | 0.3- | 0.2- | 2004 02 25 | J95 | 0.1+  | 0.2-  |
| 2004 01 29 | 379 | 0.2+  | 0.4+  | 2004 02 14 | 106 | 0.7- | 0.6- | 2004 02 26 | 750 | 1.2-  | 0.1-  |
| 2004 01 29 | 941 | 0.0   | 0.0   | 2004 02 14 | 106 | 0.1- | 0.0  | 2004 02 26 | 750 | 0.5-  | 0.3-  |
| 2004 01 29 | 941 | 0.1-  | 0.1+  | 2004 02 14 | 106 | 0.1- | 0.0  | 2004 02 26 | 750 | 1.4+  | 0.2+  |
| 2004 01 29 | 941 | 0.1+  | 0.0   | 2004 02 14 | 106 | 0.1+ | 0.1- | 2004 02 26 | 750 | 0.6-  | 0.3-  |
| 2004 01 29 | 941 | 0.2-  | 0.3-  | 2004 02 14 | 106 | 0.1+ | 0.1- | 2004 02 26 | 750 | 1.1+  | 0.0   |
| 2004 01 30 | 379 | 0.3-  | 0.3+  | 2004 02 14 | 106 | 0.2+ | 0.0  | 2004 02 26 | 750 | 1.1+  | 0.7+  |
| 2004 01 30 | 379 | 0.6+  | 0.3-  | 2004 02 14 | 106 | 0.1- | 0.2- | 2004 02 26 | 750 | 0.6-  | 0.1-  |
| 2004 01 30 | 379 | 0.0   | 0.3+  | 2004 02 14 | 213 | 0.1- | 0.3- | 2004 02 26 | 750 | 0.4-  | 0.0   |
| 2004 01 30 | 379 | 0.5+  | 0.3-  | 2004 02 14 | 213 | 0.3+ | 0.4- | 2004 02 26 | A32 | 0.7-  | 0.2+  |
| 2004 01 30 | 379 | 0.3-  | 0.2+  | 2004 02 14 | 213 | 0.7+ | 0.1- | 2004 02 26 | A32 | 0.0   | 0.5+  |
| 2004 01 31 | 704 | 1.1+  | 0.6-  | 2004 02 14 | 213 | 0.1+ | 0.8- | 2004 02 26 | A32 | 0.5-  | 0.9+  |
| 2004 01 31 | 704 | 0.9+  | 0.5-  | 2004 02 14 | 130 | 0.1+ | 0.4- | 2004 02 26 | A32 | 0.1-  | 0.1-  |
| 2004 01 31 | 704 | 0.5+  | 0.1+  | 2004 02 14 | 130 | 0.3+ | 0.2- | 2004 02 26 | A32 | 0.1-  | 0.2+  |
| 2004 01 31 | 704 | 0.3-  | 0.1+  | 2004 02 14 | 130 | 0.1+ | 0.1- | 2004 02 27 | J95 | 0.3+  | 0.6+  |
| 2004 01 31 | 704 | 0.1-  | 0.3-  | 2004 02 14 | 130 | 0.2- | 0.1- | 2004 02 27 | J95 | 0.8-  | 0.3-  |
| 2004 01 31 | H41 | 0.9+  | 0.8-  | 2004 02 14 | A30 | 0.3- | 0.7+ | 2004 02 27 | J95 | 0.2-  | 0.1+  |
| 2004 01 31 | H41 | 0.6+  | 0.2+  | 2004 02 14 | A30 | 0.0  | 0.1- | 2004 02 28 | 670 | 0.0   | 0.8+  |
| 2004 01 31 | H41 | 0.3+  | 0.5-  | 2004 02 14 | A30 | 0.2+ | 0.4+ | 2004 02 28 | 670 | 0.1+  | 0.2-  |
| 2004 01 31 | H41 | 0.5+  | 0.2+  | 2004 02 14 | A30 | 0.1- | 0.3- | 2004 02 28 | 670 | 0.2-  | 0.6-  |
| 2004 01 31 | H41 | 0.2-  | 0.8-  | 2004 02 14 | A30 | 0.0  | 0.3- | 2004 02 29 | J95 | 0.4+  | 0.0   |
| 2004 01 31 | 379 | 0.4+  | 0.9-  | 2004 02 14 | A30 | 0.5- | 0.2+ | 2004 02 29 | J95 | 0.4+  | 0.1-  |
| 2004 01 31 | 379 | 0.7-  | 0.1-  | 2004 02 14 | 939 | 0.2- | 0.5- | 2004 02 29 | J95 | 0.6-  | 0.3-  |
| 2004 01 31 | 379 | 0.3-  | 0.2+  | 2004 02 14 | 939 | 0.2- | 0.3- | 2004 04 25 | 474 | 0.4+  | 0.1+  |
| 2004 02 02 | 143 | 0.1-  | 0.1+  | 2004 02 14 | 939 | 0.2- | 0.1+ | 2004 04 25 | 474 | 0.1-  | 0.2+  |
| 2004 02 02 | 143 | 0.1+  | 0.2-  | 2004 02 15 | 750 | 0.4- | 0.1- | 2004 04 25 | 474 | 0.1-  | 0.2+  |
| 2004 02 02 | 143 | 0.1+  | 0.1-  | 2004 02 15 | 750 | 0.1- | 0.3- | 2004 06 13 | 926 | 1.0+  | 0.6+  |
| 2004 02 05 | 932 | 0.1-  | 0.5+  | 2004 02 15 | 750 | 0.0  | 0.0  | 2004 06 13 | 926 | 0.1-  | 0.7+  |
| 2004 02 05 | 932 | 0.3+  | 0.2+  | 2004 02 15 | 750 | 0.3- | 0.1+ | 2004 06 13 | 926 | 0.1+  | 0.5+  |
| 2004 02 05 | 932 | 0.1-  | 0.2+  | 2004 02 15 | 750 | 0.0  | 0.2- | 2004 07 13 | 474 | 0.7-  | 0.4+  |
| 2004 02 07 | G73 | 0.1-  | 0.0   | 2004 02 16 | H41 | 0.4+ | 0.0  | 2004 07 13 | 474 | 0.0   | 0.1-  |
| 2004 02 07 | G73 | 0.1+  | 0.0   | 2004 02 16 | H41 | 0.0  | 0.1- | 2004 07 13 | 474 | 0.1+  | 0.4+  |
| 2004 02 07 | G73 | 0.0   | 0.1-  | 2004 02 16 | H41 | 0.5+ | 0.5- | 2004 07 13 | 474 | 0.1-  | 0.4+  |
| 2004 02 08 | 750 | 0.1-  | 0.3+  | 2004 02 16 | H41 | 1.4+ | 0.4- | 2004 07 15 | 711 | 0.2+  | 1.1-  |
| 2004 02 08 | 750 | 0.1-  | 0.1-  | 2004 02 16 | H41 | 0.8+ | 0.0  | 2004 07 15 | 711 | 0.1+  | 0.1+  |
| 2004 02 08 | 750 | 0.1-  | 0.1+  | 2004 02 16 | 379 | 0.3- | 0.0  | 2004 07 15 | 711 | 0.4+  | 0.9-  |
| 2004 02 08 | 750 | 0.1-  | 0.3-  | 2004 02 16 | 379 | 0.1+ | 0.4+ | 2004 07 25 | J50 | 0.1-  | 0.3+  |
| 2004 02 08 | 379 | 0.5+  | 0.2-  | 2004 02 16 | 151 | 0.0  | 0.1+ | 2004 07 25 | J50 | 0.2-  | 0.0   |
| 2004 02 08 | 379 | 0.0   | 0.4+  | 2004 02 16 | 151 | 0.1- | 0.2+ | 2004 07 25 | J50 | 0.2+  | 0.1+  |
| 2004 02 08 | 379 | 0.0   | 0.1-  | 2004 02 16 | 151 | 0.4- | 0.0  | 2004 08 19 | 711 | 0.8-  | 0.9-  |
| 2004 02 08 | 379 | 0.7+  | 0.4+  | 2004 02 16 | 151 | 0.1- | 0.1+ | 2004 08 19 | 711 | 0.6-  | 0.6-  |
| 2004 02 08 | A30 | 0.3-  | 0.0   | 2004 02 16 | 151 | 0.3- | 0.1- | 2004 08 19 | 711 | 0.3+  | 0.0   |
| 2004 02 08 | A30 | (2.5+ | 4.1+) | 2004 02 16 | 151 | 0.3- | 0.0  | 2007 12 03 | 291 | 0.2+  | 0.2-  |
| 2004 02 08 | A30 | (0.2+ | 2.0+) | 2004 02 16 | 151 | 0.6- | 0.3+ | 2007 12 03 | 291 | 0.5-  | 0.2+  |
| 2004 02 08 | 951 | 0.1-  | 0.2+  | 2004 02 16 | 151 | 0.1- | 0.2- | 2007 12 03 | 291 | 0.9-  | 0.6-  |
| 2004 02 08 | 951 | 0.5+  | 0.1+  | 2004 02 17 | 493 | 0.1- | 0.1+ | 2007 12 04 | 691 | 0.7+  | 0.4+  |
| 2004 02 09 | 185 | 0.4-  | 0.0   | 2004 02 17 | 493 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.6+  | 0.1-  |
| 2004 02 09 | 185 | 0.6-  | 0.0   | 2004 02 18 | 127 | 0.1+ | 0.3+ |            |     |       |       |

2007 DEC. 24

M.P.O. 129447

**(172679)\* 2003 YW<sub>137</sub> = 2002 RE<sub>144</sub>**

Discovered 2003 Dec. 27 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 61756)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.10832  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22947225 | $\omega$ 163.15270 | +0.01023189   | -0.99760227 |
| <i>a</i> | 2.6423029  | $\Omega$ 286.22048 | +0.90902016   | +0.03779959 |
| <i>e</i> | 0.0407882  | <i>i</i> 4.08779   | +0.41662652   | -0.05797334 |
| <i>P</i> | 4.30       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 11 | 644 | 0.6-  | 0.5+  | 2003 12 29 | 699 | (2.3+ | 0.2-) | 2006 08 15 | D35 | 0.3- | 0.7+ |
| 2002 09 11 | 644 | 0.4-  | 0.4+  | 2004 01 13 | 691 | 0.4+  | 0.5+  | 2006 08 22 | 644 | 0.4+ | 0.5+ |
| 2002 09 11 | 644 | 0.6-  | 0.5+  | 2004 01 13 | 691 | 0.0   | 0.5+  | 2006 08 22 | 644 | 0.2- | 0.7+ |
| 2002 09 13 | 644 | 0.5-  | 0.3+  | 2004 01 13 | 691 | 0.1+  | 0.3+  | 2006 08 22 | 644 | 0.5- | 0.5+ |
| 2002 09 13 | 644 | 0.5-  | 0.3+  | 2004 01 24 | 704 | 0.5-  | 0.9+  | 2007 11 07 | 691 | 0.2- | 0.2- |
| 2002 09 13 | 644 | 0.7-  | 0.0   | 2004 01 24 | 704 | 0.8-  | 0.2+  | 2007 11 07 | 691 | 0.0  | 0.1- |
| 2002 10 04 | 704 | 0.7+  | 1.2+  | 2004 01 24 | 704 | 0.6+  | 0.4+  | 2007 11 07 | 691 | 0.2- | 0.1- |
| 2002 10 04 | 704 | 0.9+  | 0.1+  | 2004 01 24 | 704 | 0.1+  | 0.0   | 2007 11 19 | 691 | 0.5- | 0.3- |
| 2002 10 04 | 704 | (1.7+ | 1.0-) | 2004 01 24 | 704 | 0.4-  | 0.1+  | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2003 12 21 | 691 | 0.2+  | 0.2+  | 2004 01 31 | 691 | 0.1-  | 0.0   | 2007 11 19 | 691 | 0.2- | 0.4- |
| 2003 12 21 | 691 | 0.1+  | 0.1+  | 2004 01 31 | 691 | 0.2-  | 0.2+  | 2007 12 10 | 704 | 0.6+ | 0.4+ |
| 2003 12 21 | 691 | 0.1+  | 0.0   | 2004 01 31 | 691 | 0.0   | 0.3+  | 2007 12 10 | 704 | 0.4+ | 0.1+ |
| 2003 12 27 | 691 | 0.2+  | 0.0   | 2006 05 26 | G96 | 0.4-  | 0.1+  | 2007 12 10 | 704 | 0.4+ | 1.4- |
| 2003 12 27 | 691 | 0.3+  | 0.0   | 2006 05 26 | G96 | 0.3+  | 0.3+  | 2007 12 14 | 704 | 0.3+ | 1.2- |
| 2003 12 27 | 691 | 0.1-  | 0.0   | 2006 05 26 | G96 | 0.1-  | 0.3+  | 2007 12 14 | 704 | 0.5+ | 0.7- |
| 2003 12 29 | 699 | (1.8+ | 1.4+) | 2006 05 26 | G96 | 0.4-  | 0.3-  | 2007 12 14 | 704 | 0.9+ | 0.1- |
| 2003 12 29 | 699 | 0.0   | 1.0+  | 2006 08 15 | D35 | 0.2-  | 0.5+  | 2007 12 14 | 704 | 0.6+ | 0.5- |
| 2003 12 29 | 699 | 0.6+  | 1.2+  | 2006 08 15 | D35 | 0.0   | 0.8+  | 2007 12 14 | 704 | 0.6+ | 0.5- |

**(172680)\* 2003 YK<sub>138</sub>**

Discovered 2003 Dec. 27 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.76394  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21907262 | $\omega$ 127.88101 | +0.12555850   | -0.99085120 |
| <i>a</i> | 2.7252770  | $\Omega$ 314.82718 | +0.88691112   | +0.13445960 |
| <i>e</i> | 0.0860469  | <i>i</i> 4.00107   | +0.44454891   | +0.01159845 |
| <i>P</i> | 4.50       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 09 | 704 | 0.2+ | 2.0+ | 2004 01 22 | 704 | 0.1+ | 0.2+ | 2007 11 07 | 704 | 0.1-  | 0.1-  |
| 2000 03 09 | 704 | 1.0+ | 0.5- | 2004 01 22 | 704 | 0.1+ | 0.5+ | 2007 11 07 | 704 | 0.3+  | 0.5-  |
| 2000 03 09 | 704 | 0.4+ | 0.9+ | 2004 01 22 | 704 | 0.2+ | 0.3+ | 2007 11 12 | G96 | 0.1-  | 0.5-  |
| 2002 09 06 | 704 | 0.1- | 1.0+ | 2004 01 22 | 704 | 0.3+ | 0.6+ | 2007 11 12 | G96 | 0.4-  | 0.3-  |
| 2002 09 06 | 704 | 0.5+ | 0.8+ | 2004 01 26 | 699 | 0.4- | 0.4+ | 2007 11 12 | G96 | 0.7+  | 0.0   |
| 2002 09 06 | 704 | 0.2- | 0.6+ | 2004 01 26 | 699 | 0.1+ | 0.3- | 2007 11 12 | G96 | 0.3+  | 0.4-  |
| 2002 09 06 | 704 | 0.3- | 0.5+ | 2004 01 26 | 699 | 0.0  | 0.5+ | 2007 11 15 | 699 | (0.3+ | 1.8-) |
| 2002 09 06 | 704 | 0.1- | 0.1+ | 2004 01 26 | 699 | 1.2- | 0.2+ | 2007 11 15 | 699 | 0.4+  | 0.3-  |
| 2002 09 14 | 644 | 0.5- | 0.3+ | 2004 01 28 | 691 | 0.0  | 0.2+ | 2007 11 15 | 699 | 0.2+  | 0.4-  |
| 2002 09 14 | 644 | 0.6- | 0.5+ | 2004 01 28 | 691 | 0.1- | 0.2+ | 2007 11 15 | 699 | 0.4-  | 0.6-  |
| 2002 09 14 | 644 | 0.6- | 0.4+ | 2004 01 28 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.5-  | 0.1-  |
| 2002 10 04 | 704 | 0.2+ | 0.2- | 2004 01 30 | 704 | 0.5+ | 0.5- | 2007 11 18 | 704 | 0.3+  | 0.0   |
| 2002 10 04 | 704 | 0.5- | 0.4- | 2004 01 30 | 704 | 0.5+ | 0.3- | 2007 11 18 | 704 | 0.3-  | 0.4+  |
| 2002 10 04 | 704 | 1.1- | 0.1- | 2004 01 30 | 704 | 0.4+ | 0.6+ | 2007 11 18 | 704 | 0.7-  | 0.4+  |
| 2002 10 04 | 704 | 0.7- | 0.2- | 2004 01 30 | 704 | 0.2- | 0.4+ | 2007 11 18 | 704 | 0.1+  | 0.4+  |
| 2002 11 06 | 291 | 0.2+ | 0.1+ | 2004 01 30 | 704 | 0.3+ | 0.0  | 2007 11 20 | 704 | 1.1+  | 0.2-  |
| 2002 11 06 | 291 | 0.1+ | 0.4+ | 2004 02 11 | 691 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.0   | 0.4-  |
| 2002 11 06 | 291 | 0.0  | 0.2+ | 2004 02 11 | 691 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.4-  | 0.8-  |
| 2003 12 27 | 704 | 0.3- | 0.6+ | 2004 02 11 | 691 | 0.0  | 0.1+ | 2007 11 20 | 704 | 0.6-  | 0.6-  |
| 2003 12 27 | 704 | 0.2+ | 0.5- | 2004 02 11 | 699 | 0.2- | 0.3+ | 2007 11 20 | 704 | 0.1+  | 0.3-  |
| 2003 12 27 | 704 | 1.0+ | 0.6- | 2004 02 11 | 699 | 0.1+ | 0.2+ | 2007 12 04 | 699 | 0.8+  | 0.4-  |
| 2003 12 27 | 704 | 0.0  | 0.0  | 2004 02 11 | 699 | 0.3+ | 0.2- | 2007 12 04 | 699 | 0.3-  | 0.7-  |
| 2003 12 29 | 699 | 0.6- | 0.3- | 2004 02 11 | 699 | 0.5- | 0.4- | 2007 12 04 | 699 | 0.4-  | 0.7+  |
| 2003 12 29 | 699 | 0.2- | 0.8- | 2004 02 12 | 291 | 0.0  | 0.4- | 2007 12 04 | 699 | 0.5+  | 1.0-  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 29 | 699 | 0.2- | 0.1+ | 2004 02 12 | 291 | 0.1- | 0.4- | 2007 12 12 | 704 | (0.2+ | 2.0+) |
| 2003 12 29 | 699 | 0.8- | 0.2- | 2004 02 12 | 291 | 0.1- | 0.4- | 2007 12 12 | 704 | 1.0-  | 0.6+  |
| 2004 01 16 | 644 | 0.3+ | 0.4+ | 2004 02 26 | 704 | 0.2+ | 0.5+ | 2007 12 12 | 704 | 0.3-  | 0.4+  |
| 2004 01 16 | 644 | 0.4+ | 0.5+ | 2004 02 26 | 704 | 0.2- | 0.4+ | 2007 12 12 | 704 | 0.6-  | 0.3-  |
| 2004 01 16 | 644 | 0.3+ | 0.3+ | 2004 02 26 | 704 | 0.2+ | 0.6+ | 2007 12 13 | 704 | 0.3+  | 1.3+  |
| 2004 01 19 | 691 | 0.1- | 0.0  | 2004 04 13 | 645 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.1-  | 0.7+  |
| 2004 01 19 | 691 | 0.1- | 0.0  | 2004 04 13 | 645 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.9+  | 0.5-  |
| 2004 01 19 | 703 | 0.1- | 0.1- | 2006 07 21 | G96 | 0.2+ | 0.2+ | 2007 12 13 | 704 | 0.5-  | 0.9+  |
| 2004 01 19 | 703 | 0.8- | 0.7+ | 2006 07 21 | G96 | 0.2- | 0.1+ | 2007 12 13 | 704 | 0.0   | 1.2+  |
| 2004 01 19 | 703 | 0.4+ | 0.7+ | 2006 07 21 | G96 | 0.2- | 0.1- | 2007 12 15 | 704 | (2.2+ | 1.9-) |
| 2004 01 19 | 691 | 0.0  | 0.1- | 2006 07 21 | G96 | 0.0  | 0.1- | 2007 12 15 | 704 | (1.3+ | 1.7-) |
| 2004 01 19 | 703 | 0.2- | 0.8+ | 2007 11 07 | 704 | 0.4+ | 0.3- | 2007 12 15 | 704 | 0.5+  | 1.3-  |
| 2004 01 22 | 704 | 0.0  | 0.0  | 2007 11 07 | 704 | 0.3+ | 0.4- |            |     |       |       |

**(172681)\* 2003 YR<sub>146</sub>**

Discovered 2003 Dec. 28 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.68392  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24344408 | $\omega$ 51.23659  | -0.91966120   | -0.11057896 |
| <i>a</i> | 2.5402117  | $\Omega$ 119.31317 | +0.05099830   | -0.98504172 |
| <i>e</i> | 0.1819219  | <i>i</i> 25.60458  | +0.38938729   | -0.13215563 |
| <i>P</i> | 4.05       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 27 | 704 | 0.1+ | 0.3- | 2004 02 14 | 704 | 0.1+  | 0.3-  | 2005 06 30 | 691 | 0.2-  | 0.3-  |
| 2000 03 27 | 704 | 0.2- | 0.4- | 2004 02 14 | 704 | 0.7-  | 0.9-  | 2005 06 30 | 691 | 0.2+  | 0.2+  |
| 2000 03 27 | 704 | 0.4- | 0.6- | 2004 02 14 | 704 | 0.0   | 0.4-  | 2005 06 30 | 691 | 0.2-  | 0.2+  |
| 2000 03 27 | 704 | 0.3+ | 0.6+ | 2004 02 14 | 704 | 0.3-  | 0.5-  | 2005 07 11 | 691 | 0.2-  | 0.2-  |
| 2000 03 27 | 704 | 0.6- | 0.1+ | 2004 02 14 | 704 | 0.1-  | 0.9-  | 2005 07 11 | 691 | 0.1+  | 0.1-  |
| 2000 04 12 | 699 | 0.3+ | 0.9- | 2004 03 01 | 704 | 0.8-  | 0.1+  | 2005 07 11 | 691 | 0.1-  | 0.0   |
| 2000 04 12 | 699 | 0.9- | 0.5- | 2004 03 01 | 704 | 0.3-  | 0.1+  | 2005 07 30 | E12 | 0.1+  | 0.0   |
| 2000 04 12 | 699 | 0.5+ | 0.0  | 2004 03 01 | 704 | 0.5-  | 0.1+  | 2005 07 30 | E12 | 0.5+  | 0.5+  |
| 2000 04 12 | 699 | 0.3- | 0.5- | 2004 03 01 | 704 | 0.7-  | 0.0   | 2005 07 30 | E12 | 1.4+  | 0.6+  |
| 2003 12 28 | 704 | 0.5+ | 0.4+ | 2004 03 01 | 704 | 0.1-  | 0.4-  | 2005 07 30 | E12 | 0.3-  | 0.5+  |
| 2003 12 28 | 704 | 0.2- | 0.9+ | 2004 03 24 | 703 | 0.7-  | 0.7+  | 2007 11 09 | G96 | 0.6-  | 0.4-  |
| 2003 12 28 | 704 | 0.4+ | 1.1+ | 2004 03 24 | 703 | 0.2+  | 0.5+  | 2007 11 09 | G96 | 0.8-  | 0.1+  |
| 2003 12 28 | 704 | 1.2+ | 0.1- | 2004 03 24 | 703 | 0.1+  | 0.0   | 2007 11 09 | G96 | 0.1-  | 0.3-  |
| 2003 12 28 | 704 | 0.4+ | 0.5- | 2004 03 24 | 703 | 0.1-  | 0.1-  | 2007 11 09 | G96 | 0.3-  | 0.2-  |
| 2003 12 30 | 704 | 0.7+ | 0.7+ | 2004 04 16 | 703 | 0.6-  | 0.8+  | 2007 12 06 | 703 | 0.3-  | 0.3-  |
| 2003 12 30 | 704 | 0.0  | 0.1+ | 2004 04 16 | 703 | (0.6+ | 1.6-) | 2007 12 06 | 703 | 0.9-  | 0.2+  |
| 2003 12 30 | 704 | 0.5+ | 1.1+ | 2004 04 16 | 703 | 0.8+  | 0.4+  | 2007 12 06 | 703 | 0.2-  | 0.2-  |
| 2004 01 31 | 704 | 0.4+ | 0.0  | 2004 04 16 | 703 | 0.1+  | 0.7+  | 2007 12 06 | 703 | (1.8- | 0.9-) |
| 2004 01 31 | 704 | 0.6+ | 0.1+ | 2004 05 11 | 704 | 0.9+  | 0.2-  | 2007 12 13 | 704 | 0.2+  | 0.3-  |
| 2004 01 31 | 704 | 0.0  | 0.2- | 2004 05 11 | 704 | 0.2+  | 0.5-  | 2007 12 13 | 704 | 0.7+  | 0.0   |
| 2004 01 31 | 704 | 0.1+ | 0.5+ | 2004 05 11 | 704 | 0.7+  | 1.0+  | 2007 12 13 | 704 | 0.6+  | 0.3-  |
| 2004 01 31 | 704 | 0.2- | 0.0  | 2004 05 11 | 704 | 0.8+  | 0.6+  | 2007 12 13 | 704 | 0.0   | 0.9+  |

**(172682)\* 2003 YD<sub>147</sub> = 2005 JB<sub>158</sub>**

Discovered 2003 Dec. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPO* 86214)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 229.66845  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22947790 | $\omega$ 228.24119 | -0.97220775   | +0.19491046 |
| <i>a</i> | 2.6422595  | $\Omega$ 322.45559 | -0.09470676   | -0.83405308 |
| <i>e</i> | 0.1888993  | <i>i</i> 12.28884  | -0.21410912   | -0.51610597 |
| <i>P</i> | 4.30       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

||
||
||

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 13 | 644 | 0.5− | 0.6+ | 2005 04 15 | E12 | 0.6− | 0.5+ | 2006 08 28 | 703 | 0.1−  | 0.1+  |
| 2003 12 17 | 704 | 0.0  | 0.5− | 2005 04 15 | E12 | 0.0  | 0.4+ | 2006 08 28 | 703 | 0.6+  | 0.9−  |
| 2003 12 17 | 704 | 0.1− | 0.4+ | 2005 05 05 | E12 | 0.2− | 0.0  | 2006 08 29 | 691 | 0.0   | 0.0   |
| 2003 12 17 | 704 | 0.1− | 0.3− | 2005 05 05 | E12 | 0.1− | 0.2+ | 2006 08 29 | 691 | 0.0   | 0.0   |
| 2003 12 17 | 704 | 0.1− | 0.9+ | 2005 05 05 | E12 | 0.3+ | 0.0  | 2006 08 29 | 691 | 0.1−  | 0.3+  |
| 2003 12 29 | 704 | 0.2+ | 0.7+ | 2005 05 05 | E12 | 0.2+ | 0.1− | 2006 09 27 | 691 | 0.1−  | 0.1+  |
| 2003 12 29 | 704 | 0.3− | 0.9+ | 2005 05 16 | E12 | 0.0  | 0.2+ | 2006 09 27 | 691 | 0.2+  | 0.2+  |
| 2003 12 29 | 704 | 0.4− | 0.6+ | 2005 05 16 | E12 | 0.2− | 0.4+ | 2006 09 27 | 691 | 0.2+  | 0.2+  |
| 2003 12 29 | 704 | 0.1+ | 0.0  | 2005 05 16 | E12 | 0.1− | 0.1+ | 2007 11 12 | 703 | 0.2−  | 0.6+  |
| 2003 12 29 | 704 | 0.1− | 0.1− | 2005 05 16 | E12 | 0.3+ | 0.2+ | 2007 11 12 | 703 | (2.2− | 0.0 ) |
| 2003 12 30 | 704 | 0.6− | 0.8+ | 2005 05 29 | E12 | 0.4+ | 0.4+ | 2007 11 12 | 703 | 0.4+  | 1.3+  |
| 2003 12 30 | 704 | 1.1+ | 0.9− | 2005 05 29 | E12 | 0.8− | 0.3− | 2007 11 12 | 703 | 1.2−  | 1.0−  |
| 2003 12 30 | 704 | 0.5+ | 1.4+ | 2005 05 29 | E12 | 0.9+ | 0.1− | 2007 12 03 | 704 | 0.5−  | 0.0   |
| 2003 12 30 | 704 | 0.2− | 0.6+ | 2005 05 29 | E12 | 0.1+ | 0.2+ | 2007 12 03 | 704 | 0.1+  | 0.2+  |
| 2005 03 20 | E12 | 0.7+ | 0.8+ | 2005 07 27 | E12 | 1.0+ | 1.2+ | 2007 12 03 | 704 | 0.4−  | 0.7+  |

**(172683)\* 2003 YX<sub>148</sub> = 2005 JG<sub>165</sub>**

Discovered 2003 Dec. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 76357)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 302.04286  | (2000.0) | <i>P</i> | <i>Q</i>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.22741171 | $\omega$ | 60.97261 | −0.55311597              |
| <i>a</i> | 2.6582399  | $\Omega$ | 64.64176 | +0.63947161              |
| <i>e</i> | 0.1079517  | <i>i</i> | 15.62811 | +0.53398387              |
| <i>P</i> | 4.33       | <i>H</i> | 15.5     | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 01 | 644 | 0.6− | 0.6+ | 2005 06 11 | 691 | 0.1+ | 0.4+ | 2007 11 08 | H07 | 0.1+  | 0.2+  |
| 2002 09 01 | 644 | 0.0  | 0.6+ | 2005 06 11 | 691 | 0.7+ | 0.4+ | 2007 11 08 | H07 | 0.1+  | 0.5+  |
| 2002 09 01 | 644 | 0.5− | 0.6+ | 2005 06 11 | 691 | 0.1+ | 0.3+ | 2007 11 08 | H07 | (1.7+ | 0.9−) |
| 2003 12 17 | 704 | 0.3− | 0.2− | 2005 06 13 | G96 | 0.4− | 0.1− | 2007 11 08 | H07 | (0.5+ | 2.8+) |
| 2003 12 17 | 704 | 0.3+ | 0.3+ | 2005 06 13 | G96 | 0.1− | 0.2+ | 2007 11 08 | H07 | (0.1+ | 2.2+) |
| 2003 12 17 | 704 | 0.2− | 0.3− | 2005 06 13 | G96 | 0.0  | 0.0  | 2007 11 08 | H07 | (1.6− | 2.0+) |
| 2003 12 17 | 704 | 0.4− | 0.1+ | 2005 06 13 | G96 | 0.1+ | 0.1− | 2007 11 08 | H07 | 0.0   | 0.8+  |
| 2003 12 17 | 699 | 0.6− | 0.0  | 2005 06 14 | 291 | 0.1+ | 0.2+ | 2007 11 08 | H07 | 0.3+  | 0.7+  |
| 2003 12 17 | 699 | 0.0  | 0.6− | 2005 06 14 | 291 | 0.2− | 0.2+ | 2007 11 08 | H07 | 0.3+  | 0.2−  |
| 2003 12 17 | 699 | 0.4+ | 0.5− | 2005 06 14 | 291 | 0.7+ | 0.2+ | 2007 11 09 | H07 | 0.1−  | 0.9+  |
| 2003 12 17 | 699 | 0.7− | 0.2+ | 2007 10 16 | D29 | 0.2− | 0.5− | 2007 11 09 | H07 | 0.2+  | 0.5+  |
| 2003 12 29 | 704 | 0.5+ | 0.9+ | 2007 10 16 | D29 | 0.3+ | 0.4+ | 2007 11 09 | H07 | 0.0   | 1.1+  |
| 2003 12 29 | 704 | 0.3+ | 0.3+ | 2007 10 16 | D29 | 1.1− | 0.9+ | 2007 11 09 | H07 | 0.1−  | 0.1−  |
| 2003 12 29 | 704 | 0.3+ | 0.6+ | 2007 10 16 | D29 | 0.2− | 0.3+ | 2007 11 09 | H07 | 0.4+  | 0.3+  |
| 2003 12 29 | 704 | 0.1+ | 0.7+ | 2007 10 20 | G96 | 0.0  | 0.0  | 2007 11 09 | H07 | 0.2−  | 0.5+  |
| 2003 12 29 | 704 | 0.6+ | 0.6+ | 2007 10 20 | G96 | 0.1− | 0.0  | 2007 11 12 | H07 | 0.6−  | 0.5+  |
| 2003 12 30 | 704 | 0.1− | 0.1− | 2007 10 20 | G96 | 0.2− | 0.1+ | 2007 11 12 | H07 | 0.1−  | 0.1−  |
| 2003 12 30 | 704 | 0.3− | 0.1+ | 2007 11 01 | D35 | 0.0  | 0.4+ | 2007 11 12 | H07 | 0.2−  | 0.2+  |
| 2003 12 30 | 704 | 0.3+ | 0.0  | 2007 11 01 | D35 | 0.5+ | 0.4+ | 2007 11 14 | 704 | 0.4−  | 0.1+  |
| 2003 12 30 | 704 | 0.3− | 0.7+ | 2007 11 01 | D35 | 0.2− | 0.4+ | 2007 11 14 | 704 | 0.2−  | 1.2+  |
| 2005 05 10 | G96 | 0.2− | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.3−  | 0.2+  |
| 2005 05 10 | G96 | 0.1− | 0.2+ | 2007 11 04 | 691 | 0.3− | 0.2+ | 2007 11 14 | 704 | 0.4+  | 0.6+  |
| 2005 05 10 | G96 | 0.4− | 0.2+ | 2007 11 04 | 691 | 0.5− | 0.1+ | 2007 11 14 | 704 | 0.6+  | 0.6−  |
| 2005 05 10 | G96 | 0.2− | 0.3+ | 2007 11 05 | 704 | 0.1+ | 0.5+ | 2007 12 03 | 703 | 0.1−  | 0.2−  |
| 2005 05 18 | 644 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.3+ | 0.0  | 2007 12 03 | 703 | 0.6−  | 0.2+  |
| 2005 05 18 | 644 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.8− | 0.4+ | 2007 12 03 | 703 | 0.1−  | 0.3+  |
| 2005 05 18 | 644 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.3− | 0.0  | 2007 12 03 | 703 | 0.2−  | 0.2+  |
| 2005 06 06 | 691 | 0.1− | 0.4+ | 2007 11 08 | 691 | 0.5+ | 0.1− | 2007 12 10 | 704 | 0.1−  | 0.6+  |
| 2005 06 06 | 691 | 0.9+ | 0.7+ | 2007 11 08 | 691 | 0.5− | 0.1− | 2007 12 10 | 704 | 0.2+  | 0.5+  |
| 2005 06 06 | 691 | 0.4+ | 0.4+ | 2007 11 08 | 691 | 0.2+ | 0.3− | 2007 12 10 | 704 | 0.1−  | 0.3+  |

**(172684)\* 2003 YQ<sub>149</sub>**

Discovered 2003 Dec. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 14.54399   | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21849622 | $\omega$ | 338.38039 | +0.88863183              |
| <i>a</i> | 2.7300678  | $\Omega$ | 48.10121  | +0.44600935              |
| <i>e</i> | 0.1213495  | <i>i</i> | 12.44700  | +0.10681355              |
| <i>P</i> | 4.51       | <i>H</i> | 15.8      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 13 | 704 | 0.4−  | 0.1+  | 2007 10 08 | G96 | 0.5+  | 0.1−  | 2007 11 04 | 691 | 0.1− | 0.1− |
| 2002 08 13 | 704 | 0.8−  | 0.8+  | 2007 10 08 | G96 | 0.2+  | 0.3−  | 2007 11 04 | 691 | 0.2− | 0.2− |
| 2002 08 13 | 704 | 0.4−  | 0.0   | 2007 10 08 | 691 | 0.1−  | 0.1−  | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2002 09 10 | 644 | 0.3−  | 0.4+  | 2007 10 11 | 704 | 1.0+  | 0.2−  | 2007 11 05 | 704 | 0.1− | 0.2+ |
| 2002 09 10 | 644 | 0.1−  | 0.2+  | 2007 10 11 | 704 | (0.5+ | 1.8+) | 2007 11 05 | 704 | 0.3+ | 0.4+ |
| 2002 09 10 | 644 | 0.2−  | 0.2+  | 2007 10 11 | 704 | 0.2+  | 1.1+  | 2007 11 05 | 704 | 1.1+ | 0.2− |
| 2002 09 10 | 644 | 0.1−  | 0.3+  | 2007 10 11 | 704 | 0.4+  | 0.8+  | 2007 11 05 | 704 | 1.1+ | 0.2− |
| 2002 09 10 | 644 | 0.2−  | 0.1+  | 2007 10 11 | 704 | 0.0   | 0.4+  | 2007 11 05 | 704 | 0.4+ | 0.1− |
| 2002 09 10 | 644 | 0.2+  | 0.3+  | 2007 10 12 | 691 | 0.0   | 0.3−  | 2007 11 05 | G96 | 0.3+ | 0.3− |
| 2002 09 17 | 644 | 0.0   | 0.7+  | 2007 10 12 | 691 | 0.3−  | 0.1−  | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 2002 09 17 | 644 | 0.2−  | 0.8+  | 2007 10 12 | 691 | 0.1−  | 0.2−  | 2007 11 05 | G96 | 0.4+ | 0.4− |
| 2002 09 17 | 644 | 0.0   | 0.8+  | 2007 10 20 | 703 | 0.5−  | 0.1−  | 2007 11 05 | G96 | 0.5+ | 0.3− |
| 2003 12 17 | 704 | 0.9+  | 0.6−  | 2007 10 20 | 703 | 1.5−  | 0.4−  | 2007 11 07 | 703 | 0.1+ | 0.3− |
| 2003 12 17 | 704 | 0.7+  | 0.5+  | 2007 10 20 | 703 | 1.5−  | 0.7+  | 2007 11 07 | 703 | 0.8− | 0.2+ |
| 2003 12 17 | 704 | 0.4+  | 0.6+  | 2007 10 20 | 703 | 1.0−  | 0.7−  | 2007 11 07 | 703 | 0.5− | 0.3− |
| 2003 12 17 | 704 | 0.3+  | 0.4+  | 2007 10 22 | A24 | 0.1+  | 0.3−  | 2007 11 07 | 703 | 0.4− | 0.4− |
| 2003 12 29 | 704 | 1.0+  | 1.0−  | 2007 10 22 | A24 | 0.1+  | 0.1−  | 2007 11 11 | 699 | 0.5+ | 0.6+ |
| 2003 12 29 | 704 | 0.6−  | 0.5+  | 2007 10 22 | A24 | 0.3+  | 0.1+  | 2007 11 11 | 699 | 0.2− | 0.6+ |
| 2003 12 29 | 704 | (0.9+ | 1.9−) | 2007 10 22 | A24 | 0.1+  | 0.2+  | 2007 11 11 | 699 | 1.2+ | 0.4− |
| 2003 12 29 | 704 | 0.9−  | 0.4−  | 2007 10 22 | A24 | 0.1+  | 0.2+  | 2007 11 11 | 699 | 0.4+ | 0.0  |
| 2003 12 30 | 704 | 0.0   | 0.4+  | 2007 10 22 | A24 | 0.5+  | 0.3+  | 2007 11 15 | 704 | 0.2+ | 1.4+ |
| 2003 12 30 | 704 | 0.1−  | 0.3+  | 2007 10 30 | G96 | 0.4+  | 0.1−  | 2007 11 15 | 704 | 0.2+ | 0.7+ |
| 2003 12 30 | 704 | 0.2−  | 0.3+  | 2007 10 30 | G96 | 0.0   | 0.4−  | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 2003 12 30 | 704 | 0.5−  | 0.4+  | 2007 10 30 | G96 | 0.2+  | 0.4−  | 2007 11 15 | 704 | 0.4− | 1.1+ |
| 2003 12 30 | 704 | 0.2+  | 0.7+  | 2007 10 30 | G96 | 0.5+  | 0.2−  | 2007 11 15 | 704 | 0.2+ | 0.8+ |
| 2004 01 19 | 704 | 0.9−  | 0.1−  | 2007 10 31 | 691 | 0.1−  | 0.0   | 2007 12 03 | 703 | 0.1− | 0.9− |
| 2004 01 19 | 704 | 0.4+  | 0.6−  | 2007 10 31 | 691 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.2− | 0.8− |
| 2004 01 19 | 704 | 0.5−  | 0.4+  | 2007 10 31 | 691 | 0.3−  | 0.0   | 2007 12 03 | 703 | 0.4− | 0.6+ |
| 2004 01 19 | 704 | 0.3+  | 0.5+  | 2007 11 03 | G96 | 1.0+  | 1.2−  | 2007 12 03 | 703 | 1.0− | 0.0  |
| 2005 05 08 | 691 | 0.2+  | 0.6+  | 2007 11 03 | G96 | 0.2+  | 0.1−  | 2007 12 15 | 704 | 0.7+ | 1.2+ |
| 2005 05 08 | 691 | 0.2+  | 0.2+  | 2007 11 03 | G96 | 0.4+  | 0.0   | 2007 12 15 | 704 | 0.2− | 1.5+ |
| 2005 05 08 | 691 | 0.3+  | 0.4+  | 2007 11 03 | G96 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.0  | 1.3+ |
| 2007 10 08 | 691 | 0.1+  | 0.2+  | 2007 11 03 | 699 | 0.1+  | 0.5+  | 2007 12 15 | 704 | 0.1+ | 0.2+ |
| 2007 10 08 | 691 | 0.6−  | 0.0   | 2007 11 03 | 699 | 0.4−  | 0.7−  | 2007 12 15 | 704 | 0.5− | 0.3+ |
| 2007 10 08 | G96 | 0.4+  | 0.1−  | 2007 11 03 | 699 | 0.1+  | 0.2+  |            |     |      |      |
| 2007 10 08 | G96 | 0.1+  | 0.0   | 2007 11 03 | 699 | 0.9−  | 0.8−  |            |     |      |      |

**(172685)\* 2003 YG<sub>155</sub> = 2000 FG<sub>18</sub>**

Discovered 2003 Dec. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 57578)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 298.77165  | (2000.0) | <i>P</i> | <i>Q</i>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.22281433 | $\omega$ | 78.61494 | −0.66366553              |
| <i>a</i> | 2.6946807  | $\Omega$ | 54.63664 | +0.56432202              |
| <i>e</i> | 0.1079621  | <i>i</i> | 13.32964 | +0.49100786              |
| <i>P</i> | 4.42       | <i>H</i> | 15.3     | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 15 | 691 | 0.2− | 0.5− | 2004 01 18 | 703 | 0.7−  | 0.5−  | 2006 08 25 | E12 | (0.8+ | 2.4+) |
| 1998 11 15 | 691 | 0.2− | 0.5− | 2004 01 19 | 704 | 0.4+  | 0.8+  | 2006 08 25 | E12 | (0.7+ | 2.0+) |
| 1998 11 15 | 691 | 0.2− | 0.3− | 2004 01 19 | 704 | 0.3−  | 0.2−  | 2006 08 25 | E12 | 0.4+  | 1.4+  |
| 1998 11 26 | 691 | 0.4+ | 0.1− | 2004 01 19 | 704 | 0.1+  | 0.5+  | 2007 10 16 | G96 | 0.2+  | 0.2−  |
| 1998 11 26 | 691 | 0.5+ | 0.1− | 2004 01 19 | 704 | (0.6+ | 2.0+) | 2007 10 16 | G96 | 0.4+  | 0.3−  |
| 1998 11 26 | 691 | 0.3− | 1.6+ | 2004 01 28 | 703 | 0.1+  | 0.6−  | 2007 10 16 | G96 | 0.1+  | 0.5−  |
| 2000 03 29 | 704 | 0.3+ | 0.2+ | 2004 01 28 | 703 | 0.5−  | 0.4−  | 2007 11 03 | D35 | 0.7+  | 0.2+  |
| 2000 03 29 | 704 | 0.0  | 0.1+ | 2004 01 28 | 703 | 0.4−  | 0.5−  | 2007 11 03 | D35 | 0.1−  | 0.2+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 29 | 704 | 0.3+  | 0.1+  | 2004 01 28 | 703 | 0.2-  | 0.3+  | 2007 11 03 | D35 | 0.3+ | 0.2+ |
| 2000 03 29 | 704 | 0.1+  | 0.7+  | 2004 01 30 | 699 | 0.1-  | 0.3-  | 2007 11 06 | 691 | 0.4- | 0.0  |
| 2000 03 29 | 704 | 0.3-  | 0.4+  | 2004 01 30 | 699 | 0.6-  | 1.1-  | 2007 11 06 | 691 | 0.4- | 0.0  |
| 2000 04 03 | 704 | 0.1+  | 0.1+  | 2004 01 30 | 699 | 0.4-  | 0.4+  | 2007 11 06 | 691 | 0.3- | 0.4+ |
| 2000 04 03 | 704 | 0.8-  | 1.0+  | 2004 01 30 | 699 | 0.7-  | 0.4-  | 2007 11 13 | 703 | 0.4- | 0.3- |
| 2000 04 03 | 704 | 1.8+  | 0.9+  | 2004 02 02 | 704 | 0.2+  | 0.3+  | 2007 11 13 | 703 | 0.4- | 1.0- |
| 2000 04 03 | 704 | 0.7+  | 1.0+  | 2004 02 02 | 704 | 0.3+  | 0.0   | 2007 11 13 | 703 | 0.1- | 0.4- |
| 2003 11 19 | 704 | 0.6-  | 0.1+  | 2004 02 02 | 704 | 0.4+  | 0.3+  | 2007 11 13 | 703 | 0.3+ | 0.1- |
| 2003 11 19 | 704 | 1.2+  | 0.6+  | 2004 02 02 | 704 | 0.0   | 0.6+  | 2007 11 18 | 704 | 0.6+ | 0.5+ |
| 2003 11 19 | 704 | 0.6-  | 0.3+  | 2004 02 10 | 704 | 0.0   | 0.3-  | 2007 11 18 | 704 | 0.3+ | 0.1+ |
| 2003 11 19 | 704 | 0.5+  | 0.8+  | 2004 02 10 | 704 | 0.1+  | 0.0   | 2007 11 18 | 704 | 0.0  | 0.8+ |
| 2003 12 03 | 704 | (0.5- | 1.6+) | 2004 02 10 | 704 | 0.3-  | 0.6+  | 2007 11 18 | 704 | 0.5+ | 1.2+ |
| 2003 12 03 | 704 | 0.7-  | 0.0   | 2004 02 10 | 704 | 0.2-  | 1.1+  | 2007 11 18 | 704 | 0.1+ | 0.1- |
| 2003 12 03 | 704 | (1.6- | 2.5+) | 2004 02 10 | 704 | 0.1+  | 0.9-  | 2007 11 20 | 704 | 0.0  | 0.9+ |
| 2003 12 03 | 704 | (1.0- | 2.4+) | 2004 02 14 | 703 | 0.3+  | 0.1+  | 2007 11 20 | 704 | 0.8+ | 0.3+ |
| 2003 12 17 | 699 | 0.4-  | 0.1-  | 2004 02 14 | 703 | 0.2+  | 0.8-  | 2007 11 20 | 704 | 0.4- | 0.4+ |
| 2003 12 17 | 699 | 0.2-  | 0.3+  | 2004 02 14 | 703 | 0.4+  | 0.8-  | 2007 11 20 | 704 | 0.3+ | 1.1+ |
| 2003 12 17 | 699 | 0.3-  | 0.2+  | 2004 02 14 | 703 | 0.3+  | 0.3-  | 2007 11 20 | 704 | 0.3+ | 0.6+ |
| 2003 12 17 | 699 | 0.2+  | 0.0   | 2004 02 16 | 201 | 0.3-  | 0.2+  | 2007 11 20 | 691 | 0.5- | 0.1- |
| 2003 12 30 | 704 | 0.3+  | 0.3-  | 2004 02 16 | 201 | 0.2-  | 0.2-  | 2007 11 20 | 691 | 0.3- | 0.0  |
| 2003 12 30 | 704 | 0.1+  | 0.1-  | 2004 02 16 | 201 | 0.0   | 0.1+  | 2007 11 20 | 691 | 0.2- | 0.2- |
| 2003 12 30 | 704 | 0.3+  | 0.3-  | 2004 02 16 | 201 | 0.2+  | 0.2-  | 2007 12 13 | 704 | 0.4+ | 0.1- |
| 2003 12 30 | 704 | 0.3-  | 0.3-  | 2004 02 17 | 201 | 0.2-  | 0.2-  | 2007 12 13 | 704 | 0.5+ | 0.1- |
| 2003 12 30 | 704 | 0.1-  | 0.2-  | 2004 02 26 | 703 | 0.9-  | 0.7-  | 2007 12 13 | 704 | 0.5+ | 1.1- |
| 2004 01 02 | 704 | 0.6+  | 1.1+  | 2004 02 26 | 703 | 0.8-  | 1.0-  | 2007 12 13 | 704 | 0.2- | 0.8- |
| 2004 01 02 | 704 | 1.4+  | 0.9+  | 2004 02 26 | 703 | (1.7- | 0.8-) | 2007 12 13 | 704 | 0.3+ | 0.7- |
| 2004 01 02 | 704 | (1.8+ | 1.3+) | 2004 02 26 | 703 | 0.7-  | 1.0-  | 2007 12 15 | 704 | 0.3+ | 0.5+ |
| 2004 01 02 | 704 | 1.5+  | 0.1+  | 2004 03 25 | 704 | 0.5+  | 0.3-  | 2007 12 15 | 704 | 0.5+ | 0.0  |
| 2004 01 02 | 704 | 1.4+  | 1.2+  | 2004 03 25 | 704 | 0.2+  | 0.1-  | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 2004 01 18 | 703 | 0.0   | 0.0   | 2004 03 25 | 704 | 0.1+  | 0.7-  | 2007 12 15 | 704 | 0.7+ | 0.2+ |
| 2004 01 18 | 703 | 0.1-  | 0.2+  | 2004 03 25 | 704 | 0.0   | 0.5-  | 2007 12 15 | 704 | 0.3+ | 0.1- |
| 2004 01 18 | 703 | 0.6+  | 0.7-  | 2006 08 25 | E12 | (0.0  | 1.6+) |            |     |      |      |

**(172686)\* 2003 YR<sub>155</sub>**

Discovered 2003 Dec. 26 by NEAT at Haleakala.

|                                         |            |       |          |            |     |             |      |             |          |       |       |
|-----------------------------------------|------------|-------|----------|------------|-----|-------------|------|-------------|----------|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |          |            |     | MPC         |      |             |          |       |       |
| <i>M</i>                                | 10.33314   |       | (2000.0) |            |     | <b>P</b>    |      |             | <b>Q</b> |       |       |
| <i>n</i>                                | 0.23716953 |       | $\omega$ | 220.59082  |     | +0.59455080 |      | -0.80303443 |          |       |       |
| <i>a</i>                                | 2.5848189  |       | $\Omega$ | 193.09803  |     | +0.77625258 |      | +0.58641044 |          |       |       |
| <i>e</i>                                | 0.2345985  |       | <i>i</i> | 10.31014   |     | +0.20962174 |      | +0.10610612 |          |       |       |
| <i>P</i>                                | 4.16       |       | <i>H</i> | 15.5       |     | <i>G</i>    | 0.15 |             | <i>U</i> | 1     |       |
| Residuals in seconds of arc             |            |       |          |            |     |             |      |             |          |       |       |
| 1996 03 19                              | 691        | 0.1-  | 0.3-     | 2002 08 04 | 644 | 0.1-        | 0.6+ | 2004 01 29  | 704      | 0.6-  | 0.3+  |
| 1996 03 19                              | 691        | 0.2-  | 0.3-     | 2003 12 21 | 608 | 0.2+        | 0.3+ | 2004 01 29  | 704      | 0.2+  | 0.1-  |
| 1996 03 19                              | 691        | 0.2-  | 0.3-     | 2003 12 21 | 608 | 0.2+        | 0.2+ | 2004 01 29  | 704      | 0.5+  | 0.4+  |
| 2000 02 06                              | 704        | 0.1-  | 1.0+     | 2003 12 21 | 608 | 0.4+        | 0.0  | 2004 03 29  | 413      | 0.1+  | 0.1+  |
| 2000 02 06                              | 704        | 0.8+  | 0.2+     | 2003 12 26 | 608 | 0.4+        | 0.2- | 2004 03 29  | 413      | 0.2+  | 0.3-  |
| 2000 02 06                              | 704        | 0.1+  | 0.5+     | 2003 12 26 | 608 | 0.2-        | 0.1- | 2005 03 14  | G96      | 0.2-  | 0.2-  |
| 2000 02 06                              | 704        | 1.3+  | 0.3+     | 2003 12 26 | 608 | 0.0         | 0.3+ | 2005 03 14  | G96      | 0.6-  | 0.2-  |
| 2000 02 06                              | 704        | 0.1-  | 0.6+     | 2003 12 28 | 699 | 0.4+        | 0.5+ | 2005 03 14  | G96      | 0.5-  | 0.4-  |
| 2001 04 15                              | 691        | 0.3+  | 0.4+     | 2003 12 28 | 699 | 0.6+        | 0.6- | 2005 03 14  | G96      | 0.1+  | 0.1-  |
| 2001 04 15                              | 691        | 0.4+  | 0.3+     | 2003 12 28 | 699 | 1.3-        | 0.8+ | 2007 09 15  | 704      | (0.1+ | 1.8+) |
| 2001 04 15                              | 691        | 0.1+  | 0.5+     | 2003 12 28 | 699 | 0.1-        | 0.1- | 2007 09 15  | 704      | 0.8+  | 0.6+  |
| 2002 07 09                              | 704        | 1.0-  | 0.2-     | 2004 01 12 | 644 | 0.0         | 0.4+ | 2007 09 15  | 704      | 0.2-  | 0.7+  |
| 2002 07 09                              | 704        | 0.3-  | 0.6+     | 2004 01 12 | 644 | 0.1-        | 0.2+ | 2007 09 15  | 704      | (0.7- | 1.7+) |
| 2002 07 09                              | 704        | (1.9+ | 0.0 )    | 2004 01 12 | 644 | 0.0         | 0.3+ | 2007 12 05  | 683      | 0.9+  | 0.3+  |
| 2002 07 20                              | 644        | 0.1+  | 0.6+     | 2004 01 17 | 608 | 0.5+        | 0.1+ | 2007 12 05  | 683      | 0.6+  | 0.7+  |
| 2002 07 20                              | 644        | 0.0   | 0.4+     | 2004 01 17 | 608 | 0.3+        | 0.1+ | 2007 12 14  | 704      | 0.3+  | 0.3+  |
| 2002 07 20                              | 644        | 0.1+  | 0.4+     | 2004 01 17 | 608 | 0.0         | 0.4+ | 2007 12 14  | 704      | 0.2-  | 1.0-  |
| 2002 07 28                              | 644        | 0.3-  | 0.9+     | 2004 01 18 | 644 | 0.6-        | 0.5+ | 2007 12 14  | 704      | 0.5-  | 0.1-  |
| 2002 07 28                              | 644        | 0.0   | 0.6+     | 2004 01 18 | 644 | 0.4-        | 0.5+ | 2007 12 14  | 704      | 0.7-  | 0.4+  |
| 2002 07 28                              | 644        | 0.3-  | 0.5+     | 2004 01 18 | 644 | 0.2-        | 0.3+ | 2007 12 14  | 704      | 0.0   | 0.1+  |
| 2002 08 04                              | 644        | 0.3-  | 0.6+     | 2004 01 29 | 704 | 0.4-        | 0.2+ |             |          |       |       |
| 2002 08 04                              | 644        | 0.1+  | 0.5+     | 2004 01 29 | 704 | 0.8-        | 0.6+ |             |          |       |       |

**(172687)\* 2003 YQ<sub>162</sub>**

Discovered 2003 Dec. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |             | MPC   |             |            |     |       |       |
|-----------------------------------------|------------|----------|----------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| <i>M</i>                                | 316.43054  |          | (2000.0) |            | <b>P</b>    |       | <b>Q</b>    |            |     |       |       |
| <i>n</i>                                | 0.23096466 | $\omega$ | 60.64941 |            | -0.33706523 |       | -0.92790015 |            |     |       |       |
| <i>a</i>                                | 2.6309082  | $\Omega$ | 49.94081 |            | +0.77541681 |       | -0.36959211 |            |     |       |       |
| <i>e</i>                                | 0.1449266  | <i>i</i> | 12.01575 |            | +0.53396235 |       | -0.04902021 |            |     |       |       |
| <i>P</i>                                | 4.27       | <i>H</i> | 15.7     |            | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc             |            |          |          |            |             |       |             |            |     |       |       |
| 1992 05 02                              | 691        | 0.1+     | 0.0      | 2004 01 11 | 644         | 0.3+  | 0.4-        | 2007 11 15 | 704 | 0.4+  | 0.5+  |
| 1992 05 02                              | 691        | (4.6-    | 3.7-)    | 2005 05 10 | G96         | 0.2+  | 0.3+        | 2007 11 15 | 704 | 0.7+  | 0.0   |
| 1992 05 02                              | 691        | 0.5+     | 0.9+     | 2005 05 10 | G96         | 0.0   | 0.2+        | 2007 11 15 | 704 | 0.5+  | 0.5-  |
| 2003 11 19                              | 704        | 0.4-     | 0.3-     | 2005 05 10 | G96         | 0.1+  | 0.2+        | 2007 11 17 | 691 | 0.1-  | 0.1-  |
| 2003 11 19                              | 704        | (1.7+    | 1.9-)    | 2005 05 10 | G96         | 1.2-  | 0.3+        | 2007 11 17 | 691 | 0.0   | 0.0   |
| 2003 11 19                              | 704        | (0.0     | 1.6-)    | 2005 05 16 | 644         | 0.6+  | 0.0         | 2007 11 17 | 691 | 0.2+  | 0.1-  |
| 2003 11 19                              | 704        | 0.6+     | 0.2-     | 2005 05 16 | 644         | 0.3+  | 0.2+        | 2007 11 17 | G96 | 0.2-  | 0.3-  |
| 2003 11 19                              | 704        | 0.4+     | 0.8-     | 2005 05 16 | 644         | 0.8+  | 0.4+        | 2007 11 17 | G96 | 0.3+  | 0.4-  |
| 2003 12 03                              | 704        | 0.3-     | 0.3+     | 2007 10 09 | G96         | 0.6+  | 0.5-        | 2007 11 17 | G96 | 0.2+  | 0.4-  |
| 2003 12 03                              | 704        | (0.7+    | 1.8+)    | 2007 10 09 | G96         | 0.2+  | 0.4-        | 2007 11 17 | G96 | 0.4+  | 0.3-  |
| 2003 12 03                              | 704        | 0.1-     | 1.0+     | 2007 10 09 | G96         | 0.4+  | 0.2-        | 2007 11 18 | 704 | 0.2+  | 1.3+  |
| 2003 12 03                              | 704        | 0.5+     | 0.9+     | 2007 10 16 | G96         | 0.3-  | 0.3-        | 2007 11 18 | 704 | 0.0   | 0.7+  |
| 2003 12 03                              | 704        | 0.1+     | 0.7+     | 2007 10 16 | G96         | 0.0   | 0.1-        | 2007 11 18 | 704 | 0.7-  | 0.8+  |
| 2003 12 17                              | 704        | 0.3-     | 0.2+     | 2007 10 16 | G96         | 0.2+  | 0.1-        | 2007 11 18 | 704 | 0.2+  | 0.5+  |
| 2003 12 17                              | 704        | 0.5-     | 0.2-     | 2007 10 16 | G96         | 0.3+  | 0.3-        | 2007 11 18 | 704 | 0.1-  | 0.6+  |
| 2003 12 17                              | 704        | 0.3-     | 0.6+     | 2007 10 23 | 704         | 0.2-  | 1.0+        | 2007 11 20 | 704 | (0.0  | 2.0+) |
| 2003 12 17                              | 704        | 0.4-     | 0.0      | 2007 10 23 | 704         | 0.0   | 0.4+        | 2007 11 20 | 704 | 0.3-  | 1.2+  |
| 2003 12 17                              | 704        | 0.5-     | 0.3+     | 2007 10 23 | 704         | 1.0-  | 0.9-        | 2007 11 20 | 704 | 0.8+  | 0.1+  |
| 2003 12 28                              | 704        | 0.6-     | 0.5+     | 2007 10 23 | 704         | 0.0   | 0.5+        | 2007 11 20 | 704 | 0.9+  | 0.4+  |
| 2003 12 28                              | 704        | 0.9-     | 0.2-     | 2007 10 23 | 704         | 0.6-  | 0.2+        | 2007 11 20 | 704 | (3.4+ | 0.5-) |
| 2003 12 28                              | 704        | (0.3-    | 2.3-)    | 2007 10 30 | 691         | 0.4-  | 0.1-        | 2007 12 12 | 704 | 0.2+  | 0.7+  |
| 2003 12 29                              | 704        | 0.5+     | 0.7-     | 2007 10 30 | 691         | 0.4-  | 0.1-        | 2007 12 12 | 704 | (0.4+ | 1.5+) |
| 2003 12 29                              | 704        | 0.5-     | 0.3-     | 2007 10 30 | 691         | 0.3-  | 0.1-        | 2007 12 12 | 704 | 0.5+  | 1.0+  |
| 2003 12 29                              | 704        | 0.1-     | 0.2-     | 2007 11 05 | 691         | 0.4-  | 0.1+        | 2007 12 12 | 704 | 0.3+  | 0.6+  |
| 2003 12 29                              | 704        | 0.4-     | 0.7-     | 2007 11 05 | 691         | 0.3-  | 0.0         | 2007 12 12 | 704 | 0.3-  | 0.8+  |
| 2003 12 29                              | 704        | 1.0+     | 0.7-     | 2007 11 05 | 691         | 0.6-  | 0.1+        | 2007 12 13 | 704 | 0.3+  | 0.4+  |
| 2003 12 30                              | 704        | (3.4+    | 1.7-)    | 2007 11 06 | D29         | 0.1-  | 0.6-        | 2007 12 13 | 704 | 0.4+  | 0.7+  |
| 2003 12 30                              | 704        | 1.1+     | 0.8-     | 2007 11 06 | D29         | 0.3-  | 0.1+        | 2007 12 13 | 704 | 0.2+  | 0.6+  |
| 2003 12 30                              | 704        | 1.4+     | 0.4-     | 2007 11 06 | D29         | 0.2+  | 0.7-        | 2007 12 13 | 704 | 0.4+  | 0.6+  |
| 2003 12 30                              | 704        | 0.1+     | 0.1+     | 2007 11 06 | D29         | 0.3-  | 0.4-        | 2007 12 13 | 704 | 0.7+  | 0.9+  |
| 2004 01 11                              | 644        | 0.2-     | 0.3-     | 2007 11 09 | 691         | 0.3-  | 0.2-        | 2007 12 15 | 704 | 0.7+  | 0.3+  |
| 2004 01 11                              | 644        | 0.0      | 0.3-     | 2007 11 09 | 691         | 0.2-  | 0.2-        | 2007 12 15 | 704 | 0.8+  | 0.5+  |
| 2004 01 11                              | 644        | 0.2-     | 0.3-     | 2007 11 09 | 691         | 0.2-  | 0.0         | 2007 12 15 | 704 | 0.5+  | 0.4+  |
| 2004 01 11                              | 644        | 0.1-     | 0.5-     | 2007 11 15 | 704         | 0.5+  | 0.1+        | 2007 12 15 | 704 | 0.6+  | 0.1+  |
| 2004 01 11                              | 644        | 0.2-     | 0.2-     | 2007 11 15 | 704         | (2.0+ | 0.7+)       | 2007 12 15 | 704 | 0.5+  | 0.3+  |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 12 17 691 | 0.1+ | 0.3+ | 2007 10 16 691 | 0.4− | 0.0  | 2007 11 17 G96 | 0.1+ | 0.3− |
| 2003 12 17 691 | 0.4+ | 0.2− | 2007 10 16 691 | 0.1− | 0.3− | 2007 11 17 G96 | 0.0  | 0.2− |
| 2003 12 29 691 | 0.2+ | 0.2− | 2007 10 16 691 | 0.2− | 0.2− | 2007 11 17 G96 | 0.2− | 0.6− |
| 2003 12 29 691 | 0.3− | 0.5+ | 2007 10 20 691 | 0.2− | 0.2+ | 2007 11 17 G96 | 0.3− | 0.7− |
| 2003 12 29 691 | 0.3+ | 0.1+ | 2007 10 20 691 | 0.2− | 0.2− | 2007 12 06 G96 | 1.1− | 0.9− |
| 2005 03 09 G96 | 0.4− | 0.2+ | 2007 10 20 691 | 0.1+ | 0.3+ | 2007 12 06 G96 | 0.1+ | 0.1+ |
| 2005 03 09 G96 | 0.1− | 0.1− | 2007 11 07 704 | 0.3+ | 0.1+ | 2007 12 06 G96 | 0.8+ | 0.0  |
| 2005 03 09 G96 | 0.1− | 0.2+ | 2007 11 07 704 | 0.1− | 0.0  | 2007 12 06 G96 | 0.4+ | 0.3+ |
| 2005 03 09 G96 | 0.7− | 0.0  | 2007 11 07 704 | 0.2+ | 0.1− |                |      |      |

**(172689)\* 2003 YQ<sub>169</sub>**

Discovered 2003 Dec. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 37.72277   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25207755 | <i>ω</i> 77.22327  | +0.71704932   | −0.69494475 |
| <i>a</i> | 2.4818752  | <i>Ω</i> 326.75297 | +0.59540229   | +0.65079831 |
| <i>e</i> | 0.1093769  | <i>i</i> 5.62920   | +0.36240362   | +0.30579952 |
| <i>P</i> | 3.91       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 1993 03 21 809 | 0.8−  | 0.0   | 2003 12 23 704 | 1.1+  | 0.5+  | 2006 08 29 704 | 0.2+  | 0.5+  |
| 1993 04 17 413 | (3.9+ | 2.7+) | 2003 12 23 704 | 0.5+  | 0.4+  | 2006 08 29 704 | 0.4+  | 0.2−  |
| 2002 07 17 644 | 0.6−  | 0.5+  | 2003 12 23 704 | 0.8+  | 0.2−  | 2006 08 29 704 | 0.2+  | 0.8+  |
| 2002 07 17 644 | 0.1+  | 0.5+  | 2003 12 23 704 | 0.1−  | 0.6+  | 2006 10 20 G96 | 0.6−  | 0.8−  |
| 2002 07 17 644 | 0.4−  | 0.7+  | 2003 12 28 704 | 0.2+  | 0.0   | 2006 10 20 G96 | 0.1−  | 0.3−  |
| 2002 07 17 644 | 0.0   | 0.6+  | 2003 12 28 704 | 0.7−  | 0.3−  | 2006 10 20 G96 | 0.1+  | 0.4−  |
| 2002 07 17 644 | 0.7−  | 0.5+  | 2003 12 28 704 | 0.7−  | 0.6−  | 2006 10 20 G96 | 0.3−  | 0.3−  |
| 2002 07 17 644 | 0.0   | 0.7+  | 2003 12 28 704 | 0.5−  | 0.5+  | 2007 11 11 G96 | 0.2+  | 0.1−  |
| 2002 08 29 644 | 0.5+  | 0.0   | 2005 04 14 703 | 0.2−  | 0.1−  | 2007 11 11 G96 | 0.0   | 0.1−  |
| 2002 08 29 644 | 0.4+  | 0.0   | 2005 04 14 703 | 0.7+  | 0.9+  | 2007 11 11 G96 | 0.1−  | 0.1+  |
| 2002 08 29 644 | 0.3+  | 0.2+  | 2005 04 14 703 | (2.8+ | 0.4+) | 2007 11 11 G96 | 0.1−  | 0.2−  |
| 2003 12 04 704 | 0.4+  | 1.1+  | 2005 04 14 703 | 0.7+  | 1.1+  | 2007 12 13 704 | (0.2− | 2.2+) |
| 2003 12 04 704 | 0.3−  | 0.5−  | 2006 08 20 644 | 0.2−  | 0.1+  | 2007 12 13 704 | 0.2−  | 1.4+  |
| 2003 12 04 704 | 1.1+  | 1.5−  | 2006 08 20 644 | 0.1−  | 0.1−  | 2007 12 13 704 | 0.1−  | 0.0   |
| 2003 12 04 704 | 0.9−  | 0.2−  | 2006 08 20 644 | 0.4−  | 0.2+  | 2007 12 15 704 | 0.1+  | 1.0+  |
| 2003 12 18 704 | 0.4+  | 0.1+  | 2006 08 28 703 | 0.4−  | 0.1+  | 2007 12 15 704 | 0.1−  | 1.0+  |
| 2003 12 18 704 | 0.1−  | 0.1+  | 2006 08 28 703 | 0.2+  | 0.8+  | 2007 12 15 704 | 0.5+  | 0.6+  |
| 2003 12 18 704 | 0.1−  | 0.2+  | 2006 08 28 703 | (1.8− | 1.1+) | 2007 12 15 704 | 0.4+  | 1.1+  |
| 2003 12 18 704 | 0.2−  | 0.4−  | 2006 08 28 703 | 0.6−  | 0.2+  | 2007 12 15 704 | 0.5+  | 1.0+  |

**(172690)\* 2003 YC<sub>175</sub> = 2002 TX<sub>174</sub>**

Discovered 2003 Dec. 19 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 69619)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 89.73838   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22434621 | <i>ω</i> 237.77652 | +0.86236844   | +0.49306892 |
| <i>a</i> | 2.6824001  | <i>Ω</i> 92.44790  | −0.41714262   | +0.82060939 |
| <i>e</i> | 0.1133933  | <i>i</i> 6.60434   | −0.28690192   | +0.28893472 |
| <i>P</i> | 4.39       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 1998 12 28 691 | 0.6−  | 0.1−  | 2003 12 19 691 | 0.3+ | 0.2− | 2005 05 15 644 | 0.0  | 0.3+ |
| 1998 12 28 691 | 0.6−  | 1.0−  | 2003 12 19 691 | 0.2+ | 0.0  | 2005 05 15 644 | 0.3− | 0.3+ |
| 1998 12 28 691 | 0.7−  | 0.1−  | 2003 12 19 691 | 0.3+ | 0.4− | 2006 08 12 644 | 0.1− | 0.7+ |
| 2002 09 05 645 | 0.3+  | 0.1+  | 2003 12 28 691 | 0.4+ | 0.0  | 2006 08 12 644 | 0.3− | 0.5+ |
| 2002 09 05 645 | 0.3+  | 0.1+  | 2003 12 28 691 | 0.6+ | 0.2+ | 2006 08 12 644 | 0.2− | 0.6+ |
| 2002 09 15 608 | 1.0−  | 0.8−  | 2003 12 28 691 | 0.5+ | 0.1+ | 2006 08 14 644 | 0.3− | 0.8+ |
| 2002 09 15 608 | 0.8−  | 0.7−  | 2004 01 15 691 | 0.2+ | 0.1+ | 2006 08 14 644 | 0.4− | 0.6+ |
| 2002 09 15 608 | 0.8−  | 0.7−  | 2004 01 15 691 | 0.0  | 0.1+ | 2006 08 14 644 | 0.4− | 0.6+ |
| 2002 10 04 704 | (0.1− | 1.9+) | 2004 01 15 691 | 0.1+ | 0.3+ | 2006 08 19 644 | 0.1− | 0.6+ |
| 2002 10 04 704 | (1.4− | 1.9+) | 2004 01 22 704 | 1.0+ | 0.4+ | 2006 08 19 644 | 0.3− | 0.7+ |
| 2002 10 04 704 | (0.2− | 1.9+) | 2004 01 22 704 | 0.1+ | 0.7− | 2006 08 19 644 | 0.1− | 0.7+ |
| 2002 10 06 704 | 0.2−  | 0.1−  | 2004 01 22 704 | 0.0  | 0.1− | 2007 11 05 691 | 0.3− | 0.3+ |
| 2002 10 06 704 | 0.1−  | 0.3+  | 2004 01 22 704 | 0.5+ | 0.8+ | 2007 11 05 691 | 0.2− | 0.1+ |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 10 06 704 | 0.3− | 0.5+ | 2004 01 22 704 | 0.3+ | 1.2+ | 2007 11 05 691 | 0.1− | 0.0  |
| 2002 10 06 704 | 0.6− | 0.3+ | 2005 05 07 691 | 0.0  | 0.4+ | 2007 12 04 691 | 0.2− | 0.3+ |
| 2002 11 06 644 | 0.3+ | 0.7+ | 2005 05 07 691 | 0.1+ | 0.3+ | 2007 12 04 691 | 0.3− | 0.1− |
| 2002 11 06 644 | 0.1− | 0.4+ | 2005 05 07 691 | 0.4− | 0.4+ | 2007 12 04 691 | 0.7− | 0.5+ |
| 2002 11 06 644 | 0.1− | 0.4+ | 2005 05 15 644 | 0.1− | 0.7+ |                |      |      |

**(172691)\* 2003 YG<sub>175</sub> = 2002 TN<sub>334</sub>**

Discovered 2003 Dec. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76365)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 81.59482   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22446504 | <i>ω</i> 279.24295 | +0.96192435   | +0.26750610 |
| <i>a</i> | 2.6814533  | <i>Ω</i> 65.25767  | −0.22022231   | +0.88005534 |
| <i>e</i> | 0.0194866  | <i>i</i> 3.53854   | −0.16187553   | +0.39235581 |
| <i>P</i> | 4.39       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1998 11 22 691 | 0.4− | 0.3− | 2004 01 22 704 | 0.2− | 0.1− | 2005 06 13 G96 | 0.0  | 0.6+ |
| 1998 11 22 691 | 0.6− | 0.0  | 2004 01 22 704 | 0.2− | 0.9− | 2007 11 05 691 | 0.5− | 0.2+ |
| 1998 11 22 691 | 0.4− | 0.4− | 2004 01 22 704 | 0.9+ | 0.6− | 2007 11 05 691 | 0.8− | 0.3− |
| 2002 10 05 645 | 0.0  | 0.0  | 2004 01 22 704 | 0.9+ | 0.8+ | 2007 11 05 691 | 0.6− | 0.3+ |
| 2002 10 05 645 | 0.0  | 0.0  | 2005 04 16 691 | 0.0  | 0.0  | 2007 12 05 704 | 1.2+ | 1.2+ |
| 2002 10 10 645 | 0.0  | 0.1+ | 2005 04 16 691 | 0.1+ | 0.3+ | 2007 12 05 704 | 0.0  | 1.0+ |
| 2002 10 10 645 | 0.1+ | 0.1+ | 2005 04 16 691 | 0.5+ | 0.1− | 2007 12 05 704 | 0.1+ | 0.6+ |
| 2002 10 31 645 | 0.0  | 0.1+ | 2005 04 30 691 | 0.1+ | 0.2+ | 2007 12 05 704 | 0.2+ | 0.5+ |
| 2002 10 31 645 | 0.0  | 0.0  | 2005 04 30 691 | 0.0  | 0.6+ | 2007 12 05 G96 | 0.2− | 0.0  |
| 2002 11 08 645 | 0.0  | 0.1+ | 2005 04 30 691 | 0.1− | 0.4+ | 2007 12 05 G96 | 0.5+ | 0.0  |
| 2002 11 08 645 | 0.0  | 0.1+ | 2005 05 17 G96 | 0.5− | 0.0  | 2007 12 05 G96 | 0.2− | 0.0  |
| 2003 12 19 691 | 0.7+ | 0.3− | 2005 05 17 G96 | 0.9− | 0.6− | 2007 12 05 G96 | 0.0  | 0.2− |
| 2003 12 19 691 | 0.0  | 0.0  | 2005 05 17 G96 | 0.4− | 0.0  | 2007 12 06 G96 | 0.1− | 0.4− |
| 2003 12 19 691 | 0.1+ | 0.4− | 2005 05 17 G96 | 0.3− | 0.1+ | 2007 12 06 G96 | 0.0  | 0.6− |
| 2003 12 28 691 | 0.4+ | 0.0  | 2005 06 13 G96 | 0.5− | 0.5+ | 2007 12 06 G96 | 0.5− | 0.6− |
| 2003 12 28 691 | 0.5+ | 0.3+ | 2005 06 13 G96 | 0.2+ | 0.2+ | 2007 12 06 G96 | 0.1+ | 0.6− |
| 2003 12 28 691 | 0.2+ | 0.4+ | 2005 06 13 G96 | 0.2− | 0.5+ |                |      |      |

**(172692)\* 2004 AR<sub>5</sub>**

Discovered 2004 Jan. 13 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 9.54417    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22422984 | <i>ω</i> 124.92396 | +0.82758227   | −0.52354078 |
| <i>a</i> | 2.6833281  | <i>Ω</i> 267.44812 | +0.42581482   | +0.82057289 |
| <i>e</i> | 0.2654296  | <i>i</i> 11.69588  | +0.36577224   | +0.22927100 |
| <i>P</i> | 4.40       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 1998 10 29 699 | 0.6−  | 0.7−  | 2004 01 28 645 | 0.0  | 0.0  | 2007 11 16 704 | 0.4+ | 0.9− |
| 1998 10 29 699 | 0.4+  | 0.9+  | 2004 02 11 644 | 0.1+ | 0.1+ | 2007 11 16 704 | 0.3+ | 0.0  |
| 1998 10 29 699 | 0.4+  | 0.6−  | 2004 02 11 644 | 0.4+ | 0.4+ | 2007 11 16 704 | 0.2+ | 0.3+ |
| 2002 06 23 950 | 0.1−  | 0.4+  | 2004 02 11 644 | 0.2+ | 0.0  | 2007 11 17 704 | 0.3− | 0.2− |
| 2002 06 23 950 | 0.0   | 0.5+  | 2007 11 03 704 | 0.4+ | 0.4+ | 2007 11 17 704 | 0.2− | 0.3+ |
| 2002 06 23 950 | 0.0   | 0.4+  | 2007 11 03 704 | 0.1+ | 0.0  | 2007 11 17 704 | 0.6− | 0.3− |
| 2002 07 18 704 | 0.3−  | 0.7+  | 2007 11 03 704 | 0.1+ | 0.4− | 2007 11 17 704 | 0.2− | 0.2− |
| 2002 07 18 704 | 0.0   | 0.1+  | 2007 11 03 704 | 0.1− | 0.1− | 2007 11 17 704 | 0.3− | 0.3− |
| 2002 07 18 704 | 0.2+  | 0.5+  | 2007 11 03 704 | 0.2− | 0.1− | 2007 12 02 704 | 0.1− | 0.4− |
| 2002 07 18 704 | 0.3+  | 0.4+  | 2007 11 08 704 | 0.2+ | 0.2− | 2007 12 02 704 | 0.6− | 0.6+ |
| 2002 08 05 644 | 0.7−  | 0.3+  | 2007 11 08 704 | 0.2+ | 0.2+ | 2007 12 02 704 | 0.3− | 0.6+ |
| 2002 08 05 644 | 0.4−  | 0.3+  | 2007 11 08 704 | 0.0  | 0.3+ | 2007 12 12 704 | 0.5+ | 0.1+ |
| 2002 08 05 644 | 0.5−  | 0.2+  | 2007 11 08 704 | 0.1− | 0.1+ | 2007 12 12 704 | 0.0  | 0.2+ |
| 2003 12 22 704 | 0.4+  | 0.5+  | 2007 11 08 704 | 0.0  | 0.2+ | 2007 12 12 704 | 0.0  | 0.8− |
| 2003 12 22 704 | (0.2− | 1.5+) | 2007 11 08 704 | 0.2− | 0.4+ | 2007 12 12 704 | 0.4+ | 0.8− |
| 2003 12 22 704 | 0.5+  | 1.0+  | 2007 11 08 704 | 0.0  | 0.2− | 2007 12 12 704 | 0.2+ | 1.0− |
| 2004 01 13 699 | 0.8−  | 0.2+  | 2007 11 08 704 | 0.5− | 0.6+ | 2007 12 13 704 | 1.4+ | 1.0+ |
| 2004 01 13 699 | 0.4+  | 0.2+  | 2007 11 08 704 | 0.2− | 0.1− | 2007 12 13 704 | 0.1+ | 0.3− |
| 2004 01 13 699 | (0.9− | 1.6+) | 2007 11 08 704 | 0.2− | 0.2+ | 2007 12 13 704 | 0.2+ | 0.4− |



2007 DEC. 24

M.P.O. 129451

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 13 | 699 | 0.7− | 0.7− | 2007 11 15 | 699 | 0.0   | 0.8−  | 2007 12 15 | 704 | 0.4+ | 0.6+ |
| 2004 01 16 | 644 | 0.0  | 0.2+ | 2007 11 15 | 699 | 0.2−  | 0.3−  | 2007 12 15 | 704 | 0.0  | 0.1+ |
| 2004 01 16 | 644 | 0.6+ | 0.2+ | 2007 11 15 | 699 | 1.1−  | 0.6+  | 2007 12 15 | 704 | 0.2− | 0.1+ |
| 2004 01 16 | 644 | 0.3+ | 0.2+ | 2007 11 16 | 704 | 0.2+  | 0.3+  | 2007 12 15 | 704 | 0.2+ | 0.2+ |
| 2004 01 28 | 645 | 0.0  | 0.0  | 2007 11 16 | 704 | (4.4− | 3.5+) | 2007 12 15 | 704 | 0.1+ | 0.1+ |

(172693)\* 2004 AV<sub>5</sub>

Discovered 2004 Jan. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 228.91004  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20631293 | <i>ω</i> | 287.25237 | −0.95363817   | +0.21906093 |
| <i>a</i> | 2.8365150  | <i>Ω</i> | 265.77771 | −0.12964676   | −0.91783676 |
| <i>e</i> | 0.1237229  | <i>i</i> | 11.94231  | −0.27159889   | −0.33104075 |
| <i>P</i> | 4.78       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 645 | 0.0  | 0.0  | 2004 02 25 | 113 | 0.3+ | 0.1− | 2007 11 20 | 704 | 0.3− | 0.0  |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2004 03 11 | 644 | 0.2− | 0.1− | 2007 11 20 | 704 | 0.2+ | 0.0  |
| 2004 01 13 | 644 | 0.1− | 0.1+ | 2004 03 11 | 644 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.3− | 0.5− |
| 2004 01 13 | 644 | 0.0  | 0.1+ | 2004 03 11 | 644 | 0.4+ | 0.3− | 2007 11 20 | 704 | 0.4+ | 0.3+ |
| 2004 01 13 | 644 | 0.3− | 0.1+ | 2005 06 23 | 644 | 0.2− | 0.4+ | 2007 11 20 | G96 | 0.1− | 0.3− |
| 2004 01 16 | 644 | 0.3− | 0.2− | 2005 06 23 | 644 | 0.0  | 0.3+ | 2007 11 20 | 704 | 0.8+ | 0.0  |
| 2004 01 16 | 644 | 0.0  | 0.2+ | 2005 06 23 | 644 | 0.0  | 0.4+ | 2007 11 20 | G96 | 0.1− | 0.1− |
| 2004 01 16 | 644 | 0.5+ | 0.3+ | 2005 07 03 | 644 | 0.3− | 0.7+ | 2007 11 20 | G96 | 0.1− | 0.4− |
| 2004 01 23 | 699 | 0.7+ | 0.3+ | 2005 07 03 | 644 | 0.3− | 0.6+ | 2007 11 20 | G96 | 0.1− | 0.3− |
| 2004 01 23 | 699 | 0.4− | 0.8+ | 2005 07 03 | 644 | 0.0  | 0.5+ | 2007 11 30 | A77 | 0.1− | 0.3− |
| 2004 01 23 | 699 | 0.4− | 0.7− | 2005 08 04 | 644 | 0.3+ | 0.4− | 2007 11 30 | A77 | 0.2− | 0.9− |
| 2004 01 23 | 699 | 0.7− | 0.5+ | 2005 08 04 | 644 | 0.3− | 0.5+ | 2007 11 30 | A77 | 1.4+ | 0.0  |
| 2004 01 28 | 645 | 0.0  | 0.0  | 2005 08 04 | 644 | 0.1+ | 0.3+ | 2007 12 12 | A77 | 0.3− | 0.7+ |
| 2004 01 28 | 645 | 0.1− | 0.0  | 2006 12 11 | 291 | 0.5+ | 0.4+ | 2007 12 12 | A77 | 0.7− | 0.4+ |
| 2004 01 29 | 704 | 0.5− | 0.9+ | 2006 12 11 | 291 | 0.0  | 0.5+ | 2007 12 13 | A77 | 0.5− | 0.7+ |
| 2004 01 29 | 704 | 0.6+ | 0.7+ | 2006 12 11 | 291 | 0.2+ | 0.1− | 2007 12 13 | 704 | 0.1− | 1.0+ |
| 2004 01 29 | 704 | 0.4− | 0.3− | 2007 11 02 | 704 | 0.4+ | 0.4− | 2007 12 13 | 704 | 0.6− | 0.6+ |
| 2004 02 18 | 704 | 1.2+ | 0.4− | 2007 11 02 | 704 | 0.0  | 0.1+ | 2007 12 13 | 704 | 0.8− | 0.6+ |
| 2004 02 18 | 704 | 0.7+ | 0.3− | 2007 11 02 | 704 | 0.4+ | 1.2− | 2007 12 13 | 704 | 0.5− | 0.7+ |
| 2004 02 18 | 704 | 1.1+ | 0.6− | 2007 11 09 | G96 | 0.2− | 0.4− | 2007 12 16 | 704 | 0.8− | 0.2+ |
| 2004 02 18 | 704 | 0.8+ | 0.6− | 2007 11 09 | G96 | 0.0  | 0.3− | 2007 12 16 | 704 | 0.4+ | 1.3+ |
| 2004 02 25 | 113 | 0.4+ | 0.2+ | 2007 11 09 | G96 | 0.4− | 0.3− | 2007 12 16 | 704 | 0.3− | 1.1+ |
| 2004 02 25 | 113 | 0.7+ | 0.2+ | 2007 11 09 | G96 | 0.3− | 0.3− | 2007 12 16 | 704 | 0.0  | 0.7+ |

(172694)\* 2004 AZ<sub>7</sub>

Discovered 2004 Jan. 13 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.12061  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23319633 | <i>ω</i> | 12.16696 | −0.13615743   | −0.98629179 |
| <i>a</i> | 2.6140962  | <i>Ω</i> | 85.71183 | +0.90092101   | −0.16240897 |
| <i>e</i> | 0.1682053  | <i>i</i> | 5.36384  | +0.41207098   | +0.02918598 |
| <i>P</i> | 4.23       | <i>H</i> | 16.0     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 27 | 691 | 0.1+ | 0.2+ | 2003 12 27 | 704 | 0.8+ | 0.1+ | 2004 02 13 | 699 | 0.7− | 0.8− |
| 1994 10 27 | 691 | 0.0  | 0.0  | 2003 12 27 | 704 | 0.4+ | 0.3+ | 2004 02 13 | 699 | 0.7− | 0.0  |
| 1994 10 27 | 691 | 0.5− | 0.5− | 2003 12 27 | 704 | 0.7− | 0.8− | 2004 02 15 | 704 | 0.3+ | 0.4− |
| 1998 09 29 | 910 | 0.3+ | 0.7+ | 2003 12 27 | 704 | 0.6− | 0.3+ | 2004 02 15 | 704 | 0.5− | 0.5+ |
| 1998 09 29 | 910 | 0.5+ | 0.6+ | 2004 01 13 | 699 | 0.5− | 0.4+ | 2004 02 15 | 704 | 1.0+ | 0.4− |
| 1998 09 29 | 910 | 0.2+ | 0.6+ | 2004 01 13 | 699 | 0.4− | 0.5− | 2004 02 15 | 704 | 0.2+ | 0.1− |
| 2000 03 12 | 704 | 0.2− | 1.0+ | 2004 01 13 | 699 | 1.1− | 0.5− | 2004 02 15 | 704 | 0.1+ | 0.6− |
| 2000 03 12 | 704 | 1.9+ | 0.3+ | 2004 01 13 | 699 | 0.7− | 0.4+ | 2004 02 17 | 644 | 0.1− | 0.0  |
| 2000 03 12 | 704 | 0.7+ | 0.2− | 2004 01 17 | 644 | 0.4+ | 0.1− | 2004 02 17 | 644 | 0.1+ | 0.1− |
| 2000 03 12 | 704 | 0.8+ | 0.9+ | 2004 01 17 | 644 | 0.1+ | 0.2− | 2004 02 17 | 644 | 0.1− | 0.0  |
| 2000 03 12 | 704 | 0.9+ | 1.8+ | 2004 01 17 | 644 | 0.2+ | 0.0  | 2004 02 17 | 644 | 0.1+ | 0.2+ |
| 2000 03 26 | 699 | 0.2+ | 0.2+ | 2004 01 27 | 704 | 0.7− | 0.1− | 2004 02 17 | 644 | 0.0  | 0.2− |
| 2000 03 26 | 699 | 0.9− | 0.0  | 2004 01 27 | 704 | 0.4− | 0.3+ | 2004 02 17 | 644 | 0.1+ | 0.2− |
| 2000 03 26 | 699 | 0.3+ | 0.7+ | 2004 01 27 | 704 | 0.1− | 0.3+ | 2005 05 19 | G96 | 0.2− | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 26 | 699 | 0.0  | 0.5− | 2004 01 27 | 704 | 0.3− | 0.2+ | 2005 05 19 | G96 | 0.0   | 0.4+  |
| 2002 08 19 | 644 | 0.1+ | 0.5+ | 2004 01 27 | 704 | 0.2+ | 0.1− | 2005 05 19 | G96 | 0.4−  | 0.0   |
| 2002 08 19 | 644 | 0.2− | 0.5+ | 2004 01 30 | 704 | 0.3+ | 0.1− | 2005 05 19 | G96 | 0.4−  | 0.2+  |
| 2002 08 30 | 644 | 0.1+ | 0.6+ | 2004 01 30 | 704 | 0.2+ | 0.4+ | 2007 12 03 | 691 | 0.4−  | 0.3−  |
| 2002 08 30 | 644 | 0.1− | 0.3+ | 2004 01 30 | 704 | 0.1+ | 0.1− | 2007 12 03 | 691 | 0.2−  | 0.1−  |
| 2002 08 30 | 644 | 0.4− | 0.2+ | 2004 01 30 | 704 | 0.2+ | 0.3− | 2007 12 03 | 691 | 0.3+  | 0.3−  |
| 2002 09 16 | 644 | 0.4− | 1.1+ | 2004 01 30 | 704 | 0.3+ | 0.6+ | 2007 12 05 | 704 | 0.9+  | 0.8+  |
| 2002 09 16 | 644 | 0.3− | 0.6+ | 2004 02 10 | 703 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.8+  | 0.7+  |
| 2002 09 16 | 644 | 0.3− | 0.2+ | 2004 02 10 | 703 | 0.4+ | 0.0  | 2007 12 05 | 704 | (0.3+ | 1.5+) |
| 2003 10 24 | 691 | 0.0  | 0.1+ | 2004 02 10 | 703 | 0.3− | 0.0  | 2007 12 05 | 704 | 1.0−  | 0.2+  |
| 2003 10 24 | 691 | 0.4+ | 0.1− | 2004 02 10 | 644 | 0.1− | 0.2+ | 2007 12 14 | 704 | 0.1−  | 0.0   |
| 2003 10 24 | 691 | 0.5+ | 0.4+ | 2004 02 10 | 703 | 0.1− | 0.1+ | 2007 12 14 | 704 | 0.1+  | 0.2−  |
| 2003 12 17 | 644 | 0.1+ | 0.3+ | 2004 02 10 | 644 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.4−  | 0.3+  |
| 2003 12 17 | 644 | 0.2+ | 0.4+ | 2004 02 10 | 644 | 0.2+ | 0.5+ | 2007 12 14 | 704 | 0.2+  | 0.4+  |
| 2003 12 17 | 644 | 0.4+ | 0.3+ | 2004 02 13 | 699 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.4+  | 0.1+  |
| 2003 12 27 | 704 | 0.3+ | 0.7− | 2004 02 13 | 699 | 0.9− | 0.6− |            |     |       |       |

(172695)\* 2004 BO<sub>5</sub>

Discovered 2004 Jan. 16 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 98.20569   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22026709 | <i>ω</i> | 4.07946   | +0.81343255   | +0.57959125 |
| <i>a</i> | 2.7154156  | <i>Ω</i> | 320.36642 | −0.53581236   | +0.71386798 |
| <i>e</i> | 0.0549929  | <i>i</i> | 4.40610   | −0.22634621   | +0.39302225 |
| <i>P</i> | 4.47       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 704 | 0.1− | 0.4+ | 2004 02 13 | 691 | 0.0  | 0.1+ | 2006 08 19 | 644 | 0.3− | 0.3+ |
| 2002 10 04 | 704 | 0.2− | 0.4+ | 2004 02 13 | 691 | 0.1+ | 0.3+ | 2006 08 19 | 644 | 0.0  | 0.3+ |
| 2002 10 04 | 704 | 0.4+ | 0.6+ | 2004 02 15 | 704 | 0.5− | 1.4+ | 2006 08 19 | 644 | 0.4− | 0.0  |
| 2002 10 12 | 704 | 0.2+ | 0.5+ | 2004 02 15 | 704 | 1.0− | 0.1+ | 2006 08 19 | 644 | 0.0  | 0.1+ |
| 2002 10 12 | 704 | 0.4− | 0.7+ | 2004 02 15 | 704 | 0.3− | 0.7− | 2006 08 22 | 644 | 0.2− | 0.2+ |
| 2002 10 12 | 704 | 0.7− | 0.6− | 2006 07 18 | G96 | 0.5− | 0.1− | 2006 08 22 | 644 | 0.2− | 0.2+ |
| 2004 01 16 | 644 | 0.3+ | 0.6+ | 2006 07 18 | G96 | 0.5− | 0.3− | 2006 08 22 | 644 | 0.0  | 0.3+ |
| 2004 01 16 | 644 | 0.0  | 0.5+ | 2006 07 18 | G96 | 0.1+ | 0.4− | 2006 08 28 | 703 | 0.8+ | 0.6+ |
| 2004 01 16 | 644 | 0.2− | 0.1+ | 2006 07 18 | G96 | 0.3− | 0.4− | 2006 08 28 | 703 | 0.9+ | 0.2+ |
| 2004 01 16 | 691 | 0.3+ | 0.0  | 2006 08 13 | 644 | 0.3− | 0.1+ | 2006 08 28 | 703 | 0.5+ | 1.0+ |
| 2004 01 16 | 691 | 0.1+ | 0.0  | 2006 08 13 | 644 | 0.5− | 0.0  | 2006 08 28 | 703 | 0.0  | 1.1+ |
| 2004 01 16 | 691 | 0.2+ | 0.1+ | 2006 08 13 | 644 | 0.1− | 0.3+ | 2006 10 21 | G96 | 0.1− | 0.2− |
| 2004 01 17 | 644 | 0.4+ | 0.2+ | 2006 08 13 | D35 | 0.4− | 0.5+ | 2006 10 21 | G96 | 0.4− | 0.0  |
| 2004 01 17 | 644 | 0.3+ | 0.1+ | 2006 08 13 | D35 | 0.5− | 0.1+ | 2006 10 21 | G96 | 0.7− | 0.0  |
| 2004 01 17 | 644 | 0.5+ | 0.4+ | 2006 08 13 | D35 | 0.5− | 0.1+ | 2006 10 21 | G96 | 0.4− | 0.1− |
| 2004 01 22 | 704 | 0.0  | 0.5+ | 2006 08 15 | 644 | 0.1− | 0.2+ | 2007 11 03 | 691 | 0.1− | 0.4− |
| 2004 01 22 | 704 | 0.3− | 0.3+ | 2006 08 15 | 644 | 0.1− | 0.0  | 2007 11 03 | 691 | 0.2− | 0.3− |
| 2004 01 22 | 704 | 0.7+ | 1.1+ | 2006 08 15 | 644 | 0.1− | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.3− |
| 2004 01 22 | 704 | 0.6+ | 0.3+ | 2006 08 17 | A50 | 0.7+ | 0.1− | 2007 11 07 | 691 | 0.0  | 0.5− |
| 2004 01 22 | 704 | 0.4+ | 1.1+ | 2006 08 17 | A50 | 0.6+ | 0.3− | 2007 11 07 | 691 | 0.0  | 0.3− |
| 2004 01 27 | 691 | 0.1− | 0.1+ | 2006 08 17 | 644 | 0.2− | 0.3+ | 2007 11 07 | 691 | 0.0  | 0.4− |
| 2004 01 27 | 691 | 0.1+ | 0.1+ | 2006 08 17 | 644 | 0.1+ | 0.4+ | 2007 12 13 | 704 | 0.0  | 0.3− |
| 2004 01 27 | 691 | 0.1+ | 0.1− | 2006 08 17 | 644 | 0.3− | 0.5+ | 2007 12 13 | 704 | 0.2− | 0.6+ |
| 2004 01 27 | 691 | 0.0  | 0.3+ | 2006 08 17 | A50 | 0.3+ | 0.6+ | 2007 12 13 | 704 | 0.4− | 0.3+ |
| 2004 01 27 | 691 | 0.0  | 0.1− | 2006 08 18 | A50 | 0.4− | 0.3+ | 2007 12 13 | 704 | 0.8+ | 0.6+ |
| 2004 01 27 | 691 | 0.0  | 0.0  | 2006 08 18 | 644 | 0.4− | 0.1+ | 2007 12 15 | 704 | 0.2+ | 0.1− |
| 2004 02 11 | 691 | 0.2+ | 0.1+ | 2006 08 18 | 644 | 0.2− | 0.0  | 2007 12 15 | 704 | 0.2+ | 0.2+ |
| 2004 02 11 | 691 | 0.2− | 0.0  | 2006 08 18 | 644 | 0.1− | 0.1+ | 2007 12 15 | 704 | 0.3+ | 0.2− |
| 2004 02 11 | 691 | 0.1− | 0.1+ | 2006 08 19 | 644 | 0.1− | 0.3+ | 2007 12 15 | 704 | 0.5+ | 0.5+ |
| 2004 02 13 | 691 | 0.2− | 0.4+ | 2006 08 19 | 644 | 0.2+ | 0.3+ | 2007 12 15 | 704 | 0.1+ | 0.2− |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 99.68145   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21245510 | $\omega$ | 239.40982 | +0.58566126   | +0.80775774 |
| <i>a</i> | 2.7815782  | $\Omega$ | 66.59037  | −0.71630291   | +0.55462800 |
| <i>e</i> | 0.0568725  | <i>i</i> | 4.20520   | −0.37935606   | +0.19978794 |
| <i>P</i> | 4.64       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 01 | 691 | 0.1+ | 0.4+ | 2005 04 19 | 691 | 0.1+ | 0.1+ | 2007 10 10 | G96 | 0.1− | 0.0  |
| 1995 02 01 | 691 | 0.0  | 0.2+ | 2005 04 19 | 691 | 0.1+ | 0.2− | 2007 10 10 | G96 | 0.2+ | 0.1− |
| 1995 02 01 | 691 | 0.2+ | 0.2+ | 2005 04 19 | 691 | 0.1− | 0.4+ | 2007 10 31 | 691 | 0.2− | 0.0  |
| 2004 01 16 | 691 | 0.2+ | 0.1− | 2005 05 07 | 691 | 0.2+ | 0.1+ | 2007 10 31 | 691 | 0.4+ | 0.2− |
| 2004 01 16 | 691 | 0.1+ | 0.1+ | 2005 05 07 | 691 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.4+ | 0.6+ |
| 2004 01 16 | 691 | 0.1− | 0.0  | 2005 05 07 | 691 | 0.1+ | 0.0  | 2007 11 14 | 704 | 0.6+ | 0.3+ |
| 2004 01 18 | 691 | 0.1+ | 0.1− | 2005 05 11 | G96 | 0.7− | 0.2− | 2007 11 14 | 704 | 0.6− | 0.7+ |
| 2004 01 18 | 691 | 0.0  | 0.1− | 2005 05 11 | G96 | 0.4− | 0.1− | 2007 11 14 | 704 | 0.6− | 0.3+ |
| 2004 01 18 | 691 | 0.3+ | 0.3− | 2005 05 11 | G96 | 0.4− | 0.2− | 2007 11 19 | 691 | 0.3− | 0.2+ |
| 2004 01 31 | 691 | 0.1− | 0.0  | 2005 05 11 | G96 | 0.2+ | 0.0  | 2007 11 19 | 691 | 0.3− | 0.0  |
| 2004 01 31 | 691 | 0.3− | 0.4− | 2006 08 14 | 644 | 0.0  | 0.5+ | 2007 11 19 | 691 | 0.3− | 0.1+ |
| 2004 01 31 | 691 | 0.3− | 0.3+ | 2006 08 14 | 644 | 0.4− | 0.4+ | 2007 12 06 | G96 | 0.3+ | 0.2− |
| 2005 03 09 | G96 | 0.5+ | 0.1+ | 2006 08 14 | 644 | 0.1− | 0.5+ | 2007 12 06 | G96 | 0.2+ | 0.4− |
| 2005 03 09 | G96 | 0.7− | 0.5− | 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 12 06 | G96 | 0.7+ | 0.4− |
| 2005 03 09 | G96 | 0.2+ | 0.1− | 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 12 06 | G96 | 0.0  | 0.8− |
| 2005 03 09 | G96 | 0.3− | 0.8+ | 2007 09 10 | G96 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.1+ | 0.2− |
| 2005 04 12 | 691 | 0.2+ | 0.1− | 2007 09 10 | G96 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.0  | 0.1− |
| 2005 04 12 | 691 | 0.1− | 0.1+ | 2007 10 10 | G96 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.1− | 0.3− |
| 2005 04 12 | 691 | 0.1+ | 0.0  | 2007 10 10 | G96 | 0.3+ | 0.1− | 2007 12 15 | G96 | 0.1− | 0.1+ |

**(172697)\* 2004 BT<sub>11</sub>**

Discovered 2004 Jan. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.41863   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23714945 | $\omega$ | 22.79659 | +0.69575470   | −0.71822889 |
| <i>a</i> | 2.5849648  | $\Omega$ | 23.11888 | +0.65561739   | −0.63016522 |
| <i>e</i> | 0.1816842  | <i>i</i> | 1.24396  | +0.29341307   | +0.29502383 |
| <i>P</i> | 4.16       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 29 | 691 | 0.1+ | 0.2− | 2004 01 22 | 704 | 0.4− | 0.6+ | 2005 06 01 | G96 | 0.3+ | 0.0  |
| 1994 09 29 | 691 | 0.1− | 0.1+ | 2004 01 22 | 704 | 0.4− | 0.8+ | 2005 06 01 | G96 | 0.5− | 0.3+ |
| 1994 09 29 | 691 | 0.2+ | 0.2+ | 2004 01 22 | 704 | 0.4− | 0.7+ | 2005 06 01 | G96 | 0.3+ | 0.1− |
| 1998 09 18 | 691 | 0.4− | 0.4+ | 2004 01 28 | 691 | 0.1+ | 0.2+ | 2005 06 01 | G96 | 0.1− | 0.2− |
| 1998 09 18 | 691 | 0.1+ | 0.3+ | 2004 01 28 | 691 | 0.1+ | 0.3+ | 2006 06 21 | 691 | 0.0  | 0.2− |
| 1998 09 18 | 691 | 0.2− | 0.4+ | 2004 01 28 | 691 | 0.0  | 0.2+ | 2006 06 21 | 691 | 0.1+ | 1.2+ |
| 2000 02 06 | 695 | 0.1+ | 0.2+ | 2004 02 11 | 691 | 0.1− | 0.0  | 2006 06 21 | 691 | 0.9− | 0.4− |
| 2000 02 06 | 695 | 0.5+ | 0.2+ | 2004 02 11 | 691 | 0.1+ | 0.1+ | 2007 11 02 | G96 | 0.2+ | 0.0  |
| 2001 05 26 | 291 | 0.8− | 0.2+ | 2004 02 11 | 691 | 0.2+ | 0.1+ | 2007 11 02 | G96 | 0.4− | 0.3− |
| 2001 05 26 | 291 | 0.1− | 0.5+ | 2004 02 17 | 645 | 0.1− | 0.1− | 2007 11 02 | G96 | 0.4+ | 0.3− |
| 2001 05 26 | 291 | 0.2+ | 0.7+ | 2004 02 17 | 645 | 0.1− | 0.0  | 2007 11 02 | G96 | 0.1− | 0.1− |
| 2002 08 08 | 644 | 0.3+ | 0.4+ | 2005 04 12 | G96 | 0.1+ | 0.2− | 2007 12 06 | 704 | 0.5− | 0.0  |
| 2002 08 08 | 644 | 0.2+ | 0.8+ | 2005 04 12 | G96 | 0.2− | 0.3− | 2007 12 06 | 704 | 1.1− | 0.6+ |
| 2002 08 08 | 644 | 0.4+ | 0.6+ | 2005 04 12 | G96 | 0.4+ | 0.2− | 2007 12 06 | 704 | 1.4− | 1.5+ |
| 2004 01 16 | 644 | 0.2− | 0.5+ | 2005 04 12 | G96 | 0.3+ | 0.0  | 2007 12 10 | 704 | 0.8− | 0.5+ |
| 2004 01 16 | 644 | 0.1− | 0.3+ | 2005 04 14 | 691 | 0.1+ | 0.1− | 2007 12 10 | 704 | 0.7+ | 0.3+ |
| 2004 01 16 | 644 | 0.0  | 0.3+ | 2005 04 14 | 691 | 0.5+ | 0.1− | 2007 12 10 | 704 | 0.0  | 0.3+ |
| 2004 01 19 | 691 | 0.0  | 0.1− | 2005 04 14 | 691 | 0.5+ | 0.1+ | 2007 12 10 | 704 | 0.3− | 0.9+ |
| 2004 01 19 | 691 | 0.2+ | 0.0  | 2005 05 07 | G96 | 0.0  | 0.1+ | 2007 12 14 | 704 | 1.2+ | 0.3+ |
| 2004 01 19 | 691 | 0.0  | 0.1− | 2005 05 07 | G96 | 0.0  | 0.3+ | 2007 12 14 | 704 | 1.6+ | 0.1+ |
| 2004 01 22 | 704 | 0.4− | 0.4+ | 2005 05 07 | G96 | 0.2+ | 0.1+ | 2007 12 14 | 704 | 0.7+ | 0.2− |
| 2004 01 22 | 704 | 0.4+ | 0.1− | 2005 05 07 | G96 | 0.6+ | 0.1− | 2007 12 14 | 704 | 1.4+ | 0.5+ |

**(172698)\* 2004 BO<sub>15</sub> = 2005 JS<sub>155</sub>**

Discovered 2004 Jan. 16 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 86225)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.07791    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24009461 | $\omega$ | 206.98181 | +0.39416596   | −0.91895530 |
| <i>a</i> | 2.5637821  | $\Omega$ | 219.80763 | +0.84666554   | +0.36835056 |
| <i>e</i> | 0.2120508  | <i>i</i> | 1.11192   | +0.35747819   | +0.14085103 |
| <i>P</i> | 4.11       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1992 03 01 | 809 | (2.6− | 1.3+) | 2004 01 24 | 704 | 0.0  | 0.7+ | 2006 07 23 | G96 | 0.3+ | 0.5+ |
| 2000 03 09 | 691 | 0.2−  | 0.8+  | 2004 01 24 | 704 | 0.7+ | 0.5+ | 2006 07 23 | G96 | 0.4+ | 0.2+ |
| 2000 03 09 | 691 | 0.5−  | 0.6+  | 2004 01 24 | 704 | 0.1+ | 1.3+ | 2006 07 23 | G96 | 0.0  | 0.4+ |
| 2000 03 09 | 691 | 0.1−  | 0.3−  | 2004 01 24 | 704 | 0.0  | 0.7+ | 2007 11 14 | 704 | 0.1+ | 1.1− |
| 2003 12 17 | 291 | 0.2−  | 0.1+  | 2004 02 13 | 691 | 0.3+ | 0.1+ | 2007 11 14 | 704 | 0.7+ | 0.6− |
| 2003 12 17 | 291 | 0.3−  | 0.2+  | 2004 02 13 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 704 | 0.6+ | 0.7− |
| 2003 12 17 | 291 | 0.1−  | 0.0   | 2004 02 13 | 691 | 0.1+ | 0.1+ | 2007 11 19 | G96 | 0.1− | 0.5− |
| 2004 01 16 | 691 | 0.0   | 0.0   | 2004 02 17 | 645 | 0.1+ | 0.1− | 2007 11 19 | G96 | 0.1+ | 0.4− |
| 2004 01 16 | 691 | 0.3+  | 0.1+  | 2004 02 17 | 645 | 0.1+ | 0.2− | 2007 11 19 | G96 | 0.2+ | 0.3− |
| 2004 01 16 | 691 | 0.2+  | 0.1+  | 2004 04 13 | 645 | 0.1+ | 0.1− | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 2004 01 19 | 699 | 0.4−  | 0.4−  | 2004 04 13 | 645 | 0.0  | 0.2− | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2004 01 19 | 699 | 1.1−  | 0.7+  | 2005 05 04 | G96 | 0.5+ | 0.2− | 2007 12 04 | G96 | 0.3+ | 0.3− |
| 2004 01 19 | 699 | 0.3−  | 0.8+  | 2005 05 04 | G96 | 0.1− | 0.1+ | 2007 12 04 | G96 | 0.2− | 0.3− |
| 2004 01 19 | 699 | 0.1+  | 0.2−  | 2005 05 04 | G96 | 0.3+ | 0.2+ | 2007 12 04 | 691 | 0.4− | 0.1+ |
| 2004 01 19 | 703 | 1.1+  | 0.2−  | 2005 05 04 | G96 | 0.4− | 0.1+ | 2007 12 04 | 691 | 0.4− | 0.2− |
| 2004 01 19 | 703 | 0.7+  | 0.4−  | 2005 05 13 | G96 | 0.1− | 0.1+ | 2007 12 04 | 691 | 0.4− | 0.1+ |
| 2004 01 19 | 703 | 0.4−  | 1.1−  | 2005 05 13 | G96 | 0.7− | 0.4− | 2007 12 05 | 704 | 0.1− | 0.8+ |
| 2004 01 19 | 703 | (1.2+ | 2.2−) | 2005 05 13 | G96 | 0.0  | 0.2− | 2007 12 05 | 704 | 0.9+ | 1.2+ |
| 2004 01 21 | 704 | 0.1−  | 0.2+  | 2005 05 13 | G96 | 0.3− | 0.3+ | 2007 12 05 | 704 | 0.3− | 0.6+ |
| 2004 01 21 | 704 | 0.0   | 0.3+  | 2006 06 19 | G96 | 0.2+ | 0.6+ | 2007 12 05 | 704 | 1.5+ | 1.5+ |
| 2004 01 21 | 704 | 0.1−  | 0.3+  | 2006 06 19 | G96 | 0.4− | 0.0  | 2007 12 16 | 691 | 0.3− | 0.1− |
| 2004 01 21 | 704 | 0.2−  | 0.5+  | 2006 06 19 | G96 | 0.0  | 0.3− | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2004 01 21 | 704 | 0.2+  | 0.1+  | 2006 06 19 | G96 | 0.1− | 0.1− | 2007 12 16 | 691 | 0.0  | 0.1− |
| 2004 01 24 | 704 | 0.5+  | 0.2+  | 2006 07 23 | G96 | 0.3− | 0.0  |            |     |      |      |

**(172699)\* 2004 BR<sub>23</sub>**

Discovered 2004 Jan. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 241.02975  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21238808 | $\omega$ | 73.15093  | −0.94630864   | +0.31912562 |
| <i>a</i> | 2.7821633  | $\Omega$ | 125.43051 | −0.31542904   | −0.87664248 |
| <i>e</i> | 0.0890490  | <i>i</i> | 3.62823   | −0.07074239   | −0.36007888 |
| <i>P</i> | 4.64       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 09 28 | 691 | 1.5−  | 0.6+  | 2004 02 12 | 691 | 0.2−  | 0.4+  | 2006 08 18 | 691 | 0.0  | 0.3+ |
| 1992 09 28 | 691 | 0.5+  | 0.4+  | 2004 02 12 | 691 | 0.2−  | 0.3+  | 2006 08 18 | 691 | 1.2− | 0.0  |
| 1992 09 28 | 691 | 0.7+  | 0.4+  | 2004 02 12 | 333 | 0.4−  | 0.5+  | 2006 08 27 | 691 | 0.1− | 0.1+ |
| 1995 03 04 | 691 | 0.1−  | 0.2+  | 2004 02 12 | 691 | 0.1−  | 0.3+  | 2006 08 27 | 691 | 0.0  | 0.4+ |
| 1995 03 04 | 691 | 0.1−  | 0.4−  | 2004 02 12 | 333 | 0.3−  | 0.3+  | 2006 08 27 | 691 | 0.1+ | 0.1− |
| 2004 01 18 | 644 | 0.2+  | 0.2+  | 2004 02 12 | 333 | 0.6−  | 0.2+  | 2006 09 18 | 703 | 0.9− | 0.4+ |
| 2004 01 18 | 644 | 0.3+  | 0.1+  | 2004 02 17 | 704 | 0.8+  | 1.1+  | 2006 09 18 | 703 | 0.6+ | 0.8+ |
| 2004 01 18 | 644 | 0.6+  | 0.0   | 2004 02 17 | 704 | 0.1−  | 0.2−  | 2006 09 18 | 703 | 0.4+ | 0.6− |
| 2004 01 21 | 704 | (0.6+ | 2.3+) | 2004 02 17 | 704 | 0.2−  | 0.0   | 2006 09 18 | 703 | 1.2+ | 0.9+ |
| 2004 01 21 | 704 | 1.3+  | 0.7+  | 2004 02 17 | 704 | 0.9−  | 0.5−  | 2006 11 23 | G96 | 0.3+ | 0.1+ |
| 2004 01 21 | 704 | 0.8+  | 0.8+  | 2004 02 17 | 704 | 0.1+  | 0.3+  | 2006 11 23 | G96 | 0.1+ | 0.2− |
| 2004 01 23 | 699 | 0.3−  | 0.9−  | 2004 02 23 | 704 | 0.1+  | 1.1+  | 2006 11 23 | G96 | 0.3+ | 0.6+ |
| 2004 01 23 | 699 | 0.8+  | 0.2−  | 2004 02 23 | 704 | 0.1−  | 1.0+  | 2006 11 23 | G96 | 0.2+ | 0.0  |
| 2004 01 23 | 699 | 0.9+  | 0.6−  | 2004 02 23 | 704 | 0.1+  | 0.9+  | 2007 11 08 | 691 | 0.0  | 0.5− |
| 2004 01 23 | 699 | 0.4−  | 0.3+  | 2004 02 23 | 704 | 0.9+  | 0.6+  | 2007 11 08 | 691 | 0.0  | 0.2− |
| 2004 01 24 | 704 | 0.3+  | 0.6+  | 2004 02 23 | 704 | (0.8+ | 2.3+) | 2007 11 08 | 691 | 0.0  | 0.4− |
| 2004 01 24 | 704 | (0.1+ | 2.2+) | 2004 03 10 | 644 | 0.1+  | 0.1+  | 2007 11 20 | 691 | 0.1+ | 0.3− |
| 2004 01 24 | 704 | 0.2+  | 0.6+  | 2004 03 10 | 644 | 0.3+  | 0.3+  | 2007 11 20 | 691 | 0.0  | 0.2− |
| 2004 01 24 | 704 | 0.1−  | 0.4+  | 2004 03 10 | 644 | 0.4+  | 0.5+  | 2007 11 20 | 691 | 0.2− | 0.1+ |
| 2004 01 24 | 704 | 0.2+  | 0.4+  | 2005 02 10 | 809 | 0.1−  | 0.3+  | 2007 12 05 | G96 | 0.5− | 0.5− |
| 2004 01 30 | 691 | 0.0   | 0.0   | 2005 02 10 | 809 | 0.3−  | 1.1−  | 2007 12 05 | G96 | 1.3+ | 0.4− |
| 2004 01 30 | 691 | 0.1+  | 0.0   | 2005 02 10 | 809 | 0.7+  | 0.0   | 2007 12 05 | G96 | 0.1+ | 0.1− |
| 2004 01 30 | 691 | 0.2+  | 0.1−  | 2006 08 18 | 691 | 0.0   | 0.2+  | 2007 12 05 | G96 | 0.4+ | 0.4− |

2007 DEC. 24

M.P.O. 129453

(172700)\* 2004 BJ<sub>24</sub> = 2004 AW<sub>26</sub>

Discovered 2004 Jan. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (d, MPO 100701)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |
|----------|------------|----------|-----------|
| <i>M</i> | 74.12947   | <i>P</i> | <i>Q</i>  |
|          |            | (2000.0) |           |
| <i>n</i> | 0.24594808 | $\omega$ | 68.59107  |
| <i>a</i> | 2.5229410  | $\Omega$ | 286.36025 |
| <i>e</i> | 0.2337526  | <i>i</i> | 5.04902   |
| <i>P</i> | 4.01       | <i>H</i> | 15.9      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 2         |

Residuals in seconds of arc

|            |     |             |            |     |      |      |            |     |             |      |
|------------|-----|-------------|------------|-----|------|------|------------|-----|-------------|------|
| 1998 06 26 | 809 | (3.8+ 0.7-) | 2002 07 13 | 644 | 0.0  | 0.2+ | 2004 01 19 | 699 | 0.8-        | 0.2- |
| 1998 06 26 | 809 | (3.4+ 1.2-) | 2002 07 13 | 644 | 0.2- | 0.3+ | 2004 01 21 | 704 | 0.3+        | 1.1+ |
| 1998 06 26 | 809 | (3.5+ 1.1-) | 2002 07 14 | 644 | 0.5- | 0.7+ | 2004 01 21 | 704 | 0.5+        | 0.2- |
| 2000 01 07 | 691 | 0.1+ 0.0    | 2002 07 14 | 704 | 0.3+ | 1.2- | 2004 01 21 | 704 | 0.1+        | 0.3+ |
| 2000 01 07 | 691 | 0.2+ 0.1-   | 2002 07 14 | 644 | 0.1- | 0.1+ | 2004 01 31 | 691 | 0.2-        | 0.5+ |
| 2000 01 07 | 691 | 0.2+ 0.0    | 2002 07 14 | 704 | 1.0+ | 0.1+ | 2004 01 31 | 691 | 0.1-        | 0.3+ |
| 2002 06 12 | 644 | 0.0 0.0     | 2002 07 14 | 644 | 0.0  | 0.1+ | 2004 01 31 | 691 | 0.1+        | 0.2+ |
| 2002 06 12 | 644 | 0.0 0.0     | 2002 07 14 | 704 | 1.1- | 0.2+ | 2006 06 18 | 644 | 0.2-        | 0.2+ |
| 2002 06 12 | 644 | 0.0 0.1-    | 2002 07 14 | 704 | 0.7- | 1.2+ | 2006 06 18 | 644 | 0.2-        | 0.2- |
| 2002 06 16 | 644 | 0.1- 0.6+   | 2002 07 14 | 704 | 0.4- | 0.6+ | 2006 06 18 | 644 | 0.2+        | 0.0  |
| 2002 06 16 | 644 | 0.1- 0.0    | 2002 07 15 | 644 | 0.0  | 0.2+ | 2006 06 30 | 704 | 0.4+        | 0.8+ |
| 2002 06 16 | 644 | 0.1+ 0.1-   | 2002 07 15 | 644 | 0.0  | 0.1+ | 2006 06 30 | 704 | 0.6+        | 0.4- |
| 2002 06 29 | 644 | 0.0 0.1+    | 2002 07 19 | 644 | 0.5- | 0.6+ | 2006 06 30 | 704 | 0.7+        | 0.0  |
| 2002 06 29 | 644 | 0.1+ 0.1+   | 2002 07 19 | 644 | 0.2- | 0.5+ | 2006 06 30 | 704 | (1.5+ 1.7+) |      |
| 2002 06 29 | 644 | 0.1+ 0.0    | 2002 07 19 | 644 | 0.0  | 0.2+ | 2006 11 02 | G96 | 0.2-        | 0.1+ |
| 2002 07 04 | 644 | 0.1+ 0.2+   | 2003 12 19 | 704 | 0.6- | 0.9- | 2006 11 02 | G96 | 0.5-        | 0.0  |
| 2002 07 04 | 644 | 0.2+ 0.0    | 2003 12 19 | 704 | 0.4- | 1.2- | 2006 11 02 | G96 | 0.1-        | 0.6+ |
| 2002 07 04 | 644 | 0.1- 0.1-   | 2003 12 19 | 704 | 0.9- | 0.2+ | 2006 11 02 | G96 | 0.4+        | 0.3+ |
| 2002 07 05 | 704 | 0.2+ 1.1-   | 2003 12 19 | 704 | 0.8- | 0.4+ | 2007 11 04 | G96 | 0.3+        | 0.1+ |
| 2002 07 05 | 704 | 0.2+ 1.3-   | 2004 01 13 | 699 | 0.7+ | 0.2- | 2007 11 04 | G96 | 0.2-        | 0.2- |
| 2002 07 05 | 704 | 0.0 1.0-    | 2004 01 13 | 699 | 0.1- | 0.2- | 2007 11 04 | G96 | 0.2-        | 0.2+ |
| 2002 07 05 | 704 | (3.0+ 1.9-) | 2004 01 13 | 699 | 0.8+ | 0.7+ | 2007 11 04 | G96 | 0.3+        | 0.1+ |
| 2002 07 06 | 333 | 0.4- 1.0+   | 2004 01 13 | 699 | 0.7+ | 0.5+ | 2007 12 06 | G96 | 0.3-        | 0.1+ |
| 2002 07 06 | 333 | 0.3- 0.3+   | 2004 01 19 | 699 | 0.3- | 0.4+ | 2007 12 06 | G96 | 0.0         | 0.4- |
| 2002 07 06 | 333 | 0.7+ 0.1+   | 2004 01 19 | 699 | 0.7+ | 0.2- | 2007 12 06 | G96 | 0.3-        | 0.3+ |
| 2002 07 13 | 644 | 0.2- 0.1+   | 2004 01 19 | 699 | 0.6+ | 0.0  | 2007 12 06 | G96 | 0.1-        | 0.6+ |

(172701)\* 2004 BM<sub>25</sub> = 2000 GP<sub>158</sub>

Discovered 2004 Jan. 19 by the Catalina Sky Survey.

Id. A. Doppler (MPO 69633)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |
|----------|------------|----------|-----------|
| <i>M</i> | 292.54834  | <i>P</i> | <i>Q</i>  |
|          |            | (2000.0) |           |
| <i>n</i> | 0.22322154 | $\omega$ | 202.46527 |
| <i>a</i> | 2.6914025  | $\Omega$ | 298.56860 |
| <i>e</i> | 0.1480657  | <i>i</i> | 2.16214   |
| <i>P</i> | 4.42       | <i>H</i> | 16.8      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 0         |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 1995 01 07 | 691 | 0.0  | 0.4- | 2004 01 19 | 703 | 1.1-        | 1.0+ | 2007 11 01 | 691 | 0.0  | 0.1+ |
| 1995 01 07 | 691 | 0.1- | 0.6- | 2004 01 21 | 704 | 0.4-        | 0.2+ | 2007 11 01 | 691 | 0.2- | 0.1+ |
| 1995 01 07 | 691 | 0.0  | 1.5- | 2004 01 21 | 704 | 0.5-        | 0.2- | 2007 11 01 | 691 | 0.2- | 0.0  |
| 2000 03 09 | 704 | 0.7+ | 1.2+ | 2004 01 21 | 704 | 0.3-        | 0.1- | 2007 11 01 | 691 | 0.1+ | 0.1+ |
| 2000 03 09 | 704 | 1.4+ | 0.1- | 2004 01 21 | 704 | 0.7-        | 1.1- | 2007 11 05 | 691 | 0.1+ | 0.4- |
| 2000 03 09 | 704 | 0.1+ | 0.4+ | 2004 01 21 | 704 | (1.7- 1.1+) |      | 2007 11 05 | 691 | 0.2- | 0.0  |
| 2000 03 09 | 704 | 0.5+ | 0.6+ | 2004 01 24 | 704 | 0.4-        | 0.1- | 2007 11 05 | 691 | 0.1+ | 0.2+ |
| 2000 03 09 | 704 | 0.9- | 0.1- | 2004 01 24 | 704 | 0.9-        | 0.1- | 2007 11 13 | 699 | 1.1+ | 0.2- |
| 2000 04 07 | 699 | 1.5+ | 0.5+ | 2004 01 24 | 704 | 0.3-        | 0.0  | 2007 11 13 | 699 | 0.1- | 0.7+ |
| 2000 04 07 | 699 | 0.4- | 0.6+ | 2004 01 24 | 704 | (1.3+ 1.9-) |      | 2007 11 13 | 699 | 0.2- | 0.7+ |
| 2000 04 07 | 699 | 0.4+ | 1.2+ | 2004 01 27 | 691 | 0.1+        | 0.1+ | 2007 11 13 | 699 | 0.1- | 0.2+ |
| 2000 04 07 | 699 | 0.6- | 0.5+ | 2004 01 27 | 691 | 0.3+        | 0.2+ | 2007 11 15 | 704 | 0.8- | 0.5+ |
| 2000 04 11 | 608 | 0.5+ | 0.1+ | 2004 01 27 | 691 | 0.1+        | 0.2+ | 2007 11 15 | 704 | 0.4- | 1.1+ |
| 2000 04 11 | 608 | 0.4+ | 0.3+ | 2004 02 11 | 699 | 0.5-        | 0.9+ | 2007 11 15 | 704 | 0.2+ | 1.2+ |
| 2000 04 11 | 608 | 0.0  | 0.3+ | 2004 02 11 | 699 | 0.3-        | 0.4+ | 2007 11 15 | 704 | 1.2+ | 1.0+ |

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 2002 10 11 | 704 | (0.6+ 1.8+) | 2004 02 11 | 699 | 0.2- 0.1-   | 2007 11 15 | 704 | 0.8- 1.2+ |
| 2002 10 11 | 704 | 0.4+ 0.1+   | 2004 02 11 | 699 | 0.8- 0.2+   | 2007 11 17 | 691 | 0.1- 0.0  |
| 2002 10 11 | 704 | 1.1+ 0.1-   | 2004 04 13 | 645 | 0.0 0.1-    | 2007 11 17 | 691 | 0.2- 0.2+ |
| 2002 10 11 | 704 | 0.7- 0.4+   | 2004 04 13 | 645 | 0.0 0.1-    | 2007 11 17 | 691 | 0.2- 0.0  |
| 2003 12 22 | 691 | 0.2- 0.4+   | 2004 04 15 | 645 | 0.1+ 0.1-   | 2007 12 10 | 704 | 0.1+ 0.9- |
| 2003 12 22 | 691 | 0.1- 0.1+   | 2004 04 15 | 645 | 0.1+ 0.0    | 2007 12 10 | 704 | 0.3- 0.2- |
| 2003 12 22 | 691 | 0.1+ 0.3+   | 2004 04 16 | 645 | 0.0 0.1-    | 2007 12 10 | 704 | 1.1+ 0.6- |
| 2004 01 19 | 699 | 0.4- 0.8+   | 2004 04 16 | 645 | 0.0 0.0     | 2007 12 10 | 704 | 1.6+ 0.4- |
| 2004 01 19 | 699 | 0.1+ 0.0    | 2006 08 28 | 703 | 0.5+ 0.9-   | 2007 12 14 | 704 | 0.8- 0.1+ |
| 2004 01 19 | 699 | 0.0 0.0     | 2006 08 28 | 703 | 1.1- 0.9+   | 2007 12 14 | 704 | 0.3- 1.5+ |
| 2004 01 19 | 699 | 0.2+ 0.8+   | 2006 08 28 | 703 | (1.5- 2.3+) | 2007 12 14 | 704 | 0.2+ 2.0+ |
| 2004 01 19 | 703 | 0.1+ 0.2-   | 2006 08 28 | 703 | 0.7- 1.0-   | 2007 12 14 | 704 | 0.6+ 1.1+ |
| 2004 01 19 | 703 | 0.5+ 0.3-   | 2007 11 01 | 691 | 0.2+ 0.2-   |            |     |           |
| 2004 01 19 | 703 | 0.4- 0.3+   | 2007 11 01 | 691 | 0.2+ 0.0    |            |     |           |

(172702)\* 2004 BF<sub>28</sub>

Discovered 2004 Jan. 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |
|----------|------------|----------|-----------|
| <i>M</i> | 22.93019   | <i>P</i> | <i>Q</i>  |
|          |            | (2000.0) |           |
| <i>n</i> | 0.23961815 | $\omega$ | 312.13176 |
| <i>a</i> | 2.5671795  | $\Omega$ | 108.81193 |
| <i>e</i> | 0.1680346  | <i>i</i> | 5.90320   |
| <i>P</i> | 4.11       | <i>H</i> | 16.2      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 0         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 17 | 608 | 0.1- | 0.1+ | 2004 01 30 | 704 | 0.3+  | 0.1+  | 2005 06 12 | 691 | 0.2+ | 0.0  |
| 2002 08 17 | 608 | 0.4+ | 0.6+ | 2004 01 30 | 704 | 0.6+  | 1.1+  | 2005 06 12 | 691 | 0.3- | 0.1- |
| 2002 08 17 | 608 | 0.1- | 0.4- | 2004 01 31 | 691 | 0.2-  | 0.2+  | 2005 06 12 | 691 | 0.0  | 0.1+ |
| 2002 08 18 | 644 | 0.4- | 0.7+ | 2004 01 31 | 691 | 0.1-  | 0.3+  | 2006 08 12 | 644 | 0.2- | 0.0  |
| 2002 08 18 | 644 | 0.2- | 0.9+ | 2004 01 31 | 691 | 0.3-  | 0.2+  | 2006 08 12 | 644 | 0.0  | 0.3+ |
| 2002 08 18 | 644 | 0.3- | 1.0+ | 2004 02 11 | 691 | 0.4-  | 0.1+  | 2006 08 12 | 644 | 0.3- | 0.2+ |
| 2002 08 19 | 644 | 0.0  | 0.2- | 2004 02 11 | 691 | 0.3-  | 0.1+  | 2006 08 14 | 644 | 0.4- | 0.4+ |
| 2002 08 19 | 644 | 0.1- | 0.0  | 2004 02 11 | 691 | 0.2-  | 0.3+  | 2006 08 14 | 644 | 0.2- | 0.2+ |
| 2002 08 19 | 644 | 0.2+ | 0.2- | 2004 02 16 | 704 | (1.7- | 0.3+) | 2006 08 14 | 644 | 0.3- | 0.6+ |
| 2002 08 30 | 644 | 0.2- | 1.5+ | 2004 02 16 | 704 | 0.2-  | 0.7+  | 2006 08 17 | 644 | 0.7- | 0.2+ |
| 2002 08 30 | 644 | 0.1+ | 1.2+ | 2004 02 16 | 704 | 0.0   | 0.4+  | 2006 08 17 | 644 | 0.3- | 0.4+ |
| 2002 08 30 | 644 | 0.0  | 1.1+ | 2004 02 16 | 704 | 0.0   | 0.7+  | 2006 08 17 | 644 | 0.3- | 0.3+ |
| 2003 10 25 | 691 | 0.9+ | 0.1- | 2004 02 16 | 704 | 1.0+  | 0.6+  | 2006 08 20 | 644 | 0.1+ | 0.0  |
| 2003 10 25 | 691 | 0.1- | 0.1+ | 2004 02 18 | 691 | 0.1+  | 0.1+  | 2006 08 20 | 644 | 0.1- | 0.2+ |
| 2003 10 25 | 691 | 0.5+ | 0.3+ | 2004 02 18 | 691 | 0.1-  | 0.0   | 2006 08 20 | 644 | 0.0  | 0.0  |
| 2004 01 18 | 644 | 0.5- | 0.0  | 2004 02 18 | 691 | 0.0   | 0.1+  | 2006 08 24 | 644 | 0.4- | 0.3+ |
| 2004 01 18 | 644 | 0.1+ | 0.1- | 2004 02 18 | 608 | 0.7+  | 0.8-  | 2006 08 24 | 644 | 0.0  | 0.6+ |
| 2004 01 18 | 644 | 0.2- | 0.1+ | 2004 02 18 | 608 | 0.4+  | 0.1+  | 2006 08 24 | 644 | 0.3+ | 0.5+ |
| 2004 01 22 | 704 | 0.2+ | 0.2+ | 2004 02 18 | 608 | 0.5+  | 0.4-  | 2007 11 11 | G96 | 0.2- | 0.2- |
| 2004 01 22 | 704 | 0.1+ | 0.0  | 2005 05 03 | 691 | 0.5+  | 0.1+  | 2007 11 11 | G96 | 0.0  | 0.2- |
| 2004 01 22 | 704 | 0.8+ | 0.4+ | 2005 05 03 | 691 | 0.1+  | 0.0   | 2007 11 11 | G96 | 0.4- | 0.0  |
| 2004 01 22 | 704 | 0.1+ | 0.2+ | 2005 05 03 | 691 | 0.1+  | 0.1+  | 2007 11 11 | G96 | 0.1- | 0.1- |
| 2004 01 22 | 704 | 0.4- | 0.8+ | 2005 05 08 | 691 | 0.1+  | 0.1+  | 2007 12 14 | 704 | 0.3+ | 0.2- |
| 2004 01 24 | 704 | 0.3+ | 0.5+ | 2005 05 08 | 691 | 0.0   | 0.4+  | 2007 12 14 | 704 | 1.7+ | 0.5+ |
| 2004 01 24 | 704 | 0.5+ | 0.0  | 2005 05 08 | 691 | 0.2+  | 0.1+  | 2007 12 14 | 704 | 0.3+ | 1.5+ |
| 2004 01 24 | 704 | 0.1+ | 0.3+ | 2005 05 19 | G96 | 0.4-  | 0.1-  | 2007 12 14 | G96 | 0.2+ | 0.3- |
| 2004 01 30 | 704 | 0.1+ | 0.1+ | 2005 05 19 | G96 | 0.4-  | 0.1-  | 2007 12 14 | G96 | 0.2- | 0.3- |
| 2004 01 30 | 704 | 0.9- | 0.0  | 2005 05 19 | G96 | 0.2-  | 0.1-  | 2007 12 14 | G96 | 0.1- | 0.5- |
| 2004 01 30 | 704 | 0.4+ | 0.2- | 2005 05 19 | G96 | 0.4-  | 0.0   | 2007 12 14 | G96 | 0.5- | 0.4- |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 10 21 | 809 | 1.4−  | 1.3+  | 2004 01 31 | 691 | 0.1−  | 0.2−  | 2007 11 09 | D29 | 0.7− | 0.2+ |
| 1993 10 21 | 809 | 0.5−  | 2.5+  | 2004 01 31 | 691 | 0.3−  | 0.2−  | 2007 11 09 | D29 | 0.0  | 0.2− |
| 1993 10 21 | 809 | 0.4+  | 2.5+  | 2004 01 31 | 691 | 0.3−  | 0.0   | 2007 11 09 | D29 | 0.6+ | 0.1+ |
| 2002 09 09 | 599 | 1.1−  | 0.3−  | 2004 02 11 | 699 | 1.0−  | 0.3+  | 2007 11 09 | D29 | 0.2+ | 0.5− |
| 2002 09 09 | 599 | (1.2− | 1.5+) | 2004 02 11 | 699 | 0.5−  | 0.0   | 2007 11 12 | 704 | 0.1− | 0.1+ |
| 2002 09 09 | 599 | 1.4−  | 0.4−  | 2004 02 11 | 699 | 0.1+  | 0.2+  | 2007 11 12 | 704 | 0.0  | 0.6+ |
| 2002 09 28 | 608 | (2.7− | 1.3−) | 2004 02 11 | 699 | 0.1−  | 0.1−  | 2007 11 12 | 704 | 0.6+ | 0.7+ |
| 2002 09 28 | 608 | (3.0− | 1.6−) | 2004 02 12 | 691 | 0.1+  | 0.1+  | 2007 11 12 | 704 | 0.3− | 0.5+ |
| 2002 09 28 | 608 | (2.5− | 1.6−) | 2004 02 12 | 691 | 0.0   | 0.0   | 2007 11 12 | 704 | 0.8− | 0.4+ |
| 2002 10 06 | 704 | 0.1−  | 1.1+  | 2004 02 12 | 691 | 0.1+  | 0.1+  | 2007 11 17 | 703 | 0.0  | 1.0− |
| 2002 10 06 | 704 | 0.6+  | 0.5−  | 2004 02 16 | 704 | (1.6− | 0.2+) | 2007 11 17 | 703 | 0.6− | 0.3− |
| 2002 10 06 | 704 | (1.7− | 1.2+) | 2004 02 16 | 704 | 0.9+  | 0.5+  | 2007 11 17 | 703 | 0.3+ | 0.1+ |
| 2002 10 06 | 704 | (0.0  | 1.6+) | 2004 02 16 | 704 | 0.0   | 0.9+  | 2007 11 17 | 703 | 1.3+ | 0.7+ |
| 2004 01 18 | 644 | 0.0   | 0.1−  | 2004 02 16 | 704 | 0.3+  | 0.9+  | 2007 12 04 | 704 | 1.8+ | 1.1+ |
| 2004 01 18 | 644 | 0.0   | 0.2−  | 2004 02 23 | 704 | 0.4+  | 0.2+  | 2007 12 04 | 704 | 0.3− | 0.3+ |
| 2004 01 18 | 644 | 0.1+  | 0.1−  | 2004 02 23 | 704 | 0.8+  | 0.9+  | 2007 12 04 | 704 | 0.3− | 0.3− |
| 2004 01 22 | 704 | (0.4− | 2.5−) | 2004 02 23 | 704 | (1.0− | 2.3+) | 2007 12 04 | 704 | 0.1− | 0.4− |
| 2004 01 22 | 704 | 0.5−  | 0.3−  | 2004 02 23 | 704 | 0.7−  | 1.0+  | 2007 12 04 | 704 | 0.0  | 0.4+ |
| 2004 01 22 | 704 | 0.0   | 0.8−  | 2005 05 10 | 691 | 0.2+  | 0.6+  | 2007 12 05 | 699 | 0.7+ | 0.3+ |
| 2004 01 30 | 704 | 0.8+  | 0.8−  | 2005 05 10 | 691 | 0.3+  | 0.6+  | 2007 12 05 | 699 | 0.0  | 0.9+ |
| 2004 01 30 | 704 | 0.5+  | 0.3−  | 2005 05 10 | 691 | 0.3+  | 0.8+  | 2007 12 05 | 699 | 1.2− | 1.2− |
| 2004 01 30 | 704 | 0.1+  | 0.3+  | 2005 05 26 | 461 | 0.4−  | 0.3+  | 2007 12 05 | 699 | 0.4− | 0.2+ |
| 2004 01 30 | 704 | 0.0   | 0.3+  | 2005 05 26 | 461 | 0.2+  | 0.2+  |            |     |      |      |

**(172704)\* 2004 BS<sub>31</sub> = 2000 EP<sub>81</sub>**

Discovered 2004 Jan. 19 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 57601)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 266.35224  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22746860 | $\omega$ | 103.11495 | −0.99598418              |
| <i>a</i> | 2.6577966  | $\Omega$ | 72.80956  | +0.04288950              |
| <i>e</i> | 0.1016232  | <i>i</i> | 3.23987   | +0.07858755              |
| <i>P</i> | 4.33       | <i>H</i> | 15.9      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 05 | 704 | 0.9− | 1.0+ | 2004 01 19 | 699 | 0.7− | 0.9− | 2005 06 26 | G96 | 0.3+ | 0.3+ |
| 2000 03 05 | 704 | 1.2+ | 0.5+ | 2004 01 19 | 699 | 0.6− | 0.6− | 2005 06 26 | G96 | 0.1− | 0.6+ |
| 2000 03 05 | 704 | 0.2+ | 0.4− | 2004 01 19 | 699 | 0.5+ | 0.8+ | 2005 06 28 | G96 | 0.1− | 0.4+ |
| 2000 03 05 | 704 | 0.5+ | 0.4+ | 2004 01 19 | 699 | 0.3− | 0.1+ | 2005 06 28 | G96 | 0.2+ | 0.2+ |
| 2000 03 12 | 704 | 0.3+ | 1.0+ | 2004 01 22 | 704 | 0.3− | 0.0  | 2005 06 28 | G96 | 0.3+ | 0.3+ |
| 2000 03 12 | 704 | 0.3+ | 0.3+ | 2004 01 22 | 704 | 0.3− | 0.2+ | 2005 06 28 | G96 | 0.1− | 0.1+ |
| 2000 03 12 | 704 | 0.4+ | 1.2− | 2004 01 22 | 704 | 0.3− | 0.5+ | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2000 03 12 | 704 | 0.2− | 0.3+ | 2004 01 22 | 704 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.2− | 0.1− |
| 2000 03 12 | 704 | 0.3− | 0.5− | 2004 01 22 | 704 | 0.7− | 0.0  | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2000 04 03 | 704 | 1.0− | 0.2+ | 2004 01 27 | 691 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.1+ | 0.8+ |
| 2000 04 03 | 704 | 0.0  | 0.5− | 2004 01 27 | 691 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.0  | 0.3+ |
| 2000 04 03 | 704 | 0.4− | 0.2− | 2004 01 27 | 691 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.6− | 0.6− |
| 2003 12 22 | 704 | 0.3+ | 0.7+ | 2004 01 30 | 704 | 0.6+ | 0.1+ | 2007 12 05 | 704 | 0.6+ | 0.6− |
| 2003 12 22 | 704 | 0.2− | 0.5+ | 2004 01 30 | 704 | 0.2− | 0.2− | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2003 12 22 | 704 | 0.7+ | 0.7+ | 2004 01 30 | 704 | 0.1− | 1.2− | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2003 12 22 | 704 | 0.5+ | 0.0  | 2004 01 30 | 704 | 0.4− | 0.4− | 2007 12 05 | 704 | 0.5+ | 0.5+ |
| 2003 12 27 | 704 | 0.4− | 0.3+ | 2004 02 23 | 704 | 0.3+ | 0.9+ | 2007 12 15 | 691 | 0.2− | 0.0  |
| 2003 12 27 | 704 | 1.1+ | 0.3+ | 2004 02 23 | 704 | 0.0  | 0.2+ | 2007 12 15 | 691 | 0.1+ | 0.1+ |
| 2003 12 27 | 704 | 0.0  | 1.2− | 2004 02 23 | 704 | 0.3− | 0.6+ | 2007 12 15 | 691 | 0.2− | 0.0  |
| 2003 12 28 | 691 | 0.2+ | 0.0  | 2004 02 23 | 704 | 0.1+ | 0.2+ | 2007 12 16 | 691 | 0.1+ | 0.2+ |
| 2003 12 28 | 691 | 0.2− | 0.2− | 2005 06 26 | G96 | 0.2− | 0.0  | 2007 12 16 | 691 | 0.3+ | 0.2− |
| 2003 12 28 | 691 | 0.2− | 0.3− | 2005 06 26 | G96 | 0.2+ | 0.2+ | 2007 12 16 | 691 | 0.2+ | 0.1− |

**(172705)\* 2004 BK<sub>32</sub> = 2005 GP<sub>98</sub>**

Discovered 2004 Jan. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76379)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 148.09237  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.20477649 | $\omega$ | 212.06585 | −0.15912620              |
| <i>a</i> | 2.8506856  | $\Omega$ | 48.80343  | −0.89560954              |
| <i>e</i> | 0.0340673  | <i>i</i> | 2.68556   | −0.41540630              |
| <i>P</i> | 4.81       | <i>H</i> | 16.5      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 13 | 691 | 0.3− | 0.1− | 2005 04 07 | 691 | 0.1+ | 0.3+ | 2007 10 30 | G96 | 0.8+ | 0.2− |
| 2000 04 13 | 691 | 0.4+ | 0.1− | 2005 04 07 | 691 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.2− |
| 2000 04 13 | 691 | 0.1− | 0.3+ | 2005 04 11 | G96 | 0.3+ | 0.1− | 2007 11 03 | 691 | 0.7− | 1.2− |
| 2003 12 29 | 691 | 0.0  | 0.4+ | 2005 04 11 | G96 | 0.4− | 0.3+ | 2007 11 03 | 691 | 0.2− | 0.9+ |
| 2003 12 29 | 691 | 0.3− | 0.2+ | 2005 04 11 | G96 | 0.1− | 0.4+ | 2007 11 03 | 691 | 0.1− | 0.0  |
| 2003 12 29 | 691 | 0.2+ | 0.1− | 2005 04 11 | G96 | 0.1+ | 0.3+ | 2007 11 07 | 691 | 0.3+ | 0.1+ |
| 2004 01 19 | 691 | 0.1+ | 0.1− | 2005 04 16 | 691 | 0.1− | 0.3+ | 2007 11 07 | 691 | 0.2+ | 0.2+ |
| 2004 01 19 | 691 | 0.0  | 0.1+ | 2005 04 16 | 691 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.4+ | 0.3− |
| 2004 01 19 | 691 | 0.0  | 0.0  | 2005 04 16 | 691 | 0.3+ | 0.1− | 2007 11 14 | 691 | 0.1+ | 0.1− |
| 2004 01 22 | 704 | 0.2+ | 1.2+ | 2005 05 10 | G96 | 0.1− | 0.1− | 2007 11 14 | 691 | 0.1− | 0.2+ |
| 2004 01 22 | 704 | 0.4+ | 0.9+ | 2005 05 10 | G96 | 0.0  | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.6+ |
| 2004 01 22 | 704 | 0.7+ | 0.1− | 2005 05 10 | G96 | 0.3− | 0.2+ | 2007 11 18 | 691 | 0.1− | 0.2+ |
| 2004 01 22 | 704 | 0.9+ | 0.6+ | 2005 05 10 | G96 | 0.3− | 0.4+ | 2007 11 18 | 691 | 0.3− | 0.8+ |
| 2004 01 28 | 691 | 0.3+ | 0.0  | 2007 10 17 | G96 | 0.5+ | 0.6− | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2004 01 28 | 691 | 0.1− | 0.2+ | 2007 10 17 | G96 | 0.4+ | 0.4− | 2007 12 04 | 691 | 0.2− | 0.1− |
| 2004 01 28 | 691 | 0.1− | 0.2+ | 2007 10 17 | G96 | 0.8+ | 0.1− | 2007 12 04 | 691 | 0.3− | 0.7+ |
| 2004 02 17 | 645 | 0.1− | 0.2− | 2007 10 17 | G96 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.3− | 0.1− |
| 2004 02 17 | 645 | 0.0  | 0.2− | 2007 10 30 | G96 | 0.6+ | 0.3− |            |     |      |      |
| 2005 04 07 | 691 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.4− |            |     |      |      |

**(172706)\* 2004 BQ<sub>35</sub>**

Discovered 2004 Jan. 19 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 317.45823  | (2000.0) | <b>P</b> | <b>Q</b>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.19933375 | $\omega$ | 43.50515 | +0.12495449              |
| <i>a</i> | 2.9023436  | $\Omega$ | 39.34038 | +0.89801915              |
| <i>e</i> | 0.0166942  | <i>i</i> | 2.48247  | +0.42183880              |
| <i>P</i> | 4.94       | <i>H</i> | 15.6     | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 30 | 291 | 0.0   | 0.1−  | 2005 06 01 | G96 | 0.6+  | 0.1+  | 2007 10 30 | 703 | 0.5−  | 0.0   |
| 2002 10 30 | 291 | 0.1−  | 0.0   | 2005 06 01 | G96 | 0.5+  | 0.4+  | 2007 10 31 | G96 | 0.1+  | 0.1−  |
| 2002 10 30 | 291 | 0.2+  | 0.0   | 2005 06 01 | G96 | 0.2+  | 0.4+  | 2007 10 31 | G96 | 0.1+  | 0.1−  |
| 2004 01 19 | 691 | 0.1−  | 0.3−  | 2005 06 01 | G96 | 1.4−  | 0.3−  | 2007 10 31 | G96 | 0.1+  | 0.3−  |
| 2004 01 19 | 691 | 0.0   | 0.3−  | 2007 10 06 | 691 | 0.1+  | 0.1+  | 2007 10 31 | G96 | 0.1+  | 0.0   |
| 2004 01 19 | 691 | 0.0   | 0.3−  | 2007 10 06 | 691 | 0.1−  | 0.3−  | 2007 11 06 | 704 | 0.1−  | 0.1−  |
| 2004 01 22 | 704 | 0.8−  | 0.9+  | 2007 10 06 | 691 | 0.4−  | 0.5+  | 2007 11 06 | 704 | 0.1−  | 0.9+  |
| 2004 01 22 | 704 | 0.2−  | 0.3+  | 2007 10 07 | G96 | 0.2+  | 0.4−  | 2007 11 06 | 704 | (0.4− | 2.4+) |
| 2004 01 22 | 704 | 0.5−  | 0.1−  | 2007 10 07 | G96 | 0.0   | 0.2−  | 2007 11 07 | 703 | 0.0   | 0.3−  |
| 2004 01 22 | 704 | 0.2+  | 0.2−  | 2007 10 07 | G96 | 0.3+  | 0.2−  | 2007 11 07 | 703 | 1.2+  | 0.1−  |
| 2004 01 22 | 704 | 0.1+  | 0.6+  | 2007 10 07 | G96 | 0.5+  | 0.3−  | 2007 11 07 | 703 | 0.8−  | 0.0   |
| 2004 01 26 | 699 | (1.8+ | 0.7−) | 2007 10 15 | 703 | (1.5+ | 2.0+) | 2007 11 07 | 703 | 0.2+  | 0.5−  |
| 2004 01 26 | 699 | 1.3−  | 1.0+  | 2007 10 15 | 703 | 0.7−  | 1.4+  | 2007 11 09 | G96 | 0.4+  | 0.2−  |
| 2004 01 26 | 699 | 1.2+  | 0.0   | 2007 10 15 | 703 | 0.4+  | 0.4+  | 2007 11 09 | G96 | 0.3+  | 0.3−  |
| 2004 01 26 | 699 | 0.1+  | 0.1−  | 2007 10 15 | 703 | 0.4+  | 0.4+  | 2007 11 09 | G96 | 0.3+  | 0.2−  |
| 2004 02 23 | 704 | 0.7+  | 0.3+  | 2007 10 16 | 691 | 0.2−  | 0.0   | 2007 11 09 | G96 | 0.3+  | 0.1−  |
| 2004 02 23 | 704 | 0.3+  | 0.7+  | 2007 10 16 | 691 | 0.1+  | 0.1+  | 2007 11 15 | 704 | 0.4+  | 0.4+  |
| 2004 02 23 | 704 | 0.4−  | 0.2+  | 2007 10 16 | 691 | 0.2−  | 0.3+  | 2007 11 15 | 704 | (1.5+ | 0.5+) |
| 2004 02 23 | 704 | 0.2+  | 0.2+  | 2007 10 21 | 691 | 0.1+  | 0.6+  | 2007 11 15 | 704 | 0.5+  | 0.6+  |
| 2004 02 23 | 704 | 0.5+  | 0.2+  | 2007 10 21 | 691 | 0.1−  | 0.2−  | 2007 11 15 | 704 | 0.0   | 0.4+  |
| 2005 04 07 | 691 | 0.4+  | 0.2+  | 2007 10 21 | 691 | 0.7−  | 0.2−  | 2007 11 15 | 704 | 0.7+  | 0.7+  |
| 2005 04 07 | 691 | 0.1+  | 0.1+  | 2007 10 30 | 691 | 0.0   | 0.0   | 2007 12 06 | G96 | 0.9+  | 0.2−  |
| 2005 04 07 | 691 | 0.1+  | 0.4+  | 2007 10 30 | 691 | 0.2−  | 0.1−  | 2007 12 06 | G96 | 0.2+  | 0.1−  |
| 2005 05 07 | G96 | 0.1−  | 0.4+  | 2007 10 30 | 691 | 0.0   | 0.1−  | 2007 12 06 | G96 | 0.6+  | 0.2−  |
| 2005 05 07 | G96 | 0.2−  | 0.4+  | 2007 10 30 | 703 | 0.9−  | 0.3+  | 2007 12 06 | G96 | 0.5+  | 0.4−  |
| 2005 05 07 | G96 | 0.2−  | 0.2+  | 2007 10 30 | 703 | (1.5− | 1.9+) |            |     |       |       |
| 2005 05 07 | G96 | 0.1−  | 0.3+  | 2007 10 30 | 703 | 0.4−  | 0.4+  |            |     |       |       |

2007 DEC. 24

M.P.O. 129455

(172707)\* 2004 BW<sub>43</sub>Discovered 2004 Jan. 22 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 304.89407  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.20948974 | $\omega$ 110.19656 | −0.54981578   | −0.83516449 |  |
| <i>a</i> | 2.8077658  | $\Omega$ 13.18648  | +0.74116115   | −0.49565266 |  |
| <i>e</i> | 0.0504219  | <i>i</i> 3.57992   | +0.38520484   | −0.23838775 |  |
| <i>P</i> | 4.70       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |             |      |            |     |       |       |            |     |      |      |
|------------|-----|-------------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 09 25 | 691 | 0.0         | 0.2− | 2004 02 11 | 699 | (0.7− | 1.6+) | 2004 03 19 | 704 | 0.6− | 0.3− |
| 1992 09 25 | 691 | 1.5+        | 1.8− | 2004 02 11 | 699 | 1.0+  | 0.7−  | 2004 03 22 | 704 | 0.6+ | 0.9+ |
| 1992 09 25 | 691 | 0.3−        | 0.4− | 2004 02 11 | 699 | 1.4−  | 0.1−  | 2004 03 22 | 704 | 0.0  | 1.2+ |
| 1995 04 06 | 691 | 0.2−        | 0.1+ | 2004 02 16 | 691 | 0.0   | 0.0   | 2004 03 22 | 704 | 0.1+ | 0.0  |
| 1995 04 06 | 691 | 0.1+        | 0.1+ | 2004 02 16 | 691 | 0.1−  | 0.0   | 2006 08 16 | 644 | 0.3− | 0.7+ |
| 1995 04 06 | 691 | 0.2−        | 0.1− | 2004 02 16 | 691 | 0.1+  | 0.0   | 2006 08 16 | 644 | 0.5− | 0.5+ |
| 2001 08 24 | 644 | 0.1+        | 1.1+ | 2004 02 18 | 333 | 0.7−  | 0.7−  | 2006 08 16 | 644 | 0.3− | 0.7+ |
| 2001 08 24 | 644 | 0.4+        | 0.9+ | 2004 02 18 | 333 | 0.9−  | 0.6−  | 2006 09 14 | 703 | 0.4− | 0.4+ |
| 2001 08 24 | 644 | 0.3+        | 1.1+ | 2004 02 18 | 333 | 0.3−  | 0.2−  | 2006 09 14 | 703 | 0.7− | 0.8+ |
| 2002 10 31 | 644 | 0.6−        | 0.1− | 2004 02 23 | 704 | 0.2−  | 0.8−  | 2006 09 14 | 644 | 0.5− | 0.0  |
| 2002 10 31 | 644 | 0.0         | 0.0  | 2004 02 23 | 704 | 0.0   | 1.0−  | 2006 09 14 | 703 | 0.0  | 0.0  |
| 2002 10 31 | 644 | 0.3−        | 0.1+ | 2004 02 23 | 704 | 0.2−  | 0.9−  | 2006 09 14 | 703 | 0.2− | 0.3+ |
| 2002 11 06 | 608 | 0.1+        | 0.8+ | 2004 02 23 | 704 | 0.2+  | 0.7−  | 2006 09 14 | 644 | 0.5− | 0.4+ |
| 2002 11 06 | 608 | 0.5−        | 1.0+ | 2004 02 23 | 704 | 0.1−  | 1.3−  | 2006 09 14 | 644 | 0.1− | 0.0  |
| 2002 11 06 | 608 | 0.3+        | 0.4+ | 2004 03 14 | 703 | 0.0   | 1.1+  | 2007 11 19 | G96 | 0.1− | 0.4− |
| 2004 01 22 | 704 | 0.3+        | 0.4+ | 2004 03 14 | 703 | 0.0   | 0.5−  | 2007 11 19 | G96 | 0.3+ | 0.6− |
| 2004 01 22 | 704 | 0.3+        | 0.7+ | 2004 03 14 | 703 | 0.1−  | 0.2−  | 2007 11 19 | G96 | 0.0  | 0.5− |
| 2004 01 22 | 704 | 0.3+        | 0.9+ | 2004 03 14 | 703 | 0.6−  | 0.0   | 2007 11 20 | 704 | 0.5− | 0.1+ |
| 2004 01 22 | 704 | 0.2+        | 1.3+ | 2004 03 14 | 704 | 0.1+  | 0.8−  | 2007 11 20 | 704 | 0.1− | 0.6+ |
| 2004 01 22 | 704 | 0.8+        | 0.9+ | 2004 03 14 | 704 | 0.6+  | 0.3+  | 2007 11 20 | 704 | 0.2− | 0.2+ |
| 2004 01 23 | 699 | 1.3+        | 0.4− | 2004 03 14 | 704 | 0.0   | 0.6+  | 2007 11 20 | 704 | 0.3− | 0.5− |
| 2004 01 23 | 699 | 0.0         | 0.3− | 2004 03 14 | 704 | (0.3+ | 1.6+) | 2007 12 13 | 704 | 0.5− | 0.1+ |
| 2004 01 23 | 699 | 0.2−        | 0.6− | 2004 03 18 | 691 | 0.1−  | 0.1−  | 2007 12 13 | 704 | 0.8− | 0.2− |
| 2004 01 23 | 699 | 0.2−        | 0.5− | 2004 03 18 | 691 | 0.1+  | 0.1+  | 2007 12 13 | 704 | 0.1− | 0.2+ |
| 2004 01 30 | 704 | 0.0         | 0.7+ | 2004 03 18 | 691 | 0.0   | 0.2+  | 2007 12 13 | 704 | 1.0+ | 0.4+ |
| 2004 01 30 | 704 | 0.0         | 0.5− | 2004 03 19 | 704 | 0.5+  | 0.3+  | 2007 12 13 | 704 | 0.3+ | 0.0  |
| 2004 01 30 | 704 | 0.1+        | 0.3− | 2004 03 19 | 704 | 0.3−  | 0.4−  | 2007 12 15 | 704 | 0.2− | 0.6+ |
| 2004 01 30 | 704 | (1.5+ 1.4−) |      | 2004 03 19 | 704 | 0.2−  | 1.3−  | 2007 12 15 | 704 | 0.7+ | 0.1+ |
| 2004 02 11 | 699 | 0.3+        | 0.5+ | 2004 03 19 | 704 | 0.5+  | 0.1+  | 2007 12 15 | 704 | 0.1− | 0.9+ |

(172708)\* 2004 BT<sub>46</sub>Discovered 2004 Jan. 21 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 296.92149  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.23201367 | $\omega$ 223.89063 | −0.93387419   | −0.31792676 |  |
| <i>a</i> | 2.6229720  | $\Omega$ 296.91039 | +0.35723678   | −0.80873797 |  |
| <i>e</i> | 0.1290389  | <i>i</i> 10.57906  | +0.01615203   | −0.49483883 |  |
| <i>P</i> | 4.25       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 09 | 704 | 0.9+ | 1.2+ | 2004 01 26 | 699 | 0.0  | 0.1+ | 2004 02 23 | 608 | 0.1+  | 0.9−  |
| 2000 03 09 | 704 | 0.2+ | 1.3+ | 2004 01 29 | 704 | 0.5− | 0.4+ | 2004 02 23 | 608 | 0.1+  | 0.6−  |
| 2000 03 09 | 704 | 0.9+ | 0.3+ | 2004 01 29 | 704 | 0.1− | 0.2− | 2004 02 23 | 704 | 0.5+  | 0.2−  |
| 2000 03 09 | 704 | 0.2− | 0.4+ | 2004 01 29 | 704 | 0.3+ | 0.2− | 2004 02 23 | 608 | 0.1−  | 0.7−  |
| 2000 03 09 | 704 | 0.9+ | 0.3+ | 2004 01 29 | 704 | 0.1− | 0.1− | 2004 02 23 | 704 | 0.1+  | 0.2−  |
| 2000 04 07 | 704 | 0.2− | 0.0  | 2004 01 29 | 704 | 0.2− | 0.1− | 2004 02 23 | 704 | (0.1+ | 2.3−) |
| 2000 04 07 | 704 | 0.5− | 1.1− | 2004 02 02 | 608 | 0.3+ | 0.9− | 2004 02 26 | 704 | 0.3−  | 0.3+  |
| 2000 04 07 | 704 | 0.4+ | 0.4+ | 2004 02 02 | 608 | 0.5+ | 0.2− | 2004 02 26 | 704 | 0.2+  | 0.2+  |
| 2000 04 07 | 704 | 0.2− | 1.2+ | 2004 02 02 | 608 | 0.1− | 0.2− | 2004 02 26 | 704 | 0.5−  | 0.3−  |
| 2000 04 07 | 704 | 0.4− | 0.5+ | 2004 02 13 | 333 | 0.2− | 0.9+ | 2004 02 26 | 704 | 0.2+  | 0.6+  |
| 2001 07 21 | 608 | 0.2− | 0.4− | 2004 02 13 | 333 | 0.6− | 0.8+ | 2004 02 26 | 704 | 0.2+  | 0.5+  |
| 2001 07 21 | 608 | 0.3+ | 0.1− | 2004 02 13 | 333 | 1.2− | 0.0  | 2004 03 11 | 644 | 0.6−  | 0.1+  |
| 2001 07 21 | 608 | 0.1+ | 0.5− | 2004 02 13 | 333 | 0.8− | 0.3− | 2004 03 11 | 644 | 0.0   | 0.5+  |

|            |     |             |      |            |     |            |      |            |     |       |       |
|------------|-----|-------------|------|------------|-----|------------|------|------------|-----|-------|-------|
| 2002 10 10 | 704 | 0.1−        | 0.2+ | 2004 02 13 | 333 | 0.7−       | 0.0  | 2004 03 11 | 644 | 0.2−  | 0.3+  |
| 2002 10 10 | 704 | 0.1+        | 0.9+ | 2004 02 13 | 333 | 0.9−       | 0.1− | 2006 09 16 | 703 | 0.1−  | 1.2+  |
| 2002 10 10 | 704 | 0.3−        | 0.2− | 2004 02 14 | 699 | 0.0        | 0.3− | 2006 09 16 | 703 | 0.9+  | 0.6+  |
| 2002 10 10 | 704 | 1.3−        | 0.1− | 2004 02 14 | 699 | 0.0        | 0.3+ | 2006 09 16 | 703 | 0.3−  | 0.5+  |
| 2003 12 23 | 704 | 0.2−        | 0.0  | 2004 02 14 | 699 | 0.5−       | 0.1+ | 2006 09 16 | 703 | (2.5− | 0.2−) |
| 2003 12 23 | 704 | (1.9+ 1.3+) |      | 2004 02 14 | 699 | 0.8−       | 0.0  | 2006 09 22 | A50 | 0.1−  | 0.3+  |
| 2003 12 23 | 704 | (1.8+ 0.6+) |      | 2004 02 17 | 704 | 0.3+       | 0.7+ | 2006 09 22 | A50 | 0.2+  | 0.0   |
| 2003 12 23 | 704 | (1.7+ 1.3−) |      | 2004 02 17 | 704 | 0.0        | 0.1+ | 2006 09 29 | 699 | (1.6+ | 0.2+) |
| 2003 12 23 | 704 | 0.8+        | 0.2+ | 2004 02 17 | 704 | (0.0 1.6+) |      | 2006 09 29 | 699 | 0.6−  | 0.4+  |
| 2003 12 23 | 704 | 0.6+        | 0.4− | 2004 02 17 | 704 | 0.7+       | 0.9+ | 2006 09 29 | 699 | (0.8+ | 1.7+) |
| 2003 12 23 | 704 | 0.3+        | 0.4− | 2004 02 17 | 704 | 0.0        | 0.5+ | 2006 09 29 | 699 | 0.6−  | 1.3+  |
| 2004 01 21 | 704 | 0.6+        | 0.5+ | 2004 02 18 | 608 | 0.1+       | 0.2+ | 2007 12 05 | 691 | 0.3−  | 0.2−  |
| 2004 01 21 | 704 | 0.7+        | 0.1− | 2004 02 18 | 608 | 0.3−       | 0.2+ | 2007 12 05 | 691 | 0.2−  | 0.2−  |
| 2004 01 21 | 704 | (1.5+ 0.4+) |      | 2004 02 18 | 608 | 0.1+       | 0.4+ | 2007 12 05 | 691 | 0.2−  | 0.2−  |
| 2004 01 21 | 704 | 0.4+        | 0.2+ | 2004 02 19 | 704 | 0.1−       | 0.4− | 2007 12 13 | 704 | 0.4+  | 0.1+  |
| 2004 01 21 | 704 | 0.2+        | 0.3− | 2004 02 19 | 704 | 0.4+       | 0.4− | 2007 12 13 | 704 | 0.8+  | 0.4+  |
| 2004 01 24 | 704 | 0.2+        | 0.4− | 2004 02 19 | 704 | 0.3+       | 0.2+ | 2007 12 13 | 704 | 0.0   | 0.5+  |
| 2004 01 24 | 704 | 0.5+        | 0.4− | 2004 02 19 | 704 | 0.1+       | 0.5− | 2007 12 13 | 704 | 0.2+  | 0.3+  |
| 2004 01 24 | 704 | 0.9+        | 0.3− | 2004 02 19 | 704 | 0.4−       | 0.4− | 2007 12 13 | 704 | 0.1−  | 0.2+  |
| 2004 01 24 | 704 | 0.0         | 0.1− | 2004 02 22 | 704 | 0.5+       | 0.1− | 2007 12 15 | 704 | 0.4+  | 0.1+  |
| 2004 01 24 | 704 | 1.1+        | 0.5− | 2004 02 22 | 704 | 0.4+       | 0.1+ | 2007 12 15 | 704 | 0.1+  | 0.1−  |
| 2004 01 26 | 699 | 0.6−        | 0.2− | 2004 02 22 | 704 | 0.1−       | 0.1+ | 2007 12 15 | 704 | 0.3−  | 0.8−  |
| 2004 01 26 | 699 | 0.1+        | 0.2+ | 2004 02 22 | 704 | 0.0        | 0.4+ | 2007 12 15 | 704 | 0.0   | 0.1−  |
| 2004 01 26 | 699 | 0.7−        | 0.4+ | 2004 02 23 | 704 | 0.6+       | 0.2− | 2007 12 15 | 704 | 0.3−  | 0.2+  |

(172709)\* 2004 BZ<sub>48</sub> = 2005 JT<sub>118</sub>Discovered 2004 Jan. 21 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.Id. G. V. Williams (*MPO* 76383)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |                    | MPC           |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 252.11543  | (2000.0)           | <i>P</i>      | <i>Q</i>    |  |
| <i>n</i> | 0.21174027 | $\omega$ 26.73291  | −0.97490328   | −0.21573844 |  |
| <i>a</i> | 2.7878350  | $\Omega$ 140.68306 | +0.18557579   | −0.92386773 |  |
| <i>e</i> | 0.0881565  | <i>i</i> 4.97608   | +0.12298461   | −0.31610970 |  |
| <i>P</i> | 4.65       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 04 27 | 699 | 0.5+  | 0.4+  | 2004 01 29 | 704 | 1.1+  | 0.4+  | 2007 11 04 | 704 | 0.1+  | 0.6−  |
| 2000 04 27 | 699 | 0.3+  | 0.2−  | 2004 01 29 | 704 | 0.0   | 0.3−  | 2007 11 09 | 703 | (1.7− | 0.4−) |
| 2000 04 27 | 699 | 1.4+  | 1.6+  | 2004 01 29 | 704 | 0.6+  | 0.7+  | 2007 11 09 | 703 | 0.0   | 1.3+  |
| 2000 04 27 | 699 | 1.8−  | 0.5+  | 2004 02 13 | 291 | 0.1+  | 0.2+  | 2007 11 09 | 703 | 0.1+  | 0.3−  |
| 2003 12 22 | 691 | 0.1+  | 0.2+  | 2004 02 13 | 291 | 0.1+  | 0.2+  | 2007 11 09 | 703 | 0.4−  | 0.2−  |
| 2003 12 22 | 691 | 0.3+  | 0.1−  | 2004 02 13 | 291 | 0.1−  | 0.2+  | 2007 11 12 | 704 | 0.7+  | 1.3+  |
| 2003 12 22 | 691 | 0.1+  | 0.0   | 2004 02 17 | 645 | 0.1−  | 0.2−  | 2007 11 12 | 704 | 0.5−  | 1.0+  |
| 2004 01 13 | 699 | 0.0   | 0.6+  | 2004 02 17 | 645 | 0.1−  | 0.2−  | 2007 11 12 | 704 | 1.2−  | 1.2+  |
| 2004 01 13 | 699 | 0.2−  | 0.6+  | 2005 05 10 | 691 | 0.0   | 0.1+  | 2007 11 12 | 704 | 0.5−  | 0.1+  |
| 2004 01 13 | 699 | 0.0   | 1.1+  | 2005 05 10 | 691 | 0.1+  | 0.1+  | 2007 11 20 | 703 | 0.7−  | 0.6−  |
| 2004 01 13 | 699 | (1.7− | 0.1+) | 2005 05 10 | 691 | 0.1+  | 0.2+  | 2007 11 20 | 703 | 1.3+  | 0.2−  |
| 2004 01 21 | 704 | 0.3+  | 0.1−  | 2005 05 12 | 704 | 0.2+  | 0.7−  | 2007 11 20 | 703 | 0.4−  | 0.4−  |
| 2004 01 21 | 704 | 1.2+  | 0.1−  | 2005 05 12 | 704 | 0.4+  | 1.3+  | 2007 11 20 | 703 | 0.5−  | 0.8+  |
| 2004 01 21 | 704 | 0.1+  | 0.2−  | 2005 05 12 | 704 | (0.1− | 2.7+) | 2007 12 04 | 704 | 0.4−  | 0.6+  |
| 2004 01 21 | 704 | 0.2−  | 0.1−  | 2005 05 14 | 691 | 0.2−  | 0.1+  | 2007 12 04 | 704 | 0.5−  | 0.9+  |
| 2004 01 24 | 704 | 0.6+  | 0.9+  | 2005 05 14 | 691 | 0.3+  | 0.4+  | 2007 12 04 | 704 | 0.3−  | 1.1−  |
| 2004 01 24 | 704 | 1.0+  | 0.0   | 2005 05 14 | 691 | 0.0   | 0.2+  | 2007 12 04 | 704 | 0.2+  | 0.7+  |
| 2004 01 24 | 704 | 0.2+  | 0.4−  | 2005 06 04 | 691 | 0.0   | 0.2+  | 2007 12 05 | 699 | 0.4+  | 0.1+  |
| 2004 01 24 | 704 | 0.1+  | 0.7−  | 2005 06 04 | 691 | 0.1+  | 0.0   | 2007 12 05 | 699 | 0.1+  | 0.4−  |
| 2004 01 24 | 704 | 0.2+  | 0.4+  | 2005 06 04 | 691 | 0.1−  | 0.1+  | 2007 12 05 | 699 | 1.0−  | 0.6−  |
| 2004 01 27 | 704 | (0.7+ | 2.0+) | 2005 06 23 | 644 | 0.4−  | 0.1+  | 2007 12 05 | 699 | 0.2+  | 0.6+  |
| 2004 01 27 | 704 | 0.3−  | 0.6+  | 2005 06 23 | 644 | 0.1+  | 0.5+  | 2007 12 06 | 703 | 0.8−  | 1.2+  |
| 2004 01 27 | 704 | 0.1+  | 0.2+  | 2005 06 23 | 644 | 0.0   | 0.2+  | 2007 12 06 | 703 | 1.3−  | 0.1+  |
| 2004 01 28 | 704 | 0.7−  | 0.3−  | 2007 11 04 | 704 | 0.3+  | 0.4+  | 2007 12 06 | 703 | 0.3+  | 0.3+  |
| 2004 01 28 | 704 | 0.2−  | 0.0   | 2007 11 04 | 704 | 0.2−  | 0.2−  | 2007 12 06 | 703 | 0.9+  | 1.6+  |
| 2004 01 28 | 704 | 0.6−  | 0.1−  | 2007 11 04 | 704 | 0.3+  | 0.2+  |            |     |       |       |
| 2004 01 28 | 704 | 0.5+  | 1.2+  | 2007 11 04 | 704 | 0.9+  | 0.1−  |            |     |       |       |

**(172710)\* 2004 BD<sub>49</sub>**

Discovered 2004 Jan. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 352.19167  |          | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|--|------------|----------|-----------|--|-------------|------|-------------|---|
| <i>n</i> |  | 0.22059235 | $\omega$ | 301.30893 |  | +0.55453088 |      | -0.82690757 |   |
| <i>a</i> |  | 2.7127457  | $\Omega$ | 114.72909 |  | +0.79416847 |      | +0.49235095 |   |
| <i>e</i> |  | 0.1535778  | <i>i</i> | 5.90073   |  | +0.24857986 |      | +0.27168807 |   |
| <i>P</i> |  | 4.47       | <i>H</i> | 16.8      |  | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.3+ | 0.5- | 2004 01 15 | 691 | 0.0  | 0.0  | 2005 04 07 | 691 | 0.3- | 0.3+ |
| 2002 08 18 | 644 | 0.1- | 0.2- | 2004 01 15 | 691 | 0.1- | 0.0  | 2005 04 07 | 691 | 0.5+ | 0.8+ |
| 2002 08 18 | 644 | 0.3+ | 0.4- | 2004 01 15 | 691 | 0.3- | 0.0  | 2007 10 10 | 699 | 0.3- | 0.2+ |
| 2002 08 19 | 644 | 0.8- | 0.5+ | 2004 01 21 | 704 | 1.0- | 1.2+ | 2007 10 10 | 699 | 1.0+ | 0.5+ |
| 2002 08 19 | 644 | 0.1+ | 0.6+ | 2004 01 21 | 704 | 0.7- | 0.2- | 2007 10 10 | 699 | 0.0  | 1.0+ |
| 2002 08 19 | 644 | 0.2+ | 0.4+ | 2004 01 21 | 704 | 0.3- | 0.8+ | 2007 10 10 | 699 | 1.0+ | 0.1+ |
| 2002 08 19 | 644 | 0.2- | 0.6+ | 2004 01 24 | 704 | 0.2+ | 0.0  | 2007 11 09 | 703 | 0.2+ | 0.7- |
| 2002 08 19 | 644 | 0.6- | 0.1+ | 2004 01 24 | 704 | 0.1+ | 1.0+ | 2007 11 09 | 703 | 0.5- | 0.6+ |
| 2002 08 19 | 644 | 0.1+ | 0.2+ | 2004 01 24 | 704 | 0.4+ | 0.8+ | 2007 11 09 | 703 | 0.6- | 0.6- |
| 2002 08 29 | 644 | 0.1- | 0.5+ | 2004 01 24 | 704 | 0.1+ | 0.3+ | 2007 11 09 | 703 | 1.1- | 0.2+ |
| 2002 08 29 | 644 | 0.2+ | 0.6+ | 2004 01 27 | 691 | 0.1- | 0.1- | 2007 11 13 | G96 | 0.3- | 0.0  |
| 2002 08 29 | 644 | 0.1+ | 0.3+ | 2004 01 27 | 691 | 0.2+ | 0.2+ | 2007 11 13 | G96 | 0.3- | 0.2+ |
| 2002 08 30 | 644 | 0.2- | 0.3+ | 2004 01 27 | 691 | 0.0  | 0.3- | 2007 11 13 | G96 | 0.1+ | 0.0  |
| 2002 08 30 | 644 | 0.2- | 0.2+ | 2004 02 13 | 691 | 0.2+ | 0.2+ | 2007 11 13 | G96 | 0.0  | 0.1- |
| 2002 08 30 | 644 | 0.1+ | 0.2+ | 2004 02 13 | 691 | 0.2+ | 0.3- | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2002 09 16 | 644 | 0.3- | 0.3+ | 2004 02 13 | 691 | 0.1+ | 0.4- | 2007 11 15 | 704 | 0.6+ | 0.2+ |
| 2002 09 16 | 644 | 0.5- | 0.4+ | 2004 02 16 | 691 | 0.1+ | 0.2- | 2007 11 15 | 704 | 0.8+ | 0.1- |
| 2003 12 21 | 691 | 0.0  | 0.0  | 2004 02 16 | 691 | 0.0  | 0.1+ | 2007 11 15 | 704 | 0.9- | 0.3+ |
| 2003 12 21 | 691 | 0.1+ | 0.0  | 2004 02 16 | 691 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2003 12 21 | 691 | 0.0  | 0.2+ | 2005 04 07 | 691 | 0.2+ | 0.2+ |            |     |      |      |

**(172711)\* 2004 BG<sub>55</sub> = 2002 TU<sub>171</sub>**

Discovered 2004 Jan. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 61799)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 354.23237  |          | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|--|------------|----------|-----------|--|-------------|------|-------------|---|
| <i>n</i> |  | 0.22661996 | $\omega$ | 135.54959 |  | +0.18271653 |      | -0.96410935 |   |
| <i>a</i> |  | 2.6644277  | $\Omega$ | 303.00583 |  | +0.82589470 |      | +0.25681272 |   |
| <i>e</i> |  | 0.0948968  | <i>i</i> | 13.27969  |  | +0.53339724 |      | -0.06738234 |   |
| <i>P</i> |  | 4.35       | <i>H</i> | 15.6      |  | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 07 25 | 691 | 0.0   | 0.5+  | 2003 12 22 | 291 | 0.3- | 0.2+ | 2004 02 11 | 703 | 1.1+  | 0.4+  |
| 1993 07 25 | 691 | 0.6-  | 0.3+  | 2003 12 22 | 291 | 1.1+ | 0.1- | 2004 02 11 | 699 | 1.3-  | 0.2+  |
| 1993 07 25 | 691 | 0.1-  | 0.2-  | 2004 01 22 | 704 | 0.2+ | 0.0  | 2004 02 11 | 699 | 0.7-  | 1.0-  |
| 1998 11 14 | 704 | 0.9+  | 0.7-  | 2004 01 22 | 704 | 0.2+ | 0.0  | 2004 02 22 | 704 | 0.2+  | 1.3+  |
| 1998 11 14 | 704 | 1.0+  | 1.4-  | 2004 01 22 | 704 | 0.3+ | 0.0  | 2004 02 22 | 704 | (0.6+ | 1.9+) |
| 1998 11 14 | 704 | 0.3+  | 1.8-  | 2004 01 22 | 704 | 0.6+ | 0.2- | 2004 02 22 | 704 | 0.5+  | 0.5+  |
| 2000 03 09 | 704 | 0.7-  | 0.4+  | 2004 01 22 | 704 | 0.1+ | 0.3+ | 2006 08 17 | 644 | 0.1+  | 0.7+  |
| 2000 03 09 | 704 | 0.9+  | 0.6+  | 2004 01 24 | 704 | 0.4- | 0.4+ | 2006 08 17 | 644 | 0.1+  | 0.4+  |
| 2000 03 09 | 704 | 0.5+  | 0.4+  | 2004 01 24 | 704 | 0.5- | 0.4+ | 2006 08 17 | 644 | 0.1-  | 0.2+  |
| 2002 09 11 | 644 | 0.4-  | 0.3+  | 2004 01 24 | 704 | 0.0  | 0.1+ | 2006 08 17 | 644 | 0.1-  | 0.5+  |
| 2002 09 11 | 644 | 0.6-  | 0.3+  | 2004 01 24 | 704 | 0.5+ | 0.1+ | 2006 08 17 | 644 | 0.0   | 0.6+  |
| 2002 09 11 | 644 | 0.7-  | 0.1+  | 2004 01 30 | 704 | 0.4+ | 0.9+ | 2006 08 17 | 644 | 0.4-  | 0.7+  |
| 2002 10 04 | 644 | 0.3+  | 1.0+  | 2004 01 30 | 704 | 1.3+ | 0.3- | 2006 08 30 | 704 | 0.3+  | 0.4-  |
| 2002 10 04 | 644 | 0.0   | 1.1+  | 2004 01 30 | 704 | 0.5- | 1.1+ | 2006 08 30 | 704 | 0.2-  | 0.3+  |
| 2002 10 04 | 644 | 0.3-  | 0.9+  | 2004 01 30 | 704 | 0.8+ | 0.3+ | 2006 08 30 | 704 | (1.0+ | 1.6-) |
| 2002 10 06 | 704 | 0.5-  | 0.4-  | 2004 01 30 | 704 | 0.8+ | 0.8+ | 2006 08 30 | 704 | 0.1-  | 0.4-  |
| 2002 10 06 | 704 | 0.1-  | 0.1+  | 2004 02 11 | 644 | 0.5+ | 0.1+ | 2007 11 16 | 704 | 0.0   | 0.7-  |
| 2002 10 06 | 704 | 0.5-  | 0.6-  | 2004 02 11 | 644 | 0.4+ | 0.0  | 2007 11 16 | 704 | 0.1-  | 0.0   |
| 2002 10 06 | 704 | 0.4-  | 1.1-  | 2004 02 11 | 644 | 0.4+ | 0.1+ | 2007 11 16 | 704 | 0.1-  | 0.9+  |
| 2002 10 09 | 704 | (2.2+ | 1.8-) | 2004 02 11 | 703 | 1.0- | 0.3- | 2007 12 03 | 704 | 0.3-  | 0.2+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 09 | 704 | 0.8+ | 0.1+ | 2004 02 11 | 703 | 0.2- | 0.3- | 2007 12 03 | 704 | 0.1- | 0.3+ |
| 2002 10 09 | 704 | 0.0  | 1.3+ | 2004 02 11 | 699 | 0.4+ | 0.3- | 2007 12 03 | 704 | 0.5- | 0.0  |
| 2002 10 09 | 704 | 0.1- | 0.7+ | 2004 02 11 | 703 | 0.7- | 0.3+ | 2007 12 03 | 704 | 0.0  | 0.4- |
| 2003 12 22 | 291 | 0.6- | 0.2+ | 2004 02 11 | 699 | 0.0  | 0.4- | 2007 12 03 | 704 | 0.3- | 0.9+ |

**(172712)\* 2004 BT<sub>56</sub>**

Discovered 2004 Jan. 23 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 261.59289  |          | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|--|------------|----------|-----------|--|-------------|------|-------------|---|
| <i>n</i> |  | 0.20082435 | $\omega$ | 282.35404 |  | -0.95534424 |      | -0.29473380 |   |
| <i>a</i> |  | 2.8879642  | $\Omega$ | 240.50769 |  | +0.27969453 |      | -0.87878657 |   |
| <i>e</i> |  | 0.1593338  | <i>i</i> | 1.39551   |  | +0.09533280 |      | -0.37532141 |   |
| <i>P</i> |  | 4.91       | <i>H</i> | 16.0      |  | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 11 02 | 691 | 0.2+ | 0.6- | 2004 02 22 | 691 | 0.1+  | 0.0   | 2006 09 27 | G96 | 0.4-  | 0.0   |
| 1997 11 02 | 691 | 0.2+ | 0.8- | 2004 02 22 | 691 | 0.1+  | 0.1-  | 2006 09 27 | G96 | 0.2+  | 0.2+  |
| 1997 11 02 | 691 | 0.3+ | 0.7- | 2004 02 22 | 691 | 0.1+  | 0.1-  | 2007 10 30 | 691 | 0.2-  | 0.4+  |
| 2002 11 05 | 291 | 0.3- | 0.5+ | 2004 02 29 | 691 | 0.0   | 0.0   | 2007 10 30 | 691 | 0.1-  | 0.1+  |
| 2002 11 05 | 291 | 0.1- | 0.1- | 2004 02 29 | 691 | 0.0   | 0.0   | 2007 10 30 | 691 | 0.2+  | 0.3+  |
| 2002 11 05 | 291 | 0.0  | 0.1+ | 2004 02 29 | 691 | 0.1+  | 0.1+  | 2007 10 30 | G96 | 0.4+  | 0.3-  |
| 2004 01 23 | 699 | 0.4+ | 0.9+ | 2004 03 01 | 333 | 0.3-  | 0.9-  | 2007 10 30 | G96 | 1.3+  | 0.1+  |
| 2004 01 23 | 699 | 0.4- | 0.1- | 2004 03 01 | 333 | 0.6-  | 0.3+  | 2007 10 30 | G96 | 0.5+  | 0.3-  |
| 2004 01 23 | 699 | 0.2+ | 0.5- | 2004 03 01 | 333 | 0.4-  | 0.3+  | 2007 10 30 | G96 | 0.3+  | 0.3-  |
| 2004 01 23 | 699 | 1.2+ | 0.7- | 2004 03 01 | 333 | 1.1-  | 0.3+  | 2007 10 31 | 691 | 0.2+  | 0.5+  |
| 2004 01 24 | 704 | 0.4+ | 0.4+ | 2004 03 15 | 704 | 1.3+  | 1.1+  | 2007 10 31 | 691 | 0.0   | 0.6+  |
| 2004 01 24 | 704 | 0.3+ | 0.4+ | 2004 03 15 | 704 | (1.8+ | 1.0+) | 2007 10 31 | 691 | 0.2-  | 0.2+  |
| 2004 01 24 | 704 | 0.8- | 0.9- | 2004 03 15 | 704 | 0.3+  | 1.2+  | 2007 11 04 | 691 | 0.6-  | 0.7+  |
| 2004 01 24 | 704 | 0.7- | 0.8+ | 2004 03 18 | 704 | 0.6+  | 0.6+  | 2007 11 04 | 691 | 0.2+  | 0.1+  |
| 2004 01 24 | 704 | 0.1- | 0.5- | 2004 03 18 | 704 | 0.5+  | 0.9+  | 2007 11 04 | 691 | 0.2-  | 0.1-  |
| 2004 01 29 | 704 | 1.0+ | 0.4+ | 2004 03 18 | 704 | 0.3-  | 1.0+  | 2007 11 15 | 704 | 0.1+  | 0.1-  |
| 2004 01 29 | 704 | 0.3+ | 1.5- | 2004 03 18 | 704 | 0.2+  | 0.5+  | 2007 11 15 | 704 | 0.2-  | 0.1+  |
| 2004 01 29 | 704 | 1.0+ | 1.1+ | 2004 03 18 | 704 | 0.4+  | 0.0   | 2007 11 15 | 704 | 0.1-  | 0.7-  |
| 2004 01 29 | 704 | 0.1- | 0.1+ | 2004 03 27 | 691 | 0.4+  | 0.0   | 2007 11 15 | 704 | 0.5+  | 0.8+  |
| 2004 02 11 | 703 | 1.4- | 0.2+ | 2004 03 27 | 691 | 0.1-  | 0.3+  | 2007 11 20 | G96 | 0.3+  | 0.5-  |
| 2004 02 11 | 703 | 0.9- | 0.2+ | 2004 03 27 | 691 | 0.2+  | 0.1+  | 2007 11 20 | G96 | 0.0   | 0.3-  |
| 2004 02 11 | 703 | 1.0- | 0.6+ | 2006 08 19 | 691 | 0.2-  | 0.4+  | 2007 11 20 | G96 | 0.3+  | 0.5-  |
| 2004 02 11 | 703 | 0.2- | 0.3+ | 2006 08 19 | 691 | 0.3-  | 0.2+  | 2007 11 20 | G96 | 1.0+  | 0.7-  |
| 2004 02 12 | 691 | 0.1+ | 0.2+ | 2006 08 19 | 691 | 0.2-  | 0.6+  | 2007 12 05 | 704 | 1.0-  | 0.4+  |
| 2004 02 12 | 691 | 0.3+ | 0.1+ | 2006 08 29 | 691 | 0.0   | 0.6+  | 2007 12 05 | 704 | 1.1-  | 1.5-  |
| 2004 02 12 | 691 | 0.1+ | 0.2+ | 2006 08 29 | 691 | 0.0   | 0.6+  | 2007 12 05 | 704 | (0.2- | 3.2-) |
| 2004 02 18 | 333 | 0.4- | 0.1- | 2006 08 29 | 691 | 0.4-  | 0.5+  | 2007 12 06 | 691 | 0.4+  | 0.1-  |
| 2004 02 18 | 333 | 0.1- | 0.4- | 2006 09 27 | G96 | 0.6-  | 0.2-  | 2007 12 06 | 691 | 0.3-  | 0.3+  |
| 2004 02 18 | 333 | 1.0- | 0.1+ | 2006 09 27 | G96 | 0.1-  | 0.2+  | 2007 12 06 | 691 | 0.3-  | 0.2-  |

**(172713)\* 2004 BA<sub>60</sub> = 1996 EG<sub>12</sub>**

Discovered 2004 Jan. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 76387)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |  | 262.59647  |          | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|--|------------|----------|-----------|--|-------------|------|-------------|---|
| <i>n</i> |  | 0.23838639 | $\omega$ | 296.66232 |  | -0.85940929 |      | +0.50366014 |   |
| <i>a</i> |  | 2.5760151  | $\Omega$ | 273.69587 |  | -0.43214978 |      | -0.80752118 |   |
| <i>e</i> |  | 0.2351660  | <i>i</i> | 5.05850   |  | -0.27324391 |      | -0.30697885 |   |
| <i>P</i> |  | 4.13       | <i>H</i> | 16.4      |  | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

2007 DEC. 24

M.P.O. 129457

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 01 | 703 | 0.9+  | 0.1+  | 2004 01 27 | 691 | 0.4− | 0.5+ | 2006 10 19 | G96 | 0.0  | 0.6− |
| 2000 02 01 | 703 | 1.3+  | 0.3+  | 2005 06 18 | G96 | 0.1− | 0.1+ | 2006 10 19 | G96 | 0.5+ | 0.5− |
| 2000 02 01 | 703 | 1.3−  | 0.2+  | 2005 06 18 | G96 | 0.3− | 0.0  | 2007 11 05 | G96 | 0.4− | 0.3− |
| 2000 02 02 | 704 | 1.4+  | 0.3−  | 2005 06 18 | G96 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.3− | 0.4− |
| 2000 02 02 | 704 | 0.9+  | 0.5+  | 2005 06 18 | G96 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.0  | 0.6− |
| 2000 02 02 | 704 | 0.2−  | 0.6+  | 2005 07 04 | G96 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.2+ | 0.6− |
| 2000 02 02 | 704 | 0.1+  | 0.6+  | 2005 07 04 | G96 | 0.0  | 0.2+ | 2007 12 16 | 691 | 0.1− | 0.0  |
| 2000 03 05 | 704 | 0.2+  | 0.5+  | 2005 07 04 | G96 | 0.5− | 0.2+ | 2007 12 16 | 691 | 0.5− | 0.2− |
| 2000 03 05 | 704 | 0.8+  | 1.2+  | 2005 07 04 | G96 | 0.1+ | 0.5+ | 2007 12 16 | 691 | 0.1− | 0.2+ |
| 2000 03 05 | 704 | (0.6− | 2.1+) | 2005 07 05 | 691 | 0.2− | 0.7+ |            |     |      |      |
| 2004 01 15 | 691 | 0.0   | 0.4+  | 2005 07 05 | 691 | 0.1− | 1.2+ |            |     |      |      |

(172714)\* 2004 BS<sub>62</sub>

Discovered 2004 Jan. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.20870621 | $\omega$ | 197.49318 | +0.43066494 | +0.89766202 |          |   |
| <i>a</i> | 2.8147887  | $\Omega$ | 98.10095  | −0.81634443 | +0.43160150 |          |   |
| <i>e</i> | 0.0814513  | <i>i</i> | 5.41561   | −0.38484995 | +0.08901153 |          |   |
| <i>P</i> | 4.72       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 07 | 704 | 0.1− | 0.9+  | 2005 04 04 | 703 | 0.5+ | 0.2+ | 2006 08 28 | 703 | 0.6− | 0.7+ |
| 2002 11 07 | 704 | 0.7− | 0.0   | 2005 05 03 | 691 | 0.1+ | 0.0  | 2006 08 28 | 703 | 0.6− | 0.4+ |
| 2002 11 07 | 704 | 0.6− | 0.4−  | 2005 05 03 | 691 | 0.1+ | 0.5+ | 2006 08 28 | 703 | 0.4+ | 0.2− |
| 2003 12 28 | 691 | 0.1+ | 0.1−  | 2005 05 03 | 691 | 0.0  | 0.2+ | 2007 11 01 | 691 | 0.1+ | 0.0  |
| 2003 12 28 | 691 | 0.4+ | 0.3+  | 2006 08 12 | 644 | 0.1− | 0.3+ | 2007 11 01 | 691 | 0.0  | 0.2+ |
| 2003 12 28 | 691 | 0.4+ | 0.3−  | 2006 08 12 | 644 | 0.1+ | 0.4+ | 2007 11 01 | 691 | 0.0  | 0.4+ |
| 2004 01 15 | 691 | 0.3− | 0.2+  | 2006 08 12 | 644 | 0.0  | 0.2+ | 2007 11 05 | 691 | 0.3− | 0.2+ |
| 2004 01 15 | 691 | 0.3− | 0.0   | 2006 08 14 | 644 | 0.1+ | 0.3+ | 2007 11 05 | 691 | 0.0  | 0.0  |
| 2004 01 15 | 691 | 0.2+ | 0.2−  | 2006 08 14 | 644 | 0.1+ | 0.3+ | 2007 11 05 | 691 | 0.0  | 0.1− |
| 2004 01 22 | 704 | (0.0 | 1.7+) | 2006 08 14 | 644 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 2004 01 22 | 704 | 0.6+ | 0.1+  | 2006 08 17 | 644 | 0.1− | 0.3+ | 2007 11 09 | 691 | 0.8+ | 1.2− |
| 2004 01 22 | 704 | 0.7− | 0.9+  | 2006 08 17 | 644 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.1+ |
| 2004 01 22 | 704 | 0.3+ | 0.8+  | 2006 08 17 | 644 | 0.0  | 0.3+ | 2007 11 20 | 691 | 0.2− | 0.5+ |
| 2004 01 22 | 704 | 0.4− | 1.1+  | 2006 08 20 | 644 | 0.1− | 0.5+ | 2007 11 20 | 691 | 0.4− | 0.3− |
| 2004 01 27 | 691 | 0.2+ | 0.1+  | 2006 08 20 | 644 | 0.1+ | 0.3+ | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2004 01 27 | 691 | 0.0  | 0.2+  | 2006 08 20 | 644 | 0.3+ | 0.2+ | 2007 12 04 | 704 | 0.3− | 0.7− |
| 2004 01 27 | 691 | 0.1− | 0.2+  | 2006 08 23 | 644 | 0.1+ | 0.4+ | 2007 12 04 | 704 | 0.3+ | 0.6+ |
| 2005 04 04 | 703 | 0.3− | 1.2+  | 2006 08 23 | 644 | 0.1+ | 0.4+ | 2007 12 04 | 704 | 0.6+ | 0.9+ |
| 2005 04 04 | 703 | 0.5− | 0.8−  | 2006 08 23 | 644 | 0.0  | 0.2+ |            |     |      |      |
| 2005 04 04 | 703 | 0.2− | 0.1+  | 2006 08 28 | 703 | 0.1− | 0.5− |            |     |      |      |

(172715)\* 2004 BP<sub>67</sub>

Discovered 2004 Jan. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.20952035 | $\omega$ | 54.72306  | +0.99380153 | +0.10722794 |          |   |
| <i>a</i> | 2.8074923  | $\Omega$ | 299.10500 | −0.10974989 | +0.90430511 |          |   |
| <i>e</i> | 0.0149242  | <i>i</i> | 1.92420   | −0.01770547 | +0.41320024 |          |   |
| <i>P</i> | 4.70       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 11 | 704 | 0.2+ | 0.9+ | 2004 01 27 | 691 | 0.1+ | 0.1+ | 2007 10 11 | 691 | 0.1+ | 0.0  |
| 2002 10 11 | 704 | 1.1− | 0.7− | 2004 01 27 | 691 | 0.1+ | 0.3+ | 2007 10 11 | 691 | 0.3+ | 0.2− |
| 2002 10 11 | 704 | 0.2+ | 0.1+ | 2004 02 13 | 691 | 0.0  | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2002 10 11 | 704 | 0.6+ | 0.6+ | 2004 02 13 | 691 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 1.1− | 0.2+ |
| 2002 10 11 | 704 | 0.7− | 0.8+ | 2004 02 13 | 691 | 0.2− | 0.1− | 2007 11 04 | 691 | 0.0  | 0.2+ |
| 2003 12 21 | 691 | 0.1+ | 0.0  | 2006 07 21 | G96 | 0.1− | 0.1+ | 2007 11 15 | 704 | 1.2+ | 0.5+ |
| 2003 12 21 | 691 | 0.1+ | 0.1+ | 2006 07 21 | G96 | 0.1− | 0.2+ | 2007 11 15 | 704 | 0.7+ | 0.3+ |
| 2003 12 21 | 691 | 0.2+ | 0.1− | 2006 07 21 | G96 | 0.5− | 0.1+ | 2007 11 15 | 704 | 1.1+ | 0.1+ |
| 2004 01 15 | 691 | 0.2− | 0.1+ | 2006 07 21 | G96 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 1.1+ | 0.3+ |
| 2004 01 15 | 691 | 0.0  | 0.3− | 2006 08 20 | 644 | 0.2+ | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 15 | 691 | 0.2− | 0.1− | 2006 08 20 | 644 | 0.1+ | 0.1+ | 2007 11 19 | 691 | 0.1− | 0.1− |
| 2004 01 24 | 704 | 0.1− | 0.3+ | 2006 08 20 | 644 | 0.1− | 0.4+ | 2007 11 19 | 691 | 0.0  | 0.2− |
| 2004 01 24 | 704 | 0.9− | 0.5+ | 2007 10 07 | 691 | 0.0  | 0.2− | 2007 12 05 | 691 | 0.1+ | 0.2+ |
| 2004 01 24 | 704 | 0.2+ | 1.1− | 2007 10 07 | 691 | 0.0  | 0.1− | 2007 12 05 | 691 | 0.1− | 0.0  |
| 2004 01 24 | 704 | 0.8+ | 0.1+ | 2007 10 07 | 691 | 0.0  | 0.2− | 2007 12 05 | 691 | 0.3+ | 0.1− |
| 2004 01 27 | 691 | 0.1+ | 0.2+ | 2007 10 11 | 691 | 0.0  | 0.1− |            |     |      |      |

(172716)\* 2004 BS<sub>77</sub>

Discovered 2004 Jan. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22076917 | $\omega$ | 20.09822 | −0.23495909 | −0.97055430 |          |   |
| <i>a</i> | 2.7112970  | $\Omega$ | 83.51974 | +0.88433478 | −0.23611682 |          |   |
| <i>e</i> | 0.0318669  | <i>i</i> | 3.06287  | +0.40341818 | −0.04767818 |          |   |
| <i>P</i> | 4.46       | <i>H</i> | 16.6     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 04 18 | 691 | 1.0+ | 0.7+ | 2004 02 14 | 691 | 0.2+ | 0.1+ | 2005 06 13 | G96 | 0.2− | 0.5− |
| 1996 04 18 | 691 | 0.1+ | 0.3+ | 2004 02 14 | 691 | 0.3+ | 0.1+ | 2005 06 13 | G96 | 1.3+ | 0.5− |
| 1996 04 18 | 691 | 0.2− | 0.4+ | 2004 02 14 | 691 | 0.4+ | 0.1+ | 2005 06 13 | G96 | 0.5+ | 0.4+ |
| 2000 02 07 | 691 | 0.3− | 0.7+ | 2004 02 17 | 645 | 0.0  | 0.2− | 2005 06 13 | G96 | 0.2− | 0.3+ |
| 2000 02 07 | 691 | 0.4− | 0.4+ | 2004 02 17 | 645 | 0.0  | 0.2− | 2006 08 17 | 644 | 0.5− | 0.8+ |
| 2000 02 07 | 691 | 0.5− | 0.5+ | 2005 05 08 | 673 | 0.3+ | 0.8+ | 2006 08 17 | 644 | 0.3+ | 0.9+ |
| 2002 10 31 | 645 | 0.0  | 0.1+ | 2005 05 08 | 673 | 0.2+ | 0.7+ | 2006 08 17 | 644 | 0.3− | 0.5+ |
| 2002 10 31 | 645 | 0.1− | 0.1+ | 2005 05 08 | 673 | 0.4+ | 0.7+ | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2004 01 22 | 704 | 0.4+ | 0.6+ | 2005 05 08 | G96 | 0.4− | 0.0  | 2007 11 14 | 691 | 0.1+ | 0.1+ |
| 2004 01 22 | 704 | 0.0  | 0.4+ | 2005 05 08 | G96 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.1− |
| 2004 01 22 | 704 | 0.0  | 0.4+ | 2005 05 08 | G96 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.2− | 0.4+ |
| 2004 01 22 | 704 | 0.1− | 0.6+ | 2005 05 08 | G96 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.2− | 1.0+ |
| 2004 01 22 | 704 | 0.2+ | 0.1+ | 2005 05 08 | G96 | 0.3− | 0.4+ | 2007 12 05 | 704 | 1.0− | 0.3+ |
| 2004 01 28 | 691 | 0.2− | 0.1− | 2005 05 08 | G96 | 0.2− | 0.1+ | 2007 12 05 | 704 | 0.9− | 0.2+ |
| 2004 01 28 | 691 | 0.0  | 0.1− | 2005 05 08 | G96 | 0.1+ | 0.1+ | 2007 12 16 | 691 | 0.3− | 0.0  |
| 2004 01 28 | 691 | 0.1− | 0.0  | 2005 05 08 | G96 | 0.2− | 0.4+ | 2007 12 16 | 691 | 0.7− | 0.1+ |
| 2004 02 12 | 691 | 0.2+ | 0.1+ | 2005 05 09 | 673 | 0.1− | 1.0+ | 2007 12 16 | 691 | 0.2+ | 1.7+ |
| 2004 02 12 | 691 | 0.5+ | 0.0  | 2005 05 09 | 673 | 0.5+ | 0.8+ |            |     |      |      |
| 2004 02 12 | 691 | 0.1+ | 0.0  | 2005 05 09 | 673 | 0.9+ | 0.5+ |            |     |      |      |

(172717)\* 2004 BS<sub>81</sub> = 2005 HK<sub>2</sub>

Discovered 2004 Jan. 26 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 76393)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21690923 | $\omega$ | 284.84870 | +0.98607325 | −0.11081547 |          |   |
| <i>a</i> | 2.7433677  | $\Omega$ | 81.62892  | +0.15272035 | +0.89857707 |          |   |
| <i>e</i> | 0.0623167  | <i>i</i> | 7.20094   | −0.06584856 | +0.42459296 |          |   |
| <i>P</i> | 4.54       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 645 | 0.0  | 0.1+ | 2005 04 17 | 691 | 0.1− | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.2− |
| 2002 09 05 | 645 | 0.0  | 0.1+ | 2005 04 18 | 691 | 0.0  | 0.3+ | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 2002 10 02 | 608 | 1.0− | 0.3− | 2005 04 18 | 691 | 0.0  | 0.4+ | 2007 11 18 | G96 | 0.0  | 0.1− |
| 2002 10 02 | 608 | 0.0  | 1.0− | 2005 04 18 | 691 | 0.0  | 0.3+ | 2007 11 19 | 691 | 0.2− | 0.2+ |
| 2002 10 02 | 608 | 1.0− | 1.0− | 2006 08 12 | 644 | 0.2+ | 0.5+ | 2007 11 19 | 691 | 0.2− | 0.2+ |
| 2002 10 04 | 704 | 0.1− | 0.3− | 2006 08 12 | 644 | 0.2+ | 0.5+ | 2007 11 19 | 691 | 0.3− | 0.1+ |
| 2002 10 04 | 704 | 0.3+ | 0.0  | 2006 08 12 | 644 | 0.0  | 0.6+ | 2007 12 03 | 703 | 1.1+ | 0.4+ |
| 2002 10 04 | 704 | 0.4+ | 0.3+ | 2007 10 20 | G96 | 0.1+ | 0.1+ | 2007 12 03 | 703 | 0.5+ | 0.5+ |
| 2002 10 04 | 704 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.3+ | 0.0  | 2007 12 03 | 703 | 1.0+ | 0.3+ |
| 2002 10 15 | 644 | 0.2− | 0.5+ | 2007 10 20 | G96 | 0.0  | 0.1+ | 2007 12 03 | 703 | 0.1− | 0.7− |
| 2002 10 15 | 644 | 0.3− | 0.9+ | 2007 10 20 | G96 | 0.2+ | 0.0  | 2007 12 04 | 699 | 0.2+ | 0.6− |
| 2002 10 15 | 644 | 0.4− | 0.7+ | 2007 11 03 | 691 | 0.2− | 0.1− | 2007 12 04 | 699 | 0.3− | 0.0  |
| 2003 12 28 | 704 | 0.1− | 0.4− | 2007 11 03 | 691 | 0.3− | 0.2+ | 2007 12 04 | 699 | 0.3− | 0.3− |
| 2003 12 28 | 704 | 1.3+ | 0.6+ | 2007 11 03 | 691 | 0.2− | 0.2+ | 2007 12 04 | 699 | 1.2− | 0.1− |
| 2003 12 28 | 704 | 0.7+ | 0.5+ | 2007 11 04 | 704 | 0.7+ | 0.2− | 2007 12 05 | 704 | 0.4+ | 0.4− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 704 | 0.5+ | 0.3+ | 2007 11 04 | 704 | 0.5+ | 0.3− | 2007 12 05 | 704 | 0.3+ | 0.4+ |
| 2004 01 26 | 699 | 0.1+ | 0.9+ | 2007 11 04 | 704 | 0.1+ | 0.0  | 2007 12 05 | 704 | 0.1+ | 0.5− |
| 2004 01 26 | 699 | 0.4+ | 1.0+ | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2004 01 26 | 699 | 0.1+ | 0.2+ | 2007 11 07 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.1− |
| 2004 01 26 | 699 | 0.1− | 0.1− | 2007 11 07 | 691 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.3− |
| 2004 01 28 | 691 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.4+ | 0.5+ | 2007 12 15 | G96 | 0.0  | 0.4− |
| 2004 01 28 | 691 | 0.2− | 0.0  | 2007 11 14 | 704 | 0.4+ | 0.2− | 2007 12 15 | G96 | 0.3+ | 0.5− |
| 2004 01 28 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.8+ | 0.4− | 2007 12 15 | G96 | 0.0  | 0.0  |
| 2005 04 17 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 0.2+ | 0.6− |            |     |      |      |
| 2005 04 17 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.3− |            |     |      |      |

**(172718)\* 2004 BD<sub>85</sub>**

Discovered 2004 Jan. 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.48248545 | <i>ω</i> | 284.29914 | −0.92305149 | +0.18967171 |          |   |
| <i>a</i>                                | 1.6099531  | <i>Ω</i> | 267.46763 | −0.06024628 | −0.93053466 |          |   |
| <i>e</i>                                | 0.2045348  | <i>i</i> | 19.57205  | −0.37992938 | −0.31325689 |          |   |
| <i>P</i>                                | 2.04       | <i>H</i> | 18.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 01 13 | 704 | 0.4+  | 0.3−  | 2004 02 08 | 715 | 0.1−  | 0.2+  | 2005 12 04 | 691 | 0.5−  | 0.4−  |
| 2002 01 13 | 704 | 0.8+  | 0.4−  | 2004 02 08 | 715 | 0.3+  | 0.7+  | 2005 12 04 | 691 | 0.6+  | 0.4−  |
| 2002 01 13 | 704 | 0.2+  | 0.3+  | 2004 02 08 | 715 | 0.2+  | 0.0   | 2005 12 08 | 691 | 0.0   | 0.3−  |
| 2002 01 13 | 704 | 0.6+  | 0.8−  | 2004 02 10 | 176 | 1.2−  | 0.4+  | 2005 12 08 | 691 | 0.2+  | 0.1−  |
| 2002 01 13 | 704 | 0.2+  | 0.3+  | 2004 02 10 | 176 | 1.1−  | 0.4+  | 2005 12 08 | 691 | 0.7+  | 1.0+  |
| 2004 01 28 | 704 | 0.2−  | 0.1−  | 2004 02 10 | 176 | 1.1−  | 0.5+  | 2005 12 30 | 704 | 0.5−  | 1.0+  |
| 2004 01 28 | 704 | 0.5+  | 0.1−  | 2004 02 10 | 176 | 0.9−  | 0.6+  | 2005 12 30 | 704 | 0.6−  | 0.4+  |
| 2004 01 28 | 704 | 0.5+  | 0.2−  | 2004 02 10 | 176 | 0.8−  | 0.6+  | 2005 12 30 | 704 | 0.9−  | 0.3+  |
| 2004 01 28 | 704 | 0.5+  | 0.7−  | 2004 02 16 | 448 | 0.3+  | 0.2+  | 2006 01 28 | 703 | 0.7+  | 0.8+  |
| 2004 01 28 | 704 | 0.1−  | 0.3−  | 2004 02 16 | 448 | 0.4+  | 0.0   | 2006 01 28 | 703 | (0.3− | 1.7−) |
| 2004 01 28 | J95 | 0.8−  | 0.8−  | 2004 02 16 | 448 | 0.1+  | 0.4−  | 2006 01 28 | 703 | 0.2+  | 0.9−  |
| 2004 01 29 | G90 | 1.3−  | 0.3+  | 2004 02 26 | 448 | 0.4+  | 0.1−  | 2006 01 28 | 703 | 0.3+  | 0.1+  |
| 2004 01 29 | G90 | 0.2−  | 0.1−  | 2004 02 26 | 448 | 0.3+  | 0.0   | 2007 12 13 | 704 | 0.4−  | 0.0   |
| 2004 01 29 | G90 | 0.4+  | 0.9+  | 2004 02 26 | 448 | 0.2+  | 0.1−  | 2007 12 13 | 704 | 0.3−  | 0.3−  |
| 2004 01 30 | G90 | 0.1−  | 0.1+  | 2004 03 09 | 448 | 0.6+  | 0.6+  | 2007 12 13 | 704 | 0.2−  | 0.3+  |
| 2004 01 30 | G90 | 0.4−  | 0.1+  | 2004 03 09 | 448 | 0.8+  | 0.3+  | 2007 12 13 | 704 | 0.3+  | 0.3+  |
| 2004 01 30 | G90 | 0.1−  | 0.1−  | 2004 03 09 | 448 | 0.8+  | 0.1−  | 2007 12 15 | 704 | 0.9+  | 1.0−  |
| 2004 01 30 | 854 | 0.2+  | 1.0−  | 2004 03 31 | 413 | 0.9+  | 0.6+  | 2007 12 15 | 704 | 0.0   | 0.3−  |
| 2004 01 30 | 448 | 0.4−  | 0.0   | 2004 03 31 | 413 | 0.8+  | 0.5+  | 2007 12 15 | 704 | 0.3−  | 0.2+  |
| 2004 01 30 | 854 | (1.9+ | 0.1+) | 2005 10 27 | 696 | (2.1− | 0.4+) | 2007 12 15 | 704 | 0.3+  | 0.4−  |
| 2004 01 30 | 448 | 0.3−  | 0.2+  | 2005 10 27 | 696 | 0.3+  | 0.3+  | 2007 12 15 | 704 | 0.5+  | 0.5+  |
| 2004 01 30 | 448 | 0.1−  | 0.3+  | 2005 12 04 | 691 | 0.0   | 0.3+  |            |     |       |       |

**(172719)\* 2004 BQ<sub>89</sub>**

Discovered 2004 Jan. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.21856186 | <i>ω</i> | 214.24677 | −0.49250083 | −0.86270502 |          |   |
| <i>a</i>                                | 2.7295211  | <i>Ω</i> | 265.50439 | +0.82205971 | −0.41781181 |          |   |
| <i>e</i>                                | 0.0845905  | <i>i</i> | 6.61352   | +0.28576347 | −0.28490934 |          |   |
| <i>P</i>                                | 4.51       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 12 22 | 704 | 1.8− | 1.6− | 2004 02 13 | 644 | 0.0  | 0.5+ | 2006 09 11 | 703 | 0.4−  | 0.8+  |
| 1998 12 22 | 704 | 0.1− | 1.6− | 2004 02 13 | 644 | 0.0  | 0.0  | 2006 09 11 | 703 | (2.2+ | 1.0+) |
| 1998 12 22 | 704 | 1.4+ | 1.5− | 2004 02 13 | 644 | 0.1− | 0.1+ | 2006 09 11 | 703 | 0.8+  | 0.2−  |
| 2000 04 26 | 699 | 0.5+ | 1.0− | 2004 02 14 | 699 | 0.5− | 0.1− | 2006 09 11 | 703 | 0.1+  | 0.6+  |
| 2000 04 26 | 699 | 0.4− | 1.0− | 2004 02 14 | 699 | 0.2+ | 0.2+ | 2006 09 18 | 703 | (0.1− | 2.6−) |
| 2000 04 26 | 699 | 0.0  | 0.6+ | 2004 02 14 | 699 | 1.2+ | 0.2+ | 2006 09 18 | 703 | 0.0   | 1.2−  |
| 2000 04 26 | 699 | 1.8− | 0.4+ | 2004 02 14 | 699 | 0.0  | 0.1− | 2006 09 18 | 703 | (1.5− | 1.6−) |
| 2002 10 03 | 644 | 0.1− | 0.2− | 2004 02 18 | 691 | 0.3− | 0.0  | 2006 09 18 | 703 | 0.6+  | 0.6−  |
| 2002 10 03 | 644 | 0.2− | 0.0  | 2004 02 18 | 691 | 0.1− | 0.0  | 2006 09 26 | 703 | (0.7+ | 1.5+) |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 03 | 644 | 0.4− | 0.2+ | 2004 02 18 | 691 | 0.0   | 0.0   | 2006 09 26 | 703 | 0.4− | 0.9+ |
| 2002 10 31 | 644 | 0.2− | 0.2+ | 2004 02 19 | 704 | 0.1−  | 0.2−  | 2006 09 26 | 703 | 0.0  | 0.0  |
| 2002 10 31 | 644 | 0.7− | 0.1+ | 2004 02 19 | 704 | 0.1−  | 0.0   | 2006 09 26 | 703 | 0.5− | 0.7+ |
| 2002 10 31 | 644 | 0.2+ | 0.9+ | 2004 02 19 | 704 | 0.3+  | 0.1+  | 2007 11 06 | 691 | 0.1+ | 0.3− |
| 2002 10 31 | 644 | 0.5− | 0.0  | 2004 02 19 | 704 | 1.1+  | 0.1+  | 2007 11 06 | 691 | 0.2+ | 0.3− |
| 2002 10 31 | 644 | 0.5+ | 1.1+ | 2004 02 19 | 704 | 0.6+  | 0.2+  | 2007 11 06 | 691 | 0.3− | 0.3− |
| 2002 10 31 | 644 | 0.4+ | 1.2+ | 2004 03 15 | 704 | 0.5+  | 0.0   | 2007 12 05 | 691 | 0.2− | 0.5+ |
| 2004 01 23 | 704 | 0.4− | 0.3− | 2004 03 15 | 704 | 0.3+  | 0.1−  | 2007 12 05 | 691 | 0.1+ | 0.2− |
| 2004 01 23 | 704 | 0.4− | 0.1+ | 2004 03 15 | 704 | 0.5−  | 0.2+  | 2007 12 05 | 691 | 0.1+ | 0.0  |
| 2004 01 23 | 704 | 0.9− | 0.2+ | 2004 03 15 | 704 | 0.1+  | 0.6+  | 2007 12 14 | 704 | 0.8− | 0.0  |
| 2004 01 23 | 704 | 1.2+ | 0.2+ | 2004 03 15 | 704 | 0.2+  | 0.2+  | 2007 12 14 | 704 | 0.4− | 0.3− |
| 2004 01 29 | 704 | 0.1+ | 0.1+ | 2004 03 19 | 704 | 0.0   | 0.3+  | 2007 12 14 | 704 | 0.9+ | 1.6+ |
| 2004 01 29 | 704 | 0.3+ | 0.1− | 2004 03 19 | 704 | 0.8+  | 0.3+  | 2007 12 14 | 704 | 1.6− | 0.1+ |
| 2004 01 29 | 704 | 0.8+ | 0.2+ | 2004 03 19 | 704 | (1.0+ | 1.8+) | 2007 12 14 | 704 | 0.3+ | 0.6+ |
| 2004 01 29 | 704 | 0.1+ | 0.1+ | 2004 03 19 | 704 | 0.4+  | 1.2+  |            |     |      |      |

**(172720)\* 2004 BO<sub>93</sub>**

Discovered 2004 Jan. 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i>                                | 0.22820364 | <i>ω</i> | 185.41111 | −0.05288853 | −0.93196597 |          |   |
| <i>a</i>                                | 2.6520864  | <i>Ω</i> | 267.98089 | +0.92913394 | +0.08569352 |          |   |
| <i>e</i>                                | 0.0403465  | <i>i</i> | 21.03205  | +0.36594114 | −0.35227268 |          |   |
| <i>P</i>                                | 4.32       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 17 | 699 | 0.1−  | 0.1−  | 2003 12 22 | 644 | 0.2−  | 0.1+  | 2007 11 05 | 704 | 0.0  | 0.3+ |
| 2002 08 17 | 699 | 0.3−  | 0.1+  | 2003 12 26 | 608 | 0.3+  | 0.2−  | 2007 11 05 | 704 | 0.2− | 0.5+ |
| 2002 08 17 | 699 | 0.9+  | 0.9+  | 2003 12 26 | 608 | 0.2+  | 0.3−  | 2007 11 05 | G96 | 0.2+ | 0.3− |
| 2002 08 17 | 699 | (2.2− | 0.4+) | 2003 12 26 | 608 | 0.3+  | 0.2−  | 2007 11 05 | G96 | 0.3+ | 0.3− |
| 2002 09 18 | 699 | 0.3+  | 0.0   | 2004 01 28 | 704 | 0.2+  | 0.8+  | 2007 11 05 | 704 | 0.3− | 0.4− |
| 2002 09 18 | 699 | 0.2−  | 0.2−  | 2004 01 28 | 704 | 0.8+  | 0.2−  | 2007 11 05 | G96 | 0.2+ | 0.4− |
| 2002 09 18 | 699 | 0.0   | 0.4−  | 2004 01 28 | 704 | 0.3−  | 0.1+  | 2007 11 05 | G96 | 0.0  | 0.2− |
| 2002 09 18 | 699 | 0.7+  | 0.3+  | 2004 01 29 | 704 | 0.1−  | 0.5+  | 2007 11 14 | 704 | 0.9+ | 0.0  |
| 2002 09 25 | 644 | 0.6−  | 0.2+  | 2004 01 29 | 704 | 0.3−  | 0.4+  | 2007 11 14 | 704 | 0.9+ | 0.6+ |
| 2002 09 25 | 644 | 0.4−  | 0.1+  | 2004 01 29 | 699 | 0.1+  | 0.5+  | 2007 11 14 | 704 | 0.4− | 0.8+ |
| 2002 09 25 | 644 | 0.5−  | 0.2+  | 2004 01 29 | 704 | 0.7−  | 0.3+  | 2007 11 14 | 704 | 0.1+ | 0.2+ |
| 2002 10 12 | 704 | 0.4+  | 0.1+  | 2004 01 29 | 704 | 0.0   | 0.1−  | 2007 11 14 | 704 | 0.2+ | 0.1+ |
| 2002 10 12 | 704 | 0.7+  | 0.9−  | 2004 01 29 | 699 | 0.2−  | 0.0   | 2007 11 19 | G96 | 0.1+ | 0.3− |
| 2002 10 12 | 704 | 0.2+  | 0.2−  | 2004 01 29 | 704 | 0.2−  | 0.2+  | 2007 11 19 | G96 | 0.2+ | 0.2− |
| 2002 10 12 | 704 | 0.3−  | 0.1−  | 2004 01 29 | 699 | 0.4−  | 0.2+  | 2007 11 19 | G96 | 0.2+ | 0.3− |
| 2002 10 31 | 704 | 0.9−  | 0.1−  | 2004 01 29 | 699 | 0.6−  | 0.8−  | 2007 11 19 | G96 | 0.0  | 0.2− |
| 2002 10 31 | 704 | 0.3−  | 0.2+  | 2004 02 20 | 704 | 0.6+  | 0.3+  | 2007 12 04 | 704 | 0.2+ | 0.2− |
| 2002 10 31 | 704 | 0.6−  | 0.7+  | 2004 02 20 | 704 | 0.7+  | 0.2−  | 2007 12 04 | 704 | 0.9− | 0.0  |
| 2002 10 31 | 704 | 0.1−  | 0.3−  | 2004 02 20 | 704 | 1.4+  | 0.4−  | 2007 12 04 | 704 | 0.2− | 0.2− |
| 2002 10 31 | 704 | 0.6−  | 0.0   | 2004 03 14 | 644 | 0.3+  | 0.3+  | 2007 12 04 | 704 | 0.1+ | 0.1+ |
| 2002 11 11 | 704 | 0.2−  | 0.6+  | 2004 03 14 | 644 | 0.0   | 0.2+  | 2007 12 04 | 704 | 0.1− | 0.2− |
| 2002 11 11 | 704 | 1.0+  | 1.4+  | 2004 03 14 | 644 | 0.2−  | 0.4+  | 2007 12 06 | 691 | 0.4− | 0.1+ |
| 2002 11 11 | 704 | 0.4+  | 0.6+  | 2004 03 16 | 704 | 0.3−  | 0.4−  | 2007 12 06 | 691 | 0.1− | 0.1− |
| 2002 11 11 | 704 | 0.1−  | 0.4+  | 2004 03 16 | 704 | (2.0+ | 0.9−) | 2007 12 06 | G96 | 0.1+ | 0.4− |
| 2002 12 31 | 704 | 0.3+  | 0.7−  | 2004 03 16 | 704 | 0.7+  | 0.3−  | 2007 12 06 | 691 | 0.2− | 0.1− |
| 2002 12 31 | 704 | 0.9−  | 0.2+  | 2004 03 16 | 704 | 0.1−  | 0.8+  | 2007 12 06 | G96 | 0.2+ | 0.6− |
| 2002 12 31 | 704 | (2.3− | 1.0+) | 2006 09 22 | 113 | 0.0   | 0.4−  | 2007 12 06 | G96 | 0.1− | 0.4− |
| 2003 12 22 | 644 | 0.1−  | 0.1+  | 2006 09 22 | 113 | 0.6+  | 0.2−  | 2007 12 06 | G96 | 0.1− | 0.5− |
| 2003 12 22 | 644 | 0.0   | 0.1−  | 2006 09 22 | 113 | 0.4+  | 0.3−  |            |     |      |      |



2007 DEC. 24

M.P.O. 129459

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 12 | 645 | 0.1− | 0.0  | 2004 02 14 | 691 | 0.1+ | 0.4+ | 2007 10 24 | G96 | 0.8+ | 0.6− |
| 2000 02 12 | 645 | 0.2− | 0.0  | 2004 02 14 | 691 | 0.3− | 0.3+ | 2007 10 24 | G96 | 0.4+ | 0.1+ |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2005 05 04 | 691 | 0.8+ | 0.5+ | 2007 10 25 | G96 | 0.1− | 0.4− |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2005 05 04 | 691 | 0.3+ | 0.6+ | 2007 10 25 | G96 | 0.2− | 0.0  |
| 2004 01 19 | 691 | 0.3+ | 0.0  | 2005 05 04 | 691 | 0.5+ | 0.4+ | 2007 10 25 | G96 | 0.4+ | 0.3− |
| 2004 01 19 | 691 | 0.3+ | 0.1− | 2005 05 16 | 691 | 0.4+ | 0.3− | 2007 10 25 | G96 | 0.4+ | 0.3− |
| 2004 01 19 | 691 | 0.2+ | 0.1+ | 2005 05 16 | 691 | 0.4− | 0.2− | 2007 11 05 | 704 | 0.6− | 0.7+ |
| 2004 01 24 | 704 | 0.2+ | 1.4+ | 2005 05 16 | 691 | 1.0− | 0.4+ | 2007 11 05 | 704 | 0.6− | 1.1+ |
| 2004 01 24 | 704 | 0.8+ | 0.7+ | 2006 05 31 | G96 | 0.2+ | 0.4+ | 2007 11 05 | 704 | 0.6− | 0.9+ |
| 2004 01 24 | 704 | 0.4− | 0.2− | 2006 05 31 | G96 | 0.7+ | 0.3+ | 2007 11 20 | 703 | 0.4− | 0.1+ |
| 2004 01 24 | 704 | 0.7+ | 0.8+ | 2006 05 31 | G96 | 0.4− | 0.5+ | 2007 11 20 | 703 | 0.3− | 0.6− |
| 2004 01 28 | 691 | 0.1+ | 0.2− | 2006 05 31 | G96 | 0.1+ | 0.4+ | 2007 11 20 | 703 | 0.1− | 1.0− |
| 2004 01 28 | 691 | 0.2+ | 0.0  | 2006 07 21 | G96 | 0.2+ | 0.1+ | 2007 11 20 | 703 | 0.6− | 0.6+ |
| 2004 01 28 | 691 | 0.0  | 0.2− | 2006 07 21 | G96 | 0.3− | 0.3+ | 2007 12 04 | 704 | 0.9− | 0.5+ |
| 2004 01 30 | 691 | 0.2− | 0.2+ | 2006 07 21 | G96 | 0.0  | 0.2+ | 2007 12 04 | 704 | 0.1+ | 0.6+ |
| 2004 01 30 | 691 | 0.0  | 0.1− | 2006 07 21 | G96 | 0.0  | 0.2− | 2007 12 04 | 704 | 0.4− | 0.6+ |
| 2004 01 30 | 691 | 0.0  | 0.0  | 2007 10 24 | G96 | 0.2+ | 0.7− | 2007 12 04 | 704 | 0.5− | 0.6+ |
| 2004 02 14 | 691 | 0.2+ | 0.1− | 2007 10 24 | G96 | 0.0  | 0.3− |            |     |      |      |

(172722)\* 2004 BV<sub>102</sub>

Discovered 2004 Jan. 31 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 8.22435    |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.51383360 | $\omega$ | 17.04373  | +0.99889354 | +0.02453304 |
| $a$ | 1.5437882  | $\Omega$ | 341.41157 | -0.04143431 | +0.86266797 |
| $e$ | 0.6992863  | $i$      | 7.23086   | +0.02224606 | +0.50517533 |
| $P$ | 1.92       | $H$      | 17.6      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 31 | 704 | 1.0−  | 0.5+  | 2005 05 04 | 474 | 0.0  | 0.0  | 2006 01 24 | A30 | 0.1− | 0.0  |
| 2004 01 31 | 704 | 0.4−  | 0.9+  | 2005 05 04 | 474 | 0.2− | 0.2+ | 2006 01 24 | A30 | 0.1− | 0.1− |
| 2004 01 31 | 704 | 0.6−  | 1.0+  | 2005 05 04 | 474 | 0.2− | 0.0  | 2006 01 25 | 703 | 0.4− | 0.1− |
| 2004 01 31 | 704 | 0.3−  | 0.7+  | 2005 05 04 | 474 | 0.0  | 0.4+ | 2006 01 25 | 703 | 0.5− | 0.0  |
| 2004 01 31 | 704 | 0.6−  | 1.0+  | 2005 05 04 | F65 | 0.1− | 0.3− | 2006 01 25 | 703 | 0.3− | 0.1+ |
| 2004 02 01 | 673 | (1.9− | 0.6−) | 2005 05 04 | F65 | 0.1+ | 0.0  | 2006 01 25 | 703 | 0.4− | 0.1− |
| 2004 02 01 | 673 | (1.6− | 0.4−) | 2005 05 04 | F65 | 0.3+ | 0.1− | 2006 01 25 | H45 | 0.1+ | 0.6+ |
| 2004 02 01 | 673 | (1.9− | 0.2−) | 2005 05 04 | F65 | 0.0  | 0.1+ | 2006 01 25 | H45 | 0.2− | 0.0  |
| 2004 02 01 | 673 | (1.8− | 0.1−) | 2005 12 26 | 448 | 0.0  | 0.0  | 2006 01 25 | H45 | 0.0  | 0.2− |
| 2004 02 01 | 240 | 0.7−  | 0.3−  | 2005 12 26 | 448 | 0.1+ | 0.2− | 2006 01 25 | H45 | 0.4− | 0.3+ |
| 2004 02 01 | 240 | 0.4−  | 0.3−  | 2005 12 26 | 448 | 0.1− | 0.1+ | 2006 01 25 | H45 | 0.5− | 0.1+ |
| 2004 02 01 | 240 | 0.0   | 0.2−  | 2005 12 26 | 448 | 0.1+ | 0.1+ | 2006 01 27 | 113 | 0.1+ | 0.2− |
| 2004 02 01 | 240 | 0.0   | 0.3−  | 2005 12 26 | 448 | 0.5+ | 0.1− | 2006 01 27 | 113 | 0.2− | 0.1− |
| 2004 02 01 | 240 | 0.0   | 0.2−  | 2005 12 29 | H45 | 0.4− | 0.7− | 2006 01 27 | 113 | 0.3− | 0.1− |
| 2004 02 01 | 240 | 0.1−  | 0.2−  | 2005 12 29 | H45 | 0.0  | 0.5− | 2006 01 27 | 113 | 0.1+ | 0.0  |
| 2004 02 01 | 240 | 0.1+  | 0.1−  | 2005 12 29 | H45 | 0.1+ | 0.5− | 2006 01 27 | 113 | 0.1+ | 0.2− |
| 2004 02 01 | 143 | 0.3−  | 0.1−  | 2005 12 29 | H45 | 0.0  | 1.0− | 2006 01 30 | 355 | 0.5+ | 0.4+ |
| 2004 02 01 | 143 | 0.4+  | 0.2−  | 2005 12 29 | H45 | 0.3+ | 1.2− | 2006 01 30 | 355 | 0.2+ | 1.1+ |
| 2004 02 01 | 143 | 0.4−  | 0.1+  | 2006 01 02 | H45 | 0.3− | 0.1+ | 2006 01 30 | 355 | 0.6+ | 0.9+ |
| 2004 02 01 | 143 | 0.3+  | 0.1+  | 2006 01 02 | H45 | 0.1+ | 0.0  | 2006 01 30 | 355 | 0.1− | 0.3+ |
| 2004 02 02 | 704 | 0.1+  | 0.7+  | 2006 01 02 | H45 | 0.1+ | 0.3− | 2006 01 30 | 355 | 0.3− | 0.7+ |
| 2004 02 02 | 704 | 0.4+  | 0.9+  | 2006 01 02 | H45 | 0.0  | 0.2+ | 2006 01 30 | A53 | 0.1+ | 0.3+ |
| 2004 02 02 | 704 | 0.2−  | 1.3+  | 2006 01 02 | H45 | 0.0  | 0.4− | 2006 01 30 | A53 | 0.1− | 0.2+ |
| 2004 02 02 | 704 | 0.5+  | 0.4+  | 2006 01 03 | H45 | 0.1− | 0.3− | 2006 01 30 | A53 | 0.0  | 0.2+ |
| 2004 02 03 | 704 | 0.1−  | 0.3+  | 2006 01 03 | H45 | 0.1− | 0.3− | 2006 01 31 | 198 | 0.1− | 0.1+ |
| 2004 02 03 | 704 | 0.4+  | 0.9−  | 2006 01 03 | H45 | 0.2+ | 0.2− | 2006 01 31 | 198 | 0.1− | 0.1+ |
| 2004 02 03 | 704 | 0.2+  | 0.1+  | 2006 01 03 | H45 | 0.2+ | 0.4− | 2006 01 31 | 198 | 0.0  | 0.2+ |
| 2004 02 03 | 704 | 0.1−  | 0.3+  | 2006 01 03 | H45 | 0.3− | 0.4− | 2006 01 31 | 198 | 0.1+ | 0.2+ |
| 2004 02 03 | 704 | 0.1−  | 0.3−  | 2006 01 06 | H45 | 0.1− | 0.2− | 2006 01 31 | 198 | 0.1− | 0.1+ |
| 2004 02 06 | 926 | 0.4−  | 0.0   | 2006 01 06 | H45 | 0.3+ | 0.0  | 2006 02 02 | 240 | 0.0  | 0.0  |
| 2004 02 06 | 926 | 0.2+  | 0.3+  | 2006 01 06 | H45 | 0.2− | 0.2− | 2006 02 02 | 240 | 0.1+ | 0.0  |
| 2004 02 06 | 926 | 0.1+  | 0.1+  | 2006 01 06 | H45 | 0.2+ | 0.5− | 2006 02 02 | 240 | 0.0  | 0.1− |
| 2004 02 07 | 926 | 0.3−  | 0.3+  | 2006 01 06 | H45 | 0.0  | 0.2− | 2006 02 02 | 240 | 0.1+ | 0.0  |
| 2004 02 07 | 926 | 0.2−  | 0.1−  | 2006 01 06 | 703 | 0.1− | 0.1− | 2006 02 02 | 240 | 0.1+ | 0.0  |
| 2004 02 07 | 926 | 0.1+  | 0.1+  | 2006 01 06 | 703 | 0.1− | 0.0  | 2006 02 02 | 240 | 0.4+ | 0.1− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 02 10 | 448 | 0.1−  | 0.1−  | 2006 01 06 | 703 | 0.3−  | 0.0   | 2006 02 02 | 240 | 0.2+  | 0.1−  |
| 2004 02 10 | 448 | 0.2+  | 0.3−  | 2006 01 06 | 703 | 0.3−  | 0.1−  | 2006 02 02 | 240 | 0.3+  | 0.1−  |
| 2004 02 10 | 448 | 0.2−  | 0.2−  | 2006 01 08 | 127 | 0.3+  | 0.3+  | 2006 02 02 | 084 | 0.4+  | 0.6−  |
| 2004 02 10 | 926 | 0.4−  | 0.3+  | 2006 01 08 | 127 | 0.4+  | 0.4+  | 2006 02 02 | 084 | 0.1+  | 0.5−  |
| 2004 02 10 | 926 | 0.2−  | 0.3+  | 2006 01 08 | 127 | 0.4+  | 0.3+  | 2006 02 03 | 084 | 0.6+  | 0.4−  |
| 2004 02 10 | 926 | 0.3+  | 0.2+  | 2006 01 09 | H45 | 0.6−  | 0.1−  | 2006 02 04 | H45 | 0.5−  | 0.4+  |
| 2004 02 10 | 104 | 0.3+  | 0.6+  | 2006 01 09 | H45 | 0.5−  | 0.3−  | 2006 02 04 | H45 | 0.6−  | 0.3−  |
| 2004 02 10 | 104 | 0.1−  | 0.5+  | 2006 01 09 | H45 | 0.4−  | 0.0   | 2006 02 04 | H45 | 0.3−  | 0.3+  |
| 2004 02 10 | 104 | 0.6−  | 0.1+  | 2006 01 09 | H45 | 0.3−  | 0.2−  | 2006 02 04 | H45 | 0.1−  | 0.1+  |
| 2004 02 10 | 104 | 0.1+  | 0.5+  | 2006 01 09 | H45 | 0.3−  | 0.1−  | 2006 02 04 | H45 | 0.2+  | 0.2−  |
| 2004 02 11 | H67 | (7.0+ | 1.0+) | 2006 01 11 | A13 | (2.6− | 0.0 ) | 2006 02 04 | 699 | 0.2+  | 0.2+  |
| 2004 02 11 | H67 | (2.9+ | 0.7+) | 2006 01 11 | A13 | (2.9− | 0.1−) | 2006 02 04 | 699 | (1.1− | 2.0+) |
| 2004 02 11 | H67 | (3.9+ | 0.1+) | 2006 01 11 | A13 | (2.7− | 0.1−) | 2006 02 04 | 699 | 0.1+  | 0.3+  |
| 2004 02 12 | 170 | 0.4−  | 0.1−  | 2006 01 14 | H45 | 1.0−  | 0.1+  | 2006 02 04 | 699 | 0.1−  | 0.4+  |
| 2004 02 12 | 170 | 0.2−  | 0.0   | 2006 01 14 | H45 | 0.3−  | 0.0   | 2006 02 04 | 565 | 0.5−  | 0.3−  |
| 2004 02 12 | 170 | 0.3−  | 0.1−  | 2006 01 14 | H45 | 0.6−  | 0.1−  | 2006 02 04 | 130 | 0.1+  | 0.4−  |
| 2004 02 14 | 704 | 0.3+  | 0.6+  | 2006 01 14 | H45 | 1.0−  | 0.1−  | 2006 02 04 | 130 | 0.2+  | 0.2−  |
| 2004 02 14 | 704 | 0.4+  | 0.5+  | 2006 01 14 | H45 | 0.7−  | 0.1−  | 2006 02 04 | 130 | 0.1+  | 0.2−  |
| 2004 02 14 | 704 | 0.2+  | 1.0+  | 2006 01 18 | H45 | 0.8−  | 0.1−  | 2006 02 04 | 130 | 0.1+  | 0.3−  |
| 2004 02 14 | 704 | 0.8+  | 0.4+  | 2006 01 18 | H45 | 0.6−  | 0.1+  | 2006 02 04 | 565 | 0.6−  | 0.0   |
| 2004 02 14 | 704 | 0.1−  | 0.8+  | 2006 01 18 | H45 | 0.6−  | 0.3−  | 2006 02 04 | 130 | 0.0   | 0.3−  |
| 2004 02 14 | 106 | (1.8+ | 1.6+) | 2006 01 18 | H45 | 0.9−  | 0.0   | 2006 02 04 | 565 | 0.0   | 0.4+  |
| 2004 02 15 | 704 | 0.2−  | 0.6−  | 2006 01 18 | H45 | 0.6−  | 0.1−  | 2006 02 04 | 170 | 0.0   | 0.2−  |
| 2004 02 15 | 704 | 0.2−  | 0.2+  | 2006 01 22 | H93 | (2.4− | 0.3−) | 2006 02 04 | 170 | 0.1+  | 0.4−  |
| 2004 02 15 | 704 | 0.4−  | 0.0   | 2006 01 22 | H93 | (2.0− | 0.0 ) | 2006 02 04 | 170 | 0.1+  | 0.5−  |
| 2004 02 15 | 704 | 0.2−  | 0.5+  | 2006 01 22 | H93 | 1.4−  | 0.2−  | 2006 02 05 | 941 | 0.2+  | 0.2−  |
| 2004 02 15 | 704 | 0.0   | 0.2+  | 2006 01 22 | 670 | 0.3+  | 0.3−  | 2006 02 05 | 941 | 0.2+  | 0.2−  |
| 2004 02 17 | 830 | 0.3−  | 0.4+  | 2006 01 22 | 670 | 0.0   | 0.2−  | 2006 02 05 | 941 | 0.2+  | 0.1−  |
| 2004 02 17 | 830 | 0.0   | 0.4+  | 2006 01 22 | 670 | 0.5+  | 0.4−  | 2006 02 05 | 941 | 0.1+  | 0.0   |
| 2004 02 18 | 926 | 0.5−  | 0.5+  | 2006 01 22 | A80 | 0.2−  | 0.3−  | 2006 02 06 | 704 | 0.1+  | 0.3−  |
| 2004 02 18 | 926 | (0.2+ | 1.8−) | 2006 01 22 | A80 | 0.1−  | 0.2−  | 2006 02 06 | 704 | 0.3+  | 0.1+  |
| 2004 02 18 | 926 | 0.5+  | 0.1+  | 2006 01 22 | A80 | 0.0   | 0.3−  | 2006 02 06 | 704 | 0.4+  | 0.1+  |
| 2004 02 18 | 448 | 0.2−  | 0.2−  | 2006 01 24 | 699 | 0.4+  | 0.1−  | 2006 02 06 | 704 | 0.4+  | 0.3+  |
| 2004 02 18 | 448 | 0.1−  | 0.2+  | 2006 01 24 | 699 | 0.0   | 0.0   | 2006 02 06 | 704 | 0.0   | 0.6+  |
| 2004 02 18 | 448 | 0.1−  | 0.0   | 2006 01 24 | 699 | 0.3+  | 0.1−  | 2006 02 06 | 084 | 0.1−  | 0.3−  |
| 2004 02 20 | 246 | 0.8−  | 0.3+  | 2006 01 24 | 699 | 0.5+  | 0.2−  | 2006 02 07 | 084 | 0.2+  | 0.3−  |
| 2004 02 20 | 246 | 0.2−  | 0.6+  | 2006 01 24 | H45 | 0.7−  | 0.0   | 2006 02 07 | 084 | 0.5−  | 0.3−  |
| 2004 02 20 | 246 | 0.4−  | 0.4+  | 2006 01 24 | H45 | 0.7−  | 0.1−  | 2006 02 18 | 699 | 1.2+  | 0.6−  |
| 2004 02 20 | 246 | 0.0   | 0.8+  | 2006 01 24 | H45 | 0.7−  | 0.0   | 2006 02 18 | 699 | 0.5+  | 0.3+  |
| 2004 02 20 | 246 | 0.0   | 0.9+  | 2006 01 24 | H45 | 0.1+  | 0.1−  | 2006 02 18 | 699 | 0.7+  | 0.2+  |
| 2004 02 20 | 246 | 0.4−  | 1.2+  | 2006 01 24 | H45 | 0.5−  | 0.1−  | 2006 02 20 | 704 | 0.0   | 0.9−  |
| 2004 02 20 | 246 | 1.0−  | 1.3+  | 2006 01 24 | A74 | 0.6+  | 0.2+  | 2006 02 20 | 704 | 0.5+  | 1.1−  |
| 2004 02 24 | 926 | 0.2+  | 0.2+  | 2006 01 24 | A74 | 0.2−  | 0.2−  | 2006 02 20 | 704 | 0.3−  | 1.0+  |
| 2004 02 24 | 926 | 0.1+  | 0.1+  | 2006 01 24 | A74 | 0.5−  | 0.4−  | 2006 02 20 | 704 | (1.8+ | 0.0 ) |
| 2004 03 07 | 715 | 0.4−  | 0.2−  | 2006 01 24 | A74 | 0.1+  | 0.1−  | 2006 02 22 | 699 | 0.1+  | 0.3+  |
| 2004 03 07 | 448 | 0.2−  | 0.6−  | 2006 01 24 | A74 | 0.7−  | 0.4−  | 2006 02 22 | 699 | 1.0+  | 0.6+  |
| 2004 03 07 | 715 | 0.1+  | 0.4−  | 2006 01 24 | A74 | 0.2−  | 0.0   | 2006 02 22 | 699 | 0.1−  | 0.5+  |
| 2004 03 07 | 715 | 0.1+  | 0.2−  | 2006 01 24 | A74 | 0.2+  | 0.1−  | 2006 02 22 | 699 | 0.2+  | 1.0+  |
| 2004 03 07 | 448 | 0.2−  | 0.2+  | 2006 01 24 | 240 | 0.0   | 0.1−  | 2006 02 22 | 704 | 0.2+  | 0.3+  |
| 2004 03 07 | 448 | 0.4+  | 0.7+  | 2006 01 24 | 240 | 0.1−  | 0.0   | 2006 02 22 | 704 | 0.6+  | 0.1−  |
| 2004 04 13 | 291 | 0.3−  | 0.7+  | 2006 01 24 | 240 | 0.1−  | 0.1−  | 2006 02 22 | 704 | 0.9−  | 0.1−  |
| 2004 04 13 | 291 | 0.6+  | 0.3+  | 2006 01 24 | 240 | 0.0   | 0.1−  | 2006 02 28 | 170 | 0.1−  | 0.2−  |
| 2004 04 13 | 291 | 0.3+  | 1.4+  | 2006 01 24 | 240 | 0.1−  | 0.0   | 2006 02 28 | 170 | 0.2−  | 0.3−  |
| 2004 04 14 | 696 | 0.4−  | 1.0−  | 2006 01 24 | 240 | 0.1−  | 0.1−  | 2006 02 28 | 170 | 0.0   | 0.3−  |
| 2004 04 14 | 696 | 0.0   | 0.2−  | 2006 01 24 | 240 | 0.1+  | 0.2−  | 2007 03 20 | 691 | 0.1−  | 0.1−  |
| 2004 04 14 | 291 | 1.0+  | 0.7−  | 2006 01 24 | 240 | 0.0   | 0.2−  | 2007 03 20 | 691 | 0.1+  | 0.3−  |
| 2004 04 14 | 291 | 0.4+  | 0.4−  | 2006 01 24 | 240 | 0.0   | 0.3−  | 2007 03 20 | 691 | 0.1−  | 0.4−  |
| 2004 04 14 | 291 | 0.1−  | 1.0+  | 2006 01 24 | 434 | 0.1−  | 0.2−  | 2007 11 20 | 703 | 0.5+  | 0.1+  |
| 2005 03 07 | A68 | 0.1+  | 0.2−  | 2006 01 24 | 240 | 0.0   | 0.1−  | 2007 11 20 | 703 | 0.8−  | 0.3−  |
| 2005 03 07 | A68 | 0.4−  | 0.4+  | 2006 01 24 | 434 | 0.1−  | 0.2+  | 2007 11 20 | 703 | 0.6+  | 0.1+  |
| 2005 03 07 | A68 | 0.0   | 0.1−  | 2006 01 24 | 434 | 0.9+  | 0.8+  | 2007 11 20 | 703 | 0.9+  | 0.7+  |
| 2005 03 08 | F65 | 0.0   | 0.1−  | 2006 01 24 | 434 | 0.2−  | 0.1−  | 2007 12 05 | 699 | 1.1−  | 0.1−  |
| 2005 03 08 | F65 | 0.0   | 0.1−  | 2006 01 24 | A30 | 0.1−  | 0.2−  | 2007 12 05 | 699 | 0.9+  | 1.3+  |
| 2005 03 08 | F65 | 0.0   | 0.1−  | 2006 01 24 | A30 | 0.1−  | 0.2−  | 2007 12 05 | 699 | 0.8+  | 0.0   |
| 2005 03 08 | F65 | 0.2+  | 0.1+  | 2006 01 24 | A30 | 0.0   | 0.2−  | 2007 12 05 | 699 | 1.3+  | 0.5+  |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                             |          |           | MPC         |                                               |          |             |            |     |       |       |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------|----------|-----------|-------------|-----------------------------------------------|----------|-------------|------------|-----|-------|-------|
| <i>M</i>                                | 31.64067                                                                                                    |          | (2000.0)  | <b>P</b>    |                                               |          | <b>Q</b>    |            |     |       |       |
| <i>n</i>                                | 0.24019711                                                                                                  | $\omega$ | 338.23150 | +0.65571197 |                                               |          | −0.75096841 |            |     |       |       |
| <i>a</i>                                | 2.5630527                                                                                                   | $\Omega$ | 70.70385  | +0.70433337 |                                               |          | +0.57119965 |            |     |       |       |
| <i>e</i>                                | 0.2266632                                                                                                   | <i>i</i> | 4.74214   | +0.27194908 |                                               |          | +0.33132674 |            |     |       |       |
| <i>P</i>                                | 4.10 <th><i>H</i></th> <td>16.0</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td colspan="4">1</td></td> | <i>H</i> | 16.0      | <i>G</i>    | 0.15 <th><i>U</i></th> <td colspan="4">1</td> | <i>U</i> | 1           |            |     |       |       |
| Residuals in seconds of arc             |                                                                                                             |          |           |             |                                               |          |             |            |     |       |       |
| 2000 02 03                              | 704                                                                                                         | 1.5−     | 1.5+      | 2004 02 15  | 704                                           | 0.8−     | 1.4+        | 2005 05 03 | 691 | 0.1+  | 0.4−  |
| 2000 02 03                              | 704                                                                                                         | 0.2+     | 0.9+      | 2004 02 15  | 704                                           | 0.3−     | 0.6+        | 2005 05 03 | 691 | 0.4+  | 0.0   |
| 2000 02 03                              | 704                                                                                                         | 0.8+     | 0.1−      | 2004 02 16  | 691                                           | 0.1−     | 0.0         | 2005 05 03 | 691 | 0.1+  | 0.1−  |
| 2000 02 03                              | 704                                                                                                         | 0.1−     | 1.2−      | 2004 02 16  | 691                                           | 0.1−     | 0.1−        | 2005 05 10 | 691 | 0.0   | 0.0   |
| 2002 08 11                              | 644                                                                                                         | 0.3−     | 0.9+      | 2004 02 16  | 691                                           | 0.1−     | 0.2−        | 2005 05 10 | 691 | 0.1−  | 0.1+  |
| 2002 08 11                              | 644                                                                                                         | 0.1−     | 1.0+      | 2004 02 16  | 926                                           | 0.1+     | 0.1−        | 2005 05 10 | 691 | 0.3+  | 0.4+  |
| 2002 08 11                              | 644                                                                                                         | 0.4−     | 1.0+      | 2004 02 16  | 926                                           | 0.2−     | 0.3+        | 2005 05 11 | G96 | 0.8−  | 0.3+  |
| 2004 01 18                              | 644                                                                                                         | 0.2+     | 0.2+      | 2004 02 16  | 926                                           | 0.4−     | 0.1+        | 2005 05 11 | G96 | 0.6−  | 0.4−  |
| 2004 01 18                              | 644                                                                                                         | 0.2+     | 0.2+      | 2004 02 16  | 246                                           | 0.8+     | 0.2+        | 2005 05 11 | G96 | 0.8−  | 0.2−  |
| 2004 01 18                              | 644                                                                                                         | 0.1+     | 0.2+      | 2004 02 16  | 246                                           | 0.7+     | 0.0         | 2005 05 11 | G96 | 0.3+  | 0.1+  |
| 2004 01 19                              | 703                                                                                                         | 0.2+     | 0.8+      | 2004 02 16  | 246                                           | 0.1+     | 0.3+        | 2006 08 14 | 644 | 0.1+  | 0.3+  |
| 2004 01 19                              | 703                                                                                                         | 1.0+     | 0.9+      | 2004 02 16  | 246                                           | 0.3+     | 0.4−        | 2006 08 14 | 644 | 0.4−  | 0.7+  |
| 2004 01 19                              | 703                                                                                                         | 0.1−     | 0.3−      | 2004 02 16  | 246                                           | 0.1+     | 0.3+        | 2006 08 14 | 644 | 0.2−  | 0.6+  |
| 2004 01 19                              | 703                                                                                                         | (1.2−    | 4.1−)     | 2004 02 16  | 246                                           | 0.7+     | 0.0         | 2006 08 15 | 644 | 0.1+  | 0.8+  |
| 2004 01 28                              | 703                                                                                                         | 1.2+     | 0.1−      | 2004 02 16  | 246                                           | 0.8+     | 0.2−        | 2006 08 15 | 644 | 0.1−  | 0.6+  |
| 2004 01 28                              | 703                                                                                                         | 0.5−     | 1.0−      | 2004 02 16  | 246                                           | 0.5+     | 0.3−        | 2006 08 15 | 644 | 0.1−  | 0.8+  |
| 2004 01 28                              | 703                                                                                                         | 1.3−     | 0.8+      | 2004 02 16  | 246                                           | 0.6+     | 0.1−        | 2007 11 12 | G96 | 0.6+  | 0.3+  |
| 2004 01 28                              | 703                                                                                                         | 0.6+     | 1.3−      | 2004 02 16  | 246                                           | 0.0      | 0.0         | 2007 11 12 | G96 | 0.4+  | 0.1−  |
| 2004 01 30                              | 704                                                                                                         | 0.6+     | 0.8+      | 2004 02 17  | 291                                           | 0.2+     | 0.4−        | 2007 11 12 | G96 | 0.3+  | 0.0   |
| 2004 01 30                              | 704                                                                                                         | 0.1+     | 0.3+      | 2004 02 17  | 291                                           | 0.1+     | 0.1+        | 2007 11 12 | G96 | 0.6+  | 0.1+  |
| 2004 01 30                              | 704                                                                                                         | 0.2+     | 0.9+      | 2004 02 17  | 291                                           | 0.2−     | 0.6−        | 2007 11 15 | 704 | 0.2+  | 0.1+  |
| 2004 01 30                              | 704                                                                                                         | 0.4−     | 0.8+      | 2004 02 17  | 246                                           | 0.1−     | 0.3+        | 2007 11 15 | 704 | 0.1−  | 0.2−  |
| 2004 01 30                              | 704                                                                                                         | (0.1−    | 2.1+)     | 2004 02 17  | 246                                           | 0.3−     | 0.2+        | 2007 11 15 | 704 | 0.5+  | 0.0   |
| 2004 02 10                              | 644                                                                                                         | 0.2+     | 0.1−      | 2004 02 17  | 246                                           | 0.0      | 0.1+        | 2007 11 15 | 704 | (1.9− | 0.7+) |
| 2004 02 10                              | 644                                                                                                         | 0.3+     | 0.1−      | 2004 02 17  | 246                                           | 0.3−     | 0.2+        | 2007 11 20 | 704 | 0.8+  | 0.5+  |
| 2004 02 10                              | 644                                                                                                         | 0.0      | 0.6+      | 2004 02 17  | 246                                           | 0.0      | 0.2+        | 2007 11 20 | 704 | 0.9+  | 0.6−  |
| 2004 02 14                              | 926                                                                                                         | 0.8+     | 0.3−      | 2004 02 17  | 246                                           | 0.0      | 0.0         | 2007 11 20 | 704 | 0.0   | 1.0+  |
| 2004 02 14                              | 926                                                                                                         | 0.1+     | 0.1−      | 2004 02 17  | 246                                           | 0.2−     | 0.1−        | 2007 11 20 | 704 | 0.2−  | 0.1−  |
| 2004 02 14                              | 926                                                                                                         | 0.7−     | 0.2+      | 2004 02 17  | 246                                           | 0.1+     | 0.2+        | 2007 12 03 | 703 | 1.4−  | 0.7+  |
| 2004 02 15                              | 704                                                                                                         | 0.5+     | 0.8+      | 2005 04 16  | 691                                           | 0.1+     | 0.2+        | 2007 12 03 | 703 | 0.6−  | 0.9+  |
| 2004 02 15                              | 704                                                                                                         | 0.7−     | 1.2+      | 2005 04 16  | 691                                           | 0.0      | 0.2−        | 2007 12 03 | 703 | 0.8−  | 0.2−  |
| 2004 02 15                              | 704                                                                                                         | 0.3−     | 0.2−      | 2005 04 16  | 691                                           | 0.4−     | 0.1+        | 2007 12 03 | 703 | 0.9−  | 0.3+  |

**(172724)\* 2004 BR<sub>111</sub> = 2005 LZ<sub>49</sub>**

Discovered 2004 Jan. 29 by the Catalina Sky Survey.

Id. A. Doppler (MPO 86248)

|                                         |            |          |                |             |      |                |             |      |  |
|-----------------------------------------|------------|----------|----------------|-------------|------|----------------|-------------|------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |                | MPC         |      |                |             |      |  |
| $M$                                     | 0.10177    |          | (2000.0)       | <b>P</b>    |      |                | <b>Q</b>    |      |  |
| $n$                                     | 0.22808164 | $\omega$ | 334.35922      | +0.09761756 |      |                | −0.96480966 |      |  |
| $a$                                     | 2.6530321  | $\Omega$ | 109.23813      | +0.95182217 |      |                | +0.01884821 |      |  |
| $e$                                     | 0.2163111  | $i$      | 14.98694       | +0.29069806 |      |                | +0.26227289 |      |  |
| $P$                                     | 4.32       | $H$      | 15.7           | $G$         | 0.15 |                | $U$         | 1    |  |
| Residuals in seconds of arc             |            |          |                |             |      |                |             |      |  |
| 2002 10 07 644                          | 0.4−       | 0.4+     | 2005 05 21 G96 | 0.4−        | 0.3− | 2007 12 04 699 | 0.5+        | 0.4+ |  |
| 2002 10 07 644                          | 0.3−       | 0.6+     | 2005 05 21 G96 | 0.3−        | 0.0  | 2007 12 04 704 | 0.0         | 0.9+ |  |
| 2002 10 07 644                          | 0.5−       | 0.4+     | 2005 05 21 G96 | 0.8−        | 0.0  | 2007 12 04 704 | 1.0+        | 1.2+ |  |
| 2003 12 25 645                          | 0.1−       | 0.4−     | 2005 05 21 G96 | 0.1−        | 0.0  | 2007 12 04 704 | 0.1+        | 0.7+ |  |
| 2003 12 25 645                          | 0.0        | 0.3−     | 2005 06 11 691 | 0.0         | 0.2+ | 2007 12 04 704 | 0.0         | 1.0+ |  |
| 2003 12 27 704                          | (2.3−      | 0.7−)    | 2005 06 11 691 | 0.0         | 0.5+ | 2007 12 04 699 | 0.1+        | 0.8− |  |
| 2003 12 27 704                          | 0.4−       | 0.0      | 2005 06 11 691 | 0.1−        | 0.4+ | 2007 12 04 704 | 0.6+        | 1.1+ |  |
| 2003 12 27 704                          | 0.4−       | 0.2−     | 2005 06 15 691 | 1.0+        | 0.5− | 2007 12 04 704 | 2.1+        | 1.1+ |  |
| 2004 01 29 703                          | 0.6−       | 1.4+     | 2005 06 15 691 | 0.4+        | 1.3+ | 2007 12 04 704 | 0.4+        | 0.9+ |  |
| 2004 01 29 703                          | 0.1−       | 1.4+     | 2005 06 15 691 | 0.1+        | 0.0  | 2007 12 04 704 | 1.1+        | 0.9+ |  |
| 2004 01 29 703                          | 0.4−       | 0.1+     | 2005 06 28 691 | 0.2+        | 0.6+ | 2007 12 04 699 | 0.2+        | 0.4+ |  |
| 2004 01 29 703                          | 0.7−       | 0.4+     | 2005 06 28 691 | 0.1+        | 0.5+ | 2007 12 04 704 | 0.1−        | 1.5+ |  |
| 2004 01 30 704                          | 0.7+       | 1.0−     | 2005 06 28 691 | 0.0         | 0.3+ | 2007 12 04 704 | 0.7−        | 1.0+ |  |
| 2004 01 30 704                          | 1.5+       | 1.5−     | 2007 11 04 704 | 0.7+        | 0.2+ | 2007 12 05 291 | 0.7−        | 0.3+ |  |

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2004 01 30 704 | 0.9+ | 0.2+ | 2007 11 04 704 | 0.7+  | 1.1+  | 2007 12 05 291 | 0.7− | 0.1+ |
| 2004 01 30 704 | 0.9+ | 0.3+ | 2007 11 04 704 | 0.1+  | 0.6+  | 2007 12 05 291 | 0.5− | 0.2+ |
| 2004 02 15 704 | 0.9− | 1.4+ | 2007 11 04 704 | 0.6+  | 0.2−  | 2007 12 05 291 | 0.5− | 0.2+ |
| 2004 02 15 704 | 0.4− | 0.7+ | 2007 11 12 704 | 1.4+  | 0.5−  | 2007 12 05 291 | 0.6− | 0.3+ |
| 2004 02 15 704 | 0.3+ | 0.2+ | 2007 11 12 704 | 1.4+  | 0.2+  | 2007 12 05 291 | 0.5− | 0.3+ |
| 2004 03 14 704 | 0.3+ | 0.7+ | 2007 11 12 704 | 0.7+  | 0.1−  | 2007 12 06 691 | 0.2+ | 0.1− |
| 2004 03 14 704 | 0.8+ | 0.1− | 2007 11 12 704 | (1.6+ | 1.6+) | 2007 12 06 691 | 0.1+ | 0.1− |
| 2004 03 14 704 | 0.1− | 0.7+ | 2007 11 12 704 | (1.7+ | 0.9+) | 2007 12 06 691 | 0.3+ | 0.1+ |
| 2004 03 14 704 | 0.0  | 0.3+ | 2007 12 04 699 | 0.3−  | 0.0   |                |      |      |

**(172725)\* 2004 BG<sub>112</sub>**

Discovered 2004 Jan. 24 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |      |             |   |  |  |  |
| <i>M</i>                                | 318.54158  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |
| <i>n</i>                                | 0.24486698 | $\omega$ | 225.40223 | −0.98634972 |      | −0.09698684 |   |  |  |  |
| <i>a</i>                                | 2.5303615  | $\Omega$ | 308.57081 | +0.15048329 |      | −0.85901485 |   |  |  |  |
| <i>e</i>                                | 0.2351587  | <i>i</i> | 9.79957   | −0.06685057 |      | −0.50267985 |   |  |  |  |
| <i>P</i>                                | 4.03       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 07 10 | 691 | 0.4− | 0.1− | 2004 01 30 | 699 | 0.1+  | 0.8+  | 2004 03 27 | 703 | (0.3+ | 1.6−) |
| 1997 07 10 | 691 | 0.3+ | 0.6+ | 2004 01 30 | 699 | 0.1+  | 0.2+  | 2004 03 27 | 703 | 0.6+  | 0.5−  |
| 1997 07 10 | 691 | 0.6− | 0.2+ | 2004 01 30 | 699 | 0.1+  | 1.0−  | 2004 03 27 | 703 | 0.4+  | 0.6+  |
| 2000 02 02 | 704 | 1.3− | 0.2− | 2004 02 12 | 644 | 0.1−  | 0.4+  | 2005 07 03 | G96 | 0.0   | 0.0   |
| 2000 02 02 | 704 | 1.1+ | 0.3− | 2004 02 12 | 644 | 0.1−  | 0.6+  | 2005 07 03 | G96 | 0.6+  | 0.7+  |
| 2000 02 02 | 704 | 0.7− | 0.8+ | 2004 02 12 | 644 | 0.1+  | 1.0+  | 2005 07 03 | G96 | 0.1+  | 0.3+  |
| 2000 02 02 | 704 | 0.7+ | 0.4+ | 2004 02 17 | 703 | 1.4+  | 0.1+  | 2005 07 03 | G96 | 0.3−  | 0.5−  |
| 2000 02 02 | 704 | 1.9+ | 0.3+ | 2004 02 17 | 703 | 0.2−  | 1.2+  | 2005 07 12 | G96 | 0.1+  | 0.4−  |
| 2000 02 08 | 704 | 0.5+ | 0.4+ | 2004 02 17 | 703 | 0.1+  | 0.1−  | 2005 07 12 | G96 | 0.0   | 0.1+  |
| 2000 02 08 | 704 | 0.0  | 0.9− | 2004 02 17 | 703 | 0.1−  | 0.7+  | 2005 07 12 | G96 | 0.4+  | 0.2+  |
| 2000 02 08 | 704 | 0.1− | 0.6− | 2004 02 19 | 704 | 0.4−  | 0.3+  | 2005 07 12 | G96 | 0.3+  | 0.4−  |
| 2000 02 08 | 704 | 0.6− | 0.1+ | 2004 02 19 | 704 | 0.1−  | 0.0   | 2005 07 12 | G96 | 0.0   | 0.3+  |
| 2000 02 08 | 704 | 0.5+ | 1.7− | 2004 02 19 | 704 | 0.5−  | 0.2+  | 2005 07 12 | G96 | 0.1−  | 0.2−  |
| 2000 03 09 | 704 | 0.1+ | 0.4− | 2004 02 19 | 704 | 0.3+  | 0.4+  | 2005 07 12 | G96 | 0.3+  | 0.7+  |
| 2000 03 09 | 704 | 0.2+ | 0.4− | 2004 02 19 | 704 | 0.1−  | 0.3+  | 2005 07 12 | G96 | 0.1+  | 0.3−  |
| 2000 03 09 | 704 | 0.4− | 0.0  | 2004 02 23 | 704 | 0.4−  | 0.3+  | 2005 07 15 | G96 | 0.2+  | 0.2−  |
| 2000 03 09 | 704 | 0.5+ | 0.0  | 2004 02 23 | 704 | 0.2−  | 0.0   | 2005 07 15 | G96 | 0.5−  | 0.6+  |
| 2000 04 04 | 699 | 0.9− | 0.3+ | 2004 02 23 | 704 | 0.9−  | 0.1−  | 2005 07 15 | G96 | 0.2−  | 0.3+  |
| 2000 04 04 | 699 | 0.9− | 0.2+ | 2004 02 23 | 704 | 0.7−  | 0.1+  | 2005 07 15 | G96 | 0.4−  | 0.1+  |
| 2000 04 04 | 699 | 0.2− | 0.1+ | 2004 02 23 | 704 | (1.9− | 0.0 ) | 2007 11 18 | G96 | 0.5+  | 0.6−  |
| 2000 04 04 | 699 | 0.4+ | 0.9+ | 2004 03 01 | 703 | 0.5−  | 0.7−  | 2007 11 18 | G96 | 0.6+  | 0.2−  |
| 2003 12 21 | 704 | 1.0+ | 0.9+ | 2004 03 01 | 703 | 0.5−  | 0.0   | 2007 11 18 | G96 | 0.1+  | 0.2+  |
| 2003 12 21 | 704 | 0.0  | 0.9+ | 2004 03 01 | 703 | 0.8−  | 0.4−  | 2007 11 18 | G96 | 0.5+  | 0.1+  |
| 2003 12 21 | 704 | 0.4+ | 0.8+ | 2004 03 01 | 703 | 0.5+  | 0.1+  | 2007 12 05 | G96 | 0.1−  | 0.2+  |
| 2004 01 24 | 704 | 0.1+ | 0.1− | 2004 03 16 | 608 | 0.2−  | 0.8−  | 2007 12 05 | G96 | 0.3−  | 0.1+  |
| 2004 01 24 | 704 | 0.3+ | 0.0  | 2004 03 16 | 608 | 0.1+  | 1.1−  | 2007 12 05 | G96 | 0.0   | 0.1+  |
| 2004 01 24 | 704 | 0.4+ | 0.1− | 2004 03 16 | 608 | 0.1−  | 0.5−  |            |     |       |       |
| 2004 01 30 | 699 | 0.0  | 0.3− | 2004 03 27 | 703 | 0.9+  | 0.5+  |            |     |       |       |

2007 DEC. 24

M.P.O. 129461

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 28 | 644 | 0.8−  | 0.1+  | 2004 03 17 | 704 | 0.1+ | 0.1− | 2006 08 19 | 699 | 0.9− | 0.3− |
| 2002 08 28 | 644 | 0.5−  | 0.5+  | 2004 03 17 | 704 | 0.4+ | 1.0− | 2006 09 15 | 691 | 0.0  | 0.1+ |
| 2002 08 28 | 644 | 0.7−  | 0.4+  | 2004 03 17 | 704 | 0.6+ | 0.5+ | 2006 09 15 | 691 | 0.1+ | 0.1− |
| 2004 01 29 | 699 | 0.2−  | 0.4+  | 2004 03 17 | 704 | 0.3+ | 1.0− | 2006 09 15 | 691 | 0.5+ | 0.3+ |
| 2004 01 29 | 699 | 0.1+  | 1.0−  | 2004 03 17 | 704 | 0.4+ | 0.5+ | 2006 09 17 | 691 | 0.1− | 0.5+ |
| 2004 01 29 | 699 | 1.5−  | 1.1+  | 2004 03 17 | 704 | 0.6+ | 0.6+ | 2006 09 17 | 691 | 0.0  | 0.1− |
| 2004 01 29 | 699 | (2.2− | 0.0 ) | 2004 03 17 | 704 | 0.1− | 0.1+ | 2006 09 17 | 691 | 0.2− | 0.4+ |
| 2004 01 30 | 699 | 0.7+  | 0.0   | 2004 03 18 | 704 | 0.2− | 0.5− | 2006 09 19 | 691 | 0.2− | 0.5+ |
| 2004 01 30 | 699 | 0.3+  | 0.0   | 2004 03 18 | 704 | 0.3+ | 0.4+ | 2006 09 19 | 691 | 0.1− | 0.4+ |
| 2004 01 30 | 699 | (1.6+ | 0.9−) | 2004 03 18 | 704 | 0.5+ | 0.2− | 2006 09 19 | 691 | 0.1− | 0.3+ |
| 2004 01 30 | 699 | 0.8−  | 0.0   | 2004 03 18 | 704 | 0.3+ | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.3+ |
| 2004 02 18 | 608 | 0.7+  | 0.1−  | 2004 03 18 | 704 | 0.4+ | 0.1+ | 2007 11 07 | G96 | 0.5+ | 0.1+ |
| 2004 02 18 | 608 | 0.7+  | 0.5+  | 2004 03 19 | 704 | 0.2+ | 0.9+ | 2007 11 07 | G96 | 0.4− | 0.3+ |
| 2004 02 18 | 608 | 0.8+  | 0.2−  | 2004 03 19 | 704 | 0.1− | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.4+ |
| 2004 02 19 | 704 | 0.7−  | 0.6+  | 2004 03 19 | 704 | 0.5− | 0.5+ | 2007 11 18 | G96 | 0.2− | 0.2+ |
| 2004 02 19 | 704 | 0.3−  | 0.1+  | 2004 03 19 | 704 | 0.6+ | 0.7+ | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2004 02 19 | 704 | 0.1+  | 0.1+  | 2004 03 19 | 704 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2004 02 19 | 704 | 0.0   | 0.4+  | 2004 03 19 | 704 | 0.2− | 0.6+ | 2007 11 18 | G96 | 0.3+ | 0.1+ |
| 2004 02 19 | 704 | 0.4+  | 0.1−  | 2004 03 19 | 704 | 0.6− | 0.2+ | 2007 12 04 | G96 | 0.0  | 0.2+ |
| 2004 02 26 | 704 | 0.4+  | 0.1−  | 2004 03 19 | 704 | 0.1+ | 1.1+ | 2007 12 04 | G96 | 0.0  | 0.3+ |
| 2004 02 26 | 704 | 0.3−  | 0.6+  | 2004 03 19 | 704 | 0.5+ | 0.9− | 2007 12 04 | G96 | 0.1− | 0.2+ |
| 2004 02 26 | 704 | 0.4+  | 0.8+  | 2004 03 20 | 291 | 0.1− | 0.3+ | 2007 12 04 | G96 | 0.1− | 0.3+ |
| 2004 02 26 | 704 | 0.7+  | 0.2+  | 2004 03 20 | 291 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.7+ | 1.1+ |
| 2004 03 16 | 704 | 0.3−  | 0.0   | 2004 03 20 | 291 | 0.0  | 0.3+ | 2007 12 05 | 704 | 0.1− | 0.9+ |
| 2004 03 16 | 704 | 0.1+  | 0.4+  | 2006 08 19 | 691 | 0.3− | 0.4+ | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2004 03 16 | 704 | 0.2−  | 0.0   | 2006 08 19 | 691 | 0.2− | 0.3+ |            |     |      |      |

(172727)\* 2004 BF<sub>118</sub>

Discovered 2004 Jan. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>M</i> | 5.94727    |          | (2000.0)  | <i>P</i>    |             | <i>Q</i>   |
| <i>n</i> | 0.23671419 | $\omega$ | 138.33777 | +0.13479854 | −0.96880606 |            |
| <i>a</i> | 2.5881326  | $\Omega$ | 302.90839 | +0.83097321 | +0.22484435 |            |
| <i>e</i> | 0.1731750  | <i>i</i> | 14.34133  | +0.53973408 | −0.10421056 |            |
| <i>P</i> | 4.16       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 27 | 644 | 0.2−  | 0.2−  | 2004 02 11 | 644 | 0.2+  | 0.3+  | 2006 09 16 | 691 | 0.1−  | 0.1+  |
| 2002 08 27 | 644 | 0.5−  | 0.1−  | 2004 02 11 | 644 | 0.0   | 0.1+  | 2006 09 18 | 691 | 0.1−  | 0.0   |
| 2002 08 27 | 644 | 0.6−  | 0.1−  | 2004 02 11 | 644 | 0.2+  | 0.3+  | 2006 09 18 | 691 | 0.2−  | 0.0   |
| 2002 09 04 | 644 | 0.1−  | 0.3+  | 2004 02 13 | 333 | 0.4−  | 0.4+  | 2006 09 18 | 691 | 0.1−  | 0.0   |
| 2002 09 04 | 644 | 0.4−  | 0.0   | 2004 02 13 | 333 | 0.6−  | 0.6+  | 2007 11 17 | 704 | 0.4−  | 0.2+  |
| 2002 09 04 | 644 | 0.5−  | 0.2+  | 2004 02 13 | 333 | 0.4−  | 0.5+  | 2007 11 17 | 704 | 0.4−  | 0.6−  |
| 2002 09 12 | 644 | 0.1−  | 0.3+  | 2004 02 17 | 691 | 0.3+  | 0.3+  | 2007 11 17 | 704 | 0.1−  | 0.0   |
| 2002 09 12 | 644 | 0.2−  | 0.2+  | 2004 02 17 | 691 | 0.2+  | 0.3+  | 2007 11 17 | 704 | 1.0−  | 0.5−  |
| 2002 09 12 | 644 | 0.1−  | 0.3+  | 2004 02 17 | 691 | 0.4+  | 0.3+  | 2007 12 04 | 699 | 0.2+  | 0.6−  |
| 2002 10 06 | 644 | 0.1+  | 0.3+  | 2004 02 18 | 704 | 0.1−  | 0.6+  | 2007 12 04 | 699 | (1.6− | 0.1+) |
| 2002 10 06 | 644 | 0.0   | 0.5+  | 2004 02 18 | 704 | 0.6+  | 0.3+  | 2007 12 04 | 699 | 0.4+  | 1.1−  |
| 2002 10 06 | 644 | 0.1−  | 0.3+  | 2004 02 18 | 704 | (0.1+ | 2.0+) | 2007 12 04 | 699 | 0.3−  | 0.1−  |
| 2004 01 23 | 704 | (2.0+ | 0.7+) | 2004 02 18 | 704 | 0.3+  | 0.7+  | 2007 12 13 | 704 | 0.1−  | 0.6+  |
| 2004 01 23 | 704 | (2.3+ | 0.7+) | 2004 02 19 | 608 | 0.4+  | 0.1−  | 2007 12 13 | 704 | 0.1+  | 0.2+  |
| 2004 01 23 | 704 | 0.5−  | 0.8+  | 2004 02 19 | 608 | 0.7+  | 0.3−  | 2007 12 13 | 704 | 0.2−  | 0.0   |
| 2004 01 23 | 704 | (1.8+ | 0.3+) | 2004 02 19 | 608 | 0.4+  | 0.3+  | 2007 12 13 | 704 | 0.9+  | 0.3+  |
| 2004 01 23 | 704 | (1.9+ | 0.5+) | 2006 08 16 | 644 | 0.8−  | 0.6+  | 2007 12 13 | 704 | 0.4−  | 0.9−  |
| 2004 01 29 | 704 | 0.1+  | 0.0   | 2006 08 16 | 644 | 0.7−  | 0.3+  | 2007 12 15 | 704 | 0.5+  | 1.0+  |
| 2004 01 29 | 704 | 0.3+  | 0.1+  | 2006 08 16 | 644 | 1.0−  | 0.1+  | 2007 12 15 | 704 | 0.3+  | 0.1+  |
| 2004 01 29 | 704 | 0.3+  | 0.2−  | 2006 08 21 | 644 | 0.5−  | 0.0   | 2007 12 15 | 704 | 0.3−  | 0.1−  |
| 2004 01 29 | 704 | 0.4−  | 0.4+  | 2006 08 21 | 644 | 0.4−  | 0.0   | 2007 12 15 | 704 | 0.1−  | 0.5+  |
| 2004 02 03 | 608 | 0.3−  | 0.4−  | 2006 08 21 | 644 | 0.5−  | 0.4+  | 2007 12 15 | 704 | 0.6−  | 0.0   |
| 2004 02 03 | 608 | 0.0   | 1.3−  | 2006 09 16 | 691 | 1.2+  | 0.6+  |            |     |       |       |
| 2004 02 03 | 608 | 0.1−  | 1.0−  | 2006 09 16 | 691 | 0.1+  | 0.0   |            |     |       |       |

(172728)\* 2004 BN<sub>119</sub> = 1998 WH<sub>37</sub> = 2000 EY<sub>147</sub>

Discovered 2004 Jan. 30 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 61873), A. Doppler (MPO 95170)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |            |
|----------|------------|----------|----------|-------------|-------------|------------|
| <i>M</i> | 349.85186  |          | (2000.0) | <i>P</i>    |             | <i>Q</i>   |
| <i>n</i> | 0.23225911 | $\omega$ | 50.98984 | −0.20486486 | −0.95896777 |            |
| <i>a</i> | 2.6211238  | $\Omega$ | 51.96105 | +0.80341053 | −0.27912309 |            |
| <i>e</i> | 0.0497989  | <i>i</i> | 14.40913 | +0.55907236 | +0.04971025 |            |
| <i>P</i> | 4.24       | <i>H</i> | 15.6     | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 14 | 691 | 0.6−  | 0.1−  | 2002 10 15 | 644 | 0.2−  | 0.0   | 2004 02 11 | 704 | 1.2−  | 0.1+  |
| 1998 11 14 | 691 | (5.3+ | 5.0−) | 2002 10 15 | 644 | 0.1−  | 0.1+  | 2004 02 11 | 704 | 1.0−  | 0.4+  |
| 1998 11 14 | 691 | 0.5−  | 0.1−  | 2002 10 15 | 644 | 0.0   | 0.2+  | 2004 02 11 | 704 | 0.7−  | 0.3+  |
| 1998 11 21 | 691 | 0.2+  | 0.3−  | 2002 11 06 | 644 | 0.4+  | 1.4+  | 2004 02 11 | 704 | 0.1−  | 0.9+  |
| 1998 11 21 | 691 | 0.3+  | 0.0   | 2002 11 06 | 644 | 0.5+  | 1.3+  | 2005 02 09 | 809 | 0.1−  | 0.5+  |
| 1998 11 21 | 691 | 0.2−  | 0.2−  | 2002 11 06 | 644 | 0.1+  | 1.4+  | 2005 02 09 | 809 | 0.1−  | 0.6+  |
| 1998 11 27 | 691 | 0.5+  | 0.3−  | 2003 12 30 | 704 | 0.6+  | 1.2+  | 2005 02 09 | 809 | 0.2−  | 0.2+  |
| 1998 11 27 | 691 | 0.7+  | 0.7−  | 2003 12 30 | 704 | 1.1+  | 1.2+  | 2006 09 26 | 703 | 0.3−  | 0.8+  |
| 1998 11 27 | 691 | 0.6+  | 0.0   | 2003 12 30 | 704 | (0.3− | 1.7+) | 2006 09 26 | 703 | 0.9−  | 0.1+  |
| 2000 03 04 | 704 | 0.1+  | 0.8+  | 2004 01 14 | 644 | 0.2+  | 0.1+  | 2006 09 26 | 703 | 0.4+  | 0.5+  |
| 2000 03 04 | 704 | 0.4+  | 0.4−  | 2004 01 14 | 644 | 0.2−  | 0.0   | 2006 09 26 | 703 | 0.9−  | 0.9+  |
| 2000 03 04 | 704 | 0.2+  | 0.5−  | 2004 01 14 | 644 | 0.1+  | 0.1+  | 2007 11 16 | 704 | 0.8+  | 0.8+  |
| 2000 03 04 | 704 | 0.3+  | 0.6+  | 2004 01 30 | 703 | (0.7+ | 1.8−) | 2007 11 16 | 704 | 0.2−  | 0.4−  |
| 2000 03 04 | 704 | 0.5+  | 0.1+  | 2004 01 30 | 703 | 1.0+  | 0.4−  | 2007 11 16 | 704 | (0.3+ | 2.1+) |
| 2000 03 08 | 608 | 0.3+  | 0.3+  | 2004 01 30 | 703 | 0.6+  | 0.5−  | 2007 11 16 | 704 | 0.6−  | 0.3+  |
| 2000 03 08 | 608 | 0.4+  | 0.3−  | 2004 01 30 | 703 | 0.6−  | 1.2−  | 2007 11 20 | 703 | (1.4− | 1.6−) |
| 2000 03 08 | 608 | 0.1+  | 0.1+  | 2004 02 02 | 704 | (1.6+ | 0.4−) | 2007 11 20 | 703 | 0.0   | 0.5+  |
| 2002 09 29 | 608 | 0.5−  | 0.6+  | 2004 02 02 | 704 | (2.4+ | 1.6−) | 2007 11 20 | 703 | (2.1− | 0.6+) |
| 2002 09 29 | 608 | 0.4−  | 0.4−  | 2004 02 02 | 704 | (1.6+ | 0.2−) | 2007 11 20 | 703 | 0.6−  | 0.4+  |
| 2002 09 29 | 608 | 1.4−  | 0.2+  | 2004 02 02 | 704 | (1.9+ | 0.1+) | 2007 12 03 | 704 | 0.7+  | 0.3+  |
| 2002 10 04 | 704 | 1.2−  | 0.6+  | 2004 02 10 | 644 | 0.1+  | 0.1+  | 2007 12 03 | 704 | 0.4+  | 0.1+  |
| 2002 10 04 | 704 | 0.7−  | 0.3+  | 2004 02 10 | 644 | 0.2+  | 0.4+  | 2007 12 03 | 704 | 0.5+  | 0.4+  |
| 2002 10 04 | 704 | 0.1+  | 0.5+  | 2004 02 10 | 644 | 0.1+  | 0.2+  | 2007 12 03 | 704 | 0.1−  | 0.3−  |
| 2002 10 04 | 704 | (2.2− | 0.0 ) | 2004 02 11 | 704 | 1.3−  | 0.3+  | 2007 12 03 | 704 | 1.1+  | 0.8+  |

(172729)\* 2004 BF<sub>120</sub> = 2000 KW<sub>66</sub>

Discovered 2004 Jan. 30 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 61874)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>M</i> | 245.76873  |          | (2000.0)  | <i>P</i>    |             | <i>Q</i>   |
| <i>n</i> | 0.21075183 | $\omega$ | 10.24723  | −0.98332013 | +0.18188309 |            |
| <i>a</i> | 2.7965450  | $\Omega$ | 180.23267 | −0.17090713 | −0.92444635 |            |
| <i>e</i> | 0.0945454  | <i>i</i> | 3.50967   | −0.06222759 | −0.33513801 |            |
| <i>P</i> | 4.68       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 23 | 699 | 0.4− | 0.1− | 2004 02 13 | 691 | 0.1−  | 0.1+  | 2006 11 21 | G96 | 0.5− | 0.6+ |
| 2000 05 23 | 699 | 0.1− | 0.8− | 2004 02 13 | 333 | 0.2+  | 0.3−  | 2006 11 21 | G96 | 0.0  | 0.1+ |
| 2000 05 23 | 699 | 0.3− | 0.3+ | 2004 02 17 | 704 | (0.2+ | 1.6+) | 2006 11 21 | G96 | 0.1− | 0.2+ |
| 2000 05 23 | 699 | 0.2− | 1.0− | 2004 02 17 | 704 | 0.1+  | 0.4+  | 2006 11 21 | G96 | 0.0  | 0.4− |
| 2000 05 28 | 704 | 0.4+ | 0.5+ | 2004 02 17 | 704 | 1.5+  | 0.2−  | 2007 11 18 | G96 | 0.1− | 0.4− |
| 2000 05 28 | 704 | 1.4+ | 1.6+ | 2004 02 17 | 704 | 0.1−  | 1.4+  | 2007 11 18 | G96 | 0.2+ | 0.3− |
| 2000 05 28 | 704 | 0.4− | 0.8+ | 2004 02 17 | 704 | 0.5+  | 0.6+  | 2007 11 18 | G96 | 0.2+ | 0.2− |
| 2000 05 28 | 704 | 0.4+ | 1.2+ | 2004 03 10 | 644 | 0.0   | 0.3+  | 2007 11 18 | G96 | 0.0  | 0.2− |
| 2002 11 04 | 644 | 0.1− | 0.4+ | 2004 03 10 | 644 | 0.0   | 0.5+  | 2007 12 03 | 703 | 0.6− | 0.1+ |
| 2002 11 04 | 644 | 0.3− | 0.5+ | 2004 03 10 | 644 | 0.6+  | 0.0   | 2007 12 03 | 703 | 1.2− | 0.6− |
| 2002 11 04 | 644 | 0.0  | 0.5+ | 2006 09 23 | 691 | 0.1−  | 0.4+  | 2007 12 03 | 703 | 0.4+ | 0.0  |
| 2004 01 30 | 691 | 0.1− | 0.1+ | 2006 09 23 | 691 | 0.2−  | 0.6+  | 2007 12 03 | 703 | 0.3− | 0.8+ |
| 2004 01 30 | 691 | 0.1+ | 0.1+ | 2006 09 23 | 691 | 0.3−  | 0.4+  | 2007 12 04 | 704 | 0.5+ | 0.7+ |
| 2004 01 30 | 691 | 0.0  | 0.1+ | 2006 09 25 | G96 | 0.1−  | 0.3+  | 2007 12 04 | 704 | 0.8+ | 0.0  |
| 2004 01 31 | 704 | 0.3− | 0.8+ | 2006 09 25 | G96 | 0.2+  | 0.1−  | 2007 12 04 | 704 | 0.0  | 0.0  |
| 2004 01 31 | 704 | 0.4+ | 0.5− | 2006 09 25 | G96 | 0.6+  | 0.3−  | 2007 12 04 | 704 | 0.5+ | 0.7+ |
| 2004 01 31 | 704 | 0.5+ | 0.1− | 2006 09 25 | G96 | 0.3+  | 0.0   | 2007 12 04 | 704 | 0.4− | 1.1− |
| 2004 01 31 | 704 | 0.2− | 1.3+ | 2006 10 16 | G96 | 0.4+  | 0.2−  | 2007 12 05 | G96 | 0.0  | 0.3− |
| 2004 02 11 | 644 | 0.3+ | 0.0  | 2006 10 16 | G96 | 0.0   | 0.2−  | 2007 12 05 | G96 | 0.1+ | 0.2− |
| 2004 02 11 | 644 | 0.1+ | 0.1+ | 2006 10 16 | G96 | 0.2+  | 0.1−  | 2007 12 05 | G96 | 0.2+ | 0.3− |
| 2004 02 11 | 644 | 0.2+ | 0.1+ | 2006 10 16 | G96 | 0.6−  | 0.6+  | 2007 12 05 | G96 | 0.2+ | 0.1− |
| 2004 02 13 | 691 | 0.2− | 0.0  | 2006 10 27 | G96 | 0.6−  | 0.6−  | 2007 12 05 | G96 | 0.3+ | 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 13 | 691 | 0.1− | 0.0  | 2006 10 27 | G96 | 0.5+ | 0.1− | 2007 12 05 | G96 | 0.4− | 0.4− |
| 2004 02 13 | 333 | 0.0  | 0.3− | 2006 10 27 | G96 | 0.0  | 0.2+ | 2007 12 05 | G96 | 0.4+ | 0.3− |
| 2004 02 13 | 333 | 0.7− | 0.1+ | 2006 10 27 | G96 | 0.5− | 0.3+ | 2007 12 05 | G96 | 0.2− | 0.0  |

**(172730)\* 2004 BL<sub>120</sub>**

Discovered 2004 Jan. 31 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 268.27153  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23085146 | $\omega$ | 114.06554 | −0.95788114 | +0.19876435 |
| <i>a</i> | 2.6317681  | $\Omega$ | 77.92931  | −0.27163351 | −0.86129375 |
| <i>e</i> | 0.1128191  | <i>i</i> | 12.23638  | +0.09316087 | −0.46761716 |
| <i>P</i> | 4.27       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 04 | 704 | 0.4−  | 0.3−  | 2003 12 28 | 704 | 0.7+  | 0.7+  | 2007 11 06 | G96 | 0.3+ | 0.5− |
| 2000 03 04 | 704 | 0.0   | 0.0   | 2004 01 31 | 699 | (0.0  | 2.8−) | 2007 11 06 | G96 | 0.2+ | 0.4− |
| 2000 03 04 | 704 | 0.3−  | 0.2+  | 2004 01 31 | 699 | 0.4+  | 0.2−  | 2007 11 06 | G96 | 0.1− | 0.3− |
| 2000 03 04 | 704 | 0.1−  | 0.3+  | 2004 01 31 | 699 | 0.3+  | 0.2+  | 2007 11 06 | G96 | 0.1− | 0.3− |
| 2000 03 04 | 704 | 0.2−  | 0.1+  | 2004 01 31 | 699 | (1.8− | 1.9−) | 2007 11 18 | G96 | 0.1− | 0.2− |
| 2000 03 29 | 704 | 0.1−  | 1.3−  | 2004 02 02 | 704 | 0.1+  | 0.1+  | 2007 11 18 | G96 | 0.2− | 0.5− |
| 2000 03 29 | 704 | 0.3−  | 0.1−  | 2004 02 02 | 704 | 0.1+  | 1.2+  | 2007 11 18 | G96 | 0.2− | 0.4− |
| 2000 03 29 | 704 | 0.2−  | 0.1+  | 2004 02 02 | 704 | 0.7−  | 0.3+  | 2007 11 18 | G96 | 0.3+ | 0.3− |
| 2000 03 29 | 704 | 0.7+  | 0.1+  | 2004 02 09 | 644 | 0.0   | 0.6−  | 2007 11 19 | G96 | 0.2− | 0.6− |
| 2000 03 29 | 704 | 0.4−  | 1.3+  | 2004 02 09 | 644 | 0.3+  | 0.6−  | 2007 11 19 | G96 | 0.1− | 0.5− |
| 2000 05 02 | 704 | 0.1+  | 0.3+  | 2004 02 09 | 644 | 1.4+  | 1.0−  | 2007 11 19 | G96 | 0.0  | 0.4− |
| 2000 05 02 | 704 | 1.3+  | 0.5+  | 2004 02 11 | 644 | 0.3−  | 0.3−  | 2007 12 13 | 704 | 0.4+ | 0.0  |
| 2000 05 02 | 704 | 0.1+  | 0.7+  | 2004 02 11 | 644 | 0.2−  | 0.4−  | 2007 12 13 | 704 | 0.2− | 0.0  |
| 2002 11 07 | 645 | 0.1−  | 0.1+  | 2004 02 11 | 644 | 0.4−  | 0.3−  | 2007 12 13 | 704 | 0.4− | 0.2− |
| 2002 11 07 | 645 | 0.0   | 0.1+  | 2004 02 14 | 704 | 0.4−  | 0.3−  | 2007 12 13 | 704 | 0.6+ | 0.2− |
| 2003 12 28 | 704 | 0.6−  | 0.8+  | 2004 02 14 | 704 | 0.1−  | 0.8+  | 2007 12 13 | 704 | 0.3− | 0.7+ |
| 2003 12 28 | 704 | 1.1+  | 0.9+  | 2004 02 14 | 704 | 0.5−  | 0.2−  | 2007 12 15 | 704 | 0.4− | 0.0  |
| 2003 12 28 | 704 | 0.6+  | 0.6+  | 2004 02 14 | 704 | 0.2+  | 0.1−  | 2007 12 15 | 704 | 0.1+ | 0.1− |
| 2003 12 28 | 704 | (0.4+ | 2.2+) | 2004 02 14 | 704 | 0.1+  | 0.4+  | 2007 12 15 | 704 | 0.2− | 0.2− |

**(172731)\* 2004 BY<sub>120</sub>**

Discovered 2004 Jan. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 306.05782  |          | (2000.0) | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.21783567 | $\omega$ | 64.01177 | −0.66746331 | −0.70800818 |
| <i>a</i> | 2.7355839  | $\Omega$ | 69.88266 | +0.56461781 | −0.68317905 |
| <i>e</i> | 0.1189780  | <i>i</i> | 14.22185 | +0.48548888 | −0.17885975 |
| <i>P</i> | 4.52       | <i>H</i> | 16.0     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 07 | 699 | 0.0   | 0.7+  | 2004 01 17 | 644 | 0.1+  | 0.1+  | 2007 11 15 | 704 | 0.4− | 0.6+ |
| 2000 04 07 | 699 | 0.0   | 1.9+  | 2004 01 31 | 704 | 0.1+  | 0.5−  | 2007 11 15 | 704 | 0.4+ | 0.3− |
| 2000 04 07 | 699 | 0.2−  | 0.5+  | 2004 01 31 | 704 | 1.4+  | 0.3+  | 2007 11 15 | 704 | 0.8+ | 0.1+ |
| 2000 04 07 | 699 | (1.3− | 2.4+) | 2004 01 31 | 704 | (2.2− | 0.8−) | 2007 11 15 | 704 | 0.1+ | 0.2− |
| 2000 04 27 | 704 | 0.7+  | 0.9−  | 2004 01 31 | 704 | 0.6+  | 0.5−  | 2007 11 18 | 691 | 0.3− | 0.0  |
| 2000 04 27 | 704 | 0.8+  | 0.4−  | 2004 02 02 | 704 | 0.5+  | 1.2−  | 2007 11 18 | 691 | 0.3− | 0.2− |
| 2000 04 27 | 704 | 1.0+  | 0.3−  | 2004 02 02 | 704 | (2.8+ | 0.6−) | 2007 11 18 | 691 | 0.4− | 0.1− |
| 2000 04 27 | 704 | 0.1−  | 0.9+  | 2004 02 02 | 704 | 1.3+  | 0.2+  | 2007 12 10 | 704 | 0.0  | 0.2+ |
| 2000 06 03 | 608 | 0.7−  | 0.5−  | 2004 02 02 | 704 | 0.8+  | 0.6−  | 2007 12 10 | 704 | 0.3+ | 0.8− |
| 2000 06 03 | 608 | 0.5−  | 0.3−  | 2004 02 14 | 704 | 0.2+  | 0.9+  | 2007 12 10 | 704 | 0.2− | 0.2− |
| 2000 06 03 | 608 | 0.6−  | 0.4−  | 2004 02 14 | 704 | 0.3−  | 0.6+  | 2007 12 10 | 704 | 0.2+ | 0.3+ |
| 2002 10 15 | 644 | 0.2−  | 0.3+  | 2004 02 14 | 704 | 0.2−  | 0.5+  | 2007 12 15 | 704 | 0.3− | 0.2− |
| 2002 10 15 | 644 | 0.4−  | 0.6+  | 2004 02 14 | 704 | 1.1+  | 1.0+  | 2007 12 15 | 704 | 0.9− | 1.7− |
| 2002 10 15 | 644 | 0.1+  | 0.3+  | 2004 02 14 | 704 | 0.2−  | 0.8+  | 2007 12 15 | 704 | 0.3− | 0.3− |
| 2002 10 30 | 704 | (2.3− | 1.4+) | 2004 03 17 | 644 | 0.1−  | 0.0   | 2007 12 15 | 704 | 0.4+ | 0.5− |
| 2002 10 30 | 704 | 0.1−  | 0.6+  | 2004 03 17 | 644 | 0.1+  | 0.0   | 2007 12 15 | 704 | 0.1− | 0.2− |
| 2002 10 30 | 704 | 1.0−  | 0.7−  | 2004 03 17 | 644 | 0.0   | 0.1−  | 2007 12 16 | 704 | 0.1+ | 0.2− |
| 2002 10 30 | 704 | 0.2+  | 1.2+  | 2004 04 15 | 645 | 0.1−  | 0.0   | 2007 12 16 | 704 | 0.9+ | 0.1− |
| 2003 12 29 | 704 | 0.1+  | 0.2+  | 2004 04 15 | 645 | 0.2−  | 0.0   | 2007 12 16 | 704 | 0.9+ | 0.2+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 704 | 0.3+  | 0.2+  | 2007 11 05 | 704 | 1.2+ | 1.3+ | 2007 12 16 | 704 | 0.8+ | 0.1+ |
| 2003 12 29 | 704 | (1.0+ | 1.5−) | 2007 11 05 | 704 | 0.7+ | 0.7+ | 2007 12 16 | 704 | 0.3− | 0.3+ |
| 2004 01 17 | 644 | 0.1−  | 0.2−  | 2007 11 05 | 704 | 0.7+ | 0.7+ |            |     |      |      |
| 2004 01 17 | 644 | 0.0   | 0.2−  | 2007 11 15 | 704 | 0.1+ | 0.3− |            |     |      |      |

**(172732)\* 2004 BZ<sub>120</sub>**

Discovered 2004 Jan. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 336.50384  |          | (2000.0) | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.24437905 | $\omega$ | 67.19530 | −0.77329106 | −0.57597023 |
| <i>a</i> | 2.5337284  | $\Omega$ | 76.63071 | +0.43421749 | −0.78573955 |
| <i>e</i> | 0.0611998  | <i>i</i> | 15.81230 | +0.46203476 | −0.22554748 |
| <i>P</i> | 4.03       | <i>H</i> | 15.3     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 31 | 704 | 0.3+  | 0.3−  | 2004 02 10 | 644 | 0.1−  | 0.1+  | 2006 10 10 | 644 | 0.0   | 0.3+  |
| 2000 01 31 | 704 | 0.8+  | 0.1−  | 2004 02 14 | 704 | 0.3−  | 0.8+  | 2006 10 10 | 644 | 0.3+  | 0.3−  |
| 2000 01 31 | 704 | 0.1+  | 0.5+  | 2004 02 14 | 704 | 0.6−  | 0.7+  | 2006 10 10 | 644 | 0.6+  | 0.0   |
| 2000 01 31 | 704 | 0.1−  | 0.4+  | 2004 02 14 | 704 | (0.4+ | 1.5+) | 2006 10 21 | 703 | 0.6−  | 0.4+  |
| 2002 10 06 | 644 | 0.3−  | 0.1+  | 2004 02 14 | 704 | 0.2−  | 1.3+  | 2006 10 21 | 703 | 0.2−  | 0.3−  |
| 2002 10 06 | 644 | 0.1−  | 0.2+  | 2004 02 14 | 704 | 0.3+  | 1.0+  | 2006 10 21 | 703 | 0.2+  | 0.1−  |
| 2002 10 06 | 644 | 0.5−  | 0.6+  | 2004 02 26 | 703 | 0.6−  | 0.0   | 2006 10 21 | 703 | 0.2−  | 0.6+  |
| 2002 10 16 | 644 | 0.6−  | 0.3−  | 2004 02 26 | 703 | 0.3−  | 0.2−  | 2006 10 31 | 703 | 0.3+  | 0.4+  |
| 2002 10 16 | 644 | 0.2−  | 0.4−  | 2004 02 26 | 703 | 0.2−  | 0.0   | 2006 10 31 | 703 | 0.7+  | 0.4−  |
| 2002 10 16 | 644 | 0.4−  | 0.4−  | 2004 02 26 | 703 | 0.2+  | 0.0   | 2006 10 31 | 703 | 0.1+  | 1.4−  |
| 2002 11 21 | 644 | 0.0   | 0.3−  | 2004 03 01 | 704 | (0.2− | 1.6+) | 2006 10 31 | 703 | 0.0   | 0.2−  |
| 2002 11 21 | 644 | 0.5−  | 0.0   | 2004 03 01 | 704 | 0.5+  | 0.1−  | 2006 11 17 | 703 | 0.5+  | 0.7+  |
| 2002 11 21 | 644 | 0.0   | 0.2−  | 2004 03 01 | 704 | 0.4+  | 0.0   | 2006 11 17 | 703 | 0.8+  | 0.3+  |
| 2002 12 01 | 704 | 0.3+  | 0.1−  | 2004 03 01 | 704 | 0.1+  | 0.1+  | 2006 11 17 | 703 | 0.5−  | 1.1+  |
| 2002 12 01 | 704 | 0.8+  | 0.3+  | 2004 03 17 | 644 | 0.1+  | 0.4+  | 2006 11 17 | 703 | 0.4+  | 0.6−  |
| 2002 12 01 | 704 | 0.7−  | 0.9−  | 2004 03 17 | 644 | 0.1+  | 0.3+  | 2006 11 23 | 703 | (1.9+ | 0.2−) |
| 2002 12 01 | 704 | 0.1−  | 0.4−  | 2004 03 17 | 644 | 0.1+  | 0.1+  | 2006 11 23 | 703 | (2.9+ | 1.4−) |
| 2002 12 01 | 704 | 0.6−  | 0.8+  | 2004 03 18 | 645 | 0.0   | 0.2−  | 2006 11 23 | 703 | (1.8+ | 1.2−) |
| 2004 01 31 | 704 | 0.5+  | 1.3+  | 2004 03 18 | 645 | 0.1−  | 0.3−  | 2006 11 23 | 703 | 0.9−  | 0.6−  |
| 2004 01 31 | 704 | (0.4+ | 1.6+) | 2004 03 24 | 703 | 0.8+  | 0.2+  | 2007 11 08 | 704 | 0.0   | 0.0   |
| 2004 01 31 | 704 | 0.2+  | 1.2+  | 2004 03 24 | 703 | (1.5+ | 0.1+) | 2007 11 08 | 704 | 0.1−  | 0.1−  |
| 2004 01 31 | 704 | 1.0+  | 1.0+  | 2004 03 24 | 703 | (2.4+ | 0.5+) | 2007 11 08 | 704 | 0.9+  | 1.1+  |
| 2004 01 31 | 704 | 0.6−  | 0.8+  | 2004 03 24 | 703 | (2.9− | 0.7−) | 2007 11 08 | 704 | 0.8+  | 0.1−  |
| 2004 02 02 | 704 | 0.3+  | 0.6−  | 2006 09 19 | 703 | 0.7+  | 0.9−  | 2007 11 08 | 704 | 1.5+  | 1.4+  |
| 2004 02 02 | 704 | 0.6−  | 0.2−  | 2006 09 19 | 703 | 0.8+  | 0.4−  | 2007 12 06 | 703 | 1.3−  | 0.4−  |
| 2004 02 02 | 704 | 0.8+  | 1.3−  | 2006 09 19 | 703 | 0.3+  | 0.3−  | 2007 12 06 | 703 | 0.8−  | 0.2−  |
| 2004 02 02 | 704 | 0.4+  | 0.6−  | 2006 09 19 | 703 | 0.2+  | 0.0   | 2007 12 06 | 703 | 2.4−  | 0.2+  |
| 2004 02 02 | 704 | 0.6+  | 0.1−  | 2006 10 10 | 644 | 0.1+  | 0.1+  | 2007 12 06 | 703 | 0.5−  | 0.3−  |
| 2004 02 10 | 644 | 0.0   | 0.1+  | 2006 10 10 | 644 | 0.2+  | 0.4+  |            |     |       |       |
| 2004 02 10 | 644 | 0.1+  | 0.1+  | 2006 10 10 | 644 | 0.4+  | 0.3+  |            |     |       |       |

**(172733)\* 2004 BR<sub>122</sub>**

Discovered 2004 Jan. 18 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 250.39199  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18585994 | $\omega$ | 178.33848 | −0.97791513 | −0.20880000 |
| <i>a</i> | 3.0409703  | $\Omega$ | 349.59576 | +0.19116389 | −0.87579822 |
| <i>e</i> | 0.0584522  | <i>i</i> | 2.91859   | +0.08448881 | −0.43517817 |
| <i>P</i> | 5.30       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |    |
|------------|-----|------|------|------------|-----|----|
| 2001 09 12 | 691 | 0.2− | 0.3+ | 2004 01 27 | 691 | 0. |
|------------|-----|------|------|------------|-----|----|

2007 DEC. 24

M.P.O. 129463

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 18 | 691 | 0.2− | 0.1+ | 2004 01 30 | 568 | 0.0  | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2004 01 18 | 691 | 0.3+ | 0.2+ | 2004 01 30 | 568 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.2− | 0.1+ |
| 2004 01 20 | 309 | 0.1+ | 0.1− | 2004 01 30 | 568 | 0.3− | 0.3− | 2007 11 07 | 691 | 0.3+ | 0.1− |
| 2004 01 20 | 309 | 0.0  | 0.1− | 2004 01 30 | 568 | 0.3+ | 0.1+ | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2004 01 20 | 309 | 0.1+ | 0.1− | 2004 04 24 | 691 | 0.4− | 0.4+ | 2007 11 13 | 691 | 0.0  | 0.3− |
| 2004 01 21 | 309 | 0.0  | 0.1− | 2004 04 24 | 691 | 0.1+ | 0.1− | 2007 11 13 | 691 | 0.3+ | 0.3+ |
| 2004 01 21 | 309 | 0.1− | 0.1− | 2004 04 24 | 691 | 0.0  | 0.3− | 2007 12 04 | 691 | 0.0  | 0.3+ |
| 2004 01 21 | 309 | 0.1− | 0.1− | 2006 08 21 | 691 | 0.5− | 0.1+ | 2007 12 04 | 691 | 0.3− | 0.2− |
| 2004 01 22 | 309 | 0.1+ | 0.0  | 2006 08 21 | 691 | 0.1+ | 0.5+ | 2007 12 04 | 691 | 0.1− | 0.2+ |
| 2004 01 22 | 309 | 0.1+ | 0.0  | 2006 08 21 | 691 | 0.1− | 0.5+ | 2007 12 06 | 691 | 0.5− | 0.2+ |
| 2004 01 22 | 309 | 0.2+ | 0.0  | 2006 09 26 | G96 | 0.1− | 0.0  | 2007 12 06 | 691 | 0.1− | 0.5− |
| 2004 01 23 | 309 | 0.1+ | 0.1+ | 2006 09 26 | G96 | 0.5+ | 0.1+ | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2004 01 23 | 309 | 0.1+ | 0.0  | 2006 09 26 | G96 | 0.1− | 0.3+ |            |     |      |      |

**(172734)\* 2004 CN<sub>1</sub> = 1993 OA<sub>8</sub> = 2002 VD<sub>125</sub>**

Discovered 2004 Feb. 10 at San Marcello Pistoiese.

Id. G. V. Williams (*MPO* 61879)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 206.94682  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24441496 | $\omega$ | 340.23367 | +0.15207724 | +0.98251312 |
| <i>a</i> | 2.5334803  | $\Omega$ | 298.38461 | −0.88959257 | +0.08870451 |
| <i>e</i> | 0.1251322  | <i>i</i> | 7.01371   | −0.43069429 | +0.16370548 |
| <i>P</i> | 4.03       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 07 12 | 809 | 1.2−  | 1.7+  | 2002 11 15 | 644 | 0.1+ | 0.5+ | 2004 02 16 | 104 | 0.9+ | 0.5+ |
| 1993 07 12 | 809 | (1.9− | 2.1+) | 2002 11 15 | 644 | 0.4+ | 0.3− | 2006 11 14 | 703 | 0.1− | 0.7+ |
| 1993 07 12 | 809 | (2.2− | 2.7+) | 2004 01 30 | 691 | 0.1+ | 0.2+ | 2006 11 14 | 703 | 0.7− | 0.4+ |
| 1993 07 19 | 809 | 0.2−  | 0.2−  | 2004 01 30 | 691 | 0.1+ | 0.0  | 2006 11 14 | 703 | 0.3− | 0.2− |
| 1993 07 19 | 809 | 0.3−  | 0.2−  | 2004 01 30 | 691 | 0.1+ | 0.2+ | 2006 11 14 | 703 | 0.6+ | 0.9− |
| 1993 07 19 | 809 | 1.1−  | 1.0−  | 2004 02 10 | 104 | 0.0  | 0.1− | 2006 11 22 | 703 | 0.6+ | 0.6+ |
| 1993 07 20 | 809 | 0.1+  | 1.2+  | 2004 02 10 | 104 | 0.1− | 1.0+ | 2006 11 22 | 703 | 1.2− | 0.4+ |
| 1993 07 20 | 809 | 0.4+  | 1.1+  | 2004 02 10 | 104 | 0.0  | 0.1− | 2006 11 22 | 703 | 0.4− | 0.4− |
| 1993 07 20 | 809 | 0.1−  | 1.0+  | 2004 02 10 | 104 | 0.2− | 1.4− | 2006 11 22 | 703 | 0.7− | 0.1+ |
| 1993 07 23 | 809 | (3.0+ | 0.2−) | 2004 02 11 | 644 | 0.4+ | 0.0  | 2006 11 25 | G96 | 0.2+ | 0.6− |
| 1993 07 23 | 809 | (2.5+ | 0.3−) | 2004 02 11 | 644 | 0.7+ | 0.4+ | 2006 11 25 | G96 | 0.0  | 0.4− |
| 1993 07 23 | 809 | (3.0+ | 0.5−) | 2004 02 11 | 644 | 0.5+ | 0.3+ | 2006 11 25 | G96 | 0.1− | 0.4− |
| 1993 07 24 | 809 | (1.5+ | 2.9+) | 2004 02 11 | 104 | 0.5+ | 0.4− | 2006 11 25 | G96 | 0.3− | 0.3− |
| 2001 06 16 | 704 | 0.9+  | 0.2−  | 2004 02 11 | 104 | 0.4− | 0.1+ | 2007 11 19 | G96 | 0.7− | 0.2+ |
| 2001 06 16 | 704 | 0.4+  | 0.6−  | 2004 02 11 | 104 | 0.7+ | 0.4+ | 2007 11 19 | G96 | 0.6− | 0.2+ |
| 2001 06 16 | 704 | 0.6+  | 0.0   | 2004 02 13 | 699 | 0.4− | 0.4+ | 2007 11 19 | G96 | 0.0  | 0.2− |
| 2001 06 16 | 704 | 0.4−  | 0.0   | 2004 02 13 | 699 | 0.1− | 0.5− | 2007 11 19 | G96 | 0.9− | 0.0  |
| 2001 06 16 | 704 | 0.0   | 0.1−  | 2004 02 13 | 699 | 0.0  | 0.6− | 2007 12 04 | G96 | 0.3− | 0.4+ |
| 2002 11 13 | 644 | 0.0   | 0.4+  | 2004 02 13 | 699 | 0.3− | 0.5+ | 2007 12 04 | G96 | 0.6− | 0.1+ |
| 2002 11 13 | 644 | 0.6+  | 0.2+  | 2004 02 16 | 104 | 0.1− | 0.4+ | 2007 12 04 | G96 | 0.2− | 0.4+ |
| 2002 11 13 | 644 | 1.3+  | 0.8+  | 2004 02 16 | 104 | 0.2+ | 0.2+ | 2007 12 04 | G96 | 0.5+ | 0.3− |
| 2002 11 15 | 644 | 0.1+  | 0.2+  | 2004 02 16 | 104 | 0.3− | 0.0  |            |     |      |      |

**(172735)\* 2004 CF<sub>3</sub>**

Discovered 2004 Feb. 9 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 320.07628  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23701942 | $\omega$ | 102.99279 | −0.51864738 | −0.85295312 |
| <i>a</i> | 2.5859101  | $\Omega$ | 18.60819  | +0.69523654 | −0.46087176 |
| <i>e</i> | 0.1525582  | <i>i</i> | 10.64725  | +0.49764550 | −0.24508815 |
| <i>P</i> | 4.16       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 03 30 | 691 | 0.1− | 0.4− | 2003 12 17 | 704 | 1.2+ | 0.3+ | 2004 02 16 | 644 | 0.4+ | 0.0  |
| 1992 03 30 | 691 | 0.2+ | 0.5− | 2003 12 17 | 704 | 0.7+ | 0.2+ | 2004 02 16 | 644 | 0.4+ | 0.5+ |
| 1992 03 30 | 691 | 0.3+ | 0.6− | 2003 12 17 | 704 | 0.1− | 0.2+ | 2004 03 23 | 704 | 0.7− | 0.0  |
| 1994 10 08 | 691 | 0.4− | 0.9− | 2003 12 17 | 704 | 0.6+ | 0.4+ | 2004 03 23 | 704 | 0.2− | 0.3+ |
| 1994 10 08 | 691 | 0.6− | 0.6+ | 2003 12 29 | 703 | 0.6− | 0.2+ | 2004 03 23 | 704 | 0.6− | 0.8+ |
| 1994 10 08 | 691 | 0.7+ | 0.1+ | 2003 12 29 | 704 | 0.0  | 0.6+ | 2004 03 23 | 704 | 0.3− | 0.2+ |
| 1996 05 22 | 691 | 0.7− | 0.8+ | 2003 12 29 | 703 | 0.3− | 0.2+ | 2007 11 02 | D29 | 0.4− | 0.7− |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 05 22 | 691 | 0.3− | 0.7+ | 2003 12 29 | 704 | 0.2−  | 0.7+  | 2007 11 02 | D29 | 0.0  | 0.7− |
| 1996 05 22 | 691 | 0.1+ | 0.4+ | 2003 12 29 | 703 | 0.4+  | 0.2+  | 2007 11 02 | D29 | 0.1− | 0.6− |
| 2000 01 29 | 704 | 0.4+ | 0.5+ | 2003 12 29 | 704 | 0.1−  | 0.4+  | 2007 11 02 | D29 | 0.6− | 0.3− |
| 2000 01 29 | 704 | 0.4− | 0.0  | 2003 12 29 | 703 | 0.0   | 0.9+  | 2007 11 09 | 704 | 0.2+ | 0.1+ |
| 2000 01 29 | 704 | 0.1+ | 1.0+ | 2003 12 29 | 704 | 0.1+  | 0.6+  | 2007 11 09 | 704 | 0.0  | 0.3− |
| 2000 01 29 | 704 | 1.5− | 0.3− | 2003 12 29 | 704 | 0.8+  | 0.2−  | 2007 11 09 | 704 | 0.1+ | 0.2− |
| 2000 01 29 | 704 | 0.5− | 0.9+ | 2004 01 31 | 699 | 0.5+  | 0.1+  | 2007 11 09 | 704 | 0.3+ | 0.6− |
| 2002 08 30 | 644 | 0.4− | 0.8+ | 2004 01 31 | 699 | 1.3+  | 0.2−  | 2007 11 09 | 704 | 0.5+ | 0.0  |
| 2002 08 30 | 644 | 0.6− | 0.7+ | 2004 01 31 | 699 | 1.0+  | 1.1−  | 2007 11 16 | 704 | 0.2− | 0.1− |
| 2002 08 30 | 644 | 0.8− | 0.7+ | 2004 01 31 | 699 | 0.6−  | 0.3+  | 2007 11 16 | 704 | 0.4− | 0.2− |
| 2002 09 07 | 599 | 0.2+ | 0.4+ | 2004 02 09 | 644 | 0.1−  | 0.2+  | 2007 11 16 | 704 | 0.6− | 0.0  |
| 2002 09 07 | 599 | 0.3− | 0.0  | 2004 02 09 | 644 | 0.1+  | 0.6+  | 2007 11 16 | 704 | 0.5− | 0.1− |
| 2002 09 07 | 599 | 0.1+ | 0.1+ | 2004 02 09 | 644 | 0.1+  | 0.2+  | 2007 12 03 | 704 | 1.1+ | 0.5− |
| 2002 09 07 | 599 | 0.2+ | 0.3+ | 2004 02 11 | 704 | 1.0−  | 0.2−  | 2007 12 03 | 704 | 0.2− | 0.4− |
| 2003 11 28 | 699 | 0.7− | 0.1− | 2004 02 11 | 704 | 0.0   | 0.6−  | 2007 12 03 | 704 | 0.0  | 0.2− |
| 2003 11 28 | 699 | 1.2+ | 0.8− | 2004 02 11 | 704 | (0.8+ | 2.0−) | 2007 12 03 | 704 | 0.3+ | 1.1− |
| 2003 11 28 | 699 | 0.5+ | 0.2+ | 2004 02 11 | 704 | 1.1+  | 0.6−  |            |     |      |      |
| 2003 11 28 | 699 | 0.1+ | 0.1− | 2004 02 16 | 644 | 0.5+  | 0.0   |            |     |      |      |

**(172736)\* 2004 CA<sub>8</sub> = 2000 FO<sub>18</sub> = 2002 TA<sub>343</sub>**

Discovered 2004 Feb. 10 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61885)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 305.22608  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.23177889 | $\omega$ | 90.10412 | −0.89263216 | −0.43005534 |
| <i>a</i> | 2.6247431  | $\Omega$ | 64.42598 | +0.33049186 | −0.82819680 |
| <i>e</i> | 0.1522665  | <i>i</i> | 8.61576  | +0.30656641 | −0.35936397 |
| <i>P</i> | 4.25       | <i>H</i> | 16.6     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 12 | 704 | 0.2+  | 0.7−  | 2004 01 20 | 704 | 0.2− | 1.4+ | 2007 11 06 | G96 | 0.0   | 0.3+  |
| 2000 03 12 | 704 | 0.0   | 1.1+  | 2004 01 31 | 704 | 0.8− | 1.0+ | 2007 12 05 | 691 | 0.1−  | 0.2−  |
| 2000 03 12 | 704 | 1.3+  | 0.5+  | 2004 01 31 | 704 | 0.1− | 0.1+ | 2007 12 05 | 691 | 0.3−  | 0.7+  |
| 2000 03 29 | 704 | 0.7+  | 0.1+  | 2004 01 31 | 704 | 0.6+ | 0.1+ | 2007 12 05 | 691 | 0.0   | 0.2−  |
| 2000 03 29 | 704 | 0.4+  | 0.2−  | 2004 01 31 | 704 | 0.2− | 0.5+ | 2007 12 05 | 691 | 0.1−  | 0.8+  |
| 2000 03 29 | 704 | 0.5−  | 1.6+  | 2004 02 10 | 644 | 0.2+ | 0.3− | 2007 12 05 | 691 | 0.1−  | 0.8−  |
| 2000 03 29 | 704 | 1.5+  | 0.8+  | 2004 02 10 | 644 | 0.3+ | 0.2+ | 2007 12 05 | 691 | 0.1−  | 0.2+  |
| 2000 04 03 | 704 | 0.5−  | 0.2−  | 2004 02 10 | 644 | 0.2+ | 0.4− | 2007 12 13 | 704 | 0.3−  | 0.0   |
| 2000 04 03 | 704 | 0.9+  | 1.1−  | 2004 02 12 | 644 | 0.1+ | 0.2− | 2007 12 13 | 704 | 0.9+  | 0.5+  |
| 2000 04 03 | 704 | 0.3−  | 1.6+  | 2004 02 12 | 644 | 0.1+ | 0.2− | 2007 12 13 | 704 | (1.8+ | 0.7+) |
| 2000 04 03 | 704 | 0.9−  | 0.8+  | 2004 02 12 | 644 | 0.6+ | 0.1− | 2007 12 13 | 704 | 0.0   | 0.4+  |
| 2000 04 03 | 704 | 0.5−  | 0.3+  | 2004 02 14 | 704 | 0.1+ | 0.1− | 2007 12 15 | 704 | 0.1+  | 0.8+  |
| 2002 10 05 | 645 | 0.0   | 0.0   | 2004 02 14 | 704 | 0.7+ | 0.1− | 2007 12 15 | 704 | 0.1−  | 0.5+  |
| 2002 10 05 | 645 | 0.0   | 0.0   | 2004 02 14 | 704 | 0.4+ | 0.5− | 2007 12 15 | 704 | 0.4+  | 1.0+  |
| 2002 10 10 | 645 | 0.0   | 0.0   | 2004 02 14 | 704 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.2−  | 1.0+  |
| 2002 10 10 | 645 | 0.0   | 0.0   | 2004 02 14 | 704 | 0.3+ | 0.0  | 2007 12 15 | 704 | 0.1+  | 0.7+  |
| 2002 10 15 | 644 | 0.3−  | 0.9+  | 2004 03 18 | 645 | 0.1− | 0.2− | 2007 12 17 | 691 | 0.5+  | 0.6−  |
| 2002 10 15 | 644 | (0.8− | 1.5+) | 2004 03 18 | 645 | 0.1− | 0.2− | 2007 12 17 | 691 | 0.1−  | 0.4−  |
| 2002 10 15 | 644 | 0.4+  | 0.0   | 2007 11 06 | G96 | 0.2+ | 0.2− | 2007 12 17 | 691 | 0.1−  | 0.1−  |
| 2004 01 20 | 704 | 0.8−  | 1.2+  | 2007 11 06 | G96 | 0.5+ | 0.3− |            |     |       |       |
| 2004 01 20 | 704 | 0.3−  | 0.4+  | 2007 11 06 | G96 | 0.3+ | 0.1− |            |     |       |       |

**(172737)\* 2004 CD<sub>9</sub>**

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 24 | 691 | 0.1−  | 0.3+  | 2004 02 12 | 691 | 0.3+ | 0.0  | 2007 10 15 | G96 | 0.2+ | 0.4+ |
| 2000 04 30 | 691 | 0.4+  | 0.0   | 2004 02 12 | 691 | 0.1+ | 0.3− | 2007 10 15 | G96 | 0.5+ | 0.3+ |
| 2000 04 30 | 691 | 0.3−  | 0.0   | 2004 02 12 | 691 | 0.0  | 0.1− | 2007 10 15 | G96 | 0.3+ | 0.3+ |
| 2000 04 30 | 691 | 0.5−  | 0.1−  | 2004 02 13 | 691 | 0.1− | 0.3− | 2007 10 30 | 691 | 0.2+ | 0.5+ |
| 2000 05 06 | 691 | 0.0   | 0.0   | 2004 02 13 | 691 | 0.0  | 0.1− | 2007 10 30 | 691 | 0.0  | 0.3+ |
| 2000 05 06 | 691 | 0.3+  | 0.1+  | 2004 02 13 | 691 | 0.1+ | 0.1− | 2007 10 30 | 691 | 0.1− | 0.4+ |
| 2000 05 06 | 691 | 0.1+  | 0.1+  | 2004 02 13 | 691 | 0.4− | 0.2+ | 2007 11 07 | 691 | 0.0  | 0.3+ |
| 2002 11 02 | 950 | (2.7+ | 0.8+) | 2004 02 13 | 691 | 0.1− | 0.0  | 2007 11 07 | 691 | 0.2− | 0.1+ |
| 2002 11 02 | 950 | (2.7+ | 0.8+) | 2004 02 13 | 691 | 0.1+ | 0.4− | 2007 11 07 | 691 | 0.3− | 0.3+ |
| 2002 11 02 | 950 | (2.5+ | 0.8+) | 2005 05 08 | 691 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 0.3− | 0.2+ |
| 2004 01 17 | 644 | 0.2+  | 0.2+  | 2005 05 08 | 691 | 0.3+ | 0.3+ | 2007 11 14 | 691 | 0.1− | 0.3+ |
| 2004 01 17 | 644 | 0.1+  | 0.1+  | 2005 05 08 | 691 | 1.1− | 1.3+ | 2007 11 14 | 691 | 0.1− | 0.3+ |
| 2004 01 17 | 644 | 0.8+  | 0.0   | 2005 05 08 | G96 | 0.4− | 0.0  | 2007 12 15 | G96 | 0.1− | 0.1+ |
| 2004 01 22 | 704 | 0.1−  | 0.8+  | 2005 05 08 | G96 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.3+ | 0.4+ |
| 2004 01 22 | 704 | 0.9+  | 0.8+  | 2005 05 08 | G96 | 0.2− | 0.4− | 2007 12 15 | G96 | 0.1− | 0.3+ |
| 2004 01 22 | 704 | 1.2+  | 0.3+  | 2005 05 08 | G96 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.4− | 0.2+ |
| 2004 01 22 | 704 | (0.3+ | 1.8+) | 2005 05 12 | 691 | 0.5+ | 0.3+ |            |     |      |      |
| 2004 02 11 | 291 | 0.3−  | 0.0   | 2005 05 12 | 691 | 0.5+ | 0.0  |            |     |      |      |

(172738)\* 2004 CF<sub>12</sub> = 2001 TY<sub>130</sub>

Discovered 2004 Feb. 11 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 61886)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |          |             |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>M</i> | 217.36831  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
| <i>n</i> | 0.18973039 | $\omega$ | 69.85392  | −0.92229282 |          |          | +0.36170977 |
| <i>a</i> | 2.9994718  | $\Omega$ | 131.08902 | −0.38609646 |          |          | −0.87820451 |
| <i>e</i> | 0.0728495  | <i>i</i> | 10.40878  | +0.01747802 |          |          | −0.31292632 |
| <i>P</i> | 5.19       | <i>H</i> | 14.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 10 | 644 | 0.1− | 0.6+ | 2004 02 18 | 691 | 0.1−  | 0.0   | 2006 09 20 | 703 | 1.2+ | 0.4+ |
| 2001 10 10 | 644 | 0.1− | 0.7+ | 2004 02 18 | 608 | 0.6+  | 1.2+  | 2006 09 20 | 703 | 0.8− | 0.5− |
| 2001 10 10 | 644 | 0.8− | 0.5+ | 2004 02 18 | 608 | (0.1+ | 1.8+) | 2006 09 20 | 703 | 1.3− | 1.3+ |
| 2001 10 15 | 644 | 0.2+ | 0.7+ | 2004 02 18 | 608 | (0.8+ | 1.7+) | 2006 09 20 | 703 | 0.7+ | 0.2− |
| 2001 10 15 | 644 | 0.5+ | 1.0+ | 2004 02 18 | 691 | 0.2−  | 0.1+  | 2006 09 26 | 703 | 0.7+ | 0.4− |
| 2001 10 15 | 644 | 0.2+ | 0.4+ | 2004 03 20 | 704 | 0.1+  | 0.5+  | 2006 09 26 | 703 | 0.3− | 0.0  |
| 2004 01 22 | 704 | 0.0  | 0.5+ | 2004 03 20 | 704 | 0.6+  | 0.5+  | 2006 09 26 | 703 | 0.4− | 0.3+ |
| 2004 01 22 | 704 | 0.8− | 0.0  | 2004 03 20 | 704 | 0.7+  | 0.5+  | 2006 09 26 | 703 | 1.5− | 0.2− |
| 2004 01 22 | 704 | 0.7− | 0.6+ | 2004 03 20 | 704 | 0.4+  | 1.2+  | 2007 11 07 | 703 | 0.7− | 0.5+ |
| 2004 01 22 | 704 | 0.4+ | 0.5+ | 2004 03 23 | 704 | 0.0   | 0.7+  | 2007 11 07 | 703 | 0.8+ | 0.4− |
| 2004 02 11 | 703 | 0.9− | 0.3+ | 2004 03 23 | 704 | 0.1+  | 0.4+  | 2007 11 07 | 703 | 1.1− | 0.5− |
| 2004 02 11 | 703 | 0.4− | 0.1+ | 2004 03 23 | 704 | 0.2+  | 0.1+  | 2007 11 07 | 703 | 0.8+ | 1.4+ |
| 2004 02 11 | 703 | 0.3+ | 1.3+ | 2004 03 23 | 704 | 0.3+  | 0.7+  | 2007 11 19 | G96 | 0.3− | 0.5− |
| 2004 02 11 | 703 | 0.8− | 0.6+ | 2004 03 23 | 704 | 0.2−  | 0.6+  | 2007 11 19 | G96 | 0.2− | 0.5− |
| 2004 02 11 | 644 | 0.1+ | 0.1+ | 2005 06 03 | E12 | 0.8+  | 0.7−  | 2007 11 19 | G96 | 0.2− | 0.5− |
| 2004 02 11 | 644 | 0.3+ | 0.3+ | 2005 06 03 | E12 | 0.3+  | 0.4+  | 2007 11 19 | G96 | 0.2− | 0.4− |
| 2004 02 11 | 644 | 0.1+ | 0.5+ | 2005 06 03 | E12 | 0.2+  | 0.7+  | 2007 12 05 | 703 | 0.1− | 0.9+ |
| 2004 02 12 | 644 | 0.0  | 0.4+ | 2005 06 03 | E12 | 0.3+  | 0.5+  | 2007 12 05 | 703 | 0.2+ | 0.8+ |
| 2004 02 12 | 644 | 0.4− | 0.3+ | 2006 08 29 | 703 | 0.2+  | 0.6+  | 2007 12 05 | 703 | 1.7+ | 0.6+ |
| 2004 02 12 | 644 | 0.6+ | 0.6− | 2006 08 29 | 703 | 0.5−  | 1.0+  | 2007 12 05 | 703 | 2.0+ | 0.3− |
| 2004 02 17 | 704 | 0.2+ | 0.1− | 2006 08 29 | 703 | 0.1−  | 0.4+  | 2007 12 05 | 703 | 0.2+ | 0.4− |
| 2004 02 17 | 704 | 0.1− | 0.1+ | 2006 08 29 | 703 | 0.9−  | 1.0−  | 2007 12 05 | 703 | 0.4+ | 0.8− |
| 2004 02 17 | 704 | 0.3+ | 0.1+ | 2006 09 14 | 703 | 0.1+  | 1.1+  | 2007 12 05 | 703 | 1.2− | 0.0  |
| 2004 02 17 | 704 | 0.7+ | 1.0− | 2006 09 14 | 703 | 0.5−  | 1.3+  | 2007 12 05 | 703 | 0.1+ | 0.2− |
| 2004 02 17 | 704 | 0.3+ | 1.2− | 2006 09 14 | 703 | 1.1−  | 0.6+  |            |     |      |      |
| 2004 02 18 | 691 | 0.0  | 0.1− | 2006 09 14 | 703 | 0.1−  | 0.0   |            |     |      |      |

(172739)\* 2004 CT<sub>23</sub> = 2005 GC<sub>144</sub>

Discovered 2004 Feb. 12 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 76410)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |          |             |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>M</i> | 89.12812   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
| <i>n</i> | 0.21176298 | $\omega$ | 231.67030 | +0.84499587 |          |          | +0.52416436 |
| <i>a</i> | 2.7876357  | $\Omega$ | 96.48084  | −0.45131533 |          |          | +0.80529755 |
| <i>e</i> | 0.0625531  | <i>i</i> | 6.12344   | −0.28687357 |          |          | +0.27703352 |
| <i>P</i> | 4.65       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 11 21 | 644 | 0.7−  | 0.6+  | 2004 02 23 | 704 | (0.4+ | 1.7+) | 2007 11 04 | 691 | 0.6−  | 0.2+  |
| 2002 11 21 | 644 | 1.2−  | 0.3+  | 2005 04 10 | 691 | 0.1+  | 0.2+  | 2007 11 04 | 691 | 0.3−  | 0.0   |
| 2002 11 21 | 644 | 0.6−  | 0.5+  | 2005 04 10 | 691 | 0.0   | 0.2+  | 2007 11 04 | 691 | 0.3−  | 0.2+  |
| 2004 01 22 | 704 | 1.2+  | 0.2+  | 2005 04 10 | 691 | 0.2−  | 0.1−  | 2007 11 08 | 691 | 0.2−  | 0.2+  |
| 2004 01 22 | 704 | 0.8+  | 0.4+  | 2005 04 15 | 691 | 0.1−  | 0.2+  | 2007 11 08 | 691 | 0.1−  | 0.2+  |
| 2004 01 22 | 704 | (0.8− | 1.9+) | 2005 04 15 | 691 | 0.1−  | 0.0   | 2007 11 08 | 691 | (0.3− | 2.0+) |
| 2004 01 22 | 704 | 0.7+  | 0.6+  | 2005 04 15 | 691 | 0.1−  | 0.4+  | 2007 11 18 | G96 | 0.3+  | 0.0   |
| 2004 01 22 | 704 | 0.2+  | 0.7+  | 2005 05 02 | 691 | 0.1+  | 0.4+  | 2007 11 18 | G96 | 0.8−  | 1.1−  |
| 2004 02 12 | 691 | 0.1+  | 0.0   | 2005 05 02 | 691 | 0.0   | 0.2+  | 2007 11 18 | G96 | 1.2+  | 0.8−  |
| 2004 02 12 | 691 | 0.1−  | 0.0   | 2005 05 02 | 691 | 0.1+  | 0.1+  | 2007 11 18 | G96 | 0.6+  | 0.1+  |
| 2004 02 12 | 691 | 0.1+  | 0.1−  | 2006 08 16 | E12 | 0.1−  | 0.3+  | 2007 12 03 | 703 | 0.1+  | 0.3+  |
| 2004 02 13 | 691 | 0.0   | 0.2+  | 2006 08 16 | E12 | 0.6+  | 1.0+  | 2007 12 03 | 703 | 0.1−  | 0.2−  |
| 2004 02 13 | 691 | 0.2+  | 0.0   | 2006 08 16 | E12 | 0.9+  | 0.3+  | 2007 12 03 | 703 | 1.0−  | 0.3−  |
| 2004 02 13 | 691 | 0.1−  | 0.0   | 2006 08 16 | E12 | 0.1+  | 0.2+  | 2007 12 03 | 703 | 0.7+  | 0.3−  |
| 2004 02 23 | 704 | 0.4+  | 0.8−  | 2006 08 24 | 704 | 0.2+  | 0.6+  | 2007 12 04 | 704 | 1.1+  | 0.4+  |
| 2004 02 23 | 704 | 0.5+  | 0.2+  | 2006 08 24 | 704 | 0.0   | 0.8+  | 2007 12 04 | 704 | 0.8+  | 0.4+  |
| 2004 02 23 | 704 | (2.1+ | 0.5+) | 2006 08 24 | 704 | 0.6−  | 0.7+  | 2007 12 04 | 704 | 0.4+  | 0.2+  |

(172740)\* 2004 CZ<sub>27</sub> = 2006 QS<sub>128</sub>

Discovered 2004 Feb. 12 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 108895)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |          |             |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>M</i> | 118.78364  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
| <i>n</i> | 0.21462381 | $\omega$ | 311.13381 | +0.55199934 |          |          | +0.83379252 |
| <i>a</i> | 2.7628085  | $\Omega$ | 352.35358 | −0.74253401 |          |          | +0.48643917 |
| <i>e</i> | 0.0565835  | <i>i</i> | 4.01414   | −0.37939423 |          |          | +0.26108803 |
| <i>P</i> | 4.59       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 12 13 | 691 | 0.4− | 0.1− | 2004 02 12 | 691 | 0.2− | 0.3+ | 2006 09 14 | 703 | 0.8−  | 0.6+  |
| 1993 12 13 | 691 | 0.1− | 0.4+ | 2004 02 14 | 691 | 0.2+ | 0.0  | 2006 09 30 | G96 | 0.2+  | 0.1−  |
| 1993 12 13 | 691 | 0.1+ | 0.1+ | 2004 02 14 | 691 | 0.0  | 0.3+ | 2006 09 30 | G96 | 0.7−  | 0.3+  |
| 2000 03 03 | 645 | 0.1+ | 0.0  | 2004 02 14 | 691 | 0.1+ | 0.1+ | 2006 09 30 | G96 | 0.1+  | 0.1−  |
| 2000 03 03 | 645 | 0.1+ | 0.1+ | 2006 08 17 | 644 | 0.2− | 0.5+ | 2006 09 30 | G96 | 0.2−  | 0.8+  |
| 2000 03 11 | 704 | 0.4+ | 1.4+ | 2006 08 17 | 644 | 0.0  | 0.4+ | 2007 11 18 | G96 | (0.6+ | 2.6−) |
| 2000 03 11 | 704 | 0.5+ | 1.5+ | 2006 08 17 | 644 | 0.2− | 0.4+ | 2007 11 18 | G96 | 0.5+  | 0.6−  |
| 2000 03 11 | 704 | 0.1+ | 0.5+ | 2006 08 28 | 703 | 0.0  | 0.4+ | 2007 11 18 | G96 | 0.1−  | 0.9−  |
| 2002 10 16 | 644 | 0.2− | 0.3+ | 2006 08 28 | 703 | 0.6− | 1.4+ | 2007 11 18 | G96 | 0.1−  | 0.7−  |
| 2002 10 16 | 644 | 0.2− | 0.6+ | 2006 08 28 | 703 | 0.4− | 1.1+ | 2007 11 20 | 691 | 0.1+  | 0.5−  |
| 2002 10 16 | 644 | 0.1+ | 0.7+ | 2006 08 28 | 703 | 0.6− | 0.7+ | 2007 11 20 | 691 | 0.5−  | 0.3−  |
| 2002 10 31 | 644 | 0.0  | 0.6+ | 2006 08 28 | 699 | 0.3+ | 0.2+ | 2007 11 20 | 691 | 0.5−  | 0.2−  |
| 2002 10 31 | 644 | 0.4+ | 0.9+ | 2006 08 28 | 699 | 1.0− | 0.7+ | 2007 12 13 | 704 | 0.1+  | 0.6−  |
| 2002 10 31 | 644 | 0.2− | 1.3+ | 2006 08 28 | 699 | 1.1− | 0.6+ | 2007 12 13 | 704 | 1.4+  | 0.3+  |
| 2002 11 09 | 695 | 0.3+ | 0.0  | 2006 08 28 | 699 | 0.0  | 0.0  | 2007 12 13 | 704 | (1.7+ | 0.8+) |
| 2002 11 09 | 695 | 0.2− | 0.2− | 2006 08 28 | 699 | 0.7− | 1.2− | 2007 12 13 | 704 | 0.4+  | 0.0   |
| 2004 01 22 | 704 | 0.2− | 0.5+ | 2006 08 28 | 699 | 0.7+ | 0.1+ | 2007 12 15 | 704 | 0.0   | 0.3+  |
| 2004 01 22 | 704 | 0.3− | 0.5+ | 2006 08 28 | 699 | 0.5+ | 1.0− | 2007 12 15 | 704 | 0.9+  | 0.3+  |
| 2004 01 22 | 704 | 0.6+ | 0.7+ | 2006 08 28 | 699 | 0.0  | 1.1+ | 2007 12 15 | 704 | 0.4+  | 0.8+  |
| 2004 01 22 | 704 | 1.2+ | 1.0+ | 2006 09 14 | 703 | 0.5− | 0.2+ | 2007 12 15 | 704 | 1.1+  | 0.6−  |
| 2004 02 12 | 691 | 0.4− | 0.4+ | 2006 09 14 | 703 | 0.6+ | 1.5+ |            |     |       |       |
| 2004 02 12 | 691 | 0.0  | 0.3+ | 2006 09 14 | 703 | 0.4− | 0.0  |            |     |       |       |

2007 DEC. 24

M.P.O. 129465

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             | MPC         |       |          |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|-------|----------|------------|-----|-------|-------|
| $M$                                     | 312.98374  |          | (2000.0)  |             | <b>P</b>    |       | <b>Q</b> |            |     |       |       |
| $n$                                     | 0.21282678 | $\omega$ | 359.00552 | −0.22888801 | −0.95591126 |       |          |            |     |       |       |
| $a$                                     | 2.7783388  | $\Omega$ | 104.20810 | +0.89443050 | −0.28110429 |       |          |            |     |       |       |
| $e$                                     | 0.1689254  | $i$      | 10.93949  | +0.38419313 | +0.08493547 |       |          |            |     |       |       |
| $P$                                     | 4.63       | $H$      | 16.3      | $G$         | 0.15        | $U$   | 1        |            |     |       |       |
| Residuals in seconds of arc             |            |          |           |             |             |       |          |            |     |       |       |
| 2000 05 10                              | 645        | 0.0      | 0.1−      | 2004 02 15  | 704         | 0.3+  | 0.2+     | 2007 10 31 | 703 | 0.7−  | 0.4+  |
| 2000 05 10                              | 645        | 0.1−     | 0.1−      | 2004 02 15  | 704         | 0.4−  | 0.1−     | 2007 10 31 | 703 | 1.3−  | 0.4+  |
| 2003 12 28                              | 704        | (0.8−    | 2.3+)     | 2004 02 22  | 703         | 0.3+  | 1.0+     | 2007 10 31 | 703 | 0.3+  | 0.7+  |
| 2003 12 28                              | 704        | 0.2−     | 1.2+      | 2004 02 22  | 703         | (0.5− | 1.7+)    | 2007 10 31 | 703 | 0.1−  | 0.7+  |
| 2003 12 28                              | 704        | 0.9+     | 0.0       | 2004 02 22  | 703         | 0.9−  | 0.1−     | 2007 11 07 | 703 | 0.1+  | 0.9+  |
| 2004 01 18                              | 644        | 0.2+     | 0.2−      | 2004 02 22  | 703         | 0.5+  | 0.6+     | 2007 11 07 | 703 | 0.3−  | 0.5−  |
| 2004 01 18                              | 644        | 0.0      | 0.1+      | 2005 05 08  | 691         | 0.1−  | 0.6+     | 2007 11 07 | 703 | 0.6−  | 0.6−  |
| 2004 01 18                              | 644        | 0.2+     | 0.0       | 2005 05 08  | 691         | 0.0   | 0.6+     | 2007 11 07 | 703 | (1.6+ | 0.4−) |
| 2004 01 30                              | 704        | 1.2+     | 0.0       | 2005 05 08  | 691         | 0.0   | 0.7+     | 2007 11 15 | 703 | 1.0−  | 0.2+  |
| 2004 01 30                              | 704        | 0.7+     | 0.8+      | 2005 05 17  | G96         | 0.1−  | 0.5−     | 2007 11 15 | 703 | 0.1−  | 0.2+  |
| 2004 01 30                              | 704        | 0.8+     | 0.2+      | 2005 05 17  | G96         | 0.7−  | 0.5+     | 2007 11 15 | 703 | 0.0   | 1.0+  |
| 2004 02 11                              | 691        | 0.2−     | 0.1−      | 2005 05 17  | G96         | 0.2−  | 0.0      | 2007 11 15 | 703 | 0.4−  | 0.5+  |
| 2004 02 11                              | 691        | 0.1−     | 0.0       | 2005 05 17  | G96         | 0.6−  | 0.8+     | 2007 12 06 | 703 | 0.5+  | 0.1+  |
| 2004 02 11                              | 691        | 0.2−     | 0.0       | 2005 06 04  | 691         | 0.8+  | 0.2+     | 2007 12 06 | 703 | 0.1+  | 0.2−  |
| 2004 02 15                              | 704        | 0.4−     | 0.4+      | 2005 06 04  | 691         | 0.1+  | 0.2+     | 2007 12 06 | 703 | 1.5+  | 0.8+  |
| 2004 02 15                              | 704        | 0.4−     | 0.1−      | 2005 06 04  | 691         | 0.5+  | 0.1+     | 2007 12 06 | 703 | 0.1−  | 0.3+  |

**(172742)\* 2004 CC<sub>67</sub>**

Discovered 2004 Feb. 15 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |           |             |      | MPC         |      |            |                 |
|-----------------------------------------|------------|-------------|-----------|-------------|------|-------------|------|------------|-----------------|
| $M$                                     | 53.45087   | (2000.0)    |           | <b>P</b>    |      | <b>Q</b>    |      |            |                 |
| $n$                                     | 0.22165857 | $\omega$    | 332.76174 | +0.87441770 |      | −0.47550587 |      |            |                 |
| $a$                                     | 2.7040395  | $\Omega$    | 55.95670  | +0.46362562 |      | +0.76039074 |      |            |                 |
| $e$                                     | 0.0399328  | $i$         | 6.67901   | +0.14298592 |      | +0.44238002 |      |            |                 |
| $P$                                     | 4.45       | $H$         | 15.4      | $G$         | 0.15 | $U$         | 1    |            |                 |
| Residuals in seconds of arc             |            |             |           |             |      |             |      |            |                 |
| 2002 10 11                              | 704        | 0.9+        | 0.5−      | 2004 02 16  | 691  | 0.1−        | 0.1+ | 2006 09 20 | 703 1.2− 0.7−   |
| 2002 10 11                              | 704        | 0.2+        | 0.2+      | 2004 02 16  | 691  | 0.2−        | 0.2+ | 2006 09 26 | 703 0.5+ 1.0+   |
| 2002 10 11                              | 704        | 0.2+        | 0.0       | 2004 03 16  | 691  | 0.2+        | 0.3+ | 2006 09 26 | 703 (0.4− 1.7+) |
| 2002 10 11                              | 704        | 0.0         | 0.5+      | 2004 03 16  | 691  | 0.2+        | 0.3+ | 2006 09 26 | 703 0.6+ 1.3+   |
| 2002 10 11                              | 704        | 0.1−        | 0.7−      | 2004 03 16  | 691  | 0.0         | 0.1+ | 2006 09 26 | 703 0.5− 1.2+   |
| 2002 10 16                              | 644        | 0.4−        | 0.1+      | 2005 04 07  | G96  | (1.1+ 9.8+) |      | 2007 11 06 | G96 0.4− 0.3−   |
| 2002 10 16                              | 644        | 0.1+        | 0.4+      | 2005 04 07  | G96  | (0.6+ 9.3+) |      | 2007 11 06 | G96 0.1− 0.4−   |
| 2002 10 16                              | 644        | 0.4−        | 0.2+      | 2005 04 07  | G96  | (0.4− 9.1+) |      | 2007 11 06 | G96 0.8− 0.2−   |
| 2002 10 30                              | 644        | 0.3−        | 1.2+      | 2005 04 07  | G96  | (0.5+ 8.9+) |      | 2007 11 06 | G96 0.2− 0.3−   |
| 2002 10 30                              | 644        | 0.1−        | 1.2+      | 2005 06 04  | 704  | 0.2−        | 0.5− | 2007 12 13 | 704 0.4− 0.3−   |
| 2002 10 30                              | 644        | 0.4+        | 0.6+      | 2005 06 04  | 704  | 0.4+        | 1.1+ | 2007 12 13 | 704 0.3− 0.1−   |
| 2002 11 06                              | 704        | 0.1−        | 0.7−      | 2005 06 04  | 704  | 0.4+        | 0.8+ | 2007 12 13 | 704 0.3+ 0.4−   |
| 2002 11 06                              | 704        | 0.2+        | 0.5−      | 2006 09 14  | 703  | 0.3−        | 0.4− | 2007 12 13 | 704 0.6+ 0.7−   |
| 2002 11 06                              | 704        | 1.0−        | 0.4−      | 2006 09 14  | 703  | 0.4−        | 0.4− | 2007 12 13 | 704 0.1+ 0.1−   |
| 2002 11 06                              | 704        | 0.2−        | 0.4+      | 2006 09 14  | 703  | 0.6+ 0.0    |      | 2007 12 15 | 704 0.7+ 0.8+   |
| 2004 02 15                              | 704        | (0.8− 1.9+) |           | 2006 09 14  | 703  | 0.0         | 0.2+ | 2007 12 15 | 704 0.8− 0.1+   |
| 2004 02 15                              | 704        | (0.7− 2.0+) |           | 2006 09 20  | 703  | (2.1− 0.0 ) |      | 2007 12 15 | 704 0.4− 0.1+   |
| 2004 02 15                              | 704        | (0.3+ 1.9+) |           | 2006 09 20  | 703  | 0.1+ 0.1−   |      | 2007 12 15 | 704 1.0+ 0.3+   |
| 2004 02 16                              | 691        | 0.1+ 0.1+   |           | 2006 09 20  | 703  | 0.8− 0.1+   |      | 2007 12 15 | 704 0.7+ 0.3−   |

**(172743)\* 2004 CO<sub>74</sub> = 2004 BM<sub>161</sub>**

Discovered 2004 Feb. 11 by Spacewatch at Kitt Peak.

Id. A. Doppler (d, MPO 86281)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |           |            | MPC         |             |             |            |               |
|-----------------------------------------|------------|-------------|-----------|------------|-------------|-------------|-------------|------------|---------------|
| <i>M</i>                                | 329.51508  |             | (2000.0)  |            | <b>P</b>    |             | <b>Q</b>    |            |               |
| <i>n</i>                                | 0.22068692 | $\omega$    | 140.70154 |            | −0.37595431 |             | −0.92592816 |            |               |
| <i>a</i>                                | 2.7119706  | $\Omega$    | 331.32802 |            | +0.82999417 |             | −0.31908254 |            |               |
| <i>e</i>                                | 0.1145132  | <i>i</i>    | 4.33521   |            | +0.41202915 |             | −0.20209743 |            |               |
| <i>P</i>                                | 4.47       | <i>H</i>    | 16.0      |            | <i>G</i>    | 0.15        | <i>U</i>    | 0          |               |
| Residuals in seconds of arc             |            |             |           |            |             |             |             |            |               |
| 1995 03 07                              | 691        | 0.6−        | 0.1−      | 2004 02 11 | 644         | 0.3−        | 0.6+        | 2004 03 27 | 691 0.0 0.0   |
| 1995 03 07                              | 691        | 0.3+        | 0.0       | 2004 02 17 | 704         | 0.2−        | 0.6+        | 2006 07 18 | G96 0.2− 0.2+ |
| 1995 03 07                              | 691        | 0.1+        | 0.1+      | 2004 02 17 | 704         | 0.3+        | 0.7+        | 2006 07 18 | G96 0.0 0.5+  |
| 1997 08 11                              | 691        | 0.5−        | 0.1−      | 2004 02 17 | 704         | 0.1−        | 0.7+        | 2006 07 18 | G96 0.8− 0.2− |
| 1997 08 11                              | 691        | (4.5+ 1.4+) |           | 2004 02 17 | 704         | 0.0         | 0.5+        | 2006 07 18 | G96 1.1− 0.3− |
| 2002 10 09                              | 704        | 0.0         | 0.3+      | 2004 02 17 | 704         | 0.3−        | 0.6+        | 2006 08 19 | 691 0.1− 0.9+ |
| 2002 10 09                              | 704        | 0.4+        | 0.0       | 2004 02 17 | 608         | 0.2+        | 0.7−        | 2006 08 19 | 691 0.2− 0.7+ |
| 2002 10 09                              | 704        | 0.9+        | 0.9+      | 2004 02 17 | 608         | 0.1−        | 0.8−        | 2006 08 19 | 691 0.3− 0.6+ |
| 2002 11 03                              | 608        | 0.0         | 1.1−      | 2004 02 17 | 608         | 0.5+        | 0.3−        | 2006 08 27 | 691 0.2− 0.4+ |
| 2002 11 03                              | 608        | 0.0         | 0.3−      | 2004 02 26 | 704         | 0.4+        | 0.3+        | 2006 08 27 | 691 0.1− 0.5+ |
| 2002 11 03                              | 608        | 0.3−        | 0.6−      | 2004 02 26 | 704         | (1.6+ 0.2+) |             | 2006 08 27 | 691 0.3− 0.7+ |
| 2002 11 14                              | 291        | 0.1−        | 0.0       | 2004 02 26 | 704         | 0.1+        | 0.1+        | 2006 09 25 | G96 0.3− 0.1+ |
| 2002 11 14                              | 291        | 0.1+        | 0.4+      | 2004 02 26 | 704         | 0.7+        | 0.4+        | 2006 09 25 | G96 0.0 0.2−  |
| 2002 11 14                              | 291        | 0.2+        | 0.4+      | 2004 02 26 | 704         | 0.2−        | 0.7+        | 2006 09 25 | G96 0.1+ 0.2− |
| 2003 11 20                              | 691        | 0.1+        | 0.2+      | 2004 03 11 | 644         | 0.1−        | 0.3+        | 2006 09 25 | G96 0.4+ 0.1+ |
| 2003 11 20                              | 691        | 0.1+        | 0.1−      | 2004 03 11 | 644         | 0.3+        | 0.6+        | 2006 09 27 | G96 0.2− 0.0  |
| 2003 11 20                              | 691        | 0.3+        | 0.3+      | 2004 03 11 | 644         | 0.2+        | 0.6+        | 2006 09 27 | G96 0.1+ 0.0  |
| 2004 01 24                              | 704        | 0.3+        | 0.8+      | 2004 03 17 | 691         | 0.1−        | 0.1+        | 2006 09 27 | G96 0.4+ 0.0  |
| 2004 01 24                              | 704        | 0.4−        | 0.5−      | 2004 03 17 | 691         | 0.1−        | 0.1+        | 2006 09 27 | G96 0.4− 0.1+ |
| 2004 01 24                              | 704        | 1.2+        | 1.3+      | 2004 03 17 | 691         | 0.0         | 0.3+        | 2007 12 13 | 704 0.4+ 1.2+ |
| 2004 01 24                              | 704        | 0.3−        | 0.2−      | 2004 03 18 | 704         | 0.9+        | 0.5+        | 2007 12 13 | 704 0.1+ 0.8+ |
| 2004 01 24                              | 704        | 0.2+        | 0.9+      | 2004 03 18 | 704         | 1.0+        | 0.7+        | 2007 12 13 | 704 0.5− 0.0  |
| 2004 02 11                              | 291        | 0.3+        | 0.0       | 2004 03 18 | 704         | 0.5−        | 0.4+        | 2007 12 13 | 704 0.3− 0.5+ |
| 2004 02 11                              | 291        | 0.6+        | 0.0       | 2004 03 18 | 704         | 0.3+        | 1.2+        | 2007 12 16 | 691 0.3− 0.4− |
| 2004 02 11                              | 291        | 0.6+        | 0.1−      | 2004 03 18 | 704         | 0.1−        | 0.7+        | 2007 12 16 | 691 0.1+ 0.2− |
| 2004 02 11                              | 644        | 0.0         | 0.3+      | 2004 03 27 | 691         | 0.2−        | 0.3+        | 2007 12 16 | 691 0.3− 0.5− |
| 2004 02 11                              | 644        | 0.1−        | 0.0       | 2004 03 27 | 691         | 0.2−        | 0.3+        |            |               |

**(172744)\* 2004 CX<sub>78</sub>**

Discovered 2004 Feb. 11 by NEAT at Palomar.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |      |             |       |            |     |      |      |
|-----------------------------------------|------------|----------|----------|-------------|------|-------------|-------|------------|-----|------|------|
| <i>M</i>                                | 292.73451  | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |       |            |     |      |      |
| <i>n</i>                                | 0.20530262 | $\omega$ | 50.55190 | −0.71524782 |      | −0.69795605 |       |            |     |      |      |
| <i>a</i>                                | 2.8458132  | $\Omega$ | 85.15224 | +0.62967767 |      | −0.66578055 |       |            |     |      |      |
| <i>e</i>                                | 0.0452553  | <i>i</i> | 2.05600  | +0.30319399 |      | −0.26380601 |       |            |     |      |      |
| <i>P</i>                                | 4.80       | <i>H</i> | 15.7     | <i>G</i>    | 0.15 | <i>U</i>    | 1     |            |     |      |      |
| Residuals in seconds of arc             |            |          |          |             |      |             |       |            |     |      |      |
| 2002 11 15                              | 704        | 0.8+     | 0.8−     | 2004 02 26  | 704  | 0.9+        | 0.3+  | 2007 09 15 | G96 | 0.0  | 0.0  |
| 2002 11 15                              | 704        | 0.7−     | 0.3−     | 2004 02 26  | 704  | (1.5+       | 1.3+) | 2007 11 09 | 691 | 0.7− | 0.4− |
| 2002 11 15                              | 704        | 0.2+     | 0.3−     | 2004 02 26  | 704  | 0.6+        | 0.3+  | 2007 11 09 | 691 | 0.3− | 0.5− |
| 2002 11 15                              | 704        | 0.3−     | 1.4+     | 2004 02 29  | 691  | 0.0         | 0.0   | 2007 11 09 | 691 | 0.4− | 0.4− |
| 2004 02 11                              | 644        | 0.5+     | 0.1+     | 2004 02 29  | 691  | 0.1−        | 0.2+  | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2004 02 11                              | 644        | 0.3+     | 0.0      | 2004 02 29  | 691  | 0.1−        | 0.1+  | 2007 11 14 | 691 | 0.3− | 0.0  |
| 2004 02 11                              | 644        | 0.5+     | 0.1+     | 2004 03 19  | 704  | 0.5−        | 0.0   | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2004 02 17                              | 691        | 0.1−     | 0.2+     | 2004 03 19  | 704  | 0.3+        | 0.3+  | 2007 11 19 | 691 | 0.9+ | 0.2+ |
| 2004 02 17                              | 691        | 0.2−     | 0.1+     | 2004 03 19  | 704  | 0.4+        | 0.1−  | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2004 02 17                              | 691        | 0.2−     | 0.1+     | 2004 03 26  | 691  | 0.4−        | 0.7−  | 2007 11 19 | 691 | 0.3− | 0.4+ |
| 2004 02 17                              | 704        | 0.1−     | 1.1+     | 2004 03 26  | 691  | 0.0         | 0.5−  | 2007 12 04 | G96 | 0.5+ | 0.1− |
| 2004 02 17                              | 704        | 0.5+     | 0.6+     | 2004 03 26  | 691  | 0.1−        | 0.7−  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2004 02 17                              | 704        | 0.5+     | 0.3+     | 2005 06 16  | G96  | 0.3−        | 0.2+  | 2007 12 04 | G96 | 0.5+ | 0.2− |
| 2004 02 17                              | 704        | 0.5+     | 0.4+     | 2005 06 16  | G96  | 0.0         | 0.6+  | 2007 12 05 | 704 | 0.8+ | 0.4+ |
| 2004 02 23                              | 704        | 0.3+     | 0.0      | 2005 06 16  | G96  | 0.7−        | 0.4+  | 2007 12 05 | 704 | 0.3+ | 0.7+ |
| 2004 02 23                              | 704        | 0.6+     | 0.1+     | 2005 06 16  | G96  | 0.1+        | 0.4+  | 2007 12 05 | 704 | 0.4+ | 0.3+ |
| 2004 02 23                              | 704        | 0.1+     | 0.9+     | 2005 06 26  | G96  | 0.3−        | 1.0−  | 2007 12 05 | 704 | 1.1+ | 1.3+ |
| 2004 02 23                              | 704        | 0.2+     | 0.5+     | 2005 06 26  | G96  | 1.1+        | 1.3−  | 2007 12 05 | 704 | 0.8+ | 0.6+ |
| 2004 02 25                              | 704        | 0.7−     | 0.2−     | 2005 06 26  | G96  | 0.1−        | 0.1+  | 2007 12 15 | G96 | 0.1+ | 0.5− |
| 2004 02 25                              | 704        | 0.5−     | 0.1−     | 2005 06 26  | G96  | 0.3+        | 0.7+  | 2007 12 15 | G96 | 0.5+ | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 25 | 704 | 0.4+ | 0.9- | 2007 09 15 | G96 | 0.2+ | 0.3- | 2007 12 15 | G96 | 0.2+ | 0.3- |
| 2004 02 25 | 704 | 0.7- | 0.3- | 2007 09 15 | G96 | 0.2+ | 0.2- | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2004 02 26 | 704 | 0.4+ | 0.6+ | 2007 09 15 | G96 | 0.3+ | 0.1+ |            |     |      |      |

**(172745)\* 2004 CQ<sub>81</sub> = 2006 RF<sub>73</sub>**

Discovered 2004 Feb. 12 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 108909)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 190.78814  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22547873 | $\omega$ | 249.08578 | -0.13851029 | +0.99034565 |
| <i>a</i> | 2.6734106  | $\Omega$ | 12.95623  | -0.89925761 | -0.12343465 |
| <i>e</i> | 0.0190348  | <i>i</i> | 1.40897   | -0.41491042 | -0.06308235 |
| <i>P</i> | 4.37       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.1+  | 0.1+  | 2004 02 23 | 704 | 0.0   | 0.3+  | 2006 10 21 | 705 | 0.3+ | 0.1- |
| 2000 03 03 | 645 | 0.1+  | 0.1+  | 2004 02 23 | 704 | 0.4-  | 1.0-  | 2006 10 23 | 705 | 0.2+ | 0.0  |
| 2000 03 11 | 691 | 0.1-  | 0.5-  | 2006 09 15 | 691 | 0.1-  | 0.2+  | 2006 10 23 | 705 | 0.2+ | 0.1+ |
| 2000 03 11 | 691 | 0.2-  | 0.6-  | 2006 09 15 | 691 | 0.0   | 0.0   | 2006 10 27 | G96 | 0.9+ | 0.2- |
| 2000 03 11 | 691 | 0.1-  | 0.8-  | 2006 09 15 | 691 | 0.1-  | 0.0   | 2006 10 27 | G96 | 0.1+ | 0.1- |
| 2000 04 05 | 704 | 0.7+  | 1.7+  | 2006 09 19 | 691 | 0.2-  | 0.2+  | 2006 10 27 | G96 | 0.0  | 0.3- |
| 2000 04 05 | 704 | 0.8+  | 0.1-  | 2006 09 19 | 691 | 0.2+  | 0.0   | 2006 10 27 | G96 | 0.9+ | 0.1- |
| 2000 04 05 | 704 | 0.5-  | 1.4+  | 2006 09 19 | 691 | 0.1+  | 0.2+  | 2006 10 27 | 705 | 0.2+ | 0.1- |
| 2000 04 05 | 704 | 0.7+  | 0.8+  | 2006 09 19 | 703 | 0.8-  | 0.6-  | 2006 10 27 | 705 | 0.0  | 0.2- |
| 2000 04 05 | 704 | 1.2-  | 0.1+  | 2006 09 19 | 703 | (1.7- | 0.1-) | 2006 10 31 | 705 | 0.3+ | 0.1- |
| 2001 07 19 | 644 | 0.9-  | 0.0   | 2006 09 19 | 703 | (1.9- | 0.8+) | 2006 10 31 | 705 | 0.2+ | 0.2- |
| 2001 07 19 | 644 | 1.2-  | 0.2-  | 2006 09 19 | 703 | 0.7-  | 0.1+  | 2007 11 05 | G96 | 0.1- | 0.1- |
| 2001 07 19 | 644 | 1.1-  | 0.1+  | 2006 09 23 | 691 | 0.0   | 0.4+  | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 2002 11 06 | 704 | (0.9- | 1.6+) | 2006 09 23 | 691 | 0.1+  | 0.2+  | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2002 11 06 | 704 | 0.2+  | 0.2-  | 2006 09 23 | 691 | 0.2-  | 0.3+  | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2002 11 06 | 704 | 0.8-  | 0.9-  | 2006 09 25 | G96 | 0.1-  | 0.1-  | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2004 02 12 | 691 | 0.3+  | 0.3+  | 2006 09 25 | G96 | 0.0   | 0.1-  | 2007 12 04 | G96 | 0.4+ | 0.3+ |
| 2004 02 12 | 691 | 0.5+  | 0.2+  | 2006 09 25 | G96 | 0.0   | 0.0   | 2007 12 04 | G96 | 0.6+ | 0.1- |
| 2004 02 12 | 691 | 0.1+  | 0.2+  | 2006 09 25 | G96 | 0.1+  | 0.0   | 2007 12 04 | G96 | 0.0  | 0.7- |
| 2004 02 17 | 704 | 0.9-  | 1.2+  | 2006 09 27 | 691 | 0.1-  | 0.3+  | 2007 12 17 | 691 | 0.0  | 0.1- |
| 2004 02 17 | 704 | 0.7+  | 0.4-  | 2006 09 27 | 691 | 0.1-  | 0.4+  | 2007 12 17 | 691 | 1.5- | 0.1- |
| 2004 02 17 | 704 | 0.9+  | 0.5-  | 2006 09 27 | 691 | 0.0   | 0.4+  | 2007 12 17 | 691 | 0.1+ | 0.1+ |
| 2004 02 17 | 704 | 0.0   | 0.2+  | 2006 10 17 | 705 | 0.2+  | 0.1-  | 2007 12 17 | 691 | 0.2- | 0.0  |
| 2004 02 17 | 704 | 1.0+  | 0.5+  | 2006 10 17 | 705 | 0.2+  | 0.1-  | 2007 12 17 | 691 | 0.0  | 0.0  |
| 2004 02 23 | 704 | 0.6-  | 0.5+  | 2006 10 20 | 705 | 0.2+  | 0.1-  | 2007 12 17 | 691 | 0.1+ | 0.0  |
| 2004 02 23 | 704 | 0.2+  | 1.1+  | 2006 10 20 | 705 | 0.2+  | 0.1-  |            |     |      |      |
| 2004 02 23 | 704 | 0.0   | 0.5+  | 2006 10 21 | 705 | 0.3+  | 0.1-  |            |     |      |      |

**(172746)\* 2004 CB<sub>86</sub>**

Discovered 2004 Feb. 14 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 348.74811  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20046705 | $\omega$ | 271.50770 | +0.45496053 | -0.89026899 |
| <i>a</i> | 2.8913947  | $\Omega$ | 151.40086 | +0.83332369 | +0.41739775 |
| <i>e</i> | 0.0849160  | <i>i</i> | 2.48871   | +0.31397856 | +0.18220933 |
| <i>P</i> | 4.92       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 01 12 | 691 | 0.2- | 0.1- | 2004 03 18 | 691 | 0.1- | 0.1+ | 2007 11 02 | 691 | 0.1-  | 0.0   |
| 1994 01 12 | 691 | 0.2+ | 0.1+ | 2004 03 27 | 691 | 0.0  | 0.5+ | 2007 11 14 | 704 | 0.6+  | 0.4+  |
| 1994 01 12 | 691 | 0.3- | 0.6- | 2004 03 27 | 691 | 0.4+ | 0.4+ | 2007 11 14 | 704 | 0.3-  | 0.2+  |
| 1999 02 07 | 691 | 0.6+ | 0.3- | 2004 03 27 | 691 | 0.2- | 0.1+ | 2007 11 14 | 704 | 0.2+  | 0.4+  |
| 1999 02 07 | 691 | 0.7+ | 0.6- | 2005 05 08 | G96 | 0.6- | 0.1+ | 2007 11 14 | 704 | 0.1-  | 0.2-  |
| 1999 02 07 | 691 | 0.5+ | 0.3- | 2005 05 08 | G96 | 0.6- | 0.1+ | 2007 11 14 | 704 | 0.2+  | 0.5+  |
| 1999 02 07 | 691 | 0.8- | 0.5- | 2005 05 08 | G96 | 0.6- | 0.3+ | 2007 11 15 | 699 | 0.5+  | 0.5+  |
| 1999 02 07 | 691 | 0.5- | 0.5- | 2005 05 08 | G96 | 0.2- | 0.4+ | 2007 11 15 | 699 | 0.1+  | 0.0   |
| 1999 02 07 | 691 | 1.4- | 0.3+ | 2005 06 10 | 691 | 0.6+ | 0.4+ | 2007 11 15 | 699 | (1.5+ | 0.2-) |
| 2002 11 22 | 644 | 0.4+ | 0.7+ | 2005 06 10 | 691 | 0.0  | 0.0  | 2007 11 15 | 699 | 1.0+  | 0.2-  |
| 2002 11 22 | 644 | 0.3+ | 0.7+ | 2005 06 10 | 691 | 0.1+ | 0.2+ | 2007 11 18 | G96 | 0.3+  | 0.1-  |
| 2002 11 22 | 644 | 0.2+ | 0.8+ | 2005 06 14 | 691 | 0.1- | 0.2+ | 2007 11 18 | G96 | 0.3+  | 0.1-  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 02 14 | 691 | 0.1+  | 0.4+  | 2005 06 14 | 691 | 0.1+  | 0.2+  | 2007 11 18 | G96 | 0.3+ | 0.2- |
| 2004 02 14 | 691 | 0.2+  | 0.5+  | 2005 06 14 | 691 | 0.2+  | 0.0   | 2007 11 18 | G96 | 0.5+ | 0.2- |
| 2004 02 14 | 691 | 0.0   | 0.4+  | 2007 10 08 | 691 | 0.2-  | 0.2-  | 2007 12 03 | 703 | 0.9- | 0.5- |
| 2004 02 17 | 704 | 0.1+  | 0.3+  | 2007 10 08 | 691 | 0.2-  | 0.2+  | 2007 12 03 | 703 | 0.9- | 0.7- |
| 2004 02 17 | 704 | 0.2+  | 0.7+  | 2007 10 08 | 691 | 0.3-  | 0.1+  | 2007 12 03 | 703 | 0.7- | 0.0  |
| 2004 02 17 | 704 | 0.6+  | 0.2-  | 2007 10 12 | 691 | 0.0   | 0.1+  | 2007 12 03 | 703 | 0.6- | 0.4+ |
| 2004 02 17 | 704 | 0.3+  | 0.8+  | 2007 10 12 | 691 | 0.1-  | 0.1+  | 2007 12 04 | 704 | 0.0  | 0.7+ |
| 2004 02 26 | 704 | (1.8+ | 0.6+) | 2007 10 12 | 691 | 0.1-  | 0.1-  | 2007 12 04 | 704 | 0.9+ | 0.1- |
| 2004 02 26 | 704 | 0.4+  | 0.4+  | 2007 10 20 | 703 | (2.2+ | 0.9+) | 2007 12 04 | 704 | 0.4- | 0.8+ |
| 2004 02 26 | 704 | 1.5+  | 0.1-  | 2007 10 20 | 703 | 0.1-  | 0.4+  | 2007 12 04 | 704 | 0.2- | 0.9+ |
| 2004 02 26 | 704 | 0.6+  | 0.8-  | 2007 10 20 | 703 | 0.3+  | 0.1+  | 2007 12 05 | 699 | 0.1- | 0.2- |
| 2004 02 26 | 704 | 1.0+  | 0.4-  | 2007 10 20 | 703 | 0.9-  | 0.7+  | 2007 12 05 | 699 | 1.1+ | 0.5- |
| 2004 03 18 | 691 | 0.0   | 0.2+  | 2007 11 02 | 691 | 0.1-  | 0.2+  | 2007 12 05 | 699 | 0.8+ | 0.2- |
| 2004 03 18 | 691 | 0.2-  | 0.0   | 2007 11 02 | 691 | 0.2-  | 0.0   | 2007 12 05 | 699 | 0.4+ | 0.3+ |

**(172747)\* 2004 CZ<sub>88</sub>**

Discovered 2004 Feb. 11 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.02829   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21323745 | $\omega$ | 338.54264 | +0.88657281 | -0.45838912 |
| <i>a</i> | 2.7747705  | $\Omega$ | 48.89494  | +0.43552245 | +0.78180541 |
| <i>e</i> | 0.1116589  | <i>i</i> | 4.73453   | +0.15591293 | +0.42268157 |
| <i>P</i> | 4.62       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 05 05 | 645 | 0.1- | 0.1+ | 2004 04 16 | 645 | 0.1- | 0.0  | 2007 11 15 | 704 | (0.1+ | 3.4+) |
| 2000 05 05 | 645 | 0.1+ | 0.1- | 2004 04 17 | 291 | 0.3+ | 0.4+ | 2007 11 15 | 704 | 0.7+  | 0.6+  |
| 2002 10 03 | 704 | 0.1- | 0.3+ | 2004 04 17 | 291 | 0.7+ | 0.4+ | 2007 11 15 | 704 | 0.1+  | 0.5+  |
| 2002 10 03 | 704 | 0.4+ | 0.8+ | 2004 04 17 | 291 | 0.6+ | 0.6+ | 2007 11 17 | 691 | 0.4-  | 0.0   |
| 2002 10 03 | 704 | 0.5- | 0.0  | 2005 04 10 | G96 | 0.2+ | 0.4+ | 2007 11 17 | 691 | 0.3-  | 0.0   |
| 2002 10 03 | 704 | 0.4- | 0.0  | 2005 04 10 | G96 | 0.3+ | 0.2+ | 2007 11 17 | 691 | 0.3-  | 0.2-  |
| 2004 02 11 | 691 | 0.1+ | 0.1- | 2005 04 10 | G96 | 0.3- | 0.0  | 2007 12 10 | 704 | 0.2+  | 1.9+  |
| 2004 02 11 | 691 | 0.1- | 0.0  | 2005 04 10 | G96 | 0.1+ | 0.2- | 2007 12 10 | 704 | 0.4-  | 0.3+  |
| 2004 02 11 | 691 | 0.2+ | 0.1+ | 2005 04 16 | 691 | 0.2+ | 0.5+ | 2007 12 10 | 704 | 0.0   | 0.8+  |
| 2004 02 18 | 691 | 0.2- | 0.1+ | 2005 04 16 | 691 | 0.6+ | 0.3+ | 2007 12 14 | 704 | 1.4+  | 0.8+  |
| 2004 02 18 | 691 | 0.0  | 0.2+ | 2005 04 16 | 691 | 0.2+ | 0.2+ | 2007 12 14 | 704 | 0.5+  | 0.3+  |
| 2004 02 18 | 691 | 0.2+ | 0.1+ | 2005 05 11 | G96 | 0.6- | 0.3- | 2007 12 14 | 704 | 0.0   | 0.1-  |
| 2004 03 18 | 645 | 0.1- | 0.1- | 2005 05 11 | G96 | 0.6- | 0.0  | 2007 12 14 | 704 | 0.0   | 0.5-  |
| 2004 03 18 | 645 | 0.0  | 0.0  | 2005 05 11 | G96 | 0.4- | 0.0  | 2007 12 14 | 704 | 0.3+  | 0.9+  |
| 2004 04 14 | 291 | 0.3+ | 0.3- | 2005 05 11 | G96 | 1.3- | 0.0  | 2007 12 15 | G96 | 0.0   | 0.5-  |
| 2004 04 14 | 291 | 0.3- | 0.0  | 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 12 15 | G96 | 0.3+  | 0.5-  |
| 2004 04 14 | 291 | 0.3- | 0.3+ | 2007 09 14 | G96 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.2+  | 1.0-  |
| 2004 04 15 | 645 | 0.0  | 0.2- | 2007 09 14 | G96 | 0.2- | 0.2- | 2007 12 15 | G96 | 0.1+  | 0.4-  |
| 2004 04 15 | 645 | 0.1- | 0.1- | 2007 09 14 | G96 | 0.4+ | 0.3- |            |     |       |       |
| 2004 04 16 | 645 | 0.0  | 0.1- | 2007 11 15 | 704 | 0.4- | 0.8+ |            |     |       |       |

**(172748)\* 2004 CX<sub>96</sub>**

Discovered 2004 Feb. 12 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 266.15922  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22338767 | $\omega$ | 259.58246 | -0.96428729 | +0.23922809 |
| <i>a</i> | 2.6900679  | $\Omega$ | 294.18269 | -0.16668122 | -0.88163961 |
| <i>e</i> | 0.0508305  | <i>i</i> | 7.15768   | -0.20583341 | -0.40679419 |
| <i>P</i> | 4.41       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 08 | 608 | 0.1- | 0.6+ | 2004 03 15 | 703 | 1.1- | 0.7+ | 2006 10 17 | 703 | 0.2+  | 0.6-  |
| 2001 08 08 | 608 | 0.8- | 0.1- | 2004 03 15 | 703 | 0.3+ | 1.2+ | 2006 10 17 | 703 | (2.1- | 1.0+) |
| 2001 08 08 | 608 | 0.4- | 0.4- | 2004 03 15 | 703 | 0.7- | 0.1- | 2006 10 17 | 703 | 0.5+  | 0.4+  |
| 2002 11 13 | 644 | 0.3- | 0.3+ | 2004 03 15 | 703 | 0.4+ | 0.8+ | 2006 10 21 | 644 | 0.0   | 0.5+  |
| 2002 11 13 | 644 | 0.3- | 0.3+ | 2004 03 16 | 704 | 0.1+ | 0.6+ | 2006 10 21 | 644 | 0.2-  | 0.7+  |
| 2002 11 13 | 644 | 0.2- | 0.1+ | 2004 03 16 | 704 | 0.6+ | 0.3+ | 2006 10 21 | 644 | 0.0   | 0.5+  |
| 2002 11 25 | 644 | 0.1+ | 0.0  | 2004 03 16 | 704 | 0.3+ | 0.3- | 2007 11 07 | G96 | 0.3+  | 0.1+  |
| 2002 11 25 | 644 | 0.1+ | 0.2+ | 2004 03 19 | 704 | 0.2+ | 0.5+ | 2007 11 07 | G96 | 0.1+  | 0.0   |
| 2002 11 25 | 644 | 0.1- | 0.2+ | 2004 03 19 | 704 | 0.5+ | 0.8+ | 2007 11 07 | G96 | 0.0   | 0.1+  |
| 2004 02 12 | 644 | 0.3+ | 0.0  | 2004 03 19 | 704 | 1.4+ | 0.0  | 2007 11 07 | G96 | 0.3+  | 0.3-  |



2007 DEC. 24

M.P.O. 129467

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 02 12 | 644 | 0.3+  | 0.2+  | 2006 09 22 | 699 | 0.8+  | 1.5-  | 2007 12 03 | 291 | 0.6- | 0.1- |
| 2004 02 12 | 644 | 0.3+  | 0.1-  | 2006 09 22 | 699 | 0.7-  | 0.6+  | 2007 12 03 | 291 | 0.7- | 0.2- |
| 2004 02 15 | 703 | 0.7-  | 0.1-  | 2006 09 22 | 699 | (0.2+ | 2.9+) | 2007 12 03 | 291 | 0.6- | 0.0  |
| 2004 02 15 | 703 | 0.2+  | 0.1+  | 2006 09 22 | 699 | 0.1-  | 0.5+  | 2007 12 04 | 691 | 0.3- | 0.5- |
| 2004 02 15 | 703 | 0.3-  | 0.0   | 2006 09 27 | 703 | 0.9+  | 1.3+  | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2004 02 15 | 703 | (0.2+ | 1.5-) | 2006 09 27 | 703 | (0.4+ | 1.8+) | 2007 12 04 | 691 | 1.0+ | 0.4+ |
| 2004 02 23 | 704 | 1.4+  | 0.1-  | 2006 09 27 | 703 | 0.7-  | 1.1+  | 2007 12 10 | 704 | 1.3+ | 0.6- |
| 2004 02 23 | 704 | (2.0+ | 0.2-) | 2006 09 27 | 703 | (0.2+ | 2.9+) | 2007 12 10 | 704 | 0.2+ | 0.3- |
| 2004 02 23 | 704 | (2.1+ | 1.9+) | 2006 10 12 | 644 | 0.3+  | 0.5+  | 2007 12 10 | 704 | 0.7+ | 0.0  |
| 2004 02 26 | 704 | (1.7+ | 0.9+) | 2006 10 12 | 644 | 0.1+  | 0.6+  | 2007 12 10 | 704 | 0.1- | 0.5- |
| 2004 02 26 | 704 | (1.8+ | 2.1+) | 2006 10 12 | 644 | 0.1-  | 0.6+  |            |     |      |      |
| 2004 02 26 | 704 | 0.6+  | 0.0   | 2006 10 17 | 703 | 0.9-  | 0.9-  |            |     |      |      |

**(172749)\* 2004 CB<sub>98</sub> = 1998 XU<sub>36</sub>**

Discovered 2004 Feb. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPO* 69675)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC      |             |          |             |
|----------|-----------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> |           | (2000.0) |           | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 346.39686 | <i>ω</i> | 359.42554 |          | +0.21400908 |          | -0.95056708 |
| <i>a</i> | 2.7425727 | <i>Ω</i> | 78.20165  |          | +0.89713972 |          | +0.10014364 |
| <i>e</i> | 0.1228165 | <i>i</i> | 13.28824  |          | +0.38644591 |          | +0.29392767 |
| <i>P</i> | 4.54      | <i>H</i> | 15.4      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 14 | 704 | 0.4-  | 1.6+  | 2004 02 14 | 704 | 0.1- | 0.1+ | 2005 06 08 | 691 | 0.3+ | 0.3+ |
| 1998 12 14 | 704 | (2.5- | 0.7-) | 2004 02 16 | 703 | 0.1+ | 0.6+ | 2005 06 12 | 691 | 0.2+ | 0.4+ |
| 1998 12 14 | 704 | (0.5- | 3.2-) | 2004 02 16 | 703 | 0.2+ | 0.7- | 2005 06 12 | 691 | 0.3+ | 0.7+ |
| 1998 12 14 | 704 | 0.4+  | 1.1-  | 2004 02 16 | 703 | 0.5- | 0.4- | 2005 06 12 | 691 | 0.5+ | 0.4+ |
| 1998 12 14 | 704 | 0.8-  | 1.0+  | 2004 02 16 | 703 | 1.5+ | 0.8- | 2007 10 30 | 691 | 0.4- | 0.3+ |
| 1998 12 16 | 704 | 0.9-  | 0.5-  | 2005 05 03 | 691 | 0.2- | 0.4+ | 2007 10 30 | 691 | 0.4- | 0.2+ |
| 1998 12 16 | 704 | 0.7-  | 0.1+  | 2005 05 03 | 691 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.6- | 0.1- |
| 1998 12 16 | 704 | 1.4+  | 1.7+  | 2005 05 03 | 691 | 0.1+ | 0.1+ | 2007 11 12 | 704 | 0.5+ | 0.1- |
| 1998 12 16 | 704 | 0.0   | 1.4+  | 2005 05 10 | 691 | 0.8- | 0.9- | 2007 11 12 | 704 | 0.5- | 0.2+ |
| 1998 12 17 | 704 | 0.0   | 1.5-  | 2005 05 10 | 691 | 0.4+ | 0.2+ | 2007 11 12 | 704 | 0.2- | 0.2+ |
| 1998 12 17 | 704 | 0.8-  | 0.0   | 2005 05 10 | 691 | 0.3+ | 0.3+ | 2007 11 12 | 704 | 0.6+ | 0.6+ |
| 1998 12 17 | 704 | 0.2-  | 1.3-  | 2005 05 14 | 644 | 0.1+ | 0.1+ | 2007 11 12 | 704 | 0.3- | 0.2+ |
| 1998 12 17 | 704 | 1.6+  | 1.1-  | 2005 05 14 | 644 | 0.2+ | 0.3+ | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 1998 12 17 | 704 | 0.1+  | 0.6+  | 2005 05 14 | 644 | 0.5+ | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2004 01 17 | 644 | 0.0   | 0.3-  | 2005 05 16 | G96 | 0.4- | 0.2+ | 2007 11 18 | G96 | 0.3+ | 0.1- |
| 2004 01 17 | 644 | 0.1-  | 0.3-  | 2005 05 16 | G96 | 0.7- | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2004 01 17 | 644 | 0.2-  | 0.2-  | 2005 05 16 | G96 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.1+ | 0.2+ |
| 2004 01 31 | 704 | 0.2-  | 0.5+  | 2005 05 16 | G96 | 0.6- | 0.2- | 2007 12 03 | 703 | 0.1+ | 0.4+ |
| 2004 01 31 | 704 | 0.2-  | 0.2+  | 2005 05 19 | G96 | 0.6- | 0.1- | 2007 12 03 | 703 | 0.3- | 0.6+ |
| 2004 01 31 | 704 | 0.9+  | 0.1-  | 2005 05 19 | G96 | 0.2+ | 0.0  | 2007 12 03 | 703 | 0.4- | 0.4+ |
| 2004 02 14 | 704 | 0.3+  | 0.3-  | 2005 05 19 | G96 | 0.1- | 0.3- | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2004 02 14 | 704 | 1.4-  | 0.2-  | 2005 05 19 | G96 | 0.4- | 0.2- | 2007 12 04 | 704 | 1.0+ | 0.4+ |
| 2004 02 14 | 704 | 0.0   | 0.7+  | 2005 06 08 | 691 | 0.0  | 0.2+ | 2007 12 04 | 704 | 0.4+ | 0.5+ |
| 2004 02 14 | 704 | 0.3-  | 0.2+  | 2005 06 08 | 691 | 0.4+ | 0.2- | 2007 12 04 | 704 | 0.8+ | 0.6+ |

**(172750)\* 2004 CE<sub>98</sub> = 2001 OO<sub>34</sub>**

Discovered 2004 Feb. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 86291)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC      |             |          |             |
|----------|-----------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> |           | (2000.0) |           | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 206.65310 | <i>ω</i> | 180.56458 |          | -0.13530034 |          | +0.96331350 |
| <i>a</i> | 2.6326609 | <i>Ω</i> | 81.67512  |          | -0.90812487 |          | -0.02701784 |
| <i>e</i> | 0.1206762 | <i>i</i> | 13.54718  |          | -0.39623610 |          | -0.26701523 |
| <i>P</i> | 4.27      | <i>H</i> | 15.6      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 04 | 704 | 0.4- | 0.4+ | 2004 02 14 | 704 | 0.9- | 0.4- | 2006 10 22 | 703 | 0.0  | 0.4- |
| 2000 03 04 | 704 | 1.1+ | 0.4- | 2004 02 14 | 704 | 1.2+ | 0.0  | 2006 11 08 | 705 | 0.2+ | 0.1+ |
| 2000 03 04 | 704 | 0.4- | 0.6+ | 2004 02 16 | 703 | 0.9- | 0.1+ | 2006 11 08 | 705 | 0.5+ | 0.2- |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 04 | 704 | 0.2+ | 0.4- | 2004 02 16 | 703 | 0.3+ | 0.2+ | 2006 11 16 | 703 | 0.1+  | 1.0+  |
| 2000 03 04 | 704 | 0.6+ | 0.4+ | 2004 02 16 | 703 | 0.4- | 0.6- | 2006 11 16 | 703 | (2.4- | 0.3-) |
| 2001 07 19 | 644 | 0.2- | 0.0  | 2004 02 16 | 703 | 0.9- | 1.4- | 2006 11 16 | 703 | 0.4-  | 0.8+  |
| 2001 07 19 | 644 | 0.0  | 0.2+ | 2004 03 17 | 644 | 0.5+ | 0.5+ | 2006 11 16 | 703 | 0.5-  | 0.2-  |
| 2001 07 19 | 644 | 0.3- | 0.3+ | 2004 03 17 | 644 | 0.2+ | 0.5+ | 2006 11 21 | 705 | 0.3+  | 0.4-  |
| 2002 11 16 | 644 | 0.2- | 0.3+ | 2004 03 17 | 644 | 0.1+ | 0.4+ | 2006 11 21 | 705 | 0.5+  | 0.0   |
| 2002 11 16 | 644 | 0.3- | 0.1- | 2006 10 01 | 705 | 0.2+ | 0.2- | 2007 10 26 | G96 | 0.7-  | 0.1-  |
| 2002 11 16 | 644 | 0.1- | 0.1+ | 2006 10 01 | 705 | 0.2+ | 0.2- | 2007 10 26 | G96 | 0.4-  | 0.0   |
| 2002 12 10 | 644 | 0.2+ | 0.0  | 2006 10 03 | 705 | 0.3+ | 0.1- | 2007 10 26 | G96 | 0.1+  | 0.3-  |
| 2002 12 10 | 644 | 0.0  | 0.5+ | 2006 10 03 | 705 | 0.3+ | 0.1- | 2007 10 26 | G96 | 0.5+  | 1.4-  |
| 2002 12 10 | 644 | 0.4- | 0.3+ | 2006 10 04 | 705 | 0.3+ | 0.1- | 2007 12 16 | 704 | 0.3-  | 0.1-  |
| 2004 01 17 | 644 | 0.0  | 0.5+ | 2006 10 04 | 705 | 0.2+ | 0.1- | 2007 12 16 | 704 | 0.0   | 0.8+  |
| 2004 01 17 | 644 | 0.2- | 0.4+ | 2006 10 22 | 703 | 0.6- | 0.9+ | 2007 12 16 | 704 | 0.3+  | 0.0   |
| 2004 01 17 | 644 | 0.4+ | 0.1- | 2006 10 22 | 703 | 0.5- | 0.7- | 2007 12 16 | 704 | 0.5+  | 0.2+  |
| 2004 02 14 | 704 | 0.4- | 0.2+ | 2006 10 22 | 703 | 0.3- | 0.1+ |            |     |       |       |

**(172751)\* 2004 CJ<sub>100</sub>**

Discovered 2004 Feb. 15 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC      |             |          |             |
|----------|-----------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> |           | (2000.0) |           | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i> | 235.49006 | <i>ω</i> | 136.84802 |          | -0.81004059 |          | +0.58099658 |
| <i>a</i> | 2.9045907 | <i>Ω</i> | 78.83738  |          | -0.55756570 |          | -0.72135002 |
| <i>e</i> | 0.2567921 | <i>i</i> | 4.63206   |          | -0.18153436 |          | -0.37695772 |
| <i>P</i> | 4.95      | <i>H</i> | 15.6      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 01 04 | 291 | 0.1-  | 0.3+  | 2004 03 22 | 704 | 0.0   | 0.7+  | 2004 03 30 | 704 | 1.2- | 0.3+ |
| 2003 01 04 | 291 | 0.0   | 0.7+  | 2004 03 22 | 704 | 0.1+  | 0.1+  | 2004 04 09 | 644 | 0.2- | 0.1- |
| 2003 01 04 | 291 | 0.3-  | 0.7+  | 2004 03 22 | 704 | 0.0   | 0.0   | 2004 04 09 | 644 | 0.2- | 0.2- |
| 2004 02 15 | 703 | 0.3+  | 0.3+  | 2004 03 22 | 704 | 0.3-  | 0.2+  | 2004 04 09 | 644 | 0.0  | 0.1- |
| 2004 02 15 | 703 | (0.8+ | 1.8+) | 2004 03 22 | 704 | 0.3+  | 0.3+  | 2004 05 22 | 704 | 0.2+ | 0.6+ |
| 2004 02 15 | 703 | 0.4+  | 0.3+  | 2004 03 25 | 704 | 0.3+  | 0.5-  | 2004 05 22 | 704 | 0.0  | 0.6+ |
| 2004 02 15 | 703 | 1.1+  | 1.0+  | 2004 03 25 | 704 | 0.1+  | 0.3-  | 2004 05 22 | 704 | 0.0  | 0.1- |
| 2004 02 17 | 704 | 0.1-  | 0.0   | 2004 03 25 | 704 | 0.7+  | 0.1-  | 2005 07 27 | 644 | 0.3- | 0.9+ |
| 2004 02 17 | 704 | 0.1+  | 0.3+  | 2004 03 25 | 704 | 0.3+  | 0.4-  | 2005 07 27 | 644 | 0.4- | 0.8+ |
| 2004 02 17 | 704 | 0.4+  | 0.0   | 2004 03 25 | 704 | 0.5+  | 0.3-  | 2005 07 27 | 644 | 0.1- | 0.9+ |
| 2004 02 17 | 704 | 0.2-  | 0.2+  | 2004 03 26 | 704 | 0.3+  | 0.6+  | 2005 08 05 | 644 | 0.3+ | 0.3+ |
| 2004 02 17 | 704 | 0.7-  | 0.3-  | 2004 03 26 | 704 | 0.4+  | 0.3+  | 2005 08 05 | 644 | 0.0  | 0.5+ |
| 2004 02 20 | 608 | 0.4+  | 0.8-  | 2004 03 26 | 704 | 0.4+  | 0.2-  | 2005 08 05 | 644 | 0.1- | 0.5+ |
| 2004 02 20 | 608 | 0.6-  | 0.2-  | 2004 03 26 | 704 | 0.1-  | 0.5-  | 2005 09 01 | 644 | 0.2- | 0.7+ |
| 2004 02 20 | 608 | 0.1+  | 0.5-  | 2004 03 26 | 703 | 0.4+  | 0.0   | 2005 09 01 | 644 | 0.1- | 0.6+ |
| 2004 03 14 | 703 | 0.6-  | 0.8+  | 2004 03 26 | 703 | 0.5+  | 0.0   | 2005 09 01 | 644 | 0.4- | 0.7+ |
| 2004 03 14 | 703 | 0.5+  | 1.2+  | 2004 03 26 | 703 | 0.0   | 0.5-  | 2005 09 03 | 644 | 0.3- | 0.8+ |
| 2004 03 14 | 703 | 0.3+  | 0.7+  | 2004 03 26 | 703 | 1.2+  | 0.0   | 2005 09 03 | 644 | 0.4- | 0.7+ |
| 2004 03 14 | 703 | 0.1-  | 0.4+  | 2004 03 28 | 704 | 0.1-  | 0.1-  | 2005 09 03 | 644 | 0.6- | 0.4+ |
| 2004 03 15 | 704 | 0.0   | 0.1-  | 2004 03 28 | 704 | 0.2+  | 0.6-  | 2005 11 03 | 695 | 0.3- | 0.5+ |
| 2004 03 15 | 704 | 0.7+  | 0.0   | 2004 03 28 | 704 | 0.3-  | 0.2-  | 2005 11 03 | 695 | 0.3- | 0.5+ |
| 2004 03 15 | 704 | 0.7+  | 0.7-  | 2004 03 28 | 704 | 0.2-  | 0.2-  | 2006 10 02 | G96 | 0.0  | 0.1+ |
| 2004 03 15 | 704 | 0.2+  | 0.5-  | 2004 03 28 | 704 | 0.6-  | 0.2-  | 2006 10 02 | G96 | 0.1- | 0.3+ |
| 2004 03 15 | 704 | 0.1+  | 0.2-  | 2004 03 28 | 224 | 0.3-  | 0.2-  | 2006 10 02 | G96 | 0.5+ | 0.0  |
| 2004 03 16 | 184 | (5.4+ | 0.5-) | 2004 03 28 | 224 | 0.4-  | 0.2-  | 2006 10 02 | G96 | 0.2- | 0.1+ |
| 2004 03 16 | 184 | (4.8+ | 2.9-) | 2004 03 28 | 224 | 0.2-  | 0.6-  | 2007 11 14 | 691 | 0.3- | 0.1+ |
| 2004 03 16 | 184 | (4.4+ | 2.1-) | 2004 03 29 | 704 | 0.6+  | 0.4-  | 2007 11 14 | 691 | 0.4+ | 0.0  |
| 2004 03 19 | 644 | 0.0   | 0.4-  | 2004 03 29 | 704 | 0.4-  | 0.3+  | 2007 11 14 | 691 | 0.4- | 0.3+ |
| 2004 03 19 | 644 | 0.1-  | 0.1+  | 2004 03 29 | 704 | 0.7+  | 0.2-  | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2004 03 19 | 644 | 0.1-  | 0.0   | 2004 03 29 | 704 | 0.1-  | 0.5-  | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2004 03 20 | 704 | 0.1+  | 1.1+  | 2004 03 29 | 704 | 0.2+  | 0.5-  | 2007 11 19 | 691 | 0.4+ | 0.1+ |
| 2004 03 20 | 704 | 0.0   | 1.2+  | 2004 03 30 | 704 | (0.2+ | 1.7+) | 2007 12 04 | 691 | 0.0  | 0.2- |
| 2004 03 20 | 704 | 0.7-  | 1.4+  | 2004 03 30 | 704 | 0.8-  | 1.4+  | 2007 12 04 | 691 | 0.0  | 0.5- |
| 2004 03 20 | 704 | 0.0   | 0.7+  | 2004 03 30 | 704 | 0.7-  | 1.0+  | 2007 12 04 | 691 | 0.2- | 0.6- |
| 2004 03 20 | 704 | 0.2-  | 1.4+  | 2004 03 30 | 704 | 1.1-  | 0.6+  |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.37837  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22488015 | $\omega$ | 117.88678 | -0.51711899   | -0.85585366 |
| <i>a</i> | 2.6781525  | $\Omega$ | 3.30542   | +0.71054979   | -0.43585764 |
| <i>e</i> | 0.0596045  | <i>i</i> | 10.11103  | +0.47718649   | -0.27846477 |
| <i>P</i> | 4.38       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 05 | 704 | 1.1+ | 0.8+ | 2004 02 19 | 704 | 0.1- | 1.2+ | 2006 10 19 | 695 | 0.0  | 0.7+ |
| 2000 04 05 | 704 | 0.9+ | 0.2+ | 2004 02 19 | 704 | 0.7+ | 0.7+ | 2006 10 20 | 695 | 0.1- | 0.6+ |
| 2000 04 05 | 704 | 0.7+ | 0.7+ | 2004 02 19 | 704 | 0.2+ | 0.0  | 2006 10 20 | 695 | 0.0  | 0.6+ |
| 2000 04 05 | 704 | 0.5+ | 0.7+ | 2004 03 14 | 704 | 0.2+ | 0.3- | 2006 11 15 | G96 | 0.7- | 0.4- |
| 2000 04 05 | 704 | 1.2+ | 1.3+ | 2004 03 14 | 704 | 0.4- | 0.9- | 2006 11 15 | G96 | 0.0  | 0.5- |
| 2002 10 12 | 704 | 0.0  | 0.0  | 2004 03 14 | 704 | 0.6- | 0.4- | 2006 11 15 | G96 | 0.2+ | 0.5- |
| 2002 10 12 | 704 | 0.1- | 0.5- | 2004 03 14 | 704 | 0.8- | 0.1- | 2006 11 15 | G96 | 0.1- | 0.0  |
| 2002 10 12 | 704 | 0.4+ | 0.6+ | 2004 03 16 | 691 | 0.2- | 0.2- | 2006 11 21 | G96 | 0.5- | 1.0- |
| 2002 10 18 | 644 | 0.3- | 1.0+ | 2004 03 16 | 691 | 0.2- | 0.3- | 2006 11 21 | G96 | 0.8- | 0.3+ |
| 2002 10 18 | 644 | 0.3- | 0.8+ | 2004 03 16 | 691 | 0.2- | 0.3- | 2006 11 21 | G96 | 0.6- | 0.3- |
| 2002 10 18 | 644 | 1.0- | 0.8+ | 2006 09 14 | 703 | 0.9+ | 0.9+ | 2006 11 21 | G96 | 0.2- | 0.1+ |
| 2004 02 15 | 704 | 0.3- | 0.1- | 2006 09 14 | 703 | 0.3- | 0.0  | 2007 11 09 | 704 | 0.4+ | 0.6- |
| 2004 02 15 | 704 | 0.1- | 1.2+ | 2006 09 14 | 703 | 1.0+ | 0.5- | 2007 11 09 | 704 | 0.7- | 0.6- |
| 2004 02 15 | 704 | 0.1+ | 0.8+ | 2006 09 14 | 703 | 0.2- | 0.8- | 2007 11 09 | 704 | 0.8- | 1.5- |
| 2004 02 15 | 704 | 0.1- | 0.1+ | 2006 09 30 | G96 | 0.4+ | 0.4+ | 2007 12 03 | 704 | 1.5+ | 0.3+ |
| 2004 02 15 | 704 | 0.5+ | 0.0  | 2006 09 30 | G96 | 0.1- | 0.2+ | 2007 12 03 | 704 | 1.1+ | 1.4+ |
| 2004 02 19 | 704 | 0.2+ | 1.0+ | 2006 09 30 | G96 | 0.6- | 0.2+ | 2007 12 03 | 704 | 0.5+ | 0.2+ |
| 2004 02 19 | 704 | 0.0  | 0.2+ | 2006 09 30 | G96 | 0.6- | 0.8+ |            |     |      |      |

**(172753)\* 2004 CO<sub>117</sub> = 2005 JK<sub>123</sub>**

Discovered 2004 Feb. 11 by NEAT at Palomar.

Id. A. Doppler (*MPO* 86301)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.12598  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20972263 | $\omega$ | 148.02861 | +0.29266302   | -0.95532087 |
| <i>a</i> | 2.8056868  | $\Omega$ | 284.92584 | +0.86804944   | +0.28356972 |
| <i>e</i> | 0.0727715  | <i>i</i> | 2.45307   | +0.40104678   | +0.08336823 |
| <i>P</i> | 4.70       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 01 | 699 | 0.3+ | 0.3+ | 2004 02 29 | 691 | 0.1- | 0.1- | 2007 11 15 | 704 | 0.8+ | 0.3- |
| 2002 10 01 | 699 | 0.1+ | 0.7+ | 2004 02 29 | 691 | 0.2+ | 0.3- | 2007 11 15 | 704 | 1.4+ | 0.4+ |
| 2002 10 01 | 699 | 1.0- | 0.5+ | 2004 02 29 | 691 | 0.1- | 0.1- | 2007 11 15 | 704 | 0.8+ | 0.1+ |
| 2002 10 01 | 699 | 0.1+ | 0.8+ | 2005 05 11 | 691 | 0.3+ | 0.4+ | 2007 11 15 | 704 | 0.1- | 1.3- |
| 2002 10 09 | 704 | 0.7- | 0.1+ | 2005 05 11 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2002 10 09 | 704 | 1.3- | 1.4+ | 2005 05 11 | 691 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.5- | 0.1- |
| 2002 10 09 | 704 | 0.1+ | 1.1+ | 2005 05 16 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.1- | 0.3- |
| 2002 10 09 | 704 | 0.1+ | 1.2+ | 2005 05 16 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 704 | 0.1- | 0.6+ |
| 2003 12 28 | 291 | 0.2- | 0.3+ | 2005 05 16 | 691 | 0.1- | 0.0  | 2007 11 20 | 704 | 0.8+ | 1.7- |
| 2003 12 28 | 291 | 0.1- | 0.0  | 2007 10 14 | G96 | 0.3+ | 0.5- | 2007 11 20 | 704 | 1.7+ | 0.3- |
| 2003 12 28 | 291 | 0.1+ | 0.5+ | 2007 10 14 | G96 | 0.1+ | 0.4- | 2007 11 20 | 704 | 0.1+ | 1.8+ |
| 2004 01 30 | 691 | 0.2+ | 0.1- | 2007 10 14 | G96 | 0.1- | 0.4- | 2007 11 20 | 704 | 0.5- | 1.8+ |
| 2004 01 30 | 691 | 0.3- | 1.0+ | 2007 10 14 | G96 | 0.2+ | 0.6- | 2007 12 10 | 704 | 1.3- | 0.5- |
| 2004 01 30 | 691 | 0.2+ | 0.3- | 2007 11 13 | 699 | 0.0  | 0.3- | 2007 12 10 | 704 | 0.3+ | 1.4- |
| 2004 02 11 | 644 | 0.5+ | 0.1- | 2007 11 13 | 699 | 0.6- | 0.6+ | 2007 12 10 | 704 | 0.2+ | 0.7+ |
| 2004 02 11 | 644 | 0.2+ | 0.3- | 2007 11 13 | 699 | 0.5+ | 0.4+ | 2007 12 10 | 704 | 0.3- | 0.9- |
| 2004 02 11 | 644 | 0.5+ | 0.0  | 2007 11 13 | 699 | 0.7- | 1.1+ |            |     |      |      |

**(172754)\* 2004 DM = 2001 SN<sub>185</sub>**

Discovered 2004 Feb. 16 by W. K. Y. Yeung at Desert Eagle Observatory.

Id. G. V. Williams (*MPO* 61941)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 290.29102  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19715440 | $\omega$ | 142.13715 | -0.72133950   | -0.69229528 |
| <i>a</i> | 2.9236928  | $\Omega$ | 353.93201 | +0.58051933   | -0.58869283 |
| <i>e</i> | 0.0415141  | <i>i</i> | 10.85867  | +0.37771237   | -0.41733439 |
| <i>P</i> | 5.00       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 14 | 608 | 1.2-  | 0.1+  | 2004 02 23 | 704 | 0.7+  | 0.1+  | 2006 08 30 | 699 | 0.1-  | 0.7+  |
| 2001 08 14 | 608 | 0.9-  | 0.3+  | 2004 02 23 | 704 | 0.4+  | 1.2+  | 2006 08 30 | 699 | (0.6- | 3.4+) |
| 2001 08 14 | 608 | 0.2-  | 0.2+  | 2004 02 23 | 704 | 0.5+  | 1.4+  | 2006 09 14 | 703 | 0.1+  | 0.1+  |
| 2001 09 19 | 704 | 0.6-  | 1.4+  | 2004 03 15 | 704 | 0.2+  | 0.1+  | 2006 09 14 | 703 | 1.3-  | 0.3-  |
| 2001 09 19 | 704 | 0.3+  | 0.8+  | 2004 03 15 | 704 | 0.7+  | 0.1+  | 2006 09 14 | 703 | 0.0   | 0.6-  |
| 2001 09 19 | 704 | 0.2+  | 1.4+  | 2004 03 15 | 704 | 0.5+  | 0.8+  | 2006 09 14 | 703 | 0.2+  | 0.8-  |
| 2001 09 19 | 704 | 0.0   | 1.0+  | 2004 03 15 | 704 | 0.3+  | 0.4+  | 2006 09 30 | G96 | 0.4-  | 0.1-  |
| 2001 09 19 | 704 | 0.4+  | 1.4+  | 2004 03 15 | 704 | 0.3+  | 0.8+  | 2006 09 30 | G96 | 0.0   | 0.1-  |
| 2001 09 19 | 645 | 0.2-  | 0.0   | 2004 03 19 | 704 | 0.0   | 0.3+  | 2006 09 30 | G96 | 0.1-  | 0.2-  |
| 2001 09 19 | 645 | 0.2-  | 0.0   | 2004 03 19 | 704 | 0.6+  | 0.7+  | 2006 09 30 | G96 | 0.2-  | 0.2-  |
| 2001 09 21 | 704 | 1.2+  | 1.1+  | 2004 03 19 | 704 | 0.2+  | 0.1-  | 2007 11 09 | 704 | 0.2-  | 0.4+  |
| 2001 09 21 | 704 | 0.8+  | 0.8+  | 2004 03 27 | 704 | 0.7+  | 1.3+  | 2007 11 09 | 704 | 0.0   | 0.2+  |
| 2001 09 21 | 704 | (1.7+ | 0.4+) | 2004 03 27 | 704 | 0.2-  | 1.1+  | 2007 11 09 | 704 | 0.2+  | 0.5-  |
| 2001 09 21 | 704 | 1.4+  | 0.1-  | 2004 03 27 | 704 | 0.9+  | 1.1+  | 2007 11 09 | 704 | 0.4+  | 0.2+  |
| 2001 09 21 | 704 | 0.8+  | 0.6+  | 2004 03 27 | 704 | 1.3+  | 0.7+  | 2007 11 09 | 704 | 0.3-  | 0.6+  |
| 2004 02 15 | 703 | 1.1+  | 0.5+  | 2004 03 27 | 704 | 1.2+  | 1.4+  | 2007 11 16 | 704 | 0.0   | 0.6-  |
| 2004 02 15 | 703 | (2.0+ | 0.2-) | 2006 08 21 | 691 | 0.1-  | 0.4+  | 2007 11 16 | 704 | 0.6-  | 0.3-  |
| 2004 02 15 | 703 | 0.8+  | 0.5+  | 2006 08 21 | 691 | 0.1+  | 0.1+  | 2007 11 16 | 704 | 0.4+  | 0.1-  |
| 2004 02 15 | 703 | (2.1- | 0.1+) | 2006 08 21 | 691 | 0.2-  | 0.2+  | 2007 12 03 | 704 | 0.1+  | 0.3+  |
| 2004 02 16 | 333 | 0.4-  | 0.1+  | 2006 08 28 | 691 | 0.3-  | 0.2+  | 2007 12 03 | 704 | 0.0   | 0.7+  |
| 2004 02 16 | 333 | 0.5-  | 0.6+  | 2006 08 28 | 691 | 0.4-  | 0.2+  | 2007 12 03 | 704 | 0.1-  | 0.3+  |
| 2004 02 17 | 333 | 0.2-  | 0.3+  | 2006 08 28 | 691 | 0.3+  | 0.8+  | 2007 12 03 | 704 | 0.1-  | 0.2+  |
| 2004 02 17 | 333 | 0.1-  | 0.5+  | 2006 08 30 | 699 | (1.1+ | 2.0-) | 2007 12 03 | 704 | 0.1-  | 0.3+  |
| 2004 02 23 | 704 | 0.4+  | 0.2+  | 2006 08 30 | 699 | 0.5-  | 0.2+  |            |     |       |       |

**(172755)\* 2004 DV<sub>6</sub>**

Discovered 2004 Feb. 16 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 229.04053  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18865871 | $\omega$ | 151.44520 | -0.97136322   | +0.23739107 |
| <i>a</i> | 3.0108201  | $\Omega$ | 42.29122  | -0.22070782   | -0.88600992 |
| <i>e</i> | 0.1811780  | <i>i</i> | 0.84711   | -0.08798607   | -0.39828621 |
| <i>P</i> | 5.22       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 05 02 | 691 | 0.5-  | 0.2+  | 2004 02 26 | 704 | 0.5+ | 0.2+ | 2004 03 19 | 704 | 0.3+ | 0.1+ |
| 1994 05 02 | 691 | 0.0   | 0.2+  | 2004 02 26 | 704 | 0.6+ | 0.5+ | 2004 03 19 | 704 | 0.3+ | 0.5- |
| 1994 05 02 | 691 | 0.1-  | 0.0   | 2004 03 01 | 333 | 0.3- | 0.4+ | 2004 03 29 | 691 | 0.3- | 0.1+ |
| 1999 03 24 | 699 | 0.2-  | 0.5+  | 2004 03 01 | 333 | 0.5- | 0.3+ | 2004 03 29 | 691 | 0.0  | 0.0  |
| 1999 03 24 | 699 | 1.2+  | 0.5-  | 2004 03 01 | 333 | 0.4- | 0.5+ | 2004 03 29 | 691 | 0.1- | 0.0  |
| 1999 03 24 | 699 | 0.3-  | 0.1+  | 2004 03 01 | 333 | 0.8- | 0.8+ | 2006 09 26 | G96 | 0.6- | 0.2- |
| 2001 09 21 | 704 | 0.0   | 0.2+  | 2004 03 14 | 691 | 0.1- | 0.0  | 2006 09 26 | G96 | 0.5- | 0.1- |
| 2001 09 21 | 704 | 0.6+  | 1.1+  | 2004 03 14 | 691 | 0.0  | 0.0  | 2006 09 26 | G96 | 0.3- | 0.1- |
| 2001 09 21 | 704 | 1.0-  | 1.5+  | 2004 03 14 | 691 | 0.1+ | 0.2- | 2006 09 26 | G96 | 0.6- | 0.1- |
| 2001 09 21 | 704 | (0.7+ | 1.7+) | 2004 03 15 | 704 | 0.6+ | 0.2+ | 2007 10 08 | 691 | 0.3- | 0.3- |
| 2001 10 14 | 645 | 0.0   | 0.1+  | 2004 03 15 | 704 | 0.1+ | 0.8+ | 2007 10 08 | 691 | 0.1- | 0.1- |
| 2001 10 14 | 645 | 0.0   | 0.1+  | 2004 03 15 | 703 | 0.8- | 0.0  | 2007 10 08 | 691 | 0.1- | 0.1+ |
| 2001 10 15 | 645 | 0.0   | 0.1+  | 2004 03 15 | 704 | 0.0  | 0.3- | 2007 10 30 | G96 | 0.0  | 0.1- |
| 2001 10 15 | 645 | 0.1+  | 0.0   | 2004 03 15 | 703 | 0.1- | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.4- |
| 2001 12 10 | 645 | 0.2+  | 0.1+  | 2004 03 15 | 704 | 0.0  | 0.2- | 2007 10 30 | G96 | 0.4+ | 0.4- |
| 2001 12 10 | 645 | 0.0   | 0.0   | 2004 03 15 | 703 | 0.3- | 0.5+ | 2007 10 30 | G96 | 0.4+ | 0.4- |
| 2002 11 27 | 599 | 0.8+  | 0.0   | 2004 03 15 | 704 | 0.6+ | 0.4- | 2007 11 03 | 691 | 0.1- | 0.1+ |
| 2002 11 27 | 599 | 0.4+  | 0.3+  | 2004 03 15 | 703 | 0.8- | 0.4+ | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2004 02 16 | 691 | 0.0   | 0.1-  | 2004 03 19 | 704 | 0.2+ | 0.9+ | 2007 11 03 | 691 | 0.2- | 0.1+ |
| 2004 02 16 | 691 | 0.3-  | 0.2-  | 2004 03 19 | 704 | 0.8+ | 0.7- | 2007 11 11 | G96 | 0.2- | 0.2- |
| 2004 02 16 | 691 | 0.1-  | 0.2-  | 2004 03 19 | 704 | 0.0  | 0.5+ | 2007 11 11 | G96 | 0.8+ | 0.4+ |
| 2004 02 18 | 704 | 0.2+  | 0.8+  | 2004 03 19 | 704 | 0.0  | 0.5+ | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 2004 02 18 | 704 | 0.3+  | 0.4+  | 2004 03 19 | 704 | 0.4+ | 0.2- | 2007 11 11 | G96 | 0.6+ | 0.6- |

2007 DEC. 24

M.P.O. 129469

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 18 | 704 | 0.3- | 0.5+ | 2004 03 19 | 704 | 0.0  | 0.7+ | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2004 02 18 | 608 | 1.2+ | 0.7- | 2004 03 19 | 704 | 0.3+ | 0.6- | 2007 11 18 | 691 | 0.3- | 0.0  |
| 2004 02 18 | 608 | 0.7+ | 0.0  | 2004 03 19 | 704 | 0.4- | 0.6+ | 2007 11 18 | 691 | 0.4- | 0.2- |
| 2004 02 18 | 608 | 0.6+ | 0.2- | 2004 03 19 | 704 | 0.2- | 0.4- | 2007 12 05 | 691 | 0.2- | 0.0  |
| 2004 02 26 | 704 | 0.7+ | 0.5+ | 2004 03 19 | 704 | 0.9+ | 0.4- | 2007 12 05 | 691 | 0.4- | 0.3- |
| 2004 02 26 | 704 | 0.8+ | 0.0  | 2004 03 19 | 704 | 0.2+ | 0.2- | 2007 12 05 | 691 | 0.3- | 0.2- |
| 2004 02 26 | 704 | 0.7+ | 0.7+ | 2004 03 19 | 704 | 0.5+ | 0.2- |            |     |      |      |

(172756)\* 2004 DJ<sub>12</sub>

Discovered 2004 Feb. 17 by NEAT at Haleakala.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 309.01915  | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21864121 | $\omega$ | 119.60339 | -0.81596100              |
| <i>a</i> | 2.7288607  | $\Omega$ | 25.19161  | +0.49967130              |
| <i>e</i> | 0.2055760  | <i>i</i> | 4.48570   | +0.29075116              |
| <i>P</i> | 4.51       | <i>H</i> | 15.5      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 17 | 704 | 0.6-  | 1.7+  | 2004 03 15 | 704 | 0.3+  | 0.1+  | 2004 03 29 | 704 | 0.0  | 0.3- |
| 1998 12 17 | 704 | 1.2+  | 0.7-  | 2004 03 15 | 704 | 0.2+  | 0.2-  | 2004 03 29 | 704 | 0.8+ | 0.2+ |
| 1998 12 17 | 704 | 0.2+  | 0.1-  | 2004 03 15 | 703 | 0.1+  | 1.3+  | 2004 03 29 | 704 | 0.7+ | 0.1- |
| 1998 12 17 | 704 | 0.6+  | 0.9-  | 2004 03 15 | 704 | 0.3+  | 0.3-  | 2004 03 29 | 704 | 0.9+ | 0.2- |
| 1998 12 17 | 557 | 0.7-  | 0.3+  | 2004 03 19 | 704 | 0.2+  | 0.0   | 2004 03 30 | 704 | 0.3+ | 0.1- |
| 1999 01 16 | 704 | 0.6-  | 1.4-  | 2004 03 19 | 704 | 0.2+  | 0.0   | 2004 03 30 | 704 | 0.0  | 0.2+ |
| 1999 01 16 | 704 | 0.0   | 0.3+  | 2004 03 19 | 704 | 0.2+  | 0.2-  | 2004 03 30 | 704 | 0.1+ | 0.2+ |
| 1999 01 16 | 704 | (0.7+ | 2.6-) | 2004 03 19 | 704 | 0.1+  | 0.1+  | 2004 03 30 | 704 | 0.3- | 0.6- |
| 1999 01 16 | 704 | (3.4- | 1.0+) | 2004 03 19 | 704 | 0.2-  | 0.2+  | 2004 03 30 | 704 | 0.2- | 0.6- |
| 2002 10 11 | 644 | 0.9-  | 1.1+  | 2004 03 20 | 699 | 0.6-  | 0.0   | 2004 04 13 | 691 | 0.0  | 0.1+ |
| 2002 10 11 | 644 | 1.0-  | 1.3+  | 2004 03 20 | 699 | 0.5-  | 0.3-  | 2004 04 13 | 691 | 0.1- | 0.0  |
| 2002 10 11 | 644 | (0.2- | 1.6+) | 2004 03 20 | 608 | 0.2+  | 0.4-  | 2004 04 13 | 691 | 0.2- | 0.2+ |
| 2002 10 30 | 644 | 0.1-  | 0.8+  | 2004 03 20 | 699 | 0.4-  | 0.0   | 2004 04 15 | 699 | 0.3+ | 0.1- |
| 2002 10 30 | 644 | 0.4-  | 0.9+  | 2004 03 20 | 608 | 0.3+  | 0.4-  | 2004 04 15 | 699 | 0.6- | 0.1- |
| 2002 10 30 | 644 | 0.1+  | 1.3+  | 2004 03 20 | 608 | 0.4+  | 0.2-  | 2004 04 15 | 699 | 0.1- | 0.5- |
| 2003 12 27 | 704 | 0.3-  | 0.6+  | 2004 03 20 | 699 | 0.1+  | 0.2+  | 2004 04 15 | 699 | 0.6- | 0.1+ |
| 2003 12 27 | 704 | 0.5+  | 0.9+  | 2004 03 22 | 704 | 0.5-  | 0.2+  | 2004 04 19 | 704 | 0.5+ | 0.2+ |
| 2003 12 27 | 704 | (0.8+ | 2.6+) | 2004 03 22 | 704 | 0.2-  | 0.1+  | 2004 04 19 | 704 | 0.7+ | 0.1- |
| 2003 12 27 | 704 | 0.1-  | 0.7-  | 2004 03 22 | 704 | 0.5-  | 0.1-  | 2004 04 19 | 704 | 0.1+ | 0.4- |
| 2004 02 16 | 703 | 0.3+  | 0.1-  | 2004 03 22 | 704 | 0.4-  | 0.0   | 2004 04 19 | 704 | 0.0  | 0.3+ |
| 2004 02 16 | 703 | 1.0+  | 0.5+  | 2004 03 22 | 704 | 0.6-  | 0.0   | 2004 04 19 | 704 | 0.6- | 0.0  |
| 2004 02 16 | 703 | 0.3+  | 0.2-  | 2004 03 25 | 704 | 1.0+  | 0.0   | 2004 04 21 | 691 | 0.0  | 0.0  |
| 2004 02 16 | 703 | 0.5+  | 0.0   | 2004 03 25 | 704 | 0.3+  | 0.0   | 2004 04 21 | 691 | 0.0  | 0.1+ |
| 2004 02 17 | 608 | 0.3-  | 0.5+  | 2004 03 25 | 704 | 0.3+  | 0.1+  | 2004 04 21 | 691 | 0.0  | 0.1+ |
| 2004 02 17 | 608 | 0.2+  | 0.5+  | 2004 03 26 | 704 | 0.4+  | 0.3+  | 2004 05 16 | 704 | 0.5+ | 0.4+ |
| 2004 02 17 | 608 | 0.4-  | 0.6+  | 2004 03 26 | 704 | 0.0   | 0.9-  | 2004 05 16 | 704 | 0.8+ | 0.2+ |
| 2004 02 18 | 704 | 0.2+  | 0.0   | 2004 03 26 | 704 | 0.5-  | 0.2+  | 2004 05 16 | 704 | 0.4+ | 0.3+ |
| 2004 02 18 | 704 | 0.1-  | 0.3-  | 2004 03 26 | 704 | 0.1+  | 0.1+  | 2006 10 02 | G96 | 1.1- | 0.8+ |
| 2004 02 18 | 704 | 0.3-  | 0.1+  | 2004 03 27 | 704 | 0.6+  | 0.1+  | 2006 10 02 | G96 | 0.1+ | 0.1- |
| 2004 02 18 | 704 | 0.6-  | 0.0   | 2004 03 27 | 704 | 0.2-  | 0.2+  | 2006 10 02 | G96 | 0.2+ | 0.2+ |
| 2004 02 18 | 704 | 0.1-  | 0.2-  | 2004 03 27 | 704 | 0.1-  | 0.4+  | 2006 10 02 | G96 | 0.2- | 0.4+ |
| 2004 02 23 | 704 | 0.1+  | 0.2+  | 2004 03 27 | 704 | 0.2+  | 0.1-  | 2007 11 18 | 704 | 0.7- | 0.5- |
| 2004 02 23 | 704 | 0.3+  | 0.1-  | 2004 03 27 | 704 | 0.0   | 0.2+  | 2007 11 18 | 704 | 0.4+ | 0.7+ |
| 2004 02 23 | 704 | 0.3+  | 0.4-  | 2004 03 28 | 704 | 1.4+  | 0.7+  | 2007 11 18 | 704 | 0.5- | 0.2- |
| 2004 02 23 | 704 | 0.4+  | 0.1+  | 2004 03 28 | 704 | 0.1+  | 0.4-  | 2007 11 18 | 704 | 0.9- | 0.5+ |
| 2004 02 23 | 704 | 0.2-  | 0.4+  | 2004 03 28 | 704 | 0.2+  | 0.2+  | 2007 11 20 | 704 | 0.4- | 0.7+ |
| 2004 02 25 | 704 | 0.7-  | 0.4-  | 2004 03 28 | 704 | 0.3-  | 0.2-  | 2007 11 20 | 704 | 1.1- | 0.7+ |
| 2004 02 25 | 704 | 0.6-  | 0.7-  | 2004 03 28 | 704 | 0.5-  | 0.3+  | 2007 11 20 | 704 | 0.6- | 0.1+ |
| 2004 02 25 | 704 | 0.9-  | 0.0   | 2004 03 28 | 704 | 0.6+  | 0.2+  | 2007 11 20 | 704 | 0.1- | 1.4+ |
| 2004 02 25 | 704 | 0.9-  | 0.6-  | 2004 03 28 | 703 | 0.0   | 0.4-  | 2007 12 13 | 704 | 0.3- | 0.1+ |
| 2004 03 11 | 644 | 0.1-  | 0.3+  | 2004 03 28 | 704 | 0.5-  | 0.5+  | 2007 12 13 | 704 | 0.6+ | 0.6- |
| 2004 03 11 | 644 | 0.0   | 0.1+  | 2004 03 28 | 703 | 0.7+  | 0.7-  | 2007 12 13 | 704 | 0.3- | 0.3+ |
| 2004 03 11 | 644 | 0.0   | 0.2-  | 2004 03 28 | 704 | 0.1+  | 0.5+  | 2007 12 15 | 704 | 0.6+ | 0.3+ |
| 2004 03 15 | 703 | 0.5-  | 0.8+  | 2004 03 28 | 704 | 0.5+  | 0.2+  | 2007 12 15 | 704 | 0.8+ | 0.7- |
| 2004 03 15 | 704 | 0.3+  | 0.1+  | 2004 03 28 | 703 | (3.7- | 1.6-) | 2007 12 15 | 704 | 0.8+ | 1.4- |
| 2004 03 15 | 703 | 0.4-  | 0.1-  | 2004 03 28 | 704 | 0.6+  | 0.8+  | 2007 12 15 | 704 | 0.8+ | 1.2- |
| 2004 03 15 | 704 | 0.2+  | 0.1+  | 2004 03 28 | 703 | (1.1+ | 2.2-) | 2007 12 15 | 704 | 0.6+ | 1.3- |
| 2004 03 15 | 703 | 0.9-  | 0.5+  | 2004 03 29 | 704 | 0.1-  | 0.0   |            |     |      |      |

(172757)\* 2004 DT<sub>12</sub> = 2000 HL<sub>70</sub>

Discovered 2004 Feb. 16 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 61951)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.51415  | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.23412843 | $\omega$ | 126.91269 | -0.75083429              |
| <i>a</i> | 2.6071536  | $\Omega$ | 11.79537  | +0.57773279              |
| <i>e</i> | 0.2166511  | <i>i</i> | 4.58320   | +0.32011357              |
| <i>P</i> | 4.21       | <i>H</i> | 16.2      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 10 16 | 691 | 0.3+  | 0.4+  | 2004 03 15 | 704 | 0.6+  | 0.0   | 2004 04 15 | 699 | (1.8- | 0.7+) |
| 1998 10 16 | 691 | 0.3-  | 0.4+  | 2004 03 15 | 691 | 0.1+  | 0.0   | 2004 04 15 | 699 | 0.9-  | 0.6-  |
| 1998 10 16 | 691 | 1.2-  | 1.6+  | 2004 03 15 | 703 | 0.0   | 0.7+  | 2004 04 21 | 691 | 0.0   | 0.2+  |
| 2000 04 06 | 704 | 0.6-  | 0.5+  | 2004 03 15 | 704 | 0.2+  | 0.1-  | 2004 04 21 | 691 | 0.2+  | 0.3+  |
| 2000 04 06 | 704 | 0.8-  | 0.4-  | 2004 03 15 | 703 | 0.5+  | 1.1+  | 2004 04 21 | 691 | 0.0   | 0.0   |
| 2000 04 06 | 704 | 1.1+  | 0.8+  | 2004 03 15 | 704 | 0.6+  | 0.2+  | 2006 08 28 | 705 | 0.2+  | 0.3+  |
| 2000 04 06 | 704 | 0.4+  | 0.9+  | 2004 03 15 | 691 | 0.1+  | 0.2+  | 2006 08 28 | 705 | 0.1+  | 0.3+  |
| 2000 04 06 | 704 | 0.3-  | 0.6+  | 2004 03 15 | 704 | 0.3-  | 0.4+  | 2006 09 30 | 691 | 0.9-  | 0.9+  |
| 2000 04 26 | 699 | 1.0-  | 1.1-  | 2004 03 15 | 703 | 0.3+  | 1.1+  | 2006 09 30 | 691 | 0.4-  | 0.9+  |
| 2000 04 26 | 699 | 0.2+  | 0.3+  | 2004 03 15 | 704 | 0.4+  | 0.4+  | 2006 09 30 | 691 | 0.7-  | 1.0+  |
| 2000 04 26 | 699 | 0.1+  | 0.8+  | 2004 03 19 | 704 | 0.1+  | 0.5+  | 2006 09 30 | G96 | 0.3-  | 0.3+  |
| 2000 04 26 | 699 | 0.4+  | 0.5+  | 2004 03 19 | 704 | 0.4+  | 0.4+  | 2006 09 30 | G96 | 0.2-  | 0.3+  |
| 2000 04 30 | 699 | 1.3+  | 0.4-  | 2004 03 19 | 704 | 0.2-  | 0.5+  | 2006 09 30 | G96 | 0.3+  | 0.6+  |
| 2000 04 30 | 699 | 0.3-  | 0.5+  | 2004 03 19 | 704 | 0.3+  | 0.1+  | 2006 09 30 | G96 | 0.3-  | 0.1+  |
| 2000 04 30 | 699 | 0.4+  | 0.9+  | 2004 03 19 | 704 | 0.1+  | 0.2+  | 2006 09 30 | G96 | 0.3-  | 0.4+  |
| 2000 04 30 | 699 | 0.1+  | 1.4+  | 2004 03 20 | 699 | 0.0   | 0.2-  | 2006 09 30 | G96 | 0.1+  | 0.0   |
| 2002 10 11 | 704 | 0.7+  | 0.4+  | 2004 03 20 | 699 | 0.3+  | 1.2+  | 2006 09 30 | G96 | 0.1+  | 0.4+  |
| 2002 10 11 | 704 | 0.1+  | 0.5+  | 2004 03 20 | 699 | 0.1-  | 0.1-  | 2006 09 30 | G96 | 0.5-  | 0.3+  |
| 2002 10 11 | 704 | (0.3- | 1.7+) | 2004 03 20 | 699 | 0.3+  | 0.3+  | 2006 10 20 | G96 | 0.4-  | 0.6+  |
| 2004 02 16 | 703 | 1.3+  | 0.0   | 2004 03 22 | 704 | 0.8+  | 0.1+  | 2006 10 20 | G96 | 0.0   | 0.4+  |
| 2004 02 16 | 703 | 0.5+  | 0.5-  | 2004 03 22 | 704 | 0.5+  | 0.3-  | 2006 10 20 | G96 | 0.2-  | 0.3+  |
| 2004 02 16 | 703 | 0.7-  | 0.2+  | 2004 03 22 | 704 | (0.3- | 2.3-) | 2006 10 20 | G96 | 0.2+  | 1.1+  |
| 2004 02 16 | 703 | 0.6-  | 0.3+  | 2004 03 22 | 704 | 0.5-  | 1.4-  | 2007 10 26 | G96 | 0.3-  | 0.0   |
| 2004 02 17 | 608 | 0.2+  | 0.7-  | 2004 03 22 | 704 | 0.4+  | 0.1-  | 2007 10 26 | G96 | 0.2+  | 0.1-  |
| 2004 02 17 | 608 | 0.3+  | 1.2-  | 2004 03 28 | 704 | 0.6+  | 0.1+  | 2007 10 26 | G96 | 0.2+  | 0.1-  |
| 2004 02 17 | 608 | 0.0   | 0.8-  | 2004 03 28 | 704 | 0.2-  | 0.6+  | 2007 10 26 | G96 | 0.3-  | 0.1-  |
| 2004 02 19 | 704 | 0.0   | 0.3+  | 2004 03 28 | 704 | 0.5-  | 0.7-  | 2007 12 06 | 703 | 0.1-  | 0.8-  |
| 2004 02 19 | 704 | 0.3-  | 0.1+  | 2004 03 28 | 704 | 0.3+  | 0.4+  | 2007 12 06 | 703 | 0.9-  | 0.6-  |
| 2004 02 19 | 704 | 0.3+  | 0.3+  | 2004 03 28 | 704 | 0.5+  | 0.0   | 2007 12 06 | 703 | 0.1-  | 0.2-  |
| 2004 02 19 | 704 | 0.4+  | 0.0   | 2004 03 30 | 291 | 0.2+  | 0.5+  | 2007 12 06 | 703 | 0.8-  | 0.8-  |
| 2004 02 19 | 704 | 0.4+  | 0.0   | 2004 03 30 | 291 | 0.3+  | 0.3+  | 2007 12 13 | 704 | 0.0   | 0.1-  |
| 2004 02 23 | 704 | (1.8+ | 0.6-) | 2004 03 30 | 291 | 0.1-  | 0.4+  | 2007 12 13 | 704 | 0.5-  | 0.2-  |
| 2004 02 23 | 704 | 1.1+  | 0.9-  | 2004 04 12 | 699 | 0.3-  | 0.2+  | 2007 12 13 | 704 | 0.8-  | 0.2-  |
| 2004 02 23 | 704 | (1.7+ | 1.2-) | 2004 04 12 | 699 | 0.6-  | 0.2+  | 2007 12 13 | 704 | 0.4+  | 0.1+  |
| 2004 02 23 | 704 | 0.1+  | 0.3+  | 2004 04 12 | 699 | 0.3-  | 0.3-  | 2007 12 13 | 704 | 0.0   | 0.3+  |
| 2004 02 23 | 704 | (1.5+ | 1.1-) | 2004 04 12 | 699 | 0.1+  | 0.5+  | 2007 12 16 | 699 | 0.2+  | 0.2-  |
| 2004 03 11 | 644 | 0.4-  | 0.5+  | 2004 04 13 | 691 | 0.3+  | 0.4+  | 2007 12 16 | 699 | 0.5+  | 0.8+  |
| 2004 03 11 | 644 | 0.2-  | 0.3+  | 2004 04 13 | 691 | 0.1+  | 0.3+  | 2007 12 16 | 699 | 0.6-  | 0.6-  |
| 2004 03 11 | 644 | 0.6+  | 0.1+  | 2004 04 13 | 691 | 0.0   | 0.3+  | 2007 12 16 | 699 | 0.2-  | 0.6-  |
| 2004 03 15 | 691 | 0.1+  | 0.1+  | 2004 04 15 | 699 | 0.3-  | 0.6+  |            |     |       |       |
| 2004 03 15 | 703 | 0.3+  | 0.1+  | 2004 04 15 | 699 | 0.2-  | 0.7+  |            |     |       |       |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 10 | 644 | 0.7−        | 0.8+ | 2004 02 23 | 704 | 0.4+ | 0.5+ | 2007 11 03 | G96 | 0.2− | 0.5− |
| 2002 10 10 | 644 | 0.8−        | 1.0+ | 2004 02 23 | 704 | 0.2+ | 0.2− | 2007 11 07 | G96 | 0.0  | 0.4− |
| 2002 10 10 | 644 | 0.8−        | 0.8+ | 2004 02 23 | 704 | 0.1− | 0.7− | 2007 11 07 | G96 | 0.0  | 0.4− |
| 2002 10 30 | 291 | 0.2−        | 0.2− | 2004 02 23 | 704 | 0.4+ | 0.6− | 2007 11 07 | G96 | 0.3− | 0.3− |
| 2002 10 30 | 291 | 0.5+        | 0.2− | 2004 03 11 | 644 | 0.5− | 0.0  | 2007 11 07 | G96 | 0.3− | 0.5− |
| 2002 10 30 | 291 | 0.5+        | 0.5− | 2004 03 11 | 644 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.5− | 0.3− |
| 2004 02 18 | 704 | 0.2−        | 0.4− | 2004 03 11 | 644 | 0.5− | 0.2+ | 2007 11 21 | G96 | 0.5− | 0.4− |
| 2004 02 18 | 704 | 1.2−        | 0.6+ | 2006 09 30 | G96 | 0.2− | 0.4+ | 2007 11 21 | G96 | 0.2− | 0.4− |
| 2004 02 18 | 704 | 0.0         | 0.7+ | 2006 09 30 | G96 | 0.0  | 0.7+ | 2007 11 21 | G96 | 0.2− | 0.4− |
| 2004 02 18 | 704 | 0.6+        | 1.3+ | 2006 09 30 | G96 | 0.1+ | 0.7+ | 2007 12 13 | 704 | 0.2+ | 0.4− |
| 2004 02 19 | 704 | 0.7+        | 0.4− | 2006 09 30 | G96 | 0.4− | 0.5+ | 2007 12 13 | 704 | 0.5+ | 0.2+ |
| 2004 02 19 | 704 | 0.5+        | 0.2+ | 2006 10 21 | G96 | 0.3+ | 0.3+ | 2007 12 13 | 704 | 0.5+ | 0.4− |
| 2004 02 19 | 704 | (0.8+ 1.9−) |      | 2006 10 21 | G96 | 0.7− | 0.5+ | 2007 12 13 | 704 | 0.1+ | 0.8+ |
| 2004 02 19 | 704 | 0.3+        | 0.0  | 2006 10 21 | G96 | 0.4− | 0.4+ | 2007 12 15 | 704 | 1.1+ | 0.9+ |
| 2004 02 20 | 608 | 0.1−        | 0.4+ | 2006 10 21 | G96 | 0.6− | 0.1+ | 2007 12 15 | 704 | 0.4− | 1.9+ |
| 2004 02 20 | 608 | 0.1+        | 0.3+ | 2007 11 03 | G96 | 0.4− | 0.7− | 2007 12 15 | 704 | 0.4− | 0.1+ |
| 2004 02 20 | 608 | 0.1−        | 0.4+ | 2007 11 03 | G96 | 0.1+ | 0.6− | 2007 12 15 | 704 | 0.0  | 1.2+ |
| 2004 02 23 | 704 | 0.3+        | 0.6− | 2007 11 03 | G96 | 0.3− | 0.2− | 2007 12 15 | 704 | 0.9+ | 0.4+ |

**(172759)\* 2004 DK<sub>23</sub>**

Discovered 2004 Feb. 18 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 349.27143  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22630223 | $\omega$ | 313.70925 | −0.50773100 | −0.85964354 |
| $a$ | 2.6669211  | $\Omega$ | 166.46810 | +0.84363234 | −0.50946648 |
| $e$ | 0.1139162  | $i$      | 14.03989  | +0.17462448 | −0.03816921 |
| $P$ | 4.36       | $H$      | 16.0      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |             |       |            |     |             |       |
|------------|-----|------|------|------------|-----|-------------|-------|------------|-----|-------------|-------|
| 2000 05 10 | 645 | 0.0  | 0.0  | 2004 03 20 | 704 | 0.0         | 0.4−  | 2004 04 23 | 704 | 1.2+        | 0.3+  |
| 2000 05 10 | 645 | 0.0  | 0.1+ | 2004 03 20 | 704 | 0.3+        | 0.2+  | 2004 04 23 | 704 | (2.1−       | 0.5−) |
| 2001 07 25 | 608 | 0.0  | 0.1− | 2004 03 20 | 333 | (1.7−       | 0.1−) | 2006 08 28 | 705 | 0.0         | 0.3+  |
| 2001 07 25 | 608 | 0.3+ | 0.1− | 2004 03 20 | 333 | 0.9−        | 0.4+  | 2006 08 28 | 705 | 0.1−        | 0.4+  |
| 2001 07 25 | 608 | 0.4+ | 0.2− | 2004 03 20 | 333 | 1.0−        | 0.6−  | 2006 09 12 | 705 | 0.0         | 0.7+  |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2004 03 21 | 704 | 0.6+        | 0.4+  | 2006 09 12 | 705 | 0.0         | 0.7+  |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2004 03 21 | 704 | 0.3+        | 0.9+  | 2006 09 18 | 703 | 1.1−        | 0.7+  |
| 2002 11 06 | 644 | 0.5− | 0.4− | 2004 03 21 | 704 | (1.7+ 1.8+) |       | 2006 09 18 | 703 | 0.5−        | 0.5+  |
| 2002 11 06 | 644 | 0.2− | 0.5− | 2004 03 22 | 704 | 0.4−        | 0.1−  | 2006 09 18 | 703 | 0.5+        | 0.6−  |
| 2002 11 06 | 644 | 0.3− | 0.4− | 2004 03 22 | 704 | 0.0         | 0.2+  | 2006 09 18 | 703 | (1.1+ 1.7−) |       |
| 2004 02 18 | 703 | 0.6+ | 0.8+ | 2004 03 22 | 704 | 0.7−        | 0.6+  | 2006 09 26 | 703 | 0.1−        | 1.3+  |
| 2004 02 18 | 703 | 0.4+ | 0.2+ | 2004 03 22 | 704 | 0.6+        | 0.8−  | 2006 09 26 | 703 | 0.7+        | 1.2+  |
| 2004 02 18 | 703 | 0.6+ | 0.4− | 2004 03 22 | 704 | 0.2−        | 1.0+  | 2006 09 26 | 703 | (2.1−       | 0.8+) |
| 2004 02 18 | 703 | 0.2+ | 0.5+ | 2004 03 23 | 704 | 0.1−        | 0.7+  | 2006 09 26 | 703 | 0.8−        | 0.1+  |
| 2004 02 19 | 704 | 0.5+ | 0.5+ | 2004 03 23 | 704 | 0.7−        | 0.7+  | 2006 09 30 | 703 | 0.5+        | 0.1−  |
| 2004 02 19 | 704 | 0.6+ | 0.1+ | 2004 03 23 | 704 | 0.5+        | 0.4+  | 2006 09 30 | 703 | 0.2−        | 0.6−  |
| 2004 02 19 | 704 | 1.0− | 0.2+ | 2004 03 23 | 704 | 0.3+        | 1.0+  | 2006 09 30 | 703 | 0.2+        | 0.5−  |
| 2004 02 23 | 704 | 0.6+ | 0.2+ | 2004 03 28 | 703 | (0.6−       | 2.2−) | 2006 09 30 | 703 | 0.1+        | 0.0   |
| 2004 02 23 | 704 | 0.5+ | 1.1+ | 2004 03 28 | 703 | 0.4+        | 0.2+  | 2006 10 16 | 703 | 0.6−        | 1.2+  |
| 2004 02 23 | 704 | 0.7+ | 0.9+ | 2004 03 28 | 703 | 0.7−        | 0.3+  | 2006 10 16 | 703 | 0.6−        | 0.3+  |
| 2004 03 15 | 333 | 0.2− | 0.2− | 2004 03 28 | 703 | 0.7+        | 0.6−  | 2006 10 16 | 703 | 0.3−        | 0.7+  |
| 2004 03 15 | 333 | 0.3− | 0.3− | 2004 04 16 | 691 | 0.1−        | 0.3−  | 2006 10 16 | 703 | 0.7+        | 0.6+  |
| 2004 03 15 | 333 | 0.0  | 0.1+ | 2004 04 16 | 691 | 0.3−        | 0.3−  | 2007 11 11 | 704 | 0.7+        | 0.4+  |
| 2004 03 16 | 333 | 0.2+ | 0.4− | 2004 04 16 | 691 | 0.3−        | 0.4−  | 2007 11 11 | 704 | 0.6+        | 0.0   |
| 2004 03 16 | 333 | 0.2+ | 0.2+ | 2004 04 21 | 691 | 0.0         | 0.1−  | 2007 11 11 | 704 | 0.2−        | 0.4+  |
| 2004 03 16 | 333 | 0.3+ | 0.3− | 2004 04 21 | 691 | 0.2−        | 0.1−  | 2007 12 05 | 703 | 0.3−        | 0.3−  |
| 2004 03 20 | 704 | 0.1− | 0.4+ | 2004 04 21 | 691 | 0.0         | 0.0   | 2007 12 05 | 703 | 0.3−        | 0.6+  |
| 2004 03 20 | 704 | 0.4+ | 0.1− | 2004 04 23 | 704 | (2.1+ 0.1−) |       | 2007 12 05 | 703 | 0.3+        | 0.1−  |
| 2004 03 20 | 704 | 0.1+ | 0.2− | 2004 04 23 | 704 | 0.6+        | 0.6−  | 2007 12 05 | 703 | 0.8−        | 0.1+  |

**(172760)\* 2004 DQ<sub>23</sub>**

Discovered 2004 Feb. 18 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 291.93832  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18799137 | $\omega$ | 345.90180 | −0.69888384 | −0.70818143 |
| $a$ | 3.0179412  | $\Omega$ | 148.24816 | +0.67328361 | −0.69867781 |
| $e$ | 0.0727022  | $i$      | 10.97676  | +0.24135153 | −0.10162865 |
| $P$ | 5.24       | $H$      | 15.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |             |            |            |             |             |            |           |       |       |
|------------|-----|-------------|------------|------------|-------------|-------------|------------|-----------|-------|-------|
| 1999 03 20 | 645 | 0.1−        | 0.0        | 2004 03 21 | 699         | (2.3+ 0.6−) | 2007 11 09 | 703       | 1.1−  | 0.1−  |
| 1999 03 20 | 645 | 0.1−        | 0.1−       | 2004 03 23 | 704         | 0.6+ 0.2+   | 2007 11 09 | 703       | (0.2− | 2.2−) |
| 2001 09 12 | 704 | 0.3+ 0.3+   | 2004 03 23 | 704        | 0.8+ 0.0    | 2007 11 09  | 703        | 1.5−      | 0.9−  |       |
| 2001 09 12 | 704 | 0.2+ 1.2+   | 2004 03 23 | 704        | 0.8+ 0.0    | 2007 11 14  | 699        | 0.5−      | 0.0   |       |
| 2001 09 12 | 704 | 0.5− 0.9+   | 2004 03 23 | 704        | 0.5+ 0.4+   | 2007 11 14  | 699        | 0.6−      | 0.1−  |       |
| 2001 09 12 | 704 | 0.3+ 0.4+   | 2004 03 23 | 704        | 0.9+ 0.0    | 2007 11 14  | 699        | 0.5−      | 0.5−  |       |
| 2001 10 16 | 644 | 0.0 1.1+    | 2004 03 28 | 703        | 0.8− 0.4−   | 2007 11 14  | 699        | 0.5+ 0.4− |       |       |
| 2001 10 16 | 644 | 0.7− 0.8+   | 2004 03 28 | 703        | 0.9+ 0.6+   | 2007 11 15  | 703        | 0.5+ 0.3+ |       |       |
| 2001 10 16 | 644 | 0.7− 1.0+   | 2004 03 28 | 703        | 0.2+ 0.4−   | 2007 11 15  | 703        | 0.3− 0.0  |       |       |
| 2003 01 11 | 644 | 0.3+ 0.2−   | 2004 03 28 | 703        | 0.8+ 1.0+   | 2007 11 15  | 703        | 1.1− 1.0− |       |       |
| 2003 01 11 | 644 | 0.5+ 0.1+   | 2004 04 10 | 644        | 0.2+ 0.2+   | 2007 11 15  | 703        | 0.2+ 1.4+ |       |       |
| 2003 01 11 | 644 | 0.6+ 0.2+   | 2004 04 10 | 644        | 0.0 0.1+    | 2007 11 16  | 703        | 0.5+ 0.2+ |       |       |
| 2004 02 18 | 703 | 0.8+ 0.6+   | 2004 04 10 | 644        | 0.0 0.1+    | 2007 11 16  | 703        | 0.4+ 0.4+ |       |       |
| 2004 02 18 | 703 | 0.1− 1.0+   | 2004 04 15 | 704        | 1.0+ 1.0+   | 2007 11 16  | 703        | 0.7− 0.4− |       |       |
| 2004 02 18 | 703 | 0.1+ 0.2+   | 2004 04 15 | 704        | 0.1− 0.7+   | 2007 11 16  | 703        | 0.3− 0.1− |       |       |
| 2004 02 18 | 703 | 1.3+ 0.8+   | 2004 04 15 | 704        | 0.3− 0.1+   | 2007 11 17  | 703        | 1.0+ 0.0  |       |       |
| 2004 02 19 | 704 | 0.2+ 0.1−   | 2004 04 15 | 704        | 0.4+ 1.3+   | 2007 11 17  | 703        | 0.4− 0.3− |       |       |
| 2004 02 19 | 704 | (2.2+ 0.1−) | 2004 04 21 | 691        | 0.2− 0.1+   | 2007 11 17  | 703        | 0.1+ 1.1− |       |       |
| 2004 02 19 | 704 | 0.3+ 0.5−   | 2004 04 21 | 691        | 0.6− 0.1+   | 2007 11 17  | 703        | 0.2− 0.0  |       |       |
| 2004 02 19 | 704 | 1.1+ 0.4−   | 2004 04 21 | 691        | 0.5− 0.2+   | 2007 11 20  | 703        | 0.5+ 1.1+ |       |       |
| 2004 02 25 | 704 | 0.4− 0.6+   | 2004 04 25 | 699        | 0.6+ 0.1−   | 2007 11 20  | 703        | 0.4+ 0.2− |       |       |
| 2004 02 25 | 704 | 0.0 0.1−    | 2004 04 25 | 699        | 0.4+ 1.1+   | 2007 11 20  | 703        | 0.8− 0.1+ |       |       |
| 2004 02 25 | 704 | 0.4+ 0.8+   | 2004 04 25 | 699        | 0.2+ 0.4+   | 2007 11 20  | 703        | 1.0− 0.8+ |       |       |
| 2004 02 25 | 704 | (2.7+ 0.0 ) | 2004 04 25 | 699        | 0.6− 0.5+   | 2007 12 14  | 683        | 0.4+ 0.4+ |       |       |
| 2004 03 15 | 704 | 0.1− 0.4+   | 2006 09 14 | 703        | (1.2+ 2.2+) | 2007 12 14  | 683        | 0.1+ 2.4+ |       |       |
| 2004 03 15 | 704 | 0.0 0.1−    | 2006 09 14 | 644        | 0.3− 0.8+   | 2007 12 14  | 683        | 2.1+ 1.3+ |       |       |
| 2004 03 15 | 704 | 0.1− 0.0    | 2006 09 14 | 703        | (0.1− 1.6+) | 2007 12 15  | 699        | 0.7+ 1.3− |       |       |
| 2004 03 15 | 704 | 0.3− 0.2−   | 2006 09 14 | 703        | 0.3− 1.0+   | 2007 12 15  | 699        | 0.2+ 0.1+ |       |       |
| 2004 03 15 | 704 | 0.6− 0.0    | 2006 09 14 | 703        | 0.5− 1.4+   | 2007 12 15  | 699        | 0.2− 0.3+ |       |       |
| 2004 03 21 | 699 | 0.1+ 0.4+   | 2006 09 14 | 644        | 0.3+ 0.7+   | 2007 12 15  | 699        | 0.4+ 0.5− |       |       |
| 2004 03 21 | 699 | 0.1+ 0.7+   | 2006 09 14 | 644        | 0.0 1.0+    |             |            |           |       |       |
| 2004 03 21 | 699 | 0.4+ 0.0    | 2007 11 09 | 703        | 0.8− 0.8−   |             |            |           |       |       |

**(172761)\* 2004 DP<sub>24</sub>**

Discovered 2004 Feb. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 193.48544  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.18145134 | $\omega$ | 252.07763 | −0.69201370 | +0.71745896 |     |   |
| $a$ | 3.0900293  | $\Omega$ | 333.58507 | −0.57563453 | −0.61514835 |     |   |
| $e$ | 0.0777385  | $i$      | 10.33492  | −0.43561672 | −0.32687175 |     |   |
| $P$ | 5.43       | $H$      | 14.4      | $G$         | 0.15        | $U$ | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 699 | 0.6+ | 0.7− | 2004 03 21 | 704 | 0.6− | 0.1+ | 2006 09 27 | 704 | 0.7− | 0.9− |
| 2001 09 20 | 699 | 0.8+ | 0.2+ | 2004 03 21 | 704 | 0.3+ | 1.3+ | 2006 09 27 | 704 | 1.5− | 0.1− |
| 2001 09 20 | 699 | 1.2− | 0.1− | 2006 08 22 | 644 | 0.4− | 0.0  | 2006 09 27 | 704 | 0.5− | 0.3− |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 02 19 | 704 | 0.3+ | 0.2+ | 2006 08 27 | 699 | 1.3-  | 1.0+  | 2006 10 17 | 705 | 0.1+  | 0.1+  |
| 2004 02 19 | 704 | 0.2+ | 0.6+ | 2006 08 28 | 703 | 0.0   | 0.7+  | 2006 10 20 | 705 | 0.1+  | 0.0   |
| 2004 02 19 | 704 | 0.8+ | 0.7+ | 2006 08 28 | 703 | 0.7-  | 0.4+  | 2006 10 20 | 705 | 0.1+  | 0.0   |
| 2004 02 20 | 608 | 0.7+ | 0.8- | 2006 08 28 | 703 | 1.3-  | 1.0+  | 2006 10 22 | 705 | 0.1+  | 0.1+  |
| 2004 02 20 | 608 | 0.5+ | 0.6- | 2006 08 28 | 703 | 0.7-  | 0.1+  | 2006 10 22 | 705 | 0.2+  | 0.0   |
| 2004 02 20 | 608 | 0.6+ | 0.3- | 2006 08 30 | 704 | 0.6+  | 0.1+  | 2006 10 28 | 705 | 0.1+  | 0.0   |
| 2004 02 25 | 704 | 0.6+ | 0.2+ | 2006 08 30 | 704 | 0.8+  | 1.2+  | 2006 10 28 | 705 | 0.1+  | 0.1-  |
| 2004 02 25 | 704 | 0.2+ | 0.7+ | 2006 08 30 | 704 | (0.1- | 1.6+) | 2006 10 31 | 705 | 0.1+  | 0.1-  |
| 2004 02 25 | 704 | 0.5+ | 1.0+ | 2006 08 30 | 704 | 1.4-  | 1.2+  | 2006 10 31 | 705 | 0.1+  | 0.0   |
| 2004 02 25 | 704 | 0.5+ | 0.6+ | 2006 08 30 | 704 | 0.3-  | 0.7+  | 2006 11 09 | 705 | 0.0   | 0.1-  |
| 2004 03 13 | 644 | 0.2+ | 0.4+ | 2006 09 12 | 703 | 0.8-  | 0.7+  | 2006 11 09 | 705 | 0.0   | 0.1-  |
| 2004 03 13 | 644 | 0.3+ | 0.3+ | 2006 09 12 | 703 | 1.3-  | 0.6+  | 2006 11 13 | 705 | 0.2-  | 0.2-  |
| 2004 03 13 | 644 | 0.3+ | 0.4+ | 2006 09 12 | 703 | (1.6- | 0.9-) | 2006 11 13 | 705 | 0.2-  | 0.2-  |
| 2004 03 16 | 704 | 0.4+ | 0.7+ | 2006 09 12 | 703 | 1.0-  | 0.1-  | 2006 11 14 | 705 | 0.1-  | 0.0   |
| 2004 03 16 | 704 | 0.1- | 0.3+ | 2006 09 14 | 644 | 0.2-  | 0.4+  | 2006 11 14 | 705 | 0.2-  | 0.1-  |
| 2004 03 16 | 704 | 0.1+ | 0.0  | 2006 09 14 | 644 | 0.4-  | 0.3+  | 2006 11 17 | 705 | 0.2-  | 0.2-  |
| 2004 03 16 | 704 | 0.3+ | 0.1+ | 2006 09 14 | 644 | 0.2-  | 0.4+  | 2006 11 17 | 705 | 0.1-  | 0.2-  |
| 2004 03 16 | 704 | 0.3+ | 0.9+ | 2006 09 16 | 699 | 0.1+  | 0.3+  | 2006 11 22 | 705 | 0.2-  | 0.1-  |
| 2004 03 18 | 704 | 0.4- | 0.4+ | 2006 09 16 | 699 | 0.2+  | 0.3+  | 2006 11 22 | 705 | 0.3-  | 0.1-  |
| 2004 03 18 | 704 | 0.6- | 0.2+ | 2006 09 16 | 699 | 0.1+  | 0.4+  | 2006 11 24 | 705 | 0.2-  | 0.0   |
| 2004 03 18 | 704 | 0.6+ | 1.0+ | 2006 09 16 | 699 | 0.9+  | 0.3+  | 2006 11 24 | 705 | 0.1-  | 0.1-  |
| 2004 03 18 | 704 | 0.0  | 1.1+ | 2006 09 18 | 704 | (0.8+ | 1.9+) | 2007 11 03 | 704 | 0.2-  | 0.6+  |
| 2004 03 18 | 704 | 0.3+ | 1.1+ | 2006 09 18 | 704 | (2.0+ | 0.4-) | 2007 11 03 | 704 | 0.1-  | 0.8+  |
| 2004 03 20 | 699 | 0.8- | 0.1+ | 2006 09 18 | 704 | (1.7+ | 1.2+) | 2007 11 03 | 704 | 0.4-  | 0.2+  |
| 2004 03 20 | 699 | 0.8+ | 0.4- | 2006 09 18 | 704 | 0.8+  | 0.6-  | 2007 11 03 | 704 | 0.9-  | 0.3-  |
| 2004 03 20 | 704 | 0.1+ | 0.7+ | 2006 09 18 | 704 | 1.1+  | 0.9+  | 2007 11 09 | 704 | 1.7+  | 1.6-  |
| 2004 03 20 | 699 | 1.4- | 0.7+ | 2006 09 19 | 699 | 0.4+  | 0.1-  | 2007 11 09 | 704 | (1.9+ | 1.4-) |
| 2004 03 20 | 704 | 0.6+ | 0.1+ | 2006 09 19 | 703 | 0.5-  | 0.8-  | 2007 11 09 | 704 | 0.0   | 0.1-  |
| 2004 03 20 | 704 | 0.6+ | 0.1+ | 2006 09 19 | 699 | 1.3+  | 0.6+  | 2007 12 03 | 704 | 0.1+  | 0.6+  |
| 2004 03 20 | 699 | 0.2+ | 0.5- | 2006 09 19 | 703 | 0.3-  | 0.3+  | 2007 12 03 | 704 | 0.4-  | 0.5+  |
| 2004 03 20 | 704 | 0.4+ | 0.1+ | 2006 09 19 | 703 | 0.6-  | 0.2-  | 2007 12 03 | 704 | 0.4-  | 0.1-  |
| 2004 03 20 | 704 | 0.4+ | 0.0  | 2006 09 19 | 699 | 0.8-  | 0.3+  | 2007 12 03 | 704 | 0.1-  | 0.2-  |
| 2004 03 21 | 704 | 0.3+ | 0.6+ | 2006 09 19 | 703 | 0.3-  | 0.2-  | 2007 12 03 | 704 | 0.5+  | 0.0   |
| 2004 03 21 | 704 | 0.6+ | 0.6+ | 2006 09 19 | 699 | 0.1+  | 1.5+  |            |     |       |       |
| 2004 03 21 | 704 | 0.1+ | 0.1- | 2006 09 27 | 704 | 1.0-  | 0.4-  |            |     |       |       |

**(172762)\* 2004 DN<sub>25</sub> = 2005 KW<sub>8</sub>**

Discovered 2004 Feb. 22 at Great Shefford.

Id. T. B. Spahr (*MPO* 76435)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 152.26683  | (2000.0) | <i>P</i>  | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.21277452 | $\omega$ | 141.47063 | +0.13295986 |
| <i>a</i> | 2.7787937  | $\Omega$ | 135.93720 | +0.93971934 |
| <i>e</i> | 0.0962133  | <i>i</i> | 7.82018   | +0.15583555 |
| <i>P</i> | 4.63       | <i>H</i> | 15.8      | -0.31503846 |
|          |            |          |           | -0.04845213 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 16 | 704 | (0.1+ | 1.6+) | 2004 02 27 | J95 | (0.3- | 2.0+) | 2005 06 29 | 644 | 0.2+  | 0.5+  |
| 2001 08 16 | 704 | (0.3+ | 1.7+) | 2004 02 27 | J95 | 1.0+  | 0.7+  | 2005 06 29 | 644 | 0.0   | 0.7+  |
| 2001 08 16 | 704 | 0.7+  | 0.7+  | 2004 02 27 | 185 | 0.3-  | 0.3+  | 2006 09 26 | 703 | 0.3-  | 1.1+  |
| 2001 08 16 | 704 | 0.4-  | 0.8+  | 2004 02 27 | 185 | 0.3-  | 0.2+  | 2006 09 26 | 703 | (0.5- | 1.9+) |
| 2001 08 21 | 807 | 0.2-  | 0.5+  | 2004 03 15 | 185 | 0.4-  | 0.7-  | 2006 09 26 | 703 | 0.6-  | 1.3+  |
| 2001 08 21 | 807 | 0.4-  | 0.4+  | 2004 03 16 | 185 | 0.4-  | 0.3-  | 2006 09 26 | 703 | (0.2+ | 1.7+) |
| 2001 08 27 | 644 | 0.8-  | 1.0+  | 2005 04 30 | 691 | 0.2+  | 0.3+  | 2006 09 27 | 703 | 0.9+  | 0.2+  |
| 2001 08 27 | 644 | 0.0   | 0.5+  | 2005 04 30 | 691 | 0.1+  | 0.4+  | 2006 09 27 | 703 | 0.3-  | 0.9+  |
| 2001 08 27 | 644 | 0.1+  | 0.5+  | 2005 04 30 | 691 | 0.1+  | 0.4+  | 2006 09 27 | 703 | 0.0   | 0.4-  |
| 2004 02 22 | J95 | 0.4-  | 0.4-  | 2005 05 14 | 704 | 0.9-  | 0.6+  | 2006 09 27 | 703 | 0.6-  | 1.4+  |
| 2004 02 22 | J95 | 0.3-  | 0.2+  | 2005 05 14 | 704 | 0.2+  | 0.3+  | 2007 12 11 | J95 | 0.1-  | 1.0+  |
| 2004 02 22 | J95 | 0.1-  | 0.4-  | 2005 05 14 | 704 | 0.8-  | 0.8-  | 2007 12 11 | J95 | 0.3+  | 0.5-  |
| 2004 02 22 | J95 | (3.7- | 1.6+) | 2005 05 14 | 704 | 0.2-  | 0.1+  | 2007 12 11 | J95 | 0.0   | 0.5-  |
| 2004 02 23 | J95 | 0.0   | 1.1+  | 2005 05 27 | 185 | 0.8+  | 0.9+  | 2007 12 11 | J95 | 0.5-  | 0.1+  |
| 2004 02 23 | J95 | 1.0+  | 0.4-  | 2005 05 27 | 185 | 0.6+  | 0.2+  | 2007 12 11 | J95 | 0.3+  | 0.2+  |
| 2004 02 23 | J95 | 0.3-  | 0.2-  | 2005 05 27 | 185 | 0.2+  | 0.1+  | 2007 12 13 | J95 | 0.1-  | 1.3+  |
| 2004 02 26 | 704 | 0.5-  | 0.5+  | 2005 05 28 | 185 | 0.5+  | 0.1-  | 2007 12 13 | J95 | 0.2-  | 0.2-  |
| 2004 02 26 | 704 | 0.3-  | 0.5+  | 2005 05 28 | 185 | 0.0   | 0.3+  | 2007 12 13 | J95 | 0.1-  | 0.5+  |
| 2004 02 26 | 704 | 0.3-  | 0.9+  | 2005 05 28 | 185 | 0.2-  | 0.6+  |            |     |       |       |
| 2004 02 26 | 704 | 0.0   | 0.7+  | 2005 06 29 | 644 | 0.3+  | 0.2+  |            |     |       |       |

**(172763)\* 2004 DJ<sub>32</sub>**

Discovered 2004 Feb. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 245.89905  | (2000.0) | <i>P</i>  | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.20474377 | $\omega$ | 294.49429 | -0.95842587 |
| <i>a</i> | 2.8509893  | $\Omega$ | 261.45887 | +0.27345691 |
| <i>e</i> | 0.2325800  | <i>i</i> | 4.72695   | -0.22276337 |
| <i>P</i> | 4.81       | <i>H</i> | 16.0      | -0.17831527 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 14 | 644 | 0.3+  | 0.1+  | 2004 02 26 | 704 | 0.0  | 0.3+ | 2006 09 30 | 691 | 0.2- | 0.2+ |
| 2004 01 14 | 644 | 0.4+  | 0.0   | 2004 03 15 | 704 | 1.0+ | 0.6+ | 2006 09 30 | 691 | 0.4+ | 0.4+ |
| 2004 01 14 | 644 | 0.4+  | 0.3+  | 2004 03 15 | 704 | 0.4- | 0.2- | 2006 09 30 | 691 | 0.0  | 0.3- |
| 2004 01 23 | 704 | 0.3-  | 0.7+  | 2004 03 15 | 704 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.4- | 0.2- |
| 2004 01 23 | 704 | 0.2-  | 0.0   | 2004 03 15 | 704 | 0.1- | 0.2+ | 2007 11 09 | 691 | 0.2- | 0.1- |
| 2004 01 23 | 704 | 0.4+  | 1.0+  | 2004 03 15 | 704 | 0.4+ | 0.1+ | 2007 11 09 | 691 | 0.2- | 0.1- |
| 2004 01 23 | 704 | 0.1+  | 1.3+  | 2005 06 18 | G96 | 0.0  | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.1- |
| 2004 02 18 | 704 | 0.2+  | 1.0+  | 2005 06 18 | G96 | 0.2- | 0.2+ | 2007 11 09 | 691 | 0.3+ | 0.3- |
| 2004 02 18 | 704 | 0.3+  | 0.3-  | 2005 06 18 | G96 | 0.4- | 0.8+ | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 2004 02 18 | 704 | (1.6+ | 1.6+) | 2005 06 18 | G96 | 0.5- | 0.6+ | 2007 11 13 | 691 | 0.5- | 0.3+ |
| 2004 02 18 | 704 | 0.2+  | 0.6+  | 2005 07 05 | G96 | 0.6+ | 0.2+ | 2007 11 13 | 691 | 0.3- | 0.2+ |
| 2004 02 23 | 704 | 0.1+  | 0.9+  | 2005 07 05 | G96 | 0.2- | 0.4+ | 2007 11 13 | 691 | 0.2+ | 0.3+ |
| 2004 02 23 | 704 | 0.1+  | 0.3+  | 2005 07 05 | G96 | 0.1- | 0.7+ | 2007 12 15 | G96 | 1.5+ | 0.3- |
| 2004 02 23 | 704 | 0.1+  | 0.6-  | 2005 07 05 | G96 | 0.1+ | 0.4+ | 2007 12 15 | G96 | 0.7+ | 0.1+ |
| 2004 02 26 | 704 | 0.3-  | 0.4-  | 2006 09 26 | 691 | 0.3- | 0.0  | 2007 12 15 | G96 | 1.0+ | 0.5- |
| 2004 02 26 | 704 | 0.2+  | 0.4-  | 2006 09 26 | 691 | 0.3- | 0.3+ | 2007 12 15 | G96 | 1.1+ | 0.6- |
| 2004 02 26 | 704 | 0.5-  | 0.4+  | 2006 09 26 | 691 | 0.2- | 0.6+ |            |     |      |      |

**(172764)\* 2004 DY<sub>42</sub> = 2001 SV<sub>198</sub>**

Discovered 2004 Feb. 23 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 61980)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 192.11949  | (2000.0) | <i>P</i>  | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.19896228 | $\omega$ | 131.10768 | -0.56007558 |
| <i>a</i> | 2.9059550  | $\Omega$ | 104.79412 | +0.82760902 |
| <i>e</i> | 0.1185401  | <i>i</i> | 2.20089   | -0.77112651 |
| <i>P</i> | 4.95       | <i>H</i> | 15.5      | -0.50442239 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 19 | 704 | 0.2- | 0.2+ | 2006 08 18 | 691 | 0.1- | 0.2- | 2006 10 20 | G96 | 0.1+  | 0.5-  |
| 2001 09 19 | 704 | 0.7- | 0.1+ | 2006 08 18 | 691 | 0.1- | 0.1- | 2007 11 05 | 691 | 0.1+  | 0.3-  |
| 2001 09 19 | 704 | 0.7- | 1.1+ | 2006 08 18 | 691 | 0.2- | 0.1+ | 2007 11 05 | 691 | 0.3-  | 0.3-  |
| 2001 09 19 | 704 | 0.5- | 0.8+ | 2006 08 27 | 705 | 0.3+ | 0.1+ | 2007 11 05 | 691 | 0.2-  | 0.4+  |
| 2001 09 19 | 704 | 0.5- | 0.1- | 2006 08 27 | 705 | 0.2+ | 0.0  | 2007 11 09 | 691 | 0.3-  | 0.3-  |
| 2001 09 21 | 704 | 0.3- | 0.4- | 2006 09 15 | 691 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1-  | 0.0   |
| 2001 09 21 | 704 | 0.7+ | 0.3+ | 2006 09 15 | 691 | 0.1- | 0.0  | 2007 11 09 | 691 | 0.5-  | 0.0   |
| 2001 09 21 | 704 | 0.4+ | 0.1+ | 2006 09 15 | 691 | 0.1- | 0.1- | 2007 11 19 | 691 | 0.4+  | 0.2-  |
| 2001 09 21 | 704 | 0.8+ | 0.4+ | 2006 09 15 | 291 | 0.0  | 0.3+ | 2007 11 19 | 691 | 0.1+  | 0.2-  |
| 2004 02 23 | 704 | 0.2- | 0.2+ | 2006 09 15 | 291 | 0.1- | 0.2+ | 2007 11 19 | 691 | (2.3+ | 0.4+) |
| 2004 02 23 | 704 | 0.0  | 0.5+ | 2006 09 15 | 291 | 0.0  | 0.3+ | 2007 12 03 | 703 | 1.1+  | 0.8+  |
| 2004 02 23 | 704 | 0.0  | 0.1- | 2006 09 16 | 291 | 0.6- | 0.1+ | 2007 12 03 | 703 | (0.8+ | 1.7+) |
| 2004 02 23 | 704 | 0.0  | 0.6+ | 2006 09 16 | 291 | 0.2- | 0.2+ | 2007 12 03 | 703 | 0.6+  | 0.4-  |
| 2004 02 23 | 704 | 0.5- | 0.3+ | 2006 09 16 | 291 | 0.1+ | 0.7+ | 2007 12 03 | 703 | (1.7- | 0.7-) |
| 2004 02 25 | 704 | 0.1- | 0.2- | 2006 09 30 | 691 | 0.1+ | 0.0  | 2007 12 05 | 704 | (2.1+ | 0.1+) |
| 2004 02 25 | 704 | 0.1- | 0.2+ | 2006 09 30 | 691 | 0.2+ | 0.1+ | 2007 12 05 | 704 | 0.9+  | 0.2+  |
| 2004 02 25 | 704 | 0.8+ | 0.3+ | 2006 09 30 | 691 | 0.4+ | 0.2- | 2007 12 05 | 704 | (2.2+ | 0.5-) |
| 2004 02 25 | 704 | 0.8- | 0.1- | 2006 09 30 | G96 | 0.1+ | 0.2- | 2007 12 05 | 704 | 0.3+  | 0.8+  |
| 2004 02 26 | 704 | 0.2- | 0.6+ | 2006 09 30 | G96 | 0.0  | 0.3- | 2007 12 15 | G96 | 0.8+  | 0.3-  |
| 2004 02 26 | 704 | 0.4+ | 0.2+ | 2006 09 30 | G96 | 0.0  | 0.4- | 2007 12 15 | G96 | 0.5+  | 0.4-  |
| 2004 02 26 | 704 | 0.0  | 0.6+ | 2006 09 30 | G96 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.4+  | 0.3-  |
| 2004 03 20 | 691 | 0.2+ | 0.5+ | 2006 10 20 | G96 | 0.1+ | 0.3- | 2007 12 15 | G96 | 0.0   | 0.7-  |

2004 03 20 691 0.3+ 0.2+ 2006 10 20 G96 0.1+ 0.5-  
 2004 03 20 691 0.2+ 0.3+ 2006 10 20 G96 0.6+ 0.2-

**(172765)\* 2004 DW<sub>51</sub>**

Discovered 2004 Feb. 23 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 235.43844  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.19257461 | $\omega$ | 113.20644 | -0.94763945 +0.31425598  |
| <i>a</i> | 2.9698650  | $\Omega$ | 85.14795  | -0.30985399 -0.86182726  |
| <i>e</i> | 0.0945653  | <i>i</i> | 3.26606   | -0.07726564 -0.39811675  |
| <i>P</i> | 5.12       | <i>H</i> | 16.0      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1999 03 21 | 645 | 0.1- 0.2-   | 2004 03 11 | 644 | 0.1+ 0.3+   | 2004 03 28 | 703 | 0.2- 1.0- |
| 1999 03 21 | 645 | 0.1- 0.2-   | 2004 03 15 | 703 | (3.8- 1.9-) | 2006 08 18 | 691 | 0.1- 0.2+ |
| 2003 12 19 | 691 | 0.2- 0.1-   | 2004 03 15 | 704 | 0.2- 1.0+   | 2006 08 18 | 691 | 0.1- 0.7+ |
| 2003 12 19 | 691 | 0.0 0.0     | 2004 03 15 | 703 | 0.5- 0.9+   | 2006 08 18 | 691 | 0.1- 0.3+ |
| 2003 12 19 | 691 | 0.1- 0.2-   | 2004 03 15 | 704 | 0.5+ 0.2+   | 2006 08 27 | 691 | 0.1- 0.2+ |
| 2004 02 18 | 704 | 0.9+ 0.9+   | 2004 03 15 | 703 | 0.2+ 0.6+   | 2006 08 27 | 691 | 0.0 0.0   |
| 2004 02 18 | 704 | 1.0+ 0.5+   | 2004 03 15 | 704 | 0.5+ 1.3-   | 2006 08 27 | 691 | 0.3- 0.4+ |
| 2004 02 18 | 704 | 0.2- 0.1+   | 2004 03 15 | 703 | 0.7- 0.7+   | 2006 11 23 | G96 | 0.0 0.2-  |
| 2004 02 23 | 704 | 0.8+ 0.5+   | 2004 03 15 | 704 | 0.2- 0.7+   | 2006 11 23 | G96 | 0.2- 0.4+ |
| 2004 02 23 | 704 | 0.6+ 1.2+   | 2004 03 15 | 704 | 0.5+ 0.9+   | 2006 11 23 | G96 | 0.2- 0.1+ |
| 2004 02 23 | 704 | 1.3+ 0.5+   | 2004 03 19 | 704 | 0.1- 1.0+   | 2006 11 23 | G96 | 0.5- 0.2+ |
| 2004 02 23 | 704 | 0.9+ 0.6+   | 2004 03 19 | 704 | 0.8+ 0.3+   | 2007 11 19 | 691 | 0.0 0.1-  |
| 2004 02 25 | 704 | (1.2- 2.5+) | 2004 03 19 | 704 | 0.2+ 0.2-   | 2007 11 19 | 691 | 0.0 0.0   |
| 2004 02 25 | 704 | 0.5+ 0.4+   | 2004 03 19 | 704 | 0.5+ 0.0    | 2007 11 19 | 691 | 0.1+ 0.1- |
| 2004 02 25 | 704 | (1.4- 2.0+) | 2004 03 19 | 704 | 0.2+ 0.3+   | 2007 12 04 | G96 | 0.9+ 0.3- |
| 2004 02 25 | 704 | 1.2- 0.1+   | 2004 03 20 | 699 | 0.4+ 0.3-   | 2007 12 04 | G96 | 0.7+ 0.3- |
| 2004 02 26 | 704 | 0.7- 1.2+   | 2004 03 20 | 699 | 0.4- 0.4-   | 2007 12 04 | G96 | 0.4+ 0.3- |
| 2004 02 26 | 704 | 0.4- 0.9+   | 2004 03 20 | 699 | 0.0 0.7+    | 2007 12 04 | G96 | 0.9- 0.1+ |
| 2004 02 26 | 704 | 0.1+ 1.0+   | 2004 03 20 | 699 | 0.4+ 0.3+   | 2007 12 05 | 704 | 1.0- 0.2- |
| 2004 02 26 | 704 | 0.3- 0.6-   | 2004 03 28 | 703 | 0.2+ 0.8-   | 2007 12 05 | 704 | 0.4+ 0.7+ |
| 2004 03 11 | 644 | 0.3- 0.5+   | 2004 03 28 | 703 | 1.1+ 0.6+   | 2007 12 05 | 704 | 0.1+ 0.2- |
| 2004 03 11 | 644 | 0.1+ 0.4+   | 2004 03 28 | 703 | 0.2- 1.3+   |            |     |           |

**(172766)\* 2004 DR<sub>56</sub> = 2005 JX<sub>83</sub>**

Discovered 2004 Feb. 22 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 86332)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 83.70074   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.20070076 | $\omega$ | 140.77957 | +0.91692340 +0.39890257  |
| <i>a</i> | 2.8891496  | $\Omega$ | 195.72230 | -0.37583979 +0.85367739  |
| <i>e</i> | 0.0824158  | <i>i</i> | 2.39484   | -0.13414888 +0.33483078  |
| <i>P</i> | 4.91       | <i>H</i> | 16.2      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2001 08 15 | 608 | 0.1- 0.1+ | 2005 05 08 | 691 | 0.1+ 0.2+ | 2006 08 28 | 703 | 1.1- 0.2+ |
| 2001 08 15 | 608 | 0.0 0.4-  | 2005 05 08 | 691 | 0.0 0.4+  | 2006 08 28 | 703 | 0.8- 0.3+ |
| 2001 08 15 | 608 | 0.4+ 0.4- | 2005 05 12 | 691 | 0.1+ 0.3+ | 2006 08 28 | 703 | 0.1+ 0.7+ |
| 2004 02 12 | 691 | 0.1- 0.0  | 2005 05 12 | 691 | 0.0 0.2+  | 2007 11 09 | 691 | 0.1+ 0.1+ |
| 2004 02 12 | 691 | 0.2- 0.2+ | 2005 05 12 | 691 | 0.2+ 0.1+ | 2007 11 09 | 691 | 0.1- 0.2+ |
| 2004 02 12 | 691 | 0.1- 0.2+ | 2005 06 13 | G96 | 0.0 0.4+  | 2007 11 09 | 691 | 0.2- 0.1+ |
| 2004 02 22 | 691 | 0.4+ 0.2- | 2005 06 13 | G96 | 0.5- 0.4+ | 2007 11 13 | 691 | 0.1- 0.4+ |
| 2004 02 22 | 691 | 0.1+ 0.2- | 2005 06 13 | G96 | 0.1+ 0.8+ | 2007 11 13 | 691 | 0.2- 0.4+ |
| 2004 02 22 | 691 | 0.3+ 0.1+ | 2005 06 13 | G96 | 0.4- 0.3+ | 2007 11 13 | 691 | 0.3+ 0.7+ |
| 2004 02 29 | 691 | 0.1+ 0.2- | 2006 08 13 | 644 | 0.0 0.5+  | 2007 12 05 | 704 | 0.0 0.7+  |
| 2004 02 29 | 691 | 0.4- 0.2+ | 2006 08 13 | 644 | 0.1+ 0.4+ | 2007 12 05 | 704 | 0.0 0.3-  |
| 2004 02 29 | 691 | 0.1- 0.1- | 2006 08 13 | 644 | 0.3+ 0.2+ | 2007 12 05 | 704 | 0.3+ 1.4- |
| 2005 05 08 | 691 | 0.1+ 0.0  | 2006 08 28 | 703 | 0.2+ 0.4+ |            |     |           |

**(172767)\* 2004 DH<sub>60</sub>**

Discovered 2004 Feb. 26 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 164.60525  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.18049391 | $\omega$ | 284.09109 | -0.47342257 +0.87965433  |
| <i>a</i> | 3.1009471  | $\Omega$ | 317.55487 | -0.77984320 -0.44264928  |
| <i>e</i> | 0.0824698  | <i>i</i> | 3.87423   | -0.40953101 -0.17398239  |
| <i>P</i> | 5.46       | <i>H</i> | 15.6      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2001 09 28 | 644 | 0.7+ 0.1+ | 2004 03 17 | 691 | 0.1+ 0.1- | 2006 08 29 | 691 | 0.0 0.3+  |
| 2001 09 28 | 644 | 0.2+ 0.2+ | 2004 03 18 | 704 | 1.4+ 0.2- | 2006 08 29 | 691 | 0.1- 0.4+ |
| 2001 09 28 | 644 | 0.5+ 0.5+ | 2004 03 18 | 704 | 0.7+ 1.1+ | 2006 09 27 | G96 | 0.2- 0.0  |
| 2001 10 18 | 644 | 0.1- 0.5- | 2004 03 18 | 704 | 0.5+ 1.1+ | 2006 09 27 | G96 | 0.3- 0.0  |
| 2001 10 18 | 644 | 0.6- 1.0- | 2004 03 23 | 704 | 0.2+ 0.4- | 2006 09 27 | G96 | 0.0 0.1+  |
| 2001 10 18 | 644 | 0.3- 0.7- | 2004 03 23 | 704 | 0.2+ 0.9+ | 2006 09 27 | G96 | 0.4+ 0.2+ |
| 2004 02 14 | 691 | 0.2+ 0.2+ | 2004 03 23 | 704 | 0.5+ 0.6+ | 2007 11 07 | 691 | 0.5- 0.1- |
| 2004 02 14 | 691 | 0.1- 0.2+ | 2004 03 26 | 691 | 0.2- 0.1+ | 2007 11 07 | 691 | 0.3- 0.0  |
| 2004 02 14 | 691 | 0.2- 0.3+ | 2004 03 26 | 691 | 0.2- 0.1+ | 2007 11 07 | 691 | 0.1- 0.1+ |
| 2004 02 26 | 704 | 0.4- 1.0+ | 2004 03 26 | 691 | 0.2+ 0.0  | 2007 11 09 | 691 | 0.1+ 0.1+ |
| 2004 02 26 | 704 | 0.3+ 0.3+ | 2006 08 19 | 691 | 0.4- 0.3+ | 2007 11 09 | 691 | 0.3- 0.0  |
| 2004 02 26 | 704 | 0.2+ 0.8+ | 2006 08 19 | 691 | 0.5- 0.5+ | 2007 11 09 | 691 | 0.0 0.0   |
| 2004 02 26 | 704 | 0.2- 0.2+ | 2006 08 19 | 691 | 0.4- 0.1+ | 2007 11 13 | 691 | 0.3+ 0.6- |
| 2004 02 29 | 691 | 0.2+ 0.4+ | 2006 08 27 | 691 | 0.0 0.6+  | 2007 11 13 | 691 | 0.2+ 0.1+ |
| 2004 02 29 | 691 | 0.1+ 0.2+ | 2006 08 27 | 691 | 0.2- 0.5+ | 2007 11 13 | 691 | 0.4+ 0.1- |
| 2004 02 29 | 691 | 0.3+ 0.2+ | 2006 08 27 | 691 | 0.0 0.2+  | 2007 11 17 | 691 | 0.2- 0.1+ |
| 2004 03 11 | 644 | 0.0 0.4+  | 2006 08 28 | 703 | 1.2+ 0.3- | 2007 11 17 | 691 | 0.2+ 0.1+ |
| 2004 03 11 | 644 | 0.3+ 0.1+ | 2006 08 28 | 703 | 1.1+ 0.9+ | 2007 11 17 | 691 | 0.3+ 0.2+ |
| 2004 03 11 | 644 | 0.5+ 0.0  | 2006 08 28 | 703 | 0.5- 1.5- | 2007 12 05 | 691 | 0.0 0.2+  |
| 2004 03 17 | 691 | 0.0 0.1-  | 2006 08 28 | 703 | 0.7- 0.4- | 2007 12 05 | 691 | 0.1+ 0.2+ |
| 2004 03 17 | 691 | 0.0 0.0   | 2006 08 29 | 691 | 0.1- 0.6+ | 2007 12 05 | 691 | 0.1- 0.1+ |

**(172768)\* 2004 DJ<sub>60</sub> = 2002 RB<sub>247</sub>**

Discovered 2004 Feb. 26 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Id. A. Doppler (*MPO* 95182)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 34.62760   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22920286 | $\omega$ | 99.35287  | +0.64075590 -0.76668806  |
| <i>a</i> | 2.6443729  | $\Omega$ | 310.72006 | +0.68189633 +0.59242275  |
| <i>e</i> | 0.1553335  | <i>i</i> | 3.04539   | +0.35277367 +0.24743627  |
| <i>P</i> | 4.30       | <i>H</i> | 16.4      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2002 09 06 | 704 | 0.6- 0.7+   | 2006 08 13 | 644 | 0.1+ 0.1+ | 2006 08 28 | 703 | 0.6- 0.1-   |
| 2002 09 06 | 704 | 0.6- 0.3+   | 2006 08 13 | 644 | 0.2- 0.4+ | 2006 08 28 | 703 | 0.7- 0.5+   |
| 2002 09 06 | 704 | 0.4- 0.4+   | 2006 08 13 | 644 | 0.1- 0.4+ | 2006 08 28 | 699 | 1.1- 0.4+   |
| 2002 10 04 | 704 | 0.1+ 1.0+   | 2006 08 13 | D35 | 0.2+ 0.3+ | 2006 08 28 | 703 | 0.4- 0.6-   |
| 2002 10 04 | 704 | 0.3+ 0.2-   | 2006 08 13 | D35 | 0.3- 0.5+ | 2006 08 28 | 703 | (1.7- 0.2-) |
| 2002 10 04 | 704 | 0.1- 1.4+   | 2006 08 13 | D35 | 0.0 0.8+  | 2006 08 28 | 699 | 0.3+ 0.6-   |
| 2002 10 04 | 704 | (0.4- 1.8+) | 2006 08 15 | 644 | 0.3- 0.4+ | 2006 09 26 | G96 | 0.1+ 0.1-   |
| 2002 10 04 | 704 | 0.4- 1.2+   | 2006 08 15 | 644 | 0.3- 0.1+ | 2006 09 26 | G96 | 0.3- 0.2-   |
| 2002 11 06 | 446 | 1.3- 1.1+   | 2006 08 15 | 644 | 0.3- 0.3+ | 2006 09 26 | G96 | 0.1- 0.1-   |
| 2004 02 26 | 704 | 0.7- 0.2+   | 2006 08 15 | 644 | 0.6- 0.8+ | 2006 09 26 | G96 | 0.4- 0.0    |
| 2004 02 26 | 704 | 0.2+ 0.8+   | 2006 08 15 | 644 | 0.1- 0.6+ | 2006 10 21 | G96 | 0.3- 0.2-   |
| 2004 02 26 | 704 | 0.0 1.0+    | 2006 08 15 | 644 | 0.3- 0.2+ | 2006 10 21 | G96 | 0.0 0.2-    |
| 2004 02 26 | 704 | 0.6+ 0.5+   | 2006 08 16 | A50 | 0.3+ 0.1- | 2006 10 21 | G96 | 0.3- 0.1-   |
| 2004 02 26 | 704 | 0.1- 0.8+   | 2006 08 17 | A50 | 0.7+ 0.5+ | 2006 10 21 | G96 | 0.0 0.1-    |
| 2004 02 29 | 691 | 0.4+ 0.4+   | 2006 08 17 | 644 | 0.1+ 0.3+ | 2007 10 15 | G96 | 0.0 0.3-    |
| 2004 02 29 | 691 | 0.5+ 0.2+   | 2006 08 17 | 644 | 0.3- 0.4+ | 2007 10 15 | G96 | 0.3- 0.2-   |
| 2004 02 29 | 691 | 0.0 0.7+    | 2006 08 17 | 644 | 0.2- 0.3+ | 2007 10 15 | G96 | 0.2- 0.0    |
| 2004 03 17 | 691 | 0.3+ 0.3+   | 2006 08 17 | A50 | 0.5+ 0.2+ | 2007 10 15 | G96 | 0.5- 0.2-   |
| 2004 03 17 | 691 | 0.1- 0.1+   | 2006 08 17 | A50 | 0.5+ 0.8- | 2007 11 04 | G96 | 0.4- 0.0    |
| 2004 03 17 | 691 | 0.0 0.3+    | 2006 08 22 | 644 | 0.3- 0.1+ | 2007 11 04 | G96 | 0.4- 0.0    |
| 2004 03 26 | 691 | 0.3+ 0.3+   | 2006 08 22 | 644 | 0.4- 0.2- | 2007 11 04 | G96 | 0.3- 0.1-   |
| 2004 03 26 | 691 | 0.3+ 0.9+   | 2006 08 22 | 644 | 0.3+ 0.2+ | 2007 11 04 | G96 | 0.3- 0.2-   |
| 2004 03 26 | 691 | 0.2+ 0.2+   | 2006 08 28 | 691 | 0.1+ 0.2+ | 2007 12 14 | G96 | 0.2+ 0.6-   |

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|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 07 18 | G96 | 0.4− | 0.1+ | 2006 08 28 | 691 | 0.1+  | 0.3+  | 2007 12 14 | G96 | 0.3+ | 0.5− |
| 2006 07 18 | G96 | 0.0  | 0.4− | 2006 08 28 | 699 | 0.9−  | 1.1+  | 2007 12 14 | G96 | 0.3+ | 0.5− |
| 2006 07 18 | G96 | 0.5+ | 0.5+ | 2006 08 28 | 691 | 0.0   | 0.4+  |            |     |      |      |
| 2006 07 18 | G96 | 0.3+ | 0.3+ | 2006 08 28 | 699 | (1.7+ | 1.4+) |            |     |      |      |

(172769)\* 2004 DV<sub>75</sub>

Discovered 2004 Feb. 17 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 227.59903  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18959544 | $\omega$ | 44.67788  | −0.99950572 |          |          | +0.02891929 |
| <i>a</i> | 3.0008949  | $\Omega$ | 136.97477 | −0.03143676 |          |          | −0.92213319 |
| <i>e</i> | 0.1198899  | <i>i</i> | 1.03530   | +0.00021743 |          |          | −0.38579016 |
| <i>P</i> | 5.20       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 02 08 | 691 | 0.1+ | 0.3+ | 2004 02 17 | 704 | 0.5+  | 1.1+  | 2006 09 26 | G96 | 0.3− | 0.3− |
| 1999 02 08 | 691 | 0.1− | 0.9+ | 2004 02 26 | 704 | 0.5+  | 0.9+  | 2006 09 26 | G96 | 0.3− | 0.3− |
| 1999 02 08 | 691 | 0.3+ | 0.0  | 2004 02 26 | 704 | 0.5+  | 1.2+  | 2006 09 26 | G96 | 0.3− | 0.4− |
| 1999 03 13 | 691 | 0.0  | 0.4+ | 2004 02 26 | 704 | 0.1−  | 0.1+  | 2006 09 26 | G96 | 0.5− | 0.1− |
| 1999 03 13 | 691 | 0.1− | 0.2− | 2004 02 26 | 704 | 0.8−  | 0.1+  | 2007 10 30 | 691 | 0.1− | 0.0  |
| 1999 03 13 | 691 | 0.1+ | 0.2− | 2004 03 18 | 704 | (1.5+ | 2.6+) | 2007 10 30 | 691 | 0.0  | 0.1− |
| 2001 09 19 | 291 | 0.1− | 0.1+ | 2004 03 18 | 704 | 0.7+  | 1.1+  | 2007 10 30 | 691 | 0.6− | 0.3− |
| 2001 09 19 | 291 | 0.2− | 0.5+ | 2004 03 18 | 704 | (1.4+ | 1.6+) | 2007 11 09 | G96 | 0.6+ | 0.0  |
| 2001 09 19 | 291 | 0.0  | 0.5+ | 2004 03 18 | 704 | 0.5+  | 1.2+  | 2007 11 09 | G96 | 0.1+ | 0.1+ |
| 2004 01 30 | 691 | 0.2− | 0.3+ | 2006 08 19 | 691 | 0.1−  | 0.2+  | 2007 11 09 | G96 | 0.2+ | 0.0  |
| 2004 01 30 | 691 | 0.1− | 0.3+ | 2006 08 19 | 691 | 0.6−  | 0.2+  | 2007 11 09 | G96 | 0.3+ | 0.2− |
| 2004 01 30 | 691 | 0.0  | 0.0  | 2006 08 19 | 691 | 0.5−  | 0.4+  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2004 02 17 | 704 | 1.0+ | 0.2+ | 2006 08 27 | 691 | 0.2−  | 0.7+  | 2007 12 06 | G96 | 0.5+ | 0.3+ |
| 2004 02 17 | 704 | 1.0+ | 0.8+ | 2006 08 27 | 691 | 0.0   | 0.8+  | 2007 12 06 | G96 | 0.2+ | 0.5− |
| 2004 02 17 | 704 | 1.0+ | 1.0+ | 2006 08 27 | 691 | 0.4+  | 0.8+  | 2007 12 06 | G96 | 0.9+ | 0.4− |

(172770)\* 2004 EV<sub>2</sub>

Discovered 2004 Mar. 9 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 339.91495  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.22928251 | $\omega$ | 16.82009  | −0.46033835 |          |          | −0.86021261 |
| <i>a</i> | 2.6437604  | $\Omega$ | 101.05357 | +0.78659668 |          |          | −0.50979019 |
| <i>e</i> | 0.1465696  | <i>i</i> | 12.91562  | +0.41152674 |          |          | +0.01217520 |
| <i>P</i> | 4.30       | <i>H</i> | 15.6      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 19 | 644 | 0.1−  | 1.2−  | 2004 03 28 | 704 | 0.4−  | 0.6+  | 2007 11 14 | 704 | 0.5+  | 0.0   |
| 2002 09 29 | 608 | 0.5−  | 0.8+  | 2004 03 28 | 704 | 0.3−  | 1.0−  | 2007 11 14 | 704 | 0.3−  | 0.4+  |
| 2002 09 29 | 608 | 0.4−  | 0.0   | 2004 03 28 | 704 | 0.1+  | 0.5+  | 2007 12 01 | D35 | 0.1−  | 0.5−  |
| 2002 09 29 | 608 | 0.7−  | 0.2−  | 2004 03 28 | 704 | 0.1+  | 1.2+  | 2007 12 01 | D35 | 0.1+  | 0.3−  |
| 2002 10 05 | 704 | 0.4+  | 1.0+  | 2004 04 08 | 644 | 0.5−  | 0.5+  | 2007 12 01 | D35 | 0.0   | 0.4−  |
| 2002 10 05 | 704 | 0.2+  | 0.8+  | 2004 04 08 | 644 | 0.5−  | 0.1−  | 2007 12 04 | 699 | 0.0   | 0.0   |
| 2002 10 05 | 704 | 0.1−  | 0.2+  | 2004 04 08 | 644 | 0.4−  | 0.3+  | 2007 12 04 | 699 | 0.2+  | 0.8−  |
| 2002 10 06 | 608 | 0.6−  | 0.3+  | 2004 04 08 | 644 | 0.5−  | 0.2+  | 2007 12 04 | 699 | 0.6−  | 0.5+  |
| 2002 10 16 | 644 | 0.3+  | 0.6+  | 2004 04 08 | 644 | 0.6−  | 0.0   | 2007 12 04 | 699 | 0.1+  | 0.6+  |
| 2002 10 16 | 644 | 0.3+  | 0.4+  | 2004 04 08 | 644 | 0.6−  | 0.0   | 2007 12 05 | 704 | 0.3−  | 1.0−  |
| 2002 10 16 | 644 | 0.1−  | 0.4+  | 2006 09 26 | 703 | 0.5−  | 0.3−  | 2007 12 05 | 704 | 0.6+  | 0.7−  |
| 2002 11 05 | 644 | 0.1−  | 0.1+  | 2006 09 26 | 703 | (3.1− | 0.3−) | 2007 12 05 | 704 | (0.3− | 1.8−) |
| 2002 11 05 | 644 | 0.3+  | 0.2+  | 2006 09 26 | 703 | (5.1− | 2.4−) | 2007 12 05 | 704 | 0.7+  | 0.8−  |
| 2002 11 05 | 644 | 0.2−  | 0.6+  | 2007 11 05 | 704 | 0.1−  | 0.6−  | 2007 12 05 | 704 | 0.4−  | 0.3−  |
| 2004 01 30 | 704 | 1.3+  | 1.0+  | 2007 11 05 | 704 | 0.0   | 0.4+  | 2007 12 06 | G96 | 0.3−  | 0.2−  |
| 2004 01 30 | 704 | 0.8+  | 1.0+  | 2007 11 05 | 704 | 1.1+  | 0.2−  | 2007 12 06 | G96 | 0.4−  | 0.2−  |
| 2004 01 30 | 704 | 0.4+  | 0.7+  | 2007 11 05 | 704 | 0.9+  | 0.2+  | 2007 12 06 | G96 | 0.1+  | 0.3−  |
| 2004 01 30 | 704 | (2.0+ | 1.0+) | 2007 11 07 | 703 | 1.0−  | 0.1−  | 2007 12 10 | 704 | 0.3−  | 0.2−  |
| 2004 03 09 | 644 | 1.0−  | 0.0   | 2007 11 07 | 703 | 0.4−  | 0.1+  | 2007 12 10 | 704 | 0.1+  | 0.0   |
| 2004 03 09 | 644 | 1.0−  | 0.2+  | 2007 11 07 | 703 | 0.8−  | 0.2+  | 2007 12 10 | 704 | 0.1+  | 0.2−  |
| 2004 03 09 | 644 | 0.8−  | 0.1+  | 2007 11 07 | 703 | 1.2−  | 0.8+  | 2007 12 10 | 704 | 0.6−  | 0.7+  |
| 2004 03 14 | 704 | 0.7+  | 0.0   | 2007 11 11 | G96 | 0.1−  | 0.1−  | 2007 12 10 | 704 | 0.5−  | 0.1+  |
| 2004 03 14 | 704 | 1.5+  | 0.0   | 2007 11 11 | G96 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.9+  | 0.4+  |

## M.P.O. 129473

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 14 | 704 | 1.0+  | 0.4−  | 2007 11 11 | G96 | 0.2+ | 0.1− | 2007 12 14 | 704 | 0.4+ | 0.3+ |
| 2004 03 14 | 704 | 0.9+  | 0.1−  | 2007 11 11 | G96 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.7+ | 0.4− |
| 2004 03 14 | 704 | 1.0+  | 0.1+  | 2007 11 14 | 704 | 0.4+ | 0.1+ |            |     |      |      |
| 2004 03 28 | 704 | (0.2− | 2.0+) | 2007 11 14 | 704 | 0.5+ | 0.8− |            |     |      |      |

(172771)\* 2004 ER<sub>3</sub> = 2000 FH<sub>18</sub>

Discovered 2004 Mar. 10 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 61996)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 358.78941  |          | (2000.0) |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.24062259 | $\omega$ | 22.63904 | −0.48451160 |          |          | −0.86350549 |
| <i>a</i> | 2.5600304  | $\Omega$ | 96.59180 | +0.77947178 |          |          | −0.49881173 |
| <i>e</i> | 0.1381311  | <i>i</i> | 8.10317  | +0.39707965 |          |          | −0.07446557 |
| <i>P</i> | 4.10       | <i>H</i> | 15.9     | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 11 11 | 691 | 0.1− | 0.5− | 2003 12 28 | 704 | 0.1− | 0.2+ | 2004 03 26 | 703 | 0.7−  | 0.8+  |
| 1994 11 11 | 691 | 0.2+ | 0.2− | 2004 02 17 | 704 | 0.3+ | 1.3+ | 2004 03 26 | 703 | (1.2− | 1.8+) |
| 1994 11 11 | 691 | 0.1+ | 0.3− | 2004 02 17 | 704 | 0.3− | 0.6+ | 2004 03 26 | 703 | (0.1+ | 2.4+) |
| 2000 03 29 | 704 | 0.8− | 0.2− | 2004 02 17 | 704 | 0.7+ | 0.7+ | 2004 04 09 | 644 | 0.4+  | 0.8+  |
| 2000 03 29 | 704 | 0.2+ | 0.3+ | 2004 02 27 | 704 | 0.3− | 0.2+ | 2004 04 09 | 644 | 0.5+  | 0.6+  |
| 2000 03 29 | 704 | 0.3+ | 0.1+ | 2004 02 27 | 704 | 0.4+ | 0.1− | 2004 04 09 | 644 | 0.3+  | 0.5+  |
| 2000 03 29 | 704 | 0.8− | 0.3+ | 2004 02 27 | 704 | 0.1+ | 0.4+ | 2006 09 19 | F84 | 0.2+  | 0.1+  |
| 2000 03 29 | 704 | 1.9+ | 0.5− | 2004 03 10 | 644 | 0.5− | 0.3− | 2006 09 19 | F84 | 0.8−  | 1.4−  |
| 2000 04 03 | 704 | 0.2− | 0.0  | 2004 03 10 | 644 | 0.2+ | 0.1+ | 2006 09 26 | 703 | 1.0−  | 0.3+  |
| 2000 04 03 | 704 | 0.3− | 0.3+ | 2004 03 10 | 644 | 0.1− | 0.2+ | 2006 09 26 | 703 | 0.2+  | 0.1−  |
| 2000 04 03 | 704 | 0.3− | 0.5− | 2004 03 10 | 644 | 0.1+ | 0.1− | 2006 09 26 | 703 | (0.4− | 1.7−) |
| 2002 09 05 | 645 | 0.1− | 0.3+ | 2004 03 10 | 644 | 0.1+ | 0.2+ | 2006 09 26 | 703 | 1.4−  | 0.7−  |
| 2002 09 05 | 645 | 0.0  | 0.2+ | 2004 03 10 | 644 | 0.1+ | 0.1− | 2007 09 26 | G96 | 0.1+  | 1.1−  |
| 2002 10 15 | 644 | 0.0  | 1.2+ | 2004 03 14 | 704 | 0.2+ | 0.1− | 2007 09 26 | G96 | 0.2+  | 0.3−  |
| 2002 10 15 | 644 | 0.2+ | 1.2+ | 2004 03 14 | 704 | 0.0  | 0.8+ | 2007 09 26 | G96 | 0.1+  | 0.1+  |
| 2002 10 15 | 644 | 0.1− | 1.2+ | 2004 03 14 | 704 | 0.4− | 1.3+ | 2007 09 26 | G96 | 0.1−  | 0.2−  |
| 2003 12 23 | 704 | 0.4+ | 0.8− | 2004 03 23 | 704 | 0.3+ | 0.1− | 2007 11 20 | G96 | 0.3−  | 0.0   |
| 2003 12 23 | 704 | 0.4+ | 0.8− | 2004 03 23 | 704 | 0.1+ | 0.3− | 2007 11 20 | G96 | 0.3+  | 0.1−  |
| 2003 12 23 | 704 | 0.0  | 0.1− | 2004 03 23 | 704 | 0.6+ | 0.5− | 2007 11 20 | G96 | 0.2+  | 0.1−  |
| 2003 12 28 | 704 | 0.8− | 0.4+ | 2004 03 23 | 704 | 0.2− | 0.3+ | 2007 11 20 | G96 | 0.1+  | 0.1−  |
| 2003 12 28 | 704 | 0.4+ | 0.1− | 2004 03 23 | 704 | 0.3+ | 0.3+ |            |     |       |       |
| 2003 12 28 | 704 | 1.0+ | 0.4− | 2004 03 26 | 703 | 0.6+ | 1.3+ |            |     |       |       |

(172772)\* 2004 EZ<sub>12</sub>

Discovered 2004 Mar. 11 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 185.89561  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18287672 | $\omega$ | 126.93489 | −0.50831258 |          |          | +0.85970252 |
| <i>a</i> | 3.0739521  | $\Omega$ | 112.44075 | −0.80640450 |          |          | −0.45467630 |
| <i>e</i> | 0.1050326  | <i>i</i> | 3.11953   | −0.30220872 |          |          | −0.23276822 |
| <i>P</i> | 5.39       | <i>H</i> | 15.3      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 11 | 012 | 0.3+ | 0.2− | 2004 03 16 | 704 | 0.3+ | 0.4+ | 2006 09 28 | 691 | 0.4− | 0.6+ |
| 2003 01 11 | 012 | 0.3+ | 0.4− | 2004 03 16 | 704 | 0.0  | 0.6+ | 2006 09 28 | 691 | 0.5− | 0.7+ |
| 2003 01 11 | 012 | 0.3− | 1.1+ | 2004 03 16 | 704 | 1.0+ | 1.0+ | 2007 10 20 | G96 | 0.2+ | 0.1− |
| 2003 01 11 | 012 | 0.2− | 0.1− | 2004 03 17 | 704 | 0.4+ | 0.6+ | 2007 10 20 | G96 | 0.1+ | 0.1− |
| 2004 02 23 | 704 | 0.0  | 0.9+ | 2004 03 17 | 704 | 0.1− | 0.6+ | 2007 10 20 | G96 | 0.0  | 0.2+ |
| 2004 02 23 | 704 | 0.1+ | 1.2+ | 2004 03 17 | 704 | 1.1+ | 0.4+ | 2007 10 20 | G96 | 0.1+ | 0.2− |
| 2004 02 23 | 704 | 0.8+ | 0.9− | 2004 03 17 | 704 | 0.3− | 0.4+ | 2007 11 03 | 691 | 0.2− | 0.1+ |
| 2004 02 23 | 704 | 0.2− | 1.3− | 2004 03 22 | 704 | 0.6− | 0.4+ | 2007 11 03 | 691 | 0.2− | 0.0  |
| 2004 02 23 | 704 | 0.6+ | 1.0− | 2004 03 22 | 704 | 0.8− | 0.4+ | 2007 11 03 | 691 | 0.2− | 0.1− |
| 2004 03 11 | 644 | 0.2+ | 0.0  | 2004 03 22 | 704 | 0.6− | 0.1+ | 2007 11 07 | 691 | 0.2− | 0.2+ |
| 2004 03 11 | 644 | 0.2+ | 0.3+ | 2004 03 22 | 704 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.1− | 0.3+ |
| 2004 03 11 | 644 | 0.3+ | 0.3+ | 2004 03 22 | 704 | 0.4− | 0.8+ | 2007 11 07 | 691 | 0.2− | 0.1− |
| 2004 03 15 | 691 | 0.3− | 0.3− | 2004 03 22 | 704 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.5+ | 0.1− |
| 2004 03 15 | 691 | 0.1− | 0.2− | 2004 03 22 | 704 | 0.1− | 0.3+ | 2007 11 18 | G96 | 0.3+ | 0.1− |
| 2004 03 15 | 691 | 0.3− | 0.3− | 2004 03 22 | 704 | 0.3− | 0.6+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2004 03 15 | 703 | 0.4− | 0.6+ | 2004 03 22 | 704 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.1+ | 0.1− |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 15 | 704 | 0.0   | 0.3+  | 2004 03 27 | 691 | 0.0   | 0.3+  | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2004 03 15 | 703 | 0.2-  | 0.3+  | 2004 03 27 | 691 | 0.1-  | 0.0   | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2004 03 15 | 704 | 0.4+  | 0.2+  | 2004 03 27 | 691 | 0.3-  | 0.1+  | 2007 11 19 | 691 | 0.4+ | 1.4- |
| 2004 03 15 | 703 | 0.2+  | 0.3-  | 2004 03 28 | 703 | 1.5+  | 0.6-  | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2004 03 15 | 704 | 1.0+  | 0.8+  | 2004 03 28 | 703 | 0.8+  | 0.6+  | 2007 12 05 | 704 | 0.4+ | 1.2+ |
| 2004 03 15 | 703 | 0.0   | 0.5+  | 2004 03 28 | 703 | 0.2-  | 0.2-  | 2007 12 05 | 704 | 0.3+ | 0.5- |
| 2004 03 15 | 704 | 0.6+  | 1.1+  | 2004 03 28 | 703 | (0.8+ | 2.1+) | 2007 12 05 | 704 | 0.3+ | 0.6- |
| 2004 03 15 | 704 | 0.9+  | 0.1+  | 2006 08 27 | 705 | 0.2+  | 0.7+  | 2007 12 15 | G96 | 0.0  | 0.0  |
| 2004 03 16 | 704 | 0.8+  | 0.2+  | 2006 08 27 | 705 | 0.3+  | 0.8+  | 2007 12 15 | G96 | 0.9- | 1.0+ |
| 2004 03 16 | 704 | 0.2-  | 1.1+  | 2006 08 28 | 705 | 0.4+  | 0.8+  | 2007 12 15 | G96 | 0.7+ | 0.2+ |
| 2004 03 16 | 704 | 0.8+  | 0.2+  | 2006 08 28 | 705 | 0.3+  | 0.8+  | 2007 12 15 | G96 | 0.2+ | 0.4- |
| 2004 03 16 | 704 | (0.7+ | 2.2+) | 2006 09 28 | 691 | 0.6-  | 0.7+  |            |     |      |      |

(172773)\* 2004 EQ<sub>15</sub> = 1993 UA<sub>10</sub>

Discovered 2004 Mar. 12 by NEAT at Palomar.

Id. A. Doppler (MPO 89520)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.68302  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22248461 | $\omega$ | 187.26143 | -0.63256261 | -0.77357645 |
| <i>a</i> | 2.6973423  | $\Omega$ | 301.98597 | +0.71283190 | -0.56230109 |
| <i>e</i> | 0.0859591  | <i>i</i> | 2.56785   | +0.30287825 | -0.29222760 |
| <i>P</i> | 4.43       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 10 24 | 691 | 0.2- | 0.2+ | 2004 02 26 | 704 | 0.6+  | 0.3+  | 2006 10 03 | G96 | 0.0  | 0.6+ |
| 1993 10 24 | 691 | 0.1- | 0.5+ | 2004 02 26 | 704 | 0.5+  | 0.9+  | 2006 10 03 | G96 | 0.2- | 0.3+ |
| 1993 10 24 | 691 | 0.2- | 0.2+ | 2004 02 26 | 704 | 0.2+  | 0.3+  | 2006 10 03 | G96 | 0.6+ | 0.1+ |
| 1993 11 06 | 691 | 0.7- | 0.1- | 2004 02 26 | 704 | (0.1- | 1.6+) | 2007 11 02 | G96 | 0.5+ | 0.3- |
| 1993 11 06 | 691 | 1.0+ | 0.2+ | 2004 03 12 | 644 | 0.6+  | 0.3+  | 2007 11 02 | G96 | 0.6+ | 0.5- |
| 1995 03 02 | 691 | 0.5- | 0.6- | 2004 03 12 | 644 | 0.0   | 0.2-  | 2007 11 02 | G96 | 0.7+ | 0.2- |
| 1995 03 02 | 691 | 0.1- | 0.3- | 2004 03 12 | 644 | 0.1+  | 0.2+  | 2007 11 02 | G96 | 0.7+ | 0.7- |
| 1995 03 02 | 691 | 0.1- | 0.6- | 2004 03 15 | 704 | 0.7+  | 0.3+  | 2007 11 11 | G96 | 0.4+ | 0.5- |
| 2000 04 26 | 699 | 2.0- | 0.4- | 2004 03 15 | 704 | 0.2+  | 0.5-  | 2007 11 11 | G96 | 0.7+ | 0.2- |
| 2000 04 26 | 699 | 0.1- | 0.5- | 2004 03 15 | 704 | 0.6+  | 0.1-  | 2007 11 11 | G96 | 0.4+ | 0.3- |
| 2000 04 26 | 699 | 0.1+ | 1.1+ | 2004 03 15 | 704 | 0.7+  | 0.1+  | 2007 11 11 | G96 | 0.3+ | 0.1- |
| 2000 04 26 | 699 | 1.2- | 0.3- | 2004 03 15 | 704 | 1.0+  | 0.5+  | 2007 12 03 | 691 | 0.7- | 0.9- |
| 2001 08 23 | 691 | 0.2+ | 0.3- | 2004 03 18 | 704 | 0.3-  | 0.7-  | 2007 12 03 | 691 | 0.5- | 0.7- |
| 2001 08 23 | 691 | 0.4+ | 0.2- | 2004 03 18 | 704 | 0.3-  | 0.8+  | 2007 12 03 | 691 | 0.6- | 0.1+ |
| 2001 08 23 | 691 | 0.5- | 0.1- | 2004 03 18 | 704 | 0.9-  | 0.1+  | 2007 12 10 | 704 | 0.2+ | 0.3- |
| 2004 01 30 | 699 | 0.4+ | 1.1+ | 2004 03 18 | 704 | 0.1+  | 0.2-  | 2007 12 10 | 704 | 1.4+ | 1.3+ |
| 2004 01 30 | 699 | 0.1+ | 0.0  | 2004 03 18 | 704 | 0.0   | 0.6+  | 2007 12 10 | 704 | 0.6+ | 0.9+ |
| 2004 01 30 | 699 | 0.6+ | 0.7+ | 2004 03 30 | 691 | 0.0   | 0.3-  | 2007 12 10 | 704 | 0.1- | 0.7+ |
| 2004 01 30 | 699 | 1.1+ | 0.6- | 2004 03 30 | 691 | 0.2-  | 0.0   | 2007 12 14 | 704 | 0.5+ | 0.8- |
| 2004 02 18 | 704 | 0.4+ | 0.2+ | 2004 03 30 | 691 | 0.2+  | 0.3-  | 2007 12 14 | 704 | 0.3- | 0.9+ |
| 2004 02 18 | 704 | 0.5+ | 0.0  | 2006 10 01 | 703 | 1.3+  | 0.2-  | 2007 12 14 | 704 | 0.5+ | 2.3+ |
| 2004 02 18 | 704 | 0.7+ | 0.1- | 2006 10 01 | 703 | 0.0   | 1.0-  | 2007 12 15 | 691 | 0.3- | 0.5+ |
| 2004 02 18 | 704 | 0.2+ | 0.9+ | 2006 10 01 | 703 | (3.1- | 0.7-) | 2007 12 15 | 691 | 0.3- | 0.2- |
| 2004 02 18 | 704 | 0.7+ | 0.4+ | 2006 10 01 | 703 | 0.4+  | 0.6-  | 2007 12 15 | 691 | 0.4- | 0.1- |
| 2004 02 26 | 704 | 1.0+ | 1.0+ | 2006 10 03 | G96 | 0.0   | 0.2+  |            |     |      |      |

(172774)\* 2004 EO<sub>23</sub>

Discovered 2004 Mar. 15 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.04164    |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23016285 | $\omega$ | 132.36377 | -0.00255626 | -0.92393533 |
| <i>a</i> | 2.6370148  | $\Omega$ | 313.18854 | +0.69152428 | +0.27469592 |
| <i>e</i> | 0.2286307  | <i>i</i> | 31.64607  | +0.72234869 | -0.26624360 |
| <i>P</i> | 4.28       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 13 | 704 | (1.7+ | 0.4-) | 2004 03 15 | 644 | 0.1+ | 0.1+ | 2006 06 20 | G96 | 0.2- | 0.1+ |
| 2002 07 13 | 704 | 1.1-  | 0.4+  | 2004 03 15 | 644 | 0.0  | 0.2+ | 2006 06 20 | G96 | 0.1- | 0.1- |
| 2002 07 13 | 704 | 1.0-  | 0.0   | 2004 03 15 | 644 | 0.1+ | 0.0  | 2006 06 20 | G96 | 0.5- | 0.2+ |
| 2002 07 13 | 704 | (0.1+ | 1.7-) | 2004 03 15 | 644 | 0.0  | 0.4+ | 2006 06 20 | G96 | 0.2- | 0.1- |
| 2002 08 14 | 644 | 0.6-  | 0.5+  | 2004 03 17 | 704 | 0.4+ | 1.1- | 2006 07 21 | 703 | 0.4- | 1.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 14 | 644 | 0.7-  | 0.5+  | 2004 03 17 | 704 | 0.6- | 0.6+ | 2006 07 21 | 703 | 0.4+ | 1.0- |
| 2002 08 14 | 644 | 0.6-  | 0.4+  | 2004 03 17 | 704 | 0.4+ | 1.4- | 2006 07 21 | 703 | 0.5- | 0.1+ |
| 2002 10 10 | 644 | 0.3-  | 0.3-  | 2004 03 17 | 704 | 0.6+ | 1.3- | 2006 07 21 | 703 | 0.4+ | 0.1+ |
| 2002 10 10 | 644 | 0.3-  | 0.3-  | 2004 03 17 | 704 | 0.3+ | 0.8- | 2006 07 21 | 198 | 0.8- | 1.2+ |
| 2002 10 10 | 644 | (1.8- | 1.7-) | 2004 03 19 | 704 | 0.1+ | 0.3+ | 2006 07 21 | 198 | 0.4- | 0.7+ |
| 2002 10 10 | 704 | 0.2+  | 0.0   | 2004 03 19 | 704 | 0.0  | 0.1+ | 2006 07 21 | 198 | 0.3- | 0.6+ |
| 2002 10 10 | 704 | 0.0   | 0.4+  | 2004 03 19 | 291 | 0.1+ | 0.4+ | 2006 07 21 | 198 | 0.1+ | 0.2+ |
| 2002 10 10 | 704 | 0.0   | 0.6+  | 2004 03 19 | 704 | 0.4+ | 0.1+ | 2006 08 16 | 644 | 0.0  | 0.0  |
| 2002 10 10 | 704 | 0.2-  | 0.3+  | 2004 03 19 | 291 | 0.0  | 0.2+ | 2006 08 16 | 644 | 0.3- | 0.2+ |
| 2002 10 10 | 704 | 0.2+  | 0.6+  | 2004 03 19 | 704 | 1.0+ | 1.0+ | 2006 08 16 | 644 | 0.0  | 0.0  |
| 2003 12 13 | 704 | 0.3-  | 0.0   | 2004 03 19 | 291 | 0.0  | 0.2+ | 2007 11 07 | 703 | 0.1- | 0.7+ |
| 2003 12 13 | 704 | 0.1-  | 1.1+  | 2004 03 19 | 704 | 1.0+ | 0.5+ | 2007 11 07 | 703 | 0.6+ | 0.5+ |
| 2003 12 13 | 704 | 1.1-  | 0.4-  | 2004 03 19 | 704 | 0.3- | 0.7+ | 2007 11 07 | 703 | 0.9- | 0.8- |
| 2004 02 02 | 703 | (1.7+ | 1.7+) | 2004 03 19 | 704 | 0.1- | 0.2+ | 2007 11 07 | 703 | 0.1+ | 0.2- |
| 2004 02 02 | 703 | (1.6+ | 0.4+) | 2004 03 19 | 704 | 0.4+ | 0.6+ | 2007 11 20 | 703 | 0.3+ | 0.0  |
| 2004 02 02 | 703 | (1.6+ | 0.8+) | 2004 03 19 | 704 | 0.6+ | 0.0  | 2007 11 20 | 703 | 1.3+ | 0.8+ |
| 2004 02 02 | 703 | (0.6+ | 2.0+) | 2004 03 19 | 704 | 0.4+ | 0.6+ | 2007 11 20 | 703 | 1.2+ | 0.3+ |
| 2004 02 24 | 608 | 0.8+  | 1.3-  | 2004 03 26 | 704 | 0.2- | 0.7+ | 2007 11 20 | 703 | 0.1- | 0.4+ |
| 2004 02 24 | 608 | 0.6+  | 1.2-  | 2004 03 26 | 704 | 0.1+ | 0.6+ | 2007 12 06 | 703 | 0.5+ | 0.2+ |
| 2004 02 24 | 608 | 0.6+  | 1.2-  | 2004 03 26 | 704 | 0.3- | 0.7+ | 2007 12 06 | 703 | 0.4+ | 0.0  |
| 2004 03 15 | 644 | 0.0   | 0.1+  | 2004 03 26 | 704 | 0.4- | 1.1+ | 2007 12 06 | 703 | 0.1- | 0.3+ |
| 2004 03 15 | 644 | 0.2+  | 0.2+  | 2004 03 26 | 704 | 0.1+ | 0.1+ | 2007 12 06 | 703 | 0.0  | 0.0  |

(172775)\* 2004 EW<sub>30</sub> = 2006 TV<sub>70</sub>

Discovered 2004 Mar. 15 by the Catalina Sky Survey.

Id. A. Doppler (MPO 108947)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.59971  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21743356 | $\omega$ | 355.50477 | -0.70013701 | -0.71186345 |
| <i>a</i> | 2.7389557  | $\Omega$ | 138.91857 | +0.65768587 | -0.67312369 |
| <i>e</i> | 0.0887210  | <i>i</i> | 4.82776   | +0.27795227 | -0.20038697 |
| <i>P</i> | 4.53       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 03 10 | 691 | 0.2+  | 0.4+  | 2005 07 04 | G96 | 0.5+  | 0.5+  | 2006 11 24 | G96 | 0.3+ | 0.1- |
| 1999 03 10 | 691 | 0.0   | 0.6+  | 2005 07 04 | G96 | 0.1-  | 0.3+  | 2006 12 26 | G96 | 0.0  | 0.3+ |
| 1999 03 10 | 691 | 0.3+  | 0.3+  | 2006 09 30 | 703 | 0.4+  | 0.9-  | 2006 12 26 | G96 | 0.0  | 0.2- |
| 2001 05 24 | 807 | 0.3-  | 0.5+  | 2006 09 30 | 703 | 0.7-  | 0.5+  | 2006 12 26 | G96 | 0.2- | 0.1- |
| 2001 05 24 | 807 | 0.0   | 0.6+  | 2006 09 30 | 703 | 0.3-  | 0.1-  | 2006 12 26 | G96 | 0.4+ | 0.4+ |
| 2004 03 15 | 703 | 1.3-  | 1.3+  | 2006 09 30 | 703 | (1.8- | 0.6+) | 2007 10 19 | G96 | 0.1- | 0.4- |
| 2004 03 15 | 703 | (0.4- | 1.6+) | 2006 10 02 | G96 | 0.4-  | 0.3+  | 2007 10 19 | G96 | 0.3+ | 0.1- |
| 2004 03 15 | 703 | 0.8+  | 0.7-  | 2006 10 02 | G96 | 0.1-  | 0.3+  | 2007 10 19 | G96 | 0.1+ | 0.4- |
| 2004 03 15 | 703 | (1.7- | 0.0 ) | 2006 10 02 | G96 | 0.1-  | 0.1+  | 2007 10 19 | G96 | 0.5+ | 0.5- |
| 2004 03 16 | 691 | 0.3+  | 0.1+  | 2006 10 02 | G96 | 0.3-  | 0.1+  | 2007 11 09 | G96 | 0.0  | 0.3- |
| 2004 03 16 | 691 | 0.0   | 0.1+  | 2006 10 11 | 644 | 0.2-  | 0.6+  | 2007 11 09 | G96 | 0.1+ | 0.5- |
| 2004 03 16 | 691 | 0.3-  | 0.0   | 2006 10 11 | 644 | 0.1-  | 0.8+  | 2007 11 09 | G96 | 1.1+ | 0.5- |
| 2004 03 22 | 704 | 0.6-  | 0.0   | 2006 10 11 | 644 | 0.2-  | 0.8+  | 2007 11 09 | G96 | 0.2- | 0.0  |
| 2004 03 22 | 704 | 0.4+  | 0.2+  | 2006 10 16 | 703 | (0.2+ | 1.6+) | 2007 11 21 | 691 | 0.2- | 0.1- |
| 2004 03 22 | 704 | 1.0+  | 0.3+  | 2006 10 16 | 703 | (1.6- | 1.1+) | 2007 11 21 | 691 | 0.0  | 0.1+ |
| 2004 04 23 | 691 | 0.3-  | 0.1-  | 2006 10 16 | 703 | 0.5-  | 0.5+  | 2007 11 21 | 691 | 0.1- | 0.0  |
| 2004 04 23 | 691 | 0.0   | 0.1+  | 2006 10 16 | 703 | 1.0-  | 0.9+  | 2007 12 04 | G96 | 0.1- | 0.1- |
| 2004 04 23 | 691 | 0.0   | 0.2+  | 2006 11 24 | G96 | 0.1+  | 0.1-  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2005 07 04 | G96 | 0.0   | 0.8+  | 2006 11 24 | G96 | 0.0   | 0.0   | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 2005 07 04 | G96 | 0.5+  | 0.6+  | 2006 11 24 | G96 | 0.4+  | 0.1+  | 2007 12 04 | G96 | 0.1+ | 0.4- |



2007 DEC. 24

M.P.O. 129475

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 02 10 | 691 | 0.1–  | 0.4+  | 2004 03 28 | 608 | 0.2+  | 0.7+  | 2005 07 05 | 691 | 0.1–  | 0.1–  |
| 1999 02 10 | 691 | 0.3+  | 0.2–  | 2004 03 28 | 608 | 0.5+  | 0.2+  | 2005 07 05 | 691 | 0.1+  | 0.3+  |
| 1999 02 10 | 691 | 0.2–  | 0.1+  | 2004 03 31 | 704 | 0.1+  | 0.7+  | 2005 07 09 | 691 | 0.0   | 0.2+  |
| 1999 02 13 | 691 | 0.0   | 0.0   | 2004 03 31 | 704 | 0.2+  | 0.6+  | 2005 07 09 | 691 | 0.0   | 0.2+  |
| 1999 02 13 | 691 | 0.1–  | 0.0   | 2004 03 31 | 704 | 0.7+  | 1.1+  | 2005 07 09 | 691 | 0.0   | 0.1+  |
| 1999 02 13 | 691 | 0.0   | 0.2–  | 2004 04 16 | 644 | 0.0   | 0.1–  | 2005 07 16 | 691 | 0.1–  | 0.0   |
| 2001 08 20 | 807 | 0.2–  | 0.1+  | 2004 04 16 | 644 | 0.1–  | 0.1+  | 2005 07 16 | 691 | 0.2+  | 0.3+  |
| 2001 08 20 | 807 | 0.2–  | 0.3+  | 2004 04 16 | 644 | 0.1+  | 0.1+  | 2005 07 16 | 691 | 0.2–  | 0.1+  |
| 2001 09 16 | 704 | (0.6+ | 2.0+) | 2004 04 17 | 704 | 0.5–  | 1.2–  | 2005 07 18 | 644 | 0.1–  | 0.0   |
| 2001 09 16 | 704 | 0.2–  | 0.7+  | 2004 04 17 | 704 | 0.5+  | 0.2–  | 2005 07 18 | 644 | 0.0   | 0.0   |
| 2001 09 16 | 704 | 0.2+  | 0.9+  | 2004 04 17 | 704 | 0.1–  | 0.5–  | 2005 07 18 | 644 | 0.2+  | 0.0   |
| 2004 03 14 | 644 | 0.3+  | 0.2–  | 2004 04 17 | 704 | 0.8+  | 0.2+  | 2005 08 28 | 691 | 0.0   | 0.7–  |
| 2004 03 14 | 644 | 0.3+  | 0.4–  | 2004 04 21 | 703 | (2.2– | 0.7–) | 2005 08 28 | 691 | 0.0   | 0.5–  |
| 2004 03 14 | 644 | 0.3+  | 0.2+  | 2004 04 21 | 703 | 0.1–  | 0.0   | 2005 08 28 | 691 | 0.1+  | 0.2+  |
| 2004 03 16 | 703 | 0.8–  | 0.2–  | 2004 04 21 | 703 | 0.0   | 0.6+  | 2006 10 17 | 703 | 0.3–  | 0.0   |
| 2004 03 16 | 703 | 0.1+  | 0.3+  | 2004 04 21 | 703 | 0.1+  | 0.2+  | 2006 10 17 | 703 | 0.3–  | 1.4+  |
| 2004 03 16 | 703 | 0.2+  | 1.2–  | 2004 04 25 | 703 | 0.5–  | 0.1+  | 2006 10 17 | 703 | 0.8–  | 0.9+  |
| 2004 03 16 | 703 | 0.3–  | 0.4+  | 2004 04 25 | 703 | 1.3+  | 0.1–  | 2006 10 17 | 703 | 0.8–  | 0.0   |
| 2004 03 17 | 704 | 1.1+  | 0.6–  | 2004 04 25 | 703 | 0.2+  | 0.4+  | 2007 11 12 | G96 | (1.8– | 0.3–) |
| 2004 03 17 | 704 | 0.8–  | 0.8+  | 2004 04 25 | 703 | 0.8+  | 0.6+  | 2007 11 12 | G96 | 0.1–  | 0.1+  |
| 2004 03 17 | 704 | 0.6–  | 0.2–  | 2004 04 26 | 608 | 0.0   | 0.1+  | 2007 11 12 | G96 | 0.3–  | 0.4+  |
| 2004 03 17 | 704 | 0.3+  | 1.4+  | 2004 04 26 | 608 | 0.2+  | 0.4+  | 2007 11 12 | G96 | 0.0   | 0.3+  |
| 2004 03 26 | 699 | 0.6–  | 0.2–  | 2004 04 26 | 608 | 0.0   | 0.4+  | 2007 12 14 | D29 | 0.1+  | 0.5+  |
| 2004 03 26 | 699 | 1.1–  | 0.2–  | 2005 07 04 | 644 | 0.1+  | 0.1+  | 2007 12 14 | D29 | 0.5–  | 0.2+  |
| 2004 03 26 | 699 | 0.4–  | 0.4–  | 2005 07 04 | 644 | 0.1+  | 0.3+  | 2007 12 14 | D29 | 0.9+  | 0.2–  |
| 2004 03 26 | 699 | 1.3–  | 0.2–  | 2005 07 04 | 644 | 0.1+  | 0.2–  | 2007 12 14 | D29 | 0.9+  | 0.1+  |
| 2004 03 28 | 608 | 0.5+  | 0.1+  | 2005 07 05 | 691 | 0.1–  | 0.2+  |            |     |       |       |

(172777)\* 2004 EL<sub>57</sub>

Discovered 2004 Mar. 15 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 218.25199  | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.17530590 | $\omega$ | 322.23950 | –0.94251020 | +0.22965012 |          |   |
| <i>a</i> | 3.1618288  | $\Omega$ | 232.80726 | –0.18010805 | –0.96100457 |          |   |
| <i>e</i> | 0.1435835  | <i>i</i> | 17.74314  | –0.28148820 | –0.15404883 |          |   |
| <i>P</i> | 5.62       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 12 08 | 691 | 0.3–  | 0.5–  | 2004 03 26 | 704 | 0.6+  | 0.8+  | 2007 10 20 | 703 | 0.1+  | 1.2+  |
| 1996 12 08 | 691 | 0.2–  | 0.6–  | 2004 04 12 | 644 | 0.4–  | 0.4+  | 2007 10 20 | 703 | 0.3+  | 0.7+  |
| 1996 12 08 | 691 | 0.3+  | 0.2–  | 2004 04 12 | 644 | 0.1–  | 0.6+  | 2007 10 31 | G96 | 0.3+  | 0.2–  |
| 1999 05 12 | 699 | 0.9+  | 0.8–  | 2004 04 12 | 644 | 0.1–  | 0.8+  | 2007 10 31 | G96 | 0.3–  | 0.2–  |
| 1999 05 12 | 699 | 0.3+  | 0.1+  | 2004 04 17 | 704 | 1.3+  | 0.3+  | 2007 10 31 | G96 | 0.6+  | 0.6–  |
| 1999 05 12 | 699 | 0.3–  | 0.1+  | 2004 04 17 | 704 | 0.2+  | 0.3+  | 2007 10 31 | G96 | 0.4+  | 0.6–  |
| 1999 05 19 | 704 | 0.5+  | 1.3+  | 2004 04 17 | 704 | 0.5+  | 0.6–  | 2007 11 02 | 691 | 0.2–  | 0.2+  |
| 1999 05 19 | 704 | 0.1+  | 0.2–  | 2004 04 17 | 704 | (1.7+ | 0.3–) | 2007 11 02 | 691 | 0.2–  | 0.2+  |
| 1999 05 19 | 704 | (2.2– | 1.0+) | 2004 04 24 | 703 | 0.5+  | 1.3+  | 2007 11 02 | 691 | 0.0   | 0.0   |
| 1999 05 19 | 704 | 1.1+  | 1.5–  | 2004 04 24 | 703 | 0.2+  | 1.1+  | 2007 11 02 | G96 | 0.2–  | 0.6–  |
| 1999 05 19 | 704 | 0.5–  | 0.5+  | 2004 04 24 | 703 | 0.0   | 0.8+  | 2007 11 02 | G96 | 0.4–  | 0.6–  |
| 1999 06 14 | 704 | 0.1+  | 1.5–  | 2004 04 24 | 703 | 0.5–  | 1.2+  | 2007 11 02 | G96 | 0.0   | 0.6–  |
| 1999 06 14 | 704 | 0.7–  | 1.6+  | 2006 09 27 | 703 | 0.1–  | 0.0   | 2007 11 02 | G96 | 0.1–  | 0.6–  |
| 1999 06 14 | 704 | 1.4–  | 0.6+  | 2006 09 27 | 703 | 0.5–  | 0.5+  | 2007 11 06 | 691 | 0.2+  | 0.3+  |
| 1999 06 14 | 704 | (0.6– | 2.5+) | 2006 09 27 | 703 | 0.7+  | 0.1+  | 2007 11 06 | 691 | 0.0   | 0.1+  |
| 2001 10 20 | 644 | 0.3+  | 0.2+  | 2006 09 27 | 703 | 0.9–  | 0.0   | 2007 11 06 | 691 | 0.1–  | 0.1+  |
| 2001 10 20 | 644 | 0.1+  | 0.3+  | 2007 10 11 | 691 | 0.2–  | 0.0   | 2007 11 07 | 703 | 0.3+  | 1.4+  |
| 2001 10 20 | 644 | 0.5+  | 0.0   | 2007 10 11 | 691 | 0.1–  | 0.2+  | 2007 11 07 | 703 | 1.1+  | 0.9+  |
| 2004 03 15 | 644 | (2.2– | 0.2+) | 2007 10 11 | 691 | 0.1+  | 0.6+  | 2007 11 07 | 703 | (0.5+ | 1.8+) |
| 2004 03 15 | 644 | (2.4– | 0.3+) | 2007 10 12 | 704 | 0.1+  | 0.0   | 2007 11 07 | 703 | (0.4+ | 2.3+) |
| 2004 03 15 | 644 | (1.7– | 0.2+) | 2007 10 12 | 704 | 0.2+  | 0.7+  | 2007 11 18 | G96 | 0.8+  | 0.0   |
| 2004 03 17 | 704 | 0.3–  | 1.0–  | 2007 10 12 | 704 | 0.2–  | 0.8–  | 2007 11 18 | G96 | 0.2+  | 0.4–  |
| 2004 03 17 | 704 | 0.1+  | 0.4–  | 2007 10 15 | 691 | 0.3–  | 0.1+  | 2007 11 18 | G96 | 0.5+  | 0.3–  |
| 2004 03 17 | 704 | 0.1–  | 0.7–  | 2007 10 15 | 691 | 0.2–  | 0.1+  | 2007 11 18 | G96 | 0.4+  | 0.1–  |
| 2004 03 17 | 704 | 0.1+  | 0.2–  | 2007 10 15 | 691 | 0.2–  | 0.2+  | 2007 12 15 | G96 | 0.5–  | 0.1+  |
| 2004 03 17 | 704 | 0.4–  | 0.4–  | 2007 10 19 | 691 | 0.4–  | 0.3+  | 2007 12 15 | G96 | 0.4+  | 0.3+  |
| 2004 03 26 | 704 | 0.3+  | 0.2–  | 2007 10 19 | 691 | 0.0   | 0.0   | 2007 12 15 | G96 | 0.9+  | 0.1–  |
| 2004 03 26 | 704 | 0.6–  | 0.1+  | 2007 10 19 | 691 | 0.2–  | 0.1–  | 2007 12 15 | G96 | 0.3+  | 0.2+  |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2004 03 26 | 704 | 0.0  | 0.0  | 2007 10 20 | 703 | 0.8+ | 0.8+ |
| 2004 03 26 | 704 | 0.2– | 0.3+ | 2007 10 20 | 703 | 1.4+ | 1.0– |

(172778)\* 2004 EE<sub>64</sub> = 1999 FC<sub>80</sub>

Discovered 2004 Mar. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 72999)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> | 281.77505  | (2000.0) |          | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.18186759 | $\omega$ | 74.22913 | –0.44203176 | –0.89022395 |          |   |
| <i>a</i> | 3.0853126  | $\Omega$ | 42.55976 | +0.74806521 | –0.43355004 |          |   |
| <i>e</i> | 0.0481271  | <i>i</i> | 9.36351  | +0.49498117 | –0.13977008 |          |   |
| <i>P</i> | 5.42       | <i>H</i> | 15.2     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 03 20 | 645 | 0.0   | 0.0   | 2004 03 25 | 704 | (1.6– | 1.4+) | 2007 10 30 | 703 | 0.5+  | 1.0–  |
| 1999 03 20 | 645 | 0.0   | 0.0   | 2005 05 30 | E12 | 1.0+  | 0.7+  | 2007 10 30 | 703 | 0.5–  | 0.9+  |
| 1999 03 21 | 645 | 0.0   | 0.0   | 2005 05 30 | E12 | 0.5+  | 0.7+  | 2007 11 03 | 699 | 0.5+  | 0.5–  |
| 1999 03 21 | 645 | 0.0   | 0.1–  | 2005 05 30 | E12 | 0.3–  | 0.6+  | 2007 11 03 | 699 | 0.9–  | 0.4–  |
| 2001 09 12 | 704 | 0.5–  | 1.1+  | 2007 10 10 | 691 | 0.2–  | 0.0   | 2007 11 03 | 699 | 0.6+  | 0.3–  |
| 2001 09 12 | 704 | 0.0   | 1.0+  | 2007 10 10 | 691 | 0.4–  | 0.2+  | 2007 11 03 | 699 | 0.1+  | 0.1+  |
| 2001 09 12 | 704 | (1.7+ | 1.8+) | 2007 10 10 | 691 | 0.1–  | 0.9–  | 2007 11 05 | 704 | (0.0  | 1.7+) |
| 2002 11 12 | 704 | 0.6–  | 0.6–  | 2007 10 10 | 691 | 0.4–  | 0.1+  | 2007 11 05 | 704 | (0.1+ | 2.0+) |
| 2002 11 12 | 704 | 0.3–  | 0.3–  | 2007 10 10 | 691 | 0.3–  | 0.0   | 2007 11 05 | 704 | (0.1+ | 1.8+) |
| 2002 11 12 | 704 | 0.5+  | 0.3–  | 2007 10 10 | 691 | 0.2–  | 0.3+  | 2007 11 05 | 704 | 0.2+  | 1.3+  |
| 2002 11 12 | 704 | 0.5–  | 0.5–  | 2007 10 11 | 704 | 0.7+  | 0.5+  | 2007 11 05 | 704 | 0.4–  | 1.1+  |
| 2002 12 13 | 704 | 0.9+  | 0.5–  | 2007 10 11 | 704 | 0.4+  | 0.3+  | 2007 11 07 | G96 | 0.2+  | 0.3–  |
| 2002 12 13 | 704 | 0.2+  | 0.4–  | 2007 10 11 | 704 | 0.6+  | 0.7+  | 2007 11 07 | G96 | 0.2+  | 0.3–  |
| 2002 12 13 | 704 | 1.1+  | 0.0   | 2007 10 14 | 704 | 0.4+  | 0.4+  | 2007 11 07 | G96 | 0.5+  | 0.2–  |
| 2002 12 13 | 704 | 0.5+  | 0.5–  | 2007 10 14 | 704 | 0.2–  | 0.4+  | 2007 11 07 | G96 | 0.1–  | 0.1–  |
| 2004 02 16 | 704 | (1.7+ | 0.8+) | 2007 10 14 | 704 | 1.0+  | 0.1–  | 2007 11 14 | 704 | 0.2–  | 0.4+  |
| 2004 02 16 | 704 | 0.5+  | 0.7+  | 2007 10 14 | 704 | (0.2– | 1.8+) | 2007 11 14 | 704 | 1.0–  | 1.0–  |
| 2004 02 16 | 704 | 1.2+  | 0.1+  | 2007 10 14 | 704 | 0.3–  | 0.6+  | 2007 11 14 | 704 | 0.1+  | 0.1–  |
| 2004 02 16 | 704 | 0.9+  | 0.9+  | 2007 10 18 | 691 | 0.4–  | 0.3–  | 2007 11 14 | 704 | 0.2–  | 0.6+  |
| 2004 02 16 | 704 | 0.2+  | 0.5+  | 2007 10 18 | 691 | 0.1–  | 0.1+  | 2007 11 14 | 704 | 0.5–  | 0.1+  |
| 2004 03 14 | 704 | 0.7+  | 0.1+  | 2007 10 18 | 691 | 0.0   | 0.1–  | 2007 11 17 | G96 | 0.1+  | 0.0   |
| 2004 03 14 | 704 | 0.8+  | 0.6+  | 2007 10 20 | 704 | 0.1+  | 0.1+  | 2007 11 17 | G96 | 0.0   | 0.1–  |
| 2004 03 14 | 704 | 0.3+  | 0.7+  | 2007 10 20 | 704 | 0.2+  | 0.1+  | 2007 11 17 | G96 | 0.2+  | 0.1–  |
| 2004 03 18 | 703 | 0.8–  | 0.3–  | 2007 10 20 | 704 | 0.0   | 0.0   | 2007 11 17 | G96 | 0.0   | 0.1–  |
| 2004 03 18 | 703 | 0.1+  | 0.4–  | 2007 10 20 | 704 | 0.2–  | 0.4–  | 2007 12 05 | 704 | 0.5+  | 0.1+  |
| 2004 03 18 | 703 | 0.1–  | 0.4–  | 2007 10 23 | 691 | 0.2–  | 0.1+  | 2007 12 05 | 704 | 0.7+  | 0.7–  |
| 2004 03 18 | 703 | 0.6+  | 0.1+  | 2007 10 23 | 691 | 0.1–  | 0.3+  | 2007 12 05 | G96 | 0.3+  | 0.1–  |
| 2004 03 23 | 704 | 1.1+  | 0.0   | 2007 10 23 | 691 | 0.3–  | 0.0   | 2007 12 05 | 704 | 0.4–  | 0.9–  |
| 2004 03 23 | 704 | 0.3–  | 0.5+  | 2007 10 30 | 703 | 0.3+  | 1.2+  | 2007 12 05 | G96 | 0.4+  | 0.0   |
| 2004 03 23 | 704 | 0.1+  | 0.4+  | 2007 10 30 | 703 | 1.1+  | 1.3+  | 2007 12 05 | 704 | 0.1+  | 0.6+  |
| 2004 03 23 | 704 | 0.9–  | 1.2+  | 2007 10 30 | 703 | 0.9+  | 0.7+  | 2007 12 05 | G96 | 0.1+  | 0.2–  |
| 2004 03 25 | 704 | (1.2+ | 2.2+) | 2007 10 30 | 703 | 0.2+  | 0.7+  | 2007 12 05 | G96 | 0.4+  | 0.1–  |
| 2004 03 25 | 704 | 0.0   | 1.4+  | 2007 10 30 | 703 | (1.6+ | 0.5+) |            |     |       |       |
| 2004 03 25 | 704 | (1.6+ | 0.7+) | 2007 10 30 | 703 | (1.0+ | 1.7+) |            |     |       |       |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 17 | 699 | 0.8+  | 0.1+  | 2004 03 18 | 703 | 0.3-  | 0.1+  | 2007 11 12 | 704 | 0.7- | 0.5- |
| 2001 09 17 | 699 | (1.3- | 2.6+) | 2004 03 18 | 703 | 1.2+  | 0.5+  | 2007 11 12 | 704 | 0.0  | 0.0  |
| 2001 09 17 | 699 | 1.1-  | 0.8-  | 2004 03 18 | 703 | 0.8-  | 0.7+  | 2007 11 21 | 703 | 1.1- | 0.5+ |
| 2002 11 07 | 704 | 1.0+  | 0.5+  | 2004 03 25 | 704 | (0.3+ | 2.3+) | 2007 11 21 | 703 | 0.2+ | 0.8- |
| 2002 11 07 | 704 | 0.1+  | 0.3-  | 2004 03 25 | 704 | 0.0   | 1.1+  | 2007 11 21 | 703 | 0.6- | 0.8+ |
| 2002 11 07 | 704 | 1.3-  | 0.4+  | 2004 03 25 | 704 | (0.1- | 1.6+) | 2007 11 21 | 703 | 0.4- | 0.1+ |
| 2002 11 07 | 704 | 0.7-  | 0.6-  | 2004 03 25 | 704 | 0.3+  | 1.3+  | 2007 12 04 | 704 | 0.4+ | 0.4- |
| 2002 12 10 | 644 | 0.1-  | 0.1+  | 2004 03 26 | 704 | 0.4+  | 0.1+  | 2007 12 04 | 704 | 0.1+ | 0.6+ |
| 2002 12 10 | 644 | 0.0   | 0.1+  | 2004 03 26 | 704 | 0.9+  | 0.0   | 2007 12 04 | 704 | 0.2- | 0.2+ |
| 2002 12 10 | 644 | 0.0   | 0.1+  | 2004 03 26 | 704 | 0.2+  | 0.2-  | 2007 12 04 | 704 | 0.1- | 0.3+ |
| 2003 01 27 | 291 | 0.3+  | 0.2-  | 2004 03 26 | 704 | 0.8-  | 0.0   | 2007 12 15 | 704 | 0.3+ | 0.5+ |
| 2003 01 27 | 291 | 0.2+  | 0.0   | 2006 08 28 | E12 | 0.0   | 0.6+  | 2007 12 15 | 704 | 0.4+ | 0.6+ |
| 2003 01 27 | 291 | 0.3+  | 0.3-  | 2006 08 28 | E12 | 0.6+  | 0.2+  | 2007 12 15 | 704 | 0.2- | 0.6+ |
| 2004 02 16 | 704 | 0.5+  | 0.8+  | 2006 08 28 | E12 | 0.9-  | 1.2+  | 2007 12 15 | 704 | 0.4+ | 0.3+ |
| 2004 02 16 | 704 | 0.4-  | 0.3+  | 2006 08 28 | E12 | (0.1- | 1.7+) | 2007 12 15 | 704 | 0.5+ | 0.7+ |
| 2004 02 16 | 704 | 1.0+  | 0.5+  | 2007 11 04 | 704 | 0.4+  | 0.0   |            |     |      |      |

**(172780)\* 2004 ED<sub>66</sub> = 2000 GN<sub>33</sub>**

Discovered 2004 Mar. 14 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 62051)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 309.24045  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23289398 | $\omega$ | 256.23357 | -0.98622058   | -0.16417321 |
| <i>a</i> | 2.6163582  | $\Omega$ | 274.31434 | +0.15858920   | -0.90308580 |
| <i>e</i> | 0.0309816  | <i>i</i> | 1.17219   | +0.04710027   | -0.39684152 |
| <i>P</i> | 4.23       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 11 29 | 691 | 0.7-  | 0.0   | 2004 03 18 | 704 | 0.3+  | 0.9-  | 2006 10 21 | 644 | 0.2-  | 0.2+  |
| 1994 11 29 | 691 | 0.3+  | 1.2-  | 2004 03 20 | 699 | 0.4-  | 0.8+  | 2006 10 21 | 644 | 0.3+  | 0.0   |
| 1994 11 29 | 691 | 0.0   | 1.1-  | 2004 03 20 | 704 | 0.7+  | 0.5+  | 2006 10 29 | 691 | 0.1+  | 0.3+  |
| 2000 04 05 | 699 | 0.8+  | 0.8+  | 2004 03 20 | 704 | 0.2+  | 0.7+  | 2006 10 29 | 691 | 0.2+  | 0.3+  |
| 2000 04 05 | 704 | 0.5+  | 0.1-  | 2004 03 20 | 699 | 0.8-  | 0.2+  | 2006 10 29 | 691 | 0.0   | 0.2+  |
| 2000 04 05 | 699 | 0.1-  | 0.6-  | 2004 03 20 | 704 | 0.5+  | 1.4+  | 2006 11 07 | 644 | 0.1-  | 0.4+  |
| 2000 04 05 | 704 | 0.1+  | 0.7-  | 2004 03 20 | 704 | 0.2+  | 0.7+  | 2006 11 07 | 644 | 0.1+  | 0.3+  |
| 2000 04 05 | 699 | 0.0   | 0.0   | 2004 03 20 | 704 | (0.7+ | 1.7+) | 2006 11 07 | 644 | 0.5+  | 0.1-  |
| 2000 04 05 | 704 | 0.3+  | 0.7-  | 2004 03 20 | 704 | 0.4+  | 0.9+  | 2006 11 11 | 703 | 0.5+  | 0.0   |
| 2000 04 05 | 699 | 0.6+  | 0.1+  | 2004 03 20 | 699 | 0.0   | 0.1+  | 2006 11 11 | 703 | 0.5-  | 0.6-  |
| 2000 04 05 | 704 | 0.1-  | 0.6-  | 2004 03 20 | 704 | (0.6+ | 1.6+) | 2006 11 11 | 703 | 1.3-  | 0.1-  |
| 2000 04 05 | 704 | 0.1+  | 0.0   | 2004 03 20 | 704 | 0.3+  | 0.2+  | 2006 11 11 | 703 | 0.4+  | 1.0-  |
| 2000 04 06 | 704 | 1.0-  | 0.6-  | 2004 03 20 | 704 | 0.9+  | 0.8-  | 2006 11 15 | 691 | 0.0   | 0.5+  |
| 2000 04 06 | 704 | 0.1+  | 0.1+  | 2004 03 20 | 699 | 0.6-  | 0.5-  | 2006 11 15 | 691 | 0.1-  | 0.2+  |
| 2000 04 06 | 704 | 0.4-  | 0.4+  | 2004 03 25 | 704 | 1.3+  | 0.6+  | 2006 11 15 | 691 | 0.3-  | 0.1+  |
| 2000 04 06 | 704 | 0.7-  | 0.2-  | 2004 03 25 | 704 | 0.3-  | 0.2-  | 2006 11 17 | 691 | 0.1+  | 0.2+  |
| 2000 04 06 | 704 | 0.3-  | 0.1-  | 2004 03 25 | 704 | 0.9+  | 0.5-  | 2006 11 17 | 691 | 0.1+  | 0.3+  |
| 2002 11 06 | 704 | 0.2+  | 0.5+  | 2004 03 25 | 704 | 1.1+  | 0.8+  | 2006 11 17 | 691 | 0.1+  | 0.3-  |
| 2002 11 06 | 704 | 0.4-  | 0.4+  | 2004 03 25 | 704 | 1.2+  | 1.1+  | 2006 11 20 | G96 | 0.1+  | 0.2-  |
| 2002 11 06 | 704 | 1.0-  | 0.9+  | 2004 03 25 | 704 | 0.4+  | 0.2+  | 2006 11 20 | G96 | 0.3+  | 0.2+  |
| 2002 11 06 | 704 | 0.2-  | 0.8+  | 2004 03 25 | 704 | 0.2+  | 0.2-  | 2006 11 20 | G96 | 0.4+  | 0.4-  |
| 2002 11 13 | 644 | 0.8+  | 1.4-  | 2004 03 25 | 704 | 0.3+  | 1.0+  | 2006 11 20 | G96 | 0.0   | 0.2+  |
| 2002 11 13 | 644 | 0.1-  | 0.4+  | 2004 03 25 | 704 | 1.5+  | 0.2-  | 2006 11 21 | 691 | 0.0   | 0.3-  |
| 2002 11 13 | 644 | 0.1-  | 0.1+  | 2004 03 25 | 704 | 0.4-  | 0.2+  | 2006 11 21 | 691 | 0.1+  | 0.1+  |
| 2002 11 28 | 699 | 0.6-  | 0.1-  | 2004 03 27 | 704 | 0.1+  | 1.1+  | 2006 11 21 | 691 | 0.1-  | 0.1-  |
| 2002 11 28 | 699 | 0.3-  | 0.4+  | 2004 03 27 | 704 | 0.2-  | 0.8+  | 2006 11 21 | 691 | 0.3+  | 0.0   |
| 2002 11 28 | 699 | 0.1-  | 0.9+  | 2004 03 27 | 704 | 0.2+  | 0.3-  | 2006 11 21 | 691 | 0.1-  | 0.1+  |
| 2004 02 26 | 704 | 0.1+  | 0.5+  | 2004 03 27 | 704 | 0.3+  | 1.2+  | 2006 11 21 | 691 | 0.3+  | 0.1-  |
| 2004 02 26 | 704 | 1.0-  | 0.5+  | 2004 03 27 | 704 | 0.7-  | 0.7-  | 2006 11 21 | 704 | 0.5+  | 0.4+  |
| 2004 02 26 | 704 | 0.0   | 0.1+  | 2004 03 30 | 691 | 0.2+  | 0.2+  | 2006 11 21 | 704 | 0.9+  | 0.3+  |
| 2004 02 26 | 704 | 0.8-  | 0.1+  | 2004 03 30 | 691 | 0.1+  | 0.3+  | 2006 11 21 | 704 | 0.6+  | 0.4+  |
| 2004 02 26 | 704 | 0.5-  | 0.2+  | 2004 03 30 | 691 | 0.1+  | 0.2+  | 2006 11 21 | 704 | 0.4+  | 0.7+  |
| 2004 03 14 | 691 | 0.3-  | 0.2+  | 2004 03 31 | 691 | 0.1+  | 0.1-  | 2006 11 21 | 704 | (0.4+ | 2.3+) |
| 2004 03 14 | 691 | 0.4-  | 0.2+  | 2004 03 31 | 691 | 0.1-  | 0.2+  | 2006 11 23 | 691 | 0.0   | 0.0   |
| 2004 03 14 | 691 | 0.3-  | 0.0   | 2004 03 31 | 691 | 0.2-  | 0.2+  | 2006 11 23 | 691 | 0.3+  | 0.2-  |
| 2004 03 17 | 683 | 1.4-  | 0.5+  | 2006 10 16 | 691 | 0.4-  | 0.4+  | 2006 11 23 | 691 | 0.1+  | 0.1-  |
| 2004 03 17 | 683 | (1.2- | 1.6-) | 2006 10 16 | 691 | 0.5-  | 0.4+  | 2007 11 19 | G96 | 0.2-  | 0.4-  |
| 2004 03 17 | 683 | 0.9+  | 1.0+  | 2006 10 16 | 691 | 0.5-  | 0.3+  | 2007 11 19 | G96 | 0.1-  | 0.2-  |
| 2004 03 18 | 683 | 1.2+  | 0.6-  | 2006 10 20 | 691 | 0.2-  | 0.3+  | 2007 11 19 | G96 | 0.1-  | 0.6-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 18 | 683 | 1.2+ | 1.3- | 2006 10 20 | 691 | 0.4- | 0.3+ | 2007 11 19 | G96 | 0.5- | 0.1+ |
| 2004 03 18 | 683 | 0.6+ | 0.5+ | 2006 10 20 | 691 | 0.4- | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.8- |
| 2004 03 18 | 704 | 0.2- | 0.7+ | 2006 10 20 | 644 | 0.3+ | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.5- |
| 2004 03 18 | 704 | 0.2+ | 0.9+ | 2006 10 20 | 644 | 0.3- | 0.2+ | 2007 12 04 | G96 | 0.3+ | 1.9- |
| 2004 03 18 | 704 | 0.0  | 0.1- | 2006 10 20 | 644 | 0.0  | 0.1- | 2007 12 04 | G96 | 1.1- | 1.3- |
| 2004 03 18 | 704 | 1.2+ | 0.6+ | 2006 10 21 | 644 | 0.3- | 0.1- |            |     |      |      |

**(172781)\* 2004 EV<sub>75</sub>**

Discovered 2004 Mar. 14 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 224.70545  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21276474 | $\omega$ | 117.91798 | -0.01696649   | +0.99880420 |
| <i>a</i> | 2.7788788  | $\Omega$ | 150.99983 | -0.94738163   | -0.00139840 |
| <i>e</i> | 0.1274972  | <i>i</i> | 5.42683   | -0.31965635   | -0.04886931 |
| <i>P</i> | 4.63       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 01 25 | 645 | 0.0   | 0.2+  | 2004 04 22 | 704 | 1.1+  | 0.4-  | 2005 09 22 | 644 | 0.2-  | 0.2+  |
| 2003 01 25 | 645 | 0.1-  | 0.1+  | 2004 04 25 | 704 | 0.2+  | 0.8+  | 2005 09 22 | 644 | 0.4-  | 0.3+  |
| 2004 03 14 | 644 | 0.2+  | 0.6+  | 2004 04 25 | 704 | 0.1-  | 0.2+  | 2005 09 22 | 644 | 0.0   | 0.1+  |
| 2004 03 14 | 644 | 0.2+  | 0.7+  | 2004 04 25 | 704 | 0.0   | 0.3+  | 2005 09 22 | 644 | 0.4-  | 0.6+  |
| 2004 03 14 | 644 | 0.2+  | 0.3+  | 2004 04 25 | 704 | 0.1+  | 0.2-  | 2005 09 22 | 644 | 0.5+  | 0.5+  |
| 2004 03 19 | 704 | 0.6+  | 0.4+  | 2004 04 25 | 704 | 0.7-  | 0.3+  | 2005 10 01 | 704 | (0.3+ | 1.6+) |
| 2004 03 19 | 704 | 0.4+  | 0.6+  | 2004 04 28 | 608 | 0.7+  | 0.2+  | 2005 10 01 | 704 | 0.5-  | 0.6+  |
| 2004 03 19 | 704 | 0.9+  | 0.8+  | 2004 04 28 | 608 | 0.3+  | 0.4-  | 2005 10 01 | 704 | 0.7+  | 0.4+  |
| 2004 03 19 | 704 | 0.8+  | 0.1-  | 2004 04 28 | 608 | 0.5+  | 0.5+  | 2005 10 01 | 699 | 0.4-  | 0.5-  |
| 2004 03 19 | 704 | 0.3+  | 0.5+  | 2004 05 18 | 704 | 0.3-  | 0.6+  | 2005 10 01 | 699 | 0.9+  | 0.1+  |
| 2004 03 22 | 704 | 0.2+  | 0.1+  | 2004 05 18 | 704 | 0.6-  | 0.7+  | 2005 10 01 | 699 | 0.4+  | 0.6+  |
| 2004 03 22 | 704 | 0.0   | 0.4+  | 2004 05 18 | 704 | 0.9-  | 1.2+  | 2005 10 01 | 699 | 0.9+  | 0.9+  |
| 2004 03 22 | 704 | (1.6+ | 0.7+) | 2004 05 18 | 704 | (1.6- | 0.3+) | 2006 11 16 | 691 | 0.1-  | 0.3+  |
| 2004 03 22 | 704 | 0.0   | 0.8+  | 2005 07 30 | 644 | 0.1-  | 0.2+  | 2006 11 16 | 691 | 0.2-  | 0.1+  |
| 2004 03 27 | 699 | 0.5-  | 0.3-  | 2005 07 30 | 644 | 0.1-  | 0.2+  | 2006 11 16 | 691 | 0.1+  | 0.2+  |
| 2004 03 27 | 699 | 0.9-  | 0.5+  | 2005 07 30 | 644 | 0.2+  | 0.2+  | 2006 11 20 | 691 | 0.2-  | 0.5+  |
| 2004 03 27 | 699 | 0.4-  | 0.1-  | 2005 08 06 | 644 | 0.0   | 0.2+  | 2006 11 20 | 691 | 0.1+  | 0.6+  |
| 2004 03 27 | 699 | 0.6-  | 1.2+  | 2005 08 06 | 644 | 0.1+  | 0.2+  | 2006 11 20 | 691 | 0.1+  | 0.5+  |
| 2004 04 14 | 691 | 0.1+  | 0.4+  | 2005 08 06 | 644 | 0.0   | 0.1+  | 2006 11 21 | G96 | 0.4-  | 0.3+  |
| 2004 04 14 | 691 | 0.0   | 0.4+  | 2005 08 28 | 691 | 0.1-  | 0.3+  | 2006 11 21 | G96 | 0.2+  | 0.2+  |
| 2004 04 14 | 691 | 0.1-  | 0.4+  | 2005 08 28 | 691 | 0.2-  | 0.5+  | 2006 11 21 | G96 | 0.1-  | 0.2+  |
| 2004 04 16 | 704 | 1.0-  | 0.7+  | 2005 08 28 | 691 | 0.0   | 0.4+  | 2006 11 21 | G96 | 0.0   | 0.2+  |
| 2004 04 16 | 704 | (0.1+ | 2.0+) | 2005 08 28 | 699 | 0.9-  | 0.1+  | 2006 11 21 | G96 | 0.3+  | 0.2+  |
| 2004 04 16 | 704 | 0.2-  | 1.4+  | 2005 08 28 | 699 | 1.0-  | 0.1-  | 2006 11 21 | G96 | 0.2-  | 0.3+  |
| 2004 04 16 | 704 | (1.6+ | 3.0+) | 2005 08 28 | 699 | 0.3+  | 0.5+  | 2006 11 21 | G96 | 0.1+  | 0.2+  |
| 2004 04 20 | 704 | 0.9+  | 0.6+  | 2005 08 28 | 699 | 0.4-  | 0.6+  | 2006 11 21 | G96 | 0.2+  | 0.2+  |
| 2004 04 20 | 704 | 1.4+  | 0.1+  | 2005 09 01 | 691 | 0.0   | 0.2+  | 2006 11 23 | G96 | 0.1-  | 0.0   |
| 2004 04 20 | 703 | (0.4- | 2.1+) | 2005 09 01 | 691 | 0.1+  | 0.2+  | 2006 11 23 | G96 | 0.1+  | 0.0   |
| 2004 04 20 | 704 | 0.8+  | 1.1+  | 2005 09 01 | 691 | 0.0   | 0.0   | 2006 11 23 | G96 | 0.1+  | 0.2-  |
| 2004 04 20 | 703 | 0.2-  | 1.3+  | 2005 09 07 | 699 | 0.4-  | 0.4+  | 2006 11 23 | G96 | 0.3+  | 0.1-  |
| 2004 04 20 | 704 | 0.1+  | 0.1-  | 2005 09 07 | 699 | 0.9+  | 0.3+  | 2006 11 24 | 691 | 0.0   | 0.3+  |
| 2004 04 20 | 703 | 0.6+  | 1.5+  | 2005 09 07 | 699 | 1.0-  | 0.2+  | 2006 11 24 | 691 | 0.1+  | 0.3+  |
| 2004 04 20 | 703 | (0.8- | 1.9+) | 2005 09 07 | 699 | 0.6-  | 0.0   | 2006 11 24 | 691 | 0.1+  | 0.2+  |
| 2004 04 20 | 704 | 0.9+  | 0.4+  | 2005 09 08 | 704 | 0.2-  | 0.2+  | 2007 11 18 | G96 | 0.1-  | 0.6-  |
| 2004 04 22 | 704 | 0.2+  | 0.6-  | 2005 09 08 | 704 | 0.1-  | 0.8+  | 2007 11 18 | G96 | 0.5+  | 0.0   |
| 2004 04 22 | 704 | 0.4+  | 0.1-  | 2005 09 08 | 704 | 0.4+  | 0.5+  | 2007 11 18 | G96 | 0.1+  | 0.1-  |
| 2004 04 22 | 704 | 0.2+  | 0.0   | 2005 09 08 | 704 | 0.4+  | 0.0   | 2007 11 18 | G96 | 0.3+  | 0.1+  |
| 2004 04 22 | 704 | 0.2-  | 0.3-  | 2005 09 08 | 704 | 0.2-  | 0.1+  | 2007 12 06 | G96 | 0.9-  | 0.4-  |
| 2004 04 22 | 704 | 1.1-  | 0.1-  | 2005 09 11 | 691 | 0.3-  | 0.1+  | 2007 12 06 | G96 | 0.3-  | 0.3+  |
| 2004 04 22 | 704 | 0.7+  | 0.0   | 2005 09 11 | 691 | 0.3-  | 0.1+  | 2007 12 06 | G96 | 0.3-  | 0.1+  |
| 2004 04 22 | 704 | 0.1+  | 0.5-  | 2005 09 11 | 691 | 0.2-  | 0.1+  | 2007 12 06 | G96 | 0.9-  | 0.2+  |
| 2004 04 22 | 704 | 0.2+  | 0.1+  | 2005 09 22 | 644 | 0.5-  | 0.2-  |            |     |       |       |

2007 DEC. 24

M.P.O. 129477

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 160.28011  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18013492 | $\omega$ | 136.96044 | -0.01857716 | +0.99934537 |
| <i>a</i> | 3.1050656  | $\Omega$ | 131.94975 | -0.92828322 | -0.00570556 |
| <i>e</i> | 0.1618610  | <i>i</i> | 2.39226   | -0.37140969 | -0.03572502 |
| <i>P</i> | 5.47       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 10 20 | 691 | 0.0  | 0.3+ | 2004 03 19 | 704 | 0.7+  | 0.7+  | 2006 10 01 | 691 | 0.0  | 0.1+ |
| 1995 10 20 | 691 | 0.1- | 0.2+ | 2004 03 19 | 704 | 0.1+  | 0.0   | 2006 10 01 | 691 | 0.0  | 0.1+ |
| 1995 10 20 | 691 | 1.3+ | 0.1- | 2004 03 19 | 704 | 0.3+  | 0.4+  | 2006 10 01 | 691 | 0.0  | 0.2+ |
| 1995 10 26 | 691 | 0.4- | 0.3- | 2004 03 19 | 704 | 0.6+  | 0.9+  | 2006 10 11 | 291 | 0.1- | 0.3+ |
| 1995 10 26 | 691 | 0.5- | 0.2+ | 2004 03 19 | 704 | (0.0  | 1.7+) | 2006 10 11 | 291 | 0.3+ | 0.2+ |
| 1995 10 26 | 691 | 0.2- | 0.0  | 2004 03 20 | 699 | 0.3+  | 1.5+  | 2006 10 11 | 291 | 0.1- | 0.2+ |
| 1998 01 29 | 691 | 0.3+ | 0.2- | 2004 03 20 | 699 | (0.7+ | 1.8+) | 2006 10 15 | 703 | 0.7- | 1.5+ |
| 1998 01 29 | 691 | 0.2+ | 0.3- | 2004 03 20 | 699 | 0.7+  | 0.4-  | 2006 10 15 | 703 | 0.6- | 1.0+ |
| 1998 01 29 | 691 | 0.0  | 0.2- | 2004 03 20 | 699 | 1.2-  | 0.8+  | 2006 10 15 | 703 | 1.0- | 0.1- |
| 1998 02 03 | 691 | 0.5- | 0.3- | 2004 03 22 | 704 | (0.4+ | 1.7+) | 2006 10 15 | 703 | 0.3- | 0.5+ |
| 1998 02 03 | 691 | 0.4- | 0.3- | 2004 03 22 | 704 | 0.9+  | 0.6+  | 2006 10 22 | G96 | 0.1- | 0.1- |
| 1998 02 03 | 691 | 0.3- | 0.3- | 2004 03 22 | 704 | 0.5-  | 1.0+  | 2006 10 22 | G96 | 0.1- | 0.1+ |
| 2001 11 20 | 704 | 0.7- | 0.2- | 2004 03 22 | 704 | (2.0- | 2.2+) | 2006 10 22 | G96 | 0.2- | 0.5- |
| 2001 11 20 | 704 | 0.0  | 0.0  | 2004 03 31 | 691 | 0.1+  | 0.3+  | 2006 10 22 | G96 | 0.2- | 0.1- |
| 2001 11 20 | 704 | 0.4- | 0.9+ | 2004 03 31 | 691 | 0.0   | 0.3+  | 2006 11 16 | G96 | 0.1+ | 0.1- |
| 2004 02 23 | 704 | 0.4+ | 0.7+ | 2004 03 31 | 691 | 0.0   | 0.5+  | 2006 11 16 | G96 | 0.1+ | 0.1- |
| 2004 02 23 | 704 | 0.5+ | 0.4- | 2004 04 12 | 691 | 0.2+  | 0.1+  | 2006 11 16 | G96 | 0.0  | 0.2+ |
| 2004 02 23 | 704 | 0.1+ | 0.5+ | 2004 04 12 | 691 | 0.1-  | 0.2+  | 2006 11 16 | G96 | 0.1+ | 0.0  |
| 2004 02 23 | 704 | 0.7+ | 0.9+ | 2004 04 12 | 691 | 0.0   | 0.3-  | 2007 11 13 | 691 | 0.2+ | 0.1+ |
| 2004 02 23 | 704 | 0.3+ | 1.1+ | 2006 09 17 | 691 | 0.2-  | 0.3+  | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2004 03 15 | 691 | 0.2+ | 0.2+ | 2006 09 17 | 691 | 0.4-  | 0.3+  | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2004 03 15 | 691 | 0.1- | 0.4+ | 2006 09 17 | 691 | 0.3-  | 0.0   | 2007 12 15 | 691 | 0.4- | 0.1+ |
| 2004 03 15 | 691 | 0.0  | 0.3+ | 2006 09 27 | G96 | 0.3+  | 0.2+  | 2007 12 15 | 691 | 0.1+ | 0.5+ |
| 2004 03 15 | 704 | 0.2+ | 0.3+ | 2006 09 27 | G96 | 0.6+  | 0.3+  | 2007 12 15 | 691 | 0.6+ | 1.1- |
| 2004 03 15 | 704 | 0.2+ | 0.1+ | 2006 09 27 | G96 | 0.3-  | 0.2+  |            |     |      |      |
| 2004 03 15 | 704 | 1.1+ | 0.6- | 2006 09 27 | G96 | 0.1-  | 0.1+  |            |     |      |      |

(172783)\* 2004 EL<sub>80</sub> = 2003 AP<sub>18</sub>

Discovered 2004 Mar. 14 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 69693)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.06720   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.19025362 | $\omega$ | 255.21477 | +0.90700393 | +0.37751748 |
| <i>a</i> | 2.9939699  | $\Omega$ | 82.32503  | -0.27597566 | +0.86756051 |
| <i>e</i> | 0.0657572  | <i>i</i> | 10.85359  | -0.31809010 | +0.32375812 |
| <i>P</i> | 5.18       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 01 22 | 691 | 0.1+  | 0.2+  | 2004 03 26 | 703 | (0.3+ | 2.2+) | 2006 09 26 | 703 | 0.4-  | 0.7+  |
| 1993 01 22 | 691 | 0.1-  | 1.5-  | 2004 03 26 | 703 | (0.2+ | 1.8+) | 2006 09 26 | 703 | 0.8-  | 0.6+  |
| 1993 01 22 | 691 | 0.2-  | 0.2-  | 2004 03 26 | 703 | 1.0-  | 1.0-  | 2006 10 12 | E12 | (0.9+ | 1.8-) |
| 2001 10 15 | 644 | 0.4-  | 0.2+  | 2004 03 26 | 703 | (1.8- | 1.6+) | 2006 10 12 | E12 | 0.1+  | 0.2-  |
| 2001 10 15 | 644 | 0.2-  | 0.3+  | 2005 06 04 | 704 | 1.0+  | 0.3+  | 2006 10 12 | E12 | 0.1+  | 0.2+  |
| 2001 10 15 | 644 | 0.4-  | 0.2+  | 2005 06 04 | 704 | (0.4- | 1.8+) | 2006 10 12 | E12 | 0.4+  | 0.1+  |
| 2003 01 05 | 704 | 0.6+  | 0.8-  | 2005 06 04 | 704 | 0.5-  | 0.1-  | 2007 11 09 | 691 | 0.0   | 0.1+  |
| 2003 01 05 | 704 | 0.1+  | 0.1+  | 2005 06 04 | 704 | 0.3+  | 0.1+  | 2007 11 09 | 691 | 0.2+  | 0.2-  |
| 2003 01 05 | 704 | 0.0   | 0.2+  | 2005 06 04 | 704 | 0.2-  | 0.1+  | 2007 11 09 | 691 | 0.2-  | 0.1+  |
| 2003 01 05 | 704 | 0.2-  | 0.5-  | 2005 06 13 | 599 | 0.3+  | 0.9+  | 2007 11 14 | 704 | 0.0   | 0.9-  |
| 2003 01 05 | 704 | 0.2+  | 1.0+  | 2005 06 13 | 599 | 0.5+  | 0.8+  | 2007 11 14 | 704 | 0.3+  | 0.0   |
| 2003 01 08 | 460 | 0.4+  | 0.6+  | 2005 06 13 | 599 | 0.3+  | 0.6+  | 2007 11 14 | 704 | 0.2+  | 0.0   |
| 2003 01 08 | 460 | 0.2+  | 0.5+  | 2005 06 13 | 599 | 0.3+  | 0.7+  | 2007 12 14 | 704 | 0.2+  | 0.2+  |
| 2004 03 14 | 704 | 0.6+  | 0.9+  | 2005 06 16 | G96 | 0.3-  | 0.5+  | 2007 12 14 | 704 | 0.5+  | 0.1-  |
| 2004 03 14 | 704 | 0.7+  | 1.0+  | 2005 06 16 | G96 | 0.1+  | 0.7+  | 2007 12 14 | 704 | 0.2-  | 0.1+  |
| 2004 03 14 | 704 | (2.1+ | 1.1+) | 2005 06 16 | G96 | 0.5-  | 0.6+  | 2007 12 14 | 704 | 0.1+  | 0.3+  |
| 2004 03 19 | 644 | 0.8+  | 0.9+  | 2005 06 16 | G96 | (0.3- | 2.8+) | 2007 12 16 | 691 | 0.2-  | 0.3-  |
| 2004 03 19 | 644 | 0.5+  | 0.8+  | 2006 09 20 | 703 | 1.3-  | 0.0   | 2007 12 16 | 691 | 0.3-  | 0.9+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 19 | 644 | 0.7+ | 0.7+ | 2006 09 20 | 703 | 0.6- | 0.1- | 2007 12 16 | 691 | 0.1- | 0.2- |
| 2004 03 23 | 704 | 0.4+ | 0.8+ | 2006 09 20 | 703 | 0.6+ | 0.0  | 2007 12 16 | 691 | 0.2- | 1.1+ |
| 2004 03 23 | 704 | 0.0  | 0.4+ | 2006 09 20 | 703 | 0.8+ | 0.7+ | 2007 12 16 | 691 | 0.1- | 0.1- |
| 2004 03 23 | 704 | 0.1- | 1.2+ | 2006 09 26 | 703 | 0.6+ | 0.4+ | 2007 12 16 | 691 | 0.0  | 0.7+ |
| 2004 03 23 | 704 | 0.4+ | 0.9+ | 2006 09 26 | 703 | 0.1+ | 0.5+ |            |     |      |      |

(172784)\* 2004 EH<sub>83</sub> = 2001 TN<sub>224</sub>

Discovered 2004 Mar. 14 by NEAT at Palomar.

Id. G. V. Williams (MPO 62063)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 203.59796  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18167341 | $\omega$ | 231.49106 | -0.70557564 | +0.70827681 |
| <i>a</i> | 3.0875107  | $\Omega$ | 353.48982 | -0.57251895 | -0.58848408 |
| <i>e</i> | 0.0538309  | <i>i</i> | 11.45463  | -0.41759438 | -0.38991082 |
| <i>P</i> | 5.43       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 2001 10 14 | 704 | 0.1+  | 1.0+  | 2004 03 31 | 704 | 0.2+  | 0.4-  | 2006 09 18 | 699 | 0.4- | 0.8+  |
| 2001 10 14 | 704 | 0.4-  | 1.2+  | 2004 03 31 | 704 | 1.0+  | 1.1+  | 2006 09 18 | 699 | 0.6- | 0.4-  |
| 2001 10 14 | 704 | 0.3+  | 1.2+  | 2004 03 31 | 704 | 0.8+  | 1.2+  | 2006 09 20 | 704 | 0.3- | 0.3+  |
| 2001 10 20 | 644 | 0.7-  | 0.4+  | 2004 04 16 | 704 | 0.2-  | 0.9+  | 2006 09 20 | 704 | 1.3- | 1.1+  |
| 2001 10 20 | 644 | 0.6-  | 0.6+  | 2004 04 16 | 704 | 0.4+  | 0.5+  | 2006 09 20 | 704 | 1.4- | 0.1-  |
| 2001 10 20 | 644 | 0.6-  | 0.5+  | 2004 04 16 | 704 | 0.7+  | 1.1+  | 2006 09 20 | 704 | 1.2- | 0.2+  |
| 2003 01 10 | 704 | 0.3+  | 0.0   | 2004 04 16 | 704 | 0.9+  | 0.8+  | 2006 09 25 | 699 | 0.9+ | 0.7-  |
| 2003 01 10 | 704 | 0.4-  | 0.6-  | 2006 08 17 | 644 | 0.3+  | 0.0   | 2006 09 25 | 699 | 0.1+ | 0.0   |
| 2003 01 10 | 704 | 0.4+  | 0.0   | 2006 08 17 | 644 | 0.3-  | 0.1-  | 2006 09 25 | 699 | 1.2+ | 0.5-  |
| 2003 01 10 | 704 | 1.0-  | 0.3+  | 2006 08 17 | 644 | 0.4-  | 0.2+  | 2006 09 25 | 699 | 0.7+ | 0.2+  |
| 2003 01 10 | 704 | 0.4-  | 0.1+  | 2006 08 19 | 691 | 0.2-  | 0.3+  | 2006 09 28 | 691 | 0.1+ | 0.3+  |
| 2004 03 14 | 644 | 0.5+  | 0.7+  | 2006 08 19 | 691 | 0.6-  | 0.1+  | 2006 09 28 | 691 | 0.2+ | 0.3+  |
| 2004 03 14 | 644 | 0.5+  | 0.8+  | 2006 08 19 | 691 | 0.0   | 0.4+  | 2006 09 28 | 691 | 0.0  | 0.1+  |
| 2004 03 14 | 644 | 0.5+  | 0.7+  | 2006 08 25 | 704 | 0.6+  | 0.4+  | 2006 10 16 | 703 | 0.7- | 1.4+  |
| 2004 03 20 | 704 | 0.4+  | 0.1+  | 2006 08 25 | 704 | 0.1+  | 0.3+  | 2006 10 16 | 703 | (0.0 | 1.6+) |
| 2004 03 20 | 704 | 0.6+  | 0.0   | 2006 08 25 | 704 | 1.1-  | 0.8-  | 2006 10 16 | 703 | 0.1+ | 0.1+  |
| 2004 03 20 | 704 | 1.0+  | 0.6+  | 2006 08 25 | 704 | 0.4-  | 0.6+  | 2006 10 16 | 703 | 0.4- | 0.6-  |
| 2004 03 20 | 704 | 0.7-  | 0.9+  | 2006 08 28 | 703 | 0.3+  | 0.3-  | 2006 10 22 | 644 | 0.4+ | 0.5+  |
| 2004 03 20 | 704 | 0.2+  | 0.5+  | 2006 08 28 | 703 | (1.5+ | 1.1+) | 2006 10 22 | 644 | 0.3+ | 0.1+  |
| 2004 03 24 | 699 | 0.5+  | 0.4+  | 2006 08 28 | 703 | 0.2+  | 1.0-  | 2006 10 22 | 644 | 0.3+ | 0.2+  |
| 2004 03 24 | 699 | 0.0   | 1.3+  | 2006 08 28 | 703 | 0.2-  | 0.4+  | 2007 11 09 | 704 | 0.2+ | 0.3-  |
| 2004 03 24 | 699 | 0.2-  | 0.3+  | 2006 08 28 | 691 | 0.2-  | 0.0   | 2007 11 09 | 704 | 1.0+ | 1.0+  |
| 2004 03 24 | 699 | 0.9+  | 0.8-  | 2006 08 28 | 691 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 0.1+ | 0.9+  |
| 2004 03 27 | 704 | (2.0- | 1.5+) | 2006 08 28 | 691 | 0.2-  | 0.7-  | 2007 12 03 | 704 | 0.5- | 1.3-  |
| 2004 03 27 | 704 | 0.9-  | 0.7+  | 2006 09 17 | 703 | 0.5-  | 0.4+  | 2007 12 03 | 704 | 0.1- | 0.6-  |
| 2004 03 27 | 704 | (1.7- | 1.1+) | 2006 09 17 | 703 | 0.5-  | 0.2+  | 2007 12 03 | 704 | 0.4+ | 0.0   |
| 2004 03 27 | 704 | (1.7- | 0.9+) | 2006 09 17 | 703 | (2.0- | 0.6-) | 2007 12 03 | 704 | 0.5- | 0.1-  |
| 2004 03 27 | 704 | (1.5- | 1.7+) | 2006 09 17 | 703 | 0.2+  | 0.2+  | 2007 12 03 | 704 | 0.0  | 0.2+  |
| 2004 03 31 | 704 | 0.1+  | 0.0   | 2006 09 18 | 699 | 0.4+  | 0.3+  |            |     |      |       |
| 2004 03 31 | 704 | 1.1+  | 0.7-  | 2006 09 18 | 699 | 1.1+  | 0.4-  |            |     |      |       |

(172785)\* 2004 ES<sub>114</sub> = 2005 OL<sub>3</sub>

Discovered 2004 Mar. 11 by NEAT at Palomar.

Id. A. Doppler (MPO 86384)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 190.77889  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20290386 | $\omega$ | 167.23775 | +0.01577019 | +0.96756360 |
| $a$ | 2.8681983  | $\Omega$ | 103.24533 | -0.93862547 | +0.10122729 |
| $e$ | 0.1166153  | $i$      | 15.01224  | -0.34457732 | -0.23145995 |
| $P$ | 4.86       | $H$      | 15.3      | $G$ 0.15    | $U$ 0       |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 04 | 704 | 0.4+ | 0.2- | 2004 04 14 | 704 | 1.0+ | 0.3+ | 2007 11 04 | G96 | 0.6+ | 0.2- |
| 2004 02 17 | 691 | 0.3+ | 0.0  | 2005 07 26 | 428 | 0.0  | 0.2+ | 2007 11 04 | G96 | 0.1- | 0.3- |
| 2004 02 17 | 691 | 0.1+ | 0.1+ | 2005 07 26 | 428 | 0.6- | 0.3+ | 2007 11 04 | G96 | 0.7+ | 0.4- |
| 2004 02 17 | 691 | 0.1- | 0.0  | 2005 07 27 | 428 | 0.2- | 0.1+ | 2007 11 04 | G96 | 0.5+ | 0.5- |
| 2004 03 11 | 644 | 0.2+ | 0.1+ | 2005 07 27 | 428 | 0.8+ | 0.9+ | 2007 12 03 | 691 | 0.0  | 0.1+ |
| 2004 03 11 | 644 | 0.9+ | 0.0  | 2006 08 28 | 705 | 0.2- | 0.3+ | 2007 12 03 | 691 | 0.5- | 0.0  |
| 2004 03 11 | 644 | 0.0  | 0.5+ | 2006 08 28 | 705 | 0.3- | 0.3+ | 2007 12 03 | 691 | 0.2+ | 0.0  |
| 2004 03 19 | 644 | 0.0  | 0.1+ | 2006 09 16 | 705 | 0.0  | 0.4+ | 2007 12 17 | 691 | 0.1- | 0.0  |
| 2004 03 19 | 644 | 0.2- | 0.3+ | 2006 09 16 | 705 | 0.1+ | 0.4+ | 2007 12 17 | 691 | 0.3- | 0.1- |
| 2004 03 19 | 644 | 0.1+ | 0.3+ | 2006 09 18 | 705 | 0.2+ | 0.3+ | 2007 12 17 | 691 | 0.2- | 0.1- |
| 2004 03 29 | 704 | 0.6- | 0.1+ | 2006 09 18 | 705 | 0.1+ | 0.5+ |            |     |      |      |

**(172786)\* 2004 FX<sub>14</sub>**

Discovered 2004 Mar. 16 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 327.40145  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.22808218 | $\omega$ | 167.58278 | -0.87062790   |
| <i>a</i> | 2.6530279  | $\Omega$ | 342.93888 | -0.77724264   |
| <i>e</i> | 0.1979498  | <i>i</i> | 2.99455   | +0.20593867   |
| <i>P</i> | 4.32       | <i>H</i> | 15.9      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 09 23 | 691 | 0.6-  | 0.5+  | 2004 03 27 | 704 | 0.5-  | 0.2+  | 2004 04 26 | 699 | 0.3- | 0.7+ |
| 1997 09 23 | 691 | 0.8-  | 0.3+  | 2004 03 27 | 704 | 0.3-  | 0.3+  | 2004 04 26 | 699 | 1.2+ | 0.1+ |
| 1997 09 23 | 691 | 0.3-  | 0.5+  | 2004 03 31 | 704 | 0.5+  | 0.2+  | 2004 04 29 | 608 | 0.6+ | 0.1+ |
| 2002 10 15 | 644 | 0.2-  | 0.6+  | 2004 03 31 | 704 | 0.2-  | 0.1-  | 2004 04 29 | 608 | 0.6+ | 0.1- |
| 2002 10 15 | 644 | 0.3-  | 0.6+  | 2004 03 31 | 704 | 0.5+  | 1.2-  | 2004 04 29 | 608 | 0.0  | 0.4- |
| 2002 10 15 | 644 | 0.4-  | 0.7+  | 2004 03 31 | 704 | 0.9-  | 0.4+  | 2005 07 11 | 691 | 0.3+ | 0.0  |
| 2002 10 31 | 644 | 0.4+  | 1.1+  | 2004 03 31 | 704 | 0.6-  | 0.2+  | 2005 07 11 | 691 | 0.0  | 0.0  |
| 2002 10 31 | 644 | 0.4+  | 1.0+  | 2004 04 01 | 704 | 0.2-  | 0.5+  | 2005 07 11 | 691 | 0.1+ | 0.2- |
| 2002 10 31 | 644 | 0.1+  | 0.7+  | 2004 04 01 | 704 | 0.9+  | 0.3-  | 2006 09 17 | 691 | 0.1- | 0.4+ |
| 2002 11 05 | 704 | 0.1+  | 0.8+  | 2004 04 01 | 704 | 0.7+  | 0.2-  | 2006 09 17 | 691 | 0.3- | 0.4+ |
| 2002 11 05 | 704 | 0.5+  | 1.0+  | 2004 04 01 | 704 | 0.2+  | 0.2+  | 2006 09 17 | 691 | 0.3- | 0.4+ |
| 2002 11 05 | 704 | 0.2-  | 0.8+  | 2004 04 11 | 644 | 0.4+  | 0.3+  | 2006 09 25 | 691 | 0.2- | 0.4+ |
| 2004 03 16 | 703 | 0.7+  | 0.9+  | 2004 04 11 | 644 | 0.0   | 0.1+  | 2006 09 25 | 691 | 0.0  | 0.3+ |
| 2004 03 16 | 703 | (0.5- | 2.3+) | 2004 04 11 | 644 | 0.2+  | 0.2+  | 2006 09 25 | 691 | 0.1- | 0.6+ |
| 2004 03 16 | 703 | (0.3+ | 1.7+) | 2004 04 11 | 703 | (2.2+ | 1.2+) | 2006 10 19 | G96 | 0.1+ | 0.1- |
| 2004 03 16 | 703 | 0.0   | 0.5+  | 2004 04 11 | 703 | 1.1+  | 1.4+  | 2006 10 19 | G96 | 0.2+ | 0.2- |
| 2004 03 17 | 704 | 0.3+  | 0.0   | 2004 04 11 | 703 | 0.8+  | 0.4+  | 2006 10 19 | G96 | 0.2+ | 0.1- |
| 2004 03 17 | 704 | 0.1+  | 0.2+  | 2004 04 11 | 703 | 0.7+  | 0.9+  | 2006 10 19 | G96 | 0.4+ | 0.4+ |
| 2004 03 17 | 704 | 0.4+  | 0.2+  | 2004 04 16 | 644 | 0.5+  | 0.2+  | 2006 10 21 | 644 | 0.2- | 1.0+ |
| 2004 03 17 | 704 | 0.8-  | 0.7+  | 2004 04 16 | 644 | 0.2+  | 0.3+  | 2006 10 21 | 644 | 0.1- | 0.8+ |
| 2004 03 17 | 704 | 0.2-  | 0.1-  | 2004 04 16 | 644 | 0.4+  | 0.5+  | 2006 10 21 | 644 | 0.2- | 0.8+ |
| 2004 03 18 | 704 | 0.0   | 0.3+  | 2004 04 16 | 704 | 0.3-  | 0.2+  | 2006 10 31 | G96 | 0.9- | 0.1+ |
| 2004 03 18 | 704 | 0.5+  | 0.8+  | 2004 04 16 | 704 | 0.9+  | 0.1+  | 2006 10 31 | G96 | 0.2- | 0.3- |
| 2004 03 18 | 704 | 0.7+  | 0.6+  | 2004 04 16 | 644 | 0.4+  | 0.5+  | 2006 10 31 | G96 | 0.2- | 0.2- |
| 2004 03 18 | 704 | 1.2-  | 0.6+  | 2004 04 16 | 644 | 0.2+  | 0.5+  | 2006 10 31 | G96 | 0.2- | 0.4- |
| 2004 03 18 | 704 | 0.6+  | 0.0   | 2004 04 16 | 644 | 0.0   | 0.6+  | 2007 11 11 | G96 | 0.1+ | 0.4- |
| 2004 03 20 | 704 | 0.1+  | 0.0   | 2004 04 16 | 644 | 0.2+  | 0.4+  | 2007 11 11 | G96 | 0.1- | 0.4- |
| 2004 03 20 | 704 | 0.1+  | 0.8+  | 2004 04 16 | 644 | 0.1+  | 0.3+  | 2007 11 11 | G96 | 0.0  | 0.7- |
| 2004 03 20 | 704 | 0.0   | 0.7+  | 2004 04 16 | 704 | 0.8-  | 0.9+  | 2007 11 11 | G96 | 0.3+ | 0.7- |
| 2004 03 20 | 704 | 0.6+  | 0.3+  | 2004 04 16 | 644 | 0.4+  | 0.7+  | 2007 12 06 | 704 | 0.6+ | 1.4+ |
| 2004 03 20 | 704 | 0.5+  | 0.3+  | 2004 04 16 | 704 | (0.9- | 1.9+) | 2007 12 06 | 704 | 0.6- | 0.6+ |
| 2004 03 27 | 699 | 0.8+  | 0.7-  | 2004 04 20 | 704 | 0.0   | 0.3+  | 2007 12 06 | 704 | 0.0  | 0.8+ |
| 2004 03 27 | 699 | 0.3+  | 0.3+  | 2004 04 20 | 704 | 1.0-  | 0.8+  | 2007 12 06 | 704 | 0.2+ | 1.3+ |
| 2004 03 27 | 699 | 0.8-  | 0.0   | 2004 04 20 | 704 | 0.6-  | 0.1-  | 2007 12 15 | G96 | 0.6- | 0.3- |
| 2004 03 27 | 699 | 0.5+  | 0.4-  | 2004 04 20 | 704 | 0.5+  | 0.6+  | 2007 12 15 | G96 | 0.4- | 0.3- |
| 2004 03 27 | 704 | 0.2-  | 0.0   | 2004 04 20 | 704 | 0.5+  | 0.3+  | 2007 12 15 | G96 | 0.8- | 0.4- |
| 2004 03 27 | 704 | 0.2-  | 0.4+  | 2004 04 26 | 699 | 0.6-  | 0.1+  | 2007 12 15 | G96 | 0.7- | 0.0  |
| 2004 03 27 | 704 | 0.0   | 0.4+  | 2004 04 26 | 699 | 0.8+  | 0.6+  |            |     |      |      |

**(172787)\* 2004 FK<sub>15</sub> = 1998 XA<sub>25</sub>**

Discovered 2004 Mar. 16 by the Siding Spring Survey at Siding Spring.

Id. G. V. Williams (*MPO* 62077)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 277.11670  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.21922623 | $\omega$ | 269.54881 | -0.93254788   |
| <i>a</i> | 2.7240038  | $\Omega$ | 287.95629 | -0.18628853   |
| <i>e</i> | 0.1533529  | <i>i</i> | 12.10240  | -0.30927502   |
| <i>P</i> | 4.50       | <i>H</i> | 15.4      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 12 | 691 | 0.3- | 0.4- | 2004 04 17 | 644 | 0.2+  | 0.4+  | 2005 07 30 | 644 | 0.0  | 0.3+ |
| 1998 12 12 | 691 | 0.7- | 0.2+ | 2004 04 17 | 644 | 0.1-  | 0.6+  | 2005 07 30 | 644 | 0.2+ | 0.1+ |
| 1998 12 17 | 691 | 0.4+ | 0.3+ | 2004 04 17 | 704 | (0.6+ | 3.3+) | 2005 07 30 | 644 | 0.1+ | 0.2+ |
| 1998 12 17 | 691 | 0.4+ | 0.1- | 2004 04 17 | 644 | 0.1+  | 0.3+  | 2006 10 19 | 703 | 1.1- | 0.2- |
| 1998 12 17 | 691 | 0.5+ | 0.4+ | 2004 04 17 | 704 | 1.4+  | 0.4-  | 2006 10 19 | 703 | 1.5- | 0.3+ |
| 2004 03 16 | E12 | 0.2- | 0.4+ | 2004 04 17 | 704 | (0.9+ | 2.6+) | 2006 10 19 | 703 | 1.2+ | 0.1+ |
| 2004 03 16 | E12 | 0.4- | 0.1+ | 2004 04 17 | 704 | (1.4+ | 3.7+) | 2006 10 19 | 703 | 0.9- | 0.2+ |
| 2004 03 16 | E12 | 0.4- | 0.1+ | 2004 04 17 | 704 | (0.8+ | 3.0+) | 2006 10 19 | 703 | 0.5+ | 0.3+ |
| 2004 03 16 | E12 | 0.0  | 0.5+ | 2004 04 24 | 703 | 0.4-  | 0.8+  | 2006 10 19 | 703 | 0.2- | 0.0  |
| 2004 03 16 | E12 | 0.8- | 0.1- | 2004 04 24 | 703 | 0.1-  | 0.2+  | 2006 10 19 | 703 | 0.5- | 0.4+ |
| 2004 03 16 | E12 | 0.2+ | 0.1+ | 2004 04 24 | 703 | 0.3-  | 0.6-  | 2006 10 19 | 703 | 0.3- | 0.6- |
| 2004 03 16 | E12 | 0.9+ | 0.8+ | 2004 04 24 | 703 | 0.4-  | 0.1-  | 2006 11 22 | 703 | 0.5- | 0.4- |
| 2004 03 16 | E12 | 0.1+ | 0.6+ | 2004 05 12 | E12 | 0.6+  | 0.9+  | 2006 11 22 | 703 | 0.8- | 0.5+ |
| 2004 03 17 | 703 | 0.6+ | 0.4- | 2004 05 12 | E12 | 0.1-  | 0.1-  | 2006 11 22 | 703 | 0.8- | 1.1+ |
| 2004 03 17 | 703 | 0.1+ | 0.2- | 2004 05 12 | E12 | 0.1-  | 0.4+  | 2006 11 22 | 703 | 0.4+ | 0.5+ |
| 2004 03 17 | 703 | 0.0  | 0.5- | 2004 05 12 | E12 | 0.2+  | 0.1-  | 2007 11 07 | G96 | 0.6+ | 0.1- |
| 2004 03 17 | 703 | 0.1+ | 0.7+ | 2004 05 14 | 644 | 0.4+  | 0.5+  | 2007 11 07 | G96 | 0.6+ | 0.1- |
| 2004 03 17 | 704 | 0.1- | 0.4- | 2004 05 14 | 644 | 0.3+  | 0.1+  | 2007 11 07 | G96 | 0.3- | 0.2+ |
| 2004 03 17 | 704 | 0.3+ | 0.3+ | 2004 05 14 | 644 | 0.8+  | 1.0+  | 2007 11 07 | G96 | 0.2+ | 0.3+ |
| 2004 03 17 | 704 | 0.0  | 0.1+ | 2004 05 15 | 704 | 0.1+  | 0.4-  | 2007 11 21 | G96 | 0.8+ | 0.3- |
| 2004 03 17 | 704 | 0.1- | 0.3- | 2004 05 15 | 704 | 0.3-  | 0.2+  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2004 03 17 | 704 | 0.0  | 0.0  | 2004 05 15 | 704 | 0.4-  | 0.3-  | 2007 11 21 | G96 | 0.4+ | 0.1+ |
| 2004 03 18 | 704 | 0.2- | 0.1+ | 2004 05 15 | 704 | 0.4-  | 0.6-  | 2007 11 21 | G96 | 0.2+ | 0.1+ |
| 2004 03 18 | 704 | 0.1- | 0.2+ | 2005 07 01 | 691 | 0.0   | 0.3+  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2004 03 18 | 704 | 0.0  | 0.2- | 2005 07 01 | 691 | 0.0   | 0.2+  | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2004 03 18 | 704 | 0.2- | 0.2+ | 2005 07 01 | 691 | 0.1-  | 0.3+  | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2004 03 18 | 704 | 0.2- | 0.1+ | 2005 07 06 | 691 | 0.0   | 0.2+  | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2004 03 26 | 704 | 0.0  | 0.2- | 2005 07 06 | 691 | 0.2-  | 0.4+  | 2007 12 14 | 704 | 0.2- | 1.4+ |
| 2004 03 26 | 704 | 0.0  | 0.4+ | 2005 07 06 | 691 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.4+ | 0.1- |
| 2004 03 26 | 704 | 0.3- | 0.2+ | 2005 07 29 | 644 | 0.2-  | 0.2+  | 2007 12 14 | 704 | 0.1+ | 0.1+ |
| 2004 03 26 | 704 | 0.1+ | 0.0  | 2005 07 29 | 644 | 0.0   | 0.4+  |            |     |      |      |
| 2004 03 26 | 704 | 0.1- | 0.2+ | 2005 07 29 | 644 | 0.0   | 0.2+  |            |     |      |      |

**(172788)\* 2004 FH<sub>17</sub> = 1998 DD<sub>29</sub> = 2001 TV<sub>143</sub>**

Discovered 2004 Mar. 23 at the Goodricke-Pigott Observatory, Tucson.

Id. G. V. Williams (*MPO* 62077)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 280.29704  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.18151187 | $\omega$ | 338.55415 | -0.80197348   |
| <i>a</i> | 3.0893423  | $\Omega$ | 164.57945 | +0.57288763   |
| <i>e</i> | 0.0553158  | <i>i</i> | 11.45590  | +0.16922856   |
| <i>P</i> | 5.43       | <i>H</i> | 15.1      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 02 28 | 691 | 0.2- | 0.3- | 2004 03 23 | 683 | 0.7-  | 0.1+  | 2006 09 14 | 703 | 0.7+ | 0.8+ |
| 1998 02 28 | 691 | 0.2- | 0.2- | 2004 03 24 | 699 | 1.1-  | 1.1+  | 2006 09 14 | 703 | 1.3- | 0.7+ |
| 1998 02 28 | 691 | 0.2- | 0.1+ | 2004 03 24 | 699 | (1.0- | 2.1+) | 2006 09 30 | G96 | 0.3- | 0.2- |
| 1998 03 03 | 691 | 0.3+ | 0.1+ | 2004 03 24 | 699 | (1.6+ | 1.6+) | 2006 09 30 | G96 | 0.1- | 0.1+ |
| 1998 03 03 | 691 | 0.1+ | 0.2+ | 2004 03 24 | 699 | 0.3-  | 0.3+  | 2006 09 30 | G96 | 0.1+ | 0.1- |
| 1998 03 03 | 691 | 0.1+ | 0.2+ | 2004 03 27 | 683 | 0.4+  | 1.1+  | 2006 09 30 | G96 | 0.2+ | 0.0  |
| 2001 10 10 | 644 | 0.1- | 0.2+ | 2004 03 27 | 683 | 0.8+  | 0.2-  | 2006 10 20 | G96 | 0.1- | 0.1- |
| 2001 10 10 | 644 | 0.1- | 0.3+ | 2004 03 27 | 683 | 1.0-  | 0.1-  | 2006 10 20 | G96 | 0.1+ | 0.2- |
| 2001 10 10 | 644 | 0.0  | 0.5+ | 2004 03 30 | 703 | 0.6-  | 0.9+  | 2006 10 20 | G96 | 0.3- | 0.2- |
| 2001 10 16 | 644 | 0.1+ | 0.9+ | 2004 03 30 | 703 | 1.1-  | 1.5-  | 2006 10 20 | G96 | 0.1- | 0.1- |
| 2001 10 16 | 644 | 0.1+ | 0.7+ | 2004 03 30 | 703 | 1.1-  | 1.1-  | 2006 11 17 | G96 | 0.0  | 0.4+ |
| 2001 10 16 | 644 | 0.3- | 0.6+ | 2004 03 30 | 703 | 0.5+  | 0.1-  | 2006 11 17 | G96 | 0.0  | 0.4- |
| 2004 03 16 | 704 | 0.3+ | 1.0+ | 2004 04 23 | 704 | 1.2+  | 0.1-  | 2006 11 17 | G96 | 0.7- | 0.2+ |
| 2004 03 16 | 704 | 0.6+ | 0.3+ | 2004 04 23 | 704 | 1.0+  | 0.3-  | 2006 11 17 | G96 | 0.3- | 0.4- |

## 2007 DEC. 24

## M.P.O. 129479

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 03 16 | 704 | 0.2− | 0.3+ | 2004 04 23 | 704 | 0.2− | 0.2+ | 2007 11 17 | 703 | (1.8+ | 1.0+) |
| 2004 03 16 | 704 | 0.2− | 0.1+ | 2004 04 23 | 704 | 0.2+ | 0.0  | 2007 11 17 | 703 | 0.7−  | 0.4+  |
| 2004 03 16 | 704 | 0.0  | 0.2− | 2004 04 23 | 704 | 0.8+ | 0.6− | 2007 11 17 | 703 | 0.2+  | 1.0+  |
| 2004 03 21 | 691 | 0.1− | 0.3+ | 2006 08 27 | 691 | 0.2+ | 0.7+ | 2007 11 17 | 703 | 0.0   | 1.2+  |
| 2004 03 21 | 691 | 0.0  | 0.4+ | 2006 08 27 | 691 | 0.1+ | 0.7+ | 2007 11 18 | G96 | 0.1−  | 0.1−  |
| 2004 03 21 | 691 | 0.2+ | 0.3+ | 2006 08 27 | 691 | 0.0  | 0.6+ | 2007 11 18 | G96 | 0.3+  | 0.1−  |
| 2004 03 22 | 704 | 0.8+ | 1.3+ | 2006 08 28 | 703 | 0.4− | 0.2+ | 2007 11 18 | G96 | 0.0   | 0.0   |
| 2004 03 22 | 704 | 0.2+ | 1.1+ | 2006 08 28 | 703 | 0.4− | 0.2− | 2007 11 18 | G96 | 0.2+  | 0.1+  |
| 2004 03 22 | 704 | 0.5+ | 1.5+ | 2006 08 28 | 703 | 0.5− | 0.4+ | 2007 12 05 | 703 | 1.0−  | 0.3−  |
| 2004 03 22 | 704 | 0.2+ | 1.4+ | 2006 08 28 | 703 | 0.1− | 0.4− | 2007 12 05 | 703 | 0.1−  | 0.9+  |
| 2004 03 23 | 683 | 0.5+ | 1.3+ | 2006 09 14 | 703 | 0.2+ | 0.4+ | 2007 12 05 | 703 | 0.3+  | 0.1+  |
| 2004 03 23 | 683 | 1.0+ | 0.1+ | 2006 09 14 | 703 | 0.6− | 0.2+ | 2007 12 05 | 703 | 0.7+  | 0.3+  |

(172789)\* 2004 FQ<sub>31</sub>

Discovered 2004 Mar. 30 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |
|----------|------------|----------|-----------|
| <i>M</i> | 228.52978  | <i>P</i> | <i>Q</i>  |
| <i>n</i> | 0.17274715 | $\omega$ | 110.70945 |
| <i>a</i> | 3.1929746  | $\Omega$ | 95.46201  |
| <i>e</i> | 0.0701212  | <i>i</i> | 25.22211  |
| <i>P</i> | 5.71       | <i>H</i> | 14.2      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 12 07 | 704 | 0.0  | 0.5+ | 2004 03 30 | 704 | 0.3+  | 0.0   | 2004 04 27 | 704 | 0.7− | 0.8+ |
| 2001 12 07 | 704 | 0.9− | 0.6+ | 2004 03 31 | 704 | 0.3−  | 0.2−  | 2004 04 27 | 704 | 0.8− | 0.5− |
| 2001 12 07 | 704 | 0.6− | 0.8+ | 2004 03 31 | 704 | 0.8+  | 0.1+  | 2004 04 28 | 704 | 0.3+ | 0.5− |
| 2002 11 22 | 644 | 0.1+ | 0.5+ | 2004 03 31 | 704 | 0.6+  | 0.9−  | 2004 04 28 | 704 | 0.2+ | 0.1+ |
| 2002 11 22 | 644 | 0.0  | 0.1+ | 2004 03 31 | 704 | 0.4+  | 0.0   | 2004 04 28 | 704 | 0.1− | 0.4+ |
| 2002 11 22 | 644 | 0.3+ | 0.2+ | 2004 03 31 | 704 | 0.1−  | 0.7−  | 2004 04 28 | 704 | 0.3+ | 0.4+ |
| 2003 01 05 | 699 | 0.6+ | 0.2+ | 2004 03 31 | 704 | 0.4−  | 0.6+  | 2004 04 29 | 704 | 0.1+ | 0.2+ |
| 2003 01 05 | 699 | 0.3+ | 0.4− | 2004 03 31 | 704 | 0.6+  | 0.7+  | 2004 04 29 | 704 | 0.8+ | 0.1− |
| 2003 01 05 | 699 | 0.3+ | 0.1− | 2004 03 31 | 704 | 0.5+  | 0.7+  | 2004 04 29 | 704 | 0.6− | 0.1− |
| 2003 01 05 | 699 | 0.1+ | 0.0  | 2004 03 31 | 704 | 0.7+  | 0.5+  | 2004 04 29 | 704 | 1.1+ | 0.6+ |
| 2003 01 13 | 704 | 0.2+ | 0.7+ | 2004 03 31 | 704 | 0.4+  | 0.2−  | 2004 05 12 | 704 | 0.3− | 0.3+ |
| 2003 01 13 | 704 | 0.5+ | 0.5− | 2004 03 31 | 704 | 1.2+  | 0.3+  | 2004 05 12 | 704 | 0.3− | 0.5− |
| 2003 01 13 | 704 | 0.4+ | 0.3− | 2004 03 31 | 704 | 0.2+  | 0.0   | 2004 05 12 | 704 | 0.1− | 0.1− |
| 2003 01 25 | 704 | 0.9− | 1.3− | 2004 03 31 | 704 | 0.6+  | 1.1+  | 2004 05 12 | 704 | 0.5+ | 0.0  |
| 2003 01 25 | 704 | 0.1− | 0.2+ | 2004 03 31 | 704 | 0.2−  | 0.3−  | 2004 05 12 | 704 | 0.1− | 0.1+ |
| 2003 01 25 | 704 | 0.6− | 0.2− | 2004 03 31 | 704 | 0.6+  | 0.0   | 2005 08 06 | E12 | 0.6+ | 1.3+ |
| 2003 02 06 | 699 | 0.6− | 0.1+ | 2004 04 12 | 703 | 0.2+  | 0.1+  | 2005 08 06 | E12 | 0.1− | 1.1+ |
| 2003 02 06 | 699 | 0.1− | 0.1+ | 2004 04 12 | 703 | (2.1− | 0.7−) | 2005 08 06 | E12 | 0.4− | 1.1+ |
| 2003 02 06 | 699 | 0.1+ | 0.5+ | 2004 04 12 | 703 | 0.2−  | 0.1−  | 2005 08 06 | E12 | 0.4+ | 0.7+ |
| 2003 02 06 | 699 | 0.1+ | 0.9− | 2004 04 12 | 703 | 0.1+  | 0.1−  | 2007 11 11 | 704 | 0.6− | 0.5+ |
| 2004 03 28 | 699 | 0.2− | 0.5+ | 2004 04 22 | 703 | 1.1+  | 0.1+  | 2007 11 11 | 704 | 0.1− | 1.3+ |
| 2004 03 28 | 699 | 1.2− | 0.7+ | 2004 04 22 | 703 | 0.8−  | 1.1+  | 2007 11 11 | 704 | 0.5− | 0.6+ |
| 2004 03 28 | 699 | 0.2− | 0.6− | 2004 04 22 | 703 | 1.0−  | 0.5+  | 2007 11 11 | 704 | 0.5− | 0.7+ |
| 2004 03 28 | 699 | 0.2− | 0.9− | 2004 04 22 | 703 | 0.7−  | 1.5+  | 2007 12 05 | 703 | 0.1− | 0.9+ |
| 2004 03 30 | 704 | 0.2− | 0.7+ | 2004 04 27 | 704 | 0.3+  | 0.1−  | 2007 12 05 | 703 | 0.5− | 0.6+ |
| 2004 03 30 | 704 | 0.4+ | 0.2+ | 2004 04 27 | 704 | 0.3−  | 0.1−  | 2007 12 05 | 703 | 0.5− | 1.0+ |
| 2004 03 30 | 704 | 0.2+ | 0.8+ | 2004 04 27 | 704 | 0.6+  | 1.0−  | 2007 12 05 | 703 | 0.3− | 0.6+ |

(172790)\* 2004 FQ<sub>32</sub>

Discovered 2004 Mar. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |
|----------|------------|----------|-----------|
| <i>M</i> | 349.21341  | <i>P</i> | <i>Q</i>  |
| <i>n</i> | 0.24230166 | $\omega$ | 229.11943 |
| <i>a</i> | 2.5481899  | $\Omega$ | 234.53239 |
| <i>e</i> | 0.1999719  | <i>i</i> | 18.12803  |
| <i>P</i> | 4.07       | <i>H</i> | 15.2      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 11 | 608 | 0.1+ | 0.7− | 2003 11 24 | 644 | 0.3+ | 0.4+ | 2004 03 19 | 704 | 0.8+ | 0.3+ |
| 2000 03 11 | 608 | 0.5+ | 0.3− | 2003 11 29 | 704 | 0.5+ | 0.1+ | 2004 03 19 | 704 | 0.5+ | 0.4− |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 11 | 608 | 0.1− | 0.3+ | 2003 11 29 | 704 | 0.1− | 1.0+ | 2005 07 01 | 691 | 0.0   | 0.2+  |
| 2000 04 06 | 699 | 0.1+ | 0.4+ | 2003 11 29 | 704 | 1.3+ | 1.1+ | 2005 07 01 | 691 | 0.5+  | 0.3+  |
| 2000 04 06 | 699 | 0.5+ | 0.3− | 2003 11 29 | 704 | 0.0  | 0.5+ | 2005 07 01 | 691 | 0.5−  | 0.9+  |
| 2000 04 06 | 699 | 0.0  | 0.3+ | 2003 11 29 | 704 | 0.1+ | 0.1− | 2006 09 27 | 703 | 1.1−  | 0.3−  |
| 2000 04 06 | 699 | 0.9− | 0.1+ | 2003 12 23 | 608 | 0.4− | 0.5+ | 2006 09 27 | 703 | 0.6−  | 0.0   |
| 2002 08 14 | 644 | 0.1+ | 1.0+ | 2003 12 23 | 608 | 0.1+ | 0.7+ | 2006 09 27 | 703 | 0.7−  | 0.3−  |
| 2002 08 14 | 644 | 0.3− | 1.2+ | 2003 12 23 | 608 | 0.5− | 0.3+ | 2006 09 27 | 703 | 0.2−  | 0.3−  |
| 2002 08 14 | 644 | 0.1+ | 1.2+ | 2004 03 16 | 704 | 0.6− | 0.2+ | 2007 10 20 | 704 | 0.6−  | 0.0   |
| 2002 10 09 | 704 | 0.2− | 0.5− | 2004 03 16 | 704 | 1.0− | 1.0+ | 2007 10 20 | 704 | 0.7−  | 0.5+  |
| 2002 10 09 | 704 | 0.3− | 1.1+ | 2004 03 16 | 704 | 1.1− | 0.0  | 2007 10 20 | 704 | 0.3+  | 0.5+  |
| 2002 10 09 | 704 | 0.1+ | 0.2+ | 2004 03 16 | 704 | 0.2− | 0.5+ | 2007 10 20 | 704 | 0.2−  | 0.3+  |
| 2002 10 09 | 704 | 0.1+ | 0.5+ | 2004 03 16 | 704 | 0.3− | 0.4+ | 2007 10 20 | 704 | (0.8− | 1.5−) |
| 2002 10 09 | 704 | 0.7+ | 0.1− | 2004 03 19 | 704 | 0.4+ | 0.2+ | 2007 12 07 | D35 | 0.7+  | 0.2−  |
| 2003 11 24 | 644 | 0.4+ | 0.3+ | 2004 03 19 | 704 | 0.2+ | 0.1+ | 2007 12 07 | D35 | 0.9+  | 0.1−  |
| 2003 11 24 | 644 | 0.3+ | 0.5+ | 2004 03 19 | 704 | 0.4− | 0.3− | 2007 12 07 | D35 | 0.9+  | 0.1+  |

(172791)\* 2004 FY<sub>35</sub>

Discovered 2004 Mar. 16 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |
|----------|------------|----------|-----------|
| <i>M</i> | 237.01602  | <i>P</i> | <i>Q</i>  |
| <i>n</i> | 0.21240139 | $\omega$ | 135.21510 |
| <i>a</i> | 2.7820471  | $\Omega$ | 105.13948 |
| <i>e</i> | 0.0732790  | <i>i</i> | 5.50949   |
| <i>P</i> | 4.64       | <i>H</i> | 15.7      |
|          |            | <i>G</i> | 0.15      |
|          |            | <i>U</i> | 1         |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 16 | 644 | 0.1−  | 1.0+  | 2004 03 26 | 691 | 0.0   | 0.0   | 2005 06 29 | 644 | 0.2− | 0.3+ |
| 2001 10 16 | 644 | 0.1−  | 1.1+  | 2004 03 26 | 691 | 0.1−  | 0.2+  | 2005 07 04 | 644 | 0.1− | 0.2+ |
| 2001 10 16 | 644 | 0.4−  | 0.9+  | 2004 03 26 | 691 | 0.1−  | 0.1+  | 2005 07 04 | 644 | 0.0  | 0.3+ |
| 2004 03 16 | 704 | 0.8−  | 0.7−  | 2004 03 30 | 703 | 0.6−  | 0.0   | 2005 07 04 | 644 | 0.0  | 0.4+ |
| 2004 03 16 | 704 | 0.6+  | 0.1+  | 2004 03 30 | 703 | 0.5+  | 0.3+  | 2006 10 03 | G96 | 0.3− | 0.1+ |
| 2004 03 16 | 704 | 0.3+  | 0.0   | 2004 03 30 | 703 | 0.7+  | 0.7+  | 2006 10 03 | G96 | 0.3− | 0.1+ |
| 2004 03 16 | 704 | 0.2+  | 0.8+  | 2004 03 30 | 703 | 0.9+  | 1.2+  | 2006 10 03 | G96 | 0.4− | 0.3+ |
| 2004 03 16 | 704 | 0.9+  | 0.4+  | 2004 04 15 | 644 | 0.1−  | 0.3+  | 2006 10 03 | G96 | 0.0  | 0.3+ |
| 2004 03 19 | 704 | 1.2−  | 0.6+  | 2004 04 15 | 644 | 0.3−  | 0.2+  | 2006 11 16 | G96 | 0.0  | 0.0  |
| 2004 03 19 | 704 | 0.6+  | 0.7+  | 2004 04 15 | 644 | 0.2−  | 0.1+  | 2006 11 16 | G96 | 0.0  | 0.1+ |
| 2004 03 19 | 704 | (0.1+ | 1.6+) | 2004 04 20 | E12 | 0.0   | 1.0−  | 2006 11 16 | G96 | 0.5− | 0.0  |
| 2004 03 19 | 704 | (1.6+ | 2.3+) | 2004 04 20 | E12 | (0.9+ | 2.5−) | 2006 11 16 | G96 | 0.2+ | 0.1+ |
| 2004 03 19 | 704 | (1.1+ | 1.7+) | 2004 04 20 | E12 | 0.7−  | 0.6−  | 2006 11 17 | G96 | 0.5− | 0.4+ |
| 2004 03 20 | 704 | 0.4+  | 0.1+  | 2004 04 20 | E12 | 0.2+  | 1.2−  | 2006 11 17 | G96 | 0.1− | 0.5+ |
| 2004 03 20 | 704 | 0.1−  | 0.8+  | 2004 04 22 | 704 | 1.3+  | 0.1−  | 2006 11 17 | G96 | 0.3− | 0.4+ |
| 2004 03 20 | 704 | 0.9+  | 0.6−  | 2004 04 22 | 704 | (1.9+ | 0.1−) | 2006 11 17 | G96 | 0.0  | 0.7+ |
| 2004 03 20 | 704 | 0.2+  | 1.0+  | 2004 04 22 | 704 | 0.8+  | 0.3+  | 2007 11 09 | G96 | 0.1− | 0.1+ |
| 2004 03 20 | 704 | 0.2+  | 0.2−  | 2004 04 26 | 691 | 0.3−  | 0.2−  | 2007 11 09 | G96 | 0.2− | 0.0  |
| 2004 03 22 | 699 | 0.3−  | 0.2−  | 2004 04 26 | 691 | 0.2−  | 0.0   | 2007 11 09 | G96 | 0.6+ | 0.1− |
| 2004 03 22 | 699 | 0.5+  | 0.6−  | 2004 04 26 | 691 | 0.4−  | 0.1−  | 2007 11 09 | G96 | 0.3− | 0.1+ |
| 2004 03 22 | 704 | 0.2+  | 0.4+  | 2004 06 16 | 704 | 0.1+  | 0.1−  | 2007 12 15 | G96 | 1.0+ | 0.6− |
| 2004 03 22 | 699 | 1.0−  | 0.8+  | 2004 06 16 | 704 | 0.3+  | 0.6−  | 2007 12 15 | G96 | 0.1− | 0.3+ |
| 2004 03 22 | 704 | 0.4+  | 0.4+  | 2004 06 16 | 704 | 0.9+  | 0.7+  | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2004 03 22 | 704 | 0.9+  | 0.4+  | 2004 06 16 | 704 | 0.2+  | 0.9+  | 2007 12 15 | G96 | 0.1+ | 0.2− |
| 2004 03 22 | 699 | 0.3+  | 0.7+  | 2005 06 29 | 644 | 0.0   | 0.3+  |            |     |      |      |
| 2004 03 22 | 704 | 0.0   | 0.1+  | 2005 06 29 | 644 | 0.2−  | 0.3+  |            |     |      |      |

(172792)\* 2004 FW<sub>40</sub>

Discovered 2004 Mar. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 21 | 645 | 0.1−  | 0.1−  | 2004 03 19 | 704 | 0.9+ | 1.1+ | 2006 09 28 | 705 | 0.1+  | 0.3+  |
| 1999 03 21 | 645 | 0.1−  | 0.2−  | 2004 03 22 | 704 | 0.1+ | 0.6+ | 2006 09 29 | 705 | 0.1−  | 0.2+  |
| 1999 03 22 | 645 | 0.1−  | 0.2−  | 2004 03 22 | 704 | 0.5+ | 0.9+ | 2006 09 29 | 705 | 0.1−  | 0.2+  |
| 1999 03 22 | 645 | 0.1−  | 0.2−  | 2004 03 22 | 704 | 0.7+ | 0.6+ | 2006 09 30 | 705 | 0.0   | 0.2+  |
| 2001 09 19 | 704 | (0.7− | 1.7+) | 2004 03 22 | 704 | 0.3− | 0.6+ | 2006 09 30 | 705 | 0.1+  | 0.3+  |
| 2001 09 19 | 704 | (0.2− | 2.1+) | 2004 03 22 | 704 | 0.9+ | 0.6+ | 2006 10 03 | 705 | 0.1+  | 0.2+  |
| 2001 09 19 | 704 | (0.8− | 1.6+) | 2004 03 28 | 704 | 0.7+ | 0.4+ | 2006 10 03 | 705 | 0.1+  | 0.2+  |
| 2001 09 19 | 704 | 1.2−  | 0.2+  | 2004 03 28 | 704 | 0.3+ | 0.1+ | 2007 11 06 | 691 | 0.5−  | 0.2−  |
| 2002 12 08 | 291 | 0.4+  | 0.0   | 2004 03 28 | 704 | 1.0+ | 1.0+ | 2007 11 06 | 691 | 0.4−  | 0.0   |
| 2002 12 08 | 291 | 0.2+  | 0.1+  | 2004 03 28 | 704 | 0.2+ | 0.6+ | 2007 11 06 | 691 | 0.3−  | 0.6+  |
| 2002 12 08 | 291 | 0.1−  | 0.1+  | 2004 03 28 | 704 | 1.0+ | 0.1− | 2007 12 05 | 691 | 0.2−  | 0.2+  |
| 2004 02 23 | 704 | (1.5+ | 1.7+) | 2004 04 15 | 644 | 0.0  | 0.4+ | 2007 12 05 | 691 | (0.5+ | 1.8+) |
| 2004 02 23 | 704 | 0.6+  | 0.1+  | 2004 04 15 | 644 | 0.4+ | 0.6+ | 2007 12 05 | 691 | 0.2−  | 0.3+  |
| 2004 02 23 | 704 | (1.2+ | 1.6+) | 2004 04 15 | 644 | 0.3+ | 0.5+ | 2007 12 05 | 704 | 1.0+  | 0.9−  |
| 2004 03 16 | 704 | 1.3+  | 1.3+  | 2004 04 23 | 691 | 0.2+ | 0.4+ | 2007 12 05 | 704 | 1.1+  | 0.9−  |
| 2004 03 16 | 704 | 1.5−  | 0.5+  | 2004 04 23 | 691 | 0.1− | 0.5+ | 2007 12 05 | 704 | 0.7+  | 0.7−  |
| 2004 03 16 | 704 | (0.8+ | 2.6−) | 2004 04 23 | 691 | 0.1− | 0.6+ | 2007 12 05 | 704 | 0.1+  | 0.6+  |
| 2004 03 16 | 704 | 0.7−  | 0.5+  | 2006 09 11 | 705 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.5+  | 0.2−  |
| 2004 03 18 | 704 | 0.4+  | 0.3−  | 2006 09 11 | 705 | 0.0  | 0.1+ | 2007 12 14 | 704 | 0.2−  | 0.5−  |
| 2004 03 18 | 704 | 1.2+  | 1.0+  | 2006 09 17 | 705 | 0.1− | 0.1+ | 2007 12 14 | 704 | 0.8+  | 0.2−  |
| 2004 03 18 | 704 | 0.4+  | 0.1+  | 2006 09 17 | 705 | 0.0  | 0.2+ | 2007 12 14 | 704 | 0.5−  | 0.2−  |
| 2004 03 19 | 704 | 0.5+  | 0.1−  | 2006 09 20 | 705 | 0.1− | 0.2+ | 2007 12 14 | 704 | 0.5+  | 0.3−  |
| 2004 03 19 | 704 | 0.1+  | 0.9+  | 2006 09 20 | 705 | 0.1− | 0.1+ |            |     |       |       |
| 2004 03 19 | 704 | 0.4+  | 0.9+  | 2006 09 28 | 705 | 0.1+ | 0.3+ |            |     |       |       |

**(172793)\* 2004 FP<sub>42</sub> = 2001 SJ<sub>334</sub>**

Discovered 2004 Mar. 18 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 76457)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 164.70437  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.17560560 | $\omega$ | 337.78651 | −0.61406564 |      | +0.78818419 |   |
| <i>a</i> | 3.1582304  | $\Omega$ | 254.30534 | −0.71755602 |      | −0.57920992 |   |
| <i>e</i> | 0.0946157  | <i>i</i> | 2.44669   | −0.32868945 |      | −0.20804217 |   |
| <i>P</i> | 5.61       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 291 | 0.5+  | 0.1−  | 2004 03 20 | 691 | 0.1+ | 0.2+ | 2007 10 08 | 691 | 0.4− | 0.0  |
| 2001 09 19 | 291 | 0.0   | 0.2−  | 2005 06 13 | G96 | 0.5− | 0.4+ | 2007 10 12 | 691 | 0.1− | 0.0  |
| 2001 09 19 | 291 | 0.5−  | 0.1−  | 2005 06 13 | G96 | 0.9− | 0.7+ | 2007 10 12 | 691 | 0.2− | 0.3+ |
| 2001 09 23 | 704 | 1.1−  | 0.3+  | 2005 06 13 | G96 | 0.6− | 0.5+ | 2007 10 12 | 691 | 0.1− | 0.2− |
| 2001 09 23 | 704 | (1.6− | 0.8+) | 2005 06 13 | G96 | 0.4− | 0.2+ | 2007 10 21 | 691 | 0.4− | 0.1− |
| 2001 09 23 | 704 | 0.2+  | 0.6+  | 2006 08 19 | 691 | 0.2+ | 0.7+ | 2007 10 21 | 691 | 0.2− | 0.2+ |
| 2001 09 23 | 704 | (0.6− | 1.7+) | 2006 08 19 | 691 | 0.2+ | 0.7+ | 2007 10 21 | 691 | 0.3− | 0.2+ |
| 2002 12 04 | 695 | 0.3+  | 0.0   | 2006 08 19 | 691 | 0.2− | 0.8+ | 2007 11 07 | G96 | 0.5+ | 0.1+ |
| 2002 12 04 | 695 | 0.3+  | 0.1−  | 2006 09 27 | G96 | 0.3+ | 0.7− | 2007 11 07 | G96 | 0.1+ | 0.2+ |
| 2004 02 29 | 691 | 0.4+  | 0.2+  | 2006 09 27 | G96 | 0.0  | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.0  |
| 2004 02 29 | 691 | 0.0   | 0.4+  | 2006 09 27 | G96 | 0.3+ | 0.1+ | 2007 11 07 | G96 | 0.3+ | 0.1+ |
| 2004 02 29 | 691 | 0.2+  | 0.2+  | 2006 09 27 | G96 | 0.1+ | 0.2− | 2007 12 15 | G96 | 0.5+ | 0.1+ |
| 2004 03 18 | 691 | 0.4+  | 0.1+  | 2007 10 04 | 691 | 0.4+ | 0.7+ | 2007 12 15 | G96 | 0.6+ | 0.6− |
| 2004 03 18 | 691 | 0.2+  | 0.1+  | 2007 10 04 | 691 | 0.6− | 0.4− | 2007 12 15 | G96 | 0.3+ | 0.3− |
| 2004 03 18 | 691 | 0.2+  | 0.3+  | 2007 10 04 | 691 | 0.1− | 0.2− | 2007 12 15 | G96 | 1.0+ | 0.1+ |
| 2004 03 20 | 691 | 0.2−  | 0.2+  | 2007 10 08 | 691 | 0.2+ | 0.0  |            |     |      |      |
| 2004 03 20 | 691 | 0.0   | 0.2+  | 2007 10 08 | 691 | 0.0  | 0.1+ |            |     |      |      |

**(172794)\* 2004 FU<sub>60</sub> = 2002 YK<sub>21</sub>**

Discovered 2004 Mar. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 62106)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 318.77858  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.21233980 | $\omega$ | 68.08700 | −0.92017835 |      | −0.34838928 |   |
| <i>a</i> | 2.7825851  | $\Omega$ | 91.15690 | +0.25950108 |      | −0.88434197 |   |
| <i>e</i> | 0.1682406  | <i>i</i> | 10.29014 | +0.29313988 |      | −0.31074780 |   |
| <i>P</i> | 4.64       | <i>H</i> | 15.4     | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 11 14 | 704 | 0.3+ | 0.5− | 2004 04 16 | 704 | 0.6−  | 0.5−  | 2006 08 28 | 705 | 0.4−  | 0.4+  |
| 2002 11 14 | 704 | 0.5− | 1.1+ | 2004 04 16 | 704 | 1.1−  | 0.3+  | 2006 09 11 | 705 | 0.4−  | 0.5+  |
| 2002 11 14 | 704 | 0.6+ | 1.2+ | 2004 04 16 | 704 | 0.1−  | 1.0−  | 2006 09 11 | 705 | 0.3−  | 0.5+  |
| 2002 11 14 | 704 | 0.3+ | 0.9+ | 2004 04 23 | 704 | 0.8+  | 0.1−  | 2006 09 16 | 705 | 0.4−  | 0.5+  |
| 2002 12 31 | 704 | 0.1+ | 0.4+ | 2004 04 23 | 704 | 1.1+  | 0.2+  | 2006 09 16 | 705 | 0.4−  | 0.5+  |
| 2002 12 31 | 704 | 0.1− | 0.9+ | 2004 04 23 | 704 | 0.4+  | 0.3+  | 2007 09 18 | G96 | 0.1−  | 0.7−  |
| 2002 12 31 | 704 | 0.2− | 1.5+ | 2004 04 23 | 704 | 0.6+  | 0.9+  | 2007 09 18 | G96 | 0.1+  | 0.2−  |
| 2002 12 31 | 704 | 0.1+ | 0.9+ | 2004 04 23 | 704 | 0.6+  | 0.4+  | 2007 09 18 | G96 | 0.2−  | 0.4−  |
| 2003 01 04 | 704 | 0.3− | 0.3+ | 2004 05 12 | 703 | 0.0   | 1.1+  | 2007 09 18 | G96 | 0.4−  | 0.7−  |
| 2003 01 04 | 704 | 0.0  | 1.0− | 2004 05 12 | 703 | 0.1+  | 0.3+  | 2007 11 18 | 704 | (0.3+ | 2.4+) |
| 2003 01 04 | 704 | 0.7+ | 1.5− | 2004 05 12 | 703 | 0.9−  | 0.4+  | 2007 11 18 | 704 | 0.3−  | 0.5+  |
| 2003 01 04 | 704 | 1.2− | 0.2+ | 2004 05 12 | 703 | (2.8− | 2.3−) | 2007 11 18 | 704 | 0.2−  | 0.4−  |
| 2004 02 17 | 291 | 0.8− | 0.2+ | 2004 05 13 | 699 | 0.8+  | 0.2−  | 2007 12 03 | 703 | 1.2−  | 0.2+  |
| 2004 02 17 | 291 | 0.7− | 0.6+ | 2004 05 13 | 699 | 0.1+  | 0.6−  | 2007 12 03 | 703 | 0.2+  | 0.2−  |
| 2004 02 17 | 291 | 0.4− | 0.5+ | 2004 05 13 | 699 | 0.3+  | 0.6−  | 2007 12 03 | 703 | 0.4−  | 0.1−  |
| 2004 03 18 | 291 | 0.2+ | 0.0  | 2004 05 13 | 699 | 0.8+  | 0.5−  | 2007 12 03 | 703 | (1.6− | 1.4−) |
| 2004 03 18 | 291 | 0.5+ | 0.2+ | 2004 05 14 | 704 | 1.5−  | 0.3−  | 2007 12 13 | 704 | 0.3−  | 0.7−  |
| 2004 03 18 | 291 | 0.6+ | 0.1+ | 2004 05 14 | 704 | 0.5−  | 0.4+  | 2007 12 13 | 704 | 1.4+  | 0.5−  |
| 2004 03 21 | 291 | 0.2− | 0.1+ | 2004 05 14 | 704 | 0.5−  | 0.7−  | 2007 12 13 | 704 | 0.4+  | 0.1−  |
| 2004 03 21 | 291 | 0.2− | 0.1+ | 2004 05 14 | 704 | 0.5+  | 0.4−  | 2007 12 13 | 704 | 0.9+  | 0.7+  |
| 2004 03 21 | 291 | 0.7− | 0.1+ | 2004 05 23 | 704 | 1.4+  | 0.2+  | 2007 12 13 | 704 | 1.1+  | 0.2+  |
| 2004 04 11 | 644 | 0.5+ | 0.2− | 2004 05 23 | 704 | 0.5+  | 0.2−  | 2007 12 16 | 699 | 0.9−  | 0.7−  |
| 2004 04 11 | 644 | 0.2+ | 0.2+ | 2004 05 23 | 704 | 0.2+  | 0.2−  | 2007 12 16 | 699 | 0.1−  | 0.8+  |
| 2004 04 11 | 644 | 0.2+ | 0.1− | 2004 05 23 | 704 | 1.0+  | 0.4−  | 2007 12 16 | 699 | 0.2−  | 0.2−  |
| 2004 04 16 | 704 | 0.7+ | 0.4+ | 2004 05 23 | 704 | 0.5+  | 0.0   | 2007 12 16 | 699 | 0.0   | 0.8−  |
| 2004 04 16 | 704 | 0.2+ | 0.3− | 2006 08 28 | 705 | 0.6−  | 0.4+  |            |     |       |       |

**(172795)\* 2004 FT<sub>62</sub>**

Discovered 2004 Mar. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 225.03884  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18041212 | $\omega$ | 117.93155 | −0.91272447 |      | +0.40666542 |   |
| <i>a</i> | 3.1018841  | $\Omega$ | 86.08692  | −0.38738812 |      | −0.83064823 |   |
| <i>e</i> | 0.1636972  | <i>i</i> | 2.26691   | −0.12986336 |      | −0.38032453 |   |
| <i>P</i> | 5.46       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 31 | 807 | 0.2−  | 0.4+  | 2004 04 15 | 644 | 0.2+ | 0.3+ | 2006 09 28 | 691 | 0.6− | 0.4+ |
| 2000 07 31 | 807 | 0.1−  | 0.6+  | 2004 04 15 | 644 | 0.4+ | 0.2+ | 2006 09 29 | 705 | 0.2+ | 0.1+ |
| 2001 10 26 | 691 | 0.1+  | 0.1−  | 2004 04 19 | 704 | 0.4+ | 0.9+ | 2006 09 29 | 705 | 0.1+ | 0.2+ |
| 2001 10 26 | 691 | 0.0   | 0.1+  | 2004 04 19 | 704 | 0.5− | 0.2+ | 2006 10 02 | 705 | 0.3+ | 0.2+ |
| 2001 10 26 | 691 | 0.1−  | 0.2−  | 2004 04 19 | 704 | 0.9+ | 0.2− | 2006 10 02 | 705 | 0.2+ | 0.1+ |
| 2004 03 19 | 704 | 0.0   | 0.2−  | 2004 04 19 | 704 | 0.4+ | 0.7+ | 2007 10 14 | G96 | 0.6+ | 0.3− |
| 2004 03 19 | 704 | 0.1−  | 1.5−  | 2004 04 23 | 691 | 0.1+ | 0.1+ | 2007 10 14 | G96 | 0.0  | 0.7− |
| 2004 03 19 | 704 | 0.6−  | 0.4+  | 2004 04 23 | 691 | 0.3+ | 0.3+ | 2007 10 14 | G96 | 0.6+ | 0.0  |
| 2004 03 19 | 704 | 0.5+  | 0.7+  | 2004 04 23 | 691 | 0.2+ | 0.0  | 2007 10 14 | G96 | 0.4+ | 0.2− |
| 2004 03 22 | 704 | 0.3+  | 0.6+  | 2005 06 17 | G96 | 0.4− | 0.5+ | 2007 11 03 | 691 | 0.4+ | 0.4+ |
| 2004 03 22 | 704 | 0.1−  | 0.4+  | 2005 06 17 | G96 | 0.3− | 0.1+ | 2007 11 03 | 691 | 0.3− | 0.0  |
| 2004 03 22 | 704 | 0.9+  | 0.2+  | 2005 06 17 | G96 | 0.8− | 0.4+ | 2007 11 03 | 691 | 0.5− | 0.2+ |
| 2004 03 22 | 704 | 0.9+  | 0.2−  | 2006 08 30 | 705 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.2− |
| 2004 03 24 | 699 | 0.2−  | 0.6+  | 2006 08 30 | 705 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.2− |
| 2004 03 24 | 699 | 0.6+  | 0.0   | 2006 09 11 | 705 | 0.1+ | 0.1+ | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2004 03 24 | 699 | 0.0   | 0.6+  | 2006 09 11 | 705 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.1+ | 0.3+ |
| 2004 03 24 | 699 | 0.5−  | 0.3−  | 2006 09 16 | 705 | 0.2+ | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.3+ |
| 2004 03 28 | 704 | 0.5−  | 0.5−  | 2006 09 16 | 705 | 0.2+ | 0.2+ | 2007 11 14 | 691 | 0.2− | 0.1− |
| 2004 03 28 | 704 | 1.0−  | 0.3−  | 2006 09 19 | 705 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.4− | 0.1+ |
| 2004 03 28 | 704 | 0.6−  | 0.2+  | 2006 09 19 | 705 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.2− | 0.3+ |
| 2004 03 28 | 704 | 0.7−  | 0.1+  | 2006 09 20 | 705 | 0.3+ | 0.2+ | 2007 11 18 | 691 | 0.2− | 0.3+ |
| 2004 03 28 | 704 | 1.0−  | 0.5−  | 2006 09 20 | 705 | 0.2+ | 0.1+ | 2007 12 06 | G96 | 1.1+ | 0.0  |
| 2004 04 12 | 699 | (2.2+ | 0.6+) | 2006 09 22 | 705 | 0.0  | 0.3+ | 2007 12 06 | G96 | 0.4+ | 0.2− |
| 2004 04 12 | 699 | 0.2+  | 0.5+  | 2006 09 22 | 705 | 0.1+ | 0.3+ | 2007 12 06 | G96 | 0.1− | 0.5+ |
| 2004 04 12 | 699 | 0.7−  | 0.9+  | 2006 09 27 | 705 | 0.3+ | 0.1+ | 2007 12 06 | G96 | 1.3− | 0.0  |
| 2004 04 12 | 699 | 0.2−  | 0.4−  | 2006 09 27 | 705 | 0.3+ | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.3− |
| 2004 04 15 | 644 | 0.5+  | 0.3+  | 2006 09 28 | 691 | 0.1− | 0.2+ | 2007 12 15 | G96 | 0.4+ | 0.3− |

2007 DEC. 24

M.P.O. 129481

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 15 | 644 | 0.8+ | 0.4+ | 2006 09 28 | 691 | 0.2- | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.4+ |
| 2004 04 15 | 644 | 0.3+ | 0.3+ | 2006 09 28 | 705 | 0.2+ | 0.3+ | 2007 12 15 | G96 | 0.5+ | 0.2- |
| 2004 04 15 | 644 | 0.5+ | 0.6+ | 2006 09 28 | 705 | 0.1+ | 0.3+ |            |     |      |      |

**(172796)\* 2004 FP<sub>91</sub> = 1992 SD<sub>26</sub>**

Discovered 2004 Mar. 22 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.  
Id. A. Doppler (*MPO* 76459)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i>                                | 338.14445  | (2000.0) |          | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.20941541 | $\omega$ | 76.99792 | -0.37510635 | -0.92575764 |          |   |
| <i>a</i>                                | 2.8084301  | $\Omega$ | 35.15184 | +0.81520935 | -0.35389818 |          |   |
| <i>e</i>                                | 0.0793424  | <i>i</i> | 4.74472  | +0.44128102 | -0.13314978 |          |   |
| <i>P</i>                                | 4.71       | <i>H</i> | 16.0     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 09 27 | 691 | 0.5+ | 0.3+ | 2004 03 23 | 704 | 0.2+  | 0.7+  | 2006 10 21 | G96 | 0.4+ | 0.3- |
| 1992 09 27 | 691 | 0.1+ | 0.2+ | 2004 03 23 | 704 | 0.1-  | 0.7+  | 2006 10 21 | G96 | 0.8+ | 0.1+ |
| 1992 09 27 | 691 | 0.1- | 0.2+ | 2004 03 23 | 704 | 0.5+  | 0.4-  | 2006 10 21 | G96 | 0.6+ | 0.1+ |
| 1992 10 02 | 691 | 0.5- | 0.8+ | 2004 03 23 | 704 | 0.2-  | 1.2+  | 2006 10 21 | G96 | 0.3+ | 0.4+ |
| 1992 10 02 | 691 | 1.1- | 1.5+ | 2004 04 16 | 691 | 0.1+  | 0.3+  | 2007 11 12 | G96 | 0.1- | 0.1- |
| 1997 11 02 | 691 | 0.1+ | 0.4- | 2004 04 16 | 691 | 0.2+  | 0.2+  | 2007 11 12 | G96 | 0.1- | 0.0  |
| 1997 11 02 | 691 | 0.1+ | 0.5- | 2004 04 16 | 691 | 0.0   | 0.2+  | 2007 11 12 | G96 | 0.8+ | 0.2- |
| 1997 11 02 | 691 | 0.2- | 0.4- | 2006 08 27 | 691 | 0.2+  | 0.4+  | 2007 11 12 | G96 | 0.2- | 0.1- |
| 1997 11 25 | 691 | 0.4+ | 0.8- | 2006 08 27 | 691 | 0.4-  | 0.4+  | 2007 12 13 | 704 | 1.1+ | 0.9+ |
| 1997 11 25 | 691 | 0.3+ | 0.2- | 2006 08 27 | 691 | 0.2-  | 0.8+  | 2007 12 13 | 704 | 0.3+ | 0.8+ |
| 1997 11 25 | 691 | 0.1+ | 0.2- | 2006 09 18 | 703 | 1.2-  | 0.9+  | 2007 12 13 | 704 | 1.5+ | 0.7+ |
| 2002 12 11 | 704 | 0.5- | 0.3- | 2006 09 18 | 703 | 0.6+  | 0.0   | 2007 12 13 | 704 | 0.2- | 1.2+ |
| 2002 12 11 | 704 | 0.2+ | 0.7- | 2006 09 18 | 703 | 1.0-  | 0.3+  | 2007 12 15 | 704 | 0.2- | 1.1+ |
| 2002 12 11 | 704 | 0.3- | 0.5- | 2006 09 18 | 703 | (1.8+ | 1.0-) | 2007 12 15 | 704 | 0.2+ | 0.8+ |
| 2004 03 22 | 704 | 0.7+ | 1.0+ | 2006 09 19 | 703 | 0.3-  | 1.4-  | 2007 12 15 | 704 | 0.0  | 0.3+ |
| 2004 03 22 | 704 | 1.1+ | 0.4+ | 2006 09 19 | 703 | 0.3-  | 0.6-  | 2007 12 15 | 704 | 0.4+ | 1.0+ |
| 2004 03 22 | 704 | 0.5- | 0.6+ | 2006 09 19 | 703 | 0.2-  | 0.9-  | 2007 12 15 | 704 | 0.8- | 0.9+ |
| 2004 03 22 | 704 | 0.1- | 0.4+ | 2006 09 19 | 703 | 0.6-  | 0.7-  |            |     |      |      |

**(172797)\* 2004 FN<sub>103</sub> = 1991 VW<sub>16</sub>**

Discovered 2004 Mar. 23 by the Lincoln Laboratory Near-Earth Asteroid  
Research Team at Socorro.  
Id. G. V. Williams (*MPO* 62122)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i>                                | 258.17831  | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.19007355 | $\omega$ | 0.11042   | -0.99903780 | -0.04380709 |          |   |
| <i>a</i>                                | 2.9958605  | $\Omega$ | 177.37605 | +0.04020312 | -0.93387937 |          |   |
| <i>e</i>                                | 0.0500581  | <i>i</i> | 2.62888   | +0.01752653 | -0.35489471 |          |   |
| <i>P</i>                                | 5.19       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1991 11 05 | 691 | 0.1+  | 0.7+  | 2004 03 27 | 704 | 0.1+  | 0.2+  | 2006 09 30 | 691 | 0.5- | 0.6+ |
| 1991 11 05 | 691 | 0.5+  | 0.2+  | 2004 03 27 | 704 | 0.4+  | 0.5+  | 2006 09 30 | 691 | 0.3- | 0.8+ |
| 1991 11 06 | 691 | 0.1+  | 0.3-  | 2004 03 29 | 291 | 0.4+  | 0.2+  | 2006 09 30 | 691 | 0.2- | 0.5+ |
| 1991 11 06 | 691 | 0.2+  | 0.2+  | 2004 03 29 | 291 | 0.3+  | 0.3+  | 2006 10 20 | G96 | 0.2+ | 0.4- |
| 1991 11 06 | 691 | 0.1+  | 0.4+  | 2004 03 29 | 291 | 0.2+  | 0.2+  | 2006 10 20 | G96 | 0.4+ | 0.2- |
| 1994 04 15 | 691 | 0.3-  | 0.7+  | 2004 04 14 | 691 | (2.6+ | 1.6-) | 2006 10 20 | G96 | 0.0  | 0.4- |
| 1994 04 15 | 691 | 0.7-  | 0.0   | 2004 04 14 | 691 | 0.3+  | 0.1+  | 2006 10 20 | G96 | 0.3- | 0.2- |
| 1994 04 15 | 691 | 0.7-  | 0.6+  | 2004 04 14 | 691 | 0.5+  | 0.4+  | 2006 10 27 | G96 | 0.5+ | 0.4+ |
| 2004 03 23 | 704 | (0.1- | 1.6-) | 2006 08 28 | 691 | 0.2-  | 0.1-  | 2006 10 27 | G96 | 0.5+ | 0.2- |
| 2004 03 23 | 704 | 0.8+  | 0.7+  | 2006 08 28 | 691 | 0.2-  | 0.3+  | 2006 10 27 | G96 | 0.2- | 0.1- |
| 2004 03 23 | 704 | 0.0   | 0.6+  | 2006 08 28 | 691 | 0.3-  | 0.6+  | 2006 10 27 | G96 | 0.2+ | 0.2- |
| 2004 03 24 | 699 | 0.4-  | 0.9-  | 2006 09 11 | 705 | 0.2+  | 0.2+  | 2007 11 20 | 691 | 0.6- | 0.1+ |
| 2004 03 24 | 699 | (0.2- | 2.0+) | 2006 09 11 | 705 | 0.3+  | 0.2+  | 2007 11 20 | 691 | 0.7- | 0.2+ |
| 2004 03 24 | 699 | 0.3-  | 1.3+  | 2006 09 15 | 691 | 0.1+  | 0.3+  | 2007 11 20 | 691 | 0.5- | 0.1- |
| 2004 03 24 | 699 | 0.9+  | 0.9-  | 2006 09 15 | 691 | 0.0   | 0.1+  | 2007 12 04 | 704 | 0.7- | 0.4- |
| 2004 03 26 | 704 | 1.2+  | 0.1-  | 2006 09 15 | 691 | 0.1+  | 0.1+  | 2007 12 04 | 704 | 0.1+ | 0.5+ |
| 2004 03 26 | 704 | 0.9+  | 0.5+  | 2006 09 22 | A50 | 0.4+  | 0.1+  | 2007 12 04 | 704 | 0.1+ | 1.2+ |
| 2004 03 26 | 704 | 0.0   | 0.6+  | 2006 09 22 | A50 | 0.4+  | 0.0   | 2007 12 05 | G96 | 0.2- | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 26 | 704 | 0.6+ | 0.6+ | 2006 09 25 | G96 | 0.4- | 0.1- | 2007 12 05 | G96 | 0.1- | 0.0  |
| 2004 03 27 | 704 | 1.0+ | 0.6- | 2006 09 25 | G96 | 0.2+ | 0.2+ | 2007 12 05 | G96 | 0.5- | 0.2- |
| 2004 03 27 | 704 | 1.0+ | 1.0+ | 2006 09 25 | G96 | 0.3+ | 0.1+ | 2007 12 05 | G96 | 0.0  | 0.2- |

**(172798)\* 2004 FU<sub>108</sub> = 2001 RS<sub>140</sub>**

Discovered 2004 Mar. 23 by Spacewatch at Kitt Peak.  
Id. G. V. Williams (*MPO* 62125)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i>                                | 309.58453  | (2000.0) |          | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.18496862 | $\omega$ | 51.34806 | -0.40264203 | -0.91482957 |          |   |
| <i>a</i>                                | 3.0507317  | $\Omega$ | 62.42204 | +0.82855400 | -0.37868353 |          |   |
| <i>e</i>                                | 0.1427925  | <i>i</i> | 2.00973  | +0.38907283 | -0.14030556 |          |   |
| <i>P</i>                                | 5.33       | <i>H</i> | 15.9     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 11 12 | 691 | 0.3+ | 0.8- | 2004 04 13 | 691 | 0.1- | 0.2- | 2007 11 14 | 691 | 0.2- | 0.1+ |
| 1991 11 12 | 691 | 0.1+ | 0.4- | 2004 04 13 | 691 | 0.1- | 0.1- | 2007 11 14 | 691 | 0.3+ | 0.3+ |
| 1991 11 12 | 691 | 0.1+ | 0.3- | 2004 04 13 | 691 | 0.1+ | 0.2- | 2007 11 14 | 691 | 0.0  | 0.7+ |
| 2001 09 12 | 704 | 0.5- | 0.8- | 2004 04 20 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.0  | 0.0  |
| 2001 09 12 | 704 | 0.5- | 0.3+ | 2004 04 20 | 691 | 0.2- | 0.2+ | 2007 11 15 | 704 | 0.4+ | 0.6+ |
| 2001 09 12 | 704 | 0.2+ | 0.6+ | 2004 04 20 | 691 | 0.0  | 0.6+ | 2007 11 15 | 704 | 0.7+ | 0.4+ |
| 2001 09 19 | 704 | 0.3- | 0.4+ | 2004 05 09 | 691 | 0.3- | 0.4+ | 2007 11 15 | 704 | 0.2+ | 0.5+ |
| 2001 09 19 | 704 | 0.6- | 0.8+ | 2004 05 09 | 691 | 0.4+ | 0.2+ | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2001 09 19 | 704 | 0.7+ | 1.2+ | 2004 05 09 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 691 | 0.1+ | 0.3+ |
| 2001 09 19 | 704 | 0.1- | 0.2- | 2007 10 08 | 691 | 0.4- | 0.3+ | 2007 12 04 | 691 | 0.3+ | 0.2+ |
| 2002 12 31 | 704 | 1.1+ | 0.3+ | 2007 10 08 | 691 | 0.2- | 0.7+ | 2007 12 04 | 691 | 0.3- | 0.0  |
| 2002 12 31 | 704 | 0.4+ | 0.2- | 2007 10 08 | 691 | 0.5- | 0.0  | 2007 12 05 | 691 | 0.1- | 0.2- |
| 2002 12 31 | 704 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.3+ | 0.1- | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2003 01 08 | 704 | 0.1- | 0.0  | 2007 10 30 | 691 | 0.2- | 0.1+ | 2007 12 05 | 691 | 0.1- | 0.1- |
| 2003 01 08 | 704 | 0.8- | 0.7- | 2007 10 30 | 691 | 0.1- | 0.3+ | 2007 12 06 | 691 | 0.2- | 0.2- |
| 2003 01 08 | 704 | 0.9- | 0.1+ | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 12 06 | 691 | 0.1- | 0.1+ |
| 2003 01 08 | 704 | 0.1- | 0.2- | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.3- | 0.3+ |
| 2004 03 16 | 691 | 0.4+ | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.0  | 2007 12 15 | G96 | 0.8+ | 0.5- |
| 2004 03 16 | 691 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2004 03 16 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.5- | 0.3- | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2004 03 23 | 691 | 0.2+ | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.8+ | 0.7- |
| 2004 03 23 | 691 | 0.1- | 0.0  | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 16 | 691 | 0.0  | 0.1+ |
| 2004 03 23 | 691 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.2+ | 0.2- | 2007 12 16 | 691 | 0.2- | 0.1- |
| 2004 03 27 | 704 | 0.4+ | 0.4- | 2007 11 11 | G96 | 0.2+ | 0.1- | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2004 03 27 | 704 | 0.3+ | 0.9+ | 2007 11 11 | G96 | 0.4+ | 0.3- |            |     |      |      |
| 2004 03 27 | 704 | 1.0+ | 0.5+ | 2007 11 11 | G96 | 0.4+ | 0.1- |            |     |      |      |

**(172799)\* 2004 FE<sub>112</sub> = 1999 FE<sub>14</sub> = 2001 SX<sub>188</sub>**

Discovered 2004 Mar. 26 by Spacewatch at Kitt Peak.  
Id. A. Doppler (*MPO* 89538)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i>                                | 24.19194   | (2000.0) |          | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.20184308 | $\omega$ | 35.65098 | +0.49959644 | -0.86614414 |          |   |
| <i>a</i>                                | 2.8782387  | $\Omega$ | 24.38495 | +0.78667164 | +0.44684033 |          |   |
| <i>e</i>                                | 0.0613237  | <i>i</i> | 1.95175  | +0.36269978 | +0.22389294 |          |   |
| <i>P</i>                                | 4.88       | <i>H</i> | 16.2     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 19 | 691 | 0.1+ | 0.1+ | 2004 03 27 | 704 | 0.2- | 0.8+ | 2006 10 20 | G96 | 0.0  | 0.3+ |
| 1999 03 19 | 691 | 0.1+ | 0.0  | 2004 03 27 | 704 | 0.2+ | 0.4- | 2006 11 21 | G96 | 0.3+ | 0.2- |
| 1999 03 19 | 691 | 0.1- | 0.1+ | 2004 03 27 | 704 | 1.0+ | 0.1+ | 2006 11 21 | G96 | 0.2- | 0.2+ |
| 1999 03 24 | 691 | 0.4+ | 0.2+ | 2004 04 12 | 691 | 0.1+ | 0.2+ | 2006 11 21 | G96 | 0.3- | 0.1+ |
| 1999 03 24 | 691 | 0.5+ | 0.0  | 2004 04 12 | 691 | 0.0  | 0.7+ | 2006 11 21 | G96 | 0.2+ | 0.1- |
| 1999 03 24 | 691 | 0.2+ | 0.9+ | 2004 04 12 | 691 | 0.3+ | 0.1+ | 2007 11 02 | G96 | 0.3+ | 0.3- |
| 2001 09 19 | 704 | 0.2+ | 0.6+ | 2006 08 18 | 691 | 0.1+ | 0.2+ | 2007 11 02 | G96 | 0.4+ | 0.0  |
| 2001 09 19 | 704 | 0.4- | 0.2- | 2006 08 18 | 691 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.6+ | 0.1- |
| 2001 09 19 | 704 | 0.7- | 0.3- | 2006 08 18 | 691 | 0.3+ | 0.2+ | 2007 11 02 | G96 | 0.8+ | 0.3- |
| 2001 09 21 | 704 | 0.5- | 0.9+ | 2006 09 22 | A50 | 0.1- | 0.2+ | 2007 12 03 | 691 | 0.3+ | 0.2- |
| 2001 09 21 | 704 | 0.7- | 0.4- | 2006 09 22 | A50 | 0.2- | 0.1+ | 2007 12 03 | 691 | 0.2- | 0.0  |
| 2001 09 21 | 704 | 0.7- | 0.2- | 2006 09 26 | 691 | 0.5- | 0.5+ | 2007 12 03 | 691 | 0.0  | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 704 | 0.4+ | 0.0  | 2006 09 26 | 691 | 0.2− | 0.6+ | 2007 12 15 | 691 | 0.1− | 0.1+ |
| 2004 03 26 | 691 | 0.1− | 0.1− | 2006 09 26 | 691 | 0.3− | 0.5+ | 2007 12 15 | 691 | 0.2− | 0.1− |
| 2004 03 26 | 691 | 0.2− | 0.2+ | 2006 10 20 | G96 | 0.5− | 0.0  | 2007 12 15 | 691 | 0.2− | 0.4+ |
| 2004 03 26 | 691 | 0.2− | 0.1− | 2006 10 20 | G96 | 0.3+ | 0.2− |            |     |      |      |
| 2004 03 27 | 704 | 0.3+ | 0.3+ | 2006 10 20 | G96 | 0.3+ | 0.2+ |            |     |      |      |

**(172800)\* 2004 FW<sub>122</sub>**

Discovered 2004 Mar. 26 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 289.23095  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22533427 | $\omega$ | 255.59707 | −0.92024766 |      | +0.37617548 |   |
| <i>a</i> | 2.6745531  | $\Omega$ | 306.38829 | −0.28709623 |      | −0.83628307 |   |
| <i>e</i> | 0.1292198  | <i>i</i> | 7.70076   | −0.26593233 |      | −0.39890178 |   |
| <i>P</i> | 4.37       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 0.6− | 1.4+ | 2004 03 28 | 704 | 0.1+  | 1.2−  | 2005 07 29 | 644 | 0.0   | 0.1+  |
| 2001 09 16 | 704 | 0.1− | 0.6+ | 2004 03 28 | 704 | 0.4+  | 0.5−  | 2005 11 01 | G96 | 0.2−  | 0.1+  |
| 2001 09 16 | 704 | 0.6+ | 1.2+ | 2004 03 29 | 704 | 0.1+  | 0.5+  | 2005 11 01 | G96 | 0.4−  | 0.1−  |
| 2001 09 16 | 704 | 0.2− | 0.1− | 2004 03 29 | 704 | 0.8+  | 0.3−  | 2005 11 01 | G96 | 0.5+  | 0.1−  |
| 2003 01 05 | 704 | 0.3− | 0.7+ | 2004 03 29 | 704 | 0.2−  | 0.7−  | 2005 11 01 | G96 | 0.3−  | 0.7−  |
| 2003 01 05 | 704 | 0.1− | 0.1+ | 2004 03 29 | 704 | 0.1+  | 0.0   | 2006 11 08 | 644 | 0.1−  | 0.2+  |
| 2003 01 05 | 704 | 0.2+ | 0.8+ | 2004 03 29 | 704 | 0.4−  | 0.6+  | 2006 11 08 | 644 | 0.3+  | 0.1−  |
| 2003 01 05 | 704 | 0.8− | 0.4+ | 2004 04 17 | 704 | 0.7+  | 0.1−  | 2006 11 08 | 644 | 0.1+  | 0.1+  |
| 2004 03 17 | 704 | 0.0  | 1.4+ | 2004 04 17 | 704 | 0.1−  | 0.3+  | 2006 11 22 | 703 | 0.2+  | 0.6+  |
| 2004 03 17 | 704 | 0.4+ | 0.8+ | 2004 04 17 | 704 | 0.5+  | 0.8+  | 2006 11 22 | 703 | 0.6−  | 0.1−  |
| 2004 03 17 | 704 | 0.5+ | 1.1+ | 2004 04 17 | 704 | 0.2+  | 0.4+  | 2006 11 22 | 703 | (0.6+ | 2.4−) |
| 2004 03 17 | 704 | 0.1− | 0.8− | 2004 04 23 | 608 | 0.8+  | 0.0   | 2006 11 22 | 703 | 0.7−  | 0.1−  |
| 2004 03 26 | 704 | 0.4− | 0.1− | 2004 04 23 | 608 | 0.7+  | 0.1−  | 2007 11 07 | G96 | 0.1−  | 0.6−  |
| 2004 03 26 | 704 | 0.2− | 0.5+ | 2004 04 23 | 608 | 0.9+  | 0.4+  | 2007 11 07 | G96 | 0.2−  | 0.3−  |
| 2004 03 26 | 704 | 0.2+ | 0.2+ | 2004 05 14 | 703 | (2.0+ | 1.2+) | 2007 11 07 | G96 | 0.7−  | 0.8−  |
| 2004 03 26 | 704 | 0.1+ | 0.1− | 2004 05 14 | 703 | 0.9−  | 0.3−  | 2007 11 07 | G96 | 0.2−  | 0.0   |
| 2004 03 26 | 704 | 0.4− | 0.3− | 2004 05 14 | 703 | (1.9+ | 2.0−) | 2007 12 04 | G96 | 0.2+  | 0.1+  |
| 2004 03 28 | 704 | 0.2− | 0.1+ | 2004 05 14 | 703 | 1.1−  | 0.0   | 2007 12 04 | G96 | 0.3+  | 0.0   |
| 2004 03 28 | 704 | 0.6− | 0.5+ | 2005 07 29 | 644 | 0.1−  | 0.0   | 2007 12 04 | G96 | 0.1−  | 0.5−  |
| 2004 03 28 | 704 | 0.5− | 0.3+ | 2005 07 29 | 644 | 0.0   | 0.0   | 2007 12 04 | G96 | 0.6+  | 0.2−  |

**(172801)\* 2004 FS<sub>129</sub> = 2001 TV<sub>94</sub>**

Discovered 2004 Mar. 19 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 62134)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 186.69489  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18661154 | $\omega$ | 336.59780 | −0.36147467 |      | +0.92843253 |   |
| <i>a</i> | 3.0327996  | $\Omega$ | 272.12148 | −0.84131900 |      | −0.36442041 |   |
| <i>e</i> | 0.0377202  | <i>i</i> | 4.92121   | −0.40189353 |      | −0.07218586 |   |
| <i>P</i> | 5.28       | <i>H</i> | 15.0      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 14 | 704 | 0.1− | 0.2− | 2004 04 16 | 644 | 0.0  | 0.5+ | 2006 09 30 | 691 | 0.0  | 0.3+ |
| 2001 10 14 | 704 | 0.0  | 0.6+ | 2004 04 16 | 644 | 0.5+ | 0.3+ | 2006 10 09 | 644 | 0.2+ | 0.1+ |
| 2001 10 14 | 704 | 0.6− | 0.1− | 2004 04 16 | 644 | 0.1+ | 0.5+ | 2006 10 09 | 644 | 0.2+ | 0.3− |
| 2001 10 14 | 704 | 0.2− | 0.1− | 2004 04 16 | 644 | 0.5+ | 0.3+ | 2006 10 09 | 644 | 0.3+ | 0.1+ |
| 2001 10 17 | 704 | 0.5− | 0.5− | 2004 04 19 | 704 | 0.8+ | 1.0+ | 2006 10 22 | 644 | 0.2− | 0.2+ |
| 2001 10 17 | 704 | 0.9− | 0.9+ | 2004 04 19 | 704 | 0.5+ | 1.0+ | 2006 10 22 | 644 | 0.0  | 0.3+ |
| 2001 10 17 | 704 | 0.3− | 0.2+ | 2004 04 19 | 704 | 0.9+ | 0.6+ | 2006 10 22 | 644 | 0.1+ | 0.2+ |
| 2001 10 17 | 704 | 0.3+ | 0.8+ | 2004 04 19 | 704 | 0.8+ | 1.0+ | 2006 10 23 | 644 | 0.3− | 0.1+ |
| 2003 01 08 | 704 | 0.9+ | 0.1+ | 2006 09 17 | 703 | 0.5+ | 0.7− | 2006 10 23 | 644 | 0.2− | 0.2− |
| 2003 01 08 | 704 | 0.7+ | 0.4+ | 2006 09 17 | 703 | 0.0  | 0.4− | 2006 10 23 | 644 | 0.3− | 0.5− |
| 2003 01 08 | 704 | 0.1+ | 0.6− | 2006 09 17 | 703 | 0.1+ | 0.9+ | 2007 11 14 | 691 | 0.1+ | 0.3− |
| 2004 03 19 | 704 | 1.1− | 0.4+ | 2006 09 17 | 703 | 0.2− | 0.6+ | 2007 11 14 | 691 | 0.0  | 0.4− |
| 2004 03 19 | 704 | 0.0  | 1.4+ | 2006 09 18 | 691 | 0.0  | 0.3− | 2007 11 14 | 691 | 0.6− | 0.0  |
| 2004 03 19 | 704 | 0.8− | 0.4+ | 2006 09 18 | 691 | 0.1+ | 0.0  | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2004 03 19 | 704 | 0.3− | 0.4+ | 2006 09 18 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 691 | 0.7− | 1.1+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 26 | 699 | 0.6+  | 0.4−  | 2006 09 19 | 699 | (1.6+ | 0.3−) | 2007 12 05 | 691 | 0.1+ | 0.2− |
| 2004 03 26 | 699 | 1.0+  | 0.2+  | 2006 09 19 | 699 | 0.4−  | 0.8+  | 2007 12 14 | 704 | 1.0+ | 0.3+ |
| 2004 03 26 | 699 | 0.2+  | 0.3+  | 2006 09 19 | 699 | (1.7+ | 0.6+) | 2007 12 14 | 704 | 1.0+ | 0.0  |
| 2004 03 26 | 699 | 0.7−  | 1.4−  | 2006 09 19 | 699 | 0.4−  | 0.4+  | 2007 12 14 | 704 | 1.0+ | 0.3+ |
| 2004 03 31 | 704 | 0.5−  | 0.0   | 2006 09 26 | 691 | 0.0   | 0.1+  | 2007 12 16 | 691 | 0.0  | 0.1− |
| 2004 03 31 | 704 | (0.7+ | 1.7+) | 2006 09 26 | 691 | 0.3−  | 0.2+  | 2007 12 16 | 691 | 0.1− | 0.1− |
| 2004 03 31 | 704 | 0.6+  | 1.1+  | 2006 09 26 | 691 | 0.1−  | 0.2+  | 2007 12 16 | 691 | 0.0  | 0.1− |
| 2004 04 16 | 644 | 0.2+  | 0.5+  | 2006 09 30 | 691 | 0.0   | 0.6+  |            |     |      |      |
| 2004 04 16 | 644 | 0.2+  | 0.6+  | 2006 09 30 | 691 | 0.1−  | 0.2+  |            |     |      |      |

**(172802)\* 2004 FJ<sub>132</sub>**

Discovered 2004 Mar. 23 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 110.75449  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.17785212 | $\omega$ | 90.68964  | +0.55608906 |      | +0.83098087 |   |
| <i>a</i> | 3.1315788  | $\Omega$ | 213.11100 | −0.77328385 |      | +0.51053066 |   |
| <i>e</i> | 0.0625774  | <i>i</i> | 1.61067   | −0.30462609 |      | +0.22097339 |   |
| <i>P</i> | 5.54       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 25 | 691 | 0.1−  | 0.7−  | 2005 06 11 | 735 | 0.5−  | 1.1+  | 2007 11 01 | 691 | 0.8+ | 0.3− |
| 1993 03 25 | 691 | 0.4−  | 0.6−  | 2005 06 16 | G96 | (0.8+ | 2.2+) | 2007 11 05 | 691 | 0.1+ | 0.4+ |
| 1993 03 25 | 691 | 0.3−  | 0.5−  | 2005 06 16 | G96 | 0.1−  | 0.4+  | 2007 11 05 | 691 | 0.2− | 0.3− |
| 1995 09 29 | 691 | 0.4−  | 0.3+  | 2005 06 16 | G96 | 0.0   | 0.2−  | 2007 11 05 | 691 | 0.2− | 0.2− |
| 1995 09 29 | 691 | 0.1−  | 0.4+  | 2005 06 16 | G96 | 0.1−  | 0.0   | 2007 11 09 | 691 | 0.1− | 0.2+ |
| 1995 09 29 | 691 | 0.3−  | 0.3+  | 2006 08 28 | 691 | 0.2+  | 0.4+  | 2007 11 09 | 691 | 0.2− | 0.0  |
| 2001 10 15 | 691 | 0.2−  | 0.0   | 2006 08 28 | 691 | 0.0   | 0.3+  | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2001 10 15 | 691 | 1.2+  | 0.3+  | 2006 08 28 | 691 | 0.0   | 0.3+  | 2007 11 14 | 691 | 0.1− | 0.1+ |
| 2001 10 15 | 691 | 0.2−  | 0.1+  | 2006 10 16 | G96 | 0.0   | 0.5−  | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2004 03 15 | 691 | 0.4+  | 0.2+  | 2006 10 16 | G96 | 0.1−  | 0.3−  | 2007 11 14 | 691 | 0.0  | 0.2− |
| 2004 03 15 | 691 | 0.7−  | 0.6+  | 2006 10 16 | G96 | 0.5−  | 0.2−  | 2007 11 18 | 691 | 0.7− | 0.2+ |
| 2004 03 15 | 691 | 0.0   | 0.0   | 2006 10 16 | G96 | 0.8+  | 0.6−  | 2007 11 18 | 691 | 0.4− | 0.1+ |
| 2004 03 23 | 691 | 0.6+  | 0.5+  | 2006 11 13 | G96 | 0.9−  | 1.2−  | 2007 11 18 | 691 | 0.3− | 1.0+ |
| 2004 03 23 | 691 | 0.2+  | 0.5+  | 2006 11 13 | G96 | 0.9+  | 0.2−  | 2007 12 04 | G96 | 0.2− | 0.4− |
| 2004 03 23 | 691 | 0.1+  | 0.4+  | 2006 11 13 | G96 | 0.1+  | 0.3+  | 2007 12 04 | G96 | 1.4+ | 0.6+ |
| 2004 03 30 | 691 | 0.5+  | 0.8−  | 2006 11 13 | G96 | 0.2−  | 0.6−  | 2007 12 04 | G96 | 0.4+ | 0.2− |
| 2004 03 30 | 691 | 0.2+  | 0.3+  | 2007 09 15 | G96 | 0.1+  | 0.2−  | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2004 03 30 | 691 | 0.5+  | 0.2−  | 2007 09 15 | G96 | 0.3+  | 0.1−  | 2007 12 05 | 704 | 0.8− | 1.0+ |
| 2004 03 31 | 291 | 0.1−  | 0.1+  | 2007 09 15 | G96 | 0.2+  | 0.3−  | 2007 12 05 | 704 | 0.7− | 0.8+ |
| 2004 03 31 | 291 | 0.4−  | 0.5+  | 2007 09 15 | G96 | 0.5+  | 0.4−  | 2007 12 05 | 704 | 0.9− | 0.2+ |
| 2004 03 31 | 291 | 0.2+  | 0.3+  | 2007 10 15 | G96 | 0.2+  | 0.5−  | 2007 12 15 | G96 | 1.2+ | 0.7− |
| 2004 04 12 | 691 | 0.0   | 0.1−  | 2007 10 15 | G96 | 0.7+  | 0.3−  | 2007 12 15 | G96 | 0.1+ | 0.8− |
| 2004 04 12 | 691 | 0.3+  | 0.2+  | 2007 10 15 | G96 | 0.2+  | 0.1−  | 2007 12 15 | G96 | 0.7+ | 0.2− |
| 2004 04 12 | 691 | 0.1+  | 0.7+  | 2007 10 15 | G96 | 0.7+  | 0.6−  | 2007 12 15 | G96 | 0.5+ | 0.2− |
| 2005 06 11 | 735 | (0.5+ | 1.6−) | 2007 11 01 | 691 | 0.2+  | 0.3+  |            |     |      |      |
| 2005 06 11 | 735 | 0.2−  | 0.3−  | 2007 11 01 | 691 | 0.4−  | 0.8−  |            |     |      |      |

**(172803)\* 2004 FH<sub>139</sub> = 2002 XB<sub>109</sub>**

Discovered 2004 Mar. 20 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 62137)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 311.35193  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.21088622 | $\omega$ | 105.02010 | −0.87127375 |      | −0.47998395 |   |
| <i>a</i> | 2.7953568  | $\Omega$ | 46.41873  | +0.37816544 |      | −0.78960288 |   |
| <i>e</i> | 0.1658434  | <i>i</i> | 8.13105   | +0.31284653 |      | −0.38228615 |   |
| <i>P</i> | 4.67       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc



|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 12 06 | 704 | 0.2+ | 0.3+ | 2004 03 31 | 704 | 1.3+  | 0.8-  | 2004 05 12 | 699 | (2.4- | 1.3+) |
| 2002 12 11 | 704 | 0.6- | 0.6+ | 2004 03 31 | 704 | 0.7+  | 0.4-  | 2004 05 19 | 691 | 0.0   | 0.1+  |
| 2002 12 11 | 704 | 0.8- | 0.1- | 2004 04 09 | E12 | 0.2-  | 0.5-  | 2004 05 19 | 691 | 0.2-  | 0.1+  |
| 2002 12 11 | 704 | 0.3+ | 0.6+ | 2004 04 09 | E12 | 0.1+  | 0.0   | 2004 05 19 | 691 | 0.1-  | 0.1+  |
| 2002 12 11 | 704 | 0.7+ | 0.1+ | 2004 04 09 | E12 | 0.6-  | 0.4+  | 2006 09 26 | 703 | 0.1+  | 0.6-  |
| 2002 12 31 | 704 | 0.3- | 1.1+ | 2004 04 09 | E12 | 0.0   | 0.4+  | 2006 09 26 | 703 | 0.6-  | 0.1-  |
| 2002 12 31 | 704 | 0.7- | 0.3+ | 2004 04 14 | 691 | 0.3-  | 0.1+  | 2006 09 26 | 703 | 0.2-  | 0.3+  |
| 2002 12 31 | 704 | 0.4- | 0.3+ | 2004 04 14 | 691 | 0.2-  | 0.1+  | 2006 09 26 | 703 | (1.9- | 1.0+) |
| 2002 12 31 | 704 | 0.3+ | 0.3- | 2004 04 14 | 691 | 0.3-  | 0.1+  | 2006 10 02 | G96 | 0.2-  | 0.4+  |
| 2002 12 31 | 704 | 0.5+ | 0.8+ | 2004 04 16 | 704 | 0.1-  | 0.4+  | 2006 10 02 | G96 | 0.2-  | 0.6+  |
| 2004 03 15 | 703 | 1.1- | 1.5+ | 2004 04 16 | 704 | 0.1+  | 0.1+  | 2006 10 02 | G96 | 0.3-  | 0.3+  |
| 2004 03 15 | 703 | 1.1- | 0.6- | 2004 04 16 | 704 | 0.0   | 0.6-  | 2006 10 02 | G96 | 0.3-  | 0.4+  |
| 2004 03 15 | 703 | 0.3- | 0.3+ | 2004 04 16 | 704 | 1.0-  | 0.6+  | 2006 11 23 | G96 | 0.0   | 0.5+  |
| 2004 03 15 | 703 | 0.3+ | 1.3+ | 2004 04 19 | 704 | 0.9+  | 0.1+  | 2006 11 23 | G96 | 0.3+  | 0.4+  |
| 2004 03 20 | 699 | 0.3+ | 0.2- | 2004 04 19 | 704 | (2.0+ | 0.3+) | 2006 11 23 | G96 | 0.2-  | 0.5+  |
| 2004 03 20 | 704 | 0.4+ | 0.1- | 2004 04 19 | 704 | 0.5+  | 0.8-  | 2006 11 23 | G96 | 0.1+  | 0.0   |
| 2004 03 20 | 699 | 0.3+ | 0.2+ | 2004 04 19 | 704 | 0.7+  | 0.1-  | 2007 11 14 | G96 | 0.5-  | 0.6-  |
| 2004 03 20 | 704 | 0.2+ | 0.3- | 2004 04 19 | 704 | 0.9+  | 0.2-  | 2007 11 14 | G96 | 0.4-  | 0.7-  |
| 2004 03 20 | 704 | 0.1- | 0.8+ | 2004 04 20 | 703 | (1.9- | 2.4-) | 2007 11 14 | G96 | 0.2-  | 0.5-  |
| 2004 03 20 | 699 | 0.7+ | 0.8- | 2004 04 20 | 703 | (1.8- | 0.9-) | 2007 11 14 | G96 | 0.5-  | 0.4-  |
| 2004 03 20 | 704 | 0.3- | 0.7- | 2004 04 20 | 703 | 1.0-  | 0.6-  | 2007 12 05 | 699 | 0.2-  | 0.5+  |
| 2004 03 20 | 704 | 0.4- | 0.6+ | 2004 04 20 | 703 | 0.3-  | 0.6-  | 2007 12 05 | 699 | 0.6-  | 0.2-  |
| 2004 03 20 | 699 | 0.5- | 0.4+ | 2004 04 22 | 704 | 0.4+  | 0.1-  | 2007 12 05 | 699 | 1.0-  | 1.0-  |
| 2004 03 22 | 704 | 0.9+ | 0.3+ | 2004 04 22 | 704 | 0.0   | 0.1+  | 2007 12 05 | 699 | 0.5-  | 0.9-  |
| 2004 03 22 | 704 | 0.1+ | 0.2+ | 2004 04 22 | 704 | (1.7- | 0.6-) | 2007 12 16 | 704 | 0.4+  | 0.5+  |
| 2004 03 22 | 704 | 0.7+ | 0.8+ | 2004 04 22 | 704 | 1.2-  | 0.6-  | 2007 12 16 | 704 | 0.7+  | 0.2-  |
| 2004 03 25 | 699 | 1.1+ | 0.2- | 2004 04 22 | 704 | (0.7- | 1.8-) | 2007 12 16 | 704 | 0.3+  | 0.0   |
| 2004 03 25 | 699 | 0.8+ | 0.5+ | 2004 05 10 | 691 | 0.4-  | 0.1+  | 2007 12 16 | 704 | 0.8+  | 0.2+  |
| 2004 03 25 | 699 | 0.6+ | 0.7- | 2004 05 10 | 691 | 0.1-  | 0.2+  | 2007 12 16 | 704 | 0.7+  | 0.3-  |
| 2004 03 25 | 699 | 0.9- | 0.5- | 2004 05 10 | 691 | 0.3+  | 0.1-  |            |     |       |       |
| 2004 03 28 | 704 | 1.2+ | 0.3+ | 2004 05 11 | 699 | (1.3- | 2.6+) |            |     |       |       |

**(172804)\* 2004 FL<sub>143</sub>**

Discovered 2004 Mar. 28 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 311.73949  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.22063487 | $\omega$ | 223.85449 | -0.90729796   |
| <i>a</i> | 2.7123971  | $\Omega$ | 292.16710 | -0.41408063   |
| <i>e</i> | 0.1567935  | <i>i</i> | 8.09983   | +0.07312764   |
| <i>P</i> | 4.47       | <i>H</i> | 15.4      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 12 17 | 704 | 0.1+  | 1.5-  | 2004 03 28 | 608 | 0.1+  | 0.0   | 2006 09 16 | 703 | (0.4- | 1.5+) |
| 1998 12 17 | 704 | 0.8+  | 0.7+  | 2004 03 28 | 608 | 0.0   | 0.1+  | 2006 09 16 | 703 | 1.1-  | 1.3+  |
| 1998 12 17 | 704 | 1.0-  | 1.5-  | 2004 03 28 | 608 | 0.4+  | 0.1-  | 2006 09 16 | 703 | 0.3+  | 1.2+  |
| 1998 12 17 | 704 | 0.8+  | 0.7+  | 2004 03 31 | 704 | 0.3+  | 0.5+  | 2006 09 16 | 703 | 0.6+  | 1.1+  |
| 1998 12 17 | 704 | (4.0- | 0.8+) | 2004 03 31 | 704 | 0.3-  | 0.3-  | 2006 09 27 | 703 | 1.2-  | 0.4+  |
| 2002 11 13 | 644 | 0.2+  | 0.2-  | 2004 03 31 | 704 | 1.0+  | 0.0   | 2006 09 27 | 703 | 0.2-  | 0.4-  |
| 2002 11 13 | 644 | 0.1-  | 0.1-  | 2004 03 31 | 704 | 0.1+  | 0.0   | 2006 09 27 | 703 | 1.3-  | 0.4-  |
| 2002 11 13 | 644 | 0.6-  | 0.9+  | 2004 04 17 | 704 | 0.3-  | 0.0   | 2006 09 27 | 703 | 1.0-  | 0.1+  |
| 2002 12 12 | 644 | 0.5-  | 0.7+  | 2004 04 17 | 704 | 0.6+  | 0.7+  | 2007 11 07 | G96 | 0.3-  | 0.2-  |
| 2002 12 12 | 644 | 0.5-  | 0.6+  | 2004 04 17 | 704 | 0.1+  | 0.6-  | 2007 11 07 | G96 | 0.0   | 0.5-  |
| 2002 12 12 | 644 | 0.5-  | 0.7+  | 2004 04 17 | 704 | 0.3-  | 0.1-  | 2007 11 07 | G96 | 0.4+  | 0.2-  |
| 2004 01 29 | 699 | (3.9- | 2.0+) | 2004 04 17 | 699 | 0.5-  | 0.6+  | 2007 11 07 | G96 | 0.1+  | 0.2-  |
| 2004 01 29 | 699 | 0.0   | 0.8-  | 2004 04 17 | 699 | 0.1-  | 0.3+  | 2007 11 21 | G96 | 0.1-  | 0.4-  |
| 2004 01 29 | 699 | 0.8-  | 1.3-  | 2004 04 17 | 699 | 0.2-  | 1.0+  | 2007 11 21 | G96 | 0.0   | 0.2-  |
| 2004 01 29 | 699 | 0.0   | 0.5+  | 2004 04 17 | 699 | 0.9-  | 1.1+  | 2007 11 21 | G96 | 0.5-  | 0.4-  |
| 2004 03 17 | 703 | 0.6-  | 0.1-  | 2004 04 25 | 703 | 0.2+  | 0.0   | 2007 11 21 | G96 | 0.2+  | 0.3-  |
| 2004 03 17 | 703 | 0.1+  | 0.4+  | 2004 04 25 | 703 | (0.0  | 2.0+) | 2007 12 04 | 699 | 0.5-  | 0.3-  |
| 2004 03 17 | 703 | 0.6-  | 0.3-  | 2004 04 25 | 703 | (0.1+ | 2.2+) | 2007 12 04 | 699 | 0.2-  | 0.6-  |
| 2004 03 17 | 703 | 0.4+  | 0.7+  | 2004 04 25 | 703 | (0.6+ | 2.0+) | 2007 12 04 | 699 | 1.2-  | 0.3+  |
| 2004 03 17 | 704 | 0.8+  | 1.1+  | 2005 06 17 | G96 | 0.1-  | 0.5-  | 2007 12 04 | 699 | 1.1-  | 0.6-  |
| 2004 03 17 | 703 | 0.6-  | 0.1-  | 2005 06 17 | G96 | 0.6-  | 0.3-  | 2007 12 06 | G96 | 0.7-  | 0.8+  |
| 2004 03 17 | 704 | 0.5+  | 0.3+  | 2005 06 17 | G96 | 0.1+  | 0.5-  | 2007 12 06 | G96 | 0.2-  | 0.5-  |
| 2004 03 17 | 703 | 0.9-  | 0.3+  | 2005 06 17 | G96 | 0.4-  | 0.4-  | 2007 12 06 | G96 | 0.2-  | 0.6-  |
| 2004 03 17 | 704 | 0.6+  | 0.4+  | 2005 07 10 | 691 | 0.1+  | 0.1+  | 2007 12 10 | 704 | 1.8+  | 1.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 17 | 703 | 0.9- | 0.6- | 2005 07 10 | 691 | 0.2+ | 0.2+ | 2007 12 10 | 704 | 0.3+ | 1.4+ |
| 2004 03 17 | 704 | 0.7+ | 0.0  | 2005 07 10 | 691 | 0.2+ | 0.0  | 2007 12 10 | 704 | 0.9+ | 0.8+ |
| 2004 03 17 | 703 | 0.3- | 0.5+ | 2005 07 15 | G96 | 0.0  | 0.4+ | 2007 12 10 | 704 | 0.6+ | 0.4+ |
| 2004 03 17 | 704 | 1.0+ | 0.5+ | 2005 07 15 | 691 | 0.1+ | 0.1+ | 2007 12 10 | 704 | 0.4+ | 0.4+ |
| 2004 03 28 | 704 | 0.2- | 0.0  | 2005 07 15 | G96 | 0.2+ | 0.4+ | 2007 12 14 | 704 | 0.7+ | 0.5- |
| 2004 03 28 | 704 | 0.0  | 1.2+ | 2005 07 15 | 691 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.0  | 0.3- |
| 2004 03 28 | 704 | 0.3+ | 0.3+ | 2005 07 15 | G96 | 0.2- | 0.3+ | 2007 12 14 | 704 | 0.4+ | 0.0  |
| 2004 03 28 | 704 | 0.5+ | 0.4- | 2005 07 15 | G96 | 0.3+ | 0.2+ | 2007 12 14 | 704 | 0.4+ | 0.1+ |
| 2004 03 28 | 704 | 0.3+ | 0.0  | 2005 07 15 | 691 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 0.2+ | 0.2+ |

**(172805)\* 2004 FQ<sub>156</sub> = 2001 SK<sub>7</sub>**

Discovered 2004 Mar. 17 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 69711)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 324.04944  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.18840272 | $\omega$ | 310.82305 | -0.05460954   |
| <i>a</i> | 3.0135468  | $\Omega$ | 142.27327 | +0.93069033   |
| <i>e</i> | 0.1187003  | <i>i</i> | 2.90460   | +0.36170888   |
| <i>P</i> | 5.23       | <i>H</i> | 15.7      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 0    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 18 | 291 | 0.0  | 0.3+ | 2006 07 18 | G96 | 0.4+ | 0.2+ | 2007 11 07 | 704 | 0.0   | 0.1-  |
| 2001 09 18 | 291 | 0.3+ | 0.5+ | 2006 07 18 | G96 | 0.3- | 0.2- | 2007 11 12 | 704 | 0.3+  | 0.4+  |
| 2001 09 18 | 291 | 0.6+ | 0.6+ | 2007 10 10 | 691 | 0.1- | 0.0  | 2007 11 12 | 704 | (0.1+ | 1.9+) |
| 2001 09 19 | 291 | 0.9- | 0.7+ | 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 12 | 704 | 1.3+  | 0.2-  |
| 2001 09 19 | 291 | 1.0- | 0.4+ | 2007 10 10 | G96 | 0.7+ | 0.2- | 2007 11 12 | 704 | 0.1-  | 0.2+  |
| 2001 09 19 | 645 | 0.1- | 0.1- | 2007 10 10 | G96 | 0.4+ | 0.5- | 2007 11 12 | 704 | 0.0   | 0.6+  |
| 2001 09 19 | 645 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.4- | 0.3+ | 2007 11 15 | 699 | 0.3+  | 0.4-  |
| 2001 09 19 | 291 | 0.7+ | 0.4+ | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 15 | 699 | 0.1-  | 0.1-  |
| 2002 11 05 | 291 | 0.4- | 0.1- | 2007 10 10 | G96 | 0.6+ | 0.4- | 2007 11 15 | 699 | 0.9+  | 0.3+  |
| 2002 11 05 | 291 | 0.2+ | 0.0  | 2007 10 10 | G96 | 0.2+ | 0.2- | 2007 11 15 | 699 | 1.4+  | 0.3-  |
| 2002 11 05 | 291 | 0.0  | 0.1- | 2007 10 10 | 691 | 0.1- | 0.1+ | 2007 11 18 | G96 | 0.3+  | 0.1-  |
| 2002 12 13 | 644 | 0.6+ | 1.3+ | 2007 10 10 | 691 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.2+  | 0.0   |
| 2002 12 13 | 644 | 0.9- | 0.0  | 2007 10 20 | 703 | 1.0+ | 0.2+ | 2007 11 18 | G96 | 0.6+  | 0.1-  |
| 2002 12 13 | 644 | 0.4+ | 1.3+ | 2007 10 20 | 703 | 0.7- | 0.1- | 2007 11 18 | G96 | 0.0   | 0.2-  |
| 2002 12 13 | 644 | 0.4- | 0.0  | 2007 10 20 | 703 | 0.9+ | 0.5+ | 2007 11 20 | 691 | 0.0   | 0.3+  |
| 2002 12 13 | 644 | 1.0+ | 1.1+ | 2007 10 20 | 703 | 0.8- | 1.3+ | 2007 11 20 | 691 | 0.1+  | 0.2+  |
| 2002 12 13 | 644 | 0.1- | 0.0  | 2007 11 04 | 704 | 0.1- | 0.3- | 2007 11 20 | 691 | 0.0   | 0.1-  |
| 2004 03 17 | 691 | 0.1+ | 0.0  | 2007 11 04 | 704 | 0.1- | 0.3- | 2007 11 20 | 691 | 0.0   | 0.1+  |
| 2004 03 17 | 691 | 0.0  | 0.4+ | 2007 11 04 | 704 | 0.8- | 0.5- | 2007 11 20 | 691 | 0.0   | 0.1+  |
| 2004 03 17 | 691 | 0.0  | 0.2+ | 2007 11 04 | 704 | 0.5- | 0.9+ | 2007 11 20 | 691 | 0.1+  | 0.1-  |
| 2004 03 26 | 691 | 0.1+ | 0.4+ | 2007 11 04 | 704 | 0.8+ | 0.7+ | 2007 12 05 | 699 | 0.2-  | 0.5-  |
| 2004 03 26 | 691 | 0.0  | 0.3+ | 2007 11 05 | A77 | 1.3+ | 0.4- | 2007 12 05 | 699 | 0.9-  | 1.8+  |
| 2004 03 26 | 691 | 0.1+ | 0.4+ | 2007 11 05 | A77 | 0.5+ | 0.8- | 2007 12 05 | 699 | 1.3-  | 0.8+  |
| 2004 04 22 | 691 | 0.2+ | 0.5+ | 2007 11 05 | A77 | 0.1+ | 0.6+ | 2007 12 05 | 699 | 0.3-  | 0.5+  |
| 2004 04 22 | 691 | 0.3+ | 0.5+ | 2007 11 07 | 704 | 0.1+ | 0.8- | 2007 12 06 | 691 | 0.0   | 0.3-  |
| 2004 04 22 | 691 | 0.3+ | 0.1+ | 2007 11 07 | 704 | 0.2- | 0.7- | 2007 12 06 | 691 | 0.4-  | 0.3-  |
| 2006 07 18 | G96 | 0.7- | 0.2+ | 2007 11 07 | 704 | 0.5- | 0.6- | 2007 12 06 | 691 | 0.2-  | 0.1-  |
| 2006 07 18 | G96 | 0.7+ | 0.2+ | 2007 11 07 | 704 | 0.3- | 0.1- |            |     |       |       |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 16 | 644 | 0.4− | 0.4+ | 2004 04 14 | 291 | 0.2− | 0.1+ | 2006 07 23 | G96 | 0.2+ | 0.1+ |
| 2002 11 16 | 644 | 0.4− | 0.0  | 2004 04 14 | 291 | 0.1+ | 0.1+ | 2006 07 23 | G96 | 0.2− | 0.0  |
| 2003 01 02 | 704 | 1.0+ | 0.1− | 2005 04 06 | 703 | 0.2− | 0.4− | 2006 07 23 | G96 | 0.0  | 0.0  |
| 2003 01 02 | 704 | 0.7− | 0.2− | 2005 04 06 | 703 | 0.6+ | 0.0  | 2006 08 14 | 644 | 0.0  | 0.1+ |
| 2003 01 02 | 704 | 0.6+ | 1.1+ | 2005 04 06 | 703 | 1.0+ | 0.7+ | 2006 08 14 | 644 | 0.2+ | 0.1+ |
| 2003 01 02 | 704 | 0.7− | 0.4− | 2005 04 06 | 703 | 0.3− | 0.8− | 2006 08 14 | 644 | 0.1+ | 0.0  |
| 2004 01 31 | 691 | 0.0  | 0.5+ | 2005 04 12 | 699 | 1.4− | 0.5+ | 2007 11 20 | 703 | 0.8+ | 1.0− |
| 2004 01 31 | 691 | 0.2− | 0.2+ | 2005 04 12 | 699 | 0.8+ | 0.1+ | 2007 11 20 | 703 | 1.3− | 0.2+ |
| 2004 01 31 | 691 | 0.2− | 0.1+ | 2005 04 12 | 699 | 0.3− | 0.4− | 2007 11 20 | 703 | 0.5− | 0.0  |
| 2004 02 16 | 704 | 0.8− | 0.7+ | 2005 04 12 | 699 | 1.0− | 0.9+ | 2007 11 20 | 703 | 0.6+ | 0.8+ |
| 2004 02 16 | 704 | 0.6+ | 0.3+ | 2006 05 30 | 691 | 0.1+ | 0.5+ | 2007 12 05 | 703 | 0.1+ | 0.9+ |
| 2004 02 16 | 704 | 0.5+ | 0.2− | 2006 05 30 | 691 | 0.3+ | 0.5+ | 2007 12 05 | 703 | 0.1+ | 0.3+ |
| 2004 02 23 | 704 | 0.7+ | 0.8+ | 2006 05 30 | 691 | 0.0  | 0.6+ | 2007 12 05 | 703 | 0.2− | 0.2+ |
| 2004 02 23 | 704 | 0.4− | 0.3− | 2006 06 21 | 644 | 0.1− | 0.4+ | 2007 12 05 | 703 | 0.3− | 0.0  |
| 2004 02 23 | 704 | 0.2− | 0.6+ | 2006 06 21 | 644 | 0.2− | 0.3+ |            |     |      |      |
| 2004 02 23 | 704 | 0.3− | 0.6+ | 2006 06 21 | 644 | 0.1− | 0.1+ |            |     |      |      |

**(172807)\* 2004 GC<sub>16</sub>**

Discovered 2004 Apr. 10 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.20615698 | $\omega$ | 36.75845 | −0.15311014 | −0.98189906 |          |   |
| <i>a</i> | 2.8379453  | $\Omega$ | 62.29341 | +0.87404474 | −0.18720119 |          |   |
| <i>e</i> | 0.0289044  | <i>i</i> | 7.23485  | +0.46108902 | +0.02880900 |          |   |
| <i>P</i> | 4.78       | <i>H</i> | 15.1     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 23 | 704 | 0.3− | 0.8− | 2004 04 10 | 644 | 0.2+ | 0.5+ | 2006 10 22 | 703 | 0.5− | 1.4− |
| 2001 08 23 | 704 | 0.0  | 1.1+ | 2004 04 10 | 644 | 0.3+ | 0.6+ | 2007 11 03 | G96 | 0.1+ | 0.1− |
| 2001 08 23 | 704 | 0.1− | 1.3+ | 2004 04 15 | 704 | 0.3+ | 0.7+ | 2007 11 03 | G96 | 0.0  | 0.0  |
| 2001 08 23 | 704 | 0.4− | 1.2+ | 2004 04 15 | 704 | 0.5− | 0.9+ | 2007 11 03 | G96 | 0.3+ | 0.3− |
| 2001 08 23 | 704 | 0.5− | 0.8+ | 2004 04 15 | 704 | 0.6+ | 1.4+ | 2007 11 03 | G96 | 0.0  | 0.0  |
| 2001 09 12 | 704 | 0.4− | 1.0+ | 2006 09 30 | 704 | 0.8+ | 0.6+ | 2007 11 12 | G96 | 0.3− | 0.7− |
| 2001 09 12 | 704 | 0.1− | 0.3+ | 2006 09 30 | 704 | 0.4+ | 0.4+ | 2007 11 12 | G96 | 0.4− | 0.3− |
| 2001 09 12 | 704 | 0.8− | 0.2− | 2006 09 30 | 704 | 0.6− | 0.1− | 2007 11 12 | G96 | 0.5− | 0.4− |
| 2001 10 24 | 644 | 0.4+ | 0.8+ | 2006 10 02 | G96 | 0.4+ | 0.2+ | 2007 11 12 | G96 | 0.6− | 0.5− |
| 2001 10 24 | 644 | 0.1− | 0.6+ | 2006 10 02 | G96 | 0.4+ | 0.2+ | 2007 12 13 | 704 | 0.2− | 0.2+ |
| 2001 10 24 | 644 | 0.2− | 0.0  | 2006 10 02 | G96 | 0.4+ | 0.3+ | 2007 12 13 | 704 | 0.5+ | 0.9+ |
| 2004 03 15 | 704 | 1.3+ | 0.8− | 2006 10 02 | G96 | 0.2+ | 0.3+ | 2007 12 13 | 704 | 0.3− | 0.9+ |
| 2004 03 15 | 704 | 0.8+ | 0.8− | 2006 10 20 | 644 | 0.4− | 0.5+ | 2007 12 13 | 704 | 0.5+ | 1.4+ |
| 2004 03 15 | 704 | 1.2+ | 0.3+ | 2006 10 20 | 644 | 0.0  | 0.4+ | 2007 12 13 | 704 | 0.1+ | 0.3+ |
| 2004 03 15 | 704 | 0.8− | 0.5+ | 2006 10 20 | 644 | 0.2+ | 0.2+ | 2007 12 15 | 704 | 0.2− | 0.4+ |
| 2004 03 20 | 704 | 0.2+ | 0.2+ | 2006 10 21 | 644 | 0.2+ | 0.4+ | 2007 12 15 | 704 | 0.3+ | 0.3+ |
| 2004 03 20 | 704 | 0.3− | 0.6+ | 2006 10 21 | 644 | 0.2+ | 0.6+ | 2007 12 15 | 704 | 0.7+ | 0.6− |
| 2004 03 20 | 704 | 0.6− | 0.3+ | 2006 10 21 | 644 | 0.2− | 0.1+ | 2007 12 15 | 704 | 0.4+ | 0.0  |
| 2004 03 20 | 704 | 0.2+ | 0.3+ | 2006 10 22 | 703 | 1.2− | 1.2− | 2007 12 15 | 704 | 0.1+ | 0.4+ |
| 2004 03 20 | 704 | 0.6− | 0.4+ | 2006 10 22 | 703 | 0.0  | 0.2− |            |     |      |      |
| 2004 04 10 | 644 | 0.2+ | 0.8+ | 2006 10 22 | 703 | 1.1− | 0.9− |            |     |      |      |

**(172808)\* 2004 GS<sub>26</sub>**

Discovered 2004 Apr. 14 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.17870723 | $\omega$ | 328.50150 | −0.92613252 | −0.37475955 |          |   |
| <i>a</i> | 3.1215812  | $\Omega$ | 189.77793 | +0.37668257 | −0.91295175 |          |   |
| <i>e</i> | 0.1366582  | <i>i</i> | 14.60503  | +0.01971814 | −0.16147561 |          |   |
| <i>P</i> | 5.52       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |             |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 03 | 704 | (2.3+ 0.9+) | 2004 04 16 | 704 | 0.6+ | 0.1+ | 2006 10 17 | 691 | 0.2+ | 0.0  |
| 1998 03 03 | 704 | (2.3+ 1.8−) | 2004 05 14 | 704 | 0.3+ | 0.5− | 2007 11 15 | 703 | 0.6− | 0.8+ |
| 1998 03 03 | 704 | (4.0− 1.3+) | 2004 05 14 | 704 | 0.4− | 0.5− | 2007 11 15 | 703 | 0.9− | 0.7+ |
| 1998 03 03 | 704 | 1.8+        | 2004 05 14 | 704 | 0.3− | 0.2− | 2007 11 15 | 703 | 0.3+ | 1.3+ |
| 1998 03 04 | 704 | 0.1+        | 2004 05 14 | 704 | 0.4+ | 0.6+ | 2007 11 15 | 703 | 0.6+ | 0.2+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 04 | 704 | 1.2−  | 0.4+  | 2004 05 23 | 704 | 0.5− | 0.6+ | 2007 11 18 | G96 | 0.4− | 0.4+ |
| 1998 03 04 | 704 | 1.1−  | 0.3+  | 2004 05 23 | 704 | 0.7− | 0.8+ | 2007 11 18 | G96 | 0.4+ | 0.4+ |
| 1998 03 04 | 704 | (0.7+ | 2.3+) | 2004 05 23 | 704 | 0.8− | 0.6+ | 2007 11 18 | G96 | 0.2+ | 0.1+ |
| 2004 04 14 | 699 | (0.3+ | 1.9+) | 2004 05 23 | 704 | 0.5− | 0.0  | 2007 11 18 | G96 | 0.1− | 0.5+ |
| 2004 04 14 | 699 | 0.4+  | 0.9+  | 2006 09 20 | 691 | 0.0  | 0.3− | 2007 12 05 | 703 | 0.3− | 0.8+ |
| 2004 04 14 | 699 | 0.9−  | 0.2−  | 2006 09 20 | 691 | 0.3− | 0.1− | 2007 12 05 | 703 | 0.1+ | 0.2+ |
| 2004 04 14 | 699 | 1.1+  | 0.8+  | 2006 09 20 | 691 | 0.4− | 0.1− | 2007 12 05 | 703 | 0.8+ | 0.0  |
| 2004 04 16 | 704 | 0.7+  | 0.5+  | 2006 10 17 | 691 | 0.1+ | 0.0  | 2007 12 05 | 703 | 0.0  | 2.2− |
| 2004 04 16 | 704 | 0.6+  | 0.2−  | 2006 10 17 | 691 | 0.3+ | 0.2+ |            |     |      |      |

**(172809)\* 2004 GV<sub>27</sub>**

Discovered 2004 Apr. 15 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.18538357 | $\omega$ | 108.66675 | −0.90802789 | +0.16587959 |          |   |
| <i>a</i> | 3.0461776  | $\Omega$ | 82.32969  | −0.33037538 | −0.84814768 |          |   |
| <i>e</i> | 0.1427285  | <i>i</i> | 22.83886  | +0.25756058 | −0.50311974 |          |   |
| <i>P</i> | 5.32       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |             |      |            |     |       |       |            |     |       |       |
|------------|-----|-------------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 12 04 | 691 | 0.3−        | 0.1+ | 2004 05 02 | 703 | 0.3−  | 0.5−  | 2004 05 21 | 703 | 0.9−  | 0.4+  |
| 1996 12 04 | 691 | 0.0         | 0.1+ | 2004 05 02 | 703 | 0.7−  | 0.1−  | 2004 05 21 | 703 | 0.3−  | 0.2−  |
| 1996 12 04 | 691 | 0.2−        | 0.0  | 2004 05 02 | 703 | 0.5−  | 0.9+  | 2004 05 21 | 703 | (2.0− | 3.9−) |
| 1996 12 12 | 691 | 0.1−        | 0.0  | 2004 05 02 | 703 | 1.0+  | 0.2+  | 2004 05 24 | 704 | 0.1+  | 1.0+  |
| 1996 12 12 | 691 | 0.4−        | 0.1+ | 2004 05 12 | 703 | 0.6−  | 0.0   | 2004 05 24 | 704 | 0.5+  | 0.4+  |
| 1996 12 12 | 691 | 0.6−        | 0.1− | 2004 05 12 | 703 | 0.6−  | 0.2+  | 2004 05 24 | 704 | 0.6+  | 0.4+  |
| 2002 01 08 | 645 | 0.0         | 0.1+ | 2004 05 12 | 703 | 0.0   | 0.6+  | 2004 05 24 | 704 | 0.3+  | 0.6+  |
| 2002 01 08 | 645 | 0.0         | 0.1+ | 2004 05 12 | 703 | 0.6−  | 0.4−  | 2004 05 24 | 704 | 0.1−  | 1.4+  |
| 2002 01 14 | 645 | 0.0         | 0.1+ | 2004 05 14 | 704 | 0.9+  | 0.3−  | 2004 06 13 | 704 | 1.2+  | 0.2+  |
| 2002 01 14 | 645 | 0.0         | 0.1+ | 2004 05 14 | 704 | 0.2+  | 0.1−  | 2004 06 13 | 704 | 0.5+  | 0.7+  |
| 2002 12 05 | 704 | (2.1+ 0.8−) |      | 2004 05 14 | 704 | 0.2−  | 0.4+  | 2004 06 13 | 704 | 0.1+  | 0.4−  |
| 2002 12 05 | 704 | 1.4+        | 0.1+ | 2004 05 14 | 704 | 0.9+  | 0.4−  | 2004 06 13 | 704 | 0.5+  | 0.9+  |
| 2002 12 05 | 704 | 1.0+        | 0.7− | 2004 05 14 | 704 | 0.6+  | 0.2+  | 2004 06 19 | 703 | (0.7− | 1.5−) |
| 2003 01 10 | 704 | 0.8+        | 0.0  | 2004 05 14 | 691 | 0.2−  | 0.1−  | 2004 06 19 | 703 | 0.9−  | 1.2−  |
| 2003 01 10 | 704 | 0.8+        | 0.2− | 2004 05 14 | 699 | 0.3−  | 0.4−  | 2004 06 19 | 703 | 0.5+  | 1.3−  |
| 2003 01 10 | 704 | 0.4+        | 0.4+ | 2004 05 14 | 691 | 0.1−  | 0.1−  | 2004 06 19 | 703 | 0.6+  | 0.1−  |
| 2003 01 10 | 704 | 0.4+        | 0.0  | 2004 05 14 | 699 | 1.0−  | 0.7−  | 2007 12 14 | 704 | 0.1−  | 0.5+  |
| 2004 04 15 | 644 | 0.0         | 0.1+ | 2004 05 14 | 699 | 0.4−  | 0.3+  | 2007 12 14 | 704 | 1.1+  | 0.2−  |
| 2004 04 15 | 644 | 0.2+        | 0.0  | 2004 05 14 | 691 | 0.0   | 0.1−  | 2007 12 14 | 704 | 0.0   | 0.2+  |
| 2004 04 15 | 644 | 0.2+        | 0.1+ | 2004 05 14 | 699 | (0.9− | 2.6−) | 2007 12 14 | 704 | 0.3+  | 0.0   |
| 2004 04 16 | 704 | 0.2+        | 0.5+ | 2004 05 19 | 691 | 0.3+  | 0.1+  | 2007 12 16 | 691 | 1.1−  | 0.3+  |
| 2004 04 16 | 704 | 1.0−        | 0.9+ | 2004 05 19 | 691 | 0.4+  | 0.3+  | 2007 12 16 | 691 | 0.1+  | 0.5−  |
| 2004 04 16 | 704 | (1.9+ 0.1+) |      | 2004 05 19 | 691 | 0.4+  | 0.3+  | 2007 12 16 | 691 | 0.2−  | 0.3−  |
| 2004 04 16 | 704 | 0.1+        | 0.9+ | 2004 05 21 | 703 | 0.2−  | 0.3−  |            |     |       |       |

**(172810)\* 2004 GR<sub>32</sub> = 2001 SG<sub>347</sub>**

Discovered 2004 Apr. 12 by NEAT at Palomar.

Id. A. Doppler (MPO 69715)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 265.26186  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18150005 | $\omega$ | 182.48234 | −0.92832131  | −0.36460522  |
| $a$ | 3.0894764  | $\Omega$ | 335.73557 | +0.34407510  | −0.76851629  |
| $e$ | 0.0775195  | $i$      | 10.18706  | +0.14082567  | −0.52578109  |
| $P$ | 5.43       | $H$      | 14.8      | $G$ 0.15     | $U$ 1        |

2007 DEC. 24

M.P.O. 129485

|            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 28 | 644 | 0.8−  | 0.3+  | 2004 03 31 | 704 | 0.6+ | 0.8+ |
| 2001 09 28 | 644 | 0.9−  | 0.6+  | 2004 03 31 | 704 | 0.7+ | 1.3+ |
| 2001 09 28 | 644 | 0.6−  | 0.2+  | 2004 04 12 | 644 | 0.3+ | 0.4+ |
| 2001 10 20 | 644 | 0.1+  | 1.5+  | 2004 04 12 | 644 | 0.4+ | 0.4+ |
| 2001 10 20 | 644 | (0.2+ | 1.7+) | 2004 04 12 | 644 | 0.2+ | 0.5+ |
| 2001 10 20 | 644 | (0.2+ | 1.6+) | 2004 04 15 | 703 | 0.3− | 1.0− |
| 2002 12 03 | 644 | 0.0   | 0.4+  | 2004 04 15 | 703 | 0.4+ | 0.2+ |
| 2002 12 03 | 644 | 0.2−  | 0.4+  | 2004 04 15 | 703 | 0.3− | 1.1+ |
| 2002 12 03 | 644 | 0.1+  | 0.2+  | 2004 04 15 | 703 | 0.4+ | 0.6+ |
| 2003 01 04 | 704 | 0.1−  | 0.2+  | 2004 04 16 | 644 | 0.6+ | 0.5+ |
| 2003 01 04 | 704 | 0.6+  | 0.9+  | 2004 04 16 | 644 | 0.4+ | 0.4+ |
| 2003 01 04 | 704 | 1.1+  | 0.8+  | 2004 04 16 | 644 | 0.6+ | 0.7+ |
| 2003 01 04 | 704 | 0.3+  | 0.1+  | 2004 04 17 | 704 | 0.0  | 0.1+ |
| 2004 03 17 | 703 | 0.2+  | 0.4+  | 2004 04 17 | 704 | 0.3− | 0.2+ |
| 2004 03 17 | 703 | 0.1−  | 0.2+  | 2004 04 17 | 704 | 0.6+ | 0.2+ |
| 2004 03 17 | 704 | 0.1−  | 0.7+  | 2006 08 28 | 703 | 0.9+ | 0.8+ |

(172811)\* 2004 GO<sub>35</sub>

Discovered 2004 Apr. 13 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.80871  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21599060 | $\omega$ | 244.64562 | −0.93792458 | −0.31967257 |
| <i>a</i> | 2.7511407  | $\Omega$ | 276.47407 | +0.34643172 | −0.84464266 |
| <i>e</i> | 0.2683010  | <i>i</i> | 7.78323   | +0.01680874 | −0.42940450 |
| <i>P</i> | 4.56       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 11 03 | 691 | 0.5+  | 0.1+  | 2004 04 13 | 644 | 0.1−  | 0.1+  | 2004 05 15 | 704 | 0.5+ | 0.4+ |
| 1997 11 03 | 691 | 0.4+  | 0.1−  | 2004 04 13 | 644 | 0.2−  | 0.2+  | 2004 05 15 | 704 | 0.7+ | 0.4+ |
| 1997 11 03 | 691 | 0.2+  | 0.1+  | 2004 04 13 | 644 | 0.1−  | 0.3+  | 2004 05 15 | 704 | 0.5+ | 0.5+ |
| 1998 12 16 | 699 | 0.7+  | 0.3+  | 2004 04 16 | E12 | (1.9+ | 1.3−) | 2004 05 15 | 704 | 0.1+ | 0.2− |
| 1998 12 16 | 699 | 0.7+  | 1.7+  | 2004 04 16 | E12 | 0.5+  | 0.1+  | 2005 07 01 | 691 | 0.2− | 0.4+ |
| 1998 12 16 | 699 | 0.7+  | 0.8+  | 2004 04 16 | E12 | 0.4+  | 0.4+  | 2005 07 01 | 691 | 0.3− | 0.0  |
| 1999 01 20 | 704 | 0.6−  | 0.3+  | 2004 04 16 | E12 | (1.5+ | 0.5+) | 2005 07 01 | 691 | 0.1− | 0.3+ |
| 1999 01 20 | 704 | 0.6−  | 0.0   | 2004 04 17 | 704 | 0.4−  | 0.9+  | 2005 07 10 | 691 | 0.0  | 0.1− |
| 1999 01 20 | 704 | 1.6−  | 0.1−  | 2004 04 17 | 704 | 0.0   | 0.7+  | 2005 07 10 | 691 | 0.4+ | 0.6+ |
| 1999 01 20 | 704 | (3.3− | 0.9+) | 2004 04 17 | 704 | 0.6−  | 0.9+  | 2005 07 10 | 691 | 0.2− | 0.1+ |
| 2002 12 06 | 704 | (1.6+ | 1.2−) | 2004 04 17 | 704 | 0.0   | 0.1−  | 2005 07 15 | 691 | 0.3− | 0.2+ |
| 2002 12 06 | 704 | 1.1−  | 0.9+  | 2004 04 24 | 608 | 0.0   | 0.4−  | 2005 07 15 | 691 | 0.0  | 0.3− |
| 2002 12 06 | 704 | 0.0   | 0.0   | 2004 04 24 | 608 | 0.2−  | 0.2−  | 2005 07 15 | 691 | 0.2+ | 0.1− |
| 2002 12 06 | 704 | 0.3−  | 1.1+  | 2004 04 24 | 608 | 0.0   | 0.5−  | 2005 08 28 | 691 | 0.3− | 0.1+ |
| 2002 12 06 | 704 | (2.5− | 1.4+) | 2004 04 25 | 704 | 0.1−  | 1.2−  | 2005 08 28 | 691 | 0.4− | 0.6+ |
| 2004 03 16 | 644 | 0.3−  | 0.2−  | 2004 04 25 | 704 | 1.0−  | 0.3−  | 2005 08 28 | 691 | 0.3− | 0.1− |
| 2004 03 16 | 644 | 0.1−  | 0.1−  | 2004 04 25 | 704 | 0.8+  | 0.7−  | 2007 12 10 | 704 | 0.6+ | 0.7+ |
| 2004 03 16 | 644 | 0.0   | 0.0   | 2004 04 25 | 704 | 0.4+  | 0.9−  | 2007 12 10 | 704 | 0.1− | 0.7+ |
| 2004 03 26 | 704 | 0.9+  | 0.3+  | 2004 04 25 | 704 | 0.4−  | 1.0−  | 2007 12 10 | 704 | 0.6− | 0.9+ |
| 2004 03 26 | 704 | 0.9+  | 0.8+  | 2004 04 30 | 608 | 0.3−  | 0.2+  | 2007 12 10 | 704 | 0.1− | 0.7+ |
| 2004 03 26 | 699 | 0.4+  | 0.4+  | 2004 04 30 | 608 | 0.6−  | 0.8+  | 2007 12 14 | 704 | 0.6+ | 0.6+ |
| 2004 03 26 | 704 | 0.0   | 0.3−  | 2004 04 30 | 608 | 0.2−  | 0.6+  | 2007 12 14 | 704 | 0.5+ | 0.8+ |
| 2004 03 26 | 704 | 0.1−  | 0.8+  | 2004 05 13 | 644 | 0.3+  | 0.2+  | 2007 12 14 | 704 | 0.2− | 0.3− |
| 2004 03 26 | 699 | 0.2−  | 0.5−  | 2004 05 13 | 644 | 0.1+  | 0.2+  | 2007 12 14 | 704 | 0.3+ | 0.2− |
| 2004 03 26 | 699 | 0.1+  | 0.3+  | 2004 05 13 | 644 | 0.2+  | 0.2+  | 2007 12 14 | 704 | 0.1− | 0.3+ |
| 2004 03 26 | 699 | 0.7+  | 0.7+  | 2004 05 15 | 704 | 0.5+  | 0.2+  |            |     |      |      |

(172812)\* 2004 GG<sub>38</sub> = 2001 TG<sub>97</sub>

Discovered 2004 Apr. 15 by the Catalina Sky Survey.

Id. A. Doppler (MPO 76463)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 201.75792  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18092967 | $\omega$ | 346.42242 | −0.66430085 | +0.73459277 |
| <i>a</i> | 3.0959661  | $\Omega$ | 241.75250 | −0.67031196 | −0.66723663 |
| <i>e</i> | 0.0577455  | <i>i</i> | 9.02092   | −0.33073592 | −0.12316145 |
| <i>P</i> | 5.45       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 05 18 | 704 | 1.1−  | 1.2−  | 2004 04 17 | 704 | 0.4+  | 0.5+  | 2007 09 18 | G96 | 0.1+ | 0.8− |
| 1999 05 18 | 704 | 0.3−  | 1.8+  | 2004 04 17 | 704 | 0.1+  | 0.6+  | 2007 09 18 | G96 | 0.0  | 0.5− |
| 1999 05 18 | 704 | 0.2+  | 1.6+  | 2004 04 17 | 704 | 0.2+  | 0.1−  | 2007 09 18 | G96 | 0.1− | 0.6− |
| 1999 05 18 | 704 | 0.2+  | 1.0+  | 2006 09 22 | 683 | 1.1−  | 1.1+  | 2007 09 18 | G96 | 0.3− | 0.4− |
| 2001 10 14 | 704 | 0.2+  | 0.7+  | 2006 09 22 | 683 | (1.5− | 1.4+) | 2007 11 14 | 691 | 0.1− | 0.3− |
| 2001 10 14 | 704 | 0.2+  | 1.2+  | 2006 09 22 | 683 | 0.1+  | 0.4−  | 2007 11 14 | 691 | 0.1− | 0.0  |
| 2001 10 14 | 704 | 0.7−  | 0.2+  | 2006 09 27 | 703 | 0.4−  | 0.2−  | 2007 11 14 | 691 | 0.4+ | 0.3+ |
| 2001 10 14 | 704 | 0.4+  | 0.7+  | 2006 09 27 | 703 | 0.2−  | 0.1+  | 2007 11 19 | 691 | 0.5− | 0.3− |
| 2001 10 14 | 704 | 0.4−  | 0.0   | 2006 09 27 | 703 | 1.0+  | 0.7−  | 2007 11 19 | 691 | 0.2− | 0.0  |
| 2001 10 17 | 704 | 0.0   | 1.0+  | 2006 09 27 | 703 | 0.7+  | 0.1−  | 2007 11 19 | 691 | 0.4− | 0.0  |
| 2001 10 17 | 704 | 0.1−  | 1.0+  | 2006 10 03 | 703 | 0.4+  | 0.4+  | 2007 12 03 | 703 | 0.7+ | 0.6− |
| 2001 10 17 | 704 | 0.4+  | 1.0+  | 2006 10 03 | 703 | 0.9+  | 0.7+  | 2007 12 03 | 703 | 0.6+ | 0.0  |
| 2004 03 17 | 704 | 0.4+  | 0.3+  | 2006 10 03 | 703 | 1.3−  | 0.5+  | 2007 12 03 | 703 | 0.2− | 0.2− |
| 2004 03 17 | 704 | 0.1+  | 1.0+  | 2006 10 03 | 703 | 0.1−  | 0.5+  | 2007 12 03 | 703 | 0.8+ | 0.2− |
| 2004 03 17 | 704 | 0.4−  | 0.6+  | 2006 10 12 | 644 | 0.3+  | 0.1−  | 2007 12 05 | 704 | 0.2+ | 1.3+ |
| 2004 03 17 | 704 | 0.6+  | 0.2−  | 2006 10 12 | 644 | 0.1+  | 0.4+  | 2007 12 05 | 704 | 0.9− | 1.2+ |
| 2004 03 17 | 704 | 0.4+  | 0.1+  | 2006 10 12 | 644 | 0.1+  | 0.2+  | 2007 12 05 | 704 | 1.4+ | 1.0+ |
| 2004 04 15 | 703 | (3.4+ | 1.4+) | 2006 10 17 | 703 | (0.3− | 1.8+) | 2007 12 05 | 704 | 1.4− | 0.5+ |
| 2004 04 15 | 703 | 0.4+  | 1.1+  | 2006 10 17 | 703 | 0.3−  | 0.4+  | 2007 12 05 | 704 | 0.8+ | 0.5+ |
| 2004 04 15 | 703 | 1.2+  | 0.8+  | 2006 10 17 | 703 | 0.1−  | 0.1−  |            |     |      |      |
| 2004 04 15 | 703 | (1.6+ | 0.5+) | 2006 10 17 | 703 | 0.6−  | 0.4+  |            |     |      |      |

(172813)\* 2004 GD<sub>55</sub>

Discovered 2004 Apr. 13 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.35732  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18073480 | $\omega$ | 241.11085 | +0.01219966 | −0.99828686 |
| <i>a</i> | 3.0981911  | $\Omega$ | 208.36367 | +0.95424776 | +0.02872233 |
| <i>e</i> | 0.0462243  | <i>i</i> | 6.91826   | +0.29876810 | −0.05097417 |
| <i>P</i> | 5.45       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 24 | 691 | 0.2+  | 0.6−  | 2004 05 09 | 691 | 0.4+ | 0.1− | 2006 10 22 | 691 | 0.5− | 0.5+ |
| 2000 07 24 | 691 | 0.1−  | 0.1−  | 2004 05 09 | 691 | 0.3+ | 0.5+ | 2006 10 22 | 691 | 0.1− | 0.1+ |
| 2000 07 24 | 691 | 0.1+  | 0.3−  | 2004 05 09 | 691 | 0.2− | 0.4+ | 2006 10 22 | 691 | 0.1− | 0.3+ |
| 2001 10 18 | 644 | (0.7+ | 1.7+) | 2006 08 21 | 691 | 0.3+ | 1.3+ | 2007 11 04 | 691 | 0.1+ | 0.2+ |
| 2001 10 18 | 644 | 0.8+  | 1.3+  | 2006 08 21 | 691 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.3− | 0.1+ |
| 2001 10 18 | 644 | 0.6+  | 1.1+  | 2006 08 21 | 691 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.2− |
| 2001 11 14 | 691 | 0.2+  | 0.8−  | 2006 09 20 | 691 | 0.0  | 0.4− | 2007 12 04 | 704 | 0.1+ | 1.1+ |
| 2001 11 14 | 691 | 0.1−  | 0.3−  | 2006 09 20 | 691 | 0.1− | 0.3+ | 2007 12 04 | 704 | 0.1+ | 0.7+ |
| 2001 11 14 | 691 | 0.2−  | 0.3−  | 2006 09 20 | 691 | 0.0  | 0.4+ | 2007 12 04 | 704 | 0.4+ | 0.5+ |
| 2004 04 13 | 691 | 0.1+  | 0.3+  | 2006 10 18 | 691 | 0.1+ | 0.1− | 2007 12 04 | 704 | 0.7− | 1.1+ |
| 2004 04 13 | 691 | 0.1+  | 0.3+  | 2006 10 18 | 691 | 0.1− | 0.1− | 2007 12 05 | G96 | 0.4+ | 0.1− |
| 2004 04 13 | 691 | 0.2−  | 0.1+  | 2006 10 18 | 691 | 0.6− | 0.2+ | 2007 12 05 | G96 | 0.5+ | 0.1− |
| 2004 04 19 | 691 | 0.0   | 0.2+  | 2006 10 20 | 691 | 0.0  | 0.1+ | 2007 12 05 | G96 | 0.1+ | 0.2− |
| 2004 04 19 | 691 | 0.1+  | 0.2+  | 2006 10 20 | 691 | 0.0  | 0.5+ | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 2004 04 19 | 691 | 0.1−  | 0.2+  | 2006 10 20 | 691 | 0.1− | 0.2− |            |     |      |      |

(172814)\* 2004 GV<sub>55</sub>

Discovered 2004 Apr. 13 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.09568   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17260024 | $\omega$ | 55.61292  | +0.72022899 | −0.69363238 |
| <i>a</i> | 3.1947861  | $\Omega$ | 348.28943 | +0.61548149 | +0.64687976 |
| <i>e</i> | 0.0802281  | <i>i</i> | 3.39328   | +0.32008240 | +0.31689224 |
| <i>P</i> | 5.71       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 18 | 691 | 0.0  | 0.1+ | 2004 04 25 | 691 | 0.2+ | 0.3+ | 2006 10 16 | G96 | 0.0  | 0.4− |
| 2001 10 18 | 691 | 0.1− | 0.3+ | 2004 04 25 | 691 | 0.2+ | 0.3+ | 2006 10 16 | G96 | 0.2− | 0.0  |
| 2001 10 18 | 691 | 0.1− | 0.4− | 2004 04 25 | 691 | 0.0  | 0.4+ | 2006 10 16 | G96 | 0.1+ | 0.1+ |
| 2001 10 26 | 644 | 0.1+ | 1.1+ | 2004 05 09 | 691 | 0.3+ | 0.4+ | 2006 10 16 | G96 | 0.2− | 0.0  |
| 2001 10 26 | 644 | 0.2+ | 0.9+ | 2004 05 09 | 691 | 0.0  | 0.4+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2001 10 26 | 644 | 0.2− | 0.9+ | 2004 05 09 | 691 | 0.5− | 0.8+ | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 2001 11 19 | 704 | 0.3− | 1.0+ | 2006 08 19 | 691 | 0.0  | 0.6+ | 2007 11 18 | G96 | 0.4+ | 0.2+ |

|            |     |             |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 19 | 704 | (0.7+ 2.3+) | 2006 08 19 | 691 | 0.0  | 0.3+ | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2001 11 19 | 704 | 0.5- 0.1-   | 2006 08 19 | 691 | 0.2- | 0.3+ | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2001 11 19 | 704 | 0.0 0.2+    | 2006 08 27 | 691 | 0.3- | 0.2+ | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2004 04 13 | 691 | 0.6+ 0.4-   | 2006 08 27 | 691 | 0.1- | 0.4+ | 2007 11 20 | 691 | 0.2- | 0.2+ |
| 2004 04 13 | 691 | 0.4+ 0.1-   | 2006 08 27 | 691 | 0.3- | 0.1+ | 2007 12 15 | 704 | 0.5- | 0.8+ |
| 2004 04 13 | 691 | 0.5- 0.3-   | 2006 08 28 | 703 | 0.2- | 0.1+ | 2007 12 15 | 704 | 0.8+ | 1.1+ |
| 2004 04 19 | 691 | 0.0 0.3+    | 2006 08 28 | 703 | 1.1+ | 0.8- | 2007 12 15 | 704 | 0.1+ | 0.2- |
| 2004 04 19 | 691 | 0.2+ 0.2+   | 2006 08 28 | 703 | 0.1+ | 1.2- | 2007 12 15 | 704 | 0.6+ | 0.1- |
| 2004 04 19 | 691 | 0.2+ 0.2+   | 2006 08 28 | 703 | 0.9+ | 0.3- |            |     |      |      |

**(172815)\* 2004 GD<sub>88</sub>**

Discovered 2004 Apr. 13 by the Siding Spring Survey at Siding Spring.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 231.23676  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.18885931 | $\omega$ | 289.59608 |     | -0.62980680  |     | +0.75242273  |
| $a$ | 3.0086878  | $\Omega$ | 299.84224 |     | -0.60291847  |     | -0.63010733  |
| $e$ | 0.1293589  | $i$      | 12.84817  |     | -0.48972717  |     | -0.19189788  |
| $P$ | 5.22       | $H$      | 15.0      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |      |       |            |     |       |       |            |     |      |      |
|------------|-----|------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 08 31 | 704 | 0.8- | 0.3-  | 2004 04 24 | 699 | 0.0   | 0.9+  | 2006 10 27 | 703 | 0.3+ | 0.3- |
| 2000 08 31 | 704 | 1.0- | 0.8+  | 2004 04 24 | 699 | 0.2-  | 0.2+  | 2006 10 27 | 703 | 0.2- | 0.2- |
| 2000 08 31 | 704 | 0.3+ | 1.3+  | 2004 04 24 | 699 | 0.7+  | 1.3+  | 2006 10 27 | 703 | 0.0  | 0.2- |
| 2000 08 31 | 704 | 0.5+ | 1.1+  | 2004 04 30 | E12 | (0.3+ | 3.3+) | 2006 11 16 | 703 | 0.3- | 0.5- |
| 2000 08 31 | 704 | 0.1- | 0.2+  | 2004 04 30 | E12 | (0.6- | 3.0+) | 2006 11 16 | 703 | 0.6+ | 0.6- |
| 2003 01 05 | 291 | 0.2+ | 0.3+  | 2004 04 30 | E12 | 0.8+  | 1.0+  | 2006 11 16 | 703 | 0.2+ | 0.9+ |
| 2003 01 05 | 291 | 0.1+ | 0.2+  | 2004 04 30 | E12 | (0.0  | 1.7+) | 2006 11 16 | 703 | 0.7- | 0.5+ |
| 2003 01 05 | 291 | 0.1+ | 0.3+  | 2004 05 11 | E12 | 0.2-  | 0.3+  | 2007 12 05 | 691 | 0.2- | 0.1+ |
| 2003 01 08 | 704 | 0.1+ | 0.3+  | 2004 05 11 | E12 | 0.3+  | 0.3+  | 2007 12 05 | 691 | 0.3- | 0.1- |
| 2003 01 08 | 704 | 0.5- | 0.8+  | 2004 05 11 | E12 | 0.3+  | 0.0   | 2007 12 05 | 691 | 0.3- | 0.1- |
| 2003 01 08 | 704 | 0.3+ | 0.9-  | 2004 05 11 | E12 | 0.3-  | 0.3+  | 2007 12 13 | 704 | 0.7+ | 0.3+ |
| 2003 01 08 | 704 | 0.3+ | 1.2+  | 2005 08 06 | 644 | 0.3-  | 0.5+  | 2007 12 13 | 704 | 0.8+ | 0.0  |
| 2003 01 08 | 704 | 0.4+ | 1.1+  | 2005 08 06 | 644 | 0.3-  | 0.4+  | 2007 12 13 | 704 | 1.3+ | 0.2- |
| 2004 04 01 | E12 | 0.4+ | 1.4-  | 2005 08 06 | 644 | 0.2-  | 0.4+  | 2007 12 15 | 704 | 0.5+ | 0.7- |
| 2004 04 01 | E12 | 1.3- | 0.7-  | 2005 08 24 | 644 | 0.1-  | 0.3+  | 2007 12 15 | 704 | 0.9+ | 0.6- |
| 2004 04 01 | E12 | 0.5+ | 1.4-  | 2005 08 24 | 644 | 0.0   | 0.1+  | 2007 12 15 | 704 | 1.6+ | 0.3+ |
| 2004 04 01 | E12 | 0.2- | 0.5-  | 2005 08 24 | 644 | 0.2-  | 0.3+  | 2007 12 15 | 704 | 1.9+ | 0.2- |
| 2004 04 13 | E12 | 0.0  | 0.4+  | 2006 10 02 | 703 | (1.8- | 0.6-) | 2007 12 17 | 691 | 0.2- | 0.6- |
| 2004 04 13 | E12 | 0.2- | 0.2+  | 2006 10 02 | 703 | 0.3+  | 1.0-  | 2007 12 17 | 691 | 0.3- | 0.1- |
| 2004 04 13 | E12 | 0.1+ | 0.0   | 2006 10 02 | 703 | 0.3+  | 1.0-  | 2007 12 17 | 691 | 0.4- | 0.7+ |
| 2004 04 13 | E12 | 0.2- | 0.6+  | 2006 10 02 | 703 | 1.2-  | 0.7+  |            |     |      |      |
| 2004 04 24 | 699 | (0.0 | 2.0+) | 2006 10 27 | 703 | (1.0+ | 2.1+) |            |     |      |      |

**(172816)\* 2004 HX<sub>1</sub>**

Discovered 2004 Apr. 20 by W. K. Y. Yeung at Desert Eagle Observatory.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 260.59589  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.18602267 | $\omega$ | 117.31815 |     | -0.99504208 |     | +0.09336661 |
| $a$ | 3.0391966  | $\Omega$ | 68.05589  |     | -0.09919141 |     | -0.90659859 |
| $e$ | 0.1886069  | $i$      | 2.11693   |     | -0.00723369 |     | -0.41153576 |
| $P$ | 5.30       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 31 | 807 | 0.0  | 0.0  | 2004 05 12 | 699 | 0.7- | 1.0+ | 2006 10 21 | 705 | 0.3+ | 0.0  |
| 2000 07 31 | 807 | 0.0  | 0.2+ | 2004 05 13 | 333 | 0.2+ | 0.1+ | 2006 11 01 | 705 | 0.2- | 0.4+ |
| 2004 03 01 | 291 | 0.3+ | 0.4+ | 2004 05 13 | 333 | 0.1- | 0.1- | 2006 11 01 | 705 | 0.0  | 0.1+ |
| 2004 03 01 | 291 | 0.1+ | 0.3+ | 2004 05 13 | 333 | 0.2- | 0.2+ | 2006 11 09 | 705 | 0.0  | 0.0  |
| 2004 03 01 | 291 | 0.3+ | 0.4+ | 2004 05 14 | 691 | 0.3- | 0.1+ | 2006 11 09 | 705 | 0.0  | 0.1+ |
| 2004 03 31 | 704 | 0.7+ | 1.4+ | 2004 05 14 | 691 | 0.2- | 0.1+ | 2006 11 14 | 705 | 0.0  | 0.1+ |
| 2004 03 31 | 704 | 0.4+ | 0.8+ | 2004 05 14 | 691 | 0.1- | 0.2+ | 2006 11 14 | 705 | 0.1- | 0.1+ |
| 2004 03 31 | 704 | 0.6- | 0.9+ | 2004 05 16 | 704 | 0.4+ | 0.3+ | 2006 11 17 | 705 | 0.2- | 0.2+ |
| 2004 04 20 | 333 | 0.5- | 0.5- | 2004 05 16 | 704 | 0.1+ | 0.9+ | 2006 11 17 | 705 | 0.2+ | 0.0  |
| 2004 04 20 | 333 | 0.2- | 0.7- | 2004 05 16 | 704 | 0.5+ | 0.2+ | 2006 11 24 | 705 | 0.1- | 0.1+ |
| 2004 04 20 | 333 | 0.3- | 0.3- | 2004 05 16 | 704 | 0.2+ | 0.3+ | 2006 11 24 | 705 | 0.0  | 0.2+ |
| 2004 04 21 | 704 | 0.3+ | 0.1- | 2004 05 16 | 704 | 0.8+ | 0.1+ | 2007 11 01 | 691 | 0.2+ | 0.6+ |
| 2004 04 21 | 333 | 0.6+ | 0.2+ | 2004 05 23 | 691 | 0.0  | 0.4+ | 2007 11 01 | 691 | 0.3- | 0.5+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 21 | 333 | 0.3-  | 0.0   | 2004 05 23 | 691 | 0.0  | 0.3+ | 2007 11 01 | 691 | 0.2+ | 1.1- |
| 2004 04 21 | 704 | 1.4+  | 0.5+  | 2004 05 23 | 691 | 0.2+ | 0.3+ | 2007 11 19 | 691 | 0.3- | 0.4+ |
| 2004 04 21 | 333 | 0.3-  | 0.1-  | 2006 09 18 | 691 | 0.1+ | 0.3+ | 2007 11 19 | 691 | 0.2- | 0.5+ |
| 2004 04 21 | 333 | 0.5-  | 0.2+  | 2006 09 18 | 691 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.2- | 0.3+ |
| 2004 04 21 | 704 | 0.8+  | 0.2+  | 2006 09 18 | 691 | 0.5- | 0.2+ | 2007 12 04 | G96 | 0.7+ | 0.5+ |
| 2004 04 26 | 699 | 1.5+  | 0.3-  | 2006 09 26 | 691 | 0.2- | 0.5+ | 2007 12 04 | G96 | 0.4+ | 0.2+ |
| 2004 04 26 | 699 | 0.8+  | 1.2+  | 2006 09 26 | 691 | 0.2+ | 0.2+ | 2007 12 04 | G96 | 0.6+ | 0.6+ |
| 2004 04 26 | 699 | 0.7-  | 1.1-  | 2006 09 26 | 691 | 0.2- | 0.2+ | 2007 12 04 | G96 | 0.1- | 0.2+ |
| 2004 04 26 | 699 | 1.1+  | 0.1+  | 2006 09 30 | 691 | 0.5- | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.9+ |
| 2004 05 12 | 699 | 0.2-  | 0.9+  | 2006 09 30 | 691 | 0.1- | 0.5+ | 2007 12 05 | 704 | 0.5- | 0.7+ |
| 2004 05 12 | 699 | (1.6- | 2.4+) | 2006 09 30 | 691 | 0.2- | 0.2+ | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2004 05 12 | 699 | (2.8- | 0.8-) | 2006 10 21 | 705 | 0.1+ | 0.0  | 2007 12 05 | 704 | 0.2- | 0.8+ |

**(172817)\* 2004 HS<sub>54</sub>**

Discovered 2004 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 304.65313  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.21725839 | $\omega$ | 322.97688 |     | -0.99690880 |     | +0.07303576 |
| $a$ | 2.7404277  | $\Omega$ | 221.24068 |     | -0.05735449 |     | -0.92841680 |
| $e$ | 0.1280393  | $i$      | 2.51774   |     | -0.05369638 |     | -0.36429113 |
| $P$ | 4.54       | $H$      | 16.2      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1992 10 03 | 691 | 0.1+  | 0.0   | 2006 09 27 | G96 | 0.3+ | 0.1- | 2006 11 21 | G96 | 0.4- | 0.1- |
| 1992 10 03 | 691 | 0.5-  | 0.3+  | 2006 09 27 | G96 | 0.5+ | 0.3- | 2006 11 21 | G96 | 0.1- | 0.0  |
| 1992 10 03 | 691 | 0.5-  | 0.2-  | 2006 09 27 | G96 | 0.5- | 0.2- | 2007 11 18 | G96 | 0.6- | 0.2- |
| 1999 02 18 | 910 | 0.4-  | 0.4-  | 2006 09 27 | G96 | 0.2- | 0.1+ | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 1999 02 18 | 910 | 1.0+  | 0.7-  | 2006 10 12 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.5- | 0.1- |
| 1999 02 18 | 910 | 1.0+  | 0.7-  | 2006 10 12 | 691 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.4- | 0.2+ |
| 2001 11 12 | 645 | 0.1+  | 0.0   | 2006 10 12 | 691 | 0.0  | 0.3+ | 2007 11 19 | G96 | 0.2- | 0.1- |
| 2001 11 12 | 645 | 0.1+  | 0.1-  | 2006 10 12 | 691 | 0.2- | 0.4+ | 2007 11 19 | G96 | 0.2- | 0.4+ |
| 2004 04 21 | 704 | 0.8+  | 0.8+  | 2006 10 12 | 691 | 0.3+ | 0.2+ | 2007 11 19 | G96 | 0.1- | 0.4+ |
| 2004 04 21 | 704 | 0.2+  | 1.4+  | 2006 10 12 | 691 | 0.1- | 0.0  | 2007 11 19 | G96 | 0.0  | 0.2+ |
| 2004 04 21 | 704 | 0.3+  | 0.1+  | 2006 10 16 | 691 | 0.1- | 0.2+ | 2007 11 19 | G96 | 0.1+ | 0.4+ |
| 2004 04 21 | 704 | 0.3+  | 1.0+  | 2006 10 16 | 691 | 0.2- | 0.4+ | 2007 11 19 | G96 | 0.0  | 0.2+ |
| 2004 04 21 | 704 | (0.7+ | 1.6+) | 2006 10 16 | 691 | 0.1- | 0.5+ | 2007 11 19 | G96 | 0.1+ | 0.4+ |
| 2004 04 26 | 699 | 0.4-  | 0.5+  | 2006 10 27 | G96 | 0.2- | 0.0  | 2007 11 19 | G96 | 0.1- | 0.2+ |
| 2004 04 26 | 699 | 0.7+  | 0.0   | 2006 10 27 | G96 | 0.2+ | 0.0  | 2007 11 19 | G96 | 0.0  | 0.6+ |
| 2004 04 26 | 699 | 0.3+  | 0.3+  | 2006 10 27 | G96 | 0.0  | 0.1- | 2007 11 19 | G96 | 0.1- | 0.6+ |
| 2004 04 26 | 699 | 0.3-  | 0.1+  | 2006 10 27 | G96 | 0.4+ | 0.1- | 2007 11 19 | G96 | 0.0  | 0.3+ |
| 2004 05 14 | 691 | 0.0   | 0.5+  | 2006 10 28 | 691 | 0.0  | 0.4+ | 2007 11 19 | G96 | 0.2- | 0.2+ |
| 2004 05 14 | 691 | 0.2+  | 0.5+  | 2006 10 28 | 691 | 0.0  | 0.3+ | 2007 11 20 | G96 | 0.0  | 0.3- |
| 2004 05 14 | 691 | 0.1+  | 0.6+  | 2006 10 28 | 691 | 0.3+ | 0.6+ | 2007 11 20 | G96 | 0.3- | 0.1+ |
| 2004 05 16 | 704 | 0.5+  | 0.3+  | 2006 11 11 | G96 | 0.3+ | 0.0  | 2007 11 20 | G96 | 0.0  | 0.1+ |
| 2004 05 16 | 704 | 0.3+  | 0.3+  | 2006 11 11 | G96 | 0.3- | 0.3- | 2007 11 20 | G96 | 0.3- | 0.3- |
| 2004 05 16 | 704 | 0.3-  | 0.3-  | 2006 11 11 | G96 | 0.2+ | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2005 08 06 | 644 | 0.3-  | 0.0   | 2006 11 11 | G96 | 0.3- | 0.5- | 2007 12 06 | G96 | 0.1- | 0.4- |
| 2005 08 06 | 644 | 0.4-  | 0.3+  | 2006 11 21 | G96 | 0.3- | 0.0  | 2007 12 06 | G96 | 0.7- | 0.8+ |
| 2005 08 06 | 644 | 0.0   | 0.3+  | 2006 11 21 | G96 | 0.2- | 0.3+ | 2007 12 06 | G96 | 0.3+ | 0.6+ |

**(172818)\* 2004 HS<sub>58</sub>**

Discovered 2004 Apr. 24 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = J

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 12 | 704 | 0.4− | 0.6+ | 2006 09 30 | 703 | 0.6− | 0.1+ | 2006 11 08 | 705 | 0.2+ | 0.2− |
| 1999 12 12 | 704 | 1.2+ | 0.3− | 2006 10 01 | 704 | 0.4− | 0.3+ | 2006 11 10 | 705 | 0.1+ | 0.0  |
| 1999 12 12 | 704 | 0.3+ | 1.0+ | 2006 10 01 | 704 | 0.9− | 0.5+ | 2006 11 10 | 705 | 0.2+ | 0.0  |
| 2004 04 24 | 291 | 0.5− | 0.6+ | 2006 10 01 | 704 | 1.0− | 0.5+ | 2006 11 14 | 705 | 0.2+ | 0.1− |
| 2004 04 24 | 291 | 0.2− | 0.6+ | 2006 10 01 | 704 | 0.5− | 0.2+ | 2006 11 14 | 705 | 0.1+ | 0.1− |
| 2004 04 24 | 291 | 0.2− | 0.6+ | 2006 10 01 | 704 | 0.9− | 0.6+ | 2006 11 16 | G96 | 0.2− | 0.0  |
| 2004 04 28 | 691 | 0.1+ | 0.1+ | 2006 10 02 | 691 | 0.2− | 0.2+ | 2006 11 16 | G96 | 0.0  | 0.2− |
| 2004 04 28 | 691 | 0.2+ | 0.3+ | 2006 10 02 | 691 | 0.1− | 0.2+ | 2006 11 16 | G96 | 0.3+ | 0.2− |
| 2004 04 28 | 691 | 0.4+ | 0.1+ | 2006 10 02 | 691 | 0.1+ | 0.2+ | 2006 11 16 | G96 | 0.1− | 0.1− |
| 2004 05 13 | 691 | 0.3+ | 0.4+ | 2006 10 13 | 705 | 0.3+ | 0.1− | 2006 11 17 | 705 | 0.1+ | 0.2− |
| 2004 05 13 | 691 | 0.1+ | 0.1+ | 2006 10 13 | 705 | 0.3+ | 0.0  | 2006 11 17 | 705 | 0.1+ | 0.2− |
| 2004 05 13 | 691 | 0.3+ | 0.3+ | 2006 10 16 | 703 | 0.7+ | 0.3− | 2006 11 19 | 705 | 0.1+ | 0.1− |
| 2004 06 08 | 691 | 0.1+ | 0.1− | 2006 10 16 | 703 | 1.1− | 0.1− | 2006 11 19 | 705 | 0.1+ | 0.2− |
| 2004 06 08 | 691 | 0.2+ | 0.2− | 2006 10 16 | 703 | 0.3− | 0.1− | 2006 11 21 | 705 | 0.0  | 0.1− |
| 2004 06 08 | 691 | 0.5+ | 0.1− | 2006 10 16 | 703 | 1.0− | 0.0  | 2006 11 21 | 705 | 0.0  | 0.1− |
| 2004 06 15 | 691 | 0.6+ | 0.4+ | 2006 10 16 | 703 | 0.5+ | 0.2+ | 2006 11 24 | 705 | 0.0  | 0.1− |
| 2004 06 15 | 691 | 0.7− | 0.1− | 2006 10 16 | 703 | 0.2+ | 0.2− | 2006 11 24 | 705 | 0.0  | 0.1− |
| 2004 06 15 | 691 | 0.0  | 0.4+ | 2006 10 16 | 703 | 0.5+ | 0.9− | 2006 11 29 | 705 | 0.0  | 0.1− |
| 2006 09 18 | 703 | 0.0  | 0.1+ | 2006 10 16 | 703 | 0.2− | 0.2− | 2006 11 29 | 705 | 0.0  | 0.0  |
| 2006 09 18 | 703 | 0.5− | 0.1+ | 2006 10 17 | 557 | 0.2+ | 0.2− | 2006 12 22 | G96 | 0.4− | 0.1− |
| 2006 09 18 | 703 | 0.1+ | 0.5+ | 2006 10 17 | 557 | 0.4− | 0.3+ | 2006 12 22 | G96 | 0.0  | 0.6− |
| 2006 09 18 | 703 | 0.4− | 0.2+ | 2006 10 17 | 557 | 1.1+ | 1.2− | 2006 12 22 | G96 | 0.2+ | 0.0  |
| 2006 09 21 | 699 | 0.0  | 0.1− | 2006 10 17 | 557 | 0.5+ | 0.6− | 2006 12 22 | G96 | 0.2− | 0.2− |
| 2006 09 21 | 699 | 0.3− | 0.1− | 2006 10 19 | 644 | 0.2− | 0.1− | 2007 02 17 | G96 | 0.4− | 0.4− |
| 2006 09 21 | 699 | 0.1+ | 0.1− | 2006 10 19 | 644 | 0.1− | 0.3+ | 2007 02 17 | G96 | 0.3+ | 0.1− |
| 2006 09 21 | 699 | 0.0  | 0.6+ | 2006 10 19 | 644 | 0.0  | 0.2+ | 2007 02 17 | G96 | 0.2− | 0.4− |
| 2006 09 22 | 704 | 0.3− | 0.1− | 2006 10 20 | 705 | 0.2+ | 0.0  | 2007 02 17 | G96 | 0.0  | 0.0  |
| 2006 09 22 | 704 | 0.3+ | 0.4+ | 2006 10 20 | 705 | 0.2+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2006 09 22 | 704 | 0.4− | 0.3+ | 2006 10 21 | 644 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.2+ |
| 2006 09 22 | 704 | 0.1+ | 0.4+ | 2006 10 21 | 644 | 0.2+ | 0.3+ | 2007 11 14 | 691 | 0.3− | 0.2+ |
| 2006 09 22 | 704 | 0.2+ | 0.1+ | 2006 10 21 | 644 | 0.1+ | 0.2+ | 2007 12 05 | 691 | 0.2− | 0.5+ |
| 2006 09 25 | 699 | 0.9− | 0.4+ | 2006 10 22 | 703 | 0.5− | 0.5+ | 2007 12 05 | 691 | 0.1+ | 0.1+ |
| 2006 09 25 | 699 | 0.2+ | 0.4+ | 2006 10 22 | 703 | 0.1+ | 0.4+ | 2007 12 05 | 691 | 0.1+ | 0.1+ |
| 2006 09 25 | 699 | 0.2− | 0.0  | 2006 10 22 | 705 | 0.3+ | 0.0  | 2007 12 14 | 704 | 0.1+ | 1.8+ |
| 2006 09 25 | 699 | 0.6+ | 0.6+ | 2006 10 22 | 705 | 0.3+ | 0.0  | 2007 12 14 | 704 | 0.2+ | 0.6+ |
| 2006 09 28 | 691 | 0.1− | 0.3+ | 2006 10 22 | 703 | 0.5− | 1.0− | 2007 12 14 | 704 | 0.2+ | 0.7+ |
| 2006 09 28 | 691 | 0.1− | 0.3+ | 2006 10 22 | 703 | 0.5− | 0.7− | 2007 12 16 | 691 | 0.2− | 0.2+ |
| 2006 09 28 | 691 | 0.2− | 0.4+ | 2006 10 23 | 705 | 0.2+ | 0.0  | 2007 12 16 | 691 | 0.0  | 0.3+ |
| 2006 09 28 | 291 | 0.1+ | 0.4+ | 2006 10 23 | 705 | 0.2+ | 0.1− | 2007 12 16 | 691 | 0.0  | 0.2+ |
| 2006 09 28 | 291 | 0.2+ | 0.3+ | 2006 10 28 | 705 | 0.2+ | 0.2− |            |     |      |      |

**(172819)\* 2004 JN<sub>42</sub> = 2002 GT<sub>49</sub> = 2003 HJ**

Discovered 2004 May 15 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPO* 65825)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 355.74668  | <i>P</i> | (2000.0)  | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.08168790 | $\omega$ | 132.53984 | +0.95107837 | +0.27546694 |
| <i>a</i> | 5.2605470  | $\Omega$ | 212.22154 | −0.29800990 | +0.93739778 |
| <i>e</i> | 0.0738559  | <i>i</i> | 15.20974  | +0.08148639 | +0.21308064 |
| <i>P</i> | 12.07      | <i>H</i> | 12.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 28 | 608 | 0.3+ | 0.1+ | 2003 04 24 | 699 | 0.6− | 0.2− | 2004 06 16 | 240 | 0.4− | 0.7− |
| 2001 01 28 | 608 | 0.3+ | 0.7+ | 2003 04 24 | 699 | 0.2+ | 0.9− | 2004 06 16 | 240 | 0.5+ | 0.8− |
| 2001 01 28 | 608 | 0.3+ | 0.8+ | 2003 04 24 | 691 | 0.2− | 0.2+ | 2004 06 16 | 240 | 0.7+ | 0.5− |
| 2001 02 24 | 608 | 0.2− | 0.6− | 2003 04 24 | 699 | 0.3+ | 0.1+ | 2007 09 08 | 699 | 0.7+ | 0.6+ |
| 2001 02 24 | 608 | 0.4− | 0.2− | 2004 05 12 | 699 | 0.1− | 0.6+ | 2007 09 08 | 699 | 0.3− | 1.2+ |
| 2001 02 24 | 608 | 0.5− | 0.4− | 2004 05 12 | 699 | 0.2− | 0.3− | 2007 09 08 | 699 | 0.8− | 0.8+ |
| 2002 04 05 | 644 | 0.2+ | 0.1+ | 2004 05 12 | 699 | 0.2+ | 0.6− | 2007 09 08 | 699 | 0.3+ | 0.9+ |
| 2002 04 05 | 644 | 0.1+ | 0.3+ | 2004 05 12 | 699 | 0.4+ | 0.2+ | 2007 09 11 | 703 | 0.2− | 0.4+ |
| 2002 04 05 | 644 | 0.0  | 0.3+ | 2004 05 15 | 704 | 0.6− | 0.6− | 2007 09 11 | 703 | 0.8− | 0.5+ |
| 2002 04 08 | 644 | 1.0+ | 0.2+ | 2004 05 15 | 704 | 1.0+ | 0.2− | 2007 09 11 | 703 | 0.7− | 0.4− |
| 2002 04 08 | 644 | 0.4+ | 0.5+ | 2004 05 15 | 704 | 0.1− | 0.5+ | 2007 09 11 | 703 | 0.6− | 0.2+ |
| 2002 04 08 | 644 | 0.5+ | 0.4+ | 2004 05 15 | 704 | 0.1− | 0.2+ | 2007 12 05 | G96 | 0.4+ | 0.5− |
| 2003 04 08 | 644 | 0.1+ | 0.5+ | 2004 05 15 | 704 | 0.3− | 0.3+ | 2007 12 05 | G96 | 0.1+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 04 08 | 644 | 0.3+ | 0.2+ | 2004 05 21 | 704 | 0.3− | 0.2+ | 2007 12 05 | G96 | 0.1+ | 0.1− |
| 2003 04 08 | 644 | 0.4+ | 0.4+ | 2004 05 21 | 704 | 0.3+ | 0.4− | 2007 12 05 | G96 | 0.5+ | 0.4− |
| 2003 04 24 | 691 | 0.2− | 0.2+ | 2004 05 21 | 704 | 0.6+ | 0.2− | 2007 12 05 | G96 | 0.2+ | 0.1− |
| 2003 04 24 | 699 | 1.3− | 0.1+ | 2004 05 21 | 704 | 0.2+ | 0.0  | 2007 12 05 | G96 | 0.0  | 0.2− |
| 2003 04 24 | 691 | 0.1− | 0.1+ | 2004 05 21 | 704 | 0.1− | 0.2− | 2007 12 05 | G96 | 0.4+ | 0.0  |

**(172820)\* 2004 RN<sub>2</sub>**

Discovered 2004 Sept. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 288.36103  | <i>P</i> | (2000.0)  | <i>Q</i>    |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.36703744 | $\omega$ | 254.46813 | −0.68094917 | −0.67381014 |
| <i>a</i> | 1.9319496  | $\Omega$ | 242.16914 | +0.73195993 | −0.63868005 |
| <i>e</i> | 0.0663788  | <i>i</i> | 18.92803  | −0.02330017 | −0.37157462 |
| <i>P</i> | 2.69       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |             |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|-------------|------|
| 2003 03 11 | 644 | 0.0  | 0.2+ | 2004 10 04 | 704 | 0.3−        | 0.3− | 2006 06 20 | 703 | 0.0         | 0.1− |
| 2003 03 11 | 644 | 0.4+ | 0.1+ | 2004 10 04 | 704 | 0.1+        | 0.1− | 2006 06 20 | 703 | 0.6−        | 0.0  |
| 2003 03 11 | 644 | 0.2− | 0.2+ | 2004 10 04 | 704 | 0.3+        | 0.0  | 2006 06 20 | 703 | 0.7−        | 1.0− |
| 2004 09 06 | 704 | 0.1+ | 0.2+ | 2004 10 04 | 704 | 0.1+        | 0.9− | 2006 06 21 | 644 | 0.3+        | 0.1+ |
| 2004 09 06 | 704 | 1.0+ | 0.3+ | 2004 10 14 | 644 | 0.1−        | 0.4+ | 2006 06 21 | 644 | 0.2+        | 0.0  |
| 2004 09 06 | 704 | 0.3+ | 0.4− | 2004 10 14 | 644 | 0.2−        | 0.3− | 2006 06 21 | 644 | 0.1+        | 0.2+ |
| 2004 09 06 | 704 | 0.0  | 0.4− | 2004 10 14 | 644 | 0.2−        | 0.4+ | 2007 11 05 | 704 | 0.2+        | 0.1− |
| 2004 09 06 | 704 | 0.5+ | 0.4+ | 2004 10 15 | 699 | 1.4+        | 1.1− | 2007 11 05 | 704 | 0.1+        | 0.7+ |
| 2004 09 07 | 704 | 0.0  | 0.2+ | 2004 10 15 | 699 | (1.7+ 0.6−) |      | 2007 11 05 | 704 | 0.7+        | 0.8+ |
| 2004 09 07 | 704 | 0.3− | 0.2+ | 2004 10 15 | 699 | 0.7+        | 0.9+ | 2007 11 05 | 704 | (1.2+ 1.6+) |      |
| 2004 09 07 | 704 | 0.0  | 0.6+ | 2004 10 15 | 699 | 0.9+        | 0.8+ | 2007 11 05 | 691 | 0.3+        | 0.3+ |
| 2004 09 07 | 704 | 0.0  | 0.6+ | 2004 10 16 | 704 | 0.7−        | 0.2− | 2007 11 05 | 691 | 0.1+        | 0.1+ |
| 2004 09 07 | 704 | 0.6+ | 0.0  | 2004 10 16 | 704 | 0.1−        | 1.2− | 2007 11 05 | 691 | 0.1+        | 0.1− |
| 2004 09 07 | 704 | 0.4− | 0.0  | 2004 10 16 | 704 | 0.3−        | 0.9− | 2007 11 14 | 704 | 0.5+        | 0.5+ |
| 2004 09 07 | 704 | 0.4+ | 0.2− | 2004 10 16 | 704 | 0.4−        | 1.4− | 2007 11 14 | 704 | 0.8+        | 0.1+ |
| 2004 09 07 | 704 | 0.2− | 0.3− | 2006 05 24 | 644 | 0.1+        | 0.2+ | 2007 11 14 | 704 | 0.6+        | 0.2+ |
| 2004 09 07 | 704 | 0.4− | 0.4+ | 2006 05 24 | 644 | 0.0         | 0.1+ | 2007 11 14 | 704 | 0.6+        | 0.1− |
| 2004 09 07 | 704 | 0.1+ | 0.2+ | 2006 05 24 | 644 | 0.1−        | 0.0  | 2007 11 14 | 704 | 0.4+        | 0.4− |
| 2004 09 08 | 704 | 0.1− | 0.5− | 2006 05 24 | 644 | 0.0         | 0.1+ | 2007 11 19 | 291 | 0.2−        | 0.1+ |
| 2004 09 08 | 704 | 0.1+ | 0.6+ | 2006 05 24 | 644 | 0.1+        | 0.0  | 2007 11 19 | 291 | 0.4−        | 0.1+ |
| 2004 09 08 | 704 | 0.0  | 0.1− | 2006 05 24 | 644 | 0.1−        | 0.1+ | 2007 11 19 | 291 | 0.1−        | 0.3+ |
| 2004 09 08 | 704 | 0.5+ | 0.4+ | 2006 05 27 | 704 | 0.2−        | 0.8+ | 2007 11 19 | 291 | 0.1+        | 0.3+ |
| 2004 09 08 | 704 | 0.0  | 0.3+ | 2006 05 27 | 704 | 0.1−        | 0.6+ | 2007 11 19 | 291 | 0.9−        | 0.1− |
| 2004 09 15 | 704 | 0.8− | 0.0  | 2006 05 27 | 704 | 0.3−        | 0.3+ | 2007 11 19 | 291 | 0.4+        | 1.2+ |
| 2004 09 15 | 704 | 0.7− | 0.3− | 2006 05 27 | 704 | 0.2+        | 1.0+ | 2007 12 03 | D35 | 0.6+        | 0.3− |
| 2004 09 15 | 704 | 0.4+ | 0.4+ | 2006 05 27 | 704 | 0.1−        | 0.6+ | 2007 12 03 | D35 | 0.1+        | 0.0  |
| 2004 09 15 | 704 | 0.9− | 0.4+ | 2006 06 01 | 691 | 0.1+        | 0.4+ | 2007 12 03 | D35 | 0.1+        | 0.1− |
| 2004 09 15 | 704 | 0.0  | 0.3+ | 2006 06 01 | 691 | 0.1−        | 0.1+ | 2007 12 04 | 704 | 0.2−        | 0.0  |
| 2004 09 15 | 704 | 0.3− | 0.0  | 2006 06 01 | 691 | 0.0         | 0.1+ | 2007 12 04 | 704 | 0.4+        | 0.1+ |
| 2004 09 15 | 704 | 0.4− | 0.0  | 2006 06 16 | 691 | 0.1−        | 0.5+ | 2007 12 04 | 704 | 0.4−        | 0.0  |
| 2004 09 15 | 704 | 0.0  | 0.2+ | 2006 06 16 | 691 | 0.2−        | 0.3+ | 2007 12 04 | 704 | 0.1+        | 0.0  |
| 2004 09 15 | 704 | 0.3− | 0.7+ | 2006 06 16 | 691 | 0.3+        | 0.1+ | 2007 12 04 | 704 | 0.2+        | 0.1− |
| 2004 10 04 | 704 | 0.1− | 0.2+ | 2006 06 20 | 703 | 0.6+        | 0.2+ |            |     |             |      |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 09 14 | 704 | 0.3+ | 0.4+ | 2004 09 11 | 704 | 0.0  | 0.6− | 2006 03 30 | 106 | 0.5−  | 1.1−  |
| 1999 09 14 | 704 | 0.1− | 0.6− | 2004 09 11 | 704 | 1.3+ | 0.3− | 2006 04 02 | 703 | 0.1+  | 0.4+  |
| 2001 04 24 | 699 | 1.3− | 0.1− | 2004 09 11 | 704 | 0.6− | 0.5− | 2006 04 02 | 703 | 0.5−  | 0.4+  |
| 2001 04 24 | 699 | 0.6+ | 1.2+ | 2004 09 13 | 704 | 0.3+ | 0.3+ | 2006 04 02 | 703 | 0.5−  | 0.4−  |
| 2001 04 24 | 699 | 0.1− | 0.2+ | 2004 09 13 | 704 | 0.5− | 0.8+ | 2006 04 02 | 703 | 1.0+  | 0.5+  |
| 2001 04 24 | 699 | 1.3− | 0.1− | 2004 09 13 | 704 | 0.3− | 0.1+ | 2006 04 08 | 703 | (1.5− | 3.7−) |
| 2001 06 15 | 699 | 1.0+ | 0.4− | 2004 09 13 | 704 | 0.8− | 1.3+ | 2006 04 08 | 703 | 0.8−  | 1.0+  |
| 2001 06 15 | 699 | 1.0+ | 0.6+ | 2004 09 18 | 704 | 0.1+ | 0.9+ | 2006 04 08 | 703 | 1.4−  | 0.6−  |
| 2001 06 15 | 699 | 1.0+ | 0.1− | 2004 09 18 | 704 | 0.2− | 0.0  | 2006 04 08 | 703 | (0.6− | 1.5−) |
| 2001 06 15 | 699 | 0.5+ | 1.0+ | 2004 09 18 | 704 | 0.2+ | 0.3− | 2007 11 02 | 703 | 0.5+  | 0.8+  |
| 2004 07 13 | 644 | 0.2+ | 0.6+ | 2004 09 18 | 704 | 0.1− | 0.2+ | 2007 11 02 | 703 | 0.0   | 0.5−  |
| 2004 07 13 | 644 | 0.1− | 0.3+ | 2006 02 24 | 699 | 0.1+ | 0.6+ | 2007 11 02 | 703 | 0.5−  | 1.0+  |
| 2004 07 13 | 644 | 0.0  | 0.6+ | 2006 02 24 | 699 | 1.1+ | 0.9− | 2007 11 02 | 703 | 0.6−  | 0.3+  |
| 2004 08 20 | 704 | 0.2− | 0.2+ | 2006 02 24 | 699 | 0.7− | 1.4+ | 2007 11 19 | 703 | 0.4−  | 0.8+  |
| 2004 08 20 | 704 | 0.8+ | 0.2− | 2006 02 24 | 699 | 0.7+ | 0.3+ | 2007 11 19 | 703 | 1.1+  | 0.5+  |
| 2004 08 20 | 704 | 0.2+ | 0.1+ | 2006 02 28 | 704 | 0.9+ | 0.4+ | 2007 11 19 | 703 | 0.6+  | 0.5+  |
| 2004 08 20 | 704 | 0.0  | 0.7− | 2006 02 28 | 704 | 0.8+ | 0.4− | 2007 11 19 | 703 | 0.7−  | 0.5−  |
| 2004 09 08 | 704 | 0.7+ | 0.3− | 2006 02 28 | 704 | 0.2+ | 0.5+ |            |     |       |       |
| 2004 09 08 | 704 | 0.1− | 0.2+ | 2006 02 28 | 704 | 0.8+ | 0.8+ |            |     |       |       |

**(172822)\* 2004 TD<sub>13</sub> = 2001 RZ<sub>15</sub>**

Discovered 2004 Oct. 6 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 73256)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 320.65587  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.35780217 | $\omega$ | 251.79596 | −0.13251157   |
| <i>a</i> | 1.9650521  | $\Omega$ | 207.44808 | +0.98913062   |
| <i>e</i> | 0.0704916  | <i>i</i> | 20.64846  | +0.06372830   |
| <i>P</i> | 2.75       | <i>H</i> | 17.6      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 05 05 | 645 | 0.1+  | 0.2+  | 2004 10 06 | 644 | 0.1− | 0.5+ | 2006 05 03 | 691 | 0.2+  | 0.2+  |
| 2000 05 05 | 645 | 0.1−  | 0.1+  | 2004 10 06 | 644 | 0.1− | 0.5+ | 2006 05 03 | 691 | 0.2+  | 0.0   |
| 2001 09 10 | 704 | (0.3− | 1.5+) | 2004 10 09 | 699 | 0.2+ | 0.0  | 2006 05 20 | G96 | 0.2−  | 0.3−  |
| 2001 09 10 | 704 | (0.4− | 1.7+) | 2004 10 09 | 699 | 0.4+ | 0.0  | 2006 05 20 | G96 | 0.1−  | 0.3−  |
| 2001 09 10 | 704 | 1.1−  | 1.3+  | 2004 10 09 | 699 | 0.1+ | 0.2− | 2006 05 20 | G96 | 0.0   | 0.3−  |
| 2001 09 10 | 704 | (0.6− | 2.1+) | 2004 10 09 | 699 | 0.2− | 0.1− | 2006 05 20 | G96 | 0.1−  | 0.4−  |
| 2001 09 12 | 704 | 0.0   | 1.2+  | 2004 10 10 | 704 | 0.3− | 0.4− | 2006 05 20 | G96 | 0.4−  | 0.0   |
| 2001 09 12 | 704 | 0.5+  | 0.5+  | 2004 10 10 | 704 | 0.2− | 0.3+ | 2006 05 20 | G96 | 0.3−  | 0.2+  |
| 2001 09 12 | 704 | 0.7−  | 0.7+  | 2004 10 10 | 704 | 0.1− | 0.1− | 2006 05 20 | G96 | 0.1−  | 0.1−  |
| 2001 09 12 | 704 | 0.4−  | 0.1−  | 2004 10 10 | 704 | 0.2+ | 0.1+ | 2006 05 20 | G96 | 0.5−  | 0.0   |
| 2003 03 23 | 644 | 0.3+  | 0.4+  | 2004 10 10 | 704 | 0.3− | 0.2+ | 2006 06 16 | 691 | 0.1+  | 0.1−  |
| 2003 03 23 | 644 | 0.4+  | 0.4+  | 2004 10 12 | 704 | 0.4+ | 0.4+ | 2006 06 16 | 691 | 0.2−  | 0.2−  |
| 2003 03 23 | 644 | 0.2+  | 0.3+  | 2004 10 12 | 704 | 0.0  | 0.2+ | 2006 06 16 | 691 | 0.0   | 0.3−  |
| 2004 09 14 | 704 | 0.2−  | 0.2+  | 2004 10 12 | 704 | 0.6− | 0.4+ | 2007 11 20 | 703 | (2.5+ | 0.3+) |
| 2004 09 14 | 704 | (2.4− | 0.8−) | 2004 10 12 | 704 | 0.0  | 0.5+ | 2007 11 20 | 703 | 1.3+  | 0.9+  |
| 2004 09 14 | 644 | 0.1+  | 0.4+  | 2006 03 05 | G96 | 0.1+ | 0.6+ | 2007 11 20 | 703 | 0.2+  | 0.2+  |
| 2004 09 14 | 704 | 0.2+  | 1.1−  | 2006 03 05 | G96 | 0.3− | 0.5+ | 2007 11 20 | 703 | 0.5+  | 0.6+  |
| 2004 09 14 | 704 | 0.6+  | 0.4+  | 2006 03 05 | G96 | 0.3− | 0.1+ | 2007 12 06 | 703 | 0.4−  | 0.9+  |
| 2004 09 14 | 644 | 0.4−  | 0.1+  | 2006 03 05 | G96 | 0.2− | 0.4+ | 2007 12 06 | 703 | 0.6−  | 0.3+  |
| 2004 09 14 | 704 | 0.3+  | 0.4−  | 2006 04 24 | 691 | 0.1+ | 0.4+ | 2007 12 06 | 703 | 0.1−  | 0.5−  |
| 2004 09 14 | 644 | 0.1−  | 0.1−  | 2006 04 24 | 691 | 0.1− | 0.4+ | 2007 12 06 | 703 | 0.4+  | 0.8+  |
| 2004 09 22 | 699 | 1.3+  | 0.2−  | 2006 04 24 | 691 | 0.1+ | 0.3+ | 2007 12 16 | 704 | 1.1−  | 0.3+  |
| 2004 09 22 | 699 | 0.1−  | 0.9+  | 2006 04 29 | 691 | 0.0  | 0.5+ | 2007 12 16 | 704 | 0.5−  | 0.8+  |
| 2004 09 22 | 699 | 0.1−  | 0.5+  | 2006 04 29 | 691 | 0.1− | 0.2+ | 2007 12 16 | 704 | 0.4+  | 0.7+  |
| 2004 09 22 | 699 | 0.2−  | 0.5+  | 2006 04 29 | 691 | 0.0  | 0.3+ |            |     |       |       |
| 2004 10 06 | 644 | 0.2−  | 0.2+  | 2006 05 03 | 691 | 0.1+ | 0.1+ |            |     |       |       |

**(172823)\* 2004 TL<sub>183</sub>**

Discovered 2004 Oct. 7 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 140.52085  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.30789565 | $\omega$ | 241.67574 | −0.78593347   |
| <i>a</i> | 2.1720360  | $\Omega$ | 336.46372 | −0.54535953   |
| <i>e</i> | 0.0715531  | <i>i</i> | 3.28143   | −0.29136157   |
| <i>P</i> | 3.20       | <i>H</i> | 16.9      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 17 | 291 | 0.2+ | 0.1+ | 2006 02 07 | G96 | 0.0  | 0.3− | 2006 03 29 | 691 | 0.3+  | 0.0   |
| 2001 10 17 | 291 | 0.4+ | 0.2+ | 2006 02 07 | G96 | 0.1+ | 0.5− | 2006 03 29 | 691 | 0.2+  | 0.1+  |
| 2001 10 17 | 291 | 0.1+ | 0.2+ | 2006 02 07 | G96 | 0.2+ | 0.2− | 2006 03 29 | 691 | 0.3+  | 0.0   |
| 2003 05 01 | 704 | 0.4+ | 0.4+ | 2006 02 07 | G96 | 0.2+ | 0.3− | 2006 04 02 | G96 | 0.1+  | 0.0   |
| 2003 05 01 | 704 | 0.4+ | 0.9+ | 2006 02 20 | 703 | 0.2− | 0.5− | 2006 04 02 | G96 | 0.1+  | 0.1−  |
| 2003 05 01 | 704 | 0.1+ | 1.1+ | 2006 02 20 | 703 | 0.1+ | 0.2+ | 2006 04 02 | G96 | 0.1+  | 0.0   |
| 2003 05 01 | 704 | 0.2+ | 1.0+ | 2006 02 20 | 703 | 1.1− | 0.5+ | 2006 04 07 | G96 | 0.5−  | 0.1+  |
| 2003 05 01 | 704 | 0.2+ | 0.1+ | 2006 02 20 | 703 | 0.3+ | 0.5+ | 2006 04 07 | G96 | 0.1−  | 0.2+  |
| 2003 05 01 | 704 | 0.7+ | 0.9+ | 2006 02 22 | 703 | 0.1− | 0.1− | 2006 04 07 | G96 | 0.1−  | 0.2+  |
| 2004 09 10 | 691 | 0.3− | 0.2+ | 2006 02 22 | 703 | 1.0− | 1.2− | 2006 04 07 | G96 | 0.3−  | 0.3+  |
| 2004 09 10 | 691 | 0.1− | 0.2+ | 2006 02 22 | 703 | 0.1− | 0.1− | 2007 09 12 | G96 | 0.1−  | 0.1+  |
| 2004 09 10 | 691 | 0.0  | 0.0  | 2006 02 22 | 703 | 0.2+ | 0.1− | 2007 09 12 | G96 | 0.4+  | 0.1−  |
| 2004 10 07 | 691 | 0.5− | 0.2+ | 2006 02 24 | 691 | 0.1+ | 0.1+ | 2007 09 12 | G96 | 0.1−  | 0.0   |
| 2004 10 07 | 691 | 0.2− | 0.1+ | 2006 02 24 | 691 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.0   | 0.1−  |
| 2004 10 07 | 691 | 0.2− | 0.0  | 2006 02 24 | 691 | 0.0  | 0.4+ | 2007 09 14 | 699 | (2.0+ | 0.1−) |
| 2004 10 10 | 704 | 0.5+ | 0.7+ | 2006 02 24 | G96 | 0.2+ | 0.1+ | 2007 09 14 | 699 | 0.8+  | 0.1+  |
| 2004 10 10 | 704 | 0.5− | 0.8− | 2006 02 24 | G96 | 0.1+ | 0.1+ | 2007 09 14 | 699 | 0.2−  | 0.1+  |
| 2004 10 10 | 704 | 0.1− | 0.3+ | 2006 02 24 | G96 | 0.1− | 0.1+ | 2007 09 14 | 699 | (0.3− | 1.7+) |
| 2004 10 10 | 704 | 0.3− | 0.2+ | 2006 02 24 | G96 | 0.3+ | 0.0  | 2007 09 15 | G96 | 0.0   | 0.2+  |
| 2004 10 11 | 691 | 0.1− | 0.2+ | 2006 03 02 | 691 | 0.1+ | 0.3+ | 2007 09 15 | G96 | 0.2+  | 0.1+  |
| 2004 10 11 | 691 | 0.0  | 0.2+ | 2006 03 02 | 691 | 0.2+ | 0.3+ | 2007 09 15 | G96 | 0.4−  | 0.1−  |
| 2004 10 11 | 691 | 0.2− | 0.2+ | 2006 03 02 | 691 | 0.7− | 0.6− | 2007 09 15 | G96 | 0.2+  | 0.0   |
| 2004 10 21 | 704 | 0.8− | 0.4+ | 2006 03 09 | 699 | 1.1+ | 0.9+ | 2007 09 19 | A77 | 0.4+  | 0.5+  |
| 2004 10 21 | 704 | 0.8− | 0.6+ | 2006 03 09 | 691 | 0.2+ | 0.1+ | 2007 09 19 | A77 | 0.0   | 0.5+  |
| 2004 10 21 | 704 | 1.0− | 0.5+ | 2006 03 09 | 691 | 0.1+ | 0.4+ | 2007 09 19 | A77 | 0.1+  | 0.5+  |
| 2006 01 23 | G96 | 0.1+ | 0.5− | 2006 03 09 | 699 | 0.2− | 0.1− | 2007 09 20 | A77 | 0.1+  | 1.0+  |
| 2006 01 23 | G96 | 0.4− | 0.0  | 2006 03 09 | 691 | 0.2+ | 0.3+ | 2007 09 20 | A77 | 0.2+  | 0.9+  |
| 2006 01 23 | G96 | 0.3− | 0.4− | 2006 03 09 | 699 | 0.7+ | 0.1+ | 2007 09 20 | A77 | 0.5+  | 0.8+  |
| 2006 01 23 | G96 | 0.2− | 0.3− | 2006 03 09 | 699 | 0.4+ | 0.0  | 2007 10 19 | G96 | 0.2+  | 0.0   |
| 2006 02 03 | G96 | 0.0  | 0.3− | 2006 03 23 | 704 | 0.1− | 1.2+ | 2007 10 19 | G96 | 0.2−  | 0.3−  |
| 2006 02 03 | G96 | 0.2− | 0.5− | 2006 03 23 | 704 | 1.2+ | 0.6+ | 2007 10 19 | G96 | 0.0   | 0.1−  |
| 2006 02 03 | G96 | 0.6+ | 0.2− | 2006 03 23 | 703 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.0   | 0.0   |
| 2006 02 03 | G96 | 0.2+ | 0.1+ | 2006 03 23 | 704 | 0.1+ | 0.5+ | 2007 12 06 | G96 | 0.3−  | 0.4−  |
| 2006 02 06 | 703 | 1.4− | 0.1− | 2006 03 23 | 703 | 0.3− | 0.2+ | 2007 12 06 | G96 | 0.0   | 0.9+  |
| 2006 02 06 | 703 | 0.1+ | 0.9− | 2006 03 23 | 704 | 1.2+ | 1.5+ | 2007 12 06 | G96 | 0.2−  | 0.0   |
| 2006 02 06 | 703 | 0.7− | 0.3+ | 2006 03 23 | 703 | 1.3− | 0.4+ | 2007 12 06 | G96 | 0.5−  | 0.7−  |
| 2006 02 06 | 703 | 1.4− | 0.4− | 2006 03 23 | 703 | 0.5+ | 0.2− |            |     |       |       |

**(172824)\* 2004 XA = 2001 VL<sub>78</sub>**

Discovered 2004 Dec. 1 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 73581)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 315.15465  | (2000.0) | <b>P</b>  | <b>Q</b>      |
|----------|------------|----------|-----------|---------------|
| <i>n</i> | 0.36345973 | $\omega$ | 237.54580 | −0.77925298   |
| <i>a</i> | 1.9446070  | $\Omega$ | 270.55934 | +0.61903018   |
| <i>e</i> | 0.0409940  | <i>i</i> | 23.46302  | −0.09780808   |
| <i>P</i> | 2.71       | <i>H</i> | 16.1      | <i>G</i> 0.15 |
|          |            |          |           | <i>U</i> 2    |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |             |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|-------------|
| 2001 09 26 | 704 | 0.2+        | 0.3+ | 2004 12 02 | 704 | 0.8− | 0.2+ | 2005 02 02 | 704 | (0.9+ 2.0−) |
| 2001 09 26 | 704 | 0.1+        | 0.5− | 2004 12 02 | 704 | 0.2− | 0.1− | 2005 02 02 | 704 | 0.4+ 0.2−   |
| 2001 09 26 | 704 | 0.2−        | 0.5− | 2004 12 02 | 704 | 0.4+ | 0.5+ | 2005 02 02 | 704 | 0.8+ 0.5+   |
| 2001 09 26 | 704 | 0.3−        | 0.2− | 2004 12 02 | 785 | 0.9+ | 0.7− | 2005 02 06 | 644 | 0.3+ 0.2−   |
| 2001 09 26 | 704 | 0.9−        | 1.0− | 2004 12 02 | 704 | 1.0− | 0.6+ | 2005 02 06 | 644 | 0.2+ 0.2−   |
| 2001 11 12 | 704 | 0.4+        | 0.2+ | 2004 12 02 | 704 | 0.4− | 0.2+ | 2005 02 06 | 644 | 0.3+ 0.2−   |
| 2001 11 12 | 704 | (2.3− 1.2+) |      | 2004 12 02 | 704 | 0.4+ | 0.3+ | 2006 05 04 | G96 | 0.2− 0.1+   |

2007 DEC. 24

M.P.O. 129489

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 12 | 704 | 1.4+  | 0.6+  | 2004 12 02 | 704 | (0.1+ | 1.6-) | 2006 05 04 | G96 | 0.2+  | 0.5-  |
| 2001 11 12 | 704 | 0.4+  | 0.6+  | 2004 12 02 | G72 | 0.0   | 0.7+  | 2006 05 30 | G96 | 0.4-  | 0.2+  |
| 2001 11 18 | 704 | 0.5+  | 1.0-  | 2004 12 02 | G72 | (2.0- | 2.2+) | 2006 05 30 | G96 | (2.0- | 0.2+) |
| 2001 11 18 | 704 | 0.1-  | 0.4-  | 2004 12 02 | G72 | 0.6+  | 0.6+  | 2006 05 30 | G96 | 0.5-  | 0.2+  |
| 2001 11 18 | 704 | 0.6-  | 0.9-  | 2004 12 02 | G72 | 0.3+  | 0.6-  | 2006 06 11 | 644 | 0.7+  | 0.7+  |
| 2001 11 18 | 704 | 0.0   | 1.4-  | 2004 12 02 | G72 | (2.2+ | 0.8+) | 2006 06 11 | 644 | 0.4-  | 0.1+  |
| 2004 12 01 | 704 | 0.4-  | 0.5-  | 2004 12 02 | 448 | 0.8-  | 0.3-  | 2006 06 11 | 644 | 0.8-  | 0.3-  |
| 2004 12 01 | 704 | 0.2-  | 0.4-  | 2004 12 02 | 448 | 0.6-  | 0.0   | 2006 06 21 | 704 | 0.3+  | 0.3+  |
| 2004 12 01 | 704 | 0.3-  | 0.4+  | 2004 12 02 | 448 | 0.1-  | 0.4-  | 2006 06 21 | 704 | 0.1-  | 0.8+  |
| 2004 12 01 | 704 | 0.7-  | 0.1+  | 2004 12 15 | 704 | 0.1-  | 1.0-  | 2006 06 21 | 704 | 0.2+  | 0.5-  |
| 2004 12 01 | 704 | 0.3-  | 0.1+  | 2004 12 15 | 704 | 0.9+  | 0.5-  | 2006 06 21 | 704 | 0.2+  | 0.4+  |
| 2004 12 01 | 703 | (1.9- | 0.9+) | 2004 12 15 | 704 | 1.0+  | 0.6-  | 2007 09 18 | G96 | 0.5-  | 0.2-  |
| 2004 12 01 | 703 | (2.0- | 1.4+) | 2004 12 15 | 704 | 0.7+  | 0.5-  | 2007 09 18 | G96 | 0.1-  | 0.1-  |
| 2004 12 01 | J95 | 1.2+  | 0.3-  | 2004 12 15 | 704 | 1.2+  | 0.0   | 2007 09 18 | G96 | 0.3-  | 0.1+  |
| 2004 12 01 | J95 | 0.5+  | 0.2+  | 2004 12 17 | 704 | 0.2+  | 0.3+  | 2007 09 18 | G96 | 0.2+  | 0.1-  |
| 2004 12 01 | J95 | 0.6-  | 0.1+  | 2004 12 17 | 704 | 0.1+  | 0.7+  | 2007 10 11 | 704 | 0.3+  | 1.4+  |
| 2004 12 02 | 673 | 0.2-  | 0.3+  | 2004 12 17 | 704 | 0.1-  | 0.8+  | 2007 10 11 | 704 | 0.4+  | 0.2+  |
| 2004 12 02 | 673 | 0.2-  | 0.0   | 2004 12 17 | 704 | 0.2+  | 0.2+  | 2007 10 11 | 704 | (0.8+ | 1.7+) |
| 2004 12 02 | 673 | 0.1+  | 0.4+  | 2004 12 17 | 704 | 0.1+  | 0.5+  | 2007 10 26 | G96 | 0.1+  | 0.0   |
| 2004 12 02 | 673 | 0.4+  | 0.5-  | 2005 01 06 | 704 | 0.5-  | 0.3+  | 2007 10 26 | G96 | 0.2-  | 0.2-  |
| 2004 12 02 | 854 | (5.2- | 3.4+) | 2005 01 06 | 704 | 0.2-  | 0.5+  | 2007 10 26 | G96 | 0.1+  | 0.2-  |
| 2004 12 02 | 854 | 0.3+  | 0.3+  | 2005 01 06 | 704 | 0.9-  | 0.1+  | 2007 10 26 | G96 | 0.0   | 0.3-  |
| 2004 12 02 | 854 | 0.3+  | 0.4+  | 2005 01 06 | 704 | 0.5-  | 0.4+  | 2007 11 12 | 704 | 0.5-  | 1.1-  |
| 2004 12 02 | 704 | 0.1-  | 0.2-  | 2005 01 06 | 704 | 0.0   | 1.0+  | 2007 11 12 | 704 | 0.2-  | 1.1-  |
| 2004 12 02 | 704 | 0.6-  | 0.2+  | 2005 01 07 | 608 | 0.2-  | 0.2-  | 2007 11 12 | 704 | 0.0   | 0.0   |
| 2004 12 02 | 785 | 0.3-  | 1.1+  | 2005 01 07 | 608 | 0.2-  | 0.3+  | 2007 11 12 | 704 | 0.9+  | 0.2+  |
| 2004 12 02 | 704 | 0.3-  | 0.2+  | 2005 01 07 | 608 | 0.3-  | 0.1-  | 2007 11 12 | 704 | 0.1-  | 0.4-  |
| 2004 12 02 | 704 | 0.3+  | 0.1+  | 2005 02 01 | 703 | 0.4-  | 1.0-  | 2007 12 05 | 703 | 0.8-  | 0.2-  |
| 2004 12 02 | 704 | 0.0   | 0.1-  | 2005 02 01 | 703 | 0.8-  | 0.8-  | 2007 12 05 | 703 | 1.9-  | 0.2+  |
| 2004 12 02 | 785 | 0.1+  | 0.4+  | 2005 02 01 | 703 | 0.4-  | 0.7-  | 2007 12 05 | 703 | 0.8-  | 0.3-  |
| 2004 12 02 | 704 | 0.7-  | 1.0+  | 2005 02 01 | 703 | 0.6-  | 0.9-  | 2007 12 05 | 703 | 0.2+  | 0.2+  |
| 2004 12 02 | 704 | 0.8-  | 0.2+  | 2005 02 02 | 704 | 1.1+  | 0.4+  |            |     |       |       |
| 2004 12 02 | 704 | 0.1+  | 0.4+  | 2005 02 02 | 704 | 0.2-  | 0.0   |            |     |       |       |

(172825)\* 2004 YH<sub>14</sub>

Discovered 2004 Dec. 18 by the Mt. Lemmon Survey at Mount Lemmon.

|          |                |                    |           |             |             |
|----------|----------------|--------------------|-----------|-------------|-------------|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 | MPG       |             |             |
| <i>M</i> | 29.08977       | (2000.0)           | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.29971522     | $\omega$           | 76.38859  | +0.97393453 | -0.22534143 |
| <i>a</i> | 2.2113807      | $\Omega$           | 296.62915 | +0.19527963 | +0.89114616 |
| <i>e</i> | 0.1507832      | <i>i</i>           | 1.66270   | +0.11540100 | +0.39380167 |
| <i>P</i> | 3.29           | <i>H</i>           | 17.4      | <i>G</i>    | 0.15        |
|          |                |                    |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 03 | 691 | 0.1+ | 0.1+ | 2006 05 05 | 691 | 0.7- | 0.9- | 2007 11 13 | 691 | 0.4- | 1.2- |
| 2000 09 03 | 691 | 0.1- | 0.0  | 2006 05 05 | 691 | 0.3- | 0.2+ | 2007 11 13 | 699 | 0.2+ | 1.1- |
| 2000 09 03 | 691 | 0.1- | 0.0  | 2006 06 02 | 691 | 0.0  | 0.2+ | 2007 11 13 | 691 | 0.3- | 0.1+ |
| 2002 02 20 | 691 | 0.1+ | 0.2+ | 2006 06 02 | 691 | 0.1+ | 0.3+ | 2007 11 13 | 699 | 1.4+ | 1.3- |
| 2002 02 20 | 691 | 0.2+ | 0.4+ | 2006 06 02 | 691 | 1.1+ | 0.5+ | 2007 11 13 | 699 | 0.5- | 0.3+ |
| 2002 02 20 | 691 | 0.3+ | 0.4+ | 2007 07 19 | G96 | 1.0+ | 0.4+ | 2007 11 15 | 704 | 0.6- | 0.8+ |
| 2004 12 15 | 599 | 0.5+ | 0.1+ | 2007 07 19 | G96 | 0.6+ | 0.2- | 2007 11 15 | 704 | 0.5+ | 1.0+ |
| 2004 12 15 | 599 | 0.1- | 0.2- | 2007 07 19 | G96 | 0.7+ | 0.1- | 2007 11 15 | 704 | 0.1- | 0.9+ |
| 2004 12 18 | G96 | 0.0  | 0.4- | 2007 07 19 | G96 | 0.3+ | 0.0  | 2007 11 15 | 704 | 0.6+ | 0.9+ |
| 2004 12 18 | G96 | 0.9- | 0.7- | 2007 08 24 | 691 | 0.2+ | 0.3+ | 2007 11 15 | 704 | 0.7+ | 1.5+ |
| 2004 12 18 | G96 | 0.6- | 0.2+ | 2007 08 24 | 691 | 0.4- | 0.2+ | 2007 11 17 | 691 | 0.1- | 0.1+ |
| 2004 12 18 | G96 | 0.1- | 0.2+ | 2007 08 24 | 691 | 0.1- | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.1+ |
| 2004 12 19 | G96 | 0.3- | 0.4- | 2007 11 01 | 691 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.1+ | 0.0  |
| 2004 12 19 | G96 | 0.1- | 0.6- | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 04 | 699 | 0.2+ | 0.3- |
| 2004 12 19 | G96 | 0.3- | 0.0  | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 12 04 | 699 | 0.0  | 0.6+ |
| 2004 12 19 | G96 | 0.3- | 0.4- | 2007 11 05 | 691 | 0.2- | 0.2- | 2007 12 04 | 699 | 0.6- | 0.0  |
| 2005 01 15 | 704 | 0.4+ | 0.4+ | 2007 11 05 | 691 | 0.5- | 0.0  | 2007 12 04 | 699 | 0.2- | 1.0+ |
| 2005 01 15 | 704 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 12 10 | 704 | 0.1+ | 0.9+ |
| 2005 01 15 | 704 | 0.2- | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.3+ | 2007 12 10 | 704 | 0.6+ | 1.0+ |
| 2005 01 16 | 691 | 0.0  | 0.2- | 2007 11 09 | 691 | 0.2- | 0.0  | 2007 12 10 | 704 | 0.9+ | 0.4+ |
| 2005 01 16 | 691 | 0.2+ | 0.1- | 2007 11 09 | 691 | 0.3- | 0.0  | 2007 12 14 | 704 | 0.4+ | 0.3+ |
| 2005 01 16 | 691 | 0.0  | 0.3- | 2007 11 13 | A77 | 1.0+ | 0.2- | 2007 12 14 | 704 | 0.5+ | 0.0  |
| 2006 05 01 | 691 | 0.3+ | 0.0  | 2007 11 13 | A77 | 0.3+ | 0.6+ | 2007 12 14 | 704 | 0.6+ | 0.5- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 01 | 691 | 0.1+ | 0.1- | 2007 11 13 | A77 | 0.1+ | 0.3+ | 2007 12 14 | 704 | 0.0  | 0.2+ |
| 2006 05 01 | 691 | 0.3- | 0.6+ | 2007 11 13 | 699 | 0.5+ | 0.5+ | 2007 12 14 | 704 | 0.2+ | 0.1- |
| 2006 05 05 | 691 | 0.3- | 0.3- | 2007 11 13 | 691 | 0.1- | 0.0  |            |     |      |      |

(172826)\* 2004 YL<sub>31</sub> = 2007 TR<sub>146</sub>

Discovered 2004 Dec. 19 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 128152)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 69.02550   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.30269108 | $\omega$ | 282.94611 | +0.57296181  | +0.81904566  |
| $a$ | 2.1968630  | $\Omega$ | 22.09069  | -0.71807915  | +0.51911060  |
| $e$ | 0.2354911  | $i$      | 4.52157   | -0.39506595  | +0.24431207  |
| $P$ | 3.26       | $H$      | 16.3      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 21 | 645 | 0.1-  | 0.1-  | 2007 09 10 | G96 | 0.2+  | 0.1-  | 2007 11 02 | G96 | 0.2+  | 0.1-  |
| 2001 11 21 | 645 | 0.1-  | 0.2-  | 2007 10 06 | 704 | 0.5+  | 0.7+  | 2007 11 02 | G96 | 0.1+  | 0.1-  |
| 2003 03 07 | 291 | 0.1+  | 0.7+  | 2007 10 06 | 704 | 0.0   | 0.3-  | 2007 11 02 | G96 | 0.2+  | 0.2+  |
| 2003 03 07 | 291 | 0.1-  | 0.5+  | 2007 10 06 | 704 | 0.4-  | 0.6+  | 2007 11 03 | 691 | 0.1-  | 0.1-  |
| 2003 03 07 | 291 | 0.4+  | 0.7+  | 2007 10 06 | 704 | 0.4+  | 0.6+  | 2007 11 03 | 691 | 0.3-  | 0.0   |
| 2003 03 27 | 699 | 0.3+  | 0.4+  | 2007 10 06 | 704 | 0.2-  | 0.1+  | 2007 11 03 | 691 | 0.2-  | 0.0   |
| 2003 03 27 | 699 | 1.0+  | 0.2+  | 2007 10 07 | 691 | 0.3-  | 0.3+  | 2007 11 06 | 704 | 0.3+  | 0.7+  |
| 2003 03 27 | 699 | 0.0   | 0.3+  | 2007 10 07 | 691 | 0.4-  | 0.1+  | 2007 11 06 | 704 | (0.2- | 1.8+) |
| 2003 03 27 | 699 | 1.3+  | 0.7+  | 2007 10 07 | 691 | 0.5-  | 0.0   | 2007 11 06 | 704 | 0.2+  | 1.4+  |
| 2003 04 24 | 699 | 0.0   | 0.5+  | 2007 10 07 | 699 | 0.2+  | 0.6+  | 2007 11 06 | 704 | 0.8-  | 0.2+  |
| 2003 04 24 | 699 | 0.1-  | 0.6+  | 2007 10 07 | 699 | 0.1+  | 0.3+  | 2007 11 06 | 704 | (1.7- | 0.4-) |
| 2003 04 24 | 699 | 0.6+  | 0.4-  | 2007 10 07 | 699 | 0.2-  | 1.3+  | 2007 11 07 | 703 | 0.4-  | 0.3+  |
| 2003 04 24 | 699 | 0.7+  | 0.4-  | 2007 10 07 | 699 | 0.8-  | 0.5+  | 2007 11 07 | 703 | 0.6+  | 0.6+  |
| 2003 04 24 | 608 | 1.1+  | 1.3+  | 2007 10 11 | 704 | 0.2-  | 0.4+  | 2007 11 07 | 703 | 0.7+  | 0.6-  |
| 2003 04 24 | 608 | (1.4+ | 2.2+) | 2007 10 11 | 704 | 0.1-  | 0.2-  | 2007 11 07 | 703 | 0.3-  | 0.1-  |
| 2003 04 24 | 608 | (1.7+ | 1.4+) | 2007 10 11 | 704 | 0.1+  | 0.1+  | 2007 11 07 | 703 | 0.2-  | 0.3+  |
| 2003 05 06 | 691 | 0.1-  | 0.3+  | 2007 10 11 | 704 | 0.2+  | 0.1+  | 2007 11 07 | 703 | 0.1+  | 0.5+  |
| 2003 05 06 | 691 | 0.1-  | 0.5+  | 2007 10 11 | 704 | 0.5-  | 0.1-  | 2007 11 07 | 703 | 0.2-  | 0.7+  |
| 2003 05 06 | 691 | 0.2+  | 0.3+  | 2007 10 11 | 691 | 0.1-  | 0.2+  | 2007 11 07 | 703 | 0.4+  | 0.6+  |
| 2003 06 16 | 644 | 0.6+  | 0.7+  | 2007 10 11 | 691 | 0.2-  | 0.2+  | 2007 11 08 | 704 | 0.5+  | 1.1+  |
| 2003 06 16 | 644 | 0.6+  | 0.7+  | 2007 10 11 | 691 | 0.1-  | 0.3+  | 2007 11 08 | 704 | 0.6-  | 0.6+  |
| 2003 06 16 | 644 | 0.7+  | 0.9+  | 2007 10 15 | 703 | 0.3-  | 0.6-  | 2007 11 08 | 704 | 0.9-  | 0.2+  |
| 2004 11 20 | 691 | 0.2+  | 0.0   | 2007 10 15 | 703 | 0.3-  | 0.0   | 2007 11 08 | 704 | 0.6-  | 0.5+  |
| 2004 11 20 | 691 | 0.2+  | 0.1+  | 2007 10 15 | 703 | 0.2-  | 0.5-  | 2007 11 08 | 704 | 0.7-  | 0.4+  |
| 2004 11 20 | 691 | 0.1+  | 0.0   | 2007 10 15 | 703 | 0.6-  | 0.4+  | 2007 11 11 | 699 | 0.3-  | 0.1+  |
| 2004 12 19 | 691 | 0.2+  | 0.2-  | 2007 10 15 | 691 | 0.3-  | 0.0   | 2007 11 11 | 699 | 0.2+  | 0.1-  |
| 2004 12 19 | 691 | 0.1+  | 0.3-  | 2007 10 15 | 691 | 0.2-  | 0.2+  | 2007 11 11 | 699 | 0.3-  | 0.1-  |
| 2004 12 19 | 691 | 0.3+  | 0.1-  | 2007 10 15 | 691 | 0.3-  | 0.1-  | 2007 11 11 | 699 | 0.4-  | 0.3-  |
| 2004 12 20 | 691 | 0.0   | 0.1-  | 2007 10 18 | 699 | 0.9+  | 0.1+  | 2007 11 18 | 704 | 0.2+  | 0.9+  |
| 2004 12 20 | 691 | 0.1-  | 0.1-  | 2007 10 18 | 699 | 0.2-  | 0.7-  | 2007 11 18 | 704 | 0.5+  | 0.7+  |
| 2004 12 20 | 691 | 0.0   | 0.0   | 2007 10 18 | 699 | 0.5-  | 0.1-  | 2007 11 18 | 704 | 0.7+  | 0.6+  |
| 2006 02 22 | 703 | 0.9-  | 1.2+  | 2007 10 18 | 699 | 0.2+  | 0.1-  | 2007 11 18 | 704 | 0.4-  | 0.9+  |
| 2006 02 22 | 703 | 0.3+  | 0.3-  | 2007 10 19 | 691 | 0.7-  | 0.0   | 2007 11 18 | 704 | 0.7+  | 0.6+  |
| 2006 02 22 | 703 | (0.2+ | 1.7+) | 2007 10 19 | 691 | 0.2+  | 0.0   | 2007 11 20 | 704 | 1.4+  | 0.7+  |
| 2006 02 22 | 703 | 0.4-  | 0.2+  | 2007 10 19 | 691 | 0.2-  | 0.1-  | 2007 11 20 | 704 | 0.4-  | 0.8+  |
| 2006 03 04 | G96 | 0.1+  | 0.3+  | 2007 10 20 | 703 | 0.2+  | 0.1+  | 2007 11 20 | 704 | 1.0-  | 0.3+  |
| 2006 03 04 | G96 | 0.3+  | 0.4+  | 2007 10 20 | 703 | 0.8+  | 0.3+  | 2007 11 20 | 704 | 0.5-  | 0.4-  |
| 2006 03 04 | G96 | 0.3-  | 0.3+  | 2007 10 20 | 703 | 0.1+  | 0.2+  | 2007 11 20 | 704 | 0.5-  | 0.2+  |
| 2006 03 04 | G96 | 0.3+  | 0.4+  | 2007 10 20 | 703 | 0.3-  | 0.0   | 2007 12 03 | 703 | 0.2+  | 0.0   |
| 2006 03 23 | 703 | 1.1+  | 0.4+  | 2007 10 30 | 703 | (1.5+ | 1.5+) | 2007 12 03 | 703 | 1.2+  | 0.5+  |
| 2006 03 23 | 703 | (1.6+ | 0.6+) | 2007 10 30 | 703 | 1.0+  | 1.2+  | 2007 12 03 | 703 | 0.6+  | 0.3+  |
| 2006 03 23 | 703 | 0.0   | 0.6-  | 2007 10 30 | 703 | (0.7+ | 1.7+) | 2007 12 03 | 703 | 1.6+  | 0.5-  |
| 2006 03 23 | 703 | 0.3+  | 0.1-  | 2007 11 01 | 704 | 0.6+  | 0.4+  | 2007 12 05 | 699 | 0.6+  | 0.6-  |
| 2007 09 10 | G96 | 0.2+  | 0.2-  | 2007 11 01 | 704 | 0.3-  | 1.1+  | 2007 12 05 | 699 | 0.5+  | 0.1+  |
| 2007 09 10 | G96 | 0.1+  | 0.0   | 2007 11 01 | 704 | 0.1+  | 0.4+  | 2007 12 05 | 699 | 0.8+  | 0.0   |
| 2007 09 10 | G96 | 0.5+  | 0.0   | 2007 11 02 | G96 | 0.3+  | 0.2-  | 2007 12 05 | 699 | 0.3-  | 0.5+  |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.00113  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29848885 | $\omega$ | 122.01024 | +0.51129941 | -0.85414322 |
| <i>a</i> | 2.2174337  | $\Omega$ | 296.95231 | +0.74819884 | +0.49676144 |
| <i>e</i> | 0.1354500  | <i>i</i> | 6.11363   | +0.42281369 | +0.15384222 |
| <i>P</i> | 3.30       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 02 29 | 809 | 1.2-  | 0.9-  | 2005 01 17 | 704 | 0.6+  | 0.0   | 2007 11 03 | 704 | 0.8-  | 0.1+  |
| 2000 09 27 | 691 | 0.1+  | 0.0   | 2005 01 17 | 704 | 0.1+  | 0.0   | 2007 11 08 | 704 | 0.0   | 0.9+  |
| 2000 09 27 | 691 | 0.0   | 0.1-  | 2005 01 17 | 704 | 0.3+  | 0.2-  | 2007 11 08 | 704 | 0.2+  | 0.6+  |
| 2000 09 27 | 691 | 0.2+  | 0.0   | 2005 01 17 | 704 | 0.1-  | 0.1-  | 2007 11 08 | 704 | 0.1+  | 0.5+  |
| 2002 03 06 | 644 | 0.2+  | 0.5+  | 2005 01 19 | 704 | 0.1-  | 0.2-  | 2007 11 08 | 704 | 0.4+  | 0.2+  |
| 2002 03 06 | 644 | 0.2+  | 0.6+  | 2005 01 19 | 704 | 0.1-  | 0.4-  | 2007 11 08 | 704 | 0.1+  | 0.7+  |
| 2002 03 06 | 644 | 0.3-  | 0.1-  | 2005 01 19 | 704 | 0.3-  | 0.4+  | 2007 11 08 | 703 | 0.7+  | 0.2-  |
| 2002 03 14 | 644 | 0.4+  | 0.0   | 2005 01 19 | 704 | 0.1-  | 0.5-  | 2007 11 08 | 703 | 0.4+  | 0.5+  |
| 2002 03 14 | 644 | 0.3+  | 0.3+  | 2005 01 19 | 704 | 0.5+  | 0.4-  | 2007 11 08 | 703 | (1.8+ | 1.0+) |
| 2002 03 14 | 644 | 0.3+  | 1.4+  | 2005 01 20 | 704 | 0.7+  | 0.3+  | 2007 11 08 | 703 | (0.4- | 1.7+) |
| 2002 03 17 | 608 | 0.9-  | 0.4+  | 2005 01 20 | 704 | (1.2+ | 3.0-) | 2007 11 11 | 704 | 0.9-  | 0.6+  |
| 2002 04 04 | 608 | 0.4-  | 0.8+  | 2005 01 20 | 704 | (0.8+ | 2.2-) | 2007 11 11 | 704 | 0.5-  | 0.6+  |
| 2002 04 05 | 644 | 0.2-  | 0.4-  | 2005 01 20 | 704 | (1.5+ | 2.5-) | 2007 11 11 | 704 | 0.5+  | 0.1+  |
| 2002 04 05 | 644 | 0.5+  | 0.1-  | 2005 02 01 | 703 | 0.3+  | 0.3-  | 2007 11 11 | 704 | 0.6-  | 0.0   |
| 2005 01 01 | 703 | 1.2-  | 0.6-  | 2005 02 01 | 703 | 0.3-  | 0.1-  | 2007 11 12 | 704 | 0.4-  | 0.2-  |
| 2005 01 01 | 703 | (0.8- | 1.7-) | 2005 02 01 | 703 | 0.4-  | 0.2-  | 2007 11 12 | 704 | 0.6-  | 0.4-  |
| 2005 01 01 | 703 | 0.5-  | 1.0-  | 2005 02 01 | 703 | 0.2-  | 0.7-  | 2007 11 12 | 704 | 0.3-  | 0.9-  |
| 2005 01 01 | 703 | (0.5- | 2.3-) | 2005 02 02 | 704 | 1.1+  | 1.4+  | 2007 11 12 | 704 | 0.1-  | 0.1+  |
| 2005 01 06 | 704 | 0.0   | 1.2-  | 2005 02 02 | 704 | 1.3+  | 0.0   | 2007 11 12 | 704 | 0.0   | 0.5+  |
| 2005 01 06 | 704 | 0.5-  | 0.6-  | 2005 02 02 | 704 | 1.4+  | 0.3-  | 2007 11 15 | G96 | 0.1-  | 0.6-  |
| 2005 01 06 | 704 | 0.3-  | 0.3-  | 2005 02 02 | 704 | (0.3+ | 1.6+) | 2007 11 15 | G96 | 0.3-  | 0.7-  |
| 2005 01 06 | 704 | 0.3-  | 0.2-  | 2005 03 13 | G96 | 0.4-  | 0.2-  | 2007 11 15 | G96 | 0.1+  | 0.6-  |
| 2005 01 11 | 704 | 1.4+  | 0.2+  | 2005 03 13 | G96 | 0.4-  | 0.4-  | 2007 11 15 | G96 | 0.1+  | 0.6-  |
| 2005 01 11 | 704 | 1.2+  | 0.1-  | 2005 03 13 | G96 | 0.2-  | 0.6-  | 2007 11 17 | 704 | 0.1+  | 0.3+  |
| 2005 01 11 | 704 | (2.5+ | 2.7-) | 2005 03 13 | G96 | 0.2-  | 0.6-  | 2007 11 17 | 704 | 0.0   | 0.1+  |
| 2005 01 11 | 704 | 0.1-  | 0.4-  | 2007 10 12 | 699 | 0.1-  | 1.1-  | 2007 11 17 | 704 | 0.1+  | 0.5+  |
| 2005 01 13 | 691 | 0.2-  | 0.1+  | 2007 10 12 | 699 | 0.4-  | 0.4+  | 2007 11 17 | 704 | 0.4-  | 0.7+  |
| 2005 01 13 | 691 | 0.4-  | 0.1-  | 2007 10 12 | 699 | 0.6+  | 0.1-  | 2007 11 17 | 704 | 0.2-  | 0.8+  |
| 2005 01 13 | 691 | 0.1-  | 0.0   | 2007 10 12 | 699 | 0.2+  | 0.3-  | 2007 12 04 | G96 | 0.3-  | 0.6-  |
| 2005 01 13 | 699 | (0.6+ | 2.5+) | 2007 11 02 | 703 | 0.6+  | 0.1+  | 2007 12 04 | G96 | 0.5-  | 0.6-  |
| 2005 01 13 | 699 | (1.8+ | 3.2+) | 2007 11 02 | 703 | 0.3+  | 0.1-  | 2007 12 04 | G96 | 0.1-  | 0.4-  |
| 2005 01 13 | 699 | (1.5+ | 1.6+) | 2007 11 02 | 703 | 0.2-  | 0.3+  | 2007 12 04 | G96 | 0.3-  | 0.6-  |
| 2005 01 13 | 699 | 0.2+  | 1.4+  | 2007 11 02 | 703 | 0.4+  | 1.2-  | 2007 12 16 | 704 | 0.1-  | 0.1-  |
| 2005 01 15 | 704 | 0.3-  | 1.1+  | 2007 11 03 | 704 | 0.2-  | 0.2+  | 2007 12 16 | 704 | 0.3-  | 0.1+  |
| 2005 01 15 | 704 | 0.7+  | 1.0+  | 2007 11 03 | 704 | 0.1+  | 0.2+  | 2007 12 16 | 704 | 0.1-  | 0.1-  |
| 2005 01 15 | 704 | 0.2+  | 0.8+  | 2007 11 03 | 704 | 0.1-  | 1.0+  | 2007 12 16 | 704 | 0.3+  | 0.1-  |
| 2005 01 17 | 704 | 0.0   | 0.2+  | 2007 11 03 | 704 | 0.7+  | 0.0   | 2007 12 16 | 704 | 0.1+  | 0.1+  |

(172828)\* 2005 AQ<sub>9</sub> = 2003 TB<sub>58</sub>

Discovered 2005 Jan. 7 by the Catalina Sky Survey.

Id. A. Doppler (MPO 86612)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 275.27134  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26354440 | $\omega$ | 245.89316 | -0.39051829 | -0.91885513 |
| <i>a</i> | 2.4093516  | $\Omega$ | 227.21771 | +0.87014696 | -0.34835601 |
| <i>e</i> | 0.1600031  | <i>i</i> | 4.42096   | +0.30056568 | -0.18534654 |
| <i>P</i> | 3.74       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 05 20 | 691 | 0.4+ | 0.6+ | 2005 01 07 | 703 | 1.4+  | 1.4+  | 2005 03 02 | 703 | 0.1- | 0.4- |
| 1998 05 20 | 691 | 0.1+ | 0.7+ | 2005 01 07 | 703 | 0.7-  | 0.3-  | 2005 03 02 | 703 | 0.9- | 0.4- |
| 1998 05 20 | 691 | 1.9- | 1.5+ | 2005 01 07 | 599 | 0.5+  | 0.3+  | 2005 03 02 | 703 | 0.4+ | 0.1+ |
| 2000 11 21 | 704 | 0.1+ | 1.1+ | 2005 01 07 | 599 | 0.4+  | 0.3+  | 2005 03 02 | 703 | 0.2- | 0.1- |
| 2000 11 21 | 704 | 0.1- | 0.8+ | 2005 01 07 | 599 | 0.5+  | 0.3+  | 2007 09 09 | 691 | 0.5- | 0.0  |
| 2000 11 21 | 704 | 0.6- | 1.2+ | 2005 01 07 | 599 | 0.6+  | 0.4+  | 2007 09 09 | 691 | 0.5- | 0.1+ |
| 2000 11 21 | 704 | 0.2- | 0.1- | 2005 01 13 | 704 | (1.6+ | 0.6-) | 2007 09 09 | 691 | 0.5- | 0.1+ |
| 2000 12 30 | 704 | 0.8+ | 1.0+ | 2005 01 13 | 704 | 1.3+  | 0.8-  | 2007 09 13 | 703 | 0.5- | 0.2+ |
| 2000 12 30 | 704 | 0.1- | 0.0  | 2005 01 13 | 704 | 0.8+  | 0.2+  | 2007 09 13 | 691 | 0.3- | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 30 | 704 | 0.2- | 1.6+ | 2005 01 13 | 704 | 0.2+  | 0.4+  | 2007 09 13 | 703 | (2.2- | 0.3+) |
| 2000 12 30 | 704 | 0.6+ | 0.4- | 2005 01 13 | 704 | 0.4+  | 0.3+  | 2007 09 13 | 703 | 1.2-  | 0.0   |
| 2000 12 30 | 704 | 0.4+ | 0.5+ | 2005 02 02 | 703 | 0.1-  | 0.2-  | 2007 09 13 | 691 | 0.3-  | 0.2+  |
| 2002 06 08 | 291 | 0.7+ | 0.3+ | 2005 02 02 | 704 | 0.7-  | 0.8+  | 2007 09 13 | 703 | 0.2+  | 0.2-  |
| 2002 06 08 | 291 | 0.5+ | 0.3+ | 2005 02 02 | 703 | 1.0+  | 0.3-  | 2007 09 13 | 691 | 0.2-  | 0.1+  |
| 2002 06 08 | 291 | 0.4+ | 0.5+ | 2005 02 02 | 703 | 1.1-  | 0.3+  | 2007 09 20 | 691 | 0.3-  | 0.1-  |
| 2003 09 29 | 691 | 0.3+ | 0.2+ | 2005 02 02 | 704 | 0.5+  | 0.7+  | 2007 09 20 | 691 | 0.1-  | 0.1-  |
| 2003 09 29 | 691 | 0.4- | 0.1- | 2005 02 02 | 703 | 0.2-  | 0.6+  | 2007 09 20 | 691 | 0.2-  | 0.0   |
| 2003 09 29 | 691 | 0.6+ | 0.2+ | 2005 02 02 | 704 | 0.3+  | 0.4+  | 2007 12 04 | G96 | 0.0   | 0.9-  |
| 2003 10 01 | 291 | 0.4+ | 1.1+ | 2005 02 02 | 704 | 0.3+  | 0.6+  | 2007 12 04 | G96 | 0.2+  | 0.3+  |
| 2003 10 01 | 291 | 0.6+ | 0.8+ | 2005 02 09 | 704 | 1.0+  | 1.0+  | 2007 12 04 | G96 | 0.6+  | 0.4+  |
| 2003 10 01 | 291 | 0.2+ | 0.6+ | 2005 02 09 | 704 | 0.7-  | 0.4-  | 2007 12 04 | G96 | 0.3+  | 0.4-  |
| 2005 01 07 | 703 | 0.2- | 0.5+ | 2005 02 09 | 704 | (2.1+ | 1.9+) |            |     |       |       |
| 2005 01 07 | 703 | 0.2+ | 0.4+ | 2005 02 09 | 704 | (0.5- | 1.6-) |            |     |       |       |

(172829)\* 2005 AV<sub>13</sub>

Discovered 2005 Jan. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.32086   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29918130 | $\omega$ | 289.14856 | +0.94444252 | -0.30390290 |
| <i>a</i> | 2.2140109  | $\Omega$ | 88.69891  | +0.32840128 | +0.85693702 |
| <i>e</i> | 0.0722447  | <i>i</i> | 7.19332   | +0.01345103 | +0.41629552 |
| <i>P</i> | 3.29       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 10 30 | 704 | 1.6+  | 1.4-  | 2005 01 19 | 704 | 0.5+  | 0.3+  | 2007 11 08 | G96 | 0.0   | 0.0   |
| 1997 10 30 | 704 | (2.8+ | 0.2-) | 2005 01 19 | 704 | 0.3+  | 0.5+  | 2007 11 08 | G96 | 0.0   | 0.2+  |
| 1997 10 30 | 704 | 1.9+  | 2.0-  | 2005 02 03 | 704 | 0.2-  | 0.6-  | 2007 11 08 | G96 | 0.1+  | 0.0   |
| 1997 10 30 | 704 | (3.9+ | 0.4+) | 2005 02 03 | 704 | 0.0   | 0.6+  | 2007 11 08 | G96 | 0.1+  | 0.1+  |
| 1997 11 06 | 704 | 0.5-  | 1.5+  | 2005 02 03 | 704 | 0.8+  | 0.4-  | 2007 11 12 | 704 | 0.1+  | 0.6+  |
| 1997 11 06 | 704 | 0.1+  | 1.5-  | 2005 02 03 | 704 | 0.7-  | 0.3-  | 2007 11 12 | 704 | 0.1-  | 0.2+  |
| 1997 11 06 | 704 | (1.3- | 2.8+) | 2005 02 03 | 704 | 0.0   | 0.4-  | 2007 11 12 | 704 | 0.1-  | 0.5+  |
| 1997 11 06 | 704 | 0.8-  | 0.4-  | 2005 02 04 | G96 | 0.1-  | 0.4-  | 2007 11 12 | 704 | 0.4-  | 0.2+  |
| 1997 11 06 | 704 | 1.0-  | 0.2-  | 2005 02 04 | G96 | 0.1-  | 0.3-  | 2007 11 12 | 704 | 0.1-  | 0.8+  |
| 1997 11 06 | 704 | 1.0+  | 1.4-  | 2005 02 04 | G96 | 0.1+  | 0.3-  | 2007 11 14 | 699 | 0.3+  | 0.3+  |
| 1997 11 06 | 704 | 1.0-  | 1.2+  | 2005 02 04 | G96 | 0.2-  | 0.4-  | 2007 11 14 | 699 | 0.2+  | 0.3-  |
| 1997 11 06 | 704 | 0.6+  | 0.4-  | 2006 05 22 | E12 | 0.5-  | 0.2+  | 2007 11 14 | 699 | 0.0   | 0.7+  |
| 2005 01 07 | 704 | 1.3-  | 0.0   | 2006 05 22 | E12 | 0.2+  | 0.2+  | 2007 11 14 | 699 | 0.4+  | 1.3-  |
| 2005 01 07 | 704 | 0.9-  | 0.8+  | 2006 05 22 | E12 | 0.0   | 0.4+  | 2007 11 18 | 699 | 0.2+  | 0.5-  |
| 2005 01 07 | 704 | (1.5- | 0.1-) | 2006 05 22 | E12 | 0.2+  | 0.3+  | 2007 11 18 | 699 | 0.5-  | 0.1-  |
| 2005 01 07 | 704 | 0.8-  | 0.2-  | 2006 05 24 | 644 | 0.0   | 0.0   | 2007 11 18 | 699 | 0.7-  | 0.1-  |
| 2005 01 07 | 704 | 0.4-  | 0.4+  | 2006 05 24 | 644 | 0.4+  | 0.4+  | 2007 11 18 | 699 | 0.0   | 0.0   |
| 2005 01 08 | 704 | 0.3+  | 0.1+  | 2006 05 24 | 644 | 0.6+  | 0.7+  | 2007 11 20 | 703 | 1.0-  | 0.1-  |
| 2005 01 08 | 704 | 0.3-  | 0.3-  | 2006 06 15 | E12 | 0.9-  | 0.2+  | 2007 11 20 | 703 | 0.6-  | 0.5-  |
| 2005 01 08 | 704 | 0.7+  | 0.3-  | 2006 06 15 | E12 | 0.4+  | 0.1+  | 2007 11 20 | 703 | 0.7-  | 0.1+  |
| 2005 01 08 | 704 | 0.2+  | 0.6-  | 2006 06 15 | E12 | 0.2+  | 0.5-  | 2007 11 20 | 703 | (1.8- | 0.7-) |
| 2005 01 12 | 704 | 0.7-  | 1.2-  | 2006 06 15 | E12 | (3.7+ | 0.7-) | 2007 11 29 | 704 | 0.2-  | 0.8+  |
| 2005 01 12 | 704 | 0.2+  | 0.1-  | 2007 11 02 | 703 | 0.9-  | 0.3+  | 2007 11 29 | 704 | 0.9+  | 0.6+  |
| 2005 01 12 | 704 | 0.0   | 0.7-  | 2007 11 02 | 703 | 0.3-  | 0.2+  | 2007 11 29 | 704 | 0.9+  | 0.8+  |
| 2005 01 16 | 704 | 0.4+  | 0.3-  | 2007 11 02 | 703 | 0.2+  | 0.1+  | 2007 12 04 | 704 | 0.4-  | 0.6+  |
| 2005 01 16 | 704 | 0.3+  | 0.2+  | 2007 11 02 | 703 | 0.8+  | 0.0   | 2007 12 04 | 704 | 0.1+  | 1.0+  |
| 2005 01 16 | 704 | 0.6+  | 0.4+  | 2007 11 04 | 704 | 0.1-  | 0.1+  | 2007 12 04 | 704 | 0.5-  | 0.5+  |
| 2005 01 18 | 691 | 0.1+  | 0.1-  | 2007 11 04 | 704 | 0.2-  | 0.1-  | 2007 12 04 | 704 | 0.1+  | 0.2+  |
| 2005 01 18 | 691 | 0.0   | 0.1+  | 2007 11 04 | 704 | 0.3-  | 0.5+  | 2007 12 04 | 704 | 0.2-  | 0.3+  |
| 2005 01 18 | 691 | 0.0   | 0.1-  | 2007 11 04 | 704 | 0.1+  | 0.6+  |            |     |       |       |
| 2005 01 19 | 704 | 0.8+  | 1.3+  | 2007 11 04 | 704 | 0.2+  | 0.3+  |            |     |       |       |



2007 DEC. 24

M.P.O. 129491

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 212.34088  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27298879 | $\omega$ 343.45668 | -0.86115741   | +0.50493427 |
| <i>a</i> | 2.3534565  | $\Omega$ 227.02067 | -0.45682716   | -0.81938876 |
| <i>e</i> | 0.1756489  | <i>i</i> 4.60449   | -0.22297278   | -0.27137326 |
| <i>P</i> | 3.61       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 1998 03 04 | 704 | (3.1- 0.1+) | 2005 01 15 | 699 | 0.7- 0.5-   | 2006 08 19 | 699 | (0.7+ 1.6+) |
| 1998 03 04 | 704 | (4.6- 0.1-) | 2005 02 01 | 106 | (2.6+ 1.1+) | 2006 08 19 | 699 | 0.9+ 0.2-   |
| 1998 03 04 | 704 | (5.1- 0.5+) | 2005 02 01 | 106 | 0.2+ 1.1+   | 2006 08 19 | 699 | 0.0 0.8+    |
| 1998 03 04 | 704 | (5.0- 1.3+) | 2005 02 01 | 106 | 0.9- 0.7-   | 2007 10 17 | G96 | 0.2+ 0.2-   |
| 1998 03 04 | 704 | (9.0- 0.6+) | 2005 02 02 | 703 | 0.5+ 1.0-   | 2007 10 17 | G96 | 0.2+ 0.2-   |
| 1998 03 31 | 704 | 0.3- 1.2+   | 2005 02 02 | 703 | 0.6+ 0.7-   | 2007 10 17 | G96 | 0.2+ 0.4-   |
| 1998 03 31 | 704 | 0.6+ 0.9+   | 2005 02 02 | 703 | 0.1+ 0.4+   | 2007 10 17 | G96 | 0.7+ 0.3-   |
| 1998 03 31 | 704 | 0.7+ 1.1+   | 2005 02 02 | 703 | 0.6+ 0.0    | 2007 10 30 | 691 | 0.5- 0.0    |
| 1998 03 31 | 704 | 0.1- 0.0    | 2005 02 09 | 704 | 0.3+ 0.5+   | 2007 10 30 | 691 | 0.2+ 0.2-   |
| 1998 03 31 | 704 | 0.7- 0.4-   | 2005 02 09 | 704 | 0.7- 0.8+   | 2007 10 30 | 691 | 0.3- 0.0    |
| 2003 09 28 | 691 | 0.1+ 0.3+   | 2005 02 09 | 704 | 0.3- 0.3+   | 2007 11 07 | 691 | 0.3- 0.0    |
| 2003 09 28 | 691 | 0.2+ 0.3+   | 2005 02 09 | 704 | 0.9+ 0.5-   | 2007 11 07 | 691 | 0.5- 0.1-   |
| 2003 09 28 | 691 | 0.0 0.2+    | 2005 03 02 | 703 | 0.7+ 0.3+   | 2007 11 07 | 691 | 0.1- 0.1+   |
| 2003 10 16 | 644 | 0.4+ 0.2+   | 2005 03 02 | 703 | 0.2+ 0.9-   | 2007 11 08 | 691 | 0.1+ 0.1-   |
| 2003 10 16 | 644 | 0.3- 0.5+   | 2005 03 02 | 703 | 1.0+ 0.1+   | 2007 11 08 | 691 | 0.0 0.1-    |
| 2003 10 16 | 644 | 0.1+ 0.5+   | 2005 03 02 | 703 | 0.2+ 0.6-   | 2007 11 08 | 691 | 0.1+ 0.0    |
| 2005 01 07 | 703 | 0.7- 0.6-   | 2006 08 14 | 644 | 0.3- 0.1+   | 2007 11 14 | 704 | 0.0 1.6+    |
| 2005 01 07 | 703 | 0.0 0.3+    | 2006 08 14 | 644 | 0.1- 0.1+   | 2007 11 14 | 704 | (0.2- 1.6+) |
| 2005 01 07 | 703 | 0.0 0.3+    | 2006 08 14 | 644 | 0.0 0.4+    | 2007 11 14 | 704 | (0.1+ 3.0+) |
| 2005 01 07 | 703 | 0.8- 0.2-   | 2006 08 16 | 644 | 0.3- 0.1-   | 2007 12 04 | G96 | 0.2+ 0.2-   |
| 2005 01 15 | 699 | 0.7+ 1.1+   | 2006 08 16 | 644 | 0.4- 0.0    | 2007 12 04 | G96 | 0.1+ 0.2-   |
| 2005 01 15 | 699 | (2.0+ 0.5+) | 2006 08 16 | 644 | 0.4- 0.0    | 2007 12 04 | G96 | 0.4+ 0.1-   |
| 2005 01 15 | 699 | 0.4+ 0.5+   | 2006 08 19 | 699 | (0.9- 1.9+) | 2007 12 04 | G96 | 0.0 0.1-    |

(172831)\* 2005 CC<sub>4</sub> = 1998 HE<sub>136</sub>

Discovered 2005 Feb. 1 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 73830)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 213.54951  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27394001 | $\omega$ 109.65972 | -0.72953535   | +0.67716976 |
| <i>a</i> | 2.3480053  | $\Omega$ 113.09493 | -0.66009149   | -0.66036954 |
| <i>e</i> | 0.1550790  | <i>i</i> 5.99161   | -0.17904579   | -0.32458156 |
| <i>P</i> | 3.60       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 1998 04 20 | 704 | 1.1+ 0.4-   | 2005 02 03 | 704 | 0.5+ 0.4+ | 2005 03 11 | 699 | 0.2+ 0.6+   |
| 1998 04 20 | 704 | 1.3- 0.4+   | 2005 02 03 | 704 | 0.3- 0.2+ | 2005 03 11 | 699 | 0.0 1.0+    |
| 1998 04 20 | 704 | 0.2+ 0.3+   | 2005 02 09 | 691 | 0.1- 0.1- | 2005 03 11 | 699 | 0.5- 0.0    |
| 1998 04 20 | 704 | 0.2- 0.3-   | 2005 02 09 | 699 | 0.6- 1.3+ | 2006 08 18 | 644 | 0.2- 0.5+   |
| 1998 04 24 | 704 | 0.8- 0.2+   | 2005 02 09 | 691 | 0.1- 0.0  | 2006 08 18 | 644 | 0.1+ 0.4+   |
| 1998 04 24 | 704 | 0.6+ 1.0-   | 2005 02 09 | 699 | 0.5+ 0.4- | 2006 08 18 | 644 | 0.1- 0.5+   |
| 1998 04 24 | 704 | 0.9+ 0.3-   | 2005 02 09 | 691 | 0.1- 0.1- | 2006 08 24 | 644 | 0.2- 0.7+   |
| 1998 04 24 | 704 | 0.8- 0.0    | 2005 02 09 | 699 | 0.2- 0.6+ | 2006 08 24 | 644 | 0.6- 0.8+   |
| 1998 04 24 | 704 | 0.3- 1.8+   | 2005 02 09 | 699 | 0.9+ 0.1+ | 2006 08 24 | 644 | 0.2- 0.8+   |
| 2003 10 24 | 691 | 0.2- 0.3+   | 2005 02 14 | 704 | 0.1- 0.3+ | 2006 09 14 | 703 | 0.9- 1.3-   |
| 2003 10 24 | 691 | 0.1+ 0.6+   | 2005 02 14 | 704 | 0.1+ 0.3+ | 2006 09 14 | 703 | 0.3- 1.0+   |
| 2003 10 24 | 691 | 0.2+ 0.4+   | 2005 02 14 | 704 | 0.9+ 0.8+ | 2006 09 14 | 703 | 0.5+ 0.2-   |
| 2004 12 20 | G96 | 0.4- 0.4-   | 2005 02 14 | 704 | 0.1- 0.8+ | 2006 09 14 | 703 | (2.0- 1.5-) |
| 2004 12 20 | G96 | 1.0- 0.6-   | 2005 02 14 | 704 | 0.8+ 0.8- | 2007 11 08 | 691 | 0.4- 0.1-   |
| 2004 12 20 | G96 | 0.4- 0.4-   | 2005 03 04 | 704 | 0.8+ 0.1+ | 2007 11 08 | 691 | 0.0 0.1-    |
| 2004 12 20 | G96 | 0.0 0.4-    | 2005 03 04 | 704 | 0.6+ 0.4- | 2007 11 08 | 691 | 0.2- 0.1-   |
| 2005 02 01 | 691 | 0.0 0.1-    | 2005 03 04 | 704 | 0.8+ 0.3+ | 2007 12 04 | 704 | 0.3- 0.2+   |
| 2005 02 01 | 691 | 0.0 0.0     | 2005 03 04 | 704 | 0.7+ 0.0  | 2007 12 04 | 704 | 0.4+ 0.2-   |
| 2005 02 01 | 691 | 0.0 0.0     | 2005 03 04 | 704 | 0.4+ 0.2- | 2007 12 04 | 704 | 0.1+ 1.2-   |
| 2005 02 02 | 703 | 1.3- 0.0    | 2005 03 09 | 704 | 0.3- 1.1+ | 2007 12 06 | G96 | 0.3+ 0.2-   |
| 2005 02 02 | 703 | 0.8- 0.5-   | 2005 03 09 | 704 | 0.3- 0.4+ | 2007 12 06 | G96 | 0.1+ 0.3-   |
| 2005 02 02 | 703 | (1.0- 1.6-) | 2005 03 09 | 704 | 0.1- 0.1- | 2007 12 06 | G96 | 0.3+ 0.2-   |
| 2005 02 02 | 703 | (1.1- 1.9-) | 2005 03 09 | 704 | 0.2+ 0.4+ | 2007 12 06 | G96 | 0.0 0.5-    |

|            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|
| 2005 02 03 | 704 | 1.0+ 0.3+ | 2005 03 09 | 704 | 0.5+ 0.5+ |
| 2005 02 03 | 704 | 0.4+ 0.3+ | 2005 03 11 | 699 | 0.2+ 0.2+ |

(172832)\* 2005 CN<sub>4</sub> = 1998 BS<sub>18</sub>

Discovered 2005 Feb. 1 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 73831)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 219.66767  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27532628 | $\omega$ 88.71137  | -0.86454865   | +0.49940240 |
| <i>a</i> | 2.3401172  | $\Omega$ 121.24635 | -0.48324570   | -0.79546544 |
| <i>e</i> | 0.1133542  | <i>i</i> 3.76574   | -0.13794645   | -0.34326662 |
| <i>P</i> | 3.58       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |           |            |     |             |            |     |             |
|------------|-----|-----------|------------|-----|-------------|------------|-----|-------------|
| 1998 01 23 | 691 | 0.3- 0.3- | 2005 02 01 | 691 | 0.1- 0.2+   | 2005 03 16 | 703 | 0.3+ 0.1+   |
| 1998 01 23 | 691 | 0.1+ 0.1- | 2005 02 01 | 691 | 0.1- 0.3+   | 2005 03 16 | 703 | 0.6- 0.0    |
| 1998 01 23 | 691 | 0.0 0.3-  | 2005 02 01 | 691 | 0.1- 0.3+   | 2005 03 16 | 703 | (1.0- 1.8-) |
| 1998 01 28 | 691 | 0.3- 0.3+ | 2005 02 02 | 704 | 0.0 0.0     | 2005 03 16 | 703 | 0.1- 0.1+   |
| 1998 01 28 | 691 | 0.5- 0.1+ | 2005 02 02 | 704 | 0.8+ 0.1+   | 2006 08 12 | 644 | 0.2- 0.3+   |
| 1998 01 28 | 691 | 0.2+ 0.1- | 2005 02 02 | 704 | 0.8+ 0.2+   | 2006 08 12 | 644 | 0.2- 0.6+   |
| 2000 12 29 | 691 | 0.0 0.0   | 2005 02 02 | 704 | 0.3+ 0.9+   | 2006 08 12 | 644 | 0.1- 0.5+   |
| 2000 12 29 | 691 | 0.1- 0.2- | 2005 02 09 | 691 | 0.0 0.3+    | 2006 08 14 | 644 | 0.0 0.5+    |
| 2000 12 29 | 691 | 0.0 0.1-  | 2005 02 09 | 691 | 0.1+ 0.3+   | 2006 08 14 | 644 | 0.5- 0.5+   |
| 2002 06 06 | 704 | 0.1+ 0.1- | 2005 02 09 | 691 | 0.4- 0.2+   | 2006 08 14 | 644 | 0.5- 0.5+   |
| 2002 06 06 | 704 | 0.9+ 0.2- | 2005 02 14 | 704 | 1.2+ 0.2-   | 2006 08 20 | 644 | 0.6- 0.3+   |
| 2002 06 06 | 704 | 0.5- 1.0+ | 2005 02 14 | 704 | (1.8+ 0.2+) | 2006 08 20 | 644 | 0.6- 0.5+   |
| 2003 10 16 | 291 | 0.1+ 0.3+ | 2005 02 14 | 704 | 0.4+ 0.8+   | 2006 08 20 | 644 | 0.4- 0.2+   |
| 2003 10 16 | 291 | 0.4+ 0.5+ | 2005 02 14 | 704 | 1.2+ 0.3-   | 2007 11 18 | G96 | 0.3- 0.2+   |
| 2003 10 16 | 291 | 0.2+ 0.5+ | 2005 02 14 | 704 | 1.2+ 0.5+   | 2007 11 18 | G96 | 0.1+ 0.1+   |
| 2004 12 20 | G96 | 0.0 0.1+  | 2005 03 09 | 704 | (1.6+ 0.5+) | 2007 11 18 | G96 | 0.0 0.1+    |
| 2004 12 20 | G96 | 0.4- 0.2- | 2005 03 09 | 704 | 1.3+ 0.4-   | 2007 11 18 | G96 | 0.1- 0.2+   |
| 2004 12 20 | G96 | 0.1- 0.1- | 2005 03 09 | 704 | 1.1+ 0.9+   | 2007 12 03 | 703 | 1.0- 0.1-   |
| 2004 12 20 | G96 | 0.0 0.2-  | 2005 03 12 | 704 | 0.1- 0.7-   | 2007 12 03 | 703 | 0.8- 0.3+   |
| 2005 01 17 | 703 | 0.6+ 0.7- | 2005 03 12 | 704 | 0.3+ 0.2-   | 2007 12 03 | 703 | 0.5- 0.3-   |
| 2005 01 17 | 703 | 0.3- 0.5- | 2005 03 12 | 704 | 0.8+ 0.4+   | 2007 12 03 | 703 | 0.8- 2.2-   |
| 2005 01 17 | 703 | 0.7- 0.3- | 2005 03 12 | 704 | 0.2- 0.1-   |            |     |             |
| 2005 01 17 | 703 | 0.9- 0.0  | 2005 03 12 | 704 | 0.9+ 0.8+   |            |     |             |

(172833)\* 2005 CZ<sub>11</sub>

Discovered 2005 Feb. 1 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.95489  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.28978016 | $\omega$ 67.58879 | -0.22948620   | -0.97258970 |
| <i>a</i> | 2.2616407  | $\Omega$ 35.74357 | +0.86773665   | -0.22188826 |
| <i>e</i> | 0.1158178  | <i>i</i> 3.67945  | +0.44087322   | -0.06953323 |
| <i>P</i> | 3.40       | <i>H</i> 16.9     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 10 01 | 704 | 0.0   | 0.4+  | 2005 02 09 | G96 | 0.3-  | 0.6-  | 2007 11 09 | 691 | 0.1-  | 0.1+  |
| 2000 10 01 | 704 | 0.7-  | 0.3+  | 2005 02 09 | 699 | 0.6+  | 0.7+  | 2007 11 09 | 691 | 0.0   | 0.1-  |
| 2000 10 01 | 704 | 0.0   | 0.3+  | 2005 02 09 | G96 | 0.5-  | 0.5-  | 2007 11 13 | 691 | 0.3-  | 0.1-  |
| 2000 10 01 | 704 | 0.2-  | 0.2+  | 2005 02 09 | G96 | 0.3-  | 0.5-  | 2007 11 13 | 691 | 0.1+  | 0.6+  |
| 2000 10 01 | 704 | 0.3+  | 0.4+  | 2005 02 09 | 699 | 1.3+  | 0.9+  | 2007 11 13 | 691 | 0.3-  | 0.0   |
| 2000 10 31 | 704 | 0.3-  | 0.2+  | 2005 03 08 | 704 | 0.7-  | 1.2+  | 2007 11 15 | 704 | 0.7+  | 1.5+  |
| 2000 10 31 | 704 | 0.5+  | 0.5-  | 2005 03 08 | 704 | 0.0   | 0.0   | 2007 11 15 | 704 | 0.1+  | 1.2+  |
| 2000 10 31 | 704 | 0.1+  | 0.1+  | 2005 03 08 | 704 | 0.0   | 0.3-  | 2007 11 15 | 704 | 0.6-  | 0.0   |
| 2000 10 31 | 704 | 0.3-  | 0.4-  | 2005 03 08 | 704 | 0.6+  | 0.2+  | 2007 11 15 | 704 | 0.5+  | 0.1+  |
| 2002 04 14 | 704 | 0.6+  | 0.8+  | 2005 03 08 | 704 | 0.2+  | 0.5+  | 2007 11 17 | 691 | 0.2-  | 0.1-  |
| 2002 04 14 | 704 | 0.5+  | 0.9+  | 2005 03 09 | 704 | 0.9-  | 0.1-  | 2007 11 17 | 691 | 0.1-  | 0.0   |
| 2002 04 14 | 704 | 0.5+  | 0.2-  | 2005 03 09 | 704 | 0.4-  | 0.3+  | 2007 11 17 | 691 | 0.0   | 0.1-  |
| 2002 04 14 | 704 | 0.8-  | 0.1+  | 2005 03 09 | 704 | 0.6-  | 0.1-  | 2007 11 20 | 704 | 1.4+  | 1.1+  |
| 2005 01 20 | 699 | 0.6-  | 0.7+  | 2005 03 09 | 704 | 0.3-  | 1.1+  | 2007 11 20 | 704 | 0.4+  | 0.3+  |
| 2005 01 20 | 699 | (1.7+ | 1.4-) | 2005 03 10 | 699 | (2.0- | 2.2-) | 2007 11 20 | 704 | 0.4+  | 0.0   |
| 2005 01 20 | 699 | 0.8+  | 0.4-  | 2005 03 10 | 699 | 0.0   | 0.3-  | 2007 11 20 | 704 | 0.5-  | 0.0   |
| 2005 01 20 | 699 | 0.6+  | 0.5-  | 2005 03 10 | 699 | 0.7+  | 0.0   | 2007 12 04 | 699 | (1.8+ | 0.2+) |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 01 | 703 | 1.1+  | 0.3-  | 2005 03 10 | 699 | 0.9- | 0.6+ | 2007 12 04 | 699 | 0.9+ | 0.1- |
| 2005 02 01 | 703 | (2.0- | 0.9-) | 2007 09 10 | G96 | 0.3+ | 0.4- | 2007 12 04 | 699 | 0.2- | 0.9- |
| 2005 02 01 | 703 | (2.3- | 0.9-) | 2007 09 10 | G96 | 0.3+ | 0.0  | 2007 12 04 | 699 | 0.2+ | 0.8- |
| 2005 02 01 | 703 | 0.3-  | 1.2-  | 2007 09 10 | G96 | 0.4+ | 0.5- | 2007 12 10 | 704 | 0.3+ | 0.0  |
| 2005 02 03 | 704 | 0.0   | 0.2-  | 2007 09 10 | G96 | 0.0  | 0.2- | 2007 12 10 | 704 | 0.1- | 0.5+ |
| 2005 02 03 | 704 | 0.3-  | 0.5+  | 2007 11 01 | 691 | 0.3- | 0.1- | 2007 12 10 | 704 | 0.9+ | 0.0  |
| 2005 02 03 | 704 | 0.1+  | 0.1+  | 2007 11 01 | 691 | 0.2- | 0.0  | 2007 12 15 | 704 | 0.6+ | 0.4- |
| 2005 02 03 | 704 | 0.8-  | 0.8-  | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.7+ | 0.1- |
| 2005 02 03 | 704 | (1.7+ | 0.4-) | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 15 | 704 | 1.2+ | 0.1- |
| 2005 02 09 | 699 | 0.5+  | 0.1+  | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 12 15 | 704 | 0.1+ | 0.0  |
| 2005 02 09 | 699 | 0.6+  | 0.6-  | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 15 | 704 | 0.2+ | 0.3+ |
| 2005 02 09 | G96 | 0.5-  | 0.5-  | 2007 11 09 | 691 | 0.3- | 0.1- |            |     |      |      |

**(172834)\* 2005 CO<sub>18</sub>**

Discovered 2005 Feb. 2 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 104.43271  |          |           |             |             |          |   |
| <i>n</i> | 0.26138181 | $\omega$ | 158.33321 | +0.44129525 | +0.89497552 |          |   |
| <i>a</i> | 2.4226228  | $\Omega$ | 137.77816 | -0.83694628 | +0.43677995 |          |   |
| <i>e</i> | 0.1051706  | <i>i</i> | 5.58502   | -0.32369652 | +0.09078595 |          |   |
| <i>P</i> | 3.77       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 07 02 | 691 | 0.1-  | 0.5+  | 2003 10 20 | 644 | 0.1+ | 0.2+ | 2005 04 09 | G96 | 0.5- | 0.2- |
| 1995 07 02 | 691 | 0.1-  | 0.3+  | 2003 10 20 | 644 | 0.3+ | 0.6+ | 2005 04 09 | G96 | 0.0  | 0.1- |
| 1995 07 02 | 691 | 0.1-  | 0.1+  | 2005 01 17 | 691 | 0.1+ | 0.3+ | 2005 04 09 | G96 | 0.6- | 0.1- |
| 2000 12 30 | 691 | 0.1-  | 0.2+  | 2005 01 17 | 691 | 0.4+ | 0.1- | 2007 11 12 | 704 | 0.2- | 1.0+ |
| 2000 12 30 | 691 | 0.0   | 0.1+  | 2005 01 17 | 691 | 0.2- | 0.4+ | 2007 11 12 | 704 | 0.6- | 0.9+ |
| 2000 12 30 | 691 | 0.0   | 0.2+  | 2005 02 02 | 703 | 1.1+ | 0.8- | 2007 11 12 | 704 | 1.2- | 0.7+ |
| 2002 04 16 | 704 | 1.2+  | 1.0+  | 2005 02 02 | 703 | 0.4+ | 0.1+ | 2007 11 12 | 704 | 1.5- | 0.4- |
| 2002 04 16 | 704 | (0.1+ | 1.7+) | 2005 02 02 | 703 | 0.2- | 0.2+ | 2007 11 18 | G96 | 0.1- | 0.1- |
| 2002 04 16 | 704 | (2.2+ | 1.1+) | 2005 02 02 | 703 | 0.7+ | 0.3+ | 2007 11 18 | G96 | 0.2- | 0.1- |
| 2002 04 16 | 704 | (0.7+ | 2.3+) | 2005 02 04 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2002 05 08 | 704 | 1.0-  | 0.0   | 2005 02 04 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.4- |
| 2002 05 08 | 704 | 0.2-  | 0.2+  | 2005 02 04 | 691 | 0.1- | 0.1+ | 2007 12 05 | 699 | 1.6+ | 0.2+ |
| 2002 05 08 | 704 | 0.3+  | 0.8-  | 2005 03 04 | G96 | 0.2- | 0.0  | 2007 12 05 | 699 | 0.1+ | 0.7- |
| 2003 09 28 | 704 | (2.8- | 2.5+) | 2005 03 04 | G96 | 0.2+ | 0.2- | 2007 12 05 | 699 | 0.6+ | 1.5- |
| 2003 09 28 | 704 | 0.5-  | 0.3+  | 2005 03 04 | G96 | 0.7- | 0.1- | 2007 12 05 | 699 | 0.6+ | 0.6- |
| 2003 09 28 | 704 | 0.8+  | 0.6-  | 2005 03 04 | G96 | 0.4- | 0.3- |            |     |      |      |
| 2003 10 20 | 644 | 0.0   | 0.4+  | 2005 04 09 | G96 | 0.1- | 0.2+ |            |     |      |      |

**(172835)\* 2005 CW<sub>36</sub> = 1998 HT<sub>30</sub>**

Discovered 2005 Feb. 3 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 76668)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 207.25809  |          |           |             |             |          |   |
| <i>n</i> | 0.27168882 | $\omega$ | 140.15964 | -0.75020336 | +0.65996686 |          |   |
| <i>a</i> | 2.3609577  | $\Omega$ | 81.18629  | -0.61660683 | -0.67618356 |          |   |
| <i>e</i> | 0.1375047  | <i>i</i> | 2.34773   | -0.23872775 | -0.32744394 |          |   |
| <i>P</i> | 3.63       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 10 03 | 691 | 0.2+  | 0.4+  | 2004 12 20 | G96 | 0.3-  | 0.6+  | 2006 08 19 | 699 | (0.2+ | 1.6+) |
| 1992 10 03 | 691 | 0.1-  | 0.3+  | 2004 12 20 | G96 | 0.2-  | 0.0   | 2006 08 19 | 699 | (2.2+ | 1.6+) |
| 1992 10 03 | 691 | 1.5-  | 0.1-  | 2005 02 03 | 704 | 0.0   | 0.4-  | 2006 08 19 | 699 | 0.8+  | 0.9+  |
| 1994 01 11 | 691 | 0.9+  | 0.4-  | 2005 02 03 | 704 | (1.6+ | 0.6-) | 2007 11 05 | G96 | 0.4+  | 0.2-  |
| 1994 01 11 | 691 | 0.5-  | 1.0-  | 2005 02 03 | 704 | (0.1+ | 2.1+) | 2007 11 05 | G96 | 0.7+  | 0.4-  |
| 1994 01 11 | 691 | 0.3+  | 0.8-  | 2005 02 03 | 704 | 0.7+  | 0.5+  | 2007 11 05 | G96 | 0.4+  | 0.2-  |
| 1998 03 29 | 704 | 1.4-  | 0.8+  | 2005 02 03 | 704 | 0.3-  | 0.1-  | 2007 11 05 | G96 | 0.7+  | 0.1-  |
| 1998 03 29 | 704 | (2.2+ | 0.2-) | 2005 02 04 | G96 | 0.1+  | 0.4-  | 2007 11 13 | 691 | 0.6-  | 0.3+  |
| 1998 03 29 | 704 | 1.5+  | 1.5+  | 2005 02 04 | G96 | 0.2+  | 0.1-  | 2007 11 13 | 691 | 0.2+  | 0.1+  |
| 1998 03 29 | 704 | 1.8-  | 0.2-  | 2005 02 04 | G96 | 0.3+  | 0.2-  | 2007 11 13 | 691 | 0.3-  | 0.1-  |
| 1998 04 17 | 691 | 0.4+  | 0.4-  | 2005 02 04 | G96 | 0.1+  | 0.3-  | 2007 11 18 | 691 | 0.0   | 0.0   |
| 1998 04 17 | 691 | 0.1-  | 0.3-  | 2005 02 09 | 691 | 0.1+  | 0.4+  | 2007 11 18 | 691 | 0.7+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 04 17 | 691 | 0.4+ | 0.3- | 2005 02 09 | 691 | 0.1+ | 0.4+ | 2007 11 18 | 691 | 0.8- | 0.1+ |
| 1998 04 19 | 704 | 1.6+ | 1.3+ | 2005 02 09 | 691 | 0.0  | 0.5+ | 2007 12 04 | G96 | 0.1- | 0.1- |
| 1998 04 19 | 704 | 0.5- | 1.8+ | 2005 03 01 | 691 | 0.1+ | 0.4+ | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 1998 04 19 | 704 | 1.6- | 0.3+ | 2005 03 01 | 691 | 0.1+ | 0.4+ | 2007 12 04 | G96 | 0.5+ | 0.3- |
| 1998 04 19 | 704 | 0.9- | 1.8- | 2005 03 01 | 691 | 0.1+ | 0.6+ | 2007 12 04 | G96 | 0.3+ | 0.2+ |
| 1998 04 30 | 691 | 0.2- | 0.2- | 2005 03 02 | 703 | 0.6- | 0.6- | 2007 12 15 | G96 | 0.5+ | 0.1- |
| 1998 04 30 | 691 | 0.2+ | 0.4+ | 2005 03 02 | 703 | 0.3- | 0.8+ | 2007 12 15 | G96 | 0.3+ | 0.5- |
| 1998 04 30 | 691 | 0.1- | 0.1- | 2005 03 02 | 703 | 1.3- | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2004 12 20 | G96 | 0.3- | 0.2- | 2005 03 02 | 703 | 0.0  | 1.0+ | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2004 12 20 | G96 | 0.4- | 0.0  | 2006 08 19 | 699 | 1.2+ | 1.1+ |            |     |      |      |

**(172836)\* 2005 CX<sub>37</sub>**

Discovered 2005 Feb. 7 by S. Sposetti at Gnosca.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 268.11686  |          |           |             |             |          |   |
| <i>n</i> | 0.27853216 | $\omega$ | 191.52940 | -0.95572659 | -0.29360746 |          |   |
| <i>a</i> | 2.3221262  | $\Omega$ | 331.37316 | +0.27311176 | -0.86039337 |          |   |
| <i>e</i> | 0.1803680  | <i>i</i> | 2.33598   | +0.10952918 | -0.41655481 |          |   |
| <i>P</i> | 3.54       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 03 20 | 704 | 0.5-  | 0.0   | 2005 03 03 | 703 | 0.1+  | 0.5+  | 2005 03 30 | 703 | 0.8+ | 0.9+ |
| 1998 03 20 | 704 | 0.4-  | 0.2-  | 2005 03 04 | 704 | 0.4-  | 0.0   | 2005 03 30 | 703 | 1.3- | 0.2+ |
| 1998 03 20 | 704 | 1.3-  | 0.9+  | 2005 03 04 | 704 | 0.1+  | 0.3-  | 2005 05 06 | G96 | 0.1- | 1.2+ |
| 1998 03 20 | 704 | 0.5-  | 0.2-  | 2005 03 04 | 704 | 0.4-  | 0.6+  | 2005 05 06 | G96 | 0.6- | 0.0  |
| 1998 03 20 | 704 | 1.9-  | 0.2-  | 2005 03 04 | 704 | 0.1-  | 0.1-  | 2005 05 06 | G96 | 0.1+ | 0.2- |
| 1998 04 01 | 704 | 1.4+  | 0.1-  | 2005 03 08 | 699 | 0.3+  | 0.5-  | 2005 05 06 | G96 | 0.0  | 0.1- |
| 1998 04 01 | 704 | 1.2+  | 0.2+  | 2005 03 08 | 699 | 0.4+  | 0.4-  | 2005 05 08 | G96 | 0.6- | 0.0  |
| 1998 04 01 | 704 | 1.2-  | 1.2-  | 2005 03 08 | 699 | 0.5-  | 0.2+  | 2005 05 08 | G96 | 0.6- | 0.1+ |
| 1998 04 01 | 704 | 0.1+  | 0.5-  | 2005 03 08 | 699 | 0.5+  | 0.0   | 2005 05 08 | G96 | 0.0  | 0.3- |
| 2003 09 18 | 291 | 0.2+  | 0.2+  | 2005 03 08 | 704 | 0.1-  | 0.3-  | 2005 05 08 | G96 | 0.2- | 0.3+ |
| 2003 09 18 | 291 | 0.4-  | 0.3+  | 2005 03 08 | 704 | 0.1+  | 0.1-  | 2005 05 14 | G96 | 0.0  | 0.0  |
| 2003 09 18 | 291 | 0.4-  | 0.2+  | 2005 03 08 | 704 | 0.3+  | 0.3+  | 2005 05 14 | G96 | 0.3+ | 0.2+ |
| 2003 09 29 | 691 | 0.1+  | 0.3+  | 2005 03 08 | 704 | 0.4+  | 0.1-  | 2005 05 14 | G96 | 0.6- | 0.1- |
| 2003 09 29 | 691 | 0.0   | 0.2+  | 2005 03 08 | 704 | 0.9+  | 0.2-  | 2005 05 14 | G96 | 0.1- | 0.1+ |
| 2003 09 29 | 691 | 0.1+  | 0.1+  | 2005 03 08 | G96 | 0.1-  | 0.2-  | 2007 10 14 | G96 | 0.3+ | 0.5- |
| 2005 02 01 | 691 | 0.4+  | 0.1+  | 2005 03 08 | G96 | 0.0   | 0.2-  | 2007 10 14 | G96 | 0.7+ | 0.3- |
| 2005 02 01 | 691 | 0.4+  | 0.2+  | 2005 03 08 | G96 | 0.2-  | 0.2-  | 2007 10 14 | G96 | 0.6+ | 0.4- |
| 2005 02 01 | 691 | 0.3+  | 0.1+  | 2005 03 08 | G96 | 0.3-  | 0.2-  | 2007 10 14 | G96 | 0.6+ | 0.5- |
| 2005 02 07 | 143 | 0.5-  | 0.2+  | 2005 03 17 | 704 | (1.1+ | 1.5+) | 2007 11 02 | 691 | 0.3- | 0.2+ |
| 2005 02 07 | 143 | 0.2+  | 0.1+  | 2005 03 17 | 704 | 0.1-  | 1.0+  | 2007 11 02 | 691 | 0.1+ | 0.0  |
| 2005 02 08 | 143 | 0.1-  | 0.0   | 2005 03 17 | 704 | 0.5-  | 1.2+  | 2007 11 02 | 691 | 0.2- | 0.0  |
| 2005 02 08 | 143 | 0.1-  | 0.1+  | 2005 03 17 | 704 | 0.5+  | 0.4+  | 2007 12 04 | 691 | 0.1+ | 0.0  |
| 2005 02 08 | 143 | 0.2-  | 0.2-  | 2005 03 17 | 704 | 0.2+  | 0.2-  | 2007 12 04 | 691 | 0.0  | 0.2- |
| 2005 03 01 | 143 | 0.2+  | 0.3-  | 2005 03 17 | 703 | 0.7-  | 0.1+  | 2007 12 04 | 691 | 0.0  | 0.2- |
| 2005 03 01 | 143 | 0.1-  | 0.5-  | 2005 03 17 | 703 | 0.9-  | 0.6+  | 2007 12 06 | 691 | 0.1- | 0.0  |
| 2005 03 01 | 143 | 0.1-  | 0.3-  | 2005 03 17 | 703 | 0.9-  | 0.8+  | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2005 03 03 | 703 | (1.7- | 0.4+) | 2005 03 17 | 703 | 0.9-  | 0.4+  | 2007 12 06 | 691 | 0.1- | 0.2- |
| 2005 03 03 | 703 | 0.6+  | 0.3-  | 2005 03 30 | 703 | 0.9+  | 0.0   |            |     |      |      |
| 2005 03 03 | 703 | 1.2+  | 0.4-  | 2005 03 30 | 703 | 1.1+  | 0.0   |            |     |      |      |

**(172837)\* 2005 CR<sub>43</sub> = 2003 UF<sub>306</sub>**

Discovered 2005 Feb. 2 by the Catalina Sky Survey.

Id. A. Doppler (*MPO* 76674)

Epoch 2007 Oct. 27.0

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 13 | 644 | 0.2+ | 0.1+ | 2005 02 09 | 699 | 1.1+  | 0.4+  | 2006 06 23 | 644 | 0.1- | 0.9+ |
| 2002 06 13 | 644 | 0.1+ | 0.7+ | 2005 02 09 | 699 | (1.7+ | 0.4+) | 2006 06 23 | 644 | 0.2- | 0.7+ |
| 2002 06 13 | 644 | 0.1- | 0.5+ | 2005 02 09 | 699 | 0.1-  | 0.7+  | 2006 06 23 | 644 | 0.1+ | 0.6+ |
| 2003 10 01 | 691 | 0.2- | 0.1- | 2005 02 09 | 704 | 0.5-  | 1.4+  | 2006 07 21 | 644 | 0.1- | 0.6+ |
| 2003 10 01 | 691 | 0.2+ | 0.1- | 2005 02 09 | 704 | 0.0   | 1.2+  | 2006 07 21 | 644 | 0.2- | 0.6+ |
| 2003 10 01 | 691 | 0.2- | 0.1+ | 2005 02 09 | 704 | 1.1+  | 1.0+  | 2006 07 21 | 644 | 0.4- | 0.6+ |
| 2003 10 18 | 691 | 0.3+ | 0.0  | 2005 02 09 | 704 | 0.2+  | 1.2+  | 2007 11 06 | 691 | 0.2- | 0.2- |
| 2003 10 18 | 691 | 0.2+ | 0.0  | 2005 02 10 | 568 | 0.8-  | 0.2-  | 2007 11 06 | 691 | 0.6- | 0.3- |
| 2003 10 18 | 691 | 0.1+ | 0.2+ | 2005 02 10 | 568 | 0.3-  | 0.6-  | 2007 11 06 | 691 | 0.2- | 0.1- |
| 2003 10 27 | 691 | 0.1+ | 0.2+ | 2005 02 10 | 568 | 0.2-  | 0.2-  | 2007 12 12 | 704 | 0.4+ | 0.7+ |
| 2003 10 27 | 691 | 0.1+ | 0.3+ | 2005 03 04 | G96 | 0.0   | 0.2-  | 2007 12 12 | 704 | 0.1- | 0.1- |
| 2003 10 27 | 691 | 0.1+ | 0.2+ | 2005 03 04 | G96 | 0.2+  | 0.4-  | 2007 12 12 | 704 | 0.3- | 0.5+ |
| 2004 12 20 | G96 | 0.2- | 0.3- | 2005 03 04 | G96 | 0.1+  | 0.1-  | 2007 12 13 | 704 | 0.8+ | 0.0  |
| 2004 12 20 | G96 | 0.2- | 0.6- | 2005 03 04 | G96 | 0.1+  | 0.4-  | 2007 12 13 | 704 | 0.4+ | 0.3+ |
| 2004 12 20 | G96 | 0.0  | 0.5- | 2005 04 05 | G96 | 0.3-  | 0.0   | 2007 12 13 | 704 | 0.2+ | 0.1- |
| 2004 12 20 | G96 | 0.2- | 0.3- | 2005 04 05 | G96 | 0.2-  | 0.2+  | 2007 12 13 | 704 | 0.3+ | 0.2+ |
| 2005 02 02 | 704 | 0.3+ | 0.7+ | 2005 04 05 | G96 | 0.2+  | 0.3-  | 2007 12 13 | 704 | 0.9+ | 0.1- |
| 2005 02 02 | 704 | 0.3+ | 1.3+ | 2005 04 05 | G96 | 0.2-  | 0.1+  | 2007 12 16 | 704 | 1.3- | 1.7+ |
| 2005 02 02 | 704 | 0.3+ | 0.7+ | 2005 04 06 | G96 | 0.1-  | 0.1+  | 2007 12 16 | 704 | 1.6- | 0.7+ |
| 2005 02 02 | 703 | 0.4+ | 0.2- | 2005 04 06 | G96 | 0.3+  | 0.0   | 2007 12 16 | 704 | 0.1- | 1.6+ |
| 2005 02 02 | 703 | 0.7- | 0.7- | 2005 04 06 | G96 | 0.1-  | 0.1+  |            |     |      |      |
| 2005 02 02 | 704 | 0.9+ | 0.2- | 2005 04 06 | G96 | 0.1-  | 0.3-  |            |     |      |      |

**(172838)\* 2005 CP<sub>48</sub>**

Discovered 2005 Feb. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 327.47582  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.30488164 | $\omega$ | 122.95541 | -0.48380275 | -0.87517071 |
| $a$ | 2.1863274  | $\Omega$ | 355.97429 | +0.78626612 | -0.43297523 |
| $e$ | 0.1508561  | $i$      | 2.72348   | +0.38434423 | -0.21589044 |
| $P$ | 3.23       | $H$      | 16.9      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 10 01 | 910 | 0.3-  | 0.0   | 2005 03 03 | 704 | 0.3+  | 0.2+  | 2005 04 02 | 691 | 0.2- | 0.4- |
| 1997 10 01 | 910 | 0.1-  | 0.1+  | 2005 03 04 | 704 | 0.0   | 0.3+  | 2005 04 02 | 691 | 0.1- | 0.2- |
| 1997 10 01 | 910 | 0.1+  | 0.3+  | 2005 03 04 | 704 | 0.1+  | 0.1-  | 2005 04 02 | 691 | 0.1+ | 0.2- |
| 2002 04 04 | 644 | (0.2+ | 2.6+) | 2005 03 04 | 704 | 0.2+  | 0.3-  | 2005 04 02 | G96 | 0.6- | 0.3- |
| 2002 04 04 | 644 | 0.1+  | 1.5+  | 2005 03 04 | G96 | 0.4-  | 0.6-  | 2005 04 02 | G96 | 0.6- | 0.4- |
| 2002 04 04 | 644 | (0.2- | 2.5+) | 2005 03 04 | G96 | 0.6-  | 0.7-  | 2005 04 02 | G96 | 0.5- | 0.5- |
| 2002 04 14 | 704 | 0.4+  | 0.8+  | 2005 03 04 | 704 | 0.4+  | 0.2-  | 2005 04 02 | G96 | 0.5- | 0.4- |
| 2002 04 14 | 704 | 0.9-  | 0.5+  | 2005 03 04 | G96 | 0.8-  | 0.5-  | 2005 05 04 | G96 | 0.1+ | 0.2+ |
| 2002 04 14 | 704 | 0.7+  | 0.6+  | 2005 03 04 | G96 | 0.6-  | 0.5-  | 2005 05 04 | G96 | 0.5- | 0.4- |
| 2002 04 14 | 704 | 0.5+  | 0.2-  | 2005 03 04 | 704 | 0.3+  | 0.6-  | 2005 05 04 | G96 | 0.2- | 0.3- |
| 2002 04 14 | 704 | 0.6+  | 0.2+  | 2005 03 08 | 699 | 0.3+  | 0.1-  | 2005 05 04 | G96 | 0.5- | 0.2- |
| 2002 05 11 | 704 | 0.8+  | 0.1+  | 2005 03 08 | 699 | 0.4-  | 0.3-  | 2005 05 08 | G96 | 0.7- | 0.4- |
| 2002 05 11 | 704 | 0.0   | 0.5+  | 2005 03 08 | 699 | 0.3+  | 0.3-  | 2005 05 08 | G96 | 0.6- | 0.4- |
| 2002 05 11 | 704 | 0.7+  | 0.5+  | 2005 03 08 | 699 | 0.2+  | 0.1+  | 2005 05 08 | G96 | 0.5- | 0.1- |
| 2005 02 02 | 704 | 1.1-  | 0.4+  | 2005 03 08 | 704 | 0.8+  | 0.9+  | 2005 05 08 | G96 | 0.4- | 0.6- |
| 2005 02 02 | 704 | 0.1+  | 0.1+  | 2005 03 08 | 704 | 0.2+  | 0.1-  | 2005 05 13 | G96 | 0.6- | 0.1- |
| 2005 02 02 | 704 | 0.1+  | 0.2-  | 2005 03 08 | 704 | 0.4+  | 0.4+  | 2005 05 13 | G96 | 0.5- | 0.0  |
| 2005 02 02 | 704 | 0.1-  | 0.6-  | 2005 03 08 | 704 | 0.1+  | 0.5+  | 2005 05 13 | G96 | 0.5- | 0.2- |
| 2005 02 02 | 704 | 0.1-  | 0.1+  | 2005 03 08 | 704 | 0.8+  | 0.3+  | 2005 05 13 | G96 | 0.8- | 0.1- |
| 2005 02 09 | 704 | 0.3+  | 0.7-  | 2005 03 09 | 704 | 0.3+  | 0.4+  | 2007 11 06 | G96 | 0.5- | 0.7- |
| 2005 02 09 | 704 | 0.2+  | 0.2-  | 2005 03 09 | 704 | 0.4+  | 0.5+  | 2007 11 06 | G96 | 0.3- | 0.3- |
| 2005 02 09 | 704 | 0.4+  | 0.8-  | 2005 03 09 | 704 | (0.4+ | 1.5+) | 2007 11 06 | G96 | 0.7- | 0.2- |
| 2005 02 09 | 704 | 0.1+  | 0.2+  | 2005 03 09 | 704 | 1.3+  | 0.4+  | 2007 11 06 | G96 | 0.5- | 0.7- |
| 2005 02 14 | 704 | 0.9+  | 1.3+  | 2005 03 09 | 704 | 0.5+  | 1.4+  | 2007 12 13 | 704 | 0.3+ | 0.0  |
| 2005 02 14 | 704 | 0.5+  | 0.6+  | 2005 03 10 | 695 | 0.1-  | 0.3-  | 2007 12 13 | 704 | 0.5- | 0.0  |
| 2005 02 14 | 704 | (1.7- | 0.5+) | 2005 03 10 | 695 | 0.4-  | 0.2-  | 2007 12 13 | 704 | 0.1- | 0.2+ |
| 2005 02 14 | 704 | 0.2-  | 1.0+  | 2005 03 17 | 704 | (1.6- | 0.1-) | 2007 12 13 | 704 | 0.1- | 0.3+ |
| 2005 02 14 | 704 | 0.6-  | 0.1-  | 2005 03 17 | 704 | 0.3-  | 1.0+  | 2007 12 13 | 704 | 0.2- | 0.5+ |
| 2005 03 03 | 703 | 1.2-  | 0.4+  | 2005 03 17 | 704 | 0.3+  | 1.3+  | 2007 12 15 | 704 | 0.2+ | 0.3+ |
| 2005 03 03 | 703 | 0.4+  | 0.2+  | 2005 03 17 | 704 | 0.1-  | 0.4+  | 2007 12 15 | 704 | 0.1- | 0.5+ |
| 2005 03 03 | 703 | 0.5-  | 0.8+  | 2005 03 17 | 703 | 0.5+  | 0.5-  | 2007 12 15 | 704 | 0.1+ | 0.5+ |
| 2005 03 03 | 703 | 0.5+  | 0.1+  | 2005 03 17 | 703 | 1.1-  | 0.7-  | 2007 12 15 | 704 | 0.2+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 704 | 0.2+ | 0.9- | 2005 03 17 | 703 | 0.4+ | 0.6- | 2007 12 15 | 704 | 2.0+ | 0.1+ |
| 2005 03 03 | 704 | 0.7+ | 0.0  | 2005 03 17 | 703 | 0.1+ | 0.3- |            |     |      |      |

**(172839)\* 2005 CE<sub>73</sub>**

Discovered 2005 Feb. 1 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 30.07809   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27826313 | $\omega$ | 271.99232 | +0.96039964 | -0.27138538 |
| $a$ | 2.3236227  | $\Omega$ | 103.75865 | +0.27442441 | +0.88214875 |
| $e$ | 0.1769085  | $i$      | 3.72521   | +0.04820549 | +0.38492021 |
| $P$ | 3.54       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 04 28 | 691 | 0.2+  | 0.2+  | 2004 12 20 | G96 | 0.3- | 0.5- | 2007 11 11 | D29 | 0.1-  | 0.1+  |
| 1995 04 28 | 691 | 0.2+  | 0.3+  | 2005 02 01 | 691 | 0.1+ | 0.1+ | 2007 11 11 | D29 | 0.2+  | 0.1+  |
| 1995 04 28 | 691 | 0.3+  | 0.2+  | 2005 02 01 | 691 | 0.0  | 0.2+ | 2007 11 14 | 704 | 0.3+  | 0.2+  |
| 2000 12 30 | 704 | 0.6-  | 0.0   | 2005 02 01 | 691 | 0.1- | 0.2+ | 2007 11 14 | 704 | 0.2+  | 0.2-  |
| 2000 12 30 | 704 | 0.8-  | 0.2+  | 2005 02 09 | 691 | 0.1+ | 0.3- | 2007 11 14 | 704 | 0.2-  | 0.1-  |
| 2000 12 30 | 704 | 0.1-  | 0.4+  | 2005 02 09 | 691 | 0.0  | 0.4- | 2007 11 14 | 704 | 0.3-  | 0.6-  |
| 2000 12 30 | 704 | 0.4+  | 0.7-  | 2005 02 09 | 691 | 0.1- | 0.2- | 2007 11 14 | 704 | 0.9-  | 0.1+  |
| 2003 08 01 | 608 | 0.1+  | 0.8-  | 2006 04 26 | G96 | 0.2- | 0.3+ | 2007 11 18 | G96 | 0.0   | 0.0   |
| 2003 08 01 | 608 | 0.6-  | 0.7-  | 2006 04 26 | G96 | 0.3- | 0.3+ | 2007 11 18 | G96 | 0.1+  | 0.1-  |
| 2003 08 01 | 608 | 0.4+  | 0.4-  | 2006 04 26 | G96 | 0.4- | 0.2- | 2007 11 18 | G96 | 0.1+  | 0.1-  |
| 2003 08 26 | 704 | 1.0-  | 0.6+  | 2006 04 26 | G96 | 0.0  | 0.5+ | 2007 11 18 | G96 | 0.2+  | 0.2-  |
| 2003 08 26 | 704 | (0.2- | 1.6+) | 2007 10 13 | 704 | 0.2- | 0.4- | 2007 11 21 | 703 | 0.6-  | 1.0-  |
| 2003 08 26 | 704 | 0.7-  | 0.9+  | 2007 10 13 | 704 | 1.1+ | 0.2+ | 2007 11 21 | 703 | 0.1+  | 0.4+  |
| 2003 08 31 | 704 | 0.6+  | 0.4-  | 2007 10 13 | 704 | 0.4+ | 0.1+ | 2007 11 21 | 703 | 0.7-  | 0.8+  |
| 2003 08 31 | 704 | 0.3-  | 0.4+  | 2007 10 13 | 704 | 0.2+ | 0.9+ | 2007 11 21 | 703 | (1.0- | 2.5+) |
| 2003 08 31 | 704 | 0.1-  | 0.1-  | 2007 10 13 | 704 | 0.7+ | 0.3+ | 2007 12 03 | 703 | 0.3-  | 0.4+  |
| 2003 08 31 | 704 | 1.0+  | 0.7-  | 2007 11 04 | 704 | 0.6+ | 0.4- | 2007 12 03 | 703 | 0.5-  | 0.1+  |
| 2003 09 15 | 699 | 0.1+  | 0.8+  | 2007 11 04 | 704 | 0.7+ | 0.4+ | 2007 12 03 | 703 | 0.1+  | 0.0   |
| 2003 09 15 | 699 | 0.7+  | 0.4-  | 2007 11 04 | 704 | 0.7+ | 0.3+ | 2007 12 03 | 703 | 0.1+  | 0.8-  |
| 2003 09 15 | 699 | (0.8+ | 3.1+) | 2007 11 04 | 691 | 0.3- | 0.2+ | 2007 12 04 | 704 | 0.7+  | 0.5+  |
| 2003 09 15 | 699 | (3.3- | 1.9+) | 2007 11 04 | 691 | 0.4- | 0.1+ | 2007 12 04 | 704 | 0.2+  | 0.2-  |
| 2004 12 20 | G96 | 1.0-  | 0.2-  | 2007 11 04 | 691 | 0.3- | 0.1+ | 2007 12 04 | 704 | 0.1+  | 0.2+  |
| 2004 12 20 | G96 | 0.1+  | 0.1-  | 2007 11 11 | D29 | 0.3+ | 0.3+ | 2007 12 04 | 704 | 0.8+  | 1.0+  |
| 2004 12 20 | G96 | 0.2-  | 0.5-  | 2007 11 11 | D29 | 0.2+ | 0.2+ | 2007 12 04 | 704 | 0.5+  | 0.1+  |

**(172840)\* 2005 EK<sub>3</sub>**

Discovered 2005 Mar. 1 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 225.98971  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.26998110 | $\omega$ | 77.87395  | -0.97605877 | +0.20690965 |
| $a$ | 2.3709031  | $\Omega$ | 114.03703 | -0.21693229 | -0.90365213 |
| $e$ | 0.0729977  | $i$      | 4.21117   | -0.01580039 | -0.37496831 |
| $P$ | 3.65       | $H$      | 17.0      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 21 | 691 | 0.5- | 0.6- | 2005 02 14 | 704 | 0.4+ | 0.5+ | 2007 11 09 | 691 | 0.5- | 0.5+ |
| 2000 12 21 | 691 | 0.3- | 0.7- | 2005 03 01 | 691 | 0.1+ | 0.3+ | 2007 11 09 | 291 | 0.6- | 0.1+ |
| 2000 12 21 | 691 | 0.3- | 0.7- | 2005 03 01 | 691 | 0.2+ | 0.5+ | 2007 11 09 | 291 | 0.3- | 0.3+ |
| 2003 10 22 | 645 | 0.1+ | 0.0  | 2005 03 01 | 691 | 0.2+ | 0.3+ | 2007 11 09 | 291 | 0.1- | 0.1+ |
| 2003 10 22 | 645 | 0.1+ | 0.0  | 2005 03 04 | 704 | 0.6+ | 0.3- | 2007 11 09 | 291 | 0.1+ | 0.3+ |
| 2003 10 24 | 645 | 0.0  | 0.1- | 2005 03 04 | 704 | 1.0+ | 1.4- | 2007 11 09 | 291 | 0.1- | 0.2+ |
| 2003 10 24 | 645 | 0.1+ | 0.0  | 2005 03 04 | 704 | 1.0+ | 0.4- | 2007 11 09 | 291 | 0.0  | 0.2+ |
| 2003 11 16 | 645 | 0.1+ | 0.1- | 2006 06 19 | G96 | 0.2+ | 0.2+ | 2007 11 13 | 691 | 0.3+ | 0.2- |
| 2003 11 16 | 645 | 0.1+ | 0.1- | 2006 06 19 | G96 | 0.2+ | 0.4+ | 2007 11 13 | 691 | 0.4- | 0.4+ |
| 2003 11 20 | 645 | 0.0  | 0.1- | 2006 06 19 | G96 | 0.7- | 0.3- | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2003 11 20 | 645 | 0.1+ | 0.0  | 2006 06 19 | G96 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.1- | 0.2+ |
| 2004 12 20 | G96 | 0.6- | 0.1- | 2006 06 20 | 691 | 0.5- | 0.0  | 2007 11 20 | 691 | 0.2- | 0.3+ |
| 2004 12 20 | G96 | 0.3- | 0.2+ | 2006 06 20 | 691 | 0.2- | 0.4+ | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2004 12 20 | G96 | 0.3- | 0.0  | 2006 06 20 | 691 | 0.2- | 0.7+ | 2007 11 20 | 703 | 1.0- | 0.9+ |
| 2004 12 20 | G96 | 0.7- | 0.1- | 2007 11 01 | 691 | 0.2- | 0.1+ | 2007 11 20 | 703 | 0.9- | 0.0  |
| 2005 02 04 | G96 | 0.1+ | 0.2- | 2007 11 01 | 691 | 0.1- | 0.3+ | 2007 11 20 | 703 | 0.7+ | 0.4- |
| 2005 02 04 | G96 | 0.1+ | 0.3- | 2007 11 01 | 691 | 0.2+ | 0.2+ | 2007 11 20 | 703 | 0.3- | 0.4- |
| 2005 02 04 | G96 | 0.1+ | 0.3- | 2007 11 05 | 691 | 0.3- | 0.2+ | 2007 12 05 | 704 | 1.0+ | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 04 | G96 | 0.1−  | 0.2−  | 2007 11 05 | 691 | 1.0+ | 0.5+ | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2005 02 14 | 704 | 0.9+  | 0.6+  | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.3− | 0.9+ |
| 2005 02 14 | 704 | 0.0   | 0.7+  | 2007 11 09 | 691 | 0.2− | 0.2+ |            |     |      |      |
| 2005 02 14 | 704 | (1.8+ | 2.9+) | 2007 11 09 | 691 | 0.1− | 0.0  |            |     |      |      |

**(172841)\* 2005 EA<sub>5</sub>**

Discovered 2005 Mar. 1 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.14991  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.26676120 | $\omega$ | 90.19500 | −0.11189111   | −0.99362395 |
| <i>a</i> | 2.3899434  | $\Omega$ | 6.28010  | +0.85392672   | −0.10326939 |
| <i>e</i> | 0.0774447  | <i>i</i> | 7.27390  | +0.50822193   | −0.04524243 |
| <i>P</i> | 3.69       | <i>H</i> | 16.7     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 18 | 704 | 0.5−  | 0.2−  | 2005 03 08 | 699 | 0.9− | 0.1− | 2005 05 13 | G96 | 0.2−  | 0.3+  |
| 2001 01 18 | 704 | 0.4−  | 0.1+  | 2005 03 08 | 699 | 1.2+ | 0.7+ | 2005 05 13 | G96 | 0.3−  | 0.2−  |
| 2001 01 18 | 704 | 0.6+  | 0.3−  | 2005 03 08 | 699 | 0.9− | 1.2+ | 2005 05 13 | G96 | 0.2−  | 0.5+  |
| 2001 05 20 | 807 | 0.3+  | 0.2+  | 2005 03 08 | 699 | 0.5+ | 0.6− | 2005 05 13 | G96 | 0.0   | 0.1−  |
| 2001 05 21 | 807 | 0.3+  | 0.3+  | 2005 03 08 | 699 | 0.3− | 0.1− | 2007 11 08 | 704 | (0.5+ | 1.7−) |
| 2003 10 19 | 691 | 0.2+  | 0.3+  | 2005 03 08 | 699 | 0.7+ | 0.5− | 2007 11 08 | 704 | 0.3+  | 0.1+  |
| 2003 10 19 | 691 | 0.2+  | 0.1+  | 2005 03 09 | 699 | 0.5+ | 0.1− | 2007 11 08 | 704 | 1.0−  | 0.2+  |
| 2003 10 19 | 691 | 0.0   | 0.0   | 2005 03 09 | 699 | 0.2− | 0.1+ | 2007 11 09 | 704 | 0.0   | 0.0   |
| 2003 10 24 | 704 | 0.0   | 0.5+  | 2005 03 09 | 699 | 1.2+ | 0.2+ | 2007 11 09 | 704 | 0.1−  | 0.7+  |
| 2003 10 24 | 704 | 0.5−  | 1.2+  | 2005 03 09 | 699 | 0.3+ | 0.8− | 2007 11 09 | 704 | 0.0   | 0.5+  |
| 2003 10 24 | 704 | 0.8−  | 0.9+  | 2005 03 16 | G96 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.2−  | 0.9−  |
| 2003 10 24 | 704 | 1.4−  | 0.1+  | 2005 03 16 | G96 | 0.4− | 0.1− | 2007 11 09 | 704 | 0.3+  | 0.7−  |
| 2003 10 24 | 704 | 1.4−  | 0.4+  | 2005 03 16 | G96 | 0.3− | 0.1+ | 2007 11 17 | 704 | 0.2+  | 0.1−  |
| 2005 03 01 | 691 | 0.1+  | 0.2+  | 2005 03 16 | G96 | 0.5− | 0.0  | 2007 11 17 | 704 | 0.6+  | 1.3−  |
| 2005 03 01 | 691 | 0.1−  | 0.4+  | 2005 04 04 | G96 | 0.1+ | 0.2− | 2007 11 17 | 704 | 0.1+  | 0.3−  |
| 2005 03 01 | 691 | 0.2+  | 0.3+  | 2005 04 04 | G96 | 0.1− | 0.1− | 2007 11 17 | 704 | 0.9+  | 1.0−  |
| 2005 03 03 | 703 | 0.7+  | 0.3+  | 2005 04 04 | G96 | 0.0  | 0.0  | 2007 11 17 | 704 | 0.6+  | 0.8−  |
| 2005 03 03 | 703 | (0.2+ | 1.9+) | 2005 04 04 | G96 | 0.2− | 0.0  | 2007 12 16 | 704 | 0.9−  | 0.2+  |
| 2005 03 03 | 703 | 0.7+  | 0.5+  | 2005 05 04 | G96 | 0.0  | 0.3+ | 2007 12 16 | 704 | 0.2−  | 0.3+  |
| 2005 03 03 | 703 | 0.3−  | 0.6−  | 2005 05 04 | G96 | 0.1− | 0.1− | 2007 12 16 | 704 | 0.1+  | 0.8+  |
| 2005 03 08 | 699 | 0.3−  | 1.2−  | 2005 05 04 | G96 | 0.5− | 0.1− | 2007 12 16 | 704 | 0.3−  | 0.1−  |
| 2005 03 08 | 699 | (1.5+ | 1.1+) | 2005 05 04 | G96 | 0.1+ | 0.0  |            |     |       |       |

**(172842)\* 2005 EN<sub>9</sub>**

Discovered 2005 Mar. 2 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 277.90166  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26797470 | $\omega$ | 300.90811 | −0.80558168   | −0.59192262 |
| <i>a</i> | 2.3827228  | $\Omega$ | 202.82969 | +0.56376420   | −0.75240940 |
| <i>e</i> | 0.0654092  | <i>i</i> | 3.81315   | +0.18223087   | −0.28897700 |
| <i>P</i> | 3.68       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 02 | 704 | 0.4−  | 0.1−  | 2005 03 11 | 704 | (2.0+ | 0.3+) | 2007 10 20 | G96 | 0.2− | 0.1− |
| 2001 01 02 | 704 | 0.3+  | 0.2+  | 2005 03 11 | 704 | 1.0+  | 0.3+  | 2007 11 04 | 704 | 0.3− | 0.5− |
| 2001 01 02 | 704 | 0.1+  | 1.0+  | 2005 03 11 | 704 | (1.7+ | 1.8+) | 2007 11 04 | 704 | 0.7− | 0.1− |
| 2003 09 16 | 691 | 0.3−  | 0.2+  | 2005 03 11 | 704 | 0.7+  | 0.2−  | 2007 11 04 | 704 | 0.7− | 0.4− |
| 2003 09 16 | 691 | 0.2+  | 0.1+  | 2005 03 17 | 703 | 0.1+  | 0.2−  | 2007 11 04 | 704 | 1.1− | 0.3+ |
| 2003 09 16 | 691 | 0.0   | 0.2+  | 2005 03 17 | 703 | 0.0   | 0.4−  | 2007 11 08 | 691 | 0.3− | 0.1+ |
| 2003 09 29 | 704 | 0.4−  | 0.1+  | 2005 03 17 | 703 | 0.4+  | 0.9−  | 2007 11 08 | 691 | 0.6+ | 0.6− |
| 2003 09 29 | 704 | 0.9−  | 0.5+  | 2005 03 17 | 703 | 0.8−  | 0.0   | 2007 11 08 | 691 | 1.2+ | 0.4+ |
| 2003 09 29 | 704 | 0.5−  | 0.2+  | 2005 04 12 | G96 | 0.3+  | 0.6−  | 2007 11 14 | 704 | 0.0  | 0.2+ |
| 2003 10 21 | 699 | (2.2+ | 2.0+) | 2005 04 12 | G96 | 0.2−  | 0.3−  | 2007 11 14 | 704 | 0.5+ | 0.0  |
| 2003 10 21 | 699 | 0.1+  | 0.3+  | 2005 04 12 | G96 | 0.1+  | 0.2−  | 2007 11 14 | 704 | 0.2+ | 0.3+ |
| 2003 10 21 | 699 | 0.9+  | 0.1+  | 2005 04 12 | G96 | 0.0   | 0.2−  | 2007 11 14 | 704 | 0.0  | 0.3+ |
| 2003 10 21 | 699 | 0.9+  | 1.1−  | 2005 04 15 | 691 | 0.1+  | 0.1−  | 2007 11 14 | 704 | 0.2− | 0.8+ |
| 2005 03 02 | 691 | 0.1+  | 0.1−  | 2005 04 15 | 691 | 0.1−  | 0.0   | 2007 11 14 | 704 | 0.7− | 0.2+ |
| 2005 03 02 | 691 | 0.3+  | 0.0   | 2005 04 15 | 691 | 0.2−  | 0.0   | 2007 11 14 | 704 | 0.6− | 0.1− |
| 2005 03 02 | 691 | 0.2+  | 0.2−  | 2005 05 08 | G96 | 0.3−  | 0.3−  | 2007 11 14 | 704 | 0.1− | 0.6+ |
| 2005 03 03 | 703 | 0.7−  | 0.1+  | 2005 05 08 | G96 | 0.2−  | 0.3−  | 2007 11 20 | 703 | 0.3+ | 1.1+ |
| 2005 03 03 | 703 | 0.8−  | 0.5−  | 2005 05 08 | G96 | 0.4−  | 0.1−  | 2007 11 20 | 703 | 0.2− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 703 | 0.7− | 0.7− | 2005 05 08 | G96 | 0.5− | 0.6− | 2007 11 20 | 703 | 0.1+ | 0.6− |
| 2005 03 03 | 703 | 0.0  | 0.1+ | 2006 06 19 | G96 | 0.1− | 0.2+ | 2007 11 20 | 703 | 0.2− | 0.7− |
| 2005 03 07 | 683 | 0.5− | 1.0+ | 2006 06 19 | G96 | 0.3+ | 0.6+ | 2007 11 20 | G96 | 0.0  | 0.3− |
| 2005 03 07 | 683 | 0.6− | 0.7+ | 2006 06 19 | G96 | 0.1+ | 0.2+ | 2007 11 20 | G96 | 0.1− | 0.5− |
| 2005 03 07 | 683 | 0.6+ | 0.5+ | 2006 06 19 | G96 | 0.5+ | 0.3+ | 2007 11 20 | G96 | 0.2− | 0.2− |
| 2005 03 08 | 683 | 0.3− | 0.2− | 2006 06 19 | G96 | 0.2− | 0.1− | 2007 11 20 | G96 | 0.5− | 0.7− |
| 2005 03 08 | 683 | 0.6− | 0.2+ | 2006 06 19 | G96 | 0.4− | 0.2− | 2007 11 20 | G96 | 0.3− | 0.5− |
| 2005 03 08 | 683 | 0.3− | 0.7+ | 2006 06 19 | G96 | 0.5− | 0.0  | 2007 11 20 | G96 | 0.0  | 0.6− |
| 2005 03 09 | 704 | 0.7+ | 0.1+ | 2006 06 19 | G96 | 0.0  | 0.3+ | 2007 11 20 | G96 | 0.4− | 0.3− |
| 2005 03 09 | 704 | 0.5+ | 0.5+ | 2007 09 15 | G96 | 0.3− | 0.0  | 2007 11 20 | G96 | 0.2− | 0.6− |
| 2005 03 09 | 704 | 0.1+ | 0.4+ | 2007 09 15 | G96 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.0  | 0.8+ |
| 2005 03 09 | 704 | 0.6+ | 0.4+ | 2007 09 15 | G96 | 0.3− | 0.1− | 2007 12 04 | 704 | 0.7+ | 0.5− |
| 2005 03 09 | 704 | 0.8+ | 0.9+ | 2007 09 15 | G96 | 0.0  | 0.2− | 2007 12 04 | 704 | 0.3− | 0.5+ |
| 2005 03 10 | 683 | 0.9− | 1.0+ | 2007 10 20 | G96 | 0.1+ | 0.1− | 2007 12 04 | 704 | 0.1+ | 0.2+ |
| 2005 03 10 | 683 | 1.1+ | 0.3+ | 2007 10 20 | G96 | 0.1− | 0.1− | 2007 12 04 | 704 | 0.4− | 0.8+ |
| 2005 03 10 | 683 | 1.2− | 0.0  | 2007 10 20 | G96 | 0.1− | 0.2− |            |     |      |      |

**(172843)\* 2005 ER<sub>9</sub> = 1998 HY<sub>56</sub>**

Discovered 2005 Mar. 2 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76727)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 256.92940  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27553742 | $\omega$ | 349.00980 | −0.99992976   | +0.00043041 |
| <i>a</i> | 2.3389216  | $\Omega$ | 191.03549 | +0.00363805   | −0.93994948 |
| <i>e</i> | 0.1835282  | <i>i</i> | 3.54752   | −0.01127984   | −0.34131334 |
| <i>P</i> | 3.58       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 03 25 | 704 | 0.1+  | 0.8−  | 2005 03 03 | 703 | 0.1+  | 0.2+  | 2005 03 17 | 704 | 0.7+ | 0.0  |
| 1998 03 25 | 704 | 0.9−  | 1.6+  | 2005 03 07 | 683 | 0.1+  | 1.1+  | 2005 03 17 | 704 | 0.0  | 0.4+ |
| 1998 03 25 | 704 | 1.0−  | 0.4−  | 2005 03 07 | 683 | 0.7−  | 1.4+  | 2005 03 17 | 704 | 0.2+ | 0.2+ |
| 1998 03 25 | 704 | (5.9− | 0.6−) | 2005 03 07 | 683 | 0.9−  | 0.4+  | 2005 03 17 | 704 | 0.1+ | 0.5− |
| 1998 03 29 | 704 | 0.9−  | 0.4−  | 2005 03 08 | 699 | 0.4−  | 0.2+  | 2005 04 01 | 699 | 1.1+ | 0.0  |
| 1998 03 29 | 704 | 0.2+  | 0.9+  | 2005 03 08 | 683 | 0.3−  | 0.4−  | 2005 04 01 | 699 | 0.7+ | 0.0  |
| 1998 03 29 | 704 | 0.6−  | 0.3−  | 2005 03 08 | 704 | 0.7+  | 0.5+  | 2005 04 01 | 699 | 0.1− | 0.0  |
| 1998 03 29 | 704 | 0.6−  | 0.5+  | 2005 03 08 | 683 | 0.3−  | 0.2−  | 2005 04 01 | 699 | 0.9+ | 0.2− |
| 1998 03 29 | 704 | (3.1− | 1.7−) | 2005 03 08 | 699 | 0.4−  | 0.2−  | 2005 04 04 | 703 | 0.0  | 0.6− |
| 1998 04 21 | 704 | 0.1−  | 1.1+  | 2005 03 08 | 704 | 0.2+  | 0.3+  | 2005 04 04 | 703 | 0.7− | 0.6− |
| 1998 04 21 | 704 | 1.5+  | 0.9−  | 2005 03 08 | 704 | 0.2+  | 0.6+  | 2005 04 04 | 703 | 0.4− | 0.3− |
| 1998 04 21 | 704 | 0.8+  | 1.4+  | 2005 03 08 | 699 | 0.2−  | 0.1+  | 2005 04 04 | 703 | 0.1− | 0.1− |
| 1998 04 21 | 704 | 0.2+  | 0.5−  | 2005 03 08 | 704 | 0.3+  | 0.7+  | 2005 04 09 | G96 | 0.2− | 0.2− |
| 1998 04 21 | 704 | 1.6+  | 0.4−  | 2005 03 08 | 704 | 0.3+  | 1.1+  | 2005 04 09 | G96 | 0.3− | 0.1− |
| 1998 04 22 | 704 | 1.4−  | 1.7+  | 2005 03 09 | 699 | 0.2−  | 0.2+  | 2005 04 09 | G96 | 0.3− | 0.1− |
| 1998 04 22 | 704 | 1.5+  | 0.2+  | 2005 03 09 | 683 | 0.1+  | 1.2−  | 2005 04 09 | G96 | 0.2− | 0.1− |
| 1998 04 22 | 704 | 0.3−  | 1.1−  | 2005 03 09 | 683 | 0.6−  | 1.1−  | 2005 04 10 | 691 | 0.2+ | 0.2+ |
| 1998 04 22 | 704 | 0.9+  | 0.4+  | 2005 03 09 | 699 | 0.1−  | 0.3+  | 2005 04 10 | 691 | 0.2+ | 0.1− |
| 2003 10 16 | 691 | 0.1+  | 0.2+  | 2005 03 09 | 683 | 0.2−  | 0.4−  | 2005 04 10 | 691 | 0.1+ | 0.2+ |
| 2003 10 16 | 691 | 0.3−  | 0.5+  | 2005 03 09 | 699 | 0.7−  | 0.8+  | 2005 05 04 | G96 | 0.2− | 0.0  |
| 2003 10 16 | 691 | 0.3−  | 0.2+  | 2005 03 09 | 699 | 0.7−  | 0.5+  | 2005 05 04 | G96 | 0.3− | 0.2− |
| 2005 03 02 | 691 | 0.1+  | 0.2+  | 2005 03 10 | 683 | 0.5−  | 1.4−  | 2005 05 04 | G96 | 0.2− | 0.2− |
| 2005 03 02 | 691 | 0.1−  | 0.3−  | 2005 03 10 | 683 | (0.3− | 2.0−) | 2005 05 04 | G96 | 0.3− | 0.3− |
| 2005 03 02 | 691 | 0.2−  | 0.1+  | 2005 03 10 | 683 | 0.2−  | 0.7−  | 2007 10 20 | G96 | 0.6+ | 0.3+ |
| 2005 03 03 | 703 | 0.2+  | 0.4−  | 2005 03 11 | G96 | 0.2−  | 0.2−  | 2007 10 20 | G96 | 0.6+ | 0.1− |
| 2005 03 03 | 703 | 0.1+  | 0.4+  | 2005 03 11 | G96 | 0.2−  | 0.3−  | 2007 10 20 | G96 | 0.0  | 0.0  |
| 2005 03 03 | 703 | 0.1+  | 0.7−  | 2005 03 11 | G96 | 0.1−  | 0.2−  | 2007 10 20 | G96 | 0.5+ | 0.3− |
| 2005 03 03 | 703 | 0.4+  | 0.1+  | 2005 03 11 | G96 | 0.2−  | 0.3−  | 2007 11 08 | 691 | 0.0  | 0.2− |
| 2005 03 03 | 704 | 0.1+  | 1.2−  | 2005 03 14 | 704 | 0.4+  | 0.0   | 2007 11 08 | 691 | 0.3− | 0.3− |
| 2005 03 03 | 704 | 0.4+  | 0.6−  | 2005 03 14 | 704 | 1.5+  | 0.7+  | 2007 11 08 | 691 | 0.2− | 0.6+ |
| 2005 03 03 | 704 | 0.1+  | 0.6−  | 2005 03 14 | 704 | 0.2+  | 0.4−  | 2007 11 20 | G96 | 0.2+ | 0.1− |
| 2005 03 03 | 703 | 0.5−  | 0.9+  | 2005 03 14 | 704 | 0.4+  | 0.1+  | 2007 11 20 | G96 | 0.1+ | 0.2− |
| 2005 03 03 | 703 | 0.5−  | 0.7+  | 2005 03 14 | 704 | 0.2−  | 0.1−  | 2007 11 20 | G96 | 0.7+ | 0.0  |
| 2005 03 03 | 703 | 0.1−  | 0.8+  | 2005 03 17 | 704 | 0.6+  | 0.3+  | 2007 11 20 | G96 | 0.2+ | 0.1− |

2007 DEC. 24

M.P.O. 129495

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 174.52677  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24309763 | $\omega$ | 316.75284 | -0.48299478   | +0.87527144 |
| <i>a</i> | 2.5426245  | $\Omega$ | 284.35173 | -0.79622544   | -0.45081584 |
| <i>e</i> | 0.1089345  | <i>i</i> | 1.46795   | -0.36433651   | -0.17511421 |
| <i>P</i> | 4.05       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |        |       |            |     |       |       |            |     |      |      |
|------------|-----|--------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 21 | 809 | 1.3-   | 1.2-  | 2005 03 09 | 699 | 0.4-  | 0.4+  | 2006 06 19 | G96 | 0.1- | 0.6- |
| 1993 03 22 | 809 | 0.9-   | 0.4-  | 2005 03 09 | 699 | 1.1+  | 0.6+  | 2006 06 19 | G96 | 0.0  | 0.2+ |
| 1998 09 01 | 691 | 0.5+   | 0.8-  | 2005 03 11 | 704 | 0.6+  | 0.0   | 2006 07 25 | 644 | 0.5- | 0.2+ |
| 1998 09 01 | 691 | 0.1+   | 0.4-  | 2005 03 11 | G96 | 0.3-  | 0.2-  | 2006 07 25 | 644 | 0.7- | 0.5+ |
| 1998 09 01 | 691 | 0.5+   | 0.1+  | 2005 03 11 | G96 | 0.2-  | 0.3-  | 2006 07 25 | 644 | 0.3- | 0.6+ |
| 2001 03 18 | 704 | 0.7+   | 0.0   | 2005 03 11 | G96 | 0.3-  | 0.3-  | 2006 08 14 | 644 | 0.6- | 0.5+ |
| 2001 03 18 | 704 | 0.6-   | 1.2+  | 2005 03 11 | G96 | 0.1-  | 0.3-  | 2006 08 14 | 644 | 0.5- | 0.2+ |
| 2001 03 18 | 704 | 0.1+   | 0.7+  | 2005 03 11 | 704 | 0.9+  | 0.6-  | 2006 08 14 | 644 | 0.5- | 0.4+ |
| 2001 03 18 | 704 | (1.0+) | 2.0+) | 2005 03 11 | 704 | 0.0   | 0.3+  | 2006 08 16 | 644 | 0.2+ | 0.3+ |
| 2002 08 12 | 807 | 0.1-   | 0.5+  | 2005 03 11 | 704 | 0.0   | 1.0-  | 2006 08 16 | 644 | 0.0  | 0.5+ |
| 2002 08 12 | 807 | 0.0    | 0.5+  | 2005 03 13 | 691 | 0.1+  | 0.2+  | 2006 08 16 | 644 | 0.1+ | 0.2+ |
| 2002 08 17 | 644 | 0.1-   | 0.8+  | 2005 03 13 | 691 | 0.2-  | 0.1+  | 2006 08 17 | 644 | 0.0  | 0.8+ |
| 2002 08 17 | 644 | 0.0    | 0.6+  | 2005 03 13 | 691 | 0.1+  | 0.7+  | 2006 08 17 | 644 | 0.0  | 0.4+ |
| 2002 08 17 | 644 | 0.6-   | 0.8+  | 2005 03 14 | 704 | 0.3-  | 0.5+  | 2006 08 17 | 644 | 0.0  | 0.7+ |
| 2005 03 02 | 691 | 0.4+   | 0.4-  | 2005 03 14 | 704 | 0.4+  | 1.0+  | 2006 10 22 | G96 | 0.5- | 0.3- |
| 2005 03 02 | 691 | 0.4+   | 0.1+  | 2005 03 14 | 704 | (1.4- | 1.8+) | 2006 10 22 | G96 | 0.3- | 0.1- |
| 2005 03 02 | 691 | 0.1-   | 0.5-  | 2005 03 14 | 704 | 0.4+  | 0.6+  | 2006 10 22 | G96 | 0.1- | 0.4+ |
| 2005 03 03 | 703 | 0.5-   | 0.1+  | 2005 03 14 | 704 | 0.5+  | 0.4-  | 2006 10 22 | G96 | 0.1- | 0.5- |
| 2005 03 03 | 703 | 0.2-   | 0.2+  | 2005 05 08 | G96 | 0.1-  | 0.2-  | 2007 10 16 | G96 | 0.4- | 0.2+ |
| 2005 03 03 | 703 | 0.5-   | 0.8-  | 2005 05 08 | G96 | 0.2-  | 0.7-  | 2007 10 16 | G96 | 0.2- | 0.5+ |
| 2005 03 03 | 703 | 0.2-   | 0.2+  | 2005 05 08 | G96 | 0.0   | 0.3-  | 2007 10 16 | G96 | 0.1- | 0.5+ |
| 2005 03 08 | 704 | 0.1+   | 0.3+  | 2005 05 08 | G96 | 0.4-  | 0.4-  | 2007 10 16 | G96 | 0.1- | 0.1- |
| 2005 03 08 | 704 | 0.1-   | 0.6+  | 2005 05 12 | G96 | 0.8-  | 0.0   | 2007 12 15 | G96 | 0.5- | 0.0  |
| 2005 03 08 | 704 | 0.3+   | 0.5+  | 2005 05 12 | G96 | 0.5-  | 0.0   | 2007 12 15 | G96 | 0.1+ | 0.1+ |
| 2005 03 08 | 704 | 0.1+   | 0.1+  | 2005 05 12 | G96 | 0.3-  | 0.2-  | 2007 12 15 | G96 | 0.4- | 0.0  |
| 2005 03 08 | 704 | 0.2+   | 0.2-  | 2005 05 12 | G96 | 0.5+  | 0.9-  | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2005 03 09 | 699 | 0.3-   | 0.5+  | 2006 06 19 | G96 | 0.1+  | 0.5-  |            |     |      |      |
| 2005 03 09 | 699 | 0.5+   | 0.8+  | 2006 06 19 | G96 | 0.3-  | 0.4-  |            |     |      |      |

(172845)\* 2005 EK<sub>11</sub> = 2001 BZ<sub>9</sub>

Discovered 2005 Mar. 2 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 76731)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 312.94940  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27976431 | $\omega$ | 357.90219 | -0.29806954   | -0.94988438 |
| <i>a</i> | 2.3153030  | $\Omega$ | 109.42913 | +0.87722522   | -0.31149752 |
| <i>e</i> | 0.0913772  | <i>i</i> | 5.73292   | +0.37633824   | -0.02624800 |
| <i>P</i> | 3.52       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 27 | 704 | 1.2+  | 0.0   | 2005 02 14 | 704 | 0.1-  | 0.3+  | 2007 11 02 | 703 | 0.5+ | 0.4+ |
| 2000 11 27 | 704 | 0.3-  | 1.2-  | 2005 02 14 | 704 | 1.2-  | 0.6-  | 2007 11 06 | D29 | 0.4+ | 0.3- |
| 2000 11 27 | 704 | 0.7+  | 0.6+  | 2005 02 14 | 704 | 0.1-  | 0.2+  | 2007 11 09 | 703 | 0.0  | 0.2+ |
| 2000 11 27 | 704 | 0.1-  | 0.5+  | 2005 03 02 | 703 | 0.0   | 0.3+  | 2007 11 09 | 703 | 0.8- | 0.0  |
| 2000 11 27 | 704 | 0.3-  | 0.5+  | 2005 03 02 | 703 | 0.5-  | 0.2-  | 2007 11 09 | 703 | 0.3+ | 0.3+ |
| 2001 01 19 | 691 | 0.5-  | 0.3-  | 2005 03 02 | 703 | 0.7-  | 1.2+  | 2007 11 09 | 703 | 1.4- | 0.1+ |
| 2001 01 19 | 691 | 0.6-  | 0.2-  | 2005 03 02 | 703 | 0.1+  | 0.6+  | 2007 11 12 | 704 | 0.5- | 0.2+ |
| 2001 01 19 | 691 | 0.5-  | 0.3-  | 2005 03 04 | 704 | 1.0+  | 0.6-  | 2007 11 12 | 704 | 0.5- | 0.5+ |
| 2001 01 20 | 691 | 0.3+  | 0.7-  | 2005 03 04 | 704 | 0.3+  | 0.8+  | 2007 11 12 | 704 | 0.0  | 0.1+ |
| 2001 01 20 | 691 | 0.0   | 0.9-  | 2005 03 04 | 704 | 0.9+  | 0.5+  | 2007 11 12 | 704 | 0.2- | 0.1+ |
| 2001 01 20 | 691 | 1.0+  | 0.1-  | 2005 03 04 | 704 | 1.4+  | 0.1+  | 2007 11 12 | 704 | 0.1- | 1.2+ |
| 2001 01 21 | 691 | 0.3-  | 0.5+  | 2005 03 16 | 704 | (1.7- | 0.5+) | 2007 11 14 | 699 | 0.7+ | 0.3- |
| 2001 01 21 | 691 | 0.6-  | 0.2-  | 2005 03 16 | 704 | 0.4-  | 0.3-  | 2007 11 14 | 699 | 0.2+ | 0.7+ |
| 2001 01 21 | 691 | (1.8- | 0.2+) | 2005 03 16 | 703 | 0.4-  | 0.2-  | 2007 11 14 | 699 | 0.3- | 0.4- |
| 2001 01 22 | 691 | 0.4+  | 0.0   | 2005 03 16 | 703 | (1.6- | 0.2+) | 2007 11 14 | 699 | 1.5+ | 0.9+ |
| 2001 01 22 | 691 | 0.2+  | 0.1+  | 2005 03 16 | 704 | 0.3+  | 0.5-  | 2007 11 20 | 703 | 0.7- | 0.4- |
| 2001 01 22 | 691 | 0.5+  | 0.0   | 2005 03 16 | 703 | 1.0-  | 1.1+  | 2007 11 20 | 703 | 0.2- | 0.4- |
| 2002 05 09 | 644 | 0.0   | 0.6+  | 2005 03 16 | 704 | 0.1+  | 0.7+  | 2007 11 20 | 703 | 0.8- | 0.6+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 09 | 644 | 0.2- | 0.5+ | 2005 03 16 | 703 | 0.5- | 0.9+ | 2007 11 20 | 703 | 0.7+ | 0.3- |
| 2002 05 09 | 644 | 0.2+ | 0.3+ | 2005 03 16 | 704 | 0.3- | 0.7+ | 2007 12 04 | 704 | 0.1+ | 1.3+ |
| 2005 02 03 | 704 | 0.9+ | 1.2- | 2007 10 19 | D35 | 0.4- | 0.3+ | 2007 12 04 | 704 | 0.2- | 0.4- |
| 2005 02 03 | 704 | 0.1+ | 0.4- | 2007 10 19 | D35 | 0.5- | 0.2- | 2007 12 04 | 704 | 0.8- | 0.4+ |
| 2005 02 03 | 704 | 1.1+ | 0.7+ | 2007 10 19 | D35 | 0.1+ | 0.2+ | 2007 12 04 | 704 | 0.5- | 0.6+ |
| 2005 02 03 | 704 | 0.5+ | 1.4- | 2007 11 02 | 703 | 0.2- | 0.0  | 2007 12 04 | 704 | 0.3- | 0.4+ |
| 2005 02 14 | 704 | 0.0  | 0.2+ | 2007 11 02 | 703 | 0.8+ | 1.3+ |            |     |      |      |
| 2005 02 14 | 704 | 0.4- | 0.2- | 2007 11 02 | 703 | 0.9+ | 0.9+ |            |     |      |      |

(172846)\* 2005 EH<sub>14</sub>

Discovered 2005 Mar. 3 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 192.95185  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23070389 | $\omega$ | 137.86666 | -0.92265925   | +0.38344407 |
| <i>a</i> | 2.6328904  | $\Omega$ | 64.72305  | -0.36476220   | -0.83346185 |
| <i>e</i> | 0.0697713  | <i>i</i> | 2.59065   | -0.12509373   | -0.39788438 |
| <i>P</i> | 4.27       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 10 08 | 691 | 0.0   | 0.6+  | 2005 03 04 | 704 | (2.3+ | 1.5-) | 2007 10 06 | 691 | 0.1- | 0.3+ |
| 1994 10 08 | 691 | 0.1+  | 0.8+  | 2005 03 04 | 704 | (2.5+ | 1.6-) | 2007 10 06 | 691 | 0.1+ | 0.0  |
| 1994 10 08 | 691 | 0.2-  | 0.7-  | 2005 03 04 | 704 | (2.2+ | 0.8-) | 2007 10 14 | 691 | 0.1+ | 0.5+ |
| 2001 03 19 | 691 | 0.0   | 0.6+  | 2005 03 04 | 704 | (1.6+ | 0.1-) | 2007 10 14 | 691 | 0.2- | 0.3+ |
| 2001 03 19 | 691 | 0.0   | 0.5+  | 2005 03 07 | H06 | 0.4+  | 0.2-  | 2007 10 14 | 691 | 0.1- | 0.0  |
| 2001 03 19 | 691 | 0.0   | 0.5+  | 2005 03 07 | H06 | 0.6-  | 0.1+  | 2007 10 15 | 703 | 0.8- | 0.2+ |
| 2002 08 18 | 644 | 0.1-  | 1.0+  | 2005 03 07 | H06 | 0.7-  | 0.2-  | 2007 10 15 | 703 | 1.0- | 0.4- |
| 2002 08 18 | 644 | 0.5-  | 1.1+  | 2005 03 08 | 699 | 0.2+  | 0.1+  | 2007 10 15 | 703 | 0.2- | 0.9+ |
| 2002 08 18 | 644 | 0.3-  | 1.1+  | 2005 03 08 | 699 | 0.8+  | 0.1+  | 2007 10 15 | 703 | 0.6+ | 0.4+ |
| 2002 08 29 | 644 | 0.1-  | 0.8+  | 2005 03 08 | 699 | 0.7+  | 0.1-  | 2007 10 18 | 691 | 0.5- | 0.0  |
| 2002 08 29 | 644 | 0.2-  | 0.5+  | 2005 03 08 | 699 | 0.2+  | 0.3+  | 2007 10 18 | 691 | 0.4- | 0.1- |
| 2002 08 29 | 644 | 0.3+  | 0.5+  | 2005 03 09 | 704 | 0.2+  | 0.7+  | 2007 10 18 | 691 | 0.0  | 0.2- |
| 2003 11 19 | 699 | (0.2- | 1.8-) | 2005 03 09 | 704 | 0.7+  | 0.5+  | 2007 11 05 | 704 | 0.2- | 0.8+ |
| 2003 11 19 | 699 | 0.3+  | 0.6-  | 2005 03 09 | 704 | 0.3+  | 0.5+  | 2007 11 05 | 704 | 1.2+ | 0.3+ |
| 2003 11 19 | 699 | 1.1-  | 0.1-  | 2005 03 09 | 704 | 1.3+  | 0.7+  | 2007 11 05 | 704 | 0.3+ | 0.7+ |
| 2003 11 19 | 699 | 0.1+  | 1.1+  | 2005 03 12 | 704 | 0.2+  | 0.1-  | 2007 11 07 | G96 | 0.2+ | 0.6- |
| 2003 11 24 | 699 | (0.1- | 1.6-) | 2005 03 12 | 704 | 0.5+  | 0.2-  | 2007 11 07 | G96 | 0.4+ | 0.6- |
| 2003 11 24 | 699 | 0.4-  | 0.3-  | 2005 03 12 | 704 | 0.4+  | 0.1+  | 2007 11 07 | G96 | 0.1- | 0.6- |
| 2003 11 24 | 699 | (1.9+ | 0.4-) | 2005 03 12 | 704 | 0.3-  | 0.0   | 2007 11 07 | G96 | 0.2+ | 0.7- |
| 2003 11 24 | 699 | 0.6+  | 0.8+  | 2005 03 12 | 704 | 0.6+  | 0.3+  | 2007 11 14 | 704 | 0.5- | 1.0+ |
| 2005 03 03 | 691 | 0.1+  | 0.0   | 2005 03 16 | 704 | 0.3+  | 0.1+  | 2007 11 14 | 704 | 0.9+ | 1.3+ |
| 2005 03 03 | 691 | 0.1+  | 0.2+  | 2005 03 16 | 704 | 0.1+  | 0.2-  | 2007 11 14 | 704 | 0.1+ | 0.1+ |
| 2005 03 03 | 691 | 0.3+  | 0.3+  | 2005 03 16 | 704 | 0.1+  | 0.5-  | 2007 11 14 | 704 | 0.9- | 0.7+ |
| 2005 03 03 | 703 | 0.7-  | 0.3-  | 2005 03 31 | 644 | 0.2+  | 0.2+  | 2007 11 17 | G96 | 0.2+ | 0.2- |
| 2005 03 03 | 703 | 0.7-  | 0.3-  | 2005 03 31 | 644 | 0.3+  | 0.5+  | 2007 11 17 | G96 | 0.3+ | 0.0  |
| 2005 03 03 | 703 | 1.3-  | 0.1+  | 2005 03 31 | 644 | 0.3+  | 0.7+  | 2007 11 17 | G96 | 0.3+ | 0.5- |
| 2005 03 03 | 703 | 0.0   | 0.2+  | 2005 05 11 | G96 | 0.3-  | 0.2-  | 2007 11 17 | G96 | 0.4+ | 0.4- |
| 2005 03 04 | H06 | 0.1-  | 0.8-  | 2005 05 11 | G96 | 0.3-  | 0.1-  | 2007 12 05 | G96 | 0.2+ | 0.6- |
| 2005 03 04 | H06 | 0.2+  | 0.0   | 2005 05 11 | G96 | 0.1-  | 0.0   | 2007 12 05 | G96 | 0.8+ | 0.4- |
| 2005 03 04 | H06 | 0.4-  | 0.1-  | 2005 05 11 | G96 | 0.8-  | 0.1+  | 2007 12 05 | G96 | 0.5+ | 0.4- |
| 2005 03 04 | 704 | (2.3+ | 1.3-) | 2007 10 06 | 691 | 0.3-  | 0.1+  | 2007 12 05 | G96 | 0.1+ | 0.3- |

(172847)\* 2005 EC<sub>15</sub>

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 10 | 704 | 0.0  | 1.3+ | 2005 03 08 | 704 | 0.1+ | 0.2+ | 2005 04 06 | 699 | 0.0  | 0.8+ |
| 2003 09 28 | 333 | 0.6- | 0.0  | 2005 03 08 | 704 | 0.0  | 0.1+ | 2005 04 06 | 699 | 1.1+ | 1.1- |
| 2003 09 28 | 333 | 0.4- | 0.3+ | 2005 03 08 | 704 | 0.2- | 0.1- | 2005 04 06 | 699 | 0.3- | 1.3+ |
| 2003 09 28 | 333 | 0.2- | 0.7+ | 2005 03 08 | 704 | 0.2- | 0.0  | 2005 04 06 | 699 | 0.7- | 0.9+ |
| 2003 10 01 | 699 | 0.8- | 1.2+ | 2005 03 08 | 704 | 0.2+ | 0.4+ | 2005 04 09 | 691 | 0.2+ | 0.0  |
| 2003 10 01 | 699 | 0.0  | 1.0- | 2005 03 09 | 699 | 0.4+ | 0.2- | 2005 04 09 | 691 | 0.0  | 0.0  |
| 2003 10 01 | 699 | 0.2+ | 0.7+ | 2005 03 09 | 699 | 0.7+ | 0.7- | 2005 04 09 | 691 | 0.1+ | 0.2+ |
| 2003 10 01 | 699 | 0.4- | 1.1- | 2005 03 09 | 699 | 0.4- | 0.3- | 2006 05 26 | G96 | 0.1- | 0.4+ |
| 2003 10 23 | 645 | 0.0  | 0.1+ | 2005 03 09 | 699 | 0.2+ | 0.4+ | 2006 05 26 | G96 | 0.1- | 0.2+ |
| 2003 10 23 | 645 | 0.0  | 0.1+ | 2005 03 09 | 704 | 0.2- | 0.1+ | 2006 05 26 | G96 | 0.5- | 0.4+ |
| 2003 10 24 | 645 | 0.0  | 0.1+ | 2005 03 09 | 704 | 0.4- | 0.7- | 2006 05 26 | G96 | 0.2+ | 0.2+ |
| 2003 10 24 | 645 | 0.0  | 0.1+ | 2005 03 09 | 704 | 1.3- | 0.4+ | 2006 08 14 | 644 | 0.1- | 0.3+ |
| 2005 02 09 | 704 | 0.5+ | 0.4+ | 2005 03 09 | 704 | 0.2- | 0.1+ | 2006 08 14 | 644 | 0.1- | 0.5- |
| 2005 02 09 | 704 | 0.3+ | 0.4+ | 2005 03 09 | 704 | 0.4- | 0.1- | 2006 08 14 | 644 | 0.1- | 0.2+ |
| 2005 02 09 | 704 | 0.4- | 0.6+ | 2005 03 10 | G96 | 0.2- | 0.2- | 2006 08 24 | 644 | 0.1- | 0.5+ |
| 2005 02 09 | 704 | 0.9- | 0.2+ | 2005 03 10 | G96 | 0.3- | 0.1- | 2006 08 24 | 644 | 0.2+ | 0.5+ |
| 2005 02 09 | 704 | 0.6+ | 0.0  | 2005 03 10 | G96 | 0.3- | 0.1- | 2006 08 24 | 644 | 0.5+ | 0.4+ |
| 2005 03 03 | 691 | 0.3+ | 0.2+ | 2005 03 10 | G96 | 0.6- | 0.0  | 2007 10 14 | 291 | 0.3- | 0.1- |
| 2005 03 03 | 691 | 0.4+ | 0.3+ | 2005 03 11 | 704 | 0.1- | 0.0  | 2007 10 14 | 291 | 0.8- | 0.2+ |
| 2005 03 03 | 691 | 0.4+ | 0.4+ | 2005 03 11 | 704 | 0.1+ | 0.1+ | 2007 10 14 | 291 | 0.3- | 0.2+ |
| 2005 03 03 | 704 | 0.3+ | 0.8- | 2005 03 11 | 704 | 0.2+ | 0.2+ | 2007 12 04 | 704 | 0.6+ | 0.3+ |
| 2005 03 03 | 704 | 1.0+ | 1.4+ | 2005 03 11 | 704 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.8+ | 0.3+ |
| 2005 03 03 | 704 | 0.6+ | 0.2- | 2005 03 11 | 704 | 0.5- | 0.5- | 2007 12 04 | 704 | 0.3+ | 1.0+ |
| 2005 03 03 | 704 | 1.0+ | 0.2+ | 2005 03 16 | G96 | 0.2- | 0.0  | 2007 12 04 | 704 | 1.0+ | 0.7- |
| 2005 03 04 | G96 | 0.2- | 0.1- | 2005 03 16 | G96 | 0.4- | 0.0  |            |     |      |      |
| 2005 03 04 | G96 | 0.1+ | 0.1- | 2005 03 16 | G96 | 0.2- | 0.1- |            |     |      |      |

**(172848)\* 2005 EA<sub>17</sub>**

Discovered 2005 Mar. 3 by Spacewatch at Kitt Peak.

|                                         |  |            |          |           |  |             |  |             |  |          |  |
|-----------------------------------------|--|------------|----------|-----------|--|-------------|--|-------------|--|----------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |            |          |           |  |             |  |             |  |          |  |
| M                                       |  |            |          | P         |  |             |  | Q           |  |          |  |
| 290.35207                               |  |            |          | (2000.0)  |  |             |  |             |  |          |  |
| <i>n</i>                                |  | 0.27109557 | $\omega$ | 134.90351 |  | -0.70199481 |  | -0.71218201 |  |          |  |
| <i>a</i>                                |  | 2.3644008  | $\Omega$ | 359.68338 |  | +0.63885619 |  | -0.62955000 |  |          |  |
| <i>e</i>                                |  | 0.1198652  | <i>i</i> | 2.80427   |  | +0.31474761 |  | -0.31058588 |  |          |  |
| <i>P</i>                                |  | 3.64       | <i>H</i> | 16.9      |  | <i>G</i>    |  | 0.15        |  | <i>U</i> |  |
|                                         |  |            |          |           |  |             |  |             |  | 1        |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 22 | 704 | 0.0  | 0.2- | 2005 03 04 | G96 | 0.3-  | 0.2-  | 2005 03 14 | 704 | 0.5- | 0.1- |
| 2000 12 22 | 704 | 0.1+ | 0.2+ | 2005 03 04 | 691 | 0.2+  | 0.1+  | 2005 03 14 | 704 | 0.5- | 0.5+ |
| 2000 12 22 | 704 | 0.1+ | 0.5- | 2005 03 04 | G96 | 0.4-  | 0.3-  | 2005 04 02 | G96 | 0.3- | 0.0  |
| 2000 12 22 | 704 | 0.9+ | 0.2- | 2005 03 04 | G96 | 0.3-  | 0.1-  | 2005 04 02 | G96 | 0.4- | 0.6- |
| 2001 01 04 | 704 | 0.7- | 1.1+ | 2005 03 04 | G96 | 0.4-  | 0.1-  | 2005 04 02 | G96 | 0.4- | 0.1- |
| 2001 01 04 | 704 | 0.6+ | 0.6+ | 2005 03 04 | 691 | 0.1+  | 0.3+  | 2005 04 02 | G96 | 0.0  | 0.1- |
| 2001 01 04 | 704 | 0.3- | 0.1- | 2005 03 04 | 691 | 0.3+  | 0.2+  | 2005 04 04 | G96 | 0.3- | 0.1- |
| 2001 01 04 | 704 | 0.6+ | 0.1+ | 2005 03 08 | 699 | 0.7+  | 0.8-  | 2005 04 04 | G96 | 0.4- | 0.2- |
| 2001 01 19 | 704 | 0.9- | 0.2- | 2005 03 08 | 699 | 0.2+  | 0.2+  | 2005 04 04 | G96 | 0.1- | 0.3- |
| 2001 01 19 | 704 | 0.6- | 0.1- | 2005 03 08 | 699 | 0.3+  | 0.3-  | 2005 04 04 | G96 | 0.1- | 0.2- |
| 2001 01 19 | 704 | 0.5+ | 0.9+ | 2005 03 08 | 699 | (0.8+ | 1.7+) | 2005 05 08 | G96 | 0.5- | 0.1- |
| 2001 01 19 | 704 | 0.1- | 0.1+ | 2005 03 08 | 704 | 1.0-  | 0.8+  | 2005 05 08 | G96 | 0.2- | 0.0  |
| 2003 09 20 | 291 | 0.4- | 0.5+ | 2005 03 08 | 704 | 0.4+  | 0.9+  | 2005 05 08 | G96 | 0.2+ | 0.1- |
| 2003 09 20 | 291 | 0.2- | 0.4+ | 2005 03 08 | 704 | 0.8+  | 0.4+  | 2005 05 08 | G96 | 0.8- | 0.2+ |
| 2003 09 20 | 291 | 0.9- | 0.5+ | 2005 03 08 | 704 | 1.0+  | 0.8-  | 2007 10 14 | G96 | 0.4+ | 0.7- |
| 2003 09 27 | 691 | 0.2- | 0.3+ | 2005 03 08 | 704 | 1.2+  | 0.2-  | 2007 10 14 | G96 | 0.0  | 0.8- |
| 2003 09 27 | 691 | 0.1- | 0.1+ | 2005 03 09 | 699 | 0.2-  | 1.2+  | 2007 10 14 | G96 | 0.3+ | 0.6- |
| 2003 09 27 | 691 | 0.3- | 0.1+ | 2005 03 09 | 699 | 0.9+  | 0.2-  | 2007 10 14 | G96 | 0.0  | 0.4- |
| 2003 10 20 | 691 | 0.4+ | 0.3+ | 2005 03 09 | 699 | 0.6+  | 0.7+  | 2007 11 18 | 691 | 0.3- | 0.5- |
| 2003 10 20 | 691 | 0.0  | 0.3+ | 2005 03 09 | 699 | 0.7+  | 0.3-  | 2007 11 18 | 691 | 0.5- | 0.5- |
| 2003 10 20 | 691 | 0.3+ | 0.4+ | 2005 03 11 | 704 | 0.4-  | 0.7-  | 2007 11 18 | 691 | 0.2- | 0.4- |
| 2005 03 03 | 691 | 0.2- | 0.0  | 2005 03 11 | 704 | 0.2+  | 0.2+  | 2007 12 15 | 704 | 0.7+ | 0.7+ |
| 2005 03 03 | 691 | 0.1- | 0.1+ | 2005 03 11 | 704 | 0.6+  | 0.3+  | 2007 12 15 | 704 | 0.8+ | 0.1+ |
| 2005 03 03 | 691 | 0.1- | 0.2+ | 2005 03 11 | 704 | 0.6-  | 0.3-  | 2007 12 15 | 704 | 1.8+ | 0.5+ |
| 2005 03 03 | 703 | 0.0  | 0.9- | 2005 03 11 | 704 | 1.2+  | 0.5-  | 2007 12 16 | 704 | 0.4- | 0.2- |
| 2005 03 03 | 703 | 0.8- | 1.0+ | 2005 03 14 | 704 | 1.2+  | 0.5+  | 2007 12 16 | 704 | 1.4+ | 0.8+ |
| 2005 03 03 | 703 | 1.2+ | 0.3+ | 2005 03 14 | 704 | 0.2+  | 1.1+  | 2007 12 16 | 704 | 0.3+ | 0.1+ |
| 2005 03 03 | 703 | 0.3- | 1.3+ | 2005 03 14 | 704 | 0.4-  | 0.2+  |            |     |      |      |

**(172849)\* 2005 EN<sub>21</sub> = 1998 DA<sub>8</sub> = 2002 LZ<sub>17</sub> = 2003 TU<sub>42</sub>**

Discovered 2005 Mar. 3 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 76749)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|           |  |            |          |           |  |             |  |             |  |          |  |
|-----------|--|------------|----------|-----------|--|-------------|--|-------------|--|----------|--|
| M         |  |            |          | P         |  |             |  | Q           |  |          |  |
| 233.17287 |  |            |          | (2000.0)  |  |             |  |             |  |          |  |
| <i>n</i>  |  | 0.28801104 | $\omega$ | 124.47747 |  | -0.75149439 |  | +0.65729443 |  |          |  |
| <i>a</i>  |  | 2.2708928  | $\Omega$ | 96.68625  |  | -0.62248981 |  | -0.67794304 |  |          |  |
| <i>e</i>  |  | 0.1189186  | <i>i</i> | 3.27541   |  | -0.21854661 |  | -0.32917665 |  |          |  |
| <i>P</i>  |  | 3.42       | <i>H</i> | 16.6      |  | <i>G</i>    |  | 0.15        |  | <i>U</i> |  |
|           |  |            |          |           |  |             |  |             |  | 1        |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 05 08 | 691 | 0.2+  | 0.0   | 2003 10 21 | 691 | 0.1+ | 0.2+ | 2005 03 12 | 704 | 0.3+  | 0.0   |
| 1995 05 08 | 691 | 0.1+  | 0.0   | 2003 10 21 | 691 | 0.4- | 0.3+ | 2005 03 12 | 704 | 0.4+  | 0.1-  |
| 1995 05 08 | 691 | 0.1+  | 0.2+  | 2003 10 21 | 691 | 0.1- | 0.3+ | 2005 03 16 | 704 | 0.5-  | 1.1+  |
| 1998 02 17 | 327 | 1.0-  | 0.7+  | 2003 10 21 | 644 | 0.0  | 0.5+ | 2005 03 16 | 704 | 0.4+  | 0.8+  |
| 1998 02 17 | 327 | 0.6-  | 0.6+  | 2003 10 21 | 644 | 0.5- | 0.6+ | 2005 03 16 | 704 | 0.0   | 1.0+  |
| 1998 02 17 | 327 | 0.6-  | 0.2-  | 2003 10 21 | 644 | 0.3- | 0.1+ | 2005 03 16 | 704 | 0.3+  | 1.0+  |
| 2002 06 06 | 704 | (0.3- | 1.9+) | 2005 03 03 | 703 | 0.6+ | 0.0  | 2005 04 06 | 699 | (3.3+ | 1.0+) |
| 2002 06 06 | 704 | 0.6-  | 0.3+  | 2005 03 03 | 703 | 0.4- | 0.1- | 2005 04 06 | 699 | 0.4+  | 0.8-  |
| 2002 06 06 | 704 | 0.4-  | 0.9+  | 2005 03 03 | 703 | 0.0  | 0.4- | 2005 04 06 | 699 | 0.1+  | 0.1+  |
| 2002 06 06 | 704 | 0.3-  | 1.1+  | 2005 03 03 | 703 | 0.2+ | 0.6- | 2005 04 06 | 699 | 0.4+  | 1.0-  |
| 2002 06 06 | 704 | 0.4-  | 1.3+  | 2005 03 04 | 704 | 1.2+ | 0.1- | 2005 04 10 | 691 | 0.1+  | 0.4-  |
| 2002 06 08 | 704 | 0.7-  | 0.2-  | 2005 03 04 | 704 | 0.1+ | 0.1+ | 2005 04 10 | 691 | 0.2-  | 0.1-  |
| 2002 06 08 | 704 | 0.7+  | 0.2-  | 2005 03 04 | 704 | 0.5+ | 0.1+ | 2005 04 10 | 691 | 0.2-  | 0.0   |
| 2002 06 08 | 704 | 0.3-  | 0.2+  | 2005 03 04 | 704 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.0   | 0.1+  |
| 2002 06 08 | 704 | 0.4-  | 0.3+  | 2005 03 04 | 704 | 0.0  | 0.5+ | 2007 11 05 | G96 | 0.3-  | 0.4+  |
| 2002 06 08 | 704 | 0.4+  | 0.4-  | 2005 03 09 | 704 | 0.4+ | 0.2- | 2007 11 05 | G96 | 0.1-  | 0.5-  |
| 2002 07 04 | 644 | (2.1+ | 0.5-) | 2005 03 09 | 704 | 0.4+ | 0.1+ | 2007 11 05 | G96 | 0.2+  | 0.4-  |
| 2002 07 04 | 644 | 0.4+  | 0.0   | 2005 03 09 | 704 | 0.1+ | 0.1- | 2007 12 03 | 691 | 0.2-  | 0.1+  |
| 2002 07 04 | 644 | 0.4-  | 0.6+  | 2005 03 09 | 704 | 0.8+ | 0.5+ | 2007 12 03 | 691 | 0.4-  | 0.2-  |
| 2003 10 02 | 291 | 0.2+  | 0.0   | 2005 03 09 | 704 | 0.2+ | 0.3+ | 2007 12 03 | 691 | 0.2-  | 0.1+  |
| 2003 10 02 | 291 | 0.2+  | 0.4+  | 2005 03 12 | 704 | 0.2+ | 0.4+ |            |     |       |       |
| 2003 10 02 | 291 | 0.2+  | 0.7+  | 2005 03 12 | 704 | 0.3+ | 0.9+ |            |     |       |       |

**(172850)\* 2005 EU<sub>27</sub> = 2003 YO<sub>173</sub>**

Discovered 2005 Mar. 3 by J.-C. Merlin at the Tenagra II Observatory.

Id. G. V. Williams (*MPO* 76762)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|   |
|---|
| M |
|---|

2007 DEC. 24

M.P.O. 129497

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 230.42473  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28078679 | $\omega$ | 189.17786 | -0.75451578   | +0.65551816 |
| <i>a</i> | 2.3096789  | $\Omega$ | 31.85229  | -0.59825755   | -0.66717803 |
| <i>e</i> | 0.1014429  | <i>i</i> | 3.43857   | -0.26980332   | -0.35379291 |
| <i>P</i> | 3.51       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 03 02 | 691 | 0.1-  | 0.1+  | 2005 03 04 | 704 | 0.3-  | 0.0   | 2005 03 30 | 703 | 1.1-  | 0.1-  |
| 1998 03 02 | 691 | 0.3-  | 0.0   | 2005 03 04 | 704 | 1.1+  | 0.8+  | 2005 03 30 | 703 | 1.1-  | 1.0-  |
| 1998 03 02 | 691 | 0.1-  | 0.0   | 2005 03 04 | 704 | 0.2+  | 1.4+  | 2005 03 30 | 703 | (0.6+ | 2.0-) |
| 1998 03 20 | 704 | (1.3+ | 2.3+) | 2005 03 09 | 699 | 0.1+  | 0.4+  | 2005 03 30 | 703 | 0.1+  | 0.2-  |
| 1998 03 20 | 704 | 0.9+  | 1.8+  | 2005 03 09 | 699 | 0.0   | 0.6-  | 2005 04 17 | 691 | 0.4+  | 0.2+  |
| 1998 03 20 | 704 | 0.2-  | 1.2+  | 2005 03 09 | 699 | 1.2-  | 0.5+  | 2005 04 17 | 691 | 0.1+  | 0.4+  |
| 1998 03 20 | 704 | 1.8+  | 0.7-  | 2005 03 09 | 699 | 0.0   | 0.4-  | 2005 04 17 | 691 | 0.5+  | 0.4+  |
| 1998 03 20 | 704 | 1.4+  | 0.0   | 2005 03 09 | 704 | (2.7- | 2.2-) | 2006 08 21 | 291 | 0.0   | 1.0+  |
| 1998 03 29 | 704 | 0.6-  | 0.8-  | 2005 03 09 | 704 | 1.2-  | 0.4+  | 2006 08 21 | 291 | 0.2-  | 0.6+  |
| 1998 03 29 | 704 | 0.6-  | 1.6+  | 2005 03 09 | 704 | (2.1- | 0.3+) | 2006 08 21 | 291 | 0.3-  | 0.7+  |
| 1998 03 29 | 704 | 1.6+  | 0.9+  | 2005 03 12 | 704 | 0.3+  | 0.1+  | 2006 10 22 | G96 | 0.6-  | 0.4-  |
| 1998 03 29 | 704 | 0.4-  | 0.2-  | 2005 03 12 | 704 | 0.4+  | 0.2+  | 2006 10 22 | G96 | 0.2-  | 0.2-  |
| 1998 03 29 | 704 | (2.4- | 0.0 ) | 2005 03 12 | 704 | 0.8+  | 0.2+  | 2006 10 22 | G96 | 0.3-  | 0.3-  |
| 2003 10 22 | 291 | 0.3-  | 0.2+  | 2005 03 12 | 704 | 0.2-  | 0.2+  | 2006 10 22 | G96 | 0.6-  | 0.0   |
| 2003 10 22 | 291 | 0.0   | 0.3+  | 2005 03 12 | 704 | 0.2-  | 0.5+  | 2006 11 17 | G96 | 0.6-  | 0.7+  |
| 2003 10 22 | 691 | 0.1+  | 0.2+  | 2005 03 16 | 704 | 1.1+  | 0.1+  | 2006 11 17 | G96 | 0.5-  | 0.0   |
| 2003 10 22 | 291 | 0.1+  | 0.3+  | 2005 03 16 | 704 | 0.8+  | 0.1-  | 2006 11 17 | G96 | 0.8-  | 0.0   |
| 2003 10 22 | 691 | 0.1+  | 0.0   | 2005 03 16 | 704 | 0.8+  | 0.1-  | 2006 11 17 | G96 | 0.2-  | 0.5+  |
| 2003 10 22 | 691 | 0.3-  | 0.1+  | 2005 03 16 | 704 | 0.4+  | 0.4+  | 2007 11 06 | G96 | 0.1+  | 0.1-  |
| 2005 03 03 | 703 | (1.6- | 0.7-) | 2005 03 16 | 704 | 0.5+  | 0.3+  | 2007 11 06 | G96 | 0.8+  | 0.0   |
| 2005 03 03 | 703 | 0.0   | 0.3-  | 2005 03 18 | 704 | 0.1-  | 0.4-  | 2007 11 06 | G96 | 0.1+  | 0.4-  |
| 2005 03 03 | 703 | 0.1-  | 0.5+  | 2005 03 18 | 704 | 0.2+  | 0.4-  | 2007 11 06 | G96 | 0.3+  | 0.2-  |
| 2005 03 03 | 703 | 0.7-  | 0.0   | 2005 03 18 | 704 | 0.2-  | 0.7-  | 2007 12 05 | 691 | 0.1-  | 0.1-  |
| 2005 03 04 | 704 | 0.0   | 0.6+  | 2005 03 18 | 704 | 0.5+  | 0.5+  | 2007 12 05 | 691 | 0.1+  | 0.2-  |
| 2005 03 04 | 704 | 0.7-  | 0.1+  | 2005 03 18 | 704 | 0.8-  | 0.1+  | 2007 12 05 | 691 | 0.2-  | 0.4+  |

(172852)\* 2005 EW<sub>33</sub> = 2003 SW<sub>219</sub>

Discovered 2005 Mar. 7 by A. Lowe at RAS Observatory, Mayhill.

Id. G. V. Williams (*MPO* 76774)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 288.62896  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28894663 | $\omega$ | 248.45506 | -0.90219481   | -0.42884797 |
| <i>a</i> | 2.2659881  | $\Omega$ | 266.12554 | +0.41088944   | -0.82192168 |
| <i>e</i> | 0.1803104  | <i>i</i> | 2.65377   | +0.13120363   | -0.37487887 |
| <i>P</i> | 3.41       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 01 25 | 566 | 0.3-  | 0.2+  | 2005 03 08 | H06 | 0.0   | 0.1-  | 2007 11 05 | 691 | 0.3-  | 0.1+  |
| 1998 01 25 | 566 | 0.2-  | 0.1+  | 2005 03 08 | H06 | 0.2-  | 0.4+  | 2007 11 13 | 691 | 0.2-  | 0.2-  |
| 1998 01 25 | 566 | 0.2-  | 0.2+  | 2005 03 08 | H06 | 0.5-  | 0.3-  | 2007 11 13 | 691 | 0.4-  | 0.1+  |
| 1998 01 30 | 910 | 0.2+  | 0.2+  | 2005 03 10 | 699 | 1.1+  | 1.0-  | 2007 11 13 | 691 | 0.3-  | 0.3-  |
| 1998 01 30 | 910 | 0.3+  | 0.1-  | 2005 03 10 | 699 | 0.7+  | 0.4+  | 2007 11 15 | 704 | 0.2+  | 0.0   |
| 1998 01 30 | 910 | 0.4+  | 0.2+  | 2005 03 10 | 703 | 0.5-  | 0.5+  | 2007 11 15 | 704 | 1.4+  | 1.2+  |
| 2003 09 18 | 691 | 0.1+  | 0.1-  | 2005 03 10 | 699 | 0.9+  | 0.7+  | 2007 11 15 | 704 | 0.6+  | 1.2+  |
| 2003 09 18 | 691 | 0.2+  | 0.1-  | 2005 03 10 | 703 | 0.6-  | 0.6+  | 2007 11 15 | 704 | (1.0+ | 2.3+) |
| 2003 09 18 | 691 | 0.2+  | 0.0   | 2005 03 10 | 703 | 0.5+  | 0.1+  | 2007 12 04 | G96 | (1.8+ | 0.9+) |
| 2003 09 29 | 691 | 0.1-  | 0.3+  | 2005 03 10 | 699 | 1.4+  | 0.1+  | 2007 12 04 | G96 | 0.4+  | 0.3-  |
| 2003 09 29 | 691 | 0.3-  | 0.3+  | 2005 03 10 | 703 | 0.5-  | 0.1-  | 2007 12 04 | G96 | 0.2+  | 0.3-  |
| 2003 09 29 | 691 | 0.2+  | 0.7+  | 2005 03 17 | 703 | 0.2+  | 0.3+  | 2007 12 10 | 704 | 0.7+  | 0.5+  |
| 2003 09 30 | 291 | 0.4-  | 0.3-  | 2005 03 17 | 703 | (0.4- | 2.0+) | 2007 12 10 | 704 | 1.2+  | 0.2-  |
| 2003 09 30 | 291 | 0.1+  | 0.5+  | 2005 03 17 | 703 | 1.0-  | 0.0   | 2007 12 10 | 704 | 0.9+  | 0.2+  |
| 2003 09 30 | 291 | (2.6+ | 1.8+) | 2005 03 17 | 703 | 0.8-  | 0.6+  | 2007 12 10 | 704 | 1.0+  | 0.3-  |
| 2003 10 02 | 291 | 0.4-  | 0.3+  | 2005 03 30 | H06 | 0.2-  | 0.1+  | 2007 12 15 | 701 | 0.0   | 0.2-  |
| 2003 10 02 | 291 | 0.3-  | 0.4+  | 2005 03 30 | H06 | 0.8+  | 0.6+  | 2007 12 15 | 701 | 0.3+  | 0.1-  |
| 2003 10 02 | 291 | 0.2-  | 0.2+  | 2005 03 30 | H06 | 0.3+  | 0.2-  | 2007 12 15 | 701 | 0.6+  | 0.2+  |
| 2005 03 04 | 703 | 0.2-  | 0.6+  | 2005 04 09 | 699 | 0.0   | 0.8+  | 2007 12 15 | 701 | 0.3+  | 0.2-  |
| 2005 03 04 | 703 | 0.0   | 0.1+  | 2005 04 09 | 699 | (2.3+ | 0.7+) | 2007 12 16 | 701 | 1.3+  | 1.7-  |
| 2005 03 04 | 703 | 0.6+  | 0.3-  | 2005 04 09 | 699 | (0.4- | 1.5+) | 2007 12 16 | 701 | 0.1+  | 0.1-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | 703 | 0.3- | 0.5+ | 2005 04 09 | 699 | 0.5+ | 0.7+ | 2007 12 16 | 701 | 0.4- | 0.3- |
| 2005 03 07 | H06 | 0.0  | 0.2- | 2007 11 01 | 691 | 0.2- | 0.1+ | 2007 12 16 | 701 | 0.1+ | 0.1+ |
| 2005 03 07 | H06 | 0.5- | 0.3- | 2007 11 01 | 691 | 0.2- | 0.0  | 2007 12 16 | 701 | 0.4- | 0.0  |
| 2005 03 08 | 691 | 0.2+ | 0.1+ | 2007 11 01 | 691 | 0.6- | 0.2+ | 2007 12 16 | 701 | 0.1+ | 0.1+ |
| 2005 03 08 | 691 | 0.0  | 0.2+ | 2007 11 05 | 691 | 0.3- | 0.2- | 2007 12 16 | 701 | 0.1+ | 0.1- |
| 2005 03 08 | 691 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.1- | 0.1- |            |     |      |      |

(172853)\* 2005 EC<sub>39</sub> = 2007 TG<sub>292</sub>

Discovered 2005 Mar. 4 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 128172)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 320.40094  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25534346 | $\omega$ | 89.32823  | +0.31574315   | -0.94881963 |
| <i>a</i> | 2.4606672  | $\Omega$ | 342.26137 | +0.86129514   | +0.28965211 |
| <i>e</i> | 0.1304036  | <i>i</i> | 1.29728   | +0.39809163   | +0.12586887 |
| <i>P</i> | 3.86       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 02 | 691 | 0.1+ | 0.0  | 2005 03 08 | 735 | 0.6- | 0.5+ | 2007 10 14 | G96 | 0.0  | 0.2- |
| 2001 02 02 | 691 | 0.1+ | 0.2- | 2005 03 08 | 735 | 0.5+ | 0.3+ | 2007 10 14 | G96 | 0.1+ | 0.4- |
| 2001 02 02 | 691 | 0.0  | 0.2- | 2005 04 02 | G96 | 0.1- | 0.0  | 2007 10 14 | G96 | 0.2+ | 0.1+ |
| 2001 02 13 | 691 | 0.2+ | 0.3+ | 2005 04 02 | G96 | 0.2- | 0.2+ | 2007 10 14 | G96 | 0.7+ | 0.2- |
| 2001 02 13 | 691 | 0.1+ | 0.3+ | 2005 04 02 | G96 | 0.6+ | 0.2+ | 2007 10 15 | 691 | 0.0  | 0.0  |
| 2001 02 13 | 691 | 0.1- | 0.6+ | 2005 04 02 | G96 | 0.2+ | 0.1+ | 2007 10 15 | 691 | 0.1- | 0.3- |
| 2003 09 27 | 691 | 0.0  | 0.3+ | 2007 09 13 | G96 | 0.1+ | 0.1- | 2007 10 15 | 691 | 0.9- | 0.6- |
| 2003 09 27 | 691 | 0.3- | 0.2+ | 2007 09 13 | G96 | 0.3+ | 0.2- | 2007 11 01 | G96 | 0.2+ | 0.0  |
| 2003 09 27 | 691 | 0.1- | 0.2+ | 2007 09 13 | G96 | 0.6+ | 0.1- | 2007 11 01 | G96 | 0.1+ | 0.1- |
| 2003 10 17 | 691 | 0.3- | 0.1+ | 2007 09 13 | G96 | 0.2- | 0.2- | 2007 11 01 | G96 | 0.0  | 0.3- |
| 2003 10 17 | 691 | 0.2- | 0.4+ | 2007 10 13 | 703 | 1.0- | 1.0+ | 2007 11 01 | G96 | 0.1- | 0.1+ |
| 2003 10 17 | 691 | 0.0  | 0.8+ | 2007 10 13 | 703 | 1.3+ | 0.5+ | 2007 12 06 | G96 | 0.6+ | 0.5- |
| 2005 03 04 | G96 | 0.2+ | 0.2- | 2007 10 13 | 703 | 0.0  | 0.6+ | 2007 12 06 | G96 | 0.9+ | 0.5- |
| 2005 03 04 | G96 | 0.2- | 0.2- | 2007 10 14 | G96 | 0.6+ | 0.3- | 2007 12 06 | G96 | 0.6+ | 0.1- |
| 2005 03 04 | G96 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.5+ | 0.2- | 2007 12 06 | G96 | 0.4+ | 0.5- |
| 2005 03 04 | G96 | 0.2- | 0.4- | 2007 10 14 | G96 | 0.3+ | 0.2- |            |     |      |      |
| 2005 03 08 | 735 | 0.3+ | 0.3+ | 2007 10 14 | G96 | 0.8+ | 0.1- |            |     |      |      |

(172854)\* 2005 ED<sub>44</sub> = 1994 RY<sub>27</sub>

Discovered 2005 Mar. 3 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76794)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 64.23564   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23803064 | $\omega$ | 352.79912 | +0.94700314   | +0.32074451 |
| <i>a</i> | 2.5785811  | $\Omega$ | 348.44668 | -0.29017594   | +0.83075731 |
| <i>e</i> | 0.1554332  | <i>i</i> | 5.02722   | -0.13777873   | +0.45493433 |
| <i>P</i> | 4.14       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 05 | 809 | 1.0+  | 0.9-  | 2002 06 13 | 644 | 0.3- | 0.5+ | 2005 03 13 | 691 | 0.2- | 0.3- |
| 1994 09 05 | 809 | 0.1+  | 0.3-  | 2002 06 18 | 644 | 0.3+ | 0.7+ | 2005 04 02 | G96 | 1.0+ | 0.7+ |
| 1994 09 05 | 809 | 0.0   | 0.2+  | 2002 06 18 | 644 | 0.2- | 0.3+ | 2005 04 02 | G96 | 0.6- | 0.5- |
| 1994 09 06 | 809 | 0.7+  | 0.4-  | 2002 06 18 | 644 | 0.6+ | 0.6+ | 2005 04 02 | G96 | 0.0  | 0.1+ |
| 1994 09 06 | 809 | 0.3-  | 1.8-  | 2002 07 06 | 644 | 0.1- | 0.1- | 2005 04 02 | G96 | 0.0  | 0.0  |
| 1994 09 06 | 809 | 0.2-  | 0.4-  | 2002 07 06 | 644 | 0.1- | 0.2- | 2005 04 06 | G96 | 0.9- | 0.2- |
| 1998 08 17 | 704 | 0.1-  | 0.5-  | 2002 07 06 | 644 | 0.3- | 0.2- | 2005 04 06 | G96 | 0.2- | 0.4- |
| 1998 08 17 | 704 | 0.5-  | 1.2+  | 2005 03 03 | 691 | 0.1- | 0.1+ | 2005 04 06 | G96 | 0.2- | 0.4- |
| 1998 08 17 | 704 | 0.8-  | 0.6+  | 2005 03 03 | 691 | 0.4+ | 0.1- | 2005 04 06 | G96 | 0.8- | 0.5- |
| 1998 08 17 | 704 | 0.9+  | 0.1-  | 2005 03 03 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 704 | 0.7+ | 0.0  |
| 1998 08 17 | 704 | (3.8- | 1.5+) | 2005 03 08 | G96 | 0.4- | 0.4- | 2007 11 20 | 704 | 0.2+ | 0.4+ |
| 2001 03 28 | 691 | 0.1+  | 0.1-  | 2005 03 08 | G96 | 0.8- | 0.1- | 2007 11 20 | 704 | 1.2+ | 0.2+ |
| 2001 03 28 | 691 | 0.1+  | 0.2-  | 2005 03 08 | G96 | 1.0- | 0.2- | 2007 12 16 | 704 | 1.0- | 0.5+ |
| 2001 03 28 | 691 | 0.8+  | 0.3+  | 2005 03 08 | G96 | 0.4- | 0.2- | 2007 12 16 | 704 | 0.0  | 0.1+ |
| 2002 06 13 | 644 | 0.1-  | 0.4+  | 2005 03 13 | 691 | 0.7- | 0.2- | 2007 12 16 | 704 | 0.6- | 1.1+ |
| 2002 06 13 | 644 | 0.2-  | 0.2+  | 2005 03 13 | 691 | 0.0  | 0.5+ |            |     |      |      |

**(172855)\* 2005 EL<sub>46</sub> = 2000 YZ<sub>13</sub>**

Discovered 2005 Mar. 3 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 76798)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 255.63704  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.27891476 | $\omega$ | 320.40200 | −0.99784786 | −0.06249815 |          |          |
| <i>a</i> | 2.3200022  | $\Omega$ | 216.02959 | +0.06538722 | −0.92571626 |          |          |
| <i>e</i> | 0.1259105  | <i>i</i> | 1.93296   | +0.00491566 | −0.37301927 |          |          |
| <i>P</i> | 3.53       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 06 | 691 | 0.2−  | 0.2−  | 2005 03 08 | 699 | (2.0+ | 0.2−) | 2005 03 17 | 703 | 0.3− | 0.7− |
| 1996 10 06 | 691 | 0.1−  | 0.1−  | 2005 03 08 | 699 | 0.3+  | 0.3+  | 2005 03 17 | 703 | 1.5− | 1.1− |
| 1996 10 06 | 691 | 0.2−  | 0.2+  | 2005 03 08 | 699 | 0.1−  | 0.4−  | 2005 03 17 | 703 | 0.1− | 0.4+ |
| 1998 03 03 | 704 | 0.1−  | 0.7+  | 2005 03 08 | 699 | 0.8−  | 0.5−  | 2005 05 08 | G96 | 0.1− | 0.1+ |
| 1998 03 03 | 704 | 0.1+  | 0.5−  | 2005 03 08 | 704 | 1.2+  | 0.4+  | 2005 05 08 | G96 | 0.6− | 0.3− |
| 1998 03 03 | 704 | (1.1− | 3.4−) | 2005 03 08 | 704 | 0.4+  | 0.4+  | 2005 05 08 | G96 | 0.3− | 0.1− |
| 1998 03 03 | 704 | (5.2− | 3.4−) | 2005 03 08 | 704 | 0.9+  | 0.7+  | 2005 05 08 | G96 | 0.6− | 0.3− |
| 2000 12 23 | 691 | 0.4−  | 0.2−  | 2005 03 08 | 704 | 0.9+  | 0.2−  | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 2000 12 23 | 691 | 0.2−  | 0.1+  | 2005 03 08 | 704 | 0.9+  | 0.0   | 2007 11 13 | 691 | 0.4− | 0.1+ |
| 2000 12 23 | 691 | 0.1−  | 0.0   | 2005 03 09 | 704 | 1.2−  | 0.4+  | 2007 11 13 | 691 | 0.4− | 0.2+ |
| 2000 12 25 | 691 | 0.0   | 0.0   | 2005 03 09 | 704 | 0.0   | 0.5−  | 2007 11 18 | 691 | 0.3− | 0.1+ |
| 2000 12 25 | 691 | 0.6+  | 0.2+  | 2005 03 09 | 704 | 0.1−  | 0.6−  | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2000 12 25 | 691 | 0.3+  | 0.1+  | 2005 03 11 | 704 | 0.4+  | 1.4+  | 2007 11 18 | 691 | 0.2− | 0.0  |
| 2003 09 18 | 291 | 0.1+  | 0.4+  | 2005 03 11 | 704 | 0.4+  | 1.4+  | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2003 09 18 | 291 | 0.0   | 0.0   | 2005 03 11 | 704 | (2.1+ | 0.2+) | 2007 12 04 | G96 | 0.5+ | 0.4− |
| 2003 09 18 | 291 | 0.5−  | 0.6+  | 2005 03 11 | 704 | 0.1+  | 0.1−  | 2007 12 04 | G96 | 0.4+ | 0.4− |
| 2003 10 19 | 691 | 0.4+  | 0.3+  | 2005 03 13 | G96 | 0.1−  | 0.2−  | 2007 12 04 | G96 | 0.6+ | 0.1− |
| 2003 10 19 | 691 | 0.0   | 0.2−  | 2005 03 13 | G96 | 0.3−  | 0.1−  | 2007 12 05 | 704 | 0.3+ | 0.7− |
| 2003 10 19 | 691 | 0.3+  | 0.5−  | 2005 03 13 | G96 | 0.2−  | 0.3−  | 2007 12 05 | 704 | 1.1+ | 1.1− |
| 2005 02 02 | 691 | 0.4+  | 0.0   | 2005 03 13 | G96 | 0.3−  | 0.2−  | 2007 12 05 | 704 | 0.1− | 0.2− |
| 2005 02 02 | 691 | 0.1+  | 0.1−  | 2005 03 17 | 704 | (1.7+ | 0.3+) | 2007 12 15 | G96 | 0.5+ | 0.2− |
| 2005 02 02 | 691 | 0.1+  | 0.1−  | 2005 03 17 | 704 | 1.3+  | 0.1−  | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2005 03 03 | 703 | 0.5−  | 0.1+  | 2005 03 17 | 704 | 0.5+  | 0.0   | 2007 12 15 | G96 | 0.3− | 0.0  |
| 2005 03 03 | 703 | 0.9−  | 0.8+  | 2005 03 17 | 704 | 0.0   | 0.3+  | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2005 03 03 | 703 | 0.4−  | 0.3+  | 2005 03 17 | 704 | 0.7+  | 0.6+  |            |     |      |      |
| 2005 03 03 | 703 | 0.6−  | 0.0   | 2005 03 17 | 703 | 0.9−  | 0.7−  |            |     |      |      |

**(172856)\* 2005 ES<sub>46</sub>**

Discovered 2005 Mar. 3 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 289.85811  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.28028496 | $\omega$ | 314.05844 | −0.71170118 | −0.70247846 |          |          |
| <i>a</i> | 2.3124349  | $\Omega$ | 181.32198 | +0.66995465 | −0.67774441 |          |          |
| <i>e</i> | 0.0767448  | <i>i</i> | 5.80148   | +0.21128699 | −0.21722459 |          |          |
| <i>P</i> | 3.52       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 03 03 | 704 | 0.5+  | 1.0+  | 2005 03 03 | 703 | 0.9− | 0.3+ | 2005 04 09 | G96 | 0.3−  | 0.0   |
| 1998 03 03 | 704 | 0.3−  | 0.9−  | 2005 03 03 | 703 | 0.4− | 0.0  | 2005 04 09 | G96 | 0.0   | 0.2−  |
| 1998 03 03 | 704 | 1.1+  | 0.2−  | 2005 03 03 | 703 | 0.0  | 0.2− | 2006 06 20 | 691 | 0.4−  | 0.6+  |
| 1998 03 03 | 704 | (2.3+ | 2.0+) | 2005 03 08 | 699 | 0.3− | 1.2+ | 2006 06 20 | 691 | 0.6−  | 1.0+  |
| 1998 03 04 | 704 | 0.6−  | 0.3+  | 2005 03 08 | 699 | 0.1− | 1.1+ | 2006 06 20 | 691 | 0.2+  | 0.6+  |
| 1998 03 04 | 704 | 1.8−  | 0.8+  | 2005 03 08 | 699 | 1.5+ | 0.9+ | 2007 11 12 | 704 | 0.9+  | 0.6+  |
| 1998 03 04 | 704 | (3.3− | 0.3−) | 2005 03 08 | 699 | 0.7+ | 0.2+ | 2007 11 12 | 704 | 0.2+  | 0.5+  |
| 1998 03 04 | 704 | (1.6− | 2.1−) | 2005 03 13 | G96 | 0.2− | 0.1− | 2007 11 12 | 704 | 0.0   | 0.5+  |
| 2003 09 26 | 645 | 0.0   | 0.0   | 2005 03 13 | G96 | 0.0  | 0.0  | 2007 11 12 | 704 | 0.1−  | 0.1−  |
| 2003 09 26 | 645 | 0.1−  | 0.1−  | 2005 03 13 | G96 | 0.1+ | 0.0  | 2007 11 12 | 704 | 0.0   | 0.1+  |
| 2003 09 29 | 645 | 0.1−  | 0.1+  | 2005 03 13 | G96 | 0.2+ | 0.1+ | 2007 11 17 | 703 | (2.2− | 0.0 ) |
| 2003 09 29 | 645 | 0.2+  | 0.2+  | 2005 03 17 | 703 | 0.0  | 1.0+ | 2007 11 17 | 703 | 0.2−  | 0.6+  |
| 2003 10 24 | 691 | 0.1−  | 0.3+  | 2005 03 17 | 703 | 1.4+ | 1.4+ | 2007 11 17 | 703 | 0.2+  | 0.6+  |
| 2003 10 24 | 691 | 0.0   | 0.3+  | 2005 03 17 | 703 | 0.5+ | 0.5+ | 2007 11 17 | 703 | 0.5−  | 0.7−  |
| 2003 10 24 | 691 | 0.0   | 0.3+  | 2005 03 17 | 703 | 0.6+ | 1.4+ | 2007 11 29 | 704 | 1.0+  | 0.7+  |
| 2005 02 02 | 644 | 1.1+  | 0.2−  | 2005 03 30 | 644 | 0.0  | 0.3+ | 2007 11 29 | 704 | 1.2−  | 0.1+  |
| 2005 02 02 | 644 | 1.0+  | 0.3+  | 2005 03 30 | 644 | 0.2+ | 0.2+ | 2007 11 29 | 704 | (1.7− | 0.3+) |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 02 | 644 | 1.0+  | 0.1−  | 2005 03 30 | 644 | 0.0  | 0.1+ | 2007 12 03 | 704 | 0.3− | 0.2− |
| 2005 02 09 | 699 | (3.8+ | 0.2+) | 2005 03 30 | 644 | 0.2+ | 0.3+ | 2007 12 03 | 704 | 0.6− | 0.0  |
| 2005 02 09 | 699 | (0.0  | 1.8−) | 2005 03 30 | 644 | 0.2+ | 0.0  | 2007 12 03 | 704 | 0.1− | 0.3− |
| 2005 02 09 | 699 | 0.4+  | 1.4+  | 2005 03 30 | 644 | 0.4+ | 0.2+ | 2007 12 03 | 704 | 0.8− | 0.3+ |
| 2005 02 09 | 699 | 0.5−  | 1.0+  | 2005 04 09 | G96 | 0.4− | 0.2− | 2007 12 03 | 704 | 0.8− | 0.1+ |
| 2005 03 03 | 703 | 0.6−  | 0.7−  | 2005 04 09 | G96 | 0.1− | 0.0  |            |     |      |      |

**(172857)\* 2005 EL<sub>49</sub> = 1995 SQ<sub>50</sub> = 2003 UO<sub>18</sub>**

Discovered 2005 Mar. 3 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 76805), A. Doppler (*MPO* 115819)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 214.49772  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.25620245 | $\omega$ | 333.96548 | −0.88207205 | +0.47052313 |          |          |
| <i>a</i> | 2.4551641  | $\Omega$ | 234.12283 | −0.42699523 | −0.81962814 |          |          |
| <i>e</i> | 0.1396168  | <i>i</i> | 1.66893   | −0.19905773 | −0.32682977 |          |          |
| <i>P</i> | 3.85       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 09 26 | 691 | 0.1− | 0.8+ | 2005 03 08 | 699 | 0.7+  | 0.4−  | 2005 03 17 | 703 | 0.1− | 0.6− |
| 1995 09 26 | 691 | 0.4+ | 0.2+ | 2005 03 08 | 704 | 0.0   | 0.4−  | 2005 03 17 | 703 | 0.3− | 0.4− |
| 1995 09 26 | 691 | 0.9− | 0.4+ | 2005 03 08 | 699 | 0.5+  | 1.1+  | 2005 04 04 | 691 | 0.3+ | 0.1+ |
| 1995 10 01 | 691 | 0.3− | 0.2+ | 2005 03 08 | 704 | 0.5+  | 1.3−  | 2005 04 04 | 691 | 0.1+ | 0.3+ |
| 1995 10 01 | 691 | 0.4− | 0.1+ | 2005 03 08 | 704 | 0.0   | 0.5−  | 2005 04 04 | 691 | 0.0  | 0.1+ |
| 1995 10 01 | 691 | 0.1− | 0.0  | 2005 03 08 | 699 | 0.8−  | 0.1−  | 2005 04 12 | G96 | 0.1− | 0.1+ |
| 1999 11 05 | 691 | 0.4+ | 0.5− | 2005 03 08 | 704 | 0.3+  | 0.1−  | 2005 04 12 | G96 | 0.1− | 0.2− |
| 1999 11 05 | 691 | 0.0  | 0.6− | 2005 03 08 | 704 | 0.2+  | 0.1+  | 2005 04 12 | G96 | 0.1− | 0.1− |
| 1999 11 05 | 691 | 0.3+ | 0.3− | 2005 03 09 | 699 | 1.1−  | 0.5−  | 2005 04 12 | G96 | 0.5− | 0.5− |
| 2002 08 03 | 644 | 0.3− | 1.1+ | 2005 03 09 | 699 | 0.1−  | 0.4+  | 2006 09 27 | G96 | 0.4+ | 0.0  |
| 2002 08 03 | 644 | 0.1− | 0.8+ | 2005 03 09 | 699 | 1.0−  | 1.0+  | 2006 09 27 | G96 | 0.0  | 0.4− |
| 2002 08 03 | 644 | 0.1+ | 0.8+ | 2005 03 09 | 699 | (0.6+ | 2.6−) | 2006 09 27 | G96 | 0.4− | 0.2+ |
| 2003 10 19 | 691 | 0.1+ | 0.1+ | 2005 03 11 | 704 | 0.9+  | 1.4+  | 2006 09 27 | G96 | 0.1− | 0.2− |
| 2003 10 19 | 691 | 0.4+ | 0.0  | 2005 03 11 | G96 | 0.1−  | 0.0   | 2007 11 03 | 691 | 0.4− | 0.1− |
| 2003 10 19 | 691 | 0.3+ | 0.6+ | 2005 03 11 | G96 | 0.2−  | 0.2+  | 2007 11 03 | 691 | 0.1+ | 0.1+ |
| 2003 10 20 | 291 | 0.2− | 0.3+ | 2005 03 11 | 704 | 0.2−  | 1.4+  | 2007 11 03 | 691 | 0.4− | 0.1+ |
| 2003 10 20 | 291 | 0.1+ | 0.7+ | 2005 03 11 | G96 | 0.1−  | 0.0   | 2007 11 14 | 691 | 0.2− | 0.3− |
| 2003 10 20 | 291 | 0.4+ | 0.3+ | 2005 03 11 | G96 | 0.2−  | 0.1+  | 2007 11 14 | 691 | 0.3− | 0.4− |
| 2005 03 03 | 703 | 1.0− | 0.5− | 2005 03 11 | 704 | 1.4+  | 1.4+  | 2007 11 14 | 691 | 0.2− | 0.3− |
| 2005 03 03 | 703 | 0.4+ | 0.1− | 2005 03 11 | 704 | 0.4+  | 1.5+  | 2007 12 04 | G96 | 0.4+ | 0.1− |
| 2005 03 03 | 703 | 0.9− | 0.0  | 2005 03 11 | 704 | 0.2−  | 0.8+  | 2007 12 04 | G96 | 0.2− | 0.0  |
| 2005 03 03 | 703 | 0.3− | 0.1− | 2005 03 17 | 704 | 0.1−  | 0.1+  | 2007 12 04 | G96 | 0.0  | 0.1− |
| 2005 03 03 | 703 | 0.0  | 0.6− | 2005 03 17 | 704 | (2.0+ | 0.6+) | 2007 12 04 | G96 | 0.0  | 0.1− |
| 2005 03 03 | 703 | 0.9+ | 0.1+ | 2005 03 17 | 704 | 1.5+  | 0.4+  | 2007 12 15 | G96 | 0.5+ | 0.2+ |
| 2005 03 03 | 703 | 0.2− | 0.4+ | 2005 03 17 | 704 | 0.4+  | 0.9+  | 2007 12 15 | G96 | 0.3+ | 0.4+ |
| 2005 03 03 | 703 | 0.5− | 0.3+ | 2005 03 17 | 703 | 0.4−  | 0.1−  | 2007 12 15 | G96 | 0.3+ | 0.2+ |
| 2005 03 08 | 699 | 0.6+ | 0.3− | 2005 03 17 | 703 | 1.3+  | 0.5−  | 2007 12 15 | G96 | 0.7+ | 0.0  |

**(172858)\* 2005 EC<sub>69</sub> = 2003 SN<sub>237</sub>**

Discovered 2005 Mar. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 76826)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 299.96593  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.27420687 | $\omega$ | 312.24854 |     | −0.67116190 |     | −0.74131080 |
| $a$ | 2.3464816  | $\Omega$ | 179.90813 |     | +0.69528924 |     | −0.62953647 |
| $e$ | 0.1788252  | $i$      | 3.14877   |     | +0.25712757 |     | −0.23268461 |
| $P$ | 3.59       | $H$      | 16.9      | $G$ | 0.15        | $U$ | 0           |



2007 DEC. 24

M.P.O. 129499

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 29 | 691 | 0.2− | 0.3+ | 2005 04 04 | 704 | 0.0   | 0.3+  | 2007 11 05 | 704 | 0.1−  | 0.4+  |
| 2003 09 29 | 691 | 0.4− | 0.4+ | 2005 04 09 | 704 | 0.3+  | 0.5−  | 2007 11 05 | 704 | 0.2+  | 0.4+  |
| 2003 10 19 | 645 | 0.0  | 0.1+ | 2005 04 09 | 704 | 1.0+  | 0.1−  | 2007 11 08 | 691 | 0.2−  | 0.1+  |
| 2003 10 19 | 645 | 0.0  | 0.1+ | 2005 04 09 | 704 | 0.6+  | 0.2−  | 2007 11 08 | 691 | 0.2−  | 0.1+  |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2005 04 09 | 704 | 1.0+  | 0.8−  | 2007 11 08 | 691 | 0.0   | 0.1+  |
| 2003 10 22 | 645 | 0.1− | 0.1+ | 2005 04 09 | 704 | 0.5+  | 0.6+  | 2007 11 13 | 699 | 1.5−  | 0.3−  |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2005 04 12 | 704 | 0.4+  | 0.8+  | 2007 11 13 | 699 | (1.9− | 0.1−) |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2005 04 12 | 704 | 0.2+  | 1.2+  | 2007 11 13 | 699 | 0.2+  | 0.2−  |
| 2005 03 07 | 704 | 0.1+ | 0.3+ | 2005 04 12 | 704 | 0.5+  | 0.6−  | 2007 11 13 | 699 | 0.6−  | 0.5−  |
| 2005 03 07 | 704 | 0.7+ | 0.4+ | 2005 04 12 | 704 | 0.2+  | 0.1+  | 2007 11 29 | 704 | 0.8+  | 0.7+  |
| 2005 03 07 | 704 | 0.7+ | 0.4− | 2005 04 12 | 704 | 0.1+  | 0.2+  | 2007 11 29 | 704 | 0.7+  | 0.6+  |
| 2005 03 07 | 704 | 1.3+ | 0.2− | 2005 04 18 | 703 | (1.7− | 0.2+) | 2007 11 29 | 704 | 1.4+  | 0.5+  |
| 2005 03 07 | 704 | 0.0  | 0.6− | 2005 04 18 | 703 | 0.2−  | 0.8+  | 2007 11 29 | 704 | 0.2−  | 0.1−  |
| 2005 03 08 | 699 | 0.0  | 0.5+ | 2005 04 18 | 703 | 0.2+  | 0.6+  | 2007 12 04 | 704 | 0.4−  | 0.6+  |
| 2005 03 08 | 699 | 0.5+ | 0.9− | 2005 04 18 | 703 | (2.6− | 2.2+) | 2007 12 04 | 704 | 0.9−  | 0.4−  |
| 2005 03 08 | 699 | 1.0+ | 0.6+ | 2005 05 04 | 644 | 0.3−  | 0.2+  | 2007 12 04 | 704 | 0.6−  | 0.0   |
| 2005 03 08 | G96 | 0.5− | 0.0  | 2005 05 04 | 644 | 0.4−  | 0.3+  | 2007 12 04 | 704 | 0.3+  | 0.1+  |
| 2005 03 08 | 699 | 0.9+ | 1.1+ | 2005 05 04 | 644 | 0.2−  | 0.1+  | 2007 12 04 | 704 | 0.4−  | 0.5−  |
| 2005 03 08 | G96 | 0.6− | 0.0  | 2005 05 04 | 644 | 0.1+  | 0.1+  | 2007 12 05 | 699 | 0.0   | 0.2−  |
| 2005 03 08 | G96 | 0.5− | 0.1+ | 2005 05 04 | 644 | 0.3−  | 0.2+  | 2007 12 05 | 699 | 0.5+  | 0.3−  |
| 2005 03 08 | G96 | 0.4− | 0.0  | 2005 05 04 | 644 | 0.1+  | 0.3+  | 2007 12 05 | 699 | 1.0+  | 0.0   |
| 2005 03 13 | 703 | 0.3− | 0.6− | 2007 10 25 | G96 | 0.2+  | 0.2−  | 2007 12 05 | 699 | 0.6+  | 0.6−  |
| 2005 03 13 | 703 | 0.3− | 0.4+ | 2007 10 25 | G96 | 0.2+  | 0.3−  |            |     |       |       |
| 2005 03 13 | 703 | 1.2− | 0.6− | 2007 10 25 | G96 | 0.3−  | 0.1+  |            |     |       |       |

(172859)\* 2005 ET<sub>73</sub>

Discovered 2005 Mar. 3 by Spacewatch at Kitt Peak.

|                                         |            |          |           |             |          |             |          |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|----------|-------------|----------|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |          |             |          |  |  |  |  |
| <i>M</i>                                | 155.33044  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |  |  |  |  |
| <i>n</i>                                | 0.23411518 | $\omega$ | 234.23926 | −0.31211923 |          | +0.94972220 |          |  |  |  |  |
| <i>a</i>                                | 2.6072520  | $\Omega$ | 17.62307  | −0.84321329 |          | −0.26495833 |          |  |  |  |  |
| <i>e</i>                                | 0.1144730  | <i>i</i> | 4.67676   | −0.43769045 |          | −0.16680777 |          |  |  |  |  |
| <i>P</i>                                | 4.21       | <i>H</i> | 16.5      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |  |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.1−  | 0.1−  | 2005 03 09 | 704 | 0.4+ | 0.5− | 2006 08 12 | 644 | 0.2− | 0.5+ |
| 1998 09 19 | 645 | 0.1+  | 0.1+  | 2005 03 09 | 704 | 0.2− | 0.8+ | 2006 08 12 | 644 | 0.4− | 0.9+ |
| 2001 03 17 | 691 | 0.0   | 0.0   | 2005 03 09 | 704 | 1.0+ | 1.0+ | 2006 08 12 | 644 | 0.2− | 0.6+ |
| 2001 03 17 | 691 | 0.1−  | 0.3+  | 2005 03 12 | 704 | 0.5− | 0.5− | 2007 10 14 | G96 | 0.4+ | 0.2− |
| 2001 03 17 | 691 | 0.2−  | 0.2+  | 2005 03 12 | 704 | 0.5+ | 0.3− | 2007 10 14 | G96 | 0.2+ | 0.0  |
| 2001 04 13 | 691 | (1.8− | 0.0 ) | 2005 03 12 | 704 | 0.1− | 0.2+ | 2007 10 14 | G96 | 0.4+ | 0.1− |
| 2001 04 13 | 691 | 0.1+  | 0.5+  | 2005 03 12 | 704 | 0.2− | 1.0+ | 2007 10 14 | G96 | 0.8+ | 0.3− |
| 2001 04 13 | 691 | 0.1+  | 0.7+  | 2005 03 12 | 704 | 0.0  | 0.5+ | 2007 11 01 | 691 | 0.1− | 0.2+ |
| 2001 04 23 | 691 | 0.2+  | 0.2+  | 2005 03 16 | 704 | 0.5− | 0.0  | 2007 11 01 | 691 | 0.1+ | 0.2− |
| 2001 04 23 | 691 | 0.3+  | 0.2+  | 2005 03 16 | 704 | 0.1+ | 0.1− | 2007 11 01 | 691 | 0.3+ | 0.2+ |
| 2001 04 23 | 691 | 0.2+  | 0.1+  | 2005 03 16 | 704 | 0.6− | 0.2− | 2007 11 05 | 691 | 0.1+ | 0.1+ |
| 2002 08 29 | 644 | 0.2−  | 0.8+  | 2005 03 16 | G96 | 0.4− | 0.3− | 2007 11 05 | 691 | 0.2− | 0.1+ |
| 2002 08 29 | 644 | 0.1−  | 0.8+  | 2005 03 16 | G96 | 0.2− | 0.4− | 2007 11 05 | 691 | 0.0  | 0.0  |
| 2002 08 29 | 644 | 0.5−  | 0.7+  | 2005 03 16 | G96 | 0.3− | 0.4− | 2007 11 07 | 691 | 0.3+ | 0.6+ |
| 2005 03 03 | 691 | 0.2+  | 0.1+  | 2005 03 16 | G96 | 0.0  | 0.4− | 2007 11 07 | 691 | 0.1+ | 0.2+ |
| 2005 03 03 | 691 | 0.2+  | 0.1−  | 2005 04 11 | 691 | 0.0  | 0.1− | 2007 11 07 | 691 | 0.5− | 0.3+ |
| 2005 03 03 | 691 | 0.1+  | 0.0   | 2005 04 11 | 691 | 0.1+ | 0.0  | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2005 03 03 | 703 | 1.3+  | 0.5−  | 2005 04 11 | 691 | 0.3+ | 0.2+ | 2007 11 13 | 691 | 0.7− | 0.5− |
| 2005 03 03 | 703 | 0.7−  | 0.3−  | 2005 04 11 | G96 | 0.2− | 0.4− | 2007 11 13 | 691 | 0.4− | 0.3− |
| 2005 03 03 | 703 | (2.1− | 0.3+) | 2005 04 11 | G96 | 0.2− | 0.2− | 2007 12 06 | 691 | 0.2+ | 0.5+ |
| 2005 03 03 | 703 | 0.6−  | 0.4−  | 2005 04 11 | G96 | 0.2− | 0.1− | 2007 12 06 | 691 | 0.2− | 0.5− |
| 2005 03 09 | 699 | 1.4−  | 1.3−  | 2005 04 11 | G96 | 0.5− | 0.0  | 2007 12 06 | 691 | 0.2− | 0.2+ |
| 2005 03 09 | 699 | 0.3−  | 1.0−  | 2005 05 10 | G96 | 0.3− | 0.2− | 2007 12 16 | 691 | 0.1− | 0.3+ |
| 2005 03 09 | 699 | 1.1+  | 0.2−  | 2005 05 10 | G96 | 0.4− | 0.1− | 2007 12 16 | 691 | 0.1+ | 0.3+ |
| 2005 03 09 | 704 | 0.2−  | 0.4+  | 2005 05 10 | G96 | 0.1− | 0.3+ | 2007 12 16 | 691 | 0.1− | 0.2+ |
| 2005 03 09 | 699 | 0.3+  | 0.3+  | 2005 05 10 | G96 | 0.3− | 0.1+ |            |     |      |      |

(172860)\* 2005 EC<sub>79</sub>

Discovered 2005 Mar. 3 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 240.47288  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.26443418 | $\omega$ | 126.42070 | −0.97814904 |          | +0.19033340 |          |
| <i>a</i> | 2.4039439  | $\Omega$ | 64.68597  | −0.20771454 |          | −0.87744440 |          |
| <i>e</i> | 0.1225792  | <i>i</i> | 5.30961   | −0.00889501 |          | −0.44030049 |          |
| <i>P</i> | 3.73       | <i>H</i> | 16.3      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.2+ | 0.1+ | 2003 10 28 | 704 | 0.2+  | 0.6+  | 2005 04 11 | 699 | 0.2+ | 0.7+ |
| 2001 01 04 | 704 | 0.5+ | 0.1− | 2005 03 03 | 703 | 0.3+  | 0.9−  | 2005 04 18 | 691 | 0.0  | 0.1+ |
| 2001 01 04 | 704 | 0.6+ | 0.3+ | 2005 03 03 | 703 | 0.8−  | 0.3−  | 2005 04 18 | 691 | 0.0  | 0.4+ |
| 2001 01 04 | 704 | 0.0  | 0.5+ | 2005 03 03 | 703 | 0.6−  | 0.6−  | 2005 04 18 | 691 | 0.1+ | 0.0  |
| 2001 01 04 | 704 | 0.3− | 0.5+ | 2005 03 03 | 703 | 0.4−  | 0.2−  | 2007 11 05 | G96 | 0.2+ | 0.2− |
| 2001 02 17 | 704 | 0.8− | 0.5+ | 2005 03 09 | 699 | 0.9+  | 0.6+  | 2007 11 05 | G96 | 0.2+ | 0.1− |
| 2001 02 17 | 704 | 1.0− | 1.2− | 2005 03 09 | 699 | 1.1+  | 0.8+  | 2007 11 05 | G96 | 0.1+ | 0.1− |
| 2001 02 17 | 704 | 0.5− | 1.0− | 2005 03 09 | 699 | 1.1+  | 0.6+  | 2007 11 05 | G96 | 0.1− | 0.1− |
| 2001 02 17 | 704 | 0.7+ | 0.1− | 2005 03 09 | 699 | (2.4+ | 0.6+) | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2001 02 17 | 704 | 1.1+ | 0.5+ | 2005 03 09 | 704 | 1.0+  | 0.2−  | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2002 07 12 | 644 | 0.4− | 0.1+ | 2005 03 09 | 704 | 0.2+  | 0.3+  | 2007 11 18 | 691 | 0.1− | 0.1− |
| 2002 07 12 | 644 | 0.0  | 0.7+ | 2005 03 09 | 704 | 0.4+  | 0.2−  | 2007 12 03 | 703 | 0.1− | 0.8+ |
| 2002 07 12 | 644 | 0.2− | 0.2+ | 2005 03 09 | 704 | 0.6+  | 0.3+  | 2007 12 03 | 703 | 0.3+ | 0.0  |
| 2002 07 12 | 644 | 0.2+ | 0.3+ | 2005 03 09 | 704 | 0.0   | 0.2+  | 2007 12 03 | 703 | 0.3+ | 0.4+ |
| 2002 07 12 | 644 | 0.1+ | 0.5+ | 2005 03 17 | 703 | 0.5−  | 0.8+  | 2007 12 03 | 703 | 0.3− | 0.1− |
| 2002 07 12 | 644 | 0.2+ | 0.7+ | 2005 03 17 | 703 | 0.6−  | 0.5+  | 2007 12 15 | G96 | 0.5+ | 0.3− |
| 2003 10 21 | 691 | 0.1− | 0.3+ | 2005 03 17 | 703 | 0.4−  | 0.1−  | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2003 10 21 | 691 | 0.1− | 0.2+ | 2005 03 17 | 703 | 0.7−  | 0.0   | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2003 10 21 | 691 | 0.4− | 0.3+ | 2005 04 11 | 699 | 0.2−  | 1.0+  | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2003 10 28 | 704 | 0.3+ | 0.5+ | 2005 04 11 | 699 | 0.8−  | 0.2−  |            |     |      |      |
| 2003 10 28 | 704 | 0.6− | 0.9+ | 2005 04 11 | 699 | 0.5+  | 0.4−  |            |     |      |      |

(172861)\* 2005 EY<sub>82</sub> = 2003 SV<sub>76</sub>

Discovered 2005 Mar. 4 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76843)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 354.99807  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.28239919 | $\omega$ | 191.64381 | +0.37018315 |          | −0.92880277 |          |
| <i>a</i> | 2.3008789  | $\Omega$ | 236.63144 | +0.85393123 |          | +0.34744344 |          |
| <i>e</i> | 0.1894943  | <i>i</i> | 1.16806   | +0.36574019 |          | +0.12887382 |          |
| <i>P</i> | 3.49       | <i>H</i> | 17.4      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.7− | 0.2+ | 2003 08 04 | 691 | 0.2− | 0.1+ | 2005 04 12 | G96 | 0.2− | 0.4+ |
| 2000 11 21 | 704 | 0.6+ | 0.2+ | 2003 08 04 | 691 | 0.1− | 0.1+ | 2005 04 12 | G96 | 0.5− | 0.3+ |
| 2000 11 21 | 704 | 0.4+ | 0.1+ | 2003 08 04 | 691 | 0.2− | 0.2+ | 2005 04 12 | G96 | 0.1− | 0.2+ |
| 2000 11 21 | 704 | 1.7+ | 0.2− | 2003 09 19 | 291 | 0.4− | 0.8+ | 2005 04 12 | G96 | 0.0  | 0.1+ |
| 2000 11 29 | 704 | 0.2+ | 0.5+ | 2003 09 19 | 291 | 0.3− | 0.5+ | 2007 11 09 | 691 | 0.0  | 0.3− |
| 2000 11 29 | 704 | 0.2+ | 0.3+ | 2003 09 19 | 291 | 0.6− | 0.1+ | 2007 11 09 | 691 | 0.1− | 0.4− |
| 2000 11 29 | 704 | 0.2− | 0.5+ | 2003 09 20 | 291 | 0.7+ | 0.4+ | 2007 11 09 | 691 | 0.3+ | 0.3− |
| 2000 11 29 | 704 | 1.1+ | 0.4+ | 2003 09 20 | 291 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.9+ | 0.8+ |
| 2000 12 18 | 691 | 0.2− | 0.3+ | 2003 09 20 | 291 | 0.2+ | 0.6+ | 2007 11 14 | 704 | 0.2+ | 0.4+ |
| 2000 12 18 | 691 | 0.1+ | 0.3+ | 2005 03 04 | 691 | 0.0  | 0.6+ | 2007 11 14 | 704 | 0.1− | 1.3+ |
| 2000 12 18 | 691 | 0.1− | 0.2+ | 2005 03 04 | 691 | 0.0  | 0.4+ | 2007 11 17 | 691 | 0.3− | 0.3− |
| 2001 01 03 | 704 | 0.9− | 1.0− | 2005 03 04 | 691 | 0.2+ | 0.2+ | 2007 11 17 | 691 | 0.2− | 0.2− |
| 2001 01 03 | 704 | 0.3+ | 0.7− | 2005 03 09 | 691 | 0.3+ | 0.4+ | 2007 11 17 | 691 | 0.1− | 0.1− |
| 2001 01 03 | 704 | 0.8− | 0.1+ | 2005 03 09 | 691 | 0.4+ | 0.1+ | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2001 01 03 | 704 | 0.2+ | 0.3+ | 2005 03 09 | 691 | 0.3+ | 0.4+ | 2007 12 05 | 704 | 0.3+ | 0.2− |
| 2001 01 03 | 704 | 1.0− | 0.5+ | 2005 04 06 | G96 | 0.3+ | 0.2+ | 2007 12 05 | 704 | 0.1− | 0.1− |
| 2001 01 24 | 691 | 0.1− | 0.2+ | 2005 04 06 | G96 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.3+ | 0.9+ |
| 2001 01 24 | 691 | 0.2− | 0.1− | 2005 04 06 | G96 | 0.2− | 0.1+ | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2001 01 24 | 691 | 0.1− | 0.1+ | 2005 04 06 | G96 | 0.2− | 0.1− |            |     |      |      |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 190.87334  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24769734 | $\omega$ 250.19184 | -0.64101888   | +0.76700554 |
| <i>a</i> | 2.5110488  | $\Omega$ 339.85883 | -0.66993481   | -0.57708761 |
| <i>e</i> | 0.0600955  | <i>i</i> 4.70372   | -0.37454258   | -0.28048600 |
| <i>P</i> | 3.98       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 23 | 691 | 0.3+ | 0.1+ | 2005 03 04 | 691 | 0.0   | 0.4+  | 2006 10 20 | G96 | 0.0  | 0.5- |
| 2001 01 23 | 691 | 0.3+ | 0.1+ | 2005 03 09 | 699 | 0.5+  | 0.1-  | 2006 10 20 | G96 | 0.6- | 0.4+ |
| 2001 01 23 | 691 | 0.4+ | 0.4+ | 2005 03 09 | 699 | (1.8+ | 0.6+) | 2006 10 20 | G96 | 0.1- | 0.3+ |
| 2002 07 14 | 644 | 0.1- | 0.1+ | 2005 03 09 | 699 | 0.5+  | 0.5+  | 2006 10 20 | G96 | 0.6- | 0.3- |
| 2002 07 14 | 644 | 0.2- | 0.4+ | 2005 03 09 | 699 | 0.2+  | 0.5+  | 2007 11 13 | 703 | 0.1- | 0.0  |
| 2002 07 14 | 644 | 0.4- | 0.4+ | 2005 03 13 | 691 | 0.2-  | 0.0   | 2007 11 13 | 703 | 0.1+ | 0.8+ |
| 2002 08 08 | 644 | 0.2- | 0.3+ | 2005 03 13 | 691 | 0.1-  | 0.1-  | 2007 11 13 | 703 | 0.2- | 0.2- |
| 2002 08 08 | 644 | 0.3+ | 0.7+ | 2005 03 13 | 691 | 0.1-  | 0.0   | 2007 11 13 | 703 | 0.4- | 0.1+ |
| 2002 08 08 | 644 | 0.0  | 0.0  | 2005 03 17 | 703 | (2.4- | 0.9+) | 2007 11 17 | 704 | 0.4- | 0.8- |
| 2002 08 10 | 807 | 0.2- | 0.1- | 2005 03 17 | 703 | 0.3+  | 0.5+  | 2007 11 17 | 704 | 0.9+ | 0.4+ |
| 2002 08 10 | 807 | 0.2- | 0.1+ | 2005 03 17 | 703 | (2.7+ | 0.9+) | 2007 11 17 | 704 | 0.6- | 0.5+ |
| 2003 11 21 | 691 | 0.4- | 0.2- | 2005 03 17 | 703 | 0.4+  | 0.1-  | 2007 11 17 | 704 | 1.0+ | 0.7+ |
| 2003 11 21 | 691 | 0.1- | 0.4+ | 2006 08 12 | 644 | 0.1-  | 0.3+  | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2003 11 21 | 691 | 0.1- | 0.3+ | 2006 08 12 | 644 | 0.0   | 0.3+  | 2007 11 20 | 691 | 0.1+ | 0.1- |
| 2003 11 24 | 704 | 1.2+ | 0.1+ | 2006 08 12 | 644 | 0.1+  | 0.5+  | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2003 11 24 | 704 | 0.0  | 0.1- | 2006 08 14 | 644 | 0.1-  | 0.5+  | 2007 12 16 | 704 | 0.2- | 0.6+ |
| 2003 11 24 | 704 | 0.3- | 0.4- | 2006 08 14 | 644 | 0.1-  | 0.2+  | 2007 12 16 | 704 | 0.9+ | 0.9+ |
| 2003 11 24 | 704 | 0.4+ | 0.1- | 2006 08 14 | 644 | 0.0   | 0.5+  | 2007 12 16 | 704 | 0.2+ | 0.2+ |
| 2003 11 24 | 704 | 0.6- | 0.3- | 2006 08 15 | 644 | 0.3-  | 0.5+  | 2007 12 16 | 704 | 0.4- | 0.9- |
| 2005 03 04 | 691 | 0.0  | 0.0  | 2006 08 15 | 644 | 0.1+  | 0.6+  |            |     |      |      |
| 2005 03 04 | 691 | 0.1- | 0.1+ | 2006 08 15 | 644 | 0.2+  | 0.4+  |            |     |      |      |

**(172863)\* 2005 EW<sub>83</sub>**

Discovered 2005 Mar. 4 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 297.36629  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27757823 | $\omega$ 256.35101 | -0.61875973   | -0.78232524 |
| <i>a</i> | 2.3274433  | $\Omega$ 232.10463 | +0.75121574   | -0.56263850 |
| <i>e</i> | 0.1121725  | <i>i</i> 5.19405   | +0.22980710   | -0.26721741 |
| <i>P</i> | 3.55       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.1+ | 0.2+ | 2005 03 10 | 699 | 1.0-  | 1.3+  | 2007 10 30 | 691 | 0.1- | 0.4- |
| 2003 09 19 | 691 | 0.4- | 0.4+ | 2005 03 10 | 703 | 0.1+  | 0.2+  | 2007 11 03 | 691 | 0.3- | 0.4+ |
| 2003 09 19 | 691 | 0.7- | 0.2+ | 2005 03 10 | 703 | 0.8-  | 0.5+  | 2007 11 03 | 691 | 0.2- | 0.0  |
| 2003 10 03 | 691 | 0.1- | 0.3+ | 2005 03 10 | 703 | 0.2-  | 0.5-  | 2007 11 03 | 691 | 0.2- | 0.1+ |
| 2003 10 03 | 691 | 0.4- | 0.3+ | 2005 03 10 | 703 | 1.0-  | 0.3+  | 2007 11 14 | 704 | 0.8- | 0.0  |
| 2003 10 03 | 691 | 0.0  | 0.5+ | 2005 03 10 | 703 | 0.5+  | 0.3-  | 2007 11 14 | 691 | 0.5+ | 0.3+ |
| 2003 11 19 | 645 | 0.0  | 0.1+ | 2005 03 17 | 703 | 1.4+  | 0.8+  | 2007 11 14 | 704 | 0.1- | 0.1+ |
| 2003 11 19 | 645 | 0.1+ | 0.1+ | 2005 03 17 | 703 | 1.1+  | 1.4+  | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2005 03 04 | 703 | 0.0  | 0.2- | 2005 03 17 | 703 | (2.1+ | 0.5-) | 2007 11 14 | 704 | 0.4+ | 1.0+ |
| 2005 03 04 | 703 | 0.4+ | 0.4+ | 2005 03 17 | 703 | 0.7-  | 1.0+  | 2007 11 14 | 704 | 0.0  | 0.4+ |
| 2005 03 04 | 703 | 0.1+ | 0.2- | 2005 03 31 | 644 | 0.5+  | 0.8+  | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2005 03 04 | 703 | 0.2- | 0.0  | 2005 03 31 | 644 | 0.4+  | 0.8+  | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2005 03 09 | 691 | 0.2+ | 0.1+ | 2005 03 31 | 644 | 0.5+  | 1.1+  | 2007 11 18 | 691 | 0.3+ | 0.2+ |
| 2005 03 09 | 691 | 0.2+ | 0.0  | 2006 06 19 | 691 | 0.1+  | 0.0   | 2007 11 18 | 691 | 0.3- | 0.1- |
| 2005 03 09 | 691 | 0.2+ | 0.0  | 2006 06 19 | 691 | 0.0   | 0.5+  | 2007 12 05 | 704 | 1.1+ | 0.5- |
| 2005 03 10 | 699 | 0.4- | 1.1+ | 2006 06 19 | 691 | 0.0   | 0.1-  | 2007 12 05 | 704 | 0.4+ | 0.6- |
| 2005 03 10 | 699 | 0.5+ | 0.9- | 2007 09 14 | G96 | 0.2+  | 0.9-  | 2007 12 05 | 704 | 0.7+ | 0.7- |
| 2005 03 10 | 703 | 0.1- | 0.2- | 2007 09 14 | G96 | 0.3-  | 0.5-  | 2007 12 05 | 704 | 0.3+ | 0.0  |
| 2005 03 10 | 699 | 0.2+ | 0.3+ | 2007 09 14 | G96 | 0.2+  | 0.2-  | 2007 12 05 | 704 | 0.4+ | 0.6- |
| 2005 03 10 | 703 | 0.5+ | 0.6+ | 2007 10 30 | 691 | 0.3-  | 0.3-  |            |     |      |      |
| 2005 03 10 | 703 | 0.8- | 0.3+ | 2007 10 30 | 691 | 0.1-  | 0.1+  |            |     |      |      |

**(172864)\* 2005 EQ<sub>84</sub>**

Discovered 2005 Mar. 4 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 246.46346  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26105260 | $\omega$ 117.28687 | -0.95724793   | -0.28517728 |
| <i>a</i> | 2.4246592  | $\Omega$ 46.18836  | +0.23593413   | -0.86667798 |
| <i>e</i> | 0.0853107  | <i>i</i> 3.85216   | +0.16736630   | -0.40932040 |
| <i>P</i> | 3.78       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 19 | 704 | 0.6-  | 0.3-  | 2005 03 12 | 704 | 0.7-  | 0.1+  | 2007 11 09 | G96 | 0.4+ | 0.1- |
| 2001 01 19 | 704 | 0.0   | 0.0   | 2005 03 12 | 704 | 0.7-  | 0.6+  | 2007 11 09 | G96 | 0.4+ | 0.2- |
| 2001 01 19 | 704 | (1.6- | 0.8-) | 2005 03 12 | 704 | 0.4-  | 0.6-  | 2007 11 09 | G96 | 0.1+ | 0.1+ |
| 2001 02 22 | 645 | 0.0   | 0.2-  | 2005 03 12 | 704 | 0.4-  | 0.7+  | 2007 11 09 | G96 | 0.1+ | 0.1- |
| 2001 02 22 | 645 | 0.0   | 0.1-  | 2007 10 07 | G96 | 0.0   | 0.3-  | 2007 11 09 | G96 | 0.1+ | 0.1- |
| 2003 10 18 | 691 | 0.4-  | 0.3-  | 2007 10 07 | G96 | 0.6+  | 0.1-  | 2007 11 09 | G96 | 0.1- | 0.1- |
| 2003 10 18 | 691 | 0.0   | 0.3+  | 2007 10 07 | G96 | 0.1+  | 0.4-  | 2007 11 12 | G96 | 0.3+ | 0.5- |
| 2003 10 18 | 691 | 0.1+  | 0.4+  | 2007 10 07 | G96 | 0.1+  | 0.2-  | 2007 11 12 | G96 | 0.7+ | 0.1- |
| 2005 02 09 | 691 | 0.1+  | 0.4+  | 2007 10 18 | 691 | 0.1-  | 0.2+  | 2007 11 12 | G96 | 0.2+ | 0.2+ |
| 2005 02 09 | 691 | 0.0   | 0.3+  | 2007 10 18 | 691 | 0.1-  | 0.0   | 2007 11 12 | G96 | 0.8+ | 0.5+ |
| 2005 02 09 | 691 | 0.0   | 0.4+  | 2007 10 18 | 691 | 0.3-  | 0.7+  | 2007 11 13 | G96 | 0.3- | 0.0  |
| 2005 02 14 | 704 | 0.4-  | 0.3-  | 2007 10 30 | 691 | 0.4-  | 0.3+  | 2007 11 13 | G96 | 0.3+ | 0.1+ |
| 2005 02 14 | 704 | 0.3+  | 0.7-  | 2007 10 30 | 691 | 0.2-  | 0.3+  | 2007 11 13 | G96 | 0.2- | 0.0  |
| 2005 02 14 | 704 | 0.6+  | 0.6+  | 2007 10 30 | 691 | (1.5- | 0.1-) | 2007 11 13 | G96 | 0.3+ | 0.4- |
| 2005 02 14 | 704 | (0.8+ | 2.1+) | 2007 10 30 | G96 | 0.3+  | 0.5-  | 2007 11 13 | 291 | 0.6- | 0.0  |
| 2005 02 14 | 704 | 0.9+  | 0.8+  | 2007 10 30 | G96 | 0.2+  | 0.0   | 2007 11 13 | 291 | 0.4- | 0.1- |
| 2005 03 04 | 704 | 0.8+  | 0.3-  | 2007 10 30 | G96 | 0.8+  | 0.1-  | 2007 11 13 | 291 | 0.4- | 0.1- |
| 2005 03 04 | 704 | 0.1+  | 0.6+  | 2007 10 30 | G96 | 0.7+  | 0.5-  | 2007 12 03 | 701 | 0.8- | 0.7- |
| 2005 03 04 | 704 | 0.9+  | 0.0   | 2007 11 09 | G96 | 0.3+  | 0.1-  | 2007 12 03 | 701 | 0.8+ | 0.6- |
| 2005 03 04 | 704 | 1.2+  | 0.5-  | 2007 11 09 | G96 | 0.3+  | 0.0   | 2007 12 03 | 701 | 0.5- | 0.4- |
| 2005 03 09 | 704 | 0.5+  | 0.2+  | 2007 11 09 | G96 | 0.8+  | 0.0   | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2005 03 09 | 704 | 0.5+  | 0.9+  | 2007 11 09 | G96 | 0.7+  | 0.2-  | 2007 12 15 | G96 | 0.6+ | 0.4+ |
| 2005 03 09 | 704 | 0.1+  | 0.4-  | 2007 11 09 | G96 | 0.6+  | 0.0   | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2005 03 12 | 704 | 1.2-  | 0.6+  | 2007 11 09 | G96 | 0.5+  | 0.3-  | 2007 12 15 | G96 | 0.1+ | 0.3- |

**(172865)\* 2005 EC<sub>97</sub>**

Discovered 2005 Mar. 3 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 169.74495  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21251385 | $\omega$ 253.78893 | -0.95465114   | +0.28090326 |
| <i>a</i> | 2.7810655  | $\Omega$ 302.42877 | -0.20835454   | -0.86705058 |
| <i>e</i> | 0.0844420  | <i>i</i> 6.71277   | -0.21267247   | -0.41148104 |
| <i>P</i> | 4.64       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 16 | 644 | 0.1- | 0.2+ | 2004 12 20 | G96 | 0.0   | 0.2+  | 2005 03 17 | 703 | 0.1+ | 0.2+ |
| 2002 08 16 | 644 | 0.2- | 0.6+ | 2004 12 20 | G96 | 0.2+  | 0.1-  | 2005 03 17 | 703 | 0.4- | 0.1+ |
| 2002 08 16 | 644 | 0.1+ | 0.0  | 2004 12 20 | G96 | 0.9+  | 0.9-  | 2005 03 17 | 703 | 0.8- | 0.0  |
| 2002 08 27 | 644 | 0.0  | 0.1- | 2005 03 03 | 703 | 0.7-  | 0.2-  | 2007 09 13 | 703 | 0.2+ | 0.1+ |
| 2002 08 27 | 644 | 0.2- | 0.0  | 2005 03 03 | 703 | 0.0   | 0.2+  | 2007 09 13 | 703 | 0.1+ | 0.2- |
| 2002 08 27 | 644 | 0.1+ | 0.2+ | 2005 03 03 | 703 | 0.0   | 1.3+  | 2007 09 13 | 703 | 0.8+ | 1.2+ |
| 2003 10 27 | 691 | 0.2- | 0.6- | 2005 03 03 | 703 | 0.2-  | 0.3+  | 2007 09 13 | 703 | 1.1- | 0.8+ |
| 2003 10 27 | 691 | 0.9+ | 0.0  | 2005 03 10 | 703 | 0.3+  | 0.1-  | 2007 10 13 | 703 | 0.5+ | 0.6- |
| 2003 10 27 | 691 | 0.4- | 0.0  | 2005 03 10 | 703 | 0.3+  | 0.3+  | 2007 10 13 | 703 | 0.4- | 0.1- |
| 2003 11 16 | 691 | 0.1- | 0.3- | 2005 03 10 | 703 | 0.1+  | 0.4+  | 2007 10 13 | 703 | 0.4- | 0.2- |
| 2003 11 16 | 691 | 0.1- | 0.2- | 2005 03 10 | 703 | 0.8+  | 0.8-  | 2007 10 13 | 703 | 0.8- | 0.3+ |
| 2003 11 16 | 691 | 0.2+ | 0.1- | 2005 03 11 | 699 | 0.1+  | 0.6+  | 2007 12 15 | G96 | 0.4- | 0.8- |
| 2003 12 19 | 691 | 0.1+ | 0.2+ | 2005 03 11 | 699 | 0.7+  | 0.6-  | 2007 12 15 | G96 | 0.5+ | 0.4+ |
| 2003 12 19 | 691 | 0.2+ | 0.3+ | 2005 03 11 | 699 | (0.8+ | 1.6+) | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2003 12 19 | 691 | 0.1+ | 0.5+ | 2005 03 11 | 699 | 1.2+  | 0.1-  | 2007 12 15 | G96 | 0.4+ | 0.1+ |

2007 DEC. 24

M.P.O. 129501

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 321.48842  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27145512 | $\omega$ | 8.61202   | -0.45038521 | -0.88457885 |
| $a$ | 2.3623125  | $\Omega$ | 108.23094 | +0.81137551 | -0.46212727 |
| $e$ | 0.0531423  | $i$      | 7.32722   | +0.37258951 | -0.06291772 |
| $P$ | 3.63       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 691 | 0.0   | 0.2-  | 2003 12 12 | 644 | 0.1+ | 0.2+ | 2005 04 06 | 703 | 0.2- | 0.2- |
| 2001 01 04 | 691 | 0.1-  | 0.1-  | 2003 12 12 | 644 | 0.2+ | 0.7+ | 2005 04 06 | 703 | 0.3- | 0.8+ |
| 2001 01 04 | 691 | 0.1-  | 0.2-  | 2003 12 12 | 644 | 0.4+ | 0.3+ | 2005 04 08 | 704 | 0.1- | 0.3+ |
| 2001 01 19 | 704 | 0.2-  | 0.7+  | 2005 03 03 | 703 | 0.2- | 0.6+ | 2005 04 08 | 704 | 0.4+ | 1.0+ |
| 2001 01 19 | 704 | 0.4+  | 0.7+  | 2005 03 03 | 703 | 0.7+ | 0.4- | 2005 04 08 | 704 | 0.8+ | 0.1- |
| 2001 01 19 | 704 | 0.9+  | 1.4+  | 2005 03 03 | 703 | 1.0+ | 0.1- | 2005 04 08 | 704 | 0.8+ | 1.0+ |
| 2001 02 03 | 704 | 0.5-  | 0.4-  | 2005 03 03 | 703 | 1.3+ | 0.2- | 2005 04 08 | 704 | 0.4+ | 0.4+ |
| 2001 02 03 | 704 | 0.2-  | 0.8-  | 2005 03 10 | 703 | 0.7- | 0.5+ | 2005 04 09 | 699 | 1.4+ | 0.1+ |
| 2001 02 03 | 704 | 0.4-  | 0.2+  | 2005 03 10 | 703 | 1.2- | 0.6- | 2005 04 09 | 699 | 0.6- | 0.2+ |
| 2001 02 03 | 704 | 0.1-  | 0.5-  | 2005 03 10 | 703 | 0.5- | 0.2- | 2005 04 09 | 699 | 0.8+ | 0.6+ |
| 2001 02 03 | 704 | 0.0   | 0.4-  | 2005 03 10 | 703 | 0.1- | 0.0  | 2005 04 09 | 699 | 0.1+ | 0.6+ |
| 2001 02 17 | 704 | 0.2-  | 0.8-  | 2005 03 18 | 704 | 0.3+ | 1.0+ | 2006 07 21 | 704 | 0.4- | 0.9- |
| 2001 02 17 | 704 | 0.3-  | 0.2-  | 2005 03 18 | 704 | 0.7+ | 0.6- | 2006 07 21 | 704 | 0.7- | 0.7- |
| 2001 02 17 | 704 | 0.2-  | 0.4+  | 2005 03 18 | 704 | 0.2+ | 0.1+ | 2006 07 21 | 704 | 0.5+ | 0.3+ |
| 2001 02 17 | 704 | 0.1+  | 0.6+  | 2005 03 18 | 704 | 0.1+ | 0.1- | 2006 08 20 | 644 | 0.1- | 0.8+ |
| 2001 02 17 | 704 | 0.4+  | 0.2+  | 2005 03 30 | 703 | 0.3- | 0.3+ | 2006 08 20 | 644 | 0.2- | 0.8+ |
| 2003 10 30 | 608 | 0.5+  | 0.3-  | 2005 03 30 | 703 | 0.3+ | 0.4- | 2006 08 20 | 644 | 0.2- | 0.6+ |
| 2003 10 30 | 608 | 0.0   | 0.3+  | 2005 03 30 | 703 | 0.6- | 0.8- | 2007 12 04 | 704 | 0.4+ | 0.3+ |
| 2003 10 30 | 608 | 0.4-  | 0.5+  | 2005 03 30 | 703 | 0.1- | 0.4- | 2007 12 04 | 704 | 0.5+ | 0.5- |
| 2003 11 16 | 683 | 0.5-  | 0.9+  | 2005 04 05 | 699 | 0.2- | 0.6+ | 2007 12 04 | 704 | 1.2+ | 0.3+ |
| 2003 11 16 | 683 | 0.5-  | 0.4+  | 2005 04 05 | 699 | 0.1- | 0.2+ | 2007 12 16 | 691 | 0.3- | 0.2- |
| 2003 11 16 | 683 | (2.2- | 0.3-) | 2005 04 05 | 699 | 0.2+ | 0.0  | 2007 12 16 | 691 | 0.2- | 0.4+ |
| 2003 11 19 | 644 | 0.0   | 0.5+  | 2005 04 05 | 699 | 0.1+ | 0.1- | 2007 12 16 | 691 | 0.0  | 0.3- |
| 2003 11 19 | 644 | 0.1-  | 0.3+  | 2005 04 06 | 703 | 1.1- | 0.5- |            |     |      |      |
| 2003 11 19 | 644 | 0.2+  | 0.5+  | 2005 04 06 | 703 | 0.6- | 0.0  |            |     |      |      |

(172867)\* 2005 EX<sub>118</sub>

Discovered 2005 Mar. 7 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 286.31360  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.29072673 | $\omega$ | 229.28369 | -0.96684966 | -0.23714935 |
| $a$ | 2.2567290  | $\Omega$ | 296.80419 | +0.25433986 | -0.86152504 |
| $e$ | 0.1256627  | $i$      | 6.08845   | +0.02264874 | -0.44892625 |
| $P$ | 3.39       | $H$      | 16.6      | $G$         | 0.15        |
|     |            |          |           |             | $U$         |
|     |            |          |           |             | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 01 | 691 | 0.1+ | 0.0  | 2005 03 31 | G92 | 1.1+  | 0.5+  | 2006 09 15 | 691 | 0.1- | 0.3- |
| 2003 10 01 | 691 | 0.1- | 0.2+ | 2005 04 01 | 699 | 0.5+  | 0.2+  | 2006 09 17 | 691 | 0.1+ | 0.3+ |
| 2003 10 01 | 691 | 0.0  | 0.0  | 2005 04 01 | 699 | 0.9+  | 0.3-  | 2006 09 17 | 691 | 0.3+ | 0.5+ |
| 2004 12 10 | 291 | 0.2- | 0.9+ | 2005 04 01 | 699 | 0.4+  | 0.5+  | 2006 09 17 | 691 | 0.1+ | 0.4+ |
| 2004 12 10 | 291 | 0.0  | 0.5+ | 2005 04 01 | 699 | 0.3+  | 0.9-  | 2006 09 26 | 691 | 0.5- | 0.1+ |
| 2004 12 10 | 291 | 0.3- | 0.7+ | 2005 04 02 | 644 | 0.3+  | 0.3-  | 2006 09 26 | 691 | 0.0  | 0.5+ |
| 2005 03 07 | 704 | 1.1+ | 0.0  | 2005 04 02 | 644 | 0.3+  | 0.2-  | 2006 09 26 | 691 | 0.4- | 0.6+ |
| 2005 03 07 | 704 | 0.4+ | 0.1+ | 2005 04 02 | 644 | 0.4+  | 0.3-  | 2007 11 12 | G96 | 0.4- | 0.3- |
| 2005 03 07 | 704 | 0.7+ | 0.5+ | 2005 04 05 | 644 | 0.4+  | 0.1+  | 2007 11 12 | G96 | 0.3- | 0.5- |
| 2005 03 07 | 704 | 1.0+ | 0.1+ | 2005 04 05 | 644 | 0.1-  | 0.1-  | 2007 11 12 | G96 | 0.6- | 0.3- |
| 2005 03 11 | 699 | 0.3- | 0.8+ | 2005 04 05 | 644 | 0.7+  | 0.3+  | 2007 11 12 | G96 | 0.4- | 0.4- |
| 2005 03 11 | 699 | 0.0  | 0.3+ | 2005 04 07 | 704 | 0.1+  | 0.6+  | 2007 12 06 | 704 | 0.2- | 0.7+ |
| 2005 03 11 | 699 | 0.0  | 0.5+ | 2005 04 07 | 704 | 0.8+  | 0.2+  | 2007 12 06 | 704 | 0.2+ | 0.3+ |
| 2005 03 11 | 699 | 0.3- | 1.1+ | 2005 04 07 | 704 | 0.1-  | 0.3+  | 2007 12 06 | 704 | 0.9+ | 0.2- |
| 2005 03 13 | 703 | 0.5- | 0.1+ | 2005 04 15 | 703 | 1.2-  | 0.3-  | 2007 12 06 | 704 | 0.3+ | 0.3+ |
| 2005 03 13 | 703 | 0.5- | 0.4+ | 2005 04 15 | 703 | 0.5-  | 1.0+  | 2007 12 10 | 704 | 0.5+ | 0.8+ |
| 2005 03 13 | 703 | 0.2+ | 0.7+ | 2005 04 15 | 703 | 0.5-  | 1.0+  | 2007 12 10 | 704 | 1.2+ | 1.1+ |
| 2005 03 13 | 703 | 0.3+ | 0.6+ | 2005 04 15 | 703 | (1.7- | 0.4+) | 2007 12 10 | 704 | 0.4+ | 1.2+ |
| 2005 03 30 | G92 | 0.4+ | 0.4- | 2006 08 29 | 691 | 0.5-  | 0.6+  | 2007 12 15 | 704 | 0.9- | 0.6+ |
| 2005 03 30 | G92 | 0.2+ | 0.2+ | 2006 08 29 | 691 | 0.6-  | 0.6+  | 2007 12 15 | 704 | 0.3+ | 0.0  |
| 2005 03 30 | G92 | 0.2+ | 0.2+ | 2006 08 29 | 691 | 0.2-  | 0.4+  | 2007 12 15 | 704 | 0.1+ | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 31 | G92 | 0.2- | 0.5+ | 2006 09 15 | 691 | 0.4- | 0.2- | 2007 12 15 | 704 | 0.5- | 0.1- |
| 2005 03 31 | G92 | 0.4+ | 0.4+ | 2006 09 15 | 691 | 0.1+ | 0.4+ | 2007 12 15 | 704 | 0.2+ | 0.3+ |

(172868)\* 2005 ET<sub>124</sub> = 2003 UP<sub>285</sub>

Discovered 2005 Mar. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (MPO 76889)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 257.70344  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27404468 | $\omega$ | 344.88053 | -0.99980143 | +0.01850917 |
| $a$ | 2.3474074  | $\Omega$ | 196.18544 | -0.01440096 | -0.92719611 |
| $e$ | 0.1038066  | $i$      | 1.51778   | -0.01377365 | -0.37411867 |
| $P$ | 3.60       | $H$      | 17.2      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 09 13 | 691 | 0.3- | 0.2+ | 2005 03 11 | 704 | 0.5+  | 0.9+  | 2005 04 02 | G96 | 0.3- | 0.0  |
| 1999 09 13 | 691 | 0.5- | 0.3+ | 2005 03 11 | 704 | 0.4-  | 0.6-  | 2005 04 02 | G96 | 0.5- | 0.1- |
| 1999 09 13 | 691 | 0.3- | 0.3+ | 2005 03 11 | 704 | 0.3-  | 0.6-  | 2005 04 04 | 703 | 0.9- | 0.2- |
| 2000 11 29 | 691 | 0.2- | 0.6- | 2005 03 11 | 704 | 0.2-  | 0.9-  | 2005 04 04 | 703 | 0.5- | 0.2- |
| 2000 11 29 | 691 | 0.2+ | 0.3- | 2005 03 11 | 704 | 0.2-  | 1.1-  | 2005 04 04 | 703 | 0.4- | 0.1- |
| 2000 11 29 | 691 | 0.3- | 0.7- | 2005 03 14 | 704 | 0.7+  | 0.5+  | 2005 04 04 | 703 | 0.1- | 0.2- |
| 2000 12 27 | 691 | 0.1+ | 1.5+ | 2005 03 14 | 704 | 0.1-  | 0.1-  | 2005 05 04 | G96 | 0.0  | 0.1- |
| 2000 12 27 | 691 | 0.7+ | 0.3+ | 2005 03 14 | 704 | 0.6+  | 0.5-  | 2005 05 04 | G96 | 0.3- | 0.2+ |
| 2000 12 27 | 691 | 0.4- | 0.9+ | 2005 03 14 | 704 | 0.0   | 0.6+  | 2005 05 04 | G96 | 0.2- | 0.2+ |
| 2003 10 19 | 691 | 0.2+ | 0.0  | 2005 03 14 | 704 | 0.5+  | 0.5+  | 2005 05 04 | G96 | 0.2- | 0.1- |
| 2003 10 19 | 691 | 0.4+ | 0.1- | 2005 03 16 | 691 | 0.5+  | 0.5+  | 2005 05 13 | G96 | 0.3- | 0.4- |
| 2003 10 19 | 691 | 0.1+ | 0.2+ | 2005 03 16 | 691 | 0.3+  | 0.5+  | 2005 05 13 | G96 | 0.6- | 0.2+ |
| 2003 10 22 | 695 | 0.2+ | 0.1+ | 2005 03 16 | 691 | 0.4+  | 0.4+  | 2005 05 13 | G96 | 0.0  | 0.1+ |
| 2003 10 22 | 695 | 0.1- | 0.1+ | 2005 03 17 | 704 | 0.7+  | 0.0   | 2005 05 13 | G96 | 0.2- | 0.4- |
| 2003 10 24 | 291 | 0.1+ | 0.2+ | 2005 03 17 | 704 | 0.9+  | 0.8+  | 2006 08 28 | 691 | 0.2- | 0.6+ |
| 2003 10 24 | 291 | 0.0  | 0.3+ | 2005 03 17 | 704 | 0.7+  | 0.1+  | 2006 08 28 | 691 | 0.1- | 0.6+ |
| 2003 10 24 | 291 | 0.0  | 0.1+ | 2005 04 01 | 699 | 0.6-  | 0.7-  | 2006 08 28 | 691 | 0.2- | 0.7+ |
| 2005 03 08 | 704 | 0.4+ | 1.2+ | 2005 04 01 | 699 | 0.9+  | 0.1+  | 2007 11 09 | 691 | 0.2- | 0.2- |
| 2005 03 08 | 704 | 0.1+ | 0.2+ | 2005 04 01 | 699 | 0.6+  | 0.6-  | 2007 11 09 | 691 | 0.2- | 0.2- |
| 2005 03 08 | 704 | 0.5+ | 1.0+ | 2005 04 01 | 683 | 1.0-  | 0.1-  | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2005 03 08 | 704 | 0.4+ | 1.3+ | 2005 04 01 | 699 | 0.4+  | 1.2+  | 2007 12 16 | 691 | 0.3- | 0.1- |
| 2005 03 11 | G96 | 0.5- | 0.3+ | 2005 04 01 | 683 | (1.9+ | 1.3-) | 2007 12 16 | 691 | 0.3+ | 0.1- |
| 2005 03 11 | G96 | 0.4- | 0.5+ | 2005 04 01 | 683 | 0.2-  | 0.6-  | 2007 12 16 | 691 | 0.2- | 0.2- |
| 2005 03 11 | G96 | 0.7- | 0.2+ | 2005 04 02 | G96 | 0.1-  | 0.3-  |            |     |      |      |
| 2005 03 11 | G96 | 0.6- | 0.4+ | 2005 04 02 | G96 | 0.0   | 0.0   |            |     |      |      |

(172869)\* 2005 EH<sub>126</sub>

Discovered 2005 Mar. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 126.56327  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23509612 | $\omega$ | 177.39002 | +0.19785139 | +0.94462075 |
| $a$ | 2.5999944  | $\Omega$ | 103.92558 | -0.90416068 | +0.27903171 |
| $e$ | 0.0761144  | $i$      | 15.64890  | -0.37861364 | -0.17272216 |
| $P$ | 4.19       | $H$      | 15.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 04 25 | 699 | 0.5- | 1.3+ | 2005 03 12 | 704 | 0.6+  | 0.4+  | 2007 11 09 | 703 | 0.2+  | 0.3-  |
| 2001 04 25 | 699 | 0.5- | 0.4+ | 2005 03 12 | 704 | 1.3+  | 0.9+  | 2007 11 09 | 703 | 0.7+  | 0.0   |
| 2001 04 25 | 699 | 0.0  | 0.3+ | 2005 03 12 | 704 | 0.0   | 0.6-  | 2007 11 09 | 703 | (1.6+ | 1.5+) |
| 2001 04 25 | 699 | 0.6+ | 1.0+ | 2005 03 12 | 704 | 0.6+  | 0.2-  | 2007 11 15 | 703 | 0.4-  | 0.7+  |
| 2003 12 01 | 704 | 0.5- | 0.5+ | 2005 03 12 | 704 | (1.6- | 0.2-) | 2007 11 15 | 703 | 0.7-  | 0.0   |
| 2003 12 01 | 704 | 0.2- | 0.2- | 2005 04 01 | 703 | (1.8- | 0.6-) | 2007 11 15 | 703 | 1.4-  | 0.4+  |
| 2003 12 01 | 704 | 0.6+ | 0.1- | 2005 04 01 | 703 | 1.1-  | 0.8-  | 2007 11 15 | 703 | 0.0   | 0.8+  |
| 2003 12 01 | 704 | 1.2+ | 0.6+ | 2005 04 01 | 703 | (2.0- | 2.0-) | 2007 11 16 | 703 | 0.9-  | 0.5+  |
| 2003 12 01 | 704 | 0.5+ | 0.5+ | 2005 04 01 | 703 | (1.3- | 1.6-) | 2007 11 16 | 703 | 0.3-  | 0.6-  |
| 2003 12 16 | 413 | 0.6+ | 0.8- | 2005 04 02 | 699 | 1.0-  | 0.4-  | 2007 11 16 | 703 | (0.7- | 1.6+) |
| 2003 12 16 | 413 | 0.0  | 0.2- | 2005 04 02 | 699 | 0.5+  | 0.4+  | 2007 11 16 | 703 | 0.6-  | 0.5-  |
| 2003 12 16 | 413 | 0.2- | 0.0  | 2005 04 02 | 699 | 0.2-  | 0.2+  | 2007 11 18 | G96 | 0.0   | 0.3-  |
| 2005 03 08 | 704 | 0.4+ | 0.1- | 2005 04 02 | 699 | 0.4+  | 1.2+  | 2007 11 18 | G96 | 0.3-  | 0.3-  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 08 | 704 | 0.5+  | 0.4+  | 2005 04 02 | 699 | (1.5− | 0.3+) | 2007 11 18 | G96 | 0.3− | 0.0  |
| 2005 03 08 | 704 | 0.0   | 0.3+  | 2005 04 02 | 699 | (2.0+ | 0.0 ) | 2007 11 18 | G96 | 0.5+ | 0.4− |
| 2005 03 08 | 704 | 0.7−  | 0.1+  | 2005 04 02 | 699 | 1.0−  | 0.1+  | 2007 11 19 | 703 | 0.6+ | 0.8+ |
| 2005 03 09 | 704 | (1.3+ | 1.6+) | 2005 04 02 | 699 | 0.2−  | 1.0−  | 2007 11 19 | 703 | 0.3+ | 0.0  |
| 2005 03 09 | 704 | 0.7−  | 0.9−  | 2006 06 22 | 644 | 0.2−  | 0.7+  | 2007 11 19 | 703 | 1.5+ | 0.1+ |
| 2005 03 09 | 704 | 0.6+  | 0.4+  | 2006 06 22 | 644 | 0.1−  | 0.9+  | 2007 11 19 | 703 | 0.4− | 0.5+ |
| 2005 03 09 | 704 | 0.1+  | 0.5−  | 2006 06 22 | 644 | 0.2+  | 0.4+  | 2007 12 05 | 703 | 1.2− | 1.2+ |
| 2005 03 11 | 704 | (1.8+ | 0.4−) | 2006 08 20 | 644 | 0.1−  | 0.6+  | 2007 12 05 | 703 | 0.2+ | 1.3+ |
| 2005 03 11 | 704 | 0.7+  | 0.6+  | 2006 08 20 | 644 | 0.1−  | 1.1+  | 2007 12 05 | 703 | 0.5− | 0.1+ |
| 2005 03 11 | 704 | 0.2+  | 1.3+  | 2006 08 20 | 644 | 0.6+  | 1.1+  | 2007 12 05 | 703 | 0.1− | 0.4+ |
| 2005 03 11 | 704 | 1.2+  | 0.5+  | 2007 11 09 | 703 | 0.7−  | 0.1+  |            |     |      |      |

**(172870)\* 2005 EH<sub>132</sub>**

Discovered 2005 Mar. 9 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23959056 | <i>ω</i> | 34.28040  | +0.92908711 | +0.36761215 |          |   |
| <i>a</i> | 2.5673766  | <i>Ω</i> | 304.10016 | −0.34940638 | +0.83625970 |          |   |
| <i>e</i> | 0.1596045  | <i>i</i> | 2.81896   | −0.12129440 | +0.40685503 |          |   |
| <i>P</i> | 4.11       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 17 | 599 | 0.2+ | 0.6− | 2005 03 14 | 704 | 0.6+ | 0.7− | 2007 11 13 | 691 | 0.2− | 0.0  |
| 2002 06 17 | 599 | 0.9+ | 0.4− | 2005 03 17 | 703 | 0.4− | 0.8+ | 2007 11 13 | 691 | 0.0  | 0.1− |
| 2002 06 17 | 599 | 0.2− | 0.3+ | 2005 03 17 | 703 | 0.5− | 0.8+ | 2007 11 15 | 704 | 0.0  | 0.7− |
| 2002 07 05 | 704 | 0.6− | 0.9+ | 2005 03 17 | 703 | 0.6− | 0.8+ | 2007 11 15 | 704 | 0.4+ | 0.1− |
| 2002 07 05 | 704 | 0.2+ | 0.2+ | 2005 03 17 | 703 | 0.5− | 0.2− | 2007 11 15 | 704 | 0.3+ | 0.3+ |
| 2002 07 05 | 704 | 0.5− | 0.7+ | 2005 04 09 | G96 | 0.3− | 0.1− | 2007 11 15 | 704 | 0.5+ | 0.5+ |
| 2002 07 05 | 704 | 0.1− | 0.6+ | 2005 04 09 | G96 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.2− | 0.4− |
| 2003 12 18 | 704 | 0.2+ | 0.2+ | 2005 04 09 | G96 | 0.1− | 0.0  | 2007 11 17 | 691 | 0.2− | 0.6− |
| 2003 12 18 | 704 | 0.3− | 0.3− | 2005 04 09 | G96 | 0.1− | 0.3+ | 2007 11 17 | 691 | 0.2− | 0.2− |
| 2003 12 18 | 704 | 0.5+ | 0.1+ | 2005 04 12 | G96 | 0.2+ | 0.0  | 2007 11 17 | 691 | 0.1− | 0.1+ |
| 2003 12 18 | 704 | 0.4− | 0.5+ | 2005 04 12 | G96 | 0.3− | 0.3− | 2007 11 20 | 704 | 0.6+ | 0.4+ |
| 2005 03 09 | 699 | 0.1− | 0.2− | 2005 04 12 | G96 | 0.1− | 0.2− | 2007 11 20 | 704 | 1.3− | 0.7+ |
| 2005 03 09 | 699 | 0.4+ | 0.3− | 2005 04 12 | G96 | 0.3− | 0.4− | 2007 11 20 | 704 | 0.1− | 0.6+ |
| 2005 03 09 | 699 | 0.6+ | 0.3− | 2005 05 12 | G96 | 0.2− | 0.1+ | 2007 11 20 | 704 | 0.4− | 1.0+ |
| 2005 03 09 | 699 | 0.3+ | 0.8+ | 2005 05 12 | G96 | 0.2− | 0.1− | 2007 12 10 | 704 | 0.2− | 0.7+ |
| 2005 03 11 | G96 | 0.1+ | 0.1+ | 2005 05 12 | G96 | 0.4− | 0.0  | 2007 12 10 | 704 | 0.1+ | 0.3+ |
| 2005 03 11 | G96 | 0.2+ | 0.0  | 2005 05 12 | G96 | 0.6− | 0.0  | 2007 12 10 | 704 | 0.4+ | 0.9+ |
| 2005 03 11 | G96 | 0.2− | 0.0  | 2007 11 02 | 691 | 0.1− | 0.2− | 2007 12 10 | 704 | 0.4− | 0.5+ |
| 2005 03 11 | G96 | 0.0  | 0.1− | 2007 11 02 | 691 | 0.0  | 0.2+ | 2007 12 14 | 704 | 0.1− | 0.4− |
| 2005 03 13 | 691 | 0.3+ | 0.0  | 2007 11 02 | 691 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.7+ | 0.6+ |
| 2005 03 13 | 691 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.0  | 0.1+ | 2007 12 14 | 704 | 0.5+ | 0.2− |
| 2005 03 13 | 691 | 0.2+ | 0.1+ | 2007 11 09 | 691 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.2+ | 0.5− |
| 2005 03 14 | 704 | 0.8+ | 0.0  | 2007 11 09 | 691 | 0.1− | 0.1− | 2007 12 14 | 704 | 0.5+ | 0.3+ |
| 2005 03 14 | 704 | 0.3− | 0.3− | 2007 11 13 | 691 | 0.4+ | 0.0  |            |     |      |      |

**(172871)\* 2005 EH<sub>137</sub>**

Discovered 2005 Mar. 9 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.24348063 | <i>ω</i> | 178.41517 | −0.63513243 | +0.77137262 |          |   |
| <i>a</i> | 2.5399575  | <i>Ω</i> | 52.15296  | −0.70922070 | −0.56194422 |          |   |
| <i>e</i> | 0.1551217  | <i>i</i> | 2.89547   | −0.30596209 | −0.29866868 |          |   |
| <i>P</i> | 4.05       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 05 | 691 | 0.1+ | 0.1− | 2005 04 01 | 699 | 0.7+ | 0.9+ | 2005 04 15 | 699 | 0.7+ | 0.3+ |
| 1994 09 05 | 691 | 0.0  | 0.1+ | 2005 04 01 | 691 | 0.0  | 0.3− | 2005 04 15 | 699 | 0.4+ | 0.5+ |
| 1994 09 05 | 691 | 0.3+ | 0.2− | 2005 04 01 | 699 | 0.0  | 0.5− | 2005 04 15 | 699 | 1.1+ | 0.3− |
| 1997 05 06 | 691 | 0.3− | 0.1− | 2005 04 01 | 691 | 0.2− | 0.3− | 2005 05 06 | G96 | 0.7− | 0.2− |
| 1997 05 06 | 691 | 0.0  | 0.2− | 2005 04 01 | 699 | 0.4+ | 0.4− | 2005 05 06 | G96 | 0.6− | 0.2− |
| 1997 05 06 | 691 | 0.4− | 0.6− | 2005 04 01 | 699 | 0.6+ | 0.6− | 2005 05 06 | G96 | 0.7− | 0.3+ |
| 2001 03 21 | 691 | 0.1+ | 0.4+ | 2005 04 02 | 691 | 0.2− | 0.2− | 2005 05 06 | G96 | 0.5− | 0.1− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 21 | 691 | 0.0   | 0.2+  | 2005 04 02 | 691 | 0.1−  | 0.2−  | 2006 08 28 | 703 | (6.2+ | 3.0−) |
| 2001 03 21 | 691 | 0.1+  | 0.3+  | 2005 04 02 | 691 | 0.3−  | 0.1−  | 2006 08 28 | 703 | 0.2+  | 1.0−  |
| 2001 04 16 | 699 | 0.9+  | 0.5+  | 2005 04 09 | 704 | (0.5+ | 1.6+) | 2006 08 28 | 703 | 1.1−  | 0.7−  |
| 2001 04 16 | 699 | (1.9+ | 0.4−) | 2005 04 09 | 704 | 0.5+  | 0.5−  | 2006 08 28 | 703 | 0.5+  | 0.9−  |
| 2001 04 16 | 699 | (2.3+ | 0.7−) | 2005 04 09 | 704 | 0.5+  | 0.3−  | 2007 11 09 | 691 | 0.3−  | 0.1+  |
| 2001 04 16 | 699 | 0.8+  | 0.1−  | 2005 04 09 | 704 | 0.0   | 0.2+  | 2007 11 09 | 691 | 0.0   | 0.2+  |
| 2001 04 26 | 608 | (3.0− | 0.3−) | 2005 04 09 | 704 | 0.5+  | 0.1+  | 2007 11 09 | 691 | 0.2−  | 0.1+  |
| 2001 04 26 | 608 | (2.4− | 0.3−) | 2005 04 10 | G96 | 0.3−  | 0.3−  | 2007 11 09 | 691 | 0.1+  | 0.3+  |
| 2001 04 26 | 608 | (2.8− | 0.4−) | 2005 04 10 | G96 | 0.3−  | 0.4−  | 2007 11 09 | 691 | 0.7−  | 0.2−  |
| 2002 09 11 | 644 | 0.2+  | 0.9+  | 2005 04 10 | G96 | 0.3−  | 0.3−  | 2007 11 09 | 691 | 0.2−  | 0.1+  |
| 2002 09 11 | 644 | 0.1+  | 1.4+  | 2005 04 10 | G96 | 0.4−  | 0.2−  | 2007 11 13 | 691 | 0.1+  | 0.1−  |
| 2002 09 11 | 644 | (0.2+ | 1.7+) | 2005 04 11 | 699 | 0.8+  | 0.8+  | 2007 11 13 | 691 | 0.4+  | 0.1+  |
| 2005 03 09 | G96 | 0.3−  | 0.1−  | 2005 04 11 | 699 | 0.4−  | 0.3+  | 2007 11 13 | 691 | 0.0   | 0.4+  |
| 2005 03 09 | G96 | 0.3−  | 0.3−  | 2005 04 11 | 699 | 0.4+  | 0.5+  | 2007 11 17 | 691 | 0.7−  | 0.2−  |
| 2005 03 09 | G96 | 0.1−  | 0.1−  | 2005 04 11 | 699 | 0.2+  | 0.2+  | 2007 11 17 | 691 | 0.0   | 0.2−  |
| 2005 03 09 | G96 | 0.5−  | 0.3−  | 2005 04 12 | 704 | (1.0− | 1.9+) | 2007 11 17 | 691 | 0.1+  | 0.8−  |
| 2005 03 10 | 699 | 0.1−  | 0.3−  | 2005 04 12 | 704 | (0.2+ | 2.0+) | 2007 12 06 | G96 | 0.3−  | 0.1+  |
| 2005 03 10 | 699 | 0.0   | 0.1−  | 2005 04 12 | 704 | 0.2+  | 1.3+  | 2007 12 06 | G96 | 0.4+  | 0.1−  |
| 2005 03 10 | 699 | 0.1−  | 0.8+  | 2005 04 12 | 704 | (0.4+ | 1.7+) | 2007 12 06 | G96 | 0.4+  | 0.3−  |
| 2005 03 10 | 699 | (1.7− | 1.2−) | 2005 04 12 | 704 | 0.2−  | 1.3+  | 2007 12 06 | G96 | 0.5+  | 0.2−  |
| 2005 04 01 | 691 | 0.1+  | 0.2−  | 2005 04 15 | 699 | 0.2+  | 0.1−  |            |     |       |       |

**(172872)\* 2005 EH<sub>139</sub> = 2001 KY<sub>60</sub>**

Discovered 2005 Mar. 9 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 76906)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23413144 | <i>ω</i> | 84.31690  | −0.39059072 | +0.92040719 |          |   |
| <i>a</i> | 2.6071312  | <i>Ω</i> | 162.66173 | −0.86559042 | −0.36091128 |          |   |
| <i>e</i> | 0.0832947  | <i>i</i> | 3.27303   | −0.31335622 | −0.15031188 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 10 31 | 691 | 0.6− | 0.7+ | 2005 04 11 | 699 | 0.6−  | 0.9+  | 2006 08 28 | 703 | 0.6− | 0.2− |
| 1994 10 31 | 691 | 0.1− | 0.6+ | 2005 04 11 | 699 | 0.1+  | 0.1−  | 2006 08 28 | 699 | 0.0  | 0.4− |
| 1994 10 31 | 691 | 0.1+ | 0.4+ | 2005 04 11 | 699 | 0.2+  | 0.1−  | 2006 08 28 | 703 | 0.0  | 0.3− |
| 2001 05 17 | 691 | 0.3+ | 0.3+ | 2005 04 11 | 699 | 1.1−  | 1.5+  | 2006 08 28 | 699 | 0.5+ | 0.0  |
| 2001 05 17 | 691 | 0.0  | 0.3+ | 2005 04 12 | 691 | 0.1−  | 0.1+  | 2006 08 28 | 699 | 0.5− | 0.6+ |
| 2001 05 17 | 691 | 0.0  | 0.4+ | 2005 04 12 | 691 | 0.0   | 0.1+  | 2006 08 28 | 699 | 0.5− | 1.2− |
| 2001 05 24 | 699 | 0.4+ | 0.2+ | 2005 04 12 | 691 | 0.1+  | 0.1+  | 2006 09 26 | G96 | 0.2+ | 0.2− |
| 2001 05 24 | 699 | 0.1+ | 0.4− | 2005 04 12 | 704 | 0.1−  | 0.4+  | 2006 09 26 | G96 | 0.2+ | 0.2− |
| 2001 05 24 | 699 | 0.4+ | 0.4+ | 2005 04 12 | 704 | (4.2+ | 1.8−) | 2006 09 26 | G96 | 0.1+ | 0.1− |
| 2001 05 24 | 699 | 0.5+ | 0.1+ | 2005 04 12 | 704 | 0.8+  | 0.5−  | 2006 09 26 | G96 | 0.3+ | 0.2− |
| 2005 03 09 | G96 | 0.9− | 0.5− | 2005 04 12 | 704 | 0.0   | 0.6−  | 2006 11 16 | G96 | 0.2+ | 0.0  |
| 2005 03 09 | G96 | 0.2− | 0.1− | 2005 04 15 | 699 | (1.6+ | 0.6+) | 2006 11 16 | G96 | 0.1− | 0.4− |
| 2005 03 09 | G96 | 0.3− | 0.2− | 2005 04 15 | 699 | 0.7+  | 0.1+  | 2006 11 16 | G96 | 0.2− | 0.1+ |
| 2005 03 09 | G96 | 0.6− | 0.2+ | 2005 04 15 | 699 | (0.6− | 2.5+) | 2006 11 16 | G96 | 0.0  | 0.2− |
| 2005 03 11 | 691 | 0.2+ | 0.1+ | 2005 04 15 | 699 | 1.2+  | 0.4−  | 2007 11 18 | G96 | 0.0  | 0.2+ |
| 2005 03 11 | 691 | 0.1+ | 0.4+ | 2005 05 07 | 691 | 0.1−  | 0.3−  | 2007 11 18 | G96 | 0.7+ | 0.3+ |
| 2005 03 11 | 691 | 0.2+ | 0.3+ | 2005 05 07 | 691 | 0.2−  | 0.0   | 2007 11 18 | G96 | 0.3+ | 0.1+ |
| 2005 04 01 | 691 | 0.1+ | 0.0  | 2005 05 07 | 691 | 0.1+  | 0.2−  | 2007 11 18 | G96 | 0.0  | 0.4+ |
| 2005 04 01 | 691 | 0.2− | 0.1+ | 2006 08 19 | 691 | 0.1+  | 0.3+  | 2007 12 05 | G96 | 0.0  | 0.3+ |
| 2005 04 01 | 691 | 0.1− | 0.0  | 2006 08 19 | 691 | 0.0   | 0.5+  | 2007 12 05 | G96 | 0.1− | 0.3+ |
| 2005 04 04 | 704 | 0.8+ | 0.5+ | 2006 08 19 | 691 | 0.2−  | 0.4+  | 2007 12 05 | G96 | 0.2+ | 0.3+ |
| 2005 04 04 | 704 | 0.0  | 0.2+ | 2006 08 28 | 703 | 0.2+  | 0.4−  | 2007 12 05 | G96 | 0.3− | 0.0  |
| 2005 04 04 | 704 | 0.4− | 0.0  | 2006 08 28 | 703 | 0.2−  | 0.4−  |            |     |      |      |

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M.P.O. 129503

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1998 03 21 691 (4.5+ 2.7+) | 2003 10 22 645 0.1+ 0.0    | 2005 04 13 699 (2.0+ 0.6+) |
| 1998 03 21 691 0.4- 1.0-   | 2003 10 22 645 0.1- 0.0    | 2007 11 11 G96 0.0 0.4-    |
| 1998 03 21 691 0.3- 0.8-   | 2003 10 24 645 0.1+ 0.0    | 2007 11 11 G96 0.4- 0.7-   |
| 2000 12 22 704 0.5+ 0.3+   | 2003 10 24 704 (0.5+ 1.7-) | 2007 11 11 G96 0.3- 0.4-   |
| 2000 12 22 704 0.5+ 1.0-   | 2003 10 24 645 0.0 0.0     | 2007 11 11 G96 0.1- 0.6-   |
| 2000 12 22 704 0.3- 0.2+   | 2003 10 24 704 0.9+ 0.3-   | 2007 12 04 699 0.1- 0.3+   |
| 2000 12 22 704 0.8+ 0.9-   | 2003 10 24 704 0.7+ 0.3-   | 2007 12 04 699 0.5- 0.0    |
| 2000 12 22 704 1.0- 0.9+   | 2003 10 24 704 1.5+ 0.6-   | 2007 12 04 699 0.7+ 0.3+   |
| 2001 01 19 704 0.1+ 0.7-   | 2003 10 24 704 0.3- 0.6-   | 2007 12 04 699 1.1+ 0.4+   |
| 2001 01 19 704 0.1- 0.4-   | 2005 03 10 703 1.1+ 1.3-   | 2007 12 10 704 0.8+ 0.7+   |
| 2001 01 19 704 0.7- 0.0    | 2005 03 10 703 1.2- 0.7-   | 2007 12 10 704 0.1- 0.3-   |
| 2001 01 19 704 0.0 0.9-    | 2005 03 10 703 1.0- 0.3+   | 2007 12 10 704 0.4+ 0.3-   |
| 2001 01 19 704 0.5- 0.8-   | 2005 03 10 703 0.2- 0.3+   | 2007 12 10 704 0.2+ 0.4-   |
| 2003 09 21 691 0.1- 0.2+   | 2005 03 10 691 0.5+ 0.4+   | 2007 12 10 704 0.5- 0.7+   |
| 2003 09 21 691 0.2- 0.1+   | 2005 03 10 691 0.3+ 0.4+   | 2007 12 13 704 0.1+ 0.4+   |
| 2003 09 21 691 0.0 0.2+    | 2005 03 10 691 0.1+ 0.6+   | 2007 12 13 704 0.8+ 0.7+   |
| 2003 09 28 704 0.6- 1.0+   | 2005 03 11 691 0.3+ 0.2+   | 2007 12 13 704 0.6+ 0.6+   |
| 2003 09 28 704 0.3+ 1.0+   | 2005 03 11 691 0.0 0.3+    | 2007 12 13 704 0.0 0.2-    |
| 2003 09 28 704 0.3+ 0.8+   | 2005 03 11 691 0.3+ 0.3+   | 2007 12 13 704 0.2- 0.9+   |
| 2003 09 28 704 0.5- 0.4+   | 2005 04 10 G96 0.4- 0.1+   | 2007 12 15 704 0.1- 0.5+   |
| 2003 09 28 704 0.4+ 0.5+   | 2005 04 10 G96 0.3- 0.2+   | 2007 12 15 704 0.1+ 0.1-   |
| 2003 10 19 645 0.0 0.1-    | 2005 04 10 G96 0.1- 0.2+   | 2007 12 15 704 0.5+ 0.0    |
| 2003 10 19 645 0.0 0.2-    | 2005 04 10 G96 0.2- 0.3+   | 2007 12 15 704 1.2- 0.8+   |
| 2003 10 19 704 0.8- 0.1-   | 2005 04 13 699 (1.4- 1.9+) | 2007 12 15 704 0.6- 0.6+   |
| 2003 10 19 704 1.4- 0.3-   | 2005 04 13 699 (1.9+ 0.5-) |                            |
| 2003 10 19 704 0.4- 0.4+   | 2005 04 13 699 1.0- 1.1-   |                            |

(172874)\* 2005 EO<sub>161</sub> = 2000 KU<sub>19</sub>

Discovered 2005 Mar. 9 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (MPO 76925)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        | 118.63967  | (2000.0)           | P             | Q           |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18359758 | <i>ω</i> 222.09710 | +0.13897017   | +0.98936917 |
| <i>a</i> | 3.0659007  | <i>Ω</i> 55.93417  | -0.89422920   | +0.14396167 |
| <i>e</i> | 0.2591724  | <i>i</i> 2.96489   | -0.42548963   | +0.02058351 |
| <i>P</i> | 5.37       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1996 11 06 691 0.3+ 0.1+   | 2005 03 12 691 0.1+ 0.2+ | 2006 08 20 291 0.1- 0.3+   |
| 1996 11 06 691 0.1+ 0.1+   | 2005 04 02 691 0.1+ 0.3+ | 2006 08 20 291 0.2- 0.5+   |
| 1996 11 06 691 0.0 0.0     | 2005 04 02 691 0.1- 0.3+ | 2006 08 20 291 0.3+ 0.2+   |
| 1996 11 11 691 0.3- 0.3+   | 2005 04 02 691 0.1+ 0.1+ | 2006 08 20 291 0.3- 0.2-   |
| 1996 11 11 691 0.4- 0.3+   | 2005 04 09 704 1.0+ 1.1- | 2006 08 20 291 0.5- 0.3+   |
| 1996 11 11 691 (5.6+ 1.2+) | 2005 04 09 704 1.3+ 0.1+ | 2006 08 23 644 0.4+ 0.1-   |
| 2000 05 28 704 0.8- 0.0    | 2005 04 09 704 1.1+ 0.4+ | 2006 08 23 644 0.2+ 0.2-   |
| 2000 05 28 704 0.9- 0.0    | 2005 04 12 691 0.2+ 0.4+ | 2006 08 23 644 0.2+ 0.3+   |
| 2000 05 28 704 0.3- 0.6-   | 2005 04 12 691 0.1+ 0.6+ | 2006 09 14 703 1.5- 1.2-   |
| 2000 05 28 704 0.4- 0.7-   | 2005 04 12 691 0.4+ 0.2+ | 2006 09 14 703 0.4- 0.5+   |
| 2000 05 28 704 0.3+ 1.2-   | 2005 04 19 691 0.5- 0.3+ | 2006 09 14 703 0.1- 0.1-   |
| 2000 05 29 704 0.1+ 0.6-   | 2005 04 19 691 0.2+ 0.1+ | 2006 09 14 703 (0.2- 1.9+) |
| 2000 05 29 704 0.0 0.5-    | 2005 04 19 691 0.1+ 0.2+ | 2007 11 14 691 0.1- 0.1-   |
| 2000 05 29 704 0.9+ 0.3-   | 2006 08 19 291 0.1- 0.2+ | 2007 11 14 691 0.5- 0.3+   |
| 2005 03 09 G96 0.2- 0.2+   | 2006 08 19 291 0.0 0.4+  | 2007 11 14 691 0.0 0.3+    |
| 2005 03 09 G96 0.5- 0.4+   | 2006 08 19 291 0.1- 0.2+ | 2007 12 15 G96 0.7+ 0.1-   |
| 2005 03 09 G96 0.3- 0.2+   | 2006 08 19 291 0.0 0.1+  | 2007 12 15 G96 1.2+ 0.3+   |
| 2005 03 09 G96 0.5- 0.2+   | 2006 08 19 291 0.2+ 0.1+ | 2007 12 15 G96 0.0 0.4+    |
| 2005 03 12 691 0.1+ 0.3+   | 2006 08 19 291 0.1- 0.1+ | 2007 12 15 G96 0.4+ 0.7-   |
| 2005 03 12 691 0.3+ 0.3+   | 2006 08 20 291 0.1+ 0.3+ |                            |

(172875)\* 2005 EW<sub>165</sub> = 1996 GO<sub>9</sub> = 2002 RP<sub>146</sub>

Discovered 2005 Mar. 11 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 76929)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        | 88.21901   | (2000.0)           | P             | Q           |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21351468 | <i>ω</i> 233.96784 | +0.52594956   | +0.85022802 |
| <i>a</i> | 2.7723681  | <i>Ω</i> 67.77875  | -0.77244443   | +0.48839529 |
| <i>e</i> | 0.0512917  | <i>i</i> 1.36932   | -0.35595879   | +0.19642393 |
| <i>P</i> | 4.62       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1996 04 13 691 0.4+ 0.7+   | 2005 03 17 703 0.2- 0.5-   | 2007 11 01 G96 0.3+ 0.0    |
| 1996 04 13 691 0.4+ 0.7+   | 2005 04 04 G96 0.4- 0.0    | 2007 11 01 G96 0.0 0.1+    |
| 1996 04 13 691 0.1- 0.7+   | 2005 04 04 G96 0.8- 0.1+   | 2007 11 01 G96 0.3+ 0.1+   |
| 1996 04 19 691 0.5+ 0.3+   | 2005 04 04 G96 0.0 0.5-    | 2007 11 01 G96 0.1- 0.1+   |
| 1996 04 19 691 0.5+ 0.9+   | 2005 04 04 G96 0.9- 0.6-   | 2007 11 04 G96 0.2+ 0.4+   |
| 1996 04 19 691 0.2- 0.2+   | 2007 10 04 691 0.4- 0.3+   | 2007 11 04 G96 0.4+ 0.3+   |
| 2002 09 11 644 0.1- 0.6+   | 2007 10 04 691 0.5- 0.3+   | 2007 11 04 G96 0.1+ 0.5+   |
| 2002 09 11 644 0.2- 0.4+   | 2007 10 04 691 0.4- 0.6+   | 2007 11 04 G96 0.3+ 0.3+   |
| 2002 09 11 644 0.5- 0.6+   | 2007 10 08 691 0.1- 0.4+   | 2007 11 05 704 (0.6+ 1.7+) |
| 2002 09 13 644 0.1+ 0.4+   | 2007 10 08 691 0.0 0.1-    | 2007 11 05 704 (0.2- 2.0+) |
| 2002 09 13 644 0.4- 0.3+   | 2007 10 08 691 0.3- 0.6+   | 2007 11 05 704 (0.3- 2.1+) |
| 2002 09 13 644 0.4- 0.2+   | 2007 10 12 691 0.1- 0.1+   | 2007 11 09 G96 0.0 0.0     |
| 2005 03 11 691 0.1+ 0.1+   | 2007 10 12 691 0.2- 0.2+   | 2007 11 09 G96 0.3+ 0.1+   |
| 2005 03 11 691 0.0 0.1+    | 2007 10 12 691 0.1+ 0.3+   | 2007 11 09 G96 0.1- 0.1-   |
| 2005 03 11 691 0.3+ 0.1-   | 2007 10 15 703 0.0 0.7+    | 2007 11 09 G96 0.2- 0.1+   |
| 2005 03 12 691 0.2+ 0.2+   | 2007 10 15 703 0.4+ 0.4+   | 2007 12 05 G96 0.7+ 0.5-   |
| 2005 03 12 691 0.1+ 0.2+   | 2007 10 15 703 (0.3+ 2.0+) | 2007 12 05 G96 1.0+ 0.5-   |
| 2005 03 12 691 0.1+ 0.1+   | 2007 10 15 703 1.3+ 0.7+   | 2007 12 05 G96 0.7+ 0.4-   |
| 2005 03 17 703 (0.6+ 1.7+) | 2007 10 20 691 0.2- 0.1-   | 2007 12 05 G96 0.4+ 0.5-   |
| 2005 03 17 703 0.9- 0.2-   | 2007 10 20 691 0.4- 0.3+   |                            |
| 2005 03 17 703 0.3- 0.3-   | 2007 10 20 691 0.2- 0.2-   |                            |

(172876)\* 2005 EY<sub>168</sub> = 2000 CH<sub>141</sub> = 2002 RQ<sub>168</sub>

Discovered 2005 Mar. 11 by the Mt. Lemmon Survey at Mount Lemmon.

Id. A. Doppler (MPO 89638)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        | 112.55295  | (2000.0)           | P             | Q           |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22933434 | <i>ω</i> 342.98709 | +0.57309556   | +0.81930999 |
| <i>a</i> | 2.6433621  | <i>Ω</i> 321.97442 | -0.74859722   | +0.51491216 |
| <i>e</i> | 0.0748171  | <i>i</i> 1.59125   | -0.33341218   | +0.25218368 |
| <i>P</i> | 4.30       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2000 02 06 691 0.2- 0.0  | 2005 03 11 G96 0.3- 0.2- | 2006 08 14 644 0.1+ 0.2+ |
| 2000 02 06 691 0.1- 0.1- | 2005 03 12 G96 0.3- 0.2+ | 2006 08 14 644 0.2+ 0.1+ |
| 2000 02 06 691 0.3- 0.1+ | 2005 03 12 G96 0.4- 0.0  | 2006 10 20 G96 0.6+ 0.5- |
| 2000 02 12 691 0.1+ 0.1- | 2005 03 12 G96 0.4- 0.1- | 2006 10 20 G96 0.1- 0.6- |
| 2000 02 12 691 0.4+ 0.1- | 2005 03 12 G96 1.1- 0.3- | 2006 10 20 G96 0.1- 0.4+ |
| 2000 02 12 691 0.2+ 0.4- | 2005 04 02 644 0.5+ 0.4+ | 2006 10 20 G96 0.5+ 0.0  |
| 2002 09 13 644 0.5- 1.1+ | 2005 04 02 644 0.2+ 0.3+ | 2007 11 09 691 0.1+ 0.2+ |
| 2002 09 13 644 0.5- 1.3+ | 2005 04 02 644 0.4+ 0.8+ | 2007 11 09 691 0.5- 0.4+ |
| 2002 09 13 644 0.0 1.3+  | 2005 05 02 691 0.1+ 0.1+ | 2007 11 09 691 0.2+ 0.3+ |
| 2002 09 14 644 0.7- 0.4+ | 2005 05 02 691 0.4+ 0.3+ | 2007 12 15 G96 0.1- 0.4+ |
| 2002 09 14 644 0.7- 0.6+ | 2005 05 02 691 0.2+ 0.4+ | 2007 12 15 G96 0.0 0.7+  |
| 2002 09 14 644 0.8- 0.2+ | 2005 05 12 691 0.2+ 0.6+ | 2007 12 15 G96 0.0 0.8+  |
| 2005 03 11 G96 0.1+ 0.2+ | 2005 05 12 691 0.2+ 0.4+ | 2007 12 15 G96 0.1+ 0.5+ |
| 2005 03 11 G96 0.2- 0.1- | 2005 05 12 691 0.2+ 0.2+ |                          |
| 2005 03 11 G96 0.5- 0.2- | 2006 08 14 644 0.4+ 0.3+ |                          |

(172877)\* 2005 EL<sub>175</sub> = 1999 VY<sub>45</sub> = 2003 YO<sub>71</sub>

Discovered 2005 Mar. 8 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 76936), A. Doppler (MPO 126035)

|                                         |            |          |                |             |       |                |      |      |
|-----------------------------------------|------------|----------|----------------|-------------|-------|----------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |       |                |      |      |
| <i>M</i>                                | 85.71289   |          | (2000.0)       | <b>P</b>    |       | <b>Q</b>       |      |      |
| <i>n</i>                                | 0.26476281 | $\omega$ | 34.70013       | +0.98708866 |       | +0.15343581    |      |      |
| <i>a</i>                                | 2.4019542  | $\Omega$ | 316.40065      | -0.15786895 |       | +0.88342123    |      |      |
| <i>e</i>                                | 0.1455067  | <i>i</i> | 3.82239        | -0.02708090 |       | +0.44274641    |      |      |
| <i>P</i>                                | 3.72       | <i>H</i> | 16.3           | <i>G</i>    | 0.15  | <i>U</i>       | 1    |      |
| Residuals in seconds of arc             |            |          |                |             |       |                |      |      |
| 1999 10 12 704                          | 0.4-       | 0.4-     | 2003 12 18 704 | 0.2-        | 0.5-  | 2006 07 20 644 | 0.1- | 0.3+ |
| 1999 10 12 704                          | 0.5+       | 0.2+     | 2003 12 18 704 | 0.3+        | 0.2-  | 2006 07 20 644 | 0.0  | 0.0  |
| 1999 10 12 704                          | 0.1-       | 0.6-     | 2003 12 18 704 | 0.0         | 0.0   | 2006 07 20 644 | 0.1+ | 0.3+ |
| 1999 10 12 704                          | 0.2-       | 0.0      | 2003 12 22 704 | 0.8+        | 1.1+  | 2006 08 13 644 | 0.1+ | 0.3+ |
| 1999 10 12 704                          | 0.1-       | 0.0      | 2003 12 22 704 | 0.3+        | 1.2+  | 2006 08 13 644 | 0.0  | 0.1+ |
| 1999 11 04 704                          | 0.4-       | 0.2+     | 2003 12 22 704 | 0.1+        | 1.1+  | 2006 08 13 644 | 0.2- | 0.1+ |
| 1999 11 04 704                          | 0.3+       | 1.1+     | 2005 03 08 691 | 0.3+        | 0.4+  | 2006 09 26 G96 | 0.2- | 0.2+ |
| 1999 11 04 704                          | 0.4+       | 0.1+     | 2005 03 08 691 | 0.1+        | 0.8+  | 2006 09 26 G96 | 0.5- | 0.0  |
| 1999 11 04 704                          | 0.2+       | 0.2+     | 2005 03 08 691 | 0.2+        | 0.3+  | 2006 09 26 G96 | 0.0  | 0.2+ |
| 1999 11 04 703                          | 0.4-       | 0.5+     | 2005 03 13 691 | 0.3+        | 0.2+  | 2006 09 26 G96 | 0.2- | 0.1+ |
| 1999 11 04 704                          | 0.7+       | 0.8-     | 2005 03 13 691 | (0.5+       | 1.7+) | 2006 10 21 G96 | 0.2+ | 0.0  |
| 1999 11 04 703                          | 1.5-       | 0.3+     | 2005 03 13 691 | 0.3+        | 0.2+  | 2006 10 21 G96 | 0.1- | 0.2+ |
| 1999 11 04 703                          | 0.1-       | 0.7+     | 2005 03 17 703 | 0.3+        | 0.1-  | 2006 10 21 G96 | 0.1+ | 0.2- |
| 1999 11 04 703                          | 0.5-       | 0.7+     | 2005 03 17 703 | (1.6-       | 0.0 ) | 2006 10 21 G96 | 0.2+ | 0.4+ |
| 1999 11 11 703                          | 0.6+       | 0.3+     | 2005 03 17 703 | 1.2-        | 0.6-  | 2007 11 07 G96 | 0.1- | 0.2- |
| 1999 11 11 703                          | 0.2-       | 0.8+     | 2005 03 17 703 | 0.4-        | 0.4-  | 2007 11 07 G96 | 0.1- | 0.2- |
| 1999 11 11 703                          | 0.7-       | 0.2+     | 2006 06 03 G96 | 0.0         | 0.1+  | 2007 11 07 G96 | 0.1- | 0.3- |
| 1999 11 11 703                          | 0.0        | 0.5+     | 2006 06 03 G96 | 0.1-        | 0.0   | 2007 11 07 G96 | 0.2- | 0.3- |
| 2003 11 20 704                          | 0.0        | 0.8+     | 2006 06 03 G96 | 0.5-        | 0.6+  | 2007 12 06 G96 | 0.2- | 0.1- |
| 2003 11 20 704                          | 0.4+       | 0.1+     | 2006 06 03 G96 | 0.0         | 0.4+  | 2007 12 06 G96 | 0.5- | 0.1- |
| 2003 11 20 704                          | 0.6-       | 1.0-     | 2006 07 20 644 | 0.0         | 0.4+  | 2007 12 06 G96 | 0.5- | 0.2- |
| 2003 11 20 704                          | 0.5-       | 0.5-     | 2006 07 20 644 | 0.1-        | 0.2+  | 2007 12 06 G96 | 0.2+ | 0.4- |
| 2003 12 18 704                          | 0.2-       | 0.3-     | 2006 07 20 644 | 0.1+        | 0.2+  |                |      |      |

**(172878)\* 2005 EP<sub>175</sub> = 2006 LW<sub>1</sub>**

Discovered 2005 Mar. 8 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 100933)

|                                         |            |          |                |             |      |                |      |      |
|-----------------------------------------|------------|----------|----------------|-------------|------|----------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |      |                |      |      |
| <i>M</i>                                | 93.78359   |          | (2000.0)       | <b>P</b>    |      | <b>Q</b>       |      |      |
| <i>n</i>                                | 0.25724885 | $\omega$ | 90.87886       | +0.94868464 |      | +0.31469126    |      |      |
| <i>a</i>                                | 2.4485018  | $\Omega$ | 250.77944      | -0.30164992 |      | +0.87106934    |      |      |
| <i>e</i>                                | 0.2081085  | <i>i</i> | 1.88710        | -0.09489356 |      | +0.37710425    |      |      |
| <i>P</i>                                | 3.83       | <i>H</i> | 16.0           | <i>G</i>    | 0.15 | <i>U</i>       | 1    |      |
| Residuals in seconds of arc             |            |          |                |             |      |                |      |      |
| 1995 11 15 691                          | 0.4+       | 0.1+     | 2006 06 11 644 | 0.1+        | 0.0  | 2006 09 13 644 | 0.3- | 0.2- |
| 1995 11 15 691                          | 0.2+       | 0.2-     | 2006 07 17 H07 | 0.0         | 0.3+ | 2006 09 13 644 | 0.2- | 0.2- |
| 1995 11 15 691                          | 0.2+       | 0.0      | 2006 07 17 H07 | 0.4+        | 1.0- | 2006 09 26 G96 | 0.1+ | 0.2- |
| 1996 01 12 691                          | 0.2-       | 0.2-     | 2006 07 17 H07 | 0.2+        | 0.0  | 2006 09 26 G96 | 0.2+ | 0.3- |
| 1996 01 12 691                          | 0.3-       | 0.2+     | 2006 07 17 H07 | 0.0         | 0.6- | 2006 09 26 G96 | 0.1- | 0.2- |
| 1996 01 12 691                          | 0.1-       | 0.3+     | 2006 07 21 H07 | 0.1-        | 0.3- | 2006 09 26 G96 | 0.0  | 0.0  |
| 1997 03 03 691                          | 0.7-       | 0.7-     | 2006 07 21 H07 | 1.2-        | 0.5- | 2006 09 27 704 | 0.3- | 0.4+ |
| 1997 03 03 691                          | 0.9-       | 0.9-     | 2006 07 21 H07 | 0.0         | 0.3- | 2006 09 27 704 | 0.5+ | 0.2+ |
| 1997 03 03 691                          | 0.6-       | 0.4-     | 2006 07 21 H07 | 0.2+        | 0.2- | 2006 09 27 704 | 0.5+ | 0.4+ |
| 2005 03 08 691                          | 0.7+       | 0.4+     | 2006 07 22 H07 | 0.1-        | 0.2+ | 2006 09 27 704 | 0.2+ | 0.8- |
| 2005 03 08 691                          | 0.2+       | 0.0      | 2006 07 22 H07 | 0.1+        | 0.3- | 2007 10 07 G96 | 0.3+ | 0.2+ |
| 2005 03 08 691                          | 0.0        | 0.0      | 2006 07 22 H07 | 0.1+        | 0.2- | 2007 10 07 G96 | 0.1- | 0.1- |
| 2005 03 13 691                          | 0.3+       | 0.2+     | 2006 07 22 H07 | 0.0         | 0.4+ | 2007 10 07 G96 | 0.3- | 0.3- |
| 2005 03 13 691                          | 0.4+       | 0.1+     | 2006 07 26 704 | 0.2-        | 0.4+ | 2007 10 07 G96 | 0.1+ | 0.2+ |
| 2005 03 13 691                          | 0.4+       | 0.0      | 2006 07 26 704 | 0.4+        | 0.1+ | 2007 11 08 G96 | 0.1- | 0.1+ |
| 2005 03 17 691                          | 0.2-       | 0.0      | 2006 07 26 704 | 0.7+        | 1.1+ | 2007 11 08 G96 | 0.1- | 0.9+ |
| 2005 03 17 691                          | 0.1-       | 0.2+     | 2006 07 26 704 | 0.3-        | 0.0  | 2007 11 08 G96 | 0.2- | 0.2+ |
| 2005 03 17 691                          | 0.3+       | 0.2+     | 2006 07 26 704 | 0.1+        | 0.4+ | 2007 11 08 G96 | 0.2- | 0.4+ |
| 2006 05 24 G96                          | 0.3+       | 0.0      | 2006 08 12 644 | 0.2-        | 0.1+ | 2007 11 11 G96 | 0.2+ | 0.0  |
| 2006 05 24 G96                          | 0.1-       | 0.2-     | 2006 08 12 644 | 0.0         | 0.0  | 2007 11 11 G96 | 0.3+ | 0.2+ |
| 2006 05 24 G96                          | 0.2-       | 0.1-     | 2006 08 12 644 | 0.0         | 0.0  | 2007 11 11 G96 | 0.2- | 0.0  |
| 2006 05 24 G96                          | 0.2-       | 0.3-     | 2006 08 13 644 | 0.1-        | 0.1+ | 2007 11 11 G96 | 0.5+ | 0.0  |
| 2006 06 05 G96                          | 0.2-       | 0.1-     | 2006 08 13 644 | 0.0         | 0.1+ | 2007 12 05 G96 | 0.4- | 0.1+ |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 06 05 G96 | 0.2+ | 0.0  | 2006 08 13 644 | 0.1- | 0.1+ | 2007 12 05 G96 | 0.2- | 0.1- |
| 2006 06 05 G96 | 0.1+ | 0.0  | 2006 08 20 644 | 0.1+ | 0.2- | 2007 12 05 G96 | 0.4- | 0.0  |
| 2006 06 05 G96 | 0.1- | 0.2- | 2006 08 20 644 | 0.1- | 0.1- | 2007 12 05 G96 | 0.2- | 0.1- |
| 2006 06 11 644 | 0.1- | 0.3- | 2006 08 20 644 | 0.0  | 0.1- |                |      |      |
| 2006 06 11 644 | 0.4- | 0.3- | 2006 09 13 644 | 0.0  | 0.0  |                |      |      |

**(172879)\* 2005 EX<sub>193</sub>**

Discovered 2005 Mar. 11 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

|                                         |            |          |                |             |      |                |      |      |
|-----------------------------------------|------------|----------|----------------|-------------|------|----------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |      |                |      |      |
| <i>M</i>                                | 196.32604  |          | (2000.0)       | <b>P</b>    |      | <b>Q</b>       |      |      |
| <i>n</i>                                | 0.24781829 | $\omega$ | 347.16427      | -0.77550215 |      | +0.63094461    |      |      |
| <i>a</i>                                | 2.5102317  | $\Omega$ | 231.97868      | -0.57669685 |      | -0.72241722    |      |      |
| <i>e</i>                                | 0.0709819  | <i>i</i> | 1.63515        | -0.25693805 |      | -0.28288206    |      |      |
| <i>P</i>                                | 3.98       | <i>H</i> | 16.9           | <i>G</i>    | 0.15 | <i>U</i>       | 1    |      |
| Residuals in seconds of arc             |            |          |                |             |      |                |      |      |
| 1999 11 17 691                          | 0.3+       | 0.4-     | 2005 03 11 704 | 0.4+        | 0.1- | 2007 10 17 G96 | 0.5+ | 0.1- |
| 1999 11 17 691                          | 0.1+       | 0.4-     | 2005 03 13 691 | 0.0         | 0.1- | 2007 10 17 G96 | 0.4+ | 0.3- |
| 1999 11 17 691                          | 0.2+       | 0.3-     | 2005 03 13 691 | 0.0         | 0.1+ | 2007 10 17 G96 | 0.3+ | 0.3+ |
| 1999 12 05 691                          | 0.2+       | 0.0      | 2005 03 13 691 | 0.4-        | 0.1- | 2007 10 17 G96 | 0.2+ | 0.1+ |
| 1999 12 05 691                          | 0.2+       | 0.1-     | 2005 03 17 703 | 0.6-        | 1.0- | 2007 10 30 691 | 0.4- | 0.2+ |
| 1999 12 05 691                          | 0.0        | 0.3-     | 2005 03 17 703 | 0.7-        | 0.2+ | 2007 10 30 691 | 0.3- | 0.2- |
| 1999 12 18 691                          | 0.1-       | 0.1-     | 2005 03 17 703 | 0.7+        | 0.8- | 2007 10 30 691 | 0.5- | 0.2+ |
| 1999 12 18 691                          | 0.4-       | 0.2+     | 2005 03 17 703 | 0.8-        | 0.3- | 2007 11 03 691 | 0.3- | 0.3+ |
| 1999 12 18 691                          | 0.4-       | 0.3+     | 2005 04 09 G96 | 0.2+        | 0.1- | 2007 11 03 691 | 0.1- | 0.2+ |
| 2005 03 08 699                          | (0.9-      | 1.7+)    | 2005 04 09 G96 | 0.1-        | 0.1+ | 2007 11 03 691 | 0.4- | 0.4+ |
| 2005 03 08 699                          | 1.0+       | 0.4-     | 2005 04 09 G96 | 0.2-        | 0.1- | 2007 12 04 G96 | 0.3+ | 0.3- |
| 2005 03 08 699                          | 1.0+       | 1.4+     | 2005 04 09 G96 | 0.3+        | 0.1- | 2007 12 04 G96 | 0.6+ | 0.3+ |
| 2005 03 08 699                          | (1.6+      | 0.2+)    | 2005 05 26 G96 | 0.1-        | 0.3+ | 2007 12 04 G96 | 0.3+ | 0.3+ |
| 2005 03 09 699                          | 0.9+       | 0.9+     | 2006 05 26 G96 | 0.1+        | 0.0  | 2007 12 04 G96 | 0.7+ | 0.2+ |
| 2005 03 09 699                          | 1.3+       | 0.3+     | 2006 05 26 G96 | 0.2-        | 0.3+ | 2007 12 15 G96 | 0.3+ | 0.3- |
| 2005 03 09 699                          | (2.7+      | 1.1+)    | 2006 05 26 G96 | 0.0         | 0.1+ | 2007 12 15 G96 | 0.2+ | 0.1- |
| 2005 03 09 699                          | 0.5-       | 1.2+     | 2007 10 09 G96 | 0.7+        | 0.3+ | 2007 12 15 G96 | 0.7+ | 0.2+ |
| 2005 03 11 704                          | 1.3-       | 0.1+     | 2007 10 09 G96 | 0.7+        | 0.1+ | 2007 12 15 G96 | 0.6+ | 0.1- |
| 2005 03 11 704                          | 0.6+       | 0.6-     | 2007 10 09 G96 | 0.5+        | 0.1+ |                |      |      |
| 2005 03 11 704                          | (2.0+      | 0.7+)    | 2007 10 09 G96 | 0.5+        | 0.2- |                |      |      |

**(172880)\* 2005 EJ<sub>198</sub>**

Discovered 2005 Mar. 11 by the Mt. Lemmon Survey at Mount Lemmon.

|                                         |            |          |                |             |      |                |      |      |
|-----------------------------------------|------------|----------|----------------|-------------|------|----------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |                |             |      |                |      |      |
| <i>M</i>                                | 337.66650  |          | (2000.0)       | <b>P</b>    |      | <b>Q</b>       |      |      |
| <i>n</i>                                | 0.27248604 | $\omega$ | 160.64705      | -0.01311019 |      | -0.99958106    |      |      |
| <i>a</i>                                | 2.3563504  | $\Omega$ | 290.09739      | +0.91374323 |      | -0.00149617    |      |      |
| <i>e</i>                                | 0.1940688  | <i>i</i> | 1.57451        | +0.40608057 |      | -0.02890457    |      |      |
| <i>P</i>                                | 3.62       | <i>H</i> | 17.6           | <i>G</i>    | 0.15 | <i>U</i>       | 0    |      |
| Residuals in seconds of arc             |            |          |                |             |      |                |      |      |
| 1999 08 08 691                          | 0.4+       | 0.1-     | 2003 09 29 691 | 0.0         | 0.5+ | 2007 11 15 704 | 0.4- | 0.8+ |
| 1999 08 08 691                          | 0.3+       | 0.4+     | 2003 09 29 645 | 0.1-        | 0.1+ | 2007 11 15 704 | 0.6- | 0.4- |
| 1999 08 08 691                          | 0.8+       | 0.1-     | 2003 10 18 645 | 0.1-        | 0.0  | 2007 11 15 704 | 0.4- | 0.2- |
| 2001 01 21 704                          | 0.3+       | 0.3-     | 2003 10 18 645 | 0.0         | 0.0  | 2007 11 15 704 | 0.4+ | 0.2+ |
| 2001 01 21 704                          | 0.7+       | 0.8+     | 2003 10 23 645 | 0.1-        | 0.1- | 2007 11 15 704 | 0.5- | 0.3+ |
| 2001 01 21 704                          | 0.3+       | 0.2-     | 2003 10 23 645 | 0.1-        | 0.1- | 2007 11 17 691 | 0.1+ | 0.3- |
| 2001 01 21 704                          | 0.4-       | 0.2-     | 2003 11 20 645 | 0.1-        | 0.1- | 2007 11 17 691 | 0.0  | 0.2+ |
| 2001 02 16 699                          | 0.3-       | 0.6+     | 2003 11 20 645 | 0.0         | 0.1- | 2007 11 17 691 | 0.2+ | 0.0  |
| 2001 02 16 699                          | 0.1-       | 0.4+     | 2005 03 11 G96 | 0.5-        | 0.2+ | 2007 11 28 D29 | 0.5+ | 0.5- |
| 2001 02 16 699                          | 0.4-       | 0.4+     | 2005 03 11 G96 | 0.7-        | 0.2+ | 2007 11 28 D29 | 0.1+ | 0.1+ |
| 2001 02 16 699                          | 0.2+       | 1.1+     | 2005 03 11 G96 | 0.0         | 0.7+ | 2007 11 28 D29 | 0.6+ | 0.5- |
| 2003 09 17 691                          | 0.7+       | 0.0      | 2005 03 11 G96 | 0.2-        | 0.2+ | 2007 11 28 D29 | 0.3+ | 0.3+ |
| 2003 09 17 691                          | 0.4+       | 0.5+     | 2005 03 13 691 | 0.1+        | 0.4+ | 2007 12 14 704 | 0.0  | 0.3+ |
| 2003 09 17 691                          | 0.1+       | 0.0      | 2005 03 13 691 | 0.1+        | 0.5+ | 2007 12 14 704 | 0.2- | 0.2+ |

## 2007 DEC. 24

## M.P.O. 129505

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 699 | 0.6− | 0.6+ | 2007 08 24 | 691 | 0.9− | 0.5+ | 2007 12 15 | G96 | 0.3+ | 0.4− |
| 2003 09 29 | 691 | 0.2+ | 0.4+ | 2007 11 09 | 691 | 0.2+ | 0.3− | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2003 09 29 | 691 | 0.1− | 0.5+ | 2007 11 09 | 691 | 0.2+ | 0.3− | 2007 12 15 | G96 | 0.1+ | 0.2− |
| 2003 09 29 | 645 | 0.1− | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.5− |

**(172881)\* 2005 EQ<sub>199</sub> = 1995 UV<sub>2</sub>**

Discovered 2005 Mar. 12 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 76955)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 105.30252  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.25779500 | $\omega$ | 317.73816 | +0.84370185 | +0.53670940 |
| <i>a</i> | 2.4450424  | $\Omega$ | 9.81818   | −0.47457811 | +0.75488702 |
| <i>e</i> | 0.0918898  | <i>i</i> | 3.52979   | −0.25088407 | +0.37694643 |
| <i>P</i> | 3.82       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 04 | 691 | 0.3− | 0.2− | 2005 03 13 | 703 | 0.1+ | 1.0+ | 2006 08 12 | 644 | 0.0  | 0.2+ |
| 1991 10 04 | 691 | 0.0  | 0.1+ | 2005 03 13 | 703 | 0.5− | 0.3+ | 2006 08 14 | 644 | 0.1− | 0.1+ |
| 1991 10 04 | 691 | 0.1+ | 0.0  | 2005 03 13 | 703 | 0.3+ | 0.2− | 2006 08 14 | 644 | 0.3− | 0.1+ |
| 1995 10 24 | 046 | 0.6+ | 0.1− | 2005 04 02 | G96 | 0.0  | 0.3− | 2006 08 14 | 644 | 0.2− | 0.1− |
| 1995 10 24 | 046 | 0.6+ | 0.5− | 2005 04 02 | G96 | 0.3+ | 0.0  | 2006 08 17 | 644 | 0.1+ | 0.2+ |
| 1995 10 24 | 046 | 0.3+ | 0.3− | 2005 04 02 | G96 | 0.1+ | 0.2− | 2006 08 17 | 644 | 0.1− | 0.2+ |
| 1995 10 24 | 046 | 0.2+ | 0.3− | 2005 04 02 | G96 | 0.1+ | 0.4− | 2006 08 17 | 644 | 0.2+ | 0.2+ |
| 1995 10 24 | 046 | 0.0  | 0.4− | 2005 04 02 | G96 | 0.1+ | 0.2− | 2006 08 17 | 644 | 0.1+ | 0.4+ |
| 1995 10 24 | 046 | 0.2+ | 0.4− | 2005 04 02 | G96 | 0.1− | 0.0  | 2006 08 17 | 644 | 0.0  | 0.4+ |
| 1995 10 25 | 046 | 0.5+ | 1.1+ | 2005 04 02 | G96 | 0.0  | 0.2+ | 2006 08 17 | 644 | 0.0  | 0.1+ |
| 1995 10 25 | 046 | 0.6− | 0.6+ | 2005 04 02 | G96 | 0.1− | 0.6− | 2006 08 20 | 644 | 0.1+ | 0.3+ |
| 1995 10 25 | 046 | 0.2+ | 0.5+ | 2005 04 05 | G96 | 0.2− | 0.2− | 2006 08 20 | 644 | 0.2+ | 0.3+ |
| 1995 10 26 | 046 | 0.5− | 0.2− | 2005 04 05 | G96 | 0.3+ | 0.2+ | 2006 08 20 | 644 | 0.2+ | 0.4+ |
| 1995 10 26 | 046 | 0.2− | 0.2+ | 2005 04 05 | G96 | 0.6− | 0.3− | 2006 08 28 | 703 | 0.1+ | 0.2− |
| 1995 10 26 | 046 | 0.5− | 0.1+ | 2005 04 05 | G96 | 0.2− | 0.1+ | 2006 08 28 | 703 | 0.4− | 0.3− |
| 1999 11 15 | 012 | 1.9− | 1.1+ | 2005 04 05 | G96 | 0.2− | 0.2− | 2006 08 28 | 703 | 0.3− | 0.7+ |
| 1999 11 15 | 012 | 1.0+ | 1.9+ | 2005 04 05 | G96 | 0.2− | 0.2+ | 2006 08 28 | 703 | 1.2− | 0.8+ |
| 1999 11 15 | 012 | 0.4+ | 0.2+ | 2005 04 05 | G96 | 0.1+ | 0.0  | 2007 11 06 | G96 | 0.5− | 0.0  |
| 2005 03 01 | 691 | 0.4+ | 0.1+ | 2005 04 05 | G96 | 0.3− | 0.0  | 2007 11 06 | G96 | 0.8− | 0.4+ |
| 2005 03 01 | 691 | 0.3+ | 0.1+ | 2005 05 08 | G96 | 0.2− | 0.1− | 2007 11 06 | G96 | 0.4− | 0.2+ |
| 2005 03 01 | 691 | 0.1+ | 0.0  | 2005 05 08 | G96 | 0.1− | 0.3− | 2007 11 06 | G96 | 0.6− | 0.2+ |
| 2005 03 12 | 691 | 0.2+ | 0.5+ | 2005 05 08 | G96 | 0.6− | 0.2− | 2007 12 15 | 704 | 0.3+ | 0.2− |
| 2005 03 12 | 691 | 0.3+ | 0.3+ | 2005 05 08 | G96 | 1.1− | 0.0  | 2007 12 15 | 704 | 0.8+ | 0.2− |
| 2005 03 12 | 691 | 0.3+ | 0.4+ | 2006 08 12 | 644 | 0.1+ | 0.1+ | 2007 12 15 | 704 | 0.0  | 0.2− |
| 2005 03 13 | 703 | 1.1− | 0.5+ | 2006 08 12 | 644 | 0.1+ | 0.1+ |            |     |      |      |

**(172882)\* 2005 EQ<sub>220</sub> = 2000 WA<sub>80</sub>**

Discovered 2005 Mar. 11 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 76975)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.16288  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28213744 | $\omega$ | 145.11319 | −0.49257254 | −0.87014015 |
| <i>a</i> | 2.3023017  | $\Omega$ | 334.38667 | +0.79029383 | −0.43996590 |
| <i>e</i> | 0.1865276  | <i>i</i> | 2.00346   | +0.36442824 | −0.22200477 |
| <i>P</i> | 3.49       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 20 | 704 | 0.6+ | 0.5− | 2005 04 04 | 703 | 0.4+ | 0.6+ | 2007 10 24 | G96 | 0.2+  | 0.2+  |
| 2000 11 20 | 704 | 0.4− | 0.7+ | 2005 04 04 | 703 | 0.5+ | 0.9+ | 2007 11 17 | 691 | 0.4−  | 0.1−  |
| 2000 11 20 | 704 | 0.6− | 0.2− | 2005 04 04 | 703 | 0.7− | 0.1− | 2007 11 17 | 691 | 0.1−  | 0.2−  |
| 2000 11 20 | 704 | 0.2− | 0.2− | 2005 04 05 | G96 | 0.0  | 0.3− | 2007 11 17 | 691 | 0.2−  | 0.0   |
| 2000 11 20 | 704 | 0.1+ | 0.9+ | 2005 04 05 | G96 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.6−  | 0.1−  |
| 2000 11 29 | 704 | 0.4− | 0.5− | 2005 04 05 | G96 | 0.1+ | 0.2− | 2007 11 18 | 704 | 1.2−  | 0.1+  |
| 2000 11 29 | 704 | 0.2− | 0.0  | 2005 04 05 | G96 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.2−  | 0.3+  |
| 2000 11 29 | 704 | 0.9+ | 0.3− | 2005 04 12 | G96 | 0.2− | 0.3+ | 2007 11 18 | 704 | 0.9−  | 0.1+  |
| 2003 09 16 | 691 | 0.2− | 0.9+ | 2005 04 12 | G96 | 0.2− | 0.0  | 2007 12 10 | 704 | (0.2− | 2.0+) |
| 2003 09 16 | 691 | 0.3− | 0.5+ | 2005 04 12 | G96 | 0.5− | 0.2+ | 2007 12 10 | 704 | 0.4−  | 0.2+  |
| 2003 09 16 | 691 | 0.3− | 0.6+ | 2005 04 12 | G96 | 0.2− | 0.2+ | 2007 12 10 | 704 | 0.6−  | 0.6+  |
| 2005 03 11 | G96 | 0.3− | 0.1− | 2005 05 14 | G96 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 1.8+  | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | G96 | 0.2− | 0.1− | 2005 05 14 | G96 | 0.3− | 0.0  | 2007 12 14 | 704 | 0.5+ | 1.1+ |
| 2005 03 11 | G96 | 0.2− | 0.2− | 2005 05 14 | G96 | 0.1− | 0.2+ | 2007 12 14 | 704 | 0.3+ | 0.7+ |
| 2005 03 11 | G96 | 0.2− | 0.1− | 2005 05 14 | G96 | 0.1+ | 0.5+ | 2007 12 14 | 704 | 0.6+ | 0.2− |
| 2005 03 13 | 691 | 1.3+ | 0.1− | 2007 10 24 | G96 | 0.3− | 0.7+ | 2007 12 14 | 704 | 0.1− | 0.2+ |
| 2005 03 13 | 691 | 0.2+ | 0.4+ | 2007 10 24 | G96 | 0.2− | 0.1− | 2007 12 15 | 704 | 0.9+ | 0.3+ |
| 2005 03 13 | 691 | 0.5− | 0.3+ | 2007 10 24 | G96 | 0.6− | 0.7+ | 2007 12 15 | 704 | 0.4+ | 0.3− |
| 2005 03 17 | 691 | 0.2+ | 0.4+ | 2007 10 24 | G96 | 0.1− | 0.2− | 2007 12 15 | 704 | 1.6+ | 0.2− |
| 2005 03 17 | 691 | 0.1+ | 0.0  | 2007 10 24 | G96 | 0.1− | 0.5+ | 2007 12 15 | 704 | 0.6+ | 0.5− |
| 2005 03 17 | 691 | 0.1+ | 0.4+ | 2007 10 24 | G96 | 0.4− | 0.2− | 2007 12 15 | 704 | 0.7+ | 0.7− |
| 2005 04 04 | 703 | 0.6− | 0.1− | 2007 10 24 | G96 | 0.1+ | 0.4+ |            |     |      |      |

**(172883)\* 2005 EP<sub>256</sub>**

Discovered 2005 Mar. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 247.78460  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27186075 | $\omega$ | 326.83147 | −0.97093271 | +0.20343144 |
| <i>a</i> | 2.3599622  | $\Omega$ | 225.45770 | −0.16232973 | −0.94687562 |
| <i>e</i> | 0.1683686  | <i>i</i> | 10.19201  | −0.17589410 | −0.24908273 |
| <i>P</i> | 3.63       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 1995 07 28 | 691 | 0.1−  | 0.1+  | 2005 03 17 | 704 | 0.6−  | 0.1+  | 2005 05 06 | 703 | 0.5− | 0.3+  |
| 1995 07 28 | 691 | 0.0   | 0.1−  | 2005 03 17 | 704 | 0.3−  | 0.0   | 2005 05 06 | 703 | 0.4− | 1.0−  |
| 1995 07 28 | 691 | 0.2+  | 0.1−  | 2005 03 17 | 704 | 0.0   | 0.8+  | 2005 05 06 | 703 | 0.1+ | 0.0   |
| 1996 12 01 | 691 | 0.2+  | 0.0   | 2005 03 17 | 704 | 0.2+  | 0.9+  | 2005 05 06 | 703 | 0.2+ | 0.1+  |
| 1996 12 01 | 691 | 0.4+  | 0.0   | 2005 03 17 | 704 | (0.7+ | 1.6+) | 2006 09 16 | 691 | 0.0  | 0.2+  |
| 1996 12 01 | 691 | (0.3+ | 5.0−) | 2005 04 01 | 699 | 0.2+  | 0.7+  | 2006 09 16 | 691 | 0.2+ | 0.3+  |
| 1998 05 24 | 704 | (2.3+ | 1.8+) | 2005 04 01 | 699 | 0.1−  | 0.2−  | 2006 09 16 | 691 | 0.3− | 0.8+  |
| 1998 05 24 | 704 | (2.5+ | 0.4−) | 2005 04 01 | 699 | 0.9−  | 0.4+  | 2006 09 18 | 691 | 0.0  | 0.2+  |
| 1998 05 24 | 704 | (3.1+ | 2.8−) | 2005 04 01 | 699 | 0.1−  | 0.3+  | 2006 09 18 | 691 | 0.1− | 0.4+  |
| 1998 05 24 | 704 | 1.2−  | 0.4−  | 2005 04 05 | 703 | (1.9+ | 0.9+) | 2006 09 18 | 691 | 0.3+ | 0.2+  |
| 1998 05 24 | 704 | 0.9−  | 1.6+  | 2005 04 05 | 703 | (1.0+ | 1.5−) | 2006 09 20 | 691 | 0.1+ | 0.2+  |
| 2003 10 19 | 691 | 0.4−  | 0.0   | 2005 04 05 | 703 | 0.3−  | 1.4+  | 2006 09 20 | 691 | 0.2− | 0.1+  |
| 2003 10 19 | 691 | 0.0   | 0.1−  | 2005 04 05 | 703 | (0.7− | 2.1+) | 2006 09 20 | 691 | 0.1− | 0.1+  |
| 2003 10 19 | 691 | 0.0   | 0.0   | 2005 04 07 | 704 | 0.5+  | 0.7+  | 2007 11 14 | 704 | (0.0 | 1.6+) |
| 2003 10 24 | 704 | 0.2−  | 1.0+  | 2005 04 07 | 704 | 0.4+  | 0.4+  | 2007 11 14 | 704 | 0.0  | 0.7+  |
| 2003 10 24 | 704 | 0.2−  | 0.1−  | 2005 04 07 | 704 | 0.8+  | 0.4−  | 2007 11 14 | 704 | 0.2+ | 1.2+  |
| 2003 10 24 | 704 | 0.6−  | 0.1+  | 2005 04 07 | 704 | 0.2+  | 0.1+  | 2007 12 03 | D35 | 0.2− | 0.9+  |
| 2003 11 21 | 704 | 0.3+  | 0.4+  | 2005 04 07 | 704 | 0.5+  | 0.1−  | 2007 12 03 | D35 | 0.1− | 0.8+  |
| 2003 11 21 | 704 | 0.7+  | 0.9+  | 2005 04 09 | 699 | 0.4+  | 0.6+  | 2007 12 03 | D35 | 1.0− | 0.3+  |
| 2003 11 21 | 704 | 0.1−  | 0.8+  | 2005 04 09 | 699 | 0.4+  | 0.1+  | 2007 12 04 | 704 | 0.3− | 0.2−  |
| 2003 11 21 | 704 | 0.5−  | 0.0   | 2005 04 09 | 699 | 1.2+  | 0.2−  | 2007 12 04 | 704 | 0.1+ | 0.2−  |
| 2005 03 11 | 699 | 1.4+  | 0.4+  | 2005 04 15 | 703 | 0.1−  | 0.4−  | 2007 12 04 | 704 | 1.1− | 0.9−  |
| 2005 03 11 | 699 | 1.1+  | 0.8+  | 2005 04 15 | 703 | 0.5−  | 0.3+  | 2007 12 04 | 704 | 1.4− | 0.6−  |
| 2005 03 11 | 699 | 1.3+  | 0.4+  | 2005 04 15 | 703 | 0.2−  | 0.7+  |            |     |      |       |
| 2005 03 11 | 699 | 0.9+  | 0.6+  | 2005 04 15 | 703 | 0.8−  | 0.3+  |            |     |      |       |

**(172884)\* 2005 ES<sub>256</sub> = 2006 SJ<sub>133</sub>**

Discovered 2005 Mar. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 109155)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 247.97692  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28992959 | $\omega$ | 312.41569 | −0.79647005 | +0.59398988 |
| $a$ | 2.2608636  | $\Omega$ | 264.33583 | −0.51600287 | −0.76524258 |
| $e$ | 0.0981104  | $i$      | 6.53114   | −0.31524037 | −0.24815280 |
| $P$ | 3.40       | $H$      | 16.8      | $G$ 0.15    | $U$ 1       |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 18 | 644 | 0.2− | 0.4+ | 2005 04 15 | 699 | 0.7−  | 1.4+  | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2003 11 24 | 691 | 0.2− | 0.3+ | 2005 04 15 | 699 | 0.2+  | 0.2+  | 2007 11 11 | G96 | 0.4− | 0.2+ |
| 2003 11 24 | 691 | 0.0  | 0.4+ | 2005 04 15 | 699 | 0.6+  | 0.5+  | 2007 11 11 | G96 | 0.1+ | 0.1+ |
| 2003 11 24 | 691 | 0.1− | 0.0  | 2005 04 15 | 699 | 0.1−  | 0.2+  | 2007 11 11 | G96 | 0.2+ | 0.2− |
| 2005 03 11 | 699 | 0.5− | 0.2− | 2006 09 17 | 703 | (0.6− | 1.9−) | 2007 12 15 | G96 | 0.0  | 0.8− |
| 2005 03 11 | 699 | 0.3+ | 0.9+ | 2006 09 17 | 703 | (1.0− | 1.8−) | 2007 12 15 | G96 | 0.2+ | 0.4− |
| 2005 03 11 | 699 | 0.0  | 0.2− | 2006 09 17 | 703 | (3.6− | 2.9−) | 2007 12 15 | G96 | 0.2+ | 0.6− |
| 2005 03 11 | 699 | 0.1+ | 1.2+ | 2006 09 17 | 703 | 0.4−  | 0.5−  | 2007 12 15 | G96 | 0.4+ | 0.3− |
| 2005 03 17 | 704 | 0.6+ | 0.1+ | 2006 09 22 | 703 | 0.3+  | 1.1+  |            |     |      |      |
| 2005 03 17 | 704 | 0.5+ | 0.2− | 2006 09 22 | 703 | 0.4+  | 0.9+  |            |     |      |      |

**(172885)\* 2005 EL<sub>269</sub>**

Discovered 2005 Mar. 15 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.18472  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.27372027 | $\omega$ | 202.01628 | −0.52886112 | −0.84825013 |            |
| <i>a</i> | 2.3492618  | $\Omega$ | 279.92225 | +0.78283520 | −0.47485793 |            |
| <i>e</i> | 0.1887620  | <i>i</i> | 1.62223   | +0.32783374 | −0.23448169 |            |
| <i>P</i> | 3.60       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 21 | 704 | 0.0   | 0.0   | 2001 02 12 | 699 | 0.8− | 0.1+ | 2005 04 12 | 691 | 0.1−  | 0.4+  |
| 2001 01 21 | 704 | 0.5+  | 0.3−  | 2001 02 12 | 699 | 0.3− | 1.0+ | 2005 04 12 | 691 | 0.1+  | 0.3+  |
| 2001 01 21 | 704 | 0.1+  | 0.1−  | 2001 02 12 | 699 | 0.3− | 0.1− | 2007 09 18 | G96 | 0.5+  | 0.7−  |
| 2001 01 21 | 704 | 0.8−  | 0.9−  | 2003 09 21 | 691 | 0.1+ | 0.4+ | 2007 09 18 | G96 | 0.7+  | 0.1−  |
| 2001 01 21 | 704 | (1.0− | 1.9+) | 2003 09 21 | 691 | 0.3− | 0.3+ | 2007 09 18 | G96 | 0.2+  | 0.2−  |
| 2001 01 21 | 704 | 0.7+  | 0.4+  | 2003 09 21 | 691 | 0.3− | 0.3+ | 2007 09 18 | G96 | 0.0   | 0.2−  |
| 2001 01 21 | 704 | 0.4+  | 0.3+  | 2003 10 19 | 691 | 0.1− | 0.2+ | 2007 12 06 | G96 | (0.3+ | 1.9+) |
| 2001 01 21 | 704 | 0.5+  | 0.4+  | 2003 10 19 | 691 | 0.0  | 0.3+ | 2007 12 06 | G96 | 0.1−  | 0.6−  |
| 2001 01 21 | 704 | 0.9+  | 0.0   | 2003 10 19 | 691 | 0.1− | 0.2+ | 2007 12 06 | G96 | 0.1+  | 0.1−  |
| 2001 01 21 | 704 | 0.3+  | 0.8+  | 2005 03 15 | G96 | 0.3− | 0.4+ | 2007 12 06 | G96 | 0.2+  | 0.1−  |
| 2001 01 21 | 704 | 1.0−  | 0.9+  | 2005 03 15 | G96 | 0.8− | 0.6− | 2007 12 14 | 704 | 0.5+  | 0.4+  |
| 2001 01 21 | 704 | 0.1+  | 1.0−  | 2005 03 15 | G96 | 0.1+ | 0.6+ | 2007 12 14 | 704 | 1.5+  | 0.6+  |
| 2001 01 21 | 704 | 0.2−  | 0.2−  | 2005 03 15 | G96 | 0.2− | 0.4− | 2007 12 14 | 704 | 0.6+  | 0.8+  |
| 2001 01 21 | 704 | 0.3−  | 0.9+  | 2005 03 17 | G96 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.0   | 0.7+  |
| 2001 01 21 | 704 | 0.2+  | 0.4+  | 2005 03 17 | G96 | 0.0  | 0.1− | 2007 12 15 | 691 | 0.0   | 0.2−  |
| 2001 02 02 | 704 | 0.4−  | 0.1−  | 2005 03 17 | G96 | 0.2+ | 0.1− | 2007 12 15 | 691 | 0.0   | 0.1−  |
| 2001 02 02 | 704 | 0.3+  | 0.2+  | 2005 03 17 | G96 | 0.5+ | 0.4− | 2007 12 15 | 691 | 0.3−  | 0.4−  |
| 2001 02 02 | 704 | 0.1−  | 0.3−  | 2005 04 11 | 691 | 0.2+ | 0.2+ | 2007 12 16 | 291 | 0.3−  | 0.0   |
| 2001 02 02 | 704 | 0.6+  | 0.4−  | 2005 04 11 | 691 | 0.2+ | 0.1+ | 2007 12 16 | 291 | 0.2−  | 0.0   |
| 2001 02 02 | 704 | 0.0   | 0.6−  | 2005 04 11 | 691 | 0.0  | 0.2− |            |     |       |       |
| 2001 02 12 | 699 | 0.3+  | 1.2+  | 2005 04 12 | 691 | 0.1+ | 0.5+ |            |     |       |       |

**(172886)\* 2005 EU<sub>281</sub>**

Discovered 2005 Mar. 10 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 251.09693  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.26313790 | $\omega$ | 108.69308 | −0.97902449 | +0.14146931 |            |
| <i>a</i> | 2.4118324  | $\Omega$ | 79.64367  | −0.19093232 | −0.88819480 |            |
| <i>e</i> | 0.1519631  | <i>i</i> | 8.57178   | +0.07110482 | −0.43714577 |            |
| <i>P</i> | 3.75       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 18 | 704 | 0.7+ | 0.1− | 2005 03 18 | 704 | (2.7+ | 1.1−) | 2005 04 16 | 703 | 0.7+ | 0.4+ |
| 2001 01 18 | 704 | 0.8− | 0.7− | 2005 03 18 | 703 | 0.6+  | 0.6−  | 2005 04 16 | 703 | 0.4− | 0.3+ |
| 2001 01 18 | 704 | 1.3− | 0.4− | 2005 03 18 | 704 | (1.7+ | 0.0 ) | 2005 04 16 | 703 | 0.2− | 0.4+ |
| 2001 01 18 | 704 | 0.6− | 0.0  | 2005 03 18 | 703 | 0.0   | 0.3−  | 2005 05 06 | 703 | 0.7− | 0.0  |
| 2001 01 18 | 704 | 0.7− | 0.5− | 2005 03 18 | 703 | 0.2+  | 0.2−  | 2005 05 06 | 703 | 0.5− | 0.3− |
| 2001 02 02 | 699 | 0.6+ | 0.5− | 2005 03 18 | 703 | 1.4−  | 0.6−  | 2005 05 06 | 703 | 0.3− | 0.3+ |
| 2001 02 02 | 699 | 0.4+ | 0.2− | 2005 03 30 | 703 | 0.5−  | 0.2−  | 2005 05 06 | 703 | 0.7− | 0.4+ |
| 2001 02 02 | 699 | 0.2− | 0.3+ | 2005 03 30 | 703 | 0.3−  | 0.4+  | 2005 05 08 | 703 | 0.6− | 0.0  |
| 2001 02 02 | 699 | 0.6− | 0.6− | 2005 03 30 | 703 | 0.5−  | 0.2+  | 2005 05 08 | 703 | 1.3+ | 1.0− |
| 2001 02 16 | 704 | 0.4+ | 0.6+ | 2005 03 30 | 703 | 0.2−  | 0.4−  | 2005 05 08 | 703 | 0.1− | 0.2− |
| 2001 02 16 | 704 | 0.2− | 0.3+ | 2005 04 05 | 699 | 0.2−  | 0.4−  | 2005 05 08 | 703 | 0.5− | 0.4− |
| 2001 02 16 | 704 | 0.6+ | 0.3+ | 2005 04 05 | 699 | 0.1+  | 0.0   | 2007 11 06 | 691 | 0.4− | 0.1− |
| 2001 02 16 | 704 | 0.3− | 0.1− | 2005 04 05 | 699 | 0.5+  | 0.4+  | 2007 11 06 | 691 | 0.1− | 0.2− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 16 | 704 | 0.1−  | 0.4+  | 2005 04 05 | 699 | 0.1− | 0.1+ | 2007 11 06 | 691 | 0.4− | 0.6− |
| 2001 03 18 | 699 | 0.4+  | 0.2+  | 2005 04 05 | 644 | 0.8+ | 0.0  | 2007 11 14 | 704 | 0.6− | 0.5+ |
| 2001 03 18 | 699 | (2.0+ | 0.0 ) | 2005 04 05 | 644 | 1.0+ | 0.2+ | 2007 11 14 | 704 | 0.2+ | 0.1− |
| 2001 03 18 | 699 | (1.8+ | 1.0+) | 2005 04 05 | 644 | 0.8+ | 0.0  | 2007 11 14 | 704 | 1.4+ | 0.9− |
| 2001 03 18 | 699 | 1.1+  | 0.4+  | 2005 04 08 | 704 | 1.2+ | 0.5+ | 2007 11 14 | 691 | 0.1+ | 0.2+ |
| 2003 10 29 | 691 | 0.1−  | 0.0   | 2005 04 08 | 704 | 0.7+ | 0.2+ | 2007 11 14 | 691 | 0.3− | 0.2+ |
| 2003 10 29 | 691 | 0.1−  | 0.1−  | 2005 04 08 | 704 | 0.5+ | 0.0  | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2003 10 29 | 691 | 0.2+  | 0.2+  | 2005 04 08 | 704 | 0.9+ | 1.3+ | 2007 12 05 | 704 | 0.0  | 1.4+ |
| 2005 03 10 | 703 | 0.6−  | 0.6−  | 2005 04 08 | 704 | 0.6+ | 0.2+ | 2007 12 05 | 704 | 0.3− | 0.3+ |
| 2005 03 10 | 703 | 0.4−  | 0.6−  | 2005 04 09 | 699 | 0.3− | 0.2+ | 2007 12 05 | 704 | 0.9+ | 1.0+ |
| 2005 03 10 | 703 | (1.6− | 1.3−) | 2005 04 09 | 699 | 0.3− | 0.1+ | 2007 12 05 | 704 | 0.9+ | 0.5+ |
| 2005 03 10 | 703 | 1.0−  | 0.5−  | 2005 04 09 | 699 | 0.6− | 1.5+ | 2007 12 05 | 704 | 0.3+ | 1.1+ |
| 2005 03 18 | 704 | (2.2+ | 0.1−) | 2005 04 09 | 699 | 0.1+ | 0.1− |            |     |      |      |
| 2005 03 18 | 704 | 0.2−  | 0.2−  | 2005 04 16 | 703 | 0.5+ | 0.4+ |            |     |      |      |

**(172887)\* 2005 ET<sub>287</sub> = 2000 WG<sub>139</sub>**

Discovered 2005 Mar. 8 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 77015)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 327.91750  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.28164864 | $\omega$ | 236.24807 | −0.09513043 | −0.99519851 |            |
| <i>a</i> | 2.3049647  | $\Omega$ | 219.23082 | +0.92493926 | −0.07981626 |            |
| <i>e</i> | 0.0941886  | <i>i</i> | 2.08634   | +0.36801842 | −0.05665062 |            |
| <i>P</i> | 3.50       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 21 | 704 | 0.3+ | 0.5− | 2005 03 08 | 699 | (0.2+ | 2.2+) | 2007 11 14 | 704 | 0.0   | 0.4+  |
| 2000 11 21 | 704 | 0.4+ | 0.1− | 2005 03 08 | 699 | 0.2+  | 0.7−  | 2007 11 14 | 691 | 0.3−  | 0.3+  |
| 2000 11 21 | 704 | 0.4+ | 1.2+ | 2005 03 08 | 699 | 0.1+  | 0.8+  | 2007 11 14 | 704 | 0.2+  | 0.3−  |
| 2000 11 21 | 704 | 0.6+ | 0.4+ | 2005 03 08 | 699 | 0.7+  | 0.2−  | 2007 11 14 | 691 | 0.2−  | 0.3+  |
| 2000 11 24 | 691 | 0.1+ | 0.3− | 2005 03 17 | G96 | 0.1−  | 0.0   | 2007 11 14 | 704 | (1.2+ | 1.6+) |
| 2000 11 24 | 691 | 0.2− | 0.5− | 2005 03 17 | G96 | 0.0   | 0.1+  | 2007 11 14 | 704 | 0.2−  | 0.1+  |
| 2000 11 24 | 691 | 0.2− | 0.4− | 2005 03 17 | G96 | 0.3+  | 0.0   | 2007 11 14 | 691 | 0.5−  | 0.2+  |
| 2002 04 13 | 691 | 0.4− | 0.6+ | 2005 03 17 | G96 | 0.2−  | 0.0   | 2007 12 04 | G96 | 0.3+  | 0.1+  |
| 2002 04 13 | 691 | 0.3+ | 0.4− | 2005 05 08 | G96 | 0.5−  | 0.2+  | 2007 12 04 | G96 | 0.0   | 0.1+  |
| 2002 04 13 | 691 | 0.2− | 0.1− | 2005 05 08 | G96 | 0.4−  | 0.2−  | 2007 12 04 | G96 | 0.1+  | 0.1+  |
| 2002 05 08 | 291 | 0.2− | 0.3+ | 2005 05 08 | G96 | 0.3−  | 0.0   | 2007 12 04 | G96 | 0.1−  | 0.0   |
| 2002 05 08 | 291 | 0.5− | 0.2− | 2005 05 08 | G96 | 0.4−  | 0.2+  | 2007 12 05 | 704 | 0.6+  | 0.8+  |
| 2002 05 08 | 291 | 0.2− | 0.2+ | 2007 09 14 | G96 | 0.2−  | 0.5−  | 2007 12 05 | 704 | 0.1+  | 0.8+  |
| 2002 06 03 | 291 | 0.8+ | 0.4+ | 2007 09 14 | G96 | 0.2+  | 0.1−  | 2007 12 05 | 704 | 1.2+  | 0.4+  |
| 2002 06 03 | 291 | 0.4+ | 0.0  | 2007 09 14 | G96 | 0.3−  | 0.0   | 2007 12 05 | 704 | 0.0   | 1.4+  |
| 2002 06 03 | 291 | 0.4+ | 0.2+ | 2007 09 14 | G96 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.2+  | 1.5+  |
| 2005 03 03 | 703 | 0.2+ | 0.3+ | 2007 10 15 | G96 | 0.3−  | 0.3−  | 2007 12 15 | G96 | 0.3+  | 0.2−  |
| 2005 03 03 | 703 | 0.5+ | 0.2− | 2007 10 15 | G96 | 0.3+  | 0.1+  | 2007 12 15 | G96 | 0.0   | 0.1+  |
| 2005 03 03 | 703 | 0.2− | 1.0− | 2007 10 15 | G96 | 0.2+  | 0.3+  | 2007 12 15 | G96 | 0.1+  | 0.1−  |
| 2005 03 03 | 703 | 0.8− | 0.3− | 2007 10 15 | G96 | 0.3+  | 0.1+  | 2007 12 15 | G96 | 0.1+  | 0.1+  |

**(172888)\* 2005 EE<sub>290</sub>**

Discovered 2005 Mar. 9 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 37.77483   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17254081 | $\omega$ | 121.19708 | +0.82330991 | +0.56290828 |
| $a$ | 3.1955197  | $\Omega$ | 204.77405 | −0.56169238 | +0.78959225 |
| $e$ | 0.0511890  | $i$      | 10.00020  | −0.08162386 | +0.24429152 |
| $P$ | 5.71       | $H$      | 15.2      | $G$ 0.15    | $U$ 1       |



2007 DEC. 24

M.P.O. 129507

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 25 | 704 | 0.5− | 0.8+ | 2005 04 04 | 691 | 0.1−  | 0.0   | 2007 10 07 | 703 | (1.7− | 0.3+) |
| 2001 08 25 | 704 | 0.0  | 1.1− | 2005 05 13 | G96 | 0.2−  | 0.2+  | 2007 10 07 | 703 | 0.0   | 0.2+  |
| 2001 08 25 | 704 | 0.0  | 0.3− | 2005 05 13 | G96 | 0.4−  | 0.2+  | 2007 10 07 | 703 | 0.0   | 0.0   |
| 2001 08 25 | 704 | 0.1− | 1.0+ | 2005 05 13 | G96 | 0.3−  | 0.1+  | 2007 10 07 | 703 | 0.9−  | 0.2+  |
| 2001 08 25 | 704 | 0.3− | 0.1+ | 2005 05 13 | G96 | 0.1−  | 0.4+  | 2007 10 09 | 704 | 0.6+  | 1.1+  |
| 2001 09 08 | 704 | 0.3+ | 0.3+ | 2007 09 09 | 691 | 0.2−  | 0.2−  | 2007 10 09 | 704 | 1.0−  | 0.3−  |
| 2001 09 08 | 704 | 0.9+ | 0.6+ | 2007 09 09 | 691 | 0.2−  | 0.3−  | 2007 10 09 | 704 | 1.0−  | 0.0   |
| 2001 09 08 | 704 | 0.5+ | 1.0− | 2007 09 09 | 691 | 0.2−  | 0.2−  | 2007 10 12 | 704 | 0.4+  | 0.0   |
| 2001 09 08 | 704 | 0.1+ | 0.2+ | 2007 09 13 | 703 | 0.5+  | 0.3+  | 2007 10 12 | 704 | 0.1−  | 0.0   |
| 2001 09 08 | 704 | 0.0  | 0.3+ | 2007 09 13 | 703 | 1.4−  | 1.3+  | 2007 10 12 | 704 | 0.3+  | 0.4−  |
| 2002 11 16 | 644 | 0.1− | 0.7+ | 2007 09 13 | 703 | 0.9+  | 0.5+  | 2007 12 04 | G96 | 0.3+  | 0.8−  |
| 2002 11 16 | 644 | 0.0  | 0.8+ | 2007 09 13 | 703 | (0.5− | 2.5+) | 2007 12 04 | G96 | 0.3−  | 0.5−  |
| 2002 11 16 | 644 | 0.2− | 0.5+ | 2007 09 13 | 703 | 1.2+  | 1.3+  | 2007 12 04 | G96 | 0.4+  | 0.3+  |
| 2005 03 09 | 691 | 0.2+ | 0.4+ | 2007 09 13 | 703 | 0.2+  | 0.5−  | 2007 12 04 | G96 | 0.9+  | 0.3−  |
| 2005 03 09 | 691 | 0.7+ | 0.2+ | 2007 09 13 | 703 | 0.3+  | 0.0   |            |     |       |       |

(172889)\* 2005 EG<sub>291</sub> = 2002 TY<sub>344</sub>

Discovered 2005 Mar. 10 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 77017)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 141.76425  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22192883 | $\omega$ | 171.70806 | +0.07599851 |      | +0.99106082 |   |
| <i>a</i> | 2.7018438  | $\Omega$ | 102.59933 | −0.92115314 |      | +0.11188018 |   |
| <i>e</i> | 0.1367566  | <i>i</i> | 6.45100   | −0.38170816 |      | −0.07267234 |   |
| <i>P</i> | 4.44       | <i>H</i> | 16.1      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 22 | 691 | 0.1+ | 0.0  | 2005 03 10 | 703 | 0.3− | 0.9+ | 2005 04 08 | 704 | 0.3+ | 1.2+ |
| 1998 12 22 | 691 | 0.3− | 0.4− | 2005 03 10 | 703 | 0.9+ | 0.9+ | 2006 08 15 | 644 | 0.0  | 0.4+ |
| 1998 12 22 | 691 | 0.1− | 0.2− | 2005 03 18 | 703 | 0.8− | 0.5+ | 2006 08 15 | 644 | 0.1− | 0.2+ |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2005 03 18 | 703 | 0.1− | 0.2+ | 2006 08 15 | 644 | 0.3− | 0.4+ |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2005 03 18 | 703 | 1.4+ | 0.1+ | 2006 08 24 | 644 | 0.5− | 0.4+ |
| 2002 10 10 | 644 | 0.5− | 0.8+ | 2005 03 18 | 703 | 0.0  | 0.3+ | 2006 08 24 | 644 | 0.4− | 0.1+ |
| 2002 10 10 | 644 | 0.4− | 0.4+ | 2005 04 04 | 703 | 0.2+ | 0.0  | 2006 08 24 | 644 | 0.6− | 0.2+ |
| 2002 10 10 | 644 | 0.3− | 0.8+ | 2005 04 04 | 703 | 0.4− | 0.4− | 2007 10 30 | 691 | 0.1+ | 0.1+ |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2005 04 04 | 703 | 0.5− | 0.7+ | 2007 10 30 | 691 | 0.2− | 0.3+ |
| 2002 10 10 | 645 | 0.1+ | 0.0  | 2005 04 04 | 703 | 0.1− | 0.3− | 2007 10 30 | 691 | 0.3− | 0.1+ |
| 2002 10 15 | 644 | 0.3− | 0.0  | 2005 04 05 | 644 | 0.7+ | 0.1− | 2007 11 18 | G96 | 0.0  | 0.1+ |
| 2002 10 15 | 644 | 0.2− | 0.1+ | 2005 04 05 | 644 | 0.3+ | 0.0  | 2007 11 18 | G96 | 0.5+ | 0.1− |
| 2002 10 15 | 644 | 0.3− | 0.1+ | 2005 04 05 | 644 | 0.1+ | 0.3+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2005 04 08 | 704 | 0.7+ | 1.2− | 2007 11 18 | G96 | 0.4+ | 0.1+ |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2005 04 08 | 704 | 0.6+ | 0.2− | 2007 12 04 | 704 | 0.3+ | 0.6+ |
| 2005 03 10 | 703 | 0.2− | 0.7+ | 2005 04 08 | 704 | 0.4+ | 0.0  | 2007 12 04 | 704 | 0.2+ | 0.8+ |
| 2005 03 10 | 703 | 1.1− | 1.5+ | 2005 04 08 | 704 | 0.4+ | 0.1− | 2007 12 04 | 704 | 0.8− | 0.1+ |

(172890)\* 2005 FN<sub>6</sub>

Discovered 2005 Mar. 30 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 244.60674  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26724151 | $\omega$ | 102.74398 | −0.94515246 |      | +0.31394197 |   |
| <i>a</i> | 2.3870789  | $\Omega$ | 95.60745  | −0.32364966 |      | −0.86295461 |   |
| <i>e</i> | 0.1965518  | <i>i</i> | 5.19725   | −0.04401953 |      | −0.39591639 |   |
| <i>P</i> | 3.69       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 704 | 0.4− | 0.3+ | 2005 03 18 | 704 | 0.1+ | 1.1+ | 2005 04 08 | 704 | 0.3+ | 0.4− |
| 2001 01 04 | 704 | 0.6− | 0.1+ | 2005 03 18 | 704 | 0.3+ | 0.6+ | 2005 04 08 | 704 | 0.2+ | 0.3+ |
| 2001 01 04 | 704 | 0.2+ | 0.6+ | 2005 03 18 | 704 | 0.5+ | 0.2+ | 2005 04 09 | 699 | 0.2− | 0.2+ |
| 2001 01 04 | 704 | 0.4− | 0.5− | 2005 03 18 | 703 | 0.4− | 0.8− | 2005 04 09 | 699 | 0.1− | 0.4+ |
| 2001 01 04 | 704 | 0.4+ | 0.2+ | 2005 03 18 | 703 | 0.4− | 0.9− | 2005 04 09 | 699 | 0.4− | 0.5+ |
| 2001 01 19 | 704 | 0.1+ | 0.5+ | 2005 03 18 | 703 | 0.8− | 0.7− | 2005 04 09 | 699 | 0.3+ | 0.1+ |
| 2001 01 19 | 704 | 0.1− | 0.0  | 2005 03 18 | 703 | 0.0  | 0.4− | 2005 04 16 | 703 | 0.1+ | 0.6+ |
| 2001 01 19 | 704 | 0.1+ | 0.4+ | 2005 03 30 | 703 | 0.4− | 0.1+ | 2005 04 16 | 703 | 0.4+ | 0.3+ |
| 2001 01 19 | 704 | 0.7+ | 0.0  | 2005 03 30 | 703 | 0.4− | 0.3+ | 2005 04 16 | 703 | 0.2+ | 0.5+ |
| 2001 01 19 | 704 | 0.4+ | 1.3+ | 2005 03 30 | 703 | 0.4− | 0.2+ | 2005 04 16 | 703 | 0.0  | 0.8+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 17 | 704 | 0.3− | 0.2+ | 2005 03 30 | 703 | 0.4− | 0.1+ | 2005 05 13 | 704 | 0.1− | 0.0  |
| 2001 02 17 | 704 | 1.1+ | 1.1− | 2005 04 05 | 699 | 0.9+ | 0.2+ | 2005 05 13 | 704 | 0.3+ | 0.5− |
| 2001 02 17 | 704 | 0.7− | 0.4+ | 2005 04 05 | 699 | 0.2+ | 0.4+ | 2005 05 13 | 704 | 0.7+ | 0.7− |
| 2002 07 14 | 644 | 0.0  | 0.5+ | 2005 04 05 | 699 | 1.1+ | 0.0  | 2005 05 13 | 704 | 0.5+ | 0.0  |
| 2002 07 14 | 644 | 0.2− | 0.2+ | 2005 04 05 | 608 | 0.7+ | 0.3− | 2007 11 08 | 691 | 0.2− | 0.2− |
| 2002 07 14 | 644 | 0.0  | 0.4+ | 2005 04 05 | 608 | 1.0+ | 0.2− | 2007 11 08 | 691 | 0.9− | 0.0  |
| 2002 08 13 | 644 | 0.1− | 1.3+ | 2005 04 05 | 608 | 0.8+ | 0.5− | 2007 11 08 | 691 | 0.0  | 0.3− |
| 2002 08 13 | 644 | 0.1+ | 0.2+ | 2005 04 06 | 703 | 0.6− | 0.1+ | 2007 12 04 | 704 | 0.9+ | 0.5+ |
| 2002 08 13 | 644 | 0.6− | 0.2+ | 2005 04 06 | 703 | 0.8− | 0.7− | 2007 12 04 | 704 | 0.4+ | 0.0  |
| 2005 03 03 | 703 | 0.1− | 0.1− | 2005 04 06 | 703 | 0.7− | 0.4− | 2007 12 04 | 704 | 0.6+ | 0.3+ |
| 2005 03 03 | 703 | 0.5− | 0.1− | 2005 04 06 | 703 | 0.8− | 0.3+ | 2007 12 04 | 704 | 1.1+ | 0.7+ |
| 2005 03 03 | 703 | 0.8− | 0.2− | 2005 04 08 | 704 | 0.7+ | 0.0  | 2007 12 05 | G96 | 0.3+ | 0.3+ |
| 2005 03 03 | 703 | 0.6− | 0.4− | 2005 04 08 | 704 | 0.5+ | 0.3− | 2007 12 05 | G96 | 0.2+ | 0.2+ |
| 2005 03 18 | 704 | 0.0  | 0.5+ | 2005 04 08 | 704 | 0.4− | 0.1+ | 2007 12 05 | G96 | 0.5+ | 0.1+ |

(172891)\* 2005 GX<sub>2</sub> = 2003 WX<sub>1</sub>

Discovered 2005 Apr. 1 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 77036)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 256.01536  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.27568341 | $\omega$ | 150.83784 | −0.90907138 |      | +0.41183904 |   |
| <i>a</i> | 2.3380958  | $\Omega$ | 53.61850  | −0.39583680 |      | −0.80649059 |   |
| <i>e</i> | 0.1255216  | <i>i</i> | 4.49313   | −0.13000941 |      | −0.42421873 |   |
| <i>P</i> | 3.58       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 12 05 | 691 | 0.7+  | 0.8+  | 2005 04 11 | 699 | 0.1−  | 0.5+  | 2005 05 12 | 699 | 0.0   | 0.0   |
| 1996 12 05 | 691 | 0.2+  | 0.1−  | 2005 04 11 | 699 | 1.0+  | 0.5+  | 2005 05 12 | 699 | 0.4−  | 0.7−  |
| 1996 12 05 | 691 | 0.2−  | 0.3−  | 2005 04 11 | 699 | 0.4+  | 0.4+  | 2005 05 14 | 691 | 0.1+  | 0.0   |
| 1998 04 25 | 809 | (2.2+ | 2.8+) | 2005 04 11 | 699 | 0.1−  | 0.1−  | 2005 05 14 | 691 | 0.0   | 0.1+  |
| 1998 04 25 | 809 | (1.7+ | 2.3+) | 2005 04 12 | 704 | 0.7+  | 0.2+  | 2005 05 14 | 691 | 0.1+  | 0.1+  |
| 1998 04 25 | 809 | (2.2+ | 2.4+) | 2005 04 12 | 704 | 0.0   | 0.2+  | 2005 05 18 | 644 | 0.0   | 0.2+  |
| 2001 01 19 | 704 | 1.1−  | 0.3+  | 2005 04 12 | 704 | 0.4−  | 0.1+  | 2005 05 18 | 644 | 0.2−  | 0.3+  |
| 2001 01 19 | 704 | 0.3+  | 0.4−  | 2005 04 12 | 704 | 0.2+  | 0.0   | 2005 05 18 | 644 | 0.2−  | 0.2+  |
| 2001 01 19 | 704 | 0.8−  | 0.7+  | 2005 04 12 | 704 | 0.1+  | 0.1+  | 2005 06 13 | G96 | 0.1−  | 0.1+  |
| 2001 01 19 | 704 | 0.4−  | 0.4−  | 2005 04 18 | 691 | 0.1+  | 0.2+  | 2005 06 13 | G96 | 0.5−  | 0.0   |
| 2003 11 16 | 291 | 0.0   | 0.4+  | 2005 04 18 | 703 | 0.6−  | 0.2+  | 2005 06 13 | G96 | 0.0   | 0.2+  |
| 2003 11 16 | 291 | 0.1−  | 0.0   | 2005 04 18 | 691 | 0.0   | 0.2+  | 2006 09 14 | 703 | (1.2− | 2.2+) |
| 2003 11 16 | 291 | 0.1−  | 0.3+  | 2005 04 18 | 703 | 0.5−  | 0.0   | 2006 09 14 | 703 | 0.5+  | 0.5+  |
| 2003 11 18 | 691 | 0.5−  | 0.2−  | 2005 04 18 | 703 | (2.4− | 0.5−) | 2006 09 14 | 703 | (1.8− | 0.2−) |
| 2003 11 18 | 691 | 0.5−  | 0.7−  | 2005 04 18 | 704 | 0.2−  | 1.3−  | 2006 09 14 | 703 | (0.7− | 2.1+) |
| 2003 11 18 | 691 | 0.2−  | 0.0   | 2005 04 18 | 703 | 0.7−  | 0.5+  | 2006 09 18 | 703 | (3.2− | 0.2−) |
| 2003 11 28 | 691 | 0.3+  | 0.2+  | 2005 04 18 | 691 | 0.3−  | 0.8−  | 2006 09 18 | 703 | 0.8−  | 0.5+  |
| 2003 11 28 | 691 | 0.0   | 0.1+  | 2005 04 18 | 704 | 1.4−  | 0.6+  | 2006 09 18 | 703 | (0.6+ | 2.4−) |
| 2003 11 28 | 691 | 0.2−  | 0.3+  | 2005 04 18 | 704 | 0.4−  | 1.1−  | 2006 09 18 | 703 | 0.1−  | 1.0−  |
| 2005 04 01 | 699 | 0.8+  | 0.5−  | 2005 04 18 | 704 | (1.5− | 1.7+) | 2006 10 03 | G96 | 0.6+  | 0.1+  |
| 2005 04 01 | 699 | 0.8−  | 0.6−  | 2005 04 20 | 705 | 0.4−  | 0.1−  | 2006 10 03 | G96 | 0.1+  | 0.5+  |
| 2005 04 01 | 699 | 0.7−  | 1.2−  | 2005 04 20 | 705 | 0.1−  | 0.1−  | 2006 10 03 | G96 | 0.1+  | 0.8+  |
| 2005 04 01 | 699 | 0.4+  | 0.3+  | 2005 04 20 | 705 | 1.3−  | 1.1−  | 2006 10 03 | G96 | 0.0   | 0.7+  |
| 2005 04 02 | 691 | 0.2+  | 0.0   | 2005 05 03 | 691 | 0.1+  | 0.1+  | 2007 11 03 | G96 | 0.3+  | 0.1−  |
| 2005 04 02 | 691 | 0.2+  | 0.0   | 2005 05 03 | 691 | 0.2+  | 0.0   | 2007 11 03 | G96 | 0.3+  | 0.6−  |
| 2005 04 02 | 644 | 0.8+  | 0.5+  | 2005 05 03 | 691 | 0.0   | 0.0   | 2007 11 03 | G96 | 0.2−  | 0.1+  |
| 2005 04 02 | 691 | 0.3+  | 0.1−  | 2005 05 08 | 703 | 0.3+  | 1.4+  | 2007 11 03 | G96 | 0.2−  | 0.1−  |
| 2005 04 02 | 644 | 0.6+  | 0.2+  | 2005 05 08 | 703 | (1.0− | 1.9+) | 2007 12 10 | 704 | 0.6−  | 0.0   |
| 2005 04 02 | 644 | 0.7+  | 0.3+  | 2005 05 08 | 703 | 0.0   | 1.2+  | 2007 12 10 | 704 | 0.1+  | 0.3−  |
| 2005 04 05 | 703 | (2.2− | 0.0 ) | 2005 05 08 | 703 | 0.2+  | 0.6+  | 2007 12 10 | 704 | 0.6+  | 0.1−  |
| 2005 04 05 | 703 | (1.5− | 0.2+) | 2005 05 10 | G96 | 0.1+  | 0.1+  | 2007 12 10 | 704 | 0.5−  | 0.5+  |
| 2005 04 05 | 703 | 0.0   | 0.2−  | 2005 05 10 | G96 | 0.0   | 0.0   | 2007 12 16 | 704 | 0.6+  | 0.1+  |
| 2005 04 05 | 703 | 0.0   | 0.4−  | 2005 05 10 | G96 | 0.3−  | 0.1−  | 2007 12 16 | 704 | 1.7+  | 0.1+  |
| 2005 04 10 | 691 | 0.0   | 0.1+  | 2005 05 10 | G96 | 0.2−  | 0.1−  | 2007 12 16 | 704 | 0.4+  | 0.3−  |
| 2005 04 10 | 691 | 0.0   | 0.2+  | 2005 05 12 | 699 | 1.1+  | 0.9+  | 2007 12 16 | 704 | 0.1+  | 0.1−  |
| 2005 04 10 | 691 | 0.1+  | 0.1+  | 2005 05 12 | 699 | 0.0   | 1.0+  |            |     |       |       |

Id. G. V. Williams (*MPO* 77040)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 119.41318  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.21656050 | $\omega$ | 235.45098 | +0.51551556 | +0.85155057 |          |
| <i>a</i> | 2.7463121  | $\Omega$ | 65.85686  | -0.74793143 | +0.50151256 |          |
| <i>e</i> | 0.1024209  | <i>i</i> | 6.00233   | -0.41814147 | +0.15279652 |          |
| <i>P</i> | 4.55       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 05 23 | 691 | 0.7+  | 0.2+  | 2005 04 02 | 691 | 0.0   | 0.2+  | 2006 08 28 | E12 | 0.6+  | 0.0   |
| 1996 05 23 | 691 | 0.1+  | 0.5+  | 2005 04 05 | 703 | 0.3-  | 0.1-  | 2006 08 28 | E12 | 0.4+  | 0.9+  |
| 1996 05 23 | 691 | 0.1+  | 0.9+  | 2005 04 05 | 703 | (1.6- | 0.6-) | 2006 08 28 | E12 | 0.7-  | 0.5+  |
| 1996 06 08 | 809 | (2.4- | 3.2+) | 2005 04 05 | 703 | 0.3+  | 0.9+  | 2006 08 28 | E12 | 0.2-  | 0.2+  |
| 1996 06 08 | 809 | (2.6- | 4.2+) | 2005 04 05 | 703 | 0.3+  | 0.2-  | 2006 09 20 | 703 | 0.7+  | 0.6+  |
| 1996 06 08 | 809 | (1.8- | 2.7+) | 2005 04 13 | 704 | 1.2+  | 1.2-  | 2006 09 20 | 703 | (1.1+ | 1.8+) |
| 1996 06 10 | 809 | (3.0- | 3.0+) | 2005 04 13 | 704 | 0.9-  | 0.3+  | 2006 09 20 | 703 | (0.9+ | 2.2+) |
| 1996 06 10 | 809 | (3.2- | 3.6+) | 2005 04 13 | 704 | 0.1-  | 1.3+  | 2006 09 20 | 703 | (0.6+ | 1.6+) |
| 1996 06 10 | 809 | (3.1- | 3.4+) | 2005 04 13 | 704 | 0.2-  | 0.2+  | 2007 11 14 | 691 | 0.3-  | 0.5+  |
| 2002 10 15 | 644 | 0.6-  | 0.7+  | 2005 04 18 | 691 | 0.2+  | 0.4+  | 2007 11 14 | 691 | 0.1+  | 0.1+  |
| 2002 10 15 | 644 | 0.5-  | 0.3+  | 2005 04 18 | 691 | 0.1+  | 0.3+  | 2007 11 14 | 691 | 0.0   | 0.4+  |
| 2002 10 15 | 644 | 0.3+  | 0.7+  | 2005 04 18 | 691 | 0.1+  | 0.3+  | 2007 12 06 | G96 | 0.1+  | 0.2+  |
| 2002 10 15 | 644 | 0.3-  | 0.6+  | 2005 05 08 | 703 | 0.5-  | 1.2+  | 2007 12 06 | G96 | 0.0   | 0.0   |
| 2002 10 15 | 644 | 0.2-  | 0.7+  | 2005 05 08 | 703 | 0.9-  | 1.5-  | 2007 12 06 | G96 | 0.4+  | 0.2-  |
| 2002 10 15 | 644 | 0.4-  | 0.7+  | 2005 05 08 | 703 | 1.2-  | 1.4-  | 2007 12 06 | G96 | 0.2+  | 0.1-  |
| 2002 11 07 | 704 | (0.6+ | 1.7+) | 2005 05 08 | 703 | 0.6-  | 0.9-  | 2007 12 10 | 704 | 2.2+  | 0.5-  |
| 2002 11 07 | 704 | 0.4+  | 1.2+  | 2005 05 09 | 699 | 0.2+  | 0.6+  | 2007 12 10 | 704 | 0.7+  | 0.2+  |
| 2002 11 07 | 704 | 0.7-  | 1.3+  | 2005 05 09 | 699 | 0.2+  | 0.1-  | 2007 12 10 | 704 | 1.0+  | 1.2-  |
| 2002 11 07 | 704 | 1.1-  | 0.4+  | 2005 05 09 | 699 | 0.6-  | 0.1-  | 2007 12 10 | 704 | 0.2+  | 0.4-  |
| 2002 11 22 | 644 | 0.8-  | 0.7+  | 2005 05 09 | 699 | 0.0   | 0.4+  | 2007 12 14 | 704 | 0.3+  | 0.2+  |
| 2002 11 22 | 644 | 0.6-  | 0.6+  | 2005 05 12 | 691 | 0.2+  | 0.0   | 2007 12 14 | 704 | 0.7-  | 0.6+  |
| 2002 11 22 | 644 | 0.3-  | 1.0+  | 2005 05 12 | 691 | 0.1+  | 0.2+  | 2007 12 14 | 704 | 0.8-  | 0.1+  |
| 2005 04 01 | 691 | 0.0   | 0.3+  | 2005 05 12 | 691 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.1+  | 0.1+  |
| 2005 04 01 | 691 | 0.0   | 0.1+  | 2005 05 13 | 703 | (3.2- | 0.4-) | 2007 12 15 | 691 | 0.2-  | 0.2+  |
| 2005 04 01 | 691 | 0.4+  | 0.1-  | 2005 05 13 | 703 | (2.0- | 0.9+) | 2007 12 15 | 691 | 0.1-  | 0.0   |
| 2005 04 02 | 691 | 0.1-  | 0.1+  | 2005 05 13 | 703 | (1.9- | 2.4+) | 2007 12 15 | 691 | 0.2-  | 0.2-  |
| 2005 04 02 | 691 | 0.1-  | 0.1+  | 2005 05 13 | 703 | (0.5- | 1.6+) |            |     |       |       |

(172893)\* 2005 GE<sub>9</sub>

Discovered 2005 Apr. 2 by W. Bickel at Bergisch Gladbach.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 169.10874  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.22371049 | $\omega$ | 171.03825 | -0.14047114 | +0.95279732 |          |
| <i>a</i> | 2.6874794  | $\Omega$ | 90.55382  | -0.92424879 | -0.02871540 |          |
| <i>e</i> | 0.0666968  | <i>i</i> | 15.61482  | -0.35500992 | -0.30224606 |          |
| <i>P</i> | 4.41       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 05 22 | 599 | 1.2-  | 0.7+  | 2005 04 03 | 621 | 0.0  | 0.1+ | 2005 05 15 | 644 | 0.3+  | 0.3+  |
| 1996 05 22 | 599 | 0.3-  | 0.1-  | 2005 04 03 | 621 | 0.3+ | 0.3+ | 2005 05 15 | 644 | 0.3+  | 0.3+  |
| 1996 05 22 | 599 | 0.2+  | 0.3-  | 2005 04 12 | 699 | 1.4+ | 0.8+ | 2005 05 15 | 644 | 0.3+  | 0.4+  |
| 2002 10 05 | 644 | 0.1-  | 0.4+  | 2005 04 12 | 699 | 1.0- | 1.0+ | 2005 05 15 | 644 | 0.4+  | 0.3+  |
| 2002 10 05 | 644 | 0.4-  | 0.6+  | 2005 04 12 | 699 | 0.0  | 0.5+ | 2005 05 15 | 644 | 0.3+  | 0.2+  |
| 2002 10 05 | 644 | 0.5-  | 0.3+  | 2005 04 12 | 699 | 0.9- | 0.7+ | 2005 05 19 | 703 | 0.4+  | 1.0-  |
| 2002 10 16 | 644 | 0.0   | 0.2+  | 2005 04 13 | 703 | 0.2- | 0.2- | 2005 05 19 | 703 | (0.6- | 2.2+) |
| 2002 10 16 | 644 | 0.3+  | 0.3+  | 2005 04 13 | 703 | 0.0  | 0.2- | 2005 05 19 | 703 | 0.6-  | 0.7-  |
| 2002 10 16 | 644 | 0.3+  | 0.1-  | 2005 04 13 | 703 | 0.4- | 0.4- | 2005 05 19 | 703 | 0.0   | 0.7-  |
| 2003 12 23 | 704 | 0.5+  | 0.5-  | 2005 04 13 | 703 | 0.0  | 0.4+ | 2005 05 20 | 644 | 0.3+  | 0.2+  |
| 2003 12 23 | 704 | (2.3+ | 0.5+) | 2005 05 04 | 703 | 0.1- | 0.2- | 2005 05 20 | 644 | 0.2+  | 0.2+  |
| 2003 12 23 | 704 | 1.4+  | 0.0   | 2005 05 04 | 703 | 0.4- | 0.1+ | 2005 05 20 | 644 | 0.3+  | 0.1+  |
| 2003 12 23 | 704 | 0.2+  | 0.3+  | 2005 05 04 | 703 | 0.5- | 0.2- | 2005 05 31 | 699 | 0.1+  | 0.7+  |
| 2003 12 28 | 704 | 0.2+  | 0.7-  | 2005 05 04 | 703 | 0.3- | 0.2+ | 2005 05 31 | 699 | 0.8+  | 0.0   |
| 2003 12 28 | 704 | 0.5-  | 1.3-  | 2005 05 06 | 704 | 0.2+ | 0.1- | 2005 05 31 | 699 | 0.4-  | 0.4+  |
| 2003 12 28 | 704 | 0.0   | 0.2-  | 2005 05 06 | 704 | 0.0  | 0.7+ | 2005 05 31 | 703 | 0.6-  | 0.3+  |
| 2004 01 18 | 691 | 0.1+  | 0.1-  | 2005 05 06 | 704 | 0.7+ | 0.2+ | 2005 05 31 | 699 | 0.4+  | 0.4-  |
| 2004 01 18 | 691 | 0.1+  | 0.1-  | 2005 05 06 | 704 | 0.8+ | 0.5+ | 2005 05 31 | 703 | 0.0   | 0.1+  |
| 2004 01 18 | 691 | 0.2+  | 0.0   | 2005 05 06 | 704 | 0.7+ | 0.3- | 2005 05 31 | 703 | 0.0   | 0.3-  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 27 | 703 | 0.0   | 0.0   | 2005 05 11 | 703 | 0.1-  | 0.3+  | 2005 05 31 | 703 | 1.0+ | 0.5- |
| 2004 01 27 | 703 | 0.3+  | 0.2-  | 2005 05 11 | 703 | 0.4-  | 0.3+  | 2007 11 20 | 691 | 0.3- | 0.0  |
| 2004 01 27 | 703 | 0.4-  | 0.2-  | 2005 05 11 | 703 | 0.1-  | 0.2+  | 2007 11 20 | 691 | 1.3- | 0.8+ |
| 2004 01 27 | 703 | (0.2- | 2.1+) | 2005 05 11 | 703 | 1.3-  | 0.0   | 2007 11 20 | 691 | 0.5- | 0.0  |
| 2005 04 02 | 621 | 0.4+  | 0.3-  | 2005 05 12 | 599 | (2.6+ | 0.8+) | 2007 12 04 | 704 | 0.8+ | 0.8+ |
| 2005 04 02 | 621 | 0.6+  | 0.0   | 2005 05 12 | 599 | 0.1+  | 0.2+  | 2007 12 04 | 704 | 0.3+ | 0.9+ |
| 2005 04 02 | 621 | 0.0   | 0.1+  | 2005 05 12 | 599 | 0.2+  | 0.2+  | 2007 12 04 | 704 | 1.1+ | 0.2- |
| 2005 04 03 | 621 | 0.1-  | 0.1+  | 2005 05 15 | 644 | 0.2+  | 0.3+  | 2007 12 04 | 704 | 0.8+ | 0.6+ |

(172894)\* 2005 GX<sub>17</sub> = 2002 RR<sub>221</sub>

Discovered 2005 Apr. 2 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Id. G. V. Williams (*MPO* 77055)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 220.09448  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.23260459 | $\omega$ | 46.84516  | -0.92332214 | +0.37407562 |          |
| <i>a</i> | 2.6185278  | $\Omega$ | 154.74501 | -0.38399856 | -0.89661250 |          |
| <i>e</i> | 0.1059290  | <i>i</i> | 11.74602  | -0.00461831 | -0.23696721 |          |
| <i>P</i> | 4.24       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 01 14 | 691 | 0.4+ | 0.3+ | 2005 04 02 | 683 | (0.1- | 1.8+) | 2005 05 08 | 703 | 0.8-  | 0.2+  |
| 1996 01 14 | 691 | 0.2- | 0.4+ | 2005 04 02 | 683 | (2.4+ | 0.1+) | 2006 08 15 | 644 | 0.4-  | 0.2+  |
| 1996 01 14 | 691 | 0.0  | 0.0  | 2005 04 02 | 683 | 0.3+  | 0.3+  | 2006 08 15 | 644 | 0.2+  | 0.3+  |
| 2001 05 18 | 699 | 0.4- | 0.2+ | 2005 04 04 | 703 | 0.7-  | 0.6+  | 2006 08 15 | 644 | 0.3-  | 0.0   |
| 2001 05 18 | 699 | 0.5+ | 0.3+ | 2005 04 04 | 703 | 0.2-  | 0.4-  | 2006 08 19 | 691 | 0.1+  | 0.0   |
| 2001 05 18 | 699 | 0.5+ | 0.8+ | 2005 04 04 | 703 | 0.0   | 0.3-  | 2006 08 19 | 691 | 0.0   | 0.2+  |
| 2001 05 18 | 699 | 0.5+ | 1.0+ | 2005 04 04 | 703 | 0.7-  | 0.2+  | 2006 08 19 | 691 | 0.1+  | 0.1+  |
| 2001 05 31 | 644 | 0.6+ | 0.5+ | 2005 04 13 | 703 | 0.4-  | 0.3-  | 2006 08 28 | 703 | (0.5+ | 2.1+) |
| 2001 05 31 | 644 | 0.6+ | 0.6+ | 2005 04 13 | 703 | 0.1-  | 0.6-  | 2006 08 28 | 703 | 0.6+  | 0.6-  |
| 2001 05 31 | 644 | 0.3+ | 0.1- | 2005 04 13 | 703 | (1.6+ | 1.0+) | 2006 08 28 | 703 | 0.4+  | 1.3+  |
| 2002 09 15 | 644 | 0.4- | 0.2+ | 2005 04 13 | 703 | 0.0   | 0.1+  | 2006 08 28 | 703 | 0.5-  | 0.6-  |
| 2002 09 15 | 644 | 0.3- | 0.2- | 2005 04 18 | 704 | 0.2-  | 0.3-  | 2007 11 15 | 703 | 0.6+  | 0.8+  |
| 2002 09 15 | 644 | 0.2- | 0.0  | 2005 04 18 | 704 | 0.3+  | 0.0   | 2007 11 15 | 703 | 0.6-  | 1.4-  |
| 2002 09 16 | 644 | 0.0  | 0.2+ | 2005 04 18 | 704 | 0.9+  | 0.1+  | 2007 11 15 | 703 | 0.8-  | 0.4+  |
| 2002 09 16 | 644 | 0.8- | 0.1+ | 2005 04 18 | 704 | 0.7+  | 0.3+  | 2007 11 15 | 703 | 0.1+  | 0.6-  |
| 2002 09 16 | 644 | 0.3- | 0.1- | 2005 04 18 | 704 | 0.7+  | 0.1-  | 2007 12 05 | 703 | 0.1+  | 0.4-  |
| 2004 01 18 | 644 | 0.1+ | 0.5+ | 2005 05 08 | 703 | 0.0   | 0.9-  | 2007 12 05 | 703 | 1.1+  | 0.5-  |
| 2004 01 18 | 644 | 0.2- | 0.7+ | 2005 05 08 | 703 | 0.5-  | 0.4-  | 2007 12 05 | 703 | 0.4+  | 0.9+  |
| 2004 01 18 | 644 | 0.2- | 0.3+ | 2005 05 08 | 703 | 0.6-  | 0.1-  | 2007 12 05 | 703 | 0.1-  | 0.6+  |

(172895)\* 2005 GQ<sub>27</sub> = 2003 YJ<sub>38</sub>

Discovered 2005 Apr. 3 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 77065)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 233.14262  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>n</i> | 0.25436687 | $\omega$ | 317.10986 | -0.92105649 | +0.38301242 |          |
| <i>a</i> | 2.4669614  | $\Omega$ | 245.53451 | -0.33307495 | -0.86846312 |          |
| <i>e</i> | 0.1107263  | <i>i</i> | 4.43608   | -0.20178213 | -0.31475910 |          |
| <i>P</i> | 3.87       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 10 24 | 691 | 0.0  | 0.3- | 2003 12 21 | 691 | 0.1+ | 0.1+ | 2006 08 28 | 699 | (0.7+ | 2.3+) |
| 1995 10 24 | 691 | 0.1- | 0.1- | 2005 04 03 | 644 | 0.5+ | 0.2+ | 2006 08 28 | 699 | 0.4-  | 1.2+  |
| 1995 10 24 | 691 | 0.1+ | 0.3- | 2005 04 03 | 644 | 1.0+ | 0.2+ | 2006 08 28 | 699 | 0.1-  | 0.4-  |
| 2002 08 05 | 644 | 0.9+ | 0.4+ | 2005 04 03 | 644 | 0.7+ | 0.7+ | 2006 09 30 | 691 | 0.2-  | 0.4+  |
| 2002 08 05 | 644 | 0.8+ | 0.4+ | 2005 04 05 | 644 | 0.4+ | 0.3+ | 2006 09 30 | 691 | 0.0   | 0.5+  |
| 2002 08 05 | 644 | 0.6+ | 0.7+ | 2005 04 05 | 644 | 0.4+ | 0.4+ | 2006 09 30 | 691 | 0.0   | 0.2+  |
| 2002 08 16 | 644 | 0.0  | 1.0- | 2005 04 05 | 644 | 0.7+ | 0.5+ | 2006 10 02 | G96 | 0.5-  | 0.7-  |
| 2002 08 16 | 644 | 0.1+ | 0.4- | 2005 04 14 | 703 | 0.7- | 0.3+ | 2006 10 02 | G96 | 0.7-  | 0.1-  |
| 2002 08 16 | 644 | 0.0  | 0.8- | 2005 04 14 | 703 | 1.0- | 0.3+ | 2006 10 02 | G96 | 0.3+  | 0.0   |
| 2002 08 17 | 644 | 0.3- | 0.4+ | 2005 04 14 | 703 | 0.9- | 0.5+ | 2006 10 02 | G96 | 0.3-  | 0.3-  |
| 2002 08 17 | 644 | 0.4- | 0.3+ | 2005 04 14 | 703 | 0.9- | 0.4+ | 2007 11 02 | 691 | 0.3-  | 0.2-  |
| 2002 08 17 | 644 | 0.3- | 0.3+ | 2005 05 06 | 703 | 0.5+ | 0.3+ | 2007 11 02 | 691 | 0.1-  | 0.1+  |
| 2002 08 26 | 644 | 0.4- | 0.5- | 2005 05 06 | 703 | 0.8- | 1.0- | 2007 11 02 | 691 | 0.7-  | 0.1-  |

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M.P.O. 129509

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 26 | 644 | 0.4− | 0.4− | 2005 05 06 | 703 | 1.2+ | 0.6− | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 2002 08 26 | 644 | 0.3− | 0.4− | 2005 05 06 | 703 | 0.3− | 0.3+ | 2007 12 04 | G96 | 0.7+ | 0.3− |
| 2003 12 19 | 691 | 0.0  | 0.3+ | 2005 05 06 | G96 | 0.2− | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 2003 12 19 | 691 | 0.2− | 0.2+ | 2005 05 06 | G96 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.4+ | 0.3− |
| 2003 12 19 | 691 | 0.1+ | 0.2+ | 2005 05 06 | G96 | 0.6+ | 0.5+ | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2003 12 21 | 691 | 0.2− | 0.4+ | 2005 05 06 | G96 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.4+ | 0.8+ |
| 2003 12 21 | 691 | 0.0  | 0.1− | 2006 08 28 | 699 | 0.2+ | 1.3+ | 2007 12 05 | 704 | 0.9+ | 0.1+ |

(172896)\* 2005 GN<sub>30</sub>

Discovered 2005 Apr. 4 by the Catalina Sky Survey.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 293.11454  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.24375054 | $\omega$ | 313.37211 | −0.55017413 | −0.83479599 |          |   |
| <i>a</i>                                | 2.5380820  | $\Omega$ | 169.94608 | +0.79620225 | −0.53185415 |          |   |
| <i>e</i>                                | 0.0280400  | <i>i</i> | 6.77460   | +0.25173479 | −0.14229134 |          |   |
| <i>P</i>                                | 4.04       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 15 | 691 | 0.0   | 0.3+  | 2005 04 05 | 699 | (0.1+ | 1.9−) | 2006 05 30 | 691 | 0.2− | 0.3+ |
| 2001 03 15 | 691 | 0.2+  | 0.4+  | 2005 04 05 | 699 | 0.8+  | 0.2+  | 2006 07 21 | D35 | 0.1+ | 0.6+ |
| 2001 03 15 | 691 | 0.0   | 0.2+  | 2005 04 05 | 699 | (1.7+ | 0.6−) | 2006 07 21 | D35 | 0.0  | 0.4+ |
| 2002 08 05 | 644 | 0.3+  | 0.6+  | 2005 04 05 | 699 | 0.6+  | 1.0+  | 2006 07 21 | D35 | 0.4+ | 0.2+ |
| 2002 08 05 | 644 | 0.0   | 0.6+  | 2005 04 09 | 699 | 0.3−  | 0.3+  | 2007 11 02 | G96 | 0.0  | 0.1− |
| 2002 08 05 | 644 | 0.2−  | 1.0+  | 2005 04 09 | 699 | 0.6+  | 0.3+  | 2007 11 02 | G96 | 0.6+ | 0.1+ |
| 2003 12 16 | 691 | 0.4−  | 0.4+  | 2005 04 09 | 699 | 1.4−  | 0.9+  | 2007 11 02 | G96 | 0.0  | 0.2+ |
| 2003 12 16 | 691 | 0.0   | 0.5+  | 2005 04 09 | 699 | 0.9+  | 0.1−  | 2007 11 02 | G96 | 0.1+ | 0.2+ |
| 2003 12 16 | 691 | 0.2+  | 0.3+  | 2005 04 10 | G96 | 0.1−  | 0.3−  | 2007 11 17 | 703 | 0.7+ | 0.3+ |
| 2005 03 11 | 691 | 0.1+  | 0.1−  | 2005 04 10 | G96 | 0.1−  | 0.3−  | 2007 11 17 | 703 | 0.5− | 0.3− |
| 2005 03 11 | 691 | 0.2+  | 0.3+  | 2005 04 10 | G96 | 0.4−  | 0.0   | 2007 11 17 | 703 | 0.5+ | 1.3+ |
| 2005 03 11 | 691 | 0.3+  | 0.1+  | 2005 04 10 | G96 | 0.5−  | 0.1−  | 2007 11 17 | 703 | 0.1− | 0.2− |
| 2005 03 13 | 703 | 0.3+  | 1.5−  | 2005 04 30 | 691 | 0.2−  | 0.3+  | 2007 11 18 | G96 | 0.2− | 0.1− |
| 2005 03 13 | 703 | (0.1+ | 1.8+) | 2005 04 30 | 691 | 0.1−  | 0.1+  | 2007 11 18 | G96 | 0.3− | 0.3− |
| 2005 03 13 | 703 | (0.6+ | 2.0−) | 2005 04 30 | 691 | (1.8− | 0.1−) | 2007 11 18 | G96 | 0.1− | 0.2− |
| 2005 03 13 | 703 | 0.8−  | 0.6−  | 2005 05 10 | 691 | 0.4+  | 0.1+  | 2007 11 18 | G96 | 0.1− | 0.1− |
| 2005 04 04 | 703 | 0.6−  | 0.7−  | 2005 05 10 | 691 | 0.1−  | 0.2+  | 2007 12 05 | 703 | 0.3+ | 0.4+ |
| 2005 04 04 | 703 | 1.2+  | 0.6−  | 2005 05 10 | 691 | 0.1+  | 0.0   | 2007 12 05 | 703 | 0.4− | 0.3+ |
| 2005 04 04 | 703 | 1.4−  | 0.3−  | 2006 05 30 | 691 | 0.2−  | 0.0   | 2007 12 05 | 703 | 0.6+ | 0.3− |
| 2005 04 04 | 703 | 0.7−  | 1.0−  | 2006 05 30 | 691 | 0.1−  | 0.2+  | 2007 12 05 | 703 | 1.0− | 0.0  |

(172897)\* 2005 GO<sub>30</sub> = 1995 BK<sub>10</sub>

Discovered 2005 Apr. 4 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 77069)

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 119.24713  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.21054511 | $\omega$ | 178.75536 | +0.25790037 | +0.96387028 |          |   |
| <i>a</i>                                | 2.7983752  | $\Omega$ | 106.18717 | −0.88704355 | +0.26355383 |          |   |
| <i>e</i>                                | 0.1401179  | <i>i</i> | 3.97927   | −0.38293751 | +0.03864541 |          |   |
| <i>P</i>                                | 4.68       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 01 12 | 691 | 0.4+ | 0.1+ | 2005 04 09 | 699 | 0.3− | 0.2− | 2006 08 20 | 644 | 0.1−  | 0.1−  |
| 1994 01 12 | 691 | 1.4− | 0.1− | 2005 04 09 | 699 | 1.0+ | 0.0  | 2006 08 20 | 644 | 0.1−  | 0.1+  |
| 1994 01 12 | 691 | 0.1+ | 0.0  | 2005 04 09 | 699 | 0.9+ | 1.1+ | 2006 08 20 | 644 | 0.0   | 0.1+  |
| 1995 01 29 | 691 | 0.3+ | 0.1− | 2005 04 09 | 699 | 0.2− | 1.4+ | 2006 08 20 | 644 | 0.3−  | 0.0   |
| 1995 01 29 | 691 | 0.0  | 0.3− | 2005 05 02 | 691 | 0.0  | 0.1+ | 2006 08 20 | 644 | 0.0   | 0.3+  |
| 1995 01 29 | 691 | 0.3+ | 0.2− | 2005 05 02 | 691 | 0.1+ | 0.0  | 2006 08 28 | 703 | (0.4− | 1.6−) |
| 1995 02 05 | 691 | 0.1− | 0.6− | 2005 05 02 | 691 | 0.0  | 0.1+ | 2006 08 28 | 703 | (2.5− | 1.2+) |
| 1995 02 05 | 691 | 0.0  | 0.1− | 2005 05 04 | 644 | 0.0  | 0.2+ | 2006 08 28 | 703 | (0.0  | 1.6+) |
| 1995 02 05 | 691 | 0.1+ | 0.5− | 2005 05 04 | 644 | 0.0  | 0.1+ | 2006 08 28 | 703 | (2.4+ | 2.4+) |
| 2002 10 15 | 644 | 0.1− | 0.2+ | 2005 05 04 | 644 | 0.2− | 0.1− | 2006 08 28 | E12 | 0.1+  | 0.0   |
| 2002 10 15 | 644 | 0.1− | 0.3+ | 2005 05 10 | 691 | 0.0  | 0.2+ | 2006 08 28 | E12 | 0.1+  | 0.7−  |
| 2002 10 15 | 644 | 0.2− | 0.1+ | 2005 05 10 | 691 | 0.1− | 0.3+ | 2006 08 28 | E12 | 0.7+  | 0.3+  |
| 2005 04 04 | 703 | 0.5− | 0.3+ | 2005 05 10 | 691 | 0.4− | 0.3+ | 2006 08 28 | E12 | 0.0   | 0.5+  |
| 2005 04 04 | 703 | 0.1− | 0.8+ | 2006 07 25 | 644 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.1−  | 0.7+  |
| 2005 04 04 | 703 | 0.6+ | 0.5+ | 2006 07 25 | 644 | 0.1+ | 0.6+ | 2007 11 04 | 691 | 0.3−  | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 04 | 703 | 0.3− | 0.8+ | 2006 07 25 | 644 | 0.0  | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.6+ |
| 2005 04 05 | 699 | 1.2+ | 0.0  | 2006 08 14 | 644 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.4+ | 0.5+ |
| 2005 04 05 | 699 | 0.8+ | 1.4+ | 2006 08 14 | 644 | 0.2+ | 0.2+ | 2007 11 20 | G96 | 0.2+ | 0.4+ |
| 2005 04 05 | 699 | 0.7− | 0.0  | 2006 08 14 | 644 | 0.2− | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.4+ |
| 2005 04 05 | 699 | 0.9+ | 0.7+ | 2006 08 20 | 644 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.3+ | 0.6+ |

(172898)\* 2005 GV<sub>35</sub> = 2003 YO<sub>75</sub>

Discovered 2005 Apr. 2 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 77075)

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 83.44309   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.22363922 | $\omega$ | 239.12019 | +0.67881757 | +0.71403166 |          |   |
| <i>a</i>                                | 2.6880504  | $\Omega$ | 74.66756  | −0.59836357 | +0.67314454 |          |   |
| <i>e</i>                                | 0.0873743  | <i>i</i> | 10.23512  | −0.42563804 | +0.19244537 |          |   |
| <i>P</i>                                | 4.41       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 14 | 704 | 0.6+  | 0.8−  | 2005 04 02 | 703 | 0.1−  | 1.2+  | 2007 11 09 | 703 | 0.7− | 0.1+ |
| 2002 08 14 | 704 | 0.4−  | 1.0+  | 2005 04 02 | 703 | 0.9−  | 1.2−  | 2007 11 09 | 703 | 0.8− | 0.3+ |
| 2002 08 14 | 704 | 0.3−  | 0.2+  | 2005 04 02 | 703 | 0.3+  | 0.6+  | 2007 11 09 | 703 | 0.2− | 0.2− |
| 2002 08 14 | 704 | 0.2−  | 0.1+  | 2005 04 06 | 644 | 0.8+  | 0.4+  | 2007 11 12 | G96 | 0.3+ | 0.3− |
| 2002 08 20 | 644 | 0.1−  | 0.5−  | 2005 04 06 | 644 | 1.2+  | 0.3+  | 2007 11 12 | G96 | 0.3+ | 0.3− |
| 2002 08 20 | 644 | 0.4+  | 0.1+  | 2005 04 06 | 644 | 1.2+  | 0.5+  | 2007 11 12 | 704 | 0.1− | 0.2+ |
| 2002 08 20 | 644 | 0.3−  | 0.0   | 2005 04 09 | 703 | 1.0−  | 0.3−  | 2007 11 12 | G96 | 0.6+ | 0.3− |
| 2002 09 01 | 644 | 0.5+  | 1.0+  | 2005 04 09 | 703 | 0.3−  | 0.6−  | 2007 11 12 | G96 | 0.2+ | 0.5− |
| 2002 09 01 | 644 | 0.1+  | 1.0+  | 2005 04 09 | 703 | 1.1−  | 1.0+  | 2007 11 12 | 704 | 0.2− | 0.8+ |
| 2002 09 01 | 644 | 0.2+  | 1.2+  | 2005 04 09 | 703 | 0.2+  | 0.2+  | 2007 11 12 | 704 | 0.1+ | 0.5+ |
| 2002 09 10 | 644 | 0.3−  | 0.6−  | 2005 04 16 | 703 | (0.6+ | 2.2+) | 2007 11 12 | 704 | 1.2+ | 0.5+ |
| 2002 09 10 | 644 | 0.6−  | 1.0−  | 2005 04 16 | 703 | 0.9−  | 1.1+  | 2007 11 12 | 704 | 0.6+ | 0.3− |
| 2002 09 10 | 644 | 0.2−  | 0.9−  | 2005 04 16 | 703 | 0.2+  | 0.2+  | 2007 11 17 | 703 | 0.6+ | 0.1− |
| 2003 12 18 | 704 | 1.1+  | 0.1−  | 2005 04 16 | 703 | 0.5−  | 0.7+  | 2007 11 17 | 703 | 0.2− | 0.2− |
| 2003 12 18 | 704 | 0.4−  | 0.3−  | 2007 10 12 | G96 | 0.5+  | 0.3−  | 2007 11 17 | 703 | 1.0− | 0.1− |
| 2003 12 18 | 704 | 0.6−  | 0.3−  | 2007 10 12 | G96 | 0.3+  | 0.4−  | 2007 11 17 | 703 | 0.7− | 0.1− |
| 2003 12 22 | 704 | 0.1+  | 1.1−  | 2007 10 12 | G96 | 0.6+  | 0.5−  | 2007 12 03 | 704 | 1.1− | 0.0  |
| 2003 12 22 | 704 | 0.8+  | 0.3−  | 2007 10 12 | G96 | 0.3+  | 0.6−  | 2007 12 03 | 704 | 0.0  | 0.2+ |
| 2003 12 22 | 704 | 0.4−  | 0.4−  | 2007 11 04 | 704 | 0.2+  | 1.0+  | 2007 12 03 | 704 | 0.6− | 0.4+ |
| 2005 03 16 | 703 | (1.0− | 1.7−) | 2007 11 04 | 704 | 0.8+  | 0.8+  | 2007 12 03 | 704 | 0.1+ | 0.0  |
| 2005 03 16 | 703 | (1.0+ | 2.1−) | 2007 11 04 | 704 | 0.4+  | 0.6+  | 2007 12 03 | 704 | 0.0  | 0.4+ |
| 2005 03 16 | 703 | 0.7+  | 0.8−  | 2007 11 04 | 704 | 0.5+  | 1.0+  | 2007 12 15 | 691 | 0.4− | 0.1+ |
| 2005 03 16 | 703 | (1.8− | 0.2−) | 2007 11 04 | 704 | 0.4+  | 0.8+  | 2007 12 15 | 691 | 0.4− | 0.2+ |
| 2005 04 02 | 703 | 1.3+  | 0.5−  | 2007 11 09 | 703 | 0.8−  | 0.4−  | 2007 12 15 | 691 | 0.1− | 0.3− |

(172899)\* 2005 GU<sub>47</sub>

Discovered 2005 Apr. 5 by NEAT at Palomar.

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 106.07217  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.20987567 | $\omega$ | 237.37652 | +0.55502482 | +0.79972364 |          |   |
| <i>a</i>                                | 2.8043227  | $\Omega$ | 68.01711  | −0.65627974 | +0.59005894 |          |   |
| <i>e</i>                                | 0.2126584  | <i>i</i> | 14.29021  | −0.51112069 | +0.11078155 |          |   |
| <i>P</i>                                | 4.70       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 10 | 644 | 0.1− | 0.0  | 2005 05 03 | 703 | 0.8+  | 1.0+  | 2006 09 12 | E12 | 0.1− | 0.1+ |
| 2002 12 10 | 644 | 0.3− | 0.3+ | 2005 05 03 | 703 | (3.6+ | 1.7−) | 2006 09 12 | E12 | 0.2− | 0.4− |
| 2002 12 10 | 644 | 0.1− | 0.6+ | 2005 05 03 | 703 | (1.9+ | 0.4+) | 2006 09 12 | E12 | 0.1+ | 0.4+ |
| 2005 03 10 | 703 | 0.5− | 0.3− | 2005 05 03 | 703 | (1.7+ | 0.9+) | 2006 09 12 | E12 | 0.9− | 0.8− |
| 2005 03 10 | 703 | 0.1+ | 0.6+ | 2006 06 22 | E12 | 0.1+  | 0.4+  | 2006 09 12 | E12 | 0.6− | 0.4− |
| 2005 03 10 | 703 | 1.1− | 0.0  | 2006 06 22 | E12 | 0.1−  | 0.3+  | 2006 09 23 | E12 | 0.1− | 0.4− |
| 2005 03 10 | 703 | 0.6− | 0.6− | 2006 06 22 | E12 | 0.4+  | 0.5−  | 2006 09 23 | E12 | 0.1+ | 0.4− |
| 2005 03 10 | 703 | 0.3− | 0.3− | 2006 07 29 | E12 | 0.3−  | 0.4−  | 2006 09 23 | E12 | 0.4+ | 0.1− |
| 2005 03 10 | 703 | 0.6+ | 0.6− | 2006 07 29 | E12 | 0.1+  | 0.3−  | 2006 09 23 | E12 | 0.2− | 0.4+ |
| 2005 03 10 | 703 | 0.2− | 1.3− | 2006 07 29 | E12 | 0.1+  | 0.1−  | 2006 09 28 | E12 | 0.3− | 0.5+ |
| 2005 03 10 | 703 | 0.6+ | 0.2+ | 2006 07 29 | E12 | 0.4+  | 0.3−  | 2006 09 28 | E12 | 0.3− | 0.5+ |
| 2005 03 31 | 703 | 0.1+ | 0.0  | 2006 08 13 | E12 | 0.1−  | 0.3+  | 2006 09 28 | E12 | 0.1− | 0.2+ |
| 2005 03 31 | 703 | 0.4− | 0.6− | 2006 08 13 | E12 | 0.5+  | 0.1+  | 2006 09 28 | E12 | 0.1− | 0.6+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 31 | 703 | 0.7−  | 0.5+  | 2006 08 13 | E12 | 0.2− | 0.2− | 2007 11 14 | 691 | 0.1− | 0.0  |
| 2005 03 31 | 703 | (4.6+ | 0.7−) | 2006 08 13 | E12 | 0.8+ | 0.2− | 2007 11 14 | 691 | 0.0  | 0.1− |
| 2005 04 05 | 644 | (1.7+ | 0.2+) | 2006 08 25 | E12 | 0.2+ | 0.2− | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2005 04 05 | 644 | 1.4+  | 0.1+  | 2006 08 25 | E12 | 0.0  | 0.2+ | 2007 12 10 | 704 | 0.7− | 1.4− |
| 2005 04 05 | 644 | 1.0+  | 0.3+  | 2006 08 25 | E12 | 0.1+ | 0.4− | 2007 12 10 | 704 | 0.1− | 0.3− |
| 2005 04 06 | 703 | 1.1+  | 1.0+  | 2006 08 25 | E12 | 0.1− | 0.1− | 2007 12 10 | 704 | 0.0  | 0.7− |
| 2005 04 06 | 703 | 0.2−  | 0.2−  | 2006 09 03 | E12 | 0.3− | 0.6+ | 2007 12 10 | 704 | 0.9+ | 1.1+ |
| 2005 04 06 | 703 | 0.3−  | 0.2−  | 2006 09 03 | E12 | 0.1− | 0.1+ | 2007 12 15 | 704 | 0.1− | 0.1− |
| 2005 04 06 | 703 | 0.3−  | 0.7+  | 2006 09 03 | E12 | 0.6+ | 0.0  | 2007 12 15 | 704 | 0.0  | 0.0  |
| 2005 04 16 | 703 | 1.5−  | 1.2−  | 2006 09 03 | E12 | 0.5+ | 0.1+ | 2007 12 15 | 704 | 0.6+ | 0.4+ |
| 2005 04 16 | 703 | (1.6− | 0.3−) | 2006 09 12 | E12 | 0.0  | 1.0− | 2007 12 15 | 704 | 0.2+ | 0.3+ |
| 2005 04 16 | 703 | 0.7−  | 0.6−  | 2006 09 12 | E12 | 0.2+ | 0.2− | 2007 12 15 | 704 | 0.5+ | 0.2− |
| 2005 04 16 | 703 | 0.2+  | 0.1+  | 2006 09 12 | E12 | 0.1+ | 0.0  |            |     |      |      |

**(172900)\* 2005 GQ<sub>51</sub> = 2002 TD<sub>374</sub>**

Discovered 2005 Apr. 2 by NEAT at Palomar.

Id. A. Doppler (*MPO* 86690)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 178.10277  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21814914 | <i>ω</i> | 123.04908 | −0.55044171 | +0.83094253 |
| <i>a</i> | 2.7329627  | <i>Ω</i> | 113.34781 | −0.79236396 | −0.48941985 |
| <i>e</i> | 0.0748523  | <i>i</i> | 5.05659   | −0.26300815 | −0.26458028 |
| <i>P</i> | 4.52       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 03 27 | 691 | 0.0   | 0.6+  | 2005 04 13 | 699 | 0.2+  | 0.3+  | 2006 08 28 | 699 | (3.1+ | 0.5+) |
| 1996 03 27 | 691 | 0.2−  | 0.6+  | 2005 04 13 | 699 | 0.7+  | 0.4+  | 2006 08 28 | 699 | 0.4−  | 0.3+  |
| 1996 03 27 | 691 | 0.0   | 0.5+  | 2005 04 13 | 699 | (1.1+ | 2.5+) | 2006 08 28 | 699 | 0.2+  | 0.6+  |
| 2002 10 07 | 644 | 0.2−  | 0.3+  | 2005 04 13 | 699 | (0.9− | 2.2+) | 2006 09 13 | 644 | 0.1−  | 0.2+  |
| 2002 10 07 | 644 | 0.1−  | 0.7+  | 2005 04 18 | 703 | 0.1+  | 0.3+  | 2006 09 13 | 644 | 0.0   | 0.2+  |
| 2002 10 07 | 644 | 0.0   | 0.5+  | 2005 04 18 | 703 | 1.1−  | 0.4+  | 2006 09 13 | 644 | 0.2−  | 0.5+  |
| 2002 10 10 | 645 | 0.1+  | 0.0   | 2005 04 18 | 703 | 0.6−  | 0.4+  | 2007 11 05 | 691 | 0.1−  | 0.1+  |
| 2002 10 10 | 645 | 0.0   | 0.0   | 2005 04 18 | 703 | 0.5−  | 0.6−  | 2007 11 05 | 691 | 0.3−  | 0.0   |
| 2002 10 11 | 645 | 0.0   | 0.1+  | 2005 05 08 | 703 | 0.0   | 0.3−  | 2007 11 05 | 691 | 0.9−  | 0.5−  |
| 2002 10 11 | 645 | 0.0   | 0.0   | 2005 05 08 | 703 | 0.1−  | 0.2−  | 2007 11 09 | 691 | 0.1+  | 0.0   |
| 2002 10 30 | 645 | 0.0   | 0.0   | 2005 05 08 | 703 | (1.9− | 0.2+) | 2007 11 09 | 691 | 0.1−  | 0.2+  |
| 2002 10 30 | 645 | 0.0   | 0.0   | 2005 05 08 | 703 | 0.4−  | 0.8−  | 2007 11 09 | 691 | 0.3−  | 0.0   |
| 2003 12 28 | 704 | 0.4+  | 0.3+  | 2006 08 17 | 644 | 0.2−  | 0.2+  | 2007 11 12 | 704 | 0.5−  | 0.9+  |
| 2003 12 28 | 704 | 0.4+  | 0.9+  | 2006 08 17 | 644 | 0.0   | 0.3+  | 2007 11 12 | 704 | (0.0  | 1.8+) |
| 2003 12 28 | 704 | 0.9+  | 0.4+  | 2006 08 17 | 644 | 0.5−  | 0.3+  | 2007 11 12 | 704 | (2.3+ | 0.5+) |
| 2005 04 02 | 644 | 0.2−  | 0.1+  | 2006 08 18 | 644 | 0.6−  | 0.2+  | 2007 11 12 | 704 | 0.1−  | 0.0   |
| 2005 04 02 | 644 | 0.5+  | 0.3+  | 2006 08 18 | 644 | 0.7−  | 0.3+  | 2007 11 20 | 691 | 0.0   | 0.0   |
| 2005 04 02 | 644 | 0.3+  | 0.5+  | 2006 08 18 | 644 | 0.8−  | 0.2+  | 2007 11 20 | 691 | 0.1+  | 0.2+  |
| 2005 04 05 | 703 | (0.1− | 2.0−) | 2006 08 24 | 644 | 0.3−  | 0.3+  | 2007 11 20 | 691 | 0.2−  | 0.0   |
| 2005 04 05 | 703 | (2.8− | 0.5−) | 2006 08 24 | 644 | 0.6−  | 0.2+  | 2007 12 04 | 704 | 0.2−  | 1.5+  |
| 2005 04 05 | 703 | 1.5+  | 0.5+  | 2006 08 24 | 644 | 0.3−  | 0.3+  | 2007 12 04 | 704 | 0.2+  | 1.1+  |
| 2005 04 05 | 703 | (2.2− | 1.5−) | 2006 08 24 | 644 | 0.4−  | 0.3+  | 2007 12 04 | 704 | 0.9−  | 0.4+  |
| 2005 04 07 | 691 | 0.9+  | 0.4−  | 2006 08 24 | 644 | 0.1+  | 0.4+  | 2007 12 05 | 704 | 0.1+  | 0.4−  |
| 2005 04 07 | 691 | 0.2+  | 0.6+  | 2006 08 24 | 644 | 0.1−  | 0.5+  | 2007 12 05 | 704 | 0.0   | 0.5+  |
| 2005 04 07 | 691 | 0.0   | 0.4+  | 2006 08 28 | 699 | 1.0+  | 1.0−  | 2007 12 05 | 704 | 1.3+  | 0.9+  |

**(172901)\* 2005 GY<sub>68</sub>**

Discovered 2005 Apr. 2 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 219.80663  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21760780 | <i>ω</i> | 343.97704 | −0.99412872 | +0.10393603 |
| <i>a</i> | 2.7374934  | <i>Ω</i> | 202.05569 | −0.08838102 | −0.94040881 |
| <i>e</i> | 0.0591175  | <i>i</i> | 4.59608   | −0.06242503 | −0.32377242 |
| <i>P</i> | 4.53       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 11 | 699 | 0.6+ | 0.1+ | 2005 04 18 | 703 | 0.7− | 0.0  | 2007 10 20 | 703 | 1.0+ | 1.2+ |
| 2000 03 11 | 699 | 0.2+ | 0.2− | 2005 04 18 | 703 | 1.0− | 0.4+ | 2007 10 20 | 691 | 0.7− | 0.2+ |
| 2000 03 11 | 699 | 1.3− | 0.4− | 2005 04 18 | 703 | 0.8− | 1.1+ | 2007 10 20 | 703 | 0.8+ | 0.2− |
| 2000 03 11 | 699 | 0.1− | 0.3− | 2005 05 04 | 568 | 0.1+ | 0.1+ | 2007 10 20 | 703 | 0.6+ | 0.2− |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 03 | 704 | 0.9−  | 0.6+  | 2005 05 04 | 568 | 0.1+  | 0.1+  | 2007 10 30 | 691 | 0.0   | 0.1+  |
| 2002 10 03 | 704 | 0.4+  | 0.4+  | 2005 05 04 | 568 | 0.1+  | 0.0   | 2007 10 30 | 691 | 0.1−  | 0.4+  |
| 2002 10 03 | 704 | 0.4+  | 0.1−  | 2005 05 05 | 568 | 0.0   | 0.0   | 2007 10 30 | 691 | 0.0   | 0.1−  |
| 2002 11 08 | 645 | 0.0   | 0.1+  | 2005 05 08 | 703 | 0.9−  | 0.9+  | 2007 11 05 | 704 | 0.2−  | 0.6+  |
| 2002 11 08 | 645 | 0.0   | 0.1+  | 2005 05 08 | 703 | (0.4+ | 1.5−) | 2007 11 05 | 704 | 0.1+  | 0.5+  |
| 2005 03 11 | G96 | 0.3−  | 0.1−  | 2005 05 08 | 703 | 0.8−  | 0.9+  | 2007 11 05 | 704 | 0.3−  | 0.5+  |
| 2005 03 11 | G96 | 0.2−  | 0.5−  | 2005 05 08 | 703 | 0.6−  | 0.5+  | 2007 11 05 | 704 | 0.6−  | 0.7+  |
| 2005 03 11 | G96 | 0.3−  | 0.1−  | 2005 05 08 | G96 | 0.2+  | 0.2+  | 2007 11 09 | G96 | 0.0   | 0.1+  |
| 2005 03 11 | G96 | 0.2−  | 0.0   | 2005 05 08 | G96 | 0.1−  | 0.2+  | 2007 11 09 | G96 | 0.0   | 0.2+  |
| 2005 04 02 | G96 | 0.0   | 0.1−  | 2005 05 08 | G96 | 0.2+  | 0.3+  | 2007 11 09 | G96 | 0.1−  | 0.0   |
| 2005 04 02 | G96 | 0.0   | 0.1−  | 2005 05 08 | G96 | 0.2−  | 0.3+  | 2007 11 09 | G96 | (1.7− | 0.4−) |
| 2005 04 02 | G96 | 0.0   | 0.0   | 2006 08 14 | E12 | 0.8−  | 0.3+  | 2007 11 14 | 704 | 0.5−  | 0.9+  |
| 2005 04 02 | G96 | 0.1−  | 0.1−  | 2006 08 14 | E12 | 0.1+  | 0.2−  | 2007 11 14 | 704 | 0.8+  | 0.4+  |
| 2005 04 09 | 691 | 0.2+  | 0.3+  | 2006 08 14 | E12 | 0.1−  | 1.1+  | 2007 11 14 | 704 | 0.7+  | 0.9+  |
| 2005 04 09 | 691 | 0.2+  | 0.5+  | 2006 08 14 | E12 | 0.2−  | 0.3+  | 2007 11 14 | 704 | 0.5+  | 1.0+  |
| 2005 04 09 | 691 | 0.1+  | 0.5+  | 2007 10 07 | G96 | 0.2+  | 0.1+  | 2007 11 14 | 704 | 0.3+  | 1.2+  |
| 2005 04 12 | 704 | 0.4+  | 0.0   | 2007 10 07 | G96 | 0.0   | 0.1−  | 2007 11 17 | 703 | (1.2− | 1.6+) |
| 2005 04 12 | 704 | 1.0+  | 0.9+  | 2007 10 07 | G96 | 0.3+  | 0.0   | 2007 11 17 | 703 | 1.3−  | 0.2−  |
| 2005 04 12 | 704 | 1.3+  | 0.9+  | 2007 10 07 | G96 | 0.1+  | 0.2−  | 2007 11 17 | 703 | 0.1+  | 0.4+  |
| 2005 04 12 | 704 | 0.6+  | 0.2−  | 2007 10 16 | 691 | 0.1−  | 0.2+  | 2007 11 17 | 703 | 1.1+  | 0.4−  |
| 2005 04 12 | 704 | 0.3+  | 0.2−  | 2007 10 16 | 691 | 0.6−  | 0.1+  | 2007 12 05 | 704 | 1.2+  | 0.7−  |
| 2005 04 17 | 691 | 0.4+  | 0.4+  | 2007 10 16 | 691 | 0.3−  | 0.3+  | 2007 12 05 | 704 | 0.6+  | 0.3−  |
| 2005 04 17 | 691 | 0.3+  | 0.3+  | 2007 10 20 | 691 | 0.3+  | 0.1−  | 2007 12 05 | 704 | 0.2+  | 0.8+  |
| 2005 04 17 | 691 | 0.4+  | 0.3+  | 2007 10 20 | 691 | 0.5−  | 0.4+  | 2007 12 05 | 704 | 0.3+  | 0.2+  |
| 2005 04 18 | 703 | (0.7− | 1.9−) | 2007 10 20 | 703 | 0.9−  | 0.4−  |            |     |       |       |

**(172902)\* 2005 GO<sub>75</sub>**

Discovered 2005 Apr. 5 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 259.82820  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.25602713 | <i>ω</i> | 236.97316 | −0.99570393 | −0.09198308 |
| <i>a</i> | 2.4562848  | <i>Ω</i> | 297.74714 | +0.08845275 | −0.91097098 |
| <i>e</i> | 0.1291766  | <i>i</i> | 0.68761   | +0.02738245 | −0.40208330 |
| <i>P</i> | 3.85       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 10 02 | 691 | 0.0  | 0.5+ | 2003 12 21 | 291 | 0.2+  | 0.4+  | 2005 05 12 | G96 | 0.2− | 0.0  |
| 1995 10 02 | 691 | 0.1− | 0.2+ | 2005 04 05 | 699 | 0.1+  | 1.0+  | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 1995 10 02 | 691 | 0.5+ | 0.3+ | 2005 04 05 | 699 | 0.7+  | 0.4−  | 2007 11 05 | G96 | 0.0  | 0.1+ |
| 1995 10 15 | 691 | 0.3− | 0.1− | 2005 04 05 | 699 | (0.3− | 2.0+) | 2007 11 05 | G96 | 0.2+ | 0.1+ |
| 1995 10 15 | 691 | 0.0  | 0.3− | 2005 04 05 | 699 | 0.8+  | 0.0   | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 1995 10 15 | 691 | 0.0  | 0.2− | 2005 04 05 | G96 | 0.1−  | 0.0   | 2007 11 17 | 691 | 0.3− | 0.4+ |
| 2001 03 02 | 699 | 0.6− | 0.9+ | 2005 04 05 | G96 | 0.4−  | 0.1−  | 2007 11 17 | 691 | 0.2− | 0.3+ |
| 2001 03 02 | 699 | 0.1+ | 0.5+ | 2005 04 05 | G96 | 0.1−  | 0.2−  | 2007 11 17 | 691 | 0.4− | 0.5+ |
| 2001 03 02 | 699 | 0.6+ | 0.3+ | 2005 04 05 | G96 | 0.2−  | 0.3−  | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2001 03 02 | 699 | 0.1− | 0.0  | 2005 04 09 | 691 | 0.1−  | 0.4+  | 2007 12 15 | G96 | 0.1− | 0.1− |
| 2002 07 07 | 291 | 0.7− | 0.5+ | 2005 04 09 | 691 | 0.1+  | 0.3+  | 2007 12 15 | G96 | 0.5+ | 0.2− |
| 2002 07 07 | 291 | 0.2+ | 0.6+ | 2005 04 09 | 691 | 0.0   | 0.3+  | 2007 12 15 | G96 | 0.1− | 0.2− |
| 2002 07 07 | 291 | 0.2− | 0.4+ | 2005 04 17 | 691 | 0.1−  | 0.2+  | 2007 12 15 | G96 | 0.0  | 0.3+ |
| 2003 11 30 | 691 | 0.3+ | 0.2+ | 2005 04 17 | 691 | 0.2+  | 0.2+  | 2007 12 15 | G96 | 0.3+ | 0.1− |
| 2003 11 30 | 691 | 0.1− | 0.5+ | 2005 04 17 | 691 | 0.6+  | 0.2+  | 2007 12 15 | G96 | 0.6+ | 0.4+ |
| 2003 11 30 | 691 | 0.3− | 0.3+ | 2005 05 12 | G96 | 0.0   | 0.2−  | 2007 12 15 | G96 | 0.7+ | 0.1− |
| 2003 12 21 | 291 | 0.1+ | 0.0  | 2005 05 12 | G96 | 0.3−  | 0.2−  |            |     |      |      |
| 2003 12 21 | 291 | 0.4− | 0.6− | 2005 05 12 | G96 | 0.2−  | 0.4−  |            |     |      |      |

2007 DEC. 24

M.P.O. 129511

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 31 | 704 | 0.2-  | 0.3+  | 2005 04 08 | 704 | 0.0  | 0.2+ | 2006 08 26 | E12 | 0.2- | 1.0+ |
| 2002 10 31 | 704 | 0.2+  | 0.1-  | 2005 04 08 | 704 | 0.6+ | 1.1+ | 2006 08 26 | E12 | 0.5+ | 0.0  |
| 2002 10 31 | 704 | 0.1+  | 0.8-  | 2006 06 18 | E12 | 0.2+ | 0.7+ | 2006 08 26 | E12 | 0.6- | 0.1- |
| 2002 10 31 | 704 | 0.0   | 0.6+  | 2006 06 18 | E12 | 0.1- | 0.1- | 2007 11 06 | 691 | 0.3- | 0.1- |
| 2005 03 18 | 703 | 0.2-  | 1.0+  | 2006 06 18 | E12 | 0.0  | 0.0  | 2007 11 06 | 691 | 0.3- | 0.2+ |
| 2005 03 18 | 703 | (1.9+ | 0.2+) | 2006 06 18 | E12 | 1.2- | 1.1- | 2007 11 06 | 691 | 0.1+ | 0.3+ |
| 2005 03 18 | 703 | 0.3-  | 0.0   | 2006 07 26 | E12 | 1.1+ | 0.1- | 2007 11 15 | 704 | 0.1+ | 1.0+ |
| 2005 03 18 | 703 | 1.2-  | 0.3+  | 2006 07 26 | E12 | 0.3+ | 0.1+ | 2007 11 15 | 704 | 0.7- | 0.2+ |
| 2005 04 06 | 703 | 0.7+  | 0.2-  | 2006 07 26 | E12 | 0.1- | 1.3+ | 2007 11 15 | 704 | 0.7- | 0.2- |
| 2005 04 06 | 703 | 0.5+  | 0.3-  | 2006 07 26 | E12 | 0.6+ | 0.0  | 2007 12 13 | 704 | 0.2- | 0.4+ |
| 2005 04 06 | 703 | 0.3+  | 0.1+  | 2006 08 25 | E12 | 1.4- | 0.8+ | 2007 12 13 | 704 | 0.4+ | 0.2- |
| 2005 04 06 | 703 | (0.9- | 1.7-) | 2006 08 25 | E12 | 1.0- | 0.5+ | 2007 12 13 | 704 | 0.8+ | 0.5+ |
| 2005 04 08 | 704 | 0.8+  | 1.0+  | 2006 08 25 | E12 | 0.2+ | 0.2+ | 2007 12 13 | 704 | 0.5+ | 0.8+ |
| 2005 04 08 | 704 | 1.0+  | 0.1+  | 2006 08 25 | E12 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.4+ | 0.5+ |
| 2005 04 08 | 704 | 0.5+  | 1.2+  | 2006 08 26 | E12 | 0.0  | 0.9+ |            |     |      |      |

(172904)\* 2005 GR<sub>79</sub> = 1999 TA<sub>308</sub> = 2001 DD<sub>59</sub>

Discovered 2005 Apr. 6 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (MPO 77112)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| M | 290.69365  |          | P        |             | Q           |
|---|------------|----------|----------|-------------|-------------|
| n | 0.26221649 | $\omega$ | 89.51619 | -0.82368854 | -0.56547024 |
| a | 2.4174790  | $\Omega$ | 56.04823 | +0.49791946 | -0.75688125 |
| e | 0.1298232  | i        | 2.91590  | +0.27131789 | -0.32768001 |
| P | 3.76       | H        | 17.1     | G           | 0.15        |
|   |            |          |          | U           | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 04 | 691 | 0.0  | 0.0  | 2005 04 09 | 691 | 0.0  | 0.1+ | 2005 06 13 | G96 | 0.1- | 0.3+ |
| 1999 10 04 | 691 | 0.2- | 0.2+ | 2005 04 09 | 691 | 0.3+ | 0.3+ | 2005 06 13 | G96 | 0.3- | 0.4+ |
| 1999 10 04 | 691 | 0.5- | 0.5+ | 2005 04 09 | 691 | 0.2+ | 0.1- | 2005 06 13 | G96 | 0.5- | 0.5+ |
| 1999 10 13 | 691 | 0.1+ | 0.2+ | 2005 04 10 | 691 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.4+ | 0.2- |
| 1999 10 13 | 691 | 0.1- | 0.1+ | 2005 04 10 | 691 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.0  | 0.2+ |
| 1999 10 13 | 691 | 0.1- | 0.1- | 2005 04 10 | 691 | 0.8- | 0.4+ | 2007 09 18 | G96 | 0.3+ | 0.0  |
| 2001 02 21 | 684 | 0.2- | 0.9- | 2005 04 14 | 691 | 0.1+ | 0.1+ | 2007 09 18 | G96 | 0.4+ | 0.3+ |
| 2001 02 21 | 684 | 0.3- | 1.0- | 2005 04 14 | 691 | 0.0  | 0.1+ | 2007 11 19 | 291 | 0.4- | 0.2+ |
| 2001 02 22 | 684 | 0.9- | 1.0- | 2005 04 14 | 691 | 0.1+ | 0.1+ | 2007 11 19 | 291 | 0.0  | 0.3+ |
| 2001 02 22 | 684 | 0.3- | 0.8- | 2005 04 15 | 699 | 0.1+ | 0.7+ | 2007 11 19 | 291 | 0.2- | 0.4+ |
| 2003 10 21 | 691 | 0.1+ | 0.3+ | 2005 04 15 | 699 | 0.7- | 0.2- | 2007 11 20 | 291 | 0.6- | 0.0  |
| 2003 10 21 | 691 | 0.1+ | 0.2+ | 2005 04 15 | 699 | 0.7- | 1.4+ | 2007 11 20 | 291 | 0.5- | 0.2+ |
| 2003 10 21 | 691 | 0.1+ | 0.3+ | 2005 04 15 | 699 | 0.8+ | 0.2+ | 2007 11 20 | 291 | 0.7- | 0.1+ |
| 2003 10 28 | 704 | 0.5- | 0.4- | 2005 04 18 | 691 | 0.2+ | 0.1+ | 2007 12 04 | G96 | 0.8+ | 0.1+ |
| 2003 10 28 | 704 | 0.6+ | 0.2+ | 2005 04 18 | 691 | 0.3+ | 0.1- | 2007 12 04 | G96 | 0.7+ | 0.3+ |
| 2003 10 28 | 704 | 0.3- | 0.3- | 2005 04 18 | 691 | 0.1- | 0.0  | 2007 12 04 | G96 | 0.7+ | 0.2+ |
| 2005 03 17 | 691 | 0.3+ | 0.3- | 2005 04 18 | 691 | 0.3+ | 0.4+ | 2007 12 04 | G96 | 0.6+ | 0.2+ |
| 2005 03 17 | 691 | 0.1+ | 0.1+ | 2005 04 18 | 691 | 0.3+ | 0.1+ | 2007 12 06 | D35 | 0.4+ | 0.1+ |
| 2005 03 17 | 691 | 0.1+ | 0.0  | 2005 04 18 | 691 | 0.0  | 0.2+ | 2007 12 06 | D35 | 0.8+ | 0.5+ |
| 2005 04 06 | G96 | 0.1+ | 0.2- | 2005 05 14 | 691 | 0.3+ | 0.2+ | 2007 12 06 | D35 | 1.1+ | 0.4+ |
| 2005 04 06 | G96 | 0.3- | 0.0  | 2005 05 14 | 691 | 0.2+ | 0.1- | 2007 12 14 | 704 | 0.1+ | 0.3- |
| 2005 04 06 | G96 | 0.6- | 0.0  | 2005 05 14 | 691 | 0.2+ | 0.2+ | 2007 12 14 | 704 | 1.3+ | 0.7- |
| 2005 04 06 | G96 | 0.0  | 0.3+ | 2005 06 13 | G96 | 1.0- | 0.1- | 2007 12 14 | 704 | 0.3+ | 0.3+ |

(172905)\* 2005 GX<sub>79</sub> = 1998 FG<sub>81</sub>

Discovered 2005 Apr. 7 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 77112)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| M | 281.11413  |          | P         |             | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.29466887 | $\omega$ | 65.28614  | -0.91421496 | +0.39490563 |
| a | 2.2365565  | $\Omega$ | 137.81295 | -0.40317088 | -0.86381813 |
| e | 0.0607835  | i        | 7.77824   | -0.04079529 | -0.31283827 |
| P | 3.34       | H        | 16.3      | G           | 0.15        |
|   |            |          |           | U           | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 03 24 | 704 | (0.8- | 2.1-) | 2005 02 09 | 691 | 0.1+  | 0.1+  | 2005 05 06 | 704 | 0.0   | 0.4-  |
| 1998 03 24 | 704 | 1.8+  | 0.5-  | 2005 02 09 | 691 | 0.3+  | 0.2+  | 2005 05 06 | 704 | 0.3+  | 0.3+  |
| 1998 03 24 | 704 | 0.0   | 0.2+  | 2005 02 09 | 691 | 0.0   | 0.1+  | 2005 05 11 | 703 | 0.7-  | 0.5-  |
| 1998 03 24 | 704 | 1.2-  | 1.6-  | 2005 04 07 | 699 | 0.5-  | 0.4+  | 2005 05 11 | 703 | 0.2-  | 0.0   |
| 1998 03 25 | 704 | 0.0   | 0.9+  | 2005 04 07 | 699 | 0.3-  | 0.7+  | 2005 05 11 | 703 | 0.8-  | 0.5+  |
| 1998 03 25 | 704 | (2.2- | 2.9+) | 2005 04 07 | 699 | 0.9+  | 0.1+  | 2005 05 11 | 703 | 0.5-  | 0.1+  |
| 1998 03 25 | 704 | 0.2-  | 0.3+  | 2005 04 07 | 699 | 0.5+  | 0.4+  | 2005 05 11 | A13 | 0.2+  | 0.2+  |
| 1998 03 25 | 704 | 0.2-  | 0.2+  | 2005 04 09 | 704 | (1.5+ | 0.0 ) | 2005 05 11 | A13 | 0.6+  | 0.2+  |
| 1998 03 25 | 704 | 0.4-  | 0.1-  | 2005 04 09 | 704 | (1.7+ | 0.1-) | 2005 05 11 | A13 | 0.2+  | 0.4-  |
| 2001 01 02 | 704 | 0.3+  | 0.5+  | 2005 04 09 | 704 | 0.4+  | 0.1+  | 2005 05 15 | 644 | 0.1-  | 0.2+  |
| 2001 01 02 | 704 | 0.1+  | 0.4+  | 2005 04 09 | 704 | 0.7+  | 0.4+  | 2005 05 15 | 644 | 0.2+  | 0.4+  |
| 2001 01 02 | 704 | 0.2+  | 0.1-  | 2005 04 09 | 704 | 0.9+  | 0.2-  | 2005 05 15 | 644 | 0.2+  | 0.4+  |
| 2003 10 29 | 699 | 0.0   | 0.1-  | 2005 04 18 | 703 | 0.1+  | 0.3-  | 2005 05 19 | 703 | (0.2- | 2.0+) |
| 2003 10 29 | 699 | 0.7-  | 0.6+  | 2005 04 18 | 703 | 0.5-  | 0.6+  | 2005 05 19 | 703 | 1.0-  | 0.4+  |
| 2003 10 29 | 699 | 0.0   | 0.1-  | 2005 04 18 | 703 | 0.9-  | 0.1+  | 2005 05 19 | 703 | 0.5-  | 0.5-  |
| 2003 10 29 | 699 | 0.1-  | 0.7+  | 2005 04 18 | 703 | 0.3-  | 0.6+  | 2005 05 19 | 703 | 0.6-  | 0.2-  |
| 2003 11 19 | 644 | 0.5+  | 0.2+  | 2005 04 30 | 185 | 0.7+  | 0.2-  | 2006 08 28 | 705 | 0.1+  | 0.5+  |
| 2003 11 19 | 644 | 0.4+  | 1.0+  | 2005 04 30 | 185 | 0.9+  | 0.2+  | 2006 08 28 | 705 | 0.1+  | 0.4+  |
| 2003 11 19 | 644 | 0.1+  | 0.3+  | 2005 04 30 | 185 | 0.4+  | 0.2-  | 2007 11 18 | G96 | 0.3-  | 0.2-  |
| 2003 12 11 | 703 | (1.1- | 1.8+) | 2005 04 30 | 185 | 0.7+  | 0.0   | 2007 11 18 | G96 | 0.2+  | 0.4-  |
| 2003 12 11 | 703 | 1.2-  | 0.4-  | 2005 05 04 | 703 | 0.6-  | 0.3-  | 2007 11 18 | G96 | 0.4-  | 0.4-  |
| 2003 12 11 | 703 | 0.3+  | 0.6-  | 2005 05 04 | 703 | 1.2-  | 0.1-  | 2007 11 18 | G96 | 0.4-  | 0.2-  |
| 2003 12 11 | 703 | 1.3-  | 0.8+  | 2005 05 04 | 703 | (1.6- | 1.4+) | 2007 12 14 | G96 | 0.2+  | 1.1-  |
| 2003 12 22 | 691 | 0.0   | 0.2+  | 2005 05 04 | 703 | 0.5+  | 0.4+  | 2007 12 14 | G96 | 0.4+  | 1.1-  |
| 2003 12 22 | 691 | 0.2-  | 0.3+  | 2005 05 06 | 704 | 0.4+  | 0.7+  | 2007 12 14 | G96 | 0.2-  | 1.0-  |
| 2003 12 22 | 691 | 0.0   | 0.4+  | 2005 05 06 | 704 | 0.0   | 1.3+  | 2007 12 14 | G96 | 0.3-  | 0.1-  |

(172906)\* 2005 GY<sub>79</sub> = 2001 GG<sub>11</sub>

Discovered 2005 Apr. 7 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (MPO 77113)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| M | 270.77280  |          | P        |             | Q           |
|---|------------|----------|----------|-------------|-------------|
| n | 0.25141269 | $\omega$ | 87.26087 | -0.93238721 | -0.31447926 |
| a | 2.4862488  | $\Omega$ | 74.36176 | +0.21146508 | -0.87441296 |
| e | 0.1641336  | i        | 10.66433 | +0.29314948 | -0.36946553 |
| P | 3.92       | H        | 16.2     | G           | 0.15        |
|   |            |          |          | U           | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 23 | 608 | 0.2- | 0.5- | 2005 04 07 | 699 | 0.1+  | 0.2+  | 2007 10 24 | G96 | 0.1+ | 0.0  |
| 2001 03 23 | 608 | 0.4- | 0.5- | 2005 04 07 | 699 | 0.3+  | 0.4-  | 2007 11 12 | 704 | 1.5+ | 0.1+ |
| 2001 03 23 | 608 | 0.4- | 0.4- | 2005 04 09 | 704 | 0.1-  | 0.3-  | 2007 11 12 | 704 | 0.2- | 0.7+ |
| 2001 04 15 | 704 | 0.1- | 0.5+ | 2005 04 09 | 704 | 0.0   | 0.9-  | 2007 11 12 | 704 | 0.5- | 1.3+ |
| 2001 04 15 | 704 | 0.4- | 0.9- | 2005 04 09 | 704 | 0.4+  | 0.1-  | 2007 11 12 | 704 | 0.4+ | 0.9+ |
| 2001 04 15 | 704 | 0.1+ | 0.2- | 2005 04 09 | 704 | 0.5+  | 0.1+  | 2007 11 12 | 704 | 0.5+ | 0.4+ |
| 2001 04 15 | 704 | 0.2- | 0.7+ | 2005 04 09 | 704 | 0.7+  | 0.0   | 2007 12 04 | 704 | 0.7- | 1.3+ |
| 2001 04 15 | 704 | 0.6- | 0.3- | 2005 05 07 | 703 | 1.2-  | 0.3+  | 2007 12 04 | 704 | 0.4- | 1.8- |
| 2001 04 17 | 699 | 0.6+ | 0.6+ | 2005 05 07 | 703 | 0.5-  | 0.8+  | 2007 12 04 | 704 | 0.2- | 2.3+ |
| 2001 04 17 | 699 | 0.9+ | 0.2+ | 2005 05 07 | 703 | (1.9- | 0.4+) | 2007 12 04 | 704 | 1.8- | 0.7+ |
| 2001 04 17 | 699 | 0.0  | 0.3+ | 2005 05 07 | 703 | 0.5-  | 0.7+  | 2007 12 04 | 704 | 0.8- | 0.6+ |
| 2001 04 17 | 699 | 0.2- | 0.6- | 2005 05 15 | 644 | 0.3+  | 0.2+  | 2007 12 05 | 704 | 0.2- | 0.3- |
| 2003 11 29 | 691 | 0.1+ | 0.4- | 2005 05 15 | 644 | 0.2+  | 0.3+  | 2007 12 05 | 704 | 0.2+ | 0.6- |
| 2003 11 29 | 691 | 0.1+ | 0.3- | 2005 05 15 | 644 | 0.2+  | 0.2+  | 2007 12 05 | 704 | 0.3- | 0.6- |
| 2003 11 29 | 691 | 0.3+ | 0.1- | 2007 10 24 | G96 | 0.6+  | 0.8-  | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2005 04 07 | 699 | 0.4- | 0.4- | 2007 10 24 | G96 | 0.2+  | 0.5-  |            |     |      |      |
| 2005 04 07 | 699 | 0.9+ | 0.4+ | 2007 10 24 | G96 | 0.1-  | 1.0-  |            |     |      |      |

(172907)\* 2005 GC<sub>90</sub>

Discovered 2005 Apr. 6 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 167.98178  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27940147 | $\omega$ | 176.37813 | +0.33752848   | +0.93364907 |
| <i>a</i> | 2.3173071  | $\Omega$ | 113.31802 | -0.86688737   | +0.35794663 |
| <i>e</i> | 0.1173312  | <i>i</i> | 7.50165   | -0.36685258   | +0.01317624 |
| <i>P</i> | 3.53       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 10 16 | 704 | 1.3-  | 0.8+  | 2005 03 16 | 703 | 0.1-  | 0.1+  | 2006 09 21 | 699 | 0.3+ | 0.0  |
| 1999 10 16 | 704 | 1.1-  | 0.2-  | 2005 03 16 | 703 | 0.6-  | 0.5-  | 2006 09 21 | 699 | 0.7- | 0.8+ |
| 1999 10 16 | 704 | 0.9-  | 0.0   | 2005 03 30 | 703 | 0.7-  | 0.3+  | 2006 09 25 | 703 | 0.1- | 0.1+ |
| 1999 10 16 | 704 | 0.5-  | 0.2-  | 2005 03 30 | 703 | 0.3+  | 0.3+  | 2006 09 25 | 703 | 0.0  | 0.0  |
| 1999 10 16 | 704 | 0.8-  | 0.8+  | 2005 03 30 | 703 | 0.5+  | 0.8+  | 2006 09 25 | 703 | 0.6+ | 1.3- |
| 2003 11 24 | 691 | 1.1-  | 0.3+  | 2005 03 30 | 703 | (1.9+ | 0.5-) | 2006 09 25 | 703 | 0.3+ | 0.3+ |
| 2003 11 24 | 691 | 0.3+  | 0.1+  | 2005 04 06 | 703 | 0.8+  | 0.2-  | 2006 10 09 | 644 | 0.5- | 0.1- |
| 2003 11 24 | 691 | 0.3+  | 0.1+  | 2005 04 06 | 703 | 0.7-  | 0.6-  | 2006 10 09 | 644 | 0.1- | 0.5+ |
| 2003 12 01 | 704 | 0.7+  | 0.3+  | 2005 04 06 | 703 | (0.0  | 1.5+) | 2006 10 09 | 644 | 0.1- | 0.3+ |
| 2003 12 01 | 704 | 0.4+  | 0.7+  | 2005 04 06 | 703 | 0.7+  | 0.7+  | 2006 10 09 | 644 | 0.0  | 0.0  |
| 2003 12 01 | 704 | 0.4+  | 0.4+  | 2005 04 11 | 699 | 1.0+  | 0.2+  | 2006 10 09 | 644 | 0.0  | 0.4+ |
| 2003 12 04 | 703 | (1.7- | 0.8-) | 2005 04 11 | 699 | 0.3+  | 0.1-  | 2006 10 09 | 644 | 0.1- | 0.1+ |
| 2003 12 04 | 703 | 0.6+  | 0.5-  | 2005 04 11 | 699 | 0.9+  | 0.6+  | 2007 11 08 | G96 | 0.5+ | 0.4- |
| 2003 12 04 | 703 | 0.6-  | 0.5+  | 2005 04 11 | 699 | 0.2+  | 0.0   | 2007 11 08 | G96 | 0.6+ | 0.1- |
| 2003 12 04 | 703 | 0.8+  | 0.2-  | 2005 04 16 | 703 | 0.4-  | 0.2+  | 2007 11 08 | G96 | 0.2+ | 0.4- |
| 2003 12 17 | 691 | 0.3+  | 0.1+  | 2005 04 16 | 703 | 0.0   | 0.3+  | 2007 11 08 | G96 | 0.4+ | 0.4- |
| 2003 12 17 | 691 | 0.2+  | 0.4-  | 2005 04 16 | 703 | (1.9- | 1.1-) | 2007 12 06 | G96 | 0.9+ | 0.5- |
| 2003 12 17 | 691 | 0.4+  | 0.2-  | 2005 04 16 | 703 | 0.4+  | 0.3+  | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2003 12 17 | 699 | 1.3+  | 0.7+  | 2006 09 17 | 699 | 0.1-  | 0.2-  | 2007 12 06 | G96 | 0.5+ | 0.6- |
| 2003 12 17 | 699 | (1.0+ | 1.8-) | 2006 09 17 | 699 | 0.2+  | 0.4+  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2003 12 17 | 699 | 1.2+  | 0.4-  | 2006 09 17 | 699 | 0.3+  | 0.3-  | 2007 12 15 | 291 | 0.6- | 0.2- |
| 2003 12 17 | 699 | 0.3-  | 1.2+  | 2006 09 17 | 699 | 0.7+  | 0.3+  | 2007 12 15 | 291 | 0.7- | 0.3+ |
| 2003 12 22 | 704 | 1.0+  | 0.1+  | 2006 09 19 | 703 | 0.6-  | 0.2-  | 2007 12 15 | 291 | 0.2- | 0.2+ |
| 2003 12 22 | 704 | 0.1-  | 1.0-  | 2006 09 19 | 703 | 0.4+  | 0.7-  | 2007 12 16 | 291 | 0.5- | 0.2+ |
| 2003 12 22 | 704 | 0.8+  | 0.5-  | 2006 09 19 | 703 | 0.3+  | 0.2+  | 2007 12 16 | 291 | 0.4- | 0.1+ |
| 2003 12 22 | 704 | 0.4+  | 0.1+  | 2006 09 19 | 703 | 0.4-  | 0.2+  | 2007 12 16 | 291 | 0.5- | 0.2+ |
| 2005 03 16 | 703 | 1.1+  | 0.6+  | 2006 09 21 | 699 | 0.5-  | 1.2+  |            |     |      |      |
| 2005 03 16 | 703 | 0.5+  | 0.3+  | 2006 09 21 | 699 | 0.2+  | 0.2-  |            |     |      |      |

(172908)\* 2005 GV<sub>92</sub> = 2004 AL<sub>24</sub>

Discovered 2005 Apr. 6 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 77120)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 155.64205  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21576049 | $\omega$ | 184.32781 | -0.14886471   | +0.98742753 |
| <i>a</i> | 2.7530965  | $\Omega$ | 77.11740  | -0.90561425   | -0.11454599 |
| <i>e</i> | 0.0254493  | <i>i</i> | 3.12615   | -0.39711728   | -0.10893161 |
| <i>P</i> | 4.57       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 19 | 691 | 0.1- | 0.1- | 2005 04 30 | 691 | 0.3+ | 0.3+ | 2007 10 30 | 691 | 0.0  | 0.1+ |
| 2003 12 19 | 691 | 0.3- | 0.3- | 2005 04 30 | 691 | 0.2+ | 0.3+ | 2007 10 30 | 691 | 0.0  | 0.2- |
| 2003 12 19 | 691 | 0.2+ | 0.6- | 2005 04 30 | 691 | 0.2+ | 0.2+ | 2007 11 03 | 691 | 0.1+ | 0.0  |
| 2004 01 15 | 691 | 0.0  | 0.2- | 2005 05 14 | 644 | 0.1+ | 0.2+ | 2007 11 03 | 691 | 0.4+ | 0.0  |
| 2004 01 15 | 691 | 0.2- | 0.1+ | 2005 05 14 | 644 | 0.1+ | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2004 01 15 | 691 | 0.2- | 0.2+ | 2005 05 14 | 644 | 0.2- | 0.0  | 2007 11 07 | 691 | 0.6- | 0.0  |
| 2004 01 22 | 704 | 1.3+ | 1.0+ | 2005 05 19 | G96 | 0.1+ | 0.3- | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2004 01 22 | 704 | 0.1+ | 0.6+ | 2005 05 19 | G96 | 0.4- | 0.2+ | 2007 11 07 | 691 | 0.3- | 0.2+ |
| 2004 01 22 | 704 | 0.2- | 0.4+ | 2005 05 19 | G96 | 0.2- | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.1+ |
| 2004 01 22 | 704 | 1.2+ | 1.4+ | 2005 05 19 | G96 | 0.3- | 0.2+ | 2007 11 14 | 704 | 0.3+ | 0.0  |
| 2005 04 06 | G96 | 0.6+ | 0.5+ | 2005 06 13 | G96 | 0.1+ | 0.4+ | 2007 11 14 | 691 | 0.4- | 0.0  |
| 2005 04 06 | G96 | 0.4- | 0.1- | 2005 06 13 | G96 | 0.0  | 0.2+ | 2007 11 14 | 704 | 1.1+ | 1.1+ |
| 2005 04 06 | G96 | 0.2- | 0.1- | 2005 06 13 | G96 | 0.2- | 0.0  | 2007 11 14 | 704 | 1.1+ | 0.6+ |
| 2005 04 06 | G96 | 0.1- | 0.4+ | 2005 06 13 | G96 | 0.5- | 0.2- | 2007 11 14 | 691 | 0.1+ | 0.3+ |
| 2005 04 11 | G96 | 0.1- | 1.3- | 2006 08 18 | 644 | 0.5- | 0.7+ | 2007 12 15 | G96 | 0.4+ | 0.1- |
| 2005 04 11 | G96 | 0.0  | 0.0  | 2006 08 18 | 644 | 0.0  | 0.5+ | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2005 04 11 | G96 | 0.0  | 0.1- | 2006 08 18 | 644 | 0.1- | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2005 04 11 | G96 | 0.1+ | 0.2- | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.9+ | 0.2+ |

(172909)\* 2005 GH<sub>95</sub> = 1992 EX<sub>26</sub> = 2005 HE<sub>4</sub>

Discovered 2005 Apr. 6 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 77122)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 270.75007  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23399956 | $\omega$ | 328.53575 | -0.78657772   | -0.61744229 |
| <i>a</i> | 2.6081107  | $\Omega$ | 173.31848 | +0.57951271   | -0.74249068 |
| <i>e</i> | 0.1218257  | <i>i</i> | 3.83339   | +0.21321469   | -0.25975492 |
| <i>P</i> | 4.21       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 03 02 | 809 | 1.3- | 0.7+ | 2005 04 10 | 691 | 0.1+ | 0.4+ | 2007 10 10 | 691 | 0.3-  | 0.3+  |
| 1992 03 04 | 809 | 0.3- | 0.2+ | 2005 04 10 | 691 | 0.2+ | 0.3+ | 2007 10 10 | 691 | 0.3-  | 0.4+  |
| 2001 05 22 | 691 | 0.2+ | 0.4+ | 2005 04 10 | 691 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.5-  | 0.5+  |
| 2001 05 22 | 691 | 0.0  | 0.9- | 2005 04 11 | G96 | 0.1- | 0.3- | 2007 11 02 | G96 | 0.2-  | 0.0   |
| 2001 05 22 | 691 | 0.3+ | 0.4+ | 2005 04 11 | G96 | 0.2- | 0.2- | 2007 11 02 | G96 | 0.1-  | 0.1-  |
| 2003 12 01 | 704 | 0.9+ | 0.4- | 2005 04 11 | G96 | 0.3- | 0.3- | 2007 11 02 | G96 | 0.1+  | 0.0   |
| 2003 12 01 | 704 | 0.1+ | 0.3- | 2005 04 11 | G96 | 0.1+ | 0.4- | 2007 11 04 | 704 | 1.0-  | 0.5-  |
| 2003 12 01 | 704 | 0.4+ | 0.2- | 2005 04 12 | 695 | 0.1- | 0.2+ | 2007 11 04 | 704 | 0.2-  | 0.5+  |
| 2003 12 01 | 704 | 0.5+ | 0.1+ | 2005 04 12 | 695 | 0.4- | 0.0  | 2007 11 04 | 704 | 0.5-  | 0.6+  |
| 2003 12 01 | 704 | 0.1+ | 0.2+ | 2005 04 18 | 691 | 0.1+ | 0.1- | 2007 11 04 | 704 | 0.2-  | 0.1-  |
| 2003 12 22 | 691 | 0.0  | 0.2- | 2005 04 18 | 703 | 0.2+ | 0.6- | 2007 11 07 | 704 | (0.1- | 1.7+) |
| 2003 12 22 | 691 | 0.0  | 0.0  | 2005 04 18 | 703 | 0.4- | 0.7- | 2007 11 07 | 704 | 0.1-  | 0.3+  |
| 2003 12 22 | 704 | 0.8+ | 0.3+ | 2005 04 18 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 704 | 0.7-  | 0.9+  |
| 2003 12 22 | 691 | 0.4+ | 0.1- | 2005 04 18 | 703 | 0.4- | 1.1+ | 2007 11 07 | 704 | (1.0- | 2.3+) |
| 2003 12 22 | 704 | 0.9+ | 0.0  | 2005 04 18 | 703 | 0.3- | 0.7+ | 2007 11 07 | 704 | 0.7-  | 1.4+  |
| 2003 12 22 | 704 | 1.2+ | 0.0  | 2005 04 18 | 691 | 0.0  | 0.1+ | 2007 11 13 | G96 | 0.0   | 0.1-  |
| 2003 12 22 | 704 | 0.1+ | 0.9+ | 2007 10 06 | 691 | 0.5- | 0.5+ | 2007 11 13 | G96 | 0.5+  | 0.1+  |
| 2005 03 13 | G96 | 0.3- | 0.1- | 2007 10 06 | 691 | 0.3- | 0.3+ | 2007 11 13 | G96 | 0.7+  | 0.3-  |
| 2005 03 13 | G96 | 0.3- | 0.3- | 2007 10 06 | 691 | 0.3- | 0.1- | 2007 12 04 | 704 | 1.6+  | 0.3-  |
| 2005 03 13 | G96 | 0.5- | 0.2+ | 2007 10 08 | G96 | 0.2- | 0.1- | 2007 12 04 | 704 | 0.4+  | 0.5-  |
| 2005 03 13 | G96 | 0.4- | 0.1- | 2007 10 08 | G96 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.8-  | 1.6-  |
| 2005 04 06 | 691 | 0.2+ | 0.4+ | 2007 10 08 | G96 | 0.1- | 0.2- | 2007 12 04 | 704 | 0.5+  | 0.2+  |
| 2005 04 06 | 691 | 0.0  | 0.3+ | 2007 10 08 | G96 | 0.1+ | 0.0  |            |     |       |       |
| 2005 04 06 | 691 | 0.3+ | 0.4+ | 2007 10 10 | 691 | 0.1+ | 0.5+ |            |     |       |       |

(172910)\* 2005 GF<sub>96</sub>

Discovered 2005 Apr. 6 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 279.21374  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25759911 | $\omega$ | 350.22769 | -0.90022696   | -0.43538222 |
| <i>a</i> | 2.4462817  | $\Omega$ | 163.95887 | +0.40089661   | -0.83398008 |
| <i>e</i> | 0.1346207  | <i>i</i> | 1.20437   | +0.16992151   | -0.33899787 |
| <i>P</i> | 3.83       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 21 | 691 | 0.0  | 0.0  | 2005 05 04 | 568 | 0.3- | 0.8- | 2007 11 13 | 691 | 0.2- | 0.1+ |
| 2001 02 21 | 691 | 0.0  | 0.2- | 2005 05 04 | 568 | 0.4- | 0.8- | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2001 02 21 | 691 | 0.0  | 0.0  | 2005 05 05 | 568 | 0.2- | 0.3- | 2007 11 13 | 691 | 0.2- | 0.2- |
| 2003 10 19 | 691 | 0.2- | 0.2+ | 2005 05 06 | G96 | 0.3- | 0.4+ | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2003 10 19 | 691 | 0.2- | 0.3+ | 2005 05 06 | G96 | 0.5- | 0.2+ | 2007 11 14 | 691 | 0.1- | 0.1- |
| 2003 10 19 | 691 | 0.1+ | 0.6+ | 2005 05 06 | G96 | 0.1- | 0.1+ | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2003 11 20 | 691 | 0.1- | 0.1+ | 2005 05 06 | G96 | 0.1- | 0.7+ | 2007 11 18 | 691 | 0.0  | 0.2- |
| 2003 11 20 | 691 | 0.1- | 0.3+ | 2005 05 14 | 691 | 0.4+ | 0.4- | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2003 11 20 | 691 | 0.1- | 0.4+ | 2005 05 14 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2005 04 06 | 691 | 0.2+ | 0.4+ | 2005 05 14 | 691 | 0.0  | 0.3+ | 2007 12 03 | 703 | 0.1- | 1.1+ |
| 2005 04 06 | 691 | 0.1+ | 0.2+ | 2005 06 30 | 291 | 0.0  | 0.4+ | 2007 12 03 | 703 | 0.6+ | 0.2+ |
| 2005 04 06 | 691 | 0.1+ | 0.1+ | 2005 06 30 | 291 | 0.3+ | 0.3+ | 2007 12 03 | 703 | 0.3+ | 0.5+ |
| 2005 04 11 | 699 | 0.6+ | 0.2+ | 2005 06 30 | 291 | 0.4+ | 0.3+ | 2007 12 03 | 703 | 0.5- | 0.0  |
| 2005 04 11 | 699 | 0.1+ | 0.9+ | 2007 09 14 | G96 | 0.2+ | 0.8- | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2005 04 11 | 699 | 1.5- | 0.6- | 2007 09 14 | G96 | 0.4+ | 0.1+ | 2007 12 15 | G96 | 0.3- | 0.5- |
| 2005 04 11 | 699 | 0.4+ | 0.8+ | 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 12 15 | G96 | 1.8+ | 0.1- |
| 2005 05 04 | 568 | 0.5- | 0.8- | 2007 09 14 | G96 | 0.1- | 0.4+ | 2007 12 15 | G96 | 0.8+ | 0.4- |

2007 DEC. 24

M.P.O. 129513

(172911)\* 2005 GA<sub>99</sub> = 2002 RV<sub>156</sub>

Discovered 2005 Apr. 7 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 77124)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 230.35740  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.24362609 | $\omega$ | 350.10098 |     | -0.86969509 |     | +0.49308427 |
| $a$ | 2.5389464  | $\Omega$ | 219.46797 |     | -0.45042389 |     | -0.81132305 |
| $e$ | 0.1226709  | $i$      | 2.01265   |     | -0.20186325 |     | -0.31404270 |
| $P$ | 4.05       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |           |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-----------|
| 1994 09 12 | 691 | (0.3- 2.6+) | 2005 04 07 | 691 | 0.2+ 0.4+   | 2006 08 28 | 703 | 1.4+ 0.5+ |
| 1994 09 12 | 691 | 0.0 0.3-    | 2005 04 11 | G96 | 0.0 0.0     | 2006 08 28 | 703 | 0.2- 1.5+ |
| 1994 09 12 | 691 | 0.4+ 0.1-   | 2005 04 11 | G96 | 0.2- 0.1+   | 2006 08 28 | 703 | 0.7- 0.0  |
| 1998 09 25 | 691 | 0.1- 0.8+   | 2005 04 11 | G96 | 0.3+ 0.8+   | 2006 08 28 | 691 | 0.0 0.4+  |
| 1998 09 25 | 691 | 0.4- 0.6+   | 2005 04 11 | G96 | 0.2+ 0.0    | 2006 08 28 | 691 | 0.3- 0.2+ |
| 1998 09 25 | 691 | 0.7- 0.9+   | 2005 05 01 | 644 | 0.3+ 0.0    | 2006 08 28 | 691 | 0.3- 0.1+ |
| 2002 09 05 | 645 | 0.1+ 0.2-   | 2005 05 01 | 644 | 0.5+ 0.2+   | 2006 09 28 | G96 | 0.5- 0.2+ |
| 2002 09 05 | 645 | 0.1+ 0.2-   | 2005 05 01 | 644 | 0.4+ 0.2+   | 2006 09 28 | G96 | 0.0 0.2-  |
| 2002 09 11 | 644 | 0.2- 0.3+   | 2005 05 04 | G96 | 0.2- 0.3+   | 2006 09 28 | G96 | 0.2- 0.6- |
| 2002 09 11 | 644 | 0.1+ 0.3+   | 2005 05 04 | G96 | 0.3- 0.3+   | 2006 09 28 | G96 | 0.3- 0.1- |
| 2002 09 11 | 644 | 0.3- 0.4+   | 2005 05 04 | G96 | 0.3- 0.3+   | 2006 10 19 | G96 | 0.2+ 0.3- |
| 2002 09 14 | 644 | 0.6- 0.7+   | 2005 05 04 | G96 | 0.1+ 0.2+   | 2006 10 19 | G96 | 0.2+ 0.3- |
| 2002 09 14 | 644 | 0.5- 0.7+   | 2005 05 13 | 704 | 0.5- 0.4-   | 2006 10 19 | G96 | 0.4+ 0.3- |
| 2002 09 14 | 644 | 0.7- 0.7+   | 2005 05 13 | 704 | 0.1+ 0.7+   | 2006 10 19 | G96 | 0.3- 0.5- |
| 2005 03 11 | G96 | 0.6- 0.0    | 2005 05 13 | 704 | 0.2+ 0.3+   | 2007 11 13 | 691 | 0.0 0.4+  |
| 2005 03 11 | G96 | 0.1- 0.0    | 2005 05 13 | 704 | (1.9+ 0.6+) | 2007 11 13 | 691 | 0.0 0.1+  |
| 2005 03 11 | G96 | 0.2- 0.1-   | 2006 08 19 | 691 | 0.1+ 0.0    | 2007 11 13 | 691 | 0.1+ 0.3+ |
| 2005 03 11 | G96 | 0.5- 0.5+   | 2006 08 19 | 691 | 0.0 0.1+    | 2007 12 16 | 691 | 0.0 0.4+  |
| 2005 04 07 | 691 | 0.2+ 0.4+   | 2006 08 19 | 691 | 0.2+ 0.1+   | 2007 12 16 | 691 | 0.1- 0.1+ |
| 2005 04 07 | 691 | 0.2+ 0.4+   | 2006 08 28 | 703 | 0.3- 0.5+   | 2007 12 16 | 691 | 0.1- 0.3+ |

(172912)\* 2005 GB<sub>99</sub>

Discovered 2005 Apr. 7 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 204.78040  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22614127 | $\omega$ | 2.83689   |     | -0.74019539 |     | +0.67108015 |
| $a$ | 2.6681864  | $\Omega$ | 219.42091 |     | -0.61820160 |     | -0.70376803 |
| $e$ | 0.1155729  | $i$      | 3.79041   |     | -0.26445711 |     | -0.23315657 |
| $P$ | 4.36       | $H$      | 15.5      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |             |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-------------|
| 1998 10 14 | 691 | 0.2- 0.1- | 2005 04 18 | 704 | 0.3+ 0.3+ | 2006 08 27 | 699 | 0.8+ 0.3-   |
| 1998 10 14 | 691 | 0.1- 0.1- | 2005 04 18 | 704 | 0.7- 1.0+ | 2006 08 27 | 699 | 0.6- 0.5+   |
| 1998 10 14 | 691 | 0.4+ 0.2+ | 2005 05 04 | 699 | 0.4- 0.8+ | 2006 08 28 | 703 | 0.1- 0.8+   |
| 2000 02 02 | 704 | 0.0 0.5+  | 2005 05 04 | 701 | 0.1+ 0.9+ | 2006 08 28 | 703 | 0.1+ 1.1+   |
| 2000 02 02 | 704 | 0.5+ 0.4+ | 2005 05 04 | 699 | 0.5- 0.8+ | 2006 08 28 | 703 | 0.3- 0.5+   |
| 2000 02 02 | 704 | 0.0 0.9+  | 2005 05 04 | 704 | 1.2+ 0.0  | 2006 08 28 | 703 | 1.0+ 1.1+   |
| 2000 02 02 | 704 | 0.0 0.5+  | 2005 05 04 | G96 | 0.3- 0.0  | 2006 08 29 | 691 | 0.0 0.5+    |
| 2000 02 02 | 704 | 0.4- 0.2+ | 2005 05 04 | 699 | 0.4+ 1.0+ | 2006 08 29 | 691 | 0.1- 0.3+   |
| 2002 10 11 | 704 | 0.8+ 0.5+ | 2005 05 04 | G96 | 0.1- 0.4+ | 2006 08 29 | 691 | 0.0 0.1+    |
| 2002 10 11 | 704 | 0.4+ 0.4- | 2005 05 04 | 701 | 0.3+ 0.4+ | 2006 09 11 | 703 | 0.7- 0.7+   |
| 2002 10 11 | 704 | 0.8- 1.1+ | 2005 05 04 | 704 | 0.2- 0.2+ | 2006 09 11 | 703 | 1.3- 0.7+   |
| 2002 10 11 | 704 | 0.2- 0.4+ | 2005 05 04 | G96 | 0.0 0.7+  | 2006 09 11 | 703 | 0.9- 1.1+   |
| 2003 12 23 | 704 | 0.3- 0.5+ | 2005 05 04 | 699 | 0.6+ 0.7+ | 2006 09 11 | 703 | 0.2- 1.1-   |
| 2003 12 23 | 704 | 0.2- 0.4- | 2005 05 04 | G96 | 0.2- 0.2+ | 2006 09 13 | 644 | 0.2- 0.4+   |
| 2003 12 23 | 704 | 0.3+ 1.1+ | 2005 05 04 | 704 | 0.2+ 0.2+ | 2006 09 13 | 644 | 0.3+ 0.2+   |
| 2005 03 11 | G96 | 0.0 0.0   | 2005 05 04 | 704 | 0.4+ 0.2+ | 2006 09 13 | 644 | 0.1+ 0.1-   |
| 2005 03 11 | G96 | 0.3+ 0.0  | 2005 05 04 | 701 | 0.1+ 0.8+ | 2006 09 17 | 703 | 0.2+ 0.1+   |
| 2005 03 11 | G96 | 0.2- 0.3- | 2005 05 08 | 699 | 0.5+ 0.5+ | 2006 09 17 | 703 | (2.5- 0.7-) |
| 2005 03 11 | G96 | 0.1- 0.0  | 2005 05 08 | 699 | 0.9- 0.7+ | 2006 09 17 | 703 | 0.8- 0.9-   |
| 2005 04 07 | 704 | 0.1- 0.4- | 2005 05 08 | 699 | 0.2- 0.2+ | 2006 09 17 | 703 | (1.9+ 1.2-) |
| 2005 04 07 | 704 | 0.2+ 0.3+ | 2005 05 08 | 699 | 0.5- 1.0+ | 2006 09 28 | G96 | 0.1+ 0.3-   |
| 2005 04 07 | 704 | 0.4- 0.6+ | 2005 05 09 | 704 | 0.9+ 0.2- | 2006 09 28 | G96 | 0.3- 0.0    |
| 2005 04 07 | 691 | 0.1+ 0.3+ | 2005 05 09 | 704 | 0.7+ 0.5- | 2006 09 28 | G96 | 0.3- 0.5-   |

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 2005 04 07 | 691 | 0.2+ 0.4+   | 2005 05 09 | 704 | 1.0+ 0.0    | 2006 09 28 | G96 | 0.3+ 0.3-   |
| 2005 04 07 | 691 | 0.1+ 0.3+   | 2005 05 13 | 704 | 0.7+ 0.6+   | 2007 11 14 | 704 | (0.5- 1.5+) |
| 2005 04 11 | G96 | 0.1+ 0.2+   | 2005 05 13 | 704 | 0.0 0.2-    | 2007 11 14 | 691 | 0.5- 0.4+   |
| 2005 04 11 | G96 | 0.3- 0.0    | 2005 05 13 | 704 | 0.8+ 0.4-   | 2007 11 14 | 704 | 0.0 0.3-    |
| 2005 04 11 | G96 | 0.2- 0.0    | 2005 05 13 | 704 | 0.2+ 0.4-   | 2007 11 14 | 691 | 0.1- 0.3+   |
| 2005 04 11 | G96 | 0.3- 0.2+   | 2005 05 13 | 704 | 0.1- 0.2-   | 2007 11 14 | 704 | 0.8+ 0.8-   |
| 2005 04 12 | 704 | 0.0 0.8-    | 2005 05 26 | 699 | 0.7+ 0.3-   | 2007 11 14 | 704 | 0.2- 0.1+   |
| 2005 04 12 | 704 | 0.5+ 0.7+   | 2005 05 26 | 699 | 0.3- 0.4-   | 2007 11 14 | 691 | 0.4- 0.2+   |
| 2005 04 12 | 704 | (0.4+ 2.1+) | 2005 05 26 | 699 | 0.9+ 0.4+   | 2007 12 03 | 703 | 0.1+ 0.4+   |
| 2005 04 15 | I10 | 0.0 0.3+    | 2005 05 26 | 699 | 0.3+ 0.9-   | 2007 12 03 | 703 | 0.3+ 1.0+   |
| 2005 04 15 | I10 | 0.3- 0.7-   | 2005 06 28 | 699 | (0.5+ 2.4+) | 2007 12 03 | 703 | 0.9+ 0.6+   |
| 2005 04 15 | I10 | 0.2+ 0.4-   | 2005 06 28 | 699 | 1.3- 0.3+   | 2007 12 03 | 703 | 0.4- 0.0    |
| 2005 04 18 | 703 | 0.1- 0.3-   | 2005 06 28 | 699 | 0.4+ 0.1-   | 2007 12 05 | 704 | 1.1+ 1.9+   |
| 2005 04 18 | 703 | 0.5- 0.3+   | 2005 06 28 | 699 | 0.7- 0.7-   | 2007 12 05 | 704 | 0.1- 0.9+   |
| 2005 04 18 | 703 | 0.8- 0.9+   | 2006 07 26 | A50 | 0.1- 0.4+   | 2007 12 05 | 704 | 0.4- 1.4+   |
| 2005 04 18 | 703 | 0.4- 0.3+   | 2006 08 27 | 699 | 0.1- 0.2+   | 2007 12 05 | 704 | 0.5+ 1.3+   |
| 2005 04 18 | 704 | 0.0 0.4-    | 2006 08 27 | 699 | 0.8- 1.2+   | 2007 12 05 | 704 | 0.7+ 0.3+   |

(172913)\* 2005 GM<sub>99</sub> = 2004 AH<sub>16</sub>

Discovered 2005 Apr. 7 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 95669)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 160.37347  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22259961 | $\omega$ | 25.97184  |     | -0.08073483 |     | +0.99669917 |
| $a$ | 2.6964132  | $\Omega$ | 239.39842 |     | -0.91620350 |     | -0.07757663 |
| $e$ | 0.0400159  | $i$      | 0.56742   |     | -0.39249589 |     | -0.02392982 |
| $P$ | 4.43       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2000 03 03 | 704 | 0.0 0.8-  | 2005 05 07 | G96 | 0.2- 0.1+ | 2007 11 14 | 691 | 0.3+ 0.1- |
| 2000 03 03 | 704 | 0.5+ 0.4+ | 2005 05 07 | G96 | 0.4- 0.1+ | 2007 11 14 | 691 | 0.3- 0.3- |
| 2000 03 03 | 704 | 0.2+ 1.0+ | 2005 05 07 | G96 | 0.2- 0.1+ | 2007 11 14 | 691 | 0.1+ 0.3+ |
| 2004 01 15 | 691 | 0.1- 0.6+ | 2005 06 01 | G96 | 0.1- 0.1- | 2007 11 19 | 691 | 0.4+ 0.4- |
| 2004 01 15 | 691 | 0.4+ 0.2+ | 2005 06 01 | G96 | 0.0 0.4-  | 2007 11 19 | 691 | 0.1- 0.2+ |
| 2004 01 15 | 691 | 0.2+ 0.4+ | 2005 06 01 | G96 | 0.4- 0.0  | 2007 11 19 | 691 | 0.4- 0.1- |
| 2004 01 27 | 691 | 0.2- 0.2+ | 2005 06 01 | G96 | 0.4- 0.1- | 2007 12 04 | G96 | 0.5+ 0.1+ |
| 2004 01 27 | 691 | 0.4- 0.3- | 2006 08 19 | 691 | 0.2- 0.6+ | 2007 12 04 | G96 | 0.0 1.4-  |
| 2004 01 27 | 691 | 0.2+ 0.5+ | 2006 08 19 | 691 | 0.4- 0.4+ | 2007 12 04 | G96 | 0.3+ 0.2+ |
| 2005 04 07 | 691 | 0.4+ 0.0  | 2006 08 19 | 691 | 0.0 0.4+  | 2007 12 04 | G96 | 0.5+ 0.6- |
| 2005 04 07 | 691 | 0.1+ 0.2+ | 2006 09 26 | G96 | 0.0 0.0   | 2007 12 14 | 704 | 0.7+ 0.2+ |
| 2005 04 07 | 691 | 0.4+ 0.0  | 2006 09 26 | G96 | 0.0 0.0   | 2007 12 14 | 704 | 1.5+ 0.1- |
| 2005 04 11 | G96 | 0.4+ 0.8+ | 2006 09 26 | G96 | 0.1- 0.0  | 2007 12 14 | 704 | 0.5+ 0.3- |
| 2005 04 11 | G96 | 0.4- 0.0  | 2006 09 26 | G96 | 0.0 0.0   | 2007 12 16 | 691 | 0.4- 0.2+ |
| 2005 04 11 | G96 | 0.7- 0.5- | 2007 11 06 | 691 | 0.1+ 0.2+ | 2007 12 16 | 691 | 0.3- 0.1- |
| 2005 04 11 | G96 | 0.3- 0.2+ | 2007 11 06 | 691 | 0.1- 0.3- | 2007 12 16 | 691 | 0.1+ 0.0  |
| 2005 05 07 | G96 | 0.4- 0.1- | 2007 11 06 | 691 | 0.3- 0.2+ |            |     |           |

(172914)\* 2005 GJ<sub>103</sub> = 1998 RR<sub>10</sub>

Discovered 2005 Apr. 9 by the Mt. Lemmon Survey at Mount Lemmon.

Id. A. Doppler (*MPO* 86703)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.10450  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.23532997 | $\omega$ | 267.91040 |          | +0.40343739 |          | -0.91494326 |
| <i>a</i> | 2.5982716  | $\Omega$ | 158.28646 |          | +0.85070132 |          | +0.37070263 |
| <i>e</i> | 0.0069055  | <i>i</i> | 1.67611   |          | +0.33696519 |          | +0.15955683 |
| <i>P</i> | 4.19       | <i>H</i> | 16.5      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 09 | 691 | 0.1+ | 0.2+ | 2005 04 02 | G96 | 0.1- | 0.1+ | 2007 11 07 | 691 | 0.2- | 0.3+ |
| 1994 10 09 | 691 | 0.2- | 0.5+ | 2005 04 09 | G96 | 0.3- | 0.1+ | 2007 11 07 | 691 | 0.1- | 0.0  |
| 1998 08 26 | 691 | 0.7+ | 0.1+ | 2005 04 09 | G96 | 0.5+ | 0.7+ | 2007 11 07 | 691 | 0.0  | 0.0  |
| 1998 08 26 | 691 | 0.1+ | 0.3+ | 2005 04 09 | G96 | 0.1- | 0.5+ | 2007 11 08 | 691 | 0.3+ | 0.2+ |
| 1998 08 26 | 691 | 0.6+ | 0.3- | 2005 04 09 | G96 | 0.2- | 1.2+ | 2007 11 08 | 691 | 0.1- | 0.1- |
| 1998 09 13 | 691 | 0.5- | 1.1+ | 2005 04 11 | 691 | 0.1+ | 0.5+ | 2007 11 08 | 691 | 0.2- | 0.0  |
| 1998 09 13 | 691 | 0.3- | 0.5+ | 2005 04 11 | 691 | 0.1+ | 0.5+ | 2007 11 14 | 704 | 1.0+ | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 13 | 691 | 0.7− | 0.9+ | 2005 04 11 | 691 | 0.5+ | 0.3+ | 2007 11 14 | 704 | 0.2− | 0.9+ |
| 1998 09 19 | 691 | 0.8− | 0.4+ | 2005 05 06 | G96 | 0.0  | 0.2+ | 2007 11 14 | 704 | 0.2+ | 0.4+ |
| 1998 09 19 | 691 | 0.2− | 0.3+ | 2005 05 06 | G96 | 0.5+ | 0.8+ | 2007 11 14 | 704 | 0.4+ | 1.2+ |
| 1998 09 19 | 691 | 0.4− | 0.3− | 2005 05 06 | G96 | 0.9+ | 0.1+ | 2007 11 19 | 691 | 0.2− | 0.0  |
| 2004 01 28 | 691 | 0.1− | 0.3+ | 2005 05 06 | G96 | 0.6− | 0.1+ | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2004 01 28 | 691 | 0.0  | 0.1+ | 2006 05 24 | G96 | 0.5+ | 0.0  | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2004 01 28 | 691 | 0.4+ | 0.3− | 2006 05 24 | G96 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.2− | 0.6+ |
| 2005 03 17 | 691 | 0.2+ | 0.4+ | 2006 05 24 | G96 | 0.0  | 0.2+ | 2007 12 03 | 703 | 0.9− | 0.5− |
| 2005 03 17 | 691 | 0.2+ | 0.6+ | 2006 05 24 | G96 | 0.5+ | 0.5+ | 2007 12 03 | 703 | 0.7− | 0.3− |
| 2005 03 17 | 691 | 0.1+ | 0.1+ | 2007 10 24 | G96 | 0.3− | 0.2− | 2007 12 03 | 703 | 0.1+ | 0.7+ |
| 2005 04 02 | 691 | 0.3+ | 1.0+ | 2007 10 24 | G96 | 0.3+ | 0.1+ | 2007 12 05 | 704 | 0.4+ | 0.5+ |
| 2005 04 02 | 691 | 0.2+ | 0.4+ | 2007 10 24 | G96 | 0.2− | 0.1− | 2007 12 05 | 704 | 0.0  | 0.5+ |
| 2005 04 02 | 691 | 0.2+ | 0.2+ | 2007 10 24 | G96 | 0.4+ | 0.2− | 2007 12 05 | 704 | 0.3+ | 0.0  |
| 2005 04 02 | G96 | 0.3− | 0.5+ | 2007 11 03 | 691 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.4+ | 1.3+ |
| 2005 04 02 | G96 | 0.3− | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.2− |            |     |      |      |
| 2005 04 02 | G96 | 0.5− | 0.3+ | 2007 11 03 | 691 | 0.1− | 0.2+ |            |     |      |      |

(172915)\* 2005 GE<sub>106</sub> = 2002 SZ<sub>60</sub> = 2003 YE<sub>170</sub>

Discovered 2005 Apr. 10 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 86703)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 248.20193  |          | (2000.0)  | $\mathbf{P}$  | $\mathbf{Q}$  |
|-----|------------|----------|-----------|---------------|---------------|
| $n$ | 0.21927944 | $\omega$ | 105.35414 | $-0.93976878$ | $-0.32973125$ |
| $a$ | 2.7235631  | $\Omega$ | 55.47273  | $+0.25638328$ | $-0.85425003$ |
| $e$ | 0.0290061  | $i$      | 6.27628   | $+0.22605807$ | $-0.40191316$ |
| $P$ | 4.49       | $H$      | 16.0      | $G$ 0.15      | $U$ 0         |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 11 14 | 691 | 0.1−  | 0.1+  | 2005 04 10 | 691 | 0.1+ | 0.5+ | 2007 11 04 | 691 | 0.2−  | 0.3+  |
| 1998 11 14 | 691 | (3.8− | 5.4−) | 2005 04 11 | G96 | 0.6− | 0.7+ | 2007 11 04 | 691 | 0.0   | 0.2+  |
| 1998 11 14 | 691 | 0.1−  | 0.4+  | 2005 04 11 | G96 | 0.1+ | 0.6+ | 2007 11 04 | 691 | 0.0   | 0.0   |
| 1998 11 21 | 691 | 0.2+  | 0.2+  | 2005 04 11 | G96 | 0.4− | 0.2+ | 2007 11 05 | G96 | 0.7+  | 0.0   |
| 1998 11 21 | 691 | 0.2−  | 0.2+  | 2005 04 11 | G96 | 0.6− | 0.1+ | 2007 11 05 | G96 | 0.3+  | 0.1−  |
| 1998 11 21 | 691 | (0.5− | 3.5−) | 2005 04 18 | 691 | 0.2+ | 0.4+ | 2007 11 05 | G96 | 0.5+  | 0.2−  |
| 2000 03 04 | 704 | 0.7+  | 0.0   | 2005 04 18 | 691 | 0.4+ | 0.6+ | 2007 11 05 | G96 | 0.6+  | 0.1−  |
| 2000 03 04 | 704 | 0.1+  | 0.6+  | 2005 04 18 | 691 | 0.5+ | 0.5+ | 2007 11 14 | 704 | 1.4−  | 0.3+  |
| 2000 03 04 | 704 | 0.1+  | 0.7−  | 2007 10 08 | 691 | 0.3+ | 0.0  | 2007 11 14 | 704 | 0.1−  | 0.4+  |
| 2000 03 04 | 704 | 0.3+  | 0.1+  | 2007 10 08 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 704 | (1.0+ | 1.6−) |
| 2000 03 04 | 704 | 0.0   | 0.0   | 2007 10 08 | G96 | 0.2+ | 0.1− | 2007 11 20 | G96 | 0.1+  | 0.1−  |
| 2002 09 16 | 644 | 0.5−  | 0.4+  | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 11 20 | G96 | 0.7+  | 0.1−  |
| 2002 09 16 | 644 | 0.7−  | 0.6+  | 2007 10 08 | G96 | 0.1+ | 0.1− | 2007 11 20 | G96 | 0.3+  | 0.0   |
| 2002 09 16 | 644 | 0.9−  | 0.5+  | 2007 10 08 | G96 | 0.0  | 0.1− | 2007 11 20 | G96 | 0.3+  | 0.0   |
| 2002 09 17 | 644 | 0.0   | 0.7+  | 2007 10 08 | 691 | 0.4− | 0.4+ | 2007 12 05 | 691 | 0.4−  | 1.1+  |
| 2002 09 17 | 644 | 0.3−  | 0.4+  | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.3+  | 0.1−  |
| 2002 09 17 | 644 | 0.4−  | 0.3+  | 2007 10 12 | 691 | 0.2− | 0.0  | 2007 12 05 | 691 | 0.6+  | 0.2−  |
| 2003 12 18 | 691 | 0.1−  | 0.1−  | 2007 10 12 | 691 | 0.2+ | 0.2+ | 2007 12 15 | G96 | 1.2+  | 0.1−  |
| 2003 12 18 | 691 | 0.2−  | 0.0   | 2007 10 15 | 703 | 1.3− | 0.1+ | 2007 12 15 | G96 | 1.1+  | 0.6−  |
| 2003 12 18 | 691 | 0.0   | 0.2−  | 2007 10 15 | 703 | 0.4+ | 0.4+ | 2007 12 15 | G96 | 0.8+  | 0.1−  |
| 2003 12 30 | 704 | 0.4−  | 0.4−  | 2007 10 15 | 703 | 1.1− | 0.7+ | 2007 12 15 | G96 | 0.6+  | 0.2−  |
| 2003 12 30 | 704 | 0.3+  | 0.3−  | 2007 10 15 | 703 | 0.6+ | 0.6− | 2007 12 16 | 291 | 0.3−  | 0.2+  |
| 2003 12 30 | 704 | 1.0−  | 0.8−  | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 12 16 | 291 | 0.1+  | 0.1+  |
| 2005 04 10 | 691 | 0.3+  | 0.4+  | 2007 10 30 | 691 | 0.8− | 0.1+ | 2007 12 16 | 291 | 0.0   | 0.1+  |
| 2005 04 10 | 691 | 0.4+  | 0.4+  | 2007 10 30 | 691 | 0.5− | 0.0  |            |     |       |       |

(172916)\* 2005 GU<sub>112</sub> = 2006 PE<sub>13</sub>

Discovered 2005 Apr. 6 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 103691)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 78.95572   |          | (2000.0)  | $P$         | $Q$         |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.22279558 | $\omega$ | 84.69534  | +0.91228030 | +0.40009628 |
| $a$ | 2.6948318  | $\Omega$ | 251.69708 | −0.40273184 | +0.83741944 |
| $e$ | 0.0317257  | $i$      | 5.29197   | −0.07450991 | +0.37235958 |
| $P$ | 4.42       | $H$      | 16.1      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.7− | 0.5+ | 2006 07 21 | 703 | 1.5− | 1.1− | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2002 09 13 | 644 | 0.6− | 0.4+ | 2006 07 21 | 703 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.4+ |
| 2002 09 13 | 644 | 0.5− | 0.2+ | 2006 07 21 | 703 | 0.4− | 0.2+ | 2007 11 09 | 691 | 0.4− | 0.2+ |
| 2002 10 04 | 704 | 0.4+ | 0.6+ | 2006 08 14 | E12 | 0.3− | 0.5+ | 2007 11 13 | 691 | 0.5− | 0.6+ |
| 2002 10 04 | 704 | 0.7+ | 0.4+ | 2006 08 14 | E12 | 0.6− | 0.2+ | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2002 10 04 | 704 | 0.2+ | 0.8+ | 2006 08 14 | E12 | 0.1+ | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.2+ |
| 2002 10 04 | 704 | 0.4− | 1.3+ | 2006 08 19 | 644 | 0.2− | 0.7+ | 2007 11 17 | 691 | 0.1+ | 0.1+ |
| 2003 12 28 | 691 | 0.1− | 0.0  | 2006 08 19 | 644 | 0.0  | 0.9+ | 2007 11 17 | 691 | 0.1− | 0.1+ |
| 2003 12 28 | 691 | 0.0  | 0.0  | 2006 08 19 | 644 | 0.0  | 0.9+ | 2007 11 17 | 691 | 0.2− | 0.2+ |
| 2003 12 28 | 691 | 0.2− | 0.2+ | 2007 10 16 | G96 | 0.6+ | 0.0  | 2007 12 05 | 704 | 0.8+ | 0.3− |
| 2005 04 06 | 691 | 0.2+ | 0.4+ | 2007 10 16 | G96 | 0.3+ | 0.2+ | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2005 04 06 | 691 | 0.1− | 0.3+ | 2007 10 16 | G96 | 0.5+ | 0.1− | 2007 12 05 | 704 | 0.8+ | 0.3+ |
| 2005 04 06 | 691 | 0.6+ | 0.2+ | 2007 10 16 | G96 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.7+ | 0.3− |
| 2005 04 12 | 691 | 0.1− | 0.4+ | 2007 11 05 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.8+ | 0.4+ |
| 2005 04 12 | 691 | 0.1+ | 0.4+ | 2007 11 05 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.4+ | 0.1− |
| 2005 04 12 | 691 | 0.2+ | 0.6+ | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2005 04 16 | 691 | 0.1+ | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2005 04 16 | 691 | 0.3+ | 0.3+ | 2007 11 05 | G96 | 0.6+ | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2005 04 16 | 691 | 0.1− | 0.1+ | 2007 11 05 | G96 | 0.0  | 0.0  |            |     |      |      |
| 2006 07 21 | 703 | 0.6+ | 0.6+ | 2007 11 05 | G96 | 0.5+ | 0.1+ |            |     |      |      |

(172917)\* 2005 GX<sub>130</sub> = 2007 TE<sub>261</sub>

Discovered 2005 Apr. 9 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 128208)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 330.63358  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.21096211 | $\omega$ | 196.61524 | +0.25256079  | −0.96686731  |
| $a$ | 2.7946863  | $\Omega$ | 238.76934 | +0.89260760  | +0.24764091  |
| $e$ | 0.0721571  | $i$      | 2.49053   | +0.37344977  | +0.06198051  |
| $P$ | 4.67       | $H$      | 17.0      | $G$          | 0.15         |
|     |            |          |           | $U$          | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 16 | 691 | 0.1+ | 0.1− | 2006 05 25 | G96 | 0.4− | 0.6+ | 2007 11 07 | 703 | 1.1− | 1.0− |
| 2004 01 16 | 691 | 0.0  | 0.1+ | 2006 05 25 | G96 | 0.2+ | 0.5+ | 2007 11 07 | 703 | 0.2− | 1.0+ |
| 2004 01 16 | 691 | 0.2− | 0.2+ | 2006 05 25 | G96 | 0.2− | 0.1− | 2007 11 11 | G96 | 0.3+ | 0.2− |
| 2004 02 17 | 645 | 0.1+ | 0.2− | 2006 05 25 | G96 | 0.2+ | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.1+ |
| 2004 02 17 | 645 | 0.0  | 0.2+ | 2007 10 10 | 691 | 0.1− | 0.0  | 2007 11 11 | G96 | 0.5+ | 0.5− |
| 2005 04 09 | 691 | 0.1+ | 0.1+ | 2007 10 10 | 691 | 0.0  | 0.1+ | 2007 11 12 | G96 | 0.8+ | 0.4+ |
| 2005 04 09 | 691 | 0.5+ | 0.4− | 2007 10 10 | 691 | 0.4− | 0.3+ | 2007 11 12 | G96 | 0.1+ | 0.3+ |
| 2005 04 09 | 691 | 0.6+ | 0.2+ | 2007 10 14 | 691 | 0.0  | 0.1+ | 2007 11 12 | G96 | 0.6+ | 0.0  |
| 2005 04 14 | 691 | 0.1+ | 0.7+ | 2007 10 14 | 691 | 0.8+ | 0.7− | 2007 11 12 | G96 | 0.1+ | 0.3+ |
| 2005 04 14 | 691 | 0.0  | 0.2− | 2007 10 14 | 691 | 0.0  | 0.9+ | 2007 12 06 | G96 | 0.0  | 0.2− |
| 2005 04 14 | 691 | 0.2− | 0.7+ | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 12 06 | G96 | 0.1+ | 0.3− |
| 2005 05 07 | G96 | 0.8− | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.4+ | 2007 12 06 | G96 | 0.2− | 0.2− |
| 2005 05 07 | G96 | 0.3− | 0.3− | 2007 10 30 | G96 | 0.2+ | 0.1− | 2007 12 06 | G96 | 0.0  | 0.1− |
| 2005 05 07 | G96 | 0.5− | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2005 05 07 | G96 | 0.2− | 0.3+ | 2007 11 03 | 691 | 0.6− | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.6− |
| 2005 05 14 | G96 | 0.3+ | 0.2− | 2007 11 03 | 691 | 0.2− | 0.3+ | 2007 12 15 | G96 | 0.7+ | 0.4− |
| 2005 05 14 | G96 | 0.0  | 0.1− | 2007 11 03 | 691 | 0.1− | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.6− |
| 2005 05 14 | G96 | 0.8− | 0.1− | 2007 11 07 | 703 | 0.8− | 0.4− |            |     |      |      |
| 2005 05 14 | G96 | 1.0− | 0.2− | 2007 11 07 | 703 | 0.9− | 0.3+ |            |     |      |      |

(172918)\* 2005 GL<sub>135</sub> = 2005 GD<sub>212</sub>

Discovered 2005 Apr. 10 by Spacewatch at Kitt Peak.

Id. A. Doppler (d, *MPO* 87833)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> |
|----------|
|----------|



2007 DEC. 24

M.P.O. 129515

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 01 28 | 691 | 0.2+ | 0.6- | 2002 09 15 | 644 | 0.4- | 0.0  | 2007 10 30 | 691 | 0.3- | 0.3+ |
| 1996 01 28 | 691 | 0.5+ | 0.5- | 2002 09 16 | 644 | 0.3- | 0.2+ | 2007 11 07 | 691 | 0.2+ | 0.1- |
| 1996 01 28 | 691 | 0.1- | 0.2- | 2002 09 16 | 644 | 0.0  | 0.1- | 2007 11 07 | 691 | 0.1- | 0.2+ |
| 1996 02 18 | 691 | 0.8- | 0.0  | 2002 09 16 | 644 | 0.5- | 0.5- | 2007 11 07 | 691 | 0.2- | 0.3+ |
| 1996 02 18 | 691 | 0.2- | 0.2+ | 2005 04 10 | 691 | 0.2+ | 0.1- | 2007 11 18 | G96 | 0.5+ | 0.3+ |
| 1996 02 18 | 691 | 0.2+ | 0.1- | 2005 04 10 | 691 | 0.1- | 0.4+ | 2007 11 18 | G96 | 0.1+ | 0.1+ |
| 2002 08 18 | 644 | 0.4- | 0.8+ | 2005 04 10 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.2+ |
| 2002 08 18 | 644 | 0.4+ | 0.7+ | 2005 04 14 | 691 | 0.6+ | 0.9+ | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2002 08 18 | 644 | 0.2- | 0.6+ | 2005 04 14 | 691 | 0.1+ | 0.4+ | 2007 11 19 | 691 | 0.1+ | 0.4+ |
| 2002 08 29 | 644 | 0.0  | 0.0  | 2005 04 14 | 691 | 0.2+ | 0.5+ | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2002 08 29 | 644 | 0.5+ | 0.1- | 2005 04 15 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.1+ | 0.4+ |
| 2002 08 29 | 644 | 0.6+ | 0.6+ | 2005 04 15 | 691 | 0.1+ | 0.3+ | 2007 12 03 | 703 | 0.1+ | 0.3- |
| 2002 09 15 | 644 | 0.2- | 0.1+ | 2005 04 15 | 691 | 0.1+ | 0.4+ | 2007 12 03 | 703 | 0.4- | 0.1- |
| 2002 09 15 | 644 | 0.3- | 0.1- | 2007 10 30 | 691 | 0.2- | 0.7+ | 2007 12 03 | 703 | 0.3- | 0.2- |
| 2002 09 15 | 644 | 0.6- | 0.4+ | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 12 03 | 703 | 0.2- | 1.4+ |

(172919)\* 2005 GP<sub>135</sub> = 1998 XE<sub>14</sub> = 2004 BB<sub>117</sub>

Discovered 2005 Apr. 10 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 109199)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 62.30613   | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.22652830 | $\omega$ | 285.09465 | +0.96933070 | -0.16998372 |
| <i>a</i> | 2.6651464  | $\Omega$ | 84.93368  | +0.22945140 | +0.88466893 |
| <i>e</i> | 0.1149853  | <i>i</i> | 10.26426  | -0.08803431 | +0.43412720 |
| <i>P</i> | 4.35       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 15 | 910 | 0.4+ | 0.3- | 2004 01 28 | 703 | 0.5+ | 0.7+ | 2005 05 15 | 644 | 0.1- | 0.4+ |
| 1998 12 15 | 910 | 0.1+ | 0.5- | 2004 01 28 | 703 | 0.7- | 0.6+ | 2006 08 20 | 644 | 0.1- | 0.5+ |
| 1998 12 16 | 910 | 0.0  | 0.2- | 2004 01 28 | 703 | 0.3+ | 0.0  | 2006 08 20 | 644 | 0.3+ | 0.6+ |
| 1998 12 16 | 910 | 0.4+ | 0.1+ | 2004 01 28 | 703 | 0.3- | 0.1- | 2006 08 20 | 644 | 0.4+ | 0.8+ |
| 1998 12 16 | 910 | 0.1+ | 0.2+ | 2004 01 31 | 704 | 0.2+ | 0.8+ | 2007 11 11 | G96 | 0.4- | 0.1- |
| 1998 12 16 | 910 | 0.6+ | 0.3- | 2004 01 31 | 704 | 0.1- | 0.9+ | 2007 11 11 | G96 | 0.1- | 0.5- |
| 2002 10 02 | 608 | 1.0- | 0.2+ | 2004 01 31 | 704 | 1.3+ | 1.2+ | 2007 11 11 | G96 | 0.2- | 0.0  |
| 2002 10 02 | 608 | 0.7- | 0.3- | 2005 04 10 | 691 | 0.2- | 0.3+ | 2007 11 11 | G96 | 0.5- | 0.1- |
| 2002 10 02 | 608 | 1.0- | 0.0  | 2005 04 10 | 691 | 0.2+ | 0.1+ | 2007 12 06 | 704 | 0.6+ | 0.0  |
| 2002 10 16 | 644 | 0.1- | 0.8+ | 2005 04 10 | 691 | 0.4+ | 0.2+ | 2007 12 06 | 704 | 0.5+ | 1.5- |
| 2002 10 16 | 644 | 0.3- | 0.7+ | 2005 04 14 | 691 | 0.1+ | 0.2+ | 2007 12 06 | 704 | 1.1+ | 0.7+ |
| 2002 10 16 | 644 | 0.2- | 0.8+ | 2005 04 14 | 691 | 0.0  | 0.3+ | 2007 12 06 | 704 | 0.6+ | 0.6+ |
| 2002 10 25 | 644 | 0.3- | 1.0+ | 2005 04 14 | 691 | 0.2- | 0.3+ | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2002 10 25 | 644 | 0.6- | 0.6+ | 2005 05 15 | 644 | 0.1- | 0.3- | 2007 12 14 | 704 | 0.8- | 0.5+ |
| 2002 10 25 | 644 | 0.2- | 1.1+ | 2005 05 15 | 644 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 0.9- | 0.4+ |

(172920)\* 2005 GL<sub>138</sub>

Discovered 2005 Apr. 12 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 60.47540   | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.22032764 | $\omega$ | 221.02200 | +0.98613373 | +0.16146545 |
| <i>a</i> | 2.7149180  | $\Omega$ | 129.64422 | -0.13628274 | +0.91972591 |
| <i>e</i> | 0.0514993  | <i>i</i> | 2.85323   | -0.09469572 | +0.35781721 |
| <i>P</i> | 4.47       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 704 | 0.1- | 0.2- | 2005 04 19 | 705 | 0.3- | 0.0  | 2007 11 08 | 691 | 0.2- | 0.3+ |
| 2000 03 03 | 704 | 0.2- | 0.1- | 2005 04 19 | 705 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.2- |
| 2000 03 03 | 704 | 0.5- | 0.8+ | 2005 05 04 | 691 | 0.1- | 0.5+ | 2007 11 20 | G96 | 0.3+ | 0.1+ |
| 2000 03 03 | 704 | 0.0  | 0.3+ | 2005 05 04 | 691 | 0.2+ | 0.5+ | 2007 11 20 | G96 | 0.3+ | 0.2- |
| 2002 09 05 | 645 | 0.0  | 0.1+ | 2005 05 04 | 691 | 0.2- | 0.5+ | 2007 11 20 | G96 | 0.5+ | 0.5- |
| 2002 09 05 | 645 | 0.0  | 0.1+ | 2006 06 19 | G96 | 0.6- | 0.1+ | 2007 11 20 | G96 | 0.5+ | 0.2+ |
| 2002 10 04 | 644 | 0.5- | 0.3+ | 2006 06 19 | G96 | 0.3- | 0.0  | 2007 11 20 | G96 | 0.3+ | 0.2+ |
| 2002 10 04 | 644 | 0.2+ | 1.0+ | 2006 06 19 | G96 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.2+ |
| 2002 10 04 | 644 | 1.2- | 0.3+ | 2006 06 19 | G96 | 0.1+ | 0.2- | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2006 07 21 | G96 | 0.1- | 0.1+ | 2007 11 21 | G96 | 0.0  | 0.1- |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2006 07 21 | G96 | 0.0  | 0.0  | 2007 11 21 | G96 | 0.4- | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 12 | 691 | 0.3+ | 0.0  | 2006 07 21 | G96 | 0.1+ | 0.1- | 2007 11 21 | G96 | 0.4+ | 0.1+ |
| 2005 04 12 | 691 | 0.1+ | 0.2+ | 2006 07 21 | G96 | 0.2- | 0.0  | 2007 11 21 | G96 | 0.2+ | 0.2+ |
| 2005 04 12 | 691 | 0.3+ | 0.0  | 2007 11 04 | 691 | 0.3- | 0.4- | 2007 12 15 | A77 | 0.0  | 1.5+ |
| 2005 04 14 | 691 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.2- | 0.1+ | 2007 12 15 | A77 | 0.5+ | 1.1+ |
| 2005 04 14 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.2- | 0.2+ | 2007 12 15 | A77 | 0.5- | 0.1- |
| 2005 04 14 | 691 | 0.0  | 0.1+ | 2007 11 08 | 691 | 0.1- | 0.1+ |            |     |      |      |
| 2005 04 19 | 705 | 0.7+ | 0.1- | 2007 11 08 | 691 | 0.2- | 0.4+ |            |     |      |      |

(172921)\* 2005 GX<sub>138</sub> = 2001 TW<sub>140</sub>

Discovered 2005 Apr. 12 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 77146)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 112.85269  | (2000.0) | <i>P</i>  | <i>Q</i>    |             |
| <i>n</i> | 0.18272136 | $\omega$ | 255.31221 | +0.15188010 | +0.98478883 |
| <i>a</i> | 3.0756943  | $\Omega$ | 23.92201  | -0.80773554 | +0.17287893 |
| <i>e</i> | 0.1204798  | <i>i</i> | 12.01351  | -0.56964527 | +0.01743079 |
| <i>P</i> | 5.39       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |             |      |            |     |             |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|-------------|------|------------|-----|------|------|
| 1996 10 08 | 691 | 0.2-        | 0.7- | 2005 04 12 | 691 | 0.4+        | 0.6+ | 2006 08 25 | E12 | 0.2- | 0.4+ |
| 1996 10 08 | 691 | 0.2+        | 0.4- | 2005 04 12 | G96 | 0.2+        | 0.3+ | 2006 08 25 | E12 | 0.7- | 0.4- |
| 1996 10 08 | 691 | 0.1+        | 0.1- | 2005 04 12 | G96 | 0.0         | 0.2+ | 2007 10 07 | 691 | 0.2- | 0.6+ |
| 2001 09 12 | 704 | 0.4-        | 0.7+ | 2005 04 12 | G96 | 0.1-        | 0.4+ | 2007 10 07 | 691 | 0.5- | 0.2+ |
| 2001 09 12 | 704 | 0.6+        | 0.5- | 2005 04 12 | G96 | 0.1-        | 0.1- | 2007 10 07 | 691 | 0.1- | 0.4+ |
| 2001 09 12 | 704 | 0.3+        | 0.6+ | 2005 04 13 | 699 | 1.1+        | 0.3+ | 2007 10 16 | G96 | 0.6+ | 0.0  |
| 2001 09 12 | 704 | (0.5+ 1.6+) |      | 2005 04 13 | 699 | 0.6+        | 1.2+ | 2007 10 16 | G96 | 0.0  | 0.1- |
| 2001 10 10 | 644 | (0.0 1.6+)  |      | 2005 04 13 | 699 | 0.2+        | 0.6+ | 2007 10 16 | G96 | 0.2+ | 0.2- |
| 2001 10 10 | 644 | 0.0         | 1.5+ | 2005 04 13 | 699 | (3.5+ 2.2+) |      | 2007 10 16 | G96 | 0.3+ | 0.2- |
| 2001 10 10 | 644 | 0.2+        | 1.1+ | 2005 04 14 | 703 | 0.3-        | 0.5+ | 2007 11 02 | 691 | 0.2- | 0.1+ |
| 2001 10 11 | 704 | 0.2-        | 0.7+ | 2005 04 14 | 703 | 0.8-        | 0.5- | 2007 11 02 | 691 | 0.3- | 0.0  |
| 2001 10 11 | 704 | 0.3+        | 0.4+ | 2005 04 14 | 703 | 0.1+        | 0.3- | 2007 11 02 | 691 | 0.1- | 0.1- |
| 2001 10 11 | 704 | 0.0         | 0.7+ | 2005 04 14 | 703 | (2.3- 0.6+) |      | 2007 11 17 | 691 | 0.0  | 0.4+ |
| 2001 10 16 | 644 | 0.0         | 0.7+ | 2005 05 14 | 644 | 0.2+        | 0.7+ | 2007 11 17 | 691 | 0.2- | 0.2+ |
| 2001 10 16 | 644 | 0.5-        | 0.5+ | 2005 05 14 | 644 | 0.4+        | 0.2+ | 2007 11 17 | 691 | 0.3- | 0.2+ |
| 2001 10 16 | 644 | 0.1-        | 0.6+ | 2005 05 14 | 644 | 0.5+        | 0.6+ | 2007 11 17 | 704 | 0.6- | 0.6+ |
| 2005 03 10 | G96 | 0.1+        | 0.1- | 2006 08 14 | E12 | 0.4-        | 0.4- | 2007 11 17 | 704 | 1.1+ | 1.2+ |
| 2005 03 10 | G96 | 0.2-        | 0.1- | 2006 08 14 | E12 | 0.8+        | 0.6+ | 2007 11 17 | 704 | 0.2- | 1.1+ |
| 2005 03 10 | G96 | 0.2-        | 0.3+ | 2006 08 14 | E12 | 0.7-        | 0.2- | 2007 11 17 | 704 | 0.5- | 0.2+ |
| 2005 03 10 | G96 | 0.5-        | 0.5- | 2006 08 14 | E12 | 0.3-        | 0.4- | 2007 11 17 | 704 | 0.1- | 1.5+ |
| 2005 04 12 | 691 | 0.5+        | 0.7+ | 2006 08 25 | E12 | 1.2-        | 0.7- |            |     |      |      |
| 2005 04 12 | 691 | 0.5+        | 0.5+ | 2006 08 25 | E12 | 0.8+        | 0.7+ |            |     |      |      |

(172922)\* 2005 GL<sub>139</sub> = 2006 PP<sub>40</sub>

Discovered 2005 Apr. 12 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 109200)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 300.63354  | (2000.0) | <i>P</i> | <i>Q</i>    |             |
| <i>n</i> | 0.21667111 | $\omega$ | 45.08711 | -0.37979235 | -0.91785169 |
| <i>a</i> | 2.7453774  | $\Omega$ | 67.55105 | +0.80969497 | -0.39013437 |
| <i>e</i> | 0.0106155  | <i>i</i> | 7.16978  | +0.44738332 | -0.07309887 |
| <i>P</i> | 4.55       | <i>H</i> | 15.8     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 04 14 | 691 | 0.7- | 0.1- | 2006 07 18 | E12 | 1.0+ | 0.4+ | 2007 11 14 | 704 | 0.0  | 0.6+ |
| 1996 04 14 | 691 | 0.0  | 0.2+ | 2006 07 18 | E12 | 0.2- | 0.4+ | 2007 11 14 | 704 | 0.4- | 0.6+ |
| 1996 04 14 | 691 | 0.1- | 0.2+ | 2006 07 18 | E12 | 0.3+ | 1.0+ | 2007 11 19 | 691 | 0.3- | 0.2- |
| 2000 03 05 | 704 | 1.2+ | 0.4+ | 2006 08 14 | 644 | 0.1- | 0.8+ | 2007 11 19 | 691 | 0.1- | 0.1- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 09 | 691 | 0.3+  | 0.1+  | 2007 10 31 | 691 | 0.3− | 0.1+ | 2007 12 04 | G96 | 0.1− | 0.0  |
| 2005 04 12 | 691 | 0.1+  | 0.2+  | 2007 10 31 | 691 | 0.5− | 0.7+ | 2007 12 05 | H07 | 0.4+ | 1.3+ |
| 2005 04 12 | 691 | 0.0   | 0.3+  | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 12 05 | H07 | 0.0  | 1.0+ |
| 2005 04 12 | 691 | 0.1−  | 0.3+  | 2007 11 05 | 704 | 1.0+ | 0.1+ | 2007 12 05 | H07 | 0.5− | 0.9+ |
| 2005 04 14 | 691 | 0.4−  | 0.7+  | 2007 11 05 | 704 | 0.2− | 0.3+ | 2007 12 05 | 704 | 0.3− | 0.9+ |
| 2005 04 14 | 691 | 0.4+  | 0.3+  | 2007 11 05 | 704 | 0.7− | 0.5+ | 2007 12 05 | 704 | 0.3+ | 0.7+ |
| 2005 04 14 | 691 | 0.3+  | 0.5+  | 2007 11 05 | 704 | 0.2+ | 0.7+ | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2005 05 07 | 703 | 0.1+  | 0.3−  | 2007 11 05 | 704 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 0.8+ | 0.8+ |
| 2005 05 07 | 703 | 0.1+  | 0.7+  | 2007 11 08 | 691 | 0.3− | 0.1− | 2007 12 05 | 704 | 0.1− | 0.6+ |
| 2005 05 07 | 703 | (1.6− | 1.0−) | 2007 11 08 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2005 05 07 | 703 | (1.7− | 0.3−) | 2007 11 08 | 691 | 0.2− | 0.2− | 2007 12 15 | G96 | 0.1− | 0.0  |
| 2005 05 14 | 644 | 0.4+  | 0.1+  | 2007 11 14 | 704 | 0.7− | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2005 05 14 | 644 | 0.2+  | 0.2+  | 2007 11 14 | 704 | 0.6+ | 0.2+ | 2007 12 15 | G96 | 0.1− | 0.1− |
| 2005 05 14 | 644 | 0.2+  | 0.2+  | 2007 11 14 | 704 | 0.1+ | 0.5+ |            |     |      |      |

**(172923)\* 2005 GK<sub>140</sub>**

Discovered 2005 Apr. 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 227.08595  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.22760611 | $\omega$ | 137.83697 | −0.95499223 |      | +0.19348456 |   |
| <i>a</i>                                | 2.6567260  | $\Omega$ | 54.68991  | −0.28634548 |      | −0.79918678 |   |
| <i>e</i>                                | 0.1589509  | <i>i</i> | 15.99352  | +0.07743454 |      | −0.56909069 |   |
| <i>P</i>                                | 4.33       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1992 04 26 | 691 | 0.5+  | 0.1−  | 2005 04 30 | 644 | 0.2+ | 0.2+ | 2007 10 10 | 691 | 0.2− | 0.3+ |
| 1992 04 26 | 691 | 0.2+  | 0.5+  | 2005 04 30 | 599 | 0.3+ | 0.3+ | 2007 10 16 | 691 | 0.2− | 0.3− |
| 1992 04 26 | 691 | 0.4−  | 0.4+  | 2005 04 30 | 599 | 0.4+ | 0.1+ | 2007 10 16 | 691 | 0.4− | 0.3+ |
| 2000 02 02 | 704 | 0.8+  | 0.3+  | 2005 04 30 | 599 | 0.4+ | 0.4+ | 2007 10 16 | 691 | 0.1+ | 0.2+ |
| 2000 02 02 | 704 | 0.2+  | 0.1−  | 2005 04 30 | 599 | 0.3+ | 0.4+ | 2007 10 30 | 691 | 0.7− | 0.1+ |
| 2000 02 02 | 704 | 0.2−  | 0.3−  | 2005 05 03 | 704 | 0.1− | 0.5+ | 2007 10 30 | 691 | 0.3− | 0.4+ |
| 2000 02 02 | 704 | 1.8−  | 0.6+  | 2005 05 03 | 704 | 0.3+ | 0.5+ | 2007 10 30 | 691 | 0.6− | 0.1+ |
| 2000 02 02 | 704 | 0.7+  | 0.5+  | 2005 05 03 | 704 | 1.1+ | 0.7+ | 2007 11 03 | 691 | 0.3− | 0.3+ |
| 2000 04 05 | 645 | 0.0   | 0.3−  | 2005 05 03 | 704 | 0.7− | 0.6+ | 2007 11 03 | 691 | 0.3− | 0.4+ |
| 2000 04 05 | 645 | 0.0   | 0.3−  | 2005 05 03 | 704 | 0.7− | 0.4+ | 2007 11 03 | 691 | 0.3− | 0.2+ |
| 2003 12 17 | 704 | 0.5−  | 0.2+  | 2005 05 11 | 699 | 0.5+ | 0.5+ | 2007 11 05 | G96 | 0.1− | 0.0  |
| 2003 12 17 | 704 | 0.1−  | 0.5+  | 2005 05 11 | 699 | 0.2− | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2003 12 17 | 704 | 0.2+  | 0.2−  | 2005 05 11 | 699 | 0.5+ | 0.9+ | 2007 11 05 | G96 | 0.1+ | 0.1+ |
| 2003 12 17 | 704 | 0.0   | 0.2+  | 2005 05 11 | 699 | 0.8+ | 0.7+ | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2003 12 29 | 704 | 0.8+  | 0.6+  | 2005 05 12 | 704 | 0.1+ | 1.1+ | 2007 11 14 | 691 | 0.4− | 0.2+ |
| 2003 12 29 | 704 | 1.3+  | 0.3+  | 2005 05 12 | 704 | 0.8+ | 1.1+ | 2007 11 14 | 691 | 0.2− | 0.3+ |
| 2003 12 29 | 704 | 0.3+  | 0.4−  | 2005 05 12 | 704 | 0.6+ | 0.9+ | 2007 11 14 | 691 | 0.3− | 0.2+ |
| 2003 12 29 | 704 | 0.3+  | 1.5+  | 2005 05 12 | 704 | 0.7+ | 0.7+ | 2007 11 14 | 704 | 0.4+ | 1.2+ |
| 2005 03 31 | 691 | 0.3+  | 0.1+  | 2005 05 12 | 704 | 1.1+ | 0.4− | 2007 11 14 | 704 | 0.1− | 1.0+ |
| 2005 03 31 | 691 | 0.0   | 0.2+  | 2005 05 16 | 704 | 0.4− | 0.3− | 2007 11 14 | 704 | 0.1+ | 1.0+ |
| 2005 03 31 | 691 | 0.2+  | 0.1+  | 2005 05 16 | 704 | 0.1+ | 0.4− | 2007 11 14 | 704 | 0.4+ | 0.6+ |
| 2005 04 13 | 699 | 0.5−  | 0.1+  | 2005 05 16 | 704 | 1.2− | 0.2− | 2007 11 14 | 704 | 0.2+ | 1.1+ |
| 2005 04 13 | 699 | 0.2−  | 0.2+  | 2005 05 16 | 704 | 1.2+ | 1.3+ | 2007 11 17 | 703 | 0.1+ | 0.2+ |
| 2005 04 13 | 699 | 0.4−  | 0.0   | 2005 05 30 | 699 | 0.2+ | 0.8+ | 2007 11 17 | 703 | 0.5+ | 0.7+ |
| 2005 04 13 | 704 | 0.1−  | 0.1+  | 2005 05 30 | 699 | 0.5+ | 0.8+ | 2007 11 17 | 703 | 0.3− | 1.3+ |
| 2005 04 13 | 699 | 0.0   | 0.1−  | 2005 05 30 | 699 | 0.4+ | 0.7+ | 2007 11 17 | 703 | 0.5+ | 0.4− |
| 2005 04 13 | 704 | 1.2+  | 0.3+  | 2005 05 30 | 699 | 0.5+ | 1.1+ | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2005 04 13 | 704 | 0.4+  | 0.2−  | 2005 06 04 | 704 | 0.3+ | 0.1+ | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2005 04 13 | 704 | 0.3+  | 0.6−  | 2005 06 04 | 704 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2005 04 13 | 704 | 1.4+  | 0.8+  | 2005 06 04 | 704 | 0.6− | 0.5+ | 2007 12 05 | 691 | 0.3− | 0.5+ |
| 2005 04 14 | 691 | 0.2+  | 0.3+  | 2005 06 04 | 704 | 0.5− | 1.2− | 2007 12 05 | 691 | 0.2− | 0.5+ |
| 2005 04 14 | 691 | 0.2+  | 0.2+  | 2005 06 12 | G96 | 0.6− | 0.0  | 2007 12 05 | 691 | 0.2− | 0.0  |
| 2005 04 14 | 691 | 0.2+  | 0.3+  | 2005 06 12 | G96 | 0.4− | 0.1− | 2007 12 05 | 704 | 0.3+ | 0.8+ |
| 2005 04 18 | 691 | 0.2+  | 0.3+  | 2005 06 12 | G96 | 0.3− | 0.1+ | 2007 12 05 | 704 | 1.1+ | 0.0  |
| 2005 04 18 | 691 | 0.2+  | 0.2+  | 2005 06 12 | G96 | 0.1− | 0.4+ | 2007 12 05 | 704 | 0.9− | 0.0  |
| 2005 04 18 | 691 | 0.2+  | 0.3+  | 2007 10 10 | 691 | 0.2− | 0.1+ | 2007 12 05 | 704 | 0.1+ | 0.4− |
| 2005 04 19 | 704 | (2.0+ | 1.2−) | 2007 10 10 | G96 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.2− | 0.1− |
| 2005 04 19 | 704 | 0.1−  | 0.3+  | 2007 10 10 | G96 | 0.2+ | 0.2− | 2007 12 06 | 691 | 0.1− | 0.3+ |
| 2005 04 19 | 704 | 0.2+  | 0.1+  | 2007 10 10 | 691 | 0.4− | 0.4+ | 2007 12 06 | 691 | 0.1− | 0.5+ |
| 2005 04 30 | 644 | 0.0   | 0.1+  | 2007 10 10 | G96 | 0.3+ | 0.4− | 2007 12 06 | 691 | 0.1− | 0.4+ |
| 2005 04 30 | 644 | 0.2+  | 0.1+  | 2007 10 10 | G96 | 0.2+ | 0.1− |            |     |      |      |

**(172924)\* 2005 GE<sub>144</sub>**

Discovered 2005 Apr. 10 by Spacewatch at Kitt Peak.

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 104.27263  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.17897909 | $\omega$ | 196.98988 | +0.38182602 |      | +0.91635520 |   |
| <i>a</i>                                | 3.1184194  | $\Omega$ | 95.58948  | −0.83328362 |      | +0.39768134 |   |
| <i>e</i>                                | 0.1494264  | <i>i</i> | 6.94980   | −0.39980907 |      | +0.04628938 |   |
| <i>P</i>                                | 5.51       | <i>H</i> | 14.8      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 18 | 645 | 0.1−  | 0.0   | 2005 05 14 | 704 | 0.6− | 0.4+ | 2007 11 12 | 704 | 0.0  | 0.6+ |
| 2001 09 18 | 645 | 0.0   | 0.0   | 2005 05 14 | 704 | 0.3− | 1.5+ | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 2001 09 21 | 704 | (0.7+ | 2.0+) | 2005 05 15 | 644 | 0.2− | 0.2+ | 2007 11 13 | 691 | 0.4− | 0.1+ |
| 2001 09 21 | 704 | (0.4− | 2.0+) | 2005 05 15 | 644 | 0.5− | 0.1+ | 2007 11 13 | 691 | 0.3− | 0.2+ |
| 2001 09 21 | 704 | 0.1−  | 0.9+  | 2005 05 15 | 644 | 0.3− | 0.2+ | 2007 11 20 | 703 | 0.0  | 0.0  |
| 2001 09 21 | 704 | 0.7+  | 0.2+  | 2006 07 29 | D35 | 0.6− | 0.5+ | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2001 10 10 | 644 | 0.5−  | 0.5+  | 2006 07 29 | D35 | 0.5− | 0.7+ | 2007 11 20 | 703 | 0.4− | 1.0+ |
| 2001 10 10 | 644 | 0.5−  | 1.1+  | 2006 07 29 | D35 | 0.5− | 0.9+ | 2007 11 20 | 703 | 0.8+ | 0.7− |
| 2001 10 10 | 644 | 0.4−  | 0.9+  | 2006 08 16 | E12 | 0.2− | 0.3+ | 2007 11 20 | 691 | 0.3− | 0.0  |
| 2005 02 09 | 691 | 0.2+  | 0.8+  | 2006 08 16 | E12 | 0.1− | 0.8+ | 2007 11 20 | 703 | 0.2− | 0.3+ |
| 2005 02 09 | 691 | 0.5+  | 0.7+  | 2006 08 16 | E12 | 0.1− | 0.8+ | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2005 02 09 | 691 | 0.2+  | 0.6+  | 2006 08 16 | E12 | 0.0  | 0.1+ | 2007 12 04 | 704 | 0.6+ | 0.1+ |
| 2005 04 10 | 691 | 0.1+  | 0.3+  | 2007 11 04 | 704 | 0.2+ | 0.6+ | 2007 12 04 | 704 | 0.1+ | 0.1+ |
| 2005 04 10 | 691 | 0.1−  | 0.2+  | 2007 11 04 | 704 | 0.5− | 0.1+ | 2007 12 04 | 704 | 0.1+ | 1.2+ |
| 2005 04 10 | 691 | 0.2+  | 0.3+  | 2007 11 04 | 704 | 0.1+ | 0.5+ | 2007 12 04 | 704 | 0.6+ | 1.4+ |
| 2005 04 15 | 691 | 0.2+  | 0.2+  | 2007 11 04 | 704 | 0.6+ | 0.4− | 2007 12 04 | 704 | 0.7+ | 1.8+ |
| 2005 04 15 | 691 | 0.2+  | 0.3+  | 2007 11 09 | 691 | 0.2− | 0.3+ | 2007 12 05 | 704 | 1.2− | 1.4+ |
| 2005 04 15 | 691 | 0.6+  | 0.0   | 2007 11 09 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.8+ | 0.1+ |
| 2005 05 03 | 704 | 0.2−  | 1.1+  | 2007 11 09 | 691 | 0.2− | 0.2+ | 2007 12 05 | 704 | 0.0  | 0.6+ |
| 2005 05 03 | 704 | 0.8+  | 0.7+  | 2007 11 12 | 704 | 0.7+ | 0.8− | 2007 12 05 | 704 | 0.2+ | 0.6+ |
| 2005 05 03 | 704 | 0.1−  | 1.2+  | 2007 11 12 | 704 | 0.6+ | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2005 05 14 | 704 | 0.3+  | 0.5+  | 2007 11 12 | 704 | 0.2+ | 0.7+ |            |     |      |      |
| 2005 05 14 | 704 | 1.0+  | 0.6+  | 2007 11 12 | 704 | 0.0  | 0.3+ |            |     |      |      |

**(172925)\* 2005 GY<sub>155</sub> = 2007 TM<sub>64</sub>**

Discovered 2005 Apr. 10 by the Mt. Lemmon Survey at Mount Lemmon.

|                                         |            |      |      |            |           |             |      |             |     |       |       |
|-----------------------------------------|------------|------|------|------------|-----------|-------------|------|-------------|-----|-------|-------|
| Id. A. Doppler ( <i>MPO</i> 128212)     |            |      |      |            |           |             |      |             |     |       |       |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |            |           |             |      |             |     |       |       |
|                                         |            |      |      | MPC        |           |             |      |             |     |       |       |
| <i>M</i>                                | 14.92304   |      |      | (2000.0)   |           | <b>P</b>    |      | <b>Q</b>    |     |       |       |
| <i>n</i>                                | 0.20102400 |      |      | $\omega$   | 311.21554 | +0.90342877 |      | −0.42540188 |     |       |       |
| <i>a</i>                                | 2.8860517  |      |      | $\Omega$   | 74.02245  | +0.40810346 |      | +0.81509325 |     |       |       |
| <i>e</i>                                | 0.0760881  |      |      | <i>i</i>   | 3.18314   | +0.13140785 |      | +0.39326357 |     |       |       |
| <i>P</i>                                | 4.90       |      |      | <i>H</i>   | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1   |       |       |
| Residuals in seconds of arc             |            |      |      |            |           |             |      |             |     |       |       |
| 2000 04 12                              | 691        | 0.1− | 0.5+ | 2007 10 08 | 691       | 0.3−        | 0.1− | 2007 11 05  | 704 | 0.2+  | 1.0+  |
| 2000 04 12                              | 691        | 0.1− | 0.5+ | 2007 10 08 | 691       | 0.4−        | 0.0  | 2007 11 05  | 704 | 1.0−  | 0.9−  |
| 2000 04 12                              | 691        | 0.2− | 0.0  | 2007 10 08 | 691       | 0.4−        | 0.1+ | 2007 11 05  | G96 | 0.5+  | 0.6−  |
| 2000 04 27                              | 691        | 0.1+ | 0.1+ | 2007 10 08 | 691       | 0.1−        | 0.2+ | 2007 11 05  | G96 | 0.4+  | 0.1−  |
| 2000 04 27                              | 691        | 0.3+ | 0.3− | 2007 10 08 | 691       | 0.4−        | 0.1+ | 2007 11 05  | G96 | 0.7+  | 0.2−  |
| 2000 04 27                              | 691        | 0.3+ | 0.2− | 2007 10 08 | 691       | 0.3−        | 0.0  | 2007 11 05  | 704 | 0.0   | 0.6+  |
| 2004 02 11                              | 691        | 0.1− | 0.2− | 2007 10 16 | 691       | 0.1−        | 0.1+ | 2007 11 05  | G96 | 0.1+  | 0.5−  |
| 2004 02 11                              | 691        | 0.2+ | 0.0  | 2007 10 16 | 691       | 0.1−        | 0.0  | 2007 11 05  | 704 | 0.7−  | 0.7+  |
| 2004 02 11                              | 691        | 0.0  | 0.0  | 2007 10 16 | 691       | 0.3−        | 0.0  | 2007 11 07  | 703 | 0.4−  | 0.5−  |
| 2004 02 26                              | 695        | 0.4− | 0.2− | 2007 10 20 | 691       | 0.2−        | 0.0  | 2007 11 07  | 703 | (1.4− | 2.3−) |
| 2004 02 26                              | 695        | 0.3− | 0.2− | 2007 10 20 | 703       | 0.2+        | 0.5− | 2007 11 07  | 703 | (1.0− | 1.8−) |
| 2005 03 13                              | G96        | 0.0  | 0.2− | 2007 10 20 | 691       | 0.2−        | 0.0  | 2007 11 07  | 703 | (1.0− | 1.5−) |
| 2005 03 13                              | G96        | 0.8− | 0.1− | 2007 10 20 | 703       | 1.4+        | 0.4+ | 2007 11 14  | 704 | 0.2+  | 0.5+  |
| 2005 03 13                              | G96        | 0.8− | 0.6− | 2007 10 20 | 703       | 1.1+        | 0.6− | 2007 11 14  | 704 | 0.1−  | 0.2−  |
| 2005 03 13                              | G96        | 0.4− | 0.0  | 2007 10 20 | 691       | 0.1−        | 0.1− | 2007 11 14  | 704 | 0.3+  | 0.1−  |
| 2005 04 10                              | G96        | 0.2+ | 0.3− | 2007 10 20 | 703       | 0.2−        | 0.0  | 2007 11 14  | 704 | 0.8+  | 0.1+  |
| 2005 04 10                              | G96        | 0.1− | 0.5+ | 2007 11 01 | 291       | 0.2+        | 0.1− | 2007 11 14  | 704 | 0.9+  | 0.0   |
| 2005 04 10                              | G96        | 0.3+ | 0.5− | 2007 11 01 | 291       | 0.1+        | 0.0  | 2007 12 05  | 704 | 1.9+  | 0.5+  |
| 2005 04 10                              | G96        | 0.1− | 0.4+ | 2007 11 01 | 291       | 0.0         | 0.1− | 2007 12 05  | 703 | 0.6+  | 1.9+  |
| 2005 04 16                              | 691        | 0.0  | 0.2+ | 2007 11 02 | H07       | 0.0         | 0.6+ | 2007 12 05  | 704 | 2.1+  | 0.4−  |

## 2007 DEC. 24

## M.P.O. 129517

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 16 | 691 | 0.5+ | 0.2+ | 2007 11 02 | H07 | 0.2+  | 0.7+  | 2007 12 05 | 703 | 0.4- | 1.1+ |
| 2005 04 16 | 691 | 0.0  | 0.2+ | 2007 11 02 | H07 | 0.2-  | 0.7+  | 2007 12 05 | 703 | 0.7+ | 0.6+ |
| 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 11 02 | 291 | 0.3-  | 0.1-  | 2007 12 05 | 703 | 0.7- | 0.9+ |
| 2007 10 07 | G96 | 0.1- | 0.2- | 2007 11 02 | 291 | 0.1-  | 0.2-  | 2007 12 05 | 704 | 1.1+ | 0.6+ |
| 2007 10 07 | G96 | 0.0  | 0.2- | 2007 11 02 | 291 | 0.1-  | 0.2-  | 2007 12 05 | 704 | 0.8+ | 0.6+ |
| 2007 10 07 | G96 | 0.5+ | 0.1- | 2007 11 05 | 704 | (0.5- | 1.6+) |            |     |      |      |

**(172926)\* 2005 GE<sub>156</sub>**

Discovered 2005 Apr. 10 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.27694  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23809975 | $\omega$ | 20.86527 | +0.09918270   | -0.99398001 |
| <i>a</i> | 2.5780822  | $\Omega$ | 63.46747 | +0.90542910   | +0.07074650 |
| <i>e</i> | 0.1308857  | <i>i</i> | 2.98217  | +0.41274802   | +0.08365803 |
| <i>P</i> | 4.14       | <i>H</i> | 16.6     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 13 | 644 | 0.5- | 0.9+ | 2007 09 10 | G96 | 0.5+  | 0.1-  | 2007 11 17 | 704 | 0.1+ | 1.1- |
| 2002 08 13 | 644 | 0.4- | 0.8+ | 2007 09 10 | G96 | 0.2+  | 0.2+  | 2007 11 17 | 704 | 0.0  | 0.5- |
| 2002 08 13 | 644 | 0.1+ | 1.0+ | 2007 09 10 | G96 | 0.0   | 0.3-  | 2007 11 17 | 704 | 0.4+ | 0.2- |
| 2003 12 18 | 704 | 0.4+ | 0.1+ | 2007 10 30 | 691 | 0.1-  | 0.0   | 2007 12 03 | 703 | 0.3- | 0.1+ |
| 2003 12 18 | 704 | 0.5+ | 0.3+ | 2007 10 30 | 691 | 0.2-  | 0.1+  | 2007 12 03 | 703 | 0.0  | 0.0  |
| 2003 12 18 | 704 | 0.1- | 0.3- | 2007 10 30 | 691 | 0.4-  | 0.3+  | 2007 12 03 | 703 | 0.2- | 0.1+ |
| 2003 12 24 | 704 | 0.5- | 1.0- | 2007 11 06 | D29 | 0.1+  | 0.6-  | 2007 12 03 | 703 | 0.8+ | 0.4+ |
| 2003 12 24 | 704 | 0.1+ | 0.7+ | 2007 11 06 | D29 | 0.5-  | 0.1-  | 2007 12 04 | 699 | 0.9+ | 0.8- |
| 2003 12 24 | 704 | 0.8+ | 0.9+ | 2007 11 06 | D29 | 0.4-  | 0.1-  | 2007 12 04 | 699 | 1.0- | 0.1- |
| 2004 01 13 | 691 | 0.1- | 0.1+ | 2007 11 06 | D29 | 0.3+  | 0.1-  | 2007 12 04 | 699 | 0.0  | 0.2- |
| 2004 01 13 | 691 | 0.2- | 0.0  | 2007 11 07 | 691 | 0.8+  | 0.0   | 2007 12 04 | 699 | 0.2+ | 0.6- |
| 2004 01 13 | 691 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.0   | 0.1-  | 2007 12 05 | 704 | 0.2+ | 0.0  |
| 2005 04 10 | G96 | 0.1- | 0.2+ | 2007 11 07 | 691 | 0.0   | 0.2+  | 2007 12 05 | 704 | 0.4+ | 0.4+ |
| 2005 04 10 | G96 | 0.3- | 0.6+ | 2007 11 14 | 691 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 0.5+ | 0.4+ |
| 2005 04 10 | G96 | 0.1+ | 0.5+ | 2007 11 14 | 691 | 0.1-  | 0.2+  | 2007 12 05 | 704 | 0.1- | 0.0  |
| 2005 04 10 | G96 | 0.5- | 0.5+ | 2007 11 14 | 691 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 0.5+ | 0.6- |
| 2005 04 16 | 691 | 0.3+ | 0.1- | 2007 11 15 | 704 | 1.2-  | 0.8-  | 2007 12 06 | G96 | 0.4- | 1.1+ |
| 2005 04 16 | 691 | 0.4+ | 0.3+ | 2007 11 15 | 704 | (1.6+ | 0.0 ) | 2007 12 06 | G96 | 1.2+ | 0.7+ |
| 2005 04 16 | 691 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 0.7-  | 0.6-  | 2007 12 06 | G96 | 0.5+ | 0.3- |
| 2005 05 01 | 644 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 1.1-  | 1.2-  | 2007 12 06 | G96 | 0.1+ | 0.3- |
| 2005 05 01 | 644 | 0.2+ | 0.2+ | 2007 11 16 | 704 | 0.4+  | 0.0   | 2007 12 14 | 704 | 0.2- | 0.8+ |
| 2005 05 01 | 644 | 0.1+ | 0.0  | 2007 11 16 | 704 | 0.3+  | 0.8-  | 2007 12 14 | 704 | 0.3- | 1.0+ |
| 2005 05 14 | G96 | 0.5- | 0.2- | 2007 11 16 | 704 | 0.3-  | 0.7+  | 2007 12 14 | 704 | 0.6+ | 1.0+ |
| 2005 05 14 | G96 | 0.6- | 0.1- | 2007 11 16 | 704 | 0.4+  | 0.2+  | 2007 12 14 | 704 | 0.3- | 1.5+ |
| 2005 05 14 | G96 | 0.5- | 0.3- | 2007 11 17 | 704 | 0.8+  | 0.7-  |            |     |      |      |
| 2005 05 14 | G96 | 0.2- | 0.1- | 2007 11 17 | 704 | 0.8-  | 0.5-  |            |     |      |      |

**(172927)\* 2005 GK<sub>157</sub>**

Discovered 2005 Apr. 11 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 79.61747   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21363844 | $\omega$ | 336.42418 | +0.90692234   | +0.42129398 |
| <i>a</i> | 2.7712973  | $\Omega$ | 358.65549 | -0.37327996   | +0.80156357 |
| <i>e</i> | 0.0767012  | <i>i</i> | 4.40648   | -0.19533033   | +0.42427258 |
| <i>P</i> | 4.61       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 02 | 691 | 0.4- | 0.6- | 2005 03 15 | G96 | 0.7-  | 0.1-  | 2006 08 14 | 644 | 0.1- | 0.5+ |
| 2000 04 02 | 691 | 0.2+ | 0.1- | 2005 03 15 | G96 | (1.7- | 0.4+) | 2006 08 14 | 644 | 0.2- | 0.4+ |
| 2000 04 02 | 691 | 0.0  | 0.1- | 2005 03 15 | G96 | 0.3-  | 0.0   | 2006 08 14 | 644 | 0.0  | 0.5+ |
| 2000 04 25 | 691 | 0.0  | 0.2- | 2005 03 15 | G96 | 1.1-  | 0.3+  | 2007 11 19 | G96 | 0.1- | 0.2- |
| 2000 04 25 | 691 | 0.4+ | 0.6- | 2005 04 11 | 691 | 0.3+  | 0.5+  | 2007 11 19 | G96 | 0.1- | 0.3- |
| 2000 04 25 | 691 | 0.2- | 0.5- | 2005 04 11 | 691 | 0.3+  | 0.5+  | 2007 11 19 | G96 | 0.0  | 0.2- |
| 2002 10 11 | 644 | 0.6- | 0.4+ | 2005 04 11 | 691 | 0.2+  | 0.5+  | 2007 11 19 | G96 | 0.1+ | 0.5- |
| 2002 10 11 | 644 | 0.7- | 0.3+ | 2005 04 16 | 691 | 0.1-  | 0.2+  | 2007 12 13 | 704 | 0.5- | 0.4+ |
| 2002 10 11 | 644 | 0.6- | 0.4+ | 2005 04 16 | 691 | 0.1+  | 0.2-  | 2007 12 13 | 704 | 0.8+ | 0.3+ |
| 2004 01 30 | 704 | 0.1+ | 0.3+ | 2005 04 16 | 691 | 0.2-  | 0.0   | 2007 12 13 | 704 | 1.3- | 0.3- |
| 2004 01 30 | 704 | 0.3+ | 0.1- | 2005 04 17 | 691 | 0.1+  | 0.1+  | 2007 12 13 | 704 | 0.6+ | 0.1- |
| 2004 01 30 | 704 | 0.4+ | 0.5+ | 2005 04 17 | 691 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 1.4+ | 0.8+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 30 | 704 | (2.2- | 0.1+) | 2005 04 17 | 691 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.4+ | 1.4+ |
| 2004 02 17 | 691 | 0.4-  | 0.2+  | 2005 05 01 | 644 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.6+ | 1.0+ |
| 2004 02 17 | 691 | 0.3-  | 0.3+  | 2005 05 01 | 644 | 0.2+ | 0.1+ | 2007 12 15 | 704 | 0.1+ | 0.3+ |
| 2004 02 17 | 691 | 0.3-  | 0.3+  | 2005 05 01 | 644 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.6+ | 0.4+ |

**(172928)\* 2005 GQ<sub>168</sub> = 1243 T-1 = 2007 VP<sub>220</sub>**

Discovered 2005 Apr. 12 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 128214)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 188.62048  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23301004 | $\omega$ | 46.96988  | -0.42212528   | +0.90648110 |
| <i>a</i> | 2.6154893  | $\Omega$ | 198.06890 | -0.84092444   | -0.39571496 |
| <i>e</i> | 0.1525108  | <i>i</i> | 1.86833   | -0.33860940   | -0.14731490 |
| <i>P</i> | 4.23       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1971 03 24 | 675 | 1.5+  | 1.2-  | 2005 04 12 | 704 | 0.7+  | 0.3+  | 2006 09 23 | 691 | 0.0  | 0.5+ |
| 1971 03 25 | 675 | 1.0-  | 0.4-  | 2005 04 12 | 704 | 0.4+  | 0.8+  | 2006 09 23 | 691 | 0.3- | 0.8+ |
| 1971 03 25 | 675 | 0.9-  | 0.1-  | 2005 04 12 | 704 | 0.6+  | 0.7-  | 2006 09 23 | 691 | 0.1+ | 0.7+ |
| 1971 03 26 | 675 | 0.6-  | 1.9-  | 2005 04 17 | 691 | 0.1+  | 0.5+  | 2006 10 19 | G96 | 0.6+ | 0.1- |
| 1971 03 27 | 675 | (1.2+ | 2.9-) | 2005 04 17 | 691 | 0.1+  | 0.5+  | 2006 10 19 | G96 | 0.1+ | 0.4+ |
| 1971 04 02 | 675 | 1.8-  | 0.6+  | 2005 04 17 | 691 | 0.2+  | 0.4+  | 2006 10 19 | G96 | 0.8+ | 0.1+ |
| 1992 03 03 | 809 | 1.4-  | 0.6-  | 2005 04 18 | 703 | (1.6- | 0.4-) | 2006 10 19 | G96 | 0.2- | 0.4+ |
| 1996 02 10 | 691 | 0.6+  | 0.1+  | 2005 04 18 | 703 | 0.6-  | 0.8-  | 2007 11 09 | 691 | 0.5- | 0.5+ |
| 1996 02 10 | 691 | 0.5+  | 0.4-  | 2005 04 18 | 703 | 0.1-  | 0.3-  | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 1996 02 10 | 691 | 1.1+  | 0.1-  | 2005 04 18 | 703 | 0.3-  | 0.7-  | 2007 11 09 | 691 | 0.2+ | 0.4- |
| 1998 10 19 | 691 | 0.1-  | 0.2+  | 2005 04 18 | 704 | 0.5+  | 0.6+  | 2007 11 13 | 691 | 0.2+ | 0.2+ |
| 1998 10 19 | 691 | 0.2-  | 0.1-  | 2005 04 18 | 704 | 0.4+  | 0.5+  | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 1998 10 19 | 691 | 0.1-  | 0.2-  | 2005 04 18 | 704 | 0.4-  | 0.1-  | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2005 04 02 | G96 | 0.5-  | 0.1+  | 2005 04 18 | 704 | 0.1-  | 0.7+  | 2007 12 04 | 691 | 0.4- | 0.1+ |
| 2005 04 02 | G96 | 0.5-  | 0.3-  | 2005 04 19 | 699 | 0.0   | 0.3-  | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2005 04 02 | G96 | 0.9-  | 0.2+  | 2005 04 19 | 699 | 0.6-  | 0.4+  | 2007 12 04 | 691 | 0.5- | 0.6+ |
| 2005 04 02 | G96 | 0.6-  | 0.1-  | 2005 04 19 | 699 | 1.2+  | 0.3-  | 2007 12 16 | 691 | 0.2- | 0.4+ |
| 2005 04 12 | 691 | 0.0   | 0.4+  | 2005 04 19 | 699 | 0.1-  | 0.1+  | 2007 12 16 | 691 | 0.3- | 0.5+ |
| 2005 04 12 | 691 | 0.1-  | 0.4+  | 2005 06 27 | 291 | 0.3+  | 0.3+  | 2007 12 16 | 691 | 0.1- | 0.3+ |
| 2005 04 12 | 704 | 0.3+  | 1.1+  | 2005 06 27 | 291 | 0.2+  | 0.7+  |            |     |      |      |
| 2005 04 12 | 691 | 0.0   | 0.6+  | 2005 06 27 | 291 | 0.3+  | 0.1+  |            |     |      |      |

**(172929)\* 2005 GM<sub>170</sub>**

Discovered 2005 Apr. 12 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 236.44587  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23493069 | $\omega$ | 317.60592 | -0.99642256   | +0.04704711 |
| <i>a</i> | 2.6012148  | $\Omega$ | 225.23807 | -0.02113955   | -0.94306013 |
| <i>e</i> | 0.1939980  | <i>i</i> | 5.67433   | -0.08182421   | -0.32927824 |
| <i>P</i> | 4.20       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.2+ | 0.0  | 2005 05 11 | G96 | 0.3- | 0.2+ | 2007 10 18 | 691 | 0.4- | 0.5+ |
| 2003 11 19 | 691 | 0.3- | 0.2+ | 2005 05 11 | G96 | 0.4- | 0.1+ | 2007 10 30 | G96 | 0.6+ | 0.2+ |
| 2003 11 19 | 691 | 0.3- | 0.1+ | 2005 05 11 | G96 | 0.3- | 0.3+ | 2007 10 30 | G96 | 0.7+ | 0.1+ |
| 2003 12 21 | 691 | 0.1+ | 0.2+ | 2005 05 13 | 704 | 0.7+ | 0.9+ | 2007 10 30 | G96 | 0.6+ | 0.5+ |
| 2003 12 21 | 691 | 0.2+ | 0.2+ | 2005 05 13 | 704 | 0.3+ | 0.9+ | 2007 10 30 | G96 | 0.6+ | 0.0  |
| 2003 12 21 | 691 | 0.0  | 0.1+ | 2005 05 13 | 704 | 0.4+ | 0.2- | 2007 11 04 | 691 | 0.1- | 0.2+ |
| 2005 04 12 | 704 | 0.2+ | 0.7+ | 2005 05 13 | 704 | 0.5+ | 0.4+ | 2007 11 04 | 691 | 0.1+ | 0.3+ |
| 2005 04 12 | 704 | 0.5+ | 1.1+ | 2006 08 29 | 691 | 0.0  | 0.2+ | 2007 11 04 | 691 | 0.3- | 0.3+ |
| 2005 04 12 | 704 | 0.8+ | 0.1- | 2006 08 29 | 691 | 0.1- | 0.2+ | 2007 11 17 | G96 | 0.7+ | 0.2+ |
| 2005 04 12 | 704 | 0.4+ | 0.4+ | 2006 08 29 | 691 | 0.0  | 0.2+ | 2007 11 17 | G96 | 0.3+ | 0.0  |
| 2005 04 18 | 703 | 0.7- | 0.5+ | 2007 10 10 | 691 | 0.5+ | 0.2- | 2007 11 17 | G96 | 0.4+ | 0.1+ |
| 2005 04 18 | 703 | 0.5- | 0.2+ | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 17 | G96 | 0.6+ | 0.4+ |
| 2005 04 18 | 703 | 0.2+ | 1.4+ | 2007 10 10 | 691 | 0.2- | 0.2- | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2005 04 18 | 703 | 0.9- | 0.1+ | 2007 10 14 | 691 | 0.3- | 0.1+ | 2007 12 06 | G96 | 0.9+ | 0.1- |
| 2005 04 19 | 608 | 0.3+ | 0.2- | 2007 10 14 | 691 | 0.6- | 0.0  | 2007 12 06 | G96 | 0.8+ | 0.5- |
| 2005 04 19 | 608 | 0.5+ | 0.5- | 2007 10 14 | 691 | 0.0  | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.7- |

2005 04 19 608 0.4+ 0.1- 2007 10 18 691 0.3- 0.3-  
 2005 05 11 G96 0.4- 0.3+ 2007 10 18 691 0.0 0.3+

**(172930)\* 2005 HZ<sub>3</sub>**

Discovered 2005 Apr. 18 by the Lincoln Laboratory Near-Earth Asteroid  
 Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 212.87989 |            |          | (2000.0)  |             |             | <b>P</b> |   |  | <b>Q</b> |  |  |
|--------------------|------------|----------|-----------|-------------|-------------|----------|---|--|----------|--|--|
| <i>n</i>           | 0.23190516 | $\omega$ | 152.32836 | -0.61037009 | +0.62802657 |          |   |  |          |  |  |
| <i>a</i>           | 2.6237902  | $\Omega$ | 75.58755  | -0.78710444 | -0.41242094 |          |   |  |          |  |  |
| <i>e</i>           | 0.1763571  | <i>i</i> | 29.89542  | -0.08896604 | -0.65991787 |          |   |  |          |  |  |
| <i>P</i>           | 4.25       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 2 |  |          |  |  |

Residuals in seconds of arc

|                |             |      |                |             |      |                |      |      |
|----------------|-------------|------|----------------|-------------|------|----------------|------|------|
| 2000 04 25 645 | 0.0         | 0.1- | 2005 05 06 704 | 0.0         | 0.3+ | 2005 06 11 691 | 0.2+ | 0.2+ |
| 2000 04 25 645 | 0.0         | 0.1- | 2005 05 06 704 | 0.1-        | 0.1+ | 2005 06 23 644 | 0.3+ | 0.0  |
| 2003 12 03 704 | 0.1+        | 0.1- | 2005 05 06 704 | 0.2-        | 0.1- | 2005 06 23 644 | 0.2+ | 0.4+ |
| 2003 12 03 704 | 0.3+        | 1.1+ | 2005 05 06 691 | 0.4-        | 0.1- | 2005 06 23 644 | 0.0  | 0.3+ |
| 2003 12 03 704 | 0.2-        | 1.1+ | 2005 05 06 691 | 0.0         | 0.1+ | 2007 11 05 691 | 0.3- | 0.2- |
| 2003 12 03 704 | 1.0-        | 0.0  | 2005 05 06 691 | 0.1+        | 0.1+ | 2007 11 05 691 | 0.3- | 0.2+ |
| 2003 12 03 704 | (0.3+ 1.9+) |      | 2005 05 10 691 | 0.1+        | 0.1+ | 2007 11 05 691 | 0.3- | 0.0  |
| 2003 12 29 704 | 0.2+        | 0.4- | 2005 05 10 691 | 0.1+        | 0.2+ | 2007 11 13 691 | 0.5- | 0.4+ |
| 2003 12 29 704 | 0.6+        | 0.2- | 2005 05 10 691 | 0.0         | 0.1+ | 2007 11 13 691 | 0.2- | 0.3+ |
| 2003 12 29 704 | 0.7+        | 0.5+ | 2005 05 14 691 | 0.1-        | 0.1+ | 2007 11 13 691 | 0.3- | 0.4+ |
| 2005 04 18 704 | 0.5-        | 0.8- | 2005 05 14 704 | 0.9+        | 0.0  | 2007 12 06 G96 | 0.1- | 0.1- |
| 2005 04 18 704 | 0.3+        | 0.3- | 2005 05 14 691 | 0.7+        | 0.3+ | 2007 12 06 G96 | 0.2- | 0.2+ |
| 2005 04 18 704 | 0.3-        | 0.6- | 2005 05 14 704 | 0.3-        | 0.9+ | 2007 12 06 G96 | 0.1+ | 0.1- |
| 2005 04 18 704 | 0.1+        | 0.4- | 2005 05 14 691 | 0.0         | 0.2+ | 2007 12 06 G96 | 0.2- | 0.1- |
| 2005 04 18 704 | (1.5- 0.5-) |      | 2005 05 14 704 | (1.6- 1.0+) |      | 2007 12 14 704 | 0.4+ | 0.3- |
| 2005 05 01 691 | 0.0         | 0.0  | 2005 05 28 599 | 0.2+        | 0.2+ | 2007 12 14 704 | 0.8+ | 1.3+ |
| 2005 05 01 691 | 0.0         | 0.0  | 2005 05 28 599 | 0.5+        | 0.2+ | 2007 12 14 704 | 0.4- | 0.5+ |
| 2005 05 01 691 | 0.1-        | 0.0  | 2005 05 28 599 | 0.6+        | 0.3+ | 2007 12 14 704 | 0.5+ | 1.2+ |
| 2005 05 04 703 | 0.6-        | 0.9- | 2005 06 02 703 | 0.8-        | 0.3- | 2007 12 16 704 | 0.4- | 0.1+ |
| 2005 05 04 703 | 0.7-        | 0.8- | 2005 06 02 703 | 0.5-        | 0.1+ | 2007 12 16 704 | 0.4- | 0.1+ |
| 2005 05 04 703 | 0.2-        | 0.4- | 2005 06 02 703 | 0.9-        | 0.2+ | 2007 12 16 704 | 0.8+ | 0.4+ |
| 2005 05 04 703 | 0.8-        | 0.2- | 2005 06 02 703 | 0.4+        | 0.3- | 2007 12 16 704 | 0.0  | 0.3+ |
| 2005 05 06 704 | 0.1+        | 0.6- | 2005 06 11 691 | 0.3+        | 0.2+ |                |      |      |
| 2005 05 06 704 | 0.4+        | 0.0  | 2005 06 11 691 | 0.8+        | 0.6+ |                |      |      |

**(172931)\* 2005 HA<sub>4</sub>**

Discovered 2005 Apr. 28 by J. Broughton at Reedy Creek.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 216.83775 |            |          | (2000.0)  |             |             | <b>P</b> |   |  | <b>Q</b> |  |  |
|--------------------|------------|----------|-----------|-------------|-------------|----------|---|--|----------|--|--|
| <i>n</i>           | 0.23234667 | $\omega$ | 282.44281 | -0.77130283 | +0.63490404 |          |   |  |          |  |  |
| <i>a</i>           | 2.6204653  | $\Omega$ | 296.98791 | -0.56278481 | -0.71305863 |          |   |  |          |  |  |
| <i>e</i>           | 0.1382470  | <i>i</i> | 2.86862   | -0.29726285 | -0.29739579 |          |   |  |          |  |  |
| <i>P</i>           | 4.24       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |          |  |  |

Residuals in seconds of arc

|                |             |      |                |             |      |                |             |      |
|----------------|-------------|------|----------------|-------------|------|----------------|-------------|------|
| 2000 02 03 704 | 0.4-        | 0.5- | 2005 05 08 E12 | 0.0         | 0.4- | 2006 09 19 699 | 1.1+        | 0.4+ |
| 2000 02 03 704 | 0.8+        | 0.3+ | 2005 05 08 E12 | 0.0         | 1.0+ | 2006 09 19 703 | 0.4-        | 0.2+ |
| 2000 02 03 704 | 0.2+        | 1.4+ | 2005 05 11 644 | 0.4+        | 0.4+ | 2006 09 19 699 | 0.3+        | 0.1+ |
| 2000 02 03 704 | 0.8+        | 0.1- | 2005 05 11 644 | 0.6+        | 0.3+ | 2006 09 25 699 | 0.2-        | 0.7- |
| 2000 02 03 704 | 0.2-        | 1.2+ | 2005 05 11 644 | 0.4+        | 0.1+ | 2006 09 25 699 | 1.2-        | 0.7- |
| 2002 10 05 644 | 0.1-        | 0.2+ | 2005 05 15 428 | 0.0         | 0.3+ | 2006 09 25 699 | 0.7+        | 0.9+ |
| 2002 10 05 644 | 0.5-        | 0.0  | 2005 05 15 428 | 0.6+        | 0.1+ | 2006 09 25 699 | (2.1- 0.4+) |      |
| 2002 10 05 704 | (3.0- 0.6+) |      | 2005 05 26 699 | 0.7+        | 0.5- | 2006 10 20 691 | 0.1+        | 0.3+ |
| 2002 10 05 704 | (1.8- 0.6-) |      | 2005 05 26 699 | 0.5+        | 0.1- | 2006 10 20 691 | 0.1-        | 0.3+ |
| 2002 10 05 704 | 1.0-        | 1.0+ | 2005 05 26 699 | 1.0-        | 0.3- | 2006 10 20 691 | 0.1-        | 0.5+ |
| 2002 10 05 704 | (2.2- 0.4-) |      | 2005 05 26 699 | 0.2+        | 0.7- | 2006 10 20 G96 | 0.1-        | 0.3- |
| 2002 10 05 644 | 0.5-        | 0.2+ | 2005 06 03 703 | 0.8-        | 0.8+ | 2006 10 20 G96 | 0.1+        | 0.2- |
| 2005 04 28 428 | 0.8-        | 0.4+ | 2005 06 03 703 | 1.4-        | 0.0  | 2006 10 20 G96 | 0.1+        | 0.3- |
| 2005 04 28 428 | 0.1-        | 0.4+ | 2005 06 03 703 | 1.1-        | 0.4+ | 2006 10 20 G96 | 0.4-        | 0.1+ |
| 2005 04 28 428 | 0.6+        | 1.3+ | 2005 06 03 703 | (1.7- 0.3-) |      | 2007 11 05 691 | 0.2+        | 0.0  |
| 2005 04 28 E12 | 0.1-        | 0.3+ | 2005 06 14 699 | 0.5+        | 0.1+ | 2007 11 05 691 | 0.4-        | 0.1+ |

|            |     |      |      |            |     |             |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------------|-----|------|------|
| 2005 04 28 | E12 | 0.3+ | 0.5+ | 2005 06 14 | 699 | (1.6- 1.4-) | 2007 11 05 | 691 | 0.1+ | 0.1+ |
| 2005 04 28 | E12 | 0.1- | 0.2+ | 2005 06 14 | 699 | 1.5+ 1.3+   | 2007 11 09 | 691 | 0.1- | 0.1- |
| 2005 04 28 | E12 | 0.2- | 0.4+ | 2005 06 14 | 699 | 0.3- 0.2+   | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 2005 04 30 | 428 | 0.4- | 0.2- | 2005 07 04 | 644 | 0.1+ 0.2-   | 2007 11 09 | 691 | 0.0  | 0.2- |
| 2005 04 30 | 428 | 0.3+ | 0.5+ | 2005 07 04 | 644 | 0.2+ 0.3+   | 2007 12 10 | 704 | 0.7- | 0.2+ |
| 2005 04 30 | 428 | 0.5+ | 0.0  | 2005 07 04 | 644 | 0.5+ 0.5+   | 2007 12 10 | 704 | 1.2- | 0.4- |
| 2005 05 02 | 428 | 0.1- | 1.0+ | 2006 08 06 | D35 | 0.1+ 0.3+   | 2007 12 10 | 704 | 0.2- | 0.4+ |
| 2005 05 02 | 428 | 0.2+ | 0.0  | 2006 08 06 | D35 | 0.3- 0.3+   | 2007 12 14 | 704 | 0.1+ | 1.7+ |
| 2005 05 02 | 428 | 0.4+ | 0.1+ | 2006 08 06 | D35 | 0.1+ 0.1+   | 2007 12 14 | 704 | 0.4+ | 0.9+ |
| 2005 05 04 | 644 | 0.1+ | 0.3+ | 2006 09 19 | 699 | 0.5- 0.6-   | 2007 12 14 | 704 | 0.2+ | 0.7+ |
| 2005 05 04 | 644 | 0.1+ | 0.4+ | 2006 09 19 | 703 | 1.3- 0.4-   | 2007 12 14 | 704 | 0.4+ | 0.8+ |
| 2005 05 04 | 644 | 0.2+ | 0.2+ | 2006 09 19 | 699 | 0.0 1.2+    | 2007 12 14 | 704 | 0.9+ | 0.8+ |
| 2005 05 08 | E12 | 0.0  | 0.1- | 2006 09 19 | 703 | 0.6+ 1.1+   |            |     |      |      |
| 2005 05 08 | E12 | 0.6- | 0.0  | 2006 09 19 | 703 | 1.0+ 0.6-   |            |     |      |      |

**(172932)\* 2005 JC = 1999 XD<sub>263</sub>**

Discovered 2005 May 1 at Altschwendt.

Id. G. V. Williams (*MPO* 77181)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 291.58426 |            |          | (2000.0)  |             |             | <b>P</b> |   |  | <b>Q</b> |  |  |
|--------------------|------------|----------|-----------|-------------|-------------|----------|---|--|----------|--|--|
| <i>n</i>           | 0.24377676 | $\omega$ | 42.19605  | -0.84683570 | -0.50897634 |          |   |  |          |  |  |
| <i>a</i>           | 2.5379001  | $\Omega$ | 106.58964 | +0.43475308 | -0.82958050 |          |   |  |          |  |  |
| <i>e</i>           | 0.1241222  | <i>i</i> | 9.26581   | +0.30636425 | -0.22965035 |          |   |  |          |  |  |
| <i>P</i>           | 4.04       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 0 |  |          |  |  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1999 12 08 704 | 0.0  | 0.2- | 2005 05 03 A44 | 0.1- | 0.8+ | 2005 06 17 691 | 0.2- | 0.1+ |
| 1999 12 08 704 | 1.0+ | 0.0  | 2005 05 03 A44 | 0.2- | 0.5- | 2005 06 17 691 | 0.5+ | 0.2+ |
| 1999 12 08 704 | 0.2+ | 0.1- | 2005 05 03 691 | 0.1+ | 0.1+ | 2005 06 17 691 | 0.2+ | 0.1+ |
| 1999 12 16 704 | 0.3- | 0.5- | 2005 05 03 691 | 0.1+ | 0.1+ | 2006 09 24 A44 | 0.4- | 1.0+ |
| 1999 12 16 704 | 0.1+ | 0.4- | 2005 05 03 691 | 0.1+ | 0.1+ | 2006 09 24 A44 | 0.4- | 0.0  |
| 1999 12 16 704 | 0.4- | 1.0- | 2005 05 09 691 | 0.2+ | 0.2+ | 2006 09 24 A44 | 0.9+ | 0.3+ |
| 1999 12 16 704 | 0.3- | 0.2- | 2005 05 09 691 | 0.1+ | 0.4+ | 2007 10 07 A44 | 0.5- | 0.2+ |
| 2001 05 24 691 | 0.1- | 0.2+ | 2005 05 09 691 | 0.0  | 0.1+ | 2007 10 07 A44 | 0.1- | 0.2+ |
| 2001 05 24 691 | 0.3- | 0.3+ | 2005 05 09 A44 | 0.1+ | 0.0  | 2007 10 07 A44 | 0.2- | 0.9+ |
| 2001 05 24 691 | 0.3- | 0.0  | 2005 05 09 A44 | 0.2+ | 0.0  | 2007 10 08 A44 | 0.1- | 0.3+ |
| 2003 12 19 704 | 1.3+ | 0.8- | 2005 05 09 A44 | 0.0  | 0.0  | 2007 10 08 A44 | 0.7- | 0.5+ |
| 2003 12 19 704 | 0.3+ | 0.0  | 2005 05 11 A44 | 0.5+ | 0.3- | 2007 10 08 A44 | 0.2- | 0.5+ |
| 2003 12 19 704 | 0.7+ | 0.3+ | 2005 05 11 A44 | 0.0  | 0.1+ | 2007 10 10 A44 | 0.3- | 0.7- |
| 2003 12 19 704 | 0.7+ | 0.4+ | 2005 05 20 G96 | 0.3- | 0.1- | 2007 10 10 A44 | 0.8- | 0.1+ |
| 2003 12 29 704 | 0.3- | 0.5+ | 2005 05 20 G96 | 0.3- | 0.7- | 2007 10 10 A44 | 0.7- | 0.0  |
| 2003 12 29 704 | 0.2+ | 0.6+ | 2005 05 20 G96 | 0.4- | 0.1- | 2007 12 04 704 | 0.2- | 0.6+ |
| 2003 12 29 704 | 0.3+ | 0.6+ | 2005 05 20 G96 | 0.8- | 0.3- | 2007 12 04 704 | 0.6- | 0.3+ |
| 2003 12 29 704 | 0.3- | 0.8+ | 2005 05 27 A44 | 1.1- | 0.4- | 2007 12 04 704 | 0.0  | 0.8+ |
| 2003 12 29 704 | 0.8- | 0.9+ | 2005 05 27 A44 | 0.2- | 0.3- | 2007 12 05 G96 | 0.1+ | 0.1+ |
| 2005 05 01 A44 | 0.3- | 0.0  | 2005 05 27 A44 | 0.5- | 0.1+ | 2007 12 05 G96 | 0.1- | 0.2+ |
| 2005 05 01 A44 | 0.7- | 0.6+ | 2005 06 05 691 | 0.2+ | 0.1- | 2007 12 05 G96 | 0.3- | 0.0  |
| 2005 05 02 A44 | 0.1- | 0.1- | 2005 06 05 691 | 0.4+ | 0.2- | 2007 12 05 G96 | 0.1+ | 0.1+ |
| 2005 05 02 A44 | 0.4+ | 0.2+ | 2005 06 05 691 | 0.3+ | 0.1- |                |      |      |

**(172933)\* 2005 JH**

Discovered 2005 May 2 by J. Broughton at Reedy Creek.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 235.42154 |            |          | (2000.0)  |             |             | <b>P</b> |   |  | <b>Q</b> |  |  |
|--------------------|------------|----------|-----------|-------------|-------------|----------|---|--|----------|--|--|
| <i>n</i>           | 0.22900466 | $\omega$ | 319.25591 | -0.89193123 | +0.35219393 |          |   |  |          |  |  |
| <i>a</i>           | 2.6458984  | $\Omega$ | 243.52000 | -0.28668450 | -0.92545524 |          |   |  |          |  |  |
| <i>e</i>           | 0.1298806  | <i>i</i> | 18.47062  | -0.34967223 | -0.13961385 |          |   |  |          |  |  |
| <i>P</i>           | 4.30       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |          |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 09 | 704 | 1.4+ | 0.9+ | 2005 05 04 | 704 | 0.7+ | 0.8+ | 2005 06 23 | 644 | 0.2− | 0.1+ |
| 2000 03 09 | 704 | 0.4+ | 0.1− | 2005 05 11 | 644 | 0.0  | 0.2+ | 2005 06 27 | 644 | 0.0  | 0.1+ |
| 2000 03 09 | 704 | 0.1+ | 0.3− | 2005 05 11 | 644 | 0.0  | 0.2+ | 2005 06 27 | 644 | 0.1+ | 0.1+ |
| 2000 03 09 | 704 | 1.1+ | 0.4+ | 2005 05 11 | 644 | 0.1− | 0.1+ | 2005 06 27 | 644 | 0.0  | 0.1+ |
| 2000 03 09 | 704 | 0.4− | 0.3− | 2005 05 27 | 428 | 0.8+ | 1.0− | 2005 06 27 | 644 | 0.1− | 0.2+ |

2007 DEC. 24

M.P.O. 129519

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 09 | 608 | 0.2−  | 0.6−  | 2005 05 27 | 428 | 0.6−  | 0.0   | 2005 06 27 | 644 | 0.0  | 0.2+ |
| 2000 03 09 | 608 | 0.5−  | 0.4−  | 2005 05 27 | 428 | 0.6+  | 0.5+  | 2005 06 27 | 644 | 0.1+ | 0.2+ |
| 2000 03 09 | 608 | 0.5−  | 0.6−  | 2005 05 27 | 599 | 0.1−  | 0.0   | 2006 09 16 | 703 | 0.5+ | 0.1− |
| 2002 09 20 | 644 | 0.5−  | 0.3+  | 2005 05 27 | 599 | 0.1+  | 0.3−  | 2006 09 16 | 703 | 0.4− | 0.3− |
| 2002 09 20 | 644 | 0.6−  | 0.0   | 2005 05 27 | 599 | 0.1+  | 0.3−  | 2006 09 16 | 703 | 1.1+ | 0.2+ |
| 2002 09 20 | 644 | 0.4−  | 0.1−  | 2005 06 03 | 703 | 0.2−  | 0.1−  | 2006 09 16 | 703 | 1.1+ | 1.5+ |
| 2002 09 22 | 644 | 0.3−  | 0.1+  | 2005 06 03 | 703 | 0.4−  | 0.2−  | 2006 09 20 | 291 | 0.2+ | 0.0  |
| 2002 09 22 | 644 | 0.3−  | 0.6−  | 2005 06 03 | 703 | (1.7− | 2.2+) | 2006 09 20 | 291 | 0.1+ | 0.0  |
| 2002 09 22 | 644 | 0.3−  | 0.2−  | 2005 06 03 | 703 | 0.0   | 1.3+  | 2006 09 20 | 291 | 0.2+ | 0.0  |
| 2002 09 27 | 644 | 0.9−  | 0.3+  | 2005 06 04 | 704 | 0.1−  | 0.0   | 2007 11 02 | 691 | 0.2− | 0.2+ |
| 2002 09 28 | 644 | 0.9−  | 0.1−  | 2005 06 04 | 704 | 0.5−  | 0.3+  | 2007 11 02 | 691 | 0.1− | 0.3+ |
| 2002 11 12 | 644 | 0.2+  | 0.2+  | 2005 06 04 | 704 | 0.2−  | 0.4−  | 2007 11 02 | 691 | 0.0  | 0.4+ |
| 2005 05 02 | 428 | 0.1+  | 0.8+  | 2005 06 04 | 704 | 1.0−  | 0.3+  | 2007 11 14 | 704 | 0.0  | 1.0+ |
| 2005 05 02 | 428 | 0.7−  | 0.9+  | 2005 06 04 | 704 | 0.1+  | 0.1−  | 2007 11 14 | 704 | 0.2− | 0.9+ |
| 2005 05 03 | 428 | 0.5+  | 0.4−  | 2005 06 06 | 691 | 0.2−  | 0.2+  | 2007 11 14 | 704 | 0.9+ | 0.2+ |
| 2005 05 03 | 428 | 0.4−  | 0.2−  | 2005 06 06 | 691 | 0.2−  | 0.3+  | 2007 11 14 | 704 | 0.1+ | 0.0  |
| 2005 05 03 | 428 | 0.3−  | 0.0   | 2005 06 06 | 691 | 0.1−  | 0.3+  | 2007 11 14 | 704 | 0.2− | 0.0  |
| 2005 05 03 | 428 | 0.0   | 0.3+  | 2005 06 10 | 691 | 0.1−  | 0.2−  | 2007 12 04 | 704 | 0.6+ | 0.8+ |
| 2005 05 04 | 704 | 1.1+  | 0.2+  | 2005 06 10 | 691 | 0.0   | 0.0   | 2007 12 04 | 704 | 0.7− | 0.6+ |
| 2005 05 04 | 704 | 0.4+  | 0.6+  | 2005 06 10 | 691 | 0.2−  | 0.3−  | 2007 12 04 | 704 | 0.3+ | 0.2− |
| 2005 05 04 | 704 | (2.3+ | 0.2+) | 2005 06 23 | 644 | 0.1−  | 0.2+  | 2007 12 04 | 704 | 0.7+ | 0.7+ |
| 2005 05 04 | 704 | 1.2+  | 0.7+  | 2005 06 23 | 644 | 0.1−  | 0.0   | 2007 12 04 | 704 | 0.2+ | 0.2+ |

(172934)\* 2005 JX = 2004 BA<sub>134</sub>

Discovered 2005 May 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (MPO 77183)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 185.88817  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21232655 | $\omega$ | 85.78433  | −0.57756304 | +0.81430145 |
| $a$ | 2.7827008  | $\Omega$ | 148.71066 | −0.78614680 | −0.53574347 |
| $e$ | 0.0444159  | $i$      | 6.38324   | −0.21998669 | −0.22336535 |
| $P$ | 4.64       | $H$      | 15.5      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 29 | 704 | 0.2−  | 0.4+  | 2005 05 03 | 704 | 0.5+  | 0.6−  | 2006 07 18 | G96 | 0.0   | 0.3+  |
| 2000 03 29 | 704 | 0.3−  | 0.4+  | 2005 05 03 | 704 | (2.6+ | 0.5−) | 2006 08 16 | A50 | 0.7+  | 0.0   |
| 2000 03 29 | 704 | (2.2− | 0.0 ) | 2005 05 03 | 704 | 1.0+  | 0.4+  | 2006 08 16 | A50 | 0.4+  | 0.3+  |
| 2000 03 29 | 704 | 0.5+  | 1.7+  | 2005 05 04 | 691 | 0.3−  | 0.3+  | 2006 08 17 | A50 | 0.1+  | 0.2+  |
| 2000 03 29 | 704 | 0.1−  | 0.2−  | 2005 05 04 | 691 | 0.1−  | 0.0   | 2006 08 17 | A50 | 0.7+  | 0.4+  |
| 2001 06 15 | 691 | 0.0   | 0.3+  | 2005 05 04 | 691 | 0.2−  | 0.1+  | 2006 08 18 | 644 | 0.2−  | 0.5+  |
| 2001 06 15 | 691 | 0.2−  | 0.4+  | 2005 05 08 | 704 | 0.6−  | 0.0   | 2006 08 18 | 644 | 0.1+  | 0.7+  |
| 2001 06 15 | 691 | 0.3−  | 0.3+  | 2005 05 08 | 704 | 0.1+  | 0.1+  | 2006 08 18 | 644 | 0.3−  | 0.9+  |
| 2002 10 31 | 704 | 0.2+  | 0.3+  | 2005 05 08 | 704 | 0.2−  | 0.7+  | 2006 08 28 | 699 | 1.4−  | 0.2−  |
| 2002 10 31 | 704 | 0.2+  | 1.2+  | 2005 05 10 | 691 | 0.1−  | 0.1+  | 2006 08 28 | 699 | (0.5− | 2.1+) |
| 2002 10 31 | 704 | 0.9−  | 1.0+  | 2005 05 10 | 691 | 0.1+  | 0.1−  | 2006 08 28 | 699 | 1.0+  | 0.5+  |
| 2002 10 31 | 704 | 0.3+  | 0.2+  | 2005 05 10 | 691 | 0.2+  | 0.1−  | 2006 08 28 | 699 | (0.4+ | 1.9+) |
| 2003 12 29 | 691 | 0.0   | 0.2+  | 2005 05 11 | 699 | 0.6−  | 0.9−  | 2007 11 18 | 703 | 0.1−  | 0.3+  |
| 2003 12 29 | 691 | 0.2+  | 0.2+  | 2005 05 11 | 699 | 0.3+  | 1.0−  | 2007 11 18 | 703 | 0.6+  | 0.8+  |
| 2003 12 29 | 691 | 0.0   | 0.1−  | 2005 05 11 | 699 | 0.5−  | 0.7−  | 2007 11 18 | 703 | 0.2−  | 0.9−  |
| 2004 01 18 | 691 | 0.1+  | 0.5+  | 2005 05 11 | 699 | 0.6+  | 0.3−  | 2007 11 18 | 703 | 0.4+  | 0.2+  |
| 2004 01 18 | 691 | 0.0   | 0.2+  | 2005 05 14 | 691 | 0.1+  | 0.1+  | 2007 11 29 | 704 | 1.1−  | 0.1+  |
| 2004 01 18 | 691 | 0.0   | 0.2+  | 2005 05 14 | 691 | 0.2−  | 0.2+  | 2007 11 29 | 704 | 1.2−  | 0.7+  |
| 2004 01 28 | 691 | 0.1+  | 0.2+  | 2005 05 14 | 691 | 0.1−  | 0.2+  | 2007 11 29 | 704 | 0.5−  | 0.2+  |
| 2004 01 28 | 691 | 0.1+  | 0.2+  | 2005 05 31 | 699 | 0.7+  | 0.4+  | 2007 12 03 | 704 | 0.1−  | 0.1−  |
| 2004 01 28 | 691 | 0.1+  | 0.1+  | 2005 05 31 | 699 | 0.2+  | 0.3+  | 2007 12 03 | 704 | 0.8−  | 0.3−  |
| 2004 02 16 | 704 | 0.9+  | 1.5−  | 2005 05 31 | 699 | 0.4−  | 1.3+  | 2007 12 03 | 704 | 0.3−  | 0.2−  |
| 2004 02 16 | 704 | 0.5+  | 0.1−  | 2005 05 31 | 699 | 0.4+  | 0.3+  | 2007 12 03 | 704 | 0.3−  | 0.5+  |
| 2004 02 16 | 704 | 1.2+  | 0.6+  | 2006 07 18 | G96 | 0.0   | 0.3+  | 2007 12 03 | 704 | 0.3−  | 0.1−  |
| 2004 02 16 | 704 | 0.7−  | 0.2+  | 2006 07 18 | G96 | 0.1+  | 0.5+  |            |     |       |       |
| 2005 05 03 | 704 | 1.3+  | 0.1−  | 2006 07 18 | G96 | 0.2−  | 0.2−  |            |     |       |       |

(172935)\* 2005 JF<sub>4</sub>

Discovered 2005 May 3 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 222.84958  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22684830 | $\omega$ | 345.30969 | −0.82504370 | +0.54609389 |
| $a$ | 2.6626395  | $\Omega$ | 228.73160 | −0.49700090 | −0.82356309 |
| $e$ | 0.1332136  | $i$      | 11.13881  | −0.26887356 | −0.15337961 |
| $P$ | 4.34       | $H$      | 15.8      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 21 | 691 | 0.1−  | 0.3+  | 2005 06 03 | 703 | 0.1+  | 0.1−  | 2006 10 20 | 691 | 0.7− | 0.1− |
| 1998 11 21 | 691 | 0.3−  | 0.5+  | 2005 06 03 | 703 | (2.0− | 0.5+) | 2006 10 20 | 691 | 0.1− | 0.3+ |
| 1998 11 21 | 691 | 0.2+  | 0.2+  | 2005 06 05 | 704 | 0.3−  | 0.3+  | 2006 10 22 | 691 | 0.1− | 0.3− |
| 2002 10 31 | 644 | (1.6− | 0.6+) | 2005 06 05 | 704 | 0.7−  | 0.2+  | 2006 10 22 | 691 | 0.2− | 0.1+ |
| 2002 10 31 | 644 | 0.0   | 0.4+  | 2005 06 05 | 704 | 0.0   | 0.1−  | 2006 10 22 | 691 | 0.1+ | 0.0  |
| 2002 10 31 | 644 | 0.1+  | 0.3+  | 2005 06 05 | 704 | 0.1−  | 0.2+  | 2006 10 22 | 691 | 0.3+ | 0.1− |
| 2002 11 12 | 644 | 0.6+  | 0.1+  | 2005 06 05 | 704 | 0.8+  | 0.9+  | 2006 10 22 | 691 | 0.1− | 0.1+ |
| 2005 05 03 | 703 | 1.5−  | 0.7+  | 2005 06 08 | 691 | 0.4+  | 0.2+  | 2006 10 22 | 691 | 0.0  | 0.1− |
| 2005 05 03 | 703 | 1.0−  | 0.5−  | 2005 06 08 | 691 | 0.4+  | 0.1+  | 2006 11 11 | G96 | 0.3− | 0.6− |
| 2005 05 03 | 703 | 0.1+  | 0.0   | 2005 06 08 | 691 | 0.3+  | 0.0   | 2006 11 11 | G96 | 0.6+ | 0.5− |
| 2005 05 03 | 703 | 0.3−  | 0.3−  | 2005 06 13 | 691 | 0.3+  | 0.2+  | 2006 11 11 | G96 | 0.4+ | 0.1− |
| 2005 05 04 | 644 | 0.2+  | 0.4+  | 2005 06 13 | 691 | 0.4−  | 0.4+  | 2006 11 11 | G96 | 0.2+ | 0.3− |
| 2005 05 04 | 644 | 0.6+  | 0.4+  | 2005 06 13 | 691 | 0.4+  | 0.0   | 2007 11 04 | 691 | 0.6− | 0.7+ |
| 2005 05 04 | 644 | 0.1−  | 0.5+  | 2006 10 03 | G96 | 0.2+  | 1.0−  | 2007 11 04 | 691 | 0.0  | 0.2− |
| 2005 05 15 | G96 | 0.1−  | 0.2+  | 2006 10 03 | G96 | 0.1−  | 0.3−  | 2007 11 04 | 691 | 0.3− | 0.1+ |
| 2005 05 15 | G96 | 0.0   | 0.2+  | 2006 10 03 | G96 | 0.2−  | 0.8−  | 2007 11 21 | G96 | 0.5+ | 0.0  |
| 2005 05 15 | G96 | 0.3−  | 0.1+  | 2006 10 03 | G96 | 0.1+  | 0.3−  | 2007 11 21 | G96 | 0.6+ | 0.1− |
| 2005 05 15 | G96 | 0.4−  | 0.2+  | 2006 10 18 | 691 | 0.7+  | 0.1−  | 2007 11 21 | G96 | 0.3+ | 0.0  |
| 2005 05 19 | G96 | 0.4−  | 0.0   | 2006 10 18 | 691 | 0.1−  | 0.3+  | 2007 11 21 | G96 | 0.4+ | 0.4− |
| 2005 05 19 | G96 | 0.2−  | 0.1+  | 2006 10 18 | 691 | 0.0   | 0.2+  | 2007 12 04 | 704 | 0.6− | 1.4+ |
| 2005 05 19 | G96 | 0.2−  | 0.0   | 2006 10 20 | 691 | 0.1+  | 0.1+  | 2007 12 04 | 704 | 0.6+ | 0.5+ |
| 2005 05 19 | G96 | 0.3−  | 0.1+  | 2006 10 20 | 691 | 0.1−  | 0.1+  | 2007 12 04 | 704 | 0.5+ | 0.3+ |
| 2005 06 03 | 703 | 0.9−  | 0.3+  | 2006 10 20 | 691 | 0.0   | 0.2+  | 2007 12 04 | 704 | 0.9+ | 0.5− |
| 2005 06 03 | 703 | 0.7−  | 0.5−  | 2006 10 20 | 691 | 0.0   | 0.0   | 2007 12 04 | 704 | 0.9+ | 0.3+ |

(172936)\* 2005 JW<sub>29</sub> = 2003 YC<sub>173</sub>

Discovered 2005 May 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (MPO 77204)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |     |   |
|-----|------------|----------|----------|-------------|-------------|-----|---|
| $M$ | 266.29104  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.23960306 | $\omega$ | 86.78861 | −0.97458079 | −0.19495926 |     |   |
| $a$ | 2.5672873  | $\Omega$ | 81.94885 | +0.13411612 | −0.90234265 |     |   |
| $e$ | 0.1601656  | $i$      | 6.40042  | +0.17945792 | −0.38440686 |     |   |
| $P$ | 4.11       | $H$      | 15.8     | $G$         | 0.15        | $U$ | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 14 | 691 | 0.1+  | 0.5−  | 2005 05 14 | G96 | 0.2− | 0.0  | 2007 11 04 | 691 | 0.5−  | 0.3+  |
| 1999 11 14 | 691 | 0.5+  | 0.2−  | 2005 05 14 | G96 | 0.2− | 0.1+ | 2007 11 04 | 691 | 0.6−  | 0.2+  |
| 1999 11 14 | 691 | 0.3+  | 0.9−  | 2005 05 18 | 644 | 0.3+ | 0.1+ | 2007 11 04 | 691 | 0.1−  | 0.1+  |
| 2000 01 04 | 704 | 0.6−  | 0.5−  | 2005 05 18 | 644 | 0.1+ | 0.1− | 2007 11 09 | H07 | 0.1+  | 0.0   |
| 2000 01 04 | 704 | 0.3−  | 0.3−  | 2005 05 18 | 644 | 0.1+ | 0.0  | 2007 11 09 | H07 | 0.4−  | 0.2+  |
| 2000 01 04 | 704 | 1.1−  | 0.1−  | 2005 05 21 | 644 | 0.0  | 0.1+ | 2007 11 09 | H07 | 0.2+  | 0.7−  |
| 2003 11 21 | 704 | 0.9−  | 0.1+  | 2005 05 21 | 644 | 0.0  | 0.1+ | 2007 11 09 | H07 | 0.3+  | 0.2−  |
| 2003 11 21 | 704 | (0.4− | 1.6+) | 2005 05 21 | 644 | 0.0  | 0.0  | 2007 11 09 | H07 | 0.4−  | 0.3+  |
| 2003 11 21 | 704 | 0.5−  | 1.0−  | 2005 06 04 | 704 | 0.3− | 0.1+ | 2007 11 09 | H07 | (0.4+ | 1.6+) |
| 2003 11 21 | 704 | 0.9+  | 0.2+  | 2005 06 04 | 704 | 0.4− | 0.1− | 2007 11 11 | H07 | 0.8+  | 0.3+  |
| 2003 11 21 | 704 | 0.9+  | 0.3+  | 2005 06 04 | 704 | 0.4+ | 0.2+ | 2007 11 11 | H07 | 0.6+  | 0.2−  |
| 2003 12 19 | 704 | 0.1+  | 0.1+  | 2005 06 10 | 691 | 0.4+ | 0.3+ | 2007 11 11 | H07 | 0.5−  | 0.3+  |
| 2003 12 19 | 704 | (0.4+ | 1.5+) | 2005 06 10 | 691 | 0.3+ | 0.5+ | 2007 11 14 | 704 | 0.2−  | 0.8+  |
| 2003 12 19 | 704 | 0.1−  | 0.8+  | 2005 06 10 | 691 | 0.1+ | 0.4+ | 2007 11 14 | 704 | (2.1+ | 0.0 ) |
| 2003 12 19 | 704 | 0.2−  | 0.6+  | 2005 06 14 | 691 | 0.3+ | 0.3+ | 2007 11 14 | 704 | 0.3−  | 0.2+  |
| 2003 12 19 | 704 | 0.7−  | 0.3+  | 2005 06 14 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 1.0+  | 0.2−  |
| 2003 12 29 | 691 | 0.4−  | 0.6+  | 2005 06 14 | 691 | 0.2+ | 0.3+ | 2007 11 21 | G96 | 0.2+  | 0.0   |
| 2003 12 29 | 691 | 0.3−  | 0.5+  | 2005 06 16 | G96 | 0.3− | 0.1− | 2007 11 21 | G96 | 0.1+  | 0.1+  |
| 2003 12 29 | 691 | 0.2−  | 0.5+  | 2005 06 16 | G96 | 0.4− | 0.1− | 2007 11 21 | G96 | 0.1+  | 0.0   |
| 2005 04 17 | 703 | 0.7−  | 0.5+  | 2005 06 16 | G96 | 0.4− | 0.2− | 2007 11 21 | G96 | 0.2+  | 0.0   |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 17 | 703 | 0.6−  | 0.8−  | 2005 06 16 | G96 | 0.4−  | 0.2−  | 2007 11 21 | G96 | 0.0  | 0.2+ |
| 2005 04 17 | 703 | 0.0   | 0.5−  | 2005 06 23 | 644 | 0.1−  | 0.1−  | 2007 11 21 | G96 | 0.2+ | 0.0  |
| 2005 04 17 | 703 | 1.3−  | 0.4−  | 2005 06 23 | 644 | 0.3−  | 0.0   | 2007 11 21 | G96 | 0.0  | 0.0  |
| 2005 05 03 | 704 | 1.2−  | 0.7−  | 2005 06 23 | 644 | 0.1+  | 0.1+  | 2007 11 21 | G96 | 0.1− | 0.1+ |
| 2005 05 03 | 704 | 0.9+  | 0.3+  | 2007 11 02 | 106 | 0.4+  | 1.1−  | 2007 12 03 | 703 | 0.3+ | 0.2− |
| 2005 05 03 | 704 | 0.5−  | 0.6−  | 2007 11 02 | 106 | (0.5− | 1.7−) | 2007 12 03 | 703 | 0.1+ | 0.9+ |
| 2005 05 03 | 704 | 0.4+  | 0.0   | 2007 11 02 | 106 | 0.5−  | 0.3−  | 2007 12 03 | 703 | 0.6− | 0.1− |
| 2005 05 08 | 704 | (1.6+ | 0.3+) | 2007 11 02 | 106 | 0.6+  | 1.2−  | 2007 12 03 | 703 | 1.3+ | 0.1+ |
| 2005 05 08 | 704 | 1.2+  | 0.6+  | 2007 11 04 | 704 | 0.3+  | 0.4+  | 2007 12 05 | 704 | 0.4+ | 0.7+ |
| 2005 05 08 | 704 | (2.1+ | 0.4−) | 2007 11 04 | 704 | 0.4+  | 0.7+  | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2005 05 14 | G96 | 0.1−  | 0.0   | 2007 11 04 | 704 | 1.0−  | 0.9−  | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2005 05 14 | G96 | 0.0   | 0.1−  | 2007 11 04 | 704 | 0.3+  | 0.6+  |            |     |      |      |

**(172937)\* 2005 JS<sub>32</sub> = 1999 FS<sub>79</sub>**

Discovered 2005 May 4 by the Mt. Lemmon Survey at Mount Lemmon.

Id. A. Doppler (*MPO 77207*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 49.12973   |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.17976568 | $\omega$ | 299.93698 |     | +0.98658867  |     | +0.12102078  |
| $a$ | 3.1093160  | $\Omega$ | 53.32839  |     | −0.05607356  |     | +0.88148151  |
| $e$ | 0.1179266  | $i$      | 7.84876   |     | −0.15329239  |     | +0.45644749  |
| $P$ | 5.48       | $H$      | 15.6      | $G$ | 0.15         | $U$ | 0            |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 05 11 | 691 | 0.2−  | 0.2−  | 2005 05 08 | 691 | 0.1+ | 0.5+ | 2007 11 03 | 691 | 0.4−  | 0.2+  |
| 1994 05 11 | 691 | 0.8−  | 0.4−  | 2005 05 08 | 691 | 0.1+ | 0.4+ | 2007 11 03 | 691 | 0.1−  | 0.1+  |
| 1994 05 11 | 691 | 0.6−  | 0.2−  | 2005 05 08 | 691 | 0.2+ | 0.5+ | 2007 11 03 | 691 | 0.2+  | 0.2+  |
| 1996 12 12 | 691 | 0.1+  | 0.2−  | 2005 05 12 | 691 | 0.2+ | 0.3+ | 2007 11 15 | 704 | 0.6+  | 1.4+  |
| 1996 12 12 | 691 | 0.2+  | 0.3−  | 2005 05 12 | 691 | 0.0  | 0.3+ | 2007 11 15 | 704 | 0.3−  | 0.1−  |
| 1996 12 12 | 691 | 0.0   | 0.0   | 2005 05 12 | 691 | 0.4+ | 0.1+ | 2007 11 15 | 704 | 1.1−  | 0.4+  |
| 1999 03 20 | 645 | 0.1+  | 0.1+  | 2005 05 13 | G96 | 0.3− | 0.2− | 2007 11 15 | 704 | 0.5−  | 0.2+  |
| 1999 03 20 | 645 | 0.1+  | 0.0   | 2005 05 13 | G96 | 0.4− | 0.1− | 2007 11 15 | 704 | 0.1−  | 0.1+  |
| 1999 03 21 | 645 | 0.0   | 0.0   | 2005 05 13 | G96 | 0.3+ | 0.3− | 2007 11 18 | 691 | 0.1+  | 0.4+  |
| 1999 03 21 | 645 | 0.1+  | 0.0   | 2005 05 13 | G96 | 0.1− | 0.1− | 2007 11 18 | 691 | 0.4−  | 0.3+  |
| 2001 08 27 | 699 | (0.1+ | 1.9+) | 2007 10 09 | G96 | 0.0  | 0.2− | 2007 11 18 | 691 | 0.3+  | 0.7−  |
| 2001 08 27 | 699 | 0.2−  | 0.8+  | 2007 10 09 | G96 | 0.2+ | 0.3− | 2007 12 03 | 703 | 0.5−  | 0.3+  |
| 2001 08 27 | 699 | 0.4−  | 0.4−  | 2007 10 09 | G96 | 0.2+ | 0.0  | 2007 12 03 | 703 | 0.8−  | 0.1+  |
| 2001 08 27 | 699 | 0.4−  | 1.0+  | 2007 10 09 | G96 | 0.0  | 0.3− | 2007 12 03 | 703 | (0.5− | 1.8+) |
| 2001 10 16 | 644 | 0.0   | 0.7+  | 2007 10 17 | G96 | 0.3+ | 0.1− | 2007 12 03 | 703 | 0.7+  | 0.0   |
| 2001 10 16 | 644 | 0.3+  | 0.7+  | 2007 10 17 | G96 | 0.2+ | 0.3+ | 2007 12 15 | G96 | 0.5+  | 0.0   |
| 2001 10 16 | 644 | 0.4+  | 0.8+  | 2007 10 17 | G96 | 0.2+ | 0.1− | 2007 12 15 | G96 | 0.0   | 0.2+  |
| 2005 05 04 | G96 | 0.1+  | 0.3+  | 2007 10 17 | G96 | 0.6+ | 0.3− | 2007 12 15 | G96 | 0.0   | 0.1−  |
| 2005 05 04 | G96 | 0.2+  | 0.5+  | 2007 10 30 | 691 | 0.4− | 0.1+ | 2007 12 15 | G96 | 0.5+  | 0.1+  |
| 2005 05 04 | G96 | 0.0   | 0.1−  | 2007 10 30 | 691 | 0.4− | 0.2+ |            |     |       |       |
| 2005 05 04 | G96 | 0.1−  | 0.7+  | 2007 10 30 | 691 | 0.1− | 0.1− |            |     |       |       |

**(172938)\* 2005 JV<sub>48</sub>**

Discovered 2005 May 3 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 51.22909   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.17635310 | $\omega$ | 267.25260 |     | +0.97044891 |     | +0.14307282 |
| $a$ | 3.1492996  | $\Omega$ | 84.46856  |     | −0.05284207 |     | +0.91172487 |
| $e$ | 0.0895508  | $i$      | 11.25793  |     | −0.23544984 |     | +0.38508173 |
| $P$ | 5.59       | $H$      | 15.8      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 21 | 645 | 0.0  | 0.0  | 2005 06 08 | 691 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.0   | 0.2+  |
| 1999 03 21 | 645 | 0.0  | 0.1− | 2005 06 12 | 691 | 0.0  | 0.5+ | 2007 11 20 | 703 | 0.5+  | 0.5+  |
| 1999 03 22 | 645 | 0.0  | 0.1+ | 2005 06 12 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 703 | 0.7−  | 0.7+  |
| 1999 03 22 | 645 | 0.1+ | 0.3+ | 2005 06 12 | 691 | 0.3− | 0.6+ | 2007 11 20 | 703 | 0.2+  | 0.2−  |
| 2001 10 15 | 644 | 0.6− | 0.7+ | 2007 10 14 | G96 | 0.4− | 0.1+ | 2007 11 20 | 703 | 0.7+  | 0.9+  |
| 2001 10 15 | 644 | 0.4− | 0.6+ | 2007 10 14 | G96 | 0.2+ | 0.3+ | 2007 11 20 | 703 | 0.3+  | 1.3+  |
| 2001 10 15 | 644 | 0.7− | 0.8+ | 2007 10 14 | G96 | 0.3+ | 0.0  | 2007 11 20 | 703 | 0.7−  | 0.0   |
| 2001 10 23 | 644 | 0.1− | 0.0  | 2007 10 14 | G96 | 0.7+ | 0.2+ | 2007 11 20 | 703 | 0.4+  | 0.2+  |
| 2001 10 23 | 644 | 0.2+ | 0.2+ | 2007 11 02 | G96 | 0.3+ | 0.2+ | 2007 11 20 | 703 | (1.6− | 0.7+) |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 23 | 644 | 0.2− | 0.1+ | 2007 11 02 | G96 | 0.1+  | 0.1+  | 2007 11 21 | 703 | 0.1+ | 0.8+ |
| 2005 05 03 | 691 | 0.1− | 0.1+ | 2007 11 02 | G96 | 0.1−  | 0.1+  | 2007 11 21 | 703 | 0.5− | 0.6− |
| 2005 05 03 | 691 | 0.2− | 0.2+ | 2007 11 02 | G96 | 0.1−  | 0.1+  | 2007 11 21 | 703 | 0.2− | 0.8+ |
| 2005 05 03 | 691 | 0.1− | 0.1+ | 2007 11 09 | 703 | 0.2−  | 0.5+  | 2007 11 21 | 703 | 0.0  | 0.2− |
| 2005 05 10 | 691 | 0.1+ | 0.2+ | 2007 11 09 | 703 | 1.3−  | 0.9−  | 2007 11 21 | G96 | 0.1− | 0.0  |
| 2005 05 10 | 691 | 0.2+ | 0.0  | 2007 11 09 | 703 | 1.3−  | 0.0   | 2007 11 21 | G96 | 0.1+ | 0.1+ |
| 2005 05 10 | 691 | 0.0  | 0.1+ | 2007 11 09 | 703 | 0.3−  | 0.3+  | 2007 11 21 | G96 | 0.4+ | 0.1+ |
| 2005 05 14 | 691 | 0.3+ | 0.1+ | 2007 11 12 | 704 | (0.8+ | 1.6+) | 2007 11 21 | G96 | 0.0  | 0.3+ |
| 2005 05 14 | 691 | 0.0  | 0.0  | 2007 11 12 | 704 | 0.0   | 0.8+  | 2007 12 04 | 704 | 0.1− | 0.5+ |
| 2005 05 14 | 691 | 0.1− | 0.3− | 2007 11 12 | 704 | 0.5+  | 0.0   | 2007 12 04 | 704 | 0.8− | 0.0  |
| 2005 06 04 | 691 | 0.1+ | 0.2+ | 2007 11 12 | 704 | 0.1−  | 0.8+  | 2007 12 04 | 704 | 0.8− | 0.0  |
| 2005 06 04 | 691 | 0.1+ | 0.3+ | 2007 11 12 | 704 | (0.2+ | 1.7+) | 2007 12 04 | 704 | 0.5− | 0.9+ |
| 2005 06 04 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.4+  | 0.0   | 2007 12 04 | 704 | 0.9− | 0.5+ |
| 2005 06 08 | 691 | 0.2+ | 0.1+ | 2007 11 18 | G96 | 0.3+  | 0.3+  |            |     |      |      |
| 2005 06 08 | 691 | 0.4+ | 0.1− | 2007 11 18 | G96 | 0.1+  | 0.1−  |            |     |      |      |

**(172939)\* 2005 JY<sub>49</sub>**

Discovered 2005 May 4 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 55.87902   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.16980380 | $\omega$ | 260.38796 |     | +0.93420569 |     | +0.34009610 |
| $a$ | 3.2297664  | $\Omega$ | 79.66917  |     | −0.26903682 |     | +0.86989832 |
| $e$ | 0.1549065  | $i$      | 6.28370   |     | −0.23426252 |     | +0.35722759 |
| $P$ | 5.80       | $H$      | 14.7      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 17 | 704 | 0.1+  | 0.0   | 2005 05 19 | G96 | 0.1+  | 0.1+  | 2007 11 14 | 704 | (1.5− | 1.9+) |
| 2001 10 17 | 704 | 0.4−  | 0.7+  | 2005 05 19 | G96 | 0.3−  | 0.1+  | 2007 11 14 | 704 | 1.2−  | 0.3−  |
| 2001 10 17 | 704 | 0.6−  | 0.1+  | 2005 05 19 | G96 | 0.2−  | 0.2+  | 2007 11 19 | 691 | 0.2−  | 0.1−  |
| 2001 10 17 | 704 | 0.6−  | 0.3+  | 2005 05 19 | G96 | 0.2−  | 0.1+  | 2007 11 19 | 691 | 0.1−  | 0.0   |
| 2001 10 17 | 704 | 0.4−  | 0.3+  | 2006 08 14 | 644 | 0.1+  | 0.5+  | 2007 11 19 | 691 | 0.1−  | 0.1−  |
| 2001 11 20 | 704 | 0.5−  | 0.4+  | 2006 08 14 | 644 | 0.2+  | 0.4+  | 2007 11 20 | 703 | 0.7+  | 0.6+  |
| 2001 11 20 | 704 | 0.5−  | 0.4+  | 2006 08 14 | 644 | 0.1−  | 0.3+  | 2007 11 20 | 703 | 1.2−  | 0.7−  |
| 2001 11 20 | 704 | 0.4−  | 0.7+  | 2006 08 23 | 644 | 0.8−  | 0.3+  | 2007 11 20 | 703 | 0.8−  | 1.4+  |
| 2001 11 20 | 704 | 0.2−  | 0.6+  | 2006 08 23 | 644 | 0.4−  | 0.2−  | 2007 11 20 | 703 | 0.0   | 0.4+  |
| 2001 11 20 | 704 | 0.8−  | 1.1+  | 2006 08 23 | 644 | 0.0   | 0.1−  | 2007 12 03 | 703 | 0.8−  | 1.3+  |
| 2001 12 11 | 704 | (2.6− | 1.9+) | 2006 08 24 | 644 | 0.1+  | 0.4+  | 2007 12 03 | 703 | 0.7−  | 0.1+  |
| 2001 12 11 | 704 | 1.1−  | 0.0   | 2006 08 24 | 644 | 0.2−  | 0.5+  | 2007 12 03 | 703 | 0.5−  | 0.1−  |
| 2001 12 11 | 704 | 0.7+  | 1.3+  | 2006 08 24 | 644 | 0.3+  | 0.3+  | 2007 12 03 | 703 | 0.8−  | 0.9+  |
| 2001 12 11 | 704 | 0.7+  | 0.1+  | 2007 10 19 | 699 | 0.4−  | 0.5+  | 2007 12 04 | 704 | 0.7+  | 0.1+  |
| 2001 12 11 | 704 | 0.3+  | 0.8+  | 2007 10 19 | 699 | 0.2−  | 0.0   | 2007 12 04 | 704 | 0.8+  | 0.0   |
| 2001 12 14 | 704 | 0.0   | 1.1+  | 2007 10 19 | 699 | 0.4−  | 0.0   | 2007 12 04 | 704 | 0.6+  | 1.1+  |
| 2001 12 14 | 704 | 0.3+  | 0.1+  | 2007 10 19 | 699 | 0.1−  | 0.5+  | 2007 12 04 | 704 | 0.1+  | 0.5+  |
| 2001 12 14 | 704 | 0.0   | 0.0   | 2007 11 04 | 704 | 0.0   | 0.7+  | 2007 12 04 | 704 | 0.2+  | 0.9+  |
| 2001 12 14 | 704 | 0.0   | 0.8+  | 2007 11 04 | 704 | 0.0   | 0.2+  | 2007 12 05 | 104 | 0.9+  | 0.3+  |
| 2005 04 16 | 691 | 0.1+  | 0.6+  | 2007 11 04 | 704 | 0.3+  | 0.4+  | 2007 12 05 | 104 | 0.7+  | 0.0   |
| 2005 04 16 | 691 | 0.1+  | 0.6+  | 2007 11 04 | 704 | 0.3−  | 1.1+  | 2007 12 05 | 104 | 0.5+  | 0.5−  |
| 2005 04 16 | 691 | 0.1+  | 0.5+  | 2007 11 04 | 704 | 0.6−  | 1.0+  | 2007 12 05 | 104 | 0.1+  | 0.0   |
| 2005 05 04 | 691 | 0.3+  | 0.7+  | 2007 11 08 | 691 | 0.2−  | 0.1+  | 2007 12 05 | 104 | 0.4−  | 0.1+  |
| 2005 05 04 | 691 | 0.5+  | 0.4+  | 2007 11 08 | 691 | 0.1−  | 0.2+  | 2007 12 05 | 104 | 0.0   | 0.6−  |
| 2005 05 04 | 691 | 0.5+  | 0.4+  | 2007 11 08 | 691 | 0.1−  | 0.1+  | 2007 12 13 | 104 | 0.2+  | 0.3+  |
| 2005 05 10 | 691 | 0.4+  | 0.4+  | 2007 11 13 | 699 | 0.1−  | 0.1+  | 2007 12 13 | 104 | 0.0   | 0.3+  |
| 2005 05 10 | 691 | 0.3+  | 0.5+  | 2007 11 13 | 699 | 0.4+  | 0.5−  | 2007 12 13 | 104 | 0.6+  | 0.7+  |
| 2005 05 10 | 691 | 0.3+  | 0.7+  | 2007 11 13 | 699 | (1.5+ | 0.4−) | 2007 12 14 | 104 | 0.9+  | 1.1+  |
| 2005 05 17 | G96 | 0.3−  | 0.8+  | 2007 11 13 | 699 | 0.6+  | 0.6−  | 2007 12 14 | 104 | 0.1+  | 0.1+  |
| 2005 05 17 | G96 | 0.0   | 0.5+  | 2007 11 14 | 704 | 0.7−  | 1.2+  | 2007 12 14 | 104 | 0.2+  | 0.3−  |
| 2005 05 17 | G96 | 0.3−  | 0.1+  | 2007 11 14 | 704 | (0.7− | 2.0+) |            |     |       |       |
| 2005 05 17 | G96 | 0.1−  | 1.4+  | 2007 11 14 | 704 | 0.2−  | 0.6+  |            |     |       |       |

2007 DEC. 24

M.P.O. 129521

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 90.48654   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19705092 | $\omega$ | 212.98378 | +0.81131089   | +0.58218671 |
| <i>a</i> | 2.9247162  | $\Omega$ | 111.32171 | -0.52324030   | +0.76373168 |
| <i>e</i> | 0.1048174  | <i>i</i> | 3.27564   | -0.26075704   | +0.27887732 |
| <i>P</i> | 5.00       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 23 | 807 | 0.2- | 0.4+ | 2005 04 16 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.1- | 0.6+ |
| 2001 05 23 | 807 | 0.2- | 0.6+ | 2005 04 16 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.3- | 0.3+ |
| 2001 08 12 | 608 | 0.4- | 0.1+ | 2005 05 04 | 691 | 0.3- | 0.4+ | 2007 11 14 | 691 | 0.2- | 0.2+ |
| 2001 08 12 | 608 | 1.0- | 0.1- | 2005 05 04 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.7+ | 0.2+ |
| 2001 08 12 | 608 | 1.5- | 0.7- | 2005 05 04 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.2+ | 0.3- |
| 2001 08 25 | 704 | 1.0+ | 0.6+ | 2005 05 10 | 691 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.3- | 0.8+ |
| 2001 08 25 | 704 | 0.3+ | 1.0+ | 2005 05 10 | 691 | 0.2+ | 0.2+ | 2007 12 05 | 704 | 0.1- | 0.5+ |
| 2001 08 25 | 704 | 0.9+ | 1.2+ | 2005 05 10 | 691 | 0.3+ | 0.2+ | 2007 12 05 | G96 | 0.3- | 0.0  |
| 2004 02 12 | 691 | 0.2+ | 0.3+ | 2005 05 17 | G96 | 0.7- | 0.1- | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2004 02 12 | 691 | 0.0  | 0.0  | 2005 05 17 | G96 | 0.2+ | 0.5- | 2007 12 05 | G96 | 0.3+ | 0.1+ |
| 2004 02 12 | 691 | 0.2+ | 0.2+ | 2005 05 17 | G96 | 0.2- | 0.1- | 2007 12 05 | G96 | 0.1- | 0.0  |
| 2004 03 18 | 691 | 0.1- | 0.2+ | 2005 05 17 | G96 | 0.4- | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.7- |
| 2004 03 18 | 691 | 0.2- | 0.0  | 2006 08 13 | 644 | 0.2- | 0.7+ | 2007 12 15 | G96 | 0.5+ | 0.2+ |
| 2004 03 18 | 691 | 0.2+ | 0.2- | 2006 08 13 | 644 | 0.3- | 0.5+ | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2005 04 16 | 691 | 0.1+ | 0.0  | 2006 08 13 | 644 | 0.0  | 0.5+ | 2007 12 15 | G96 | 0.1+ | 0.1+ |

**(172941)\* 2005 JU<sub>66</sub>**

Discovered 2005 May 4 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 302.36484  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27873725 | $\omega$ | 141.63555 | -0.95033459   | -0.31076259 |
| <i>a</i> | 2.3209870  | $\Omega$ | 20.27909  | +0.27202366   | -0.85599198 |
| <i>e</i> | 0.1534026  | <i>i</i> | 2.82007   | +0.15121937   | -0.41316381 |
| <i>P</i> | 3.54       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 01 | 699 | 0.9+  | 0.0   | 2005 05 04 | 644 | 0.5+ | 0.2- | 2006 08 18 | 691 | 0.2+ | 0.0  |
| 2001 02 01 | 699 | (1.9- | 2.7+) | 2005 05 04 | 644 | 0.2+ | 0.2+ | 2006 08 18 | 691 | 0.4- | 0.3+ |
| 2001 02 01 | 699 | 0.4-  | 1.0+  | 2005 05 04 | 644 | 0.1+ | 0.1- | 2006 08 18 | 691 | 0.0  | 0.2+ |
| 2001 02 01 | 699 | 0.6-  | 0.1-  | 2005 05 07 | 691 | 0.1+ | 0.0  | 2006 09 30 | G96 | 0.2- | 0.7- |
| 2003 10 22 | 691 | 0.1-  | 0.0   | 2005 05 07 | 691 | 0.2- | 0.1+ | 2006 09 30 | G96 | 0.2- | 0.3- |
| 2003 10 22 | 691 | 0.1+  | 0.2+  | 2005 05 07 | 691 | 0.9+ | 0.6+ | 2006 09 30 | G96 | 0.1+ | 0.1+ |
| 2003 10 22 | 691 | 0.0   | 0.5+  | 2005 05 11 | 691 | 0.0  | 0.2- | 2006 09 30 | G96 | 0.2- | 0.2- |
| 2003 11 21 | 691 | 0.0   | 0.2-  | 2005 05 11 | 691 | 0.1- | 0.1+ | 2007 11 03 | G96 | 0.5- | 0.2+ |
| 2003 11 21 | 691 | 0.2-  | 0.4+  | 2005 05 11 | 691 | 0.0  | 0.1+ | 2007 11 03 | G96 | 0.5+ | 0.1+ |
| 2003 11 21 | 691 | 0.0   | 0.0   | 2005 05 12 | 644 | 0.3- | 0.3+ | 2007 11 03 | G96 | 0.3+ | 0.1- |
| 2005 03 11 | G96 | 0.5-  | 0.2-  | 2005 05 12 | 644 | 0.4+ | 0.4+ | 2007 11 03 | G96 | 0.2+ | 0.1+ |
| 2005 03 11 | G96 | 0.0   | 0.4+  | 2005 05 12 | 644 | 0.0  | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.1- |
| 2005 03 11 | G96 | 0.3-  | 0.2+  | 2005 05 16 | 691 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.3- |
| 2005 03 11 | G96 | 0.1+  | 0.5-  | 2005 05 16 | 691 | 0.2- | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.3+ |
| 2005 04 11 | G96 | 0.3-  | 0.2+  | 2005 05 16 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.2- | 0.3- |
| 2005 04 11 | G96 | 0.1+  | 0.2+  | 2005 05 19 | 644 | 0.0  | 0.3+ | 2007 12 15 | 704 | 0.2+ | 0.4+ |
| 2005 04 11 | G96 | 0.1+  | 0.3-  | 2005 05 19 | 644 | 0.0  | 0.3+ | 2007 12 15 | 704 | 0.2- | 0.5+ |
| 2005 04 11 | G96 | 0.3+  | 0.0   | 2005 05 19 | 644 | 0.1+ | 0.0  | 2007 12 15 | 704 | 0.2- | 0.3+ |

**(172942)\* 2005 JX<sub>71</sub>**

Discovered 2005 May 8 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 178.41655  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21992342 | $\omega$ | 325.16089 | -0.53892239   | +0.81744201 |
| <i>a</i> | 2.7182437  | $\Omega$ | 271.41293 | -0.71923359   | -0.57220417 |
| <i>e</i> | 0.1287809  | <i>i</i> | 11.73654  | -0.43848113   | -0.06611310 |
| <i>P</i> | 4.48       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 06 | 699 | 0.4- | 1.1+ | 2005 05 12 | 644 | 0.6+ | 0.2+ | 2007 11 02 | 704 | 0.2+  | 0.2-  |
| 2002 10 06 | 699 | 0.1+ | 0.2- | 2005 06 26 | E12 | 0.8- | 1.0- | 2007 11 02 | 704 | 0.3-  | 0.5-  |
| 2002 10 06 | 699 | 0.6+ | 0.6+ | 2005 06 26 | E12 | 0.5+ | 0.2+ | 2007 11 02 | 703 | 1.0-  | 0.9+  |
| 2002 10 06 | 699 | 0.2- | 0.6- | 2005 06 26 | E12 | 0.6- | 0.1+ | 2007 11 02 | 703 | 0.4+  | 0.3+  |
| 2003 12 27 | 291 | 0.2+ | 0.3+ | 2005 06 26 | E12 | 0.4- | 0.1+ | 2007 11 02 | 703 | 0.9-  | 0.0   |
| 2003 12 27 | 291 | 0.1+ | 0.4+ | 2006 08 27 | 699 | 1.2+ | 0.1- | 2007 11 02 | 703 | (1.8- | 0.8+) |
| 2003 12 27 | 291 | 0.2- | 0.2+ | 2006 08 27 | 699 | 1.4- | 0.4+ | 2007 11 08 | 704 | 0.7-  | 0.3+  |
| 2005 04 02 | E12 | 0.3- | 0.2+ | 2006 08 27 | 699 | 0.4- | 0.4+ | 2007 11 08 | 704 | 0.1-  | 0.0   |
| 2005 04 02 | E12 | 0.6- | 0.7+ | 2006 08 27 | 699 | 0.2+ | 0.6+ | 2007 11 08 | 704 | 0.5-  | 0.1-  |
| 2005 04 02 | E12 | 0.4+ | 0.1- | 2006 08 30 | 699 | 0.6- | 0.5- | 2007 11 08 | 704 | 0.4-  | 0.2+  |
| 2005 04 02 | E12 | 0.3+ | 0.3+ | 2006 08 30 | 699 | 0.0  | 0.2+ | 2007 11 08 | 704 | 0.2-  | 0.2-  |
| 2005 04 10 | E12 | 0.1+ | 0.2+ | 2006 08 30 | 699 | 0.2+ | 0.2+ | 2007 11 17 | 704 | 0.2+  | 0.5+  |
| 2005 04 10 | E12 | 0.1+ | 0.3+ | 2006 08 30 | 699 | 0.5+ | 0.4- | 2007 11 17 | 704 | 0.4-  | 0.3-  |
| 2005 04 10 | E12 | 0.1- | 0.5+ | 2006 09 11 | 703 | 0.6+ | 0.6+ | 2007 11 17 | 704 | 0.8-  | 0.2-  |
| 2005 04 10 | E12 | 0.3+ | 0.3+ | 2006 09 11 | 703 | 0.1+ | 0.2+ | 2007 11 17 | 704 | 0.2-  | 0.0   |
| 2005 05 02 | E12 | 0.1+ | 0.5+ | 2006 09 11 | 703 | 0.0  | 1.4+ | 2007 11 17 | 704 | 0.5-  | 0.3+  |
| 2005 05 02 | E12 | 0.2- | 0.0  | 2006 09 11 | 703 | 0.5- | 1.3+ | 2007 12 12 | 704 | (0.4+ | 2.1+) |
| 2005 05 02 | E12 | 0.6+ | 0.3+ | 2006 09 15 | 704 | 0.3+ | 0.3- | 2007 12 12 | 704 | (1.1+ | 1.7+) |
| 2005 05 02 | E12 | 0.2+ | 0.2+ | 2006 09 15 | 704 | 0.2- | 0.3- | 2007 12 12 | 704 | 0.4+  | 1.0+  |
| 2005 05 08 | 699 | 0.3+ | 0.1+ | 2006 09 15 | 704 | 0.9- | 0.1+ | 2007 12 15 | 704 | 0.7+  | 0.1-  |
| 2005 05 08 | 699 | 0.8+ | 0.1- | 2006 09 15 | 704 | 0.2+ | 0.1+ | 2007 12 15 | 704 | 0.9+  | 0.1+  |
| 2005 05 08 | 699 | 1.4- | 0.6+ | 2006 09 15 | 704 | 0.1+ | 0.1+ | 2007 12 15 | 704 | 1.5+  | 0.4-  |
| 2005 05 08 | 699 | 0.4- | 0.4+ | 2006 09 19 | 703 | 0.3- | 0.4+ | 2007 12 15 | 704 | 0.6+  | 0.0   |
| 2005 05 11 | 644 | 0.6+ | 0.0  | 2006 09 19 | 703 | 0.1+ | 0.1+ | 2007 12 16 | 704 | 0.9+  | 0.1+  |
| 2005 05 11 | 644 | 0.5+ | 0.2+ | 2006 09 19 | 703 | 1.0- | 0.3- | 2007 12 16 | 704 | 0.5+  | 0.7+  |
| 2005 05 11 | 644 | 0.5+ | 0.1+ | 2006 09 19 | 703 | 0.3- | 0.1- | 2007 12 16 | 704 | 0.1-  | 0.1+  |
| 2005 05 12 | 644 | 0.4+ | 0.0  | 2007 11 02 | 704 | 0.1- | 0.6- | 2007 12 16 | 704 | 0.5+  | 0.3-  |
| 2005 05 12 | 644 | 0.4+ | 0.2+ | 2007 11 02 | 704 | 0.2- | 0.7- |            |     |       |       |

**(172943)\* 2005 JT<sub>88</sub> = 1999 GA<sub>13</sub>**

Discovered 2005 May 10 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 77234)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.17748   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17376984 | $\omega$ | 161.18095 | +0.95728625   | -0.26948308 |
| <i>a</i> | 3.1804344  | $\Omega$ | 214.99704 | +0.23626685   | +0.93796974 |
| <i>e</i> | 0.0304619  | <i>i</i> | 10.52807  | +0.16667637   | +0.21815508 |
| <i>P</i> | 5.67       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 04 12 | 691 | 0.3+  | 0.4+  | 2005 05 12 | G96 | 0.6- | 0.4- | 2007 10 20 | 691 | 0.6-  | 0.2-  |
| 1999 04 12 | 691 | 0.3+  | 0.1-  | 2005 06 08 | 691 | 0.4+ | 0.7+ | 2007 10 29 | H59 | 0.2+  | 0.5+  |
| 1999 04 12 | 691 | 0.3+  | 0.3+  | 2005 06 08 | 691 | 0.1+ | 0.2- | 2007 10 29 | H59 | 0.1+  | 0.2-  |
| 1999 04 16 | 691 | 0.4-  | 0.3-  | 2005 06 08 | 691 | 0.0  | 0.3+ | 2007 11 01 | G96 | 0.1-  | 0.0   |
| 1999 04 16 | 691 | 0.5-  | 0.0   | 2005 06 12 | 691 | 0.0  | 0.2- | 2007 11 01 | G96 | 0.4+  | 0.0   |
| 1999 04 16 | 691 | 0.3+  | 1.1+  | 2005 06 12 | 691 | 0.0  | 0.0  | 2007 11 01 | G96 | 0.4+  | 0.0   |
| 2001 09 25 | 704 | 0.2-  | 0.4+  | 2005 06 12 | 691 | 0.2+ | 0.4- | 2007 11 01 | G96 | 0.2+  | 0.1+  |
| 2001 09 25 | 704 | 0.1-  | 0.3-  | 2007 10 12 | 691 | 0.7+ | 0.1+ | 2007 11 05 | 704 | 0.1-  | 1.0+  |
| 2001 09 25 | 704 | 0.3-  | 0.8+  | 2007 10 12 | 691 | 0.0  | 0.2- | 2007 11 05 | 704 | 0.8+  | 0.8+  |
| 2001 09 25 | 704 | 0.0   | 0.9+  | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 05 | 704 | (0.9+ | 2.2+) |
| 2001 09 25 | 704 | (0.5- | 1.7+) | 2007 10 12 | 704 | 0.1- | 0.2- | 2007 11 05 | 704 | 0.1+  | 0.1+  |
| 2005 01 17 | 809 | 0.1-  | 0.6+  | 2007 10 12 | 704 | 0.9- | 0.7+ | 2007 11 17 | G96 | 0.7+  | 0.4+  |
| 2005 01 17 | 809 | 0.2-  | 0.1-  | 2007 10 12 | 704 | 0.3- | 0.4- | 2007 11 17 | G96 | 0.3+  | 0.4+  |
| 2005 01 17 | 809 | 0.6-  | 0.1+  | 2007 10 12 | 704 | 0.8+ | 0.6+ | 2007 11 17 | G96 | 0.6+  | 0.1+  |
| 2005 05 10 | G96 | 0.1-  | 0.3-  | 2007 10 12 | 704 | 0.3- | 0.1+ | 2007 11 17 | G96 | 0.2+  | 0.3+  |
| 2005 05 10 | G96 | 0.1-  | 0.2-  | 2007 10 13 | 704 | 0.2+ | 0.2+ | 2007 12 05 | G96 | 0.4+  | 0.5-  |
| 2005 05 10 | G96 | 0.1-  | 0.2-  | 2007 10 13 | 704 | 0.6- | 0.1- | 2007 12 05 | G96 | 0.1+  | 0.1+  |
| 2005 05 10 | G96 | 0.2-  | 0.3-  | 2007 10 13 | 704 | 0.3+ | 0.8+ | 2007 12 05 | G96 | 0.9-  | 0.0   |
| 2005 05 12 | G96 | 0.5-  | 0.2-  | 2007 10 13 | 704 | 0.1+ | 0.0  | 2007 12 05 | G96 | 0.7-  | 0.5+  |
| 2005 05 12 | G96 | 0.6-  | 0.3-  | 2007 10 20 | 691 | 0.4- | 0.8- |            |     |       |       |
| 2005 05 12 | G96 | 0.3-  | 0.2-  | 2007 10 20 | 691 | 0.2- | 0.3+ |            |     |       |       |

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 131.12956  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21569643 | $\omega$ | 202.84376 | +0.29343823   | +0.94721180 |
| <i>a</i> | 2.7536416  | $\Omega$ | 84.41611  | -0.85583219   | +0.32049336 |
| <i>e</i> | 0.0900278  | <i>i</i> | 7.45698   | -0.42596393   | +0.00859139 |
| <i>P</i> | 4.57       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 01 | 704 | 0.2-  | 0.3+  | 2005 05 13 | 703 | 0.6-  | 0.3+  | 2006 09 26 | 703 | 0.2+ | 0.6- |
| 2002 12 01 | 704 | 0.7-  | 1.5+  | 2006 08 17 | 644 | 0.1+  | 0.2-  | 2007 11 14 | 704 | 0.8- | 1.5- |
| 2002 12 01 | 704 | (2.0- | 0.6-) | 2006 08 17 | 644 | 0.0   | 0.2+  | 2007 11 14 | 704 | 1.0- | 1.2- |
| 2002 12 01 | 704 | 1.0-  | 0.3+  | 2006 08 17 | 644 | 0.1+  | 0.0   | 2007 11 14 | 704 | 0.0  | 0.4- |
| 2003 12 21 | 645 | 0.0   | 0.1-  | 2006 08 20 | 644 | 0.1-  | 0.2-  | 2007 11 14 | 704 | 0.1- | 0.2- |
| 2003 12 21 | 645 | 0.0   | 0.1-  | 2006 08 20 | 644 | 0.1+  | 0.2-  | 2007 11 14 | 691 | 0.3- | 0.1+ |
| 2003 12 28 | 704 | (1.1+ | 2.3+) | 2006 08 20 | 644 | 0.1+  | 0.3-  | 2007 11 14 | 691 | 0.2+ | 0.2+ |
| 2003 12 28 | 704 | 1.2+  | 0.9+  | 2006 08 23 | 644 | 0.1-  | 0.1+  | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2003 12 28 | 704 | 0.0   | 1.4+  | 2006 08 23 | 644 | 0.1-  | 0.1+  | 2007 11 19 | 291 | 0.4- | 0.0  |
| 2003 12 28 | 704 | (0.9+ | 1.7+) | 2006 08 23 | 644 | 0.1-  | 0.1+  | 2007 11 19 | 291 | 0.2- | 0.0  |
| 2005 04 18 | 703 | 1.1-  | 0.3+  | 2006 08 28 | E12 | 0.6+  | 0.4+  | 2007 11 19 | 291 | 0.2- | 0.1+ |
| 2005 04 18 | 703 | 0.1-  | 0.4-  | 2006 08 28 | E12 | 0.1+  | 0.3+  | 2007 11 19 | 291 | 0.6- | 0.3+ |
| 2005 04 18 | 703 | 1.0+  | 1.0+  | 2006 08 28 | E12 | 0.3+  | 0.1-  | 2007 11 19 | 291 | 0.2- | 0.3+ |
| 2005 04 18 | 703 | 0.3+  | 0.9-  | 2006 08 28 | E12 | 0.3+  | 0.3-  | 2007 11 19 | 291 | 0.5- | 0.3+ |
| 2005 05 08 | 703 | 0.8-  | 0.3+  | 2006 09 17 | 699 | 0.7+  | 0.3-  | 2007 12 03 | 703 | 0.8+ | 0.2+ |
| 2005 05 08 | 703 | 0.0   | 0.5-  | 2006 09 17 | 699 | 1.0+  | 0.5-  | 2007 12 03 | 703 | 0.0  | 0.1- |
| 2005 05 08 | 703 | 0.8+  | 0.6-  | 2006 09 17 | 699 | 0.7-  | 0.0   | 2007 12 03 | 703 | 0.1- | 1.0- |
| 2005 05 08 | 703 | 0.9+  | 0.7+  | 2006 09 17 | 699 | 1.2-  | 1.0+  | 2007 12 03 | 703 | 0.7+ | 0.2- |
| 2005 05 11 | 699 | (2.3+ | 1.2+) | 2006 09 20 | 703 | (1.3+ | 2.9+) | 2007 12 05 | 704 | 1.6+ | 0.4+ |
| 2005 05 11 | 699 | (0.2+ | 1.6+) | 2006 09 20 | 703 | (2.0+ | 2.7+) | 2007 12 05 | 704 | 1.4+ | 0.1- |
| 2005 05 11 | 699 | (2.2+ | 0.5+) | 2006 09 20 | 703 | 0.1+  | 0.3-  | 2007 12 05 | 704 | 1.5+ | 0.0  |
| 2005 05 11 | 699 | (2.2+ | 0.7+) | 2006 09 20 | 703 | 0.3+  | 0.2-  | 2007 12 05 | 704 | 1.4+ | 0.4- |
| 2005 05 13 | 703 | 0.2-  | 0.1+  | 2006 09 26 | 703 | 0.3-  | 0.6-  | 2007 12 05 | 704 | 1.4+ | 0.0  |
| 2005 05 13 | 703 | 0.1+  | 1.0+  | 2006 09 26 | 703 | 0.2-  | 0.5-  |            |     |      |      |
| 2005 05 13 | 703 | 0.3-  | 0.6+  | 2006 09 26 | 703 | 0.3+  | 0.7+  |            |     |      |      |

(172945)\* 2005 JO<sub>125</sub> = 1997 LJ<sub>12</sub> = 2001 KK<sub>71</sub>

Discovered 2005 May 11 by the Catalina Sky Survey.

Id. A. Doppler (*MPO* 86746), G. V. Williams (*ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 249.10290  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24347281 | $\omega$ | 122.41287 | -0.94739310   | +0.19613758 |
| <i>a</i> | 2.5400118  | $\Omega$ | 69.98675  | -0.29719083   | -0.83247225 |
| <i>e</i> | 0.0488027  | <i>i</i> | 15.61613  | +0.11884410   | -0.51818915 |
| <i>P</i> | 4.05       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 06 07 | 809 | 0.1-  | 0.0   | 2003 12 17 | 704 | 0.9+  | 0.5-  | 2005 05 11 | 703 | 0.2- | 0.1+ |
| 1997 06 07 | 809 | 0.6+  | 0.1-  | 2004 01 19 | 704 | 0.2+  | 0.0   | 2005 05 11 | 703 | 0.1+ | 0.2- |
| 1997 06 07 | 809 | 0.3+  | 0.1+  | 2004 01 19 | 704 | 0.9-  | 0.6+  | 2005 05 14 | 704 | 1.2+ | 0.1- |
| 1997 06 08 | 809 | 0.6-  | 1.4-  | 2004 01 19 | 704 | 0.0   | 0.2+  | 2005 05 14 | 704 | 1.1+ | 0.1- |
| 1997 06 08 | 809 | 1.0-  | 1.5-  | 2004 01 19 | 704 | 0.2+  | 0.3-  | 2005 05 14 | 704 | 0.3+ | 1.0+ |
| 1997 06 08 | 809 | 1.6-  | 1.8-  | 2005 03 31 | 691 | 0.3+  | 0.2+  | 2007 11 18 | 704 | 0.3+ | 0.3- |
| 2001 05 24 | 699 | (0.3+ | 2.1+) | 2005 03 31 | 691 | 0.3+  | 0.3+  | 2007 11 18 | 704 | 0.2- | 0.7- |
| 2001 05 24 | 699 | 0.7-  | 0.7+  | 2005 03 31 | 691 | 0.3+  | 0.5+  | 2007 11 18 | 704 | 0.0  | 0.2+ |
| 2001 05 24 | 699 | 1.1+  | 0.1+  | 2005 04 18 | 703 | 0.1+  | 1.0-  | 2007 11 18 | 704 | 0.3- | 1.1- |
| 2001 05 24 | 699 | 0.8-  | 1.2+  | 2005 04 18 | 703 | 0.7-  | 0.6-  | 2007 12 05 | 691 | 0.3- | 0.1- |
| 2001 05 28 | 608 | 0.3-  | 0.6-  | 2005 04 18 | 703 | 0.1-  | 0.2+  | 2007 12 05 | 691 | 0.1- | 0.0  |
| 2001 05 28 | 608 | 0.4-  | 0.5-  | 2005 04 18 | 703 | 0.0   | 0.3-  | 2007 12 05 | 691 | 0.1- | 0.5- |
| 2001 05 28 | 608 | 0.2-  | 0.8-  | 2005 05 06 | 703 | 0.4-  | 0.5-  | 2007 12 13 | 704 | 0.7+ | 1.0- |
| 2003 11 24 | 704 | 0.4-  | 0.3-  | 2005 05 06 | 703 | 0.5-  | 0.5-  | 2007 12 13 | 704 | 0.4+ | 0.1- |
| 2003 11 24 | 704 | 0.6-  | 0.1+  | 2005 05 06 | 703 | 0.9-  | 0.0   | 2007 12 13 | 704 | 0.2- | 0.0  |
| 2003 11 24 | 704 | 0.3-  | 0.1+  | 2005 05 06 | 703 | (3.8- | 2.9-) | 2007 12 15 | 704 | 0.0  | 0.5+ |
| 2003 12 17 | 704 | 0.9+  | 0.0   | 2005 05 11 | 703 | 0.3-  | 0.9+  | 2007 12 15 | 704 | 0.3+ | 0.2+ |
| 2003 12 17 | 704 | 0.7+  | 0.2+  | 2005 05 11 | 703 | 0.4-  | 0.4-  | 2007 12 15 | 704 | 0.5+ | 0.9+ |

(172946)\* 2005 JJ<sub>134</sub> = 2005 JV<sub>50</sub>

Discovered 2005 May 14 by the Mt. Lemmon Survey at Mount Lemmon.

Id. A. Doppler (d, *MPO* 100955)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 12.15197   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21985317 | $\omega$ | 339.80378 | +0.63987563   | -0.76269882 |
| <i>a</i> | 2.7188228  | $\Omega$ | 70.29229  | +0.71807696   | +0.54980922 |
| <i>e</i> | 0.0651867  | <i>i</i> | 5.73490   | +0.27372367   | +0.34058821 |
| <i>P</i> | 4.48       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 05 | 645 | 0.0   | 0.1+  | 2005 05 04 | 691 | 0.2+ | 0.0  | 2006 08 14 | 644 | 0.1-  | 0.3+  |
| 2002 09 05 | 645 | 0.0   | 0.1+  | 2005 05 14 | G96 | 0.2- | 0.1+ | 2006 08 14 | 644 | 0.4-  | 0.1+  |
| 2002 10 04 | 704 | 1.4-  | 0.7+  | 2005 05 14 | G96 | 0.1- | 0.1- | 2007 11 14 | 691 | (0.1- | 1.6+) |
| 2002 10 04 | 704 | 1.1-  | 0.9+  | 2005 05 14 | G96 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.5-  | 0.1+  |
| 2002 10 04 | 704 | 0.6-  | 0.2-  | 2005 05 14 | G96 | 0.1- | 0.0  | 2007 11 14 | 691 | 0.7-  | 0.0   |
| 2002 10 04 | 704 | 0.7-  | 0.6+  | 2005 05 16 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.5+  | 0.5+  |
| 2004 02 10 | 644 | 0.3-  | 0.2+  | 2005 05 16 | 691 | 0.4- | 0.3+ | 2007 12 05 | 704 | 0.0   | 0.1-  |
| 2004 02 10 | 644 | 0.2-  | 0.1+  | 2005 05 16 | 691 | 0.0  | 0.8+ | 2007 12 05 | 704 | 0.2+  | 0.2-  |
| 2004 02 10 | 644 | 0.8+  | 0.2+  | 2005 05 17 | G96 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.3+  | 0.4+  |
| 2004 02 15 | 704 | 1.5+  | 0.5-  | 2005 05 17 | G96 | 0.3- | 0.2+ | 2007 12 05 | 704 | 0.1+  | 0.6+  |
| 2004 02 15 | 704 | (3.5+ | 1.3+) | 2005 05 17 | G96 | 0.2- | 0.1+ | 2007 12 05 | G96 | 0.4-  | 0.1+  |
| 2004 02 15 | 704 | (1.3+ | 1.8+) | 2005 05 17 | G96 | 0.1+ | 0.6+ | 2007 12 05 | G96 | 0.3-  | 0.1+  |
| 2004 02 15 | 704 | 1.4+  | 0.8+  | 2005 05 19 | G96 | 0.1- | 0.0  | 2007 12 05 | G96 | 0.0   | 0.1+  |
| 2004 02 17 | 645 | 0.0   | 0.1+  | 2005 05 19 | G96 | 0.3- | 0.0  | 2007 12 05 | G96 | 0.2-  | 0.1-  |
| 2004 02 17 | 645 | 0.1-  | 0.1+  | 2005 05 19 | G96 | 0.3- | 0.1- | 2007 12 14 | 704 | 1.0+  | 1.2+  |
| 2005 04 16 | 691 | 0.4+  | 0.4+  | 2005 05 19 | G96 | 0.4- | 0.2+ | 2007 12 14 | 704 | 0.2+  | 0.4+  |
| 2005 04 16 | 691 | 0.3+  | 0.1-  | 2006 08 12 | 644 | 0.3+ | 0.9+ | 2007 12 14 | 704 | 0.5+  | 0.0   |
| 2005 04 16 | 691 | 0.2+  | 0.5+  | 2006 08 12 | 644 | 0.1- | 0.7+ | 2007 12 14 | 704 | 1.1+  | 1.2+  |
| 2005 05 04 | 691 | 0.3+  | 0.1+  | 2006 08 12 | 644 | 0.0  | 0.5+ | 2007 12 14 | 704 | 0.4+  | 0.6+  |
| 2005 05 04 | 691 | 0.2+  | 0.1+  | 2006 08 14 | 644 | 0.5- | 0.7+ |            |     |       |       |

(172947)\* 2005 JQ<sub>138</sub>

Discovered 2005 May 13 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 162.77338  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18951964 | $\omega$ | 188.47190 | -0.45595705   | +0.87510994 |
| <i>a</i> | 3.0016950  | $\Omega$ | 54.55602  | -0.80445514   | -0.32730638 |
| <i>e</i> | 0.0787722  | <i>i</i> | 11.47899  | -0.38072970   | -0.35644513 |
| <i>P</i> | 5.20       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 695 | 0.0   | 0.1+  | 2005 05 19 | 644 | 1.1+ | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2002 12 05 | 695 | 0.0   | 0.1+  | 2005 05 19 | 644 | 1.0+ | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.2- |
| 2004 02 14 | 704 | 1.2-  | 1.3+  | 2007 10 08 | 691 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2004 02 14 | 704 | (1.8- | 0.3+) | 2007 10 08 | G96 | 0.3+ | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.5- |
| 2004 02 14 | 704 | 0.3+  | 0.3+  | 2007 10 08 | 691 | 0.2- | 0.0  | 2007 11 07 | 704 | 1.1- | 1.0+ |
| 2004 05 14 | 645 | 0.0   | 0.0   | 2007 10 08 | G96 | 0.2+ | 0.3- | 2007 11 07 | 704 | 0.6+ | 0.5- |
| 2004 05 14 | 645 | 0.1+  | 0.0   | 2007 10 08 | G96 | 0.0  | 0.2- | 2007 11 07 | 704 | 0.8- | 0.6- |
| 2005 04 11 | G96 | 0.2-  | 0.4+  | 2007 10 08 | G96 | 0.3+ | 0.3- | 2007 11 07 | 704 | 0.4+ | 1.3- |
| 2005 04 11 | G96 | 0.2+  | 0.4+  | 2007 10 08 | 691 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.5- | 0.4+ |
| 2005 04 11 | G96 | 0.3-  | 0.3+  | 2007 10 12 | 691 | 0.2- | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.3+ |
| 2005 04 11 | G96 | 0.4+  | 0.2-  | 2007 10 12 | 691 | 0.3- | 0.0  | 2007 11 14 | 691 | 0.3- | 0.3+ |
| 2005 05 04 | G96 | 0.3-  | 0.4+  | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.1+ | 0.2- |
| 2005 05 04 | G96 | 0.1-  | 0.0   | 2007 10 16 | 691 | 0.3- | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 2005 05 04 | G96 | 0.1+  | 0.1+  | 2007 10 16 | 691 | 0.1- | 0.2- | 2007 11 18 | 691 | 0.2- | 0.2+ |
| 2005 05 04 | G96 | 0.0   | 0.2+  | 2007 10 16 | 691 | 0.1- | 0.1- | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2005 05 13 | G96 | 0.8-  | 1.4+  | 2007 10 20 | 691 | 0.3+ | 0.1+ | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2005 05 13 | G96 | 0.1+  | 0.3+  | 2007 10 20 | 691 | 0.2+ | 0.1- | 2007 11 18 | 691 | 0.3- | 0.2+ |
| 2005 05 13 | G96 | 0.1-  | 0.4+  | 2007 10 20 | 691 | 0.1- | 0.3+ | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2005 05 13 | G96 | 0.1+  | 0.3+  | 2007 10 30 | 691 | 0.9+ | 0.5+ | 2007 12 05 | 691 | 0.2+ | 0.0  |
| 2005 05 18 | E12 | 0.1+  | 0.6+  | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.4+ | 0.1+ |
| 2005 05 18 | E12 | 0.3+  | 0.5+  | 2007 10 30 | 691 | 0.7- | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.1- |
| 2005 05 18 | E12 | 0.1-  | 0.6+  | 2007 11 03 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2005 05 18 | E12 | 0.9+  | 1.1+  | 2007 11 03 | 691 | 0.1- | 0.4+ | 2007 12 15 | G96 | 0.5+ | 0.2- |
| 2005 05 19 | 644 | 0.8+  | 0.2+  | 2007 11 03 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.1- |



(172948)\* 2005 JR<sub>164</sub>

Discovered 2005 May 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 227.19298  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21468499 | $\omega$ | 310.04081 | −0.98377454 |          |          | +0.02305432 |
| <i>a</i> | 2.7622835  | $\Omega$ | 232.03030 | +0.02442293 |          |          | −0.96526850 |
| <i>e</i> | 0.1449523  | <i>i</i> | 13.04361  | −0.17773905 |          |          | −0.26024071 |
| <i>P</i> | 4.59       | <i>H</i> | 15.8      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 14 | 691 | 0.4+  | 0.0   | 2005 04 18 | 703 | 0.3− | 0.3− | 2007 09 25 | G96 | 0.5+ | 0.3− |
| 1998 11 14 | 691 | 0.2+  | 2.8−  | 2005 04 18 | 703 | 1.0− | 0.2− | 2007 09 25 | G96 | 0.5+ | 0.0  |
| 1998 11 14 | 691 | 0.2+  | 0.0   | 2005 04 18 | 703 | 0.9− | 0.1− | 2007 09 25 | G96 | 0.8+ | 0.0  |
| 1998 11 23 | 691 | 0.2−  | 0.1−  | 2005 05 10 | 704 | 0.5+ | 0.7+ | 2007 09 25 | G96 | 0.8+ | 0.2+ |
| 1998 11 23 | 691 | 0.1−  | 0.0   | 2005 05 10 | 704 | 0.2+ | 0.8+ | 2007 10 11 | 691 | 0.1− | 0.1+ |
| 1998 11 23 | 691 | 0.2−  | 0.3+  | 2005 05 10 | 704 | 0.3+ | 0.5+ | 2007 10 11 | 691 | 0.1+ | 0.2+ |
| 1998 11 27 | 691 | 0.2−  | 0.0   | 2005 05 10 | 704 | 0.1+ | 0.6+ | 2007 10 11 | 691 | 0.2− | 0.3+ |
| 1998 11 27 | 691 | 0.1+  | 1.5+  | 2005 05 10 | 704 | 0.7+ | 0.6+ | 2007 10 15 | 691 | 0.3+ | 0.1+ |
| 2000 03 09 | 704 | 1.1+  | 0.5+  | 2005 05 10 | G96 | 0.2− | 0.3− | 2007 10 15 | 691 | 0.0  | 0.3+ |
| 2000 03 09 | 704 | 0.7+  | 0.3−  | 2005 05 10 | G96 | 0.1− | 0.3− | 2007 10 15 | 691 | 0.1− | 0.1+ |
| 2000 03 09 | 704 | 1.4+  | 0.1−  | 2005 05 10 | G96 | 0.2+ | 0.2+ | 2007 10 19 | 691 | 0.0  | 0.3+ |
| 2000 04 05 | 699 | 0.1+  | 0.8+  | 2005 05 10 | G96 | 0.1− | 0.2− | 2007 10 19 | 691 | 0.0  | 0.2+ |
| 2000 04 05 | 699 | 0.7+  | 1.5+  | 2005 05 19 | 644 | 0.3+ | 0.0  | 2007 10 19 | 691 | 1.0− | 0.5+ |
| 2000 04 05 | 699 | (3.1− | 0.9+) | 2005 05 19 | 644 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.2− | 0.0  |
| 2000 04 05 | 699 | 0.5−  | 0.3−  | 2005 05 19 | 644 | 0.6+ | 0.4− | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2002 10 03 | 599 | 0.1+  | 0.5+  | 2005 05 30 | 699 | 1.2+ | 1.6− | 2007 12 15 | G96 | 0.8+ | 0.0  |
| 2002 10 03 | 599 | 0.3−  | 0.7+  | 2005 05 30 | 699 | 0.0  | 0.6+ | 2007 12 15 | G96 | 0.2+ | 0.1− |
| 2002 10 03 | 599 | 0.2−  | 0.3+  | 2005 05 30 | 699 | 0.1+ | 0.3+ |            |     |      |      |
| 2005 04 18 | 703 | 1.0−  | 0.4+  | 2005 05 30 | 699 | 0.2− | 0.8+ |            |     |      |      |

(172949)\* 2005 JQ<sub>166</sub> = 2006 SR<sub>161</sub>

Discovered 2005 May 11 by NEAT at Palomar.

Id. A. Doppler (*MPO* 109262)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 92.36107   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17061504 | $\omega$ | 336.51103 | +0.61119539 |          |          | +0.79053620 |
| <i>a</i> | 3.2195203  | $\Omega$ | 331.12031 | −0.71289628 |          |          | +0.52864982 |
| <i>e</i> | 0.1131375  | <i>i</i> | 4.58831   | −0.34383003 |          |          | +0.30916320 |
| <i>P</i> | 5.78       | <i>H</i> | 15.0      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 08 01 | 704 | 0.6−  | 0.2+  | 2006 08 28 | 703 | 0.2+  | 1.0−  | 2006 11 16 | G96 | 0.2−  | 0.3−  |
| 2000 08 01 | 704 | 0.7+  | 0.8−  | 2006 08 28 | 703 | (0.1− | 1.7+) | 2006 11 16 | G96 | 0.3+  | 0.5−  |
| 2000 08 01 | 704 | 0.5−  | 0.1−  | 2006 08 28 | 699 | 0.6−  | 1.3+  | 2007 11 02 | 691 | 0.1+  | 0.3−  |
| 2000 08 01 | 704 | 0.2−  | 0.3+  | 2006 08 28 | 703 | 1.4+  | 0.0   | 2007 11 02 | 691 | 0.4+  | 0.3−  |
| 2003 01 13 | 644 | 0.0   | 0.4+  | 2006 08 28 | 703 | 0.5−  | 0.9+  | 2007 11 02 | 691 | 0.4+  | 0.2−  |
| 2003 01 13 | 644 | 0.0   | 0.3+  | 2006 08 28 | 703 | 0.4+  | 0.0   | 2007 11 07 | 704 | (0.6− | 2.4+) |
| 2003 01 13 | 644 | 0.9+  | 0.4+  | 2006 08 28 | 703 | 0.0   | 0.1+  | 2007 11 07 | 704 | (1.5− | 2.9+) |
| 2004 02 26 | 704 | 1.4+  | 1.2+  | 2006 08 28 | 703 | 0.1+  | 0.3+  | 2007 11 07 | 704 | (0.1− | 1.9+) |
| 2004 02 26 | 704 | (0.5+ | 1.6+) | 2006 08 28 | 703 | (2.4− | 1.1+) | 2007 11 07 | 704 | (0.1− | 2.8+) |
| 2004 02 26 | 704 | (1.2+ | 1.8+) | 2006 09 14 | 703 | 0.0   | 1.0+  | 2007 11 18 | 704 | 0.2+  | 0.6+  |
| 2004 02 26 | 704 | 1.5+  | 0.1+  | 2006 09 14 | 703 | 0.6−  | 1.2+  | 2007 11 18 | 704 | 0.1+  | 0.5+  |
| 2005 02 14 | 809 | 0.3−  | 0.2+  | 2006 09 14 | 703 | 0.6−  | 0.2+  | 2007 11 18 | 704 | 1.0−  | 0.2+  |
| 2005 02 14 | 809 | 0.0   | 0.2+  | 2006 09 14 | 703 | 0.4+  | 0.3−  | 2007 11 18 | 704 | 0.6−  | 1.2+  |
| 2005 02 14 | 809 | 0.1−  | 0.3+  | 2006 09 24 | 699 | 0.1+  | 0.4+  | 2007 11 18 | 704 | 0.2−  | 1.4+  |
| 2005 05 11 | 644 | 0.1−  | 0.9+  | 2006 09 24 | 699 | (0.3+ | 1.6+) | 2007 11 30 | A77 | 1.1−  | 0.8+  |
| 2005 05 11 | 644 | 0.3−  | 0.5+  | 2006 09 24 | 699 | 0.1−  | 0.4+  | 2007 11 30 | A77 | 0.4+  | 1.4−  |
| 2005 05 11 | 644 | 0.1−  | 0.5+  | 2006 09 24 | 699 | 0.3−  | 1.1+  | 2007 11 30 | A77 | 0.4+  | 0.5−  |
| 2005 05 19 | 644 | 0.4−  | 0.6+  | 2006 09 26 | G96 | 0.4+  | 0.1−  | 2007 12 04 | 691 | 0.0   | 0.1+  |
| 2005 05 19 | 644 | 0.2−  | 0.4+  | 2006 09 26 | G96 | 0.3+  | 0.1−  | 2007 12 04 | 691 | 0.1−  | 0.0   |
| 2005 05 19 | 644 | 0.3+  | 0.5+  | 2006 09 26 | G96 | 0.6+  | 0.1−  | 2007 12 04 | 691 | 0.0   | 0.2+  |
| 2006 08 28 | 699 | 0.6−  | 0.1−  | 2006 09 26 | G96 | 0.5+  | 0.3+  | 2007 12 06 | 691 | 1.2−  | 0.2+  |
| 2006 08 28 | 699 | 0.2−  | 1.3−  | 2006 11 16 | G96 | 0.2−  | 0.3+  | 2007 12 06 | 691 | 0.1−  | 0.2+  |
| 2006 08 28 | 699 | 0.2+  | 0.5+  | 2006 11 16 | G96 | 0.2+  | 0.4+  | 2007 12 06 | 691 | 0.1+  | 0.1−  |

(172950)\* 2005 JU<sub>166</sub> = 2005 JT<sub>55</sub>

Discovered 2005 May 11 by NEAT at Palomar.

Id. A. Doppler (d, *MPO* 86754)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 126.10378  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18763500 | $\omega$ | 44.96009  | +0.16597248 |          |          | +0.97738049 |
| <i>a</i> | 3.0217613  | $\Omega$ | 235.02711 | −0.94375471 |          |          | +0.11888550 |
| <i>e</i> | 0.0491337  | <i>i</i> | 9.20454   | −0.28597234 |          |          | +0.17491033 |
| <i>P</i> | 5.25       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 17 | 644 | 0.7−  | 0.1−  | 2005 06 11 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.6+  | 0.1+  |
| 2001 08 17 | 644 | 0.6−  | 0.3+  | 2005 06 27 | 644 | 0.1− | 0.1+ | 2007 10 30 | G96 | 0.2+  | 0.1−  |
| 2001 08 17 | 644 | 0.4+  | 0.3−  | 2005 06 27 | 644 | 0.3− | 0.0  | 2007 10 30 | G96 | 0.0   | 0.3+  |
| 2001 08 24 | 699 | (1.5+ | 2.4+) | 2005 06 27 | 644 | 0.3− | 0.4+ | 2007 11 15 | 704 | 0.1+  | 0.5+  |
| 2001 08 24 | 699 | 1.0+  | 1.1−  | 2006 09 14 | 691 | 0.3+ | 0.4+ | 2007 11 15 | 704 | 0.0   | 0.0   |
| 2001 08 24 | 699 | 0.1−  | 1.2+  | 2006 09 14 | 691 | 0.2− | 0.4− | 2007 11 15 | 704 | 0.1+  | 1.1+  |
| 2001 08 24 | 699 | (2.5− | 0.7+) | 2006 09 14 | 691 | 0.1− | 0.2− | 2007 11 15 | 704 | 0.0   | 0.4+  |
| 2005 02 13 | 809 | 0.3−  | 0.0   | 2007 10 09 | G96 | 0.8+ | 0.4− | 2007 11 15 | 704 | 0.1+  | 1.4+  |
| 2005 02 13 | 809 | 0.5+  | 0.3−  | 2007 10 09 | G96 | 0.2+ | 0.4− | 2007 11 18 | 691 | 0.3+  | 0.3+  |
| 2005 02 13 | 809 | 0.5−  | 0.3−  | 2007 10 09 | G96 | 0.7+ | 0.3− | 2007 11 18 | 691 | 0.1+  | 0.3+  |
| 2005 05 04 | 644 | 0.1+  | 0.2+  | 2007 10 09 | G96 | 0.5+ | 0.3− | 2007 11 18 | 691 | 0.0   | 0.2−  |
| 2005 05 04 | 644 | 0.2+  | 0.0   | 2007 10 10 | G96 | 0.5+ | 0.2− | 2007 12 03 | 703 | 0.2+  | 0.0   |
| 2005 05 04 | 644 | 0.1+  | 0.0   | 2007 10 10 | G96 | 0.2+ | 0.2− | 2007 12 03 | 703 | (1.9+ | 1.1−) |
| 2005 05 11 | 644 | 0.1+  | 0.0   | 2007 10 10 | G96 | 0.5+ | 0.2− | 2007 12 03 | 703 | 0.5+  | 1.1−  |
| 2005 05 11 | 644 | 0.3+  | 0.0   | 2007 10 10 | G96 | 0.2+ | 0.2− | 2007 12 03 | 703 | 0.3−  | 0.1+  |
| 2005 05 11 | 644 | 0.1−  | 0.0   | 2007 10 11 | 691 | 0.2− | 0.3+ | 2007 12 05 | 704 | 1.2+  | 0.6−  |
| 2005 05 18 | E12 | 0.5−  | 0.0   | 2007 10 11 | 691 | 0.1− | 0.3+ | 2007 12 05 | 704 | 0.0   | 0.7−  |
| 2005 05 18 | E12 | 0.1+  | 0.7+  | 2007 10 11 | 691 | 0.4− | 0.3+ | 2007 12 05 | 704 | 1.1+  | 0.2+  |
| 2005 05 18 | E12 | 0.1−  | 0.2+  | 2007 10 15 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.8+  | 1.0+  |
| 2005 05 18 | E12 | 0.1+  | 0.2+  | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 12 14 | 691 | 0.2−  | 0.0   |
| 2005 06 06 | 691 | 0.1+  | 0.3+  | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 12 14 | 691 | 0.0   | 0.3+  |
| 2005 06 06 | 691 | 0.2+  | 0.4+  | 2007 10 19 | 691 | 0.2− | 0.6+ | 2007 12 14 | 691 | 1.0−  | 0.5−  |
| 2005 06 06 | 691 | 0.0   | 0.5+  | 2007 10 19 | 691 | 0.1− | 0.3− | 2007 12 16 | 691 | 0.1−  | 0.3+  |
| 2005 06 11 | 691 | 0.1+  | 0.3+  | 2007 10 19 | 691 | 0.1− | 0.2− | 2007 12 16 | 691 | 0.0   | 0.1+  |
| 2005 06 11 | 691 | 0.0   | 0.2+  | 2007 10 30 | G96 | 0.1+ | 0.0  | 2007 12 16 | 691 | 0.1−  | 0.1+  |

(172951)\* 2005 JN<sub>174</sub>

Discovered 2005 May 11 by M. W. Buie at Cerro Tololo.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 290.52092  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27123570 | $\omega$ | 326.81034 | −0.96467019 |          |          | −0.26157621 |
| <i>a</i> | 2.3635864  | $\Omega$ | 198.10532 | +0.25835361 |          |          | −0.91581360 |
| <i>e</i> | 0.0567495  | <i>i</i> | 5.80899   | +0.05162197 |          |          | −0.30473486 |
| <i>P</i> | 3.63       | <i>H</i> | 17.0      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 04 | 691 | 0.2+ | 0.4− | 2005 03 10 | G96 | 0.3− | 0.3− | 2005 05 14 | 644 | 0.3− | 0.9+ |
| 1999 11 04 | 691 | 0.5− | 0.1− | 2005 03 10 | G96 | 0.2− | 0.3− | 2005 05 14 | 644 | 0.1+ | 0.3+ |
| 1999 11 04 | 691 | 0.1+ | 0.3− | 2005 03 10 | G96 | 0.6− | 0.1− | 2005 05 14 | 644 | 0.1− | 0.2+ |
| 2001 02 19 | 699 | 0.8+ | 1.1+ | 2005 03 10 | G96 | 0.2− | 0.2+ | 2005 05 14 | 644 | 0.1+ | 0.1− |
| 2001 02 19 | 699 | 0.3+ | 0.0  | 2005 04 04 | G96 | 0.0  | 0.0  | 2005 05 14 | 644 | 0.3− | 0.3− |
| 2001 02 19 | 699 | 0.7+ | 0.7+ | 2005 04 04 | G96 | 0.3− | 0.1− | 2005 05 14 | 644 | 0.1− | 0.1+ |
| 2001 02 19 | 699 | 0.8+ | 1.4+ | 2005 04 04 | G96 | 0.2− | 0.3− | 2006 08 29 | 691 | 0.1+ | 0.1+ |
| 2001 02 20 | 645 | 0.0  | 0.1− | 2005 04 04 | G96 | 0.8− | 0.1− | 2006 08 29 | 691 | 0.0  | 0.2+ |
| 2001 02 20 | 645 | 0.0  | 0.1− | 2005 04 17 | 691 | 0.3+ | 0.1− | 2006 08 29 | 691 | 0.1+ | 0.3+ |
| 2003 11 19 | 699 | 0.7+ | 0.3− | 2005 04 17 | 691 | 0.1+ | 0.1+ | 2006 09 01 | 152 | 0.1− | 1.8+ |
| 2003 11 19 | 699 | 0.4+ | 0.3− | 2005 04 17 | 691 | 0.1+ | 0.0  | 2006 09 01 | 152 | 2.3+ | 0.6− |
| 2003 11 19 | 699 | 0.4+ | 0.2− | 2005 05 11 | 807 | 0.5− | 0.0  | 2006 09 28 | G96 | 0.1− | 0.1− |
| 2003 11 19 | 699 | 0.1+ | 0.4− | 2005 05 11 | 807 | 0.4− | 0.1+ | 2006 09 28 | G96 | 0.1− | 0.1− |
| 2003 12 21 | 691 | 0.5− | 0.5+ | 2005 05 12 | 691 | 0.1− | 0.2+ | 2006 09 28 | G96 | 0.8− | 0.2− |
| 2003 12 21 | 691 | 0.2− | 0.4+ | 2005 05 12 | 691 | 0.1+ | 0.3+ | 2006 09 28 | G96 | 0.3− | 0.2− |
| 2003 12 21 | 691 | 0.3− | 0.5+ | 2005 05 12 | 691 | 0.1+ | 0.3+ |            |     |      |      |

**(172952)\* 2005 KC<sub>3</sub>**

Discovered 2005 May 17 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 139.57029  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21408131 | $\omega$ | 228.95233 | +0.15401334 | +0.97465529 |          |   |
| <i>a</i> | 2.7674739  | $\Omega$ | 50.66075  | -0.83190163 | +0.21651466 |          |   |
| <i>e</i> | 0.0434563  | <i>i</i> | 12.11027  | -0.53312247 | -0.05628909 |          |   |
| <i>P</i> | 4.60       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 08 | 608 | 0.1+  | 0.0   | 2005 05 09 | 699 | 0.3+ | 0.4+ | 2007 11 02 | 691 | 0.0   | 0.2+  |
| 2000 03 08 | 608 | 0.0   | 0.2-  | 2005 05 09 | 704 | 0.2+ | 0.9+ | 2007 11 08 | 691 | 0.2-  | 0.1+  |
| 2000 03 08 | 608 | 0.0   | 0.1+  | 2005 05 09 | 699 | 0.4+ | 0.8+ | 2007 11 08 | 691 | 0.5-  | 0.1+  |
| 2002 10 11 | 704 | 1.1-  | 0.3+  | 2005 05 09 | 699 | 0.9+ | 0.1+ | 2007 11 08 | 691 | 0.1-  | 0.0   |
| 2002 10 11 | 704 | (2.2- | 0.8+) | 2005 05 09 | 699 | 0.2- | 0.9+ | 2007 11 18 | 704 | 0.2+  | 0.5-  |
| 2002 10 11 | 704 | 0.8-  | 1.3+  | 2005 05 17 | G96 | 0.0  | 0.3+ | 2007 11 18 | 704 | 0.6+  | 0.5-  |
| 2002 10 11 | 704 | (2.4- | 0.8+) | 2005 05 17 | G96 | 0.2- | 0.4+ | 2007 11 18 | 704 | 1.1+  | 0.2+  |
| 2002 10 30 | 644 | 0.5+  | 0.8+  | 2005 05 17 | G96 | 0.2- | 0.2+ | 2007 11 18 | 704 | 0.2+  | 0.4-  |
| 2002 10 30 | 644 | 0.6+  | 0.6+  | 2005 05 17 | G96 | 0.3- | 0.0  | 2007 11 20 | 704 | 0.2-  | 0.2-  |
| 2002 10 30 | 644 | 0.8+  | 0.1+  | 2005 05 19 | G96 | 0.1- | 0.1+ | 2007 11 20 | 704 | (0.9+ | 2.3+) |
| 2002 11 11 | 704 | 0.0   | 0.1-  | 2005 05 19 | G96 | 0.3- | 0.1+ | 2007 11 20 | 704 | 1.0-  | 0.1-  |
| 2002 11 11 | 704 | 0.4-  | 0.2+  | 2005 05 19 | G96 | 0.4- | 0.0  | 2007 11 20 | 704 | 0.6+  | 0.1+  |
| 2002 11 11 | 704 | 0.3-  | 0.9+  | 2005 05 19 | G96 | 0.3- | 0.1+ | 2007 11 20 | 691 | 0.1-  | 0.1+  |
| 2002 12 01 | 704 | 0.1+  | 0.3-  | 2005 06 12 | G96 | 0.5- | 0.3+ | 2007 11 20 | 691 | 0.1-  | 0.0   |
| 2002 12 01 | 704 | 0.4-  | 0.1+  | 2005 06 12 | G96 | 0.2- | 0.1+ | 2007 11 20 | 691 | 0.1-  | 0.0   |
| 2002 12 01 | 704 | 0.1+  | 0.8-  | 2005 06 12 | G96 | 0.1+ | 0.3+ | 2007 12 13 | 704 | 0.4+  | 0.1-  |
| 2002 12 01 | 704 | 0.9-  | 0.7-  | 2005 06 12 | G96 | 0.2- | 0.0  | 2007 12 13 | 704 | 0.0   | 0.3+  |
| 2005 04 05 | 691 | 0.5+  | 0.1+  | 2006 07 30 | E12 | 0.0  | 0.5+ | 2007 12 13 | 704 | 1.0+  | 0.1-  |
| 2005 04 05 | 691 | 0.8+  | 0.3+  | 2006 07 30 | E12 | 1.3- | 0.2+ | 2007 12 13 | 704 | 0.2+  | 0.2+  |
| 2005 04 05 | 691 | 1.0-  | 1.3-  | 2006 07 30 | E12 | 0.8+ | 0.6+ | 2007 12 13 | 704 | 0.4+  | 0.6-  |
| 2005 04 13 | 699 | 0.7-  | 1.3+  | 2006 07 30 | E12 | 0.1+ | 0.5- | 2007 12 15 | 704 | 0.1-  | 1.0+  |
| 2005 04 13 | 699 | 1.3+  | 1.1+  | 2007 09 15 | G96 | 0.6+ | 0.1- | 2007 12 15 | 704 | 1.3-  | 0.4+  |
| 2005 04 13 | 699 | (1.0+ | 2.2+) | 2007 09 15 | G96 | 0.3+ | 0.0  | 2007 12 15 | 704 | 0.5+  | 0.7+  |
| 2005 04 13 | 699 | 1.0+  | 0.0   | 2007 09 15 | G96 | 0.4+ | 0.2- | 2007 12 15 | 704 | 0.7-  | 0.7-  |
| 2005 05 09 | 704 | 0.5+  | 1.1+  | 2007 09 15 | G96 | 0.2+ | 0.1- | 2007 12 15 | 704 | 0.1-  | 0.1-  |
| 2005 05 09 | 704 | 0.5+  | 0.3+  | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.0   | 0.7+  |
| 2005 05 09 | 704 | 0.5+  | 0.2+  | 2007 11 02 | 691 | 0.1+ | 0.2+ | 2007 12 15 | 704 | 0.5-  | 0.4+  |

**(172953)\* 2005 KG<sub>5</sub> = 2004 CK<sub>82</sub>**

Discovered 2005 May 18 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 86760)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 326.38902  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.20293256 | $\omega$ | 257.12812 | -0.01642172 | -0.99984096 |          |   |
| <i>a</i> | 2.8679278  | $\Omega$ | 193.81848 | +0.92828144 | -0.01266082 |          |   |
| <i>e</i> | 0.0315994  | <i>i</i> | 1.66880   | +0.37151566 | -0.01256018 |          |   |
| <i>P</i> | 4.86       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 26 | 691 | 0.7+  | 0.0   | 2005 05 20 | G96 | 0.2+  | 0.4+  | 2007 10 24 | G96 | 0.2+ | 0.0  |
| 2000 05 26 | 691 | 0.2+  | 0.5-  | 2006 07 28 | A50 | 0.1-  | 0.7-  | 2007 10 24 | G96 | 0.4+ | 0.5- |
| 2000 05 26 | 691 | 0.1-  | 0.8+  | 2006 08 28 | 691 | 0.2-  | 0.6+  | 2007 10 24 | G96 | 0.0  | 0.3+ |
| 2002 11 04 | 644 | 1.0-  | 0.6+  | 2006 08 28 | 691 | 0.1-  | 0.1+  | 2007 10 25 | G96 | 0.4+ | 0.0  |
| 2002 11 04 | 644 | 0.5-  | 0.4+  | 2006 08 28 | 691 | 0.2-  | 0.4+  | 2007 10 25 | G96 | 0.6+ | 1.0- |
| 2002 11 04 | 644 | 0.4-  | 0.7+  | 2006 08 28 | 703 | (1.8- | 1.4+) | 2007 10 25 | G96 | 0.5+ | 0.5- |
| 2004 02 12 | 691 | 0.2+  | 0.2+  | 2006 08 28 | 703 | (0.3- | 1.6+) | 2007 10 25 | G96 | 0.9+ | 0.2- |
| 2004 02 12 | 691 | 0.1+  | 0.3+  | 2006 08 28 | 703 | 0.6+  | 0.7+  | 2007 10 31 | 691 | 0.2- | 0.2- |
| 2004 02 12 | 691 | 0.3-  | 0.3+  | 2006 08 28 | 703 | (0.1- | 2.1-) | 2007 10 31 | 691 | 0.4- | 0.1- |
| 2004 02 17 | 704 | 0.1+  | 0.8+  | 2006 10 21 | G96 | 0.0   | 0.2-  | 2007 10 31 | 691 | 0.1- | 0.2+ |
| 2004 02 17 | 704 | (0.4+ | 1.8+) | 2006 10 21 | G96 | 0.7-  | 0.3-  | 2007 11 05 | 704 | 0.8+ | 0.5+ |
| 2004 02 17 | 704 | (0.0  | 1.5+) | 2006 10 21 | G96 | 0.2-  | 0.0   | 2007 11 05 | 704 | 0.8- | 0.8+ |
| 2005 05 08 | G96 | 0.7+  | 0.1+  | 2006 10 21 | G96 | 0.3+  | 0.2-  | 2007 11 05 | 704 | 0.9+ | 1.2+ |
| 2005 05 08 | G96 | 0.1-  | 0.2-  | 2007 10 14 | G96 | 0.1+  | 0.3-  | 2007 11 05 | 704 | 1.1- | 0.0  |
| 2005 05 08 | G96 | 0.3-  | 0.2+  | 2007 10 14 | G96 | 0.0   | 0.0   | 2007 11 14 | 704 | 0.3+ | 0.1+ |
| 2005 05 08 | G96 | 0.6-  | 0.4-  | 2007 10 14 | G96 | 0.1-  | 0.2-  | 2007 11 14 | 704 | 0.7+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 18 | 644 | 0.1- | 0.4+ | 2007 10 14 | G96 | 0.4+ | 0.2- | 2007 11 14 | 704 | (0.3+ | 1.8+) |
| 2005 05 18 | 644 | 0.3- | 0.4+ | 2007 10 15 | G96 | 0.2- | 0.1- | 2007 12 05 | 704 | 0.3+  | 0.5+  |
| 2005 05 18 | 644 | 0.1- | 0.6+ | 2007 10 15 | G96 | 0.3+ | 0.0  | 2007 12 05 | 704 | 0.2-  | 1.9+  |
| 2005 05 20 | G96 | 0.5- | 0.6+ | 2007 10 15 | G96 | 0.2- | 0.3- | 2007 12 05 | 704 | 0.1+  | 0.5-  |
| 2005 05 20 | G96 | 0.0  | 0.4- | 2007 10 15 | G96 | 0.4+ | 0.4- | 2007 12 05 | 704 | 0.4-  | 0.6+  |
| 2005 05 20 | G96 | 0.1- | 0.4+ | 2007 10 24 | G96 | 0.5+ | 0.7- |            |     |       |       |

**(172954)\* 2005 KC<sub>6</sub>**

Discovered 2005 May 18 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 259.29185  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.24348641 | $\omega$ | 70.20229  | -0.99818661 | -0.05863963 |          |   |
| <i>a</i> | 2.5399173  | $\Omega$ | 106.43410 | +0.04854947 | -0.91780266 |          |   |
| <i>e</i> | 0.1894316  | <i>i</i> | 0.81229   | +0.03558716 | -0.39268267 |          |   |
| <i>P</i> | 4.05       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.1-  | 0.3+  | 2005 05 04 | G96 | 0.3- | 0.0  | 2006 08 28 | 691 | 0.1- | 0.0  |
| 2003 11 19 | 691 | 0.4+  | 0.4+  | 2005 05 18 | 644 | 0.6+ | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1- |
| 2003 11 19 | 691 | 0.7+  | 0.4+  | 2005 05 18 | 644 | 0.1+ | 0.3+ | 2007 11 03 | 691 | 0.2- | 0.0  |
| 2003 12 01 | 691 | (1.8- | 1.1+) | 2005 05 18 | 644 | 0.8+ | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.5- |
| 2003 12 01 | 691 | 0.4-  | 0.4+  | 2005 05 19 | 644 | 0.0  | 0.3+ | 2007 11 07 | 691 | 0.2+ | 0.1+ |
| 2003 12 01 | 691 | 0.4-  | 0.1+  | 2005 05 19 | 644 | 0.1+ | 0.1- | 2007 11 07 | 691 | 0.0  | 0.3- |
| 2003 12 19 | 291 | 0.3-  | 0.1+  | 2005 05 19 | 644 | 0.4+ | 0.3- | 2007 11 07 | 691 | 0.0  | 0.2+ |
| 2003 12 19 | 291 | 0.0   | 0.1-  | 2005 06 13 | G96 | 0.0  | 0.7+ | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2003 12 19 | 291 | 0.1-  | 0.3-  | 2005 06 13 | G96 | 0.2+ | 0.3+ | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2005 04 11 | G96 | 0.2-  | 0.3+  | 2005 06 13 | G96 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.3- | 0.2+ |
| 2005 04 11 | G96 | 0.2-  | 0.4+  | 2005 06 13 | G96 | 0.4- | 0.3+ | 2007 12 06 | G96 | 0.6+ | 0.1- |
| 2005 04 11 | G96 | 0.3+  | 0.7+  | 2006 08 21 | 691 | 0.2+ | 0.1+ | 2007 12 06 | G96 | 0.9+ | 0.0  |
| 2005 04 11 | G96 | 0.0   | 0.2+  | 2006 08 21 | 691 | 0.0  | 0.1- | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2005 05 04 | G96 | 0.2+  | 0.4+  | 2006 08 21 | 691 | 0.6+ | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.2+ |
| 2005 05 04 | G96 | 0.3-  | 0.1+  | 2006 08 28 | 691 | 0.3- | 0.0  |            |     |      |      |
| 2005 05 04 | G96 | 0.2-  | 0.1-  | 2006 08 28 | 691 | 0.4- | 0.1- |            |     |      |      |

**(172955)\* 2005 KR<sub>11</sub>**

Discovered 2005 May 30 by the Siding Spring Survey at Siding Spring.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 133.54558  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18036734 | $\omega$ | 32.48295  | +0.23293570 | +0.93520717 |          |   |
| <i>a</i> | 3.1023976  | $\Omega$ | 252.19620 | -0.94134377 | +0.14797779 |          |   |
| <i>e</i> | 0.1643547  | <i>i</i> | 16.26702  | -0.24415747 | +0.32169881 |          |   |
| <i>P</i> | 5.46       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 11 12 | 704 | 0.7+ | 0.1+ | 2005 06 23 | 644 | 0.5+  | 0.4+  | 2006 09 28 | 703 | 0.7-  | 0.6+  |
| 2001 11 12 | 704 | 1.0- | 0.2+ | 2005 06 23 | 644 | 0.1-  | 0.5+  | 2006 09 28 | 703 | 0.4+  | 0.6-  |
| 2001 11 12 | 704 | 1.0+ | 0.6- | 2005 06 28 | G96 | 0.3+  | 0.0   | 2006 10 20 | 703 | 0.6-  | 0.8-  |
| 2001 11 12 | 704 | 0.8- | 0.9+ | 2005 06 28 | G96 | 0.0   | 0.1+  | 2006 10 20 | 703 | 0.7+  | 0.4-  |
| 2005 05 30 | E12 | 0.2+ | 0.1- | 2005 06 28 | G96 | 0.2+  | 0.3+  | 2006 10 20 | 703 | 0.1-  | 0.4+  |
| 2005 05 30 | E12 | 0.1- | 0.5- | 2005 06 28 | G96 | 0.1-  | 0.2+  | 2006 10 20 | 703 | 0.3-  | 1.2+  |
| 2005 05 30 | E12 | 0.4- | 0.3+ | 2005 07 05 | G96 | 0.0   | 0.3-  | 2007 11 01 | 691 | 0.3-  | 0.3-  |
| 2005 05 30 | E12 | 0.4- | 0.2- | 2005 07 05 | G96 | 0.3+  | 0.2-  | 2007 11 01 | 691 | 0.1-  | 0.2+  |
| 2005 06 04 | 704 | 0.6+ | 0.1+ | 2005 07 05 | G96 | 0.0   | 0.2-  | 2007 11 01 | 691 | 0.0   | 0.1-  |
| 2005 06 04 | 704 | 0.3+ | 0.8+ | 2005 07 05 | G96 | 0.1+  | 0.3-  | 2007 12 04 | G96 | 0.2+  | 0.2-  |
| 2005 06 04 | 704 | 0.1+ | 0.5+ | 2005 07 27 | 644 | 0.3-  | 0.2+  | 2007 12 04 | G96 | 0.6+  | 0.0   |
| 2005 06 04 | 704 | 0.3- | 0.5+ | 2005 07 27 | 644 | 0.0   | 0.1+  | 2007 12 04 | G96 | 0.1+  | 0.5-  |
| 2005 06 04 | 704 | 0.4+ | 0.0  | 2005 07 27 | 644 | 0.0   | 0.3+  | 2007 12 04 | G96 | 0.1+  | 0.2-  |
| 2005 06 11 | 703 | 1.2+ | 1.1- | 2005 08 05 | 644 | 0.5-  | 0.1+  | 2007 12 05 | 704 | 0.3+  | 0.2-  |
| 2005 06 11 | 703 | 0.3- | 0.4+ | 2005 08 05 | 644 | 0.4-  | 0.1-  | 2007 12 05 | 704 | 0.8+  | 0.3+  |
| 2005 06 11 | 703 | 1.3- | 0.2- | 2005 08 05 | 644 | 0.2+  | 0.2+  | 2007 12 05 | 704 | 0.2+  | 1.2+  |
| 2005 06 11 | 703 | 0.4- | 0.2- | 2006 09 17 | 703 | 0.4-  | 0.0   | 2007 12 05 | 704 | (1.6+ | 1.0+) |
| 2005 06 13 | G96 | 0.0  | 0.1+ | 2006 09 17 | 703 | 0.0   | 0.3-  | 2007 12 16 | 691 | 0.0   | 0.6+  |
| 2005 06 13 | G96 | 0.0  | 0.3+ | 2006 09 17 | 703 | 1.3+  | 0.0   | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2005 06 13 | G96 | 0.0  | 0.2+ | 2006 09 17 | 703 | 0.1+  | 0.7-  | 2007 12 16 | 691 | 0.0   | 0.1-  |
| 2005 06 13 | G96 | 0.2- | 0.2- | 2006 09 28 | 703 | (2.6+ | 0.5+) |            |     |       |       |
| 2005 06 23 | 644 | 0.3+ | 0.2+ | 2006 09 28 | 703 | 0.4-  | 0.3+  |            |     |       |       |

2007 DEC. 24

M.P.O. 129525

(172956)\* 2005 LZ<sub>1</sub>

Discovered 2005 June 1 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 137.33191  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.20874676 | $\omega$ | 209.47281 |     | +0.58916864 |     | +0.77895068 |
| $a$ | 2.8144242  | $\Omega$ | 97.45064  |     | -0.69247404 |     | +0.62371688 |
| $e$ | 0.1213385  | $i$      | 12.50796  |     | -0.41636524 |     | +0.06490831 |
| $P$ | 4.72       | $H$      | 16.0      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 05 04 | 645 | 0.0   | 0.0   | 2005 06 05 | 704 | 0.2- | 0.1+ | 2006 09 24 | 699 | 0.2-  | 0.7+  |
| 2000 05 04 | 645 | 0.1+  | 0.0   | 2005 06 05 | 704 | 0.2+ | 1.1- | 2006 09 25 | 703 | (1.6- | 1.2-) |
| 2001 07 22 | 644 | 0.2-  | 0.3+  | 2005 06 05 | 704 | 0.3+ | 0.1+ | 2006 09 25 | 703 | 0.1-  | 0.2+  |
| 2001 07 22 | 644 | 0.0   | 0.1+  | 2005 06 16 | 691 | 0.1+ | 0.2+ | 2006 09 25 | 703 | 0.2+  | 0.8+  |
| 2001 07 22 | 644 | 0.2-  | 0.1+  | 2005 06 16 | 691 | 0.3+ | 0.0  | 2006 09 25 | 703 | 0.5+  | 0.0   |
| 2001 08 23 | 608 | 0.8-  | 0.2-  | 2005 06 16 | 691 | 0.2+ | 0.2+ | 2006 10 10 | 644 | 0.3+  | 0.2-  |
| 2001 08 23 | 608 | 0.4-  | 0.6-  | 2005 06 24 | 644 | 0.0  | 0.2+ | 2006 10 10 | 644 | 0.1+  | 0.2+  |
| 2001 08 23 | 608 | 0.0   | 0.8-  | 2005 06 24 | 644 | 0.0  | 0.2- | 2006 10 10 | 644 | 0.5+  | 0.6+  |
| 2001 09 11 | 704 | 0.2-  | 0.3-  | 2005 06 24 | 644 | 0.2+ | 0.1+ | 2006 10 11 | 644 | 0.1-  | 0.4+  |
| 2001 09 11 | 704 | 0.5+  | 0.6-  | 2005 06 24 | 644 | 0.1- | 0.1+ | 2006 10 11 | 644 | 0.2+  | 0.3+  |
| 2001 09 11 | 704 | 0.5+  | 0.5-  | 2005 06 24 | 644 | 0.1+ | 0.1+ | 2006 10 11 | 644 | 0.2+  | 0.4+  |
| 2001 09 11 | 704 | 0.4-  | 0.2-  | 2005 06 24 | 644 | 0.2+ | 0.1+ | 2006 10 21 | 703 | (1.7- | 0.2+) |
| 2001 09 11 | 704 | 0.3+  | 0.3+  | 2005 06 27 | 644 | 0.2- | 0.1+ | 2006 10 21 | 703 | 1.2-  | 1.4+  |
| 2005 06 01 | 691 | 0.1+  | 0.4+  | 2005 06 27 | 644 | 0.1- | 0.3+ | 2006 10 21 | 703 | 0.0   | 0.7+  |
| 2005 06 01 | 691 | 0.3-  | 0.8+  | 2005 06 27 | 644 | 0.0  | 0.3+ | 2006 10 21 | 703 | 0.2+  | 0.7+  |
| 2005 06 01 | 691 | 0.2+  | 0.3+  | 2005 07 12 | G96 | 0.1- | 0.0  | 2007 11 19 | G96 | 0.2+  | 0.2+  |
| 2005 06 02 | E12 | 0.4-  | 0.2+  | 2005 07 12 | G96 | 0.4- | 0.0  | 2007 11 19 | G96 | 0.4+  | 0.0   |
| 2005 06 02 | E12 | 0.1-  | 0.2-  | 2005 07 12 | G96 | 0.3- | 0.2- | 2007 11 19 | G96 | 0.2+  | 0.2-  |
| 2005 06 02 | E12 | 0.1+  | 0.2-  | 2005 07 26 | 644 | 0.2- | 0.6+ | 2007 11 19 | G96 | 0.6+  | 0.3-  |
| 2005 06 02 | E12 | 0.5-  | 0.7-  | 2005 07 26 | 644 | 0.2- | 0.0  | 2007 12 03 | 691 | 0.5-  | 0.3+  |
| 2005 06 03 | 703 | 0.1+  | 0.3-  | 2005 07 26 | 644 | 0.3+ | 0.1- | 2007 12 03 | 691 | 0.4-  | 0.6+  |
| 2005 06 03 | 703 | 0.4+  | 0.3-  | 2006 09 24 | 699 | 0.7- | 0.8- | 2007 12 03 | 691 | 0.1+  | 0.5+  |
| 2005 06 03 | 703 | (0.3- | 2.6-) | 2006 09 24 | 699 | 0.2- | 0.8+ |            |     |       |       |
| 2005 06 03 | 703 | 0.3-  | 0.7-  | 2006 09 24 | 699 | 0.4+ | 0.4- |            |     |       |       |

(172957)\* 2005 LY<sub>8</sub>

Discovered 2005 June 1 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 323.25112  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.19336180 | $\omega$ | 290.98641 |     | +0.00216141  |     | -0.99796561  |
| $a$ | 2.9617991  | $\Omega$ | 158.58996 |     | +0.97004030  |     | -0.01338696  |
| $e$ | 0.0887537  | $i$      | 10.05251  |     | +0.24293443  |     | +0.06233327  |
| $P$ | 5.10       | $H$      | 15.4      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 12 13 | 644 | 0.3-  | 1.0+  | 2005 06 13 | 691 | 0.4+ | 0.3+ | 2007 10 13 | 703 | 0.1-  | 0.3+  |
| 2002 12 13 | 644 | 0.4-  | 1.2+  | 2006 07 21 | A50 | 0.6+ | 0.1- | 2007 10 13 | 703 | (2.0+ | 0.5-) |
| 2002 12 13 | 644 | 0.4-  | 0.7+  | 2006 07 21 | A50 | 0.4+ | 0.1- | 2007 10 30 | 703 | 1.0-  | 0.8+  |
| 2004 02 26 | 704 | 0.6+  | 0.9+  | 2006 08 14 | 644 | 0.1+ | 0.2+ | 2007 10 30 | 703 | (1.7- | 0.9+) |
| 2004 02 26 | 704 | (0.1- | 1.7+) | 2006 08 14 | 644 | 0.1+ | 0.0  | 2007 10 30 | 703 | 1.4-  | 0.6-  |
| 2004 02 26 | 704 | 0.4+  | 0.9+  | 2006 08 14 | 644 | 0.1- | 0.3+ | 2007 10 30 | 703 | 1.1-  | 1.0+  |
| 2004 02 26 | 704 | 1.1+  | 0.7+  | 2006 08 17 | 644 | 0.0  | 0.1+ | 2007 11 05 | 703 | 0.5-  | 0.3-  |
| 2005 05 13 | 691 | 0.1-  | 0.1+  | 2006 08 17 | 644 | 0.1- | 0.3+ | 2007 11 05 | 703 | 0.3+  | 1.1-  |
| 2005 05 13 | 691 | 0.2-  | 0.5+  | 2006 08 17 | 644 | 0.1- | 0.4+ | 2007 11 05 | 703 | 0.4+  | 0.7+  |
| 2005 05 13 | 691 | 0.0   | 0.4+  | 2006 09 27 | G96 | 0.1- | 0.1- | 2007 11 05 | 703 | 0.5-  | 0.0   |
| 2005 06 01 | G96 | 0.4-  | 0.1+  | 2006 09 27 | G96 | 0.1+ | 0.1- | 2007 11 14 | G96 | 0.7+  | 0.7+  |
| 2005 06 01 | G96 | 0.2-  | 0.1+  | 2006 09 27 | G96 | 0.3- | 0.4- | 2007 11 14 | G96 | 0.5+  | 0.4+  |
| 2005 06 01 | G96 | 0.8-  | 0.1+  | 2006 09 27 | G96 | 0.3+ | 0.3- | 2007 11 14 | G96 | 0.4+  | 0.7+  |
| 2005 06 01 | G96 | 0.2-  | 0.1+  | 2007 10 07 | 703 | 0.3+ | 1.5+ | 2007 11 14 | G96 | 0.2+  | 0.5+  |
| 2005 06 08 | 691 | 0.0   | 0.2+  | 2007 10 07 | 703 | 0.6+ | 1.2+ | 2007 12 06 | 703 | 0.9-  | 0.6+  |
| 2005 06 08 | 691 | 0.1+  | 0.4+  | 2007 10 07 | 703 | 1.5+ | 0.3+ | 2007 12 06 | 703 | 0.2-  | 0.0   |
| 2005 06 08 | 691 | 0.1-  | 0.0   | 2007 10 07 | 703 | 0.1+ | 0.1+ | 2007 12 06 | 703 | (0.1+ | 2.0+) |
| 2005 06 13 | 691 | 0.1+  | 0.4+  | 2007 10 13 | 703 | 0.4- | 0.2+ | 2007 12 06 | 703 | 1.2-  | 1.0+  |
| 2005 06 13 | 691 | 0.1+  | 0.3+  | 2007 10 13 | 703 | 0.7+ | 0.1- |            |     |       |       |

(172958)\* 2005 LH<sub>11</sub> = 2001 XS<sub>35</sub>

Discovered 2005 June 3 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 86775)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 95.73757   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17835378 | $\omega$ | 68.89705  |     | +0.94728196 |     | +0.20756859 |
| $a$ | 3.1257039  | $\Omega$ | 278.47721 |     | -0.29602349 |     | +0.85844829 |
| $e$ | 0.0274555  | $i$      | 14.28647  |     | +0.12258456 |     | +0.46902219 |
| $P$ | 5.53       | $H$      | 14.5      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 03 | 704 | 0.1+  | 0.1+  | 2003 01 28 | 608 | 0.1+  | 0.2-  | 2006 09 17 | 703 | 0.4+ | 0.2+ |
| 2000 10 03 | 704 | 0.5+  | 0.5+  | 2003 01 28 | 608 | 0.2+  | 0.1+  | 2006 09 17 | 703 | 0.6+ | 0.0  |
| 2000 10 03 | 704 | 0.3-  | 0.9+  | 2004 04 15 | E12 | (1.7- | 0.7+) | 2006 09 17 | 703 | 0.3- | 0.1+ |
| 2000 10 03 | 704 | 0.1+  | 0.9-  | 2004 04 15 | E12 | (1.0- | 2.3+) | 2006 09 28 | 703 | 0.3+ | 0.0  |
| 2001 11 11 | 704 | 0.9+  | 0.3+  | 2004 04 15 | E12 | 0.2-  | 1.3+  | 2006 09 28 | 703 | 0.4- | 0.1- |
| 2001 11 11 | 704 | 0.3-  | 0.2-  | 2004 04 15 | E12 | (1.3- | 2.5+) | 2006 09 28 | 703 | 0.0  | 0.5- |
| 2001 11 11 | 704 | 0.1+  | 0.2+  | 2005 06 03 | 691 | 0.3+  | 0.1+  | 2006 09 28 | 703 | 0.2- | 0.1- |
| 2001 11 11 | 704 | 0.6+  | 0.3-  | 2005 06 03 | 691 | 0.1-  | 0.1-  | 2006 10 23 | 644 | 0.1- | 0.1+ |
| 2001 11 11 | 704 | 1.0+  | 0.3-  | 2005 06 03 | 691 | 0.0   | 0.0   | 2006 10 23 | 644 | 0.1+ | 0.1+ |
| 2001 12 09 | 704 | 0.5-  | 0.0   | 2005 06 08 | 691 | 0.2+  | 0.0   | 2006 10 23 | 644 | 0.2+ | 0.0  |
| 2001 12 09 | 704 | 0.4-  | 0.6+  | 2005 06 08 | 691 | 0.7-  | 0.8-  | 2007 12 03 | 691 | 0.1- | 0.2- |
| 2001 12 09 | 704 | 0.8-  | 0.7+  | 2005 06 08 | 691 | 0.1+  | 0.1-  | 2007 12 03 | 691 | 0.1- | 0.1- |
| 2001 12 09 | 704 | 0.2+  | 0.8+  | 2005 06 11 | 704 | 0.3+  | 0.7+  | 2007 12 03 | 691 | 0.2- | 0.5- |
| 2001 12 09 | 704 | 0.6+  | 0.7+  | 2005 06 11 | 704 | 1.0-  | 0.0   | 2007 12 14 | 704 | 1.0+ | 0.7+ |
| 2001 12 14 | 704 | 1.1-  | 0.4-  | 2005 06 11 | 704 | (2.2- | 0.7-) | 2007 12 14 | 704 | 0.5+ | 0.2+ |
| 2001 12 14 | 704 | (1.8- | 0.3+) | 2005 06 12 | 691 | 0.1+  | 0.0   | 2007 12 14 | 704 | 1.0+ | 0.2+ |
| 2001 12 14 | 704 | 0.3-  | 0.0   | 2005 06 12 | 691 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.4+ | 0.5+ |
| 2001 12 14 | 704 | 0.4-  | 0.0   | 2005 06 12 | 691 | 0.2+  | 0.3+  | 2007 12 14 | 704 | 1.0+ | 0.4+ |
| 2002 01 08 | 704 | 0.4-  | 0.1+  | 2005 06 13 | G96 | 0.1+  | 0.4+  | 2007 12 15 | 691 | 0.1- | 0.1- |
| 2002 01 08 | 704 | 0.1-  | 0.1+  | 2005 06 13 | G96 | 0.2+  | 0.3+  | 2007 12 15 | 691 | 0.3- | 0.2+ |
| 2002 01 08 | 704 | 0.2-  | 0.9+  | 2005 06 13 | G96 | 0.0   | 0.5+  | 2007 12 15 | 691 | 0.1- | 0.1- |
| 2002 01 08 | 704 | 0.3+  | 0.8-  | 2005 06 13 | G96 | 0.1+  | 0.5+  |            |     |      |      |
| 2003 01 28 | 608 | 0.2-  | 0.1-  | 2006 09 17 | 703 | 1.0-  | 0.6-  |            |     |      |      |

(172959)\* 2005 LG<sub>19</sub>

Discovered 2005 June 8 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 5.04567    |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17881934 | $\omega$ | 247.11878 |     | +0.64525566 |     | -0.76263401 |
| $a$ | 3.1202764  | $\Omega$ | 162.46140 |     | +0.74426611 |     | +0.61419814 |
| $e$ | 0.1005419  | $i$      | 8.60833   |     | +0.17237487 |     | +0.20285465 |
| $P$ | 5.51       | $H$      | 15.2      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 23 | 809 | (2.9- | 3.4+) | 2005 06 14 | 691 | 0.2+ | 0.5- | 2006 09 26 | G96 | 0.2- | 0.7- |
| 2001 10 16 | 644 | 0.1+  | 0.4+  | 2005 06 30 | 691 | 0.4+ | 0.3+ | 2006 09 26 | G96 | 0.1- | 0.8- |
| 2001 10 16 | 644 | 0.1-  | 0.2+  | 2005 06 30 | 691 | 0.0  | 0.3+ | 2006 09 26 | G96 | 0.2- | 0.4- |
| 2001 10 16 | 644 | 0.2+  | 0.3+  | 2005 06 30 | 691 | 0.3+ | 0.0  | 2007 11 02 | 703 | 0.3+ | 0.6+ |
| 2001 10 24 | 644 | 0.1-  | 0.6+  | 2005 07 04 | 691 | 0.2- | 0.1+ | 2007 11 02 | 703 | 0.5- | 0.1+ |
| 2001 10 24 | 644 | 0.2+  | 0.9+  | 2005 07 04 | 691 | 0.0  | 0.2+ | 2007 11 02 | 703 | 0.1- | 1.1+ |
| 2001 10 24 | 644 | 0.2-  | 0.8+  | 2005 07 04 | 691 | 0.2- | 0.0  | 2007 11 02 | 703 | 0.1+ | 0.0  |
| 2003 01 01 | 704 | 0.2-  | 0.4+  | 2006 08 15 | D35 | 0.5- | 0.0  | 2007 11 04 | G96 | 0.2+ | 0.0  |
| 2003 01 01 | 704 | (1.8- | 0.8+) | 2006 08 15 | D35 | 0.3- | 0.3- | 2007 11 04 | G96 | 0.3+ | 0.5+ |
| 2003 01 01 | 704 | 0.5-  | 0.4-  | 2006 08 15 | D35 | 0.2+ | 0.1- | 2007 11 04 | G96 | 0.0  | 0.0  |
| 2003 01 01 | 704 | 0.5-  | 1.1+  | 2006 08 19 | 699 | 0.3- | 0.8+ | 2007 11 04 | G96 | 0.0  | 0.0  |
| 2005 06 08 | 691 | 0.1+  | 0.5+  | 2006 08 19 | 699 | 0.1- | 0.4+ | 2007 11 07 | D29 | 0.8+ | 1.0+ |
| 2005 06 08 | 691 | 0.1-  | 0.4+  | 2006 08 19 | 699 | 0.1+ | 0.6- | 2007 11 07 | D29 | 0.6+ | 0.2- |
| 2005 06 08 | 691 | 0.0   | 0.1+  | 2006 08 19 | 699 | 0.0  | 0.1- | 2007 11 07 | D29 | 0.2+ | 0.1+ |
| 2005 06 10 | 691 | 0.1+  | 0.1+  | 2006 08 28 | 703 | 0.5- | 0.4- | 2007 12 05 | 703 | 0.5- | 0.1+ |
| 2005 06 10 | 691 | 0.1-  | 0.2+  | 2006 08 28 | 703 | 0.2- | 1.4- | 2007 12 05 | 703 | 0.6- | 0.4+ |
| 2005 06 10 | 691 | 0.4+  | 0.2-  | 2006 08 28 | 703 | 0.1+ | 1.3+ | 2007 12 05 | 703 | 0.3- | 0.2- |
| 2005 06 14 | 691 | 0.2-  | 0.2+  | 2006 08 28 | 703 | 0.3+ | 1.1- | 2007 12 05 | 703 | 0.1+ | 0.2+ |
| 2005 06 14 | 691 | 0.0   | 0.1+  | 2006 09 26 | G96 | 0.1- | 0.3- |            |     |      |      |

**(172960)\* 2005 LG<sub>37</sub> = 2002 UD<sub>62</sub>**

Discovered 2005 June 11 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 86788)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 312.18183  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.23217270 | $\omega$ | 243.34718 |          | −0.49511555 |          | −0.86402717 |
| <i>a</i> | 2.6217741  | $\Omega$ | 236.62502 |          | +0.83091274 |          | −0.44022253 |
| <i>e</i> | 0.0852239  | <i>i</i> | 6.26985   |          | +0.25385943 |          | −0.24425635 |
| <i>P</i> | 4.25       | <i>H</i> | 16.3      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.3− | 0.4+ | 2005 05 10 | G96 | 0.5+ | 0.7+ | 2007 09 15 | G96 | 0.1− | 0.2− |
| 2002 09 13 | 644 | 0.1− | 0.8+ | 2005 05 10 | G96 | 0.4− | 0.1+ | 2007 09 18 | G96 | 0.3+ | 0.1+ |
| 2002 09 13 | 644 | 0.1+ | 0.7+ | 2005 05 10 | G96 | 0.3+ | 0.5+ | 2007 09 18 | G96 | 0.5+ | 0.0  |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2005 05 10 | G96 | 0.3− | 0.4+ | 2007 09 18 | G96 | 0.2+ | 0.0  |
| 2002 10 30 | 645 | 0.1+ | 0.0  | 2005 05 10 | 703 | 0.6− | 0.4− | 2007 09 18 | G96 | 0.3+ | 0.4+ |
| 2002 10 31 | 645 | 0.1− | 0.0  | 2005 05 10 | 703 | 0.6+ | 0.5+ | 2007 11 05 | 704 | 0.1− | 1.4+ |
| 2002 10 31 | 645 | 0.1− | 0.0  | 2005 05 10 | 703 | 0.5+ | 0.0  | 2007 11 05 | 704 | 0.6+ | 0.8+ |
| 2002 11 08 | 645 | 0.0  | 0.0  | 2005 05 10 | 703 | 1.2− | 1.2− | 2007 11 05 | 704 | 0.3+ | 0.1+ |
| 2002 11 08 | 645 | 0.0  | 0.1− | 2005 06 11 | 691 | 0.4+ | 0.4+ | 2007 11 05 | 704 | 0.4− | 0.2+ |
| 2003 12 22 | 704 | 0.2− | 0.4+ | 2005 06 11 | 691 | 0.1+ | 0.1+ | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2003 12 22 | 704 | 0.5+ | 0.1+ | 2005 06 11 | 691 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.2+ | 0.2− |
| 2003 12 22 | 704 | 0.6+ | 0.5+ | 2005 06 14 | G96 | 1.1− | 0.2+ | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2003 12 22 | 704 | 0.4+ | 0.2− | 2005 06 14 | G96 | 0.9− | 0.0  | 2007 12 05 | 704 | 0.4− | 0.6+ |
| 2003 12 22 | 704 | 0.5+ | 0.0  | 2005 06 14 | G96 | 0.9− | 0.5− | 2007 12 05 | 704 | 0.8− | 1.1+ |
| 2003 12 22 | 644 | 0.5− | 0.2+ | 2005 06 14 | G96 | 0.8− | 0.0  | 2007 12 05 | 704 | 0.4− | 1.0+ |
| 2003 12 22 | 644 | 0.7− | 0.1+ | 2005 06 15 | 691 | 0.3+ | 0.4+ | 2007 12 05 | G96 | 0.4− | 0.5− |
| 2003 12 22 | 644 | 0.4− | 0.2− | 2005 06 15 | 691 | 0.2+ | 0.3+ | 2007 12 05 | G96 | 0.5+ | 0.2− |
| 2005 05 10 | G96 | 0.5+ | 0.6+ | 2005 06 15 | 691 | 0.3+ | 0.1− | 2007 12 05 | G96 | 0.4+ | 0.1− |
| 2005 05 10 | G96 | 0.4− | 0.2+ | 2007 09 15 | G96 | 0.6− | 0.1+ | 2007 12 05 | G96 | 0.1− | 0.2− |
| 2005 05 10 | G96 | 0.1+ | 0.5+ | 2007 09 15 | G96 | 0.3+ | 0.3+ |            |     |      |      |
| 2005 05 10 | G96 | 0.4− | 0.2+ | 2007 09 15 | G96 | 0.1− | 0.4+ |            |     |      |      |

**(172961)\* 2005 MH<sub>2</sub>**

Discovered 2005 June 16 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 157.07008  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.18170974 | $\omega$ | 173.19916 |          | −0.26495890 |          | +0.93213153 |
| <i>a</i> | 3.0870992  | $\Omega$ | 81.21582  |          | −0.89603968 |          | −0.14343703 |
| <i>e</i> | 0.1399225  | <i>i</i> | 14.46359  |          | −0.35624384 |          | −0.33250056 |
| <i>P</i> | 5.42       | <i>H</i> | 15.0      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 11 03 | 691 | 0.1+  | 0.3+  | 2005 05 22 | 644 | 0.0  | 0.5+ | 2005 06 27 | G96 | 0.6+  | 0.5+  |
| 1996 11 03 | 691 | 0.6−  | 0.1−  | 2005 05 22 | 644 | 0.0  | 0.2+ | 2005 06 28 | G96 | 0.1+  | 0.4+  |
| 1996 11 03 | 691 | 0.1−  | 0.8+  | 2005 06 04 | 704 | 0.2− | 0.4+ | 2005 06 28 | G96 | 0.1+  | 0.2+  |
| 2004 01 17 | 644 | 0.0   | 0.3+  | 2005 06 04 | 704 | 0.3− | 0.7+ | 2005 06 28 | G96 | 0.0   | 0.3+  |
| 2004 01 17 | 644 | 0.4+  | 0.4+  | 2005 06 04 | 704 | 0.0  | 0.5+ | 2005 06 28 | G96 | 0.4+  | 0.3+  |
| 2004 01 17 | 644 | 0.3+  | 0.1−  | 2005 06 04 | 704 | 0.3+ | 0.6+ | 2006 08 24 | 644 | 0.2+  | 0.5+  |
| 2004 01 19 | 691 | 0.1+  | 0.2+  | 2005 06 04 | 704 | 0.1+ | 1.0+ | 2006 08 24 | 644 | 0.3−  | 0.2+  |
| 2004 01 19 | 691 | 0.1−  | 0.1−  | 2005 06 11 | 703 | 0.2+ | 0.3− | 2006 08 24 | 644 | 0.0   | 0.1+  |
| 2004 01 19 | 691 | 0.1+  | 0.0   | 2005 06 11 | 703 | 1.1− | 0.2+ | 2006 09 26 | 703 | 0.4−  | 0.2+  |
| 2004 01 30 | 699 | 1.3+  | 0.6−  | 2005 06 11 | 703 | 0.7− | 0.2− | 2006 09 26 | 703 | 0.3−  | 0.8−  |
| 2004 01 30 | 699 | 0.4−  | 0.6−  | 2005 06 11 | 703 | 0.5+ | 0.3+ | 2006 09 26 | 703 | 1.3+  | 0.5+  |
| 2004 01 30 | 699 | 0.2+  | 0.9+  | 2005 06 16 | G96 | 0.4+ | 0.3+ | 2006 09 26 | 703 | 0.5+  | 1.2−  |
| 2004 01 30 | 699 | 0.7+  | 1.0+  | 2005 06 16 | G96 | 0.3+ | 0.3+ | 2007 11 12 | 704 | 0.5−  | 0.6+  |
| 2004 02 14 | 704 | (1.6+ | 0.8+) | 2005 06 16 | G96 | 0.6+ | 0.3+ | 2007 11 12 | 704 | 0.8−  | 0.8+  |
| 2004 02 14 | 704 | 0.2+  | 1.2+  | 2005 06 16 | G96 | 0.5+ | 0.4+ | 2007 11 12 | 704 | 0.9−  | 1.0+  |
| 2004 02 14 | 704 | 0.4+  | 0.3+  | 2005 06 23 | 644 | 0.3+ | 0.1+ | 2007 11 12 | 704 | 0.7+  | 0.5+  |
| 2004 02 14 | 704 | 1.4+  | 1.2+  | 2005 06 23 | 644 | 0.3+ | 0.3+ | 2007 11 12 | 704 | (1.6− | 1.7−) |
| 2004 02 14 | 704 | 1.4+  | 0.8+  | 2005 06 23 | 644 | 0.1+ | 0.4+ | 2007 12 04 | 704 | 1.0−  | 0.5+  |
| 2004 04 15 | 645 | 0.1−  | 0.1−  | 2005 06 27 | G96 | 0.3+ | 0.4+ | 2007 12 04 | 704 | 0.3+  | 0.1+  |
| 2004 04 15 | 645 | 0.1−  | 0.1−  | 2005 06 27 | G96 | 0.1− | 0.4+ | 2007 12 04 | 704 | 0.4−  | 1.2+  |
| 2005 05 22 | 644 | 0.1+  | 0.1+  | 2005 06 27 | G96 | 0.5+ | 0.4+ | 2007 12 04 | 704 | 0.6−  | 0.7+  |

**(172962)\* 2005 MZ<sub>13</sub> = 2004 FM<sub>83</sub>**

Discovered 2005 June 28 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 86818)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 163.78607  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.18941435 | $\omega$ | 134.37706 |          | −0.31269293 |          | +0.93476154 |
| <i>a</i> | 3.0028073  | $\Omega$ | 116.70731 |          | −0.91631188 |          | −0.25008915 |
| <i>e</i> | 0.0428549  | <i>i</i> | 10.88249  |          | −0.25019126 |          | −0.25234160 |
| <i>P</i> | 5.20       | <i>H</i> | 15.5      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 26 | 644 | 0.5−  | 0.4+  | 2005 06 03 | 691 | 0.5− | 0.8+ | 2005 07 03 | 705 | 0.4−  | 0.2+  |
| 2001 08 26 | 644 | 0.2−  | 0.3+  | 2005 06 03 | 691 | 0.2− | 0.1+ | 2006 08 30 | 699 | (1.6− | 0.7−) |
| 2001 08 26 | 644 | 0.1−  | 0.5+  | 2005 06 03 | 691 | 0.2− | 0.3+ | 2006 08 30 | 699 | 0.9−  | 0.5−  |
| 2004 02 16 | 704 | 0.2+  | 0.5+  | 2005 06 13 | 691 | 0.8+ | 1.3− | 2006 08 30 | 699 | 0.2−  | 0.0   |
| 2004 02 16 | 704 | 0.4−  | 0.3+  | 2005 06 13 | 691 | 0.0  | 0.3+ | 2006 08 30 | 699 | 0.3+  | 0.5−  |
| 2004 02 16 | 704 | 0.3+  | 1.1+  | 2005 06 13 | 691 | 0.2− | 0.1+ | 2006 09 26 | 703 | 0.9−  | 1.5+  |
| 2004 02 16 | 704 | 0.2−  | 0.4+  | 2005 06 28 | 691 | 0.1+ | 0.0  | 2006 09 26 | 703 | 0.8+  | 0.1+  |
| 2004 03 18 | 703 | 0.4+  | 0.1+  | 2005 06 28 | 691 | 0.0  | 0.2+ | 2006 09 26 | 703 | (0.2− | 2.2+) |
| 2004 03 18 | 644 | 0.1+  | 0.3+  | 2005 06 28 | 691 | 0.2− | 0.2+ | 2006 09 26 | 703 | 1.5+  | 1.0+  |
| 2004 03 18 | 703 | 0.7+  | 0.7−  | 2005 06 28 | 644 | 0.2+ | 0.5− | 2007 11 15 | 703 | 1.2−  | 1.0+  |
| 2004 03 18 | 703 | (2.0+ | 0.1+) | 2005 06 28 | 644 | 0.1+ | 0.1+ | 2007 11 15 | 703 | 0.4+  | 0.0   |
| 2004 03 18 | 644 | 0.2−  | 0.3+  | 2005 06 28 | 644 | 0.4− | 0.4− | 2007 11 15 | 703 | 0.5−  | 1.4+  |
| 2004 03 18 | 703 | 0.3+  | 0.2−  | 2005 07 01 | 691 | 0.0  | 0.1+ | 2007 11 15 | 703 | 0.5+  | 1.1+  |
| 2004 03 18 | 644 | 0.1+  | 0.3+  | 2005 07 01 | 691 | 0.6+ | 0.3+ | 2007 12 05 | 703 | 1.0−  | 0.5+  |
| 2004 03 23 | 704 | 0.0   | 0.1+  | 2005 07 01 | 691 | 0.1+ | 0.0  | 2007 12 05 | 703 | (0.5− | 2.2+) |
| 2004 03 23 | 704 | 0.3+  | 0.7+  | 2005 07 03 | 705 | 0.3− | 0.0  | 2007 12 05 | 703 | (0.3+ | 0.3+) |
| 2004 03 23 | 704 | 0.1+  | 0.1+  | 2005 07 03 | 705 | 0.1− | 0.2+ | 2007 12 05 | 703 | (0.3+ | 2.3+) |

**(172963)\* 2005 MY<sub>14</sub>**

Discovered 2005 June 29 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 12.11702   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.17205544 | $\omega$ | 149.34826 |          | +0.08586381 |          | −0.97235767 |
| <i>a</i> | 3.2015266  | $\Omega$ | 294.95200 |          | +0.85863667 |          | +0.18276314 |
| <i>e</i> | 0.0176326  | <i>i</i> | 13.85641  |          | +0.50534194 |          | −0.14532100 |
| <i>P</i> | 5.73       | <i>H</i> | 14.7      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 10 04 | 704 | 0.0  | 0.2− | 2005 07 01 | 691 | 0.1−  | 0.3+  | 2007 11 03 | G96 | 0.2−  | 0.0   |
| 2000 10 04 | 704 | 0.3+ | 0.1+ | 2005 07 09 | 691 | 0.0   | 0.1+  | 2007 11 11 | G96 | 0.4−  | 0.0   |
| 2000 10 04 | 704 | 1.1+ | 0.0  | 2005 07 09 | 691 | 0.2−  | 0.3+  | 2007 11 11 | G96 | 0.2−  | 0.2+  |
| 2000 10 04 | 704 | 1.0+ | 1.1− | 2005 07 09 | 691 | 0.1−  | 0.3+  | 2007 11 11 | G96 | 0.1−  | 0.3+  |
| 2001 12 17 | 704 | 0.2− | 0.4+ | 2005 08 31 | 691 | 0.0   | 0.0   | 2007 11 11 | G96 | 0.1+  | 0.2−  |
| 2001 12 17 | 704 | 0.5− | 0.2+ | 2005 08 31 | 691 | 0.1+  | 0.1−  | 2007 12 06 | 704 | (1.3+ | 2.0+) |
| 2001 12 17 | 704 | 0.0  | 0.3+ | 2005 08 31 | 691 | 0.1−  | 0.1+  | 2007 12 06 | 704 | 0.3+  | 0.0   |
| 2002 01 08 | 704 | 0.4+ | 1.1+ | 2006 10 02 | 703 | 0.8−  | 0.2+  | 2007 12 06 | 704 | 0.1+  | 0.5+  |
| 2002 01 08 | 704 | 0.1− | 0.4+ | 2006 10 02 | 703 | 1.0−  | 0.2−  | 2007 12 06 | 704 | 0.2+  | 0.8+  |
| 2002 01 08 | 704 | 0.2+ | 1.1+ | 2006 10 02 | 703 | 0.5−  | 1.0−  | 2007 12 10 | 704 | 0.3+  | 0.7+  |
| 2003 03 27 | 644 | 0.5+ | 0.7+ | 2006 10 02 | 703 | 0.3−  | 0.7−  | 2007 12 10 | 704 | 0.1+  | 0.6−  |
| 2003 03 27 | 644 | 0.5− | 0.8+ | 2006 10 27 | 703 | (1.1− | 2.5+) | 2007 12 10 | 704 | 0.2+  | 0.0   |
| 2003 03 27 | 644 | 0.2+ | 0.3+ | 2006 10 27 | 703 | (0.7− | 2.6+) | 2007 12 10 | 704 | 0.3−  | 0.7+  |
| 2005 06 29 | 644 | 0.2+ | 0.1+ | 2006 10 27 | 703 | 0.2−  | 0.6+  | 2007 12 14 | 704 | 1.5+  | 0.5−  |
| 2005 06 29 | 644 | 0.1− | 0.2+ | 2006 10 27 | 703 | 0.8+  | 0.8+  | 2007 12 14 | 704 | 0.8+  | 0.4−  |
| 2005 06 29 | 644 | 0.3− | 0.1+ | 2007 11 03 | G96 | 0.1−  | 0.2+  | 2007 12 14 | 704 | 0.2+  | 1.1−  |
| 2005 07 01 | 691 | 0.3− | 0.2+ | 2007 11 03 | G96 | 0.3−  | 0.0   |            |     |       |       |
| 2005 07 01 | 691 | 0.1− | 0.2+ | 2007 11 03 | G96 | 0.1−  | 0.1+  |            |     |       |       |

2007 DEC. 24

M.P.O. 129527

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 230.93227  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21096768 | $\omega$ | 113.71000 | -0.28423926 | +0.95754959 |
| <i>a</i> | 2.7946371  | $\Omega$ | 139.67892 | -0.90445956 | -0.25118741 |
| <i>e</i> | 0.0418679  | <i>i</i> | 4.25675   | -0.31805809 | -0.14143432 |
| <i>P</i> | 4.67       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 11 18 | 691 | 0.1+  | 0.2+  | 2005 07 05 | G96 | 0.3+ | 0.1- | 2005 10 28 | G96 | 0.0   | 0.1+  |
| 1992 11 18 | 691 | 0.1-  | 0.2-  | 2005 07 05 | G96 | 0.1- | 0.1- | 2005 10 28 | G96 | 0.0   | 0.1+  |
| 1992 11 18 | 691 | 0.1+  | 0.0   | 2005 07 05 | G96 | 0.1+ | 0.2- | 2006 10 03 | G96 | 0.3+  | 0.2+  |
| 2001 09 21 | 704 | (0.9- | 1.9-) | 2005 07 18 | 644 | 0.0  | 0.4+ | 2006 10 03 | G96 | 0.2+  | 0.1+  |
| 2001 09 21 | 704 | (0.2+ | 1.6-) | 2005 07 18 | 644 | 0.1+ | 0.2+ | 2006 10 03 | G96 | 0.1+  | 0.2+  |
| 2001 09 21 | 704 | 0.3-  | 0.7-  | 2005 07 18 | 644 | 0.2+ | 0.3+ | 2006 10 16 | 703 | 1.5-  | 0.2-  |
| 2004 03 31 | 691 | 0.1-  | 0.2+  | 2005 08 06 | 644 | 0.0  | 0.0  | 2006 10 16 | 703 | 0.2-  | 0.5+  |
| 2004 03 31 | 691 | 0.0   | 0.1+  | 2005 08 06 | 644 | 0.1- | 0.0  | 2006 10 16 | 703 | (0.5+ | 1.6+) |
| 2004 03 31 | 691 | 0.1+  | 0.2+  | 2005 08 06 | 644 | 0.0  | 0.4+ | 2006 10 16 | 703 | 0.4-  | 0.3+  |
| 2004 04 20 | 704 | 0.1-  | 0.3+  | 2005 08 27 | 735 | 0.0  | 0.1- | 2007 11 09 | G96 | 0.7+  | 0.1+  |
| 2004 04 20 | 704 | 0.3-  | 0.2-  | 2005 08 27 | 735 | 0.1- | 0.8+ | 2007 11 09 | G96 | 0.2+  | 0.2+  |
| 2004 04 20 | 704 | 0.7-  | 0.2-  | 2005 10 25 | G96 | 0.6+ | 0.1+ | 2007 11 09 | G96 | 0.6+  | 0.2-  |
| 2004 04 20 | 704 | 0.6+  | 0.3-  | 2005 10 25 | G96 | 0.4+ | 0.4+ | 2007 11 09 | G96 | 0.5+  | 0.3+  |
| 2005 06 29 | 644 | 0.2-  | 0.3+  | 2005 10 25 | G96 | 0.2+ | 0.1- | 2007 12 04 | G96 | 0.1+  | 0.2+  |
| 2005 06 29 | 644 | 0.3-  | 0.1+  | 2005 10 25 | G96 | 0.0  | 0.4- | 2007 12 04 | G96 | 0.1+  | 0.1-  |
| 2005 06 29 | 644 | 0.3-  | 0.1+  | 2005 10 28 | G96 | 0.3- | 0.1- | 2007 12 04 | G96 | 0.0   | 0.4+  |
| 2005 07 05 | G96 | 0.1+  | 0.1-  | 2005 10 28 | G96 | 0.3+ | 0.2- | 2007 12 04 | G96 | 0.0   | 0.1+  |

(172965)\* 2005 MX<sub>38</sub>

Discovered 2005 June 30 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.96717   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.12545007 | $\omega$ | 51.79840  | +0.99686374 | +0.05460270 |
| <i>a</i> | 3.9520471  | $\Omega$ | 305.00037 | -0.07410613 | +0.89805140 |
| <i>e</i> | 0.2076856  | <i>i</i> | 4.00990   | +0.02776628 | +0.43648853 |
| <i>P</i> | 7.86       | <i>H</i> | 13.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 08 01 | 688 | 0.3+  | 0.5+  | 2005 08 29 | 704 | 1.0+ | 1.1- | 2006 11 14 | 703 | 0.4-  | 0.4-  |
| 1997 08 01 | 688 | 0.1+  | 0.3+  | 2005 08 29 | 704 | 0.6+ | 0.2- | 2006 11 16 | 704 | 0.4-  | 0.8+  |
| 1998 11 10 | 704 | 1.5+  | 1.8-  | 2005 08 29 | 704 | 0.0  | 0.2+ | 2006 11 16 | 704 | 0.3+  | 0.1+  |
| 1998 11 10 | 704 | 0.9-  | 0.3+  | 2005 09 05 | 703 | 0.0  | 0.9+ | 2006 11 16 | 704 | 0.5+  | 1.1+  |
| 1998 11 10 | 704 | 0.8-  | 0.1+  | 2005 09 05 | 703 | 0.3- | 0.5- | 2006 11 16 | 704 | 0.5-  | 0.3+  |
| 1998 11 10 | 704 | (3.3- | 0.3+) | 2005 09 05 | 703 | 1.3- | 0.6- | 2006 11 16 | 704 | 0.2+  | 0.4+  |
| 2005 06 10 | G92 | 0.0   | 1.0-  | 2005 09 05 | 703 | 0.5- | 0.5- | 2006 11 17 | 704 | (0.6+ | 1.9+) |
| 2005 06 10 | G92 | 0.2-  | 0.2-  | 2005 10 03 | 644 | 0.1+ | 0.2- | 2006 11 17 | 704 | (0.1- | 1.6+) |
| 2005 06 10 | G92 | 0.0   | 0.8-  | 2005 10 03 | 644 | 0.1+ | 0.2- | 2006 11 17 | 704 | 0.5+  | 0.2-  |
| 2005 06 30 | 691 | 0.2+  | 0.0   | 2005 10 03 | 644 | 0.0  | 0.2- | 2006 11 18 | G96 | 0.4+  | 0.1-  |
| 2005 06 30 | 691 | 0.1+  | 0.2+  | 2005 10 26 | G96 | 0.1- | 0.2- | 2006 11 18 | G96 | 0.4+  | 0.1-  |
| 2005 06 30 | 691 | 0.2+  | 0.2+  | 2005 10 26 | G96 | 0.3- | 0.4- | 2006 11 18 | G96 | 0.4+  | 0.2-  |
| 2005 06 30 | 691 | 0.0   | 0.1-  | 2005 10 26 | G96 | 0.1- | 0.5+ | 2006 11 18 | G96 | 0.3+  | 0.2-  |
| 2005 06 30 | 691 | 0.3+  | 0.1+  | 2005 10 26 | G96 | 0.5- | 0.8+ | 2006 11 19 | 704 | (0.4+ | 2.0+) |
| 2005 06 30 | 691 | 0.1+  | 0.0   | 2006 09 25 | 704 | 0.2+ | 0.5- | 2006 11 19 | 704 | 0.1-  | 1.3+  |
| 2005 07 05 | G96 | 1.0+  | 0.1-  | 2006 09 25 | 704 | 0.8+ | 1.2+ | 2006 11 19 | 704 | 0.1-  | 1.5+  |
| 2005 07 05 | G96 | 0.3-  | 0.1+  | 2006 09 25 | 704 | 0.4- | 0.6+ | 2006 11 19 | 704 | 0.3-  | 0.9+  |
| 2005 07 05 | G96 | 0.0   | 0.0   | 2006 09 25 | 704 | 0.9- | 0.2+ | 2006 11 19 | 704 | 0.6-  | 0.8+  |
| 2005 07 05 | G96 | 0.2+  | 0.3+  | 2006 10 02 | G96 | 0.3+ | 0.3- | 2006 11 22 | 704 | 0.2+  | 0.2+  |
| 2005 07 07 | 691 | 0.5+  | 0.4+  | 2006 10 02 | G96 | 0.2+ | 0.3- | 2006 11 22 | 704 | 0.1-  | 0.7+  |
| 2005 07 07 | 691 | 0.1+  | 0.2+  | 2006 10 02 | G96 | 0.1+ | 0.2- | 2006 11 22 | 704 | 0.8-  | 0.2+  |
| 2005 07 07 | 691 | 0.5-  | 0.5+  | 2006 10 02 | G96 | 0.1+ | 0.2- | 2006 11 22 | 704 | 0.5-  | 0.1-  |
| 2005 07 11 | 691 | 0.1+  | 0.1-  | 2006 10 13 | 691 | 0.1- | 0.1+ | 2006 11 22 | 704 | 0.2-  | 0.1+  |
| 2005 07 11 | 691 | 0.1+  | 0.0   | 2006 10 13 | 691 | 0.2- | 0.0  | 2006 11 25 | G96 | 0.1-  | 0.1-  |
| 2005 07 11 | 691 | 0.3+  | 0.1+  | 2006 10 13 | 691 | 0.1+ | 0.0  | 2006 11 25 | G96 | 0.0   | 0.2-  |
| 2005 07 15 | G96 | 0.8-  | 0.3-  | 2006 10 17 | 691 | 0.0  | 0.3- | 2006 11 25 | G96 | 0.1+  | 0.2-  |
| 2005 07 15 | G96 | 0.5-  | 0.1-  | 2006 10 17 | 691 | 0.1+ | 0.1- | 2006 11 25 | G96 | 0.1+  | 0.2-  |
| 2005 07 15 | G96 | 0.8-  | 0.2-  | 2006 10 17 | 691 | 0.2+ | 0.1- | 2006 11 29 | 704 | 0.1+  | 0.7+  |
| 2005 07 15 | G96 | 0.7-  | 0.3-  | 2006 10 19 | 644 | 0.4- | 0.5+ | 2006 11 29 | 704 | 0.3+  | 0.1-  |
| 2005 07 18 | 644 | 0.1+  | 0.1+  | 2006 10 19 | 644 | 0.3- | 0.3+ | 2006 11 29 | 704 | 0.2+  | 0.7+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 07 18 | 644 | 0.0  | 0.1- | 2006 10 19 | 644 | 0.2- | 0.2+ | 2006 11 29 | 704 | 0.4+ | 0.4+ |
| 2005 07 18 | 644 | 0.1+ | 0.1+ | 2006 10 19 | 644 | 0.3- | 0.1+ | 2006 11 29 | 704 | 0.3+ | 0.7- |
| 2005 07 28 | 644 | 0.1+ | 0.5- | 2006 10 19 | 644 | 0.0  | 0.3+ | 2006 12 05 | 644 | 0.1- | 0.3+ |
| 2005 07 28 | 644 | 0.2+ | 0.1+ | 2006 10 19 | 644 | 0.1+ | 0.2+ | 2006 12 05 | 644 | 0.2- | 0.1+ |
| 2005 07 28 | 644 | 0.1+ | 0.1- | 2006 10 21 | 704 | 1.4+ | 0.4+ | 2006 12 05 | 644 | 0.1+ | 0.0  |
| 2005 08 06 | 704 | 0.2+ | 0.3+ | 2006 10 21 | 704 | 1.0- | 0.5+ | 2006 12 15 | 644 | 0.0  | 0.1+ |
| 2005 08 06 | 704 | 0.6- | 0.9+ | 2006 10 21 | 704 | 0.3+ | 0.2- | 2006 12 15 | 644 | 0.0  | 0.2- |
| 2005 08 06 | 704 | 0.3- | 0.0  | 2006 10 21 | 704 | 0.2- | 0.0  | 2006 12 15 | 644 | 0.1- | 0.0  |
| 2005 08 06 | 704 | 0.1+ | 0.1+ | 2006 10 21 | 704 | 0.1- | 0.9- | 2007 02 19 | G96 | 0.1+ | 0.3- |
| 2005 08 06 | 644 | 0.3- | 0.1- | 2006 10 23 | 644 | 0.1+ | 0.1- | 2007 02 19 | G96 | 0.3+ | 0.4- |
| 2005 08 06 | 644 | 0.0  | 0.3- | 2006 10 23 | 644 | 0.0  | 0.3+ | 2007 02 19 | G96 | 0.0  | 0.2- |
| 2005 08 06 | 644 | 0.2- | 1.4- | 2006 10 23 | 644 | 0.1+ | 0.0  | 2007 02 19 | G96 | 0.2+ | 0.0  |
| 2005 08 25 | 644 | 0.2- | 0.2- | 2006 10 27 | 703 | 0.6- | 0.3- | 2007 12 03 | 691 | 0.3- | 0.2+ |
| 2005 08 25 | 644 | 0.5- | 0.1- | 2006 10 27 | 703 | 0.1- | 0.2+ | 2007 12 03 | 691 | 0.2- | 0.3+ |
| 2005 08 25 | 644 | 0.1- | 0.3- | 2006 10 27 | 703 | 0.4+ | 0.1- | 2007 12 03 | 691 | 0.3- | 0.1+ |
| 2005 08 26 | 699 | 1.1+ | 0.1+ | 2006 10 27 | 703 | 0.3+ | 0.2- | 2007 12 06 | 704 | 1.0- | 0.2- |
| 2005 08 26 | 699 | 1.2- | 0.4+ | 2006 10 29 | 704 | 0.1+ | 0.4- | 2007 12 06 | 704 | 0.2+ | 0.2+ |
| 2005 08 26 | 699 | 0.3- | 0.0  | 2006 10 29 | 704 | 0.5+ | 0.5- | 2007 12 06 | 704 | 0.1+ | 0.3- |
| 2005 08 26 | 699 | 1.2- | 0.2- | 2006 10 29 | 704 | 0.5- | 0.5- | 2007 12 06 | 704 | 0.2- | 0.8+ |
| 2005 08 27 | 699 | 0.6+ | 0.3+ | 2006 10 29 | 704 | 0.5- | 0.2+ | 2007 12 10 | 704 | 0.2- | 1.0+ |
| 2005 08 27 | 699 | 0.3+ | 0.3+ | 2006 11 01 | G96 | 0.1- | 0.4- | 2007 12 10 | 704 | 0.1+ | 0.4+ |
| 2005 08 27 | 699 | 0.4+ | 0.4- | 2006 11 01 | G96 | 0.1+ | 0.2- | 2007 12 10 | 704 | 0.4+ | 0.1- |
| 2005 08 27 | E12 | 0.0  | 0.4- | 2006 11 01 | G96 | 0.1- | 0.3- | 2007 12 10 | 704 | 1.1+ | 0.4+ |
| 2005 08 27 | E12 | 0.9- | 0.1+ | 2006 11 01 | G96 | 0.1+ | 0.2- | 2007 12 10 | 704 | 0.3+ | 0.4+ |
| 2005 08 27 | E12 | 0.1- | 0.3+ | 2006 11 14 | 703 | 0.5- | 0.4- | 2007 12 14 | 704 | 0.2- | 1.5- |
| 2005 08 27 | E12 | 0.0  | 1.0- | 2006 11 14 | 703 | 0.2+ | 0.7- | 2007 12 14 | 704 | 0.3+ | 1.0- |
| 2005 08 29 | 699 | 0.1- | 0.4+ | 2006 11 14 | 703 | 0.0  | 0.6- | 2007 12 14 | 704 | 0.1- | 1.3- |
| 2005 08 29 | 699 | 0.8+ | 0.6+ | 2006 11 14 | 703 | 0.7+ | 0.3- | 2007 12 14 | 704 | 1.1+ | 0.4- |
| 2005 08 29 | 704 | 0.2- | 0.8- | 2006 11 14 | 703 | 0.1- | 0.4+ | 2007 12 14 | 704 | 0.6+ | 1.4- |
| 2005 08 29 | 704 | 0.3- | 0.6- | 2006 11 14 | 703 | 0.5- | 0.4- |            |     |      |      |
| 2005 08 29 | 699 | 0.3- | 0.1- | 2006 11 14 | 703 | 0.1+ | 0.4- |            |     |      |      |

(172966)\* 2005 MC<sub>54</sub>

Discovered 2005 June 23 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 79.93648   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.12375365 | $\omega$ | 79.93387  | +0.97997894 | +0.09172987 |
| <i>a</i> | 3.9880816  | $\Omega$ | 274.64418 | -0.15728905 | +0.90084501 |
| <i>e</i> | 0.2316490  | <i>i</i> | 10.21215  | +0.12207143 | +0.42433938 |
| <i>P</i> | 7.96       | <i>H</i> | 14.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.0  | 0.1+ | 2005 09 11 | 699 | 1.2+  | 0.6-  | 2006 11 25 | G96 | 0.4+ | 0.2- |
| 2001 02 20 | 645 | 0.1+ | 0.0  | 2005 09 11 | 699 | 0.6+  | 0.1+  | 2006 11 25 | G96 | 0.3- | 0.2- |
| 2005 06 23 | 644 | 0.2+ | 0.2+ | 2005 09 11 | 699 | (3.5- | 0.4-) | 2006 11 25 | G96 | 0.1+ | 0.3- |
| 2005 06 23 | 644 | 0.1+ | 0.1+ | 2005 09 23 | 644 | 0.0   | 0.3+  | 2006 12 27 | 703 | 0.3+ | 0.9- |
| 2005 06 23 | 644 | 0.2+ | 0.3+ | 2005 09 23 | 644 | 0.2+  | 0.0   | 2006 12 27 | 703 | 0.1+ | 0.1- |
| 2005 07 08 | 691 | 0.0  | 0.1+ | 2005 09 23 | 644 | 0.3-  | 0.1+  | 2006 12 27 | 703 | 0.6+ | 0.7- |
| 2005 07 08 | 691 | 0.0  | 0.1+ | 2006 10 19 | 703 | 0.0   | 0.3+  | 2006 12 27 | 703 | 0.9+ | 0.8- |

2005 08 30 699 0.2+ 0.4- 2006 11 22 703 0.2+ 0.4- 2007 12 04 G96 0.2+ 0.1-  
 2005 09 11 699 0.4- 0.7- 2006 11 25 G96 0.0 0.1-

**(172967)\* 2005 NK<sub>55</sub> = 2006 QF<sub>31</sub>**  
 Discovered 2005 July 6 by J. Broughton at Reedy Creek.

Id. A. Doppler (*MPO* 109310)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 163.87853  | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.18077458 | $\omega$ | 306.68117 | +0.11266123 | +0.99043542     |
| <i>a</i> | 3.0977365  | $\Omega$ | 329.49682 | -0.85423644 | +0.05559649     |
| <i>e</i> | 0.0496013  | <i>i</i> | 9.02884   | -0.50753083 | +0.12628026     |
| <i>P</i> | 5.45       | <i>H</i> | 15.0      | <i>G</i>    | 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|                |             |                |             |                |             |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 2000 08 09 691 | 0.2+ 0.2+   | 2003 01 30 644 | (0.3+ 2.0+) | 2006 09 20 699 | 1.4- 0.4+   |
| 2000 08 09 691 | 0.3+ 0.2-   | 2003 02 01 645 | 0.1- 0.2-   | 2006 09 22 699 | 0.3- 0.6-   |
| 2000 08 09 691 | 0.6+ 0.2-   | 2003 02 01 645 | 0.1- 0.1-   | 2006 09 22 699 | (0.4+ 1.6+) |
| 2000 08 20 691 | 0.3- 0.8-   | 2003 02 01 704 | 1.2- 0.0    | 2006 09 22 699 | 0.2+ 0.4-   |
| 2000 08 20 691 | 0.4+ 0.5-   | 2003 02 01 704 | 0.2+ 0.0    | 2006 09 22 699 | 0.1+ 0.4-   |
| 2000 08 20 691 | 0.3+ 0.6-   | 2003 02 01 704 | 1.2- 0.8-   | 2006 09 27 703 | 1.1- 0.3+   |
| 2000 08 29 704 | 0.4- 0.2+   | 2003 02 01 704 | 0.2- 0.3+   | 2006 09 27 703 | (0.9- 1.7+) |
| 2000 08 29 704 | 0.7- 0.7+   | 2003 02 01 704 | (1.5+ 1.9+) | 2006 09 27 703 | (0.2- 1.8+) |
| 2000 08 29 704 | 1.0- 0.2+   | 2004 04 09 E12 | 0.1- 0.0    | 2006 09 27 703 | 0.4+ 0.2+   |
| 2000 08 29 704 | 0.0 0.4+    | 2004 04 09 E12 | 0.1+ 0.4+   | 2006 10 12 644 | 0.2+ 0.3-   |
| 2000 08 29 704 | 0.3- 0.9+   | 2004 04 09 E12 | 0.6+ 0.1-   | 2006 10 12 644 | 0.3+ 0.3-   |
| 2001 11 11 704 | 0.8+ 1.2+   | 2004 04 09 E12 | 0.9+ 0.0    | 2006 10 12 644 | 0.2+ 0.0    |
| 2001 11 11 699 | 0.2+ 0.9+   | 2005 07 06 428 | 0.2+ 0.6+   | 2006 10 17 703 | 0.3+ 0.2+   |
| 2001 11 11 704 | 0.0 0.5+    | 2005 07 06 428 | 0.0 0.9+    | 2006 10 17 703 | 0.2+ 0.5+   |
| 2001 11 11 704 | 0.1+ 0.6+   | 2005 07 10 428 | 0.6+ 0.1-   | 2006 10 17 703 | 0.5- 0.3+   |
| 2001 11 11 699 | 0.2+ 0.1+   | 2005 07 10 428 | 0.0 0.1+    | 2006 10 17 703 | 0.6+ 0.4+   |
| 2001 11 11 704 | 0.1- 0.9+   | 2005 07 10 E12 | 0.0 0.8+    | 2006 10 21 644 | 0.1+ 0.3+   |
| 2001 11 11 699 | 0.1- 0.3+   | 2005 07 10 E12 | 0.5- 0.6+   | 2006 10 21 644 | 0.2- 0.2+   |
| 2001 11 11 704 | 0.2+ 0.7+   | 2005 07 10 E12 | 0.5- 0.3+   | 2006 10 21 644 | 0.1- 0.2+   |
| 2001 11 11 699 | 0.7+ 0.1-   | 2005 07 10 E12 | 0.3- 0.5+   | 2006 10 22 644 | 0.1- 0.3-   |
| 2003 01 05 704 | 0.1- 0.6-   | 2006 08 22 H55 | (2.2+ 2.5+) | 2006 10 22 644 | 0.1- 0.4-   |
| 2003 01 05 704 | 0.5+ 0.7+   | 2006 08 22 H55 | (2.4+ 2.6+) | 2006 10 22 644 | 0.1- 0.2+   |
| 2003 01 05 704 | 0.7- 0.4+   | 2006 08 22 H55 | (2.7+ 3.2+) | 2006 10 23 644 | 0.1+ 0.2+   |
| 2003 01 05 704 | 0.1- 0.8+   | 2006 08 23 H55 | 0.9- 0.7-   | 2006 10 23 644 | 0.3+ 0.0    |
| 2003 01 16 644 | 0.1+ 0.6+   | 2006 08 23 H55 | 0.7- 0.6-   | 2006 10 23 644 | 0.0 0.1+    |
| 2003 01 16 644 | 0.1+ 0.8+   | 2006 08 23 H55 | 1.0- 0.6-   | 2007 12 02 704 | 0.1+ 0.5-   |
| 2003 01 16 644 | 0.4+ 0.2+   | 2006 09 16 703 | 0.1- 0.2-   | 2007 12 02 704 | 0.6+ 0.7+   |
| 2003 01 25 699 | 0.0 1.0-    | 2006 09 16 703 | 0.7+ 0.3-   | 2007 12 02 704 | 0.3- 0.4-   |
| 2003 01 25 699 | 0.6+ 1.2+   | 2006 09 16 703 | 0.1- 1.2+   | 2007 12 02 704 | 0.3+ 0.7+   |
| 2003 01 25 699 | (0.2- 2.6+) | 2006 09 16 703 | 0.8- 0.4-   | 2007 12 16 704 | 0.5+ 1.2+   |
| 2003 01 25 699 | 0.1- 0.4+   | 2006 09 20 699 | 0.7- 0.0    | 2007 12 16 704 | 0.7+ 0.1-   |
| 2003 01 30 644 | 0.2- 0.3+   | 2006 09 20 699 | 1.4+ 1.2-   | 2007 12 16 704 | 0.7+ 1.0-   |
| 2003 01 30 644 | 0.2- 0.1+   | 2006 09 20 699 | (1.8- 0.5+) | 2007 12 16 704 | 0.1+ 0.5+   |

**(172968)\* 2005 NQ<sub>80</sub> = 2001 XT<sub>160</sub>**

Discovered 2005 July 14 by J. Broughton at Reedy Creek.

Id. A. Doppler (*MPO* 89696)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 143.81568  | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.17831380 | $\omega$ | 221.33599 | +0.59421020 | +0.79638473     |
| <i>a</i> | 3.1261712  | $\Omega$ | 85.42129  | -0.70507135 | +0.58314473     |
| <i>e</i> | 0.1478740  | <i>i</i> | 6.48776   | -0.38702535 | +0.16035457     |
| <i>P</i> | 5.53       | <i>H</i> | 15.0      | <i>G</i>    | 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                |           |                |             |                |             |
|----------------|-----------|----------------|-------------|----------------|-------------|
| 1993 04 17 691 | 0.1- 0.0  | 2004 04 20 704 | 0.9- 1.2+   | 2006 10 16 703 | 1.1- 0.3-   |
| 1993 04 17 691 | 0.2+ 0.1+ | 2004 04 20 704 | (0.3- 1.7+) | 2006 10 16 703 | 1.4+ 0.3+   |
| 1993 04 17 691 | 0.1+ 0.1- | 2004 04 20 704 | (0.3+ 2.4+) | 2006 10 16 703 | 0.7- 0.8-   |
| 2000 10 02 699 | 0.6- 0.8+ | 2004 04 20 704 | 0.7+ 0.8+   | 2006 10 16 703 | 0.2- 0.1+   |
| 2000 10 02 699 | 0.8- 0.6+ | 2005 07 14 428 | 0.2+ 0.1+   | 2006 11 01 703 | (1.5+ 0.2+) |
| 2000 10 02 699 | 0.1- 0.5+ | 2005 07 14 428 | 0.1+ 0.3-   | 2006 11 01 703 | 0.5- 1.4+   |

|                |             |                |           |                |           |
|----------------|-------------|----------------|-----------|----------------|-----------|
| 2000 10 02 699 | 0.1+ 1.6+   | 2005 07 15 428 | 0.2- 1.2+ | 2006 11 01 703 | 1.4- 1.2- |
| 2001 11 21 704 | 0.2- 0.8+   | 2005 07 15 428 | 0.1- 0.2+ | 2006 11 01 703 | 0.9+ 0.5+ |
| 2001 11 21 704 | 0.3- 0.4+   | 2005 08 12 E12 | 1.5+ 0.1- | 2006 11 16 G96 | 0.5+ 0.5- |
| 2001 11 21 704 | 0.6- 0.2+   | 2005 08 12 E12 | 0.2- 0.5+ | 2006 11 16 G96 | 0.1+ 0.0  |
| 2001 11 21 704 | (2.2- 1.2+) | 2005 08 12 E12 | 0.6- 0.4- | 2006 11 16 G96 | 0.2+ 0.3- |
| 2001 12 14 704 | 0.1+ 0.1+   | 2005 08 12 E12 | 0.0 0.5+  | 2006 11 16 G96 | 0.4+ 0.1- |
| 2001 12 14 704 | 0.5- 0.9+   | 2005 08 24 E12 | 0.4- 0.8- | 2007 10 07 G96 | 1.0+ 0.3- |
| 2001 12 14 704 | 0.4+ 0.7+   | 2005 08 24 E12 | 0.3- 0.1+ | 2007 10 07 G96 | 0.0 0.4-  |
| 2001 12 14 704 | 0.0 0.2+    | 2005 08 24 E12 | 0.1+ 0.5- | 2007 10 07 G96 | 0.7+ 0.2+ |
| 2001 12 17 704 | 0.2+ 0.5+   | 2005 08 24 E12 | 0.1- 1.2- | 2007 10 07 G96 | 0.6+ 0.1+ |
| 2001 12 17 704 | 0.4- 0.0    | 2006 10 03 G96 | 0.1- 0.4- | 2007 12 04 G96 | 0.2+ 0.2- |
| 2001 12 17 704 | 0.7- 0.2+   | 2006 10 03 G96 | 0.4+ 0.2- | 2007 12 04 G96 | 0.2+ 0.4- |
| 2001 12 17 704 | 0.1- 1.2-   | 2006 10 03 G96 | 0.4+ 0.2- | 2007 12 04 G96 | 0.4- 0.2- |
| 2004 04 20 704 | 0.2+ 0.7+   | 2006 10 03 G96 | 0.5+ 0.3- | 2007 12 04 G96 | 0.1+ 0.5- |

**(172969)\* 2005 QA<sub>20</sub> = 2004 EC<sub>89</sub>**

Discovered 2005 Aug. 26 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 87018)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |                 |
|----------|------------|----------|-----------|-------------|-----------------|
| <i>M</i> | 196.11031  | (2000.0) | <b>P</b>  | <b>Q</b>    |                 |
| <i>n</i> | 0.27448283 | $\omega$ | 220.02853 | +0.99356012 | +0.06345884     |
| <i>a</i> | 2.3449087  | $\Omega$ | 136.05269 | -0.03200299 | +0.95188655     |
| <i>e</i> | 0.1369323  | <i>i</i> | 7.77352   | -0.10869268 | +0.29980821     |
| <i>P</i> | 3.59       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                |             |                |             |                |           |
|----------------|-------------|----------------|-------------|----------------|-----------|
| 1998 09 17 699 | 0.4- 0.7+   | 2005 08 02 704 | 0.7+ 0.5+   | 2005 10 04 644 | 0.2- 0.0  |
| 1998 09 17 699 | 0.0 0.1+    | 2005 08 02 704 | (0.9+ 1.6+) | 2005 10 04 644 | 0.4- 0.1+ |
| 1998 09 17 699 | (0.2+ 2.3-) | 2005 08 10 608 | 0.2+ 0.4+   | 2005 10 04 644 | 0.7- 0.1- |
| 2002 12 14 704 | 0.0 0.6+    | 2005 08 10 608 | 0.1- 0.5+   | 2005 10 04 644 | 0.4- 0.3+ |
| 2002 12 14 704 | 0.3- 0.3+   | 2005 08 10 608 | 0.5- 0.9+   | 2005 10 24 413 | 0.2+ 0.1+ |
| 2002 12 14 704 | 0.3+ 0.3+   | 2005 08 26 699 | 0.1- 0.9+   | 2005 10 24 413 | 0.0 0.0   |
| 2002 12 14 704 | 0.1+ 0.7+   | 2005 08 26 699 | 0.4+ 0.5+   | 2005 10 24 413 | 0.0 0.3+  |
| 2002 12 14 704 | 0.2- 1.2+   | 2005 08 26 699 | 0.4- 0.6+   | 2006 11 22 G96 | 0.0 0.3-  |
| 2004 03 12 644 | 0.2- 0.7+   | 2005 08 26 699 | 0.4+ 0.9+   | 2006 11 22 G96 | 0.2- 0.1+ |
| 2004 03 12 644 | 0.1+ 0.4+   | 2005 08 27 E12 | 0.7- 0.1+   | 2006 11 22 G96 | 0.4- 0.3+ |
| 2004 03 12 644 | 0.1+ 0.6+   | 2005 08 27 E12 | 0.3- 0.3-   | 2006 11 22 G96 | 0.1- 0.1+ |
| 2004 03 14 691 | 0.1+ 0.3+   | 2005 08 27 E12 | 0.5- 0.5+   | 2007 01 10 G96 | 0.4- 0.1- |
| 2004 03 14 691 | 0.1- 0.2+   | 2005 08 27 E12 | 0.3+ 0.3+   | 2007 01 10 G96 | 0.1- 0.0  |
| 2004 03 14 691 | 0.2- 0.0    | 2005 08 29 699 | 0.0 0.0     | 2007 01 10 G96 | 0.2- 0.1- |
| 2004 03 21 691 | 0.3+ 0.2+   | 2005 08 29 704 | 0.6- 0.5+   | 2007 01 10 G96 | 0.3- 0.0  |
| 2004 03 21 691 | 0.2+ 0.1+   | 2005 08 29 699 | 0.1+ 0.3-   | 2007 01 17 644 | 0.1+ 0.0  |
| 2004 03 21 691 | 0.1+ 0.1+   | 2005 08 29 704 | 0.0 0.2+    | 2007 01 17 644 | 0.3+ 0.2+ |
| 2004 03 23 704 | 0.1+ 0.3-   | 2005 08 29 699 | (2.8- 1.5+) | 2007 01 17 644 | 0.1- 0.5+ |
| 2004 03 23 704 | 0.1+ 0.5+   | 2005 08 29 704 | 0.1+ 0.5+   | 2007 01 24 703 | 0.0 0.6+  |
| 2004 03 23 704 | 0.3+ 0.8+   | 2005 08 29 699 | 0.3- 0.1+   | 2007 01 24 703 | 0.6+ 1.2+ |
| 2004 03 23 704 | 0.3+ 1.2+   | 2005 08 29 704 | 0.6+ 0.2+   | 2007 01 24 703 | 0.9- 0.7+ |
| 2005 06 23 644 | 0.1- 0.2+   | 2005 08 29 704 | 0.4- 0.0    | 2007 01 24 703 | 0.2- 0.9- |
| 2005 06 23 644 | 0.1+ 0.2+   | 2005 08 30 644 | 0.0 0.2+    | 2007 02 13 704 | 0.1- 0.7+ |
| 2005 06 23 644 | 0.3- 0.1+   | 2005 08 30 644 | 0.1- 0.2+   | 2007 02 13 704 | 0.9+ 0.5+ |
| 2005 07 11 G96 | 0.1- 0.1-   | 2005 08 30 644 | 0.1- 0.1+   | 2007 02 13 704 | 1.4+ 0.3+ |
| 2005 07 11 G96 | 0.1+ 0.1+   | 2005 09 05 703 | 0.0 0.2+    | 2007 02 23 290 | 0.3+ 0.0  |
| 2005 07 11 G96 | 0.1- 0.1-   | 2005 09 05 703 | 0.4+ 0.4-   | 2007 02 23 290 | 0.3- 0.3+ |
| 2005 07 28 644 | 0.1- 0.2+   | 2005 09 05 703 | 1.0+ 0.2+   | 2007 03 10 G96 | 0.4+ 0.2+ |
| 2005 07 28 644 | 0.1- 0.1+   | 2005 09 05 703 | 0.9- 0.2+   | 2007 03 10 G96 | 0.5- 0.2+ |
| 2005 07 28 644 | 0.1- 0.1+   | 2005 10 04 644 | 0.4- 0.1-   | 2007 03 10 G96 | 0.3+ 0.1+ |
| 2005 08 02 704 | 1.1+ 0.6-   | 2005 10 04 644 | 0.2- 0.2+   | 2007 03 10 G96 | 0.1- 0.0  |

**(172970)\* 2005 QD<sub>32</sub>**

Discovered 2005 Aug. 24 by NEAT at Palomar.

2007 DEC. 24

M.P.O. 129529

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 156.87758  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17046457 | $\omega$ 4.14289   | +0.67771034   | +0.73047463 |
| <i>a</i> | 3.2214147  | $\Omega$ 308.54778 | -0.67771274   | +0.57597209 |
| <i>e</i> | 0.1190753  | <i>i</i> 6.19178   | -0.28533162   | +0.36696453 |
| <i>P</i> | 5.78       | <i>H</i> 14.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 05 | 704 | 0.1+  | 0.1-  | 2005 08 30 | 691 | 0.2+ | 0.1+ | 2006 11 17 | 691 | 0.0  | 0.2- |
| 2000 11 05 | 704 | 0.9-  | 0.1+  | 2005 08 30 | 691 | 0.2+ | 0.1+ | 2006 11 17 | 691 | 0.0  | 0.1- |
| 2000 11 05 | 704 | 0.1-  | 0.1-  | 2005 08 30 | 691 | 0.2+ | 0.1+ | 2006 11 21 | G96 | 0.1- | 0.3- |
| 2002 01 09 | 691 | 0.2+  | 0.6+  | 2005 08 30 | 704 | 0.1+ | 0.4+ | 2006 11 21 | G96 | 0.0  | 0.2- |
| 2002 01 09 | 691 | 0.0   | 0.3-  | 2005 08 30 | 704 | 0.2+ | 0.6+ | 2006 11 21 | G96 | 0.1- | 0.3- |
| 2002 01 09 | 691 | 0.4+  | 0.3+  | 2005 08 30 | 704 | 0.2+ | 0.1+ | 2006 11 21 | G96 | 0.1- | 0.3- |
| 2002 01 14 | 645 | 0.0   | 0.0   | 2005 08 30 | 704 | 0.4- | 0.2+ | 2006 11 22 | 704 | 0.3- | 0.4- |
| 2002 01 14 | 645 | 0.0   | 0.0   | 2005 09 12 | 691 | 0.3- | 0.1+ | 2006 11 22 | 704 | 0.0  | 1.5- |
| 2002 01 14 | 704 | 0.2+  | 0.4+  | 2005 09 12 | 691 | 0.3- | 0.2- | 2006 11 22 | 704 | 0.3- | 0.4- |
| 2002 01 14 | 704 | 0.7+  | 1.2+  | 2005 09 12 | 691 | 0.3- | 0.1+ | 2006 11 25 | 691 | 0.2- | 0.2- |
| 2002 01 14 | 704 | 0.1-  | 1.3+  | 2005 09 22 | 644 | 0.1+ | 0.2+ | 2006 11 25 | 691 | 0.1- | 0.3- |
| 2002 01 14 | 704 | (1.0+ | 2.0+) | 2005 09 22 | 644 | 0.1+ | 0.1- | 2006 11 25 | 691 | 0.3- | 0.4- |
| 2004 05 22 | 704 | 0.1+  | 0.4-  | 2005 09 22 | 644 | 0.2+ | 0.2+ | 2006 11 27 | 704 | 0.3+ | 0.0  |
| 2004 05 22 | 704 | 0.4-  | 0.3-  | 2005 09 23 | 703 | 0.1+ | 0.4- | 2006 11 27 | 704 | 0.2- | 0.4- |
| 2004 05 22 | 704 | 0.0   | 1.2-  | 2005 09 23 | 703 | 0.4- | 0.8+ | 2006 11 27 | 704 | 0.9+ | 0.1- |
| 2005 07 06 | 291 | 0.3-  | 0.0   | 2005 09 23 | 703 | 1.3+ | 0.8- | 2006 12 15 | 704 | 0.7- | 0.7+ |
| 2005 07 06 | 291 | 0.2-  | 0.1-  | 2005 09 23 | 703 | 0.4- | 0.0  | 2006 12 15 | 704 | 1.0+ | 1.0+ |
| 2005 07 06 | 291 | 0.2-  | 0.0   | 2005 09 26 | 691 | 0.1+ | 0.1- | 2006 12 15 | 704 | 0.9+ | 1.3+ |
| 2005 07 31 | 644 | 0.1-  | 0.3+  | 2005 09 26 | 691 | 0.1+ | 0.1- | 2006 12 15 | 704 | 1.0+ | 1.3+ |
| 2005 07 31 | 644 | 0.1-  | 0.1+  | 2005 09 26 | 691 | 0.1+ | 0.0  | 2006 12 15 | 704 | 1.2+ | 0.4- |
| 2005 07 31 | 644 | 0.0   | 0.1+  | 2005 09 28 | 644 | 0.2+ | 0.1+ | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2005 07 31 | 644 | 0.2+  | 0.2+  | 2005 09 28 | 644 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.2- | 0.0  |
| 2005 07 31 | 644 | 0.0   | 0.1+  | 2005 09 28 | 644 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.2- | 0.3+ |
| 2005 07 31 | 644 | 0.0   | 0.0   | 2005 09 28 | 644 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.2+ | 0.1+ |
| 2005 08 24 | 644 | 0.1-  | 0.0   | 2005 09 28 | 644 | 0.1+ | 0.1- | 2007 12 14 | G96 | 0.4- | 0.3+ |
| 2005 08 24 | 644 | 0.1-  | 0.1+  | 2005 09 28 | 644 | 0.0  | 0.0  | 2007 12 14 | G96 | 0.4+ | 0.7+ |
| 2005 08 24 | 644 | 0.1-  | 0.0   | 2005 10 09 | 691 | 0.1+ | 0.2+ | 2007 12 14 | G96 | 0.0  | 0.1+ |
| 2005 08 26 | 644 | 0.1+  | 0.2+  | 2005 10 09 | 691 | 0.0  | 0.1+ | 2007 12 14 | G96 | 0.4- | 0.2+ |
| 2005 08 26 | 644 | 0.1-  | 0.2+  | 2005 10 09 | 691 | 0.3- | 0.1- |            |     |      |      |
| 2005 08 26 | 644 | 0.2-  | 0.1+  | 2006 11 17 | 691 | 0.1- | 0.2- |            |     |      |      |

(172971)\* 2005 QN<sub>176</sub>

Discovered 2005 Aug. 31 by CINEOS at Campo Imperatore.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 238.36683  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17877409 | $\omega$ 303.31089 | -0.25332575   | +0.94200496 |
| <i>a</i> | 3.1208028  | $\Omega$ 310.39960 | -0.76335460   | -0.33442694 |
| <i>e</i> | 0.0939260  | <i>i</i> 16.80076  | -0.59423550   | +0.02802295 |
| <i>P</i> | 5.51       | <i>H</i> 14.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 01 | 704 | 0.6+  | 0.1+  | 2005 09 13 | 704 | 0.4+ | 1.0+ | 2005 10 02 | 699 | 0.2+ | 0.3+ |
| 2000 12 01 | 704 | 0.0   | 0.4-  | 2005 09 13 | 704 | 0.0  | 0.3+ | 2005 10 02 | 644 | 0.2- | 0.1+ |
| 2000 12 01 | 704 | 0.0   | 0.1-  | 2005 09 13 | 704 | 0.7+ | 0.3+ | 2005 10 02 | 644 | 0.3- | 0.1+ |
| 2000 12 01 | 704 | 0.9-  | 0.1-  | 2005 09 13 | 704 | 0.4+ | 0.1- | 2005 10 02 | 699 | 0.0  | 0.2- |
| 2001 12 09 | 704 | 0.5+  | 0.4+  | 2005 09 13 | 704 | 0.8+ | 0.0  | 2005 10 02 | 699 | 0.0  | 0.4+ |
| 2001 12 09 | 704 | 0.0   | 0.2+  | 2005 09 13 | 704 | 0.4+ | 0.5+ | 2005 10 06 | 703 | 0.8- | 0.1- |
| 2001 12 09 | 704 | 1.1+  | 0.6+  | 2005 09 13 | 704 | 0.5+ | 0.1- | 2005 10 06 | 703 | 0.6- | 0.7- |
| 2001 12 09 | 704 | 1.5+  | 1.1+  | 2005 09 13 | 704 | 1.2+ | 0.8+ | 2005 10 06 | 703 | 1.3- | 0.1+ |
| 2001 12 19 | 644 | 0.3-  | 0.1+  | 2005 09 13 | 704 | 0.1+ | 0.0  | 2005 10 06 | 703 | 0.6+ | 0.4+ |
| 2001 12 19 | 644 | 0.4-  | 0.1+  | 2005 09 25 | 644 | 0.1+ | 0.1+ | 2005 10 23 | 644 | 0.1- | 0.3+ |
| 2001 12 19 | 644 | 0.5-  | 0.0   | 2005 09 25 | 644 | 0.1+ | 0.3+ | 2005 10 23 | 644 | 0.1- | 0.3+ |
| 2003 03 09 | 699 | 0.7+  | 0.0   | 2005 09 25 | 644 | 0.1- | 0.2+ | 2005 10 23 | 644 | 0.6+ | 0.1- |
| 2003 03 09 | 699 | 0.4+  | 0.2+  | 2005 09 26 | 644 | 0.1- | 0.2+ | 2005 10 23 | 703 | 0.2- | 0.4- |
| 2003 03 09 | 699 | 0.0   | 0.3+  | 2005 09 26 | 703 | 0.5- | 0.2- | 2005 10 23 | 703 | 0.3+ | 0.0  |
| 2003 03 09 | 699 | 0.3+  | 0.0   | 2005 09 26 | 644 | 0.0  | 0.1+ | 2005 10 23 | 703 | 0.3- | 0.1- |
| 2003 04 07 | 704 | 0.4+  | 0.3+  | 2005 09 26 | 703 | 0.7- | 0.9- | 2005 10 23 | 703 | 0.4- | 1.0- |
| 2003 04 07 | 704 | (0.4+ | 1.9+) | 2005 09 26 | 703 | 0.2+ | 0.1+ | 2005 10 29 | 703 | 0.0  | 0.5- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 04 07 | 704 | 0.4+  | 1.5+  | 2005 09 26 | 703 | 0.1+ | 0.7- | 2005 10 29 | 703 | 0.0  | 0.4+ |
| 2003 04 07 | 704 | 0.4+  | 1.2+  | 2005 09 26 | 644 | 0.2- | 0.1+ | 2005 10 29 | 703 | 1.5- | 0.7- |
| 2005 08 09 | 704 | (1.8+ | 1.0+) | 2005 09 26 | 644 | 0.3- | 0.2- | 2005 10 29 | 703 | 0.3- | 0.6- |
| 2005 08 09 | 704 | 1.0+  | 0.8+  | 2005 09 26 | 644 | 0.2- | 0.1+ | 2006 12 11 | 704 | 0.1- | 0.3- |
| 2005 08 09 | 704 | 0.9+  | 0.3+  | 2005 09 26 | 644 | 0.0  | 0.2+ | 2006 12 11 | 704 | 0.2- | 0.1- |
| 2005 08 31 | 599 | 0.1-  | 0.2+  | 2005 09 26 | 703 | 0.6+ | 0.1+ | 2006 12 11 | 704 | 0.7- | 0.4- |
| 2005 08 31 | 599 | 0.1-  | 0.2+  | 2005 09 26 | 703 | 0.0  | 0.2- | 2006 12 11 | 704 | 0.2+ | 0.3- |
| 2005 08 31 | 599 | 0.2-  | 0.1+  | 2005 09 26 | 703 | 0.3- | 0.4+ | 2007 11 18 | G96 | 0.4- | 0.5- |
| 2005 08 31 | 599 | 0.0   | 0.1+  | 2005 09 26 | 703 | 0.5- | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2005 09 01 | 644 | 0.1-  | 0.0   | 2005 10 02 | 644 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.2- | 0.4- |
| 2005 09 01 | 644 | 0.1-  | 0.1+  | 2005 10 02 | 644 | 0.1- | 0.3+ | 2007 11 18 | G96 | 0.3- | 0.4- |
| 2005 09 01 | 644 | 0.1-  | 0.1+  | 2005 10 02 | 644 | 0.2- | 0.2+ | 2007 12 04 | G96 | 0.1- | 0.4- |
| 2005 09 10 | 699 | 0.3+  | 0.1-  | 2005 10 02 | 644 | 0.5- | 0.2+ | 2007 12 04 | G96 | 0.4- | 0.3- |
| 2005 09 10 | 699 | 0.1+  | 0.4+  | 2005 10 02 | 644 | 0.3- | 0.2+ | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2005 09 10 | 699 | 0.2-  | 0.0   | 2005 10 02 | 699 | 0.2- | 0.2- | 2007 12 04 | G96 | 0.3- | 0.0  |
| 2005 09 10 | 699 | 0.0   | 0.7+  | 2005 10 02 | 644 | 0.3- | 0.0  |            |     |      |      |
| 2005 09 13 | 704 | 0.8+  | 0.4-  | 2005 10 02 | 644 | 0.3- | 0.0  |            |     |      |      |

(172972)\* 2005 SG<sub>13</sub>

Discovered 2005 Sept. 24 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 144.49363  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20666816 | $\omega$ 51.95749  | +0.89763427   | -0.44051442 |
| <i>a</i> | 2.8332637  | $\Omega$ 334.17020 | +0.39352968   | +0.81550926 |
| <i>e</i> | 0.1316651  | <i>i</i> 1.85899   | +0.19846188   | +0.37535541 |
| <i>P</i> | 4.77       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 12 07 | 691 | 0.3+ | 0.5- | 2005 09 27 | 691 | 0.0   | 0.1+  | 2005 10 07 | 703 | 0.6-  | 0.7-  |
| 2001 12 07 | 691 | 0.4- | 0.1- | 2005 09 30 | 691 | 0.6-  | 0.1+  | 2005 10 07 | 703 | 0.8-  | 0.1+  |
| 2001 12 07 | 691 | 0.1- | 0.1+ | 2005 09 30 | 691 | 0.6-  | 0.1+  | 2005 10 07 | 703 | (0.3+ | 1.5-) |
| 2001 12 19 | 704 | 1.1+ | 0.4- | 2005 09 30 | 691 | 0.7-  | 0.0   | 2005 10 10 | 691 | 0.1+  | 0.1-  |
| 2001 12 19 | 704 | 0.8+ | 0.2+ | 2005 10 01 | 691 | 0.1-  | 0.2+  | 2005 10 10 | 691 | 0.0   | 0.0   |
| 2001 12 19 | 704 | 0.4+ | 0.4+ | 2005 10 01 | 691 | 0.3-  | 0.1+  | 2005 10 10 | 691 | 0.2+  | 0.1+  |
| 2001 12 19 | 704 | 0.1+ | 0.9+ | 2005 10 01 | 691 | 0.1+  | 0.1+  | 2005 11 03 | G96 | 0.2+  | 0.4-  |
| 2002 01 14 | 704 | 0.7+ | 0.0  | 2005 10 05 | 691 | 0.2+  | 0.2+  | 2005 11 03 | G96 | 0.0   | 0.1-  |
| 2002 01 14 | 704 | 0.3+ | 0.2- | 2005 10 05 | 691 | 0.1+  | 0.1+  | 2005 11 03 | G96 | 0.3+  | 0.1+  |
| 2002 01 14 | 704 | 0.1+ | 0.1- | 2005 10 05 | 691 | 0.2+  | 0.2+  | 2005 11 03 | G96 | 0.1+  | 0.1-  |
| 2002 01 20 | 691 | 0.0  | 0.1+ | 2005 10 05 | 691 | 0.2+  | 0.2+  | 2005 11 05 | 691 | 0.2+  | 0.1+  |
| 2002 01 20 | 691 | 0.5- | 0.1+ | 2005 10 05 | 691 | 0.1+  | 0.0   | 2005 11 05 | 691 | 0.1+  | 0.0   |
| 2002 01 20 | 691 | 0.2- | 0.1+ | 2005 10 05 | 691 | 0.1+  | 0.0   | 2005 11 05 | 691 | 0.3+  | 0.2+  |
| 2003 04 07 | 291 | 0.4+ | 0.4+ | 2005 10 06 | 699 | 0.5+  | 0.7-  | 2007 02 16 | G96 | 0.7-  | 0.4+  |
| 2003 04 07 | 291 | 0.4- | 0.3+ | 2005 10 06 | 699 | 0.7+  | 1.1+  | 2007 02 16 | G96 | 0.0   | 0.2-  |
| 2003 04 07 | 291 | 0.5+ | 0.3+ | 2005 10 06 | 699 | (1.1+ | 1.7+) | 2007 02 16 | G96 | 0.1+  | 0.3-  |
| 2005 09 23 | 703 | 0.4- | 0.4- | 2005 10 06 | 699 | 0.0   | 0.9-  | 2007 02 16 | G96 | 0.0   | 0.2-  |
| 2005 09 23 | 703 | 0.0  | 1.0- | 2005 10 07 | 704 | 0.8-  | 0.8+  | 2007 02 23 | 290 | 0.1-  | 0.1+  |
| 2005 09 23 | 703 | 0.6- | 1.1- | 2005 10 07 | 704 | 0.0   | 0.2-  | 2007 02 23 | 290 | 0.1+  | 0.1+  |
| 2005 09 23 | 703 | 0.2- | 1.5+ | 2005 10 07 | 704 | 1.2+  | 0.6+  | 2007 03 10 | G96 | 0.1+  | 0.4-  |
| 2005 09 24 | 691 | 0.1+ | 0.0  | 2005 10 07 | 703 | 0.9+  | 1.3-  | 2007 03 10 | G96 | 0.4+  | 0.2+  |
| 2005 09 24 | 691 | 0.1+ | 0.0  | 2005 10 07 | 703 | 0.1-  | 0.4+  | 2007 03 10 | G96 | 0.3-  | 0.2-  |
| 2005 09 24 | 691 | 0.0  | 0.0  | 2005 10 07 | 703 | 0.9+  | 0.5-  | 2007 03 10 | G96 | 0.3+  | 0.4+  |
| 2005 09 27 | 691 | 0.0  | 0.1- | 2005 10 07 | 703 | 0.7-  | 0.4-  |            |     |       |       |
| 2005 09 27 | 691 | 0.2- | 0.1+ | 2005 10 07 | 703 | 0.1+  | 0.5-  |            |     |       |       |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 17 | 703 | 0.5− | 0.6+ | 2005 08 31 | 699 | 0.5+ | 0.3− | 2005 10 22 | 644 | 0.2−  | 0.4+  |
| 1999 11 17 | 703 | 1.5− | 0.1+ | 2005 08 31 | 699 | 1.1+ | 0.2− | 2005 10 27 | 704 | 1.0−  | 0.6+  |
| 1999 12 06 | 704 | 0.3+ | 0.2+ | 2005 09 09 | 705 | 0.0  | 0.0  | 2005 10 27 | 704 | 0.4+  | 0.6+  |
| 1999 12 06 | 704 | 0.7+ | 0.3+ | 2005 09 09 | 705 | 0.0  | 0.1+ | 2005 10 27 | 704 | 0.3+  | 1.0+  |
| 1999 12 06 | 704 | 0.0  | 0.6+ | 2005 09 14 | 705 | 0.0  | 0.2+ | 2005 10 27 | 704 | 0.0   | 0.7−  |
| 2002 04 16 | 704 | 1.2+ | 0.5+ | 2005 09 14 | 705 | 0.1− | 0.3+ | 2005 10 27 | 703 | 0.8−  | 0.3−  |
| 2002 04 16 | 704 | 1.3+ | 0.8+ | 2005 09 15 | 705 | 0.0  | 0.3+ | 2005 10 27 | 703 | 0.2−  | 0.4+  |
| 2002 04 16 | 704 | 0.6+ | 1.4+ | 2005 09 15 | 705 | 0.1− | 0.3+ | 2005 10 27 | 703 | 1.1−  | 0.6+  |
| 2002 04 16 | 704 | 0.1+ | 1.0+ | 2005 09 21 | 705 | 0.1+ | 0.4+ | 2005 10 27 | 703 | 0.6−  | 1.1+  |
| 2003 05 26 | 691 | 0.2− | 0.7+ | 2005 09 21 | 705 | 0.1+ | 0.3+ | 2005 10 31 | 699 | 0.1+  | 0.7−  |
| 2003 05 26 | 691 | 0.1− | 0.4+ | 2005 09 23 | 644 | 0.2+ | 0.6+ | 2005 10 31 | 699 | (0.6− | 1.6−) |
| 2003 05 26 | 691 | 0.4+ | 0.3+ | 2005 09 23 | 644 | 0.1− | 0.7+ | 2005 10 31 | 699 | 0.4−  | 0.5+  |
| 2003 06 01 | 691 | 0.2− | 0.5+ | 2005 09 23 | 644 | 0.1− | 0.7+ | 2005 10 31 | 699 | (1.5− | 2.4+) |
| 2003 06 01 | 691 | 0.1+ | 0.3+ | 2005 09 28 | 644 | 0.5− | 0.4+ | 2005 11 01 | 703 | 0.2−  | 0.1+  |
| 2003 06 01 | 691 | 0.4+ | 0.6+ | 2005 09 28 | 644 | 0.2− | 0.8+ | 2005 11 01 | 703 | 0.6−  | 1.0+  |
| 2004 07 18 | 704 | 0.0  | 0.7+ | 2005 09 28 | 644 | 0.1− | 0.1+ | 2005 11 01 | 703 | 0.4−  | 0.3−  |
| 2004 07 18 | 704 | 0.4+ | 0.9+ | 2005 10 01 | 699 | 0.1− | 0.2+ | 2005 11 01 | 703 | 0.2−  | 0.1+  |
| 2004 07 18 | 704 | 0.1− | 0.7+ | 2005 10 01 | 699 | 0.2+ | 0.4+ | 2007 02 07 | 291 | 0.4−  | 0.3+  |
| 2004 07 18 | 704 | 0.1− | 0.3+ | 2005 10 01 | 699 | 0.6− | 0.4+ | 2007 02 07 | 291 | 0.1+  | 0.4+  |
| 2004 07 18 | 704 | 0.0  | 0.4+ | 2005 10 01 | 699 | 0.1− | 0.7+ | 2007 02 07 | 291 | 0.1+  | 0.5+  |
| 2004 08 09 | 699 | 0.8− | 0.3− | 2005 10 05 | 703 | 1.0+ | 0.8− | 2007 11 20 | 691 | 0.4+  | 0.4+  |
| 2004 08 09 | 699 | 0.7− | 0.4+ | 2005 10 05 | 703 | 1.0+ | 0.0  | 2007 11 20 | 691 | 0.3−  | 0.3+  |
| 2004 08 09 | 699 | 0.2+ | 0.4− | 2005 10 05 | 703 | 0.4− | 0.8+ | 2007 11 20 | 691 | 0.0   | 0.5+  |
| 2004 08 09 | 699 | 0.1− | 0.1− | 2005 10 05 | 703 | 0.2+ | 0.2− |            |     |       |       |

(172974)\* 2005 YW<sub>55</sub> = 2004 HF<sub>54</sub>

Discovered 2005 Dec. 28 by the Catalina Sky Survey.

Id. A. Doppler (MPO 96725)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M | 297.14716  |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.47058882 | $\omega$ | 256.47132 | −0.71001717 | −0.69264141 |
| a | 1.6369735  | $\Omega$ | 239.51407 | +0.68955085 | −0.64729607 |
| e | 0.2465669  | i        | 8.47331   | +0.14281189 | −0.31820697 |
| P | 2.09       | H        | 19.3      | G           | 0.15        |
|   |            |          |           | U           | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 06 04 | 644 | 0.3+  | 1.0−  | 2005 12 29 | 711 | 0.4+  | 0.4+  | 2007 11 14 | 691 | 0.0   | 0.2+  |
| 2002 06 04 | 644 | 0.3−  | 0.6−  | 2005 12 29 | 673 | 0.3+  | 0.2+  | 2007 11 14 | 691 | 0.5−  | 0.2−  |
| 2002 06 04 | 644 | 0.0   | 0.2+  | 2005 12 29 | 673 | 0.1−  | 0.1+  | 2007 11 15 | 704 | 1.1+  | 1.0+  |
| 2004 04 25 | 704 | 0.7−  | 0.1+  | 2005 12 29 | 711 | 0.4+  | 0.2+  | 2007 11 15 | 704 | 0.6+  | 1.1+  |
| 2004 04 25 | 704 | 0.6+  | 0.1−  | 2005 12 29 | 701 | 0.4+  | 0.3+  | 2007 11 15 | 704 | 0.6+  | 1.3+  |
| 2004 04 25 | 704 | 0.9+  | 0.4−  | 2005 12 29 | 711 | 0.5+  | 0.7−  | 2007 11 15 | 704 | 0.6−  | 0.5+  |
| 2004 04 25 | 704 | 0.0   | 0.1+  | 2005 12 29 | 701 | 0.5+  | 0.3−  | 2007 11 15 | 704 | 0.7+  | 0.4+  |
| 2004 04 27 | 704 | 0.3+  | 0.9+  | 2006 01 02 | 711 | 0.1+  | 0.0   | 2007 11 16 | H45 | 0.0   | 0.1+  |
| 2004 04 27 | 704 | 0.0   | 0.2+  | 2006 01 02 | 711 | 0.1+  | 0.2−  | 2007 11 16 | H45 | 0.0   | 0.2+  |
| 2004 04 27 | 704 | 0.1+  | 0.2+  | 2006 01 02 | 711 | 0.2+  | 0.1−  | 2007 11 16 | H45 | 0.0   | 0.1+  |
| 2004 04 27 | 704 | 0.6−  | 0.2+  | 2006 01 07 | 448 | 0.2−  | 0.4−  | 2007 11 16 | H45 | 0.3+  | 0.1+  |
| 2004 04 27 | 704 | 0.5−  | 0.4−  | 2006 01 07 | 448 | 0.2+  | 0.0   | 2007 11 16 | H45 | 0.6+  | 0.3−  |
| 2004 04 27 | 704 | 0.7+  | 0.4+  | 2006 01 07 | 448 | 0.6−  | 0.4−  | 2007 11 16 | H45 | 0.2+  | 0.1+  |
| 2004 05 16 | 704 | 0.8−  | 0.4+  | 2006 01 09 | E12 | 0.3−  | 0.1−  | 2007 11 18 | 691 | 0.1−  | 0.0   |
| 2004 05 16 | 704 | 0.3−  | 0.3−  | 2006 01 09 | E12 | 0.2−  | 0.2−  | 2007 11 18 | 691 | 0.0   | 0.1−  |
| 2004 05 16 | 704 | 0.9−  | 0.6+  | 2006 01 09 | E12 | 0.0   | 0.1−  | 2007 11 18 | 691 | 0.2−  | 0.1+  |
| 2004 05 16 | 704 | 0.3+  | 0.8+  | 2006 01 09 | E12 | 0.3+  | 0.2+  | 2007 11 30 | A78 | 0.1+  | 0.2+  |
| 2004 05 23 | 691 | 0.3+  | 0.8+  | 2006 02 25 | 703 | 0.6−  | 0.2+  | 2007 11 30 | A78 | 0.5+  | 0.2−  |
| 2004 05 23 | 691 | 0.4+  | 0.1+  | 2006 02 25 | 703 | 0.4−  | 0.2+  | 2007 11 30 | A78 | 0.1+  | 0.4+  |
| 2004 05 23 | 691 | 0.1+  | 0.1−  | 2006 02 25 | 703 | 0.9−  | 0.2−  | 2007 11 30 | A78 | 0.3+  | 0.4+  |
| 2005 10 30 | G96 | 0.1+  | 0.2−  | 2006 03 20 | 246 | 0.4+  | 0.3−  | 2007 12 03 | 703 | 0.5−  | 0.4+  |
| 2005 10 30 | G96 | 0.2−  | 0.1−  | 2006 03 20 | 246 | 0.1+  | 0.4−  | 2007 12 03 | 703 | 0.2+  | 0.2+  |
| 2005 10 30 | G96 | 0.1+  | 0.5−  | 2006 03 20 | 246 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.2−  | 0.4+  |
| 2005 10 30 | G96 | 0.1−  | 0.4−  | 2006 03 20 | 246 | 0.1−  | 0.0   | 2007 12 03 | 703 | 0.1−  | 1.1+  |
| 2005 12 28 | 703 | 0.9−  | 0.1−  | 2006 03 20 | 246 | 0.2+  | 0.8−  | 2007 12 04 | 704 | 0.9+  | 1.1+  |
| 2005 12 28 | 703 | (2.2− | 0.4+) | 2006 03 20 | 246 | 0.6+  | 0.1+  | 2007 12 04 | 704 | 0.3+  | 1.0+  |
| 2005 12 28 | 703 | 0.3−  | 0.5−  | 2006 03 20 | 246 | 0.8+  | 0.0   | 2007 12 04 | 704 | 0.1+  | 0.7+  |
| 2005 12 28 | 703 | 0.6+  | 0.3−  | 2006 04 21 | 703 | (1.7− | 0.8−) | 2007 12 04 | 704 | 0.1+  | 0.7+  |
| 2005 12 28 | 703 | 0.0   | 0.0   | 2006 04 21 | 703 | 1.4−  | 0.3+  | 2007 12 04 | 704 | 0.6+  | 1.0+  |
| 2005 12 28 | 703 | 0.6−  | 0.7+  | 2006 04 21 | 703 | (1.6+ | 1.4−) | 2007 12 05 | 699 | (1.8+ | 0.3−) |
| 2005 12 28 | 703 | 0.4−  | 0.3−  | 2006 04 21 | 703 | 1.0−  | 0.5−  | 2007 12 05 | 699 | 0.4−  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 12 28 | 703 | 0.1+ | 0.4+ | 2007 09 13 | H55 | 0.3− | 0.3+ | 2007 12 05 | 699 | (2.3+ | 0.1−) |
| 2005 12 28 | 474 | 0.1+ | 0.3− | 2007 09 13 | H55 | 0.1− | 0.1+ | 2007 12 05 | 699 | 0.7−  | 0.7−  |
| 2005 12 28 | 474 | 0.1− | 0.5− | 2007 09 13 | H55 | 0.7− | 0.1− | 2007 12 05 | H45 | 0.3+  | 0.1−  |
| 2005 12 28 | 474 | 0.2− | 0.3− | 2007 09 13 | 291 | 0.5− | 0.4− | 2007 12 05 | H45 | 0.3+  | 0.1−  |
| 2005 12 28 | 474 | 1.1− | 0.6+ | 2007 09 13 | 291 | 0.4− | 0.1− | 2007 12 05 | H45 | 0.3+  | 0.2−  |
| 2005 12 28 | E12 | 0.1− | 0.2+ | 2007 09 13 | 291 | 0.4− | 0.3+ | 2007 12 05 | H45 | 0.1+  | 0.3−  |
| 2005 12 28 | E12 | 0.1− | 0.0  | 2007 11 02 | 691 | 0.1− | 0.3+ | 2007 12 05 | H45 | 0.5+  | 0.1+  |
| 2005 12 28 | E12 | 0.2+ | 0.7+ | 2007 11 02 | 691 | 0.1− | 0.6− | 2007 12 05 | 699 | 1.3+  | 0.7−  |
| 2005 12 29 | 703 | 0.3− | 0.3− | 2007 11 02 | 691 | 0.3− | 0.3+ | 2007 12 05 | 699 | 0.5−  | 0.7+  |
| 2005 12 29 | 703 | 0.2− | 0.4+ | 2007 11 05 | H45 | 0.0  | 0.2− | 2007 12 05 | 699 | 0.4−  | 1.1−  |
| 2005 12 29 | 703 | 0.5− | 0.3− | 2007 11 05 | H45 | 0.8− | 0.2− | 2007 12 05 | 699 | 0.3−  | 0.7−  |
| 2005 12 29 | 703 | 0.1− | 0.1+ | 2007 11 05 | H45 | 0.1− | 0.0  | 2007 12 06 | 106 | 0.7+  | 0.7−  |
| 2005 12 29 | 651 | 0.6+ | 0.9+ | 2007 11 05 | H45 | 0.8− | 0.0  | 2007 12 06 | 106 | 0.7+  | 0.1+  |
| 2005 12 29 | 651 | 0.6+ | 0.7+ | 2007 11 05 | H45 | 0.1+ | 0.2− | 2007 12 06 | 106 | 0.6+  | 0.2−  |
| 2005 12 29 | 651 | 1.3+ | 0.9+ | 2007 11 06 | A13 | 0.3+ | 0.1− | 2007 12 06 | 106 | 0.5+  | 0.3−  |
| 2005 12 29 | 734 | 0.2− | 0.2+ | 2007 11 06 | A13 | 0.2+ | 0.0  | 2007 12 17 | H45 | 0.1−  | 1.1−  |
| 2005 12 29 | 701 | 0.3+ | 0.1− | 2007 11 13 | 699 | 0.8− | 0.3− | 2007 12 17 | H45 | 0.1+  | 0.2+  |
| 2005 12 29 | 673 | 0.0  | 0.4+ | 2007 11 13 | 699 | 0.1− | 0.0  | 2007 12 17 | H45 | 0.0   | 0.7−  |
| 2005 12 29 | 734 | 0.2+ | 0.0  | 2007 11 13 | 699 | 0.8− | 0.3− | 2007 12 17 | H45 | 1.0+  | 0.6−  |
| 2005 12 29 | 673 | 0.1+ | 0.0  | 2007 11 13 | 699 | 0.7+ | 0.6− | 2007 12 17 | H45 | 0.1−  | 1.0−  |
| 2005 12 29 | 734 | 0.1− | 0.2− | 2007 11 14 | 691 | 0.1− | 0.1+ |            |     |       |       |

(172975)\* 2006 DY<sub>6</sub> = 2004 VU<sub>24</sub>

Discovered 2006 Feb. 20 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 97176)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M | 120.76264  |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.29193659 | $\omega$ | 272.61286 | −0.49351390 | +0.86876554 |
| a | 2.2504897  | $\Omega$ | 327.71101 | −0.76426072 | −0.45574307 |
| e | 0.1410732  | i        | 4.41427   | −0.41515007 | −0.19376451 |
| P | 3.38       | H        | 16.4      | G           | 0.15        |
|   |            |          |           | U           | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 08 29 | 704 | 0.6− | 1.8+ | 2006 03 05 | 691 | 0.1+  | 0.3+  | 2007 09 20 | 691 | 0.2−  | 0.0   |
| 2000 08 29 | 704 | 0.1− | 1.0+ | 2006 03 05 | 691 | 0.3+  | 0.2+  | 2007 09 20 | 691 | 0.2−  | 0.2+  |
| 2000 08 29 | 704 | 0.8− | 0.4− | 2006 03 05 | 691 | 0.3+  | 0.1+  | 2007 09 22 | 704 | 0.0   | 1.1+  |
| 2000 08 29 | 704 | 0.2− | 0.7+ | 2006 03 21 | 704 | 0.6−  | 0.3−  | 2007 09 22 | 704 | 0.0   | 1.0+  |
| 2000 08 29 | 704 | 0.0  | 0.6+ | 2006 03 21 | 704 | 0.6+  | 0.1+  | 2007 09 22 | 704 | 0.4−  | 0.3+  |
| 2004 11 04 | 699 | 0.1+ | 0.6+ | 2006 03 21 | 704 | 1.2+  | 1.5+  | 2007 10 08 | 699 | (1.7+ | 1.1+) |
| 2004 11 04 | 699 | 1.0− | 1.3− | 2006 03 24 | 699 | 0.2−  | 0.3+  | 2007 10 08 | 699 | (1.8+ | 0.2−) |
| 2004 11 04 | 699 | 0.1+ | 0.2− | 2006 03 24 | 699 | 0.2+  | 0.7+  | 2007 10 08 | 699 | 0.2+  | 1.3−  |
| 2004 11 04 | 699 | 0.3− | 0.9− | 2006 03 24 | 699 | 0.3−  | 0.4+  | 2007 10 08 | 699 | 0.4+  | 0.1+  |
| 2004 11 09 | 703 | 0.1− | 0.3+ | 2006 04 16 | 699 | 0.6−  | 0.9+  | 2007 10 09 | 704 | 0.5+  | 1.4+  |
| 2004 11 09 | 703 | 0.0  | 0.5− | 2006 04 16 | 699 | (1.9+ | 0.8+) | 2007 10 09 | 704 | 0.6−  | 1.4+  |
| 2004 11 09 | 703 | 0.4− | 1.1+ | 2006 04 16 | 699 | 1.2+  | 0.7+  | 2007 10 09 | 704 | 0.1+  | 0.3+  |



2007 DEC. 24

M.P.O. 129531

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |      |             |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|-------|-------|
| <i>M</i>                                | 359.35038  |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |     |       |       |
| <i>n</i>                                | 0.28041319 | $\omega$ | 346.69164 |            | +0.97001735 |      | +0.24296514 |            |     |       |       |
| <i>a</i>                                | 2.3117299  | $\Omega$ | 359.17520 |            | -0.16852567 |      | +0.65507481 |            |     |       |       |
| <i>e</i>                                | 0.1644943  | <i>i</i> | 24.00062  |            | -0.17511551 |      | +0.71543339 |            |     |       |       |
| <i>P</i>                                | 3.51       | <i>H</i> | 16.7      |            | <i>G</i>    | 0.15 | <i>U</i>    | 1          |     |       |       |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |     |       |       |
| 1999 03 21                              | 645        | 0.2-     | 0.1+      | 2004 12 19 | 704         | 0.6+ | 1.0-        | 2006 03 24 | 699 | 0.8-  | 0.5+  |
| 1999 03 21                              | 645        | 0.2-     | 0.1+      | 2004 12 19 | 704         | 0.0  | 0.7-        | 2006 04 01 | 704 | 1.2+  | 0.7+  |
| 1999 03 25                              | 691        | 0.1+     | 1.3-      | 2004 12 19 | 704         | 0.1- | 0.3-        | 2006 04 01 | 704 | (1.2- | 2.8+) |
| 1999 03 25                              | 691        | 0.2-     | 0.8-      | 2006 02 27 | 691         | 0.2+ | 0.1+        | 2006 04 01 | 704 | 0.2-  | 0.7+  |
| 1999 03 25                              | 691        | 0.1-     | 1.2-      | 2006 02 27 | 691         | 0.3+ | 0.2+        | 2006 04 01 | 704 | 0.1+  | 1.0+  |
| 2002 01 25                              | 704        | 0.9+     | 1.2+      | 2006 02 27 | 691         | 0.5+ | 0.3+        | 2007 08 12 | E12 | 0.2-  | 0.2+  |
| 2002 01 25                              | 704        | 0.3-     | 0.2+      | 2006 03 02 | 691         | 0.2+ | 0.1-        | 2007 08 12 | E12 | 0.2+  | 0.1-  |
| 2002 01 25                              | 704        | 0.6-     | 0.6-      | 2006 03 02 | 691         | 0.2+ | 0.1+        | 2007 08 12 | E12 | 0.4-  | 0.4+  |
| 2002 01 25                              | 704        | 0.3-     | 0.5-      | 2006 03 02 | 691         | 0.4+ | 0.1+        | 2007 08 12 | E12 | 0.2-  | 0.1+  |
| 2004 09 14                              | 704        | 0.4+     | 0.7+      | 2006 03 06 | 691         | 0.1- | 0.1-        | 2007 09 02 | E12 | 0.1-  | 0.1-  |
| 2004 09 14                              | 704        | 0.3+     | 0.9-      | 2006 03 06 | 691         | 0.1- | 0.0         | 2007 09 02 | E12 | 0.2-  | 0.5-  |
| 2004 09 14                              | 704        | 0.6+     | 0.2+      | 2006 03 06 | 691         | 0.1+ | 0.2+        | 2007 09 02 | E12 | 0.4+  | 0.2-  |
| 2004 09 14                              | 704        | 0.1-     | 0.1-      | 2006 03 21 | G96         | 0.3- | 0.1-        | 2007 09 14 | E12 | 0.1-  | 0.3+  |
| 2004 10 16                              | 704        | 0.1-     | 0.7+      | 2006 03 21 | G96         | 0.1+ | 0.2-        | 2007 09 14 | E12 | 0.6+  | 0.1+  |
| 2004 10 16                              | 704        | 1.0+     | 0.3+      | 2006 03 21 | G96         | 0.1+ | 0.1-        | 2007 09 14 | E12 | 0.1-  | 0.3+  |
| 2004 10 16                              | 704        | 1.1+     | 0.4+      | 2006 03 21 | G96         | 0.0  | 0.2-        | 2007 12 05 | 704 | 0.8-  | 0.4-  |
| 2004 10 16                              | 704        | 0.0      | 0.6+      | 2006 03 24 | 699         | 0.1+ | 0.3+        | 2007 12 05 | 704 | 1.1+  | 2.1-  |
| 2004 12 19                              | 704        | 1.0-     | 0.4+      | 2006 03 24 | 699         | 0.6+ | 1.1+        | 2007 12 05 | 704 | 0.2-  | 0.7-  |
| 2004 12 19                              | 704        | 0.4-     | 0.7-      | 2006 03 24 | 699         | 0.6+ | 0.2+        | 2007 12 05 | 704 | 0.5+  | 0.4-  |

(172977)\* 2006 DK<sub>116</sub> = 2007 RC<sub>94</sub>

Discovered 2006 Feb. 27 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 126138)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|
| MPC                                     |            |          |           |             |             |          |   |  |  |
| <i>M</i>                                | 83.59499   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |  |  |
| <i>n</i>                                | 0.26459913 | $\omega$ | 246.99142 | +0.11079235 | +0.99302681 |          |   |  |  |
| <i>a</i>                                | 2.4029447  | $\Omega$ | 29.45728  | -0.87921375 | +0.11683127 |          |   |  |  |
| <i>e</i>                                | 0.1679267  | <i>i</i> | 4.69869   | -0.46336621 | +0.01575452 |          |   |  |  |
| <i>P</i>                                | 3.72       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 02 16 | 644 | 0.4+ | 1.0+ | 2006 03 03 | 691 | 0.4+  | 0.4+  | 2007 10 08 | 704 | 0.5+ | 0.1+ |
| 2002 02 16 | 644 | 0.7+ | 0.8+ | 2006 03 03 | 691 | 0.4+  | 0.3+  | 2007 10 08 | 704 | 0.5- | 1.2- |
| 2002 02 16 | 644 | 0.6+ | 0.9+ | 2006 04 07 | G96 | 0.2-  | 0.3+  | 2007 10 08 | 704 | 0.7- | 0.8- |
| 2003 07 08 | 644 | 0.2- | 0.0  | 2006 04 07 | G96 | 0.1-  | 0.5+  | 2007 10 08 | 704 | 0.3- | 0.0  |
| 2003 07 08 | 644 | 0.2- | 0.3+ | 2006 04 07 | G96 | 0.4-  | 0.7+  | 2007 10 08 | G96 | 0.2+ | 0.1+ |
| 2003 07 08 | 644 | 0.2- | 0.7+ | 2006 04 07 | G96 | 0.4-  | 0.4+  | 2007 10 08 | G96 | 0.3+ | 0.0  |
| 2003 07 25 | 644 | 0.5- | 0.1+ | 2007 09 10 | 691 | 0.4-  | 0.5+  | 2007 10 08 | G96 | 0.0  | 0.1+ |
| 2003 07 25 | 644 | 0.2- | 0.5+ | 2007 09 10 | 691 | 0.3-  | 0.4+  | 2007 10 08 | G96 | 0.2+ | 0.3- |
| 2003 07 25 | 644 | 0.1- | 0.6+ | 2007 09 10 | 691 | 0.2+  | 0.4+  | 2007 10 11 | 704 | 0.3+ | 0.9+ |
| 2003 08 23 | 644 | 0.0  | 0.6+ | 2007 09 11 | 691 | 0.6-  | 0.6+  | 2007 10 11 | 704 | 0.1+ | 0.1+ |
| 2003 08 23 | 644 | 0.4- | 0.2+ | 2007 09 11 | 691 | 0.2-  | 0.5+  | 2007 10 11 | 704 | 0.3+ | 0.7+ |
| 2003 08 23 | 644 | 0.1- | 0.2+ | 2007 09 11 | 691 | 0.4-  | 0.1-  | 2007 10 18 | G96 | 0.5+ | 0.0  |
| 2006 02 27 | 691 | 0.3+ | 0.3+ | 2007 10 04 | 703 | 0.4+  | 0.6+  | 2007 10 18 | G96 | 0.4+ | 0.1+ |
| 2006 02 27 | 691 | 0.0  | 0.4+ | 2007 10 04 | 703 | 0.5-  | 0.2-  | 2007 10 18 | G96 | 0.5+ | 0.1+ |
| 2006 02 27 | 691 | 0.3+ | 0.3+ | 2007 10 04 | 703 | 0.2+  | 0.3-  | 2007 10 18 | G96 | 0.4+ | 0.1- |
| 2006 03 02 | G96 | 0.0  | 0.4+ | 2007 10 04 | 703 | 0.1-  | 0.9+  | 2007 12 06 | G96 | 0.7+ | 0.0  |
| 2006 03 02 | G96 | 0.2+ | 0.3+ | 2007 10 06 | 704 | (1.2+ | 1.6+) | 2007 12 06 | G96 | 0.5+ | 0.2- |
| 2006 03 02 | G96 | 0.1- | 0.4+ | 2007 10 06 | 704 | (1.1- | 2.2+) | 2007 12 06 | G96 | 0.1- | 0.5+ |
| 2006 03 02 | G96 | 0.1+ | 0.1- | 2007 10 06 | 704 | 1.4-  | 0.3+  | 2007 12 06 | G96 | 0.8+ | 0.3+ |
| 2006 03 03 | 691 | 0.2+ | 0.3+ | 2007 10 06 | 704 | 0.2+  | 0.3-  |            |     |      |      |

(172978)\* 2006 HB<sub>8</sub> = 2000 WR<sub>66</sub>

Discovered 2006 Apr. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 101620)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |          |            |          |             | MPC      |             |          |       |       |  |
|-----------------------------------------|------------|-------|----------|------------|----------|-------------|----------|-------------|----------|-------|-------|--|
| <i>M</i>                                | 69.80353   |       | (2000.0) |            | <b>P</b> |             | <b>Q</b> |             |          |       |       |  |
| <i>n</i>                                | 0.28066870 |       | $\omega$ | 267.62073  |          | +0.82666649 |          | +0.54486394 |          |       |       |  |
| <i>a</i>                                | 2.3103267  |       | $\Omega$ | 59.33111   |          | −0.42913195 |          | +0.77200379 |          |       |       |  |
| <i>e</i>                                | 0.1878776  |       | <i>i</i> | 9.40259    |          | −0.36396194 |          | +0.32731244 |          |       |       |  |
| <i>P</i>                                | 3.51       |       | <i>H</i> | 16.1       |          | <i>G</i>    | 0.15     |             | <i>U</i> |       | 1     |  |
| Residuals in seconds of arc             |            |       |          |            |          |             |          |             |          |       |       |  |
| 1999 05 22                              | 691        | 0.0   | 0.4+     | 2006 04 30 | 704      | 0.4−        | 0.1+     | 2007 11 05  | 704      | 0.3+  | 0.6+  |  |
| 1999 05 22                              | 691        | 0.0   | 0.2−     | 2006 05 03 | 691      | 0.4+        | 0.2−     | 2007 11 05  | 691      | 0.1+  | 0.0   |  |
| 1999 05 22                              | 691        | 0.2−  | 0.1+     | 2006 05 03 | 691      | 0.5+        | 0.1−     | 2007 11 05  | G96      | 0.6+  | 0.1+  |  |
| 2000 11 21                              | 704        | 0.8−  | 0.4−     | 2006 05 03 | 691      | 0.1+        | 0.4+     | 2007 11 05  | G96      | 0.2+  | 0.1+  |  |
| 2000 11 21                              | 704        | 0.1−  | 0.1+     | 2006 05 03 | 691      | 0.3+        | 0.1+     | 2007 11 05  | 691      | 0.3−  | 0.0   |  |
| 2000 11 21                              | 704        | 0.6+  | 0.4+     | 2006 05 03 | 691      | 0.2+        | 0.1+     | 2007 11 05  | G96      | 0.5+  | 0.0   |  |
| 2000 11 21                              | 704        | 0.6−  | 0.1−     | 2006 05 03 | 691      | 0.1+        | 0.1+     | 2007 11 05  | G96      | 0.1+  | 0.1+  |  |
| 2000 11 21                              | 704        | 0.7+  | 0.5+     | 2006 05 25 | 644      | 0.4−        | 0.1−     | 2007 11 13  | 703      | 0.7−  | 0.4−  |  |
| 2000 11 29                              | 704        | 0.0   | 0.8+     | 2006 05 25 | 644      | 0.2−        | 0.1−     | 2007 11 13  | 703      | 0.0   | 0.6−  |  |
| 2000 11 29                              | 704        | 0.4+  | 0.6+     | 2006 05 25 | 644      | 0.5−        | 0.2−     | 2007 11 13  | 703      | 0.4−  | 0.2+  |  |
| 2000 11 29                              | 704        | 0.0   | 0.2+     | 2006 05 25 | G96      | 0.2−        | 0.1−     | 2007 11 13  | 703      | 0.8−  | 0.1+  |  |
| 2000 11 29                              | 704        | 0.4+  | 0.8+     | 2006 05 25 | G96      | 0.3−        | 0.2−     | 2007 11 15  | 704      | 0.1−  | 0.2+  |  |
| 2006 04 08                              | 691        | 0.2−  | 0.3−     | 2006 05 25 | G96      | 0.4−        | 0.0      | 2007 11 15  | 704      | 0.4+  | 0.5+  |  |
| 2006 04 08                              | 691        | 0.0   | 0.1+     | 2006 05 25 | G96      | 0.4−        | 0.1−     | 2007 11 15  | 704      | 0.3+  | 0.1+  |  |
| 2006 04 08                              | 691        | 0.7−  | 0.2+     | 2006 06 13 | 644      | 0.0         | 0.1−     | 2007 11 15  | 704      | 0.3+  | 0.8+  |  |
| 2006 04 18                              | 691        | 0.3−  | 0.1+     | 2006 06 13 | 644      | 0.1−        | 0.4+     | 2007 11 15  | 704      | 0.2+  | 0.9+  |  |
| 2006 04 18                              | 691        | 0.1+  | 0.2−     | 2006 06 13 | 644      | 0.4−        | 0.2−     | 2007 12 04  | 699      | 1.4−  | 0.1+  |  |
| 2006 04 18                              | 691        | 0.3−  | 0.3+     | 2006 06 20 | 644      | 0.0         | 0.3+     | 2007 12 04  | 699      | 1.5+  | 0.4−  |  |
| 2006 04 21                              | 691        | 0.3+  | 0.1−     | 2006 06 20 | 644      | 0.1−        | 0.1+     | 2007 12 04  | 699      | 0.5+  | 0.1−  |  |
| 2006 04 21                              | 691        | 0.4+  | 0.2−     | 2006 06 20 | 644      | 0.8+        | 0.8+     | 2007 12 04  | 699      | 0.4+  | 1.0−  |  |
| 2006 04 21                              | 691        | 0.1+  | 0.0      | 2006 06 20 | 644      | 0.2+        | 0.2−     | 2007 12 04  | 699      | 0.2+  | 0.4−  |  |
| 2006 04 21                              | 703        | 0.2−  | 0.5+     | 2006 06 20 | 644      | 0.8+        | 0.2+     | 2007 12 04  | 699      | 1.0+  | 0.3+  |  |
| 2006 04 21                              | 703        | 1.2−  | 1.2−     | 2006 06 20 | 644      | 0.7+        | 0.1+     | 2007 12 04  | 699      | (1.6+ | 1.0+) |  |
| 2006 04 21                              | 703        | 1.2−  | 0.0      | 2007 10 11 | 704      | 0.3+        | 0.8−     | 2007 12 04  | 699      | (3.7+ | 1.4+) |  |
| 2006 04 21                              | 703        | 0.6−  | 0.2+     | 2007 10 11 | 704      | 0.6+        | 1.3+     | 2007 12 10  | 704      | (0.5+ | 2.5+) |  |
| 2006 04 24                              | 704        | 1.0+  | 0.5−     | 2007 10 11 | 704      | (1.2+       | 1.6+)    | 2007 12 10  | 704      | 0.4−  | 0.2−  |  |
| 2006 04 24                              | 704        | (0.2+ | 1.5−)    | 2007 11 05 | 704      | 0.2+        | 1.1+     | 2007 12 10  | 704      | 0.4−  | 0.9−  |  |
| 2006 04 24                              | 704        | 0.0   | 1.2−     | 2007 11 05 | 704      | 0.3−        | 0.1−     | 2007 12 10  | 704      | 1.5−  | 0.2+  |  |
| 2006 04 30                              | 704        | 0.7+  | 0.4+     | 2007 11 05 | 704      | 0.3+        | 0.3+     | 2007 12 13  | A77      | 0.8−  | 1.2−  |  |
| 2006 04 30                              | 704        | 0.5+  | 0.2+     | 2007 11 05 | 704      | 0.0         | 0.3+     | 2007 12 13  | A77      | (2.1− | 0.8−) |  |
| 2006 04 30                              | 704        | 0.1−  | 0.4+     | 2007 11 05 | 691      | 0.0         | 0.1−     | 2007 12 14  | A77      | 0.8−  | 1.4−  |  |

(172979)\* 2006 HT<sub>25</sub>

Discovered 2006 Apr. 20 by Spacewatch at Kitt Peak.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |              |              |             |       |       |            |     |      |      |
|-----------------------------------------|------------|----------|--------------|--------------|-------------|-------|-------|------------|-----|------|------|
| MPC                                     |            |          |              |              |             |       |       |            |     |      |      |
| $M$                                     | 88.05460   | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |             |       |       |            |     |      |      |
| $n$                                     | 0.26939259 | $\omega$ | 232.05562    | +0.59036758  | +0.80332219 |       |       |            |     |      |      |
| $a$                                     | 2.3743548  | $\Omega$ | 74.30648     | -0.71265523  | +0.56437603 |       |       |            |     |      |      |
| $e$                                     | 0.1838128  | $i$      | 4.66843      | -0.37893091  | +0.19013980 |       |       |            |     |      |      |
| $P$                                     | 3.66       | $H$      | 17.2         | $G$          | 0.15        | $U$   | 0     |            |     |      |      |
| Residuals in seconds of arc             |            |          |              |              |             |       |       |            |     |      |      |
| 1994 01 19                              | 691        | 1.2-     | 0.3+         | 2006 04 24   | 691         | 0.1+  | 0.0   | 2006 06 19 | G96 | 0.1+ | 0.2- |
| 1994 01 19                              | 691        | 0.3+     | 0.4-         | 2006 04 24   | 691         | 0.2+  | 0.0   | 2006 06 19 | G96 | 0.4- | 0.2- |
| 1994 01 19                              | 691        | 0.6-     | 0.4-         | 2006 04 24   | 691         | 0.1+  | 0.0   | 2006 06 19 | G96 | 0.4- | 0.0  |
| 1995 05 31                              | 691        | 0.7+     | 0.6+         | 2006 04 30   | A50         | 0.4-  | 0.5+  | 2006 06 19 | G96 | 0.5- | 0.4- |
| 1995 05 31                              | 691        | 0.0      | 0.5+         | 2006 04 30   | A50         | (1.6- | 2.1-) | 2006 07 21 | G96 | 1.0- | 0.0  |
| 1995 05 31                              | 691        | 0.7+     | 0.5-         | 2006 05 02   | 691         | 0.2-  | 0.1-  | 2006 07 21 | G96 | 0.6- | 0.2- |
| 2002 04 12                              | 644        | 0.8+     | 0.6+         | 2006 05 02   | 691         | 0.1+  | 0.0   | 2006 07 21 | G96 | 0.7- | 0.3+ |
| 2002 04 12                              | 644        | 0.1+     | 0.8+         | 2006 05 02   | G96         | 0.1-  | 0.1+  | 2006 07 21 | G96 | 0.3- | 0.2+ |
| 2002 04 12                              | 644        | 0.5-     | 0.4+         | 2006 05 02   | 691         | 0.1-  | 0.2-  | 2007 10 20 | G96 | 0.4+ | 0.2+ |
| 2003 09 26                              | 645        | 0.0      | 0.0          | 2006 05 02   | G96         | 0.6-  | 0.0   | 2007 10 20 | G96 | 0.2+ | 0.1- |
| 2003 09 26                              | 645        | 0.0      | 0.0          | 2006 05 02   | G96         | 0.3-  | 0.0   | 2007 10 20 | G96 | 0.5+ | 0.4+ |
| 2003 09 28                              | 704        | 0.2-     | 0.0          | 2006 05 06   | 691         | 0.0   | 0.0   | 2007 10 20 | G96 | 0.2+ | 0.4+ |
| 2003 09 28                              | 704        | 0.6-     | 0.1+         | 2006 05 06   | 691         | 0.1-  | 0.0   | 2007 11 18 | 691 | 0.9- | 0.3- |
| 2003 09 28                              | 704        | 0.8-     | 0.1+         | 2006 05 06   | 691         | 0.0   | 0.3+  | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2003 09 28                              | 704        | 0.3-     | 0.6+         | 2006 05 16   | 644         | 0.4-  | 0.4+  | 2007 11 18 | 691 | 0.3+ | 0.3+ |
| 2003 09 28                              | 645        | 0.0      | 0.0          | 2006 05 16   | 644         | 0.8-  | 0.1-  | 2007 12 06 | G96 | 0.1+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 645 | 0.0  | 0.0  | 2006 05 16 | 644 | 0.4− | 0.4− | 2007 12 06 | G96 | 0.7+ | 0.0  |
| 2005 01 13 | 691 | 0.5+ | 0.0  | 2006 05 21 | 691 | 0.1− | 0.3+ | 2007 12 06 | G96 | 0.7+ | 0.4+ |
| 2005 01 13 | 691 | 0.2+ | 0.6+ | 2006 05 21 | 691 | 0.1+ | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.1− |
| 2005 01 13 | 691 | 0.0  | 0.1− | 2006 05 21 | 691 | 0.5+ | 0.4− | 2007 12 15 | G96 | 0.4+ | 0.7+ |
| 2006 04 20 | 691 | 0.2+ | 0.1+ | 2006 05 25 | 644 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.8+ | 0.3+ |
| 2006 04 20 | 691 | 0.1− | 0.1+ | 2006 05 25 | 644 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.7+ |
| 2006 04 20 | 691 | 0.1+ | 0.0  | 2006 05 25 | 644 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.4+ | 0.5+ |

**(172980)\* 2006 HG<sub>26</sub> = 2003 YR<sub>161</sub>**

Discovered 2006 Apr. 20 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 101640)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 61.18977   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23106386 | $\omega$ | 269.72319 | +0.77589413 | +0.59609413 |
| <i>a</i> | 2.6301551  | $\Omega$ | 53.67686  | −0.42689278 | +0.73715148 |
| <i>e</i> | 0.2725550  | <i>i</i> | 14.85395  | −0.46448988 | +0.31824437 |
| <i>P</i> | 4.27       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 17 | 704 | 0.4−  | 0.8−  | 2006 05 19 | 703 | 0.3+ | 0.4− | 2007 11 09 | 691 | 0.3− | 0.1+ |
| 2003 12 17 | 704 | 0.2+  | 0.4−  | 2006 05 19 | 703 | 0.3− | 0.3− | 2007 11 09 | 691 | 0.5− | 0.4+ |
| 2003 12 17 | 704 | 0.4+  | 0.4−  | 2006 05 19 | 703 | 0.4− | 0.6− | 2007 11 09 | 691 | 0.3− | 0.0  |
| 2003 12 17 | 704 | 0.2−  | 0.3−  | 2006 05 19 | 703 | 0.1+ | 0.2− | 2007 11 13 | 691 | 0.2− | 0.2+ |
| 2003 12 29 | 704 | 0.7+  | 0.3+  | 2006 05 20 | G96 | 0.1− | 0.1− | 2007 11 13 | 691 | 0.2− | 0.0  |
| 2003 12 29 | 704 | 0.5−  | 0.2+  | 2006 05 20 | G96 | 0.0  | 0.0  | 2007 11 13 | 691 | 0.3− | 0.2+ |
| 2003 12 29 | 704 | 0.5−  | 0.1−  | 2006 05 20 | G96 | 0.0  | 0.1+ | 2007 11 15 | 704 | 1.0+ | 0.2+ |
| 2003 12 29 | 704 | 0.2+  | 0.0   | 2006 05 20 | G96 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 0.3+ | 0.0  |
| 2005 03 01 | 703 | 0.2−  | 0.9−  | 2006 05 27 | 704 | 0.9+ | 0.1− | 2007 11 15 | 704 | 0.6+ | 0.1+ |
| 2005 03 01 | 703 | (2.0− | 1.6−) | 2006 05 27 | 704 | 0.6+ | 0.8+ | 2007 11 15 | 704 | 0.2− | 0.0  |
| 2005 03 01 | 703 | 0.0   | 0.9−  | 2006 05 27 | 704 | 1.0+ | 1.2+ | 2007 11 15 | 704 | 0.2− | 0.7− |
| 2005 03 01 | 703 | 0.3−  | 0.6−  | 2007 10 06 | 704 | 0.9+ | 1.1+ | 2007 11 17 | 691 | 0.7− | 0.1− |
| 2006 04 20 | 691 | 0.2−  | 0.1−  | 2007 10 06 | 704 | 1.0+ | 0.4+ | 2007 11 17 | 691 | 0.1− | 0.0  |
| 2006 04 20 | 691 | 0.1−  | 0.1+  | 2007 10 06 | 704 | 0.3+ | 0.7+ | 2007 11 17 | 691 | 0.1− | 0.1− |
| 2006 04 20 | 691 | 0.1−  | 0.0   | 2007 10 11 | 704 | 0.5+ | 0.2− | 2007 11 20 | 704 | 0.6+ | 0.0  |
| 2006 04 24 | 691 | 0.0   | 0.4+  | 2007 10 11 | 704 | 0.6+ | 0.2+ | 2007 11 20 | 704 | 0.5+ | 0.6+ |
| 2006 04 24 | 691 | 0.2−  | 0.3+  | 2007 10 11 | 704 | 0.9+ | 0.5+ | 2007 11 20 | 704 | 0.8+ | 0.1− |
| 2006 04 24 | 691 | 0.1+  | 0.5+  | 2007 10 16 | G96 | 0.2− | 0.1− | 2007 11 20 | 704 | 1.0+ | 0.0  |
| 2006 05 04 | 691 | 0.1+  | 0.4+  | 2007 10 16 | G96 | 0.0  | 0.1− | 2007 11 20 | 704 | 0.9+ | 0.5+ |
| 2006 05 04 | 691 | 0.2+  | 0.2+  | 2007 10 16 | G96 | 0.1+ | 0.1+ | 2007 12 12 | 704 | 1.2+ | 1.1+ |
| 2006 05 04 | 691 | 1.3+  | 0.7−  | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 12 12 | 704 | 0.6+ | 0.5+ |
| 2006 05 08 | 691 | 0.0   | 0.4+  | 2007 10 24 | G96 | 0.0  | 0.4− | 2007 12 12 | 704 | 0.0  | 0.4+ |
| 2006 05 08 | 691 | 0.1+  | 0.3+  | 2007 10 24 | G96 | 0.3+ | 0.3− | 2007 12 12 | 704 | 0.4+ | 0.5+ |
| 2006 05 08 | 691 | 0.0   | 0.4+  | 2007 10 24 | G96 | 0.4+ | 0.3− | 2007 12 12 | 704 | 0.6+ | 0.3+ |
| 2006 05 16 | 644 | 0.0   | 0.3−  | 2007 10 24 | G96 | 0.3+ | 0.2− | 2007 12 13 | 704 | 0.3+ | 0.8+ |
| 2006 05 16 | 644 | 0.1−  | 0.6+  | 2007 10 30 | 691 | 0.4− | 0.0  | 2007 12 13 | 704 | 0.0  | 0.9+ |
| 2006 05 16 | 644 | 0.5−  | 0.1+  | 2007 10 30 | 691 | 0.4− | 0.1− | 2007 12 13 | 704 | 0.3+ | 0.6+ |
| 2006 05 16 | E12 | 0.6+  | 1.3+  | 2007 10 30 | 691 | 0.2− | 0.3+ | 2007 12 13 | 704 | 0.5+ | 0.4+ |
| 2006 05 16 | E12 | 0.1+  | 0.1−  | 2007 11 05 | 691 | 0.5− | 0.0  | 2007 12 15 | 704 | 0.5− | 0.2+ |
| 2006 05 16 | E12 | 0.4−  | 0.1−  | 2007 11 05 | 691 | 0.5− | 0.2+ | 2007 12 15 | 704 | 1.2+ | 1.5+ |
| 2006 05 16 | E12 | 0.9−  | 0.3+  | 2007 11 05 | 691 | 0.5− | 0.1+ |            |     |      |      |

**(172981)\* 2006 HN<sub>30</sub>**

Discovered 2006 Apr. 21 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 107.62367  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.31038674 | $\omega$ | 229.04634 | +0.52822682 | +0.84631862 |
| <i>a</i> | 2.1603989  | $\Omega$ | 72.96546  | −0.75585480 | +0.50554364 |
| <i>e</i> | 0.1631988  | <i>i</i> | 4.12105   | −0.38685908 | +0.16784047 |
| <i>P</i> | 3.18       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 07 | 704 | 0.4+ | 0.6+ | 2006 04 08 | 691 | 0.3− | 0.2+ | 2006 05 07 | 691 | 0.0  | 0.1+ |
| 2000 07 07 | 704 | 0.0  | 0.8+ | 2006 04 21 | 703 | 0.1− | 0.4− | 2006 05 07 | 691 | 0.0  | 0.2+ |
| 2000 07 07 | 704 | 0.4+ | 1.3+ | 2006 04 21 | 703 | 1.1− | 0.3− | 2006 05 25 | 644 | 0.5− | 0.0  |
| 2000 08 20 | 699 | 0.5− | 0.0  | 2006 04 21 | 703 | 1.0− | 0.2+ | 2006 05 25 | 644 | 0.4− | 0.2− |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 08 20 | 699 | 0.5− | 0.8+ | 2006 04 21 | 703 | 0.4−  | 0.8−  | 2006 05 25 | 644 | 0.3− | 0.1− |
| 2000 08 20 | 699 | 0.2− | 0.5− | 2006 04 23 | 704 | 0.3+  | 0.0   | 2006 05 25 | G96 | 0.7− | 0.3− |
| 2000 08 20 | 699 | 0.3− | 0.4+ | 2006 04 23 | 704 | (0.7+ | 2.1+) | 2006 05 25 | G96 | 0.0  | 0.4− |
| 2002 01 08 | 704 | 0.3− | 0.9+ | 2006 04 23 | 704 | 0.4+  | 0.2+  | 2006 05 25 | G96 | 0.3− | 0.2− |
| 2002 01 08 | 704 | 0.6− | 0.3− | 2006 04 23 | 704 | 0.2−  | 0.1+  | 2006 05 25 | G96 | 0.6− | 0.2− |
| 2002 01 08 | 704 | 0.7− | 0.6+ | 2006 04 27 | 704 | 0.6+  | 0.9+  | 2006 05 27 | 704 | 0.5+ | 0.4− |
| 2004 12 03 | 691 | 0.2+ | 0.1− | 2006 04 27 | 704 | 0.3+  | 0.9+  | 2006 05 27 | 704 | 1.3+ | 0.2+ |
| 2004 12 03 | 691 | 0.3+ | 0.0  | 2006 04 27 | 704 | 1.0+  | 1.1−  | 2006 05 27 | 704 | 0.9+ | 0.8+ |
| 2004 12 03 | 691 | 0.3+ | 0.2+ | 2006 04 27 | 704 | 1.2+  | 0.1−  | 2006 05 27 | 704 | 0.4− | 0.6− |
| 2004 12 16 | 691 | 0.2+ | 0.3+ | 2006 04 30 | 704 | 0.3+  | 0.0   | 2007 11 09 | 691 | 0.2− | 0.1− |
| 2004 12 16 | 691 | 0.1− | 0.2+ | 2006 04 30 | 704 | 0.1−  | 0.0   | 2007 11 09 | 691 | 0.2− | 0.3+ |
| 2004 12 16 | 691 | 0.2− | 0.1+ | 2006 04 30 | 704 | 0.4−  | 0.5+  | 2007 11 09 | 691 | 0.0  | 0.3+ |
| 2006 02 06 | 691 | 0.3+ | 0.2− | 2006 04 30 | 704 | 0.4−  | 0.6+  | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2006 02 06 | 691 | 0.7+ | 0.1+ | 2006 05 05 | 691 | 0.1+  | 0.2+  | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 2006 02 06 | 691 | 0.2− | 0.4− | 2006 05 05 | 691 | 0.1+  | 0.1+  | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 2006 04 08 | 691 | 0.1+ | 0.0  | 2006 05 05 | 691 | 0.1+  | 0.2+  | 2007 12 04 | G96 | 0.1+ | 0.3+ |
| 2006 04 08 | 691 | 0.1− | 0.1+ | 2006 05 07 | 691 | 0.1−  | 0.0   |            |     |      |      |

**(172982)\* 2006 HZ<sub>60</sub>**

Discovered 2006 Apr. 28 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 162.53591  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.30519793 | $\omega$ | 13.45964  | −0.58520583 | +0.80954562 |
| <i>a</i> | 2.1848166  | $\Omega$ | 220.75019 | −0.75042347 | −0.56244416 |
| <i>e</i> | 0.1125828  | <i>i</i> | 4.09232   | −0.30724380 | −0.16820362 |
| <i>P</i> | 3.23       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 08 21 | 699 | 0.1+ | 0.2− | 2006 05 20 | E12 | 0.3− | 0.1+ | 2007 10 30 | 703 | 0.4−  | 0.9+  |
| 2000 08 21 | 699 | 0.9− | 1.0+ | 2006 05 20 | E12 | 0.0  | 0.5+ | 2007 10 30 | G96 | 0.4+  | 0.1+  |
| 2000 08 21 | 699 | 0.1+ | 0.5+ | 2006 05 20 | E12 | 0.1− | 0.0  | 2007 10 30 | 703 | 0.4−  | 0.4+  |
| 2000 08 21 | 699 | 0.3+ | 0.2− | 2006 05 24 | 691 | 0.0  | 0.3+ | 2007 10 30 | G96 | 0.3+  | 0.1+  |
| 2000 08 31 | 704 | 1.0+ | 0.3+ | 2006 05 24 | 691 | 0.1− | 0.0  | 2007 10 30 | G96 | 0.3+  | 0.1−  |
| 2000 08 31 | 704 | 0.1− | 0.3+ | 2006 05 24 | 691 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.4−  | 0.8+  |
| 2000 08 31 | 704 | 0.6+ | 0.3− | 2006 05 25 | 691 | 0.6+ | 0.2− | 2007 11 05 | 704 | 0.5+  | 0.5+  |
| 2000 08 31 | 704 | 1.1+ | 0.3+ | 2006 05 25 | 691 | 0.0  | 0.2+ | 2007 11 05 | 704 | 0.4−  | 0.2+  |
| 2000 09 27 | 645 | 0.0  | 0.3− | 2006 05 25 | 704 | 0.0  | 0.8− | 2007 11 05 | 704 | 0.3+  | 0.5+  |
| 2000 09 27 | 645 | 0.0  | 0.2− | 2006 05 25 | 644 | 0.3− | 0.1+ | 2007 11 05 | 704 | 0.5−  | 0.6+  |
| 2003 07 01 | 704 | 0.3+ | 0.1+ | 2006 05 25 | 704 | 0.5+ | 0.6− | 2007 11 07 | 703 | 0.1+  | 0.8−  |
| 2003 07 01 | 704 | 0.1+ | 0.4− | 2006 05 25 | 691 | 0.0  | 0.3+ | 2007 11 07 | 703 | 0.5−  | 0.2+  |
| 2003 07 01 | 704 | 0.2+ | 0.2− | 2006 05 25 | 704 | 0.9+ | 0.3+ | 2007 11 07 | 703 | 0.6+  | 0.7+  |
| 2004 11 05 | 599 | 0.4− | 0.9+ | 2006 05 25 | 644 | 0.3− | 0.1− | 2007 11 07 | 703 | 0.5+  | 0.6+  |
| 2004 11 05 | 599 | 0.4+ | 0.4+ | 2006 05 25 | 704 | 0.4+ | 0.5+ | 2007 11 09 | G96 | 0.0   | 0.1−  |
| 2004 11 05 | 599 | 0.3+ | 0.5+ | 2006 05 25 | 704 | 0.2− | 0.4+ | 2007 11 09 | G96 | 0.1−  | 0.1+  |
| 2004 11 05 | 599 | 0.2+ | 0.7+ | 2006 05 25 | 644 | 0.2− | 0.1+ | 2007 11 09 | G96 | 0.0   | 0.0   |
| 2006 03 25 | G96 | 0.4− | 0.3+ | 2006 05 27 | 704 | 0.3+ | 0.8+ | 2007 11 09 | G96 | 0.1−  | 0.0   |
| 2006 03 25 | G96 | 0.2− | 0.5+ | 2006 05 27 | 704 | 0.2+ | 0.5+ | 2007 11 11 | G96 | 0.1+  | 0.3+  |
| 2006 03 25 | G96 | 0.1+ | 0.2+ | 2006 05 27 | 704 | 0.7+ | 0.5+ | 2007 11 11 | G96 | 0.1−  | 0.3+  |
| 2006 03 25 | G96 | 0.2− | 0.2+ | 2006 05 27 | 704 | 0.5− | 0.1+ | 2007 11 11 | G96 | 0.8+  | 0.3+  |
| 2006 04 20 | G96 | 0.1− | 0.1+ | 2006 05 27 | 704 | 0.2+ | 0.8+ | 2007 11 11 | G96 | 0.7+  | 0.6+  |
| 2006 04 20 | G96 | 0.2− | 0.1+ | 2006 05 29 | 691 | 0.1− | 0.3+ | 2007 11 11 | G96 | 0.4+  | 0.0   |
| 2006 04 20 | G96 | 0.1− | 0.2+ | 2006 05 29 | 691 | 0.1+ | 0.3+ | 2007 11 11 | G96 | 0.7+  | 0.4+  |
| 2006 04 20 | G96 | 0.1− | 0.4+ | 2006 05 29 | 691 | 0.0  | 0.3+ | 2007 11 11 | G96 | 0.5+  | 0.0   |
| 2006 04 24 | G96 | 0.3+ | 0.7− | 2006 06 02 | 691 | 0.1+ | 0.3+ | 2007 11 11 | G96 | 0.3+  | 0.1+  |
| 2006 04 24 | G96 | 0.5+ | 0.2− | 2006 06 02 | 691 | 0.3+ | 0.5+ | 2007 11 11 | 699 | 0.4−  | 0.8+  |
| 2006 04 24 | G96 | 0.1+ | 0.1− | 2006 06 02 | 691 | 0.3+ | 0.4+ | 2007 11 11 | 699 | (0.2− | 2.4+) |
| 2006 04 24 | G96 | 0.4− | 0.9+ | 2006 06 04 | 704 | 0.1+ | 0.3+ | 2007 11 11 | 699 | 0.6+  | 0.9+  |
| 2006 04 28 | 704 | 0.1+ | 0.1− | 2006 06 04 | 704 | 0.6− | 0.7+ | 2007 11 11 | 699 | 0.9+  | 1.1+  |
| 2006 04 28 | 704 | 0.2+ | 0.3+ | 2006 06 04 | 704 | 0.0  | 0.2+ | 2007 11 12 | G96 | 0.8+  | 0.2+  |
| 2006 04 28 | 704 | 0.1− | 0.8− | 2006 06 04 | 704 | 1.0+ | 0.2+ | 2007 11 12 | G96 | 0.0   | 0.3−  |
| 2006 04 28 | 704 | 0.8− | 1.4+ | 2006 06 21 | 644 | 0.1+ | 0.2+ | 2007 11 12 | G96 | 0.4+  | 0.4+  |
| 2006 05 01 | 704 | 0.7+ | 0.5+ | 2006 06 21 | 644 | 0.3− | 0.1+ | 2007 11 12 | G96 | 0.7+  | 0.5+  |
| 2006 05 01 | 704 | 0.4+ | 0.3+ | 2006 06 21 | 644 | 0.5+ | 0.3+ | 2007 11 12 | G96 | 0.0   | 0.3+  |
| 2006 05 01 | 704 | 0.6+ | 1.2+ | 2006 06 21 | 644 | 0.1+ | 0.0  | 2007 11 12 | G96 | 0.3+  | 0.5+  |
| 2006 05 01 | 704 | 0.5+ | 0.1− | 2006 06 21 | 644 | 0.1+ | 0.3+ | 2007 11 12 | G96 | 0.1+  | 0.2+  |
| 2006 05 01 | 704 | 0.1− | 0.5+ | 2006 06 21 | 644 | 0.3− | 0.3+ | 2007 11 12 | G96 | 0.1+  | 0.0   |

2007 DEC. 24

M.P.O. 129533

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 05 08 | E12 | 0.1+ | 0.1- | 2007 10 04 | 691 | 0.4-  | 0.1+  | 2007 11 12 | G96 | 0.2+ | 0.1+ |
| 2006 05 08 | E12 | 0.3+ | 0.0  | 2007 10 04 | 691 | 0.9-  | 0.8+  | 2007 11 12 | G96 | 0.4+ | 0.0  |
| 2006 05 08 | E12 | 0.4+ | 0.6+ | 2007 10 04 | 691 | 1.3-  | 0.6+  | 2007 11 12 | G96 | 0.5+ | 0.3+ |
| 2006 05 16 | 644 | 0.1- | 0.2+ | 2007 10 12 | 691 | 0.2-  | 0.0   | 2007 11 14 | 704 | 0.1- | 0.3+ |
| 2006 05 16 | 644 | 0.2- | 0.1- | 2007 10 12 | 691 | 0.6-  | 0.2+  | 2007 11 14 | 704 | 0.1+ | 0.9+ |
| 2006 05 16 | 644 | 0.3+ | 0.1+ | 2007 10 12 | 691 | 0.3-  | 0.3+  | 2007 11 14 | 704 | 0.2+ | 0.7+ |
| 2006 05 16 | E12 | 0.3- | 0.4- | 2007 10 20 | 703 | (1.5+ | 0.7+) | 2007 11 14 | 704 | 0.5- | 0.5+ |
| 2006 05 16 | E12 | 0.1+ | 0.0  | 2007 10 20 | 703 | 0.0   | 0.1-  | 2007 11 14 | 704 | 0.3- | 0.6+ |
| 2006 05 16 | E12 | 0.6+ | 0.3- | 2007 10 20 | 703 | 0.1+  | 0.9-  | 2007 11 15 | 704 | 0.5+ | 0.4- |
| 2006 05 16 | E12 | 0.5- | 0.1- | 2007 10 20 | 703 | 0.6+  | 0.1-  | 2007 11 15 | 704 | 0.1+ | 0.1- |
| 2006 05 17 | 644 | 0.4- | 0.1+ | 2007 10 21 | 691 | 0.1+  | 0.3+  | 2007 11 15 | 704 | 0.2- | 0.5- |
| 2006 05 17 | 644 | 0.4+ | 0.1+ | 2007 10 21 | 691 | 0.1-  | 0.3+  | 2007 11 15 | 704 | 0.0  | 1.1- |
| 2006 05 17 | 644 | 0.3- | 0.1+ | 2007 10 21 | 691 | 0.3-  | 0.2+  | 2007 11 15 | 704 | 0.4+ | 0.4- |
| 2006 05 17 | 644 | 0.3- | 0.2+ | 2007 10 30 | 691 | 0.3-  | 0.4+  | 2007 12 06 | G96 | 0.3+ | 0.3+ |
| 2006 05 17 | 644 | 0.5- | 0.2+ | 2007 10 30 | 691 | 0.3-  | 0.3+  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2006 05 17 | 644 | 0.3- | 0.0  | 2007 10 30 | 691 | 0.0   | 0.4+  | 2007 12 06 | G96 | 0.7+ | 0.1- |
| 2006 05 19 | 703 | 0.5- | 0.0  | 2007 10 30 | 703 | 0.1-  | 0.5+  | 2007 12 06 | G96 | 0.4+ | 0.5+ |
| 2006 05 19 | 703 | 0.8- | 0.1- | 2007 10 30 | 703 | 0.0   | 0.8+  |            |     |      |      |
| 2006 05 19 | 703 | 0.5- | 0.3- | 2007 10 30 | G96 | 0.3+  | 0.0   |            |     |      |      |

(172983)\* 2006 HD<sub>71</sub>

Discovered 2006 Apr. 25 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 84.29285   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.30265620 | $\omega$ | 158.77264 | +0.77841960 | +0.62712483 |
| <i>a</i> | 2.1970317  | $\Omega$ | 162.30114 | -0.58834630 | +0.74433212 |
| <i>e</i> | 0.1302869  | <i>i</i> | 5.26204   | -0.21888709 | +0.22953028 |
| <i>P</i> | 3.26       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 04 11 | 691 | 0.3+  | 0.7-  | 2002 02 11 | 704 | (1.7- | 1.7+) | 2006 05 19 | 703 | 0.0   | 0.1-  |
| 1996 04 11 | 691 | 0.4+  | 0.7-  | 2002 02 21 | 691 | 0.0   | 0.2+  | 2006 05 19 | 703 | 0.2-  | 0.6+  |
| 2000 08 24 | 704 | 0.5-  | 0.1+  | 2002 02 21 | 691 | 0.5-  | 0.4+  | 2006 05 19 | 703 | 0.8-  | 0.6-  |
| 2000 08 24 | 704 | 0.5+  | 1.0+  | 2002 02 21 | 691 | 0.5-  | 0.5+  | 2006 05 24 | 699 | (2.3+ | 0.5+) |
| 2000 08 24 | 704 | 0.1-  | 0.9+  | 2004 12 12 | 291 | 0.1-  | 0.5+  | 2006 05 24 | 699 | 0.4+  | 0.7+  |
| 2000 08 24 | 704 | 0.1-  | 0.6+  | 2004 12 12 | 291 | 0.0   | 0.6+  | 2006 05 24 | 699 | (1.5+ | 0.4-) |
| 2000 08 24 | 704 | 0.4-  | 0.4+  | 2004 12 12 | 291 | 0.2-  | 0.6+  | 2006 05 24 | 699 | 0.3+  | 0.6+  |
| 2000 09 03 | 645 | 0.0   | 0.1-  | 2006 04 25 | 691 | 0.0   | 0.1+  | 2006 05 25 | 703 | 0.6-  | 0.0   |
| 2000 09 03 | 645 | 0.0   | 0.1-  | 2006 04 25 | 691 | 0.0   | 0.3-  | 2006 05 25 | 703 | (1.8- | 0.6+) |
| 2000 09 05 | 704 | 0.3-  | 1.0+  | 2006 04 25 | 691 | 0.2-  | 0.1+  | 2006 05 25 | 703 | 0.2+  | 0.5+  |
| 2000 09 05 | 704 | 0.2+  | 1.2+  | 2006 04 29 | 691 | 0.4-  | 0.8+  | 2006 05 25 | 703 | 0.2+  | 0.4+  |
| 2000 09 05 | 704 | 0.7-  | 1.4+  | 2006 04 29 | 691 | 0.2+  | 0.4+  | 2007 11 16 | G96 | 1.2+  | 0.3+  |
| 2000 09 05 | 704 | 0.5-  | 1.0+  | 2006 04 29 | 691 | 0.1+  | 0.4+  | 2007 11 16 | G96 | 0.5+  | 0.0   |
| 2000 09 05 | 704 | 1.2-  | 1.9+  | 2006 04 30 | 704 | 0.1-  | 0.9+  | 2007 11 16 | G96 | 0.9+  | 0.1+  |
| 2000 09 24 | 704 | 0.6-  | 0.2-  | 2006 04 30 | 704 | 1.3+  | 0.1+  | 2007 11 16 | G96 | 0.8+  | 0.1+  |
| 2000 09 24 | 704 | 0.6+  | 0.5+  | 2006 04 30 | 704 | 1.2+  | 1.2+  | 2007 12 16 | 704 | 0.3+  | 0.6+  |
| 2000 09 24 | 704 | 0.4+  | 0.2+  | 2006 04 30 | 704 | 0.5+  | 1.4+  | 2007 12 16 | 704 | 0.0   | 0.1-  |
| 2002 02 11 | 704 | (0.3+ | 1.6+) | 2006 05 03 | 691 | 0.1+  | 0.3+  | 2007 12 16 | 704 | 0.1+  | 0.5+  |
| 2002 02 11 | 704 | 0.1+  | 1.3+  | 2006 05 03 | 691 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.3+  | 0.9+  |
| 2002 02 11 | 704 | 0.0   | 0.8+  | 2006 05 03 | 691 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.1+  | 0.0   |
| 2002 02 11 | 704 | (0.1+ | 1.6+) | 2006 05 19 | 703 | 0.4-  | 0.4-  |            |     |       |       |

(172984)\* 2006 HK<sub>89</sub> = 1999 XB<sub>17</sub>

Discovered 2006 Apr. 20 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 101707)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.28363   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23074333 | $\omega$ | 213.05837 | +0.26840833 | +0.79490219 |
| <i>a</i> | 2.6325903  | $\Omega$ | 77.95636  | -0.71807515 | +0.54163391 |
| <i>e</i> | 0.1811763  | <i>i</i> | 33.80622  | -0.64212541 | -0.27342864 |
| <i>P</i> | 4.27       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 07 | 704 | 0.0  | 0.3+ | 2006 04 29 | 699 | 0.0   | 0.1+  | 2006 06 12 | 644 | 0.3-  | 0.1+  |
| 1999 12 07 | 704 | 0.1- | 0.1- | 2006 05 02 | 703 | 0.1-  | 0.4-  | 2006 06 19 | 704 | 1.4+  | 0.6+  |
| 1999 12 07 | 704 | 0.2+ | 0.4+ | 2006 05 02 | 703 | 0.5+  | 0.1+  | 2006 06 19 | 704 | 0.4+  | 0.2+  |
| 1999 12 07 | 704 | 0.3- | 0.6+ | 2006 05 02 | 703 | 1.0+  | 0.3-  | 2006 06 19 | 704 | 1.4+  | 0.2-  |
| 1999 12 08 | 704 | 0.0  | 0.3- | 2006 05 02 | 703 | (1.6- | 0.2+) | 2006 06 21 | 699 | 1.2+  | 0.3+  |
| 1999 12 08 | 704 | 1.2- | 0.0  | 2006 05 02 | 703 | 0.1-  | 0.0   | 2006 06 21 | 699 | 1.9+  | 0.4+  |
| 1999 12 08 | 704 | 1.1+ | 0.5- | 2006 05 02 | 703 | 0.6-  | 0.0   | 2006 06 21 | 703 | 1.0-  | 0.4+  |
| 1999 12 08 | 704 | 0.5+ | 0.3+ | 2006 05 02 | 703 | 0.7-  | 0.0   | 2006 06 21 | 699 | 0.6+  | 0.8+  |
| 2003 11 18 | 683 | 0.0  | 0.2- | 2006 05 02 | 703 | 0.1-  | 0.6-  | 2006 06 21 | 703 | 0.1-  | 0.0   |
| 2003 11 18 | 683 | 0.1- | 0.0  | 2006 05 20 | 699 | 0.0   | 0.4+  | 2006 06 21 | 703 | 0.3-  | 0.3+  |
| 2003 11 18 | 683 | 0.0  | 0.8- | 2006 05 20 | 699 | 0.2-  | 0.6+  | 2006 06 21 | 703 | 1.0-  | 0.6+  |
| 2003 11 23 | 699 | 0.8- | 0.6- | 2006 05 20 | 644 | 0.1-  | 0.0   | 2006 06 21 | 699 | 0.7+  | 0.4-  |
| 2003 11 23 | 699 | 0.2+ | 0.2- | 2006 05 20 | 699 | 0.5-  | 0.2+  | 2006 06 21 | 699 | 0.6+  | 0.8+  |
| 2003 11 23 | 699 | 0.4+ | 0.0  | 2006 05 20 | 644 | 0.0   | 0.0   | 2006 06 23 | 644 | 0.2+  | 0.1-  |
| 2003 11 23 | 699 | 0.0  | 0.7+ | 2006 05 20 | 699 | 0.1-  | 0.2+  | 2006 06 23 | 644 | 0.2+  | 0.0   |
| 2003 12 14 | 703 | 0.1- | 0.1+ | 2006 05 20 | 644 | 0.0   | 0.0   | 2006 07 21 | E12 | 0.0   | 0.4+  |
| 2003 12 14 | 703 | 0.1+ | 0.7+ | 2006 05 21 | 703 | 0.4+  | 0.8+  | 2006 07 21 | E12 | 0.3+  | 0.1+  |
| 2003 12 14 | 703 | 0.6+ | 0.3+ | 2006 05 21 | 703 | 0.3-  | 0.7+  | 2006 07 21 | E12 | 0.1-  | 0.6+  |
| 2003 12 14 | 703 | 0.6- | 0.9+ | 2006 05 21 | 703 | 0.2+  | 0.5+  | 2006 07 21 | E12 | (1.2+ | 1.9-) |
| 2003 12 21 | 691 | 0.4- | 0.1+ | 2006 05 21 | 703 | 0.5-  | 1.0+  | 2007 10 12 | 703 | 0.0   | 0.3+  |
| 2003 12 21 | 691 | 0.5- | 0.2+ | 2006 05 27 | 703 | 1.2+  | 0.5+  | 2007 10 12 | 703 | 0.0   | 0.1-  |
| 2003 12 21 | 691 | 0.4- | 0.3+ | 2006 05 27 | 703 | (3.4- | 0.9-) | 2007 10 12 | 703 | 0.7-  | 0.2-  |
| 2004 01 18 | 644 | 0.1- | 0.6+ | 2006 05 27 | 703 | (1.8+ | 2.5+) | 2007 10 12 | 703 | 0.4-  | 0.6-  |
| 2004 01 18 | 644 | 0.1- | 0.4+ | 2006 05 27 | 703 | 0.5-  | 0.6-  | 2007 11 04 | 703 | (2.1- | 0.0)  |
| 2004 01 18 | 644 | 0.2- | 0.4+ | 2006 05 29 | 704 | 0.4+  | 0.5-  | 2007 11 04 | 703 | (2.4- | 2.3+) |
| 2006 04 20 | 704 | 0.5- | 0.1+ | 2006 05 29 | 704 | 0.6-  | 0.6-  | 2007 11 04 | 703 | 0.7+  | 1.0+  |
| 2006 04 20 | 704 | 1.4+ | 1.2+ | 2006 05 29 | 704 | 0.4+  | 0.7-  | 2007 11 04 | 703 | 0.6-  | 0.7+  |
| 2006 04 20 | 704 | 0.1- | 0.7+ | 2006 05 29 | 704 | 0.8+  | 1.1-  | 2007 11 19 | 703 | 0.8-  | 0.4-  |
| 2006 04 20 | 704 | 0.2- | 0.2+ | 2006 05 29 | 704 | 0.6+  | 0.9-  | 2007 11 19 | 703 | 0.3+  | 0.3+  |
| 2006 04 29 | 699 | 0.1- | 0.1+ | 2006 06 12 | 644 | 0.1-  | 0.1+  | 2007 11 19 | 703 | 0.5+  | 0.4+  |
| 2006 04 29 | 699 | 0.1+ | 0.4+ | 2006 06 12 | 644 | 0.0   | 0.1-  | 2007 11 19 | 703 | 0.1+  | 0.7+  |

(172985)\* 2006 HW<sub>147</sub> = 2007 VG<sub>111</sub>

Discovered 2006 Apr. 27 by M. W. Buie at Cerro Tololo.

Id. G. V. Williams (*MPO* 128257)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 54.17002   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.25949970 | $\omega$ | 52.45262  | +0.94384924 | +0.33023039 |
| <i>a</i> | 2.4343227  | $\Omega$ | 288.26274 | -0.30628349 | +0.86348470 |
| <i>e</i> | 0.1989613  | <i>i</i> | 0.59271   | -0.12385085 | +0.38123755 |
| <i>P</i> | 3.80       | <i>H</i> | 18.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 17 | 691 | 0.1-  | 0.1-  | 2006 04 27 | 807 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.5+ |
| 1999 08 17 | 691 | 0.1-  | 0.1-  | 2006 04 28 | 807 | 0.2+ | 0.2+ | 2007 11 07 | 691 | 0.2+ | 0.1- |
| 1999 08 17 | 691 | 0.3-  | 0.4-  | 2006 04 28 | 807 | 0.1+ | 0.2+ | 2007 11 07 | 691 | 0.3- | 0.4+ |
| 1999 09 03 | 691 | 0.2+  | 0.0   | 2006 05 20 | 691 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.2- | 0.2- |
| 1999 09 03 | 691 | 0.2+  | 0.0   | 2006 05 20 | 691 | 0.1- | 0.2+ | 2007 11 14 | 691 | 0.5- | 0.7- |
| 1999 09 03 | 691 | 0.1+  | 0.1-  | 2006 05 20 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 691 | 0.1+ | 0.2+ |
| 2003 10 26 | 291 | (1.9- | 0.9+) | 2007 11 03 | 691 | 0.3+ | 0.1+ | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2003 10 26 | 291 | 0.5-  | 0.8+  | 2007 11 03 | 691 | 0.2+ | 0.3- | 2007 12 15 | G96 | 0.4+ | 0.4- |
| 2003 10 26 | 291 | 0.3+  | 0.0   | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.1+ | 0.1+ |
| 2003 11 18 | 291 | 0.3-  | 0.2+  | 2007 11 05 | G96 | 0.1+ | 0.7- | 2007 12 15 | G96 | 0.4- | 0.4+ |
| 2003 11 18 | 291 | 0.2+  | 0.4+  | 2007 11 05 | G96 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.9+ | 0.6- |
| 2003 11 18 | 291 | 0.1+  | 0.2+  | 2007 11 05 | G96 | 0.6+ | 0.1- |            |     |      |      |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 09 25 | 704 | 0.0  | 0.6− | 2006 05 29 | 691 | 0.1+  | 0.1+  | 2007 11 12 | 704 | (0.1+ | 1.6+) |
| 2000 09 25 | 704 | 0.7+ | 1.2+ | 2006 05 29 | 691 | 0.1+  | 0.4+  | 2007 11 12 | 704 | 0.2−  | 1.2+  |
| 2000 09 25 | 704 | 0.6− | 1.0− | 2006 05 29 | 691 | 0.3+  | 0.6+  | 2007 11 12 | 704 | 0.0   | 0.7+  |
| 2000 09 25 | 704 | 0.6− | 1.5+ | 2007 10 20 | 703 | 0.3+  | 0.4−  | 2007 11 13 | 691 | 0.0   | 0.1−  |
| 2005 01 16 | 691 | 0.2+ | 0.0  | 2007 10 20 | 703 | 0.5+  | 0.3−  | 2007 11 13 | 691 | 0.1−  | 0.2−  |
| 2005 01 16 | 691 | 0.1+ | 0.5+ | 2007 10 20 | 703 | 0.1−  | 0.7+  | 2007 11 13 | 691 | 0.3−  | 0.0   |
| 2005 01 16 | 691 | 0.1+ | 0.1+ | 2007 10 20 | 703 | 0.8−  | 0.7−  | 2007 11 20 | 703 | 0.9+  | 0.3+  |
| 2005 03 10 | G96 | 0.3+ | 0.0  | 2007 11 04 | 704 | (0.1− | 2.5+) | 2007 11 20 | 703 | (2.1+ | 0.6+) |
| 2005 03 10 | G96 | 0.3− | 0.1+ | 2007 11 04 | 704 | 0.4+  | 0.8+  | 2007 11 20 | 703 | (1.8+ | 0.2+) |
| 2005 03 10 | G96 | 0.3− | 0.1+ | 2007 11 04 | 704 | 0.0   | 1.1+  | 2007 11 20 | 703 | 0.5+  | 0.7−  |
| 2005 03 10 | G96 | 0.0  | 0.0  | 2007 11 04 | 704 | 0.4−  | 0.6+  | 2007 12 04 | 704 | 0.1+  | 1.1+  |
| 2006 05 04 | 691 | 0.5− | 0.1+ | 2007 11 04 | 704 | 0.7+  | 1.1+  | 2007 12 04 | 704 | 0.5+  | 1.3−  |
| 2006 05 04 | 691 | 0.4+ | 0.1− | 2007 11 05 | 691 | 0.2−  | 0.0   | 2007 12 04 | 704 | 0.3−  | 0.8+  |
| 2006 05 04 | 691 | 0.3+ | 0.2+ | 2007 11 05 | 691 | 0.1−  | 0.5+  | 2007 12 04 | 704 | 1.2+  | 0.4−  |
| 2006 05 08 | 691 | 0.4− | 0.3− | 2007 11 05 | 691 | 0.0   | 0.5+  | 2007 12 05 | 704 | 0.4−  | 0.9−  |
| 2006 05 08 | 691 | 0.3+ | 0.2+ | 2007 11 09 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.8+  | 1.0−  |
| 2006 05 08 | 691 | 1.4− | 1.0− | 2007 11 09 | 691 | 0.0   | 0.1−  | 2007 12 05 | 704 | 1.4−  | 3.0−  |
| 2006 05 25 | 691 | 0.4+ | 0.5+ | 2007 11 09 | 691 | 0.3−  | 0.0   | 2007 12 05 | 704 | 0.1−  | 0.1+  |
| 2006 05 25 | 691 | 0.0  | 0.4+ | 2007 11 12 | 704 | 0.0   | 0.5+  |            |     |       |       |
| 2006 05 25 | 691 | 0.9+ | 0.9+ | 2007 11 12 | 704 | 0.3+  | 0.9+  |            |     |       |       |

**(172987)\* 2006 KP<sub>28</sub> = 2000 WJ<sub>138</sub>**

Discovered 2006 May 20 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 101802)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.67068   | (2000.0) | <i>P</i>  | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.28190637 | $\omega$ | 279.12508 | +0.95973621 |
| <i>a</i> | 2.3035596  | $\Omega$ | 65.14312  | −0.21651335 |
| <i>e</i> | 0.1346216  | <i>i</i> | 4.53532   | +0.87793471 |
| <i>P</i> | 3.50       | <i>H</i> | 17.1      | −0.17896473 |
|          |            |          |           | +0.39429945 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.3− | 0.7− | 2006 05 24 | 691 | 0.2+ | 0.5+ | 2007 11 08 | 291 | 0.0  | 0.4+ |
| 2000 11 21 | 704 | 1.1+ | 0.8− | 2006 05 24 | 691 | 0.3+ | 0.6+ | 2007 11 08 | 291 | 0.4+ | 0.1+ |
| 2000 11 21 | 704 | 0.0  | 0.9− | 2006 05 24 | 691 | 0.0  | 0.4+ | 2007 11 13 | 699 | 0.1+ | 0.4− |
| 2000 11 21 | 704 | 0.2+ | 0.1+ | 2006 05 25 | G96 | 0.1− | 0.4+ | 2007 11 13 | 699 | 1.1− | 0.5+ |
| 2000 11 21 | 704 | 0.6− | 0.4+ | 2006 05 25 | G96 | 0.1− | 0.3+ | 2007 11 13 | 699 | 0.7− | 0.4+ |
| 2000 11 24 | 699 | 0.6− | 0.9+ | 2006 05 25 | G96 | 0.0  | 0.1+ | 2007 11 13 | 699 | 0.3+ | 0.5− |
| 2000 11 24 | 699 | 0.5− | 0.7+ | 2006 05 25 | G96 | 0.2− | 0.2− | 2007 11 14 | 704 | 0.2+ | 0.2+ |
| 2000 11 24 | 699 | 0.8+ | 0.3+ | 2006 05 28 | 691 | 0.2+ | 0.2+ | 2007 11 14 | 704 | 0.8− | 0.2− |
| 2000 11 24 | 699 | 0.9+ | 1.1+ | 2006 05 28 | 691 | 0.4+ | 0.1− | 2007 11 14 | 691 | 0.3− | 0.1+ |
| 2002 03 05 | 645 | 0.0  | 0.0  | 2006 05 28 | 691 | 0.0  | 0.5+ | 2007 11 14 | 704 | 0.6− | 0.2− |
| 2002 03 05 | 645 | 0.1− | 0.0  | 2006 06 19 | G96 | 0.2− | 0.3− | 2007 11 14 | 691 | 0.1− | 0.2+ |
| 2003 07 08 | 644 | 0.6− | 0.1+ | 2006 06 19 | G96 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.5+ | 0.2− |
| 2003 07 08 | 644 | 0.7− | 0.2+ | 2006 06 19 | G96 | 0.7− | 0.3+ | 2007 11 14 | 704 | 0.6+ | 0.8− |
| 2003 07 08 | 644 | 0.4− | 0.1+ | 2006 06 19 | G96 | 0.2+ | 0.3− | 2007 11 14 | 691 | 0.1− | 0.2+ |
| 2005 01 13 | 691 | 0.1− | 0.4+ | 2007 10 20 | G96 | 0.0  | 0.2− | 2007 11 18 | 691 | 0.5− | 0.1+ |
| 2005 01 13 | 691 | 0.2+ | 0.0  | 2007 10 20 | G96 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.3− | 0.3+ |
| 2005 01 13 | 691 | 0.3− | 0.1+ | 2007 10 20 | G96 | 0.0  | 0.3− | 2007 11 18 | 691 | 0.4− | 0.2+ |
| 2006 04 24 | G96 | 0.4+ | 0.5− | 2007 10 20 | G96 | 0.2+ | 0.2− | 2007 12 04 | G96 | 0.4+ | 0.0  |
| 2006 04 24 | G96 | 0.3− | 0.2− | 2007 10 24 | G96 | 0.1− | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2006 04 24 | G96 | 0.2− | 0.5− | 2007 10 24 | G96 | 0.9+ | 0.2− | 2007 12 04 | G96 | 0.2− | 0.2− |
| 2006 04 24 | G96 | 0.5+ | 0.6− | 2007 10 24 | G96 | 0.7+ | 0.9− | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2006 05 01 | 695 | 0.1− | 0.1+ | 2007 10 24 | G96 | 0.0  | 0.5− | 2007 12 05 | 704 | 1.0− | 0.8+ |
| 2006 05 01 | 695 | 0.2− | 0.1+ | 2007 10 25 | G96 | 0.5+ | 0.2+ | 2007 12 05 | 704 | 0.2− | 0.7+ |
| 2006 05 01 | 695 | 0.0  | 0.0  | 2007 10 25 | G96 | 0.2− | 0.3− | 2007 12 05 | 704 | 0.3+ | 0.4+ |
| 2006 05 01 | 695 | 0.0  | 0.0  | 2007 10 25 | G96 | 0.3+ | 0.2− | 2007 12 05 | 704 | 0.4− | 0.5− |
| 2006 05 02 | 695 | 0.0  | 0.0  | 2007 10 25 | G96 | 0.1− | 0.2+ | 2007 12 15 | G96 | 0.1+ | 0.4+ |
| 2006 05 02 | 695 | 0.3− | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.3+ | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2006 05 20 | 691 | 0.1+ | 0.4+ | 2007 11 08 | 691 | 0.1− | 0.4+ | 2007 12 15 | G96 | 0.1− | 0.2+ |
| 2006 05 20 | 691 | 0.3+ | 0.5+ | 2007 11 08 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.1+ | 0.7+ |
| 2006 05 20 | 691 | 0.3+ | 0.3+ | 2007 11 08 | 291 | 0.4+ | 0.4+ |            |     |      |      |

**(172988)\* 2006 KQ<sub>48</sub>**

Discovered 2006 May 21 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 71.27632   | (2000.0) | <i>P</i>  | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.25340125 | $\omega$ | 200.28698 | +0.76305261 |
| <i>a</i> | 2.4732245  | $\Omega$ | 119.50612 | −0.58346956 |
| <i>e</i> | 0.1843202  | <i>i</i> | 3.80662   | −0.27805393 |
| <i>P</i> | 3.89       | <i>H</i> | 16.5      | 0.15        |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 09 | 704 | 1.0− | 0.9− | 2003 11 21 | 699 | 0.7− | 0.8+ | 2007 11 01 | 691 | 0.1− | 0.0  |
| 1999 10 09 | 704 | 0.7+ | 0.9− | 2003 11 21 | 699 | 0.5− | 1.3− | 2007 11 04 | 704 | 0.2+ | 0.1− |
| 1999 10 09 | 704 | 0.1+ | 1.0− | 2003 11 21 | 699 | 0.2− | 0.9+ | 2007 11 04 | 704 | 0.7+ | 1.4+ |
| 1999 10 09 | 704 | 0.2+ | 0.3+ | 2005 03 09 | 691 | 0.5− | 0.6− | 2007 11 04 | 704 | 0.2− | 0.5+ |
| 2002 05 11 | 704 | 0.2+ | 0.2+ | 2005 03 09 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.3− | 0.9+ |
| 2002 05 11 | 704 | 0.6− | 0.8+ | 2005 03 09 | 691 | 0.5+ | 0.2+ | 2007 11 05 | 691 | 0.3− | 0.1+ |
| 2002 05 11 | 704 | 0.8+ | 0.1+ | 2006 04 30 | 691 | 0.2+ | 0.6+ | 2007 11 05 | 691 | 0.1− | 0.1+ |
| 2002 05 11 | 704 | 0.1+ | 0.4+ | 2006 04 30 | 691 | 0.2+ | 0.6+ | 2007 11 12 | 704 | 1.1+ | 0.6+ |
| 2002 05 19 | 644 | 0.3+ | 0.2− | 2006 04 30 | 691 | 0.2+ | 0.4+ | 2007 11 12 | 704 | 0.0  | 1.1+ |
| 2002 05 19 | 644 | 0.3− | 0.3− | 2006 05 21 | 691 | 0.1− | 0.1+ | 2007 11 12 | 704 | 0.3+ | 1.1− |
| 2002 05 19 | 644 | 0.1− | 0.2− | 2006 05 21 | 691 | 0.0  | 0.2+ | 2007 11 12 | 704 | 0.8+ | 0.8+ |
| 2003 10 23 | 699 | 0.2+ | 0.4− | 2006 05 21 | 691 | 0.1+ | 0.0  | 2007 11 12 | 704 | 0.3− | 0.7+ |
| 2003 10 23 | 699 | 0.0  | 0.1+ | 2006 05 25 | 691 | 0.3+ | 0.1+ | 2007 11 13 | 691 | 0.4− | 0.1+ |
| 2003 10 23 | 699 | 0.4− | 0.9+ | 2006 05 25 | 691 | 0.1+ | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2003 10 23 | 699 | 0.2− | 0.3− | 2006 05 25 | 644 | 0.2− | 0.1+ | 2007 11 13 | 691 | 0.2− | 0.2+ |
| 2003 10 29 | 691 | 0.0  | 0.3+ | 2006 05 25 | 691 | 0.2+ | 0.1− | 2007 11 13 | 691 | 0.2− | 0.1− |
| 2003 10 29 | 704 | 1.1+ | 0.6+ | 2006 05 25 | 644 | 0.2− | 0.9+ | 2007 11 13 | 691 | 0.3− | 0.0  |
| 2003 10 29 | 691 | 0.1+ | 0.3+ | 2006 05 25 | 644 | 0.0  | 0.6+ | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2003 10 29 | 704 | 0.3+ | 0.6− | 2006 06 02 | 691 | 0.1− | 0.5+ | 2007 12 04 | 704 | 1.4+ | 0.8+ |
| 2003 10 29 | 704 | 0.3+ | 0.7+ | 2006 06 02 | 691 | 0.1− | 0.2+ | 2007 12 04 | 704 | 0.2+ | 0.0  |
| 2003 10 29 | 704 | 1.1− | 1.2− | 2006 06 02 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 704 | 1.1− | 0.5+ |
| 2003 10 29 | 691 | 0.0  | 0.5+ | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 12 04 | 704 | 0.1− | 0.9+ |
| 2003 11 21 | 699 | 1.3+ | 1.4− | 2007 11 01 | 691 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.2− | 2.1+ |

**(172989)\* 2006 KW<sub>67</sub> = 2003 SH<sub>286</sub>**

Discovered 2006 May 25 by Q.-z. Ye at Lulin Observatory.

Id. G. V. Williams (*MPO* 101822)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 118.71655  | (2000.0) | <i>P</i>  | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.27453818 | $\omega$ | 34.75951  | +0.24936695 |
| <i>a</i> | 2.3445934  | $\Omega$ | 249.78250 | −0.90569308 |
| <i>e</i> | 0.1857618  | <i>i</i> | 4.59945   | −0.34283549 |
| <i>P</i> | 3.59       | <i>H</i> | 17.4      | 0.15        |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 14 | 644 | 1.0+  | 1.3−  | 2003 10 20 | 644 | 0.2−  | 0.7+  | 2006 06 14 | D35 | 0.0  | 0.8− |
| 2002 03 14 | 644 | (0.6+ | 1.8−) | 2003 10 20 | 644 | 0.5−  | 0.3+  | 2006 06 15 | D35 | 0.4− | 0.3− |
| 2002 04 05 | 644 | 0.2−  | 0.7+  | 2003 10 20 | 644 | 0.4−  | 0.5+  | 2006 06 15 | D35 | 0.2− | 0.3− |
| 2002 04 05 | 644 | 0.2−  | 0.6+  | 2006 05 25 | D35 | 0.5+  | 0.7−  | 2007 11 14 | 691 | 0.4− | 0.0  |
| 2002 04 05 | 644 | 0.6−  | 0.1+  | 2006 05 25 | D35 | 0.4−  | 0.1+  | 2007 11 14 | 691 | 0.3− | 0.1+ |
| 2003 09 21 | 644 | 0.1−  | 0.0   | 2006 05 26 | D35 | 0.3−  | 0.0   | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2003 09 21 | 644 | 0.0   | 0.1+  | 2006 05 26 | D35 | 0.3−  | 0.3+  | 2007 12 04 | G96 | 0.8+ | 0.2− |
| 2003 09 21 | 644 | 0.2+  | 0.1+  | 2006 05 26 | D35 | 0.1−  | 0.6+  | 2007 12 04 | G96 | 0.4+ | 0.1− |
| 2003 09 22 | 644 | 0.0   | 0.1−  | 2006 05 26 | D35 | 0.1−  | 0.2+  | 2007 12 04 | G96 | 0.5+ | 0.3+ |
| 2003 09 22 | 644 | 0.2+  | 0.1−  | 2006 06 04 | 704 | 1.1+  | 0.3+  | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2003 09 22 | 644 | 0.2+  | 0.1−  | 2006 06 04 | 704 | 0.6−  | 0.5+  | 2007 12 15 | G96 | 0.6+ | 0.6− |
| 2003 10 16 | 691 | 0.1+  | 0.1−  | 2006 06 04 | 704 | 0.2+  | 0.9+  | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2003 10 16 | 691 | 0.2−  | 0.2−  | 2006 06 04 | 704 | 0.7+  | 0.2+  | 2007 12 15 | G96 | 0.6− | 0.8+ |
| 2003 10 16 | 691 | 0.2+  | 0.0   | 2006 06 14 | D35 | (1.7− | 0.8+) | 2007 12 15 | G96 | 0.5+ | 0.3+ |

2007 DEC. 24

M.P.O. 129535

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |      |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|------|------|
| <i>M</i>                                | 100.21381  |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.25906721 | $\omega$ | 208.54391 |            | +0.38838596 |      | +0.88393793 |            |     |      |      |
| <i>a</i>                                | 2.4370311  | $\Omega$ | 85.34269  |            | −0.78800302 |      | +0.46508072 |            |     |      |      |
| <i>e</i>                                | 0.1916741  | <i>i</i> | 15.14522  |            | −0.47771078 |      | −0.04851456 |            |     |      |      |
| <i>P</i>                                | 3.80       | <i>H</i> | 16.7      |            | <i>G</i>    | 0.15 | <i>U</i>    | 0          |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |     |      |      |
| 2002 04 11                              | 644        | 0.4+     | 0.2−      | 2003 11 19 | 644         | 0.5− | 0.4+        | 2006 06 21 | 691 | 0.4+ | 0.2+ |
| 2002 04 11                              | 644        | 0.4+     | 0.1+      | 2003 11 19 | 644         | 0.1+ | 0.5+        | 2006 06 21 | 644 | 0.2− | 0.2+ |
| 2002 04 11                              | 644        | 0.1−     | 1.2+      | 2006 05 09 | G96         | 0.3− | 0.4−        | 2006 06 21 | 691 | 0.2− | 0.2− |
| 2002 05 05                              | 644        | 0.5+     | 0.5+      | 2006 05 09 | G96         | 0.4− | 0.3−        | 2006 07 21 | G96 | 0.7− | 0.2− |
| 2002 05 05                              | 644        | 0.7+     | 0.5+      | 2006 05 09 | G96         | 0.4− | 0.3−        | 2006 07 21 | G96 | 0.1− | 0.4− |
| 2002 05 05                              | 644        | 0.3+     | 0.4+      | 2006 05 09 | G96         | 0.2− | 0.1−        | 2006 07 21 | G96 | 0.1− | 0.4− |
| 2002 05 13                              | 644        | 0.3+     | 0.6+      | 2006 05 25 | G96         | 0.1− | 0.1−        | 2006 07 21 | G96 | 0.4− | 0.1− |
| 2002 05 13                              | 644        | 0.4+     | 0.6+      | 2006 05 25 | G96         | 0.1− | 0.1−        | 2007 11 04 | G96 | 0.0  | 0.1+ |
| 2002 05 13                              | 644        | 0.2+     | 0.1+      | 2006 05 25 | G96         | 0.1− | 0.1−        | 2007 11 04 | G96 | 0.2− | 0.0  |
| 2003 09 27                              | 645        | 0.0      | 0.0       | 2006 05 25 | G96         | 0.4− | 0.1−        | 2007 11 04 | G96 | 0.2− | 0.1− |
| 2003 09 27                              | 645        | 0.0      | 0.0       | 2006 05 26 | 691         | 0.0  | 0.3+        | 2007 11 04 | G96 | 0.1− | 0.0  |
| 2003 09 28                              | 645        | 0.1−     | 0.1+      | 2006 05 26 | 691         | 0.0  | 0.2+        | 2007 11 18 | G96 | 0.3+ | 0.2− |
| 2003 09 28                              | 645        | 0.0      | 0.1+      | 2006 05 26 | 691         | 0.0  | 0.5+        | 2007 11 18 | G96 | 0.5+ | 0.2− |
| 2003 09 30                              | 645        | 0.0      | 0.0       | 2006 06 05 | 704         | 1.5+ | 1.4+        | 2007 11 18 | G96 | 0.1+ | 0.1− |
| 2003 09 30                              | 645        | 0.0      | 0.0       | 2006 06 05 | 704         | 0.5+ | 0.6+        | 2007 11 18 | G96 | 0.3+ | 0.2− |
| 2003 11 19                              | 644        | 0.2−     | 0.7+      | 2006 06 05 | 704         | 0.3+ | 0.9−        | 2007 12 05 | 703 | 0.5− | 1.8+ |
| 2003 11 19                              | 644        | 0.4−     | 0.2+      | 2006 06 21 | 644         | 0.2+ | 0.0         | 2007 12 05 | 703 | 0.4+ | 0.4+ |
| 2003 11 19                              | 644        | 0.4−     | 0.3+      | 2006 06 21 | 691         | 0.2+ | 0.1−        | 2007 12 05 | 703 | 1.0− | 0.2+ |
| 2003 11 19                              | 644        | 0.1−     | 0.5+      | 2006 06 21 | 644         | 0.2− | 0.0         | 2007 12 05 | 703 | 0.5+ | 0.9+ |

(172991)\* 2006 KR<sub>114</sub>

Discovered 2006 May 26 by NEAT at Palomar.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|
| $M$                                     | 100.62395  | (2000.0) |           | <b>P</b>    | <b>Q</b>    |
| $n$                                     | 0.21299413 | $\omega$ | 46.65502  | +0.39094934 | +0.91161121 |
| $a$                                     | 2.7768833  | $\Omega$ | 246.75827 | −0.87938885 | +0.32922471 |
| $e$                                     | 0.2631184  | $i$      | 7.94332   | −0.27172389 | +0.24612211 |
| $P$                                     | 4.63       | $H$      | 15.5      | $G$ 0.15    | $U$ 1       |

|                             |     |      |      |            |     |      |      |            |     |      |      |
|-----------------------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| Residuals in seconds of arc |     |      |      |            |     |      |      |            |     |      |      |
| 1997 10 10                  | 691 | 0.3− | 0.3+ | 2006 05 26 | 644 | 0.2+ | 0.0  | 2007 10 30 | 691 | 0.4− | 0.0  |
| 1997 10 10                  | 691 | 0.1+ | 0.2− | 2006 05 26 | 644 | 0.0  | 0.2+ | 2007 10 30 | 691 | 0.2− | 0.1+ |
| 1997 10 10                  | 691 | 0.1+ | 0.1− | 2006 05 26 | 644 | 0.1+ | 0.3+ | 2007 11 03 | 691 | 0.1+ | 0.3+ |
| 2001 05 15                  | 699 | 0.3+ | 0.2+ | 2006 05 28 | E12 | 1.3− | 0.2− | 2007 11 03 | 691 | 0.1+ | 0.2+ |
| 2001 05 15                  | 699 | 0.3+ | 0.1+ | 2006 05 28 | E12 | 0.6− | 0.1− | 2007 11 03 | 691 | 1.2− | 0.3− |
| 2001 05 15                  | 699 | 1.1+ | 0.2− | 2006 05 28 | E12 | 0.1+ | 1.2+ | 2007 11 05 | G96 | 0.1+ | 0.1− |
| 2001 05 15                  | 699 | 1.1− | 0.9+ | 2006 06 18 | 644 | 0.5+ | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.1− |
| 2001 05 24                  | 699 | 0.3+ | 0.4+ | 2006 06 18 | 644 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.2+ |
| 2001 05 24                  | 699 | 1.0− | 0.1− | 2006 06 18 | 644 | 0.3+ | 0.1− | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2001 05 24                  | 699 | 0.3+ | 0.9+ | 2006 07 21 | 644 | 0.0  | 1.0− | 2007 11 14 | 691 | 0.0  | 0.5+ |
| 2001 05 24                  | 699 | 0.4+ | 0.4+ | 2006 07 21 | 644 | 0.3+ | 0.1− | 2007 11 14 | 691 | 0.2− | 0.0  |
| 2002 10 16                  | 644 | 0.2− | 0.6+ | 2006 07 21 | 644 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2002 10 16                  | 644 | 0.1+ | 0.8+ | 2007 10 16 | G96 | 0.5+ | 0.0  | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2002 10 16                  | 644 | 0.1+ | 0.5+ | 2007 10 16 | G96 | 0.4+ | 0.4− | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2002 10 28                  | 644 | 0.3+ | 0.1− | 2007 10 16 | G96 | 0.8+ | 0.0  | 2007 12 04 | G96 | 0.5+ | 0.1− |
| 2002 10 28                  | 644 | 0.3+ | 0.1− | 2007 10 16 | G96 | 0.2− | 0.3+ | 2007 12 04 | G96 | 0.4+ | 0.3+ |
| 2002 10 28                  | 644 | 0.1− | 0.0  | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.5+ |
| 2006 05 06                  | G96 | 0.1+ | 0.1− | 2007 10 16 | G96 | 0.6+ | 0.3− | 2007 12 15 | G96 | 0.7+ | 0.2+ |
| 2006 05 06                  | G96 | 0.5− | 0.1+ | 2007 10 16 | G96 | 1.0+ | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2006 05 06                  | G96 | 0.0  | 0.2+ | 2007 10 16 | G96 | 0.4+ | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2006 05 06                  | G96 | 0.1− | 0.4+ | 2007 10 30 | 691 | 0.0  | 0.1− |            |     |      |      |

(172992)\* 2006 KW<sub>116</sub> = 2005 CF<sub>28</sub>

Discovered 2006 May 29 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 101841)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |       |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|-------|-------------|------------|-----|------|------|
| <i>M</i>                                | 11.59736   |          | (2000.0)  |            | <b>P</b>    |       | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.27238579 | $\omega$ | 266.87817 |            | +0.90899736 |       | −0.41041730 |            |     |      |      |
| <i>a</i>                                | 2.3569285  | $\Omega$ | 117.34269 |            | +0.40748662 |       | +0.83841222 |            |     |      |      |
| <i>e</i>                                | 0.1653090  | <i>i</i> | 4.69286   |            | +0.08762682 |       | +0.35863991 |            |     |      |      |
| <i>P</i>                                | 3.62       | <i>H</i> | 16.3      |            | <i>G</i>    | 0.15  | <i>U</i>    | 1          |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |       |             |            |     |      |      |
| 2000 12 30                              | 704        | 0.6−     | 0.7+      | 2007 09 11 | 703         | 0.4−  | 0.3+        | 2007 10 30 | 703 | 0.4+ | 1.0+ |
| 2000 12 30                              | 704        | 1.0+     | 0.2+      | 2007 09 11 | 703         | (2.0− | 0.0 )       | 2007 10 30 | 703 | 0.4+ | 1.5+ |
| 2000 12 30                              | 704        | 0.3−     | 0.7+      | 2007 09 11 | 703         | 0.0   | 0.1−        | 2007 10 30 | 703 | 0.1− | 0.9+ |
| 2000 12 30                              | 704        | 0.2+     | 0.2+      | 2007 09 11 | 703         | 0.7−  | 0.9+        | 2007 10 30 | 703 | 0.5− | 0.9+ |
| 2000 12 30                              | 704        | 0.3+     | 0.4+      | 2007 10 08 | D29         | 0.2+  | 0.3−        | 2007 11 07 | 703 | 0.6− | 0.3− |
| 2003 07 25                              | 644        | 0.4−     | 0.0       | 2007 10 08 | D29         | 0.1+  | 0.0         | 2007 11 07 | 703 | 1.0+ | 0.3− |
| 2003 07 25                              | 644        | 0.7−     | 0.2+      | 2007 10 08 | D29         | 0.1+  | 0.1−        | 2007 11 07 | 703 | 0.0  | 0.6+ |
| 2003 07 25                              | 644        | 0.2−     | 0.3+      | 2007 10 08 | D29         | 0.2+  | 0.4−        | 2007 11 07 | 703 | 0.1− | 0.1− |
| 2004 12 20                              | G96        | 0.4−     | 0.1−      | 2007 10 12 | G96         | 0.4−  | 0.2−        | 2007 11 11 | 699 | 0.0  | 0.1− |
| 2004 12 20                              | G96        | 0.2+     | 0.3−      | 2007 10 12 | G96         | 0.1+  | 0.2−        | 2007 11 11 | 699 | 0.6− | 0.0  |
| 2004 12 20                              | G96        | 0.4−     | 0.4−      | 2007 10 12 | G96         | 0.1−  | 0.3−        | 2007 11 11 | 699 | 0.1+ | 0.4− |
| 2004 12 20                              | G96        | 0.2−     | 0.0       | 2007 10 12 | G96         | 0.2−  | 0.3−        | 2007 11 11 | 699 | 0.1− | 1.1− |
| 2005 02 01                              | 691        | 0.1+     | 0.3+      | 2007 10 13 | 704         | 0.2+  | 0.4+        | 2007 11 12 | 704 | 0.3+ | 0.6+ |
| 2005 02 01                              | 691        | 0.0      | 0.4+      | 2007 10 13 | 704         | 0.3−  | 0.2−        | 2007 11 12 | 704 | 0.1− | 0.2+ |
| 2005 02 01                              | 691        | 0.0      | 0.3+      | 2007 10 13 | 704         | 0.3−  | 0.3−        | 2007 11 12 | 704 | 0.2+ | 0.2+ |
| 2005 02 04                              | G96        | 0.2+     | 0.2+      | 2007 10 13 | 704         | 0.4−  | 0.4−        | 2007 11 12 | 704 | 0.7+ | 0.2+ |
| 2005 02 04                              | G96        | 0.1+     | 0.1+      | 2007 10 13 | 704         | 1.0−  | 0.2+        | 2007 11 12 | 704 | 0.2+ | 0.2+ |
| 2005 02 04                              | G96        | 0.2−     | 0.0       | 2007 10 15 | 106         | 0.5−  | 0.4−        | 2007 11 18 | 703 | 0.0  | 0.6+ |
| 2005 02 04                              | G96        | 0.1+     | 0.2+      | 2007 10 15 | 106         | (1.0− | 1.6−)       | 2007 11 18 | 703 | 1.0− | 0.4+ |
| 2006 05 21                              | 691        | 0.1+     | 0.4+      | 2007 10 15 | 106         | 0.4−  | 0.1+        | 2007 11 18 | 703 | 0.0  | 0.9+ |
| 2006 05 21                              | 691        | 0.1+     | 0.4+      | 2007 10 15 | 106         | 0.0   | 0.2+        | 2007 11 18 | 703 | 0.4− | 0.9+ |
| 2006 05 21                              | 691        | 0.4+     | 0.3+      | 2007 10 19 | 704         | 0.3+  | 0.7−        | 2007 11 29 | 704 | 0.3− | 0.0  |
| 2006 05 29                              | 691        | 0.0      | 0.5+      | 2007 10 19 | 704         | 0.4+  | 1.0+        | 2007 11 29 | 704 | 0.2− | 0.3− |
| 2006 05 29                              | 691        | 0.1−     | 0.4+      | 2007 10 19 | 704         | 0.9+  | 0.1+        | 2007 11 29 | 704 | 0.3+ | 0.3− |
| 2006 05 29                              | 691        | 0.2+     | 0.3+      | 2007 10 19 | 704         | 0.6−  | 0.5+        | 2007 11 29 | 704 | 0.0  | 0.5+ |
| 2006 06 02                              | 691        | 0.1+     | 0.2+      | 2007 10 19 | 704         | 0.6−  | 0.4+        | 2007 12 04 | 704 | 0.1+ | 0.1+ |
| 2006 06 02                              | 691        | 0.2+     | 0.3+      | 2007 10 20 | 704         | 0.1+  | 0.6+        | 2007 12 04 | 704 | 0.2+ | 0.3+ |
| 2006 06 02                              | 691        | 0.1+     | 0.1−      | 2007 10 20 | 704         | 0.1−  | 0.8+        | 2007 12 04 | 704 | 0.2+ | 0.7− |
| 2006 06 16                              | 691        | 0.4−     | 0.1+      | 2007 10 20 | 704         | 0.2+  | 0.8+        | 2007 12 04 | 704 | 0.2+ | 0.3− |
| 2006 06 16                              | 691        | 0.1+     | 0.2+      | 2007 10 20 | 704         | 0.1−  | 0.0         |            |     |      |      |
| 2006 06 16                              | 691        | 0.2+     | 0.1+      | 2007 10 20 | 704         | 0.0   | 0.7+        |            |     |      |      |

(172993)\* 2006 KV<sub>118</sub> = 2002 TZ<sub>147</sub>

Discovered 2006 May 30 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 101842)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             | MPC  |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|------|------|
| <i>M</i>                                | 128.84588  |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.22759616 | $\omega$ | 23.88427  |            | +0.05636968 |      | +0.97911593 |            |     |      |      |
| <i>a</i>                                | 2.6568035  | $\Omega$ | 249.82478 |            | −0.04627128 |      | −0.01000282 |            |     |      |      |
| <i>e</i>                                | 0.0640646  | <i>i</i> | 12.01104  |            | −0.31842288 |      | +0.20305649 |            |     |      |      |
| <i>P</i>                                | 4.33       | <i>H</i> | 15.7      |            | <i>G</i>    | 0.15 | <i>U</i>    | 1          |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |     |      |      |
| 2002 08 15                              | 704        | 0.1+     | 0.6+      | 2003 12 23 | 704         | 0.2+ | 0.4−        | 2007 11 05 | 691 | 0.1− | 0.1− |
| 2002 08 15                              | 704        | 0.7+     | 0.4−      | 2006 05 26 | 703         | 0.0  | 0.9+        | 2007 11 05 | 691 | 0.8− | 0.1− |
| 2002 08 15                              | 704        | 0.4+     | 0.4+      | 2006 05 26 | 703         | 0.9− | 1.1+        | 2007 11 07 | 691 | 0.2− | 0.2+ |
| 2002 08 30                              | 699        | 1.2+     | 0.3−      | 2006 05 26 | 703         | 0.3+ | 0.5+        | 2007 11 07 | 691 | 0.1− | 0.0  |
| 2002 08 30                              | 699        | 0.6+     | 0.4+      | 2006 05 26 | 703         | 0.1− | 0.4−        | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2002 08 30                              | 699        | 0.7−     | 0.7−      | 2006 05 30 | 691         | 0.3+ | 0.1+        | 2007 11 07 | 704 | 0.9+ | 0.6− |
| 2002 08 30                              | 699        | 1.2−     | 0.4−      | 2006 05 30 | 691         | 0.0  | 0.5−        | 2007 11 07 | 704 | 0.4+ | 0.8+ |
| 2002 09 11                              | 644        | 0.4−     | 0.2+      | 2006 05 30 | 691         | 0.0  | 0.1−        | 2007 11 07 | 704 | 0.8+ | 0.2− |
| 2002 09 11                              | 644        | 0.3−     | 0.2+      | 2006 06 04 | 691         | 0.0  | 0.0         | 2007 11 07 | 704 | 0.3+ | 1.0− |
| 2002 09 11                              | 644        | 0.3−     | 0.3+      | 2006 06 04 | 691         | 0.4+ | 0.0         | 2007 11 09 | 691 | 0.1+ | 0.2− |
| 2002 10 05                              | 644        | 0.1+     | 0.2−      | 2006 06 04 | 691         | 0.1− | 0.2+        | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2002 10 05                              | 644        | 0.2+     | 0.5+      | 2006 06 11 | 644         | 0.4− | 0.4−        | 2007 11 09 | 691 | 0.0  | 0.4− |
| 2002 10 05                              | 644        | 0.6+     | 0.3+      | 2006 06 11 | 644         | 0.1− | 0.1−        | 2007 11 13 | 691 | 0.3+ | 0.5− |
| 2002 10 06                              | 644        | 0.2−     | 1.1−      | 2006 06 11 | 644         | 0.5− | 0.1+        | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2002 10 06                              | 644        | 0.1−     | 0.4−      | 2006 06 11 | 644         | 0.4− | 0.0         | 2007 11 13 | 691 | 0.2+ | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 644 | 0.5+  | 1.0-  | 2006 06 11 | 644 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.3- | 0.5+ |
| 2002 10 06 | 704 | 0.6-  | 0.3+  | 2006 06 11 | 644 | 0.4- | 0.2+ | 2007 11 17 | 691 | 0.1- | 0.3- |
| 2002 10 06 | 704 | 0.7+  | 0.3-  | 2006 06 20 | 644 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.1- | 0.3+ |
| 2002 10 06 | 704 | 0.4-  | 0.2+  | 2006 06 20 | 644 | 0.2+ | 0.1+ | 2007 11 18 | 704 | 0.9- | 0.7+ |
| 2002 10 06 | 704 | 0.5-  | 0.7+  | 2006 06 20 | 644 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.2- | 0.2+ |
| 2003 12 23 | 704 | 0.6-  | 0.3-  | 2007 11 01 | 691 | 0.1+ | 0.0  | 2007 11 18 | 704 | 0.0  | 0.9- |
| 2003 12 23 | 704 | 0.6+  | 0.1+  | 2007 11 01 | 691 | 0.1+ | 0.1- | 2007 12 05 | 691 | 0.3+ | 0.3+ |
| 2003 12 23 | 704 | 0.3-  | 0.0   | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.2+ | 0.2+ |
| 2003 12 23 | 704 | (1.4- | 1.6+) | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 691 | 0.0  | 0.4+ |

**(172994)\* 2006 KE<sub>122</sub>**

Discovered 2006 May 24 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 73.81483   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18104121 | $\omega$ | 205.71229 | +0.58174903  | +0.74823564  |
| $a$ | 3.0946943  | $\Omega$ | 101.50905 | -0.67875150  | +0.66264524  |
| $e$ | 0.1874250  | $i$      | 18.99384  | -0.44817905  | -0.03232212  |
| $P$ | 5.44       | $H$      | 14.5      | $G$          | 0.15         |
|     |            |          |           | $U$          | 1            |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 11 | 704 | 0.4+  | 0.8+  | 2006 05 24 | 644 | 0.3- | 0.0  | 2006 07 19 | 644 | 0.2-  | 0.2-  |
| 2001 09 11 | 704 | 0.2-  | 0.8-  | 2006 05 24 | 644 | 0.1- | 0.1- | 2006 07 19 | 644 | 0.1+  | 0.4-  |
| 2001 09 11 | 704 | 0.3+  | 0.2-  | 2006 05 24 | 644 | 0.1- | 0.1+ | 2006 07 19 | 644 | 0.1-  | 0.1+  |
| 2001 09 11 | 704 | 0.2-  | 0.6+  | 2006 05 24 | 644 | 0.0  | 0.3- | 2006 07 21 | 644 | 0.3+  | 0.2+  |
| 2001 09 11 | 704 | 0.4+  | 0.1+  | 2006 05 24 | 644 | 0.1+ | 0.1+ | 2006 07 21 | 644 | 0.0   | 0.2+  |
| 2001 09 11 | 704 | (0.4+ | 1.8+) | 2006 06 09 | 644 | 0.1+ | 0.1+ | 2006 07 21 | 644 | 0.2-  | 0.1+  |
| 2001 09 11 | 704 | 0.2+  | 1.5+  | 2006 06 09 | 644 | 0.3- | 0.1+ | 2006 07 21 | 644 | 0.1-  | 0.4+  |
| 2001 09 18 | 644 | 0.6-  | 0.7-  | 2006 06 09 | 644 | 0.2- | 0.1- | 2006 07 21 | 644 | 0.1-  | 0.3+  |
| 2001 09 18 | 644 | 0.4-  | 0.4-  | 2006 06 22 | 644 | 0.0  | 0.3+ | 2006 07 21 | 644 | 0.3-  | 0.1+  |
| 2001 09 18 | 644 | 0.4-  | 0.2+  | 2006 06 22 | 644 | 0.0  | 0.2+ | 2007 11 07 | 703 | 1.0+  | 0.5+  |
| 2002 12 13 | 644 | (0.8+ | 1.9+) | 2006 06 22 | 644 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.9-  | 0.2-  |
| 2002 12 13 | 644 | (1.0+ | 1.8+) | 2006 06 30 | 704 | 0.8+ | 0.0  | 2007 11 07 | 703 | 0.2-  | 0.4+  |
| 2002 12 13 | 644 | (1.0+ | 1.9+) | 2006 06 30 | 704 | 0.2- | 0.4+ | 2007 11 07 | 703 | 0.5-  | 0.2-  |
| 2005 04 02 | 703 | 0.1-  | 0.5+  | 2006 06 30 | 704 | 0.5+ | 0.1+ | 2007 11 15 | 703 | 1.0+  | 0.6+  |
| 2005 04 02 | 703 | 0.3+  | 0.3+  | 2006 06 30 | 704 | 0.8+ | 0.0  | 2007 11 15 | 703 | (2.1+ | 0.4+) |
| 2005 04 02 | 703 | 0.5+  | 0.2-  | 2006 06 30 | 428 | 1.3- | 0.1- | 2007 11 15 | 703 | 0.1-  | 0.3+  |
| 2005 04 02 | 703 | 0.3-  | 0.6+  | 2006 07 01 | 428 | 0.7- | 0.3- | 2007 11 15 | 703 | 0.3-  | 0.1+  |
| 2005 05 05 | 644 | 0.2+  | 0.4+  | 2006 07 18 | 704 | 0.1+ | 0.0  | 2007 12 06 | 703 | 0.9+  | 0.8+  |
| 2005 05 05 | 644 | 0.1+  | 0.0   | 2006 07 18 | 704 | 0.3- | 0.4- | 2007 12 06 | 703 | 0.3+  | 0.4-  |
| 2005 05 05 | 644 | 0.3+  | 0.4+  | 2006 07 18 | 704 | 0.8+ | 1.0- | 2007 12 06 | 703 | 0.2+  | 0.8+  |
| 2006 05 24 | 644 | 0.2-  | 0.1+  | 2006 07 18 | 704 | 0.9+ | 0.1- | 2007 12 06 | 703 | 2.0-  | 1.4-  |

**(172995)\* 2006 KN<sub>122</sub> = 1991 PY<sub>4</sub> = 1991 PQ<sub>28</sub>**

Discovered 2006 May 28 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 101845)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 89.06712   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25822254 | $\omega$ | 181.36611 | +0.73391839   | +0.67575772 |
| <i>a</i> | 2.4423428  | $\Omega$ | 135.85662 | −0.62224961   | +0.70943235 |
| <i>e</i> | 0.2051712  | <i>i</i> | 5.65835   | −0.27234025   | +0.20014306 |
| <i>P</i> | 3.82       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1991 08 03 | 809 | (1.0- | 2.1-) | 2003 10 29 | 699 | 1.0+  | 0.9+  | 2006 05 28 | 704 | 0.4+ | 1.1+ |
| 1991 08 03 | 809 | (1.0- | 2.7-) | 2003 10 29 | 699 | (2.0- | 0.9-) | 2006 06 05 | 704 | 0.1+ | 1.0+ |
| 1991 08 03 | 809 | 0.7-  | 1.6-  | 2003 10 29 | 699 | 0.4-  | 0.1+  | 2006 06 05 | 704 | 0.2+ | 0.5+ |
| 1991 08 05 | 809 | 0.7+  | 0.6-  | 2003 11 24 | 699 | 0.9+  | 0.5+  | 2006 06 05 | 704 | 0.2+ | 0.6+ |
| 1991 08 05 | 809 | 0.2+  | 1.4-  | 2003 11 24 | 699 | 0.3+  | 0.1-  | 2006 06 05 | 704 | 0.2+ | 1.3+ |
| 1991 08 05 | 809 | 0.6+  | 0.3-  | 2003 11 24 | 699 | 0.3+  | 0.7+  | 2006 06 14 | 644 | 0.3- | 0.4+ |
| 2002 05 08 | 704 | 0.5-  | 0.4+  | 2003 11 24 | 699 | 0.2-  | 0.0   | 2006 06 14 | 644 | 0.3- | 0.6+ |
| 2002 05 08 | 704 | (2.3- | 0.0 ) | 2003 12 21 | 691 | 0.4-  | 0.2+  | 2006 06 14 | 644 | 0.7- | 0.5+ |
| 2002 05 08 | 704 | 0.1+  | 1.1+  | 2003 12 21 | 691 | 0.2-  | 0.1+  | 2006 06 18 | 644 | 0.1+ | 0.2+ |
| 2002 05 08 | 704 | 0.8-  | 0.0   | 2003 12 21 | 691 | 0.4-  | 0.3+  | 2006 06 18 | 644 | 0.3- | 0.3+ |
| 2002 06 09 | 704 | 1.2+  | 0.6-  | 2005 02 09 | 691 | 0.1-  | 0.0   | 2006 06 18 | 644 | 0.3- | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 09 | 704 | 0.9+ | 0.8- | 2005 02 09 | 691 | 0.2+ | 1.1- | 2007 12 04 | 704 | 0.3- | 0.8+ |
| 2002 06 09 | 704 | 1.0+ | 0.5- | 2005 02 09 | 691 | 0.0  | 0.1+ | 2007 12 04 | 704 | 0.5+ | 0.9+ |
| 2002 06 09 | 704 | 0.3+ | 0.4+ | 2005 03 01 | 691 | 0.2- | 0.1- | 2007 12 04 | 704 | 0.5- | 0.4+ |
| 2003 10 19 | 699 | 0.0  | 0.5- | 2005 03 01 | 691 | 0.3- | 0.2+ | 2007 12 04 | 704 | 0.9+ | 1.3+ |
| 2003 10 19 | 699 | 0.4- | 1.1+ | 2005 03 01 | 691 | 0.1- | 0.0  | 2007 12 05 | G96 | 0.4+ | 0.2+ |
| 2003 10 19 | 699 | 0.7- | 0.4- | 2006 05 28 | 704 | 0.2- | 1.2+ | 2007 12 05 | G96 | 0.6+ | 0.2+ |
| 2003 10 19 | 699 | 0.6+ | 0.8+ | 2006 05 28 | 704 | 0.2+ | 0.5- | 2007 12 05 | G96 | 0.0  | 0.1+ |
| 2003 10 29 | 699 | 0.9- | 0.2- | 2006 05 28 | 704 | 0.6+ | 1.0+ | 2007 12 05 | G96 | 0.2+ | 0.1+ |

**(172996)\* 2006 KL<sub>141</sub> = 2003 WU<sub>57</sub> = 2007 VY<sub>20</sub>**

Discovered 2006 May 25 by P. A. Wiegert at Mauna Kea.

Id. G. V. Williams (*MPO* 128276)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 46.83988   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22662747 | $\omega$ | 275.80252 | +0.81922273 | +0.57118124 |
| $a$ | 2.6643689  | $\Omega$ | 49.37706  | -0.49581303 | +0.75035005 |
| $e$ | 0.0908713  | $i$      | 3.87134   | -0.28817278 | +0.33275637 |
| $P$ | 4.35       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 11 18 | 691 | 0.1+  | 0.0   | 2006 05 23 | G96 | 0.4+  | 0.3+  | 2007 10 13 | G96 | 0.1+  | 0.4-  |
| 2003 11 18 | 691 | 0.1-  | 0.1+  | 2006 05 23 | G96 | 0.0   | 0.3+  | 2007 10 17 | 699 | (0.4- | 2.3-) |
| 2003 11 18 | 691 | 0.0   | 0.2-  | 2006 05 25 | 568 | 0.1-  | 0.3+  | 2007 10 17 | 699 | 0.4+  | 0.2-  |
| 2003 11 18 | 291 | 0.5-  | 0.1+  | 2006 05 25 | 568 | 0.1-  | 0.3+  | 2007 10 17 | 699 | (1.7+ | 1.9-) |
| 2003 11 18 | 291 | 0.6-  | 0.0   | 2006 05 25 | 568 | 0.0   | 0.2+  | 2007 10 17 | 699 | 1.2+  | 0.6-  |
| 2003 11 18 | 291 | 0.8-  | 0.0   | 2006 05 26 | 568 | 0.1-  | 0.1-  | 2007 11 02 | G96 | 0.5+  | 0.1+  |
| 2003 11 21 | 704 | 1.4+  | 0.1-  | 2007 09 10 | 691 | 0.1-  | 0.1-  | 2007 11 02 | G96 | 0.4+  | 0.2-  |
| 2003 11 21 | 704 | 1.2+  | 0.3-  | 2007 09 10 | 691 | 0.1-  | 0.1+  | 2007 11 02 | G96 | 0.2+  | 0.2-  |
| 2003 11 21 | 704 | 1.3+  | 0.2-  | 2007 09 10 | 691 | 0.4-  | 0.8+  | 2007 11 02 | G96 | 0.1+  | 0.1-  |
| 2003 11 21 | 704 | 0.8+  | 0.2-  | 2007 09 11 | 703 | 0.1-  | 0.1+  | 2007 11 03 | G96 | 0.1+  | 0.2-  |
| 2003 11 21 | 704 | 0.9+  | 0.8+  | 2007 09 11 | 703 | 0.1-  | 0.7+  | 2007 11 03 | G96 | 0.3+  | 0.2-  |
| 2003 12 16 | 291 | 0.1-  | 0.2+  | 2007 09 11 | 703 | (0.5+ | 1.7+) | 2007 11 03 | G96 | 0.0   | 0.4-  |
| 2003 12 16 | 291 | 0.2-  | 0.1+  | 2007 09 11 | 703 | 0.7+  | 0.2+  | 2007 11 03 | G96 | 0.3+  | 0.3-  |
| 2003 12 16 | 291 | 0.7+  | 0.1+  | 2007 09 18 | 691 | 0.1-  | 0.3+  | 2007 11 05 | 704 | 0.6-  | 0.5-  |
| 2005 02 01 | 691 | 0.1+  | 0.2+  | 2007 09 18 | 691 | 0.3-  | 0.1+  | 2007 11 05 | 704 | 0.4+  | 0.1+  |
| 2005 02 01 | 691 | 0.2+  | 0.3+  | 2007 09 18 | 691 | 0.2-  | 0.1+  | 2007 11 05 | 704 | 0.4-  | 0.2-  |
| 2005 02 01 | 691 | 0.2+  | 0.1+  | 2007 10 04 | 703 | 0.6-  | 0.5-  | 2007 11 05 | 704 | 0.4-  | 1.2+  |
| 2005 02 09 | 699 | 1.2-  | 0.1+  | 2007 10 04 | 703 | 0.3-  | 0.7+  | 2007 12 06 | G96 | 0.4-  | 0.4-  |
| 2005 02 09 | 699 | 0.8+  | 0.3+  | 2007 10 04 | 703 | 0.5-  | 0.1+  | 2007 12 06 | G96 | 0.4+  | 0.3-  |
| 2005 02 09 | 699 | (1.7+ | 0.9+) | 2007 10 04 | 703 | 0.3+  | 0.9+  | 2007 12 06 | G96 | 0.4+  | 0.4-  |
| 2005 02 09 | 699 | 0.8-  | 0.8-  | 2007 10 13 | G96 | 0.2+  | 0.4-  | 2007 12 06 | G96 | 0.1+  | 0.5-  |
| 2006 05 23 | G96 | (0.1- | 2.9+) | 2007 10 13 | G96 | 0.2+  | 0.4-  |            |     |       |       |
| 2006 05 23 | G96 | 0.1+  | 0.2+  | 2007 10 13 | G96 | 0.7+  | 0.3-  |            |     |       |       |

**(172997)\* 2006 LO<sub>1</sub>**

Discovered 2006 June 4 by the Mt. Lemmon Survey at Mount Lemmon.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 127.43315  |          | (2000.0)  | $\mathbf{P}$ |      | $\mathbf{Q}$ |   |
|-----|------------|----------|-----------|--------------|------|--------------|---|
| $n$ | 0.27987066 | $\omega$ | 163.72358 | +0.05753496  |      | +0.99277481  |   |
| $a$ | 2.3147165  | $\Omega$ | 109.47987 | -0.92796396  |      | +0.09208077  |   |
| $e$ | 0.1563824  | $i$      | 6.41289   | -0.36820186  |      | -0.07693709  |   |
| $P$ | 3.52       | $H$      | 16.4      | $G$          | 0.15 | $U$          | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 11 | 644 | 0.1-  | 0.5+  | 2006 05 28 | 704 | 1.4-  | 0.1-  | 2006 06 24 | 704 | 0.0  | 0.7+ |
| 2002 03 11 | 644 | 0.1-  | 0.6+  | 2006 05 28 | 704 | (1.6- | 1.6+) | 2006 06 24 | 704 | 0.1- | 1.3- |
| 2002 03 11 | 644 | 0.1-  | 0.6+  | 2006 05 28 | 704 | 0.8+  | 0.1+  | 2006 06 24 | 704 | 0.2+ | 0.2- |
| 2002 04 02 | 644 | 0.2+  | 0.0   | 2006 05 28 | 704 | 0.9-  | 0.9+  | 2007 11 02 | G96 | 0.8+ | 0.1- |
| 2002 04 02 | 644 | 0.0   | 0.2+  | 2006 06 04 | G96 | 0.1+  | 0.0   | 2007 11 02 | G96 | 0.4+ | 0.1- |
| 2002 04 02 | 644 | 0.1+  | 0.1-  | 2006 06 04 | G96 | 0.2+  | 0.3+  | 2007 11 02 | G96 | 0.1+ | 0.2+ |
| 2003 09 19 | 699 | (0.3+ | 1.7+) | 2006 06 04 | G96 | 0.5+  | 0.3+  | 2007 11 02 | G96 | 0.2- | 0.0  |
| 2003 09 19 | 699 | 0.2+  | 0.0   | 2006 06 04 | G96 | 0.1+  | 0.1+  | 2007 11 20 | 691 | 0.8- | 0.2+ |
| 2003 09 19 | 699 | 0.5-  | 1.1+  | 2006 06 05 | 704 | (0.1+ | 2.5+) | 2007 11 20 | 691 | 0.2+ | 0.1+ |
| 2003 09 19 | 699 | 0.4+  | 1.0-  | 2006 06 05 | 704 | 0.2+  | 0.9+  | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2003 10 16 | 644 | 0.5-  | 0.7+  | 2006 06 05 | 704 | 0.5+  | 1.1+  | 2007 11 21 | G96 | 0.2+ | 0.2+ |

2007 DEC. 24

M.P.O. 129537

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 16 | 644 | 0.2− | 0.8+ | 2006 06 05 | 704 | 0.8+ | 1.2+ | 2007 11 21 | G96 | 0.2+ | 0.3+ |
| 2003 10 16 | 644 | 0.3− | 0.8+ | 2006 06 16 | 644 | 0.1+ | 0.3+ | 2007 11 21 | G96 | 0.2− | 0.4+ |
| 2005 01 17 | 691 | 0.4+ | 0.1+ | 2006 06 16 | 644 | 0.1− | 0.2+ | 2007 11 21 | G96 | 0.3+ | 0.2+ |
| 2005 01 17 | 691 | 0.1− | 0.3+ | 2006 06 16 | 644 | 0.1− | 0.2+ |            |     |      |      |
| 2005 01 17 | 691 | 0.1+ | 0.2+ | 2006 06 24 | 704 | 0.5+ | 0.2+ |            |     |      |      |

**(172998)\* 2006 LT<sub>6</sub> = 1994 PJ<sub>23</sub> = 1998 SW<sub>29</sub>**

Discovered 2006 June 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. T. B. Spahr (*MPO* 101850)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |  |             |      |             |   |
|-----|------------|----------|-----------|--|-------------|------|-------------|---|
| $M$ | 92.84720   |          | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |
| $n$ | 0.23924848 | $\omega$ | 151.95812 |  | +0.56261186 |      | +0.82601499 |   |
| $a$ | 2.5698233  | $\Omega$ | 152.23764 |  | −0.77155701 |      | +0.53946437 |   |
| $e$ | 0.2519232  | $i$      | 4.20598   |  | −0.29693041 |      | +0.16333226 |   |
| $P$ | 4.12       | $H$      | 16.0      |  | $G$         | 0.15 | $U$         | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 08 12 | 809 | 1.3+  | 0.2−  | 2002 06 18 | 704 | 0.1+  | 0.2−  | 2006 06 21 | 644 | 0.1+ | 0.3+ |
| 1994 08 12 | 809 | 0.6+  | 0.4−  | 2002 06 18 | 704 | 0.1−  | 0.1+  | 2006 06 21 | 644 | 0.3+ | 0.4+ |
| 1994 08 12 | 809 | 0.4+  | 0.5+  | 2002 06 18 | 704 | 0.1+  | 0.3+  | 2006 06 21 | 644 | 0.0  | 0.2+ |
| 1994 08 13 | 809 | (2.6+ | 0.5+) | 2002 06 18 | 704 | 0.9−  | 0.6−  | 2006 06 21 | 644 | 0.0  | 0.3+ |
| 1994 08 13 | 809 | 1.4+  | 0.5−  | 2002 07 05 | 704 | 0.2−  | 0.4+  | 2006 06 21 | 644 | 0.3+ | 0.4+ |
| 1994 08 13 | 809 | 1.8+  | 0.5−  | 2002 07 05 | 704 | 0.4−  | 0.2+  | 2006 06 24 | 704 | 0.0  | 0.2+ |
| 1998 08 17 | 704 | 0.8+  | 0.2−  | 2002 07 05 | 704 | 0.2−  | 0.5−  | 2006 06 24 | 704 | 0.3+ | 0.8+ |
| 1998 08 17 | 704 | 0.5+  | 0.3−  | 2002 07 05 | 704 | 0.0   | 0.2−  | 2006 06 24 | 704 | 0.2− | 0.4+ |
| 1998 08 17 | 704 | 0.9+  | 0.4−  | 2005 04 02 | G96 | 0.1−  | 0.2+  | 2007 11 04 | 691 | 0.1− | 0.3+ |
| 1998 08 17 | 704 | 0.0   | 0.5−  | 2005 04 02 | G96 | 0.2−  | 0.8+  | 2007 11 04 | 691 | 0.2− | 0.1+ |
| 1998 08 17 | 704 | (5.2− | 0.3−) | 2005 04 02 | G96 | 0.7−  | 0.4+  | 2007 11 04 | 691 | 0.1− | 0.2+ |
| 1998 09 19 | 691 | 0.3−  | 0.5+  | 2005 04 02 | G96 | 0.8−  | 0.3+  | 2007 11 21 | G96 | 0.1+ | 0.3− |
| 1998 09 19 | 691 | 0.2−  | 0.4+  | 2006 05 28 | 704 | (3.1+ | 1.4−) | 2007 11 21 | G96 | 0.2+ | 0.3− |
| 1998 09 19 | 691 | 0.0   | 0.1+  | 2006 05 28 | 704 | 0.5+  | 0.5+  | 2007 11 21 | G96 | 0.1− | 0.3− |
| 1998 09 26 | 691 | 0.8−  | 0.0   | 2006 05 28 | 704 | 0.5+  | 0.2+  | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 1998 09 26 | 691 | 0.6−  | 0.1+  | 2006 06 05 | 704 | 0.8+  | 0.8+  | 2007 12 04 | 704 | 0.8− | 0.4+ |
| 1998 09 26 | 691 | 0.7−  | 0.2−  | 2006 06 05 | 704 | 0.5+  | 0.1+  | 2007 12 04 | 704 | 0.2− | 1.2+ |
| 2002 06 10 | 704 | 0.3+  | 0.0   | 2006 06 05 | 704 | 0.3−  | 0.3−  | 2007 12 04 | 704 | 1.2+ | 0.4− |
| 2002 06 10 | 704 | 0.0   | 0.7+  | 2006 06 05 | 704 | 0.8+  | 0.4−  | 2007 12 04 | 704 | 1.6+ | 1.2+ |
| 2002 06 10 | 704 | 1.2−  | 1.0−  | 2006 06 05 | 704 | 0.2+  | 0.1+  |            |     |      |      |
| 2002 06 18 | 704 | 1.1+  | 0.7−  | 2006 06 21 | 644 | 0.1+  | 0.2+  |            |     |      |      |

**(172999)\* 2006 MF<sub>2</sub>**

Discovered 2006 June 16 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 69.52786   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.27052355 | $\omega$ | 180.64460 |     | +0.85174860 |     | +0.52006189 |
| $a$ | 2.3677327  | $\Omega$ | 147.76247 |     | −0.48017924 |     | +0.82345870 |
| $e$ | 0.1302850  | $i$      | 6.86031   |     | −0.20964786 |     | +0.22682901 |
| $P$ | 3.64       | $H$      | 17.0      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 691 | 0.1−  | 0.3+  | 2005 03 08 | G96 | 0.4− | 0.0  | 2007 10 14 | G96 | 0.1+ | 0.1+ |
| 2003 09 22 | 691 | 0.2−  | 0.3+  | 2005 03 08 | G96 | 0.6− | 0.2+ | 2007 10 14 | G96 | 0.0  | 0.2+ |
| 2003 09 22 | 691 | 0.2−  | 0.3+  | 2006 05 23 | 691 | 0.0  | 0.4+ | 2007 10 14 | G96 | 0.1+ | 0.1+ |
| 2003 09 28 | 704 | (0.5− | 1.6+) | 2006 05 23 | 691 | 0.2− | 0.3+ | 2007 11 13 | G96 | 0.3+ | 0.0  |
| 2003 09 28 | 704 | 0.4+  | 0.6+  | 2006 05 23 | 691 | 0.1− | 0.3+ | 2007 11 13 | G96 | 0.1+ | 0.1− |
| 2003 09 28 | 704 | 0.1+  | 0.8+  | 2006 06 16 | 691 | 0.1+ | 0.3+ | 2007 11 13 | G96 | 0.1− | 0.0  |
| 2003 09 28 | 704 | (1.1− | 1.7+) | 2006 06 16 | 691 | 0.3+ | 0.1+ | 2007 11 13 | G96 | 0.1− | 0.1+ |
| 2005 02 04 | 691 | 0.0   | 0.5+  | 2006 06 16 | 691 | 0.1+ | 0.2− | 2007 11 18 | G96 | 0.3− | 0.1+ |
| 2005 02 04 | 691 | 0.3+  | 0.5+  | 2006 06 20 | 691 | 0.1− | 0.0  | 2007 11 18 | G96 | 0.0  | 0.2+ |
| 2005 02 04 | 691 | 0.3+  | 0.4+  | 2006 06 20 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.2+ |
| 2005 03 08 | G96 | 0.4−  | 0.1+  | 2006 06 20 | 691 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.2− | 0.1− |
| 2005 03 08 | G96 | 0.2+  | 0.2+  | 2007 10 14 | G96 | 0.4− | 0.2+ |            |     |      |      |

**(173000)\* 2006 MT<sub>3</sub> = 1997 WY<sub>22</sub>**

Discovered 2006 June 16 by NEAT at Palomar.

Id. A. Doppler (*MPO* 101852)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 53.18671   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.29108586 | $\omega$ | 279.44162 |     | +0.98759021 |     | -0.06252017 |
| $a$ | 2.2548724  | $\Omega$ | 84.24162  |     | +0.11671544 |     | +0.90597907 |
| $e$ | 0.1473280  | $i$      | 8.32587   |     | -0.10508603 |     | +0.41868024 |
| $P$ | 3.39       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 11 23 | 691 | 0.1− | 0.1− | 2000 12 19 | 699 | 0.5+  | 0.7−  | 2006 06 20 | 644 | 0.0  | 0.3+ |
| 1997 11 23 | 691 | 0.1+ | 0.2− | 2000 12 19 | 699 | 0.9−  | 0.1−  | 2006 06 22 | 644 | 0.1− | 0.2+ |
| 1997 11 23 | 691 | 0.0  | 0.0  | 2000 12 19 | 699 | 0.3−  | 0.2+  | 2006 06 22 | 644 | 0.2− | 0.1+ |
| 1997 12 03 | 691 | 0.1− | 0.5− | 2000 12 19 | 699 | 0.1−  | 0.9+  | 2006 06 22 | 644 | 0.3− | 0.2+ |
| 1997 12 03 | 691 | 0.5− | 0.2− | 2002 03 12 | 645 | 0.1+  | 0.0   | 2006 06 23 | 644 | 0.4− | 0.1− |
| 1997 12 03 | 691 | 0.6− | 0.2− | 2002 03 12 | 645 | 0.1+  | 0.0   | 2006 06 23 | 644 | 0.3− | 0.2+ |
| 2000 10 31 | 704 | 0.4− | 0.1+ | 2003 07 08 | 644 | 0.1−  | 0.1+  | 2006 06 23 | 644 | 0.2− | 0.2+ |
| 2000 10 31 | 704 | 0.0  | 0.3− | 2003 07 08 | 644 | 0.4−  | 0.0   | 2007 11 14 | 704 | 0.9+ | 0.1+ |
| 2000 10 31 | 704 | 0.7− | 0.4− | 2003 07 08 | 644 | 0.5−  | 0.1−  | 2007 11 14 | 704 | 0.6+ | 0.5+ |
| 2000 10 31 | 704 | 0.7− | 0.2+ | 2003 07 23 | 704 | 1.1+  | 1.4−  | 2007 11 14 | 704 | 0.1+ | 0.9+ |
| 2000 11 26 | 704 | 1.9+ | 0.6+ | 2003 07 23 | 704 | (1.6+ | 0.8−) | 2007 12 04 | 691 | 0.0  | 0.0  |
| 2000 11 26 | 704 | 0.4+ | 0.2+ | 2003 07 23 | 704 | 0.6+  | 0.9−  | 2007 12 04 | 691 | 0.3− | 0.1− |
| 2000 11 26 | 704 | 0.5+ | 0.6+ | 2006 06 16 | 644 | 0.3−  | 0.4+  | 2007 12 04 | 691 | 0.4− | 0.2− |
| 2000 11 26 | 704 | 1.3− | 0.9− | 2006 06 16 | 644 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2000 11 30 | 608 | 0.5+ | 0.6+ | 2006 06 16 | 644 | 0.1−  | 0.1+  | 2007 12 05 | 704 | 0.3+ | 0.7+ |
| 2000 11 30 | 608 | 0.5+ | 1.1+ | 2006 06 20 | 644 | 0.5−  | 0.6−  | 2007 12 05 | 704 | 0.3+ | 0.6− |
| 2000 11 30 | 608 | 0.9+ | 1.2+ | 2006 06 20 | 644 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.1+ | 0.0  |

**(173001)\* 2006 MH<sub>15</sub> = 2003 XQ<sub>4</sub>**

Discovered 2006 June 20 by the Mt. Lemmon Survey at Mount Lemmon.

Id. A. Doppler (*MPO* 120496)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 7.25851    |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.26728855 | $\omega$ | 315.89287 |     | −0.16276415 |     | −0.98479500 |
| $a$ | 2.3867988  | $\Omega$ | 143.34940 |     | +0.93107468 |     | −0.17366699 |
| $e$ | 0.2067099  | $i$      | 5.83800   |     | +0.32650846 |     | +0.00431113 |
| $P$ | 3.69       | $H$      | 16.2      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 03 | 703 | 1.0− | 1.3+ | 2004 02 22 | 704 | 0.8+ | 0.6+ | 2006 07 18 | G96 | 0.1− | 0.1− |
| 1999 10 03 | 703 | 0.6− | 0.2+ | 2004 02 22 | 704 | 0.8+ | 0.1+ | 2006 07 18 | G96 | 0.5− | 0.3− |
| 1999 10 03 | 703 | 0.5+ | 1.2+ | 2004 02 22 | 704 | 0.3− | 0.3+ | 2006 07 18 | G96 | 0.4− | 0.0  |
| 1999 10 03 | 703 | 0.1+ | 1.2+ | 2005 06 04 | 691 | 0.1+ | 0.2+ | 2006 08 13 | 644 | 0.0  | 0.3+ |
| 2001 05 24 | 645 | 0.0  | 0.0  | 2005 06 04 | 691 | 0.2+ | 0.1+ | 2006 08 13 | 644 | 0.3− | 0.5+ |
| 2001 05 24 | 645 | 0.0  | 0.0  | 2005 06 04 | 691 | 0.4+ | 0.3+ | 2006 08 13 | 644 | 0.2− | 0.4+ |
| 2003 12 01 | 704 | 0.3− | 0.3+ | 2005 06 15 | 691 | 0.4+ | 0.4+ | 2007 11 18 | G96 | 0.6− | 0.0  |
| 2003 12 01 | 704 | 0.5− | 0.5+ | 2005 06 15 | 691 | 0.2− | 0.2+ | 2007 11 18 | G96 | 0.7+ | 0.8− |
| 2003 12 01 | 704 | 0.0  | 0.2+ | 2005 06 15 | 691 | 0.1+ | 0.6+ | 2007 11 18 | G96 | 0.5− | 0.1+ |
| 2003 12 01 | 704 | 0.6+ | 0.5+ | 2006 06 20 | G96 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.5− | 0.1− |
| 2003 12 04 | 704 | 0.4− | 0.5+ | 2006 06 20 | G96 | 0.0  | 0.2− | 2007 12 05 | 704 | 0.1− | 0.5+ |
| 2003 12 04 | 704 | 0.0  | 0.6+ | 2006 06 20 | G96 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.8+ | 2.7+ |
| 2003 12 04 | 704 | 0.1+ | 0.1− | 2006 06 20 | G96 | 0.1+ | 0.1− | 2007 12 05 | 704 | 0.0  | 1.9+ |
| 2003 12 04 | 704 | 0.1− | 0.1− | 2006 07 18 | G96 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.8+ | 0.2− |

**(173002)\* 2006 OS = 2006 ND<sub>1</sub>**

Discovered 2006 July 17 by W. Ries at Altschwendt.

Id. G. V. Williams (d, *MPO* 109582)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 95.29516   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.24141617 | $\omega$ | 282.15192 |     | +0.74209544 |     | +0.66969931 |
| $a$ | 2.5544171  | $\Omega$ | 35.81529  |     | −0.59469563 |     | +0.67724799 |
| $e$ | 0.1359302  | $i$      | 2.76560   |     | −0.30924338 |     | +0.30469330 |
| $P$ | 4.08       | $H$      | 16.1      | $G$ | 0.15        | $U$ | 1           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 17 | 704 | 1.1+ | 0.7- | 2004 01 13 | 691 | 0.2+ | 0.4+ | 2006 07 20 | 428 | 0.0  | 0.3- |
| 1998 08 17 | 704 | 0.2- | 0.1- | 2004 01 13 | 691 | 0.3- | 0.3+ | 2006 07 20 | 428 | 0.2+ | 0.4- |
| 1998 08 17 | 704 | 1.3- | 0.7+ | 2004 01 28 | 691 | 0.2+ | 0.1- | 2006 07 24 | A44 | 0.1+ | 0.2+ |
| 1998 08 17 | 704 | 0.3- | 1.0+ | 2004 01 28 | 691 | 0.5+ | 0.2+ | 2006 07 24 | A44 | 0.9- | 0.8+ |
| 2001 03 14 | 691 | 0.1+ | 0.6+ | 2004 01 28 | 691 | 0.6+ | 0.2+ | 2006 07 24 | A44 | 0.5- | 0.8+ |
| 2001 03 14 | 691 | 0.1+ | 0.4+ | 2005 03 16 | G96 | 0.1- | 0.3+ | 2007 11 15 | 704 | 1.1- | 0.2- |
| 2001 03 14 | 691 | 0.1- | 0.8+ | 2005 03 16 | G96 | 0.1- | 0.1- | 2007 11 15 | 704 | 0.5- | 0.8+ |
| 2001 05 22 | 807 | 0.6+ | 0.5- | 2005 03 16 | G96 | 0.1+ | 0.1- | 2007 11 15 | 704 | 1.0- | 0.6+ |
| 2001 05 23 | 807 | 0.4+ | 0.4- | 2005 03 16 | G96 | 0.2- | 0.2+ | 2007 11 15 | 704 | 1.5- | 0.5- |
| 2002 08 08 | 644 | 0.5- | 0.0  | 2006 07 04 | E12 | 0.6+ | 0.0  | 2007 12 06 | G96 | 0.0  | 0.2+ |
| 2002 08 08 | 644 | 0.5- | 0.1+ | 2006 07 04 | E12 | 0.1+ | 0.2+ | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2002 08 08 | 644 | 0.4- | 0.2+ | 2006 07 04 | E12 | 1.1+ | 0.7+ | 2007 12 06 | G96 | 0.5+ | 0.2+ |
| 2002 08 13 | 704 | 0.2+ | 0.5+ | 2006 07 04 | E12 | 1.0- | 0.5+ | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2002 08 13 | 704 | 0.9+ | 0.6+ | 2006 07 17 | 428 | 0.0  | 0.8- | 2007 12 10 | 704 | 0.9+ | 0.5+ |
| 2002 08 13 | 704 | 0.2+ | 0.1+ | 2006 07 17 | 428 | 0.0  | 0.3+ | 2007 12 10 | 704 | 0.6- | 0.0  |
| 2002 08 13 | 704 | 0.6- | 0.2+ | 2006 07 17 | A44 | 0.0  | 0.5+ | 2007 12 10 | 704 | 0.1- | 0.6- |
| 2002 08 13 | 704 | 0.7- | 0.0  | 2006 07 17 | A44 | 1.2+ | 0.6+ | 2007 12 14 | 704 | 0.2- | 0.1+ |
| 2002 08 18 | 644 | 0.6- | 0.2+ | 2006 07 17 | A44 | 0.7+ | 0.7+ | 2007 12 14 | 704 | 0.7+ | 0.5- |
| 2002 08 18 | 644 | 0.6- | 0.0  | 2006 07 19 | A44 | 0.3+ | 0.5+ | 2007 12 14 | 704 | 0.6+ | 0.2- |
| 2002 08 18 | 644 | 0.4- | 0.3+ | 2006 07 19 | A44 | 0.1+ | 0.5+ | 2007 12 14 | 704 | 0.4- | 0.0  |
| 2003 12 22 | 704 | 0.5+ | 0.1- | 2006 07 19 | 644 | 0.0  | 0.5+ | 2007 12 14 | 704 | 0.1- | 0.6- |
| 2003 12 22 | 704 | 0.5+ | 0.9+ | 2006 07 19 | 644 | 0.3- | 0.3+ | 2007 12 15 | 691 | 0.3- | 0.0  |
| 2003 12 22 | 704 | 0.1+ | 0.1- | 2006 07 19 | 644 | 0.0  | 0.5+ | 2007 12 15 | 691 | 0.4- | 0.2+ |
| 2003 12 22 | 704 | 0.2+ | 1.2+ | 2006 07 19 | A44 | 0.4- | 0.2+ | 2007 12 15 | 691 | 0.4- | 0.2+ |
| 2003 12 22 | 704 | 0.1- | 1.1+ | 2006 07 19 | A44 | 1.4+ | 1.3- |            |     |      |      |
| 2004 01 13 | 691 | 0.3+ | 0.3+ | 2006 07 19 | A44 | 0.8- | 0.5+ |            |     |      |      |

(173003)\* 2006 OD<sub>6</sub> = 2002 TX<sub>191</sub> = 2003 YO<sub>180</sub>

Discovered 2006 July 18 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 103952, *MPO* 109587)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |  |  |  |  |
|----------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| <i>M</i> | 115.23057  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i> | 0.21783681 | $\omega$ | 342.77946 | +0.50548827 |      | +0.85186057 |   |  |  |  |  |
| <i>a</i> | 2.7355744  | $\Omega$ | 317.30908 | -0.76590154 |      | +0.36978666 |   |  |  |  |  |
| <i>e</i> | 0.1274715  | <i>i</i> | 11.67152  | -0.39733669 |      | +0.37093315 |   |  |  |  |  |
| <i>P</i> | 4.52       | <i>H</i> | 15.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 05 | 699 | 0.5+  | 0.6+  | 2005 04 02 | E12 | 0.3-  | 0.7+  | 2006 08 23 | A50 | 0.9+  | 0.4+  |
| 2002 10 05 | 699 | (0.3+ | 1.5+) | 2005 04 06 | 699 | 1.0+  | 0.9-  | 2006 08 28 | 703 | 0.0   | 0.9+  |
| 2002 10 05 | 699 | 0.7-  | 0.0   | 2005 04 06 | 699 | 0.3-  | 1.0+  | 2006 08 28 | 703 | 0.1+  | 0.1+  |
| 2002 10 05 | 699 | 0.2-  | 0.5+  | 2005 04 06 | 699 | 0.2+  | 1.1-  | 2006 08 28 | 703 | 0.7-  | 0.1+  |
| 2002 10 06 | 704 | 0.2-  | 0.9+  | 2005 04 06 | 699 | 1.3-  | 0.5-  | 2006 08 28 | 703 | (2.7- | 0.2+) |
| 2002 10 06 | 704 | 0.2-  | 1.0+  | 2005 04 14 | 703 | 0.1-  | 0.5+  | 2006 08 30 | 704 | 0.8-  | 0.8+  |
| 2002 10 06 | 704 | 0.7-  | 0.7-  | 2005 04 14 | 703 | (1.6+ | 0.1+) | 2006 08 30 | 704 | 0.0   | 0.3-  |
| 2002 10 06 | 704 | 0.1-  | 0.1-  | 2005 04 14 | 703 | 0.5+  | 0.4+  | 2006 08 30 | 704 | 0.2+  | 0.3+  |
| 2002 11 14 | 644 | 0.1-  | 0.5-  | 2005 04 14 | 703 | 0.7+  | 1.3+  | 2006 08 30 | 704 | 0.1+  | 0.3-  |
| 2002 11 14 | 644 | 0.2+  | 0.2+  | 2006 06 20 | 703 | 0.2+  | 0.7+  | 2006 08 30 | 704 | 0.7-  | 0.4+  |
| 2002 11 14 | 644 | 0.1-  | 0.3-  | 2006 06 20 | 703 | 0.9-  | 0.6+  | 2006 08 30 | 704 | 0.4+  | 0.4+  |
| 2002 11 14 | 644 | 0.4+  | 0.0   | 2006 06 20 | 703 | 0.6-  | 0.6-  | 2006 08 30 | 704 | 0.1-  | 0.1+  |
| 2002 11 14 | 644 | 0.1-  | 0.0   | 2006 06 20 | 703 | (1.3- | 1.8+) | 2006 08 30 | 704 | 0.2-  | 0.6-  |
| 2002 11 14 | 644 | 0.2+  | 0.1+  | 2006 07 18 | G96 | 0.2-  | 0.1-  | 2006 08 30 | 704 | 0.6-  | 0.4+  |
| 2003 12 23 | 704 | 0.7+  | 0.8-  | 2006 07 18 | G96 | 0.1+  | 0.0   | 2006 09 01 | 704 | 0.2+  | 0.3+  |
| 2003 12 23 | 704 | 0.2+  | 0.4-  | 2006 07 18 | G96 | 0.3-  | 0.4-  | 2006 09 01 | 704 | 0.3+  | 0.2+  |
| 2003 12 23 | 704 | 0.4+  | 1.0+  | 2006 07 18 | G96 | 0.1-  | 0.1-  | 2006 09 01 | 704 | 1.1+  | 0.1-  |
| 2003 12 23 | 704 | 0.6+  | 0.4+  | 2006 07 18 | G96 | 0.3-  | 0.5-  | 2006 09 12 | 704 | 0.4+  | 0.5-  |
| 2003 12 28 | 704 | 0.6-  | 0.1+  | 2006 07 18 | G96 | 0.1-  | 0.2-  | 2006 09 12 | 704 | 0.8+  | 0.6-  |
| 2003 12 28 | 704 | 0.4-  | 0.6-  | 2006 07 18 | G96 | 0.4-  | 0.4-  | 2006 09 12 | 704 | 0.8+  | 0.7-  |
| 2003 12 28 | 704 | 0.2-  | 0.4-  | 2006 07 18 | G96 | 0.6-  | 0.3-  | 2006 09 12 | 704 | 0.6+  | 0.5-  |
| 2003 12 28 | 704 | 0.6-  | 0.7-  | 2006 07 20 | 644 | 0.6-  | 0.1+  | 2006 09 12 | 704 | 0.3+  | 0.3+  |
| 2003 12 28 | 704 | 0.2+  | 0.0   | 2006 07 20 | 644 | 0.3-  | 0.1-  | 2006 09 14 | 703 | 0.8+  | 1.0+  |
| 2004 01 13 | 699 | 1.3+  | 1.1-  | 2006 07 20 | 644 | 0.3-  | 0.0   | 2006 09 14 | 703 | 0.2+  | 0.7+  |
| 2004 01 13 | 699 | 0.9-  | 0.4-  | 2006 07 21 | 704 | 1.2+  | 0.6+  | 2006 09 14 | 703 | 0.5+  | 0.2+  |
| 2004 01 13 | 699 | 0.7-  | 0.8+  | 2006 07 21 | 704 | 1.2+  | 0.2+  | 2006 09 14 | 703 | 0.0   | 0.3+  |
| 2004 01 13 | 699 | 0.9-  | 0.3+  | 2006 07 21 | 704 | 0.3+  | 0.4-  | 2006 09 25 | 704 | 0.0   | 0.2-  |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 01 18 | 691 | 0.2+  | 0.2-  | 2006 07 21 | 704 | 0.4+ | 0.9+ | 2006 09 25 | 704 | 0.4+  | 0.2+  |
| 2004 01 18 | 691 | 0.1+  | 0.3-  | 2006 07 21 | 704 | 0.8+ | 0.4+ | 2006 09 25 | 704 | 0.3-  | 0.3-  |
| 2004 01 18 | 691 | 0.1+  | 0.1-  | 2006 07 25 | 644 | 0.0  | 0.2+ | 2006 09 25 | 704 | 0.8-  | 0.5-  |
| 2004 01 24 | 704 | (0.3+ | 1.8+) | 2006 07 25 | 644 | 0.0  | 0.3+ | 2006 09 25 | 704 | (0.3- | 2.0-) |
| 2004 01 24 | 704 | (2.0+ | 2.8+) | 2006 07 25 | 644 | 0.1- | 0.1+ | 2006 09 28 | G96 | 0.3+  | 0.3-  |
| 2004 01 24 | 704 | (0.1+ | 2.0+) | 2006 08 16 | A50 | 0.2- | 0.3- | 2006 09 28 | G96 | 0.1-  | 0.4-  |
| 2004 01 24 | 704 | 0.3+  | 0.4+  | 2006 08 16 | A50 | 0.3- | 0.2- | 2006 09 28 | G96 | 0.1-  | 0.3-  |
| 2004 01 31 | 704 | (2.2- | 0.5-) | 2006 08 18 | 644 | 0.2- | 0.1- | 2006 09 28 | G96 | 0.1-  | 0.2-  |
| 2004 01 31 | 704 | 0.2+  | 0.9+  | 2006 08 18 | 644 | 0.4- | 0.0  | 2006 10 20 | 703 | (1.7- | 0.8-) |
| 2004 01 31 | 704 | 0.3-  | 0.1-  | 2006 08 18 | 644 | 0.2- | 0.1+ | 2006 10 20 | 703 | 0.2-  | 0.7-  |
| 2004 02 15 | 704 | 0.5-  | 1.1+  | 2006 08 19 | 699 | 0.3- | 0.1+ | 2006 10 20 | 703 | 0.4-  | 0.9-  |
| 2004 02 15 | 704 | 0.8+  | 0.5+  | 2006 08 19 | 699 | 0.1+ | 0.1- | 2006 10 20 | 703 | 0.0   | 0.9-  |
| 2004 02 15 | 704 | 0.4-  | 0.8-  | 2006 08 19 | 699 | 0.1- | 0.2+ | 2007 11 16 | 704 | 0.6+  | 0.3+  |
| 2004 02 23 | 704 | 0.9-  | 0.3-  | 2006 08 19 | 699 | 0.0  | 0.6+ | 2007 11 16 | 704 | 0.3+  | 0.3+  |
| 2004 02 23 | 704 | 0.4+  | 0.4+  | 2006 08 19 | A50 | 0.0  | 0.3- | 2007 11 16 | 704 | 0.9-  | 0.1-  |
| 2004 02 23 | 704 | 0.9-  | 0.4-  | 2006 08 19 | A50 | 0.1+ | 0.3- | 2007 11 16 | 704 | 0.1-  | 0.2+  |
| 2004 02 23 | 704 | 0.8+  | 0.9+  | 2006 08 23 | A50 | 0.2- | 0.5- | 2007 12 03 | 704 | 0.0   | 0.6+  |
| 2005 04 02 | E12 | 0.1+  | 0.4+  | 2006 08 23 | A50 | 0.5- | 0.2+ | 2007 12 03 | 704 | 0.3-  | 0.1+  |
| 2005 04 02 | E12 | 0.1+  | 0.3+  | 2006 08 23 | A50 | 0.2- | 0.2- | 2007 12 03 | 704 | 0.2-  | 0.0   |
| 2005 04 02 | E12 | 0.2-  | 0.1+  | 2006 08 23 | A50 | 0.4+ | 0.1+ | 2007 12 03 | 704 | 0.1+  | 0.6+  |

(173004)\* 2006 OH<sub>14</sub> = 1997 WZ<sub>23</sub> = 2007 UF<sub>116</sub>

Discovered 2006 July 21 by the Mt. Lemmon Survey at Mount Lemmon.

Id. G. V. Williams (*MPO* 128277)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |  |  |  |  |
|----------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| <i>M</i> | 46.46546   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i> | 0.19836405 | $\omega$ | 218.49788 | +0.99915087 |      | -0.03176056 |   |  |  |  |  |
| <i>a</i> | 2.9117947  | $\Omega$ | 143.29630 | +0.03915713 |      | +0.93014726 |   |  |  |  |  |
| <i>e</i> | 0.0661141  | <i>i</i> | 2.51677   | -0.01281621 |      | +0.36581054 |   |  |  |  |  |
| <i>P</i> | 4.97       | <i>H</i> | 16.1      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |  |  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 19 | 691 | 0.4+ | 0.0  | 2006 05 24 | G96 | 0.2+ | 0.3- | 2007 10 31 | 691 | 0.3+ | 0.5+ |
| 1997 11 21 | 691 | 0.1- | 0.5- | 2006 07 21 | G96 | 0.2- | 0.0  | 2007 10 31 | 691 | 0.3- | 0.3+ |
| 1997 11 21 | 691 | 0.1+ | 0.3- | 2006 07 21 | G96 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.1- | 0.6+ |
| 1997 11 21 | 691 | 0.4+ | 0.5- | 2006 07 21 | G96 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.1+ | 0.4+ |
| 1997 12 04 | 691 | 0.4- | 0.0  | 2006 07 21 | G96 | 0.3+ | 0.1+ | 2007 11 04 | 691 | 0.6- | 0.3+ |
| 1997 12 04 | 691 | 0.8+ | 1.5- | 2006 07 28 | J87 | 0.5- | 0.1+ | 2007 11 04 | 691 | 0.0  | 0.6+ |
| 1997 12 04 | 691 | 0.7- | 0.1+ | 2006 07 29 | J87 | 0.2- | 0.3+ | 2007 11 08 | 691 | 0.1- | 0.1+ |
| 2004 01 30 | 691 | 0.0  | 0.3+ | 2006 07 29 | J87 | 0.2- | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.   |



2007 DEC. 24

M.P.O. 129539

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 19 | 704 | 0.3+  | 0.5+  | 2006 07 30 | E12 | (0.1− | 1.6+) | 2007 11 18 | 704 | (1.5+ | 0.1+) |
| 2001 08 19 | 704 | 0.2−  | 0.2−  | 2006 07 30 | E12 | 0.6+  | 0.2+  | 2007 11 18 | 704 | 0.4−  | 0.4+  |
| 2001 09 11 | 704 | 0.0   | 0.4+  | 2006 07 30 | E12 | 0.4+  | 0.5+  | 2007 11 18 | 704 | 1.0+  | 1.0−  |
| 2001 09 11 | 704 | 0.8+  | 0.3−  | 2006 07 30 | E12 | 0.7+  | 0.2+  | 2007 11 20 | 704 | 0.9+  | 1.2−  |
| 2001 09 11 | 704 | 1.0+  | 0.3+  | 2006 08 28 | E12 | 0.2+  | 0.4−  | 2007 11 20 | 704 | 1.2+  | 0.5+  |
| 2001 09 11 | 704 | 0.7+  | 0.7−  | 2006 08 28 | E12 | 0.9−  | 0.5+  | 2007 11 20 | 704 | 0.2+  | 0.6−  |
| 2001 09 11 | 704 | 0.5+  | 0.3−  | 2006 08 28 | E12 | 0.1−  | 0.1−  | 2007 12 04 | G96 | 0.5+  | 0.4−  |
| 2001 10 14 | 644 | 0.6−  | 0.4+  | 2006 09 27 | E12 | 0.5−  | 0.0   | 2007 12 04 | G96 | 0.3+  | 0.3−  |
| 2001 10 14 | 644 | 0.1−  | 0.4+  | 2006 09 27 | E12 | 1.3−  | 0.4+  | 2007 12 04 | G96 | 0.4+  | 0.2−  |
| 2001 10 14 | 644 | 0.8−  | 0.3−  | 2006 09 27 | E12 | 0.2+  | 0.1−  | 2007 12 04 | G96 | 0.7+  | 0.4−  |
| 2002 11 07 | 645 | 0.1−  | 0.1+  | 2006 09 27 | E12 | 0.1−  | 0.6−  | 2007 12 05 | 691 | 0.4−  | 0.2+  |
| 2002 11 07 | 645 | 0.1−  | 0.0   | 2007 11 02 | G96 | 0.0   | 0.0   | 2007 12 05 | 691 | 0.4−  | 0.3+  |
| 2002 12 11 | 704 | 1.1+  | 0.5+  | 2007 11 02 | G96 | 0.3+  | 0.4+  | 2007 12 05 | 691 | 0.4−  | 0.3+  |
| 2002 12 11 | 704 | 0.0   | 0.5+  | 2007 11 02 | G96 | 0.1−  | 0.2−  | 2007 12 15 | 704 | 0.3+  | 0.3−  |
| 2002 12 11 | 704 | (2.3+ | 0.8+) | 2007 11 02 | G96 | 0.5−  | 0.3−  | 2007 12 15 | 704 | 0.4+  | 0.5−  |
| 2002 12 11 | 704 | 0.0   | 0.7+  | 2007 11 14 | 699 | (0.5− | 1.8−) | 2007 12 15 | 704 | 0.5+  | 0.1−  |
| 2002 12 14 | 704 | 0.0   | 0.2−  | 2007 11 14 | 699 | 0.5−  | 0.5−  | 2007 12 15 | 704 | 1.4+  | 0.1−  |
| 2002 12 14 | 704 | 0.4+  | 0.6−  | 2007 11 14 | 699 | 1.1−  | 0.2+  |            |     |       |       |
| 2002 12 14 | 704 | (0.0  | 1.7−) | 2007 11 14 | 699 | 0.9−  | 0.2−  |            |     |       |       |

(173006)\* 2006 PC<sub>6</sub> = 1996 GE<sub>15</sub>

Discovered 2006 Aug. 12 by NEAT at Palomar.

Id. A. Doppler (MPO 109595)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 19.14788   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22501012 | $\omega$ | 269.76330 | +0.75346764   | −0.65171008 |
| <i>a</i> | 2.6771211  | $\Omega$ | 130.90579 | +0.63968683   | +0.69606986 |
| <i>e</i> | 0.0282510  | <i>i</i> | 6.60634   | +0.15194498   | +0.30126520 |
| <i>P</i> | 4.38       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 04 13 | 691 | 0.1+  | 0.2−  | 2005 04 07 | 691 | 0.3+ | 0.8+ | 2006 08 15 | 644 | 0.2+ | 0.1+ |
| 1996 04 13 | 691 | 0.2+  | 0.5−  | 2005 04 07 | 691 | 0.2+ | 0.6+ | 2007 11 11 | 704 | 0.9− | 0.2− |
| 1996 04 13 | 691 | 0.1+  | 0.2−  | 2006 05 26 | G96 | 0.5− | 0.1− | 2007 11 11 | 704 | 0.5+ | 0.2+ |
| 1996 04 21 | 691 | 0.5−  | 0.1−  | 2006 05 26 | G96 | 0.1+ | 0.4− | 2007 11 11 | 704 | 0.1− | 0.4− |
| 1996 04 21 | 691 | 0.3−  | 0.0   | 2006 05 26 | G96 | 0.1+ | 0.0  | 2007 11 11 | 704 | 0.3+ | 0.5+ |
| 1996 04 21 | 691 | 0.1−  | 0.2−  | 2006 05 26 | G96 | 0.1+ | 0.2− | 2007 11 11 | 704 | 0.1− | 0.9− |
| 2002 10 01 | 699 | 0.5−  | 0.9+  | 2006 08 12 | 644 | 0.1+ | 0.0  | 2007 11 17 | 703 | 0.5+ | 0.5+ |
| 2002 10 01 | 699 | 0.3+  | 0.9+  | 2006 08 12 | 644 | 0.1+ | 0.0  | 2007 11 17 | 703 | 0.8− | 0.1− |
| 2002 10 01 | 699 | (1.3− | 2.0+) | 2006 08 12 | 644 | 0.1+ | 0.3+ | 2007 11 17 | 703 | 0.9− | 0.2+ |
| 2002 10 01 | 699 | 0.8−  | 0.5+  | 2006 08 14 | 644 | 0.3− | 0.1− | 2007 11 17 | 703 | 0.1+ | 0.4+ |
| 2005 02 09 | 691 | 0.1−  | 0.8+  | 2006 08 14 | 644 | 0.3− | 0.0  | 2007 12 05 | 699 | 0.2+ | 0.2+ |
| 2005 02 09 | 691 | 0.1+  | 0.4+  | 2006 08 14 | 644 | 0.3+ | 0.0  | 2007 12 05 | 699 | 1.1+ | 0.4+ |
| 2005 02 09 | 691 | 0.2−  | 0.6−  | 2006 08 15 | 644 | 0.1− | 0.3− | 2007 12 05 | 699 | 0.5+ | 0.2+ |
| 2005 04 07 | 691 | 0.3+  | 0.5+  | 2006 08 15 | 644 | 0.1+ | 0.2− | 2007 12 05 | 699 | 0.8− | 1.7+ |

(173007)\* 2006 PU<sub>6</sub> = 2005 GW<sub>57</sub>

Discovered 2006 Aug. 12 by NEAT at Palomar.

Id. G. V. Williams (MPO 103977)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 77.58610   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.19225920 | $\omega$ | 257.44043 | +0.86122411   | +0.50526802 |
| <i>a</i> | 2.9731122  | $\Omega$ | 72.18768  | −0.44110901   | +0.79664346 |
| <i>e</i> | 0.2189434  | <i>i</i> | 3.29654   | −0.25242005   | +0.33175809 |
| <i>P</i> | 5.13       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 05 | 691 | 0.0   | 0.3−  | 2001 09 12 | 704 | 0.9+ | 0.0  | 2006 08 12 | 644 | 0.3− | 0.1− |
| 1991 10 05 | 691 | 0.1+  | 0.2−  | 2001 09 12 | 704 | 0.7− | 0.7− | 2006 08 17 | 644 | 0.2− | 0.5− |
| 1991 10 05 | 691 | 0.1−  | 0.5−  | 2005 04 06 | G96 | 0.6+ | 0.3− | 2006 08 17 | 644 | 0.2− | 0.1+ |
| 2001 08 01 | 644 | 0.6+  | 1.5+  | 2005 04 06 | G96 | 0.6− | 1.0+ | 2006 08 17 | 644 | 0.4− | 0.0  |
| 2001 08 01 | 644 | (0.3+ | 1.6+) | 2005 04 06 | G96 | 0.2+ | 0.3− | 2006 08 20 | 644 | 0.3− | 0.1− |
| 2001 08 01 | 644 | (0.4+ | 1.7+) | 2005 04 06 | G96 | 0.5− | 1.2− | 2006 08 20 | 644 | 0.3− | 0.1+ |
| 2001 08 11 | 608 | 0.0   | 0.6+  | 2005 04 07 | G96 | 0.5+ | 0.4+ | 2006 08 20 | 644 | 0.3− | 0.0  |
| 2001 08 11 | 608 | 0.9−  | 0.5+  | 2005 04 07 | G96 | 0.4+ | 0.1− | 2007 11 14 | 691 | 0.1− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 11 | 608 | 0.2− | 0.9+ | 2005 04 07 | G96 | 0.0  | 0.1− | 2007 11 14 | 691 | 0.1− | 0.2− |
| 2001 08 25 | 704 | 0.8− | 0.8+ | 2005 04 07 | G96 | 0.3− | 0.3+ | 2007 11 14 | 691 | 0.3+ | 0.4+ |
| 2001 08 25 | 704 | 0.3+ | 0.2+ | 2005 05 10 | G96 | 0.1+ | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.5+ |
| 2001 08 25 | 704 | 0.3+ | 0.1+ | 2005 05 10 | G96 | 0.2+ | 0.4+ | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2001 08 25 | 704 | 0.6+ | 0.4− | 2005 05 10 | G96 | 0.4+ | 0.2− | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2001 09 12 | 704 | 0.5+ | 0.6+ | 2005 05 10 | G96 | 0.4− | 0.1+ | 2007 12 15 | 691 | 0.2+ | 0.1− |
| 2001 09 12 | 704 | 0.7+ | 0.9+ | 2006 08 12 | 644 | 0.2+ | 0.2− | 2007 12 15 | 691 | 0.0  | 0.1+ |
| 2001 09 12 | 704 | 0.5+ | 0.1+ | 2006 08 12 | 644 | 0.4− | 0.0  | 2007 12 15 | 691 | 0.4− | 0.3− |

(173008)\* 2006 PL<sub>9</sub> = 2001 TF<sub>223</sub>

Discovered 2006 Aug. 13 by NEAT at Palomar.

Id. A. Doppler (MPO 103980)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 72.55492   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17944850 | $\omega$ | 150.72469 | +0.89591428   | +0.44422318 |
| <i>a</i> | 3.1129787  | $\Omega$ | 182.90352 | −0.41429903   | +0.83405660 |
| <i>e</i> | 0.1497348  | <i>i</i> | 2.07813   | −0.16029323   | +0.32713201 |
| <i>P</i> | 5.49       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 05 15 | 691 | 0.1− | 0.2− | 2005 05 08 | G96 | 0.1− | 0.1− | 2006 08 16 | 644 | 0.1− | 0.3− |
| 1994 05 15 | 691 | 0.2+ | 0.6+ | 2005 05 08 | G96 | 0.1− | 0.2− | 2006 08 16 | 644 | 0.0  | 0.3+ |
| 1994 05 15 | 691 | 0.2− | 0.5+ | 2005 05 08 | G96 | 0.0  | 0.1+ | 2006 08 16 | 644 | 0.2+ | 0.1− |
| 2001 09 21 | 704 | 0.3− | 1.4+ | 2005 05 08 | G96 | 0.7+ | 0.1+ | 2006 08 22 | 644 | 0.1+ | 0.1− |
| 2001 09 21 | 704 | 0.1− | 0.1+ | 2005 06 13 | G96 | 0.3+ | 0.1+ | 2006 08 22 | 644 | 0.2− | 0.0  |
| 2001 09 21 | 704 | 0.3− | 1.1+ | 2005 06 13 | G96 | 0.4+ | 0.0  | 2006 08 22 | 644 | 0.3− | 0.1+ |
| 2001 09 21 | 704 | 0.1+ | 1.1+ | 2005 06 13 | G96 | 0.7+ | 0.6− | 2006 10 17 | G96 | 0.1− | 0.6− |
| 2001 09 21 | 704 | 1.1− | 0.6+ | 2005 06 13 | G96 | 0.1− | 0.0  | 2006 10 17 | G96 | 0.3− | 0.1+ |
| 2001 10 14 | 291 | 0.1+ | 0.3− | 2006 05 26 | G96 | 0.0  | 0.2− | 2006 10 17 | G96 | 0.0  | 0.0  |
| 2001 10 14 | 291 | 0.3+ | 0.2− | 2006 05 26 | G96 | 0.1+ | 0.4+ | 2006 10 17 | G96 | 0.8− | 0.1+ |
| 2001 10 14 | 291 | 0.3+ | 0.2− | 2006 05 26 | G96 | 0.4+ | 0.2− | 2007 11 09 | 691 | 0.3− | 0.1+ |
| 2001 10 18 | 644 | 0.1− | 0.6+ | 2006 05 26 | G96 | 0.1+ | 0.2− | 2007 11 09 | 691 | 0.7− | 0.5+ |
| 2001 10 18 | 644 | 0.4− | 0.7+ | 2006 08 13 | 644 | 0.3− | 0.1− | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2001 10 18 | 644 | 0.3+ | 0.5+ | 2006 08 13 | 644 | 0.1+ | 0.1− | 2007 12 15 | G96 | 0.7+ | 0.5− |
| 2005 04 11 | G96 | 0.4− | 0.0  | 2006 08 13 | 644 | 0.2+ | 0.3− | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2005 04 11 | G96 | 0.5+ | 0.2− | 2006 08 15 | 644 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.5+ | 0.6− |
| 2005 04 11 | G96 | 0.6+ | 0.2− | 2006 08 15 | 644 | 0.0  | 0.3− | 2007 12 15 | G96 | 0.4+ | 0.2+ |
| 2005 04 11 | G96 | 0.5− | 1.3+ | 2006 08 15 | 644 | 0.2− | 0.2+ |            |     |      |      |

(173009)\* 2006 PB<sub>10</sub> = 2001 QA<sub>290</sub> = 2004 FQ<sub>152</sub>

Discovered 2006 Aug. 13 by NEAT at Palomar.

Id. G. V. Williams (MPO 103981)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 37.42222   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.19745656 | $\omega$ | 139.33621 | +0.84966427   | −0.52714204 |
| <i>a</i> | 2.9207093  | $\Omega$ | 252.48149 | +0.47996709   | +0.78397294 |
| <i>e</i> | 0.1625734  | <i>i</i> | 0.83235   | +0.21840840   | +0.32788367 |
| <i>P</i> | 4.99       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 22 | 645 | 0.1− | 0.1+ | 2005 06 13 | G96 | 0.4+ | 0.4− | 2006 08 29 | 704 | 0.3−  | 0.6−  |
| 1999 03 22 | 645 | 0.1− | 0.0  | 2005 06 13 | G96 | 0.1− | 0.2+ | 2006 09 14 | 703 | (1.8+ | 0.6−) |
| 2001 08 16 | 704 | 0.8− | 0.8+ | 2006 07 18 | G96 | 0.1+ | 0.2− | 2006 09 14 | 703 | 0.7−  | 0.1+  |
| 2001 08 16 | 704 | 0.8− | 0.4+ | 2006 07 18 | G96 | 0.2− | 0.1− | 2006 09 14 | 703 | 0.1+  | 0.3−  |
| 2001 08 16 | 704 | 0.9− | 0.5+ | 2006 07 18 | G96 | 0.4− | 0.3− | 2006 09 14 | 703 | (2.1− | 0.3+) |
| 2001 08 16 | 704 | 0.9− | 1.0+ | 2006 07 18 | G96 | 0.8− | 0.9− | 2006 09 26 | G96 | 0.2+  | 0.0   |
| 2001 08 21 | 691 | 0.4+ | 0.4+ | 2006 08 13 | 644 | 0.4− | 0.3− | 2006 09 26 | G96 | 0.1−  | 0.1−  |
| 2001 08 21 | 691 | 0.2+ | 0.3+ | 2006 08 13 | 644 | 0.0  | 0.1+ | 2006 09 26 | G96 | 0.2−  | 0.2+  |
| 2001 08 21 | 691 | 0.2+ | 0.3+ | 2006 08 13 | 644 | 0.2+ | 0.2+ | 2006 09 26 | G96 | 0.1+  | 0.0   |
| 2001 09 21 | 704 | 0.5+ | 0.2+ | 2006 08 15 | 644 | 0.2− | 0.0  | 2006 10 21 | G96 | 0.7+  | 0.2−  |
| 2001 09 21 | 704 | 0.6− | 0.3+ | 2006 08 15 | 644 | 0.1− | 0.0  | 2006 10 21 | G96 | 0.6+  | 0.8−  |
| 2001 09 21 | 704 | 0.2− | 0.3− | 2006 08 15 | 644 | 0.2− | 0.1+ | 2006 10 21 | G96 | 0.3+  | 0.1−  |
| 2001 09 21 | 704 | 0.5− | 0.2− | 2006 08 28 | 691 | 0.2+ | 0.3+ | 2006 10 21 | G96 | 0.6+  | 0.3−  |
| 2002 12 31 | 704 | 0.3+ | 0.7+ | 2006 08 28 | 699 | 1.5− | 0.0  | 2006 11 16 | G96 | 0.3+  | 0.1+  |
| 2002 12 31 | 704 | 0.0  | 0.3+ | 2006 08 28 | 691 | 0.0  | 0.2+ | 2006 11 16 | G96 | 0.5−  | 0.4−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 31 | 704 | 0.5+ | 0.6- | 2006 08 28 | 691 | 0.1+ | 0.4+ | 2006 11 16 | G96 | 0.5- | 0.2- |
| 2002 12 31 | 704 | 0.6+ | 0.1- | 2006 08 28 | 699 | 0.4+ | 0.3+ | 2006 11 16 | G96 | 0.2+ | 0.0  |
| 2004 03 17 | 691 | 0.1- | 0.1+ | 2006 08 28 | 703 | 0.4+ | 1.1- | 2007 12 03 | 691 | 0.1- | 0.3+ |
| 2004 03 17 | 691 | 0.3+ | 0.1+ | 2006 08 28 | 703 | 1.1- | 0.6- | 2007 12 03 | 691 | 1.0- | 0.1- |
| 2004 03 17 | 691 | 0.5+ | 0.2- | 2006 08 28 | 699 | 0.5+ | 1.0+ | 2007 12 03 | 691 | 1.2+ | 0.2- |
| 2004 03 28 | 291 | 0.5+ | 0.5+ | 2006 08 28 | 703 | 0.1+ | 1.1+ | 2007 12 15 | 691 | 0.7+ | 0.0  |
| 2004 03 28 | 291 | 0.3+ | 0.2+ | 2006 08 28 | 703 | 0.1+ | 0.9+ | 2007 12 15 | 691 | 0.6- | 0.6+ |
| 2004 03 28 | 291 | 0.2+ | 0.4+ | 2006 08 28 | 699 | 0.4+ | 0.4+ | 2007 12 15 | 691 | 0.5- | 0.4+ |
| 2005 06 13 | G96 | 0.4- | 0.1+ | 2006 08 29 | 704 | 0.3- | 1.1- |            |     |      |      |
| 2005 06 13 | G96 | 0.1+ | 0.2- | 2006 08 29 | 704 | 0.7- | 0.5- |            |     |      |      |

**(173010)\* 2006 PW<sub>11</sub> = 1999 RR<sub>66</sub>**

Discovered 2006 Aug. 13 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 103983)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M         |            | P        |           | Q           |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 135.04780 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.28047613 | $\omega$ | 190.71220 | +0.64414382 | +0.76237112 |
| <i>a</i>  | 2.3113841  | $\Omega$ | 119.42029 | -0.69640051 | +0.61814954 |
| <i>e</i>  | 0.1798364  | <i>i</i> | 4.09500   | -0.31639385 | +0.19152394 |
| <i>P</i>  | 3.51       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 04 | 699 | 0.5-  | 0.5+  | 2002 05 18 | 704 | 0.5- | 1.3+ | 2006 08 23 | 704 | 0.5- | 0.6+ |
| 1999 09 04 | 699 | 0.5+  | 0.7+  | 2002 05 18 | 704 | 0.0  | 0.0  | 2006 08 28 | 704 | 0.7- | 0.8- |
| 1999 09 04 | 699 | 0.3+  | 0.7+  | 2002 05 18 | 704 | 0.6- | 0.4+ | 2006 08 28 | 704 | 0.6- | 0.0  |
| 1999 09 07 | 704 | 0.4-  | 0.5+  | 2003 12 01 | 704 | 0.3+ | 0.6+ | 2006 08 28 | 704 | 0.2- | 0.6- |
| 1999 09 07 | 704 | 0.4-  | 0.3+  | 2003 12 01 | 704 | 0.3- | 0.3+ | 2006 08 28 | 704 | 0.3- | 0.3+ |
| 1999 09 07 | 704 | 0.1-  | 0.8-  | 2003 12 01 | 704 | 0.6- | 1.0+ | 2006 08 28 | 704 | 0.6+ | 0.5- |
| 1999 09 07 | 704 | 0.2-  | 0.9+  | 2003 12 19 | 691 | 0.3- | 0.1- | 2006 08 28 | 699 | 0.0  | 0.2+ |
| 1999 09 07 | 704 | 0.4+  | 0.2+  | 2003 12 19 | 691 | 0.4- | 0.1- | 2006 08 28 | 699 | 0.3- | 0.3- |
| 1999 09 09 | 704 | 0.5+  | 0.1-  | 2003 12 19 | 691 | 0.2- | 0.1- | 2006 08 28 | 699 | 0.8+ | 0.3+ |
| 1999 09 09 | 704 | 0.3-  | 0.4+  | 2006 07 25 | 644 | 0.1- | 0.3+ | 2006 08 28 | 699 | 0.9+ | 0.4+ |
| 1999 09 09 | 704 | 0.6-  | 1.3+  | 2006 07 25 | 644 | 0.0  | 0.3+ | 2006 08 31 | 704 | 0.6- | 0.5- |
| 2001 01 15 | 691 | 0.0   | 0.5+  | 2006 07 25 | 644 | 0.3- | 0.1+ | 2006 08 31 | 704 | 0.2+ | 0.4+ |
| 2001 01 15 | 691 | 0.4+  | 0.6+  | 2006 08 13 | 644 | 0.1+ | 0.1+ | 2006 08 31 | 704 | 0.9+ | 0.3- |
| 2001 01 15 | 691 | 0.3+  | 0.6+  | 2006 08 13 | 644 | 0.1- | 0.1+ | 2007 11 11 | G96 | 0.3+ | 0.5- |
| 2002 04 30 | 644 | 0.3+  | 0.4+  | 2006 08 13 | 644 | 0.1+ | 0.1+ | 2007 11 11 | G96 | 0.5+ | 0.5- |
| 2002 04 30 | 644 | 0.3-  | 0.9+  | 2006 08 15 | 644 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.3- | 0.3- |
| 2002 04 30 | 644 | 0.9+  | 0.7+  | 2006 08 15 | 644 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.1- | 0.4- |
| 2002 05 08 | 704 | (1.8+ | 3.5+) | 2006 08 15 | 644 | 0.1+ | 0.0  | 2007 12 05 | G96 | 0.4+ | 0.9- |
| 2002 05 08 | 704 | (1.9+ | 2.2+) | 2006 08 23 | 704 | 0.8+ | 0.1- | 2007 12 05 | G96 | 0.1+ | 0.5- |
| 2002 05 08 | 704 | (1.8+ | 0.8+) | 2006 08 23 | 704 | 0.2- | 0.2- | 2007 12 05 | G96 | 0.5+ | 0.7- |
| 2002 05 18 | 704 | 0.1-  | 0.4+  | 2006 08 23 | 704 | 0.0  | 0.2- | 2007 12 05 | G96 | 0.1+ | 0.4- |

**(173011)\* 2006 PL<sub>13</sub> = 2002 JC<sub>138</sub>**

Discovered 2006 Aug. 14 by the Siding Spring Survey at Siding Spring.

Id. A. Doppler (*MPO* 109600)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M         |            | P        |           | Q           |             |
|-----------|------------|----------|-----------|-------------|-------------|
| 239.72192 |            | (2000.0) |           |             |             |
| <i>n</i>  | 0.28658653 | $\omega$ | 299.90169 | -0.96028022 | +0.25915961 |
| <i>a</i>  | 2.2784117  | $\Omega$ | 255.28261 | -0.20459391 | -0.90599094 |
| <i>e</i>  | 0.1068612  | <i>i</i> | 6.13899   | -0.18974518 | -0.33468897 |
| <i>P</i>  | 3.44       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 11 | 691 | 0.1- | 0.3- | 2005 02 14 | 703 | 0.2+ | 0.7- | 2006 09 25 | G96 | 0.1- | 0.2+ |
| 1996 10 11 | 691 | 0.3- | 0.1+ | 2005 02 14 | 703 | 0.6+ | 0.2+ | 2006 09 25 | G96 | 0.2+ | 0.3- |
| 1996 10 11 | 691 | 0.2- | 0.1- | 2005 02 14 | 703 | 0.1+ | 0.2+ | 2007 11 01 | 691 | 0.3- | 0.1- |
| 2002 05 09 | 644 | 0.4+ | 1.0+ | 2005 02 14 | 703 | 0.5+ | 0.1+ | 2007 11 01 | 691 | 0.1+ | 0.0  |
| 2002 05 09 | 644 | 0.1+ | 0.7+ | 2005 03 03 | 703 | 0.1+ | 0.3+ | 2007 11 01 | 691 | 0.0  | 0.1+ |
| 2002 05 09 | 644 | 0.2+ | 0.7+ | 2005 03 03 | 703 | 0.2- | 0.0  | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 2002 05 11 | 704 | 0.0  | 0.6+ | 2005 03 03 | 703 | 0.0  | 0.5+ | 2007 11 09 | 691 | 0.0  | 0.1- |
| 2002 05 11 | 704 | 0.5+ | 0.1- | 2005 03 03 | 703 | 0.0  | 0.6+ | 2007 11 09 | 691 | 0.1+ | 0.1- |
| 2002 05 11 | 704 | 0.2+ | 0.4- | 2006 08 14 | E12 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.3- |
| 2002 05 11 | 704 | 0.4- | 0.3+ | 2006 08 14 | E12 | 0.2- | 0.9+ | 2007 11 17 | 691 | 0.0  | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 11 | 704 | 0.4- | 0.1- | 2006 08 14 | E12 | 0.7- | 0.3+ | 2007 11 17 | 691 | 0.1- | 0.1- |
| 2003 10 18 | 691 | 0.3+ | 0.0  | 2006 08 14 | E12 | 0.9- | 0.6+ | 2007 12 05 | 704 | 1.0- | 0.8+ |
| 2003 10 18 | 691 | 0.7+ | 0.4+ | 2006 08 14 | E12 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.5- | 1.3+ |
| 2003 10 18 | 691 | 0.4+ | 0.2+ | 2006 08 15 | 644 | 0.3- | 0.3+ | 2007 12 05 | 704 | 0.8- | 1.6+ |
| 2005 01 13 | 703 | 0.9+ | 0.1- | 2006 08 15 | 644 | 0.3- | 0.5+ | 2007 12 05 | 704 | 0.5- | 1.1+ |
| 2005 01 13 | 703 | 0.2+ | 0.7+ | 2006 08 15 | 644 | 0.3- | 0.0  | 2007 12 05 | 704 | 0.6- | 1.2+ |
| 2005 01 13 | 703 | 0.8- | 0.5- | 2006 09 25 | G96 | 0.5+ | 0.1+ |            |     |      |      |
| 2005 01 13 | 703 | 0.2- | 0.6- | 2006 09 25 | G96 | 0.3- | 0.2- |            |     |      |      |

**(173012)\* 2006 PG<sub>17</sub>**

Discovered 2006 Aug. 15 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| M        |            | P        |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| 41.89260 |            | (2000.0) |           |             |             |
| <i>n</i> | 0.12448286 | $\omega$ | 213.36791 | +0.99452861 | -0.09583842 |
| <i>a</i> | 3.9724919  | $\Omega$ | 152.04291 | +0.10415816 | +0.94018347 |
| <i>e</i> | 0.2521435  | <i>i</i> | 5.08684   | -0.00799526 | +0.32690983 |
| <i>P</i> | 7.92       | <i>H</i> | 14.3      | <i>G</i>    | 0.15        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 12 03 | 691 | 0.1-  | 0.3-  | 2006 08 25 | 704 | 0.4- | 0.4+ | 2006 09 30 | 703 | 0.2-  | 0.4-  |
| 1991 12 03 | 691 | 0.7+  | 0.6-  | 2006 08 27 | 691 | 0.1- | 0.3+ | 2006 09 30 | 703 | 0.1+  | 0.4-  |
| 1991 12 03 | 691 | 0.4-  | 0.5-  | 2006 08 27 | 699 | 0.9+ | 0.9+ | 2006 09 30 | 703 | 0.6-  | 0.3-  |
| 1992 12 25 | 691 | 0.1-  | 0.4+  | 2006 08 27 | 691 | 0.1- | 0.2+ | 2006 09 30 | 703 | 0.3-  | 0.6-  |
| 1992 12 25 | 691 | 0.2+  | 0.2+  | 2006 08 27 | 699 | 0.3+ | 0.5+ | 2006 10 02 | G96 | 1.3+  | 0.8-  |
| 1992 12 25 | 691 | 0.1-  | 0.3+  | 2006 08 27 | 691 | 0.0  | 0.3+ | 2006 10 02 | G96 | 0.0   | 0.5-  |
| 1998 08 17 | 704 | 1.4+  | 1.1-  | 2006 08 27 | 699 | 0.2+ | 0.7+ | 2006 10 02 | G96 | 0.2-  | 0.4-  |
| 1998 08 17 | 704 | (2.3+ | 0.7+) | 2006 08 27 | 699 | 0.4+ | 0.6+ | 2006 10 02 | G96 | 0.3-  | 0.4-  |
| 1998 08 17 | 704 | 1.1-  | 1.9-  | 2006 08 28 | 703 | 0.3- | 0.2- | 2006 10 09 | 644 | 0.8+  | 0.1-  |
| 1998 08 17 | 704 | 0.6-  | 0.2-  | 2006 08 28 | 703 | 0.2+ | 0.1+ | 2006 10 09 | 644 | 0.0   | 0.2+  |
| 1998 08 17 | 704 | (4.4- | 0.2+) | 2006 08 28 | 703 | 0.2- | 0.1+ | 2006 10 09 | 644 | 0.0   | 0.3+  |
| 1998 08 30 | 699 | 0.5+  | 1.1+  | 2006 08 28 | 703 | 0.2+ | 0.2+ | 2006 11 17 | 704 | 1.3+  | 0.1+  |
| 1998 08 30 | 699 | 0.6+  | 1.0+  | 2006 08 30 | 704 | 0.2+ | 0.3+ | 2006 11 17 | 704 | 0.1-  | 0.5+  |
| 1998 08 30 | 699 | 0.2-  | 0.9+  | 2006 08 30 | 704 | 0.1+ | 0.1- | 2006 11 17 | 704 | 0.2+  | 0.4+  |
| 1998 09 12 | 691 | 0.1+  | 0.0   | 2006 08 30 | 704 | 0.1+ | 0.0  | 2006 11 25 | G96 | 0.2+  | 0.3-  |
| 1998 09 12 | 691 | 0.3+  | 0.1-  | 2006 08 30 | 704 | 0.4- | 0.8+ | 2006 11 25 | G96 | 0.2+  | 0.2-  |
| 1998 09 12 | 691 | 0.2+  | 0.4-  | 2006 09 14 | 703 | 0.1- | 0.2+ | 2006 11 25 | G96 | 0.8-  | 0.1+  |
| 1999 12 06 | 704 | 0.3-  | 0.1+  | 2006 09 14 | 703 | 0.2+ | 0.0  | 2006 11 25 | G96 | 0.2-  | 0.4-  |
| 1999 12 06 | 704 | 0.3+  | 0.9-  | 2006 09 14 | 703 | 0.1- | 1.0+ | 2006 11 27 | 703 | 1.1-  | 1.1-  |
| 1999 12 06 | 704 | 0.1-  | 0.6-  | 2006 09 14 | 703 | 0.2- | 0.5- | 2006 11 27 | 703 | (2.2- | 0.3-) |
| 1999 12 06 | 704 | 0.0   | 0.0   | 2006 09 16 | 699 | 1.3- | 0.9+ | 2006 11 27 | 703 | 0.6-  | 0.2-  |
| 1999 12 06 | 704 | 0.4-  | 0.2-  | 2006 09 16 | 699 | 0.3+ | 0.5+ | 2006 11 27 | 703 | 1.1-  | 1.2-  |
| 2002 02 13 | 645 | 0.0   | 0.3+  | 2006 09 16 | 699 | 0.4+ | 0.2- | 2006 12 12 | 703 | (0.1+ | 2.2-) |
| 2002 02 13 | 645 | 0.1+  | 0.1+  | 2006 09 16 | 699 | 0.7- | 0.5+ | 2006 12 12 | 703 | 0.9+  | 1.1-  |
| 2002 02 13 | 291 | 0.6+  | 0.9+  | 2006 09 17 | 704 | 0.0  | 0.5+ | 2006 12 12 | 703 | 0.7-  | 0.8-  |
| 2002 02 13 | 291 | 0.4+  | 0.8+  | 2006 09 17 | 704 | 0.8- | 1.4+ | 2006 12 12 | 703 | 0.4-  | 1.0-  |
| 2002 02 13 | 291 | 0.1-  | 1.0+  | 2006 09 17 | 704 | 0.8- | 0.0  | 2006 12 13 | 704 | 0.8-  | 0.2+  |
| 2006 08 15 | 644 | 0.2-  | 0.1+  | 2006 09 17 | 704 | 0.1- | 0.1+ | 2006 12 13 | 704 | (1.9- | 0.7-) |
| 2006 08 15 | 644 | 0.3-  | 0.1+  | 2006 09 17 | 704 | 0.1- | 0.4- | 2006 12 13 | 704 | 1.4-  | 0.5-  |
| 2006 08 15 | 644 | 0.3-  | 0.0   | 2006 09 19 | 699 | 0.0  | 0.1- | 2007 11 04 | 704 | 1.0+  | 0.2+  |
| 2006 08 18 | 704 | 0.5+  | 1.1-  | 2006 09 19 | 699 | 0.0  | 1.0+ | 2007 11 04 | 704 | 1.0+  | 0.7-  |
| 2006 08 18 | 704 | 0.8-  | 0.2-  | 2006 09 19 | 699 | 0.3- | 0.3+ | 2007 11 04 | 704 | 0.8+  | 0.2-  |
| 2006 08 18 | 704 | 0.5-  | 0.5-  | 2006 09 20 | 704 | 0.2+ | 0.4+ | 2007 11 04 | 704 | 0.3-  | 0.4+  |

2007 DEC. 24

M.P.O. 129541

Id. G. V. Williams (*MPO* 109604)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    | 162.79574  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b>   |       |      |
|-----------------------------|------------|----------|-----------|-------------|-------------|------------|-------|------|
| <i>n</i>                    | 0.25472976 | $\omega$ | 329.41964 | −0.18106692 | +0.98335468 |            |       |      |
| <i>a</i>                    | 2.4646179  | $\Omega$ | 290.14484 | −0.89902834 | −0.17172956 |            |       |      |
| <i>e</i>                    | 0.1573544  | <i>i</i> | 0.92224   | −0.39870142 | −0.05935083 |            |       |      |
| <i>P</i>                    | 3.87       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i>   | 1     |      |
| Residuals in seconds of arc |            |          |           |             |             |            |       |      |
| 2001 02 23                  | 691        | 0.3+     | 0.3+      | 2005 04 09  | G96         | 0.0        | 0.1+  | 0.5+ |
| 2001 02 23                  | 691        | 0.4+     | 0.0       | 2005 04 09  | G96         | 0.2−       | 0.2+  | 0.3+ |
| 2001 02 23                  | 691        | 0.1−     | 0.4+      | 2005 04 09  | G96         | (1.6−      | 2.2+) | 0.1− |
| 2002 07 22                  | 644        | 0.0      | 0.2−      | 2005 04 09  | G96         | (1.5−      | 1.9+) | 0.2− |
| 2002 07 22                  | 644        | 0.1−     | 0.2+      | 2006 06 20  | G96         | 0.0        | 0.0   | 0.8− |
| 2002 07 22                  | 644        | 0.5−     | 0.1+      | 2006 06 20  | G96         | 0.0        | 0.1+  | 0.3+ |
| 2002 08 07                  | 644        | 0.3−     | 0.2+      | 2006 06 20  | G96         | 0.6−       | 0.2−  | 0.4− |
| 2002 08 07                  | 644        | 0.3−     | 0.3+      | 2006 06 20  | G96         | 0.5+       | 0.9−  | 0.6− |
| 2002 08 07                  | 644        | 0.1−     | 0.5−      | 2006 08 13  | 644         | 0.3−       | 0.2+  | 0.7− |
| 2005 03 08                  | G96        | 0.1+     | 0.1+      | 2006 08 13  | 644         | 0.0        | 0.4+  | 0.2+ |
| 2005 03 08                  | G96        | 0.2+     | 0.1+      | 2006 08 13  | 644         | 0.2−       | 0.1+  | 0.3− |
| 2005 03 08                  | G96        | 0.3−     | 0.1+      | 2006 08 18  | 644         | 0.3+       | 0.1+  | 0.6− |
| 2005 03 08                  | G96        | 0.4−     | 0.0       | 2006 08 18  | 644         | 0.0        | 0.0   | 0.1+ |
| 2005 03 11                  | G96        | 0.0      | 0.1+      | 2006 08 18  | 644         | 0.2+       | 0.1+  | 0.4− |
| 2005 03 11                  | G96        | 0.3+     | 0.3−      | 2006 08 20  | 644         | 0.1+       | 0.1+  | 0.3+ |
| 2005 03 11                  | G96        | 0.2+     | 0.4+      | 2006 08 20  | 644         | 0.0        | 0.1+  | 0.4− |
| 2005 03 11                  | G96        | 0.6−     | 0.1−      | 2006 08 20  | 644         | 0.2−       | 0.1+  | 0.9+ |
|                             |            |          |           |             |             | 2007 12 05 | G96   | 0.9+ |

**(173014)\* 2006 PF<sub>22</sub> = 2005 JD<sub>30</sub>**

Discovered 2006 Aug. 15 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 103994)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    | 140.35075  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |       |     |      |
|-----------------------------|------------|----------|-----------|-------------|------|-------------|-------|-----|------|
| <i>n</i>                    | 0.23791919 | $\omega$ | 86.87685  | +0.11358251 |      | +0.99348393 |       |     |      |
| <i>a</i>                    | 2.5793864  | $\Omega$ | 189.66026 | −0.93238472 |      | +0.10331359 |       |     |      |
| <i>e</i>                    | 0.2379262  | <i>i</i> | 3.21730   | −0.34315850 |      | +0.04812464 |       |     |      |
| <i>P</i>                    | 4.14       | <i>H</i> | 17.0      | <i>G</i>    | 0.15 | <i>U</i>    | 0     |     |      |
| Residuals in seconds of arc |            |          |           |             |      |             |       |     |      |
| 1998 10 14                  | 691        | 0.6−     | 0.5+      | 2005 05 08  | G96  | 0.0         | 0.2+  |     |      |
| 1998 10 14                  | 691        | 0.6−     | 0.2+      | 2005 05 08  | G96  | 0.6−        | 0.3+  |     |      |
| 1998 10 14                  | 691        | 0.4−     | 0.1−      | 2006 07 25  | 644  | 0.4−        | 0.0   |     |      |
| 2001 04 16                  | 645        | 0.1+     | 0.1+      | 2006 07 25  | 644  | 0.4−        | 0.0   |     |      |
| 2001 04 16                  | 645        | 0.1+     | 0.1+      | 2006 07 25  | 644  | 0.3−        | 0.5+  |     |      |
| 2002 09 05                  | 704        | 0.4+     | 0.1+      | 2006 08 15  | 644  | 0.3+        | 0.0   |     |      |
| 2002 09 05                  | 704        | 0.6+     | 0.6−      | 2006 08 15  | 644  | 0.2+        | 0.0   |     |      |
| 2002 09 05                  | 704        | 0.5+     | 0.1−      | 2006 08 15  | 644  | 0.1−        | 0.1+  |     |      |
| 2002 09 05                  | 704        | 0.2+     | 0.1+      | 2006 08 18  | 699  | 0.4+        | 1.2+  |     |      |
| 2002 10 11                  | 645        | 0.1+     | 0.1+      | 2006 08 18  | 699  | 0.4+        | 0.0   |     |      |
| 2002 10 11                  | 645        | 0.2+     | 0.1+      | 2006 08 18  | 699  | 0.6+        | 0.1+  |     |      |
| 2005 03 17                  | G96        | 0.4−     | 0.3+      | 2006 08 18  | 699  | 0.6+        | 0.1+  |     |      |
| 2005 03 17                  | G96        | 0.0      | 0.1+      | 2006 08 29  | 691  | 0.4−        | 0.4−  |     |      |
| 2005 03 17                  | G96        | 0.5−     | 0.2+      | 2006 08 29  | 691  | 0.3−        | 0.1−  |     |      |
| 2005 03 17                  | G96        | 0.1−     | 0.3+      | 2006 08 29  | 691  | 0.2−        | 0.1+  |     |      |
| 2005 05 04                  | G96        | 0.5+     | 0.1+      | 2006 09 14  | 703  | 0.8−        | 0.4+  |     |      |
| 2005 05 04                  | G96        | 0.3+     | 0.1+      | 2006 09 14  | 703  | 0.4−        | 0.7+  |     |      |
| 2005 05 04                  | G96        | 0.2+     | 0.1−      | 2006 09 14  | 703  | 0.5−        | 0.1−  |     |      |
| 2005 05 04                  | G96        | 0.5+     | 0.5+      | 2006 09 14  | 703  | 0.1−        | 0.3−  |     |      |
| 2005 05 08                  | G96        | 0.3−     | 0.5+      | 2006 09 18  | 699  | 0.6+        | 1.3+  |     |      |
| 2005 05 08                  | G96        | 0.4−     | 0.2−      | 2006 09 18  | 699  | (2.2+       | 2.1+) |     |      |
|                             |            |          |           |             |      | 2007 12 05  | G96   | 0.0 | 0.1+ |
|                             |            |          |           |             |      | 2007 12 05  | G96   | 0.0 | 0.2+ |

**(173015)\* 2006 PX<sub>25</sub> = 2005 MW<sub>24</sub>**

Discovered 2006 Aug. 13 by NEAT at Palomar.

Id. A. Doppler (*MPO* 103997)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$                         | 50.81583                                                                                                                          |          | (2000.0)                                                                                      |            | <b>P</b>                                                    |       | <b>Q</b>    |            |     |      |      |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------|-------|-------------|------------|-----|------|------|
| $n$                         | 0.17356669                                                                                                                        | $\omega$ | 230.14868                                                                                     |            | +0.99531220                                                 |       | −0.06581669 |            |     |      |      |
| $a$                         | 3.1829157                                                                                                                         | $\Omega$ | 133.49741                                                                                     |            | +0.08585900                                                 |       | +0.93858994 |            |     |      |      |
| $e$                         | 0.1377932                                                                                                                         | $i$      | 5.60615                                                                                       |            | −0.04451809                                                 |       | +0.33869910 |            |     |      |      |
| $P$                         | 5.68 <th><math>H</math></th> <td>15.3<th><math>G</math></th><td>0.15<th><math>U</math></th><td>0</td><td></td><td></td></td></td> | $H$      | 15.3 <th><math>G</math></th> <td>0.15<th><math>U</math></th><td>0</td><td></td><td></td></td> | $G$        | 0.15 <th><math>U</math></th> <td>0</td> <td></td> <td></td> | $U$   | 0           |            |     |      |      |
| Residuals in seconds of arc |                                                                                                                                   |          |                                                                                               |            |                                                             |       |             |            |     |      |      |
| 2000 07 05                  | 691                                                                                                                               | 0.0      | 0.0                                                                                           | 2005 06 27 | 691                                                         | 0.0   | 0.3+        | 2006 08 31 | 704 | 0.8+ | 1.0− |
| 2000 07 05                  | 691                                                                                                                               | 0.1−     | 0.1+                                                                                          | 2005 06 27 | 691                                                         | 0.1+  | 0.2+        | 2006 08 31 | 704 | 0.9+ | 0.1− |
| 2000 07 05                  | 691                                                                                                                               | 0.2−     | 0.3+                                                                                          | 2005 07 04 | 691                                                         | 0.2−  | 0.5+        | 2006 08 31 | 704 | 0.2− | 0.7− |
| 2001 10 19                  | 608                                                                                                                               | 0.2+     | 0.0                                                                                           | 2005 07 04 | 691                                                         | 0.1+  | 0.3+        | 2006 09 18 | 699 | 0.8− | 0.3+ |
| 2001 10 19                  | 608                                                                                                                               | 0.4−     | 0.2−                                                                                          | 2005 07 04 | 691                                                         | 0.1+  | 0.1−        | 2006 09 18 | 699 | 1.0+ | 1.2+ |
| 2001 10 19                  | 608                                                                                                                               | 0.3−     | 0.7−                                                                                          | 2006 08 13 | 644                                                         | 0.3−  | 0.1+        | 2006 09 18 | 699 | 0.7− | 1.2+ |
| 2001 12 11                  | 704                                                                                                                               | 0.4+     | 0.8+                                                                                          | 2006 08 13 | 644                                                         | 0.3−  | 0.1+        | 2006 09 18 | 699 | 0.1+ | 0.5− |
| 2001 12 11                  | 704                                                                                                                               | 0.1−     | 0.4+                                                                                          | 2006 08 13 | 644                                                         | 0.1−  | 0.3+        | 2007 11 04 | H07 | 0.4− | 0.6+ |
| 2001 12 11                  | 704                                                                                                                               | 0.6+     | 1.2+                                                                                          | 2006 08 21 | 644                                                         | (0.9− | 1.6+)       | 2007 11 04 | H07 | 0.5− | 1.0+ |
| 2003 01 30                  | 644                                                                                                                               | 0.5−     | 0.9+                                                                                          | 2006 08 21 | 644                                                         | 0.6−  | 0.6+        | 2007 11 04 | H07 | 0.2− | 0.4+ |
| 2003 01 30                  | 644                                                                                                                               | 0.1−     | 1.1+                                                                                          | 2006 08 21 | 644                                                         | 0.2−  | 0.5+        | 2007 11 08 | G96 | 0.3− | 0.0  |
| 2003 01 30                  | 644                                                                                                                               | 0.2+     | 1.0+                                                                                          | 2006 08 23 | 704                                                         | 0.2−  | 0.5+        | 2007 11 08 | G96 | 0.0  | 0.5− |
| 2003 01 31                  | 704                                                                                                                               | 0.5−     | 0.4+                                                                                          | 2006 08 23 | 704                                                         | 0.7−  | 0.0         | 2007 11 08 | G96 | 0.0  | 0.0  |
| 2003 01 31                  | 704                                                                                                                               | 0.3+     | 0.4−                                                                                          | 2006 08 23 | 704                                                         | 0.1+  | 1.1+        | 2007 11 08 | G96 | 0.4− | 0.1+ |
| 2003 01 31                  | 704                                                                                                                               | 1.2+     | 0.1+                                                                                          | 2006 08 28 | 703                                                         | 0.3−  | 0.0         | 2007 12 04 | 704 | 0.2− | 0.7+ |
| 2004 04 21                  | 691                                                                                                                               | 0.0      | 0.3+                                                                                          | 2006 08 28 | 703                                                         | 0.2−  | 0.4+        | 2007 12 04 | 704 | 0.3− | 0.1+ |
| 2004 04 21                  | 691                                                                                                                               | 0.3+     | 0.0                                                                                           | 2006 08 28 | 703                                                         | 0.3−  | 0.3−        | 2007 12 04 | 704 | 0.3+ | 1.1+ |
| 2004 04 21                  | 691                                                                                                                               | 0.1+     | 0.3+                                                                                          | 2006 08 28 | 703                                                         | 0.2+  | 0.3−        | 2007 12 04 | 704 | 0.5+ | 0.7+ |
| 2005 06 27                  | 691                                                                                                                               | 0.3+     | 0.2+                                                                                          | 2006 08 31 | 704                                                         | 1.3+  | 0.2−        | 2007 12 04 | 704 | 0.2− | 1.0+ |

**(173016)\* 2006 PZ<sub>26</sub> = 1998 YG<sub>16</sub>**

Discovered 2006 Aug. 15 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 109609)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    | 50.07585                                                                                                                   |          | (2000.0)  |            |                                                                 | <b>P</b>    |       | <b>Q</b>    |     |           |       |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------|----------|-----------|------------|-----------------------------------------------------------------|-------------|-------|-------------|-----|-----------|-------|
| <i>n</i>                    | 0.21271920                                                                                                                 | $\omega$ | 103.91128 |            |                                                                 | +0.87458431 |       | −0.47853462 |     |           |       |
| <i>a</i>                    | 2.7792755                                                                                                                  | $\Omega$ | 284.72808 |            |                                                                 | +0.40780588 |       | +0.81314240 |     |           |       |
| <i>e</i>                    | 0.0537005                                                                                                                  | <i>i</i> | 4.63464   |            |                                                                 | +0.26229115 |       | +0.33136695 |     |           |       |
| <i>P</i>                    | 4.63 <th><i>H</i></th> <td>15.6</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>0</td><td></td><td></td><td></td></td> | <i>H</i> | 15.6      | <i>G</i>   | 0.15 <th><i>U</i></th> <td>0</td> <td></td> <td></td> <td></td> | <i>U</i>    | 0     |             |     |           |       |
| Residuals in seconds of arc |                                                                                                                            |          |           |            |                                                                 |             |       |             |     |           |       |
| 1998 12 22                  | 691                                                                                                                        | 0.0      | 0.1−      | 2004 02 19 | 704                                                             | 0.0         | 1.2+  | 2006 09 20  | 699 | 0.7− 0.4− |       |
| 1998 12 22                  | 691                                                                                                                        | 0.1−     | 0.2−      | 2006 08 15 | 644                                                             | 0.2−        | 0.4+  | 2006 09 20  | 699 | 0.4+      | 0.1+  |
| 1998 12 22                  | 691                                                                                                                        | 0.4−     | 0.4−      | 2006 08 15 | 644                                                             | 0.4−        | 0.1−  | 2006 09 20  | 699 | 0.4−      | 1.0+  |
| 1998 12 27                  | 691                                                                                                                        | 0.1−     | 0.6−      | 2006 08 15 | 644                                                             | 0.4−        | 0.1+  | 2006 09 20  | 699 | 0.1−      | 0.2−  |
| 1998 12 27                  | 691                                                                                                                        | 0.0      | 0.1−      | 2006 08 24 | 704                                                             | (1.7−       | 1.5+) | 2006 09 30  | 699 | 0.9−      | 0.1+  |
| 1998 12 27                  | 691                                                                                                                        | 0.0      | 0.2+      | 2006 08 24 | 704                                                             | 0.7−        | 0.8+  | 2006 09 30  | 699 | 1.0+      | 0.3+  |
| 1999 01 18                  | 691                                                                                                                        | 0.0      | 0.1+      | 2006 08 24 | 704                                                             | (0.6−       | 1.8+) | 2006 09 30  | 699 | 0.0       | 0.1+  |
| 1999 01 18                  | 691                                                                                                                        | 0.1+     | 0.2+      | 2006 08 29 | 703                                                             | 0.5+        | 0.7+  | 2006 09 30  | 699 | (1.7+     | 0.1+) |
| 1999 01 18                  | 691                                                                                                                        | 0.0      | 0.1+      | 2006 08 29 | 703                                                             | 0.1−        | 1.4+  | 2006 10 21  | 644 | 0.2+      | 0.2−  |
| 2001 08 16                  | 704                                                                                                                        | 0.0      | 1.5−      | 2006 08 29 | 703                                                             | 0.1−        | 0.4+  | 2006 10 21  | 644 | 0.1+      | 0.0   |
| 2001 08 16                  | 704                                                                                                                        | 0.3−     | 0.0       | 2006 08 29 | 703                                                             | 0.2−        | 1.1+  | 2006 10 21  | 644 | 0.1+      | 0.2−  |
| 2001 08 16                  | 704                                                                                                                        | 0.7+     | 0.2−      | 2006 08 30 | 704                                                             | 1.0+        | 0.1−  | 2007 11 02  | G96 | 0.3+      | 0.5−  |
| 2002 11 12                  | 704                                                                                                                        | 0.6+     | 0.4−      | 2006 08 30 | 704                                                             | 0.9+        | 0.2−  | 2007 11 02  | G96 | 0.6+      | 0.3−  |
| 2002 11 12                  | 704                                                                                                                        | 0.3+     | 0.4+      | 2006 08 30 | 704                                                             | 0.9+        | 0.1−  | 2007 11 02  | G96 | 0.2+      | 0.5−  |
| 2002 11 12                  | 704                                                                                                                        | 1.2−     | 0.4−      | 2006 08 30 | 704                                                             | 0.5+        | 0.1+  | 2007 11 02  | G96 | 0.5+      | 0.4−  |
| 2002 12 02                  | 704                                                                                                                        | 0.2−     | 1.1+      | 2006 09 11 | 703                                                             | 0.4+        | 0.0   | 2007 12 03  | 691 | 0.1+      | 0.1+  |
| 2002 12 02                  | 704                                                                                                                        | 0.5−     | 0.2+      | 2006 09 11 | 703                                                             | 1.1−        | 0.3−  | 2007 12 03  | 691 | 0.1−      | 0.0   |
| 2002 12 02                  | 704                                                                                                                        | 0.8+     | 0.5−      | 2006 09 11 | 703                                                             | 0.5−        | 0.4−  | 2007 12 03  | 691 | 0.1−      | 0.2−  |
| 2002 12 02                  | 704                                                                                                                        | 0.3+     | 0.7+      | 2006 09 11 | 703                                                             | 0.2+        | 0.1−  | 2007 12 14  | 704 | 0.4+      | 1.6+  |
| 2004 02 12                  | 644                                                                                                                        | 0.4+     | 0.3+      | 2006 09 13 | 644                                                             | 0.0         | 0.1+  | 2007 12 14  | 704 | 0.5+      | 0.2−  |
| 2004 02 12                  | 644                                                                                                                        | 0.7+     | 0.6+      | 2006 09 13 | 644                                                             | 0.0         | 0.1−  | 2007 12 14  | 704 | 0.6+      | 0.2+  |
| 2004 02 12                  | 644                                                                                                                        | 0.6+     | 0.4+      | 2006 09 13 | 644                                                             | 0.1−        | 0.0   | 2007 12 15  | 691 | 0.1−      | 0.1−  |
| 2004 02 19                  | 704                                                                                                                        | 0.0      | 1.2+      | 2006 09 18 | 703                                                             | 0.0         | 0.5+  | 2007 12 15  | 691 | 0.3−      | 0.0   |
| 2004 02 19                  | 704                                                                                                                        | (0.2+    | 1.9+)     | 2006 09 18 | 703                                                             | 1.4−        | 0.2+  | 2007 12 15  | 691 | 0.4−      | 0.1+  |
| 2004 02 19                  | 704                                                                                                                        | 0.1+     | 0.9+      | 2006 09 18 | 703                                                             | 0.7−        | 0.8+  |             |     |           |       |
| 2004 02 19                  | 704                                                                                                                        | 1.3+     | 0.6+      | 2006 09 18 | 703                                                             | 0.0         | 0.9−  |             |     |           |       |

**(173017)\* 2006 PO<sub>27</sub> = 1997 GG<sub>29</sub>**

Discovered 2006 Aug. 13 by the Siding Spring Survey at Siding Spring.  
Id. A. Doppler (*MPO* 103999)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 91.31455   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23432899 | $\omega$ | 259.71649 | +0.87332789 | +0.40999906 |          |   |
| <i>a</i> | 2.6056657  | $\Omega$ | 75.66994  | -0.26747118 | +0.85491988 |          |   |
| <i>e</i> | 0.1802207  | <i>i</i> | 15.75384  | -0.40713334 | +0.31782507 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 04 12 | 691 | 0.4+ | 0.0  | 2004 01 19 | 704 | 0.5+  | 0.9+  | 2006 08 23 | E12 | 0.1- | 0.1+ |
| 1997 04 12 | 691 | 0.5+ | 0.2+ | 2004 01 19 | 704 | (1.5+ | 1.1-) | 2007 11 06 | G96 | 0.3- | 0.1- |
| 1997 04 12 | 691 | 0.4+ | 0.2+ | 2006 06 18 | E12 | 0.5-  | 0.8+  | 2007 11 06 | G96 | 0.5- | 0.1- |
| 1997 04 15 | 691 | 0.4- | 0.0  | 2006 06 18 | E12 | 0.5+  | 0.0   | 2007 11 06 | G96 | 0.2- | 0.2- |
| 1997 04 15 | 691 | 0.2- | 0.0  | 2006 06 18 | E12 | 0.1+  | 0.2+  | 2007 11 06 | G96 | 0.3- | 0.1+ |
| 1997 04 15 | 691 | 0.5- | 0.1+ | 2006 06 18 | E12 | 0.0   | 0.2-  | 2007 11 12 | G96 | 0.2+ | 0.1- |
| 2002 08 13 | 704 | 1.0- | 1.0- | 2006 07 18 | E12 | 0.3-  | 0.2+  | 2007 11 12 | G96 | 0.1- | 0.0  |
| 2002 08 13 | 704 | 0.5- | 0.6- | 2006 07 18 | E12 | 0.1+  | 0.0   | 2007 11 12 | G96 | 0.3- | 0.1- |
| 2002 08 13 | 704 | 1.1+ | 0.6+ | 2006 07 18 | E12 | 0.0   | 0.5+  | 2007 12 13 | 704 | 0.3- | 1.1+ |
| 2002 08 13 | 704 | 0.1- | 0.3+ | 2006 07 18 | E12 | 0.0   | 0.0   | 2007 12 13 | 704 | 0.5+ | 0.4+ |
| 2002 08 13 | 704 | 1.0+ | 0.3+ | 2006 08 13 | E12 | 0.1-  | 0.4+  | 2007 12 13 | 704 | 0.0  | 0.8+ |
| 2003 12 30 | 704 | 0.7- | 0.6+ | 2006 08 13 | E12 | 0.3-  | 0.1-  | 2007 12 13 | 704 | 0.5- | 0.0  |
| 2003 12 30 | 704 | 0.2+ | 1.0- | 2006 08 13 | E12 | 0.5-  | 0.6+  | 2007 12 16 | 704 | 0.0  | 0.4+ |
| 2003 12 30 | 704 | 0.7- | 0.0  | 2006 08 13 | E12 | 0.4-  | 0.9+  | 2007 12 16 | 704 | 0.2+ | 0.3+ |
| 2003 12 30 | 704 | 0.8+ | 0.4+ | 2006 08 23 | E12 | 1.1-  | 0.0   | 2007 12 16 | 704 | 0.1+ | 0.6+ |
| 2004 01 19 | 704 | 1.0+ | 0.0  | 2006 08 23 | E12 | 0.4+  | 0.1-  | 2007 12 16 | 704 | 0.7+ | 0.0  |
| 2004 01 19 | 704 | 0.6- | 0.4+ | 2006 08 23 | E12 | 1.2+  | 0.6+  | 2007 12 16 | 704 | 0.0  | 0.4+ |

**(173018)\* 2006 PS<sub>27</sub>**

Discovered 2006 Aug. 13 by the Siding Spring Survey at Siding Spring.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 44.05757   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17734743 | $\omega$ | 285.37739 | +0.86655138 | -0.20883303 |          |   |
| <i>a</i> | 3.1375173  | $\Omega$ | 88.37078  | +0.39470491 | +0.84261039 |          |   |
| <i>e</i> | 0.2066268  | <i>i</i> | 26.96715  | -0.30544516 | +0.49638342 |          |   |
| <i>P</i> | 5.56       | <i>H</i> | 14.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 26 | 644 | 0.3+  | 1.4+  | 2006 07 18 | E12 | 0.8- | 0.9+ | 2006 09 21 | E12 | 0.0  | 0.1- |
| 2001 08 26 | 644 | 0.5+  | 1.4+  | 2006 07 18 | E12 | 0.6+ | 0.2+ | 2006 09 21 | E12 | 0.5- | 0.6- |
| 2001 08 26 | 644 | 0.5+  | 1.2+  | 2006 07 18 | E12 | 0.0  | 0.6- | 2006 09 21 | E12 | 0.1- | 0.9+ |
| 2001 10 24 | 699 | 1.0-  | 0.1+  | 2006 07 18 | E12 | 0.1+ | 0.1+ | 2006 09 30 | E12 | 0.5- | 0.3+ |
| 2001 10 24 | 699 | (2.5- | 1.3+) | 2006 07 28 | E12 | 0.2- | 0.0  | 2006 09 30 | E12 | 0.4+ | 0.4- |
| 2001 10 24 | 699 | 0.7+  | 1.4+  | 2006 07 28 | E12 | 0.3- | 0.3- | 2006 09 30 | E12 | 0.6+ | 0.2+ |
| 2001 10 24 | 699 | 0.4-  | 0.0   | 2006 07 28 | E12 | 0.5- | 1.0- | 2006 09 30 | E12 | 1.0+ | 0.5- |
| 2001 11 16 | 699 | 1.3-  | 0.2+  | 2006 07 28 | E12 | 0.6+ | 0.4- | 2006 10 22 | E12 | 0.0  | 0.4- |
| 2001 11 16 | 699 | 0.4-  | 1.0-  | 2006 08 13 | E12 | 0.7+ | 0.5- | 2006 10 22 | E12 | 0.0  | 1.2- |
| 2001 11 16 | 699 | (1.7- | 0.5-) | 2006 08 13 | E12 | 0.8- | 0.3+ | 2006 10 22 | E12 | 0.1- | 1.0+ |
| 2001 11 16 | 699 | 1.2-  | 0.2+  | 2006 08 13 | E12 | 0.2- | 0.3+ | 2006 10 22 | E12 | 0.6- | 0.3- |
| 2001 12 14 | 644 | 0.5-  | 1.3+  | 2006 08 13 | E12 | 0.6- | 0.3- | 2007 11 04 | 704 | 0.5- | 0.4+ |
| 2001 12 14 | 644 | 0.7-  | 0.2+  | 2006 08 22 | E12 | 0.7- | 0.3+ | 2007 11 04 | 704 | 0.7- | 0.4- |
| 2001 12 14 | 644 | 0.7-  | 0.1+  | 2006 08 22 | E12 | 0.1- | 0.1+ | 2007 11 04 | 704 | 0.7- | 0.6+ |
| 2005 05 11 | 691 | 0.1+  | 0.3+  | 2006 08 22 | E12 | 0.1+ | 0.5- | 2007 11 04 | 704 | 0.8- | 0.4+ |
| 2005 05 11 | 691 | 0.4+  | 0.1-  | 2006 08 22 | E12 | 0.3+ | 0.3+ | 2007 11 12 | 704 | 0.2+ | 0.6+ |
| 2005 05 11 | 691 | 0.4+  | 0.6+  | 2006 08 31 | E12 | 0.4- | 0.2+ | 2007 11 12 | 704 | 0.4+ | 0.3+ |
| 2005 06 05 | 691 | 0.1+  | 0.3+  | 2006 08 31 | E12 | 0.1- | 0.0  | 2007 11 12 | 704 | 0.3+ | 0.2+ |
| 2005 06 05 | 691 | 0.1+  | 0.6+  | 2006 08 31 | E12 | 0.2+ | 0.2+ | 2007 11 12 | 704 | 1.0+ | 0.9+ |
| 2005 06 05 | 691 | 0.2+  | 0.1+  | 2006 08 31 | E12 | 0.2- | 0.1+ | 2007 12 14 | 704 | 0.4- | 0.1+ |
| 2006 06 18 | E12 | 1.3+  | 0.8-  | 2006 09 15 | E12 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.9+ | 0.9- |
| 2006 06 18 | E12 | 0.4+  | 0.5-  | 2006 09 15 | E12 | 0.2- | 0.0  | 2007 12 14 | 704 | 0.0  | 0.1+ |
| 2006 06 18 | E12 | 0.1+  | 0.6+  | 2006 09 15 | E12 | 0.9+ | 0.0  |            |     |      |      |
| 2006 06 18 | E12 | 0.8-  | 0.1+  | 2006 09 15 | E12 | 0.0  | 0.2- |            |     |      |      |

**(173019)\* 2006 PT<sub>29</sub> = 2003 BM<sub>78</sub>**

Discovered 2006 Aug. 12 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 103999)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 31.06734   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18443457 | $\omega$ | 74.25908  | +0.84680776 | -0.50197786 |          |   |
| <i>a</i> | 3.0566180  | $\Omega$ | 315.46985 | +0.33883445 | +0.76398855 |          |   |
| <i>e</i> | 0.2337358  | <i>i</i> | 14.52493  | +0.41000956 | +0.40538837 |          |   |
| <i>P</i> | 5.34       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 10 | 704 | 0.2+  | 0.5+  | 2001 11 17 | 704 | 0.2-  | 0.3+  | 2006 09 25 | G96 | 0.2- | 0.2- |
| 2001 09 10 | 704 | 0.6+  | 0.4+  | 2001 11 17 | 704 | (0.7+ | 3.1+) | 2006 09 25 | G96 | 0.1+ | 0.1+ |
| 2001 09 10 | 704 | 0.4+  | 0.5+  | 2001 11 17 | 704 | 0.5-  | 0.8+  | 2006 09 25 | G96 | 0.3- | 0.0  |
| 2001 09 10 | 704 | 0.9+  | 0.0   | 2003 01 31 | 644 | 0.2+  | 0.0   | 2006 09 25 | G96 | 0.1- | 0.2- |
| 2001 09 10 | 704 | 1.0+  | 0.2+  | 2003 01 31 | 644 | 0.1+  | 0.0   | 2007 11 15 | 699 | 1.0- | 1.0+ |
| 2001 09 18 | 645 | 0.1-  | 0.2-  | 2003 01 31 | 644 | 0.4+  | 0.0   | 2007 11 15 | 699 | 1.0- | 0.5+ |
| 2001 09 18 | 645 | 0.1-  | 0.2-  | 2003 02 01 | 704 | 0.0   | 0.5+  | 2007 11 15 | 699 | 0.2+ | 0.1- |
| 2001 09 23 | 608 | 0.8-  | 0.1+  | 2003 02 01 | 704 | 0.1+  | 0.3+  | 2007 11 15 | 699 | 0.4+ | 0.5+ |
| 2001 09 23 | 608 | 0.5-  | 0.5+  | 2003 02 01 | 704 | 0.0   | 0.7+  | 2007 12 03 | 704 | 0.6- | 0.6- |
| 2001 09 23 | 608 | 0.2-  | 0.4+  | 2006 08 12 | 644 | 0.2-  | 0.1+  | 2007 12 03 | 704 | 0.5- | 0.0  |
| 2001 09 29 | 644 | 0.2-  | 0.5+  | 2006 08 12 | 644 | 0.1-  | 0.3+  | 2007 12 03 | 704 | 2.2+ | 1.1- |
| 2001 09 29 | 644 | 0.1+  | 0.4+  | 2006 08 12 | 644 | 0.3+  | 0.7+  | 2007 12 03 | 704 | 1.0- | 0.5+ |
| 2001 09 29 | 644 | 0.1-  | 0.6+  | 2006 08 14 | 644 | 0.0   | 0.3+  | 2007 12 03 | 704 | 1.5+ | 0.6- |
| 2001 10 17 | 704 | (1.8+ | 1.5+) | 2006 08 14 | 644 | 0.3-  | 0.1+  | 2007 12 07 | D29 | 0.8- | 0.6- |
| 2001 10 17 | 704 | 0.8+  | 0.8+  | 2006 08 14 | 644 | 0.1-  | 0.2+  | 2007 12 07 | D29 | 0.2+ | 0.0  |
| 2001 10 17 | 704 | 1.4+  | 0.5+  | 2006 08 20 | 644 | 0.1+  | 0.1+  | 2007 12 07 | D29 | 0.0  | 0.0  |
| 2001 10 17 | 704 | 0.7+  | 0.6+  | 2006 08 20 | 644 | 0.1-  | 0.1+  | 2007 12 07 | D29 | 0.2+ | 0.1- |
| 2001 11 17 | 704 | 0.1+  | 1.2+  | 2006 08 20 | 644 | 0.0   | 0.1+  |            |     |      |      |

**(173020)\* 2006 PF<sub>37</sub>**

Discovered 2006 Aug. 12 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.01555   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22815959 | $\omega$ | 287.56781 | +0.89306264 | -0.38450937 |          |   |
| <i>a</i> | 2.6524277  | $\Omega$ | 95.56754  | +0.44713671 | +0.81626283 |          |   |
| <i>e</i> | 0.1704408  | <i>i</i> | 13.57724  | -0.05007874 | +0.43112358 |          |   |
| <i>P</i> | 4.32       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 11 28 | 691 | 0.3- | 0.3- | 2002 10 28 | 704 | 0.6+ | 0.8+ | 2007 11 21 | G96 | 0.2+  | 0.0   |
| 1994 11 28 | 691 | 0.5+ | 0.1- | 2004 03 18 | 645 | 0.1- | 0.1+ | 2007 11 21 | G96 | 0.1+  | 0.1+  |
| 1994 11 28 | 691 | 0.3+ | 0.1- | 2004 03 18 | 645 | 0.0  | 0.0  | 2007 11 21 | G96 | 0.1+  | 0.1-  |
| 1998 12 16 | 699 | 0.8- | 0.9+ | 2004 04 15 | 645 | 0.0  | 0.0  | 2007 12 06 | 704 | 0.2+  | 0.6+  |
| 1998 12 16 | 699 | 0.2- | 0.4+ | 2004 04 15 | 645 | 0.0  | 0.1+ | 2007 12 06 | 704 | 0.0   | 0.8+  |
| 1998 12 16 | 699 | 0.2+ | 1.1+ | 2004 04 16 | 645 | 0.0  | 0.0  | 2007 12 06 | 704 | 0.1+  | 0.7+  |
| 2001 05 23 | 291 | 0.5+ | 0.9+ | 2004 04 16 | 645 | 0.0  | 0.1+ | 2007 12 06 | 704 | 0.1+  | 0.1+  |
| 2001 05 23 | 291 | 0.4- | 0.5+ | 2006 07 18 | E12 | 0.5+ | 0.1- | 2007 12 06 | G96 | 0.2+  | 0.1+  |
| 2001 05 23 | 291 | 0.8+ | 0.7+ | 2006 07 18 | E12 | 0.2- | 0.5+ | 2007 12 06 | G96 | 0.1+  | 0.3+  |
| 2002 09 13 | 704 | 0.6- | 1.2+ | 2006 07 18 | E12 | 0.4- | 0.1+ | 2007 12 06 | G96 | 0.1+  | 0.3+  |
| 2002 09 13 | 704 | 0.1- | 0.2+ | 2006 07 18 | E12 | 0.3- | 0.1+ | 2007 12 06 | G96 | 0.0   | 0.0   |
| 2002 09 13 | 704 | 0.4- | 1.1+ | 2006 08 12 | 644 | 0.1+ | 0.4+ | 2007 12 10 | 704 | (0.5+ | 1.7+) |
| 2002 09 13 | 704 | 0.8+ | 1.2+ | 2006 08 12 | 644 | 0.0  | 0.3+ | 2007 12 10 | 704 | 0.2-  | 0.0   |
| 2002 10 02 | 608 | 0.4- | 1.0- | 2006 08 12 | 644 | 0.1- | 0.6+ | 2007 12 10 | 704 | 0.2-  | 0.6+  |
| 2002 10 02 | 608 | 0.5- | 0.5- | 2006 08 14 | 644 | 0.0  | 0.2+ | 2007 12 10 | 704 | 0.5-  | 0.6+  |
| 2002 10 02 | 608 | 0.1- | 0.3- | 2006 08 14 | 644 | 0.1+ | 0.5+ | 2007 12 10 | 704 | 0.3+  | 0.5+  |
| 2002 10 08 | 644 | 0.4- | 0.3+ | 2006 08 14 | 644 | 0.0  | 0.3- | 2007 12 15 | 704 | 0.3+  | 1.3+  |
| 2002 10 08 | 644 | 0.3- | 0.0  | 2006 08 14 | 644 | 0.3+ | 0.4+ | 2007 12 15 | 704 | 0.3+  | 1.2+  |
| 2002 10 08 | 644 | 0.3- | 0.4+ | 2006 08 14 | 644 | 0.4+ | 0.4+ | 2007 12 15 | 704 | 0.5+  | 1.0+  |
| 2002 10 28 | 704 | 1.4- | 0.3- | 2006 08 14 | 644 | 0.2+ | 0.3+ | 2007 12 15 | 704 | 0.6+  | 0.7+  |
| 2002 10 28 | 704 | 0.9- | 0.0  | 2007 11 21 | G96 | 0.3+ | 0.2- | 2007 12 15 | 704 | 0.0   | 0.2+  |

2007 DEC. 24

M.P.O. 129543

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 107.06611  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26089651 | $\omega$ 257.15090 | +0.92594818   | +0.37396702 |
| <i>a</i> | 2.4256262  | $\Omega$ 80.86934  | -0.32252463   | +0.85555620 |
| <i>e</i> | 0.2346996  | <i>i</i> 3.05492   | -0.19646333   | +0.35801154 |
| <i>P</i> | 3.78       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1976 10 22 | 381 | 0.8+ | 0.7+ | 2006 08 19 | 644 | 0.1- | 0.3+ | 2006 08 28 | 699 | 0.2- | 0.1+ |
| 1976 10 22 | 381 | 0.7- | 0.8- | 2006 08 20 | 568 | 0.2+ | 0.2+ | 2006 08 28 | 704 | 0.2+ | 0.2+ |
| 2003 12 14 | 291 | 0.4- | 0.5+ | 2006 08 20 | 568 | 0.1+ | 0.2+ | 2006 08 28 | 699 | 0.3+ | 0.1+ |
| 2003 12 14 | 291 | 0.6- | 0.3+ | 2006 08 20 | 568 | 0.2+ | 0.2+ | 2006 08 28 | 699 | 0.1+ | 0.6+ |
| 2003 12 14 | 291 | 0.4- | 0.5+ | 2006 08 23 | 704 | 0.1- | 0.1+ | 2006 08 31 | 704 | 0.6+ | 0.9- |
| 2003 12 17 | 691 | 0.0  | 0.8- | 2006 08 23 | 704 | 0.3- | 0.1+ | 2006 08 31 | 704 | 0.2+ | 0.3+ |
| 2003 12 17 | 691 | 0.1+ | 0.4- | 2006 08 23 | 704 | 0.1- | 0.1+ | 2006 08 31 | 704 | 0.0  | 0.5- |
| 2003 12 17 | 691 | 0.5+ | 0.2+ | 2006 08 23 | 704 | 0.1+ | 0.1+ | 2006 08 31 | 704 | 0.2+ | 0.2- |
| 2003 12 29 | 691 | 0.4+ | 0.2+ | 2006 08 23 | 704 | 0.3+ | 0.3- | 2006 08 31 | 704 | 0.4+ | 0.3- |
| 2003 12 29 | 691 | 0.0  | 0.3+ | 2006 08 23 | 568 | 0.8- | 0.1- | 2006 09 20 | 644 | 0.3+ | 0.2+ |
| 2003 12 29 | 691 | 0.2+ | 0.4+ | 2006 08 23 | 644 | 0.0  | 0.2+ | 2006 09 20 | 644 | 0.1+ | 0.4+ |
| 2005 03 11 | 691 | 0.0  | 0.2+ | 2006 08 23 | 644 | 0.0  | 0.2+ | 2006 09 20 | 644 | 0.3+ | 0.3+ |
| 2005 03 11 | 691 | 0.3+ | 0.4+ | 2006 08 23 | 568 | 0.8- | 0.2- | 2006 11 27 | G96 | 0.1- | 0.1- |
| 2005 03 11 | 691 | 0.3+ | 0.2+ | 2006 08 23 | 644 | 0.1+ | 0.2+ | 2006 11 27 | G96 | 0.2- | 0.0  |
| 2005 05 11 | G96 | 0.3- | 0.1+ | 2006 08 23 | 568 | 0.7- | 0.2- | 2006 11 27 | G96 | 0.2- | 0.1+ |
| 2005 05 11 | G96 | 0.2+ | 0.5+ | 2006 08 23 | 644 | 0.0  | 0.2+ | 2006 11 27 | G96 | 0.3+ | 0.4+ |
| 2005 05 11 | G96 | 0.6- | 0.3+ | 2006 08 23 | 644 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.6+ | 0.4+ |
| 2005 05 11 | G96 | 0.6- | 0.0  | 2006 08 23 | 644 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.1+ | 0.6- |
| 2006 08 17 | 644 | 0.1- | 0.1+ | 2006 08 24 | 644 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.1- | 0.0  |
| 2006 08 17 | 644 | 0.2- | 0.2+ | 2006 08 24 | 644 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.5+ | 0.4- |
| 2006 08 17 | 644 | 0.1- | 0.2+ | 2006 08 24 | 644 | 0.1- | 0.1+ | 2007 12 14 | G96 | 0.3+ | 0.5- |
| 2006 08 18 | 644 | 0.0  | 0.1+ | 2006 08 28 | 704 | 0.5+ | 0.3- | 2007 12 14 | G96 | 0.3+ | 0.3- |
| 2006 08 18 | 644 | 0.0  | 0.2+ | 2006 08 28 | 704 | 0.3- | 0.1- | 2007 12 14 | G96 | 0.1+ | 1.0- |
| 2006 08 18 | 644 | 0.1- | 0.1+ | 2006 08 28 | 704 | 0.1- | 0.3- | 2007 12 14 | G96 | 0.0  | 0.6- |
| 2006 08 19 | 644 | 0.1- | 0.1+ | 2006 08 28 | 699 | 0.0  | 0.4+ |            |     |      |      |
| 2006 08 19 | 644 | 0.0  | 0.2+ | 2006 08 28 | 704 | 0.0  | 0.3- |            |     |      |      |

(173022)\* 2006 QU<sub>2</sub> = 2001 FB<sub>192</sub>

Discovered 2006 Aug. 17 by NEAT at Palomar.

Id. G. V. Williams (MPO 104006)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 120.51381  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25849422 | $\omega$ 350.30885 | +0.83257337   | +0.55340825 |
| <i>a</i> | 2.4406312  | $\Omega$ 336.04311 | -0.50422150   | +0.73948779 |
| <i>e</i> | 0.0144426  | <i>i</i> 3.34372   | -0.22930823   | +0.38327159 |
| <i>P</i> | 3.81       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 24 | 691 | 0.3+  | 0.4+  | 2005 04 06 | 691 | 0.5+ | 0.1+ | 2006 08 28 | 122 | 0.3- | 0.2- |
| 1995 10 24 | 691 | 0.4+  | 0.0   | 2005 04 15 | 691 | 0.5+ | 0.0  | 2006 09 25 | 688 | 0.1+ | 0.1- |
| 1995 10 24 | 691 | 0.2+  | 0.3+  | 2005 04 15 | 691 | 0.3+ | 0.3+ | 2006 09 25 | G96 | 0.2+ | 0.5- |
| 1997 03 11 | 691 | 0.7-  | 0.3-  | 2005 04 15 | 691 | 0.4+ | 0.1+ | 2006 09 25 | G96 | 0.3- | 0.3- |
| 1997 03 11 | 691 | 0.6-  | 0.2+  | 2006 08 17 | 644 | 0.3+ | 0.0  | 2006 09 25 | G96 | 0.1- | 0.5- |
| 1997 03 11 | 691 | 0.5-  | 0.1-  | 2006 08 17 | 644 | 0.2- | 0.1+ | 2006 09 25 | G96 | 0.2+ | 0.3- |
| 2001 03 23 | 699 | 0.3+  | 0.6+  | 2006 08 17 | 644 | 0.1+ | 0.0  | 2006 09 25 | 688 | 0.1+ | 0.3- |
| 2001 03 23 | 699 | 1.0-  | 0.4+  | 2006 08 19 | 691 | 0.1- | 0.1+ | 2007 11 03 | G96 | 0.0  | 0.3+ |
| 2001 03 23 | 699 | (0.2+ | 2.0+) | 2006 08 19 | 691 | 0.3- | 0.1- | 2007 11 03 | G96 | 0.4- | 0.5+ |
| 2001 03 23 | 699 | 0.7+  | 0.4+  | 2006 08 19 | 691 | 0.1- | 0.3+ | 2007 11 03 | G96 | 0.2- | 0.4+ |
| 2001 03 26 | 695 | 0.5+  | 0.2+  | 2006 08 24 | 122 | 0.3+ | 0.2+ | 2007 11 03 | G96 | 0.0  | 0.5+ |
| 2001 03 26 | 695 | 0.5+  | 0.2+  | 2006 08 24 | 122 | 0.2+ | 0.3+ | 2007 11 11 | G96 | 0.4- | 0.4+ |
| 2005 03 17 | G96 | 0.8-  | 0.2-  | 2006 08 25 | 122 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.2- | 0.1+ |
| 2005 03 17 | G96 | 0.4-  | 0.2-  | 2006 08 27 | 691 | 0.3- | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.1+ |
| 2005 03 17 | G96 | 0.2-  | 0.3-  | 2006 08 27 | 691 | 0.3- | 0.1+ | 2007 11 11 | G96 | 0.7- | 0.8+ |
| 2005 03 17 | G96 | 0.0   | 0.1-  | 2006 08 27 | 691 | 0.2- | 0.1+ | 2007 12 15 | 704 | 0.8+ | 1.0+ |
| 2005 04 06 | 691 | 0.4+  | 0.1-  | 2006 08 28 | 122 | 0.3- | 0.3- | 2007 12 15 | 704 | 1.5+ | 0.4+ |
| 2005 04 06 | 691 | 0.1-  | 0.3+  | 2006 08 28 | 122 | 0.0  | 0.3- | 2007 12 15 | 704 | 0.4+ | 0.5+ |

(173023)\* 2006 QX<sub>3</sub>

Discovered 2006 Aug. 18 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.86120   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17255551 | $\omega$ 354.31650 | +0.93579768   | +0.35201027 |
| <i>a</i> | 3.1953382  | $\Omega$ 345.02931 | -0.32043664   | +0.82652114 |
| <i>e</i> | 0.1576029  | <i>i</i> 4.27887   | -0.14697982   | +0.43926253 |
| <i>P</i> | 5.71       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 10 13 | 621 | 0.1-  | 0.3-  | 2006 08 22 | 644 | 0.0   | 0.2-  | 2006 09 25 | G96 | 0.3+  | 0.4-  |
| 2001 10 13 | 621 | 0.4+  | 0.5+  | 2006 08 22 | 644 | 0.2-  | 0.1-  | 2006 09 25 | G96 | 0.1-  | 0.4-  |
| 2001 10 21 | 704 | 0.9+  | 0.7+  | 2006 08 28 | 703 | 0.5-  | 0.1+  | 2006 09 25 | G96 | 0.3+  | 0.4-  |
| 2001 10 21 | 704 | (0.7+ | 2.1+) | 2006 08 28 | 703 | 0.8-  | 0.6-  | 2006 09 25 | G96 | 0.0   | 0.4-  |
| 2001 10 21 | 704 | (0.4+ | 1.5+) | 2006 08 28 | 703 | 0.5+  | 0.4+  | 2006 09 27 | 704 | 0.3+  | 0.2+  |
| 2001 11 24 | 704 | 0.5+  | 0.1-  | 2006 08 28 | 703 | 0.4-  | 0.3-  | 2006 09 27 | 704 | 0.3-  | 1.2-  |
| 2001 11 24 | 704 | 1.2-  | 0.1+  | 2006 08 30 | 704 | 0.7-  | 0.1+  | 2006 09 27 | 704 | 0.0   | 0.8+  |
| 2001 11 24 | 704 | 0.1-  | 0.5+  | 2006 08 30 | 704 | 0.6-  | 0.4+  | 2006 09 27 | 704 | 0.6-  | 0.1+  |
| 2001 11 24 | 704 | 0.1-  | 1.4-  | 2006 08 30 | 704 | 0.5+  | 0.7-  | 2006 11 13 | G96 | 0.0   | 0.4-  |
| 2001 11 24 | 704 | (1.7- | 0.1+) | 2006 08 30 | 704 | 0.1-  | 0.6-  | 2006 11 13 | G96 | 0.0   | 1.0-  |
| 2004 03 21 | 291 | 0.1+  | 0.6+  | 2006 09 14 | 703 | 0.4+  | 0.7+  | 2006 11 13 | G96 | 0.7-  | 0.5-  |
| 2004 03 21 | 291 | 0.3+  | 0.8+  | 2006 09 14 | 703 | 0.6+  | 0.8+  | 2006 11 13 | G96 | 0.1-  | 0.4-  |
| 2004 03 21 | 291 | 0.6+  | 0.6+  | 2006 09 14 | 703 | 0.2-  | 0.8+  | 2007 01 09 | G96 | 1.0-  | 0.2-  |
| 2006 08 18 | 691 | 0.2+  | 0.3+  | 2006 09 14 | 703 | 0.0   | 1.1+  | 2007 01 09 | G96 | 0.1+  | 0.3-  |
| 2006 08 18 | 691 | 0.1+  | 0.2+  | 2006 09 17 | 704 | 0.4+  | 0.5+  | 2007 01 09 | G96 | 0.4-  | 0.1+  |
| 2006 08 18 | 691 | 0.2-  | 0.2+  | 2006 09 17 | 704 | 0.6+  | 0.4-  | 2007 01 09 | G96 | 0.2+  | 0.3-  |
| 2006 08 19 | 691 | 0.1-  | 0.4+  | 2006 09 17 | 704 | 0.0   | 0.0   | 2007 11 19 | 691 | 0.4-  | 0.3+  |
| 2006 08 19 | 691 | 0.1+  | 0.2+  | 2006 09 17 | 704 | 0.8+  | 1.1+  | 2007 11 19 | 691 | 0.6-  | 0.2+  |
| 2006 08 19 | 691 | 0.1+  | 0.4+  | 2006 09 17 | 704 | 0.3+  | 0.7+  | 2007 11 19 | 691 | 1.4+  | 1.1-  |
| 2006 08 21 | 704 | 0.0   | 0.5-  | 2006 09 20 | 644 | 0.1+  | 0.3-  | 2007 11 29 | 185 | 1.5+  | 1.0-  |
| 2006 08 21 | 704 | 1.2-  | 0.0   | 2006 09 20 | 699 | 0.3+  | 0.4+  | 2007 11 29 | 185 | (0.2+ | 1.5+) |
| 2006 08 21 | 704 | (1.1- | 1.8+) | 2006 09 20 | 644 | 0.6-  | 0.1+  | 2007 12 06 | 691 | 0.2-  | 0.3+  |
| 2006 08 22 | 644 | 0.2-  | 0.0   | 2006 09 20 | 699 | 1.4-  | 0.6+  | 2007 12 06 | 691 | 0.4-  | 0.8+  |
| 2006 08 22 | 644 | 0.3-  | 0.2-  | 2006 09 20 | 644 | 0.3-  | 0.0   | 2007 12 06 | 691 | 0.3-  | 0.5+  |
| 2006 08 22 | 644 | 0.1-  | 0.3-  | 2006 09 20 | 699 | (1.9- | 0.4+) |            |     |       |       |
| 2006 08 22 | 644 | 0.2-  | 0.2-  | 2006 09 20 | 699 | 0.1-  | 0.8+  |            |     |       |       |

(173024)\* 2006 QG<sub>7</sub>

Discovered 2006 Aug. 17 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.34779   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21645278 | $\omega$ 87.94389  | +0.22871761   | -0.97303666 |
| <i>a</i> | 2.7472231  | $\Omega$ 348.70044 | +0.82175628   | +0.20938811 |
| <i>e</i> | 0.1485300  | <i>i</i> 8.74738   | +0.52192421   | +0.09672788 |
| <i>P</i> | 4.55       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 02 23 | 699 | 0.6+ | 0.7+ | 2006 08 17 | 644 | 0.1- | 0.6+ | 2006 09 29 | 704 | 0.9+ | 0.1- |
| 1999 02 23 | 699 | 1.3+ | 1.0+ | 2006 08 17 | 644 | 0.5+ | 0.4+ | 2006 09 29 | 704 | 0.1+ | 0.4- |
| 1999 02 23 | 699 | 0.8+ | 1.0+ | 2006 08 18 | 644 | 0.1- | 0.3+ | 2006 09 29 | 704 | 0.4+ | 0.6- |
| 2001 08 26 | 608 | 0.2+ | 0.7- | 2006 08 18 | 644 | 0.0  | 0.2+ | 2006 09 29 | 704 | 0.0  | 0.4+ |
| 2001 08 26 | 608 | 0.2+ | 0.5- | 2006 08 18 | 644 | 0.0  | 0.3+ | 2006 10 01 | 703 | 0.1- | 0.5+ |
| 2001 08 26 | 608 | 0.4- | 0.3- | 2006 08 21 | 691 | 0.2- | 0.3+ | 2006 10 01 | 703 | 0.0  | 0.7- |
| 2002 10 31 | 704 | 1.0- | 0.3+ | 2006 08 21 | 691 | 0.1- | 0.2+ | 2006 10 01 | 703 | 0.2+ | 0.6+ |
| 2002 10 31 | 704 | 0.3+ | 0.6+ | 2006 08 21 | 691 | 0.2- | 0.1+ | 2006 10 01 | 703 | 0.3+ | 0.3- |
| 2002 10 31 | 704 | 0.1- | 0.5+ | 2006 08 28 | 703 | 0.1- | 0.9+ | 2006 10 11 | 644 | 0.1+ | 0.3+ |
| 2002 10 31 | 704 | 0.3- | 0.1+ | 2006 08 28 | 703 | 0.2- | 0.3- | 2006 10 11 | 644 | 0.1- | 0.3+ |
| 2002 10 31 | 704 | 0.2- | 0.3+ | 2006 08 28 | 703 | 0.3- | 0.2+ | 2006 10 11 | 644 | 0.0  | 0.4+ |
| 2002 12 06 | 704 | 1.0+ | 0.7- | 2006 08 28 | 703 | 0.3- | 0.3+ | 2006 10 12 | 644 | 0.3- | 0.3+ |
| 2002 12 06 | 704 | 0.5+ | 0.7- | 2006 09 17 | 703 | 0.2+ | 0.3+ | 2006 10 12 | 644 | 0.2- | 0.1+ |
| 2002 12 06 | 704 | 0.4+ | 0.6- | 2006 09 17 | 703 | 0.0  | 0.4+ | 2006 10 12 | 644 | 0.1- | 0.1+ |
| 2002 12 06 | 704 | 0.3- | 1.5- | 2006 09 17 | 703 | 0.0  | 0.6+ | 2006 10 17 | 703 | 0.8- | 0.7+ |
| 2002 12 15 | 704 | 0.2- | 0.1- | 2006 09 17 | 703 | 0.0  | 0.1+ | 2006 10 17 | 703 | 0.0  | 0.7- |
| 2002 12 15 | 704 | 0.8- | 0.5- | 2006 09 18 | 699 | 0.2+ | 0.0  | 2006 10 17 | 703 | 0.2+ | 0.3+ |
| 2002 12 15 | 704 | 0.3+ | 0.5- | 2006 09 18 | 699 | 1.1+ | 0.0  | 2006 10 17 | 703 | 0.6- | 0.0  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 03 18 | 704 | 0.3−  | 0.9+  | 2006 09 18 | 699 | 0.9+  | 1.3+  | 2006 10 19 | 644 | 0.1−  | 0.1+  |
| 2004 03 18 | 704 | (0.9− | 2.0+) | 2006 09 18 | 699 | (1.5+ | 0.1+) | 2006 10 19 | 644 | 0.1+  | 0.1−  |
| 2004 03 18 | 704 | 1.2+  | 0.6−  | 2006 09 25 | 704 | 0.2−  | 0.6−  | 2006 10 19 | 644 | 0.0   | 0.1+  |
| 2004 03 18 | 704 | 0.5+  | 0.1−  | 2006 09 25 | 704 | 0.4−  | 0.4−  | 2006 10 23 | G96 | 0.4+  | 0.0   |
| 2004 03 18 | 704 | 1.0+  | 1.0−  | 2006 09 25 | 704 | 0.6+  | 0.0   | 2006 10 23 | G96 | 0.2−  | 0.2−  |
| 2004 04 21 | 704 | 0.1−  | 1.0+  | 2006 09 25 | 704 | 0.2−  | 0.1−  | 2006 10 23 | G96 | 0.3−  | 0.3−  |
| 2004 04 21 | 704 | 1.0−  | 1.3+  | 2006 09 25 | 704 | 0.2+  | 0.8+  | 2006 10 23 | G96 | 0.3+  | 0.2−  |
| 2004 04 21 | 704 | 0.6−  | 0.6+  | 2006 09 25 | 704 | 0.5+  | 0.2−  | 2007 11 20 | 704 | 0.6+  | 1.4+  |
| 2006 07 21 | G96 | 0.5−  | 0.2+  | 2006 09 25 | 704 | (1.5− | 0.5−) | 2007 11 20 | 704 | 0.6+  | 0.3−  |
| 2006 07 21 | G96 | 0.2−  | 0.0   | 2006 09 25 | 704 | 1.0−  | 0.5−  | 2007 11 20 | 704 | (0.7+ | 2.0+) |
| 2006 07 21 | G96 | 0.1+  | 0.4+  | 2006 09 25 | 704 | 1.0−  | 0.5+  | 2007 12 13 | 704 | 0.2−  | 1.0+  |
| 2006 07 21 | G96 | 0.2−  | 0.1+  | 2006 09 25 | 704 | 1.2−  | 1.3−  | 2007 12 13 | 704 | 0.9+  | 1.2+  |
| 2006 08 17 | 644 | 0.2−  | 0.4+  | 2006 09 29 | 704 | 0.3−  | 0.0   | 2007 12 13 | 704 | 0.1−  | 0.4−  |

(173025)\* 2006 QA<sub>17</sub> = 2004 BG<sub>78</sub> = 2005 GB<sub>132</sub>

Discovered 2006 Aug. 17 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 104016), A. Doppler (*MPO* 109629)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 86.89510   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22778629 | $\omega$ | 254.55182 | +0.95651009 | +0.28621990 |
| <i>a</i> | 2.6553249  | $\Omega$ | 88.79115  | −0.24137927 | +0.88495430 |
| <i>e</i> | 0.1687321  | <i>i</i> | 3.22661   | −0.16378185 | +0.36733371 |
| <i>P</i> | 4.33       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 03 | 704 | 0.0   | 0.1+  | 2005 04 14 | 691 | 0.1− | 0.5+ | 2006 08 23 | 644 | 0.4−  | 0.2+  |
| 2002 10 03 | 704 | 0.6−  | 0.7+  | 2005 04 14 | 691 | 0.2+ | 0.4+ | 2006 08 23 | 644 | 0.1−  | 0.6+  |
| 2002 10 03 | 704 | 0.5−  | 1.1−  | 2005 05 03 | 691 | 0.2− | 0.1− | 2006 08 23 | 644 | 0.0   | 0.2+  |
| 2002 10 10 | 644 | 0.4−  | 0.4+  | 2005 05 03 | 691 | 0.0  | 0.1+ | 2006 08 24 | 644 | 0.2−  | 0.3+  |
| 2002 10 10 | 644 | 0.4−  | 0.5+  | 2005 05 03 | 691 | 0.2+ | 0.0  | 2006 08 24 | 644 | 0.1−  | 0.2+  |
| 2002 10 10 | 644 | 0.2−  | 0.5+  | 2006 07 25 | 644 | 0.5+ | 0.2+ | 2006 08 24 | 644 | 0.3−  | 0.3+  |
| 2002 10 31 | 704 | (0.2+ | 1.5+) | 2006 07 25 | 644 | 0.1+ | 0.4+ | 2006 08 31 | 704 | (1.0+ | 1.6−) |
| 2002 10 31 | 704 | 1.1−  | 0.8+  | 2006 07 25 | 644 | 0.1+ | 0.5+ | 2006 08 31 | 704 | 0.6−  | 1.4+  |
| 2002 10 31 | 704 | 0.4+  | 0.7+  | 2006 08 17 | 644 | 0.1− | 0.3+ | 2006 08 31 | 704 | 0.2−  | 1.2−  |
| 2002 10 31 | 704 | 0.4−  | 1.0+  | 2006 08 17 | 644 | 0.2− | 0.3+ | 2006 08 31 | 704 | (0.9+ | 1.7−) |
| 2004 01 22 | 704 | 0.6+  | 0.4+  | 2006 08 17 | 644 | 0.3− | 0.2+ | 2006 09 14 | 644 | 0.0   | 0.2+  |
| 2004 01 22 | 704 | 0.2+  | 0.4+  | 2006 08 19 | 699 | 0.1+ | 0.2− | 2006 09 14 | 644 | 0.0   | 0.1+  |
| 2004 01 22 | 704 | 0.7−  | 1.4+  | 2006 08 19 | 699 | 0.1− | 0.1+ | 2006 09 14 | 644 | 0.3+  | 0.5+  |
| 2004 01 22 | 704 | 0.2+  | 1.2+  | 2006 08 19 | 699 | 0.7− | 0.3+ | 2007 11 05 | G96 | 0.1+  | 0.3−  |
| 2004 01 28 | 691 | 0.1+  | 0.2+  | 2006 08 19 | 699 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.4+  | 0.4−  |
| 2004 01 28 | 691 | 1.1−  | 1.0−  | 2006 08 20 | 644 | 0.0  | 0.5+ | 2007 11 05 | G96 | 0.7+  | 0.2−  |
| 2004 01 28 | 691 | 0.0   | 0.1+  | 2006 08 20 | 644 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.1+  | 0.0   |
| 2004 02 13 | 291 | 0.4+  | 0.0   | 2006 08 20 | 644 | 0.2− | 0.3+ | 2007 12 03 | 691 | 0.0   | 0.2+  |
| 2004 02 13 | 291 | 0.8+  | 0.0   | 2006 08 20 | 644 | 0.4− | 0.3+ | 2007 12 03 | 691 | 0.1+  | 0.2−  |
| 2004 02 13 | 291 | 1.1+  | 0.2+  | 2006 08 20 | 644 | 0.2+ | 0.3+ | 2007 12 03 | 691 | 0.4+  | 0.0   |
| 2005 04 10 | 691 | 0.0   | 0.4+  | 2006 08 20 | 644 | 0.1− | 0.3+ | 2007 12 15 | 691 | 1.3−  | 1.3+  |
| 2005 04 10 | 691 | 0.1+  | 0.3+  | 2006 08 23 | 704 | 0.9+ | 0.8− | 2007 12 15 | 691 | 0.2+  | 0.1−  |
| 2005 04 10 | 691 | 0.1+  | 0.6+  | 2006 08 23 | 704 | 1.1+ | 1.0− | 2007 12 15 | 691 | 0.1−  | 0.1−  |
| 2005 04 14 | 691 | 0.0   | 0.0   | 2006 08 23 | 704 | 0.6+ | 0.2+ |            |     |       |       |

(173026)\* 2006 QL<sub>18</sub>

Discovered 2006 Aug. 17 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.50180   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18322176 | $\omega$ | 309.73205 | +0.93473194 | +0.34477046 |
| <i>a</i> | 3.0700917  | $\Omega$ | 30.38775  | −0.25106188 | +0.81216085 |
| <i>e</i> | 0.0615547  | <i>i</i> | 9.79750   | −0.25148387 | +0.47066769 |
| <i>P</i> | 5.38       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 23 | 704 | 0.4− | 1.2+ | 2004 03 25 | 704 | 0.3− | 1.1+ | 2006 08 28 | E12 | 0.2+ | 0.4+ |
| 2001 09 23 | 704 | 0.1+ | 0.4+ | 2004 03 25 | 704 | 0.6+ | 0.7− | 2006 09 14 | 644 | 0.2− | 0.3+ |
| 2001 09 23 | 704 | 0.3+ | 1.1+ | 2004 03 25 | 704 | 0.9+ | 1.0+ | 2006 09 14 | 644 | 0.6− | 0.5+ |
| 2001 09 23 | 704 | 0.5+ | 0.4+ | 2006 08 17 | 644 | 0.2− | 0.0  | 2006 09 14 | 644 | 0.4− | 0.4+ |
| 2001 09 23 | 704 | 0.2+ | 0.1+ | 2006 08 17 | 644 | 0.1− | 0.1+ | 2007 11 02 | 691 | 0.1− | 0.0  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 23 | 704 | 0.3+  | 0.4+  | 2006 08 17 | 644 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.6− | 0.4− |
| 2001 09 23 | 704 | 0.3+  | 1.1+  | 2006 08 20 | 644 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.1+ | 0.1− |
| 2001 09 23 | 704 | 0.3+  | 0.4+  | 2006 08 20 | 644 | 0.2− | 0.2− | 2007 11 12 | G96 | 0.2+ | 0.1− |
| 2001 10 17 | 644 | 0.1−  | 0.4+  | 2006 08 20 | 644 | 0.1− | 0.1+ | 2007 11 12 | G96 | 0.3− | 0.0  |
| 2001 10 17 | 644 | 0.1−  | 0.5+  | 2006 08 20 | 644 | 0.1+ | 0.1+ | 2007 11 12 | G96 | 0.3+ | 0.3− |
| 2001 10 17 | 644 | 0.4+  | 0.1+  | 2006 08 20 | 644 | 0.2− | 0.2− | 2007 11 18 | 704 | 0.6+ | 0.3+ |
| 2001 10 24 | 704 | 0.2+  | 1.2+  | 2006 08 20 | 644 | 0.2+ | 0.0  | 2007 11 18 | 704 | 0.4+ | 0.8+ |
| 2001 10 24 | 704 | 0.1−  | 0.2−  | 2006 08 23 | 644 | 0.0  | 0.1− | 2007 11 18 | 704 | 0.8+ | 0.3+ |
| 2001 10 24 | 704 | (0.3− | 2.1+) | 2006 08 23 | 644 | 0.3+ | 0.2+ | 2007 11 18 | 704 | 0.2+ | 0.0  |
| 2001 10 24 | 704 | 0.1+  | 0.5+  | 2006 08 23 | 644 | 0.0  | 0.0  | 2007 11 20 | 691 | 0.0  | 0.3+ |
| 2001 12 10 | 645 | 0.1−  | 0.1−  | 2006 08 24 | 644 | 0.2− | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.8− |
| 2001 12 10 | 645 | 0.1−  | 0.1−  | 2006 08 24 | 644 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2004 02 29 | 691 | 0.1+  | 0.2+  | 2006 08 24 | 644 | 0.0  | 0.0  | 2007 12 16 | 704 | 0.9+ | 0.2− |
| 2004 02 29 | 691 | 0.0   | 0.1+  | 2006 08 28 | E12 | 0.2− | 0.0  | 2007 12 16 | 704 | 0.6+ | 0.7+ |
| 2004 02 29 | 691 | 0.4+  | 0.3+  | 2006 08 28 | E12 | 0.2− | 0.3− | 2007 12 16 | 704 | 0.3− | 0.8+ |
| 2004 03 25 | 704 | 0.6−  | 1.3+  | 2006 08 28 | E12 | 0.7+ | 0.2− | 2007 12 16 | 704 | 0.2+ | 0.2+ |

(173027)\* 2006 QO<sub>18</sub>

Discovered 2006 Aug. 17 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 152.10554  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24643589 | $\omega$ | 220.02651 | +0.14325886 | +0.98351286 |
| <i>a</i> | 2.5196105  | $\Omega$ | 58.47716  | −0.87167850 | +0.17819668 |
| <i>e</i> | 0.1075237  | <i>i</i> | 7.43868   | −0.46867206 | −0.03079613 |
| <i>P</i> | 4.00       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 03 26 | 704 | 1.1+  | 0.2−  | 2005 03 18 | 703 | 0.9−  | 0.3−  | 2006 08 20 | 644 | 0.1−  | 0.4+  |
| 2001 03 26 | 704 | (0.2− | 1.9+) | 2005 03 30 | 703 | 1.3−  | 0.9+  | 2006 08 20 | 644 | 0.1+  | 0.2+  |
| 2001 03 26 | 704 | 0.9+  | 0.7+  | 2005 03 30 | 703 | 1.2−  | 0.9−  | 2006 08 24 | 644 | 0.2+  | 0.1+  |
| 2001 03 26 | 704 | 0.7+  | 0.2+  | 2005 03 30 | 703 | 0.6−  | 0.0   | 2006 08 24 | 644 | 0.1+  | 0.1+  |
| 2002 08 14 | 704 | 0.2−  | 0.0   | 2005 03 30 | 703 | 0.6+  | 0.9+  | 2006 08 24 | 644 | 0.1−  | 0.1+  |
| 2002 08 14 | 704 | 0.2−  | 0.1+  | 2005 04 11 | 699 | 0.2+  | 0.1−  | 2006 08 28 | E12 | 0.1−  | 0.2+  |
| 2002 08 14 | 704 | 0.1+  | 1.1+  | 2005 04 11 | 699 | 0.1+  | 0.2+  | 2006 08 28 | E12 | 0.7−  | 0.0   |
| 2002 08 18 | 608 | 0.1+  | 0.2−  | 2005 04 11 | 699 | (1.4+ | 1.9+) | 2006 08 28 | E12 | 0.3+  | 1.0+  |
| 2002 08 18 | 608 | 0.2+  | 0.1+  | 2005 04 11 | 699 | 0.6+  | 0.4−  | 2006 08 28 | E12 | 0.3+  | 0.0   |
| 2002 08 18 | 608 | 0.4−  | 0.5−  | 2005 04 16 | 703 | (3.3− | 1.2+) | 2006 09 20 | 703 | 0.2−  | 0.0   |
| 2002 08 20 | 644 | 0.3+  | 0.5+  | 2005 04 16 | 703 | 0.2−  | 0.1−  | 2006 09 20 | 703 | 0.6+  | 0.3+  |
| 2002 08 20 | 644 | 0.2−  | 0.5+  | 2005 04 16 | 703 | 0.4+  | 0.9+  | 2006 09 20 | 703 | 0.4+  | 0.4+  |
| 2002 08 20 | 644 | 0.4−  | 0.1+  | 2005 04 16 | 703 | 0.4−  | 0.5+  | 2006 09 20 | 703 | (1.3+ | 1.6+) |
| 2002 09 09 | 644 | 0.2−  | 0.7−  | 2006 08 14 | 644 | 0.1−  | 0.2+  | 2006 09 26 | 703 | 0.1+  | 0.3−  |
| 2002 09 09 | 644 | 0.1+  | 0.8−  | 2006 08 14 | 644 | 0.0   | 0.3+  | 2006 09 26 | 703 | 1.2−  | 0.1+  |
| 2002 09 09 | 644 | 0.4−  | 1.0−  | 2006 08 14 | 644 | 0.2+  | 0.5+  | 2006 09 26 | 703 | 0.4−  | 0.2−  |
| 2005 03 03 | 703 | 0.1−  | 0.4−  | 2006 08 17 | 644 | 0.1+  | 0.4+  | 2006 09 26 | 703 | 0.2−  | 0.1−  |
| 2005 03 03 | 703 | 0.4+  | 0.6+  | 2006 08 17 | 644 | 0.1−  | 0.2+  | 2007 12 06 | 691 | 0.2−  | 0.2+  |
| 2005 03 03 | 703 | 0.9+  | 0.0   | 2006 08 17 | 644 | 0.2+  | 0.3+  | 2007 12 06 | 691 | 0.2−  | 0.3+  |
| 2005 03 03 | 703 | 1.3+  | 0.6+  | 2006 08 20 | 644 | 0.2+  | 0.2+  | 2007 12 06 | 691 | 0.0   | 0.2−  |
| 2005 03 18 | 703 | 0.4+  | 0.6+  | 2006 08 20 | 644 | 0.0   | 0.2+  | 2007 12 15 | 704 | 0.5+  | 0.0   |
| 2005 03 18 | 703 | (0.7− | 2.0+) | 2006 08 20 | 644 | 0.0   | 0.2+  | 2007 12 15 | 704 | 0.4+  | 0.4+  |
| 2005 03 18 | 703 | 0.7−  | 0.0   | 2006 08 20 | 644 | 0.2−  | 0.3+  | 2007 12 15 | 704 | 0.8+  | 0.9+  |

2007 DEC. 24

M.P.O. 129545

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 16 | 644 | 0.4+ | 0.6+ | 2006 08 17 | 644 | 0.1-  | 0.2-  | 2007 11 02 | G96 | 0.7+ | 0.3- |
| 2001 10 16 | 644 | 0.4+ | 0.6+ | 2006 08 17 | 644 | 0.2-  | 0.0   | 2007 11 02 | G96 | 0.5+ | 0.4- |
| 2001 10 24 | 644 | 0.2+ | 0.5+ | 2006 08 17 | 644 | 0.6-  | 0.1+  | 2007 11 02 | G96 | 0.8+ | 0.3- |
| 2001 10 24 | 644 | 0.7+ | 0.8+ | 2006 08 20 | 644 | 0.2-  | 0.0   | 2007 11 02 | G96 | 0.5+ | 0.3- |
| 2001 10 24 | 644 | 0.0  | 0.7+ | 2006 08 20 | 644 | 0.1-  | 0.2+  | 2007 11 07 | 703 | 0.5- | 0.2- |
| 2004 01 17 | 644 | 0.7+ | 0.5+ | 2006 08 20 | 644 | 0.2-  | 0.3+  | 2007 11 07 | 703 | 0.2+ | 0.2- |
| 2004 01 17 | 644 | 0.7+ | 0.8+ | 2006 09 26 | 703 | 0.5+  | 0.3-  | 2007 11 07 | 703 | 0.3+ | 1.4+ |
| 2004 01 17 | 644 | 0.4+ | 0.9+ | 2006 09 26 | 703 | (1.7- | 0.2+) | 2007 11 07 | 703 | 0.3+ | 0.4+ |
| 2004 02 12 | 644 | 0.2+ | 0.1+ | 2006 09 26 | 703 | 1.3-  | 0.5+  | 2007 11 18 | 704 | 0.6+ | 0.0  |
| 2004 02 12 | 644 | 0.4+ | 0.2+ | 2006 09 26 | 703 | 1.0+  | 0.5-  | 2007 11 18 | 704 | 0.9- | 0.3- |
| 2004 02 12 | 644 | 0.4+ | 0.3+ | 2007 10 07 | 691 | 0.2-  | 0.1-  | 2007 11 18 | 704 | 0.2+ | 0.3+ |
| 2005 05 13 | E12 | 0.3+ | 0.8+ | 2007 10 07 | 691 | 0.5-  | 0.0   | 2007 11 18 | 704 | 0.2+ | 0.0  |
| 2005 05 13 | E12 | 0.3+ | 0.7+ | 2007 10 07 | 691 | 0.3+  | 0.1+  | 2007 11 19 | 691 | 0.2- | 0.1+ |
| 2005 05 13 | E12 | 0.1+ | 0.7+ | 2007 10 11 | 691 | 0.4-  | 0.0   | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2005 05 13 | E12 | 0.1+ | 0.9+ | 2007 10 11 | 691 | 0.1-  | 0.2+  | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2005 05 30 | E12 | 0.3+ | 0.3+ | 2007 10 11 | 691 | 0.2-  | 0.1+  |            |     |      |      |

(173029)\* 2006 QQ<sub>19</sub> = 1996 JY<sub>2</sub>

Discovered 2006 Aug. 17 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 104018)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 133.71918  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.21857656 | $\omega$ | 225.10699 | +0.31425082 | +0.93604358 |
| <i>a</i> | 2.7293988  | $\Omega$ | 63.81162  | -0.81369833 | +0.35148958 |
| <i>e</i> | 0.1091731  | <i>i</i> | 10.16268  | -0.48902091 | +0.01665772 |
| <i>P</i> | 4.51       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 05 09 | 691 | 0.2-  | 0.5+  | 2005 05 13 | 703 | 0.7-  | 0.2-  | 2006 09 17 | 699 | 0.2+ | 0.2+ |
| 1996 05 09 | 691 | 0.4-  | 0.2+  | 2006 08 14 | 644 | 0.2-  | 0.7+  | 2007 11 06 | 691 | 0.1+ | 0.3+ |
| 1996 05 09 | 691 | 0.0   | 0.6+  | 2006 08 14 | 644 | 0.4-  | 0.1+  | 2007 11 06 | 691 | 0.3- | 0.0  |
| 1996 05 15 | 691 | 0.5+  | 0.1+  | 2006 08 14 | 644 | 0.1+  | 0.6+  | 2007 11 06 | 691 | 0.1- | 0.0  |
| 1996 05 15 | 691 | 0.4+  | 0.2+  | 2006 08 17 | 644 | 0.0   | 0.2+  | 2007 11 14 | 691 | 0.3- | 0.3+ |
| 1996 05 15 | 691 | 1.0+  | 0.6+  | 2006 08 17 | 644 | 0.3-  | 0.2+  | 2007 11 14 | 691 | 0.2- | 0.5+ |
| 2002 10 15 | 644 | 1.1-  | 0.8+  | 2006 08 17 | 644 | 0.3-  | 0.2+  | 2007 11 14 | 691 | 0.2+ | 0.1+ |
| 2002 10 15 | 644 | 0.6-  | 0.6+  | 2006 08 18 | 428 | (2.0- | 0.5+) | 2007 12 10 | 704 | 0.5- | 0.6+ |
| 2002 10 15 | 644 | 1.2-  | 0.7+  | 2006 08 18 | 428 | 0.3+  | 1.3+  | 2007 12 10 | 704 | 0.6+ | 0.1+ |
| 2005 04 02 | 644 | 0.7+  | 0.1+  | 2006 08 20 | 644 | 0.4-  | 0.2+  | 2007 12 10 | 704 | 1.2+ | 0.2- |
| 2005 04 02 | 644 | 0.4+  | 0.2+  | 2006 08 20 | 644 | 0.2-  | 0.2+  | 2007 12 15 | 704 | 0.0  | 0.4- |
| 2005 04 02 | 644 | 0.9+  | 0.4+  | 2006 08 20 | 644 | 0.3-  | 0.2+  | 2007 12 15 | 704 | 1.8- | 0.4- |
| 2005 04 05 | 703 | (1.4- | 1.6-) | 2006 08 28 | E12 | 0.8-  | 0.1+  | 2007 12 15 | 704 | 0.9- | 0.5- |
| 2005 04 05 | 703 | 0.1+  | 0.5+  | 2006 08 28 | E12 | 0.0   | 0.4+  | 2007 12 15 | 704 | 0.3+ | 0.3- |
| 2005 04 05 | 703 | 1.3-  | 0.4+  | 2006 08 28 | E12 | 0.7+  | 0.0   | 2007 12 16 | 704 | 0.8+ | 0.6+ |
| 2005 04 05 | 703 | 1.2+  | 0.5-  | 2006 08 28 | E12 | 0.6+  | 0.0   | 2007 12 16 | 704 | 1.0+ | 0.6+ |
| 2005 05 13 | 703 | 0.9-  | 0.1-  | 2006 09 17 | 699 | 0.4+  | 0.7-  | 2007 12 16 | 704 | 0.6+ | 0.2+ |
| 2005 05 13 | 703 | 0.8-  | 0.5-  | 2006 09 17 | 699 | (1.3- | 1.7+) | 2007 12 16 | 704 | 0.6+ | 0.6+ |
| 2005 05 13 | 703 | 1.2-  | 0.5-  | 2006 09 17 | 699 | 0.6-  | 0.2-  | 2007 12 16 | 704 | 0.4+ | 0.0  |

(173030)\* 2006 QE<sub>29</sub> = 2002 GM<sub>118</sub>

Discovered 2006 Aug. 21 by NEAT at Palomar.

Id. G. V. Williams (*MPO* 104024)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 159.48922  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.29578583 | $\omega$ | 175.60977 | +0.33346537 | +0.93868809 |
| <i>a</i> | 2.2309224  | $\Omega$ | 113.84994 | -0.86785626 | +0.34192123 |
| <i>e</i> | 0.1738709  | <i>i</i> | 5.49318   | -0.36827484 | +0.04421017 |
| <i>P</i> | 3.33       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 01 01 | 691 | 0.2- | 0.1- | 2004 12 20 | G96 | 0.1- | 0.5- | 2006 08 28 | 699 | 0.3-  | 0.4+  |
| 1998 01 01 | 691 | 0.2+ | 0.0  | 2005 02 01 | 691 | 0.3+ | 0.1- | 2006 08 28 | 699 | 0.1-  | 1.1+  |
| 1998 01 01 | 691 | 0.1- | 0.3+ | 2005 02 01 | 691 | 0.3+ | 0.0  | 2006 08 28 | 699 | 1.1-  | 0.1+  |
| 1999 06 14 | 704 | 1.1- | 0.7- | 2005 02 01 | 691 | 0.4+ | 0.3+ | 2006 08 28 | 699 | (2.1+ | 0.4+) |
| 1999 06 14 | 704 | 0.4+ | 0.2- | 2006 08 16 | 644 | 0.3+ | 0.3+ | 2006 09 16 | 704 | 0.2+  | 0.1-  |
| 1999 06 14 | 704 | 0.9- | 0.1+ | 2006 08 16 | 644 | 0.0  | 0.5+ | 2006 09 16 | 704 | 0.6-  | 0.4+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 06 14 | 704 | 0.5+  | 0.2-  | 2006 08 16 | 644 | 0.2+ | 0.5+ | 2006 09 16 | 704 | 1.0+ | 0.5- |
| 1999 06 14 | 704 | 0.5-  | 0.5-  | 2006 08 16 | 644 | 0.1+ | 0.4+ | 2006 09 16 | 704 | 0.2- | 0.7- |
| 2002 04 12 | 644 | 0.4+  | 1.3+  | 2006 08 16 | 644 | 0.0  | 0.2+ | 2006 09 20 | 703 | 0.2- | 0.9+ |
| 2002 04 12 | 644 | 0.4+  | 1.4+  | 2006 08 16 | 644 | 0.0  | 0.4+ | 2006 09 20 | 703 | 0.1+ | 0.2+ |
| 2002 04 12 | 644 | 0.8+  | 1.4+  | 2006 08 21 | 644 | 0.0  | 0.5+ | 2006 09 20 | 703 | 0.1- | 0.2- |
| 2002 04 13 | 644 | 0.4+  | 0.7+  | 2006 08 21 | 644 | 0.2+ | 0.5+ | 2006 09 20 | 703 | 0.5- | 0.7- |
| 2002 04 13 | 644 | 0.4+  | 0.8+  | 2006 08 21 | 644 | 0.3+ | 0.3+ | 2007 11 11 | G96 | 0.9+ | 0.2- |
| 2002 04 13 | 644 | 0.4+  | 0.5+  | 2006 08 22 | 644 | 0.0  | 0.7+ | 2007 11 11 | G96 | 0.8+ | 0.3+ |
| 2003 10 27 | 704 | (0.5+ | 1.7+) | 2006 08 22 | 644 | 0.1- | 0.5+ | 2007 11 11 | G96 | 0.2- | 0.1+ |
| 2003 10 27 | 704 | 1.6+  | 0.5+  | 2006 08 22 | 644 | 0.4- | 0.5+ | 2007 11 11 | G96 | 0.7- | 0.5- |
| 2003 10 27 | 704 | (1.9+ | 1.5+) | 2006 08 23 | 704 | 0.6- | 1.2- | 2007 12 03 | 691 | 0.8- | 0.4+ |
| 2004 12 20 | G96 | 0.4-  | 0.0   | 2006 08 23 | 704 | 0.2- | 0.5+ | 2007 12 03 | 691 | 0.3- | 0.5+ |
| 2004 12 20 | G96 | 0.4+  | 0.4-  | 2006 08 23 | 704 | 1.1+ | 0.1- | 2007 12 03 | 691 | 0.5- | 0.1- |
| 2004 12 20 | G96 | 0.0   | 0.3-  | 2006 08 23 | 704 | 1.3- | 0.9+ |            |     |      |      |

(173031)\* 2006 QM<sub>29</sub> = 2001 KW<sub>30</sub>

Discovered 2006 Aug. 16 by the Siding Spring Survey at Siding Spring.

Id. G. V. Williams (*MPO* 104025)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 125.27153  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.21990899 | $\omega$ | 203.88418 | +0.29909030 | +0.95097743 |
| <i>a</i> | 2.7183627  | $\Omega$ | 83.59460  | -0.86224253 | +0.30465015 |
| <i>e</i> | 0.1539849  | <i>i</i> | 4.53977   | -0.40875764 | +0.05319975 |
| <i>P</i> | 4.48       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 21 | 704 | 0.9-  | 0.4+  | 2005 04 05 | 699 | 0.5+ | 0.3- | 2006 08 28 | 704 | 0.5- | 0.7- |
| 2001 05 21 | 704 | 0.4-  | 1.1+  | 2005 04 05 | 699 | 0.1- | 1.0+ | 2006 08 28 | 704 | 0.5- | 1.0- |
| 2001 05 21 | 704 | 0.2-  | 0.3-  | 2005 04 05 | 699 | 0.5+ | 0.7+ | 2007 11 14 | 691 | 0.3- | 0.5+ |
| 2001 05 21 | 704 | 0.0   | 0.3+  | 2005 04 05 | 699 | 0.4+ | 0.3+ | 2007 11 14 | 691 | 0.3- | 0.4+ |
| 2001 05 24 | 704 | 0.1+  | 0.2-  | 2006 08 16 | E12 | 0.3- | 0.7+ | 2007 11 14 | 691 | 0.1+ | 0.5+ |
| 2001 05 24 | 704 | 1.3+  | 1.4+  | 2006 08 16 | E12 | 0.1+ | 0.3+ | 2007 11 19 | 691 | 0.2- | 0.0  |
| 2001 05 24 | 704 | 0.2+  | 0.2+  | 2006 08 16 | E12 | 1.0+ | 0.1- | 2007 11 19 | 691 | 0.5- | 0.3+ |
| 2002 10 11 | 704 | 1.0-  | 0.3+  | 2006 08 16 | E12 | 0.2+ | 0.7+ | 2007 11 19 | 691 | 0.2- | 0.2+ |
| 2002 10 11 | 704 | 0.3+  | 0.2-  | 2006 08 23 | 704 | 1.0- | 0.6+ | 2007 11 21 | G96 | 0.4+ | 0.3- |
| 2002 10 11 | 704 | (0.0  | 1.6+) | 2006 08 23 | 704 | 0.3+ | 0.1+ | 2007 11 21 | G96 | 0.4+ | 0.1- |
| 2002 10 11 | 704 | 0.1-  | 0.8+  | 2006 08 23 | 704 | 0.2+ | 0.2+ | 2007 11 21 | G96 | 0.3+ | 0.1+ |
| 2002 10 31 | 704 | 0.6+  | 1.1+  | 2006 08 23 | 644 | 0.0  | 0.3+ | 2007 11 21 | G96 | 0.2- | 0.0  |
| 2002 10 31 | 704 | 0.7-  | 0.4+  | 2006 08 23 | 644 | 0.2+ | 0.2+ | 2007 12 04 | G96 | 0.3+ | 0.4- |
| 2002 10 31 | 704 | (0.7- | 1.6+) | 2006 08 23 | 644 | 0.1+ | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.5- |
| 2003 12 17 | 691 | 0.5-  | 0.6-  | 2006 08 24 | 644 | 0.1+ | 0.3+ | 2007 12 04 | G96 | 0.5+ | 0.2- |
| 2003 12 17 | 691 | 0.7+  | 0.2-  | 2006 08 24 | 644 | 0.1+ | 0.5+ | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2003 12 17 | 691 | 0.1+  | 0.2-  | 2006 08 24 | 644 | 0.1- | 0.3+ | 2007 12 05 | 704 | 0.1+ | 1.9+ |
| 2005 03 11 | 691 | 0.1+  | 0.4+  | 2006 08 28 | 704 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.1+ | 0.0  |
| 2005 03 11 | 691 | 0.3+  | 0.3+  | 2006 08 28 | 704 | 0.6- | 0.4- | 2007 12 05 | 704 | 0.3+ | 0.3+ |
| 2005 03 11 | 691 | 0.1-  | 0.3+  | 2006 08 28 | 704 | 0.4+ | 0.3- | 2007 12 05 | 704 | 0.1+ | 0.3- |

(173032)\* 2006 QF<sub>40</sub> = 2005 KF<sub>7</sub>

Discovered 2006 Aug. 25 by J. Lacruz at La Cañada.

Id. G. V. Williams (*MPO* 109661)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC      |           | Q           |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 109.16296  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |
| <i>n</i> | 0.18219321 | $\omega$ | 137.14116 | +0.49092392 | +0.86860603 |
| <i>a</i> | 3.0816354  | $\Omega$ | 161.93102 | -0.84642023 | +0.49380742 |
| <i>e</i> | 0.1629826  | <i>i</i> | 12.51501  | -0.20631649 | +0.04096077 |
| <i>P</i> | 5.41       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    |             |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 644 | 0.2+  | 0.9+  | 2006 08 25 | J87 | 0.2+ | 0.3+ | 2006 09 30 | 703 | 0.0  | 0.7+ |
| 2001 10 15 | 644 | 0.3+  | 1.2+  | 2006 08 27 | 691 | 0.2- | 0.2+ | 2006 09 30 | G96 | 0.2- | 0.4- |
| 2001 10 23 | 644 | 0.4-  | 0.0   | 2006 08 27 | 691 | 0.1+ | 0.1+ | 2006 09 30 | G96 | 0.1- | 0.4- |
| 2001 10 23 | 644 | 0.4-  | 0.1+  | 2006 08 27 | 691 | 0.1- | 0.4+ | 2006 11 27 | G96 | 0.3+ | 0.2- |
| 2001 10 23 | 644 | 0.5-  | 0.5+  | 2006 08 28 | 703 | 0.7- | 0.3+ | 2006 11 27 | G96 | 0.4+ | 0.5- |
| 2004 03 18 | 691 | 0.4+  | 0.9+  | 2006 08 28 | 703 | 0.8- | 1.2- | 2006 11 27 | G96 | 0.5+ | 0.1- |
| 2004 03 18 | 691 | 0.0   | 0.4+  | 2006 08 28 | 703 | 0.8+ | 0.8+ | 2006 11 27 | G96 | 0.7+ | 0.9- |
| 2004 03 18 | 691 | 0.3+  | 0.1+  | 2006 08 28 | 703 | 1.0- | 0.7- | 2007 11 10 | J87 | 0.3- | 0.5- |
| 2005 05 19 | 703 | (0.3+ | 1.5+) | 2006 08 28 | 703 | 0.0  | 0.2+ | 2007 11 10 | J87 | 0.2- | 0.6- |
| 2005 05 19 | 703 | 0.8+  | 0.8+  | 2006 09 14 | 703 | 0.6+ | 0.3- | 2007 11 11 | J87 | 0.1+ | 0.6- |
| 2005 05 19 | 703 | (3.0- | 1.9-) | 2006 09 14 | 703 | 0.2+ | 1.1- | 2007 11 16 | J87 | 0.3- | 0.0  |
| 2005 05 19 | 703 | 0.9-  | 0.0   | 2006 09 14 | 703 | 0.3- | 0.1- | 2007 11 16 | J87 | 0.2- | 0.1- |
| 2005 05 20 | 644 | 0.4-  | 0.4+  | 2006 09 16 | J87 | 0.0  | 0.2+ | 2007 11 16 | J87 | 0.5- | 0.1- |
| 2005 05 20 | 644 | 0.0   | 0.6+  | 2006 09 16 | J87 | 1.4+ | 0.6+ | 2007 12 14 | J87 | 0.1- | 0.1+ |
| 2005 05 20 | 644 | 0.1-  | 0.8+  | 2006 09 17 | J87 | 0.0  | 0.4- | 2007 12 14 | J87 | 0.0  | 0.1+ |
| 2006 08 18 | 691 | 0.2+  | 0.2+  | 2006 09 17 | 704 | 0.4+ | 0.5+ | 2007 12 14 | J87 | 0.5+ | 0.0  |

(173033)\* 2006 QX<sub>44</sub> = 2001 VP<sub>84</sub> = 2004 FJ<sub>19</sub>

Discovered 2006 Aug. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 109666)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.22231   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17368607 | $\omega$ | 2.29988   | +0.91117669   | +0.40610976 |
| <i>a</i> | 3.1814570  | $\Omega$ | 333.39891 | -0.38045193   | +0.76455052 |
| <i>e</i> | 0.0714496  | <i>i</i> | 8.93061   | -0.15815616   | +0.50053707 |
| <i>P</i> | 5.67       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 08 01 | 807 | 0.4-  | 0.1-  | 2004 03 18 | 704 | 0.5+  | 0.4-  | 2006 08 28 | 703 | 0.2-  | 0.0   |
| 2000 08 01 | 807 | 0.5-  | 0.2-  | 2004 03 18 | 704 | 0.7+  | 0.1+  | 2006 08 28 | 699 | 0.2-  | 1.1-  |
| 2001 11 12 | 704 | 0.6+  | 0.1+  | 2004 03 18 | 704 | 0.5+  | 0.6+  | 2006 08 28 | 703 | 0.5+  | 0.9-  |
| 2001 11 12 | 704 | 0.9+  | 0.1-  | 2004 03 18 | 704 | 1.0+  | 0.8+  | 2006 08 28 | 699 | 0.9-  | 0.7+  |
| 2001 11 12 | 704 | 1.4+  | 1.1+  | 2006 08 16 | 644 | 0.0   | 0.2+  | 2006 08 28 | 699 | 1.3-  | 1.3+  |
| 2001 11 12 | 704 | 0.3+  | 0.1+  | 2006 08 16 | 644 | 0.2+  | 0.2+  | 2006 08 28 | 699 | 0.1-  | 0.4+  |
| 2001 11 17 | 704 | 0.7+  | 1.0-  | 2006 08 16 | 644 | 0.1+  | 0.0   | 2006 08 31 | 704 | 0.5-  | 1.0-  |
| 2001 11 17 | 704 | 0.0   | 0.5-  | 2006 08 18 | 644 | 0.1-  | 0.1+  | 2006 08 31 | 704 | 0.3-  | 0.1-  |
| 2001 11 17 | 704 | 0.4-  | 1.2+  | 2006 08 18 | 699 | 0.3+  | 0.8-  | 2006 08 31 | 704 | 0.4+  | 0.1+  |
| 2001 11 18 | 704 | 0.4+  | 0.2-  | 2006 08 18 | 699 | (2.4- | 1.7+) | 2006 09 14 | 703 | 0.5-  | 0.3-  |
| 2001 11 18 | 704 | 0.2-  | 1.2-  | 2006 08 18 | 644 | 0.1+  | 0.3+  | 2006 09 14 | 703 | 0.0   | 0.8-  |
| 2001 11 18 | 704 | 0.1-  | 0.2-  | 2006 08 18 | 699 | 0.3-  | 1.3+  | 2006 09 14 | 703 | 0.8+  | 0.0   |
| 2001 11 18 | 704 | 0.0   | 0.7-  | 2006 08 18 | 644 | 0.4-  | 0.2-  | 2006 09 14 | 703 | 0.6-  | 0.7-  |
| 2001 11 18 | 704 | 0.1+  | 0.2-  | 2006 08 18 | 699 | (0.9+ | 1.9+) | 2006 09 18 | 699 | (0.7+ | 2.2-) |
| 2002 11 07 | 645 | 0.1+  | 0.1+  | 2006 08 19 | 691 | 0.2+  | 0.5+  | 2006 09 18 | 699 | 0.5-  | 1.5+  |
| 2002 11 07 | 645 | 0.0   | 0.0   | 2006 08 19 | 691 | 0.2+  | 0.2+  | 2006 09 18 | 699 | 0.3+  | 0.7-  |
| 2002 12 13 | 645 | 0.0   | 0.1+  | 2006 08 19 | 691 | 0.0   | 0.4+  | 2006 09 18 | 699 | 1.5+  | 0.4+  |
| 2002 12 13 | 645 | 0.0   | 0.2+  | 2006 08 25 | 704 | 0.6-  | 1.0+  | 2007 11 09 | 704 | 0.4+  | 1.1-  |
| 2003 01 09 | 704 | 0.7-  | 0.5+  | 2006 08 25 | 704 | 0.3-  | 0.5+  | 2007 11 09 | 704 | 0.3-  | 1.2-  |
| 2003 01 09 | 704 | 0.7-  | 0.3-  | 2006 08 25 | 704 | 0.7-  | 0.5+  | 2007 11 09 | 704 | 0.4+  | 0.9-  |
| 2003 01 09 | 704 | 0.1+  | 0.4+  | 2006 08 27 | 691 | 0.1-  | 0.1+  | 2007 11 09 | 704 | 0.6+  | 0.1+  |
| 2004 03 16 | 703 | 0.4+  | 1.3+  | 2006 08 27 | 691 | 0.5-  | 0.3+  | 2007 12 13 | 104 | 0.1-  | 0.4+  |
| 2004 03 16 | 703 | 0.9+  | 0.3-  | 2006 08 27 | 691 | 0.4-  | 0.1+  | 2007 12 13 | 104 | 0.1+  | 0.1-  |
| 2004 03 16 | 703 | (1.9+ | 1.9+) | 2006 08 28 | 703 | 0.6-  | 0.3-  | 2007 12 13 | 104 | 0.5-  | 0.9+  |
| 2004 03 16 | 703 | (1.5+ | 1.6+) | 2006 08 28 | 703 | 0.3+  | 0.1+  |            |     |       |       |

(173034)\* 2006 QG<sub>45</sub>

Discovered 2006 Aug. 19 by Spacewatch at Kitt Peak.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.42609   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21913035 | $\omega$ | 168.42358 | +0.98454660   | -0.17462826 |
| <i>a</i> | 2.7247983  | $\Omega$ | 201.64682 | +0.15769198   | +0.91670904 |
| <i>e</i> | 0.0966116  | <i>i</i> | 2.04315   | +0.07616581   | +0.35937376 |
| <i>P</i> | 4.50       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 29 | 691 | 0.4- | 0.2- | 2005 06 14 | 691 | 0.2+ | 0.4+ | 2006 08 29 | 691 | 0.0  | 0.6+ |
| 2000 03 29 | 691 | 0.0  | 0.2- | 2005 06 14 | 691 | 0.0  | 0.2- | 2006 08 29 | 691 | 0.2- | 0.2+ |
| 2000 03 29 | 691 | 0.0  | 0.3- | 2005 06 14 | 691 | 0.0  | 0.2+ | 2006 08 29 | 691 | 0.6- | 0.4+ |
| 2002 11 04 | 644 | 0.7- | 0.6+ | 2006 08 19 | 691 | 0.0  | 0.1+ | 2006 09 27 | G96 | 0.1- | 0.4- |
| 2002 11 04 | 644 | 0.7- | 0.3+ | 2006 08 19 | 691 | 0.2- | 0.5+ | 2006 09 27 | G96 | 0.1+ | 0.4- |
| 2002 11 04 | 644 | 0.3- | 0.6+ | 2006 08 19 | 691 | 0.4+ | 0.4+ | 2006 09 27 | G96 | 0.0  | 0.5- |
| 2004 02 29 | 691 | 0.1+ | 0.6+ | 2006 08 24 | 644 | 0.5- | 0.6+ | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2004 02 29 | 691 | 0.6+ | 0.8+ | 2006 08 24 | 644 | 0.1- | 0.4+ | 2007 11 05 | G96 | 0.1+ | 0.2- |
| 2004 02 29 | 691 | 0.4+ | 0.4+ | 2006 08 24 | 644 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.7+ | 0.3- |
| 2004 03 18 | 691 | 0.3+ | 0.1+ | 2006 08 27 | 691 | 0.1- | 0.4+ | 2007 11 05 | G96 | 0.2+ | 1.4- |
| 2004 03 18 | 691 | 0.5+ | 0.3+ | 2006 08 27 | 691 | 1.2+ | 1.0- | 2007 12 04 | 691 | 0.0  | 0.2- |
| 2004 03 18 | 691 | 0.0  | 0.1+ | 2006 08 27 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 691 | 0.2- | 0.1+ |
| 2005 04 07 | G96 | 1.3- | 0.9- | 2006 08 28 | 703 | 0.6- | 1.4- | 2007 12 04 | 691 | 0.1+ | 0.1- |
| 2005 04 07 | G96 | 1.0- | 0.1+ | 2006 08 28 | 703 | 0.0  | 0.6+ | 2007 12 16 | 691 | 0.2- | 0.2- |
| 2005 04 07 | G96 | 0.3- | 0.2+ | 2006 08 28 | 703 | 0.8- | 0.3- | 2007 12 16 | 691 | 0.2- | 0.1+ |
| 2005 04 07 | G96 | 0.3- | 0.3+ | 2006 08 28 | 703 | 0.6- | 0.1+ | 2007 12 16 | 691 | 0.4- | 0.1- |

(173035)\* 2006 QL<sub>50</sub> = 1994 SJ<sub>9</sub> = 2000 DN<sub>81</sub>

Discovered 2006 Aug. 22 by NEAT at Palomar.

Id. A. Doppler (*MPO* 109674)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.92585    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24188520 | $\omega$ | 74.05369 | +0.05879668   | -0.99791787 |
| <i>a</i> | 2.5511139  | $\Omega$ | 12.66435 | +0.86341057   | +0.03750562 |
| <i>e</i> | 0.0910577  | <i>i</i> | 6.94552  | +0.50106401   | +0.05247136 |
| <i>P</i> | 4.07       | <i>H</i> | 15.8     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 09 28 | 691 | 0.0   | 0.1-  | 2002 10 11 | 704 | 0.3+  | 1.2+  | 2006 08 24 | 644 | 0.0   | 0.3+  |
| 1994 09 28 | 691 | 0.1+  | 0.1-  | 2002 10 11 | 704 | 0.0   | 0.3+  | 2006 08 24 | 644 | 0.2-  | 0.6+  |
| 1994 09 28 | 691 | 0.1+  | 0.4-  | 2002 10 11 | 704 | (0.5+ | 2.4+) | 2006 08 30 | 699 | 0.6-  | 1.1+  |
| 1994 10 11 | 691 | 0.2-  | 0.4-  | 2002 10 11 | 704 | 1.3-  | 1.4+  | 2006 08 30 | 699 | 0.9-  | 0.6+  |
| 1994 10 11 | 691 | 0.0   | 0.4-  | 2002 10 11 | 704 | 0.6-  | 0.6+  | 2006 08 30 | 699 | 0.7+  | 0.4+  |
| 1994 10 11 | 691 | 0.6+  | 0.2-  | 2003 12 18 | 704 | 0.6+  | 0.2-  | 2006 08 30 | 699 | (0.6+ | 1.6+) |
| 1998 10 14 | 910 | 0.1+  | 0.1-  | 2003 12 18 | 704 | 0.2+  | 0.1+  | 2006 09 14 | 703 | 0.6-  | 0.8+  |
| 1998 10 14 | 910 | 0.6+  | 0.2-  | 2003 12 18 | 704 | 0.6+  | 0.9-  | 2006 09 14 | 703 | 0.4-  | 0.2+  |
| 1998 10 14 | 910 | 0.5+  | 0.1+  | 2003 12 18 | 704 | 0.0   | 0.6-  | 2006 09 14 | 703 | 1.3-  | 0.6-  |
| 2000 02 28 | 704 | 0.0   | 1.8+  | 2003 12 27 | 704 | (2.9+ | 2.1+) | 2006 09 14 | 703 | 0.5-  | 0.1-  |
| 2000 02 28 | 704 | 1.1+  | 1.1+  | 2003 12 27 | 704 | 0.2+  | 1.3+  | 2006 11 17 | G96 | 0.1+  | 0.2+  |
| 2000 02 28 | 704 | 0.3+  | 0.4+  | 2003 12 27 | 704 | 1.2+  | 0.2+  | 2006 11 17 | G96 | 0.3+  | 0.3-  |
| 2000 02 28 | 704 | 0.6+  | 0.7+  | 2003 12 27 | 704 | 0.2+  | 0.9+  | 2006 11 17 | G96 | 0.2-  | 0.2+  |
| 2000 03 04 | 704 | 0.5+  | 0.6+  | 2003 12 29 | 704 | (2.0+ | 1.6+) | 2006 11 17 | G96 | 0.4+  | 0.2-  |
| 2000 03 04 | 704 | 0.3-  | 0.1-  | 2003 12 29 | 704 | (1.8+ | 1.7+) | 2007 11 19 | G96 | 0.4+  | 0.9-  |
| 2000 03 04 | 704 | 0.4-  | 0.4+  | 2003 12 29 | 704 | (1.2+ | 2.4+) | 2007 11 19 | G96 | 0.0   | 0.7-  |
| 2000 03 04 | 704 | 0.3+  | 0.4+  | 2004 01 26 | 699 | 0.4-  | 0.7+  | 2007 11 19 | G96 | 0.4+  | 0.7-  |
| 2002 09 04 | 699 | (0.9+ | 1.6+) | 2004 01 26 | 699 | 0.8-  | 1.0+  | 2007 11 19 | G96 | 0.0   | 0.7-  |
| 2002 09 04 | 699 | 1.3+  | 0.1-  | 2004 01 26 | 699 | 1.1-  | 0.2-  | 2007 12 16 | 704 | 0.2-  | 0.4+  |
| 2002 09 04 | 699 | 0.7-  | 0.5+  | 2004 01 26 | 699 | 0.2-  | 1.0-  | 2007 12 16 | 704 | 0.8+  | 0.7+  |
| 2002 09 04 | 699 | 0.3+  | 0.2+  | 2006 08 22 | 644 | 0.4-  | 0.6+  | 2007 12 16 | 704 | 0.2-  | 0.0   |
| 2002 09 13 | 644 | 0.4-  | 0.9+  | 2006 08 22 | 644 | 0.2-  | 0.6+  | 2007 12 16 | 704 | 0.5-  | 0.0   |
| 2002 09 13 | 644 | 0.2-  | 0.7+  | 2006 08 22 | 644 | 0.3-  | 0.4+  | 2007 12 16 | 704 | 0.2-  | 0.7+  |
| 2002 09 13 | 644 | 0.3-  | 0.8+  | 2006 08 24 | 644 | 0.2-  | 0.5+  |            |     |       |       |

(173036)\* 2006 QR<sub>51</sub> = 2003 XT<sub>26</sub>

Discovered 2006 Aug. 23 by NEAT at Palomar.

Id. A. Doppler (*MPO* 109676)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|--|



2007 DEC. 24

M.P.O. 129547

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 17 | 644 | 0.2- | 0.1+ | 2003 12 19 | 691 | 0.1-  | 0.2-  | 2006 08 24 | 644 | 0.0  | 0.1+ |
| 2002 06 17 | 644 | 0.0  | 0.2- | 2003 12 19 | 691 | 0.3+  | 0.0   | 2006 08 24 | 644 | 0.4+ | 0.3+ |
| 2002 06 17 | 644 | 0.0  | 0.0  | 2003 12 19 | 691 | 0.2+  | 0.0   | 2007 11 09 | 691 | 0.1- | 0.4+ |
| 2002 07 12 | 644 | 0.0  | 0.5+ | 2005 03 16 | 703 | 0.1+  | 0.2+  | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2002 07 12 | 644 | 0.2+ | 0.4+ | 2005 03 16 | 703 | 0.5+  | 0.0   | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 2002 07 12 | 644 | 0.1+ | 0.3+ | 2005 03 16 | 703 | (0.5+ | 1.8-) | 2007 11 13 | 691 | 0.2+ | 0.2- |
| 2002 08 05 | 644 | 0.4- | 0.3- | 2005 03 16 | 703 | 0.3+  | 0.3+  | 2007 11 13 | 691 | 0.2- | 0.2+ |
| 2002 08 05 | 644 | 0.4- | 0.1- | 2006 08 16 | E12 | 0.0   | 0.3+  | 2007 11 13 | 691 | 0.3- | 0.1- |
| 2002 08 05 | 644 | 0.5- | 0.2- | 2006 08 16 | E12 | 0.7+  | 0.3-  | 2007 11 17 | 691 | 0.4- | 0.1- |
| 2003 11 19 | 691 | 0.0  | 0.0  | 2006 08 16 | E12 | 0.1-  | 0.8-  | 2007 11 17 | 691 | 0.1- | 0.2+ |
| 2003 11 19 | 691 | 0.1- | 0.1- | 2006 08 16 | E12 | 0.0   | 0.6-  | 2007 11 17 | 691 | 0.1+ | 0.0  |
| 2003 11 19 | 691 | 0.1+ | 0.0  | 2006 08 23 | 644 | 0.6-  | 0.1+  | 2007 12 14 | 704 | 0.4+ | 0.7- |
| 2003 12 01 | 704 | 0.3- | 0.2+ | 2006 08 23 | 644 | 0.2+  | 0.3+  | 2007 12 14 | 704 | 0.3- | 0.9- |
| 2003 12 01 | 704 | 0.1+ | 0.9+ | 2006 08 23 | 644 | 0.2+  | 0.4+  | 2007 12 14 | 704 | 0.9+ | 0.3+ |
| 2003 12 01 | 704 | 0.1+ | 0.5+ | 2006 08 24 | 644 | 0.2+  | 0.4+  | 2007 12 14 | 704 | 0.3+ | 0.9- |

(173037)\* 2006 QK<sub>57</sub>

Discovered 2006 Aug. 25 by A. Lowe at RAS Observatory, Mayhill.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| M | 130.61954  |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.21861844 | $\omega$ | 7.44818   | +0.23366751 | +0.94495733 |
| a | 2.7290502  | $\Omega$ | 276.26929 | -0.90354274 | +0.12401558 |
| e | 0.1580013  | i        | 13.32114  | -0.35917965 | +0.30278010 |
| P | 4.51       | H        | 15.3      | G           | 0.15        |
|   |            |          |           | U           | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 06 | 704 | 0.1-  | 0.2-  | 2006 08 06 | 699 | 0.2+ | 0.4+ | 2006 09 15 | 704 | 0.6+  | 0.0   |
| 2002 10 06 | 704 | 0.1+  | 0.9+  | 2006 08 06 | 699 | 0.8- | 0.2- | 2006 09 15 | 704 | 0.2+  | 0.3+  |
| 2002 10 06 | 704 | 0.6-  | 0.6+  | 2006 08 25 | H06 | 0.3+ | 0.4+ | 2006 09 15 | 704 | 0.2+  | 0.2-  |
| 2002 10 06 | 704 | 1.3-  | 0.7+  | 2006 08 25 | H06 | 0.3+ | 0.3- | 2006 09 15 | 704 | 0.1-  | 0.9-  |
| 2002 11 14 | 644 | 0.1-  | 0.4+  | 2006 08 25 | H06 | 0.1+ | 0.2+ | 2006 09 15 | 704 | 0.2-  | 0.3-  |
| 2002 11 14 | 644 | 0.4+  | 0.4-  | 2006 08 27 | 699 | 1.0+ | 0.5- | 2006 09 20 | 699 | 1.0+  | 0.7+  |
| 2002 11 14 | 644 | 0.3+  | 0.3-  | 2006 08 27 | 699 | 0.2- | 0.6+ | 2006 09 20 | 699 | 0.5+  | 0.0   |
| 2002 11 14 | 644 | 0.5+  | 0.3-  | 2006 08 27 | 699 | 0.5- | 0.2- | 2006 09 20 | 699 | 0.0   | 0.3+  |
| 2002 11 14 | 644 | 0.1+  | 0.0   | 2006 08 27 | 699 | 0.6- | 0.0  | 2006 09 20 | 699 | 1.1-  | 0.0   |
| 2002 11 14 | 644 | 0.2+  | 0.3-  | 2006 08 27 | H06 | 1.0- | 0.0  | 2007 11 17 | 704 | (2.2- | 2.2+) |
| 2003 12 19 | 704 | 1.0-  | 0.6+  | 2006 08 27 | H06 | 0.1+ | 0.3- | 2007 11 17 | 704 | (0.1- | 1.9+) |
| 2003 12 19 | 704 | 1.1+  | 0.9+  | 2006 08 27 | H06 | 0.1+ | 0.2- | 2007 11 17 | 704 | 0.4+  | 0.1-  |
| 2003 12 19 | 704 | 0.2+  | 0.1-  | 2006 08 30 | 699 | 0.2+ | 0.3+ | 2007 11 17 | 704 | 0.3-  | 0.4-  |
| 2003 12 28 | 691 | 0.3+  | 0.2-  | 2006 08 30 | 699 | 0.5+ | 0.5+ | 2007 11 20 | 704 | 0.4+  | 0.1+  |
| 2003 12 28 | 691 | 0.1+  | 0.0   | 2006 08 30 | 699 | 0.5- | 0.3- | 2007 11 20 | 704 | 0.1+  | 0.5+  |
| 2003 12 28 | 691 | 0.3-  | 0.0   | 2006 08 30 | 699 | 0.3- | 0.7+ | 2007 11 20 | 704 | (2.1- | 1.0+) |
| 2006 06 03 | 703 | 0.6-  | 1.0-  | 2006 08 31 | H06 | 1.1+ | 0.2+ | 2007 11 20 | 704 | 0.3-  | 1.0+  |
| 2006 06 03 | 703 | 0.9-  | 0.3-  | 2006 08 31 | H06 | 0.6+ | 0.6- | 2007 12 15 | 704 | 0.1+  | 1.1-  |
| 2006 06 03 | 703 | 1.0-  | 0.5-  | 2006 09 11 | 703 | 0.5+ | 0.4+ | 2007 12 15 | 704 | 0.2-  | 0.6-  |
| 2006 06 03 | 703 | (0.9+ | 1.8-) | 2006 09 11 | 703 | 0.0  | 0.2- | 2007 12 15 | 704 | 0.8-  | 0.8-  |
| 2006 08 06 | 699 | 0.4+  | 1.2+  | 2006 09 11 | 703 | 0.2+ | 0.6- |            |     |       |       |
| 2006 08 06 | 699 | (1.6+ | 0.8-) | 2006 09 11 | 703 | 0.8- | 0.5- |            |     |       |       |

(173038)\* 2006 QZ<sub>76</sub>

Discovered 2006 Aug. 21 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| M | 66.00645   |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.20198542 | $\omega$ | 197.21101 | +0.99487917 | +0.09980793 |
| a | 2.8768863  | $\Omega$ | 157.04298 | -0.08725838 | +0.92771862 |
| e | 0.0716020  | i        | 2.34093   | -0.05100401 | +0.35968950 |
| P | 4.88       | H        | 16.0      | G           | 0.15        |
|   |            |          |           | U           | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 04 01 | 691 | 0.1- | 0.6- | 2004 03 18 | 691 | 0.2- | 0.1+ | 2006 09 14 | 703 | 0.5+  | 0.3+  |
| 1995 04 01 | 691 | 0.0  | 0.1+ | 2004 03 18 | 691 | 0.1+ | 0.1+ | 2006 09 14 | 703 | (1.4- | 1.9+) |
| 1997 11 28 | 691 | 0.2- | 0.0  | 2005 05 14 | 644 | 0.1- | 0.2+ | 2006 09 14 | 703 | 0.9+  | 0.6-  |
| 1997 11 28 | 691 | 0.1+ | 0.4- | 2005 05 14 | 644 | 0.2+ | 0.1+ | 2006 09 30 | G96 | 0.1-  | 0.1-  |
| 1997 11 28 | 691 | 0.3+ | 0.2- | 2005 05 14 | 644 | 0.2- | 0.1+ | 2006 09 30 | G96 | 0.2+  | 0.1-  |
| 2001 08 13 | 608 | 0.3- | 1.4- | 2006 08 21 | 644 | 0.2+ | 0.4+ | 2006 09 30 | G96 | 0.2-  | 0.2+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 13 | 608 | 0.3- | 0.9- | 2006 08 21 | 644 | 0.3+  | 0.3+  | 2006 09 30 | G96 | 0.1- | 0.1+ |
| 2001 08 13 | 608 | 0.1- | 0.7- | 2006 08 21 | 644 | 0.2+  | 0.1+  | 2006 10 28 | G96 | 0.0  | 0.2+ |
| 2001 08 27 | 691 | 0.1+ | 1.2+ | 2006 08 28 | 699 | 0.5+  | 0.7+  | 2006 10 28 | G96 | 0.1- | 0.0  |
| 2001 08 27 | 691 | 0.3- | 0.9+ | 2006 08 28 | 699 | 0.4-  | 0.2-  | 2006 10 28 | G96 | 0.3+ | 0.1- |
| 2001 08 27 | 691 | 0.5- | 0.9+ | 2006 08 28 | 699 | 0.0   | 0.4+  | 2006 10 28 | G96 | 0.3- | 0.4- |
| 2002 11 24 | 644 | 0.1+ | 0.6+ | 2006 08 28 | 703 | 0.1-  | 0.2+  | 2007 12 04 | 704 | 0.3- | 0.0  |
| 2002 11 24 | 644 | 0.1+ | 0.5+ | 2006 08 28 | 703 | 0.8+  | 0.1-  | 2007 12 04 | 704 | 0.0  | 0.1+ |
| 2002 11 24 | 644 | 0.1+ | 0.2+ | 2006 08 28 | 699 | 1.0+  | 0.4+  | 2007 12 04 | 704 | 0.3- | 0.2+ |
| 2004 02 14 | 691 | 0.2+ | 0.5+ | 2006 08 28 | 703 | 0.9-  | 0.4+  | 2007 12 04 | 704 | 0.7- | 0.2+ |
| 2004 02 14 | 691 | 0.3+ | 0.7+ | 2006 08 28 | 703 | 0.0   | 0.4-  | 2007 12 05 | G96 | 0.0  | 0.3+ |
| 2004 02 14 | 691 | 0.2+ | 0.7+ | 2006 08 28 | 703 | 0.5-  | 0.3+  | 2007 12 05 | G96 | 0.0  | 0.3+ |
| 2004 02 26 | 704 | 1.1- | 0.4+ | 2006 08 28 | 703 | (1.4- | 1.6+) | 2007 12 05 | G96 | 0.2- | 0.4+ |
| 2004 02 26 | 704 | 0.7+ | 0.6+ | 2006 08 28 | 703 | 0.8-  | 0.2-  | 2007 12 05 | G96 | 0.3+ | 0.1+ |
| 2004 02 26 | 704 | 0.8+ | 0.8- | 2006 08 28 | 703 | 0.0   | 0.6-  | 2007 12 05 | G96 | 0.3- | 0.2+ |
| 2004 03 18 | 691 | 0.4+ | 0.4+ | 2006 09 14 | 703 | 0.4-  | 0.4-  | 2007 12 05 | G96 | 0.1+ | 0.2- |

(173039)\* 2006 QW<sub>80</sub> = 2000 FF<sub>71</sub>

Discovered 2006 Aug. 24 by NEAT at Palomar.

Id. G. V. Williams (MPO 109699)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| M | 66.35717   |          | (2000.0)  | P           | Q           |
|---|------------|----------|-----------|-------------|-------------|
| n | 0.21945636 | $\omega$ | 28.03021  | +0.97942901 | -0.20172990 |
| a | 2.7220991  | $\Omega$ | 343.60574 | +0.18175191 | +0.89243312 |
| e | 0.0912230  | i        | 0.99174   | +0.08766449 | +0.40356929 |
| P | 4.49       | H        | 16.5      | G           | 0.15        |
|   |            |          |           | U           | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 29 | 691 | 0.1-  | 0.4-  | 2006 08 28 | 703 | 0.5+  | 0.6+  | 2006 09 25 | 701 | 0.1+ | 0.6+ |
| 2000 03 29 | 691 | 0.1-  | 0.3-  | 2006 08 28 | 691 | 0.1-  | 0.5+  | 2006 09 25 | 701 | 0.2+ | 0.1+ |
| 2000 03 29 | 691 | 0.1+  | 0.2-  | 2006 08 28 | 703 | 0.5+  | 0.4+  | 2006 09 25 | 701 | 0.1- | 0.2+ |
| 2000 04 05 | 704 | 0.3-  | 1.7+  | 2006 08 28 | 703 | 1.3-  | 0.2-  | 2006 09 26 | G96 | 0.6- | 0.2- |
| 2000 04 05 | 704 | 1.1-  | 0.4+  | 2006 08 28 | 691 | 0.0   | 0.4+  | 2006 09 26 | G96 | 0.1+ | 0.2- |
| 2000 04 05 | 704 | 0.1+  | 0.3+  | 2006 09 01 | 152 | 1.1+  | 0.9-  | 2006 09 26 | G96 | 0.2+ | 0.0  |
| 2000 04 05 | 704 | 0.9+  | 1.5+  | 2006 09 01 | 152 | 0.5+  | 0.3-  | 2006 09 26 | G96 | 0.3- | 0.2- |
| 2002 11 06 | 704 | 0.3-  | 0.8+  | 2006 09 01 | 152 | 0.0   | 0.2-  | 2006 10 27 | G96 | 0.1+ | 0.1- |
| 2002 11 06 | 704 | 0.2-  | 1.0-  | 2006 09 01 | 152 | 0.4-  | 0.5+  | 2006 10 27 | G96 | 0.4- | 0.5- |
| 2002 11 06 | 704 | 0.4+  | 0.3-  | 2006 09 01 | 152 | 0.3+  | 0.3+  | 2006 10 27 | G96 | 0.2- | 0.3- |
| 2002 11 06 | 704 | 0.9+  | 1.1+  | 2006 09 01 | 152 | (3.9- | 1.5-) | 2006 10 27 | G96 | 0.5+ | 0.2- |
| 2004 02 29 | 691 | 0.1+  | 0.4+  | 2006 09 01 | 152 | (1.7- | 2.0-) | 2006 11 21 | G96 | 0.1- | 0.4- |
| 2004 02 29 | 691 | 0.4-  | 0.3+  | 2006 09 01 | 152 | 0.1+  | 0.9+  | 2006 11 21 | G96 | 0.3- | 0.1+ |
| 2004 02 29 | 691 | 0.1+  | 0.1+  | 2006 09 01 | 152 | 0.2+  | 0.5+  | 2006 11 21 | G96 | 0.3- | 0.1- |
| 2004 03 27 | 691 | (2.0+ | 0.6+) | 2006 09 02 | 152 | 0.2-  | 0.5+  | 2006 11 21 | G96 | 0.3- | 0.4- |
| 2004 03 27 | 691 | 0.2+  | 0.2+  | 2006 09 02 | 152 | 1.0-  | 0.6-  | 2007 11 02 | G96 | 0.3+ | 0.4- |
| 2004 03 27 | 691 | 0.3+  | 0.6+  | 2006 09 02 | 152 | 1.1-  | 0.9+  | 2007 11 02 | G96 | 0.8+ | 0.1+ |
| 2005 05 10 | G96 | 0.3+  | 0.2-  | 2006 09 02 | 152 | 0.2-  | 0.1+  | 2007 11 02 | G96 | 0.4+ | 0.1- |
| 2005 05 10 | G96 | 0.5+  | 0.1-  | 2006 09 14 | 703 | 0.8+  | 0.3-  | 2007 11 02 | G96 | 0.5+ | 0.1- |
| 2005 05 10 | G96 | 0.4+  | 0.1-  | 2006 09 14 | 703 | 0.9-  | 0.6-  | 2007 12 03 | 691 | 0.2- | 0.0  |
| 2005 05 10 | G96 | 0.4+  | 0.2-  | 2006 09 14 | 703 | 0.6-  | 0.9-  | 2007 12 03 | 691 | 0.2- | 0.1+ |
| 2006 08 24 | 644 | 0.0   | 0.0   | 2006 09 14 | 703 | 0.6-  | 1.2-  | 2007 12 03 | 691 | 0.1+ | 0.0  |
| 2006 08 24 | 644 | 0.1+  | 0.4+  | 2006 09 17 | 704 | 0.3-  | 0.8-  | 2007 12 15 | 691 | 0.4+ | 0.0  |
| 2006 08 24 | 644 | 0.2-  | 0.3+  | 2006 09 17 | 704 | 0.5+  | 0.1-  | 2007 12 15 | 691 | 0.0  | 0.1- |
| 2006 08 28 | 691 | 0.1-  | 0.4+  | 2006 09 17 | 704 | 0.6+  | 0.2-  | 2007 12 15 | 691 | 0.5- | 0.1- |
| 2006 08 28 | 703 | 0.3-  | 0.6+  | 2006 09 25 | 701 | 0.2+  | 0.4+  |            |     |      |      |

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Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 704 | 0.8+ | 0.7− | 2004 01 22 | 704 | 1.1+ | 0.8− | 2006 08 18 | 644 | 0.0  | 0.5+ |
| 2002 10 06 | 704 | 0.7+ | 1.0− | 2004 01 27 | 691 | 0.0  | 0.1+ | 2006 08 18 | 644 | 0.4− | 0.4+ |
| 2002 10 06 | 704 | 1.0− | 0.8− | 2004 01 27 | 691 | 0.2+ | 0.0  | 2007 11 09 | 704 | 0.3− | 1.1− |
| 2002 10 06 | 704 | 0.4− | 0.4− | 2004 01 27 | 691 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.2+ | 0.2− |
| 2002 10 06 | 704 | 0.7− | 0.1+ | 2006 06 20 | G96 | 0.1− | 0.0  | 2007 11 09 | 704 | 0.1+ | 0.3− |
| 2002 10 31 | 644 | 0.1+ | 0.8+ | 2006 06 20 | G96 | 0.1+ | 0.5− | 2007 11 09 | 704 | 0.1+ | 0.5− |
| 2002 10 31 | 644 | 0.4+ | 0.9+ | 2006 06 20 | G96 | 0.2− | 0.4− | 2007 11 16 | 704 | 0.6− | 0.8− |
| 2002 10 31 | 644 | 0.1− | 1.4+ | 2006 06 20 | G96 | 0.6− | 0.4− | 2007 11 16 | 704 | 0.8+ | 0.6+ |
| 2003 12 27 | 704 | 0.2− | 0.6+ | 2006 08 16 | 644 | 0.2− | 0.4+ | 2007 11 16 | 704 | 0.1+ | 1.3+ |
| 2003 12 27 | 704 | 0.8− | 0.2+ | 2006 08 16 | 644 | 0.0  | 0.0  | 2007 12 03 | 704 | 0.1+ | 0.4− |
| 2003 12 27 | 704 | 0.7− | 0.0  | 2006 08 16 | 644 | 0.3+ | 0.2+ | 2007 12 03 | 704 | 0.6− | 0.0  |
| 2003 12 27 | 704 | 0.4− | 0.5+ | 2006 08 17 | 644 | 0.1+ | 0.3+ | 2007 12 03 | 704 | 0.2+ | 0.6− |
| 2004 01 22 | 704 | 0.5+ | 0.4+ | 2006 08 17 | 644 | 0.2− | 0.4+ | 2007 12 03 | 704 | 0.0  | 0.0  |
| 2004 01 22 | 704 | 0.6+ | 0.7+ | 2006 08 17 | 644 | 0.2− | 0.6+ |            |     |      |      |
| 2004 01 22 | 704 | 0.3+ | 0.7+ | 2006 08 18 | 644 | 0.1+ | 0.3+ |            |     |      |      |

**(173041)\* 2006 QD<sub>96</sub>**

Discovered 2006 Aug. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 92.15570   |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21943835 | <i>ω</i> | 264.93489 | +0.93329125 | +0.31572524 |
| <i>a</i> | 2.7222481  | <i>Ω</i> | 76.57961  | −0.21788398 | +0.87661537 |
| <i>e</i> | 0.1355180  | <i>i</i> | 10.13295  | −0.28547157 | +0.36312955 |
| <i>P</i> | 4.49       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 07 | 704 | 0.5− | 0.4− | 2005 04 18 | 691 | 0.3+ | 0.1+ | 2006 08 28 | E12 | 0.5− | 0.1− |
| 2002 11 07 | 704 | 0.1+ | 0.3+ | 2006 08 16 | 644 | 0.1− | 0.1− | 2006 09 26 | 703 | 0.2+ | 0.8+ |
| 2002 11 07 | 704 | 0.3+ | 0.6− | 2006 08 16 | 644 | 0.4− | 0.5+ | 2006 09 26 | 703 | 0.4− | 0.3+ |
| 2002 11 07 | 704 | 0.1− | 0.2+ | 2006 08 16 | 644 | 0.0  | 0.2+ | 2006 09 26 | 703 | 1.4− | 0.7− |
| 2002 12 10 | 644 | 0.2− | 0.9+ | 2006 08 16 | 644 | 0.1− | 0.4+ | 2006 09 26 | 703 | 0.1+ | 0.4− |
| 2002 12 10 | 644 | 0.1− | 0.2+ | 2006 08 16 | 644 | 0.1+ | 0.2+ | 2007 11 02 | G96 | 0.3− | 0.2− |
| 2002 12 10 | 644 | 0.1− | 0.8+ | 2006 08 16 | 644 | 0.3− | 0.2+ | 2007 11 02 | G96 | 0.1− | 0.0  |
| 2004 03 17 | 645 | 0.0  | 0.0  | 2006 08 17 | 644 | 0.2− | 0.1+ | 2007 11 02 | G96 | 0.6+ | 0.1+ |
| 2004 03 17 | 645 | 0.1− | 0.0  | 2006 08 17 | 644 | 0.2+ | 0.2+ | 2007 11 02 | G96 | 0.3+ | 0.1+ |
| 2004 03 18 | 645 | 0.0  | 0.0  | 2006 08 17 | 644 | 0.1+ | 0.7+ | 2007 11 19 | G96 | 0.2− | 0.3− |
| 2004 03 18 | 645 | 0.1+ | 0.0  | 2006 08 18 | 644 | 0.2+ | 0.5+ | 2007 11 19 | G96 | 0.3− | 0.0  |
| 2005 04 10 | 691 | 0.0  | 0.4+ | 2006 08 18 | 644 | 0.0  | 0.6+ | 2007 11 19 | G96 | 0.4− | 0.4− |
| 2005 04 10 | 691 | 0.2+ | 0.3+ | 2006 08 18 | 644 | 0.1+ | 0.7+ | 2007 11 19 | G96 | 0.0  | 0.2− |
| 2005 04 10 | 691 | 0.1+ | 0.3+ | 2006 08 28 | E12 | 0.5− | 0.3+ | 2007 12 05 | 691 | 0.1+ | 0.5+ |
| 2005 04 18 | 691 | 0.1+ | 0.3+ | 2006 08 28 | E12 | 0.8− | 0.9+ | 2007 12 05 | 691 | 0.7− | 0.2− |
| 2005 04 18 | 691 | 0.1+ | 0.5+ | 2006 08 28 | E12 | 0.7+ | 0.4+ | 2007 12 05 | 691 | 0.7+ | 1.4+ |

**(173042)\* 2006 QU<sub>96</sub>**

Discovered 2006 Aug. 16 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 153.83504  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27500183 | <i>ω</i> | 186.13659 | +0.46958193 | +0.87151208 |
| <i>a</i> | 2.3419574  | <i>Ω</i> | 111.94567 | −0.80342022 | +0.48815683 |
| <i>e</i> | 0.1517337  | <i>i</i> | 8.76111   | −0.36607207 | +0.04657894 |
| <i>P</i> | 3.58       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 04 24 | 704 | 0.4+  | 1.2+  | 2005 03 16 | 703 | 1.0−  | 0.2−  | 2006 09 12 | 704 | 0.2−  | 1.5+  |
| 1998 04 24 | 704 | (0.1− | 2.6+) | 2005 03 16 | 703 | 0.4−  | 0.6+  | 2006 09 12 | 704 | (1.7− | 0.0 ) |
| 1998 04 24 | 704 | (1.0+ | 2.2+) | 2005 03 16 | 703 | 0.4−  | 0.9+  | 2006 09 18 | 703 | 0.0   | 0.3+  |
| 1998 04 24 | 704 | 1.4+  | 1.2+  | 2005 03 16 | 703 | (1.9− | 0.1+) | 2006 09 18 | 703 | 0.7−  | 0.3−  |
| 1998 04 24 | 704 | (5.9− | 1.0+) | 2005 03 16 | 704 | (1.2+ | 1.8−) | 2006 09 18 | 703 | 0.2−  | 0.5+  |
| 1999 10 08 | 704 | 0.7−  | 0.3+  | 2005 03 16 | 704 | 0.9+  | 1.2−  | 2006 09 18 | 703 | 0.1+  | 0.0   |
| 1999 10 08 | 704 | 0.0   | 0.1+  | 2005 03 16 | 704 | 0.8+  | 0.7+  | 2006 09 18 | 703 | 0.3−  | 0.5+  |
| 1999 10 08 | 704 | 0.3−  | 1.0+  | 2005 03 16 | 704 | 0.4+  | 0.5+  | 2006 09 18 | 703 | 0.4+  | 0.3−  |
| 1999 10 08 | 704 | 0.3−  | 0.0   | 2005 04 02 | 699 | 0.6−  | 0.0   | 2006 09 18 | 703 | 0.0   | 0.0   |
| 1999 10 08 | 704 | 0.5−  | 0.2+  | 2005 04 02 | 699 | 0.2−  | 0.5+  | 2006 09 20 | 703 | 0.3+  | 0.0   |
| 2001 02 17 | 704 | 0.8−  | 0.7+  | 2005 04 02 | 699 | 0.1+  | 0.1+  | 2006 09 20 | 703 | 0.6+  | 0.6−  |
| 2001 02 17 | 704 | 0.3+  | 0.7+  | 2005 04 02 | 699 | (1.7− | 0.2+) | 2006 09 20 | 703 | 0.1−  | 0.5−  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 17 | 704 | 0.7−  | 0.3+  | 2005 04 12 | 704 | 0.7+  | 0.7+  | 2006 09 20 | 703 | 0.3+  | 1.0−  |
| 2002 07 05 | 704 | 0.2+  | 1.0+  | 2005 04 12 | 704 | (1.6+ | 3.0+) | 2006 09 20 | 608 | (1.4− | 1.9−) |
| 2002 07 05 | 704 | (0.4− | 1.9+) | 2005 04 12 | 704 | 0.0   | 0.7+  | 2006 09 20 | 608 | 0.2−  | 0.8−  |
| 2002 07 05 | 704 | (0.6− | 2.0+) | 2005 04 12 | 704 | (0.9− | 1.8+) | 2006 09 20 | 608 | 0.9−  | 0.9−  |
| 2002 07 05 | 704 | (0.2− | 1.6+) | 2006 07 31 | E12 | 0.4−  | 0.4−  | 2006 09 21 | 699 | (1.7+ | 0.6+) |
| 2002 07 14 | 704 | 0.8−  | 0.9+  | 2006 07 31 | E12 | 1.0−  | 1.2+  | 2006 09 21 | 699 | 0.2+  | 0.5+  |
| 2002 07 14 | 704 | 0.3+  | 0.1−  | 2006 07 31 | E12 | 0.0   | 0.9+  | 2006 09 21 | 699 | 0.3+  | 1.0+  |
| 2002 07 14 | 704 | 0.4+  | 0.4−  | 2006 07 31 | E12 | 0.4+  | 0.3+  | 2006 09 26 | 703 | 0.1−  | 0.0   |
| 2002 07 14 | 704 | 0.0   | 0.2−  | 2006 08 16 | 644 | 0.2−  | 0.0   | 2006 09 26 | 703 | 0.1−  | 0.4+  |
| 2002 07 14 | 704 | 0.5+  | 0.9+  | 2006 08 16 | 644 | 0.1−  | 0.0   | 2006 09 26 | 703 | 1.0−  | 0.7−  |
| 2003 11 19 | 599 | 0.5+  | 0.4+  | 2006 08 16 | 644 | 0.2−  | 0.1−  | 2006 09 26 | 703 | 0.0   | 0.1+  |
| 2003 11 20 | 599 | 0.5+  | 0.6+  | 2006 08 21 | 644 | 0.1−  | 0.4−  | 2007 11 11 | G96 | 0.3−  | 0.1+  |
| 2003 11 20 | 599 | 0.0   | 0.3+  | 2006 08 21 | 644 | 0.1−  | 0.4−  | 2007 11 11 | G96 | 0.0   | 0.0   |
| 2003 12 01 | 704 | 0.1−  | 0.5+  | 2006 08 21 | 644 | 0.3+  | 0.1−  | 2007 11 11 | G96 | 0.1−  | 0.2+  |
| 2003 12 01 | 704 | 0.7+  | 0.3+  | 2006 09 12 | 704 | 0.4+  | 0.5+  | 2007 11 11 | G96 | 0.2−  | 0.2−  |
| 2003 12 01 | 704 | 0.3−  | 0.2−  | 2006 09 12 | 704 | 0.4+  | 0.3+  | 2007 12 05 | G96 | 0.2+  | 0.1+  |
| 2003 12 01 | 704 | (2.3+ | 0.3+) | 2006 09 12 | 704 | 0.4+  | 0.0   | 2007 12 05 | G96 | 0.0   | 0.1+  |
| 2003 12 14 | 644 | 0.0   | 0.3+  | 2006 09 12 | 704 | 0.2+  | 0.9+  | 2007 12 05 | G96 | 0.5+  | 0.0   |
| 2003 12 14 | 644 | 0.2+  | 0.6+  | 2006 09 12 | 704 | 1.0−  | 0.2+  | 2007 12 05 | G96 | 0.1−  | 0.2+  |
| 2003 12 14 | 644 | 0.5+  | 0.2+  | 2006 09 12 | 704 | 0.7+  | 0.4+  |            |     |       |       |

**(173043)\* 2006 QP<sub>104</sub>**

Discovered 2006 Aug. 28 by the Lowell Observatory Near-Earth Object Search

at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.18788   |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.16888451 | <i>ω</i> | 225.27697 | +0.99878988 | −0.03422898 |
| <i>a</i> | 3.2414762  | <i>Ω</i> | 136.64792 | +0.04472937 | +0.93074222 |
| <i>e</i> | 0.0948994  | <i>i</i> | 2.94881   | −0.02044645 | +0.36407045 |
| <i>P</i> | 5.84       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 24 | 704 | 1.2− | 0.5− | 2006 07 18 | G96 | 0.7+ | 0.1+ | 2007 11 04 | 691 | 0.4−  | 0.2+  |
| 2001 10 24 | 704 | 0.1− | 0.6+ | 2006 07 18 | G96 | 0.7+ | 0.1+ | 2007 11 04 | 691 | 0.2−  | 0.0   |
| 2001 10 24 | 704 | 0.5− | 0.1+ | 2006 07 18 | G96 | 0.6− | 0.2− | 2007 11 08 | 691 | 0.2−  | 0.2−  |
| 2001 10 24 | 704 | 0.8− | 0.6− | 2006 08 13 | 644 | 0.1+ | 0.3+ | 2007 11 08 | 691 | 0.1+  | 0.0   |
| 2001 11 20 | 704 | 0.3− | 0.1− | 2006 08 13 | 644 | 0.2− | 0.2+ | 2007 11 08 | 691 | 0.0   | 0.0   |
| 2001 11 20 | 704 | 0.2− | 0.4− | 2006 08 13 | 644 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.5+  | 0.1−  |
| 2001 11 20 | 704 | 0.4− | 0.1+ | 2006 08 28 | 699 | 0.5+ | 1.4+ | 2007 11 20 | G96 | 0.3+  | 0.2−  |
| 2001 11 20 | 704 | 1.0+ | 0.2+ | 2006 08 28 | 699 | 1.1+ | 0.3+ | 2007 11 20 | G96 | 0.3+  | 0.1−  |
| 2001 12 14 | 691 | 0.6+ | 0.3− | 2006 08 28 | 699 | 0.7− | 0.7− | 2007 11 20 | G96 | 0.5+  | 0.2−  |
| 2001 12 14 | 691 | 0.0  | 0.1+ | 2006 08 28 | 703 | 0.6− | 1.0+ | 2007 11 20 | G96 | 0.2+  | 0.1−  |
| 2001 12 14 | 691 | 0.1+ | 0.3+ | 2006 08 28 | 703 | 1.2− | 0.0  | 2007 11 20 | G96 | 0.2+  | 0.1−  |
| 2003 01 29 | 291 | 0.2+ | 0.4+ | 2006 08 28 | 699 | 0.1− | 0.6+ | 2007 11 20 | G96 | 0.3−  | 0.0   |
| 2003 01 29 | 291 | 0.2+ | 0.4+ | 2006 08 28 | 703 | 0.2− | 0.1+ | 2007 11 20 | G96 | 0.3+  | 0.2+  |
| 2003 01 29 | 291 | 0.4− | 0.2− | 2006 08 28 | 703 | 0.9+ | 0.4− | 2007 11 21 | G96 | 0.4+  | 0.1−  |
| 2004 03 23 | 704 | 0.7+ | 0.4+ | 2006 08 28 | 703 | 0.2+ | 0.1− | 2007 11 21 | G96 | 0.3+  | 0.3−  |
| 2004 03 23 | 704 | 0.2+ | 0.1− | 2006 08 28 | 703 | 0.3+ | 0.0  | 2007 11 21 | G96 | 0.6+  | 0.3−  |
| 2004 03 23 | 704 | 0.5+ | 0.4− | 2006 08 28 | 703 | 0.3+ | 0.0  | 2007 11 21 | G96 | 0.4+  | 0.3−  |
| 2005 05 19 | G96 | 0.3− | 0.5+ | 2006 08 28 | 703 | 0.0  | 0.1− | 2007 12 04 | 704 | 0.1+  | 0.6+  |
| 2005 05 19 | G96 | 0.2− | 0.7+ | 2006 08 29 | 704 | 0.6+ | 0.1− | 2007 12 04 | 704 | (2.0+ | 1.2+) |
| 2005 05 19 | G96 | 0.3− | 0.7+ | 2006 08 29 | 704 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.2+  | 0.3−  |
| 2005 05 19 | G96 | 0.1+ | 0.6+ | 2006 08 29 | 704 | 0.3− | 0.5+ | 2007 12 04 | 704 | (1.8+ | 0.3+) |
| 2006 06 20 | G96 | 0.2+ | 0.0  | 2006 09 14 | 703 | 1.2− | 0.3+ | 2007 12 04 | 704 | 0.6−  | 0.8+  |
| 2006 06 20 | G96 | 0.1− | 0.1− | 2006 09 14 | 703 | 0.4− | 0.5+ | 2007 12 15 | A77 | 0.6−  | 0.8+  |
| 2006 06 20 | G96 | 0.1+ | 0.1− | 2006 09 14 | 703 | 0.7− | 0.4− | 2007 12 15 | A77 | 0.2+  | 1.0+  |
| 2006 06 20 | G96 | 0.2− | 0.1+ | 2006 09 14 | 703 | 0.3− | 0.7− | 2007 12 15 | A77 | 0.3−  | 0.6+  |
| 2006 07 18 | G96 | 0.8+ | 0.5− | 2007 11 04 | 691 | 0.2− | 0.1− |            |     |       |       |

2007 DEC. 24

M.P.O. 129549

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 100.33117  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17346201 | $\omega$ 111.55657 | +0.55140062   | +0.83406547 |
| <i>a</i> | 3.1841960  | $\Omega$ 191.95173 | -0.79268840   | +0.51744069 |
| <i>e</i> | 0.1474791  | <i>i</i> 4.73439   | -0.26000472   | +0.19128493 |
| <i>P</i> | 5.68       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 11 | 691 | 0.2+ | 0.5+ | 2006 08 28 | 703 | 1.0-  | 0.4-  | 2006 11 16 | G96 | 0.4+ | 0.3- |
| 2001 10 11 | 691 | 0.3+ | 0.5+ | 2006 08 28 | 703 | 0.6+  | 0.6+  | 2006 11 16 | G96 | 0.5- | 0.5- |
| 2001 10 11 | 691 | 0.2+ | 0.1- | 2006 08 28 | 703 | 0.4-  | 0.6+  | 2006 11 16 | G96 | 0.5+ | 0.5- |
| 2001 10 21 | 691 | 0.2- | 0.1+ | 2006 08 29 | 691 | 0.0   | 0.2+  | 2006 11 16 | G96 | 0.2- | 1.1- |
| 2001 10 21 | 691 | 0.3- | 0.3+ | 2006 08 29 | 691 | 0.2+  | 0.2+  | 2006 11 16 | G96 | 0.3+ | 0.4- |
| 2001 10 21 | 691 | 0.4- | 0.2+ | 2006 08 29 | 691 | 0.1+  | 0.2-  | 2006 11 16 | G96 | 1.0- | 1.1- |
| 2001 11 17 | 691 | 0.2+ | 0.1- | 2006 09 17 | 703 | (0.4+ | 1.8-) | 2007 11 04 | 691 | 0.3- | 0.5+ |
| 2001 11 17 | 691 | 0.1- | 0.0  | 2006 09 17 | 703 | 0.1+  | 0.1-  | 2007 11 04 | 691 | 0.1+ | 0.1- |
| 2001 11 17 | 691 | 0.0  | 0.1- | 2006 09 17 | 703 | (0.0  | 2.3-) | 2007 11 04 | 691 | 0.4- | 0.1- |
| 2005 06 12 | 691 | 0.2- | 0.4+ | 2006 09 17 | 703 | 0.2-  | 0.5-  | 2007 11 08 | 691 | 0.1+ | 0.5+ |
| 2005 06 12 | 691 | 0.1+ | 0.0  | 2006 09 28 | G96 | 0.3+  | 0.0   | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2005 06 12 | 691 | 0.2+ | 0.3+ | 2006 09 28 | G96 | 0.5-  | 0.0   | 2007 11 08 | 691 | 0.0  | 0.1+ |
| 2005 06 16 | 691 | 0.2- | 0.4+ | 2006 09 28 | G96 | 0.0   | 0.0   | 2007 11 30 | A13 | 0.3+ | 0.1- |
| 2005 06 16 | 691 | 0.3+ | 0.2+ | 2006 09 28 | G96 | 0.0   | 0.1-  | 2007 11 30 | A13 | 1.0+ | 0.3- |
| 2005 06 16 | 691 | 0.3+ | 0.4+ | 2006 11 16 | G96 | 1.0+  | 0.6-  |            |     |      |      |
| 2006 08 28 | 703 | 0.2+ | 0.3+ | 2006 11 16 | G96 | 0.3-  | 0.2+  |            |     |      |      |

(173045)\* 2006 QP<sub>114</sub>

Discovered 2006 Aug. 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 51.14293   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17346182 | $\omega$ 188.69996 | +0.99826966   | -0.05249382 |
| <i>a</i> | 3.1841984  | $\Omega$ 174.11170 | +0.05586152   | +0.98732408 |
| <i>e</i> | 0.1376909  | <i>i</i> 14.96813  | -0.01836251   | +0.14978506 |
| <i>P</i> | 5.68       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 10 21 | 327 | 0.2+  | 1.1-  | 2006 08 24 | 704 | 0.4+  | 0.6+  | 2006 09 18 | 703 | 0.4-  | 0.2-  |
| 1995 10 21 | 327 | 0.1-  | 0.8-  | 2006 08 24 | 704 | 0.2+  | 0.6-  | 2006 09 18 | 703 | 0.9-  | 0.4-  |
| 1995 10 21 | 327 | 0.6-  | 1.0-  | 2006 08 24 | 704 | 0.4+  | 1.0-  | 2006 09 18 | 704 | 1.1+  | 0.7+  |
| 1995 10 21 | 327 | 0.4-  | 0.1-  | 2006 08 27 | 699 | 0.4-  | 0.5-  | 2006 09 18 | 704 | 0.7+  | 0.6-  |
| 1998 03 02 | 910 | 0.5+  | 0.5-  | 2006 08 27 | 699 | 0.1-  | 0.4+  | 2006 09 18 | 704 | 0.8+  | 0.0   |
| 1998 03 02 | 910 | 0.4+  | 0.7-  | 2006 08 27 | 699 | 0.6-  | 0.5+  | 2006 09 18 | 704 | 1.4+  | 0.6+  |
| 1998 03 02 | 910 | 0.5+  | 0.6-  | 2006 08 27 | 699 | 0.3-  | 0.4+  | 2006 09 19 | 699 | 0.0   | 0.1-  |
| 2001 08 26 | 644 | 0.3+  | 0.9+  | 2006 08 29 | 703 | 0.2+  | 0.8-  | 2006 09 19 | 699 | 0.3-  | 0.5+  |
| 2001 08 26 | 644 | 0.4+  | 1.1+  | 2006 08 29 | 703 | 0.6-  | 0.7-  | 2006 09 19 | 699 | 0.2-  | 0.2+  |
| 2001 08 26 | 644 | 0.6+  | 1.3+  | 2006 08 29 | 703 | 1.0-  | 0.6-  | 2006 09 19 | 691 | 0.0   | 0.2+  |
| 2001 10 16 | 704 | 0.7-  | 1.1+  | 2006 08 29 | 703 | 1.3-  | 0.8-  | 2006 09 19 | 699 | 0.1-  | 0.0   |
| 2001 10 16 | 704 | 1.0-  | 0.9-  | 2006 08 29 | 703 | (1.7- | 0.5-) | 2006 09 19 | 691 | 0.3+  | 0.4+  |
| 2001 10 16 | 704 | 0.1+  | 0.9-  | 2006 08 29 | 703 | 0.9-  | 0.3-  | 2006 09 19 | 691 | 0.2+  | 0.2+  |
| 2001 10 16 | 704 | 0.8-  | 0.2+  | 2006 08 29 | 703 | 0.6-  | 0.2+  | 2006 09 29 | 704 | 0.7-  | 0.6+  |
| 2001 12 07 | 704 | 0.1+  | 0.1-  | 2006 08 29 | 703 | 0.8-  | 0.0   | 2006 09 29 | 704 | 0.5+  | 0.4+  |
| 2001 12 07 | 704 | 0.2-  | 0.3+  | 2006 08 30 | 704 | 0.2+  | 0.3+  | 2006 09 29 | 704 | 0.4+  | 0.0   |
| 2001 12 07 | 704 | 0.2+  | 0.6+  | 2006 08 30 | 704 | 0.8+  | 0.4+  | 2006 11 16 | G96 | 0.0   | 0.4-  |
| 2001 12 07 | 704 | 0.3-  | 0.9+  | 2006 08 30 | 704 | 1.3+  | 0.2+  | 2006 11 16 | G96 | 0.2+  | 0.2-  |
| 2001 12 07 | 704 | 0.8-  | 1.3+  | 2006 08 30 | 704 | 0.6+  | 0.3+  | 2006 11 16 | G96 | 0.4+  | 0.3-  |
| 2002 01 14 | 645 | 0.1+  | 0.1+  | 2006 08 30 | 704 | 1.0+  | 0.0   | 2006 11 16 | G96 | 0.0   | 0.4-  |
| 2002 01 14 | 645 | 0.1+  | 0.1+  | 2006 09 01 | 704 | 1.2+  | 1.0-  | 2006 11 18 | 703 | 0.3-  | 0.6-  |
| 2004 03 20 | 704 | 1.0+  | 0.7+  | 2006 09 01 | 704 | 0.3+  | 0.4+  | 2006 11 18 | 703 | 1.0-  | 0.9-  |
| 2004 03 20 | 704 | 0.2+  | 0.6-  | 2006 09 01 | 704 | 0.3-  | 0.3+  | 2006 11 18 | 703 | 1.3-  | 0.8+  |
| 2004 03 20 | 704 | 0.3-  | 0.1-  | 2006 09 11 | 703 | 0.5+  | 0.5-  | 2006 11 18 | 703 | 0.4-  | 0.5+  |
| 2004 03 20 | 704 | (0.2+ | 1.6+) | 2006 09 11 | 703 | 0.0   | 0.5-  | 2007 10 19 | 704 | (2.3- | 1.4+) |
| 2004 04 16 | 691 | 0.1+  | 0.4+  | 2006 09 11 | 703 | (1.1- | 2.8-) | 2007 10 19 | 704 | 0.4-  | 1.0-  |
| 2004 04 16 | 691 | 0.4+  | 0.6+  | 2006 09 11 | 703 | 1.0-  | 1.0-  | 2007 10 19 | 704 | 1.1-  | 1.3-  |
| 2004 04 16 | 691 | 0.1-  | 0.4+  | 2006 09 17 | 691 | 0.1+  | 0.3+  | 2007 10 19 | 704 | 0.3-  | 0.8-  |
| 2005 05 13 | 691 | 0.1-  | 0.1+  | 2006 09 17 | 691 | 0.0   | 0.3+  | 2007 12 05 | 703 | 0.2+  | 0.6+  |
| 2005 05 13 | 691 | 0.5-  | 0.6+  | 2006 09 17 | 691 | 0.0   | 0.4+  | 2007 12 05 | 703 | 0.4-  | 0.9+  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 13 | 691 | 0.2-  | 0.1+  | 2006 09 18 | 703 | (1.2+ | 2.4+) | 2007 12 05 | 703 | 0.2+ | 0.4+ |
| 2006 08 24 | 704 | (0.6+ | 2.0+) | 2006 09 18 | 703 | 0.1+  | 0.2-  | 2007 12 05 | 703 | 0.4- | 0.1+ |

(173046)\* 2006 QD<sub>116</sub>

Discovered 2006 Aug. 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.99448    | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17422367 | $\omega$ 95.54780  | +0.26941182   | -0.96012548 |
| <i>a</i> | 3.1749089  | $\Omega$ 338.36982 | +0.78376908   | +0.26366021 |
| <i>e</i> | 0.1031111  | <i>i</i> 11.68803  | +0.55957422   | +0.09296432 |
| <i>P</i> | 5.66       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 27 | 644 | 0.8-  | 0.1-  | 2003 03 06 | 644 | 0.6+  | 0.3+  | 2006 09 19 | 703 | 0.2+ | 1.1+ |
| 2001 08 27 | 644 | 0.5-  | 0.1+  | 2003 03 12 | 644 | 1.0+  | 0.9+  | 2006 09 19 | 699 | 0.0  | 0.2+ |
| 2001 08 27 | 644 | 0.3-  | 0.0   | 2003 03 12 | 644 | 0.8+  | 1.2+  | 2006 09 19 | 703 | 0.8- | 0.8- |
| 2001 09 25 | 704 | (0.9- | 1.7+) | 2003 03 12 | 644 | 0.7+  | 0.7+  | 2006 09 19 | 699 | 0.7+ | 0.1- |
| 2001 09 25 | 704 | 1.0-  | 0.0   | 2004 04 25 | 704 | (1.8+ | 1.8+) | 2006 09 25 | 699 | 0.8- | 0.5- |
| 2001 09 25 | 704 | 0.3-  | 0.6+  | 2004 04 25 | 704 | (0.5+ | 1.5+) | 2006 09 25 | 699 | 0.3+ | 0.2- |
| 2001 09 25 | 704 | 0.8-  | 0.7+  | 2004 04 25 | 704 | 1.0+  | 1.4+  | 2006 09 25 | 699 | 0.4- | 1.0+ |
| 2001 11 11 | 704 | 1.2-  | 0.1-  | 2004 04 25 | 704 | 0.7+  | 1.4+  | 2006 09 25 | 699 | 0.3- | 0.2- |
| 2001 11 11 | 704 | 0.5+  | 0.1-  | 2006 08 27 | 699 | 0.3-  | 1.4-  | 2006 09 29 | 704 | 0.3+ | 0.0  |
| 2001 11 11 | 704 | 0.0   | 0.1+  | 2006 08 27 | 699 | 0.8-  | 0.9+  | 2006 09 29 | 704 | 0.3- | 0.1+ |
| 2001 11 11 | 704 | 0.1+  | 0.4-  | 2006 08 27 | 699 | 1.0-  | 0.8+  | 2006 09 29 | 704 | 0.4- | 1.1+ |
| 2001 11 11 | 704 | 0.4+  | 0.1+  | 2006 08 27 | 699 | 0.6-  | 0.5-  | 2006 09 29 | 704 | 0.4+ | 0.0  |
| 2001 12 09 | 704 | 0.4+  | 0.7+  | 2006 08 29 | 703 | (2.0+ | 1.3-) | 2006 10 18 | 691 | 0.1+ | 0.2+ |
| 2001 12 09 | 704 | 0.1+  | 0.7+  | 2006 08 29 | 703 | (1.3+ | 2.7-) | 2006 10 18 | 691 | 0.1+ | 0.3+ |
| 2001 12 09 | 704 | 0.0   | 0.3+  | 2006 08 29 | 703 | 0.7+  | 0.8-  | 2006 10 18 | 691 | 0.2+ | 0.2+ |
| 2001 12 09 | 704 | 0.3+  | 0.1-  | 2006 08 29 | 703 | 0.5+  | 1.0-  | 2006 10 22 | 691 | 0.1- | 0.1+ |
| 2001 12 09 | 704 | 0.5+  | 0.2-  | 2006 09 12 | 703 | 0.3-  | 0.7-  | 2006 10 22 | 691 | 0.0  | 0.1- |
| 2001 12 22 | 704 | 0.2-  | 0.4+  | 2006 09 12 | 703 | 0.6+  | 0.1-  | 2006 10 22 | 691 | 0.4+ | 0.7+ |
| 2001 12 22 | 704 | 0.4+  | 0.2-  | 2006 09 12 | 703 | 1.4-  | 1.1+  | 2007 11 09 | 704 | 0.1+ | 1.2- |
| 2001 12 22 | 704 | 0.8+  | 0.1+  | 2006 09 12 | 703 | 0.6-  | 0.7+  | 2007 11 09 | 704 | 0.5- | 0.2- |
| 2001 12 22 | 704 | 0.1+  | 0.4+  | 2006 09 14 | 644 | 0.0   | 0.3+  | 2007 11 09 | 704 | 0.3- | 0.7- |
| 2002 01 05 | 644 | 0.1-  | 0.1-  | 2006 09 14 | 644 | 0.2-  | 0.1+  | 2007 11 09 | 704 | 0.9- | 1.1- |
| 2002 01 05 | 644 | 0.3+  | 0.0   | 2006 09 14 | 644 | 0.0   | 0.1+  | 2007 11 09 | 704 | 0.3- | 0.5- |
| 2002 01 05 | 644 | 0.1-  | 0.1+  | 2006 09 16 | 699 | 1.3-  | 0.7-  | 2007 12 03 | 704 | 0.1+ | 0.1+ |
| 2003 01 28 | 645 | 0.0   | 0.0   | 2006 09 16 | 699 | 0.8+  | 0.4+  | 2007 12 03 | 704 | 0.1- | 0.0  |
| 2003 01 28 | 645 | 0.0   | 0.0   | 2006 09 16 | 699 | 0.8-  | 0.1-  | 2007 12 03 | 704 | 0.3+ | 0.0  |
| 2003 02 01 | 704 | (0.1+ | 2.9+) | 2006 09 16 | 699 | 1.0+  | 1.1+  | 2007 12 03 | 704 | 0.3+ | 0.8+ |
| 2003 02 01 | 704 | (0.3- | 1.7+) | 2006 09 18 | 704 | 0.2+  | 0.3-  | 2007 12 03 | 704 | 0.1+ | 0.1+ |
| 2003 02 01 | 704 | 0.5-  | 1.4+  | 2006 09 18 | 704 | 0.5-  | 0.4-  | 2007 12 03 | 704 | 0.5- | 0.2+ |
| 2003 02 12 | 608 | 0.3-  | 0.4+  | 2006 09 18 | 704 | 0.6+  | 0.7-  | 2007 12 03 | 704 | 0.3+ | 0.2+ |
| 2003 02 12 | 608 | 0.3-  | 0.0   | 2006 09 19 | 699 | 0.0   | 0.2-  | 2007 12 03 | 704 | 0.3+ | 0.7- |
| 2003 02 12 | 608 | 0.1-  | 0.3+  | 2006 09 19 | 703 | 0.6-  | 0.5+  | 2007 12 03 | 704 | 0.4+ | 0.2+ |
| 2003 03 06 | 644 | 1.0+  | 0.1+  | 2006 09 19 | 699 | 0.7-  | 0.1+  |            |     |      |      |
| 2003 03 06 | 644 | 0.8+  | 0.3+  | 2006 09 19 | 703 | 0.5-  | 0.2-  |            |     |      |      |

(173047)\* 2006 QJ<sub>121</sub> = 2002 VM<sub>4</sub>

Discovered 2006 Aug. 29 by the Catalina Sky Survey.

Id. G. V. Williams (MPO 109739)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |                    |              |              |
|-----|------------|--------------------|--------------|--------------|
| $M$ | 144.59335  | (2000.0)           | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.21172943 | $\omega$ 47.68731  | +0.14417199  | +0.98819128  |
| $a$ | 2.7879302  | $\Omega$ 230.67663 | -0.92648586  | +0.11637748  |
| $e$ | 0.0859361  | $i$ 3.84606        | -0.34761818  | +0.09967089  |
| $P$ | 4.66       | $H$ 16.0           | $G$ 0.15     | $U$ 0        |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 05 | 291 | 0.1+  | 0.1-  | 2006 08 29 | 703 | 0.5+  | 1.3+  | 2006 09 17 | 703 | 0.1- | 1.0+ |
| 2005 05 04 | E12 | 0.1-  | 0.7+  | 2006 08 29 | 703 | 1.3-  | 0.6-  | 2006 09 17 | 703 | 0.2- | 0.4+ |
| 2005 05 04 | E12 | 0.2-  | 1.5+  | 2006 08 29 | 703 | 1.4-  | 0.7+  | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2005 05 04 | E12 | 0.5-  | 0.7+  | 2006 08 29 | 691 | 0.1+  | 0.1+  | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2005 05 04 | E12 | 0.1+  | 0.8+  | 2006 08 29 | 691 | 0.2+  | 0.0   | 2007 11 19 | 691 | 0.4- | 0.1- |
| 2005 05 07 | G96 | 0.5+  | 0.1-  | 2006 08 29 | 691 | 0.1+  | 0.1-  | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2005 05 07 | G96 | 0.6+  | 0.2+  | 2006 08 30 | 699 | (2.2+ | 2.0-) | 2007 12 05 | 704 | 0.1+ | 1.3+ |
| 2005 05 07 | G96 | 0.5+  | 0.1-  | 2006 08 30 | 699 | 0.8+  | 0.2+  | 2007 12 05 | 704 | 0.7+ | 0.5+ |
| 2005 05 07 | G96 | (1.5- | 2.6-) | 2006 08 30 | 704 | 0.2+  | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2005 06 01 | G96 | 0.3-  | 0.1-  | 2006 08 30 | 704 | 0.6+  | 1.1+  | 2007 12 05 | 704 | 0.1+ | 0.7+ |
| 2005 06 01 | G96 | 0.2-  | 0.2+  | 2006 08 30 | 699 | 0.2+  | 0.8-  | 2007 12 16 | 691 | 0.3- | 0.1+ |
| 2005 06 01 | G96 | 0.0   | 0.1-  | 2006 08 30 | 704 | 0.5+  | 0.2+  | 2007 12 16 | 691 | 0.1- | 0.3+ |
| 2005 06 01 | G96 | 0.1-  | 0.1+  | 2006 08 30 | 699 | 0.4-  | 0.3+  | 2007 12 16 | 691 | 0.3+ | 0.2+ |

**(173048)\* 2006 QQ<sub>128</sub>**

Discovered 2006 Aug. 17 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27709239 | $\omega$ | 253.13904 | +0.58871677 | +0.80292348 |          |   |
| <i>a</i> | 2.3301631  | $\Omega$ | 53.29825  | -0.69019300 | +0.55945776 |          |   |
| <i>e</i> | 0.1183471  | <i>i</i> | 6.69092   | -0.42076856 | +0.20572043 |          |   |
| <i>P</i> | 3.56       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 08 | 704 | 0.4-  | 0.8+  | 2005 03 13 | 152 | (1.7+ | 0.4-) | 2006 09 20 | 703 | 0.8+ | 0.2+ |
| 2002 06 08 | 704 | (0.3+ | 2.2+) | 2005 03 13 | 152 | (6.7- | 0.1+) | 2006 09 20 | 703 | 0.4- | 0.6- |
| 2002 06 08 | 704 | 0.3-  | 1.0+  | 2005 04 16 | 691 | 0.4+  | 0.4+  | 2006 09 26 | 703 | 0.5- | 0.2- |
| 2002 06 08 | 704 | 0.3-  | 0.8+  | 2005 04 16 | 691 | 0.4+  | 0.0   | 2006 09 26 | 703 | 0.6+ | 0.1- |
| 2003 10 27 | 691 | 0.1-  | 0.2+  | 2005 04 16 | 691 | 0.5+  | 0.4+  | 2006 09 26 | 703 | 0.9- | 1.3+ |
| 2003 10 27 | 691 | 0.3+  | 0.2+  | 2006 08 17 | 644 | 0.1-  | 0.3+  | 2006 09 26 | 703 | 0.8+ | 0.7+ |
| 2003 10 27 | 691 | 0.1-  | 0.1-  | 2006 08 17 | 644 | 0.3-  | 0.0   | 2007 11 04 | G96 | 0.3- | 0.3- |
| 2003 11 21 | 704 | 1.3+  | 0.4+  | 2006 08 17 | 644 | 0.3-  | 0.3+  | 2007 11 04 | G96 | 0.2+ | 0.2- |
| 2003 11 21 | 704 | 0.7-  | 0.8-  | 2006 08 28 | E12 | 0.6+  | 0.0   | 2007 11 04 | G96 | 0.6+ | 0.1+ |
| 2003 11 21 | 704 | 0.2+  | 0.2+  | 2006 08 28 | E12 | 0.5-  | 0.3+  | 2007 11 04 | G96 | 0.3- | 0.3- |
| 2003 11 21 | 704 | 0.1-  | 0.9+  | 2006 08 28 | E12 | 0.3-  | 0.5+  | 2007 11 11 | G96 | 0.3- | 0.5- |
| 2003 11 21 | 704 | 0.5-  | 0.4+  | 2006 08 28 | E12 | 0.0   | 0.6+  | 2007 11 11 | G96 | 0.1+ | 0.0  |
| 2003 11 26 | 704 | 0.1-  | 0.7+  | 2006 09 17 | 699 | (0.7- | 1.9+) | 2007 11 11 | G96 | 0.1+ | 0.1+ |
| 2003 11 26 | 704 | 0.5-  | 0.5+  | 2006 09 17 | 699 | (1.7+ | 1.3-) | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2003 11 26 | 704 | 0.2-  | 0.9+  | 2006 09 17 | 699 | 1.0+  | 1.1+  | 2007 12 05 | 691 | 0.5- | 0.1+ |
| 2003 12 19 | 691 | 0.0   | 0.0   | 2006 09 17 | 699 | 1.3-  | 1.4-  | 2007 12 05 | 691 | 0.1- | 0.3+ |
| 2003 12 19 | 691 | 0.2-  | 0.0   | 2006 09 20 | 703 | 0.1+  | 0.5+  | 2007 12 05 | 691 | 0.2- | 0.1+ |
| 2003 12 19 | 691 | 0.0   | 0.0   | 2006 09 20 | 703 | (0.4+ | 2.0+) |            |     |      |      |

**(173049)\* 2006 QH<sub>141</sub> = 2005 LN<sub>50</sub>**

Discovered 2006 Aug. 18 by NEAT at Palomar.

Id. A. Doppler (*MPO* 109758)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19612060 | $\omega$ | 146.78044 | +0.72837869 | -0.66800321 |          |   |
| <i>a</i> | 2.9339581  | $\Omega$ | 255.91387 | +0.58940396 | +0.72430971 |          |   |
| <i>e</i> | 0.0650241  | <i>i</i> | 9.04208   | +0.34938153 | +0.17072538 |          |   |
| <i>P</i> | 5.03       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 25 | 704 | 0.3- | 0.0  | 2001 11 18 | 645 | 0.1- | 0.1- | 2006 09 11 | 703 | 0.5-  | 1.2+  |
| 2001 08 25 | 704 | 0.4+ | 0.1- | 2005 06 13 | G96 | 0.0  | 0.4+ | 2006 09 11 | 703 | (1.7+ | 0.4+) |
| 2001 08 25 | 704 | 0.1+ | 0.2- | 2005 06 13 | G96 | 0.1- | 0.4+ | 2006 09 11 | 703 | 0.4-  | 0.0   |
| 2001 08 25 | 704 | 0.2- | 0.4+ | 2005 06 13 | G96 | 0.2+ | 0.2+ | 2006 09 18 | 703 | 0.7+  | 0.5+  |
| 2001 08 25 | 704 | 0.4+ | 0.8+ | 2005 06 13 | G96 | 0.0  | 0.2+ | 2006 09 18 | 703 | 0.7-  | 0.8-  |
| 2001 09 16 | 704 | 0.1- | 0.7- | 2005 06 26 | G96 | 0.2- | 0.2+ | 2006 09 18 | 703 | 0.0   | 1.0-  |
| 2001 09 16 | 704 | 0.7+ | 0.3+ | 2005 06 26 | G96 | 0.0  | 0.3+ | 2007 11 06 | 691 | 0.0   | 0.2-  |
| 2001 09 16 | 704 | 0.7+ | 1.2- | 2005 06 26 | G96 | 0.2- | 0.6+ | 2007 11 06 | 691 | 0.1+  | 0.3+  |
| 2001 09 16 | 704 | 0.2- | 0.4- | 2005 06 26 | G96 | 0.2+ | 0.1+ | 2007 11 06 | 691 | 0.2-  | 0.2+  |
| 2001 09 16 | 704 | 0.5- | 0.9- | 2006 08 18 | 644 | 0.2- | 0.1+ | 2007 11 13 | 691 | 0.0   | 0.0   |
| 2001 09 25 | 704 | 1.2+ | 0.5+ | 2006 08 18 | 644 | 0.0  | 0.2- | 2007 11 13 | 691 | 0.0   | 0.1-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 25 | 704 | 0.2- | 0.1- | 2006 08 18 | 644 | 0.1- | 0.1+ | 2007 11 13 | 691 | 0.2+ | 0.1- |
| 2001 09 25 | 704 | 0.7+ | 0.2+ | 2006 08 19 | 644 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.8+ |
| 2001 09 25 | 704 | 0.4- | 1.0+ | 2006 08 19 | 644 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.4+ | 0.5+ |
| 2001 09 25 | 704 | 1.4+ | 1.4+ | 2006 08 19 | 644 | 0.1- | 0.1+ | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2001 11 18 | 645 | 0.1- | 0.1- | 2006 09 11 | 703 | 0.6+ | 1.1+ | 2007 12 05 | 704 | 0.6- | 1.0+ |

**(173050)\* 2006 QU<sub>142</sub> = 2004 FZ<sub>149</sub>**

Discovered 2006 Aug. 31 by M. Ory at the Observatoire Astronomique

Jurassien-Vicques.

Id. G. V. Williams (*MPO* 109761)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18431446 | $\omega$ | 11.66077  | +0.30302009 | +0.94125885 |          |   |
| <i>a</i> | 3.0579458  | $\Omega$ | 276.11486 | -0.88595436 | +0.22062680 |          |   |
| <i>e</i> | 0.0467900  | <i>i</i> | 8.62026   | -0.35108930 | +0.25564739 |          |   |
| <i>P</i> | 5.35       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 28 | 691 | 0.2+ | 0.1+ | 2004 02 14 | 644 | 0.8+ | 0.2- | 2006 09 12 | 185 | 0.7+ | 0.3- |
| 1995 08 28 | 691 | 0.0  | 0.1- | 2004 03 16 | 691 | 0.0  | 0.0  | 2006 09 12 | 185 | 0.3+ | 0.5+ |
| 1995 08 28 | 691 | 0.4- | 0.3- | 2004 03 16 | 691 | 0.1+ | 0.2- | 2007 11 19 | G96 | 0.2+ | 1.2- |
| 1996 11 04 | 691 | 0.3+ | 0.1- | 2004 03 16 | 691 | 0.1- | 0.0  | 2007 11 19 | G96 | 0.1- | 0.0  |
| 1996 11 04 | 691 | 0.2+ | 0.5- | 2004 03 27 | 691 | 0.0  | 0.2+ | 2007 11 19 | G96 | 0.3- | 0.0  |
| 1996 11 04 | 691 | 0.6+ | 0.1+ | 2004 03 27 | 691 | 0.1+ | 0.1+ | 2007 11 19 | G96 | 0.1- | 0.0  |
| 2001 09 29 | 644 | 0.3+ | 0.4+ | 2004 03 27 | 691 | 0.0  | 0.0  | 2007 11 20 | G96 | 0.3- | 0.0  |
| 2001 09 29 | 644 | 0.2- | 0.5+ | 2006 08 31 | 185 | 1.1+ | 0.5+ | 2007 11 20 | G96 | 0.1- | 0.4- |
| 2001 09 29 | 644 | 0.0  | 0.2+ | 2006 09 01 | 185 | 0.3+ | 0.5- | 2007 11 20 | G96 | 0.4- | 0.1- |
| 2001 10 13 | 644 | 0.8- | 0.3- | 2006 09 01 | 185 | 0.8+ | 0.6+ | 2007 11 20 | G96 | 0.2- | 0.2- |
| 2001 10 13 | 644 | 0.5- | 0.6+ | 2006 09 01 | 185 | 0.1+ | 0.4+ | 2007 12 13 | 704 | 0.6- | 0.5+ |
| 2001 10 13 | 644 | 0.6- | 0.9+ | 2006 09 01 | 185 | 0.8+ | 0.5+ | 2007 12 13 | 704 | 0.3+ | 1.0+ |
| 2001 10 26 | 644 | 0.9- | 0.3- | 2006 09 01 | 185 | 0.5- | 0.3- | 2007 12 13 | 704 | 0.2- | 0.5+ |
| 2001 10 26 | 644 | 0.5- | 0.4- | 2006 09 04 | A13 | 0.4- | 0.4+ | 2007 12 13 | 704 | 0.3+ | 0.4+ |
| 2001 10 26 | 644 | 0.5- | 0.2+ | 2006 09 04 | A13 | 0.5- | 0.1- | 2007 12 13 | 704 | 1.0- | 0.3+ |
| 2004 02 14 | 644 | 0.3- | 0.2+ | 2006 09 05 | H36 | 0.0  | 0.7- |            |     |      |      |
| 2004 02 14 | 644 | 0.4- | 0.0  | 2006 09 05 | H36 | 0.1+ | 0.4+ |            |     |      |      |

**(173051)\* 2006 QM<sub>168</sub> = 2005 JT<sub>140</sub>**

Discovered 2006 Aug. 30 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 109782)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23091999 | $\omega$ | 265.72602 | +0.99658923 | +0.01200255 |          |   |
| <i>a</i> | 2.6312475  | $\Omega$ | 93.57199  | +0.02101719 | +0.91982396 |          |   |
| <i>e</i> | 0.1029967  | <i>i</i> | 4.69224   | -0.07980087 | +0.39214770 |          |   |
| <i>P</i> | 4.27       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 04 13 | 691 | 0.3+ | 0.2- | 2005 05 14 | G96 | 0.3- | 0.0  | 2006 09 26 | 703 | 0.6-  | 0.6-  |
| 1996 04 13 | 691 | 0.3- | 0.3- | 2005 05 14 | G96 | 0.3- | 0.0  | 2006 09 26 | 703 | 0.3+  | 0.5+  |
| 1996 04 13 | 691 | 0.3+ | 0.4+ | 2005 05 14 | G96 | 0.3- | 0.0  | 2006 09 26 | 703 | 0.7-  | 0.1-  |
| 2002 09 06 | 599 | 0.2- | 0.3- | 2005 05 19 | G96 | 0.3- | 0.1- | 2006 09 26 | 703 | 0.8+  | 0.5-  |
| 2002 09 06 | 599 | 0.2- | 0.2- | 2005 05 19 | G96 | 0.6- | 0.2+ | 2006 10 02 | 703 | 0.2-  | 0.0   |
| 2002 09 06 | 599 | 0.1- | 0.4+ | 2005 05 19 | G96 | 0.4- | 0.4+ | 2006 10 02 | 703 | (0.3+ | 2.4+) |
| 2002 09 06 | 599 | 0.3- | 0.1- | 2005 05 19 | G96 | 0.1- | 0.4+ | 2006 10 02 | 703 | (2.0- | 0.0)  |
| 2002 10 11 | 644 | 0.3- | 0.0  | 2006 08 30 | 699 | 0.1- | 0.6+ | 2006 10 02 | 703 | 0.2+  | 1.0+  |
| 2002 10 11 | 644 | 0.4- | 0.1+ | 2006 08 30 | 699 | 0.0  | 1.2+ | 2007 11 04 | G96 | 0.5+  | 0.2-  |
| 2002 10 11 | 644 | 0.6- | 0.0  | 2006 08 30 | 699 | 0.1+ | 0.2+ | 2007 11 04 | G96 | 0.6-  | 1.2+  |
| 2004 02 16 | 704 | 0.0  | 1.1+ | 2006 08 30 | 699 | 1.2+ | 0.2+ | 2007 11 04 | G96 | 0.0   | 0.0   |
| 2004 02 16 | 704 | 1.1+ | 0.6+ | 2006 09 14 | 644 | 0.3+ | 0.2+ | 2007 11 04 | G96 | 0.5-  | 0.4-  |
| 2004 02 16 | 704 | 0.5+ | 0.1- | 2006 09 14 | 644 | 0.1+ | 0.0  | 2007 12 06 | G96 | 0.3-  | 0.4+  |
| 2004 02 16 | 704 | 0.4+ | 1.2+ | 2006 09 14 | 703 | 0.3+ | 0.1+ | 2007 12 06 | G96 | 0.1-  | 0.1-  |
| 2005 04 16 | 691 | 0.0  | 0.2+ | 2006 09 14 | 703 | 0.0  | 0.4+ | 2007 12 06 | G96 | 0.4+  | 0.2+  |
| 2005 04 16 | 691 | 0.1+ | 0.3+ | 2006 09 14 | 644 | 0.2+ | 0.2+ | 2007 12 06 | G96 | 0.2+  | 0.2-  |

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M.P.O. 129551

2005 04 16 691 0.2+ 0.2+ 2006 09 14 703 0.8- 0.4+  
 2005 05 14 G96 0.2- 0.2+ 2006 09 14 703 0.6- 0.8+

**(173052)\* 2006 QP<sub>170</sub> = 2002 XA<sub>97</sub>**

Discovered 2006 Aug. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 109784)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.44227   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20288066 | $\omega$ | 77.52238  | +0.95312141   | -0.30217681 |
| <i>a</i> | 2.8684170  | $\Omega$ | 300.06415 | +0.27006106   | +0.87301786 |
| <i>e</i> | 0.0810742  | <i>i</i> | 1.04420   | +0.13647931   | +0.38279106 |
| <i>P</i> | 4.86       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1999 02 09 691 0.0 0.3-  | 2004 02 16 691 0.3+ 0.3+   | 2006 08 28 703 0.2- 0.5+ |
| 1999 02 09 691 0.1+ 0.1+ | 2004 02 16 691 0.5+ 0.4+   | 2006 08 28 703 0.8- 0.3+ |
| 1999 02 09 691 0.2+ 0.1- | 2004 02 16 691 (1.8- 0.5-) | 2006 08 28 703 0.3+ 0.1+ |
| 1999 03 06 691 0.7- 0.3- | 2004 03 14 691 0.1+ 0.3+   | 2006 08 28 703 0.7- 1.0- |
| 1999 03 06 691 0.3- 1.0+ | 2004 03 14 691 0.1+ 0.4+   | 2006 09 14 644 0.1- 0.0  |
| 1999 03 06 691 0.8- 0.3- | 2004 03 14 691 0.7+ 0.5+   | 2006 09 14 644 0.3- 0.4+ |
| 1999 03 20 691 0.2+ 0.1- | 2005 02 14 809 0.1- 0.4+   | 2006 09 14 644 0.3+ 0.2+ |
| 1999 03 20 691 0.0 0.5-  | 2005 02 14 809 0.2+ 0.4+   | 2006 09 26 G96 0.1- 0.3- |
| 1999 03 20 691 0.3+ 0.7- | 2005 02 14 809 0.1+ 0.4+   | 2006 09 26 G96 0.1- 0.3- |
| 2002 11 24 644 0.1+ 0.1+ | 2005 02 14 809 0.1+ 0.3+   | 2006 09 26 G96 0.2- 0.5- |
| 2002 11 24 644 0.1+ 0.3+ | 2005 05 10 G96 0.1- 0.6+   | 2006 09 26 G96 0.1+ 0.1- |
| 2002 11 24 644 0.0 0.1+  | 2005 05 10 G96 0.0 0.3+    | 2007 12 05 691 0.0 0.3-  |
| 2002 12 05 704 0.0 1.3+  | 2005 05 10 G96 0.0 0.1+    | 2007 12 05 691 0.1- 0.4- |
| 2002 12 05 704 0.6+ 0.6+ | 2005 05 10 G96 0.2- 0.4+   | 2007 12 05 691 0.1- 0.1+ |
| 2002 12 05 704 0.9- 1.3+ | 2006 06 20 G96 0.5+ 0.1+   | 2007 12 14 704 0.2- 0.5+ |
| 2002 12 05 704 0.2+ 0.3+ | 2006 06 20 G96 0.0 0.0     | 2007 12 14 704 1.0- 0.4- |
| 2002 12 05 704 0.6+ 0.5+ | 2006 06 20 G96 0.7- 0.1-   | 2007 12 14 704 0.3+ 0.4- |
| 2002 12 10 704 0.7- 1.5+ | 2006 06 20 G96 0.2- 0.2-   | 2007 12 16 691 0.2- 0.5- |
| 2002 12 10 704 0.7+ 0.2+ | 2006 08 19 691 0.0 0.3+    | 2007 12 16 691 0.2+ 1.0+ |
| 2002 12 10 704 0.3- 0.1- | 2006 08 19 691 0.1- 0.5+   | 2007 12 16 691 0.1- 0.2- |
| 2002 12 10 704 0.6+ 0.5- | 2006 08 19 691 0.2+ 0.3+   |                          |

**(173053)\* 2006 RU<sub>9</sub> = 2004 DU<sub>62</sub>**

Discovered 2006 Sept. 13 by NEAT at Palomar.

Id. A. Doppler (*MPO* 109804)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.36470   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22875038 | $\omega$ | 24.53753  | +0.99652040   | +0.08317418 |
| <i>a</i> | 2.6478589  | $\Omega$ | 330.68987 | -0.07817770   | +0.91026596 |
| <i>e</i> | 0.0230550  | <i>i</i> | 0.63190   | -0.02890223   | +0.40558345 |
| <i>P</i> | 4.31       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 1997 08 05 691 0.7- 0.9+   | 2005 06 14 G96 0.2+ 0.3+ | 2006 09 22 A50 0.1+ 0.4- |
| 1997 08 05 691 0.4- 0.5+   | 2005 06 14 G96 0.3- 0.4+ | 2006 09 22 A50 0.4- 0.4- |
| 1997 08 05 691 0.3- 0.6+   | 2005 06 14 G96 0.2- 0.2- | 2006 09 23 691 0.3+ 0.1- |
| 2000 03 11 704 0.1+ 0.3-   | 2005 06 14 G96 0.4+ 0.1+ | 2006 09 23 691 0.0 0.0   |
| 2000 03 11 704 0.5+ 0.0    | 2006 08 28 705 0.1+ 0.1- | 2006 09 23 691 0.2+ 0.2- |
| 2000 03 11 704 0.8+ 0.1-   | 2006 08 28 705 0.1+ 0.2- | 2006 10 19 G96 0.1+ 0.1- |
| 2002 10 03 704 (1.0+ 3.1-) | 2006 08 28 691 0.1+ 0.0  | 2006 10 19 G96 0.2+ 0.2- |
| 2002 10 03 704 0.5- 1.3-   | 2006 08 28 691 0.2+ 0.2+ | 2006 10 19 G96 0.1- 0.2- |
| 2002 10 03 704 (2.1- 1.4+) | 2006 08 28 691 0.3+ 0.0  | 2006 10 19 G96 0.0 0.1-  |
| 2002 10 29 291 0.3+ 0.1+   | 2006 09 13 644 0.2- 0.3+ | 2006 10 27 G96 0.2- 0.4- |
| 2002 10 29 291 0.4+ 0.2+   | 2006 09 13 644 0.1+ 0.1+ | 2006 10 27 G96 0.2- 0.0  |
| 2002 10 29 291 0.3+ 0.1-   | 2006 09 13 644 0.2+ 0.0  | 2006 10 27 G96 0.5- 0.2+ |
| 2002 10 31 644 0.3- 0.2+   | 2006 09 14 644 0.2+ 0.0  | 2006 10 27 G96 0.3+ 0.5- |
| 2002 10 31 644 0.6- 0.7+   | 2006 09 14 644 0.3- 0.1- | 2007 10 19 G96 0.1- 0.3- |
| 2002 10 31 644 1.1- 0.8+   | 2006 09 14 644 0.5- 0.0  | 2007 10 19 G96 0.0 0.1-  |
| 2004 02 12 691 0.1+ 0.2+   | 2006 09 15 691 0.1- 0.2+ | 2007 10 19 G96 0.0 0.1+  |
| 2004 02 12 691 0.1+ 0.3+   | 2006 09 15 691 0.1+ 0.3+ | 2007 10 19 G96 0.1- 0.2- |
| 2004 02 12 691 0.3+ 0.3+   | 2006 09 15 691 0.2- 0.3+ | 2007 12 04 691 0.3+ 0.5+ |

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2004 02 26 704 (0.0 2.6+)  | 2006 09 16 699 (1.9+ 0.1-) | 2007 12 04 691 0.1- 0.1+ |
| 2004 02 26 704 (0.0 2.0+)  | 2006 09 16 699 0.0 0.7-    | 2007 12 04 691 0.5- 0.1- |
| 2004 02 26 704 0.1+ 1.4+   | 2006 09 16 699 0.7- 0.7+   | 2007 12 17 691 0.3- 0.1+ |
| 2004 02 26 704 (1.1- 2.6+) | 2006 09 16 699 0.2- 0.7+   | 2007 12 17 691 0.3- 0.3+ |
| 2004 03 01 691 0.1+ 0.2+   | 2006 09 17 704 0.5- 0.5+   | 2007 12 17 691 0.3- 0.1- |
| 2004 03 01 691 0.5+ 0.4+   | 2006 09 17 704 0.6+ 0.2+   |                          |
| 2004 03 01 691 0.3+ 0.3+   | 2006 09 17 704 0.5+ 0.1-   |                          |

**(173054)\* 2006 RR<sub>71</sub> = 1995 SN<sub>16</sub>**

Discovered 2006 Sept. 15 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 109891)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 270.35737  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18203763 | $\omega$ | 351.31337 | -0.98319447   | -0.18253915 |
| <i>a</i> | 3.0833910  | $\Omega$ | 178.16166 | +0.17237248   | -0.93334173 |
| <i>e</i> | 0.0860116  | <i>i</i> | 5.08714   | +0.06013619   | -0.30911596 |
| <i>P</i> | 5.41       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1993 03 24 809 1.0+ 0.8+ | 2005 07 11 G96 0.0 0.2-    | 2006 10 17 705 0.2+ 0.0  |
| 1995 09 18 691 0.3- 0.2+ | 2005 07 11 G96 0.3+ 0.3-   | 2006 10 20 705 0.3+ 0.0  |
| 1995 09 18 691 0.1- 0.1+ | 2006 09 15 691 0.2- 0.1-   | 2006 10 20 705 0.3+ 0.1- |
| 1995 09 18 691 0.4- 0.1+ | 2006 09 15 691 0.1+ 0.1+   | 2006 10 21 G96 0.2+ 0.3- |
| 1995 09 23 691 0.1- 1.0+ | 2006 09 15 691 0.3- 0.3+   | 2006 10 21 G96 0.0 0.1-  |
| 1995 09 23 691 0.4- 0.5+ | 2006 09 19 691 0.0 0.3+    | 2006 10 21 G96 0.1- 0.3- |
| 1995 09 23 691 0.4- 0.2+ | 2006 09 19 691 0.1- 0.1+   | 2006 10 21 G96 0.2+ 0.1- |
| 1995 09 23 691 0.1+ 0.1+ | 2006 09 19 691 0.2+ 0.1+   | 2006 10 22 705 0.4+ 0.0  |
| 1995 09 23 691 0.0 0.1-  | 2006 09 23 691 0.1+ 0.1+   | 2006 10 22 705 0.3+ 0.0  |
| 1995 09 23 691 0.4+ 0.0  | 2006 09 23 691 0.1- 0.0    | 2006 10 23 705 0.2+ 0.0  |
| 2001 11 20 704 0.1- 0.1+ | 2006 09 23 691 0.1+ 0.2+   | 2006 10 23 705 0.3+ 0.0  |
| 2001 11 20 704 0.8+ 0.1- | 2006 09 24 291 0.3- 0.1-   | 2006 10 27 705 0.0 0.1-  |
| 2001 11 20 704 0.9+ 0.5+ | 2006 09 24 291 0.2- 0.1-   | 2006 10 27 705 0.2+ 0.0  |
| 2003 01 24 644 0.8+ 0.5+ | 2006 09 24 291 0.1- 0.1+   | 2007 11 08 691 0.2- 0.0  |
| 2003 01 24 644 0.2+ 0.6+ | 2006 09 25 G96 (0.2+ 1.7-) | 2007 11 08 691 0.4- 0.1+ |
| 2003 01 24 644 0.3+ 0.9+ | 2006 09 25 G96 0.1- 0.1-   | 2007 11 08 691 0.5- 0.4+ |
| 2004 04 13 691 0.3+ 0.5+ | 2006 09 25 G96 0.2+ 0.4-   | 2007 12 04 704 1.0+ 0.9+ |
| 2004 04 13 691 0.1- 0.6+ | 2006 09 25 G96 0.0 0.3-    | 2007 12 04 704 0.5+ 1.3- |
| 2004 04 13 691 0.0 0.5+  | 2006 09 29 705 0.3+ 0.1-   | 2007 12 04 704 0.6- 2.3+ |
| 2004 05 21 691 0.2+ 0.3+ | 2006 09 29 705 0.3+ 0.1-   | 2007 12 04 704 0.2- 1.0+ |
| 2004 05 21 691 0.1+ 0.4+ | 2006 10 02 705 0.3+ 0.0    | 2007 12 04 704 0.3+ 1.1+ |
| 2004 05 21 691 0.1+ 0.5+ | 2006 10 02 705 0.4+ 0.0    | 2007 12 05 G96 0.1+ 0.2- |
| 2005 06 28 691 0.0 0.1-  | 2006 10 03 705 0.3+ 0.0    | 2007 12 05 G96 0.3+ 0.0  |
| 2005 06 28 691 0.2- 0.0  | 2006 10 03 705 0.4+ 0.1-   | 2007 12 05 G96 0.2- 0.1+ |
| 2005 06 28 691 0.1+ 0.2+ | 2006 10 13 705 0.3+ 0.1-   | 2007 12 05 G96 0.1+ 0.1- |
| 2005 07 11 G96 0.2- 0.1+ | 2006 10 13 705 0.2+ 0.1-   |                          |
| 2005 07 11 G96 0.2+ 0.0  | 2006 10 17 705 0.2+ 0.0    |                          |

**(173055)\* 2006 RT<sub>79</sub> = 2004 FK<sub>151</sub>**

Discovered 2006 Sept. 15 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 109899)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 184.99402  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.16880120 | $\omega$ | 215.73482 | -0.51164399   | +0.85856558 |
| <i>a</i> | 3.2425426  | $\Omega$ | 23.54478  | -0.76789697   | -0.43973673 |
| <i>e</i> | 0.0867543  | <i>i</i> | 4.73114   | -0.38542790   | -0.26362237 |
| <i>P</i> | 5.84       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2000 10 05 691 0.1- 0.0  | 2006 09 26 G96 0.2- 0.4- | 2006 10 23 705 0.0 0.1-  |
| 2000 10 05 691 0.0 0.2+  | 2006 09 26 G96 0.1+ 0.4- | 2006 10 29 705 0.0 0.1-  |
| 2000 10 05 691 0.1- 0.3+ | 2006 09 26 G96 0.1- 0.3- | 2006 10 29 705 0.1+ 0.0  |
| 2004 03 16 691 0.2+ 0.3+ | 2006 09 27 691 0.2- 0.1- | 2006 11 01 705 0.0 0.1-  |
| 2004 03 16 691 0.2+ 0.3+ | 2006 09 27 691 0.4+ 0.9+ | 2006 11 01 705 0.0 0.0   |
| 2004 03 16 691 0.0 0.7+  | 2006 09 27 691 0.0 0.1-  | 2006 11 16 705 0.1+ 0.1- |
| 2004 03 27 704 0.1+ 0.9+ | 2006 09 27 705 0.2+ 0.1- | 2006 11 16 705 0.1- 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 27 | 704 | 0.5+ | 0.7+ | 2006 09 27 | 705 | 0.1+ | 0.1- | 2006 11 19 | 705 | 0.0  | 0.0  |
| 2004 03 27 | 704 | 1.0+ | 0.2+ | 2006 09 28 | 705 | 0.2+ | 0.4+ | 2006 11 19 | 705 | 0.0  | 0.2- |
| 2004 04 16 | 644 | 0.5+ | 0.6+ | 2006 09 28 | 705 | 0.2+ | 0.4+ | 2006 11 23 | 705 | 0.1+ | 0.1- |
| 2004 04 16 | 644 | 0.2+ | 0.7+ | 2006 10 02 | 705 | 0.0  | 0.2- | 2006 11 23 | 705 | 0.1- | 0.0  |
| 2004 04 16 | 644 | 0.7+ | 0.8+ | 2006 10 02 | 705 | 0.1+ | 0.2- | 2007 10 24 | G96 | 0.7+ | 0.4- |
| 2006 09 15 | 691 | 0.4- | 0.1+ | 2006 10 13 | 705 | 0.1+ | 0.0  | 2007 10 24 | G96 | 0.4- | 0.0  |
| 2006 09 15 | 691 | 0.2- | 0.2- | 2006 10 13 | 705 | 0.1+ | 0.0  | 2007 10 24 | G96 | 0.2- | 0.0  |
| 2006 09 15 | 691 | 0.5- | 0.3+ | 2006 10 21 | G96 | 0.3- | 0.3- | 2007 10 24 | G96 | 0.5+ | 0.6+ |
| 2006 09 19 | 691 | 0.2- | 0.2+ | 2006 10 21 | G96 | 0.3- | 0.5- | 2007 11 02 | 691 | 0.2- | 0.2+ |
| 2006 09 19 | 691 | 0.1- | 0.0  | 2006 10 21 | G96 | 0.3- | 0.4- | 2007 11 02 | 691 | 0.1- | 0.1+ |
| 2006 09 19 | 691 | 0.1+ | 0.1+ | 2006 10 21 | G96 | 0.2- | 0.4- | 2007 11 02 | 691 | 0.2- | 0.0  |
| 2006 09 22 | 705 | 0.3+ | 0.2- | 2006 10 21 | 705 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.7+ | 0.5+ |
| 2006 09 22 | 705 | 0.3+ | 0.3- | 2006 10 21 | 705 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.2+ | 0.0  |
| 2006 09 23 | 691 | 0.3- | 0.2+ | 2006 10 22 | 291 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.8+ | 0.0  |
| 2006 09 23 | 691 | 0.0  | 0.0  | 2006 10 22 | 291 | 0.2+ | 0.5+ | 2007 12 13 | 704 | 0.6- | 1.1+ |
| 2006 09 23 | 691 | 0.0  | 0.1+ | 2006 10 22 | 291 | 0.0  | 0.2+ |            |     |      |      |
| 2006 09 26 | G96 | 0.3- | 0.4- | 2006 10 23 | 705 | 0.1+ | 0.1- |            |     |      |      |

**(173056)\* 2006 SP<sub>8</sub>**

Discovered 2006 Sept. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 76.94899   | (2000.0)           |               |
| <i>n</i> | 0.17320453 | $\omega$ 287.54425 | +0.95250001   |
| <i>a</i> | 3.1873509  | $\Omega$ 85.20059  | +0.28686635   |
| <i>e</i> | 0.1325383  | <i>i</i> 12.59439  | -0.10223223   |
| <i>P</i> | 5.69       | <i>H</i> 14.8      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 02 | 699 | 0.3+ | 1.7- | 2006 09 16 | 705 | 0.2+ | 0.3- | 2006 11 10 | 704 | 0.4-  | 0.2+  |
| 2000 10 02 | 699 | 0.1- | 0.7+ | 2006 09 16 | 699 | 1.3- | 1.1- | 2006 11 16 | 703 | (2.8+ | 0.3-) |
| 2000 10 02 | 699 | 0.0  | 1.2+ | 2006 09 18 | 703 | 0.2- | 0.8- | 2006 11 16 | 703 | 1.0+  | 0.3-  |
| 2000 10 02 | 699 | 0.5- | 0.7+ | 2006 09 18 | 703 | 0.0  | 1.1- | 2006 11 16 | 703 | (0.3- | 1.8+) |
| 2001 11 15 | 691 | 0.2- | 0.3+ | 2006 09 18 | 703 | 0.1+ | 0.8- | 2006 11 16 | 703 | (0.4- | 3.7+) |
| 2001 11 15 | 691 | 0.3- | 0.4+ | 2006 09 18 | 703 | 0.4- | 0.6- | 2006 11 16 | 703 | 0.1+  | 1.3+  |
| 2001 11 15 | 691 | 0.2- | 0.0  | 2006 09 29 | 699 | 0.5- | 0.5+ | 2006 11 16 | 703 | 0.7-  | 0.1-  |
| 2001 12 18 | 644 | 0.1+ | 0.1+ | 2006 09 29 | 699 | 0.4+ | 0.8- | 2006 11 16 | 703 | (1.1+ | 1.7+) |
| 2001 12 18 | 644 | 0.0  | 0.2- | 2006 09 29 | 699 | 0.6+ | 0.1+ | 2006 11 16 | 703 | 0.3-  | 0.9+  |
| 2001 12 18 | 644 | 0.2+ | 0.3+ | 2006 09 29 | 699 | 0.6+ | 0.8- | 2006 12 12 | 644 | 0.2+  | 0.1-  |
| 2001 12 18 | 704 | 1.5+ | 0.7- | 2006 09 30 | 704 | 0.7+ | 0.0  | 2006 12 12 | 644 | 0.0   | 0.2-  |
| 2001 12 18 | 704 | 0.5+ | 0.1+ | 2006 09 30 | 704 | 0.1+ | 1.1+ | 2006 12 12 | 644 | 0.1+  | 0.3-  |
| 2001 12 18 | 704 | 0.5+ | 0.7- | 2006 09 30 | 704 | 1.0+ | 0.4+ | 2006 12 21 | 703 | 0.2+  | 0.0   |
| 2001 12 18 | 704 | 0.1+ | 0.3- | 2006 09 30 | 704 | 0.2+ | 0.3+ | 2006 12 21 | 703 | 1.0-  | 0.8+  |
| 2002 01 08 | 704 | 0.2+ | 0.2+ | 2006 10 11 | 644 | 0.3- | 0.4- | 2006 12 21 | 703 | 0.6-  | 0.3+  |
| 2002 01 08 | 704 | 0.1- | 0.1- | 2006 10 11 | 644 | 0.2- | 0.2- | 2006 12 21 | 703 | 0.7-  | 1.0-  |
| 2002 01 08 | 704 | 0.1+ | 0.3- | 2006 10 11 | 644 | 0.0  | 0.3- | 2007 11 18 | G96 | 0.2-  | 0.1-  |
| 2002 01 08 | 704 | 0.3- | 0.8- | 2006 10 17 | 703 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.3-  | 0.1-  |
| 2002 01 08 | 704 | 0.2- | 0.6- | 2006 10 17 | 703 | 0.2- | 1.0+ | 2007 11 18 | G96 | 0.3-  | 0.0   |
| 2006 08 28 | 705 | 0.2- | 0.3- | 2006 10 17 | 703 | 0.9- | 0.6+ | 2007 11 18 | G96 | 0.5-  | 0.1+  |
| 2006 08 28 | 705 | 0.2- | 0.3- | 2006 10 17 | 703 | 0.6- | 0.4+ | 2007 12 13 | 704 | 0.5-  | 0.3+  |
| 2006 09 11 | 705 | 0.0  | 0.3- | 2006 10 28 | 703 | 0.9+ | 0.5+ | 2007 12 13 | 704 | 0.4+  | 0.3+  |
| 2006 09 11 | 705 | 0.0  | 0.2- | 2006 10 28 | 703 | 0.6+ | 0.3+ | 2007 12 13 | 704 | 0.2-  | 0.6+  |
| 2006 09 16 | 699 | 0.6+ | 0.8+ | 2006 10 28 | 703 | 0.6+ | 0.5+ | 2007 12 16 | 704 | 0.3+  | 0.4-  |
| 2006 09 16 | 699 | 0.8- | 0.4- | 2006 10 28 | 703 | 0.9+ | 0.4+ | 2007 12 16 | 704 | 0.5+  | 0.5-  |
| 2006 09 16 | 699 | 0.7- | 1.1- | 2006 11 10 | 704 | 0.2+ | 0.2- | 2007 12 16 | 704 | 0.0   | 0.3-  |
| 2006 09 16 | 705 | 0.1+ | 0.2- | 2006 11 10 | 704 | 1.2+ | 0.0  | 2007 12 16 | 704 | 0.6+  | 0.2+  |

**(173057)\* 2006 SD<sub>51</sub> = 2002 XG<sub>98</sub>**

Discovered 2006 Sept. 17 by the Catalina Sky Survey.  
Id. G. V. Williams (*MPO* 109993)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 341.23691  | (2000.0)           |               |
| <i>n</i> | 0.21105556 | $\omega$ 158.19670 | -0.47718890   |
| <i>a</i> | 2.7938614  | $\Omega$ 320.14263 | +0.78343862   |
| <i>e</i> | 0.1154139  | <i>i</i> 8.30537   | +0.39813902   |
| <i>P</i> | 4.67       | <i>H</i> 15.2      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 1    |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 01 21 | 691 | 0.6- | 0.5- | 2004 03 26 | 704 | 0.5-  | 0.4-  | 2006 10 03 | 703 | 0.2- | 0.4+ |
| 1994 01 21 | 691 | 0.3+ | 0.7- | 2004 04 17 | 704 | 1.1+  | 0.8+  | 2006 10 03 | 703 | 0.0  | 0.9+ |
| 1999 02 21 | 699 | 1.1+ | 1.3+ | 2004 04 17 | 704 | 0.7-  | 0.4+  | 2006 10 03 | 703 | 0.1+ | 0.3+ |
| 1999 02 21 | 699 | 0.6+ | 0.8+ | 2004 04 17 | 704 | 0.2-  | 0.2+  | 2006 10 17 | 703 | 0.4+ | 0.7+ |
| 1999 02 21 | 699 | 0.6+ | 1.0+ | 2004 04 17 | 704 | 0.3+  | 1.2+  | 2006 10 17 | 703 | 0.3+ | 0.6- |
| 2002 12 05 | 704 | 0.1- | 0.7+ | 2006 09 17 | 703 | 0.2+  | 0.8+  | 2006 10 17 | 703 | 0.8+ | 0.2+ |
| 2002 12 05 | 704 | 0.8- | 0.3+ | 2006 09 17 | 703 | 0.6-  | 0.2+  | 2006 10 17 | 703 | 0.8- | 1.0+ |
| 2002 12 05 | 704 | 0.4- | 0.2+ | 2006 09 17 | 703 | 0.6-  | 0.4-  | 2007 11 07 | 704 | 1.3- | 1.1- |
| 2002 12 05 | 704 | 0.2+ | 1.0+ | 2006 09 17 | 703 | 0.3-  | 0.4+  | 2007 11 07 | 704 | 0.4+ | 0.1+ |
| 2002 12 05 | 704 | 0.2- | 0.3+ | 2006 09 20 | 703 | 0.8-  | 0.3+  | 2007 11 07 | 704 | 0.2+ | 0.6- |
| 2002 12 10 | 704 | 0.0  | 0.7+ | 2006 09 20 | 703 | 0.5+  | 0.1-  | 2007 11 07 | 704 | 0.1- | 0.4+ |
| 2002 12 10 | 704 | 0.7+ | 0.2+ | 2006 09 20 | 703 | 0.3-  | 0.3+  | 2007 11 09 | 704 | 0.9+ | 1.2+ |
| 2002 12 10 | 704 | 0.7- | 0.1- | 2006 09 20 | 703 | (3.1- | 2.0-) | 2007 11 09 | 704 | 0.8+ | 0.3+ |
| 2003 02 01 | 704 | 0.4- | 0.5- | 2006 09 27 | 703 | 0.4+  | 0.8+  | 2007 11 09 | 704 | 0.2- | 1.3+ |
| 2003 02 01 | 704 | 0.1- | 0.0  | 2006 09 27 | 703 | 1.4-  | 0.1+  | 2007 12 13 | 704 | 0.6+ | 0.5- |
| 2003 02 01 | 704 | 0.2+ | 0.9- | 2006 09 27 | 703 | 0.5-  | 0.5+  | 2007 12 13 | 704 | 0.1- | 0.1+ |
| 2003 02 01 | 704 | 0.1+ | 0.4+ | 2006 09 27 | 703 | 1.0+  | 0.0   | 2007 12 13 | 704 | 0.6+ | 1.2+ |
| 2004 03 15 | 644 | 0.2+ | 0.6+ | 2006 10 03 | 703 | 0.2+  | 0.7+  | 2007 12 13 | 704 | 0.4- | 0.3+ |
| 2004 03 15 | 644 | 0.3+ | 0.5+ | 2006 10 03 | 703 | 0.0   | 0.7-  | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 2004 03 15 | 644 | 1.0- | 1.3+ | 2006 10 03 | 703 | (0.2- | 1.9-) | 2007 12 15 | 704 | 0.5+ | 0.2- |
| 2004 03 26 | 704 | 1.4+ | 0.6- | 2006 10 03 | 703 | 0.4-  | 0.2-  | 2007 12 15 | 704 | 0.9- | 0.9- |
| 2004 03 26 | 704 | 0.8+ | 0.6+ | 2006 10 03 | 703 | 0.4+  | 0.6-  |            |     |      |      |

**(173058)\* 2006 SY<sub>53</sub>**

Discovered 2006 Sept. 16 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 82.59714   | (2000.0)           |               |
| <i>n</i> | 0.15629764 | $\omega$ 70.97467  | +0.82367571   |
| <i>a</i> | 3.4132474  | $\Omega$ 258.04576 | -0.56626656   |
| <i>e</i> | 0.1711385  | <i>i</i> 15.50879  | +0.03000851   |
| <i>P</i> | 6.31       | <i>H</i> 14.0      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 0    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 04 | 704 | 0.5+ | 0.3+ | 2006 07 24 | 704 | 0.8+ | 0.4- | 2007 11 13 | 691 | 0.9+  | 0.1+  |
| 2000 10 04 | 704 | 0.1+ | 0.5- | 2006 08 10 | 644 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.0   | 0.8+  |
| 2000 10 04 | 704 | 0.3- | 0.0  | 2006 08 10 | 644 | 0.2- | 0.1+ | 2007 11 15 | 704 | (2.0+ | 1.5-) |
| 2000 10 04 | 704 | 0.6- | 0.7- | 2006 08 10 | 644 | 0.1- | 0.2+ | 2007 11 15 | 704 | 0.2+  | 0.5-  |
| 2000 11 19 | 704 | 1.2- | 1.2+ | 2006 09 06 | 644 | 0.0  | 0.2+ | 2007 11 15 | 704 | (1.7+ | 1.5-) |
| 2000 11 19 | 704 | 0.3- | 0.1- | 2006 09 06 | 644 | 0.0  | 0.1+ | 2007 11 17 | 691 | 0.2-  | 0.2-  |
| 2000 11 19 | 704 | 0.3+ | 0.4- | 2006 09 06 | 644 | 0.2+ | 0.1+ | 2007 11 17 | 691 | 0.1-  | 0.0   |
| 2000 11 19 | 704 | 0.3- | 0.1- | 2006 09 16 | 703 | 0.1+ | 0.1- | 2007 11 17 | 691 | 0.0   | 0.1-  |
| 2002 01 09 | 704 | 0.8+ | 0.5+ | 2006 09 16 | 703 | 0.0  | 0.3- | 2007 12 04 | G96 | 0.6+  | 0.1-  |
| 2002 01 09 | 704 | 0.8+ | 0.2- | 2006 09 16 | 703 | 0.1- | 0.2- | 2007 12 04 | G96 | 0.4+  | 0.0   |
| 2002 01 09 | 704 | 1.0+ | 0.1- | 2006 09 16 | 703 | 0.2- | 0.3- | 2007 12 04 | G96 | 0.2+  | 0.0   |
| 2004 03 16 | E12 | 1.5+ | 0.1+ | 2006 09 21 | 699 | 0.6+ | 0.9+ | 2007 12 04 | G96 | 0.5+  | 0.0   |
| 2004 03 16 | E12 | 0.3+ | 0.6+ | 2006 09 21 | 699 | 0.1- | 0.6+ | 2007 12 05 | 704 | 0.4-  | 0.4+  |
| 2004 03 16 | E12 | 0.1- | 0.2- | 2006 09 21 | 699 | 0.3- | 0.0  | 2007 12 05 | 704 | 1.2-  | 0.3+  |
| 2004 03 16 | E12 | 0.5+ | 0.2- | 2006 09 21 | 699 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.0   | 0.7+  |
| 2005 06 04 | 704 | 1.2- | 0.0  | 2006 09 28 | 703 | 0.0  | 0.3- | 2007 12 05 | 704 | 0.2+  | 0.6+  |
| 2005 06 04 | 704 | 0.1+ | 0.6+ | 2006 09 28 | 703 | 0.1- | 0.4+ | 2007 12 05 | 704 | 0.7-  | 0.0   |
| 2005 06 04 | 704 | 0.2- | 0.8+ | 2006 09 28 | 703 | 0.4+ | 0.4- | 2007 12 05 | 703 | 0.6-  | 0.5-  |
| 2005 06 04 | 704 | 0.5- | 0.8+ | 2006 09 28 | 703 | 0.2+ | 0.2+ | 2007 12 05 | 703 | 0.0   | 0.2+  |
| 2005 06 13 | G96 | 0.2- | 0.1+ | 2006 10 26 | 703 | 0.5- | 0.2- | 2007 12 05 | 703 | 0.1-  | 0.1+  |
| 2005 06 13 | G96 | 0.1+ | 0.2+ | 2006 10 26 | 703 | 0.1+ | 0.6- | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2005 06 13 | G96 | 0.2- | 0.2- | 2006 10 26 | 703 | 0.4- | 0.5+ | 2007 12 16 | 691 | 1.0-  | 0.4+  |
| 2005 06 13 | G96 | 0.9- | 0.9+ | 2006 10 26 | 703 | 0.2+ | 0.8+ | 2007 12 16 | 691 | 0.0   | 0.3+  |
| 2006 07 24 | 704 | 1.3+ | 0.2- | 2007 11 13 | 691 | 0.1+ | 0.1- |            |     |       |       |
| 2006 07 24 | 704 | 0.9+ | 0.7+ | 2007 11 13 | 691 | 0.0  | 0.1- |            |     |       |       |

**(173059)\* 2006 SE<sub>56</sub>**

Discovered 2006 Sept. 19 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 90.38806   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18705795 | $\omega$ | 267.16767 | +0.98380442  | +0.07191873  |
| $a$ | 3.0279725  | $\Omega$ | 88.66960  | −0.00106401  | +0.91830395  |
| $e$ | 0.1063529  | $i$      | 9.45243   | −0.17924208  | +0.38928852  |
| $P$ | 5.27       | $H$      | 15.4      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.0   | 0.3+  | 2006 09 21 | 699 | 0.3−  | 0.2−  | 2006 10 28 | 703 | 0.4+ | 0.5+ |
| 2001 10 17 | 704 | 0.1+  | 0.2−  | 2006 09 21 | 699 | (1.3+ | 1.6−) | 2006 10 28 | 703 | 0.4− | 1.1− |
| 2001 10 17 | 704 | 0.4+  | 0.4+  | 2006 09 21 | 699 | 0.1−  | 0.4−  | 2006 10 28 | 703 | 0.4+ | 0.0  |
| 2001 10 17 | 704 | 0.2−  | 0.4+  | 2006 09 26 | 703 | 0.3−  | 0.8+  | 2006 10 28 | 703 | 0.2+ | 0.2− |
| 2001 10 17 | 704 | 0.6−  | 1.0+  | 2006 09 26 | 703 | 0.5+  | 0.6+  | 2006 11 16 | 703 | 0.1+ | 1.0+ |
| 2001 11 19 | 699 | (1.6− | 1.4−) | 2006 09 26 | 703 | 0.2−  | 0.4+  | 2006 11 16 | 703 | 0.2+ | 0.7+ |
| 2001 11 19 | 699 | 0.9−  | 0.7−  | 2006 09 26 | 703 | 0.0   | 1.3+  | 2006 11 16 | 703 | 0.2+ | 0.2− |
| 2001 11 19 | 699 | 1.3+  | 0.6−  | 2006 09 29 | 699 | 0.4−  | 0.4+  | 2006 11 16 | 703 | 0.7− | 0.3+ |
| 2001 11 19 | 699 | 0.1−  | 0.1−  | 2006 09 29 | 699 | 0.2+  | 0.7+  | 2007 10 15 | G96 | 0.5+ | 0.5− |
| 2001 12 11 | 704 | 0.3+  | 0.1+  | 2006 09 29 | 699 | 0.6−  | 0.6−  | 2007 10 15 | G96 | 0.2− | 0.1− |
| 2001 12 11 | 704 | 0.2+  | 1.1−  | 2006 09 29 | 699 | 0.7−  | 1.1+  | 2007 10 15 | G96 | 0.7+ | 0.4− |
| 2001 12 11 | 704 | 0.1+  | 0.3−  | 2006 10 16 | 703 | 0.1+  | 0.4−  | 2007 10 15 | G96 | 0.0  | 0.7− |
| 2003 04 26 | 645 | 0.0   | 0.1+  | 2006 10 16 | 703 | 0.0   | 0.8−  | 2007 11 07 | G96 | 0.5+ | 0.3− |
| 2003 04 26 | 645 | 0.0   | 0.1+  | 2006 10 16 | 703 | 0.5+  | 0.5−  | 2007 11 07 | G96 | 0.3+ | 0.2+ |
| 2006 09 19 | 703 | 0.5−  | 0.5−  | 2006 10 16 | 703 | 0.6+  | 0.9−  | 2007 11 07 | G96 | 0.6+ | 0.0  |
| 2006 09 19 | 703 | 0.5−  | 0.0   | 2006 10 22 | 703 | (1.6+ | 0.8−) | 2007 11 07 | G96 | 0.4+ | 0.6− |
| 2006 09 19 | 703 | 0.5−  | 0.0   | 2006 10 22 | 703 | 0.4+  | 0.3+  | 2007 12 04 | 691 | 0.4− | 0.0  |
| 2006 09 19 | 703 | 0.4−  | 0.1+  | 2006 10 22 | 703 | 0.1−  | 0.1+  | 2007 12 04 | 691 | 0.1− | 0.1+ |
| 2006 09 21 | 699 | 0.3+  | 0.3−  | 2006 10 22 | 703 | 0.0   | 0.4+  | 2007 12 04 | 691 | 0.0  | 0.1− |

**(173060)\* 2006 SA<sub>59</sub> = 2003 YN<sub>102</sub>**

Discovered 2006 Sept. 16 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 110002)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 218.89143  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22814863 | $\omega$ | 304.40703 | −0.73031848 | +0.65422501 |
| $a$ | 2.6525127  | $\Omega$ | 277.30117 | −0.54350204 | −0.73078178 |
| $e$ | 0.1133351  | $i$      | 11.42809  | −0.41381210 | −0.19480152 |
| $P$ | 4.32       | $H$      | 15.6      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 08 | 704 | 0.2−  | 0.2−  | 2003 12 23 | 704 | 1.2+ | 0.2− | 2006 09 29 | 699 | (1.8+ | 1.4−) |
| 2000 02 08 | 704 | 0.1+  | 0.7+  | 2005 05 18 | E12 | 0.7+ | 0.6+ | 2006 09 29 | 699 | 1.0−  | 1.4−  |
| 2000 02 08 | 704 | 1.3−  | 0.2+  | 2005 05 18 | E12 | 0.5+ | 0.5+ | 2006 09 29 | 699 | (0.3+ | 2.1+) |
| 2000 02 08 | 704 | 0.6+  | 1.0+  | 2005 05 18 | E12 | 0.1+ | 0.1+ | 2006 09 29 | 699 | 0.2+  | 0.7+  |
| 2000 03 04 | 645 | 0.1+  | 0.1−  | 2005 05 18 | E12 | 0.0  | 0.1+ | 2006 10 03 | 703 | 0.1+  | 1.4+  |
| 2000 03 04 | 645 | 0.1+  | 0.1−  | 2005 07 11 | E12 | 0.1− | 0.2+ | 2006 10 03 | 703 | 0.0   | 0.4−  |
| 2000 05 05 | 645 | 0.2−  | 0.1+  | 2005 07 11 | E12 | 0.8− | 0.1+ | 2006 10 03 | 703 | 0.8−  | 0.9+  |
| 2000 05 05 | 645 | 0.2−  | 0.1+  | 2005 07 11 | E12 | 0.0  | 0.0  | 2006 10 03 | 703 | 1.3+  | 0.7−  |
| 2002 11 01 | 644 | 0.2+  | 0.1+  | 2005 07 11 | E12 | 0.4+ | 0.3+ | 2006 10 26 | 703 | 0.2−  | 0.9+  |
| 2002 11 01 | 644 | 0.1−  | 0.2+  | 2006 09 16 | 703 | 0.1− | 0.5+ | 2006 10 26 | 703 | (1.7+ | 0.1−) |
| 2002 11 01 | 644 | 0.6+  | 0.3−  | 2006 09 16 | 703 | 0.7− | 0.6− | 2006 10 26 | 703 | 0.9−  | 0.0   |
| 2003 12 19 | 704 | 0.2−  | 0.7−  | 2006 09 16 | 703 | 0.6− | 0.6− | 2006 10 26 | 703 | 0.6−  | 0.7−  |
| 2003 12 19 | 704 | (0.2− | 2.3+) | 2006 09 16 | 703 | 0.5− | 0.5+ | 2007 12 06 | 691 | 0.3−  | 0.1−  |
| 2003 12 19 | 704 | 0.6−  | 0.9+  | 2006 09 21 | 699 | 0.9+ | 0.1− | 2007 12 06 | 691 | 0.1+  | 0.7−  |
| 2003 12 19 | 704 | (2.0− | 1.9+) | 2006 09 21 | 699 | 0.4− | 0.3+ | 2007 12 06 | 691 | 0.3−  | 0.5+  |
| 2003 12 19 | 704 | 0.3+  | 0.4−  | 2006 09 21 | 699 | 0.8+ | 0.6+ | 2007 12 15 | 704 | 0.1+  | 0.8+  |
| 2003 12 23 | 704 | 1.0+  | 0.0   | 2006 09 21 | 699 | 0.6+ | 0.5+ | 2007 12 15 | 704 | 0.4−  | 0.7+  |
| 2003 12 23 | 704 | 0.6+  | 1.0−  | 2006 09 22 | A50 | 0.1− | 0.3+ | 2007 12 15 | 704 | 0.3+  | 1.0+  |
| 2003 12 23 | 704 | 0.1−  | 0.4−  | 2006 09 22 | A50 | 0.0  | 0.3− | 2007 12 15 | 704 | 0.2+  | 0.8+  |

**(173061)\* 2006 SQ<sub>59</sub>**

Discovered 2006 Sept. 16 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 41.96896   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18328942 | $\omega$ | 106.67519 | +0.60380267 | −0.77031008 |
| $a$ | 3.0693361  | $\Omega$ | 304.37851 | +0.60332817 | +0.60974025 |
| $e$ | 0.2027144  | $i$      | 14.38552  | +0.52097740 | +0.18665266 |
| $P$ | 5.38       | $H$      | 14.7      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 28 | 704 | 0.1−  | 1.0−  | 2002 01 23 | 704 | 0.9− | 0.1− | 2006 09 21 | 699 | 1.2+ | 1.4− |
| 2001 09 28 | 704 | 0.2−  | 0.0   | 2002 02 08 | 704 | 0.4+ | 0.0  | 2006 09 28 | 703 | 0.1− | 0.3+ |
| 2001 09 28 | 704 | (2.5+ | 2.2−) | 2002 02 08 | 704 | 0.1− | 0.0  | 2006 09 28 | 703 | 0.1− | 0.3− |
| 2001 09 28 | 704 | 0.5−  | 0.2+  | 2002 02 08 | 704 | 0.1− | 0.2+ | 2006 09 28 | 703 | 0.5+ | 0.2+ |
| 2001 09 28 | 704 | 0.9+  | 0.2−  | 2002 02 08 | 704 | 0.4+ | 0.5+ | 2006 09 28 | 703 | 0.1− | 0.3− |
| 2001 10 25 | 704 | 0.8−  | 1.1+  | 2002 02 08 | 704 | 1.0+ | 0.6+ | 2006 10 20 | 703 | 0.5− | 0.3− |
| 2001 10 25 | 704 | 0.2+  | 0.2+  | 2003 01 03 | 291 | 0.2+ | 0.4+ | 2006 10 20 | 703 | 0.5− | 0.3+ |
| 2001 10 25 | 704 | 0.6−  | 0.1+  | 2003 01 03 | 291 | 0.3+ | 0.1− | 2006 10 20 | 703 | 0.6− | 0.3+ |
| 2001 10 25 | 704 | 0.1−  | 0.1+  | 2003 01 03 | 291 | 0.1+ | 0.4+ | 2006 10 20 | 703 | 0.2− | 0.3+ |
| 2001 12 09 | 704 | 0.2−  | 0.5+  | 2003 03 08 | 699 | 0.4+ | 0.4− | 2006 11 25 | 703 | 1.0− | 1.3− |
| 2001 12 09 | 704 | 0.3+  | 0.6+  | 2003 03 08 | 699 | 0.6− | 1.2+ | 2006 11 25 | 703 | 0.9− | 0.5+ |
| 2001 12 09 | 704 | 0.2+  | 0.1+  | 2003 03 08 | 699 | 0.4+ | 0.3− | 2006 11 25 | 703 | 1.3− | 0.5− |
| 2001 12 09 | 704 | 0.8+  | 0.5+  | 2003 03 08 | 699 | 0.7+ | 1.3+ | 2006 11 25 | 703 | 0.9+ | 0.3+ |
| 2001 12 09 | 704 | 0.4+  | 0.4+  | 2006 08 29 | 699 | 0.9+ | 1.2+ | 2007 10 18 | 691 | 0.4− | 0.3− |
| 2001 12 22 | 704 | (0.9− | 1.6−) | 2006 08 29 | 699 | 0.4+ | 0.8+ | 2007 10 18 | 691 | 0.1+ | 0.4− |
| 2001 12 22 | 704 | (1.2− | 1.6−) | 2006 08 29 | 699 | 0.5+ | 0.6+ | 2007 10 18 | 691 | 0.6− | 0.1+ |
| 2001 12 22 | 704 | 0.1−  | 1.2−  | 2006 08 29 | 699 | 0.6+ | 0.3+ | 2007 11 09 | G96 | 0.2− | 0.7− |
| 2001 12 22 | 704 | (0.1− | 1.6−) | 2006 09 06 | 644 | 0.2− | 0.2+ | 2007 11 09 | G96 | 0.2+ | 0.6− |
| 2002 01 07 | 704 | 0.2−  | 0.2+  | 2006 09 06 | 644 | 0.1− | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.5− |
| 2002 01 07 | 704 | 0.7+  | 0.5+  | 2006 09 06 | 644 | 0.1+ | 0.2+ | 2007 11 09 | G96 | 0.0  | 0.7− |
| 2002 01 07 | 704 | 0.1−  | 0.5+  | 2006 09 16 | 703 | 0.2− | 0.2− | 2007 11 20 | 704 | 1.3+ | 0.3+ |
| 2002 01 07 | 704 | 0.1−  | 0.0   | 2006 09 16 | 703 | 0.1− | 0.1+ | 2007 11 20 | 704 | 1.0+ | 0.1− |
| 2002 01 07 | 704 | 0.2+  | 0.3−  | 2006 09 16 | 703 | 0.1+ | 0.0  | 2007 11 20 | 704 | 0.3− | 1.5+ |
| 2002 01 23 | 704 | 0.4−  | 0.0   | 2006 09 16 | 703 | 0.2+ | 0.5− | 2007 12 14 | G96 | 0.4− | 0.7− |
| 2002 01 23 | 704 | (1.7− | 0.3+) | 2006 09 21 | 699 | 0.0  | 0.1+ | 2007 12 14 | G96 | 0.7− | 0.8− |
| 2002 01 23 | 704 | 0.9−  | 0.7−  | 2006 09 21 | 699 | 0.1− | 0.4− | 2007 12 14 | G96 | 0.6− | 0.6− |
| 2002 01 23 | 704 | 0.4−  | 0.1+  | 2006 09 21 | 699 | 0.1− | 0.4− | 2007 12 14 | G96 | 0.4− | 0.6− |

**(173062)\* 2006 SD<sub>86</sub> = 2004 HR<sub>54</sub> = 2005 MR<sub>21</sub>**

Discovered 2006 Sept. 18 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 121641)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $\dot{M}$ | 227.34721  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
|-----------|------------|----------|-----------|-------------|-------------|-----|---|
| $n$       | 0.17533376 | $\omega$ | 19.63825  | −0.82335377 | +0.56752624 |     |   |
| $a$       | 3.1614940  | $\Omega$ | 194.93997 | −0.52152089 | −0.75771292 |     |   |
| $e$       | 0.1242397  | $i$      | 0.35452   | −0.22384042 | −0.32215695 |     |   |
| $P$       | 5.62       | $H$      | 15.8      | $G$         | 0.15        | $U$ | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 27 | 691 | 0.1− | 0.1− | 2005 07 03 | G96 | 0.3+ | 0.4− | 2006 11 22 | G96 | 0.4− | 0.0  |
| 2000 09 27 | 691 | 0.1− | 0.0  | 2005 07 15 | G96 | 0.1− | 0.3+ | 2006 11 22 | G96 | 0.3+ | 0.9− |
| 2000 09 27 | 691 | 0.0  | 0.1− | 2005 07 15 | G96 | 0.3− | 0.4+ | 2006 11 22 | G96 | 0.4+ | 0.5− |
| 2003 01 23 | 291 | 0.7− | 1.2− | 2005 07 15 | G96 | 0.4− | 0.4+ | 2007 11 02 | 691 | 0.1+ | 0.0  |
| 2003 01 23 | 291 | 0.4+ | 0.3+ | 2005 07 15 | G96 | 0.1− | 0.0  | 2007 11 02 | 691 | 0.1− | 0.1− |
| 2003 01 23 | 291 | 0.5+ | 0.5+ | 2006 09 18 | 691 | 0.3− | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.6+ |
| 2004 04 21 | 704 | 0.1+ | 0.1+ | 2006 09 18 | 691 | 0.3− | 0.3− | 2007 11 13 | 691 | 0.4− | 0.4− |
| 2004 04 21 | 704 | 0.4+ | 0.1− | 2006 09 18 | 691 | 0.3− | 0.1− | 2007 11 13 | 691 | 0.4+ | 0.2+ |
| 2004 04 21 | 704 | 0.1+ | 0.4− | 2006 09 25 | 691 | 0.6+ | 0.2− | 2007 11 13 | 691 | 0.1+ | 0.1− |
| 2004 04 21 | 704 | 0.2− | 0.3+ | 2006 09 25 | 691 | 0.4+ | 0.2+ | 2007 11 17 | 691 | 0.1+ | 0.1+ |
| 2004 04 26 | 699 | 0.6+ | 0.0  | 2006 09 25 | 691 | 0.1− | 0.1+ | 2007 11 17 | 691 | 0.5− | 0.0  |
| 2004 04 26 | 699 | 0.1+ | 0.1+ | 2006 09 26 | G96 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.0  | 0.2− |
| 2004 04 26 | 699 | 0.8− | 0.4− | 2006 09 26 | G96 | 0.1− | 0.1− | 2007 12 04 | 691 | 0.3+ | 0.2− |
| 2004 04 26 | 699 | 0.7− | 0.9− | 2006 09 26 | G96 | 0.9+ | 0.3+ | 2007 12 04 | 691 | 0.2− | 0.3+ |
| 2005 06 30 | 691 | 0.1+ | 0.3− | 2006 09 26 | G96 | 0.8+ | 0.3+ | 2007 12 04 | 691 | 0.0  | 0.0  |
| 2005 06 30 | 691 | 0.1+ | 0.2+ | 2006 10 16 | G96 | 0.5+ | 0.3− | 2007 12 16 | 691 | 0.2− | 0.4+ |
| 2005 06 30 | 691 | 0.3− | 0.7+ | 2006 10 16 | G96 | 0.2+ | 0.1− | 2007 12 16 | 691 | 0.1+ | 0.2+ |
| 2005 07 03 | G96 | 0.4− | 0.1− | 2006 10 16 | G96 | 0.4+ | 0.1+ | 2007 12 16 | 691 | 0.3− | 0.3+ |

2005 07 03 G96 0.1− 0.3− 2006 10 16 G96 0.6+ 0.5−  
 2005 07 03 G96 0.1− 0.1− 2006 11 22 G96 0.4+ 0.9−

**(173063)\* 2006 SG<sub>93</sub> = 1997 WA<sub>25</sub>**

Discovered 2006 Sept. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 110033)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 49.42303   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21663806 | $\omega$ | 217.26434 | +0.40237387   | −0.91538969 |
| <i>a</i> | 2.7456565  | $\Omega$ | 209.01513 | +0.84603140   | +0.37704553 |
| <i>e</i> | 0.0872613  | <i>i</i> | 1.48024   | +0.34975153   | +0.14106167 |
| <i>P</i> | 4.55       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 11 28 | 691 | 0.9− | 0.5− | 2006 10 15 | 691 | 0.0   | 0.4+  | 2006 11 15 | 691 | 0.0   | 0.1+  |
| 1997 11 28 | 691 | 0.5− | 0.1− | 2006 10 15 | 691 | 0.5−  | 0.0   | 2006 11 15 | 691 | (0.3− | 1.8+) |
| 1997 12 04 | 691 | 0.3+ | 0.0  | 2006 10 21 | 703 | (2.0− | 0.0 ) | 2006 12 12 | G96 | 0.5−  | 0.5+  |
| 1997 12 04 | 691 | 0.8+ | 0.2+ | 2006 10 21 | 703 | 1.5+  | 0.5+  | 2006 12 12 | G96 | 0.1−  | 0.0   |
| 1997 12 04 | 691 | 0.5+ | 0.1− | 2006 10 21 | 703 | 1.3−  | 0.7−  | 2006 12 12 | G96 | 0.6−  | 0.0   |
| 2001 09 19 | 645 | 0.0  | 0.1− | 2006 10 21 | 703 | 1.0−  | 0.1+  | 2006 12 12 | G96 | 0.0   | 0.1+  |
| 2001 09 19 | 645 | 0.1+ | 0.1− | 2006 10 21 | 644 | 0.1−  | 0.1+  | 2007 01 08 | G96 | 0.1−  | 0.4−  |
| 2004 04 13 | 691 | 0.2+ | 0.2− | 2006 10 21 | 644 | 0.1−  | 0.2+  | 2007 01 08 | G96 | 0.3−  | 0.4−  |
| 2004 04 13 | 691 | 0.1− | 0.3+ | 2006 10 21 | 644 | 0.1+  | 0.4+  | 2007 01 08 | G96 | 0.1+  | 0.0   |
| 2004 04 13 | 691 | 0.2+ | 0.2− | 2006 10 27 | G96 | 0.3+  | 0.1−  | 2007 01 08 | G96 | 0.1−  | 0.6−  |
| 2004 05 16 | 691 | 0.2+ | 1.1+ | 2006 10 27 | G96 | 0.2−  | 0.0   | 2007 02 06 | G96 | 0.0   | 0.2−  |
| 2004 05 16 | 691 | 0.1− | 0.1+ | 2006 10 27 | G96 | 0.2+  | 0.3−  | 2007 02 06 | G96 | 0.4+  | 0.2+  |
| 2004 05 16 | 691 | 0.4+ | 0.2+ | 2006 10 27 | G96 | 0.1+  | 0.1−  | 2007 02 06 | G96 | 0.4+  | 0.5−  |
| 2006 09 18 | 691 | 0.2− | 0.2+ | 2006 10 28 | 691 | 0.1−  | 0.1+  | 2007 02 06 | G96 | 0.3+  | 0.1−  |
| 2006 09 18 | 691 | 0.1− | 0.3+ | 2006 10 28 | 691 | 0.2−  | 0.1−  | 2007 11 18 | G96 | 0.5+  | 0.2+  |
| 2006 09 18 | 691 | 0.3− | 0.3+ | 2006 10 28 | 691 | 0.0   | 0.1+  | 2007 11 18 | G96 | 0.4+  | 0.0   |
| 2006 09 25 | G96 | 0.2+ | 0.1− | 2006 11 01 | 691 | 0.7+  | 0.1+  | 2007 11 18 | G96 | 0.8+  | 0.1+  |
| 2006 09 25 | G96 | 0.0  | 0.1− | 2006 11 01 | 691 | 0.3+  | 0.1+  | 2007 11 18 | G96 | 0.4−  | 0.0   |
| 2006 09 25 | G96 | 0.2+ | 0.2− | 2006 11 01 | 691 | 0.3+  | 0.2+  | 2007 12 14 | G96 | 0.8−  | 0.3−  |
| 2006 09 25 | G96 | 0.2− | 0.1− | 2006 11 13 | G96 | 0.0   | 0.1−  | 2007 12 14 | G96 | 0.6−  | 0.8−  |
| 2006 10 11 | 691 | 0.0  | 0.3+ | 2006 11 13 | G96 | 0.1−  | 0.2−  | 2007 12 14 | G96 | 0.4−  | 0.4+  |
| 2006 10 11 | 691 | 0.1− | 0.0  | 2006 11 13 | G96 | 0.0   | 0.1−  | 2007 12 14 | G96 | 0.5−  | 0.8+  |
| 2006 10 11 | 691 | 0.5− | 0.2+ | 2006 11 13 | G96 | 0.1−  | 0.2−  |            |     |       |       |
| 2006 10 15 | 691 | 0.2+ | 0.2+ | 2006 11 15 | 691 | 0.2+  | 0.3+  |            |     |       |       |

**(173064)\* 2006 SD<sub>122</sub>**

Discovered 2006 Sept. 19 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 82.10682   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18504046 | $\omega$ | 81.49767  | +0.95672926   | −0.12625428 |
| <i>a</i> | 3.0499420  | $\Omega$ | 285.44533 | −0.00520352   | +0.89339642 |
| <i>e</i> | 0.1235946  | <i>i</i> | 15.78241  | +0.29093307   | +0.43116435 |
| <i>P</i> | 5.33       | <i>H</i> | 15.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 25 | 704 | 0.2−  | 0.9−  | 2006 08 12 | 644 | 0.1+  | 0.1−  | 2006 10 27 | 703 | 0.3+ | 0.3− |
| 2001 10 25 | 704 | 0.2+  | 0.8−  | 2006 09 19 | 703 | 1.2+  | 0.8+  | 2006 11 15 | 703 | 0.2− | 0.1+ |
| 2001 10 25 | 704 | (0.2− | 2.5−) | 2006 09 19 | 703 | 0.1−  | 0.8−  | 2006 11 15 | 703 | 0.5− | 0.8− |
| 2001 12 09 | 704 | 0.4+  | 0.8−  | 2006 09 19 | 703 | 0.4+  | 0.5+  | 2006 11 15 | 703 | 0.2− | 0.7+ |
| 2001 12 09 | 704 | 0.3+  | 0.4+  | 2006 09 19 | 703 | 0.2+  | 0.1−  | 2006 11 15 | 703 | 0.4− | 0.2− |
| 2001 12 09 | 704 | 0.6−  | 0.1−  | 2006 09 25 | 703 | 0.2+  | 0.6+  | 2006 11 22 | 703 | 0.4+ | 0.1− |
| 2001 12 09 | 704 | 0.5+  | 0.1+  | 2006 09 25 | 703 | 0.1+  | 0.7−  | 2006 11 22 | 703 | 0.3− | 0.2+ |
| 2001 12 09 | 704 | 0.2+  | 0.1+  | 2006 09 25 | 703 | 0.8+  | 0.1+  | 2006 11 22 | 703 | 0.0  | 0.9− |
| 2001 12 22 | 704 | (1.9− | 0.6+) | 2006 09 25 | 703 | 1.1−  | 1.0−  | 2007 09 18 | G96 | 0.2+ | 0.2− |
| 2001 12 22 | 704 | 0.6−  | 1.3+  | 2006 10 02 | 704 | (2.9+ | 1.4−) | 2007 09 18 | G96 | 0.1+ | 0.6− |
| 2001 12 22 | 704 | (2.2− | 2.0+) | 2006 10 02 | 704 | (2.0+ | 1.6+) | 2007 09 18 | G96 | 0.1− | 0.3− |
| 2001 12 22 | 704 | (1.7− | 0.9+) | 2006 10 02 | 703 | 0.3+  | 1.1+  | 2007 09 18 | G96 | 0.1− | 0.1+ |
| 2001 12 22 | 704 | (4.2− | 4.6+) | 2006 10 02 | 703 | 0.1−  | 0.2−  | 2007 11 08 | G96 | 0.0  | 0.1− |
| 2002 01 08 | 704 | 0.7−  | 0.4+  | 2006 10 02 | 704 | (1.3+ | 1.8+) | 2007 11 08 | G96 | 0.1− | 0.1− |
| 2002 01 08 | 704 | 0.3−  | 0.7+  | 2006 10 02 | 703 | 0.1+  | 0.1−  | 2007 11 08 | G96 | 0.3− | 0.2− |
| 2002 01 08 | 704 | 0.4+  | 0.6+  | 2006 10 02 | 703 | 0.8−  | 0.5+  | 2007 11 08 | G96 | 0.4− | 0.0  |

2003 01 28 608 0.3− 0.1− 2006 10 02 704 (1.8+ 1.7−) 2007 12 05 G96 0.3+ 0.1−  
 2003 01 28 608 0.2− 0.4− 2006 10 02 704 (1.1+ 2.0+) 2007 12 05 G96 0.1− 0.1+  
 2003 01 28 608 0.4+ 0.3+ 2006 10 27 703 0.0 0.3− 2007 12 05 G96 0.2+ 0.1−  
 2006 08 12 644 0.1+ 0.1+ 2006 10 27 703 0.3− 0.1− 2007 12 05 G96 0.2− 0.2+  
 2006 08 12 644 0.1− 0.0 2006 10 27 703 0.2− 0.4+

**(173065)\* 2006 SZ<sub>123</sub>**

Discovered 2006 Sept. 19 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 322.11014  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22252839 | $\omega$ | 42.32586 | −0.71826451   | −0.67410236 |
| <i>a</i> | 2.6969886  | $\Omega$ | 94.42351 | +0.58308419   | −0.71829166 |
| <i>e</i> | 0.0436091  | <i>i</i> | 9.95064  | +0.37961681   | −0.17217175 |
| <i>P</i> | 4.43       | <i>H</i> | 16.0     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 27 | 699 | 0.8+ | 0.2+ | 2004 02 16 | 704 | 0.3+  | 0.1−  | 2006 10 23 | 644 | 0.1− | 0.3+ |
| 2000 04 27 | 699 | 0.7+ | 0.8+ | 2004 02 16 | 704 | 0.3+  | 0.5+  | 2006 10 23 | 644 | 0.0  | 0.5+ |
| 2000 04 27 | 699 | 0.1− | 0.7+ | 2004 03 18 | 703 | 1.1+  | 0.7+  | 2007 11 04 | G96 | 0.1+ | 0.2− |
| 2000 04 27 | 699 | 0.7+ | 1.7+ | 2004 03 18 | 703 | (3.4+ | 2.2+) | 2007 11 04 | G96 | 0.0  | 0.1− |
| 2001 07 24 | 644 | 0.2+ | 0.3+ | 2004 03 18 | 703 | (2.1+ | 1.0+) | 2007 11 04 | G96 | 0.4+ | 0.2+ |
| 2001 07 24 | 644 | 0.3+ | 0.0  | 2004 03 18 | 703 | 0.8+  | 1.0+  | 2007 11 04 | G96 | 0.3+ | 0.1+ |
| 2001 07 24 | 644 | 0.2+ | 0.5+ | 2006 09 19 | 703 | 0.6−  | 1.2+  | 2007 11 11 | G96 | 0.1+ | 0.3− |
| 2002 11 15 | 644 | 0.4− | 0.5+ | 2006 09 19 | 703 | 0.8−  | 0.5+  | 2007 11 11 | G96 | 0.3+ | 0.0  |
| 2002 11 15 | 644 | 1.1− | 0.9+ | 2006 09 19 | 703 | 0.0   | 0.9+  | 2007 11 11 | G96 | 0.2+ | 0.1− |
| 2002 11 15 | 644 | 0.3+ | 0.6+ | 2006 09 19 | 703 | 0.8−  | 0.2−  | 2007 11 11 | G96 | 0.0  | 0.1− |
| 2002 12 01 | 608 | 0.6+ | 0.1− | 2006 09 25 | 703 | 0.3−  | 1.0+  | 2007 11 21 | G96 | 0.5+ | 0.1− |
| 2002 12 01 | 608 | 0.6+ | 0.3− | 2006 09 25 | 703 | 0.1+  | 1.0+  | 2007 11 21 | G96 | 0.3+ | 0.1− |
| 2002 12 01 | 608 | 0.2+ | 0.5− | 2006 09 25 | 703 | (0.2+ | 1.8+) | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 2004 01 28 | 645 | 0.1− | 0.1+ | 2006 09 25 | 703 | 1.4−  | 1.1−  | 2007 11 21 | G96 | 0.4+ | 0.3− |
| 2004 01 28 | 645 | 0.1− | 0.1+ | 2006 10 22 | 644 | 0.2−  | 0.7+  | 2007 12 06 | G96 | 0.4− | 0.3− |
| 2004 02 16 | 704 | 0.2+ | 0.7+ | 2006 10 22 | 644 | 0.3−  | 0.9+  | 2007 12 06 | G96 | 0.1− | 0.0  |
| 2004 02 16 | 704 | 0.3+ | 0.5+ | 2006 10 22 | 644 | 0.7−  | 0.3+  | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2004 02 16 | 704 | 0.0  | 0.7+ | 2006 10 23 | 644 | 0.0   | 0.7+  | 2007 12 06 | G96 | 0.3+ | 0.2− |

**(173066)\* 2006 SY<sub>127</sub>**

Discovered 2006 Sept. 17 by the Catalina Sky Survey.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 61.25623   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17804924 | $\omega$ | 87.69071  | +0.92276374   | −0.29298218 |
| <i>a</i> | 3.1292671  | $\Omega$ | 289.26428 | +0.15132872   | +0.87291587 |
| <i>e</i> | 0.1194460  | <i>i</i> | 15.37797  | +0.35441036   | +0.39010170 |
| <i>P</i> | 5.54       | <i>H</i> | 14.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 08 02 | 704 | 0.5+  | 0.5−  | 2002 01 08 | 704 | 0.1−  | 0.5−  | 2006 10 20 | 703 | 0.2− | 0.2− |
| 2000 08 02 | 704 | 0.4+  | 0.0   | 2002 01 08 | 704 | 0.2+  | 0.8+  | 2006 10 20 | 703 | 0.6− | 0.2+ |
| 2000 08 02 | 704 | 0.2−  | 0.1−  | 2002 01 08 | 704 | 0.4+  | 0.8+  | 2006 10 20 | 703 | 0.3− | 0.2+ |
| 2000 08 02 | 704 | 0.1+  | 0.2+  | 2004 03 18 | E12 | 0.1−  | 0.5+  | 2006 10 20 | 703 | 0.2+ | 0.1− |
| 2000 08 31 | 704 | 0.5−  | 0.0   | 2004 03 18 | E12 | 0.7+  | 0.8+  | 2006 11 15 | 703 | 0.1+ | 1.3+ |
| 2000 08 31 | 704 | 0.2−  | 0.3+  | 2004 03 18 | E12 | 0.2+  | 0.3+  | 2006 11 15 | 703 | 1.3− | 0.4+ |
| 2000 08 31 | 704 | 0.1+  | 0.3+  | 2004 03 18 | E12 | 0.1−  | 0.6+  | 2006 11 15 | 703 | 0.7+ | 0.8− |
| 2000 08 31 | 704 | (2.4+ | 1.6+) | 2006 09 17 | 703 | 0.1−  | 0.0   | 2006 11 15 | 703 | 0.3− | 0.5− |
| 2001 10 25 | 704 | 0.6+  | 0.4+  | 2006 09 17 | 703 | 1.1−  | 0.5−  | 2007 12 05 | 691 | 0.1− | 0.1− |
| 2001 10 25 | 704 | 0.4−  | 1.0+  | 2006 09 17 | 703 | 0.1−  | 0.2+  | 2007 12 05 | 691 | 0.0  | 0.2− |
| 2001 10 25 | 704 | (0.0  | 1.7+) | 2006 09 22 | 699 | (1.7+ | 0.8+) | 2007 12 05 | 691 | 0.2− | 0.2− |
| 2001 11 11 | 704 | (0.4− | 1.5−) | 2006 09 22 | 699 | 0.8+  | 0.6+  | 2007 12 06 | 704 | 0.4− | 0.9+ |
| 2001 11 11 | 704 | 0.8+  | 0.8+  | 2006 09 22 | 699 | 0.2−  | 0.2+  | 2007 12 06 | 704 | 1.0− | 0.2+ |
| 2001 11 11 | 704 | 0.3−  | 0.1−  | 2006 09 22 | 699 | 0.1−  | 0.6+  | 2007 12 06 | 704 | 0.7+ | 0.3+ |
| 2001 11 11 | 704 | 0.2−  | 0.7−  | 2006 09 28 | 703 | 0.3+  | 0.3−  | 2007 12 14 | 704 | 0.1+ | 1.0+ |
| 2001 11 11 | 704 | 0.9+  | 0.4−  | 2006 09 28 | 703 | 0.6−  | 0.1+  | 2007 12 14 | 704 | 0.1− | 0.4+ |
| 2001 12 09 | 704 | 0.4−  | 0.3−  | 2006 09 28 | 703 | 0.0   | 0.0   | 2007 12 14 | 704 | 0.7+ | 0.7+ |
| 2001 12 09 | 704 | 0.1−  | 0.1+  | 2006 09 28 | 703 | 1.1+  | 0.1−  | 2007 12 14 | 704 | 0.0  | 0.8+ |
| 2001 12 09 | 704 | 0.9−  | 0.0   | 2006 10 18 | 106 | 0.1+  | 0.0   | 2007 12 15 | 691 | 0.0  | 0.5− |
| 2001 12 09 | 704 | 0.6−  | 0.2−  | 2006 10 18 | 106 | 0.1+  | 0.2+  | 2007 12 15 | 691 | 0.1+ | 0.2− |



2007 DEC. 24

M.P.O. 129555

2001 12 09 704 0.4- 0.3- 2006 10 18 106 0.5+ 0.4- 2007 12 15 691 0.1+ 0.1-  
 2002 01 08 704 0.5+ 0.4+ 2006 10 18 106 0.4+ 0.5-

(173067)\* 2006 SX<sub>148</sub> = 2000 EP<sub>27</sub>

Discovered 2006 Sept. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 110079)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 233.88084  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22952356 | $\omega$ | 318.81899 | -0.67845101   | +0.73351032 |
| <i>a</i> | 2.6419091  | $\Omega$ | 268.41544 | -0.66287528   | -0.63518204 |
| <i>e</i> | 0.1251737  | <i>i</i> | 2.34076   | -0.31670268   | -0.24188095 |
| <i>P</i> | 4.29       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 03 | 704 | 0.9+ | 0.8+ | 2001 08 27 | 644 | 0.1+  | 0.8+  | 2006 09 19 | 691 | 0.5+  | 0.1+  |
| 2000 03 03 | 704 | 0.9+ | 0.1+ | 2001 08 27 | 644 | 0.2+  | 0.4+  | 2006 09 23 | 152 | (1.0+ | 2.8-) |
| 2000 03 03 | 704 | 0.2+ | 0.2+ | 2001 08 27 | 644 | 0.2-  | 0.9+  | 2006 09 23 | 152 | 0.1-  | 1.2-  |
| 2000 03 03 | 704 | 0.3- | 0.6+ | 2003 12 28 | 291 | 0.2+  | 0.5+  | 2006 09 26 | 691 | 0.2-  | 0.0   |
| 2000 03 03 | 704 | 0.2- | 0.2+ | 2003 12 28 | 291 | 0.5-  | 0.3+  | 2006 09 26 | 691 | 0.1-  | 0.3+  |
| 2000 03 09 | 704 | 0.4+ | 0.1+ | 2003 12 28 | 291 | 1.0-  | 0.1+  | 2006 09 26 | 691 | 0.1-  | 0.0   |
| 2000 03 09 | 704 | 0.7+ | 0.4- | 2004 01 30 | 704 | (2.1+ | 0.5-) | 2006 09 30 | 691 | 0.1+  | 0.0   |
| 2000 03 09 | 704 | 0.1+ | 0.3+ | 2004 01 30 | 704 | 0.7+  | 1.4+  | 2006 09 30 | 691 | 0.1+  | 0.0   |
| 2000 03 09 | 704 | 0.4+ | 0.2- | 2004 01 30 | 704 | 1.0+  | 0.4+  | 2006 09 30 | 691 | 1.0-  | 0.3+  |
| 2001 07 25 | 608 | 0.4+ | 0.1+ | 2004 01 30 | 704 | 0.1+  | 0.9+  | 2007 11 05 | G96 | 0.7+  | 0.1-  |
| 2001 07 25 | 608 | 0.3+ | 0.8+ | 2004 01 30 | 704 | 0.1+  | 0.3-  | 2007 11 05 | G96 | 0.5+  | 0.4-  |
| 2001 07 25 | 608 | 0.3+ | 0.8+ | 2004 02 22 | 704 | 0.7+  | 1.0+  | 2007 11 05 | G96 | 0.6+  | 0.0   |
| 2001 08 16 | 704 | 1.1- | 0.1+ | 2004 02 22 | 704 | 0.6-  | 0.5+  | 2007 11 05 | G96 | 0.7+  | 0.0   |
| 2001 08 16 | 704 | 0.1+ | 0.2+ | 2004 02 22 | 704 | (1.9+ | 1.0+) | 2007 12 04 | 691 | 0.3-  | 0.0   |
| 2001 08 16 | 704 | 1.2- | 0.7+ | 2006 09 19 | 691 | 0.1+  | 0.2+  | 2007 12 04 | 691 | 0.2+  | 0.3-  |
| 2001 08 16 | 704 | 0.8- | 0.3+ | 2006 09 19 | 691 | 0.2+  | 0.1+  | 2007 12 04 | 691 | 0.2+  | 0.3-  |

(173068)\* 2006 SU<sub>171</sub> = 2001 SJ<sub>88</sub> = 2006 QJ<sub>64</sub>

Discovered 2006 Sept. 25 by Spacewatch at Kitt Peak.

Id. G. V. Williams (d, *MPO* 110092), A. Doppler (*MPO* 126201)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.31188   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20354721 | $\omega$ | 148.80444 | +0.99059495   | -0.13611855 |
| <i>a</i> | 2.8621514  | $\Omega$ | 219.02647 | +0.12054662   | +0.91629210 |
| <i>e</i> | 0.0803090  | <i>i</i> | 1.26549   | +0.06473149   | +0.37667032 |
| <i>P</i> | 4.84       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 11 24 | 691 | 0.2- | 0.4- | 2006 07 22 | G96 | 0.5+  | 0.0   | 2006 10 02 | G96 | 0.1- | 0.3- |
| 1992 11 24 | 691 | 0.0  | 0.3- | 2006 07 22 | G96 | 0.1-  | 0.3-  | 2006 10 02 | G96 | 0.3+ | 0.2- |
| 1999 03 21 | 691 | 1.0+ | 0.2- | 2006 07 22 | G96 | 0.1-  | 0.1+  | 2006 10 09 | 644 | 0.4- | 0.5+ |
| 1999 03 21 | 691 | 1.2+ | 0.1- | 2006 07 22 | G96 | 0.2-  | 0.1+  | 2006 10 09 | 644 | 0.1+ | 0.4+ |
| 1999 03 21 | 691 | 0.2+ | 0.4+ | 2006 08 24 | 644 | 0.2-  | 0.3+  | 2006 10 09 | 644 | 0.1- | 0.4+ |
| 2001 08 19 | 807 | 0.1- | 0.5- | 2006 08 24 | 644 | 0.0   | 0.1-  | 2006 10 11 | 644 | 0.1+ | 0.3+ |
| 2001 08 19 | 807 | 0.2- | 0.4- | 2006 08 24 | 644 | 0.2-  | 0.0   | 2006 10 11 | 644 | 0.0  | 0.3+ |
| 2001 09 11 | 699 | 0.0  | 0.3+ | 2006 08 28 | 703 | 0.8+  | 0.2+  | 2006 10 11 | 644 | 0.0  | 0.0  |
| 2001 09 11 | 699 | 0.2+ | 0.2+ | 2006 08 28 | 703 | 0.0   | 1.0-  | 2006 10 17 | G96 | 0.3+ | 0.1+ |
| 2001 09 11 | 699 | 0.2- | 0.5+ | 2006 08 28 | 703 | 0.1+  | 0.5+  | 2006 10 17 | G96 | 0.1+ | 0.2- |
| 2001 09 11 | 699 | 0.4+ | 0.0  | 2006 08 28 | 703 | 0.3-  | 0.4-  | 2006 10 17 | G96 | 0.0  | 0.4- |
| 2001 09 12 | 704 | 0.0  | 1.0+ | 2006 09 17 | 691 | 0.0   | 0.2+  | 2006 10 17 | G96 | 0.3- | 0.9- |
| 2001 09 12 | 704 | 0.9- | 0.1- | 2006 09 17 | 691 | 0.1+  | 0.1-  | 2006 10 20 | 644 | 0.0  | 0.4+ |
| 2001 09 12 | 704 | 0.9- | 0.4+ | 2006 09 17 | 691 | 0.1-  | 0.2+  | 2006 10 20 | 644 | 0.0  | 0.0  |
| 2001 09 12 | 704 | 0.5- | 0.7+ | 2006 09 20 | 704 | (3.5- | 1.2+) | 2006 10 20 | 644 | 0.0  | 0.4+ |
| 2001 09 19 | 691 | 0.2+ | 0.1+ | 2006 09 20 | 704 | 0.1+  | 0.3+  | 2006 10 22 | 644 | 0.2- | 0.5+ |
| 2001 09 19 | 691 | 0.0  | 0.1+ | 2006 09 20 | 704 | 0.3-  | 0.3-  | 2006 10 22 | 644 | 0.1- | 0.0  |
| 2001 09 19 | 691 | 0.1- | 0.1+ | 2006 09 20 | 704 | 0.5+  | 0.3+  | 2006 10 22 | 644 | 0.2- | 0.2+ |
| 2001 09 20 | 704 | 0.0  | 0.0  | 2006 09 25 | 691 | 0.0   | 0.2+  | 2006 10 22 | G96 | 0.1+ | 0.2- |
| 2001 09 20 | 704 | 0.0  | 0.2- | 2006 09 25 | 691 | 0.1+  | 0.2+  | 2006 10 22 | G96 | 0.1- | 0.4- |
| 2001 09 20 | 704 | 0.2+ | 0.3- | 2006 09 25 | 691 | 0.2+  | 0.3+  | 2006 10 22 | G96 | 0.3- | 0.4- |
| 2001 09 20 | 704 | 0.2- | 0.3+ | 2006 09 26 | G96 | 0.1+  | 0.2-  | 2006 10 22 | G96 | 0.7+ | 0.1+ |
| 2001 09 20 | 704 | 0.3+ | 0.2+ | 2006 09 26 | G96 | 0.2+  | 0.4-  | 2006 10 28 | 705 | 0.2+ | 0.1- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 22 | 704 | 1.2-  | 0.2+  | 2006 09 26 | G96 | 0.1+  | 0.4-  | 2006 10 28 | 705 | 0.0  | 0.1- |
| 2001 09 22 | 704 | 0.2-  | 0.2+  | 2006 09 26 | G96 | 0.1+  | 0.4-  | 2006 10 29 | 705 | 0.1+ | 0.0  |
| 2001 09 22 | 704 | 1.2-  | 0.2-  | 2006 09 27 | 704 | 0.0   | 0.6+  | 2006 10 29 | 705 | 0.1+ | 0.0  |
| 2001 09 23 | 704 | 0.0   | 0.8+  | 2006 09 27 | 704 | 0.1-  | 0.6+  | 2007 10 07 | G96 | 0.3+ | 0.0  |
| 2001 09 23 | 704 | (0.8- | 1.5+) | 2006 09 27 | 704 | 0.8+  | 0.4+  | 2007 10 07 | G96 | 0.2+ | 0.1- |
| 2001 09 23 | 704 | 0.6-  | 0.7+  | 2006 09 27 | 704 | 0.6+  | 0.0   | 2007 10 07 | G96 | 0.0  | 0.1- |
| 2001 09 23 | 704 | 0.8-  | 0.6+  | 2006 09 29 | 704 | 0.7-  | 0.3+  | 2007 10 07 | G96 | 0.3+ | 0.1- |
| 2001 09 23 | 704 | 0.9-  | 0.2-  | 2006 09 29 | 704 | 0.3-  | 0.3+  | 2007 11 04 | G96 | 0.0  | 0.1- |
| 2004 03 18 | 704 | 0.7+  | 0.4+  | 2006 09 29 | 704 | 0.4-  | 1.2-  | 2007 11 04 | G96 | 0.1- | 0.1- |
| 2004 03 18 | 704 | (2.3+ | 0.3+) | 2006 09 29 | 704 | 1.5+  | 0.4+  | 2007 11 04 | G96 | 0.2+ | 0.1- |
| 2004 03 18 | 704 | 0.2+  | 0.1+  | 2006 09 29 | 704 | 0.2-  | 0.2-  | 2007 11 04 | G96 | 0.5+ | 0.1+ |
| 2004 03 18 | 704 | 0.5+  | 0.4+  | 2006 10 01 | 704 | (1.1- | 1.8-) | 2007 12 02 | D35 | 0.0  | 0.0  |
| 2004 03 18 | 704 | 0.7+  | 1.2+  | 2006 10 01 | 704 | 0.2-  | 0.6+  | 2007 12 02 | D35 | 0.3- | 0.2+ |
| 2004 03 28 | 291 | 0.2-  | 0.6+  | 2006 10 01 | 704 | 0.7+  | 1.1+  | 2007 12 02 | D35 | 0.7+ | 0.5- |
| 2004 03 28 | 291 | 0.0   | 0.5+  | 2006 10 02 | 691 | 0.3-  | 0.1+  | 2007 12 03 | 691 | 0.2- | 0.5+ |
| 2004 03 28 | 291 | 0.1+  | 0.9+  | 2006 10 02 | 691 | 0.4-  | 0.2+  | 2007 12 03 | 691 | 0.3- | 0.3+ |
| 2004 04 25 | 691 | 0.5-  | 0.4+  | 2006 10 02 | 691 | 0.2+  | 0.3+  | 2007 12 03 | 691 | 0.4- | 0.3+ |
| 2004 04 25 | 691 | 0.3-  | 0.0   | 2006 10 02 | G96 | 0.3-  | 0.3-  |            |     |      |      |
| 2004 04 25 | 691 | 0.3-  | 0.1+  | 2006 10 02 | G96 | 0.1+  | 0.0   |            |     |      |      |

(173069)\* 2006 SQ<sub>199</sub> = 2003 WO<sub>175</sub> = 2005 FP<sub>11</sub> = 2006 SR<sub>368</sub>

Discovered 2006 Sept. 24 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 110105)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 203.03828  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28933725 | $\omega$ | 262.57371 | -0.08891844   | +0.99603876 |
| <i>a</i> | 2.2639482  | $\Omega$ | 2.32512   | -0.90838580   | -0.08086566 |
| <i>e</i> | 0.1386298  | <i>i</i> | 0.78120   | -0.40856916   | -0.03698027 |
| <i>P</i> | 3.41       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 12 | 691 | 0.3+  | 0.1+  | 2005 03 16 | 691 | 0.5+ | 0.6+ | 2006 09 28 | 691 | 0.2+ | 0.4+ |
| 1996 10 12 | 691 | 0.0   | 0.0   | 2005 03 16 | 691 | 0.5+ | 0.6+ | 2006 09 28 | 691 | 0.2+ | 0.2+ |
| 1996 10 12 | 691 | 0.1+  | 0.2-  | 2005 04 02 | G96 | 0.3+ | 0.1+ | 2006 10 02 | 691 | 0.3- | 0.4+ |
| 1999 08 07 | 691 | 0.4-  | 0.3+  | 2005 04 02 | G96 | 0.0  | 0.1- | 2006 10 02 | 691 | 0.4- | 0.3+ |
| 1999 08 07 | 691 | 0.2-  | 0.4+  | 2005 04 02 | G96 | 0.2+ | 0.1- | 2006 10 02 | 691 | 0.6- | 0.4+ |
| 1999 08 07 | 691 | 0.3-  | 0.6+  | 2005 04 02 | G96 | 0.0  | 0.1+ | 2006 10 16 | G96 | 0.3+ | 0.0  |
| 2003 11 19 | 691 | 0.1-  | 0.1-  | 2005 05 13 | G96 | 0.4- | 0.1- | 2006 10 16 | G96 | 0.2+ | 0.1- |
| 2003 11 19 | 691 | 0.1+  | 0.2+  | 2005 05 13 | G96 | 0.3- | 0.2+ | 2006 10 16 | G96 | 0.4+ | 0.0  |
| 2003 11 19 | 691 | 0.5-  | 0.1+  | 2005 05 13 | G96 | 0.1+ | 0.2- | 2006 10 16 | G96 | 0.5+ | 0.1- |
| 2003 11 20 | 695 | 0.2-  | 0.2+  | 2005 05 13 | G96 | 0.2- | 0.2- | 2006 10 27 | G96 | 0.2+ | 0.1- |
| 2003 11 20 | 695 | 0.2+  | 0.2+  | 2006 07 21 | G96 | 0.4+ | 0.7- | 2006 10 27 | G96 | 0.2+ | 0.0  |
| 2005 03 03 | 691 | 0.3+  | 0.2+  | 2006 07 21 | G96 | 0.5- | 0.8- | 2006 10 27 | G96 | 0.5+ | 0.2+ |
| 2005 03 03 | 691 | 0.0   | 0.4+  | 2006 07 21 | G96 | 0.3+ | 0.2- | 2006 10 27 | G96 | 0.1+ | 0.4- |
| 2005 03 03 | 691 | 0.4-  | 0.0   | 2006 07 21 | G96 | 0.6+ | 0.6+ | 2007 11 11 | G96 | 0.4+ | 0.4+ |
| 2005 03 03 | 703 | 1.5-  | 1.4-  | 2006 09 19 | 691 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.1+ | 0.9- |
| 2005 03 03 | 703 | (1.9+ | 1.6-) | 2006 09 19 | 691 | 0.1+ | 0.1- | 2007 11 11 | G96 | 0.7+ | 0.0  |
| 2005 03 03 | 703 | (2.7+ | 2.8-) | 2006 09 19 | 691 | 0.2- | 0.8- | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2005 03 03 | 703 | 0.3-  | 0.5-  | 2006 09 24 | 691 | 0.0  | 0.0  | 2007 12 14 | G96 | 0.4+ | 0.1- |
| 2005 03 11 | 695 | 0.3+  | 0.3+  | 2006 09 24 | 691 | 0.2+ | 0.1- | 2007 12 14 | G96 | 0.4- | 0.5- |
| 2005 03 11 | 695 | 0.3+  | 0.1-  | 2006 09 24 | 691 | 0.2- | 0.0  | 2007 12 14 | G96 | 0.7- | 0.5+ |
| 2005 03 16 | 691 | 0.4+  | 0.6+  | 2006 09 28 | 691 | 0.2+ | 0.2+ | 2007 12 14 | G96 | 0.4- | 0.8+ |

(173070)\* 2006 SW<sub>256</sub> = 1991 VS<sub>8</sub> = 2001 LH<sub>10</sub>

Discovered 2006 Sept. 26 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 110129)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1991 11 04 | 691 | 0.1−  | 0.1−  | 2002 10 04 | 704 | 0.6− | 0.4+ | 2006 10 31 | 691 | 0.2− | 0.3− |
| 1991 11 04 | 691 | 0.5−  | 0.2−  | 2002 10 04 | 704 | 0.2− | 0.7+ | 2006 10 31 | 691 | 0.5− | 0.3− |
| 1991 11 04 | 691 | 0.2−  | 0.1+  | 2002 10 04 | 704 | 0.2− | 0.3+ | 2006 11 13 | 691 | 0.0  | 0.3+ |
| 1991 11 05 | 691 | 0.2+  | 0.4+  | 2002 10 04 | 644 | 0.2+ | 0.9+ | 2006 11 13 | 691 | 0.1− | 0.1− |
| 1991 11 05 | 691 | 0.5+  | 0.6+  | 2006 09 15 | 691 | 0.4+ | 0.0  | 2006 11 13 | 691 | 0.1+ | 0.2+ |
| 1991 11 05 | 691 | 0.1+  | 0.3+  | 2006 09 15 | 691 | 0.1+ | 0.1− | 2006 11 13 | G96 | 0.2+ | 0.1− |
| 1993 04 18 | 413 | 0.1−  | 1.7+  | 2006 09 15 | 691 | 0.3+ | 0.1+ | 2006 11 13 | G96 | 0.1+ | 0.1− |
| 1997 05 04 | 809 | (1.0− | 2.2−) | 2006 09 26 | 691 | 0.9− | 0.2− | 2006 11 13 | G96 | 0.7+ | 0.1− |
| 1997 05 04 | 809 | (1.7− | 3.1−) | 2006 09 26 | 691 | 0.4+ | 0.0  | 2006 11 13 | G96 | 0.1+ | 0.4− |
| 1997 05 04 | 809 | (0.8− | 3.3−) | 2006 09 26 | 691 | 0.2+ | 0.1+ | 2006 11 15 | G96 | 0.2+ | 0.1− |
| 1997 05 10 | 691 | 0.1+  | 0.0   | 2006 09 30 | 691 | 0.0  | 0.3+ | 2006 11 15 | G96 | 0.0  | 0.3− |
| 1997 05 10 | 691 | 0.1−  | 0.9+  | 2006 09 30 | 691 | 0.1− | 0.1− | 2006 11 15 | G96 | 0.3− | 0.1− |
| 1997 05 10 | 691 | 0.0   | 0.2+  | 2006 09 30 | 691 | 0.2− | 0.1− | 2006 11 15 | G96 | 0.0  | 0.3− |
| 2000 01 11 | 704 | 0.2+  | 0.4+  | 2006 10 15 | 691 | 0.3+ | 0.2− | 2006 11 22 | G96 | 0.0  | 0.3− |
| 2000 01 11 | 704 | 0.0   | 0.4−  | 2006 10 15 | 691 | 0.2− | 0.1+ | 2006 11 22 | G96 | 0.1− | 0.4− |
| 2000 01 11 | 704 | 0.4−  | 0.4−  | 2006 10 15 | 691 | 0.1− | 0.2− | 2006 11 22 | G96 | 0.4+ | 0.3− |
| 2000 01 11 | 704 | 0.3−  | 0.4+  | 2006 10 20 | 644 | 0.2+ | 0.1+ | 2006 11 22 | G96 | 0.3+ | 0.1− |
| 2000 01 11 | 704 | 0.2+  | 1.1−  | 2006 10 20 | 644 | 0.3+ | 0.3+ | 2006 12 17 | G96 | 0.0  | 0.4− |
| 2001 06 15 | 704 | 0.1−  | 0.5+  | 2006 10 20 | 644 | 0.4− | 0.4+ | 2006 12 17 | G96 | 0.1+ | 0.6− |
| 2001 06 15 | 704 | 0.2−  | 0.5+  | 2006 10 21 | 703 | 0.1− | 0.2+ | 2006 12 17 | G96 | 0.0  | 0.0  |
| 2001 06 15 | 704 | 0.7+  | 0.6−  | 2006 10 21 | 703 | 0.5− | 0.4+ | 2006 12 17 | G96 | 0.1− | 0.1+ |
| 2001 06 15 | 704 | 0.3−  | 0.4−  | 2006 10 21 | 703 | 0.5− | 0.1− | 2007 01 10 | G96 | 0.4+ | 0.0  |
| 2001 06 21 | 704 | 0.8+  | 0.5+  | 2006 10 21 | 703 | 0.4− | 0.2− | 2007 01 10 | G96 | 0.1+ | 0.1+ |
| 2001 06 21 | 704 | 0.5+  | 0.4−  | 2006 10 21 | 644 | 0.4− | 0.3+ | 2007 01 10 | G96 | 0.8+ | 0.1− |
| 2001 06 21 | 704 | 0.1−  | 0.1+  | 2006 10 21 | 644 | 0.2− | 0.0  | 2007 01 10 | G96 | 0.1− | 0.1− |
| 2001 06 21 | 704 | 0.3−  | 0.1−  | 2006 10 21 | 644 | 0.3− | 0.1− | 2007 11 19 | 703 | 1.3+ | 0.1+ |
| 2002 09 06 | 704 | 0.7−  | 0.1−  | 2006 10 21 | 644 | 0.0  | 0.3+ | 2007 11 19 | 703 | 0.4− | 0.2− |
| 2002 09 06 | 704 | 0.2+  | 0.6−  | 2006 10 21 | 644 | 0.0  | 0.7+ | 2007 11 19 | 703 | 1.5− | 0.6+ |
| 2002 09 06 | 704 | 0.7−  | 0.1+  | 2006 10 21 | 644 | 0.1+ | 0.2+ | 2007 11 19 | 703 | 0.5+ | 1.2+ |
| 2002 10 04 | 644 | 0.3+  | 0.8+  | 2006 10 27 | 691 | 0.5+ | 0.0  | 2007 12 05 | 703 | 0.7− | 1.9+ |
| 2002 10 04 | 704 | 0.3−  | 0.3+  | 2006 10 27 | 691 | 0.0  | 0.5+ | 2007 12 05 | 703 | 0.4+ | 0.1+ |
| 2002 10 04 | 704 | 0.6−  | 1.0+  | 2006 10 27 | 691 | 0.1+ | 0.3− | 2007 12 05 | 703 | 0.5+ | 0.5+ |
| 2002 10 04 | 644 | 0.3+  | 0.9+  | 2006 10 31 | 691 | 0.2− | 0.1+ | 2007 12 05 | 703 | 1.3+ | 0.0  |

**(173071)\* 2006 SM<sub>280</sub>**

Discovered 2006 Sept. 29 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 75.60149   | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.12721244 | $\omega$ | 274.96986 | +0.98114241              |
| <i>a</i> | 3.9154619  | $\Omega$ | 75.92755  | +0.90188523              |
| <i>e</i> | 0.2270130  | <i>i</i> | 6.52742   | +0.40174903              |
| <i>P</i> | 7.75       | <i>H</i> | 14.3      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 05 20 | 691 | 0.2− | 0.3+ | 2006 10 16 | 703 | 0.0  | 0.1− | 2006 11 20 | 704 | 0.2− | 0.2+ |
| 1996 05 20 | 691 | 0.2− | 0.1− | 2006 10 16 | 703 | 0.7− | 0.4− | 2006 11 20 | 704 | 1.3− | 0.4+ |
| 1996 05 20 | 691 | 0.5+ | 0.3− | 2006 10 16 | 703 | 0.2− | 0.1− | 2006 11 20 | 704 | 0.0  | 0.2+ |
| 2003 05 02 | 691 | 0.1+ | 0.3+ | 2006 10 16 | 703 | 0.3− | 0.6− | 2006 11 22 | G96 | 0.2− | 0.0  |
| 2003 05 02 | 691 | 0.1− | 0.5+ | 2006 10 21 | G96 | 0.2+ | 0.1+ | 2006 11 22 | G96 | 0.2− | 0.0  |
| 2003 05 02 | 691 | 0.1+ | 0.6+ | 2006 10 21 | G96 | 0.0  | 0.0  | 2006 11 22 | G96 | 0.2+ | 0.0  |
| 2005 07 10 | E12 | 0.2+ | 0.4+ | 2006 10 21 | G96 | 0.2− | 0.3+ | 2006 11 22 | G96 | 0.1+ | 0.1− |
| 2005 07 10 | E12 | 0.0  | 0.1− | 2006 10 21 | G96 | 0.1+ | 0.1+ | 2006 12 26 | G96 | 0.3− | 0.1+ |
| 2005 07 10 | E12 | 0.2+ | 0.3+ | 2006 11 01 | G96 | 0.2+ | 0.3− | 2006 12 26 | G96 | 0.1− | 0.2+ |
| 2005 07 10 | E12 | 0.6− | 0.4− | 2006 11 01 | G96 | 0.2− | 0.1− | 2006 12 26 | G96 | 0.5+ | 0.0  |
| 2005 08 12 | E12 | 0.0  | 0.3+ | 2006 11 01 | G96 | 0.1− | 0.0  | 2006 12 26 | G96 | 0.0  | 0.1+ |
| 2005 08 12 | E12 | 0.1+ | 0.0  | 2006 11 01 | G96 | 0.1− | 0.1− | 2007 02 17 | G96 | 0.8− | 0.2− |
| 2005 08 12 | E12 | 0.5− | 0.2+ | 2006 11 08 | 644 | 0.1− | 0.4+ | 2007 02 17 | G96 | 0.4− | 0.2− |
| 2005 08 12 | E12 | 1.0+ | 0.6+ | 2006 11 08 | 644 | 0.0  | 0.1+ | 2007 02 17 | G96 | 0.0  | 0.3+ |
| 2005 08 24 | E12 | 0.1− | 0.3+ | 2006 11 08 | 644 | 0.1− | 0.3+ | 2007 02 17 | G96 | 0.2− | 0.3− |
| 2005 08 24 | E12 | 0.8+ | 0.6+ | 2006 11 13 | 644 | 0.2− | 0.3+ | 2007 11 02 | G96 | 0.2− | 0.4− |
| 2005 08 24 | E12 | 0.4− | 0.5− | 2006 11 13 | 644 | 0.1+ | 0.3+ | 2007 11 02 | G96 | 0.4+ | 0.4− |
| 2005 08 24 | E12 | 0.2+ | 0.4− | 2006 11 13 | 644 | 0.1+ | 0.3+ | 2007 11 02 | G96 | 0.1− | 0.0  |
| 2006 09 29 | 699 | 0.9− | 0.5+ | 2006 11 13 | 703 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.5+ | 0.4+ |
| 2006 09 29 | 699 | 0.2− | 0.4+ | 2006 11 13 | 703 | 0.2− | 0.6+ | 2007 12 04 | G96 | 1.6+ | 0.5− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 29 | 699 | 1.3+ | 1.5− | 2006 11 13 | 703 | 0.0  | 0.2− | 2007 12 04 | G96 | 0.9+ | 0.4− |
| 2006 09 29 | 699 | 0.1+ | 0.5+ | 2006 11 13 | 703 | 0.3− | 0.2− | 2007 12 04 | G96 | 0.7− | 0.8− |
| 2006 09 30 | 703 | 0.3+ | 0.0  | 2006 11 20 | 704 | 0.1+ | 0.0  | 2007 12 04 | G96 | 1.1+ | 1.5− |
| 2006 09 30 | 703 | 0.5+ | 0.2− | 2006 11 20 | 704 | 0.6+ | 0.8+ | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2006 09 30 | 703 | 0.9− | 0.4− | 2006 11 20 | 704 | 0.9− | 0.9+ | 2007 12 05 | 691 | 0.2− | 0.3+ |
| 2006 09 30 | 703 | 0.5+ | 0.3− | 2006 11 20 | 704 | 0.2− | 0.7+ | 2007 12 05 | 691 | 0.0  | 0.2+ |

**(173072)\* 2006 SG<sub>387</sub>**

Discovered 2006 Sept. 30 by A. C. Becker at Apache Point.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 341.21144  | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.18400338 | $\omega$ | 14.70552  | −0.44672691              |
| <i>a</i> | 3.0613913  | $\Omega$ | 101.86139 | −0.43473657              |
| <i>e</i> | 0.1183053  | <i>i</i> | 3.69247   | +0.37081928              |
| <i>P</i> | 5.36       | <i>H</i> | 16.4      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 29 | 807 | 0.3−  | 0.2+  | 2006 10 04 | 705 | 0.2+ | 0.0  | 2006 11 17 | G96 | 0.1+ | 0.3− |
| 2000 07 29 | 807 | 0.2−  | 0.2+  | 2006 10 13 | 705 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.4+ | 0.5− |
| 2002 12 14 | 645 | 0.0   | 0.0   | 2006 10 13 | 705 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.4− | 0.6− |
| 2002 12 14 | 645 | 0.0   | 0.2+  | 2006 10 16 | 705 | 0.1− | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.5− |
| 2003 01 28 | 645 | 0.1+  | 0.0   | 2006 10 16 | 705 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.0  | 0.5− |
| 2003 01 28 | 645 | 0.1+  | 0.0   | 2006 10 17 | 705 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.0  | 0.1+ |
| 2003 03 07 | 699 | 1.1−  | 0.8+  | 2006 10 17 | 705 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.4+ | 0.2+ |
| 2003 03 07 | 699 | 0.2+  | 0.5+  | 2006 10 20 | 705 | 0.0  | 0.0  | 2007 11 04 | G96 | 0.1− | 0.0  |
| 2003 03 07 | 699 | 0.2−  | 0.1+  | 2006 10 20 | 705 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.2− | 0.0  |
| 2003 03 07 | 699 | (1.7− | 0.1−) | 2006 10 22 | 705 | 0.2+ | 0.0  | 2007 11 11 | G96 | 0.5+ | 0.1+ |
| 2006 09 28 | 691 | 0.2−  | 0.2+  | 2006 10 22 | 705 | 0.2+ | 0.1+ | 2007 11 11 | G96 | 0.7+ | 0.5− |
| 2006 09 28 | 691 | 0.4−  | 0.4+  | 2006 10 23 | 705 | 0.1+ | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.4− |
| 2006 09 28 | 691 | 0.1−  | 0.3+  | 2006 10 23 | 705 | 0.2+ | 0.0  | 2007 11 11 | G96 | 0.6+ | 0.3− |
| 2006 09 30 | 705 | 0.0   | 0.0   | 2006 10 29 | 705 | 0.1+ | 0.0  | 2007 12 15 | 691 | 0.1− | 0.1− |
| 2006 09 30 | 705 | 0.1−  | 0.0   | 2006 10 29 | 705 | 0.1+ | 0.0  | 2007 12 15 | 691 | 0.4− | 0.2− |
| 2006 10 01 | 705 | 0.0   | 0.0   | 2006 11 17 | G96 | 0.1− | 0.0  | 2007 12 15 | 691 | 0.1− | 0.0  |
| 2006 10 01 | 705 | 0.1+  | 0.0   | 2006 11 17 | G96 | 0.5− | 0.1− |            |     |      |      |
| 2006 10 04 | 705 | 0.2+  | 0.0   | 2006 11 17 | G96 | 0.1+ | 0.1− |            |     |      |      |

**(173073)\* 2006 TS<sub>49</sub>**

Discovered 2006 Oct. 12 by NEAT at Palomar.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 183.00768  | (2000.0) | <i>P</i>  | <i>Q</i>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.24284536 | $\omega$ | 216.19388 | +0.23001922              |
| <i>a</i> | 2.5443851  | $\Omega$ | 67.14000  | −0.88143407              |
| <i>e</i> | 0.1176372  | <i>i</i> | 2.70385   | −0.41251077              |
| <i>P</i> | 4.06       | <i>H</i> | 16.5      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 17 | 691 | 0.0  | 0.4− | 2006 09 24 | 691 | 0.3+ | 0.5+ | 2006 10 21 | 644 | 0.2+ | 0.0  |
| 1998 10 17 | 691 | 0.1− | 0.1− | 2006 09 24 | 691 | 0.2+ | 0.4+ | 2006 10 22 | 691 | 0.2− | 0.1− |
| 1998 10 27 | 691 | 0.0  | 0.3− | 2006 09 24 | 691 | 0.1+ | 0.4+ | 2006 10 22 | 691 | 0.1− | 0.2− |
| 1998 10 27 | 691 | 0.4+ | 0.5− | 2006 10 12 | 644 | 0.1− | 0.3+ | 2006 10 22 | 691 | 0.3− | 0.1+ |
| 1998 10 27 | 691 | 0.5+ | 0.6− | 2006 10 12 | 644 | 0.1+ | 0.1+ | 2006 10 23 | 691 | 0.4− | 0.0  |
| 2002 11 01 | 608 | 0.5− | 0.5− | 2006 10 12 | 644 | 0.5+ | 0.3− | 2006 10 23 | 691 | 0.4− | 0.1− |
| 2002 11 01 | 608 | 0.1− | 0.2+ | 2006 10 15 | 691 | 0.3+ | 0.1− | 2006 10 23 | 691 | 0.7− | 0.2− |
| 2002 11 01 | 608 | 0.3− | 0.6− | 2006 10 15 | 691 | 0.1+ | 0.1+ | 2006 10 28 | 691 | 0.0  | 0.1+ |
| 2004 02 14 | 691 | 0.1+ | 0.4+ | 2006 10 15 | 691 | 0.1+ | 0.1+ | 2006 10 28 | 691 | 0.1− | 0.2− |
| 2004 02 14 | 691 | 0.1+ | 0.4+ | 2006 10 17 | G96 | 0.6+ | 0.2− | 2006 10 28 | 691 | 0.2− | 0.0  |
| 2004 02 14 | 691 | 0.2− | 0.1+ | 2006 10 17 | G96 | 0.1− | 0.2− | 2006 11 01 | 691 | 0.3+ | 0.2+ |
| 2005 05 04 | G96 | 0.2− | 0.0  | 2006 10 17 | G96 | 0.3− | 0.3− | 2006 11 01 | 691 | 0.2+ | 0.2+ |
| 2005 05 04 | G96 | 0.3− | 0.2− | 2006 10 17 | G96 | 0.0  | 0.2− | 2006 11 01 | 691 | 0.2+ | 0.3+ |
| 2005 05 04 | G96 | 0.1+ | 0.0  | 2006 10 19 | 691 | 0.1− | 0.2+ | 2006 11 14 | G96 | 0.7+ | 0.2− |
| 2005 05 04 | G96 | 0.2− | 0.4+ | 2006 10 19 | 691 | 0.0  | 0.1+ | 2006 11 14 | G96 | 0.1+ | 0.3− |
| 2005 06 04 | 704 | 0.4+ | 0.7+ | 2006 10 19 | 691 | 0.0  | 0.1+ | 2006 11 14 | G96 | 0.0  | 0.6− |
| 2005 06 04 | 704 | 0.3+ | 1.3− | 2006 10 20 | 644 | 0.5+ | 0.7+ | 2006 11 14 | G96 | 0.1− | 0.5− |
| 2005 06 04 | 704 | 0.9− | 0.9− | 2006 10 20 | 644 | 0.1− | 0.2+ | 2007 11 12 | G96 | 0.4+ | 0.7− |
| 2005 06 13 | G96 | 0.4+ | 0.1+ | 2006 10 20 | 644 | 0.0  | 0.1+ | 2007 11 12 | G96 | 0.2+ | 0.3− |
| 2005 06 13 | G96 | 0.3+ | 0.1+ | 2006 10 21 | 703 | 0.1+ | 0.7− | 2007 11 12 | G96 | 0.3+ | 0.5− |

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2005 06 13 G96 0.3− 0.1+   | 2006 10 21 703 0.4− 0.6− | 2007 11 12 G96 0.3+ 0.8− |
| 2005 06 13 G96 0.1+ 0.0    | 2006 10 21 703 0.2+ 0.1− | 2007 12 14 G96 0.1− 0.4− |
| 2006 09 19 691 (3.0+ 0.4−) | 2006 10 21 703 0.9− 0.6− | 2007 12 14 G96 0.3− 0.3+ |
| 2006 09 19 691 0.1+ 0.8+   | 2006 10 21 644 0.1− 0.2+ | 2007 12 14 G96 0.5− 0.2+ |
| 2006 09 19 691 0.0 0.2+    | 2006 10 21 644 0.0 0.4+  | 2007 12 14 G96 0.1− 0.2− |

**(173074)\* 2006 TU<sub>60</sub>**

Discovered 2006 Oct. 14 by W. Bickel at Bergisch Gladbach.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC                |                          |
|-----------------------------------------|------------|--------------------|--------------------------|
| <i>M</i>                                | 42.18797   | (2000.0)           |                          |
| <i>n</i>                                | 0.20546160 | $\omega$ 245.81120 | +0.24315153 −0.96981962  |
| <i>a</i>                                | 2.8443450  | $\Omega$ 190.16625 | +0.92299156 +0.23706498  |
| <i>e</i>                                | 0.0442585  | <i>i</i> 5.88244   | +0.29826821 +0.05700959  |
| <i>P</i>                                | 4.80       | <i>H</i> 16.3      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2001 09 21 704 0.1+ 0.4+ | 2005 07 30 E12 0.1+ 0.0    | 2006 10 17 G96 0.1− 0.6− |
| 2001 09 21 704 0.7+ 0.2+ | 2005 07 30 E12 0.3+ 0.7+   | 2006 10 17 G96 0.3+ 0.3− |
| 2001 09 21 704 0.7− 1.2− | 2005 07 30 E12 (1.6+ 0.8−) | 2006 10 17 G96 0.2+ 0.2− |
| 2001 10 24 691 0.0 0.0   | 2005 07 30 E12 0.3+ 0.2+   | 2006 10 18 691 0.0 0.2+  |
| 2001 10 24 691 0.1+ 0.2− | 2006 09 30 G96 0.3+ 0.3−   | 2006 10 18 691 0.1− 0.1+ |
| 2001 10 24 691 0.1+ 0.3− | 2006 09 30 G96 0.4+ 0.1−   | 2006 10 18 691 0.1− 0.1+ |
| 2002 12 07 291 0.3+ 0.3+ | 2006 09 30 G96 0.5+ 0.1−   | 2006 10 22 691 0.5− 0.1+ |
| 2002 12 07 291 0.3− 0.6+ | 2006 09 30 G96 0.0 0.2−    | 2006 10 22 691 0.2− 0.1+ |
| 2002 12 07 291 0.2− 0.7+ | 2006 10 11 691 0.7+ 0.0    | 2006 10 22 691 0.4− 0.2+ |
| 2003 01 25 809 0.7+ 0.1− | 2006 10 11 691 0.4− 0.0    | 2006 10 30 A44 0.1− 0.1− |
| 2003 01 25 809 0.6+ 0.1− | 2006 10 11 691 0.2+ 0.5+   | 2006 11 16 G96 0.4+ 0.1− |
| 2003 01 25 809 0.7+ 0.1− | 2006 10 14 621 0.0 0.0     | 2006 11 16 G96 0.4+ 0.3− |
| 2005 07 06 691 0.1+ 0.1+ | 2006 10 15 621 0.5+ 0.4−   | 2006 11 16 G96 0.1− 0.4− |
| 2005 07 06 691 0.4− 0.6+ | 2006 10 15 621 0.4+ 0.4+   |                          |
| 2005 07 06 691 0.1− 0.6+ | 2006 10 17 G96 0.2+ 0.7−   |                          |

**(173075)\* 2006 UC = 2003 BZ<sub>22</sub>**

Discovered 2006 Oct. 16 by J. W. Young at Table Mountain Observatory, Wrightwood.

Id. A. Doppler (*MPO* 110296)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC                |                          |
|-----------------------------------------|------------|--------------------|--------------------------|
| <i>M</i>                                | 330.20317  | (2000.0)           |                          |
| <i>n</i>                                | 0.17764136 | $\omega$ 198.49153 | −0.18787649 −0.93896992  |
| <i>a</i>                                | 3.1340553  | $\Omega$ 263.12917 | +0.93379526 −0.07979815  |
| <i>e</i>                                | 0.1109316  | <i>i</i> 16.87277  | +0.30451411 −0.33461582  |
| <i>P</i>                                | 5.55       | <i>H</i> 14.8      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2001 10 15 704 0.7+ 0.7+   | 2006 09 27 703 1.1+ 0.5− | 2007 11 18 704 0.1+ 0.3−   |
| 2001 10 15 704 0.1− 0.4+   | 2006 09 27 703 0.3− 0.0  | 2007 11 18 704 0.8+ 0.4+   |
| 2001 10 15 704 0.4+ 0.4−   | 2006 10 16 673 0.3+ 0.1− | 2007 11 18 704 0.2+ 0.2−   |
| 2001 10 15 704 0.4+ 0.5+   | 2006 10 16 673 0.5+ 0.2+ | 2007 11 18 G96 0.8+ 0.5−   |
| 2001 11 11 704 0.5− 1.0+   | 2006 10 16 673 0.3− 0.4− | 2007 11 18 G96 0.1+ 0.5−   |
| 2001 11 11 704 0.0 0.8−    | 2006 10 17 673 0.1+ 0.1+ | 2007 11 18 G96 0.4+ 0.5−   |
| 2001 11 11 704 (0.9− 1.6+) | 2006 10 17 673 0.0 0.0   | 2007 11 19 G96 0.1− 0.4−   |
| 2001 11 11 704 0.3− 1.4+   | 2006 10 17 673 0.1+ 0.1+ | 2007 11 19 G96 0.4+ 0.4−   |
| 2001 11 12 704 1.0− 1.0+   | 2006 10 20 673 0.2+ 0.1− | 2007 11 19 G96 0.2− 0.5−   |
| 2001 11 12 704 0.8− 0.0    | 2006 10 20 673 0.1+ 0.2− | 2007 11 20 704 0.0 0.7−    |
| 2001 11 12 704 (4.1− 0.6+) | 2006 10 20 673 0.2+ 0.2− | 2007 11 20 704 0.2+ 0.6−   |
| 2001 11 12 704 0.3− 0.9+   | 2006 10 20 673 0.1+ 0.1− | 2007 11 20 704 (0.1− 2.0−) |
| 2001 11 12 704 0.0 1.0+    | 2007 10 09 673 0.1+ 0.3− | 2007 12 06 D35 0.5+ 0.4−   |
| 2003 01 25 644 0.4+ 1.2+   | 2007 10 09 673 0.1+ 0.1− | 2007 12 06 D35 0.2+ 0.3−   |
| 2003 01 25 644 0.1+ 1.3+   | 2007 10 09 673 0.0 0.0   | 2007 12 06 D35 1.3− 0.9−   |
| 2003 01 25 644 (0.3+ 1.6+) | 2007 11 07 704 0.3+ 0.1− | 2007 12 15 704 0.7− 1.7+   |
| 2003 01 28 704 0.4+ 0.9−   | 2007 11 07 691 0.3− 0.4− | 2007 12 15 704 1.0− 1.3+   |
| 2003 01 28 704 0.4+ 0.6−   | 2007 11 07 704 0.4+ 0.3+ | 2007 12 15 704 0.3− 0.6+   |
| 2003 01 28 704 (1.2− 1.7−) | 2007 11 07 691 0.2− 0.3− | 2007 12 15 704 0.1− 0.4+   |
| 2003 01 28 704 1.1− 0.7−   | 2007 11 07 704 0.3+ 0.7+ | 2007 12 15 704 0.2− 0.7+   |

|                          |                          |
|--------------------------|--------------------------|
| 2006 09 27 703 0.2− 1.0− | 2007 11 07 691 0.1− 0.2− |
| 2006 09 27 703 0.5− 0.3− | 2007 11 18 704 0.3+ 0.2− |

**(173076)\* 2006 UV<sub>50</sub> = 2002 YS<sub>7</sub>**

Discovered 2006 Oct. 17 by the Catalina Sky Survey.

Id. T. B. Spahr (*MPO* 114374)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC                |                          |
|-----------------------------------------|------------|--------------------|--------------------------|
| <i>M</i>                                | 359.52893  | (2000.0)           |                          |
| <i>n</i>                                | 0.20901255 | $\omega$ 199.11633 | −0.22680025 −0.97307818  |
| <i>a</i>                                | 2.8120377  | $\Omega$ 264.00872 | +0.89885730 −0.19292422  |
| <i>e</i>                                | 0.0577434  | <i>i</i> 2.36234   | +0.37498960 −0.12609161  |
| <i>P</i>                                | 4.72       | <i>H</i> 16.0      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2001 08 21 807 0.1− 0.3+ | 2003 01 08 704 0.1− 0.2−   | 2006 10 19 G96 0.3+ 0.0  |
| 2001 08 21 807 0.1− 0.2+ | 2003 01 08 704 0.8+ 0.9+   | 2006 12 17 G96 0.0 0.2−  |
| 2001 09 23 704 0.3− 0.2− | 2003 01 08 704 0.3+ 0.9+   | 2006 12 17 G96 0.2− 0.3− |
| 2001 09 23 704 0.1+ 0.1− | 2003 01 11 344 0.3+ 0.1+   | 2006 12 17 G96 0.2+ 0.1− |
| 2001 09 23 704 0.2+ 0.1+ | 2003 01 11 344 0.1− 0.0    | 2006 12 17 G96 0.2− 0.2− |
| 2002 12 30 344 0.1+ 0.5− | 2006 09 14 703 (2.0− 1.1+) | 2007 11 08 G96 0.2− 0.3− |
| 2002 12 30 344 0.3+ 0.4− | 2006 09 14 703 0.2− 0.6−   | 2007 11 08 G96 0.4− 0.2− |
| 2002 12 30 344 0.2+ 0.8− | 2006 09 14 703 0.9+ 0.2+   | 2007 11 08 G96 0.2− 0.3− |
| 2002 12 31 704 0.2+ 0.5+ | 2006 09 14 703 0.6− 0.8−   | 2007 11 08 G96 0.0 0.3−  |
| 2002 12 31 704 0.9+ 1.3+ | 2006 10 11 644 0.0 0.3+    | 2007 11 11 G96 0.0 0.6−  |
| 2002 12 31 704 0.7+ 0.5+ | 2006 10 11 644 0.2+ 0.3+   | 2007 11 11 G96 0.7− 0.1− |
| 2002 12 31 704 0.2+ 0.9− | 2006 10 11 644 0.0 0.3+    | 2007 11 11 G96 0.2+ 0.7− |
| 2002 12 31 704 0.2− 0.4+ | 2006 10 17 703 0.2− 0.3+   | 2007 11 11 G96 0.1+ 0.2− |
| 2002 12 31 344 0.4− 0.5+ | 2006 10 17 703 0.4− 0.6−   | 2007 12 15 G96 0.4− 0.2− |
| 2002 12 31 344 0.7− 0.7+ | 2006 10 17 703 0.7− 0.8−   | 2007 12 15 G96 0.3+ 0.3− |
| 2003 01 01 344 0.9− 0.0  | 2006 10 17 703 1.2+ 1.1+   | 2007 12 15 G96 0.1− 0.4− |
| 2003 01 01 344 0.7− 0.0  | 2006 10 19 G96 0.1− 0.2−   | 2007 12 15 G96 0.1+ 0.3− |
| 2003 01 08 704 0.5− 0.4+ | 2006 10 19 G96 0.2− 0.1−   |                          |
| 2003 01 08 704 0.1− 0.2+ | 2006 10 19 G96 0.3+ 0.1+   |                          |

**(173077)\* 2006 UH<sub>134</sub>**

Discovered 2006 Oct. 19 by Spacewatch at Kitt Peak.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC                |                          |
|-----------------------------------------|------------|--------------------|--------------------------|
| <i>M</i>                                | 323.36930  | (2000.0)           |                          |
| <i>n</i>                                | 0.17473467 | $\omega$ 42.66049  | −0.96048890 −0.27466446  |
| <i>a</i>                                | 3.1687160  | $\Omega$ 121.34561 | +0.23905946 −0.89687664  |
| <i>e</i>                                | 0.1970352  | <i>i</i> 3.01698   | +0.14251894 −0.34665795  |
| <i>P</i>                                | 5.64       | <i>H</i> 15.8      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 03 25 291 0.2− 0.6+   | 2006 09 30 G96 0.3− 0.6− | 2006 11 15 G96 0.2+ 0.2+ |
| 2003 03 25 291 0.1− 0.6+   | 2006 09 30 G96 0.2+ 0.1+ | 2006 11 15 G96 0.1− 0.3+ |
| 2003 03 25 291 1.1− 0.8+   | 2006 09 30 G96 0.3− 0.4+ | 2006 11 15 G96 0.6+ 0.2− |
| 2003 04 11 691 (0.4+ 1.7+) | 2006 09 30 G96 0.2− 0.1− | 2006 11 15 G96 0.4+ 0.2+ |
| 2003 04 11 691 (0.3+ 1.8+) | 2006 10 02 G96 1.1− 0.1− | 2007 11 08 G96 0.4− 0.4− |
| 2003 04 11 691 (0.4+ 1.8+) | 2006 10 02 G96 0.3− 0.2− | 2007 11 08 G96 0.3− 0.2− |
| 2003 05 05 699 0.3− 0.2−   | 2006 10 02 G96 0.3− 0.5+ | 2007 11 08 G96 0.4+ 0.4+ |
| 2003 05 05 699 0.2− 0.6−   | 2006 10 02 G96 0.2− 0.7+ | 2007 11 08 G96 0.4+ 0.2− |
| 2003 05 05 699 1.0+ 0.1+   | 2006 10 19 691 0.1+ 0.6+ | 2007 11 09 G96 0.0 0.1−  |
| 2003 05 05 699 0.7− 0.0    | 2006 10 19 691 0.2− 0.3+ | 2007 11 09 G96 0.4− 0.2+ |
| 2003 05 22 691 1.1+ 0.8+   | 2006 10 19 691 0.1+ 0.3+ | 2007 11 09 G96 0.3+ 0.2− |
| 2003 05 22 691 0.5+ 0.5+   | 2006 10 23 691 0.3− 0.1+ | 2007 11 09 G96 0.8+ 0.2− |
| 2003 05 22 691 1.0+ 0.7+   | 2006 10 23 691 0.4− 0.5+ | 2007 12 14 G96 0.4− 0.2− |
| 2005 10 06 G96 0.5− 0.4+   | 2006 10 23 691 0.2− 0.7+ | 2007 12 14 G96 0.1− 0.0  |
| 2005 10 06 G96 0.4− 0.6+   | 2006 10 31 691 0.1+ 0.6+ | 2007 12 14 G96 0.1+ 0.2+ |
| 2005 10 06 G96 0.2− 0.1+   | 2006 10 31 691 0.0 0.3+  | 2007 12 14 G96 0.2− 0.3+ |
| 2005 10 06 G96 0.2− 0.2+   | 2006 10 31 691 0.0 0.4+  |                          |

**(173078)\* 2006 UM<sub>187</sub>**

Discovered 2006 Oct. 19 by the Catalina Sky Survey.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |        |             |            |     |        |       |
|-----------------------------------------|------------|----------|-----------|------------|-------------|--------|-------------|------------|-----|--------|-------|
| $M$                                     | 15.30437   | (2000.0) |           |            | <b>P</b>    |        | <b>Q</b>    |            |     |        |       |
| $n$                                     | 0.18392550 | $\omega$ | 138.58268 |            | −0.07336669 |        | −0.98449281 |            |     |        |       |
| $a$                                     | 3.0622554  | $\Omega$ | 314.93454 |            | +0.84552063 |        | +0.02332928 |            |     |        |       |
| $e$                                     | 0.1767024  | $i$      | 13.00833  |            | +0.52887824 |        | −0.17386679 |            |     |        |       |
| $P$                                     | 5.36       | $H$      | 15.3      | $G$        | 0.15        | $U$    | 0           |            |     |        |       |
| Residuals in seconds of arc             |            |          |           |            |             |        |             |            |     |        |       |
| 1996 12 14                              | 369        | 0.2−     | 0.3−      | 2003 03 28 | 699         | 0.4+   | 0.6+        | 2006 10 27 | 703 | 0.3+   | 0.2+  |
| 1996 12 14                              | 369        | 0.0      | 0.2+      | 2003 03 28 | 699         | 0.8+   | 0.3+        | 2006 10 27 | 703 | 1.0−   | 0.3−  |
| 2000 09 03                              | 645        | 0.1−     | 0.1+      | 2006 09 17 | 703         | 0.3−   | 0.8+        | 2006 10 27 | 703 | 0.3+   | 0.1+  |
| 2000 09 03                              | 645        | 0.0      | 0.1+      | 2006 09 17 | 703         | 0.3−   | 1.1−        | 2006 11 15 | 703 | 1.1+   | 0.4+  |
| 2001 10 25                              | 704        | 0.1+     | 0.5+      | 2006 09 17 | 703         | 0.9−   | 0.6+        | 2006 11 15 | 703 | (0.5+) | 1.8+) |
| 2001 10 25                              | 704        | 0.1+     | 0.3+      | 2006 09 17 | 703         | (2.0−  | 0.3+)       | 2006 11 15 | 703 | 0.3+   | 0.1+  |
| 2001 10 25                              | 704        | 1.1−     | 0.3−      | 2006 09 28 | 703         | 0.1+   | 0.4+        | 2006 11 15 | 703 | 0.2+   | 0.5+  |
| 2001 12 09                              | 704        | 0.2+     | 0.4−      | 2006 09 28 | 703         | (1.6+) | 0.1−)       | 2007 11 18 | 704 | 1.2+   | 0.0   |
| 2001 12 09                              | 704        | 0.5+     | 0.4−      | 2006 09 28 | 703         | 0.2+   | 1.0+        | 2007 11 18 | 704 | 0.6+   | 0.9+  |
| 2001 12 09                              | 704        | 0.4+     | 0.4−      | 2006 09 28 | 703         | 0.3+   | 1.0+        | 2007 11 18 | 704 | (0.7−  | 2.1+) |
| 2003 03 09                              | 699        | 0.3−     | 0.4−      | 2006 10 19 | 703         | 0.3+   | 0.2−        | 2007 11 18 | 704 | (0.7+) | 1.7+) |
| 2003 03 09                              | 699        | 0.1+     | 0.9+      | 2006 10 19 | 703         | 1.3−   | 0.3−        | 2007 12 03 | 703 | 0.6−   | 0.8+  |
| 2003 03 09                              | 699        | 0.2+     | 0.2+      | 2006 10 22 | 644         | 0.4−   | 0.4+        | 2007 12 03 | 703 | 0.1−   | 0.1−  |
| 2003 03 09                              | 699        | 0.8+     | 0.5−      | 2006 10 22 | 644         | 0.0    | 0.6+        | 2007 12 03 | 703 | 0.1+   | 0.7+  |
| 2003 03 28                              | 699        | 0.6+     | 1.1+      | 2006 10 22 | 644         | 0.1−   | 0.1−        | 2007 12 03 | 703 | 0.3−   | 0.7+  |
| 2003 03 28                              | 699        | 0.1+     | 0.4+      | 2006 10 27 | 703         | 0.6+   | 1.3−        |            |     |        |       |

**(173079)\* 2006 UY<sub>187</sub> = 2006 UL<sub>207</sub>**

Discovered 2006 Oct. 19 by the Catalina Sky Survey.

Id. A. Doppler (d, *MPO* 115947)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      | MPC         |       |            |     |       |       |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|-------|------------|-----|-------|-------|
| <i>M</i>                                | 341.14267  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |       |            |     |       |       |
| <i>n</i>                                | 0.18441414 | $\omega$ | 218.85726 | −0.61648828 |      | −0.76480233 |       |            |     |       |       |
| <i>a</i>                                | 3.0568437  | $\Omega$ | 270.01392 | +0.76101748 |      | −0.51781673 |       |            |     |       |       |
| <i>e</i>                                | 0.1731806  | <i>i</i> | 10.78565  | +0.20197672 |      | −0.38333175 |       |            |     |       |       |
| <i>P</i>                                | 5.34       | <i>H</i> | 14.8      | <i>G</i>    | 0.15 | <i>U</i>    | 1     |            |     |       |       |
| Residuals in seconds of arc             |            |          |           |             |      |             |       |            |     |       |       |
| 2001 10 15                              | 704        | 0.2+     | 0.6+      | 2003 02 01  | 699  | 0.3−        | 0.5+  | 2006 10 23 | 644 | 0.4+  | 0.3+  |
| 2001 10 15                              | 704        | 0.4−     | 0.1−      | 2003 02 01  | 699  | 0.1+        | 0.4+  | 2006 10 27 | 703 | 0.6+  | 0.5−  |
| 2001 10 15                              | 704        | 0.4−     | 0.3+      | 2003 02 01  | 699  | 1.2+        | 1.0−  | 2006 10 27 | 703 | 0.5−  | 0.9−  |
| 2001 10 15                              | 704        | 0.0      | 0.0       | 2003 03 25  | 608  | 0.5−        | 0.1+  | 2006 10 27 | 703 | (1.3+ | 1.8−) |
| 2001 10 15                              | 704        | 0.0      | 0.4+      | 2003 03 25  | 608  | 0.5−        | 0.1−  | 2006 10 27 | 703 | 0.5+  | 0.2−  |
| 2001 11 11                              | 704        | 0.3−     | 0.5+      | 2003 03 25  | 608  | 0.7−        | 0.3+  | 2007 09 15 | G96 | 0.3−  | 0.4−  |
| 2001 11 11                              | 704        | 0.4+     | 1.0+      | 2006 09 17  | 703  | 0.3−        | 0.7−  | 2007 09 15 | G96 | 0.1−  | 0.2−  |
| 2001 11 11                              | 704        | (0.5−    | 1.5+)     | 2006 09 17  | 703  | (1.8−       | 0.4−) | 2007 09 15 | G96 | 0.1+  | 0.3−  |
| 2001 11 11                              | 704        | 0.5−     | 1.0+      | 2006 09 17  | 703  | 0.7+        | 1.2+  | 2007 09 15 | G96 | 0.3−  | 0.2−  |
| 2001 11 24                              | 704        | (1.6+    | 0.1−)     | 2006 09 17  | 703  | 0.2−        | 1.4−  | 2007 11 14 | 704 | 0.3−  | 1.0+  |
| 2001 11 24                              | 704        | 0.1−     | 0.3+      | 2006 09 28  | 703  | 0.2+        | 0.1+  | 2007 11 14 | 704 | 0.3−  | 0.6+  |
| 2001 11 24                              | 704        | 0.5+     | 0.4−      | 2006 09 28  | 703  | 0.0         | 0.5+  | 2007 11 14 | 704 | 0.7−  | 1.0+  |
| 2001 11 24                              | 704        | 0.3+     | 0.0       | 2006 09 28  | 703  | (1.2−       | 1.5−) | 2007 11 14 | 704 | 0.3+  | 0.0   |
| 2001 11 24                              | 704        | 0.1+     | 0.3−      | 2006 09 28  | 703  | 0.0         | 0.4−  | 2007 12 03 | 703 | 0.5−  | 0.5−  |
| 2001 12 17                              | 704        | 0.0      | 0.0       | 2006 10 19  | 703  | 0.7−        | 1.0−  | 2007 12 03 | 703 | 1.8−  | 0.1+  |
| 2001 12 17                              | 704        | 0.1+     | 0.2+      | 2006 10 19  | 703  | 0.4+        | 0.1+  | 2007 12 03 | 703 | 1.5−  | 0.2+  |
| 2001 12 17                              | 704        | 0.6+     | 0.7−      | 2006 10 19  | 703  | 0.1−        | 0.2+  | 2007 12 03 | 703 | 1.4−  | 0.8−  |
| 2001 12 17                              | 704        | 0.6−     | 0.3−      | 2006 10 19  | 703  | 0.0         | 1.1−  | 2007 12 04 | 704 | 1.8+  | 0.6−  |
| 2002 01 08                              | 704        | 0.1−     | 0.4+      | 2006 10 22  | 644  | 0.2−        | 0.3+  | 2007 12 04 | 704 | 1.4+  | 0.3−  |
| 2002 01 08                              | 704        | 0.4−     | 0.1+      | 2006 10 22  | 644  | 0.1−        | 0.3+  | 2007 12 04 | 704 | 1.6+  | 0.5−  |
| 2002 01 08                              | 704        | 0.1+     | 0.1−      | 2006 10 22  | 644  | 0.1−        | 0.0   | 2007 12 04 | 704 | 1.1+  | 0.8−  |
| 2002 01 08                              | 704        | 0.2+     | 0.2+      | 2006 10 23  | 644  | 0.1+        | 0.1+  |            |     |       |       |
| 2003 02 01                              | 699        | 0.7+     | 0.0       | 2006 10 23  | 644  | 0.0         | 0.4+  |            |     |       |       |

**(173080)\* 2006 UN<sub>188</sub> = 1995 QK<sub>13</sub> = 1995 QD<sub>17</sub> = 2000 PZ<sub>23</sub>**

Discovered 2006 Oct. 19 by the Catalina Sky Survey.

Id. A. Doppler (*MPO* 110420)

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                                         |       |          |            |          | MPC         |          |             |     |       |       |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|------------|----------|-------------|----------|-------------|-----|-------|-------|
| $M$                                     | 155.80043                                                                                                                                               |       | (2000.0) |            | <b>P</b> |             | <b>Q</b> |             |     |       |       |
| $n$                                     | 0.18705142                                                                                                                                              |       | $\omega$ | 350.08988  |          | +0.30476770 |          | +0.93080678 |     |       |       |
| $a$                                     | 3.0280430                                                                                                                                               |       | $\Omega$ | 297.41389  |          | −0.85753593 |          | +0.17598903 |     |       |       |
| $e$                                     | 0.0969031                                                                                                                                               |       | $i$      | 13.13853   |          | −0.41442585 |          | +0.32035386 |     |       |       |
| $P$                                     | 5.27 <th><math>H</math></th> <td colspan="2">15.0</td> <th><math>G</math></th> <td colspan="2">0.15</td> <th><math>U</math></th> <td colspan="2">1</td> |       | $H$      | 15.0       |          | $G$         | 0.15     |             | $U$ | 1     |       |
| Residuals in seconds of arc             |                                                                                                                                                         |       |          |            |          |             |          |             |     |       |       |
| 1995 08 25                              | 691                                                                                                                                                     | 0.0   | 0.4−     | 2002 12 31 | 645      | 0.0         | 0.2−     | 2006 10 19  | 703 | 0.4+  | 0.1−  |
| 1995 08 25                              | 691                                                                                                                                                     | 0.2+  | 0.2−     | 2002 12 31 | 645      | 0.1+        | 0.2−     | 2006 10 19  | 703 | 1.0−  | 1.0−  |
| 1995 08 25                              | 691                                                                                                                                                     | 0.2+  | 0.2−     | 2003 01 05 | 291      | 0.7−        | 0.3+     | 2006 10 19  | 703 | 0.5−  | 0.0   |
| 1995 08 31                              | 691                                                                                                                                                     | 0.3+  | 0.1+     | 2003 01 05 | 291      | 0.2+        | 0.0      | 2006 10 22  | 644 | 0.1+  | 0.4+  |
| 1995 08 31                              | 691                                                                                                                                                     | 0.2−  | 0.1−     | 2003 01 05 | 291      | 0.2+        | 0.2+     | 2006 10 22  | 644 | 0.0   | 0.3−  |
| 1995 08 31                              | 691                                                                                                                                                     | 0.2+  | 0.2−     | 2003 01 30 | 699      | 0.4−        | 0.2+     | 2006 10 22  | 644 | 0.5+  | 0.0   |
| 2000 08 02                              | 704                                                                                                                                                     | 0.4+  | 0.5−     | 2003 01 30 | 699      | 0.1−        | 0.2+     | 2006 10 23  | 644 | 0.1−  | 0.3+  |
| 2000 08 02                              | 704                                                                                                                                                     | 0.5+  | 0.8+     | 2003 01 30 | 699      | 0.3+        | 0.9+     | 2006 10 23  | 644 | 0.3+  | 0.3+  |
| 2000 08 02                              | 704                                                                                                                                                     | 0.2+  | 0.0      | 2003 01 30 | 699      | 1.1−        | 0.4−     | 2006 10 23  | 644 | 0.0   | 0.2−  |
| 2000 08 02                              | 704                                                                                                                                                     | 0.3+  | 0.9+     | 2003 01 30 | 608      | 0.3−        | 0.8+     | 2006 11 22  | 703 | 0.8+  | 1.0+  |
| 2000 08 07                              | 608                                                                                                                                                     | 0.7−  | 0.4+     | 2003 01 30 | 608      | 0.5−        | 1.2+     | 2006 11 22  | 703 | 0.0   | 0.6+  |
| 2000 08 07                              | 608                                                                                                                                                     | 1.0−  | 0.4+     | 2003 01 30 | 608      | 0.4−        | 0.4+     | 2006 11 22  | 703 | 0.4−  | 0.1+  |
| 2000 08 07                              | 608                                                                                                                                                     | 1.2−  | 0.5+     | 2006 09 17 | 703      | 1.1−        | 0.5+     | 2006 11 22  | 703 | 0.2−  | 0.2+  |
| 2001 11 11                              | 704                                                                                                                                                     | (2.4− | 0.6+)    | 2006 09 17 | 703      | (1.2+       | 2.6+)    | 2007 12 13  | 704 | 0.4−  | 1.0+  |
| 2001 11 11                              | 704                                                                                                                                                     | 0.5+  | 0.4−     | 2006 09 17 | 703      | 0.7−        | 0.1+     | 2007 12 13  | 704 | 0.5+  | 0.2−  |
| 2001 11 11                              | 704                                                                                                                                                     | 0.6+  | 0.6−     | 2006 09 17 | 703      | 0.8−        | 0.3−     | 2007 12 13  | 704 | (0.6− | 1.6+) |
| 2001 11 12                              | 704                                                                                                                                                     | 0.2−  | 0.6−     | 2006 09 28 | 703      | 0.1+        | 0.1−     | 2007 12 13  | 704 | 0.3−  | 0.8+  |
| 2001 11 12                              | 704                                                                                                                                                     | 0.3−  | 0.4−     | 2006 09 28 | 703      | 0.6+        | 1.1+     | 2007 12 15  | 704 | 1.0+  | 0.7+  |
| 2001 11 12                              | 704                                                                                                                                                     | 0.6−  | 0.0      | 2006 09 28 | 703      | 0.1+        | 0.3−     | 2007 12 15  | 704 | 0.4+  | 0.2+  |
| 2001 11 12                              | 704                                                                                                                                                     | 0.6+  | 0.6+     | 2006 09 28 | 703      | 0.6+        | 0.5−     | 2007 12 15  | 704 | 0.2+  | 0.3+  |
| 2001 11 12                              | 704                                                                                                                                                     | 0.5−  | 0.3−     | 2006 10 19 | 703      | 0.1−        | 0.7+     | 2007 12 15  | 704 | 0.6+  | 0.3+  |

**(173081)\* 2006 UD<sub>219</sub>**

Discovered 2006 Oct. 16 by the Catalina Sky Survey.

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                                     |      |          |            |     | MPC         |                                               |            |             |      |      |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------|----------|------------|-----|-------------|-----------------------------------------------|------------|-------------|------|------|
| <i>M</i> 210.30086                      |                                                                                                                                     |      | (2000.0) |            |     | <b>P</b>    |                                               |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.23282979                                                                                                                          |      | $\omega$ | 178.54482  |     | −0.39131449 |                                               |            | +0.91517269 |      |      |
| <i>a</i>                                | 2.6865244                                                                                                                           |      | $\Omega$ | 68.41091   |     | −0.84536528 |                                               |            | −0.31600330 |      |      |
| <i>e</i>                                | 0.0763734                                                                                                                           |      | <i>i</i> | 5.96323    |     | −0.36363514 |                                               |            | −0.25020166 |      |      |
| <i>P</i>                                | 4.40 <th><i>H</i></th> <td colspan="2">15.7</td> <th><i>G</i></th> <td colspan="2">0.15<th><i>U</i></th><td colspan="2">1</td></td> |      | <i>H</i> | 15.7       |     | <i>G</i>    | 0.15 <th><i>U</i></th> <td colspan="2">1</td> |            | <i>U</i>    | 1    |      |
| Residuals in seconds of arc             |                                                                                                                                     |      |          |            |     |             |                                               |            |             |      |      |
| 2000 03 29                              | 704                                                                                                                                 | 0.7+ | 0.3+     | 2006 09 18 | 703 | (0.8−       | 1.7−)                                         | 2006 10 28 | 705         | 0.2+ | 0.1+ |
| 2000 03 29                              | 704                                                                                                                                 | 0.2+ | 0.5+     | 2006 09 25 | 699 | 1.4+        | 0.5−                                          | 2006 10 28 | 705         | 0.3+ | 0.2+ |
| 2000 03 29                              | 704                                                                                                                                 | 0.6+ | 0.9+     | 2006 09 25 | 699 | (1.4−       | 2.6+)                                         | 2006 11 09 | 705         | 0.1+ | 0.2+ |
| 2000 03 29                              | 704                                                                                                                                 | 0.1− | 0.8+     | 2006 09 25 | 699 | 0.0         | 0.7+                                          | 2006 11 09 | 705         | 0.2+ | 0.2+ |
| 2001 08 10                              | 644                                                                                                                                 | 0.7− | 0.5+     | 2006 09 25 | 699 | 0.2−        | 0.3−                                          | 2006 11 13 | 705         | 0.1+ | 0.1+ |
| 2001 08 10                              | 644                                                                                                                                 | 0.4− | 1.0+     | 2006 09 30 | 703 | 0.6−        | 0.2−                                          | 2006 11 13 | 705         | 0.0  | 0.2+ |
| 2001 08 10                              | 644                                                                                                                                 | 0.2+ | 0.6+     | 2006 09 30 | 703 | 0.7−        | 0.7+                                          | 2006 11 16 | 705         | 0.1+ | 0.1+ |
| 2001 08 27                              | 644                                                                                                                                 | 0.8− | 0.4+     | 2006 09 30 | 703 | 0.8−        | 0.4+                                          | 2006 11 16 | 705         | 0.1+ | 0.1+ |
| 2001 08 27                              | 644                                                                                                                                 | 0.9− | 0.3+     | 2006 09 30 | 703 | 0.9+        | 0.9−                                          | 2006 11 19 | 705         | 0.0  | 0.1+ |
| 2001 08 27                              | 644                                                                                                                                 | 0.7− | 0.2+     | 2006 10 12 | 644 | 0.1+        | 0.4+                                          | 2006 11 19 | 705         | 0.2− | 0.0  |
| 2002 11 13                              | 704                                                                                                                                 | 0.5− | 1.0+     | 2006 10 12 | 644 | 0.1+        | 0.3+                                          | 2006 11 22 | 705         | 0.1+ | 0.1− |
| 2002 11 13                              | 704                                                                                                                                 | 0.6+ | 0.1+     | 2006 10 12 | 644 | 0.3−        | 0.0                                           | 2006 11 22 | 705         | 0.0  | 0.1+ |
| 2002 11 13                              | 704                                                                                                                                 | 0.3+ | 1.0−     | 2006 10 16 | 703 | 0.7−        | 0.5+                                          | 2006 11 23 | 705         | 0.0  | 0.1− |
| 2004 01 18                              | 644                                                                                                                                 | 0.2− | 0.3+     | 2006 10 16 | 703 | 0.1+        | 0.4+                                          | 2006 11 23 | 705         | 0.1− | 0.0  |
| 2004 01 18                              | 644                                                                                                                                 | 0.1+ | 0.4+     | 2006 10 16 | 703 | 0.6+        | 0.7−                                          | 2007 11 11 | G96         | 0.2+ | 0.3− |
| 2004 01 18                              | 644                                                                                                                                 | 0.1+ | 0.4+     | 2006 10 16 | 703 | 0.7+        | 0.3−                                          | 2007 11 11 | G96         | 0.1− | 0.4− |
| 2004 02 16                              | 704                                                                                                                                 | 1.2+ | 0.2−     | 2006 10 21 | 644 | 0.3−        | 0.2+                                          | 2007 11 11 | G96         | 0.3+ | 0.4− |
| 2004 02 16                              | 704                                                                                                                                 | 0.9+ | 0.3−     | 2006 10 21 | 644 | 0.5−        | 0.0                                           | 2007 11 11 | G96         | 0.1+ | 0.2+ |
| 2004 02 16                              | 704                                                                                                                                 | 0.1− | 0.3+     | 2006 10 21 | 644 | 0.1−        | 0.2+                                          | 2007 12 05 | 691         | 0.3− | 0.4− |
| 2004 02 16                              | 704                                                                                                                                 | 0.3+ | 0.6+     | 2006 10 21 | 644 | 0.2−        | 0.4+                                          | 2007 12 05 | 691         | 0.5− | 0.1− |
| 2004 03 16                              | 691                                                                                                                                 | 0.2+ | 0.1+     | 2006 10 21 | 644 | 0.6−        | 0.3+                                          | 2007 12 05 | 691         | 0.2− | 0.2− |
| 2004 03 16                              | 691                                                                                                                                 | 0.2+ | 0.2+     | 2006 10 21 | 644 | 0.2−        | 0.2+                                          | 2007 12 15 | 704         | 0.5− | 0.6+ |
| 2004 03 16                              | 691                                                                                                                                 | 0.1+ | 0.2+     | 2006 10 22 | 703 | 0.1+        | 0.1−                                          | 2007 12 15 | 704         | 0.3− | 0.6+ |
| 2006 09 18                              | 703                                                                                                                                 | 1.3+ | 1.2+     | 2006 10 22 | 703 | 0.2−        | 0.8+                                          | 2007 12 15 | 704         | 0.2+ | 1.0+ |
| 2006 09 18                              | 703                                                                                                                                 | 0.1+ | 1.4+     | 2006 10 22 | 703 | 0.6+        | 0.4+                                          | 2007 12 15 | 704         | 0.2− | 0.8+ |
| 2006 09 18                              | 703                                                                                                                                 | 1.0+ | 0.2−     | 2006 10 22 | 703 | 0.8−        | 1.1−                                          |            |             |      |      |

2007 DEC. 24

M.P.O. 129559

**(173082)\* 2006 UT<sub>265</sub> = 2005 LE<sub>48</sub>**

Discovered 2006 Oct. 27 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 110463)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 132.84541  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18994376 | $\omega$ | 342.84564 | +0.67710552 |          |          | +0.73447346 |
| <i>a</i> | 2.9972251  | $\Omega$ | 329.72485 | -0.66411353 |          |          | +0.58321691 |
| <i>e</i> | 0.2150910  | <i>i</i> | 5.18629   | -0.31698791 |          |          | +0.34699679 |
| <i>P</i> | 5.19       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|-------|
| 1993 01 29 | 691 | 0.3+  | 0.0   | 2004 04 24 | 691 | 0.1+  | 0.2+  | 2006 11 16 | 704 | 0.5- | 0.4-  |
| 1993 01 29 | 691 | 0.2-  | 0.4+  | 2005 06 10 | 428 | 0.3-  | 0.1+  | 2006 11 16 | 704 | (0.0 | 1.6+) |
| 1993 01 29 | 691 | 0.1-  | 0.2+  | 2005 06 10 | 428 | 0.2+  | 0.4+  | 2006 11 19 | 704 | 0.0  | 0.2+  |
| 2001 11 12 | 704 | 0.0   | 1.3-  | 2005 06 17 | 428 | 0.4-  | 0.1+  | 2006 11 19 | 704 | 0.7- | 0.9+  |
| 2001 11 12 | 704 | 0.4-  | 1.1-  | 2005 06 17 | 428 | 0.1-  | 0.0   | 2006 11 19 | 704 | 0.3+ | 0.6+  |
| 2001 11 12 | 704 | 0.2+  | 1.0-  | 2005 06 17 | 428 | 0.1-  | 0.3+  | 2006 11 19 | 704 | 1.3+ | 0.3+  |
| 2001 11 12 | 704 | 0.2-  | 0.8-  | 2006 10 04 | G96 | 0.1-  | 0.1-  | 2006 11 19 | 704 | 0.7+ | 0.2+  |
| 2001 11 12 | 704 | (0.6+ | 1.7-) | 2006 10 04 | G96 | 0.1-  | 0.0   | 2006 11 22 | 704 | 0.4- | 0.0   |
| 2001 11 19 | 699 | (0.7- | 1.8+) | 2006 10 04 | G96 | 0.1+  | 0.1-  | 2006 11 22 | 704 | 0.3+ | 0.1+  |
| 2001 11 19 | 699 | 0.3-  | 1.3+  | 2006 10 04 | G96 | 0.1+  | 0.0   | 2006 11 22 | 704 | 0.5+ | 0.4+  |
| 2001 11 19 | 699 | 0.3-  | 0.4+  | 2006 10 19 | 703 | 0.7-  | 0.4-  | 2006 11 22 | 704 | 0.2+ | 1.1+  |
| 2001 11 19 | 699 | 0.7-  | 0.6+  | 2006 10 19 | 703 | 0.0   | 0.6+  | 2006 11 22 | 704 | 0.1+ | 0.3+  |
| 2001 11 24 | 704 | 0.1+  | 0.2+  | 2006 10 19 | 703 | 0.3-  | 0.4+  | 2006 11 22 | 704 | 0.9+ | 1.3+  |
| 2001 11 24 | 704 | 0.8-  | 0.3+  | 2006 10 19 | 703 | 0.1-  | 0.1-  | 2006 11 23 | G96 | 0.2- | 0.2-  |
| 2001 11 24 | 704 | 0.8+  | 0.1-  | 2006 10 27 | 703 | 1.0-  | 1.1+  | 2006 11 23 | G96 | 0.4+ | 0.2-  |
| 2001 11 24 | 704 | 0.9-  | 0.4+  | 2006 10 27 | 703 | 0.5-  | 0.4+  | 2006 11 23 | G96 | 0.0  | 0.3-  |
| 2001 11 24 | 704 | 0.4-  | 0.3+  | 2006 10 27 | 703 | 0.6+  | 1.4+  | 2006 11 23 | G96 | 0.1+ | 0.1-  |
| 2003 01 29 | 645 | 0.0   | 0.2-  | 2006 10 27 | 703 | 0.8-  | 0.1-  | 2007 11 03 | G96 | 0.4+ | 0.1-  |
| 2003 01 29 | 645 | 0.1+  | 0.2-  | 2006 11 01 | G96 | 0.2+  | 0.0   | 2007 11 03 | G96 | 0.3+ | 0.1-  |
| 2004 03 15 | 691 | 0.5+  | 0.2+  | 2006 11 01 | G96 | 0.4+  | 0.1+  | 2007 11 03 | G96 | 0.6+ | 0.3-  |
| 2004 03 15 | 703 | 0.6-  | 0.0   | 2006 11 01 | G96 | 0.0   | 0.0   | 2007 11 03 | G96 | 0.0  | 1.4-  |
| 2004 03 15 | 703 | (1.3+ | 2.1+) | 2006 11 01 | G96 | 0.1+  | 0.2-  | 2007 12 05 | 691 | 0.4- | 0.3+  |
| 2004 03 15 | 691 | 0.1+  | 0.3+  | 2006 11 14 | 703 | (6.4+ | 1.7+) | 2007 12 05 | 691 | 0.5- | 0.1-  |
| 2004 03 15 | 703 | 0.8-  | 0.1-  | 2006 11 14 | 703 | 0.4+  | 0.4+  | 2007 12 05 | 691 | 0.2- | 0.3+  |
| 2004 03 15 | 703 | 0.1-  | 1.0+  | 2006 11 14 | 703 | 0.1-  | 0.8+  | 2007 12 17 | 691 | 0.0  | 0.2+  |
| 2004 03 15 | 691 | 0.2+  | 0.3+  | 2006 11 14 | 703 | 0.0   | 0.1+  | 2007 12 17 | 691 | 0.0  | 0.0   |
| 2004 04 24 | 691 | 0.3+  | 0.2+  | 2006 11 16 | 704 | (0.4- | 2.2+) | 2007 12 17 | 691 | 0.3- | 0.2+  |
| 2004 04 24 | 691 | 0.4+  | 0.2+  | 2006 11 16 | 704 | 0.7-  | 0.3-  |            |     |      |       |

**(173083)\* 2006 WG<sub>80</sub> = 2000 AK<sub>254</sub> = 2002 JK<sub>92</sub> = 2004 RV<sub>127</sub>**

Discovered 2006 Nov. 18 by Spacewatch at Kitt Peak.

Id. A. Doppler (*MPO* 112618)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 261.05553  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.12541536 | $\omega$ | 267.80148 | -0.79790825 |          |          | +0.60221165 |
| <i>a</i> | 3.9527763  | $\Omega$ | 309.22576 | -0.53875737 |          |          | -0.73194342 |
| <i>e</i> | 0.1410369  | <i>i</i> | 1.93411   | -0.27033854 |          |          | -0.31874748 |
| <i>P</i> | 7.86       | <i>H</i> | 14.5      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 05 | 691 | 0.1- | 0.4+ | 2002 05 13 | 704 | 0.7+ | 0.2+ | 2006 11 01 | G96 | 0.5- | 0.1- |
| 2000 01 05 | 691 | 0.3- | 0.3- | 2004 09 07 | 691 | 0.1+ | 0.3+ | 2006 11 01 | G96 | 0.1- | 0.4- |
| 2000 01 05 | 691 | 0.1- | 0.2- | 2004 09 07 | 691 | 0.2+ | 0.2+ | 2006 11 01 | G96 | 0.2+ | 0.3- |
| 2000 01 15 | 691 | 0.0  | 0.3- | 2004 09 07 | 691 | 0.2- | 0.1+ | 2006 11 01 | G96 | 0.5- | 0.1- |
| 2000 01 15 | 691 | 0.1+ | 0.0  | 2004 09 11 | 691 | 0.1- | 0.5+ | 2006 11 18 | 691 | 0.5- | 0.3- |
| 2000 01 15 | 691 | 0.0  | 0.1- | 2004 09 11 | 691 | 0.2- | 0.0  | 2006 11 18 | 691 | 0.1- | 0.0  |
| 2001 02 20 | 645 | 0.1+ | 0.2+ | 2004 09 11 | 691 | 0.2+ | 0.3+ | 2006 11 18 | 691 | 0.1- | 0.1+ |
| 2001 02 20 | 645 | 0.1+ | 0.2+ | 2005 10 22 | 691 | 0.2+ | 0.2+ | 2006 11 22 | 691 | 0.2+ | 0.4+ |
| 2002 05 11 | 704 | 0.2- | 0.2- | 2005 10 22 | 691 | 0.6- | 0.4- | 2006 11 22 | 691 | 0.1- | 0.1+ |
| 2002 05 11 | 704 | 0.7- | 0.1+ | 2005 10 22 | 691 | 0.2- | 0.0  | 2006 11 22 | 691 | 0.1- | 0.2+ |
| 2002 05 11 | 704 | 0.0  | 0.2+ | 2005 10 30 | 691 | 0.0  | 0.0  | 2007 11 04 | G96 | 0.4+ | 0.2- |
| 2002 05 11 | 704 | 0.4- | 0.5+ | 2005 10 30 | 691 | 0.3- | 0.3+ | 2007 11 04 | G96 | 0.3+ | 0.4- |
| 2002 05 11 | 704 | 0.5- | 0.4+ | 2005 10 30 | 691 | 0.4+ | 0.4+ | 2007 11 04 | G96 | 0.1+ | 0.1- |
| 2002 05 13 | 704 | 0.2+ | 0.5- | 2006 10 20 | G96 | 0.2- | 0.4- | 2007 11 04 | G96 | 0.9+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 13 | 704 | 0.1+ | 0.8- | 2006 10 20 | G96 | 0.1+ | 0.0  | 2007 12 15 | 691 | 0.1+ | 0.1- |
| 2002 05 13 | 704 | 0.9- | 0.5+ | 2006 10 20 | G96 | 0.4+ | 0.0  | 2007 12 15 | 691 | 0.1- | 0.5- |
| 2002 05 13 | 704 | 0.5- | 0.5- | 2006 10 20 | G96 | 0.8+ | 0.4- | 2007 12 15 | 691 | 0.2- | 0.0  |

**(173084)\* 2007 PO<sub>1</sub> = 2004 JF<sub>41</sub>**

Discovered 2007 Aug. 5 at Crni Vrh.

Id. A. Doppler (*MPO* 126306)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 338.67428  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.08437508 | $\omega$ | 114.18319 | +0.96668784 |          |          | +0.08593262 |
| <i>a</i> | 5.1482533  | $\Omega$ | 241.67970 | -0.15039165 |          |          | +0.95290324 |
| <i>e</i> | 0.0493722  | <i>i</i> | 15.89548  | +0.20711583 |          |          | +0.29084532 |
| <i>P</i> | 11.68      | <i>H</i> | 11.8      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 25 | 699 | 1.2+ | 0.0  | 2004 05 15 | 704 | 0.0   | 0.8-  | 2007 08 05 | 106 | 0.3+ | 0.3+ |
| 1998 11 25 | 699 | 1.3- | 1.4+ | 2004 05 15 | 704 | 0.7-  | 0.2-  | 2007 08 06 | 106 | 0.2- | 0.5- |
| 1998 11 25 | 699 | 0.5+ | 0.1+ | 2004 05 15 | 704 | 0.3+  | 0.0   | 2007 08 06 | 106 | 0.6- | 0.2- |
| 2000 12 30 | 608 | 0.3- | 1.3- | 2004 05 15 | 704 | 0.2-  | 0.2-  | 2007 08 06 | 106 | 0.2+ | 0.0  |
| 2000 12 30 | 608 | 0.3- | 0.9- | 2004 05 15 | 704 | 0.9-  | 0.1-  | 2007 08 06 | 106 | 0.7- | 0.4- |
| 2000 12 30 | 608 | 0.3- | 1.2- | 2004 05 19 | 704 | (3.3- | 0.6-) | 2007 08 06 | 106 | 0.2+ | 1.2- |
| 2001 02 24 | 608 | 0.6- | 1.3- | 2004 05 19 | 704 | (3.2- | 0.0)  | 2007 08 06 | 106 | 0.4+ | 0.4- |
| 2001 02 24 | 608 | 1.2- | 1.3- | 2004 05 19 | 704 | (4.7- | 0.0)  | 2007 08 06 | 106 | 0.1+ | 1.5- |
| 2001 02 24 | 608 | 1.2- | 1.3- | 2005 06 17 | G96 | 0.4+  | 0.4-  | 2007 08 06 | 106 | 0.3+ | 0.9- |
| 2002 02 08 | 644 | 0.5+ | 0.4+ | 2005 06 17 | G96 | 0.2+  | 0.0   | 2007 09 05 | 703 | 0.1+ | 0.5+ |
| 2002 02 08 | 644 | 0.0  | 0.5+ | 2005 06 17 | G96 | 0.0   | 0.0   | 2007 09 05 | 703 | 0.6+ | 0.3+ |
| 2002 02 08 | 644 | 0.4+ | 0.5+ | 2005 06 17 | G96 | 0.1-  | 0.1-  | 2007 09 05 | 703 | 0.0  | 0.4+ |
| 2003 03 23 | 644 | 0.3+ | 0.2+ | 2005 07 04 | 644 | 0.2-  | 0.2-  | 2007 09 05 | 703 | 0.1- | 0.8+ |
| 2003 03 23 | 644 | 0.1+ | 0.3+ | 2005 07 04 | 644 | 0.1+  | 0.1-  | 2007 12 05 | G96 | 0.3+ | 0.1+ |
| 2003 03 23 | 644 | 0.0  | 0.3- | 2005 07 04 | 644 | 0.3-  | 0.1-  | 2007 12 05 | G96 | 0.0  | 0.1- |
| 2003 05 05 | 608 | 0.8+ | 0.3+ | 2007 08 05 | 106 | 0.2+  | 0.6-  | 2007 12 05 | G96 | 0.1+ | 0.1+ |
| 2003 05 05 | 608 | 0.9+ | 0.0  | 2007 08 05 | 106 | 0.7-  | 0.8-  | 2007 12 05 | G96 | 0.2+ | 0.1- |
| 2003 05 05 | 608 | 0.0  | 1.1+ | 2007 08 05 | 106 | 1.3+  | 0.0   |            |     |      |      |

**(173085)\* 2007 PY<sub>31</sub> = 2003 WO<sub>28</sub> = 2005 EY<sub>227</sub>**

Discovered 2007 Aug. 8 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPO* 122617)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 9.64460    |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.20346950 | $\omega$ | 320.20335 | +0.84290785 |          |          | +0.53804285 |
| <i>a</i> | 2.8628802  | $\Omega$ | 7.24951   | -0.48516901 |          |          | +0.76327115 |
| <i>e</i> | 0.0650040  | <i>i</i> | 1.83055   | -0.23263143 |          |          | +0.35766891 |
| <i>P</i> | 4.84       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |         |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|---------|
| 2001 03 23 | 691 | 0.2+ | 0.4+ | 2005 03 10 | G96 | 0.3- | 0.1- | 2007 08 08 | 704 | 0.6+  | 0.4+    |
| 2001 03 23 | 691 | 0.2+ | 0.5+ | 2005 03 10 | G96 | 0.5- | 0.2- | 2007 08 08 | 704 | 0.9+  | 0.1-    |
| 2001 03 23 | 691 | 0.3+ | 0.2+ | 2005 03 10 | G96 | 0.2+ | 0.2- | 2007 08 08 | 704 | 0.4-  | 0.5+    |
| 2001 05 22 | 807 | 0.1+ | 0.0  | 2005 03 10 | G96 | 0.1- | 0.0  | 2007 08 14 | 704 | 0.2+  | 1.3+    |
| 2001 05 22 | 807 | 0.2+ | 0.1- | 2005 03 16 | 691 | 0.2+ | 0.4+ | 2007 08 14 | 704 | 0.1-  | 1.3+    |
| 2002 07 05 | 644 | 0.1- | 0.1- | 2005 03 16 | 691 | 0.2+ | 0.2+ | 2007 08 14 | 704 | 0.1-  | 0.5+    |
| 2002 07 05 | 644 | 0.1- | 0.0  | 2005 03 16 | 691 | 0.3+ | 0.4+ | 2007 08 18 | 699 | 1.2+  | 1.0+    |
| 2002 07 05 | 644 | 0.0  | 0.2- | 2005 04 09 | G96 | 0.9- | 0.2- | 2007 08 18 | 699 | (0.3+ | 2.6+)   |
| 2002 07 18 | 644 | 0.4- | 0.2- | 2005 04 09 | G96 | 0.4- | 0.1- | 2007 08 18 | 699 | 0.4+  | 1.3+    |
| 2002 07 18 | 644 | 0.4- | 0.0  | 2005 04 09 | G96 | 0.1- | 0.2+ | 2007 08 18 | 699 | 1.1-  | 0.1+    |
| 2002 07 18 | 644 | 0.1+ | 0.2- | 2005 04 09 | G96 | 0.6- | 0.2- | 2007 09 04 | 703 | (3.1- | 0.5-)   |
| 2003 11 16 | 691 | 0.1+ | 0.4+ | 2006 03 26 | 691 | 0.0  | 0.5+ | 2007 09 04 | 703 | (2.2- | 0.1-)   |
| 2003 11 16 | 691 | 0.1+ | 0.3+ | 2006 03 26 | 691 | 0.2+ | 0.4+ | 2007 09 04 | 703 | (3.4- | 1.5+)</ |

**(173086)\* 2007 RS<sub>8</sub>**

Discovered 2007 Sept. 8 by M. Ory at the Observatoire Astronomique  
Jurassien-Vicques.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 278.12222  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.08522744 | $\omega$ | 183.78838 | +0.48446590   | -0.83722854 |
| <i>a</i> | 5.1138709  | $\Omega$ | 237.40317 | +0.81032801   | +0.53873581 |
| <i>e</i> | 0.0963357  | <i>i</i> | 17.52256  | +0.32963815   | -0.09387273 |
| <i>P</i> | 11.56      | <i>H</i> | 12.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 25 | 699 | 1.1+ | 0.5+ | 2003 03 23 | 644 | 0.2- | 0.2+ | 2007 09 11 | 185 | 0.5- | 0.1+ |
| 1998 11 25 | 699 | 0.0  | 1.0+ | 2003 03 23 | 644 | 0.0  | 0.5+ | 2007 09 13 | 185 | 0.1+ | 0.2+ |
| 1998 11 25 | 699 | 0.1- | 0.6+ | 2004 04 28 | 691 | 0.0  | 0.2- | 2007 09 13 | 185 | 0.2- | 0.4+ |
| 1998 12 23 | 691 | 0.1- | 0.2- | 2004 04 28 | 691 | 0.0  | 0.1- | 2007 09 16 | 185 | 0.1+ | 0.0  |
| 1998 12 23 | 691 | 0.1- | 0.1- | 2004 04 28 | 691 | 0.1+ | 0.0  | 2007 09 16 | 185 | 0.2+ | 0.4+ |
| 1998 12 23 | 691 | 0.1- | 0.5- | 2005 07 12 | G96 | 0.1+ | 0.1- | 2007 09 16 | 185 | 0.1- | 0.3+ |
| 2000 12 01 | 608 | 0.7- | 0.2- | 2005 07 12 | G96 | 0.2+ | 0.8- | 2007 09 19 | 185 | 0.4- | 0.6- |
| 2000 12 01 | 608 | 0.0  | 0.2- | 2005 07 12 | G96 | 0.3- | 0.1+ | 2007 09 19 | 185 | 1.2+ | 0.2+ |
| 2000 12 01 | 608 | 0.5- | 0.3+ | 2005 07 12 | G96 | 0.3+ | 0.3+ | 2007 09 22 | J95 | 0.1- | 0.2- |
| 2001 02 19 | 608 | 0.3+ | 0.1- | 2007 09 08 | 185 | 0.5- | 0.5- | 2007 09 22 | J95 | 0.6+ | 0.4+ |
| 2001 02 19 | 608 | 0.0  | 0.2- | 2007 09 08 | 185 | 0.2+ | 0.2+ | 2007 09 22 | J95 | 0.1- | 0.3- |
| 2001 02 19 | 608 | 0.0  | 0.3- | 2007 09 08 | 185 | 0.1- | 0.3+ | 2007 09 22 | J95 | 0.4- | 0.1- |
| 2001 02 22 | 608 | 0.4+ | 0.6+ | 2007 09 08 | 185 | 0.7- | 0.5- | 2007 09 29 | 941 | 0.3+ | 0.2+ |
| 2001 02 22 | 608 | 1.0+ | 0.5- | 2007 09 09 | 185 | 0.1- | 0.1+ | 2007 09 29 | 941 | 0.3+ | 0.1+ |
| 2002 02 08 | 644 | 0.3- | 0.1- | 2007 09 09 | 185 | 0.0  | 0.1- | 2007 09 29 | 941 | 0.1+ | 0.2+ |
| 2002 02 08 | 644 | 0.0  | 0.4+ | 2007 09 09 | 185 | 0.1+ | 0.1- | 2007 10 08 | 185 | 0.5- | 0.0  |
| 2002 03 10 | 644 | 0.1- | 0.2+ | 2007 09 11 | J95 | 0.3+ | 0.1- | 2007 10 08 | 185 | 0.5- | 0.3+ |
| 2002 03 10 | 644 | 0.5- | 0.2- | 2007 09 11 | J95 | 0.1- | 0.2- | 2007 10 13 | 185 | 0.4- | 0.8+ |
| 2003 03 23 | 644 | 0.2- | 0.1- | 2007 09 11 | 185 | 0.4- | 0.0  | 2007 10 13 | 185 | 0.0  | 0.7+ |

**(173087)\* 2007 RJ<sub>20</sub> = 2005 JE<sub>182</sub>**

Discovered 2007 Sept. 2 by the Catalina Sky Survey.

Id. A. Doppler (*MPO* 126361)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 48.37643   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17637064 | $\omega$ | 118.95547 | +0.67941007   | +0.73281627 |
| <i>a</i> | 3.1490908  | $\Omega$ | 194.03823 | -0.71521690   | +0.65007219 |
| <i>e</i> | 0.0750051  | <i>i</i> | 8.81655   | -0.16391075   | +0.20096383 |
| <i>P</i> | 5.59       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 20 | 699 | (1.8- | 0.1+) | 2007 09 08 | 699 | 0.6-  | 0.5+  | 2007 09 28 | D35 | 0.2- | 0.2+ |
| 2001 07 20 | 699 | 0.5+  | 1.0+  | 2007 09 08 | 699 | 0.3-  | 1.0+  | 2007 10 06 | 704 | 0.4- | 0.1- |
| 2001 07 20 | 699 | (1.2+ | 2.2-) | 2007 09 08 | 699 | 0.7+  | 0.0   | 2007 10 06 | 704 | 0.5- | 0.1+ |
| 2001 07 20 | 699 | 0.8-  | 0.5+  | 2007 09 08 | 699 | 1.0-  | 1.4+  | 2007 10 06 | 704 | 0.1- | 0.2+ |
| 2002 11 22 | 644 | 0.1-  | 0.3+  | 2007 09 11 | 683 | 0.1-  | 1.2+  | 2007 10 06 | 704 | 0.7- | 0.4+ |
| 2002 11 22 | 644 | 0.1-  | 0.6+  | 2007 09 11 | 683 | 0.1+  | 0.2+  | 2007 10 06 | 704 | 0.2- | 0.7+ |
| 2002 11 22 | 644 | 0.2+  | 0.5+  | 2007 09 11 | 683 | (1.7- | 1.0-) | 2007 10 08 | 699 | 1.3+ | 0.5+ |
| 2002 12 01 | 608 | 0.2-  | 0.1+  | 2007 09 12 | 683 | (0.3- | 1.6-) | 2007 10 08 | 699 | 0.3+ | 0.7- |
| 2002 12 01 | 608 | 0.1+  | 0.3+  | 2007 09 12 | 683 | 1.2+  | 0.4+  | 2007 10 08 | 699 | 1.0+ | 0.6- |
| 2002 12 01 | 608 | 0.4-  | 0.6+  | 2007 09 13 | 703 | 1.2+  | 0.4-  | 2007 10 08 | 699 | 1.4- | 0.2- |
| 2005 03 13 | 703 | (6.0+ | 3.1+) | 2007 09 13 | 703 | 0.9+  | 0.1+  | 2007 10 09 | A77 | 0.2+ | 0.4+ |
| 2005 03 13 | 703 | 0.5-  | 0.1-  | 2007 09 13 | 703 | 1.0-  | 0.0   | 2007 10 09 | A77 | 0.2+ | 0.4+ |
| 2005 03 13 | 703 | (0.7+ | 1.7+) | 2007 09 13 | 703 | (0.9- | 1.9-) | 2007 10 09 | A77 | 0.1- | 0.0  |
| 2005 03 13 | 703 | 0.5+  | 1.2+  | 2007 09 14 | 704 | 0.7-  | 0.7-  | 2007 10 11 | 704 | 0.2- | 0.2- |
| 2005 03 17 | 691 | 0.6+  | 0.7+  | 2007 09 14 | 704 | (1.1+ | 1.9-) | 2007 10 11 | 704 | 1.2- | 0.5- |
| 2005 03 17 | 691 | 0.4+  | 0.6+  | 2007 09 14 | 704 | 0.3+  | 0.0   | 2007 10 11 | 704 | 1.0- | 0.2+ |
| 2005 03 17 | 691 | 0.4+  | 0.6+  | 2007 09 14 | 704 | 0.0   | 1.4-  | 2007 10 11 | G96 | 0.1- | 0.0  |
| 2005 04 07 | G96 | 0.1-  | 0.4+  | 2007 09 14 | 683 | 1.0-  | 0.8-  | 2007 10 11 | G96 | 0.1- | 0.1- |
| 2005 04 07 | G96 | 0.3-  | 0.4+  | 2007 09 14 | 683 | 0.8-  | 1.2+  | 2007 10 11 | G96 | 0.2- | 0.0  |
| 2005 04 07 | G96 | 0.1-  | 0.1-  | 2007 09 14 | 683 | (1.7- | 1.2+) | 2007 10 11 | G96 | 0.1- | 0.1- |
| 2005 04 07 | G96 | 0.0   | 0.4+  | 2007 09 15 | 683 | 0.1+  | 1.4+  | 2007 10 11 | G96 | 0.0  | 0.1+ |
| 2005 05 04 | G96 | 0.2-  | 0.2-  | 2007 09 15 | 683 | (1.5- | 3.1+) | 2007 10 11 | G96 | 0.1+ | 0.3- |
| 2005 05 04 | G96 | 0.4-  | 0.1-  | 2007 09 15 | 683 | (1.1- | 4.0+) | 2007 10 11 | G96 | 0.1+ | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 04 | G96 | 0.3- | 0.2- | 2007 09 17 | 704 | 0.3+ | 0.1- | 2007 10 11 | G96 | 0.0  | 0.2- |
| 2005 05 04 | G96 | 0.7- | 0.1+ | 2007 09 17 | 704 | 0.8+ | 0.7+ | 2007 10 14 | 704 | 0.2+ | 0.3- |
| 2005 05 13 | G96 | 0.2- | 0.0  | 2007 09 17 | 704 | 0.0  | 0.7+ | 2007 10 14 | 704 | 0.1- | 0.0  |
| 2005 05 13 | G96 | 0.0  | 0.2- | 2007 09 21 | 704 | 0.6+ | 0.2- | 2007 10 14 | 704 | 0.2+ | 0.3+ |
| 2005 05 13 | G96 | 0.3- | 0.0  | 2007 09 21 | 704 | 0.3- | 0.1- | 2007 10 14 | 704 | 0.6- | 0.2- |
| 2005 05 13 | G96 | 0.6- | 0.4+ | 2007 09 21 | 704 | 0.4- | 0.3+ | 2007 10 14 | 704 | 0.3- | 0.3+ |
| 2007 09 02 | 703 | 0.9+ | 0.8+ | 2007 09 21 | 704 | 0.0  | 0.7+ | 2007 12 05 | G96 | 0.1- | 0.1- |
| 2007 09 02 | 703 | 0.6+ | 0.2- | 2007 09 21 | 704 | 0.1- | 0.4+ | 2007 12 05 | G96 | 0.3- | 0.2- |
| 2007 09 02 | 703 | 0.9+ | 0.5- | 2007 09 28 | D35 | 0.1- | 0.6+ | 2007 12 05 | G96 | 0.0  | 0.0  |
| 2007 09 02 | 703 | 0.3+ | 0.9- | 2007 09 28 | D35 | 0.2- | 0.5+ | 2007 12 05 | G96 | 0.2+ | 0.0  |

**(173088)\* 2007 RS<sub>36</sub> = 2003 QZ<sub>37</sub>**

Discovered 2007 Sept. 8 by the Lowell Observatory Near-Earth Object Search  
at the Anderson Mesa Station.

Id. G. V. Williams (*MPO* 124216)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 355.17126  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25909715 | $\omega$ | 208.77518 | +0.89225486   | -0.45153180 |
| <i>a</i> | 2.4368434  | $\Omega$ | 178.06657 | +0.41733671   | +0.82421622 |
| <i>e</i> | 0.1935840  | <i>i</i> | 0.93568   | +0.17236977   | +0.34174062 |
| <i>P</i> | 3.80       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 11 27 | 691 | 1.0-  | 0.3-  | 2007 09 19 | 704 | 0.2+  | 0.9+  | 2007 10 08 | G96 | 0.2- | 0.1- |
| 1992 11 27 | 691 | 1.2-  | 0.7-  | 2007 09 19 | 704 | 1.3+  | 0.1+  | 2007 10 08 | G96 | 0.1- | 0.1- |
| 1992 11 27 | 691 | 1.1+  | 1.9-  | 2007 09 19 | 704 | 0.0   | 0.6+  | 2007 10 08 | G96 | 0.1- | 0.2- |
| 1992 11 27 | 691 | 0.3+  | 0.8+  | 2007 09 19 | 704 | (1.9- | 0.3+) | 2007 10 11 | 704 | 0.8- | 1.2+ |
| 1992 11 27 | 691 | 1.9+  | 1.3-  | 2007 09 19 | 683 | (2.1+ | 1.7+) | 2007 10 11 | 704 | 0.2+ | 0.7+ |
| 1992 11 27 | 691 | 0.5-  | 0.5+  | 2007 09 19 | 683 | (0.7+ | 1.7-) | 2007 10 11 | 704 | 0.5- | 1.1+ |
| 2003 08 04 | 691 | 0.3-  | 0.5-  | 2007 09 19 | 683 | 0.0   | 1.3-  | 2007 10 11 | 704 | 0.2- | 0.5+ |
| 2003 08 04 | 691 | 0.2-  | 0.5-  | 2007 09 21 | 704 | 0.4+  | 1.1+  | 2007 10 14 | 704 | 0.5+ | 0.6+ |
| 2003 08 04 | 691 | 0.0   | 0.6-  | 2007 09 21 | 704 | 1.1-  | 1.3+  | 2007 10 14 | 704 | 1.4- | 1.2- |
| 2003 08 22 | 704 | 0.2+  | 0.2+  | 2007 09 21 | 704 | 1.4-  | 1.2+  | 2007 10 14 | 704 | 0.6- | 0.3+ |
| 2003 08 22 | 704 | 0.4-  | 0.9+  | 2007 09 21 | 704 | 0.5-  | 0.8+  | 2007 10 14 | 704 | 0.3+ | 0.5+ |
| 2003 08 22 | 704 | 0.4+  | 0.9+  | 2007 10 01 | A50 | 0.4+  | 0.3+  | 2007 10 14 | 704 | 0.1- | 1.2+ |
| 2003 08 22 | 704 | 0.1-  | 0.4+  | 2007 10 01 | A50 | 0.4-  | 0.1+  | 2007 10 17 | 699 | 0.5+ | 0.6+ |
| 2003 08 25 | 704 | 0.5+  | 0.0   | 2007 10 01 | A50 | 0.0   | 0.2+  | 2007 10 17 | 699 | 1.1+ | 0.2- |
| 2003 08 25 | 704 | 0.8+  | 0.3-  | 2007 10 01 | A50 | 0.0   | 0.4+  | 2007 10 17 | 699 | 0.1- | 0.5- |
| 2003 08 25 | 704 | 0.8+  | 0.2-  | 2007 10 04 | 703 | 0.1+  | 0.3+  | 2007 10 17 | 699 | 1.0- | 0.3- |
| 2003 08 25 | 704 | 1.3+  | 0.3+  | 2007 10 04 | 703 | 0.4-  | 0.1+  | 2007 10 19 | 704 | 0.9+ | 0.8+ |
| 2005 02 02 | 691 | 0.1+  | 0.7+  | 2007 10 04 | 703 | 0.6+  | 0.1+  | 2007 10 19 | 704 | 0.0  | 0.6+ |
| 2005 02 02 | 691 | 0.5+  | 0.6+  | 2007 10 04 | 703 | 0.3-  | 0.2-  | 2007 10 19 | 704 | 0.3- | 0.3+ |
| 2005 02 02 | 691 | 0.3-  | 0.2+  | 2007 10 06 | 704 | 0.5+  | 0.3+  | 2007 10 19 | 704 | 0.4- | 1.2+ |
| 2005 03 01 | 691 | 0.3+  | 0.4+  | 2007 10 06 | 704 | 0.3-  | 0.8-  | 2007 10 19 | 704 | 0.2- | 0.8+ |
| 2005 03 01 | 691 | 0.3+  | 0.4+  | 2007 10 06 | 704 | 0.1+  | 0.0   | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2005 03 01 | 691 | 0.1+  | 0.5+  | 2007 10 06 | 704 | 0.1-  | 0.6-  | 2007 11 05 | G96 | 0.2- | 0.3- |
| 2007 09 08 | 699 | 0.7-  | 0.1-  | 2007 10 06 | 704 | 0.1+  | 0.4-  | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2007 09 08 | 699 | (0.2+ | 1.7+) | 2007 10 07 | 704 | 0.6+  | 1.1+  | 2007 11 05 | G96 | 0.2- | 0.3- |
| 2007 09 08 | 699 | 0.9-  | 0.7+  | 2007 10 07 | 704 | 0.8-  | 0.7+  | 2007 12 04 | G96 | 0.6+ | 0.1+ |
| 2007 09 08 | 699 | 0.5-  | 0.8+  | 2007 10 07 | 704 | 0.6-  | 0.2-  | 2007 12 04 | G96 | 0.4+ | 0.2+ |
| 2007 09 11 | 703 | 0.0   | 0.4-  | 2007 10 07 | 704 | 1.0-  | 0.6-  | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2007 09 11 | 703 | 0.7-  | 1.0-  | 2007 10 07 | 704 | 0.5-  | 1.2+  | 2007 12 04 | G96 | 0.2- | 0.1+ |
| 2007 09 11 | 703 | 0.2+  | 0.0   | 2007 10 08 | 704 | 0.0   | 0.3+  | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2007 09 11 | 703 | 0.2+  | 0.2-  | 2007 10 08 | 704 | (1.0+ | 2.0+) | 2007 12 06 | G96 | 0.1- | 0.0  |
| 2007 09 13 | 704 | 0.0   | 1.3+  | 2007 10 08 | 704 | 0.2+  | 0.5-  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2007 09 13 | 704 | 0.2-  | 0.3-  | 2007 10 08 | 704 | 0.2-  | 0.5+  | 2007 12 06 | G96 | 0.0  | 0.4+ |
| 2007 09 13 | 704 | 0.2+  | 0.2+  | 2007 10 08 | 704 | 0.2+  | 0.6-  |            |     |      |      |
| 2007 09 19 | 704 | 0.4+  | 0.4+  | 2007 10 08 | G96 | 0.2-  | 0.1-  |            |     |      |      |

2007 DEC. 24

M.P.O. 129561

| Epoch                       | 2007 Oct. 27.0 TT = JDT 2454400.5                                                                                  | MPC      |                                                                                      |             |                                                        |             |                         |            |     |       |      |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|-------------|-------------------------|------------|-----|-------|------|
| <i>M</i>                    | 43.73779                                                                                                           | (2000.0) |                                                                                      | <b>P</b>    |                                                        | <b>Q</b>    |                         |            |     |       |      |
| <i>n</i>                    | 0.29870182                                                                                                         | $\omega$ | 307.08354                                                                            | +0.70161908 |                                                        | +0.71254176 |                         |            |     |       |      |
| <i>a</i>                    | 2.2163796                                                                                                          | $\Omega$ | 7.47718                                                                              | −0.64397837 |                                                        | +0.63640731 |                         |            |     |       |      |
| <i>e</i>                    | 0.1954780                                                                                                          | <i>i</i> | 1.70014                                                                              | −0.30499594 |                                                        | +0.29541492 |                         |            |     |       |      |
| <i>P</i>                    | 3.30 <th><i>H</i></th> <td>17.4<th><i>G</i></th><td>0.15<th><i>U</i></th><td>1<td colspan="2"></td></td></td></td> | <i>H</i> | 17.4 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>1<td colspan="2"></td></td></td> | <i>G</i>    | 0.15 <th><i>U</i></th> <td>1<td colspan="2"></td></td> | <i>U</i>    | 1 <td colspan="2"></td> |            |     |       |      |
| Residuals in seconds of arc |                                                                                                                    |          |                                                                                      |             |                                                        |             |                         |            |     |       |      |
| 2003 04 26                  | 691                                                                                                                | 0.8+     | 0.6+                                                                                 | 2007 09 11  | 691                                                    | 0.8−        | 0.7+                    | 2007 10 07 | G96 | 0.2−  | 0.4− |
| 2003 04 26                  | 691                                                                                                                | 0.8+     | 0.5+                                                                                 | 2007 09 12  | 691                                                    | 0.4−        | 0.0                     | 2007 10 07 | G96 | 0.3+  | 0.4− |
| 2003 04 26                  | 691                                                                                                                | 0.5+     | 0.3+                                                                                 | 2007 09 12  | 691                                                    | 0.6−        | 0.1−                    | 2007 10 07 | G96 | 0.0   | 0.2− |
| 2003 05 08                  | 691                                                                                                                | 0.6−     | 0.7+                                                                                 | 2007 09 12  | 691                                                    | 0.4−        | 0.1+                    | 2007 10 08 | 704 | 0.0   | 0.4− |
| 2003 05 08                  | 691                                                                                                                | 0.1−     | 0.6+                                                                                 | 2007 09 13  | 699                                                    | 0.5+        | 0.2−                    | 2007 10 08 | 704 | 0.3+  | 0.1+ |
| 2003 05 08                  | 691                                                                                                                | 0.2−     | 0.2−                                                                                 | 2007 09 13  | 699                                                    | 0.3+        | 0.2+                    | 2007 10 08 | 699 | 0.8+  | 0.7− |
| 2004 11 11                  | 691                                                                                                                | 0.1+     | 0.1+                                                                                 | 2007 09 13  | 699                                                    | 0.4−        | 0.2+                    | 2007 10 08 | 704 | 0.5−  | 1.1− |
| 2004 11 11                  | 691                                                                                                                | 0.4+     | 0.1−                                                                                 | 2007 09 13  | 699                                                    | 0.5−        | 0.5−                    | 2007 10 08 | 699 | 0.6−  | 1.1− |
| 2004 11 11                  | 691                                                                                                                | 0.1+     | 0.1+                                                                                 | 2007 09 16  | 704                                                    | 0.4+        | 0.3+                    | 2007 10 08 | 704 | 1.4−  | 0.6+ |
| 2004 12 19                  | G96                                                                                                                | 0.6−     | 0.4+                                                                                 | 2007 09 16  | 704                                                    | 0.1+        | 0.9+                    | 2007 10 08 | 699 | (1.8− | 1.4− |
| 2004 12 19                  | G96                                                                                                                | 1.1−     | 0.3+                                                                                 | 2007 09 16  | 704                                                    | 1.0+        | 0.2−                    | 2007 10 08 | 699 | 0.6−  | 0.3+ |
| 2004 12 19                  | G96                                                                                                                | 0.4−     | 0.0                                                                                  | 2007 09 16  | 704                                                    | 0.3+        | 0.6+                    | 2007 10 11 | 704 | (1.6− | 2.4+ |
| 2004 12 19                  | G96                                                                                                                | 1.1−     | 0.1+                                                                                 | 2007 09 16  | 704                                                    | 0.5+        | 1.0+                    | 2007 10 11 | 704 | 0.8−  | 1.1+ |
| 2006 02 21                  | G96                                                                                                                | 0.2+     | 0.2+                                                                                 | 2007 09 19  | 704                                                    | 0.1−        | 0.0                     | 2007 10 11 | 704 | (0.7− | 2.3+ |
| 2006 02 21                  | G96                                                                                                                | 0.1−     | 0.3+                                                                                 | 2007 09 19  | 704                                                    | 0.3−        | 0.1−                    | 2007 10 14 | 704 | 0.0   | 0.6+ |
| 2006 02 21                  | G96                                                                                                                | 0.2−     | 0.0                                                                                  | 2007 09 19  | 704                                                    | 0.0         | 0.6+                    | 2007 10 14 | 704 | 0.7−  | 0.4+ |
| 2006 02 21                  | G96                                                                                                                | 0.1+     | 0.0                                                                                  | 2007 09 19  | 704                                                    | 0.1−        | 0.7+                    | 2007 10 14 | 704 | 0.1+  | 1.4+ |
| 2006 02 25                  | G96                                                                                                                | 0.5+     | 0.1+                                                                                 | 2007 09 21  | 704                                                    | 0.1−        | 1.5+                    | 2007 10 14 | 704 | 0.0   | 0.6+ |
| 2006 02 25                  | G96                                                                                                                | 0.4+     | 0.2+                                                                                 | 2007 09 21  | 704                                                    | 0.1+        | 0.4−                    | 2007 10 14 | 704 | 0.7+  | 0.4+ |
| 2006 02 25                  | G96                                                                                                                | 0.1+     | 0.6+                                                                                 | 2007 09 21  | 704                                                    | 1.2+        | 0.9+                    | 2007 10 18 | 704 | 1.1+  | 0.6+ |
| 2006 02 25                  | G96                                                                                                                | 0.3+     | 0.0                                                                                  | 2007 09 21  | 704                                                    | 0.7+        | 1.3+                    | 2007 10 18 | 704 | 0.5−  | 0.3+ |
| 2006 03 03                  | 691                                                                                                                | 0.3+     | 0.7+                                                                                 | 2007 09 21  | 704                                                    | 1.0+        | 0.3+                    | 2007 10 18 | 704 | 0.4+  | 0.4− |
| 2006 03 03                  | 691                                                                                                                | 0.3+     | 0.7+                                                                                 | 2007 10 02  | A77                                                    | (1.5−       | 0.3+)                   | 2007 10 19 | 704 | 0.9−  | 1.1− |
| 2006 03 03                  | 691                                                                                                                | 0.1+     | 0.7+                                                                                 | 2007 10 02  | A77                                                    | 1.3−        | 0.9+                    | 2007 10 19 | 704 | 0.4−  | 0.3− |
| 2007 09 08                  | 699                                                                                                                | 0.5−     | 0.4−                                                                                 | 2007 10 02  | A77                                                    | 1.3−        | 0.1−                    | 2007 10 19 | 704 | 0.1+  | 0.3+ |
| 2007 09 08                  | 699                                                                                                                | 0.1−     | 1.2+                                                                                 | 2007 10 05  | J95                                                    | 0.2+        | 0.1+                    | 2007 10 19 | G96 | 0.2+  | 0.0  |
| 2007 09 08                  | 699                                                                                                                | 0.7−     | 0.6−                                                                                 | 2007 10 05  | J95                                                    | 0.4+        | 0.2+                    | 2007 10 19 | G96 | 0.1+  | 0.1− |
| 2007 09 08                  | 699                                                                                                                | 0.2−     | 0.4+                                                                                 | 2007 10 05  | J95                                                    | 0.4+        | 0.2+                    | 2007 10 19 | G96 | 0.4−  | 0.2+ |
| 2007 09 10                  | G96                                                                                                                | 0.1+     | 0.2−                                                                                 | 2007 10 06  | 704                                                    | 1.0+        | 0.3+                    | 2007 12 04 | G96 | 0.2+  | 0.5− |
| 2007 09 10                  | G96                                                                                                                | 0.5+     | 0.3−                                                                                 | 2007 10 06  | 704                                                    | 0.2−        | 0.6+                    | 2007 12 04 | G96 | 0.0   | 0.3− |
| 2007 09 10                  | G96                                                                                                                | 0.3+     | 0.2−                                                                                 | 2007 10 06  | 704                                                    | 0.2+        | 0.5+                    | 2007 12 04 | G96 | 0.2−  | 0.1− |
| 2007 09 10                  | G96                                                                                                                | 0.1+     | 0.0                                                                                  | 2007 10 06  | 704                                                    | 0.2−        | 1.2+                    | 2007 12 04 | G96 | 0.3+  | 0.2+ |
| 2007 09 11                  | 691                                                                                                                | 0.3−     | 0.1−                                                                                 | 2007 10 06  | 704                                                    | 0.3+        | 0.6+                    |            |     |       |      |
| 2007 09 11                  | 691                                                                                                                | 0.4−     | 0.1−                                                                                 | 2007 10 07  | G96                                                    | 0.1+        | 0.3−                    |            |     |       |      |

(173090)\* 2007 RJ<sub>207</sub> = 2006 JU<sub>12</sub>

Discovered 2007 Sept. 10 by Spacewatch at Kitt Peak.

Id. A. Doppler (MPO 126471)

|                                         |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC      |           |             |      |             |   |  |  |  |  |
| <i>M</i> 339.05442                      | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i> 0.27408622                     | $\omega$ | 242.43497 | +0.70067827 |      | −0.71278802 |   |  |  |  |  |
| <i>a</i> 2.3471702                      | $\Omega$ | 162.96366 | +0.68652891 |      | +0.66159734 |   |  |  |  |  |
| <i>e</i> 0.1331740                      | <i>i</i> | 6.14387   | +0.19423702 |      | +0.23285661 |   |  |  |  |  |
| <i>P</i> 3.60                           | <i>H</i> | 16.8      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |  |  |
|----------------|-------|-------|----------------|------|------|----------------|------|------|--|--|
| 2003 07 08 599 | 0.2+  | 0.6−  | 2006 05 05 691 | 0.2− | 0.4+ | 2007 09 22 704 | 0.3+ | 0.8+ |  |  |
| 2003 07 08 599 | 0.7+  | 0.2+  | 2006 05 05 691 | 0.5− | 0.3+ | 2007 09 22 704 | 0.2− | 0.3+ |  |  |
| 2003 07 08 599 | 0.2−  | 0.3−  | 2006 05 26 691 | 0.7+ | 0.4+ | 2007 09 22 704 | 0.3− | 0.6+ |  |  |
| 2003 07 30 599 | 0.5−  | 0.1−  | 2006 05 26 691 | 0.0  | 0.0  | 2007 09 22 704 | 0.8+ | 1.0+ |  |  |
| 2003 07 30 599 | 0.0   | 0.0   | 2006 05 26 691 | 0.2+ | 0.1− | 2007 10 04 703 | 0.5+ | 0.3+ |  |  |
| 2003 07 30 599 | 0.0   | 0.6−  | 2007 09 10 691 | 0.1− | 0.2− | 2007 10 04 703 | 0.1− | 1.5+ |  |  |
| 2005 01 13 703 | 0.5+  | 0.2−  | 2007 09 10 691 | 0.2− | 0.3− | 2007 10 04 703 | 0.9− | 0.5+ |  |  |
| 2005 01 13 703 | 0.6+  | 0.5+  | 2007 09 10 691 | 0.3− | 0.1− | 2007 10 04 703 | 0.3− | 0.7+ |  |  |
| 2005 01 13 703 | 0.1−  | 0.2+  | 2007 09 15 691 | 0.1− | 0.2− | 2007 10 07 704 | 0.4+ | 0.6− |  |  |
| 2005 01 13 703 | 0.1−  | 0.4−  | 2007 09 15 691 | 0.2− | 0.3− | 2007 10 07 704 | 0.5+ | 0.2− |  |  |
| 2005 02 02 703 | 0.1+  | 1.0+  | 2007 09 15 691 | 0.3− | 0.1− | 2007 10 07 704 | 0.1+ | 0.1+ |  |  |
| 2005 02 02 703 | (0.9+ | 1.8+) | 2007 09 19 691 | 0.4− | 0.1− | 2007 10 07 704 | 1.2+ | 1.1+ |  |  |

|                |       |       |                |      |      |                |       |       |  |  |
|----------------|-------|-------|----------------|------|------|----------------|-------|-------|--|--|
| 2005 02 02 703 | 0.4+  | 1.3+  | 2007 09 19 691 | 0.1− | 0.1− | 2007 10 07 704 | 0.8+  | 0.3+  |  |  |
| 2005 02 02 703 | (0.1+ | 1.6+) | 2007 09 19 691 | 0.1− | 0.2− | 2007 10 09 A44 | 0.1+  | 0.1+  |  |  |
| 2005 03 17 G96 | 0.4−  | 0.6+  | 2007 09 21 704 | 0.1+ | 0.4+ | 2007 10 09 A44 | 0.3+  | 0.1+  |  |  |
| 2005 03 17 G96 | 0.4−  | 0.2+  | 2007 09 21 704 | 0.2+ | 1.0+ | 2007 10 09 A44 | 0.3+  | 0.0   |  |  |
| 2005 03 17 G96 | 0.2−  | 0.2+  | 2007 09 21 704 | 0.7+ | 1.1+ | 2007 10 13 704 | 0.9+  | 0.7+  |  |  |
| 2005 03 17 G96 | 0.2−  | 0.6+  | 2007 09 21 704 | 0.3− | 0.7+ | 2007 10 13 704 | 0.0   | 0.0   |  |  |
| 2006 05 01 691 | 0.1−  | 0.0   | 2007 09 21 704 | 0.0  | 0.1+ | 2007 10 13 704 | 0.4+  | 0.2+  |  |  |
| 2006 05 01 691 | 0.4+  | 0.3+  | 2007 09 21 691 | 0.1− | 0.0  | 2007 12 04 704 | (2.1+ | 0.5+) |  |  |
| 2006 05 01 691 | 0.5−  | 0.5+  | 2007 09 21 691 | 0.1− | 0.1− | 2007 12 04 704 | 1.3+  | 0.7+  |  |  |
| 2006 05 05 691 | 0.3+  | 0.1+  | 2007 09 21 691 | 0.2− | 0.3+ | 2007 12 04 704 | (0.0  | 1.8+) |  |  |

(173091)\* 2007 RU<sub>217</sub> = 2000 FY<sub>52</sub> = 2002 TE<sub>323</sub>

Discovered 2007 Sept. 13 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 128317)

|                                         |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC      |           |             |      |             |   |  |  |  |  |
| <i>M</i> 336.09917                      | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i> 0.20121110                     | $\omega$ | 211.62180 | +0.69708837 |      | −0.71695917 |   |  |  |  |  |
| <i>a</i> 2.8842623                      | $\Omega$ | 194.18753 | +0.66291202 |      | +0.64773971 |   |  |  |  |  |
| <i>e</i> 0.0850936                      | <i>i</i> | 1.42879   | +0.27315829 |      | +0.25768744 |   |  |  |  |  |
| <i>P</i> 4.90                           | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 30 | 691 | 0.0  | 0.2− | 2005 04 10 | G96 | 0.2− | 0.3+ | 2007 10 05 | J87 | 1.0+ | 0.5+ |
| 2000 03 30 | 691 | 0.1− | 0.4− | 2005 04 10 | G96 | 0.4− | 0.4+ | 2007 10 05 | J87 | 0.7+ | 0.6+ |
| 2000 03 30 | 691 | 0.2− | 0.2− | 2005 04 10 | G96 | 0.4− | 0.2+ | 2007 10 09 | G96 | 0.1+ | 0.2− |
| 2000 04 06 | 691 | 0.1− | 0.5− | 2005 05 13 | G96 | 0.7− | 0.3− | 2007 10 09 | G96 | 0.4+ | 0.2− |
| 2000 04 06 | 691 | 0.0  | 0.9− | 2005 05 13 | G96 | 0.3− | 0.4− | 2007 10 09 | G96 | 0.2+ | 0.1− |
| 2000 04 06 | 691 | 0.1+ | 1.0− | 2005 05 13 | G96 | 0.0  | 0.3− | 2007 10 09 | G96 | 0.5+ | 0.1− |
| 2002 10 05 | 645 | 0.2+ | 0.1− | 2005 05 13 | G96 | 0.6− | 0.1+ | 2007 10 19 | G96 | 0.1+ | 0.2− |
| 2002 10 05 | 645 | 0.2+ | 0.1− | 2007 09 13 | 691 | 0.6− | 0.5+ | 2007 10 19 | G96 | 0.2+ | 0.6− |
| 2002 10 11 | 645 | 0.0  | 0.1− | 2007 09 13 | 691 | 0.2+ | 0.9+ | 2007 10 19 | G96 | 0.2− | 0.3− |
| 2002 10 11 | 645 | 0.1− | 0.2− | 2007 09 13 | 691 | 0.3− | 0.3+ | 2007 10 19 | G96 | 0.4+ | 0.5− |
| 2002 10 30 | 645 | 0.0  | 0.1− | 2007 09 14 | G96 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.1− |
| 2002 10 30 | 645 | 0.0  | 0.2− | 2007 09 14 | G96 | 0.0  | 0.2− | 2007 10 30 | G96 | 0.8+ | 0.1+ |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.1− | 0.4− | 2007 10 30 | G96 | 0.2+ | 0.0  |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.9+ | 0.1+ | 2007 10 30 | G96 | 0.6+ | 0.1+ |
| 2005 03 08 | G96 | 0.2− | 0.5+ | 2007 09 14 | 699 | 0.5− | 0.6+ | 2007 12 04 | G96 | 0.8+ | 0.9− |
| 2005 03 08 | G96 | 0.4− | 0.3− | 2007 09 14 | 699 | 0.3− | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 2005 03 08 | G96 | 0.1+ | 0.2+ | 2007 09 14 | 699 | 1.1− | 1.0− | 2007 12 04 | G96 | 0.2− | 0.4− |
| 2005 03 08 | G96 | 0.4− | 0.2+ | 2007 09 14 | 699 | 0.7− | 0.0  | 2007 12 04 | G96 | 0.4− | 0.7− |
| 2005 04 10 | G96 | 0.3− | 0.2+ | 2007 10 05 | J87 | 0.6+ | 0.5+ |            |     |      |      |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.3− | 2007 12 10 | 704 | 0.3+ | 0.3− |
| 2005 04 02 | G96 | 0.1− | 0.2+ | 2007 11 05 | G96 | 0.2+ | 0.4+ | 2007 12 10 | 704 | 0.7− | 0.4+ |
| 2005 04 02 | G96 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.5+ |
| 2005 04 02 | G96 | 0.1− | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.1+ |
| 2005 04 02 | G96 | 0.0  | 0.3+ | 2007 11 09 | 691 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.2+ |
| 2005 04 02 | G96 | 0.1+ | 0.2+ | 2007 11 09 | 691 | 0.4− | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.4+ |
| 2005 04 02 | G96 | 0.2+ | 0.0  | 2007 11 09 | 691 | 0.2− | 0.1− |            |     |      |      |
| 2006 06 21 | 691 | 0.5+ | 0.1+ | 2007 11 13 | 691 | 0.0  | 0.3− |            |     |      |      |

**(173093)\* 2007 TH<sub>35</sub>**

Discovered 2007 Oct. 7 by the Mt. Lemmon Survey at Mount Lemmon.

|                                         |            |                    |
|-----------------------------------------|------------|--------------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |                    |
| <i>M</i>                                | 318.14675  | (2000.0)           |
| <i>n</i>                                | 0.22323997 | $\omega$ 248.09237 |
| <i>a</i>                                | 2.6912543  | $\Omega$ 212.02755 |
| <i>e</i>                                | 0.1503136  | <i>i</i> 10.64822  |
| <i>P</i>                                | 4.42       | <i>H</i> 15.8      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 30 | 691 | 0.2+ | 0.4+ | 2007 10 07 | G96 | 0.3+ | 0.1− | 2007 11 03 | 691 | 0.1−  | 0.0   |
| 1998 09 30 | 691 | 0.5+ | 0.2− | 2007 10 08 | 691 | 0.1− | 0.0  | 2007 11 03 | 699 | 1.3+  | 0.4+  |
| 1998 09 30 | 691 | 0.7− | 0.4+ | 2007 10 08 | G96 | 0.2+ | 0.3− | 2007 11 03 | 699 | 0.5+  | 0.8+  |
| 2002 09 04 | 644 | 0.2− | 0.7+ | 2007 10 08 | 691 | 0.2− | 0.2− | 2007 11 03 | 699 | 1.2+  | 0.5+  |
| 2002 09 04 | 644 | 0.4− | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.4− | 2007 11 03 | 699 | 0.8−  | 0.2−  |
| 2002 09 04 | 644 | 0.2+ | 0.5+ | 2007 10 08 | G96 | 0.3+ | 0.1− | 2007 11 04 | 704 | 0.5+  | 1.5+  |
| 2002 09 12 | 644 | 0.4− | 0.4+ | 2007 10 08 | G96 | 0.4+ | 0.4− | 2007 11 04 | 704 | 0.4+  | 1.1+  |
| 2002 09 12 | 644 | 0.4− | 0.5+ | 2007 10 08 | 691 | 0.0  | 0.3− | 2007 11 04 | 704 | 0.2+  | 0.3+  |
| 2002 09 12 | 644 | 0.3− | 0.4+ | 2007 10 09 | D29 | 0.4+ | 0.4− | 2007 11 04 | 704 | 0.7+  | 1.3+  |
| 2002 10 10 | 645 | 0.1+ | 0.0  | 2007 10 09 | D29 | 0.7+ | 0.4− | 2007 11 04 | 704 | 1.0−  | 0.7+  |
| 2002 10 10 | 645 | 0.0  | 0.1− | 2007 10 09 | D29 | 0.7+ | 0.3− | 2007 11 08 | G96 | 0.4+  | 0.5−  |
| 2002 10 11 | 645 | 0.0  | 0.0  | 2007 10 09 | D29 | 0.3+ | 0.1− | 2007 11 08 | G96 | 0.3+  | 0.5−  |
| 2002 10 11 | 645 | 0.1+ | 0.0  | 2007 10 12 | 691 | 1.2− | 0.3+ | 2007 11 08 | G96 | 0.2+  | 0.6−  |
| 2002 10 30 | 645 | 0.0  | 0.1− | 2007 10 12 | 691 | 0.4− | 0.1+ | 2007 11 12 | 704 | 0.0   | 0.0   |
| 2002 10 30 | 645 | 0.0  | 0.1− | 2007 10 12 | 691 | 0.4− | 0.1+ | 2007 11 12 | 704 | 0.2+  | 0.4−  |
| 2005 01 17 | 809 | 0.4− | 0.2+ | 2007 10 15 | 703 | 0.2+ | 0.4+ | 2007 11 12 | 704 | 0.1+  | 0.1+  |
| 2005 01 17 | 809 | 0.2− | 0.0  | 2007 10 15 | 703 | 0.9− | 1.4+ | 2007 11 12 | 704 | 0.2+  | 0.0   |
| 2005 01 17 | 809 | 0.0  | 0.1− | 2007 10 15 | 703 | 0.2− | 0.8+ | 2007 11 12 | 704 | 0.9+  | 0.3+  |
| 2005 05 14 | G96 | 0.2+ | 0.1− | 2007 10 15 | 703 | 0.7− | 1.1− | 2007 11 15 | 704 | (0.5− | 1.8+) |
| 2005 05 14 | G96 | 0.1− | 0.0  | 2007 10 21 | 704 | 0.6− | 1.3+ | 2007 11 15 | 704 | 0.9−  | 0.6−  |
| 2005 05 14 | G96 | 0.3− | 0.0  | 2007 10 21 | 704 | 1.0+ | 0.5+ | 2007 11 15 | 704 | 0.7+  | 0.0   |
| 2005 05 14 | G96 | 0.2− | 0.2+ | 2007 10 21 | 704 | 0.0  | 1.1+ | 2007 11 15 | 704 | (0.2+ | 1.8+) |
| 2005 06 03 | 691 | 0.2+ | 0.7+ | 2007 10 21 | 704 | 0.4− | 0.7+ | 2007 11 15 | 704 | 0.7+  | 0.0   |
| 2005 06 03 | 691 | 0.0  | 0.3+ | 2007 10 21 | 691 | 0.1− | 0.1− | 2007 11 15 | 704 | (0.5− | 1.8+) |
| 2005 06 03 | 691 | 0.2+ | 0.4+ | 2007 10 21 | 691 | 0.3− | 0.1+ | 2007 11 15 | 704 | 0.2+  | 0.5+  |
| 2007 09 10 | G96 | 0.2+ | 0.1− | 2007 10 21 | 691 | 0.3− | 0.1− | 2007 11 15 | 704 | 0.2+  | 1.5+  |
| 2007 09 10 | G96 | 0.5+ | 0.3− | 2007 10 30 | 703 | 0.3− | 0.5− | 2007 11 15 | 704 | 1.0+  | 0.6−  |
| 2007 09 10 | G96 | 0.0  | 0.1− | 2007 10 30 | 703 | 0.9+ | 0.5+ | 2007 12 04 | 704 | 0.1−  | 0.3+  |
| 2007 09 10 | G96 | 0.3+ | 0.1− | 2007 10 30 | 703 | 0.8+ | 0.1− | 2007 12 04 | 704 | 0.2−  | 0.1+  |
| 2007 09 18 | G96 | 0.9+ | 0.1+ | 2007 10 30 | 703 | 0.6+ | 0.7− | 2007 12 04 | 704 | 0.7−  | 0.0   |
| 2007 09 18 | G96 | 0.5+ | 0.1− | 2007 11 02 | D29 | 0.3+ | 0.6+ | 2007 12 04 | 704 | 0.1−  | 0.7+  |
| 2007 09 18 | G96 | 0.5+ | 0.3− | 2007 11 02 | D29 | 0.4+ | 0.4− | 2007 12 16 | 699 | 0.4+  | 1.4−  |
| 2007 09 18 | G96 | 0.2+ | 0.5− | 2007 11 02 | D29 | 0.3+ | 0.1− | 2007 12 16 | 699 | 0.9−  | 0.1−  |
| 2007 10 07 | G96 | 0.1+ | 0.6− | 2007 11 02 | D29 | 0.5+ | 0.6− | 2007 12 16 | 699 | 0.6+  | 0.4+  |
| 2007 10 07 | G96 | 0.2+ | 0.5− | 2007 11 03 | 691 | 0.1− | 0.1+ | 2007 12 16 | 699 | 1.5−  | 0.4+  |
| 2007 10 07 | G96 | 0.0  | 0.5− | 2007 11 03 | 691 | 0.2− | 0.1− |            |     |       |       |

**(173094)\* 2007 TM<sub>69</sub> = 2004 CY<sub>25</sub>**

Discovered 2007 Oct. 14 by V. S. Casulli at Osservatorio Astronomico Vallemare di Borbona.

Id. A. Doppler (MPO 128391)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 339.10655  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.20278793 | $\omega$ 186.86749 | +0.41727871   | −0.90862788 |
| <i>a</i> | 2.8692913  | $\Omega$ 238.47082 | +0.83470873   | +0.39040553 |
| <i>e</i> | 0.0452618  | <i>i</i> 1.11243   | +0.35936028   | +0.14825279 |
| <i>P</i> | 4.86       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 11 | 644 | 0.1+ | 0.6+ | 2007 10 10 | 691 | 0.5− | 0.3− | 2007 11 03 | A55 | 0.5− | 0.1− |
| 2002 10 11 | 644 | 1.0− | 0.2+ | 2007 10 10 | 691 | 0.1+ | 0.3− | 2007 11 04 | 691 | 0.1− | 0.2− |
| 2002 10 11 | 644 | 0.5+ | 0.3+ | 2007 10 14 | A55 | 0.2+ | 0.7+ | 2007 11 04 | 691 | 0.2− | 0.1− |
| 2004 01 28 | 691 | 0.1− | 0.3+ | 2007 10 14 | A55 | 0.5+ | 0.8+ | 2007 11 04 | 691 | 0.2− | 0.4+ |
| 2004 01 28 | 691 | 0.1+ | 0.1+ | 2007 10 14 | A55 | 0.2− | 0.0  | 2007 11 05 | 704 | 0.9+ | 0.7− |
| 2004 01 28 | 691 | 0.3− | 0.3+ | 2007 10 15 | A55 | 0.3+ | 0.1+ | 2007 11 05 | 704 | 1.0+ | 0.2− |
| 2004 02 11 | 691 | 0.3+ | 0.3− | 2007 10 15 | A55 | 1.2− | 0.4+ | 2007 11 05 | 704 | 0.5+ | 0.2− |
| 2004 02 11 | 691 | 0.2+ | 0.1+ | 2007 10 15 | A55 | 1.2− | 0.3− | 2007 11 10 | H55 | 0.1+ | 0.1+ |
| 2004 02 11 | 691 | 0.1+ | 0.1− | 2007 10 16 | A55 | 0.3− | 0.1− | 2007 11 10 | H55 | 0.1+ | 0.2+ |
| 2004 02 14 | 691 | 0.0  | 0.2+ | 2007 10 16 | A55 | 0.3+ | 0.3+ | 2007 11 10 | H55 | 0.2+ | 0.2+ |
| 2004 02 14 | 691 | 0.2− | 0.3− | 2007 10 16 | A55 | 0.6+ | 0.2+ | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2004 02 14 | 691 | 0.2− | 0.2− | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 11 | G96 | 0.6+ | 0.1− |
| 2005 04 07 | 691 | 0.1+ | 0.2+ | 2007 10 18 | 691 | 0.1− | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.0  |
| 2005 04 07 | 691 | 0.2+ | 0.0  | 2007 10 18 | 691 | 0.2− | 0.1+ | 2007 11 11 | G96 | 0.4+ | 0.4− |
| 2005 04 07 | 691 | 0.2+ | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.3− | 2007 11 15 | 704 | 0.9+ | 0.4+ |
| 2005 05 07 | G96 | 0.2+ | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.4− | 2007 11 15 | 704 | 0.0  | 0.6+ |
| 2005 05 07 | G96 | 0.0  | 0.3+ | 2007 10 30 | G96 | 0.2+ | 0.1− | 2007 11 15 | 704 | 0.2+ | 0.2− |
| 2005 05 07 | G96 | 0.2− | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.0  | 2007 11 15 | 704 | 0.2− | 0.4− |
| 2005 05 07 | G96 | 0.0  | 0.5+ | 2007 10 31 | 691 | 0.1+ | 0.0  | 2007 11 17 | G96 | 0.7+ | 0.1− |
| 2005 06 01 | G96 | 0.3+ | 0.3+ | 2007 10 31 | 691 | 0.2− | 0.1+ | 2007 11 17 | G96 | 0.5+ | 0.3− |
| 2005 06 01 | G96 | 0.4− | 0.2+ | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.4− |
| 2005 06 01 | G96 | 0.5− | 0.2+ | 2007 11 03 | 691 | 0.2+ | 0.3+ | 2007 11 17 | G96 | 0.7+ | 0.3− |
| 2005 06 01 | G96 | 0.5− | 0.1− | 2007 11 03 | 691 | 0.5− | 0.0  | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2007 10 06 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.2+ | 2007 12 06 | G96 | 0.5+ | 0.2− |
| 2007 10 06 | 691 | 0.2− | 0.4+ | 2007 11 03 | A55 | 0.1− | 0.2− | 2007 12 06 | G96 | 0.2− | 0.1− |
| 2007 10 06 | 691 | 0.1+ | 0.0  | 2007 11 03 | A55 | 0.1+ | 0.5+ | 2007 12 06 | G96 | 0.2+ | 0.4− |
| 2007 10 10 | 691 | 0.1− | 0.1− | 2007 11 03 | A55 | 0.0  | 0.3+ |            |     |      |      |

**(173095)\* 2007 TV<sub>73</sub> = 2002 CS<sub>49</sub>**

Discovered 2007 Oct. 13 by A. Lowe at RAS Observatory, Mayhill.

Id. G. V. Williams (MPO 128395)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 4.30566    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.29895425 | $\omega$ 156.69239 | +0.94353101   | −0.32439340 |
| <i>a</i> | 2.2151318  | $\Omega$ 222.42330 | +0.28610536   | +0.90019610 |
| <i>e</i> | 0.1830628  | <i>i</i> 5.71842   | +0.16701181   | +0.29054415 |
| <i>P</i> | 3.30       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1987 09 15 | 260 | 0.3+  | 0.0   | 2007 10 11 | 704 | 0.4+  | 0.8+  | 2007 10 20 | 703 | 0.7−  | 0.1+  |
| 1987 09 15 | 260 | 0.4−  | 0.5−  | 2007 10 11 | 699 | 0.4+  | 0.2−  | 2007 10 20 | 703 | 0.0   | 0.2−  |
| 1992 01 28 | 691 | 0.0   | 0.4−  | 2007 10 11 | 704 | (0.7− | 1.5−) | 2007 10 20 | 703 | 0.4−  | 0.3−  |
| 1992 01 28 | 691 | 0.2+  | 0.1−  | 2007 10 11 | 704 | 0.9+  | 1.2+  | 2007 10 20 | 703 | 0.3−  | 0.0   |
| 1992 01 28 | 691 | 0.1−  | 0.2+  | 2007 10 11 | G96 | 0.1−  | 0.7−  | 2007 10 31 | 703 | 0.0   | 0.2−  |
| 2001 12 26 | 608 | 0.3+  | 0.9−  | 2007 10 11 | G96 | 0.2−  | 0.3−  | 2007 10 31 | 703 | 0.2+  | 0.2−  |
| 2001 12 26 | 608 | 0.0   | 0.9+  | 2007 10 11 | 699 | 0.1−  | 0.2−  | 2007 10 31 | 703 | 0.5+  | 0.4+  |
| 2002 01 08 | 644 | 0.4−  | 0.7−  | 2007 10 11 | G96 | 0.4+  | 0.6−  | 2007 10 31 | 703 | 0.1+  | 0.3−  |
| 2002 01 08 | 644 | 0.3−  | 0.2+  | 2007 10 11 | G96 | 0.3−  | 0.4−  | 2007 11 01 | 704 | 0.1−  | 0.6+  |
| 2002 01 08 | 644 | 0.5−  | 0.1−  | 2007 10 11 | G96 | 0.3+  | 0.7−  | 2007 11 01 | 704 | 1.3+  | 0.5−  |
| 2002 01 27 | 644 | 0.7+  | 0.3+  | 2007 10 11 | G96 | 0.1+  | 0.3−  | 2007 11 01 | 704 | 0.4+  | 0.1−  |
| 2002 02 03 | 644 | (0.7+ | 1.6+) | 2007 10 11 | G96 | 0.0   | 0.3−  | 2007 11 01 | 704 | 0.5+  | 0.2+  |
| 2002 02 03 | 608 | 0.6−  | 0.5−  | 2007 10 11 | 699 | 0.3−  | 0.1−  | 2007 11 01 | 704 | 0.6−  | 0.5−  |
| 2002 02 03 | 608 | 0.4−  | 0.1−  | 2007 10 11 | 699 | 0.3+  | 0.2−  | 2007 11 02 | 699 | 0.2+  | 0.1+  |
| 2002 02 03 | 644 | (0.6+ | 2.0+) | 2007 10 12 | 704 | 0.6+  | 0.0   | 2007 11 02 | 699 | 0.0   | 0.5−  |
| 2002 02 03 | 644 | (0.7+ | 1.7+) | 2007 10 12 | 704 | 0.7+  | 0.3+  | 2007 11 02 | 699 | 0.9+  | 0.2+  |
| 2002 02 03 | 608 | 0.2−  | 0.5−  | 2007 10 12 | 704 | 0.3+  | 0.1+  | 2007 11 02 | 699 | 0.6+  | 0.5−  |
| 2002 02 07 | 644 | 0.4+  | 1.4+  | 2007 10 12 | 704 | 0.4+  | 0.5+  | 2007 11 06 | 704 | (2.0+ | 0.6−) |
| 2002 02 07 | 644 | (0.1− | 1.8+) | 2007 10 12 | 704 | 0.2+  | 0.7+  | 2007 11 06 | 704 | (2.4+ | 0.3−) |



2007 DEC. 24

M.P.O. 129563

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 02 07 | 644 | 0.2+  | 1.2+  | 2007 10 12 | B40 | 0.1-  | 0.1-  | 2007 11 06 | 704 | (2.4+ | 0.3-) |
| 2002 02 17 | 644 | 0.3-  | 0.4-  | 2007 10 12 | B40 | 0.6-  | 0.4+  | 2007 11 06 | 704 | (1.6+ | 0.2-) |
| 2002 02 17 | 644 | 0.2+  | 0.2-  | 2007 10 12 | B40 | 0.1-  | 0.4-  | 2007 11 06 | 704 | (1.5+ | 0.1-) |
| 2002 02 17 | 644 | 0.4-  | 0.5+  | 2007 10 13 | G91 | 0.1-  | 0.0   | 2007 11 07 | G96 | 0.3+  | 0.2-  |
| 2002 03 06 | 644 | 0.6+  | 0.3+  | 2007 10 13 | G91 | 0.3-  | 0.1+  | 2007 11 07 | G96 | 0.0   | 0.2-  |
| 2002 03 06 | 644 | 0.3+  | 1.4+  | 2007 10 13 | G91 | 0.1-  | 0.1+  | 2007 11 07 | G96 | 0.4+  | 0.2-  |
| 2002 03 06 | 644 | 0.3-  | 0.7-  | 2007 10 13 | H06 | 0.4+  | 0.2+  | 2007 11 07 | G96 | 0.2+  | 0.1-  |
| 2002 03 14 | 644 | 0.8+  | 0.8-  | 2007 10 13 | H06 | 0.1-  | 0.1-  | 2007 11 15 | 704 | 0.5+  | 1.3+  |
| 2006 05 03 | G96 | 0.0   | 0.1+  | 2007 10 13 | H06 | 0.8-  | 0.5-  | 2007 11 15 | 704 | 0.5-  | 0.1-  |
| 2006 05 03 | G96 | 0.0   | 0.1+  | 2007 10 14 | H06 | 0.1-  | 0.5-  | 2007 11 15 | 704 | 0.8+  | 1.3+  |
| 2006 05 03 | G96 | 0.1-  | 0.3+  | 2007 10 14 | H06 | 0.3+  | 0.2+  | 2007 11 15 | 704 | 0.5+  | 0.8+  |
| 2006 05 03 | G96 | 0.0   | 0.3-  | 2007 10 14 | H06 | 0.1-  | 0.2+  | 2007 11 15 | 704 | 0.4+  | 0.8-  |
| 2006 05 23 | G96 | 0.4+  | 0.2+  | 2007 10 15 | 704 | 0.2+  | 0.3+  | 2007 12 05 | 704 | (1.1- | 1.7+) |
| 2006 05 23 | G96 | 0.1-  | 0.2+  | 2007 10 15 | 704 | 0.6-  | 0.2+  | 2007 12 05 | 704 | 1.2+  | 0.2-  |
| 2006 05 23 | G96 | 0.2+  | 0.3+  | 2007 10 15 | 704 | 0.2-  | 0.7+  | 2007 12 05 | 704 | 0.7-  | 1.5+  |
| 2006 05 23 | G96 | 0.2+  | 0.3+  | 2007 10 15 | 704 | 0.4-  | 0.1+  | 2007 12 05 | 704 | 0.8-  | 1.0+  |
| 2007 10 09 | 704 | 0.4-  | 0.4+  | 2007 10 15 | 704 | 0.8-  | 0.3+  | 2007 12 05 | 703 | 0.3-  | 1.0-  |
| 2007 10 09 | 704 | 0.4+  | 0.1+  | 2007 10 15 | E10 | 0.2-  | 0.9-  | 2007 12 05 | 703 | 0.5-  | 0.4+  |
| 2007 10 09 | 704 | 0.0   | 0.4+  | 2007 10 15 | E10 | 0.4-  | 0.8-  | 2007 12 05 | 704 | (1.6- | 1.9+) |
| 2007 10 09 | 699 | 1.1+  | 0.3-  | 2007 10 16 | G91 | 0.2-  | 0.0   | 2007 12 05 | 703 | 0.7-  | 0.7-  |
| 2007 10 09 | 704 | 0.3-  | 0.3+  | 2007 10 16 | G91 | 0.4-  | 0.0   | 2007 12 05 | 703 | 1.4-  | 0.4-  |
| 2007 10 09 | 704 | 0.4-  | 0.4+  | 2007 10 16 | G91 | 0.3-  | 0.1+  | 2007 12 06 | G96 | 0.3+  | 0.2-  |
| 2007 10 09 | 699 | 0.6+  | 0.3-  | 2007 10 19 | 704 | (2.7- | 0.7+) | 2007 12 06 | G96 | 0.2+  | 0.2-  |
| 2007 10 09 | 699 | 0.2+  | 0.3-  | 2007 10 19 | 704 | (2.8- | 0.2+) | 2007 12 06 | G96 | 0.2+  | 0.3-  |
| 2007 10 09 | 699 | 0.4+  | 0.3-  | 2007 10 19 | 704 | (2.7- | 0.4-) | 2007 12 06 | G96 | 0.0   | 0.2-  |
| 2007 10 11 | 704 | (1.8- | 0.7+) | 2007 10 19 | 704 | (3.1- | 0.0)  |            |     |       |       |
| 2007 10 11 | 704 | 0.6+  | 1.1+  | 2007 10 19 | 704 | (3.3- | 0.1+) |            |     |       |       |

(173096)\* 2007 TA<sub>79</sub> = 1996 RH<sub>19</sub> = 2004 FT<sub>42</sub> = 2005 CY<sub>61</sub>

Discovered 2007 Oct. 5 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 128399)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 258.12933  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.18830839 | $\omega$ | 189.87022 | -0.79640644 |          | -0.60456756 |          |
| <i>a</i> | 3.0145531  | $\Omega$ | 312.92068 | +0.55627524 |          | -0.72237790 |          |
| <i>e</i> | 0.0486634  | <i>i</i> | 1.19913   | +0.23726492 |          | -0.33566090 |          |
| <i>P</i> | 5.23       | <i>H</i> | 15.8      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 10 08 | 691 | 0.4+  | 1.8-  | 2004 03 18 | 704 | 1.1+ | 0.1- | 2007 10 05 | 691 | 0.5-  | 0.1+  |
| 1991 10 08 | 691 | 0.1+  | 0.3+  | 2004 03 18 | 704 | 1.2+ | 1.2+ | 2007 10 05 | 691 | 0.8-  | 0.1-  |
| 1996 09 05 | 691 | 0.1+  | 0.5-  | 2004 03 18 | 704 | 0.7+ | 1.0+ | 2007 10 09 | 691 | 0.8-  | 0.5+  |
| 1996 09 05 | 691 | 0.0   | 0.4-  | 2004 03 19 | 644 | 0.1+ | 0.3+ | 2007 10 09 | 691 | 0.6-  | 0.5+  |
| 1996 09 05 | 691 | 0.0   | 0.5-  | 2004 03 19 | 644 | 0.4+ | 0.8+ | 2007 10 09 | 691 | 0.1-  | 0.1-  |
| 1996 09 08 | 691 | 0.5+  | 0.2-  | 2004 03 19 | 644 | 0.6- | 0.8+ | 2007 10 21 | 691 | 0.1+  | 0.2+  |
| 1996 09 08 | 691 | 0.6+  | 0.0   | 2004 03 20 | 691 | 0.4+ | 0.1+ | 2007 10 21 | 691 | 0.0   | 0.1-  |
| 1999 03 10 | 691 | 0.5+  | 0.6-  | 2004 03 20 | 691 | 0.5+ | 0.3+ | 2007 10 21 | 691 | 0.1-  | 0.3+  |
| 1999 03 10 | 691 | 0.0   | 0.3+  | 2004 03 20 | 691 | 0.3+ | 0.4+ | 2007 11 07 | G96 | 0.5+  | 0.5-  |
| 1999 03 10 | 691 | 0.3+  | 0.2+  | 2004 05 09 | 291 | 0.8+ | 0.5+ | 2007 11 07 | G96 | 0.8+  | 0.2-  |
| 1999 03 21 | 691 | (4.1- | 4.5-) | 2004 05 09 | 291 | 0.7+ | 0.4+ | 2007 11 07 | G96 | 0.5+  | 0.6-  |
| 1999 03 21 | 691 | 0.3-  | 0.3+  | 2004 05 09 | 291 | 0.6+ | 0.4+ | 2007 11 07 | G96 | 0.4+  | 0.5-  |
| 1999 03 21 | 691 | 0.3-  | 0.1+  | 2005 02 12 | 809 | 0.3+ | 0.6+ | 2007 11 11 | G96 | 0.7+  | 0.3-  |
| 2001 05 23 | 807 | 0.4+  | 0.7+  | 2005 02 12 | 809 | 0.1+ | 0.2+ | 2007 11 11 | G96 | 0.6+  | 0.5-  |
| 2001 05 23 | 807 | 0.0   | 0.0   | 2005 02 12 | 809 | 0.1+ | 0.4+ | 2007 11 11 | G96 | 0.6+  | 0.4-  |
| 2001 08 23 | 691 | 0.1+  | 0.4+  | 2005 02 14 | 809 | 0.0  | 0.7+ | 2007 11 11 | G96 | 0.4+  | 0.5-  |
| 2001 08 23 | 691 | 0.3+  | 0.4+  | 2005 02 14 | 809 | 0.1- | 0.7+ | 2007 11 14 | G96 | 0.6+  | 0.6-  |
| 2001 08 23 | 691 | 0.1-  | 0.5+  | 2005 02 14 | 809 | 0.0  | 0.8+ | 2007 11 14 | G96 | 0.4+  | 0.5-  |
| 2002 11 24 | 644 | 0.6-  | 0.5+  | 2005 02 14 | 809 | 0.0  | 0.7+ | 2007 11 14 | G96 | 0.2+  | 0.3-  |
| 2002 11 24 | 644 | 0.1+  | 0.5+  | 2005 06 14 | G96 | 0.0  | 0.3+ | 2007 11 14 | G96 | 0.6+  | 0.4-  |
| 2002 11 24 | 644 | 0.1-  | 0.4+  | 2005 06 14 | G96 | 0.1- | 0.1- | 2007 11 15 | 704 | (1.9- | 1.3-) |
| 2002 12 28 | 291 | 0.1+  | 0.2+  | 2005 06 14 | G96 | 0.1- | 0.2+ | 2007 11 15 | 704 | 0.6-  | 0.2+  |
| 2002 12 28 | 291 | 0.3+  | 0.1+  | 2005 06 14 | G96 | 0.2+ | 0.8+ | 2007 11 15 | 704 | 0.0   | 0.0   |
| 2002 12 28 | 291 | 0.4+  | 0.2+  | 2007 10 05 | 691 | 0.6- | 0.0  |            |     |       |       |

(173097)\* 2007 TJ<sub>115</sub> = 2000 MX<sub>5</sub> = 2004 CU<sub>60</sub> = 2005 JK<sub>184</sub>

Discovered 2007 Oct. 8 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Doppler (*MPO* 128416)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 54.05368   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.18455733 | $\omega$ | 240.25006 | +0.90963006 |          | +0.38134388 |          |
| <i>a</i> | 3.0552625  | $\Omega$ | 96.90885  | -0.30015377 |          | +0.87753931 |          |
| <i>e</i> | 0.0603882  | <i>i</i> | 9.55404   | -0.28719481 |          | +0.29069160 |          |
| <i>P</i> | 5.34       | <i>H</i> | 15.1      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 06 22 | 691 | 0.0   | 0.2+  | 2006 06 22 | 644 | 0.1+ | 0.4+ | 2007 10 31 | 703 | 0.9- | 0.1- |
| 2000 06 22 | 691 | 0.0   | 0.5+  | 2006 06 22 | 644 | 0.4+ | 0.4+ | 2007 11 07 | 703 | 0.3- | 0.8+ |
| 2000 06 22 | 691 | 0.1+  | 0.2+  | 2006 08 14 | 644 | 0.3- | 0.1- | 2007 11 07 | 703 | 0.0  | 1.5+ |
| 2002 12 10 | 644 | 0.1+  | 0.1+  | 2006 08 14 | 644 | 0.1+ | 0.2+ | 2007 11 07 | 703 | 0.2- | 1.0+ |
| 2002 12 10 | 644 | 0.0   | 0.5+  | 2006 08 14 | 644 | 0.1+ | 0.3+ | 2007 11 07 | 703 | 0.2+ | 0.0  |
| 2002 12 10 | 644 | 0.1+  | 0.0   | 2007 10 08 | 699 | 0.2+ | 0.0  | 2007 11 11 | 704 | 0.5+ | 0.2+ |
| 2004 02 11 | 644 | 0.4+  | 0.6+  | 2007 10 08 | 699 | 0.2- | 0.3+ | 2007 11 11 | 704 | 0.1+ | 0.4+ |
| 2004 02 11 | 644 | 0.4+  | 0.7+  | 2007 10 08 | 699 | 1.0- | 1.3+ | 2007 11 11 | 704 | 0.8+ | 0.7- |
| 2004 02 11 | 644 | 0.1+  | 0.6+  | 2007 10 08 | 699 | 1.4+ | 1.3+ | 2007 11 11 | 704 | 0.2- | 0.1+ |
| 2004 02 15 | 704 | (1.3+ | 1.8+) | 2007 10 10 | 703 | 0.7- | 0.6+ | 2007 11 11 | 704 | 0.4+ | 0.3- |
| 2004 02 15 | 704 | (2.5+ | 0.5+) | 2007 10 10 | 703 | 0.2- | 0.0  | 2007 11 11 | 704 | 0.1- | 0.2+ |
| 2004 02 15 | 704 | (0.5+ | 1.6+) | 2007 10 10 | 703 | 0.8+ | 0.5- | 2007 11 11 | 704 | 1.1+ | 0.6- |
| 2004 02 15 | 704 | 0.4+  | 1.1+  | 2007 10 10 | 703 | 0.9- | 0.5+ | 2007 11 11 | 704 | 0.4+ | 0.4+ |
| 2005 04 17 | G92 | 0.7-  | 0.8+  | 2007 10 16 | 703 | 0.4+ | 0.4- | 2007 11 11 | 704 | 1.3+ | 0.2- |
| 2005 04 17 | G92 | 0.5+  | 0.7+  | 2007 10 16 | 703 | 0.7- | 0.1- | 2007 11 11 | 704 | 0.2+ | 0.3- |
| 2005 04 17 | G92 | 0.6+  | 0.6+  | 2007 10 16 | 703 | 0.8- | 0.5+ | 2007 11 15 | 703 | 0.4- | 0.7- |
| 2005 05 15 | 644 | 0.3+  | 0.4+  | 2007 10 16 | 703 | 0.2+ | 0.1- | 2007 11 15 | 703 | 0.5- | 0.4+ |
| 2005 05 15 | 644 | 0.1+  | 0.4+  | 2007 10 19 | 699 | 0.6+ | 0.2- | 2007 11 15 | 703 | 0.5+ | 0.7+ |
| 2005 05 15 | 644 | 0.4+  | 0.4+  | 2007 10 19 | 699 | 0.9- | 0.2+ | 2007 11 15 | 703 | 0.1- | 0.1+ |
| 2006 06 03 | G96 | 0.0   | 0.3+  | 2007 10 19 | 699 | 0.1+ | 0.5+ | 2007 12 06 | 703 | 0.4- | 0.3- |
| 2006 06 03 | G96 | 0.1-  | 0.0   | 2007 10 19 | 699 | 0.3- | 0.3- | 2007 12 06 | 703 | 0.1- | 0.5- |
| 2006 06 03 | G96 | 0.1-  | 0.1+  | 2007 10 31 | 703 | 1.1- | 0.0  | 2007 12 06 | 703 | 0.2- | 0.2- |
| 2006 06 03 | G96 | 0.3-  | 0.1+  | 2007 10 31 | 703 | 0.0  | 0.2- | 2007 12 06 | 703 | 0.9- | 0.7+ |
| 2006 06 22 | 644 | 0.5+  | 0.2-  | 2007 10 31 | 703 | 0.9- | 0.2+ |            |     |      |      |

(173098)\* 2007 TO<sub>129</sub> = 2002 UU<sub>21</sub>

Discovered 2007 Oct. 6 by Spacewatch at Kitt Peak.

Id. T. B. Spahr (*MPO* 128425)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 64.69264   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.20241120 | $\omega$ | 117.95021 | +0.89427993 |          | +0.44443385 |          |
| <i>a</i> | 2.8728505  | $\Omega$ | 215.73316 | -0.43560407 |          | +0.83770282 |          |
| <i>e</i> | 0.0640509  | <i>i</i> | 5.14417   | -0.10253045 |          | +0.31738390 |          |
| <i>P</i> | 4.87       | <i>H</i> | 15.8      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 291 | 0.0   | 0.1+  | 2006 06 20 | 691 | 0.1+ | 0.6+ | 2007 11 05 | 704 | 1.0+ | 0.3+ |
| 2002 10 30 | 291 | 0.2+  | 0.3+  | 2006 06 20 | 691 | 0.0  | 0.2+ | 2007 11 05 | 704 | 0.7+ | 0.2- |
| 2002 10 30 | 291 | 0.2+  | 0.0   | 2006 07 21 | 644 | 0.2- | 0.1- | 2007 11 05 | 704 | 0.7- | 0.7+ |
| 2002 10 31 | 699 | 1.3-  | 0.4+  | 2006 07 21 | 644 | 0.2+ | 0.5+ | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2002 10 31 | 699 | 1.3-  | 1.3+  | 2006 07 21 | 644 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.1- |
| 2002 10 31 | 699 | (0.6- | 2.2+) | 2007 09 10 | G96 | 0.3+ | 0.2- | 2007 11 05 | G96 | 0.5+ | 0.1- |
| 2002 10 31 | 699 | 0.6-  | 1.2+  | 2007 09 10 | G96 | 0.3+ | 0.3- | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2004 01 16 | 644 | 0.1+  | 0.1-  | 2007 09 10 | G96 | 0.1+ | 0.3+ | 2007 11 07 | 704 | 0.8+ | 0.1- |
| 2004 01 16 | 644 | 0.1+  | 0.1+  | 2007 09 10 | G96 | 0.1+ | 0.3- | 2007 11 07 | 704 | 0.1+ | 0.7+ |
| 2004 01 16 | 644 | 0.4+  | 0.4+  | 2007 10 06 | 691 | 0.6- | 0.5+ | 2007 11 07 | 704 | 0.3- | 1.2+ |
| 2005 03 11 | G96 | 0.5-  | 0.0   | 2007 10 06 | 691 | 0.2- | 0.0  | 2007 11 07 | 703 | 0.4+ | 0.2- |
| 2005 03 11 | G96 | 0.6-  | 0.1-  | 2007 10 06 | 691 | 0.5- | 0.0  | 2007 11 07 | 703 | 0.3+ | 0.3+ |
| 2005 03 11 | G96 | 0.2-  | 0.2-  | 2007 10 10 | 691 | 0.0  | 0.1- | 2007 11 07 | 703 | 0.8- | 0.7+ |
| 2005 03 11 | G96 | 0.0   | 0.2+  | 2007 10 10 | 691 | 0.3- | 0.3+ | 2007 11 07 | 703 | 1.3- | 0.4+ |
| 2005 04 04 | 691 | 0.3+  | 0.6+  | 2007 10 10 | 691 | 0.2- | 0.1- | 2007 11 14 | 704 | 0.3+ | 0.1- |
| 2005 04 04 | 691 | 0.4+  | 0.7+  | 2007 10 16 | G96 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 0.1+ | 0.2- |
| 2005 04 04 | 691 | 0.3+  | 0.6+  | 2007 10 16 | G96 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 0.5+ | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 12 | G96 | 0.2− | 0.1− | 2007 10 16 | G96 | 0.1− | 0.3+ | 2007 11 14 | 704 | 0.7− | 0.8− |
| 2005 05 12 | G96 | 0.0  | 0.1+ | 2007 10 20 | 703 | 0.6+ | 0.9− | 2007 11 17 | 703 | 0.4− | 0.2+ |
| 2005 05 12 | G96 | 0.3− | 0.4+ | 2007 10 20 | 703 | 0.1− | 0.6− | 2007 11 17 | 703 | 0.8+ | 0.2− |
| 2005 05 12 | G96 | 0.7− | 0.1− | 2007 10 20 | 703 | 0.4− | 0.1+ | 2007 11 17 | 703 | 0.2+ | 0.2+ |
| 2006 05 30 | G96 | 0.1+ | 0.3− | 2007 10 20 | 703 | 0.4+ | 0.4+ | 2007 11 17 | 703 | 0.7+ | 0.2− |
| 2006 05 30 | G96 | 0.5− | 0.4− | 2007 10 31 | 691 | 0.2+ | 0.4− | 2007 11 20 | 291 | 0.1+ | 0.2+ |
| 2006 05 30 | G96 | 0.5− | 0.3− | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 20 | 291 | 0.2+ | 0.0  |
| 2006 05 30 | G96 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 11 20 | 291 | 0.1− | 0.1− |
| 2006 06 20 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 704 | 0.1− | 0.0  |            |     |      |      |

**(173099)\* 2007 TR<sub>149</sub>**

Discovered 2007 Oct. 8 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.18782   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22820089 | $\omega$ | 112.71147 | +0.92974365 | +0.30374931 |
| <i>a</i> | 2.6521077  | $\Omega$ | 230.27062 | −0.34763249 | +0.91042066 |
| <i>e</i> | 0.1913503  | <i>i</i> | 15.70053  | +0.12136063 | +0.28083906 |
| <i>P</i> | 4.32       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 09 19 | 699 | 0.0   | 0.2−  | 2007 09 15 | G96 | 0.1+  | 0.3−  | 2007 11 04 | 691 | 0.4−  | 0.2−  |
| 1998 09 19 | 699 | 0.2−  | 0.7−  | 2007 09 15 | G96 | 0.1+  | 0.2−  | 2007 11 04 | 691 | 0.4−  | 0.1−  |
| 1998 09 19 | 699 | 0.7+  | 0.5−  | 2007 09 15 | G96 | 0.1+  | 0.2−  | 2007 11 05 | H07 | 0.8−  | 1.3+  |
| 1998 10 18 | 699 | 0.3+  | 1.6+  | 2007 09 15 | G96 | 0.3−  | 0.2−  | 2007 11 05 | H07 | 0.9−  | 1.2+  |
| 1998 10 18 | 699 | 0.1−  | 0.8+  | 2007 09 27 | G96 | 0.2−  | 0.0   | 2007 11 05 | H07 | 0.2−  | 1.3+  |
| 1998 10 18 | 699 | 0.4−  | 0.0   | 2007 09 27 | G96 | 0.2−  | 0.3−  | 2007 11 08 | 691 | 0.1−  | 0.2−  |
| 2002 06 08 | 644 | 0.1−  | 0.2−  | 2007 09 27 | G96 | 0.1+  | 0.3−  | 2007 11 08 | 691 | 0.4−  | 0.1−  |
| 2002 06 08 | 644 | 0.2−  | 0.2−  | 2007 09 27 | G96 | 0.4+  | 0.3−  | 2007 11 08 | 691 | 0.6+  | 0.5−  |
| 2002 06 08 | 644 | 0.6−  | 0.1−  | 2007 10 08 | 704 | 0.4−  | 0.2+  | 2007 11 18 | 699 | 0.7+  | 0.9−  |
| 2002 06 30 | 644 | 0.2+  | 0.2+  | 2007 10 08 | 704 | (1.5+ | 0.8+) | 2007 11 18 | 699 | 0.7+  | 0.4−  |
| 2002 06 30 | 644 | 0.2+  | 0.0   | 2007 10 08 | 704 | 0.1+  | 1.4+  | 2007 11 18 | 699 | 0.2+  | 0.8−  |
| 2002 06 30 | 644 | 0.1−  | 0.1+  | 2007 10 08 | 704 | 0.5+  | 0.7+  | 2007 11 18 | 699 | 1.2+  | 0.1+  |
| 2002 07 08 | 644 | 0.5+  | 0.5−  | 2007 10 11 | 704 | 0.9+  | 0.6−  | 2007 11 29 | 704 | 0.1−  | 0.2−  |
| 2002 07 08 | 644 | 0.3−  | 0.1−  | 2007 10 11 | 704 | 0.6+  | 0.2−  | 2007 11 29 | 704 | 0.1−  | 0.7+  |
| 2002 07 08 | 644 | 0.2−  | 0.1−  | 2007 10 11 | 704 | 0.0   | 0.1+  | 2007 11 29 | 704 | 0.5+  | 0.1−  |
| 2002 07 18 | 644 | 0.4−  | 0.0   | 2007 10 19 | 699 | 0.5+  | 0.7−  | 2007 11 29 | 704 | 0.1+  | 0.4+  |
| 2002 07 18 | 644 | 0.2−  | 0.2+  | 2007 10 19 | 699 | (0.7+ | 1.7−) | 2007 12 03 | 704 | 0.6−  | 0.4+  |
| 2002 07 18 | 644 | 0.4−  | 0.1+  | 2007 10 19 | 699 | 0.4+  | 0.8+  | 2007 12 03 | 704 | 0.6−  | 0.2−  |
| 2006 06 14 | 644 | 0.2+  | 0.2+  | 2007 10 19 | 699 | 0.7+  | 0.1+  | 2007 12 03 | 704 | 0.7−  | 0.1−  |
| 2006 06 14 | 644 | 0.2−  | 0.3+  | 2007 11 01 | D35 | 0.0   | 0.1−  | 2007 12 03 | 704 | 0.5−  | 0.2+  |
| 2006 06 14 | 644 | 0.7+  | 0.7+  | 2007 11 01 | D35 | 0.2−  | 0.1+  | 2007 12 03 | 704 | 0.3−  | 0.6+  |
| 2006 07 26 | 644 | 0.1+  | 0.0   | 2007 11 01 | D35 | 0.5+  | 0.0   | 2007 12 04 | 704 | 0.2−  | 0.6+  |
| 2006 07 26 | 644 | 0.1−  | 0.2+  | 2007 11 02 | 106 | 0.3−  | 1.4−  | 2007 12 04 | 704 | 0.3+  | 0.3+  |
| 2006 07 26 | 644 | 0.0   | 0.1−  | 2007 11 02 | 106 | 0.2−  | 0.3+  | 2007 12 04 | 704 | 0.4+  | 0.3−  |
| 2006 08 12 | 644 | 0.0   | 0.2+  | 2007 11 02 | 106 | 0.4+  | 0.0   | 2007 12 04 | 703 | (1.1+ | 4.4+) |
| 2006 08 12 | 644 | 0.1−  | 0.1+  | 2007 11 02 | 106 | 0.9−  | 0.7−  | 2007 12 04 | 703 | 0.7−  | 0.0   |
| 2006 08 12 | 644 | 0.3+  | 0.0   | 2007 11 02 | 106 | 0.2−  | 0.5−  | 2007 12 04 | 704 | 0.2+  | 0.2+  |
| 2007 09 08 | 703 | (2.3+ | 0.1+) | 2007 11 02 | 106 | 0.6+  | 0.0   | 2007 12 04 | 703 | 0.7−  | 1.3−  |
| 2007 09 08 | 703 | 0.2+  | 0.2+  | 2007 11 02 | 106 | 0.5+  | 0.4−  | 2007 12 04 | 704 | 0.4+  | 1.3+  |
| 2007 09 08 | 703 | 1.1+  | 0.5−  | 2007 11 02 | 106 | 0.2−  | 0.8−  |            |     |       |       |
| 2007 09 08 | 703 | 0.6−  | 0.2−  | 2007 11 04 | 691 | 0.0   | 0.1−  |            |     |       |       |

**(173100)\* 2007 TF<sub>263</sub> = 2000 VN<sub>19</sub>**

Discovered 2007 Oct. 10 by Spacewatch at Kitt Peak.

Id. T. B. Spahr (*MPO* 128504)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 44.54148   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28236232 | $\omega$ | 133.10072 | +0.96742009 | +0.24832629 |
| <i>a</i> | 2.3010792  | $\Omega$ | 212.61216 | −0.25062775 | +0.91176183 |
| <i>e</i> | 0.1145977  | <i>i</i> | 5.25051   | −0.03583424 | +0.32714587 |
| <i>P</i> | 3.49       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |       |            |     |       |       |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|-------|-------|
| 2000 11 01 | 704 | 0.6+ | 0.1− | 2007 10 06 | 691 | (0.0 | 2.9−) | 2007 11 07 | 703 | (0.1+ | 1.5−) |
| 2000 11 01 | 704 | 0.5+ | 0.2+ | 2007 10 10 | 691 | 0.3− | 0.1−  | 2007 11 07 | 703 | 1.3+  | 0.7−  |
| 2000 11 01 | 704 | 0.4− | 0.3− | 2007 10 10 | 691 | 0.3− | 0.1+  | 2007 11 07 | 703 | 0.3+  | 0.7+  |
| 2000 11 02 | 704 | 0.3− | 0.2+ | 2007 10 10 | 691 | 0.4− | 0.2−  | 2007 11 07 | 703 | 0.1−  | 0.2−  |
| 2000 11 02 | 704 | 0.1− | 0.7+ | 2007 10 14 | 691 | 0.5− | 0.1−  | 2007 11 09 | G96 | 0.2+  | 0.2−  |
| 2000 11 02 | 704 | 0.2+ | 0.6+ | 2007 10 14 | 691 | 0.3− | 0.6−  | 2007 11 09 | G96 | 0.2−  | 0.3−  |
| 2000 11 02 | 704 | 0.7− | 0.8− | 2007 10 14 | 691 | 0.2− | 0.1−  | 2007 11 09 | G96 | 0.0   | 0.3−  |
| 2003 07 06 | 691 | 0.0  | 0.0  | 2007 10 15 | 703 | 0.2− | 0.4+  | 2007 11 09 | G96 | 0.0   | 0.2−  |
| 2003 07 06 | 691 | 0.1− | 0.1− | 2007 10 15 | 703 | 0.0  | 0.2+  | 2007 11 14 | 704 | 0.3−  | 1.3+  |
| 2003 07 06 | 691 | 0.0  | 0.1+ | 2007 10 15 | 703 | 0.3+ | 0.3−  | 2007 11 14 | 704 | 0.2+  | 0.5+  |
| 2003 07 30 | 599 | 0.2− | 0.1+ | 2007 10 15 | 703 | 0.0  | 0.1+  | 2007 11 14 | 704 | 0.6+  | 1.2+  |
| 2003 07 30 | 599 | 0.1− | 0.2+ | 2007 10 18 | 691 | 0.1− | 0.4−  | 2007 11 14 | 704 | 0.3+  | 1.4+  |
| 2003 07 30 | 599 | 0.8+ | 0.1+ | 2007 10 18 | 691 | 0.3+ | 0.3−  | 2007 11 14 | 704 | 0.4+  | 0.9+  |
| 2006 04 19 | G96 | 0.6− | 0.2− | 2007 10 18 | 691 | 0.4− | 0.3−  | 2007 11 17 | 703 | 0.6+  | 0.8+  |
| 2006 04 19 | G96 | 0.6− | 0.0  | 2007 10 20 | 703 | 0.8+ | 0.5+  | 2007 11 17 | 703 | 0.7−  | 0.0   |
| 2006 04 19 | G96 | 0.1− | 0.2+ | 2007 10 20 | 703 | 0.0  | 1.2+  | 2007 11 17 | 703 | 0.3+  | 0.6−  |
| 2006 04 19 | G96 | 0.4− | 0.2+ | 2007 10 20 | 703 | 0.3+ | 0.8+  | 2007 11 17 | 703 | 1.2+  | 0.3−  |
| 2006 05 05 | 691 | 0.2+ | 0.5+ | 2007 10 20 | 703 | 0.6+ | 0.3+  | 2007 12 05 | 704 | 0.4+  | 0.0   |
| 2006 05 05 | 691 | 0.4+ | 0.3+ | 2007 10 30 | 691 | 0.3− | 0.4+  | 2007 12 05 | 703 | 0.5+  | 0.4−  |
| 2006 05 05 | 691 | 0.0  | 0.1− | 2007 10 30 | 691 | 0.5− | 0.1+  | 2007 12 05 | 704 | 0.8+  | 0.0   |
| 2007 09 12 | G96 | 0.7+ | 0.0  | 2007 10 30 | 691 | 0.3− | 0.2+  | 2007 12 05 | 703 | 0.4+  | 0.6+  |
| 2007 09 12 | G96 | 0.3+ | 0.4− | 2007 11 05 | 704 | 0.9+ | 0.2+  | 2007 12 05 | 703 | 0.3+  | 0.2+  |
| 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 11 05 | 704 | 0.0  | 0.0   | 2007 12 05 | 704 | 0.3+  | 0.5+  |
| 2007 09 12 | G96 | 0.5+ | 0.2− | 2007 11 05 | 704 | 0.2+ | 0.5−  | 2007 12 05 | 703 | 1.2+  | 0.5+  |
| 2007 10 06 | 691 | 0.2− | 0.2− | 2007 11 05 | 704 | 0.7+ | 0.1+  | 2007 12 05 | 704 | 0.6+  | 0.3+  |
| 2007 10 06 | 691 | 0.2− | 0.0  | 2007 11 05 | 704 | 0.0  | 0.1+  | 2007 12 05 | 704 | 0.2+  | 0.2+  |

**(173101)\* 2007 TV<sub>320</sub> = 2004 CY<sub>61</sub>**

Discovered 2007 Oct. 13 by the Catalina Sky Survey.

Id. G. V. Williams (*MPO* 128516)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 4.83226    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20343279 | $\omega$ | 294.35547 | +0.76819702 | −0.62811989 |
| <i>a</i> | 2.8632246  | $\Omega$ | 104.79837 | +0.62396368 | +0.69124727 |
| <i>e</i> | 0.0750912  | <i>i</i> | 7.35973   | +0.14332713 | +0.35727107 |
| <i>P</i> | 4.84       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 09 | 699 | 0.2+  | 0.3−  | 2007 10 10 | 699 | 1.1− | 0.6− | 2007 11 07 | 703 | 0.4−  | 0.9+  |
| 2002 10 09 | 699 | 1.2+  | 0.1−  | 2007 10 13 | 703 | 0.9− | 0.4+ | 2007 11 07 | 703 | 0.1−  | 0.5+  |
| 2002 10 09 | 699 | 0.9+  | 0.4+  | 2007 10 13 | 703 | 0.3+ | 0.6− | 2007 11 11 | 704 | 1.0+  | 0.1−  |
| 2002 10 09 | 699 | 0.5−  | 0.7+  | 2007 10 13 | 703 | 0.9− | 1.2+ | 2007 11 11 | 704 | 0.5+  | 0.3+  |
| 2002 11 07 | 645 | 0.0   | 0.2−  | 2007 10 13 | 703 | 0.5− | 0.0  | 2007 11 11 | 704 | 1.0+  | 0.0   |
| 2002 11 07 | 645 | 0.0   | 0.2−  | 2007 10 15 | G96 | 0.1+ | 0.3− | 2007 11 11 | 704 | 0.8+  | 0.1−  |
| 2004 02 11 | 691 | 0.3+  | 0.4+  | 2007 10 15 | G96 | 0.1+ | 0.0  | 2007 11 15 | 699 | 1.2−  | 0.5+  |
| 2004 02 11 | 691 | 0.5+  | 0.2+  | 2007 10 15 | G96 | 0.2+ | 0.1− | 2007 11 15 | 699 | 0.7−  | 0.4−  |
| 2004 02 11 | 691 | 0.2+  | 0.3−  | 2007 10 15 | G96 | 0.2+ | 0.1+ | 2007 11 15 | 699 | 1.3+  | 1.5−  |
| 2004 02 15 | 704 | 0.9+  | 0.2−  | 2007 10 15 | 291 | 0.5− | 0.1+ | 2007 11 15 | 699 | 1.3+  | 0.4+  |
| 2004 02 15 | 704 | 0.2+  | 0.1−  | 2007 10 15 | 291 | 0.5− | 0.0  | 2007 11 17 | G96 | 0.5+  | 0.1−  |
| 2004 02 15 | 704 | 0.5+  | 0.8+  | 2007 10 15 | 291 | 0.5− | 0.1+ | 2007 11 17 | G96 | 0.2+  | 0.2−  |
| 2004 03 17 | 645 | 0.1−  | 0.0   | 2007 10 20 | G96 | 0.2+ | 0.5− | 2007 11 17 | G96 | 0.2+  | 0.2−  |
| 2004 03 17 | 645 | 0.1−  | 0.0   | 2007 10 20 | G96 | 0.4+ | 0.5− | 2007 11 17 | G96 | 0.1−  | 0.1−  |
| 2004 04 16 | 645 | 0.1−  | 0.1+  | 2007 10 20 | G96 | 0.6+ | 0.6− | 2007 11 20 | 703 | (0.7+ | 1.7+) |
| 2004 04 16 | 645 | 0.1−  | 0.1−  | 2007 10 20 | G96 | 0.4+ | 0.6− | 2007 11 20 | 703 | 1.3+  | 0.1+  |
| 2006 06 21 | 691 | 0.1−  | 0.0   | 2007 11 02 | D29 | 0.0  | 0.6− | 2007 11 20 | 703 | 0.8−  | 0.3+  |
| 2006 06 21 | 691 | 0.2−  | 0.6+  | 2007 11 02 | D29 | 0.1+ | 0.5− | 2007 11 20 | 703 | 0.2+  | 1.3+  |
| 2006 06 21 | 691 | 0.3+  | 0.1−  | 2007 11 02 | D29 | 0.1+ | 0.6+ | 2007 12 06 | 703 | 1.2−  | 0.6+  |
| 2007 10 10 | 699 | (3.5+ | 1.4−) | 2007 11 02 | D29 | 0.6+ | 0.1− | 2007 12 06 | 703 | 0.8−  | 0.8+  |
| 2007 10 10 | 699 | 0.2+  | 0.4+  | 2007 11 07 | 703 | 0.4− | 1.1+ | 2007 12 06 | 703 | 0.0   | 1.4+  |
| 2007 10 10 | 699 | 0.2+  | 0.6+  | 2007 11 07 | 703 | 0.4+ | 0.6+ | 2007 12 06 | 703 | 0.1−  | 0.9+  |

2007 DEC. 24

M.P.O. 129565

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 209.51334  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19457552 | $\omega$ 155.13512 | -0.99480741   | -0.03656840 |
| <i>a</i> | 2.9494696  | $\Omega$ 23.36935  | -0.02640620   | -0.80852212 |
| <i>e</i> | 0.0705602  | <i>i</i> 13.85397  | +0.09829000   | -0.58732847 |
| <i>P</i> | 5.07       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 10 09 | 691 | 0.0   | 0.2+  | 2003 12 29 | 703 | 0.2+  | 0.5+  | 2007 09 12 | G96 | 0.1- | 0.3- |
| 1997 10 09 | 691 | 0.6+  | 0.0   | 2003 12 29 | 703 | 0.6+  | 0.4+  | 2007 10 07 | G96 | 0.0  | 0.5- |
| 1997 10 09 | 691 | 0.1+  | 0.3+  | 2003 12 29 | 703 | 0.9-  | 0.7+  | 2007 10 07 | G96 | 0.2+ | 0.4- |
| 1997 11 23 | 691 | 0.3-  | 0.7-  | 2005 03 11 | G96 | 0.2-  | 0.1-  | 2007 10 07 | G96 | 0.3+ | 0.4- |
| 1997 11 23 | 691 | 0.3-  | 0.4-  | 2005 03 11 | G96 | 0.3-  | 0.1-  | 2007 10 07 | G96 | 0.0  | 0.3- |
| 1997 11 23 | 691 | 0.3-  | 0.4-  | 2005 03 11 | G96 | 0.3-  | 0.1-  | 2007 10 13 | 703 | 0.1+ | 0.6- |
| 2000 04 25 | 699 | 0.1+  | 0.1-  | 2005 03 11 | G96 | 1.0-  | 0.2-  | 2007 10 13 | 703 | 0.0  | 0.9- |
| 2000 04 25 | 699 | 0.5+  | 0.3+  | 2005 04 13 | 691 | 0.4+  | 0.4+  | 2007 10 13 | 703 | 1.2+ | 0.2- |
| 2000 04 25 | 699 | 0.2+  | 0.8+  | 2005 04 13 | 691 | 0.3+  | 0.4+  | 2007 10 13 | 703 | 0.1+ | 0.9+ |
| 2000 04 25 | 699 | 0.2-  | 0.2+  | 2005 04 13 | 691 | 0.4+  | 0.4+  | 2007 10 18 | G96 | 0.6- | 0.0  |
| 2000 05 24 | 699 | 0.6-  | 0.7-  | 2005 05 01 | 644 | 0.2-  | 0.2+  | 2007 10 18 | G96 | 0.2- | 0.1- |
| 2000 05 24 | 699 | 0.5+  | 0.2-  | 2005 05 01 | 644 | 0.1-  | 0.4+  | 2007 10 18 | G96 | 0.5- | 0.1+ |
| 2000 05 24 | 699 | 0.4+  | 0.5-  | 2005 05 01 | 644 | 0.1+  | 0.1+  | 2007 10 18 | G96 | 0.3- | 0.1+ |
| 2000 05 24 | 699 | 0.1-  | 0.4+  | 2005 05 06 | 703 | 1.1-  | 0.5-  | 2007 11 04 | 691 | 0.3- | 0.6+ |
| 2002 10 10 | 644 | 0.4-  | 0.6+  | 2005 05 06 | 703 | 0.4+  | 0.4-  | 2007 11 04 | 691 | 0.3- | 0.3+ |
| 2002 10 10 | 644 | 0.3-  | 1.5+  | 2005 05 06 | 703 | (2.9+ | 1.0-) | 2007 11 04 | 691 | 0.3- | 0.4+ |
| 2002 10 10 | 644 | 0.1-  | 0.5+  | 2005 05 06 | 703 | 0.2-  | 0.8-  | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2002 10 10 | 644 | 0.2-  | 1.2+  | 2007 09 12 | G96 | 0.0   | 0.4-  | 2007 11 05 | G96 | 0.1- | 0.1- |
| 2002 10 10 | 644 | 1.5+  | 0.7+  | 2007 09 12 | G96 | 0.1-  | 0.3-  | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2002 10 10 | 644 | (0.3- | 1.8+) | 2007 09 12 | G96 | 0.5+  | 0.1-  | 2007 11 05 | G96 | 0.4- | 0.1- |
| 2002 10 11 | 291 | 0.1-  | 0.3+  | 2007 09 12 | G96 | 0.3+  | 0.4-  | 2007 12 15 | G96 | 0.7- | 0.0  |
| 2002 10 11 | 291 | 0.2+  | 0.2+  | 2007 09 12 | G96 | 0.2-  | 0.1+  | 2007 12 15 | G96 | 0.6+ | 0.2- |
| 2002 10 11 | 291 | 0.1+  | 0.2+  | 2007 09 12 | G96 | 0.5-  | 0.1-  | 2007 12 15 | G96 | 0.1+ | 0.2- |
| 2003 12 29 | 703 | 0.4+  | 0.8-  | 2007 09 12 | G96 | 0.3-  | 0.1-  | 2007 12 15 | G96 | 0.3+ | 0.2+ |

(173103)\* 2007 UF<sub>38</sub> = 2171 P-L = 2003 YU<sub>95</sub>

Discovered 2007 Oct. 19 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 128561)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.68403   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23190823 | $\omega$ 143.00114 | +0.94044365   | -0.33527584 |
| <i>a</i> | 2.6237671  | $\Omega$ 236.68002 | +0.29358776   | +0.88433067 |
| <i>e</i> | 0.1139979  | <i>i</i> 3.85480   | +0.17138251   | +0.32488363 |
| <i>P</i> | 4.25       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1960 09 24 | 675 | 0.7- | 0.1- | 2007 10 19 | 691 | 0.2- | 0.1- | 2007 11 15 | 704 | 0.5-  | 0.2+  |
| 1960 09 24 | 675 | 0.5- | 0.0  | 2007 10 19 | 699 | 0.8+ | 0.2+ | 2007 11 15 | 704 | 0.0   | 0.1+  |
| 1960 09 26 | 675 | 0.8+ | 0.7+ | 2007 10 19 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.4-  | 0.9+  |
| 1960 09 26 | 675 | 0.2+ | 0.2- | 2007 10 20 | 703 | 1.1+ | 0.5- | 2007 11 15 | 704 | 0.2-  | 0.5+  |
| 1960 09 28 | 675 | 0.3+ | 0.3- | 2007 10 20 | 703 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.3-  | 0.4+  |
| 1960 09 28 | 675 | 0.3- | 0.8+ | 2007 10 20 | 703 | 0.2+ | 0.1+ | 2007 12 03 | 703 | 0.7-  | 0.3-  |
| 1960 09 29 | 675 | 0.2+ | 1.2+ | 2007 10 20 | 703 | 0.3+ | 0.1+ | 2007 12 03 | 703 | 0.3-  | 1.2+  |
| 1960 09 29 | 675 | 1.1- | 0.8+ | 2007 10 30 | 691 | 0.2- | 0.0  | 2007 12 03 | 703 | 1.5-  | 0.6-  |
| 2001 03 31 | 691 | 0.4- | 0.2+ | 2007 10 30 | 691 | 0.2- | 0.1+ | 2007 12 03 | 703 | (2.2- | 1.7-) |
| 2001 03 31 | 691 | 0.1- | 0.2+ | 2007 10 30 | 691 | 0.2- | 0.1+ | 2007 12 05 | 699 | 0.0   | 0.0   |
| 2001 03 31 | 691 | 0.3- | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.3- | 2007 12 05 | 699 | (1.8+ | 0.1-) |
| 2002 07 09 | 644 | 0.3+ | 0.9+ | 2007 10 30 | G96 | 0.1+ | 0.4- | 2007 12 05 | 699 | (1.8+ | 0.7-) |
| 2002 07 09 | 644 | 0.5+ | 0.8+ | 2007 10 30 | G96 | 0.0  | 0.3- | 2007 12 05 | 699 | 0.5-  | 0.2+  |
| 2002 07 09 | 644 | 0.3+ | 0.6+ | 2007 10 30 | G96 | 0.1+ | 0.4- | 2007 12 05 | 704 | 0.0   | 0.4+  |
| 2003 12 19 | 704 | 0.1+ | 0.0  | 2007 11 02 | D29 | 0.5+ | 0.1+ | 2007 12 05 | 704 | 0.4+  | 0.3-  |
| 2003 12 19 | 704 | 0.4+ | 0.6- | 2007 11 02 | D29 | 0.5+ | 0.3- | 2007 12 05 | 704 | 0.3-  | 0.0   |
| 2003 12 19 | 704 | 0.4+ | 0.2+ | 2007 11 02 | D29 | 0.3+ | 0.4- | 2007 12 05 | 704 | 0.2-  | 0.0   |
| 2003 12 19 | 704 | 0.8+ | 0.3- | 2007 11 02 | D29 | 0.5+ | 0.4- | 2007 12 05 | 704 | 0.2-  | 0.5+  |
| 2003 12 19 | 704 | 0.1- | 0.4- | 2007 11 06 | 704 | 0.6- | 0.3- | 2007 12 05 | 106 | 0.4+  | 0.9-  |
| 2003 12 23 | 704 | 0.2- | 0.2+ | 2007 11 06 | 704 | 0.7+ | 0.1- | 2007 12 05 | 106 | 1.1-  | 0.4-  |
| 2003 12 23 | 704 | 0.0  | 0.1- | 2007 11 06 | 704 | 0.2+ | 0.0  | 2007 12 05 | 106 | 0.2+  | 1.2-  |
| 2003 12 23 | 704 | 0.9+ | 0.6- | 2007 11 06 | 704 | 1.2+ | 1.0- | 2007 12 05 | 106 | 0.7-  | 0.6+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 17 | 691 | 0.4+ | 0.4+ | 2007 11 06 | 704 | 0.4+ | 0.5+ | 2007 12 06 | 691 | 0.1- | 0.2+ |
| 2005 03 17 | 691 | 0.4+ | 0.4+ | 2007 11 07 | 704 | 0.4+ | 0.2+ | 2007 12 06 | 691 | 0.2- | 0.1+ |
| 2005 03 17 | 691 | 0.3+ | 0.3+ | 2007 11 07 | 704 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.6- | 0.2+ |
| 2005 04 12 | G96 | 0.2- | 0.0  | 2007 11 07 | 703 | 0.3+ | 1.1+ | 2007 12 13 | A77 | 0.3+ | 0.1- |
| 2005 04 12 | G96 | 0.0  | 0.6- | 2007 11 07 | 704 | 0.1+ | 0.5+ | 2007 12 13 | A77 | 0.4+ | 0.4+ |
| 2005 04 12 | G96 | 0.1- | 0.1- | 2007 11 07 | 704 | 0.3+ | 0.1+ | 2007 12 13 | A77 | 0.1+ | 0.1- |
| 2005 04 12 | G96 | 0.3- | 0.0  | 2007 11 07 | 704 | 0.3+ | 0.1- | 2007 12 14 | 704 | 0.2- | 0.4+ |
| 2007 10 09 | D29 | 0.3+ | 0.0  | 2007 11 07 | 704 | 0.2+ | 0.4+ | 2007 12 14 | 704 | 0.0  | 0.3- |
| 2007 10 09 | D29 | 0.4+ | 0.3- | 2007 11 07 | 703 | 0.7+ | 0.3+ | 2007 12 14 | 704 | 0.8- | 1.1+ |
| 2007 10 09 | D29 | 0.3+ | 0.3- | 2007 11 07 | 704 | 0.3- | 0.2+ | 2007 12 15 | G96 | 0.4+ | 0.2+ |
| 2007 10 09 | D29 | 0.3- | 0.2- | 2007 11 07 | 704 | 0.1- | 0.0  | 2007 12 15 | G96 | 0.0  | 0.2- |
| 2007 10 09 | D29 | 0.2- | 0.1+ | 2007 11 07 | 703 | 0.5+ | 0.8+ | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2007 10 09 | D29 | 0.1+ | 0.4- | 2007 11 07 | 704 | 0.6- | 0.9+ | 2007 12 15 | G96 | 0.7- | 0.6- |
| 2007 10 09 | D29 | 0.4+ | 0.6- | 2007 11 07 | 704 | 0.5+ | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.1+ |
| 2007 10 09 | D29 | 0.9+ | 0.4- | 2007 11 07 | 703 | 0.9+ | 0.3+ | 2007 12 15 | G96 | 0.2- | 0.4- |
| 2007 10 19 | 699 | 0.6+ | 0.3- | 2007 11 11 | G96 | 0.0  | 0.2- | 2007 12 15 | G96 | 0.5+ | 0.2+ |
| 2007 10 19 | 699 | 0.0  | 0.8+ | 2007 11 11 | G96 | 0.1+ | 0.2- | 2007 12 15 | G96 | 0.3- | 0.3- |
| 2007 10 19 | 691 | 0.5- | 0.0  | 2007 11 11 | G96 | 0.1+ | 0.2- |            |     |      |      |
| 2007 10 19 | 699 | 0.7- | 1.1- | 2007 11 11 | G96 | 0.1+ | 0.3- |            |     |      |      |

(173104)\* 2007 UY<sub>114</sub> = 1978 WA<sub>3</sub>

Discovered 2007 Oct. 31 by Spacewatch at Kitt Peak.

Id. G. V. Williams (MPO 128579)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.16768  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30531053 | $\omega$ 172.52696 | +0.55141810   | -0.83032525 |
| <i>a</i> | 2.1842794  | $\Omega$ 243.97632 | +0.76067442   | +0.54011913 |
| <i>e</i> | 0.1036441  | <i>i</i> 5.14667   | +0.34250912   | +0.13722719 |
| <i>P</i> | 3.23       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1978 11 29 | 675 | 1.2- | 0.7- | 2006 06 04 | G96 | 0.0   | 0.2+  | 2007 11 13 | 699 | 0.8+ | 0.2- |
| 1978 11 30 | 675 | 1.3- | 0.9- | 2007 10 19 | 699 | 0.3+  | 0.5-  | 2007 11 13 | 699 | 0.4+ | 0.1- |
| 1994 11 10 | 691 | 0.3- | 0.2+ | 2007 10 19 | 699 | 0.1-  | 0.2+  | 2007 11 15 | 704 | 0.7+ | 0.9+ |
| 1994 11 10 | 691 | 1.7+ | 0.1+ | 2007 10 19 | 699 | 0.1-  | 0.6-  | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2002 02 13 | 645 | 0.0  | 0.0  | 2007 10 19 | 699 | 0.2+  | 0.5+  | 2007 11 15 | 704 | 0.2- | 0.7+ |
| 2002 02 13 | 645 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.7+  | 0.9+  | 2007 11 15 | 704 | 0.2- | 0.4+ |
| 2002 02 17 | 644 | 0.2+ | 1.2+ | 2007 10 31 | 691 | 0.0   | 0.2-  | 2007 11 15 | 704 | 0.2+ | 0.9+ |
| 2002 02 17 | 644 | 0.4+ | 1.2+ | 2007 10 31 | 691 | 0.1-  | 0.2-  | 2007 11 19 | 691 | 0.3- | 0.0  |
| 2002 02 17 | 644 | 0.8+ | 0.9+ | 2007 11 04 | 691 | 0.1-  | 0.1-  | 2007 11 19 | 691 | 0.4- | 0.2- |
| 2002 03 12 | 645 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.2-  | 0.1-  | 2007 11 19 | 691 | 0.1- | 0.0  |
| 2002 03 12 | 645 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.1-  | 0.1+  | 2007 12 03 | 703 | 1.1- | 0.2+ |
| 2004 12 03 | 691 | 0.0  | 0.0  | 2007 11 06 | 704 | (0.3+ | 2.4+) | 2007 12 03 | 703 | 0.5- | 0.3+ |
| 2004 12 03 | 691 | 0.0  | 0.1- | 2007 11 06 | 704 | 0.2-  | 0.5+  | 2007 12 03 | 703 | 0.5+ | 0.8+ |
| 2004 12 03 | 691 | 0.1+ | 0.1- | 2007 11 06 | 704 | 0.2+  | 0.9+  | 2007 12 03 | 703 | 0.1+ | 0.2+ |
| 2004 12 11 | 691 | 0.1- | 0.0  | 2007 11 06 | 704 | 0.6+  | 0.8+  | 2007 12 14 | 704 | 1.4- | 0.9- |
| 2004 12 11 | 691 | 0.1+ | 0.1- | 2007 11 08 | 691 | 0.3-  | 0.0   | 2007 12 14 | 704 | 0.1- | 0.2+ |
| 2004 12 11 | 691 | 0.0  | 0.1- | 2007 11 08 | 691 | 0.1-  | 0.1-  | 2007 12 14 | 704 | 0.3+ | 0.2- |
| 2006 05 24 | 644 | 0.1+ | 0.0  | 2007 11 08 | 691 | 0.6-  | 0.0   | 2007 12 14 | 704 | 0.2- | 0.3- |
| 2006 05 24 | 644 | 0.0  | 0.7+ | 2007 11 12 | A77 | 0.5+  | 0.1+  | 2007 12 14 | 704 | 0.1+ | 0.4- |
| 2006 05 24 | 644 | 0.4- | 0.6+ | 2007 11 12 | A77 | 0.5+  | 0.4+  | 2007 12 15 | G96 | 0.4+ | 0.3- |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 06 | 691 | 0.1+ | 0.5+ | 2007 10 15 | 691 | 0.2- | 0.4+ | 2007 11 15 | 704 | 0.1- | 0.7- |
| 1996 10 06 | 691 | 0.1+ | 0.2- | 2007 10 15 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.1+ | 0.7- |
| 1996 10 06 | 691 | 0.2+ | 0.2- | 2007 10 15 | 691 | 0.4- | 0.3+ | 2007 11 15 | 704 | 0.8+ | 0.5- |
| 1996 10 08 | 691 | 0.2- | 0.2+ | 2007 10 20 | 703 | 1.4- | 0.0  | 2007 11 15 | 704 | 0.5+ | 0.8- |
| 1996 10 08 | 691 | 0.0  | 0.3- | 2007 10 20 | 703 | 1.2+ | 0.5- | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 1996 10 08 | 691 | 0.3- | 0.3- | 2007 10 20 | 703 | 0.3- | 0.7- | 2007 11 15 | 704 | 0.7+ | 0.0  |
| 2000 12 30 | 691 | 0.2+ | 0.4+ | 2007 10 20 | 703 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 0.4+ | 0.3+ |
| 2000 12 30 | 691 | 0.0  | 0.5+ | 2007 11 02 | D29 | 0.4- | 1.2- | 2007 11 18 | H07 | 0.2+ | 0.6+ |
| 2000 12 30 | 691 | 0.3+ | 0.1+ | 2007 11 02 | D29 | 0.7+ | 0.7- | 2007 11 18 | H07 | 0.1+ | 0.0  |
| 2003 08 05 | 691 | 0.1- | 0.1+ | 2007 11 02 | D29 | 1.0+ | 0.2- | 2007 11 18 | H07 | 0.1- | 0.3- |
| 2003 08 05 | 691 | 0.3- | 0.1+ | 2007 11 02 | D29 | 0.3+ | 0.4- | 2007 11 19 | 691 | 0.1- | 0.2- |
| 2003 08 05 | 691 | 0.1- | 0.2+ | 2007 11 04 | H07 | 0.4+ | 0.5+ | 2007 11 19 | 691 | 0.5- | 0.0  |
| 2003 10 24 | 291 | 0.5+ | 0.2+ | 2007 11 04 | H07 | 0.2+ | 0.4+ | 2007 11 19 | 691 | 0.2- | 0.1- |
| 2003 10 24 | 291 | 0.1+ | 0.4+ | 2007 11 04 | H07 | 0.9+ | 0.4+ | 2007 11 29 | 104 | 0.9- | 0.7+ |
| 2003 10 24 | 291 | 0.2+ | 0.4+ | 2007 11 05 | H07 | 0.4+ | 0.1- | 2007 11 29 | 104 | 0.3+ | 0.8+ |
| 2006 05 01 | 691 | 0.2- | 0.1+ | 2007 11 05 | H07 | 0.6+ | 0.0  | 2007 11 29 | 104 | 0.1- | 0.6+ |
| 2006 05 01 | 691 | 0.2+ | 0.4+ | 2007 11 06 | 704 | 0.7+ | 0.4+ | 2007 12 03 | 703 | 0.4+ | 0.9+ |
| 2006 05 01 | 691 | 0.1- | 0.2+ | 2007 11 06 | 704 | 0.0  | 0.3+ | 2007 12 03 | 703 | 0.2+ | 0.3- |
| 2006 05 20 | 691 | 0.1- | 0.0  | 2007 11 06 | 704 | 0.3- | 0.1+ | 2007 12 03 | 703 | 0.2- | 0.2- |
| 2006 05 20 | 691 | 0.3+ | 0.0  | 2007 11 06 | 704 | 0.2+ | 0.2- | 2007 12 03 | 703 | 1.2- | 0.5+ |
| 2006 05 20 | 691 | 0.1- | 0.2- | 2007 11 06 | 704 | 0.2- | 0.6- |            |     |      |      |

**(173106)\* 2007 VN<sub>79</sub> = 2001 CS<sub>11</sub> = 2003 SG<sub>385</sub> = 2007 RA<sub>283</sub>**

Discovered 2007 Nov. 3 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 128596)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 306.95922  |          | (2000.0) | $P$         |      | $Q$         |   |
|-----|------------|----------|----------|-------------|------|-------------|---|
| $n$ | 0.26612364 | $\omega$ | 49.38638 | -0.45187435 |      | -0.89076573 |   |
| $a$ | 2.3937589  | $\Omega$ | 67.53957 | +0.80182840 |      | -0.42935593 |   |
| $e$ | 0.1663559  | $i$      | 3.00432  | +0.39099973 |      | -0.14896276 |   |
| $P$ | 3.70       | $H$      | 17.4     | $G$         | 0.15 | $U$         | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 01 04 | 691 | 0.0  | 0.4- | 2007 09 14 | G96 | 0.1-  | 0.1+  | 2007 11 14 | 704 | 0.1+  | 0.3-  |
| 2001 01 04 | 691 | 0.1- | 0.3- | 2007 09 14 | G96 | 0.1+  | 0.1-  | 2007 11 14 | 704 | 0.6+  | 0.0   |
| 2001 01 04 | 691 | 0.1- | 0.3- | 2007 09 14 | G96 | 0.2-  | 0.0   | 2007 11 18 | 704 | 0.1-  | 0.1-  |
| 2001 02 01 | 704 | 0.1+ | 1.1+ | 2007 09 14 | G96 | 0.5+  | 0.2-  | 2007 11 18 | 704 | 0.2+  | 0.5-  |
| 2001 02 01 | 704 | 0.3- | 0.6+ | 2007 09 14 | G96 | 0.3+  | 0.1+  | 2007 11 18 | 704 | 0.1+  | 0.2-  |
| 2001 02 01 | 704 | 0.0  | 0.1+ | 2007 09 14 | G96 | 0.2-  | 0.1+  | 2007 11 18 | 704 | 0.0   | 0.1-  |
| 2001 02 01 | 704 | 0.1- | 0.3- | 2007 09 14 | G96 | 0.4-  | 0.2-  | 2007 11 18 | 704 | 0.3-  | 0.1-  |
| 2001 02 01 | 704 | 0.6+ | 0.0  | 2007 10 20 | 703 | (0.7+ | 1.7+) | 2007 11 19 | A50 | 0.8-  | 0.2+  |
| 2001 02 03 | 704 | 0.1- | 0.6+ | 2007 10 20 | 703 | 0.7-  | 0.2+  | 2007 11 19 | A50 | 0.5+  | 0.6+  |
| 2001 02 03 | 704 | 0.7- | 0.7+ | 2007 10 20 | 703 | 0.5+  | 1.1+  | 2007 11 19 | A50 | 0.0   | 0.2+  |
| 2001 02 03 | 704 | 0.6+ | 0.2+ | 2007 10 20 | 703 | 1.0-  | 0.1+  | 2007 11 19 | A50 | 0.2+  | 0.1+  |
| 2003 09 26 | 645 | 0.1- | 0.1+ | 2007 10 20 | 691 | 0.4-  | 0.3+  | 2007 11 19 | A50 | 0.3-  | 0.6+  |
| 2003 09 26 | 645 | 0.1- | 0.0  | 2007 10 20 | 691 | 0.5-  | 0.1-  | 2007 11 19 | A50 | 0.8+  | 0.9-  |
| 2003 09 28 | 645 | 0.1+ | 0.0  | 2007 10 20 | 691 | 0.1-  | 0.1-  | 2007 12 03 | 703 | 0.4+  | 0.5+  |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.0   | 0.3-  | 2007 12 03 | 703 | 0.6+  | 1.0+  |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.0   | 0.2-  | 2007 12 03 | 703 | (0.9- | 2.1-) |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.1-  | 0.3-  | 2007 12 03 | 703 | (0.1+ | 1.9-) |
| 2005 03 18 | 703 | 0.0  | 0.5- | 2007 11 05 | G96 | 0.4+  | 0.2-  | 2007 12 05 | 704 | 0.3+  | 0.1+  |
| 2005 03 18 | 703 | 0.3+ | 1.1+ | 2007 11 05 | G96 | 0.1+  | 0.3-  | 2007 12 05 | 704 | 0.3-  | 0.3+  |
| 2005 03 18 | 703 | 0.4- | 0.8- | 2007 11 05 | G96 | 0.2+  | 0.3-  | 2007 12 05 | 704 | 0.2+  | 0.2+  |
| 2005 03 18 | 703 | 0.7+ | 0.5- | 2007 11 05 | G96 | 0.4+  | 0.2-  | 2007 12 05 | 704 | 0.3+  | 0.8+  |
| 2005 04 04 | 703 | 0.5- | 0.4+ | 2007 11 13 | 699 | 0.6+  | 0.8+  | 2007 12 14 | 704 | 0.5+  | 0.9+  |
| 2005 04 04 | 703 | 0.8- | 0.4- | 2007 11 13 | 699 | 0.3-  | 0.0   | 2007 12 14 | 704 | 0.3-  | 0.3+  |
| 2005 04 04 | 703 | 0.6- | 0.2+ | 2007 11 13 | 699 | 0.5+  | 0.7-  | 2007 12 14 | 704 | 0.5-  | 0.9+  |
| 2005 04 04 | 703 | 0.2+ | 0.5+ | 2007 11 13 | 699 | 0.7+  | 0.8+  | 2007 12 14 | 704 | 0.1+  | 0.8-  |
| 2005 05 11 | G96 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.4-  | 0.0   | 2007 12 15 | G96 | 0.2+  | 0.1+  |
| 2005 05 11 | G96 | 0.4+ | 0.5- | 2007 11 14 | 691 | 0.1-  | 0.0   | 2007 12 15 | G96 | 0.2+  | 0.1+  |
| 2005 05 11 | G96 | 0.3+ | 0.2- | 2007 11 14 | 691 | 0.1-  | 0.1-  | 2007 12 15 | G96 | 0.0   | 0.0   |
| 2005 05 11 | G96 | 0.1- | 0.5- | 2007 11 14 | 704 | 0.7+  | 0.0   | 2007 12 15 | G96 | 0.4+  | 0.0   |
| 2007 09 14 | G96 | 0.2+ | 0.3- | 2007 11 14 | 704 | 0.7+  | 0.2-  |            |     |       |       |

**(173107)\* 2007 VX<sub>111</sub> = 2000 HR<sub>102</sub>**

Discovered 2007 Nov. 3 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPO* 128601)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 4.55710    |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.20303386 | $\omega$ | 202.15136 | +0.65237868  | -0.75782495  |
| $a$ | 2.8669739  | $\Omega$ | 207.13068 | +0.69865497  | +0.60653355  |
| $e$ | 0.0732957  | $i$      | 1.27770   | +0.29374016  | +0.24045456  |
| $P$ | 4.85       | $H$      | 16.1      | $G$ 0.15     | $U$ 0        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|------|------------|-----|------|------|
| 2000 04 26 | 691 | 0.2- | 0.1+ | 2005 05 16 | 691 | 0.2-  | 0.0  | 2007 11 14 | 691 | 1.1- | 0.1- |
| 2000 04 26 | 691 | 0.1- | 0.0  | 2006 08 12 | 644 | 0.3+  | 0.7+ | 2007 11 14 | 704 | 0.0  | 0.1- |
| 2000 04 26 | 691 | 0.1- | 0.1- | 2006 08 12 | 644 | 0.3+  | 0.8+ | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2000 05 04 | 691 | 0.1- | 0.3- | 2006 08 12 | 644 | 0.0   | 0.4+ | 2007 11 14 | 704 | 0.5+ | 0.1+ |
| 2000 05 04 | 691 | 0.2- | 0.1- | 2007 09 10 | G96 | 1.1-  | 0.1- | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2000 05 04 | 691 | 0.1- | 0.3- | 2007 09 10 | G96 | 0.3+  | 0.3- | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2002 11 05 | 291 | 0.2- | 0.1+ | 2007 09 10 | G96 | 0.2+  | 0.4- | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2002 11 05 | 291 | 0.0  | 0.3+ | 2007 09 10 | G96 | 0.6+  | 0.6- | 2007 12 03 | 703 | 0.6- | 0.5- |
| 2002 11 05 | 291 | 0.2+ | 0.3+ | 2007 10 25 | G96 | 0.8+  | 0.3+ | 2007 12 03 | 703 | 0.1- | 0.8+ |
| 2004 02 12 | 691 | 0.1- | 0.1+ | 2007 10 25 | G96 | 1.1+  | 0.0  | 2007 12 03 | 703 | 0.2+ | 0.3+ |
| 2004 02 12 | 691 | 0.1+ | 0.0  | 2007 10 25 | G96 | 0.1-  | 0.4- | 2007 12 03 | 703 | 0.9- | 0.9+ |
| 2004 02 12 | 691 | 0.1- | 0.3- | 2007 10 25 | G96 | 0.8+  | 0.1+ | 2007 12 04 | G96 | 0.1- | 0.4- |
| 2004 03 20 | 691 | 0.4+ | 0.3+ | 2007 11 03 | 691 | 0.1-  | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2004 03 20 | 691 | 0.1- | 0.4+ | 2007 11 03 | 691 | 0.1-  | 0.0  | 2007 12 04 | G96 | 0.2- | 0.2- |
| 2004 03 20 | 691 | 0.5+ | 0.1+ | 2007 11 03 | 691 | 0.0   | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.6- |
| 2005 04 11 | G96 | 0.5+ | 0.7- | 2007 11 07 | 691 | 0.2-  | 0.0  | 2007 12 05 | 704 | 1.1+ | 0.5- |
| 2005 04 11 | G96 | 0.1+ | 0.2- | 2007 11 07 | 691 | 0.2-  | 0.1+ | 2007 12 05 | 704 | 0.7+ | 0.5- |
| 2005 04 11 | G96 | 0.5- | 0.4+ | 2007 11 07 | 691 | 0.1-  | 0.2+ | 2007 12 05 | 704 | 1.0+ | 0.3- |
| 2005 04 11 | G96 | 0.4- | 0.0  | 2007 11 14 | 704 | 0.7+  | 0.7+ | 2007 12 05 | 704 | 0.4+ | 0.1- |
| 2005 05 16 | 691 | 0.5+ | 1.0+ | 2007 11 14 | 691 | 0.0   | 0.1+ | 2007 12 05 | 704 | 1.3+ | 0.4- |
| 2005 05 16 | 691 | 0.2+ | 0.4+ | 2007 11 14 | 704 | (1.9+ | 0.0) |            |     |      |      |

**(173108)\* 6240 P-L = 2007 RE<sub>217</sub>**

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. F. N. Bowman (*MPO* 126546), G. V. Williams (*ibid.*)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 342.04934  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.12584746 | $\omega$ | 136.04890 | +0.69891472  | -0.71508294  |
| $a$ | 3.9437231  | $\Omega$ | 269.60625 | +0.65248581  | +0.64508100  |
| $e$ | 0.3295559  | $i$      | 0.75712   | +0.29288306  | +0.26930815  |
| $P$ | 7.83       | $H$      | 15.3      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1960 09 24 | 675 | 0.2+ | 0.0  | 2007 09 14 | 699 | 0.1-  | 0.1-  | 2007 10 06 | 704 | 0.1+  | 0.5-  |
| 1960 09 24 | 675 | 0.3+ | 1.4- | 2007 09 14 | 699 | 0.7+  | 0.0   | 2007 10 06 | 185 | (0.2- | 2.7-) |
| 1960 09 25 | 675 | 0.9+ | 0.1+ | 2007 09 14 | 699 | 0.9-  | 0.2+  | 2007 10 06 | 185 | (0.5- | 2.5-) |
| 1960 09 25 | 675 | 0.1+ | 0.4+ | 2007 09 14 | 699 | 0.3+  | 0.3+  | 2007 10 11 | 704 | 0.0   | 0.5+  |
| 1960 09 26 | 675 | 0.8- | 0.3+ | 2007 09 16 | 704 | (0.6- | 1.6+) | 2007 10 11 | 704 | 1.2-  | 0.2+  |
| 1960 09 26 | 675 | 0.2+ | 0.9- | 2007 09 16 | 704 | 0.8-  | 0.9+  | 2007 10 11 | 704 | 0.2-  | 0.0   |
| 1960 09 28 | 675 | 0.3+ | 0.0  | 2007 09 16 | 704 | 0.5+  | 0.5+  | 2007 10 11 | G96 | 0.1+  | 0.7-  |
| 1960 09 28 | 675 | 0.3- | 0.1- | 2007 09 16 | 704 | 0.1+  | 1.3+  | 2007 10 11 | G96 | 0.0   | 0.6-  |
| 1999 08 17 | 691 | 0.6- | 0.9+ | 2007 09 16 | 704 | 0.5-  | 0.9+  | 2007 10 11 | G96 | 0.6+  | 0.6-  |
| 1999 08 17 | 691 | 0.1- | 0.3+ | 2007 09 19 | 704 | 0.2-  | 0.5+  | 2007 10 11 | G96 | 0.1+  | 0.7-  |
| 1999 08 17 | 691 | 0.1+ | 0.3+ | 2007 09 19 | 704 | 0.2-  | 0.5+  | 2007 10 12 | 703 | 0.6-  | 0.2+  |
| 2002 02 14 | 691 | 0.0  | 0.5+ | 2007 09 19 | 704 | 0.4+  | 0.4+  | 2007 10 12 | 703 | 0.7-  | 0.3+  |
| 2002 02 14 | 691 | 0.7+ | 0.5+ | 2007 09 19 | 704 | 0.4-  | 0.8+  | 2007 10 12 | 703 | 0.2+  | 0.8+  |
| 2002 02 14 | 691 | 0.3- | 0.4+ | 2007 09 21 | 704 | 0.1+  | 0.8+  | 2007 10 12 | 703 | 0.2+  | 0.0   |
| 2002 03 10 | 691 | 0.8+ | 0.2+ | 2007 09 21 | 704 | 0.1+  | 0.5+  | 2007 10 14 | 704 | 0.0   | 0.5+  |
| 2002 03 10 | 691 | 0.0  | 0.6+ | 2007 09 21 | 704 | 0.0   | 0.1+  | 2007 10 14 | 704 | 0.1+  | 0.4+  |
| 2002 03 10 | 691 | 0.1- | 0.5+ | 2007 09 21 | 704 | 0.5-  | 0.5+  | 2007 10 14 | 704 | 0.2+  | 0.5+  |
| 2007 09 13 | 699 | 0.3- | 0.2- | 2007 09 21 | 704 | 0.7-  | 0.6+  | 2007 10 14 | 704 | 0.1+  | 0.0   |
| 2007 09 13 | 699 | 0.1- | 0.3- | 2007 09 28 | D35 | 0.1-  | 0.5-  | 2007 10 19 | 704 | 0.0   | 0.9-  |
| 2007 09 13 | 699 | 0.3- | 0.4+ | 2007 09 28 | D35 | 0.4-  | 0.3-  | 2007 10 19 | 704 | 0.2+  | 0.3+  |

2007 DEC. 24

M.P.O. 129567

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 13 | G96 | 0.0  | 0.5− | 2007 09 28 | D35 | 0.5− | 0.0  | 2007 10 19 | 704 | 0.0  | 0.1− |
| 2007 09 13 | G96 | 0.0  | 0.5− | 2007 10 06 | 704 | 1.0+ | 0.1+ | 2007 12 05 | G96 | 0.4+ | 0.6− |
| 2007 09 13 | G96 | 0.0  | 0.5− | 2007 10 06 | 704 | 0.3+ | 0.2− | 2007 12 05 | G96 | 0.2+ | 0.5− |
| 2007 09 13 | 699 | 0.4+ | 0.3+ | 2007 10 06 | 704 | 0.4+ | 0.2+ | 2007 12 05 | G96 | 0.0  | 0.4− |
| 2007 09 13 | G96 | 0.1+ | 0.6− | 2007 10 06 | 704 | 0.2+ | 0.5+ | 2007 12 05 | G96 | 0.2+ | 0.6− |

**(173109)\* 7635 P-L = 2000 SB<sub>185</sub>**

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld  
on Palomar Schmidt plates taken by T. Gehrels.

Id. M. E. Sansaturio (*MPO* 14992)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |             |   |
|-----|------------|----------|----------|-----|-------------|-------------|---|
| $M$ | 12.18579   |          | (2000.0) |     | <b>P</b>    | <b>Q</b>    |   |
| $n$ | 0.29598062 | $\omega$ | 21.62847 |     | +0.53539529 | −0.84296463 |   |
| $a$ | 2.2299435  | $\Omega$ | 36.05958 |     | +0.76122669 | +0.45464869 |   |
| $e$ | 0.1871824  | $i$      | 5.12288  |     | +0.36590409 | +0.28758513 |   |
| $P$ | 3.33       | $H$      | 16.6     | $G$ | 0.15        | $U$         | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1960 10 17 | 675 | 0.8+  | 0.4−  | 2000 11 26 | 704 | 0.0  | 0.0  | 2007 11 07 | 704 | 0.7+  | 0.4+  |
| 1960 10 22 | 675 | 0.7+  | 1.2−  | 2000 11 26 | 704 | 0.8+ | 0.2− | 2007 11 12 | G96 | 0.8+  | 1.1+  |
| 1960 10 25 | 675 | 0.1+  | 0.4−  | 2000 11 26 | 704 | 0.6+ | 0.5+ | 2007 11 12 | G96 | 1.3−  | 0.1+  |
| 1960 10 26 | 675 | 0.3−  | 0.6−  | 2000 11 26 | 704 | 0.9+ | 0.5+ | 2007 11 12 | G96 | 0.2−  | 0.5−  |
| 1990 09 28 | 675 | (2.4− | 0.1−) | 2005 03 04 | 704 | 0.6− | 0.4− | 2007 11 12 | G96 | 0.3−  | 1.4−  |
| 2000 09 20 | 608 | 0.9−  | 1.0−  | 2005 03 04 | 704 | 0.4+ | 0.3+ | 2007 11 18 | 704 | 0.5+  | 0.3−  |
| 2000 09 20 | 608 | 0.5−  | 0.8−  | 2005 03 04 | 704 | 0.8+ | 0.3− | 2007 11 18 | 704 | (1.6− | 1.3+) |
| 2000 09 20 | 608 | 0.6−  | 0.8−  | 2005 03 04 | 704 | 1.1+ | 0.2+ | 2007 11 18 | 704 | 0.2+  | 0.8−  |
| 2000 09 23 | 699 | 0.9−  | 0.5+  | 2005 03 09 | 704 | 0.2+ | 0.7− | 2007 11 18 | 704 | (1.7+ | 0.5−) |
| 2000 09 23 | 699 | 0.9−  | 0.3+  | 2005 03 09 | 704 | 1.0+ | 0.5+ | 2007 11 18 | 704 | 0.2+  | 0.6+  |
| 2000 09 23 | 699 | 0.8−  | 1.4+  | 2005 03 09 | 704 | 0.7+ | 0.1+ | 2007 12 13 | 704 | 0.2+  | 0.1−  |
| 2000 09 23 | 699 | 0.7−  | 0.8+  | 2005 03 09 | 704 | 1.1+ | 0.6+ | 2007 12 13 | 704 | 0.0   | 0.0   |
| 2000 09 24 | 704 | 0.1+  | 0.8+  | 2005 03 12 | 704 | 0.5+ | 1.3+ | 2007 12 13 | 704 | 0.1+  | 0.1+  |
| 2000 09 24 | 704 | 0.2−  | 0.1+  | 2005 03 12 | 704 | 0.1+ | 0.4+ | 2007 12 13 | 704 | 0.0   | 0.1−  |
| 2000 09 24 | 704 | 0.4+  | 0.6+  | 2005 03 12 | 704 | 0.2− | 1.1+ | 2007 12 13 | 704 | 0.5+  | 0.4+  |
| 2000 09 24 | 704 | 0.2−  | 0.7+  | 2005 03 12 | 704 | 0.2− | 0.3− | 2007 12 14 | D29 | 0.2−  | 0.3−  |
| 2000 09 24 | 704 | 0.3+  | 0.2+  | 2005 03 16 | 703 | 1.4− | 0.3+ | 2007 12 14 | D29 | 0.5−  | 0.5−  |
| 2000 10 02 | 704 | 0.4−  | 0.1+  | 2005 03 16 | 703 | 0.2− | 0.3+ | 2007 12 14 | D29 | 0.1+  | 0.7−  |
| 2000 10 02 | 704 | 0.2+  | 0.0   | 2005 03 16 | 703 | 1.4− | 0.6− | 2007 12 14 | D29 | 0.2−  | 1.0−  |
| 2000 10 02 | 704 | 0.3+  | 0.7+  | 2005 03 16 | 703 | 1.2− | 0.2− | 2007 12 16 | 704 | 0.0   | 0.3−  |
| 2000 10 02 | 704 | 0.6−  | 0.2+  | 2005 04 09 | 691 | 0.1+ | 0.2+ | 2007 12 16 | 704 | 0.2−  | 0.2+  |
| 2000 10 02 | 704 | 0.6−  | 0.2+  | 2005 04 09 | 691 | 0.3+ | 0.2+ | 2007 12 16 | 704 | 0.1−  | 0.0   |
| 2000 10 24 | 704 | 0.2+  | 0.5+  | 2005 04 09 | 691 | 0.1− | 0.2− | 2007 12 16 | 704 | 0.8−  | 0.9+  |
| 2000 10 24 | 704 | 0.4+  | 0.5−  | 2007 11 07 | 704 | 0.3+ | 0.8− | 2007 12 16 | 704 | 0.1−  | 1.0+  |
| 2000 10 24 | 704 | 0.7+  | 0.0   | 2007 11 07 | 704 | 0.0  | 1.0+ |            |     |       |       |
| 2000 11 26 | 704 | 0.1+  | 1.0+  | 2007 11 07 | 704 | 0.1+ | 0.4− |            |     |       |       |

**(173110)\* 2323 T-1 = 2000 CJ<sub>122</sub>**

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld  
on Palomar Schmidt plates taken by T. Gehrels.

Id. M. E. Sansaturio (*MPO* 35420)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 275.64290  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.23526940 | $\omega$ | 80.21783 |     | -0.97481860 |     | -0.21592152 |
| $a$ | 2.5987176  | $\Omega$ | 87.29706 |     | +0.17640747 |     | -0.89956818 |
| $e$ | 0.1136247  | $i$      | 3.19870  |     | +0.13641518 |     | -0.37967748 |
| $P$ | 4.19       | $H$      | 15.3     | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1971 03 24 | 675 | 1.5+ | 1.9− | 2003 12 18 | 704 | 0.4−  | 0.1−  | 2005 05 21 | G96 | 0.5+ | 0.7+ |
| 1971 03 25 | 675 | 0.2− | 0.1− | 2003 12 18 | 704 | 0.7+  | 0.8−  | 2005 05 21 | G96 | 0.2+ | 0.7+ |
| 1971 03 25 | 675 | 2.0− | 0.5+ | 2003 12 24 | 608 | (0.1+ | 3.8+) | 2005 05 21 | G96 | 0.1+ | 0.1+ |
| 1971 03 26 | 675 | 1.7− | 0.2− | 2003 12 24 | 608 | (0.0  | 3.9+) | 2005 05 21 | G96 | 0.0  | 0.2− |
| 1971 03 26 | 675 | 0.4+ | 0.6+ | 2003 12 24 | 608 | (0.3+ | 3.8+) | 2005 05 21 | G96 | 0.1− | 0.3+ |
| 1971 03 26 | 675 | 1.6+ | 0.4− | 2003 12 29 | 704 | 0.8+  | 0.3+  | 2005 05 21 | G96 | 1.2− | 0.6+ |
| 1992 03 26 | 691 | 0.3− | 0.0  | 2003 12 29 | 704 | 0.9−  | 0.5−  | 2005 05 21 | G96 | 0.3− | 0.7+ |
| 1992 03 26 | 691 | 0.3− | 0.6− | 2003 12 29 | 704 | 0.5−  | 0.0   | 2005 05 21 | G96 | 0.3+ | 0.5+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 03 26 | 691 | 0.3− | 0.5− | 2003 12 30 | 704 | 0.8+  | 1.0+  | 2005 05 21 | G96 | 0.4+ | 0.5+ |
| 2000 02 03 | 704 | 0.3− | 0.6+ | 2003 12 30 | 704 | 0.2+  | 0.6+  | 2005 05 21 | G96 | 0.6+ | 0.3+ |
| 2000 02 03 | 704 | 0.3− | 1.2+ | 2003 12 30 | 704 | (3.1+ | 0.9+) | 2005 05 21 | G96 | 0.3+ | 0.4+ |
| 2000 02 03 | 704 | 0.5+ | 0.7+ | 2003 12 30 | 704 | 1.0+  | 0.0   | 2005 05 21 | G96 | 0.5+ | 0.2+ |
| 2000 02 03 | 704 | 0.1− | 1.0+ | 2003 12 30 | 704 | 0.8+  | 0.4+  | 2006 08 19 | 291 | 0.0  | 0.1+ |
| 2000 02 03 | 704 | 0.9+ | 0.4+ | 2004 01 30 | 704 | 0.4−  | 0.5−  | 2006 08 19 | 291 | 0.1+ | 0.2+ |
| 2000 02 11 | 704 | 0.0  | 0.9+ | 2004 01 30 | 704 | 0.4+  | 1.0+  | 2006 08 19 | 291 | 0.1− | 0.0  |
| 2000 02 11 | 704 | 0.3− | 0.0  | 2004 01 30 | 704 | 0.8+  | 0.7+  | 2007 11 09 | 691 | 0.3− | 0.2− |
| 2000 02 11 | 704 | 0.3+ | 0.3+ | 2004 01 30 | 704 | 0.6+  | 1.1+  | 2007 11 09 | 691 | 0.6− | 0.4− |
| 2000 02 11 | 704 | 0.6− | 0.0  | 2004 01 30 | 704 | 0.5+  | 0.3−  | 2007 11 09 | 691 | 0.3− | 0.3− |
| 2000 02 11 | 704 | 0.5+ | 0.3+ | 2005 05 21 | G96 | 1.0+  | 0.6+  | 2007 12 05 | 704 | 0.9+ | 1.0+ |
| 2003 12 18 | 704 | 0.0  | 0.4+ | 2005 05 21 | G96 | 0.3+  | 0.4+  | 2007 12 05 | 704 | 0.2− | 0.2− |
| 2003 12 18 | 704 | 0.5− | 1.1− | 2005 05 21 | G96 | 1.2−  | 0.7−  | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2003 12 18 | 704 | 0.4+ | 0.5+ | 2005 05 21 | G96 | 0.3+  | 0.3+  |            |     |      |      |

**(173111)\* 2059 T-2 = 2002 PC<sub>133</sub>**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld  
on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPO* 35422)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 74.68450   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.23533303 | $\omega$ | 150.93226 |     | +0.87541270 |     | +0.48337623 |
| $a$ | 2.5982491  | $\Omega$ | 180.16184 |     | −0.45344376 |     | +0.82109238 |
| $e$ | 0.1912209  | $i$      | 3.15412   |     | −0.16745556 |     | +0.30356995 |
| $P$ | 4.19       | $H$      | 16.2      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1973 09 19 | 675 | 0.3−  | 2.0−  | 1994 10 09 | 691 | 0.1+ | 0.0  | 2002 08 14 | 704 | 0.8+ | 0.3+ |
| 1973 09 19 | 675 | 1.5+  | 1.8−  | 1994 10 09 | 691 | 0.1− | 0.2+ | 2002 08 14 | 704 | 0.1− | 0.0  |
| 1973 09 20 | 675 | 0.0   | 1.3+  | 1996 01 27 | 691 | 0.1− | 0.3+ | 2002 08 17 | 644 | 0.2− | 0.9− |
| 1973 09 24 | 675 | 0.3−  | 0.8−  | 1996 01 27 | 691 | 0.2+ | 0.0  | 2002 08 17 | 644 | 0.6+ | 0.5− |
| 1973 09 24 | 675 | 0.3−  | 0.6−  | 1998 09 18 | 699 | 0.0  | 1.4+ | 2002 08 17 | 644 | 0.0  | 0.1− |
| 1973 09 25 | 675 | 0.0   | 1.9−  | 1998 09 18 | 699 | 0.5− | 1.4+ | 2002 08 17 | 644 | 0.6+ | 0.4− |
| 1973 09 25 | 675 | 1.0+  | 1.5−  | 1998 09 18 | 699 | 0.8+ | 1.6+ | 2002 08 17 | 644 | 0.7− | 0.1− |
| 1973 09 29 | 675 | 0.5+  | 1.1+  | 2002 07 14 | 644 | 0.3− | 0.0  | 2002 08 17 | 644 | 0.2+ | 0.3− |
| 1973 09 29 | 675 | 1.8+  | 1.8−  | 2002 07 14 | 704 | 0.2− | 0.9+ | 2005 04 04 | G96 | 0.2+ | 0.6− |
| 1973 09 29 | 675 | 0.2+  | 0.3−  | 2002 07 14 | 704 | 0.1− | 1.1+ | 2005 04 04 | G96 | 0.0  | 0.4− |
| 1973 09 29 | 675 | 1.9+  | 0.9−  | 2002 07 14 | 704 | 1.0+ | 0.9+ | 2005 04 04 | G96 | 0.0  | 0.7− |
| 1973 09 30 | 675 | 0.2+  | 1.5−  | 2002 07 14 | 704 | 0.9− | 1.4+ | 2005 04 04 | G96 | 0.0  | 0.2− |
| 1973 09 30 | 675 | 0.4+  | 1.2+  | 2002 07 14 | 644 | 0.3− | 0.1− | 2007 11 08 | 691 | 0.0  | 0.3+ |
| 1973 09 30 | 675 | 0.2−  | 0.6+  | 2002 07 14 | 644 | 0.5− | 0.0  | 2007 11 08 | 691 | 0.0  | 0.2+ |
| 1973 09 30 | 675 | 0.5−  | 0.1−  | 2002 07 22 | 644 | 0.3− | 0.2− | 2007 11 08 | 691 | 0.0  | 0.1+ |
| 1973 10 04 | 675 | 0.2−  | 0.3−  | 2002 07 22 | 644 | 0.0  | 0.4− | 2007 12 04 | 704 | 0.6− | 0.5− |
| 1973 10 04 | 675 | 1.5−  | 2.0+  | 2002 07 22 | 644 | 0.0  | 0.6− | 2007 12 04 | 704 | 0.1+ | 0.3+ |
| 1973 10 04 | 675 | 1.5+  | 0.6−  | 2002 08 06 | 644 | 0.4− | 0.1+ | 2007 12 04 | 704 | 0.2− | 1.2+ |
| 1973 10 04 | 675 | 1.2−  | 1.4+  | 2002 08 06 | 644 | 0.2− | 0.0  | 2007 12 04 | 704 | 0.8− | 0.3− |
| 1973 10 05 | 675 | 0.2+  | 1.5−  | 2002 08 06 | 644 | 0.5− | 0.0  | 2007 12 04 | 704 | 0.2+ | 0.9+ |
| 1973 10 05 | 675 | (3.1− | 0.1+) | 2002 08 11 | 608 | 0.2− | 1.0+ | 2007 12 05 | G96 | 1.0+ | 0.4− |
| 1973 10 05 | 675 | 0.8+  | 1.1−  | 2002 08 11 | 608 | 0.3+ | 1.1+ | 2007 12 05 | G96 | 0.0  | 0.2+ |
| 1973 10 05 | 675 | 1.9−  | 0.8−  | 2002 08 11 | 608 | 0.4− | 0.1+ | 2007 12 05 | G96 | 0.3− | 0.3+ |
| 1994 10 09 | 691 | 0.3−  | 0.3+  | 2002 08 14 | 704 | 0.4− | 0.5+ | 2007 12 05 | G96 | 0.1+ | 0.3+ |

**(173112)\* 4327 T-2 = 2005 ER<sub>182</sub> = 2007 TM<sub>160</sub>**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld  
on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Doppler (*MPO* 128607)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1973 09 29 | 675 | 0.7+  | 0.4-  | 2007 07 19 | G96 | 0.5-  | 0.2-  | 2007 11 08 | 704 | 0.4- | 0.1+ |
| 1973 09 29 | 675 | 0.7-  | 1.8-  | 2007 10 09 | 704 | 0.3+  | 1.4+  | 2007 11 08 | 704 | 0.9- | 0.4+ |
| 1973 09 30 | 675 | (2.6+ | 0.4-) | 2007 10 09 | 704 | 0.4-  | 0.7+  | 2007 11 08 | 704 | 0.1- | 0.2+ |
| 1973 09 30 | 675 | 1.5+  | 0.1+  | 2007 10 09 | 704 | 0.9+  | 0.5+  | 2007 11 08 | 703 | 0.8+ | 0.2- |
| 1973 10 04 | 675 | 0.2+  | 0.5+  | 2007 10 09 | 704 | (1.8- | 1.0+) | 2007 11 08 | 703 | 0.2- | 0.2- |
| 1973 10 04 | 675 | 1.1-  | 1.7+  | 2007 10 12 | 704 | 0.2+  | 0.4+  | 2007 11 08 | 703 | 0.1+ | 0.4- |
| 1973 10 05 | 675 | 1.5-  | 0.3+  | 2007 10 12 | 704 | 0.5+  | 0.3+  | 2007 11 08 | 703 | 0.5- | 0.4- |
| 1973 10 05 | 675 | 0.2-  | 1.2+  | 2007 10 12 | 704 | 0.0   | 0.3+  | 2007 11 09 | G96 | 0.0  | 0.4- |
| 2001 03 18 | 691 | 0.0   | 0.0   | 2007 10 12 | 704 | 0.0   | 0.3-  | 2007 11 09 | G96 | 0.3+ | 0.3- |
| 2001 03 18 | 691 | 0.3-  | 0.4+  | 2007 10 12 | 704 | 0.1+  | 0.1+  | 2007 11 09 | G96 | 0.2- | 0.3- |
| 2001 03 18 | 691 | 0.1-  | 0.3-  | 2007 10 24 | 704 | 0.4+  | 1.0+  | 2007 11 09 | G96 | 0.1+ | 0.4- |
| 2001 04 21 | 691 | (2.7- | 0.5+) | 2007 10 24 | 704 | 0.5-  | 0.0   | 2007 11 15 | 699 | 0.4+ | 0.2- |
| 2001 04 21 | 691 | 0.2+  | 0.1+  | 2007 10 24 | 704 | 0.5-  | 0.2+  | 2007 11 15 | 699 | 0.5+ | 1.0- |
| 2001 04 21 | 691 | 0.3+  | 0.2+  | 2007 10 24 | 704 | 0.3+  | 0.3+  | 2007 11 15 | 699 | 0.2+ | 0.3- |
| 2005 03 09 | 704 | 0.4-  | 0.3-  | 2007 11 02 | 704 | 0.3+  | 0.0   | 2007 11 15 | 699 | 0.5- | 0.2- |
| 2005 03 09 | 704 | (1.8- | 1.1-) | 2007 11 02 | 704 | 0.2+  | 0.2+  | 2007 11 15 | G96 | 0.2- | 0.4- |
| 2005 03 09 | 704 | 0.2+  | 0.7+  | 2007 11 02 | 704 | 0.1-  | 0.2+  | 2007 11 15 | G96 | 0.1- | 0.3- |
| 2005 03 09 | 704 | 0.3-  | 0.9+  | 2007 11 02 | 704 | 0.1+  | 0.0   | 2007 11 15 | G96 | 0.1- | 0.3- |
| 2005 03 12 | 704 | 0.2+  | 0.8+  | 2007 11 02 | 704 | 0.3+  | 0.1-  | 2007 11 15 | G96 | 0.1- | 0.3- |
| 2005 03 12 | 704 | 0.8+  | 0.0   | 2007 11 02 | 703 | 0.3-  | 0.3-  | 2007 11 17 | 704 | 0.2+ | 0.3+ |
| 2005 03 12 | 704 | 0.6+  | 0.0   | 2007 11 02 | 703 | 0.1-  | 0.3-  | 2007 11 17 | 704 | 0.4- | 0.2+ |
| 2005 03 12 | 704 | 0.6+  | 0.1+  | 2007 11 02 | 703 | 0.1+  | 0.2-  | 2007 11 17 | 704 | 0.1+ | 0.4+ |
| 2005 04 17 | 691 | 0.0   | 0.1-  | 2007 11 02 | 703 | 0.3+  | 0.4+  | 2007 11 17 | 704 | 0.0  | 0.7+ |
| 2005 04 17 | 691 | 0.1+  | 0.0   | 2007 11 02 | 703 | 0.9+  | 0.7+  | 2007 11 17 | 704 | 0.1+ | 0.2- |
| 2005 04 17 | 691 | 0.2-  | 0.2-  | 2007 11 02 | 703 | 0.2-  | 0.2+  | 2007 12 02 | 704 | 0.0  | 0.0  |
| 2007 07 19 | G96 | 0.0   | 0.2-  | 2007 11 02 | 703 | 0.0   | 0.5+  | 2007 12 02 | 704 | 0.2+ | 0.5- |
| 2007 07 19 | G96 | 0.2+  | 0.1-  | 2007 11 08 | 704 | 0.9-  | 0.2-  | 2007 12 02 | 704 | 0.2+ | 0.6- |
| 2007 07 19 | G96 | 0.4+  | 0.1-  | 2007 11 08 | 704 | 0.8-  | 0.2+  | 2007 12 02 | 704 | 0.0  | 0.8- |

(173113)\* 5038 T-2 = 1999 RP<sub>53</sub> = 2003 SS<sub>99</sub>

Discovered 1973 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPO* 53547)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 36.41976   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26358903 | $\omega$ | 80.15395  | +0.97531724   | -0.20148416 |
| <i>a</i> | 2.4090797  | $\Omega$ | 291.42587 | +0.14457799   | +0.89193635 |
| <i>e</i> | 0.1571527  | <i>i</i> | 5.56883   | +0.16689363   | +0.40478844 |
| <i>P</i> | 3.74       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1973 09 20 | 675 | 0.3- | 0.3- | 2003 09 22 | 704 | 0.5-  | 0.4+  | 2003 12 28 | 704 | 0.9- | 0.7+ |
| 1973 09 20 | 675 | 1.1+ | 1.3- | 2003 09 22 | 704 | (0.7- | 2.4+) | 2003 12 28 | 704 | 0.1+ | 0.2- |
| 1973 09 24 | 675 | 0.8+ | 0.7- | 2003 09 22 | 704 | (1.9- | 0.0)  | 2003 12 28 | 704 | 0.3- | 0.0  |
| 1973 09 24 | 675 | 0.6+ | 1.4+ | 2003 09 22 | 704 | (2.3- | 0.7+) | 2007 11 03 | 691 | 0.1- | 0.1- |
| 1973 09 25 | 675 | 0.6+ | 0.3- | 2003 09 30 | 704 | 0.3-  | 0.8+  | 2007 11 03 | 691 | 0.2- | 0.1- |
| 1973 09 25 | 675 | 0.2+ | 0.7- | 2003 09 30 | 704 | 0.3-  | 0.5-  | 2007 11 03 | 691 | 0.4- | 0.2- |
| 1973 09 29 | 675 | 0.6+ | 1.7- | 2003 09 30 | 704 | 0.2-  | 0.2+  | 2007 11 07 | 704 | 0.3+ | 0.4+ |
| 1973 09 29 | 675 | 1.0+ | 0.0  | 2003 09 30 | 704 | 0.3-  | 0.1-  | 2007 11 07 | 691 | 0.2- | 0.2- |
| 1973 09 30 | 675 | 0.5- | 1.3- | 2003 09 30 | 704 | 0.7-  | 0.2-  | 2007 11 07 | 704 | 0.2+ | 0.2+ |
| 1973 09 30 | 675 | 0.9- | 2.0- | 2003 10 03 | 691 | 0.1-  | 0.1-  | 2007 11 07 | 691 | 0.2- | 0.3- |
| 1999 09 06 | 699 | 0.0  | 0.8+ | 2003 10 03 | 691 | 0.1+  | 0.0   | 2007 11 07 | 704 | 0.6+ | 0.2+ |
| 1999 09 06 | 699 | 0.3+ | 1.2+ | 2003 10 03 | 691 | 0.0   | 0.0   | 2007 11 07 | 704 | 0.1+ | 0.3+ |
| 1999 09 06 | 699 | 0.4+ | 0.5+ | 2003 10 17 | 691 | 0.1-  | 0.1+  | 2007 11 07 | 691 | 0.6- | 0.6- |
| 1999 09 07 | 704 | 0.6- | 0.1+ | 2003 10 17 | 691 | 0.1-  | 0.0   | 2007 11 07 | 704 | 0.6+ | 0.2+ |
| 1999 09 07 | 704 | 0.2+ | 0.6- | 2003 10 17 | 691 | 0.0   | 0.1+  | 2007 11 18 | 704 | 0.6+ | 0.0  |
| 1999 09 07 | 704 | 0.2+ | 0.0  | 2003 10 22 | 704 | 0.2+  | 0.1+  | 2007 11 18 | 704 | 0.5+ | 0.1+ |
| 1999 09 07 | 704 | 0.8- | 0.8- | 2003 10 22 | 704 | 0.0   | 0.7+  | 2007 11 18 | 704 | 0.4+ | 0.1- |
| 1999 09 07 | 704 | 0.2- | 0.3+ | 2003 10 22 | 704 | 0.2-  | 0.8+  | 2007 11 18 | 704 | 0.6+ | 0.1+ |
| 1999 09 07 | 704 | 0.9+ | 0.2+ | 2003 10 22 | 704 | 0.2-  | 0.3+  | 2007 11 20 | 704 | 0.5+ | 0.5- |
| 1999 09 07 | 704 | 0.9- | 0.5- | 2003 10 30 | 704 | 1.2+  | 0.2-  | 2007 11 20 | 704 | 0.1- | 0.0  |
| 1999 09 07 | 704 | 0.9- | 0.1+ | 2003 10 30 | 704 | 1.1+  | 0.3+  | 2007 11 20 | 704 | 0.2+ | 0.4- |
| 1999 09 14 | 704 | 0.7+ | 0.3- | 2003 10 30 | 704 | 1.3+  | 0.1+  | 2007 11 20 | 704 | 0.6- | 0.3+ |
| 1999 09 14 | 704 | 0.1+ | 0.9+ | 2003 11 02 | 704 | 0.2-  | 0.2+  | 2007 11 20 | 704 | 0.5+ | 0.1+ |
| 1999 09 14 | 704 | 0.4- | 1.2- | 2003 11 02 | 704 | 0.5-  | 0.5+  | 2007 12 13 | 704 | 0.0  | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 14 | 704 | 0.3+ | 0.2+ | 2003 11 02 | 704 | 0.3- | 0.4+ | 2007 12 13 | 704 | 0.2+ | 0.9+ |
| 2003 09 19 | 608 | 0.0  | 1.4+ | 2003 11 02 | 704 | 0.0  | 0.1- | 2007 12 13 | 704 | 0.2+ | 0.1- |
| 2003 09 19 | 608 | 0.0  | 1.2+ | 2003 11 02 | 704 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.1- | 0.3+ |
| 2003 09 19 | 608 | 0.7+ | 0.3+ | 2003 11 15 | 644 | 0.4- | 0.2+ | 2007 12 13 | 704 | 0.1+ | 0.5+ |
| 2003 09 20 | 644 | 0.3- | 0.1- | 2003 11 15 | 644 | 0.0  | 0.3+ | 2007 12 15 | 704 | 0.4+ | 0.2+ |
| 2003 09 20 | 644 | 0.0  | 0.2- | 2003 11 15 | 644 | 0.6+ | 0.4+ | 2007 12 15 | 704 | 0.5+ | 0.4- |
| 2003 09 20 | 644 | 0.0  | 0.0  | 2003 11 19 | 704 | 0.7- | 0.0  | 2007 12 15 | 704 | 0.2+ | 0.6- |
| 2003 09 21 | 644 | 0.0  | 0.8+ | 2003 11 19 | 704 | 1.3- | 0.3+ | 2007 12 15 | 704 | 0.1+ | 0.0  |
| 2003 09 21 | 644 | 0.6- | 0.2+ | 2003 11 19 | 704 | 0.1- | 0.1- | 2007 12 15 | 704 | 0.6+ | 0.8+ |
| 2003 09 21 | 644 | 0.7- | 0.3+ | 2003 11 19 | 704 | 0.5+ | 0.1+ |            |     |      |      |
| 2003 09 22 | 704 | 0.1+ | 0.7- | 2003 11 19 | 704 | 0.0  | 0.5+ |            |     |      |      |

(173114)\* 1195 T-3 = 2002 PW<sub>92</sub>

Discovered 1977 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Doppler (*MPO* 35425)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.05082   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23344550 | $\omega$ | 177.74579 | +0.69928279   | -0.68982953 |
| <i>a</i> | 2.6122358  | $\Omega$ | 227.80867 | +0.65183555   | +0.72297900 |
| <i>e</i> | 0.0500422  | <i>i</i> | 14.65544  | +0.29345186   | +0.03790232 |
| <i>P</i> | 4.22       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1977 10 12 | 675 | (1.1+ | 3.8+) | 2002 08 30 | 699 | 0.5- | 0.8- | 2004 01 29 | 704 | 1.0+ | 0.0  |
| 1977 10 12 | 675 | 0.1+  | 1.0+  | 2002 08 30 | 699 | 0.6+ | 1.1+ | 2004 01 29 | 704 | 0.4+ | 1.0+ |
| 1977 10 16 | 675 | 0.3-  | 2.4-  | 2002 08 30 | 699 | 0.8+ | 0.8- | 2005 05 01 | 644 | 0.2- | 0.2+ |
| 1977 10 16 | 675 | 0.2-  | 0.4-  | 2002 08 30 | 699 | 0.6- | 0.1- | 2005 05 01 | 644 | 0.4- | 0.1+ |
| 1977 10 17 | 675 | 0.4+  | 0.4-  | 2002 09 10 | 644 | 0.5- | 0.4- | 2005 05 01 | 644 | 0.5- | 0.3+ |
| 1977 10 17 | 675 | 0.2+  | 0.1-  | 2002 09 10 | 644 | 0.4- | 0.6- | 2006 05 26 | 691 | 0.3- | 0.2+ |
| 1977 10 22 | 675 | 0.4-  | 0.3-  | 2002 09 10 | 644 | 0.5- | 0.6- | 2006 05 26 | 691 | 0.0  | 0.2+ |
| 1977 10 22 | 675 | 0.3-  | 0.6-  | 2002 10 05 | 644 | 0.1+ | 0.5+ | 2006 05 26 | 691 | 0.1+ | 0.3+ |
| 2001 05 24 | 699 | 0.5-  | 0.0   | 2002 10 05 | 644 | 0.3- | 0.5+ | 2006 08 23 | 644 | 0.2- | 0.1+ |
| 2001 05 24 | 699 | (2.4+ | 0.2+) | 2002 10 05 | 644 | 0.3- | 0.7+ | 2006 08 23 | 644 | 0.1- | 0.3+ |
| 2001 05 24 | 699 | 0.5+  | 0.5-  | 2002 10 06 | 644 | 0.1- | 0.5+ | 2006 08 23 | 644 | 0.0  | 0.1+ |
| 2001 05 24 | 699 | 1.0+  | 0.1+  | 2002 10 06 | 644 | 0.2- | 0.5+ | 2007 11 08 | G96 | 0.5+ | 0.0  |
| 2002 08 14 | 644 | 0.1+  | 0.6+  | 2002 10 06 | 644 | 0.1- | 0.5+ | 2007 11 08 | G96 | 0.1+ | 0.1+ |
| 2002 08 14 | 644 | 0.2-  | 0.7+  | 2002 10 06 | 704 | 0.8+ | 0.4- | 2007 11 08 | G96 | 0.2+ | 0.0  |
| 2002 08 14 | 644 | 0.5+  | 0.5+  | 2002 10 06 | 704 | 0.5+ | 0.1- | 2007 11 08 | G96 | 0.1+ | 0.0  |
| 2002 08 15 | 704 | 0.2+  | 0.1-  | 2002 10 06 | 704 | 0.3+ | 0.5- | 2007 11 20 | 703 | 0.2+ | 0.9+ |
| 2002 08 15 | 704 | 0.4+  | 0.6+  | 2002 10 06 | 704 | 1.0+ | 0.4- | 2007 11 20 | 703 | 1.3- | 0.4+ |
| 2002 08 15 | 704 | 0.1+  | 0.4-  | 2002 10 06 | 704 | 0.5- | 0.1- | 2007 11 20 | 703 | 0.1- | 0.5+ |
| 2002 08 15 | 704 | 1.1-  | 0.9+  | 2004 01 29 | 704 | 0.6+ | 0.8+ | 2007 11 20 | 703 | 0.3- | 0.5+ |

(173115)\* 3145 T-3 = 2002 RT<sub>122</sub>

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPO* 35426)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 25.46639   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19567716 | $\omega$ | 298.40004 | +0.77119615   | +0.62366493 |
| <i>a</i> | 2.9383890  | $\Omega$ | 23.73658  | -0.41401715   | +0.64370389 |
| <i>e</i> | 0.2445832  | <i>i</i> | 18.49106  | -0.48357657   | +0.44349449 |
| <i>P</i> | 5.04       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1977 10 22 | 675 | 1.6+ | 1.8- | 2002 10 04 | 704 | 1.0+ | 0.4+ | 2007 09 18 | 699 | 0.5+ | 0.8- |
| 1977 10 22 | 675 | 0.1- | 1.3- | 2002 10 05 | 704 | 0.5+ | 0.4+ | 2007 09 18 | 699 | 0.6+ | 0.4- |
| 2002 08 14 | 704 | 0.1- | 1.3- | 2002 10 05 | 704 | 0.7+ | 0.1+ | 2007 09 18 | 699 | 0.3+ | 0.3- |
| 2002 08 14 | 704 | 0.1+ | 0.7- | 2002 10 05 | 704 | 0.1+ | 0.1+ | 2007 09 18 | 699 | 0.8+ | 0.3- |
| 2002 08 14 | 704 | 1.4- | 0.4- | 2002 10 05 | 704 | 0.3+ | 0.1+ | 2007 10 02 | E12 | 0.4+ | 0.3- |
| 2002 09 08 | 608 | 0.6- | 0.0  | 2002 10 05 | 704 | 0.3+ | 0.8+ | 2007 10 02 | E12 | 0.3- | 0.6- |
| 2002 09 08 | 608 | 0.9- | 0.3+ | 2002 10 10 | 699 | 0.1- | 0.4+ | 2007 10 02 | E12 | 0.1- | 0.6- |
| 2002 09 08 | 608 | 0.8- | 0.2+ | 2002 10 10 | 699 | 0.3- | 0.6+ | 2007 10 02 | E12 | 0.2- | 0.4- |
| 2002 09 10 | 644 | 0.2- | 0.3+ | 2002 10 10 | 699 | 0.6- | 1.1+ | 2007 10 11 | 703 | 0.3+ | 0.2- |
| 2002 09 10 | 644 | 0.2- | 0.2+ | 2002 10 10 | 699 | 0.7- | 0.6+ | 2007 10 11 | 703 | 0.7+ | 0.1+ |
| 2002 09 10 | 644 | 0.3- | 0.2+ | 2002 10 29 | 704 | 0.1+ | 0.3+ | 2007 10 11 | 703 | 0.0  | 0.2+ |
| 2002 09 13 | 704 | 0.4- | 0.6- | 2002 10 29 | 704 | 0.5+ | 1.0- | 2007 10 11 | 703 | 0.4+ | 0.4- |
| 2002 09 13 | 704 | 0.3- | 0.5- | 2002 10 29 | 704 | 0.1+ | 0.3+ | 2007 10 11 | 699 | 0.7+ | 0.1+ |
| 2002 09 13 | 704 | 0.3- | 0.9- | 2002 10 29 | 704 | 0.4+ | 0.2+ | 2007 10 11 | 699 | 0.7- | 0.4+ |
| 2002 09 13 | 608 | 0.1- | 0.8+ | 2002 10 29 | 704 | 0.6- | 0.6- | 2007 10 11 | 699 | 1.0+ | 0.6- |
| 2002 09 13 | 608 | 0.2+ | 0.2+ | 2002 12 05 | 704 | 1.2- | 1.2- | 2007 10 11 | 699 | 0.0  | 0.2- |
| 2002 09 13 | 608 | 0.2+ | 0.6+ | 2002 12 05 | 704 | 1.0- | 1.5- | 2007 12 04 | 704 | 2.0+ | 1.5+ |
| 2002 09 17 | 644 | 0.3- | 0.4+ | 2002 12 05 | 704 | 0.1+ | 1.0- | 2007 12 04 | 704 | 0.5- | 0.8+ |
| 2002 09 17 | 644 | 0.2- | 0.4+ | 2006 04 30 | 699 | 0.0  | 0.2- | 2007 12 04 | 704 | 0.1+ | 0.8+ |
| 2002 09 17 | 644 | 0.2- | 0.4+ | 2006 04 30 | 699 | 0.7- | 0.4- | 2007 12 04 | 704 | 0.4- | 1.0+ |
| 2002 09 19 | 644 | 0.6- | 1.0+ | 2006 04 30 | 699 | 0.0  | 0.4- |            |     |      |      |

**(173116)\* 4162 T-3 = 1998 TH<sub>19</sub>**

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld  
on Palomar Schmidt plates taken by T. Gehrels.  
Id. M. E. Sansaturio (*MPO* 62174)

|                                         |            |          |           |               |             |
|-----------------------------------------|------------|----------|-----------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC           |             |
| <i>M</i>                                | 25.38634   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.23421658 | $\omega$ | 304.42567 | +0.53486142   | −0.84221851 |
| <i>a</i>                                | 2.6064993  | $\Omega$ | 113.09992 | +0.79738020   | +0.47660433 |
| <i>e</i>                                | 0.2149530  | <i>i</i> | 4.22452   | +0.27947824   | +0.25202439 |
| <i>P</i>                                | 4.21       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1977 10 11 | 675 | 0.1- | 0.8- | 2001 05 24 | 807 | 0.4+ | 0.4- | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 1977 10 11 | 675 | 1.0+ | 0.6- | 2001 05 24 | 807 | 0.3+ | 0.4- | 2007 11 11 | G96 | 0.1- | 0.3- |
| 1977 10 12 | 675 | 0.2+ | 0.5- | 2004 02 14 | 691 | 0.2- | 0.3+ | 2007 11 11 | G96 | 0.4- | 0.0  |
| 1977 10 12 | 675 | 0.2- | 0.1+ | 2004 02 14 | 691 | 0.2- | 0.5+ | 2007 11 11 | G96 | 0.1- | 0.5- |
| 1977 10 16 | 675 | 0.3+ | 1.0+ | 2004 02 14 | 691 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.3- | 0.1+ |
| 1977 10 16 | 675 | 0.2+ | 0.9+ | 2004 02 23 | 704 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.2+ | 0.6+ |
| 1977 10 17 | 675 | 0.5- | 1.0- | 2004 02 23 | 704 | 0.8+ | 0.0  | 2007 11 11 | G96 | 0.2- | 0.1- |
| 1977 10 17 | 675 | 0.2+ | 0.0  | 2004 02 23 | 704 | 0.4+ | 0.3- | 2007 11 11 | G96 | 0.3- | 0.3+ |
| 1977 10 21 | 675 | 0.7+ | 0.6- | 2005 05 10 | G96 | 0.3- | 0.1- | 2007 11 13 | G96 | 0.2- | 0.0  |
| 1977 10 21 | 675 | 0.6- | 1.3- | 2005 05 10 | G96 | 0.4+ | 0.2+ | 2007 11 13 | G96 | 0.2+ | 0.0  |
| 1998 10 15 | 327 | 0.2+ | 0.4+ | 2005 05 10 | G96 | 0.1+ | 0.3- | 2007 11 13 | G96 | 0.0  | 0.1- |
| 1998 10 15 | 327 | 0.0  | 1.0+ | 2005 05 10 | G96 | 0.2- | 0.1+ | 2007 11 13 | G96 | 0.4+ | 0.0  |
| 1998 10 15 | 327 | 0.1- | 0.3+ | 2005 05 14 | G96 | 0.3- | 0.7- | 2007 12 06 | G96 | 0.5+ | 0.9- |
| 1998 10 17 | 327 | 0.8- | 0.1+ | 2005 05 14 | G96 | 0.3+ | 0.1- | 2007 12 06 | G96 | 0.7+ | 0.3- |
| 1998 10 17 | 327 | 0.6- | 0.7+ | 2005 05 14 | G96 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.3- | 0.6- |
| 1998 10 17 | 327 | 0.4- | 0.6+ | 2005 05 14 | G96 | 0.4- | 0.3- | 2007 12 06 | G96 | 0.5+ | 0.4- |

**1992 DE<sub>1</sub> = 2007 VT<sub>292</sub>**

|                                         |            |          |           |               |             |
|-----------------------------------------|------------|----------|-----------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC           |             |
| <i>M</i>                                | 299.50556  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.12399604 | $\omega$ | 218.48151 | -0.89892730   | +0.43695296 |
| <i>a</i>                                | 3.9828825  | $\Omega$ | 347.31384 | -0.35776029   | -0.77386477 |
| <i>e</i>                                | 0.0702219  | <i>i</i> | 8.28666   | -0.25285822   | -0.45848166 |
| <i>P</i>                                | 7.95       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 02 26 | 691 | 0.2- | 0.4+ | 1992 03 06 | 691 | 0.4+ | 0.9+ | 1992 03 11 | 691 | 0.6+ | 0.2+ |
| 1992 02 26 | 691 | 0.4+ | 0.0  | 1992 03 06 | 691 | 0.3+ | 0.2+ | 2007 11 14 | G96 | 0.4+ | 0.0  |
| 1992 02 26 | 691 | 0.2- | 0.1- | 1992 03 06 | 691 | 0.4- | 0.5+ | 2007 11 14 | G96 | 0.4+ | 0.1- |
| 1992 02 27 | 691 | 0.5+ | 0.5- | 1992 03 07 | 691 | 0.3- | 0.0  | 2007 11 14 | G96 | 0.2- | 0.0  |
| 1992 02 27 | 691 | 0.1+ | 0.4+ | 1992 03 07 | 691 | 0.2- | 0.7- | 2007 11 14 | G96 | 0.2- | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 02 27 | 691 | 0.5+ | 0.2- | 1992 03 07 | 691 | 0.7- | 0.4- | 2007 11 19 | 691 | 0.2+ | 0.2- |
| 1992 02 28 | 691 | 0.3- | 0.2+ | 1992 03 11 | 691 | 0.1+ | 0.3- | 2007 11 19 | 691 | 0.2- | 0.2+ |
| 1992 02 28 | 691 | 0.5- | 0.2- | 1992 03 11 | 691 | 0.1- | 0.4- | 2007 11 19 | 691 | 0.2- | 0.0  |

**1994 HC = 2007 UU<sub>65</sub>**

|                                         |            |          |           |             |             |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |
| $M$                                     | 64.59799   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$                                     | 0.31617997 | $\omega$ | 270.04530 | +0.52263914 | +0.85083978 |
| $a$                                     | 2.1339283  | $\Omega$ | 31.65181  | -0.73551489 | +0.48203583 |
| $e$                                     | 0.3372249  | $i$      | 5.91055   | -0.43112201 | +0.20907685 |
| $P$                                     | 3.12       | $H$      | 17.9      | $G$         | 0.15        |
|                                         |            |          |           | $U$         | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 04 19 | 691 | 0.0  | 0.3- | 2007 09 09 | G96 | 0.6- | 0.1+ | 2007 10 19 | 691 | 0.2- | 0.3- |
| 1994 04 19 | 691 | 0.4+ | 0.4+ | 2007 09 09 | G96 | 0.2+ | 0.0  | 2007 10 19 | 691 | 0.2+ | 0.1- |
| 1994 04 19 | 691 | 0.1- | 0.1- | 2007 09 09 | G96 | 0.2- | 0.1+ | 2007 10 31 | 691 | 0.3+ | 0.2+ |
| 1994 04 19 | 691 | 0.4+ | 0.0  | 2007 09 09 | G96 | 0.1+ | 0.0  | 2007 10 31 | 691 | 0.3+ | 0.3+ |
| 1994 04 19 | 691 | 0.1+ | 0.0  | 2007 09 18 | G96 | 0.2+ | 0.0  | 2007 10 31 | 691 | 0.0  | 0.4+ |
| 1994 04 19 | 691 | 0.2+ | 0.1- | 2007 09 18 | G96 | 0.2+ | 0.4- | 2007 11 01 | 291 | 0.3- | 0.2+ |
| 1994 04 20 | 691 | 0.6+ | 0.1- | 2007 09 18 | G96 | 0.3- | 0.0  | 2007 11 01 | 291 | 0.3- | 0.3+ |
| 1994 04 20 | 691 | 0.2+ | 0.1- | 2007 09 18 | G96 | 0.2- | 0.0  | 2007 11 01 | 291 | 0.2- | 0.0  |
| 1994 04 20 | 691 | 0.3+ | 0.4- | 2007 10 11 | 691 | 0.0  | 0.1+ | 2007 11 04 | 691 | 0.1- | 0.1+ |
| 1994 05 01 | 691 | 0.2- | 0.4+ | 2007 10 11 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.1- | 0.1+ |
| 1994 05 01 | 691 | 0.9- | 0.5+ | 2007 10 11 | 691 | 0.1- | 0.0  | 2007 11 04 | 691 | 0.1+ | 0.4+ |
| 1994 05 01 | 691 | 0.7- | 0.4+ | 2007 10 15 | 691 | 0.1- | 0.0  | 2007 11 19 | 691 | 0.2- | 0.3+ |
| 2004 11 11 | 691 | 0.1- | 0.7- | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.2+ | 0.2+ |
| 2004 11 11 | 691 | 0.3+ | 0.6- | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 19 | 691 | 0.0  | 0.1- |
| 2004 11 11 | 691 | 0.1+ | 0.3- | 2007 10 19 | 691 | 0.5- | 0.1- |            |     |      |      |

**1994 UZ<sub>10</sub> = 2002 RX<sub>255</sub> = 2007 UY<sub>96</sub>**Id. Minor Planet Center (*MPO* 127851; unpublished)

|                                         |            |          |           |              |              |
|-----------------------------------------|------------|----------|-----------|--------------|--------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC          |              |
| $M$                                     | 315.77533  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$                                     | 0.23112722 | $\omega$ | 221.86795 | -0.10837720  | -0.98783644  |
| $a$                                     | 2.6296745  | $\Omega$ | 234.64849 | +0.94452295  | -0.06733823  |
| $e$                                     | 0.0244836  | $i$      | 7.85770   | +0.31004964  | -0.14015965  |
| $P$                                     | 4.26       | $H$      | 16.7      | $G$          | 0.15         |
|                                         |            |          |           | $U$          | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 29 | 691 | 0.2- | 0.1- | 2002 08 26 | 644 | 0.1- | 0.2- | 2007 11 07 | 691 | 0.3+ | 0.3+ |
| 1994 10 29 | 691 | 0.1- | 0.0  | 2002 08 26 | 644 | 0.2- | 0.4- | 2007 11 14 | 691 | 0.3- | 0.3- |
| 1994 10 29 | 691 | 0.2- | 0.2- | 2002 09 04 | 644 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.5- | 0.3- |
| 1994 10 29 | 691 | 0.1- | 0.2+ | 2002 09 04 | 644 | 0.4+ | 0.4+ | 2007 11 14 | 691 | 0.2- | 0.3- |
| 1994 10 29 | 691 | 0.1- | 0.2+ | 2002 09 04 | 644 | 0.2- | 0.3+ | 2007 11 14 | 704 | 1.2+ | 0.5+ |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 02 15 | 691 | 0.8− | 0.5− | 2007 10 24 | G96 | 1.0+ | 0.8− | 2007 12 04 | 699 | 0.2+  | 0.1−  |
| 1994 02 15 | 691 | 0.1+ | 1.1− | 2007 10 24 | G96 | 0.1− | 0.3− | 2007 12 04 | 699 | 0.2+  | 0.3−  |
| 1994 02 15 | 691 | 0.2+ | 0.1+ | 2007 10 24 | G96 | 0.3+ | 0.2− | 2007 12 04 | 699 | 0.1−  | 1.0−  |
| 1996 10 10 | 691 | 0.6− | 0.7− | 2007 10 24 | G96 | 0.2− | 0.6− | 2007 12 12 | 704 | 1.1−  | 0.9+  |
| 1996 10 10 | 691 | 0.4− | 0.6− | 2007 11 01 | 691 | 0.2− | 0.2− | 2007 12 12 | 704 | 0.2+  | 0.1+  |
| 1996 10 10 | 691 | 0.3− | 0.6− | 2007 11 01 | 691 | 0.1− | 0.0  | 2007 12 12 | 704 | (0.8+ | 2.3+) |
| 1996 10 11 | 691 | 1.1− | 0.4− | 2007 11 01 | 691 | 0.2− | 0.2− | 2007 12 12 | 704 | 0.3+  | 0.5+  |
| 1996 10 11 | 691 | 0.7− | 0.4− | 2007 11 18 | 704 | 0.4− | 0.3+ | 2007 12 13 | 704 | (0.3− | 1.6+) |
| 1996 10 17 | 691 | 1.0+ | 0.5+ | 2007 11 18 | 704 | 0.4− | 0.2− | 2007 12 13 | 704 | 0.1−  | 1.5+  |
| 1996 10 17 | 691 | 1.3+ | 0.5+ | 2007 11 18 | 704 | 0.2− | 1.0− | 2007 12 13 | 704 | 0.5−  | 0.8+  |
| 1996 10 17 | 691 | 0.9+ | 0.2+ | 2007 11 20 | 704 | 0.5+ | 0.8+ | 2007 12 13 | 704 | 0.4−  | 1.3+  |
| 2003 09 16 | 691 | 0.2+ | 0.1− | 2007 11 20 | 704 | 0.5+ | 0.7+ | 2007 12 13 | 704 | 0.2+  | 1.4+  |
| 2003 09 16 | 691 | 0.2− | 0.1+ | 2007 11 20 | 704 | 0.3+ | 0.9+ | 2007 12 15 | 704 | 0.6−  | 1.2+  |
| 2003 09 16 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 703 | 0.5− | 0.7− | 2007 12 15 | 704 | 0.1−  | 1.0+  |
| 2005 04 11 | G96 | 0.3− | 0.3+ | 2007 12 04 | 703 | 0.1+ | 0.3+ | 2007 12 15 | 704 | 0.3+  | 1.0+  |
| 2005 04 11 | G96 | 0.2− | 0.7+ | 2007 12 04 | 699 | 0.3+ | 0.4− | 2007 12 15 | 704 | (0.3+ | 1.8+) |
| 2005 04 11 | G96 | 0.4− | 0.6+ | 2007 12 04 | 703 | 0.6+ | 0.0  | 2007 12 15 | 704 | 0.4−  | 1.1+  |
| 2005 04 11 | G96 | 0.1− | 0.2+ | 2007 12 04 | 703 | 1.1+ | 0.7− |            |     |       |       |

1996 VW<sub>17</sub> = 2007 XP<sub>2</sub>

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 59.93424   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.18807285 | $\omega$ | 308.66514 | +0.95787863 | −0.28100091 |          |   |
| <i>a</i>                                | 3.0170695  | $\Omega$ | 67.72558  | +0.27933346 | +0.86384592 |          |   |
| <i>e</i>                                | 0.0863053  | <i>i</i> | 3.66918   | +0.06664342 | +0.41810131 |          |   |
| <i>P</i>                                | 5.24       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 06 | 691 | 0.1− | 0.0  | 1996 11 18 | 691 | 0.4− | 0.2− | 2006 09 18 | 703 | 1.6− | 0.3+ |
| 1996 11 06 | 691 | 0.0  | 0.3+ | 1996 11 18 | 691 | 0.5− | 0.1+ | 2006 09 18 | 703 | 2.7+ | 0.4+ |
| 1996 11 06 | 691 | 0.3− | 0.1+ | 2004 03 21 | 691 | 0.2+ | 0.1+ | 2007 12 03 | 691 | 0.2− | 0.1− |
| 1996 11 07 | 691 | 0.7+ | 0.1− | 2004 03 21 | 691 | 0.2+ | 0.3+ | 2007 12 03 | 691 | 0.1− | 0.0  |
| 1996 11 07 | 691 | 0.4+ | 0.4+ | 2004 03 21 | 691 | 0.1+ | 0.5+ | 2007 12 03 | 691 | 0.0  | 0.2+ |
| 1996 11 07 | 691 | 0.7+ | 0.3+ | 2006 08 20 | 691 | 0.0  | 0.5+ | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 1996 11 13 | 691 | 0.5+ | 0.1− | 2006 08 20 | 691 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.6+ | 0.0  |
| 1996 11 13 | 691 | 0.1+ | 0.1+ | 2006 08 20 | 691 | 0.4− | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 1996 11 13 | 691 | 0.2+ | 0.0  | 2006 09 18 | 703 | 0.0  | 1.1+ | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 1996 11 18 | 691 | 1.5− | 0.5− | 2006 09 18 | 703 | 0.6− | 1.4− |            |     |      |      |

1997 UN<sub>6</sub> = 2007 TU<sub>225</sub>

|                                         |            |          |          |             |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
| <i>M</i>                                | 306.23451  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.19688454 | $\omega$ | 57.89111 | −0.07117252 | −0.99714618 |          |   |
| <i>a</i>                                | 2.9263637  | $\Omega$ | 36.21634 | +0.90019746 | −0.07508419 |          |   |
| <i>e</i>                                | 0.0691187  | <i>i</i> | 2.44241  | +0.42962658 | −0.00786452 |          |   |
| <i>P</i>                                | 5.01       | <i>H</i> | 16.6     | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 23 | 691 | 0.4− | 0.2− | 2005 05 09 | G96 | 0.0  | 0.3− | 2007 10 30 | G96 | 0.3+ | 0.6+ |
| 1997 10 23 | 691 | 0.3+ | 0.2− | 2005 05 09 | G96 | 0.2− | 0.2− | 2007 10 30 | G96 | 0.5+ | 0.6+ |
| 1997 10 23 | 691 | 0.1− | 0.3− | 2005 05 09 | G96 | 0.1+ | 0.1− | 2007 10 30 | G96 | 0.0  | 0.7+ |
| 1997 10 28 | 691 | 0.2+ | 0.2− | 2005 05 09 | G96 | 0.1+ | 0.2− | 2007 10 30 | G96 | 0.7+ | 0.7+ |
| 1997 10 28 | 691 | 0.1− | 0.1− | 2007 10 08 | 691 | 0.2− | 0.1+ | 2007 11 17 | G96 | 0.1− | 0.3+ |
| 1997 10 28 | 691 | 1.1+ | 0.4− | 2007 10 08 | 691 | 0.3− | 0.2+ | 2007 11 17 | G96 | 1.0− | 0.8+ |
| 1997 11 01 | 691 | 0.2− | 0.4− | 2007 10 08 | 691 | 0.1− | 0.2+ | 2007 11 17 | G96 | 0.2+ | 0.4+ |
| 1997 11 01 | 691 | 0.1− | 0.1− | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.1− | 0.2− |
| 1997 11 01 | 691 | 0.2+ | 0.5− | 2007 10 12 | 691 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.0  | 0.3+ |
| 2005 04 11 | G96 | 0.0  | 0.2− | 2007 10 12 | 691 | 0.1+ | 0.2+ | 2007 11 18 | G96 | 0.3− | 0.4+ |
| 2005 04 11 | G96 | 0.0  | 0.1− | 2007 10 20 | 691 | 0.1− | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.6+ |
| 2005 04 11 | G96 | 0.4− | 0.5− | 2007 10 20 | 691 | 0.5− | 0.2− | 2007 11 18 | G96 | 0.2+ | 0.6+ |
| 2005 04 11 | G96 | 0.1+ | 0.4+ | 2007 10 20 | 691 | 0.0  | 0.1− |            |     |      |      |

1997 UQ<sub>9</sub> = 2006 HH<sub>118</sub>

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 297.24228  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.17548526 | $\omega$ | 335.58330 | +0.98168647 | −0.09120050 |          |   |
| <i>a</i>                                | 3.1596740  | $\Omega$ | 31.10877  | +0.17763128 | +0.75546330 |          |   |
| <i>e</i>                                | 0.2655377  | <i>i</i> | 18.88806  | −0.06883902 | +0.64881251 |          |   |
| <i>P</i>                                | 5.62       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

1998 QQ<sub>73</sub> = 2007 XW

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 39.05928   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.22893900 | $\omega$ | 73.76855  | +0.97965997 | +0.05040283 |          |   |
| <i>a</i>                                | 2.6464043  | $\Omega$ | 283.02869 | −0.13138732 | +0.89272199 |          |   |
| <i>e</i>                                | 0.2884134  | <i>i</i> | 11.49975  | +0.15166978 | +0.44778009 |          |   |
| <i>P</i>                                | 4.31       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 24 | 704 | 0.7+ | 1.0+ | 1998 09 23 | 704 | 0.0  | 0.2− | 2007 12 03 | 704 | 0.3− | 0.2+ |
| 1998 08 24 | 704 | 0.5− | 0.3+ | 1998 09 23 | 704 | 0.2+ | 0.2+ | 2007 12 03 | 704 | 0.9+ | 0.2+ |
| 1998 08 24 | 704 | 0.6+ | 1.6− | 1998 09 23 | 704 | 0.3− | 0.8+ | 2007 12 03 | 704 | 0.9+ | 0.6− |
| 1998 08 24 | 704 | 0.1+ | 0.9− | 1998 09 23 | 704 | 0.1+ | 0.2+ | 2007 12 03 | 704 | 0.4+ | 0.2− |
| 1998 08 24 | 704 | 0.4− | 0.8+ | 1998 09 23 | 704 | 0.3− | 0.6+ | 2007 12 03 | 704 | 0.5− | 0.5+ |
| 1998 08 27 | 704 | 0.4− | 0.2− | 1998 09 25 | 699 | 0.0  | 0.5+ | 2007 12 13 | 704 | 0.3+ | 0.3− |
| 1998 08 27 | 704 | 0.3− | 0.4+ | 1998 09 25 | 699 | 0.0  | 0.4− | 2007 12 13 | 704 | 0.2+ | 0.7− |
| 1998 08 27 | 704 | 0.4+ | 0.2− | 1998 09 25 | 699 | 0.1− | 0.2+ | 2007 12 13 | 704 | 0.7− | 0.5− |
| 1998 08 27 | 704 | 0.5+ | 0.1+ | 2003 12 21 | 691 | 0.1− | 0.2+ | 2007 12 13 | 704 | 0.3− | 0.5+ |
| 1998 08 27 | 704 | 0.6+ | 0.4+ | 2003 12 21 | 691 | 0.2+ | 0.1− | 2007 12 13 | 704 | 0.2− | 0.2− |
| 1998 09 19 | 704 | 0.3+ | 0.6− | 2003 12 21 | 691 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.2+ | 0.2− |
| 1998 09 19 | 704 | 0.1+ | 0.1− | 2007 12 02 | 704 | 0.6− | 0.3+ | 2007 12 16 | 704 | 0.0  | 0.2+ |
| 1998 09 19 | 704 | 0.1− | 1.1− | 2007 12 02 | 704 | 0.0  | 0.3− | 2007 12 16 | 704 | 0.0  | 0.4− |
| 1998 09 19 | 704 | 0.2+ | 1.5− | 2007 12 02 | 704 | 0.3− | 0.3+ | 2007 12 16 | 704 | 0.0  | 0.1+ |
| 1998 09 19 | 704 | 1.4− | 1.5+ | 2007 12 02 | 704 | 0.1− | 0.1+ |            |     |      |      |

1998 QO<sub>97</sub> = 2007 VF<sub>270</sub>

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 18.38945   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.22707329 | $\omega$ | 124.06662 | +0.92273336 | −0.35026377 |          |   |
| <i>a</i>                                | 2.6608804  | $\Omega$ | 256.89589 | +0.27617700 | +0.89196039 |          |   |
| <i>e</i>                                | 0.3320184  | <i>i</i> | 9.50704   | +0.26886691 | +0.28587053 |          |   |
| <i>P</i>                                | 4.34       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 24 | 704 | 0.9− | 1.2+ | 2007 10 20 | D29 | 0.1+ | 0.5− | 2007 11 28 | D29 | 0.7+ | 0.4− |
| 1998 08 24 | 704 | 1.1− | 0.1− | 2007 10 20 | D29 | 0.2− | 0.8− | 2007 11 28 | D29 | 0.6− | 0.8− |
| 1998 08 24 | 704 | 0.8+ | 0.4− | 2007 10 20 | D29 | 0.7+ | 0.1− | 2007 11 28 | D29 | 0.5+ | 0.5− |
| 1998 08 24 | 704 | 1.4− | 0.8+ | 2007 11 15 | 704 | 0.5+ | 0.0  | 2007 11 28 | D29 | 0.2+ | 0.5− |
| 1998 08 27 | 704 | 1.0+ | 0.3+ | 2007 11 15 | 704 | 0.6+ | 0.5+ | 2007 11 28 | D29 | 0.1− | 0.3− |
| 1998 08 27 | 704 | 1.9+ | 0.2− | 2007 11 15 | 704 | 0.4+ | 0.4+ | 2007 11 28 | D29 | 0.2− | 0.3− |
| 1998 08 27 | 704 | 0.2+ | 0.6− | 2007 11 15 | 704 | 0.7+ | 0.2− | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 1998 09 19 | 704 | 0.3− | 0.2− | 2007 11 15 | 704 | 0.8+ | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.4− |
| 1998 09 19 | 704 | 1.7+ | 1.6− | 2007 11 17 | 691 | 0.3− | 0.4− | 2007 12 04 | G96 | 0.2+ | 0.4− |
| 1998 09 19 | 704 | 0.8− | 0.0  | 2007 11 17 | 691 | 0.2− | 0.4− | 2007 12 04 | G96 | 0.3+ | 0.5− |



2007 DEC. 24

M.P.O. 129571

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 704 | 1.2+ | 0.2+ | 2007 11 17 | 691 | 0.1- | 0.5+ | 2007 12 14 | 704 | 0.2+ | 2.5+ |
| 1998 09 23 | 704 | 1.4- | 0.2- | 2007 11 20 | 704 | 0.6- | 0.4+ | 2007 12 14 | 704 | 0.3- | 0.6+ |
| 1998 09 23 | 704 | 0.5- | 0.2+ | 2007 11 20 | 704 | 0.8+ | 0.5+ | 2007 12 14 | 704 | 0.5- | 0.0  |
| 1998 09 23 | 704 | 0.5+ | 0.3- | 2007 11 20 | 704 | 1.3+ | 0.8- | 2007 12 14 | 704 | 0.3+ | 0.0  |
| 1998 09 23 | 704 | 1.2- | 1.3+ | 2007 11 20 | 704 | 0.2- | 1.2+ | 2007 12 14 | 704 | 0.1+ | 0.9+ |
| 2004 01 28 | 645 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.0  | 0.4+ | 2007 12 16 | 691 | 0.4- | 0.1+ |
| 2004 01 28 | 645 | 0.0  | 0.0  | 2007 11 28 | D29 | 0.1+ | 0.4- | 2007 12 16 | 691 | 0.3- | 0.3+ |
| 2007 10 20 | D29 | 1.2- | 0.2- | 2007 11 28 | D29 | 0.4+ | 0.5- | 2007 12 16 | 691 | 0.3- | 0.0  |

**1998 RR = 2007 UX<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 20.33855   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23153579 | $\omega$ | 60.46604  | +0.97784911   | -0.11252891 |
| <i>a</i> | 2.6265800  | $\Omega$ | 305.44545 | +0.00852245   | +0.86389577 |
| <i>e</i> | 0.1356438  | <i>i</i> | 12.51171  | +0.20913746   | +0.49093924 |
| <i>P</i> | 4.26       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 11 22 | 691 | 0.4+ | 0.2- | 2007 09 20 | 703 | 0.6+  | 0.3+  | 2007 10 21 | 703 | 0.6-  | 0.0   |
| 1995 11 22 | 691 | 0.2- | 0.0  | 2007 09 20 | 703 | 0.5+  | 0.1-  | 2007 11 03 | 703 | 0.8-  | 1.0-  |
| 1995 11 22 | 691 | 0.2- | 0.2- | 2007 09 20 | 703 | 0.0   | 0.8+  | 2007 11 03 | 703 | 0.5-  | 0.3+  |
| 1995 12 20 | 691 | 0.1+ | 0.1- | 2007 09 20 | 703 | 0.8+  | 0.6-  | 2007 11 03 | 703 | 0.9-  | 0.4-  |
| 1995 12 20 | 691 | 0.2- | 0.1- | 2007 10 09 | 703 | (2.0+ | 0.1+) | 2007 11 03 | 703 | 0.6-  | 0.8+  |
| 1995 12 20 | 691 | 0.3- | 0.2- | 2007 10 09 | 703 | 1.4+  | 0.4+  | 2007 11 03 | 703 | 0.7-  | 1.3+  |
| 1998 09 09 | 910 | 0.5+ | 0.7- | 2007 10 09 | 703 | (2.5+ | 0.6+) | 2007 11 03 | 703 | 0.5+  | 0.1-  |
| 1998 09 09 | 910 | 0.6+ | 0.7- | 2007 10 09 | 703 | (2.4+ | 0.9+) | 2007 11 03 | 703 | (1.3- | 1.6-) |
| 1998 09 09 | 910 | 0.6+ | 0.6- | 2007 10 16 | 703 | 0.4-  | 0.5-  | 2007 11 03 | 703 | 0.5-  | 0.4-  |
| 1998 09 10 | 910 | 0.4+ | 0.2- | 2007 10 16 | 703 | 0.3+  | 0.3+  | 2007 11 13 | 703 | 0.4-  | 0.2+  |
| 1998 09 10 | 910 | 0.3+ | 0.3- | 2007 10 16 | 703 | 0.4-  | 0.1+  | 2007 11 13 | 703 | 0.6+  | 0.3+  |
| 1998 09 10 | 910 | 0.3+ | 0.0  | 2007 10 16 | 703 | 0.2-  | 0.2+  | 2007 11 13 | 703 | 0.2-  | 0.3-  |
| 1998 09 17 | 910 | 0.5- | 0.1- | 2007 10 21 | 703 | 0.6+  | 0.5-  | 2007 11 13 | 703 | 0.6-  | 0.2+  |
| 1998 09 17 | 910 | 0.6- | 0.1+ | 2007 10 21 | 703 | 1.2+  | 0.6-  |            |     |       |       |
| 1998 09 17 | 910 | 0.6- | 0.1+ | 2007 10 21 | 703 | 0.3+  | 0.3+  |            |     |       |       |

**1998 SL<sub>32</sub> = 2002 SJ<sub>71</sub> = 2005 JD<sub>181</sub>**

Id. Minor Planet Center (MPO 127857; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 222.17598  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.26087159 | $\omega$ | 80.02234  | -0.28016712   | +0.95993925 |
| <i>a</i> | 2.4257806  | $\Omega$ | 173.70131 | -0.89698609   | -0.26000649 |
| <i>e</i> | 0.1511882  | <i>i</i> | 2.50687   | -0.34193910   | -0.10446659 |
| <i>P</i> | 3.78       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 23 | 691 | 0.4- | 0.1- | 2001 04 14 | 691 | 0.4- | 0.3+ | 2002 11 08 | 645 | 0.1- | 0.0  |
| 1998 09 23 | 691 | 0.0  | 0.1+ | 2001 04 14 | 691 | 0.3+ | 0.1+ | 2002 11 08 | 645 | 0.1- | 0.0  |
| 1998 09 23 | 691 | 0.3- | 0.3- | 2001 04 14 | 691 | 0.1+ | 0.2+ | 2005 05 12 | 704 | 0.2- | 0.4- |
| 1998 09 26 | 691 | 0.8+ | 0.3- | 2001 04 14 | 691 | 0.1+ | 0.1+ | 2005 05 12 | 704 | 0.6- | 0.3+ |
| 1998 09 26 | 691 | 0.7+ | 0.0  | 2002 09 14 | 644 | 0.1+ | 0.0  | 2005 05 12 | 704 | 0.9+ | 0.3+ |
| 1998 09 26 | 691 | 0.5+ | 0.5- | 2002 09 14 | 644 | 0.0  | 0.9+ | 2006 09 30 | G96 | 0.8+ | 0.1+ |
| 1998 09 29 | 691 | 0.4- | 0.2+ | 2002 09 14 | 644 | 0.1+ | 0.5+ | 2006 09 30 | G96 | 0.4+ | 0.1+ |
| 1998 09 29 | 691 | 0.2+ | 0.2- | 2002 09 15 | 644 | 0.3- | 0.1- | 2006 09 30 | G96 | 0.5- | 0.4- |
| 1998 09 29 | 691 | 0.4+ | 0.1+ | 2002 09 15 | 644 | 0.0  | 0.2- | 2006 09 30 | G96 | 0.2+ | 0.0  |
| 2001 03 04 | 691 | 0.4+ | 0.8+ | 2002 09 15 | 644 | 0.6- | 0.2+ | 2006 10 27 | G96 | 0.1+ | 0.2+ |
| 2001 03 04 | 691 | 0.1- | 0.7+ | 2002 09 26 | 644 | 0.7- | 0.0  | 2006 10 27 | G96 | 0.3+ | 0.2- |
| 2001 03 04 | 691 | 0.0  | 0.6+ | 2002 09 26 | 644 | 0.5- | 0.1+ | 2006 10 27 | G96 | 0.2+ | 0.0  |
| 2001 03 29 | 699 | 0.4+ | 0.5- | 2002 09 26 | 644 | 0.9- | 0.3+ | 2006 10 27 | G96 | 0.0  | 0.1+ |
| 2001 03 29 | 699 | 0.7+ | 0.3- | 2002 10 05 | 644 | 0.2- | 0.0  | 2006 11 14 | G96 | 0.2+ | 0.6- |
| 2001 03 29 | 699 | 1.0+ | 0.3+ | 2002 10 05 | 644 | 0.3- | 0.0  | 2006 11 14 | G96 | 0.4+ | 0.0  |
| 2001 03 29 | 699 | 1.6- | 0.4- | 2002 10 06 | 644 | 0.0  | 0.0  | 2006 11 14 | G96 | 1.3- | 0.3- |
| 2001 04 14 | 691 | 0.1- | 0.2- | 2002 10 06 | 644 | 0.4+ | 0.7+ | 2006 11 14 | G96 | 0.6+ | 0.5+ |
| 2001 04 14 | 691 | 0.3- | 0.1- | 2002 10 06 | 644 | 0.2- | 0.4+ |            |     |      |      |

**1998 SU<sub>36</sub> = 2007 VY<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 11.59908   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22524447 | $\omega$ | 21.65086 | +0.88914938   | -0.45759936 |
| <i>a</i> | 2.6752639  | $\Omega$ | 5.58643  | +0.41355310   | +0.79973573 |
| <i>e</i> | 0.3098845  | <i>i</i> | 2.37002  | +0.19592656   | +0.38862011 |
| <i>P</i> | 4.38       | <i>H</i> | 18.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 20 | 691 | 0.5+  | 0.2-  | 2007 11 01 | 691 | 0.2- | 0.2+ | 2007 11 17 | G96 | 0.4+ | 0.6- |
| 1998 09 20 | 691 | 0.0   | 0.0   | 2007 11 05 | 691 | 0.0  | 0.2- | 2007 11 17 | G96 | 0.0  | 0.5- |
| 1998 09 23 | 691 | 0.4+  | 0.2-  | 2007 11 05 | 691 | 0.0  | 0.6+ | 2007 11 17 | G96 | 0.6+ | 0.6- |
| 1998 09 23 | 691 | 0.1-  | 0.1-  | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 11 17 | G96 | 0.6+ | 0.6- |
| 1998 09 23 | 691 | (1.0+ | 3.9-) | 2007 11 13 | 691 | 0.3- | 0.0  | 2007 11 18 | 704 | 0.2+ | 0.0  |
| 1998 09 27 | 691 | 0.2-  | 0.2+  | 2007 11 13 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.0  | 0.8+ |
| 1998 09 27 | 691 | 0.4-  | 0.0   | 2007 11 13 | 691 | 0.1- | 0.1- | 2007 11 18 | 704 | 0.2- | 0.6- |
| 1998 09 27 | 691 | 0.2-  | 0.5+  | 2007 11 14 | 300 | 0.4+ | 0.0  | 2007 11 18 | 300 | 0.3+ | 0.4- |
| 2007 09 09 | G96 | 0.0   | 0.5-  | 2007 11 14 | 300 | 0.3+ | 0.8+ | 2007 11 18 | 300 | 0.3+ | 0.0  |
| 2007 09 09 | G96 | 0.2+  | 0.7-  | 2007 11 14 | 300 | 0.2+ | 0.6+ | 2007 11 18 | 300 | 0.2+ | 0.1- |
| 2007 09 09 | G96 | 0.0   | 0.5-  | 2007 11 14 | 300 | 0.3- | 0.1+ | 2007 11 18 | 300 | 0.6+ | 0.3+ |
| 2007 09 09 | G96 | 0.2+  | 0.0   | 2007 11 17 | 691 | 0.2- | 0.3- | 2007 11 18 | 300 | 0.2- | 0.3- |
| 2007 11 01 | 691 | 0.1+  | 0.0   | 2007 11 17 | 691 | 0.3- | 0.2+ |            |     |      |      |
| 2007 11 01 | 691 | 0.3+  | 0.2-  | 2007 11 17 | 691 | 0.2- | 0.3+ |            |     |      |      |

**1998 UP<sub>14</sub> = 2007 VN<sub>105</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 285.62835  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22363992 | $\omega$ | 85.61537 | -0.67769433   | -0.72381349 |
| <i>a</i> | 2.6880448  | $\Omega$ | 47.94186 | +0.58617435   | -0.63825280 |
| <i>e</i> | 0.0483362  | <i>i</i> | 10.06122 | +0.44399327   | -0.26215911 |
| <i>P</i> | 4.41       | <i>H</i> | 16.6     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 23 | 691 | 0.2+ | 0.5+ | 2005 06 01 | G96 | 0.0  | 0.1- | 2007 10 16 | G96 | 0.2- | 0.0  |
| 1998 10 23 | 691 | 0.2- | 0.2+ | 2005 06 01 | G96 | 0.2- | 0.0  | 2007 10 30 | 691 | 0.7- | 0.6- |
| 1998 10 23 | 691 | 0.2+ | 0.1+ | 2005 06 01 | G96 | 0.6- | 0.3+ | 2007 10 30 | 691 | 0.2- | 0.2+ |
| 1998 10 24 | 691 | 0.0  | 0.4+ | 2005 06 01 | G96 | 0.3- | 0.0  | 2007 10 30 | 691 | 0.2- | 0.2+ |
| 1998 10 24 | 691 | 0.5- | 0.2+ | 2007 09 10 | G96 | 0.2- | 0.4- | 2007 11 03 | 691 | 0.1- | 0.2+ |
| 1998 10 24 | 691 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.4- | 1.0- | 2007 11 03 | 691 | 0.0  | 0.4+ |
| 1998 10 29 | 691 | 0.3+ | 0.0  | 2007 09 10 | G96 | 0.0  | 0.5- | 2007 11 03 | 691 | 0.2- | 0.2+ |
| 1998 10 29 | 691 | 0.5- | 0.2- | 2007 09 10 | G96 | 0.3+ | 0.5- | 2007 11 07 | 691 | 0.6+ | 0.1+ |
| 2005 04 16 | 691 | 0.3+ | 0.5+ | 2007 09 10 | G96 | 0.3+ | 0.5- | 2007 11 07 | 691 | 0.3+ | 0.1+ |
| 2005 04 16 | 691 | 0.6+ | 0.3+ | 2007 09 10 | G96 | 0.5- | 0.1- | 2007 11 07 | 691 | 0.7+ | 0.0  |
| 2005 04 16 | 691 | 0.2+ | 0.3+ | 2007 09 10 | G96 | 0.1- | 0.5- | 2007 11 15 | 704 | 0.1- | 0.1- |
| 2005 05 10 | G96 | 0.2- | 0.2- | 2007 09 10 | G96 | 0.4- | 0.2+ | 2007 11 15 | 704 | 1.0- | 0.5- |
| 2005 05 10 | G96 | 0.5- | 0.2- | 2007 10 16 | G96 | 0.2- | 0.0  | 2007 11 15 | 704 | 0.9- | 1.4- |
| 2005 05 10 | G96 | 0.3- | 0.2- | 2007 10 16 | G96 | 0.1+ | 0.1- | 2007 11 15 | 704 | 1.3+ | 0.6+ |
| 2005 05 10 | G96 | 0.4- | 0.2- | 2007 10 16 | G96 | 0.0  | 0.2- | 2007 11 15 | 704 | 0.5+ | 0.7- |

**1998 UG<sub>19</sub> = 2007 XF<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 40.54454   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23090118 | $\omega$ | 349.00699 | +0.93694485   | -0.31901249 |
| <i>a</i> | 2.6313904  | $\Omega$ | 30.80445  | +0.33804820   | +0.72372326 |
| <i>e</i> | 0.2599502  | <i>i</i> | 16.18058  | +0.08864406   | +0.61192784 |
| <i>P</i> | 4.27       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 09 22 | 699 | 0.7+ | 0.2+ | 1998 10 19 | 699 | 0.7+  | 1.1-  | 1998 10 29 | 704 | 1.0+ | 0.2- |
| 1998 09 22 | 699 | 0.5+ | 0.2+ | 1998 10 19 | 699 | 0.6+  | 0.2-  | 1998 10 29 | 704 | 1.3- | 1.3+ |
| 1998 09 22 | 699 | 0.7+ | 0.2- | 1998 10 19 | 699 | 0.5+  | 0.8-  | 2007 12 15 | G98 | 0.5- | 0.0  |
| 1998 09 24 | 699 | 0.1- | 0.2+ | 1998 10 19 | 699 | 0.5+  | 0.3-  | 2007 12 15 | G98 | 0.3- | 0.1- |
| 1998 09 24 | 699 | 0.2- | 0.4+ | 1998 10 28 | 704 | 0.5-  | 0.2+  | 2007 12 15 | G98 | 0.1- | 0.0  |
| 1998 09 24 | 699 | 0.2- | 0.2+ | 1998 10 28 | 704 | (1.8- | 2.2-) | 2007 12 15 | G98 | 0.3+ | 0.0  |
| 1998 09 25 | 645 | 0.0  | 0.0  | 1998 10 28 | 704 | 1.6-  | 1.0-  | 2007 12 16 | G98 | 0.1+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 25 | 645 | 0.0  | 0.0  | 1998 10 28 | 704 | 0.0  | 0.3− | 2007 12 16 | G98 | 0.1+ | 0.0  |
| 1998 10 19 | 699 | 0.5+ | 0.3− | 1998 10 29 | 704 | 0.7+ | 1.6+ | 2007 12 16 | G98 | 0.1+ | 0.2+ |
| 1998 10 19 | 699 | 0.5− | 0.7+ | 1998 10 29 | 704 | 0.6− | 0.2− | 2007 12 16 | G98 | 0.4+ | 0.3− |

**1998 WJ<sub>42</sub> = 2007 VS<sub>126</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 15.76091   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21961938 | $\omega$ | 160.73847 | +0.85640353 | −0.51067980 |
| <i>a</i> | 2.7207519  | $\Omega$ | 230.20811 | +0.45977269 | +0.82130808 |
| <i>e</i> | 0.1045376  | <i>i</i> | 5.67796   | +0.23490862 | +0.25428169 |
| <i>P</i> | 4.49       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 14 | 691 | 0.5+  | 0.3−  | 2005 04 15 | 691 | 0.6+  | 0.4+  | 2007 11 11 | 300 | 0.2+ | 0.1+ |
| 1998 11 14 | 691 | 0.7+  | 0.1−  | 2007 10 09 | G96 | 0.2−  | 0.1+  | 2007 11 11 | 300 | 0.2− | 0.2+ |
| 1998 11 14 | 691 | 0.2+  | 0.0   | 2007 10 09 | G96 | 0.1+  | 0.0   | 2007 11 12 | A13 | 0.4− | 0.2− |
| 1998 11 19 | 910 | 0.7+  | 0.6+  | 2007 10 09 | G96 | 0.1−  | 0.1−  | 2007 11 12 | A13 | 0.1− | 0.2+ |
| 1998 11 19 | 910 | 1.0+  | 0.6+  | 2007 10 09 | G96 | 0.3+  | 0.1−  | 2007 11 12 | A13 | 0.2− | 0.1− |
| 1998 11 19 | 910 | 0.9+  | 0.7+  | 2007 10 17 | G96 | 0.0   | 0.0   | 2007 11 14 | 704 | 0.3− | 0.4+ |
| 1998 11 23 | 691 | 1.4−  | 0.5−  | 2007 10 17 | G96 | 0.1+  | 0.1+  | 2007 11 14 | 704 | 0.5+ | 0.4+ |
| 1998 11 23 | 691 | 0.8−  | 0.9−  | 2007 10 17 | G96 | 0.2+  | 0.0   | 2007 11 14 | 704 | 0.0  | 0.8+ |
| 1998 11 23 | 691 | (3.6− | 0.2−) | 2007 10 17 | G96 | 0.1−  | 0.2−  | 2007 11 14 | 704 | 0.2− | 1.3+ |
| 1998 12 07 | 910 | 0.5+  | 1.2+  | 2007 10 20 | 703 | 1.3+  | 0.4+  | 2007 11 17 | A13 | 1.2− | 1.1+ |
| 1998 12 07 | 910 | 0.9+  | 1.3+  | 2007 10 20 | 703 | (2.0+ | 1.5+) | 2007 11 17 | A13 | 0.1+ | 1.1+ |
| 1998 12 07 | 910 | 0.4+  | 0.8+  | 2007 10 20 | 703 | 0.4−  | 0.1−  | 2007 11 19 | 691 | 0.4− | 0.0  |
| 2000 02 12 | 645 | 0.1−  | 0.0   | 2007 10 20 | 703 | 0.3+  | 0.8−  | 2007 11 19 | 691 | 0.1− | 0.2+ |
| 2000 02 12 | 645 | 0.0   | 0.0   | 2007 11 06 | A13 | (0.4− | 2.1+) | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2002 09 13 | 644 | 0.3−  | 0.6+  | 2007 11 06 | A13 | 1.0−  | 0.7+  | 2007 12 03 | 703 | 0.0  | 0.2+ |
| 2002 09 13 | 644 | 0.5+  | 0.3+  | 2007 11 06 | A13 | 0.5−  | 1.1+  | 2007 12 03 | 703 | 0.2− | 1.0− |
| 2002 09 13 | 644 | 0.8−  | 0.4+  | 2007 11 07 | 300 | 0.1+  | 0.5−  | 2007 12 03 | 703 | 1.6+ | 1.2− |
| 2002 10 05 | 645 | 0.1−  | 0.0   | 2007 11 07 | 300 | 0.1+  | 0.0   | 2007 12 03 | 703 | 0.3+ | 0.5− |
| 2002 10 05 | 645 | 0.0   | 0.0   | 2007 11 07 | 300 | 0.5+  | 0.6−  | 2007 12 05 | 704 | 0.5+ | 0.1− |
| 2004 01 14 | 644 | 0.0   | 0.5+  | 2007 11 07 | 300 | 0.1+  | 0.5−  | 2007 12 05 | 704 | 1.1− | 0.4− |
| 2004 01 14 | 644 | 0.1−  | 0.5+  | 2007 11 07 | 300 | 0.6+  | 0.2+  | 2007 12 05 | 704 | 0.8+ | 0.4+ |
| 2004 01 14 | 644 | 0.1−  | 0.4+  | 2007 11 11 | 300 | 0.1−  | 0.1−  | 2007 12 05 | 704 | 1.0+ | 0.2+ |
| 2005 04 15 | 691 | 0.3+  | 0.1+  | 2007 11 11 | 300 | 0.1−  | 0.0   |            |     |      |      |
| 2005 04 15 | 691 | 0.4−  | 0.2+  | 2007 11 11 | 300 | 0.2−  | 0.2+  |            |     |      |      |

**1998 YM<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 10.40503   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.54942552 | $\omega$ | 344.37503 | +0.83191351 | +0.55459315 |
| <i>a</i> | 1.4763755  | $\Omega$ | 341.90526 | −0.50248063 | +0.73866463 |
| <i>e</i> | 0.7195912  | <i>i</i> | 3.43523   | −0.23544241 | +0.38314620 |
| <i>P</i> | 1.79       | <i>H</i> | 19.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 19 | 385 | 1.8+  | 0.2+  | 1998 12 21 | 867 | 0.5−  | 0.3−  | 1998 12 27 | 402 | 0.2− | 0.1− |
| 1998 12 19 | 385 | (4.1− | 2.8−) | 1998 12 21 | 385 | 0.8+  | 0.5+  | 1998 12 27 | 402 | 0.1− | 0.1− |
| 1998 12 19 | 888 | 0.5−  | 0.4−  | 1998 12 21 | 385 | 0.8−  | 0.6+  | 1998 12 27 | 385 | 1.4+ | 0.7+ |
| 1998 12 19 | 888 | 0.7+  | 1.2−  | 1998 12 21 | 400 | 1.6+  | 1.4+  | 1998 12 27 | 385 | 1.1+ | 0.7+ |
| 1998 12 19 | 888 | 0.9−  | 0.6−  | 1998 12 21 | 400 | (1.9+ | 2.1+) | 1998 12 27 | 385 | 1.0+ | 0.5− |
| 1998 12 19 | 888 | 0.1−  | 0.3−  | 1998 12 21 | 400 | 1.0+  | 0.8+  | 1998 12 27 | 385 | 1.2− | 1.2+ |
| 1998 12 19 | 888 | 0.1+  | 0.5−  | 1998 12 21 | 888 | 0.2−  | 0.5+  | 1998 12 28 | 888 | 0.0  | 0.2+ |
| 1998 12 19 | 587 | 0.3−  | 0.7−  | 1998 12 21 | 900 | 0.1+  | 0.4+  | 1998 12 28 | 888 | 0.1− | 0.0  |
| 1998 12 19 | 587 | 0.1−  | 0.3+  | 1998 12 21 | 888 | 0.1+  | 0.9+  | 1998 12 28 | 888 | 0.1− | 0.1+ |
| 1998 12 19 | 046 | 0.5+  | 0.4−  | 1998 12 21 | 900 | 0.3+  | 0.5+  | 1998 12 28 | 046 | 0.8+ | 0.9+ |
| 1998 12 19 | 046 | 0.1−  | 0.1+  | 1998 12 21 | 360 | 0.2+  | 0.4+  | 1998 12 28 | 046 | 0.1+ | 0.0  |
| 1998 12 19 | 587 | 0.5−  | 0.2+  | 1998 12 21 | 360 | 0.1+  | 0.4+  | 1998 12 28 | 046 | 0.1− | 0.2+ |
| 1998 12 19 | 046 | 0.5+  | 0.1−  | 1998 12 21 | 360 | 0.3+  | 0.4+  | 1998 12 28 | 046 | 0.2− | 0.5+ |
| 1998 12 19 | 046 | 0.8−  | 1.3−  | 1998 12 21 | 888 | 0.1+  | 0.3+  | 1999 01 03 | 658 | 0.2− | 0.3− |
| 1998 12 19 | 046 | 0.4−  | 0.2−  | 1998 12 21 | 888 | 0.1+  | 0.6+  | 1999 01 03 | 658 | 0.7− | 0.3− |
| 1998 12 19 | 046 | 0.2+  | 0.7−  | 1998 12 22 | 888 | 0.1+  | 0.3+  | 1999 01 03 | 658 | 0.6− | 0.6− |
| 1998 12 19 | 046 | 0.4−  | 0.2−  | 1998 12 22 | 888 | 0.1+  | 0.4+  | 1999 01 05 | 867 | 0.1+ | 0.1− |
| 1998 12 20 | 557 | 0.1−  | 0.1−  | 1998 12 22 | 385 | 1.0+  | 0.1−  | 1999 01 05 | 867 | 0.0  | 0.2− |
| 1998 12 20 | 557 | 0.3−  | 0.3−  | 1998 12 22 | 385 | 0.2−  | 0.9+  | 1999 01 05 | 867 | 0.1− | 0.5− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 20 | 557 | 0.4−  | 0.1−  | 1998 12 22 | 385 | 1.0+ | 0.3+ | 1999 01 05 | 402 | 0.9+ | 0.0  |
| 1998 12 20 | 557 | 0.3−  | 0.4−  | 1998 12 23 | 402 | 1.1− | 0.1+ | 1999 01 05 | 402 | 0.1− | 0.6− |
| 1998 12 20 | 411 | 1.7−  | 0.9−  | 1998 12 23 | 402 | 1.1− | 0.4− | 1999 01 05 | 402 | 0.0  | 1.2− |
| 1998 12 20 | 411 | 0.1−  | 0.3−  | 1998 12 23 | 402 | 0.5− | 1.0− | 1999 01 08 | 658 | 0.1− | 0.2+ |
| 1998 12 20 | 411 | 1.3−  | 1.0−  | 1998 12 23 | 402 | 1.2− | 0.6− | 1999 01 08 | 658 | 0.1+ | 0.0  |
| 1998 12 20 | 897 | (3.8− | 1.4−) | 1998 12 24 | 888 | 0.2− | 0.3− | 1999 01 08 | 658 | 0.1+ | 0.2+ |
| 1998 12 20 | 897 | 0.7+  | 0.4+  | 1998 12 24 | 888 | 0.3− | 0.1− | 1999 01 09 | 411 | 0.7− | 0.3− |
| 1998 12 20 | 897 | 1.0+  | 0.4+  | 1998 12 24 | 385 | 0.4+ | 0.7+ | 1999 01 09 | 411 | 0.8− | 0.2+ |
| 1998 12 20 | 897 | 0.5−  | 0.1−  | 1998 12 24 | 385 | 0.3− | 0.6+ | 1999 01 09 | 411 | 0.1− | 0.1− |
| 1998 12 20 | 897 | 0.8−  | 1.0−  | 1998 12 24 | 385 | 1.6+ | 1.6+ | 2007 12 06 | 703 | 0.1− | 0.3+ |
| 1998 12 20 | 897 | (2.4+ | 0.1+) | 1998 12 24 | 360 | 0.2− | 0.0  | 2007 12 06 | 703 | 0.8+ | 0.5+ |
| 1998 12 20 | 355 | 0.0   | 0.2−  | 1998 12 24 | 360 | 0.5− | 0.2− | 2007 12 06 | 703 | 0.3− | 0.3− |
| 1998 12 20 | 355 | 0.5+  | 0.8+  | 1998 12 24 | 360 | 0.2− | 0.1+ | 2007 12 06 | 703 | 0.1− | 0.8+ |
| 1998 12 20 | 908 | 0.0   | 0.2−  | 1998 12 25 | 888 | 0.1+ | 0.6+ | 2007 12 06 | 703 | 0.4+ | 0.1− |
| 1998 12 20 | 908 | 0.3+  | 0.3−  | 1998 12 25 | 888 | 0.2− | 0.4+ | 2007 12 06 | H55 | 0.4+ | 0.1− |
| 1998 12 20 | 908 | 0.3+  | 0.3+  | 1998 12 25 | 888 | 1.1+ | 0.4+ | 2007 12 06 | H55 | 0.3+ | 0.1− |
| 1998 12 20 | 360 | 0.1−  | 0.2+  | 1998 12 26 | 046 | 1.2+ | 1.7− | 2007 12 06 | 703 | 1.1− | 0.2− |
| 1998 12 20 | 360 | 0.2−  | 0.5+  | 1998 12 26 | 046 | 1.3+ | 1.4− | 2007 12 06 | H55 | 0.2+ | 0.2− |
| 1998 12 20 | 360 | 0.0   | 0.4+  | 1998 12 26 | 385 | 0.4+ | 0.0  | 2007 12 06 | 703 | 0.2− | 0.4− |
| 1998 12 21 | 557 | 0.2+  | 0.1+  | 1998 12 26 | 385 | 1.3− | 0.2− | 2007 12 06 | 703 | 0.2+ | 0.3+ |
| 1998 12 21 | 557 | 0.2−  | 0.0   | 1998 12 26 | 385 | 0.3− | 0.1− | 2007 12 06 | 703 | 0.1+ | 0.6− |
| 1998 12 21 | 537 | 0.2−  | 0.1+  | 1998 12 26 | 888 | 0.3− | 0.1+ | 2007 12 06 | 703 | 0.1+ | 0.6− |
| 1998 12 21 | 867 | 0.0   | 0.2−  | 1998 12 26 | 888 | 0.3− | 0.2− | 2007 12 06 | 703 | 0.1− | 0.0  |
| 1998 12 21 | 867 | 0.2+  | 0.0   | 1998 12 26 | 888 | 0.1− | 0.1− | 2007 12 06 | 703 | 0.4− | 0.3+ |
| 1998 12 21 | 385 | 0.6−  | 0.2+  | 1998 12 27 | 402 | 0.2− | 0.1− |            |     |      |      |

**1999 GM<sub>10</sub> = 2007 XJ<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 308.71986  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20595009 | $\omega$ | 356.46045 | −0.89819274 | −0.43944563 |
| <i>a</i> | 2.8398456  | $\Omega$ | 157.45963 | +0.40407392 | −0.83580817 |
| <i>e</i> | 0.1710111  | <i>i</i> | 1.75196   | +0.17313023 | −0.32910826 |
| <i>P</i> | 4.79       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 5           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 09 | 691 | 0.3+ | 0.9+ | 1999 04 17 | 691 | 0.4− | 1.2− | 2007 12 04 | 691 | 0.7+ | 0.4− |
| 1999 04 09 | 691 | 0.6+ | 0.4+ | 1999 04 17 | 691 | 0.5− | 0.9− | 2007 12 04 | 691 | 0.2+ | 0.7− |
| 1999 04 09 | 691 | 0.6+ | 0.5+ | 2007 12 04 | G96 | 1.1+ | 0.9− | 2007 12 05 | 291 | 0.6− | 0.6+ |
| 1999 04 11 | 691 | 0.2− | 0.6+ | 2007 12 04 | G96 | 1.3+ | 0.5− | 2007 12 05 | 291 | 0.9− | 0.7+ |
| 1999 04 11 | 691 | 0.5− | 0.0  | 2007 12 04 | 691 | 0.5+ | 0.2− | 2007 12 05 | 291 | 0.9− | 0.6+ |
| 1999 04 11 | 691 | 0.6− | 0.5+ | 2007 12 04 | G96 | 0.4+ | 0.8− |            |     |      |      |
| 1999 04 17 | 691 | 0.8+ | 1.0− | 2007 12 04 | G96 | 1.1+ | 0.8− |            |     |      |      |

**1999 GV<sub>61</sub> = 2007 VP<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 141.91319  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28732848 | $\omega$ | 234.51831 | −0.36074549 | +0.93176861 |
| <i>a</i> | 2.2744877  | $\Omega$ | 14.50352  | −0.79412086 | −0.28388518 |
| <i>e</i> | 0.1766420  | <i>i</i> | 9.39114   | −0.48911630 | −0.22631054 |
| <i>P</i> | 3.43       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |        |
|------------|-----|------|------|------------|-----|------|------|--------|
| 1999 03 23 | 691 | 0.4− | 0.5+ | 2006 04 26 | E12 | 0.4+ | 2.4+ | 2007 1 |
|------------|-----|------|------|------------|-----|------|------|--------|

2007 DEC. 24

M.P.O. 129573

**1999 TC<sub>71</sub> = 2007 VM<sub>277</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.05529   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.12536103 | $\omega$ | 344.33684 | +0.98132483   | -0.17785309 |
| <i>a</i> | 3.9539182  | $\Omega$ | 26.25077  | +0.18943970   | +0.82745689 |
| <i>e</i> | 0.2054159  | <i>i</i> | 9.53660   | +0.03337930   | +0.53261935 |
| <i>P</i> | 7.86       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 09 | 691 | 0.0  | 0.0  | 1999 10 31 | 691 | 0.1-  | 0.0   | 2007 10 20 | 703 | 0.0   | 0.5-  |
| 1999 10 09 | 691 | 0.0  | 0.1- | 1999 10 31 | 691 | 0.1+  | 0.3+  | 2007 10 20 | 703 | 0.2+  | 1.3+  |
| 1999 10 09 | 691 | 0.0  | 0.1- | 1999 10 31 | 691 | 0.2-  | 0.3-  | 2007 11 07 | 703 | 1.0+  | 0.2-  |
| 1999 10 13 | 691 | 0.1- | 0.2- | 2007 10 08 | 691 | 0.1+  | 0.0   | 2007 11 07 | 703 | 1.1+  | 0.3+  |
| 1999 10 13 | 691 | 0.2- | 0.3- | 2007 10 08 | 691 | 0.7-  | 0.1+  | 2007 11 07 | 703 | 0.1+  | 0.3+  |
| 1999 10 13 | 691 | 0.2- | 0.2- | 2007 10 08 | 691 | 0.0   | 0.1+  | 2007 11 07 | 703 | (0.3- | 1.8+) |
| 1999 10 14 | 645 | 0.1+ | 0.0  | 2007 10 15 | 691 | 0.1+  | 0.1+  | 2007 11 14 | 691 | 0.3-  | 0.4-  |
| 1999 10 14 | 645 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.1-  | 0.1-  | 2007 11 14 | 691 | 1.0-  | 0.5-  |
| 1999 10 15 | 691 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.2+  | 0.6-  | 2007 11 14 | 691 | 0.2+  | 0.0   |
| 1999 10 15 | 691 | 0.1+ | 0.0  | 2007 10 19 | 691 | 0.1-  | 0.4+  | 2007 11 18 | 691 | 0.1+  | 0.2+  |
| 1999 10 15 | 691 | 0.0  | 0.0  | 2007 10 19 | 691 | 0.3+  | 0.1+  | 2007 11 18 | 691 | 0.3+  | 0.3+  |
| 1999 10 20 | 691 | 0.0  | 0.0  | 2007 10 19 | 691 | 0.2+  | 0.2-  | 2007 11 18 | 691 | 0.1+  | 0.1-  |
| 1999 10 20 | 691 | 0.0  | 0.3+ | 2007 10 20 | 703 | (1.7+ | 0.4+) |            |     |       |       |
| 1999 10 20 | 691 | 0.1+ | 0.0  | 2007 10 20 | 703 | 0.2-  | 1.2+  |            |     |       |       |

**1999 TC<sub>225</sub> = 2007 RS<sub>100</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.24262  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24193585 | $\omega$ | 12.97179  | +0.99864769   | +0.04623175 |
| <i>a</i> | 2.5507579  | $\Omega$ | 344.31980 | -0.05197853   | +0.87901543 |
| <i>e</i> | 0.0708009  | <i>i</i> | 5.04746   | -0.00101001   | +0.47454662 |
| <i>P</i> | 4.07       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 02 | 691 | 0.1+ | 0.1+ | 2003 09 24 | 644 | 0.1- | 0.5+ | 2007 09 11 | G96 | 0.5+ | 0.2- |
| 1999 10 02 | 691 | 0.3+ | 0.1- | 2005 01 18 | 691 | 0.2+ | 0.5+ | 2007 09 11 | G96 | 0.2- | 0.0  |
| 1999 10 02 | 691 | 0.1- | 0.1- | 2005 01 18 | 691 | 0.7- | 0.4- | 2007 09 11 | G96 | 0.2+ | 0.0  |
| 1999 10 06 | 704 | 0.7+ | 0.0  | 2005 01 18 | 691 | 0.4+ | 0.0  | 2007 09 11 | G96 | 0.2+ | 0.2+ |
| 1999 10 06 | 704 | 0.8- | 0.1- | 2005 02 04 | G96 | 0.1+ | 0.1+ | 2007 09 13 | G96 | 0.3- | 0.6- |
| 1999 10 06 | 704 | 0.4- | 0.4- | 2005 02 04 | G96 | 0.2+ | 0.5+ | 2007 09 13 | G96 | 0.3- | 0.4- |
| 1999 10 06 | 704 | 0.3+ | 0.1- | 2005 02 04 | G96 | 0.4- | 0.4- | 2007 09 13 | G96 | 0.5- | 0.5- |
| 1999 10 06 | 704 | 0.5+ | 0.3- | 2005 02 04 | G96 | 0.2+ | 0.2+ | 2007 09 13 | G96 | 1.0- | 0.9- |
| 1999 10 10 | 691 | 0.1- | 0.2- | 2007 08 21 | 699 | 0.9- | 0.8+ | 2007 10 04 | G96 | 0.1+ | 0.4+ |
| 1999 10 10 | 691 | 0.0  | 0.3- | 2007 08 21 | 699 | 1.0+ | 0.7+ | 2007 10 04 | G96 | 0.5+ | 0.0  |
| 1999 10 10 | 691 | 0.2+ | 0.2- | 2007 08 21 | 699 | 0.2+ | 0.7- | 2007 10 04 | G96 | 0.0  | 0.3+ |
| 2003 09 05 | 413 | 0.1+ | 0.1+ | 2007 08 21 | 699 | 0.4+ | 0.7+ | 2007 10 04 | G96 | 0.2- | 0.3+ |
| 2003 09 05 | 413 | 0.2+ | 0.0  | 2007 09 11 | G96 | 0.3+ | 0.1- | 2007 10 13 | G96 | 0.2+ | 0.1+ |
| 2003 09 05 | 413 | 0.2- | 0.2+ | 2007 09 11 | G96 | 0.3- | 0.0  | 2007 10 13 | G96 | 0.0  | 0.3+ |
| 2003 09 24 | 644 | 0.1- | 0.7+ | 2007 09 11 | G96 | 0.1+ | 0.3- | 2007 10 13 | G96 | 0.1- | 0.1+ |
| 2003 09 24 | 644 | 0.3- | 0.4+ | 2007 09 11 | G96 | 0.0  | 0.0  | 2007 10 13 | G96 | 0.2- | 0.0  |

**1999 TL<sub>297</sub> = 2007 VM<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 178.94814  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26174114 | $\omega$ | 233.04743 | -0.68459819   | +0.72882995 |
| <i>a</i> | 2.4204051  | $\Omega$ | 353.71053 | -0.63096417   | -0.60042300 |
| <i>e</i> | 0.0642058  | <i>i</i> | 6.02496   | -0.36497880   | -0.32908834 |
| <i>P</i> | 3.77       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 02 | 691 | 0.6- | 0.3+ | 1999 11 01 | 691 | 0.4+ | 0.1- | 2007 10 18 | 691 | 0.1- | 0.5- |
| 1999 10 02 | 691 | 0.1+ | 0.4+ | 2003 10 18 | 691 | 0.1- | 0.0  | 2007 10 18 | 691 | 0.3- | 0.9+ |
| 1999 10 02 | 691 | 0.4+ | 0.3+ | 2003 10 18 | 691 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.2+ | 0.2- |
| 1999 10 09 | 691 | 0.2+ | 0.0  | 2003 10 18 | 691 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.4+ | 0.2+ |
| 1999 10 09 | 691 | 0.8- | 0.9- | 2007 10 09 | 691 | 0.2+ | 0.1+ | 2007 11 01 | 691 | 0.2+ | 0.1- |
| 1999 10 09 | 691 | 0.1- | 0.2+ | 2007 10 09 | 691 | 0.4- | 1.2+ | 2007 11 05 | 691 | 0.2+ | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 01 | 691 | 0.3+ | 0.3- | 2007 10 09 | 691 | 0.5+ | 0.4- | 2007 11 05 | 691 | 0.3+ | 0.7+ |
| 1999 11 01 | 691 | 0.5+ | 0.1- | 2007 10 18 | 691 | 1.6- | 1.2- | 2007 11 05 | 691 | 0.2+ | 0.0  |

**1999 VU<sub>154</sub> = 2007 VF<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 253.85718  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25175894 | $\omega$ | 117.03448 | -0.97676319   | -0.18034807 |
| <i>a</i> | 2.4839687  | $\Omega$ | 52.79945  | +0.10518047   | -0.87411570 |
| <i>e</i> | 0.0393483  | <i>i</i> | 8.35894   | +0.18673709   | -0.45099481 |
| <i>P</i> | 3.91       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 12 | 691 | 0.3- | 0.1- | 1999 12 16 | 691 | 0.6+ | 0.3- | 2007 11 02 | 691 | 0.1- | 0.1- |
| 1999 11 12 | 691 | 0.5- | 0.2- | 2003 11 18 | 691 | 0.1- | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.3+ |
| 1999 11 12 | 691 | 0.4- | 0.1+ | 2003 11 18 | 691 | 0.0  | 0.0  | 2007 11 06 | 691 | 0.1+ | 0.2- |
| 1999 11 17 | 691 | 0.2- | 0.4+ | 2003 11 18 | 691 | 0.0  | 0.2- | 2007 11 06 | 691 | 0.5- | 0.3- |
| 1999 11 17 | 691 | 0.1- | 0.0  | 2003 12 18 | 691 | 0.3- | 0.1+ | 2007 11 06 | 691 | 0.1+ | 0.2- |
| 1999 11 17 | 691 | 0.3+ | 0.2+ | 2003 12 18 | 691 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.2+ | 0.1- |
| 1999 12 16 | 691 | 0.6+ | 0.1- | 2003 12 18 | 691 | 0.2- | 0.1+ | 2007 11 17 | 691 | 0.2+ | 1.3+ |
| 1999 12 16 | 691 | 0.6+ | 0.1- | 2007 11 02 | 691 | 0.3+ | 0.1+ | 2007 11 17 | 691 | 0.2- | 0.5- |

**1999 XH<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.41387  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.36921912 | $\omega$ | 349.45836 | +0.08753310   | -0.89129031 |
| <i>a</i> | 1.9243317  | $\Omega$ | 94.41648  | +0.94335966   | -0.06930915 |
| <i>e</i> | 0.1238110  | <i>i</i> | 26.50200  | +0.32001641   | +0.44810470 |
| <i>P</i> | 2.67       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 07 | 704 | 0.3- | 0.2+ | 1999 12 15 | 704 | 0.7+ | 0.4- | 2007 12 03 | 703 | 0.1- | 0.3- |
| 1999 12 07 | 704 | 0.1- | 0.4- | 1999 12 15 | 704 | 0.1+ | 0.2+ | 2007 12 03 | 703 | 0.5+ | 0.0  |
| 1999 12 07 | 704 | 0.3- | 0.4+ | 1999 12 15 | 704 | 1.1- | 1.6- | 2007 12 03 | 703 | 0.1+ | 0.1+ |
| 1999 12 07 | 704 | 0.4- | 0.6+ | 1999 12 15 | 704 | 0.9- | 0.2- | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 1999 12 07 | 704 | 0.8+ | 0.6+ | 1999 12 15 | 704 | 0.1- | 0.2- | 2007 12 06 | G96 | 0.0  | 0.2- |
| 1999 12 08 | 704 | 0.7+ | 0.6+ | 1999 12 16 | 704 | 0.4+ | 0.1+ | 2007 12 06 | G96 | 0.2+ | 0.2- |
| 1999 12 08 | 704 | 0.1+ | 0.1- | 1999 12 16 | 704 | 0.2- | 1.1- | 2007 12 13 | 704 | 0.3- | 0.0  |
| 1999 12 08 | 704 | 0.5- | 0.4+ | 1999 12 16 | 704 | 0.3+ | 0.6+ | 2007 12 13 | 704 | 0.2- | 0.1+ |
| 1999 12 08 | 704 | 0.8+ | 0.1+ | 1999 12 16 | 704 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.7- | 0.3+ |
| 1999 12 08 | 704 | 0.1+ | 0.3- | 1999 12 16 | 704 | 0.0  | 0.6- | 2007 12 13 | 704 | 0.5- | 0.4+ |
| 1999 12 09 | 704 | 0.0  | 0.4- | 2000 01 02 | 704 | 0.3- | 0.2- | 2007 12 13 | 704 | 0.6- | 0.6+ |
| 1999 12 09 | 704 | 0.5+ | 0.5- | 2000 01 02 | 704 | 0.2+ | 0.8+ | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 1999 12 09 | 704 | 0.5- | 0.6+ | 2000 01 02 | 704 | 0.3- | 0.1- | 2007 12 15 | 704 | 0.1- | 0.1- |
| 1999 12 10 | 704 | 0.1- | 0.1+ | 2000 01 02 | 704 | 0.6- | 0.1+ | 2007 12 15 | 704 | 0.4+ | 0.3+ |
| 1999 12 10 | 704 | 0.1+ | 1.6- | 2000 01 11 | 699 | 0.6+ | 0.0  | 2007 12 15 | 704 | 0.0  | 0.4+ |
| 1999 12 10 | 704 | 0.3- | 0.6+ | 2000 01 11 | 699 | 0.6+ | 0.2- | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 1999 12 10 | 704 | 0.1+ | 0.4+ | 2000 01 11 | 699 | 0.1- | 0.2+ |            |     |      |      |
| 1999 12 10 | 704 | 0.3+ | 0.6- | 2007 12 03 | 703 | 0.2+ | 0.0  |            |     |      |      |

**1999 XU<sub>30</sub> = 2007 VP<sub>174</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.84676  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24283693 | $\omega$ | 314.19684 | +0.52341557   | -0.81866994 |
| <i>a</i> | 2.5444440  | $\Omega$ | 102.82996 | +0.83444747   | +0.43637828 |
| <i>e</i> | 0.1332695  | <i>i</i> | 14.02250  | +0.17243422   | +0.37330086 |
| <i>P</i> | 4.06       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 06 | 704 | 0.0  | 0.1+ | 2003 12 05 | 703 | 0.4- | 0.6+ | 2007 11 15 | 703 | 0.1+ | 0.4+ |
| 1999 12 06 | 704 | 0.4- | 0.8+ | 2007 11 03 | 703 | 0.7+ | 0.3+ | 2007 11 15 | 703 | 0.2+ | 0.5- |
| 1999 12 06 | 704 | 0.2- | 0.1- | 2007 11 03 | 703 | 0.1- | 0.9+ | 2007 11 15 | 703 | 0.2+ | 1.0- |
| 1999 12 06 | 704 | 0.8+ | 0.1- | 2007 11 03 | 703 | 0.1+ | 1.3+ | 2007 11 15 | 703 | 0.6- | 0.4+ |
| 1999 12 06 | 704 | 0.3+ | 0.9+ | 2007 11 03 | 703 | 0.8+ | 0.1- | 2007 11 16 | 703 | 0.4- | 0.3- |
| 1999 12 07 | 704 | 1.0+ | 0.1+ | 2007 11 09 | 703 | 0.8- | 0.1- | 2007 11 16 | 703 | 0.2+ | 0.4+ |
| 1999 12 07 | 704 | 0.8- | 0.7- | 2007 11 09 | 703 | 0.3+ | 0.0  | 2007 11 16 | 703 | 0.2- | 0.4- |

## M.P.O. 129574

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 07 | 704 | 0.3− | 0.6− | 2007 11 09 | 703 | 1.1−  | 0.4+  | 2007 11 16 | 703 | 0.4+ | 0.2− |
| 1999 12 07 | 704 | 1.2+ | 0.3− | 2007 11 09 | 703 | 0.5−  | 0.1−  | 2007 12 04 | 703 | 0.6− | 0.6+ |
| 1999 12 07 | 704 | 0.9+ | 0.5− | 2007 11 14 | 699 | 0.3+  | 1.4−  | 2007 12 04 | 703 | 0.9− | 0.5− |
| 1999 12 15 | 704 | 0.1− | 0.5+ | 2007 11 14 | 699 | 0.4+  | 0.7−  | 2007 12 04 | 703 | 0.1− | 0.3+ |
| 1999 12 15 | 704 | 1.0− | 0.6− | 2007 11 14 | 699 | 0.4+  | 0.9−  | 2007 12 04 | 703 | 0.0  | 0.3− |
| 1999 12 15 | 704 | 0.0  | 0.2− | 2007 11 14 | 699 | (0.1− | 1.6−) | 2007 12 05 | 703 | 0.7+ | 0.2+ |
| 1999 12 15 | 704 | 0.8− | 0.4− | 2007 11 15 | 703 | 0.3+  | 0.1−  | 2007 12 05 | 703 | 0.3+ | 0.3− |
| 2003 12 05 | 703 | 0.8− | 0.6+ | 2007 11 15 | 703 | 0.6+  | 0.3+  | 2007 12 05 | 703 | 0.1+ | 0.6+ |
| 2003 12 05 | 703 | 0.3− | 0.2+ | 2007 11 15 | 703 | 0.3+  | 0.3−  | 2007 12 05 | 703 | 1.3− | 0.9+ |
| 2003 12 05 | 703 | 0.6+ | 0.1− | 2007 11 15 | 703 | 0.6+  | 0.2+  |            |     |      |      |

1999 XE<sub>106</sub>

|                                         |            |          |           |             |      |          |   |             |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|----------|---|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |          |   |             |  |  |  |
| <i>M</i> 352.12998                      |            |          |           | (2000.0)    |      |          |   | MPC         |  |  |  |
|                                         |            |          |           | <b>P</b>    |      |          |   | <b>Q</b>    |  |  |  |
| <i>n</i>                                | 0.36458423 | $\omega$ | 141.16006 | +0.50121230 |      |          |   | −0.80699492 |  |  |  |
| <i>a</i>                                | 1.9406064  | $\Omega$ | 276.64455 | +0.69458916 |      |          |   | +0.59045692 |  |  |  |
| <i>e</i>                                | 0.1243502  | <i>i</i> | 18.32669  | +0.51607375 |      |          |   | −0.01094648 |  |  |  |
| <i>P</i>                                | 2.70       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i> | 3 |             |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 11 | 684 | 0.1− | 0.1− | 1999 12 30 | 684 | 0.3+ | 0.4+ | 2000 01 29 | 684 | 1.1− | 0.3− |
| 1999 12 11 | 684 | 0.1+ | 0.0  | 2000 01 05 | 704 | 0.7+ | 0.6+ | 2003 01 12 | 644 | 0.2+ | 0.1+ |
| 1999 12 12 | 684 | 0.7− | 0.2+ | 2000 01 05 | 704 | 0.1− | 0.4− | 2003 01 12 | 644 | 0.5+ | 0.2+ |
| 1999 12 12 | 684 | 0.1+ | 0.1+ | 2000 01 05 | 704 | 0.0  | 0.5− | 2003 01 12 | 644 | 0.0  | 0.3+ |
| 1999 12 12 | 684 | 0.4+ | 0.4− | 2000 01 05 | 704 | 0.3+ | 0.1− | 2007 11 14 | 704 | 0.7+ | 0.6− |
| 1999 12 13 | 684 | 0.0  | 0.1+ | 2000 01 05 | 704 | 0.9+ | 0.8+ | 2007 11 14 | 704 | 0.4− | 0.6− |
| 1999 12 13 | 684 | 0.1− | 0.3− | 2000 01 06 | 704 | 0.2+ | 0.2− | 2007 11 14 | 704 | 0.3− | 0.7+ |
| 1999 12 18 | 684 | 0.1+ | 0.4− | 2000 01 06 | 704 | 0.0  | 0.2− | 2007 11 15 | 704 | 0.2+ | 0.5+ |
| 1999 12 18 | 684 | 0.2+ | 0.8− | 2000 01 06 | 704 | 0.6+ | 0.2− | 2007 11 15 | 704 | 0.0  | 0.6+ |
| 1999 12 28 | 684 | 0.1− | 0.1− | 2000 01 28 | 684 | 0.5− | 0.3+ | 2007 11 15 | 704 | 0.1+ | 0.6+ |
| 1999 12 28 | 684 | 0.3+ | 0.3− | 2000 01 28 | 684 | 0.5− | 0.2+ | 2007 11 15 | 704 | 0.2− | 0.1− |
| 1999 12 30 | 684 | 0.4− | 0.9− | 2000 01 29 | 684 | 1.9− | 1.5+ |            |     |      |      |

1999 YP<sub>16</sub> = 2007 TR<sub>165</sub>

|                                         |            |          |           |             |      |          |   |             |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|----------|---|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |          |   |             |  |  |  |
| <i>M</i> 3.04790                        |            |          |           | (2000.0)    |      |          |   | MPC         |  |  |  |
|                                         |            |          |           | <b>P</b>    |      |          |   | <b>Q</b>    |  |  |  |
| <i>n</i>                                | 0.23170276 | $\omega$ | 79.15134  | +0.90693832 |      |          |   | −0.41806848 |  |  |  |
| <i>a</i>                                | 2.6253180  | $\Omega$ | 305.54178 | +0.35736100 |      |          |   | +0.82861779 |  |  |  |
| <i>e</i>                                | 0.2207879  | <i>i</i> | 3.64885   | +0.22306052 |      |          |   | +0.37230540 |  |  |  |
| <i>P</i>                                | 4.25       | <i>H</i> | 17.7      | <i>G</i>    | 0.15 | <i>U</i> | 3 |             |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 02 10 | 691 | 0.1− | 0.4− | 2003 11 20 | 695 | 0.1+ | 0.3+ | 2007 10 11 | 704 | 0.6− | 0.3+ |
| 1996 02 10 | 691 | 0.1− | 0.1− | 2003 11 20 | 695 | 0.0  | 0.3+ | 2007 10 12 | 704 | 0.4− | 0.2− |
| 1996 02 10 | 691 | 0.1− | 0.1+ | 2003 12 29 | 691 | 0.0  | 0.6+ | 2007 10 12 | 704 | 0.7− | 0.3− |
| 1999 12 31 | 691 | 0.4− | 0.8− | 2003 12 29 | 691 | 0.1+ | 0.6+ | 2007 10 12 | 704 | 0.1+ | 0.9− |
| 1999 12 31 | 691 | 0.3− | 0.7− | 2003 12 29 | 691 | 0.3− | 0.5+ | 2007 10 12 | 704 | 0.2+ | 0.3− |
| 1999 12 31 | 691 | 0.2− | 0.6− | 2007 10 08 | 703 | 0.3+ | 0.9+ | 2007 10 12 | 704 | 0.3− | 1.0− |
| 2000 01 06 | 691 | 0.6+ | 0.4+ | 2007 10 08 | 703 | 0.6+ | 0.3− | 2007 10 17 | G96 | 0.1− | 0.3− |
| 2000 01 06 | 691 | 0.1+ | 0.3+ | 2007 10 08 | 703 | 0.8+ | 0.7+ | 2007 10 17 | G96 | 0.5+ | 0.6− |
| 2000 01 06 | 691 | 0.4+ | 0.1− | 2007 10 08 | 703 | 0.5+ | 0.2+ | 2007 10 17 | G96 | 0.1+ | 0.2− |
| 2000 01 11 | 691 | 0.1+ | 0.1− | 2007 10 11 | 704 | 0.1+ | 0.7+ | 2007 10 17 | G96 | 0.1+ | 0.3− |
| 2000 01 11 | 691 | 0.4− | 0.1+ | 2007 10 11 | 704 | 0.3− | 0.2− |            |     |      |      |
| 2000 01 11 | 691 | 0.1− | 0.0  | 2007 10 11 | 704 | 0.5− | 0.5+ |            |     |      |      |

2000 AX<sub>219</sub> = 2007 XF<sub>12</sub>

|                                         |            |          |           |             |      |          |   |             |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|----------|---|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |          |   |             |  |  |  |
| <i>M</i> 82.60413                       |            |          |           | (2000.0)    |      |          |   | MPC         |  |  |  |
|                                         |            |          |           | <b>P</b>    |      |          |   | <b>Q</b>    |  |  |  |
| <i>n</i>                                | 0.22647483 | $\omega$ | 223.55930 | +0.69067415 |      |          |   | +0.72094314 |  |  |  |
| <i>a</i>                                | 2.6655659  | $\Omega$ | 90.21197  | −0.64699337 |      |          |   | +0.65102502 |  |  |  |
| <i>e</i>                                | 0.1087003  | <i>i</i> | 3.24807   | −0.32306161 |      |          |   | +0.23750244 |  |  |  |
| <i>P</i>                                | 4.35       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i> | 4 |             |  |  |  |

## 2007 DEC. 24

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 31 | 691 | 0.8− | 0.5− | 2000 01 11 | 691 | 0.4+ | 0.6+ | 2007 12 04 | 691 | 0.3− | 0.1+ |
| 1999 12 31 | 691 | 0.7− | 0.6− | 2000 01 11 | 691 | 0.3+ | 0.2− | 2007 12 06 | 691 | 0.3+ | 0.3− |
| 1999 12 31 | 691 | 0.4− | 0.7− | 2007 10 08 | 691 | 0.0  | 0.1− | 2007 12 06 | 691 | 0.3+ | 0.3+ |
| 2000 01 08 | 691 | 0.0  | 0.7+ | 2007 10 08 | 691 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.1− | 0.2+ |
| 2000 01 08 | 691 | 0.2+ | 0.3+ | 2007 10 08 | 691 | 0.1− | 0.0  | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2000 01 08 | 691 | 0.4+ | 0.2+ | 2007 12 04 | 691 | 0.4− | 0.6− | 2007 12 16 | 691 | 0.2− | 0.2+ |
| 2000 01 11 | 691 | 0.5+ | 0.2+ | 2007 12 04 | 691 | 0.1− | 0.2+ | 2007 12 16 | 691 | 0.3+ | 0.2+ |

2000 AQ<sub>225</sub> = 2007 VY<sub>269</sub>

|                                         |            |          |           |             |      |          |   |             |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|----------|---|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |          |   |             |  |  |  |
| <i>M</i> 6.17728                        |            |          |           | (2000.0)    |      |          |   | MPC         |  |  |  |
|                                         |            |          |           | <b>P</b>    |      |          |   | <b>Q</b>    |  |  |  |
| <i>n</i>                                | 0.24101861 | $\omega$ | 317.64410 | +0.68905484 |      |          |   | −0.72381837 |  |  |  |
| <i>a</i>                                | 2.5572253  | $\Omega$ | 88.76617  | +0.67416589 |      |          |   | +0.62202339 |  |  |  |
| <i>e</i>                                | 0.2101902  | <i>i</i> | 2.05911   | +0.26590184 |      |          |   | +0.29861994 |  |  |  |
| <i>P</i>                                | 4.09       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i> | 3 |             |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 05 | 691 | 0.1− | 0.1+ | 2007 10 14 | G96 | 0.5+ | 0.1+ | 2007 12 03 | 703 | 0.1+ | 0.4− |
| 2000 01 05 | 691 | 0.3− | 0.1+ | 2007 10 14 | G96 | 0.4− | 0.0  | 2007 12 03 | 703 | 0.2+ | 0.5− |
| 2000 01 05 | 691 | 0.4− | 0.2+ | 2007 11 09 | 691 | 0.2− | 0.2− | 2007 12 03 | 703 | 0.6+ | 0.2− |
| 2000 01 12 | 691 | 0.1+ | 0.1− | 2007 11 09 | 691 | 0.2− | 0.2− | 2007 12 04 | G96 | 0.7− | 0.2− |
| 2000 01 12 | 691 | 0.1+ | 0.2− | 2007 11 09 | 691 | 0.4− | 0.0  | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2000 01 12 | 691 | 0.0  | 0.3− | 2007 11 15 | 704 | 0.1+ | 0.2+ | 2007 12 04 | G96 | 0.1− | 0.2− |
| 2000 01 15 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.3+ | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 2000 01 15 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.5+ | 0.3− | 2007 12 05 | 704 | 0.2− | 0.2− |
| 2000 01 15 | 691 | 0.3+ | 0.3− | 2007 11 15 | 704 | 0.1− | 0.7− | 2007 12 05 | 704 | 0.0  | 0.4+ |
| 2003 12 17 | 291 | 0.2− | 0.3+ | 2007 11 15 | 704 | 1.0+ | 0.9+ | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2003 12 17 | 291 | 0.0  | 0.3+ | 2007 11 16 | 704 | 0.3+ | 0.5+ | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2003 12 17 | 291 | 0.2+ | 0.1+ | 2007 11 16 | 704 | 0.1+ | 0.7+ | 2007 12 05 | 704 | 0.3− | 0.3+ |
| 2007 10 14 | G96 | 0.7+ | 0.2− | 2007 11 16 | 704 | 0.1+ | 0.5+ |            |     |      |      |
| 2007 10 14 | G96 | 0.2− | 0.5− | 2007 12 03 | 703 | 0.0  | 0.0  |            |     |      |      |

2000 AK<sub>235</sub> = 2007 VJ<sub>290</sub>

|                                         |            |          |           |              |              |
|-----------------------------------------|------------|----------|-----------|--------------|--------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC          |              |
| $M$                                     | 342.26950  | (2000.0) |           | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$                                     | 0.23987155 | $\omega$ | 193.89262 | +0.08837656  | −0.99599176  |
| $a$                                     | 2.5653713  | $\Omega$ | 251.03854 | +0.91527842  | +0.08665888  |
| $e$                                     | 0.1803285  | $i$      | 0.83509   | +0.39300763  | +0.02215053  |
| $P$                                     | 4.11       | $H$      | 16.8      | $G$ 0.15     | $U$ 4        |

## 2007 DEC. 24

## M.P.O. 129575

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2000 01 26 | 120 | (0.1– 2.2–) | 2006 07 21 | G96 | 0.2– 0.2+ | 2007 11 04 | G96 | 0.5+ 0.4–   |
| 2000 01 26 | 120 | 1.1+ 1.1–   | 2006 07 21 | G96 | 0.0 0.2–  | 2007 11 07 | 704 | (1.0+ 2.2+) |
| 2000 01 26 | 120 | 0.1– 0.3–   | 2006 07 21 | G96 | 0.0 0.3+  | 2007 11 07 | 704 | 1.0+ 0.9+   |
| 2000 01 27 | 120 | 0.0 0.5–    | 2006 07 21 | G96 | 0.0 0.7+  | 2007 11 07 | 704 | (3.2+ 0.3+) |
| 2000 01 27 | 120 | 0.1+ 0.4+   | 2007 10 10 | G96 | 0.2+ 0.3– | 2007 11 07 | 704 | (0.5+ 1.8+) |
| 2000 01 27 | 120 | (2.5+ 0.7–) | 2007 10 10 | G96 | 0.4+ 0.2– | 2007 11 07 | 704 | 1.4+ 1.1+   |
| 2000 02 03 | 704 | 0.5– 0.3+   | 2007 10 10 | G96 | 0.6+ 0.3– | 2007 11 07 | 703 | 0.1– 0.6+   |
| 2000 02 03 | 704 | 0.3+ 0.3–   | 2007 10 10 | G96 | 0.3+ 0.4– | 2007 11 07 | 703 | 0.1+ 0.4–   |
| 2000 02 03 | 704 | 0.5– 0.9+   | 2007 11 03 | G96 | 0.0 0.1–  | 2007 11 07 | 703 | 0.2– 1.3–   |
| 2000 02 03 | 704 | 0.1+ 0.1–   | 2007 11 03 | G96 | 0.4+ 0.1– | 2007 11 07 | 703 | 1.0– 0.1+   |
| 2000 02 03 | 704 | 0.6– 0.6+   | 2007 11 03 | G96 | 0.2+ 0.1– | 2007 11 12 | 704 | 0.6– 0.8+   |
| 2005 04 04 | 703 | 0.1– 0.1+   | 2007 11 03 | G96 | 0.1+ 0.1– | 2007 11 12 | 704 | 0.5+ 0.7+   |
| 2005 04 04 | 703 | 0.5– 0.9+   | 2007 11 03 | 291 | 0.4– 0.1+ | 2007 11 12 | 704 | 0.3– 0.3–   |
| 2005 04 04 | 703 | 0.4– 0.4–   | 2007 11 03 | 291 | 0.2– 0.0  | 2007 11 18 | 703 | 0.9– 0.3+   |
| 2005 04 04 | 703 | 0.2+ 0.5+   | 2007 11 03 | 291 | 0.3– 0.1+ | 2007 11 18 | 703 | 1.2– 0.4–   |
| 2005 05 15 | 644 | 0.9+ 0.4+   | 2007 11 04 | G96 | 0.4+ 0.3– | 2007 11 18 | 703 | 0.0 0.8+    |
| 2005 05 15 | 644 | 0.7+ 0.4+   | 2007 11 04 | G96 | 0.3+ 0.1– | 2007 11 18 | 703 | 0.1+ 1.4+   |
| 2005 05 15 | 644 | 0.3+ 0.4+   | 2007 11 04 | G96 | 0.3+ 0.1– |            |     |             |

2000 CO<sub>78</sub> = 2007 VO<sub>234</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23572220 | $\omega$ | 307.35656 | +0.37733371 | –0.92597599 |          |   |
| <i>a</i> | 2.5953886  | $\Omega$ | 120.46946 | +0.85460659 | +0.34247513 |          |   |
| <i>e</i> | 0.1523123  | <i>i</i> | 0.91086   | +0.35674480 | +0.15899447 |          |   |
| <i>P</i> | 4.18       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2000 01 28 | 691 | 0.2+ 0.2– | 2007 09 15 | G96 | 0.0 0.1–  | 2007 11 18 | 691 | 0.0 0.1+  |
| 2000 01 28 | 691 | 0.3+ 0.7– | 2007 09 15 | G96 | 0.1+ 0.0  | 2007 11 18 | 691 | 0.0 0.1+  |
| 2000 01 28 | 691 | 0.3+ 0.1+ | 2007 09 15 | G96 | 0.1– 0.2– | 2007 11 29 | D35 | 0.2+ 0.5+ |
| 2000 02 08 | 691 | 0.3– 0.3– | 2007 09 15 | G96 | 0.0 0.0   | 2007 11 29 | D35 | 0.1+ 0.6+ |
| 2000 02 08 | 691 | 0.2– 0.4– | 2007 10 09 | G96 | 0.0 0.2–  | 2007 11 29 | D35 | 0.1+ 0.2+ |
| 2000 02 08 | 691 | 0.1– 0.3– | 2007 10 09 | G96 | 0.1+ 0.0  | 2007 12 03 | 703 | 0.6– 1.3+ |
| 2000 02 11 | 691 | 0.2– 0.5+ | 2007 10 09 | G96 | 0.3+ 0.2– | 2007 12 03 | 703 | 0.2+ 0.0  |
| 2000 02 11 | 691 | 0.1– 0.0  | 2007 10 09 | G96 | 0.4+ 0.0  | 2007 12 03 | 703 | 0.1– 0.1– |
| 2000 02 11 | 691 | 0.2– 0.3+ | 2007 10 30 | 691 | 0.2– 0.2+ | 2007 12 03 | 703 | 0.5– 0.3+ |
| 2001 05 22 | 691 | 0.1+ 0.1+ | 2007 10 30 | 691 | 0.2– 0.1+ | 2007 12 04 | G96 | 0.3+ 0.0  |
| 2001 05 22 | 691 | 0.2– 0.3– | 2007 10 30 | 691 | 0.2– 0.1– | 2007 12 04 | G96 | 0.4+ 0.0  |
| 2001 05 22 | 691 | 0.2+ 0.4+ | 2007 11 09 | 691 | 0.1– 0.1+ | 2007 12 04 | G96 | 0.5+ 0.0  |
| 2005 04 04 | G96 | 0.4– 0.2+ | 2007 11 09 | 691 | 0.1– 0.1+ | 2007 12 04 | G96 | 0.1+ 0.1+ |
| 2005 04 04 | G96 | 0.5– 0.2+ | 2007 11 09 | 691 | 0.1– 0.2+ | 2007 12 05 | 704 | 0.4+ 0.0  |
| 2005 04 04 | G96 | 0.6– 0.3+ | 2007 11 14 | 704 | 0.4– 0.1– | 2007 12 05 | 704 | 0.3– 0.3+ |
| 2005 04 04 | G96 | 1.1+ 1.3+ | 2007 11 14 | 704 | 0.2– 0.3+ | 2007 12 05 | 704 | 0.8+ 0.2+ |
| 2005 04 16 | 691 | 0.2+ 0.4+ | 2007 11 14 | 704 | 0.2+ 0.3+ | 2007 12 05 | 704 | 0.5+ 0.6+ |
| 2005 04 16 | 691 | 0.3+ 0.5+ | 2007 11 14 | 704 | 0.3+ 0.4– | 2007 12 05 | 704 | 0.2+ 0.1+ |
| 2005 04 16 | 691 | 0.5+ 0.3+ | 2007 11 14 | 704 | 0.0 0.3+  | 2007 12 15 | G96 | 0.1+ 0.1– |
| 2005 05 08 | G96 | 0.1– 0.1+ | 2007 11 14 | 691 | 0.1– 0.0  | 2007 12 15 | G96 | 0.1+ 0.2– |
| 2005 05 08 | G96 | 0.1+ 0.0  | 2007 11 14 | 691 | 0.1– 0.1+ | 2007 12 15 | G96 | 0.0 0.1–  |
| 2005 05 08 | G96 | 0.5– 0.2– | 2007 11 14 | 691 | 0.2– 0.1+ | 2007 12 15 | G96 | 0.1+ 0.1+ |
| 2005 05 08 | G96 | 0.6– 0.0  | 2007 11 18 | 691 | 0.0 0.1+  |            |     |           |

2000 CH<sub>96</sub> = 2007 XR<sub>16</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23829271 | $\omega$ | 165.45357 | –0.29025031 | –0.95658231 |          |   |
| <i>a</i> | 2.5766902  | $\Omega$ | 301.41316 | +0.87484749 | –0.25400095 |          |   |
| <i>e</i> | 0.1044922  | <i>i</i> | 1.78292   | +0.38781004 | –0.14294684 |          |   |
| <i>P</i> | 4.14       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 1994 09 11 | 691 | 0.1+ 0.5– | 2001 05 23 | 807 | 0.1– 0.1+ | 2007 12 10 | J95 | 0.0 0.0   |
| 1994 09 11 | 691 | 0.1– 0.3– | 2002 08 16 | 291 | 0.1+ 0.3+ | 2007 12 10 | J95 | 0.1– 1.1– |
| 1994 09 11 | 691 | 0.1+ 0.4– | 2002 08 16 | 291 | 0.1– 0.6+ | 2007 12 11 | J95 | 0.5+ 0.2– |
| 2000 01 26 | 691 | 0.2– 0.1– | 2002 08 16 | 291 | 0.2– 0.7+ | 2007 12 11 | J95 | 0.5– 0.1– |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2000 01 26 | 691 | 0.1+ 0.2+ | 2005 05 16 | 691 | 0.5+ 0.3– | 2007 12 12 | J95 | 0.2+ 0.0  |
| 2000 01 26 | 691 | 0.0 0.2+  | 2005 05 16 | 691 | 0.3– 0.1+ | 2007 12 12 | J95 | 0.2+ 0.2– |
| 2000 02 03 | 704 | 1.5+ 0.9+ | 2005 05 16 | 691 | 0.4– 0.0  | 2007 12 12 | J95 | 0.3+ 0.3– |
| 2000 02 03 | 704 | 0.6+ 0.8+ | 2007 11 14 | 691 | 0.2– 0.3+ | 2007 12 12 | J95 | 0.1– 0.1+ |
| 2000 02 03 | 704 | 1.2+ 0.5+ | 2007 11 14 | 691 | 0.1– 0.3+ | 2007 12 12 | J95 | 0.0 0.2+  |
| 2000 02 11 | 691 | 0.3+ 0.2– | 2007 11 14 | 691 | 0.5+ 0.7– | 2007 12 12 | J95 | 0.2– 0.1+ |
| 2000 02 11 | 691 | 0.2+ 0.3– | 2007 12 06 | 691 | 0.1+ 0.2+ | 2007 12 13 | J95 | 0.2– 0.3+ |
| 2000 02 11 | 691 | 0.1– 0.1– | 2007 12 06 | 691 | 0.2– 0.1+ | 2007 12 13 | J95 | 0.1– 0.2+ |
| 2000 02 12 | 691 | 0.8– 0.3+ | 2007 12 06 | 691 | 0.4– 0.1+ | 2007 12 14 | 704 | 0.2– 1.3– |
| 2000 02 12 | 691 | 0.2+ 0.1+ | 2007 12 06 | G96 | 0.3– 0.0  | 2007 12 14 | 704 | 1.1+ 0.7– |
| 2000 02 12 | 691 | 0.2– 0.1– | 2007 12 06 | G96 | 0.2+ 0.4+ | 2007 12 14 | 704 | 0.7+ 0.4+ |
| 2000 02 12 | 691 | 0.1+ 0.1+ | 2007 12 06 | G96 | 0.3– 0.1+ | 2007 12 14 | 704 | 0.2– 0.6+ |
| 2000 02 12 | 691 | 0.0 0.1–  | 2007 12 06 | G96 | 0.4– 0.2+ | 2007 12 15 | 691 | 0.1– 0.2+ |
| 2000 02 12 | 691 | 0.2– 0.1– | 2007 12 10 | J95 | 0.1– 0.2+ | 2007 12 15 | 691 | 0.0 0.3+  |
| 2001 05 23 | 807 | 0.0 0.1+  | 2007 12 10 | J95 | 0.0 0.0   | 2007 12 15 | 691 | 0.1+ 0.3+ |

2000 CL<sub>106</sub> = 2007 VC<sub>142</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22779724 | $\omega$ | 232.67209 | +0.99199389 | +0.12052692 |          |   |
| <i>a</i> | 2.6552398  | $\Omega$ | 120.37656 | –0.09756968 | +0.92100975 |          |   |
| <i>e</i> | 0.1343533  | <i>i</i> | 2.50464   | –0.08017652 | +0.37042449 |          |   |
| <i>P</i> | 4.33       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2000 01 28 | 691 | 0.0 0.7+  | 2000 02 08 | 691 | 0.0 0.2–  | 2007 11 04 | 691 | 0.0 0.1–  |
| 2000 01 28 | 691 | 0.1+ 0.2+ | 2007 10 20 | G96 | 0.3+ 0.0  | 2007 11 08 | 691 | 0.1– 0.1– |
| 2000 01 28 | 691 | 0.1+ 0.1– | 2007 10 20 | G96 | 0.1– 0.1– | 2007 11 08 | 691 | 0.2– 0.1– |
| 2000 02 05 | 695 | 0.3– 0.4+ | 2007 10 20 | G96 | 0.6+ 0.1– | 2007 11 08 | 691 | 0.1+ 0.0  |
| 2000 02 05 | 695 | 0.6– 0.6+ | 2007 10 20 | G96 | 0.2+ 0.1– | 2007 12 04 | 704 | 0.6+ 0.9+ |
| 2000 02 08 | 691 | 0.0 0.5–  | 2007 11 04 | 691 | 0.2– 0.1– | 2007 12 04 | 704 | 0.7+ 1.2+ |
| 2000 02 08 | 691 | 0.1+ 0.4– | 2007 11 04 | 691 | 0.5– 0.0  | 2007 12 04 | 704 | 1.2+ 0.1+ |

2000 CS<sub>107</sub> = 2007 VZ<sub>53</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22419259 | $\omega$ | 142.01127 | +0.05552186 | +0.99736997 |          |   |
| <i>a</i> | 2.6836253  | $\Omega$ | 131.12061 | –0.93054227 | +0.06860373 |          |   |
| <i>e</i> | 0.0293638  | <i>i</i> | 3.54563   | –0.36195084 | –0.02338118 |          |   |
| <i>P</i> | 4.40       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2000 01 29 | 691 | 0.2– 0.0  | 2000 02 10 | 691 | 0.3+ 0.3– | 2007 10 20 | G96 | 0.2+ 0.4– |
| 2000 01 29 | 691 | 0.1+ 0.1+ | 2000 02 10 | 691 | 0.4+ 0.0  | 2007 10 20 | G96 | 0.4+ 0.2– |
| 2000 01 29 | 691 | 0.3+ 0.5– | 2001 05 21 | 691 | 0.4+ 0.1+ | 2007 10 20 | G96 | 0.5+ 0.4– |
| 2000 02 04 | 691 | 0.4– 0.1– | 2001 05 21 | 691 | 0.0 0.7+  | 2007 11 01 | 691 | 0.0 0.3–  |
| 2000 02 04 | 691 | 0.2– 0.4+ | 2001 05 21 | 691 | 0.1– 0.1– | 2007 11 01 | 691 | 0.1– 0.5+ |
| 2000 02 04 | 691 | 0.3– 0.1+ | 2006 07 21 | G96 | 0.4+ 0.1+ | 2007 11 01 | 691 | 0.4+ 1.0+ |
| 2000 02 05 | 695 | 0.1+ 0.3+ | 2006 07 21 | G96 | 0.3– 0.1– | 2007 11 05 | 691 | 0.3– 0.5+ |
| 2000 02 05 | 695 | 0.1– 0.4+ | 2006 07 21 | G96 | 0.3– 0.1+ | 2007 11 05 | 691 | 0.5– 0.2– |
| 2000 02 10 | 691 | 0.1+ 0.2– | 2007 10 20 | G96 | 0.6+ 0.2– | 2007 11 05 | 691 | 0.3– 0.4+ |

2000 CL<sub>141</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18031926 | $\omega$ | 287.19668 | –0.47153269 | +0.87585196 |          |   |
| <i>a</i> | 3.1029490  | $\Omega$ | 314.20979 | –0.74485537 | –0.45789485 |          |   |
| <i>e</i> | 0.0744368  | <i>i</i> | 8.23478   | –0.47206716 | –0.15236686 |          |   |
| <i>P</i> | 5.47       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 06 | 691 | 0.1– | 0.0  | 2000 02 12 | 691 | 0.2+ | 0.0  | 2002 07 14 | 644 | 0.3– | 0.2– |
| 2000 02 06 | 691 | 0.1– | 0.1– | 2002 07 05 | 644 | 0.4+ | 0.6+ | 2002 07 18 | 644 | 0.1+ | 0.4– |
| 2000 02 06 | 691 | 0.1– | 0.1+ | 2002 07 05 | 644 | 0.2+ | 0.5+ | 2002 07 18 | 644 | 0.0  | 0.5– |

## M.P.O. 129576

2007 DEC. 24

2000 02 12 691 0.1− 0.1+ 2002 07 14 644 0.1+ 0.1+  
 2000 02 12 691 0.1+ 0.2− 2002 07 14 644 0.2− 0.4−

**2000 DE<sub>114</sub> = 2007 VH<sub>226</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.44108  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21750344 | $\omega$ | 265.71925 | +0.38720494   | −0.92128502 |
| <i>a</i> | 2.7383689  | $\Omega$ | 161.37287 | +0.88443787   | +0.36007333 |
| <i>e</i> | 0.0309118  | <i>i</i> | 6.49710   | +0.26046493   | +0.14690509 |
| <i>P</i> | 4.53       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 03 26 | 691 | 0.5− | 0.0  | 2002 10 04 | 644 | 0.1−  | 0.7+  | 2007 11 09 | 703 | 0.0  | 0.2− |
| 1996 03 26 | 691 | 0.8− | 0.2− | 2002 10 04 | 644 | 0.2−  | 0.7+  | 2007 11 13 | G96 | 0.4+ | 0.7− |
| 1996 03 26 | 691 | 0.2− | 0.3− | 2002 10 04 | 644 | 0.2+  | 0.1+  | 2007 11 13 | G96 | 0.0  | 0.6− |
| 2000 02 27 | 691 | 0.3− | 0.1− | 2005 04 18 | 691 | 0.3+  | 0.4+  | 2007 11 13 | G96 | 0.2+ | 0.7− |
| 2000 02 27 | 691 | 0.0  | 0.1+ | 2005 04 18 | 691 | 0.4+  | 0.3+  | 2007 11 13 | G96 | 0.1− | 0.4− |
| 2000 02 27 | 691 | 0.2− | 0.0  | 2005 04 18 | 691 | 0.3−  | 0.1+  | 2007 11 15 | 699 | 0.1+ | 1.4− |
| 2000 03 03 | 704 | 1.6+ | 0.2+ | 2006 10 22 | G96 | 0.0   | 0.0   | 2007 11 15 | 699 | 0.1+ | 0.5− |
| 2000 03 03 | 704 | 1.4+ | 0.6+ | 2006 10 22 | G96 | 0.0   | 0.6+  | 2007 11 15 | 699 | 0.8+ | 0.7− |
| 2000 03 03 | 704 | 1.0+ | 0.0  | 2006 10 22 | G96 | 0.6+  | 0.4−  | 2007 11 15 | 699 | 0.4− | 0.6+ |
| 2000 03 03 | 704 | 0.6+ | 0.2− | 2006 10 22 | G96 | 0.5+  | 0.2+  | 2007 11 17 | 703 | 0.2− | 0.7− |
| 2000 03 03 | 704 | 0.8+ | 0.0  | 2007 11 02 | G96 | 0.4−  | 0.3−  | 2007 11 17 | 703 | 0.7+ | 0.4− |
| 2000 03 11 | 704 | 0.5+ | 1.5+ | 2007 11 02 | G96 | 0.2+  | 0.2−  | 2007 11 17 | 703 | 0.1− | 0.2+ |
| 2000 03 11 | 704 | 0.1− | 0.6+ | 2007 11 02 | G96 | 0.0   | 0.0   | 2007 11 17 | 703 | 1.3− | 0.1+ |
| 2000 03 11 | 704 | 0.1+ | 0.5− | 2007 11 02 | G96 | 0.1+  | 0.2−  | 2007 12 06 | 703 | 0.7− | 0.5+ |
| 2000 03 11 | 704 | 1.1+ | 0.7+ | 2007 11 09 | 703 | 0.3−  | 1.1+  | 2007 12 06 | 703 | 0.5+ | 0.2− |
| 2002 09 05 | 645 | 0.1+ | 0.1+ | 2007 11 09 | 703 | 0.1−  | 0.2+  | 2007 12 06 | 703 | 0.8− | 1.9+ |
| 2002 09 05 | 645 | 0.0  | 0.1+ | 2007 11 09 | 703 | (0.5+ | 1.8+) | 2007 12 06 | 703 | 2.1− | 0.9+ |

**2000 EF<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 280.98605  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22907300 | $\omega$ | 25.78513  | −0.91380180   | −0.40091541 |
| <i>a</i> | 2.6453722  | $\Omega$ | 130.42251 | +0.35629256   | −0.86815924 |
| <i>e</i> | 0.1863526  | <i>i</i> | 4.90271   | +0.19499202   | −0.29251729 |
| <i>P</i> | 4.30       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 11 | 704 | 0.6+  | 0.0   | 2000 03 09 | 704 | 0.4+ | 0.1− | 2007 11 08 | G96 | 0.2+ | 0.1− |
| 2000 02 11 | 704 | 0.3−  | 1.5−  | 2000 03 09 | 704 | 1.1+ | 0.7− | 2007 11 08 | G96 | 0.1+ | 0.3− |
| 2000 02 11 | 704 | 0.5−  | 0.4−  | 2000 03 11 | 699 | 0.1+ | 0.2+ | 2007 11 08 | G96 | 0.2+ | 0.4− |
| 2000 02 11 | 704 | 0.2+  | 0.3−  | 2000 03 11 | 699 | 0.5− | 0.2− | 2007 11 12 | 704 | 0.0  | 1.3+ |
| 2000 02 11 | 704 | 1.1+  | 0.4+  | 2000 03 11 | 699 | 0.4− | 1.0+ | 2007 11 12 | 704 | 0.2− | 0.0  |
| 2000 02 25 | 703 | (2.4− | 0.0 ) | 2000 03 11 | 699 | 0.9− | 0.3+ | 2007 11 12 | 704 | 0.5+ | 0.7+ |
| 2000 02 25 | 703 | 1.2−  | 0.8+  | 2000 03 12 | 704 | 0.3− | 0.3− | 2007 11 12 | 704 | 0.9− | 0.0  |
| 2000 02 25 | 703 | 0.9−  | 0.0   | 2000 03 12 | 704 | 0.7+ | 1.1− | 2007 11 16 | 704 | 0.2− | 0.3− |
| 2000 02 25 | 703 | 0.1+  | 0.0   | 2000 03 12 | 704 | 1.2− | 0.0  | 2007 11 16 | 704 | 1.0− | 0.3− |
| 2000 03 05 | 704 | 0.2−  | 0.7+  | 2000 03 12 | 704 | 0.3+ | 0.4+ | 2007 11 16 | 704 | 0.4+ | 0.4− |
| 2000 03 05 | 704 | 1.0−  | 0.2+  | 2000 03 12 | 704 | 0.3− | 0.4− | 2007 12 04 | 704 | 0.2− | 0.2+ |
| 2000 03 05 | 704 | 0.2+  | 0.4+  | 2007 10 24 | G96 | 0.3+ | 0.1− | 2007 12 04 | 704 | 0.0  | 0.4+ |
| 2000 03 05 | 704 | 0.5+  | 1.3+  | 2007 10 24 | G96 | 0.3− | 0.2− | 2007 12 04 | 704 | 0.0  | 0.1− |
| 2000 03 09 | 704 | 1.2+  | 0.3−  | 2007 10 24 | G96 | 0.2+ | 0.3+ | 2007 12 04 | 704 | 0.7+ | 0.2− |
| 2000 03 09 | 704 | 0.7+  | 0.3−  | 2007 10 24 | G96 | 0.3− | 0.1− |            |     |      |      |
| 2000 03 09 | 704 | 0.6+  | 0.2−  | 2007 11 08 | G96 | 0.4+ | 0.2− |            |     |      |      |

**2000 EK<sub>200</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 91.23054   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17671656 | $\omega$ | 253.55255 | −0.57390236   | +0.80557633 |
| <i>a</i> | 3.1449799  | $\Omega$ | 339.24500 | −0.49785546   | −0.48597748 |
| <i>e</i> | 0.2176743  | <i>i</i> | 24.55244  | −0.65021229   | −0.33892872 |
| <i>P</i> | 5.58       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 08 | 704 | 0.0  | 0.0  | 2000 03 08 | 608 | 0.0  | 1.2− | 2007 09 06 | 699 | 0.3−  | 1.1+  |
| 2000 02 08 | 704 | 0.2+ | 0.6− | 2000 04 02 | 699 | 0.3+ | 0.1+ | 2007 09 06 | 699 | (2.1+ | 2.2+) |
| 2000 02 08 | 704 | 0.4+ | 0.7+ | 2000 04 02 | 699 | 0.2+ | 0.7+ | 2007 09 06 | 699 | 0.3+  | 0.4+  |
| 2000 03 01 | 703 | 0.2+ | 0.0  | 2000 04 02 | 699 | 0.5+ | 0.6+ | 2007 09 06 | 699 | 0.1+  | 1.0+  |
| 2000 03 01 | 703 | 0.3− | 1.5+ | 2000 04 02 | 699 | 1.3− | 1.1+ | 2007 09 19 | G96 | 0.2−  | 0.2−  |
| 2000 03 01 | 703 | 0.6+ | 1.3+ | 2000 05 02 | 699 | 0.4− | 0.4+ | 2007 09 19 | G96 | 0.0   | 0.3−  |
| 2000 03 01 | 703 | 0.6+ | 0.3− | 2000 05 02 | 699 | 0.8+ | 1.2+ | 2007 09 19 | G96 | 0.2+  | 0.7−  |
| 2000 03 08 | 704 | 0.3+ | 0.0  | 2000 05 02 | 699 | 1.7− | 0.9− | 2007 09 19 | G96 | 0.1−  | 0.3−  |
| 2000 03 08 | 704 | 0.4+ | 0.8− | 2000 05 02 | 699 | 0.5+ | 0.6− | 2007 10 09 | G96 | 0.2+  | 0.1−  |
| 2000 03 08 | 704 | 0.3− | 1.1− | 2007 08 23 | 691 | 0.0  | 0.1− | 2007 10 09 | G96 | 0.1−  | 0.1−  |
| 2000 03 08 | 608 | 0.3− | 0.7− | 2007 08 23 | 691 | 0.1− | 0.3− | 2007 10 09 | G96 | 0.0   | 0.0   |
| 2000 03 08 | 608 | 0.6− | 1.3− | 2007 08 23 | 691 | 0.1− | 0.2− | 2007 10 09 | G96 | 0.1+  | 0.2−  |

**2000 FA<sub>1</sub> = 2002 TP<sub>229</sub> = 2004 BC<sub>146</sub> = 2007 TE<sub>122</sub>**Id. Minor Planet Center (*MPO* 127867; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 64.87959   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19959490 | $\omega$ | 153.25710 | +0.78908269   | +0.61424372 |
| <i>a</i> | 2.8998114  | $\Omega$ | 168.83701 | −0.57012332   | +0.73671941 |
| <i>e</i> | 0.0637724  | <i>i</i> | 2.15813   | −0.22870921   | +0.28275283 |
| <i>P</i> | 4.94       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 26 | 684 | 1.0− | 0.2− | 2005 03 08 | G96 | 0.0   | 0.0   | 2007 10 18 | 699 | 0.4+  | 0.6+  |
| 2000 03 26 | 684 | 0.5− | 0.4+ | 2005 03 08 | G96 | 0.0   | 0.1+  | 2007 10 18 | 691 | 0.5−  | 0.3−  |
| 2000 03 26 | 684 | 0.1+ | 0.4− | 2006 06 22 | 644 | 0.2−  | 0.8+  | 2007 10 18 | 691 | 0.4−  | 0.1−  |
| 2000 03 27 | 684 | 0.1− | 0.2− | 2006 06 22 | 644 | 0.1−  | 0.7+  | 2007 10 18 | 699 | (2.3+ | 0.9+) |
| 2000 03 27 | 684 | 0.2− | 0.5+ | 2006 06 22 | 644 | 0.2−  | 0.9+  | 2007 10 18 | 691 | 0.2−  | 0.2−  |
| 2000 03 27 | 684 | 0.1+ | 1.0− | 2007 10 06 | 704 | 0.3+  | 0.8+  | 2007 10 18 | 699 | 0.8+  | 1.3+  |
| 2000 04 05 | 704 | 1.6+ | 1.4+ | 2007 10 06 | 704 | 0.4+  | 0.3+  | 2007 10 30 | 703 | 1.7−  | 0.9+  |
| 2000 04 05 | 704 | 0.7+ | 0.4+ | 2007 10 06 | 704 | 0.5+  | 0.9+  | 2007 10 30 | 703 | 0.9−  | 0.5−  |
| 2000 04 05 | 704 | 0.3− | 0.3+ | 2007 10 06 | 691 | 0.5−  | 0.0   | 2007 10 30 | 703 | 0.5+  | 0.8+  |
| 2000 04 05 | 704 | 0.2− | 0.1+ | 2007 10 06 | 691 | 1.1−  | 0.5−  | 2007 10 30 | 703 | (2.3+ | 1.1+) |
| 2000 04 05 | 704 | 0.9+ | 1.3+ | 2007 10 06 | 691 | 0.2−  | 0.7+  | 2007 11 05 | 704 | (2.4+ | 1.7−) |
| 2002 10 09 | 704 | 0.7− | 0.8+ | 2007 10 10 | 691 | 0.4−  | 0.2−  | 2007 11 05 | 704 | 1.4+  | 1.8+  |
| 2002 10 09 | 704 | 0.5+ | 1.3+ | 2007 10 10 | 691 | 0.3−  | 0.4−  | 2007 11 05 | 704 | 0.5−  | 0.0   |
| 2002 10 09 | 704 | 0.7+ | 0.5+ | 2007 10 10 | 691 | 0.3−  | 0.3+  | 2007 11 05 | 704 | 1.7+  | 0.9−  |
| 2002 10 09 | 704 | 0.4− | 1.1+ | 2007 10 11 | 704 | 0.4+  | 0.0   | 2007 11 05 | 704 | 0.5+  | 0.6−  |
| 2002 10 10 | 291 | 0.6− | 0.5− | 2007 10 11 | 704 | 0.3+  | 0.2+  | 2007 11 07 | G96 | 0.2+  | 0.7−  |
| 2002 10 10 | 291 | 0.4− | 0.6− | 2007 10 11 | 704 | 0.3−  | 0.1−  | 2007 11 07 | G96 | 0.3+  | 0.8−  |
| 2002 10 10 | 291 | 0.1+ | 0.4− | 2007 10 11 | 704 | 0.1−  | 0.6+  | 2007 11 07 | G96 | 0.6+  | 0.7−  |
| 2004 01 22 | 704 | 0.3− | 0.7+ | 2007 10 14 | 691 | 0.4−  | 0.2−  | 2007 11 07 | G96 | 0.2+  | 0.7−  |
| 2004 01 22 | 704 | 0.3+ | 1.0+ | 2007 10 14 | 691 | 0.4−  | 0.1−  | 2007 11 14 | 704 | 0.0   | 0.3−  |
| 2004 01 22 | 704 | 0.7+ | 0.4+ | 2007 10 14 | 691 | 0.3−  | 0.0   | 2007 11 14 | 704 | 0.0   | 0.1+  |
| 2004 01 31 | 691 | 0.1− | 0.2− | 2007 10 15 | 703 | 0.4−  | 0.2−  | 2007 11 14 | 704 | 0.1−  | 0.3−  |
| 2004 01 31 | 691 | 0.3− | 0.1+ | 2007 10 15 | 703 | (0.2− | 2.0−) | 2007 11 14 | 704 | 0.6−  | 0.6+  |
| 2004 01 31 | 691 | 0.2− | 0.0  | 2007 10 15 | 703 | 0.6+  | 0.6−  | 2007 11 14 | 704 | 0.8−  | 0.2+  |
| 2005 03 08 | G96 | 0.0  | 0.1− | 2007 10 15 | 703 | 0.4+  | 0.5−  |            |     |       |       |
| 2005 03 08 | G96 | 0.0  | 0.1− | 2007 10 18 | 699 | 0.8+  | 0.6−  |            |     |       |       |

**2000 JW<sub>60</sub> = 2007 RB<sub>224</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 72.99044   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29528748 | $\omega$ | 343.53559 | −0.24669309   | +0.96852827 |
| <i>a</i> | 2.2334318  | $\Omega$ | 272.17331 | −0.88535018   | −0.23913245 |
| <i>e</i> | 0.3011957  | <i>i</i> | 1.89812   | −0.39407813   | −0.06905551 |
| <i>P</i> | 3.34       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-----|
| 2000 05 07 | 704 | 0.2− | 1.3− | 2007 09 10 | 691 | 0.2− | 0.2+ | 2007 09 14 | 691 | 0.8+ | 0.0 |
| 2000 05 07 | 704 | 0.4+ | 0.6− |            |     |      |      |            |     |      |     |

## 2007 DEC. 24

M.P.O. 129577

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 11 | 704 | 0.4+ | 1.1+ | 2007 09 10 | 703 | 0.1+ | 0.6− | 2007 10 08 | G96 | 0.2− | 0.2− |
| 2000 05 11 | 704 | 0.1− | 0.7+ | 2007 09 10 | 703 | 1.5+ | 0.3− | 2007 10 08 | G96 | 0.4+ | 0.1+ |
| 2007 09 10 | 691 | 1.0− | 0.4+ | 2007 09 10 | 703 | 0.2+ | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.0  |
| 2007 09 10 | 691 | 0.0  | 0.3+ | 2007 09 14 | 691 | 0.5− | 0.2+ | 2007 10 08 | G96 | 0.2− | 0.2− |

**2000 QN<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.88376   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29203504 | $\omega$ 84.45109  | +0.99503129   | −0.09418313 |
| <i>a</i> | 2.2499839  | $\Omega$ 280.95026 | +0.07325161   | +0.91213431 |
| <i>e</i> | 0.2672620  | <i>i</i> 1.88440   | +0.06743098   | +0.39892423 |
| <i>P</i> | 3.37       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 25 | 704 | 0.0  | 0.9+ | 2000 09 23 | 704 | 0.2+ | 0.1+ | 2007 11 05 | 691 | 0.1+ | 0.4− |
| 2000 08 25 | 704 | 0.1+ | 0.5− | 2000 09 23 | 704 | 0.8− | 0.1+ | 2007 11 05 | 691 | 0.1− | 0.1− |
| 2000 08 25 | 704 | 0.3− | 0.2+ | 2000 09 23 | 704 | 0.2+ | 0.6+ | 2007 11 13 | 691 | 1.0− | 0.3− |
| 2000 08 31 | 704 | 0.1+ | 0.0  | 2000 09 23 | 704 | 0.2+ | 1.2+ | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 2000 08 31 | 704 | 0.1− | 0.5+ | 2000 09 24 | 704 | 0.5+ | 1.4− | 2007 11 13 | 691 | 0.1+ | 0.1− |
| 2000 08 31 | 704 | 0.5− | 0.2+ | 2000 09 24 | 704 | 0.1+ | 0.1+ | 2007 12 04 | 703 | 0.8+ | 0.4− |
| 2000 08 31 | 704 | 0.7− | 0.1− | 2000 09 24 | 704 | 0.4+ | 1.5− | 2007 12 04 | 703 | 0.1+ | 0.7− |
| 2000 08 31 | 704 | 0.4− | 0.6+ | 2000 09 24 | 704 | 1.2+ | 0.1− | 2007 12 04 | 703 | 0.5− | 0.1− |
| 2000 09 03 | 704 | 0.7+ | 0.0  | 2000 09 24 | 704 | 0.4+ | 1.5− | 2007 12 04 | 703 | 0.2− | 0.3+ |
| 2000 09 03 | 704 | 0.1− | 0.9+ | 2000 09 25 | 704 | 0.2+ | 0.7+ | 2007 12 06 | D35 | 0.3− | 0.3+ |
| 2000 09 03 | 704 | 0.4− | 1.1+ | 2000 09 25 | 704 | 0.0  | 1.1− | 2007 12 06 | D35 | 0.1+ | 0.3+ |
| 2000 09 03 | 704 | 0.2+ | 0.9+ | 2000 09 25 | 704 | 0.2− | 0.3− | 2007 12 06 | D35 | 0.0  | 0.1+ |
| 2000 09 03 | 704 | 0.1− | 1.0+ | 2000 09 25 | 704 | 0.5+ | 0.9− | 2007 12 10 | 704 | 0.3− | 0.0  |
| 2000 09 22 | 699 | 0.1− | 0.3+ | 2000 10 02 | 704 | 0.4+ | 0.4+ | 2007 12 10 | 704 | 0.5− | 0.1− |
| 2000 09 22 | 699 | 0.3+ | 0.3+ | 2000 10 02 | 704 | 0.1+ | 0.3− | 2007 12 10 | 704 | 1.3+ | 0.6+ |
| 2000 09 22 | 699 | 0.7− | 0.5− | 2000 10 02 | 704 | 0.4+ | 0.3− | 2007 12 14 | 704 | 0.4+ | 0.5+ |
| 2000 09 22 | 699 | 1.0− | 0.8+ | 2000 10 02 | 704 | 0.8+ | 0.3− | 2007 12 14 | 704 | 0.6+ | 0.7+ |
| 2000 09 23 | 699 | 0.7− | 0.2− | 2000 10 02 | 704 | 0.4− | 0.6− | 2007 12 14 | 704 | 0.6+ | 1.0+ |
| 2000 09 23 | 699 | 0.2− | 0.6+ | 2005 01 16 | 691 | 0.1− | 0.1+ | 2007 12 14 | 704 | 0.2+ | 0.4+ |
| 2000 09 23 | 699 | 0.5− | 0.5+ | 2005 01 16 | 691 | 0.6+ | 0.8+ | 2007 12 14 | 704 | 0.1− | 0.5+ |
| 2000 09 23 | 704 | 0.1+ | 0.0  | 2005 01 16 | 691 | 0.1− | 0.2+ |            |     |      |      |
| 2000 09 23 | 699 | 1.0− | 0.6+ | 2007 11 05 | 691 | 0.2+ | 0.2− |            |     |      |      |

**2000 QF<sub>216</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.90917   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29718425 | $\omega$ 332.16121 | +0.97184200   | −0.22817840 |
| <i>a</i> | 2.2239185  | $\Omega$ 41.16563  | +0.22936855   | +0.85891112 |
| <i>e</i> | 0.1468361  | <i>i</i> 5.12526   | +0.05397403   | +0.45848261 |
| <i>P</i> | 3.32       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 31 | 704 | 0.4+ | 0.5− | 2000 09 24 | 699 | 0.5− | 0.1− | 2007 12 13 | 704 | 0.2− | 0.8− |
| 2000 08 31 | 704 | 0.7+ | 0.7− | 2000 09 25 | 704 | 0.4− | 0.1− | 2007 12 13 | 704 | 0.0  | 0.0  |
| 2000 08 31 | 704 | 0.1+ | 1.1− | 2000 09 25 | 704 | 0.1− | 0.7− | 2007 12 13 | 704 | 0.5− | 0.1+ |
| 2000 08 31 | 704 | 0.4− | 0.2− | 2000 09 25 | 704 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.6− | 0.3− |
| 2000 09 05 | 704 | 0.0  | 0.1+ | 2000 09 25 | 704 | 0.2+ | 0.8+ | 2007 12 14 | 704 | 0.5+ | 0.2− |
| 2000 09 05 | 704 | 0.4+ | 0.4+ | 2000 09 25 | 704 | 0.1− | 0.3− | 2007 12 14 | 704 | 0.5+ | 0.4+ |
| 2000 09 05 | 704 | 1.4− | 0.6+ | 2000 10 01 | 699 | 0.0  | 0.3+ | 2007 12 14 | 704 | 0.9+ | 0.2− |
| 2000 09 05 | 704 | 0.2+ | 0.6+ | 2000 10 01 | 699 | 0.4− | 0.0  | 2007 12 14 | 704 | 0.3− | 0.2− |
| 2000 09 24 | 704 | 0.1− | 0.3− | 2000 10 01 | 699 | 0.0  | 0.4− | 2007 12 15 | 704 | 0.7+ | 0.3+ |
| 2000 09 24 | 704 | 0.5+ | 0.0  | 2000 10 01 | 699 | 0.7− | 0.0  | 2007 12 15 | 704 | 0.9+ | 0.7+ |
| 2000 09 24 | 699 | 0.3+ | 0.9+ | 2000 10 02 | 704 | 0.2− | 0.5− | 2007 12 15 | 704 | 0.2+ | 0.3− |
| 2000 09 24 | 704 | 0.4+ | 0.2+ | 2000 10 02 | 704 | 1.0+ | 0.3− | 2007 12 15 | 704 | 0.6− | 0.2+ |
| 2000 09 24 | 704 | 0.2− | 0.7+ | 2000 10 02 | 704 | 0.0  | 0.2− | 2007 12 15 | 704 | 0.3+ | 0.1+ |
| 2000 09 24 | 699 | 0.4+ | 0.1+ | 2000 10 02 | 704 | 0.1− | 0.0  | 2007 12 15 | 704 | 0.0  | 0.3+ |
| 2000 09 24 | 704 | 0.5− | 0.3+ | 2000 10 02 | 704 | 0.3+ | 1.0− | 2007 12 15 | 704 | 0.6+ | 0.3− |
| 2000 09 24 | 699 | 0.3+ | 1.2+ | 2007 12 13 | 704 | 0.3− | 0.0  | 2007 12 15 | 704 | 2.1− | 0.2+ |

**2000 QD<sub>242</sub> = 2007 WF<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.52533   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29111935 | $\omega$ 46.18629  | +0.95909908   | −0.28100767 |
| <i>a</i> | 2.2546995  | $\Omega$ 330.08579 | +0.23609980   | +0.86060291 |
| <i>e</i> | 0.1344784  | <i>i</i> 3.92222   | +0.15615969   | +0.42473207 |
| <i>P</i> | 3.39       | <i>H</i> 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 27 | 807 | 0.2− | 0.0  | 2005 01 17 | 691 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.3− | 0.1+ |
| 2000 08 27 | 807 | 0.1+ | 0.4+ | 2007 10 09 | 691 | 0.2− | 0.3− | 2007 11 17 | 691 | 0.1− | 0.2+ |
| 2000 08 28 | 807 | 0.4− | 0.3+ | 2007 10 09 | 691 | 0.1− | 0.1− | 2007 11 17 | 691 | 0.3− | 0.1− |
| 2000 08 28 | 807 | 0.1− | 0.3− | 2007 10 09 | 691 | 0.1− | 0.4− | 2007 11 17 | 691 | 0.1+ | 0.0  |
| 2000 09 29 | 691 | 0.0  | 0.1+ | 2007 10 18 | 691 | 0.1+ | 0.1− | 2007 11 17 | 691 | 0.0  | 0.2− |
| 2000 09 29 | 691 | 0.1+ | 0.1− | 2007 10 18 | 691 | 0.1− | 0.1− | 2007 11 17 | 691 | 0.0  | 0.3+ |
| 2000 09 29 | 691 | 0.1− | 0.0  | 2007 10 18 | 691 | 0.5− | 0.4− | 2007 11 20 | 691 | 0.1− | 0.3− |
| 2000 10 02 | 645 | 0.2+ | 0.0  | 2007 10 21 | 703 | 0.2− | 0.2+ | 2007 11 20 | 691 | 0.5− | 0.4− |
| 2000 10 02 | 645 | 0.2+ | 0.0  | 2007 10 21 | 703 | 0.9+ | 0.6+ | 2007 11 20 | 691 | 0.4− | 0.0  |
| 2005 01 17 | 691 | 0.1+ | 0.1+ | 2007 10 21 | 703 | 0.6+ | 0.9+ |            |     |      |      |
| 2005 01 17 | 691 | 0.1− | 0.0  | 2007 10 21 | 703 | 1.3+ | 0.4− |            |     |      |      |

**2000 QC<sub>248</sub> = 2007 ST<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.24867    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29108634 | $\omega$ 58.70488  | +0.86996994   | −0.48926696 |
| <i>a</i> | 2.2548700  | $\Omega$ 330.45664 | +0.39942905   | +0.77223348 |
| <i>e</i> | 0.2106411  | <i>i</i> 7.15338   | +0.28915175   | +0.40530642 |
| <i>P</i> | 3.39       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 28 | 807 | 0.7− | 0.1+ | 2007 09 21 | 691 | 0.1+ | 0.1+ | 2007 10 21 | 703 | 0.6+ | 0.3+ |
| 2000 08 28 | 807 | 0.4− | 0.3+ | 2007 09 25 | G96 | 0.1+ | 0.0  | 2007 10 21 | 703 | 0.3+ | 0.1+ |
| 2000 08 31 | 691 | 0.2− | 0.2+ | 2007 09 25 | G96 | 0.4+ | 0.1− | 2007 10 21 | 703 | 0.4+ | 0.0  |
| 2000 08 31 | 691 | 0.2+ | 0.2+ | 2007 09 25 | G96 | 0.1+ | 0.2− | 2007 10 21 | 703 | 0.0  | 0.4+ |
| 2000 08 31 | 691 | 0.1− | 0.0  | 2007 09 25 | G96 | 0.0  | 0.3− | 2007 11 01 | 703 | 0.4− | 0.2− |
| 2000 10 21 | 691 | 0.1− | 0.4+ | 2007 10 14 | 703 | 0.4− | 0.3− | 2007 11 01 | 703 | 0.3+ | 0.3+ |
| 2000 10 21 | 691 | 0.2− | 0.2− | 2007 10 14 | 703 | 0.3− | 0.1+ | 2007 11 01 | 703 | 0.3+ | 0.2+ |
| 2000 10 21 | 691 | 0.3+ | 0.2− | 2007 10 14 | 703 | 0.5+ | 0.6+ | 2007 11 01 | 703 | 0.8+ | 0.4− |
| 2005 01 13 | 691 | 0.0  | 0.2+ | 2007 10 14 | 703 | 0.0  | 0.5+ | 2007 11 13 | 703 | 0.2− | 0.2− |
| 2005 01 13 | 691 | 0.0  | 0.2+ | 2007 10 18 | A50 | 0.3+ | 1.1+ | 2007 11 13 | 703 | 0.2+ | 0.6− |
| 2005 01 13 | 691 | 0.2+ | 0.2+ | 2007 10 18 | A50 | 0.3+ | 0.6− | 2007 11 13 | 703 | 0.5− | 0.1− |
| 2007 09 21 | 691 | 1.0− | 0.9− | 2007 10 18 | A50 | 0.3− | 0.0  | 2007 11 13 | 703 | 0.2+ | 0.1− |
| 2007 09 21 | 691 | 0.2+ | 0.1+ | 2007 10 18 | A50 | 0.2+ | 0.8+ |            |     |      |      |

**2000 RJ<sub>17</sub> = 2007 WS<sub>46</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.10559   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29101461 | $\omega$ 66.07609  | +0.99232243   | −0.05641645 |
| <i>a</i> | 2.2552405  | $\Omega$ 296.99926 | +0.00139314   | +0.89494191 |
| <i>e</i> | 0.1948818  | <i>i</i> 7.09549   | +0.12366998   | +0.44260158 |
| <i>P</i> | 3.39       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 07 13 | 809 | 1.5+  | 1.9−  | 2000 09 23 | 704 | 0.1− | 0.4− | 2007 11 20 | G96 | 0.2+ | 0.3− |
| 1993 07 13 | 809 | 0.1+  | 1.0−  | 2000 09 27 | 704 | 0.0  | 0.2+ | 2007 11 21 | G96 | 0.2+ | 0.3− |
| 1993 07 13 | 809 | (3.7+ | 1.2−) | 2000 09 27 | 704 | 0.1+ | 0.1+ | 2007 11 21 | G96 | 0.4+ | 0.3− |
| 2000 09 01 | 704 | 0.7−  | 0.2+  | 2000 09 27 | 704 | 0.1− | 0.1+ | 2007 11 21 | G96 | 0.2+ | 0.2− |
| 2000 09 01 | 704 | 0.1−  | 0.0   | 2000 09 27 | 704 | 0.1− | 0.1− | 2007 11 21 | G96 | 0.1− | 0.3− |
| 2000 09 01 | 704 | 1.2−  | 0.5+  | 2000 09 27 | 704 | 0.4+ | 0.6− | 2007 11 21 | G96 | 0.6+ | 0.1− |
| 2000 09 01 | 704 | 0.1+  | 0.3−  | 2005 01 13 | 691 | 0.2+ | 0.0  | 2007 11 21 | G96 | 0.2+ | 0.2− |
| 2000 09 01 | 704 | 0.4−  | 0.7+  | 2005 01 13 | 691 | 0.2+ | 0.5+ | 2007 11 21 | G96 | 0.7+ | 0.3− |
| 2000 09 03 | 704 | 0.1+  | 1.2+  | 2005 01 13 | 691 | 0.2− | 0.2+ | 2007 11 21 | G96 | 0.5+ | 0.1+ |
| 2000 09 03 | 704 | 0.3+  | 0.0   | 2007 11 08 | 703 | 0.4+ | 0.1− | 2007 12 02 | 704 | 0.2+ | 0.1− |
| 2000 09 03 | 704 | 0.1−  | 0.4+  | 2007 11 08 | 703 | 0.4− | 0.5− | 2007 12 02 | 704 | 0.4− | 0.6− |
| 2000 09 03 | 704 | 0.2+  | 0.8+  | 2007 11 08 | 703 | 0.5+ | 0.4− | 2007 12 02 | 704 | 0.3− | 0.1− |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 23 | 704 | 0.0  | 0.1+ | 2007 11 08 | 703 | 1.0- | 1.4- | 2007 12 02 | 704 | 0.4-  | 0.1+  |
| 2000 09 23 | 704 | 0.7- | 0.4+ | 2007 11 20 | G96 | 0.2- | 0.3- | 2007 12 16 | 704 | 0.5-  | 1.1+  |
| 2000 09 23 | 704 | 0.1- | 1.2+ | 2007 11 20 | G96 | 0.1+ | 0.9- | 2007 12 16 | 704 | 0.6-  | 0.7+  |
| 2000 09 23 | 704 | 0.9- | 0.1- | 2007 11 20 | G96 | 1.2+ | 0.3- | 2007 12 16 | 704 | (2.5- | 1.7+) |

**2000 RP<sub>24</sub> = 2007 XD<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 87.46871   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29836714 | $\omega$ | 62.32603  | +0.64298523   | +0.76109820 |
| <i>a</i> | 2.2180367  | $\Omega$ | 247.95070 | -0.73114903   | +0.57678535 |
| <i>e</i> | 0.1323661  | <i>i</i> | 5.28898   | -0.22801555   | +0.29672914 |
| <i>P</i> | 3.30       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.0  | 0.0  | 2000 09 25 | 699 | 0.6- | 0.1- | 2007 11 18 | 691 | 0.1+ | 0.1- |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2000 09 25 | 699 | 0.2- | 0.4+ | 2007 11 18 | 691 | 0.2- | 0.2+ |
| 2000 09 01 | 704 | 0.3- | 0.0  | 2000 09 25 | 699 | 0.5- | 0.1- | 2007 11 18 | 691 | 0.2- | 0.1- |
| 2000 09 01 | 704 | 0.7+ | 0.1- | 2000 09 25 | 699 | 0.5- | 0.2+ | 2007 12 03 | 703 | 0.1- | 0.9- |
| 2000 09 01 | 704 | 0.7+ | 0.1+ | 2000 09 26 | 704 | 0.7+ | 0.3- | 2007 12 03 | 703 | 0.0  | 0.1- |
| 2000 09 01 | 704 | 0.2- | 0.3- | 2000 09 26 | 704 | 0.2- | 1.0+ | 2007 12 03 | 703 | 0.7+ | 0.3+ |
| 2000 09 03 | 704 | 0.3- | 0.2- | 2000 09 26 | 704 | 0.8+ | 0.1+ | 2007 12 03 | 703 | 0.2- | 0.4+ |
| 2000 09 03 | 704 | 0.9+ | 0.4- | 2000 09 26 | 704 | 0.7- | 1.7- | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2000 09 03 | 704 | 0.8- | 0.4- | 2000 09 26 | 704 | 0.1+ | 0.7- | 2007 12 04 | G96 | 0.0  | 0.1- |
| 2000 09 03 | 704 | 0.4- | 1.0+ | 2007 10 16 | G96 | 0.3+ | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.1- |
| 2000 09 03 | 704 | 0.2+ | 0.3+ | 2007 10 16 | G96 | 0.1- | 0.0  | 2007 12 04 | G96 | 0.2- | 0.0  |
| 2000 09 23 | 704 | 0.7+ | 0.3- | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.1+ | 0.2- |
| 2000 09 23 | 704 | 0.4- | 0.3+ | 2007 10 16 | G96 | 0.1+ | 0.2- | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2000 09 23 | 704 | 0.0  | 0.1+ | 2007 11 07 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2000 09 23 | 704 | 0.2+ | 0.5+ | 2007 11 07 | 691 | 0.1+ | 0.1+ |            |     |      |      |
| 2000 09 23 | 704 | 0.1+ | 0.5+ | 2007 11 07 | 691 | 0.3- | 0.1+ |            |     |      |      |

**2000 SV<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.23097   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29803909 | $\omega$ | 96.53746  | +0.94481673   | -0.30690422 |
| <i>a</i> | 2.2196640  | $\Omega$ | 281.38137 | +0.23485425   | +0.87841309 |
| <i>e</i> | 0.1383759  | <i>i</i> | 6.71264   | +0.22839622   | +0.36633351 |
| <i>P</i> | 3.31       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 03 | 704 | 0.7- | 1.1+ | 2000 09 24 | 704 | 0.6- | 0.1- | 2000 09 28 | 704 | 0.1+ | 0.2- |
| 2000 09 03 | 704 | 0.7- | 0.1- | 2000 09 24 | 704 | 0.1- | 0.6- | 2000 09 28 | 704 | 0.2+ | 0.8- |
| 2000 09 03 | 704 | 0.3- | 0.0  | 2000 09 24 | 704 | 0.6- | 0.1- | 2000 10 03 | 704 | 0.3- | 0.0  |
| 2000 09 03 | 704 | 0.6+ | 0.1+ | 2000 09 25 | 704 | 0.2+ | 0.1+ | 2000 10 03 | 704 | 0.5- | 0.5- |
| 2000 09 23 | 704 | 0.2- | 1.0- | 2000 09 25 | 704 | 0.1- | 0.0  | 2000 10 03 | 704 | 0.2- | 0.2- |
| 2000 09 23 | 699 | 0.2- | 0.0  | 2000 09 25 | 704 | 0.9+ | 0.3+ | 2000 10 03 | 704 | 0.6- | 0.2+ |
| 2000 09 23 | 704 | 0.2+ | 0.6- | 2000 09 25 | 704 | 0.6- | 1.0+ | 2007 12 14 | 620 | 0.1+ | 0.6- |
| 2000 09 23 | 699 | 0.7+ | 0.0  | 2000 09 25 | 704 | 0.4- | 0.6+ | 2007 12 14 | 620 | 0.6+ | 0.2- |
| 2000 09 23 | 704 | 0.1- | 0.8- | 2000 09 25 | 608 | 1.6+ | 1.1+ | 2007 12 14 | 620 | 0.3+ | 0.4+ |
| 2000 09 23 | 699 | 0.3- | 0.5- | 2000 09 25 | 608 | 1.4+ | 1.6+ | 2007 12 14 | 620 | 0.1- | 0.5+ |
| 2000 09 23 | 704 | 0.8- | 0.6- | 2000 09 25 | 608 | 1.5+ | 1.3+ | 2007 12 15 | 620 | 0.1- | 0.0  |
| 2000 09 23 | 699 | 0.4- | 0.2- | 2000 09 28 | 704 | 0.1+ | 0.1+ | 2007 12 15 | 620 | 0.0  | 0.4+ |
| 2000 09 24 | 704 | 0.2+ | 0.6- | 2000 09 28 | 704 | 0.4+ | 0.3+ | 2007 12 15 | 620 | 0.7- | 0.3- |
| 2000 09 24 | 704 | 0.1- | 0.3- | 2000 09 28 | 704 | 0.0  | 0.5- |            |     |      |      |

**2000 SR<sub>41</sub> = 2007 VQ<sub>286</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.29002   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29323266 | $\omega$ | 311.86470 | +0.95840384   | -0.27475997 |
| <i>a</i> | 2.2438534  | $\Omega$ | 64.21512  | +0.28063432   | +0.85782731 |
| <i>e</i> | 0.1684376  | <i>i</i> | 4.92218   | +0.05202363   | +0.43432623 |
| <i>P</i> | 3.36       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 24 | 704 | 0.3+ | 0.6- | 2002 03 05 | 645 | 0.0   | 0.0   | 2007 12 06 | G96 | 0.1+ | 0.2- |
| 2000 09 24 | 704 | 0.3+ | 0.3+ | 2002 03 05 | 645 | 0.1-  | 0.0   | 2007 12 06 | G96 | 0.4+ | 0.2- |
| 2000 09 24 | 704 | 0.7+ | 0.6+ | 2007 11 14 | 691 | 0.3-  | 0.1-  | 2007 12 10 | 704 | 0.3+ | 0.5- |
| 2000 09 25 | 704 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.0   | 0.0   | 2007 12 10 | 704 | 0.1+ | 0.7- |
| 2000 09 25 | 704 | 0.5+ | 1.9+ | 2007 11 14 | 691 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 0.1+ | 0.4- |
| 2000 09 25 | 704 | 0.5+ | 0.9- | 2007 11 18 | 691 | 0.2-  | 0.1+  | 2007 12 10 | 704 | 0.0  | 0.4- |
| 2000 09 25 | 704 | 0.9- | 1.0+ | 2007 11 18 | 691 | 0.2-  | 0.1-  | 2007 12 14 | 704 | 0.2+ | 0.3+ |
| 2000 09 25 | 608 | 0.3+ | 0.8- | 2007 11 18 | 691 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.2+ | 0.5+ |
| 2000 09 25 | 608 | 0.3+ | 0.8- | 2007 12 05 | 703 | 0.2+  | 0.6+  | 2007 12 14 | 704 | 0.3- | 0.5+ |
| 2000 09 25 | 608 | 0.1+ | 0.7- | 2007 12 05 | 703 | 0.3-  | 0.2+  | 2007 12 14 | 704 | 0.9+ | 0.1+ |
| 2000 10 02 | 704 | 0.7- | 0.1- | 2007 12 05 | 703 | 0.4+  | 0.7+  | 2007 12 14 | 704 | 0.4- | 0.2+ |
| 2000 10 02 | 704 | 0.4- | 0.1- | 2007 12 05 | 703 | (0.9- | 2.0+) | 2007 12 15 | 691 | 0.2- | 0.0  |
| 2000 10 02 | 704 | 0.2- | 0.2- | 2007 12 06 | G96 | 0.3-  | 0.1-  | 2007 12 15 | 691 | 0.7+ | 0.0  |
| 2000 10 02 | 704 | 0.6- | 0.0  | 2007 12 06 | G96 | 0.2+  | 1.2+  | 2007 12 15 | 691 | 0.2- | 0.2- |

**2000 SQ<sub>52</sub> = 2007 XN<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 12.93112   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29764563 | $\omega$ | 125.77050 | +0.65080259   | -0.75353621 |
| <i>a</i> | 2.2216197  | $\Omega$ | 283.35434 | +0.66212437   | +0.62319111 |
| <i>e</i> | 0.1571543  | <i>i</i> | 5.48184   | +0.37154718   | +0.20932279 |
| <i>P</i> | 3.31       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 6  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 23 | 699 | 1.2- | 1.4- | 2000 09 26 | 608 | 0.6+ | 0.2- | 2007 12 13 | 620 | 0.0  | 0.1+ |
| 2000 09 23 | 699 | 0.2- | 0.7- | 2000 09 26 | 608 | 0.2+ | 0.6+ | 2007 12 13 | 620 | 0.6+ | 0.1+ |
| 2000 09 23 | 699 | 0.8- | 0.4- | 2000 09 26 | 608 | 0.2+ | 0.1- | 2007 12 13 | 620 | 0.2+ | 0.3+ |
| 2000 09 23 | 699 | 0.0  | 0.5+ | 2000 10 02 | 699 | 1.2- | 0.9- | 2007 12 13 | 620 | 0.2+ | 0.1- |
| 2000 09 24 | 704 | 0.3+ | 0.2+ | 2000 10 02 | 699 | 1.5- | 0.8+ | 2007 12 14 | 620 | 0.7- | 0.2+ |
| 2000 09 24 | 704 | 0.6- | 0.5+ | 2000 10 02 | 699 | 0.4+ | 0.2+ | 2007 12 14 | 620 | 0.4- | 0.5- |
| 2000 09 24 | 704 | 0.0  | 0.0  | 2000 10 02 | 699 | 0.0  | 0.9- | 2007 12 14 | 620 | 1.1- | 1.1- |
| 2000 09 24 | 704 | 0.9+ | 0.9+ | 2000 10 03 | 704 | 0.2- | 0.1+ | 2007 12 14 | 704 | 0.0  | 0.6+ |
| 2000 09 24 | 704 | 0.5+ | 1.3- | 2000 10 03 | 704 | 1.2+ | 0.4+ | 2007 12 14 | 704 | 0.1- | 1.0+ |
| 2000 09 26 | 704 | 0.4- | 0.3+ | 2000 10 03 | 704 | 0.0  | 0.9- | 2007 12 14 | 704 | 0.3+ | 0.9+ |
| 2000 09 26 | 704 | 1.4+ | 0.3+ | 2000 10 03 | 704 | 0.2+ | 0.4+ | 2007 12 14 | 704 | 1.2+ | 1.2- |
| 2000 09 26 | 704 | 0.6- | 1.0+ | 2007 12 13 | 620 | 0.2- | 0.2+ |            |     |      |      |
| 2000 09 26 | 704 | 0.6+ | 0.7+ | 2007 12 13 | 620 | 0.0  | 0.3- |            |     |      |      |

**2000 SP<sub>87</sub> = 2007 UZ<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.69161   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27359543 | $\omega$ | 229.89805 | +0.30936677   | +0.94024511 |
| <i>a</i> | 2.3499763  | $\Omega$ | 58.67348  | -0.81394948   | +0.33916180 |
| <i>e</i> | 0.2049370  | <i>i</i> | 9.58503   | -0.49170972   | +0.03013977 |
| <i>P</i> | 3.60       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 22 | 699 | 1.0+ | 1.4- | 2000 10 02 | 704 | 0.3-  | 0.4-  | 2007 10 11 | 703 | 0.4- | 0.4- |
| 2000 09 22 | 699 | 0.6- | 0.0  | 2000 10 02 | 704 | 0.1+  | 1.5+  | 2007 10 11 | 703 | 0.8- | 0.3+ |
| 2000 09 22 | 699 | 0.6- | 0.0  | 2000 10 02 | 704 | 0.5+  | 0.0   | 2007 10 11 | 703 | 0.5+ | 0.2+ |
| 2000 09 22 | 699 | 0.2- | 0.6- | 2006 02 21 | 703 | (2.1- | 0.2+) | 2007 10 11 | 699 | 0.2- | 0.5+ |
| 2000 09 24 | 704 | 0.4- | 0.7- | 2006 02 21 | 703 | 0.3-  | 0.3-  | 2007 10 11 | 699 | 0.7+ | 0.8+ |
| 2000 09 24 | 704 | 0.3+ | 0.8- | 2006 02 21 | 703 | 0.5-  | 0.8-  | 2007 10 11 | 699 | 0.0  | 0.3+ |
| 2000 09 24 | 704 | 0.2+ | 0.0  | 2006 02 21 | 703 | 0.7+  | 0.9+  | 2007 10 18 | 703 | 0.4+ | 0.9- |
| 2000 09 26 | 704 | 0.3+ | 0.4+ | 2007 09 05 | 703 | 0.1+  | 0.3+  | 2007 10 18 | 703 | 0.5+ | 0.1- |
| 2000 09 26 | 704 | 0.1- | 0.5+ | 2007 09 05 | 703 | 0.2+  | 0.6-  | 2007 10 18 | 703 | 1.5+ | 0.0  |
| 2000 09 26 | 704 | 0.6+ | 0.8+ | 2007 09 05 | 703 | 0.6+  | 0.4-  | 2007 10 18 | 703 | 0.5- | 0.5- |
| 2000 09 26 | 704 | 0.9- | 1.3+ | 2007 09 05 | 703 | 0.1+  | 0.5+  | 2007 10 20 | 291 | 0.5- | 0.2- |
| 2000 10 02 | 704 | 0.1- | 0.3+ | 2007 10 11 | 703 | 0.0   | 0.6-  | 2007 10 20 | 291 | 0.6- | 0.2- |
| 2000 10 02 | 704 | 0.4+ | 1.0- | 2007 10 11 | 699 | 1.0-  | 1.0+  | 2007 10 20 | 291 | 0.5- | 0.2- |



2007 DEC. 24

M.P.O. 129579

**2000 SL<sub>97</sub> = 2007 XE<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.80013   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.31016580 | $\omega$ | 117.62252 | +0.65680472   | -0.75076361 |
| <i>a</i> | 2.1614247  | $\Omega$ | 291.14127 | +0.66249123   | +0.61913815 |
| <i>e</i> | 0.0525656  | <i>i</i> | 4.33118   | +0.36015681   | +0.23026495 |
| <i>P</i> | 3.18       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 23 | 704 | 0.9- | 0.2- | 2000 09 27 | 704 | 0.3+ | 0.6- | 2007 11 11 | G96 | 0.0  | 0.6- |
| 2000 09 23 | 704 | 0.7+ | 0.4+ | 2000 09 27 | 704 | 0.2+ | 0.8+ | 2007 11 11 | G96 | 0.3- | 0.7- |
| 2000 09 23 | 704 | 1.5+ | 0.3+ | 2000 09 27 | 704 | 0.2- | 0.9- | 2007 11 11 | G96 | 0.2- | 0.7- |
| 2000 09 23 | 704 | 0.1- | 0.1- | 2005 02 09 | 699 | 0.4- | 0.3- | 2007 12 12 | B04 | 0.2+ | 0.5+ |
| 2000 09 26 | 699 | 0.4- | 0.2+ | 2005 02 09 | 699 | 1.0+ | 0.8- | 2007 12 12 | B04 | 0.0  | 0.4+ |
| 2000 09 26 | 699 | 0.5- | 0.9- | 2005 02 09 | 699 | 0.2+ | 1.3+ | 2007 12 12 | B04 | 0.4+ | 0.4+ |
| 2000 09 26 | 699 | 0.5- | 1.4+ | 2005 02 09 | 699 | 0.4- | 0.7+ | 2007 12 12 | B04 | 0.0  | 0.2+ |
| 2000 09 26 | 699 | 0.2- | 0.6+ | 2006 06 19 | G96 | 0.4- | 0.0  | 2007 12 12 | B04 | 0.1+ | 0.3+ |
| 2000 09 27 | 704 | 0.3+ | 0.3+ | 2006 06 19 | G96 | 0.2+ | 0.1+ | 2007 12 12 | B04 | 0.4+ | 0.2+ |
| 2000 09 27 | 704 | 0.7+ | 0.1+ | 2006 06 19 | G96 | 0.4- | 0.3+ | 2007 12 12 | B04 | 0.1+ | 0.3+ |
| 2000 09 27 | 704 | 0.2- | 1.2- | 2006 06 19 | G96 | 0.2+ | 0.0  | 2007 12 13 | B04 | 0.1- | 0.2+ |
| 2000 09 27 | 704 | 0.5+ | 0.9+ | 2006 07 20 | 644 | 0.0  | 0.1+ | 2007 12 13 | B04 | 0.1- | 0.3+ |
| 2000 09 27 | 704 | 0.2+ | 0.5- | 2006 07 20 | 644 | 0.0  | 0.3+ | 2007 12 13 | B04 | 0.2- | 0.4+ |
| 2000 09 27 | 704 | 0.3- | 0.4- | 2006 07 20 | 644 | 0.1- | 0.5+ | 2007 12 13 | B04 | 0.1+ | 0.1+ |
| 2000 09 27 | 704 | 1.5- | 0.4+ | 2007 11 11 | G96 | 0.2- | 1.1- |            |     |      |      |

**2000 SF<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.03569   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28908702 | $\omega$ | 108.55326 | +0.92639086   | +0.37611391 |
| <i>a</i> | 2.2652545  | $\Omega$ | 229.35795 | -0.35398710   | +0.85315300 |
| <i>e</i> | 0.3243951  | <i>i</i> | 1.38897   | -0.12842548   | +0.36148069 |
| <i>P</i> | 3.41       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 24 | 704 | 0.3+ | 0.6+  | 2000 10 02 | 704 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.5- | 0.1- |
| 2000 09 24 | 704 | 0.1+ | 0.5-  | 2000 10 02 | 704 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2000 09 24 | 704 | 0.8+ | 0.2-  | 2000 10 02 | 704 | 0.0  | 0.4- | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2000 09 24 | 704 | 0.2+ | 0.1+  | 2000 10 02 | 704 | 0.3- | 0.1+ | 2007 11 18 | 691 | 0.3+ | 0.0  |
| 2000 09 24 | 704 | 0.3+ | 0.0   | 2000 10 02 | 704 | 0.3- | 0.6+ | 2007 11 18 | 691 | 0.2+ | 0.0  |
| 2000 09 26 | 699 | 0.7- | 0.7+  | 2000 11 29 | 691 | 0.1+ | 0.4- | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2000 09 26 | 699 | (0.0 | 2.2+) | 2000 11 29 | 691 | 0.1+ | 0.4- | 2007 12 03 | 703 | 0.6+ | 0.7+ |
| 2000 09 26 | 699 | 0.3+ | 0.1+  | 2000 11 29 | 691 | 0.2+ | 0.5- | 2007 12 03 | 703 | 0.2- | 0.5+ |
| 2000 09 26 | 699 | 0.5- | 0.3+  | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 12 03 | 703 | 0.3- | 0.5- |
| 2000 09 27 | 704 | 0.0  | 0.3-  | 2007 10 30 | 691 | 0.0  | 0.3+ | 2007 12 03 | 703 | 0.2- | 0.1- |
| 2000 09 27 | 704 | 0.4- | 0.0   | 2007 10 30 | 691 | 0.1+ | 0.1- | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2000 09 27 | 704 | 0.1- | 0.2+  | 2007 11 05 | G96 | 0.6+ | 0.2- | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2000 09 27 | 704 | 0.6+ | 0.0   | 2007 11 05 | G96 | 0.7+ | 0.3- | 2007 12 05 | 704 | 0.0  | 0.5+ |
| 2000 09 27 | 704 | 0.0  | 0.6-  | 2007 11 05 | G96 | 0.4+ | 0.2- | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2000 10 01 | 699 | 0.1+ | 0.5+  | 2007 11 05 | G96 | 0.6+ | 0.1- | 2007 12 15 | G96 | 0.3+ | 0.7- |
| 2000 10 01 | 699 | 0.4- | 0.0   | 2007 11 14 | 691 | 1.1- | 1.3+ | 2007 12 15 | G96 | 0.1+ | 0.6- |
| 2000 10 01 | 699 | 0.1+ | 0.1+  | 2007 11 14 | 691 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.5+ | 0.5- |
| 2000 10 01 | 699 | 0.4- | 0.1+  | 2007 11 14 | 691 | 0.3- | 0.1- | 2007 12 15 | G96 | 0.7+ | 0.4- |

**2000 SS<sub>230</sub> = 1990 WX<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.67390   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29470471 | $\omega$ | 347.12377 | +0.98563427   | -0.16468310 |
| <i>a</i> | 2.2363752  | $\Omega$ | 22.45943  | +0.16234932   | +0.86265045 |
| <i>e</i> | 0.2149625  | <i>i</i> | 5.62983   | +0.04655944   | +0.47824018 |
| <i>P</i> | 3.34       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1990 11 23 | 372 | 0.9- | 0.3+ | 2000 10 02 | 704 | 0.3- | 0.5+ | 2000 11 27 | 704 | 0.0  | 0.6+ |
| 1990 11 23 | 372 | 0.4+ | 1.1+ | 2000 10 02 | 704 | 0.3+ | 0.3+ | 2000 11 27 | 704 | 0.1- | 0.0  |
| 2000 09 02 | 704 | 0.4- | 0.6+ | 2000 10 24 | 704 | 0.3- | 0.6+ | 2000 11 27 | 704 | 0.5+ | 1.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 02 | 704 | 1.0- | 0.2- | 2000 10 24 | 704 | 1.2- | 0.0  | 2000 11 27 | 704 | 0.3- | 0.0  |
| 2000 09 02 | 704 | 0.1+ | 0.7+ | 2000 10 24 | 704 | 0.5- | 0.2+ | 2000 12 20 | 704 | 0.6- | 0.1+ |
| 2000 09 02 | 704 | 0.0  | 0.1+ | 2000 10 24 | 704 | 0.8- | 0.1+ | 2000 12 20 | 704 | 0.5- | 0.4- |
| 2000 09 02 | 704 | 0.0  | 1.0+ | 2000 11 01 | 704 | 0.3+ | 0.0  | 2000 12 20 | 704 | 1.6- | 1.2- |
| 2000 09 09 | 699 | 0.1+ | 1.1+ | 2000 11 01 | 704 | 0.6+ | 0.0  | 2002 03 13 | 691 | 0.2+ | 0.6+ |
| 2000 09 09 | 699 | 0.1+ | 0.1- | 2000 11 01 | 704 | 0.3+ | 0.2+ | 2002 03 13 | 691 | 0.2+ | 0.4+ |
| 2000 09 09 | 699 | 0.9+ | 0.3+ | 2000 11 01 | 704 | 0.0  | 0.5+ | 2002 03 13 | 691 | 0.4+ | 0.6+ |
| 2000 09 09 | 699 | 0.6- | 0.1+ | 2000 11 01 | 704 | 0.2+ | 0.4- | 2007 09 24 | 291 | 0.2- | 0.1+ |
| 2000 09 25 | 699 | 0.0  | 0.2- | 2000 11 03 | 704 | 0.4+ | 0.6+ | 2007 09 24 | 291 | 0.1- | 0.2- |
| 2000 09 25 | 699 | 0.5- | 0.3- | 2000 11 03 | 704 | 0.1+ | 0.2+ | 2007 09 24 | 291 | 0.2- | 0.0  |
| 2000 09 25 | 699 | 0.1+ | 0.2- | 2000 11 03 | 704 | 0.7- | 0.0  | 2007 11 17 | G96 | 0.2+ | 0.5- |
| 2000 09 25 | 699 | 0.7- | 0.0  | 2000 11 03 | 704 | 0.1+ | 0.5+ | 2007 11 17 | G96 | 0.2+ | 0.4- |
| 2000 09 28 | 704 | 0.2- | 0.7+ | 2000 11 16 | 699 | 1.7+ | 0.2- | 2007 11 17 | G96 | 0.3+ | 0.4- |
| 2000 09 28 | 704 | 0.2- | 0.8- | 2000 11 16 | 699 | 1.7+ | 1.1+ | 2007 11 17 | G96 | 0.4+ | 0.4- |
| 2000 09 28 | 704 | 0.1- | 0.0  | 2000 11 16 | 699 | 0.2- | 0.8+ | 2007 12 14 | D29 | 0.0  | 0.4- |
| 2000 09 28 | 704 | 1.1- | 0.2- | 2000 11 16 | 699 | 1.2+ | 0.2+ | 2007 12 14 | D29 | 0.1- | 0.4- |
| 2000 10 01 | 704 | 0.1- | 0.2+ | 2000 11 20 | 704 | 0.0  | 1.2+ | 2007 12 14 | D29 | 0.4+ | 0.5- |
| 2000 10 01 | 704 | 0.2- | 0.1- | 2000 11 20 | 704 | 0.5- | 0.5- | 2007 12 14 | D29 | 0.7- | 0.1- |
| 2000 10 01 | 704 | 0.4- | 0.1- | 2000 11 20 | 704 | 0.4+ | 0.4- | 2007 12 16 | 704 | 0.4- | 0.3+ |
| 2000 10 01 | 704 | 0.1+ | 0.1+ | 2000 11 20 | 704 | 0.2+ | 0.5- | 2007 12 16 | 704 | 0.2+ | 0.8+ |
| 2000 10 01 | 704 | 0.1+ | 0.0  | 2000 11 20 | 704 | 0.1+ | 1.5- | 2007 12 16 | 704 | 0.5+ | 1.1- |
| 2000 10 02 | 704 | 0.3- | 0.1+ | 2000 11 27 | 704 | 0.5+ | 0.1+ | 2007 12 16 | 704 | 0.2+ | 0.6+ |

**2000 SS<sub>325</sub> = 2006 GB<sub>34</sub> = 2007 US<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 68.86195   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29038578 | $\omega$ | 168.58769 | +0.71892008   | +0.69456010 |
| <i>a</i> | 2.2584951  | $\Omega$ | 147.36651 | -0.64164021   | +0.67817858 |
| <i>e</i> | 0.1424418  | <i>i</i> | 2.89185   | -0.26730462   | +0.24012512 |
| <i>P</i> | 3.39       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 29 | 691 | 0.2- | 0.2+ | 2006 04 08 | G96 | 0.3- | 0.4- | 2007 10 16 | 691 | 0.2- | 0.0  |
| 2000 09 29 | 691 | 0.1- | 0.1+ | 2006 04 08 | G96 | 0.7- | 0.3+ | 2007 10 16 | 691 | 0.2- | 0.0  |
| 2000 09 29 | 691 | 0.3- | 0.1+ | 2006 05 26 | G96 | 0.4- | 0.3+ | 2007 10 20 | 691 | 0.5+ | 0.2- |
| 2000 10 01 | 699 | 0.4- | 0.0  | 2006 05 26 | G96 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.0  | 0.1+ |
| 2000 10 01 | 699 | 0.0  | 1.0- | 2006 05 26 | G96 | 0.3- | 0.1+ | 2007 10 20 | 691 | 0.1- | 0.3+ |
| 2000 10 01 | 699 | 1.0- | 0.8+ | 2006 05 26 | G96 | 0.5- | 0.1+ | 2007 11 04 | G96 | 0.7+ | 0.0  |
| 2000 10 01 | 699 | 0.1+ | 0.8+ | 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.4+ | 0.0  |
| 2000 10 02 | 645 | 0.1+ | 0.0  | 2007 10 08 | 691 | 0.1- | 0.4+ | 2007 11 04 | G96 | 0.3+ | 0.3- |
| 2000 10 02 | 645 | 0.1+ | 0.1- | 2007 10 08 | 691 | 0.2- | 0.1+ | 2007 11 07 | 703 | 0.9- | 0.8+ |
| 2006 04 07 | 691 | 0.4+ | 0.1+ | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 11 07 | 703 | 0.8- | 0.1+ |
| 2006 04 07 | 691 | 0.1+ | 0.2+ | 2007 10 08 | G96 | 0.4+ | 0.4- | 2007 11 07 | 703 | 0.8- | 1.3- |
| 2006 04 07 | 691 | 0.2+ | 0.2- | 2007 10 08 | G96 | 0.4- | 0.4- | 2007 11 07 | 703 | 1.4+ | 0.2+ |
| 2006 04 08 | G96 | 0.3- | 0.7+ | 2007 10 08 | G96 | 0.4+ | 0.2- |            |     |      |      |
| 2006 04 08 | G96 | 0.1- | 0.2- | 2007 10 16 | 691 | 0.2- | 0.2+ |            |     |      |      |

**2000 SB<sub>326</sub> = 2007 VP<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 150.99100  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29345216 | $\omega$ | 57.37433  | -0.19633748   | +0.98014882 |
| <i>a</i> | 2.2427344  | $\Omega$ | 201.35423 | -0.92308230   | -0.19424210 |
| <i>e</i> | 0.0294981  | <i>i</i> | 4.34165   | -0.33071235   | -0.03972787 |
| <i>P</i> | 3.36       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 04 14 | 691 | 0.1- | 0.1- | 2000 11 20 | 691 | 0.1+  | 0.9-  | 2007 11 04 | 691 | 0.2- | 0.3+ |
| 1999 04 14 | 691 | 0.1- | 0.2- | 2000 11 20 | 691 | 0.3-  | 0.9-  | 2007 11 04 | 691 | 0.1- | 0.0  |
| 1999 04 14 | 691 | 0.2+ | 0.5+ | 2000 11 20 | 691 | 0.1+  | 0.9-  | 2007 11 08 | 691 | 0.1- | 0.1+ |
| 2000 09 29 | 691 | 0.1+ | 0.5+ | 2003 07 24 | 644 | 0.0   | 0.1+  | 2007 11 08 | 691 | 0.3- | 0.3+ |
| 2000 09 29 | 691 | 0.1+ | 0.4+ | 2003 07 24 | 644 | 0.1-  | 0.2+  | 2007 11 08 | 691 | 0.1- | 0.1+ |
| 2000 09 29 | 691 | 0.3+ | 0.4+ | 2003 07 24 | 644 | 0.0   | 0.0   | 2007 11 19 | H07 | 1.0+ | 0.1+ |
| 2000 10 01 | 704 | 0.1+ | 0.7+ | 2007 11 03 | H07 | 0.5+  | 0.3+  | 2007 11 19 | H07 | 1.8- | 0.7- |
| 2000 10 01 | 704 | 0.2+ | 1.2+ | 2007 11 03 | H07 | (0.8+ | 1.6+) | 2007 12 04 | 704 | 1.1+ | 0.8- |
| 2000 10 01 | 704 | 0.1+ | 0.9- | 2007 11 03 | H07 | 0.2+  | 0.1+  | 2007 12 04 | 704 | 0.5+ | 0.0  |
| 2000 10 01 | 704 | 0.9- | 0.1+ | 2007 11 04 | 691 | 0.2-  | 0.3+  | 2007 12 04 | 704 | 0.2+ | 0.4+ |

**2000 SJ<sub>342</sub> = 2007 VM<sub>47</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.27577   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28999083 | $\omega$ 353.68453 | +0.97154730   | -0.23304356 |
| <i>a</i> | 2.2605453  | $\Omega$ 19.94578  | +0.22236309   | +0.83604995 |
| <i>e</i> | 0.1370635  | <i>i</i> 7.11747   | +0.08155057   | +0.49670028 |
| <i>P</i> | 3.40       | <i>H</i> 18.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 24 | 704 | 2.0- | 0.5+ | 2000 10 02 | 645 | 0.1- | 0.1- | 2007 10 16 | G96 | 0.0  | 0.0  |
| 2000 09 24 | 704 | 1.0- | 1.4+ | 2000 11 16 | 691 | 0.5+ | 0.3- | 2007 11 01 | 691 | 0.2- | 0.2+ |
| 2000 09 24 | 704 | 1.2- | 0.6+ | 2000 11 16 | 691 | 0.3+ | 0.5- | 2007 11 01 | 691 | 0.2- | 0.1- |
| 2000 09 30 | 691 | 0.3+ | 0.3- | 2000 11 16 | 691 | 0.4+ | 0.2- | 2007 11 01 | 691 | 0.0  | 0.1- |
| 2000 09 30 | 691 | 0.3+ | 0.1+ | 2007 10 07 | 691 | 0.1- | 0.2- | 2007 11 05 | 691 | 0.4- | 0.2+ |
| 2000 09 30 | 691 | 0.2+ | 0.1- | 2007 10 07 | 691 | 0.2+ | 0.2- | 2007 11 05 | 691 | 0.2+ | 0.2+ |
| 2000 09 30 | 691 | 0.0  | 0.5+ | 2007 10 07 | 691 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.2+ | 0.3+ |
| 2000 09 30 | 691 | 0.3+ | 0.4+ | 2007 10 16 | G96 | 0.5+ | 0.1- | 2007 11 17 | 691 | 0.4+ | 0.0  |
| 2000 09 30 | 691 | 0.3+ | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.1- | 2007 11 17 | 691 | 0.2- | 0.2+ |
| 2000 10 02 | 645 | 0.1- | 0.1- | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 11 17 | 691 | 0.4- | 0.1+ |

**2000 TG<sub>6</sub> = 1993 TS<sub>40</sub> = 2007 TW<sub>248</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.65376  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28006312 | $\omega$ 190.24506 | +0.91949774   | -0.39221094 |
| <i>a</i> | 2.3136559  | $\Omega$ 192.94248 | +0.36847078   | +0.88331362 |
| <i>e</i> | 0.1158339  | <i>i</i> 6.75718   | +0.13694228   | +0.25676375 |
| <i>P</i> | 3.52       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 09 | 809 | 1.2+  | 1.6-  | 2000 10 02 | 704 | 0.3- | 0.8+ | 2007 09 28 | D35 | 0.5+ | 0.0  |
| 1993 10 09 | 809 | 1.9+  | 1.2-  | 2000 10 02 | 704 | 0.3- | 0.0  | 2007 09 28 | D35 | 0.5+ | 0.8+ |
| 1993 10 09 | 809 | 0.5-  | 1.3-  | 2000 10 02 | 704 | 0.3+ | 0.3- | 2007 10 11 | G96 | 0.0  | 0.3- |
| 1993 10 11 | 809 | (0.7+ | 2.8+) | 2000 10 02 | 704 | 0.2- | 0.7+ | 2007 10 11 | G96 | 0.2+ | 0.1- |
| 1993 10 11 | 809 | 1.0-  | 0.8+  | 2000 10 02 | 704 | 0.4- | 0.1- | 2007 10 11 | G96 | 0.0  | 0.1- |
| 1993 10 11 | 809 | 0.8-  | 1.5+  | 2006 05 30 | G96 | 0.0  | 0.4- | 2007 10 11 | G96 | 0.1+ | 0.2- |
| 2000 09 21 | 691 | 0.1-  | 0.7-  | 2006 05 30 | G96 | 0.1- | 0.4- | 2007 10 12 | 703 | 0.3- | 0.9+ |
| 2000 09 21 | 691 | 0.0   | 0.4-  | 2006 05 30 | G96 | 0.3+ | 0.3- | 2007 10 12 | 703 | 0.8+ | 0.5+ |
| 2000 09 21 | 691 | 0.2+  | 1.0-  | 2006 05 30 | G96 | 0.4- | 0.6+ | 2007 10 12 | 703 | 0.1- | 1.0+ |
| 2000 10 01 | 704 | 0.3+  | 0.0   | 2007 09 13 | 699 | 0.5- | 1.8- | 2007 10 12 | 703 | 1.5- | 0.5- |
| 2000 10 01 | 704 | 0.4+  | 0.2+  | 2007 09 13 | 699 | 0.8+ | 0.6+ | 2007 10 20 | G96 | 0.3+ | 0.2- |
| 2000 10 01 | 704 | 0.1+  | 0.4+  | 2007 09 13 | 699 | 1.2- | 0.5+ | 2007 10 20 | G96 | 0.1+ | 0.0  |
| 2000 10 01 | 704 | 0.3-  | 0.3+  | 2007 09 13 | 699 | 0.1- | 0.0  | 2007 10 20 | G96 | 0.0  | 0.2+ |
| 2000 10 01 | 704 | 0.3+  | 0.3+  | 2007 09 28 | D35 | 0.1+ | 0.7+ | 2007 10 20 | G96 | 0.2- | 0.5- |

**2000 TJ<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.02522   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28889134 | $\omega$ 294.77750 | +0.96881411   | -0.21945298 |
| <i>a</i> | 2.2662772  | $\Omega$ 78.06657  | +0.24762429   | +0.87436813 |
| <i>e</i> | 0.2194147  | <i>i</i> 6.75391   | -0.00902400   | +0.43280569 |
| <i>P</i> | 3.41       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 28 | 704 | 0.5+ | 0.6- | 2007 11 03 | D35 | 0.2+ | 0.2- | 2007 12 03 | 703 | 0.2+ | 0.3+ |
| 2000 08 28 | 704 | 0.3- | 0.6+ | 2007 11 04 | 691 | 0.1- | 0.2+ | 2007 12 03 | 703 | 0.6- | 0.0  |
| 2000 08 28 | 704 | 0.4+ | 0.2+ | 2007 11 04 | 691 | 0.4- | 0.2+ | 2007 12 03 | 703 | 0.2- | 0.2- |
| 2000 08 28 | 704 | 0.6+ | 0.4- | 2007 11 04 | 691 | 0.1- | 0.2+ | 2007 12 03 | 703 | 0.4- | 0.7+ |
| 2000 10 01 | 704 | 0.1- | 0.6+ | 2007 11 13 | 699 | 0.4+ | 0.6- | 2007 12 03 | 703 | 0.5- | 0.7+ |
| 2000 10 01 | 704 | 0.3+ | 0.1+ | 2007 11 13 | 699 | 0.6+ | 0.7- | 2007 12 04 | 699 | 0.5+ | 0.5+ |
| 2000 10 01 | 704 | 0.4- | 0.3- | 2007 11 13 | 699 | 1.1- | 0.3- | 2007 12 04 | 699 | 0.6- | 0.7+ |
| 2000 10 01 | 704 | 0.3+ | 0.8- | 2007 11 13 | 699 | 0.3+ | 0.0  | 2007 12 04 | 699 | 0.8+ | 0.1+ |
| 2000 10 01 | 704 | 0.2+ | 0.1+ | 2007 11 18 | 699 | 0.1+ | 0.5- | 2007 12 04 | 699 | 0.9+ | 0.9+ |
| 2000 10 05 | 704 | 0.1+ | 0.1+ | 2007 11 18 | 699 | 1.1+ | 0.3- | 2007 12 05 | 704 | 0.3+ | 1.1- |
| 2000 10 05 | 704 | 0.3- | 0.4- | 2007 11 18 | 699 | 0.1- | 0.1+ | 2007 12 05 | 704 | 0.0  | 1.1- |
| 2000 10 05 | 704 | 0.8- | 0.4+ | 2007 11 18 | 699 | 0.4+ | 0.6- | 2007 12 05 | 704 | 0.3+ | 0.6- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 05 | 704 | 0.5- | 0.1- | 2007 11 21 | G96 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.2+ | 0.6- |
| 2000 11 25 | 704 | 0.3+ | 0.4- | 2007 11 21 | G96 | 0.0  | 0.3- | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2000 11 25 | 704 | 0.1+ | 0.2+ | 2007 11 21 | G96 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2000 11 25 | 704 | 0.4+ | 1.0+ | 2007 11 21 | G96 | 0.1- | 0.3- | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2000 11 25 | 704 | 0.7- | 0.2+ | 2007 12 03 | 703 | 0.8- | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.2+ |
| 2007 11 03 | D35 | 0.5+ | 0.2- | 2007 12 03 | 703 | 0.8- | 0.2+ |            |     |      |      |
| 2007 11 03 | D35 | 0.3+ | 0.1- | 2007 12 03 | 703 | 0.4- | 0.0  |            |     |      |      |

**2000 TX<sub>23</sub> = 2007 UE<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.30564   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28734432 | $\omega$ 123.42833 | +0.98322606   | -0.15133982 |
| <i>a</i> | 2.2744041  | $\Omega$ 245.45875 | +0.10658688   | +0.92967131 |
| <i>e</i> | 0.1869913  | <i>i</i> 6.42526   | +0.14800589   | +0.33586829 |
| <i>P</i> | 3.43       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 21 | 608 | 0.4+  | 0.3-  | 2007 09 26 | G96 | 0.4+  | 0.2-  | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2000 09 21 | 608 | 0.2-  | 0.3-  | 2007 09 26 | G96 | 0.2-  | 0.4-  | 2007 11 08 | 691 | 0.2- | 0.3+ |
| 2000 09 21 | 608 | 0.3+  | 0.3-  | 2007 09 26 | G96 | 0.6+  | 0.5-  | 2007 11 08 | 691 | 0.0  | 0.3+ |
| 2000 09 23 | 704 | 1.1-  | 0.3-  | 2007 10 09 | 691 | 0.3-  | 0.1-  | 2007 11 15 | 704 | 0.3- | 0.0  |
| 2000 09 23 | 704 | 0.4-  | 0.2+  | 2007 10 09 | 691 | 0.3-  | 0.1-  | 2007 11 15 | 704 | 0.6- | 0.3+ |
| 2000 09 23 | 704 | (2.1- | 0.5+) | 2007 10 09 | 691 | 0.1+  | 0.2-  | 2007 11 15 | 704 | 0.2- | 0.6+ |
| 2000 10 02 | 704 | 0.3+  | 0.7+  | 2007 10 21 | 703 | 0.0   | 0.5+  | 2007 11 15 | 704 | 0.8- | 0.2+ |
| 2000 10 02 | 704 | 0.2+  | 1.1-  | 2007 10 21 | 703 | 0.2+  | 0.9+  | 2007 11 15 | 704 | 0.6+ | 0.5+ |
| 2000 10 02 | 704 | 0.7-  | 0.2-  | 2007 10 21 | 703 | 1.2+  | 0.4+  | 2007 11 19 | 691 | 0.2- | 0.2+ |
| 2000 10 02 | 704 | 0.6-  | 0.2+  | 2007 10 21 | 703 | 1.3+  | 0.4+  | 2007 11 19 | 691 | 0.2+ | 0.0  |
| 2000 10 03 | 704 | 0.2-  | 0.4+  | 2007 10 31 | 691 | 0.1+  | 0.2-  | 2007 11 19 | 691 | 0.2- | 0.1+ |
| 2000 10 03 | 704 | 0.0   | 1.0+  | 2007 10 31 | 691 | 0.1+  | 0.1+  | 2007 12 13 | 701 | 0.1+ | 0.0  |
| 2000 10 03 | 704 | 0.3+  | 0.8+  | 2007 10 31 | 691 | 0.1-  | 0.3-  | 2007 12 13 | 701 | 0.2+ | 0.4- |
| 2000 10 03 | 704 | 1.3+  | 0.2+  | 2007 11 04 | 691 | 0.1-  | 0.2-  | 2007 12 13 | 701 | 0.7+ | 0.0  |
| 2006 05 31 | G96 | 0.4-  | 0.1-  | 2007 11 04 | 691 | 0.1+  | 0.1-  | 2007 12 13 | 701 | 0.2+ | 0.0  |
| 2006 05 31 | G96 | 0.9+  | 0.0   | 2007 11 04 | 691 | 0.1-  | 0.2-  | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2006 05 31 | G96 | 0.3-  | 0.4+  | 2007 11 04 | 691 | 0.1-  | 0.0   | 2007 12 15 | G96 | 0.5+ | 0.3- |
| 2006 05 31 | G96 | 0.1-  | 0.1+  | 2007 11 04 | 691 | 0.1-  | 0.2-  | 2007 12 15 | G96 | 0.0  | 0.2- |
| 2007 09 26 | G96 | 0.5+  | 0.5-  | 2007 11 04 | 691 | (2.2- | 2.7+) | 2007 12 15 | G96 | 0.5+ | 0.1- |

**2000 TU<sub>47</sub> = 2007 UC<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.17551  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27816615 | $\omega$ 320.57455 | +0.92543703   | -0.36340163 |
| <i>a</i> | 2.3241627  | $\Omega$ 61.04854  | +0.37118529   | +0.81266441 |
| <i>e</i> | 0.1997664  | <i>i</i> 7.04121   | +0.07607744   | +0.45553903 |
| <i>P</i> | 3.54       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 09 25 | 704 | 0.2+  | 0.2+  | 2000 10 02 | 699 | 0.4+ | 0.3+ | 2007 10 11 | 703 | 0.5+  | 1.5+  |
| 2000 09 25 | 704 | 1.0-  | 0.5-  | 2006 05 26 | G96 | 0.1- | 0.4+ | 2007 10 11 | 703 | 0.3-  | 0.8+  |
| 2000 09 25 | 704 | (1.6+ | 2.2-) | 2006 05 26 | G96 | 0.5+ | 0.1- | 2007 10 18 | 703 | 0.1-  | 1.0-  |
| 2000 09 25 | 704 | 0.6+  | 1.3-  | 2006 05 26 | G96 | 0.0  | 0.3+ | 2007 10 18 | 703 | (0.1+ | 2.5-) |
| 2000 10 01 | 704 | 0.1+  | 0.4-  | 2006 05 26 | G96 | 0.1+ | 0.2+ | 2007 10 18 | 703 | 0.9+  | 1.3-  |
| 2000 10 01 | 704 | 0.3-  | 0.1-  | 2007 09 14 | 703 | 0.1- | 0.5- | 2007 10 18 | 703 | 0.1+  | 0.6-  |
| 2000 10 01 | 704 | 0.2-  | 0.1-  | 2007 09 14 | 703 | 0.7- | 0.4- | 2007 10 20 | G96 | 0.4-  | 0.2-  |
| 2000 10 01 | 704 | 0.1-  | 1.0+  | 2007 09 14 | 703 | 0.3- | 0.8- | 2007 10 20 | G96 | 0.4-  | 0.4-  |
| 2000 10 02 | 699 | 0.1-  | 0.2+  | 2007 09 14 | 703 | 0.3- | 0.4- | 2007 10 20 | G96 | 0.4-  | 0.3-  |
| 2000 10 02 | 699 | 0.3-  | 1.1+  | 2007 10 11 | 703 | 0.9+ | 1.2+ | 2007 10 20 | G96 | 0.1+  | 0.4-  |
| 2000 10 02 | 699 | 0.3+  | 1.1+  | 2007 10 11 | 703 | 1.2+ | 1.6+ |            |     |       |       |

**2000 UT<sub>32</sub> = 2007 UX<sub>103</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 18.94524   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28368644 | $\omega$ | 236.72024 | +0.91431686 | -0.40474822 |
| $a$ | 2.2939133  | $\Omega$ | 147.14866 | +0.37977795 | +0.84460763 |
| $e$ | 0.2109072  | $i$      | 1.50709   | +0.14068896 | +0.35045232 |
| $P$ | 3.47       | $H$      | 18.5      | $G$ 0.15    | $U$ 3       |

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M.P.O. 129581

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 10 29 691 | 0.2− | 0.1− | 2007 09 15 G96 | 0.5− | 0.9+ | 2007 11 03 691 | 0.6− | 0.0  |
| 2000 10 29 691 | 0.3− | 0.0  | 2007 09 15 G96 | 0.4+ | 0.5+ | 2007 11 03 691 | 0.2− | 0.0  |
| 2000 10 29 691 | 0.3− | 0.3+ | 2007 09 15 G96 | 0.4+ | 0.4− | 2007 11 03 691 | 0.1+ | 0.2+ |
| 2000 11 02 691 | 0.1− | 0.4− | 2007 10 14 G96 | 0.0  | 0.1+ | 2007 11 18 G96 | 0.0  | 0.7− |
| 2000 11 02 691 | 0.1+ | 0.2− | 2007 10 14 G96 | 0.2− | 0.2+ | 2007 11 18 G96 | 0.0  | 0.4− |
| 2000 11 02 691 | 0.1+ | 0.5− | 2007 10 14 G96 | 0.6+ | 0.6+ | 2007 11 18 G96 | 0.3+ | 0.2− |
| 2000 11 18 691 | 0.4+ | 0.1− | 2007 10 14 G96 | 0.4+ | 0.1+ | 2007 11 18 G96 | 0.1+ | 0.0  |
| 2000 11 18 691 | 0.2+ | 0.1− | 2007 10 30 691 | 0.1+ | 0.2− | 2007 11 30 D35 | 0.3− | 0.4+ |
| 2000 11 18 691 | 0.3+ | 0.0  | 2007 10 30 691 | 0.1− | 0.4+ | 2007 11 30 D35 | 0.0  | 0.6+ |
| 2007 09 15 G96 | 0.0  | 0.8+ | 2007 10 30 691 | 0.1− | 0.4+ | 2007 11 30 D35 | 0.7+ | 0.5+ |

2000 UE<sub>67</sub> = 2007 VL<sub>99</sub>

|                           |               |          |           |             |             |
|---------------------------|---------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |           | MPC         |             |
| <i>M</i>                  | 25.15112      |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i>                  | 0.28604321    | <i>ω</i> | 354.23021 | +0.96473737 | −0.25922292 |
| <i>a</i>                  | 2.2812959     | <i>Ω</i> | 20.96651  | +0.24631079 | +0.82792266 |
| <i>e</i>                  | 0.1819900     | <i>i</i> | 7.33201   | +0.09280516 | +0.49734048 |
| <i>P</i>                  | 3.45          | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|                           |               |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2000 10 25 704 | 0.7− | 1.5− | 2000 11 03 704 | 0.4+ | 0.0  | 2007 11 06 691 | 0.1−  | 0.2−  |
| 2000 10 25 704 | 1.8− | 0.6+ | 2000 11 03 704 | 0.2− | 0.1+ | 2007 11 06 691 | 0.2−  | 0.0   |
| 2000 10 25 704 | 0.1+ | 0.2− | 2000 11 03 704 | 0.1− | 0.1− | 2007 11 06 691 | 0.4−  | 0.2−  |
| 2000 10 25 704 | 0.5+ | 0.2+ | 2007 10 21 G96 | 0.1− | 0.0  | 2007 11 17 704 | 0.3+  | 0.0   |
| 2000 11 01 704 | 0.6+ | 0.0  | 2007 10 21 G96 | 0.1− | 0.1+ | 2007 11 17 704 | (1.8+ | 0.2+) |
| 2000 11 01 704 | 0.3+ | 0.2+ | 2007 10 21 G96 | 0.4+ | 0.3+ | 2007 11 17 704 | 0.4+  | 0.5−  |
| 2000 11 01 704 | 1.3+ | 0.3+ | 2007 10 21 G96 | 0.2+ | 0.2+ | 2007 11 17 704 | 0.2+  | 0.1+  |
| 2000 11 01 704 | 0.8+ | 0.4− | 2007 11 02 691 | 0.6+ | 0.1+ | 2007 11 17 704 | 0.6+  | 0.5+  |
| 2000 11 03 704 | 0.9− | 0.2+ | 2007 11 02 691 | 0.4− | 0.2+ |                |       |       |
| 2000 11 03 704 | 0.1− | 0.4+ | 2007 11 02 691 | 0.1− | 0.0  |                |       |       |

2000 UG<sub>107</sub> = 2007 XJ<sub>10</sub>

|                           |               |          |           |             |             |
|---------------------------|---------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |           | MPC         |             |
| <i>M</i>                  | 5.24341       |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i>                  | 0.28459765    | <i>ω</i> | 320.14480 | +0.73548562 | −0.66507803 |
| <i>a</i>                  | 2.2890143     | <i>Ω</i> | 82.04515  | +0.65016377 | +0.63906509 |
| <i>e</i>                  | 0.2135980     | <i>i</i> | 7.50481   | +0.19065143 | +0.38635091 |
| <i>P</i>                  | 3.46          | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|                           |               |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 10 30 704 | 0.1− | 1.0+ | 2000 11 19 699 | 0.8− | 0.6− | 2007 12 04 703 | 0.5− | 0.3− |
| 2000 10 30 704 | 0.0  | 0.6− | 2000 11 19 699 | 0.1+ | 0.7+ | 2007 12 04 703 | 0.7− | 0.2+ |
| 2000 10 30 704 | 0.3+ | 0.2+ | 2000 11 19 699 | 0.1+ | 0.2− | 2007 12 04 699 | 0.2+ | 0.1− |
| 2000 10 30 704 | 0.2+ | 0.2− | 2000 11 20 704 | 0.3− | 0.1− | 2007 12 04 699 | 0.3+ | 0.4− |
| 2000 10 30 704 | 0.5+ | 0.7− | 2000 11 20 704 | 0.0  | 0.2+ | 2007 12 05 H06 | 0.2− | 0.2− |
| 2000 11 03 704 | 0.3− | 0.5− | 2000 11 20 704 | 0.7− | 0.2+ | 2007 12 05 H06 | 0.2+ | 0.0  |
| 2000 11 03 704 | 0.6− | 0.6− | 2000 11 20 704 | 0.3+ | 0.2+ | 2007 12 05 H06 | 0.8+ | 0.3+ |
| 2000 11 03 704 | 0.4+ | 0.2+ | 2007 12 04 699 | 0.2− | 0.5− | 2007 12 06 H06 | 1.0+ | 0.6+ |
| 2000 11 03 704 | 0.3+ | 0.3− | 2007 12 04 699 | 0.0  | 0.1− | 2007 12 06 H06 | 0.4+ | 0.0  |
| 2000 11 03 704 | 0.2+ | 1.0+ | 2007 12 04 703 | 0.2+ | 0.2+ | 2007 12 06 H06 | 0.4− | 0.7+ |
| 2000 11 19 699 | 0.1+ | 0.4+ | 2007 12 04 703 | 0.9− | 0.8− |                |      |      |

2000 VQ<sub>3</sub> = 2007 TS<sub>369</sub>

|                           |               |          |          |             |             |
|---------------------------|---------------|----------|----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |          | MPC         |             |
| <i>M</i>                  | 293.18381     |          | (2000.0) | <i>P</i>    | <i>Q</i>    |
| <i>n</i>                  | 0.27165874    | <i>ω</i> | 44.68260 | +0.16380692 | −0.98380868 |
| <i>a</i>                  | 2.3611320     | <i>Ω</i> | 36.07350 | +0.86703268 | +0.10841815 |
| <i>e</i>                  | 0.0670922     | <i>i</i> | 7.09390  | +0.47055459 | +0.14270944 |
| <i>P</i>                  | 3.63          | <i>H</i> | 16.7     | <i>G</i>    | 0.15        |
|                           |               |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2000 10 21 691 | 0.2+ | 0.2− | 2006 06 01 G96 | 0.0  | 0.1+ | 2007 10 04 703 | 0.8−  | 0.6+  |
| 2000 10 21 691 | 0.0  | 0.6− | 2006 06 01 G96 | 0.4− | 0.1+ | 2007 10 12 703 | (2.0− | 1.5+) |
| 2000 10 21 691 | 0.3+ | 0.6− | 2006 06 01 G96 | 0.2− | 0.2+ | 2007 10 12 703 | 1.1−  | 0.0   |

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2000 11 01 704 | 0.8+ | 0.9+ | 2006 06 01 G96 | 0.3+ | 0.0  | 2007 10 12 703 | (0.1− | 1.9+) |
| 2000 11 01 704 | 0.2− | 0.0  | 2006 06 01 G96 | 0.0  | 0.0  | 2007 10 12 703 | 0.7−  | 0.2−  |
| 2000 11 01 704 | 0.1+ | 1.1+ | 2006 06 01 G96 | 0.2− | 0.3+ | 2007 10 16 G96 | 0.1+  | 0.4−  |
| 2000 11 01 704 | 1.1− | 0.1+ | 2006 06 01 G96 | 0.4− | 0.1− | 2007 10 16 G96 | 0.1−  | 0.5−  |
| 2000 11 02 704 | 0.4− | 0.6+ | 2007 09 12 703 | 0.4+ | 0.0  | 2007 10 16 G96 | 0.1−  | 0.4−  |
| 2000 11 02 704 | 1.2− | 0.5+ | 2007 09 12 703 | 0.1+ | 0.4+ | 2007 10 16 G96 | 0.2−  | 0.4−  |
| 2000 11 02 704 | 0.8+ | 0.6+ | 2007 09 12 703 | 0.3+ | 0.7− | 2007 11 03 G96 | 0.6+  | 0.5−  |
| 2000 11 02 704 | 0.1+ | 0.3+ | 2007 09 12 703 | 0.2+ | 0.4+ | 2007 11 03 G96 | 0.1+  | 0.4−  |
| 2006 05 01 691 | 0.0  | 0.1− | 2007 10 04 703 | 0.2+ | 1.1+ | 2007 11 03 G96 | 0.3+  | 0.4−  |
| 2006 05 01 691 | 0.1− | 0.3− | 2007 10 04 703 | 0.8− | 1.0+ | 2007 11 03 G96 | 0.1−  | 0.5−  |
| 2006 05 01 691 | 0.2+ | 0.0  | 2007 10 04 703 | 1.3+ | 1.0+ |                |       |       |

2000 VS<sub>43</sub> = 2007 WN<sub>35</sub>

|                           |               |          |           |             |             |
|---------------------------|---------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |           | MPC         |             |
| <i>M</i>                  | 339.26075     |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i>                  | 0.28837334    | <i>ω</i> | 155.51788 | +0.11608693 | −0.99123931 |
| <i>a</i>                  | 2.2689903     | <i>Ω</i> | 287.76593 | +0.90002749 | +0.13180609 |
| <i>e</i>                  | 0.0856844     | <i>i</i> | 3.79290   | +0.42008850 | −0.00847243 |
| <i>P</i>                  | 3.42          | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|                           |               |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2000 11 01 704 | 1.0+ | 0.1− | 2003 09 29 691 | 0.1+  | 0.3+  | 2007 11 19 G96 | 0.8− | 0.5+ |
| 2000 11 01 704 | 0.5− | 1.1+ | 2003 09 29 691 | 0.1−  | 0.0   | 2007 11 19 G96 | 0.4+ | 0.2− |
| 2000 11 01 704 | 0.3+ | 0.6− | 2003 09 29 691 | 0.1−  | 0.1+  | 2007 11 19 G96 | 0.6+ | 0.2− |
| 2000 11 01 704 | 0.2− | 0.2− | 2005 02 09 699 | 0.6+  | 0.4+  | 2007 11 19 G96 | 0.4+ | 0.3− |
| 2000 11 03 704 | 0.9− | 0.9+ | 2005 02 09 699 | (2.3+ | 0.3+) | 2007 11 20 691 | 0.1+ | 0.2− |
| 2000 11 03 704 | 0.2− | 0.4− | 2005 02 09 699 | (2.5+ | 0.1−) | 2007 11 20 691 | 0.1− | 0.4− |
| 2000 11 03 704 | 0.8+ | 0.2− | 2005 02 09 699 | 0.7+  | 0.8+  | 2007 11 20 691 | 0.1+ | 0.2− |
| 2000 11 18 699 | 1.0+ | 0.1− | 2005 03 03 703 | 0.4+  | 0.7+  | 2007 12 10 704 | 0.5− | 0.4− |
| 2000 11 18 699 | 1.4− | 1.1+ | 2005 03 03 703 | 0.2−  | 0.3+  | 2007 12 10 704 | 0.1− | 0.6− |
| 2000 11 18 699 | 0.8− | 0.2+ | 2005 03 03 703 | 0.4−  | 0.5+  | 2007 12 10 704 | 0.0  | 0.4− |
| 2000 11 18 699 | 0.0  | 0.3+ | 2005 03 03 703 | 0.5−  | 0.5+  | 2007 12 15 704 | 0.1− | 0.1+ |
| 2000 11 20 704 | 0.2+ | 0.7− | 2005 03 17 703 | 0.1+  | 0.4−  | 2007 12 15 704 | 0.4− | 1.6+ |
| 2000 11 20 704 | 0.3− | 0.2+ | 2005 03 17 703 | 0.2+  | 0.6−  | 2007 12 15 704 | 0.0  | 0.1+ |
| 2000 11 20 704 | 0.2− | 0.5+ | 2005 03 17 703 | 0.2+  | 0.1−  | 2007 12 15 704 | 0.2+ | 0.1+ |
| 2000 11 20 704 | 0.0  | 0.9+ | 2005 03 17 703 | (1.6− | 0.1−) | 2007 12 15 704 | 0.0  | 0.3− |

2000 WU<sub>26</sub>

|                           |               |          |           |             |             |
|---------------------------|---------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = | JDT 2454400.5 |          |           | MPC         |             |
| <i>M</i>                  | 323.60316     |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i>                  | 0.28154432    | <i>ω</i> | 257.09094 | −0.15845892 | −0.98682791 |
| <i>a</i>                  | 2.3055340     | <i>Ω</i> | 202.10645 | +0.93614213 | −0.13966645 |
| <i>e</i>                  | 0.1185429     | <i>i</i> | 4.96649   | +0.31389278 | −0.08163310 |
| <i>P</i>                  | 3.50          | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|                           |               |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 11 20 699 | 0.9− | 0.6+ | 2000 11 27 704 | 0.1+ | 0.2− | 2007 11 04 691 | 0.1− | 0.1+ |
| 2000 11 20 699 | 0.5− | 0.3− | 2000 11 27 704 | 0.4+ | 0.4+ | 2007 11 04 691 | 0.0  | 0.1+ |
| 2000 11 20 699 | 0.1− | 0.6− | 2000 11 27 704 | 0.0  | 0.3− | 2007 11 04 691 | 0.2− | 0.1+ |
| 2000 11 20 699 | 0.5− | 0.1+ | 2000 11 27 704 | 0.6− | 0.6− | 2007 11 04 691 | 0.2− | 0.1+ |
| 2000 11 25 704 | 0.5+ | 0.0  | 2000 11 27 704 | 0.1+ | 0.5+ | 2007 11 04 691 | 0.4− | 0.4− |
| 2000 11 25 704 | 0.1− | 0.2− | 2000 11 27 704 | 0.1− | 0.2+ | 2007 11 04 691 | 0.0  | 0.2+ |
| 2000 11 25 704 | 0.7+ | 0.1+ | 2000 11 27 704 | 0.3− | 0.3+ | 2007 11 18 699 | 0.4+ | 0.7+ |
| 2000 11 25 704 | 0.6− | 0.3− | 2000 11 27 704 | 0.2− | 0.3+ | 2007 11 18 699 | 0.7+ | 0.7+ |
| 2000 11 26 704 | 0.1− | 0.2− | 2000 12 29 699 | 0.7+ | 0.7+ | 2007 11 18 699 | 0.1+ | 0.4+ |
| 2000 11 26 704 | 0.7+ | 0.3− | 2000 12 29 699 | 0.7+ | 0.2− | 2007 11 18 699 | 0.1+ | 0.4+ |
| 2000 11 26 704 | 0.1+ | 0.7− | 2000 12 29 699 | 0.4− | 0.7+ | 2007 11 29 704 | 0.4− | 0.2+ |
| 2000 11 26 704 | 0.1− | 0.7− | 2000 12 29 699 | 0.2− | 0.4− | 2007 11 29 704 | 0.4− | 0.2− |
| 2000 11 26 704 | 0.0  | 0.5− | 2002 05 17 644 | 0.3+ | 1.0+ | 2007 11 29 704 | 1.1+ | 0.8− |
| 2000 11 26 704 | 1.1+ | 0.9− | 2002 05 17 644 | 0.2− | 0.7+ | 2007 11 29 704 | 0.4+ | 0.0  |
| 2000 11 26 704 | 1.6− | 0.5+ | 2002 05 17 644 | 0.3+ | 0.6+ | 2007 12 04 704 | 0.2+ | 0.2+ |
| 2000 11 26 704 | 0.5+ | 0.1− | 2007 09 10 G96 | 0.3+ | 0.4+ | 2007 12 04 704 | 0.0  | 1.0+ |
| 2000 11 26 704 | 0.5+ | 0.3+ | 2007 09 10 G96 | 0.3− | 0.2+ | 2007 12 04 704 | 0.1− | 0.1+ |
| 2000 11 27 704 | 0.2+ | 0.2− | 2007 09 10 G96 | 0.1+ | 0.2+ | 2007 12 04 704 | 0.3+ | 0.2+ |
| 2000 11 27 704 | 0.4+ | 0.4− | 2007 09 10 G96 | 0.1+ | 0.2+ | 2007 12 04 704 | 0.1+ | 0.4+ |

**2000 WL<sub>27</sub> = 2007 UZ<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 320.41196  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.27607911 | $\omega$ | 24.05878 | +0.18083320 |      | −0.98305362 |   |
| <i>a</i> | 2.3358611  | $\Omega$ | 55.53597 | +0.89633631 |      | +0.15213760 |   |
| <i>e</i> | 0.1624708  | <i>i</i> | 2.09098  | +0.40482166 |      | +0.10227287 |   |
| <i>P</i> | 3.57       | <i>H</i> | 18.1     | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 25 | 691 | 0.6+ | 0.2− | 2007 09 12 | G96 | 0.1− | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.5− |
| 2000 11 25 | 691 | 0.6+ | 0.1− | 2007 09 12 | G96 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 0.1− | 0.3− |
| 2000 11 25 | 691 | 0.7+ | 0.1− | 2007 10 08 | G96 | 1.4+ | 1.1− | 2007 10 19 | G96 | 0.0  | 0.5− |
| 2000 11 27 | 691 | 0.2− | 0.1+ | 2007 10 08 | G96 | 0.3+ | 0.4− | 2007 11 04 | 691 | 0.3+ | 0.4+ |
| 2000 11 27 | 691 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.2− | 0.5− | 2007 11 04 | 691 | 0.5− | 0.7+ |
| 2000 11 27 | 691 | 0.2− | 0.0  | 2007 10 08 | G96 | 0.5+ | 0.3− | 2007 11 04 | 691 | 0.9− | 0.1+ |
| 2000 11 28 | 691 | 0.4− | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.1− | 2007 12 06 | G96 | 0.2+ | 0.3− |
| 2000 11 28 | 691 | 0.4− | 0.1− | 2007 10 18 | G96 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2000 11 28 | 691 | 0.5− | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.2− | 2007 12 06 | G96 | 0.2+ | 0.6− |
| 2007 09 12 | G96 | 0.1+ | 0.1+ | 2007 10 18 | G96 | 0.2+ | 0.1− | 2007 12 06 | G96 | 0.6+ | 0.2− |
| 2007 09 12 | G96 | 0.2− | 0.3+ | 2007 10 19 | G96 | 0.0  | 0.3− |            |     |      |      |

**2000 WF<sub>144</sub> = 2007 VV<sub>238</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 36.07579   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.28432471 | $\omega$ | 288.81728 | +0.99855551 |      | +0.04329318 |   |
| <i>a</i> | 2.2904790  | $\Omega$ | 68.71148  | −0.02651730 |      | +0.91218436 |   |
| <i>e</i> | 0.2478119  | <i>i</i> | 1.95712   | −0.04673030 |      | +0.40748669 |   |
| <i>P</i> | 3.47       | <i>H</i> | 17.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 18 | 699 | 0.9− | 1.1+ | 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 11 15 | 704 | 0.9+ | 0.2+ |
| 2000 11 18 | 699 | 1.2− | 0.8+ | 2007 09 14 | G96 | 0.3+ | 0.1− | 2007 11 15 | 704 | 0.6+ | 0.3+ |
| 2000 11 18 | 699 | 0.3− | 0.2− | 2007 09 14 | G96 | 0.6+ | 0.2+ | 2007 11 15 | 704 | 0.0  | 0.4− |
| 2000 11 18 | 699 | 1.3− | 0.7+ | 2007 11 05 | 691 | 0.1− | 0.1+ | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2000 11 21 | 704 | 0.1+ | 0.5− | 2007 11 05 | 691 | 0.2− | 0.0  | 2007 11 18 | 691 | 0.1− | 0.1+ |
| 2000 11 21 | 704 | 0.7− | 0.2+ | 2007 11 05 | G96 | 0.6+ | 0.2− | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2000 11 21 | 704 | 0.3+ | 1.0− | 2007 11 05 | G96 | 0.7+ | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2000 11 25 | 691 | 0.2− | 0.1− | 2007 11 05 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2000 11 25 | 691 | 0.6+ | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.1+ | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2000 11 25 | 691 | 0.6+ | 0.1− | 2007 11 05 | G96 | 0.3− | 0.1− | 2007 12 05 | 704 | 0.2+ | 0.6− |
| 2002 03 10 | 691 | 0.1+ | 0.4+ | 2007 11 13 | 691 | 0.0  | 0.1− | 2007 12 05 | 704 | 0.9+ | 0.1− |
| 2002 03 10 | 691 | 0.0  | 0.2− | 2007 11 13 | 691 | 0.3+ | 0.1− | 2007 12 15 | G96 | 0.3+ | 0.4− |
| 2002 03 10 | 691 | 0.0  | 0.2− | 2007 11 13 | 691 | 0.6− | 0.2+ | 2007 12 15 | G96 | 0.0  | 0.1− |
| 2006 04 26 | 691 | 0.1+ | 0.2− | 2007 11 14 | 691 | 0.3− | 0.1− | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2006 04 26 | 691 | 0.3− | 0.4+ | 2007 11 14 | 691 | 0.1− | 0.4+ | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2006 04 26 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 691 | 0.2− | 0.1+ |            |     |      |      |
| 2007 09 14 | G96 | 0.4+ | 0.3+ | 2007 11 15 | 704 | 0.2+ | 0.1+ |            |     |      |      |

**2000 WK<sub>159</sub> = 2007 WP<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 15.93353   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.28371753 | $\omega$ | 127.16984 | +0.59507275 |      | −0.71332589 |   |
| <i>a</i> | 2.2937457  | $\Omega$ | 282.05681 | +0.56345164 |      | +0.69877465 |   |
| <i>e</i> | 0.2610682  | <i>i</i> | 22.24448  | +0.57307126 |      | +0.05366712 |   |
| <i>P</i> | 3.47       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 19 | 704 | 0.4+ | 0.0  | 2001 01 02 | 704 | 0.3+ | 0.3+ | 2001 01 05 | 704 | 0.2− | 0.4+ |
| 2000 11 19 | 704 | 0.0  | 0.1+ | 2001 01 02 | 704 | 0.2+ | 0.8+ | 2007 11 16 | G96 | 0.2− | 0.5− |
| 2000 11 19 | 704 | 0.2− | 0.6− | 2001 01 02 | 704 | 0.5+ | 0.6+ | 2007 11 16 | G96 | 0.3− | 0.4− |
| 2000 11 19 | 704 | 0.2+ | 0.3− | 2001 01 03 | 704 | 0.0  | 0.4− | 2007 11 16 | G96 | 0.5− | 0.5− |
| 2000 11 19 | 704 | 0.3− | 0.7+ | 2001 01 03 | 704 | 0.3+ | 0.3− | 2007 11 16 | G96 | 0.5− | 0.4− |
| 2000 12 06 | 704 | 0.5− | 0.2+ | 2001 01 03 | 704 | 0.1+ | 0.2− | 2007 11 17 | 704 | 1.3+ | 0.4+ |
| 2000 12 06 | 704 | 0.3+ | 0.6− | 2001 01 03 | 704 | 0.0  | 0.0  | 2007 11 17 | 704 | 0.7+ | 0.8+ |
| 2000 12 06 | 704 | 0.1+ | 0.5− | 2001 01 03 | 704 | 0.1− | 0.0  | 2007 11 17 | 704 | 0.8+ | 1.0− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 06 | 704 | 0.4+  | 0.9−  | 2001 01 03 | 704 | 0.2− | 0.1+ | 2007 11 17 | 704 | 0.6+ | 0.2− |
| 2000 12 06 | 704 | 0.1−  | 0.4+  | 2001 01 03 | 704 | 0.1− | 0.8+ | 2007 11 17 | 704 | 0.3+ | 1.0+ |
| 2000 12 20 | 704 | 0.3+  | 0.4+  | 2001 01 03 | 704 | 0.4+ | 0.2− | 2007 11 20 | 704 | 0.2− | 0.3+ |
| 2000 12 20 | 704 | 1.7−  | 0.0   | 2001 01 03 | 704 | 0.6+ | 0.1+ | 2007 11 20 | 704 | 0.6− | 0.7− |
| 2000 12 20 | 704 | 0.6−  | 0.1−  | 2001 01 03 | 704 | 0.1+ | 0.6+ | 2007 11 20 | 704 | 0.6+ | 0.5+ |
| 2000 12 20 | 704 | 1.0−  | 1.0+  | 2001 01 03 | 704 | 0.2− | 0.5+ | 2007 11 20 | 704 | 0.3− | 0.6+ |
| 2000 12 20 | 704 | 0.6−  | 1.6+  | 2001 01 03 | 704 | 0.1+ | 0.4+ | 2007 12 05 | 691 | 0.4− | 0.2− |
| 2000 12 30 | 704 | 0.3−  | 0.1−  | 2001 01 03 | 704 | 0.0  | 0.5+ | 2007 12 05 | 691 | 0.9+ | 1.3+ |
| 2000 12 30 | 704 | 0.5−  | 0.0   | 2001 01 03 | 704 | 0.1+ | 0.2− | 2007 12 05 | 691 | 0.3− | 0.1− |
| 2000 12 30 | 704 | 0.0   | 0.3−  | 2001 01 03 | 704 | 0.6− | 0.6+ | 2007 12 06 | 691 | 0.4− | 0.0  |
| 2000 12 30 | 704 | 0.4+  | 0.4−  | 2001 01 03 | 704 | 0.0  | 0.2− | 2007 12 06 | 691 | 0.2− | 0.2− |
| 2000 12 30 | 704 | 0.0   | 1.1−  | 2001 01 03 | 704 | 0.1+ | 0.2− | 2007 12 06 | 691 | 0.2− | 0.3− |
| 2001 01 02 | 704 | (1.6+ | 1.7+) | 2001 01 03 | 704 | 0.2− | 0.1+ | 2007 12 14 | 704 | 0.1+ | 0.4− |
| 2001 01 02 | 704 | (1.9+ | 0.1−) | 2001 01 03 | 704 | 0.1+ | 0.3− | 2007 12 14 | 704 | 0.3+ | 0.6− |
| 2001 01 02 | 704 | 0.7+  | 0.2−  | 2001 01 03 | 704 | 1.0+ | 0.2− | 2007 12 14 | 704 | 0.0  | 0.1− |
| 2001 01 02 | 704 | 0.2+  | 0.6−  | 2001 01 05 | 704 | 0.4− | 0.0  | 2007 12 14 | 704 | 0.1+ | 0.5− |
| 2001 01 02 | 704 | 0.3−  | 0.4−  | 2001 01 05 | 704 | 0.1+ | 0.4− | 2007 12 14 | 704 | 0.2+ | 0.2− |
| 2001 01 02 | 704 | 0.1+  | 0.2−  | 2001 01 05 | 704 | 1.0+ | 1.4− |            |     |      |      |

**2000 WJ<sub>163</sub> = 2007 RC<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 353.21152  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26741845 | $\omega$ | 72.70074  | +0.99236723 |      | −0.12299407 |   |
| <i>a</i> | 2.3860258  | $\Omega$ | 294.36344 | +0.10909272 |      | +0.90935258 |   |
| <i>e</i> | 0.1967687  | <i>i</i> | 0.56165   | +0.05749832 |      | +0.39742966 |   |
| <i>P</i> | 3.69       | <i>H</i> | 17.5      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 11 | 691 | 0.4− | 0.7+ | 2005 01 13 | 291 | 0.4+ | 0.4+ | 2007 09 04 | G96 | 0.4+ | 0.4− |
| 1996 09 11 | 691 | 0.2− | 0.6+ | 2007 08 22 | 699 | 0.3− | 0.0  | 2007 09 04 | G96 | 0.1+ | 0.3− |
| 1996 09 11 | 691 | 0.4− | 1.1+ | 2007 08 22 | 699 | 1.4− | 1.1− | 2007 09 04 | G96 | 0.0  | 0.1− |
| 2000 11 21 | 704 | 0.7− | 0.2+ | 2007 08 22 | 699 | 1.9− | 0.3+ | 2007 09 04 | G96 | 0.1− | 0.0  |
| 2000 11 21 | 704 | 0.5− | 1.2+ | 2007 08 22 | 699 | 2.3+ | 2.5− | 2007 09 15 | G96 | 0.5+ | 0.1− |
| 2000 11 21 | 704 | 0.2+ | 0.9+ | 2007 09 03 | 703 | 0.9− | 0.0  | 2007 09 15 | G96 | 0.5+ | 0.1− |
| 2000 11 21 | 704 | 0.6+ | 0.0  | 2007 09 03 | 703 | 0.8− | 0.7− | 2007 09 15 | G96 | 0.5+ | 0.1− |
| 2000 11 21 | 704 | 0.6− | 0.9+ | 2007 09 03 | 703 | 0.0  | 0.4+ | 2007 09 15 | G96 | 0.6+ | 0.2− |
| 2000 11 27 | 691 | 0.3− | 0.4− | 2007 09 03 | 703 | 0.1+ | 0.0  | 2007 10 19 | G96 | 0.3+ | 0.1− |
| 2000 11 27 | 691 | 0.4− | 0.5− | 2007 09 03 | 703 | 1.0+ | 0.1+ | 2007 10 19 | G96 | 0.0  | 0.2− |
| 2000 11 27 | 691 | 0.1− | 0.5− | 2007 09 03 | 703 | 0.2+ | 0.2+ | 2007 10 19 | G96 | 0.2− | 0.0  |
| 2000 12 20 | 691 | 0.2+ | 0.2− | 2007 09 03 | 703 | 0.1+ | 0.1− | 2007 10 19 | G96 | 0.0  | 0.3− |
| 2000 12 20 | 691 | 0.6+ | 0.3− | 2007 09 03 | 703 | 0.8+ | 0.1− | 2007 11 01 | G96 | 0.2− | 0.1+ |
| 2000 12 20 | 691 | 0.7+ | 0.2− | 2007 09 04 | G96 | 0.3− | 0.4− | 2007 11 01 | G96 | 0.3+ | 0.1+ |
| 2005 01 13 | 291 | 0.2+ | 0.3+ | 2007 09 04 | G96 | 0.1+ | 0.3− | 2007 11 01 | G96 | 0.5+ | 0.4− |
| 2005 01 13 | 291 | 0.4− | 0.5+ | 2007 09 04 | G96 | 0.5+ | 0.9− | 2007 11 01 | G96 | 0.3+ | 0.2− |

**2000 YV<sub>57</sub> = 2007 VF<sub>224</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 5.29072    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.27444809 | $\omega$ | 301.89176 | +0.73501082 |      | −0.67628382 |   |
| <i>a</i> | 2.3451065  | $\Omega$ | 100.71239 | +0.63772681 |      | +0.66494657 |   |
| <i>e</i> | 0.1868886  | <i>i</i> | 2.85746   | +0.23035542 |      | +0.31699567 |   |
| <i>P</i> | 3.59       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 704 | 1.1+ | 1.1+ | 2005 03 03 | 703 | 0.5+ | 0.5− | 2007 11 14 | 704 | 1.0+ | 0.7+ |
| 2000 12 30 | 704 | 0.1+ | 0.6− | 2005 03 16 | G96 | 0.1− | 0.8+ | 2007 11 14 | 704 | 0.4+ | 0.6+ |
| 2000 12 30 | 704 | 0.3+ | 0.3− | 2005 03 16 | G96 | 0.1+ | 0.3+ | 2007 11 14 | 704 | 0.3+ | 0.3+ |
| 2001 01 02 | 704 | 0.4+ | 0.2− | 2005 03 16 | G96 | 0.1− | 0.2+ | 2007 11 14 | 704 | 0.4− | 0.1+ |
| 2001 01 02 | 704 | 0.4− | 0.2+ | 2005 03 16 | G96 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.5− | 0.3+ |
| 2001 01 02 | 704 | 0.3− | 1.0+ | 2007 10 25 | G96 | 0.2+ | 0.6− | 2007 11 14 | 704 | 0.3− | 0.4+ |
| 2001 01 02 | 704 | 0.4+ | 1.1+ | 2007 10 25 | G96 | 0.2+ | 0.7− | 2007 11 14 | 704 | 0.7− | 0.9+ |
| 2001 01 03 | 704 | 0.7+ | 0.0  | 2007 10 25 | G96 | 0.1+ | 0.5− | 2007 11 14 | 704 | 0.4− | 0.5+ |
| 2001 01 03 | 704 | 0.6+ | 1.2− | 2007 10 25 | G96 | 0.6+ | 0.6− | 2007 11 18 | 699 | 0.2− | 0.0  |
| 2001 01 03 | 704 | 0.3− | 0.2− | 2007 11 03 | D35 | 0.2+ | 0.2− | 2007 11 18 | 699 | 0.0  | 0.1+ |
| 2001 01 03 | 704 | 0.7− | 0.8− | 2007 11 03 | D35 | 0.2+ | 0.1− | 2007 11 18 | 699 | 0.0  | 0.2+ |
| 2001 01 03 | 704 | 0.9− | 0.0  | 2007 11 03 | D35 | 0.0  | 0.0  | 2007 11 18 | 699 | 0.5− | 0.1+ |

## 2007 DEC. 24

M.P.O. 129583

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 01 05 | 691 | 0.1+ | 0.1- | 2007 11 08 | 691 | 0.1-  | 0.1-  | 2007 11 20 | G96 | 0.1+ | 0.5- |
| 2001 01 05 | 691 | 0.2- | 0.3- | 2007 11 08 | 691 | 0.2-  | 0.0   | 2007 11 20 | G96 | 0.0  | 0.4- |
| 2001 01 05 | 691 | 0.2- | 0.1- | 2007 11 08 | 691 | 0.2-  | 0.1-  | 2007 11 20 | G96 | 0.0  | 0.4- |
| 2003 08 23 | 644 | 0.2+ | 0.1- | 2007 11 13 | 699 | 0.2+  | 0.7-  | 2007 11 20 | G96 | 0.1+ | 0.5- |
| 2003 08 23 | 644 | 0.0  | 0.1- | 2007 11 13 | 699 | 0.7+  | 0.1-  | 2007 12 04 | 704 | 1.7+ | 1.1+ |
| 2003 08 23 | 644 | 0.0  | 0.2- | 2007 11 13 | 699 | 0.1-  | 0.3-  | 2007 12 04 | 704 | 0.5+ | 0.6+ |
| 2005 03 03 | 703 | 0.9- | 0.1- | 2007 11 13 | 699 | 0.4-  | 0.6-  | 2007 12 04 | 704 | 0.5- | 0.5+ |
| 2005 03 03 | 703 | 1.0+ | 0.5- | 2007 11 14 | 704 | (0.8+ | 2.1+) | 2007 12 04 | 704 | 0.8- | 0.8+ |
| 2005 03 03 | 703 | 0.5- | 0.1- | 2007 11 14 | 704 | 0.6+  | 0.4+  | 2007 12 04 | 704 | 0.7- | 0.7+ |

2001 BP<sub>50</sub> = 2003 UD<sub>347</sub> = 2003 UD<sub>379</sub> = 2007 VT<sub>41</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 297.36224  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26414545 | $\omega$ | 7.30183   | -0.49863886 |          |          | -0.86616840 |
| <i>a</i> | 2.4056953  | $\Omega$ | 112.61322 | +0.79344538 |          |          | -0.47158424 |
| <i>e</i> | 0.1397838  | <i>i</i> | 2.06982   | +0.34900389 |          |          | -0.16541043 |
| <i>P</i> | 3.73       | <i>H</i> | 18.0      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 26 | 701 | 0.1+  | 1.2+  | 2003 09 27 | 691 | 0.1- | 0.1+ | 2007 10 20 | 691 | 0.6- | 0.1+ |
| 2001 01 26 | 701 | 0.2+  | 0.2+  | 2003 09 27 | 691 | 0.0  | 0.2+ | 2007 11 03 | G96 | 0.1+ | 0.3- |
| 2001 01 26 | 701 | 1.1-  | 0.4-  | 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.6+ | 0.2- |
| 2001 01 26 | 701 | 0.1-  | 0.2-  | 2003 10 19 | 645 | 0.0  | 0.2+ | 2007 11 03 | G96 | 0.4+ | 0.3- |
| 2001 01 26 | 701 | 1.0-  | 0.5-  | 2003 10 22 | 645 | 0.0  | 0.2- | 2007 11 03 | G96 | 0.3+ | 0.0  |
| 2001 01 26 | 701 | (0.5+ | 1.7-) | 2003 10 22 | 645 | 0.2- | 0.1+ | 2007 11 04 | G96 | 0.0  | 0.2- |
| 2001 01 26 | 557 | 0.0   | 0.7-  | 2003 10 23 | 645 | 0.0  | 0.1- | 2007 11 04 | G96 | 0.3+ | 0.2- |
| 2001 01 26 | 557 | 0.6+  | 0.6-  | 2003 10 23 | 645 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.2+ | 0.2- |
| 2001 01 26 | 557 | 0.3+  | 0.1+  | 2005 03 11 | 691 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.4+ | 0.5- |
| 2001 01 26 | 557 | 0.5-  | 0.6+  | 2005 03 11 | 691 | 0.1- | 0.2+ | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2001 01 28 | 557 | 0.4+  | 0.4-  | 2005 03 11 | 691 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.1- |
| 2001 01 28 | 557 | 1.0+  | 0.0   | 2007 10 20 | 691 | 0.4- | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.1- |
| 2003 09 27 | 691 | 0.3+  | 0.2+  | 2007 10 20 | 691 | 0.1+ | 0.6+ |            |     |      |      |

2001 CW<sub>20</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 306.48920  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27619526 | $\omega$ | 61.98655  | -0.90776631 |          |          | -0.13491535 |
| <i>a</i> | 2.3352062  | $\Omega$ | 107.89360 | +0.03735086 |          |          | -0.96910192 |
| <i>e</i> | 0.2426978  | <i>i</i> | 24.66909  | +0.41781005 |          |          | -0.20649292 |
| <i>P</i> | 3.57       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 17 | 704 | 0.4- | 0.5- | 2001 02 05 | 704 | 0.4+ | 0.3- | 2001 03 13 | 704 | 0.0  | 0.1- |
| 2001 01 17 | 704 | 0.1+ | 1.5+ | 2001 02 05 | 704 | 0.2+ | 0.2- | 2001 03 26 | 699 | 0.0  | 0.1+ |
| 2001 01 17 | 704 | 1.4- | 0.5+ | 2001 02 13 | 704 | 0.1+ | 0.4+ | 2001 03 26 | 699 | 0.1- | 0.5+ |
| 2001 01 17 | 704 | 0.2+ | 0.3- | 2001 02 13 | 704 | 0.2+ | 0.4- | 2001 03 26 | 699 | 0.0  | 0.5- |
| 2001 02 04 | 704 | 0.2- | 0.4+ | 2001 02 13 | 704 | 0.3+ | 0.1- | 2001 03 26 | 699 | 0.3- | 0.5+ |
| 2001 02 04 | 704 | 0.3+ | 0.1- | 2001 02 13 | 704 | 0.3+ | 0.1+ | 2007 12 14 | A77 | 0.1+ | 0.1+ |
| 2001 02 04 | 704 | 0.9+ | 0.4- | 2001 02 13 | 704 | 0.1- | 0.0  | 2007 12 14 | A77 | 0.2+ | 0.1+ |
| 2001 02 05 | 704 | 0.2- | 0.1- | 2001 03 13 | 704 | 0.2+ | 0.3- | 2007 12 14 | A77 | 0.0  | 0.2+ |
| 2001 02 05 | 704 | 0.6- | 0.2- | 2001 03 13 | 704 | 0.2- | 0.1- | 2007 12 15 | A77 | 0.1- | 0.4- |
| 2001 02 05 | 704 | 0.4+ | 0.0  | 2001 03 13 | 704 | 0.4- | 0.2- | 2007 12 15 | A77 | 0.1- | 0.2- |

2001 DH<sub>24</sub> = 2007 XP<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 302.49027  |          | (2000.0) |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26644147 | $\omega$ | 66.46882 | -0.68597168 |          |          | -0.72508246 |
| <i>a</i> | 2.3918549  | $\Omega$ | 66.98862 | +0.64117230 |          |          | -0.64186424 |
| <i>e</i> | 0.1003291  | <i>i</i> | 3.78835  | +0.34400717 |          |          | -0.24953101 |
| <i>P</i> | 3.70       | <i>H</i> | 16.5     | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 17 | 704 | 0.6- | 0.5+ | 2003 10 21 | 691 | 0.2- | 0.2+ | 2007 12 04 | 703 | 0.1- | 0.5- |
| 2001 02 17 | 704 | 1.1- | 0.7+ | 2005 03 18 | 703 | 0.3- | 0.3+ | 2007 12 05 | 703 | 0.5+ | 0.2- |
| 2001 02 17 | 704 | 0.7+ | 0.1- | 2005 03 18 | 703 | 0.2- | 0.9+ | 2007 12 05 | 703 | 0.2- | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 17 | 704 | 0.6+ | 0.8+ | 2005 03 18 | 703 | 0.6+ | 0.4- | 2007 12 05 | 703 | 0.3- | 0.2- |
| 2001 02 17 | 704 | 0.8+ | 0.1+ | 2005 03 18 | 703 | 0.6- | 1.0- | 2007 12 05 | 703 | 0.4- | 0.2- |
| 2001 02 19 | 699 | 0.7+ | 1.0+ | 2005 04 01 | 699 | 0.2- | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.4- |
| 2001 02 19 | 699 | 1.0+ | 0.1+ | 2005 04 01 | 699 | 0.2+ | 1.2+ | 2007 12 06 | G96 | 0.1- | 0.4- |
| 2001 02 19 | 699 | 0.2+ | 0.7+ | 2005 04 01 | 699 | 0.4- | 0.5+ | 2007 12 06 | G96 | 0.3+ | 0.5- |
| 2001 02 19 | 699 | 0.2+ | 0.4+ | 2005 04 01 | 699 | 0.6+ | 1.3- | 2007 12 06 | G96 | 0.2+ | 0.5- |
| 2001 02 20 | 704 | 0.7- | 0.6- | 2005 05 15 | 644 | 0.1- | 0.1+ | 2007 12 10 | 704 | 0.1- | 0.2- |
| 2001 02 20 | 704 | 0.2- | 0.1- | 2005 05 15 | 644 | 0.0  | 0.1- | 2007 12 10 | 704 | 0.5+ | 0.0  |
| 2001 02 20 | 704 | 0.5+ | 0.0  | 2005 05 15 | 644 | 0.2+ | 0.3- | 2007 12 10 | 704 | 0.0  | 0.7- |
| 2001 02 20 | 704 | 0.3- | 0.9+ | 2007 11 18 | 691 | 0.2- | 0.0  | 2007 12 10 | 704 | 1.0+ | 1.2+ |
| 2003 10 02 | 691 | 0.3- | 0.1+ | 2007 11 18 | 691 | 0.3- | 0.0  | 2007 12 14 | 704 | 1.4+ | 0.3+ |
| 2003 10 02 | 691 | 0.0  | 0.4+ | 2007 11 18 | 691 | 0.4- | 0.1- | 2007 12 14 | 704 | 0.5- | 0.9- |
| 2003 10 02 | 691 | 0.1- | 0.4+ | 2007 12 04 | 703 | 0.3+ | 0.5- | 2007 12 14 | 704 | 0.4- | 0.7+ |
| 2003 10 21 | 691 | 0.0  | 0.2+ | 2007 12 04 | 703 | 0.1- | 1.2- | 2007 12 14 | 704 | 1.4+ | 1.8- |
| 2003 10 21 | 691 | 0.1- | 0.4+ | 2007 12 04 | 703 | 0.6+ | 0.1- |            |     |      |      |

2001 FJ<sub>86</sub> = 2007 XA<sub>12</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 342.30428  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.08127292 | $\omega$ | 199.02710 | +0.93133141 |          |          | -0.36416632 |
| <i>a</i> | 5.2784387  | $\Omega$ | 182.33254 | +0.34064740 |          |          | +0.87325665 |
| <i>e</i> | 0.0681898  | <i>i</i> | 3.05232   | +0.12876782 |          |          | +0.32373711 |
| <i>P</i> | 12.13      | <i>H</i> | 13.9      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 27 | 691 | 0.3- | 0.1+ | 2007 09 12 | G96 | 0.0  | 0.5+ | 2007 10 31 | G96 | 0.0  | 0.2+ |
| 2001 03 27 | 691 | 0.2- | 0.1- | 2007 09 12 | G96 | 0.0  | 0.7+ | 2007 10 31 | G96 | 0.4- | 0.2+ |
| 2001 03 27 | 691 | 0.2+ | 0.4- | 2007 09 12 | G96 | 0.1- | 0.3+ | 2007 10 31 | G96 | 0.2+ | 0.0  |
| 2001 03 28 | 691 | 0.5+ | 0.5+ | 2007 09 12 | G96 | 0.1- | 0.6+ | 2007 12 04 | G96 | 0.3- | 0.3+ |
| 2001 03 28 | 691 | 0.4+ | 0.4+ | 2007 10 04 | G96 | 0.5- | 0.2+ | 2007 12 04 | G96 | 0.0  | 0.6+ |
| 2001 03 28 | 691 | 0.9- | 1.3+ | 2007 10 04 | G96 | 0.2- | 0.3+ | 2007 12 04 | G96 | 0.1+ | 0.5+ |
| 2001 03 29 | 691 | 0.6+ | 0.2- | 2007 10 04 | G96 | 0.5- | 0.5+ | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2001 03 29 | 691 | 0.3+ | 0.1+ | 2007 10 04 | G96 | 0.2- | 0.6+ | 2007 12 06 | G96 | 0.1- | 0.2+ |
| 2001 03 29 | 691 | 0.0  | 0.3- | 2007 10 20 | G96 | 0.4+ | 0.5- | 2007 12 06 | G96 | 0.1- | 0.6+ |
| 2006 09 27 | G96 | 0.1- | 0.4+ | 2007 10 20 | G96 | 0.5+ | 0.4- | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2006 09 27 | G96 | 0.1- | 0.2+ | 2007 10 20 | G96 | 0.1+ | 0.6- | 2007 12 06 | G96 | 0.5- | 0.3+ |
| 2006 09 27 | G96 | 0.3- | 0.6+ | 2007 10 20 | G96 | 0.1+ | 0.4- |            |     |      |      |
| 2006 09 27 | G96 | 0.1+ | 0.4+ | 2007 10 31 | G96 | 0.2- | 0.3+ |            |     |      |      |

2001 FW<sub>88</sub> = 2007 VU<sub>253</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 16.51450   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.22785469 | $\omega$ | 248.13153 | +0.86963075 |          |          | -0.48181747 |
| <i>a</i> | 2.6547934  | $\Omega$ | 140.44954 | +0.49189461 |          |          | +0.82693845 |
| <i>e</i> | 0.0292425  | <i>i</i> | 9.73560   | +0.04221447 |          |          | +0.28987018 |
| <i>P</i> | 4.33       | <i>H</i> | 16.9      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 03 26 | 691 | 0.5+ | 0.3+ | 2001 05 24 | 645 | 0.0  | 0.2- | 2007 11 14 | G96 | 0.3+  | 0.0   |
| 2001 03 26 | 691 | 0.2+ | 0.1+ | 2001 06 15 | 645 | 0.2- | 0.1- | 2007 11 14 | G96 | 0.1+  | 0.2-  |
| 2001 03 26 | 691 | 0.4+ | 0.5+ | 2001 06 15 | 645 | 0.3- | 0.1- | 2007 11 14 | G96 | 0.3+  | 0.1-  |
| 2001 03 28 | 691 | 0.3+ | 0.3- | 2002 08 30 | 644 | 0.1+ | 0.0  | 2007 11 15 | 703 | (1.0- | 2.2+) |
| 2001 03 28 | 691 | 0.7- | 0.1+ | 2002 08 30 | 644 | 0.0  | 0.1+ | 2007 11 15 | 703 | 0.3+  | 0.0   |
| 2001 03 28 | 691 | 0.0  | 0.2+ | 2002 08 30 | 644 | 0.2- | 0.1+ | 2007 11 15 | 703 | 0.7-  | 0.7+  |
| 2001 05 24 | 645 | 0.1- | 0.2- | 2007 11 14 | G96 | 0.5+ | 0.3- | 2007 11 15 | 703 | 0.7-  | 0.1+  |

2001 GG<sub>4</sub> = 2007 VC<sub>151</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 MPC

| <i>M</i> | 170.85664  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23581776 | $\omega$ | 211.57889 | -0.69803035 |          |          | +0.71560778 |
| <i>a</i> | 2.5946874  | $\Omega$ | 14.20831  | -0.63326616 |          |          | -0.60018088 |
| <i>e</i> | 0.0755537  | <i>i</i> | 6.00409   | -0.33425680 |          |          | -0.35733516 |
| <i>P</i> | 4.18       | <i>H</i> | 17.4      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 03 19 691 | 0.1− | 0.2+ | 2005 02 09 691 | 0.1− | 0.1+ | 2007 10 21 691 | 0.5− | 0.2+ |
| 2001 03 19 691 | 0.1− | 0.3+ | 2005 02 09 691 | 0.3− | 0.2− | 2007 11 07 G96 | 0.8+ | 0.0  |
| 2001 03 19 691 | 0.0  | 0.2+ | 2005 04 02 691 | 0.2+ | 0.0  | 2007 11 07 G96 | 0.3+ | 0.1− |
| 2001 04 15 691 | 0.1− | 0.1+ | 2005 04 02 691 | 0.0  | 0.0  | 2007 11 07 G96 | 0.8+ | 0.1− |
| 2001 04 15 691 | 0.3− | 0.2− | 2005 04 02 691 | 0.1+ | 0.0  | 2007 11 07 G96 | 0.7+ | 0.2− |
| 2001 04 15 691 | 0.2+ | 0.2− | 2007 10 09 691 | 0.3− | 0.5+ | 2007 11 08 G96 | 0.4+ | 0.1− |
| 2001 04 18 691 | 0.3+ | 0.3+ | 2007 10 09 691 | 0.2− | 0.1+ | 2007 11 08 G96 | 0.9+ | 0.1+ |
| 2001 04 18 691 | 0.1+ | 0.1+ | 2007 10 09 691 | 0.2− | 0.1+ | 2007 11 08 G96 | 0.5+ | 0.2− |
| 2001 04 18 691 | 0.2+ | 0.1− | 2007 10 21 691 | 0.0  | 0.8− | 2007 11 08 G96 | 0.6+ | 0.4+ |
| 2005 02 09 691 | 0.1− | 0.2− | 2007 10 21 691 | 0.3− | 0.5+ |                |      |      |

**2001 OL<sub>29</sub> = 2005 GU<sub>224</sub> = 2007 TG<sub>244</sub>**

Id. Minor Planet Center (MPO 127888; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.29659   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18573251 | $\omega$ 297.10159 | +0.34229823   | +0.93931274 |
| <i>a</i> | 3.0423612  | $\Omega$ 352.80106 | −0.78441027   | +0.27227513 |
| <i>e</i> | 0.1950750  | <i>i</i> 10.52014  | −0.51723539   | +0.20870513 |
| <i>P</i> | 5.31       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |        |        |
|----------------|------|------|----------------|------|------|----------------|--------|--------|
| 2001 07 18 644 | 0.6− | 0.3+ | 2001 08 09 644 | 0.2+ | 0.7+ | 2005 04 10 691 | 0.5+   | 0.6+   |
| 2001 07 18 644 | 0.1− | 0.6+ | 2001 08 09 644 | 1.3+ | 0.4− | 2005 04 10 691 | 0.3+   | 0.5+   |
| 2001 07 18 644 | 0.1+ | 0.6+ | 2001 08 09 644 | 0.3+ | 1.1+ | 2005 04 10 691 | 0.4+   | 0.6+   |
| 2001 07 24 644 | 0.3− | 0.4+ | 2001 08 14 644 | 1.0− | 0.0  | 2007 10 08 703 | 0.1−   | 0.2+   |
| 2001 07 24 644 | 0.3− | 0.4+ | 2001 08 14 644 | 0.5− | 0.0  | 2007 10 08 703 | 0.6+   | 0.4−   |
| 2001 07 24 644 | 0.3− | 0.4+ | 2001 08 14 644 | 0.8− | 0.7+ | 2007 10 08 703 | (2.2+) | (0.3+) |
| 2001 07 28 699 | 1.6+ | 1.3+ | 2001 08 25 644 | 0.5+ | 0.4− | 2007 10 08 703 | 0.8+   | 0.5+   |
| 2001 07 28 699 | 0.6+ | 0.7+ | 2001 08 25 644 | 0.6+ | 0.2+ | 2007 10 12 699 | 0.3−   | 0.2+   |
| 2001 07 28 699 | 0.7+ | 0.6+ | 2001 08 25 644 | 0.3+ | 0.0  | 2007 10 12 699 | 0.4+   | 0.3−   |
| 2001 07 28 699 | 0.0  | 0.1+ | 2001 09 11 704 | 0.7− | 0.1− | 2007 10 12 699 | 0.7+   | 0.3−   |
| 2001 07 30 644 | 1.1− | 1.3− | 2001 09 11 704 | 0.7− | 0.7− | 2007 10 12 699 | 0.5−   | 0.2−   |
| 2001 07 30 644 | 0.9− | 1.6− | 2001 09 11 704 | 0.1− | 0.5− | 2007 11 08 703 | 0.7+   | 0.0    |
| 2001 07 30 644 | 1.1− | 1.6− | 2005 04 04 G96 | 0.1+ | 0.2+ | 2007 11 08 703 | 1.3−   | 0.4+   |
| 2001 08 09 644 | 0.7+ | 0.8− | 2005 04 04 G96 | 0.3− | 0.0  | 2007 11 08 703 | 0.8−   | 0.3+   |
| 2001 08 09 644 | 0.2+ | 1.0+ | 2005 04 04 G96 | 0.1+ | 0.0  | 2007 11 08 703 | 0.9−   | 1.1+   |
| 2001 08 09 644 | 0.9+ | 0.7− | 2005 04 04 G96 | 0.0  | 0.2− |                |        |        |

**2001 PW<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.04018   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18336497 | $\omega$ 341.40102 | +0.97988402   | +0.19807132 |
| <i>a</i> | 3.0684930  | $\Omega$ 7.30560   | −0.14994501   | +0.81137632 |
| <i>e</i> | 0.2995036  | <i>i</i> 11.05981  | −0.13169587   | +0.54994202 |
| <i>P</i> | 5.38       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 2001 08 10 644 | 1.0+  | 0.5+  | 2001 08 24 608 | 0.5+  | 0.2−  | 2001 09 11 704 | 1.1−  | 0.8−  |
| 2001 08 10 644 | 0.5+  | 0.2+  | 2001 08 24 608 | 0.5+  | 0.1−  | 2001 09 11 704 | (0.8− | 1.6−) |
| 2001 08 10 644 | 1.1+  | 0.0   | 2001 08 24 608 | 0.4+  | 0.3−  | 2001 10 10 644 | 0.1+  | 0.0   |
| 2001 08 12 608 | 0.6−  | 0.6−  | 2001 08 24 608 | 0.2+  | 1.5−  | 2001 10 10 644 | 0.3+  | 0.3+  |
| 2001 08 12 608 | 0.8−  | 0.6−  | 2001 08 24 608 | 0.0   | 0.8−  | 2001 10 10 644 | 0.0   | 0.0   |
| 2001 08 12 608 | 0.6−  | 0.1−  | 2001 08 25 699 | 0.6−  | 0.6+  | 2007 11 09 704 | 0.2−  | 0.5+  |
| 2001 08 16 644 | 0.2−  | 0.1−  | 2001 08 25 699 | 0.2+  | 0.1+  | 2007 11 09 704 | 0.9+  | 0.0   |
| 2001 08 16 644 | 0.2−  | 0.2+  | 2001 08 25 699 | 0.0   | 0.7+  | 2007 11 09 704 | 1.2+  | 0.5+  |
| 2001 08 16 644 | 0.3−  | 0.1−  | 2001 08 25 699 | 0.6+  | 0.4+  | 2007 11 16 704 | 0.3+  | 0.3−  |
| 2001 08 19 704 | 0.7+  | 0.3+  | 2001 08 27 644 | 0.4−  | 0.2+  | 2007 11 16 704 | 0.9−  | 0.5−  |
| 2001 08 19 704 | 0.3−  | 0.5+  | 2001 08 27 644 | 0.3−  | 0.2+  | 2007 11 16 704 | 0.6−  | 1.2−  |
| 2001 08 19 704 | 0.1+  | 0.7+  | 2001 08 27 644 | 0.5−  | 0.4+  | 2007 12 03 704 | 0.8−  | 0.7+  |
| 2001 08 19 704 | 0.5+  | 0.3+  | 2001 09 11 704 | (2.6− | 1.3+) | 2007 12 03 704 | 0.4+  | 1.2−  |
| 2001 08 19 704 | 0.6−  | 0.3−  | 2001 09 11 704 | (1.9− | 0.5−) | 2007 12 03 704 | 0.8−  | 0.2+  |
| 2001 08 24 608 | (0.4+ | 1.9−) | 2001 09 11 704 | (1.6− | 0.5−) | 2007 12 03 704 | 0.5+  | 1.2+  |

**2001 QK<sub>6</sub> = 2007 VK<sub>126</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.38760  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18162905 | $\omega$ 275.60112 | +0.47946126   | −0.86087268 |
| <i>a</i> | 3.0880134  | $\Omega$ 144.09259 | +0.87519756   | +0.45483236 |
| <i>e</i> | 0.2387195  | <i>i</i> 16.88449  | +0.06439051   | +0.22809153 |
| <i>P</i> | 5.43       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 08 16 704 | 0.2− | 0.4+ | 2007 09 12 703 | 0.2− | 0.5+ | 2007 11 11 J75 | 0.3+ | 0.7+ |
| 2001 08 16 704 | 0.4− | 0.1− | 2007 09 12 703 | 0.3− | 0.2− | 2007 11 11 703 | 0.7+ | 0.4− |
| 2001 08 16 704 | 0.6− | 0.4+ | 2007 10 11 703 | 0.2+ | 0.8+ | 2007 11 11 703 | 0.2− | 0.0  |
| 2001 08 16 704 | 0.4+ | 0.9− | 2007 10 11 703 | 1.0+ | 0.2+ | 2007 11 11 703 | 0.4− | 0.4− |
| 2001 08 16 704 | 0.6− | 0.2− | 2007 10 11 703 | 0.5+ | 0.7+ | 2007 11 11 703 | 0.5+ | 0.1− |
| 2001 08 18 704 | 0.8+ | 0.5+ | 2007 10 11 703 | 0.2+ | 0.5+ | 2007 11 11 620 | 0.1+ | 0.2− |
| 2001 08 18 704 | 0.1+ | 0.1− | 2007 10 15 703 | 0.8− | 1.1− | 2007 11 11 620 | 0.1− | 0.2− |
| 2001 08 18 704 | 1.0− | 0.5− | 2007 10 15 703 | 0.5− | 0.0  | 2007 11 11 620 | 0.4+ | 0.1− |
| 2001 08 23 699 | 0.1− | 0.9+ | 2007 10 15 703 | 0.5+ | 0.9+ | 2007 11 11 620 | 0.2+ | 0.2− |
| 2001 08 23 699 | 0.6+ | 0.4+ | 2007 10 15 703 | 0.2− | 0.3− | 2007 11 11 620 | 0.0  | 0.3− |
| 2001 08 23 699 | 0.1+ | 0.7− | 2007 10 18 G96 | 0.2+ | 0.2− | 2007 11 11 620 | 0.0  | 0.2− |
| 2001 08 23 699 | 0.2− | 0.4+ | 2007 10 18 G96 | 0.0  | 0.3− | 2007 11 16 620 | 0.2− | 0.0  |
| 2001 08 24 644 | 0.3+ | 0.1− | 2007 10 18 G96 | 0.0  | 0.2− | 2007 11 17 620 | 0.2+ | 0.2− |
| 2001 08 24 644 | 0.6+ | 0.2− | 2007 10 18 G96 | 0.2− | 0.3− | 2007 11 17 620 | 0.3− | 0.1+ |
| 2001 08 24 644 | 0.4+ | 0.3− | 2007 11 02 703 | 0.2− | 0.1+ | 2007 11 18 703 | 0.4− | 0.1+ |
| 2005 07 01 644 | 0.0  | 0.2+ | 2007 11 02 703 | 0.5− | 0.8+ | 2007 11 18 703 | 0.6− | 0.4− |
| 2005 07 01 644 | 0.3+ | 0.2+ | 2007 11 02 703 | 0.3+ | 0.3+ | 2007 11 18 703 | 0.8− | 0.1+ |
| 2005 07 01 644 | 0.3− | 0.1+ | 2007 11 02 703 | 0.5− | 0.0  | 2007 11 18 703 | 0.2+ | 0.0  |
| 2007 09 12 703 | 0.2− | 0.3− | 2007 11 11 J75 | 0.3+ | 0.2+ |                |      |      |
| 2007 09 12 703 | 0.5− | 0.4− | 2007 11 11 J75 | 0.9+ | 0.5+ |                |      |      |

**2001 QM<sub>122</sub> = 2007 TU<sub>166</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.72305   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18030765 | $\omega$ 328.34751 | +0.71654330   | +0.69624231 |
| <i>a</i> | 3.1030822  | $\Omega$ 347.24402 | −0.59296808   | +0.57584276 |
| <i>e</i> | 0.0605022  | <i>i</i> 11.11664  | −0.36736160   | +0.42854611 |
| <i>P</i> | 5.47       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 1996 11 07 691 | 0.4+ | 0.2+ | 2001 08 24 644 | 0.0  | 0.4− | 2007 10 12 704 | 0.2+  | 0.0   |
| 1996 11 07 691 | 0.1+ | 0.7− | 2001 08 24 644 | 0.2+ | 0.1− | 2007 10 12 704 | 0.1−  | 0.0   |
| 1996 11 07 691 | 0.2+ | 0.4− | 2001 08 25 704 | 0.0  | 0.2+ | 2007 10 15 704 | 1.4+  | 0.7+  |
| 2001 08 19 704 | 0.4− | 1.2+ | 2001 08 25 704 | 0.7+ | 0.6− | 2007 10 15 704 | (2.2− | 0.4−) |
| 2001 08 19 704 | 0.7+ | 0.1+ | 2001 08 25 704 | 0.6− | 0.3+ | 2007 10 15 704 | 0.1−  | 0.1−  |
| 2001 08 19 704 | 0.6+ | 0.3+ | 2007 10 07 703 | 1.0+ | 0.0  | 2007 10 15 704 | 0.2+  | 0.2+  |
| 2001 08 19 704 | 0.5+ | 0.4− | 2007 10 07 703 | 0.5− | 0.5− | 2007 10 20 703 | 0.6−  | 0.5−  |
| 2001 08 23 608 | 1.1− | 0.1+ | 2007 10 07 703 | 0.7− | 0.4− | 2007 10 20 703 | 0.0   | 0.1−  |
| 2001 08 23 608 | 0.5− | 0.3+ | 2007 10 07 703 | 0.0  | 0.3+ | 2007 10 20 703 | 0.4−  | 1.0+  |
| 2001 08 23 608 | 0.2− | 0.5− | 2007 10 12 704 | 0.3− | 0.3− | 2007 10 20 703 | 0.2−  | 0.1+  |
| 2001 08 24 644 | 0.1+ | 0.4− | 2007 10 12 704 | 0.6− | 0.4+ |                |       |       |

**2001 QW<sub>123</sub> = 2007 TG<sub>397</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.55860  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17509194 | $\omega$ 254.78108 | +0.90380567   | −0.39420600 |
| <i>a</i> | 3.1644041  | $\Omega$ 128.14380 | +0.42626082   | +0.86375463 |
| <i>e</i> | 0.2059206  | <i>i</i> 12.22571  | −0.03790815   | +0.31389419 |
| <i>P</i> | 5.63       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 08 19 704 | 0.7+ | 0.6+ | 2001 08 25 699 | 0.1− | 0.1− | 2007 10 11 703 | 0.9− | 0.4− |
| 2001 08 19 704 | 0.4+ | 0.1− | 2001 08 25 704 | 0.1− | 0.8− | 2007 10 15 699 | 0.5− | 1.5− |
| 2001 08 19 704 | 1.3+ | 0.9+ | 2001 08 25 699 | 1.5− | 1.2+ | 2007 10 15 699 | 0.2+ | 0.7− |
| 2001 08 19 704 | 0.8+ | 0.0  | 2001 08 25 704 | 0.7− | 0.6+ | 2007 10 15 699 | 1.1+ | 0.6+ |
| 2001 08 24 608 | 0.5− | 1.1− | 2007 09 05 703 | 0.6+ | 0.1+ | 2007 10 15 699 | 0.1− | 0.1+ |

## 2007 DEC. 24

M.P.O. 129585

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 24 | 608 | 0.1+ | 1.2- | 2007 09 05 | 703 | 0.4+ | 0.4+ | 2007 10 19 | 703 | 0.3- | 0.3+ |
| 2001 08 24 | 608 | 0.4- | 0.9- | 2007 09 05 | 703 | 0.1+ | 1.6+ | 2007 10 19 | 703 | 1.7+ | 0.8- |
| 2001 08 25 | 699 | 1.6+ | 0.1+ | 2007 09 05 | 703 | 0.3+ | 0.8+ | 2007 10 19 | 703 | 0.1+ | 0.3+ |
| 2001 08 25 | 704 | 0.4- | 0.6- | 2007 10 11 | 703 | 1.1- | 0.6- | 2007 10 19 | 703 | 0.1+ | 0.1+ |
| 2001 08 25 | 699 | 1.1- | 0.4- | 2007 10 11 | 703 | 0.5- | 0.1- |            |     |      |      |
| 2001 08 25 | 704 | 0.0  | 1.1+ | 2007 10 11 | 703 | 1.2- | 0.2+ |            |     |      |      |

2001 QJ<sub>144</sub> = 2007 WL<sub>43</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 59.26983   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.18489448 | $\omega$ | 177.13491 | +0.94152307 |      | +0.33684830 |   |
| <i>a</i>                                | 3.0515471  | $\Omega$ | 163.17303 | -0.30970588 |      | +0.87474909 |   |
| <i>e</i>                                | 0.1790064  | <i>i</i> | 1.62664   | -0.13272744 |      | +0.34834931 |   |
| <i>P</i>                                | 5.33       | <i>H</i> | 17.4      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 19 | 807 | 0.3- | 0.4+ | 2001 09 19 | 704 | 0.3+ | 0.6+ | 2007 11 19 | 691 | 0.3- | 0.1+ |
| 2001 08 19 | 807 | 0.1+ | 0.2+ | 2001 09 19 | 704 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.1- | 0.2- |
| 2001 08 21 | 691 | 0.0  | 0.5- | 2001 09 19 | 704 | 0.0  | 0.8- | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2001 08 21 | 691 | 0.4+ | 0.0  | 2001 09 19 | 704 | 0.2+ | 0.7- | 2007 11 21 | G96 | 0.5+ | 0.2+ |
| 2001 08 21 | 691 | 0.1+ | 0.1+ | 2001 09 19 | 704 | 0.6- | 0.5+ | 2007 11 21 | G96 | 0.2+ | 0.0  |
| 2001 08 27 | 691 | 0.3- | 0.0  | 2001 09 20 | 691 | 0.1+ | 0.0  | 2007 11 21 | G96 | 0.2+ | 0.2- |
| 2001 08 27 | 691 | 0.2- | 0.2+ | 2001 09 20 | 691 | 0.1- | 0.0  | 2007 11 21 | G96 | 0.3+ | 0.1- |
| 2001 08 27 | 691 | 0.1- | 0.0  | 2001 09 20 | 691 | 0.1+ | 0.0  |            |     |      |      |

2001 QO<sub>163</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 15.21817   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.17407920 | $\omega$ | 190.33462 | +0.73463682 |      | -0.66347372 |   |
| <i>a</i>                                | 3.1766653  | $\Omega$ | 212.67529 | +0.63971686 |      | +0.74700811 |   |
| <i>e</i>                                | 0.2695495  | <i>i</i> | 15.22910  | +0.22598911 |      | +0.04220795 |   |
| <i>P</i>                                | 5.66       | <i>H</i> | 15.2      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 25 | 704 | 0.0   | 0.5+  | 2001 10 14 | 704 | 0.0  | 0.6- | 2001 11 17 | 704 | 0.0  | 0.3+ |
| 2001 08 25 | 704 | 0.5+  | 1.3+  | 2001 10 14 | 704 | 0.5+ | 0.9- | 2001 11 17 | 704 | 0.4- | 0.7- |
| 2001 08 25 | 704 | 0.0   | 0.6+  | 2001 10 14 | 704 | 0.4+ | 0.6- | 2001 11 17 | 704 | 0.3- | 0.6- |
| 2001 08 28 | 644 | 0.5-  | 0.0   | 2001 10 15 | 704 | 0.2+ | 0.0  | 2001 11 20 | 704 | 0.5+ | 0.3+ |
| 2001 08 28 | 644 | 0.0   | 0.4+  | 2001 10 15 | 704 | 0.1+ | 0.0  | 2001 11 20 | 704 | 0.1- | 0.2+ |
| 2001 08 28 | 644 | 0.2+  | 0.1+  | 2001 10 15 | 704 | 0.0  | 0.2+ | 2001 11 20 | 704 | 0.2+ | 0.1+ |
| 2001 08 31 | 333 | 0.0   | 0.1-  | 2001 10 15 | 704 | 0.1+ | 0.1- | 2001 11 20 | 704 | 0.2+ | 0.6+ |
| 2001 08 31 | 333 | 1.5+  | 0.3-  | 2001 10 15 | 704 | 0.1- | 0.0  | 2001 11 20 | 704 | 0.4+ | 0.1+ |
| 2001 08 31 | 333 | 1.0+  | 0.1-  | 2001 10 15 | 704 | 0.1- | 0.2- | 2001 11 21 | 704 | 0.1+ | 0.4- |
| 2001 09 01 | 333 | (3.2- | 0.2-) | 2001 10 15 | 704 | 0.1- | 0.6- | 2001 11 21 | 704 | 0.2+ | 0.2- |
| 2001 09 01 | 333 | 1.2-  | 0.0   | 2001 10 15 | 704 | 0.1+ | 0.1- | 2001 11 21 | 704 | 0.1- | 0.1+ |
| 2001 09 21 | 699 | 0.5+  | 0.5-  | 2001 10 15 | 704 | 0.3+ | 0.2- | 2001 11 21 | 704 | 0.5+ | 0.3- |
| 2001 09 21 | 699 | 0.3+  | 0.7-  | 2001 10 15 | 704 | 0.1- | 0.7- | 2001 11 21 | 704 | 0.1- | 0.3+ |
| 2001 09 21 | 699 | 0.5-  | 0.2+  | 2001 10 17 | 704 | 0.3+ | 0.4+ | 2001 11 21 | 608 | 0.7- | 0.4+ |
| 2001 09 21 | 699 | 0.2-  | 0.1+  | 2001 10 17 | 704 | 1.0+ | 0.1- | 2001 11 21 | 608 | 0.7- | 1.6+ |
| 2001 09 22 | 699 | 1.7-  | 0.9+  | 2001 10 17 | 704 | 0.4+ | 0.1- | 2001 11 21 | 608 | 0.3- | 1.1+ |
| 2001 09 22 | 699 | 1.0-  | 0.5+  | 2001 10 17 | 704 | 1.5+ | 0.3- | 2001 12 07 | 704 | 0.4- | 1.4- |
| 2001 09 22 | 699 | 0.4-  | 0.2+  | 2001 10 17 | 704 | 0.5- | 0.5+ | 2001 12 07 | 704 | 0.5+ | 0.2- |
| 2001 09 22 | 699 | 0.4-  | 0.1+  | 2001 10 21 | 704 | 0.1- | 0.0  | 2001 12 07 | 704 | 0.3- | 1.0- |
| 2001 09 23 | 704 | 0.7+  | 0.2+  | 2001 10 21 | 704 | 0.3+ | 0.1+ | 2001 12 07 | 704 | 0.9- | 2.5- |
| 2001 09 23 | 704 | 0.0   | 0.8-  | 2001 10 21 | 704 | 0.1+ | 0.2+ | 2001 12 14 | 704 | 0.9- | 0.1+ |
| 2001 09 23 | 704 | 0.4+  | 0.5-  | 2001 10 21 | 704 | 0.1+ | 0.8+ | 2001 12 14 | 704 | 0.8+ | 0.1- |
| 2001 09 24 | 704 | 0.7+  | 0.1+  | 2001 10 21 | 704 | 0.1+ | 0.3+ | 2001 12 14 | 704 | 0.9+ | 0.0  |
| 2001 09 24 | 704 | 0.1+  | 1.2-  | 2001 10 26 | 704 | 0.1- | 0.1+ | 2001 12 14 | 704 | 1.1+ | 0.7+ |
| 2001 09 24 | 704 | 0.2+  | 1.2-  | 2001 10 26 | 644 | 0.7- | 0.7+ | 2001 12 14 | 704 | 0.4+ | 0.1+ |
| 2001 09 24 | 704 | 0.3+  | 1.3-  | 2001 10 26 | 704 | 0.3- | 0.3- | 2001 12 17 | 704 | 0.2- | 0.4+ |
| 2001 09 24 | 704 | 0.5+  | 1.2-  | 2001 10 26 | 644 | 0.9- | 0.8+ | 2001 12 17 | 704 | 0.1+ | 0.8+ |
| 2001 10 11 | 644 | 0.3+  | 1.1+  | 2001 10 26 | 704 | 0.5- | 0.0  | 2001 12 17 | 704 | 0.1+ | 0.3+ |
| 2001 10 11 | 644 | 0.4+  | 0.8+  | 2001 10 26 | 644 | 0.9- | 1.0+ | 2001 12 17 | 704 | 0.0  | 0.4+ |
| 2001 10 11 | 644 | 0.3+  | 1.0+  | 2001 10 26 | 704 | 0.3- | 0.1+ | 2005 06 01 | G96 | 0.2+ | 0.2+ |
| 2001 10 13 | 704 | 0.2-  | 0.2+  | 2001 10 26 | 704 | 0.3- | 0.4- | 2005 06 01 | G96 | 0.5- | 0.3+ |
| 2001 10 13 | 704 | 0.0   | 0.1+  | 2001 11 09 | 704 | 0.0  | 0.4+ | 2005 06 01 | G96 | 0.0  | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 13 | 704 | 0.2- | 0.2+ | 2001 11 09 | 704 | 0.3- | 0.3- | 2005 06 01 | G96 | 0.3+ | 0.2+ |
| 2001 10 13 | 704 | 0.1+ | 0.6- | 2001 11 09 | 704 | 0.3- | 0.0  | 2007 12 06 | 703 | 0.2- | 0.4- |
| 2001 10 13 | 704 | 0.0  | 0.2- | 2001 11 09 | 704 | 0.2- | 0.0  | 2007 12 06 | 703 | 0.1+ | 0.1- |
| 2001 10 14 | 704 | 0.0  | 0.1+ | 2001 11 09 | 704 | 0.3+ | 0.4+ | 2007 12 06 | 703 | 0.5+ | 0.5+ |
| 2001 10 14 | 704 | 0.6+ | 0.3- | 2001 11 17 | 704 | 0.1- | 0.3- | 2007 12 06 | 703 | 0.4- | 0.3+ |

2001 QS<sub>234</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 32.54614   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i>                                | 0.18442665 | $\omega$ | 48.26272  | +0.78020062 |      | -0.62389305 |   |
| <i>a</i>                                | 3.0567054  | $\Omega$ | 350.04515 | +0.46762518 |      | +0.62973646 |   |
| <i>e</i>                                | 0.3885445  | <i>i</i> | 15.16236  | +0.41546802 |      | +0.46280606 |   |
| <i>P</i>                                | 5.34       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 05 | 608 | 0.4+ | 0.3+ | 2001 09 20 | 704 | 0.1+ | 0.5+ | 2001 10 14 | 704 | 0.1- | 0.4+ |
| 2001 08 05 | 608 | 0.5+ | 0.3+ | 2001 09 20 | 704 | 0.1+ | 0.4+ | 2001 10 14 | 704 | 0.5+ | 0.0  |
| 2001 08 24 | 704 | 0.5+ | 0.2+ | 2001 09 20 | 704 | 0.1+ | 0.3+ | 2001 10 16 | 704 | 0.6- | 0.1- |
| 2001 08 24 | 704 | 0.3+ | 0.1- | 2001 09 22 | 704 | 0.4+ | 0.1- | 2001 10 16 | 704 | 0.6- | 0.2- |
| 2001 08 24 | 704 | 0.3+ | 0.1+ | 2001 09 22 | 704 | 0.3+ | 0.4+ | 2001 10 16 | 704 | 0.3- | 0.2- |
| 2001 08 24 | 704 | 0.6+ | 0.4+ | 2001 09 22 | 704 | 0.4+ | 0.1- | 2001 10 16 | 704 | 0.4- | 0.6- |
| 2001 08 27 | 699 | 0.2+ | 0.3+ | 2001 09 22 | 704 | 0.1+ | 0.5- | 2001 10 16 | 704 | 0.0  | 0.2+ |
| 2001 08 27 | 699 | 0.6- | 0.3- | 2001 09 22 | 704 | 0.2+ | 1.2- | 2001 10 21 | 704 | 0.3- | 0.0  |
| 2001 08 27 | 699 | 0.9+ | 0.9+ | 2001 09 23 | 704 | 0.2+ | 0.4- | 2001 10 21 | 704 | 0.0  | 0.8+ |
| 2001 08 27 | 699 | 0.6- | 0.7+ | 2001 09 23 | 704 | 0.3- | 0.2- | 2001 10 21 | 704 | 0.0  | 0.1- |
| 2001 08 28 | 691 | 0.4- | 0.1- | 2001 09 23 | 704 | 0.1- | 0.3- | 2001 10 21 | 704 | 0.3- | 0.5+ |
| 2001 08 28 | 691 | 0.4- | 0.2- | 2001 09 23 | 704 | 0.3- | 0.4- | 2001 10 21 | 704 | 0.1+ | 0.8+ |
| 2001 08 28 | 691 | 0.4- | 0.3- | 2001 09 23 | 704 | 0.4- | 0.3- | 2001 10 23 | 699 | 0.1- | 0.6+ |
| 2001 09 11 | 699 | 0.4+ | 0.1+ | 2001 09 26 | 699 | 0.5- | 0.3- | 2001 10 23 | 699 | 0.4- | 0.5+ |
| 2001 09 11 | 699 | 0.3+ | 0.6- | 2001 09 26 | 699 | 0.3- | 0.5- | 2001 10 23 | 699 | 0.1+ | 0.4+ |
| 2001 09 11 | 699 | 0.2- | 0.3- | 2001 09 26 | 699 | 0.2- | 0.3- | 2001 10 23 | 699 | 0.7- | 0.2+ |
| 2001 09 11 | 699 | 0.1+ | 0.1- | 2001 09 26 | 699 | 0.7- | 0.9- | 2001 11 11 | 644 | 0.1+ | 0.3+ |
| 2001 09 15 | 644 | 0.7- | 0.8+ | 2001 09 26 | 049 | 0.4+ | 0.1- | 2001 11 11 | 644 | 0.2+ | 0.1+ |
| 2001 09 15 | 644 | 0.6- | 0.5+ | 2001 09 26 | 049 | 0.5+ | 0.3- | 2001 11 11 | 644 | 0.2+ | 0.5+ |
| 2001 09 15 | 644 | 0.3- | 0.7+ | 2001 09 26 | 049 | 0.2+ | 0.4- | 2006 07 26 | E12 | 0.5- | 0.1- |
| 2001 09 16 | 704 | 0.4+ | 0.5- | 2001 09 28 | 644 | 0.4+ | 0.1- | 2006 07 26 | E12 | 0.2- | 0.1- |
| 2001 09 16 | 704 | 0.6+ | 0.2- | 2001 09 28 | 644 | 0.2+ | 0.0  | 2006 07 26 | E12 | 0.4- | 0.7+ |
| 2001 09 16 | 704 | 0.0  | 0.7- | 2001 09 28 | 644 | 0.3+ | 0.1- | 2006 07 26 | E12 | 0.9+ | 0.3+ |
| 2001 09 18 | 699 | 0.3+ | 0.1- | 2001 10 14 | 683 | 1.2- | 0.6- | 2007 11 21 | G96 | 0.6- | 0.2+ |
| 2001 09 18 | 699 | 0.5+ | 0.6+ | 2001 10 14 | 704 | 0.4+ | 0.4+ | 2007 11 21 | G96 | 0.6+ | 0.0  |
| 2001 09 18 | 699 | 0.5+ | 0.1+ | 2001 10 14 | 683 | 1.6+ | 0.1+ | 2007 11 21 | G96 | 0.3- | 0.3+ |
| 2001 09 18 | 699 | 0.1- | 0.2+ | 2001 10 14 | 704 | 0.2+ | 0.1+ | 2007 11 21 | G96 | 0.5+ | 0.0  |
| 2001 09 20 | 704 | 0.2+ | 0.5+ | 2001 10 14 | 683 | 1.4+ | 0.6- |            |     |      |      |
| 2001 09 20 | 704 | 0.1+ | 0.2+ | 2001 10 14 | 704 | 0.3+ | 0.2+ |            |     |      |      |

2001 QZ<sub>236</sub> = 2007 VH<sub>93</sub>

|                                         |            |          |           |               |             |
|-----------------------------------------|------------|----------|-----------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC           |             |
| <i>M</i>                                | 6.03436    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.17928541 | $\omega$ | 47.75514  | +0.77845922   | −0.62695449 |
| <i>a</i>                                | 3.1148664  | $\Omega$ | 350.92377 | +0.50383747   | +0.65308058 |
| <i>e</i>                                | 0.1035167  | <i>i</i> | 11.14245  | +0.37436486   | +0.42475149 |
| <i>P</i>                                | 5.50       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 22 | 704 | 0.4−  | 0.5−  | 2007 10 09 | 703 | 0.4+  | 0.2+  | 2007 12 03 | 448 | 0.4+ | 0.3+ |
| 2001 09 22 | 704 | (1.5+ | 1.0−) | 2007 10 09 | 703 | 1.1−  | 0.6+  | 2007 12 03 | 448 | 0.1− | 0.1+ |
| 2001 09 22 | 704 | 0.8+  | 0.1−  | 2007 10 09 | 703 | (1.8− | 0.6−) |            |     |      |      |
| 2001 09 22 | 704 | 0.3+  | 0.3+  | 2007 10 09 | 703 | (3.2− | 2.6−) |            |     |      |      |

**2001 QD<sub>244</sub> = 2007 WZ<sub>46</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.07198   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17937261 | $\omega$ | 312.23408 | +0.65458524 | +0.75597792 |
| <i>a</i> | 3.1138567  | $\Omega$ | 358.63568 | −0.63563810 | +0.54754667 |
| <i>e</i> | 0.2236117  | <i>i</i> | 9.53386   | −0.40924611 | +0.35873393 |
| <i>P</i> | 5.49       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 24 | 704 | 0.3+  | 0.4+  | 2001 09 25 | 699 | 0.2−  | 0.3−  | 2006 07 29 | E12 | 0.0  | 0.4− |
| 2001 08 24 | 704 | 0.1−  | 0.1+  | 2001 10 11 | 644 | 0.6−  | 1.1−  | 2006 07 29 | E12 | 0.3+ | 0.2− |
| 2001 08 24 | 704 | 0.2+  | 0.5+  | 2001 10 11 | 644 | 1.3−  | 0.9+  | 2006 07 29 | E12 | 0.8− | 0.1+ |
| 2001 08 27 | 644 | 0.6+  | 0.6−  | 2001 10 11 | 644 | 0.8−  | 1.1−  | 2007 11 20 | G96 | 0.3− | 0.0  |
| 2001 08 27 | 644 | 0.3+  | 0.4−  | 2001 10 11 | 644 | 1.4−  | 1.1+  | 2007 11 20 | G96 | 0.0  | 0.2− |
| 2001 08 27 | 644 | 0.3+  | 0.2−  | 2001 10 11 | 644 | 0.4−  | 1.1−  | 2007 11 20 | G96 | 0.2+ | 0.1− |
| 2001 09 18 | 699 | 0.1−  | 0.0   | 2001 10 11 | 644 | 1.0−  | 1.1+  | 2007 11 20 | G96 | 0.1− | 0.2− |
| 2001 09 18 | 699 | 1.1+  | 0.7−  | 2001 10 13 | 704 | 0.6+  | 0.1+  | 2007 11 20 | G96 | 0.4− | 0.0  |
| 2001 09 18 | 699 | 0.1−  | 1.2−  | 2001 10 13 | 704 | 0.0   | 0.1−  | 2007 11 20 | G96 | 0.1− | 0.1− |
| 2001 09 18 | 699 | (1.8+ | 1.5+) | 2001 10 13 | 704 | 0.1−  | 0.2+  | 2007 11 20 | G96 | 0.1+ | 0.0  |
| 2001 09 19 | 704 | 0.5+  | 0.0   | 2001 10 18 | 644 | 0.3+  | 0.1−  | 2007 11 20 | G96 | 0.5− | 0.0  |
| 2001 09 19 | 704 | 0.9−  | 0.5−  | 2001 10 18 | 644 | 0.3+  | 0.2−  | 2007 11 21 | G96 | 0.1+ | 0.2− |
| 2001 09 19 | 704 | 0.3+  | 1.2+  | 2001 10 18 | 644 | 0.4+  | 0.1−  | 2007 11 21 | G96 | 0.2− | 0.0  |
| 2001 09 19 | 704 | 0.0   | 1.1+  | 2001 10 21 | 704 | 0.4−  | 0.6−  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2001 09 19 | 704 | 0.1+  | 0.2+  | 2001 10 21 | 704 | 0.3+  | 1.3−  | 2007 11 21 | G96 | 0.4+ | 0.1+ |
| 2001 09 20 | 704 | (0.6+ | 1.7+) | 2001 10 21 | 704 | 0.0   | 1.0−  | 2007 11 21 | G96 | 0.7+ | 0.6− |
| 2001 09 20 | 704 | 0.5+  | 1.3+  | 2001 10 21 | 704 | 0.2+  | 0.0   | 2007 11 21 | G96 | 0.0  | 0.1− |
| 2001 09 20 | 704 | (0.6+ | 1.6+) | 2001 10 21 | 704 | (0.3+ | 1.7−) | 2007 11 21 | G96 | 0.5+ | 0.0  |
| 2001 09 20 | 704 | 0.6+  | 1.2+  | 2005 03 11 | G96 | 0.5+  | 1.0+  | 2007 11 21 | G96 | 0.5+ | 0.1+ |
| 2001 09 20 | 704 | 0.6+  | 1.3+  | 2005 03 11 | G96 | 0.3+  | 0.0   | 2007 12 02 | 704 | 1.2− | 0.5− |
| 2001 09 25 | 699 | 0.4−  | 0.6+  | 2005 03 11 | G96 | 0.3−  | 0.7+  | 2007 12 02 | 704 | 0.1− | 0.3− |
| 2001 09 25 | 699 | 0.4−  | 1.4+  | 2005 03 11 | G96 | 0.9+  | 0.3+  | 2007 12 02 | 704 | 0.9+ | 1.0+ |
| 2001 09 25 | 699 | 1.1−  | 0.0   | 2006 07 29 | E12 | 0.6+  | 0.4−  |            |     |      |      |

**2001 QC<sub>248</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.68284   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.17433105 | $\omega$ | 4.06047  | +0.93809770 | −0.34569609 |
| <i>a</i> | 3.1736051  | $\Omega$ | 16.21483 | +0.31556961 | +0.82729438 |
| <i>e</i> | 0.2629119  | <i>i</i> | 4.43816  | +0.14278842 | +0.44280721 |
| <i>P</i> | 5.65       | <i>H</i> | 15.6     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 24 | 704 | 0.6+ | 0.2− | 2001 10 15 | 691 | 0.5+ | 0.1− | 2001 11 19 | 704 | 0.5+ | 0.3− |
| 2001 08 24 | 704 | 0.6+ | 0.8− | 2001 10 15 | 691 | 0.5+ | 0.1− | 2001 11 19 | 704 | 0.0  | 0.9− |
| 2001 08 24 | 704 | 0.8+ | 0.2− | 2001 10 17 | 704 | 0.2+ | 0.1− | 2001 11 19 | 704 | 0.3− | 1.4− |
| 2001 08 26 | 644 | 0.4+ | 0.5+ | 2001 10 17 | 704 | 0.0  | 0.1− | 2001 11 19 | 704 | 0.0  | 0.6− |
| 2001 08 26 | 644 | 0.5+ | 0.3+ | 2001 10 17 | 704 | 0.2+ | 0.5− | 2001 11 22 | 691 | 0.2+ | 0.5+ |
| 2001 08 26 | 644 | 0.4+ | 0.4+ | 2001 10 17 | 704 | 0.2+ | 0.3+ | 2001 11 22 | 691 | 0.5+ | 0.6+ |
| 2001 09 23 | 291 | 0.7− | 0.0  | 2001 10 17 | 704 | 0.5+ | 0.1+ | 2001 11 22 | 691 | 0.3+ | 0.5+ |
| 2001 09 23 | 291 | 0.6− | 0.1− | 2001 10 19 | 644 | 0.3+ | 0.0  | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2001 09 23 | 291 | 0.9− | 0.0  | 2001 10 19 | 644 | 0.2+ | 0.2− | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2001 09 23 | 704 | 0.2+ | 0.3+ | 2001 10 19 | 644 | 0.1+ | 0.2− | 2007 11 18 | G96 | 0.2+ | 0.1+ |
| 2001 09 23 | 704 | 1.0− | 0.3+ | 2001 10 21 | 704 | 0.1+ | 0.3− | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2001 09 23 | 704 | 0.5+ | 0.4+ | 2001 10 21 | 704 | 0.1+ | 0.2+ | 2007 11 20 | G91 | 0.2− | 0.1− |
| 2001 09 24 | 704 | 0.1− | 0.0  | 2001 10 21 | 704 | 0.4− | 0.1+ | 2007 11 20 | G91 | 0.2− | 0.0  |
| 2001 09 24 | 704 | 0.2+ | 0.3− | 2001 10 21 | 704 | 0.3− | 0.4− | 2007 11 20 | G91 | 0.2− | 0.0  |
| 2001 09 24 | 704 | 0.6− | 0.2+ | 2001 10 21 | 704 | 0.3− | 0.3− | 2007 11 20 | G91 | 0.1+ | 0.0  |
| 2001 09 24 | 704 | 0.7− | 0.1+ | 2001 11 09 | 704 | 0.2− | 0.6− | 2007 12 10 | 704 | 0.9− | 1.4− |
| 2001 09 28 | 704 | 1.0− | 0.4+ | 2001 11 09 | 704 | 0.3+ | 0.6− | 2007 12 10 | 704 | 0.6− | 0.6+ |
| 2001 09 28 | 704 | 0.7+ | 0.1+ | 2001 11 09 | 704 | 0.2− | 0.4− | 2007 12 10 | 704 | 1.0− | 1.0+ |
| 2001 09 28 | 704 | 0.2+ | 0.1− | 2001 11 09 | 704 | 0.0  | 0.5− | 2007 12 14 | 704 | 1.2+ | 0.0  |
|            |     |      |      |            |     |      |      | 2007 12 14 | 704 | 0.4+ | 0.4+ |
|            |     |      |      |            |     |      |      | 2007 12 14 | 704 | 0.5+ | 1.0+ |
|            |     |      |      |            |     |      |      | 2007 12 14 | 704 | 0.6+ | 0.7+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 11 | 644 | 0.6− | 0.1− | 2001 11 09 | 704 | (0.0  | 2.6−) | 2007 12 13 | 704 | 0.1+ | 0.0  |
| 2001 10 11 | 644 | 0.3− | 0.0  | 2001 11 11 | 699 | 0.1−  | 0.5+  | 2007 12 13 | 704 | 0.1+ | 0.0  |
| 2001 10 11 | 644 | 0.4− | 0.2+ | 2001 11 11 | 699 | 0.6−  | 0.5−  | 2007 12 13 | 704 | 0.2− | 0.3− |
| 2001 10 13 | 704 | 0.2− | 0.2+ | 2001 11 11 | 699 | 0.5−  | 0.1+  | 2007 12 15 | 704 | 0.8− | 0.3− |
| 2001 10 13 | 704 | 0.8+ | 0.4+ | 2001 11 11 | 699 | 0.9−  | 1.0+  | 2007 12 15 | 704 | 0.0  | 0.4− |
| 2001 10 13 | 704 | 0.5+ | 0.1− | 2001 11 17 | 704 | 0.3−  | 0.1−  | 2007 12 15 | 704 | 0.3− | 0.7+ |
| 2001 10 13 | 704 | 0.7+ | 0.8+ | 2001 11 17 | 704 | 0.7−  | 1.0−  | 2007 12 15 | 704 | 0.9− | 0.3+ |
| 2001 10 13 | 704 | 0.6+ | 0.1− | 2001 11 17 | 704 | 1.3−  | 0.7−  |            |     |      |      |
| 2001 10 15 | 691 | 0.6+ | 0.1− | 2001 11 17 | 704 | (1.5− | 1.5−) |            |     |      |      |

**2001 QH<sub>281</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.37733   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17561845 | $\omega$ | 288.60389 | +0.91563177 | −0.28439883 |
| <i>a</i> | 3.1580764  | $\Omega$ | 88.70672  | +0.38095357 | +0.83958626 |
| <i>e</i> | 0.3001087  | <i>i</i> | 16.51180  | −0.12842447 | +0.46283065 |
| <i>P</i> | 5.61       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 07 21 | 644 | 0.1+ | 0.6− | 2001 09 26 | 699 | 1.0+  | 0.6−  | 2007 11 02 | 703 | 0.2+  | 0.6−  |
| 2001 07 21 | 644 | 0.1+ | 0.4− | 2001 09 26 | 699 | 0.0   | 0.1−  | 2007 11 09 | 703 | 0.6+  | 0.1+  |
| 2001 07 21 | 644 | 0.2+ | 0.5− | 2001 09 26 | 699 | 0.5+  | 0.4−  | 2007 11 09 | 703 | 0.4+  | 0.4+  |
| 2001 08 19 | 704 | 0.9− | 0.4− | 2001 09 26 | 699 | 0.9−  | 0.1+  | 2007 11 09 | 703 | 0.3−  | 0.4−  |
| 2001 08 19 | 704 | 0.8− | 0.6− | 2001 09 26 | 699 | 0.3−  | 0.4+  | 2007 11 09 | 703 | (1.5− | 0.3−) |
| 2001 08 19 | 704 | 0.3− | 0.0  | 2001 09 26 | 699 | 0.4+  | 0.2+  | 2007 11 15 | 703 | 0.4+  | 0.1+  |
| 2001 08 19 | 704 | 0.4− | 0.9+ | 2001 09 26 | 699 | 0.2+  | 0.3+  | 2007 11 15 | 703 | 0.2+  | 0.2−  |
| 2001 08 19 | 704 | 0.4− | 0.3+ | 2001 11 07 | 644 | 0.5−  | 0.1−  | 2007 11 15 | 703 | 0.5−  | 0.1+  |
| 2001 08 24 | 644 | 0.4− | 0.4− | 2001 11 07 | 644 | 0.3+  | 0.3−  | 2007 11 15 | 703 | 0.5+  | 0.2+  |
| 2001 08 24 | 644 | 0.2− | 0.4− | 2001 11 07 | 644 | 0.1−  | 0.2−  | 2007 11 19 | G96 | 0.3+  | 0.1−  |
| 2001 08 24 | 644 | 0.2− | 0.6− | 2007 09 13 | 703 | 1.0−  | 0.1+  | 2007 11 19 | G96 | 0.4+  | 0.1−  |
| 2001 09 11 | 704 | 0.3+ | 0.9− | 2007 09 13 | 703 | 0.6−  | 0.4+  | 2007 11 19 | G96 | 0.4+  | 0.2−  |
| 2001 09 11 | 704 | 0.4+ | 0.3− | 2007 09 13 | 703 | 0.2−  | 1.3+  | 2007 11 19 | G96 | 0.4+  | 0.1−  |
| 2001 09 11 | 704 | 0.2+ | 0.8+ | 2007 09 13 | 703 | 0.2+  | 0.6+  | 2007 12 05 | 703 | 1.0−  | 0.8−  |
| 2001 09 11 | 704 | 0.8+ | 0.9+ | 2007 11 02 | 703 | (0.3+ | 1.9−) | 2007 12 05 | 703 | 0.3−  | 0.1−  |
| 2001 09 11 | 704 | 1.0+ | 1.2+ | 2007 11 02 | 703 | (0.7+ | 3.0−) | 2007 12 05 | 703 | 0.6−  | 0.5+  |
| 2001 09 26 | 699 | 0.2− | 0.6+ | 2007 11 02 | 703 | 0.3−  | 0.3−  | 2007 12 05 | 703 | 0.2+  | 0.1+  |

**2001 QN<sub>330</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.13955   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17258210 | $\omega$ | 92.92058  | +0.98912426 | −0.04869064 |
| <i>a</i> | 3.1950099  | $\Omega$ | 269.89858 | −0.00999462 | +0.91918377 |
| <i>e</i> | 0.3149989  | <i>i</i> | 7.97780   | +0.14674232 | +0.39080739 |
| <i>P</i> | 5.71       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 25 | 704 | 0.0  | 0.3− | 2001 11 21 | 704 | (0.2+ | 4.9−) | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2001 08 25 | 704 | 0.1− | 0.5− | 2001 11 24 | 704 | 0.0   | 0.1+  | 2007 11 18 | G96 | 0.5+ | 0.1− |
| 2001 08 25 | 704 | 0.3+ | 0.1− | 2001 11 24 | 704 | 1.0−  | 0.7+  | 2007 11 18 | G96 | 0.2+ | 0.1− |
| 2001 10 13 | 644 | 0.6− | 0.2+ | 2001 11 24 | 704 | 0.8−  | 0.9+  | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 2001 10 13 | 644 | 0.5− | 0.3+ | 2001 11 24 | 704 | (1.7− | 0.6+) | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2001 10 13 | 644 | 0.5− | 0.2+ | 2001 11 24 | 704 | 0.3−  | 0.6−  | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2001 11 11 | 644 | 0.1− | 0.2+ | 2001 12 10 | 704 | 0.3−  | 1.4−  | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2001 11 11 | 644 | 0.1− | 0.3+ | 2001 12 10 | 704 | 0.4+  | 0.3−  | 2007 12 10 | 704 | 0.9− | 1.4− |
| 2001 11 11 | 644 | 0.1− | 0.0  | 2001 12 10 | 704 | 0.4+  | 0.6−  | 2007 12 10 | 704 | 0.6− | 0.6+ |
| 2001 11 12 | 704 | 0.4+ | 0.1+ | 2007 11 03 | 691 | 0.1−  | 0.0   | 2007 12 10 | 704 | 1.0− | 1.0+ |
| 2001 11 12 | 704 | 0.5+ | 0.1− | 2007 11 03 | 691 | 0.1−  | 0.7−  | 2007 12 14 | 704 | 1.2+ | 0.0  |
| 2001 11 12 | 704 | 0.9+ | 0.0  | 2007 11 03 | 691 | 0.2−  | 0.0   | 2007 12 14 | 704 | 0.4+ | 0.4+ |
| 2001 11 12 | 704 | 0.5+ | 0.9+ | 2007 11 11 | D29 | 0.7+  | 0.0   | 2007 12 14 | 704 | 0.5+ | 1.0+ |
| 2001 11 12 | 704 | 0.7+ | 0.6+ | 2007 11 11 | D29 | 0.2+  | 0.2−  | 2007 12 14 | 704 | 0.6+ | 0.7+ |
| 2001 11 21 | 704 | 0.1− | 0.6+ | 2007 11 11 | D29 | 0.2+  | 0.2+  |            |     |      |      |
| 2001 11 21 | 704 | 0.4+ | 1.3− | 2007 11 11 | D29 | 0.1+  | 0.7+  |            |     |      |      |



2007 DEC. 24

M.P.O. 129587

**2001 QQ<sub>334</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 335.11512  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.17456029 | $\omega$ | 314.96267 | +0.81203261 | -0.55814493 |
| $a$ | 3.1708261  | $\Omega$ | 79.69463  | +0.57227967 | +0.70421905 |
| $e$ | 0.0652201  | $i$      | 9.98070   | +0.11445095 | +0.43880493 |
| $P$ | 5.65       | $H$      | 15.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 05 14 | 691 | 0.1+ | 0.1- | 2001 08 16 | 644 | 0.8- | 1.2+ | 2004 03 18 | 645 | 0.1- | 0.0  |
| 1994 05 14 | 691 | 0.1+ | 0.5+ | 2001 08 27 | 644 | 0.1- | 0.0  | 2004 03 18 | 645 | 0.0  | 0.1+ |
| 2001 08 03 | 644 | 0.0  | 0.1- | 2001 08 27 | 644 | 0.4- | 0.3+ | 2004 04 15 | 645 | 0.1+ | 0.1+ |
| 2001 08 03 | 644 | 0.1- | 0.9+ | 2001 08 27 | 644 | 0.4- | 0.6+ | 2004 04 15 | 645 | 0.0  | 0.0  |
| 2001 08 03 | 644 | 0.2- | 0.6+ | 2002 12 10 | 644 | 0.0  | 0.5+ | 2007 09 14 | 703 | 0.4- | 0.1+ |
| 2001 08 10 | 644 | 0.1+ | 0.3+ | 2002 12 10 | 644 | 0.1+ | 0.5+ | 2007 09 14 | 703 | 0.2+ | 0.3- |
| 2001 08 10 | 644 | 0.0  | 0.3+ | 2002 12 10 | 644 | 0.0  | 0.4+ | 2007 09 14 | 703 | 0.2- | 0.5+ |
| 2001 08 10 | 644 | 0.3+ | 0.2+ | 2004 02 13 | 691 | 0.0  | 0.4+ | 2007 09 14 | 703 | 0.4+ | 0.1+ |
| 2001 08 16 | 644 | 0.1- | 0.4+ | 2004 02 13 | 691 | 0.1+ | 0.1+ |            |     |      |      |
| 2001 08 16 | 644 | 0.5- | 0.5+ | 2004 02 13 | 691 | 0.3+ | 0.2+ |            |     |      |      |

**2001 RP<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 22.26457   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18468160 | $\omega$ | 225.08795 | +0.84375483 | -0.53669428 |
| $a$ | 3.0538917  | $\Omega$ | 167.36688 | +0.49994648 | +0.78175565 |
| $e$ | 0.2853047  | $i$      | 1.59470   | +0.19527241 | +0.31751748 |
| $P$ | 5.34       | $H$      | 15.9      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 16 | 704 | 0.2+ | 0.6- | 2001 09 10 | 704 | 0.5- | 0.1+ | 2001 09 21 | 704 | 0.4- | 0.6- |
| 2001 08 16 | 704 | 0.4+ | 0.4+ | 2001 09 10 | 704 | 0.2+ | 0.2+ | 2001 09 21 | 704 | 0.7- | 0.4+ |
| 2001 08 16 | 704 | 0.4- | 0.1+ | 2001 09 10 | 704 | 0.4+ | 0.1+ | 2001 09 21 | 704 | 0.3- | 0.3- |
| 2001 08 16 | 704 | 0.5+ | 0.4+ | 2001 09 12 | 704 | 0.4+ | 0.7+ | 2003 01 31 | 291 | 0.2+ | 1.0+ |
| 2001 08 23 | 699 | 0.8- | 0.7+ | 2001 09 12 | 704 | 0.1- | 1.0- | 2003 01 31 | 291 | 0.1+ | 0.6+ |
| 2001 08 23 | 699 | 0.6- | 1.1- | 2001 09 12 | 704 | 0.7- | 0.4+ | 2003 01 31 | 291 | 0.2+ | 0.5+ |
| 2001 08 23 | 699 | 1.5- | 0.1+ | 2001 09 12 | 704 | 0.1+ | 0.3- | 2007 12 04 | 691 | 0.3- | 0.1- |
| 2001 08 23 | 691 | 0.2+ | 0.0  | 2001 09 12 | 704 | 0.1- | 0.2- | 2007 12 04 | 691 | 0.6- | 0.1- |
| 2001 08 23 | 699 | 1.3- | 0.9+ | 2001 09 19 | 704 | 0.2+ | 0.3+ | 2007 12 04 | 691 | 0.3- | 0.3- |
| 2001 08 23 | 691 | 0.1+ | 0.0  | 2001 09 19 | 704 | 1.0+ | 0.9+ | 2007 12 15 | J75 | 0.9+ | 0.4- |
| 2001 08 23 | 691 | 0.2+ | 0.1+ | 2001 09 19 | 704 | 0.3+ | 0.5+ | 2007 12 15 | J75 | 0.9+ | 0.4- |
| 2001 09 07 | 704 | 0.2- | 0.4+ | 2001 09 19 | 704 | 0.1- | 0.6+ | 2007 12 15 | J75 | 1.0+ | 0.3- |
| 2001 09 07 | 704 | 0.1+ | 0.3- | 2001 09 19 | 704 | 0.5+ | 0.7+ | 2007 12 16 | J75 | 0.6+ | 0.1- |
| 2001 09 07 | 704 | 0.3+ | 0.7+ | 2001 09 21 | 704 | 0.2- | 0.7+ | 2007 12 16 | J75 | 0.8+ | 0.8- |
| 2001 09 10 | 704 | 0.2+ | 0.2+ | 2001 09 21 | 704 | 0.2- | 0.0  | 2007 12 16 | J75 | 0.8+ | 0.5- |

**2001 RU<sub>37</sub> = 2007 WJ<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 49.39057   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18656488 | $\omega$ | 44.22163  | +0.96683725  | +0.24233513  |
| $a$ | 3.0333052  | $\Omega$ | 301.59208 | -0.25261397  | +0.86097612  |
| $e$ | 0.1078435  | $i$      | 5.43092   | -0.03757555  | +0.44720667  |
| $P$ | 5.28       | $H$      | 15.9      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 08 | 704 | 0.6+  | 0.0   | 2001 09 22 | 704 | (1.7- | 1.9+) | 2007 10 18 | 691 | 0.1- | 0.5- |
| 2001 09 08 | 704 | 0.4-  | 0.9+  | 2004 02 12 | 691 | 0.2+  | 0.0   | 2007 11 01 | 691 | 0.3+ | 0.2+ |
| 2001 09 08 | 704 | (0.4- | 1.6+) | 2004 02 12 | 691 | 0.3-  | 0.0   | 2007 11 01 | 691 | 0.3+ | 0.1- |
| 2001 09 12 | 704 | 0.7-  | 0.0   | 2004 02 12 | 691 | 0.0   | 0.0   | 2007 11 01 | 691 | 0.2+ | 0.0  |
| 2001 09 12 | 704 | 0.8-  | 0.8+  | 2004 03 20 | 691 | 0.3-  | 0.1+  | 2007 11 17 | 691 | 0.9- | 0.4+ |
| 2001 09 12 | 704 | 1.3-  | 0.8+  | 2004 03 20 | 691 | 0.0   | 0.2-  | 2007 11 17 | 691 | 0.2- | 0.1- |
| 2001 09 12 | 704 | 0.8+  | 0.0   | 2004 03 20 | 691 | 0.4+  | 0.1+  | 2007 11 17 | 691 | 0.1+ | 0.1+ |
| 2001 09 19 | 645 | 0.0   | 0.1-  | 2007 10 09 | 691 | 0.2+  | 0.3-  | 2007 11 20 | 691 | 0.3- | 0.1+ |
| 2001 09 19 | 645 | 0.0   | 0.1-  | 2007 10 09 | 691 | 0.3+  | 0.1+  | 2007 11 20 | 691 | 0.1- | 0.1- |
| 2001 09 22 | 704 | 0.6+  | 0.6+  | 2007 10 09 | 691 | 0.1+  | 0.0   | 2007 11 20 | 691 | 0.1+ | 0.3+ |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2001 09 22 | 704 | 0.6+ | 0.2+ | 2007 10 18 | 691 | 0.1+ | 0.2- |
| 2001 09 22 | 704 | 0.2+ | 0.9+ | 2007 10 18 | 691 | 0.1+ | 0.2- |

**2001 RU<sub>62</sub> = 2007 VH<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |             |
|-----|------------|----------|----------|-----|-------------|-------------|
| $M$ | 12.59648   |          | (2000.0) |     | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17382686 | $\omega$ | 4.62512  |     | +0.95160575 | -0.30222402 |
| $a$ | 3.1797389  | $\Omega$ | 13.37496 |     | +0.27366868 | +0.75082011 |
| $e$ | 0.2395366  | $i$      | 13.94377 |     | +0.13982828 | +0.58730725 |
| $P$ | 5.67       | $H$      | 15.5     | $G$ | 0.15        | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 11 | 699 | 1.0-  | 0.8-  | 2001 09 21 | 704 | 0.1+ | 0.8+ | 2007 10 08 | 703 | 0.3+ | 0.3- |
| 2001 09 11 | 699 | 0.2-  | 0.2-  | 2001 09 21 | 704 | 0.8- | 0.4- | 2007 10 08 | 703 | 0.2- | 0.2- |
| 2001 09 11 | 699 | 0.4-  | 0.1-  | 2001 09 21 | 704 | 0.1- | 0.1+ | 2007 10 08 | 703 | 0.2+ | 0.1+ |
| 2001 09 11 | 699 | 0.6-  | 0.6-  | 2001 09 25 | 644 | 0.4- | 0.8+ | 2007 10 21 | 703 | 0.9- | 0.1- |
| 2001 09 12 | 704 | 0.0   | 0.2-  | 2001 09 25 | 644 | 0.4- | 0.6+ | 2007 10 21 | 703 | 0.1+ | 0.1- |
| 2001 09 12 | 704 | 0.2-  | 0.1+  | 2001 09 25 | 644 | 0.3- | 0.7+ | 2007 10 21 | 703 | 0.4+ | 0.0  |
| 2001 09 12 | 704 | 0.7-  | 0.4-  | 2001 10 11 | 704 | 0.0  | 0.5- | 2007 10 21 | 703 | 0.6- | 0.2- |
| 2001 09 16 | 704 | 1.2+  | 0.7-  | 2001 10 11 | 704 | 0.6+ | 0.4+ | 2007 11 01 | 703 | 0.1- | 0.2- |
| 2001 09 16 | 704 | 0.5+  | 1.2-  | 2001 10 11 | 704 | 0.0  | 0.8- | 2007 11 01 | 703 | 0.9+ | 1.3+ |
| 2001 09 16 | 704 | 0.3-  | 0.2-  | 2001 10 11 | 704 | 0.5- | 0.4+ | 2007 11 01 | 703 | 1.9- | 0.3- |
| 2001 09 16 | 704 | 0.0   | 1.3-  | 2001 10 17 | 644 | 0.0  | 0.2- | 2007 11 01 | 703 | 0.4- | 0.5- |
| 2001 09 16 | 704 | 0.1-  | 0.5+  | 2001 10 17 | 644 | 0.3+ | 0.2- | 2007 11 02 | 704 | 0.1- | 0.1- |
| 2001 09 16 | 704 | (0.1- | 1.9-) | 2001 10 17 | 644 | 0.1- | 0.3- | 2007 11 02 | 704 | 0.5+ | 0.5+ |
| 2001 09 16 | 704 | 0.0   | 0.4+  | 2001 10 17 | 644 | 0.4+ | 0.0  | 2007 11 02 | 704 | 0.4+ | 0.8+ |
| 2001 09 16 | 704 | 0.3+  | 0.3+  | 2001 10 17 | 644 | 0.2+ | 0.1- | 2007 11 02 | 704 | 0.8- | 0.0  |
| 2001 09 18 | 699 | 0.7-  | 0.8+  | 2001 10 17 | 644 | 0.5+ | 0.3- | 2007 11 02 | 704 | 0.5+ | 0.2+ |
| 2001 09 18 | 699 | 1.0+  | 0.8+  | 2001 10 24 | 704 | 0.1- | 0.6- | 2007 11 07 | 704 | 0.2+ | 0.3+ |
| 2001 09 18 | 699 | 0.4+  | 0.0   | 2001 10 24 | 704 | 0.3- | 0.4- | 2007 11 07 | 704 | 0.1+ | 0.0  |
| 2001 09 18 | 699 | 0.2-  | 0.2+  | 2001 10 24 | 704 | 0.2- | 0.0  | 2007 11 07 | 704 | 0.3+ | 0.3- |
| 2001 09 19 | 704 | 0.4+  | 0.2+  | 2001 10 24 | 704 | 0.2- | 0.2- | 2007 11 07 | 704 | 0.5+ | 0.4+ |
| 2001 09 19 | 704 | 0.7+  | 0.7+  | 2001 10 24 | 704 | 0.3+ | 0.9+ | 2007 11 07 | 704 | 0.5+ | 0.0  |
| 2001 09 19 | 704 | 0.2-  | 0.5-  | 2007 09 25 | G96 | 0.4+ | 0.3- | 2007 11 12 | 703 | 0.2- | 0.3- |
| 2001 09 19 | 704 | 0.6+  | 0.2+  | 2007 09 25 | G96 | 0.3+ | 0.2- | 2007 11 12 | 703 | 0.3- | 0.4- |
| 2001 09 19 | 704 | 0.6+  | 0.5+  | 2007 09 25 | G96 | 0.4+ | 0.2- | 2007 11 12 | 703 | 0.6- | 0.2+ |
| 2001 09 21 | 704 | 0.8-  | 0.2+  | 2007 09 25 | G96 | 0.4+ | 0.0  | 2007 11 12 | 703 | 0.7- | 0.7- |
| 2001 09 21 | 704 | 0.4+  | 0.5+  | 2007 10 08 | 703 | 0.5+ | 0.3+ |            |     |      |      |

**2001 RG<sub>108</sub> = 2007 TW<sub>313</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 18.25030   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.17866347 | $\omega$ | 219.00343 | +0.98862586 | -0.14501091 |
| $a$ | 3.1220909  | $\Omega$ | 149.26434 | +0.14995693 | +0.93020069 |
| $e$ | 0.0738769  | $i$      | 4.47587   | +0.01148159 | +0.33719209 |
| $P$ | 5.52       | $H$      | 15.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2001 09 21 | 704 | 0.2+ | 0.6- | 2007 10 11 | G96 | 0.9+  | 0.0   |
| 1999 03 21 | 645 | 0.0  | 0.1+ | 2001 09 21 | 704 | 0.4- | 0.4+ | 2007 10 11 | G96 | 0.0   | 0.1-  |
| 2001 09 12 | 704 | 0.2+ | 1.4+ | 2006 05 04 | G96 | 0.6- | 0.1- | 2007 10 11 | G96 | 1.0+  | 0.0   |
| 2001 09 12 | 704 | 0.6+ | 0.6+ | 2006 05 04 | G96 | 0.2+ | 0.8+ | 2007 10 11 | G96 | 0.2+  | 0.2-  |
| 2001 09 12 | 704 | 0.7+ | 0.7+ | 2006 05 04 | G96 | 0.3+ | 0.3+ | 2007 10 11 | G96 | 0.6+  | 0.1+  |
| 2001 09 12 | 704 | 0.9+ | 0.2+ | 2006 05 04 | G96 | 0.0  | 0.4+ | 2007 10 15 | 691 | 0.4-  | 0.1-  |
| 2001 09 19 | 704 | 0.5- | 0.4+ | 2007 09 13 | G96 | 0.1+ | 0.5- | 2007 10 15 | 691 | (1.6- | 0.3+) |
| 2001 09 19 | 704 | 1.0- | 0.1+ | 2007 09 13 | G96 | 0.1+ | 0.2- | 2007 10 15 | 691 | 0.3-  | 0.2+  |
| 2001 09 19 | 704 | 0.6- | 0.3+ | 2007 09 13 | G96 | 0.0  | 0.7- | 2007 10 19 | 691 | 0.2-  | 0.3+  |
| 2001 09 19 | 704 | 0.1- | 0.1+ | 2007 09 13 | G96 | 0.1+ | 0.7- | 2007 10 19 | 691 | 0.2-  | 0.3+  |
| 2001 09 19 | 704 | 1.0- | 0.3- | 2007 10 11 | 691 | 0.4+ | 0.2+ | 2007 10 19 | 691 | 0.2-  | 0.1-  |
| 2001 09 19 | 645 | 0.0  | 0.1- | 2007 10 11 | 691 | 0.2- | 0.0  | 2007 10 30 | 703 | 1.0+  | 0.0   |
| 2001 09 19 | 645 | 0.0  | 0.1- | 2007 10 11 | 691 | 0.5- | 0.0  | 2007 10 30 | 703 | 0.0   | 0.2+  |
| 2001 09 21 | 704 | 0.6- | 0.4- | 2007 10 11 | G96 | 0.3+ | 0.1- | 2007 10 30 | 703 | 0.5-  | 1.0+  |
| 2001 09 21 | 704 | 0.7+ | 1.1+ | 2007 10 11 | G96 | 0.6+ | 0.1+ | 2007 10 30 | 703 | 1.3+  | 0.4+  |
| 2001 09 21 | 704 | 0.6- | 0.4- | 2007 10 11 | G96 | 0.5+ | 0.2- |            |     |       |       |

**2001 RQ<sub>116</sub> = 2007 VB<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.68475   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18075882 | $\omega$ | 200.75402 | +0.80365650   | +0.59392511 |
| <i>a</i> | 3.0979165  | $\Omega$ | 122.75488 | -0.53955045   | +0.75363806 |
| <i>e</i> | 0.0748127  | <i>i</i> | 2.54011   | -0.25104090   | +0.28157171 |
| <i>P</i> | 5.45       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 23 | 807 | 0.6+ | 0.3+ | 2001 09 21 | 704 | 0.9- | 1.3+ | 2006 07 21 | G96 | 0.4+ | 1.0- |
| 2001 05 23 | 807 | 0.5- | 0.2- | 2004 02 12 | 691 | 0.4+ | 0.6+ | 2007 10 18 | 691 | 0.3- | 0.2+ |
| 2001 09 12 | 704 | 0.2+ | 0.6+ | 2004 02 12 | 691 | 0.4+ | 0.4+ | 2007 10 18 | 691 | 0.6- | 0.4+ |
| 2001 09 12 | 704 | 0.3- | 0.7+ | 2004 02 12 | 691 | 0.2+ | 0.9+ | 2007 10 18 | 691 | 0.1- | 0.1- |
| 2001 09 12 | 704 | 0.0  | 0.1+ | 2005 04 11 | G96 | 0.4- | 0.0  | 2007 11 02 | G96 | 0.5+ | 0.1- |
| 2001 09 12 | 704 | 0.5- | 0.7+ | 2005 04 11 | G96 | 0.2+ | 0.2+ | 2007 11 02 | G96 | 0.0  | 0.2- |
| 2001 09 12 | 704 | 0.6- | 0.5- | 2005 04 11 | G96 | 0.2- | 0.1+ | 2007 11 02 | G96 | 0.1+ | 0.1- |
| 2001 09 19 | 704 | 0.9+ | 0.1+ | 2005 04 11 | G96 | 0.0  | 0.3+ | 2007 11 02 | G96 | 0.2+ | 0.2+ |
| 2001 09 19 | 704 | 0.2+ | 0.3+ | 2005 04 30 | 691 | 0.2+ | 0.2+ | 2007 11 07 | G96 | 0.3+ | 0.4- |
| 2001 09 19 | 704 | 0.3+ | 0.5+ | 2005 04 30 | 691 | 0.4+ | 0.4+ | 2007 11 07 | G96 | 0.1+ | 0.5- |
| 2001 09 19 | 704 | 0.6+ | 0.2+ | 2005 04 30 | 691 | 0.1+ | 0.6+ | 2007 11 07 | G96 | 0.0  | 0.6- |
| 2001 09 19 | 704 | 0.8+ | 0.4+ | 2006 07 21 | G96 | 0.6+ | 0.3- | 2007 11 07 | G96 | 0.3+ | 0.6- |
| 2001 09 21 | 704 | 1.3- | 0.1+ | 2006 07 21 | G96 | 0.1- | 0.5- |            |     |      |      |
| 2001 09 21 | 704 | 1.7- | 0.8+ | 2006 07 21 | G96 | 0.1- | 0.4- |            |     |      |      |

**2001 SF<sub>7</sub> = 2007 VU<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.01864  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18298647 | $\omega$ | 55.00751  | +0.72989177   | -0.68255220 |
| <i>a</i> | 3.0727229  | $\Omega$ | 347.88701 | +0.55517346   | +0.62363583 |
| <i>e</i> | 0.0590439  | <i>i</i> | 10.19877  | +0.39879875   | +0.38105228 |
| <i>P</i> | 5.39       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 18 | 291 | 0.3+ | 0.3+ | 2001 09 21 | 704 | 0.7- | 0.4- | 2007 09 25 | G96 | 0.3+ | 0.0  |
| 2001 09 18 | 291 | 0.8+ | 0.6+ | 2001 09 21 | 704 | 0.9- | 0.1- | 2007 09 25 | G96 | 0.2+ | 0.0  |
| 2001 09 18 | 291 | 0.1+ | 0.5+ | 2001 10 06 | 103 | 0.2- | 0.5- | 2007 09 25 | G96 | 0.4+ | 0.0  |
| 2001 09 19 | 704 | 0.1- | 0.3- | 2001 10 06 | 103 | 0.6+ | 0.3- | 2007 09 25 | G96 | 0.1+ | 0.3- |
| 2001 09 19 | 704 | 1.4- | 0.4+ | 2001 10 06 | 103 | 0.0  | 0.4- | 2007 11 01 | 703 | 0.4+ | 0.5+ |
| 2001 09 19 | 291 | 1.1+ | 0.0  | 2001 10 06 | 103 | 0.2- | 0.0  | 2007 11 01 | 703 | 0.7- | 0.7+ |
| 2001 09 19 | 704 | 0.7- | 0.4+ | 2001 10 06 | 103 | 0.1- | 0.1+ | 2007 11 01 | 703 | 0.8- | 1.0+ |
| 2001 09 19 | 704 | 0.5+ | 0.1+ | 2001 10 06 | 103 | 0.1+ | 0.1+ | 2007 11 01 | 703 | 0.1- | 1.3- |
| 2001 09 19 | 291 | 1.3+ | 0.3+ | 2001 10 06 | 103 | 0.3- | 0.4+ | 2007 11 08 | 704 | 0.6+ | 0.2+ |
| 2001 09 19 | 645 | 0.1- | 0.0  | 2001 10 06 | 103 | 0.0  | 0.1+ | 2007 11 08 | 704 | 0.8+ | 0.3+ |
| 2001 09 19 | 645 | 0.1- | 0.1+ | 2001 10 06 | 103 | 0.0  | 0.0  | 2007 11 08 | 704 | 0.3+ | 0.3+ |
| 2001 09 19 | 291 | 0.5+ | 0.3+ | 2001 10 07 | 103 | 0.4+ | 0.3+ | 2007 11 09 | 704 | 0.6- | 0.0  |
| 2001 09 21 | 704 | 0.3+ | 1.5- | 2001 10 07 | 103 | 0.1- | 0.1+ | 2007 11 09 | 704 | 0.3- | 1.0- |
| 2001 09 21 | 704 | 1.1- | 0.6- | 2001 10 07 | 103 | 0.1- | 0.2+ | 2007 11 09 | 704 | 0.6- | 0.5- |

**2001 SN<sub>24</sub> = 2007 TN<sub>354</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.68001    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17048318 | $\omega$ | 190.98271 | +0.95750327   | -0.28387783 |
| <i>a</i> | 3.2211802  | $\Omega$ | 186.25402 | +0.28712976   | +0.95491430 |
| <i>e</i> | 0.1703782  | <i>i</i> | 27.91421  | +0.02727604   | -0.08690261 |
| <i>P</i> | 5.78       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2001 09 23 | 704 | 0.6- | 0.3+ | 2001 10 17 | 644 | 0.0  | 0.2- |
| 1999 03 20 | 645 | 0.0  | 0.0  | 2001 09 23 | 704 | 0.9- | 0.4- | 2001 10 17 | 644 | 0.6- | 0.3- |
| 2001 08 27 | 644 | 0.3- | 0.1- | 2001 09 23 | 704 | 0.1+ | 0.4+ | 2001 10 17 | 644 | 0.1- | 0.0  |
| 2001 08 27 | 644 | 0.3+ | 0.1- | 2001 09 23 | 704 | 0.8- | 0.3+ | 2007 09 13 | G96 | 0.3- | 0.0  |
| 2001 08 27 | 644 | 0.1+ | 0.2+ | 2001 09 23 | 704 | 0.1- | 0.5+ | 2007 09 13 | G96 | 0.3- | 0.0  |
| 2001 09 16 | 704 | 0.4- | 0.3+ | 2001 09 23 | 704 | 0.5- | 0.6+ | 2007 09 13 | G96 | 0.0  | 0.3- |
| 2001 09 16 | 704 | 0.1- | 0.2+ | 2001 09 24 | 704 | 0.3- | 0.0  | 2007 10 10 | 703 | 1.4+ | 0.3+ |
| 2001 09 16 | 704 | 0.8+ | 0.7- | 2001 09 24 | 704 | 0.5+ | 0.2- | 2007 10 10 | 703 | 0.1+ | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.1+ | 0.4+ | 2001 09 24 | 704 | 0.3-  | 0.2-  | 2007 10 10 | 703 | 0.4+ | 0.3+ |
| 2001 09 19 | 704 | 0.9+ | 1.0- | 2001 09 24 | 704 | (1.3+ | 1.9+) | 2007 10 10 | 703 | 0.8+ | 0.6+ |
| 2001 09 19 | 704 | 1.2+ | 0.4- | 2001 09 24 | 704 | 0.2-  | 0.4+  | 2007 10 15 | 703 | 1.0- | 0.9+ |
| 2001 09 20 | 704 | 0.1+ | 0.0  | 2001 09 24 | 704 | 1.0+  | 0.3-  | 2007 10 15 | 703 | 0.0  | 0.9+ |
| 2001 09 20 | 704 | 0.0  | 0.7- | 2001 09 24 | 704 | 0.3-  | 0.1-  | 2007 10 15 | 703 | 0.2- | 0.2- |
| 2001 09 20 | 704 | 0.6- | 0.3- | 2001 09 24 | 704 | 0.4+  | 0.8+  | 2007 10 15 | 703 | 0.3- | 0.6+ |
| 2001 09 20 | 704 | 0.2+ | 0.3- | 2001 09 24 | 704 | 0.3+  | 1.2-  | 2007 10 19 | 703 | 1.0- | 1.1+ |
| 2001 09 20 | 704 | 0.4+ | 0.4- | 2001 09 26 | 704 | 0.8+  | 0.3+  | 2007 10 19 | 703 | 0.7- | 0.4- |
| 2001 09 21 | 291 | 0.2- | 0.5+ | 2001 09 26 | 704 | 0.4-  | 0.1-  | 2007 10 19 | 703 | 0.0  | 1.0- |
| 2001 09 21 | 291 | 0.4+ | 0.1- | 2001 09 26 | 704 | 0.0   | 0.5+  | 2007 10 19 | 703 | 0.3+ | 0.0  |
| 2001 09 21 | 291 | 0.2+ | 0.3- | 2001 09 26 | 704 | 0.9+  | 0.4+  | 2007 11 11 | 703 | 1.2+ | 0.7- |
| 2001 09 23 | 704 | 0.0  | 0.2+ | 2001 10 13 | 704 | (0.4- | 3.2-) | 2007 11 11 | 703 | 0.0  | 0.8+ |
| 2001 09 23 | 704 | 0.2- | 1.4+ | 2001 10 13 | 704 | (1.7- | 0.3-) | 2007 11 11 | 703 | 1.4+ | 0.7- |
| 2001 09 23 | 704 | 0.6- | 0.4- | 2001 10 13 | 704 | 0.5-  | 1.2-  | 2007 11 11 | 703 | 1.6- | 0.5- |
| 2001 09 23 | 704 | 0.4- | 0.2- | 2001 10 13 | 704 | 1.2-  | 0.3+  |            |     |      |      |
| 2001 09 23 | 704 | 0.1- | 0.2+ | 2001 10 13 | 704 | 0.2+  | 0.0   |            |     |      |      |

**2001 SA<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 51.30415   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17137756 | $\omega$ | 319.73744 | +0.86975377   | +0.48957644 |
| <i>a</i> | 3.2099634  | $\Omega$ | 11.44660  | -0.33283228   | +0.67471084 |
| <i>e</i> | 0.1377775  | <i>i</i> | 18.20302  | -0.36435018   | +0.55234065 |
| <i>P</i> | 5.75       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 0.5-  | 0.4+  | 2001 09 23 | 704 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.1+  | 0.4-  |
| 2001 09 16 | 704 | 1.2-  | 0.9+  | 2001 09 23 | 704 | 0.8- | 0.3- | 2007 09 10 | G96 | 0.3+  | 0.2-  |
| 2001 09 16 | 704 | 0.7+  | 0.1+  | 2001 10 15 | 691 | 0.1- | 0.1- | 2007 09 25 | G96 | 0.1+  | 0.7-  |
| 2001 09 16 | 704 | 1.3-  | 0.8+  | 2001 10 15 | 691 | 0.1+ | 0.3- | 2007 09 25 | G96 | 0.5+  | 0.1+  |
| 2001 09 19 | 704 | 1.4+  | 1.5+  | 2001 10 15 | 691 | 0.1- | 0.1- | 2007 09 25 | G96 | 0.1-  | 0.9-  |
| 2001 09 19 | 704 | 1.4+  | 0.0   | 2001 10 18 | 644 | 0.4- | 0.1+ | 2007 09 25 | G96 | 0.1-  | 0.7-  |
| 2001 09 19 | 704 | 1.0+  | 0.6+  | 2001 10 18 | 644 | 0.5- | 0.1+ | 2007 10 14 | 703 | 0.8+  | 1.4+  |
| 2001 09 19 | 704 | 1.4+  | 0.7+  | 2001 10 18 | 644 | 0.3- | 0.1+ | 2007 10 14 | 703 | 1.1-  | 1.1+  |
| 2001 09 19 | 704 | (2.2+ | 0.1-) | 2001 10 20 | 691 | 0.3- | 0.3- | 2007 10 14 | 703 | 0.8-  | 0.1+  |
| 2001 09 21 | 691 | 0.1+  | 0.4-  | 2001 10 20 | 691 | 0.1+ | 0.3- | 2007 10 14 | 703 | 1.3+  | 0.8+  |
| 2001 09 21 | 704 | 0.4+  | 0.3-  | 2001 10 20 | 691 | 0.2- | 0.1- | 2007 11 01 | 703 | 0.0   | 0.0   |
| 2001 09 21 | 691 | 0.1+  | 0.2-  | 2001 10 21 | 704 | 0.6- | 0.7- | 2007 11 01 | 703 | 0.5-  | 1.0-  |
| 2001 09 21 | 704 | 0.2+  | 0.5+  | 2001 10 21 | 704 | 0.7- | 0.2+ | 2007 11 01 | 703 | 0.5-  | 0.5+  |
| 2001 09 21 | 691 | 0.2+  | 1.0+  | 2001 10 21 | 704 | 0.1+ | 0.1- | 2007 11 01 | 703 | 0.9-  | 0.8+  |
| 2001 09 21 | 704 | 1.1+  | 0.2+  | 2001 10 21 | 704 | 0.1+ | 0.6- | 2007 11 09 | 703 | (2.6+ | 0.7+) |
| 2001 09 23 | 704 | 0.0   | 0.4-  | 2001 10 21 | 704 | 0.1+ | 0.3+ | 2007 11 09 | 703 | 0.6+  | 0.4-  |
| 2001 09 23 | 704 | 0.1+  | 0.1-  | 2007 09 10 | G96 | 0.2- | 0.3- | 2007 11 09 | 703 | (0.4+ | 1.7-) |
| 2001 09 23 | 704 | 1.1-  | 0.9-  | 2007 09 10 | G96 | 0.5+ | 0.5- | 2007 11 09 | 703 | 0.4+  | 0.1-  |

**2001 SV<sub>100</sub> = 2007 WB<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.81275   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18284780 | $\omega$ | 58.18850  | +0.98546244   | -0.16346710 |
| <i>a</i> | 3.0742762  | $\Omega$ | 311.17609 | +0.12753168   | +0.89175840 |
| <i>e</i> | 0.1542226  | <i>i</i> | 3.52550   | +0.11224730   | +0.42195435 |
| <i>P</i> | 5.39       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 20 | 704 | 0.1+  | 0.7-  | 2001 09 23 | 704 | 0.9-  | 1.1+  | 2006 07 21 | G96 | 0.4+ | 0.1+ |
| 2001 09 20 | 704 | (0.5+ | 1.6-) | 2001 09 23 | 704 | 0.7-  | 0.9+  | 2006 07 21 | G96 | 0.1+ | 0.3- |
| 2001 09 20 | 704 | 1.0-  | 0.5-  | 2001 09 24 | 704 | 0.7+  | 1.3+  | 2006 07 21 | G96 | 0.7- | 0.3+ |
| 2001 09 20 | 704 | 0.0   | 0.3-  | 2001 09 24 | 704 | (1.0- | 1.6+) | 2007 11 19 | G96 | 0.4+ | 0.1- |
| 2001 09 20 | 704 | 0.5+  | 0.6-  | 2001 09 24 | 704 | (0.1- | 1.6+) | 2007 11 19 | G96 | 0.2+ | 0.1- |
| 2001 09 22 | 704 | 0.5+  | 0.3-  | 2001 10 19 | 644 | 0.0   | 1.0-  | 2007 11 19 | G96 | 0.4+ | 0.2- |
| 2001 09 22 | 704 | 0.0   | 0.2-  | 2001 10 19 | 644 | 0.4+  | 0.0   | 2007 11 20 | 691 | 0.2- | 0.2+ |
| 2001 09 22 | 704 | 0.3+  | 0.5+  | 2001 10 19 | 644 | 0.0   | 0.2-  | 2007 11 20 | 691 | 0.8- | 0.2- |
| 2001 09 23 | 704 | (0.5- | 1.7-) | 2006 07 21 | G96 | 0.2+  | 0.2-  | 2007 11 20 | 691 | 0.7+ | 0.1+ |

**2001 SP<sub>124</sub> = 2007 VK<sub>289</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 11.66672   |          | (2000.0)  |             | <b>P</b>    | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.17448017 | $\omega$ | 36.83537  | +0.94688090 | -0.30712707 |            |
| <i>a</i> | 3.1717967  | $\Omega$ | 340.38594 | +0.18256561 | +0.75744440 |            |
| <i>e</i> | 0.2278305  | <i>i</i> | 16.50000  | +0.26473830 | +0.57615184 |            |
| <i>P</i> | 5.65       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 02 28 | 691 | 0.3+ | 0.3+ | 2001 09 11 | 699 | 0.1+  | 0.2+  | 2007 09 13 | 703 | (3.7- | 2.0+) |
| 1998 02 28 | 691 | 0.0  | 0.4+ | 2001 09 16 | 704 | 1.1-  | 0.5+  | 2007 10 09 | 703 | 1.0+  | 0.5-  |
| 1998 02 28 | 691 | 0.3+ | 0.0  | 2001 09 16 | 704 | 1.3-  | 0.6+  | 2007 10 09 | 703 | 0.9+  | 0.3-  |
| 2001 08 16 | 704 | 0.3- | 0.1+ | 2001 09 16 | 704 | 1.6-  | 0.2-  | 2007 10 09 | 703 | 0.1-  | 0.6-  |
| 2001 08 16 | 704 | 0.0  | 0.1+ | 2001 09 16 | 704 | 1.4-  | 0.7+  | 2007 10 09 | 703 | 0.5+  | 0.8-  |
| 2001 08 16 | 704 | 0.1- | 0.8+ | 2001 09 16 | 704 | (1.9- | 0.3+) | 2007 11 03 | 703 | 0.7-  | 1.5-  |
| 2001 08 23 | 699 | 0.5+ | 0.9- | 2001 09 20 | 704 | 0.4+  | 0.1-  | 2007 11 03 | 703 | 0.6+  | 0.4-  |
| 2001 08 23 | 699 | 0.5+ | 0.4+ | 2001 09 20 | 704 | 0.1-  | 0.2-  | 2007 11 03 | 703 | 0.5+  | 0.6-  |
| 2001 08 23 | 699 | 0.9- | 0.6+ | 2001 09 20 | 704 | 0.4+  | 0.1-  | 2007 11 03 | 703 | 1.0+  | 0.1-  |
| 2001 08 23 | 699 | 0.3- | 1.1+ | 2001 09 20 | 704 | 0.2+  | 0.1+  | 2007 11 13 | 703 | 0.4+  | 0.1+  |
| 2001 09 08 | 704 | 0.5+ | 0.9- | 2001 09 20 | 704 | 0.2+  | 0.3+  | 2007 11 13 | 703 | 0.7-  | 0.1+  |
| 2001 09 08 | 704 | 0.2- | 0.6- | 2001 10 14 | 704 | 0.1+  | 0.3-  | 2007 11 13 | 703 | 0.4+  | 1.1+  |
| 2001 09 08 | 704 | 0.3+ | 1.0- | 2001 10 14 | 704 | 0.1+  | 0.4+  | 2007 11 13 | 703 | 0.1+  | 0.1+  |
| 2001 09 08 | 704 | 0.4+ | 0.6- | 2001 10 14 | 704 | 0.4-  | 0.9+  | 2007 11 19 | 703 | 0.9+  | 0.5+  |
| 2001 09 08 | 704 | 0.6+ | 0.2+ | 2001 10 14 | 704 | 0.5+  | 0.9+  | 2007 11 19 | 703 | 0.2+  | 0.1+  |
| 2001 09 11 | 699 | 0.3- | 0.4- | 2007 09 13 | 703 | 0.5+  | 0.1-  | 2007 11 19 | 703 | 0.2-  | 0.1-  |
| 2001 09 11 | 699 | 0.0  | 0.0  | 2007 09 13 | 703 | 1.6-  | 0.1+  | 2007 11 19 | 703 | 0.3+  | 0.5+  |
| 2001 09 11 | 699 | 1.0+ | 0.1+ | 2007 09 13 | 703 | 0.5-  | 0.4+  |            |     |       |       |

**2001 SN<sub>132</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 22.82317   |          | (2000.0)  |             | <b>P</b>    | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.18037832 | $\omega$ | 33.51680  | +0.90947224 | -0.41496706 |            |
| <i>a</i> | 3.1022716  | $\Omega$ | 350.88990 | +0.33675019 | +0.77152822 |            |
| <i>e</i> | 0.0766874  | <i>i</i> | 9.35633   | +0.24384330 | +0.48223080 |            |
| <i>P</i> | 5.46       | <i>H</i> | 15.1      | <i>G</i>    | 0.15        | <i>U</i> 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 1.1+ | 1.0+ | 2001 09 23 | 704 | 1.4-  | 0.5+  | 2001 10 21 | 704 | 1.2-  | 0.4+  |
| 2001 09 16 | 704 | 0.1+ | 0.4+ | 2001 09 24 | 704 | (0.2+ | 1.7-) | 2001 10 21 | 704 | (1.8- | 0.6-) |
| 2001 09 16 | 704 | 0.3+ | 0.5+ | 2001 09 24 | 704 | 1.3+  | 0.2-  | 2001 10 21 | 704 | 1.0-  | 0.4-  |
| 2001 09 16 | 704 | 0.3+ | 0.4+ | 2001 09 24 | 704 | 0.5-  | 0.5+  | 2007 11 02 | 703 | 0.3+  | 0.4+  |
| 2001 09 18 | 699 | 0.6- | 1.0- | 2001 09 24 | 704 | 1.3+  | 0.9+  | 2007 11 02 | 703 | 0.2-  | 0.4+  |
| 2001 09 18 | 699 | 0.8+ | 0.2- | 2001 09 24 | 704 | 0.6-  | 0.8-  | 2007 11 02 | 703 | 0.3+  | 0.1+  |
| 2001 09 18 | 699 | 0.6+ | 0.3+ | 2001 09 24 | 704 | 1.3+  | 0.5+  | 2007 11 02 | 703 | 1.1-  | 0.2-  |
| 2001 09 18 | 699 | 0.8+ | 0.8+ | 2001 09 24 | 704 | 0.4+  | 0.8-  | 2007 11 20 | G96 | 0.2-  | 0.3-  |
| 2001 09 20 | 704 | 0.2+ | 0.8- | 2001 09 25 | 704 | 0.7+  | 0.2+  | 2007 11 20 | G96 | 0.4-  | 0.2-  |
| 2001 09 20 | 704 | 0.1+ | 1.0- | 2001 09 25 | 704 | 0.2+  | 0.1-  | 2007 11 20 | G96 | 0.3-  | 0.6-  |
| 2001 09 20 | 704 | 0.7- | 0.3- | 2001 09 25 | 704 | (1.7+ | 0.4+) | 2007 11 20 | G96 | 0.0   | 0.5-  |
| 2001 09 20 | 704 | 0.0  | 0.7- | 2001 09 25 | 704 | 0.1+  | 0.4+  | 2007 11 21 | 703 | 0.2-  | 0.6+  |
| 2001 09 20 | 704 | 0.2- | 1.1- | 2001 09 25 | 704 | 0.9+  | 0.1+  | 2007 11 21 | 703 | 0.7+  | 0.5-  |
| 2001 09 22 | 704 | 0.4- | 0.4+ | 2001 09 25 | 704 | 0.5+  | 0.1+  | 2007 11 21 | 703 | 0.2-  | 1.4-  |
| 2001 09 22 | 704 | 0.5- | 0.2- | 2001 09 25 | 704 | 0.0   | 0.2+  | 2007 11 21 | 703 | 0.8+  | 0.4+  |
| 2001 09 22 | 704 | 0.3- | 0.1+ | 2001 09 25 | 704 | 0.7+  | 0.1+  | 2007 12 03 | 704 | 0.0   | 0.3+  |
| 2001 09 22 | 704 | 0.8- | 0.2+ | 2001 10 19 | 644 | 0.1-  | 0.0   | 2007 12 03 | 704 | 0.7+  | 0.3+  |
| 2001 09 23 | 704 | 0.5- | 0.1- | 2001 10 19 | 644 | 0.3-  | 0.0   | 2007 12 03 | 704 | 0.0   | 1.1+  |
| 2001 09 23 | 704 | 0.8- | 0.1- | 2001 10 19 | 644 | 0.1-  | 0.0   |            |     |       |       |
| 2001 09 23 | 704 | 0.9- | 0.4+ | 2001 10 21 | 704 | 0.8-  | 0.5-  |            |     |       |       |

**2001 SC<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 10.91907   |          | (2000.0)  |             | <b>P</b>    | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.17679980 | $\omega$ | 51.59967  | +0.77786392 | -0.62739330 |            |
| <i>a</i> | 3.1439928  | $\Omega$ | 347.12378 | +0.51412641 | +0.66838647 |            |
| <i>e</i> | 0.2331549  | <i>i</i> | 9.33057   | +0.36138866 | +0.39954622 |            |
| <i>P</i> | 5.57       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 27 | 699 | 0.1+ | 0.3+ | 2001 09 20 | 704 | 0.5+  | 1.1-  | 2001 10 16 | 704 | 1.2- | 0.2- |
| 2001 08 27 | 699 | 0.9- | 0.6- | 2001 09 23 | 704 | 0.3-  | 0.7-  | 2001 10 16 | 704 | 0.4+ | 0.2- |
| 2001 08 27 | 699 | 1.4- | 0.2- | 2001 09 23 | 704 | 0.2-  | 0.5-  | 2001 10 16 | 704 | 0.8+ | 0.1+ |
| 2001 08 27 | 699 | 0.5+ | 0.0  | 2001 09 23 | 704 | 0.0   | 0.5-  | 2001 10 26 | 644 | 0.2- | 0.0  |
| 2001 09 10 | 699 | 0.0  | 0.2+ | 2001 09 23 | 704 | 0.1+  | 0.4-  | 2001 10 26 | 644 | 0.4+ | 0.2+ |
| 2001 09 10 | 699 | 0.7- | 0.4+ | 2001 09 24 | 704 | 0.3+  | 0.2+  | 2001 10 26 | 644 | 0.2- | 0.0  |
| 2001 09 10 | 699 | 0.1+ | 0.5- | 2001 09 24 | 704 | 0.1-  | 0.6+  | 2007 11 09 | 704 | 0.0  | 1.2+ |
| 2001 09 10 | 699 | 1.2- | 1.0+ | 2001 09 24 | 704 | 0.6+  | 0.5+  | 2007 11 09 | 704 | 0.0  | 0.3+ |
| 2001 09 16 | 704 | 0.2+ | 1.2+ | 2001 09 24 | 704 | 1.4+  | 1.1+  | 2007 11 09 | 704 | 0.4+ | 0.2+ |
| 2001 09 16 | 704 | 0.5- | 0.4+ | 2001 09 24 | 704 | 0.5-  | 1.4+  | 2007 11 09 | 704 | 0.1+ | 0.0  |
| 2001 09 16 | 704 | 0.1+ | 0.8+ | 2001 09 28 | 644 | 0.1+  | 0.2-  | 2007 11 16 | 704 | 0.5- | 0.1+ |
| 2001 09 16 | 704 | 0.2+ | 1.5+ | 2001 09 28 | 644 | 0.3+  | 0.2-  | 2007 11 16 | 704 | 0.4- | 0.1- |
| 2001 09 18 | 699 | 0.5+ | 0.3- | 2001 09 28 | 644 | 0.3+  | 0.1-  | 2007 11 16 | 704 | 0.4- | 0.1- |
| 2001 09 18 | 699 | 0.2+ | 0.3- | 2001 10 14 | 704 | 0.1-  | 0.0   | 2007 11 16 | 704 | 0.2+ | 0.1+ |
| 2001 09 18 | 699 | 0.2- | 0.1+ | 2001 10 14 | 704 | 0.6+  | 0.2-  | 2007 12 03 | 704 | 0.9+ | 0.0  |
| 2001 09 18 | 699 | 1.2- | 0.4- | 2001 10 14 | 704 | 0.1-  | 0.0   | 2007 12 03 | 704 | 0.1- | 0.0  |
| 2001 09 20 | 704 | 0.2+ | 0.7- | 2001 10 14 | 704 | 0.6+  | 0.4-  | 2007 12 03 | 704 | 0.0  | 0.5- |
| 2001 09 20 | 704 | 0.4+ | 1.1- | 2001 10 14 | 704 | 0.2+  | 0.3-  | 2007 12 03 | 704 | 0.1- | 0.2- |
| 2001 09 20 | 704 | 0.3- | 0.7- | 2001 10 16 | 704 | 0.2+  | 0.7+  | 2007 12 03 | 704 | 0.1+ | 0.4- |
| 2001 09 20 | 704 | 0.1+ | 1.1- | 2001 10 16 | 704 | (1.9+ | 0.1+) |            |     |      |      |

**2001 SD<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 49.38474   |          | (2000.0)  |             | <b>P</b>    | <b>Q</b>   |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.18698019 | $\omega$ | 50.85416  | +0.98258636 | -0.18071922 |            |
| <i>a</i> | 3.0288120  | $\Omega$ | 319.50464 | +0.14326332 | +0.88485524 |            |
| <i>e</i> | 0.2408856  | <i>i</i> | 3.81270   | +0.11832015 | +0.42938534 |            |
| <i>P</i> | 5.27       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 16 | 704 | 0.6- | 0.2+ | 2001 09 22 | 704 | 0.2+ | 0.5- | 2001 10 19 | 644 | 0.4- | 0.1+ |
| 2001 09 16 | 704 | 0.7- | 0.0  | 2001 09 23 | 704 | 0.1+ | 0.3- | 2001 10 21 | 704 | 0.6- | 1.4+ |
| 2001 09 16 | 704 | 0.1- | 0.5- | 2001 09 23 | 704 | 0.2+ | 0.3+ | 2001 10 21 | 704 | 0.8- | 1.1+ |
| 2001 09 20 | 704 | 1.4+ | 0.0  | 2001 09 23 | 704 | 0.3+ | 0.6- | 2001 10 21 | 704 | 1.3- | 1.1+ |
| 2001 09 20 | 704 | 1.4+ | 0.7+ | 2001 09 23 | 704 | 1.0- | 0.6- | 2007 12 04 | G96 | 0.6+ | 0.2- |
| 2001 09 20 | 704 | 0.5+ | 0.4+ | 2001 09 24 | 704 | 0.5- | 0.9- | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2001 09 20 | 704 | 1.6+ | 0.4+ | 2001 09 24 | 704 | 0.0  | 0.2- | 2007 12 04 | G96 | 0.1+ | 0.1- |
| 2001 09 20 | 704 | 0.7+ | 0.3- | 2001 09 24 | 704 | 0.7- | 0.4- | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2001 09 22 | 704 | 0.2+ | 0.5- | 2001 09 24 | 704 | 0.2- | 0.1+ | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2001 09 22 | 704 | 0.1- | 0.5- | 2001 10 19 | 644 | 0.1+ | 0.1- | 2007 12 05 | 691 | 0.0  | 0.2- |
| 2001 09 22 | 704 | 0.2- | 0.2- | 2001 10 19 | 644 | 0.1+ | 0.0  | 2007 12 05 | 691 | 0.1- | 0.1+ |

**2001 SB<sub>166</sub> = 2007 VV<sub>301</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.78956   |          | (2000.0) |             | <b>P</b>    | <b>Q</b>   |
|----------|------------|----------|----------|-------------|-------------|------------|
| <i>n</i> | 0.18257930 | $\omega$ | 27.63948 | +0.77106248 | -0.63672741 |            |
| <i>a</i> | 3.0772895  | $\Omega$ | 11.91526 | +0.57835316 | +0.69610176 |            |
| <i>e</i> | 0.2532304  | <i>i</i> | 1.77432  | +0.26640248 | +0.33169345 |            |
| <i>P</i> | 5.40       | <i>H</i> | 15.5     | <i>G</i>    | 0.15        | <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 699 | 0.7- | 0.2- | 2001 09 21 | 291 | 0.1+ | 0.0  | 2001 10 13 | 704 | 0.4- | 0.7+ |
| 2001 09 19 | 699 | 0.7- | 0.4- | 2001 09 21 | 704 | 0.6+ | 0.2- | 2001 10 13 | 704 | 0.4+ | 1.2+ |
| 2001 09 19 | 699 | 0.2- | 0.4+ | 2001 09 21 | 291 | 0.0  | 0.0  | 2001 10 13 | 704 | 0.0  | 0.3+ |
| 2001 09 19 | 699 | 0.5- | 0.1- | 2001 09 21 | 291 | 0.4+ | 0.0  | 2001 10 23 | 704 | 0.4- | 0.2+ |
| 2001 09 19 | 704 | 0.2- | 0.5+ | 2001 09 24 | 644 | 0.6- | 0.6+ | 2001 10 23 | 704 | 0.7- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.1− | 0.3+ | 2001 09 24 | 644 | 0.6− | 0.7+ | 2001 10 23 | 704 | 0.4+ | 0.3+ |
| 2001 09 19 | 704 | 0.2− | 0.3+ | 2001 09 24 | 644 | 0.4− | 0.5+ | 2006 07 19 | D35 | 0.2+ | 0.1− |
| 2001 09 19 | 704 | 0.2+ | 0.9+ | 2001 09 25 | 704 | 0.1+ | 0.2− | 2006 07 19 | D35 | 0.0  | 0.2− |
| 2001 09 19 | 704 | 0.0  | 1.0+ | 2001 09 25 | 704 | 0.4− | 1.0− | 2006 07 19 | D35 | 0.1− | 0.2− |
| 2001 09 20 | 704 | 0.4+ | 0.2− | 2001 09 25 | 704 | 0.0  | 1.2− | 2007 11 15 | 704 | 0.5+ | 0.3+ |
| 2001 09 20 | 704 | 0.1− | 0.1− | 2001 09 25 | 704 | 0.2− | 1.4− | 2007 11 15 | 704 | 0.1+ | 0.1+ |
| 2001 09 20 | 704 | 0.6+ | 0.7− | 2001 09 25 | 704 | 0.7− | 1.4− | 2007 11 15 | 704 | 0.4− | 0.2− |
| 2001 09 20 | 704 | 0.2+ | 0.5− | 2001 09 26 | 704 | 0.3− | 0.2− | 2007 12 10 | 704 | 0.2− | 0.2− |
| 2001 09 20 | 704 | 0.0  | 0.1− | 2001 09 26 | 704 | 0.9+ | 0.3− | 2007 12 10 | 704 | 0.2− | 0.5+ |
| 2001 09 21 | 704 | 0.2+ | 0.1+ | 2001 09 26 | 704 | 1.0+ | 0.6+ | 2007 12 10 | 704 | 0.1− | 0.3+ |
| 2001 09 21 | 704 | 0.2+ | 0.1+ | 2001 10 11 | 704 | 0.8+ | 0.9− | 2007 12 10 | 704 | 0.6− | 0.3+ |
| 2001 09 21 | 704 | 0.1+ | 0.4+ | 2001 10 11 | 704 | 0.6− | 0.1− | 2007 12 14 | 704 | 0.1+ | 0.3− |
| 2001 09 21 | 704 | 0.2+ | 0.1− | 2001 10 11 | 644 | 0.2− | 0.2+ | 2007 12 14 | 704 | 0.0  | 0.1− |
| 2001 09 21 | 704 | 0.1− | 1.0+ | 2001 10 11 | 704 | 0.5− | 0.2+ | 2007 12 14 | 704 | 0.4+ | 0.4− |
| 2001 09 21 | 704 | 0.7+ | 0.2− | 2001 10 11 | 704 | 0.3+ | 0.0  | 2007 12 14 | 704 | 0.1+ | 0.5− |
| 2001 09 21 | 704 | 0.8− | 0.1+ | 2001 10 11 | 644 | 0.7− | 0.2+ | 2007 12 14 | 704 | 0.5+ | 0.4− |
| 2001 09 21 | 704 | 0.2+ | 0.1+ | 2001 10 11 | 644 | 0.6− | 0.2+ |            |     |      |      |
| 2001 09 21 | 704 | 0.9+ | 0.7− | 2001 10 13 | 704 | 0.1− | 0.2− |            |     |      |      |

**2001 SL<sub>167</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 290.46975  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.27984084 | $\omega$ | 312.75483 | +0.83780755   | +0.54432275 |
| <i>a</i> | 2.3148809  | $\Omega$ | 14.43443  | −0.43808921   | +0.71650516 |
| <i>e</i> | 0.1715310  | <i>i</i> | 9.77545   | −0.32581643   | +0.43627182 |
| <i>P</i> | 3.52       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.0  | 0.1+ | 2001 09 21 | 704 | 0.2+ | 0.0  | 2001 10 17 | 691 | 0.1− | 0.2+ |
| 2000 03 03 | 645 | 0.1+ | 0.1+ | 2001 09 21 | 704 | 0.1− | 0.5+ | 2001 10 17 | 691 | 0.1+ | 0.2+ |
| 2001 09 17 | 291 | 0.1− | 0.2− | 2001 09 21 | 704 | 0.0  | 0.4− | 2001 10 18 | 561 | 0.4+ | 0.5+ |
| 2001 09 17 | 291 | 0.3− | 0.4− | 2001 09 21 | 704 | 0.2+ | 0.3− | 2001 10 18 | 561 | 0.4− | 0.2− |
| 2001 09 17 | 291 | 0.1− | 0.1− | 2001 09 21 | 704 | 0.0  | 0.3− | 2001 10 18 | 561 | 0.3+ | 0.1+ |
| 2001 09 19 | 704 | 0.6+ | 0.6+ | 2001 09 26 | 704 | 0.8− | 0.6− | 2001 10 21 | 704 | 0.4+ | 0.4− |
| 2001 09 19 | 704 | 0.0  | 0.4+ | 2001 09 26 | 704 | 0.1− | 1.0+ | 2001 10 21 | 704 | 0.6+ | 0.1+ |
| 2001 09 19 | 704 | 0.8− | 0.5+ | 2001 09 26 | 704 | 0.2− | 0.1+ | 2001 10 21 | 704 | 0.5− | 0.3− |
| 2001 09 19 | 704 | 0.5+ | 0.0  | 2001 09 26 | 704 | 0.5− | 0.9+ | 2001 10 21 | 704 | 0.6+ | 0.9− |
| 2001 09 19 | 704 | 0.2+ | 0.0  | 2001 10 06 | 644 | 0.2− | 0.5− | 2001 10 21 | 704 | 0.5+ | 0.4+ |
| 2001 09 20 | 704 | 0.1− | 0.5+ | 2001 10 06 | 644 | 0.5− | 0.4− | 2007 03 20 | G96 | 0.2− | 0.5− |
| 2001 09 20 | 704 | 0.8− | 0.2+ | 2001 10 06 | 644 | 0.2+ | 0.0  | 2007 03 20 | G96 | 0.1− | 0.1+ |
| 2001 09 20 | 704 | 0.5− | 1.3− | 2001 10 16 | 704 | 1.2+ | 0.6+ | 2007 03 20 | G96 | 0.1− | 0.1+ |
| 2001 09 21 | 704 | 0.5− | 0.2+ | 2001 10 16 | 704 | 1.2+ | 0.5− | 2007 03 20 | G96 | 0.0  | 0.5− |
| 2001 09 21 | 704 | 0.0  | 0.2+ | 2001 10 16 | 704 | 0.9+ | 0.8+ | 2007 04 23 | 290 | 0.1+ | 0.5+ |
| 2001 09 21 | 704 | 0.3− | 0.8+ | 2001 10 17 | 691 | 0.2− | 0.1+ | 2007 04 23 | 290 | 0.1+ | 0.3+ |

**2001 SV<sub>194</sub> = 2007 VD<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 61.41086   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18036509 | $\omega$ | 330.59149 | +0.89854041   | +0.43879384 |
| <i>a</i> | 3.1024233  | $\Omega$ | 3.42140   | −0.36641616   | +0.76156698 |
| <i>e</i> | 0.0299511  | <i>i</i> | 8.89196   | −0.24158709   | +0.47694413 |
| <i>P</i> | 5.46       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 19 | 699 | 0.5+ | 0.8− | 2001 09 21 | 704 | 0.2+  | 0.2−  | 2007 11 02 | 704 | 0.7+ | 0.8+ |
| 2001 09 19 | 699 | 1.0+ | 0.7+ | 2001 09 21 | 704 | 0.1+  | 0.5+  | 2007 11 02 | 704 | 0.2+ | 0.1+ |
| 2001 09 19 | 699 | 0.6+ | 0.3+ | 2001 09 21 | 704 | 0.3−  | 0.6+  | 2007 11 02 | 704 | 0.1+ | 0.3− |
| 2001 09 19 | 699 | 0.5+ | 0.1+ | 2007 10 11 | 691 | 0.5+  | 0.1−  | 2007 11 02 | 704 | 0.2− | 0.0  |
| 2001 09 19 | 704 | 0.9− | 0.5+ | 2007 10 11 | 691 | 0.1−  | 0.2+  | 2007 11 02 | 704 | 0.5+ | 0.3+ |
| 2001 09 19 | 704 | 0.0  | 0.0  | 2007 10 11 | 691 | (2.1+ | 0.7−) | 2007 11 07 | 704 | 0.3+ | 0.1+ |
| 2001 09 19 | 704 | 0.9− | 0.2+ | 2007 10 19 | 691 | 0.7−  | 0.5−  | 2007 11 07 | 704 | 0.5− | 0.2− |
| 2001 09 19 | 704 | 0.6− | 1.1+ | 2007 10 19 | 691 | 0.1−  | 0.0   | 2007 11 07 | 704 | 0.5− | 0.3− |
| 2001 09 19 | 704 | 0.9− | 0.2− | 2007 10 19 | 691 | 0.1+  | 0.0   | 2007 11 07 | 704 | 0.1+ | 0.1+ |
| 2001 09 20 | 291 | 0.1− | 0.2− | 2007 11 01 | 703 | 0.7+  | 0.6+  | 2007 11 12 | 703 | 0.3+ | 0.4− |
| 2001 09 20 | 291 | 0.0  | 0.1− | 2007 11 01 | 703 | 0.9+  | 1.3+  | 2007 11 12 | 703 | 0.5− | 0.7− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 291 | 0.4+ | 0.4− | 2007 11 01 | 703 | 1.0− | 1.2+ | 2007 11 12 | 703 | 0.2+ | 0.6− |
| 2001 09 21 | 704 | 0.4− | 0.0  | 2007 11 01 | 703 | 0.3+ | 0.2+ | 2007 11 12 | 703 | 0.5− | 0.3− |

**2001 SO<sub>212</sub> = 2007 VF<sub>300</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 4.03463    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17677153 | $\omega$ | 224.66825 | +0.71333414   | −0.70082233 |
| <i>a</i> | 3.1443280  | $\Omega$ | 179.80302 | +0.69922366   | +0.71185491 |
| <i>e</i> | 0.1684602  | <i>i</i> | 27.22060  | −0.04733586   | −0.04594192 |
| <i>P</i> | 5.58       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 11 | 333 | 0.2− | 0.0  | 2001 09 21 | 704 | 0.3+ | 0.1+ | 2007 11 13 | 703 | 0.5−  | 0.6+  |
| 2001 09 11 | 333 | 1.2+ | 1.1+ | 2001 09 21 | 704 | 0.3+ | 0.1+ | 2007 11 13 | 703 | 0.7+  | 0.8+  |
| 2001 09 19 | 704 | 0.1+ | 0.4− | 2001 09 21 | 704 | 0.3+ | 0.2− | 2007 11 13 | 703 | 0.3−  | 0.5−  |
| 2001 09 19 | 704 | 0.0  | 0.3− | 2001 10 08 | 644 | 0.2− | 0.1+ | 2007 11 13 | 703 | 0.3+  | 0.6−  |
| 2001 09 19 | 704 | 0.2− | 0.3− | 2001 10 08 | 644 | 0.4− | 0.2+ | 2007 11 19 | 703 | (2.8− | 0.1+) |
| 2001 09 19 | 704 | 0.2− | 0.4− | 2001 10 08 | 644 | 0.4− | 0.3− | 2007 11 19 | 703 | 0.8−  | 0.6+  |
| 2001 09 19 | 704 | 0.0  | 0.4− | 2001 10 24 | 644 | 0.2− | 0.0  | 2007 11 19 | 703 | 0.5+  | 0.4+  |
| 2001 09 21 | 704 | 0.2+ | 0.6+ | 2001 10 24 | 644 | 0.3− | 0.0  | 2007 11 19 | 703 | 0.2+  | 1.2−  |
| 2001 09 21 | 704 | 0.0  | 0.3+ | 2001 10 24 | 644 | 0.1− | 0.3− |            |     |       |       |

**2001 SG<sub>222</sub> = 2007 VF<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 78.27559   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17666545 | $\omega$ | 278.78326 | +0.45398763   | +0.88913677 |
| <i>a</i> | 3.1455865  | $\Omega$ | 18.55250  | −0.72945840   | +0.40809034 |
| <i>e</i> | 0.2485857  | <i>i</i> | 10.45102  | −0.51164995   | +0.20711850 |
| <i>P</i> | 5.58       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.9− | 0.4− | 2007 10 16 | G96 | (0.9− | 1.9−) | 2007 11 09 | G96 | 0.2+ | 0.2− |
| 2001 09 19 | 704 | 0.3+ | 0.6− | 2007 10 16 | G96 | 0.9+  | 0.2+  | 2007 11 09 | G96 | 0.5+ | 0.2− |
| 2001 09 19 | 704 | 0.2+ | 0.7+ | 2007 10 16 | G96 | 0.6+  | 0.4+  | 2007 11 09 | G96 | 0.3+ | 0.3− |
| 2001 09 19 | 704 | 0.0  | 0.2− | 2007 10 16 | G96 | 0.5+  | 0.3+  | 2007 11 09 | G96 | 0.2+ | 0.3+ |
| 2001 09 19 | 704 | 1.0− | 0.1− | 2007 11 01 | 691 | 0.0   | 0.4+  | 2007 11 09 | G96 | 0.4+ | 0.2− |
| 2001 09 21 | 704 | 0.0  | 0.1− | 2007 11 01 | 691 | 0.1−  | 0.1+  | 2007 11 09 | G96 | 0.7+ | 0.8− |
| 2001 09 21 | 704 | 0.2− | 0.3+ | 2007 11 01 | 691 | 0.2+  | 0.2+  | 2007 11 09 | G96 | 0.1+ | 0.3− |
| 2001 09 21 | 704 | 0.5− | 0.3+ | 2007 11 05 | 691 | 0.3−  | 0.1−  | 2007 11 17 | 691 | 0.5− | 0.2− |
| 2001 10 16 | 291 | 0.3− | 0.2− | 2007 11 05 | 691 | 0.3−  | 0.3+  | 2007 11 17 | 691 | 0.1+ | 0.2− |
| 2001 10 16 | 291 | 0.5+ | 0.1− | 2007 11 05 | 691 | 0.1+  | 0.1−  | 2007 11 17 | 691 | 0.2− | 0.1+ |
| 2001 10 16 | 291 | 0.4+ | 0.3+ | 2007 11 09 | G96 | 0.0   | 0.5−  |            |     |      |      |

**2001 SX<sub>235</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 36.23240   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17557804 | $\omega$ | 307.46190 | +0.99641355   | +0.01022802 |
| <i>a</i> | 3.1585608  | $\Omega$ | 52.10830  | +0.02926438   | +0.88975802 |
| <i>e</i> | 0.2247494  | <i>i</i> | 6.10992   | −0.07939543   | +0.45631792 |
| <i>P</i> | 5.61       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 16 | 704 | 0.9+  | 0.2−  | 2001 10 10 | 644 | 0.1+  | 1.0+  | 2005 05 11 | G96 | 0.0  | 0.1+ |
| 2001 09 16 | 704 | 0.9−  | 0.1+  | 2001 10 10 | 644 | 0.1+  | 1.2+  | 2005 05 11 | G96 | 0.2+ | 0.1+ |
| 2001 09 16 | 704 | (3.9− | 1.3−) | 2001 10 14 | 645 | 0.0   | 0.0   | 2005 05 11 | G96 | 0.1− | 0.4+ |
| 2001 09 16 | 704 | (1.9− | 0.2+) | 2001 10 14 | 645 | 0.1−  | 0.0   | 2007 09 15 | G96 | 0.1+ | 0.1− |
| 2001 09 19 | 704 | 0.3−  | 0.2+  | 2001 10 15 | 645 | 0.0   | 0.1−  | 2007 09 15 | G96 | 0.0  | 0.2− |
| 2001 09 19 | 704 | 0.5+  | 0.8+  | 2001 10 15 | 645 | 0.0   | 0.2−  | 2007 09 15 | G96 | 0.1− | 0.2− |
| 2001 09 19 | 704 | 0.2+  | 0.4−  | 2001 10 19 | 608 | (0.5− | 1.6+) | 2007 09 15 | G96 | 0.1− | 0.1− |
| 2001 09 19 | 704 | 0.5−  | 0.2+  | 2001 10 19 | 608 | (0.6− | 1.7+) | 2007 10 16 | G96 | 0.3+ | 0.1− |
| 2001 09 19 | 704 | 0.4−  | 0.4+  | 2001 10 19 | 608 | 0.2−  | 1.4+  | 2007 10 16 | G96 | 0.2+ | 0.1− |
| 2001 09 21 | 704 | 0.7+  | 0.2+  | 2001 10 20 | 644 | 0.2−  | 0.4+  | 2007 10 16 | G96 | 0.1+ | 0.2− |
| 2001 09 21 | 704 | 0.3+  | 0.1+  | 2001 10 20 | 644 | 0.0   | 0.3+  | 2007 10 16 | G96 | 0.0  | 0.0  |
| 2001 09 21 | 704 | 0.0   | 0.2+  | 2001 10 20 | 644 | 0.1+  | 0.3+  | 2007 12 03 | 703 | 0.8+ | 0.1+ |
| 2001 09 21 | 704 | 0.4+  | 0.5+  | 2001 11 12 | 645 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.2− | 0.4+ |

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2001 09 21 704 0.4− 0.1+ 2001 11 12 645 0.0 0.0 2007 12 03 703 0.6− 0.2+  
 2001 10 10 644 0.0 1.2+ 2005 05 11 G96 0.0 0.3− 2007 12 03 703 0.6− 0.5+

**2001 SO<sub>255</sub> = 2007 VW<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 23.92571   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17230863 | $\omega$ | 199.72032 | +0.93338890   | −0.35886103 |
| <i>a</i> | 3.1983896  | $\Omega$ | 181.31490 | +0.33976033   | +0.88545979 |
| <i>e</i> | 0.1281090  | <i>i</i> | 4.95563   | +0.11553392   | +0.29526211 |
| <i>P</i> | 5.72       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 19 704 0.8+ 0.2+ | 2001 09 21 704 0.4− 0.7+ | 2005 05 15 G96 0.1− 0.2− |
| 2001 09 19 704 0.6− 0.3− | 2001 09 21 704 1.0+ 0.5+ | 2007 11 09 691 0.1+ 0.1− |
| 2001 09 19 704 0.1+ 0.6− | 2001 09 21 704 0.1+ 0.2+ | 2007 11 09 691 0.0 0.3+  |
| 2001 09 19 704 0.0 0.1−  | 2001 09 21 704 0.3− 0.3− | 2007 11 09 691 0.1+ 0.0  |
| 2001 09 21 704 0.3− 0.2− | 2005 05 15 G96 0.2− 0.0  | 2007 11 13 691 0.1− 0.3+ |
| 2001 09 21 704 0.4− 0.3− | 2005 05 15 G96 0.4+ 0.1+ | 2007 11 13 691 0.1+ 0.1− |
| 2001 09 21 704 0.0 0.3+  | 2005 05 15 G96 0.1− 0.1+ | 2007 11 13 691 0.2− 0.3− |

**2001 SG<sub>258</sub> = 2004 FN<sub>132</sub> = 2007 VC<sub>254</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 308.88350  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18682262 | $\omega$ | 290.24342 | −0.34589411   | −0.93827355 |
| <i>a</i> | 3.0305148  | $\Omega$ | 179.99250 | +0.93683366   | −0.34536597 |
| <i>e</i> | 0.1105232  | <i>i</i> | 20.26561  | +0.05196119   | −0.01910722 |
| <i>P</i> | 5.28       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 20 704 0.5− 0.7+ | 2004 03 23 704 0.3− 0.2− | 2007 11 14 291 0.4+ 0.1+ |
| 2001 09 20 704 0.2+ 0.5+ | 2004 03 23 704 0.4− 0.2+ | 2007 11 14 291 0.3+ 0.2+ |
| 2001 09 20 704 0.3+ 0.0  | 2004 03 29 704 0.4+ 0.5+ | 2007 11 14 291 0.2+ 0.3+ |
| 2001 09 20 704 0.3− 0.3− | 2004 03 29 704 0.8− 0.1+ | 2007 11 15 703 0.5− 0.3+ |
| 2001 09 21 704 1.3+ 1.0− | 2004 03 29 704 0.9+ 0.5− | 2007 11 15 703 0.5− 0.6− |
| 2001 09 21 704 0.1− 0.1+ | 2004 04 21 691 0.0 0.2−  | 2007 11 15 703 0.4− 0.1+ |
| 2001 09 21 704 1.0− 0.5+ | 2004 04 21 691 0.2− 0.0  | 2007 11 15 703 0.6+ 0.2− |
| 2004 03 23 704 0.4+ 0.6+ | 2004 04 21 691 0.1+ 0.0  |                          |

**2001 SA<sub>315</sub> = 2007 WQ<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 18.09595   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17710108 | $\omega$ | 113.88198 | +0.90027887   | −0.40147405 |
| <i>a</i> | 3.1404260  | $\Omega$ | 270.15005 | +0.31240547   | +0.86506612 |
| <i>e</i> | 0.1163429  | <i>i</i> | 9.68759   | +0.30315143   | +0.30079760 |
| <i>P</i> | 5.57       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 6  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 25 704 0.3+ 1.0− | 2001 09 27 704 0.2+ 0.2+ | 2007 11 18 704 0.6− 0.3+ |
| 2001 09 25 704 1.0− 0.3− | 2001 10 13 644 0.1+ 0.0  | 2007 11 18 704 0.3− 0.0  |
| 2001 09 25 704 0.4+ 0.3+ | 2001 10 13 644 0.2+ 0.1+ | 2007 11 18 704 0.2− 0.1+ |
| 2001 09 25 704 0.1+ 0.1− | 2001 10 13 644 0.3− 0.1− | 2007 11 18 704 0.1+ 0.2− |
| 2001 09 25 704 0.2− 0.6+ | 2007 11 17 704 0.4+ 0.7− | 2007 11 18 704 0.0 0.3−  |
| 2001 09 27 704 0.3+ 0.1+ | 2007 11 17 704 0.1− 0.5+ |                          |
| 2001 09 27 704 0.1+ 0.2+ | 2007 11 17 704 0.8+ 0.3+ |                          |

**2001 SS<sub>336</sub> = 2007 VS<sub>237</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 186.26084  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18997231 | $\omega$ | 353.41658 | −0.68827968   | +0.72530327 |
| <i>a</i> | 2.9969249  | $\Omega$ | 233.08817 | −0.66476134   | −0.63850725 |
| <i>e</i> | 0.0741569  | <i>i</i> | 1.02920   | −0.29045386   | −0.25737845 |
| <i>P</i> | 5.19       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1999 02 12 691 0.1+ 0.1−   | 2001 09 21 691 0.1+ 0.0    | 2007 10 17 G96 0.6+ 0.4− |
| 1999 02 12 691 0.1+ 0.2+   | 2001 09 21 691 0.1+ 0.1+   | 2007 11 11 G96 0.1+ 0.1+ |
| 1999 02 12 691 0.3− 0.2−   | 2005 06 13 G96 0.1+ 0.2−   | 2007 11 11 G96 0.0 0.1+  |
| 1999 03 11 691 0.1− 0.1+   | 2005 06 13 G96 0.5− 0.2−   | 2007 11 11 G96 0.2− 0.4+ |
| 1999 03 11 691 0.2+ 0.3−   | 2005 06 13 G96 0.0 0.1−    | 2007 11 11 G96 0.2+ 0.1+ |
| 1999 03 11 691 (4.5+ 2.9−) | 2005 06 13 G96 0.2− 0.1+   | 2007 11 14 691 0.3+ 0.1− |
| 2001 08 24 691 0.2− 0.1−   | 2006 07 25 G96 0.2+ 0.1+   | 2007 11 14 691 0.7− 0.2− |
| 2001 08 24 691 0.1− 0.2−   | 2006 07 25 G96 0.5+ 0.2+   | 2007 11 14 691 0.3− 0.0  |
| 2001 08 24 691 0.4− 0.1−   | 2006 07 25 G96 0.4+ 0.1−   | 2007 12 15 G96 0.3+ 0.0  |
| 2001 09 20 704 0.2+ 0.4−   | 2006 07 25 G96 (2.1− 0.1+) | 2007 12 15 G96 0.3− 0.2+ |
| 2001 09 20 704 0.2− 0.4+   | 2007 10 17 G96 0.5+ 0.1+   | 2007 12 15 G96 0.2+ 0.1+ |
| 2001 09 20 704 0.2+ 0.2+   | 2007 10 17 G96 0.1+ 0.3−   | 2007 12 15 G96 0.7+ 0.2+ |
| 2001 09 21 691 0.3+ 0.1+   | 2007 10 17 G96 0.4+ 0.2+   |                          |

**2001 SH<sub>342</sub> = 2007 VK<sub>148</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 0.39922    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18204713 | $\omega$ | 248.72567 | +0.39066244   | −0.92053050 |
| <i>a</i> | 3.0832837  | $\Omega$ | 178.27239 | +0.87271513   | +0.36948995 |
| <i>e</i> | 0.1570098  | <i>i</i> | 4.83095   | +0.29283298   | +0.12688880 |
| <i>P</i> | 5.41       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 21 704 0.7− 0.7− | 2001 10 16 291 0.5+ 0.3+ | 2007 11 08 691 0.3− 0.1− |
| 2001 09 21 704 0.6− 0.6− | 2001 10 16 291 0.4+ 0.4− | 2007 12 04 704 0.4+ 0.6+ |
| 2001 09 21 704 0.6− 0.4− | 2001 11 12 645 0.0 0.0   | 2007 12 04 704 0.1− 0.2+ |
| 2001 09 21 704 0.7− 1.0− | 2001 11 12 645 0.1− 0.1+ | 2007 12 04 704 0.1+ 0.4+ |
| 2001 09 21 704 0.0 0.7−  | 2007 11 04 691 0.2+ 0.2− | 2007 12 05 G96 0.4+ 0.0  |
| 2001 09 22 291 0.2− 0.2+ | 2007 11 04 691 0.2− 0.0  | 2007 12 05 G96 0.0 0.0   |
| 2001 09 22 291 0.5− 0.2+ | 2007 11 04 691 0.1+ 0.0  | 2007 12 05 G96 0.3+ 0.3− |
| 2001 09 22 291 0.1− 0.1− | 2007 11 08 691 0.4− 0.3− | 2007 12 05 G96 0.5+ 0.0  |
| 2001 10 16 291 0.7+ 0.3+ | 2007 11 08 691 0.2+ 0.2+ |                          |

**2001 SW<sub>351</sub> = 2007 VO<sub>251</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 44.81660   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17220951 | $\omega$ | 189.47155 | +0.94530690   | +0.30722675 |
| <i>a</i> | 3.1996168  | $\Omega$ | 151.86797 | −0.28199061   | +0.93858215 |
| <i>e</i> | 0.2683031  | <i>i</i> | 13.43801  | −0.16393949   | +0.15708363 |
| <i>P</i> | 5.72       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 17 699 0.2− 1.5+ | 2001 09 19 645 0.0 0.0   | 2007 11 15 703 0.8− 0.9− |
| 2001 09 17 699 0.6+ 0.1+ | 2007 11 09 703 0.0 0.7+  | 2007 11 15 703 0.4+ 0.5+ |
| 2001 09 17 699 0.7+ 0.2− | 2007 11 09 703 0.2− 0.9− | 2007 12 05 703 0.1− 1.0+ |
| 2001 09 17 699 1.1+ 0.4+ | 2007 11 09 703 0.6+ 0.5+ | 2007 12 05 703 0.2+ 0.4+ |
| 2001 09 18 645 0.0 0.0   | 2007 11 09 703 0.5+ 0.1+ | 2007 12 05 703 0.4+ 0.8− |
| 2001 09 18 645 0.0 0.0   | 2007 11 15 703 0.3− 0.4− | 2007 12 05 703 0.1+ 0.1+ |
| 2001 09 19 645 0.0 0.0   | 2007 11 15 703 0.8− 0.4− |                          |

**2001 TB<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 35.55237   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18457225 | $\omega$ | 346.11872 | +0.82208165   | −0.55075145 |
| <i>a</i> | 3.0550977  | $\Omega$ | 48.24541  | +0.53911925   | +0.67137887 |
| <i>e</i> | 0.2086364  | <i>i</i> | 11.16176  | +0.18311797   | +0.49590650 |
| <i>P</i> | 5.34       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 09 21 644 0.3+ 1.2+   | 2001 10 12 557 0.2− 0.0  | 2001 11 10 557 0.4+ 0.5+ |
| 2001 09 21 644 0.1− 1.1+   | 2001 10 12 557 0.0 0.2−  | 2001 11 10 557 0.8+ 1.3+ |
| 2001 09 21 644 0.1+ 0.9+   | 2001 10 13 557 0.0 0.6−  | 2001 11 18 645 0.2+ 0.1− |
| 2001 09 25 704 (0.6− 1.7+) | 2001 10 13 557 0.3− 0.5− | 2001 11 18 645 0.2+ 0.1− |
| 2001 09 25 704 0.8− 0.2+   | 2001 10 16 644 0.6− 0.1+ | 2001 12 14 557 0.3+ 1.2+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 25 | 704 | 1.7−  | 0.1+  | 2001 10 16 | 644 | 0.6− | 0.2+ | 2001 12 14 | 557 | 1.0− | 0.5+ |
| 2001 09 25 | 704 | (1.8− | 0.4+) | 2001 10 16 | 644 | 0.6− | 0.1+ | 2001 12 14 | 557 | 0.8+ | 0.2+ |
| 2001 10 10 | 644 | 0.2−  | 0.5−  | 2001 10 19 | 699 | 0.6− | 0.4+ | 2001 12 14 | 557 | 1.2− | 0.1− |
| 2001 10 10 | 644 | 0.4−  | 0.4−  | 2001 10 19 | 699 | 0.2− | 0.2− | 2003 01 29 | 644 | 0.2− | 0.2− |
| 2001 10 10 | 644 | 0.2−  | 0.4−  | 2001 10 19 | 699 | 1.0− | 0.8+ | 2003 01 29 | 644 | 0.2+ | 0.6+ |
| 2001 10 12 | 557 | 0.1+  | 0.7−  | 2001 10 19 | 699 | 1.1− | 1.4+ | 2003 01 29 | 644 | 0.4+ | 0.8+ |
| 2001 10 12 | 557 | 0.3−  | 0.2−  | 2001 10 24 | 644 | 0.0  | 0.1− | 2007 12 02 | 704 | 0.6+ | 0.3− |
| 2001 10 12 | 557 | 0.1−  | 0.5−  | 2001 10 24 | 644 | 0.0  | 0.1− | 2007 12 02 | 704 | 0.6− | 0.1− |
| 2001 10 12 | 557 | 0.2−  | 0.6−  | 2001 10 24 | 644 | 0.2+ | 0.1− | 2007 12 02 | 704 | 0.1+ | 0.3+ |
| 2001 10 12 | 557 | 0.0   | 0.3−  | 2001 11 10 | 557 | 0.8+ | 1.0− |            |     |      |      |

**2001 TL<sub>52</sub> = 2001 SE<sub>30</sub> = 2007 WW<sub>27</sub>**

Id. Minor Planet Center (d, *MPO* 24067; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 21.88653   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17924913 | $\omega$ | 16.12548 | +0.82751728 | −0.56082754 |          |   |
| <i>a</i> | 3.1152866  | $\Omega$ | 18.06145 | +0.50531607 | +0.72362684 |          |   |
| <i>e</i> | 0.1796711  | <i>i</i> | 4.85180  | +0.24468514 | +0.40228927 |          |   |
| <i>P</i> | 5.50       | <i>H</i> | 16.0     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 16 | 704 | 1.2+  | 0.1−  | 2001 10 13 | 699 | 0.2−  | 0.2+  | 2003 01 29 | 645 | 0.0   | 0.0   |
| 2001 09 16 | 704 | 0.4−  | 0.2−  | 2001 10 13 | 699 | 0.4+  | 0.6−  | 2003 01 29 | 645 | 0.0   | 0.1−  |
| 2001 09 16 | 704 | 0.3−  | 0.8−  | 2001 10 13 | 704 | 0.1−  | 0.3+  | 2004 03 31 | 291 | 0.1+  | 0.5+  |
| 2001 09 16 | 704 | 0.9−  | 0.1−  | 2001 10 13 | 704 | 0.3−  | 0.2−  | 2004 03 31 | 291 | 0.3+  | 0.2+  |
| 2001 09 19 | 704 | (0.1+ | 2.0+) | 2001 10 13 | 699 | 0.8+  | 0.5+  | 2004 03 31 | 291 | 0.2+  | 0.4+  |
| 2001 09 19 | 704 | (0.7− | 2.2+) | 2001 10 13 | 704 | 0.4−  | 0.2−  | 2007 11 03 | 691 | 0.5−  | 0.2+  |
| 2001 09 19 | 704 | (0.4+ | 2.1+) | 2001 10 13 | 704 | 0.1−  | 0.1+  | 2007 11 03 | 691 | 0.4−  | 0.2−  |
| 2001 09 19 | 704 | (0.5+ | 2.4+) | 2001 10 16 | 704 | 0.3−  | 0.7−  | 2007 11 03 | 691 | 1.1−  | 0.5+  |
| 2001 09 19 | 704 | (0.2+ | 1.8+) | 2001 10 16 | 704 | 0.2+  | 0.5+  | 2007 11 18 | G96 | 1.4+  | 0.2−  |
| 2001 09 20 | 704 | (0.1+ | 1.6+) | 2001 10 16 | 704 | 0.9−  | 0.2−  | 2007 11 18 | G96 | 0.7+  | 0.3−  |
| 2001 09 20 | 704 | 1.1+  | 0.6−  | 2001 10 16 | 704 | 0.3+  | 0.3−  | 2007 11 18 | G96 | 0.4+  | 0.1−  |
| 2001 09 20 | 704 | 1.0+  | 0.6−  | 2001 10 16 | 691 | 0.5−  | 0.0   | 2007 11 18 | G96 | 0.6+  | 0.1+  |
| 2001 09 20 | 704 | 0.6+  | 1.2+  | 2001 10 16 | 691 | 0.1+  | 0.2+  | 2007 11 20 | 691 | 0.1+  | 0.1−  |
| 2001 09 20 | 704 | 0.4+  | 0.6−  | 2001 10 16 | 691 | 0.2−  | 0.0   | 2007 11 20 | 691 | 0.2+  | 0.0   |
| 2001 09 20 | 704 | 0.4+  | 1.2+  | 2001 10 17 | 644 | 0.5−  | 0.4+  | 2007 11 20 | 691 | 0.1−  | 0.2−  |
| 2001 09 25 | 704 | (0.6+ | 1.6+) | 2001 10 17 | 644 | 0.4−  | 0.2+  | 2007 12 13 | 704 | 0.2+  | 0.9+  |
| 2001 09 25 | 704 | 0.3+  | 0.6+  | 2001 10 17 | 644 | 0.2−  | 0.3+  | 2007 12 13 | 704 | 0.3+  | 0.1−  |
| 2001 09 25 | 704 | (1.9+ | 0.4−) | 2001 10 17 | 644 | 0.5−  | 0.1+  | 2007 12 13 | 704 | 0.6+  | 0.8+  |
| 2001 09 26 | 704 | 0.3+  | 0.8−  | 2001 10 17 | 644 | 0.4−  | 0.4+  | 2007 12 13 | 704 | (1.8+ | 0.4−) |
| 2001 09 26 | 704 | 0.5−  | 0.5−  | 2001 10 17 | 644 | 0.4−  | 0.6+  | 2007 12 15 | 704 | 0.5−  | 0.2+  |
| 2001 09 26 | 704 | 0.8+  | 0.1+  | 2001 10 23 | 704 | (2.0− | 0.4+) | 2007 12 15 | 704 | 0.6+  | 0.6+  |
| 2001 10 11 | 644 | 0.5+  | 0.7+  | 2001 10 23 | 704 | 0.8+  | 0.0   | 2007 12 15 | 704 | 0.8+  | 0.1−  |
| 2001 10 11 | 644 | 0.5+  | 0.3+  | 2001 10 23 | 704 | 0.1+  | 1.5+  | 2007 12 15 | 704 | 0.4+  | 0.7−  |
| 2001 10 11 | 644 | 0.0   | 0.3+  | 2001 10 23 | 704 | 0.5−  | 0.3−  | 2007 12 15 | 704 | 1.0+  | 0.5−  |
| 2001 10 13 | 699 | 0.9−  | 0.5−  | 2001 10 23 | 704 | 0.3−  | 0.0   |            |     |       |       |

**2001 TX<sub>95</sub> = 2007 UW<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 47.37028   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17289373 | $\omega$ | 102.16188 | +0.90138761 | +0.42048040 |          |   |
| <i>a</i> | 3.1911696  | $\Omega$ | 233.06256 | −0.43026846 | +0.84290064 |          |   |
| <i>e</i> | 0.3127365  | <i>i</i> | 7.43463   | −0.04867677 | +0.33573016 |          |   |
| <i>P</i> | 5.70       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 29 | 644 | 0.2− | 0.1+ | 2001 10 26 | 644 | 0.9+ | 0.7+ | 2007 11 03 | 691 | 0.2− | 0.2+ |
| 2001 08 29 | 644 | 0.5+ | 0.3− | 2007 09 14 | G96 | 0.0  | 0.1− | 2007 11 03 | 691 | 0.0  | 0.0  |
| 2001 08 29 | 644 | 0.0  | 0.1− | 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 11 07 | 691 | 0.4− | 0.6− |
| 2001 10 14 | 704 | 1.0− | 0.0  | 2007 09 14 | G96 | 0.0  | 0.1+ | 2007 11 07 | 691 | 0.1+ | 0.1− |
| 2001 10 14 | 704 | 0.3− | 0.3− | 2007 09 14 | G96 | 0.4− | 0.3+ | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2001 10 14 | 704 | 0.1− | 0.2+ | 2007 10 16 | G96 | 0.5+ | 0.1− | 2007 11 14 | 691 | 0.1− | 0.1+ |
| 2001 10 14 | 704 | 0.4− | 0.6− | 2007 10 16 | G96 | 0.9+ | 0.3− | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2001 10 14 | 704 | 0.2− | 0.4− | 2007 10 16 | G96 | 0.4+ | 0.1− | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2001 10 17 | 704 | 0.3− | 0.2+ | 2007 10 16 | G96 | 0.4+ | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2001 10 17 | 704 | 0.5− | 0.3− | 2007 10 30 | 691 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.1+ | 0.8− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.5− | 0.8− | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1+ | 0.6+ |
| 2001 10 26 | 644 | 1.1+ | 1.0+ | 2007 10 30 | 691 | 0.1− | 0.4+ |            |     |      |      |
| 2001 10 26 | 644 | 0.9+ | 0.6+ | 2007 11 03 | 691 | 0.2+ | 0.2+ |            |     |      |      |

**2001 TW<sub>129</sub> = 2007 VV<sub>286</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 39.51209   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18235563 | $\omega$ | 344.52138 | +0.93518721 | −0.35398266 |          |   |
| <i>a</i> | 3.0798053  | $\Omega$ | 36.21578  | +0.32687537 | +0.85077715 |          |   |
| <i>e</i> | 0.1366503  | <i>i</i> | 1.06746   | +0.13629882 | +0.38842568 |          |   |
| <i>P</i> | 5.40       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 691 | 0.2− | 0.1+ | 2001 10 16 | 691 | 0.3− | 0.5− | 2007 11 14 | 691 | 0.3+ | 0.4+ |
| 2001 09 20 | 691 | 0.3− | 0.6+ | 2001 10 16 | 691 | 0.3− | 0.1− | 2007 11 14 | 691 | 0.3+ | 0.5− |
| 2001 09 20 | 691 | 0.2− | 0.2+ | 2001 10 16 | 691 | 0.1− | 0.3− | 2007 11 14 | 691 | 0.3+ | 0.4+ |
| 2001 10 15 | 291 | 0.2+ | 0.1+ | 2001 10 20 | 704 | 1.8− | 0.0  | 2007 11 18 | 691 | 0.1+ | 0.1− |
| 2001 10 15 | 291 | 0.6+ | 0.1+ | 2001 10 20 | 704 | 1.3− | 0.3− | 2007 11 18 | 691 | 0.2− | 0.4+ |
| 2001 10 15 | 291 | 1.5+ | 0.1+ | 2001 10 20 | 704 | 0.4− | 0.5− | 2007 11 18 | 691 | 0.9− | 0.5− |

**2001 TT<sub>141</sub> = 2007 UM<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 22.71312   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17263725 | $\omega$ | 242.80751 | +0.98366391 | −0.17074668 |          |   |
| <i>a</i> | 3.1943295  | $\Omega$ | 126.96960 | +0.17980109 | +0.91648579 |          |   |
| <i>e</i> | 0.2015646  | <i>i</i> | 4.09233   | +0.00876783 | +0.36180018 |          |   |
| <i>P</i> | 5.71       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 10 | 644 | 0.3− | 0.3+ | 2007 10 30 | 703 | 0.3− | 1.2+ | 2007 11 08 | G96 | 0.4+  | 1.2−  |
| 2001 10 10 | 644 | 0.9− | 0.3+ | 2007 10 30 | 703 | 1.0− | 0.2− | 2007 11 08 | G96 | 0.1+  | 0.8−  |
| 2001 10 10 | 644 | 0.6− | 0.3+ | 2007 10 30 | 703 | 0.5− | 1.2+ | 2007 11 08 | G96 | 0.0   | 0.7−  |
| 2001 10 15 | 645 | 0.1+ | 0.0  | 2007 10 30 | 703 | 0.6− | 0.1+ | 2007 11 08 | G96 | 0.3+  | 0.6−  |
| 2001 10 15 | 645 | 0.1+ | 0.0  | 2007 11 03 | 699 | 0.3− | 1.1+ | 2007 11 08 | G96 | 0.1−  | 0.6−  |
| 2001 10 16 | 644 | 0.8− | 0.1+ | 2007 11 03 | 699 | 0.7+ | 0.4+ | 2007 11 08 | G96 | 0.3+  | 0.6−  |
| 2001 10 16 | 644 | 0.6− | 0.3+ | 2007 11 03 | 699 | 0.2− | 1.2+ | 2007 11 12 | G96 | 0.6+  | 0.1+  |
| 2001 10 16 | 644 | 0.5− | 0.3+ | 2007 11 03 | 699 | 1.2− | 0.7+ | 2007 11 12 | G96 | 0.4+  | 0.1+  |
| 2001 12 10 | 645 | 0.0  | 0.0  | 2007 11 08 | G96 | 0.4+ | 0.0  | 2007 11 12 | G96 | 0.6+  | 0.2−  |
| 2001 12 10 | 645 | 0.0  | 0.0  | 2007 11 08 | G96 | 0.1+ | 0.2− | 2007 11 12 | G96 | (2.0+ | 0.9−) |

**2001 TY<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.90040   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17676452 | $\omega$ | 355.83734 | +0.60936724 | −0.77855810 |          |   |
| <i>a</i> | 3.1444111  | $\Omega$ | 56.54749  | +0.73255519 | +0.48040937 |          |   |
| <i>e</i> | 0.2109781  | <i>i</i> | 10.36146  | +0.30337181 | +0.40379961 |          |   |
| <i>P</i> | 5.58       | <i>H</i> | 15.0      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 704 | 0.0  | 0.6+ | 2001 10 22 | 704 | 0.9− | 0.2− | 2001 12 17 | 704 | 0.1− | 0.3− |
| 2001 09 21 | 704 | 0.1+ | 0.0  | 2001 10 22 | 704 | 0.4− | 0.9− | 2001 12 17 | 704 | 0.8+ | 0.3− |
| 2001 09 21 | 704 | 0.4− | 0.1− | 2001 10 22 | 704 | 1.4− | 0.8− | 2001 12 17 | 704 | 0.2+ | 0.1+ |
| 2001 09 21 | 704 | 0.4+ | 0.1+ | 2001 10 24 | 644 | 0.5+ | 1.1− | 2006 08 20 | 644 | 0.4+ | 0.0  |
| 2001 09 21 | 704 | 0.5+ | 0.9+ | 2001 10 24 | 644 | 0.3+ | 0.9− | 2006 08 20 | 644 | 0.1+ | 0.1− |
| 2001 10 10 | 644 | 0.1+ | 0.0  | 2001 10 24 | 644 | 0.3+ | 1.0− | 2006 08 20 | 644 | 0.0  | 0.6− |
| 2001 10 10 | 644 | 0.2+ | 0.0  | 2001 11 15 | 644 | 0.2+ | 0.1+ | 2007 11 19 | D29 | 0.1− | 1.2− |
| 2001 10 10 | 644 | 0.3+ | 0.2− | 2001 11 15 | 644 | 0.1− | 0.8+ | 2007 11 19 | D29 | 0.2+ | 0.5− |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 16 | 704 | 0.5+ | 0.2- | 2001 12 14 | 704 | 0.5- | 0.8+ | 2007 12 15 | 704 | 0.1+ | 1.3+ |
| 2001 10 16 | 644 | 0.4- | 0.5+ | 2001 12 14 | 704 | 0.0  | 1.1+ | 2007 12 15 | 704 | 0.0  | 0.2+ |
| 2001 10 16 | 644 | 0.1- | 0.5+ | 2001 12 17 | 704 | 0.5- | 0.2+ | 2007 12 15 | 704 | 0.1- | 0.3+ |
| 2001 10 16 | 644 | 0.5- | 0.4+ | 2001 12 17 | 704 | 0.2+ | 0.2+ | 2007 12 15 | 704 | 0.3- | 0.1+ |

2001 TR<sub>230</sub> = 2007 UH<sub>48</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 13.85357   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17608965 | $\omega$ | 330.77421 |     | +0.84425270 |     | -0.50673647 |
| $a$ | 3.1524399  | $\Omega$ | 60.70108  |     | +0.52234515 |     | +0.70509523 |
| $e$ | 0.2251362  | $i$      | 11.54363  |     | +0.11997051 |     | +0.49604322 |
| $P$ | 5.60       | $H$      | 15.2      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 29 | 644 | 0.2-  | 0.7+  | 2007 10 24 | G96 | 0.1+ | 0.4- | 2007 11 18 | 300 | 0.2+ | 0.1+ |
| 2001 08 29 | 644 | 0.4-  | 0.4+  | 2007 10 24 | G96 | 0.3+ | 0.4- | 2007 11 18 | 300 | 0.3+ | 0.4+ |
| 2001 08 29 | 644 | 0.5-  | 0.5+  | 2007 10 24 | G96 | 0.0  | 0.5- | 2007 11 18 | 300 | 0.2- | 0.8+ |
| 2001 09 12 | 704 | 0.7-  | 0.0   | 2007 10 24 | G96 | 0.2+ | 0.3- | 2007 11 18 | 300 | 0.1- | 0.3+ |
| 2001 09 12 | 704 | 0.2+  | 0.4-  | 2007 10 25 | G96 | 0.5+ | 0.4- | 2007 11 18 | 300 | 0.1+ | 0.2+ |
| 2001 09 12 | 704 | 0.6+  | 0.3-  | 2007 10 25 | G96 | 0.5+ | 0.4- | 2007 11 18 | 300 | 0.1- | 0.9+ |
| 2001 09 12 | 704 | (2.4+ | 1.4-) | 2007 10 25 | G96 | 0.3+ | 0.5- | 2007 11 20 | 300 | 0.7+ | 0.0  |
| 2001 09 12 | 704 | 0.1-  | 1.1-  | 2007 10 25 | G96 | 0.4+ | 0.4- | 2007 11 20 | 300 | 0.2+ | 0.1- |
| 2001 10 11 | 704 | 0.4-  | 0.3-  | 2007 11 06 | D29 | 0.0  | 0.4- | 2007 11 20 | 300 | 0.5+ | 0.5+ |
| 2001 10 11 | 704 | 0.4+  | 0.1+  | 2007 11 06 | D29 | 0.2+ | 0.4- | 2007 11 20 | 300 | 0.2+ | 0.3- |
| 2001 10 11 | 704 | 0.2-  | 0.4+  | 2007 11 06 | D29 | 0.0  | 1.0- | 2007 11 20 | 300 | 0.2+ | 0.3+ |
| 2001 10 11 | 704 | 0.2+  | 0.2-  | 2007 11 06 | D29 | 0.3+ | 0.0  | 2007 11 20 | 300 | 0.2+ | 0.0  |
| 2001 10 15 | 644 | 0.3-  | 0.2+  | 2007 11 06 | D29 | 0.0  | 0.1+ | 2007 11 20 | 300 | 0.5+ | 0.2+ |
| 2001 10 15 | 644 | 0.5-  | 0.1+  | 2007 11 06 | D29 | 0.4+ | 0.1- | 2007 12 03 | 703 | 0.1+ | 0.3+ |
| 2001 10 15 | 644 | 0.3-  | 0.2+  | 2007 11 06 | D29 | 0.2+ | 0.8- | 2007 12 03 | 703 | 0.5- | 0.2- |
| 2001 10 19 | 699 | 0.2+  | 0.3+  | 2007 11 06 | D29 | 0.2+ | 1.1- | 2007 12 03 | 703 | 0.5+ | 0.0  |
| 2001 10 19 | 699 | 0.1-  | 0.2+  | 2007 11 07 | 691 | 1.1+ | 0.9- | 2007 12 03 | 703 | 0.3+ | 0.2+ |
| 2001 10 19 | 699 | 0.4+  | 0.7+  | 2007 11 07 | 691 | 0.2- | 0.0  | 2007 12 10 | 704 | 0.2+ | 0.1+ |
| 2001 10 19 | 699 | 0.9+  | 0.1-  | 2007 11 07 | 691 | 0.3- | 0.1+ | 2007 12 10 | 704 | 0.4- | 0.6+ |
| 2005 05 08 | G96 | 0.9+  | 0.3-  | 2007 11 14 | 691 | 0.3- | 0.1+ | 2007 12 10 | 704 | 0.1- | 0.4+ |
| 2005 05 08 | G96 | 0.3-  | 0.4+  | 2007 11 14 | 691 | 0.3- | 0.0  | 2007 12 10 | 704 | 0.5- | 0.9+ |
| 2005 05 08 | G96 | 0.5-  | 0.0   | 2007 11 14 | 691 | 0.3- | 0.1+ | 2007 12 10 | 704 | 0.4- | 0.7+ |
| 2005 05 08 | G96 | 0.5-  | 0.3+  | 2007 11 18 | 691 | 0.3- | 0.0  | 2007 12 14 | 704 | 1.0- | 0.7+ |
| 2006 07 29 | E12 | 0.3+  | 0.2+  | 2007 11 18 | 691 | 0.2- | 0.1- | 2007 12 14 | 704 | 0.9- | 0.3+ |
| 2006 07 29 | E12 | 0.1-  | 0.4-  | 2007 11 18 | 691 | 0.3- | 0.1- | 2007 12 14 | 704 | 0.5- | 0.5+ |
| 2006 07 29 | E12 | 0.1-  | 0.1-  | 2007 11 18 | 300 | 0.4+ | 0.1+ | 2007 12 14 | 704 | 0.4- | 0.8+ |
| 2006 07 29 | E12 | 0.3+  | 0.2+  | 2007 11 18 | 300 | 0.6+ | 0.2+ | 2007 12 14 | 704 | 0.7- | 0.8+ |
| 2007 10 20 | G96 | 0.2+  | 0.1-  | 2007 11 18 | 300 | 0.1+ | 0.4+ | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2007 10 20 | G96 | 0.2-  | 0.2-  | 2007 11 18 | 300 | 0.0  | 0.6+ | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2007 10 20 | G96 | 0.1+  | 0.1-  | 2007 11 18 | 300 | 0.2+ | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.3- |
| 2007 10 20 | G96 | 0.3+  | 0.2-  | 2007 11 18 | 300 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.5- |

2001 TY<sub>248</sub> = 2007 WG<sub>22</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 157.43794  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.18026182 | $\omega$ | 222.21062 |     | -0.41480628 |     | +0.90618686 |
| $a$ | 3.1036081  | $\Omega$ | 23.64221  |     | -0.77040587 |     | -0.30168869 |
| $e$ | 0.0555346  | $i$      | 11.83186  |     | -0.48415963 |     | -0.29632636 |
| $P$ | 5.47       | $H$      | 15.4      | $G$ | 0.15        | $U$ | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 14 | 645 | 0.0  | 0.1+ | 2007 09 26 | G96 | 0.7+ | 0.1- | 2007 10 21 | 691 | 0.1- | 0.1+ |
| 2001 10 14 | 645 | 0.0  | 0.1+ | 2007 10 09 | 691 | 0.3- | 0.0  | 2007 10 21 | 691 | 0.1+ | 0.1+ |
| 2001 10 15 | 645 | 0.0  | 0.0  | 2007 10 09 | 691 | 0.5- | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.4- |
| 2001 10 15 | 645 | 0.0  | 0.1+ | 2007 10 09 | 691 | 0.6- | 0.1- | 2007 11 17 | 691 | 0.2+ | 0.2+ |
| 2001 11 18 | 645 | 0.0  | 0.1- | 2007 10 16 | G96 | 0.2- | 0.1- | 2007 11 17 | 691 | 0.2- | 0.2- |
| 2001 11 18 | 645 | 0.0  | 0.1- | 2007 10 16 | G96 | 0.4+ | 0.1- | 2007 11 20 | 691 | 0.0  | 0.5+ |
| 2007 09 26 | G96 | 0.1+ | 0.1- | 2007 10 16 | G96 | 0.1+ | 0.1- | 2007 11 20 | 691 | 0.0  | 0.2- |
| 2007 09 26 | G96 | 0.2- | 0.3+ | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 20 | 691 | 0.1- | 0.2+ |
| 2007 09 26 | G96 | 0.5+ | 0.4- | 2007 10 21 | 691 | 0.3- | 0.1+ |            |     |      |      |

## M.P.O. 129593

2001 TZ<sub>251</sub> = 2007 VO<sub>274</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 23.40876   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17050138 | $\omega$ | 330.47390 |     | +0.98938047 |     | -0.08761780 |
| $a$ | 3.2209510  | $\Omega$ | 35.14368  |     | +0.13688671 |     | +0.82995767 |
| $e$ | 0.0893845  | $i$      | 11.62290  |     | -0.04887043 |     | +0.55090234 |
| $P$ | 5.78       | $H$      | 15.9      | $G$ | 0.15        | $U$ | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 10 | 644 | 0.0  | 1.1+ | 2001 11 18 | 645 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.3+ |
| 2001 10 10 | 644 | 0.2- | 1.4+ | 2001 11 18 | 645 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.3+ |
| 2001 10 10 | 644 | 0.2- | 1.3+ | 2007 10 06 | 691 | 0.1- | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.1+ |
| 2001 10 14 | 645 | 0.0  | 0.0  | 2007 10 06 | 691 | 0.4- | 0.4- | 2007 10 30 | G96 | 0.0  | 0.1+ |
| 2001 10 14 | 645 | 0.0  | 0.0  | 2007 10 06 | 691 | 0.0  | 0.2- | 2007 11 13 | 703 | 1.3+ | 0.1+ |
| 2001 10 15 | 645 | 0.0  | 0.1- | 2007 10 20 | 691 | 0.2- | 0.1+ | 2007 11 13 | 703 | 0.0  | 0.9- |
| 2001 10 15 | 645 | 0.0  | 0.1- | 2007 10 20 | 691 | 0.1- | 0.1- | 2007 11 13 | 703 | 0.3- | 0.8+ |
| 2001 10 24 | 704 | 1.5- | 0.4+ | 2007 10 20 | 691 | 0.7- | 1.0+ | 2007 11 13 | 703 | 0.4+ | 0.9+ |
| 2001 10 24 | 704 | 0.8- | 0.8+ | 2007 10 20 | 703 | 1.2+ | 0.6- | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2001 10 24 | 704 | 0.5+ | 0.6- | 2007 10 20 | 703 | 0.7+ | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.2- |
| 2001 10 25 | 645 | 0.0  | 0.0  | 2007 10 20 | 703 | 0.8+ | 0.1- | 2007 11 18 | G96 | 0.2+ | 0.6- |
| 2001 10 25 | 645 | 0.0  | 0.0  | 2007 10 20 | 703 | 0.2- | 1.1- | 2007 11 18 | G96 | 0.5+ | 0.4- |

2001 TB<sub>255</sub> = 2007 VY<sub>204</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 175.72854  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17639568 | $\omega$ | 181.04920 |     | -0.70004781 |     | +0.68129671 |
| $a$ | 3.1487928  | $\Omega$ | 44.56901  |     | -0.65292979 |     | -0.48937101 |
| $e$ | 0.1540589  | $i$      | 17.74916  |     | -0.28916389 |     | -0.54438112 |
| $P$ | 5.59       | $H$      | 15.6      | $G$ | 0.15        | $U$ | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 645 | 0.3+ | 0.1- | 2005 02 11 | 809 | 0.1+ | 0.0  | 2007 11 12 | G96 | 0.2+ | 0.1+ |
| 2001 09 21 | 645 | 0.2+ | 0.3- | 2005 02 11 | 809 | 0.7+ | 0.4- | 2007 11 12 | G96 | 0.0  | 0.1+ |
| 2001 10 14 | 645 | 0.1+ | 0.2- | 2005 02 11 | 809 | 0.7- | 0.5+ | 2007 11 12 | G96 | 0.5+ | 0.3+ |
| 2001 10 14 | 645 | 0.2+ | 0.2- | 2007 10 06 | 691 | 0.5- | 0.0  | 2007 11 12 | G96 | 0.1- | 0.1- |
| 2001 10 25 | 645 | 0.1+ | 0.2- | 2007 10 06 | 691 | 0.4- | 0.3+ | 2007 11 12 | G96 | 0.3+ | 0.0  |
| 2001 10 25 | 645 | 0.0  | 0.1- | 2007 10 06 | 691 | 1.1- | 0.2+ | 2007 11 12 | G96 | 0.2- | 0.0  |
| 2004 01 31 | 645 | 0.2- | 0.3- | 2007 11 09 | G96 | 0.0  | 0.1- | 2007 11 12 | G96 | 0.2- | 0.1- |
| 2004 01 31 | 645 | 0.2- | 0.3- | 2007 11 09 | G96 | 0.5+ | 0.8+ | 2007 11 12 | G96 | 0.2- | 0.3+ |
| 2004 05 14 | 645 | 0.1+ | 0.1+ | 2007 11 09 | G96 | 0.1+ | 0.1- |            |     |      |      |
| 2004 05 14 | 645 | 0.1+ | 0.2+ | 2007 11 09 | G96 | 0.2+ | 0.3- |            |     |      |      |

2001 TD<sub>258</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 197.31198  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.27805971 | $\omega$ | 27.18659 |     | +0.18310584 |     | -0.97851289 |
| $a$ | 2.3247558  | $\Omega$ | 52.41415 |     | +0.87883667 |     | +0.11971362 |
| $e$ | 0.1048847  | $i$      | 6.86990  |     | +0.44058864 |     | +0.16787247 |
| $P$ | 3.54       | $H$      | 17.2     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 25 | 644 | 0.7- | 0.2- | 2001 10 16 | 644 | 0.4- | 0.3+ | 2003 04 01 | 645 | 0.0  | 0.0  |
| 2001 09 25 | 644 | 0.5- | 0.1+ | 2001 10 24 | 644 | 0.5- | 0.0  | 2003 04 01 | 645 | 0.0  | 0.1+ |
| 2001 09 25 | 644 | 0.1- | 0.3+ | 2001 10 24 | 644 | 0.6- | 0.4+ | 2005 12 02 | 691 | 0.7+ | 0.1- |
| 2001 09 27 | 644 | 0.0  | 0.0  | 2001 10 24 | 644 | 0.6- | 0.6+ | 2005 12 02 | 691 | 0.2- | 0.2+ |
| 2001 09 27 | 644 | 0.5- | 0.1+ | 2001 12 10 | 645 | 0.0  | 0.0  | 2005 12 02 | 691 | 0.5- | 0.3- |
| 2001 10 08 | 644 | 0.1+ | 0.1+ | 2001 12 10 | 645 | 0.1+ | 0.1+ | 2007 04 14 | G96 | 0.2+ | 0.0  |
| 2001 10 08 | 644 | 0.3- | 0.1+ | 2003 03 26 | 644 | 0.0  | 0.6+ | 2007 04 14 | G96 | 0.5- | 0.3- |
| 2001 10 08 | 644 | 0.1- | 0.3+ | 2003 03 26 | 644 | 0.6+ | 0.8+ | 2007 04 14 | G96 | 0.2+ | 0.0  |
| 2001 10 16 | 644 | 0.2+ | 0.1- | 2003 03 26 | 644 | 0.5+ | 0.3+ | 2007 04 14 | G96 | 0.1+ | 0.1- |

**2001 UJ<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.90038   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17439899 | $\omega$ 347.15707 | +0.67955749   | -0.68568262 |
| <i>a</i> | 3.1727808  | $\Omega$ 59.32657  | +0.69705271   | +0.49263096 |
| <i>e</i> | 0.2367824  | <i>i</i> 17.65463  | +0.22873376   | +0.53586760 |
| <i>P</i> | 5.65       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 13 | 699 | 1.5+ | 0.9+ | 2001 11 09 | 704 | 0.7- | 0.6- | 2001 12 15 | 704 | 0.2- | 0.3- |
| 2001 10 13 | 699 | 0.6+ | 0.3+ | 2001 11 09 | 704 | 0.1- | 0.1- | 2001 12 15 | 704 | 0.0  | 0.2- |
| 2001 10 13 | 699 | 0.5- | 1.1+ | 2001 11 09 | 704 | 0.8- | 0.2- | 2001 12 15 | 704 | 0.4- | 0.1- |
| 2001 10 13 | 699 | 1.3+ | 0.8+ | 2001 11 09 | 704 | 0.2- | 0.7- | 2001 12 15 | 704 | 0.2- | 0.1- |
| 2001 10 17 | 704 | 0.4- | 0.1+ | 2001 11 09 | 704 | 0.8- | 1.1- | 2001 12 15 | 704 | 0.5- | 0.5- |
| 2001 10 17 | 704 | 1.1+ | 0.1- | 2001 11 16 | 644 | 0.2+ | 0.0  | 2001 12 18 | 704 | 0.6+ | 0.4- |
| 2001 10 17 | 704 | 0.6- | 0.4- | 2001 11 16 | 644 | 0.3+ | 0.1+ | 2001 12 18 | 704 | 0.9+ | 0.7- |
| 2001 10 17 | 704 | 0.4- | 0.5+ | 2001 11 16 | 644 | 0.5+ | 0.0  | 2001 12 18 | 704 | 0.7+ | 1.2- |
| 2001 10 17 | 704 | 0.4+ | 0.2+ | 2001 11 19 | 699 | 0.4- | 0.1- | 2001 12 18 | 704 | 0.3+ | 0.1+ |
| 2001 10 22 | 843 | 0.0  | 0.5- | 2001 11 19 | 699 | 1.0- | 1.3- | 2001 12 18 | 704 | 0.5+ | 0.5- |
| 2001 10 22 | 843 | 0.9+ | 0.4- | 2001 11 19 | 699 | 1.3- | 0.7- | 2001 12 19 | 704 | 0.3+ | 0.2+ |
| 2001 10 22 | 704 | 0.4+ | 0.1- | 2001 11 19 | 699 | 0.6- | 0.8- | 2001 12 19 | 644 | 0.3+ | 0.9+ |
| 2001 10 22 | 704 | 0.4+ | 0.8- | 2001 11 20 | 704 | 0.5+ | 1.1- | 2001 12 19 | 704 | 0.3+ | 0.1- |
| 2001 10 22 | 704 | 0.1+ | 0.0  | 2001 11 20 | 704 | 0.4- | 0.4- | 2001 12 19 | 644 | 0.6+ | 0.9+ |
| 2001 10 23 | 843 | 0.5- | 0.7- | 2001 11 20 | 704 | 0.1- | 0.5- | 2001 12 19 | 644 | 0.7+ | 1.0+ |
| 2001 10 23 | 843 | 1.0- | 1.2+ | 2001 11 20 | 704 | 0.4- | 0.4- | 2001 12 19 | 704 | 0.7+ | 0.4- |
| 2001 10 23 | 704 | 0.3+ | 0.2+ | 2001 11 20 | 704 | 0.2- | 0.5- | 2001 12 19 | 704 | 0.1+ | 0.0  |
| 2001 10 23 | 704 | 0.4+ | 1.9+ | 2001 11 20 | 608 | 0.4+ | 0.2+ | 2002 01 08 | 704 | 1.0+ | 0.1+ |
| 2001 10 23 | 704 | 0.2+ | 0.4+ | 2001 11 20 | 608 | 0.4+ | 1.0+ | 2002 01 08 | 704 | 0.1- | 0.2+ |
| 2001 10 23 | 704 | 0.7+ | 1.3+ | 2001 11 20 | 608 | 0.1+ | 0.5+ | 2002 01 08 | 704 | 0.1+ | 0.3- |
| 2001 10 24 | 843 | 0.3+ | 1.2- | 2001 11 21 | 704 | 0.5- | 0.0  | 2002 01 08 | 704 | 0.3+ | 0.0  |
| 2001 10 24 | 843 | 0.7+ | 0.7- | 2001 11 21 | 704 | 0.8- | 0.2- | 2002 01 08 | 704 | 1.5- | 0.5- |
| 2001 10 24 | 704 | 0.3+ | 0.2+ | 2001 11 21 | 704 | 0.8- | 0.3- | 2004 04 20 | 691 | 0.1+ | 0.1- |
| 2001 10 24 | 704 | 0.3+ | 0.2- | 2001 11 21 | 704 | 0.5- | 0.4- | 2004 04 20 | 691 | 0.1+ | 0.3+ |
| 2001 10 24 | 704 | 0.5+ | 0.0  | 2001 11 21 | 704 | 0.8- | 0.1- | 2004 04 20 | 691 | 0.3- | 0.3- |
| 2001 10 24 | 704 | 0.3- | 0.1+ | 2001 12 10 | 704 | 0.9- | 1.6+ | 2007 12 03 | 704 | 0.4+ | 0.1+ |
| 2001 10 24 | 704 | 0.0  | 0.5+ | 2001 12 10 | 704 | 0.5- | 0.9+ | 2007 12 03 | 704 | 0.1- | 0.1- |
| 2001 10 25 | 644 | 0.4+ | 0.5- | 2001 12 10 | 704 | 1.0- | 1.4+ | 2007 12 03 | 704 | 0.5- | 1.2- |
| 2001 10 25 | 644 | 0.2+ | 0.4- | 2001 12 10 | 704 | 0.9- | 0.9+ | 2007 12 03 | 704 | 0.2+ | 1.1+ |
| 2001 10 25 | 644 | 0.5+ | 0.4- | 2001 12 10 | 704 | 0.1+ | 1.1+ |            |     |      |      |

**2001 UW<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.65217   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.16714192 | $\omega$ 296.70286 | +0.97942407   | -0.12234716 |
| <i>a</i> | 3.2639672  | $\Omega$ 70.68152  | +0.18230646   | +0.87748543 |
| <i>e</i> | 0.3959752  | <i>i</i> 9.79214   | -0.08656123   | +0.46373536 |
| <i>P</i> | 5.90       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 23 | 333 | 0.3-  | 0.2+  | 2001 12 10 | 704 | 1.4-  | 1.0-  | 2007 12 06 | 691 | 0.0  | 0.2- |
| 2001 10 23 | 333 | 0.4-  | 0.3+  | 2001 12 15 | 704 | 0.8+  | 0.9+  | 2007 12 06 | 691 | 0.3- | 0.1+ |
| 2001 10 23 | 333 | 0.2-  | 0.2-  | 2001 12 15 | 704 | 0.8-  | 0.9+  | 2007 12 06 | 691 | 0.4- | 0.1- |
| 2001 10 24 | 704 | (1.7+ | 0.8+) | 2001 12 15 | 704 | 0.2+  | 0.9+  | 2007 12 06 | 691 | 0.0  | 0.3+ |
| 2001 10 24 | 333 | 0.4+  | 0.4-  | 2001 12 17 | 291 | 0.1-  | 0.3-  | 2007 12 06 | 691 | 0.3- | 0.0  |
| 2001 10 24 | 704 | 1.3+  | 0.5-  | 2001 12 17 | 291 | 0.2-  | 0.3-  | 2007 12 06 | 691 | 0.2- | 0.1- |
| 2001 10 24 | 333 | 0.3+  | 0.2+  | 2001 12 17 | 291 | 0.1-  | 0.3-  | 2007 12 08 | 300 | 0.6- | 1.0+ |
| 2001 10 24 | 333 | 0.4+  | 0.2-  | 2001 12 18 | 291 | 1.3+  | 0.1+  | 2007 12 08 | 300 | 0.3+ | 0.3+ |
| 2001 10 24 | 704 | (1.9+ | 0.8+) | 2001 12 18 | 704 | 1.2-  | 0.0   | 2007 12 08 | 300 | 0.4+ | 0.2+ |
| 2001 10 24 | 704 | (1.5+ | 1.6+) | 2001 12 18 | 291 | (1.7+ | 0.4+) | 2007 12 08 | 300 | 0.3+ | 0.2+ |
| 2001 11 09 | 704 | (0.2+ | 2.0+) | 2001 12 18 | 704 | 0.4-  | 0.3+  | 2007 12 09 | 300 | 0.1- | 0.7- |
| 2001 11 09 | 704 | 0.8-  | 0.5+  | 2001 12 18 | 704 | 0.5-  | 0.2-  | 2007 12 09 | 300 | 0.0  | 0.6- |
| 2001 11 09 | 704 | 0.9-  | 1.0+  | 2001 12 18 | 291 | 0.9+  | 0.1+  | 2007 12 09 | 300 | 1.0- | 0.1- |
| 2001 11 09 | 704 | 0.7-  | 0.9+  | 2001 12 18 | 704 | 0.6-  | 0.6+  | 2007 12 09 | 300 | 0.1+ | 0.1+ |
| 2001 11 09 | 704 | 0.7-  | 1.0+  | 2001 12 18 | 704 | 0.7-  | 0.8+  | 2007 12 09 | 300 | 0.2- | 0.8+ |
| 2001 11 20 | 704 | 0.0   | 0.2+  | 2001 12 19 | 704 | (1.6+ | 0.5+) | 2007 12 09 | 300 | 0.4- | 0.4+ |
| 2001 11 20 | 704 | 0.2+  | 0.1-  | 2001 12 19 | 704 | 1.4+  | 0.0   | 2007 12 10 | 704 | 0.1+ | 0.4- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 11 20 | 704 | 0.4+ | 0.2+ | 2001 12 19 | 704 | (1.7+ | 1.1-) | 2007 12 10 | 704 | 0.2- | 0.1- |
| 2001 11 20 | 704 | 0.4- | 0.1+ | 2001 12 19 | 704 | (3.1+ | 0.5-) | 2007 12 10 | 704 | 0.5+ | 0.1- |
| 2001 11 20 | 704 | 0.0  | 0.3+ | 2001 12 24 | 291 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.1- | 0.7+ |
| 2001 11 21 | 704 | 0.3- | 0.4- | 2001 12 24 | 291 | 0.2+  | 0.0   | 2007 12 14 | 704 | 0.8+ | 0.4+ |
| 2001 11 21 | 704 | 0.2- | 0.4- | 2001 12 24 | 291 | 0.1+  | 0.2-  | 2007 12 14 | 704 | 0.2+ | 0.9+ |
| 2001 11 21 | 704 | 0.3- | 0.0  | 2007 11 18 | 691 | 0.3+  | 0.3-  | 2007 12 14 | 704 | 0.5+ | 0.9+ |
| 2001 12 09 | 644 | 0.5- | 0.8- | 2007 11 18 | 691 | 0.1+  | 0.7-  | 2007 12 14 | 704 | 0.3+ | 1.3+ |
| 2001 12 09 | 644 | 0.1- | 0.6- | 2007 11 18 | 691 | 0.2-  | 0.1+  | 2007 12 15 | 691 | 0.3- | 0.2+ |
| 2001 12 09 | 644 | 0.3- | 0.7- | 2007 12 04 | 703 | 1.7+  | 0.7-  | 2007 12 15 | 691 | 0.1- | 0.1+ |
| 2001 12 10 | 704 | 0.4+ | 0.1+ | 2007 12 04 | 703 | 2.7+  | 0.5-  | 2007 12 15 | 691 | 0.1- | 0.1- |
| 2001 12 10 | 704 | 1.0- | 0.3- | 2007 12 04 | 703 | 0.2+  | 0.4-  |            |     |      |      |

**2001 UR<sub>22</sub> = 2007 WJ<sub>54</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.50847   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17882236 | $\omega$ 174.91535 | +0.74567576   | -0.65616997 |
| <i>a</i> | 3.1202412  | $\Omega$ 226.79689 | +0.60558972   | +0.73989330 |
| <i>e</i> | 0.1809607  | <i>i</i> 9.14054   | +0.27790061   | +0.14832016 |
| <i>P</i> | 5.51       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 10 | 704 | 0.2-  | 0.1-  | 2001 10 14 | 704 | 1.0+  | 0.6-  | 2007 11 18 | G96 | 0.0   | 0.1+  |
| 2001 09 10 | 704 | 0.3-  | 0.4+  | 2001 10 14 | 704 | 0.7+  | 0.1-  | 2007 11 18 | G96 | 0.3-  | 0.2-  |
| 2001 09 10 | 704 | 0.1-  | 0.0   | 2001 10 17 | 704 | (1.7+ | 0.3+) | 2007 11 21 | G96 | 0.4+  | 0.3-  |
| 2001 09 28 | 644 | (0.4+ | 1.9+) | 2001 10 17 | 704 | 0.2+  | 0.7+  | 2007 11 21 | G96 | 0.1-  | 0.1-  |
| 2001 09 28 | 644 | (0.6+ | 1.7+) | 2001 10 17 | 704 | 0.9-  | 0.1+  | 2007 11 21 | G96 | 0.1-  | 0.0   |
| 2001 09 28 | 644 | (0.4+ | 2.0+) | 2001 10 17 | 704 | 0.2+  | 1.1+  | 2007 12 04 | 704 | (2.3- | 1.1+) |
| 2001 10 13 | 699 | 0.1+  | 0.5-  | 2001 10 19 | 704 | 0.9-  | 0.7-  | 2007 12 04 | 704 | 0.0   | 0.8+  |
| 2001 10 13 | 699 | 0.3-  | 0.1-  | 2001 10 19 | 704 | 0.3-  | 1.1+  | 2007 12 04 | 704 | 0.7-  | 0.5-  |
| 2001 10 13 | 699 | (0.5- | 1.6-) | 2001 10 19 | 704 | 0.9-  | 0.2+  | 2007 12 04 | 704 | 0.9+  | 0.1-  |
| 2001 10 13 | 699 | 0.4+  | 1.0-  | 2007 11 18 | G96 | 0.0   | 0.1+  | 2007 12 04 | 704 | 0.0   | 0.1+  |
| 2001 10 14 | 704 | 1.3+  | 0.2-  | 2007 11 18 | G96 | 0.2-  | 0.1+  |            |     |       |       |

**2001 UK<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.36208   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17308117 | $\omega$ 77.97199  | +0.93851711   | -0.32893836 |
| <i>a</i> | 3.1888653  | $\Omega$ 301.15093 | +0.24942300   | +0.85595717 |
| <i>e</i> | 0.2904280  | <i>i</i> 7.03464   | +0.23869187   | +0.39891963 |
| <i>P</i> | 5.69       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 28 | 699 | 1.2- | 0.8+ | 2001 10 27 | 704 | 0.1-  | 0.3-  | 2001 12 10 | 704 | 1.5- | 0.5- |
| 2001 08 28 | 699 | 0.4- | 0.3- | 2001 10 27 | 704 | 0.7+  | 0.4+  | 2001 12 10 | 704 | 0.2- | 0.3+ |
| 2001 08 28 | 699 | 0.2+ | 0.1- | 2001 10 27 | 704 | 0.1+  | 0.2-  | 2001 12 10 | 704 | 0.1+ | 0.4+ |
| 2001 08 28 | 699 | 0.1- | 0.8+ | 2001 10 27 | 704 | 0.5-  | 0.3+  | 2007 11 08 | 704 | 0.1+ | 0.1+ |
| 2001 09 25 | 704 | 0.1+ | 0.6+ | 2001 10 27 | 704 | 0.2+  | 0.0   | 2007 11 08 | 704 | 0.4- | 0.9- |
| 2001 09 25 | 704 | 0.2+ | 0.1- | 2001 11 10 | 704 | 0.6-  | 0.4+  | 2007 11 08 | 704 | 0.1+ | 0.5+ |
| 2001 09 25 | 704 | 0.1+ | 0.1- | 2001 11 10 | 704 | 1.0-  | 0.6+  | 2007 11 08 | 704 | 0.2- | 0.3+ |
| 2001 09 25 | 704 | 0.4+ | 0.1- | 2001 11 10 | 704 | 0.5-  | 1.0+  | 2007 11 08 | 704 | 0.0  | 0.1+ |
| 2001 09 25 | 704 | 0.1+ | 0.9+ | 2001 11 10 | 704 | 0.9-  | 1.1+  | 2007 11 20 | 704 | 0.3- | 0.3- |
| 2001 10 13 | 699 | 0.1- | 0.1- | 2001 11 10 | 704 | (2.0- | 0.9+) | 2007 11 20 | 704 | 1.3+ | 0.8+ |
| 2001 10 13 | 699 | 0.1- | 0.4- | 2001 11 11 | 644 | 0.0   | 0.1+  | 2007 11 20 | 704 | 0.9+ | 0.1+ |
| 2001 10 13 | 699 | 0.0  | 0.0  | 2001 11 11 | 644 | 0.0   | 0.0   | 2007 11 20 | 704 | 0.6- | 0.0  |



2007 DEC. 24

M.P.O. 129595

**2001 UU<sub>61</sub> = 2007 WV<sub>28</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 322.93938  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.17761020 | $\omega$ 74.84632 | -0.14140487   | -0.98798009 |
| <i>a</i> | 3.1344219  | $\Omega$ 23.55718 | +0.83766615   | -0.15303239 |
| <i>e</i> | 0.0455194  | <i>i</i> 8.98966  | +0.52756050   | -0.02182716 |
| <i>P</i> | 5.55       | <i>H</i> 15.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 17 | 291 | 0.0   | 0.2+  | 2001 10 21 | 704 | 0.8+  | 0.4-  | 2006 09 19 | 291 | 0.0  | 0.0  |
| 2001 10 17 | 704 | (1.6+ | 0.8-) | 2001 11 16 | 291 | 0.8-  | 0.0   | 2007 11 02 | 691 | 0.1+ | 0.2- |
| 2001 10 17 | 291 | 0.6+  | 0.2+  | 2001 11 16 | 291 | 0.9-  | 0.0   | 2007 11 02 | 691 | 0.2+ | 0.0  |
| 2001 10 17 | 704 | 0.0   | 0.8+  | 2001 11 16 | 291 | 1.1-  | 0.1-  | 2007 11 02 | 691 | 0.1- | 0.0  |
| 2001 10 17 | 704 | (0.5+ | 1.7+) | 2001 11 21 | 704 | 0.8+  | 1.2+  | 2007 11 19 | 691 | 0.3+ | 0.1- |
| 2001 10 17 | 291 | 0.3+  | 0.3+  | 2001 11 21 | 704 | 0.0   | 0.3+  | 2007 11 19 | 691 | 0.1+ | 0.1- |
| 2001 10 17 | 704 | (1.4+ | 1.6+) | 2001 11 21 | 704 | (1.8+ | 0.0 ) | 2007 11 19 | 691 | 0.2- | 0.0  |
| 2001 10 21 | 704 | 0.8+  | 0.4-  | 2001 11 21 | 704 | 1.1+  | 1.0+  | 2007 11 20 | 691 | 0.1+ | 0.1+ |
| 2001 10 21 | 704 | 0.1+  | 0.9-  | 2006 09 19 | 291 | 0.1+  | 0.3-  | 2007 11 20 | 691 | 0.2- | 0.1- |
| 2001 10 21 | 704 | 1.4+  | 0.5-  | 2006 09 19 | 291 | 0.0   | 0.1-  | 2007 11 20 | 691 | 0.1- | 0.2- |

**2001 UP<sub>99</sub> = 2007 VT<sub>290</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.94612   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17414311 | $\omega$ 327.63320 | +0.70251937   | -0.70475725 |
| <i>a</i> | 3.1758880  | $\Omega$ 77.52042  | +0.67261353   | +0.61211790 |
| <i>e</i> | 0.1597355  | <i>i</i> 5.81440   | +0.2350284    | +0.35864871 |
| <i>P</i> | 5.66       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 17 | 704 | (0.6- | 1.6+) | 2003 02 07 | 644 | 0.4+ | 0.3+ | 2007 12 04 | G96 | 0.4+ | 0.1- |
| 2001 10 17 | 704 | 1.0-  | 0.8+  | 2003 02 07 | 644 | 0.3+ | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.3- |
| 2001 10 17 | 704 | 1.1-  | 0.7+  | 2004 04 14 | 691 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.1- | 0.2+ |
| 2001 10 23 | 704 | 0.4+  | 1.5-  | 2004 04 14 | 691 | 0.0  | 0.2+ | 2007 12 04 | G96 | 0.2+ | 1.0+ |
| 2001 10 23 | 704 | 1.1+  | 1.3-  | 2004 04 14 | 691 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.6- | 0.2+ |
| 2001 10 23 | 704 | 1.3+  | 1.0-  | 2006 08 17 | 644 | 0.0  | 0.4+ | 2007 12 05 | 704 | 0.9+ | 0.3- |
| 2001 10 23 | 704 | 0.2+  | 0.5-  | 2006 08 17 | 644 | 0.0  | 0.4+ | 2007 12 05 | 704 | 0.6+ | 0.2+ |
| 2001 10 23 | 704 | 0.1-  | 0.8-  | 2006 08 17 | 644 | 0.0  | 0.4+ | 2007 12 05 | 704 | 1.0+ | 0.0  |
| 2001 10 24 | 644 | 0.9-  | 0.4+  | 2007 11 14 | 691 | 0.1+ | 0.4+ | 2007 12 14 | 704 | 0.1+ | 1.0+ |
| 2001 10 24 | 644 | 0.5-  | 0.1+  | 2007 11 14 | 691 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.0  |
| 2001 10 24 | 644 | 0.6-  | 0.1-  | 2007 11 14 | 691 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 0.4+ | 0.2+ |
| 2001 11 20 | 704 | 0.1-  | 0.7+  | 2007 11 19 | 691 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.7+ | 0.3- |
| 2001 11 20 | 704 | 0.8+  | 0.6+  | 2007 11 19 | 691 | 0.3- | 1.0- | 2007 12 14 | 704 | 0.5+ | 0.5+ |
| 2001 11 20 | 704 | 0.2+  | 1.1+  | 2007 11 19 | 691 | 0.2- | 0.1- | 2007 12 16 | 691 | 0.2- | 0.0  |
| 2001 11 20 | 704 | 0.3-  | 0.5+  | 2007 12 04 | 691 | 0.2- | 0.0  | 2007 12 16 | 691 | 0.0  | 0.2+ |
| 2001 11 20 | 704 | 0.3+  | 1.1+  | 2007 12 04 | 691 | 0.4- | 0.3- | 2007 12 16 | 691 | 0.3- | 0.0  |
| 2003 02 07 | 644 | 0.4+  | 0.4+  | 2007 12 04 | 691 | 0.1- | 0.1- |            |     |      |      |

**2001 UR<sub>126</sub> = 2007 VN<sub>230</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.90589   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17066010 | $\omega$ 330.56079 | +0.92552765   | -0.36901524 |
| <i>a</i> | 3.2189536  | $\Omega$ 51.34347  | +0.36522933   | +0.81057158 |
| <i>e</i> | 0.1914760  | <i>i</i> 6.24949   | +0.10003047   | +0.45475429 |
| <i>P</i> | 5.78       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 17 | 704 | 0.5+ | 0.1- | 2001 11 20 | 704 | 1.4+ | 1.2- | 2007 11 14 | 691 | 0.2+ | 0.2+ |
| 2001 10 17 | 704 | 0.9- | 0.4- | 2007 09 10 | G96 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2001 10 17 | 704 | 0.1- | 0.9+ | 2007 09 10 | G96 | 0.2+ | 0.2- | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2001 10 17 | 704 | 0.0  | 1.0- | 2007 09 10 | G96 | 0.2- | 0.2- | 2007 11 18 | 691 | 0.0  | 0.2- |
| 2001 10 24 | 704 | 0.7- | 1.3+ | 2007 09 10 | G96 | 0.1+ | 0.2- | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2001 10 24 | 704 | 0.4- | 0.7+ | 2007 10 17 | G96 | 0.2+ | 0.4- | 2007 12 03 | 703 | 0.1- | 0.4+ |
| 2001 10 24 | 704 | 0.4+ | 0.9+ | 2007 10 17 | G96 | 0.0  | 0.2- | 2007 12 03 | 703 | 0.8- | 0.3+ |
| 2001 10 24 | 704 | 0.1- | 0.6+ | 2007 10 17 | G96 | 0.4+ | 0.4- | 2007 12 03 | 703 | 0.1+ | 0.5+ |
| 2001 10 26 | 691 | 0.1+ | 0.1- | 2007 10 17 | G96 | 0.6+ | 0.1+ | 2007 12 03 | 703 | 0.5- | 0.5- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 26 | 691 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.3+ | 0.2- |
| 2001 10 26 | 691 | 0.1- | 0.1- | 2007 11 07 | 691 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.5+ | 0.2+ |
| 2001 11 20 | 704 | 0.6- | 1.0- | 2007 11 07 | 691 | 0.1- | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2001 11 20 | 704 | 0.5+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.1+ | 2007 12 06 | G96 | 0.7+ | 0.1+ |

**2001 UJ<sub>133</sub> = 2007 UB<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.44625  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17280247 | $\omega$ 190.44177 | +0.58622378   | -0.80963477 |
| <i>a</i> | 3.1922931  | $\Omega$ 223.67647 | +0.74627817   | +0.55353033 |
| <i>e</i> | 0.1819117  | <i>i</i> 2.39558   | +0.31529443   | +0.19518122 |
| <i>P</i> | 5.70       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 17 | 291 | 0.0   | 0.0   | 2007 09 10 | G96 | 0.0  | 0.2- | 2007 11 11 | J75 | 0.1+ | 0.3- |
| 2001 10 17 | 291 | 0.4+  | 0.0   | 2007 09 10 | G96 | 0.1+ | 0.1- | 2007 11 11 | J75 | 0.7+ | 0.4- |
| 2001 10 17 | 291 | 0.0   | 0.0   | 2007 09 10 | G96 | 0.2- | 0.9- | 2007 11 11 | J75 | 0.5+ | 0.4+ |
| 2001 10 19 | 644 | 0.4-  | 1.2+  | 2007 09 10 | G96 | 0.0  | 0.2- | 2007 11 13 | J75 | 0.7+ | 0.9+ |
| 2001 10 19 | 644 | 0.4-  | 1.3+  | 2007 10 17 | G96 | 0.8+ | 0.5- | 2007 11 13 | J75 | 0.6+ | 0.2+ |
| 2001 10 19 | 644 | 0.5-  | 1.4+  | 2007 10 17 | G96 | 0.7+ | 0.2- | 2007 11 13 | J75 | 0.0  | 0.4+ |
| 2001 10 21 | 704 | 0.2-  | 1.2-  | 2007 10 17 | G96 | 1.2+ | 0.3+ | 2007 12 03 | 703 | 0.2- | 0.2- |
| 2001 10 21 | 704 | 0.3-  | 0.0   | 2007 10 17 | G96 | 0.7+ | 0.3- | 2007 12 03 | 703 | 0.4- | 0.4- |
| 2001 10 21 | 704 | 0.9+  | 0.6-  | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 12 03 | 703 | 1.2- | 0.3+ |
| 2001 10 21 | 704 | 0.3+  | 0.1-  | 2007 10 30 | 691 | 1.0- | 0.6+ | 2007 12 03 | 703 | 0.2+ | 0.1- |
| 2001 10 24 | 704 | (1.8+ | 1.6-) | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 04 | G96 | 0.0  | 0.7- |
| 2001 10 24 | 704 | 0.6-  | 0.3-  | 2007 11 03 | 691 | 0.1- | 0.2+ | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2001 10 24 | 704 | 0.1-  | 1.5-  | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 04 | G96 | 0.3+ | 0.4- |
| 2001 10 24 | 704 | 0.4-  | 0.0   | 2007 11 03 | 691 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.4- |

**2001 UY<sub>136</sub> = 2007 VM<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.09562   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17071298 | $\omega$ 337.18430 | +0.82022290   | -0.57141277 |
| <i>a</i> | 3.2182888  | $\Omega$ 57.69200  | +0.52962147   | +0.74080808 |
| <i>e</i> | 0.1417786  | <i>i</i> 1.82164   | +0.21618393   | +0.35311590 |
| <i>P</i> | 5.77       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 10 01 | 691 | 0.0  | 0.1- | 2007 09 18 | G96 | 0.2+  | 0.4-  | 2007 11 11 | G96 | 0.3+ | 0.2- |
| 1995 10 01 | 691 | 0.1+ | 0.0  | 2007 09 18 | G96 | 0.9+  | 0.1+  | 2007 11 11 | G96 | 0.2+ | 0.1- |
| 1995 10 01 | 691 | 0.0  | 0.0  | 2007 10 08 | 691 | 0.4-  | 0.8-  | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2001 10 18 | 644 | 0.5- | 0.3+ | 2007 10 08 | 691 | 0.5-  | 0.1-  | 2007 11 11 | G96 | 0.4+ | 0.4- |
| 2001 10 18 | 644 | 0.2- | 0.1+ | 2007 10 08 | 691 | 0.2-  | 0.2-  | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2001 10 18 | 644 | 0.1+ | 0.4+ | 2007 10 11 | 691 | 0.2+  | 0.9+  | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2001 10 23 | 704 | 0.1- | 0.6+ | 2007 10 11 | 691 | 0.7-  | 0.7-  | 2007 11 14 | 691 | 0.2+ | 0.0  |
| 2001 10 23 | 704 | 0.6+ | 0.3+ | 2007 10 11 | 691 | 0.1+  | 0.3-  | 2007 11 15 | 704 | 0.3+ | 0.6+ |
| 2001 10 23 | 704 | 0.1- | 0.3+ | 2007 10 30 | 691 | 0.4-  | 0.1+  | 2007 11 15 | 704 | 0.7+ | 0.3+ |
| 2001 10 23 | 704 | 0.6+ | 0.7+ | 2007 10 30 | 691 | 0.2-  | 0.2+  | 2007 11 15 | 704 | 0.4- | 0.7+ |
| 2001 10 23 | 704 | 0.1+ | 0.1- | 2007 10 30 | 691 | 0.1-  | 0.3+  | 2007 11 15 | 704 | 0.7+ | 0.7+ |
| 2001 10 23 | 704 | 0.3+ | 0.1+ | 2007 10 30 | G96 | 0.3+  | 0.2+  | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2001 10 23 | 704 | 0.6- | 0.6+ | 2007 10 30 | G96 | 0.3-  | 0.0   | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2001 10 23 | 704 | 0.7+ | 0.2- | 2007 10 30 | G96 | 0.7+  | 0.1+  | 2007 11 18 | 691 | 0.3- | 0.2- |
| 2001 10 23 | 704 | 1.5- | 0.0  | 2007 10 30 | G96 | 0.3+  | 0.2+  | 2007 12 04 | 691 | 0.4- | 0.0  |
| 2001 10 23 | 704 | 0.3+ | 0.7+ | 2007 11 07 | 300 | 1.4+  | 0.7-  | 2007 12 04 | 691 | 0.2- | 0.3+ |
| 2001 10 24 | 704 | 0.5- | 0.5+ | 2007 11 07 | 300 | (1.7+ | 0.7-) | 2007 12 04 | 691 | 0.1- | 0.0  |
| 2001 10 24 | 704 | 0.5+ | 0.4+ | 2007 11 07 | 300 | 1.2+  | 1.3-  | 2007 12 06 | 691 | 0.1+ | 0.1+ |
| 2001 10 24 | 704 | 1.1+ | 0.9+ | 2007 11 07 | 300 | 1.0+  | 0.2+  | 2007 12 06 | 691 | 0.1- | 0.3+ |
| 2001 10 24 | 704 | 1.0- | 0.8+ | 2007 11 07 | 300 | (1.1+ | 2.0-) | 2007 12 06 | 691 | 0.5- | 0.1+ |
| 2001 11 14 | 691 | 0.0  | 0.1- | 2007 11 09 | 300 | 0.5+  | 0.4-  | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2001 11 14 | 691 | 0.7- | 0.7- | 2007 11 09 | 300 | 0.6+  | 0.7-  | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2001 11 14 | 691 | 0.7+ | 0.3- | 2007 11 09 | 300 | 0.6+  | 0.4-  | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2007 09 18 | G96 | 0.4+ | 0.2- | 2007 11 09 | 300 | 0.4+  | 0.4+  | 2007 12 15 | G96 | 0.7+ | 0.1- |
| 2007 09 18 | G96 | 0.6+ | 0.1+ | 2007 11 09 | 300 | 0.5+  | 0.6-  |            |     |      |      |

**2001 UL<sub>185</sub> = 2007 WT<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 21.18588   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |      |
|-----------------------------|------------|----------|-----------|-------------|------|-------------|------|
| <i>n</i>                    | 0.18282929 | $\omega$ | 123.46579 | +0.83950799 |      | −0.52277392 |      |
| <i>a</i>                    | 3.0744837  | $\Omega$ | 268.46248 | +0.43628150 |      | +0.81102466 |      |
| <i>e</i>                    | 0.1570474  | <i>i</i> | 8.51996   | +0.32385922 |      | +0.26257653 |      |
| <i>P</i>                    | 5.39       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 0    |
| Residuals in seconds of arc |            |          |           |             |      |             |      |
| 1996 11 04                  | 691        | 0.3+     | 0.4−      | 2006 08 18  | 644  | 0.0         | 0.2+ |
| 1996 11 04                  | 691        | 0.1+     | 0.6−      | 2006 08 18  | 644  | 0.0         | 0.6+ |
| 1996 11 04                  | 691        | 0.0      | 0.3−      | 2006 08 18  | 644  | 0.1+        | 0.5+ |
| 2001 10 13                  | 644        | 0.8−     | 0.7−      | 2007 11 18  | 704  | 0.8+        | 0.6− |
| 2001 10 13                  | 644        | 1.0−     | 0.4−      | 2007 11 18  | 704  | 0.2+        | 0.5− |
| 2001 10 13                  | 644        | 0.7−     | 0.3−      | 2007 11 18  | 704  | 0.8+        | 0.3− |
| 2001 10 17                  | 704        | 0.3+     | 0.5−      | 2007 11 18  | 704  | 0.4+        | 0.8+ |
| 2001 10 17                  | 704        | 0.2+     | 0.4−      | 2007 11 18  | 704  | 0.1−        | 0.4+ |
| 2001 10 17                  | 704        | 0.1−     | 0.1+      | 2007 11 19  | G96  | 0.0         | 0.2+ |
| 2001 10 17                  | 704        | 0.6−     | 0.1−      | 2007 11 19  | G96  | 0.1+        | 0.1+ |
| 2001 10 21                  | 291        | 0.2+     | 0.4+      | 2007 11 19  | G96  | 0.2+        | 0.0  |
| 2001 10 21                  | 291        | 0.0      | 0.2+      | 2007 11 19  | G96  | 0.0         | 0.2+ |
| 2001 10 21                  | 291        | 0.0      | 0.4+      | 2007 11 20  | 704  | 0.5+        | 0.5− |
| 2002 12 31                  | 645        | 0.0      | 0.0       | 2007 11 20  | 704  | 0.0         | 0.3+ |
| 2002 12 31                  | 645        | 0.0      | 0.0       | 2007 11 20  | 704  | 0.1−        | 1.3− |

**2001 UF<sub>186</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 75.60352   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |      |
|-----------------------------|------------|----------|-----------|-------------|------|-------------|------|
| <i>n</i>                    | 0.18009048 | $\omega$ | 102.73149 | +0.67391641 |      | +0.69998710 |      |
| <i>a</i>                    | 3.1055764  | $\Omega$ | 213.76788 | −0.72593548 |      | +0.68683394 |      |
| <i>e</i>                    | 0.2274347  | <i>i</i> | 25.16301  | +0.13731115 |      | +0.19564563 |      |
| <i>P</i>                    | 5.47       | <i>H</i> | 14.8      | <i>G</i>    | 0.15 | <i>U</i>    | 3    |
| Residuals in seconds of arc |            |          |           |             |      |             |      |
| 2001 07 23                  | 644        | 0.3−     | 0.2−      | 2001 10 13  | 699  | 0.8−        | 0.8+ |
| 2001 07 23                  | 644        | 0.2−     | 0.2−      | 2001 10 13  | 699  | 0.2−        | 0.4+ |
| 2001 07 23                  | 644        | 0.0      | 0.0       | 2001 10 13  | 644  | 0.8+        | 0.5− |
| 2001 09 25                  | 704        | 0.0      | 0.4+      | 2001 10 13  | 644  | 1.5+        | 0.5− |
| 2001 09 25                  | 704        | 0.0      | 0.7+      | 2001 10 13  | 644  | 1.1+        | 0.5− |
| 2001 09 25                  | 704        | 0.7+     | 0.1−      | 2001 10 17  | 704  | 0.3−        | 0.1+ |
| 2001 09 25                  | 704        | 0.4+     | 0.1+      | 2001 10 17  | 704  | 0.7−        | 0.1− |
| 2001 09 25                  | 704        | 0.5+     | 0.0       | 2001 10 17  | 704  | 0.8−        | 0.0  |
| 2001 09 29                  | 644        | 0.2−     | 0.2+      | 2001 10 17  | 704  | 1.1−        | 1.0+ |
| 2001 09 29                  | 644        | 0.2−     | 0.3−      | 2001 10 17  | 704  | 1.5−        | 0.9− |
| 2001 09 29                  | 644        | 0.1−     | 0.1+      | 2001 10 20  | 644  | 0.4+        | 0.8− |
| 2001 10 13                  | 699        | 0.0      | 0.2−      | 2001 10 20  | 644  | 0.2+        | 1.0− |
| 2001 10 13                  | 699        | 0.3−     | 0.1+      | 2001 10 20  | 644  | 0.2+        | 0.7− |

**2001 UF<sub>203</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 18.03357   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |      |
|-----------------------------|------------|----------|-----------|-------------|------|-------------|------|
| <i>n</i>                    | 0.17924008 | $\omega$ | 180.40728 | +0.54201541 |      | −0.83903188 |      |
| <i>a</i>                    | 3.1153914  | $\Omega$ | 236.77243 | +0.77118313 |      | +0.51900310 |      |
| <i>e</i>                    | 0.2372751  | <i>i</i> | 3.24697   | +0.33390998 |      | +0.16328285 |      |
| <i>P</i>                    | 5.50       | <i>H</i> | 16.8      | <i>G</i>    | 0.15 | <i>U</i>    | 4    |
| Residuals in seconds of arc |            |          |           |             |      |             |      |
| 2001 10 19                  | 644        | 0.1−     | 0.4−      | 2001 10 26  | 644  | 0.3+        | 0.7− |
| 2001 10 19                  | 644        | 0.1−     | 0.3−      | 2001 10 26  | 644  | 0.2+        | 0.7− |
| 2001 10 19                  | 644        | 0.7+     | 0.3−      | 2001 11 18  | 691  | 0.2−        | 0.1− |
| 2001 10 21                  | 704        | 0.2−     | 0.1+      | 2001 11 18  | 691  | 0.0         | 0.6+ |
| 2001 10 21                  | 704        | 0.2−     | 0.8+      | 2001 11 18  | 691  | 0.2−        | 0.4− |
| 2001 10 21                  | 704        | 0.3−     | 0.6+      | 2001 11 21  | 704  | 0.6+        | 0.6− |
| 2001 10 21                  | 704        | 0.4+     | 0.4+      | 2001 11 21  | 704  | 0.1−        | 0.0  |
|                             |            |          |           | 2007 12 04  | 691  | 0.3+        | 0.1+ |
|                             |            |          |           | 2007 12 04  | 691  | 0.1−        | 0.2− |
|                             |            |          |           | 2007 12 06  | G96  | 0.0         | 0.2+ |
|                             |            |          |           | 2007 12 06  | G96  | 0.0         | 0.5+ |
|                             |            |          |           | 2007 12 06  | G96  | 0.4+        | 0.3+ |
|                             |            |          |           | 2007 12 06  | G96  | 0.1−        | 0.5− |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2001 10 21 | 704 | 0.2− | 1.0+ | 2001 11 21 | 704 | 0.2+ | 0.6+ |
| 2001 10 26 | 644 | 0.3− | 0.6− | 2001 11 21 | 704 | 0.6+ | 0.3− |

**2001 VZ<sub>59</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 358.88637  |             | (2000.0) | <b>P</b>    |      | <b>Q</b>    |      |
|-----------------------------|------------|-------------|----------|-------------|------|-------------|------|
| <i>n</i>                    | 0.17494223 | $\omega$    | 53.11069 | +0.16206603 |      | −0.98066274 |      |
| <i>a</i>                    | 3.1662092  | $\Omega$    | 28.16228 | +0.81519207 |      | +0.07040750 |      |
| <i>e</i>                    | 0.1450730  | <i>i</i>    | 13.44080 | +0.55605440 |      | +0.18260171 |      |
| <i>P</i>                    | 5.63       | <i>H</i>    | 14.9     | <i>G</i>    | 0.15 | <i>U</i>    | 3    |
| Residuals in seconds of arc |            |             |          |             |      |             |      |
| 2001 10 14                  | 704        | 0.5+        | 0.2+     | 2001 11 18  | 704  | 0.7−        | 0.2+ |
| 2001 10 14                  | 704        | 1.0−        | 0.0      | 2001 11 18  | 704  | 0.6−        | 0.1+ |
| 2001 10 14                  | 704        | 0.4−        | 0.1−     | 2001 11 18  | 704  | 0.1−        | 0.5+ |
| 2001 10 14                  | 704        | 0.1+        | 0.6+     | 2001 11 18  | 704  | 0.0         | 0.6+ |
| 2001 11 10                  | 704        | 1.3+        | 0.2−     | 2001 11 19  | 699  | 0.2+        | 0.1− |
| 2001 11 10                  | 704        | 0.4+        | 1.0−     | 2001 11 19  | 699  | 0.4+        | 0.1+ |
| 2001 11 10                  | 704        | 1.3+        | 0.6−     | 2001 11 19  | 699  | 0.2+        | 0.6+ |
| 2001 11 11                  | 699        | 1.1−        | 0.5+     | 2001 11 19  | 699  | 0.6−        | 0.0  |
| 2001 11 11                  | 699        | 0.3+        | 0.4−     | 2001 11 21  | 704  | 0.2−        | 0.6− |
| 2001 11 11                  | 699        | 0.2+        | 0.8+     | 2001 11 21  | 704  | 1.0−        | 0.5− |
| 2001 11 11                  | 699        | (1.5− 0.9+) |          | 2001 11 21  | 704  | 0.4−        | 0.0  |
| 2001 11 12                  | 704        | 0.4−        | 0.2−     | 2001 11 21  | 704  | 0.7+        | 0.3− |
| 2001 11 12                  | 704        | 0.2+        | 0.1−     | 2001 11 21  | 704  | 0.5+        | 0.5− |
| 2001 11 12                  | 704        | 0.3+        | 0.1−     | 2001 11 24  | 704  | 0.9+        | 0.5− |
| 2001 11 12                  | 704        | 0.6−        | 0.1−     | 2001 11 24  | 704  | 1.1+        | 0.3− |
| 2001 11 12                  | 704        | 0.5−        | 0.4−     | 2001 11 24  | 704  | (2.3+ 0.7+) |      |
| 2001 11 18                  | 704        | 0.0         | 0.3+     | 2001 11 24  | 704  | 0.0         | 0.5+ |

**2001 WA<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 359.62293  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |      |
|-----------------------------|------------|----------|----------|-------------|------|-------------|------|
| <i>n</i>                    | 0.17396346 | $\omega$ | 19.37467 | +0.58894061 |      | −0.75428758 |      |
| <i>a</i>                    | 3.1780742  | $\Omega$ | 36.31058 | +0.66166919 |      | +0.24386427 |      |
| <i>e</i>                    | 0.1968748  | <i>i</i> | 29.34187 | +0.46405048 |      | +0.60957400 |      |
| <i>P</i>                    | 5.67       | <i>H</i> | 15.6     | <i>G</i>    | 0.15 | <i>U</i>    | 2    |
| Residuals in seconds of arc |            |          |          |             |      |             |      |
| 2001 10 15                  | 644        | 0.4+     | 0.2−     | 2001 11 18  | 704  | 0.6−        | 0.4+ |
| 2001 10 15                  | 644        | 0.1+     | 0.4−     | 2001 11 18  | 704  | 0.4−        | 0.2− |
| 2001 10 15                  | 644        | 0.0      | 0.6−     | 2001 11 18  | 704  | 0.0         | 1.2+ |
| 2001 10 20                  | 704        | 0.1+     | 0.2−     | 2001 11 20  | 704  | 0.2+        | 0.9− |
| 2001 10 20                  | 704        | 0.3+     | 0.8+     | 2001 11 20  | 704  | 0.0         | 0.8− |
| 2001 10 20                  | 704        | 0.5−     | 0.2−     | 2001 11 20  | 704  | 0.8+        | 0.2− |
| 2001 10 24                  | 644        | 0.3−     | 0.3+     | 2001 11 20  | 704  | 0.4+        | 0.4− |
| 2001 10 24                  | 644        | 0.1−     | 0.5+     | 2002 11 07  | 645  | 0.0         | 0.0  |
| 2001 10 24                  | 644        | 0.1−     | 0.2+     | 2002 11 07  | 645  | 0.0         | 0.0  |
| 2001 11 18                  | 704        | 0.3−     | 0.6+     | 2007 08 22  | 691  | 0.0         | 0.5+ |

**2001 WO<sub>52</sub> = 2007 WM<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 294.43792  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |      |
|-----------------------------|------------|----------|----------|-------------|------|-------------|------|
| <i>n</i>                    | 0.17325448 | $\omega$ | 85.88229 | −0.62335053 |      | −0.77160095 |      |
| <i>a</i>                    | 3.1867383  | $\Omega$ | 43.54371 | +0.62438267 |      | −0.58874602 |      |
| <i>e</i>                    | 0.0292288  | <i>i</i> | 10.60225 | +0.47072328 |      | −0.24085286 |      |
| <i>P</i>                    | 5.69       | <i>H</i> | 15.3     | <i>G</i>    | 0.15 | <i>U</i>    | 2    |
| Residuals in seconds of arc |            |          |          |             |      |             |      |
| 2001 11 12                  | 691        | 0.0      | 0.3+     | 2001 11 21  | 704  | 0.3+        | 0.2+ |
| 2001 11 12                  | 691        | 0.2+     | 0.3+     | 2004 04 14  | 691  | 0.3−        | 0.1− |
| 2001 11 12                  | 691        | 0.0      | 0.0      | 2004 04 14  | 691  | 0.8+        | 0.4+ |
| 2001 11 19                  | 704        | 0.9−     | 0.8−     | 2004 04 14  | 691  | 0.3−        | 0.1+ |
| 2001 11 19                  | 704        | 1.2−     | 0.8−     | 2007 10 24  | G96  | 0.4−        | 0.1+ |
| 2001 11 19                  | 704        | 0.6−     | 0.6−     | 2007 10 24  | G96  | 0.3−        | 0.2− |
|                             |            |          |          | 2007 11 19  | G96  | 0.5+        | 0.4− |
|                             |            |          |          | 2007 11 19  | G96  | 0.4+        | 0.4− |
|                             |            |          |          | 2007 11 19  | G96  | 0.3+        | 0.6− |
|                             |            |          |          | 2007 11 19  | G96  | 0.3+        | 0.4− |
|                             |            |          |          | 2007 11 20  | 691  | 0.1−        | 0.2+ |
|                             |            |          |          | 2007 11 20  | 691  | 0.2+        | 0.1+ |

## 2007 DEC. 24

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 19 | 704 | 0.3−  | 1.2+  | 2007 10 24 | G96 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2001 11 19 | 704 | (2.3− | 0.2+) | 2007 10 24 | G96 | 0.0  | 0.1+ | 2007 12 13 | 704 | 0.6− | 0.3+ |
| 2001 11 21 | 704 | 0.1−  | 0.7−  | 2007 11 19 | 691 | 0.1− | 0.1− | 2007 12 13 | 704 | 0.3+ | 0.5+ |
| 2001 11 21 | 704 | 0.2−  | 0.2+  | 2007 11 19 | 691 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.4− | 0.2+ |
| 2001 11 21 | 704 | 0.6+  | 1.0+  | 2007 11 19 | 691 | 0.1+ | 0.2− | 2007 12 13 | 704 | 0.4+ | 0.2+ |

**2001 WV<sub>60</sub> = 2007 VR<sub>147</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.34450  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17039024 | $\omega$ | 203.28071 | +0.16605512   | −0.95896022 |
| <i>a</i> | 3.2223515  | $\Omega$ | 237.88971 | +0.94203636   | +0.22316695 |
| <i>e</i> | 0.1151229  | <i>i</i> | 15.74374  | +0.29153592   | −0.17490514 |
| <i>P</i> | 5.78       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 09 | 704 | 0.7− | 0.1+ | 2001 11 21 | 704 | 0.3− | 0.1− | 2007 11 08 | 691 | 0.2− | 0.1+ |
| 2001 11 09 | 704 | 0.4+ | 0.8+ | 2001 11 21 | 704 | 0.4+ | 0.4− | 2007 11 08 | 691 | 0.1− | 0.2− |
| 2001 11 09 | 704 | 0.3+ | 0.4− | 2007 09 18 | G96 | 0.0  | 0.2+ | 2007 11 21 | G96 | 1.4+ | 0.1− |
| 2001 11 09 | 704 | 0.6− | 0.7− | 2007 09 18 | G96 | 0.2+ | 0.1− | 2007 11 21 | G96 | 0.1+ | 0.2− |
| 2001 11 19 | 704 | 0.4− | 0.1+ | 2007 09 18 | G96 | 0.6+ | 0.5+ | 2007 11 21 | G96 | 0.4+ | 0.1− |
| 2001 11 19 | 704 | 0.7− | 0.1+ | 2007 09 18 | G96 | 0.0  | 0.4+ | 2007 12 04 | 704 | 0.1+ | 0.1+ |
| 2001 11 19 | 704 | 0.6+ | 0.3− | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.1+ | 0.2+ |
| 2001 11 21 | 704 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.1+ | 2007 12 04 | 704 | 0.5+ | 0.1+ |
| 2001 11 21 | 704 | 0.2+ | 0.3+ | 2007 11 04 | 691 | 0.3− | 0.1− | 2007 12 04 | 704 | 0.3− | 0.2− |
| 2001 11 21 | 704 | 0.5+ | 0.1+ | 2007 11 08 | 691 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.1+ | 0.1+ |

**2001 WQ<sub>64</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 334.75531  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17485726 | $\omega$ | 250.50423 | −0.08835961   | −0.98848638 |
| <i>a</i> | 3.1672349  | $\Omega$ | 205.53479 | +0.98688489   | −0.07015065 |
| <i>e</i> | 0.2351622  | <i>i</i> | 16.55585  | +0.13509553   | −0.13406552 |
| <i>P</i> | 5.64       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 23 | 704 | 0.2+  | 0.3+  | 2001 10 21 | 704 | 0.9− | 0.4− | 2007 11 15 | 703 | 0.2+ | 0.4+ |
| 2001 09 23 | 704 | 0.8+  | 0.9−  | 2001 10 21 | 704 | 0.5− | 0.0  | 2007 11 15 | 703 | 0.2+ | 0.3− |
| 2001 09 23 | 704 | 0.5−  | 0.3−  | 2001 10 21 | 704 | 0.5− | 0.2+ | 2007 11 15 | 703 | 0.2+ | 0.2− |
| 2001 10 13 | 704 | 1.2+  | 1.0+  | 2001 10 21 | 704 | 0.5− | 0.3− | 2007 11 18 | G96 | 0.5− | 0.8− |
| 2001 10 13 | 704 | 0.8+  | 0.7+  | 2001 11 20 | 704 | 0.3− | 0.6− | 2007 11 18 | G96 | 0.2− | 0.8− |
| 2001 10 13 | 704 | (3.3− | 1.3+) | 2001 11 20 | 704 | 0.3− | 0.3− | 2007 11 18 | G96 | 0.1− | 0.7− |
| 2001 10 13 | 704 | 0.3−  | 1.4+  | 2001 11 20 | 704 | 0.4− | 0.0  | 2007 11 18 | G96 | 0.5− | 0.8− |
| 2001 10 13 | 704 | 0.4−  | 0.3+  | 2001 11 20 | 704 | 0.7+ | 1.1+ | 2007 11 18 | 699 | 0.0  | 0.1+ |
| 2001 10 17 | 704 | (1.7− | 0.6−) | 2001 11 21 | 704 | 0.8+ | 0.1+ | 2007 11 18 | 699 | 0.0  | 0.3+ |
| 2001 10 17 | 704 | 0.5−  | 0.5−  | 2001 11 21 | 704 | 0.2− | 0.1− | 2007 11 18 | 699 | 1.2− | 0.1+ |
| 2001 10 17 | 704 | 0.6+  | 0.3+  | 2001 11 21 | 704 | 0.1+ | 0.1+ | 2007 11 18 | 699 | 0.3− | 0.9+ |
| 2001 10 17 | 704 | 0.8+  | 0.7−  | 2007 11 09 | 703 | 1.4+ | 0.6+ | 2007 12 05 | 703 | 0.5+ | 0.0  |
| 2001 10 19 | 644 | 0.0   | 0.3−  | 2007 11 09 | 703 | 0.2− | 0.5+ | 2007 12 05 | 703 | 0.7+ | 0.6+ |
| 2001 10 19 | 644 | 0.2−  | 0.5−  | 2007 11 09 | 703 | 0.2− | 0.3+ | 2007 12 05 | 703 | 0.6− | 0.4− |
| 2001 10 19 | 644 | 0.1−  | 0.4−  | 2007 11 09 | 703 | 0.1− | 0.1− | 2007 12 05 | 703 | 0.1+ | 0.5+ |
| 2001 10 21 | 704 | 0.3−  | 0.1−  | 2007 11 15 | 703 | 0.7+ | 0.2− |            |     |      |      |

**2001 WF<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.50405   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18005839 | $\omega$ | 322.78637 | +0.87988665   | −0.47338826 |
| <i>a</i> | 3.1059454  | $\Omega$ | 65.51660  | +0.44615456   | +0.79312350 |
| <i>e</i> | 0.1873328  | <i>i</i> | 2.59899   | +0.16354081   | +0.38322143 |
| <i>P</i> | 5.47       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 29 | 809 | 0.0   | 0.2+  | 2001 11 21 | 704 | 0.0  | 0.1+ | 2001 12 17 | 704 | 0.0  | 0.9− |
| 2001 10 23 | 704 | 0.0   | 1.2+  | 2001 11 21 | 704 | 0.0  | 0.5− | 2001 12 17 | 704 | 0.4+ | 0.5− |
| 2001 10 23 | 704 | (1.1+ | 1.9+) | 2001 11 21 | 704 | 0.1− | 0.3− | 2002 01 13 | 291 | 0.1− | 0.1− |
| 2001 10 23 | 704 | 0.1+  | 1.2+  | 2001 11 21 | 704 | 0.2+ | 0.1− | 2002 01 13 | 291 | 0.2+ | 0.0  |

## M.P.O. 129597

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 25 | 644 | 0.3− | 0.3+ | 2001 12 14 | 704 | 1.3− | 0.2+ | 2002 01 13 | 291 | 0.2+ | 0.0  |
| 2001 10 25 | 644 | 0.4− | 0.1+ | 2001 12 14 | 704 | 0.1− | 0.1− | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2001 10 25 | 644 | 0.5− | 0.3+ | 2001 12 14 | 704 | 0.5− | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.1+ |
| 2001 11 20 | 704 | 0.3+ | 0.5+ | 2001 12 14 | 704 | 1.5+ | 0.3− | 2007 11 05 | G96 | 0.5+ | 0.2+ |
| 2001 11 20 | 704 | 0.2+ | 0.1+ | 2001 12 14 | 704 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 2001 11 20 | 704 | 0.4− | 0.2− | 2001 12 17 | 704 | 0.1− | 0.0  | 2007 12 04 | 691 | 0.0  | 0.2+ |
| 2001 11 20 | 704 | 0.3− | 0.4− | 2001 12 17 | 704 | 0.3+ | 0.6− | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2001 11 20 | 704 | 0.0  | 0.0  | 2001 12 17 | 704 | 0.1+ | 0.8− | 2007 12 04 | 691 | 0.0  | 0.1+ |

**2001 XP<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.14973  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.16576157 | $\omega$ | 20.95199 | −0.09389204   | −0.95082916 |
| <i>a</i> | 3.2820623  | $\Omega$ | 75.38523 | +0.86454681   | −0.22487724 |
| <i>e</i> | 0.2969823  | <i>i</i> | 17.75876 | +0.49370345   | +0.21296511 |
| <i>P</i> | 5.95       | <i>H</i> | 15.7     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 01 12 | 691 | 0.2− | 0.3− | 2001 12 14 | 704 | 0.5+  | 0.1+  | 2002 01 14 | 704 | (0.6− | 1.9+) |
| 1996 01 12 | 691 | 0.0  | 0.3+ | 2001 12 14 | 704 | 0.2+  | 0.2+  | 2007 11 12 | 704 | 0.3+  | 0.1−  |
| 1996 01 12 | 691 | 0.4+ | 0.3− | 2001 12 14 | 704 | 0.2+  | 0.0   | 2007 11 12 | 704 | 0.4+  | 0.2+  |
| 2001 11 20 | 704 | 0.0  | 0.0  | 2001 12 17 | 704 | 0.5+  | 0.9−  | 2007 11 12 | 704 | 0.9−  | 0.6−  |
| 2001 11 20 | 704 | 0.8+ | 0.6− | 2001 12 17 | 704 | 0.3−  | 1.2−  | 2007 11 12 | 704 | 0.7+  | 0.6+  |
| 2001 11 20 | 704 | 0.2− | 0.4+ | 2001 12 17 | 704 | 0.1−  | 0.7−  | 2007 11 12 | 704 | 0.2+  | 0.0   |
| 2001 11 20 | 704 | 0.5− | 0.4− | 2001 12 17 | 704 | 0.2−  | 1.4−  | 2007 11 14 | 704 | 0.9+  | 0.2+  |
| 2001 11 24 | 704 | 0.2+ | 0.8− | 2001 12 17 | 704 | 0.4−  | 1.4−  | 2007 11 14 | 704 | 0.7+  | 0.1+  |
| 2001 11 24 | 704 | 0.4− | 0.9+ | 2001 12 19 | 704 | 0.4−  | 0.1+  | 2007 11 14 | 704 | (1.5+ | 0.5−) |
| 2001 11 24 | 704 | 0.4+ | 0.8+ | 2001 12 19 | 704 | 1.3−  | 1.0−  | 2007 11 14 | 704 | 0.8+  | 0.2−  |
| 2001 12 07 | 644 | 0.1− | 0.4+ | 2001 12 19 | 704 | 0.0   | 0.3−  | 2007 12 04 | 691 | 0.4−  | 0.0   |
| 2001 12 07 | 644 | 0.0  | 0.1+ | 2001 12 19 | 704 | 0.5+  | 0.5−  | 2007 12 04 | 691 | 0.1−  | 0.0   |
| 2001 12 07 | 644 | 0.2− | 0.4+ | 2001 12 19 | 704 | 1.4+  | 0.8−  | 2007 12 04 | 691 | 0.8−  | 0.1−  |
| 2001 12 08 | 699 | 0.9− | 0.8− | 2001 12 19 | 408 | 0.7+  | 0.7+  | 2007 12 04 | G96 | 0.3+  | 0.3−  |
| 2001 12 08 | 699 | 0.6− | 0.3− | 2001 12 19 | 408 | 0.9−  | 1.2+  | 2007 12 04 | G96 | 0.2+  | 0.1−  |
| 2001 12 08 | 699 | 0.5+ | 0.9+ | 2001 12 20 | 704 | 0.0   | 0.1+  | 2007 12 04 | G96 | 0.2+  | 0.1−  |
| 2001 12 08 | 699 | 0.2− | 0.5+ | 2001 12 20 | 704 | 0.5−  | 0.0   | 2007 12 05 | 704 | 0.2+  | 0.5−  |
| 2001 12 11 | 704 | 0.3− | 1.0+ | 2001 12 20 | 704 | 0.4−  | 0.6+  | 2007 12 05 | 704 | 0.2+  | 0.7−  |
| 2001 12 11 | 704 | 0.4+ | 0.8+ | 2001 12 20 | 704 | 0.1+  | 0.6+  | 2007 12 05 | 704 | 0.1+  | 0.8−  |
| 2001 12 11 | 704 | 0.3− | 0.9+ | 2001 12 20 | 704 | 0.2+  | 0.1−  | 2007 12 14 | 704 | 0.1+  | 0.5−  |
| 2001 12 11 | 704 | 0.0  | 0.6+ | 2002 01 14 | 704 | 0.2+  | 0.5+  | 2007 12 14 | 704 | 0.0   | 0.4+  |
| 2001 12 11 | 704 | 0.2+ | 0.1+ | 2002 01 14 | 704 | 0.1−  | 1.4+  | 2007 12 14 | 704 | 0.1−  | 0.3+  |
| 2001 12 14 | 704 | 0.2− | 0.1+ | 2002 01 14 | 704 | (0.2− | 1.9+) | 2007 12 14 | 704 | 0.6+  | 0.3+  |
| 2001 12 14 | 704 | 0.2+ | 0.1+ | 2002 01 14 | 704 | (0.9+ | 3.4+) | 2007 12 14 | 704 | 0.5+  | 0.5+  |

**2002 AU<sub>126</sub> = 2007 UO<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 301.00634  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30645367 | $\omega$ | 258.08820 | −0.12154493   | −0.99250472 |
| <i>a</i> | 2.1788441  | $\Omega$ | 198.90713 | +0.92525067   | −0.10865921 |
| <i>e</i> | 0.1122218  | <i>i</i> | 2.24560   | +0.35935779   | −0.05592452 |
| <i>P</i> | 3.22       | <i>H</i> | 18.5      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 01 13 | 704 | 0.6+  | 0.5+  | 2002 01 15 | 704 | 0.7+  | 0.1−  | 2007 10 18 | G96 | 1.2− | 0.9+ |
| 2002 01 13 | 704 | 0.2+  | 0.4+  | 2002 01 15 | 649 | (0.1+ | 2.4−) | 2007 10 18 | G96 | 0.2+ | 0.0  |
| 2002 01 13 | 704 | 0.2−  | 0.3+  | 2002 01 15 | 649 | 0.6−  | 0.4+  | 2007 10 30 | G96 | 0.2+ | 0.2+ |
| 2002 01 13 | 704 | 1.3+  | 0.4+  | 2002 01 15 | 704 | 1.4+  | 0.3−  | 2007 10 30 | G96 | 0.2− | 0.3− |
| 2002 01 13 | 704 | (2.3+ | 1.1+) | 2007 09 14 | G96 | 0.1+  | 0.1+  | 2007 10 30 | G96 | 0.1− | 0.0  |
| 2002 01 14 | 704 | 0.7−  | 0.9−  | 2007 09 14 | G96 | 0.2+  | 0.1−  | 2007 10 30 | G96 | 0.4− | 0.5− |
| 2002 01 14 | 704 | 0.2−  | 0.1+  | 2007 09 14 | G96 | 0.3−  | 0.2+  | 2007 11 05 | G96 | 0.5+ | 0.1+ |
| 2002 01 14 | 704 | 1.3−  | 0.5−  | 2007 09 14 | G96 | 0.0   | 0.2−  | 2007 11 05 | G96 | 0.6+ | 0.2− |
| 2002 01 14 | 704 | 0.5−  | 0.5−  | 2007 10 07 | G96 | 0.6+  | 0.2−  | 2007 11 05 | G96 | 0.1+ | 0.6− |
| 2002 01 15 | 704 | 0.2−  | 0.1+  | 2007 10 07 | G96 | 0.4+  | 0.0   | 2007 11 05 | G96 | 0.4− | 0.1+ |
| 2002 01 15 | 704 | 0.3−  | 0.0   | 2007 10 18 | G96 | 0.0   | 0.1+  |            |     |      |      |
| 2002 01 15 | 649 | 0.1−  | 0.0   | 2007 10 18 | G96 | 0.3−  | 0.2+  |            |     |      |      |

**2002 AC<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 181.41435  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27780133 | $\omega$ | 192.97972 | -0.98590198   | -0.09203905 |
| <i>a</i> | 2.3261970  | $\Omega$ | 340.05816 | +0.16481972   | -0.67813637 |
| <i>e</i> | 0.2068916  | <i>i</i> | 24.18618  | -0.02884011   | -0.72915011 |
| <i>P</i> | 3.55       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 12 | 699 | 0.4+ | 0.9+ | 2002 02 08 | 446 | 0.7+ | 0.0  | 2007 08 10 | 691 | 0.2- | 0.0  |
| 2002 01 12 | 699 | 0.2- | 0.2+ | 2002 02 08 | 446 | 0.6- | 0.1+ | 2007 08 10 | 691 | 0.6- | 0.1- |
| 2002 01 12 | 699 | 0.5+ | 0.3- | 2002 02 17 | 446 | 0.8+ | 0.6- | 2007 08 10 | 691 | 0.3- | 0.2- |
| 2002 01 12 | 699 | 0.8- | 0.6+ | 2002 02 17 | 446 | 0.9- | 0.7- | 2007 10 13 | G96 | 0.2+ | 0.1- |
| 2002 01 15 | 446 | 1.0- | 0.4- | 2002 02 21 | 704 | 0.1- | 0.1- | 2007 10 13 | G96 | 0.8+ | 0.5+ |
| 2002 01 15 | 446 | 0.5- | 0.1- | 2002 02 21 | 704 | 0.1+ | 0.1+ | 2007 10 13 | G96 | 0.1- | 0.1+ |
| 2002 01 20 | 446 | 0.3+ | 0.1+ | 2002 02 21 | 704 | 0.1+ | 0.4+ | 2007 10 13 | G96 | 0.0  | 0.0  |
| 2002 01 20 | 446 | 0.4+ | 0.5- | 2002 02 21 | 704 | 0.1- | 1.0+ |            |     |      |      |
| 2002 01 20 | 446 | 0.1+ | 0.5- | 2002 02 21 | 704 | 1.0+ | 0.2+ |            |     |      |      |

**2002 AQ<sub>159</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 221.07307  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30889979 | $\omega$ | 8.56012   | -0.90909186   | +0.41645060 |
| <i>a</i> | 2.1673263  | $\Omega$ | 196.06420 | -0.38453321   | -0.84898670 |
| <i>e</i> | 0.0411410  | <i>i</i> | 2.27725   | -0.16026917   | -0.32525448 |
| <i>P</i> | 3.19       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 03 21 | 691 | 0.7+ | 0.3- | 2002 02 08 | 704 | 1.0+  | 0.4-  | 2002 02 21 | 704 | 0.1+ | 0.6+ |
| 1999 03 21 | 691 | 0.4- | 0.5- | 2002 02 08 | 704 | 0.1+  | 1.1+  | 2002 02 21 | 704 | 0.1+ | 0.6- |
| 1999 03 21 | 691 | 0.7- | 0.3- | 2002 02 08 | 704 | 1.1-  | 0.2-  | 2002 02 21 | 704 | 0.3+ | 0.4+ |
| 2002 01 13 | 704 | 0.3+ | 0.4- | 2002 02 08 | 704 | 0.2-  | 0.7+  | 2002 02 21 | 704 | 0.7- | 0.9+ |
| 2002 01 13 | 704 | 0.8- | 1.4- | 2002 02 08 | 704 | 1.1+  | 0.0   | 2002 03 05 | 644 | 0.1- | 0.2+ |
| 2002 01 13 | 704 | 0.5- | 0.7- | 2002 02 08 | 704 | 0.3-  | 0.1+  | 2002 03 05 | 644 | 0.4- | 0.2+ |
| 2002 01 13 | 704 | 0.6+ | 0.8- | 2002 02 08 | 704 | 0.0   | 0.8+  | 2002 03 05 | 644 | 0.3- | 0.2+ |
| 2002 01 13 | 704 | 0.5+ | 0.2+ | 2002 02 08 | 704 | 1.0+  | 0.7+  | 2002 03 13 | 644 | 0.3- | 0.0  |
| 2002 01 19 | 704 | 0.5+ | 1.2- | 2002 02 09 | 333 | 0.4+  | 0.6-  | 2002 03 13 | 644 | 0.4- | 0.2- |
| 2002 01 19 | 704 | 0.0  | 0.8- | 2002 02 09 | 333 | 0.5+  | 0.5-  | 2002 03 13 | 644 | 0.1- | 0.0  |
| 2002 01 19 | 704 | 0.1+ | 0.5- | 2002 02 09 | 333 | 0.7-  | 0.3-  | 2007 11 02 | 691 | 0.1- | 0.2- |
| 2002 01 19 | 704 | 0.6+ | 1.3- | 2002 02 10 | 333 | (0.3- | 1.5-) | 2007 11 02 | 691 | 0.8- | 0.4- |
| 2002 02 06 | 644 | 0.3- | 1.3+ | 2002 02 10 | 333 | 0.6+  | 1.1-  | 2007 11 02 | 691 | 0.5- | 0.0  |
| 2002 02 06 | 644 | 0.2+ | 1.5+ | 2002 02 11 | 704 | 0.0   | 0.5-  | 2007 11 19 | 691 | 0.6+ | 0.6+ |
| 2002 02 06 | 644 | 0.3+ | 1.3+ | 2002 02 11 | 704 | 0.3+  | 0.7+  | 2007 11 19 | 691 | 0.1- | 0.2- |
| 2002 02 07 | 704 | 0.7- | 0.5- | 2002 02 11 | 704 | 0.4+  | 0.5+  | 2007 11 19 | 691 | 0.1+ | 0.2- |
| 2002 02 07 | 704 | 0.4- | 0.7+ | 2002 02 11 | 704 | 0.2+  | 0.2+  | 2007 12 03 | 703 | 0.2+ | 0.1- |
| 2002 02 07 | 704 | 0.8+ | 0.2+ | 2002 02 13 | 704 | 0.1-  | 0.1-  | 2007 12 03 | 703 | 0.4+ | 0.0  |
| 2002 02 07 | 704 | 0.3- | 0.5+ | 2002 02 13 | 704 | 0.6-  | 0.9+  | 2007 12 03 | 703 | 0.5- | 0.5+ |
| 2002 02 07 | 704 | 0.1+ | 0.5- | 2002 02 13 | 704 | 0.4+  | 0.7+  | 2007 12 03 | 703 | 0.7+ | 0.3+ |
| 2002 02 08 | 704 | 0.5+ | 0.1- | 2002 02 13 | 704 | 1.2-  | 0.5-  | 2007 12 05 | G96 | 0.1+ | 0.3+ |
| 2002 02 08 | 704 | 0.4- | 0.4- | 2002 02 16 | 644 | 0.2-  | 1.0+  | 2007 12 05 | G96 | 0.4+ | 0.7- |
| 2002 02 08 | 704 | 0.2+ | 1.0+ | 2002 02 16 | 644 | 0.4-  | 1.0+  | 2007 12 05 | G96 | 0.7+ | 0.7- |
| 2002 02 08 | 704 | 0.7+ | 0.1- | 2002 02 16 | 644 | 0.5-  | 0.6+  | 2007 12 05 | G96 | 0.5+ | 0.4- |

**2002 CS<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 187.38811  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28246882 | $\omega$ | 197.82224 | -0.99873263   | -0.03444718 |
| <i>a</i> | 2.3005007  | $\Omega$ | 340.09544 | +0.04799724   | -0.87127577 |
| <i>e</i> | 0.1186873  | <i>i</i> | 6.18752   | -0.01514616   | -0.48958341 |
| <i>P</i> | 3.49       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 08 | 704 | 0.6- | 0.7- | 2002 02 07 | 291 | 0.2+ | 0.4- | 2002 03 04 | 644 | 0.4- | 1.0- |
| 2002 01 08 | 704 | 0.6+ | 1.0- | 2002 02 07 | 291 | 0.4+ | 0.1- | 2002 03 04 | 644 | 0.6- | 0.1+ |
| 2002 01 08 | 704 | 0.1- | 0.1- | 2002 02 08 | 704 | 0.9- | 0.1+ | 2006 04 29 | E12 | 0.4+ | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 08 | 704 | 0.2+ | 0.1+ | 2002 02 08 | 704 | 0.6+ | 0.4- | 2006 04 29 | E12 | 0.3- | 0.1+ |
| 2002 01 20 | 699 | 0.7+ | 0.1- | 2002 02 08 | 704 | 1.0+ | 0.4+ | 2006 04 29 | E12 | 0.6- | 0.1+ |
| 2002 01 20 | 699 | 0.4+ | 0.5+ | 2002 02 08 | 704 | 0.3- | 0.3+ | 2006 04 29 | E12 | 0.7+ | 0.2+ |
| 2002 01 20 | 699 | 0.4- | 0.3+ | 2002 02 12 | 704 | 0.6+ | 0.4+ | 2007 09 15 | G96 | 0.0  | 0.1+ |
| 2002 01 20 | 699 | 0.6+ | 0.5+ | 2002 02 12 | 704 | 0.2- | 0.6- | 2007 09 15 | G96 | 0.2- | 0.0  |
| 2002 02 04 | 644 | 0.0  | 0.1- | 2002 02 12 | 704 | 0.3- | 1.1- | 2007 09 15 | G96 | 0.7+ | 0.2+ |
| 2002 02 04 | 644 | 0.2+ | 0.2+ | 2002 02 12 | 704 | 0.8- | 0.3+ | 2007 09 15 | G96 | 0.1+ | 0.0  |
| 2002 02 04 | 644 | 0.2+ | 0.2- | 2002 02 12 | 704 | 0.3+ | 0.1+ | 2007 10 08 | 691 | 0.3- | 0.2+ |
| 2002 02 06 | 704 | 0.2+ | 0.5+ | 2002 02 20 | 704 | 1.0- | 1.3- | 2007 10 08 | 691 | 0.4- | 0.5- |
| 2002 02 06 | 704 | 0.2+ | 0.4+ | 2002 02 20 | 704 | 1.2- | 0.5+ | 2007 10 08 | 691 | 0.3- | 0.4+ |
| 2002 02 06 | 704 | 0.4- | 1.1+ | 2002 02 20 | 704 | 0.3- | 0.7+ | 2007 10 19 | 691 | 0.0  | 0.1- |
| 2002 02 06 | 704 | 0.6+ | 0.3- | 2002 02 20 | 704 | 1.2- | 0.0  | 2007 10 19 | 691 | 0.0  | 0.0  |
| 2002 02 06 | 704 | 0.6+ | 0.6+ | 2002 02 20 | 704 | 0.8+ | 0.6+ | 2007 10 19 | 691 | 0.0  | 0.1+ |
| 2002 02 07 | 291 | 0.0  | 0.0  | 2002 03 04 | 644 | 0.1- | 0.5- |            |     |      |      |

**2002 CM<sub>147</sub> = 2007 UO<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 295.38087  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30014248 | $\omega$ | 122.65145 | -0.20831442   | -0.97798907 |
| <i>a</i> | 2.2092816  | $\Omega$ | 339.36217 | +0.88563079   | -0.18343495 |
| <i>e</i> | 0.0846581  | <i>i</i> | 1.94072   | +0.41504603   | -0.09944340 |
| <i>P</i> | 3.28       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 10 | 691 | 0.0   | 0.0   | 2002 02 11 | 704 | 0.5+ | 0.2- | 2007 10 30 | 691 | 0.1+ | 0.2+ |
| 1997 10 10 | 691 | 0.0   | 0.2+  | 2002 02 11 | 704 | 0.6+ | 1.0- | 2007 10 30 | 691 | 0.0  | 0.2+ |
| 1997 10 10 | 691 | 0.2-  | 0.1+  | 2002 02 12 | 704 | 0.4- | 1.1+ | 2007 10 30 | 691 | 0.1+ | 0.1+ |
| 2002 02 10 | 704 | 0.4-  | 1.2-  | 2002 02 12 | 704 | 0.1+ | 0.6+ | 2007 11 01 | 691 | 0.2- | 0.2- |
| 2002 02 10 | 704 | (0.2+ | 1.9+) | 2002 02 12 | 704 | 0.4- | 0.9+ | 2007 11 01 | 691 | 0.4- | 0.3- |
| 2002 02 10 | 704 | 0.3-  | 0.7-  | 2002 02 12 | 704 | 0.6+ | 0.7+ | 2007 11 01 | 691 | 0.1- | 0.1+ |
| 2002 02 10 | 704 | 0.3-  | 0.8+  | 2002 02 20 | 704 | 0.9+ | 0.2- | 2007 11 02 | G96 | 0.1+ | 0.1+ |
| 2002 02 10 | 704 | (0.7- | 2.1+) | 2002 02 20 | 704 | 0.5+ | 0.5+ | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2002 02 10 | 704 | 0.3+  | 0.5-  | 2002 02 20 | 704 | 0.5- | 1.2+ | 2007 11 02 | G96 | 0.4+ | 0.1- |
| 2002 02 10 | 704 | 0.5+  | 0.3+  | 2002 02 20 | 704 | 0.5- | 1.4+ | 2007 11 02 | G96 | 0.5+ | 0.4- |
| 2002 02 10 | 704 | (0.5+ | 2.0+) | 2004 12 02 | 644 | 0.1- | 0.5+ | 2007 11 07 | 691 | 0.2+ | 0.2+ |
| 2002 02 10 | 704 | 0.4-  | 0.4-  | 2004 12 02 | 644 | 0.3+ | 0.3+ | 2007 11 07 | 691 | 0.0  | 0.4- |
| 2002 02 10 | 704 | 0.1+  | 0.2-  | 2004 12 02 | 644 | 0.4+ | 0.3+ | 2007 11 07 | 691 | 0.2- | 0.1+ |
| 2002 02 10 | 704 | (0.8+ | 1.9+) | 2004 12 16 | 691 | 0.1+ | 0.2- | 2007 12 15 | G96 | 0.1- | 0.1- |
| 2002 02 10 | 704 | 0.3-  | 0.5-  | 2004 12 16 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2002 02 10 | 704 | 0.3-  | 0.1-  | 2004 12 16 | 691 | 0.2- | 0.1- | 2007 12 15 | G96 | 0.8+ | 0.2- |
| 2002 02 10 | 704 | (1.3+ | 2.4+) | 2007 10 18 | 691 | 0.4- | 0.4+ | 2007 12 15 | G96 | 0.8+ | 0.5- |
| 2002 02 11 | 704 | 0.6+  | 0.6-  | 2007 10 18 | 691 | 0.3+ | 0.1- |            |     |      |      |
| 2002 02 11 | 704 | 0.1-  | 0.3-  | 2007 10 18 | 691 | 0.0  | 0.1- |            |     |      |      |

**2002 CF<sub>242</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 201.61210  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28083423 | $\omega$ | 252.43326 | -0.98524235   | +0.16507263 |
| <i>a</i> | 2.3094187  | $\Omega$ | 297.04802 | -0.13134659   | -0.89868496 |
| <i>e</i> | 0.1019318  | <i>i</i> | 2.91297   | -0.10975237   | -0.40634514 |
| <i>P</i> | 3.51       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 10 | 691 | 0.3+  | 0.1+  | 2002 03 10 | 699 | 0.1+ | 0.2- | 2002 03 15 | 704 | 0.4+ | 0.5- |
| 1993 10 10 | 691 | 0.0   | 0.0   | 2002 03 10 | 699 | 1.3+ | 0.8+ | 2002 03 15 | 704 | 0.5- | 1.4+ |
| 1993 10 10 | 691 | 0.3-  | 0.1+  | 2002 03 10 | 699 | 0.8- | 0.9- | 2002 04 04 | 644 | 0.2+ | 0.2+ |
| 2002 02 11 | 704 | 0.1-  | 0.5+  | 2002 03 13 | 704 | 1.1- | 0.5- | 2002 04 04 | 644 | 0.0  | 0.2+ |
| 2002 02 11 | 704 | 0.9+  | 0.7-  | 2002 03 13 | 704 | 0.5+ | 0.5+ | 2002 04 04 | 644 | 0.1- | 0.4+ |
| 2002 02 11 | 704 | 0.1+  | 0.1-  | 2002 03 13 | 704 | 1.0+ | 1.8- | 2007 10 05 | 691 | 0.4- | 0.4+ |
| 2002 02 11 | 704 | 0.2-  | 0.7-  | 2002 03 13 | 704 | 0.5+ | 0.5+ | 2007 10 05 | 691 | 0.7+ | 0.7- |
| 2002 02 15 | 704 | 0.5+  | 0.5-  | 2002 03 13 | 644 | 0.1+ | 0.1+ | 2007 10 05 | 691 | 0.4- | 0.0  |
| 2002 02 15 | 704 | 0.4-  | 1.2+  | 2002 03 13 | 644 | 0.2+ | 0.0  | 2007 10 18 | 691 | 0.1- | 0.3+ |
| 2002 02 15 | 704 | 0.9-  | 0.5+  | 2002 03 13 | 644 | 0.4+ | 0.3+ | 2007 10 18 | 691 | 0.1+ | 0.1- |
| 2002 02 15 | 704 | 0.3-  | 0.4+  | 2002 03 15 | 704 | 1.2- | 0.5- | 2007 10 18 | 691 | 0.1+ | 0.1+ |
| 2002 03 10 | 699 | (2.5- | 1.2+) | 2002 03 15 | 704 | 0.4- | 0.3- |            |     |      |      |

2007 DEC. 24

M.P.O. 129599

**2002 CS<sub>308</sub> = 2007 VC<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.28640957 | $\omega$ | 264.17222 | -0.36315601 | +0.93144457 |          |   |
| <i>a</i> | 2.2793501  | $\Omega$ | 344.47310 | -0.81724976 | -0.33029106 |          |   |
| <i>e</i> | 0.1191227  | <i>i</i> | 4.92762   | -0.44746009 | -0.15270504 |          |   |
| <i>P</i> | 3.44       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 10 | 704 | 0.3- | 0.5+ | 2006 05 30 | E12 | 0.1- | 0.0  | 2007 11 04 | 691 | 0.5- | 0.3+ |
| 2002 02 10 | 704 | 0.3- | 0.4+ | 2006 05 30 | E12 | 0.0  | 0.1- | 2007 11 04 | 691 | 0.4+ | 0.1+ |
| 2002 02 10 | 704 | 0.1+ | 0.6+ | 2006 05 30 | E12 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.1- |
| 2002 02 10 | 704 | 0.3+ | 0.6+ | 2007 10 16 | G96 | 0.4+ | 0.1- | 2007 11 07 | 703 | 1.6- | 0.6+ |
| 2002 02 10 | 704 | 0.3+ | 0.4+ | 2007 10 16 | G96 | 0.6+ | 0.0  | 2007 11 07 | 703 | 1.6- | 0.4+ |
| 2002 02 12 | 704 | 1.2- | 1.2+ | 2007 10 16 | G96 | 0.5+ | 0.4- | 2007 11 07 | 703 | 1.2+ | 0.1+ |
| 2002 02 12 | 704 | 0.1+ | 0.6- | 2007 10 16 | G96 | 0.3+ | 0.2- | 2007 11 07 | 703 | 1.1+ | 0.6+ |
| 2002 02 12 | 704 | 0.4+ | 0.9- | 2007 11 02 | 691 | 0.7- | 0.6- | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2002 02 12 | 704 | 0.4+ | 0.8- | 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.3+ | 0.1- |
| 2002 02 12 | 704 | 0.2+ | 1.5- | 2007 11 02 | 691 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.2+ | 0.1+ |

**2002 EY<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.26548547 | $\omega$ | 250.14421 | -0.94374676 | +0.32992763 |          |   |
| <i>a</i> | 2.3975935  | $\Omega$ | 309.11366 | -0.29171111 | -0.86220938 |          |   |
| <i>e</i> | 0.0879004  | <i>i</i> | 1.63453   | -0.15571346 | -0.38437318 |          |   |
| <i>P</i> | 3.71       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 30 | 645 | 0.0  | 0.3+ | 2002 03 12 | 699 | (1.4+ | 2.3+) | 2002 04 12 | 704 | 0.8+  | 0.6+  |
| 2000 11 30 | 645 | 0.1- | 0.1+ | 2002 03 13 | 704 | 0.3-  | 0.1+  | 2006 04 30 | 699 | 0.6+  | 1.1+  |
| 2002 02 09 | 291 | 0.2+ | 0.1+ | 2002 03 13 | 704 | 0.2-  | 0.1-  | 2006 04 30 | 699 | (2.6- | 0.2+) |
| 2002 02 09 | 291 | 0.6- | 0.6- | 2002 03 13 | 704 | 0.6+  | 1.1+  | 2006 04 30 | 699 | 0.5+  | 0.6+  |
| 2002 02 09 | 291 | 0.0  | 0.1- | 2002 03 13 | 704 | 0.1-  | 0.6-  | 2006 04 30 | 699 | 1.0-  | 1.4-  |
| 2002 02 11 | 704 | 0.7+ | 0.9- | 2002 03 15 | 704 | 0.6-  | 1.2+  | 2007 09 15 | G96 | 0.4-  | 0.0   |
| 2002 02 11 | 704 | 1.7- | 0.2+ | 2002 03 15 | 704 | 0.1+  | 0.4+  | 2007 09 15 | G96 | 0.4-  | 0.1+  |
| 2002 02 11 | 704 | 0.2+ | 0.6- | 2002 03 15 | 704 | 0.2+  | 0.4-  | 2007 09 15 | G96 | 0.4-  | 0.2+  |
| 2002 02 11 | 704 | 0.1- | 0.4+ | 2002 03 15 | 704 | 0.5-  | 0.3-  | 2007 09 15 | G96 | 0.5-  | 0.4+  |
| 2002 02 20 | 291 | 0.1+ | 0.4+ | 2002 03 21 | 291 | 0.1+  | 0.1-  | 2007 10 10 | G96 | 0.1-  | 0.6+  |
| 2002 02 20 | 291 | 0.3- | 0.2+ | 2002 03 21 | 291 | 0.1+  | 0.1+  | 2007 10 10 | G96 | 0.4+  | 1.2+  |
| 2002 02 20 | 291 | 0.2- | 0.1+ | 2002 03 21 | 291 | 0.0   | 0.0   | 2007 10 10 | G96 | 0.1-  | 0.7+  |
| 2002 03 12 | 699 | 0.2+ | 1.0+ | 2002 04 12 | 704 | 0.7+  | 0.5-  | 2007 10 10 | G96 | 0.2-  | 0.8+  |
| 2002 03 12 | 699 | 0.8+ | 0.1+ | 2002 04 12 | 704 | 0.8+  | 0.2+  |            |     |       |       |
| 2002 03 12 | 699 | 0.3- | 0.9+ | 2002 04 12 | 704 | 1.3+  | 0.3+  |            |     |       |       |

**2002 EY<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.28293345 | $\omega$ | 359.73885 | -0.98500223 | -0.17217502 |          |   |
| <i>a</i> | 2.2979814  | $\Omega$ | 170.32495 | +0.15842488 | -0.92830214 |          |   |
| <i>e</i> | 0.1897548  | <i>i</i> | 3.83544   | +0.06835328 | -0.32956167 |          |   |
| <i>P</i> | 3.48       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 20 | 704 | 0.5- | 0.7- | 2002 03 09 | 704 | 0.3+ | 0.4+ | 2002 04 03 | 644 | 0.1- | 0.0  |
| 2002 02 20 | 704 | 0.2- | 0.5+ | 2002 03 09 | 704 | 0.6+ | 1.8+ | 2002 04 03 | 644 | 0.4- | 0.0  |
| 2002 02 20 | 704 | 0.0  | 0.2- | 2002 03 15 | 644 | 0.1- | 0.3- | 2002 04 03 | 644 | 0.3- | 0.2- |
| 2002 02 20 | 704 | 0.5+ | 0.2- | 2002 03 15 | 644 | 0.0  | 0.1- | 2002 04 15 | 704 | 0.5+ | 0.1- |
| 2002 03 05 | 703 | 0.4- | 0.5- | 2002 03 15 | 644 | 0.1- | 0.2- | 2002 04 15 | 704 | 0.1+ | 0.0  |
| 2002 03 05 | 703 | 0.8- | 0.4+ | 2002 03 16 | 704 | 0.0  | 0.1+ | 2002 04 15 | 704 | 0.2- | 0.4+ |
| 2002 03 05 | 703 | 1.2- | 1.6- | 2002 03 16 | 704 | 0.1- | 0.4- | 2007 09 12 | G96 | 0.4+ | 0.1+ |
| 2002 03 05 | 703 | 1.1+ | 1.5+ | 2002 03 16 | 704 | 0.3+ | 0.4- | 2007 09 12 | G96 | 0.3+ | 0.2+ |
| 2002 03 06 | 644 | 0.2+ | 0.1- | 2002 03 16 | 704 | 0.4+ | 0.1+ | 2007 09 12 | G96 | 0.3- | 0.1- |
| 2002 03 06 | 644 | 0.1+ | 0.0  | 2002 03 16 | 704 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.5- | 0.0  |
| 2002 03 06 | 644 | 0.2+ | 0.1- | 2002 03 19 | 699 | 0.6- | 0.5- | 2007 10 08 | G96 | 0.0  | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 09 | 704 | 0.2-  | 0.7-  | 2002 03 19 | 699 | 0.1+ | 0.2- | 2007 10 08 | G96 | 0.1- | 0.1- |
| 2002 03 09 | 704 | (0.3+ | 2.0+) | 2002 03 19 | 699 | 0.3+ | 0.2- | 2007 10 08 | G96 | 0.4+ | 0.0  |
| 2002 03 09 | 704 | 0.8+  | 1.1+  | 2002 03 19 | 699 | 0.3- | 0.0  | 2007 10 08 | G96 | 0.3- | 0.1+ |

**2002 EX<sub>87</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.29758413 | $\omega$ | 122.10734 | -0.94611171 | -0.31997053 |          |   |
| <i>a</i> | 2.2219257  | $\Omega$ | 39.29483  | +0.26417949 | -0.85173429 |          |   |
| <i>e</i> | 0.1420993  | <i>i</i> | 4.52050   | +0.18730144 | -0.41493079 |          |   |
| <i>P</i> | 3.31       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 09 | 704 | 0.1+  | 0.5+  | 2002 03 16 | 152 | 0.0   | 0.3+  | 2002 04 14 | 644 | 0.1+ | 0.2+ |
| 2002 03 09 | 704 | 1.0+  | 0.2+  | 2002 03 16 | 152 | (2.7- | 0.4-) | 2002 04 15 | 644 | 0.0  | 0.7- |
| 2002 03 09 | 704 | 0.8+  | 0.4+  | 2002 03 16 | 704 | 0.3-  | 1.0+  | 2002 04 15 | 644 | 0.2+ | 0.7- |
| 2002 03 09 | 704 | 0.7+  | 0.7-  | 2002 03 16 | 704 | 0.5-  | 0.5+  | 2002 04 15 | 644 | 0.2- | 0.5- |
| 2002 03 10 | 291 | 0.6+  | 0.7-  | 2002 03 16 | 704 | 0.1+  | 0.5+  | 2002 04 17 | 704 | 0.3- | 0.5- |
| 2002 03 10 | 291 | 0.7-  | 0.1+  | 2002 03 16 | 704 | 0.3-  | 0.8+  | 2002 04 17 | 704 | 0.5+ | 0.8+ |
| 2002 03 10 | 291 | 0.0   | 0.2-  | 2002 03 16 | 704 | 0.9-  | 0.5+  | 2002 04 17 | 704 | 0.6- | 0.6+ |
| 2002 03 14 | 699 | 0.8+  | 1.1+  | 2002 04 02 | 644 | 0.2+  | 0.4+  | 2007 11 03 | 691 | 0.2- | 0.1+ |
| 2002 03 14 | 699 | 1.3+  | 0.3-  | 2002 04 02 | 644 | 0.2+  | 0.0   | 2007 11 03 | 691 | 0.2- | 0.4+ |
| 2002 03 14 | 699 | 0.3+  | 0.2-  | 2002 04 02 | 644 | 0.2-  | 0.1-  | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2002 03 14 | 699 | 0.4-  | 0.9+  | 2002 04 09 | 699 | 0.2+  | 0.8+  | 2007 11 14 | 691 | 0.3+ | 0.5- |
| 2002 03 16 | 152 | 0.0   | 1.4-  | 2002 04 09 | 699 | 0.4-  | 1.1-  | 2007 11 14 | 691 | 0.3- | 0.2- |
| 2002 03 16 | 152 | 0.7-  | 0.6+  | 2002 04 09 | 699 | 0.4+  | 0.1+  | 2007 11 14 | 691 | 0.3+ | 0.2- |
| 2002 03 16 | 152 | (2.4+ | 2.1-) | 2002 04 09 | 699 | 0.0   | 0.2+  | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2002 03 16 | 152 | 0.6-  | 0.4-  | 2002 04 14 | 644 | 0.1+  | 0.0   | 2007 11 18 | 691 | 0.0  | 0.2- |
| 2002 03 16 | 152 | 0.9-  | 0.5-  | 2002 04 14 | 644 | 0.2+  | 0.0   | 2007 11 18 | 691 | 0.2- | 0.3+ |

**2002 EF<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 215.61990  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
|-----|------------|----------|-----------|-------------|------|-------------|---|--|--|
| $n$ | 0.27377656 | $\omega$ | 104.09253 | -0.89551392 |      | -0.44354384 |   |  |  |
| $a$ | 2.3489398  | $\Omega$ | 49.59080  | +0.38765597 |      | -0.81759863 |   |  |  |
| $e$ | 0.1376714  | $i$      | 2.73872   | +0.21858105 |      | -0.36715302 |   |  |  |
| $P$ | 3.60       | $H$      | 17.2      | $G$         | 0.15 | $U$         | 2 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 04 01 | 691 | 0.3- | 0.7- | 2002 03 09 | 704 | 0.5+  | 0.3+  | 2002 03 22 | 644 | 0.1+ | 0.1- |
| 1995 04 01 | 691 | 0.0  | 0.3+ | 2002 03 09 | 704 | 1.0-  | 0.4+  | 2002 03 22 | 644 | 0.2- | 0.2+ |
| 1995 04 01 | 691 | 0.1- | 0.8- | 2002 03 09 | 704 | 0.9-  | 0.8+  | 2002 03 22 | 644 | 0.6- | 0.1- |
| 2002 02 10 | 704 | 1.2+ | 0.3- | 2002 03 12 | 704 | 0.0   | 1.0+  | 2002 03 23 | 704 | 0.3- | 1.1- |
| 2002 02 10 | 704 | 0.9- | 1.4- | 2002 03 12 | 704 | 0.0   | 0.1-  | 2002 03 23 | 704 | 0.3+ | 0.9- |
| 2002 02 10 | 704 | 1.0- | 0.5- | 2002 03 12 | 704 | 0.8-  | 0.3-  | 2002 03 23 | 704 | 0.1+ | 0.4+ |
| 2002 02 10 | 704 | 0.2+ | 0.1+ | 2002 03 12 | 704 | 0.5+  | 0.5-  | 2002 03 23 | 704 | 0.5+ | 0.9+ |
| 2002 02 10 | 704 | 0.4- | 0.2- | 2002 03 12 | 704 | 0.0   | 1.3-  | 2002 03 23 | 704 | 1.6+ | 0.1- |
| 2002 02 20 | 704 | 0.9+ | 0.2- | 2002 03 13 | 291 | 0.3-  | 0.2+  | 2006 05 23 | G96 | 0.0  | 0.2+ |
| 2002 02 20 | 704 | 0.6+ | 0.4- | 2002 03 13 | 291 | 0.2-  | 0.2+  | 2006 05 23 | G96 | 0.1+ | 0.3+ |
| 2002 02 20 | 704 | 0.4+ | 0.1+ | 2002 03 13 | 291 | (2.1- | 1.0-) | 2006 05 23 | G96 | 0.1- | 0.4+ |
| 2002 02 20 | 704 | 0.7+ | 0.3+ | 2002 03 16 | 704 | 0.0   | 0.5+  | 2007 08 24 | 691 | 0.3- | 0.2+ |
| 2002 02 24 | 644 | 0.4+ | 1.4+ | 2002 03 16 | 704 | 0.5-  | 0.5+  | 2007 08 24 | 691 | 0.3- | 0.4+ |
| 2002 02 24 | 644 | 0.4+ | 1.1+ | 2002 03 16 | 704 | 0.1+  | 0.8+  | 2007 08 24 | 691 | 0.2- | 0.5+ |
| 2002 02 24 | 644 | 0.2+ | 0.9+ | 2002 03 16 | 704 | 0.2+  | 0.7+  | 2007 09 14 | 691 | 0.1+ | 1.0+ |
| 2002 03 05 | 699 | 0.1- | 1.1+ | 2002 03 16 | 704 | 0.4+  | 0.3+  | 2007 09 14 | 691 | 0.1- | 1.1+ |
| 2002 03 05 | 699 | 0.1+ | 0.1+ | 2002 03 21 | 704 | 0.4+  | 0.0   | 2007 09 14 | 691 | 0.1- | 0.8+ |
| 2002 03 05 | 699 | 1.1- | 0.5- | 2002 03 21 | 704 | 0.1+  | 1.1-  | 2007 10 08 | 691 | 0.4- | 0.7+ |
| 2002 03 05 | 699 | 0.2+ | 0.9+ | 2002 03 21 | 704 | 0.4+  | 0.4+  | 2007 10 08 | 691 | 0.7- | 0.3- |
| 2002 03 09 | 704 | 0.4+ | 0.2+ | 2002 03 21 | 704 | 0.3+  | 0.2-  | 2007 10 08 | 691 | 0.4- | 0.5+ |

**2002 ET<sub>90</sub> = 2007 VF<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 170.39622  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28691641 | $\omega$ | 207.65880 | -0.33577270   | +0.94152976 |
| <i>a</i> | 2.2766650  | $\Omega$ | 42.73787  | -0.85644726   | -0.29283207 |
| <i>e</i> | 0.1616575  | <i>i</i> | 2.35616   | -0.39211579   | -0.16664660 |
| <i>P</i> | 3.44       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 24 | 644 | 0.2+  | 0.2+  | 2002 03 23 | 608 | 1.2- | 0.8+ | 2006 06 22 | 644 | 0.0  | 0.6+ |
| 2002 02 24 | 644 | 0.4+  | 0.0   | 2002 03 23 | 608 | 0.7- | 0.5+ | 2006 06 22 | 644 | 0.0  | 0.5+ |
| 2002 02 24 | 644 | 0.3+  | 0.2-  | 2002 03 23 | 608 | 0.9- | 0.8+ | 2006 08 19 | 644 | 0.0  | 0.3+ |
| 2002 03 12 | 704 | 0.1+  | 0.5+  | 2002 04 03 | 644 | 0.6+ | 0.4+ | 2006 08 19 | 644 | 0.1+ | 0.8+ |
| 2002 03 12 | 704 | 0.4-  | 0.4-  | 2002 04 03 | 644 | 0.4+ | 0.3+ | 2006 08 19 | 644 | 0.2- | 1.0+ |
| 2002 03 12 | 704 | (0.4- | 2.8-) | 2003 09 20 | 599 | 0.5- | 0.3+ | 2007 11 06 | 691 | 0.4- | 0.0  |
| 2002 03 12 | 704 | 0.2+  | 0.8-  | 2003 09 20 | 599 | 0.0  | 0.6+ | 2007 11 06 | 691 | 0.1- | 0.2+ |
| 2002 03 12 | 704 | (1.9+ | 1.2+) | 2003 09 20 | 599 | 0.2- | 0.2+ | 2007 11 06 | 691 | 0.0  | 0.1+ |
| 2002 03 12 | 704 | (0.9- | 2.0+) | 2003 09 20 | 599 | 0.7- | 0.6+ | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 2002 03 12 | 704 | 0.8-  | 0.1+  | 2003 11 16 | 645 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.3- | 0.1+ |
| 2002 03 12 | 704 | (1.6+ | 2.4+) | 2003 11 16 | 645 | 0.1- | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.1- |
| 2002 03 12 | 644 | 0.4+  | 0.1+  | 2005 01 17 | 691 | 0.0  | 0.6+ | 2007 11 17 | 691 | 0.2- | 0.4- |
| 2002 03 12 | 644 | 0.3+  | 0.2+  | 2005 01 17 | 691 | 0.4+ | 0.2- | 2007 11 17 | 691 | 0.2+ | 0.1- |
| 2002 03 12 | 644 | 0.1+  | 0.1+  | 2005 01 17 | 691 | 0.3+ | 0.2+ | 2007 11 17 | 691 | 0.3- | 0.1+ |
| 2002 03 16 | 704 | 0.9+  | 0.2+  | 2006 06 03 | G96 | 0.1- | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2002 03 16 | 704 | 0.6+  | 0.5+  | 2006 06 03 | G96 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2002 03 16 | 704 | 0.5+  | 1.2+  | 2006 06 03 | G96 | 0.1- | 0.4+ | 2007 12 15 | G96 | 0.4+ | 0.6- |
| 2002 03 16 | 704 | 0.6+  | 1.1+  | 2006 06 03 | G96 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.2- |
| 2002 03 16 | 704 | 0.6+  | 1.1+  | 2006 06 22 | 644 | 0.7- | 0.3+ |            |     |      |      |

**2002 EU<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 207.95194  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.27676592 | $\omega$ | 352.19966 | -0.99456290 | +0.10048882 |     |   |
| $a$ | 2.3319951  | $\Omega$ | 193.65817 | -0.08820421 | -0.95236174 |     |   |
| $e$ | 0.2328658  | $i$      | 6.64511   | -0.05535934 | -0.28793944 |     |   |
| $P$ | 3.56       | $H$      | 17.8      | $G$         | 0.15        | $U$ | 5 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 03 13 | 704 | 0.8-  | 0.5+  | 2002 03 23 | 704 | 0.7- | 0.2+ | 2002 04 17 | 704 | 1.3+  | 1.0+  |
| 2002 03 13 | 704 | 1.2+  | 0.1+  | 2002 03 23 | 704 | 0.3- | 0.5+ | 2002 04 17 | 704 | 0.8+  | 0.2+  |
| 2002 03 13 | 704 | 1.5-  | 0.8-  | 2002 03 23 | 704 | 0.3+ | 0.1- | 2002 04 19 | 691 | 1.1-  | 0.6+  |
| 2002 03 13 | 704 | 0.1-  | 0.4+  | 2002 04 04 | 691 | 0.4- | 0.7+ | 2002 04 19 | 691 | 1.0-  | 0.5+  |
| 2002 03 18 | 704 | 0.2+  | 1.3-  | 2002 04 04 | 691 | 0.3- | 0.4+ | 2002 04 19 | 691 | 1.0-  | 0.5+  |
| 2002 03 18 | 704 | (0.9+ | 2.4-) | 2002 04 04 | 691 | 1.8+ | 0.1- | 2002 04 20 | 644 | (1.8- | 2.3+) |
| 2002 03 18 | 704 | 0.4+  | 1.8-  | 2002 04 05 | 699 | 1.4+ | 0.6- | 2002 04 20 | 644 | 0.3-  | 0.1-  |
| 2002 03 20 | 699 | 1.4+  | 1.0+  | 2002 04 05 | 699 | 0.7+ | 0.9+ | 2002 04 20 | 644 | 0.1-  | 0.1-  |
| 2002 03 20 | 699 | 0.6-  | 0.1-  | 2002 04 05 | 699 | 1.0+ | 0.2- | 2007 10 08 | G96 | 0.3+  | 0.5+  |
| 2002 03 20 | 699 | 0.2+  | 0.7-  | 2002 04 05 | 699 | 0.3+ | 0.1+ | 2007 10 08 | G96 | 0.6-  | 0.5+  |
| 2002 03 20 | 291 | 0.7-  | 0.0   | 2002 04 10 | 704 | 0.3- | 0.1- | 2007 10 08 | G96 | 0.3-  | 0.2+  |
| 2002 03 20 | 699 | 0.3+  | 0.1+  | 2002 04 10 | 704 | 0.1+ | 0.1- | 2007 10 08 | G96 | 0.1-  | 0.6+  |
| 2002 03 20 | 291 | 0.2+  | 0.3+  | 2002 04 10 | 704 | 0.2+ | 0.3+ | 2007 10 18 | G96 | 0.2-  | 0.5+  |
| 2002 03 20 | 291 | 0.7-  | 0.0   | 2002 04 10 | 704 | 0.8+ | 0.1- | 2007 10 18 | G96 | 0.0   | 0.3+  |
| 2002 03 23 | 704 | 0.0   | 0.5+  | 2002 04 17 | 704 | 1.5- | 1.6- | 2007 10 18 | G96 | 0.1-  | 0.5+  |
| 2002 03 23 | 704 | 0.1-  | 0.7+  | 2002 04 17 | 704 | 0.5- | 0.3+ | 2007 10 18 | G96 | 0.2+  | 0.0   |

**2002 EF<sub>129</sub> = 2007 VX<sub>278</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 148.04243  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.27632623 | $\omega$ | 277.02580 | -0.24508763 | +0.96947552 |     |   |
| $a$ | 2.3344682  | $\Omega$ | 338.78320 | -0.88166757 | -0.22588880 |     |   |
| $e$ | 0.1655880  | $i$      | 1.11130   | -0.40322990 | -0.09534914 |     |   |
| $P$ | 3.57       | $H$      | 17.6      | $G$         | 0.15        | $U$ | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 13 | 704 | 0.3+ | 0.9+ | 2002 04 04 | 644 | 0.1+ | 1.2+ | 2005 01 18 | 291 | 0.3+ | 0.3- |
| 2002 03 13 | 704 | 0.6+ | 1.2- | 2002 04 04 | 644 | 0.2+ | 1.1+ | 2007 11 14 | 691 | 0.4- | 0.3+ |
| 2002 03 13 | 704 | 0.7+ | 1.5+ | 2002 04 04 | 644 | 0.1- | 1.1+ | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2002 03 13 | 704 | 0.0  | 0.3+ | 2003 09 21 | 691 | 0.2- | 0.8+ | 2007 11 14 | 691 | 0.3+ | 0.1+ |
| 2002 03 14 | 699 | 0.5+ | 0.9- | 2003 09 21 | 691 | 0.5- | 0.6+ | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2002 03 14 | 699 | 0.9- | 1.6- | 2003 09 21 | 691 | 0.4- | 0.8+ | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2002 03 14 | 699 | 0.7+ | 0.9+ | 2005 01 18 | 291 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.2+ | 0.1+ |
| 2002 03 14 | 699 | 0.8- | 0.9- | 2005 01 18 | 291 | 0.5- | 0.2- |            |     |      |      |

**2002 FB<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 224.09430  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27675089 | $\omega$ | 202.75849 | -0.91958991 | -0.38853107 |
| $a$ | 2.3320796  | $\Omega$ | 314.24209 | +0.37182220 | -0.81274634 |
| $e$ | 0.1592448  | $i$      | 4.66725   | +0.12689626 | -0.43415089 |
| $P$ | 3.56       | $H$      | 16.9      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 16 | 704 | 0.2+ | 0.6- | 2002 04 10 | 704 | 0.4- | 1.4+ | 2002 04 18 | 644 | 0.2- | 0.2+ |
| 2002 03 16 | 704 | 0.2+ | 0.8- | 2002 04 10 | 704 | 0.0  | 0.4+ | 2002 04 18 | 644 | 0.1- | 0.2+ |
| 2002 03 16 | 704 | 0.3- | 0.1- | 2002 04 10 | 704 | 0.8- | 0.1- | 2002 04 20 | 644 | 0.0  | 0.2+ |
| 2002 03 16 | 704 | 0.1+ | 0.1+ | 2002 04 10 | 704 | 0.5- | 0.7+ | 2002 04 20 | 644 | 0.1+ | 0.4+ |
| 2002 03 18 | 704 | 0.6+ | 1.4+ | 2002 04 12 | 704 | 0.1- | 1.1+ | 2002 04 20 | 644 | 0.2+ | 0.0  |
| 2002 03 18 | 704 | 0.3+ | 1.2+ | 2002 04 12 | 704 | 0.3- | 0.5+ | 2004 12 14 | 703 | 0.1- | 0.4- |
| 2002 03 18 | 704 | 0.6- | 1.0+ | 2002 04 12 | 704 | 0.1+ | 0.1- | 2004 12 14 | 703 | 0.4- | 0.3+ |
| 2002 03 18 | 704 | 0.2+ | 0.9+ | 2002 04 12 | 704 | 0.2+ | 0.6+ | 2004 12 14 | 703 | 0.4+ | 0.0  |
| 2002 03 23 | 704 | 0.1- | 0.8+ | 2002 04 14 | 704 | 0.4+ | 1.0- | 2004 12 14 | 703 | 0.0  | 0.3- |
| 2002 03 23 | 704 | 0.5+ | 0.8+ | 2002 04 14 | 704 | 0.2- | 0.7- | 2007 09 20 | 691 | 0.2- | 0.6+ |
| 2002 03 23 | 704 | 0.5+ | 0.7- | 2002 04 14 | 704 | 0.1- | 1.1- | 2007 09 20 | 691 | 0.2- | 0.5+ |
| 2002 03 23 | 704 | 0.1+ | 0.9- | 2002 04 14 | 704 | 0.8+ | 1.1+ | 2007 09 20 | 691 | 0.5- | 0.7+ |
| 2002 03 23 | 704 | 0.7- | 0.0  | 2002 04 14 | 704 | 0.3- | 1.6- | 2007 10 20 | G96 | 0.1- | 0.5+ |
| 2002 04 05 | 644 | 0.3+ | 0.1- | 2002 04 14 | 704 | 0.4+ | 1.5- | 2007 10 20 | G96 | 0.1- | 0.2+ |
| 2002 04 05 | 644 | 0.1- | 0.1+ | 2002 04 14 | 704 | 0.6+ | 1.4- | 2007 10 20 | G96 | 0.1- | 0.5+ |
| 2002 04 05 | 644 | 0.1+ | 0.0  | 2002 04 14 | 704 | 0.2- | 1.4- | 2007 10 20 | G96 | 0.1- | 0.1+ |
| 2002 04 10 | 704 | 0.1- | 0.5+ | 2002 04 18 | 644 | 0.1+ | 0.4+ |            |     |      |      |

**2002 GS<sub>42</sub> = 2007 UM<sub>74</sub> = 2007 TV<sub>414</sub>**Id. Minor Planet Center (*MPO* 127930; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 178.02559  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27297294 | $\omega$ | 181.54056 | -0.77963727 | +0.62521605 |
| $a$ | 2.3535476  | $\Omega$ | 37.23465  | -0.57392421 | -0.69058427 |
| $e$ | 0.1418463  | $i$      | 3.37729   | -0.25055284 | -0.36359078 |
| $P$ | 3.61       | $H$      | 17.1      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 04 | 644 | 0.1+  | 0.1-  | 2002 04 17 | 704 | 0.0  | 0.9+ | 2007 11 02 | G96 | 0.2+ | 0.2+ |
| 2002 04 04 | 644 | 0.4-  | 0.0   | 2002 04 20 | 644 | 0.2+ | 0.5+ | 2007 11 02 | G96 | 0.0  | 0.1+ |
| 2002 04 04 | 644 | (0.7+ | 1.6+) | 2002 04 20 | 644 | 0.2- | 0.5+ | 2007 11 04 | G96 | 0.1+ | 0.2- |
| 2002 04 05 | 644 | 0.1-  | 0.0   | 2002 04 20 | 644 | 0.1+ | 0.2+ | 2007 11 04 | G96 | 0.1+ | 0.2+ |
| 2002 04 05 | 644 | 0.3-  | 0.1-  | 2007 10 07 | G96 | 0.7- | 0.2+ | 2007 11 04 | G96 | 0.0  | 0.0  |
| 2002 04 05 | 644 | 0.1-  | 0.0   | 2007 10 07 | G96 | 0.7- | 0.1- | 2007 11 04 | G96 | 0.0  | 0.3+ |
| 2002 04 10 | 704 | 0.3-  | 0.8-  | 2007 10 07 | G96 | 0.0  | 0.2+ | 2007 11 04 | G96 | 0.4+ | 0.1+ |
| 2002 04 10 | 704 | 0.6-  | 0.9-  | 2007 10 07 | G96 | 0.4+ | 0.2- | 2007 11 04 | G96 | 0.3+ | 0.1+ |
| 2002 04 10 | 704 | 0.9+  | 1.0-  | 2007 10 31 | G96 | 0.3- | 0.0  | 2007 11 04 | G96 | 0.7+ | 0.0  |
| 2002 04 10 | 704 | (1.3+ | 2.0-) | 2007 10 31 | G96 | 0.4- | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.1- |
| 2002 04 17 | 704 | 0.8+  | 0.1-  | 2007 10 31 | G96 | 0.0  | 0.2+ | 2007 12 05 | G96 | 0.0  | 0.1- |
| 2002 04 17 | 704 | 0.5+  | 0.6+  | 2007 10 31 | G96 | 0.0  | 0.0  | 2007 12 05 | G96 | 0.2+ | 0.2+ |
| 2002 04 17 | 704 | 0.2+  | 0.8+  | 2007 11 02 | G96 | 0.2- | 0.1+ | 2007 12 05 | G96 | 0.8- | 0.3- |
| 2002 04 17 | 704 | 0.3-  | 0.1+  | 2007 11 02 | G96 | 0.0  | 0.1+ | 2007 12 05 | G96 | 0.2- | 0.5- |

2007 DEC. 24

M.P.O. 129601

**2002 GV<sub>43</sub> = 2007 UP<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 165.96292  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26669111 | $\omega$ | 201.65298 | -0.80490070   | +0.59337150 |
| <i>a</i> | 2.3903621  | $\Omega$ | 14.74951  | -0.54049630   | -0.72840906 |
| <i>e</i> | 0.1327325  | <i>i</i> | 1.51208   | -0.24494615   | -0.34253542 |
| <i>P</i> | 3.70       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 04 | 644 | 0.0  | 0.1- | 2002 04 14 | 704 | 0.4+ | 0.1- | 2007 10 18 | 291 | 0.4- | 0.0  |
| 2002 04 04 | 644 | 0.1- | 0.3- | 2002 04 14 | 704 | 0.0  | 0.2+ | 2007 10 18 | 291 | 0.1- | 0.2+ |
| 2002 04 04 | 644 | 0.1- | 0.5- | 2002 04 15 | 644 | 0.0  | 0.3+ | 2007 10 19 | G96 | 0.3+ | 0.4- |
| 2002 04 05 | 699 | 1.4- | 0.1+ | 2002 04 15 | 691 | 0.1+ | 0.6+ | 2007 10 19 | G96 | 0.2+ | 0.5- |
| 2002 04 05 | 699 | 0.3+ | 0.7- | 2002 04 15 | 644 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 0.3- | 0.2- |
| 2002 04 05 | 699 | 0.3- | 0.3+ | 2002 04 15 | 691 | 0.0  | 0.7+ | 2007 10 19 | G96 | 0.7+ | 0.5- |
| 2002 04 05 | 699 | 1.3- | 0.5- | 2002 04 15 | 691 | 0.4+ | 0.4+ | 2007 10 19 | G96 | 0.2+ | 0.3- |
| 2002 04 08 | 691 | 0.1- | 0.2+ | 2002 04 15 | 644 | 0.5+ | 0.1+ | 2007 10 19 | G96 | 0.5+ | 0.5- |
| 2002 04 08 | 691 | 0.0  | 0.1+ | 2007 09 14 | G96 | 0.1+ | 0.2+ | 2007 10 19 | G96 | 0.3+ | 0.6- |
| 2002 04 08 | 691 | 0.1+ | 0.2+ | 2007 09 14 | G96 | 0.4+ | 0.6+ | 2007 10 19 | G96 | 0.3- | 0.6- |
| 2002 04 08 | 644 | 0.5+ | 0.8+ | 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.2- |
| 2002 04 08 | 644 | 0.4+ | 0.6+ | 2007 09 14 | G96 | 0.2+ | 0.4+ | 2007 10 30 | G96 | 0.1- | 0.3- |
| 2002 04 08 | 644 | 0.4+ | 0.6+ | 2007 10 04 | 691 | 0.3- | 1.3+ | 2007 10 30 | G96 | 0.1- | 0.1+ |
| 2002 04 10 | 704 | 0.7+ | 0.3- | 2007 10 04 | 691 | 0.3- | 0.9+ | 2007 10 30 | G96 | 0.4- | 0.0  |
| 2002 04 10 | 704 | 0.3- | 0.5- | 2007 10 04 | 691 | 0.1- | 1.2+ | 2007 11 05 | G96 | 0.4- | 0.2- |
| 2002 04 10 | 704 | 0.5- | 0.2+ | 2007 10 18 | G96 | 0.3- | 0.1- | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2002 04 10 | 704 | 0.4+ | 0.1- | 2007 10 18 | G96 | 0.3+ | 0.3- | 2007 11 05 | G96 | 0.1- | 0.2+ |
| 2002 04 10 | 704 | 1.2+ | 0.9- | 2007 10 18 | G96 | 0.4+ | 0.4- | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2002 04 14 | 704 | 0.6+ | 0.3+ | 2007 10 18 | G96 | 0.1- | 0.5- |            |     |      |      |
| 2002 04 14 | 704 | 0.6+ | 0.0  | 2007 10 18 | 291 | 0.4- | 0.0  |            |     |      |      |

**2002 GU<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 183.81803  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26188125 | $\omega$ | 206.07899 | -0.99912295   | +0.04011565 |
| <i>a</i> | 2.4195417  | $\Omega$ | 336.21088 | -0.03129150   | -0.90578444 |
| <i>e</i> | 0.2020676  | <i>i</i> | 1.70513   | -0.02782392   | -0.42183561 |
| <i>P</i> | 3.76       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 22 | 691 | 1.5- | 0.3- | 2002 04 09 | 704 | 0.8+ | 0.5- | 2002 05 11 | 704 | 1.8- | 0.6- |
| 1998 01 22 | 691 | 0.8+ | 1.0- | 2002 04 12 | 704 | 0.1- | 0.3+ | 2002 05 11 | 704 | 0.3+ | 1.2- |
| 1998 01 22 | 691 | 0.2+ | 0.2- | 2002 04 12 | 704 | 0.4- | 0.5+ | 2002 05 11 | 704 | 0.9+ | 0.0  |
| 2002 04 04 | 644 | 0.8+ | 1.0+ | 2002 04 12 | 704 | 0.3- | 0.6- | 2002 05 11 | 704 | 1.2+ | 0.1+ |
| 2002 04 04 | 644 | 0.5+ | 1.0+ | 2002 04 12 | 704 | 0.7- | 0.2+ | 2004 11 04 | 691 | 0.1- | 0.8+ |
| 2002 04 04 | 644 | 0.8- | 1.1+ | 2002 04 14 | 704 | 0.1- | 0.2- | 2004 11 04 | 691 | 0.1- | 0.7+ |
| 2002 04 05 | 699 | 0.6+ | 1.2- | 2002 04 14 | 704 | 0.2+ | 0.3+ | 2004 11 04 | 691 | 0.0  | 0.5+ |
| 2002 04 05 | 699 | 0.6- | 0.0  | 2002 04 14 | 704 | 0.1- | 0.1- | 2007 09 04 | 703 | 0.1- | 0.0  |
| 2002 04 05 | 699 | 1.1- | 0.3- | 2002 04 14 | 704 | 0.1+ | 0.5+ | 2007 09 04 | 703 | 0.0  | 0.0  |
| 2002 04 05 | 699 | 0.1- | 0.6+ | 2002 04 14 | 704 | 0.1- | 0.6+ | 2007 09 04 | 703 | 0.4- | 0.2+ |
| 2002 04 09 | 704 | 0.9- | 0.1- | 2002 04 29 | 644 | 0.7+ | 0.1- | 2007 09 04 | 703 | 0.4+ | 0.2- |
| 2002 04 09 | 704 | 0.6+ | 0.0  | 2002 04 29 | 644 | 0.2+ | 0.3- |            |     |      |      |
| 2002 04 09 | 704 | 0.7+ | 0.7+ | 2002 04 29 | 644 | 0.3+ | 0.1- |            |     |      |      |

**2002 GM<sub>147</sub> = 2007 TF<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 310.23288  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28049822 | $\omega$ | 22.35183 | +0.10915208   | -0.98678498 |
| <i>a</i> | 2.3112627  | $\Omega$ | 61.56129 | +0.89015981   | +0.04341877 |
| <i>e</i> | 0.0696079  | <i>i</i> | 7.82739  | +0.44238144   | +0.15610960 |
| <i>P</i> | 3.51       | <i>H</i> | 16.8     | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 13 | 644 | 0.3- | 0.5- | 2004 12 21 | 703 | 0.0  | 0.5- | 2007 10 10 | 703 | 0.2+  | 0.5+  |
| 2002 04 13 | 644 | 0.1+ | 0.4- | 2004 12 21 | 703 | 0.3- | 0.4- | 2007 10 10 | 703 | 0.8-  | 0.3+  |
| 2002 04 13 | 644 | 0.3- | 0.2- | 2004 12 21 | 703 | 0.3- | 0.7+ | 2007 10 19 | 703 | (1.6+ | 0.1-) |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 15 | 644 | 0.4+  | 1.1+  | 2004 12 21 | 703 | 0.8+ | 0.2- | 2007 10 19 | 703 | 1.0+  | 0.4+  |
| 2002 04 15 | 644 | 0.1+  | 0.9+  | 2007 10 08 | 699 | 0.3+ | 1.2+ | 2007 10 19 | 703 | 0.2-  | 0.3+  |
| 2002 04 15 | 644 | 0.4+  | 1.3+  | 2007 10 08 | 699 | 0.8+ | 0.2- | 2007 10 19 | 703 | 0.2-  | 0.6+  |
| 2002 04 16 | 704 | 0.1+  | 0.5+  | 2007 10 08 | 699 | 0.5+ | 0.5- | 2007 11 07 | 703 | (1.8- | 0.7-) |
| 2002 04 16 | 704 | 0.1+  | 0.4-  | 2007 10 08 | 699 | 0.2+ | 0.2+ | 2007 11 07 | 703 | 0.1-  | 0.6-  |
| 2002 04 16 | 704 | (0.5+ | 1.7+) | 2007 10 10 | 703 | 0.9- | 0.0  | 2007 11 07 | 703 | 1.1-  | 0.2-  |
| 2002 04 16 | 704 | 0.5+  | 0.0   | 2007 10 10 | 703 | 0.3- | 0.7+ | 2007 11 07 | 703 | 0.5-  | 0.6-  |

**2002 GY<sub>161</sub> = 2007 UY<sub>118</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 146.04571  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27683454 | $\omega$ | 221.49210 | -0.19551010   | +0.97717599 |
| <i>a</i> | 2.3316097  | $\Omega$ | 37.45401  | -0.85993088   | -0.13008802 |
| <i>e</i> | 0.0953574  | <i>i</i> | 7.85246   | -0.47148137   | -0.16794104 |
| <i>P</i> | 3.56       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 01 | 691 | 0.1+  | 0.2+  | 2003 09 18 | 644 | 0.5- | 1.2+ | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 1995 04 01 | 691 | 0.5+  | 0.0   | 2003 09 18 | 644 | 0.4- | 1.2+ | 2007 11 13 | 691 | 0.1+ | 0.3- |
| 1995 04 01 | 691 | 0.3-  | 0.4+  | 2003 09 24 | 608 | 0.7- | 0.5+ | 2007 12 04 | 691 | 0.3- | 0.2- |
| 2002 04 10 | 704 | 0.4-  | 0.6-  | 2003 09 24 | 608 | 0.7- | 0.6+ | 2007 12 04 | 691 | 0.0  | 0.1+ |
| 2002 04 10 | 704 | 0.7+  | 0.2-  | 2003 09 24 | 608 | 0.5- | 1.1+ | 2007 12 04 | 691 | 0.1- | 0.2+ |
| 2002 04 10 | 704 | 0.1+  | 0.2-  | 2007 10 14 | G96 | 0.6+ | 0.3- | 2007 12 06 | 691 | 0.2- | 0.1- |
| 2002 04 10 | 704 | 0.1+  | 0.0   | 2007 10 14 | G96 | 0.2+ | 0.3- | 2007 12 06 | 691 | 0.0  | 0.3+ |
| 2002 04 10 | 704 | 0.3+  | 0.5+  | 2007 10 14 | G96 | 0.3+ | 0.3- | 2007 12 06 | 691 | 1.0+ | 0.9+ |
| 2002 04 14 | 644 | 0.1+  | 0.6+  | 2007 10 14 | G96 | 0.5+ | 0.5- | 2007 12 13 | 704 | 0.7+ | 0.4- |
| 2002 04 14 | 644 | 0.5+  | 1.1+  | 2007 10 31 | 691 | 0.5- | 0.0  | 2007 12 13 | 704 | 0.5- | 0.1- |
| 2002 04 14 | 644 | 0.7+  | 0.8+  | 2007 10 31 | 691 | 0.4+ | 0.2- | 2007 12 13 | 704 | 0.1+ | 0.1- |
| 2002 04 17 | 704 | (1.7- | 0.8+) | 2007 10 31 | 691 | 0.6- | 0.3+ | 2007 12 16 | 691 | 0.0  | 0.2- |
| 2002 04 17 | 704 | 0.4-  | 0.3+  | 2007 11 05 | 691 | 0.3- | 0.1- | 2007 12 16 | 691 | 0.3- | 0.4+ |
| 2002 04 17 | 704 | 0.6+  | 1.1+  | 2007 11 05 | 691 | 0.3- | 0.0  | 2007 12 16 | 691 | 0.1- | 0.2+ |
| 2002 04 17 | 704 | 0.3+  | 1.5+  | 2007 11 05 | 691 | 0.2- | 0.1+ |            |     |      |      |
| 2003 09 18 | 644 | 0.8-  | 0.8+  | 2007 11 13 | 691 | 0.6+ | 0.2- |            |     |      |      |

**2002 GD<sub>171</sub> = 2007 UV<sub>118</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 250.89931  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28357355 | $\omega$ | 278.58127 | -0.83406650   | -0.54967651 |
| <i>a</i> | 2.2945221  | $\Omega$ | 228.08898 | +0.52764523   | -0.77012699 |
| <i>e</i> | 0.1133523  | <i>i</i> | 3.60439   | +0.16100800   | -0.32366672 |
| <i>P</i> | 3.48       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 23 | 704 | (0.5- | 1.9+) | 2002 04 14 | 704 | (0.1- | 1.7+) | 2007 10 31 | 691 | 0.1- | 0.1+ |
| 2002 03 23 | 704 | 0.3+  | 0.5+  | 2002 04 14 | 704 | (0.3- | 2.7+) | 2007 10 31 | 691 | 0.1- | 0.0  |
| 2002 03 23 | 704 | 0.4+  | 1.1+  | 2002 04 14 | 704 | 0.1+  | 0.9+  | 2007 11 05 | 691 | 0.0  | 0.1- |
| 2002 04 04 | 644 | 0.3-  | 1.2+  | 2004 12 02 | 691 | 0.2-  | 0.1-  | 2007 11 05 | 691 | 0.0  | 0.2+ |
| 2002 04 04 | 644 | 0.1-  | 1.3+  | 2004 12 02 | 691 | 0.0   | 0.3-  | 2007 11 05 | 691 | 0.6- | 0.1+ |
| 2002 04 04 | 644 | 0.0   | 1.1+  | 2004 12 02 | 691 | 0.1+  | 0.3-  | 2007 11 07 | 691 | 0.2+ | 0.5+ |
| 2002 04 10 | 704 | 0.8+  | 0.5+  | 2007 10 21 | 691 | 0.2+  | 0.1-  | 2007 11 07 | 691 | 0.0  | 0.4+ |
| 2002 04 10 | 704 | 0.9+  | 0.5-  | 2007 10 21 | 691 | 0.0   | 0.2-  | 2007 11 07 | 691 | 0.1- | 0.6+ |
| 2002 04 10 | 704 | 0.4+  | 0.0   | 2007 10 21 | 691 | 0.0   | 0.1+  |            |     |      |      |
| 2002 04 14 | 704 | (0.6+ | 1.6+) | 2007 10 31 | 691 | 0.2-  | 0.3+  |            |     |      |      |

**2002 HW<sub>1</sub> = 2007 VB<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 307.44965  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.29207447 | $\omega$ | 63.88967 | -0.33712817   | -0.93777548 |
| <i>a</i> | 2.2497814  | $\Omega$ | 46.07602 | +0.81725532   | -0.33537727 |
| <i>e</i> | 0.0542767  | <i>i</i> | 6.63302  | +0.46737387   | -0.08999577 |
| <i>P</i> | 3.37       | <i>H</i> | 16.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 19 | 699 | 0.0  | 0.7- | 2005 02 02 | 644 | 0.3- | 0.1+ | 2007 11 20 | 704 | 0.7+ | 0.8- |
| 2002 03 19 | 699 | 0.7- | 1.0- | 2007 09 10 | G96 | 0.2- | 0.1+ | 2007 11 20 | 704 | 0.6+ | 0.3+ |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 03 19 | 699 | 0.3−  | 0.6−  | 2007 09 10 | G96 | 0.1− | 0.1+ | 2007 11 20 | 704 | 0.6+  | 0.3−  |
| 2002 03 19 | 699 | 0.9−  | 0.3−  | 2007 09 10 | G96 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.9+  | 0.3−  |
| 2002 04 12 | 644 | 0.2+  | 0.2+  | 2007 09 10 | G96 | 0.2− | 0.1+ | 2007 11 20 | 704 | 0.5+  | 0.2−  |
| 2002 04 12 | 644 | 0.1−  | 0.3+  | 2007 10 16 | G96 | 0.1− | 0.2− | 2007 12 04 | 699 | (1.9+ | 0.3−) |
| 2002 04 12 | 644 | 0.2+  | 0.3+  | 2007 10 16 | G96 | 0.1+ | 0.2− | 2007 12 04 | 699 | 0.7+  | 0.1−  |
| 2002 04 13 | 644 | 0.1+  | 0.2+  | 2007 10 16 | G96 | 0.1− | 0.0  | 2007 12 04 | 699 | (1.7+ | 0.7−) |
| 2002 04 13 | 644 | 0.5+  | 0.2+  | 2007 10 16 | G96 | 0.2+ | 0.0  | 2007 12 04 | 699 | 0.6+  | 0.5−  |
| 2002 04 13 | 644 | 0.1+  | 0.3+  | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 12 12 | 704 | 0.0   | 0.9+  |
| 2002 04 16 | 704 | 0.0   | 0.4+  | 2007 11 13 | 691 | 1.0− | 0.7+ | 2007 12 12 | 704 | 0.0   | 0.6−  |
| 2002 04 16 | 704 | 0.1+  | 0.5+  | 2007 11 13 | 691 | 0.3− | 0.1− | 2007 12 12 | 704 | 0.5+  | 0.8+  |
| 2002 04 16 | 704 | 0.6+  | 1.4+  | 2007 11 13 | 703 | 0.4+ | 0.6− | 2007 12 12 | 704 | 0.1−  | 0.8+  |
| 2002 04 16 | 704 | 0.0   | 0.1+  | 2007 11 13 | 703 | 0.7− | 0.1− | 2007 12 13 | 704 | 0.7+  | 0.2−  |
| 2002 04 16 | 704 | 0.3+  | 0.6+  | 2007 11 13 | 703 | 0.3− | 0.0  | 2007 12 13 | 704 | 0.4−  | 1.5+  |
| 2002 04 17 | 704 | 0.1+  | 0.4−  | 2007 11 13 | 703 | 1.4− | 0.2− | 2007 12 13 | 704 | 0.4+  | 0.6+  |
| 2002 04 17 | 704 | (1.7+ | 0.8+) | 2007 11 15 | 704 | 0.3+ | 0.3− | 2007 12 13 | 704 | (1.3− | 1.7+) |
| 2002 04 17 | 704 | 0.2+  | 0.6−  | 2007 11 15 | 704 | 0.8+ | 0.5− | 2007 12 13 | 704 | 0.3+  | 0.5+  |
| 2002 04 17 | 704 | 0.0   | 0.1−  | 2007 11 15 | 704 | 0.8+ | 0.7− | 2007 12 15 | 704 | 0.2−  | 0.3+  |
| 2005 02 02 | 644 | 0.1+  | 0.2−  | 2007 11 15 | 704 | 0.4+ | 0.0  | 2007 12 15 | 704 | 1.2−  | 0.2−  |
| 2005 02 02 | 644 | 0.1−  | 0.4−  | 2007 11 15 | 704 | 1.4+ | 0.2− | 2007 12 15 | 704 | 0.5−  | 0.4−  |

**2002 LC<sub>4</sub> = 2007 VM<sub>173</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 224.87978  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.26940123 | $\omega$ | 87.45892  | −0.97513480  | +0.18480233  |
| $a$ | 2.3743041  | $\Omega$ | 103.17076 | −0.21750296  | −0.90387994  |
| $e$ | 0.0414483  | $i$      | 7.21635   | +0.04248047  | −0.38580973  |
| $P$ | 3.66       | $H$      | 16.2      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 05 | 704 | 0.7− | 1.1+ | 2005 02 01 | 703 | 1.3− | 0.1− | 2007 11 02 | G96 | 0.3+ | 0.0  |
| 2002 06 05 | 704 | 0.2− | 0.1+ | 2005 03 09 | 703 | 0.7+ | 0.5+ | 2007 11 09 | 703 | 0.1− | 0.5+ |
| 2002 06 05 | 704 | 0.5− | 0.8− | 2005 03 09 | 703 | 0.4+ | 1.0+ | 2007 11 09 | 703 | 0.9− | 0.0  |
| 2002 06 06 | 704 | 0.1− | 0.8+ | 2005 03 09 | 703 | 1.3+ | 0.8− | 2007 11 09 | 703 | 0.1− | 0.5− |
| 2002 06 06 | 704 | 0.9+ | 0.2+ | 2005 03 09 | 703 | 0.6+ | 0.4− | 2007 11 09 | 703 | 0.1+ | 0.2− |
| 2002 06 06 | 704 | 0.1+ | 1.0− | 2006 05 07 | G96 | 0.5− | 0.3− | 2007 11 18 | G96 | 0.0  | 0.1+ |
| 2002 06 06 | 704 | 0.2+ | 0.4− | 2006 05 07 | G96 | 0.2− | 0.4− | 2007 11 18 | G96 | 0.2− | 0.1+ |
| 2002 06 09 | 704 | 0.6− | 0.5+ | 2006 05 07 | G96 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 2002 06 09 | 704 | 0.4− | 0.4+ | 2006 05 07 | G96 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.2− | 0.1− |
| 2002 06 09 | 704 | 0.6+ | 0.7+ | 2006 06 03 | G96 | 0.1+ | 0.1+ | 2007 11 21 | G96 | 0.4+ | 0.0  |
| 2002 06 09 | 608 | 0.3+ | 0.7− | 2006 06 03 | G96 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.4+ | 0.0  |
| 2002 06 09 | 608 | 0.3− | 0.3− | 2006 06 03 | G96 | 0.0  | 0.1− | 2007 11 21 | G96 | 1.1− | 0.1− |
| 2002 06 09 | 608 | 0.2− | 0.2+ | 2006 06 03 | G96 | 0.5− | 0.1− | 2007 11 21 | G96 | 0.5− | 0.1− |
| 2002 06 10 | 704 | 0.6+ | 0.2+ | 2006 07 20 | 644 | 0.1− | 0.2+ | 2007 12 04 | 704 | 0.3− | 1.2+ |
| 2002 06 10 | 704 | 0.2+ | 0.0  | 2006 07 20 | 644 | 0.4+ | 0.4+ | 2007 12 04 | 704 | 0.6+ | 0.3− |
| 2002 06 10 | 704 | 0.5+ | 0.3+ | 2006 07 20 | 644 | 0.4+ | 0.2+ | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2005 02 01 | 703 | 0.8− | 0.8+ | 2007 11 02 | G96 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.3+ | 0.6+ |
| 2005 02 01 | 703 | 0.6− | 0.4− | 2007 11 02 | G96 | 0.2+ | 0.1+ |            |     |      |      |
| 2005 02 01 | 703 | 0.0  | 0.1+ | 2007 11 02 | G96 | 0.1+ | 0.2+ |            |     |      |      |

**2002 LQ<sub>12</sub> = 2007 VS<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 84.67421   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.24119411 | $\omega$ | 109.05584 | +0.58792572 | +0.80853104 |
| $a$ | 2.5559847  | $\Omega$ | 197.02526 | −0.77048360 | +0.55034582 |
| $e$ | 0.2616688  | $i$      | 4.88200   | −0.24637040 | +0.20831954 |
| $P$ | 4.09       | $H$      | 16.7      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 05 | 704 | 1.4−  | 0.5−  | 2002 07 03 | 644 | 0.6− | 0.1− | 2006 06 21 | 644 | 0.5− | 0.0  |
| 2002 06 05 | 704 | 0.5−  | 0.4+  | 2002 07 03 | 644 | 0.0  | 0.1− | 2007 10 20 | G96 | 0.0  | 0.1− |
| 2002 06 05 | 704 | (0.5− | 1.7+) | 2002 07 03 | 644 | 0.1− | 0.1+ | 2007 10 20 | G96 | 0.5− | 0.5− |
| 2002 06 09 | 644 | 0.1+  | 0.0   | 2006 05 25 | 644 | 0.0  | 0.3+ | 2007 10 20 | G96 | 0.1− | 0.4− |
| 2002 06 09 | 704 | 0.1+  | 0.7−  | 2006 05 25 | 691 | 0.0  | 0.1− | 2007 10 20 | G96 | 0.4+ | 0.7− |
| 2002 06 09 | 704 | 0.3+  | 0.5+  | 2006 05 25 | 644 | 0.1+ | 0.4+ | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2002 06 09 | 704 | 0.9+  | 1.0+  | 2006 05 25 | 691 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.1− | 0.4+ |
| 2002 06 09 | 644 | 0.3+  | 0.2+  | 2006 05 25 | 644 | 0.1− | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 09 | 704 | 0.1+ | 0.2− | 2006 05 25 | 691 | 0.2+ | 0.1− | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2002 06 09 | 704 | 0.3+ | 0.1+ | 2006 06 21 | 644 | 0.4− | 0.3− | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2002 06 09 | 644 | 0.3+ | 0.2+ | 2006 06 21 | 644 | 0.3− | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.1+ |

**2002 LT<sub>17</sub> = 2007 XY<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 169.81304  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27961635 | $\omega$ | 185.90310 | +0.17738708 | +0.98102802 |
| $a$ | 2.3161197  | $\Omega$ | 94.33290  | −0.89969251 | +0.19386348 |
| $e$ | 0.1359554  | $i$      | 4.49896   | −0.39885738 | −0.00099240 |
| $P$ | 3.52       | $H$      | 17.0      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 06 | 704 | 0.7− | 0.0  | 2002 07 04 | 644 | 0.1−  | 0.2+  | 2006 09 26 | 703 | 0.3− | 0.2+ |
| 2002 06 06 | 704 | 0.4− | 0.4+ | 2002 07 04 | 644 | 0.4+  | 0.2−  | 2007 12 03 | 691 | 0.1− | 0.2+ |
| 2002 06 06 | 704 | 0.6− | 0.8+ | 2002 07 04 | 644 | 0.5+  | 0.4+  | 2007 12 03 | 691 | 0.2+ | 0.2− |
| 2002 06 08 | 704 | 0.3+ | 0.8+ | 2003 12 21 | 691 | 0.2−  | 0.2+  | 2007 12 03 | 691 | 0.4− | 0.1+ |
| 2002 06 08 | 704 | 0.6+ | 0.4+ | 2003 12 21 | 691 | 0.1+  | 0.6+  | 2007 12 04 | G96 | 0.3+ | 0.5− |
| 2002 06 08 | 704 | 0.2+ | 0.4+ | 2003 12 21 | 691 | 0.1−  | 0.1−  | 2007 12 04 | G96 | 0.0  | 0.0  |
| 2002 06 16 | 644 | 0.1+ | 0.4− | 2006 09 26 | 703 | (1.6− | 2.0−) | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2002 06 16 | 644 | 0.1− | 0.6− | 2006 09 26 | 703 | (0.5+ | 1.9+) | 2007 12 04 | G96 | 0.6+ | 0.6− |
| 2002 06 16 | 644 | 0.3+ | 0.7− | 2006 09 26 | 703 | 0.4+  | 0.7−  |            |     |      |      |

**2002 NZ<sub>11</sub> = 2007 XN<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 64.40330   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23398469 | $\omega$ | 216.61380 | +0.92421077 | +0.37289533 |
| $a$ | 2.6082212  | $\Omega$ | 121.29458 | −0.32351146 | +0.87911729 |
| $e$ | 0.2154434  | $i$      | 5.53107   | −0.20291572 | +0.29681958 |
| $P$ | 4.21       | $H$      | 16.2      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 04 | 644 | 0.6− | 0.0  | 2002 08 13 | 704 | 0.5−  | 0.4−  | 2007 12 04 | 703 | 0.6− | 0.9+ |
| 2002 07 04 | 644 | 0.2− | 0.2− | 2002 08 13 | 704 | (0.6− | 1.8−) | 2007 12 04 | 703 | 0.2− | 1.1+ |
| 2002 07 04 | 644 | 0.4− | 0.0  | 2002 08 13 | 704 | 0.0   | 0.4−  | 2007 12 04 | 703 | 0.7− | 1.1+ |
| 2002 07 05 | 704 | 1.2+ | 1.1+ | 2002 08 13 | 704 | 0.4−  | 0.0   | 2007 12 06 | G96 | 0.3− | 0.0  |
| 2002 07 05 | 704 | 0.7+ | 1.1+ | 2007 11 21 | G96 | 0.3+  | 0.2−  | 2007 12 06 | G96 | 0.1+ | 0.3− |
| 2002 07 05 | 704 | 0.7+ | 0.6+ | 2007 11 21 | G96 | 0.2+  | 0.3−  | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2002 07 13 | 644 | 0.1− | 0.5− | 2007 11 21 | G96 | 0.1+  | 0.4−  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2002 07 13 | 644 | 0.4− | 0.6− | 2007 11 21 | G96 | 0.0   | 0.2−  |            |     |      |      |
| 2002 07 13 | 644 | 0.1− | 0.3− | 2007 12 04 | 703 | 0.6+  | 1.0−  |            |     |      |      |

**2002 NR<sub>48</sub> = 2007 TC<sub>29</sub> = 2007 TB<sub>300</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 119.90232  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23133883 | $\omega$ | 51.09740  | −0.19962398 | +0.97948078 |
| $a$ | 2.6280706  | $\Omega$ | 207.42558 | −0.91661007 | −0.19665647 |
| $e$ | 0.1548734  | $i$      | 3.44866   | −0.34637588 | −0.04408664 |
| $P$ | 4.26       | $H$      | 16.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 09 | 691 | 0.1− | 0.5+ | 2002 08 07 | 644 | 0.1+ | 0.3+ | 2007 10 12 | 691 | 0.2− | 0.2− |
| 1994 10 09 | 691 | 0.1+ | 0.5− | 2002 08 07 | 644 | 0.4− | 0.3+ | 2007 10 16 | 691 | 0.1+ | 0.2− |
| 1994 10 09 | 691 | 0.1+ | 0.1− | 2002 08 16 | 644 | 0.0  | 0.1+ | 2007 10 16 | 691 | 0.3− | 0.3+ |
| 2000 12 23 | 645 | 0.1+ | 0.1+ | 2002 08 16 | 644 | 0.6− | 0.4+ | 2007 10 16 | 691 | 0.6− | 0.7− |
| 2000 12 23 | 645 | 0.1+ | 0.1+ | 2002 08 26 | 644 | 0.0  | 0.2− | 2007 10 30 | G96 | 0.0  | 0.0  |
| 2001 02 20 | 645 | 0.1− | 0.0  | 2002 08 26 | 644 | 0.3− | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.3− |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2005 02 02 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.1− | 0.2+ |
| 2002 07 14 | 704 | 0.2+ | 0.8+ | 2005 02 02 | 691 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.4− | 0.1+ |



## 2007 DEC. 24

M.P.O. 129603

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 22 | 644 | 0.2+ | 0.5+ | 2007 10 07 | G96 | 1.1+ | 0.1- | 2007 12 05 | G96 | 0.9+ | 0.8+ |
| 2002 07 22 | 644 | 0.0  | 0.3+ | 2007 10 07 | G96 | 0.5+ | 0.0  | 2007 12 05 | G96 | 0.1- | 0.1- |
| 2002 07 22 | 644 | 0.1+ | 0.1+ | 2007 10 12 | 691 | 0.2- | 0.2- |            |     |      |      |
| 2002 08 07 | 644 | 0.3+ | 0.2+ | 2007 10 12 | 691 | 0.3- | 0.2- |            |     |      |      |

2002 NN<sub>54</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.70209   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23971661 | $\omega$ | 215.71234 | +0.72982737   | +0.66849128 |
| <i>a</i> | 2.5664765  | $\Omega$ | 101.67617 | -0.58839688   | +0.72080116 |
| <i>e</i> | 0.1957435  | <i>i</i> | 8.40108   | -0.34805335   | +0.18320779 |
| <i>P</i> | 4.11       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 05 16 | 644 | 0.3- | 0.2+ | 2002 07 14 | 644 | 0.4-  | 0.1-  | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2002 05 16 | 644 | 0.3- | 0.2+ | 2002 07 14 | 644 | 0.4-  | 0.2+  | 2007 11 20 | 691 | 0.3- | 0.1+ |
| 2002 05 16 | 644 | 0.4- | 0.3- | 2002 07 14 | 644 | 0.2-  | 0.1+  | 2007 12 04 | 704 | 0.9+ | 0.3- |
| 2002 06 12 | 644 | 0.3- | 0.2- | 2002 07 14 | 644 | 0.1-  | 0.0   | 2007 12 04 | 704 | 0.0  | 0.7+ |
| 2002 06 12 | 644 | 0.4- | 0.1- | 2002 08 13 | 704 | 0.1-  | 0.4+  | 2007 12 04 | 704 | 0.2- | 2.1+ |
| 2002 06 12 | 644 | 0.4- | 0.1- | 2002 08 13 | 704 | 0.5+  | 0.4-  | 2007 12 05 | G96 | 0.0  | 0.0  |
| 2002 07 05 | 704 | 0.7+ | 0.0  | 2002 08 13 | 704 | 0.1+  | 0.1-  | 2007 12 05 | G96 | 1.1- | 0.3+ |
| 2002 07 05 | 704 | 0.3- | 0.3+ | 2002 08 13 | 704 | 0.2+  | 0.2+  | 2007 12 05 | G96 | 0.9+ | 0.1+ |
| 2002 07 05 | 704 | 0.3+ | 0.1- | 2002 08 13 | 704 | 1.1+  | 0.8+  | 2007 12 05 | G96 | 0.2+ | 0.1+ |
| 2002 07 09 | 644 | 0.2- | 1.1+ | 2005 03 16 | 703 | 0.1+  | 0.7+  | 2007 12 06 | G96 | 0.1- | 0.0  |
| 2002 07 09 | 644 | 0.1- | 0.4+ | 2005 03 16 | 703 | (2.6- | 0.5+) | 2007 12 06 | G96 | 0.3+ | 0.1- |
| 2002 07 09 | 644 | 0.1+ | 0.4+ | 2005 03 16 | 703 | 0.6+  | 0.5+  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2002 07 14 | 644 | 0.1- | 0.0  | 2005 03 16 | 703 | 0.3+  | 1.3+  | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2002 07 14 | 644 | 0.2+ | 0.1+ | 2007 11 20 | 691 | 0.1-  | 0.1-  |            |     |      |      |

2002 NG<sub>61</sub> = 2007 WT<sub>31</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 120.26270  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24396432 | $\omega$ | 278.72223 | +0.32737544   | +0.94475928 |
| <i>a</i> | 2.5365991  | $\Omega$ | 10.42966  | -0.82852319   | +0.29514439 |
| <i>e</i> | 0.0931656  | <i>i</i> | 5.06300   | -0.45428476   | +0.14254718 |
| <i>P</i> | 4.04       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.1- | 0.0  | 2005 03 03 | 691 | 0.7+  | 0.2+  | 2007 11 02 | 691 | 0.1+ | 0.8+ |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2005 03 03 | 691 | 0.3+  | 0.3+  | 2007 11 02 | 691 | 0.2- | 0.1- |
| 2001 03 20 | 691 | 0.1+ | 0.4+ | 2005 03 03 | 691 | 0.4+  | 0.0   | 2007 11 19 | G96 | 0.6+ | 0.3- |
| 2001 03 20 | 691 | 0.2- | 0.3+ | 2005 03 16 | G96 | 0.1+  | 0.5-  | 2007 11 19 | G96 | 0.2- | 0.0  |
| 2001 03 20 | 691 | 0.2+ | 0.4+ | 2005 03 16 | G96 | 0.2-  | 0.2-  | 2007 11 19 | G96 | 0.0  | 0.2- |
| 2002 07 06 | 644 | 0.1- | 0.5+ | 2005 03 16 | G96 | 0.2-  | 0.2-  | 2007 11 19 | G96 | 0.3+ | 0.0  |
| 2002 07 06 | 644 | 0.0  | 0.3+ | 2005 03 16 | G96 | 0.5-  | 0.3-  | 2007 11 20 | 691 | 0.5- | 0.3+ |
| 2002 07 06 | 644 | 0.0  | 0.7+ | 2005 05 10 | G96 | 0.5-  | 0.3-  | 2007 11 20 | 691 | 0.5- | 0.0  |
| 2002 07 14 | 644 | 0.6- | 0.9+ | 2005 05 10 | G96 | 0.4-  | 0.1-  | 2007 11 20 | 691 | 0.2+ | 0.2+ |
| 2002 07 14 | 644 | 0.0  | 0.5+ | 2005 05 10 | G96 | 0.5-  | 0.2+  | 2007 12 15 | 704 | 0.8- | 0.2+ |
| 2002 07 14 | 644 | 0.1- | 0.6+ | 2005 05 10 | G96 | 0.3-  | 0.1+  | 2007 12 15 | 704 | 0.3+ | 0.1+ |
| 2002 07 15 | 644 | 0.1- | 0.5+ | 2007 10 24 | G96 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.5+ | 0.1+ |
| 2002 07 15 | 644 | 0.3- | 0.6+ | 2007 10 24 | G96 | (0.2- | 1.8-) | 2007 12 15 | 704 | 0.1+ | 0.7+ |
| 2003 12 18 | 691 | 0.2+ | 0.4- | 2007 10 24 | G96 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.8+ | 1.2+ |
| 2003 12 18 | 691 | 0.2+ | 0.4- | 2007 10 24 | G96 | 0.6-  | 0.0   | 2007 12 15 | 704 | 1.0- | 0.9+ |
| 2003 12 18 | 691 | 0.7+ | 0.3- | 2007 11 02 | 691 | 0.3-  | 0.2+  |            |     |      |      |

2002 NX<sub>65</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.91134   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21073080 | $\omega$ | 64.34571  | +0.77451643   | +0.62459569 |
| <i>a</i> | 2.7967311  | $\Omega$ | 256.83798 | -0.61093736   | +0.69765336 |
| <i>e</i> | 0.2436098  | <i>i</i> | 5.89588   | -0.16395070   | +0.35094162 |
| <i>P</i> | 4.68       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 03 | 644 | 0.4- | 0.2+ | 2002 07 29 | 644 | 0.3+ | 0.0  | 2007 10 07 | 703 | 0.9+ | 1.4- |
| 2002 07 03 | 644 | 0.3- | 0.2+ | 2002 08 05 | 644 | 0.1+ | 0.2+ | 2007 10 07 | 703 | 0.2- | 0.1- |
| 2002 07 03 | 644 | 0.3- | 0.3+ | 2002 08 05 | 644 | 0.1+ | 0.4+ | 2007 10 07 | 703 | 0.8+ | 0.5- |
| 2002 07 09 | 644 | 0.4- | 0.2- | 2002 08 05 | 644 | 0.3+ | 0.4+ | 2007 10 07 | 703 | 0.7- | 1.3+ |
| 2002 07 09 | 644 | 0.1- | 0.2+ | 2002 08 16 | 644 | 0.2- | 0.5- | 2007 10 13 | 703 | 0.9+ | 0.6- |
| 2002 07 09 | 644 | 0.1- | 0.0  | 2002 08 16 | 644 | 0.3+ | 0.2- | 2007 10 13 | 703 | 0.4+ | 0.8+ |
| 2002 07 21 | 644 | 0.0  | 0.2- | 2002 08 16 | 644 | 0.2+ | 0.1+ | 2007 10 13 | 703 | 1.7- | 0.6+ |
| 2002 07 21 | 644 | 0.1+ | 0.0  | 2002 08 24 | 644 | 0.0  | 0.2+ | 2007 10 13 | 703 | 0.5- | 0.5+ |
| 2002 07 21 | 644 | 0.1+ | 0.1+ | 2002 08 24 | 644 | 0.1- | 0.8- |            |     |      |      |
| 2002 07 29 | 644 | 0.4+ | 0.2- | 2002 08 24 | 644 | 0.1- | 0.5- |            |     |      |      |

2002 NL<sub>67</sub> = 2007 TK<sub>38</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.71280   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22078022 | $\omega$ | 166.57486 | +0.93676337   | +0.34980523 |
| <i>a</i> | 2.7112066  | $\Omega$ | 172.92296 | -0.32845607   | +0.88917291 |
| <i>e</i> | 0.0611595  | <i>i</i> | 4.89878   | -0.12079321   | +0.29497090 |
| <i>P</i> | 4.46       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 19 | 645 | 0.0  | 0.0  | 2002 08 16 | 644 | 0.1+ | 0.3- | 2007 10 04 | 703 | 0.6-  | 1.1+  |
| 1998 09 19 | 645 | 0.0  | 0.1- | 2002 08 17 | 644 | 0.3- | 0.1+ | 2007 10 04 | 703 | 0.1+  | 0.5+  |
| 2002 07 04 | 644 | 0.1+ | 0.1+ | 2002 08 26 | 644 | 0.4- | 0.1+ | 2007 10 04 | 703 | (0.2- | 2.3+) |
| 2002 07 04 | 644 | 0.4- | 0.0  | 2002 08 26 | 644 | 0.3- | 0.1- | 2007 10 04 | 703 | 0.0   | 1.3+  |
| 2002 07 04 | 644 | 0.3- | 0.4- | 2002 08 26 | 644 | 0.2- | 0.3+ | 2007 10 08 | G96 | 0.0   | 0.1-  |
| 2002 07 14 | 644 | 0.4+ | 0.3- | 2002 08 27 | 644 | 0.3- | 0.3+ | 2007 10 08 | G96 | 0.1+  | 0.2-  |
| 2002 07 14 | 644 | 0.1- | 0.1- | 2002 08 27 | 644 | 0.3- | 0.2+ | 2007 10 08 | G96 | 0.0   | 0.3-  |
| 2002 07 14 | 644 | 0.1+ | 0.3+ | 2002 08 27 | 644 | 0.0  | 0.1- | 2007 10 08 | G96 | 0.1-  | 0.3-  |
| 2002 07 22 | 644 | 0.3+ | 0.4+ | 2007 09 12 | G96 | 0.2+ | 0.4+ | 2007 10 18 | G96 | 0.0   | 0.0   |
| 2002 07 22 | 644 | 0.4+ | 0.6+ | 2007 09 12 | G96 | 0.1- | 0.1+ | 2007 10 18 | G96 | 0.0   | 0.2-  |
| 2002 07 22 | 644 | 0.1+ | 0.0  | 2007 09 12 | G96 | 0.0  | 0.4+ | 2007 10 18 | G96 | 0.0   | 0.2-  |
| 2002 08 07 | 644 | 0.1+ | 0.4- | 2007 09 12 | G96 | 0.2- | 0.1- | 2007 10 18 | G96 | 0.4-  | 0.2-  |
| 2002 08 07 | 644 | 0.0  | 0.1+ | 2007 09 12 | G96 | 0.2- | 0.4+ | 2007 11 02 | G96 | 0.3-  | 0.1+  |
| 2002 08 07 | 644 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.1+ | 0.3- | 2007 11 02 | G96 | 0.1-  | 0.2+  |
| 2002 08 16 | 644 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.2+ | 0.2+ | 2007 11 02 | G96 | 0.3+  | 0.1+  |
| 2002 08 16 | 644 | 0.5+ | 0.0  | 2007 09 12 | G96 | 0.1- | 0.1+ | 2007 11 02 | G96 | 0.1+  | 0.3+  |

2002 OE<sub>10</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 54.53964   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22292310 | $\omega$ | 64.19798  | +0.93832335   | +0.30737906 |
| <i>a</i> | 2.6938041  | $\Omega$ | 277.56685 | -0.34569111   | +0.84307803 |
| <i>e</i> | 0.2285956  | <i>i</i> | 9.19051   | +0.00685178   | +0.44129078 |
| <i>P</i> | 4.42       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 21 | 644 | 0.3- | 0.2+ | 2002 08 15 | 644 | 0.2- | 0.2+ | 2002 11 08 | 645 | 0.1+ | 0.0  |
| 2002 07 21 | 644 | 0.2- | 0.0  | 2002 08 27 | 644 | 0.2+ | 0.4+ | 2007 11 18 | 704 | 1.0- | 1.4+ |
| 2002 07 21 | 644 | 0.2- | 0.0  | 2002 08 27 | 644 | 0.1- | 0.4+ | 2007 11 18 | 704 | 0.2- | 0.0  |
| 2002 07 23 | 644 | 0.3- | 0.1- | 2002 08 27 | 644 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.3+ | 0.1+ |
| 2002 07 23 | 644 | 0.2- | 0.3+ | 2002 09 04 | 644 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.5+ | 0.1+ |
| 2002 07 23 | 644 | 0.3+ | 0.0  | 2002 09 04 | 644 | 0.2- | 0.8+ | 2007 11 20 | G96 | 0.0  | 0.2+ |
| 2002 08 04 | 644 | 0.0  | 0.3+ | 2002 09 04 | 644 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.3+ | 0.2+ |
| 2002 08 04 | 644 | 0.2+ | 0.3+ | 2002 09 12 | 644 | 0.3- | 0.1+ | 2007 11 20 | G96 | 0.4+ | 0.1+ |
| 2002 08 04 | 644 | 0.1+ | 0.3+ | 2002 09 12 | 644 | 0.4- | 0.3+ | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2002 08 05 | 644 | 0.3+ | 0.7+ | 2002 09 12 | 644 | 0.6- | 0.2+ | 2007 12 13 | 704 | 0.4- | 0.5- |
| 2002 08 05 | 644 | 0.5+ | 0.9+ | 2002 09 21 | 644 | 0.1+ | 0.4+ | 2007 12 13 | 704 | 0.5+ | 0.0  |
| 2002 08 05 | 644 | 0.4+ | 0.8+ | 2002 09 21 | 644 | 0.3- | 0.3+ | 2007 12 13 | 704 | 0.2- | 0.3+ |
| 2002 08 12 | 704 | 0.1+ | 0.6- | 2002 09 21 | 644 | 0.4+ | 0.3+ | 2007 12 15 | 704 | 0.3- | 0.0  |
| 2002 08 12 | 704 | 0.0  | 0.4- | 2002 10 11 | 645 | 0.1- | 0.1- | 2007 12 15 | 704 | 0.2- | 0.3+ |
| 2002 08 12 | 704 | 0.0  | 0.1+ | 2002 10 11 | 645 | 0.1- | 0.2- | 2007 12 15 | 704 | 0.7+ | 0.9- |
| 2002 08 12 | 704 | 0.4+ | 0.1+ | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.7- | 0.7+ |
| 2002 08 15 | 644 | 0.1- | 0.2+ | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.3+ | 0.7+ |
| 2002 08 15 | 644 | 0.2- | 0.1+ | 2002 11 08 | 645 | 0.1+ | 0.0  |            |     |      |      |

**2002 OQ<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.16392   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23633303 | $\omega$ 235.23911 | +0.98592976   | +0.14202671 |
| <i>a</i> | 2.5909146  | $\Omega$ 116.45215 | -0.10203813   | +0.92905005 |
| <i>e</i> | 0.1749801  | <i>i</i> 5.65056   | -0.13240364   | +0.34160565 |
| <i>P</i> | 4.17       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 07 | 691 | 0.3- | 0.2- | 2002 07 04 | 644 | 0.2- | 0.3+ | 2002 08 08 | 644 | 0.2+ | 0.4- |
| 2000 01 07 | 691 | 0.2- | 0.5- | 2002 07 04 | 644 | 0.2- | 0.0  | 2002 08 08 | 644 | 0.1- | 0.9- |
| 2000 01 07 | 691 | 0.4+ | 0.1+ | 2002 07 04 | 644 | 0.1- | 0.0  | 2002 08 08 | 644 | 0.1+ | 0.3- |
| 2002 05 24 | 644 | 0.6+ | 0.4+ | 2002 07 09 | 644 | 0.1- | 0.1+ | 2002 08 29 | 644 | 0.2+ | 0.1+ |
| 2002 05 24 | 644 | 0.2- | 0.1+ | 2002 07 09 | 644 | 0.0  | 0.2- | 2002 08 29 | 644 | 0.5+ | 0.6+ |
| 2002 05 24 | 644 | 0.6+ | 0.1- | 2002 07 09 | 644 | 0.0  | 0.1- | 2007 12 04 | 704 | 0.5+ | 0.7+ |
| 2002 06 16 | 644 | 0.2+ | 0.0  | 2002 07 14 | 644 | 0.0  | 0.2- | 2007 12 04 | 704 | 0.2- | 0.1- |
| 2002 06 16 | 644 | 0.6- | 0.1+ | 2002 07 14 | 644 | 0.1+ | 0.3- | 2007 12 04 | 704 | 0.4+ | 0.5- |
| 2002 06 16 | 644 | 0.2- | 0.2- | 2002 07 22 | 644 | 0.3- | 0.1- | 2007 12 04 | 704 | 0.7- | 0.5+ |
| 2002 06 25 | 644 | 0.4- | 0.1- | 2002 07 22 | 644 | 0.3+ | 0.5- |            |     |      |      |
| 2002 06 25 | 644 | 0.1+ | 0.2+ | 2002 07 22 | 644 | 0.2- | 0.2- |            |     |      |      |

**2002 OW<sub>29</sub> = 2006 VS<sub>152</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.25276  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27405984 | $\omega$ 222.06487 | +0.86291204   | -0.50501743 |
| <i>a</i> | 2.3473208  | $\Omega$ 168.22648 | +0.48440242   | +0.81618441 |
| <i>e</i> | 0.2456102  | <i>i</i> 5.18643   | +0.14400385   | +0.28071409 |
| <i>P</i> | 3.60       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 09 20 | 809 | 0.0  | 0.0  | 2002 08 16 | 644 | 0.1- | 0.4+ | 2006 11 09 | 644 | 0.1+  | 0.0   |
| 2002 07 12 | 644 | 0.0  | 0.3+ | 2002 08 26 | 644 | 0.3- | 0.2- | 2006 11 09 | 644 | 0.1-  | 0.1+  |
| 2002 07 12 | 644 | 0.0  | 0.0  | 2002 08 26 | 644 | 0.2- | 0.2+ | 2006 11 09 | 644 | 0.1+  | 0.3+  |
| 2002 07 12 | 644 | 0.2+ | 0.3- | 2002 08 26 | 644 | 0.1- | 0.4+ | 2006 11 13 | 703 | 0.8-  | 0.9-  |
| 2002 07 21 | 644 | 0.5+ | 0.2+ | 2002 08 27 | 644 | 0.4- | 0.3- | 2006 11 13 | 703 | (2.9- | 1.1-) |
| 2002 07 21 | 644 | 0.1- | 0.2+ | 2002 08 27 | 644 | 0.1- | 0.4- | 2006 11 13 | 703 | 0.2-  | 1.3-  |
| 2002 07 21 | 644 | 0.2- | 0.7+ | 2002 08 27 | 644 | 0.2- | 0.0  | 2006 11 13 | 703 | 0.2-  | 0.7-  |
| 2002 07 22 | 644 | 0.1+ | 0.3- | 2005 05 16 | G96 | 0.0  | 0.2+ | 2006 11 19 | 703 | 0.4+  | 0.2+  |
| 2002 07 22 | 644 | 0.1+ | 0.4- | 2005 05 16 | G96 | 0.2+ | 0.4+ | 2006 11 19 | 703 | 0.2-  | 0.9+  |
| 2002 07 22 | 644 | 0.2+ | 0.5- | 2005 05 16 | G96 | 0.0  | 0.1+ | 2006 11 19 | 703 | 0.8-  | 1.0+  |
| 2002 08 07 | 644 | 0.0  | 0.2- | 2005 05 16 | G96 | 0.2+ | 0.6+ | 2006 11 19 | 703 | 0.2-  | 0.7+  |
| 2002 08 07 | 644 | 0.0  | 0.0  | 2006 11 01 | 703 | 0.1+ | 1.9+ | 2006 11 25 | G96 | 0.2+  | 0.2-  |
| 2002 08 07 | 644 | 0.4+ | 0.1+ | 2006 11 01 | 703 | 1.5+ | 0.1- | 2006 11 25 | G96 | 0.3+  | 0.2-  |
| 2002 08 16 | 644 | 0.0  | 0.3- | 2006 11 01 | 703 | 0.7- | 0.4+ | 2006 11 25 | G96 | 0.1+  | 0.1-  |
| 2002 08 16 | 644 | 0.1+ | 0.1+ | 2006 11 01 | 703 | 0.2+ | 0.9- | 2006 11 25 | G96 | 0.2+  | 0.2-  |

**2002 OX<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 201.35504  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28167712 | $\omega$ 7.87373   | +0.11395941   | +0.98927128 |
| <i>a</i> | 2.3048093  | $\Omega$ 268.70297 | -0.91641489   | +0.06914140 |
| <i>e</i> | 0.1737093  | <i>i</i> 5.24601   | -0.38366261   | +0.12869267 |
| <i>P</i> | 3.50       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 17 | 644 | 0.1+ | 0.0  | 2002 08 11 | 608 | 0.2- | 0.4- | 2006 10 20 | G96 | 0.0  | 0.1- |
| 2002 07 17 | 644 | 0.1+ | 0.0  | 2002 08 11 | 608 | 0.3- | 0.6- | 2006 10 20 | G96 | 0.5+ | 0.4- |
| 2002 07 17 | 644 | 0.1- | 0.1- | 2002 08 11 | 608 | 0.8- | 0.1- | 2006 10 20 | G96 | 0.3- | 0.0  |
| 2002 07 22 | 644 | 0.2+ | 0.3- | 2002 08 16 | 644 | 0.1+ | 0.0  | 2006 11 25 | G96 | 0.3- | 0.1+ |
| 2002 07 22 | 644 | 0.2- | 0.2- | 2002 08 16 | 644 | 0.1- | 0.6+ | 2006 11 25 | G96 | 0.1- | 1.0+ |
| 2002 07 22 | 644 | 0.0  | 0.1+ | 2005 03 13 | 691 | 0.2+ | 0.1- | 2006 11 25 | G96 | 0.0  | 0.2- |
| 2002 08 05 | 644 | 0.5+ | 0.4+ | 2005 03 13 | 691 | 0.2- | 0.3+ | 2006 11 25 | G96 | 0.4- | 0.7- |
| 2002 08 05 | 644 | 0.0  | 0.0  | 2005 03 13 | 691 | 0.0  | 0.1- |            |     |      |      |
| 2002 08 05 | 644 | 0.5+ | 0.6+ | 2006 10 20 | G96 | 0.3+ | 0.4+ |            |     |      |      |

**2002 OY<sub>29</sub> = 2006 EH<sub>28</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.98848    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18836276 | $\omega$ 130.37498 | +0.46333644   | +0.88610920 |
| <i>a</i> | 3.0139730  | $\Omega$ 167.21317 | -0.82786113   | +0.43739512 |
| <i>e</i> | 0.2292404  | <i>i</i> 2.95110   | -0.31617289   | +0.15328405 |
| <i>P</i> | 5.23       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 04 | 644 | 0.3- | 0.3+ | 2002 08 07 | 644 | 0.0  | 0.1+ | 2006 03 03 | 691 | 0.1+ | 0.2+ |
| 2002 07 04 | 644 | 0.1+ | 0.2+ | 2002 08 17 | 644 | 0.3+ | 0.1- | 2006 03 03 | 691 | 0.2+ | 0.3- |
| 2002 07 04 | 644 | 0.0  | 0.3- | 2002 08 17 | 644 | 0.0  | 0.1+ | 2006 03 05 | G96 | 0.2- | 0.4+ |
| 2002 07 22 | 644 | 0.2+ | 0.0  | 2002 08 17 | 644 | 0.1+ | 0.3+ | 2006 03 05 | G96 | 0.3- | 0.4+ |
| 2002 07 22 | 644 | 0.3+ | 0.2- | 2002 08 27 | 644 | 0.5- | 0.1+ | 2006 03 05 | G96 | 0.8- | 0.5- |
| 2002 07 22 | 644 | 0.2- | 0.1- | 2002 08 27 | 644 | 0.1- | 0.4- | 2006 03 05 | G96 | 0.4- | 0.4- |
| 2002 08 07 | 644 | 0.1- | 0.2+ | 2002 08 27 | 644 | 0.1+ | 0.3- |            |     |      |      |
| 2002 08 07 | 644 | 0.2+ | 0.1+ | 2006 03 03 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2002 OA<sub>30</sub> = 2007 VW<sub>168</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.10523   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22749580 | $\omega$ 262.20668 | +0.79252414   | +0.60627947 |
| <i>a</i> | 2.6575847  | $\Omega$ 60.44799  | -0.52546231   | +0.73364885 |
| <i>e</i> | 0.2725344  | <i>i</i> 4.33853   | -0.30950744   | +0.30689505 |
| <i>P</i> | 4.33       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 24 | 644 | 0.0  | 0.4- | 2002 08 19 | 644 | 0.0  | 0.2+ | 2002 09 10 | 608 | 0.0  | 0.2- |
| 2002 07 24 | 644 | 0.2+ | 0.5- | 2002 08 19 | 644 | 0.1- | 0.3+ | 2002 09 16 | 644 | 0.6- | 0.1+ |
| 2002 07 24 | 644 | 0.4+ | 0.1- | 2002 08 30 | 644 | 0.8+ | 0.5- | 2002 09 16 | 644 | 0.2- | 0.1- |
| 2002 07 24 | 608 | 0.4- | 0.4+ | 2002 08 30 | 644 | 0.2+ | 0.0  | 2002 09 16 | 644 | 0.2- | 0.0  |
| 2002 07 24 | 608 | 0.6+ | 0.1+ | 2002 08 30 | 644 | 0.2+ | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.1- |
| 2002 07 24 | 608 | 0.2+ | 0.6- | 2002 08 30 | 644 | 0.2+ | 0.1+ | 2007 11 05 | 691 | 0.2+ | 0.0  |
| 2002 07 30 | 608 | 0.4- | 0.6+ | 2002 08 30 | 644 | 0.3+ | 0.1+ | 2007 11 05 | 691 | 0.3+ | 0.2+ |
| 2002 07 30 | 608 | 0.9- | 0.6+ | 2002 08 30 | 644 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.1- | 0.1- |
| 2002 07 30 | 608 | 0.4- | 0.6+ | 2002 09 05 | 608 | 0.1- | 0.3- | 2007 11 09 | 691 | 0.4- | 0.1+ |
| 2002 08 17 | 608 | 0.2+ | 0.3- | 2002 09 05 | 608 | 0.3+ | 0.1+ | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2002 08 17 | 608 | 0.3+ | 0.4- | 2002 09 05 | 608 | 0.3- | 0.2+ | 2007 12 15 | 691 | 0.0  | 0.2+ |
| 2002 08 17 | 608 | 0.3- | 0.3- | 2002 09 10 | 608 | 0.4+ | 0.2- | 2007 12 15 | 691 | 0.2- | 0.1- |
| 2002 08 19 | 644 | 0.2- | 0.3+ | 2002 09 10 | 608 | 0.5- | 0.1- | 2007 12 15 | 691 | 0.1+ | 0.3- |

**2002 PC<sub>4</sub> = 2007 WQ<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.64513   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22249165 | $\omega$ 229.79785 | +0.88752833   | -0.44909656 |
| <i>a</i> | 2.6972854  | $\Omega$ 156.33311 | +0.46054344   | +0.87142370 |
| <i>e</i> | 0.2391481  | <i>i</i> 14.86548  | -0.01389940   | +0.19731451 |
| <i>P</i> | 4.43       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 14 | 691 | 0.1+ | 0.0  | 2002 08 06 | 644 | 0.2+ | 0.1+ | 2007 10 10 | 703 | 0.3-  | 0.5+  |
| 2000 02 14 | 691 | 0.0  | 0.1+ | 2002 08 06 | 644 | 0.5+ | 0.4+ | 2007 11 03 | 703 | 0.0   | 0.0   |
| 2000 02 14 | 691 | 0.2- | 0.1+ | 2002 08 06 | 644 | 0.3+ | 0.2+ | 2007 11 03 | 703 | 0.4+  | 0.2+  |
| 2002 07 02 | 644 | 0.1+ | 0.7- | 2002 08 07 | 644 | 0.3- | 0.3- | 2007 11 03 | 703 | 0.3+  | 0.3-  |
| 2002 07 02 | 644 | 0.3+ | 0.4- | 2002 08 07 | 644 | 0.1- | 0.2- | 2007 11 03 | 703 | 0.2+  | 0.3+  |
| 2002 07 02 | 644 | 0.1+ | 0.0  | 2002 08 07 | 644 | 0.1+ | 0.3- | 2007 11 11 | 703 | 0.3+  | 0.2-  |
| 2002 07 10 | 644 | 0.0  | 0.4- | 2002 08 15 | 644 | 0.2- | 0.2- | 2007 11 11 | 703 | 0.2-  | 0.7-  |
| 2002 07 10 | 644 | 0.2- | 0.4- | 2002 08 15 | 644 | 0.0  | 0.1- | 2007 11 11 | 703 | 0.0   | 0.3-  |
| 2002 07 21 | 644 | 0.6+ | 0.2+ | 2002 08 15 | 644 | 0.1- | 0.4- | 2007 11 11 | 703 | 0.9-  | 1.3+  |
| 2002 07 21 | 644 | 0.3- | 0.4- | 2002 08 16 | 644 | 0.3- | 0.3- | 2007 11 18 | 703 | 0.7+  | 0.7-  |
| 2002 07 21 | 644 | 0.6+ | 0.1+ | 2002 08 16 | 644 | 0.1- | 0.3- | 2007 11 18 | 703 | 0.5+  | 0.5+  |
| 2002 08 04 | 644 | 0.2+ | 0.6+ | 2002 08 16 | 644 | 0.0  | 0.2- | 2007 11 18 | 703 | 0.4-  | 0.0   |
| 2002 08 04 | 644 | 0.3+ | 0.4+ | 2002 08 26 | 644 | 0.4+ | 0.2+ | 2007 11 19 | 699 | (0.8+ | 1.8-) |
| 2002 08 04 | 644 | 0.3+ | 0.9+ | 2002 08 26 | 644 | 0.1- | 0.2- | 2007 11 19 | 699 | 0.2-  | 0.8-  |
| 2002 08 05 | 644 | 0.8- | 0.3+ | 2007 10 10 | 703 | 0.1+ | 0.3- | 2007 11 19 | 699 | 0.2+  | 0.0   |

## 2007 DEC. 24

## M.P.O. 129605

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 05 | 644 | 0.5− | 0.9+ | 2007 10 10 | 703 | 0.2− | 0.0  | 2007 11 19 | 699 | 0.5− | 1.0+ |
| 2002 08 05 | 644 | 0.4− | 0.8+ | 2007 10 10 | 703 | 0.0  | 0.2− |            |     |      |      |

**2002 PQ<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 38.08494   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21394628 | $\omega$ | 98.36837  | +0.93546859   | +0.33863665 |
| <i>a</i> | 2.7686383  | $\Omega$ | 241.88932 | −0.35221079   | +0.86977531 |
| <i>e</i> | 0.2359602  | <i>i</i> | 6.58257   | −0.02908728   | +0.35890963 |
| <i>P</i> | 4.61       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 21 | 644 | 0.9−  | 0.2+  | 2002 08 13 | 699 | 0.2− | 0.7− | 2006 05 19 | G96 | 0.3− | 0.0  |
| 2002 07 21 | 644 | 0.0   | 0.5−  | 2002 08 15 | 644 | 0.3− | 0.5− | 2006 05 19 | G96 | 0.4− | 0.4+ |
| 2002 07 21 | 644 | 0.3−  | 0.2−  | 2002 08 15 | 644 | 0.5− | 0.6− | 2006 05 19 | G96 | 0.2+ | 0.3+ |
| 2002 08 04 | 644 | 0.1−  | 0.2+  | 2002 08 15 | 644 | 0.5− | 0.6− | 2007 10 07 | 691 | 0.0  | 0.4+ |
| 2002 08 04 | 644 | 0.2−  | 0.0   | 2002 08 27 | 704 | 0.1+ | 0.7− | 2007 10 07 | 691 | 0.1+ | 0.1− |
| 2002 08 04 | 644 | 0.2−  | 0.1−  | 2002 08 27 | 704 | 0.7− | 0.6+ | 2007 10 07 | 691 | 0.0  | 0.1+ |
| 2002 08 05 | 644 | 0.1+  | 0.7+  | 2002 08 27 | 644 | 0.1− | 0.2− | 2007 10 19 | 691 | 0.3− | 0.2− |
| 2002 08 05 | 644 | 0.2−  | 0.7+  | 2002 08 27 | 704 | 0.5− | 0.2− | 2007 10 19 | 691 | 0.1− | 0.2− |
| 2002 08 05 | 644 | 0.0   | 0.7+  | 2002 08 27 | 644 | 0.0  | 0.1− | 2007 10 19 | 691 | 0.0  | 0.2+ |
| 2002 08 08 | 699 | 0.4−  | 0.7+  | 2002 08 27 | 644 | 0.1− | 0.4− | 2007 10 20 | 703 | 1.4+ | 0.4− |
| 2002 08 08 | 699 | 0.1−  | 0.0   | 2002 09 04 | 644 | 0.4+ | 0.3− | 2007 10 20 | 703 | 0.0  | 0.8− |
| 2002 08 08 | 699 | (1.3− | 1.9+) | 2002 09 04 | 644 | 0.3+ | 0.1+ | 2007 10 20 | 703 | 0.4− | 1.0− |
| 2002 08 08 | 699 | 0.5+  | 1.4+  | 2002 09 04 | 644 | 0.4+ | 0.0  | 2007 10 20 | 703 | 0.2+ | 0.3+ |
| 2002 08 12 | 704 | 0.9+  | 0.3−  | 2002 09 04 | 644 | 0.5+ | 0.3+ | 2007 11 03 | 691 | 0.0  | 0.0  |
| 2002 08 12 | 704 | 0.2+  | 0.4+  | 2002 09 04 | 644 | 0.4+ | 0.1− | 2007 11 03 | 691 | 0.2− | 0.2+ |
| 2002 08 12 | 704 | 1.0+  | 0.3+  | 2002 09 04 | 644 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.0  |
| 2002 08 12 | 704 | 0.1+  | 1.2−  | 2002 09 12 | 644 | 0.6+ | 0.3− | 2007 11 16 | D35 | 0.1− | 0.9+ |
| 2002 08 13 | 699 | 0.2+  | 0.5−  | 2002 09 12 | 644 | 0.2+ | 0.4+ | 2007 11 16 | D35 | 0.3+ | 0.2+ |
| 2002 08 13 | 699 | 0.6−  | 0.2+  | 2002 09 12 | 644 | 0.5+ | 0.2+ | 2007 11 16 | D35 | 0.1+ | 0.4− |
| 2002 08 13 | 699 | 0.6−  | 0.1−  | 2006 05 19 | G96 | 0.6+ | 0.5− |            |     |      |      |

**2002 PK<sub>15</sub> = 2007 VJ<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.43339   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22619355 | $\omega$ | 75.03051  | +0.97159034   | +0.21777986 |
| <i>a</i> | 2.6677752  | $\Omega$ | 272.32554 | −0.23661724   | +0.88566341 |
| <i>e</i> | 0.1338094  | <i>i</i> | 5.32051   | −0.00494913   | +0.41008812 |
| <i>P</i> | 4.36       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 22 | 644 | 0.1− | 0.1+ | 2005 03 08 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 1.0+ | 1.3+ |
| 2002 07 22 | 644 | 0.3− | 0.2− | 2005 03 08 | 691 | 0.2+ | 0.1+ | 2007 11 07 | 703 | 0.5+ | 0.6− |
| 2002 07 22 | 644 | 0.2− | 0.3− | 2007 09 25 | G96 | 0.6+ | 0.5− | 2007 11 07 | 703 | 0.6+ | 0.1+ |
| 2002 08 06 | 644 | 0.0  | 0.4+ | 2007 09 25 | G96 | 1.6+ | 0.1− | 2007 11 14 | 691 | 0.3− | 0.3+ |
| 2002 08 06 | 644 | 0.0  | 0.3+ | 2007 09 25 | G96 | 0.5+ | 0.8− | 2007 11 14 | 691 | 0.3− | 0.1− |
| 2002 08 06 | 644 | 0.0  | 0.1+ | 2007 09 25 | G96 | 0.6+ | 0.8− | 2007 11 14 | 691 | 0.4+ | 1.0− |
| 2002 08 07 | 644 | 0.2− | 0.3+ | 2007 11 02 | 691 | 0.1+ | 0.3+ | 2007 11 18 | 691 | 0.5− | 0.5+ |
| 2002 08 07 | 644 | 0.2+ | 0.4+ | 2007 11 02 | 691 | 0.2− | 0.0  | 2007 11 18 | 691 | 0.3− | 0.1− |
| 2002 08 07 | 644 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.1− | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2005 03 08 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 703 | 0.6− | 0.2+ |            |     |      |      |

**2002 PS<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.05257   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21445288 | $\omega$ | 103.04020 | +0.80038395   | −0.56541084 |
| <i>a</i> | 2.7642764  | $\Omega$ | 291.73016 | +0.43241314   | +0.77469425 |
| <i>e</i> | 0.2203062  | <i>i</i> | 12.38504  | +0.41521609   | +0.28312435 |
| <i>P</i> | 4.60       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 11 | 704 | 1.0+ | 0.1− | 2002 09 11 | 644 | 0.4− | 0.0  | 2007 11 08 | 703 | 0.3+ | 0.4+ |
| 2002 08 11 | 704 | 0.9+ | 1.1+ | 2002 09 11 | 644 | 0.8− | 0.1+ | 2007 11 08 | 703 | 0.2− | 0.2− |
| 2002 08 11 | 704 | 0.5− | 1.3+ | 2002 09 11 | 644 | 0.7− | 0.0  | 2007 11 08 | 703 | 0.3− | 0.1− |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 13 | 704 | 0.2+ | 0.4− | 2002 09 11 | 644 | 0.3− | 0.1+ | 2007 11 29 | 300 | (0.6+ | 1.6+) |
| 2002 08 13 | 704 | 0.8+ | 0.1− | 2002 09 11 | 644 | 0.3− | 0.1+ | 2007 11 29 | 300 | 0.3−  | 0.7+  |
| 2002 08 13 | 704 | 0.7+ | 0.6− | 2002 09 11 | 644 | 0.1− | 0.1+ | 2007 11 29 | 300 | (0.2− | 1.8+) |
| 2002 08 13 | 704 | 0.4− | 0.8− | 2002 10 06 | 704 | 0.2− | 0.7+ | 2007 11 30 | 300 | 0.1+  | 0.2−  |
| 2002 08 13 | 704 | 0.9− | 0.1− | 2002 10 06 | 704 | 1.0− | 0.7+ | 2007 11 30 | 300 | 0.9+  | 0.2−  |
| 2002 09 03 | 644 | 0.1− | 0.1− | 2002 10 06 | 704 | 0.3+ | 0.0  | 2007 11 30 | 300 | 0.3+  | 0.3+  |
| 2002 09 03 | 644 | 0.4− | 0.1− | 2002 10 06 | 704 | 0.4− | 0.4+ | 2007 11 30 | 300 | 0.3+  | 0.0   |
| 2002 09 03 | 644 | 0.0  | 0.0  | 2002 10 06 | 704 | 0.2+ | 1.1+ | 2007 12 03 | 704 | 0.3−  | 0.3−  |
| 2002 09 04 | 699 | 0.4+ | 0.4− | 2002 10 06 | 636 | 0.2+ | 1.1− | 2007 12 03 | 704 | 0.1−  | 0.3−  |
| 2002 09 04 | 699 | 0.2+ | 1.2− | 2002 10 06 | 636 | 0.2+ | 0.0  | 2007 12 03 | 704 | 0.2−  | 0.2−  |
| 2002 09 04 | 699 | 0.3+ | 0.6− | 2002 10 06 | 636 | 0.6+ | 0.6− | 2007 12 03 | 704 | 0.1−  | 0.2−  |
| 2002 09 04 | 699 | 0.9+ | 0.5+ | 2007 11 08 | 703 | 0.2− | 0.3− | 2007 12 03 | 704 | 0.2−  | 0.3+  |

**2002 PM<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.65090   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22012548 | $\omega$ | 96.23186  | +0.91589038   | −0.30613684 |
| <i>a</i> | 2.7165801  | $\Omega$ | 281.82399 | +0.17276782   | +0.88448696 |
| <i>e</i> | 0.2058134  | <i>i</i> | 15.38433  | +0.36234803   | +0.35208388 |
| <i>P</i> | 4.48       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 14 | 644 | 0.2−  | 0.1+  | 2002 09 24 | 636 | 0.2− | 0.6− | 2002 12 01 | 704 | 0.1+ | 0.6− |
| 2002 08 14 | 644 | 0.3−  | 0.0   | 2002 09 24 | 636 | 0.1+ | 0.4− | 2002 12 01 | 704 | 0.6− | 0.1+ |
| 2002 08 14 | 644 | 0.3−  | 0.1+  | 2002 09 24 | 636 | 0.8− | 0.0  | 2007 11 08 | 704 | 0.6− | 0.1+ |
| 2002 08 15 | 704 | 0.6+  | 0.2+  | 2002 10 07 | 704 | 0.2− | 0.0  | 2007 11 08 | 704 | 0.3+ | 0.5+ |
| 2002 08 15 | 704 | 0.5+  | 0.4+  | 2002 10 07 | 704 | 0.2− | 0.4− | 2007 11 08 | 704 | 0.5+ | 0.2+ |
| 2002 08 15 | 704 | 1.0+  | 0.3+  | 2002 10 07 | 704 | 0.1+ | 0.4− | 2007 11 08 | 704 | 1.0− | 0.1− |
| 2002 08 15 | 704 | 0.1+  | 0.3+  | 2002 10 08 | 608 | 0.4+ | 1.2+ | 2007 12 02 | 704 | 0.9+ | 0.5− |
| 2002 08 15 | 704 | 0.6−  | 0.1+  | 2002 10 08 | 608 | 0.5+ | 0.2− | 2007 12 02 | 704 | 0.8+ | 0.2− |
| 2002 08 22 | 644 | 0.6−  | 0.2+  | 2002 10 08 | 608 | 0.2+ | 1.0+ | 2007 12 02 | 704 | 0.3− | 0.7− |
| 2002 08 22 | 644 | 0.7−  | 0.1−  | 2002 10 09 | 704 | 0.2− | 0.1− | 2007 12 02 | 704 | 0.0  | 0.0  |
| 2002 08 22 | 644 | 0.4−  | 0.2−  | 2002 10 09 | 704 | 0.3+ | 0.1− | 2007 12 16 | 704 | 0.4+ | 0.7+ |
| 2002 09 04 | 113 | 0.7+  | 0.1+  | 2002 10 09 | 704 | 1.3− | 0.1− | 2007 12 16 | 704 | 0.3− | 0.6− |
| 2002 09 04 | 113 | 0.7+  | 0.7−  | 2002 10 09 | 704 | 0.3+ | 0.5− | 2007 12 16 | 704 | 0.4− | 0.6− |
| 2002 09 04 | 113 | 0.1−  | 0.7−  | 2002 10 09 | 704 | 0.6+ | 0.4+ | 2007 12 16 | 704 | 0.1− | 0.6+ |
| 2002 09 04 | 113 | (1.7+ | 0.2−) | 2002 12 01 | 704 | 0.6+ | 1.1+ | 2007 12 16 | 704 | 0.3− | 0.9+ |

**2002 PV<sub>100</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 166.46010  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24487469 | $\omega$ | 126.54689 | −0.42785463   | +0.87731608 |
| <i>a</i> | 2.5303083  | $\Omega$ | 116.74562 | −0.88741116   | −0.36208447 |
| <i>e</i> | 0.1382825  | <i>i</i> | 14.08909  | −0.17158626   | −0.31497831 |
| <i>P</i> | 4.02       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 15 | 644 | 0.4+ | 0.5+ | 2002 08 15 | 644 | 0.3− | 0.4− | 2005 03 01 | 703 | 1.1− | 1.5+ |
| 2002 07 15 | 644 | 0.4+ | 0.2+ | 2002 08 15 | 644 | 0.0  | 0.3− | 2005 03 01 | 703 | 0.8+ | 0.9− |
| 2002 08 11 | 644 | 0.1− | 0.3− | 2002 08 19 | 644 | 0.1− | 0.7+ | 2005 03 09 | 703 | 0.6+ | 0.2+ |
| 2002 08 11 | 644 | 0.0  | 0.3− | 2002 08 19 | 644 | 0.0  | 0.5+ | 2005 03 09 | 703 | 0.2+ | 0.3− |
| 2002 08 11 | 644 | 0.2− | 0.3− | 2005 03 01 | 703 | 0.2− | 0.5− | 2005 03 09 | 703 | 1.0+ | 0.6− |
| 2002 08 15 | 644 | 0.1+ | 0.1− | 2005 03 01 | 703 | 0.9− | 1.8+ | 2005 03 09 | 703 | 0.3− | 1.2− |

**2002 PT<sub>106</sub> = 2007 WH<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.13233   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21824716 | $\omega$ | 94.91698  | +0.99010669   | −0.07322490 |
| <i>a</i> | 2.7321444  | $\Omega$ | 269.31766 | +0.02038619   | +0.91905182 |
| <i>e</i> | 0.2276039  | <i>i</i> | 6.87498   | +0.13882774   | +0.38727492 |
| <i>P</i> | 4.52       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |
|------------|-----|
| 2002 07 21 | 644 |
|------------|-----|

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 21 | 644 | 0.2−  | 0.3+  | 2002 08 26 | 644 | 0.3+ | 0.2+ | 2007 11 18 | 704 | 1.1− | 1.7− |
| 2002 08 12 | 704 | 0.5−  | 0.1−  | 2002 08 26 | 644 | 0.1− | 0.6+ | 2007 11 18 | 704 | 0.8+ | 0.8− |
| 2002 08 12 | 704 | 0.0   | 0.1−  | 2002 08 26 | 644 | 0.2− | 0.3− | 2007 11 18 | 704 | 0.1+ | 0.5− |
| 2002 08 12 | 704 | 0.4−  | 0.0   | 2002 08 26 | 644 | 0.4+ | 0.6+ | 2007 11 18 | 704 | 0.5+ | 0.2+ |
| 2002 08 12 | 704 | 0.8+  | 0.9−  | 2002 08 26 | 644 | 0.8+ | 0.0  | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2002 08 13 | 699 | (1.6+ | 0.7+) | 2002 08 26 | 644 | 0.0  | 0.5+ | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2002 08 13 | 699 | 0.3+  | 0.5+  | 2002 09 04 | 644 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2002 08 13 | 699 | 1.4+  | 0.2−  | 2002 09 04 | 644 | 0.2− | 0.2− | 2007 11 20 | 704 | 0.3+ | 0.3+ |
| 2002 08 13 | 699 | 0.1+  | 1.0+  | 2002 09 04 | 644 | 0.1− | 0.3− | 2007 11 20 | 704 | 0.8+ | 0.7+ |
| 2002 08 15 | 644 | 0.2−  | 0.1−  | 2002 09 12 | 644 | 0.2− | 0.1+ | 2007 11 20 | 704 | 0.4− | 0.8+ |
| 2002 08 15 | 644 | 0.1+  | 0.2−  | 2002 09 12 | 644 | 0.7− | 0.4− | 2007 11 20 | 704 | 0.2+ | 1.1+ |
| 2002 08 15 | 644 | 0.1−  | 0.6−  | 2002 09 12 | 644 | 0.3− | 0.1+ |            |     |      |      |
| 2002 08 19 | 644 | 0.3−  | 0.3−  | 2007 11 02 | 691 | 0.1+ | 0.1− |            |     |      |      |

**2002 PB<sub>107</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.02907   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20231634 | $\omega$ | 58.29782  | +0.96326053 | +0.18927138 |
| <i>a</i> | 2.8737484  | $\Omega$ | 290.19198 | −0.25739355 | +0.85312773 |
| <i>e</i> | 0.2063196  | <i>i</i> | 11.71345  | +0.07666631 | +0.48615782 |
| <i>P</i> | 4.87       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 05 | 644 | 0.4+ | 0.8+ | 2002 08 27 | 644 | 0.3+ | 0.3− | 2002 10 30 | 645 | 0.1+ | 0.1+ |
| 2002 08 05 | 644 | 0.5+ | 0.5+ | 2002 08 27 | 644 | 0.4− | 0.2− | 2007 09 14 | 699 | 0.4+ | 0.2− |
| 2002 08 05 | 644 | 0.6+ | 1.1+ | 2002 09 04 | 644 | 0.1− | 0.2+ | 2007 09 14 | 699 | 0.7+ | 0.5+ |
| 2002 08 12 | 704 | 1.0+ | 0.9− | 2002 09 04 | 644 | 0.0  | 0.2+ | 2007 09 14 | 699 | 0.4− | 0.2− |
| 2002 08 12 | 704 | 0.2− | 0.2− | 2002 09 04 | 644 | 0.3− | 0.1+ | 2007 09 14 | 699 | 0.8− | 0.0  |
| 2002 08 12 | 704 | 1.1− | 0.5− | 2002 10 11 | 645 | 0.3− | 0.1− | 2007 10 09 | 699 | 0.6+ | 0.4− |
| 2002 08 15 | 644 | 0.2− | 0.1+ | 2002 10 11 | 645 | 0.3− | 0.1− | 2007 10 09 | 699 | 0.4− | 1.2+ |
| 2002 08 15 | 644 | 0.3− | 0.1− | 2002 10 29 | 645 | 0.2+ | 0.0  | 2007 10 09 | 699 | 0.3+ | 0.3− |
| 2002 08 15 | 644 | 0.1+ | 0.4− | 2002 10 29 | 645 | 0.2+ | 0.0  | 2007 10 09 | 699 | 0.4− | 0.6− |
| 2002 08 27 | 644 | 0.2− | 0.4− | 2002 10 30 | 645 | 0.2+ | 0.1+ |            |     |      |      |

**2002 PM<sub>109</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.69022   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20560277 | $\omega$ | 51.52885  | +0.90176480 | +0.36277140 |
| <i>a</i> | 2.8430428  | $\Omega$ | 286.08033 | −0.43169082 | +0.78299193 |
| <i>e</i> | 0.1567505  | <i>i</i> | 14.15533  | +0.02152407 | +0.50529254 |
| <i>P</i> | 4.79       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 20 | 644 | 0.2− | 0.1− | 2002 08 15 | 644 | 0.3− | 0.4+ | 2007 09 13 | 703 | 0.7+ | 1.1+ |
| 2002 07 20 | 644 | 0.8− | 0.2+ | 2002 08 15 | 644 | 0.3− | 0.1+ | 2007 09 13 | 703 | 1.4+ | 0.5+ |
| 2002 07 20 | 644 | 0.5− | 0.2− | 2002 08 25 | 644 | 1.1+ | 0.1− | 2007 09 13 | 703 | 0.2+ | 0.8+ |
| 2002 08 04 | 644 | 0.3− | 0.2− | 2002 08 25 | 644 | 0.8+ | 0.5+ | 2007 09 13 | 703 | 0.5+ | 0.2+ |
| 2002 08 04 | 644 | 0.1− | 0.2− | 2002 08 25 | 644 | 0.9+ | 0.0  | 2007 09 13 | 703 | 0.4− | 0.5− |
| 2002 08 04 | 644 | 0.0  | 0.1− | 2002 08 25 | 644 | 0.4+ | 0.2+ | 2007 09 13 | 703 | 0.6− | 0.6− |
| 2002 08 13 | 704 | 0.4+ | 0.1− | 2002 08 25 | 644 | 0.3+ | 0.0  | 2007 09 13 | 703 | 0.4+ | 0.1− |
| 2002 08 13 | 699 | 0.1+ | 0.1− | 2002 08 25 | 644 | 0.1+ | 0.4+ | 2007 09 13 | 703 | 0.2+ | 0.2− |
| 2002 08 13 | 699 | 0.9− | 0.8+ | 2002 09 10 | 644 | 0.0  | 0.2+ | 2007 10 08 | 703 | 1.0− | 0.7− |
| 2002 08 13 | 704 | 0.1+ | 0.1− | 2002 09 10 | 644 | 0.1− | 0.2+ | 2007 10 08 | 703 | 0.5− | 0.8− |
| 2002 08 13 | 699 | 0.5− | 0.5− | 2002 09 10 | 644 | 0.0  | 0.0  | 2007 10 08 | 703 | 0.5− | 1.5+ |
| 2002 08 13 | 704 | 1.9+ | 0.4− | 2002 09 11 | 644 | 0.3− | 0.3− | 2007 10 08 | 703 | 0.6− | 1.2− |
| 2002 08 13 | 699 | 0.7− | 0.4− | 2002 09 11 | 644 | 0.4− | 0.2− |            |     |      |      |
| 2002 08 15 | 644 | 0.5− | 0.0  | 2002 09 11 | 644 | 0.3− | 0.2− |            |     |      |      |

**2002 PT<sub>127</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.52954   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21860082 | $\omega$ | 232.16124 | +0.99164598 | −0.01054381 |
| <i>a</i> | 2.7291968  | $\Omega$ | 128.07145 | +0.04902779 | +0.95266327 |
| <i>e</i> | 0.1525003  | <i>i</i> | 9.39856   | −0.11930851 | +0.30384457 |
| <i>P</i> | 4.51       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 23 | 644 | 0.1−  | 0.2+  | 2002 08 18 | 644 | 0.1+  | 0.0   | 2007 10 19 | 703 | 0.1+ | 0.1− |
| 2002 07 23 | 644 | 0.2+  | 0.1−  | 2002 08 18 | 644 | 0.1−  | 0.0   | 2007 10 19 | 703 | 0.9+ | 1.3+ |
| 2002 07 23 | 644 | 0.2−  | 0.2+  | 2002 08 19 | 644 | 0.6+  | 1.0+  | 2007 10 31 | 703 | 0.2− | 0.1+ |
| 2002 07 30 | 608 | (1.6+ | 0.2+) | 2002 08 19 | 644 | 0.6+  | 1.1+  | 2007 10 31 | 703 | 0.9− | 0.6− |
| 2002 07 30 | 608 | (1.7+ | 0.7+) | 2002 08 19 | 644 | 0.3+  | 0.9+  | 2007 10 31 | 703 | 0.0  | 1.3− |
| 2002 07 30 | 608 | 0.8+  | 0.4+  | 2002 08 29 | 644 | 0.0   | 0.1−  | 2007 10 31 | 703 | 0.4+ | 0.2− |
| 2002 08 08 | 644 | 0.1−  | 0.1−  | 2002 08 29 | 644 | 0.3+  | 0.0   | 2007 11 07 | 703 | 0.2+ | 0.9− |
| 2002 08 08 | 644 | 0.5+  | 1.1+  | 2002 08 29 | 644 | 0.3+  | 0.1−  | 2007 11 07 | 703 | 0.5+ | 0.4− |
| 2002 08 08 | 644 | 0.4+  | 0.3−  | 2002 08 30 | 644 | 0.1−  | 0.5−  | 2007 11 07 | 703 | 0.3+ | 0.9− |
| 2002 08 11 | 644 | 0.3−  | 0.1+  | 2002 08 30 | 644 | 0.1−  | 0.4−  | 2007 11 07 | 703 | 0.2+ | 0.2+ |
| 2002 08 11 | 644 | 0.4−  | 0.1+  | 2002 08 30 | 644 | 0.2+  | 0.5−  | 2007 11 15 | 703 | 0.2− | 0.7− |
| 2002 08 11 | 644 | 0.0   | 0.2+  | 2002 09 16 | 644 | 0.7−  | 0.3−  | 2007 11 15 | 703 | 0.3− | 0.2− |
| 2002 08 14 | 704 | 0.2−  | 0.3+  | 2002 09 16 | 644 | 0.7−  | 0.5−  | 2007 11 15 | 703 | 0.1+ | 0.1− |
| 2002 08 14 | 704 | 0.5−  | 0.0   | 2002 09 16 | 644 | 0.4−  | 0.1−  | 2007 11 15 | 703 | 0.6− | 0.5− |
| 2002 08 14 | 704 | 0.7−  | 0.1−  | 2007 10 10 | 703 | (1.6+ | 1.6+) | 2007 12 06 | 703 | 0.2+ | 0.2− |
| 2002 08 14 | 704 | (1.7− | 0.3+) | 2007 10 10 | 703 | (0.2+ | 2.1+) | 2007 12 06 | 703 | 0.2− | 0.7+ |
| 2002 08 16 | 608 | 0.0   | 1.0−  | 2007 10 10 | 703 | 0.4+  | 0.8+  | 2007 12 06 | 703 | 0.0  | 0.9+ |
| 2002 08 16 | 608 | 0.8+  | 0.6−  | 2007 10 10 | 703 | 0.5−  | 0.9+  | 2007 12 06 | 703 | 1.1− | 0.6+ |
| 2002 08 16 | 608 | 0.0   | 1.0−  | 2007 10 19 | 703 | 0.0   | 0.5+  |            |     |      |      |
| 2002 08 18 | 644 | 0.0   | 0.1−  | 2007 10 19 | 703 | 0.3+  | 0.6+  |            |     |      |      |

**2002 PF<sub>131</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.79146   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21926869 | $\omega$ | 178.37245 | +0.76936117 | +0.63413335 |
| <i>a</i> | 2.7236521  | $\Omega$ | 141.91175 | −0.58750505 | +0.74982945 |
| <i>e</i> | 0.0435548  | <i>i</i> | 7.18830   | −0.25084098 | +0.18876097 |
| <i>P</i> | 4.50       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 04 | 644 | 0.1− | 0.1+ | 2002 08 08 | 644 | 0.2+ | 0.3+ | 2007 09 10 | 691 | 1.1−  | 1.5+  |
| 2002 07 04 | 644 | 0.4− | 0.7+ | 2002 08 17 | 644 | 0.5+ | 0.1− | 2007 09 14 | 691 | (0.6− | 3.1−) |
| 2002 07 04 | 644 | 0.5+ | 0.3− | 2002 08 17 | 644 | 0.0  | 0.0  | 2007 09 14 | 691 | 0.1−  | 0.3−  |
| 2002 07 22 | 644 | 0.5+ | 0.3− | 2002 08 17 | 644 | 0.3− | 0.5− | 2007 09 14 | 691 | 0.3−  | 0.5−  |
| 2002 07 22 | 644 | 0.3+ | 0.6− | 2002 08 27 | 644 | 0.3+ | 0.1− | 2007 09 18 | 691 | 0.1+  | 0.1+  |
| 2002 07 22 | 644 | 0.4+ | 0.4+ | 2002 08 27 | 644 | 0.2− | 0.1− | 2007 09 18 | 691 | 0.1+  | 0.5−  |
| 2002 08 07 | 644 | 0.2− | 0.5+ | 2002 08 27 | 644 | 0.0  | 0.2+ | 2007 09 18 | 691 | 0.4+  | 0.1+  |
| 2002 08 07 | 644 | 0.6− | 0.1+ | 2002 09 01 | 644 | 0.0  | 0.2− | 2007 10 19 | 703 | 0.6+  | 0.2+  |
| 2002 08 07 | 644 | 0.4− | 0.2+ | 2002 09 01 | 644 | 0.3− | 0.0  | 2007 10 19 | 703 | 0.8+  | 0.0   |
| 2002 08 08 | 644 | 0.6− | 0.4− | 2007 09 10 | 691 | 0.3+ | 0.5− | 2007 10 19 | 703 | 1.2−  | 0.1−  |
| 2002 08 08 | 644 | 0.6+ | 0.1+ | 2007 09 10 | 691 | 0.1+ | 0.2− | 2007 10 19 | 703 | 0.1+  | 0.3+  |

**2002 PP<sub>141</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.02412   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22136850 | $\omega$ | 76.64734  | +0.88525880 | +0.41346876 |
| <i>a</i> | 2.7064011  | $\Omega$ | 258.58897 | −0.46418335 | +0.81415489 |
| <i>e</i> | 0.2462218  | <i>i</i> | 12.54902  | +0.02916640 | +0.40767070 |
| <i>P</i> | 4.45       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 04 | 645 | 0.0  | 0.0  | 2002 09 14 | 699 | 0.1+ | 0.0  | 2002 11 06 | 699 | 0.8+  | 0.4+  |
| 2000 03 04 | 645 | 0.0  | 0.1+ | 2002 09 14 | 699 | 0.1− | 0.4− | 2002 11 06 | 699 | 0.2−  | 0.0   |
| 2002 07 13 | 704 | 0.4+ | 0.1− | 2002 10 05 | 699 | 0.3− | 0.5+ | 2002 11 06 | 699 | 0.6+  | 1.1+  |
| 2002 07 13 | 704 | 0.4+ | 0.2− | 2002 10 05 | 699 | 0.1− | 0.0  | 2002 11 06 | 699 | 0.5−  | 0.1+  |
| 2002 07 13 | 704 | 0.1+ | 0.1+ | 2002 10 05 | 699 | 0.3+ | 0.9− | 2002 12 01 | 704 | (0.6− | 1.5+) |
| 2002 07 13 | 704 | 0.0  | 0.1− | 2002 10 05 | 699 | 0.5− | 0.2+ | 2002 12 01 | 704 | (0.5− | 1.8+) |
| 2002 08 01 | 704 | 0.3− | 0.1− | 2002 10 06 | 704 | 0.2− | 0.1+ | 2002 12 01 | 704 | 0.9−  | 1.0+  |
| 2002 08 01 | 704 | 0.1+ | 0.4− | 2002 10 06 | 704 | 0.1− | 0.0  | 2002 12 01 | 704 | 0.1−  | 1.2+  |
| 2002 08 01 | 704 | 0.8− | 1.1− | 2002 10 06 | 704 | 0.2− | 0.2+ | 2002 12 01 | 704 | 0.7−  | 0.8+  |
| 2002 08 15 | 704 | 0.4+ | 0.5+ | 2002 10 06 | 704 | 0.4+ | 0.2+ | 2007 11 14 | 691 | 0.0   | 0.1−  |
| 2002 08 15 | 704 | 0.1− | 1.1+ | 2002 10 06 | 704 | 0.6+ | 0.2+ | 2007 11 14 | 691 | 0.0   | 0.2−  |
| 2002 08 15 | 704 | 0.4+ | 1.0+ | 2002 10 07 | 704 | 0.1+ | 0.3+ | 2007 11 14 | 691 | 0.0   | 0.2−  |
| 2002 08 15 | 704 | 0.9+ | 0.7+ | 2002 10 07 | 704 | 0.8+ | 0.1+ | 2007 11 18 | 691 | 0.4−  | 0.2−  |
| 2002 08 15 | 704 | 0.5− | 0.4+ | 2002 10 07 | 704 | 0.2− | 0.6− | 2007 11 18 | 691 | 0.0   | 0.1+  |

## 2007 DEC. 24

## M.P.O. 129607

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 22 | 644 | 0.2+ | 0.1− | 2002 10 07 | 704 | 0.1+ | 0.2− | 2007 11 18 | 691 | 0.2− | 0.1+ |
| 2002 08 22 | 644 | 0.1− | 0.0  | 2002 10 07 | 704 | 0.5− | 0.2+ | 2007 12 04 | 691 | 0.0  | 0.2− |
| 2002 08 22 | 644 | 0.0  | 0.1− | 2002 10 09 | 704 | 0.3− | 0.0  | 2007 12 04 | 691 | 0.2− | 0.2− |
| 2002 08 30 | 704 | 0.2− | 0.4− | 2002 10 09 | 704 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.2− | 0.2+ |
| 2002 08 30 | 704 | 0.1+ | 0.3− | 2002 10 09 | 704 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.9+ | 0.3− |
| 2002 08 30 | 704 | 0.2− | 0.5− | 2002 10 09 | 704 | 0.4− | 0.0  | 2007 12 05 | 704 | 1.2+ | 0.0  |
| 2002 08 30 | 704 | 0.3− | 0.0  | 2002 10 09 | 704 | 0.3− | 0.5− | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2002 08 30 | 704 | 0.1− | 0.1− | 2002 10 15 | 644 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.9+ | 0.1+ |
| 2002 09 14 | 699 | 0.4− | 0.6− | 2002 10 15 | 644 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.4+ | 0.1− |
| 2002 09 14 | 699 | 0.0  | 0.3− | 2002 10 15 | 644 | 0.1+ | 0.1− |            |     |      |      |

2002 PZ<sub>141</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 317.38802  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.38603630 | $\omega$ | 57.59440  | +0.84930438   | −0.50308223 |
| <i>a</i> | 1.8680305  | $\Omega$ | 331.62911 | +0.29508776   | +0.70368826 |
| <i>e</i> | 0.0761459  | <i>i</i> | 19.67308  | +0.43772740   | +0.50172811 |
| <i>P</i> | 2.55       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 14 | 704 | 0.6− | 0.8+ | 2002 09 05 | 704 | 0.1− | 0.0  | 2007 08 07 | E12 | 0.1− | 0.2− |
| 2002 08 14 | 704 | 0.2+ | 0.2− | 2002 09 09 | 608 | 0.9− | 0.4− | 2007 08 07 | E12 | 0.7+ | 0.7+ |
| 2002 08 14 | 704 | 0.0  | 0.1+ | 2002 09 09 | 608 | 0.2− | 0.3− | 2007 08 07 | E12 | 0.5− | 0.3− |
| 2002 08 16 | 608 | 1.3+ | 0.8− | 2002 09 09 | 608 | 0.6− | 0.3− | 2007 08 07 | E12 | 0.7− | 0.3+ |
| 2002 08 16 | 608 | 1.1+ | 1.1− | 2002 09 14 | 644 | 0.6− | 0.6+ | 2007 10 08 | G96 | 0.1− | 0.6− |
| 2002 08 16 | 608 | 1.0+ | 0.3− | 2002 09 14 | 644 | 0.1− | 1.1+ | 2007 10 08 | G96 | 0.1− | 0.0  |
| 2002 08 26 | 644 | 0.5− | 0.3+ | 2002 09 14 | 644 | 0.4− | 1.2+ | 2007 10 08 | G96 | 0.1− | 0.2− |
| 2002 08 26 | 644 | 0.5− | 0.3+ | 2002 10 04 | 704 | 0.5− | 0.3+ | 2007 10 08 | G96 | 0.5+ | 0.1+ |
| 2002 08 26 | 644 | 0.6− | 0.3+ | 2002 10 04 | 704 | 0.2− | 0.4− | 2007 10 11 | G96 | 0.1+ | 0.4+ |
| 2002 09 05 | 704 | 0.3+ | 0.4+ | 2002 10 04 | 704 | 0.4− | 1.1− | 2007 10 11 | G96 | 0.1+ | 0.1+ |
| 2002 09 05 | 704 | 0.5+ | 0.6+ | 2002 10 04 | 704 | 0.2− | 0.0  | 2007 10 11 | G96 | 0.5+ | 0.4− |
| 2002 09 05 | 704 | 0.3+ | 0.2− | 2002 10 29 | 645 | 0.2+ | 0.2− |            |     |      |      |
| 2002 09 05 | 704 | 1.0+ | 0.8− | 2002 10 29 | 645 | 0.3+ | 0.2− |            |     |      |      |

2002 PQ<sub>153</sub> = 2002 NZ<sub>57</sub> = 2002 NY<sub>61</sub>Id. Minor Planet Center (d, *MPO* 87831; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 204.87237  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30773510 | $\omega$ | 222.51959 | +0.95564204   | +0.28926867 |
| <i>a</i> | 2.1727913  | $\Omega$ | 120.58742 | −0.24995270   | +0.89605402 |
| <i>e</i> | 0.1730919  | <i>i</i> | 3.69147   | −0.15579454   | +0.33676523 |
| <i>P</i> | 3.20       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 04 | 644 | 0.2− | 0.4+ | 2002 08 12 | 807 | 0.4− | 0.1− | 2007 01 27 | G96 | 1.0− | 0.0  |
| 2002 07 04 | 644 | 0.2+ | 0.5+ | 2002 08 12 | 807 | 0.4− | 0.2− | 2007 01 27 | G96 | 0.1+ | 0.5− |
| 2002 07 04 | 644 | 0.0  | 0.3+ | 2002 08 29 | 644 | 0.1− | 0.2− | 2007 01 27 | G96 | 0.1+ | 0.1+ |
| 2002 07 14 | 644 | 0.2+ | 0.1+ | 2002 08 29 | 644 | 0.4+ | 0.1− | 2007 02 06 | G96 | 0.1+ | 0.1+ |
| 2002 07 14 | 644 | 0.2+ | 0.0  | 2002 08 29 | 644 | 0.0  | 0.2+ | 2007 02 06 | G96 | 0.1+ | 0.2+ |
| 2002 07 14 | 644 | 0.1+ | 0.1+ | 2004 02 12 | 691 | 0.2− | 0.5+ | 2007 02 06 | G96 | 0.4+ | 0.1+ |
| 2002 07 18 | 644 | 0.1+ | 0.1+ | 2004 02 12 | 691 | 0.0  | 0.2+ | 2007 02 06 | G96 | 0.4+ | 0.0  |
| 2002 07 18 | 644 | 0.0  | 0.2+ | 2004 02 12 | 691 | 0.5+ | 0.4+ | 2007 02 22 | G96 | 0.9− | 0.5− |
| 2002 07 18 | 644 | 0.0  | 0.2+ | 2006 12 16 | 691 | 0.2+ | 0.7+ | 2007 02 22 | G96 | 0.4+ | 0.2+ |
| 2002 08 08 | 644 | 0.1− | 0.6+ | 2006 12 16 | 691 | 0.5+ | 0.5+ | 2007 02 22 | G96 | 0.2− | 0.0  |
| 2002 08 08 | 644 | 0.0  | 0.1+ | 2006 12 16 | 691 | 0.7+ | 0.4+ | 2007 02 22 | G96 | 0.5− | 0.4+ |
| 2002 08 08 | 644 | 0.2− | 0.0  | 2007 01 27 | G96 | 0.1− | 0.1− |            |     |      |      |

2002 PD<sub>163</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 137.20227  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20916388 | $\omega$ | 69.57095  | −0.79433565   | +0.60561328 |
| <i>a</i> | 2.8106812  | $\Omega$ | 147.64880 | −0.58522566   | −0.74188360 |
| <i>e</i> | 0.0523422  | <i>i</i> | 5.10080   | −0.16291655   | −0.28782161 |
| <i>P</i> | 4.71       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 14 | 691 | 0.0  | 0.1+ | 2002 08 07 | 644 | 0.2+ | 0.5− | 2002 09 14 | 644 | 0.6− | 0.5− |
| 2001 04 14 | 691 | 0.2+ | 0.1+ | 2002 08 08 | 644 | 0.3+ | 0.6− | 2002 09 14 | 644 | 0.3− | 0.0  |
| 2001 04 14 | 691 | 0.1− | 0.1− | 2002 08 08 | 644 | 0.1− | 0.6− | 2007 08 24 | 691 | 0.6+ | 0.8+ |
| 2002 07 23 | 644 | 0.1+ | 0.0  | 2002 08 15 | 644 | 0.0  | 0.4− | 2007 08 24 | 691 | 0.4− | 0.1+ |
| 2002 07 23 | 644 | 0.6− | 0.2+ | 2002 08 15 | 644 | 0.0  | 0.2− | 2007 08 24 | 691 | 0.3− | 0.2+ |
| 2002 07 29 | 644 | 0.5+ | 1.8+ | 2002 08 15 | 644 | 0.1+ | 0.1+ | 2007 09 12 | G96 | 0.3+ | 0.0  |
| 2002 07 29 | 644 | 0.2− | 0.5+ | 2002 08 27 | 644 | 0.1− | 0.6− | 2007 09 12 | G96 | 0.3− | 0.2+ |
| 2002 07 29 | 644 | 0.1+ | 0.9+ | 2002 08 27 | 644 | 0.2+ | 0.5− | 2007 09 12 | G96 | 0.1− | 0.2− |
| 2002 08 07 | 644 | 0.2+ | 0.0  | 2002 08 27 | 644 | 0.5+ | 0.2− | 2007 09 12 | G96 | 0.1− | 0.1+ |
| 2002 08 07 | 644 | 0.1+ | 0.4− | 2002 09 14 | 644 | 0.3− | 0.1+ |            |     |      |      |

2002 PW<sub>163</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.09504   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23296934 | $\omega$ | 229.53823 | +0.97106707   | +0.08966692 |
| <i>a</i> | 2.6157940  | $\Omega$ | 124.19025 | −0.03354858   | +0.96886218 |
| <i>e</i> | 0.1274493  | <i>i</i> | 15.52016  | −0.23643865   | +0.23079409 |
| <i>P</i> | 4.23       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 05 20 | 691 | 0.2− | 0.0  | 2002 08 13 | 704 | 0.7−  | 0.2+  | 2005 03 16 | 703 | (1.3+ | 1.6+) |
| 1993 05 20 | 691 | 0.1+ | 0.4− | 2002 08 13 | 704 | 0.7+  | 0.1+  | 2007 11 15 | 703 | 0.7+  | 0.5−  |
| 1993 05 20 | 691 | 0.2− | 0.3− | 2002 08 13 | 704 | 0.1+  | 0.9+  | 2007 11 15 | 703 | 0.1−  | 1.0−  |
| 2002 07 14 | 644 | 0.1+ | 0.3+ | 2002 08 13 | 704 | 0.2+  | 0.7+  | 2007 11 15 | 703 | 0.8+  | 0.6+  |
| 2002 07 14 | 644 | 0.0  | 0.5+ | 2002 08 18 | 644 | 0.1+  | 0.1−  | 2007 11 15 | 703 | 0.6−  | 0.1−  |
| 2002 07 14 | 644 | 0.5+ | 0.4+ | 2002 08 18 | 644 | 0.1+  | 0.6+  | 2007 11 20 | 703 | 0.3−  | 0.3−  |
| 2002 07 19 | 644 | 0.3+ | 0.3− | 2002 08 18 | 644 | 0.0   | 0.0   | 2007 11 20 | 703 | 0.9+  | 0.2−  |
| 2002 07 19 | 644 | 1.1− | 0.1+ | 2002 08 30 | 644 | 0.1+  | 0.3−  | 2007 11 20 | 703 | 0.6−  | 0.4+  |
| 2002 08 08 | 644 | 0.2− | 0.2− | 2002 08 30 | 644 | 0.1+  | 0.4−  | 2007 11 20 | 703 | 0.2+  | 0.4−  |
| 2002 08 08 | 644 | 0.1− | 0.2− | 2002 08 30 | 644 | 0.1+  | 0.4−  | 2007 12 05 | 703 | 0.2+  | 0.1−  |
| 2002 08 11 | 644 | 0.1− | 0.2− | 2005 03 16 | 703 | 0.3+  | 1.5+  | 2007 12 05 | 703 | 0.3+  | 0.3−  |
| 2002 08 11 | 644 | 0.0  | 0.3− | 2005 03 16 | 703 | (2.0+ | 0.7+) | 2007 12 05 | 703 | 0.2−  | 0.5−  |
| 2002 08 11 | 644 | 0.0  | 0.4− | 2005 03 16 | 703 | (2.2− | 0.2+) | 2007 12 05 | 703 | 0.7−  | 0.7+  |

2002 PC<sub>180</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.84308  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20094173 | $\omega$ | 55.05164  | +0.99825676   | −0.03553036 |
| <i>a</i> | 2.8868394  | $\Omega$ | 306.93886 | +0.01185664   | +0.90294349 |
| <i>e</i> | 0.0555050  | <i>i</i> | 3.38030   | +0.05781750   | +0.42828805 |
| <i>P</i> | 4.91       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 29 | 644 | 0.1− | 0.4− | 2002 09 01 | 644 | 0.6− | 0.2− | 2007 08 21 | 699 | 0.4−  | 0.7−  |
| 2002 07 29 | 644 | 0.1− | 0.1− | 2002 09 01 | 644 | 0.1− | 0.0  | 2007 08 21 | 699 | 0.6−  | 0.1+  |
| 2002 08 07 | 644 | 0.2+ | 0.6+ | 2003 11 21 | 691 | 0.2− | 0.0  | 2007 08 21 | 699 | (0.8+ | 2.4+) |
| 2002 08 07 | 644 | 0.4+ | 0.3+ | 2003 11 21 | 691 | 0.2+ | 0.0  | 2007 08 21 | 699 | 1.0−  | 0.4+  |
| 2002 08 08 | 644 | 0.1− | 0.3− | 2003 11 21 | 691 | 0.0  | 0.0  | 2007 09 04 | G96 | 0.5+  | 0.1+  |
| 2002 08 08 | 644 | 0.4− | 0.2− | 2005 03 11 | G96 | 0.2+ | 0.2+ | 2007 09 04 | G96 | 0.3+  | 0.2+  |
| 2002 08 17 | 644 | 0.2+ | 0.2+ | 2005 03 11 | G96 | 0.1+ | 0.1+ | 2007 09 04 | G96 | 0.7+  | 0.2+  |
| 2002 08 17 | 644 | 0.2+ | 0.2+ | 2005 03 11 | G96 | 0.1− | 0.0  | 2007 09 04 | G96 | 0.5+  | 0.2+  |
| 2002 08 17 | 644 | 0.3+ | 0.1− | 2005 03 11 | G96 | 0.0  | 0.1+ |            |     |       |       |

2002 PD<sub>183</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.86347  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21632476 | $\omega$ | 44.83462  | +0.91482871   | −0.40266852 |
| <i>a</i> | 2.7483069  | $\Omega$ | 338.85216 | +0.34247246   | +0.81392418 |
| <i>e</i> | 0.0233261  | <i>i</i> | 4.89184   | +0.21401179   | +0.41879052 |
| <i>P</i> | 4.56       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 14 | 644 | 0.1+ | 0.4+ | 2002 08 29 | 644 | 0.1− | 0.6+ | 2005 05 08 | G96 | 1.4+ | 0.8+ |
| 2002 07 14 | 644 | 0.0  | 0.2− | 2003 12 17 | 691 | 0.3− | 0.1+ | 2005 05 08 | G96 | 0.6− | 1.9+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 14 | 644 | 0.2+ | 0.4− | 2003 12 17 | 691 | 0.1+ | 0.4+ | 2007 09 15 | D35 | 0.2+ | 0.5− |
| 2002 08 08 | 644 | 0.3− | 0.1+ | 2003 12 17 | 691 | 0.0  | 0.3+ | 2007 09 15 | D35 | 0.1+ | 0.3+ |
| 2002 08 08 | 644 | 0.3− | 0.3+ | 2005 02 01 | 691 | 0.0  | 0.6+ | 2007 09 15 | D35 | 0.0  | 0.2+ |
| 2002 08 08 | 644 | 0.1− | 0.4+ | 2005 02 01 | 691 | 0.3+ | 0.5+ | 2007 10 11 | G96 | 0.2− | 0.0  |
| 2002 08 08 | 644 | 0.2+ | 0.0  | 2005 02 01 | 691 | 0.4+ | 0.5+ | 2007 10 11 | G96 | 0.2− | 0.0  |
| 2002 08 11 | 807 | 0.3− | 0.1+ | 2005 03 03 | 703 | 0.4+ | 0.4+ | 2007 10 11 | G96 | 0.1− | 0.2− |
| 2002 08 11 | 644 | 0.1− | 0.2+ | 2005 03 03 | 703 | 0.3+ | 0.4+ | 2007 10 11 | G96 | 0.1− | 0.1− |
| 2002 08 11 | 807 | 0.5− | 0.3+ | 2005 03 03 | 703 | 1.5+ | 0.7+ | 2007 10 11 | G96 | 0.4+ | 0.2+ |
| 2002 08 11 | 644 | 0.3+ | 0.1+ | 2005 03 03 | 703 | 0.1+ | 1.3− | 2007 10 11 | G96 | 0.1− | 0.2+ |
| 2002 08 11 | 644 | 0.1+ | 0.1+ | 2005 03 08 | G96 | 0.3− | 0.0  | 2007 10 11 | G96 | 0.2+ | 0.1− |
| 2002 08 18 | 644 | 0.3− | 0.1− | 2005 03 08 | G96 | 0.2− | 0.0  | 2007 10 11 | G96 | 0.3− | 0.3+ |
| 2002 08 18 | 644 | 0.3+ | 0.3− | 2005 03 08 | G96 | 0.1+ | 0.1− | 2007 10 11 | G96 | 0.1− | 0.3+ |
| 2002 08 18 | 644 | 0.0  | 0.6+ | 2005 03 08 | G96 | 1.5− | 0.6− | 2007 10 11 | G96 | 0.2− | 0.0  |
| 2002 08 29 | 644 | 0.2+ | 0.1+ | 2005 05 08 | G96 | 0.1− | 0.3− | 2007 10 11 | G96 | 0.3− | 0.3+ |
| 2002 08 29 | 644 | 0.2− | 0.1− | 2005 05 08 | G96 | 0.2− | 0.0  | 2007 10 11 | G96 | 0.1+ | 0.2+ |

**2002 PR<sub>183</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 358.78019  | (2000.0)           |               |
| <i>n</i> | 0.22787899 | $\omega$ 255.63035 | +0.48838353   |
| <i>a</i> | 2.6546047  | $\Omega$ 164.62671 | +0.86463684   |
| <i>e</i> | 0.2184284  | <i>i</i> 14.08960  | +0.11783323   |
| <i>P</i> | 4.33       | <i>H</i> 17.4      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 3    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 22 | 910 | 0.0  | 0.4+ | 2002 07 21 | 644 | 0.2+ | 0.2+ | 2002 08 16 | 644 | 0.7+ | 0.5− |
| 1998 09 23 | 910 | 0.0  | 0.5+ | 2002 08 14 | 291 | 0.6− | 0.1+ | 2002 08 16 | 644 | 0.1− | 0.1+ |
| 1998 09 23 | 910 | 0.2− | 0.4+ | 2002 08 14 | 291 | 0.3− | 0.5− | 2002 08 26 | 644 | 0.0  | 0.7+ |
| 2000 03 03 | 691 | 0.1− | 0.4+ | 2002 08 14 | 291 | 0.1+ | 0.3+ | 2002 08 26 | 644 | 0.2+ | 0.2+ |
| 2000 03 03 | 691 | 0.0  | 0.3+ | 2002 08 15 | 644 | 0.1− | 0.3+ | 2002 08 27 | 644 | 0.1+ | 0.4− |
| 2000 03 03 | 691 | 0.2+ | 0.2− | 2002 08 15 | 644 | 0.1− | 0.0  | 2002 08 27 | 644 | 0.6+ | 0.5+ |
| 2002 07 21 | 644 | 0.4+ | 0.3+ | 2002 08 15 | 644 | 0.1− | 0.2− | 2002 08 27 | 644 | 1.2+ | 0.2− |
| 2002 07 21 | 644 | 0.5+ | 1.0+ | 2002 08 16 | 644 | 0.1− | 0.4− |            |     |      |      |

**2002 PX<sub>183</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 39.92306   | (2000.0)           |               |
| <i>n</i> | 0.23202291 | $\omega$ 238.60355 | +0.92613539   |
| <i>a</i> | 2.6229025  | $\Omega$ 140.97111 | +0.37160368   |
| <i>e</i> | 0.2864973  | <i>i</i> 14.04573  | −0.06468348   |
| <i>P</i> | 4.25       | <i>H</i> 17.8      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 2    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 26 | 910 | 0.0  | 0.2+ | 2002 07 12 | 644 | 0.2+ | 0.0  | 2002 08 07 | 644 | 0.2+ | 0.3+ |
| 1998 08 26 | 910 | 0.2− | 0.4+ | 2002 07 14 | 644 | 0.6− | 0.6+ | 2002 08 07 | 644 | 0.0  | 0.4+ |
| 1998 08 26 | 910 | 0.1− | 0.3+ | 2002 07 14 | 644 | 0.1+ | 0.2+ | 2002 08 17 | 644 | 0.4− | 0.3− |
| 2002 06 24 | 644 | 0.4+ | 0.0  | 2002 07 14 | 644 | 0.0  | 0.7+ | 2002 08 17 | 644 | 0.4− | 0.0  |
| 2002 06 24 | 644 | 0.0  | 0.1+ | 2002 07 21 | 644 | 0.0  | 0.0  | 2002 08 17 | 644 | 0.1+ | 0.4+ |
| 2002 06 24 | 644 | 0.1+ | 0.7− | 2002 07 21 | 644 | 0.1+ | 0.1− | 2002 08 27 | 644 | 0.3+ | 0.0  |
| 2002 07 03 | 644 | 0.4+ | 0.1− | 2002 07 21 | 644 | 0.0  | 0.4− | 2002 08 27 | 644 | 0.2− | 0.4+ |
| 2002 07 03 | 644 | 0.4+ | 0.1+ | 2002 08 06 | 644 | 0.1+ | 0.2+ | 2002 08 27 | 644 | 0.4− | 0.6− |
| 2002 07 03 | 644 | 0.4+ | 0.6+ | 2002 08 06 | 644 | 0.1− | 0.5+ | 2004 02 11 | 691 | 0.1+ | 0.3+ |
| 2002 07 12 | 644 | 0.1− | 0.4− | 2002 08 06 | 644 | 0.3− | 0.5+ | 2004 02 11 | 691 | 0.0  | 0.3+ |
| 2002 07 12 | 644 | 0.0  | 0.4+ | 2002 08 07 | 644 | 0.0  | 0.1+ | 2004 02 11 | 691 | 0.1− | 0.5+ |

**2002 QF<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 52.47016   | (2000.0)           |               |
| <i>n</i> | 0.22448107 | $\omega$ 264.67719 | +0.96337746   |
| <i>a</i> | 2.6813257  | $\Omega$ 80.37754  | −0.20631379   |
| <i>e</i> | 0.2748382  | <i>i</i> 4.32472   | −0.17128483   |
| <i>P</i> | 4.39       | <i>H</i> 16.8      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 2    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 11 | 644 | 0.7− | 0.1+ | 2002 08 30 | 644 | 0.4+ | 0.3− | 2007 11 17 | 734 | 0.2+ | 0.4− |
| 2002 08 11 | 644 | 0.5− | 0.1− | 2002 08 31 | 704 | 0.7+ | 0.3+ | 2007 11 18 | 734 | 0.3+ | 0.1+ |
| 2002 08 11 | 644 | 0.4− | 0.1− | 2002 08 31 | 704 | 0.9+ | 0.1+ | 2007 11 18 | 734 | 0.1− | 0.2+ |
| 2002 08 13 | 704 | 0.3+ | 1.1+ | 2002 08 31 | 704 | 0.2+ | 0.3− | 2007 11 18 | 734 | 0.1− | 0.1− |
| 2002 08 13 | 704 | 0.1− | 0.0  | 2002 09 29 | 608 | 0.3+ | 0.9− | 2007 11 18 | 734 | 0.0  | 0.0  |
| 2002 08 13 | 704 | 0.3− | 0.1+ | 2002 09 29 | 608 | 0.1+ | 0.9− | 2007 11 18 | 734 | 0.6+ | 0.1+ |
| 2002 08 13 | 704 | 0.3− | 0.9+ | 2002 09 29 | 608 | 0.0  | 0.6− | 2007 12 04 | 691 | 0.3− | 0.3− |
| 2002 08 13 | 704 | 0.0  | 0.5+ | 2003 12 21 | 645 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.2+ | 0.1+ |
| 2002 08 16 | 644 | 0.2− | 0.1− | 2003 12 21 | 645 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.4− | 0.1+ |
| 2002 08 16 | 644 | 0.0  | 0.1− | 2007 11 16 | 734 | 0.7+ | 0.4− | 2007 12 05 | 704 | 0.2− | 0.4− |
| 2002 08 16 | 644 | 0.0  | 0.0  | 2007 11 16 | 734 | 0.5+ | 0.4− | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2002 08 19 | 644 | 0.1− | 0.5+ | 2007 11 16 | 734 | 0.7+ | 0.3− | 2007 12 05 | 704 | 0.3+ | 0.5+ |
| 2002 08 19 | 644 | 0.1− | 0.7+ | 2007 11 16 | 734 | 0.2+ | 0.2− | 2007 12 16 | 691 | 0.1− | 0.1+ |
| 2002 08 19 | 644 | 0.0  | 0.9+ | 2007 11 17 | 734 | 0.6+ | 0.1− | 2007 12 16 | 691 | 0.2− | 0.3+ |
| 2002 08 30 | 644 | 0.2− | 0.5− | 2007 11 17 | 734 | 0.2− | 0.3− | 2007 12 16 | 691 | 0.2− | 0.1+ |
| 2002 08 30 | 644 | 0.1− | 0.4− | 2007 11 17 | 734 | 0.2+ | 0.4− |            |     |      |      |

**2002 QA<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 56.72295   | (2000.0)           |               |
| <i>n</i> | 0.23020492 | $\omega$ 214.46250 | +0.94130749   |
| <i>a</i> | 2.6366935  | $\Omega$ 125.91272 | −0.29698654   |
| <i>e</i> | 0.0815703  | <i>i</i> 2.94384   | −0.16043441   |
| <i>P</i> | 4.28       | <i>H</i> 16.3      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 4    |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 07 14 | 644 | 0.6− | 0.4+ | 2002 08 29 | 644 | 0.2−  | 0.6−  | 2007 11 12 | 704 | (1.4+ | 1.8+) |
| 2002 07 14 | 644 | 0.3− | 0.0  | 2002 08 29 | 644 | 0.4−  | 0.5−  | 2007 11 12 | 704 | 0.2−  | 0.6+  |
| 2002 07 14 | 644 | 0.3+ | 0.5+ | 2002 08 29 | 644 | 0.2+  | 0.0   | 2007 11 12 | 704 | 0.2+  | 0.3+  |
| 2002 07 19 | 644 | 0.4+ | 0.1+ | 2007 10 09 | D29 | 0.1+  | 0.9−  | 2007 11 12 | 704 | 0.0   | 1.3+  |
| 2002 07 19 | 644 | 0.4+ | 0.5− | 2007 10 09 | D29 | 0.1+  | 0.7−  | 2007 11 12 | 704 | 0.5+  | 0.7+  |
| 2002 08 08 | 699 | 0.4+ | 0.9+ | 2007 10 09 | D29 | 0.0   | 0.6−  | 2007 11 15 | 704 | 0.2−  | 0.0   |
| 2002 08 08 | 699 | 0.1+ | 0.1− | 2007 10 09 | D29 | 0.3+  | 1.2−  | 2007 11 15 | 704 | 0.5+  | 0.3+  |
| 2002 08 08 | 699 | 0.2− | 0.1− | 2007 10 15 | 703 | (0.2+ | 1.9−) | 2007 11 15 | 704 | 0.2+  | 0.0   |
| 2002 08 08 | 699 | 0.0  | 0.2+ | 2007 10 15 | 703 | 0.4−  | 1.0+  | 2007 11 15 | 704 | 0.4+  | 0.1+  |
| 2002 08 17 | 644 | 0.2− | 0.0  | 2007 10 15 | 703 | 0.1−  | 0.5−  | 2007 11 15 | 704 | 0.9−  | 0.4+  |
| 2002 08 17 | 644 | 0.1+ | 0.1+ | 2007 10 15 | 703 | 0.2+  | 1.0+  | 2007 11 17 | 703 | 0.3−  | 0.7−  |
| 2002 08 17 | 644 | 0.0  | 0.1+ | 2007 11 02 | D29 | 0.1−  | 0.7−  | 2007 11 17 | 703 | 0.5−  | 0.2−  |
| 2002 08 18 | 644 | 0.1+ | 0.0  | 2007 11 02 | D29 | 0.6−  | 0.4+  | 2007 11 17 | 703 | 0.3+  | 0.4+  |
| 2002 08 18 | 644 | 0.1− | 0.3− | 2007 11 02 | D29 | 0.4+  | 0.3−  | 2007 11 17 | 703 | 0.4−  | 0.4−  |
| 2002 08 18 | 644 | 0.1− | 0.0  | 2007 11 02 | D29 | 0.3+  | 0.6−  |            |     |       |       |

**2002 QH<sub>50</sub> = 2005 GE<sub>121</sub> = 2005 GY<sub>224</sub> = 2007 VS<sub>30</sub>**Id. Minor Planet Center (*MPO* 127952; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |                    |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 57.29940   | (2000.0)           |               |
| <i>n</i> | 0.21777729 | $\omega$ 348.23018 | +0.91661655   |
| <i>a</i> | 2.7360728  | $\Omega$ 348.17395 | −0.35786146   |
| <i>e</i> | 0.0608083  | <i>i</i> 5.94609   | −0.17818328   |
| <i>P</i> | 4.53       | <i>H</i> 16.8      | <i>G</i> 0.15 |
|          |            |                    | <i>U</i> 3    |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 20 | 644 | 0.0  | 0.4− | 2002 09 14 | 644 | 0.2− | 0.0  | 2007 11 02 | 691 | 0.1+  | 0.0   |
| 2002 08 20 | 644 | 0.1− | 0.2− | 2002 09 14 | 644 | 0.0  | 0.2+ | 2007 11 04 | 691 | 0.4+  | 0.1+  |
| 2002 08 20 | 644 | 0.3− | 0.0  | 2002 09 16 | 644 | 0.3− | 0.1+ | 2007 11 04 | 691 | 0.2−  | 0.0   |
| 2002 08 21 | 644 | 0.6− | 0.0  | 2002 09 16 | 644 | 0.0  | 0.3− | 2007 11 04 | 691 | 0.1−  | 0.0   |
| 2002 08 21 | 644 | 0.3− | 0.5+ | 2002 09 16 | 644 | 0.5− | 0.1− | 2007 11 07 | 703 | 1.0−  | 0.3+  |
| 2002 08 21 | 644 | 0.4− | 0.1− | 2005 04 05 | G96 | 0.4+ | 0.3− | 2007 11 07 | 703 | 1.4−  | 0.2+  |
| 2002 08 28 | 644 | 0.1+ | 0.3+ | 2005 04 05 | G96 | 0.1− | 0.5+ | 2007 11 07 | 703 | 0.3+  | 1.2+  |
| 2002 08 28 | 644 | 0.2− | 0.1− | 2005 04 05 | G96 | 0.4+ | 0.3− | 2007 11 07 | 703 | 1.0−  | 0.7+  |
| 2002 08 28 | 644 | 0.5+ | 0.3− | 2005 04 05 | G96 | 0.0  | 0.1− | 2007 11 08 | 704 | (2.1+ | 0.8+) |
| 2002 08 29 | 644 | 0.4+ | 0.1+ | 2005 04 12 | G96 | 0.3− | 0.2+ | 2007 11 08 | 704 | 0.9+  | 0.0   |
| 2002 08 29 | 644 | 0.8+ | 0.2+ | 2005 04 12 | G96 | 0.3− | 0.3− | 2007 11 08 | 704 | (0.9+ | 2.3+) |
| 2002 08 29 | 644 | 0.1+ | 0.3+ | 2005 04 12 | G96 | 0.1− | 0.1+ | 2007 11 08 | 704 | 0.9+  | 0.4−  |
| 2002 08 30 | 644 | 0.0  | 0.1− | 2005 04 12 | G96 | 0.1− | 0.1− | 2007 11 14 | 691 | 0.3+  | 0.0   |

## 2007 DEC. 24

M.P.O. 129609

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 30 | 644 | 0.5+ | 0.2- | 2007 11 02 | 691 | 0.3- | 0.5- | 2007 11 14 | 691 | 0.2+ | 0.0  |
| 2002 08 30 | 644 | 0.4+ | 0.2- | 2007 11 02 | 691 | 0.2- | 0.1+ | 2007 11 14 | 691 | 0.1+ | 0.2- |

**2002 QS<sub>57</sub> = 2007 WN<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.26494   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21417616 | $\omega$ | 34.04874  | +0.94657669   | -0.31999407 |
| <i>a</i> | 2.7666568  | $\Omega$ | 344.46374 | +0.25255129   | +0.81264864 |
| <i>e</i> | 0.2199719  | <i>i</i> | 8.57876   | +0.20052537   | +0.48703797 |
| <i>P</i> | 4.60       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.6+ | 0.4+ | 2002 09 15 | 644 | 0.2- | 0.0  | 2007 11 08 | 703 | 0.6- | 0.0  |
| 2002 08 18 | 644 | 0.9+ | 0.3+ | 2002 09 16 | 644 | 0.2- | 0.3- | 2007 11 15 | 699 | 1.1+ | 1.2+ |
| 2002 08 29 | 644 | 0.4- | 1.0- | 2002 09 16 | 644 | 0.0  | 0.5+ | 2007 11 15 | 699 | 0.4- | 0.8- |
| 2002 08 29 | 644 | 0.1- | 1.0- | 2007 10 16 | 703 | 0.0  | 1.4+ | 2007 11 15 | 699 | 0.2+ | 0.4+ |
| 2002 08 29 | 644 | 0.3+ | 0.1- | 2007 10 16 | 703 | 0.3- | 0.2+ | 2007 11 15 | 699 | 1.1+ | 0.3- |
| 2002 08 29 | 644 | 0.1- | 1.2- | 2007 10 16 | 703 | 1.1- | 0.1- | 2007 11 16 | 704 | 0.3+ | 0.4+ |
| 2002 08 29 | 644 | 0.4+ | 0.0  | 2007 10 16 | 703 | 0.1+ | 0.1- | 2007 11 16 | 704 | 0.3+ | 0.3+ |
| 2002 08 29 | 644 | 0.1+ | 0.3- | 2007 11 02 | 703 | 0.1- | 0.6- | 2007 11 16 | 704 | 1.1- | 0.3- |
| 2002 09 05 | 704 | 0.5- | 0.2+ | 2007 11 02 | 703 | 0.5+ | 0.5+ | 2007 11 17 | 704 | 0.7+ | 0.4+ |
| 2002 09 05 | 704 | 0.1- | 1.2+ | 2007 11 02 | 703 | 0.3+ | 1.1+ | 2007 11 17 | 704 | 0.3- | 0.6- |
| 2002 09 05 | 704 | 0.0  | 0.8+ | 2007 11 02 | 703 | 0.3- | 0.4- | 2007 11 17 | 704 | 0.2- | 0.3+ |
| 2002 09 05 | 704 | 0.1+ | 1.2+ | 2007 11 08 | 703 | 0.3+ | 1.1- | 2007 11 17 | 704 | 0.7+ | 0.2- |
| 2002 09 15 | 644 | 0.3- | 0.5- | 2007 11 08 | 703 | 0.2- | 0.7- |            |     |      |      |
| 2002 09 15 | 644 | 0.2- | 0.2- | 2007 11 08 | 703 | 1.0- | 0.9- |            |     |      |      |

**2002 QH<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.78975   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22117513 | $\omega$ | 354.82080 | +0.99772713   | -0.06703993 |
| <i>a</i> | 2.7079784  | $\Omega$ | 9.03162   | +0.06327459   | +0.89740336 |
| <i>e</i> | 0.2435651  | <i>i</i> | 2.48245   | +0.02317130   | +0.43608814 |
| <i>P</i> | 4.46       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 23 | 644 | 0.4- | 0.2- | 2002 08 15 | 644 | 0.6- | 0.4- | 2007 11 30 | 941 | 0.4+ | 0.4+ |
| 2002 07 23 | 644 | 0.2+ | 0.3+ | 2002 08 18 | 644 | 0.4+ | 0.1- | 2007 12 05 | 941 | 0.1- | 0.7- |
| 2002 07 29 | 644 | 0.3+ | 0.6+ | 2002 08 18 | 644 | 0.4+ | 0.0  | 2007 12 05 | 941 | 0.1+ | 0.3- |
| 2002 07 29 | 644 | 0.3- | 0.2+ | 2002 08 18 | 644 | 0.8+ | 0.3- | 2007 12 05 | 941 | 0.0  | 0.3- |
| 2002 07 29 | 644 | 0.1- | 0.4+ | 2002 08 29 | 644 | 0.1+ | 0.0  | 2007 12 05 | 941 | 0.3+ | 0.2- |
| 2002 08 08 | 644 | 0.0  | 0.1- | 2002 08 29 | 644 | 0.2+ | 0.1+ | 2007 12 07 | 941 | 0.5- | 0.3- |
| 2002 08 08 | 644 | 0.1+ | 0.2+ | 2002 08 29 | 644 | 0.4- | 0.2+ | 2007 12 07 | 941 | 0.0  | 0.2+ |
| 2002 08 08 | 644 | 0.1+ | 0.2+ | 2007 11 30 | 941 | 0.3+ | 0.3+ | 2007 12 07 | 941 | 0.5- | 0.0  |
| 2002 08 15 | 644 | 0.7- | 0.6- | 2007 11 30 | 941 | 0.0  | 0.2+ | 2007 12 07 | 941 | 0.2- | 0.5+ |
| 2002 08 15 | 644 | 0.1- | 0.5- | 2007 11 30 | 941 | 0.2+ | 0.3+ |            |     |      |      |

**2002 QD<sub>77</sub> = 2007 TU<sub>180</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 334.38238  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21729641 | $\omega$ | 273.96989 | +0.41600957   | -0.90880523 |
| <i>a</i> | 2.7401080  | $\Omega$ | 151.38090 | +0.85842788   | +0.38094288 |
| <i>e</i> | 0.1867092  | <i>i</i> | 3.80265   | +0.30006269   | +0.17016339 |
| <i>P</i> | 4.54       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 17 | 644 | 0.3- | 0.0  | 2005 04 12 | G96 | 0.2+ | 0.1- | 2007 10 11 | 699 | 0.4+  | 0.3-  |
| 2002 08 17 | 644 | 0.1+ | 0.2+ | 2005 04 12 | G96 | 0.1+ | 0.7+ | 2007 10 11 | 699 | 0.6+  | 0.7+  |
| 2002 08 17 | 644 | 0.1+ | 0.0  | 2007 09 13 | G96 | 0.5+ | 0.4- | 2007 10 11 | 699 | 0.3+  | 0.4-  |
| 2002 09 02 | 291 | 0.2- | 0.2- | 2007 09 13 | G96 | 0.8+ | 0.3- | 2007 10 18 | 683 | (0.2- | 1.6-) |
| 2002 09 02 | 291 | 0.1- | 0.5+ | 2007 09 13 | G96 | 0.9+ | 0.2- | 2007 10 18 | 683 | (0.5+ | 1.6-) |
| 2002 09 02 | 291 | 0.2+ | 0.1+ | 2007 09 13 | G96 | 0.6+ | 0.4- | 2007 10 18 | 683 | (2.3+ | 0.0 ) |
| 2003 12 22 | 691 | 0.0  | 0.1- | 2007 10 08 | G99 | 1.4- | 1.1+ | 2007 10 20 | 703 | 0.9-  | 0.1-  |
| 2003 12 22 | 691 | 0.2- | 0.1- | 2007 10 08 | G99 | 0.7+ | 0.2- | 2007 10 20 | 703 | 0.7-  | 0.2-  |
| 2003 12 22 | 691 | 0.3+ | 0.2- | 2007 10 08 | G99 | 0.8+ | 0.0  | 2007 10 20 | 703 | 0.7+  | 0.3+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 31 | 691 | 0.0  | 0.4+ | 2007 10 08 | 699 | 0.2+  | 1.0+  | 2007 10 20 | 703 | 0.4+ | 0.1- |
| 2004 01 31 | 691 | 0.1- | 0.1+ | 2007 10 10 | 291 | 0.2-  | 0.2+  | 2007 10 30 | 703 | 1.0+ | 0.0  |
| 2004 01 31 | 691 | 0.0  | 0.2+ | 2007 10 10 | 291 | 0.7-  | 0.2-  | 2007 10 30 | 703 | 0.9- | 0.8- |
| 2005 04 12 | G96 | 0.2+ | 0.1+ | 2007 10 10 | 291 | 0.2-  | 0.1-  | 2007 10 30 | 703 | 0.7+ | 0.0  |
| 2005 04 12 | G96 | 0.5- | 0.7- | 2007 10 11 | 699 | (0.9- | 2.0+) | 2007 10 30 | 703 | 0.5+ | 0.3+ |

**2002 QU<sub>80</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 46.19988   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22000761 | $\omega$ | 319.08690 | +0.97121315   | +0.23498264 |
| <i>a</i> | 2.7175502  | $\Omega$ | 27.39659  | -0.19037872   | +0.86430715 |
| <i>e</i> | 0.0726374  | <i>i</i> | 4.87344   | -0.14318152   | +0.44469800 |
| <i>P</i> | 4.48       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 18 | 644 | 0.1+ | 0.1+ | 2002 09 15 | 644 | 0.4-  | 0.1-  | 2007 10 21 | 691 | 0.1-  | 0.0   |
| 2002 08 18 | 644 | 0.3+ | 0.1- | 2002 09 15 | 644 | 0.3+  | 0.5+  | 2007 10 21 | 691 | 0.9-  | 0.1-  |
| 2002 08 19 | 644 | 0.2+ | 0.1- | 2002 09 15 | 644 | 0.2-  | 0.1+  | 2007 10 31 | G96 | 0.7+  | 0.0   |
| 2002 08 19 | 644 | 0.3+ | 0.0  | 2002 09 16 | 644 | 0.1+  | 0.5-  | 2007 10 31 | G96 | 0.8+  | 0.1-  |
| 2002 08 19 | 644 | 0.1+ | 0.3- | 2002 09 16 | 644 | 0.8-  | 0.2+  | 2007 10 31 | G96 | 0.2+  | 0.1-  |
| 2002 08 26 | 644 | 0.0  | 0.1+ | 2002 09 30 | 608 | 0.6-  | 0.5-  | 2007 10 31 | G96 | 0.3+  | 0.2-  |
| 2002 08 26 | 644 | 0.1+ | 0.0  | 2002 09 30 | 608 | 0.4+  | 0.1+  | 2007 11 07 | 703 | 0.7+  | 0.2-  |
| 2002 08 29 | 644 | 0.2+ | 0.3- | 2002 09 30 | 608 | 0.1-  | 0.9+  | 2007 11 07 | G96 | 0.5+  | 0.4-  |
| 2002 08 29 | 644 | 0.3+ | 0.3- | 2005 04 11 | G96 | 0.3+  | 0.1+  | 2007 11 07 | G96 | 0.6+  | 0.4-  |
| 2002 08 29 | 644 | 0.2+ | 0.1- | 2005 04 11 | G96 | (2.1+ | 0.4+) | 2007 11 07 | G96 | 0.5+  | 0.4-  |
| 2002 08 30 | 644 | 0.2+ | 0.1- | 2005 04 11 | G96 | 0.7-  | 0.3+  | 2007 11 07 | 703 | 0.6-  | 0.7+  |
| 2002 08 30 | 644 | 0.3+ | 0.1+ | 2005 04 11 | G96 | 0.2+  | 0.6-  | 2007 11 07 | G96 | 0.5+  | 0.4-  |
| 2002 08 30 | 644 | 0.2+ | 0.2+ | 2007 10 12 | 691 | 0.3+  | 0.2-  | 2007 11 07 | 703 | 1.1+  | 0.9+  |
| 2002 08 31 | 644 | 0.1- | 0.0  | 2007 10 12 | 691 | 0.1-  | 0.2-  | 2007 11 07 | 703 | (1.6+ | 1.3+) |
| 2002 08 31 | 644 | 0.8- | 0.1+ | 2007 10 12 | 691 | 0.4-  | 0.3+  |            |     |       |       |
| 2002 08 31 | 644 | 0.2- | 0.0  | 2007 10 21 | 691 | 0.1-  | 0.2+  |            |     |       |       |

**2002 QZ<sub>80</sub> = 2007 VC<sub>267</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.60466   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22230404 | $\omega$ | 257.78697 | +0.76060072   | -0.62881529 |
| <i>a</i> | 2.6988027  | $\Omega$ | 140.84917 | +0.64915790   | +0.73318613 |
| <i>e</i> | 0.2118360  | <i>i</i> | 14.81945  | +0.00897563   | +0.25890041 |
| <i>P</i> | 4.43       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.4+ | 0.3+ | 2002 08 30 | 644 | 0.0  | 0.3- | 2007 11 13 | I08 | 0.5- | 0.3- |
| 2002 08 18 | 644 | 0.5+ | 0.3+ | 2002 08 30 | 644 | 0.7- | 0.7- | 2007 11 13 | I08 | 0.4+ | 0.0  |
| 2002 08 19 | 644 | 0.1+ | 0.2+ | 2002 08 30 | 644 | 0.4- | 0.4- | 2007 11 13 | I08 | 0.1+ | 0.3- |
| 2002 08 19 | 644 | 0.2+ | 0.1- | 2007 11 11 | I08 | 0.3+ | 0.5- | 2007 11 15 | I08 | 0.2- | 0.1+ |
| 2002 08 19 | 644 | 0.5+ | 0.1+ | 2007 11 11 | I08 | 0.2+ | 0.3- | 2007 11 15 | I08 | 0.2+ | 0.7+ |
| 2002 08 26 | 644 | 0.2- | 0.4+ | 2007 11 11 | I08 | 0.3- | 0.1- | 2007 11 15 | I08 | 0.5+ | 0.2+ |
| 2002 08 26 | 644 | 0.3- | 0.3+ | 2007 11 11 | I08 | 0.6- | 0.4+ | 2007 11 15 | I08 | 0.1- | 0.2+ |

**2002 QB<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.01465   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21888840 | $\omega$ | 321.64423 | +0.95420065   | +0.29749654 |
| <i>a</i> | 2.7268059  | $\Omega$ | 21.11371  | -0.24827021   | +0.84632713 |
| <i>e</i> | 0.1345258  | <i>i</i> | 5.02855   | -0.16692219   | +0.44184408 |
| <i>P</i> | 4.50       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 22 | 807 | 0.1+ | 0.6+ | 2002 08 30 | 644 | 0.4+ | 0.3+ | 2007 10 15 | 691 | 0.3- | 0.2- |
| 2001 05 23 | 807 | 0.5+ | 0.6+ | 2002 08 30 | 644 | 0.2+ | 0.2+ | 2007 10 15 | 691 | 0.1- | 0.0  |
| 2002 08 12 | 608 | 1.0+ | 0.4+ | 2002 09 12 | 608 | 0.9- | 0.3- | 2007 11 02 | 691 | 0.2+ | 0.0  |
| 2002 08 12 | 608 | 0.4+ | 0.2+ | 2002 09 15 | 644 | 0.5- | 0.1- | 2007 11 02 | 691 | 0.0  | 0.0  |
| 2002 08 12 | 608 | 0.4- | 0.3+ | 2002 09 15 | 644 | 0.2- | 0.2+ | 2007 11 02 | 691 | 0.2+ | 0.2+ |
| 2002 08 18 | 644 | 0.0  | 0.2+ | 2002 09 15 | 644 | 0.3- | 0.8- | 2007 11 07 | 703 | 0.3+ | 0.5+ |
| 2002 08 18 | 644 | 0.0  | 0.1+ | 2002 09 16 | 644 | 0.0  | 0.2- | 2007 11 07 | 703 | 2.0- | 2.1+ |

## M.P.O. 129610

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 19 | 644 | 0.1+ | 0.1− | 2002 09 16 | 644 | 0.3− | 0.2− | 2007 11 07 | 703 | 1.3+ | 0.5+ |
| 2002 08 19 | 644 | 0.0  | 0.2− | 2007 09 12 | G96 | 0.3+ | 0.3− | 2007 11 07 | 703 | 0.0  | 0.3+ |
| 2002 08 19 | 644 | 0.1− | 0.2+ | 2007 09 12 | G96 | 0.0  | 0.1− | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2002 08 29 | 644 | 0.1− | 0.1+ | 2007 09 12 | G96 | 0.4+ | 0.5− | 2007 11 19 | 691 | 0.2− | 0.1− |
| 2002 08 29 | 644 | 0.1− | 0.1+ | 2007 09 12 | G96 | 0.2+ | 0.4− | 2007 11 19 | 691 | 0.0  | 0.1− |
| 2002 08 30 | 644 | 0.7+ | 0.1+ | 2007 10 15 | 691 | 0.0  | 0.3− |            |     |      |      |

**2002 QU<sub>82</sub> = 2007 VW<sub>282</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 76.02683   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.22789079 | <i>ω</i> | 105.85767 | +0.78762422 |      | +0.61554038 |   |  |  |  |  |
| <i>a</i>                                | 2.6545131  | <i>Ω</i> | 216.16390 | −0.58166409 |      | +0.72804949 |   |  |  |  |  |
| <i>e</i>                                | 0.1555910  | <i>i</i> | 2.67441   | −0.20326083 |      | +0.30175152 |   |  |  |  |  |
| <i>P</i>                                | 4.32       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 08 | 644 | 0.2− | 0.0  | 2002 08 17 | 644 | 0.3+ | 0.2+ | 2007 09 14 | G96 | 0.3+ | 0.1− |
| 2002 08 08 | 644 | 0.1− | 0.3+ | 2002 08 18 | 644 | 0.2+ | 0.2+ | 2007 09 14 | G96 | 0.4+ | 0.4+ |
| 2002 08 16 | 644 | 0.1− | 0.2+ | 2002 08 18 | 644 | 0.7− | 0.2+ | 2007 09 14 | G96 | 0.2+ | 0.1+ |
| 2002 08 16 | 644 | 0.2− | 0.1− | 2002 08 18 | 644 | 0.1+ | 0.2+ | 2007 10 30 | 691 | 0.1− | 0.2+ |
| 2002 08 16 | 644 | 0.3− | 0.1− | 2002 08 27 | 644 | 0.1− | 0.0  | 2007 10 30 | 691 | 0.0  | 0.4+ |
| 2002 08 16 | 608 | 0.2− | 0.1+ | 2002 08 27 | 644 | 0.1− | 0.1+ | 2007 10 30 | 691 | 0.1+ | 0.3− |
| 2002 08 16 | 608 | 0.2− | 0.4+ | 2002 08 27 | 644 | 0.1− | 0.1+ | 2007 11 14 | 691 | 0.4− | 0.0  |
| 2002 08 17 | 644 | 0.1+ | 0.2− | 2005 03 11 | G96 | 0.2− | 0.5+ | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2002 08 17 | 644 | 0.2+ | 0.4− | 2005 03 11 | G96 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.2+ | 0.1+ |
| 2002 08 17 | 644 | 0.2+ | 0.1+ | 2005 03 11 | G96 | 0.4+ | 0.0  | 2007 11 18 | 691 | 0.2− | 0.2− |
| 2002 08 17 | 644 | 0.2+ | 0.0  | 2005 03 11 | G96 | 0.1+ | 0.6+ | 2007 11 18 | 691 | 0.3+ | 0.1− |
| 2002 08 17 | 644 | 0.4+ | 0.4− | 2007 09 14 | G96 | 0.3+ | 0.8− | 2007 11 18 | 691 | 0.1+ | 0.1+ |

**2002 QQ<sub>97</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 87.11166   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.22030560 | <i>ω</i> | 218.25890 | +0.26198518 |      | +0.96456025 |   |  |  |  |  |
| <i>a</i>                                | 2.7150992  | <i>Ω</i> | 66.94872  | −0.87681266 |      | +0.25150192 |   |  |  |  |  |
| <i>e</i>                                | 0.1259517  | <i>i</i> | 1.95691   | −0.40319143 |      | +0.07981427 |   |  |  |  |  |
| <i>P</i>                                | 4.47       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 18 | 691 | 0.2+ | 0.1+ | 2002 08 29 | 644 | 0.5+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.1− |
| 2001 03 18 | 691 | 0.1− | 0.5+ | 2002 08 29 | 644 | 0.2− | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.3− |
| 2001 03 18 | 691 | 0.0  | 0.0  | 2002 08 29 | 644 | 0.5+ | 0.2+ | 2007 10 18 | G96 | 0.3+ | 0.8− |
| 2001 03 26 | 695 | 0.4+ | 0.1+ | 2007 09 12 | G96 | 0.4+ | 0.3− | 2007 10 18 | G96 | 1.0+ | 0.5− |
| 2001 03 26 | 695 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.0  | 0.3− | 2007 10 18 | G96 | 0.3− | 0.4+ |
| 2002 07 29 | 644 | 0.6− | 0.3− | 2007 09 12 | G96 | 0.2+ | 0.4− | 2007 10 18 | 291 | 0.1− | 0.2+ |
| 2002 07 29 | 644 | 0.9− | 0.6− | 2007 09 12 | G96 | 0.1− | 0.2− | 2007 10 18 | 291 | 0.6− | 0.4+ |
| 2002 08 08 | 644 | 0.5− | 0.2+ | 2007 10 08 | G96 | 0.3+ | 0.5− | 2007 10 18 | 291 | 0.8− | 0.2+ |
| 2002 08 08 | 644 | 0.3+ | 0.2− | 2007 10 08 | G96 | 0.2+ | 0.2− | 2007 11 05 | G96 | 0.5+ | 0.6+ |
| 2002 08 18 | 644 | 0.2+ | 0.3+ | 2007 10 08 | G96 | 0.6+ | 0.2− | 2007 11 05 | G96 | 0.5+ | 0.6+ |
| 2002 08 18 | 644 | 0.2+ | 0.2+ | 2007 10 08 | G96 | 0.5+ | 0.4− | 2007 11 05 | G96 | 0.4+ | 0.5+ |
| 2002 08 18 | 644 | 0.0  | 0.4+ | 2007 10 08 | G96 | 0.0  | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.6+ |
| 2002 08 26 | 644 | 0.0  | 0.3+ | 2007 10 08 | G96 | 0.1+ | 0.1− |            |     |      |      |
| 2002 08 26 | 644 | 0.1+ | 0.4+ | 2007 10 08 | G96 | 0.0  | 0.1+ |            |     |      |      |

**2002 QC<sub>103</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 65.08394   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.22362471 | <i>ω</i> | 220.32276 | +0.89748621 |      | +0.43170909 |   |  |  |  |  |
| <i>a</i>                                | 2.6881666  | <i>Ω</i> | 113.88472 | −0.37497564 |      | +0.85463023 |   |  |  |  |  |
| <i>e</i>                                | 0.1062801  | <i>i</i> | 5.66472   | −0.23218909 |      | +0.28850379 |   |  |  |  |  |
| <i>P</i>                                | 4.41       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 06 | 695 | 0.4+ | 0.5+ | 2002 09 16 | 644 | 0.6+ | 0.2+ | 2007 11 20 | 703 | 0.2− | 0.8+ |
| 2000 02 06 | 695 | 0.2− | 0.5+ | 2002 09 16 | 644 | 0.1− | 0.2+ | 2007 11 20 | 703 | 0.5− | 0.3− |
| 2002 08 12 | 608 | 1.3− | 0.0  | 2002 09 16 | 644 | 0.3+ | 0.9+ | 2007 11 20 | 703 | 0.2+ | 0.7+ |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 12 | 608 | 0.7− | 0.1− | 2002 09 16 | 644 | 0.1− | 0.2+ | 2007 11 20 | 703 | 0.1− | 0.1+ |
| 2002 08 12 | 608 | 0.4− | 0.3− | 2002 09 16 | 644 | 0.1+ | 0.5+ | 2007 11 21 | G96 | 0.2+ | 0.4− |
| 2002 08 19 | 644 | 0.3− | 0.5− | 2002 09 16 | 644 | 0.1+ | 1.0+ | 2007 11 21 | G96 | 0.1− | 0.1− |
| 2002 08 19 | 644 | 0.3− | 0.7− | 2002 09 30 | 608 | 0.1+ | 0.5+ | 2007 11 21 | G96 | 0.2− | 0.2− |
| 2002 08 19 | 644 | 0.2− | 0.7− | 2002 09 30 | 608 | 0.4+ | 0.9+ | 2007 11 21 | G96 | 0.2+ | 0.2− |
| 2002 08 20 | 644 | 0.0  | 0.8− | 2002 09 30 | 608 | 0.4+ | 1.4+ | 2007 12 04 | 704 | 0.1− | 0.3− |
| 2002 08 20 | 644 | 0.6+ | 0.6− | 2007 10 20 | G96 | 0.4− | 0.0  | 2007 12 04 | 704 | 0.6− | 0.4− |
| 2002 08 20 | 644 | 0.3− | 0.4− | 2007 10 20 | G96 | 0.3− | 0.3− | 2007 12 04 | 704 | 0.1− | 0.7− |
| 2002 08 30 | 644 | 0.1− | 0.1+ | 2007 10 20 | G96 | 0.1+ | 0.3− | 2007 12 04 | 704 | 0.0  | 0.8+ |
| 2002 08 30 | 644 | 0.1+ | 0.4− | 2007 10 20 | G96 | 0.0  | 0.1− | 2007 12 05 | 699 | 0.7+ | 0.4− |
| 2002 08 30 | 644 | 0.0  | 0.1+ | 2007 11 12 | G96 | 0.2− | 0.1− | 2007 12 05 | 699 | 0.9+ | 0.1+ |
| 2002 09 08 | 608 | 0.0  | 0.1− | 2007 11 12 | G96 | 0.1− | 0.1− | 2007 12 05 | 699 | 0.6+ | 0.4+ |
| 2002 09 08 | 608 | 0.6+ | 0.0  | 2007 11 12 | G96 | 0.2+ | 0.3− | 2007 12 05 | 699 | 0.6− | 0.4+ |
| 2002 09 08 | 608 | 0.2+ | 0.1− | 2007 11 12 | G96 | 0.7+ | 0.1− |            |     |      |      |

**2002 QN<sub>105</sub> = 2007 WE<sub>41</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 123.21552  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.23315977 | <i>ω</i> | 182.33941 | +0.17617166 |      | +0.98121766 |   |  |  |  |  |
| <i>a</i>                                | 2.6143695  | <i>Ω</i> | 97.81486  | −0.90183934 |      | +0.19288418 |   |  |  |  |  |
| <i>e</i>                                | 0.0619341  | <i>i</i> | 4.54952   | −0.39452421 |      | −0.00275723 |   |  |  |  |  |
| <i>P</i>                                | 4.23       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.2+ | 0.2+ | 2002 08 30 | 644 | 0.3− | 0.2− | 2007 10 21 | 691 | 0.4− | 0.1− |
| 2002 08 18 | 644 | 0.1+ | 0.1− | 2002 09 15 | 644 | 0.5+ | 0.4− | 2007 10 21 | 691 | 0.4− | 0.2+ |
| 2002 08 18 | 644 | 0.2+ | 0.2+ | 2002 09 15 | 644 | 0.5+ | 0.0  | 2007 10 21 | 691 | 0.8− | 0.4− |
| 2002 08 29 | 644 | 0.2− | 0.3− | 2002 09 15 | 644 | 0.3− | 0.0  | 2007 11 18 | G96 | 0.7+ | 0.0  |
| 2002 08 29 | 644 | 0.3+ | 0.1+ | 2007 10 10 | 691 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.3− |
| 2002 08 29 | 644 | 0.3− | 0.4+ | 2007 10 10 | G96 | 1.2+ | 0.7− | 2007 11 18 | G96 | 0.7+ | 0.1− |
| 2002 08 29 | 644 | 0.0  | 0.3+ | 2007 10 10 | G96 | 0.3+ | 0.5− | 2007 11 18 | G96 | 0.9+ | 0.2− |
| 2002 08 29 | 644 | 0.0  | 0.1− | 2007 10 10 | G96 | 0.4+ | 0.4− | 2007 11 20 | G96 | 0.7+ | 0.4− |
| 2002 08 29 | 644 | 0.5− | 0.2− | 2007 10 10 | 691 | 0.1− | 0.6+ | 2007 11 20 | G96 | 0.6+ | 0.0  |
| 2002 08 30 | 644 | 0.0  | 0.3− | 2007 10 10 | G96 | 0.6+ | 0.3− | 2007 11 20 | G96 | 0.6+ | 0.3− |
| 2002 08 30 | 644 | 0.1− | 0.0  | 2007 10 10 | 691 | 0.4− | 0.4+ | 2007 11 20 | G96 | 0.9+ | 0.1− |

**2002 QC<sub>107</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 25.53108   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.22326195 | <i>ω</i> | 107.40089 | +0.94336649 |      | −0.33013109 |   |  |  |  |  |
| <i>a</i>                                | 2.6910777  | <i>Ω</i> | 271.88559 | +0.29058012 |      | +0.86989584 |   |  |  |  |  |
| <i>e</i>                                | 0.1929224  | <i>i</i> | 1.87829   | +0.16007145 |      | +0.36646240 |   |  |  |  |  |
| <i>P</i>                                | 4.41       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 08 | 644 | 0.3+ | 0.0  | 2002 08 27 | 644 | 0.2+ | 0.2− | 2007 12 02 | D35 | 0.1+ | 0.2+ |
| 2002 08 08 | 644 | 0.1− | 0.1+ | 2002 08 27 | 644 | 0.5+ | 0.2− | 2007 12 02 | D35 | 0.3− | 0.7+ |
| 2002 08 08 | 644 | 0.5− | 0.0  | 2002 08 27 | 644 | 0.2− | 0.6− | 2007 12 02 | D35 | 0.4− | 0.3+ |
| 2002 08 17 | 644 | 0.4− | 0.1+ | 2002 09 14 | 644 | 0.6− | 0.5+ | 2007 12 15 | G96 | 0.0  | 0.2+ |
| 2002 08 17 | 644 | 0.1− | 0.0  | 2002 09 14 | 644 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2002 08 17 | 644 | 0.2+ | 0.1− | 2002 09 14 | 644 | 0.1− | 0.2+ | 2007 12 15 | G96 | 0.3− | 0.1− |
| 2002 08 17 | 644 | 0.1+ | 0.2+ | 2007 12 01 | J87 | 0.3+ | 0.3− | 2007 12 15 | G96 | 0.1− | 0.4− |
| 2002 08 17 | 644 | 0.2+ | 0.2+ | 2007 12 01 | J87 | 0.4+ | 0.5− |            |     |      |      |
| 2002 08 17 | 644 | 0.3+ | 0.4− | 2007 12 01 | J87 | 0.1+ | 0.4− |            |     |      |      |



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Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 11 11 | 691 | 0.2+ | 0.2− | 2002 08 27 | 644 | 0.3+ | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.4− |
| 1994 11 11 | 691 | 0.0  | 0.1+ | 2002 08 27 | 644 | 0.2+ | 0.2+ | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 1994 11 11 | 691 | 0.2− | 0.2+ | 2002 08 27 | 644 | 0.3+ | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.2+ |
| 2002 07 23 | 644 | 0.2+ | 0.1− | 2002 09 14 | 644 | 0.1− | 0.4− | 2007 11 13 | 691 | 0.0  | 0.3+ |
| 2002 07 23 | 644 | 0.1+ | 0.4− | 2002 09 14 | 644 | 0.4− | 0.5+ | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 2002 08 07 | 644 | 0.3− | 0.3− | 2002 09 14 | 644 | 0.2− | 0.0  | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2002 08 07 | 644 | 0.1− | 0.2+ | 2005 03 02 | 691 | 0.0  | 0.7+ | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2002 08 16 | 644 | 0.0  | 0.2+ | 2005 03 02 | 691 | 0.0  | 0.4− | 2007 12 04 | G96 | 0.7+ | 0.1− |
| 2002 08 16 | 644 | 0.1− | 0.1+ | 2005 03 02 | 691 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2002 08 16 | 644 | 0.1− | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.1− |            |     |      |      |

2002 QK<sub>114</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 329.15005  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25758372 | $\omega$ | 228.45903 | −0.69896153   | −0.70897356 |
| <i>a</i> | 2.4463792  | $\Omega$ | 266.15063 | +0.68096538   | −0.61968959 |
| <i>e</i> | 0.0787160  | <i>i</i> | 5.39779   | +0.21849239   | −0.33666200 |
| <i>P</i> | 3.83       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 16 | 644 | 0.2+ | 0.3+ | 2002 09 13 | 644 | 0.8− | 0.4− | 2007 09 15 | G96 | 0.4− | 0.3− |
| 2002 08 16 | 644 | 0.1+ | 0.0  | 2002 09 13 | 644 | 0.6− | 0.2− | 2007 10 07 | G96 | 0.1+ | 0.3− |
| 2002 08 16 | 644 | 0.5+ | 0.1+ | 2002 09 13 | 644 | 0.2− | 0.2+ | 2007 10 07 | G96 | 0.1+ | 0.6− |
| 2002 08 26 | 644 | 0.0  | 0.2− | 2006 08 21 | 691 | 0.0  | 0.1+ | 2007 10 07 | G96 | 0.1− | 0.3+ |
| 2002 08 26 | 644 | 0.3+ | 0.5− | 2006 08 21 | 691 | 0.0  | 0.0  | 2007 10 07 | G96 | 0.5− | 0.4− |
| 2002 08 26 | 644 | 0.7+ | 0.1− | 2006 08 21 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 1.1+ | 0.7− |
| 2002 08 28 | 644 | 0.2− | 0.0  | 2007 09 15 | G96 | 0.2− | 0.5+ | 2007 11 11 | G96 | 0.9− | 0.3+ |
| 2002 08 28 | 644 | 0.1+ | 0.2+ | 2007 09 15 | G96 | 1.1+ | 1.3+ | 2007 11 11 | G96 | 0.1− | 0.1+ |
| 2002 08 28 | 644 | 0.0  | 0.2+ | 2007 09 15 | G96 | 0.1− | 0.2− | 2007 11 11 | G96 | 0.1− | 0.1− |

2002 QM<sub>122</sub> = 2005 EH<sub>74</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 110.46744  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23804327 | $\omega$ | 294.54159 | +0.38744789   | +0.92188847 |
| <i>a</i> | 2.5784900  | $\Omega$ | 358.24885 | −0.81479765   | +0.34121781 |
| <i>e</i> | 0.0926953  | <i>i</i> | 4.51253   | −0.43126433   | +0.18355395 |
| <i>P</i> | 4.14       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 25 | 695 | 0.4+ | 0.5+ | 2005 03 03 | 691 | 0.2+  | 0.4+  | 2006 07 05 | D35 | 0.5− | 0.1− |
| 2001 03 25 | 695 | 0.3+ | 0.5+ | 2005 03 03 | 691 | 0.1+  | 0.1+  | 2006 07 05 | D35 | 0.5− | 0.1+ |
| 2002 07 15 | 644 | 0.4− | 0.1+ | 2005 03 03 | 691 | 0.2+  | 0.0   | 2007 10 21 | G96 | 0.1+ | 0.3− |
| 2002 07 15 | 644 | 0.1− | 0.0  | 2005 03 09 | 699 | (0.0  | 1.5+) | 2007 10 21 | G96 | 0.1+ | 0.2− |
| 2002 07 15 | 644 | 0.4− | 0.0  | 2005 03 09 | 699 | 0.7−  | 1.1−  | 2007 10 21 | G96 | 0.1+ | 0.4− |
| 2002 07 28 | 608 | 0.3+ | 0.1− | 2005 03 09 | 699 | 0.3−  | 1.5−  | 2007 10 21 | G96 | 0.1+ | 0.2− |
| 2002 07 28 | 608 | 0.2+ | 0.0  | 2005 03 09 | 699 | (0.8+ | 2.1−) | 2007 11 02 | 691 | 0.1− | 0.2− |
| 2002 07 28 | 608 | 0.0  | 0.5+ | 2005 03 09 | 704 | 1.0+  | 0.0   | 2007 11 02 | 691 | 0.0  | 0.1− |
| 2002 08 11 | 644 | 0.1− | 0.3+ | 2005 03 09 | 704 | 1.2+  | 0.9−  | 2007 11 02 | 691 | 0.0  | 1.1+ |
| 2002 08 11 | 644 | 0.1+ | 0.3+ | 2005 03 09 | 704 | 0.1−  | 0.4+  | 2007 11 07 | 704 | 0.1+ | 0.2+ |
| 2002 08 11 | 644 | 0.1+ | 0.4+ | 2005 03 09 | 704 | 0.1+  | 0.3−  | 2007 11 07 | 704 | 0.8+ | 0.2+ |
| 2002 08 11 | 644 | 0.2− | 0.7+ | 2005 03 10 | G96 | 0.1−  | 0.3+  | 2007 11 07 | 704 | 0.1+ | 0.4+ |
| 2002 08 11 | 644 | 0.1− | 0.5+ | 2005 03 10 | G96 | 0.3−  | 0.2+  | 2007 11 07 | 704 | 1.0− | 0.6+ |
| 2002 08 11 | 644 | 0.3+ | 0.4+ | 2005 03 10 | G96 | 0.3−  | 0.2+  | 2007 11 17 | G96 | 0.1+ | 0.5− |
| 2002 08 18 | 644 | 0.0  | 0.7− | 2005 03 10 | G96 | 0.2−  | 0.1+  | 2007 11 17 | G96 | 1.2+ | 0.4− |
| 2002 08 18 | 644 | 0.3+ | 0.3+ | 2005 04 04 | G96 | 0.1−  | 0.0   | 2007 11 17 | G96 | 0.2+ | 0.4− |
| 2002 08 18 | 644 | 0.3+ | 0.3+ | 2005 04 04 | G96 | 0.1+  | 0.1+  | 2007 11 17 | G96 | 0.4+ | 0.4− |
| 2002 09 02 | 608 | 0.0  | 0.9+ | 2005 04 04 | G96 | 0.2−  | 0.0   | 2007 11 20 | G96 | 0.0  | 0.4− |
| 2002 09 02 | 608 | 0.0  | 0.1+ | 2005 04 04 | G96 | 0.2−  | 0.0   | 2007 11 20 | G96 | 0.4+ | 0.2− |
| 2002 09 02 | 608 | 0.4− | 0.4+ | 2005 04 15 | 691 | 0.1+  | 0.3+  | 2007 11 20 | G96 | 0.2+ | 0.1− |
| 2003 12 25 | 691 | 0.4− | 0.6+ | 2005 04 15 | 691 | 0.1+  | 0.4+  | 2007 11 20 | G96 | 0.2− | 0.3− |
| 2003 12 25 | 691 | 0.1− | 0.2− | 2005 04 15 | 691 | 0.1−  | 0.1−  |            |     |      |      |
| 2003 12 25 | 691 | 0.4− | 0.2+ | 2006 07 05 | D35 | 0.5−  | 0.1−  |            |     |      |      |

2002 QT<sub>122</sub> = 2007 TV<sub>393</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 8.45632    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21308726 | $\omega$ | 146.12232 | +0.99300858 | +0.11119456 |
| $a$ | 2.7760742  | $\Omega$ | 207.57480 | −0.11803931 | +0.93772420 |
| $e$ | 0.0840722  | $i$      | 4.90991   | +0.00082398 | +0.32910347 |
| $P$ | 4.63       | $H$      | 16.6      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 09 16 | 691 | 0.3+ | 0.4− | 2002 08 26 | 644 | 0.2+ | 0.2− | 2007 08 23 | 691 | 0.1−  | 0.2−  |
| 1993 09 16 | 691 | 0.2+ | 0.2− | 2003 11 23 | 691 | 0.1+ | 0.3− | 2007 08 23 | 691 | 0.1+  | 0.1−  |
| 1993 09 16 | 691 | 0.2+ | 0.3− | 2003 11 23 | 691 | 0.1+ | 0.5+ | 2007 08 23 | 691 | 0.1+  | 0.1+  |
| 2001 03 28 | 691 | 0.0  | 0.4+ | 2003 11 23 | 691 | 0.0  | 0.1+ | 2007 10 05 | 691 | 1.1−  | 0.5+  |
| 2001 03 28 | 691 | 0.3+ | 0.1+ | 2003 12 17 | 691 | 0.2− | 0.4+ | 2007 10 05 | 691 | 0.1−  | 0.5+  |
| 2001 03 28 | 691 | 0.2− | 0.9+ | 2003 12 17 | 691 | 0.2+ | 0.3+ | 2007 10 05 | 691 | 0.2+  | 1.2+  |
| 2002 07 12 | 644 | 0.0  | 0.1− | 2003 12 17 | 691 | 0.3− | 0.1− | 2007 10 12 | 691 | (3.2+ | 0.8−) |
| 2002 07 12 | 644 | 0.4− | 0.4− | 2006 05 06 | G96 | 0.5− | 0.1+ | 2007 10 12 | 691 | 0.3+  | 0.1+  |
| 2002 07 12 | 644 | 0.6− | 0.1− | 2006 05 06 | G96 | 0.3− | 0.2+ | 2007 10 12 | 691 | 0.3+  | 0.1+  |
| 2002 07 14 | 644 | 0.2− | 0.1− | 2006 05 06 | G96 | 0.1− | 0.2+ | 2007 10 15 | 691 | 0.1+  | 0.2+  |
| 2002 07 14 | 644 | 0.3− | 0.0  | 2006 05 06 | G96 | 0.2− | 0.0  | 2007 10 15 | 691 | 0.4−  | 0.0   |
| 2002 07 14 | 644 | 0.2− | 0.3− | 2006 05 21 | G96 | 0.6− | 0.4+ | 2007 10 15 | 691 | 0.5−  | 0.3+  |
| 2002 07 21 | 644 | 0.4+ | 0.3− | 2006 05 21 | G96 | 0.6− | 0.3+ | 2007 10 19 | 691 | 0.0   | 0.0   |
| 2002 07 21 | 644 | 0.2+ | 0.3+ | 2006 05 21 | G96 | 0.3− | 0.3+ | 2007 10 19 | 691 | 0.1+  | 0.2+  |
| 2002 07 21 | 644 | 0.1− | 0.2− | 2006 05 21 | G96 | 0.3− | 0.5− | 2007 10 19 | 691 | 0.0   | 0.5+  |
| 2002 08 11 | 608 | 0.5− | 0.3− | 2006 05 21 | 691 | 0.0  | 0.4+ | 2007 12 06 | G96 | 0.3+  | 0.1−  |
| 2002 08 16 | 644 | 0.5− | 0.3− | 2006 05 21 | 691 | 0.1+ | 0.5+ | 2007 12 06 | G96 | 0.1−  | 0.2−  |
| 2002 08 16 | 644 | 0.4+ | 0.8− | 2006 05 21 | 691 | 0.2− | 0.7+ | 2007 12 06 | G96 | 0.6+  | 0.1−  |
| 2002 08 16 | 644 | 0.2+ | 0.4− | 2006 06 16 | 691 | 0.4+ | 0.3− | 2007 12 06 | G96 | 0.4−  | 0.2−  |
| 2002 08 26 | 644 | 0.0  | 0.6− | 2006 06 16 | 691 | 0.6+ | 0.3+ |            |     |       |       |
| 2002 08 26 | 644 | 0.3− | 0.3− | 2006 06 16 | 691 | 0.6+ | 0.5− |            |     |       |       |

2002 QW<sub>122</sub> = 2007 MA<sub>25</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 29.03245   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18430070 | $\omega$ | 349.84939 | +0.31685793 | +0.92547247 |
| $a$ | 3.0580979  | $\Omega$ | 298.35937 | −0.85283151 | +0.18220910 |
| $e$ | 0.0955272  | $i$      | 13.64609  | −0.41506561 | +0.33211527 |
| $P$ | 5.35       | $H$      | 16.2      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 15 | 644 | 0.2+ | 0.0  | 2002 09 12 | 644 | 0.1− | 0.3+ | 2002 09 28 | 644 | 0.3− | 0.2+ |
| 2002 08 15 | 644 | 0.3+ | 0.3− | 2002 09 12 | 644 | 0.1+ | 0.0  | 2002 09 28 | 644 | 0.0  | 0.1+ |
| 2002 08 27 | 644 | 0.1+ | 0.2+ | 2002 09 26 | 644 | 0.2+ | 0.5− | 2007 06 23 | 691 | 0.1− | 0.1+ |
| 2002 08 27 | 644 | 0.4+ | 0.2+ | 2002 09 26 | 644 | 0.3− | 0.1− | 2007 06 23 | 691 | 0.1+ | 0.1+ |
| 2002 08 27 | 644 | 0.1+ | 0.1+ | 2002 09 26 | 644 | 0.1− | 0.0  | 2007 06 23 | 691 | 0.2− | 0.1− |
| 2002 09 04 | 644 | 0.1+ | 0.1+ | 2002 09 27 | 644 | 0.0  | 0.3+ | 2007 06 27 | 691 | 0.2+ | 0.4− |
| 2002 09 04 | 644 | 0.2− | 0.0  | 2002 09 27 | 644 | 0.5− | 0.6− | 2007 06 27 | 691 | 0.0  | 0.2+ |
| 2002 09 04 | 644 | 0.1+ | 0.2+ | 2002 09 27 | 644 | 0.1− | 0.1+ | 2007 06 27 | 691 | 0.0  | 0.1+ |
| 2002 09 12 | 644 | 0.1− | 0.1+ | 2002 09 28 | 644 | 0.0  | 0.4− |            |     |      |      |

2002 QX<sub>122</sub> = 2004 BG<sub>148</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 286.17721  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17191651 | $\omega$ | 88.00745  | +0.67486213 | −0.72517508 |
| $a$ | 3.2032512  | $\Omega$ | 318.43480 | +0.56826798 | +0.62886217 |
| $e$ | 0.2864298  | $i$      | 11.88872  | +0.47077873 | +0.28045227 |
| $P$ | 5.73       | $H$      | 15.6      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 22 | 644 | 0.4+ | 0.3+ | 2002 09 17 | 608 | 0.8− | 0.2− | 2004 01 16 | 644 | 0.2− | 0.6− |
| 2002 08 22 | 644 | 0.0  | 0.7+ | 2002 09 17 | 608 | 0.9− | 0.2− | 2004 01 16 | 644 | 0.1− | 0.2− |
| 2002 08 22 | 644 | 0.0  | 0.4+ | 2002 10 05 | 644 | 0.3− | 0.2+ | 2004 01 16 | 644 | 0.0  | 0.5− |
| 2002 08 28 | 644 | 0.1+ | 0.2− | 2002 10 05 | 644 | 0.1− | 0.2− | 2004 01 22 | 704 | 0.4− | 0.3+ |
| 2002 08 28 | 644 | 0.4− | 0.0  | 2002 10 05 | 644 | 0.0  | 0.0  | 2004 01 22 | 704 | 0.7+ | 0.6+ |
| 2002 09 09 | 608 | 0.4+ | 0.8+ | 2002 10 06 | 644 | 0.3− | 0.3− | 2004 01 22 | 704 | 0.1+ | 0.9+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 09 | 608 | 0.4− | 0.3− | 2002 10 06 | 644 | 0.4+ | 0.3+ | 2004 01 22 | 704 | 0.3+ | 0.2− |
| 2002 09 13 | 644 | 0.3− | 0.0  | 2002 10 06 | 644 | 0.2+ | 0.1− | 2004 01 22 | 704 | 0.0  | 0.3+ |
| 2002 09 13 | 644 | 0.2− | 0.1+ | 2002 10 29 | 644 | 1.2+ | 0.2− |            |     |      |      |
| 2002 09 13 | 644 | 0.1− | 0.0  | 2002 10 29 | 644 | 1.1+ | 0.5− |            |     |      |      |

**2002 RQ<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 221.35923  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.84061374 | $\omega$ | 225.25387 | −0.55743759 | +0.83008277 |          |   |
| <i>a</i> | 1.1119154  | $\Omega$ | 10.89669  | −0.73748329 | −0.48677571 |          |   |
| <i>e</i> | 0.3062754  | <i>i</i> | 4.56054   | −0.38128956 | −0.27205147 |          |   |
| <i>P</i> | 1.17       | <i>H</i> | 20.4      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 03 | 599 | 0.0   | 0.2+  | 2002 09 10 | 246 | 0.1−  | 0.9−  | 2002 10 01 | 587 | 0.3+ | 0.0  |
| 2002 09 04 | 599 | 0.1−  | 0.1−  | 2002 09 10 | 246 | 0.2+  | 0.3−  | 2002 10 01 | 587 | 0.3+ | 0.3− |
| 2002 09 04 | 599 | 0.6+  | 0.4−  | 2002 09 10 | 246 | 0.9+  | 0.8+  | 2002 10 02 | 704 | 0.8+ | 0.2+ |
| 2002 09 04 | 599 | 0.3−  | 0.0   | 2002 09 11 | 848 | 1.1+  | 0.0   | 2002 10 02 | 704 | 0.3− | 0.2+ |
| 2002 09 04 | 599 | 0.2−  | 0.8+  | 2002 09 11 | 848 | 0.5−  | 0.3+  | 2002 10 02 | 704 | 1.0+ | 0.4+ |
| 2002 09 04 | 599 | 1.1−  | 0.9−  | 2002 09 11 | 848 | (2.0+ | 0.9+) | 2002 10 02 | 704 | 0.4+ | 0.1+ |
| 2002 09 04 | 599 | 0.0   | 0.0   | 2002 09 11 | 608 | 0.9−  | 0.2+  | 2002 10 02 | 422 | 0.0  | 0.1− |
| 2002 09 04 | 599 | 0.1+  | 0.1+  | 2002 09 11 | 608 | 0.7−  | 0.2−  | 2002 10 02 | 422 | 0.6− | 0.6− |
| 2002 09 04 | 599 | 0.1+  | 0.0   | 2002 09 11 | 608 | 1.2−  | 0.2−  | 2002 10 02 | 422 | 0.0  | 0.3− |
| 2002 09 04 | 599 | 0.5−  | 0.0   | 2002 09 12 | 246 | 0.4−  | 0.0   | 2002 10 03 | 704 | 0.5− | 1.0− |
| 2002 09 05 | 599 | 0.2−  | 0.4−  | 2002 09 12 | 246 | 0.1+  | 0.7+  | 2002 10 03 | 704 | 0.1− | 0.4+ |
| 2002 09 05 | 599 | 0.3+  | 0.1−  | 2002 09 12 | 246 | 0.2−  | 0.4−  | 2002 10 03 | 704 | 0.1− | 0.2− |
| 2002 09 05 | 557 | 0.6−  | 1.5−  | 2002 09 12 | 246 | 0.9+  | 0.7+  | 2002 10 03 | 704 | 0.4− | 0.3+ |
| 2002 09 05 | 557 | 0.4−  | 0.5−  | 2002 09 14 | 246 | 0.2−  | 0.0   | 2002 10 03 | 704 | 0.2+ | 0.8+ |
| 2002 09 05 | 557 | 0.2−  | 1.2−  | 2002 09 14 | 246 | 0.8−  | 0.2+  | 2002 10 07 | 699 | 1.0+ | 0.4+ |
| 2002 09 05 | 599 | 0.3+  | 1.0−  | 2002 09 14 | 246 | 0.3+  | 0.0   | 2002 10 07 | 699 | 0.8− | 0.6− |
| 2002 09 05 | 599 | 1.2+  | 0.1+  | 2002 09 17 | 608 | (4.2− | 0.1+) | 2002 10 07 | 699 | 0.1− | 1.0− |
| 2002 09 05 | 599 | 0.2+  | 0.6+  | 2002 09 17 | 608 | (3.1− | 0.4−) | 2002 10 07 | 699 | 0.3+ | 0.7+ |
| 2002 09 05 | 599 | 0.0   | 0.1+  | 2002 09 17 | 608 | (3.5− | 0.3+) | 2002 10 07 | 704 | 0.7− | 0.8+ |
| 2002 09 05 | 599 | 0.2−  | 0.4+  | 2002 09 20 | 599 | (3.7+ | 1.1−) | 2002 10 07 | 704 | 0.1+ | 0.4+ |
| 2002 09 06 | 599 | 0.2−  | 0.2+  | 2002 09 20 | 599 | (2.9− | 0.8−) | 2002 10 07 | 704 | 0.6− | 1.2+ |
| 2002 09 06 | 599 | 0.8+  | 0.0   | 2002 09 20 | 599 | (2.7− | 0.6+) | 2002 10 07 | 704 | 0.5− | 0.1+ |
| 2002 09 06 | 649 | 0.4+  | 1.0+  | 2002 09 20 | 599 | (1.9− | 0.4−) | 2002 10 08 | 118 | 0.1+ | 0.3+ |
| 2002 09 06 | 649 | 0.9−  | 0.0   | 2002 09 20 | 711 | 0.1−  | 0.1−  | 2002 10 08 | 118 | 0.7− | 0.5+ |
| 2002 09 06 | 649 | 0.1−  | 0.6+  | 2002 09 20 | 711 | 0.5+  | 0.4−  | 2002 10 08 | 118 | 1.0− | 0.2− |
| 2002 09 09 | 599 | 1.0+  | 0.1−  | 2002 09 20 | 711 | 1.0−  | 0.1−  | 2002 10 11 | 704 | 0.2+ | 0.1− |
| 2002 09 09 | 599 | 0.9+  | 0.2+  | 2002 09 21 | 608 | (6.1− | 0.7−) | 2002 10 11 | 704 | 0.1− | 0.3+ |
| 2002 09 09 | 599 | 0.4−  | 0.4+  | 2002 09 21 | 608 | (5.7− | 0.8−) | 2002 10 11 | 704 | 0.0  | 0.1− |
| 2002 09 09 | 848 | 1.5+  | 0.8+  | 2002 09 21 | 608 | (5.5− | 0.7−) | 2002 10 11 | 704 | 0.8+ | 0.0  |
| 2002 09 09 | 848 | (2.0+ | 1.9+) | 2002 09 28 | J95 | 0.1+  | 0.3+  | 2002 10 29 | 696 | 0.5+ | 0.4− |
| 2002 09 09 | 848 | 0.3−  | 0.1−  | 2002 09 28 | J95 | 0.3+  | 0.5−  | 2002 10 29 | 696 | 0.5− | 1.0− |
| 2002 09 09 | 848 | 0.5+  | 0.5+  | 2002 09 29 | 118 | 0.2+  | 0.1−  | 2007 12 05 | 291 | 0.2+ | 0.8+ |
| 2002 09 10 | 246 | 1.0−  | 0.3+  | 2002 09 29 | 118 | 0.1+  | 0.0   | 2007 12 05 | 291 | 0.3+ | 0.3+ |
| 2002 09 10 | 246 | 0.0   | 0.3−  | 2002 09 29 | 118 | 0.2−  | 0.4−  | 2007 12 05 | 291 | 0.5− | 1.1− |
| 2002 09 10 | 246 | 0.2+  | 0.1−  | 2002 10 01 | 587 | 0.3−  | 0.2−  |            |     |      |      |

**2002 RV<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 350.56347  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.22668857 | $\omega$ | 245.56521 | +0.48788653  | −0.87267214  |
| $a$ | 2.6638901  | $\Omega$ | 175.08778 | +0.86177563  | +0.47784235  |
| $e$ | 0.0736408  | $i$      | 13.67911  | +0.13895864  | +0.10054857  |
| $P$ | 4.35       | $H$      | 15.3      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 26 | 644 | 0.2+ | 0.4+ | 2002 09 13 | 644 | 0.0  | 0.3+ | 2007 11 05 | 703 | 0.5+ | 0.3+ |
| 2002 08 26 | 644 | 0.2+ | 0.2+ | 2002 09 14 | 644 | 0.0  | 0.3+ | 2007 11 12 | 703 | 0.9+ | 1.0− |
| 2002 08 26 | 644 | 0.3+ | 0.3+ | 2002 09 14 | 644 | 0.7+ | 0.2− | 2007 11 12 | 703 | 0.5− | 0.4− |
| 2002 09 05 | 699 | 0.0  | 1.3− | 2002 09 14 | 644 | 0.2+ | 0.2+ | 2007 11 12 | 703 | 0.2− | 0.2+ |
| 2002 09 05 | 699 | 0.1− | 0.0  | 2007 10 16 | 703 | 0.2+ | 0.4− | 2007 11 12 | 703 | 0.1+ | 0.3− |
| 2002 09 05 | 699 | 0.7− | 0.1+ | 2007 10 16 | 703 | 0.2− | 0.7− | 2007 11 19 | 699 | 0.3+ | 0.3− |
| 2002 09 05 | 699 | 0.7+ | 1.1− | 2007 10 16 | 703 | 0.4+ | 0.3− | 2007 11 19 | 699 | 0.2+ | 0.1− |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 06 | 704 | 0.5−  | 1.0+  | 2007 10 16 | 703 | 1.0−  | 0.0   | 2007 11 19 | 699 | 0.9+ | 0.1− |
| 2002 09 06 | 704 | 0.4−  | 0.6−  | 2007 10 30 | 703 | 0.5+  | 0.4+  | 2007 11 19 | 699 | 0.9+ | 0.1+ |
| 2002 09 06 | 704 | (1.0+ | 2.9+) | 2007 10 30 | 703 | (0.7− | 1.6+) | 2007 12 05 | 703 | 0.2+ | 0.1+ |
| 2002 09 06 | 704 | 0.6−  | 0.2+  | 2007 10 30 | 703 | 0.8−  | 0.4+  | 2007 12 05 | 703 | 0.9+ | 1.1+ |
| 2002 09 06 | 704 | 0.7+  | 0.0   | 2007 10 30 | 703 | 0.3−  | 0.6+  | 2007 12 05 | 703 | 1.7− | 0.2+ |
| 2002 09 13 | 644 | 0.5−  | 0.2+  | 2007 11 05 | 703 | 1.1−  | 0.5+  | 2007 12 05 | 703 | 0.3− | 0.6− |
| 2002 09 13 | 644 | 0.3−  | 0.1−  | 2007 11 05 | 703 | 0.1+  | 0.3+  |            |     |      |      |

**2002 RW<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 34.12980   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21244343 | $\omega$ | 352.20811 | +0.98977351 | +0.14264422 |
| $a$ | 2.7816801  | $\Omega$ | 359.58687 | −0.12208399 | +0.84337844 |
| $e$ | 0.2303213  | $i$      | 8.11258   | −0.07378284 | +0.51803999 |
| $P$ | 4.64       | $H$      | 16.1      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 02 06 | 695 | 0.4+ | 0.3+ | 2002 09 09 | 608 | 0.4−  | 0.9−  | 2007 10 18 | 691 | 0.1− | 0.1− |
| 2000 02 06 | 695 | 0.2+ | 0.6+ | 2002 09 09 | 608 | 0.7−  | 1.4−  | 2007 10 18 | 691 | 0.4− | 0.3− |
| 2002 08 20 | 644 | 0.0  | 0.1− | 2002 09 15 | 644 | 0.4+  | 0.3−  | 2007 10 18 | 691 | 0.1− | 0.3− |
| 2002 08 20 | 644 | 0.2− | 0.4− | 2002 09 15 | 644 | 0.4+  | 0.1−  | 2007 11 02 | 703 | 0.5+ | 1.1+ |
| 2002 08 20 | 644 | 0.0  | 0.6− | 2002 09 15 | 644 | 0.5+  | 0.2−  | 2007 11 02 | 703 | 0.3+ | 0.5+ |
| 2002 08 29 | 644 | 0.1− | 0.3− | 2002 10 03 | 704 | 1.0+  | 0.8−  | 2007 11 02 | 703 | 0.2+ | 0.6+ |
| 2002 08 29 | 644 | 0.1− | 0.2− | 2002 10 03 | 704 | 0.4+  | 0.0   | 2007 11 02 | 703 | 0.6+ | 1.0+ |
| 2002 08 29 | 644 | 0.1− | 0.0  | 2002 10 03 | 704 | 0.4+  | 0.1+  | 2007 11 16 | G96 | 0.1− | 0.2− |
| 2002 09 05 | 699 | 0.0  | 0.1+ | 2002 10 03 | 704 | 0.3+  | 0.5−  | 2007 11 16 | G96 | 0.3+ | 0.0  |
| 2002 09 05 | 704 | 0.4− | 0.6+ | 2002 10 03 | 704 | 0.7+  | 0.0   | 2007 11 16 | G96 | 0.4+ | 0.2− |
| 2002 09 05 | 699 | 0.5− | 0.1− | 2002 10 07 | 704 | 0.1−  | 0.2+  | 2007 11 19 | 291 | 0.1+ | 0.2+ |
| 2002 09 05 | 704 | 0.7− | 0.8+ | 2002 10 07 | 704 | 0.7+  | 0.8+  | 2007 11 19 | 291 | 0.2− | 0.1+ |
| 2002 09 05 | 699 | 0.0  | 0.2− | 2002 10 07 | 704 | 0.1+  | 0.4−  | 2007 11 19 | 291 | 0.3+ | 0.1+ |
| 2002 09 05 | 704 | 0.4− | 0.5+ | 2002 10 07 | 704 | 0.0   | 0.4+  | 2007 12 02 | 704 | 0.6+ | 0.5− |
| 2002 09 05 | 699 | 0.1+ | 0.1− | 2007 09 10 | 703 | 0.1+  | 0.4−  | 2007 12 02 | 704 | 0.5+ | 0.1+ |
| 2002 09 05 | 704 | 0.4− | 0.5+ | 2007 09 10 | 703 | 0.6−  | 0.6+  | 2007 12 02 | 704 | 0.8+ | 0.1+ |
| 2002 09 05 | 704 | 0.8− | 0.6+ | 2007 09 10 | 703 | 0.7+  | 0.2+  | 2007 12 03 | 704 | 0.1+ | 0.1− |
| 2002 09 06 | 704 | 0.3+ | 0.6+ | 2007 09 10 | 703 | 0.5+  | 0.6+  | 2007 12 03 | 704 | 0.6− | 0.7− |
| 2002 09 06 | 704 | 0.0  | 0.8+ | 2007 10 18 | 699 | 1.5+  | 1.0−  | 2007 12 03 | 704 | 0.1+ | 0.8+ |
| 2002 09 06 | 704 | 0.2− | 1.2+ | 2007 10 18 | 699 | (2.0+ | 0.6+) | 2007 12 03 | 704 | 0.2+ | 0.2− |
| 2002 09 06 | 704 | 0.5+ | 1.0+ | 2007 10 18 | 699 | 1.1−  | 1.3−  | 2007 12 03 | 704 | 0.0  | 0.3+ |
| 2002 09 09 | 608 | 0.7− | 1.0− | 2007 10 18 | 699 | 1.3−  | 0.2+  |            |     |      |      |

**2002 RY<sub>47</sub> = 2007 VQ<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 62.13189   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22309596 | $\omega$ | 340.26539 | +0.96276944 | +0.26994713 |
| $a$ | 2.6924123  | $\Omega$ | 4.15297   | −0.21392917 | +0.79312012 |
| $e$ | 0.1214797  | $i$      | 11.36207  | −0.16525531 | +0.54597529 |
| $P$ | 4.42       | $H$      | 15.3      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 704 | 1.0+ | 0.0  | 2002 10 03 | 704 | 0.5+ | 0.1− | 2006 07 20 | E12 | 0.1+ | 0.1+ |
| 2002 09 05 | 704 | 1.0+ | 0.4+ | 2002 10 03 | 704 | 0.2+ | 0.2+ | 2007 11 03 | 704 | 0.6− | 0.0  |
| 2002 09 05 | 704 | 0.2− | 0.2− | 2002 10 03 | 704 | 0.9+ | 0.1− | 2007 11 03 | 704 | 0.4− | 0.7− |
| 2002 09 05 | 704 | 0.4+ | 0.4− | 2002 10 03 | 704 | 0.7+ | 0.1+ | 2007 11 03 | 704 | 0.6+ | 0.1− |
| 2002 09 06 | 704 | 0.0  | 0.2+ | 2002 10 06 | 704 | 0.1+ | 0.5− | 2007 11 08 | 703 | 0.3+ | 0.5− |
| 2002 09 06 | 704 | 0.5+ | 0.0  | 2002 10 06 | 704 | 0.5− | 0.2+ | 2007 11 08 | 703 | 0.3+ | 0.6− |
| 2002 09 06 | 704 | 0.2+ | 0.9+ | 2002 10 06 | 704 | 0.5− | 0.5+ | 2007 11 08 | 703 | 0.6+ | 1.5− |
| 2002 09 06 | 704 | 0.5+ | 0.3+ | 2002 10 06 | 704 | 0.5+ | 0.6+ | 2007 11 08 | 703 | 0.2− | 1.1− |
| 2002 09 06 | 704 | 0.0  | 0.4− | 2002 10 07 | 704 | 0.7− | 0.0  | 2007 11 09 | 704 | 0.2− | 0.7+ |
| 2002 09 13 | 644 | 0.5− | 0.0  | 2002 10 07 | 704 | 0.1+ | 0.2− | 2007 11 09 | 704 | 0.5− | 0.0  |
| 2002 09 13 | 644 | 0.2− | 0.0  | 2002 10 07 | 704 | 0.7+ | 0.3+ | 2007 11 09 | 704 | 0.3− | 1.1+ |
| 2002 09 13 | 644 | 0.3− | 0.1− | 2002 10 07 | 704 | 0.9− | 0.3− | 2007 11 09 | 704 | 0.2+ | 0.1+ |
| 2002 09 15 | 644 | 0.2− | 0.1+ | 2002 10 07 | 704 | 0.8+ | 0.7− | 2007 11 16 | 704 | 0.6− | 0.5− |
| 2002 09 15 | 644 | 0.1− | 0.1+ | 2002 10 11 | 704 | 0.3+ | 0.5+ | 2007 11 16 | 704 | 0.0  | 0.0  |
| 2002 09 15 | 644 | 0.2− | 0.1+ | 2002 10 11 | 704 | 0.5− | 0.9+ | 2007 11 16 | 704 | 0.7− | 0.1− |
| 2002 09 17 | 608 | 1.1− | 0.3− | 2002 10 11 | 704 | 0.7− | 0.3− | 2007 12 03 | 704 | 0.0  | 0.2+ |
| 2002 09 17 | 608 | 0.7− | 0.7− | 2002 10 11 | 704 | 0.0  | 0.0  | 2007 12 03 | 704 | 1.0+ | 1.2+ |

## 2007 DEC. 24

M.P.O. 129613

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 17 | 608 | 1.5− | 0.7− | 2006 07 20 | E12 | 0.1− | 0.1− | 2007 12 03 | 704 | 0.2+ | 0.8+ |
| 2002 10 03 | 704 | 0.4+ | 0.1+ | 2006 07 20 | E12 | 0.0  | 0.3− | 2007 12 03 | 704 | 0.2+ | 0.5+ |

2002 RQ<sub>56</sub> = 2003 YL<sub>175</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 47.12341   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.21322669 | $\omega$ | 39.35061  | +0.97938162  | +0.19422239  |
| $a$ | 2.7748638  | $\Omega$ | 309.35973 | −0.19870030  | +0.87645279  |
| $e$ | 0.1697477  | $i$      | 4.12237   | −0.03646674  | +0.44057709  |
| $P$ | 4.62       | $H$      | 16.1      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 10 08 | 691 | 0.9−  | 0.1−  | 2003 12 19 | 691 | 0.0  | 0.2+ | 2007 11 18 | 704 | 0.7−  | 0.2+  |
| 1993 10 08 | 691 | 0.6+  | 0.1+  | 2003 12 19 | 691 | 0.1+ | 0.7+ | 2007 11 18 | 704 | 0.1−  | 0.2+  |
| 1993 10 08 | 691 | 0.4+  | 0.2−  | 2004 01 15 | 691 | 0.1− | 0.3− | 2007 11 18 | 704 | 0.3−  | 0.8−  |
| 2002 09 05 | 699 | 0.3+  | 0.6+  | 2004 01 15 | 691 | 0.0  | 0.2+ | 2007 11 18 | 704 | 0.3+  | 0.1+  |
| 2002 09 05 | 699 | (0.7− | 1.8+) | 2004 01 15 | 691 | 0.3+ | 0.2− | 2007 11 20 | 704 | 0.6−  | 1.3+  |
| 2002 09 05 | 699 | 0.8−  | 1.0+  | 2007 10 21 | G96 | 0.1− | 0.2− | 2007 11 20 | 704 | 0.3−  | 0.4+  |
| 2002 09 05 | 699 | 0.0   | 0.7+  | 2007 10 21 | G96 | 0.1− | 0.3− | 2007 11 20 | 704 | 0.5+  | 0.3+  |
| 2002 09 06 | 704 | 1.1−  | 0.7+  | 2007 10 21 | G96 | 0.1+ | 0.2− | 2007 11 20 | 704 | 0.5−  | 0.1+  |
| 2002 09 06 | 704 | 0.5+  | 0.0   | 2007 10 21 | G96 | 0.4− | 0.1− | 2007 11 20 | G96 | 0.3+  | 0.4−  |
| 2002 09 06 | 704 | 0.1+  | 0.8−  | 2007 11 11 | 300 | 0.3− | 0.1+ | 2007 11 20 | G96 | (0.9− | 1.5−) |
| 2002 09 17 | 608 | 0.2−  | 1.3−  | 2007 11 11 | 300 | 0.0  | 0.3+ | 2007 11 20 | G96 | 0.3−  | 0.3−  |
| 2002 09 17 | 608 | 0.8−  | 1.1−  | 2007 11 11 | 300 | 0.4+ | 0.0  | 2007 11 20 | G96 | 0.0   | 0.6−  |
| 2002 09 17 | 608 | 0.6−  | 1.3−  | 2007 11 11 | 300 | 0.6+ | 0.3+ | 2007 12 12 | 704 | 0.1−  | 0.1−  |
| 2002 10 04 | 704 | 0.0   | 0.4−  | 2007 11 11 | 300 | 0.2+ | 1.2− | 2007 12 12 | 704 | 0.6−  | 0.7+  |
| 2002 10 04 | 704 | 0.6−  | 0.2+  | 2007 11 11 | 300 | 0.5+ | 0.2+ | 2007 12 12 | 704 | 0.5+  | 0.5−  |
| 2002 10 04 | 704 | 0.1−  | 0.6+  | 2007 11 11 | 300 | 0.2− | 0.3+ | 2007 12 12 | 704 | 0.1+  | 0.4+  |
| 2002 10 04 | 704 | 0.5−  | 0.2+  | 2007 11 12 | 300 | 0.8+ | 0.4+ | 2007 12 13 | 704 | 0.3+  | 0.4+  |
| 2002 10 04 | 704 | 0.2−  | 0.2+  | 2007 11 12 | 300 | 0.2+ | 0.1− | 2007 12 13 | 704 | 0.6+  | 0.6−  |
| 2002 10 12 | 704 | 0.4+  | 0.4+  | 2007 11 12 | 300 | 0.0  | 0.6− | 2007 12 13 | 704 | 0.6+  | 0.1+  |
| 2002 10 12 | 704 | 0.7+  | 1.3+  | 2007 11 13 | 703 | 0.3− | 0.5− | 2007 12 13 | 704 | 0.5+  | 0.2+  |
| 2002 10 12 | 704 | 0.3+  | 1.2+  | 2007 11 13 | 703 | 1.3− | 1.1− | 2007 12 13 | 704 | 0.1−  | 0.3+  |
| 2002 10 12 | 704 | 1.2+  | 0.6+  | 2007 11 13 | 703 | 0.9− | 0.8− |            |     |       |       |
| 2003 12 19 | 691 | 0.0   | 0.1−  | 2007 11 13 | 703 | 1.0+ | 0.2− |            |     |       |       |

2002 RL<sub>72</sub> = 2007 XS<sub>17</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 75.40577   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.23124208 | $\omega$ | 340.41230 | +0.94034824  | +0.34021336  |
| $a$ | 2.6288036  | $\Omega$ | 359.69753 | −0.30588980  | +0.84517469  |
| $e$ | 0.0996931  | $i$      | 2.55652   | −0.14891816  | +0.41223126  |
| $P$ | 4.26       | $H$      | 16.1      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 704 | 0.5+ | 0.5+ | 2005 04 05 | G96 | 0.9+ | 0.0  | 2006 08 13 | 644 | 0.6+ | 0.7+ |
| 2002 09 05 | 704 | 0.2− | 0.4+ | 2005 04 05 | G96 | 0.3− | 0.3− | 2007 11 01 | 691 | 0.4− | 0.0  |
| 2002 09 05 | 704 | 0.6− | 1.1+ | 2005 04 30 | 691 | 0.2− | 0.3+ | 2007 11 01 | 691 | 0.5− | 0.1− |
| 2002 09 05 | 704 | 0.6− | 0.3+ | 2005 04 30 | 691 | 0.5+ | 0.3+ | 2007 11 01 | 691 | 0.3− | 0.0  |
| 2002 09 05 | 704 | 0.2− | 0.2+ | 2005 04 30 | 691 | 0.4+ | 0.2− | 2007 12 10 | 704 | 0.2+ | 0.1− |
| 2002 09 07 | 704 | 0.8+ | 0.8+ | 2005 05 10 | 691 | 0.1+ | 0.4+ | 2007 12 10 | 704 | 0.9− | 0.8− |
| 2002 09 07 | 704 | 0.2− | 0.4+ | 2005 05 10 | 691 | 0.1+ | 0.4+ | 2007 12 10 | 704 | 0.0  | 0.0  |
| 2002 09 07 | 704 | 0.2+ | 0.5+ | 2005 05 10 | 691 | 0.2+ | 0.5+ | 2007 12 12 | 704 | 0.3+ | 1.1+ |
| 2002 09 07 | 704 | 0.6− | 0.5+ | 2006 06 03 | G96 | 0.0  | 0.2+ | 2007 12 12 | 704 | 0.1− | 0.0  |
| 2002 09 08 | 608 | 0.2− | 0.6− | 2006 06 03 | G96 | 0.2− | 0.1+ | 2007 12 12 | 704 | 0.3− | 0.1+ |
| 2002 09 08 | 608 | 0.4− | 0.1+ | 2006 06 03 | G96 | 0.2+ | 0.3+ | 2007 12 12 | 704 | 0.1+ | 0.3+ |
| 2002 09 08 | 608 | 0.2− | 0.0  | 2006 06 03 | G96 | 0.0  | 0.2− | 2007 12 14 | 704 | 0.2+ | 1.5+ |
| 2002 09 15 | 644 | 0.1− | 0.2+ | 2006 06 21 | 691 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.8+ | 1.2+ |
| 2002 09 15 | 644 | 0.3− | 0.3+ | 2006 06 21 | 691 | 0.1− | 0.1+ | 2007 12 14 | 704 | 0.9+ | 1.2+ |
| 2002 09 15 | 644 | 0.2− | 0.3+ | 2006 06 21 | 691 | 0.3− | 0.3− | 2007 12 14 | 704 | 1.5+ | 0.5+ |
| 2005 04 05 | G96 | 0.7− | 0.2− | 2006 08 13 | 644 | 0.7+ | 0.1+ | 2007 12 14 | 704 | 0.8+ | 1.1+ |
| 2005 04 05 | G96 | 0.9− | 0.7+ | 2006 08 13 | 644 | 0.3+ | 0.1+ |            |     |      |      |

2002 RG<sub>120</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 46.81021   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.20488401 | $\omega$ | 184.62066 |     | +0.68621571 |     | +0.70908815 |
| $a$ | 2.8496882  | $\Omega$ | 128.81902 |     | −0.66052722 |     | +0.70082496 |
| $e$ | 0.0702264  | $i$      | 12.01419  |     | −0.30465028 |     | +0.07770702 |
| $P$ | 4.81       | $H$      | 15.4      | $G$ | 0.15        | $U$ | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 23 | 645 | 0.0  | 0.0  | 2002 09 03 | 599 | 0.1− | 0.1+ | 2007 09 14 | 703 | 0.5+ | 0.4− |
| 2001 05 23 | 645 | 0.0  | 0.0  | 2002 09 03 | 599 | 0.3− | 0.5− | 2007 09 14 | 703 | 1.2+ | 1.1+ |
| 2002 08 15 | 699 | 0.6+ | 0.9+ | 2002 09 03 | 599 | 0.0  | 0.2− | 2007 09 14 | 703 | 0.8+ | 0.2+ |
| 2002 08 15 | 699 | 0.1− | 0.2+ | 2002 09 08 | 599 | 0.1+ | 0.6− | 2007 09 14 | 703 | 1.0− | 0.1+ |
| 2002 08 15 | 699 | 0.1− | 0.5− | 2002 09 08 | 599 | 0.0  | 0.2− | 2007 10 11 | 703 | 0.6+ | 0.8− |
| 2002 08 15 | 699 | 1.5+ | 0.9+ | 2002 09 08 | 599 | 0.4− | 0.2− | 2007 10 11 | 703 | 0.5− | 0.4+ |
| 2002 08 19 | 644 | 0.0  | 0.4+ | 2002 09 16 | 644 | 0.3− | 0.4− | 2007 10 11 | 703 | 0.6− | 1.2− |
| 2002 08 19 | 644 | 0.0  | 0.1+ | 2002 09 16 | 644 | 0.4− | 0.1− | 2007 10 11 | 703 | 1.2− | 1.0+ |
| 2002 08 19 | 644 | 0.1− | 0.1+ | 2002 09 16 | 644 | 0.4− | 0.3− |            |     |      |      |

2002 RP<sub>126</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 35.88106   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22008587 | $\omega$ | 231.80063 |     | +0.98468389 |     | −0.01364439 |
| $a$ | 2.7169060  | $\Omega$ | 128.29064 |     | +0.05959475 |     | +0.96322612 |
| $e$ | 0.1733827  | $i$      | 12.79446  |     | −0.16384780 |     | +0.26834542 |
| $P$ | 4.48       | $H$      | 16.0      | $G$ | 0.15        | $U$ | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 17 | 608 | (0.7+ | 1.8+) | 2002 09 15 | 608 | 0.9− | 1.4− | 2007 11 11 | 703 | 0.5− | 0.5+ |
| 2002 08 17 | 608 | 1.2+  | 0.4+  | 2002 09 15 | 608 | 0.1− | 1.2− | 2007 11 11 | 703 | 0.9+ | 0.3+ |
| 2002 08 17 | 608 | 0.5+  | 0.6+  | 2002 09 15 | 608 | 0.3+ | 1.1− | 2007 11 19 | 703 | 0.1− | 0.5+ |
| 2002 08 30 | 644 | 0.0   | 0.5+  | 2002 09 16 | 644 | 0.1− | 0.5+ | 2007 11 19 | 703 | 1.4− | 0.2− |
| 2002 08 30 | 644 | 0.0   | 0.4+  | 2002 09 16 | 644 | 0.3+ | 0.7+ | 2007 11 19 | 703 | 0.8+ | 0.5− |
| 2002 08 30 | 644 | 0.1+  | 0.3+  | 2002 09 16 | 644 | 0.1+ | 0.2+ | 2007 11 19 | 703 | 0.3− | 0.2+ |
| 2002 09 09 | 644 | 0.3−  | 0.0   | 2007 11 03 | 703 | 0.2+ | 1.2− | 2007 12 05 | 703 | 0.0  | 0.1− |
| 2002 09 09 | 644 | 0.1−  | 0.3+  | 2007 11 03 | 703 | 0.7− | 0.4− | 2007 12 05 | 703 | 0.1+ | 0.2− |
| 2002 09 09 | 644 | 0.1+  | 0.1−  | 2007 11 03 | 703 | 0.2+ | 0.5+ | 2007 12 05 | 703 | 0.1+ | 0.5− |
| 2002 09 11 | 608 | 0.5−  | 0.1−  | 2007 11 03 | 703 | 0.1− | 0.7− | 2007 12 05 | 703 | 0.3+ | 0.4+ |
| 2002 09 11 | 608 | 0.5−  | 0.1−  | 2007 11 11 | 703 | 0.6+ | 0.9+ |            |     |      |      |
| 2002 09 11 | 608 | 0.5−  | 0.1−  | 2007 11 11 | 703 | 0.2− | 0.8+ |            |     |      |      |

2002 RJ<sub>140</sub> = 1998 VP<sub>55</sub> = 2007 UF<sub>123</sub>Id. Minor Planet Center (*MPO* 127963; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 50.70791   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.21000007 | $\omega$ | 252.25161 |     | +0.83601578 |     | +0.52603397 |
| $a$ | 2.8032151  | $\Omega$ | 75.75031  |     | −0.42234434 |     | +0.79851249 |
| $e$ | 0.1010026  | $i$      | 9.26790   |     | −0.35028969 |     | +0.29268765 |
| $P$ | 4.69       | $H$      | 15.8      | $G$ | 0.15        | $U$ | 5           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 13 | 910 | 0.1+ | 0.4− | 2002 09 11 | 608 | 0.1− | 0.7+ | 2007 10 08 | 699 | 0.7− | 0.2− |
| 2002 08 30 | 699 | 0.5+ | 0.3+ | 2002 09 13 | 699 | 0.1+ | 0.3+ | 2007 10 08 | 699 | 0.6+ | 0.7− |
| 2002 08 30 | 699 | 0.2− | 0.8− | 2002 09 13 | 699 | 0.6+ | 0.3− | 2007 10 31 | 703 | 0.3− | 1.4+ |
| 2002 08 30 | 699 | 0.2+ | 0.3+ | 2002 09 13 | 699 | 0.1+ | 0.1+ | 2007 10 31 | 703 | 0.1+ | 0.8+ |
| 2002 08 30 | 699 | 0.3− | 0.9− | 2002 09 13 | 699 | 0.1− | 0.1+ | 2007 10 31 | 703 | 0.6+ | 1.0+ |
| 2002 09 05 | 608 | 0.1− | 0.4− | 2002 09 17 | 644 | 0.5− | 0.1− | 2007 10 31 | 703 | 0.4+ | 1.2+ |
| 2002 09 05 | 608 | 0.3− | 0.3+ | 2002 09 17 | 644 | 0.1− | 0.3− | 2007 11 07 | 703 | 0.2− | 0.3+ |
| 2002 09 05 | 608 | 0.1+ | 0.5− | 2002 09 17 | 644 | 0.3− | 0.1− | 2007 11 07 | 703 | 1.0− | 1.0− |
| 2002 09 11 | 608 | 0.1+ | 0.6+ | 2007 10 08 | 699 | 0.5+ | 1.8− | 2007 11 07 | 703 | 1.2− | 0.6− |
| 2002 09 11 | 608 | 0.1+ | 0.7+ | 2007 10 08 | 699 | 1.0+ | 0.0  | 2007 11 07 | 703 | 0.1+ | 0.2− |

**2002 RY<sub>141</sub> = 2007 RZ<sub>249</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.25346   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20267201 | $\omega$ 290.83141 | -0.00387321   | +0.99640926 |
| <i>a</i> | 2.8703853  | $\Omega$ 338.41884 | -0.81054740   | -0.05266338 |
| <i>e</i> | 0.2254772  | <i>i</i> 13.29395  | -0.58566023   | +0.06629589 |
| <i>P</i> | 4.86       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 08 27 | 608 | 0.0  | 0.3+ | 2002 09 13 | 644 | 0.2- | 0.4+ | 2002 10 11 | 645 | 0.3+ | 0.0  |
| 1997 08 27 | 608 | 0.0  | 0.3- | 2002 09 13 | 644 | 0.4- | 0.4+ | 2007 09 13 | 691 | 0.3+ | 0.1- |
| 2002 09 05 | 645 | 0.1+ | 0.3- | 2002 09 14 | 644 | 0.3+ | 0.9- | 2007 09 13 | 691 | 0.1- | 0.2- |
| 2002 09 05 | 645 | 0.1+ | 0.3- | 2002 09 14 | 644 | 0.1- | 0.2- | 2007 09 13 | 691 | 0.0  | 0.0  |
| 2002 09 11 | 644 | 0.2- | 0.2+ | 2002 09 14 | 644 | 0.1+ | 0.5- | 2007 09 19 | 691 | 0.7- | 0.1+ |
| 2002 09 11 | 644 | 0.0  | 0.2+ | 2002 10 05 | 645 | 0.2+ | 0.0  | 2007 09 19 | 691 | 0.2+ | 0.1+ |
| 2002 09 11 | 644 | 0.1- | 0.5+ | 2002 10 05 | 645 | 0.3+ | 0.0  | 2007 09 19 | 691 | 0.0  | 0.2+ |
| 2002 09 13 | 644 | 0.0  | 0.5+ | 2002 10 11 | 645 | 0.2+ | 0.1- |            |     |      |      |

**2002 RU<sub>150</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.28907  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19728233 | $\omega$ 59.92585  | +0.97565526   | +0.15427682 |
| <i>a</i> | 2.9224287  | $\Omega$ 290.81876 | -0.20891744   | +0.87000899 |
| <i>e</i> | 0.1430841  | <i>i</i> 9.59936   | +0.06671068   | +0.46827664 |
| <i>P</i> | 5.00       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 04 | 645 | 0.1+  | 0.0   | 2002 09 12 | 644 | 0.4-  | 0.1+  | 2007 09 11 | 703 | 0.1+ | 0.0  |
| 2000 03 04 | 645 | 0.0   | 0.1+  | 2002 09 12 | 644 | 0.6-  | 0.0   | 2007 09 11 | 703 | 1.2- | 0.2+ |
| 2002 07 21 | 644 | 0.4+  | 0.5+  | 2002 09 12 | 644 | 0.6-  | 0.5-  | 2007 11 12 | G96 | 0.2- | 0.4- |
| 2002 07 21 | 644 | 0.0   | 0.3-  | 2002 09 13 | 644 | 0.7-  | 1.3+  | 2007 11 12 | G96 | 0.3+ | 0.4- |
| 2002 07 21 | 644 | 0.3+  | 0.1-  | 2002 09 13 | 644 | 0.0   | 0.6+  | 2007 11 12 | G96 | 0.1+ | 0.5- |
| 2002 08 08 | 699 | 0.4+  | 0.3+  | 2002 09 13 | 644 | 0.3+  | 0.8+  | 2007 11 12 | G96 | 0.0  | 0.1- |
| 2002 08 08 | 699 | (1.8+ | 0.7-) | 2007 09 05 | 703 | 0.3+  | 1.1+  | 2007 12 05 | G96 | 0.3- | 0.0  |
| 2002 08 08 | 699 | (0.3+ | 1.6-) | 2007 09 05 | 703 | (0.9- | 1.7+) | 2007 12 05 | G96 | 0.3- | 0.0  |
| 2002 08 08 | 699 | 0.7+  | 0.9-  | 2007 09 05 | 703 | 0.5+  | 1.1+  | 2007 12 05 | G96 | 0.2- | 0.4+ |
| 2002 08 26 | 644 | 0.2-  | 0.3-  | 2007 09 05 | 703 | 0.0   | 0.9-  | 2007 12 05 | G96 | 0.0  | 0.0  |
| 2002 08 26 | 644 | 0.1-  | 0.3-  | 2007 09 11 | 703 | 0.4+  | 0.2-  |            |     |      |      |
| 2002 08 26 | 644 | 0.1-  | 0.0   | 2007 09 11 | 703 | 0.1+  | 0.1-  |            |     |      |      |

**2002 RE<sub>158</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 189.04042  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29819824 | $\omega$ 61.87614  | +0.99560397   | -0.09230786 |
| <i>a</i> | 2.2188741  | $\Omega$ 303.41616 | +0.07787316   | +0.90996190 |
| <i>e</i> | 0.1560980  | <i>i</i> 1.08972   | +0.05204329   | +0.40428777 |
| <i>P</i> | 3.31       | <i>H</i> 18.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 01 09 | 691 | 0.1- | 0.1+ | 2002 09 14 | 644 | 0.2- | 0.4+ | 2007 02 21 | G96 | 0.3+ | 0.3+ |
| 1997 01 09 | 691 | 0.1+ | 0.0  | 2002 10 04 | 291 | 0.3+ | 0.1+ | 2007 02 21 | G96 | 0.4+ | 0.2- |
| 2002 09 11 | 644 | 0.5- | 0.3+ | 2002 10 04 | 291 | 0.1+ | 0.2+ | 2007 02 21 | G96 | 1.2- | 0.3- |
| 2002 09 11 | 644 | 0.1- | 0.3+ | 2002 10 04 | 291 | 0.3+ | 0.5+ | 2007 02 23 | 290 | 0.0  | 0.3+ |
| 2002 09 11 | 644 | 0.7- | 0.3+ | 2002 10 11 | 645 | 0.0  | 0.1- | 2007 02 23 | 290 | 0.5+ | 0.2+ |
| 2002 09 14 | 644 | 0.3- | 0.6+ | 2002 10 11 | 645 | 0.0  | 0.1- |            |     |      |      |
| 2002 09 14 | 644 | 0.5- | 0.4+ | 2007 02 21 | G96 | 0.3+ | 0.6+ |            |     |      |      |

**2002 RP<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 286.07224  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18565386 | $\omega$ 73.55873  | +0.54460330   | -0.83777608 |
| <i>a</i> | 3.0432203  | $\Omega$ 343.26765 | +0.70811305   | +0.48436888 |
| <i>e</i> | 0.0779298  | <i>i</i> 7.83029   | +0.44942536   | +0.25202781 |
| <i>P</i> | 5.31       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 20 | 644 | 0.5- | 0.3- | 2002 09 14 | 644 | 0.3- | 0.1- | 2007 09 12 | G96 | 0.2- | 0.1+ |
| 2002 08 21 | 644 | 0.5- | 0.6+ | 2002 09 14 | 644 | 0.5- | 0.1- | 2007 09 12 | G96 | 0.2+ | 0.0  |
| 2002 08 28 | 644 | 0.1+ | 0.3- | 2002 10 01 | 608 | 1.0+ | 1.2+ | 2007 09 12 | G96 | 0.3- | 0.2+ |
| 2002 08 28 | 644 | 0.6- | 0.4- | 2002 10 01 | 608 | 1.3+ | 0.6+ | 2007 09 12 | G96 | 0.0  | 0.0  |
| 2002 08 28 | 644 | 0.4+ | 0.2+ | 2002 10 01 | 608 | 0.0  | 0.1+ | 2007 10 10 | G96 | 0.1+ | 0.3- |
| 2002 09 12 | 644 | 0.6- | 0.2+ | 2005 03 11 | G96 | 0.2+ | 0.4+ | 2007 10 10 | G96 | 0.3+ | 0.0  |
| 2002 09 12 | 644 | 0.5- | 0.0  | 2005 03 11 | G96 | 0.5+ | 0.3+ | 2007 10 10 | G96 | 0.1- | 0.1- |
| 2002 09 12 | 644 | 0.3- | 0.2+ | 2005 03 11 | G96 | 0.1+ | 0.2+ | 2007 10 10 | G96 | 0.5+ | 0.5- |
| 2002 09 14 | 644 | 0.1- | 0.1+ | 2005 03 11 | G96 | 0.1+ | 0.5+ |            |     |      |      |

**2002 RY<sub>165</sub> = 2007 VE<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 73.44070   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21696603 | $\omega$ 308.97998 | +0.66292364   | +0.74868293 |
| <i>a</i> | 2.7428889  | $\Omega$ 2.54734   | -0.66855735   | +0.59345625 |
| <i>e</i> | 0.1859039  | <i>i</i> 3.18916   | -0.33699158   | +0.29543789 |
| <i>P</i> | 4.54       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 28 | 691 | 0.5+ | 0.5+ | 2002 09 15 | 644 | 0.1+ | 0.1- | 2007 10 19 | 691 | 0.3- | 0.2+ |
| 2001 03 28 | 691 | 0.4+ | 0.6+ | 2002 09 15 | 644 | 0.2- | 0.1- | 2007 11 02 | 691 | 0.4- | 0.1- |
| 2001 03 28 | 691 | 0.2- | 0.6+ | 2005 03 10 | G96 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.5- | 0.1+ |
| 2002 09 07 | 704 | 0.5- | 0.8+ | 2005 03 10 | G96 | 0.1+ | 0.1- | 2007 11 02 | 691 | 0.6+ | 0.2+ |
| 2002 09 07 | 704 | 0.1- | 0.1+ | 2005 03 10 | G96 | 0.3- | 0.2- | 2007 11 07 | H07 | 0.4+ | 0.5+ |
| 2002 09 07 | 704 | 0.4+ | 0.0  | 2005 03 10 | G96 | 0.2- | 0.4- | 2007 11 07 | H07 | 1.4+ | 0.0  |
| 2002 09 13 | 644 | 0.1- | 0.4+ | 2005 04 10 | 695 | 0.3+ | 0.4+ | 2007 11 07 | H07 | 0.2+ | 0.3+ |
| 2002 09 13 | 644 | 0.3- | 0.0  | 2005 04 10 | 695 | 0.2+ | 0.6+ | 2007 11 12 | H07 | 1.0+ | 0.1+ |
| 2002 09 13 | 644 | 0.0  | 0.3+ | 2007 10 11 | 691 | 0.2- | 0.5+ | 2007 11 12 | H07 | 0.6+ | 0.2+ |
| 2002 09 14 | 644 | 0.2- | 0.5+ | 2007 10 11 | 691 | 0.0  | 0.1+ | 2007 11 12 | H07 | 0.3+ | 0.1+ |
| 2002 09 14 | 644 | 0.3- | 0.4+ | 2007 10 11 | 691 | 0.2- | 0.1+ | 2007 11 19 | G91 | 0.1- | 0.1+ |
| 2002 09 14 | 644 | 0.0  | 0.4+ | 2007 10 19 | 691 | 0.5- | 0.2+ | 2007 11 19 | 691 | 0.9+ | 1.0- |
| 2002 09 15 | 644 | 0.0  | 0.1+ | 2007 10 19 | 691 | 0.5- | 0.0  | 2007 11 19 | 691 | 0.1- | 0.6+ |

**2002 RK<sub>176</sub> = 2007 VE<sub>301</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.87400   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21259367 | $\omega$ 191.77833 | +0.94409650   | -0.32885924 |
| <i>a</i> | 2.7803693  | $\Omega$ 187.54289 | +0.31495118   | +0.92043017 |
| <i>e</i> | 0.2246853  | <i>i</i> 10.13337  | +0.09740407   | +0.21132890 |
| <i>P</i> | 4.64       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 20 | 049 | 0.1- | 0.6- | 2002 09 14 | 644 | 0.3- | 0.1- | 2007 11 15 | 699 | 0.0   | 0.6-  |
| 2002 08 20 | 049 | 0.0  | 0.1+ | 2002 09 14 | 644 | 0.5- | 0.2- | 2007 11 15 | 699 | 0.0   | 1.1-  |
| 2002 08 20 | 049 | 0.4+ | 0.2- | 2002 10 03 | 704 | 0.2+ | 0.3+ | 2007 11 15 | 699 | 1.1+  | 0.5+  |
| 2002 08 28 | 644 | 0.3- | 0.4+ | 2002 10 03 | 704 | 0.2- | 0.7+ | 2007 11 15 | 699 | 0.9+  | 0.2+  |
| 2002 08 28 | 644 | 0.1- | 0.7+ | 2002 10 03 | 704 | 0.5- | 0.9+ | 2007 11 17 | 703 | 0.5-  | 0.4-  |
| 2002 08 28 | 644 | 0.2- | 0.0  | 2002 10 11 | 704 | 0.2+ | 0.4+ | 2007 11 17 | 703 | 0.4-  | 0.7-  |
| 2002 09 06 | 704 | 0.1- | 0.9- | 2002 10 11 | 704 | 0.8+ | 0.5- | 2007 11 17 | 703 | 0.8-  | 1.0-  |
| 2002 09 06 | 704 | 0.2+ | 0.5- | 2002 10 11 | 704 | 0.3- | 0.0  | 2007 11 17 | 703 | (1.8- | 0.3-) |
| 2002 09 06 | 704 | 1.0+ | 0.2- | 2002 10 11 | 704 | 0.6+ | 0.3- | 2007 12 05 | 703 | 0.4+  | 0.3+  |
| 2002 09 13 | 644 | 0.3- | 0.2- | 2007 11 07 | 703 | 0.7- | 0.5- | 2007 12 05 | 703 | 0.9+  | 0.8+  |
| 2002 09 13 | 644 | 0.1- | 0.2+ | 2007 11 07 | 703 | 0.9+ | 0.2+ | 2007 12 05 | 703 | 0.9-  | 0.2-  |
| 2002 09 13 | 644 | 0.2- | 0.0  | 2007 11 07 | 703 | 0.7- | 0.6+ | 2007 12 05 | 703 | 0.5-  | 0.5+  |
| 2002 09 14 | 644 | 0.3- | 0.0  | 2007 11 07 | 703 | 0.3+ | 1.3+ |            |     |       |       |

2007 DEC. 24

M.P.O. 129615

**2002 RT<sub>177</sub> = 2002 SM<sub>62</sub>**Id. M. E. Sansaturio (d, *MPO* 41953)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 100.65589 (2000.0) |            |                    | MPC           |             |
|-----------------------------|------------|--------------------|---------------|-------------|
|                             |            |                    | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                    | 0.22216999 | $\omega$ 15.27046  | +0.39993293   | +0.91508139 |
| <i>a</i>                    | 2.6998883  | $\Omega$ 278.32584 | −0.84629902   | +0.34700738 |
| <i>e</i>                    | 0.1923000  | <i>i</i> 2.99892   | −0.35189717   | +0.20545541 |
| <i>P</i>                    | 4.44       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 09 16 | 691 | 0.1− | 2.6− | 2002 09 14 | 644 | 0.3−  | 1.0+  | 2002 10 07 | 699 | 1.1− | 0.7+ |
| 1993 09 16 | 691 | 0.8+ | 0.0  | 2002 09 19 | 644 | 0.5−  | 0.2+  | 2002 10 07 | 699 | 1.0− | 0.5+ |
| 1993 09 16 | 691 | 0.4+ | 0.0  | 2002 09 19 | 644 | 0.4−  | 0.2+  | 2002 10 07 | 699 | 0.1+ | 0.9+ |
| 2002 08 13 | 704 | 0.1+ | 0.9+ | 2002 09 19 | 644 | 0.5−  | 0.1+  | 2005 03 10 | 703 | 0.7+ | 0.5− |
| 2002 08 13 | 704 | 0.0  | 0.0  | 2002 09 28 | 608 | (2.1− | 1.7−) | 2005 03 10 | 703 | 0.3+ | 0.8− |
| 2002 08 13 | 704 | 0.3− | 1.5+ | 2002 09 28 | 608 | (2.1− | 2.0−) | 2005 03 10 | 703 | 0.9− | 0.4+ |
| 2002 08 13 | 704 | 0.0  | 0.1− | 2002 09 28 | 608 | (1.7− | 1.7−) | 2005 03 10 | 703 | 0.6− | 0.3− |
| 2002 09 05 | 699 | 0.7− | 0.1+ | 2002 10 04 | 704 | 0.5+  | 0.3−  | 2007 10 14 | G96 | 0.5+ | 0.9− |
| 2002 09 05 | 699 | 0.5− | 0.2+ | 2002 10 04 | 704 | 0.3+  | 0.1−  | 2007 10 14 | G96 | 0.5+ | 0.8− |
| 2002 09 05 | 699 | 0.3+ | 0.7+ | 2002 10 04 | 704 | 0.2−  | 0.2+  | 2007 10 14 | G96 | 0.4+ | 0.8− |
| 2002 09 05 | 699 | 0.5− | 0.2− | 2002 10 04 | 704 | 0.2+  | 0.0   | 2007 10 14 | G96 | 0.0  | 0.9− |
| 2002 09 13 | 644 | 0.2− | 0.0  | 2002 10 04 | 704 | 0.0   | 0.8+  | 2007 11 02 | 691 | 0.2− | 0.6− |
| 2002 09 13 | 644 | 0.3− | 0.0  | 2002 10 04 | 704 | 0.4+  | 0.3+  | 2007 11 02 | 691 | 0.1− | 0.5− |
| 2002 09 13 | 644 | 0.3− | 0.1+ | 2002 10 04 | 704 | 0.0   | 0.6+  | 2007 11 02 | 691 | 0.1+ | 1.1+ |
| 2002 09 14 | 644 | 0.0  | 1.2+ | 2002 10 04 | 704 | 0.3+  | 0.3+  |            |     |      |      |
| 2002 09 14 | 644 | 0.1− | 0.9+ | 2002 10 07 | 699 | 0.2−  | 0.4+  |            |     |      |      |

**2002 RM<sub>179</sub> = 2007 WO<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 19.60874 (2000.0) |            |                    | MPC           |             |
|----------------------------|------------|--------------------|---------------|-------------|
|                            |            |                    | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                   | 0.21379609 | $\omega$ 196.31068 | +0.90623481   | −0.42262343 |
| <i>a</i>                   | 2.7699347  | $\Omega$ 188.71529 | +0.39574916   | +0.85741155 |
| <i>e</i>                   | 0.0807663  | <i>i</i> 4.28036   | +0.14873153   | +0.29365773 |
| <i>P</i>                   | 4.61       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 14 | 291 | 0.0  | 0.1− | 2002 09 26 | 644 | 0.3− | 0.0  | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2002 09 14 | 291 | 0.0  | 0.0  | 2002 09 26 | 644 | 0.1− | 0.6+ | 2007 11 18 | G96 | 0.2− | 0.3− |
| 2002 09 14 | 291 | 0.3+ | 0.1+ | 2002 09 26 | 644 | 0.6− | 0.0  | 2007 11 18 | G96 | 0.5+ | 0.6+ |
| 2002 09 14 | 644 | 0.9− | 0.1− | 2002 10 04 | 644 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.6− | 0.1+ |
| 2002 09 14 | 644 | 0.5− | 0.4+ | 2002 10 04 | 644 | 0.2+ | 0.0  | 2007 11 20 | G96 | 0.4− | 0.0  |
| 2002 09 15 | 291 | 0.2+ | 0.2+ | 2002 10 04 | 644 | 0.1− | 0.0  | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2002 09 15 | 291 | 0.1+ | 0.1− | 2002 10 30 | 645 | 0.0  | 0.1− | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2002 09 15 | 291 | 0.0  | 0.0  | 2002 10 30 | 645 | 0.0  | 0.0  | 2007 11 20 | G96 | 0.0  | 0.3+ |

**2002 RT<sub>198</sub> = 2007 TP<sub>271</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 40.23755 (2000.0) |            |                    | MPC           |             |
|----------------------------|------------|--------------------|---------------|-------------|
|                            |            |                    | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                   | 0.21230388 | $\omega$ 338.59742 | +0.98090718   | +0.19400975 |
| <i>a</i>                   | 2.7828989  | $\Omega$ 10.24346  | −0.16562670   | +0.86967849 |
| <i>e</i>                   | 0.0787136  | <i>i</i> 4.34277   | −0.10192600   | +0.45389376 |
| <i>P</i>                   | 4.64       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 30 | 291 | 0.1+ | 0.4− | 2003 12 18 | 691 | 0.1+ | 0.0  | 2007 10 09 | 691 | 0.0  | 0.2+ |
| 2002 08 30 | 291 | 0.0  | 0.5− | 2005 03 11 | 695 | 0.2+ | 0.5+ | 2007 10 09 | 691 | 0.0  | 0.0  |
| 2002 08 30 | 291 | 0.1− | 0.3− | 2005 03 11 | 695 | 0.2+ | 0.5+ | 2007 10 09 | 691 | 0.2+ | 0.0  |
| 2002 09 13 | 644 | 0.4− | 0.2+ | 2005 04 02 | G96 | 0.8+ | 0.5+ | 2007 10 13 | 691 | 0.2− | 0.2+ |
| 2002 09 13 | 644 | 0.5− | 0.3+ | 2005 04 02 | G96 | 0.2+ | 0.4+ | 2007 10 13 | 691 | 0.0  | 0.1+ |
| 2002 09 13 | 644 | 0.2− | 0.2+ | 2005 04 02 | G96 | 0.5− | 0.3+ | 2007 10 13 | 691 | 0.6− | 0.6+ |
| 2002 09 15 | 644 | 0.5− | 1.1+ | 2005 04 02 | G96 | 0.2+ | 0.2+ | 2007 10 21 | 691 | 0.0  | 0.1− |
| 2002 09 15 | 644 | 0.0  | 0.8+ | 2005 04 02 | G96 | 0.2− | 0.5+ | 2007 10 21 | 691 | 0.2+ | 0.2+ |
| 2002 09 15 | 644 | 0.3+ | 1.1+ | 2005 04 02 | G96 | 0.2+ | 0.1+ | 2007 10 21 | 691 | 0.0  | 0.1− |
| 2003 12 18 | 691 | 0.0  | 0.1− | 2005 04 02 | G96 | 0.2+ | 0.2+ |            |     |      |      |
| 2003 12 18 | 691 | 0.0  | 0.2+ | 2005 04 02 | G96 | 0.6+ | 0.4+ |            |     |      |      |

**2002 RU<sub>199</sub> = 2007 VY<sub>92</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 32.05795 (2000.0) |            |                    | MPC           |             |
|----------------------------|------------|--------------------|---------------|-------------|
|                            |            |                    | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                   | 0.21132709 | $\omega$ 357.30960 | +0.99886120   | +0.04771018 |
| <i>a</i>                   | 2.7914677  | $\Omega$ 359.95449 | −0.03819294   | +0.79724890 |
| <i>e</i>                   | 0.1380804  | <i>i</i> 13.60566  | −0.02859362   | +0.60176236 |
| <i>P</i>                   | 4.66       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 704 | 0.5+  | 1.5+  | 2002 10 03 | 704 | 0.2− | 0.2+ | 2007 10 16 | 703 | 0.2+ | 0.7− |
| 2002 09 05 | 704 | 0.9+  | 0.6+  | 2002 10 03 | 704 | 0.4− | 0.9+ | 2007 10 16 | 703 | 1.2+ | 0.4+ |
| 2002 09 05 | 704 | (1.7+ | 2.9+) | 2002 10 03 | 704 | 0.1+ | 0.3+ | 2007 11 02 | 703 | 0.7− | 1.2− |
| 2002 09 05 | 704 | (2.1+ | 1.9+) | 2002 10 03 | 704 | 0.6− | 0.7+ | 2007 11 02 | 703 | 1.5− | 1.1− |
| 2002 09 05 | 704 | 0.4+  | 1.1+  | 2005 03 17 | 691 | 0.7+ | 0.5+ | 2007 11 02 | 703 | 0.3− | 1.3− |
| 2002 09 05 | 704 | (2.1+ | 1.4+) | 2005 03 17 | 691 | 0.6+ | 0.7+ | 2007 11 02 | 703 | 0.1− | 0.7− |
| 2002 09 05 | 704 | 0.7+  | 1.2+  | 2005 03 17 | 691 | 0.1+ | 0.7+ | 2007 11 03 | 704 | 1.6+ | 1.0+ |
| 2002 09 13 | 644 | 1.0−  | 0.1−  | 2007 10 08 | 703 | 0.2+ | 0.1+ | 2007 11 03 | 704 | 0.2+ | 0.4+ |
| 2002 09 13 | 644 | 0.9−  | 0.1−  | 2007 10 08 | 703 | 0.4+ | 0.3+ | 2007 11 03 | 704 | 0.3− | 1.0+ |
| 2002 09 13 | 644 | 0.7−  | 0.1−  | 2007 10 08 | 703 | 0.1+ | 0.7+ | 2007 11 09 | 704 | 0.5− | 1.2+ |
| 2002 09 15 | 644 | 0.9−  | 0.2−  | 2007 10 08 | 703 | 0.3+ | 0.3+ | 2007 11 09 | 704 | 0.0  | 1.5+ |
| 2002 09 15 | 644 | 1.4−  | 0.2−  | 2007 10 16 | 703 | 0.8− | 0.1− | 2007 11 09 | 704 | 0.6− | 0.4+ |
| 2002 09 15 | 644 | 0.8−  | 0.4−  | 2007 10 16 | 703 | 0.1+ | 0.8− | 2007 11 09 | 704 | 0.6− | 0.2+ |

**2002 RE<sub>203</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 180.03208 (2000.0) |            |                    | MPC           |             |
|-----------------------------|------------|--------------------|---------------|-------------|
|                             |            |                    | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                    | 0.29338583 | $\omega$ 57.21803  | +0.98713572   | −0.14897236 |
| <i>a</i>                    | 2.2430724  | $\Omega$ 311.27890 | +0.10820862   | +0.88979450 |
| <i>e</i>                    | 0.1909884  | <i>i</i> 4.43054   | +0.11770283   | +0.43136177 |
| <i>P</i>                    | 3.36       | <i>H</i> 18.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 01 31 | 691 | 0.1+ | 0.2+ | 2002 09 15 | 644 | 0.2+  | 0.6−  | 2002 10 04 | 704 | 0.3− | 0.6− |
| 1997 01 31 | 691 | 0.3− | 0.3− | 2002 09 15 | 644 | 0.1−  | 0.8−  | 2002 10 07 | 699 | 0.4− | 0.4− |
| 1997 01 31 | 691 | 0.1− | 0.5− | 2002 09 19 | 644 | 0.1+  | 0.6+  | 2002 10 07 | 699 | 0.8+ | 0.3− |
| 2002 09 06 | 704 | 0.3+ | 0.3+ | 2002 09 19 | 644 | 0.2+  | 0.8+  | 2002 10 07 | 699 | 0.7+ | 0.9+ |
| 2002 09 06 | 704 | 0.7− | 0.2− | 2002 09 19 | 644 | 0.3+  | 0.2+  | 2002 10 07 | 699 | 0.2− | 1.3+ |
| 2002 09 06 | 704 | 0.3− | 0.2+ | 2002 09 28 | 608 | (1.8− | 2.3−) | 2007 02 22 | 290 | 0.2+ | 0.2− |
| 2002 09 06 | 704 | 0.7+ | 0.3− | 2002 09 28 | 608 | 1.9−  | 1.8−  | 2007 02 22 | 290 | 0.3− | 1.8+ |
| 2002 09 13 | 644 | 0.0  | 0.0  | 2002 09 28 | 608 | (2.2− | 2.1−) | 2007 02 23 | 290 | 0.2+ | 0.3+ |
| 2002 09 13 | 644 | 0.4+ | 0.2+ | 2002 10 04 | 704 | 1.3−  | 0.7+  | 2007 02 23 | 290 | 0.6+ | 0.2+ |
| 2002 09 13 | 644 | 0.4+ | 0.4+ | 2002 10 04 | 704 | 0.1+  | 0.2−  |            |     |      |      |
| 2002 09 15 | 644 | 0.2+ | 0.4− | 2002 10 04 | 704 | 1.0+  | 0.1+  |            |     |      |      |

**2002 RR<sub>216</sub> = 2007 VS<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> 13.97483 (2000.0) |            |                    | MPC           |             |
|----------------------------|------------|--------------------|---------------|-------------|
|                            |            |                    | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                   | 0.21653451 | $\omega$ 340.42968 | +0.82959091   | −0.55486040 |
| <i>a</i>                   | 2.7465318  | $\Omega$ 53.42972  | +0.52210942   | +0.73114393 |
| <i>e</i>                   | 0.0937022  | <i>i</i> 4.46481   | +0.19794106   | +0.39693638 |
| <i>P</i>                   | 4.55       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 608 | 0.2− | 1.2+ | 2007 09 18 | G96 | 0.1+ | 0.5− | 2007 11 09 | 300 | 0.2+ | 0.2+ |
| 2002 09 13 | 608 | 0.3− | 0.9+ | 2007 09 18 | G96 | 0.1+ | 0.4− | 2007 11 09 | 300 | 0.1+ | 0.0  |
| 2002 09 13 | 608 | 0.4− | 1.0+ | 2007 10 17 | G96 | 0.1+ | 0.4− | 2007 11 09 | 300 | 0.2+ | 0.3− |
| 2002 09 16 | 644 | 0.1+ | 0.1− | 2007 10 17 | G96 | 0.0  | 0.2− | 2007 11 13 | 699 | 0.5+ | 1.1− |
| 2002 09 16 | 644 | 0.4+ | 0.0  | 2007 10 17 | G96 | 0.4+ | 0.3− | 2007 11 13 | 699 | 0.2− | 0.2+ |
| 2002 09 16 | 644 | 0.1+ | 0.3− | 2007 10 17 | G96 | 0.3+ | 0.3− | 2007 11 13 | 699 | 0.4+ | 0.0  |
| 2002 10 01 | 699 | 0.5− | 0.6− | 2007 11 03 | 691 | 0.3− | 0.1+ | 2007 11 13 | 699 | 0.2− | 0.0  |
| 2002 10 01 | 699 | 1.1+ | 0.1− | 2007 11 03 | 691 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.2− | 0.0  |
| 2002 10 01 | 699 | 0.2− | 0.3− | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.1+ |
| 2002 10 01 | 699 | 0.7− | 0.5− | 2007 11 07 | 691 | 0.3− | 0.0  | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2005 03 14 | G96 | 0.6− | 0.0  | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 0.2+ | 1.3+ |
| 2005 03 14 | G96 | 0.3− | 0.3+ | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 0.3+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 14 | G96 | 0.6+ | 0.1+ | 2007 11 07 | 300 | 0.4+ | 0.4+ | 2007 11 15 | 704 | 0.3- | 0.4- |
| 2005 03 14 | G96 | 0.3+ | 0.5+ | 2007 11 07 | 300 | 0.3+ | 0.1- | 2007 11 15 | 704 | 0.2+ | 0.1- |
| 2005 05 10 | 807 | 0.4+ | 0.4+ | 2007 11 07 | 300 | 0.7+ | 0.9+ | 2007 11 15 | 704 | 0.3+ | 1.0+ |
| 2005 05 11 | 807 | 0.4+ | 0.2+ | 2007 11 07 | 300 | 0.3+ | 0.4+ | 2007 11 18 | 691 | 0.3- | 0.2+ |
| 2007 09 10 | G96 | 0.5- | 0.6+ | 2007 11 07 | 300 | 0.8+ | 0.8- | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2007 09 10 | G96 | 0.2- | 0.2- | 2007 11 07 | 300 | 1.2+ | 0.8- | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2007 09 10 | G96 | 0.1+ | 0.3- | 2007 11 07 | 300 | 0.7+ | 0.0  | 2007 12 06 | G96 | 0.6+ | 0.0  |
| 2007 09 10 | G96 | 0.0  | 0.4- | 2007 11 09 | 300 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.4- | 0.4- |
| 2007 09 18 | G96 | 0.4+ | 0.3- | 2007 11 09 | 300 | 0.3+ | 0.2- | 2007 12 06 | G96 | 0.4- | 0.1- |
| 2007 09 18 | G96 | 0.5+ | 0.5- | 2007 11 09 | 300 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.6+ | 0.1- |

**2002 RP<sub>222</sub> = 2007 UK<sub>68</sub>**

|                                         |            |          |           |          |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|-----------|----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |  |          |      |             |          |             |  |
| <i>M</i> 50.10616                       |            |          |           | (2000.0) |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.21238589 | $\omega$ | 239.80625 |          |  |          |      | +0.90331735 |          | +0.42601273 |  |
| <i>a</i>                                | 2.7821825  | $\Omega$ | 94.93848  |          |  |          |      | -0.37417162 |          | +0.83983648 |  |
| <i>e</i>                                | 0.2289768  | <i>i</i> | 2.89442   |          |  |          |      | -0.20979362 |          | +0.33643401 |  |
| <i>P</i>                                | 4.64       | <i>H</i> | 16.9      |          |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 04 | 699 | 1.3+ | 0.7- | 2007 10 12 | 691 | 0.1+ | 0.2- | 2007 11 14 | 691 | 0.3+ | 0.2- |
| 2002 09 04 | 699 | 0.0  | 0.8- | 2007 10 12 | 691 | 0.0  | 0.3- | 2007 11 14 | 691 | 0.1- | 0.4+ |
| 2002 09 04 | 699 | 0.4- | 0.4+ | 2007 10 30 | 691 | 0.3+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2002 09 04 | 699 | 0.0  | 0.8+ | 2007 10 30 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.2- | 0.3+ |
| 2002 09 15 | 644 | 0.2+ | 0.8+ | 2007 10 30 | 691 | 0.2+ | 0.3- | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2002 09 15 | 644 | 0.2- | 0.8+ | 2007 11 02 | 691 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2002 09 15 | 644 | 0.1+ | 0.7+ | 2007 11 02 | 691 | 0.1- | 0.2- | 2007 12 06 | 691 | 0.0  | 0.2+ |
| 2002 09 16 | 608 | 0.8- | 0.1- | 2007 11 02 | 691 | 0.1- | 0.0  | 2007 12 06 | 691 | 0.1+ | 0.0  |
| 2002 09 16 | 608 | 0.5- | 0.4- | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 12 06 | 691 | 0.0  | 0.2- |
| 2002 09 16 | 608 | 0.2+ | 0.9- | 2007 11 03 | 691 | 0.1- | 0.0  |            |     |      |      |
| 2007 10 12 | 691 | 0.2+ | 0.2- | 2007 11 03 | 691 | 0.4- | 0.2+ |            |     |      |      |

**2002 RD<sub>225</sub>**

|                                         |            |          |           |          |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|-----------|----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |  |          |      |             |          |             |  |
| <i>M</i> 103.50691                      |            |          |           | (2000.0) |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.21996449 | $\omega$ | 30.65979  |          |  |          |      | +0.04432339 |          | +0.99713406 |  |
| <i>a</i>                                | 2.7179054  | $\Omega$ | 241.94295 |          |  |          |      | -0.93009659 |          | +0.01878771 |  |
| <i>e</i>                                | 0.2447070  | <i>i</i> | 3.98392   |          |  |          |      | -0.36463100 |          | +0.07328499 |  |
| <i>P</i>                                | 4.48       | <i>H</i> | 16.5      |          |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 28 | 644 | 0.1+  | 0.5+  | 2002 09 13 | 644 | 0.2+ | 0.1+ | 2007 10 04 | 691 | 0.2- | 0.0  |
| 2002 08 28 | 644 | 0.2-  | 0.6+  | 2002 09 13 | 644 | 0.2- | 0.2+ | 2007 10 04 | 691 | 0.2- | 0.5- |
| 2002 08 28 | 644 | 0.1+  | 0.4+  | 2002 09 17 | 644 | 0.0  | 0.1+ | 2007 10 16 | 691 | 0.3+ | 0.1+ |
| 2002 09 04 | 699 | 0.6-  | 0.4+  | 2002 09 17 | 644 | 0.1- | 0.2+ | 2007 10 16 | 691 | 0.6+ | 0.1- |
| 2002 09 04 | 699 | 1.2-  | 1.4-  | 2002 09 17 | 644 | 0.1- | 0.7+ | 2007 10 16 | 691 | 0.1- | 0.2+ |
| 2002 09 04 | 699 | 0.0   | 0.0   | 2002 09 18 | 644 | 0.1+ | 0.3+ | 2007 10 31 | G96 | 1.1+ | 0.0  |
| 2002 09 04 | 699 | (0.9- | 2.0-) | 2002 09 18 | 644 | 0.4- | 0.7+ | 2007 10 31 | G96 | 1.3+ | 0.1- |
| 2002 09 06 | 704 | 0.5-  | 0.8-  | 2002 09 18 | 644 | 0.1+ | 0.5+ | 2007 10 31 | G96 | 1.0+ | 0.1+ |
| 2002 09 06 | 704 | 0.1+  | 0.2-  | 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 10 31 | G96 | 1.2+ | 0.1- |
| 2002 09 06 | 704 | 0.0   | 0.4+  | 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 11 03 | 691 | 1.4- | 0.0  |
| 2002 09 06 | 704 | 0.4+  | 0.6+  | 2002 10 11 | 645 | 0.1- | 0.1- | 2007 11 03 | 691 | 0.1+ | 0.3+ |
| 2002 09 06 | 704 | 0.9+  | 0.3+  | 2002 10 11 | 645 | 0.1- | 0.1- | 2007 11 03 | 691 | 0.0  | 0.1- |
| 2002 09 13 | 644 | 0.1+  | 0.1+  | 2007 10 04 | 691 | 0.3- | 0.4+ |            |     |      |      |

**2002 RX<sub>239</sub> = 2007 WE<sub>46</sub>**

|                                         |            |          |           |          |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|-----------|----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |  |          |      |             |          |             |  |
| <i>M</i> 132.20492                      |            |          |           | (2000.0) |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.23361396 | $\omega$ | 140.45614 |          |  |          |      | +0.09704727 |          | +0.99421691 |  |
| <i>a</i>                                | 2.6109798  | $\Omega$ | 135.05811 |          |  |          |      | -0.92884539 |          | +0.10706980 |  |
| <i>e</i>                                | 0.0821862  | <i>i</i> | 3.73246   |          |  |          |      | -0.35753050 |          | -0.00829371 |  |
| <i>P</i>                                | 4.22       | <i>H</i> | 17.4      |          |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.4- | 0.4+ | 2002 09 04 | 644 | 0.1+ | 0.3- | 2007 11 09 | 691 | 0.2- | 0.2+ |
| 2002 08 18 | 644 | 0.0  | 0.4+ | 2002 09 04 | 644 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.4- | 0.1+ |
| 2002 08 18 | 644 | 0.7+ | 0.9+ | 2002 09 15 | 644 | 0.0  | 0.0  | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2002 08 29 | 644 | 0.3+ | 0.1+ | 2002 09 15 | 644 | 0.7- | 0.5- | 2007 11 20 | 691 | 1.0+ | 0.3- |
| 2002 08 29 | 644 | 0.3+ | 0.2+ | 2002 09 15 | 644 | 0.1- | 0.2+ | 2007 11 20 | 691 | 0.6- | 0.0  |
| 2002 08 29 | 644 | 0.1+ | 0.5- | 2006 07 19 | D35 | 0.2- | 0.2+ | 2007 11 21 | G96 | 0.2+ | 0.1- |
| 2002 09 01 | 644 | 0.2- | 0.6- | 2006 07 19 | D35 | 0.3+ | 0.3- | 2007 11 21 | G96 | 0.1+ | 0.2+ |
| 2002 09 01 | 644 | 0.3- | 0.3- | 2006 07 19 | D35 | 0.1- | 0.2- | 2007 11 21 | G96 | 0.1+ | 0.2- |
| 2002 09 04 | 644 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.4+ | 0.0  |

**2002 RG<sub>248</sub> = 2007 WO<sub>37</sub>**

|                                         |            |          |           |          |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|-----------|----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |  |          |      |             |          |             |  |
| <i>M</i> 86.55832                       |            |          |           | (2000.0) |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.22940594 | $\omega$ | 332.95671 |          |  |          |      | +0.78833413 |          | +0.61509729 |  |
| <i>a</i>                                | 2.6428120  | $\Omega$ | 349.05279 |          |  |          |      | -0.55074863 |          | +0.69567401 |  |
| <i>e</i>                                | 0.1183802  | <i>i</i> | 4.10302   |          |  |          |      | -0.27423575 |          | +0.37107007 |  |
| <i>P</i>                                | 4.30       | <i>H</i> | 16.8      |          |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 28 | 644 | 0.2+ | 0.4- | 2002 09 14 | 644 | 0.1- | 0.2- | 2007 11 19 | G96 | 0.5+ | 0.0  |
| 2002 08 28 | 644 | 0.1- | 0.0  | 2002 09 14 | 644 | 0.3- | 0.7+ | 2007 11 19 | G96 | 0.7+ | 0.2- |
| 2002 08 28 | 644 | 0.5+ | 0.3- | 2002 09 15 | 644 | 0.1- | 0.0  | 2007 11 19 | G96 | 0.2+ | 0.2- |
| 2002 08 29 | 644 | 0.3+ | 0.4+ | 2002 09 15 | 644 | 0.9- | 0.5+ | 2007 11 19 | G96 | 0.0  | 0.1- |
| 2002 08 29 | 644 | 0.0  | 0.1- | 2005 03 11 | G96 | 0.1- | 0.3+ | 2007 11 20 | 691 | 0.3- | 0.4+ |
| 2002 08 29 | 644 | 0.2+ | 0.2+ | 2005 03 11 | G96 | 0.4+ | 0.4+ | 2007 11 20 | 691 | 0.1+ | 0.3+ |
| 2002 09 08 | 608 | 0.3- | 0.2+ | 2005 03 11 | G96 | 0.0  | 0.4+ | 2007 11 20 | 691 | 0.1- | 0.6- |
| 2002 09 14 | 644 | 0.0  | 0.1- | 2005 03 11 | G96 | 0.3+ | 0.2+ |            |     |      |      |

**2002 RP<sub>254</sub> = 2007 WJ<sub>55</sub>**

|                                         |            |          |           |          |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|-----------|----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |  |          |      |             |          |             |  |
| <i>M</i> 21.98065                       |            |          |           | (2000.0) |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.21658713 | $\omega$ | 66.72293  |          |  |          |      | +0.92575594 |          | -0.37703378 |  |
| <i>a</i>                                | 2.7460869  | $\Omega$ | 315.41283 |          |  |          |      | +0.33029027 |          | +0.84322454 |  |
| <i>e</i>                                | 0.2062981  | <i>i</i> | 2.33995   |          |  |          |      | +0.18407685 |          | +0.38316825 |  |
| <i>P</i>                                | 4.55       | <i>H</i> | 17.4      |          |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 28 | 644 | 0.2+ | 0.6+ | 2002 09 17 | 644 | 0.4+ | 0.4+ | 2007 11 30 | 941 | 0.1- | 0.2- |
| 2002 08 28 | 644 | 0.1+ | 0.4- | 2002 09 17 | 644 | 0.1+ | 0.2+ | 2007 11 30 | 941 | 0.3- | 0.0  |
| 2002 09 14 | 644 | 0.2+ | 0.4- | 2002 09 18 | 644 | 0.0  | 0.2+ | 2007 11 30 | 941 | 0.3- | 0.0  |
| 2002 09 14 | 644 | 0.6- | 0.0  | 2002 09 18 | 644 | 0.2+ | 0.1- | 2007 11 30 | 941 | 0.5- | 0.2+ |
| 2002 09 14 | 644 | 0.1+ | 0.0  | 2002 09 18 | 644 | 0.6- | 0.2- | 2007 12 01 | 941 | 0.4- | 0.7+ |
| 2002 09 15 | 644 | 0.2- | 0.2- | 2002 09 18 | 644 | 0.2+ | 0.0  | 2007 12 01 | 941 | 0.1- | 0.3+ |
| 2002 09 15 | 644 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.1- | 0.3+ | 2007 12 01 | 941 | 0.6+ | 1.0- |
| 2002 09 16 | 644 | 0.0  | 0.1+ | 2007 11 01 | 691 | 0.1+ | 0.3+ | 2007 12 01 | 941 | 0.8+ | 1.2- |
| 2002 09 16 | 644 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 01 | 941 | 0.9+ | 1.4- |
| 2002 09 16 | 644 | 0.2- | 0.5- | 2007 11 30 | 941 | 0.4- | 0.1+ |            |     |      |      |

**2002 RJ<sub>256</sub>**

|                                         |            |          |           |              |              |     |   |
|-----------------------------------------|------------|----------|-----------|--------------|--------------|-----|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |              |              | MPC |   |
| $M$                                     | 72.78341   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
| $n$                                     | 0.22457701 | $\omega$ | 37.94349  | +0.75983723  | +0.64204040  |     |   |
| $a$                                     | 2.6805620  | $\Omega$ | 281.79676 | -0.61907569  | +0.66661342  |     |   |
| $e$                                     | 0.2347503  | $i$      | 5.98906   | -0.19847588  | +0.37869603  |     |   |
| $P$                                     | 4.39       | $H$      | 17.3      | $G$          | 0.15         | $U$ | 4 |

## 2007 DEC. 24

M.P.O. 129617

2002 08 17 608 0.1− 0.4− 2002 09 13 644 0.5− 0.3−  
 2002 09 06 704 0.1+ 0.4+ 2002 09 13 644 0.4− 0.2−

**2002 RV<sub>266</sub> = 2007 VE<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 14.54481   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    | MPC |
|----------|------------|----------|-----------|---------------|-------------|-----|
| <i>n</i> | 0.21238525 | $\omega$ | 66.30420  | +0.94039438   | −0.32962140 |     |
| <i>a</i> | 2.7821880  | $\Omega$ | 312.82473 | +0.25534747   | +0.84693758 |     |
| <i>e</i> | 0.1579252  | <i>i</i> | 6.55404   | +0.22462432   | +0.41718877 |     |
| <i>P</i> | 4.64       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |     |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 08 28 644 | 0.1− | 0.4− | 2002 09 18 644 | 0.3− | 0.3+ | 2007 11 09 704 | 1.3+ | 0.3+ |
| 2002 08 28 644 | 0.4+ | 0.1− | 2007 10 08 703 | 0.1+ | 0.6− | 2007 11 09 704 | 0.0  | 0.3− |
| 2002 08 28 644 | 0.1+ | 0.2+ | 2007 10 08 703 | 1.1+ | 0.0  | 2007 11 09 704 | 0.2− | 0.5+ |
| 2002 09 13 644 | 0.2+ | 0.1− | 2007 10 08 703 | 0.9− | 0.2− | 2007 11 09 704 | 0.8− | 0.2− |
| 2002 09 13 644 | 0.2+ | 0.1+ | 2007 10 08 703 | 0.4− | 0.2+ | 2007 11 12 703 | 0.9− | 0.5− |
| 2002 09 13 644 | 0.1− | 0.2− | 2007 11 03 704 | 1.2+ | 0.4+ | 2007 11 12 703 | 0.5− | 0.4+ |
| 2002 09 17 644 | 0.1+ | 0.2+ | 2007 11 03 704 | 0.1− | 0.5− | 2007 11 12 703 | 0.3− | 0.3− |
| 2002 09 17 644 | 0.0  | 0.2− | 2007 11 03 704 | 0.6+ | 0.2+ | 2007 11 12 703 | 0.3− | 0.3− |
| 2002 09 18 644 | 0.4− | 0.1+ | 2007 11 09 704 | 0.1+ | 0.7+ |                |      |      |

**2002 RE<sub>272</sub> = 2007 VE<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 45.42485   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    | MPC |
|----------|------------|----------|-----------|---------------|-------------|-----|
| <i>n</i> | 0.22284534 | $\omega$ | 23.57913  | +0.99238402   | +0.11547553 |     |
| <i>a</i> | 2.6944307  | $\Omega$ | 329.69329 | −0.12215149   | +0.87755408 |     |
| <i>e</i> | 0.0778333  | <i>i</i> | 4.87537   | −0.01590479   | +0.46536464 |     |
| <i>P</i> | 4.42       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |     |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1998 10 17 327 | 0.4− | 0.9− | 2002 09 14 644 | 0.1− | 0.0  | 2007 11 05 691 | 0.7− | 0.8− |
| 1998 10 17 327 | 0.6+ | 0.9− | 2005 03 17 691 | 0.2+ | 0.5+ | 2007 11 05 691 | 0.2+ | 0.2+ |
| 1998 10 17 327 | 0.4+ | 0.1+ | 2005 03 17 691 | 0.4+ | 0.2+ | 2007 11 05 691 | 0.1+ | 0.0  |
| 2002 08 17 644 | 0.0  | 0.2+ | 2005 03 17 691 | 0.0  | 0.4+ | 2007 11 07 704 | 0.7+ | 0.1+ |
| 2002 08 17 644 | 0.1− | 0.6+ | 2007 10 09 691 | 0.1− | 0.1− | 2007 11 07 704 | 0.6+ | 0.3− |
| 2002 08 18 608 | 0.0  | 0.5+ | 2007 10 09 691 | 0.0  | 0.0  | 2007 11 07 704 | 0.2+ | 1.1+ |
| 2002 08 18 608 | 0.0  | 0.4+ | 2007 10 09 691 | 0.1+ | 0.1− | 2007 11 07 704 | 0.1− | 1.2+ |
| 2002 08 18 608 | 0.0  | 0.1− | 2007 10 18 691 | 0.2+ | 0.1− | 2007 11 07 704 | 0.4− | 0.6+ |
| 2002 09 01 644 | 0.3− | 0.4+ | 2007 10 18 691 | 0.0  | 0.0  | 2007 11 17 691 | 0.1− | 0.5+ |
| 2002 09 01 644 | 0.2− | 0.5+ | 2007 10 18 691 | 0.2+ | 0.3+ | 2007 11 17 691 | 0.0  | 0.3+ |
| 2002 09 04 644 | 0.1+ | 0.4+ | 2007 11 02 703 | 0.3− | 0.4+ | 2007 11 17 691 | 0.1+ | 0.0  |
| 2002 09 04 644 | 0.5− | 0.2+ | 2007 11 02 703 | 0.5− | 0.5− | 2007 11 20 691 | 0.1+ | 0.0  |
| 2002 09 14 644 | 0.4− | 0.4+ | 2007 11 02 703 | 0.7− | 0.2+ | 2007 11 20 691 | 0.0  | 0.1− |
| 2002 09 14 644 | 0.2− | 0.2+ | 2007 11 02 703 | 0.2− | 0.5− | 2007 11 20 691 | 0.2− | 0.0  |

**2002 RU<sub>278</sub> = 2006 UA<sub>228</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 63.55364   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    | MPC |
|----------|------------|----------|-----------|---------------|-------------|-----|
| <i>n</i> | 0.26370352 | $\omega$ | 205.36546 | +0.29118342   | −0.93874667 |     |
| <i>a</i> | 2.4083823  | $\Omega$ | 228.29760 | +0.91441051   | +0.32973195 |     |
| <i>e</i> | 0.1244116  | <i>i</i> | 14.29122  | +0.28118611   | −0.10015750 |     |
| <i>P</i> | 3.74       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |     |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 08 14 644 | 0.3+ | 0.1− | 2002 09 03 644 | 0.2− | 0.1+ | 2006 10 20 G96 | 0.1+ | 0.1− |
| 2002 08 14 644 | 0.5− | 0.2+ | 2002 09 11 644 | 0.5+ | 0.1− | 2006 10 20 G96 | 0.1+ | 0.0  |
| 2002 08 14 644 | 0.4+ | 0.2− | 2002 09 11 644 | 0.3− | 0.1− | 2006 10 20 G96 | 0.1+ | 0.0  |
| 2002 08 22 644 | 0.1− | 0.1− | 2002 09 11 644 | 0.3+ | 0.3− | 2006 10 21 644 | 0.1+ | 0.1+ |
| 2002 08 22 644 | 0.1− | 0.3+ | 2002 10 03 644 | 0.0  | 0.2− | 2006 10 21 644 | 0.0  | 0.2+ |
| 2002 09 03 644 | 0.2− | 0.1+ | 2002 10 03 644 | 0.2− | 0.1− | 2006 10 21 644 | 0.4− | 0.1− |
| 2002 09 03 644 | 0.2+ | 0.4+ | 2006 10 20 G96 | 0.0  | 0.0  |                |      |      |

**2002 RV<sub>278</sub> = 2006 KZ<sub>105</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 71.36295   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    | MPC |
|----------|------------|----------|-----------|---------------|-------------|-----|
| <i>n</i> | 0.18009463 | $\omega$ | 15.20805  | −0.49127544   | +0.86322245 |     |
| <i>a</i> | 3.1055286  | $\Omega$ | 225.53163 | −0.81515596   | −0.50265758 |     |
| <i>e</i> | 0.1130198  | <i>i</i> | 9.36862   | −0.30687001   | −0.04671577 |     |
| <i>P</i> | 5.47       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |     |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 09 04 644 | 0.1+ | 0.3+ | 2002 10 05 644 | 0.4+ | 0.2+ | 2006 05 31 G96 | 0.4+ | 0.1+ |
| 2002 09 04 644 | 0.2+ | 0.4+ | 2002 10 06 644 | 0.1− | 0.2+ | 2006 05 31 G96 | 0.1− | 0.1+ |
| 2002 09 04 644 | 0.1− | 0.1+ | 2002 10 06 644 | 0.2+ | 0.3− | 2006 06 01 G96 | 0.6+ | 0.0  |
| 2002 09 12 644 | 0.7− | 0.2− | 2002 10 06 644 | 0.4+ | 0.8− | 2006 06 01 G96 | 0.4+ | 0.2+ |
| 2002 09 12 644 | 0.1− | 0.1− | 2002 10 31 645 | 0.0  | 0.0  | 2006 06 01 G96 | 0.2+ | 0.5− |
| 2002 09 12 644 | 0.2− | 0.1+ | 2002 10 31 645 | 0.0  | 0.1+ | 2006 06 01 G96 | 0.0  | 0.4− |
| 2002 10 05 644 | 0.4+ | 0.2+ | 2006 05 31 G96 | 0.4− | 0.3+ |                |      |      |
| 2002 10 05 644 | 0.1+ | 0.1+ | 2006 05 31 G96 | 1.0− | 0.1+ |                |      |      |

**2002 SA<sub>10</sub> = 2007 VO<sub>56</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 58.18345   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    | MPC |
|----------|------------|----------|-----------|---------------|-------------|-----|
| <i>n</i> | 0.21074383 | $\omega$ | 163.04109 | +0.87550508   | +0.48293596 |     |
| <i>a</i> | 2.7966158  | $\Omega$ | 168.04168 | −0.45193258   | +0.83026872 |     |
| <i>e</i> | 0.1975674  | <i>i</i> | 4.49515   | −0.17101987   | +0.27825656 |     |
| <i>P</i> | 4.68       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |     |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2002 09 27 644 | 0.1− | 0.1− | 2002 11 08 645 | 0.0  | 0.1− | 2007 11 05 691 | 0.1+  | 0.1−  |
| 2002 09 27 644 | 0.7− | 0.0  | 2007 10 20 G96 | 0.1+ | 0.1− | 2007 11 05 691 | 0.1+  | 0.1−  |
| 2002 09 27 644 | 0.5− | 0.4+ | 2007 10 20 G96 | 0.0  | 0.1+ | 2007 11 09 691 | 0.1+  | 0.2+  |
| 2002 09 28 644 | 0.3+ | 0.5+ | 2007 10 20 G96 | 0.0  | 0.1− | 2007 11 09 691 | 0.7−  | 0.8−  |
| 2002 09 28 644 | 0.2− | 0.5+ | 2007 10 20 G96 | 0.1+ | 0.2− | 2007 11 09 691 | 0.1+  | 0.2+  |
| 2002 09 28 644 | 0.3− | 0.6+ | 2007 11 01 691 | 0.1− | 0.0  | 2007 11 20 691 | 0.0   | 0.4+  |
| 2002 10 30 645 | 0.1+ | 0.1+ | 2007 11 01 691 | 0.0  | 0.1+ | 2007 11 20 691 | 0.2+  | 0.2+  |
| 2002 10 30 645 | 0.1+ | 0.0  | 2007 11 01 691 | 0.1+ | 0.2− | 2007 11 20 691 | (2.4+ | 1.9+) |
| 2002 11 08 645 | 0.1− | 0.1− | 2007 11 05 691 | 0.2+ | 0.4+ |                |       |       |

**2002 SZ<sub>20</sub> = 2007 TK<sub>158</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 338.34186  |          | (2000.0) | <b>P</b>      | <b>Q</b>    | MPC |
|----------|------------|----------|----------|---------------|-------------|-----|
| <i>n</i> | 0.20452251 | $\omega$ | 51.48332 | +0.51719619   | −0.85516982 |     |
| <i>a</i> | 2.8530451  | $\Omega$ | 7.61197  | +0.68147000   | +0.38706164 |     |
| <i>e</i> | 0.1385129  | <i>i</i> | 15.11247 | +0.51779024   | +0.34477220 |     |
| <i>P</i> | 4.82       | <i>H</i> | 16.1     | <i>G</i> 0.15 | <i>U</i> 4  |     |

Residuals in seconds of arc

|                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 2002 09 26 644 | 0.2−  | 0.9−  | 2002 10 03 704 | (2.1− | 1.8−) | 2007 10 12 704 | 0.0   | 1.1+  |
| 2002 09 26 644 | 0.0   | 1.0−  | 2002 10 03 704 | (2.1+ | 1.0−) | 2007 10 12 704 | 0.8−  | 0.4−  |
| 2002 09 26 644 | 0.2−  | 0.9−  | 2002 10 11 704 | 0.8−  | 0.2+  | 2007 10 12 704 | 0.1+  | 0.4+  |
| 2002 09 30 704 | 0.2+  | 0.7+  | 2002 10 11 704 | 1.2+  | 0.5−  | 2007 10 12 704 | 0.1+  | 0.1−  |
| 2002 09 30 704 | 0.5−  | 1.1+  | 2002 10 11 704 | 0.1+  | 0.7−  | 2007 10 12 704 | (1.7+ | 0.2+) |
| 2002 09 30 704 | 0.3−  | 1.3+  | 2007 10 08 703 | 0.2−  | 0.1−  | 2007 10 17 G96 | 0.0   | 0.2−  |
| 2002 09 30 704 | 0.6−  | 0.5+  | 2007 10 08 703 | 0.6+  | 0.4−  | 2007 10 17 G96 | 0.6−  | 0.2−  |
| 2002 10 02 704 | 0.1−  | 0.9+  | 2007 10 08 703 | (1.9+ | 0.9+) | 2007 10 17 G96 | 0.1+  | 0.3−  |
| 2002 10 02 704 | (2.1+ | 0.2+) | 2007 10 08 703 | 0.8+  | 0.1−  | 2007 10 17 G96 | 0.0   | 1.2−  |
| 2002 10 02 704 | (2.4+ | 1.9−) | 2007 10 09 704 | 0.9−  | 0.4−  | 2007 10 31 735 | 0.5+  | 0.4+  |
| 2002 10 03 704 | 0.3+  | 0.1−  | 2007 10 09 704 | 0.8+  | 0.5+  | 2007 10 31 735 | 0.2−  | 0.4+  |
| 2002 10 03 704 | 0.8+  | 0.7−  | 2007 10 09 704 | 0.1−  | 0.6+  |                |       |       |

**2002 SY<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.76958  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18279661 | $\omega$ 255.26211 | +0.91343400   | +0.35274158 |
| <i>a</i> | 3.0748502  | $\Omega$ 83.75611  | −0.24792935   | +0.87784834 |
| <i>e</i> | 0.2217607  | <i>i</i> 11.78373  | −0.32275279   | +0.32396864 |
| <i>P</i> | 5.39       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 14 | 704 | 0.1− | 1.4+ | 2002 09 27 | 704 | 0.2+ | 0.4− | 2002 10 08 | 644 | 0.1+ | 0.2+ |
| 2002 08 14 | 704 | 0.1+ | 0.4+ | 2002 09 27 | 704 | 0.0  | 0.3− | 2007 06 11 | E12 | 0.2− | 0.4+ |
| 2002 08 14 | 704 | 0.3+ | 0.8− | 2002 09 27 | 704 | 0.0  | 0.6+ | 2007 06 11 | E12 | 0.1− | 0.3− |
| 2002 08 14 | 704 | 0.3− | 0.2+ | 2002 09 27 | 704 | 0.3− | 0.2− | 2007 06 11 | E12 | 0.3− | 0.5+ |
| 2002 08 14 | 704 | 0.4− | 0.1+ | 2002 09 30 | 608 | 0.2+ | 0.0  | 2007 06 11 | E12 | 0.1− | 0.6− |
| 2002 09 10 | 644 | 0.0  | 0.3+ | 2002 09 30 | 608 | 0.3+ | 0.0  | 2007 07 15 | E12 | 0.3+ | 0.1− |
| 2002 09 10 | 644 | 0.6− | 0.4+ | 2002 09 30 | 608 | 0.1+ | 0.0  | 2007 07 15 | E12 | 0.2+ | 0.2− |
| 2002 09 10 | 644 | 0.0  | 0.1+ | 2002 10 07 | 608 | 0.1+ | 0.9− | 2007 07 15 | E12 | 0.3+ | 0.0  |
| 2002 09 18 | 644 | 0.4− | 0.1+ | 2002 10 07 | 608 | 0.3+ | 0.7− | 2007 10 04 | E12 | 0.4− | 0.3− |
| 2002 09 18 | 644 | 0.4− | 0.1− | 2002 10 07 | 608 | 0.5+ | 1.0− | 2007 10 04 | E12 | 0.6+ | 0.8+ |
| 2002 09 18 | 644 | 0.4− | 0.0  | 2002 10 08 | 644 | 0.2+ | 0.2+ | 2007 10 04 | E12 | 0.5− | 0.0  |
| 2002 09 27 | 704 | 0.2+ | 0.5+ | 2002 10 08 | 644 | 0.1+ | 0.3+ | 2007 10 04 | E12 | 0.1+ | 0.9− |

**2002 SY<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.18232   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21658781 | $\omega$ 330.22374 | +0.71171089   | −0.69728073 |
| <i>a</i> | 2.7460812  | $\Omega$ 74.24854  | +0.66073819   | +0.62327491 |
| <i>e</i> | 0.2899299  | <i>i</i> 5.08157   | +0.23852180   | +0.35401690 |
| <i>P</i> | 4.55       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 10 | 608 | 0.5− | 0.2− | 2002 10 04 | 704 | 0.1+ | 0.3+ | 2007 12 06 | 704 | 0.1− | 0.4+ |
| 2002 09 10 | 608 | 0.0  | 0.6− | 2002 10 06 | 704 | 0.8+ | 0.1+ | 2007 12 06 | 704 | 0.2− | 0.3+ |
| 2002 09 10 | 608 | 0.1+ | 0.2− | 2002 10 06 | 704 | 0.7+ | 0.3+ | 2007 12 06 | 704 | 0.5− | 0.1+ |
| 2002 09 18 | 599 | 0.1− | 0.5+ | 2002 10 06 | 704 | 1.1+ | 0.3+ | 2007 12 10 | 704 | 0.5− | 0.0  |
| 2002 09 19 | 599 | 0.4+ | 0.0  | 2002 10 06 | 704 | 1.3+ | 0.6− | 2007 12 10 | 704 | 0.2− | 0.6+ |
| 2002 09 19 | 599 | 0.1+ | 0.1+ | 2002 10 06 | 704 | 0.5+ | 0.0  | 2007 12 10 | 704 | 0.6− | 0.4+ |
| 2002 09 19 | 599 | 0.1+ | 0.2+ | 2002 11 06 | 644 | 0.1− | 0.2+ | 2007 12 10 | 704 | 0.0  | 1.2+ |
| 2002 09 28 | 608 | 1.2− | 0.5− | 2002 11 06 | 644 | 0.4− | 0.3+ | 2007 12 10 | 704 | 0.7+ | 1.0− |
| 2002 09 28 | 608 | 1.1− | 0.2− | 2002 11 06 | 644 | 0.1− | 0.3+ | 2007 12 14 | D29 | 0.7+ | 1.0− |
| 2002 09 28 | 608 | 1.4− | 0.3− | 2002 11 19 | 644 | 0.4− | 0.2+ | 2007 12 14 | D29 | 0.9+ | 0.2− |
| 2002 10 01 | 608 | 0.5+ | 0.0  | 2002 11 19 | 644 | 0.2− | 0.2+ | 2007 12 14 | D29 | 0.3+ | 0.6− |
| 2002 10 01 | 608 | 0.6+ | 0.8+ | 2002 11 19 | 644 | 0.5− | 0.0  | 2007 12 14 | D29 | 0.2+ | 0.1− |
| 2002 10 01 | 608 | 0.2+ | 0.4− | 2007 11 02 | G96 | 0.1− | 0.2− | 2007 12 15 | 704 | 0.2− | 0.0  |
| 2002 10 04 | 704 | 0.1− | 0.2− | 2007 11 02 | G96 | 0.5+ | 0.8− | 2007 12 15 | 704 | 0.3− | 0.2+ |
| 2002 10 04 | 704 | 0.6− | 0.1+ | 2007 11 02 | G96 | 0.0  | 0.3− | 2007 12 15 | 704 | 0.4− | 0.7+ |
| 2002 10 04 | 704 | 0.5− | 0.3− | 2007 11 02 | G96 | 0.0  | 0.2− | 2007 12 15 | 704 | 0.5− | 0.6+ |
| 2002 10 04 | 704 | 0.5+ | 0.3− | 2007 12 06 | 704 | 0.0  | 1.0− | 2007 12 15 | 704 | 0.2+ | 0.2+ |

**2002 SD<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.79769   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22012842 | $\omega$ 199.19373 | +0.79459012   | −0.60456444 |
| <i>a</i> | 2.7165559  | $\Omega$ 198.34486 | +0.57770069   | +0.78117980 |
| <i>e</i> | 0.2893392  | <i>i</i> 10.23643  | +0.18678449   | +0.15575611 |
| <i>P</i> | 4.48       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 29 | 608 | 0.2+ | 0.1− | 2002 10 12 | 704 | 0.4− | 0.2+ | 2002 11 30 | 704 | 0.5− | 1.0+ |
| 2002 09 29 | 608 | 0.0  | 0.2− | 2002 10 12 | 704 | 0.1− | 0.2+ | 2002 11 30 | 704 | 0.6− | 0.8+ |
| 2002 09 29 | 608 | 0.2+ | 0.2− | 2002 10 31 | 704 | 0.2+ | 0.1+ | 2002 12 07 | 704 | 0.2− | 0.3+ |
| 2002 10 01 | 699 | 0.1− | 0.1+ | 2002 10 31 | 704 | 0.3+ | 0.2+ | 2002 12 07 | 704 | 0.6+ | 0.5+ |
| 2002 10 01 | 699 | 0.0  | 0.5+ | 2002 10 31 | 704 | 0.2+ | 0.4+ | 2002 12 07 | 704 | 0.1+ | 0.5+ |
| 2002 10 01 | 699 | 0.3− | 0.5+ | 2002 10 31 | 704 | 0.2+ | 0.6+ | 2002 12 19 | 608 | 0.7− | 0.3− |
| 2002 10 01 | 699 | 0.1− | 0.1+ | 2002 10 31 | 704 | 0.3+ | 0.8+ | 2002 12 19 | 608 | 0.1− | 0.5− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 02 | 704 | 0.1+ | 0.2+ | 2002 11 03 | 608 | 0.0  | 0.3− | 2002 12 19 | 608 | 0.2+ | 0.9− |
| 2002 10 02 | 704 | 0.1− | 0.3+ | 2002 11 03 | 608 | 0.0  | 0.5− | 2003 01 02 | 704 | 0.5+ | 0.4+ |
| 2002 10 02 | 704 | 0.2+ | 0.1+ | 2002 11 03 | 608 | 0.2− | 0.5− | 2003 01 02 | 704 | 0.8+ | 0.4+ |
| 2002 10 02 | 704 | 0.0  | 0.2+ | 2002 11 05 | 683 | 0.1− | 0.4+ | 2003 01 02 | 704 | 0.3+ | 0.5+ |
| 2002 10 02 | 704 | 0.0  | 0.2− | 2002 11 05 | 683 | 0.4+ | 0.0  | 2003 01 02 | 704 | 0.3+ | 0.0  |
| 2002 10 03 | 704 | 0.1+ | 0.2+ | 2002 11 05 | 683 | 0.2− | 0.2− | 2003 01 02 | 704 | 0.3+ | 0.8+ |
| 2002 10 03 | 704 | 0.1+ | 0.2+ | 2002 11 06 | 683 | 0.2+ | 0.6+ | 2003 01 07 | 704 | 0.9+ | 0.7+ |
| 2002 10 03 | 704 | 0.3+ | 0.5+ | 2002 11 06 | 683 | 0.1+ | 0.1+ | 2003 01 07 | 704 | 0.3− | 0.5− |
| 2002 10 03 | 704 | 0.2− | 0.0  | 2002 11 06 | 683 | 0.5+ | 0.0  | 2003 01 07 | 704 | 0.4− | 0.1+ |
| 2002 10 03 | 704 | 0.1− | 0.2+ | 2002 11 07 | 704 | 0.0  | 0.8+ | 2003 01 07 | 704 | 0.5− | 0.6+ |
| 2002 10 07 | 704 | 0.1− | 0.2+ | 2002 11 07 | 704 | 0.3+ | 0.2+ | 2005 05 04 | 691 | 0.2+ | 0.4+ |
| 2002 10 07 | 704 | 0.4− | 0.2+ | 2002 11 07 | 704 | 0.3+ | 0.2− | 2005 05 04 | 691 | 0.2− | 0.4+ |
| 2002 10 07 | 704 | 0.0  | 0.1+ | 2002 11 07 | 704 | 0.1+ | 0.2+ | 2005 05 04 | 691 | 0.1+ | 0.6+ |
| 2002 10 07 | 704 | 0.6− | 0.1+ | 2002 11 07 | 704 | 0.1+ | 0.3− | 2007 11 19 | 703 | 0.5+ | 0.5+ |
| 2002 10 07 | 704 | 0.3− | 0.6+ | 2002 11 11 | 704 | 0.1+ | 0.2− | 2007 11 19 | 703 | 0.7− | 0.3+ |
| 2002 10 11 | 704 | 0.1− | 0.7− | 2002 11 11 | 704 | 0.1+ | 0.2− | 2007 11 19 | 703 | 0.2− | 0.6− |
| 2002 10 11 | 704 | 0.1− | 1.0− | 2002 11 11 | 704 | 0.3− | 0.2− | 2007 11 19 | 703 | 1.9− | 0.7+ |
| 2002 10 11 | 704 | 0.1− | 0.8− | 2002 11 11 | 704 | 0.0  | 0.3− | 2007 12 16 | 699 | 0.2+ | 0.9− |
| 2002 10 11 | 704 | 0.1+ | 1.1− | 2002 11 11 | 704 | 0.4− | 0.6− | 2007 12 16 | 699 | 1.1+ | 1.0+ |
| 2002 10 11 | 704 | 0.0  | 0.9− | 2002 11 20 | 644 | 0.2+ | 0.1− | 2007 12 16 | 699 | 0.4+ | 0.2− |
| 2002 10 12 | 704 | 0.2− | 0.2− | 2002 11 20 | 644 | 0.0  | 0.2+ | 2007 12 16 | 699 | 0.2+ | 0.3− |
| 2002 10 12 | 704 | 0.1− | 0.5− | 2002 11 20 | 644 | 0.0  | 0.3+ |            |     |      |      |
| 2002 10 12 | 704 | 0.0  | 0.1+ | 2002 11 30 | 704 | 1.0− | 0.4+ |            |     |      |      |

**2002 SC<sub>43</sub> = 2007 WX<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.44937   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21659213 | $\omega$ 231.05336 | +0.76438821   | +0.63990454 |
| <i>a</i> | 2.7460447  | $\Omega$ 89.01547  | −0.56443567   | +0.72331422 |
| <i>e</i> | 0.1890249  | <i>i</i> 4.52879   | −0.31164569   | +0.25949705 |
| <i>P</i> | 4.55       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 05 24 | 807 | 0.0   | 0.1+  | 2007 10 24 | G96 | 0.1− | 0.4− | 2007 11 21 | G96 | 0.0   | 0.2+  |
| 2001 05 24 | 807 | 0.0   | 0.0   | 2007 11 07 | 691 | 0.0  | 0.2− | 2007 12 03 | 703 | 0.0   | 0.4−  |
| 2002 09 28 | 608 | (2.4− | 0.3−) | 2007 11 07 | 691 | 0.1− | 0.2+ | 2007 12 03 | 703 | 1.0−  | 0.1+  |
| 2002 09 28 | 608 | (3.2− | 0.5−) | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 03 | 703 | 1.4−  | 0.2+  |
| 2002 09 28 | 608 | (2.6− | 0.5−) | 2007 11 18 | G96 | 0.5+ | 0.2− | 2007 12 03 | 703 | 1.4−  | 0.3−  |
| 2002 10 02 | 704 | 0.3−  | 1.1+  | 2007 11 18 | G96 | 0.7+ | 0.2− | 2007 12 04 | 704 | 0.1+  | 1.0−  |
| 2002 10 02 | 704 | 0.1−  | 0.0   | 2007 11 18 | G96 | 0.3+ | 0.2− | 2007 12 04 | 704 | 0.3−  | 0.7+  |
| 2002 10 02 | 704 | 0.2+  | 0.3+  | 2007 11 18 | G96 | 0.5+ | 0.1− | 2007 12 04 | 704 | 0.8+  | 1.0+  |
| 2002 10 08 | 608 | 0.2+  | 0.1−  | 2007 11 19 | 691 | 0.2+ | 0.2− | 2007 12 05 | 704 | (3.1+ | 0.4+) |
| 2002 10 08 | 608 | 0.1+  | 0.8−  | 2007 11 19 | 691 | 0.2− | 0.1+ | 2007 12 05 | 704 | 1.4+  | 0.5+  |
| 2002 10 08 | 608 | 0.1−  | 0.5−  | 2007 11 19 | 691 | 0.3− | 0.2+ | 2007 12 05 | 704 | (2.1+ | 1.3+) |
| 2007 10 24 | G96 | 0.0   | 0.3−  | 2007 11 21 | G96 | 0.2− | 0.6+ | 2007 12 05 | 704 | 1.2+  | 0.8−  |
| 2007 10 24 | G96 | 0.2−  | 0.0   | 2007 11 21 | G96 | 0.2+ | 0.2+ |            |     |       |       |
| 2007 10 24 | G96 | 1.0+  | 0.2−  | 2007 11 21 | G96 | 0.1+ | 0.1+ |            |     |       |       |

**2002 SN<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.10141   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20906869 | $\omega$ 207.21564 | +0.95582535   | −0.29223575 |
| <i>a</i> | 2.8115343  | $\Omega$ 169.62773 | +0.29134572   | +0.92770572 |
| <i>e</i> | 0.2269227  | <i>i</i> 10.09625  | +0.03893024   | +0.23229368 |
| <i>P</i> | 4.71       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 15 | 608 | 0.0  | 0.6+ | 2002 10 04 | 704 | 0.1− | 0.3+ | 2004 02 17 | 691 | 0.0  | 0.2+ |
| 2002 09 15 | 608 | 0.2− | 0.3− | 2002 10 04 | 704 | 0.4− | 1.4+ | 2004 02 17 | 691 | 0.1+ | 0.   |



2007 DEC. 24

M.P.O. 129619

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 30 | 704 | 0.6+ | 0.2+ | 2002 10 30 | 704 | 0.1+ | 0.9+ | 2007 11 15 | 703 | 0.3+ | 0.1+ |
| 2002 09 30 | 704 | 0.0  | 0.8+ | 2002 11 03 | 608 | 0.1+ | 1.3- | 2007 11 17 | 703 | 0.9+ | 0.4+ |
| 2002 10 04 | 704 | 0.3+ | 0.5+ | 2002 11 03 | 608 | 0.6- | 0.9- | 2007 11 17 | 703 | 0.7- | 0.2- |
| 2002 10 04 | 704 | 0.4+ | 0.8+ | 2002 11 03 | 608 | 0.4- | 0.6- | 2007 11 17 | 703 | 0.5- | 0.2- |
| 2002 10 04 | 704 | 0.3+ | 0.7+ | 2004 02 17 | 691 | 0.1- | 0.1+ | 2007 11 17 | 703 | 0.0  | 0.9- |

**2002 SX<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 45.53566   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21197723 | $\omega$ | 241.65096 | +0.87544011 | +0.47388063 |
| $a$ | 2.7857570  | $\Omega$ | 89.92246  | -0.40345831 | +0.82482232 |
| $e$ | 0.0702012  | $i$      | 5.45640   | -0.26613155 | +0.30839145 |
| $P$ | 4.65       | $H$      | 16.1      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 12 | 608 | 0.1- | 0.2+ | 2002 09 08 | 608 | 0.1+ | 0.3+ | 2007 10 11 | 703 | 1.8- | 0.1+ |
| 2002 08 12 | 608 | 0.2+ | 0.2+ | 2002 09 16 | 644 | 0.2- | 0.7- | 2007 10 21 | G96 | 0.1- | 0.1+ |
| 2002 08 19 | 644 | 0.1- | 0.3- | 2002 09 16 | 644 | 0.4- | 0.1- | 2007 10 21 | G96 | 0.2+ | 0.0  |
| 2002 08 19 | 644 | 0.1- | 0.1+ | 2002 09 16 | 644 | 0.4+ | 0.3- | 2007 10 21 | G96 | 0.4+ | 0.0  |
| 2002 08 19 | 644 | 0.1+ | 0.2+ | 2007 10 11 | 703 | 0.3+ | 0.8- | 2007 10 21 | G96 | 0.1+ | 0.1+ |
| 2002 09 08 | 608 | 0.0  | 0.0  | 2007 10 11 | 703 | 0.5+ | 0.3+ |            |     |      |      |
| 2002 09 08 | 608 | 0.2+ | 0.3+ | 2007 10 11 | 703 | 0.3+ | 0.3+ |            |     |      |      |

**2002 SA<sub>70</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 32.86543   |          | (2000.0)  | $P$         | $Q$         |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18081450 | $\omega$ | 112.92724 | +0.50333501 | +0.86380475 |
| $a$ | 3.0972806  | $\Omega$ | 187.41183 | -0.84247076 | +0.48485318 |
| $e$ | 0.0777364  | $i$      | 9.93371   | -0.19208562 | +0.13696260 |
| $P$ | 5.45       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 09 15 | 691 | 0.6+ | 1.0- | 2002 10 04 | 644 | 0.0  | 0.3+ | 2006 04 21 | 691 | 0.3+ | 0.2+ |
| 1991 09 15 | 691 | 0.0  | 1.8- | 2002 10 04 | 644 | 0.3+ | 0.8+ | 2006 04 21 | 691 | 0.2- | 0.3+ |
| 1991 09 15 | 691 | 0.4+ | 0.4- | 2002 10 11 | 291 | 0.2+ | 0.2+ | 2006 05 08 | G96 | 0.4- | 0.2- |
| 2000 05 05 | 645 | 0.1- | 0.0  | 2002 10 11 | 291 | 0.1- | 0.4+ | 2006 05 08 | G96 | 0.1+ | 0.0  |
| 2000 05 05 | 645 | 0.1- | 0.0  | 2002 10 11 | 291 | 0.2- | 0.4+ | 2006 05 08 | G96 | 0.1- | 0.1- |
| 2002 09 14 | 644 | 0.2- | 0.5+ | 2002 11 08 | 645 | 0.1+ | 0.1+ | 2006 05 08 | G96 | 0.2- | 0.1+ |
| 2002 09 14 | 644 | 0.1+ | 0.2- | 2002 11 08 | 645 | 0.1- | 0.0  | 2007 09 09 | 691 | 0.1- | 0.2+ |
| 2002 09 14 | 644 | 0.3- | 0.1- | 2006 01 31 | 691 | 0.9+ | 0.4+ | 2007 09 09 | 691 | 0.2- | 0.3+ |
| 2002 09 26 | 644 | 0.2- | 0.1+ | 2006 01 31 | 691 | 0.4+ | 0.2+ | 2007 09 09 | 691 | 0.1+ | 0.0  |
| 2002 09 26 | 644 | 0.0  | 0.0  | 2006 01 31 | 691 | 0.0  | 0.6- |            |     |      |      |
| 2002 10 04 | 644 | 0.1- | 0.8+ | 2006 04 21 | 691 | 0.0  | 0.2+ |            |     |      |      |

**2002 SN<sub>70</sub> = 2007 VP<sub>46</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 13.07543   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21359827 | $\omega$ | 21.19527 | +0.86023902 | -0.50956488 |
| $a$ | 2.7716448  | $\Omega$ | 9.50230  | +0.45049500 | +0.74279571 |
| $e$ | 0.0509278  | $i$      | 6.34110  | +0.23883692 | +0.43427891 |
| $P$ | 4.61       | $H$      | 17.5     | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 26 | 644 | 1.0- | 0.1+ | 2002 10 10 | 645 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.5+ | 0.1+ |
| 2002 09 26 | 644 | 0.5- | 0.1+ | 2002 10 10 | 645 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.1+ | 0.1+ |
| 2002 09 26 | 644 | 1.2- | 0.5+ | 2002 10 30 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.1+ | 0.0  |
| 2002 09 27 | 644 | 0.2- | 0.3+ | 2002 10 30 | 645 | 0.1+ | 0.1- | 2007 11 05 | 691 | 0.5- | 0.1+ |
| 2002 09 27 | 644 | 0.2+ | 0.1+ | 2002 11 08 | 645 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.1+ | 0.1+ |
| 2002 09 27 | 644 | 0.4- | 0.3- | 2002 11 08 | 645 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.2+ | 0.1- |
| 2002 09 28 | 644 | 0.1- | 0.3+ | 2007 10 16 | G96 | 0.2- | 0.1- | 2007 11 17 | 691 | 0.0  | 0.1+ |
| 2002 09 28 | 644 | 0.4- | 0.4+ | 2007 10 16 | G96 | 0.2+ | 0.1- | 2007 11 17 | 691 | 0.2- | 0.0  |
| 2002 10 04 | 644 | 0.2- | 0.4+ | 2007 10 16 | G96 | 0.6+ | 0.5- | 2007 11 20 | 691 | 0.2+ | 0.1- |
| 2002 10 04 | 644 | 0.1+ | 0.0  | 2007 10 16 | G96 | 0.5+ | 0.4- | 2007 11 20 | 691 | 0.6- | 0.0  |
| 2002 10 04 | 644 | 0.0  | 0.5+ | 2007 11 01 | 691 | 0.2- | 0.0  | 2007 11 20 | 691 | 0.3+ | 0.0  |

**2002 SQ<sub>71</sub> = 2006 SG<sub>299</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 140.87046  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24568099 | $\omega$ | 206.06292 | +0.50028601 | +0.85676555 |
| $a$ | 2.5247692  | $\Omega$ | 94.18553  | -0.77086529 | +0.50655165 |
| $e$ | 0.1390995  | $i$      | 7.20971   | -0.39431029 | +0.09673787 |
| $P$ | 4.01       | $H$      | 16.8      | $G$ 0.15    | $U$ 6       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 12 | 608 | 0.7- | 0.5+ | 2002 09 17 | 644 | 0.7+ | 0.9- | 2006 09 26 | 703 | 0.4- | 0.1- |
| 2002 09 12 | 608 | 0.5- | 0.9+ | 2002 09 28 | 608 | 0.0  | 0.5+ | 2006 09 26 | 703 | 1.2+ | 1.2+ |
| 2002 09 16 | 608 | 0.2- | 0.6- | 2002 09 28 | 608 | 0.5- | 0.2- | 2006 10 02 | 703 | 0.7- | 0.4+ |
| 2002 09 16 | 608 | 0.1- | 0.2- | 2002 09 28 | 608 | 0.1- | 0.1+ | 2006 10 02 | 703 | 0.8+ | 1.3- |
| 2002 09 17 | 644 | 1.0+ | 0.7- | 2006 09 26 | 703 | 0.4- | 0.1+ | 2006 10 02 | 703 | 0.1+ | 0.2+ |
| 2002 09 17 | 644 | 0.8+ | 0.2- | 2006 09 26 | 703 | 0.4- | 0.1- | 2006 10 02 | 703 | 0.5- | 0.4+ |

**2002 TZ<sub>13</sub> = 2007 VL<sub>185</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 62.68956   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21091655 | $\omega$ | 291.88448 | +0.90988749 | +0.40034617 |
| $a$ | 2.7950888  | $\Omega$ | 44.71263  | -0.30008882 | +0.81616493 |
| $e$ | 0.1211736  | $i$      | 8.89245   | -0.28644624 | +0.41665062 |
| $P$ | 4.67       | $H$      | 15.9      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 01 | 699 | 1.2+  | 1.1+  | 2002 10 11 | 704 | 0.7- | 0.5+ | 2007 11 10 | 734 | 0.6+ | 0.2- |
| 2002 10 01 | 699 | (0.9+ | 1.9+) | 2007 09 10 | G96 | 0.5+ | 0.5- | 2007 11 10 | 734 | 0.5+ | 0.2- |
| 2002 10 01 | 699 | 1.3+  | 0.7+  | 2007 09 10 | G96 | 0.6+ | 0.3- | 2007 11 15 | 704 | 0.4- | 0.2- |
| 2002 10 01 | 699 | 0.2-  | 0.7+  | 2007 09 10 | G96 | 0.6+ | 0.7- | 2007 11 15 | 704 | 0.4- | 0.4- |
| 2002 10 03 | 704 | 0.7-  | 0.1+  | 2007 09 10 | G96 | 0.2+ | 0.7- | 2007 11 15 | 704 | 0.2+ | 1.0- |
| 2002 10 03 | 704 | 0.4-  | 0.6+  | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.3- | 0.2- |
| 2002 10 03 | 704 | 0.1+  | 0.7+  | 2007 10 30 | 691 | 0.2- | 0.3- | 2007 11 15 | 704 | 0.1- | 0.4+ |
| 2002 10 03 | 704 | 0.3-  | 0.2-  | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.8+ | 0.8+ |
| 2002 10 06 | 608 | 0.4-  | 1.3-  | 2007 11 07 | 691 | 0.2- | 0.0  | 2007 11 20 | 704 | 1.1+ | 0.4+ |
| 2002 10 06 | 608 | 0.0   | 0.8-  | 2007 11 07 | 691 | 0.0  | 0.2+ | 2007 11 20 | 704 | 0.1- | 1.3+ |
| 2002 10 06 | 608 | 0.1-  | 1.0-  | 2007 11 07 | 691 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.1- | 1.0+ |
| 2002 10 11 | 704 | 0.2+  | 0.6-  | 2007 11 10 | 734 | 0.0  | 0.2- |            |     |      |      |
| 2002 10 11 | 704 | 0.2-  | 0.2+  | 2007 11 10 | 734 | 0.0  | 0.2- |            |     |      |      |

**2002 TZ<sub>26</sub> = 2007 VP<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 21.03057   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20365607 | $\omega$ | 162.05915 | +0.98826408 | -0.14280645 |
| $a$ | 2.8611315  | $\Omega$ | 206.33439 | +0.12084786 | +0.94804735 |
| $e$ | 0.3102226  | $i$      | 7.02127   | +0.09343400 | +0.28427547 |
| $P$ | 4.84       | $H$      | 16.7      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 17 | 608 | 0.2- | 0.3- | 2002 10 31 | 699 | 0.2+  | 0.3-  | 2007 11 05 | D29 | 0.2+  | 0.6-  |
| 2002 09 17 | 608 | 0.1+ | 1.0- | 2002 10 31 | 699 | 0.3-  | 0.4-  | 2007 11 05 | D29 | 0.7+  | 0.5-  |
| 2002 09 17 | 608 | 0.6- | 0.8- | 2002 10 31 | 699 | 0.2+  | 0.1+  | 2007 11 05 | D29 | 0.4+  | 0.7-  |
| 2002 10 02 | 704 | 0.3+ | 0.0  | 2002 11 06 | 704 | 0.1+  | 0.4-  | 2007 11 05 | D29 | 0.3+  | 0.6-  |
| 2002 10 02 | 704 | 0.0  | 0.1+ | 2002 11 06 | 704 | 0.0   | 0.2-  | 2007 11 09 | 691 | 0.2+  | 0.5-  |
| 2002 10 02 | 704 | 0.3+ | 0.2+ | 2002 11 06 | 704 | 0.0   | 0.0   | 2007 11 09 | 691 | 0.1-  | 0.3-  |
| 2002 10 02 | 704 | 0.3+ | 0.3+ | 2002 11 06 | 704 | 0.3-  | 0.1+  | 2007 11 09 | 691 | 0.1-  | 0.2-  |
| 2002 10 03 | 704 | 0.1- | 0.3+ | 2002 11 06 | 704 | 0.7-  | 0.8-  | 2007 11 12 | 704 | 0.7+  | 0.2+  |
| 2002 10 03 | 704 | 0.2- | 0.1- | 2007 09 10 | G96 | 0.4-  | 0.6-  | 2007 11 12 | 704 | 0.1+  | 0.2-  |
| 2002 10 03 | 704 | 0.1+ | 0.4+ | 2007 09 10 | G96 | 0.0   | 0.3-  | 2007 11 12 | 704 | (0.1+ | 1.7+) |
| 2002 10 03 | 704 | 0.0  | 0.4+ | 2007 09 10 | G96 | 1.0-  | 0.0   | 2007 11 12 | 704 | 0.4-  | 0.8+  |
| 2002 10 04 | 599 | 0.1+ | 0.1- | 2007 09 10 | G96 | 0.4+  | 0.6-  | 2007 11 12 | 704 | 0.3+  | 0.0   |
| 2002 10 04 | 599 | 0.3+ | 0.1- | 2007 09 18 | G96 | 0.0   | 0.3-  | 2007 11 13 | 691 | 0.0   | 0.1-  |
| 2002 10 04 | 599 | 0.3+ | 0.1- | 2007 09 18 | G96 | 0.6+  | 0.5-  | 2007 11 13 | 691 | 0.2-  | 0.0   |
| 2002 10 06 | 599 | 0.2+ | 0.0  | 2007 09 18 | G96 | (0.2+ | 2.2-) | 2007 11 13 | 691 | 0.1-  | 0.0   |
| 2002 10 06 | 599 | 0.5+ | 0.3+ | 2007 09 18 | G96 | (2.4- | 1.8-) | 2007 11 15 | 699 | 0.9+  | 1.1-  |
| 2002 10 06 | 599 | 0.0  | 0.1- | 2007 10 15 | D35 | 0.5-  | 0.5+  | 2007 11 15 | 699 | 0.0   | 0.3+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 07 | 704 | 0.5+ | 0.4− | 2007 10 15 | D35 | 0.2−  | 0.6+  | 2007 11 15 | 699 | 0.5− | 0.5− |
| 2002 10 07 | 704 | 0.0  | 0.1+ | 2007 10 15 | D35 | 0.1+  | 0.8+  | 2007 11 15 | 699 | 0.2− | 0.1− |
| 2002 10 07 | 704 | 0.0  | 0.7− | 2007 11 02 | H07 | 0.6+  | 0.1−  | 2007 11 20 | 703 | 0.5+ | 0.2+ |
| 2002 10 07 | 704 | 0.3+ | 0.7− | 2007 11 02 | H07 | 1.1+  | 0.3−  | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2002 10 09 | 704 | 0.2− | 0.8+ | 2007 11 02 | H07 | 1.0+  | 0.8+  | 2007 11 20 | 703 | 0.8+ | 0.4− |
| 2002 10 09 | 704 | 0.0  | 0.3+ | 2007 11 03 | H07 | 0.2−  | 1.0+  | 2007 11 20 | 703 | 0.4− | 0.5+ |
| 2002 10 09 | 704 | 0.1− | 0.2+ | 2007 11 03 | H07 | 0.0   | 1.4+  | 2007 11 20 | 691 | 0.6− | 0.1− |
| 2002 10 09 | 704 | 0.1− | 0.4+ | 2007 11 03 | H07 | 0.2−  | 0.8+  | 2007 11 20 | 703 | 1.2− | 0.1+ |
| 2002 10 09 | 704 | 0.5− | 0.2+ | 2007 11 03 | 699 | 0.1+  | 0.0   | 2007 11 20 | 691 | 0.5− | 0.1− |
| 2002 10 10 | 644 | 0.6− | 0.0  | 2007 11 03 | 699 | 0.9+  | 1.0−  | 2007 11 20 | 703 | 0.1+ | 0.6+ |
| 2002 10 10 | 644 | 0.3− | 0.1− | 2007 11 03 | 699 | 1.3+  | 0.7+  | 2007 11 20 | 703 | 0.0  | 1.0+ |
| 2002 10 10 | 644 | 0.4− | 0.2+ | 2007 11 03 | 699 | (1.8+ | 0.5−) | 2007 11 20 | 703 | 0.5+ | 0.5+ |
| 2002 10 11 | 704 | 0.1+ | 0.5+ | 2007 11 04 | 704 | 0.2+  | 1.3+  | 2007 11 20 | 703 | 0.4+ | 1.2+ |
| 2002 10 11 | 704 | 0.4− | 0.4+ | 2007 11 04 | 704 | 0.0   | 0.9+  | 2007 12 04 | 704 | 0.4+ | 0.8− |
| 2002 10 11 | 704 | 0.4− | 0.7− | 2007 11 04 | 704 | 0.6+  | 1.1+  | 2007 12 04 | 704 | 0.8− | 1.4− |
| 2002 10 11 | 704 | 0.3− | 0.1+ | 2007 11 04 | 704 | 0.9+  | 0.7+  | 2007 12 04 | 704 | 0.4+ | 0.1− |
| 2002 10 15 | 704 | 0.6+ | 0.7+ | 2007 11 04 | 704 | 0.4+  | 1.4+  | 2007 12 04 | 704 | 0.1+ | 0.5+ |
| 2002 10 15 | 704 | 0.3− | 0.3+ | 2007 11 05 | 691 | 0.2−  | 0.4−  | 2007 12 04 | 704 | 0.3+ | 0.7+ |
| 2002 10 15 | 704 | 1.1+ | 1.2+ | 2007 11 05 | 691 | 0.2−  | 0.2−  |            |     |      |      |
| 2002 10 31 | 699 | 0.4− | 0.0  | 2007 11 05 | 691 | 0.2−  | 0.2−  |            |     |      |      |

**2002 TG<sub>43</sub> = 2007 TO<sub>417</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 288.25300  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19308768 | $\omega$ 282.15781 | +0.23096900   | −0.96963589 |
| <i>a</i> | 2.9646016  | $\Omega$ 154.05899 | +0.94877673   | +0.20615506 |
| <i>e</i> | 0.0757833  | <i>i</i> 10.58704  | +0.21558301   | +0.13155354 |
| <i>P</i> | 5.10       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 05 | 704 | 0.1+  | 0.6−  | 2002 10 03 | 704 | 0.6+  | 0.2+  | 2007 09 03 | 703 | 0.4− | 0.6− |
| 2002 09 05 | 704 | 0.1−  | 0.3+  | 2002 10 03 | 704 | 0.3−  | 1.1+  | 2007 09 03 | 703 | 0.4+ | 0.9− |
| 2002 09 05 | 704 | 0.3+  | 0.7+  | 2002 10 03 | 704 | (2.3+ | 3.2+) | 2007 09 03 | 703 | 0.0  | 0.6+ |
| 2002 09 15 | 644 | 0.1+  | 0.1+  | 2002 10 03 | 704 | 0.0   | 0.8+  | 2007 09 12 | G96 | 0.2+ | 0.2− |
| 2002 09 15 | 644 | 0.7+  | 0.1−  | 2005 04 04 | 703 | 0.5+  | 0.4−  | 2007 09 12 | G96 | 0.6+ | 0.3− |
| 2002 09 15 | 644 | 0.1+  | 0.2+  | 2005 04 04 | 703 | 0.1−  | 0.0   | 2007 09 12 | G96 | 0.4+ | 0.1− |
| 2002 09 16 | 644 | 0.6+  | 1.1+  | 2005 04 04 | 703 | 0.1−  | 0.6−  | 2007 09 12 | G96 | 0.3+ | 0.3− |
| 2002 09 16 | 644 | 0.4+  | 1.0+  | 2005 04 04 | 703 | 0.1−  | 1.9+  | 2007 10 09 | G96 | 0.8+ | 0.5+ |
| 2002 09 16 | 644 | 0.2+  | 1.1+  | 2007 08 10 | 691 | 0.7−  | 0.3−  | 2007 10 09 | G96 | 0.2− | 0.0  |
| 2002 09 28 | 608 | (1.0− | 2.2−) | 2007 08 10 | 691 | 0.3−  | 0.3−  | 2007 10 09 | G96 | 0.0  | 0.1+ |
| 2002 09 28 | 608 | 1.1−  | 1.3−  | 2007 08 10 | 691 | 0.5−  | 0.4−  | 2007 10 09 | G96 | 0.2+ | 0.2+ |
| 2002 09 28 | 608 | 1.5−  | 1.5−  | 2007 08 21 | 699 | 1.1−  | 0.3−  | 2007 10 15 | G96 | 0.4+ | 0.9− |
| 2002 10 02 | 608 | 0.5−  | 0.4−  | 2007 08 21 | 699 | (1.3− | 2.3+) | 2007 10 15 | G96 | 0.6+ | 0.3− |
| 2002 10 02 | 608 | 0.5−  | 0.2+  | 2007 08 21 | 699 | 0.7−  | 0.3−  | 2007 10 15 | G96 | 0.1− | 0.5− |
| 2002 10 02 | 608 | 0.3−  | 0.2−  | 2007 08 21 | 699 | 0.7−  | 1.3+  | 2007 10 15 | G96 | 0.1+ | 0.6− |
| 2002 10 03 | 704 | 0.4+  | 0.8+  | 2007 09 03 | 703 | 1.0+  | 0.8+  |            |     |      |      |

**2002 TC<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.83047   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21437464 | $\omega$ 210.40518 | +0.41328250   | −0.90079639 |
| <i>a</i> | 2.7649489  | $\Omega$ 215.67417 | +0.87470423   | +0.43340566 |
| <i>e</i> | 0.2023013  | <i>i</i> 13.21120  | +0.25316022   | −0.02693309 |
| <i>P</i> | 4.60       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 02 | 704 | 0.3− | 0.2− | 2002 10 11 | 704 | 1.0− | 1.3+ | 2002 11 28 | 699 | 0.3−  | 0.3+  |
| 2002 10 02 | 704 | 0.2+ | 0.5− | 2002 10 11 | 704 | 0.1− | 0.2+ | 2002 11 28 | 699 | 0.1−  | 0.2−  |
| 2002 10 02 | 704 | 0.1− | 0.7− | 2002 10 11 | 704 | 0.7+ | 0.8+ | 2002 12 01 | 704 | 0.1+  | 0.4+  |
| 2002 10 02 | 704 | 0.7− | 0.8− | 2002 11 05 | 699 | 1.8− | 0.5+ | 2002 12 01 | 704 | 0.2−  | 0.1+  |
| 2002 10 03 | 704 | 0.4+ | 0.3− | 2002 11 05 | 699 | 0.7− | 0.5+ | 2002 12 01 | 704 | 0.2−  | 0.1+  |
| 2002 10 03 | 704 | 0.3+ | 0.4+ | 2002 11 05 | 699 | 0.9− | 0.3− | 2002 12 01 | 704 | 0.0   | 0.0   |
| 2002 10 03 | 704 | 0.8+ | 0.1− | 2002 11 05 | 699 | 0.3+ | 0.5+ | 2002 12 13 | 608 | 0.3+  | 1.3−  |
| 2002 10 03 | 704 | 0.4− | 0.3− | 2002 11 07 | 704 | 0.3+ | 0.1− | 2002 12 13 | 608 | 0.2+  | 0.7−  |
| 2002 10 03 | 704 | 0.1− | 0.7− | 2002 11 07 | 704 | 0.3+ | 0.1− | 2002 12 13 | 608 | (0.2+ | 2.4+) |
| 2002 10 09 | 704 | 0.4+ | 0.8− | 2002 11 07 | 704 | 0.7+ | 0.5− | 2003 01 26 | 644 | 0.2+  | 0.5−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 09 | 704 | 0.1− | 0.1− | 2002 11 07 | 704 | 0.2+ | 0.7− | 2003 01 26 | 644 | 0.4+ | 0.1− |
| 2002 10 09 | 704 | 0.3+ | 0.9+ | 2002 11 07 | 704 | 0.1− | 0.1+ | 2003 01 26 | 644 | 0.0  | 0.5− |
| 2002 10 11 | 704 | 0.7+ | 0.4− | 2002 11 11 | 704 | 0.3+ | 0.1+ | 2006 09 11 | 703 | 0.5− | 0.5− |
| 2002 10 11 | 704 | 0.3+ | 0.5+ | 2002 11 11 | 704 | 0.1− | 0.1− | 2006 09 11 | 703 | 0.5+ | 0.1+ |
| 2002 10 11 | 704 | 0.2+ | 0.5+ | 2002 11 11 | 704 | 0.0  | 0.1− | 2006 09 11 | 703 | 0.0  | 0.8+ |
| 2002 10 11 | 704 | 0.2− | 0.3+ | 2002 11 11 | 704 | 0.5− | 0.1+ | 2006 09 11 | 703 | 0.0  | 0.2− |
| 2002 10 11 | 704 | 0.8+ | 0.3− | 2002 11 11 | 704 | 0.2− | 0.2− | 2007 11 18 | D35 | 0.1+ | 0.0  |
| 2002 10 11 | 704 | 0.2+ | 0.1+ | 2002 11 28 | 699 | 0.1− | 0.4+ | 2007 11 18 | D35 | 0.4− | 0.4+ |
| 2002 10 11 | 704 | 0.2+ | 0.3+ | 2002 11 28 | 699 | 0.0  | 1.0+ | 2007 11 18 | D35 | 0.5+ | 0.7+ |

**2002 TA<sub>102</sub> = 2007 UQ<sub>104</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.65789   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21919314 | $\omega$ 141.67890 | +0.99792724   | +0.03647035 |
| <i>a</i> | 2.7242779  | $\Omega$ 216.33794 | −0.05198155   | +0.94253071 |
| <i>e</i> | 0.0561616  | <i>i</i> 5.13361   | +0.03793607   | +0.33212312 |
| <i>P</i> | 4.50       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 02 12 | 645 | 0.0  | 0.0  | 2005 05 08 | G96 | 0.1−  | 0.4+  | 2007 10 30 | 691 | 0.2+ | 0.1+ |
| 2000 02 12 | 645 | 0.1− | 0.2− | 2005 05 08 | G96 | 0.4−  | 0.2+  | 2007 10 30 | 691 | 0.1− | 0.1− |
| 2002 10 04 | 704 | 0.5+ | 0.4+ | 2005 05 08 | G96 | 0.2−  | 0.2+  | 2007 10 30 | 691 | 0.1+ | 0.2+ |
| 2002 10 04 | 704 | 0.5+ | 0.1+ | 2005 05 12 | G96 | 0.2−  | 0.0   | 2007 11 03 | 691 | 0.1− | 0.5+ |
| 2002 10 04 | 704 | 0.5+ | 1.5− | 2005 05 12 | G96 | 0.8−  | 0.3−  | 2007 11 03 | 691 | 0.8− | 0.3− |
| 2002 10 05 | 644 | 0.0  | 0.5+ | 2005 05 12 | G96 | 0.2−  | 0.2−  | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 2002 10 05 | 644 | 0.4− | 0.1+ | 2005 05 12 | G96 | (2.1− | 0.0 ) | 2007 11 18 | G96 | 0.6+ | 0.1− |
| 2002 10 05 | 644 | 0.3− | 0.4+ | 2006 09 25 | G96 | 0.1−  | 0.1+  | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2002 10 06 | 644 | 0.5− | 0.4+ | 2006 09 25 | G96 | 0.0   | 0.2−  | 2007 11 18 | G96 | 0.5+ | 0.3− |
| 2002 10 06 | 644 | 0.4− | 0.3+ | 2006 09 25 | G96 | 0.0   | 0.1+  | 2007 11 18 | G96 | 1.0+ | 0.4− |
| 2002 10 06 | 644 | 0.6− | 0.5+ | 2006 09 25 | G96 | 0.5+  | 0.1+  | 2007 11 19 | 691 | 0.1− | 0.7+ |
| 2005 04 12 | 691 | 0.2+ | 0.6+ | 2007 10 20 | G96 | 0.3+  | 0.0   | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2005 04 12 | 691 | 0.4+ | 0.6+ | 2007 10 20 | G96 | 0.7+  | 0.2+  | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2005 04 12 | 691 | 0.5+ | 0.5+ | 2007 10 20 | G96 | 0.1+  | 0.0   |            |     |      |      |
| 2005 05 08 | G96 | 1.2− | 0.0  | 2007 10 20 | G96 | 0.0   | 0.3−  |            |     |      |      |

**2002 TH<sub>106</sub> = 2007 TJ<sub>185</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.14252   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20367758 | $\omega$ 25.20578  | +0.99875062   | −0.03296909 |
| <i>a</i> | 2.8609300  | $\Omega$ 336.59129 | +0.01115401   | +0.87960066 |
| <i>e</i> | 0.0994834  | <i>i</i> 5.42390   | +0.04871119   | +0.47456899 |
| <i>P</i> | 4.84       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 6  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 644 | 0.5+ | 0.1+ | 2002 10 07 | 699 | 0.2+ | 0.6+ | 2007 10 12 | 704 | 0.8+ | 0.4+ |
| 2002 10 04 | 644 | 0.1− | 0.2− | 2002 10 07 | 699 | 0.1− | 0.7+ | 2007 10 12 | 704 | 0.6− | 0.7+ |
| 2002 10 04 | 644 | 0.6+ | 0.4− | 2002 10 07 | 699 | 0.6+ | 0.5− | 2007 10 12 | 704 | 0.6+ | 0.5+ |
| 2002 10 05 | 644 | 0.1− | 0.5+ | 2003 12 21 | 645 | 0.0  | 0.1− | 2007 10 15 | 691 | 0.1− | 0.1− |
| 2002 10 05 | 644 | 0.3− | 0.7+ | 2003 12 21 | 645 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.3− | 0.1− |
| 2002 10 05 | 644 | 0.3− | 0.9+ | 2007 10 07 | 691 | 0.0  | 0.2− | 2007 10 15 | 691 | 0.5− | 0.1+ |
| 2002 10 06 | 644 | 0.4− | 1.1− | 2007 10 07 | 691 | 0.4− | 0.1− | 2007 10 18 | 704 | 0.5+ | 0.1+ |
| 2002 10 06 | 644 | 0.3− | 0.8− | 2007 10 07 | 691 | 0.1− | 0.1+ | 2007 10 18 | 704 | 0.5− | 0.5− |
| 2002 10 06 | 644 | 0.4− | 1.0− | 2007 10 12 | 704 | 0.3+ | 0.1− | 2007 10 18 | 704 | 0.5− | 0.6− |
| 2002 10 07 | 699 | 0.3+ | 0.0  | 2007 10 12 | 704 | 0.7+ | 0.1+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129621

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 11 | 644 | 0.3−  | 0.6+  | 2007 10 20 | 703 | 0.8+  | 0.1−  | 2007 11 06 | D29 | 0.1+ | 0.0  |
| 2002 09 11 | 644 | 0.5−  | 0.5+  | 2007 10 24 | G96 | 0.1+  | 0.3−  | 2007 11 06 | D29 | 0.2+ | 0.3− |
| 2002 09 11 | 644 | 0.4−  | 0.6+  | 2007 10 24 | G96 | 0.1+  | 0.2−  | 2007 11 06 | D29 | 0.2− | 0.3− |
| 2002 10 03 | 599 | 0.0   | 0.2+  | 2007 10 24 | G96 | 0.1+  | 0.2−  | 2007 11 07 | 704 | 0.4+ | 0.4+ |
| 2002 10 03 | 599 | 0.0   | 0.3+  | 2007 10 24 | G96 | 0.4−  | 0.2−  | 2007 11 07 | 704 | 0.2− | 0.0  |
| 2002 10 03 | 599 | 0.0   | 0.8+  | 2007 10 25 | G96 | 0.3+  | 0.3−  | 2007 11 07 | 704 | 0.8− | 0.3+ |
| 2002 10 05 | 704 | 0.4+  | 0.7−  | 2007 10 25 | G96 | 0.7+  | 0.5−  | 2007 11 07 | 704 | 0.0  | 0.1+ |
| 2002 10 05 | 704 | 0.6+  | 0.4−  | 2007 10 25 | G96 | 0.5+  | 0.4−  | 2007 11 07 | 704 | 0.5− | 0.0  |
| 2002 10 05 | 704 | 0.1−  | 0.9−  | 2007 10 25 | G96 | 0.1−  | 0.3−  | 2007 11 13 | 699 | 0.5+ | 0.3− |
| 2004 01 16 | 644 | 0.1+  | 0.1+  | 2007 10 31 | G96 | 0.2−  | 0.2−  | 2007 11 13 | 699 | 0.3+ | 0.1− |
| 2004 01 16 | 644 | 0.5+  | 0.2+  | 2007 10 31 | G96 | 0.2−  | 0.4−  | 2007 11 13 | 699 | 0.9+ | 0.8+ |
| 2004 01 16 | 644 | 0.1−  | 0.1+  | 2007 10 31 | G96 | 0.3+  | 0.4−  | 2007 11 13 | 699 | 0.5+ | 0.5+ |
| 2004 01 16 | 644 | 0.6+  | 0.3−  | 2007 10 31 | 691 | 0.3−  | 0.0   | 2007 11 29 | 704 | 0.4+ | 0.0  |
| 2004 01 16 | 644 | 0.1+  | 0.1−  | 2007 10 31 | G96 | 0.1−  | 0.4−  | 2007 11 29 | 704 | 0.4+ | 0.0  |
| 2004 01 16 | 644 | 0.4+  | 0.0   | 2007 10 31 | 691 | 0.2−  | 0.0   | 2007 11 29 | 704 | 0.6+ | 0.4+ |
| 2004 02 19 | 704 | (0.2+ | 1.8−) | 2007 10 31 | 691 | 0.7−  | 0.0   | 2007 11 29 | 704 | 0.2− | 0.5+ |
| 2004 02 19 | 704 | 0.5−  | 0.1+  | 2007 11 05 | 704 | (3.2+ | 1.1−) | 2007 12 04 | 704 | 0.5− | 0.6+ |
| 2004 02 19 | 704 | 1.0−  | 0.1+  | 2007 11 05 | 704 | (3.1+ | 2.5−) | 2007 12 04 | 704 | 0.8− | 0.9+ |
| 2005 05 13 | G96 | 0.0   | 0.2−  | 2007 11 05 | 704 | 0.2−  | 0.4−  | 2007 12 04 | 704 | 0.2− | 0.5+ |
| 2005 05 13 | G96 | 0.1−  | 0.0   | 2007 11 05 | 704 | (3.3+ | 2.0−) | 2007 12 04 | 704 | 0.7− | 1.0+ |
| 2005 05 13 | G96 | 0.1−  | 0.7+  | 2007 11 06 | D29 | 0.1+  | 0.3−  | 2007 12 04 | 704 | 0.4− | 1.0+ |
| 2005 05 13 | G96 | 0.3+  | 0.3−  | 2007 11 06 | D29 | 0.2+  | 0.4−  | 2007 12 05 | 699 | 1.2+ | 0.3− |
| 2007 10 20 | 703 | 0.9−  | 0.0   | 2007 11 06 | D29 | 0.4+  | 0.0   | 2007 12 05 | 699 | 0.2+ | 0.6− |
| 2007 10 20 | 703 | 0.1+  | 0.3+  | 2007 11 06 | D29 | 0.1+  | 0.2+  | 2007 12 05 | 699 | 0.3+ | 0.5− |
| 2007 10 20 | 703 | 0.8+  | 0.4+  | 2007 11 06 | D29 | 0.0   | 0.3−  | 2007 12 05 | 699 | 0.3+ | 0.8− |

2002 TY<sub>124</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 335.80438  |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.17808233 | $\omega$ | 40.02221  | +0.99230947 | +0.03093106 |
| $a$ | 3.1288794  | $\Omega$ | 317.73266 | −0.08851469 | +0.85417376 |
| $e$ | 0.1496704  | $i$      | 10.26486  | +0.08652784 | +0.51906691 |
| $P$ | 5.53       | $H$      | 15.8      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 02 14 | 691 | 0.1+ | 0.6− | 2002 10 04 | 644 | 0.1− | 0.1− | 2002 10 07 | 704 | 0.6− | 0.6− |
| 1999 02 14 | 691 | 0.0  | 0.6− | 2002 10 04 | 644 | 0.3− | 0.2− | 2002 10 09 | 704 | 0.7− | 0.6− |
| 1999 02 14 | 691 | 0.2− | 1.2+ | 2002 10 04 | 644 | 0.4− | 0.3− | 2002 10 09 | 704 | 0.6+ | 1.2+ |
| 2002 09 03 | 644 | 0.0  | 0.2− | 2002 10 05 | 704 | 0.3+ | 1.2+ | 2002 10 09 | 704 | 0.4+ | 0.5− |
| 2002 09 03 | 644 | 0.2+ | 0.2+ | 2002 10 05 | 704 | 0.2+ | 0.3+ | 2002 10 09 | 704 | 1.4+ | 0.8+ |
| 2002 09 03 | 644 | 0.3− | 0.1− | 2002 10 05 | 704 | 0.1− | 0.6+ | 2007 09 05 | G96 | 0.6− | 0.5+ |
| 2002 09 12 | 644 | 0.2− | 0.5− | 2002 10 07 | 704 | 0.7− | 0.4− | 2007 09 05 | G96 | 0.0  | 0.3− |
| 2002 09 12 | 644 | 0.2+ | 0.5+ | 2002 10 07 | 704 | 0.3− | 0.4− | 2007 09 05 | G96 | 0.6+ | 0.1− |
| 2002 09 12 | 644 | 0.1− | 0.2− | 2002 10 07 | 704 | 0.3+ | 0.8− | 2007 09 05 | G96 | 0.1+ | 0.2− |

2002 TF<sub>129</sub> = 2007 SR<sub>16</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 315.12639  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.18893715 | $\omega$ | 79.36702  | +0.59102028  | −0.80239098  |
| $a$ | 3.0078613  | $\Omega$ | 333.85305 | +0.64691669  | +0.53282763  |
| $e$ | 0.1221470  | $i$      | 10.83620  | +0.48186494  | +0.26881859  |
| $P$ | 5.22       | $H$      | 15.9      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 09 | 691 | 0.3+  | 0.1+  | 2004 01 28 | 691 | 0.2+ | 0.1+ | 2007 09 10 | 703 | 0.5+ | 0.4+ |
| 1994 03 09 | 691 | (6.5− | 0.9+) | 2004 01 28 | 691 | 0.1+ | 0.1+ | 2007 09 10 | 703 | 0.7− | 0.2+ |
| 1994 03 09 | 691 | 0.2−  | 0.1+  | 2007 08 24 | 691 | 0.2− | 0.2− | 2007 09 10 | 703 | 0.1+ | 0.3+ |
| 2002 10 04 | 644 | 0.4+  | 0.2+  | 2007 08 24 | 691 | 0.5− | 0.1− | 2007 09 30 | 691 | 0.2+ | 0.0  |
| 2002 10 04 | 644 | 0.6+  | 0.4+  | 2007 08 24 | 691 | 1.3− | 0.6− | 2007 09 30 | 691 | 0.0  | 0.3− |
| 2002 10 04 | 644 | 1.0+  | 0.4+  | 2007 09 03 | 703 | 0.8+ | 0.7+ | 2007 09 30 | 691 | 1.8− | 0.8− |
| 2002 10 05 | 704 | 1.4−  | 0.0   | 2007 09 03 | 703 | 0.9− | 0.5− | 2007 10 06 | 691 | 0.1− | 0.5− |
| 2002 10 05 | 704 | 1.4−  | 0.0   | 2007 09 03 | 703 | 0.2+ | 1.4+ | 2007 10 06 | 691 | 0.3− | 0.3+ |
| 2002 10 05 | 704 | 1.0−  | 0.2−  | 2007 09 03 | 703 | 1.4+ | 1.4+ | 2007 10 06 | 691 | 0.3+ | 0.5− |
| 2002 10 09 | 704 | 0.7+  | 0.4−  | 2007 09 10 | 691 | 0.3− | 0.0  | 2007 10 12 | G96 | 0.8+ | 0.1− |
| 2002 10 09 | 704 | 0.1+  | 0.5−  | 2007 09 10 | 691 | 0.1+ | 0.2− | 2007 10 12 | G96 | 0.3+ | 0.4− |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 09 | 704 | 0.8+ | 0.3+ | 2007 09 10 | 691 | 0.1−  | 0.0   | 2007 10 12 | G96 | 0.8+ | 0.2− |
| 2004 01 28 | 691 | 0.0  | 0.2+ | 2007 09 10 | 703 | (0.6+ | 2.2+) | 2007 10 12 | G96 | 0.6+ | 0.3− |

2002 TU<sub>129</sub> = 2007 TK<sub>412</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 354.71938  |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.20123729 | $\omega$ | 91.40409  | +0.72534633 | −0.68393554 |
| $a$ | 2.8840121  | $\Omega$ | 311.75576 | +0.58258128 | +0.67035884 |
| $e$ | 0.3185072  | $i$      | 6.01208   | +0.36670390 | +0.28783885 |
| $P$ | 4.90       | $H$      | 16.6      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 644 | 0.1+ | 0.2+ | 2002 10 09 | 704 | 0.4− | 0.1+ | 2007 10 14 | 703 | 0.6+ | 0.2− |
| 2002 10 04 | 644 | 0.1+ | 0.0  | 2002 10 10 | 704 | 1.0+ | 0.6− | 2007 10 14 | 703 | 0.8+ | 0.8− |
| 2002 10 04 | 644 | 0.2+ | 0.1+ | 2002 10 10 | 704 | 0.7+ | 0.4− | 2007 10 21 | 703 | 0.3+ | 0.5+ |
| 2002 10 05 | 704 | 1.1− | 0.4− | 2002 10 10 | 704 | 0.2− | 0.4− | 2007 10 21 | 703 | 1.0+ | 0.5+ |
| 2002 10 05 | 704 | 0.9− | 0.7− | 2002 10 10 | 704 | 0.8+ | 0.4+ | 2007 10 21 | 703 | 0.4− | 0.6+ |
| 2002 10 05 | 704 | 1.1− | 0.2+ | 2002 10 10 | 704 | 0.3+ | 0.8− | 2007 10 21 | 703 | 0.2+ | 0.7+ |
| 2002 10 05 | 704 | 0.5− | 1.2− | 2007 10 08 | 703 | 0.8− | 0.8− | 2007 11 01 | 703 | 0.2+ | 0.2− |
| 2002 10 07 | 699 | 0.0  | 0.2+ | 2007 10 08 | 703 | 0.0  | 0.1− | 2007 11 01 | 703 | 0.8+ | 0.6− |
| 2002 10 07 | 699 | 0.5+ | 0.3+ | 2007 10 08 | 703 | 0.8− | 0.2+ | 2007 11 01 | 703 | 0.2− | 0.3− |
| 2002 10 07 | 699 | 0.5+ | 0.2+ | 2007 10 08 | 703 | 0.4− | 0.3− | 2007 11 01 | 703 | 0.6− | 0.2+ |
| 2002 10 07 | 699 | 0.1+ | 0.9+ | 2007 10 14 | 703 | 0.4− | 0.6+ | 2007 12 16 | 704 | 0.4+ | 0.3+ |
| 2002 10 09 | 704 | 0.1+ | 0.5+ | 2007 10 14 | 703 | 0.5+ | 0.3− | 2007 12 16 | 704 | 0.1+ | 0.0  |
| 2002 10 09 | 704 | 0.7+ | 0.8+ | 2007 10 14 | 703 | 0.5− | 0.4− | 2007 12 16 | 704 | 0.3+ | 0.3+ |
| 2002 10 09 | 704 | 0.6− | 0.5+ | 2007 10 14 | 703 | 0.2+ | 0.4+ | 2007 12 16 | 704 | 0.8− | 0.1− |
| 2002 10 09 | 704 | 0.2− | 0.2+ | 2007 10 14 | 703 | 0.3− | 0.1+ | 2007 12 16 | 704 | 0.4− | 0.5− |

2002 TU<sub>133</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 341.46833  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.19268841 | $\omega$ | 106.64194 | +0.95117346  | −0.26870643  |
| $a$ | 2.9686955  | $\Omega$ | 269.14310 | +0.19184598  | +0.90014074  |
| $e$ | 0.0501399  | $i$      | 8.73657   | +0.24179366  | +0.34284618  |
| $P$ | 5.12       | $H$      | 15.2      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 16 | 704 | 0.1− | 1.0+ | 2002 10 04 | 699 | 0.8− | 0.6− | 2005 03 13 | 703 | 1.0+ | 0.3+ |
| 2002 08 16 | 704 | 0.2− | 0.7+ | 2002 10 04 | 699 | 1.0− | 0.1− | 2005 03 13 | 703 | 0.3− | 1.1+ |
| 2002 08 16 | 704 | 0.7+ | 0.6+ | 2002 10 04 | 699 | 0.5− | 0.6+ | 2007 09 05 | 703 | 1.1− | 0.2+ |
| 2002 08 16 | 704 | 0.3+ | 0.8+ | 2002 10 04 | 699 | 1.0− | 1.1− | 2007 09 05 | 703 | 1.3+ | 0.3+ |
| 2002 08 16 | 704 | 0.9+ | 1.2+ | 2002 10 05 | 704 | 0.7+ | 0.2− | 2007 09 05 | 703 | 0.6+ | 0.7− |
| 2002 09 12 | 644 | 0.1+ | 0.2+ | 2002 10 05 | 704 | 0.3− | 0.1− | 2007 09 05 | 703 | 0.6+ | 0.2+ |
| 2002 09 12 | 644 | 0.8− | 0.2+ | 2002 10 05 | 704 | 0.1− | 0.2+ | 2007 09 11 | 703 | 0.0  | 1.3− |
| 2002 09 12 | 644 | 0.1− | 0.3+ | 2002 10 05 | 704 | 0.4− | 0.5− | 2007 09 11 | 703 | 0.3+ | 0.0  |
| 2002 10 04 | 644 | 0.5+ | 0.1− | 2002 10 05 | 704 | 0.9+ | 0.3− | 2007 09 11 | 703 | 0.5− | 1.1− |
| 2002 10 04 | 644 | 0.0  | 0.2+ | 2005 03 13 | 703 | 0.1− | 0.3+ | 2007 09 11 | 703 | 0.2− | 0.3+ |
| 2002 10 04 | 644 | 0.2+ | 0.0  | 2005 03 13 | 703 | 0.2− | 1.0− |            |     |      |      |

2002 TW<sub>143</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 322.32729  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.18062889 | $\omega$ | 304.19791 | +0.83808996  | −0.53280649  |
| $a$ | 3.0994020  | $\Omega$ | 88.25987  | +0.53110926  | +0.74784970  |
| $e$ | 0.1370435  | $i$      | 6.73036   | +0.12461211  | +0.39602787  |
| $P$ | 5.46       | $H$      | 15.9      | $G$ 0.15     | $U$ 5        |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 608 | 0.2+ | 0.4+ | 2002 10 28 | 644 | 0.1+ | 0.3+ | 2007 08 14 | E12 | 0.3+ | 0.1− |
| 2002 10 08 | 699 | 0.7− | 1.7+ | 2002 10 28 | 644 | 0.3− | 0.5+ | 2007 08 14 | E12 | 0.4− | 0.1+ |
| 2002 10 08 | 699 | 0.1+ | 0.3− | 2002 10 28 | 644 | 0.4− | 0.4+ |            |     |      |      |

**2002 TG<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.75375  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18589712 | $\omega$ | 205.96886 | +0.98535573   | +0.16945785 |
| <i>a</i> | 3.0405649  | $\Omega$ | 144.25882 | −0.15025571   | +0.91540362 |
| <i>e</i> | 0.1669705  | <i>i</i> | 1.85654   | −0.08060583   | +0.36513045 |
| <i>P</i> | 5.30       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 14 | 608 | 0.4+ | 0.0  | 2002 10 05 | 644 | 0.0  | 0.3− | 2007 09 13 | G96 | 0.2+ | 0.3− |
| 2002 09 14 | 608 | 0.1+ | 0.0  | 2002 10 05 | 645 | 0.2+ | 0.2− | 2007 09 13 | G96 | 0.0  | 0.1+ |
| 2002 09 14 | 608 | 1.6− | 1.2− | 2002 10 05 | 645 | 0.2+ | 0.2− | 2007 09 13 | G96 | 0.1− | 0.1− |
| 2002 09 26 | 644 | 0.5− | 0.2− | 2002 10 06 | 644 | 0.3+ | 0.4+ | 2007 09 13 | G96 | 0.1− | 0.3− |
| 2002 09 26 | 644 | 0.3− | 0.1+ | 2002 10 06 | 644 | 0.1− | 0.1+ | 2007 10 13 | G96 | 0.3− | 0.1+ |
| 2002 09 26 | 644 | 0.4+ | 1.8+ | 2002 10 06 | 644 | 0.0  | 0.3+ | 2007 10 13 | G96 | 0.1+ | 0.3+ |
| 2002 10 03 | 704 | 0.6− | 0.5− | 2002 10 10 | 645 | 0.1+ | 0.1− | 2007 10 13 | G96 | 0.1− | 0.0  |
| 2002 10 03 | 704 | 0.5+ | 0.1+ | 2002 10 10 | 645 | 0.1+ | 0.1− | 2007 10 13 | G96 | 0.3− | 0.2− |
| 2002 10 03 | 704 | 0.1+ | 0.5+ | 2002 10 11 | 645 | 0.1+ | 0.1− | 2007 10 13 | G96 | 0.1− | 0.5+ |
| 2002 10 03 | 704 | 0.1− | 0.9+ | 2002 10 11 | 645 | 0.1+ | 0.1− | 2007 10 13 | G96 | 0.5+ | 0.1+ |
| 2002 10 03 | 704 | 0.7+ | 0.3− | 2002 10 31 | 645 | 0.3− | 0.2− | 2007 10 13 | G96 | 0.1+ | 0.2− |
| 2002 10 05 | 644 | 0.3+ | 0.6− | 2002 10 31 | 645 | 0.4− | 0.3− | 2007 10 13 | G96 | 0.2+ | 0.2+ |

**2002 TH<sub>149</sub> = 2007 RR<sub>39</sub> = 2007 TF<sub>417</sub>**Id. Minor Planet Center (*MPO* 127978; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.97233  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19042833 | $\omega$ | 231.31523 | +0.80120400   | −0.59838566 |
| <i>a</i> | 2.9921384  | $\Omega$ | 165.43853 | +0.55217377   | +0.73764088 |
| <i>e</i> | 0.0616830  | <i>i</i> | 0.59241   | +0.23059983   | +0.31276274 |
| <i>P</i> | 5.18       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 14 | 691 | 0.3− | 0.3− | 2002 10 05 | 644 | 0.2−  | 0.8+  | 2007 09 10 | G96 | 0.5+ | 0.6− |
| 1998 12 14 | 691 | 0.1− | 0.5− | 2002 10 05 | 644 | 0.2−  | 0.6+  | 2007 09 10 | G96 | 0.5+ | 0.6− |
| 1998 12 14 | 691 | 0.5− | 0.0  | 2002 10 05 | 644 | 0.1−  | 0.7+  | 2007 09 10 | G96 | 0.0  | 0.4− |
| 1999 01 07 | 691 | 0.1+ | 0.4− | 2002 10 06 | 644 | (0.1+ | 2.3+) | 2007 09 10 | G96 | 0.2− | 0.5− |
| 1999 01 07 | 691 | 0.2+ | 0.1+ | 2002 10 06 | 644 | 0.2−  | 1.1+  | 2007 10 04 | G96 | 0.0  | 0.5− |
| 1999 01 07 | 691 | 0.4+ | 0.3+ | 2002 10 06 | 644 | 0.2−  | 0.8+  | 2007 10 04 | G96 | 0.1+ | 0.2− |
| 2000 04 13 | 691 | 0.1+ | 0.3+ | 2002 10 30 | 645 | 0.0   | 0.4−  | 2007 10 04 | G96 | 0.1+ | 0.1− |
| 2000 04 13 | 691 | 0.1− | 0.3− | 2002 10 30 | 645 | 0.0   | 0.4−  | 2007 10 04 | G96 | 0.0  | 0.3− |
| 2000 04 13 | 691 | 0.2+ | 0.2+ | 2007 08 10 | 691 | 0.3−  | 0.1−  | 2007 10 11 | G96 | 0.1+ | 0.5− |
| 2000 04 29 | 691 | 0.5+ | 0.7− | 2007 08 10 | 691 | 0.5−  | 0.2−  | 2007 10 11 | G96 | 0.2− | 0.4− |
| 2000 04 29 | 691 | 0.6− | 0.8− | 2007 08 10 | 691 | 1.5−  | 1.5+  | 2007 10 11 | G96 | 0.1+ | 0.2− |
| 2000 04 29 | 691 | 0.5− | 0.4+ | 2007 08 23 | 691 | 0.3−  | 0.3+  | 2007 10 11 | G96 | 0.0  | 0.2− |
| 2002 09 14 | 644 | 0.2+ | 0.6− | 2007 08 23 | 691 | 0.2−  | 0.3−  | 2007 10 19 | G96 | 0.3+ | 0.7− |
| 2002 09 14 | 644 | 0.2− | 0.0  | 2007 08 23 | 691 | 0.6−  | 0.1+  | 2007 10 19 | G96 | 0.3+ | 0.2− |
| 2002 09 14 | 644 | 0.3− | 0.3+ | 2007 09 08 | J87 | 0.8+  | 0.6+  | 2007 10 19 | G96 | 0.0  | 0.2− |
| 2002 09 30 | 608 | 0.0  | 0.4− | 2007 09 09 | J87 | 1.2+  | 0.3+  | 2007 10 19 | G96 | 0.1+ | 0.7− |
| 2002 09 30 | 608 | 0.2+ | 0.2− | 2007 09 09 | J87 | 0.8+  | 0.3+  |            |     |      |      |

**2002 TP<sub>162</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.31086   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21026596 | $\omega$ | 275.51789 | +0.89155899   | −0.39006818 |
| <i>a</i> | 2.8008514  | $\Omega$ | 107.60972 | +0.44779801   | +0.83530019 |
| <i>e</i> | 0.2178481  | <i>i</i> | 13.97308  | −0.06781964   | +0.38745374 |
| <i>P</i> | 4.69       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |     |            |     |      |      |            |     |      |      |
|------------|-----|------|-----|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 644 | 0.3− | 0.0 | 2002 10 16 | 644 | 0.1− | 0.1+ | 2003 01 02 | 704 | 0.0  | 1.3+ |
| 2002 10 05 | 644 | 0.0  | 0.0 | 2002 10 29 | 704 | 0.2− | 0.3+ | 2003 01 02 | 704 | 0.3− | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 644 | 0.2− | 0.2− | 2002 10 29 | 704 | 0.6− | 0.2+ | 2007 11 11 | 704 | 0.2− | 0.5+ |
| 2002 10 06 | 704 | 0.2+ | 0.6+ | 2002 10 29 | 704 | 0.4− | 0.5− | 2007 11 11 | 704 | 0.6+ | 0.0  |
| 2002 10 06 | 704 | 0.7+ | 0.6− | 2002 11 05 | 644 | 0.5− | 0.4+ | 2007 11 11 | 704 | 0.2+ | 0.1− |
| 2002 10 06 | 704 | 0.8+ | 0.1+ | 2002 11 05 | 644 | 0.4− | 0.4+ | 2007 11 11 | 704 | 0.9− | 0.2− |
| 2002 10 06 | 704 | 0.3+ | 0.2− | 2002 11 05 | 644 | 0.4− | 0.4+ | 2007 12 07 | 926 | 0.4+ | 0.1+ |
| 2002 10 06 | 644 | 0.2− | 0.0  | 2002 11 30 | 704 | 0.9+ | 1.1− | 2007 12 07 | 926 | 0.4+ | 0.0  |
| 2002 10 06 | 644 | 0.0  | 0.0  | 2002 11 30 | 704 | 1.4+ | 0.3− | 2007 12 07 | 926 | 0.5+ | 0.4+ |
| 2002 10 06 | 644 | 0.0  | 0.1− | 2002 11 30 | 704 | 0.6+ | 0.6− | 2007 12 08 | D21 | 0.7− | 1.4− |
| 2002 10 16 | 644 | 0.2− | 0.0  | 2003 01 02 | 704 | 0.5− | 0.1+ | 2007 12 08 | D21 | 0.3− | 0.5+ |
| 2002 10 16 | 644 | 0.3− | 0.0  | 2003 01 02 | 704 | 0.1− | 0.5− | 2007 12 08 | D21 | 0.0  | 0.2+ |

**2002 TH<sub>165</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 65.36824   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21748002 | $\omega$ | 247.79365 | +0.89519591   | +0.42052216 |
| <i>a</i> | 2.7385655  | $\Omega$ | 87.07676  | −0.33472121   | +0.85305469 |
| <i>e</i> | 0.2528911  | <i>i</i> | 8.49894   | −0.29425497   | +0.30896409 |
| <i>P</i> | 4.53       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 24 | 645 | 0.0  | 0.1+ | 2002 10 06 | 704 | 0.0  | 0.7+ | 2002 11 03 | 608 | 0.5− | 0.2− |
| 2001 05 24 | 645 | 0.1+ | 0.1+ | 2002 10 06 | 704 | 0.2− | 0.9+ | 2002 11 06 | 644 | 0.0  | 0.5+ |
| 2002 08 12 | 704 | 0.6− | 0.6+ | 2002 10 06 | 704 | 0.2+ | 0.7+ | 2002 11 06 | 644 | 0.2+ | 0.6+ |
| 2002 08 12 | 704 | 1.0− | 1.1+ | 2002 10 16 | 644 | 0.3+ | 0.1− | 2002 11 06 | 644 | 0.2+ | 0.8+ |
| 2002 08 12 | 704 | 0.4− | 0.1+ | 2002 10 16 | 644 | 0.4+ | 0.5− | 2007 11 13 | 691 | 0.3+ | 0.6+ |
| 2002 08 24 | 644 | 0.1+ | 0.3+ | 2002 10 16 | 644 | 0.3+ | 0.2− | 2007 11 13 | 691 | 0.1− | 0.1− |
| 2002 08 24 | 644 | 0.0  | 0.4+ | 2002 10 25 | 644 | 0.4+ | 0.3+ | 2007 11 13 | 691 | 0.0  | 0.2− |
| 2002 08 24 | 644 | 0.0  | 0.7+ | 2002 10 25 | 644 | 0.6+ | 0.1+ | 2007 12 04 | 691 | 0.3− | 0.0  |
| 2002 09 16 | 608 | 0.7− | 1.2− | 2002 10 25 | 644 | 0.6+ | 0.3+ | 2007 12 04 | 691 | 0.7− | 0.1+ |
| 2002 09 16 | 608 | 0.7− | 1.0− | 2002 10 29 | 704 | 0.3+ | 0.6+ | 2007 12 04 | 691 | 0.0  | 0.2− |
| 2002 09 16 | 608 | 0.6− | 0.9− | 2002 10 29 | 704 | 0.2+ | 0.3− | 2007 12 05 | 704 | 0.3+ | 0.1− |
| 2002 10 02 | 608 | 0.2+ | 0.8− | 2002 10 29 | 704 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.4+ | 0.3+ |
| 2002 10 02 | 608 | 0.3+ | 0.3− | 2002 10 29 | 704 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.3+ | 0.5+ |
| 2002 10 02 | 608 | 0.3+ | 0.8− | 2002 11 03 | 608 | 0.3+ | 0.0  | 2007 12 05 | 704 | 0.9+ | 0.6+ |
| 2002 10 06 | 704 | 0.7− | 0.5+ | 2002 11 03 | 608 | 0.5− | 0.2+ | 2007 12 05 | 704 | 0.8+ | 0.6+ |

**2002 TE<sub>190</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.18623   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20549148 | $\omega$ | 42.51099  | +0.96182014   | −0.24457297 |
| <i>a</i> | 2.8440693  | $\Omega$ | 330.95860 | +0.12806308   | +0.79881591 |
| <i>e</i> | 0.1590443  | <i>i</i> | 14.65618  | +0.24187160   | +0.54961551 |
| <i>P</i> | 4.80       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 03 | 644 | 0.3− | 0.0  | 2002 10 07 | 699 | 0.7− | 0.4− | 2007 09 20 | 703 | 1.1+ | 0.8+ |
| 2002 09 03 | 644 | 0.3− | 0.1− | 2002 10 07 | 699 | 0.2+ | 0.1+ | 2007 09 20 | 703 | 0.3+ | 0.0  |
| 2002 09 03 | 644 | 0.2− | 0.1+ | 2002 10 07 | 699 | 0.6+ | 0.3− | 2007 09 20 | 703 | 0.9− | 0.0  |
| 2002 09 12 | 644 | 0.3− | 0.2− | 2004 02 17 | 691 | 0.1− | 0.1+ | 2007 09 20 | 703 | 0.7− | 0.4+ |
| 2002 09 12 | 644 | 0.0  | 0.1+ | 2004 02 17 | 691 | 0.1− | 0.2− | 2007 11 13 | 703 | 0.0  | 0.2+ |
| 2002 09 12 | 644 | 0.2− | 0.4− | 2004 02 17 | 691 | 0.1+ | 0.0  | 2007 11 13 | 703 | 0.2+ | 0.6− |
| 2002 10 06 | 704 | 0.5+ | 0.1+ | 2007 09 13 | 703 | 1.0+ | 0.4− | 2007 11 13 | 703 | 1.3− | 0.7+ |
| 2002 10 06 | 704 | 0.1− | 0.8+ | 2007 09 13 | 703 | 0.1+ | 0.1+ | 2007 11 13 | 703 | 0.2+ | 0.9+ |
| 2002 10 06 | 704 | 0.8+ | 0.1+ | 2007 09 13 | 703 | 0.2+ | 0.2− |            |     |      |      |
| 2002 10 07 | 699 | 0.7+ | 0.6− | 2007 09 13 | 703 | 0.6− | 0.9− |            |     |      |      |

**2002 TB<sub>192</sub> = 2007 XM<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 25.45967   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.21066300 | $\omega$ | 128.27234 | +0.83491075 | −0.51235271 |
| $a$ | 2.7973311  | $\Omega$ | 263.40167 | +0.42026770 | +0.82933542 |
| $e$ | 0.1696456  | $i$      | 11.67644  | +0.35538584 | +0.2292926  |
| $P$ | 4.68       | $H$      | 15.8      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                |             |                |             |                |           |
|----------------|-------------|----------------|-------------|----------------|-----------|
| 2002 10 05 699 | (1.7− 0.8+) | 2002 11 14 644 | 0.3+ 0.0    | 2007 12 06 G96 | 1.4+ 0.3− |
| 2002 10 05 699 | 0.1+ 0.2+   | 2002 11 14 704 | 0.2− 0.3+   | 2007 12 06 G96 | 1.3+ 0.2− |
| 2002 10 05 699 | (0.4− 1.7+) | 2002 11 14 644 | 0.6+ 0.2+   | 2007 12 06 G96 | 1.1+ 0.4− |
| 2002 10 05 699 | 0.4+ 1.3+   | 2002 11 14 704 | 0.6− 0.8−   | 2007 12 10 704 | 0.2+ 0.1+ |
| 2002 10 06 704 | 0.1− 0.1+   | 2002 11 14 644 | 0.3+ 0.1+   | 2007 12 10 704 | 0.4+ 0.2− |
| 2002 10 06 704 | 0.1+ 0.7−   | 2002 11 14 704 | (0.6− 1.6−) | 2007 12 10 704 | 0.4+ 0.1− |
| 2002 10 06 704 | 0.1− 0.7+   | 2007 11 07 691 | 0.1− 0.2−   | 2007 12 14 704 | 0.7− 0.2+ |
| 2002 10 06 704 | 0.5− 0.4−   | 2007 11 07 691 | 0.2− 0.1−   | 2007 12 14 704 | 0.1− 0.1− |
| 2002 11 07 704 | 0.5+ 0.7+   | 2007 11 07 691 | 0.2− 0.1−   | 2007 12 14 704 | 0.2− 0.0  |
| 2002 11 07 704 | 0.3+ 0.8−   | 2007 11 18 691 | 0.0 0.0     | 2007 12 14 704 | 0.2− 0.3+ |
| 2002 11 07 704 | 0.1− 0.9−   | 2007 11 18 691 | 0.1− 0.0    | 2007 12 14 704 | 0.1+ 0.2+ |
| 2002 11 07 704 | 0.1− 0.9−   | 2007 11 18 691 | (1.6− 0.8−) | 2007 12 15 691 | 0.4− 0.0  |
| 2002 11 07 704 | 0.5+ 0.4−   | 2007 12 04 703 | 0.6+ 1.1+   | 2007 12 15 691 | 0.1− 0.1− |
| 2002 11 11 699 | 1.2− 0.6+   | 2007 12 04 703 | 0.8+ 1.1+   | 2007 12 15 691 | 0.5− 0.1− |
| 2002 11 11 699 | 0.1+ 0.2+   | 2007 12 04 703 | 0.4+ 1.3+   | 2007 12 16 691 | 0.1− 0.0  |
| 2002 11 11 699 | 0.6− 0.1+   | 2007 12 04 703 | 0.6+ 0.5+   | 2007 12 16 691 | 0.1− 0.1− |
| 2002 11 11 699 | 0.2+ 0.5+   | 2007 12 06 G96 | 1.5+ 0.1−   | 2007 12 16 691 | 0.2− 0.2− |

**2002 TM<sub>193</sub> = 2007 VL<sub>87</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.01105   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21174232 | $\omega$ | 44.01322  | +0.89603215 −0.44340124  |
| <i>a</i> | 2.7878171  | $\Omega$ | 342.26845 | +0.38380830 +0.79941527  |
| <i>e</i> | 0.1196444  | <i>i</i> | 4.30111   | +0.22319851 +0.40537705  |
| <i>P</i> | 4.65       | <i>H</i> | 16.6      | <i>G</i> 0.15 <i>U</i> 0 |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 1993 12 14 691 | 0.0 0.1−  | 2002 10 11 704 | 1.1− 0.0  | 2007 11 02 704 | 0.8− 1.2+ |
| 1993 12 14 691 | 0.4+ 0.1+ | 2002 10 11 704 | 0.2+ 0.4+ | 2007 11 02 704 | 0.3+ 0.7+ |
| 1993 12 14 691 | 0.4− 0.2+ | 2002 10 11 704 | 0.4+ 0.5− | 2007 11 07 704 | 0.1+ 0.2+ |
| 2000 03 03 645 | 0.1+ 0.2+ | 2003 12 29 691 | 0.1− 0.0  | 2007 11 07 704 | 0.1+ 0.3− |
| 2000 03 03 645 | 0.1+ 0.2+ | 2003 12 29 691 | 0.1+ 0.1+ | 2007 11 07 704 | 0.2+ 0.5− |
| 2002 10 03 704 | 0.0 0.3+  | 2003 12 29 691 | 0.2+ 0.4+ | 2007 11 07 704 | 0.9− 1.2+ |
| 2002 10 03 704 | 0.5− 0.7+ | 2004 02 17 645 | 0.1− 0.2− | 2007 11 07 704 | 0.2+ 0.1− |
| 2002 10 03 704 | 0.0 0.2+  | 2004 02 17 645 | 0.0 0.2−  | 2007 11 17 691 | 0.1− 0.2+ |
| 2002 10 03 704 | 1.0− 1.3+ | 2007 10 18 691 | 0.2− 0.1+ | 2007 11 17 691 | 0.2− 0.0  |
| 2002 10 03 704 | 0.3+ 0.0  | 2007 10 18 691 | 0.2− 0.3− | 2007 11 17 691 | 0.1+ 0.4− |
| 2002 10 07 704 | 0.0 0.6+  | 2007 10 18 691 | 0.3− 0.2− | 2007 11 17 704 | 0.0 0.4+  |
| 2002 10 07 704 | 0.1+ 0.4− | 2007 11 02 704 | 0.0 0.5+  | 2007 11 17 704 | 0.5+ 0.1− |
| 2002 10 07 704 | 0.5+ 1.2− | 2007 11 02 704 | 0.4− 0.9+ | 2007 11 17 704 | 0.6+ 0.1+ |
| 2002 10 07 704 | 0.6+ 0.1+ | 2007 11 02 704 | 0.8+ 1.3+ | 2007 11 17 704 | 1.1+ 0.3+ |

**2002 TT<sub>202</sub> = 2007 XJ<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.69443   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21157710 | $\omega$ | 241.39237 | +0.99721827 −0.01950109  |
| <i>a</i> | 2.7892682  | $\Omega$ | 119.64320 | +0.04412050 +0.93235161  |
| <i>e</i> | 0.3053697  | <i>i</i> | 4.74802   | −0.06007582 +0.36102656  |
| <i>P</i> | 4.66       | <i>H</i> | 17.4      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2002 09 05 645 | 0.0 0.1−  | 2002 10 04 704 | 0.6− 0.2− | 2007 11 04 691 | 0.1− 0.2+ |
| 2002 09 05 645 | 0.0 0.0   | 2002 10 04 704 | 0.4+ 0.4+ | 2007 12 05 G96 | 0.5+ 0.9− |
| 2002 09 09 599 | 0.3− 0.0  | 2002 10 08 699 | 0.1− 0.6+ | 2007 12 05 G96 | 0.0 0.3−  |
| 2002 09 09 599 | 0.1− 0.5+ | 2002 10 08 699 | 0.5+ 0.2− | 2007 12 05 G96 | 0.1− 0.8− |
| 2002 09 09 599 | 0.0 0.0   | 2002 10 08 699 | 0.3− 0.4− | 2007 12 05 G96 | 0.4+ 0.6− |
| 2002 10 04 704 | 0.2+ 0.0  | 2002 10 08 699 | 0.6+ 0.7+ | 2007 12 06 G96 | 0.0 0.0   |
| 2002 10 04 704 | 1.3− 0.2− | 2007 11 04 691 | 0.2− 0.2+ | 2007 12 06 G96 | 0.2− 0.0  |
| 2002 10 04 704 | 0.8+ 0.3+ | 2007 11 04 691 | 0.0 0.2+  | 2007 12 06 G96 | 0.1+ 0.1+ |

**2002 TZ<sub>203</sub> = 2007 VD<sub>276</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 61.78989   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22649647 | $\omega$ | 294.92063 | +0.97097151 −0.21067042  |
| <i>a</i> | 2.6653961  | $\Omega$ | 77.40398  | +0.23893551 +0.87631303  |
| <i>e</i> | 0.2082970  | <i>i</i> | 6.66554   | −0.01114250 +0.43323603  |
| <i>P</i> | 4.35       | <i>H</i> | 16.7      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |             |                |           |                |           |
|----------------|-------------|----------------|-----------|----------------|-----------|
| 2002 10 04 704 | 0.3− 1.5+   | 2002 10 11 645 | 0.0 0.0   | 2002 11 04 608 | 0.4− 1.4+ |
| 2002 10 04 704 | 0.7− 0.7+   | 2002 10 15 644 | 0.2− 1.3+ | 2002 11 04 608 | 0.1+ 0.3+ |
| 2002 10 04 704 | 0.1+ 1.0+   | 2002 10 15 644 | 0.1− 1.4+ | 2006 08 23 644 | 0.0 0.3+  |
| 2002 10 04 704 | 0.8+ 1.3+   | 2002 10 15 644 | 0.0 1.4+  | 2006 08 23 644 | 0.1+ 0.5+ |
| 2002 10 04 704 | (1.1+ 1.7+) | 2002 10 28 644 | 0.3− 0.2− | 2006 08 23 644 | 0.2− 0.1− |
| 2002 10 04 645 | 0.1+ 0.1−   | 2002 10 28 644 | 0.4− 0.2− | 2007 11 13 G96 | 0.1+ 0.1+ |
| 2002 10 04 645 | 0.1+ 0.1−   | 2002 10 28 644 | 0.1+ 0.0  | 2007 11 13 G96 | 0.1− 0.1+ |
| 2002 10 08 699 | 1.2+ 1.4+   | 2002 10 30 645 | 0.0 0.1−  | 2007 11 13 G96 | 0.1− 0.1+ |
| 2002 10 08 699 | 0.8− 0.8+   | 2002 10 30 704 | 0.2− 0.5+ | 2007 11 13 G96 | 0.2− 0.1+ |
| 2002 10 08 699 | 0.2− 0.0    | 2002 10 30 645 | 0.1− 0.1− | 2007 11 18 G96 | 0.2− 0.1+ |
| 2002 10 08 699 | 0.1− 1.2+   | 2002 10 30 704 | 0.2− 1.3+ | 2007 11 18 G96 | 0.1+ 0.3− |
| 2002 10 10 645 | 0.0 0.1−    | 2002 10 30 704 | 0.0 0.1−  | 2007 11 18 G96 | 0.1+ 0.2− |
| 2002 10 10 645 | 0.0 0.1−    | 2002 10 30 704 | 0.5− 0.1− | 2007 11 18 G96 | 0.3+ 0.0  |
| 2002 10 11 645 | 0.0 0.1−    | 2002 11 04 608 | 0.2− 0.9+ |                |           |

**2002 TK<sub>209</sub> = 2007 XH<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.23006   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21087876 | $\omega$ | 268.18589 | +0.87052684 +0.45450617  |
| <i>a</i> | 2.7954227  | $\Omega$ | 64.74040  | −0.32601271 +0.81984618  |
| <i>e</i> | 0.2471172  | <i>i</i> | 12.04318  | −0.36864447 +0.34824759  |
| <i>P</i> | 4.67       | <i>H</i> | 16.2      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|                |             |                |           |                |           |
|----------------|-------------|----------------|-----------|----------------|-----------|
| 2001 03 22 691 | 0.1+ 0.2−   | 2002 10 16 644 | 0.0 0.3−  | 2007 12 03 703 | 1.3− 0.0  |
| 2001 03 22 691 | 0.1+ 0.1+   | 2002 10 16 644 | 0.1− 0.1− | 2007 12 03 703 | 0.0 0.7−  |
| 2001 03 22 691 | 0.0 0.4+    | 2002 10 16 644 | 0.0 0.0   | 2007 12 03 703 | 0.5− 0.7− |
| 2002 09 16 608 | 0.7− 0.2+   | 2002 10 28 644 | 0.0 0.7+  | 2007 12 03 703 | 0.1+ 0.6− |
| 2002 09 16 608 | (1.7− 0.0 ) | 2002 10 28 644 | 0.3− 0.5+ | 2007 12 04 699 | 0.3+ 2.0− |
| 2002 09 16 608 | 0.8− 0.4+   | 2002 10 28 644 | 0.3+ 0.5+ | 2007 12 04 699 | 0.1− 0.6+ |
| 2002 09 29 608 | 0.0 0.7−    | 2007 10 20 G96 | 0.0 0.4−  | 2007 12 04 699 | 0.5+ 0.3− |
| 2002 09 29 608 | 0.2+ 1.0−   | 2007 10 20 G96 | 0.4+ 0.6− | 2007 12 04 699 | 0.3+ 0.9+ |
| 2002 09 29 608 | 0.2+ 1.3−   | 2007 10 20 G96 | 0.2+ 0.6− | 2007 12 05 704 | 0.4− 1.3+ |
| 2002 10 06 704 | 0.5+ 0.6+   | 2007 10 20 G96 | 0.1+ 0.5− | 2007 12 05 704 | 0.6− 0.3+ |
| 2002 10 06 704 | 1.1+ 0.2+   | 2007 11 08 691 | 0.1− 0.2− | 2007 12 05 704 | 0.2− 0.7+ |
| 2002 10 06 704 | 0.2+ 0.5−   | 2007 11 08 691 | 0.2− 0.4+ | 2007 12 06 G96 | 0.1+ 0.2− |
| 2002 10 08 699 | 1.1− 0.3−   | 2007 11 08 691 | 0.1− 0.0  | 2007 12 06 G96 | 0.5+ 0.1− |
| 2002 10 08 699 | 0.2− 0.9+   | 2007 11 14 691 | 0.4− 0.1− | 2007 12 06 G96 | 0.2− 0.3− |
| 2002 10 08 699 | 0.0 1.1+    | 2007 11 14 691 | 0.2− 0.0  | 2007 12 06 G96 | 0.1+ 0.3− |
| 2002 10 08 699 | (1.7+ 0.3+) | 2007 11 14 691 | 1.2+ 0.8+ |                |           |

**2002 TX<sub>211</sub> = 2007 VL<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.01183   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22571679 | $\omega$ | 330.14634 | +0.80460992 −0.54987220  |
| <i>a</i> | 2.6715305  | $\Omega$ | 64.90510  | +0.58195742 +0.65519313  |
| <i>e</i> | 0.0953421  | <i>i</i> | 14.33046  | +0.11801880 +0.51803719  |
| <i>P</i> | 4.37       | <i>H</i> | 15.6      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2002 09 10 644 | 0.2− 0.6+ | 2005 05 15 644 | 0.0 0.3+  | 2007 11 20 704 | 0.7+ 0.7+ |
| 2002 09 10 644 | 0.3− 0.6+ | 2005 05 15 644 | 0.1− 0.3+ | 2007 11 20 704 | 1.2+ 0.1− |
| 2002 09 10 644 | 0.3+ 0.5+ | 2006 08 26 E12 | 0.3− 0.1− | 2007 12 06 691 | 0.2− 0.0  |
| 2002 09 10 644 | 0.6− 0.5+ | 2006 08 26 E12 | 0.3− 1.0− | 2007 12 06 691 | 0.1− 0.1− |
| 2002 09 10 644 | 0.1− 1.0+ | 2006 08 26 E12 | 0.5+ 1.0− | 2007 12 06 691 | 0.1− 0.1− |
| 2002 09 10 644 | 0.3− 0.9+ | 2006 08 26 E12 | 0.1+ 1.0+ | 2007 12 13 704 | 0.1+ 0.3+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 608 | 0.4+  | 1.4−  | 2007 11 06 | 691 | 0.3− | 0.2− | 2007 12 13 | 704 | 1.1+ | 0.0  |
| 2002 10 06 | 608 | (0.4− | 1.8−) | 2007 11 06 | 691 | 0.6− | 0.5− | 2007 12 13 | 704 | 0.1− | 0.1+ |
| 2002 10 06 | 608 | (0.5− | 1.7−) | 2007 11 06 | 691 | 0.5− | 0.1− | 2007 12 13 | 704 | 0.0  | 0.0  |
| 2002 10 08 | 644 | 0.2−  | 0.1−  | 2007 11 15 | 704 | 0.2+ | 0.6− | 2007 12 13 | 704 | 0.5+ | 0.1+ |
| 2002 10 08 | 644 | 0.6−  | 0.6+  | 2007 11 15 | 704 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.3+ | 0.2+ |
| 2002 10 08 | 644 | 0.5−  | 0.2+  | 2007 11 15 | 704 | 0.2+ | 0.4+ | 2007 12 15 | 704 | 0.4+ | 0.2+ |
| 2005 04 10 | 691 | 0.3+  | 0.3+  | 2007 11 15 | 704 | 0.5+ | 0.6+ | 2007 12 15 | 704 | 0.6+ | 0.6+ |
| 2005 04 10 | 691 | 0.2+  | 0.3+  | 2007 11 20 | 704 | 0.1+ | 0.5+ | 2007 12 15 | 704 | 0.2+ | 0.7+ |
| 2005 04 10 | 691 | 0.1+  | 0.2+  | 2007 11 20 | 704 | 0.3+ | 1.4+ | 2007 12 15 | 704 | 0.2+ | 0.6+ |
| 2005 05 15 | 644 | 0.0   | 0.2+  | 2007 11 20 | 704 | 0.2− | 0.2+ |            |     |      |      |

**2002 TN<sub>218</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.11761   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21666552 | $\omega$ | 147.01597 | +0.79761213 | −0.58621777 |
| <i>a</i> | 2.7454246  | $\Omega$ | 249.51790 | +0.51536937 | +0.78466710 |
| <i>e</i> | 0.2557992  | <i>i</i> | 8.71858   | +0.31338364 | +0.20160918 |
| <i>P</i> | 4.55       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 03 | 644 | 0.3− | 0.6− | 2002 10 09 | 704 | 0.3+ | 0.2− | 2007 11 14 | 704 | 0.1− | 0.4− |
| 2002 09 03 | 644 | 0.2− | 0.7− | 2002 10 09 | 704 | 0.4+ | 0.2− | 2007 11 14 | 704 | 1.3+ | 0.9+ |
| 2002 09 03 | 644 | 0.2− | 0.9− | 2002 10 09 | 704 | 0.0  | 0.4− | 2007 11 14 | 704 | 0.4− | 0.1+ |
| 2002 09 12 | 644 | 0.2+ | 0.2+ | 2002 10 09 | 704 | 0.4− | 0.4+ | 2007 12 04 | 691 | 0.2− | 0.1− |
| 2002 09 12 | 644 | 0.1− | 0.3+ | 2002 11 06 | 704 | 0.4− | 0.4+ | 2007 12 04 | 704 | 0.6+ | 0.2− |
| 2002 09 12 | 644 | 0.1+ | 0.3+ | 2002 11 06 | 704 | 0.0  | 0.2− | 2007 12 04 | 704 | 1.0+ | 0.1+ |
| 2002 10 05 | 704 | 0.1− | 0.7+ | 2002 11 06 | 704 | 0.5+ | 0.9+ | 2007 12 04 | 691 | 0.4− | 0.0  |
| 2002 10 05 | 704 | 0.4+ | 0.4+ | 2002 11 06 | 704 | 1.1− | 0.4− | 2007 12 04 | 704 | 1.1+ | 0.1+ |
| 2002 10 05 | 704 | 0.4+ | 0.2+ | 2002 12 01 | 704 | 0.5− | 0.3− | 2007 12 04 | 691 | 0.7− | 0.4− |
| 2002 10 05 | 704 | 0.4− | 0.1− | 2002 12 01 | 704 | 0.7+ | 0.3− | 2007 12 04 | 704 | 0.5+ | 0.7+ |
| 2002 10 05 | 704 | 0.2+ | 0.2+ | 2002 12 01 | 704 | 0.2− | 0.1+ |            |     |      |      |
| 2002 10 09 | 704 | 0.4+ | 0.1+ | 2007 11 14 | 704 | 1.2+ | 0.5+ |            |     |      |      |

**2002 TB<sub>232</sub> = 2002 TY<sub>297</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.37733  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20494200 | $\omega$ | 96.51022  | +0.57199919 | −0.80503579 |
| <i>a</i> | 2.8491506  | $\Omega$ | 317.30647 | +0.63059459 | +0.55419982 |
| <i>e</i> | 0.2801041  | <i>i</i> | 13.41117  | +0.52456400 | +0.21161271 |
| <i>P</i> | 4.81       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 699 | 0.6+ | 0.9− | 2002 10 10 | 704 | 0.2+ | 0.5+ | 2002 12 27 | 644 | 0.2− | 0.3+ |
| 2002 10 06 | 699 | 0.1− | 0.2− | 2002 10 12 | 704 | 0.1+ | 0.3+ | 2002 12 27 | 644 | 0.3− | 0.0  |
| 2002 10 06 | 699 | 0.7− | 0.9− | 2002 10 12 | 704 | 0.2+ | 0.3+ | 2002 12 27 | 644 | 0.8− | 0.2+ |
| 2002 10 06 | 699 | 0.3− | 0.7+ | 2002 10 12 | 704 | 0.2+ | 0.6+ | 2007 09 20 | 703 | 0.4− | 0.1+ |
| 2002 10 06 | 704 | 0.1+ | 0.2− | 2002 10 12 | 704 | 0.4− | 0.2+ | 2007 09 20 | 703 | 0.5− | 0.0  |
| 2002 10 06 | 704 | 0.4+ | 0.3− | 2002 10 12 | 704 | 0.4+ | 0.1+ | 2007 09 20 | 703 | 0.2+ | 0.2− |
| 2002 10 06 | 704 | 0.0  | 0.9− | 2002 10 15 | 644 | 0.4− | 0.6− | 2007 09 20 | 703 | 0.0  | 0.4+ |
| 2002 10 06 | 704 | 0.2− | 0.9− | 2002 10 15 | 644 | 0.3− | 0.7− | 2007 12 11 | J66 | 0.1+ | 0.1− |
| 2002 10 06 | 704 | 0.1+ | 0.8− | 2002 10 15 | 644 | 0.3− | 0.7− | 2007 12 11 | J66 | 0.4+ | 0.1− |
| 2002 10 10 | 704 | 0.0  | 0.7+ | 2002 11 08 | 704 | 1.2+ | 0.8+ | 2007 12 11 | J66 | 0.2− | 0.1− |
| 2002 10 10 | 704 | 0.2− | 1.0+ | 2002 11 08 | 704 | 0.9+ | 0.4+ | 2007 12 11 | J66 | 0.4+ | 0.2− |
| 2002 10 10 | 704 | 0.6− | 1.4+ | 2002 11 08 | 704 | 0.0  | 0.3+ |            |     |      |      |

**2002 TH<sub>235</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.60669   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21097113 | $\omega$ | 86.98026  | +0.98648807 | +0.00781396 |
| <i>a</i> | 2.7946067  | $\Omega$ | 272.53130 | −0.07343596 | +0.91398734 |
| <i>e</i> | 0.2712424  | <i>i</i> | 9.42791   | +0.14645286 | +0.40566745 |
| <i>P</i> | 4.67       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 704 | 0.1− | 0.1− | 2002 11 13 | 644 | 0.2+ | 0.1+ | 2007 11 20 | 704 | 0.5+ | 0.1+ |
| 2002 10 06 | 704 | 0.1− | 0.1− | 2002 11 14 | 704 | 0.3+ | 0.2− | 2007 11 20 | 291 | 0.3− | 0.3− |
| 2002 10 06 | 704 | 0.0  | 0.2− | 2002 11 14 | 704 | 0.3+ | 0.0  | 2007 11 20 | 291 | 0.1− | 0.4− |
| 2002 10 06 | 704 | 0.0  | 0.3− | 2002 11 14 | 704 | 0.0  | 0.2+ | 2007 11 20 | 291 | 0.1− | 0.2− |
| 2002 10 06 | 704 | 0.3+ | 0.1+ | 2002 11 14 | 704 | 0.2+ | 1.2+ | 2007 11 20 | 704 | 0.1− | 0.5+ |
| 2002 10 10 | 704 | 0.4− | 0.1− | 2002 12 05 | 704 | 0.4− | 0.9+ | 2007 12 10 | 704 | 1.2− | 0.0  |
| 2002 10 10 | 704 | 0.0  | 0.3+ | 2002 12 05 | 704 | 0.5− | 0.7+ | 2007 12 10 | 704 | 0.1+ | 0.3+ |
| 2002 10 10 | 704 | 0.1− | 1.2− | 2002 12 05 | 704 | 0.6− | 0.6+ | 2007 12 10 | 704 | 0.3+ | 0.1− |
| 2002 10 10 | 704 | 0.0  | 0.8− | 2002 12 05 | 704 | 0.1+ | 0.1− | 2007 12 14 | 704 | 0.1− | 0.6+ |
| 2002 10 10 | 704 | 0.0  | 0.3− | 2002 12 05 | 704 | 1.2+ | 1.3− | 2007 12 14 | 704 | 0.1− | 0.7+ |
| 2002 10 15 | 704 | 0.3− | 0.0  | 2003 01 05 | 704 | 0.2+ | 0.1+ | 2007 12 14 | 704 | 1.6− | 1.1+ |
| 2002 10 15 | 704 | 0.6− | 0.6− | 2003 01 05 | 704 | 0.7+ | 0.1+ | 2007 12 14 | 704 | 0.5+ | 0.9+ |
| 2002 10 15 | 704 | 0.5+ | 0.8− | 2003 01 05 | 704 | 0.4− | 1.0+ | 2007 12 15 | 691 | 0.3+ | 0.2− |
| 2002 11 07 | 704 | 0.5− | 0.5+ | 2003 01 05 | 704 | 0.0  | 0.1+ | 2007 12 15 | 691 | 0.0  | 0.1− |
| 2002 11 07 | 704 | 0.5− | 0.2+ | 2007 11 07 | 704 | 0.6− | 0.2− | 2007 12 15 | 691 | 0.2+ | 0.4− |
| 2002 11 07 | 704 | 0.4− | 0.6+ | 2007 11 07 | 704 | 0.4+ | 0.1− | 2007 12 16 | 704 | 0.7+ | 0.1+ |
| 2002 11 07 | 704 | 0.2− | 0.4+ | 2007 11 07 | 704 | 0.5− | 1.1− | 2007 12 16 | 704 | 0.1+ | 0.6+ |
| 2002 11 07 | 704 | 0.1+ | 0.9+ | 2007 11 07 | 704 | 0.7− | 0.4− | 2007 12 16 | 704 | 0.4− | 0.2+ |
| 2002 11 13 | 644 | 0.4+ | 0.1+ | 2007 11 07 | 704 | 0.4+ | 0.8+ | 2007 12 16 | 704 | 0.5+ | 0.8+ |
| 2002 11 13 | 644 | 0.2+ | 0.1+ | 2007 11 20 | 704 | 0.6+ | 0.0  | 2007 12 16 | 704 | 0.5+ | 0.1+ |

**2002 TP<sub>251</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 12.19757   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.19114627 | $\omega$ | 310.50377 | +0.98948154 | +0.02461467 |
| <i>a</i> | 2.9846415  | $\Omega$ | 48.59461  | +0.05145509 | +0.86108368 |
| <i>e</i> | 0.1183166  | <i>i</i> | 10.95592  | −0.13519855 | +0.50786713 |
| <i>P</i> | 5.16       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 03 | 704 | 0.7− | 0.8+ | 2002 10 31 | 704 | 0.2+ | 0.6+ | 2007 09 05 | 703 | (2.2− | 1.6−) |
| 2002 10 03 | 704 | 0.8− | 0.5+ | 2002 10 31 | 699 | 0.6+ | 0.1+ | 2007 09 05 | 703 | (2.3− | 1.3−) |
| 2002 10 03 | 704 | 0.8− | 1.3+ | 2002 10 31 | 704 | 0.7+ | 0.1− | 2007 10 12 | 703 | 0.5+  | 0.1−  |
| 2002 10 07 | 608 | 0.7+ | 1.2− | 2002 10 31 | 704 | 0.5+ | 0.2− | 2007 10 12 | 703 | 0.3+  | 1.1+  |
| 2002 10 07 | 608 | 0.7+ | 1.0− | 2002 10 31 | 699 | 0.6− | 0.0  | 2007 10 12 | 703 | 0.8+  | 0.7+  |
| 2002 10 07 | 608 | 0.4+ | 0.8− | 2002 10 31 | 704 | 0.5+ | 0.0  | 2007 10 12 | 703 | 0.7+  | 0.0   |
| 2002 10 11 | 704 | 1.0+ | 0.1− | 2002 10 31 | 704 | 0.0  | 0.2+ | 2007 10 19 | 703 | 1.3−  | 0.6−  |
| 2002 10 11 | 704 | 0.2+ | 0.8− | 2004 01 17 | 644 | 0.2− | 0.1+ | 2007 10 19 | 703 | 0.2−  | 0.1+  |
| 2002 10 11 | 704 | 0.5+ | 1.6− | 2004 01 17 | 644 | 0.2+ | 0.3+ | 2007 10 19 | 703 | 0.0   | 0.3+  |
| 2002 10 11 | 704 | 0.1− | 0.3+ | 2004 01 17 | 644 | 0.1+ | 0.1+ | 2007 10 19 | 703 | 1.6−  | 0.5+  |
| 2002 10 31 | 699 | 1.8− | 0.3+ | 2007 09 05 | 703 | 0.2+ | 0.9− |            |     |       |       |
| 2002 10 31 | 699 | 0.2− | 0.1+ | 2007 09 05 | 703 | 0.5− | 0.5+ |            |     |       |       |

**2002 TT<sub>255</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 289.21408  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17235746 | $\omega$ | 235.30168 | +0.28139733 | −0.94841041 |
| <i>a</i> | 3.1977855  | $\Omega$ | 199.95973 | +0.95904500 | +0.28309572 |
| <i>e</i> | 0.2483423  | <i>i</i> | 25.33273  | +0.03237635 | −0.14273928 |
| <i>P</i> | 5.72       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 08 | 691 | 0.0  | 0.2+ | 2002 10 11 | 704 | 0.1+ | 0.1+ | 2002 11 06 | 699 | 0.0  | 0.2− |
| 1996 10 08 | 691 | 0.0  | 0.0  | 2002 10 11 | 704 | 0.1− | 0.4+ | 2002 11 06 | 699 | 0.6+ | 0.2+ |
| 1996 10 08 | 691 | 0.1− | 0.3− | 2002 10 31 | 704 | 0.0  | 0.6+ | 2002 11 06 | 699 | 0.0  | 0.1+ |
| 2002 10 09 | 644 | 0.5− | 0.3+ | 2002 10 31 | 704 | 0.8+ | 0.2+ | 2007 12 05 | G96 | 0.1− | 0.4+ |
| 2002 10 09 | 644 | 0.5− | 0.2+ | 2002 10 31 | 704 | 0.3+ | 0.4− | 2007 12 05 | G96 | 0.6+ | 0.3− |
| 2002 10 09 | 644 | 0.5− | 0.1+ | 2002 10 31 | 704 | 0.7+ | 0.1+ | 2007 12 05 | G96 | 0.7− | 0.1− |
| 2002 10 11 | 704 | 0.3+ | 0.3− | 2002 10 31 | 704 | 0.0  | 0.1+ | 2007 12 05 | G96 | 0.1+ | 0.4+ |
| 2002 10 11 | 704 | 1.0− | 1.2− | 2002 11 06 | 699 | 0.3− | 0.1− |            |     |      |      |

2007 DEC. 24

M.P.O. 129625

**2002 TM<sub>288</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.75725   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20464177 | $\omega$ | 95.02031  | +0.98303142   | +0.01899865 |
| <i>a</i> | 2.8519365  | $\Omega$ | 263.97573 | -0.08714537   | +0.92358440 |
| <i>e</i> | 0.2528938  | <i>i</i> | 10.57159  | +0.16141535   | +0.38292415 |
| <i>P</i> | 4.82       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 10 | 704 | 0.4-  | 0.1-  | 2002 11 14 | 704 | 0.1+  | 0.2-  | 2003 01 05 | 704 | 0.4+ | 1.0+ |
| 2002 10 10 | 704 | 0.2+  | 0.3-  | 2002 11 14 | 704 | 0.5-  | 0.8-  | 2003 01 05 | 704 | 0.6+ | 0.5+ |
| 2002 10 10 | 704 | 0.4+  | 0.2-  | 2002 11 14 | 704 | 0.4-  | 0.4-  | 2003 01 05 | 704 | 0.5+ | 0.8+ |
| 2002 10 10 | 704 | 0.2-  | 0.1+  | 2002 11 27 | 699 | 0.9+  | 0.1-  | 2003 01 05 | 704 | 0.2- | 0.6+ |
| 2002 10 10 | 704 | 0.1+  | 0.3-  | 2002 11 27 | 699 | 0.1-  | 0.2+  | 2003 01 05 | 704 | 0.6- | 0.3- |
| 2002 10 12 | 704 | 0.1-  | 0.1-  | 2002 11 27 | 699 | 1.0+  | 0.4+  | 2007 11 18 | G96 | 0.0  | 0.5- |
| 2002 10 12 | 704 | 0.6-  | 0.4-  | 2002 11 27 | 699 | 1.0+  | 0.1-  | 2007 11 18 | G96 | 0.2+ | 0.4- |
| 2002 10 12 | 704 | 0.4-  | 0.6-  | 2002 12 02 | 704 | 0.3-  | 0.1-  | 2007 11 18 | G96 | 0.1+ | 0.4- |
| 2002 10 12 | 704 | 0.4+  | 0.1+  | 2002 12 02 | 704 | 0.5-  | 0.5-  | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2002 11 06 | 704 | (0.4- | 1.7+) | 2002 12 02 | 704 | 0.2-  | 0.0   | 2007 11 20 | 691 | 0.1+ | 0.2- |
| 2002 11 06 | 704 | 0.1-  | 1.4+  | 2002 12 02 | 704 | 0.3-  | 0.2-  | 2007 11 20 | 691 | 0.1- | 0.3- |
| 2002 11 06 | 699 | 0.5-  | 0.2-  | 2002 12 11 | 644 | 0.1-  | 1.0+  | 2007 11 20 | 691 | 0.0  | 0.2- |
| 2002 11 06 | 704 | (0.7- | 1.5+) | 2002 12 11 | 644 | 0.4+  | 1.1+  | 2007 12 10 | 704 | 0.0  | 0.8+ |
| 2002 11 06 | 699 | 0.2+  | 0.9+  | 2002 12 11 | 644 | 0.3+  | 0.9+  | 2007 12 10 | 704 | 0.6- | 1.2+ |
| 2002 11 06 | 704 | (0.3- | 2.1+) | 2002 12 11 | 704 | (0.1- | 1.8-) | 2007 12 10 | 704 | 0.5- | 1.1+ |
| 2002 11 06 | 699 | 0.4-  | 0.2+  | 2002 12 11 | 704 | 0.1+  | 0.5-  | 2007 12 10 | 704 | 0.4- | 0.1+ |
| 2002 11 06 | 704 | (0.1+ | 2.2+) | 2002 12 11 | 704 | 0.5-  | 0.9-  | 2007 12 14 | 704 | 0.3+ | 0.5- |
| 2002 11 06 | 699 | 0.4+  | 0.1-  | 2002 12 11 | 704 | 0.0   | 0.0   | 2007 12 14 | 704 | 0.0  | 0.4- |
| 2002 11 08 | 446 | 0.4-  | 0.3-  | 2002 12 27 | 644 | 0.0   | 0.4+  | 2007 12 14 | 704 | 0.1+ | 0.1- |
| 2002 11 08 | 446 | 0.0   | 0.3-  | 2002 12 27 | 644 | 0.4-  | 0.1+  | 2007 12 14 | 704 | 0.1+ | 0.3+ |
| 2002 11 09 | 446 | 0.4+  | 0.3-  | 2002 12 27 | 644 | 0.1+  | 0.1+  | 2007 12 14 | 704 | 0.2+ | 0.1- |
| 2002 11 09 | 446 | 0.0   | 0.4+  | 2002 12 31 | 704 | 0.2-  | 0.2+  | 2007 12 15 | G96 | 0.0  | 0.3- |
| 2002 11 13 | 644 | 0.0   | 0.3+  | 2002 12 31 | 704 | 0.1+  | 0.3-  | 2007 12 15 | G96 | 0.0  | 0.2- |
| 2002 11 13 | 644 | 0.1-  | 0.2+  | 2002 12 31 | 704 | 0.6+  | 0.7-  | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2002 11 13 | 644 | 0.1-  | 0.4+  | 2002 12 31 | 704 | 0.7+  | 0.3+  | 2007 12 15 | G96 | 0.2- | 0.2- |
| 2002 11 14 | 704 | 1.2-  | 0.3-  | 2002 12 31 | 704 | 0.3+  | 0.1-  |            |     |      |      |

**2002 TW<sub>291</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.96847  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18392346 | $\omega$ | 99.73523  | +0.94083937   | -0.31219780 |
| <i>a</i> | 3.0622781  | $\Omega$ | 278.54640 | +0.23437948   | +0.88033884 |
| <i>e</i> | 0.1450807  | <i>i</i> | 7.65530   | +0.24471930   | +0.35712191 |
| <i>P</i> | 5.36       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 704 | 0.6+ | 0.3- | 2002 10 12 | 704 | 0.2+ | 0.3+ | 2002 11 13 | 644 | 0.0  | 0.3+ |
| 2002 10 05 | 704 | 1.0- | 0.1- | 2002 10 12 | 704 | 0.3- | 0.2+ | 2007 09 05 | 703 | 0.1- | 0.1+ |
| 2002 10 05 | 704 | 0.2- | 0.2+ | 2002 11 05 | 704 | 0.5+ | 0.3+ | 2007 09 05 | 703 | 1.6- | 0.1- |
| 2002 10 05 | 704 | 0.4+ | 0.2+ | 2002 11 05 | 704 | 0.1- | 0.4- | 2007 09 05 | 703 | 0.6+ | 0.1+ |
| 2002 10 05 | 704 | 0.6+ | 0.5- | 2002 11 05 | 704 | 0.8- | 0.5- | 2007 09 05 | 703 | 0.9+ | 0.3+ |
| 2002 10 10 | 704 | 0.3- | 0.3- | 2002 11 05 | 704 | 0.6+ | 0.5+ | 2007 09 11 | 703 | 0.0  | 0.7- |
| 2002 10 10 | 704 | 0.5- | 0.6+ | 2002 11 05 | 704 | 0.6- | 0.5- | 2007 09 11 | 703 | 0.3+ | 0.4- |
| 2002 10 10 | 704 | 0.6+ | 0.0  | 2002 11 13 | 644 | 0.3+ | 0.5+ | 2007 09 11 | 703 | 0.0  | 0.6+ |
| 2002 10 12 | 704 | 0.4- | 0.3- | 2002 11 13 | 644 | 0.5+ | 0.1- | 2007 09 11 | 703 | 0.2- | 0.1+ |

**2002 TT<sub>314</sub> = 2007 XL<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 289.73146  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21877905 | $\omega$ | 77.86444 | -0.87129615   | -0.42927258 |
| <i>a</i> | 2.7277144  | $\Omega$ | 76.31929 | +0.29790320   | -0.84777035 |
| <i>e</i> | 0.0975129  | <i>i</i> | 14.16914 | +0.38999576   | -0.31146505 |
| <i>P</i> | 4.51       | <i>H</i> | 16.2     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 27 | 699 | 0.8+ | 1.2+ | 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.1+ | 0.0  |
| 2000 04 27 | 699 | 2.2+ | 0.6- | 2002 10 05 | 645 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.3- | 0.4- |
| 2000 04 27 | 699 | 0.6+ | 0.1+ | 2002 10 11 | 645 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.3+ | 0.1+ |
| 2000 04 27 | 699 | 0.5+ | 0.8+ | 2002 10 11 | 645 | 0.2- | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.2+ |
| 2000 05 04 | 645 | 0.1- | 0.0  | 2007 12 10 | 704 | 0.9+ | 0.0  | 2007 12 16 | 691 | 0.2- | 0.1- |
| 2000 05 04 | 645 | 0.1- | 0.0  | 2007 12 10 | 704 | 1.9+ | 0.2- | 2007 12 16 | 691 | 0.3- | 0.0  |
| 2002 10 04 | 645 | 0.1+ | 0.0  | 2007 12 10 | 704 | 0.9+ | 0.3- | 2007 12 16 | 691 | 0.7- | 0.3+ |
| 2002 10 04 | 645 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.6- |            |     |      |      |

**2002 TM<sub>315</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.36181  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17794621 | $\omega$ | 288.27132 | +0.83798484   | -0.50783636 |
| <i>a</i> | 3.1304749  | $\Omega$ | 102.68025 | +0.54514391   | +0.76264350 |
| <i>e</i> | 0.1064908  | <i>i</i> | 11.81203  | +0.02448530   | +0.40059595 |
| <i>P</i> | 5.54       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 645 | 0.0  | 0.3- | 2002 10 31 | 645 | 0.0  | 0.4- | 2007 08 16 | D29 | 0.0  | 0.1- |
| 2002 10 04 | 645 | 0.0  | 0.4- | 2002 10 31 | 645 | 0.1+ | 0.4- | 2007 08 16 | D29 | 0.9- | 0.3+ |
| 2002 10 05 | 645 | 0.1- | 0.3- | 2002 11 07 | 645 | 0.0  | 0.4- | 2007 09 04 | 703 | 0.8+ | 0.5+ |
| 2002 10 05 | 645 | 0.1- | 0.4- | 2002 11 07 | 645 | 0.0  | 0.4- | 2007 09 04 | 703 | 1.0- | 0.1+ |
| 2002 10 10 | 644 | 0.0  | 0.5+ | 2002 11 22 | 644 | 0.1+ | 0.5+ | 2007 09 04 | 703 | 0.3- | 1.3+ |
| 2002 10 10 | 644 | 0.2- | 0.5+ | 2002 11 22 | 644 | 0.2- | 0.9+ | 2007 09 04 | 703 | 0.6- | 1.0- |
| 2002 10 10 | 644 | 0.1+ | 0.3+ | 2002 11 22 | 644 | 0.0  | 1.0+ | 2007 09 14 | 703 | 1.0+ | 0.3- |
| 2002 10 11 | 645 | 0.1- | 0.4- | 2004 01 17 | 644 | 0.3- | 0.0  | 2007 09 14 | 703 | 0.0  | 0.5- |
| 2002 10 11 | 645 | 0.0  | 0.4- | 2004 01 17 | 644 | 0.1- | 0.0  | 2007 09 14 | 703 | 0.3+ | 0.3+ |
| 2002 10 28 | 644 | 0.3+ | 0.2- | 2004 01 17 | 644 | 0.4+ | 0.5+ | 2007 09 14 | 703 | 0.3+ | 0.3+ |
| 2002 10 28 | 644 | 0.0  | 0.2- | 2007 08 16 | D29 | 0.3+ | 0.4+ |            |     |      |      |
| 2002 10 28 | 644 | 0.5+ | 0.0  | 2007 08 16 | D29 | 0.3- | 0.5- |            |     |      |      |

**2002 TE<sub>321</sub> = 2002 RE<sub>218</sub> = 2007 TA<sub>190</sub> = 2007 RD<sub>283</sub>**Id. Minor Planet Center (*MPO* 127984; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.76414   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19404405 | $\omega$ | 5.54986   | +0.94545497   | +0.32529738 |
| <i>a</i> | 2.9548526  | $\Omega$ | 335.44502 | -0.30044384   | +0.85035078 |
| <i>e</i> | 0.1012901  | <i>i</i> | 2.37485   | -0.12589045   | +0.41362443 |
| <i>P</i> | 5.08       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 10 | 695 | 0.1- | 0.0  | 2005 03 08 | G96 | 0.3+  | 0.0   | 2007 09 14 | A77 | 0.5+ | 0.6+ |
| 2000 04 10 | 695 | 0.1+ | 0.2- | 2005 04 02 | G96 | 0.6+  | 0.4+  | 2007 09 15 | A77 | 0.2+ | 0.6+ |
| 2002 09 14 | 644 | 0.2- | 0.3+ | 2005 04 02 | G96 | 1.7-  | 0.6-  | 2007 09 15 | A77 | 0.2+ | 0.5+ |
| 2002 09 14 | 644 | 0.4- | 0.6+ | 2005 04 02 | G96 | (2.6+ | 1.4-) | 2007 10 04 | G96 | 0.0  | 0.5- |
| 2002 09 14 | 644 | 0.2- | 0.1+ | 2005 04 02 | G96 | 0.6+  | 0.0   | 2007 10 04 | G96 | 0.1+ | 0.2- |
| 2002 10 05 | 645 | 0.1+ | 0.2- | 2007 08 10 | 691 | 0.5-  | 0.1-  | 2007 10 04 | G96 | 0.3- | 0.5- |
| 2002 10 05 | 645 | 0.2+ | 0.2- | 2007 08 10 | 691 | 0.6-  | 0.7-  | 2007 10 11 | G96 | 0.1- | 0.4- |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 08 10 | 691 | 0.6-  | 0.4-  | 2007 10 11 | G96 | 0.2+ | 0.2- |
| 2002 10 10 | 645 | 0.0  | 0.1+ | 2007 09 12 | 699 | (0.9+ | 4.6+) | 2007 10 11 | G96 | 0.2- | 0.5- |
| 2002 10 11 | 645 | 0.0  | 0.1- | 2007 09 12 | 699 | 0.2+  | 1.1+  | 2007 10 11 | G96 | 0.3- | 0.2- |
| 2002 10 11 | 645 | 0.0  | 0.0  | 2007 09 12 | 699 | 0.7+  | 0.9+  | 2007 10 19 | G96 | 0.0  | 0.0  |
| 2002 10 31 | 645 | 0.1+ | 0.0  | 2007 09 12 | G96 | 0.3+  | 0.4-  | 2007 10 19 | G96 | 0.1- | 0.4+ |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.1-  | 0.5-  | 2007 10 19 | G96 | 0.1+ | 0.2+ |
| 2005 03 08 | G96 | 0.3+ | 0.2+ | 2007 09 12 | G96 | 0.2-  | 0.4-  | 2007 10 19 | G96 | 0.5+ | 0.3- |
| 2005 03 08 | G96 | 0.1+ | 0.3+ | 2007 09 12 | G96 | 0.1-  | 0.5-  |            |     |      |      |
| 2005 03 08 | G96 | 0.1- | 0.2+ | 2007 09 12 | 699 | 0.4+  | 1.0+  |            |     |      |      |

**2002 TQ<sub>327</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.22669   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19996902 | $\omega$ | 343.65797 | +0.99685971   | -0.04261285 |
| <i>a</i> | 2.8961935  | $\Omega$ | 19.16175  | +0.07298767   | +0.82137840 |
| <i>e</i> | 0.0642207  | <i>i</i> | 11.73258  | -0.03071691   | +0.56878965 |
| <i>P</i> | 4.93       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.1+ | 0.0  | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 09 13 | G96 | 0.0  | 0.1- |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2002 10 31 | 645 | 0.2- | 0.0  | 2007 09 13 | G96 | 0.2- | 0.3+ |
| 2002 10 11 | 645 | 0.0  | 0.2+ | 2002 11 08 | 645 | 0.0  | 0.1+ | 2007 10 19 | G96 | 0.0  | 0.0  |
| 2002 10 11 | 645 | 0.0  | 0.2+ | 2002 11 08 | 645 | 0.1- | 0.1- | 2007 10 19 | G96 | 0.1- | 0.5- |
| 2002 10 30 | 645 | 0.1- | 0.0  | 2007 09 13 | G96 | 0.7+ | 0.1- | 2007 10 19 | G96 | 0.4+ | 0.1+ |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2007 09 13 | G96 | 0.0  | 0.1- | 2007 10 19 | G96 | 0.7- | 0.0  |

**2002 TU<sub>343</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 66.45558   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21749962 | $\omega$ | 278.65145 | +0.98802417   | +0.09860527 |
| <i>a</i> | 2.7384010  | $\Omega$ | 75.75285  | -0.03962966   | +0.90552780 |
| <i>e</i> | 0.0056690  | <i>i</i> | 7.03336   | -0.14912317   | +0.41266985 |
| <i>P</i> | 4.53       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 05 12 | 691 | 0.2-  | 0.4-  | 2002 11 08 | 645 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.1+  | 0.0   |
| 1996 05 12 | 691 | 0.1-  | 0.4-  | 2005 05 11 | 691 | 0.1- | 0.4+ | 2007 12 04 | G96 | 0.3+  | 0.2-  |
| 2002 10 05 | 645 | 0.0   | 0.0   | 2005 05 11 | 691 | 0.2+ | 0.3+ | 2007 12 05 | 704 | 0.3+  | 0.2+  |
| 2002 10 05 | 645 | 0.0   | 0.1-  | 2005 05 11 | 691 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 0.3+  | 0.6+  |
| 2002 10 11 | 645 | 0.0   | 0.1+  | 2007 10 20 | G96 | 0.1- | 0.2- | 2007 12 05 | 704 | (2.2- | 0.9+) |
| 2002 10 11 | 645 | 0.0   | 0.1+  | 2007 10 20 | G96 | 0.1+ | 0.1- | 2007 12 05 | 704 | 0.2-  | 0.1+  |
| 2002 10 15 | 644 | (0.7- | 1.9+) | 2007 10 20 | G96 | 0.3- | 0.1- | 2007 12 15 | G96 | 0.0   | 0.1-  |
| 2002 10 15 | 644 | (0.6- | 1.6+) | 2007 10 20 | G96 | 0.1- | 0.2- | 2007 12 15 | G96 | 0.0   | 0.6+  |
| 2002 10 15 | 644 | (0.1- | 1.8+) | 2007 12 04 | G96 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.1-  | 0.2+  |
| 2002 11 08 | 645 | 0.1-  | 0.1-  | 2007 12 04 | G96 | 0.2- | 0.3- | 2007 12 15 | G96 | 0.2-  | 0.3+  |

**2002 TF<sub>350</sub> = 2003 XC<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 247.80800  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17767510 | $\omega$ | 190.76533 | +0.27987222   | -0.95013871 |
| <i>a</i> | 3.1336585  | $\Omega$ | 243.10094 | +0.89187668   | +0.31032692 |
| <i>e</i> | 0.0948316  | <i>i</i> | 8.86975   | +0.35528513   | -0.03055548 |
| <i>P</i> | 5.55       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 15 | 644 | 0.0  | 0.1+ | 2002 10 08 | 644 | 0.4+ | 0.7+ | 2003 11 19 | 691 | 0.1+ | 0.2+ |
| 2002 08 15 | 644 | 0.6- | 0.2+ | 2002 10 08 | 644 | 0.2+ | 0.9+ | 2003 12 14 | 691 | 0.0  | 0.1- |
| 2002 08 27 | 644 | 0.1+ | 0.2+ | 2002 10 08 | 644 | 0.0  | 0.1+ | 2003 12 14 | 691 | 0.2+ | 0.1+ |
| 2002 08 27 | 644 | 0.3+ | 0.4+ | 2002 10 10 | 645 | 0.0  | 0.0  | 2003 12 14 | 691 | 0.1- | 0.1+ |
| 2002 08 27 | 644 | 0.3+ | 0.4+ | 2002 10 10 | 645 | 0.1+ | 0.0  | 2003 12 27 | 691 | 0.2- | 0.4- |
| 2002 09 04 | 644 | 0.0  | 0.0  | 2002 10 11 | 645 | 0.0  | 0.0  | 2003 12 27 | 691 | 0.2+ | 0.1+ |
| 2002 09 04 | 644 | 0.2- | 0.0  | 2002 10 11 | 645 | 0.1- | 0.0  | 2003 12 27 | 691 | 0.1+ | 0.1+ |
| 2002 09 04 | 644 | 0.2- | 0.3- | 2002 10 13 | 644 | 0.5+ | 0.6+ | 2006 05 24 | 691 | 0.2- | 0.0  |
| 2002 09 12 | 644 | 0.5- | 0.3- | 2002 10 13 | 644 | 0.2+ | 0.0  | 2006 05 24 | 691 | 0.1- | 0.2+ |
| 2002 09 12 | 644 | 0.4- | 0.3- | 2003 11 19 | 691 | 0.2- | 0.0  | 2006 05 24 | 691 | 0.1+ | 0.1- |
| 2002 09 12 | 644 | 0.2- | 0.2- | 2003 11 19 | 691 | 0.1- | 0.1+ |            |     |      |      |

**2002 TK<sub>353</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.10666   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21669265 | $\omega$ | 104.80922 | +0.64702207   | +0.75993135 |
| <i>a</i> | 2.7451954  | $\Omega$ | 205.83301 | -0.74288551   | +0.60993579 |
| <i>e</i> | 0.1759795  | <i>i</i> | 8.20437   | -0.17170776   | +0.22468349 |
| <i>P</i> | 4.55       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 28 | 644 | 0.1+ | 0.1+ | 2002 09 14 | 608 | 0.6- | 1.0- | 2007 10 08 | 691 | 0.1+ | 0.1- |
| 2002 08 28 | 644 | 0.0  | 0.1+ | 2002 10 10 | 645 | 0.1+ | 0.0  | 2007 10 08 | 691 | 0.1- | 0.3+ |
| 2002 08 28 | 644 | 0.0  | 0.3+ | 2002 10 10 | 645 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.1- | 0.3- |
| 2002 09 13 | 644 | 0.7- | 0.4+ | 2002 10 11 | 645 | 0.0  | 0.1+ | 2007 10 21 | 691 | 0.2- | 0.1- |
| 2002 09 13 | 644 | 0.8- | 0.3+ | 2002 10 11 | 645 | 0.0  | 0.1+ | 2007 10 21 | 691 | 0.1- | 0.2+ |
| 2002 09 13 | 644 | 0.4- | 0.4+ | 2002 10 30 | 645 | 0.1- | 0.0  | 2007 10 21 | 691 | 0.4+ | 0.2- |
| 2002 09 13 | 644 | 0.3- | 0.1+ | 2002 10 30 | 645 | 0.1- | 0.1- | 2007 11 03 | 691 | 0.3- | 0.0  |
| 2002 09 13 | 644 | 0.8- | 0.1- | 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.3+ |
| 2002 09 13 | 644 | 0.2- | 0.1- | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.2+ | 0.0  |
| 2002 09 14 | 608 | 0.2- | 1.4- | 2007 09 10 | G96 | 0.0  | 0.0  |            |     |      |      |
| 2002 09 14 | 608 | 0.6- | 0.9- | 2007 09 10 | G96 | 0.1- | 0.5- |            |     |      |      |

**2002 TK<sub>361</sub> = 2002 TB<sub>332</sub>**Id. Minor Planet Center (d, *MPO* 102378)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.75563  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19117010 | $\omega$ | 287.44260 | +0.89496928   | -0.44460896 |
| <i>a</i> | 2.9843934  | $\Omega$ | 98.96886  | +0.42214531   | +0.81730774 |
| <i>e</i> | 0.1500789  | <i>i</i> | 2.13400   | +0.14430293   | +0.36651184 |
| <i>P</i> | 5.16       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |     |      |            |     |      |      |            |     |      |      |
|------------|-----|-----|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.0 | 0.1- | 2002 10 11 | 645 | 0.0  | 0.1+ | 2007 08 24 | 691 | 0.2+ | 0.2- |
| 2002 10 05 | 645 | 0.0 | 0.0  | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.0  | 0.2+ |
| 2002 10 10 | 645 | 0.0 | 0.1+ | 2002 10 31 | 645 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.7+ | 0.2- |
| 2002 10 10 | 645 | 0.0 | 0.0  | 2007 08 24 | 691 | 0.1- | 0.3+ | 2007 09 12 | G96 | 0.4- | 0.4- |
| 2002 10 11 | 645 | 0.0 | 0.0  | 2007 08 24 | 691 | 0.2- | 0.1+ | 2007 09 12 | G96 | 0.2+ | 0.3- |

**2002 TT<sub>364</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.09268   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19115998 | $\omega$ | 297.83140 | +0.93144629   | +0.33837096 |
| <i>a</i> | 2.9844987  | $\Omega$ | 42.76915  | -0.22372754   | +0.82262115 |
| <i>e</i> | 0.1189904  | <i>i</i> | 11.36735  | -0.28697352   | +0.45694588 |
| <i>P</i> | 5.16       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 10 | 645 | 0.0  | 0.0  | 2002 11 08 | 645 | 0.0  | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.1- |
| 2002 10 10 | 645 | 0.1+ | 0.0  | 2002 11 08 | 645 | 0.0  | 0.1- | 2007 10 20 | G96 | 0.1- | 0.2+ |
| 2002 10 11 | 645 | 0.0  | 0.1- | 2007 10 11 | 703 | 0.2- | 0.8+ | 2007 10 20 | G96 | 0.2- | 0.1+ |
| 2002 10 11 | 645 | 0.0  | 0.1- | 2007 10 11 | 703 | 0.7+ | 0.2+ | 2007 10 20 | G96 | 0.1+ | 0.2- |
| 2002 10 30 | 645 | 0.0  | 0.1+ | 2007 10 11 | 703 | 0.0  | 1.4- |            |     |      |      |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2007 10 11 | 703 | 0.3- | 0.3+ |            |     |      |      |

**2002 TM<sub>365</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.47742  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.20968419 | $\omega$ | 2.40380  | +0.12870362   | -0.98794227 |
| <i>a</i> | 2.8060297  | $\Omega$ | 80.21063 | +0.90838834   | +0.08263710 |
| <i>e</i> | 0.0762726  | <i>i</i> | 5.00981  | +0.39782660   | +0.13092431 |
| <i>P</i> | 4.70       | <i>H</i> | 17.2     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 10 10 | 691 | (0.6- | 1.6+) | 2007 11 02 | 691 | 0.0  | 0.1+ |
| 2002 10 10 | 645 | 0.1+ | 0.1+ | 2007 10 10 | G96 | 0.1+  | 0.8+  | 2007 11 02 | 691 | 0.2- | 0.3+ |



|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 11 | 645 | 0.0  | 0.1+ | 2007 10 10 | G96 | (1.7+ | 0.6+) | 2007 11 02 | 691 | 0.0  | 0.2+ |
| 2002 10 11 | 645 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.2-  | 0.1+  | 2007 11 20 | 691 | 0.2+ | 0.1+ |
| 2002 10 31 | 645 | 0.0  | 0.1- | 2007 10 10 | G96 | 0.6+  | 0.1-  | 2007 11 20 | 691 | 0.1- | 0.2+ |
| 2002 10 31 | 645 | 0.1+ | 0.1- | 2007 10 10 | G96 | 0.1+  | 0.3-  | 2007 11 20 | 691 | 0.8- | 0.1+ |
| 2002 11 08 | 645 | 0.0  | 0.1- | 2007 10 10 | 691 | 0.1-  | 0.1+  | 2007 12 06 | 691 | 0.3+ | 0.1+ |
| 2002 11 08 | 645 | 0.0  | 0.2- | 2007 10 21 | 691 | 0.1-  | 0.3+  | 2007 12 06 | 691 | 0.2- | 0.2+ |
| 2004 03 18 | 645 | 0.1+ | 0.0  | 2007 10 21 | 691 | 0.7+  | 0.3+  | 2007 12 06 | 691 | 0.2+ | 0.9- |
| 2004 03 18 | 645 | 0.1- | 0.1- | 2007 10 21 | 691 | 0.1-  | 0.3-  |            |     |      |      |

**2002 TZ<sub>374</sub> = 2007 VO<sub>297</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 353.18937  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.19906358 | $\omega$ | 296.49622 | +0.70894355 |          |          | -0.67835653 |
| <i>a</i> | 2.9049690  | $\Omega$ | 106.90689 | +0.69731441 |          |          | +0.63324149 |
| <i>e</i> | 0.1297906  | <i>i</i> | 11.63470  | +0.10560143 |          |          | +0.37260923 |
| <i>P</i> | 4.95       | <i>H</i> | 16.1      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 05 | 644 | 0.3-  | 0.0   | 2007 10 10 | 703 | (2.3- | 0.8-) | 2007 10 19 | 703 | 0.3-  | 0.3-  |
| 2002 10 05 | 644 | 0.1-  | 0.5+  | 2007 10 10 | 703 | 0.0   | 0.4-  | 2007 11 11 | 703 | 0.2+  | 0.6-  |
| 2002 10 05 | 644 | 0.1+  | 0.1+  | 2007 10 10 | 703 | (1.2- | 1.7-) | 2007 11 11 | 703 | 0.1-  | 0.3+  |
| 2002 10 06 | 644 | 0.1-  | 0.3+  | 2007 10 15 | 703 | 0.3-  | 1.2+  | 2007 11 11 | 703 | 0.9+  | 0.1-  |
| 2002 10 06 | 644 | 0.1-  | 0.1+  | 2007 10 15 | 703 | 0.1+  | 1.0+  | 2007 11 11 | 703 | 0.3-  | 0.2+  |
| 2002 10 06 | 644 | 0.2-  | 0.4-  | 2007 10 15 | 703 | 0.6-  | 0.7-  | 2007 11 18 | 703 | 0.1-  | 0.1-  |
| 2002 10 15 | 644 | 0.2+  | 0.6-  | 2007 10 15 | 703 | (1.9- | 0.5+) | 2007 11 18 | 703 | 0.0   | 0.2-  |
| 2002 10 15 | 644 | 0.5+  | 0.2-  | 2007 10 19 | 703 | 0.1-  | 0.1+  | 2007 11 18 | 703 | 0.4-  | 0.3+  |
| 2002 10 15 | 644 | 0.2+  | 0.6-  | 2007 10 19 | 703 | 0.7+  | 0.0   | 2007 11 18 | 703 | (0.8+ | 1.8-) |
| 2007 10 10 | 703 | (2.1- | 0.5-) | 2007 10 19 | 703 | (2.1- | 0.3+) |            |     |       |       |

**2002 TN<sub>376</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 30.31022   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.19206350 | $\omega$ | 263.76061 | +0.93672364 |          |          | +0.25024950 |
| <i>a</i> | 2.9751314  | $\Omega$ | 81.54912  | -0.13063898 |          |          | +0.89864518 |
| <i>e</i> | 0.1110013  | <i>i</i> | 14.32849  | -0.32478035 |          |          | +0.36029436 |
| <i>P</i> | 5.13       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 18 | 691 | 0.1+ | 0.2+ | 2002 10 11 | 645 | 0.0  | 0.0  | 2007 10 12 | 703 | 0.4+ | 0.2+ |
| 1992 11 18 | 691 | 0.2- | 0.1+ | 2002 10 11 | 645 | 0.0  | 0.0  | 2007 10 12 | 703 | 0.4- | 0.5+ |
| 2002 10 04 | 645 | 0.0  | 0.1- | 2002 10 31 | 704 | 0.9+ | 0.9- | 2007 10 12 | 703 | 0.2- | 0.5+ |
| 2002 10 04 | 645 | 0.1+ | 0.1- | 2002 10 31 | 704 | 0.2+ | 0.4- | 2007 10 12 | 703 | 0.4- | 0.2+ |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2002 10 31 | 704 | 0.4+ | 0.5+ | 2007 10 15 | 703 | 1.7+ | 0.6+ |
| 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 09 12 | 703 | 0.6+ | 0.8+ | 2007 10 15 | 703 | 0.9- | 0.5- |
| 2002 10 10 | 644 | 0.4- | 0.1+ | 2007 09 12 | 703 | 0.5+ | 1.4- | 2007 10 15 | 703 | 0.3- | 0.7- |
| 2002 10 10 | 644 | 0.2- | 0.1+ | 2007 09 12 | 703 | 0.2+ | 0.1+ | 2007 10 15 | 703 | 0.8- | 0.7+ |
| 2002 10 10 | 644 | 0.5- | 0.1+ | 2007 09 12 | 703 | 1.0- | 0.5- |            |     |      |      |

**2002 TP<sub>381</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 141.04806  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23426294 | $\omega$ | 74.18368  | +0.08123037 |          |          | +0.99634212 |
| <i>a</i> | 2.6061555  | $\Omega$ | 200.53121 | -0.94096242 |          |          | +0.06788368 |
| <i>e</i> | 0.2358877  | <i>i</i> | 4.33882   | -0.32862039 |          |          | +0.05190562 |
| <i>P</i> | 4.21       | <i>H</i> | 17.3      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 28 | 691 | 0.1+ | 0.1+ | 2002 10 09 | 644 | 0.4+ | 0.0  | 2006 08 22 | 644 | 0.0  | 0.4+ |
| 2001 03 28 | 691 | 0.2+ | 0.1+ | 2002 10 09 | 644 | 0.4- | 0.3+ | 2006 08 22 | 644 | 0.1+ | 0.1+ |
| 2001 03 28 | 691 | 0.2+ | 0.3+ | 2002 10 11 | 644 | 0.1- | 0.4+ | 2006 08 22 | 644 | 0.0  | 0.1+ |
| 2002 09 14 | 644 | 0.9- | 0.5+ | 2002 10 11 | 644 | 0.3+ | 0.2+ | 2006 09 28 | G96 | 0.1+ | 0.3- |
| 2002 09 14 | 644 | 0.3- | 0.4+ | 2002 10 11 | 644 | 0.1- | 0.4+ | 2006 09 28 | G96 | 0.3+ | 0.0  |
| 2002 09 14 | 644 | 0.1+ | 0.1- | 2005 03 17 | G96 | 0.1- | 0.2+ | 2006 09 28 | G96 | 0.0  | 0.1- |
| 2002 10 05 | 644 | 0.7- | 0.6+ | 2005 03 17 | G96 | 0.0  | 0.1- | 2006 09 28 | G96 | 0.3- | 0.2- |
| 2002 10 05 | 644 | 0.3- | 0.4+ | 2005 03 17 | G96 | 0.2- | 0.3+ | 2007 12 05 | G96 | 0.3+ | 0.5- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 644 | 0.2+ | 0.0  | 2005 03 17 | G96 | 0.1- | 0.2+ | 2007 12 05 | G96 | 0.1- | 0.1+ |
| 2002 10 06 | 644 | 0.4- | 0.4+ | 2005 04 12 | G96 | 0.2- | 0.1- | 2007 12 05 | G96 | 0.3+ | 0.1- |
| 2002 10 06 | 644 | 0.1+ | 0.4+ | 2005 04 12 | G96 | 0.1- | 0.3+ | 2007 12 05 | G96 | 0.3+ | 0.1- |
| 2002 10 06 | 644 | 0.0  | 0.2+ | 2005 04 12 | G96 | 0.6- | 0.0  |            |     |      |      |
| 2002 10 09 | 644 | 0.1+ | 0.0  | 2005 04 12 | G96 | 0.6+ | 0.9+ |            |     |      |      |

**2002 TQ<sub>381</sub> = 2006 WN<sub>143</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 110.93082  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26316195 | $\omega$ | 182.48780 | +0.84211405 |          |          | -0.53883530 |
| <i>a</i> | 2.4116854  | $\Omega$ | 210.15046 | +0.49556345 |          |          | +0.78951813 |
| <i>e</i> | 0.1915194  | <i>i</i> | 2.55276   | +0.21274587 |          |          | +0.29379865 |
| <i>P</i> | 3.75       | <i>H</i> | 18.0      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 14 | 644 | 0.1- | 0.0  | 2002 10 11 | 644 | 0.3+ | 0.3- | 2006 10 31 | G96 | 0.0  | 0.2+ |
| 2002 09 14 | 644 | 0.0  | 0.2+ | 2002 10 11 | 644 | 0.3+ | 0.2+ | 2006 10 31 | G96 | 0.1+ | 0.2- |
| 2002 09 14 | 644 | 0.3- | 0.3- | 2002 10 11 | 644 | 0.1+ | 0.0  | 2006 11 20 | 691 | 0.2- | 0.0  |
| 2002 10 05 | 644 | 0.2+ | 0.0  | 2002 10 13 | 644 | 0.4+ | 0.3- | 2006 11 20 | 691 | 0.0  | 0.0  |
| 2002 10 05 | 644 | 0.3- | 0.2+ | 2002 10 29 | 644 | 0.6- | 0.1+ | 2006 11 20 | 691 | 0.1+ | 0.3- |
| 2002 10 05 | 644 | 0.0  | 0.0  | 2002 10 29 | 644 | 0.3- | 0.1+ | 2006 11 24 | G96 | 0.3+ | 0.4+ |
| 2002 10 06 | 644 | 0.0  | 0.1+ | 2002 10 29 | 644 | 0.3+ | 0.1- | 2006 11 24 | G96 | 0.2- | 0.1+ |
| 2002 10 06 | 644 | 0.0  | 0.1- | 2006 10 31 | G96 | 0.0  | 0.4+ | 2006 11 24 | G96 | 0.1- | 0.2+ |
| 2002 10 06 | 644 | 0.1+ | 0.0  | 2006 10 31 | G96 | 0.0  | 0.3- | 2006 11 24 | G96 | 0.0  | 0.3+ |

**2002 TW<sub>381</sub> = 2007 TD<sub>356</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 94.18727   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.39511630 | $\omega$ | 252.48848 | +0.36451857 |          |          | +0.89683446 |
| <i>a</i> | 1.8393008  | $\Omega$ | 41.79027  | -0.64577573 |          |          | +0.43737241 |
| <i>e</i> | 0.0639725  | <i>i</i> | 22.09160  | -0.67089486 |          |          | +0.06628211 |
| <i>P</i> | 2.49       | <i>H</i> | 18.3      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 09 | 644 | 0.2- | 0.1+ | 2002 10 30 | 644 | 0.2- | 0.3- | 2007 10 11 | D35 | 0.2+ | 0.1+ |
| 2002 10 09 | 644 | 0.1+ | 0.2+ | 2002 11 03 | 644 | 0.5- | 0.2+ | 2007 10 11 | D35 | 0.2+ | 0.4- |
| 2002 10 09 | 644 | 0.1- | 0.3+ | 2002 11 03 | 644 | 0.5- | 0.0  | 2007 10 11 | D35 | 0.2+ | 0.1- |
| 2002 10 15 | 644 | 0.4- | 0.1+ | 2002 11 03 | 644 | 0.5+ | 0.2- | 2007 10 15 | G96 | 0.2+ | 0.3- |
| 2002 10 15 | 644 | 0.1- | 0.3+ | 2002 11 22 | 644 | 0.2+ | 0.1- | 2007 10 15 | G96 | 0.0  | 0.1- |
| 2002 10 15 | 644 | 0.3+ | 0.3+ | 2002 11 22 | 644 | 0.2- | 0.3+ | 2007 10 15 | G96 | 0.2+ | 0.2- |
| 2002 10 30 | 644 | 0.2+ | 0.1- | 2002 11 22 | 644 | 0.1- | 0.2- | 2007 10 15 | G96 | 0.1- | 0.1- |

**2002 UF<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 9.83343    |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21132068 | $\omega$ | 350.19280 | +0.37086358 |          |          | -0.91052362 |
| <i>a</i> | 2.7915241  | $\Omega$ | 77.85705  | +0.86422023 |          |          | +0.26632024 |
| <i>e</i> | 0.3027592  | <i>i</i> | 10.77535  | +0.33997587 |          |          | +0.31625982 |
| <i>P</i> | 4.66       | <i>H</i> | 16.6      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 28 | 608 | 0.2-  | 0.6-  | 2002 11 30 | 704 | (0.7+ | 2.3-) | 2007 11 18 | G96 | 0.2-  | 0.6-  |
| 2002 10 28 | 608 | 0.5-  | 0.6-  | 2002 11 30 | 704 | 0.5+  | 0.8-  | 2007 11 18 | G96 | 0.1-  | 0.3-  |
| 2002 10 28 | 608 | 0.5-  | 0.4-  | 2002 11 30 | 704 | 0.3+  | 1.0-  | 2007 11 18 | G96 | 0.5-  | 0.4-  |
| 2002 10 31 | 704 | 0.8+  | 0.2+  | 2002 11 30 | 704 | 0.1+  | 0.1-  | 2007 11 18 | G96 | 0.4-  | 0.4-  |
| 2002 10 31 | 704 | 0.1-  | 0.4+  | 2002 12 07 | 704 | 1.1-  | 0.6+  | 2007 11 19 | G98 | 0.3+  | 0.2+  |
| 2002 10 31 | 704 | 0.5+  | 0.1-  | 2002 12 07 | 704 | 0.8+  | 0.4+  | 2007 11 19 | G98 | (1.5+ | 1.8+) |
| 2002 10 31 | 704 | 0.4+  | 0.1-  | 2002 12 07 | 704 | 0.3-  | 0.7+  | 2007 11 19 | G98 | 0.1+  | 0.1-  |
| 2002 10 31 | 704 | 0.6+  | 0.1-  | 2002 12 07 | 704 | 0.9+  | 0.3+  | 2007 11 19 | G98 | 0.2-  | 0.7+  |
| 2002 11 05 | 704 | 0.4-  | 0.4+  | 2002 12 07 | 704 | 0.2+  | 0.9+  | 2007 11 19 | G98 | 0.1+  | 0.1+  |
| 2002 11 05 | 704 | 0.1+  | 0.4+  | 2002 12 11 | 704 | 1.0+  | 1.4-  | 2007 11 19 | G98 | 0.3-  | 0.3+  |
| 2002 11 05 | 704 | 0.4+  | 0.1+  | 2002 12 11 | 704 | 0.8+  | 1.0-  | 2007 12 16 | 704 | 0.9+  | 0.2-  |
| 2002 11 05 | 704 | 0.0   | 0.6+  | 2002 12 11 | 704 | 0.1-  | 0.6-  | 2007 12 16 | 704 | 0.4+  | 0.7+  |
| 2002 11 11 | 683 | (1.4- | 1.6+) | 2007 10 07 | G96 | 0.6+  | 0.3-  | 2007 12 16 | 704 | 0.2-  | 0.3-  |
| 2002 11 11 | 683 | 1.3-  | 0.5+  | 2007 10 07 | G96 | 0.2+  | 0.2-  | 2007 12 16 | 704 | 0.6+  | 0.4+  |

## M.P.O. 129628

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 12 | 704 | 0.3−  | 0.2+  | 2007 10 07 | G96 | 0.4+ | 1.2− | 2007 12 16 | 704 | 0.7+ | 0.8+ |
| 2002 11 12 | 704 | 0.6−  | 0.6+  | 2007 11 07 | G96 | 0.0  | 0.5− | 2007 12 16 | 699 | 0.5− | 0.3+ |
| 2002 11 12 | 704 | 0.5−  | 0.3+  | 2007 11 07 | G96 | 0.2− | 0.1− | 2007 12 16 | 699 | 0.1+ | 0.0  |
| 2002 11 12 | 704 | 1.4−  | 0.4+  | 2007 11 07 | G96 | 0.2− | 0.3− | 2007 12 16 | 699 | 0.4− | 0.9+ |
| 2002 11 12 | 704 | (1.8− | 0.6+) | 2007 11 07 | G96 | 0.3− | 0.2− | 2007 12 16 | 699 | 0.4− | 0.3− |

**2002 UB<sub>66</sub> = 2007 TN<sub>311</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 130.02263  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20349104 | $\omega$ | 153.14148 | −0.24714509   | +0.96746755 |
| <i>a</i> | 2.8626782  | $\Omega$ | 102.50982 | −0.89868085   | −0.20798323 |
| <i>e</i> | 0.0281947  | <i>i</i> | 3.17618   | −0.36234243   | −0.14404692 |
| <i>P</i> | 4.84       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 25 | 691 | 1.7− | 1.5− | 2002 10 31 | 645 | 0.1− | 0.3− | 2007 10 15 | 691 | 0.0  | 0.1− |
| 1995 02 25 | 691 | 0.7+ | 0.4+ | 2007 10 11 | 691 | 0.4+ | 0.0  | 2007 10 15 | 691 | 0.3− | 0.3+ |
| 1995 02 25 | 691 | 0.9+ | 1.1+ | 2007 10 11 | 691 | 0.7− | 0.4+ | 2007 10 15 | 691 | 0.2− | 0.3− |
| 2002 10 05 | 645 | 0.0  | 0.2+ | 2007 10 11 | 691 | 0.5− | 0.0  | 2007 10 19 | 691 | 0.3+ | 0.3− |
| 2002 10 05 | 645 | 0.1+ | 0.1+ | 2007 10 11 | G96 | 0.3+ | 0.3− | 2007 10 19 | 691 | 0.1− | 0.4+ |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2007 10 11 | G96 | 0.2+ | 0.2− | 2007 10 19 | 691 | 0.3− | 0.4+ |
| 2002 10 30 | 645 | 0.1+ | 0.1− | 2007 10 11 | G96 | 0.2+ | 0.0  |            |     |      |      |
| 2002 10 31 | 645 | 0.0  | 0.1− | 2007 10 11 | G96 | 0.8+ | 0.1+ |            |     |      |      |

**2002 UG<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 281.68431  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18464342 | $\omega$ | 221.74440 | −0.36653798   | −0.92944261 |
| <i>a</i> | 3.0543127  | $\Omega$ | 249.79691 | +0.86511220   | −0.32374731 |
| <i>e</i> | 0.1977012  | <i>i</i> | 2.58124   | +0.34238983   | −0.17698617 |
| <i>P</i> | 5.34       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 6  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 16 | 644 | 0.2+ | 0.0  | 2002 10 31 | 644 | 0.1− | 0.3+ | 2007 09 15 | 691 | 0.1− | 0.2+ |
| 2002 10 16 | 644 | 0.1+ | 0.0  | 2007 09 11 | 691 | 0.0  | 0.0  | 2007 09 15 | 691 | 0.0  | 0.4+ |
| 2002 10 16 | 644 | 0.4+ | 0.1− | 2007 09 11 | 691 | 0.0  | 0.2+ | 2007 10 14 | G96 | 0.0  | 0.3− |
| 2002 10 28 | 644 | 0.5− | 0.3− | 2007 09 11 | 691 | 1.3+ | 1.1+ | 2007 10 14 | G96 | 0.2+ | 0.4− |
| 2002 10 28 | 644 | 0.4− | 0.1+ | 2007 09 12 | 691 | 1.0+ | 1.0− | 2007 10 14 | G96 | 0.2+ | 0.4− |
| 2002 10 28 | 644 | 0.2+ | 0.1− | 2007 09 12 | 691 | 1.2− | 0.1− | 2007 10 14 | G96 | 0.2+ | 0.1− |
| 2002 10 31 | 644 | 0.2− | 0.0  | 2007 09 12 | 691 | 1.6− | 0.4+ |            |     |      |      |
| 2002 10 31 | 644 | 0.1+ | 0.2+ | 2007 09 15 | 691 | 0.1− | 0.0  |            |     |      |      |

**2002 VN<sub>11</sub> = 2007 VN<sub>163</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.12080   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19981313 | $\omega$ | 114.39944 | +0.92030699   | −0.38776829 |
| <i>a</i> | 2.8976996  | $\Omega$ | 268.45059 | +0.33757945   | +0.85396350 |
| <i>e</i> | 0.3260756  | <i>i</i> | 2.96344   | +0.19767439   | +0.34696122 |
| <i>P</i> | 4.93       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 01 | 644 | 0.2− | 1.2+ | 2002 11 24 | 644 | 0.4− | 0.3+ | 2007 11 13 | 300 | 0.2+ | 0.7+ |
| 2002 11 01 | 644 | 0.4− | 0.8+ | 2002 11 24 | 644 | 0.1+ | 0.1− | 2007 11 13 | 300 | 0.6+ | 0.0  |
| 2002 11 01 | 644 | 0.2+ | 0.9+ | 2002 11 24 | 644 | 0.5− | 0.1+ | 2007 11 14 | 300 | 0.8− | 0.5− |
| 2002 11 05 | 704 | 0.4+ | 0.7+ | 2002 11 24 | 644 | 0.3+ | 0.3+ | 2007 11 14 | 300 | 0.5+ | 0.7− |
| 2002 11 05 | 704 | 0.4− | 0.7− | 2002 11 24 | 644 | 0.7− | 0.2+ | 2007 11 14 | 300 | 0.2− | 0.4− |
| 2002 11 05 | 704 | 1.0+ | 0.5+ | 2002 11 24 | 644 | 0.4+ | 0.3+ | 2007 11 14 | 300 | 0.5− | 0.1+ |
| 2002 11 05 | 704 | 0.4− | 0.5+ | 2002 12 06 | 704 | 0.1+ | 0.2+ | 2007 11 14 | 300 | 0.7− | 0.1+ |
| 2002 11 05 | 704 | 0.3− | 0.3− | 2002 12 06 | 704 | 0.5+ | 0.2+ | 2007 11 14 | 300 | 0.1+ | 0.6− |
| 2002 11 06 | 704 | 0.0  | 0.5+ | 2002 12 06 | 704 | 0.2+ | 0.2+ | 2007 11 15 | 704 | 0.6− | 0.7+ |
| 2002 11 06 | 704 | 0.3+ | 0.2+ | 2002 12 06 | 704 | 0.1− | 0.7− | 2007 11 15 | 704 | 0.1+ | 0.3− |
| 2002 11 06 | 704 | 0.1+ | 0.2+ | 2002 12 06 | 704 | 0.0  | 0.1+ | 2007 11 15 | 704 | 0.5+ | 0.6− |
| 2002 11 06 | 704 | 0.7− | 0.4+ | 2002 12 06 | 704 | 0.1− | 0.8+ | 2007 11 15 | 704 | 0.3+ | 0.3+ |
| 2002 11 12 | 704 | 0.2− | 0.5+ | 2002 12 06 | 704 | 0.4− | 0.9+ | 2007 11 15 | 704 | 0.6+ | 0.3+ |
| 2002 11 12 | 704 | 0.8+ | 0.2− | 2002 12 06 | 704 | 0.4+ | 0.5+ | 2007 11 17 | 691 | 0.1+ | 0.0  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 12 | 704 | 0.1+ | 0.0  | 2007 10 24 | G96 | 0.3+ | 0.2− | 2007 11 17 | 691 | 0.0   | 0.0   |
| 2002 11 12 | 704 | 0.5− | 0.4− | 2007 10 24 | G96 | 0.1+ | 0.3− | 2007 11 17 | 691 | 0.3+  | 0.0   |
| 2002 11 12 | 704 | 0.1− | 1.0+ | 2007 10 24 | G96 | 0.3+ | 0.6− | 2007 12 10 | 704 | 0.2−  | 0.8+  |
| 2002 11 14 | 704 | 0.7+ | 0.1− | 2007 10 24 | G96 | 0.5+ | 0.4− | 2007 12 10 | 704 | (0.1− | 2.5+) |
| 2002 11 14 | 704 | 0.6+ | 0.4− | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 12 10 | 704 | 0.3−  | 0.7+  |
| 2002 11 14 | 704 | 0.4+ | 0.2− | 2007 11 05 | 691 | 0.2− | 0.4− | 2007 12 14 | 704 | (1.2+ | 2.6−) |
| 2002 11 14 | 704 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.2− | 0.2− | 2007 12 14 | 704 | (2.6+ | 0.7−) |
| 2002 11 15 | 704 | 1.0− | 0.2+ | 2007 11 09 | 691 | 0.5− | 0.1− | 2007 12 14 | 704 | (3.4+ | 0.2−) |
| 2002 11 15 | 704 | 0.6− | 1.1− | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.7+  | 0.3+  |
| 2002 11 15 | 704 | 0.1+ | 0.5− | 2007 11 09 | 691 | 0.2− | 0.3− | 2007 12 15 | G96 | 0.3+  | 0.2+  |
| 2002 11 15 | 704 | 0.1− | 1.1− | 2007 11 13 | 300 | 0.4+ | 0.2− | 2007 12 15 | G96 | 0.0   | 0.1+  |
| 2002 11 15 | 704 | 0.6− | 0.3− | 2007 11 13 | 300 | 0.7+ | 0.6− | 2007 12 15 | G96 | 0.5+  | 0.1−  |

**2002 VK<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.23378    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20925258 | $\omega$ | 169.76761 | +0.40951258   | −0.89815151 |
| <i>a</i> | 2.8098869  | $\Omega$ | 255.90970 | +0.82492881   | +0.43947829 |
| <i>e</i> | 0.2143679  | <i>i</i> | 9.49946   | +0.38960481   | +0.01351636 |
| <i>P</i> | 4.71       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 704 | 0.5− | 0.4− | 2002 11 06 | 704 | 0.8− | 1.1− | 2002 12 06 | 704 | 0.1+ | 0.3+ |
| 2002 10 05 | 704 | 0.0  | 0.2− | 2002 11 06 | 704 | 0.2+ | 0.7− | 2002 12 06 | 704 | 1.3− | 0.2+ |
| 2002 10 05 | 704 | 0.3− | 0.2− | 2002 11 06 | 704 | 0.6+ | 0.2+ | 2002 12 06 | 704 | 0.8− | 0.3− |
| 2002 10 05 | 704 | 0.6− | 0.3− | 2002 11 06 | 704 | 0.0  | 0.1+ | 2002 12 06 | 704 | 0.4+ | 0.3+ |
| 2002 10 05 | 704 | 0.7− | 0.0  | 2002 11 06 | 704 | 0.2+ | 0.0  | 2002 12 06 | 704 | 1.0+ | 0.9+ |
| 2002 10 10 | 704 | 0.7− | 0.3+ | 2002 11 06 | 704 | 0.2− | 0.3+ | 2002 12 06 | 704 | 0.6− | 0.5− |
| 2002 10 10 | 704 | 0.3− | 0.1+ | 2002 11 06 | 704 | 0.0  | 0.8− | 2002 12 06 | 704 | 0.0  | 0.6+ |
| 2002 10 10 | 704 | 0.6− | 1.0+ | 2002 11 07 | 704 | 0.0  | 1.0+ | 2002 12 06 | 704 | 0.6+ | 0.4− |
| 2002 10 10 | 704 | 1.1− | 0.9+ | 2002 11 07 | 704 | 0.7+ | 0.4− | 2002 12 11 | 704 | 0.2− | 0.2+ |
| 2002 10 10 | 704 | 0.5− | 1.5+ | 2002 11 07 | 704 | 0.2− | 0.2− | 2002 12 11 | 704 | 0.6− | 0.9− |
| 2002 11 05 | 704 | 0.3+ | 0.3+ | 2002 11 07 | 704 | 0.8− | 0.1− | 2002 12 11 | 704 | 0.4− | 0.4− |
| 2002 11 05 | 704 | 1.0+ | 0.6− | 2002 11 07 | 704 | 0.2+ | 0.3− | 2002 12 11 | 704 | 0.7− | 0.5− |
| 2002 11 05 | 704 | 1.0+ | 0.4− | 2002 11 14 | 704 | 0.1+ | 0.6+ | 2007 12 14 | J75 | 0.1+ | 0.1+ |
| 2002 11 05 | 704 | 0.2− | 0.8− | 2002 11 14 | 704 | 1.4+ | 1.1+ | 2007 12 14 | J75 | 0.0  | 0.1+ |
| 2002 11 05 | 704 | 1.0+ | 0.5− | 2002 11 14 | 704 | 1.7+ | 0.9+ | 2007 12 14 | J75 | 0.4+ | 0.1+ |
| 2002 11 06 | 704 | 0.7+ | 1.7− | 2002 11 14 | 704 | 1.5+ | 1.1+ | 2007 12 16 | J75 | 0.2− | 0.1+ |
| 2002 11 06 | 704 | 0.2− | 1.0− | 2002 12 06 | 704 | 0.8− | 0.8+ | 2007 12 16 | J75 | 0.4+ | 0.1+ |
| 2002 11 06 | 704 | 0.0  | 0.1− | 2002 12 06 | 704 | 0.4− | 0.1− | 2007 12 16 | J75 | 0.7− | 0.3− |

**2002 VT<sub>39</sub> = 2007 VL<sub>297</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.99964   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19116787 | $\omega$ | 282.98311 | +0.96562579   | −0.04532927 |
| <i>a</i> | 2.9844166  | $\Omega$ | 80.05105  | +0.15459427   | +0.89174968 |
| <i>e</i> | 0.2723224  | <i>i</i> | 15.06182  | −0.20896759   | +0.45025299 |
| <i>P</i> | 5.16       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 11 05 | 704 | 1.0+  | 0.5−  | 2002 12 01 | 704 | 0.3−  | 0.1+  | 2007 11 02 | 703 | 0.0  | 0.4+ |
| 2002 11 05 | 704 | 0.3+  | 0.4−  | 2002 12 01 | 704 | (2.4− | 1.1+) | 2007 11 02 | 703 | 0.0  | 0.4− |
| 2002 11 05 | 704 | 0.1+  | 0.0   | 2002 12 01 | 704 | 1.3−  | 0.3+  | 2007 11 02 | 703 | 0.4− | 0.5− |
| 2002 11 05 | 704 | 0.9+  | 1.0−  | 2002 12 01 | 704 | 0.6+  | 1.5−  | 2007 11 02 | 703 | 0.4− | 0.1− |
| 2002 11 06 | 699 | 0.5+  | 0.0   | 2006 05 26 | G96 | 0.0   | 0.1+  | 2007 11 11 | 703 | 0.8+ | 0.0  |
| 2002 11 06 | 699 | 0.2+  | 1.0+  | 2006 05 26 | G96 | 0.4−  | 0.0   | 2007 11 11 | 703 | 0.9+ | 0.0  |
| 2002 11 06 | 699 | 0.4+  | 0.4−  | 2006 05 26 | G96 | 0.4−  | 0.8−  | 2007 11 11 | 703 | 0.1− | 0.7− |
| 2002 11 06 | 699 | 0.2−  | 0.8+  | 2006 05 26 | G96 | 0.3+  | 0.4−  | 2007 11 11 | 703 | 0.6+ | 0.5− |
| 2002 11 12 | 704 | 0.3+  | 1.4−  | 2007 10 11 | 703 | 0.7+  | 0.2+  | 2007 11 17 | 703 | 0.1− | 0.3+ |
| 2002 11 12 | 704 | 0.2−  | 0.4+  | 2007 10 11 | 703 | 0.3+  | 0.0   | 2007 11 17 | 703 | 0.0  | 0.8− |
| 2002 11 12 | 704 | 0.5+  | 0.1−  | 2007 10 11 | 703 | 0.2−  | 0.6+  | 2007 11 17 | 703 | 0.3+ | 0.2− |
| 2002 11 12 | 704 | 1.4−  | 0.3−  | 2007 10 11 | 703 | 0.7−  | 1.0+  | 2007 11 17 | 703 | 0.6− | 0.1− |
| 2002 11 23 | 644 | 0.3−  | 0.4+  | 2007 10 15 | 703 | 0.2−  | 0.3−  | 2007 12 06 | 703 | 0.7− | 1.8+ |
| 2002 11 23 | 644 | 0.3−  | 0.5+  | 2007 10 15 | 703 | 0.6+  | 0.1+  | 2007 12 06 | 703 | 0.7− | 0.4+ |
| 2002 11 23 | 644 | 0.0   | 0.3+  | 2007 10 15 | 703 | 0.3−  | 0.4+  | 2007 12 06 | 703 | 0.4− | 0.7− |
| 2002 12 01 | 704 | (3.0− | 1.2−) | 2007 10 15 | 703 | 0.1−  | 0.2+  | 2007 12 06 | 703 | 0.4− | 0.2− |

2007 DEC. 24

M.P.O. 129629

**2002 VE<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 314.07861  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17647602 | $\omega$ | 128.62820 | +0.50556475   | -0.84725154 |
| <i>a</i> | 3.1478371  | $\Omega$ | 290.25985 | +0.72774310   | +0.52023589 |
| <i>e</i> | 0.1829768  | <i>i</i> | 10.00592  | +0.46345903   | +0.10732865 |
| <i>P</i> | 5.59       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 18 | 910 | 0.0  | 0.0  | 2002 11 07 | 704 | 0.2- | 0.2+ | 2002 12 05 | 704 | 0.9- | 0.7+ |
| 1998 01 18 | 910 | 0.0  | 0.2+ | 2002 11 07 | 704 | 0.0  | 0.5+ | 2002 12 12 | 644 | 0.5+ | 0.3- |
| 1998 01 18 | 910 | 0.3+ | 0.2+ | 2002 11 11 | 678 | 0.3+ | 1.7- | 2002 12 12 | 644 | 0.7+ | 0.0  |
| 2002 10 13 | 644 | 0.0  | 0.8+ | 2002 11 11 | 678 | 0.0  | 1.6- | 2002 12 12 | 644 | 0.8+ | 0.2- |
| 2002 10 13 | 644 | 0.1- | 0.6+ | 2002 11 12 | 699 | 0.9+ | 0.2+ | 2007 09 08 | 699 | 0.0  | 0.1+ |
| 2002 10 13 | 644 | 0.0  | 0.7+ | 2002 11 12 | 699 | 0.3- | 1.0+ | 2007 09 08 | 699 | 0.1- | 0.6+ |
| 2002 11 05 | 678 | 1.0+ | 1.4- | 2002 11 12 | 699 | 0.5- | 0.7+ | 2007 09 08 | 699 | 0.0  | 0.4+ |
| 2002 11 05 | 678 | 1.2- | 1.0- | 2002 11 12 | 699 | 0.0  | 0.2- | 2007 09 08 | 699 | 0.4- | 0.8+ |
| 2002 11 07 | 704 | 0.7- | 0.1- | 2002 12 05 | 704 | 0.2+ | 0.2+ | 2007 09 12 | 683 | 0.5- | 0.1+ |
| 2002 11 07 | 704 | 0.0  | 0.1+ | 2002 12 05 | 704 | 0.8- | 0.7+ | 2007 09 12 | 683 | 0.9+ | 0.1- |
| 2002 11 07 | 704 | 0.1+ | 0.4+ | 2002 12 05 | 704 | 0.4+ | 0.3- | 2007 09 12 | 683 | 0.0  | 1.8- |

**2002 VL<sub>51</sub> = 2007 XK<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.08893  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.20861518 | $\omega$ | 12.80265 | +0.27185751   | -0.94111152 |
| <i>a</i> | 2.8156075  | $\Omega$ | 61.72896 | +0.86159022   | +0.14498804 |
| <i>e</i> | 0.1034761  | <i>i</i> | 13.19275 | +0.42866745   | +0.30543013 |
| <i>P</i> | 4.72       | <i>H</i> | 15.8     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 06 | 699 | (1.7- | 2.0-) | 2007 11 05 | 691 | 0.2- | 0.1- | 2007 12 12 | 620 | 0.2+  | 0.2-  |
| 2002 11 06 | 699 | 0.9-  | 0.7-  | 2007 11 05 | 691 | 0.1+ | 0.7+ | 2007 12 12 | 620 | 0.1+  | 0.1+  |
| 2002 11 06 | 699 | 1.0-  | 0.5-  | 2007 11 05 | 691 | 0.5- | 0.3- | 2007 12 12 | 620 | 0.6+  | 0.3-  |
| 2002 11 06 | 699 | 1.1-  | 0.1+  | 2007 12 01 | A77 | 0.0  | 0.3+ | 2007 12 13 | 704 | 0.1+  | 0.1+  |
| 2002 11 07 | 704 | 1.3+  | 0.2+  | 2007 12 01 | A77 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.2-  | 0.6-  |
| 2002 11 07 | 704 | 0.0   | 0.1+  | 2007 12 01 | A77 | 0.4+ | 0.2+ | 2007 12 13 | 704 | 0.3+  | 0.1-  |
| 2002 11 07 | 704 | 0.6+  | 0.3-  | 2007 12 09 | 620 | 0.0  | 0.2+ | 2007 12 13 | 704 | 0.3+  | 0.2+  |
| 2002 11 11 | 644 | 0.4+  | 0.0   | 2007 12 09 | 620 | 0.1- | 0.1- | 2007 12 13 | 704 | 0.2-  | 0.1-  |
| 2002 11 11 | 644 | 0.5+  | 0.7+  | 2007 12 09 | 620 | 0.2+ | 0.2+ | 2007 12 15 | 704 | 0.4+  | 0.2+  |
| 2002 11 11 | 644 | 0.3+  | 0.4+  | 2007 12 09 | 620 | 0.1+ | 0.2+ | 2007 12 15 | 704 | (1.9+ | 0.5-) |
| 2007 09 18 | G96 | 0.3+  | 0.2+  | 2007 12 11 | 620 | 0.1+ | 0.1+ | 2007 12 15 | 704 | 0.3-  | 0.2+  |
| 2007 09 18 | G96 | 0.0   | 0.2-  | 2007 12 11 | 620 | 0.3+ | 0.0  | 2007 12 15 | 704 | 0.2+  | 0.2-  |
| 2007 09 18 | G96 | 0.3+  | 0.2-  | 2007 12 11 | 620 | 0.6- | 0.3- |            |     |       |       |
| 2007 09 18 | G96 | 0.1-  | 0.6-  | 2007 12 11 | 620 | 0.2- | 0.2- |            |     |       |       |

**2002 VW<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.85760   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20258091 | $\omega$ | 302.95052 | +0.69721653   | -0.63422843 |
| <i>a</i> | 2.8712457  | $\Omega$ | 98.79970  | +0.71685891   | +0.61583549 |
| <i>e</i> | 0.2699761  | <i>i</i> | 19.76181  | +0.00155611   | +0.46744085 |
| <i>P</i> | 4.87       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 10 | 645 | 0.0  | 0.0  | 2002 11 27 | 699 | 0.1- | 0.7+ | 2003 01 18 | 644 | 0.4+ | 0.1- |
| 2000 05 10 | 645 | 0.0  | 0.1+ | 2002 11 30 | 704 | 0.1+ | 0.6+ | 2003 01 18 | 644 | 0.1+ | 0.1- |
| 2002 10 31 | 704 | 0.5- | 0.1+ | 2002 11 30 | 704 | 0.8+ | 0.4- | 2003 01 27 | 704 | 0.1- | 0.4+ |
| 2002 10 31 | 704 | 0.7- | 0.1- | 2002 11 30 | 704 | 0.2+ | 0.1- | 2003 01 27 | 704 | 0.4+ | 0.5- |
| 2002 10 31 | 704 | 0.7- | 0.2- | 2002 11 30 | 704 | 0.0  | 0.3- | 2003 01 27 | 644 | 0.2- | 0.4+ |
| 2002 10 31 | 704 | 0.7- | 0.3- | 2002 11 30 | 704 | 0.7+ | 0.6+ | 2003 01 27 | 704 | 0.3+ | 0.1+ |
| 2002 10 31 | 704 | 1.0- | 0.2- | 2002 12 10 | 644 | 0.1- | 0.2+ | 2003 01 27 | 644 | 0.3- | 0.0  |
| 2002 11 07 | 699 | 0.9- | 0.1+ | 2002 12 10 | 644 | 0.0  | 0.3- | 2003 01 27 | 704 | 0.4+ | 0.1- |
| 2002 11 07 | 699 | 0.4- | 0.1+ | 2002 12 10 | 644 | 0.2- | 0.3+ | 2003 01 27 | 704 | 0.4+ | 0.4- |
| 2002 11 07 | 699 | 0.9- | 0.5- | 2002 12 14 | 704 | 0.1+ | 0.2+ | 2003 01 27 | 644 | 0.1- | 0.2+ |
| 2002 11 07 | 699 | 0.1+ | 0.2- | 2002 12 14 | 704 | 0.1+ | 0.2+ | 2003 02 02 | 704 | 0.3- | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 11 | 644 | 0.3+  | 0.4+  | 2002 12 14 | 704 | 0.2- | 0.4+ | 2003 02 02 | 704 | 0.1+ | 0.7+ |
| 2002 11 11 | 644 | 0.5-  | 0.4+  | 2002 12 14 | 704 | 0.1- | 0.2+ | 2003 02 02 | 704 | 0.9- | 0.3- |
| 2002 11 11 | 644 | 0.6+  | 0.3+  | 2003 01 01 | 704 | 0.1- | 0.6- | 2003 02 02 | 704 | 0.1+ | 0.2+ |
| 2002 11 12 | 673 | 1.0+  | 0.0   | 2003 01 01 | 704 | 0.4- | 0.1- | 2003 02 02 | 704 | 0.3- | 0.6- |
| 2002 11 12 | 673 | 1.0+  | 0.1-  | 2003 01 01 | 704 | 0.3- | 0.3+ | 2007 11 09 | D29 | 1.4+ | 0.5- |
| 2002 11 12 | 673 | 0.9+  | 0.2-  | 2003 01 01 | 704 | 0.3- | 0.1- | 2007 11 09 | D29 | 0.2- | 0.0  |
| 2002 11 17 | 644 | 0.0   | 0.3+  | 2003 01 01 | 704 | 0.1- | 0.2+ | 2007 11 09 | D29 | 0.2+ | 0.3- |
| 2002 11 17 | 644 | 0.0   | 0.3+  | 2003 01 08 | 699 | 0.3+ | 0.6+ | 2007 11 09 | D29 | 0.1- | 0.3- |
| 2002 11 17 | 644 | 0.1-  | 0.3+  | 2003 01 08 | 699 | 0.1- | 0.3+ | 2007 11 21 | D29 | 0.1+ | 1.6- |
| 2002 11 27 | 699 | 0.3+  | 0.7+  | 2003 01 08 | 699 | 0.5- | 0.0  | 2007 11 21 | D29 | 0.3+ | 0.5- |
| 2002 11 27 | 699 | 0.2-  | 0.6+  | 2003 01 08 | 699 | 0.7- | 0.1+ | 2007 11 21 | D29 | 0.3- | 0.6- |
| 2002 11 27 | 699 | (1.6+ | 0.1+) | 2003 01 18 | 644 | 0.1- | 0.0  | 2007 11 21 | D29 | 0.2+ | 0.5- |

**2002 VH<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 268.01151  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17413363 | $\omega$ | 254.96974 | -0.42122548   | -0.89610343 |
| <i>a</i> | 3.1760033  | $\Omega$ | 220.86872 | +0.89239571   | -0.38197791 |
| <i>e</i> | 0.1642937  | <i>i</i> | 12.34419  | +0.16186101   | -0.22603435 |
| <i>P</i> | 5.66       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 608 | 0.5+ | 0.3+ | 2002 11 11 | 704 | 0.3- | 0.4- | 2002 12 07 | 704 | 0.4- | 0.2+ |
| 2002 10 30 | 608 | 0.1+ | 0.1- | 2002 11 11 | 704 | 0.1- | 0.3+ | 2004 02 18 | 703 | 0.1- | 0.7+ |
| 2002 10 30 | 608 | 0.3- | 0.5+ | 2002 11 11 | 704 | 0.4- | 0.7- | 2004 02 18 | 703 | 0.3+ | 0.7- |
| 2002 11 07 | 704 | 1.3+ | 0.3+ | 2002 11 13 | 704 | 0.0  | 0.2+ | 2004 02 18 | 703 | 0.4+ | 0.0  |
| 2002 11 07 | 704 | 0.3- | 0.0  | 2002 11 13 | 704 | 0.6+ | 0.5- | 2004 02 18 | 703 | 0.3- | 0.9+ |
| 2002 11 07 | 704 | 0.0  | 0.3+ | 2002 11 13 | 704 | 0.4+ | 0.8+ | 2005 06 01 | 691 | 0.2- | 0.7+ |
| 2002 11 07 | 704 | 0.4- | 0.4+ | 2002 11 13 | 704 | 0.4+ | 0.2+ | 2005 06 01 | 691 | 0.0  | 0.8+ |
| 2002 11 07 | 704 | 1.6+ | 0.2- | 2002 12 01 | 704 | 0.9+ | 0.7- | 2005 06 01 | 691 | 0.1+ | 0.8+ |
| 2002 11 11 | 704 | 0.7- | 0.4- | 2002 12 01 | 704 | 0.0  | 0.3+ | 2007 09 13 | 703 | 1.6- | 0.3+ |
| 2002 11 11 | 704 | 0.2- | 0.5+ | 2002 12 01 | 704 | 0.6- | 0.6+ | 2007 09 13 | 703 | 0.7+ | 0.9+ |
| 2002 11 11 | 704 | 0.4- | 0.4- | 2002 12 01 | 704 | 0.0  | 0.4+ | 2007 09 13 | 703 | 0.0  | 0.2+ |
| 2002 11 11 | 704 | 1.3- | 0.1+ | 2002 12 07 | 704 | 0.0  | 0.2+ | 2007 09 13 | 703 | 0.7+ | 0.8- |
| 2002 11 11 | 704 | 0.7- | 0.3- | 2002 12 07 | 704 | 0.4- | 0.6+ |            |     |      |      |
| 2002 11 11 | 704 | 0.1- | 0.1- | 2002 12 07 | 704 | 0.6+ | 0.4- |            |     |      |      |

**2002 VQ<sub>127</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.63059  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18170395 | $\omega$ | 106.78174 | +0.24505348   | -0.96152764 |
| <i>a</i> | 3.0871647  | $\Omega$ | 328.19256 | +0.77540206   | +0.27124653 |
| <i>e</i> | 0.2067529  | <i>i</i> | 13.62407  | +0.58197976   | +0.04347329 |
| <i>P</i> | 5.42       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 704 | 0.8-  | 0.8-  | 2002 12 07 | 704 | 0.5- | 0.0  | 2007 09 13 | 703 | 0.5- | 0.6+ |
| 2002 10 30 | 704 | 0.4+  | 0.4-  | 2002 12 07 | 704 | 0.3+ | 0.1- | 2007 09 13 | 703 | 1.4- | 0.1+ |
| 2002 10 30 | 704 | (1.7- | 1.4-) | 2002 12 07 | 704 | 0.3+ | 0.0  | 2007 09 13 | 703 | 0.8- | 0.6+ |
| 2002 10 30 | 704 | 1.3-  | 0.8-  | 2002 12 07 | 704 | 0.5- | 0.4+ | 2007 10 08 | 703 | 0.3+ | 0.1+ |
| 2002 10 30 | 704 | (0.5- | 2.3-) | 2002 12 15 | 704 | 0.1- | 0.2+ | 2007 10 08 | 703 | 0.6- | 0.5- |
| 2002 11 15 | 704 | 0.4-  | 0.4-  | 2002 12 15 | 704 | 0.1+ | 0.3+ | 2007 10 08 | 703 | 0.6+ | 0.6- |
| 2002 11 15 | 704 | 0.1-  | 0.8-  | 2002 12 15 | 704 | 1.0+ | 1.1- | 2007 10 08 | 703 | 0.2+ | 0.8+ |
| 2002 11 15 | 704 | 0.4+  | 0.2-  | 2002 12 15 | 704 | 0.0  | 0.8+ | 2007 10 11 | B03 | 0.5- | 0.1+ |
| 2002 11 15 | 704 | 0.7+  | 0.5-  | 2003 01 22 | 644 | 0.1- | 0.7+ | 2007 10 11 | B03 | 0.0  | 0.4- |
| 2002 11 15 | 704 | 0.4+  | 0.4+  | 2003 01 22 | 644 | 0.2+ | 0.6+ | 2007 10 19 | 703 | 0.3- | 0.3+ |
| 2002 11 16 | 704 | 0.2+  | 0.5+  | 2003 01 22 | 644 | 0.1+ | 0.3+ | 2007 10 19 | 703 | 0.6+ | 0.0  |
| 2002 11 16 | 704 | 0.2-  | 0.3+  | 2007 09 12 | D35 | 0.6+ | 0.4- | 2007 10 19 | 703 | 0.5+ | 0.3- |
| 2002 11 16 | 704 | 0.4-  | 0.2-  | 2007 09 12 | D35 | 0.5+ | 0.0  | 2007 10 19 | 703 | 0.1- | 0.3+ |
| 2002 11 16 | 704 | 0.0   | 0.6+  | 2007 09 12 | D35 | 0.6+ | 0.2+ |            |     |      |      |
| 2002 12 07 | 704 | 0.2+  | 0.3+  | 2007 09 13 | 703 | 0.0  | 0.2- |            |     |      |      |

**2002 WM<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 340.92937  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17920013 | $\omega$ | 334.87629 | +0.78285339 | -0.56352959 |
| $a$ | 3.1158545  | $\Omega$ | 61.99621  | +0.60932982 | +0.60855567 |
| $e$ | 0.1184488  | $i$      | 17.38250  | +0.12592753 | +0.55865409 |
| $P$ | 5.50       | $H$      | 15.8      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 05 | 704 | 1.7- | 0.4- | 2002 11 24 | 644 | 0.1- | 0.5- | 2007 09 14 | 703 | 0.1+ | 0.5- |
| 2002 11 05 | 704 | 0.9+ | 0.5+ | 2002 11 24 | 644 | 0.5- | 0.3- | 2007 09 14 | 703 | 0.5- | 0.2+ |
| 2002 11 05 | 704 | 0.1+ | 0.2+ | 2002 11 24 | 644 | 0.5- | 0.1- | 2007 09 14 | 703 | 0.9- | 0.4- |
| 2002 11 05 | 704 | 0.9+ | 0.6+ | 2002 12 05 | 704 | 0.4+ | 0.1+ | 2007 09 14 | 703 | 0.5- | 0.1- |
| 2002 11 16 | 644 | 0.0  | 0.1+ | 2002 12 05 | 704 | 0.9- | 1.1+ | 2007 10 12 | 703 | 0.5+ | 0.1- |
| 2002 11 16 | 644 | 0.2+ | 0.2+ | 2002 12 05 | 704 | 0.1+ | 0.2+ | 2007 10 12 | 703 | 0.4+ | 0.6- |
| 2002 11 16 | 644 | 0.3+ | 0.3+ | 2002 12 05 | 704 | 0.5+ | 1.0+ | 2007 10 12 | 703 | 0.4+ | 1.3+ |
| 2002 11 23 | 644 | 0.0  | 0.5- | 2002 12 10 | 704 | 0.2- | 0.4- | 2007 10 12 | 703 | 0.5+ | 0.2+ |
| 2002 11 23 | 644 | 0.3+ | 1.0- | 2002 12 10 | 704 | 0.1- | 0.3- |            |     |      |      |
| 2002 11 23 | 644 | 0.3- | 1.1- | 2002 12 10 | 704 | 0.4+ | 0.5+ |            |     |      |      |

**2002 XY<sub>10</sub> = 2007 UE<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 13.12378   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18034780 | $\omega$ | 305.67606 | +0.96692945 | -0.15971351 |
| $a$ | 3.1026216  | $\Omega$ | 64.26716  | +0.23773040 | +0.84676345 |
| $e$ | 0.1167349  | $i$      | 12.75220  | -0.09236720 | +0.50742808 |
| $P$ | 5.47       | $H$      | 15.5      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 16 | 644 | 0.3- | 0.0  | 2002 12 10 | 704 | 0.4- | 0.2- | 2007 10 10 | 703 | 0.1+ | 0.2+ |
| 2001 08 16 | 644 | 0.3- | 0.2- | 2002 12 10 | 704 | 0.3- | 0.1+ | 2007 10 10 | 703 | 0.5- | 0.1+ |
| 2001 08 16 | 644 | 0.1- | 0.2- | 2002 12 10 | 704 | 0.1- | 0.2+ | 2007 10 10 | 703 | 0.2- | 0.2+ |
| 2001 08 27 | 644 | 0.2+ | 0.2+ | 2002 12 11 | 704 | 1.2+ | 1.3+ | 2007 10 10 | 703 | 0.4- | 0.2- |
| 2001 08 27 | 644 | 0.2+ | 0.1- | 2002 12 11 | 704 | 0.5+ | 0.6- | 2007 10 19 | 703 | 0.4- | 0.8- |
| 2001 08 27 | 644 | 0.3+ | 0.1- | 2002 12 11 | 704 | 0.3- | 0.0  | 2007 10 19 | 703 | 0.3- | 0.3- |
| 2002 12 03 | 644 | 0.3- | 0.4- | 2002 12 11 | 704 | 0.6+ | 0.6+ | 2007 10 19 | 703 | 0.5- | 0.2- |
| 2002 12 03 | 644 | 0.0  | 0.0  | 2002 12 11 | 704 | 0.5+ | 0.4- | 2007 10 19 | 703 | 0.0  | 0.3- |
| 2002 12 03 | 644 | 0.0  | 0.3- | 2007 09 18 | 699 | 0.1- | 1.7+ | 2007 10 31 | 703 | 0.7+ | 0.2+ |
| 2002 12 05 | 704 | 0.3- | 0.1- | 2007 09 18 | 699 | 0.4- | 0.5+ | 2007 10 31 | 703 | 0.2- | 0.7+ |
| 2002 12 05 | 704 | 0.6- | 0.1+ | 2007 09 18 | 699 | 0.3- | 0.2+ | 2007 10 31 | 703 | 0.5- | 0.1- |
| 2002 12 05 | 704 | 0.4- | 0.3- | 2007 09 18 | 699 | 0.1- | 0.1- | 2007 10 31 | 703 | 0.4- | 0.3+ |
| 2002 12 05 | 704 | 0.5- | 0.6- | 2007 10 10 | 703 | 1.1+ | 0.2+ | 2007 11 07 | 703 | 0.1+ | 0.0  |
| 2002 12 05 | 704 | 0.3- | 0.1+ | 2007 10 10 | 703 | 0.2+ | 0.4- | 2007 11 07 | 703 | 0.8+ | 0.5- |
| 2002 12 10 | 704 | 0.1+ | 0.0  | 2007 10 10 | 703 | 0.8+ | 0.1+ | 2007 11 07 | 703 | 0.2+ | 0.8- |
| 2002 12 10 | 704 | 0.4+ | 0.6+ | 2007 10 10 | 703 | 0.1- | 0.2+ | 2007 11 07 | 703 | 0.4+ | 0.7- |

**2002 XO<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 18.51505   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18992738 | $\omega$ | 47.44061  | +0.95509498  | -0.28591514  |
| $a$ | 2.9973974  | $\Omega$ | 328.93482 | +0.20790527  | +0.83365415  |
| $e$ | 0.0741868  | $i$      | 8.66678   | +0.21111368  | +0.47251804  |
| $P$ | 5.19       | $H$      | 15.3      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 11 | 704 | 0.2- | 0.3- | 2007 10 08 | 703 | 0.5- | 0.3- | 2007 11 09 | 704 | 0.8+  | 0.7+  |
| 2002 11 11 | 704 | 0.2- | 0.2+ | 2007 10 08 | 703 | 0.4+ | 0.2- | 2007 11 09 | 704 | 0.4+  | 0.8+  |
| 2002 11 11 | 704 | 0.8- | 1.2+ | 2007 10 08 | 703 | 0.1- | 1.3+ | 2007 11 13 | 703 | 0.5-  | 0.2-  |
| 2002 12 03 | 644 | 0.0  | 0.3+ | 2007 10 21 | 703 | 0.2+ | 0.0  | 2007 11 13 | 703 | 0.5-  | 0.6-  |
| 2002 12 03 | 644 | 0.0  | 0.1- | 2007 10 21 | 703 | 0.4+ | 0.1- | 2007 11 13 | 703 | 1.0-  | 0.4+  |
| 2002 12 03 | 644 | 0.4- | 0.2- | 2007 10 21 | 703 | 0.4+ | 0.1+ | 2007 11 13 | 703 | 0.5-  | 0.5-  |
| 2002 12 06 | 704 | 1.0+ | 0.5- | 2007 10 21 | 703 | 0.5+ | 0.1- | 2007 11 16 | 704 | 0.0   | 0.6-  |
| 2002 12 06 | 704 | 0.9+ | 0.2+ | 2007 11 01 | 703 | 0.5- | 0.5+ | 2007 11 16 | 704 | 0.3-  | 0.0   |
| 2002 12 06 | 704 | 0.3- | 0.1- | 2007 11 01 | 703 | 0.1+ | 0.0  | 2007 11 16 | 704 | 0.6-  | 0.3-  |
| 2002 12 12 | 644 | 0.0  | 0.1+ | 2007 11 01 | 703 | 0.7- | 1.0- | 2007 12 02 | 704 | (1.3+ | 1.7-) |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 12 | 644 | 0.0  | 0.0  | 2007 11 01 | 703 | 0.1+ | 0.1- | 2007 12 02 | 704 | 0.3+ | 0.6- |
| 2002 12 12 | 644 | 0.2- | 0.1+ | 2007 11 09 | 704 | 0.7+ | 0.3- | 2007 12 02 | 704 | 0.9+ | 0.3- |
| 2007 10 08 | 703 | 0.8- | 0.0  | 2007 11 09 | 704 | 0.9+ | 0.7+ | 2007 12 02 | 704 | 0.6+ | 0.2- |

**2002 XE<sub>24</sub> = 2007 VG<sub>53</sub> = 2007 VS<sub>267</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 324.16378  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.19152130 | $\omega$ | 22.92098 | -0.22302258 | -0.96776552 |
| $a$ | 2.9807439  | $\Omega$ | 80.12532 | +0.87496699 | -0.25164931 |
| $e$ | 0.1916198  | $i$      | 6.82096  | +0.42976004 | +0.01012489 |
| $P$ | 5.15       | $H$      | 16.2     | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 12 05 | 704 | 0.3- | 0.5+ | 2002 12 31 | 704 | 0.6+  | 0.5+  | 2007 11 12 | 704 | 0.7+  | 0.5-  |
| 2002 12 05 | 704 | 0.4- | 0.2- | 2002 12 31 | 704 | 0.2+  | 0.1+  | 2007 11 12 | 704 | 0.4+  | 0.3-  |
| 2002 12 05 | 704 | 0.0  | 0.8- | 2002 12 31 | 704 | (1.0- | 1.8+) | 2007 11 12 | 704 | 0.7+  | 0.0   |
| 2002 12 05 | 704 | 0.3- | 0.4- | 2007 10 20 | G96 | 0.5+  | 0.1+  | 2007 11 12 | 704 | 0.6+  | 0.1-  |
| 2002 12 05 | 704 | 0.7- | 0.3- | 2007 10 20 | G96 | 0.2+  | 0.2-  | 2007 11 13 | 691 | 0.0   | 0.3+  |
| 2002 12 06 | 704 | 0.6+ | 0.4+ | 2007 10 20 | G96 | 0.5+  | 0.1-  | 2007 11 13 | 691 | 0.2-  | 0.1+  |
| 2002 12 06 | 704 | 0.8+ | 0.5+ | 2007 10 20 | G96 | 0.3+  | 0.2-  | 2007 11 13 | 691 | 0.1-  | 0.1+  |
| 2002 12 06 | 704 | 0.3- | 0.1- | 2007 11 01 | 691 | 0.3-  | 0.0   | 2007 11 20 | 703 | 0.6+  | 1.3+  |
| 2002 12 07 | 333 | 0.2- | 0.7- | 2007 11 01 | 691 | 0.5-  | 0.2+  | 2007 11 20 | 703 | 0.2+  | 0.1+  |
| 2002 12 07 | 333 | 0.4- | 0.2- | 2007 11 01 | 691 | 0.0   | 0.1+  | 2007 11 20 | 703 | 0.6-  | 0.2-  |
| 2002 12 10 | 704 | 0.6+ | 0.3+ | 2007 11 05 | 691 | 0.1-  | 0.0   | 2007 11 20 | 703 | 0.2+  | 0.6-  |
| 2002 12 10 | 704 | 0.0  | 0.5+ | 2007 11 05 | 691 | 0.1-  | 0.0   | 2007 12 03 | 703 | 0.3+  | 0.9-  |
| 2002 12 10 | 704 | 0.1- | 0.2+ | 2007 11 05 | 691 | 0.4-  | 0.2-  | 2007 12 03 | 703 | 0.2+  | 0.2+  |
| 2002 12 10 | 704 | 0.3- | 0.5- | 2007 11 05 | D29 | 0.4+  | 0.0   | 2007 12 03 | 703 | 0.3-  | 1.1-  |
| 2002 12 10 | 704 | 0.4+ | 0.0  | 2007 11 05 | D29 | 0.6-  | 0.6+  | 2007 12 03 | 703 | 0.3-  | 0.2-  |
| 2002 12 10 | 704 | 0.3- | 0.3- | 2007 11 05 | D29 | 0.2+  | 0.2-  | 2007 12 04 | 704 | 0.3+  | 0.5-  |
| 2002 12 10 | 704 | 0.2+ | 0.2- | 2007 11 05 | D29 | 0.4+  | 0.3+  | 2007 12 04 | 704 | (0.8+ | 1.9-) |
| 2002 12 10 | 704 | 0.4- | 0.3+ | 2007 11 09 | 691 | 0.0   | 0.1-  | 2007 12 04 | 704 | 0.5+  | 0.2-  |
| 2002 12 10 | 704 | 0.7+ | 0.3- | 2007 11 09 | 691 | 0.1+  | 0.1-  | 2007 12 04 | 704 | 0.8+  | 0.5+  |
| 2002 12 31 | 704 | 0.5- | 1.1+ | 2007 11 09 | 691 | 0.0   | 0.1-  | 2007 12 04 | 704 | 0.1+  | 0.3+  |

**2002 XY<sub>26</sub> = 2007 VN<sub>92</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 340.11442  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18739139 | $\omega$ | 105.01489 | +0.69246914 | -0.70683106 |
| $a$ | 3.0243795  | $\Omega$ | 300.21862 | +0.58087661 | +0.66502375 |
| $e$ | 0.1557494  | $i$      | 9.62554   | +0.42786548 | +0.24110839 |
| $P$ | 5.26       | $H$      | 15.9      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 13 | 644 | 0.1+ | 0.0  | 2002 12 05 | 699 | 1.3- | 0.2+ | 2007 11 01 | 703 | 0.4+ | 0.8+ |
| 2002 10 13 | 644 | 0.1+ | 0.2+ | 2002 12 06 | 704 | 0.3- | 0.2- | 2007 11 01 | 703 | 1.1- | 0.6- |
| 2002 10 13 | 644 | 0.1+ | 0.1+ | 2002 12 06 | 704 | 0.8+ | 0.8- | 2007 11 01 | 703 | 1.0+ | 0.4- |
| 2002 11 07 | 704 | 0.9- | 0.3- | 2002 12 06 | 704 | 0.5+ | 1.1- | 2007 11 03 | 704 | 0.3- | 0.7- |
| 2002 11 07 | 704 | 0.2- | 1.1+ | 2002 12 11 | 644 | 0.4+ | 0.2+ | 2007 11 03 | 704 | 0.4- | 0.2- |
| 2002 11 07 | 704 | 0.1- | 0.1- | 2002 12 11 | 644 | 0.3+ | 0.3- | 2007 11 03 | 704 | 0.1+ | 1.0- |
| 2002 11 07 | 704 | 0.5- | 0.5+ | 2002 12 11 | 644 | 0.2+ | 0.1- | 2007 11 09 | 704 | 0.4- | 0.7+ |
| 2002 11 13 | 644 | 0.3+ | 0.3+ | 2007 09 18 | 703 | 0.2- | 0.2- | 2007 11 09 | 704 | 0.2+ | 0.5- |
| 2002 11 13 | 644 | 0.7+ | 0.2+ | 2007 09 18 | 703 | 0.7- | 1.1+ | 2007 11 09 | 704 | 0.6- | 0.3+ |
| 2002 11 13 | 644 | 0.7+ | 0.4+ | 2007 09 18 | 703 | 0.7- | 0.4+ | 2007 11 09 | 704 | 0.3+ | 0.6+ |
| 2002 11 25 | 644 | 0.7+ | 0.0  | 2007 09 18 | 703 | 0.2+ | 0.2- | 2007 11 09 | 704 | 0.3+ | 0.2- |
| 2002 11 25 | 644 | 0.6+ | 0.1+ | 2007 10 08 | 703 | 0.1- | 0.1- | 2007 11 09 | 704 | 0.2+ | 0.7+ |
| 2002 11 25 | 644 | 0.5+ | 0.1- | 2007 10 08 | 703 | 0.2+ | 0.1- | 2007 11 09 | 704 | 0.4+ | 0.2+ |
| 2002 12 05 | 699 | 1.6- | 0.3- | 2007 10 08 | 703 | 0.1+ | 0.4- | 2007 11 09 | 704 | 0.3+ | 0.2- |
| 2002 12 05 | 699 | 1.3- | 0.3+ | 2007 10 08 | 703 | 0.5+ | 0.0  | 2007 11 09 | 704 | 0.2+ | 0.2- |
| 2002 12 05 | 699 | 0.2+ | 0.4+ | 2007 11 01 | 703 | 0.8+ | 0.3- |            |     |      |      |

2007 DEC. 24

M.P.O. 129631

**2002 XS<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.98047  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17884944 | $\omega$ 123.83890 | +0.75930389   | -0.59480384 |
| <i>a</i> | 3.1199262  | $\Omega$ 274.08420 | +0.47452480   | +0.78365422 |
| <i>e</i> | 0.2282245  | <i>i</i> 15.34409  | +0.44529071   | +0.17914927 |
| <i>P</i> | 5.51       | <i>H</i> 14.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 06 | 704 | 0.4-  | 0.9-  | 2002 12 14 | 704 | 0.3-  | 0.5-  | 2007 06 24 | 703 | 0.3- | 1.2+ |
| 2002 12 06 | 704 | 0.2+  | 0.0   | 2002 12 30 | 704 | 0.8-  | 0.2+  | 2007 06 24 | 703 | 0.6- | 0.5+ |
| 2002 12 06 | 704 | 0.2+  | 0.3+  | 2002 12 30 | 704 | 1.3-  | 0.7+  | 2007 09 15 | 703 | 0.2+ | 0.1- |
| 2002 12 06 | 704 | 0.2-  | 0.0   | 2002 12 30 | 704 | 0.5-  | 0.7+  | 2007 09 15 | 703 | 0.1+ | 0.2+ |
| 2002 12 07 | 704 | 1.2+  | 0.8+  | 2003 01 05 | 704 | 0.3-  | 0.6+  | 2007 09 15 | 703 | 0.2- | 0.2- |
| 2002 12 07 | 704 | 0.0   | 0.4-  | 2003 01 05 | 704 | 0.2+  | 0.6-  | 2007 09 15 | 703 | 0.5- | 0.0  |
| 2002 12 07 | 704 | 0.7+  | 1.4+  | 2003 01 05 | 704 | 0.9+  | 0.3-  | 2007 10 09 | 703 | 0.1+ | 0.5+ |
| 2002 12 07 | 704 | 0.9-  | 0.0   | 2003 01 05 | 704 | 1.0+  | 0.9-  | 2007 10 09 | 703 | 0.9+ | 0.6+ |
| 2002 12 07 | 704 | 0.7+  | 0.8+  | 2003 01 05 | 704 | 1.0+  | 0.1-  | 2007 10 09 | 703 | 0.1+ | 0.1+ |
| 2002 12 07 | 704 | (1.8- | 2.0-) | 2003 01 08 | 704 | 0.7+  | 0.2-  | 2007 10 09 | 703 | 0.2- | 0.0  |
| 2002 12 07 | 704 | 0.6-  | 0.5+  | 2003 01 08 | 704 | 0.1-  | 0.3-  | 2007 10 18 | 703 | 0.3+ | 0.4- |
| 2002 12 07 | 704 | 0.9-  | 1.0-  | 2003 01 08 | 704 | 0.8+  | 0.0   | 2007 10 18 | 703 | 0.9- | 0.5- |
| 2002 12 07 | 704 | 0.4+  | 0.8+  | 2003 01 08 | 704 | (1.7+ | 0.4-) | 2007 10 18 | 703 | 0.2+ | 0.4- |
| 2002 12 10 | 704 | 0.9-  | 0.3-  | 2003 01 08 | 704 | 0.5+  | 0.5+  | 2007 10 18 | 703 | 0.0  | 0.3- |
| 2002 12 10 | 704 | 0.9-  | 0.5-  | 2003 01 31 | 704 | 0.2-  | 0.1+  | 2007 11 02 | 106 | 0.3+ | 0.3- |
| 2002 12 10 | 704 | 1.4-  | 0.4-  | 2003 01 31 | 704 | 0.1-  | 0.1+  | 2007 11 02 | 106 | 0.3+ | 0.4- |
| 2002 12 14 | 704 | 0.3+  | 0.0   | 2003 01 31 | 704 | 0.2+  | 0.4+  | 2007 11 02 | 106 | 0.2- | 0.2- |
| 2002 12 14 | 704 | 0.6+  | 0.3+  | 2003 01 31 | 704 | 0.1+  | 0.3-  | 2007 11 02 | 106 | 0.5+ | 0.3+ |
| 2002 12 14 | 704 | 0.1+  | 0.6-  | 2007 06 24 | 703 | 0.4+  | 0.3-  |            |     |      |      |
| 2002 12 14 | 704 | 0.1+  | 0.1-  | 2007 06 24 | 703 | 0.9-  | 0.2+  |            |     |      |      |

**2002 XP<sub>41</sub> = 2007 VW<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.96894  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19153018 | $\omega$ 167.92629 | +0.32980470   | -0.91981158 |
| <i>a</i> | 2.9806517  | $\Omega$ 262.52391 | +0.84733463   | +0.38768385 |
| <i>e</i> | 0.2091574  | <i>i</i> 12.37843  | +0.41623658   | -0.06039779 |
| <i>P</i> | 5.15       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 12 06 | 704 | 0.2-  | 0.1-  | 2003 01 04 | 704 | 0.6- | 0.2- | 2007 11 17 | 704 | 0.6-  | 0.9+  |
| 2002 12 06 | 704 | 0.3+  | 0.1+  | 2003 01 04 | 704 | 0.8- | 0.2- | 2007 11 17 | 704 | 0.4-  | 0.4+  |
| 2002 12 06 | 704 | 0.2-  | 0.1+  | 2007 11 02 | 703 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.3+  | 0.2-  |
| 2002 12 06 | 704 | 0.6-  | 1.4+  | 2007 11 02 | 703 | 0.7- | 0.0  | 2007 11 18 | 704 | 0.1-  | 0.3+  |
| 2002 12 06 | 704 | 0.1-  | 0.8+  | 2007 11 02 | 703 | 0.1- | 0.9- | 2007 11 18 | 704 | 0.0   | 0.1-  |
| 2002 12 10 | 704 | 0.7-  | 0.6-  | 2007 11 02 | 703 | 0.4+ | 1.1- | 2007 11 18 | 704 | 0.4+  | 0.3-  |
| 2002 12 10 | 704 | 0.5-  | 0.4+  | 2007 11 08 | 704 | 0.3- | 0.5- | 2007 11 18 | 704 | 0.1+  | 0.1+  |
| 2002 12 10 | 704 | 0.5-  | 0.4-  | 2007 11 08 | 704 | 0.2+ | 0.5- | 2007 11 30 | A77 | 0.0   | 0.2+  |
| 2002 12 10 | 644 | 0.0   | 0.2+  | 2007 11 08 | 704 | 0.3- | 0.0  | 2007 11 30 | A77 | 0.7-  | 0.1-  |
| 2002 12 10 | 704 | 0.3-  | 0.2-  | 2007 11 08 | 704 | 0.5+ | 0.1+ | 2007 11 30 | A77 | 0.5-  | 0.1+  |
| 2002 12 10 | 704 | 0.3-  | 1.0-  | 2007 11 08 | 704 | 0.3- | 0.2+ | 2007 12 02 | 704 | (1.8- | 0.9+) |
| 2002 12 10 | 704 | 0.1-  | 0.2+  | 2007 11 08 | 703 | 0.1- | 0.5- | 2007 12 02 | 704 | 0.6-  | 0.4+  |
| 2002 12 10 | 704 | 0.0   | 0.4-  | 2007 11 08 | 703 | 1.0+ | 0.1+ | 2007 12 02 | 704 | (2.5- | 0.9+) |
| 2002 12 10 | 704 | 0.6-  | 0.7+  | 2007 11 08 | 703 | 0.1+ | 0.6+ | 2007 12 02 | 704 | 0.9-  | 0.0   |
| 2002 12 10 | 704 | 0.9-  | 0.2-  | 2007 11 08 | 703 | 0.1- | 0.1+ | 2007 12 05 | 699 | (1.9- | 0.8-) |
| 2002 12 10 | 704 | 0.1-  | 0.2+  | 2007 11 08 | 703 | 0.9- | 0.3- | 2007 12 05 | 699 | 0.1-  | 0.7+  |
| 2002 12 10 | 644 | 0.1-  | 0.5+  | 2007 11 08 | 703 | 1.2- | 0.3+ | 2007 12 05 | 699 | 0.4-  | 0.2+  |
| 2002 12 10 | 644 | 0.2+  | 0.3+  | 2007 11 08 | 703 | 1.4- | 0.4+ | 2007 12 05 | 699 | 0.1-  | 0.1+  |
| 2002 12 11 | 704 | 0.6+  | 0.7-  | 2007 11 08 | 703 | 0.3+ | 0.2+ | 2007 12 12 | 704 | 0.0   | 0.3+  |
| 2002 12 11 | 704 | 0.1+  | 1.1-  | 2007 11 09 | 704 | 0.1- | 0.0  | 2007 12 12 | 704 | 0.0   | 0.6+  |
| 2002 12 11 | 704 | 0.4+  | 0.9-  | 2007 11 09 | 704 | 1.4+ | 0.0  | 2007 12 12 | 704 | 1.4+  | 0.4+  |
| 2002 12 11 | 704 | 0.3+  | 0.2-  | 2007 11 09 | 704 | 0.7+ | 0.1- | 2007 12 12 | 704 | 1.0-  | 0.3-  |
| 2002 12 11 | 704 | 0.3-  | 1.0-  | 2007 11 09 | 704 | 0.4+ | 0.1+ | 2007 12 13 | 704 | 0.0   | 0.2-  |
| 2002 12 31 | 704 | 0.5-  | 0.2+  | 2007 11 15 | G96 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.1+  | 0.0   |
| 2002 12 31 | 704 | 0.8-  | 0.9-  | 2007 11 15 | G96 | 0.0  | 0.2- | 2007 12 13 | 704 | 0.6+  | 0.0   |
| 2002 12 31 | 704 | (0.1+ | 1.8-) | 2007 11 15 | G96 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.3+  | 0.2+  |
| 2003 01 01 | 291 | 1.0+  | 0.4+  | 2007 11 15 | G96 | 0.3- | 0.2- | 2007 12 13 | 704 | 0.2-  | 0.6+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 01 | 291 | 0.1- | 0.2- | 2007 11 16 | G96 | 0.1+ | 0.2- | 2007 12 16 | 704 | 0.1+ | 1.1+ |
| 2003 01 01 | 291 | 0.3+ | 0.1- | 2007 11 16 | G96 | 0.0  | 0.5- | 2007 12 16 | 704 | 0.1+ | 0.3- |
| 2003 01 04 | 291 | 0.3- | 0.1- | 2007 11 16 | G96 | 0.5- | 0.2- | 2007 12 16 | 704 | 0.0  | 0.0  |
| 2003 01 04 | 291 | 0.4+ | 0.1+ | 2007 11 16 | G96 | 0.1+ | 0.2- | 2007 12 16 | 704 | 0.5+ | 0.3- |
| 2003 01 04 | 291 | 0.3+ | 0.1- | 2007 11 17 | 704 | 0.1+ | 0.2+ | 2007 12 16 | 704 | 0.3+ | 0.1+ |
| 2003 01 04 | 704 | 0.3- | 0.7+ | 2007 11 17 | 704 | 0.6+ | 0.9+ |            |     |      |      |
| 2003 01 04 | 704 | 0.3+ | 0.7+ | 2007 11 17 | 704 | 0.9+ | 0.7- |            |     |      |      |

**2002 XM<sub>49</sub> = 2007 UZ<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 50.59980   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18122362 | $\omega$ 257.99853 | +0.79723922   | +0.47639951 |
| <i>a</i> | 3.09261174 | $\Omega$ 72.52972  | -0.27898628   | +0.83540983 |
| <i>e</i> | 0.1581981  | <i>i</i> 22.87209  | -0.53532819   | +0.27410568 |
| <i>P</i> | 5.44       | <i>H</i> 15.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 05 26 | 699 | 0.3- | 0.2- | 2002 12 11 | 704 | 0.7- | 0.2- | 2007 10 19 | 699 | 0.7+  | 0.3-  |
| 2000 05 26 | 699 | 0.4+ | 0.3- | 2002 12 11 | 704 | 0.5- | 0.2- | 2007 10 19 | 699 | 0.0   | 0.4-  |
| 2000 05 26 | 699 | 0.8+ | 1.5+ | 2002 12 11 | 704 | 1.2- | 1.5+ | 2007 10 20 | 703 | 0.5+  | 1.0-  |
| 2000 05 26 | 699 | 0.1+ | 0.5+ | 2003 01 05 | 704 | 0.4- | 0.5+ | 2007 10 20 | 703 | 0.6-  | 0.1-  |
| 2002 12 05 | 704 | 0.3+ | 1.1- | 2003 01 05 | 704 | 0.7- | 0.8+ | 2007 10 20 | 703 | (0.0  | 2.2-) |
| 2002 12 05 | 704 | 1.4+ | 0.8- | 2003 01 05 | 704 | 0.2+ | 0.6+ | 2007 10 20 | 703 | 1.0+  | 1.2-  |
| 2002 12 05 | 704 | 0.1+ | 1.2- | 2007 10 10 | 703 | 0.1- | 0.9+ | 2007 11 18 | 699 | 0.6-  | 0.5-  |
| 2002 12 05 | 644 | 0.0  | 0.4+ | 2007 10 10 | 703 | 0.3- | 0.9+ | 2007 11 18 | 699 | 1.0-  | 0.3-  |
| 2002 12 05 | 704 | 0.3- | 1.2- | 2007 10 10 | 703 | 0.1- | 0.8+ | 2007 11 18 | 699 | (2.3- | 0.7-) |
| 2002 12 05 | 644 | 0.3+ | 0.3+ | 2007 10 10 | 703 | 0.4- | 0.6+ | 2007 11 18 | 699 | 0.5-  | 0.3-  |
| 2002 12 05 | 644 | 0.1- | 0.0  | 2007 10 15 | 703 | 0.8+ | 0.3+ | 2007 12 06 | 703 | 0.7-  | 0.2+  |
| 2002 12 10 | 704 | 0.0  | 0.1+ | 2007 10 15 | 703 | 1.4- | 0.4+ | 2007 12 06 | 703 | 0.3-  | 1.0+  |
| 2002 12 10 | 704 | 0.0  | 0.2+ | 2007 10 15 | 703 | 0.8- | 0.4+ | 2007 12 06 | 703 | 1.6+  | 0.6+  |
| 2002 12 10 | 704 | 0.4+ | 0.1- | 2007 10 15 | 703 | 0.2- | 0.5+ | 2007 12 06 | 703 | 2.0+  | 0.6-  |
| 2002 12 10 | 704 | 0.3+ | 0.5+ | 2007 10 19 | 699 | 0.1+ | 0.2- |            |     |       |       |
| 2002 12 10 | 704 | 0.3+ | 0.6+ | 2007 10 19 | 699 | 0.4- | 0.6- |            |     |       |       |

**2002 XO<sub>50</sub> = 2007 VP<sub>188</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 28.25477   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18953615 | $\omega$ 291.67589 | +0.96389210   | -0.17094661 |
| <i>a</i> | 3.0015207  | $\Omega$ 78.62904  | +0.24479765   | +0.87061873 |
| <i>e</i> | 0.1289236  | <i>i</i> 12.02085  | -0.10481474   | +0.46130281 |
| <i>P</i> | 5.20       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 20 | 644 | 0.5-  | 0.4+  | 2005 04 10 | 691 | 0.6+ | 0.3+ | 2007 11 11 | 704 | 0.3+ | 0.2+ |
| 2001 07 20 | 644 | 0.3+  | 0.4   | 2005 04 10 | 691 | 0.3- | 0.1+ | 2007 11 12 | 704 | 1.0+ | 0.2- |
| 2001 07 20 | 644 | 0.3+  | 0.0   | 2005 04 10 | 691 | 0.2+ | 0.5+ | 2007 11 12 | 704 | 0.1+ | 0.3+ |
| 2001 08 10 | 644 | 0.5-  | 0.2+  | 2007 10 13 | 703 | 0.2+ | 0.1+ | 2007 11 12 | 704 | 0.6- | 0.9+ |
| 2001 08 10 | 644 | 0.5-  | 0.5+  | 2007 10 13 | 703 | 0.4- | 0.9+ | 2007 11 12 | 704 | 0.8+ | 0.4+ |
| 2001 08 10 | 644 | 0.2+  | 0.4+  | 2007 10 13 | 703 | 1.6- | 0.1+ | 2007 11 13 | G96 | 0.5+ | 0.3- |
| 2002 12 05 | 704 | 0.2-  | 0.1+  | 2007 10 13 | 703 | 1.7- | 1.7- | 2007 11 13 | G96 | 0.0  | 0.0  |
| 2002 12 05 | 704 | 0.2+  | 0.4-  | 2007 11 02 | G96 | 0.3+ | 0.3- | 2007 11 13 | G96 | 0.5- | 0.4- |
| 2002 12 05 | 704 | 0.6+  | 0.5+  | 2007 11 02 | G96 | 0.1- | 0.3- | 2007 11 13 | G96 | 0.2+ | 0.3- |
| 2002 12 05 | 704 | 0.1-  | 0.7-  | 2007 11 02 | G96 | 1.4+ | 0.1- | 2007 11 15 | 704 | 1.3- | 0.0  |
| 2002 12 05 | 704 | 0.6-  | 0.9+  | 2007 11 09 | 703 | 0.2- | 0.7+ | 2007 11 15 | 704 | 0.4- | 0.0  |
| 2002 12 10 | 704 | 0.3+  | 1.0+  | 2007 11 09 | 703 | 0.5+ | 0.5+ | 2007 11 15 | 704 | 0.0  | 0.0  |
| 2002 12 10 | 704 | (0.4- | 1.9+) | 2007 11 09 | 703 | 0.1+ | 0.5+ | 2007 11 15 | 704 | 0.2- | 0.5- |
| 2002 12 10 | 704 | 0.2-  | 0.5+  | 2007 11 09 | 703 | 0.1+ | 0.2+ | 2007 11 20 | G96 | 0.2+ | 0.3- |
| 2002 12 11 | 704 | 0.3+  | 0.3+  | 2007 11 11 | 704 | 0.6+ | 0.7+ | 2007 11 20 | G96 | 0.1- | 0.4- |
| 2002 12 11 | 704 | 0.9-  | 0.6+  | 2007 11 11 | 704 | 0.1+ | 0.2+ | 2007 11 20 | G96 | 0.0  | 0.3- |
| 2002 12 11 | 704 | 0.2-  | 0.1+  | 2007 11 11 | 704 | 0.2- | 0.7+ | 2007 11 20 | G96 | 0.2+ | 0.3- |

**2002 XK<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.41548  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.19827862 | $\omega$ 41.93008 | −0.23464035   | −0.97173066 |
| <i>a</i> | 2.9126310  | $\Omega$ 61.65564 | +0.88378676   | −0.22444960 |
| <i>e</i> | 0.3029017  | <i>i</i> 1.70214  | +0.40480227   | −0.07322498 |
| <i>P</i> | 4.97       | <i>H</i> 16.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2002 12 05 704 | 0.2+ | 0.1+ | 2002 12 31 704 | 1.0−  | 0.0   | 2007 11 11 G96 | 0.2− | 0.2− |
| 2002 12 05 704 | 0.1− | 0.4− | 2002 12 31 704 | 0.7+  | 0.1−  | 2007 11 11 G96 | 0.4+ | 0.2− |
| 2002 12 05 704 | 0.2+ | 0.0  | 2002 12 31 704 | 0.5+  | 1.1+  | 2007 12 10 704 | 0.7+ | 0.8+ |
| 2002 12 05 704 | 0.1+ | 0.3− | 2002 12 31 704 | 0.8+  | 1.0−  | 2007 12 10 704 | 0.2+ | 0.8+ |
| 2002 12 05 704 | 0.4− | 0.1− | 2003 01 04 704 | 1.1−  | 0.5−  | 2007 12 10 704 | 0.0  | 0.5− |
| 2002 12 11 704 | 0.3− | 0.1+ | 2003 01 04 704 | 0.1+  | 0.7−  | 2007 12 10 704 | 0.3+ | 0.2+ |
| 2002 12 11 704 | 0.1+ | 0.4+ | 2003 01 04 704 | (2.6+ | 1.4+) | 2007 12 10 704 | 0.2− | 0.8+ |
| 2002 12 11 704 | 0.3+ | 0.3+ | 2003 01 08 704 | (0.7− | 2.8+) | 2007 12 14 704 | 0.9+ | 0.3− |
| 2002 12 11 704 | 1.1− | 0.8− | 2003 01 08 704 | (0.1− | 2.5+) | 2007 12 14 704 | 0.1− | 0.4+ |
| 2002 12 14 704 | 0.1+ | 0.6+ | 2003 01 08 704 | (0.2+ | 2.6+) | 2007 12 14 704 | 0.2− | 0.6− |
| 2002 12 14 704 | 0.0  | 0.4− | 2007 11 11 G96 | 0.3−  | 0.1+  | 2007 12 14 704 | 0.1− | 0.3+ |
| 2002 12 14 704 | 0.6+ | 0.6+ | 2007 11 11 G96 | 0.1−  | 0.1−  | 2007 12 14 704 | 1.3− | 0.0  |

**2002 XL<sub>100</sub> = 2007 WV<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.15320   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19126286 | $\omega$ 114.00759 | +0.96030098   | −0.24066398 |
| <i>a</i> | 2.9834284  | $\Omega$ 260.16210 | +0.17404222   | +0.91208304 |
| <i>e</i> | 0.1114415  | <i>i</i> 8.23208   | +0.21801680   | +0.33194184 |
| <i>P</i> | 5.15       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2001 08 18 644 | 0.1− | 0.1− | 2006 06 20 691 | 0.1−  | 0.3+  | 2007 12 04 703 | 0.7+ | 0.7− |
| 2001 08 18 644 | 0.1− | 0.2− | 2006 06 20 691 | 0.2+  | 0.2+  | 2007 12 04 703 | 0.7− | 0.1− |
| 2001 08 18 644 | 0.0  | 0.1− | 2006 06 20 691 | 0.2−  | 0.2+  | 2007 12 04 703 | 0.3− | 0.4− |
| 2002 12 05 704 | 1.0− | 0.4− | 2007 10 21 G96 | 0.4−  | 0.5−  | 2007 12 10 704 | 1.2+ | 0.6+ |
| 2002 12 05 704 | 0.1− | 0.0  | 2007 10 21 G96 | 0.4−  | 0.7−  | 2007 12 10 704 | 0.3+ | 0.5+ |
| 2002 12 05 704 | 0.3− | 0.2+ | 2007 10 21 G96 | 0.2−  | 0.6−  | 2007 12 10 704 | 0.1− | 0.4+ |
| 2002 12 05 704 | 0.0  | 0.1− | 2007 10 21 G96 | 0.1−  | 0.6−  | 2007 12 10 704 | 0.2+ | 1.1+ |
| 2002 12 05 704 | 0.1+ | 0.7+ | 2007 11 18 704 | 0.1−  | 0.6−  | 2007 12 10 704 | 0.6− | 0.1+ |
| 2002 12 05 608 | 0.1+ | 0.3+ | 2007 11 18 704 | (1.6+ | 0.4−) | 2007 12 15 704 | 0.0  | 1.6+ |
| 2002 12 05 608 | 0.0  | 0.2+ | 2007 11 18 704 | 0.1−  | 0.4−  | 2007 12 15 704 | 0.1+ | 0.2+ |
| 2002 12 05 608 | 0.4+ | 0.3+ | 2007 11 18 704 | 0.5−  | 0.3−  | 2007 12 15 704 | 1.2+ | 0.9+ |
| 2002 12 10 704 | 0.4+ | 0.2− | 2007 11 18 704 | 0.5−  | 0.2−  | 2007 12 15 704 | 0.5− | 0.0  |
| 2002 12 10 704 | 0.2− | 0.3+ | 2007 11 20 704 | 0.0   | 0.4−  | 2007 12 15 704 | 0.7+ | 0.7+ |
| 2002 12 10 704 | 0.3− | 0.6− | 2007 11 20 704 | 0.3−  | 0.1−  | 2007 12 16 704 | 0.0  | 1.3− |
| 2003 01 04 291 | 0.1− | 0.4+ | 2007 11 20 704 | 0.4−  | 1.1−  | 2007 12 16 704 | 0.2+ | 0.4− |
| 2003 01 04 291 | 0.2+ | 0.3+ | 2007 11 20 704 | 0.1+  | 0.6−  | 2007 12 16 704 | 0.8+ | 0.6+ |
| 2003 01 04 291 | 0.3+ | 0.2+ | 2007 12 04 703 | 0.4−  | 0.1+  |                |      |      |

**2002 YK<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.44226  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18866238 | $\omega$ 200.15775 | −0.46900333   | −0.86998867 |
| <i>a</i> | 3.0107811  | $\Omega$ 278.07518 | +0.82992627   | −0.37519290 |
| <i>e</i> | 0.2697324  | <i>i</i> 8.84103   | +0.30208982   | −0.31992185 |
| <i>P</i> | 5.22       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1997 12 29 691 | 0.2− | 0.1+ | 2003 01 08 704 | 0.5− | 0.3+ | 2007 12 02 704 | 0.7+ | 0.6− |
| 1997 12 29 691 | 0.1+ | 0.1+ | 2003 01 08 704 | 0.3+ | 0.1+ | 2007 12 02 704 | 0.2− | 0.7− |
| 1997 12 29 691 | 0.2+ | 0.0  | 2007 11 15 G96 | 0.2+ | 0.2− | 2007 12 02 704 | 0.9− | 0.0  |
| 2002 12 05 704 | 0.6− | 0.4+ | 2007 11 15 G96 | 0.2+ | 0.2− | 2007 12 03 704 | 1.3− | 0.3+ |
| 2002 12 05 704 | 0.5+ | 0.4− | 2007 11 15 G96 | 0.2− | 0.3− | 2007 12 03 704 | 0.8− | 0.5− |
| 2002 12 05 704 | 0.7+ | 0.8− | 2007 11 15 G96 | 0.2− | 0.2− | 2007 12 03 704 | 0.6− | 0.1− |
| 2002 12 11 704 | 0.2+ | 0.1+ | 2007 11 17 704 | 0.7− | 0.9+ | 2007 12 03 704 | 0.5− | 0.0  |

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2002 12 11 704 | 0.5+ | 0.9+ | 2007 11 17 704 | 0.8+  | 0.4+  | 2007 12 03 704 | 0.5− | 0.2+ |
| 2002 12 11 704 | 0.3+ | 0.9+ | 2007 11 17 704 | 0.9+  | 0.6−  | 2007 12 12 704 | 0.8+ | 0.3− |
| 2002 12 31 704 | 0.6+ | 0.5− | 2007 11 17 704 | (0.7− | 1.5+) | 2007 12 12 704 | 0.1− | 0.6+ |
| 2002 12 31 704 | 0.3− | 0.0  | 2007 11 18 D35 | 0.1−  | 0.3−  | 2007 12 12 704 | 0.2+ | 0.3+ |
| 2002 12 31 704 | 0.5− | 0.8− | 2007 11 18 D35 | 0.2−  | 0.1+  | 2007 12 12 704 | 0.0  | 0.6− |
| 2002 12 31 704 | 1.1− | 0.5+ | 2007 11 18 D35 | 0.2−  | 0.1−  | 2007 12 12 704 | 0.2− | 0.1− |
| 2003 01 03 704 | 0.4− | 0.2+ | 2007 11 20 704 | 0.7−  | 0.2+  | 2007 12 13 704 | 0.0  | 0.5+ |
| 2003 01 03 704 | 1.2− | 0.8− | 2007 11 20 704 | 0.3+  | 0.3+  | 2007 12 13 704 | 0.2+ | 0.0  |
| 2003 01 03 704 | 0.1− | 0.1+ | 2007 11 20 704 | 0.7+  | 0.1−  | 2007 12 13 704 | 0.2+ | 0.5+ |
| 2003 01 03 704 | 0.1+ | 0.1+ | 2007 11 20 704 | 0.0   | 0.1−  | 2007 12 13 704 | 0.1+ | 0.5+ |
| 2003 01 04 704 | 0.1− | 0.0  | 2007 11 20 704 | 0.3+  | 0.1+  | 2007 12 13 704 | 0.2+ | 0.3+ |
| 2003 01 04 704 | 0.4+ | 0.1− | 2007 11 20 G96 | 0.0   | 0.4−  | 2007 12 16 704 | 0.1− | 0.4+ |
| 2003 01 04 704 | 0.1+ | 0.1+ | 2007 11 20 G96 | 0.0   | 0.2−  | 2007 12 16 704 | 0.1+ | 0.7+ |
| 2003 01 08 704 | 0.8+ | 0.5− | 2007 11 20 G96 | 0.1−  | 0.3−  | 2007 12 16 704 | 1.9+ | 0.4+ |
| 2003 01 08 704 | 0.4+ | 0.7− | 2007 11 20 G96 | 0.1−  | 0.4−  | 2007 12 16 704 | 0.1− | 0.2+ |

**2002 YX<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.21301  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17211562 | $\omega$ 120.34143 | +0.95351473   | −0.19021734 |
| <i>a</i> | 3.2007803  | $\Omega$ 251.48781 | +0.11122177   | +0.94298421 |
| <i>e</i> | 0.2127824  | <i>i</i> 14.26920  | +0.28007032   | +0.27312661 |
| <i>P</i> | 5.73       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2002 11 12 704 | 0.9+  | 0.9+  | 2002 12 10 704 | 1.0+ | 0.4− | 2007 08 13 699 | 0.3− | 0.0  |
| 2002 11 12 704 | 0.5+  | 0.4−  | 2002 12 10 704 | 0.8− | 0.2− | 2007 08 13 699 | 0.4+ | 0.4− |
| 2002 11 12 704 | 0.4−  | 0.0   | 2002 12 27 644 | 0.2− | 0.0  | 2007 08 13 699 | 1.4− | 0.2− |
| 2002 11 14 704 | (2.9− | 0.5+) | 2002 12 27 644 | 0.2+ | 0.1+ | 2007 08 13 699 | 0.7− | 0.5− |
| 2002 11 14 704 | (1.8− | 2.5−) | 2002 12 27 644 | 0.2− | 0.2− | 2007 09 05 703 | 0.1− | 0.2+ |
| 2002 11 14 704 | 1.1−  | 0.7−  | 2002 12 31 699 | 1.2+ | 0.7− | 2007 09 05 703 | 0.8+ | 0.6+ |
| 2002 11 14 704 | (2.1− | 0.1+) | 2002 12 31 704 | 0.2− | 0.0  | 2007 09 05 703 | 0.4+ | 0.4− |
| 2002 11 14 704 | 1.1−  | 0.1+  | 2002 12 31 699 | 1.1− | 0.7+ | 2007 09 05 703 | 1.3+ | 0.6+ |
| 2002 11 24 644 | 0.0   | 0.0   | 2002 12 31 704 | 0.5− | 0.5− | 2007 09 12 703 | 0.2+ | 0.1− |
| 2002 11 24 644 | 0.1+  | 0.2+  | 2002 12 31 699 | 0.8− | 0.8+ | 2007 09 12 703 | 0.1+ | 0.3+ |
| 2002 11 24 644 | 0.2+  | 0.1−  | 2002 12 31 704 | 0.6− | 1.0− | 2007 09 12 703 | 0.0  | 0.1− |
| 2002 12 05 704 | 0.2−  | 0.3+  | 2002 12 31 704 | 0.2− | 0.3− | 2007 09 12 703 | 0.8− | 0.1− |
| 2002 12 05 704 | 0.3+  | 0.7+  | 2002 12 31 699 | 0.7+ | 0.0  | 2007 10 13 703 | 0.1+ | 0.4− |
| 2002 12 05 704 | 0.7+  | 0.1−  | 2002 12 31 704 | 0.6− | 0.1− | 2007 10 13 703 | 0.7+ | 0.4+ |
| 2002 12 05 704 | 0.1+  | 0.3+  | 2003 01 04 704 | 0.7− | 0.2− | 2007 10 13 703 | 0.4− | 0.1− |
| 2002 12 05 704 | 0.5+  | 0.4+  | 2003 01 04 704 | 0.4+ | 0.5− | 2007 10 13 703 | 0.2− | 0.1− |
| 2002 12 10 704 | 1.0+  | 0.1+  | 2003 01 04 704 | 0.6+ | 0.5− |                |      |      |
| 2002 12 10 704 | 0.3+  | 0.2+  | 2003 01 04 704 | 0.2− | 0.8+ |                |      |      |

**2002 YG<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.15491  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17711256 | $\omega$ 158.26398 | +0.10637639   | −0.86940354 |
| <i>a</i> | 3.1402904  | $\Omega$ 282.89434 | +0.82372109   | +0.34885473 |
| <i>e</i> | 0.2700619  | <i>i</i> 29.66963  | +0.55692695   | −0.34991123 |
| <i>P</i> | 5.56       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2002 11 27 699 | 0.8+ | 1.2− | 2002 12 31 704 | 0.1+  | 0.2−  | 2003 01 08 704 | 0.4− | 0.1− |
| 2002 11 27 699 | 0.5+ | 1.5− | 2003 01 04 704 | 0.2−  | 0.1−  | 2003 01 08 704 | 0.0  | 0.7− |
| 2002 11 27 699 | 0.5− | 0.2+ | 2003 01 04 704 | 0.3−  | 0.4−  | 2003 01 27 704 | 0.2− | 0.3+ |
| 2002 11 27 699 | 0.5+ | 0.3+ | 2003 01 04 704 | (0.1+ | 2.1−) | 2003 01 27 704 | 0.7− | 1.6− |
| 2002 12 11 704 | 0.1+ | 0.2+ | 2003 01 04 704 | 0.0   | 0.3−  | 2003 01 27 704 | 0.5− | 0.7+ |
| 2002 12 11 704 | 0.3+ | 0.4+ | 2003 01 07 704 | 0.3−  | 0.8+  | 2003 01 27 704 | 0.2− | 0.1− |
| 2002 12 11 704 | 0.4+ | 0.4+ | 2003 01 07 704 | 0.4−  | 0.5+  | 2007 11 20 G96 | 0.2+ | 0.3− |
| 2002 12 11 704 | 0.8+ | 0.7+ | 2003 01 07 704 | 0.1−  | 1.0+  | 2007 11 20 G96 | 0.2+ | 0.5− |
| 2002 12 31 704 | 0.1+ | 0.2+ | 2003 01 07 704 | 0.2−  | 0.3+  | 2007 11 20 G96 | 0.1− | 0.9+ |
| 2002 12 31 704 | 0.0  | 0.3− | 2003 01 07 704 | 0.3+  | 0.6+  | 2007 11 20 G96 | 0.0  | 0.5− |
| 2002 12 31 704 | 0.6+ | 0.9+ | 2003 01 08 704 | 0.2−  | 0.8−  |                |      |      |
| 2002 12 31 704 | 0.1+ | 0.3− | 2003 01 08 704 | 0.1+  | 0.5−  |                |      |      |

2007 DEC. 24

M.P.O. 129633

**2002 YD<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 1.86856    |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18886886 | $\omega$ | 317.26951 | +0.48798312 |          |          | -0.86567270 |
| <i>a</i> | 3.0085863  | $\Omega$ | 103.23544 | +0.82861252 |          |          | +0.41920394 |
| <i>e</i> | 0.2240309  | <i>i</i> | 6.59078   | +0.27436065 |          |          | +0.27363997 |
| <i>P</i> | 5.22       | <i>H</i> | 16.4      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 06 | 645 | 0.0  | 0.0  | 2003 01 08 | 704 | 0.7+ | 0.1+ | 2007 12 04 | 703 | 0.4+ | 0.3- |
| 2002 12 06 | 645 | 0.0  | 0.0  | 2003 01 08 | 704 | 0.8+ | 0.1- | 2007 12 04 | 703 | 0.4- | 0.2+ |
| 2002 12 31 | 704 | 1.2- | 0.6+ | 2003 01 08 | 704 | 0.7+ | 0.5- | 2007 12 04 | 703 | 0.3- | 0.7+ |
| 2002 12 31 | 704 | 1.1- | 0.3+ | 2003 01 08 | 704 | 0.0  | 0.4- | 2007 12 05 | G96 | 0.1+ | 0.1- |
| 2002 12 31 | 704 | 0.2- | 0.1+ | 2007 11 21 | G96 | 0.3+ | 0.3- | 2007 12 05 | G96 | 0.3+ | 0.0  |
| 2002 12 31 | 704 | 0.2+ | 0.2- | 2007 11 21 | G96 | 0.1+ | 0.3- | 2007 12 05 | G96 | 0.0  | 0.1- |
| 2003 01 04 | 704 | 0.3+ | 0.2- | 2007 11 21 | G96 | 0.2- | 0.3- | 2007 12 05 | G96 | 0.2- | 0.4+ |
| 2003 01 04 | 704 | 0.2- | 0.2+ | 2007 11 21 | G96 | 0.1+ | 0.2- |            |     |      |      |
| 2003 01 04 | 704 | 0.1- | 0.1- | 2007 12 04 | 703 | 0.2- | 0.4+ |            |     |      |      |

**2003 AN<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 305.45646  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.38834322 | $\omega$ | 215.19868 | -0.45705488 |          |          | -0.80678129 |
| <i>a</i> | 1.8606252  | $\Omega$ | 264.74701 | +0.87765899 |          |          | -0.34080148 |
| <i>e</i> | 0.0629211  | <i>i</i> | 22.08728  | +0.14427587 |          |          | -0.48265754 |
| <i>P</i> | 2.54       | <i>H</i> | 16.7      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 06 16 | 644 | 0.2-  | 1.3-  | 2003 01 01 | 704 | 0.5+ | 0.1+ | 2007 11 01 | D29 | 0.2+ | 0.1- |
| 2001 06 16 | 644 | 0.1+  | 1.3-  | 2003 01 01 | 704 | 0.4+ | 0.0  | 2007 11 01 | D29 | 0.0  | 0.6- |
| 2001 06 16 | 644 | 0.2+  | 0.9-  | 2003 01 01 | 704 | 0.7+ | 0.2+ | 2007 11 09 | 704 | 0.8- | 0.3- |
| 2002 11 12 | 704 | 0.6-  | 0.1+  | 2003 01 01 | 704 | 0.4+ | 0.4+ | 2007 11 09 | 704 | 0.3- | 0.4+ |
| 2002 11 12 | 704 | 1.1-  | 0.6+  | 2003 01 04 | 704 | 0.3+ | 0.2- | 2007 11 09 | 704 | 0.2+ | 0.2- |
| 2002 11 12 | 704 | 0.7-  | 0.2+  | 2003 01 04 | 704 | 0.6+ | 0.0  | 2007 11 09 | 704 | 0.0  | 0.2+ |
| 2002 11 12 | 704 | (1.6- | 1.1+) | 2003 01 04 | 704 | 0.2+ | 0.2- | 2007 11 16 | 704 | 0.2+ | 0.0  |
| 2002 12 05 | 704 | 0.0   | 0.2+  | 2003 01 04 | 704 | 0.0  | 0.1- | 2007 11 16 | 704 | 0.2+ | 0.2+ |
| 2002 12 05 | 704 | 0.1+  | 0.3+  | 2003 01 05 | 704 | 0.3- | 0.2- | 2007 11 16 | 704 | 0.2+ | 0.1+ |
| 2002 12 05 | 704 | 0.1-  | 0.3+  | 2003 01 05 | 704 | 0.5- | 0.4- | 2007 12 15 | 704 | 0.8- | 0.8- |
| 2002 12 05 | 704 | 0.4+  | 0.0   | 2003 01 05 | 704 | 0.4- | 0.1- | 2007 12 15 | 704 | 0.2+ | 1.7- |
| 2002 12 11 | 704 | 0.6-  | 0.3-  | 2003 01 05 | 704 | 0.3- | 0.0  | 2007 12 15 | 704 | 0.2- | 0.1+ |
| 2002 12 11 | 704 | 0.3-  | 0.2-  | 2003 01 05 | 704 | 0.1- | 0.0  | 2007 12 15 | 704 | 0.5- | 0.4- |
| 2002 12 11 | 704 | 0.4+  | 0.5+  | 2007 11 01 | D29 | 0.4+ | 0.4- | 2007 12 15 | 704 | 0.4- | 0.3- |
| 2003 01 01 | 704 | 0.6+  | 0.2+  | 2007 11 01 | D29 | 0.1+ | 0.5- |            |     |      |      |

**2003 AL<sub>9</sub> = 2007 VC<sub>251</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.21310  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18005645 | $\omega$ | 314.37638 | +0.46268492 |          |          | -0.88249493 |
| <i>a</i> | 3.1059677  | $\Omega$ | 107.88970 | +0.83650510 |          |          | +0.40306607 |
| <i>e</i> | 0.2054117  | <i>i</i> | 5.08886   | +0.29356751 |          |          | +0.24236427 |
| <i>P</i> | 5.47       | <i>H</i> | 16.5      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 31 | 645 | 0.2+ | 0.2- | 2007 10 12 | G96 | 0.3+ | 0.4- | 2007 11 15 | 699 | 0.2+ | 0.7+ |
| 2002 12 31 | 645 | 0.2+ | 0.2- | 2007 10 12 | G96 | 0.2+ | 0.2- | 2007 11 15 | 699 | 1.1- | 1.1- |
| 2003 01 03 | 291 | 0.6- | 0.3+ | 2007 10 12 | G96 | 0.3+ | 0.2- | 2007 11 15 | 699 | 0.7+ | 0.2- |
| 2003 01 03 | 291 | 0.0  | 0.3+ | 2007 10 12 | G96 | 0.2+ | 0.3- | 2007 11 15 | 699 | 0.2- | 0.0  |
| 2003 01 03 | 291 | 0.4- | 0.2+ | 2007 11 09 | 703 | 0.5- | 0.7+ | 2007 11 20 | G96 | 0.3- | 0.6- |
| 2003 01 05 | 291 | 0.5- | 0.8+ | 2007 11 09 | 703 | 0.5- | 1.4+ | 2007 11 20 | G96 | 0.2- | 0.3- |
| 2003 01 05 | 291 | 0.3- | 0.1- | 2007 11 09 | 703 | 1.1+ | 1.4+ | 2007 11 20 | G96 | 0.4- | 0.4- |
| 2003 01 05 | 291 | 0.2- | 0.2+ | 2007 11 09 | 703 | 0.4+ | 0.3+ | 2007 11 20 | G96 | 0.2- | 0.6- |

**2003 AP<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 272.47546  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17660749 | $\omega$ | 278.73977 | -0.95886875 |          |          | +0.10059957 |
| <i>a</i> | 3.1462747  | $\Omega$ | 267.34822 | +0.00565355 |          |          | -0.92813554 |
| <i>e</i> | 0.3114620  | <i>i</i> | 15.40912  | -0.28379350 |          |          | -0.35839104 |
| <i>P</i> | 5.58       | <i>H</i> | 14.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 30 | 645 | 0.0  | 0.0  | 2003 01 09 | 704 | 0.7- | 0.2- | 2003 04 09 | 704 | 0.3- | 0.7+ |
| 2000 11 30 | 645 | 0.0  | 0.1+ | 2003 01 09 | 704 | 0.3+ | 0.2+ | 2003 04 09 | 704 | 0.8- | 0.2+ |
| 2002 12 06 | 644 | 0.1+ | 0.1+ | 2003 01 09 | 704 | 0.4- | 0.0  | 2003 04 09 | 704 | 0.5+ | 0.7+ |
| 2002 12 06 | 644 | 0.3+ | 0.0  | 2003 01 09 | 704 | 0.6- | 0.4- | 2003 05 06 | 291 | 0.3+ | 0.3+ |
| 2002 12 06 | 644 | 0.0  | 0.1+ | 2003 01 16 | 644 | 0.3+ | 0.0  | 2003 05 06 | 291 | 0.3+ | 0.3+ |
| 2002 12 18 | 608 | 0.6+ | 0.1- | 2003 01 16 | 644 | 0.3+ | 0.2+ | 2003 05 06 | 291 | 0.2+ | 0.2+ |
| 2002 12 18 | 608 | 0.2+ | 0.3- | 2003 01 16 | 644 | 0.6+ | 0.2+ | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2002 12 18 | 608 | 0.5- | 0.0  | 2003 01 26 | 644 | 0.1+ | 0.2+ | 2007 11 08 | 691 | 0.2- | 0.0  |
| 2003 01 01 | 704 | 0.6- | 0.6+ | 2003 01 26 | 644 | 0.1+ | 0.1+ | 2007 11 08 | 691 | 0.2+ | 0.1+ |
| 2003 01 01 | 704 | 0.2+ | 0.1- | 2003 01 26 | 644 | 0.2+ | 0.0  | 2007 11 18 | 704 | 0.2+ | 0.4+ |
| 2003 01 01 | 704 | 0.3- | 0.5- | 2003 01 28 | 645 | 0.1- | 0.0  | 2007 11 18 | 704 | 1.0- | 0.3- |
| 2003 01 01 | 704 | 0.8+ | 0.0  | 2003 01 28 | 645 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.9- | 0.0  |
| 2003 01 01 | 704 | 0.4+ | 0.1+ | 2003 01 28 | 704 | 0.4+ | 0.7+ | 2007 11 18 | 704 | 0.2- | 0.9+ |
| 2003 01 05 | 704 | 0.6- | 0.8+ | 2003 01 28 | 704 | 0.2- | 0.5- | 2007 12 13 | 704 | 0.9+ | 0.6+ |
| 2003 01 05 | 704 | 0.6- | 1.2+ | 2003 01 28 | 704 | 0.5+ | 0.0  | 2007 12 13 | 704 | 0.1+ | 0.3- |
| 2003 01 05 | 704 | 0.4- | 0.8+ | 2003 01 28 | 645 | 0.0  | 0.1- | 2007 12 13 | 704 | 1.3+ | 0.0  |
| 2003 01 05 | 704 | 0.1+ | 0.0  | 2003 01 28 | 645 | 0.0  | 0.1- |            |     |      |      |
| 2003 01 09 | 704 | 0.1+ | 0.0  | 2003 04 09 | 704 | 0.3+ | 0.3+ |            |     |      |      |

**2003 AF<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.42871  |          | (2000.0) |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.19307324 | $\omega$ | 37.67126 | -0.39111373 |          |          | -0.90744166 |
| <i>a</i> | 2.9647495  | $\Omega$ | 75.81896 | +0.80121281 |          |          | -0.41781454 |
| <i>e</i> | 0.1802953  | <i>i</i> | 9.11307  | +0.45286652 |          |          | -0.04450435 |
| <i>P</i> | 5.10       | <i>H</i> | 15.6     | <i>G</i>    | 0.15     | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 07 | 645 | 0.1+ | 0.1- | 2003 01 31 | 704 | 1.4+ | 1.4+ | 2007 12 06 | 704 | 0.6+  | 0.7+  |
| 2002 11 07 | 645 | 0.1+ | 0.1- | 2003 01 31 | 704 | 1.1+ | 1.1+ | 2007 12 06 | 704 | 0.9+  | 0.3-  |
| 2002 12 13 | 645 | 0.1- | 0.2- | 2003 01 31 | 704 | 1.2+ | 1.4+ | 2007 12 06 | 704 | 0.4+  | 1.1-  |
| 2002 12 13 | 645 | 0.2- | 0.2- | 2007 11 19 | D35 | 0.2+ | 0.4+ | 2007 12 06 | 704 | 0.3+  | 0.7+  |
| 2002 12 14 | 704 | 0.7- | 0.0  | 2007 11 19 | D35 | 0.1+ | 0.1+ | 2007 12 10 | 704 | 0.9+  | 0.6+  |
| 2002 12 14 | 704 | 0.2+ | 0.2- | 2007 11 19 | D35 | 0.1+ | 0.4+ | 2007 12 10 | 704 | 1.1+  | 0.8+  |
| 2002 12 14 | 704 | 0.6+ | 0.5- | 2007 12 04 | G96 | 0.4- | 0.5+ | 2007 12 10 | 704 | (1.8+ | 1.3+) |
| 2003 01 05 | 704 | 0.4- | 0.1- | 2007 12 04 | G96 | 0.1- | 0.0  | 2007 12 10 | 704 | 1.2+  | 0.7+  |
| 2003 01 05 | 704 | 0.0  | 0.3- | 2007 12 04 | G96 | 0.4- | 0.0  | 2007 12 10 | 704 | 1.5+  | 0.8+  |
| 2003 01 05 | 704 | 0.3- | 0.3- | 2007 12 04 | G96 | 0.5- | 0.1+ | 2007 12 15 | 704 | 0.8-  | 0.2+  |
| 2003 01 05 | 704 | 0.2+ | 0.5+ | 2007 12 05 | 691 | 0.5- | 0.1- | 2007 12 15 | 704 | 0.2+  | 0.4+  |
| 2003 01 07 | 704 | 0.8- | 0.1+ | 2007 12 05 | 691 | 0.6- | 0.1- | 2007 12 15 | 704 | 0.0   | 0.5+  |
| 2003 01 07 | 704 | 0.4- | 0.1+ | 2007 12 05 | 691 | 0.6- | 0.1+ | 2007 12 15 | 704 | 0.1-  | 0.2+  |
| 2003 01 07 | 704 | 0.3- | 0.4+ | 2007 12 06 | 704 | 0.9+ | 1.0+ |            |     |       |       |

**2003 AP<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 317.08834  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17960418 | $\omega$ | 212.52290 | -0.49772472 |          |          | -0.85688255 |
| <i>a</i> | 3.1111796  | $\Omega$ | 267.64898 | +0.82173390 |          |          | -0.41634617 |
| <i>e</i> | 0.1928340  | <i>i</i> | 7.72165   | +0.27753108 |          |          | -0.30398712 |
| <i>P</i> | 5.49       | <i>H</i> | 14.9      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 10 | 644 | 0.3+ | 0.5+ | 2003 01 27 | 644 | 0.1- | 0.0  | 2007 11 20 | 704 | 0.6+ | 0.1+ |
| 2002 12 10 | 644 | 0.2- | 0.4+ | 2003 01 27 | 644 | 0.1- | 0.0  | 2007 11 20 | 704 | 0.2- | 0.7+ |
| 2002 12 10 | 644 | 0.2- | 0.6+ | 2003 01 27 | 704 | 0.2- | 0.6+ | 2007 11 20 | 704 | 0.9+ | 0.3+ |
| 2003 01 01 | 704 | 0.9+ | 0.4+ | 2003 01 27 | 644 | 0.4- | 0.2- | 2007 11 20 | 704 | 0.2- | 0.7- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 01 01 | 704 | 0.3− | 0.1+ | 2003 01 27 | 644 | 0.1−  | 0.0   | 2007 11 20 | 704 | 0.5− | 0.6− |
| 2003 01 01 | 704 | 0.6+ | 0.2+ | 2003 01 27 | 644 | 0.1−  | 0.1−  | 2007 11 20 | 691 | 0.2− | 0.1+ |
| 2003 01 01 | 704 | 0.8− | 0.3− | 2003 01 27 | 644 | 0.0   | 0.1+  | 2007 11 20 | 691 | 0.2− | 0.6+ |
| 2003 01 01 | 704 | 0.3+ | 0.2+ | 2003 02 02 | 704 | 0.2+  | 0.8+  | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2003 01 07 | 704 | 0.0  | 0.2+ | 2003 02 02 | 704 | 0.5−  | 1.0−  | 2007 11 30 | A77 | 0.0  | 0.0  |
| 2003 01 07 | 704 | 0.3+ | 0.2− | 2003 02 02 | 704 | 0.8+  | 0.0   | 2007 11 30 | A77 | 1.4− | 0.4+ |
| 2003 01 07 | 704 | 0.2− | 0.2+ | 2003 02 02 | 704 | 1.1−  | 0.1+  | 2007 11 30 | A77 | 0.2− | 0.1+ |
| 2003 01 07 | 704 | 0.3+ | 0.1+ | 2007 10 24 | G96 | 0.2−  | 0.2−  | 2007 12 10 | 704 | 0.5+ | 0.6− |
| 2003 01 07 | 704 | 0.4+ | 1.2+ | 2007 10 24 | G96 | 0.1+  | 0.4−  | 2007 12 10 | 704 | 0.7+ | 0.6− |
| 2003 01 08 | 704 | 0.6+ | 0.5− | 2007 10 24 | G96 | 0.3+  | 0.2−  | 2007 12 10 | 704 | 0.9+ | 0.2− |
| 2003 01 08 | 704 | 0.5+ | 0.2− | 2007 10 24 | G96 | 0.2+  | 0.2−  | 2007 12 10 | 704 | 0.9+ | 0.1− |
| 2003 01 08 | 704 | 0.7+ | 1.0− | 2007 11 04 | 691 | 0.2−  | 0.1−  | 2007 12 13 | A77 | 0.2+ | 0.0  |
| 2003 01 08 | 704 | 0.2+ | 1.3− | 2007 11 04 | 691 | 0.0   | 0.0   | 2007 12 13 | A77 | 0.2− | 0.0  |
| 2003 01 14 | 608 | 0.3− | 1.1− | 2007 11 04 | 691 | 0.3−  | 0.4−  | 2007 12 13 | A77 | 0.0  | 0.1− |
| 2003 01 14 | 608 | 0.2− | 1.2− | 2007 11 13 | 703 | 1.0+  | 0.3−  | 2007 12 13 | A77 | 0.0  | 0.2− |
| 2003 01 14 | 608 | 0.4− | 1.1− | 2007 11 13 | 703 | 0.9−  | 0.3−  | 2007 12 13 | A77 | 1.2− | 0.2− |
| 2003 01 26 | 699 | 0.3+ | 0.2+ | 2007 11 13 | 703 | 0.4+  | 0.0   | 2007 12 14 | A77 | 0.3− | 0.1− |
| 2003 01 26 | 699 | 0.1− | 0.2+ | 2007 11 13 | 703 | 0.0   | 0.3+  | 2007 12 16 | 704 | 0.4+ | 0.2+ |
| 2003 01 26 | 699 | 0.7+ | 0.4− | 2007 11 18 | 704 | (1.2− | 2.1+) | 2007 12 16 | 704 | 0.2+ | 1.3+ |
| 2003 01 26 | 699 | 0.0  | 0.5− | 2007 11 18 | 704 | (0.8− | 2.5+) | 2007 12 16 | 704 | 0.8+ | 0.1+ |
| 2003 01 27 | 704 | 1.1− | 0.9+ | 2007 11 18 | 704 | (1.0− | 1.9+) | 2007 12 16 | 704 | 0.5+ | 0.4+ |
| 2003 01 27 | 704 | 0.0  | 0.8+ | 2007 11 18 | 704 | (1.2− | 1.9+) |            |     |      |      |
| 2003 01 27 | 704 | 0.6− | 1.1+ | 2007 11 18 | 704 | (0.6− | 2.2+) |            |     |      |      |

**2003 AZ<sub>48</sub> = 2007 UK<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.60058  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18396593 | $\omega$ | 331.70702 | +0.64596412   | −0.74475344 |
| <i>a</i> | 3.0618068  | $\Omega$ | 77.53778  | +0.72874149   | +0.53627146 |
| <i>e</i> | 0.3408712  | <i>i</i> | 9.88039   | +0.22730199   | +0.39718413 |
| <i>P</i> | 5.36       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 05 | 704 | 1.2+ | 0.5+ | 2007 10 19 | 703 | 0.5+ | 0.1+ | 2007 11 17 | 703 | 0.2+ | 1.2− |
| 2003 01 05 | 704 | 1.1+ | 0.2− | 2007 10 19 | 703 | 0.2+ | 0.2+ | 2007 11 17 | 703 | 0.3− | 0.0  |
| 2003 01 05 | 704 | 0.6+ | 0.1+ | 2007 10 19 | 703 | 0.4− | 0.0  | 2007 11 17 | 703 | 0.5+ | 0.9+ |
| 2003 01 05 | 704 | 0.8+ | 0.2− | 2007 10 19 | 703 | 0.5+ | 0.3+ | 2007 11 17 | 703 | 0.5+ | 0.1+ |
| 2003 01 09 | 704 | 0.8− | 0.6− | 2007 10 31 | 703 | 0.9− | 0.2+ | 2007 11 29 | 704 | 0.6+ | 0.3+ |
| 2003 01 09 | 704 | 0.4− | 0.5+ | 2007 10 31 | 703 | 0.6+ | 0.7− | 2007 11 29 | 704 | 0.1− | 1.0+ |
| 2003 01 09 | 704 | 1.2− | 0.0  | 2007 10 31 | 703 | 0.0  | 0.5− | 2007 11 29 | 704 | 0.8− | 0.5+ |
| 2003 01 09 | 704 | 1.4− | 0.2+ | 2007 10 31 | 703 | 0.2+ | 0.6+ | 2007 11 29 | 704 | 0.2− | 0.4+ |
| 2007 10 10 | 703 | 0.1+ | 0.2+ | 2007 11 07 | 703 | 0.3− | 0.5− | 2007 12 06 | 703 | 0.4+ | 0.5− |
| 2007 10 10 | 703 | 0.8− | 0.2− | 2007 11 07 | 703 | 0.3− | 0.3− | 2007 12 06 | 703 | 0.2+ | 0.3− |
| 2007 10 10 | 703 | 0.1− | 0.5+ | 2007 11 07 | 703 | 0.4− | 0.2− | 2007 12 06 | 703 | 0.4+ | 0.4− |
| 2007 10 10 | 703 | 0.1+ | 0.3+ | 2007 11 07 | 703 | 0.3− | 0.2− | 2007 12 06 | 703 | 0.2+ | 0.6− |

**2003 AG<sub>53</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 317.76138  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17744321 | $\omega$ | 356.38437 | −0.27782097   | −0.92086175 |
| <i>a</i> | 3.1363881  | $\Omega$ | 109.59322 | +0.88848700   | −0.35458787 |
| <i>e</i> | 0.2315661  | <i>i</i> | 16.87963  | +0.36524835   | +0.16211439 |
| <i>P</i> | 5.55       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 31 | 704 | 0.1+ | 0.5− | 2003 01 09 | 704 | 0.7+  | 0.1+  | 2003 03 07 | 644 | 0.5+ | 0.1+ |
| 2002 12 31 | 704 | 0.6+ | 0.5− | 2003 01 31 | 699 | 0.8−  | 0.5−  | 2007 11 04 | 703 | 0.1+ | 0.4− |
| 2002 12 31 | 704 | 0.2− | 0.2+ | 2003 01 31 | 699 | 0.8−  | 0.8−  | 2007 11 04 | 703 | 1.0− | 0.0  |
| 2002 12 31 | 704 | 0.2+ | 0.6+ | 2003 01 31 | 699 | 0.2+  | 1.1−  | 2007 11 04 | 703 | 0.7− | 0.3+ |
| 2003 01 05 | 704 | 0.8+ | 0.2+ | 2003 01 31 | 699 | 1.4−  | 0.1−  | 2007 11 04 | 703 | 0.7+ | 0.6+ |
| 2003 01 05 | 704 | 0.0  | 1.1+ | 2003 02 01 | 704 | (2.6+ | 0.9+) | 2007 11 11 | 703 | 0.8− | 0.4+ |
| 2003 01 05 | 704 | 0.1+ | 0.2+ | 2003 02 01 | 704 | 0.8+  | 0.6−  | 2007 11 11 | 703 | 0.1+ | 1.4− |
| 2003 01 05 | 704 | 0.4− | 0.5− | 2003 02 01 | 704 | 0.1+  | 0.6−  | 2007 11 11 | 703 | 0.6− | 1.0+ |
| 2003 01 05 | 704 | 0.3+ | 1.0− | 2003 02 04 | 699 | 0.8−  | 0.3+  | 2007 11 11 | 703 | 0.8− | 0.5+ |
| 2003 01 09 | 704 | 0.5+ | 0.6− | 2003 02 04 | 699 | 0.1−  | 0.9+  | 2007 11 18 | 703 | 0.0  | 0.3+ |
| 2003 01 09 | 704 | 0.1− | 1.1+ | 2003 02 04 | 699 | 0.5−  | 0.5+  | 2007 11 18 | 703 | 0.4+ | 0.1− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 09 | 704 | (2.0− | 1.2−) | 2003 02 04 | 699 | 0.3− | 0.0  | 2007 11 18 | 703 | 0.2− | 0.6− |
| 2003 01 09 | 704 | 0.6+  | 1.2+  | 2003 02 04 | 704 | 1.0− | 0.6+ | 2007 11 18 | 703 | 0.6+ | 0.1+ |
| 2003 01 09 | 704 | 1.0+  | 0.2+  | 2003 02 04 | 704 | 0.8− | 0.1+ | 2007 12 06 | 703 | 0.7+ | 0.1− |
| 2003 01 09 | 704 | 0.9−  | 1.1−  | 2003 02 04 | 704 | 0.5+ | 0.6+ | 2007 12 06 | 703 | 0.5+ | 0.1− |
| 2003 01 09 | 704 | 0.2+  | 0.8−  | 2003 02 04 | 704 | 0.2− | 0.5+ | 2007 12 06 | 703 | 0.7+ | 0.6+ |
| 2003 01 09 | 704 | 0.1+  | 0.5+  | 2003 03 07 | 644 | 0.6+ | 0.0  | 2007 12 06 | 703 | 0.4+ | 0.8− |
| 2003 01 09 | 704 | 0.3+  | 0.1−  | 2003 03 07 | 644 | 0.4+ | 0.1+ |            |     |      |      |

**2003 AW<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.05271  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18368847 | $\omega$ | 32.03504 | −0.23833232   | −0.94657862 |
| <i>a</i> | 3.0648893  | $\Omega$ | 72.53872 | +0.83607735   | −0.31378185 |
| <i>e</i> | 0.1609692  | <i>i</i> | 13.16276 | +0.49413800   | +0.07436306 |
| <i>P</i> | 5.37       | <i>H</i> | 15.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 644 | 0.2−  | 0.0   | 2003 01 31 | 699 | 0.8−  | 0.2−  | 2007 12 04 | 703 | 0.9− | 0.4+ |
| 2001 10 15 | 644 | 0.1+  | 0.1+  | 2003 01 31 | 699 | 1.2−  | 0.2+  | 2007 12 04 | 703 | 0.9− | 0.2− |
| 2001 10 15 | 644 | 0.2−  | 0.4+  | 2003 01 31 | 699 | 0.4−  | 0.4+  | 2007 12 06 | G96 | 1.1+ | 0.4− |
| 2002 12 14 | 704 | 0.9−  | 0.6+  | 2003 02 06 | 699 | 0.9+  | 0.3−  | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2002 12 14 | 704 | 0.3+  | 0.7+  | 2003 02 06 | 699 | 0.2−  | 0.0   | 2007 12 06 | G96 | 0.3+ | 0.1− |
| 2002 12 14 | 704 | 1.0+  | 0.1−  | 2003 02 06 | 699 | 0.3+  | 0.1+  | 2007 12 06 | G96 | 0.2+ | 0.2− |
| 2002 12 14 | 704 | 0.6+  | 0.4−  | 2003 02 06 | 699 | 0.3−  | 0.6+  | 2007 12 10 | 704 | 0.3− | 0.3− |
| 2003 01 07 | 704 | 0.0   | 0.2−  | 2007 11 14 | 691 | 0.1+  | 0.1−  | 2007 12 10 | 704 | 0.3− | 0.1+ |
| 2003 01 07 | 704 | 0.6+  | 0.0   | 2007 11 14 | 691 | 0.3−  | 0.1+  | 2007 12 10 | 704 | 0.5+ | 0.1− |
| 2003 01 07 | 704 | 0.0   | 0.3+  | 2007 11 14 | 691 | 0.1−  | 0.1+  | 2007 12 10 | 704 | 0.4+ | 0.2+ |
| 2003 01 10 | 704 | (1.0− | 1.7−) | 2007 11 19 | 691 | (0.7+ | 2.3−) | 2007 12 14 | 704 | 0.7+ | 0.2+ |
| 2003 01 10 | 704 | 0.3+  | 0.3−  | 2007 11 19 | 691 | 0.1−  | 0.3−  | 2007 12 14 | 704 | 0.3+ | 0.6+ |
| 2003 01 10 | 704 | (1.6+ | 0.5−) | 2007 11 19 | 691 | 0.1−  | 0.2−  | 2007 12 14 | 704 | 1.2+ | 0.4+ |
| 2003 01 10 | 704 | 0.0   | 0.6−  | 2007 12 04 | 703 | 0.6−  | 1.0−  | 2007 12 14 | 704 | 0.4+ | 0.1+ |
| 2003 01 31 | 699 | (2.0− | 0.9−) | 2007 12 04 | 703 | 0.6−  | 0.0   | 2007 12 14 | 704 | 0.5+ | 1.0+ |

**2003 AT<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.14414  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.19120761 | $\omega$ | 62.93872 | −0.56649875   | −0.75234286 |
| <i>a</i> | 2.9840031  | $\Omega$ | 65.65362 | +0.56259596   | −0.65123834 |
| <i>e</i> | 0.1913816  | <i>i</i> | 21.65790 | +0.60213367   | −0.09934211 |
| <i>P</i> | 5.15       | <i>H</i> | 15.0     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 11 | 704 | 0.1+ | 0.5− | 2003 03 10 | 644 | 0.0  | 0.0  | 2003 03 26 | 704 | 0.6− | 0.2+ |
| 2003 01 11 | 704 | 0.0  | 0.3− | 2003 03 10 | 644 | 0.0  | 0.0  | 2003 03 26 | 704 | 0.3− | 0.1+ |
| 2003 01 11 | 704 | 0.2− | 0.3− | 2003 03 24 | 704 | 1.2+ | 1.7− | 2003 03 26 | 704 | 0.4+ | 0.0  |
| 2003 01 12 | 704 | 0.4+ | 0.4− | 2003 03 24 | 704 | 0.2+ | 0.8+ | 2003 03 26 | 704 | 0.4+ | 1.0− |
| 2003 01 12 | 704 | 0.6+ | 0.1− | 2003 03 24 | 704 | 0.2+ | 0.9+ | 2007 11 19 | 699 | 0.2− | 1.1− |
| 2003 01 12 | 704 | 0.2+ | 0.1+ | 2003 03 24 | 704 | 0.0  | 0.2+ | 2007 11 19 | 699 | 0.3+ | 0.8− |
| 2003 01 12 | 704 | 0.5+ | 0.7− | 2003 03 24 | 704 | 0.6+ | 0.5+ | 2007 11 19 | 699 | 0.2+ | 0.1− |
| 2003 01 13 | 704 | 0.0  | 0.8− | 2003 03 25 | 704 | 0.4− | 0.1− | 2007 11 19 | 699 | 0.2+ | 0.1+ |
| 2003 01 13 | 704 | 0.2− | 0.8+ | 2003 03 25 | 704 | 0.5+ | 0.2+ | 2007 11 20 | 703 | 0.0  | 0.9+ |
| 2003 01 13 | 704 | 1.4− | 0.4+ | 2003 03 25 | 704 | 0.1+ | 0.0  | 2007 11 20 | 703 | 0.2+ | 0.6+ |
| 2003 01 13 | 704 | 0.4− | 0.8+ | 2003 03 25 | 704 | 0.1− | 0.1− | 2007 11 20 | 703 | 0.3− | 0.5− |
| 2003 01 13 | 704 | 0.2+ | 0.9+ | 2003 03 25 | 704 | 1.5− | 0.2− | 2007 11 20 | 703 | 0.3− | 0.8+ |
| 2003 03 10 | 644 | 0.0  | 0.1+ | 2003 03 26 | 704 | 0.8− | 0.3+ |            |     |      |      |



2007 DEC. 24

M.P.O. 129635

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 10 | 704 | 0.1−  | 0.6−  | 2003 01 31 | 699 | 0.6+ | 0.7+ | 2007 12 12 | J75 | 0.4+ | 0.2+ |
| 2003 01 10 | 704 | 0.2−  | 0.2+  | 2003 01 31 | 699 | 0.4+ | 0.4− | 2007 12 12 | 620 | 0.2− | 0.2+ |
| 2003 01 10 | 704 | 0.3+  | 0.7−  | 2003 01 31 | 704 | 0.8− | 1.0− | 2007 12 13 | 620 | 0.4− | 0.3+ |
| 2003 01 10 | 704 | 0.4+  | 0.2+  | 2003 01 31 | 704 | 0.9− | 0.1− | 2007 12 13 | 620 | 0.1− | 0.5+ |
| 2003 01 10 | 704 | 0.5+  | 0.0   | 2003 01 31 | 704 | 0.5+ | 0.1+ | 2007 12 14 | 704 | 0.1+ | 0.2− |
| 2003 01 13 | 704 | 0.9−  | 1.2+  | 2003 02 06 | 699 | 0.7− | 0.3+ | 2007 12 14 | 704 | 0.5− | 0.2− |
| 2003 01 13 | 704 | (1.8− | 0.7+) | 2003 02 06 | 699 | 0.3+ | 0.2+ | 2007 12 14 | 704 | 0.3− | 0.2− |
| 2003 01 13 | 704 | (1.8− | 0.7+) | 2003 02 06 | 699 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.3+ | 0.0  |
| 2003 01 31 | 699 | 0.2+  | 0.2−  | 2003 02 06 | 699 | 0.8+ | 0.1+ | 2007 12 14 | 704 | 0.0  | 0.0  |
| 2003 01 31 | 699 | 0.5+  | 0.0   | 2007 12 11 | J75 | 0.3+ | 0.1− |            |     |      |      |
| 2003 01 31 | 704 | 1.0−  | 0.3−  | 2007 12 12 | J75 | 0.5+ | 0.3− |            |     |      |      |

2003 BT<sub>53</sub> = 2007 WK<sub>37</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17414102 | $\omega$ | 173.01194 | −0.06987478 | −0.98709925 |          |   |
| <i>a</i> | 3.1759135  | $\Omega$ | 280.92061 | +0.90799281 | −0.00312979 |          |   |
| <i>e</i> | 0.0722174  | <i>i</i> | 8.43657   | +0.41311811 | −0.16007894 |          |   |
| <i>P</i> | 5.66       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 03 | 645 | 0.1−  | 0.0   | 2003 02 03 | 644 | 0.0  | 0.3+ | 2007 11 19 | G96 | 0.3+ | 0.2+ |
| 2000 09 03 | 645 | 0.1+  | 0.0   | 2007 11 08 | 691 | 0.0  | 0.0  | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2003 01 27 | 699 | 0.1−  | 0.0   | 2007 11 08 | 691 | 1.1− | 0.2+ | 2007 11 20 | 691 | 0.1− | 0.2− |
| 2003 01 27 | 699 | 0.3−  | 0.8−  | 2007 11 08 | 691 | 0.1− | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2003 01 27 | 644 | 0.5−  | 0.1+  | 2007 11 19 | G96 | 0.4+ | 0.3− | 2007 12 04 | 703 | 0.3− | 0.1+ |
| 2003 01 27 | 699 | 0.4+  | 0.5−  | 2007 11 19 | G96 | 0.4+ | 0.2− | 2007 12 04 | 703 | 1.0− | 0.1+ |
| 2003 01 27 | 644 | 0.4−  | 0.4−  | 2007 11 19 | G96 | 0.6+ | 0.3− | 2007 12 04 | 703 | 0.8− | 0.4− |
| 2003 01 27 | 699 | 1.3−  | 0.1−  | 2007 11 19 | G96 | 0.1+ | 0.3− | 2007 12 04 | 703 | 1.0− | 0.3+ |
| 2003 01 27 | 644 | 0.0   | 0.3+  | 2007 11 19 | G96 | 0.3+ | 0.0  | 2007 12 13 | 704 | 0.1+ | 0.2+ |
| 2003 01 30 | 699 | (1.6+ | 0.3−) | 2007 11 19 | G96 | 0.7+ | 0.1+ | 2007 12 13 | 704 | 0.5+ | 0.1+ |
| 2003 01 30 | 699 | 1.4+  | 0.2+  | 2007 11 19 | G96 | 0.5+ | 0.0  | 2007 12 13 | 704 | 0.2+ | 0.3+ |
| 2003 01 30 | 699 | 0.0   | 0.4+  | 2007 11 19 | G96 | 0.4+ | 0.1+ | 2007 12 15 | 704 | 1.0− | 0.2− |
| 2003 01 30 | 699 | 0.9+  | 0.4−  | 2007 11 19 | G96 | 0.2+ | 0.1+ | 2007 12 15 | 704 | 0.6+ | 0.7+ |
| 2003 02 03 | 644 | 0.4−  | 0.7+  | 2007 11 19 | G96 | 0.5+ | 0.0  | 2007 12 15 | 704 | 1.3+ | 0.9− |
| 2003 02 03 | 644 | 0.2+  | 0.1+  | 2007 11 19 | G96 | 0.6+ | 0.0  | 2007 12 15 | 704 | 0.2− | 0.1+ |

2003 BG<sub>70</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18861618 | $\omega$ | 341.66227 | +0.22403929 | −0.94759552 |          |   |
| <i>a</i> | 3.0112727  | $\Omega$ | 94.90294  | +0.92032876 | +0.12882888 |          |   |
| <i>e</i> | 0.1712955  | <i>i</i> | 13.21374  | +0.32062654 | +0.29234542 |          |   |
| <i>P</i> | 5.23       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 31 | 704 | 0.1−  | 0.1+  | 2007 11 05 | G96 | 0.0  | 0.2− | 2007 12 04 | 701 | 0.1− | 0.1− |
| 2002 12 31 | 704 | 0.1−  | 0.4+  | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 12 04 | 701 | 0.1− | 0.0  |
| 2002 12 31 | 704 | 0.4+  | 0.0   | 2007 11 19 | G96 | 0.3− | 0.1− | 2007 12 04 | 701 | 0.0  | 0.1+ |
| 2002 12 31 | 704 | 0.0   | 0.8+  | 2007 11 19 | G96 | 0.1+ | 0.2− | 2007 12 04 | 701 | 0.1− | 0.0  |
| 2003 01 05 | 699 | 0.1−  | 0.7+  | 2007 11 19 | G96 | 0.3+ | 0.1− | 2007 12 04 | 701 | 0.3− | 0.1+ |
| 2003 01 05 | 699 | 0.8+  | 0.6+  | 2007 11 19 | G96 | 0.0  | 0.3− | 2007 12 04 | 701 | 0.1− | 0.4+ |
| 2003 01 05 | 699 | 0.5−  | 1.1+  | 2007 12 03 | 701 | 1.0+ | 0.4− | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2003 01 05 | 699 | 0.3−  | 0.1−  | 2007 12 03 | 701 | 0.1− | 0.0  | 2007 12 05 | 704 | 1.1+ | 0.5+ |
| 2003 01 30 | 704 | (1.8+ | 0.5+) | 2007 12 03 | 701 | 0.1+ | 0.2− | 2007 12 05 | 704 | 0.3+ | 0.3+ |
| 2003 01 30 | 704 | (2.3+ | 0.4+) | 2007 12 03 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 1.1+ | 0.9+ |
| 2003 01 30 | 704 | (2.5+ | 1.8+) | 2007 12 03 | 701 | 0.0  | 0.0  | 2007 12 05 | 701 | 0.1+ | 0.2+ |
| 2003 01 30 | 704 | (2.6+ | 1.2+) | 2007 12 03 | 691 | 0.1− | 0.0  | 2007 12 05 | 701 | 0.4− | 0.1− |
| 2003 01 31 | 699 | 1.0+  | 0.3+  | 2007 12 03 | 701 | 0.1− | 0.0  | 2007 12 05 | 701 | 0.0  | 0.1− |
| 2003 01 31 | 699 | 0.1+  | 0.9+  | 2007 12 03 | 691 | 0.8− | 0.5+ | 2007 12 05 | 701 | 0.1+ | 0.2− |
| 2003 01 31 | 699 | (0.5− | 2.2+) | 2007 12 04 | 699 | 0.3− | 0.1− | 2007 12 14 | 704 | 1.0+ | 0.6− |
| 2003 01 31 | 699 | 1.0+  | 0.4+  | 2007 12 04 | 701 | 0.0  | 0.1− | 2007 12 14 | 704 | 1.4+ | 0.4− |
| 2003 02 01 | 645 | 0.1−  | 0.1−  | 2007 12 04 | 699 | 1.0− | 1.0− | 2007 12 14 | 704 | 1.2+ | 0.7− |
| 2003 02 01 | 645 | 0.0   | 0.1−  | 2007 12 04 | 701 | 0.0  | 0.0  | 2007 12 14 | 704 | 1.9+ | 0.2− |
| 2006 08 28 | E12 | 0.0   | 0.2+  | 2007 12 04 | 701 | 0.0  | 0.0  | 2007 12 14 | 704 | 1.0+ | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 28 | E12 | 0.4+ | 1.1− | 2007 12 04 | 699 | 0.1− | 0.1− | 2007 12 15 | 691 | 0.3− | 0.1− |
| 2006 08 28 | E12 | 0.1+ | 1.4+ | 2007 12 04 | 701 | 0.3+ | 0.0  | 2007 12 15 | 691 | 0.3− | 0.2− |
| 2006 08 28 | E12 | 0.8− | 0.2+ | 2007 12 04 | 701 | 0.0  | 0.1− | 2007 12 15 | 691 | 0.3− | 0.1+ |
| 2007 11 05 | G96 | 0.4+ | 0.3− | 2007 12 04 | 701 | 0.3− | 0.1+ |            |     |      |      |
| 2007 11 05 | G96 | 0.1+ | 0.2− | 2007 12 04 | 699 | 0.6− | 0.3+ |            |     |      |      |

2003 BY<sub>76</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18393489 | $\omega$ | 56.65285 | −0.64216662 | −0.74033277 |          |   |
| <i>a</i> | 3.0621512  | $\Omega$ | 74.60718 | +0.61679796 | −0.65302816 |          |   |
| <i>e</i> | 0.2138786  | <i>i</i> | 11.90077 | +0.45517284 | −0.15956698 |          |   |
| <i>P</i> | 5.36       | <i>H</i> | 15.9     | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 645 | 0.0  | 0.0  | 2003 03 08 | 699 | 0.6− | 0.3+ | 2007 12 13 | 620 | 0.2− | 0.1+ |
| 2001 09 21 | 645 | 0.0  | 0.0  | 2003 03 08 | 699 | 0.2− | 0.7+ | 2007 12 13 | 704 | 0.3− | 0.3+ |
| 2003 01 29 | 644 | 0.1+ | 0.2+ | 2003 03 08 | 699 | 0.7− | 0.4+ | 2007 12 13 | 704 | 0.0  | 0.1+ |
| 2003 01 29 | 644 | 0.2+ | 0.3+ | 2003 03 08 | 699 | 1.1− | 1.0+ | 2007 12 13 | 704 | 0.1− | 0.2− |
| 2003 01 29 | 644 | 0.2+ | 0.0  | 2003 03 08 | 644 | 0.7+ | 0.0  | 2007 12 13 | 704 | 0.1− | 0.0  |
| 2003 02 01 | 644 | 0.0  | 0.1− | 2003 03 08 | 644 | 1.3+ | 0.0  | 2007 12 13 | 704 | 0.6+ | 0.1+ |
| 2003 02 01 | 644 | 0.0  | 0.0  | 2003 03 08 | 644 | 0.4+ | 0.2− | 2007 12 15 | 704 | 0.3+ | 0.1+ |
| 2003 02 01 | 644 | 0.1+ | 0.0  | 2007 12 12 | J75 | 0.0  | 0.3− | 2007 12 15 | 704 | 0.5+ | 0.2+ |
| 2003 02 08 | 699 | 0.2+ | 0.1− | 2007 12 12 | J75 | 0.1− | 0.3+ | 2007 12 15 | 704 | 0.2+ | 0.4− |
| 2003 02 08 | 699 | 0.2− | 0.9− | 2007 12 12 | J75 | 0.5− | 0.2− | 2007 12 15 | 704 | 0.5+ | 0.6− |
| 2003 02 08 | 699 | 0.4− | 0.2− | 2007 12 13 | 620 | 0.4− | 0.3+ | 2007 12 15 | 704 | 0.0  | 0.1− |
| 2003 02 08 | 699 | 0.3− | 1.4− | 2007 12 13 | 620 | 0.4− | 0.6+ |            |     |      |      |

2003 BH<sub>84</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.35930710 | $\omega$ | 35.29297  | +0.70529735 | +0.59425147 |          |   |
| <i>a</i> | 1.9595613  | $\Omega$ | 283.43466 | −0.70668683 | +0.54620119 |          |   |
| <i>e</i> | 0.7182943  | <i>i</i> | 23.41732  | −0.05611928 | +0.59036383 |          |   |
| <i>P</i> | 2.74       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 25 | 809 | 0.1−  | 0.0   | 2007 12 01 | 379 | 0.2− | 0.1+ | 2007 12 05 | A24 | 0.0  | 0.1+ |
| 2003 01 25 | 809 | 0.1−  | 0.1+  | 2007 12 02 | 704 | 0.2− | 0.3− | 2007 12 06 | 379 | 0.1+ | 0.5+ |
| 2003 01 25 | 809 | 0.2−  | 0.2+  | 2007 12 02 | 704 | 0.4− | 0.2− | 2007 12 06 | 379 | 0.1+ | 0.5+ |
| 2003 01 25 | 809 | 0.1−  | 0.2+  | 2007 12 02 | 704 | 0.1− | 0.3+ | 2007 12 06 | 379 | 0.0  | 0.3+ |
| 2003 01 30 | 809 | 0.3+  | 0.3−  | 2007 12 02 | 704 | 0.3− | 0.3− | 2007 12 06 | 379 | 0.2+ | 0.1+ |
| 2003 01 30 | 809 | 0.1+  | 0.2−  | 2007 12 02 | 379 | 0.2− | 0.2+ | 2007 12 06 | 379 | 0.1+ | 0.4+ |
| 2003 01 30 | 809 | 0.2+  | 0.2−  | 2007 12 02 | 379 | 0.1− | 0.4− | 2007 12 06 | 379 | 0.5+ | 0.3+ |
| 2003 02 06 | 809 | 0.2−  | 0.0   | 2007 12 02 | 379 | 0.1+ | 0.4+ | 2007 12 06 | 379 | 0.2+ | 0.1+ |
| 2003 02 06 | 809 | 0.0   | 0.0   | 2007 12 02 | 379 | 0.0  | 0.4− | 2007 12 06 | 379 | 0.3+ | 0.6+ |
| 2003 02 06 | 809 | 0.0   | 0.1−  | 2007 12 02 | 379 | 0.4+ | 0.1− | 2007 12 07 | 379 | 0.3− | 0.5+ |
| 2003 02 06 | 809 | 0.1−  | 0.0   | 2007 12 03 | 379 | 0.1+ | 0.1+ | 2007 12 07 | 379 | 0.6− | 0.0  |
| 2007 11 29 | 704 | (1.6− | 0.0 ) | 2007 12 03 | 379 | 0.0  | 0.1+ | 2007 12 07 | 379 | 0.5− | 0.6+ |
| 2007 11 29 | 704 | 1.5−  | 0.0   | 2007 12 03 | 379 | 0.1+ | 0.2− | 2007 12 07 | 379 | 0.6− | 0.2+ |
| 2007 11 29 | 704 | 1.1−  | 0.0   | 2007 12 03 | 379 | 0.4+ | 0.3− | 2007 12 08 | 379 | 0.3− | 0.1− |
| 2007 11 29 | 704 | 1.2−  | 0.0   | 2007 12 03 | 379 | 0.2+ | 0.4− | 2007 12 08 | 379 | 0.0  | 0.5− |
| 2007 11 29 | 704 | 1.2−  | 0.0   | 2007 12 03 | A24 | 0.3+ | 0.9− | 2007 12 08 | 379 | 0.6− | 0.0  |
| 2007 11 30 | H55 | 1.0−  | 0.5−  | 2007 12 03 | A24 | 0.2+ | 0.1− | 2007 12 08 | 379 | 0.5+ | 0.2− |
| 2007 11 30 | H55 | 0.6−  | 0.7+  | 2007 12 03 | A24 | 0.6+ | 0.4− | 2007 12 08 | 379 | 0.3+ | 0.2− |
| 2007 11 30 | H55 | (0.6− | 1.6+) | 2007 12 03 | A24 | 0.3+ | 0.2+ | 2007 12 08 | 379 | 0.4+ | 0.4− |
| 2007 11 30 | H55 | 0.3+  | 0.2−  | 2007 12 03 | A24 | 0.1− | 0.2− | 2007 12 09 | 379 | 0.2− | 0.6+ |
| 2007 11 30 | J87 | 0.2+  | 0.1−  | 2007 12 04 | 379 | 0.2− | 0.5+ | 2007 12 09 | 379 | 0.1+ | 0.7+ |
| 2007 11 30 | 130 | 0.1+  | 0.1−  | 2007 12 04 | 379 | 0.5− | 0.7+ | 2007 12 09 | 379 | 0.2− | 0.2+ |
| 2007 11 30 | J87 | 0.2+  | 0.1+  | 2007 12 05 | 379 | 0.1+ | 0.4− | 2007 12 11 | 379 | 0.4+ | 0.1− |
| 2007 11 30 | 130 | 0.6+  | 0.3+  | 2007 12 05 | 379 | 0.1+ | 0.1+ | 2007 12 11 | 379 | 0.0  | 0.0  |
| 2007 11 30 | J87 | 0.2+  | 0.1−  | 2007 12 05 | 379 | 0.3− | 0.0  | 2007 12 11 | 379 | 0.1− | 0.1+ |
| 2007 11 30 | 130 | 0.4+  | 0.1+  | 2007 12 05 | 379 | 0.2+ | 0.1− | 2007 12 11 | 379 | 0.2+ | 0.0  |
| 2007 11 30 | 130 | 0.0   | 0.2+  | 2007 12 05 | 379 | 0.2− | 0.2− | 2007 12 11 | 379 | 0.2+ | 0.4+ |
| 2007 11 30 | 595 | 0.5+  | 0.1+  | 2007 12 05 | 379 | 0.2+ | 0.0  | 2007 12 12 | B04 | 0.1− | 0.2− |
| 2007 11 30 | 595 | 0.4+  | 0.3−  | 2007 12 05 | 379 | 0.0  | 0.1− | 2007 12 12 | B04 | 0.5+ | 0.7− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 11 30 | A06 | 0.5+ | 0.1− | 2007 12 05 | 379 | 0.4+ | 0.3− | 2007 12 12 | B04 | 0.2+ | 0.3+ |
| 2007 11 30 | A06 | 0.1+ | 0.7+ | 2007 12 05 | 151 | 0.1− | 0.1− | 2007 12 12 | B04 | 0.2− | 0.5+ |
| 2007 11 30 | A06 | 0.1+ | 0.1− | 2007 12 05 | 151 | 0.1− | 0.2− | 2007 12 12 | B04 | 0.4− | 0.4− |
| 2007 12 01 | 379 | 0.0  | 0.3− | 2007 12 05 | 151 | 0.1+ | 0.4− | 2007 12 14 | J34 | 0.5− | 0.4+ |
| 2007 12 01 | 379 | 0.4+ | 0.7− | 2007 12 05 | 151 | 0.1− | 0.1− | 2007 12 14 | J34 | 0.1− | 0.4+ |
| 2007 12 01 | 379 | 0.4+ | 0.0  | 2007 12 05 | 151 | 0.0  | 0.0  | 2007 12 14 | J34 | 0.3+ | 0.1− |
| 2007 12 01 | 379 | 0.4+ | 0.0  | 2007 12 05 | 151 | 0.1− | 0.1+ | 2007 12 15 | 379 | 0.6+ | 0.2− |
| 2007 12 01 | 379 | 0.6+ | 0.1− | 2007 12 05 | 151 | 0.4− | 0.1+ | 2007 12 15 | 379 | 0.1− | 0.0  |
| 2007 12 01 | 379 | 0.3+ | 0.4− | 2007 12 05 | A24 | 0.1+ | 0.3− | 2007 12 16 | 379 | 0.1+ | 0.2− |
| 2007 12 01 | 379 | 0.4+ | 0.2− | 2007 12 05 | A24 | 0.1− | 0.2+ | 2007 12 16 | 379 | 0.5− | 0.1+ |
| 2007 12 01 | 379 | 0.3− | 0.4− | 2007 12 05 | A24 | 0.1+ | 0.2− | 2007 12 16 | 379 | 0.6− | 0.2− |
| 2007 12 01 | 379 | 0.6+ | 0.1+ | 2007 12 05 | A24 | 0.2− | 0.3− | 2007 12 16 | 379 | 0.2− | 0.5+ |
| 2007 12 01 | 379 | 0.1+ | 0.1− | 2007 12 05 | A24 | 0.7+ | 0.9− |            |     |      |      |

**2003 CA<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |               |               |
|-----|------------|----------|-----------|---------------|---------------|
| $M$ | 348.63273  |          | (2000.0)  | $P$           | $Q$           |
| $n$ | 0.19088819 | $\omega$ | 170.37613 | $-0.37902267$ | $-0.92285855$ |
| $a$ | 2.9873310  | $\Omega$ | 301.86850 | $+0.84358324$ | $-0.31420317$ |
| $e$ | 0.2309421  | $i$      | 4.61733   | $+0.38040654$ | $-0.22272956$ |
| $P$ | 5.16       | $H$      | 16.5      | $G$ 0.15      | $U$ 4         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 04 | 291 | 0.1− | 0.4+ | 2003 02 08 | 704 | 0.5+ | 0.4− | 2003 02 22 | 699 | 1.2− | 0.1+ |
| 2003 01 04 | 291 | 0.2+ | 0.2− | 2003 02 09 | 644 | 0.1+ | 1.3− | 2003 03 06 | 644 | 0.2+ | 0.4+ |
| 2003 01 04 | 291 | 0.3+ | 0.2+ | 2003 02 09 | 644 | 0.2+ | 0.7− | 2003 03 06 | 644 | 0.5+ | 0.0  |
| 2003 01 31 | 704 | 0.3− | 1.8+ | 2003 02 09 | 644 | 0.1− | 0.7− | 2003 03 06 | 644 | 0.3+ | 0.6+ |
| 2003 01 31 | 704 | 0.9+ | 0.8+ | 2003 02 22 | 644 | 0.2− | 0.2− | 2007 11 12 | G96 | 0.5− | 0.6− |
| 2003 01 31 | 704 | 0.3− | 0.3− | 2003 02 22 | 644 | 0.2+ | 0.1+ | 2007 11 12 | G96 | 0.0  | 0.2− |
| 2003 01 31 | 704 | 0.2+ | 0.1− | 2003 02 22 | 644 | 0.1− | 0.3+ | 2007 11 12 | G96 | 0.3+ | 0.8− |
| 2003 01 31 | 704 | 0.3− | 0.6+ | 2003 02 22 | 644 | 0.0  | 0.2− | 2007 11 12 | G96 | 0.2+ | 0.2− |
| 2003 02 04 | 608 | 0.1− | 0.6+ | 2003 02 22 | 644 | 0.3− | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.2+ |
| 2003 02 04 | 608 | 0.2− | 0.5+ | 2003 02 22 | 699 | 0.1+ | 1.0− | 2007 11 21 | G96 | 0.3− | 0.4+ |
| 2003 02 04 | 608 | 0.6− | 0.0  | 2003 02 22 | 644 | 0.2− | 0.3− | 2007 11 21 | G96 | 0.2− | 0.1+ |
| 2003 02 08 | 704 | 0.8+ | 1.3− | 2003 02 22 | 699 | 1.1− | 0.8+ | 2007 11 21 | G96 | 0.0  | 0.0  |
| 2003 02 08 | 704 | 0.5+ | 0.5− | 2003 02 22 | 699 | 0.5− | 0.8− |            |     |      |      |

**2003 CM<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 5.14080    |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.20955534 | $\omega$ | 150.96210 | −0.88414288  | −0.46720792  |
| $a$ | 2.8071798  | $\Omega$ | 1.19577   | +0.39795140  | −0.75625071  |
| $e$ | 0.1990790  | $i$      | 7.85088   | +0.24479798  | −0.45804107  |
| $P$ | 4.70       | $H$      | 16.6      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 11 | 645 | 0.0  | 0.0  | 2003 03 10 | 704 | 1.2+ | 0.4− | 2003 04 01 | 704 | 0.1− | 0.6− |
| 2002 12 11 | 645 | 0.0  | 0.0  | 2003 03 10 | 704 | 1.0+ | 1.0+ | 2003 04 01 | 704 | 0.8+ | 0.2− |
| 2003 02 09 | 291 | 0.4− | 0.1+ | 2003 03 10 | 704 | 0.3+ | 0.3+ | 2003 04 01 | 704 | 0.2− | 0.2+ |
| 2003 02 09 | 291 | 0.4− | 0.3+ | 2003 03 10 | 704 | 0.5+ | 0.6+ | 2003 04 01 | 695 | 0.3− | 0.6− |
| 2003 02 09 | 291 | 0.4− | 0.3+ | 2003 03 10 | 704 | 1.4+ | 0.7+ | 2003 04 03 | 699 | 1.0− | 0.5+ |
| 2003 02 11 | 608 | 0.1+ | 0.8− | 2003 03 10 | 704 | 0.2− | 1.1+ | 2003 04 03 | 699 | 1.1+ | 0.9+ |
| 2003 02 11 | 608 | 0.0  | 0.6− | 2003 03 10 | 704 | 1.1+ | 0.5+ | 2003 04 03 | 699 | 0.6− | 0.0  |
| 2003 02 11 | 608 | 0.4+ | 1.3− | 2003 03 11 | 704 | 0.0  | 0.5− | 2003 04 03 | 699 | 0.2− | 0.1+ |
| 2003 03 06 | 704 | 0.3− | 0.5+ | 2003 03 11 | 704 | 0.0  | 0.1− | 2003 04 09 | 704 | 0.6+ | 0.3− |
| 2003 03 06 | 704 | 0.9− | 1.5+ | 2003 03 11 | 704 | 0.1+ | 0.7+ | 2003 04 09 | 704 | 0.7+ | 0.5+ |
| 2003 03 06 | 704 | 0.5− | 0.5− | 2003 03 11 | 704 | 0.2− | 0.9− | 2003 04 09 | 704 | 1.2+ | 1.0− |
| 2003 03 06 | 704 | 0.4− | 0.3− | 2003 03 11 | 704 | 0.4− | 0.2+ | 2003 04 09 | 704 | 0.4+ | 0.8+ |
| 2003 03 06 | 704 | 0.6− | 0.6+ | 2003 03 21 | 608 | 0.4+ | 1.0− | 2003 04 09 | 704 | 0.0  | 0.1− |
| 2003 03 06 | 699 | 0.3− | 0.2− | 2003 03 21 | 608 | 0.4+ | 1.2− | 2005 10 06 | G96 | 0.0  | 0.4+ |
| 2003 03 06 | 699 | 0.3+ | 0.0  | 2003 03 21 | 608 | 0.2+ | 1.2− | 2005 10 06 | G96 | 0.5− | 0.2− |
| 2003 03 06 | 699 | 0.0  | 0.7+ | 2003 03 26 | 699 | 0.0  | 0.6− | 2005 10 06 | G96 | 0.2+ | 0.7+ |
| 2003 03 06 | 699 | 0.6− | 0.2− | 2003 03 26 | 699 | 0.0  | 0.8− | 2005 10 06 | G96 | 0.3− | 0.1+ |
| 2003 03 09 | 704 | 0.8+ | 0.3− | 2003 03 26 | 699 | 0.6− | 0.5− | 2007 11 20 | G96 | 0.2− | 0.1+ |
| 2003 03 09 | 704 | 0.6− | 0.2+ | 2003 03 26 | 699 | 0.5− | 0.2+ | 2007 11 20 | G96 | 0.2− | 0.6− |
| 2003 03 09 | 704 | 0.0  | 0.4− | 2003 04 01 | 695 | 0.4− | 0.6− | 2007 11 20 | G96 | 0.1+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |     |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-----|-----|
| 2003 03 09 | 704 | 0.3− | 0.2+ | 2003 04 01 | 704 | 1.1+ | 0.3+ | 2007 11 20 | G96 | 0.0 | 0.0 |
| 2003 03 09 | 704 | 0.3− | 0.8+ | 2003 04 01 | 704 | 0.0  | 0.3+ |            |     |     |     |

**2003 DT<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |               |               |
|-----|------------|----------|-----------|---------------|---------------|
| $M$ | 336.63550  |          | (2000.0)  | $\mathbf{P}$  | $\mathbf{Q}$  |
| $n$ | 0.17541383 | $\omega$ | 334.29805 | $-0.02860988$ | $-0.96582112$ |
| $a$ | 3.1605318  | $\Omega$ | 116.40069 | $+0.95955599$ | $-0.09874606$ |
| $e$ | 0.2701571  | $i$      | 16.71570  | $+0.28006031$ | $+0.23966389$ |
| $P$ | 5.62       | $H$      | 15.7      | $G$ 0.15      | $U$ 4         |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 26 | 608 | 0.5+        | 0.0  | 2003 03 08 | 699 | 0.4− | 0.6+ | 2007 11 11 | 703 | 0.9− | 0.1− |
| 2003 01 26 | 608 | 0.3+        | 0.5+ | 2003 03 08 | 699 | 0.7− | 1.0+ | 2007 11 11 | 703 | 0.4− | 0.1− |
| 2003 01 26 | 608 | 0.1−        | 0.4− | 2003 03 08 | 699 | 0.3+ | 0.7+ | 2007 11 19 | 703 | 0.8+ | 0.2+ |
| 2003 02 22 | 644 | 0.1−        | 0.3− | 2003 03 08 | 644 | 0.2− | 0.2− | 2007 11 19 | 703 | 0.3− | 0.0  |
| 2003 02 22 | 644 | 0.2−        | 0.1+ | 2003 03 08 | 644 | 0.2− | 0.2− | 2007 11 19 | 703 | 0.8+ | 0.3+ |
| 2003 02 22 | 644 | 0.1+        | 0.4+ | 2003 03 08 | 644 | 0.3− | 0.1− | 2007 11 19 | 703 | 0.2+ | 0.1− |
| 2003 02 26 | 704 | 0.1−        | 0.7− | 2007 11 03 | 703 | 0.6+ | 0.2− | 2007 12 05 | 703 | 1.1− | 0.2− |
| 2003 02 26 | 704 | (0.2+ 1.7−) |      | 2007 11 03 | 703 | 0.5− | 0.0  | 2007 12 05 | 703 | 0.3− | 0.2+ |
| 2003 02 26 | 704 | 0.8+        | 0.8− | 2007 11 03 | 703 | 0.0  | 0.3− | 2007 12 05 | 703 | 0.8+ | 0.2− |
| 2003 02 26 | 704 | 0.6−        | 0.9− | 2007 11 03 | 703 | 0.7+ | 0.4+ | 2007 12 05 | 703 | 0.5+ | 0.0  |
| 2003 03 08 | 699 | 1.0+        | 0.5+ | 2007 11 11 | 703 | 0.8− | 0.0  |            |     |      |      |

**2003 EA<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 340.64622  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.36804560 | $\omega$ | 303.51526 | +0.25860695  | −0.91311008  |
| $a$ | 1.9284200  | $\Omega$ | 128.20691 | +0.96449219  | +0.22595578  |
| $e$ | 0.1014082  | $i$      | 23.64895  | +0.05364018  | +0.33937291  |
| $P$ | 2.68       | $H$      | 16.9      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 02 07 | 644 | 0.4+ | 0.2− | 2003 03 07 | 704 | 0.2+ | 0.3− | 2006 05 27 | 699 | 0.7− | 0.4− |
| 2003 02 07 | 644 | 0.0  | 0.3− | 2003 03 07 | 704 | 0.5+ | 0.9+ | 2006 05 27 | 699 | 1.2+ | 0.2− |
| 2003 02 07 | 644 | 0.0  | 0.4− | 2003 03 07 | 704 | 0.5+ | 0.2− | 2007 11 04 | E12 | 0.7+ | 0.1− |
| 2003 02 28 | 704 | 0.7− | 0.2− | 2003 03 07 | 704 | 1.2− | 0.4− | 2007 11 04 | E12 | 0.2− | 0.4− |
| 2003 02 28 | 704 | 0.5− | 0.2− | 2003 03 09 | 644 | 0.0  | 0.2− | 2007 11 04 | E12 | 0.4+ | 0.6+ |
| 2003 02 28 | 704 | 0.3− | 0.3+ | 2003 03 09 | 644 | 0.0  | 0.1− | 2007 11 04 | E12 | 0.7− | 0.1+ |
| 2003 02 28 | 704 | 0.2+ | 1.2+ | 2003 03 09 | 644 | 0.1+ | 0.1+ | 2007 11 14 | 703 | 0.6− | 0.2− |
| 2003 02 28 | 704 | 0.0  | 0.1+ | 2003 03 21 | 644 | 0.3+ | 0.2+ | 2007 11 14 | 703 | 0.0  | 0.2+ |
| 2003 03 05 | 704 | 0.4− | 0.1+ | 2003 03 21 | 644 | 0.2+ | 0.2+ | 2007 11 14 | 703 | 0.0  | 0.2− |
| 2003 03 05 | 704 | 0.5+ | 0.6− | 2003 03 21 | 644 | 0.2+ | 0.3+ | 2007 11 14 | 703 | 0.4+ | 0.0  |
| 2003 03 05 | 704 | 0.2− | 0.5− | 2006 05 27 | 699 | 0.7+ | 0.8+ |            |     |      |      |
| 2003 03 07 | 704 | 0.3+ | 0.4+ | 2006 05 27 | 699 | 1.3− | 0.4− |            |     |      |      |

**2003 EZ<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $M$ | 30.14239   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
| $n$ | 0.23267728 | $\omega$ | 26.09811  | −0.99621818  | −0.03831240  |     |   |
| $a$ | 2.6179825  | $\Omega$ | 151.37713 | +0.01665581  | −0.96509619  |     |   |
| $e$ | 0.0856561  | $i$      | 9.36896   | +0.08527562  | −0.25907817  |     |   |
| $P$ | 4.24       | $H$      | 16.4      | $G$          | 0.15         | $U$ | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 02 25 | 012 | 0.2− | 0.3+ | 2003 03 14 | 644 | 0.4+ | 0.4+ | 2007 01 24 | 703 | 1.2− | 0.1+ |
| 2003 02 25 | 012 | 0.2− | 0.1+ | 2003 03 14 | 644 | 0.1− | 0.1− | 2007 01 24 | 703 | 0.1+ | 0.2+ |
| 2003 02 25 | 012 | 0.4− | 0.7+ | 2003 03 26 | 699 | 1.1+ | 0.6+ | 2007 01 24 | 703 | 0.2− | 0.3+ |
| 2003 02 25 | 012 | 0.0  | 0.0  | 2003 03 26 | 699 | 0.5− | 0.2− | 2007 02 25 | G96 | 0.2+ | 0.2+ |
| 2003 02 25 | 012 | 0.5+ | 1.1− | 2003 03 26 | 699 | 0.5+ | 0.6− | 2007 02 25 | G96 | 0.3+ | 0.0  |
| 2003 02 25 | 012 | 0.0  | 0.2+ | 2003 03 26 | 699 | 0.5− | 0.5+ | 2007 02 25 | G96 | 0.4+ | 0.2− |
| 2003 03 07 | 644 | 0.7+ | 0.3− | 2003 04 05 | 699 | 0.3+ | 0.2+ | 2007 02 25 | G96 | 0.1+ | 0.0  |
| 2003 03 07 | 644 | 0.6+ | 0.2− | 2003 04 05 | 699 | 0.3+ | 1.2+ | 2007 03 09 | G96 | 0.2+ | 0.2− |
| 2003 03 11 | 644 | 1.0− | 0.1− | 2003 04 05 | 699 | 0.8− | 0.6− | 2007 03 09 | G96 | 0.1− | 0.3− |

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2003 03 11 644 0.4− 0.1− 2003 04 05 699 0.2− 0.2− 2007 03 09 G96 0.1+ 0.1−  
 2003 03 11 644 0.1− 0.1− 2007 01 24 703 0.1+ 0.0 2007 03 09 G96 0.3+ 0.1−

**2003 HL<sub>25</sub> = 2004 VZ<sub>94</sub> = 2007 TJ<sub>200</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 70.36976   |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.29869504 | $\omega$ | 98.46371  | +0.42972576 | +0.90291672 |          |   |     |  |
| <i>a</i> | 2.2164131  | $\Omega$ | 196.99474 | −0.83982415 | +0.39608662 |          |   |     |  |
| <i>e</i> | 0.2227314  | <i>i</i> | 1.72215   | −0.33170945 | +0.16690350 |          |   |     |  |
| <i>P</i> | 3.30       | <i>H</i> | 17.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |     |  |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2003 04 25 | 691 | (1.3+ 1.8+) | 2006 03 03 | 691 | 0.2+ 0.3+ | 2007 10 13 | 691 | 0.0 0.2−  |
| 2003 04 25 | 691 | (1.6+ 1.7+) | 2006 03 03 | 691 | 0.0 0.2+  | 2007 10 13 | 691 | 0.8− 0.4− |
| 2003 04 25 | 691 | (1.3+ 1.9+) | 2006 03 03 | 691 | 0.1+ 0.3+ | 2007 10 21 | 691 | 0.2+ 0.3+ |
| 2003 04 29 | 691 | 0.3+ 0.0    | 2007 09 25 | G96 | 0.4− 0.5+ | 2007 10 21 | 691 | 0.1+ 0.2+ |
| 2003 04 29 | 691 | 0.2+ 0.3+   | 2007 09 25 | G96 | 0.1+ 0.3+ | 2007 10 21 | 691 | 0.3+ 0.2+ |
| 2003 04 29 | 691 | 0.1+ 0.3+   | 2007 09 25 | G96 | 0.3− 0.4+ | 2007 10 30 | G96 | 0.4+ 0.0  |
| 2003 05 05 | 691 | 0.1+ 0.4+   | 2007 09 25 | G96 | 0.4− 0.7+ | 2007 10 30 | G96 | 0.7+ 0.3− |
| 2003 05 05 | 691 | 0.0 0.7+    | 2007 10 08 | 691 | 0.4− 0.3+ | 2007 10 30 | G96 | 0.8+ 0.3− |
| 2003 05 05 | 691 | 0.1+ 0.6+   | 2007 10 08 | 691 | 0.0 0.5+  | 2007 10 30 | G96 | 0.1+ 0.1− |
| 2004 11 10 | 695 | 0.5− 0.2+   | 2007 10 08 | 691 | 0.6− 0.5+ | 2007 11 17 | G96 | 0.0 0.2+  |
| 2004 11 10 | 695 | 0.6− 0.2+   | 2007 10 12 | 691 | 0.1+ 0.1− | 2007 11 17 | G96 | 0.2+ 0.1+ |
| 2004 11 20 | 691 | 0.1− 0.1−   | 2007 10 12 | 691 | 0.2− 0.0  | 2007 11 17 | G96 | 0.1− 0.2+ |
| 2004 11 20 | 691 | 0.5+ 0.2−   | 2007 10 12 | 691 | 0.1− 0.3+ | 2007 11 17 | G96 | 0.1+ 0.1− |
| 2004 11 20 | 691 | 0.1− 0.2−   | 2007 10 13 | 691 | 0.1+ 1.2+ |            |     |           |

**2003 HE<sub>29</sub> = 2007 RR<sub>224</sub> = 2004 TF<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 91.37390   |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.29451549 | $\omega$ | 53.28130  | −0.18657274 | +0.98229446 |          |   |     |  |
| <i>a</i> | 2.2373330  | $\Omega$ | 205.98124 | −0.91327760 | −0.17978100 |          |   |     |  |
| <i>e</i> | 0.1146308  | <i>i</i> | 2.22089   | −0.36209754 | −0.05269136 |          |   |     |  |
| <i>P</i> | 3.35       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |     |  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2001 12 14 | 691 | 0.2+ 0.3+ | 2003 05 10 | 691 | 0.5− 0.4+ | 2007 09 10 | 691 | 0.3− 0.3+ |
| 2001 12 14 | 691 | 0.0 0.2−  | 2003 05 10 | 691 | 0.2− 0.2+ | 2007 09 10 | 691 | 0.2− 0.3+ |
| 2001 12 14 | 691 | 0.0 0.1+  | 2004 10 06 | 691 | 0.4− 0.6+ | 2007 09 10 | 691 | 0.1+ 0.1+ |
| 2003 04 28 | 704 | 1.5− 0.9+ | 2004 10 06 | 691 | 0.2− 0.4+ | 2007 09 10 | 703 | 0.6+ 0.1+ |
| 2003 04 28 | 704 | 0.1− 0.7+ | 2004 10 06 | 691 | 0.0 0.5+  | 2007 09 10 | 703 | 0.3+ 0.3+ |
| 2003 04 28 | 704 | 1.5− 0.2− | 2004 10 09 | 691 | 0.1− 0.4+ | 2007 09 10 | 703 | 0.1+ 0.0  |
| 2003 04 28 | 704 | 0.2− 0.1+ | 2004 10 09 | 691 | 0.1+ 0.2+ | 2007 09 10 | 703 | 0.2− 0.4+ |
| 2003 04 29 | 699 | 0.3+ 0.8+ | 2004 10 09 | 691 | 0.3− 0.5+ | 2007 09 10 | 703 | 0.4+ 0.1+ |
| 2003 04 29 | 699 | 0.2− 0.7+ | 2004 10 13 | 691 | 0.1+ 0.0  | 2007 09 10 | 703 | 0.9+ 0.4− |
| 2003 04 29 | 699 | 0.8− 0.7+ | 2004 10 13 | 691 | 0.1+ 0.2− | 2007 09 10 | 703 | 1.2− 0.1− |
| 2003 04 29 | 704 | 1.4+ 0.9− | 2004 10 13 | 691 | 0.2− 0.0  | 2007 09 10 | 703 | 0.3− 0.0  |
| 2003 04 29 | 699 | 0.6+ 0.2+ | 2004 10 15 | G96 | 0.3− 0.7− | 2007 09 15 | G96 | 0.3+ 0.0  |
| 2003 04 29 | 704 | 0.0 0.2−  | 2004 10 15 | G96 | 0.3+ 0.4− | 2007 09 15 | G96 | 0.5+ 0.1+ |
| 2003 04 29 | 704 | 0.7+ 0.7+ | 2004 10 15 | G96 | 0.0 0.2−  | 2007 09 15 | G96 | 0.1+ 0.0  |
| 2003 04 29 | 704 | 0.3− 0.7+ | 2004 10 15 | G96 | 0.2− 0.4− | 2007 09 15 | G96 | 0.6+ 0.0  |
| 2003 04 30 | 704 | 0.4+ 0.4+ | 2006 02 06 | 691 | 0.1+ 0.0  | 2007 10 19 | G96 | 0.1+ 0.2+ |
| 2003 04 30 | 704 | 1.2+ 0.3+ | 2006 02 06 | 691 | 0.5+ 0.5+ | 2007 10 19 | G96 | 0.6+ 0.2+ |
| 2003 04 30 | 704 | 1.1+ 0.1− | 2006 02 06 | 691 | 0.2+ 0.8+ | 2007 10 19 | G96 | 0.5+ 0.1− |
| 2003 04 30 | 704 | 0.6+ 1.1+ | 2006 05 04 | G96 | 0.7− 0.1− | 2007 10 19 | G96 | 0.4+ 0.1+ |
| 2003 05 05 | 704 | 0.8+ 0.1+ | 2006 05 04 | G96 | 1.2− 0.2− | 2007 12 06 | G96 | 0.0 0.1+  |
| 2003 05 05 | 704 | 1.2+ 0.6− | 2006 05 04 | G96 | 0.3− 0.2+ | 2007 12 06 | G96 | 0.0 0.0   |
| 2003 05 05 | 704 | 1.5+ 0.4− | 2006 05 04 | G96 | 0.2+ 0.1+ | 2007 12 06 | G96 | 0.1− 0.2+ |
| 2003 05 05 | 704 | 1.0+ 0.0  | 2007 08 23 | 691 | 0.3− 0.2+ | 2007 12 06 | G96 | 0.5+ 0.5− |
| 2003 05 05 | 704 | 1.4+ 0.0  | 2007 08 23 | 691 | 0.4− 0.1+ |            |     |           |
| 2003 05 10 | 691 | 0.5− 0.3+ | 2007 08 23 | 691 | 0.2− 0.2+ |            |     |           |

**2003 KB<sub>5</sub> = 2007 VC<sub>153</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 88.13995   |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.30478968 | $\omega$ | 231.29618 | +0.21741937 | +0.97384398 |          |   |     |  |
| <i>a</i> | 2.1867672  | $\Omega$ | 51.38929  | −0.86726833 | +0.22376761 |          |   |     |  |
| <i>e</i> | 0.1392211  | <i>i</i> | 4.84557   | −0.44785540 | +0.03944572 |          |   |     |  |
| <i>P</i> | 3.23       | <i>H</i> | 18.4      | <i>G</i>    | 0.15        | <i>U</i> | 4 |     |  |

Residuals in seconds of arc

|            |     |           |            |     |             |            |     |           |
|------------|-----|-----------|------------|-----|-------------|------------|-----|-----------|
| 2003 04 26 | 691 | 0.5+ 0.1+ | 2007 10 15 | 703 | 0.0 0.9−    | 2007 11 03 | 691 | 0.1+ 0.2+ |
| 2003 04 26 | 691 | 0.1+ 0.2+ | 2007 10 15 | 703 | (0.3+ 2.0−) | 2007 11 03 | 691 | 0.3+ 0.3+ |
| 2003 04 26 | 691 | 0.0 0.1+  | 2007 10 15 | 703 | 0.1− 0.5+   | 2007 11 09 | 691 | 0.1− 0.3+ |
| 2003 05 22 | 691 | 0.2+ 0.8+ | 2007 10 15 | 703 | (2.0+ 0.0 ) | 2007 11 09 | 691 | 0.3− 0.2+ |
| 2003 05 22 | 691 | 0.0 0.5+  | 2007 10 19 | G96 | 0.6+ 0.7−   | 2007 11 09 | 691 | 0.7− 0.3+ |
| 2003 05 22 | 691 | 0.6+ 0.9+ | 2007 10 19 | G96 | 0.9+ 0.1−   | 2007 11 13 | 691 | 0.0 0.2+  |
| 2003 05 25 | 691 | 0.3− 1.2− | 2007 10 19 | G96 | 0.5+ 0.4−   | 2007 11 13 | 691 | 0.5− 0.3+ |
| 2003 05 25 | 691 | 0.4− 0.3− | 2007 10 19 | G96 | 1.1+ 0.7−   | 2007 11 13 | 691 | 0.2− 0.2+ |
| 2003 05 25 | 691 | 0.3− 0.3− | 2007 11 03 | 691 | 0.1− 0.4−   |            |     |           |

**2003 KT<sub>16</sub> = 2007 RE<sub>234</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 66.04135   |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.29344024 | $\omega$ | 228.75851 | +0.45728762 | +0.88048003 |          |   |     |  |
| <i>a</i> | 2.2427951  | $\Omega$ | 68.86255  | −0.77056481 | +0.46249765 |          |   |     |  |
| <i>e</i> | 0.1216861  | <i>i</i> | 7.70623   | −0.44397963 | +0.10416741 |          |   |     |  |
| <i>P</i> | 3.36       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 1 |     |  |

Residuals in seconds of arc

|            |     |            |            |     |           |            |     |           |
|------------|-----|------------|------------|-----|-----------|------------|-----|-----------|
| 2001 11 21 | 645 | 0.0 0.1+   | 2006 03 03 | 703 | 0.0 0.9+  | 2007 09 15 | 699 | 0.1+ 0.7+ |
| 2001 11 21 | 645 | 0.0 0.0    | 2006 03 03 | 703 | 0.1+ 0.2+ | 2007 10 11 | 703 | 0.6− 0.0  |
| 2003 05 28 | 608 | 0.6+ 0.4−  | 2006 03 03 | 703 | 1.0+ 0.5− | 2007 10 11 | 703 | 0.7− 0.1+ |
| 2003 05 28 | 608 | 0.4+ 0.4−  | 2006 03 03 | 703 | 0.1− 0.1− | 2007 10 11 | 703 | 0.1+ 1.8+ |
| 2003 05 28 | 608 | 0.4+ 0.2−  | 2006 03 24 | 699 | 0.7+ 0.8+ | 2007 10 11 | 703 | 0.2− 0.0  |
| 2003 05 29 | 704 | (0.0 2.1+) | 2006 03 24 | 699 | 1.0+ 0.9+ | 2007 10 19 | 703 | 0.8+ 0.2+ |
| 2003 05 29 | 704 | 0.1+ 0.5+  | 2006 03 24 | 699 | 0.2+ 2.4+ | 2007 10 19 | 703 | 0.3− 0.5+ |
| 2003 05 29 | 704 | 0.3− 1.0+  | 2006 03 24 | 699 | 0.2− 0.4+ | 2007 10 19 | 703 | 0.2+ 0.1− |
| 2003 05 29 | 704 | 0.5− 1.3+  | 2007 09 05 | 703 | 0.8− 0.1+ | 2007 10 19 | 703 | 1.3+ 0.6− |
| 2003 06 01 | 807 | 0.2+ 0.2+  | 2007 09 05 | 703 | 0.2+ 1.1− | 2007 11 02 | 703 | 0.2− 0.4− |
| 2003 06 01 | 807 | 0.2− 0.6+  | 2007 09 05 | 703 | 0.7− 0.9− | 2007 11 02 | 703 | 1.5− 0.3+ |
| 2004 11 04 | 703 | 0.2− 0.2−  | 2007 09 05 | 703 | 0.5− 0.1− | 2007 11 02 | 703 | 0.3− 0.7+ |
| 2004 11 04 | 703 | 0.4− 0.6+  | 2007 09 12 | 703 | 1.4+ 1.2+ | 2007 11 02 | 703 | 0.4+ 0.0  |
| 2004 11 04 | 703 | 0.2− 0.7−  | 2007 09 12 | 703 | 0.1− 0.6+ | 2007 11 17 | 703 | 1.2− 1.4+ |
| 2004 11 04 | 703 | 0.9+ 0.7+  | 2007 09 12 | 703 | 0.6+ 0.5+ | 2007 11 17 | 703 | 0.2− 0.0  |
| 2004 12 19 | G96 | 0.2+ 0.3−  | 2007 09 12 | 703 | 0.2+ 0.5+ | 2007 11 17 | 703 | 1.3− 0.1+ |
| 2004 12 19 | G96 | 0.1+ 0.2−  | 2007 09 15 | 699 | 0.0 0.7+  | 2007 11 17 | 703 | 2.0− 0.4+ |
| 2004 12 19 | G96 | 0.1− 0.4−  | 2007 09 15 | 699 | 0.1+ 0.4+ |            |     |           |
| 2004 12 19 | G96 | 0.3+ 0.4−  | 2007 09 15 | 699 | 0.5+ 0.3− |            |     |           |

**2003 NQ<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 89.40515   |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.28472216 | $\omega$ | 41.19162  | +0.51642040 | +0.83509534 |          |   |     |  |
| <i>a</i> | 2.2883469  | $\Omega$ | 260.71390 | −0.82736743 | +0.42949272 |          |   |     |  |
| <i>e</i> | 0.2772646  | <i>i</i> | 11.07290  | −0.22084632 | +0.34373213 |          |   |     |  |
| <i>P</i> | 3.46       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 3 |     |  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2003 05 13 | 608 | 0.2+ 0.5− | 2003 07 06 | 608 | 0.4− 0.6− | 2003 08 09 | 636 | 0.2+ 1.0+ |
| 2003 05 13 | 608 | 0.4− 0.4− | 2003 07 06 | 608 | 0.7− 0.5− | 2003 09 17 | 699 | 0.4− 0.3− |
| 2003 05 13 | 608 | 0.3− 1.1+ | 2003 07 06 | 608 | 0.8− 0.5− | 2003 09 17 | 699 | 0.3− 0.4− |
| 2003 06 29 | 704 | 0.1+ 1.1+ | 2003 07 22 | 644 | 0.7− 0.1+ | 2003 09 17 | 699 | 0.7− 0.2− |
| 2003 06 29 | 704 | 0.8+ 0.6+ | 2003 07 22 | 644 | 0.8− 0.1− | 2003 09 17 | 699 | 1.1− 0.3− |
| 2003 06 29 | 704 | 0.2− 0.4+ | 2003 07    |     |           |            |     |           |

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|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 04 | 704 | 1.3+  | 1.7-  | 2003 07 29 | 704 | 0.3+ | 0.2+ | 2003 09 20 | 704 | 0.2+ | 0.9- |
| 2003 07 04 | 704 | (2.6+ | 0.1-) | 2003 07 29 | 704 | 0.2+ | 0.3- | 2007 12 16 | J95 | 1.1- | 0.4+ |
| 2003 07 04 | 704 | (0.9+ | 2.8-) | 2003 07 29 | 704 | 0.1+ | 0.3- | 2007 12 16 | J95 | 0.5+ | 1.2- |
| 2003 07 04 | 704 | 1.3+  | 0.3-  | 2003 08 09 | 636 | 0.0  | 0.0  | 2007 12 16 | J95 | 0.6+ | 0.7+ |

**2003 NB<sub>7</sub> = 2007 VJ<sub>281</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 57.20693   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27690214 | $\omega$ | 272.25906 | +0.78580105   | +0.61574436 |
| <i>a</i> | 2.3312303  | $\Omega$ | 49.74126  | -0.53287431   | +0.72172733 |
| <i>e</i> | 0.3032676  | <i>i</i> | 4.36633   | -0.31394534   | +0.31617801 |
| <i>P</i> | 3.56       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 06 | 428 | 1.3+ | 0.1- | 2007 09 14 | G96 | 0.4+ | 0.1+ | 2007 10 24 | G96 | 0.1+ | 0.2- |
| 2003 07 07 | 644 | 0.1+ | 0.1- | 2007 09 14 | G96 | 0.0  | 0.2- | 2007 10 24 | G96 | 0.4+ | 0.1+ |
| 2003 07 07 | 644 | 0.1- | 0.0  | 2007 09 14 | G96 | 0.3+ | 0.2- | 2007 10 24 | G96 | 0.2+ | 0.4- |
| 2003 07 07 | 644 | 0.1+ | 0.2- | 2007 09 14 | G96 | 0.3+ | 0.2- | 2007 11 14 | 691 | 0.2+ | 0.2+ |
| 2003 07 07 | 428 | 0.0  | 0.2- | 2007 10 16 | G96 | 0.2+ | 0.2- | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2003 07 07 | 428 | 0.8- | 0.8+ | 2007 10 16 | G96 | 0.1- | 0.2- | 2007 11 14 | 691 | 0.5- | 0.2- |
| 2003 07 10 | 428 | 0.2+ | 0.1- | 2007 10 16 | G96 | 0.4+ | 0.3- | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2003 07 10 | 428 | 0.4- | 0.3+ | 2007 10 16 | G96 | 0.2- | 0.1- | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2003 07 24 | 428 | 0.5- | 0.2- | 2007 10 24 | G96 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.1- | 0.2+ |

**2003 NG<sub>7</sub> = 2007 VP<sub>268</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 78.76967   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28561382 | $\omega$ | 228.69922 | +0.58031810   | +0.80523103 |
| <i>a</i> | 2.2835818  | $\Omega$ | 77.17834  | -0.70488455   | +0.57154077 |
| <i>e</i> | 0.1759113  | <i>i</i> | 7.17550   | -0.40788316   | +0.15793710 |
| <i>P</i> | 3.45       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 07 | 428 | 0.5- | 0.4- | 2007 10 12 | G96 | 0.5+ | 0.0  | 2007 11 15 | 704 | 1.4+ | 0.4+ |
| 2003 07 07 | 428 | 0.7+ | 0.2+ | 2007 10 12 | G96 | 0.4+ | 0.0  | 2007 11 15 | 704 | 0.1+ | 0.2+ |
| 2003 07 10 | 428 | 0.9+ | 0.4+ | 2007 11 08 | G96 | 0.4+ | 0.1- | 2007 11 15 | 704 | 0.1- | 0.3+ |
| 2003 07 10 | 428 | 0.5- | 0.4- | 2007 11 08 | G96 | 0.4+ | 0.4- | 2007 11 15 | 704 | 0.5+ | 1.2+ |
| 2003 07 17 | 428 | 0.3- | 0.8+ | 2007 11 08 | G96 | 0.2+ | 0.4- | 2007 11 17 | 703 | 0.7- | 0.2+ |
| 2003 07 17 | 428 | 0.2- | 0.1- | 2007 11 08 | G96 | 0.1+ | 0.5- | 2007 11 17 | 703 | 0.3- | 0.7+ |
| 2003 07 28 | 428 | 0.3+ | 0.4- | 2007 11 12 | 704 | 0.7- | 0.1+ | 2007 11 17 | 703 | 0.6+ | 0.6- |
| 2003 07 28 | 428 | 0.6- | 0.2- | 2007 11 12 | 704 | 1.0- | 0.4+ | 2007 11 17 | 703 | 0.4+ | 0.4- |
| 2007 10 12 | G96 | 0.0  | 0.1+ | 2007 11 12 | 704 | 1.2- | 0.3+ |            |     |      |      |
| 2007 10 12 | G96 | 0.2+ | 0.2+ | 2007 11 12 | 704 | 1.2- | 0.8- |            |     |      |      |

**2003 OC<sub>s</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 45.08811   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26810051 | $\omega$ | 6.58347   | +0.83087572   | +0.55589341 |
| <i>a</i> | 2.3819773  | $\Omega$ | 319.61106 | -0.51228787   | +0.74656226 |
| <i>e</i> | 0.3225612  | <i>i</i> | 2.21651   | -0.21727096   | +0.36555068 |
| <i>P</i> | 3.68       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 07 30 | 809 | 0.1- | 1.4+ | 2003 08 25 | 704 | 0.4+  | 0.7-  | 2007 11 17 | 704 | 1.0+  | 0.1+  |
| 1992 07 30 | 809 | 0.3- | 1.5+ | 2003 08 25 | 704 | 0.9+  | 0.2+  | 2007 11 17 | 704 | (1.7+ | 0.3+) |
| 1992 07 30 | 809 | 1.3- | 1.7+ | 2003 08 25 | 704 | 0.3+  | 0.7+  | 2007 11 17 | 704 | (1.7+ | 0.9-) |
| 2003 07 25 | 428 | 0.4+ | 0.2- | 2003 08 25 | 428 | 0.6+  | 0.3-  | 2007 11 17 | 704 | 0.2+  | 0.7+  |
| 2003 07 25 | 428 | 0.1+ | 0.0  | 2003 08 25 | 428 | 0.3-  | 0.6+  | 2007 11 17 | 704 | 1.6+  | 0.1-  |
| 2003 07 25 | 428 | 0.5+ | 0.0  | 2003 09 10 | 608 | (0.7- | 1.9-) | 2007 11 18 | 704 | 0.0   | 0.0   |
| 2003 07 26 | 428 | 0.4- | 0.3+ | 2003 09 10 | 608 | (1.0- | 1.7-) | 2007 11 18 | 704 | 0.6-  | 0.4+  |
| 2003 07 26 | 428 | 0.1+ | 0.2+ | 2003 09 10 | 608 | 1.2-  | 0.4-  | 2007 11 18 | 704 | 0.4+  | 0.2-  |
| 2003 07 26 | 428 | 0.0  | 0.4+ | 2003 09 22 | 608 | 0.1+  | 1.2-  | 2007 11 18 | 704 | 0.1+  | 0.2-  |
| 2003 07 27 | 428 | 0.4- | 0.2+ | 2003 09 22 | 608 | 0.1-  | 1.1-  | 2007 11 19 | 691 | 0.0   | 0.1+  |
| 2003 07 27 | 428 | 0.5- | 0.6+ | 2003 09 22 | 608 | 0.3-  | 1.1-  | 2007 11 19 | 691 | 0.1-  | 0.1-  |
| 2003 07 28 | 428 | 0.1+ | 0.3+ | 2003 09 29 | 704 | 1.0-  | 1.1-  | 2007 11 19 | 691 | 0.2-  | 0.0   |

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|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 29 | 428 | 0.1+ | 0.4+ | 2003 09 29 | 704 | 1.0-  | 0.9-  | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2003 07 29 | 428 | 0.2+ | 0.4+ | 2003 09 29 | 704 | (1.2- | 1.7-) | 2007 12 05 | 691 | 0.2- | 0.0  |
| 2003 08 01 | 608 | 0.2+ | 0.7- | 2003 09 29 | 704 | 0.2-  | 0.4-  | 2007 12 05 | 691 | 0.1- | 0.2+ |
| 2003 08 01 | 608 | 0.0  | 0.6- | 2003 09 29 | 704 | 0.4+  | 0.3-  | 2007 12 15 | 704 | 0.1+ | 0.3+ |
| 2003 08 01 | 608 | 0.2+ | 0.6- | 2003 10 24 | 704 | 0.6+  | 0.6+  | 2007 12 15 | 704 | 0.6- | 1.5+ |
| 2003 08 04 | 704 | 0.3- | 0.5- | 2003 10 24 | 704 | 0.9+  | 0.2-  | 2007 12 15 | 704 | 0.2- | 0.0  |
| 2003 08 04 | 704 | 0.1- | 0.0  | 2003 10 24 | 704 | 0.8+  | 0.4-  | 2007 12 15 | 704 | 0.6+ | 0.6- |
| 2003 08 04 | 704 | 0.2+ | 0.2- | 2003 10 24 | 704 | 0.9+  | 0.6+  |            |     |      |      |
| 2003 08 04 | 704 | 0.3- | 0.3- | 2003 10 24 | 704 | 0.5+  | 0.1+  |            |     |      |      |

**2003 ON<sub>s</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.33398   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27802158 | $\omega$ | 345.02701 | +0.91233862   | +0.40931273 |
| <i>a</i> | 2.3249683  | $\Omega$ | 350.79209 | -0.36888938   | +0.81107236 |
| <i>e</i> | 0.2414411  | <i>i</i> | 3.60676   | -0.17764816   | +0.41788122 |
| <i>P</i> | 3.55       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 08 20 | 566 | 0.3+  | 0.2-  | 2007 10 24 | G96 | 0.3+ | 0.1- | 2007 11 20 | 704 | 0.5+  | 1.3+  |
| 1996 08 20 | 566 | 0.0   | 0.1-  | 2007 10 24 | G96 | 0.1+ | 0.3- | 2007 11 20 | 704 | 0.6+  | 0.2+  |
| 1996 08 20 | 566 | 0.1-  | 0.1-  | 2007 11 02 | 691 | 0.2- | 0.1- | 2007 11 20 | 704 | 0.3+  | 0.0   |
| 2003 07 26 | 428 | 0.5-  | 0.5-  | 2007 11 02 | 691 | 0.1- | 0.0  | 2007 11 20 | 691 | 0.3-  | 0.0   |
| 2003 07 26 | 428 | 0.2-  | 0.1-  | 2007 11 02 | 691 | 0.3- | 0.2- | 2007 11 20 | 691 | 0.2-  | 0.0   |
| 2003 07 27 | 428 | 0.1+  | 0.5-  | 2007 11 18 | 704 | 0.5+ | 0.5- | 2007 11 20 | 691 | 0.3-  | 0.1-  |
| 2003 07 27 | 428 | 0.0   | 0.5-  | 2007 11 18 | 704 | 0.1- | 0.8+ | 2007 12 12 | 704 | 1.1+  | 0.0   |
| 2003 08 05 | 428 | 0.4-  | 0.2+  | 2007 11 18 | 704 | 0.6+ | 0.5+ | 2007 12 12 | 704 | 0.7+  | 1.0-  |
| 2003 08 05 | 428 | 0.4-  | 0.7+  | 2007 11 19 | 691 | 0.2- | 0.2- | 2007 12 12 | 704 | 1.5+  | 1.2-  |
| 2003 08 23 | 704 | 0.3+  | 0.2+  | 2007 11 19 | 691 | 0.2- | 0.0  | 2007 12 12 | 704 | 0.7+  | 0.2+  |
| 2003 08 23 | 704 | 1.2+  | 0.0   | 2007 11 19 | 691 | 0.2- | 0.1- | 2007 12 13 | 704 | 1.0+  | 1.2+  |
| 2003 08 23 | 704 | 0.2+  | 0.1+  | 2007 11 19 | G96 | 0.4+ | 0.1- | 2007 12 13 | 704 | 0.1+  | 0.9+  |
| 2003 08 25 | 428 | 0.3-  | 1.1+  | 2007 11 19 | G96 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.3+  | 0.8+  |
| 2003 08 25 | 428 | (3.3+ | 0.8+) | 2007 11 19 | G96 | 0.1- | 0.1- | 2007 12 15 | 704 | 0.2+  | 0.5+  |
| 2007 10 24 | G96 | 0.4+  | 0.2-  | 2007 11 19 | G96 | 0.1- | 0.2- | 2007 12 15 | 704 | (0.6+ | 1.7+) |
| 2007 10 24 | G96 | 0.1+  | 0.2-  | 2007 11 20 | 704 | 0.1+ | 0.5+ | 2007 12 15 | 704 | 0.2-  | 0.5+  |

**2003 OQ<sub>s</sub> = 2007 VZ<sub>238</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 49.19597   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27847472 | $\omega$ | 276.54805 | +0.95874774   | +0.27869148 |
| <i>a</i> | 2.3224455  | $\Omega$ | 67.28139  | -0.23088433   | +0.87835624 |
| <i>e</i> | 0.2338264  | <i>i</i> | 3.47938   | -0.16581675   | +0.38835728 |
| <i>P</i> | 3.54       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 05 21 | 691 | 0.2+ | 0.3+ | 2007 11 05 | 691 | 0.2-  | 0.1+  | 2007 12 03 | 703 | 0.8+ | 0.4- |
| 1999 05 21 | 691 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.1+  | 0.2-  | 2007 12 03 | 703 | 0.1+ | 0.4+ |
| 1999 05 21 | 691 | 0.2+ | 0.3+ | 2007 11 05 | G96 | 0.4+  | 0.1-  | 2007 12 03 | 703 | 0.1- | 0.8+ |
| 2003 07 23 | 704 | 0.5- | 0.4+ | 2007 11 05 | 691 | 0.7-  | 0.4-  | 2007 12 10 | 704 | 1.3+ | 0.1- |
| 2003 07 23 | 704 | 0.1- | 0.5+ | 2007 11 05 | G96 | 0.2-  | 0.7-  | 2007 12 10 | 704 | 0.8+ | 0.4- |
| 2003 07 23 | 704 | 0.1+ | 0.1- | 2007 11 05 | G96 | 1.0+  | 0.5-  | 2007 12 10 | 704 | 0.7+ | 0.5+ |
| 2003 07 23 | 704 | 0.0  | 1.4+ | 2007 11 13 | 691 | 0.3-  | 0.2-  | 2007 12 10 | 704 | 1.1+ | 0.2+ |
| 2003 07 26 | 428 | 0.3+ | 0.3- | 2007 11 13 | 691 | 0.1-  | 0.3+  | 2007 12 14 | 704 | 1.2+ | 0.0  |
| 2003 07 26 | 428 | 0.2- | 0.0  | 2007 11 13 | 691 | 0.5-  | 0.2+  | 2007 12 14 | 704 | 1.3+ | 0.5+ |
| 2003 07 27 | 428 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.2-  | 0.0   | 2007 12 14 | 704 | 1.1+ | 0.3+ |
| 2003 07 27 | 428 | 0.3- | 0.2+ | 2007 11 14 | 691 | 0.3-  | 0.0   | 2007 12 15 | G96 | 0.1- | 0.0  |
| 2005 01 19 | 691 | 0.1- | 0.5+ | 2007 11 14 | 691 | 0.3-  | 0.1+  | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2005 01 19 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.8+  | 0.4+  | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2005 01 19 | 691 | 0.2+ | 0.0  | 2007 11 15 | 704 | (1.6+ | 0.5+) | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2006 05 24 | G96 | 0.3- | 0.0  | 2007 11 15 | 704 | 0.4+  | 1.3+  | 2007 12 15 | G96 | 0.5+ | 0.1- |
| 2006 05 24 | G96 | 0.1- | 0.1- | 2007 11 18 | 691 | 0.2-  | 0.1+  | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2006 05 24 | G96 | 0.8- | 0.2- | 2007 11 18 | 691 | 0.4-  | 0.0   | 2007 12 15 | G96 | 0.8+ | 0.3- |
| 2006 05 24 | G96 | 0.6+ | 0.4- | 2007 11 18 | 691 | 0.1-  | 0.0   |            |     |      |      |
| 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 03 | 703 | 0.3+  | 0.1+  |            |     |      |      |

2007 DEC. 24

M.P.O. 129639

**2003 OF<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.86832   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27799400 | $\omega$ | 255.94835 | +0.82636676   | -0.49403757 |
| <i>a</i> | 2.3251221  | $\Omega$ | 132.83533 | +0.54139063   | +0.82905487 |
| <i>e</i> | 0.2600768  | <i>i</i> | 21.62676  | -0.15496501   | +0.26190628 |
| <i>P</i> | 3.55       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 08 | 691 | 0.2+ | 0.0  | 2003 08 02 | 608 | 0.5+ | 0.1- | 2003 08 30 | 608 | 0.6+ | 0.2- |
| 2003 07 08 | 691 | 0.0  | 0.0  | 2003 08 02 | 608 | 0.4+ | 0.2- | 2007 11 20 | 703 | 0.2+ | 1.0+ |
| 2003 07 08 | 691 | 0.2+ | 0.0  | 2003 08 22 | 608 | 0.3- | 1.1- | 2007 11 20 | 703 | 0.9- | 0.8- |
| 2003 07 24 | 644 | 0.2+ | 0.2+ | 2003 08 22 | 608 | 1.0- | 0.8- | 2007 11 20 | 703 | 0.3+ | 0.1+ |
| 2003 07 24 | 644 | 0.1+ | 0.1+ | 2003 08 22 | 608 | 0.7- | 1.7- | 2007 11 20 | 703 | 0.4+ | 0.0  |
| 2003 07 24 | 644 | 0.2+ | 0.3+ | 2003 08 25 | 704 | 0.7- | 0.2+ | 2007 12 06 | 703 | 0.5- | 1.0+ |
| 2003 07 25 | 704 | 0.0  | 0.3+ | 2003 08 25 | 704 | 0.4+ | 0.4+ | 2007 12 06 | 703 | 0.0  | 1.1- |
| 2003 07 25 | 704 | 0.3+ | 0.0  | 2003 08 25 | 704 | 0.3- | 0.7+ | 2007 12 06 | 703 | 0.4+ | 0.0  |
| 2003 07 25 | 704 | 0.5+ | 0.7+ | 2003 08 25 | 704 | 1.4- | 1.2+ | 2007 12 06 | 703 | 0.1- | 0.0  |
| 2003 07 25 | 704 | 0.2- | 0.6+ | 2003 08 30 | 608 | 0.2- | 0.5+ |            |     |      |      |
| 2003 08 02 | 608 | 0.2+ | 0.3- | 2003 08 30 | 608 | 0.2- | 0.4- |            |     |      |      |

**2003 QT<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 36.61273   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27104678 | $\omega$ | 172.73933 | +0.99639949   | +0.08465191 |
| <i>a</i> | 2.3646845  | $\Omega$ | 182.41965 | -0.08230587   | +0.95249881 |
| <i>e</i> | 0.2269408  | <i>i</i> | 6.39455   | -0.02034205   | +0.29254071 |
| <i>P</i> | 3.64       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 17 | 608 | 0.3-  | 0.4-  | 2003 08 28 | 941 | 0.3- | 0.3+ | 2007 11 09 | 703 | 0.6- | 0.7+ |
| 2003 08 17 | 608 | 0.7-  | 0.6-  | 2003 08 28 | 941 | 0.0  | 0.3+ | 2007 11 17 | 703 | 0.7- | 0.6+ |
| 2003 08 17 | 608 | 0.5-  | 0.6-  | 2003 08 28 | 941 | 0.0  | 0.3+ | 2007 11 17 | 703 | 0.1+ | 1.3- |
| 2003 08 20 | 608 | (1.7+ | 0.5+) | 2003 09 01 | 704 | 0.3- | 0.5- | 2007 11 17 | 703 | 0.1+ | 0.6+ |
| 2003 08 20 | 608 | 1.0+  | 0.1-  | 2003 09 01 | 704 | 0.1- | 0.1- | 2007 11 17 | 703 | 0.4+ | 0.1+ |
| 2003 08 20 | 608 | 1.2+  | 0.5+  | 2003 09 01 | 704 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.5+ | 0.1+ |
| 2003 08 24 | 704 | 0.2+  | 0.1-  | 2003 09 01 | 704 | 0.0  | 0.7- | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2003 08 24 | 704 | 0.8+  | 0.7+  | 2003 09 01 | 704 | 0.4- | 0.2+ | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2003 08 24 | 704 | 0.1-  | 0.1-  | 2003 09 27 | 704 | 0.2- | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2003 08 24 | 704 | 0.2-  | 0.2-  | 2003 09 27 | 704 | 0.0  | 0.8+ | 2007 11 28 | D35 | 0.2- | 0.2+ |
| 2003 08 28 | 704 | (0.3- | 1.9+) | 2003 09 27 | 704 | 0.6+ | 0.3- | 2007 11 28 | D35 | 0.6- | 0.6+ |
| 2003 08 28 | 704 | (0.3- | 1.7+) | 2007 11 09 | 703 | 1.3+ | 0.5- | 2007 11 28 | D35 | 0.4- | 0.7- |
| 2003 08 28 | 704 | (2.1+ | 0.5+) | 2007 11 09 | 703 | 1.0- | 0.2+ |            |     |      |      |
| 2003 08 28 | 941 | 0.5-  | 0.3+  | 2007 11 09 | 703 | 0.5- | 0.7- |            |     |      |      |

**2003 QD<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 63.19596   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27208399 | $\omega$ | 178.61844 | +0.78209956   | +0.61939438 |
| <i>a</i> | 2.3586712  | $\Omega$ | 142.82618 | -0.57281145   | +0.75776519 |
| <i>e</i> | 0.2452964  | <i>i</i> | 6.49451   | -0.24537180   | +0.20528641 |
| <i>P</i> | 3.62       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 04 | 704 | 0.5- | 0.6- | 2003 09 01 | 704 | 0.5+ | 0.1- | 2007 10 17 | G96 | 0.2- | 0.0  |
| 2003 08 04 | 704 | 0.0  | 0.5+ | 2003 09 01 | 704 | 0.1+ | 0.3- | 2007 10 17 | G96 | 0.3+ | 0.2- |
| 2003 08 04 | 704 | 0.6- | 0.1- | 2003 09 01 | 704 | 0.0  | 0.3+ | 2007 10 17 | G96 | 0.1+ | 0.0  |
| 2003 08 04 | 704 | 0.3- | 0.0  | 2003 09 04 | 691 | 0.1- | 0.0  | 2007 11 04 | G96 | 0.4- | 0.1+ |
| 2003 08 04 | 704 | 0.1+ | 0.1- | 2003 09 04 | 691 | 0.1- | 0.3- | 2007 11 04 | G96 | 0.2- | 0.2+ |
| 2003 08 20 | 599 | 0.1+ | 0.1+ | 2003 09 04 | 691 | 0.1- | 0.1- | 2007 11 04 | G96 | 0.3+ | 0.2+ |
| 2003 08 21 | 599 | 0.3+ | 0.1+ | 2003 09 17 | 704 | 0.4- | 0.2- | 2007 11 04 | G96 | 0.1- | 0.1- |
| 2003 08 21 | 599 | 0.1- | 0.1- | 2003 09 17 | 704 | 0.1- | 0.0  | 2007 11 13 | G96 | 0.3+ | 0.2+ |
| 2003 08 21 | 599 | 0.0  | 0.2+ | 2003 09 17 | 704 | 0.1+ | 0.1- | 2007 11 13 | G96 | 0.3+ | 0.0  |
| 2003 08 21 | 644 | 0.1+ | 0.0  | 2003 09 17 | 704 | 0.3+ | 0.3+ | 2007 11 13 | G96 | 0.2+ | 0.0  |
| 2003 08 21 | 644 | 0.5- | 0.3+ | 2003 09 22 | 608 | 0.1+ | 0.1- | 2007 11 13 | G96 | 0.3- | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 21 | 644 | 0.1+ | 0.8+ | 2003 09 22 | 608 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 2003 08 23 | 704 | 0.3- | 0.0  | 2003 09 22 | 608 | 0.9+ | 0.3+ | 2007 11 18 | G96 | 0.2- | 0.0  |
| 2003 08 23 | 704 | 0.1+ | 0.4+ | 2006 03 25 | 691 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.1- | 0.2+ |
| 2003 08 23 | 704 | 0.6+ | 0.2+ | 2006 03 25 | 691 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.1- | 0.0  |
| 2003 09 01 | 704 | 0.2+ | 0.4- | 2006 03 25 | 691 | 0.2- | 0.0  |            |     |      |      |
| 2003 09 01 | 704 | 0.1- | 0.4+ | 2007 10 17 | G96 | 0.5- | 0.2+ |            |     |      |      |

**2003 QQ<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.93597   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27617720 | $\omega$ | 190.11737 | +0.66931017   | +0.74150493 |
| <i>a</i> | 2.3353080  | $\Omega$ | 121.91400 | -0.67775953   | +0.63517106 |
| <i>e</i> | 0.2180718  | <i>i</i> | 3.16349   | -0.30441076   | +0.21616698 |
| <i>P</i> | 3.57       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 29 | 691 | 0.1+ | 0.3- | 2003 08 23 | 704 | 0.4-  | 0.2+  | 2003 09 15 | 699 | 0.6+ | 0.8+ |
| 2000 11 29 | 691 | 0.1+ | 0.1- | 2003 08 23 | 704 | 0.2+  | 0.1+  | 2007 11 02 | 691 | 0.4- | 0.3+ |
| 2000 11 29 | 691 | 0.1- | 0.5- | 2003 08 26 | 704 | 0.1-  | 0.7-  | 2007 11 02 | 691 | 0.2- | 0.1+ |
| 2003 07 24 | 644 | 0.2- | 0.4- | 2003 08 26 | 704 | 0.0   | 1.0+  | 2007 11 02 | 691 | 0.0  | 0.3+ |
| 2003 07 24 | 644 | 0.0  | 0.2- | 2003 08 26 | 704 | 0.0   | 0.6+  | 2007 11 12 | 703 | 0.0  | 1.1- |
| 2003 07 24 | 644 | 0.1- | 0.3- | 2003 08 28 | 608 | (0.7- | 1.7-) | 2007 11 12 | 703 | 0.8+ | 0.6- |
| 2003 08 04 | 704 | 0.4+ | 0.3+ | 2003 08 28 | 608 | 0.8-  | 1.0-  | 2007 11 12 | 703 | 0.9+ | 0.2+ |
| 2003 08 04 | 704 | 0.1+ | 0.7+ | 2003 08 28 | 608 | 0.4-  | 1.1-  | 2007 11 12 | 703 | 0.4+ | 1.4- |
| 2003 08 04 | 704 | 0.3+ | 0.6+ | 2003 08 31 | 704 | 0.2+  | 0.4-  | 2007 11 18 | G96 | 0.2+ | 0.2- |
| 2003 08 04 | 704 | 0.6+ | 0.6+ | 2003 08 31 | 704 | 0.4-  | 0.1-  | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2003 08 04 | 704 | 0.3+ | 0.5+ | 2003 08 31 | 704 | 0.1+  | 0.1-  | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2003 08 21 | 608 | 0.1- | 0.3- | 2003 08 31 | 704 | 0.1+  | 0.3-  | 2007 11 18 | G96 | 0.8+ | 0.3+ |
| 2003 08 21 | 608 | 0.1- | 1.1- | 2003 09 15 | 699 | 0.8+  | 0.3-  | 2007 11 20 | 691 | 0.2- | 0.5+ |
| 2003 08 21 | 608 | 0.5- | 0.1- | 2003 09 15 | 699 | 0.5-  | 0.4-  | 2007 11 20 | 691 | 0.2- | 0.4+ |
| 2003 08 23 | 704 | 0.1+ | 0.5+ | 2003 09 15 | 699 | 0.0   | 0.1+  | 2007 11 20 | 691 | 0.2- | 0.2+ |

**2003 QJ<sub>12</sub> = 2007 UA<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 85.91272   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27904369 | $\omega$ | 235.24558 | +0.43177337   | +0.90052023 |
| <i>a</i> | 2.3192874  | $\Omega$ | 60.41375  | -0.80706356   | +0.41112304 |
| <i>e</i> | 0.2470345  | <i>i</i> | 3.38411   | -0.40276565   | +0.14156678 |
| <i>P</i> | 3.53       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 22 | 608 | 0.5- | 1.3+ | 2006 04 21 | 691 | 0.3+ | 0.3+ | 2007 11 11 | G96 | 0.2- | 0.2- |
| 2003 08 22 | 608 | 0.2- | 0.8+ | 2006 04 21 | 691 | 0.3+ | 0.3+ | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 2003 08 22 | 608 | 0.2- | 0.7+ | 2006 04 21 | 691 | 0.4+ | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2003 08 23 | 644 | 0.4- | 0.1+ | 2006 05 19 | G96 | 0.4- | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2003 08 23 | 644 | 0.2- | 0.0  | 2006 05 19 | G96 | 0.9- | 0.2+ | 2007 11 14 | 691 | 0.5+ | 0.1+ |
| 2003 08 23 | 644 | 0.3- | 0.4- | 2006 05 19 | G96 | 0.2- | 0.1- | 2007 11 18 | 691 | 0.2- | 0.3+ |
| 2003 08 23 | 704 | 0.2- | 0.7- | 2006 05 19 | G96 | 0.6- | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2003 08 23 | 704 | 0.1+ | 0.5- | 2007 09 10 | G96 | 0.3- | 0.5- | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2003 08 23 | 704 | 0.6+ | 0.2+ | 2007 09 10 | G96 | 0.3- | 0.5- | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2003 08 23 | 704 | 0.3+ | 0.4+ | 2007 09 10 | G96 | 0.2- | 0.6- | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2003 08 23 | 704 | 0.6+ | 0.6+ | 2007 09 10 | G96 | 0.0  | 0.8- | 2007 12 05 | 691 | 0.2- | 0.1- |
| 2003 08 26 | 704 | 0.6+ | 0.9- | 2007 10 30 | G96 | 0.0  | 0.2- | 2007 12 05 | 704 | 0.2- | 1.0+ |
| 2003 08 26 | 704 | 0.2- | 0.6+ | 2007 10 30 | G96 | 0.2+ | 0.4- | 2007 12 05 | 704 | 0.3+ | 1.1+ |
| 2003 08 26 | 704 | 0.1+ | 0.2- | 2007 10 30 | G96 | 0.1- | 0.3- | 2007 12 05 | 704 | 0.1- | 0.1- |
| 2003 08 28 | 608 | 0.8- | 0.2- | 2007 10 30 | G96 | 0.0  | 0.3- | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2003 08 28 | 608 | 0.6- | 0.0  | 2007 10 31 | 691 | 0.1+ | 0.3- | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2003 08 28 | 608 | 0.6- | 0.2- | 2007 10 31 | 691 | 0.0  | 0.2- | 2007 12 15 | G96 | 0.1- | 0.4+ |
| 2003 08 31 | 704 | 0.4+ | 0.7+ | 2007 10 31 | 691 | 0.2+ | 0.3+ | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2003 08 31 | 704 | 0.1+ | 0.2+ | 2007 11 07 | 704 | 0.5+ | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.7+ |
| 2003 08 31 | 704 | 0.4+ | 0.6+ | 2007 11 07 | 704 | 0.8- | 1.0+ | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2003 08 31 | 704 | 0.1- | 0.0  | 2007 11 07 | 704 | 0.0  | 1.2+ | 2007 12 16 | 691 | 0.0  | 0.2+ |
| 2006 04 08 | 691 | 0.2- | 0.0  | 2007 11 07 | 704 | 1.1+ | 0.2+ | 2007 12 16 | 691 | 0.0  | 0.2+ |
| 2006 04 08 | 691 | 0.4+ | 0.4+ | 2007 11 11 | G96 | 0.5- | 0.8- |            |     |      |      |
| 2006 04 08 | 691 | 0.3- | 0.2+ | 2007 11 11 | G96 | 0.1- | 0.3- |            |     |      |      |

**2003 QN<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.50021   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26813675 | $\omega$ 179.79370 | +0.91868883   | +0.38124050 |
| <i>a</i> | 2.3817627  | $\Omega$ 156.93421 | -0.36276547   | +0.91783454 |
| <i>e</i> | 0.1939672  | <i>i</i> 15.28432  | -0.15624355   | +0.11061388 |
| <i>P</i> | 3.68       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 22 | 644 | 0.3- | 0.2- | 2003 08 26 | 704 | 0.6- | 0.0  | 2003 09 24 | 644 | 0.0  | 0.0  |
| 2003 08 22 | 644 | 0.3- | 0.1- | 2003 08 26 | 704 | 0.6- | 0.1+ | 2003 09 24 | 644 | 0.0  | 0.2+ |
| 2003 08 22 | 644 | 0.4- | 0.3- | 2003 08 31 | 608 | 0.6+ | 0.2- | 2007 11 11 | 703 | 0.4+ | 0.1+ |
| 2003 08 23 | 704 | 0.3+ | 0.1- | 2003 08 31 | 608 | 0.6+ | 0.4- | 2007 11 11 | 703 | 0.6+ | 0.6- |
| 2003 08 23 | 704 | 1.1+ | 0.2+ | 2003 08 31 | 608 | 0.7+ | 0.1+ | 2007 11 11 | 703 | 0.1- | 0.6+ |
| 2003 08 23 | 704 | 0.1- | 0.1+ | 2003 09 01 | 704 | 0.4- | 0.0  | 2007 11 11 | 703 | 0.8+ | 0.0  |
| 2003 08 23 | 704 | 0.0  | 0.4- | 2003 09 01 | 704 | 0.2+ | 0.2+ | 2007 11 20 | 703 | 1.2- | 0.4+ |
| 2003 08 23 | 704 | 0.2- | 0.5- | 2003 09 01 | 704 | 0.1- | 0.4- | 2007 11 20 | 703 | 0.8- | 1.3+ |
| 2003 08 26 | 704 | 0.1- | 0.7+ | 2003 09 01 | 704 | 0.2+ | 0.3+ | 2007 11 20 | 703 | 0.8- | 0.5- |
| 2003 08 26 | 704 | 0.4- | 0.3+ | 2003 09 01 | 704 | 0.4- | 0.1- | 2007 11 20 | 703 | 1.1+ | 1.3- |
| 2003 08 26 | 704 | 0.3+ | 0.4+ | 2003 09 24 | 644 | 0.1- | 0.0  |            |     |      |      |

**2003 QH<sub>46</sub> = 2007 VX<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.64628   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26611800 | $\omega$ 277.99407 | +0.07904883   | +0.99686991 |
| <i>a</i> | 2.3937928  | $\Omega$ 356.53903 | -0.90596225   | +0.07129855 |
| <i>e</i> | 0.1608176  | <i>i</i> 1.22794   | -0.41591308   | +0.03416003 |
| <i>P</i> | 3.70       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 13 | 291 | 0.4+ | 0.8+ | 2006 03 25 | G96 | 0.3- | 0.3+ | 2007 10 04 | 691 | 0.1- | 0.2+ |
| 2002 02 13 | 291 | 0.3+ | 0.8+ | 2006 03 25 | G96 | 0.1+ | 0.5+ | 2007 10 04 | 691 | 0.0  | 0.0  |
| 2002 02 13 | 291 | 0.4+ | 0.7+ | 2006 04 19 | G96 | 0.1- | 0.2+ | 2007 10 20 | 703 | 1.1- | 0.8- |
| 2003 08 23 | 644 | 0.1- | 0.2+ | 2006 04 19 | G96 | 0.0  | 0.1+ | 2007 10 20 | 703 | 0.8- | 0.0  |
| 2003 08 23 | 644 | 0.0  | 0.0  | 2006 04 19 | G96 | 0.2- | 0.1+ | 2007 10 20 | 703 | 0.6+ | 1.3+ |
| 2003 08 23 | 644 | 0.1+ | 0.2+ | 2006 04 19 | G96 | 0.3- | 0.2+ | 2007 10 20 | 703 | 0.1- | 0.3+ |
| 2003 08 25 | 704 | 0.2- | 0.2- | 2006 05 03 | 691 | 0.1+ | 0.4+ | 2007 11 02 | 691 | 1.0- | 0.3+ |
| 2003 08 25 | 704 | 0.4+ | 1.4+ | 2006 05 03 | 691 | 0.2+ | 0.8+ | 2007 11 02 | 691 | 0.3+ | 0.3+ |
| 2003 08 25 | 704 | 0.7+ | 0.6+ | 2006 05 03 | 691 | 0.1+ | 0.4+ | 2007 11 02 | 691 | 0.2+ | 0.5+ |
| 2003 08 25 | 704 | 0.5+ | 0.1- | 2007 09 05 | G96 | 0.4+ | 0.1+ | 2007 11 04 | 691 | 0.3+ | 0.2+ |
| 2003 09 17 | 291 | 0.6- | 0.6+ | 2007 09 05 | G96 | 0.0  | 0.3+ | 2007 11 04 | 691 | 0.4- | 0.2+ |
| 2003 09 17 | 291 | 0.4- | 0.8+ | 2007 09 05 | G96 | 0.2+ | 0.4+ | 2007 11 04 | 691 | 0.3- | 0.6+ |
| 2003 09 17 | 291 | 0.6- | 0.9+ | 2007 09 05 | G96 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.1- | 0.4- |
| 2006 03 25 | 691 | 0.5+ | 0.6+ | 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.6- | 0.5- |
| 2006 03 25 | 691 | 0.5+ | 0.4+ | 2007 09 14 | G96 | 0.1+ | 0.3- | 2007 11 05 | G96 | 0.5- | 0.4+ |
| 2006 03 25 | 691 | 0.3+ | 0.4+ | 2007 09 14 | G96 | 0.5+ | 0.4- | 2007 11 05 | G96 | 0.0  | 0.5+ |
| 2006 03 25 | G96 | 0.1- | 0.3+ | 2007 09 14 | G96 | 0.4+ | 0.3- |            |     |      |      |
| 2006 03 25 | G96 | 0.2+ | 0.5+ | 2007 10 04 | 691 | 0.1- | 0.4+ |            |     |      |      |

**2003 QH<sub>48</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.44356   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26660822 | $\omega$ 71.05428  | +0.99222016   | -0.08764025 |
| <i>a</i> | 2.3908575  | $\Omega$ 293.89357 | +0.04109938   | +0.90100787 |
| <i>e</i> | 0.1579875  | <i>i</i> 5.54972   | +0.11751597   | +0.42485762 |
| <i>P</i> | 3.70       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 08 20 | 644 | 0.3- | 0.2- | 2003 09 19 | 599 | 0.0   | 0.1+  | 2007 11 18 | G96 | 0.0  | 0.6- |
| 2003 08 20 | 644 | 0.1- | 0.1- | 2003 09 19 | 599 | 0.1-  | 0.2+  | 2007 11 18 | G96 | 0.2- | 0.7- |
| 2003 08 20 | 644 | 0.3- | 0.2- | 2003 09 19 | 599 | 0.3+  | 0.3+  | 2007 11 18 | G96 | 0.0  | 0.7- |
| 2003 08 23 | 644 | 0.2- | 0.3+ | 2003 09 22 | 691 | 0.0   | 0.0   | 2007 11 18 | G96 | 0.3- | 0.6- |
| 2003 08 23 | 644 | 0.4- | 0.2- | 2003 09 22 | 691 | 0.1+  | 0.1-  | 2007 11 18 | 704 | 0.0  | 0.6- |
| 2003 08 23 | 644 | 0.2- | 0.2+ | 2003 09 22 | 691 | 0.0   | 0.0   | 2007 11 18 | 704 | 0.0  | 0.3- |
| 2003 08 28 | 704 | 0.9+ | 0.3+ | 2003 09 29 | 699 | (1.3- | 2.1+) | 2007 11 18 | 704 | 0.1+ | 0.7- |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 08 28 | 704 | 0.2- | 0.4+ | 2003 09 29 | 699 | (2.1- | 3.5+) | 2007 11 18 | 704 | 0.6+  | 0.7+  |
| 2003 08 28 | 704 | 0.1+ | 0.0  | 2003 09 29 | 699 | 0.5+  | 0.2+  | 2007 11 18 | 704 | 0.1-  | 0.1-  |
| 2003 08 28 | 704 | 0.1+ | 0.2+ | 2003 09 29 | 699 | (1.0+ | 1.6-) | 2007 12 02 | 704 | 0.0   | 0.3+  |
| 2003 09 16 | 699 | 1.2- | 0.2+ | 2007 10 18 | 699 | 0.1-  | 0.6+  | 2007 12 02 | 704 | 0.8+  | 0.1-  |
| 2003 09 16 | 699 | 1.1+ | 0.9- | 2007 10 18 | 699 | 0.4-  | 0.3-  | 2007 12 02 | 704 | 0.8-  | 0.1-  |
| 2003 09 16 | 699 | 0.5+ | 0.1- | 2007 10 18 | 699 | 0.1-  | 0.3+  | 2007 12 02 | 704 | (2.1- | 0.5-) |
| 2003 09 16 | 699 | 0.4- | 0.4+ | 2007 10 18 | 699 | 1.1-  | 0.0   | 2007 12 03 | 704 | 0.5+  | 0.2-  |
| 2003 09 18 | 644 | 0.0  | 0.0  | 2007 11 02 | 703 | 0.1-  | 0.8+  | 2007 12 03 | 704 | 0.4-  | 0.5+  |
| 2003 09 18 | 644 | 0.1- | 0.1+ | 2007 11 02 | 703 | 1.0+  | 0.3+  | 2007 12 03 | 704 | 1.0-  | 1.2+  |
| 2003 09 18 | 644 | 0.2- | 0.3- | 2007 11 02 | 703 | (1.6+ | 0.5-) | 2007 12 12 | A77 | 0.1+  | 0.2+  |
| 2003 09 19 | 704 | 0.1- | 0.8- | 2007 11 02 | 703 | 0.8+  | 0.4+  | 2007 12 12 | A77 | 0.4-  | 0.0   |
| 2003 09 19 | 704 | 0.1+ | 0.1- | 2007 11 17 | 704 | 0.6+  | 0.1-  | 2007 12 12 | A77 | 0.3-  | 0.4+  |
| 2003 09 19 | 704 | 0.6- | 0.7+ | 2007 11 17 | 704 | 0.3+  | 0.2+  | 2007 12 13 | 704 | 0.1+  | 0.4-  |
| 2003 09 19 | 704 | 0.7+ | 0.7- | 2007 11 17 | 704 | (1.7- | 0.0 ) | 2007 12 13 | 704 | 0.4+  | 0.3-  |
| 2003 09 19 | 599 | 0.4+ | 0.1+ | 2007 11 17 | 704 | 0.3+  | 0.0   | 2007 12 13 | 704 | 0.6-  | 0.0   |

**2003 QZ<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.60082  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26749567 | $\omega$ 149.04319 | +0.54250995   | -0.83723389 |
| <i>a</i> | 2.3855666  | $\Omega$ 268.01912 | +0.75597742   | +0.52225046 |
| <i>e</i> | 0.1843153  | <i>i</i> 3.94281   | +0.36630739   | +0.16215386 |
| <i>P</i> | 3.68       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 24 | 461 | 0.9- | 1.0+ | 2003 09 04 | 461 | 0.7+ | 0.1+ | 2003 10 19 | 645 | 0.0  | 0.0  |
| 2003 08 25 | 461 | 0.0  | 0.6- | 2003 09 04 | 461 | 0.1+ | 0.8+ | 2003 10 19 | 645 | 0.0  | 0.0  |
| 2003 08 25 | 461 | 0.1- | 0.2+ | 2003 09 04 | 461 | 0.2- | 0.4+ | 2003 10 22 | 645 | 0.0  | 0.0  |
| 2003 08 26 | 461 | 0.0  | 0.0  | 2003 09 04 | 461 | 0.4- | 0.3- | 2003 10 22 | 645 | 0.0  | 0.1- |
| 2003 08 26 | 461 | 0.1+ | 0.4- | 2003 09 07 | 461 | 0.3- | 0.0  | 2003 11 20 | 645 | 0.1+ | 0.0  |
| 2003 08 26 | 461 | 0.9+ | 0.4- | 2003 09 07 | 461 | 0.4- | 0.3+ | 2003 11 20 | 645 | 0.0  | 0.0  |
| 2003 08 27 | 461 | 0.2- | 0.5- | 2003 09 07 | 461 | 0.3- | 0.2- | 2007 10 21 | G96 | 0.2+ | 0.5- |
| 2003 08 27 | 461 | 0.4+ | 0.1- | 2003 09 07 | 461 | 0.1+ | 0.4+ | 2007 10 21 | G96 | 0.1+ | 0.5- |
| 2003 08 27 | 461 | 0.5- | 0.2- | 2003 09 07 | 461 | 0.1+ | 0.2+ | 2007 10 21 | G96 | 0.1+ | 0.6- |
| 2003 08 27 | 461 | 1.0+ | 0.2- | 2003 09 20 | 461 | 0.3+ | 0.7+ | 2007 10 21 | G96 | 0.1+ | 0.4- |
| 2003 08 27 | 461 | 0.4+ | 0.0  | 2003 09 20 | 461 | 0.2- | 0.5+ | 2007 11 18 | 704 | 0.0  | 0.8+ |
| 2003 08 27 | 461 | 0.0  | 0.5+ | 2003 09 20 | 461 | 1.0- | 0.8+ | 2007 11 18 | 704 | 0.2- | 0.8+ |
| 2003 08 28 | 461 | 1.0+ | 0.2+ | 2003 09 20 | 461 | 0.1+ | 0.2- | 2007 11 18 | 704 | 0.3- | 0.4+ |
| 2003 08 28 | 461 | 0.1- | 0.1+ | 2003 10 17 | 645 | 0.0  | 0.1- | 2007 11 18 | 704 | 0.2+ | 0.0  |
| 2003 08 28 | 461 | 0.1- | 0.1+ | 2003 10 17 | 645 | 0.0  | 0.1- | 2007 11 18 | 704 | 0.3- | 0.0  |

**2003 QG<sub>72</sub> = 2007 XZ<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.64310   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27901983 | $\omega$ 308.67906 | +0.92542607   | -0.37432315 |
| <i>a</i> | 2.3194197  | $\Omega$ 73.37340  | +0.36394811   | +0.83476916 |
| <i>e</i> | 0.1958514  | <i>i</i> 3.52397   | +0.10549104   | +0.40378538 |
| <i>P</i> | 3.53       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 04 08 | 644 | 0.2+ | 1.3+ | 2003 08 30 | 608 | 0.6-  | 0.5-  | 2006 06 01 | G96 | 0.2- | 0.1- |
| 2002 04 08 | 644 | 0.6+ | 0.9+ | 2003 08 31 | 704 | (1.6+ | 0.8+) | 2007 12 11 | J75 | 0.1- | 0.6- |
| 2002 04 08 | 644 | 0.9+ | 0.8+ | 2003 08 31 | 704 | 0.1+  | 0.4-  | 2007 12 11 | J75 | 0.1+ | 0.4+ |
| 2003 08 23 | 644 | 0.4- | 0.7+ | 2003 08 31 | 704 | 0.8-  | 1.4+  | 2007 12 11 | J75 | 0.6- | 0.2- |
| 2003 08 23 | 644 | 0.5- | 0.5+ | 2003 08 31 | 704 | 0.1+  | 0.1-  | 2007 12 12 | 620 | 0.2+ | 0.3+ |
| 2003 08 23 | 644 | 0.2- | 0.3+ | 2003 08 31 | 608 | 0.1+  | 0.3+  | 2007 12 12 | 620 | 0.1- | 0.3+ |
| 2003 08 23 | 704 | 0.2- | 0.6+ | 2003 08 31 | 608 | 0.4-  | 0.8+  | 2007 12 12 | 620 | 0.3- | 0.2+ |
| 2003 08 23 | 704 | 0.3+ | 0.1+ | 2003 08 31 | 608 | 0.6-  | 0.4+  | 2007 12 14 | 704 | 0.8+ | 0.4- |
| 2003 08 23 | 704 | 0.3- | 0.3+ | 2003 09 04 | 608 | 0.3+  | 0.8+  | 2007 12 14 | 704 | 0.3- | 0.1- |
| 2003 08 27 | 644 | 0.1- | 0.4+ | 2003 09 04 | 608 | 0.6+  | 0.6+  | 2007 12 14 | 704 | 0.4+ | 0.8- |
| 2003 08 27 | 644 | 0.0  | 0.3+ | 2003 09 04 | 608 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.6+ | 0.5+ |
| 2003 08 27 | 644 | 0.0  | 0.3+ | 2005 02 09 | 691 | 0.1-  | 0.1-  | 2007 12 14 | 704 | 2.8+ | 0.1- |
| 2003 08 28 | 608 | 0.6+ | 1.0- | 2005 02 09 | 691 | 0.1-  | 0.1+  | 2007 12 16 | 691 | 0.1- | 0.2+ |
| 2003 08 28 | 608 | 0.3+ | 1.4- | 2005 02 09 | 691 | 0.2+  | 0.1+  | 2007 12 16 | 691 | 0.4- | 0.3+ |
| 2003 08 28 | 608 | 0.8+ | 0.6- | 2006 06 01 | G96 | 0.2-  | 0.1+  | 2007 12 16 | 691 | 0.4- | 0.2+ |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2003 08 30 | 608 | 0.3+ | 0.6− | 2006 06 01 | G96 | 0.1+ | 0.4− |
| 2003 08 30 | 608 | 0.7− | 0.4− | 2006 06 01 | G96 | 0.1+ | 0.2+ |

**2003 QU<sub>94</sub> = 2007 VO<sub>269</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 13.88665   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.27204917 | $\omega$ | 276.68012 | +0.84032794 |      | −0.54162106 |   |
| <i>a</i> | 2.3588724  | $\Omega$ | 116.11613 | +0.50662882 |      | +0.77010456 |   |
| <i>e</i> | 0.2149692  | <i>i</i> | 1.42067   | +0.19281128 |      | +0.33702463 |   |
| <i>P</i> | 3.62       | <i>H</i> | 17.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 02 15 | 691 | 0.2− | 0.1+ | 2005 03 10 | G96 | 0.1−  | 0.2−  | 2007 11 16 | 704 | 0.6+  | 0.3−  |
| 1994 02 15 | 691 | 0.2+ | 0.0  | 2007 09 15 | G96 | 0.0   | 0.2−  | 2007 11 17 | 704 | 0.7+  | 0.0   |
| 1994 02 15 | 691 | 0.2+ | 0.4− | 2007 09 15 | G96 | 0.3+  | 0.0   | 2007 11 17 | 704 | 0.1−  | 0.2−  |
| 2001 01 15 | 691 | 0.1+ | 0.8+ | 2007 09 15 | G96 | 0.1+  | 0.3−  | 2007 11 17 | 704 | (0.5+ | 1.7−) |
| 2001 01 15 | 691 | 0.3+ | 0.6+ | 2007 09 15 | G96 | 0.0   | 0.7−  | 2007 11 17 | 704 | 0.4+  | 0.0   |
| 2001 01 15 | 691 | 0.4+ | 0.7+ | 2007 10 14 | G96 | 0.3−  | 0.5−  | 2007 11 18 | 691 | 0.2−  | 0.1−  |
| 2001 02 03 | 691 | 0.3− | 0.6− | 2007 10 14 | G96 | 0.1−  | 0.1−  | 2007 11 18 | 691 | 0.3−  | 0.1−  |
| 2001 02 03 | 691 | 0.2− | 0.1+ | 2007 10 14 | G96 | 0.2+  | 0.4−  | 2007 11 18 | 691 | 0.4+  | 0.8+  |
| 2001 02 03 | 691 | 0.2− | 1.0+ | 2007 10 14 | G96 | 0.1−  | 0.4−  | 2007 12 03 | 703 | 0.0   | 0.1−  |
| 2003 08 22 | 644 | 0.3− | 0.2+ | 2007 11 09 | 691 | 0.7−  | 0.2−  | 2007 12 03 | 703 | 0.5−  | 0.4+  |
| 2003 08 22 | 644 | 0.1− | 0.2+ | 2007 11 09 | 691 | 0.4−  | 0.3−  | 2007 12 03 | 703 | 0.7−  | 0.5+  |
| 2003 08 22 | 644 | 0.4− | 0.2+ | 2007 11 09 | 691 | 0.3−  | 0.0   | 2007 12 03 | 703 | 0.3−  | 0.0   |
| 2003 08 29 | 704 | 0.2+ | 0.9+ | 2007 11 14 | 704 | 0.3+  | 0.3−  | 2007 12 04 | 699 | 0.2−  | 0.1−  |
| 2003 08 29 | 704 | 1.1+ | 1.0+ | 2007 11 14 | 704 | 0.4−  | 0.7−  | 2007 12 04 | 699 | 0.1+  | 0.0   |
| 2003 08 29 | 704 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.8+  | 0.2−  | 2007 12 04 | G96 | 0.1+  | 0.5−  |
| 2003 08 31 | 704 | 0.3− | 1.1+ | 2007 11 14 | 704 | (0.3+ | 1.9+) | 2007 12 04 | 699 | 0.6−  | 0.2−  |
| 2003 08 31 | 704 | 0.6− | 0.1+ | 2007 11 14 | 704 | 0.6+  | 0.1+  | 2007 12 04 | G96 | 0.2+  | 0.4−  |
| 2003 08 31 | 691 | 0.1− | 0.2+ | 2007 11 15 | 704 | 0.6+  | 0.0   | 2007 12 04 | G96 | 0.2+  | 0.3−  |
| 2003 08 31 | 704 | 0.8− | 0.6+ | 2007 11 15 | 704 | 0.2+  | 0.9−  | 2007 12 04 | G96 | 0.1+  | 0.3−  |
| 2003 08 31 | 704 | 0.3+ | 0.6+ | 2007 11 15 | 704 | 0.4+  | 0.2−  | 2007 12 04 | 699 | 0.9+  | 0.5+  |
| 2003 08 31 | 704 | 0.2+ | 0.6− | 2007 11 15 | 704 | 0.4+  | 0.5−  | 2007 12 05 | 704 | 0.3+  | 0.0   |
| 2003 08 31 | 691 | 0.2− | 0.3+ | 2007 11 15 | 704 | 0.1+  | 0.1−  | 2007 12 05 | 704 | 0.5−  | 0.1+  |
| 2003 08 31 | 691 | 0.2− | 0.3+ | 2007 11 16 | 704 | 1.1+  | 0.4−  | 2007 12 05 | 704 | 0.0   | 0.1−  |
| 2005 03 10 | G96 | 0.1− | 0.2+ | 2007 11 16 | 704 | 1.2+  | 0.1+  | 2007 12 05 | 704 | 0.1+  | 0.5−  |
| 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 11 16 | 704 | 0.7+  | 0.5+  | 2007 12 05 | 704 | 0.3+  | 0.0   |
| 2005 03 10 | G96 | 0.0  | 0.0  | 2007 11 16 | 704 | 0.6+  | 0.4+  |            |     |       |       |

**2003 QL<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 60.29712   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.28381442 | $\omega$ | 277.43991 | +0.96392263 |      | −0.24604050 |   |
| <i>a</i> | 2.2932236  | $\Omega$ | 96.84330  | +0.26613893 |      | +0.88392592 |   |
| <i>e</i> | 0.2601780  | <i>i</i> | 5.87178   | +0.00482039 |      | +0.39766699 |   |
| <i>P</i> | 3.47       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 01 04 | 691 | 0.0  | 0.2− | 2003 09 21 | 608 | 0.2− | 0.3− | 2003 10 18 | 699 | 0.5+ | 0.1− |
| 1994 01 04 | 691 | 0.2− | 0.0  | 2003 09 21 | 608 | 0.4− | 0.1+ | 2003 10 19 | 704 | 0.2+ | 0.4+ |
| 1994 01 04 | 691 | 0.2+ | 0.2+ | 2003 09 28 | 699 | 0.0  | 0.8− | 2003 10 19 | 704 | 0.6+ | 0.1− |
| 2003 08 30 | 608 | 0.7− | 0.6− | 2003 09 28 | 699 | 0.3+ | 0.5− | 2003 10 19 | 704 | 0.1− | 0.0  |
| 2003 08 30 | 608 | 0.2− | 1.1− | 2003 09 28 | 699 | 0.2+ | 0.0  | 2003 10 19 | 704 | 0.2+ | 0.2− |
| 2003 08 30 | 608 | 0.0  | 0.9− | 2003 09 28 | 699 | 0.8− | 1.2− | 2003 10 19 | 704 | 0.1− | 0.4− |
| 2003 09 01 | 673 | 0.3+ | 0.3+ | 2003 10 02 | 608 | 0.7+ | 1.3− | 2003 10 29 | 699 | 0.3+ | 0.1+ |
| 2003 09 01 | 673 | 0.3+ | 0.1+ | 2003 10 02 | 608 | 0.6+ | 1.2− | 2003 10 29 | 699 | 0.2+ | 0.0  |
| 2003 09 01 | 673 | 0.2+ | 0.4+ | 2003 10 02 | 608 | 0.6+ | 1.2− | 2003 10 29 | 699 | 0.6− | 0.4+ |
| 2003 09 02 | 704 | 0.2+ | 1.0+ | 2003 10 03 | 608 | 0.7− | 1.6+ | 2003 10 29 | 699 | 0.4+ | 0.0  |
| 2003 09 02 | 704 | 0.1+ | 0.7+ | 2003 10 03 | 608 | 0.5− | 1.2+ | 2003 11 21 | 699 | 0.3+ | 0.2− |
| 2003 09 02 | 704 | 0.3− | 0.1+ | 2003 10 03 | 608 | 0.8− | 1.3+ | 2003 11 21 | 699 | 0.4− | 0.5+ |
| 2003 09 02 | 704 | 0.5+ | 0.2+ | 2003 10 16 | 699 | 0.4+ | 0.0  | 2003 11 21 | 699 | 0.4− | 0.1+ |
| 2003 09 02 | 704 | 0.1+ | 0.1+ | 2003 10 16 | 699 | 0.2+ | 0.0  | 2003 11 21 | 699 | 0.7− | 0.1− |
| 2003 09 18 | 704 | 0.0  | 1.4+ | 2003 10 16 | 699 | 0.2+ | 0.3− | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2003 09 18 | 704 | 0.3+ | 0.2− | 2003 10 16 | 699 | 0.1− | 0.2− | 2007 11 18 | G96 | 0.5+ | 0.1+ |
| 2003 09 18 | 704 | 1.4− | 0.4+ | 2003 10 18 | 699 | 0.0  | 0.1− | 2007 11 18 | G96 | 0.4− | 0.1+ |

## M.P.O. 129641

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 704 | 0.0  | 0.5+ | 2003 10 18 | 699 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.1− | 0.2+ |
| 2003 09 21 | 608 | 0.3− | 0.2+ | 2003 10 18 | 699 | 0.3+ | 0.1− |            |     |      |      |

**2003 QL<sub>107</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 353.94052  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.24136846 | $\omega$ | 265.00782 | +0.98800007 |      | +0.03644901 |   |
| <i>a</i> | 2.5547537  | $\Omega$ | 92.84676  | +0.02468746 |      | +0.92199565 |   |
| <i>e</i> | 0.1431786  | <i>i</i> | 8.64295   | −0.15246765 |      | +0.38548086 |   |
| <i>P</i> | 4.08       | <i>H</i> | 16.6      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 12 20 | 691 | 0.0  | 0.3− | 2003 09 03 | 608 | 0.7+ | 0.2+ | 2003 09 25 | 644 | 0.0   | 0.5−  |
| 2000 12 20 | 691 | 0.4− | 0.1+ | 2003 09 14 | 608 | 0.4− | 0.7− | 2005 01 13 | 691 | (1.9− | 2.3−) |
| 2000 12 20 | 691 | 0.0  | 0.3− | 2003 09 14 | 608 | 0.1+ | 0.1− | 2005 01 13 | 691 | 0.1+  | 0.7+  |
| 2003 08 23 | 644 | 0.1− | 0.2− | 2003 09 14 | 608 | 0.0  | 0.3− | 2005 01 13 | 691 | 0.3+  | 0.1+  |
| 2003 08 23 | 644 | 0.0  | 0.1− | 2003 09 23 | 608 | 0.1− | 0.4− | 2007 08 14 | E12 | 0.3+  | 0.2−  |
| 2003 08 23 | 644 | 0.0  | 0.0  | 2003 09 23 | 608 | 0.9− | 0.2− | 2007 08 14 | E12 | 0.1−  | 0.9+  |
| 2003 08 31 | 704 | 0.3+ | 0.7+ | 2003 09 23 | 608 | 0.6− | 0.4− | 2007 08 14 | E12 | 0.4+  | 0.6−  |
| 2003 08 31 | 704 | 0.1+ | 0.4+ | 2003 09 24 | 608 | 0.0  | 0.3+ | 2007 08 14 | E12 | 0.2−  | 0.6+  |
| 2003 08 31 | 704 | 0.2+ | 0.3− | 2003 09 24 | 608 | 0.2+ | 0.2− | 2007 09 08 | E12 | 0.4+  | 0.9−  |
| 2003 08 31 | 704 | 0.3+ | 0.7+ | 2003 09 24 | 608 | 0.6− | 0.2+ | 2007 09 08 | E12 | 0.6−  | 0.7+  |
| 2003 09 03 | 608 | 0.3+ | 0.6+ | 2003 09 25 | 644 | 0.1− | 0.2− | 2007 09 08 | E12 | 0.3+  | 0.3−  |
| 2003 09 03 | 608 | 0.5+ | 0.6+ | 2003 09 25 | 644 | 0.1+ | 0.2+ | 2007 09 08 | E12 | 0.8−  | 0.1−  |

**2003 QM<sub>111</sub> = 2007 VW<sub>298</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 354.70228  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26274295 | $\omega$ | 295.86041 | +0.54732366 |      | −0.81689177 |   |
| <i>a</i> | 2.4142487  | $\Omega$ | 119.75921 | +0.82314027 |      | +0.48612734 |   |
| <i>e</i> | 0.2646366  | <i>i</i> | 12.10189  | +0.15125114 |      | +0.31043203 |   |
| <i>P</i> | 3.75       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 01 14 | 566 | 0.1−  | 0.3−  | 2003 09 27 | 699 | 0.3+  | 0.6−  | 2007 11 11 | 703 | 1.3+ | 0.9+ |
| 1997 01 14 | 566 | 0.2−  | 0.4−  | 2003 09 27 | 699 | 0.2+  | 1.2+  | 2007 11 11 | 703 | 0.0  | 0.2+ |
| 1997 01 14 | 566 | 0.1+  | 0.4−  | 2007 09 11 | 703 | 1.1−  | 0.1−  | 2007 11 11 | 703 | 0.0  | 0.1+ |
| 2003 08 31 | 704 | 0.5+  | 0.8+  | 2007 09 11 | 703 | (1.8+ | 1.1+) | 2007 11 11 | 703 | 0.4− | 0.0  |
| 2003 08 31 | 704 | 0.2+  | 0.1−  | 2007 09 11 | 703 | 1.3−  | 0.6+  | 2007 11 19 | 703 | 0.1− | 0.1+ |
| 2003 08 31 | 704 | 0.5−  | 0.6+  | 2007 09 11 | 703 | 1.1+  | 0.6−  | 2007 11 19 | 703 | 0.4− | 0.3− |
| 2003 09 04 | 608 | (0.4− | 1.9−) | 2007 10 10 | 703 | 0.4−  | 0.6+  | 2007 11 19 | 703 | 0.7− | 0.3+ |
| 2003 09 04 | 608 | 0.4−  | 1.0−  | 2007 10 10 | 703 | 0.4−  | 0.7+  | 2007 11 19 | 703 | 0.1+ | 0.3− |
| 2003 09 04 | 608 | 0.1+  | 1.5−  | 2007 10 10 | 703 | 0.4−  | 0.2−  | 2007 12 05 | 703 | 0.4+ | 0.3+ |
| 2003 09 20 | 608 | 0.2+  | 0.2−  | 2007 10 10 | 703 | 0.1+  | 0.2+  | 2007 12 05 | 703 | 0.1+ | 0.1− |
| 2003 09 20 | 608 | 0.1+  | 0.7−  | 2007 11 03 | 703 | 0.1+  | 0.1−  | 2007 12 05 | 703 | 0.9+ | 0.3− |
| 2003 09 20 | 608 | 0.4−  | 0.5−  | 2007 11 03 | 703 | 0.3−  | 0.5−  | 2007 12 05 | 703 | 0.6+ | 0.6+ |
| 2003 09 27 | 699 | 0.2+  | 0.3+  | 2007 11 03 | 703 | 1.1−  | 0.1+  |            |     |      |      |
| 2003 09 27 | 699 | 0.3+  | 0.1+  | 2007 11 03 | 703 | 0.7+  | 1.1−  |            |     |      |      |

**2003 RB<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 39.66956   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26648626 | $\omega$ | 81.81041  | +0.97490048 |      | +0.10214398 |   |
| <i>a</i> | 2.3915869  | $\Omega$ | 272.16465 | −0.17492330 |      | +0.90109898 |   |
| <i>e</i> | 0.2620877  | <i>i</i> | 11.41820  | +0.13773489 |      | +0.42141101 |   |
| <i>P</i> | 3.70       | <i>H</i> | 16.8      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 25 | 608 | 0.3− | 1.2− | 2003 09 20 | 108 | 0.0  | 0.2+ | 2003 10 21 | 704 | 0.2− | 0.3− |
| 2003 08 25 | 608 | 0.4− | 0.4+ | 2003 09 20 | 108 | 0.1+ | 0.7− | 2003 10 21 | 704 | 0.5+ | 0.1− |
| 2003 08 25 | 608 | 0.1− | 0.9− | 2003 09 20 | 108 | 1.0+ | 0.3+ | 2003 10 21 | 704 | 0.5+ | 0.0  |
| 2003 09 04 | 599 | 0.6− | 0.2+ | 2003 09 22 | 704 | 0.5+ | 0.0  | 2003 10 21 | 704 | 0.3− | 0.7− |
| 2003 09 04 | 599 | 0.6+ | 0.0  | 2003 09 22 | 704 | 1.0+ | 0.3− | 2003 11 22 | 704 | 0.0  | 0.5+ |
| 2003 09 04 | 599 | 0.4+ | 0.8− | 2003 09 22 | 704 | 0.9+ | 1.3− | 2003 11 22 | 704 | 0.6+ | 0.6− |
| 2003 09 04 | 599 | 0.2+ | 0.3+ | 2003 09 22 | 704 | 0.3− | 0.2+ | 2003 11 22 | 704 | 0.2− | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 05 | 599 | 0.1+ | 0.2+ | 2003 09 22 | 704 | 0.2+ | 0.4− | 2007 11 17 | 704 | 0.1−  | 0.9−  |
| 2003 09 05 | 599 | 0.1− | 0.4+ | 2003 10 14 | 644 | 0.2− | 0.3+ | 2007 11 17 | 704 | 0.9−  | 1.0−  |
| 2003 09 05 | 599 | 0.1+ | 0.0  | 2003 10 14 | 644 | 0.2− | 0.2+ | 2007 11 17 | 704 | 0.4−  | 0.1+  |
| 2003 09 16 | 644 | 0.1− | 0.4+ | 2003 10 14 | 644 | 0.2− | 0.3+ | 2007 11 17 | 704 | 0.8+  | 0.6−  |
| 2003 09 16 | 644 | 0.1− | 0.3+ | 2003 10 19 | 699 | 0.4− | 0.3+ | 2007 11 17 | 704 | 0.7−  | 1.2−  |
| 2003 09 16 | 644 | 0.1− | 0.2+ | 2003 10 19 | 699 | 0.4− | 0.1− | 2007 12 04 | 703 | (1.5+ | 0.2+) |
| 2003 09 17 | 599 | 0.2− | 0.3− | 2003 10 19 | 699 | 0.1+ | 0.1+ | 2007 12 04 | 703 | 0.4−  | 0.4+  |
| 2003 09 17 | 599 | 0.1− | 0.3+ | 2003 10 19 | 699 | 0.3− | 0.4+ | 2007 12 04 | 703 | 0.9−  | 0.1+  |
| 2003 09 17 | 599 | 0.1+ | 0.5+ | 2003 10 20 | 644 | 0.3− | 0.3+ | 2007 12 04 | 703 | 0.7+  | 0.8+  |
| 2003 09 17 | 599 | 0.1− | 0.4+ | 2003 10 20 | 644 | 0.4− | 0.4+ | 2007 12 15 | 704 | 0.3+  | 0.1+  |
| 2003 09 20 | 644 | 0.0  | 0.3+ | 2003 10 20 | 644 | 0.3− | 0.2+ | 2007 12 15 | 704 | 0.6+  | 0.1+  |
| 2003 09 20 | 644 | 0.1+ | 0.1+ | 2003 10 20 | 644 | 0.6− | 0.4+ | 2007 12 15 | 704 | 0.4−  | 0.2−  |
| 2003 09 20 | 644 | 0.0  | 0.2+ | 2003 10 20 | 644 | 0.1− | 0.2+ | 2007 12 15 | 704 | 0.9+  | 0.0   |
| 2003 09 20 | 108 | 0.7− | 0.6− | 2003 10 20 | 644 | 0.2− | 0.3+ | 2007 12 15 | 704 | 0.3+  | 1.2+  |

**2003 RB<sub>17</sub> = 2007 VR<sub>294</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 37.69824   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26682711 | $\omega$ | 338.79732 | +0.99472324 | +0.10126318 |
| $a$ | 2.3895498  | $\Omega$ | 15.41820  | −0.08293990 | +0.88824349 |
| $e$ | 0.2538596  | $i$      | 3.55294   | −0.06038753 | +0.44807284 |
| $P$ | 3.69       | $H$      | 17.4      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 08 26 | 704 | 0.8+  | 0.6−  | 2003 09 18 | 608 | 1.2+  | 0.5+  | 2007 09 15 | G96 | 0.1+ | 0.5− |
| 2003 08 26 | 704 | 0.4+  | 0.7−  | 2003 09 18 | 608 | 0.8+  | 0.6+  | 2007 09 15 | G96 | 0.1− | 0.2− |
| 2003 08 26 | 704 | 0.1−  | 0.0   | 2003 09 19 | 691 | 0.2−  | 0.1+  | 2007 09 15 | G96 | 0.1+ | 0.2− |
| 2003 08 26 | 704 | 0.1+  | 0.7+  | 2003 09 19 | 691 | 0.1−  | 0.1+  | 2007 09 15 | G96 | 0.0  | 0.3− |
| 2003 09 01 | 704 | (0.6− | 1.9+) | 2003 09 19 | 691 | 0.2−  | 0.1+  | 2007 10 24 | G96 | 0.3+ | 0.4− |
| 2003 09 01 | 704 | (0.5− | 1.7+) | 2003 09 23 | 608 | 0.6−  | 0.4−  | 2007 10 24 | G96 | 0.3+ | 0.5− |
| 2003 09 01 | 704 | 0.2−  | 0.7+  | 2003 09 23 | 608 | 0.2−  | 0.2−  | 2007 10 24 | G96 | 0.0  | 0.4− |
| 2003 09 01 | 704 | 0.8+  | 0.6+  | 2003 09 23 | 608 | 0.1−  | 0.4−  | 2007 10 24 | G96 | 0.5+ | 0.5− |
| 2003 09 14 | 608 | 0.2−  | 1.3−  | 2003 09 24 | 644 | 0.1−  | 0.3+  | 2007 11 02 | 691 | 0.1+ | 0.1− |
| 2003 09 14 | 608 | 0.1−  | 1.2−  | 2003 09 24 | 644 | 0.1−  | 0.5+  | 2007 11 02 | 691 | 0.0  | 0.0  |
| 2003 09 14 | 608 | 0.0   | 1.1−  | 2003 09 24 | 644 | 0.2−  | 0.2+  | 2007 11 02 | 691 | 0.0  | 0.1− |
| 2003 09 15 | 644 | 0.2−  | 0.1−  | 2003 09 24 | 608 | 0.5−  | 0.3−  | 2007 11 13 | 703 | 0.8− | 0.5− |
| 2003 09 15 | 644 | 0.0   | 0.1−  | 2003 09 24 | 608 | 0.4−  | 0.8−  | 2007 11 13 | 703 | 0.6+ | 0.2+ |
| 2003 09 15 | 644 | 0.1−  | 0.1−  | 2003 09 24 | 608 | 0.5−  | 0.3−  | 2007 11 13 | 703 | 0.1+ | 0.0  |
| 2003 09 15 | 644 | 0.1−  | 0.1+  | 2003 09 29 | 699 | (1.4+ | 1.8−) | 2007 11 13 | 703 | 0.1+ | 0.3+ |
| 2003 09 15 | 644 | 0.3−  | 0.1−  | 2003 09 29 | 699 | 0.4+  | 0.0   | 2007 11 20 | 691 | 0.0  | 0.1− |
| 2003 09 15 | 644 | 0.2+  | 0.1+  | 2003 09 29 | 699 | 0.4+  | 0.8+  | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2003 09 17 | 699 | 0.2−  | 0.7−  | 2003 09 29 | 699 | 0.7+  | 0.6+  | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2003 09 17 | 699 | 0.6−  | 1.3+  | 2003 09 29 | 704 | 0.1+  | 0.4+  | 2007 12 13 | 704 | 0.4+ | 0.1+ |
| 2003 09 17 | 699 | 0.7−  | 0.1−  | 2003 09 29 | 704 | 0.1+  | 0.7+  | 2007 12 13 | 704 | 0.4+ | 0.5+ |
| 2003 09 17 | 699 | 0.0   | 1.3−  | 2003 09 29 | 704 | 0.4−  | 0.4+  | 2007 12 13 | 704 | 0.3− | 0.6− |
| 2003 09 18 | 699 | 0.1+  | 0.4−  | 2003 09 29 | 704 | 0.5+  | 0.6+  | 2007 12 15 | 704 | 0.5− | 0.3− |
| 2003 09 18 | 699 | 0.4+  | 0.2−  | 2003 10 14 | 699 | 0.1−  | 0.3+  | 2007 12 15 | 704 | 0.1− | 1.4+ |
| 2003 09 18 | 699 | 0.2+  | 0.3+  | 2003 10 14 | 699 | 0.9−  | 0.2−  | 2007 12 15 | 704 | 0.3− | 1.3+ |
| 2003 09 18 | 699 | 0.1+  | 0.1+  | 2003 10 14 | 699 | 0.7+  | 0.8+  | 2007 12 15 | 704 | 0.8− | 0.3+ |
| 2003 09 18 | 608 | 0.7+  | 0.1+  | 2003 10 14 | 699 | 0.9−  | 0.1+  |            |     |      |      |

**2003 RL<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 62.14475   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.26872329 | $\omega$ | 313.59543 | +0.86857336 | +0.49488572 |
| $a$ | 2.3782957  | $\Omega$ | 16.79504  | −0.42498725 | +0.77069827 |
| $e$ | 0.1628029  | $i$      | 5.13353   | −0.25488460 | +0.40138797 |
| $P$ | 3.67       | $H$      | 16.8      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 26 | 704 | 0.2−  | 1.3+  | 2003 09 20 | 143 | 0.3− | 0.6− | 2007 11 18 | 704 | 0.6+ | 0.7+ |
| 2003 08 26 | 704 | 0.1+  | 0.3+  | 2003 09 20 | 143 | 0.3+ | 0.4+ | 2007 11 18 | 704 | 0.3− | 0.4+ |
| 2003 08 26 | 704 | 0.4+  | 0.2−  | 2003 09 20 | 143 | 1.0+ | 0.2+ | 2007 11 18 | 704 | 0.1− | 0.8+ |
| 2003 08 26 | 704 | (1.5+ | 1.7+) | 2003 09 20 | 143 | 0.7− | 0.8− | 2007 11 18 | 704 | 0.1− | 0.4+ |
| 2003 08 26 | 704 | 1.3+  | 1.2+  | 2003 09 22 | 699 | 0.1+ | 0.9− | 2007 11 18 | 704 | 0.9+ | 0.7+ |
| 2003 09 02 | 704 | 0.2+  | 0.8−  | 2003 09 22 | 699 | 1.2+ | 0.8− | 2007 11 20 | 704 | 0.8+ | 0.5− |

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 02 | 704 | 0.8−  | 0.1+  | 2003 09 22 | 699 | 0.2+ | 0.8− | 2007 11 20 | 704 | 0.1+  | 0.1−  |
| 2003 09 02 | 704 | 0.3−  | 0.8−  | 2003 09 22 | 699 | 0.4+ | 0.1+ | 2007 11 20 | 704 | (0.1− | 1.5+) |
| 2003 09 02 | 704 | 0.8−  | 0.5+  | 2003 09 28 | 704 | 0.0  | 0.8+ | 2007 11 20 | 704 | 0.2+  | 0.7+  |
| 2003 09 15 | 699 | (0.4− | 1.9+) | 2003 09 28 | 704 | 0.1+ | 0.1+ | 2007 11 20 | 704 | 0.1−  | 0.0   |
| 2003 09 15 | 699 | 0.3+  | 0.3−  | 2003 09 28 | 704 | 0.4− | 0.1+ | 2007 11 20 | 704 | 0.6+  | 0.0   |
| 2003 09 15 | 699 | (1.8+ | 0.2−) | 2003 09 28 | 704 | 0.5− | 0.1− | 2007 11 20 | 704 | 0.6+  | 0.5+  |
| 2003 09 15 | 699 | 1.2−  | 0.1−  | 2003 09 28 | 704 | 0.0  | 1.2+ | 2007 12 04 | 691 | 0.2−  | 0.3−  |
| 2003 09 18 | 704 | 0.2−  | 0.3−  | 2003 10 24 | 691 | 0.1+ | 0.1− | 2007 12 04 | 691 | 0.5−  | 0.2−  |
| 2003 09 18 | 704 | (0.7+ | 1.8−) | 2003 10 24 | 691 | 0.1+ | 0.1− | 2007 12 04 | 691 | 0.4−  | 0.1−  |
| 2003 09 18 | 704 | 0.0   | 0.5−  | 2003 10 24 | 691 | 0.0  | 0.2+ | 2007 12 13 | 704 | 0.1+  | 0.2−  |
| 2003 09 18 | 704 | 0.2−  | 0.0   | 2007 10 21 | G96 | 0.8+ | 0.2− | 2007 12 13 | 704 | 0.2+  | 0.1+  |
| 2003 09 18 | 644 | 0.8−  | 0.1+  | 2007 10 21 | G96 | 0.4+ | 0.3− | 2007 12 13 | 704 | 0.3+  | 0.3+  |
| 2003 09 18 | 644 | 0.6−  | 0.0   | 2007 10 21 | G96 | 0.5+ | 0.3− | 2007 12 13 | 704 | 0.0   | 0.2−  |
| 2003 09 18 | 644 | 0.3−  | 0.4+  | 2007 10 21 | G96 | 0.3+ | 0.2− | 2007 12 13 | 704 | 0.4+  | 0.0   |
| 2003 09 19 | 143 | 0.1−  | 0.2+  | 2007 11 02 | 691 | 0.0  | 0.2− | 2007 12 15 | 704 | 0.0   | 1.3+  |
| 2003 09 19 | 143 | 0.8+  | 0.1+  | 2007 11 02 | 691 | 0.1− | 0.1− | 2007 12 15 | 704 | 0.0   | 0.4+  |
| 2003 09 20 | 143 | (0.8+ | 1.6−) | 2007 11 02 | 691 | 0.4− | 0.1− | 2007 12 15 | 704 | (0.8− | 1.7−) |

**2003 RT<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 11.08575   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24254442 | $\omega$ | 55.81696  | +0.96242079 | +0.18481869 |
| $a$ | 2.5464893  | $\Omega$ | 292.81982 | −0.25874191 | +0.84654134 |
| $e$ | 0.2140775  | $i$      | 12.46622  | +0.08245516 | +0.49920919 |
| $P$ | 4.06       | $H$      | 16.2      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 25 | 644 | 0.1− | 0.1− | 2003 09 22 | 704 | 0.4− | 0.6− | 2007 09 10 | 703 | 0.0  | 0.3− |
| 2003 08 25 | 644 | 0.1− | 0.2− | 2003 09 22 | 704 | 0.4+ | 0.3− | 2007 09 10 | 703 | 0.1− | 0.0  |
| 2003 08 25 | 644 | 0.1− | 0.3− | 2003 09 22 | 704 | 0.0  | 0.1+ | 2007 09 10 | 703 | 0.7− | 0.3+ |
| 2003 08 25 | 644 | 0.0  | 0.1− | 2003 10 19 | 699 | 0.1+ | 0.6− | 2007 09 10 | 703 | 0.3− | 0.3+ |
| 2003 08 25 | 644 | 0.1+ | 0.2− | 2003 10 19 | 699 | 0.2− | 0.3− | 2007 10 09 | 699 | 1.5+ | 0.0  |
| 2003 08 25 | 644 | 0.2+ | 0.2− | 2003 10 19 | 699 | 0.1− | 0.3+ | 2007 10 09 | 699 | 0.3− | 0.2− |
| 2003 09 15 | 644 | 0.2+ | 0.2+ | 2003 10 19 | 699 | 0.1+ | 0.4− | 2007 10 09 | 699 | 0.6− | 0.8+ |
| 2003 09 15 | 644 | 0.2+ | 0.1+ | 2003 10 20 | 644 | 0.2+ | 0.1+ | 2007 10 09 | 699 | 0.5+ | 0.3+ |
| 2003 09 15 | 644 | 0.3+ | 0.0  | 2003 10 20 | 644 | 0.2+ | 0.2+ | 2007 11 09 | 703 | 0.1− | 0.6+ |
| 2003 09 20 | 644 | 0.2+ | 0.3+ | 2003 10 20 | 644 | 0.2+ | 0.0  | 2007 11 09 | 703 | 0.8− | 0.5+ |
| 2003 09 20 | 644 | 0.1− | 0.1+ | 2003 10 20 | 644 | 0.1− | 0.0  | 2007 11 09 | 703 | 0.1+ | 0.6+ |
| 2003 09 20 | 644 | 0.4+ | 0.1− | 2003 10 20 | 644 | 0.3+ | 0.0  | 2007 11 09 | 703 | 0.5− | 0.8− |
| 2003 09 22 | 704 | 0.3− | 0.1− | 2003 10 20 | 644 | 0.1+ | 0.0  |            |     |      |      |

**2003 SO<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 48.47813   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26512591 | $\omega$ | 349.96346 | +0.94859869 | +0.31637237 |
| $a$ | 2.3997607  | $\Omega$ | 351.57883 | −0.28629120 | +0.84662210 |
| $e$ | 0.2693698  | $i$      | 3.25248   | −0.13489946 | +0.42794806 |
| $P$ | 3.72       | $H$      | 18.2      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 31 | 291 | 0.1+ | 0.2− | 2003 09 26 | 704 | 1.7+ | 0.5− | 2003 10 01 | 699 | 0.5+ | 1.3+ |
| 2003 08 31 | 291 | 0.0  | 0.2− | 2003 09 26 | 704 | 0.9− | 0.2+ | 2003 10 24 | 691 | 0.3− | 0.3− |
| 2003 08 31 | 291 | 0.2+ | 0.1− | 2003 09 26 | 704 | 0.8+ | 0.0  | 2003 10 24 | 691 | 0.1− | 0.0− |
| 2003 09 16 | 291 | 0.1− | 0.1− | 2003 09 29 | 704 | 0.7+ | 0.6+ | 2003 10 24 | 691 | 0.1− | 0.0  |
| 2003 09 16 | 291 | 0.5− | 0.1− | 2003 09 29 | 704 | 0.1+ | 0.7+ | 2007 11 19 | G96 | 0.7+ | 0.1− |
| 2003 09 16 | 291 | 0.6− | 0.1− | 2003 09 29 | 704 | 0.3+ | 0.2+ | 2007 11 19 | G96 | 0.4+ | 0.0  |
| 2003 09 18 | 691 | 0.1+ | 0.1− | 2003 09 29 | 704 | 0.4+ | 0.2− | 2007 11 19 | G96 | 0.5+ | 0.0  |
| 2003 09 18 | 691 | 0.1+ | 0.1− | 2003 09 29 | 691 | 0.0  | 0.1+ | 2007 11 19 | G96 | 0.2+ | 0.2− |
| 2003 09 18 | 691 | 0.2+ | 0.2− | 2003 09 29 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2003 09 21 | 644 | 0.1− | 0.1+ | 2003 09 29 | 691 | 0.0  | 0.0  | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2003 09 21 | 644 | 0.1− | 0.2+ | 2003 10 01 | 699 | 0.4+ | 0.9+ | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2003 09 21 | 644 | 0.0  | 0.1+ | 2003 10 01 | 699 | 0.1− | 0.1− |            |     |      |      |
| 2003 09 26 | 704 | 0.1+ | 0.6+ | 2003 10 01 | 699 | 0.5− | 0.5+ |            |     |      |      |



2007 DEC. 24

M.P.O. 129643

**2003 SU<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 101.93348  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29613413 | $\omega$ 11.98530  | +0.88304919   | +0.46549976 |
| <i>a</i> | 2.2291728  | $\Omega$ 320.09717 | -0.43784920   | +0.77168547 |
| <i>e</i> | 0.2085245  | <i>i</i> 5.31738   | -0.16885556   | +0.43337226 |
| <i>P</i> | 3.33       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 30 | 704 | 0.2-  | 0.2+  | 2003 09 20 | 704 | 0.3- | 0.3- | 2003 10 17 | 699 | 0.2+ | 0.0  |
| 2003 07 30 | 704 | 0.2-  | 0.5+  | 2003 09 20 | 704 | 0.6+ | 0.1+ | 2003 10 21 | 644 | 0.0  | 0.1- |
| 2003 07 30 | 704 | 0.1-  | 0.5+  | 2003 09 20 | 704 | 0.1+ | 0.5- | 2003 10 21 | 644 | 0.2+ | 0.3+ |
| 2003 07 30 | 704 | 0.8-  | 1.2-  | 2003 09 20 | 704 | 0.7+ | 0.1+ | 2003 10 21 | 644 | 0.0  | 0.1- |
| 2003 07 30 | 704 | 0.2-  | 0.7+  | 2003 09 20 | 704 | 0.2+ | 1.2- | 2003 10 21 | 704 | 0.5+ | 0.4- |
| 2003 08 28 | 704 | 1.2-  | 0.1-  | 2003 09 20 | 704 | 0.8+ | 0.4- | 2003 10 21 | 704 | 0.1+ | 0.5+ |
| 2003 08 28 | 704 | 0.3+  | 0.6+  | 2003 09 21 | 644 | 0.1- | 0.0  | 2003 10 21 | 704 | 0.5- | 0.1+ |
| 2003 08 28 | 704 | 0.6+  | 0.1+  | 2003 09 21 | 644 | 0.0  | 0.2+ | 2003 10 21 | 704 | 0.1- | 0.1+ |
| 2003 08 28 | 704 | 1.3+  | 0.5+  | 2003 09 21 | 644 | 0.0  | 0.2+ | 2003 11 20 | 704 | 0.1- | 0.7+ |
| 2003 08 28 | 704 | 0.4-  | 0.5+  | 2003 09 21 | 608 | 0.1- | 0.6- | 2003 11 20 | 704 | 0.2+ | 0.0  |
| 2003 09 04 | 704 | 0.2+  | 0.0   | 2003 09 21 | 608 | 0.1- | 0.5- | 2003 11 20 | 704 | 0.4- | 0.3+ |
| 2003 09 04 | 704 | 1.3-  | 0.3+  | 2003 09 21 | 608 | 0.1+ | 0.6- | 2005 03 09 | G96 | 0.2- | 0.3- |
| 2003 09 04 | 704 | 0.3-  | 1.1+  | 2003 09 29 | 699 | 0.1- | 0.3- | 2005 03 09 | G96 | 0.0  | 0.3+ |
| 2003 09 04 | 704 | 0.2-  | 0.2+  | 2003 09 29 | 699 | 0.4- | 0.0  | 2005 03 09 | G96 | 0.2+ | 0.1+ |
| 2003 09 17 | 608 | 0.1+  | 0.1-  | 2003 09 29 | 699 | 0.1- | 0.5- | 2005 03 09 | G96 | 0.0  | 0.3+ |
| 2003 09 17 | 608 | 0.4+  | 0.0   | 2003 09 29 | 699 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.0  | 0.3- |
| 2003 09 17 | 608 | 0.0   | 0.3+  | 2003 09 30 | 704 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.1- | 0.1- |
| 2003 09 19 | 106 | (3.8+ | 2.3-) | 2003 09 30 | 704 | 0.2- | 0.3- | 2007 11 18 | G96 | 0.1+ | 0.2+ |
| 2003 09 19 | 106 | (4.1+ | 2.8-) | 2003 09 30 | 704 | 0.1- | 0.0  | 2007 11 18 | G96 | 0.4+ | 0.2+ |
| 2003 09 19 | 106 | (4.5+ | 3.0-) | 2003 09 30 | 704 | 0.3- | 0.3- | 2007 12 06 | G96 | 0.3- | 0.2+ |
| 2003 09 20 | 704 | 0.3+  | 0.1-  | 2003 09 30 | 704 | 0.6- | 0.2- | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2003 09 20 | 704 | 1.3+  | 0.2+  | 2003 10 17 | 699 | 0.2- | 0.1- | 2007 12 06 | G96 | 0.1- | 0.1+ |
| 2003 09 20 | 704 | 0.1+  | 0.7+  | 2003 10 17 | 699 | 0.3- | 0.4+ | 2007 12 06 | G96 | 0.1+ | 0.2+ |
| 2003 09 20 | 704 | 0.1-  | 0.1+  | 2003 10 17 | 699 | 0.1- | 0.4- |            |     |      |      |

**2003 SE<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.95321   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27464614 | $\omega$ 108.08473 | +0.85586390   | -0.49524171 |
| <i>a</i> | 2.3439790  | $\Omega$ 281.83513 | +0.39793566   | +0.81469691 |
| <i>e</i> | 0.2301692  | <i>i</i> 8.76283   | +0.33036979   | +0.30166967 |
| <i>P</i> | 3.59       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 25 | 644 | 0.1+ | 0.5+ | 2003 09 21 | 704 | 0.1+ | 0.1- | 2003 11 19 | 704 | 0.4+ | 0.1+ |
| 2003 08 25 | 644 | 0.1+ | 0.2+ | 2003 09 21 | 704 | 0.1+ | 0.2- | 2007 11 11 | G96 | 0.2- | 0.0  |
| 2003 08 25 | 644 | 0.3+ | 0.2+ | 2003 09 21 | 704 | 0.2+ | 0.4- | 2007 11 11 | G96 | 0.1+ | 0.2- |
| 2003 09 16 | 644 | 0.1- | 0.0  | 2003 10 19 | 699 | 0.3- | 0.2- | 2007 11 11 | G96 | 0.1- | 0.3- |
| 2003 09 16 | 644 | 0.2- | 0.2+ | 2003 10 19 | 699 | 0.2- | 0.3- | 2007 11 11 | G96 | 0.4- | 0.1- |
| 2003 09 16 | 644 | 0.3- | 0.2+ | 2003 10 19 | 699 | 0.2- | 0.7- | 2007 12 03 | 691 | 0.2- | 0.2- |
| 2003 09 19 | 608 | 0.7- | 0.8+ | 2003 10 19 | 699 | 0.4- | 0.1+ | 2007 12 03 | 691 | 0.3- | 0.2- |
| 2003 09 19 | 608 | 0.3- | 0.3- | 2003 10 21 | 644 | 0.0  | 0.1+ | 2007 12 03 | 691 | 0.2- | 0.4+ |
| 2003 09 19 | 608 | 0.5- | 0.2- | 2003 10 21 | 644 | 0.1- | 0.3+ | 2007 12 10 | 704 | 1.1+ | 0.0  |
| 2003 09 20 | 644 | 0.3+ | 0.0  | 2003 10 21 | 644 | 0.1+ | 0.0  | 2007 12 10 | 704 | 0.8+ | 0.5+ |
| 2003 09 20 | 644 | 0.2+ | 0.0  | 2003 10 23 | 691 | 0.1+ | 0.2+ | 2007 12 10 | 704 | 1.1+ | 0.5- |
| 2003 09 20 | 644 | 0.1+ | 0.0  | 2003 10 23 | 691 | 0.3+ | 0.1+ | 2007 12 10 | 704 | 0.9+ | 0.1+ |
| 2003 09 20 | 691 | 0.0  | 0.1- | 2003 10 23 | 691 | 0.1+ | 0.1- | 2007 12 10 | 704 | 0.3+ | 0.4+ |
| 2003 09 20 | 691 | 0.1+ | 0.0  | 2003 11 19 | 704 | 1.0- | 0.2+ | 2007 12 15 | 691 | 0.0  | 0.5+ |
| 2003 09 20 | 691 | 0.1- | 0.0  | 2003 11 19 | 704 | 0.2+ | 0.2- | 2007 12 15 | 691 | 0.1+ | 0.3- |
| 2003 09 21 | 704 | 0.3- | 0.2+ | 2003 11 19 | 704 | 0.8+ | 0.7- | 2007 12 15 | 691 | 0.3- | 0.1- |
| 2003 09 21 | 704 | 0.5+ | 0.1+ | 2003 11 19 | 704 | 0.0  | 0.1- |            |     |      |      |

**2003 SM<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 51.08208   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27087675 | $\omega$ 64.52537  | +0.99869866   | -0.00767715 |
| <i>a</i> | 2.3656740  | $\Omega$ 295.87966 | -0.01420609   | +0.90760089 |
| <i>e</i> | 0.1746879  | <i>i</i> 3.21247   | +0.04898139   | +0.41976384 |
| <i>P</i> | 3.64       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 28 | 704 | 0.6+  | 0.5-  | 2003 09 27 | 704 | 0.1+ | 0.2- | 2003 10 30 | 704 | 0.1-  | 0.0   |
| 2003 08 28 | 704 | 0.2-  | 0.6+  | 2003 09 27 | 704 | 0.0  | 0.2+ | 2003 10 30 | 704 | 0.3+  | 0.1-  |
| 2003 08 28 | 704 | 0.6-  | 0.7+  | 2003 09 27 | 704 | 0.3- | 0.2+ | 2003 10 30 | 704 | 0.1-  | 0.3+  |
| 2003 09 16 | 644 | 0.1-  | 0.1+  | 2003 09 27 | 704 | 0.1+ | 0.6- | 2003 11 01 | 704 | 1.2-  | 0.4-  |
| 2003 09 16 | 644 | 0.1+  | 0.1+  | 2003 10 06 | 608 | 0.1+ | 0.9- | 2003 11 01 | 704 | 0.1-  | 0.2-  |
| 2003 09 16 | 644 | 0.1+  | 0.3+  | 2003 10 06 | 608 | 0.1+ | 0.6- | 2003 11 01 | 704 | 0.0   | 0.5+  |
| 2003 09 17 | 644 | 0.4-  | 0.0   | 2003 10 06 | 608 | 0.3- | 0.8- | 2003 11 01 | 704 | 0.2-  | 0.0   |
| 2003 09 17 | 644 | 0.2-  | 0.0   | 2003 10 17 | 699 | 0.2+ | 0.5- | 2003 11 01 | 704 | 0.6-  | 0.0   |
| 2003 09 17 | 644 | 0.3-  | 0.3+  | 2003 10 17 | 699 | 1.1- | 0.1+ | 2003 11 30 | 704 | 0.5-  | 0.0   |
| 2003 09 19 | 644 | 0.2+  | 0.0   | 2003 10 17 | 699 | 0.4+ | 0.0  | 2003 11 30 | 704 | (2.1- | 0.9+) |
| 2003 09 19 | 644 | 0.4+  | 0.5+  | 2003 10 17 | 699 | 0.3- | 0.2- | 2003 11 30 | 704 | 0.4+  | 0.7+  |
| 2003 09 19 | 699 | 0.9+  | 0.6-  | 2003 10 21 | 704 | 0.4+ | 0.7+ | 2003 11 30 | 704 | 0.5+  | 0.0   |
| 2003 09 19 | 644 | 0.2+  | 0.0   | 2003 10 21 | 704 | 0.2+ | 0.5+ | 2005 03 17 | G96 | 0.1+  | 0.2-  |
| 2003 09 19 | 699 | 0.6+  | 0.5-  | 2003 10 21 | 704 | 1.0- | 0.2+ | 2005 03 17 | G96 | 0.0   | 0.2+  |
| 2003 09 19 | 699 | 0.3+  | 0.1-  | 2003 10 21 | 704 | 0.4- | 0.6+ | 2005 03 17 | G96 | 0.1-  | 0.2+  |
| 2003 09 19 | 699 | 0.2-  | 0.4-  | 2003 10 21 | 704 | 0.6- | 0.4+ | 2005 03 17 | G96 | 0.0   | 0.0   |
| 2003 09 20 | 608 | 1.4-  | 0.8-  | 2003 10 22 | 691 | 0.0  | 0.1- | 2007 12 05 | 691 | 0.2-  | 0.1+  |
| 2003 09 20 | 608 | 0.5+  | 0.8-  | 2003 10 22 | 691 | 0.0  | 0.2- | 2007 12 05 | 691 | 0.2-  | 0.1+  |
| 2003 09 20 | 608 | 0.6+  | 1.2-  | 2003 10 22 | 691 | 0.1+ | 0.2- | 2007 12 05 | 691 | 0.2+  | 0.7-  |
| 2003 09 21 | 704 | (1.0+ | 1.6+) | 2003 10 25 | 704 | 0.2+ | 0.8+ | 2007 12 14 | 704 | 0.1+  | 0.1+  |
| 2003 09 21 | 704 | (0.7+ | 2.0+) | 2003 10 25 | 704 | 0.2+ | 0.9+ | 2007 12 14 | 704 | 0.3+  | 0.3+  |
| 2003 09 21 | 704 | 0.3+  | 0.6+  | 2003 10 25 | 704 | 0.3+ | 0.8+ | 2007 12 14 | 704 | 2.2+  | 1.0+  |
| 2003 09 21 | 704 | (1.7+ | 1.5+) | 2003 10 25 | 704 | 0.5+ | 0.6+ | 2007 12 16 | 691 | 0.1+  | 0.2+  |
| 2003 09 21 | 704 | 0.9+  | 0.9+  | 2003 10 25 | 704 | 0.0  | 0.7+ | 2007 12 16 | 691 | 0.2-  | 0.2+  |
| 2003 09 27 | 704 | 0.2+  | 0.0   | 2003 10 30 | 704 | 0.2- | 0.2+ | 2007 12 16 | 691 | 0.4-  | 0.4-  |

**2003 SK<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.44585   | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26372011 | $\omega$ 14.40286 | +0.81783723   | -0.57448679 |
| <i>a</i> | 2.4082813  | $\Omega$ 20.76700 | +0.51824488   | +0.71017070 |
| <i>e</i> | 0.2310469  | <i>i</i> 5.38485  | +0.25012898   | +0.40696745 |
| <i>P</i> | 3.74       | <i>H</i> 17.2     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 02 | 704 | 0.1+  | 0.5+  | 2003 09 29 | 704 | 0.5-  | 0.1-  | 2003 10 23 | 704 | (0.6+ | 1.6+) |
| 2003 09 02 | 704 | 0.6+  | 1.1+  | 2003 09 29 | 704 | 0.5-  | 0.1+  | 2003 10 23 | 704 | (1.1- | 2.2+) |
| 2003 09 02 | 704 | 1.0-  | 0.1-  | 2003 09 29 | 704 | 0.5-  | 0.1+  | 2003 10 23 | 704 | 1.1-  | 1.2+  |
| 2003 09 16 | 699 | 0.4+  | 0.3+  | 2003 09 29 | 704 | 0.6-  | 0.4+  | 2003 10 24 | 645 | 0.1+  | 0.1-  |
| 2003 09 16 | 699 | 1.1-  | 1.0+  | 2003 09 29 | 704 | 0.2+  | 0.0   | 2003 10 24 | 645 | 0.1+  | 0.0   |
| 2003 09 16 | 699 | 1.1-  | 0.2+  | 2003 10 18 | 704 | (0.2+ | 1.6+) | 2003 11 16 | 645 | 0.0   | 0.1+  |
| 2003 09 16 | 699 | (1.6- | 1.4+) | 2003 10 18 | 704 | 0.9+  | 1.4+  | 2003 11 16 | 645 | 0.0   | 0.0   |
| 2003 09 18 | 704 | 0.9-  | 1.3-  | 2003 10 18 | 704 | (1.2- | 2.4+) | 2003 11 20 | 645 | 0.1-  | 0.0   |
| 2003 09 18 | 704 | 0.0   | 0.0   | 2003 10 19 | 704 | 0.5+  | 0.7+  | 2003 11 20 | 645 | 0.1-  | 0.0   |
| 2003 09 18 | 704 | (0.2- | 1.7-) | 2003 10 19 | 704 | 0.3-  | 0.1+  | 2007 11 03 | 691 | 0.2-  | 0.0   |
| 2003 09 18 | 704 | 0.1-  | 1.0+  | 2003 10 19 | 645 | 0.0   | 0.1-  | 2007 11 03 | 691 | 0.2-  | 0.0   |
| 2003 09 19 | 599 | 0.2-  | 0.1+  | 2003 10 19 | 645 | 0.0   | 0.1-  | 2007 11 03 | 691 | 0.0   | 0.2-  |
| 2003 09 19 | 599 | 0.1-  | 0.0   | 2003 10 19 | 704 | 0.6-  | 0.1-  | 2007 11 17 | 704 | (1.7+ | 0.1-) |
| 2003 09 19 | 599 | 0.2-  | 0.0   | 2003 10 19 | 704 | 0.0   | 1.1+  | 2007 11 17 | 704 | 1.0+  | 0.4-  |
| 2003 09 19 | 599 | 0.5-  | 0.3+  | 2003 10 19 | 704 | 0.3+  | 1.0+  | 2007 11 17 | 704 | 0.7+  | 0.4-  |
| 2003 09 23 | 608 | 0.2-  | 0.5-  | 2003 10 20 | 704 | 0.8+  | 0.5+  | 2007 11 17 | 704 | 1.1+  | 0.1-  |
| 2003 09 23 | 608 | 0.4-  | 0.4-  | 2003 10 20 | 704 | 0.9+  | 1.0+  | 2007 11 17 | 704 | 0.1+  | 1.1-  |
| 2003 09 23 | 608 | 0.5-  | 0.4-  | 2003 10 20 | 704 | (1.6+ | 0.0 ) | 2007 11 20 | 704 | 0.5-  | 0.5+  |
| 2003 09 24 | 608 | 0.7-  | 0.6-  | 2003 10 20 | 704 | (1.6+ | 0.3-) | 2007 11 20 | 704 | 0.9+  | 0.8+  |
| 2003 09 24 | 608 | 0.6-  | 0.6-  | 2003 10 20 | 704 | 1.4+  | 0.1+  | 2007 11 20 | 704 | 1.3-  | 0.0   |
| 2003 09 24 | 608 | 0.4-  | 0.4-  | 2003 10 20 | 704 | 1.4+  | 0.8+  | 2007 11 20 | 704 | 0.5+  | 0.9+  |
| 2003 09 26 | 704 | 0.1+  | 0.3+  | 2003 10 20 | 704 | 0.9+  | 0.9+  | 2007 11 20 | 704 | 0.0   | 0.5+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 26 | 704 | 0.1+ | 0.2− | 2003 10 20 | 704 | 1.2+ | 0.6+ | 2007 12 16 | 704 | 0.1− | 0.1− |
| 2003 09 26 | 704 | 0.4− | 0.4+ | 2003 10 20 | 704 | 1.4+ | 1.2+ | 2007 12 16 | 704 | 0.2− | 0.2+ |
| 2003 09 26 | 704 | 0.1− | 0.1− | 2003 10 23 | 704 | 0.3+ | 0.3− | 2007 12 16 | 704 | 1.2− | 0.2+ |
| 2003 09 26 | 704 | 0.3− | 0.2+ | 2003 10 23 | 645 | 0.1+ | 0.1− | 2007 12 16 | 704 | 0.1+ | 0.6+ |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2003 10 23 | 645 | 0.1+ | 0.1− |            |     |      |      |
| 2003 09 28 | 645 | 0.0  | 0.1− | 2003 10 23 | 704 | 0.0  | 0.9+ |            |     |      |      |

**2003 SZ<sub>55</sub>**

|                                         |            |          |           |             |             |          |   |          |  |          |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|----------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |          |  |
| <i>M</i> 155.07843                      |            |          |           | (2000.0)    |             |          |   | <b>P</b> |  | <b>Q</b> |  |
| <i>n</i>                                | 0.29572700 | $\omega$ | 52.40111  | −0.06090493 | +0.99686070 |          |   |          |  |          |  |
| <i>a</i>                                | 2.2312183  | $\Omega$ | 214.21085 | −0.94179779 | −0.07418109 |          |   |          |  |          |  |
| <i>e</i>                                | 0.1604938  | <i>i</i> | 5.16241   | −0.33061686 | +0.02767511 |          |   |          |  |          |  |
| <i>P</i>                                | 3.33       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |          |  |          |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 05 | 645 | 0.0   | 0.0   | 2003 09 19 | 704 | 0.1+ | 0.1− | 2007 12 05 | G96 | 0.7− | 0.3+ |
| 2002 03 05 | 645 | 0.0   | 0.1+  | 2003 10 17 | 691 | 0.2+ | 0.4+ | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 2003 09 16 | 699 | 0.4−  | 0.1−  | 2003 10 17 | 691 | 0.3+ | 0.0  | 2007 12 05 | G96 | 0.0  | 0.3− |
| 2003 09 16 | 699 | 0.2+  | 1.0−  | 2003 10 17 | 691 | 0.2− | 0.3+ | 2007 12 05 | G96 | 0.2− | 0.6− |
| 2003 09 16 | 699 | 0.8−  | 1.4+  | 2003 10 24 | 645 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.1+ | 0.2+ |
| 2003 09 16 | 699 | 0.4+  | 1.5+  | 2003 10 24 | 645 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.7+ | 0.3− |
| 2003 09 19 | 704 | (1.6− | 0.5+) | 2003 11 16 | 645 | 0.1− | 0.0  | 2007 12 06 | G96 | 0.4− | 0.2− |
| 2003 09 19 | 704 | 0.1+  | 0.5+  | 2003 11 16 | 645 | 0.1− | 0.2− | 2007 12 06 | G96 | 0.3+ | 0.3+ |
| 2003 09 19 | 704 | 0.3−  | 0.6−  | 2003 11 20 | 645 | 0.0  | 0.0  |            |     |      |      |
| 2003 09 19 | 704 | (1.0− | 1.9+) | 2003 11 20 | 645 | 0.1+ | 0.0  |            |     |      |      |

**2003 SG<sub>63</sub> = 2007 WQ<sub>8</sub>**

|                                         |            |          |          |             |             |          |   |          |  |          |  |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|----------|--|----------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |             |          |   |          |  |          |  |
| <i>M</i> 0.37239                        |            |          |          | (2000.0)    |             |          |   | <b>P</b> |  | <b>Q</b> |  |
| <i>n</i>                                | 0.26703025 | $\omega$ | 18.45861 | +0.57407614 | −0.81570690 |          |   |          |  |          |  |
| <i>a</i>                                | 2.3883377  | $\Omega$ | 36.60070 | +0.73541241 | +0.47546879 |          |   |          |  |          |  |
| <i>e</i>                                | 0.2494474  | <i>i</i> | 6.85119  | +0.36000719 | +0.32947181 |          |   |          |  |          |  |
| <i>P</i>                                | 3.69       | <i>H</i> | 16.8     | <i>G</i>    | 0.15        | <i>U</i> | 3 |          |  |          |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 01 | 704 | 0.9+  | 0.3−  | 2003 09 27 | 699 | 0.1+ | 0.6+ | 2007 11 18 | 704 | 0.2− | 0.2+ |
| 2003 09 01 | 704 | 0.1−  | 0.4+  | 2003 09 27 | 699 | 1.0+ | 0.6− | 2007 11 18 | 704 | 0.1− | 0.1+ |
| 2003 09 01 | 704 | 0.3+  | 0.8+  | 2003 09 27 | 699 | 1.0− | 0.6+ | 2007 11 20 | 704 | 0.1+ | 0.2− |
| 2003 09 01 | 704 | (1.6− | 0.8−) | 2007 09 14 | G96 | 0.0  | 0.1− | 2007 11 20 | 704 | 0.3+ | 0.4+ |
| 2003 09 17 | 704 | 0.5−  | 1.4−  | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 11 20 | 704 | 0.0  | 0.7− |
| 2003 09 17 | 704 | 0.7−  | 0.2+  | 2007 09 14 | G96 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.9+ | 0.3+ |
| 2003 09 17 | 704 | 0.8−  | 0.4+  | 2007 09 14 | G96 | 0.2+ | 0.4− | 2007 12 16 | 704 | 0.3+ | 0.0  |
| 2003 09 18 | 699 | 0.5+  | 0.4−  | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 16 | 704 | 0.5+ | 0.4− |
| 2003 09 18 | 699 | 0.5+  | 0.4−  | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 16 | 704 | 0.5+ | 0.4− |
| 2003 09 18 | 699 | (1.8+ | 0.6−) | 2007 11 07 | 691 | 0.2− | 0.2+ | 2007 12 16 | 704 | 0.1− | 0.5− |
| 2003 09 18 | 699 | 0.7+  | 0.8−  | 2007 11 18 | 704 | 0.5− | 0.1+ | 2007 12 16 | 704 | 0.5+ | 0.3− |
| 2003 09 27 | 699 | 0.7−  | 0.6+  | 2007 11 18 | 704 | 0.1− | 0.1+ |            |     |      |      |

**2003 SD<sub>68</sub>**

|                                         |            |          |           |             |             |          |   |          |  |          |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|----------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |          |  |
| <i>M</i> 343.20180                      |            |          |           | (2000.0)    |             |          |   | <b>P</b> |  | <b>Q</b> |  |
| <i>n</i>                                | 0.26973650 | $\omega$ | 152.27382 | +0.32677546 | −0.94173762 |          |   |          |  |          |  |
| <i>a</i>                                | 2.3723362  | $\Omega$ | 278.56230 | +0.85152066 | +0.32994612 |          |   |          |  |          |  |
| <i>e</i>                                | 0.1560648  | <i>i</i> | 4.62148   | +0.41003702 | +0.06531316 |          |   |          |  |          |  |
| <i>P</i>                                | 3.65       | <i>H</i> | 18.0      | <i>G</i>    | 0.15        | <i>U</i> | 3 |          |  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 691 | 0.0  | 0.4− | 2003 10 22 | 645 | 0.1− | 0.0  | 2007 12 13 | 704 | 0.3+ | 1.2+ |
| 2003 09 17 | 691 | 0.3− | 0.3+ | 2003 10 24 | 645 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.5− | 0.1+ |
| 2003 09 17 | 691 | 0.4− | 0.1− | 2003 10 24 | 645 | 0.1+ | 0.0  | 2007 12 13 | 704 | 0.5+ | 0.5+ |
| 2003 09 20 | 691 | 0.2+ | 0.4+ | 2007 12 04 | 691 | 0.0  | 0.1+ | 2007 12 13 | A77 | 0.4+ | 0.2− |
| 2003 09 20 | 691 | 0.2+ | 0.3+ | 2007 12 04 | 691 | 0.1− | 0.2− | 2007 12 13 | A77 | 0.4+ | 0.0  |
| 2003 09 20 | 691 | 0.1+ | 0.3+ | 2007 12 04 | 691 | 0.1− | 0.1− | 2007 12 14 | A77 | 1.1+ | 0.5+ |
| 2003 10 17 | 645 | 0.0  | 0.1− | 2007 12 12 | 704 | 0.6+ | 0.2− | 2007 12 14 | 691 | 0.2− | 0.1− |

|            |     |      |     |            |     |      |      |            |     |      |      |
|------------|-----|------|-----|------------|-----|------|------|------------|-----|------|------|
| 2003 10 17 | 645 | 0.1+ | 0.0 | 2007 12 12 | 704 | 0.6+ | 0.2+ | 2007 12 14 | 691 | 0.3− | 0.5− |
| 2003 10 19 | 645 | 0.0  | 0.0 | 2007 12 12 | 704 | 0.9+ | 0.7+ | 2007 12 14 | 691 | 0.3− | 0.1+ |
| 2003 10 19 | 645 | 0.0  | 0.0 | 2007 12 12 | 704 | 0.7− | 0.3− |            |     |      |      |
| 2003 10 22 | 645 | 0.0  | 0.0 | 2007 12 13 | 704 | 0.0  | 0.8+ |            |     |      |      |

**2003 SB<sub>80</sub> = 2007 TA<sub>189</sub>**

|                                         |            |          |           |             |             |          |   |          |  |          |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|----------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |          |  |
| <i>M</i> 340.73285                      |            |          |           | (2000.0)    |             |          |   | <b>P</b> |  | <b>Q</b> |  |
| <i>n</i>                                | 0.24161295 | $\omega$ | 43.66504  | +0.77101987 | −0.63641509 |          |   |          |  |          |  |
| <i>a</i>                                | 2.5530300  | $\Omega$ | 355.67637 | +0.47116150 | +0.59382581 |          |   |          |  |          |  |
| <i>e</i>                                | 0.2668669  | <i>i</i> | 17.32794  | +0.42841008 | +0.49228725 |          |   |          |  |          |  |
| <i>P</i>                                | 4.08       | <i>H</i> | 18.1      | <i>G</i>    | 0.15        | <i>U</i> | 3 |          |  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.2− | 0.1− | 2003 09 27 | 704 | 0.1− | 0.1− | 2007 10 04 | G96 | 0.1+ | 0.1+ |
| 2003 09 19 | 691 | 0.0  | 0.3− | 2003 10 18 | 644 | 0.0  | 0.1− | 2007 10 04 | G96 | 0.3+ | 0.0  |
| 2003 09 19 | 691 | 0.1− | 0.3− | 2003 10 18 | 644 | 0.0  | 0.0  | 2007 10 04 | G96 | 0.2− | 0.1− |
| 2003 09 20 | 704 | 0.4− | 0.3+ | 2003 10 18 | 644 | 0.1+ | 0.3+ | 2007 10 11 | G96 | 0.2+ | 0.0  |
| 2003 09 20 | 704 | 0.2− | 0.2+ | 2007 09 12 | 691 | 0.1+ | 0.2+ | 2007 10 11 | G96 | 0.5+ | 0.1− |
| 2003 09 20 | 704 | 1.1− | 0.4+ | 2007 09 12 | 691 | 0.7− | 0.4+ | 2007 10 11 | G96 | 0.2+ | 0.0  |
| 2003 09 21 | 644 | 0.3+ | 0.0  | 2007 09 12 | 691 | 0.1− | 0.2+ | 2007 10 11 | G96 | 0.5+ | 0.1− |
| 2003 09 21 | 644 | 0.2− | 0.0  | 2007 09 12 | G96 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.2− | 0.1− |
| 2003 09 21 | 644 | 0.5+ | 0.2+ | 2007 09 12 | G96 | 0.1+ | 0.4− | 2007 10 12 | 691 | 0.7− | 0.2+ |
| 2003 09 27 | 704 | 0.6+ | 0.1+ | 2007 09 12 | G96 | 0.0  | 0.2− | 2007 10 12 | 691 | 0.4− | 0.0  |
| 2003 09 27 | 704 | 0.1+ | 0.0  | 2007 09 12 | G96 | 0.5+ | 0.4− |            |     |      |      |
| 2003 09 27 | 704 | 0.6+ | 0.4− | 2007 10 04 | G96 | 0.1− | 0.0  |            |     |      |      |

**2003 SR<sub>81</sub>**

|                                         |            |          |           |             |             |          |   |          |  |          |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|----------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |          |  |
| <i>M</i> 34.77824                       |            |          |           | (2000.0)    |             |          |   | <b>P</b> |  | <b>Q</b> |  |
| <i>n</i>                                | 0.27922980 | $\omega$ | 139.38251 | +0.91468986 | −0.39336657 |          |   |          |  |          |  |
| <i>a</i>                                | 2.3182568  | $\Omega$ | 244.00887 | +0.33892230 | +0.87160955 |          |   |          |  |          |  |
| <i>e</i>                                | 0.1213381  | <i>i</i> | 5.92358   | +0.22016841 | +0.29250563 |          |   |          |  |          |  |
| <i>P</i>                                | 3.53       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 2 |          |  |          |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 09 | 691 | 0.2+  | 0.7−  | 2003 09 20 | 704 | 0.8+  | 0.6+  | 2003 10 20 | 704 | 0.8− | 0.7+ |
| 1996 10 09 | 691 | 0.1+  | 0.1−  | 2003 09 20 | 704 | 1.4+  | 0.2−  | 2003 10 20 | 704 | 0.4+ | 0.7+ |
| 2003 09 03 | 704 | 0.2+  | 0.2+  | 2003 09 20 | 704 | 0.6+  | 0.0   | 2003 10 20 | 704 | 0.3− | 0.1+ |
| 2003 09 03 | 704 | 0.6−  | 0.4+  | 2003 09 25 | 644 | 0.2−  | 0.3+  | 2003 10 21 | 699 | 0.3− | 0.6− |
| 2003 09 03 | 704 | 0.8−  | 0.3+  | 2003 09 25 | 644 | 0.3−  | 0.3+  | 2003 10 21 | 699 | 0.1− | 0.2+ |
| 2003 09 03 | 704 | 0.6−  | 0.3+  | 2003 09 25 | 644 | 0.3−  | 0.3+  | 2003 10 21 | 699 | 0.2+ | 0.8+ |
| 2003 09 08 | 699 | 0.8+  | 0.4+  | 2003 09 30 | 699 | 0.1+  | 0.6−  | 2003 10 21 | 699 | 1.3+ | 0.8− |
| 2003 09 08 | 699 | 0.1−  | 0.5+  | 2003 09 30 | 699 | 0.3−  | 0.2−  | 2003 11 19 | 645 | 0.0  | 0.2− |
| 2003 09 08 | 699 | 0.4−  | 0.6+  | 2003 09 30 | 699 | 0.1−  | 0.3−  | 2003 11 19 | 645 | 0.0  | 0.2− |
| 2003 09 08 | 699 | 0.2+  | 1.1−  | 2003 09 30 | 699 | 0.0   | 0.8+  | 2007 11 14 | 704 | 0.5+ | 1.5+ |
| 2003 09 19 | 608 | 1.0−  | 0.6−  | 2003 09 30 | 704 | (1.8+ | 1.2−) | 2007 11 14 | 704 | 0.8+ | 0.7+ |
| 2003 09 19 | 608 | 0.7−  | 0.6−  | 2003 09 30 | 704 | 0.9−  | 0.1+  | 2007 11 14 | 704 | 0.1+ | 0.4+ |
| 2003 09 19 | 608 | (2.0− | 2.0−) | 2003 09 30 | 704 | (3.1+ | 2.3+) | 2007 12 04 | 704 | 1.2− | 0.3− |
| 2003 09 20 | 691 | 0.1−  | 0.2+  | 2003 09 30 | 704 | 0.4+  | 1.5+  | 2007 12 04 | 704 | 0.9− | 0.1+ |
| 2003 09 20 | 691 | 0.2−  | 0.0   | 2003 10 15 | 644 | 0.2+  | 0.3+  | 2007 12 04 | 704 | 0.4+ | 0.3+ |
| 2003 09 20 | 704 | 0.1+  | 0.7+  | 2003 10 15 | 644 | 0.1+  | 0.4+  | 2007 12 04 | 704 | 1.2+ | 0.6− |
| 2003 09 20 | 704 | 1.2+  | 0.6−  | 2003 10 15 | 644 | 0.3+  | 0.4+  | 2007 12 04 | 704 | 0.6− | 0.1+ |
| 2003 09 20 | 691 | (0.9+ | 3.2+) | 2003 10 20 | 704 | 0.7−  | 1.0+  |            |     |      |      |

2007 DEC. 24

M.P.O. 129645

Residuals in seconds of arc

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 2003 08 22 644 0.3+ 1.1+ | 2003 09 24 608 0.8+ 1.0-   | 2003 11 22 704 0.1+ 0.1+   |
| 2003 08 22 644 0.6+ 0.8+ | 2003 09 24 608 0.0 1.0-    | 2003 11 22 704 0.7- 0.2+   |
| 2003 08 22 644 0.6+ 0.9+ | 2003 10 18 699 0.3+ 0.4+   | 2007 11 07 G96 0.3- 0.6-   |
| 2003 09 01 704 0.8- 0.4- | 2003 10 18 699 0.3- 0.1+   | 2007 11 07 G96 0.3- 0.4-   |
| 2003 09 01 704 0.2- 1.4+ | 2003 10 18 704 0.1+ 0.3-   | 2007 11 07 G96 0.1- 0.5-   |
| 2003 09 01 704 0.1- 1.0+ | 2003 10 18 699 0.5- 0.1-   | 2007 11 07 G96 0.3+ 0.5-   |
| 2003 09 01 704 0.4- 1.1- | 2003 10 18 704 1.0- 0.3+   | 2007 11 18 704 0.6+ 0.8+   |
| 2003 09 17 704 1.2- 0.3+ | 2003 10 18 699 0.2+ 0.2+   | 2007 11 18 704 0.1- 0.3+   |
| 2003 09 17 704 1.1- 0.2- | 2003 10 18 704 0.4+ 0.6+   | 2007 11 18 704 (0.4+ 1.5+) |
| 2003 09 17 704 1.3- 0.7+ | 2003 10 18 704 0.2+ 0.4+   | 2007 11 18 704 (0.7+ 1.7+) |
| 2003 09 18 608 0.6+ 0.8- | 2003 10 25 704 0.3- 1.0+   | 2007 12 13 704 0.6- 0.7-   |
| 2003 09 18 608 1.0+ 1.4- | 2003 10 25 704 0.5- 0.5+   | 2007 12 13 704 0.7- 0.8-   |
| 2003 09 18 608 0.8+ 1.4- | 2003 10 25 704 0.2- 0.9+   | 2007 12 13 704 0.3+ 0.6-   |
| 2003 09 19 699 0.5+ 0.2+ | 2003 10 25 704 0.4- 0.8+   | 2007 12 13 704 0.3+ 0.4-   |
| 2003 09 19 699 0.1- 0.4- | 2003 10 25 704 0.8- 0.7+   | 2007 12 13 704 0.1- 0.0    |
| 2003 09 19 699 0.9+ 0.3+ | 2003 10 27 699 0.1+ 1.2-   | 2007 12 16 704 0.0 0.3+    |
| 2003 09 19 699 0.5+ 0.2+ | 2003 10 27 699 0.2+ 0.6-   | 2007 12 16 704 0.3+ 0.1+   |
| 2003 09 20 644 0.3- 0.2+ | 2003 10 27 699 0.5- 0.2+   | 2007 12 16 704 0.6+ 0.6+   |
| 2003 09 20 644 0.2- 0.2+ | 2003 10 27 699 0.6+ 0.2-   | 2007 12 16 704 0.2+ 0.0    |
| 2003 09 20 644 0.3- 0.3+ | 2003 11 21 699 (2.0- 1.4+) | 2007 12 16 704 0.5- 0.0    |
| 2003 09 23 608 0.6+ 1.2- | 2003 11 21 699 0.4+ 0.6+   | 2007 12 16 699 0.0 0.2+    |
| 2003 09 23 608 0.8+ 0.6- | 2003 11 21 699 (2.0- 0.2-) | 2007 12 16 699 0.7- 0.3+   |
| 2003 09 23 608 0.0 0.6-  | 2003 11 21 699 (0.0 1.9+)  | 2007 12 16 699 0.8+ 0.2+   |
| 2003 09 24 608 0.4+ 0.9- | 2003 11 22 704 0.2- 0.2-   | 2007 12 16 699 0.3- 0.9+   |

2003 SW<sub>92</sub> = 2004 YD<sub>15</sub> = 2004 YR<sub>36</sub> = 2007 TZ<sub>234</sub>

Id. Minor Planet Center (*MPO* 128027; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 61.26560   | (2000.0)           |               |
| <i>n</i> | 0.23199593 | $\omega$ 311.84787 | +0.37612871   |
| <i>a</i> | 2.6231058  | $\Omega$ 340.23551 | +0.33469599   |
| <i>e</i> | 0.0323890  | <i>i</i> 2.12502   | -0.39374593   |
| <i>P</i> | 4.25       | <i>H</i> 16.9      | <i>G</i> 0.15 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 03 19 691 0.0 0.3+  | 2004 12 18 G96 0.0 0.1-  | 2007 08 23 691 0.2+ 0.3+ |
| 2001 03 19 691 0.7+ 0.2+ | 2004 12 19 G96 0.1+ 0.1+ | 2007 08 23 691 0.4+ 0.2- |
| 2001 03 19 691 0.1- 0.2- | 2004 12 19 G96 0.7- 0.1- | 2007 09 10 G96 0.1+ 0.0  |
| 2003 09 18 291 0.1+ 0.2- | 2004 12 19 G96 0.4+ 0.1+ | 2007 09 10 G96 0.2- 0.2+ |
| 2003 09 18 291 0.2+ 0.3- | 2004 12 19 G96 0.3- 0.2+ | 2007 09 10 G96 0.2+ 0.0  |
| 2003 09 18 291 0.0 0.1-  | 2005 01 18 691 0.2+ 0.4+ | 2007 09 10 G96 0.1- 0.3+ |
| 2003 09 21 691 0.4- 0.1+ | 2005 01 18 691 0.0 0.4+  | 2007 09 19 691 0.1+ 0.1+ |
| 2003 09 21 691 0.1- 0.2+ | 2005 01 18 691 0.2+ 0.1- | 2007 09 19 691 0.0 0.0   |
| 2003 09 21 691 0.3- 0.1+ | 2006 04 07 691 0.1- 0.6+ | 2007 09 19 691 0.5- 0.1- |
| 2003 10 19 691 0.0 0.2+  | 2006 04 07 691 0.2+ 0.0  | 2007 10 09 691 0.1+ 0.0  |
| 2003 10 19 691 0.4+ 0.2- | 2006 04 07 691 0.0 0.2+  | 2007 10 09 691 0.1+ 0.3+ |
| 2003 10 19 691 0.1- 0.2+ | 2007 08 10 691 0.0 0.1-  | 2007 10 09 691 0.1+ 0.1+ |
| 2004 12 18 G96 0.1- 0.3- | 2007 08 10 691 0.3- 0.3- | 2007 10 12 691 0.1- 0.3+ |
| 2004 12 18 G96 0.2+ 0.0  | 2007 08 10 691 0.1+ 0.1+ | 2007 10 12 691 0.3- 0.2+ |
| 2004 12 18 G96 0.0 0.1-  | 2007 08 23 691 0.4+ 0.2- | 2007 10 12 691 0.6- 0.5+ |

2003 SO<sub>93</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 8.05299    | (2000.0)           |               |
| <i>n</i> | 0.26212843 | $\omega$ 323.63508 | +0.74092620   |
| <i>a</i> | 2.4180204  | $\Omega$ 78.42467  | +0.63196522   |
| <i>e</i> | 0.2187360  | <i>i</i> 4.14643   | +0.22726266   |
| <i>P</i> | 3.76       | <i>H</i> 16.9      | <i>G</i> 0.15 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 18 644 0.2+ 0.0  | 2007 10 20 G96 0.2+ 0.4- | 2007 11 17 704 0.3+ 0.2- |
| 2003 09 18 644 0.2+ 0.4+ | 2007 10 20 G96 0.2+ 0.4- | 2007 11 17 704 0.4+ 0.5+ |
| 2003 09 18 644 0.4+ 0.0  | 2007 10 20 G96 0.4+ 0.3- | 2007 11 17 704 0.3+ 0.2+ |
| 2003 09 20 644 0.0 0.0   | 2007 10 30 691 0.2+ 0.1- | 2007 11 30 D35 0.1- 0.0  |
| 2003 09 20 644 0.1- 0.0  | 2007 10 30 691 0.0 0.1+  | 2007 11 30 D35 0.1- 0.3+ |

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 09 20 644 0.0 0.1-    | 2007 10 30 691 0.0 0.1-  | 2007 11 30 D35 0.2+ 0.1- |
| 2003 09 22 106 0.4+ 0.3-   | 2007 11 09 691 0.3- 0.0  | 2007 12 03 703 0.1- 0.4- |
| 2003 09 22 106 0.2- 0.3-   | 2007 11 09 691 0.3- 0.3+ | 2007 12 03 703 0.0 0.9-  |
| 2003 09 22 106 0.6+ 0.1+   | 2007 11 09 691 0.5- 0.1- | 2007 12 03 703 0.1- 0.3- |
| 2003 09 22 699 0.0 0.5-    | 2007 11 09 691 0.2- 0.2+ | 2007 12 03 703 0.0 0.1+  |
| 2003 09 22 699 0.5- 0.1+   | 2007 11 09 691 0.3- 0.0  | 2007 12 04 699 0.1+ 0.3- |
| 2003 09 22 699 0.8+ 0.2+   | 2007 11 09 691 0.3- 0.1+ | 2007 12 04 699 0.5- 0.3- |
| 2003 09 22 699 0.6- 1.1+   | 2007 11 14 704 0.3+ 1.0+ | 2007 12 04 699 0.7- 0.3- |
| 2003 09 28 704 0.1+ 0.9-   | 2007 11 14 704 0.1+ 0.0  | 2007 12 04 699 0.2- 0.1+ |
| 2003 09 28 704 0.8- 0.2-   | 2007 11 14 704 0.2- 0.3- | 2007 12 05 704 0.8+ 1.1- |
| 2003 09 28 704 0.1- 0.9-   | 2007 11 14 704 0.3+ 0.4+ | 2007 12 05 704 0.6+ 0.0  |
| 2003 09 28 704 0.3- 0.2+   | 2007 11 14 704 0.1+ 0.0  | 2007 12 05 704 0.7+ 0.4+ |
| 2003 10 16 699 0.2- 0.8-   | 2007 11 15 704 0.1+ 0.1- | 2007 12 05 704 0.2- 0.5- |
| 2003 10 16 699 (1.5- 1.6+) | 2007 11 15 704 0.9+ 0.3- | 2007 12 05 704 0.4+ 0.1- |
| 2003 10 16 699 0.6- 0.2-   | 2007 11 15 704 0.0 0.3+  | 2007 12 14 704 0.9+ 0.1+ |
| 2003 10 16 699 0.8- 1.2-   | 2007 11 15 704 0.6+ 0.2+ | 2007 12 14 704 0.3- 0.0  |
| 2003 10 18 699 0.9+ 0.0    | 2007 11 15 704 0.4+ 0.3- | 2007 12 14 704 0.2+ 0.5+ |
| 2003 10 18 699 (0.9+ 1.9-) | 2007 11 16 704 0.6+ 0.1+ | 2007 12 14 704 0.4- 0.3- |
| 2003 10 18 699 0.5- 1.0+   | 2007 11 16 704 0.9+ 0.4+ | 2007 12 14 704 0.3+ 1.0+ |
| 2003 10 18 699 0.5+ 0.4+   | 2007 11 16 704 0.1- 0.4+ | 2007 12 15 G96 0.2- 0.2- |
| 2003 10 19 644 0.0 0.4+    | 2007 11 16 704 0.6+ 0.3+ | 2007 12 15 G96 0.1+ 0.4- |
| 2003 10 19 644 0.2+ 0.4+   | 2007 11 17 704 0.1+ 0.5+ | 2007 12 15 G96 0.0 0.3-  |
| 2003 10 19 644 0.5+ 0.4+   | 2007 11 17 704 0.2- 0.3+ | 2007 12 15 G96 0.2- 0.7- |

2003 SF<sub>118</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 79.49204   | (2000.0)           |               |
| <i>n</i> | 0.28136767 | $\omega$ 331.20508 | +0.91199678   |
| <i>a</i> | 2.3064989  | $\Omega$ 4.58017   | -0.37028790   |
| <i>e</i> | 0.2194082  | <i>i</i> 1.74104   | -0.17649007   |
| <i>P</i> | 3.50       | <i>H</i> 17.8      | <i>G</i> 0.15 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 16 644 0.2+ 0.0  | 2003 09 29 704 0.3- 0.2+ | 2003 10 23 704 0.2+ 0.2+ |
| 2003 09 16 644 0.2+ 0.1+ | 2003 09 29 704 0.3+ 1.7+ | 2003 10 23 704 0.2+ 0.4- |
| 2003 09 16 644 0.2+ 0.0  | 2003 09 29 704 0.8- 0.2+ | 2003 10 23 704 0.9- 0.1- |
| 2003 09 21 691 0.1+ 0.2- | 2003 10 06 699 2.0+ 0.1+ | 2003 10 23 704 0.2- 0.4+ |
| 2003 09 21 691 0.1- 0.1- | 2003 10 06 699 0.7- 1.3+ | 2007 12 04 G96 0.7+ 0.6- |
| 2003 09 21 691 0.0 0.1-  | 2003 10 06 699 1.1+ 0.4- | 2007 12 04 G96 0.2- 0.1- |
| 2003 09 27 691 0.0 0.1-  | 2003 10 06 699 0.7- 0.1+ | 2007 12 04 G96 0.3+ 0.7- |
| 2003 09 27 691 0.1- 0.2- | 2003 10 15 644 0.3+ 0.0  | 2007 12 04 G96 0.9+ 0.6- |
| 2003 09 27 691 0.1- 0.1- | 2003 10 15 644 0.0 0.2+  | 2007 12 05 691 0.1- 0.1+ |
| 2003 09 29 704 0.3- 0.0  | 2003 10 15 644 0.0 0.1-  | 2007 12 05 691 0.2- 0.3+ |
| 2003 09 29 704 0.0 0.0   | 2003 10 23 704 0.2- 0.2- | 2007 12 05 691 0.1- 0.1+ |

2003 SH<sub>123</sub> = 2007 RV<sub>251</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |
|----------|------------|--------------------|---------------|
| <i>M</i> | 355.56326  | (2000.0)           |               |
| <i>n</i> | 0.24603123 | $\omega$ 70.10980  | +0.91870917   |
| <i>a</i> | 2.5223725  | $\Omega$ 312.92372 | +0.33242622   |
| <i>e</i> | 0.1506957  | <i>i</i> 3.86602   | +0.21322821   |
| <i>P</i> | 4.01       | <i>H</i> 17.2      | <i>G</i> 0.15 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 18 644 0.5+ 0.1+ | 2007 09 09 691 0.4+ 0.1+ | 2007 09 19 691 0.1+ 0.1+ |
| 2003 09 18 644 0.0 0.3+  | 2007 09 09 691 0.2+ 0.1+ | 2007 09 19 691 0.1- 0.3+ |
| 2003 09 18 644 0.3+ 0.1- | 2007 09 09 691 0.3+ 0.0  | 2007 10 07 703 0.4- 0.2- |
| 2003 09 20 599 0.4- 0.5- | 2007 09 13 691 0.2- 0.0  | 2007 10 07 703 1.0+ 0.9- |
| 2003 09 20 599 0.5- 0.2+ | 2007 09 13 691 0.2+ 0.1+ | 2007 10 07 703 1.3+ 1.3- |
| 2003 09 20 599 0.1- 0.3- | 2007 09 13 691 0.1+ 0.0  | 2007 10 07 703 1.2+ 0.4+ |
| 2003 09 20 599 0.6- 0.1- | 2007 09 13 291 0.4- 0.2- | 2007 12 15 G96 0.2+ 0.2+ |
| 2003 10 16 691 0.0 0.2+  | 2007 09 13 291 0.7- 0.2- | 2007 12 15 G96 0.5+ 0.0  |
| 2003 10 16 691 0.0 0.1+  | 2007 09 13 291 0.7- 0.1- | 2007 12 15 G96 0.4- 0.4- |
| 2003 10 16 691 0.1+ 0.2+ | 2007 09 19 691 0.2+ 0.0  | 2007 12 15 G96 0.7- 0.4+ |

**2003 SN<sub>124</sub> = 2007 VR<sub>47</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 59.21741   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26107086 | $\omega$ 323.27649 | +0.92198594   | +0.38573826 |
| <i>a</i> | 2.4245461  | $\Omega$ 14.15130  | -0.31407801   | +0.79613499 |
| <i>e</i> | 0.0945154  | <i>i</i> 7.96582   | -0.22648826   | +0.46623500 |
| <i>P</i> | 3.78       | <i>H</i> 18.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 10 | 691 | 0.3+ | 0.2+ | 2003 09 19 | 291 | 0.1- | 0.0  | 2007 11 01 | 691 | 0.2- | 0.0  |
| 1994 03 10 | 691 | 0.0  | 0.3+ | 2003 09 30 | 691 | 0.0  | 0.1+ | 2007 11 01 | 691 | 0.2+ | 0.1- |
| 2003 09 18 | 291 | 0.4+ | 0.5- | 2003 09 30 | 691 | 0.0  | 0.1+ | 2007 11 01 | 691 | 0.3- | 0.0  |
| 2003 09 18 | 291 | 0.1+ | 0.1+ | 2003 09 30 | 691 | 0.2+ | 0.2+ | 2007 11 05 | 691 | 0.4+ | 0.5- |
| 2003 09 18 | 291 | 0.4+ | 0.2+ | 2003 10 19 | 691 | 0.3- | 0.3+ | 2007 11 05 | 691 | 0.1+ | 0.2+ |
| 2003 09 19 | 291 | 0.6- | 0.3- | 2003 10 19 | 691 | 0.3- | 0.2+ | 2007 11 05 | 691 | 0.0  | 0.1- |
| 2003 09 19 | 291 | 0.4- | 0.0  | 2003 10 19 | 691 | 0.2+ | 0.3+ |            |     |      |      |

**2003 SG<sub>127</sub> = 2007 XU<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.93112   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27004680 | $\omega$ 299.96896 | +0.69393708   | -0.71100737 |
| <i>a</i> | 2.3705186  | $\Omega$ 105.62262 | +0.69459632   | +0.61943560 |
| <i>e</i> | 0.0944052  | <i>i</i> 6.77818   | +0.18970315   | +0.33281834 |
| <i>P</i> | 3.65       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 106 | 0.2+ | 0.1- | 2003 09 28 | 699 | 0.2+ | 0.6- | 2007 12 04 | 703 | 0.1+ | 0.3- |
| 2003 09 19 | 106 | 0.4- | 0.1- | 2003 10 02 | 691 | 0.0  | 0.1+ | 2007 12 04 | 703 | 0.8- | 0.0  |
| 2003 09 19 | 106 | 0.4+ | 0.4- | 2003 10 02 | 691 | 0.1- | 0.1+ | 2007 12 04 | 703 | 0.2+ | 0.2+ |
| 2003 09 20 | 644 | 0.1- | 0.0  | 2003 10 02 | 691 | 0.0  | 0.1+ | 2007 12 05 | 699 | 0.1- | 0.4+ |
| 2003 09 20 | 644 | 0.0  | 0.1+ | 2003 10 17 | 644 | 0.2+ | 0.2- | 2007 12 05 | 699 | 0.0  | 0.3+ |
| 2003 09 20 | 644 | 0.1+ | 0.2+ | 2003 10 17 | 644 | 0.3+ | 0.1- | 2007 12 05 | 699 | 0.3+ | 0.2- |
| 2003 09 20 | 106 | 0.3+ | 0.6+ | 2003 10 17 | 644 | 0.9+ | 0.0  | 2007 12 05 | 699 | 0.4+ | 0.1+ |
| 2003 09 20 | 106 | 0.2+ | 0.3+ | 2003 10 18 | 699 | 0.2- | 0.2+ | 2007 12 15 | 704 | 0.1+ | 0.3- |
| 2003 09 20 | 106 | 0.2+ | 0.4+ | 2003 10 18 | 699 | 0.3+ | 0.1+ | 2007 12 15 | 704 | 0.0  | 0.1- |
| 2003 09 28 | 699 | 0.4- | 0.7- | 2003 10 18 | 699 | 0.7- | 0.9- | 2007 12 15 | 704 | 0.1+ | 0.5+ |
| 2003 09 28 | 699 | 0.2+ | 0.4+ | 2003 10 18 | 699 | 0.2- | 0.4+ | 2007 12 15 | 704 | 0.4- | 0.0  |
| 2003 09 28 | 699 | 1.0- | 0.8- | 2007 12 04 | 703 | 0.1+ | 0.6- |            |     |      |      |

**2003 SX<sub>133</sub> = 2007 VD<sub>281</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.60685    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26495584 | $\omega$ 353.61405 | +0.67522612   | -0.73682423 |
| <i>a</i> | 2.4007875  | $\Omega$ 53.90803  | +0.67859555   | +0.60244425 |
| <i>e</i> | 0.1715927  | <i>i</i> 2.41536   | +0.28909818   | +0.30684032 |
| <i>P</i> | 3.72       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |             |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------------|------|
| 2003 09 18 | 704 | 0.6- | 0.7- | 2005 05 09 | G96 | 0.3+ | 0.2+ | 2007 11 14 | 691 | 0.2-        | 0.0  |
| 2003 09 18 | 704 | 0.5+ | 0.1- | 2005 05 09 | G96 | 0.2- | 0.1- | 2007 11 14 | 691 | 0.2-        | 0.1- |
| 2003 09 18 | 704 | 0.4- | 0.4- | 2005 05 09 | G96 | 0.1+ | 0.7+ | 2007 11 18 | 691 | 0.0         | 0.1- |
| 2003 09 18 | 704 | 0.4- | 0.2- | 2005 05 09 | G96 | 0.1+ | 0.2- | 2007 11 18 | 691 | 0.3-        | 0.0  |
| 2003 09 18 | 704 | 0.3+ | 0.3- | 2007 09 10 | G96 | 0.4+ | 0.2- | 2007 11 18 | 691 | 0.2-        | 0.1+ |
| 2003 09 20 | 699 | 0.4- | 0.9+ | 2007 09 10 | G96 | 0.5+ | 0.1- | 2007 12 03 | 703 | 0.1-        | 0.3+ |
| 2003 09 20 | 699 | 0.6+ | 0.2- | 2007 09 10 | G96 | 0.1+ | 0.4- | 2007 12 03 | 703 | 0.4+        | 0.0  |
| 2003 09 20 | 699 | 0.9- | 0.9+ | 2007 09 10 | G96 | 0.2+ | 0.3- | 2007 12 03 | 703 | 0.2+        | 0.2- |
| 2003 09 20 | 699 | 0.5+ | 0.6- | 2007 10 09 | G96 | 0.3+ | 0.0  | 2007 12 03 | 703 | 0.5+        | 0.2- |
| 2003 09 22 | 691 | 0.0  | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.1- | 2007 12 04 | 699 | 0.5+        | 0.2+ |
| 2003 09 22 | 691 | 0.2- | 0.3+ | 2007 10 09 | G96 | 0.3+ | 0.1- | 2007 12 04 | 699 | 1.4+        | 0.4- |
| 2003 09 22 | 691 | 0.1- | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.2- | 2007 12 04 | 699 | 0.1+        | 1.2+ |
| 2003 09 28 | 704 | 0.0  | 0.5+ | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 12 04 | 699 | 0.4-        | 0.8+ |
| 2003 09 28 | 704 | 0.1- | 0.2- | 2007 10 30 | 691 | 0.4- | 0.5- | 2007 12 14 | 704 | 0.4+        | 1.0+ |
| 2003 09 28 | 704 | 0.1- | 0.3- | 2007 10 30 | 691 | 0.3- | 0.0  | 2007 12 14 | 704 | (0.8+ 1.9+) |      |
| 2003 09 28 | 704 | 0.4+ | 0.3+ | 2007 11 06 | D29 | 0.4+ | 0.2- | 2007 12 14 | 704 | 0.0         | 0.8+ |
| 2003 09 28 | 704 | 0.3- | 0.4+ | 2007 11 06 | D29 | 0.1- | 0.1+ | 2007 12 14 | 704 | 0.7+        | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 04 | 608 | 0.2+ | 0.4- | 2007 11 06 | D29 | 0.3+ | 0.7- | 2007 12 14 | 704 | 0.4- | 0.1- |
| 2003 10 04 | 608 | 0.9+ | 1.0- | 2007 11 06 | D29 | 0.6+ | 0.4- |            |     |      |      |
| 2003 10 04 | 608 | 0.2+ | 0.5- | 2007 11 14 | 691 | 0.0  | 0.0  |            |     |      |      |

**2003 SY<sub>136</sub> = 2007 WD<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.87977  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26114717 | $\omega$ 89.27389  | +0.72347486   | -0.68753337 |
| <i>a</i> | 2.4240738  | $\Omega$ 314.15857 | +0.59381008   | +0.66579360 |
| <i>e</i> | 0.2351633  | <i>i</i> 4.98227   | +0.35209901   | +0.28985643 |
| <i>P</i> | 3.77       | <i>H</i> 18.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 691 | 0.2- | 0.1- | 2003 09 26 | 645 | 0.1- | 0.0  | 2007 11 16 | G96 | 0.1- | 0.1- |
| 2003 09 20 | 691 | 0.0  | 0.1+ | 2007 10 21 | 703 | 0.6- | 0.6- | 2007 11 16 | G96 | 0.1+ | 0.0  |
| 2003 09 20 | 691 | 0.2+ | 0.1- | 2007 10 21 | 703 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.2- | 0.0  |
| 2003 09 22 | 691 | 0.0  | 0.0  | 2007 10 21 | 703 | 0.9- | 0.9+ | 2007 11 18 | G96 | 0.3+ | 0.3+ |
| 2003 09 22 | 691 | 0.0  | 0.2+ | 2007 10 21 | 703 | 1.3+ | 0.3- | 2007 11 18 | G96 | 0.2- | 0.1+ |
| 2003 09 22 | 691 | 0.2+ | 0.1- | 2007 11 16 | G96 | 0.2+ | 0.1- | 2007 11 18 | G96 | 0.2- | 0.1- |
| 2003 09 26 | 645 | 0.1- | 0.1+ | 2007 11 16 | G96 | 0.2+ | 0.1- |            |     |      |      |

**2003 SN<sub>143</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.84539  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23148537 | $\omega$ 52.36139  | +0.85673616   | -0.51477773 |
| <i>a</i> | 2.6269613  | $\Omega$ 338.56489 | +0.44161906   | +0.76397948 |
| <i>e</i> | 0.1603266  | <i>i</i> 4.98157   | +0.26641275   | +0.38902344 |
| <i>P</i> | 4.26       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 644 | 0.2+ | 0.1+ | 2003 10 03 | 691 | 0.2- | 0.0  | 2007 09 05 | G96 | 0.1+ | 0.1+ |
| 2003 09 20 | 644 | 0.4+ | 0.3- | 2003 10 17 | 691 | 0.2- | 0.2+ | 2007 09 05 | G96 | 0.1+ | 0.2+ |
| 2003 09 20 | 644 | 0.1- | 0.2- | 2003 10 17 | 691 | 0.1+ | 0.1+ | 2007 09 05 | G96 | 0.0  | 0.0  |
| 2003 09 22 | 644 | 0.0  | 0.0  | 2003 10 17 | 691 | 0.3- | 0.3+ | 2007 09 19 | G96 | 0.0  | 0.2- |
| 2003 09 22 | 644 | 0.4- | 0.1+ | 2007 08 23 | 691 | 0.4- | 0.1+ | 2007 09 19 | G96 | 0.1+ | 0.1- |
| 2003 09 22 | 644 | 0.1+ | 0.0  | 2007 08 23 | 691 | 0.4- | 0.0  | 2007 09 19 | G96 | 0.3+ | 0.1- |
| 2003 10 03 | 691 | 0.0  | 0.1- | 2007 08 23 | 691 | 0.3- | 0.1+ | 2007 09 19 | G96 | 0.2+ | 0.0  |
| 2003 10 03 | 691 | 0.3+ | 0.1- | 2007 09 05 | G96 | 0.2+ | 0.0  |            |     |      |      |

**2003 SW<sub>155</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.53879   | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26702687 | $\omega$ 9.16153  | +0.84503986   | -0.53394858 |
| <i>a</i> | 2.3883579  | $\Omega$ 23.17976 | +0.48589789   | +0.74465490 |
| <i>e</i> | 0.1552647  | <i>i</i> 4.13756  | +0.22318352   | +0.40048470 |
| <i>P</i> | 3.69       | <i>H</i> 16.8     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |            |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------------|------|
| 2003 09 19 | 699 | 0.3+ | 0.6- | 2003 09 29 | 704 | 0.1- | 0.3+ | 2003 10 23 | 704 | 0.0        | 0.4+ |
| 2003 09 19 | 699 | 0.9+ | 0.1+ | 2003 09 29 | 704 | 1.0+ | 0.0  | 2003 10 23 | 704 | 0.0        | 0.4+ |
| 2003 09 19 | 699 | 0.1- | 0.6- | 2003 10 01 | 691 | 0.2- | 0.0  | 2003 10 23 | 704 | 0.7-       | 0.8+ |
| 2003 09 19 | 699 | 0.8+ | 0.2+ | 2003 10 01 | 691 | 0.0  | 0.1- | 2003 10 28 | 704 | 1.2+       | 0.9+ |
| 2003 09 21 | 644 | 0.2- | 0.1- | 2003 10 01 | 691 | 0.0  | 0.1+ | 2003 10 28 | 704 | (2.1- 0.0) |      |
| 2003 09 21 | 644 | 0.3- | 0.2- | 2003 10 03 | 608 | 0.8+ | 1.9- | 2003 10 28 | 704 | 0.7-       | 0.6+ |
| 2003 09 21 | 644 | 0.1- | 0.3+ | 2003 10 03 | 608 | 0.2+ | 2.0- | 2003 10 28 | 704 | 0.6+       | 0.0  |
| 2003 09 21 | 608 | 0.0  | 0.3- | 2003 10 03 | 608 | 0.4- | 1.6- | 2003 11 19 | 644 | 0.3-       | 0.0  |
| 2003 09 21 | 608 | 0.5- | 1.2- | 2003 10 17 | 704 | 1.5- | 0.5+ | 2003 11 19 | 644 | 0.4-       | 0.3+ |
| 2003 09 21 | 608 | 0.4- | 1.7- | 2003 10 17 | 704 | 0.1+ | 0.2+ | 2003 11 19 | 644 | 0.3-       | 0.2- |
| 2003 09 26 | 704 | 0.4+ | 1.7+ | 2003 10 17 | 704 | 1.2- | 0.8+ | 2005 03 16 | G96 | 0.0        | 0.2- |
| 2003 09 26 | 704 | 1.5+ | 0.2+ | 2003 10 17 | 704 | 1.9- | 0.2+ | 2005 03 16 | G96 | 0.1+       | 0.3- |
| 2003 09 26 | 704 | 1.4+ | 0.4- | 2003 10 21 | 699 | 0.0  | 0.1- | 2005 03 16 | G96 | 0.4-       | 0.0  |
| 2003 09 26 | 704 | 0.5+ | 1.1+ | 2003 10 21 | 699 | 0.3- | 0.9- | 2005 03 16 | G96 | 0.1+       | 0.1- |
| 2003 09 26 | 704 | 1.4+ | 0.0  | 2003 10 21 | 699 | 0.5+ | 0.2+ | 2007 12 06 | 691 | 0.0        | 0.1+ |
| 2003 09 29 | 704 | 0.3- | 0.3+ | 2003 10 21 | 699 | 0.6- | 0.4- | 2007 12 06 | 691 | 0.2-       | 0.2+ |

2007 DEC. 24

M.P.O. 129647

2003 09 29 704 0.2- 1.2+ 2003 10 23 704 0.1+ 0.5+ 2007 12 06 691 0.3+ 0.5-  
 2003 09 29 704 0.2- 1.0+ 2003 10 23 704 0.1- 0.4+

**2003 SX<sub>170</sub> = 2007 UF<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.55522   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26060163 | $\omega$ | 143.62433 | +0.99956347   | +0.02036659 |
| <i>a</i> | 2.4274556  | $\Omega$ | 215.22699 | -0.02683988   | +0.92876555 |
| <i>e</i> | 0.1859893  | <i>i</i> | 2.12642   | +0.01234847   | +0.37010777 |
| <i>P</i> | 3.78       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 18 | 291 | 0.0   | 0.3+  | 2003 09 29 | 012 | 0.5- | 0.7+ | 2007 11 01 | 291 | 0.1+  | 0.1+  |
| 2003 09 18 | 291 | 0.1-  | 0.1+  | 2003 09 29 | 012 | 1.5- | 0.2- | 2007 11 01 | 291 | 0.4-  | 0.1-  |
| 2003 09 18 | 291 | 0.1-  | 0.5+  | 2003 09 29 | 012 | 0.0  | 0.5+ | 2007 11 05 | G96 | 0.6+  | 0.1-  |
| 2003 09 18 | 691 | 0.0   | 0.0   | 2003 11 19 | 645 | 0.0  | 0.1- | 2007 11 05 | G96 | 0.4+  | 0.2-  |
| 2003 09 18 | 691 | 0.1+  | 0.1+  | 2003 11 19 | 645 | 0.1+ | 0.1- | 2007 11 05 | G96 | 0.5+  | 0.2-  |
| 2003 09 18 | 691 | 0.0   | 0.1-  | 2007 09 14 | G96 | 0.3+ | 0.5- | 2007 11 05 | G96 | 0.7+  | 0.3-  |
| 2003 09 23 | 012 | (0.1- | 1.7-) | 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 11 14 | 691 | 0.1-  | 0.4+  |
| 2003 09 23 | 012 | 0.2-  | 0.1-  | 2007 09 14 | G96 | 0.3+ | 0.5- | 2007 11 14 | 691 | 0.2-  | 0.2+  |
| 2003 09 23 | 012 | 0.9-  | 0.0   | 2007 09 14 | G96 | 0.2- | 0.2- | 2007 11 14 | 691 | 0.2-  | 0.3+  |
| 2003 09 23 | 012 | 0.9+  | 0.3-  | 2007 10 20 | 691 | 0.1- | 0.1+ | 2007 11 14 | G96 | 0.4+  | 0.2-  |
| 2003 09 24 | 012 | 0.2+  | 0.6-  | 2007 10 20 | 691 | 0.2- | 0.1+ | 2007 11 14 | G96 | 0.3+  | 0.3-  |
| 2003 09 24 | 012 | 1.2+  | 0.2-  | 2007 10 20 | 691 | 0.1- | 0.0  | 2007 11 14 | G96 | 0.7+  | 0.3-  |
| 2003 09 24 | 012 | 0.0   | 0.0   | 2007 10 30 | 691 | 0.2+ | 0.2- | 2007 11 14 | G96 | 0.0   | 0.2-  |
| 2003 09 24 | 012 | 0.8+  | 0.6-  | 2007 10 30 | 691 | 0.3+ | 0.1+ | 2007 11 15 | 704 | 0.2+  | 1.4-  |
| 2003 09 29 | 012 | 1.0-  | 0.5-  | 2007 10 30 | 691 | 0.1- | 0.1+ | 2007 11 15 | 704 | 1.3+  | 0.7+  |
| 2003 09 29 | 012 | (1.8- | 0.7+) | 2007 11 01 | 291 | 0.1- | 0.1+ | 2007 11 15 | 704 | (1.6+ | 0.1-) |

**2003 SY<sub>176</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 347.57090  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27368025 | $\omega$ | 57.15995 | +0.25210512   | -0.96600823 |
| <i>a</i> | 2.3494908  | $\Omega$ | 18.49637 | +0.81665163   | +0.18067447 |
| <i>e</i> | 0.0911007  | <i>i</i> | 10.38621 | +0.51915617   | +0.18489142 |
| <i>P</i> | 3.60       | <i>H</i> | 17.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 18 | 644 | 0.0   | 0.4+  | 2003 10 19 | 645 | 0.0   | 0.1-  | 2005 03 13 | 152 | 0.2- | 0.4+ |
| 2003 09 18 | 644 | 0.3+  | 0.5+  | 2003 10 19 | 645 | 0.1-  | 0.1-  | 2007 11 09 | 704 | 0.1- | 0.0  |
| 2003 09 18 | 644 | 0.6+  | 0.5+  | 2003 10 23 | 645 | 0.0   | 0.0   | 2007 11 09 | 704 | 0.3- | 0.3+ |
| 2003 09 22 | 699 | (1.6- | 0.6-) | 2003 10 23 | 645 | 0.0   | 0.0   | 2007 11 09 | 704 | 0.1- | 0.3+ |
| 2003 09 22 | 699 | 0.8-  | 0.4-  | 2003 10 24 | 691 | 0.2+  | 0.2+  | 2007 11 09 | 704 | 0.3+ | 0.2+ |
| 2003 09 22 | 699 | 0.9+  | 0.5-  | 2003 10 24 | 691 | 0.4+  | 0.3+  | 2007 11 16 | 704 | 0.3+ | 0.2+ |
| 2003 09 22 | 699 | 0.5-  | 1.3-  | 2003 10 24 | 704 | 1.2+  | 0.2+  | 2007 11 16 | 704 | 0.1- | 0.2- |
| 2003 09 28 | 704 | 0.4-  | 0.5+  | 2003 10 24 | 704 | 1.0+  | 0.6+  | 2007 11 16 | 704 | 0.2- | 0.7- |
| 2003 09 28 | 704 | 1.1-  | 0.6+  | 2003 10 24 | 691 | 0.0   | 0.2+  | 2007 12 03 | 704 | 0.3- | 0.2+ |
| 2003 09 28 | 704 | 0.5-  | 0.7+  | 2003 10 24 | 704 | (0.4+ | 2.0+) | 2007 12 03 | 704 | 0.2- | 0.0  |
| 2003 09 28 | 704 | 0.2+  | 1.2-  | 2003 11 16 | 645 | 0.0   | 0.0   | 2007 12 03 | 704 | 1.2+ | 0.3+ |
| 2003 09 28 | 704 | 0.6+  | 0.1-  | 2003 11 16 | 645 | 0.0   | 0.0   | 2007 12 03 | 704 | 0.4- | 0.3+ |
| 2003 09 28 | 645 | 0.0   | 0.0   | 2005 03 13 | 152 | 1.0+  | 0.0   | 2007 12 03 | 704 | 0.2- | 0.4- |
| 2003 09 28 | 645 | 0.0   | 0.1+  | 2005 03 13 | 152 | 1.0-  | 0.6-  |            |     |      |      |

**2003 SQ<sub>217</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.75276   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.26647055 | $\omega$ | 2.52718  | +0.66151435   | -0.74624847 |
| <i>a</i> | 2.3916809  | $\Omega$ | 46.07028 | +0.68622890   | +0.56241844 |
| <i>e</i> | 0.2228769  | <i>i</i> | 5.91699  | +0.30247092   | +0.35608809 |
| <i>P</i> | 3.70       | <i>H</i> | 16.5     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 13 | 699 | 0.5+ | 0.8+ | 2003 11 01 | 704 | 0.0  | 0.2+ | 2003 12 13 | 703 | 0.0  | 0.5+ |
| 1999 08 13 | 699 | 0.7- | 1.3- | 2003 11 01 | 704 | 0.2+ | 0.6+ | 2003 12 13 | 703 | 0.5+ | 0.3+ |
| 1999 08 13 | 699 | 0.6+ | 0.2- | 2003 11 01 | 704 | 0.3+ | 0.0  | 2003 12 13 | 703 | 0.2- | 0.6- |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 27 | 333 | 0.5-  | 0.1-  | 2003 11 01 | 704 | 0.5+  | 0.4+  | 2003 12 13 | 644 | 0.0   | 0.0   |
| 2003 09 27 | 333 | 0.7-  | 0.6-  | 2003 11 01 | 704 | 0.3+  | 0.1+  | 2003 12 13 | 644 | 0.1-  | 0.2+  |
| 2003 09 27 | 333 | 0.5+  | 0.6-  | 2003 11 02 | 704 | 0.4+  | 0.4+  | 2003 12 13 | 644 | 0.1-  | 0.0   |
| 2003 09 28 | 333 | 0.2-  | 0.3-  | 2003 11 02 | 704 | 0.5+  | 0.8+  | 2003 12 20 | 704 | 0.8-  | 1.2+  |
| 2003 09 28 | 333 | 0.9-  | 0.5-  | 2003 11 02 | 704 | 0.5+  | 0.4+  | 2003 12 20 | 704 | 0.3+  | 0.0   |
| 2003 09 28 | 333 | 0.6-  | 0.8-  | 2003 11 02 | 704 | 0.3+  | 0.6+  | 2003 12 20 | 704 | 0.1-  | 0.1+  |
| 2003 09 30 | 333 | 0.5-  | 0.3-  | 2003 11 02 | 704 | 0.2+  | 0.2+  | 2003 12 20 | 704 | 0.5+  | 0.1+  |
| 2003 09 30 | 333 | 0.1-  | 0.1+  | 2003 11 18 | 703 | 1.3+  | 0.1+  | 2003 12 20 | 704 | 0.2-  | 0.7+  |
| 2003 09 30 | 333 | 0.3-  | 0.2-  | 2003 11 18 | 644 | 0.0   | 0.0   | 2003 12 22 | 704 | 0.2+  | 0.4+  |
| 2003 10 09 | 699 | 0.0   | 0.0   | 2003 11 18 | 703 | (0.8+ | 1.5+) | 2003 12 22 | 704 | 0.3+  | 0.3+  |
| 2003 10 09 | 699 | 0.0   | 0.6+  | 2003 11 18 | 703 | 0.8+  | 0.6+  | 2003 12 22 | 704 | (1.2- | 1.8+) |
| 2003 10 09 | 699 | 0.0   | 0.5-  | 2003 11 18 | 644 | 0.1-  | 0.1+  | 2003 12 22 | 704 | 0.2+  | 0.1+  |
| 2003 10 09 | 699 | 0.0   | 0.5+  | 2003 11 18 | 703 | (1.6+ | 0.8+) | 2003 12 22 | 704 | 0.2+  | 0.2+  |
| 2003 10 15 | 699 | 0.3+  | 0.5+  | 2003 11 18 | 644 | 0.2+  | 0.1-  | 2003 12 22 | 704 | 0.2+  | 0.2-  |
| 2003 10 15 | 699 | 0.5+  | 1.2-  | 2003 11 19 | 691 | 0.0   | 0.1+  | 2003 12 22 | 704 | 0.5+  | 0.1-  |
| 2003 10 15 | 699 | 0.3-  | 0.4-  | 2003 11 19 | 691 | 1.2-  | 0.7+  | 2003 12 22 | 704 | 0.0   | 0.1+  |
| 2003 10 15 | 699 | 0.1+  | 0.2+  | 2003 11 19 | 691 | 0.5-  | 0.1-  | 2003 12 27 | 704 | 0.2+  | 0.2-  |
| 2003 10 21 | 704 | 0.3-  | 0.1-  | 2003 11 19 | 291 | 0.1-  | 0.0   | 2003 12 27 | 704 | 0.5+  | 0.8-  |
| 2003 10 21 | 704 | 0.2-  | 0.7+  | 2003 11 19 | 291 | 0.1-  | 0.0   | 2003 12 27 | 704 | 0.4-  | 0.4-  |
| 2003 10 21 | 704 | 0.1-  | 0.5+  | 2003 11 19 | 291 | 0.0   | 0.0   | 2003 12 27 | 704 | 0.3+  | 0.6-  |
| 2003 10 21 | 704 | 0.8-  | 0.5+  | 2003 11 21 | 704 | 0.1-  | 0.1+  | 2003 12 27 | 704 | 0.7+  | 0.2-  |
| 2003 10 21 | 691 | 0.1-  | 0.0   | 2003 11 21 | 704 | 0.1-  | 0.2+  | 2004 01 13 | 699 | 1.2-  | 0.1-  |
| 2003 10 21 | 691 | 0.0   | 0.1-  | 2003 11 21 | 704 | 0.1-  | 0.3+  | 2004 01 13 | 699 | 1.3-  | 0.5-  |
| 2003 10 21 | 691 | 0.2-  | 0.0   | 2003 11 21 | 704 | 0.0   | 0.2+  | 2004 01 13 | 699 | 0.0   | 1.4-  |
| 2003 10 24 | 704 | 1.4+  | 0.4+  | 2003 11 21 | 704 | 0.3+  | 0.3+  | 2004 01 13 | 699 | (0.0  | 3.2-) |
| 2003 10 24 | 704 | (1.7+ | 0.2+) | 2003 11 21 | 699 | 0.3-  | 0.1-  | 2007 11 06 | 703 | (1.6- | 0.3+) |
| 2003 10 24 | 704 | 1.2+  | 0.5+  | 2003 11 21 | 699 | 0.6+  | 0.8+  | 2007 11 06 | 703 | 0.3-  | 0.0   |
| 2003 10 24 | 704 | (1.6+ | 0.2+) | 2003 11 21 | 699 | 0.0   | 0.4-  | 2007 11 06 | 703 | 1.0+  | 0.7+  |
| 2003 10 24 | 704 | 1.2+  | 0.3+  | 2003 11 21 | 699 | 0.4-  | 0.3-  | 2007 11 06 | 703 | 0.2-  | 0.5+  |
| 2003 10 28 | 704 | 0.0   | 0.6-  | 2003 11 30 | 691 | 0.1-  | 0.0   | 2007 11 18 | 704 | 0.3+  | 0.5-  |
| 2003 10 28 | 704 | 0.1-  | 1.0-  | 2003 11 30 | 291 | 0.1-  | 0.2-  | 2007 11 18 | 704 | 0.1-  | 0.1-  |
| 2003 10 28 | 704 | 0.3-  | 1.0-  | 2003 11 30 | 691 | 0.0   | 0.1-  | 2007 11 18 | 704 | 0.1+  | 0.4-  |
| 2003 10 28 | 704 | 0.2-  | 1.4-  | 2003 11 30 | 291 | 0.1+  | 0.2-  | 2007 11 18 | 704 | 0.0   | 1.0-  |
| 2003 10 28 | 704 | 0.1-  | 0.8-  | 2003 11 30 | 691 | 0.2+  | 0.1-  | 2007 11 18 | 704 | 0.2-  | 0.1+  |
| 2003 10 30 | 704 | 0.2+  | 0.1+  | 2003 11 30 | 291 | 0.1+  | 0.1-  | 2007 12 05 | 699 | 0.3-  | 0.0   |
| 2003 10 30 | 704 | 0.1-  | 0.1-  | 2003 12 01 | 704 | 0.5+  | 0.1-  | 2007 12 05 | 699 | 1.0-  | 0.2+  |
| 2003 10 30 | 704 | 0.1-  | 0.2+  | 2003 12 01 | 704 | 0.2-  | 0.4+  | 2007 12 05 | 699 | 0.6-  | 0.1+  |
| 2003 10 30 | 704 | 0.2-  | 0.0   | 2003 12 01 | 704 | 0.3-  | 0.2-  | 2007 12 05 | 699 | 0.0   | 0.5-  |
| 2003 10 30 | 704 | 0.1+  | 0.1+  | 2003 12 01 | 704 | 0.4-  | 0.3+  | 2007 12 13 | 704 | 0.1-  | 0.2-  |
| 2003 10 30 | 608 | 0.4+  | 0.7-  | 2003 12 01 | 704 | 1.1-  | 0.3+  | 2007 12 13 | 704 | 0.3-  | 0.1-  |
| 2003 10 30 | 608 | 0.5+  | 0.8-  | 2003 12 10 | 644 | 0.0   | 0.1+  | 2007 12 13 | 704 | 0.4+  | 0.3-  |
| 2003 10 30 | 608 | (0.8+ | 1.7-) | 2003 12 10 | 644 | 0.0   | 0.1-  | 2007 12 13 | 704 | 0.1+  | 0.0   |
| 2003 11 01 | 704 | 0.7+  | 0.2+  | 2003 12 10 | 644 | 0.2+  | 0.1+  | 2007 12 16 | 704 | 0.4+  | 0.2+  |
| 2003 11 01 | 704 | 0.1-  | 0.3+  | 2003 12 10 | 644 | 0.0   | 0.1+  | 2007 12 16 | 704 | 0.2+  | 0.3+  |
| 2003 11 01 | 704 | 0.5+  | 0.3+  | 2003 12 10 | 644 | 0.2+  | 0.0   | 2007 12 16 | 704 | 0.1+  | 0.4-  |
| 2003 11 01 | 704 | 0.3+  | 0.0   | 2003 12 10 | 644 | 0.2+  | 0.1-  | 2007 12 16 | 704 | 0.1+  | 0.1+  |
| 2003 11 01 | 704 | 0.6+  | 0.4+  | 2003 12 13 | 703 | 0.2+  | 0.2-  | 2007 12 16 | 704 | 0.3+  | 0.1-  |

**2003 SD<sub>229</sub> = 2007 VZ<sub>143</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 100.77582  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26432740 | $\omega$ | 125.36411 | +0.60088112 | +0.79933695 |
| <i>a</i> | 2.4045913  | $\Omega$ | 181.57140 | -0.75024641 | +0.56331780 |
| <i>e</i> | 0.0664658  | <i>i</i> | 3.18990   | -0.27581190 | +0.20912556 |

**2003 ST<sub>230</sub> = 2007 VO<sub>280</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 65.02565   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.26940141 | $\omega$ | 268.88581 | +0.72912299 | +0.68348207 |
| $a$ | 2.3743030  | $\Omega$ | 47.99658  | -0.60762775 | +0.67009671 |
| $e$ | 0.2501874  | $i$      | 2.70724   | -0.31490980 | +0.28952143 |
| $P$ | 3.66       | $H$      | 17.4      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 24 | 644 | 0.0  | 0.1- | 2007 10 09 | G96 | 0.7+ | 0.2- | 2007 11 14 | 691 | 0.2- | 0.5+ |
| 2003 09 24 | 644 | 0.1- | 0.8- | 2007 10 17 | G96 | 0.4+ | 0.1- | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2003 09 24 | 644 | 0.1+ | 0.0  | 2007 10 17 | G96 | 0.5+ | 0.1- | 2007 11 18 | 691 | 0.2+ | 0.0  |
| 2003 09 28 | 704 | 0.2- | 0.5- | 2007 10 17 | G96 | 0.3+ | 0.1+ | 2007 11 18 | 691 | 0.5- | 0.1- |
| 2003 09 28 | 704 | 0.5- | 0.5+ | 2007 10 17 | G96 | 0.4+ | 0.0  | 2007 12 06 | G96 | 0.4+ | 0.3- |
| 2003 09 28 | 704 | 0.4+ | 0.6+ | 2007 10 30 | 691 | 0.5- | 0.2- | 2007 12 06 | G96 | 0.8+ | 0.8- |
| 2003 09 28 | 704 | 0.2+ | 0.5+ | 2007 10 30 | 691 | 0.4- | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.7+ |
| 2007 10 09 | G96 | 0.7+ | 0.4- | 2007 10 30 | 691 | 0.4- | 0.1- | 2007 12 06 | G96 | 1.0+ | 0.4+ |
| 2007 10 09 | G96 | 0.2+ | 0.3- | 2007 11 14 | 691 | 0.2+ | 0.1- |            |     |      |      |
| 2007 10 09 | G96 | 0.0  | 0.4- | 2007 11 14 | 691 | 0.2+ | 0.2+ |            |     |      |      |

**2003 SF<sub>233</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 80.45615   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.28740351 | $\omega$ | 307.92164 | +0.98099790 | +0.17832673 |
| $a$ | 2.2740919  | $\Omega$ | 41.96288  | -0.12174081 | +0.87252523 |
| $e$ | 0.1912608  | $i$      | 6.56420   | -0.15107053 | +0.45486184 |
| $P$ | 3.43       | $H$      | 16.8      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 01 | 704 | 1.5- | 0.5+ | 2003 10 02 | 691 | 0.1+ | 0.0  | 2003 10 25 | 704 | 0.1+  | 0.4+  |
| 2003 08 01 | 704 | 0.2+ | 0.1+ | 2003 10 02 | 691 | 0.1+ | 0.0  | 2003 10 25 | 704 | 0.1+  | 0.6+  |
| 2003 08 01 | 704 | 0.6- | 0.3- | 2003 10 06 | 608 | 0.2+ | 0.8- | 2003 11 16 | 645 | 0.1+  | 0.1-  |
| 2003 08 01 | 704 | 0.5+ | 0.5+ | 2003 10 06 | 608 | 0.0  | 0.5- | 2003 11 16 | 645 | 0.1+  | 0.1-  |
| 2003 09 02 | 704 | 0.1+ | 0.0  | 2003 10 06 | 608 | 0.2- | 0.4- | 2003 11 20 | 645 | 0.1+  | 0.1-  |
| 2003 09 02 | 704 | 1.1- | 0.2- | 2003 10 16 | 699 | 1.1+ | 0.7- | 2003 11 20 | 645 | (0.5+ | 2.9+) |
| 2003 09 02 | 704 | 1.6- | 0.5- | 2003 10 16 | 699 | 0.9- | 0.1+ | 2003 11 21 | 704 | 0.5-  | 0.0   |
| 2003 09 18 | 704 | 0.1+ | 0.5- | 2003 10 16 | 699 | 0.1- | 0.5- | 2003 11 21 | 704 | 0.3-  | 1.0+  |
| 2003 09 18 | 704 | 0.2+ | 0.7+ | 2003 10 16 | 699 | 0.4- | 0.4+ | 2003 11 21 | 704 | 0.4+  | 0.2-  |
| 2003 09 18 | 704 | 0.4- | 0.0  | 2003 10 18 | 699 | 0.3+ | 0.3- | 2003 11 21 | 704 | 0.9+  | 0.5+  |
| 2003 09 18 | 704 | 0.0  | 1.0+ | 2003 10 18 | 699 | 0.5+ | 0.1+ | 2003 11 21 | 704 | 0.1+  | 0.9+  |
| 2003 09 18 | 704 | 0.3+ | 0.0  | 2003 10 18 | 699 | 0.2+ | 0.1- | 2003 12 21 | 704 | 0.5-  | 0.3+  |
| 2003 09 25 | 644 | 0.3- | 0.0  | 2003 10 18 | 699 | 0.3+ | 0.4- | 2003 12 21 | 704 | 1.0-  | 0.8+  |
| 2003 09 25 | 644 | 0.3- | 0.2+ | 2003 10 19 | 704 | 0.5+ | 0.2- | 2003 12 21 | 704 | 0.4-  | 0.0   |
| 2003 09 25 | 644 | 0.2- | 0.1+ | 2003 10 19 | 704 | 0.1+ | 0.1- | 2007 09 15 | G96 | 0.5+  | 0.2+  |
| 2003 09 28 | 704 | 1.2- | 0.9+ | 2003 10 19 | 704 | 0.4+ | 0.1- | 2007 09 15 | G96 | 0.3+  | 0.3+  |
| 2003 09 28 | 704 | 0.1- | 0.6+ | 2003 10 19 | 704 | 0.4+ | 0.1+ | 2007 09 15 | G96 | 0.1+  | 0.0   |
| 2003 09 28 | 704 | 0.2- | 0.4+ | 2003 10 19 | 704 | 0.7+ | 0.1- | 2007 09 15 | G96 | 0.4+  | 0.0   |
| 2003 09 28 | 704 | 0.1- | 0.5+ | 2003 10 25 | 704 | 0.0  | 1.1+ | 2007 12 05 | 691 | 0.1-  | 0.3+  |
| 2003 09 28 | 704 | 0.5- | 0.4+ | 2003 10 25 | 704 | 0.2- | 0.2+ | 2007 12 05 | 691 | 0.1-  | 0.3+  |
| 2003 10 02 | 691 | 0.0  | 0.0  | 2003 10 25 | 704 | 0.4- | 0.8+ | 2007 12 05 | 691 | 0.1+  | 0.0   |

**2003 SV<sub>233</sub> = 2007 US<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 54.25170   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27059669 | $\omega$ | 282.08969 | +0.92982706 | +0.36506451 |
| $a$ | 2.3673060  | $\Omega$ | 56.51538  | -0.31230533 | +0.84946148 |
| $e$ | 0.2142142  | $i$      | 3.18666   | -0.19464589 | +0.38097650 |
| $P$ | 3.64       | $H$      | 17.7      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 08 | 691 | 0.3+ | 0.4- | 2003 09 28 | 704 | 1.0+ | 0.5+ | 2007 11 05 | G96 | 0.5+ | 0.2+ |
| 1996 11 08 | 691 | 0.0  | 0.0  | 2003 09 28 | 704 | 0.0  | 0.9+ | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 1996 11 08 | 691 | 0.1- | 0.4- | 2006 05 06 | 691 | 0.3- | 0.5+ | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2003 09 18 | 699 | 0.0  | 0.7+ | 2006 05 06 | 691 | 0.1+ | 0.4- | 2007 11 05 | G96 | 0.1+ | 0.1+ |
| 2003 09 18 | 699 | 1.0- | 1.6- | 2006 05 06 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 691 | 0.0  | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 699 | 0.4+ | 1.0+ | 2007 10 15 | G96 | 0.1+ | 0.1- | 2007 11 14 | 691 | 0.4- | 0.4+ |
| 2003 09 18 | 699 | 0.3- | 0.1- | 2007 10 15 | G96 | 0.1+ | 0.2- | 2007 11 14 | 691 | 0.4- | 0.0  |
| 2003 09 25 | 608 | 0.2+ | 0.0  | 2007 10 15 | G96 | 0.5+ | 0.2+ | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 2003 09 25 | 608 | 0.5- | 0.1- | 2007 10 15 | G96 | 0.1+ | 0.2- | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 2003 09 25 | 608 | 0.1- | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 18 | 691 | 0.1+ | 0.3+ |
| 2003 09 28 | 704 | 0.4- | 0.3- | 2007 10 30 | 691 | 0.1- | 0.0  |            |     |      |      |
| 2003 09 28 | 704 | 0.2+ | 0.2- | 2007 10 30 | 691 | 0.2+ | 0.2+ |            |     |      |      |

**2003 SN<sub>241</sub> = 2007 TQ<sub>229</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |     |   |
|-----|------------|----------|----------|-------------|-------------|-----|---|
| $M$ | 0.85679    |          | (2000.0) | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.25694667 | $\omega$ | 3.68686  | +0.79139329 | -0.61103359 |     |   |
| $a$ | 2.4504211  | $\Omega$ | 33.99904 | +0.56002345 | +0.71267974 |     |   |
| $e$ | 0.1852449  | $i$      | 1.87464  | +0.24509262 | +0.34456572 |     |   |
| $P$ | 3.84       | $H$      | 18.6     | $G$         | 0.15        | $U$ | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 691 | 0.1- | 0.2- | 2005 03 10 | G96 | 0.1+ | 0.5- | 2007 10 30 | G96 | 0.5+ | 0.2- |
| 2003 09 27 | 691 | 0.0  | 0.0  | 2007 09 09 | G96 | 0.1+ | 0.2- | 2007 11 09 | G96 | 0.4+ | 0.5- |
| 2003 09 27 | 691 | 0.2- | 0.1- | 2007 09 09 | G96 | 0.0  | 0.1- | 2007 11 09 | G96 | 0.5+ | 0.3- |
| 2003 09 29 | 691 | 0.1- | 0.2+ | 2007 09 09 | G96 | 0.1+ | 0.4- | 2007 11 09 | G96 | 0.1+ | 0.4- |
| 2003 09 29 | 691 | 0.0  | 0.1+ | 2007 09 09 | G96 | 0.6+ | 0.2- | 2007 11 09 | G96 | 0.6+ | 0.3- |
| 2003 09 29 | 691 | 0.1+ | 0.2+ | 2007 10 08 | 691 | 0.1- | 0.0  | 2007 11 09 | G96 | 1.1+ | 0.1- |
| 2003 10 18 | 645 | 0.0  | 0.1- | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.7+ | 0.2- |
| 2003 10 18 | 291 | 0.1+ | 0.3+ | 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 11 09 | G96 | 0.8+ | 0.2- |
| 2003 10 18 | 645 | 0.0  | 0.1- | 2007 10 12 | 691 | 0.2- | 0.2+ | 2007 11 09 | G96 | 0.9+ | 0.2- |
| 2003 10 18 | 291 | 0.2- | 0.2+ | 2007 10 12 | 691 | 0.2- | 0.3- | 2007 11 09 | 291 | 0.7+ | 0.2+ |
| 2003 10 18 | 291 | 0.1- | 0.2+ | 2007 10 12 | 691 | 0.3- | 0.0  | 2007 11 09 | 291 | 0.1- | 0.1- |
| 2003 10 24 | 691 | 0.1+ | 0.4+ | 2007 10 16 | 691 | 0.4- | 0.0  | 2007 11 09 | 291 | 0.3+ | 0.2+ |
| 2003 10 24 | 691 | 0.4+ | 0.2+ | 2007 10 16 | 691 | 0.1- | 0.2+ | 2007 12 03 | 291 | 0.5- | 0.2+ |
| 2003 10 24 | 691 | 0.1+ | 0.1- | 2007 10 16 | 691 | 0.3- | 0.0  | 2007 12 03 | 291 | 0.5- | 0.2+ |
| 2005 03 10 | G96 | 0.0  | 0.5- | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 12 03 | 291 | 0.4- | 0.0  |
| 2005 03 10 | G96 | 0.7+ | 0.1+ | 2007 10 30 | G96 | 0.5+ | 0.2- |            |     |      |      |
| 2005 03 10 | G96 | 0.8- | 0.6+ | 2007 10 30 | G96 | 1.0+ | 0.3- |            |     |      |      |

**2003 SH<sub>242</sub> = 2007 VC<sub>168</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 351.63103  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26104031 | $\omega$ | 102.47681 | +0.33119396 | -0.94353653 |
| $a$ | 2.4247353  | $\Omega$ | 328.17916 | +0.86044360 | +0.30506670 |
| $e$ | 0.1621759  | $i$      | 0.76360   | +0.38723039 | +0.12912445 |
| $P$ | 3.78       | $H$      | 18.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 18 | 691 | 0.4+ | 0.1- | 2003 10 18 | 691 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.3+ | 0.3- |
| 1999 09 18 | 691 | 0.1- | 0.8- | 2003 10 18 | 691 | 0.1- | 0.2+ | 2007 11 09 | 691 | 0.3- | 0.3+ |
| 1999 09 18 | 691 | 0.0  | 0.2+ | 2003 10 18 | 691 | 0.1- | 0.3+ | 2007 11 09 | 691 | 0.2- | 0.1+ |
| 2003 09 27 | 691 | 0.1- | 0.0  | 2003 11 24 | 691 | 0.2+ | 0.1- | 2007 11 14 | 291 | 0.1+ | 0.1- |
| 2003 09 27 | 691 | 0.1- | 0.2+ | 2003 11 24 | 691 | 0.1- | 0.1+ | 2007 11 14 | 291 | 0.2- | 0.0  |
| 2003 09 27 | 691 | 0.4+ | 0.2+ | 2003 11 24 | 691 | 0.1- | 0.2- | 2007 11 14 | 291 | 0.1+ | 0.2- |
| 2003 09 29 | 691 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.2- | 2007 12 06 | D35 | 0.2+ | 0.2+ |
| 2003 09 29 | 691 | 0.5- | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.2- | 2007 12 06 | D35 | 0.1- | 0.7+ |
| 2003 09 29 | 691 | 0.1- | 0.0  | 2007 11 05 | 691 | 0.1+ | 0.2- | 2007 12 06 | D35 | 0.3+ | 0.3+ |

**2003 SD<sub>253</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 46.11532   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27311836 | $\omega$ | 35.39857  | +0.99928247 | -0.01926114 |
| $a$ | 2.3527121  | $\Omega$ | 325.66101 | +0.00291082 | +0.89754641 |
| $e$ | 0.1606168  | $i$      | 3.31434   | +0.03776334 | +0.44049910 |
| $P$ | 3.61       | $H$      | 17.9      | $G$         | 0.15        |
|     |            |          |           | $U$         | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 691 | 0.2- | 0.4+ | 2003 09 27 | 704 | 0.5+ | 0.4+ | 2003 10 22 | 645 | 0.1+ | 0.1- |
| 2003 09 17 | 691 | 0.2- | 0.4+ | 2003 09 27 | 691 | 0.0  | 0.3+ | 2003 10 23 | 645 | 0.0  | 0.1- |

## 2007 DEC. 24

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 691 | 0.1−  | 0.1+  | 2003 09 27 | 704 | 1.4+ | 0.3+ | 2003 10 23 | 645 | 0.0  | 0.1− |
| 2003 09 22 | 699 | 0.7+  | 1.0+  | 2003 09 27 | 704 | 0.3+ | 0.7+ | 2003 11 19 | 645 | 0.0  | 0.0  |
| 2003 09 22 | 699 | 0.5+  | 0.1+  | 2003 09 29 | 291 | 0.4− | 0.2+ | 2003 11 19 | 645 | 0.1+ | 0.0  |
| 2003 09 22 | 683 | 0.0   | 0.5−  | 2003 09 29 | 291 | 0.2− | 0.3+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2003 09 22 | 683 | (1.4+ | 2.7+) | 2003 09 29 | 291 | 0.3− | 0.1+ | 2007 11 18 | G96 | 0.1− | 0.2− |
| 2003 09 22 | 699 | 0.4+  | 0.1−  | 2003 10 17 | 691 | 0.1− | 0.3+ | 2007 11 18 | G96 | 0.8+ | 0.0  |
| 2003 09 22 | 683 | 1.3+  | 0.9−  | 2003 10 17 | 691 | 0.7− | 0.1− | 2007 11 18 | G96 | 0.6− | 1.2− |
| 2003 09 22 | 699 | 0.4−  | 0.1+  | 2003 10 17 | 691 | 0.1− | 0.3+ | 2007 11 20 | 691 | 0.2+ | 0.3+ |
| 2003 09 27 | 691 | 0.1−  | 0.2+  | 2003 10 18 | 645 | 0.0  | 0.1− | 2007 11 20 | 691 | 0.1− | 0.2+ |
| 2003 09 27 | 691 | 0.6−  | 0.0   | 2003 10 18 | 645 | 0.0  | 0.1− | 2007 11 20 | 691 | 0.2− | 0.5+ |
| 2003 09 27 | 704 | 0.1−  | 0.7+  | 2003 10 22 | 645 | 0.1+ | 0.2− |            |     |      |      |

2003 SG<sup>258</sup>

|                                         |            |          |           |             |             |          |   |  |   |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |   |  |  |
| <i>M</i> 354.73508                      |            |          | (2000.0)  |             |             | MPC      |   |  | Q |  |  |
| <i>n</i>                                | 0.23402797 | $\omega$ | 350.79308 | +0.99216910 | −0.10902848 |          |   |  |   |  |  |
| <i>a</i>                                | 2.6078997  | $\Omega$ | 15.85791  | +0.12401282 | +0.80180516 |          |   |  |   |  |  |
| <i>e</i>                                | 0.1703605  | <i>i</i> | 12.88557  | +0.01487617 | +0.58755533 |          |   |  |   |  |  |
| <i>P</i>                                | 4.21       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 4 |  |   |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 16 | 691 | 0.1− | 0.1− | 2003 10 02 | 704 | 0.0  | 0.3+ | 2003 10 24 | 704 | 0.7−  | 0.0   |
| 2003 09 16 | 691 | 0.0  | 0.2− | 2003 10 18 | 691 | 0.1+ | 0.3− | 2003 10 27 | 291 | 0.0   | 0.0   |
| 2003 09 16 | 691 | 0.2− | 0.1+ | 2003 10 18 | 691 | 0.0  | 0.2− | 2003 10 27 | 291 | 0.1+  | 0.2−  |
| 2003 09 19 | 699 | 0.6− | 1.2− | 2003 10 18 | 691 | 0.0  | 0.1− | 2003 10 27 | 291 | 0.0   | 0.1−  |
| 2003 09 19 | 699 | 1.9+ | 0.7+ | 2003 10 21 | 699 | 0.2− | 0.1+ | 2003 10 30 | 704 | 0.5+  | 0.1−  |
| 2003 09 19 | 699 | 0.6+ | 0.4+ | 2003 10 21 | 699 | 0.8+ | 0.8+ | 2003 10 30 | 704 | 0.1−  | 0.0   |
| 2003 09 19 | 699 | 1.7+ | 0.6− | 2003 10 21 | 699 | 0.0  | 0.3− | 2003 10 30 | 704 | 1.1+  | 0.8−  |
| 2003 09 28 | 691 | 0.2+ | 0.1− | 2003 10 21 | 704 | 0.3− | 0.1+ | 2007 09 04 | 703 | 0.8−  | 0.1+  |
| 2003 09 28 | 691 | 0.0  | 0.1− | 2003 10 21 | 699 | 0.5− | 0.2− | 2007 09 04 | 703 | 0.8+  | 0.2+  |
| 2003 09 28 | 691 | 0.2+ | 0.1− | 2003 10 21 | 704 | 0.6+ | 0.2+ | 2007 09 04 | 703 | 0.4−  | 0.6+  |
| 2003 09 29 | 704 | 0.0  | 0.2− | 2003 10 21 | 704 | 0.2+ | 0.3− | 2007 09 04 | 703 | (2.2+ | 0.2−) |
| 2003 09 29 | 704 | 0.2− | 0.1+ | 2003 10 21 | 704 | 0.4− | 0.2− | 2007 09 14 | 703 | 1.6−  | 0.5−  |
| 2003 09 29 | 704 | 0.4− | 0.4− | 2003 10 21 | 704 | 0.5− | 0.7− | 2007 09 14 | 703 | 0.5+  | 0.8−  |
| 2003 09 29 | 704 | 0.0  | 0.3+ | 2003 10 24 | 704 | 0.6− | 0.7+ | 2007 09 14 | 703 | 0.1−  | 0.9+  |
| 2003 09 29 | 704 | 0.4− | 0.3+ | 2003 10 24 | 704 | 0.4− | 0.4+ | 2007 09 14 | 703 | 0.5+  | 1.0+  |
| 2003 10 02 | 704 | 0.6− | 0.7+ | 2003 10 24 | 704 | 0.6− | 0.5+ | 2007 09 20 | E12 | 0.8+  | 0.9−  |
| 2003 10 02 | 704 | 0.6− | 0.1+ | 2003 10 24 | 704 | 0.2− | 0.6+ | 2007 09 20 | E12 | 0.0   | 0.3−  |

2003 SW<sup>259</sup>

|                                         |            |          |          |             |             |          |   |  |   |  |  |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|--|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |             |          |   |  |   |  |  |
| <i>M</i> 312.56652                      |            |          | (2000.0) |             |             | MPC      |   |  | Q |  |  |
| <i>n</i>                                | 0.23133702 | $\omega$ | 36.78915 | +0.33957841 | −0.93876824 |          |   |  |   |  |  |
| <i>a</i>                                | 2.6280843  | $\Omega$ | 33.47240 | +0.83581801 | +0.27274076 |          |   |  |   |  |  |
| <i>e</i>                                | 0.2035500  | <i>i</i> | 6.06940  | +0.43138701 | +0.21053900 |          |   |  |   |  |  |
| <i>P</i>                                | 4.26       | <i>H</i> | 17.0     | <i>G</i>    | 0.15        | <i>U</i> | 3 |  |   |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 28 | 691 | 0.1− | 0.1− | 2003 10 25 | 291 | 0.1+ | 0.1− | 2003 12 01 | 291 | 0.3+  | 0.2−  |
| 2003 09 28 | 691 | 0.0  | 0.0  | 2003 10 26 | 703 | 0.8− | 0.1− | 2003 12 01 | 291 | 0.1+  | 0.0   |
| 2003 09 28 | 691 | 0.1− | 0.0  | 2003 10 26 | 703 | 0.7+ | 1.5− | 2003 12 01 | 291 | 0.5−  | 0.3−  |
| 2003 09 29 | 704 | 0.2− | 0.1+ | 2003 10 26 | 703 | 0.7− | 0.6− | 2005 04 06 | 683 | 0.2+  | 0.3+  |
| 2003 09 29 | 704 | 0.6+ | 0.6+ | 2003 10 26 | 703 | 0.7− | 0.1+ | 2005 04 06 | 683 | (5.3+ | 0.9−) |
| 2003 09 29 | 704 | 0.3− | 0.2− | 2003 10 28 | 704 | 0.4+ | 0.4+ | 2005 04 06 | 683 | (7.3+ | 1.0−) |
| 2003 10 19 | 691 | 0.2+ | 0.0  | 2003 10 28 | 704 | 0.5+ | 0.7+ | 2007 09 12 | 703 | 1.8−  | 0.3−  |
| 2003 10 19 | 691 | 0.1+ | 0.1− | 2003 10 28 | 704 | 0.0  | 0.2+ | 2007 09 12 | 703 | 0.0   | 0.3+  |
| 2003 10 19 | 691 | 0.0  | 0.1− | 2003 10 28 | 704 | 0.1+ | 0.9+ | 2007 09 12 | 703 | 0.4−  | 0.1+  |
| 2003 10 21 | 704 | 1.1+ | 0.9− | 2003 10 28 | 704 | 0.1+ | 0.7+ | 2007 09 12 | 703 | 0.3+  | 0.7+  |
| 2003 10 21 | 704 | 0.6− | 0.7+ | 2003 11 21 | 704 | 0.3+ | 0.0  | 2007 10 15 | G96 | 0.5+  | 0.1+  |
| 2003 10 21 | 704 | 0.7− | 1.0− | 2003 11 21 | 704 | 0.1+ | 0.7+ | 2007 10 15 | G96 | 0.5+  | 0.1−  |
| 2003 10 21 | 704 | 0.2− | 0.2− | 2003 11 21 | 704 | 0.1+ | 0.1+ | 2007 10 15 | G96 | 0.5+  | 0.3−  |
| 2003 10 25 | 291 | 0.1+ | 0.1− | 2003 11 21 | 704 | 0.1− | 0.6+ | 2007 10 15 | G96 | 0.5+  | 0.3−  |
| 2003 10 25 | 291 | 0.0  | 0.0  | 2003 11 21 | 704 | 0.3− | 0.2+ |            |     |       |       |

## M.P.O. 129649

2003 SQ<sup>269</sup>

|                                         |            |          |           |             |             |          |   |  |   |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |   |  |  |
| <i>M</i> 17.42764                       |            |          | (2000.0)  |             |             | MPC      |   |  | Q |  |  |
| <i>n</i>                                | 0.26250116 | $\omega$ | 320.68277 | +0.85155648 | −0.52104147 |          |   |  |   |  |  |
| <i>a</i>                                | 2.4157310  | $\Omega$ | 70.81208  | +0.49515948 | +0.76297611 |          |   |  |   |  |  |
| <i>e</i>                                | 0.1767721  | <i>i</i> | 3.52260   | +0.17224589 | +0.38260062 |          |   |  |   |  |  |
| <i>P</i>                                | 3.75       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |   |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 04 03 | 691 | 0.0   | 0.4−  | 2003 10 04 | 683 | 0.1−  | 0.7+  | 2007 11 18 | 691 | 0.3− | 0.2− |
| 1994 04 03 | 691 | 0.1+  | 0.2−  | 2003 10 04 | 683 | 0.7+  | 0.2+  | 2007 11 18 | 691 | 0.3− | 0.3− |
| 1994 04 03 | 691 | 0.3−  | 0.0   | 2003 10 04 | 683 | 1.0−  | 0.8+  | 2007 11 18 | 691 | 0.2− | 0.1− |
| 1996 12 09 | 691 | 0.1+  | 0.1−  | 2003 10 15 | 699 | 0.6+  | 0.1+  | 2007 12 03 | 703 | 0.0  | 0.4+ |
| 1996 12 09 | 691 | 0.1−  | 0.3−  | 2003 10 15 | 699 | 0.5+  | 0.4−  | 2007 12 03 | 703 | 0.2− | 0.8+ |
| 1996 12 09 | 691 | (4.6+ | 2.8+) | 2003 10 15 | 699 | 0.3+  | 1.2+  | 2007 12 03 | 703 | 0.2+ | 0.6+ |
| 2003 09 27 | 683 | 0.3−  | 0.6−  | 2003 10 15 | 699 | (2.0+ | 1.1+) | 2007 12 04 | G96 | 0.0  | 0.2− |
| 2003 09 27 | 683 | 0.4+  | 1.2−  | 2003 10 15 | 644 | 0.6−  | 0.8+  | 2007 12 04 | G96 | 0.4+ | 0.1− |
| 2003 09 27 | 683 | 0.2+  | 0.7−  | 2003 10 15 | 644 | 0.6−  | 0.7+  | 2007 12 04 | G96 | 0.1+ | 0.6− |
| 2003 09 28 | 704 | 0.2−  | 0.0   | 2003 10 15 | 644 | 0.5−  | 0.8+  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2003 09 28 | 704 | (0.1+ | 1.7+) | 2003 10 19 | 645 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.5+ |
| 2003 09 28 | 699 | 0.2+  | 0.7+  | 2003 10 19 | 645 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.8+ |
| 2003 09 28 | 704 | (2.4− | 2.1+) | 2003 10 23 | 645 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.3+ | 0.9+ |
| 2003 09 28 | 699 | 0.5+  | 0.1+  | 2003 10 23 | 645 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.3+ | 0.7+ |
| 2003 09 28 | 704 | 0.7−  | 0.0   | 2003 10 24 | 645 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.2+ | 0.7+ |
| 2003 09 28 | 699 | 0.3+  | 0.3+  | 2003 10 24 | 645 | 0.0   | 0.0   | 2007 12 14 | 704 | 0.3− | 0.7+ |
| 2003 09 28 | 704 | 0.3+  | 0.2−  | 2003 10 25 | 704 | 0.8−  | 0.2+  | 2007 12 14 | 704 | 0.2− | 0.8+ |
| 2003 09 28 | 699 | 0.1+  | 0.7+  | 2003 10 25 | 704 | 0.2+  | 0.3+  | 2007 12 14 | 704 | 0.3+ | 1.0+ |
| 2003 09 28 | 683 | (1.9+ | 1.0−) | 2003 10 25 | 704 | 0.5−  | 0.2+  | 2007 12 14 | 704 | 0.2+ | 1.1+ |
| 2003 09 28 | 683 | 1.4+  | 0.8−  | 2003 10 25 | 704 | (1.8− | 1.1+) | 2007 12 14 | 704 | 0.1− | 0.0  |
| 2003 09 28 | 683 | 0.3−  | 0.2−  | 2003 10 25 | 704 | 1.4−  | 0.5+  | 2007 12 15 | G96 | 0.6+ | 0.4− |
| 2003 09 29 | 683 | 0.4−  | 0.6−  | 2003 10 29 | 699 | 0.7+  | 0.1−  | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2003 09 29 | 683 | (2.0− | 1.1−) | 2003 10 29 | 699 | 0.1−  | 0.4+  | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2003 09 29 | 683 | (1.5− | 1.1−) | 2003 10 29 | 699 | 0.5+  | 0.6+  | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2003 09 30 | 683 | 0.5+  | 0.1−  | 2003 10 29 | 699 | 0.8+  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2003 09 30 | 683 | 0.1+  | 0.3−  | 2003 11 16 | 645 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2003 09 30 | 683 | 0.9−  | 0.2−  | 2003 11 16 | 645 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2003 10 02 | 683 | 1.4+  | 0.7+  | 2007 11 14 | 691 | 0.3−  | 0.1+  | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2003 10 02 | 683 | (3.2+ | 0.6+) | 2007 11 14 | 691 | 0.1+  | 0.3−  |            |     |      |      |
| 2003 10 02 | 683 | (2.1+ | 1.4+) | 2007 11 14 | 691 | 0.2−  | 0.1−  |            |     |      |      |

2003 SV<sup>269</sup>

|                                         |            |          |           |             |             |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |
| $M$                                     | 93.84965   |          | (2000.0)  | $P$         | $Q$         |
| $n$                                     | 0.28812571 | $\omega$ | 225.32133 | +0.93655670 | +0.32819349 |
| $a$                                     | 2.2702902  | $\Omega$ | 115.16051 | −0.27064860 | +0.90024662 |
| $e$                                     | 0.1657575  | $i$      | 7.81590   | −0.22273502 | +0.28608576 |
| $P$                                     | 3.42       | $H$      | 16.4      | $G$ 0.15    | $U$ 4       |

2003 10 19 704 0.3− 0.6+ 2003 10 29 A50 0.4− 0.4−  
 2003 10 19 704 0.1− 1.0+ 2003 10 29 A50 0.5− 0.2−

**2003 SV<sub>270</sub> = 2007 WC<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.69018   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26134671 | $\omega$ | 300.62348 | +0.85299100   | −0.51882368 |
| <i>a</i> | 2.4228397  | $\Omega$ | 90.68507  | +0.49620165   | +0.77237481 |
| <i>e</i> | 0.2001452  | <i>i</i> | 3.25745   | +0.16183414   | +0.36641388 |
| <i>P</i> | 3.77       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 644 | 0.1−  | 0.4+  | 2003 11 20 | 645 | 0.0  | 0.1− | 2007 12 03 | 703 | 1.0+ | 0.3+ |
| 2003 09 19 | 644 | 0.0   | 0.3+  | 2003 11 20 | 645 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.8+ | 0.1− |
| 2003 09 19 | 644 | 0.3+  | 0.6+  | 2007 10 30 | 691 | 0.3+ | 0.2− | 2007 12 03 | 703 | 0.1− | 0.8+ |
| 2003 09 25 | 644 | 0.2−  | 0.1+  | 2007 10 30 | 691 | 0.1+ | 0.1− | 2007 12 03 | 703 | 0.4+ | 0.6− |
| 2003 09 25 | 644 | 0.3−  | 0.2+  | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 12 03 | 703 | 0.3+ | 1.0+ |
| 2003 09 25 | 644 | 0.3−  | 0.0   | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 03 | 703 | 0.4− | 0.3− |
| 2003 09 28 | 333 | 0.3+  | 0.4+  | 2007 11 07 | 691 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.2− | 0.6− |
| 2003 09 28 | 333 | 0.1+  | 0.6+  | 2007 11 07 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.2+ | 0.6+ |
| 2003 09 28 | 699 | 1.2−  | 0.1−  | 2007 11 18 | G96 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 0.6− | 0.8+ |
| 2003 09 28 | 333 | 0.3+  | 0.1+  | 2007 11 18 | G96 | 0.2+ | 0.0  | 2007 12 05 | 704 | 0.7− | 0.1− |
| 2003 09 28 | 699 | 0.3−  | 0.6−  | 2007 11 18 | G96 | 0.1+ | 0.2− | 2007 12 05 | 704 | 0.3− | 0.2+ |
| 2003 09 28 | 699 | 0.5+  | 0.3+  | 2007 11 18 | G96 | 0.2− | 1.1− | 2007 12 05 | 704 | 0.4− | 0.7+ |
| 2003 09 28 | 699 | (1.6− | 0.4−) | 2007 11 19 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.4− | 0.4− |
| 2003 10 02 | 691 | 0.0   | 0.1−  | 2007 11 19 | 691 | 0.3− | 0.2− | 2007 12 15 | G96 | 0.3+ | 0.3− |
| 2003 10 02 | 691 | 0.1−  | 0.1+  | 2007 11 19 | 691 | 0.2− | 0.0  | 2007 12 15 | G96 | 0.0  | 0.3− |
| 2003 10 02 | 691 | 0.2+  | 0.3−  | 2007 12 03 | 703 | 1.3+ | 0.4+ | 2007 12 15 | G96 | 0.1+ | 0.3− |

**2003 SS<sub>272</sub> = 2007 XS<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.13862   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28186308 | $\omega$ | 166.68596 | +0.58683809   | −0.80545704 |
| <i>a</i> | 2.3037955  | $\Omega$ | 247.32036 | +0.73442412   | +0.57255796 |
| <i>e</i> | 0.0896639  | <i>i</i> | 5.15017   | +0.34094320   | +0.15302401 |
| <i>P</i> | 3.50       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 704 | 0.8+  | 0.2+  | 2003 10 14 | 644 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.3+ | 0.1− |
| 2003 09 27 | 704 | (0.7− | 1.7+) | 2005 03 08 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.1− |
| 2003 09 27 | 704 | 0.3+  | 0.7+  | 2005 03 08 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 691 | 0.0  | 0.3+ |
| 2003 09 27 | 704 | (2.0+ | 1.2+) | 2005 03 08 | 691 | 0.3+ | 0.4+ | 2007 12 04 | 691 | 0.4− | 0.0  |
| 2003 09 30 | 704 | 1.1−  | 0.4+  | 2006 05 30 | G96 | 0.3− | 0.2− | 2007 12 04 | 691 | 0.3− | 0.1− |
| 2003 09 30 | 704 | 0.8−  | 0.2+  | 2006 05 30 | G96 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.6− |
| 2003 09 30 | 704 | 0.3+  | 0.5+  | 2006 05 30 | G96 | 0.2− | 0.1− | 2007 12 06 | G96 | 0.1+ | 0.4− |
| 2003 09 30 | 704 | 0.7−  | 0.2+  | 2006 05 30 | G96 | 0.5+ | 0.0  | 2007 12 06 | G96 | 0.5+ | 0.3− |
| 2003 10 14 | 644 | 0.0   | 0.3+  | 2007 11 05 | G96 | 0.6+ | 0.2− | 2007 12 06 | G96 | 0.4+ | 0.3− |
| 2003 10 14 | 644 | 0.1+  | 0.2+  | 2007 11 05 | G96 | 0.4+ | 0.2− |            |     |      |      |

**2003 SW<sub>274</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.89123    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23856544 | $\omega$ | 271.60193 | +0.99915651   | +0.02608292 |
| <i>a</i> | 2.5747260  | $\Omega$ | 86.90426  | −0.01126306   | +0.91681635 |
| <i>e</i> | 0.1644384  | <i>i</i> | 1.82019   | −0.03948931   | +0.39845634 |
| <i>P</i> | 4.13       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 16 | 691 | 0.1− | 0.1− | 2003 10 16 | 691 | 0.2+ | 0.1+ | 2007 10 15 | G96 | 0.1+ | 0.7+ |
| 2003 09 16 | 691 | 0.3+ | 0.0  | 2003 10 16 | 691 | 0.1− | 0.1+ | 2007 11 03 | G96 | 0.1+ | 0.3+ |
| 2003 09 16 | 691 | 0.1+ | 0.1− | 2003 10 16 | 691 | 0.2+ | 0.2+ | 2007 11 03 | G96 | 0.1− | 0.3− |
| 2003 09 28 | 691 | 0.1− | 0.1− | 2007 10 13 | 703 | 0.7− | 1.1+ | 2007 11 03 | G96 | 0.1+ | 0.5− |
| 2003 09 28 | 691 | 0.0  | 0.1− | 2007 10 13 | 703 | 1.1− | 0.2+ | 2007 11 03 | G96 | 0.3+ | 0.3− |
| 2003 09 28 | 691 | 0.0  | 0.1+ | 2007 10 13 | 703 | 0.2+ | 0.2− | 2007 11 17 | G96 | 0.3+ | 0.3− |
| 2003 10 01 | 691 | 0.0  | 0.1− | 2007 10 13 | 703 | 0.4+ | 0.0  | 2007 11 17 | G96 | 0.1+ | 0.6− |

2003 10 01 691 0.3− 0.1+ 2007 10 15 G96 0.6+ 0.6− 2007 11 17 G96 0.0 0.2−  
 2003 10 01 691 0.2− 0.1+ 2007 10 15 G96 0.1− 0.1− 2007 11 17 G96 0.2+ 0.3−

**2003 SM<sub>275</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.82712  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22845370 | $\omega$ | 333.46973 | +0.98328932   | +0.16465881 |
| <i>a</i> | 2.6501508  | $\Omega$ | 17.58009  | −0.08392854   | +0.78851325 |
| <i>e</i> | 0.0850860  | <i>i</i> | 14.89733  | −0.16154910   | +0.59256589 |
| <i>P</i> | 4.31       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1990 09 28 | 675 | 0.4− | 0.4+ | 2003 10 19 | 691 | 0.2− | 0.2− | 2003 10 24 | 704 | 0.2− | 0.4+ |
| 2003 09 29 | 704 | 0.9− | 0.6+ | 2003 10 19 | 704 | 0.0  | 0.0  | 2003 10 24 | 704 | 0.1+ | 0.4+ |
| 2003 09 29 | 704 | 0.5− | 0.2+ | 2003 10 19 | 704 | 0.9+ | 0.5+ | 2003 10 24 | 704 | 0.4+ | 0.1− |
| 2003 09 29 | 704 | 0.1+ | 0.7+ | 2003 10 19 | 691 | 0.1− | 0.4− | 2003 10 24 | 704 | 0.3− | 0.0  |
| 2003 09 29 | 704 | 0.2+ | 0.8+ | 2003 10 19 | 704 | 0.6+ | 0.6+ | 2007 08 13 | E12 | 0.6+ | 0.8− |
| 2003 09 29 | 704 | 0.3− | 0.5+ | 2003 10 19 | 704 | 0.9+ | 0.6+ | 2007 08 13 | E12 | 0.2+ | 0.2+ |
| 2003 10 01 | 691 | 0.2+ | 0.2− | 2003 10 19 | 704 | 0.1− | 1.4+ | 2007 08 13 | E12 | 0.1− | 0.5+ |
| 2003 10 01 | 691 | 0.3+ | 0.2− | 2003 10 21 | 704 | 1.0− | 0.2− | 2007 08 13 | E12 | 0.2− | 0.1− |
| 2003 10 01 | 691 | 0.3+ | 0.2− | 2003 10 21 | 704 | 0.5+ | 0.3− | 2007 10 03 | E12 | 0.4− | 0.2− |
| 2003 10 03 | 608 | 0.3− | 1.5− | 2003 10 21 | 704 | 0.4+ | 0.5− | 2007 10 03 | E12 | 0.0  | 0.6+ |
| 2003 10 03 | 608 | 0.2+ | 1.3− | 2003 10 21 | 704 | 0.1− | 0.4− | 2007 10 03 | E12 | 0.0  | 0.3− |
| 2003 10 03 | 608 | 0.2− | 1.0− | 2003 10 21 | 704 | 0.3− | 0.7− |            |     |      |      |
| 2003 10 19 | 691 | 0.3− | 0.2− | 2003 10 24 | 704 | 0.1− | 0.2+ |            |     |      |      |

**2003 SG<sub>276</sub> = 2003 UC<sub>120</sub> = 2007 VD<sub>190</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.49761  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25481377 | $\omega$ | 79.51336  | +0.65304528   | −0.75715209 |
| <i>a</i> | 2.4640761  | $\Omega$ | 329.69641 | +0.68192580   | +0.59703136 |
| <i>e</i> | 0.1744479  | <i>i</i> | 1.80493   | +0.32940712   | +0.26509295 |
| <i>P</i> | 3.87       | <i>H</i> | 18.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 16 | 645 | 0.1+ | 0.1− | 2003 10 01 | 291 | 0.0  | 0.1− | 2007 11 07 | 300 | 0.1+ | 0.1− |
| 1999 10 16 | 645 | 0.0  | 0.1− | 2003 10 18 | 691 | 0.4+ | 0.0  | 2007 11 07 | 300 | 0.4− | 0.8+ |
| 2003 09 29 | 691 | 0.1+ | 0.0  | 2003 10 18 | 691 | 0.2+ | 0.1+ | 2007 11 07 | 300 | 1.0− | 0.6− |
| 2003 09 29 | 691 | 0.2+ | 0.2− | 2003 10 18 | 691 | 0.2+ | 0.2+ | 2007 11 11 | 300 | 0.6+ | 0.2+ |
| 2003 09 29 | 691 | 0.4− | 0.2− | 2003 11 24 | 691 | 0.1− | 0.2+ | 2007 11 11 | 300 | 0.6+ | 0.3− |
| 2003 10 01 | 291 | 0.1− | 0.0  | 2003 11 24 | 691 | 0.3+ | 0.2− |            |     |      |      |
| 2003 10 01 | 291 | 0.4− | 0.4+ | 2003 11 24 | 691 | 0.6− | 0.1− |            |     |      |      |

**2003 SR<sub>290</sub> = 2007 VA<sub>109</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.75996   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25639800 | $\omega$ | 82.23564  | +0.71435479   | +0.69943981 |
| <i>a</i> | 2.4539156  | $\Omega$ | 233.37904 | −0.65232999   | +0.65423914 |
| <i>e</i> | 0.2132243  | <i>i</i> | 1.56614   | −0.25330380   | +0.28767185 |
| <i>P</i> | 3.84       | <i>H</i> | 18.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 291 | 0.5+ | 0.1+ | 2003 10 23 | 291 | 0.2+ | 0.2− | 2007 11 03 | 691 | 0.2+ | 0.1− |
| 2003 09 28 | 291 | 0.4− | 0.1− | 2003 10 23 | 291 | 0.0  | 0.2− | 2007 11 07 | 691 | 0.1− | 0.1− |
| 2003 09 28 | 291 | 0.3+ | 0.1+ | 2003 11 15 | 291 | 0.0  | 0.3+ | 2007 11 07 | 691 | 0.3− | 0.2− |
| 2003 10 02 | 691 | 0.3− | 0.0  | 2003 11 15 | 291 | 0.2− | 0.1+ | 2007 11 07 | 691 | 0.2+ | 0.2− |
| 2003 10 02 | 691 | 0.0  | 0.0  | 2003 11 15 | 291 | 0.3+ | 0.2− | 2007 11 14 | 691 | 0.4− | 0.2− |
| 2003 10 02 | 691 | 0.3− | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.3− | 2007 11 14 | 691 | 0.4+ | 0.2+ |
| 2003 10 23 | 291 | 0.2− | 0.0  | 2007 11 03 | 691 | 0.1+ | 0.7+ | 2007 11 14 | 691 | 0.0  | 0.3+ |



2007 DEC. 24

M.P.O. 129651

**2003 SF<sub>295</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 63.51173   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25767724 | $\omega$ | 72.16899  | +0.55002912   | +0.83009968 |
| <i>a</i> | 2.4457872  | $\Omega$ | 231.55229 | -0.80370167   | +0.49628774 |
| <i>e</i> | 0.1105322  | <i>i</i> | 6.72146   | -0.22700573   | +0.25423021 |
| <i>P</i> | 3.83       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 28 | 644 | 0.1- | 0.4- | 2003 09 29 | 699 | 0.8+ | 0.5- | 2006 05 07 | G96 | 0.1- | 0.2+ |
| 2003 08 28 | 644 | 0.0  | 0.5- | 2003 09 29 | 699 | 0.3- | 0.6+ | 2007 09 12 | 703 | 0.2- | 0.5+ |
| 2003 08 28 | 644 | 0.0  | 0.1- | 2003 09 29 | 699 | 0.0  | 1.0- | 2007 09 12 | 703 | 0.3- | 0.6- |
| 2003 09 16 | 699 | 0.0  | 0.1- | 2003 09 30 | 704 | 0.2+ | 0.3- | 2007 09 12 | 703 | 0.7+ | 0.2- |
| 2003 09 16 | 699 | 1.3+ | 1.1+ | 2003 09 30 | 704 | 0.3- | 0.7+ | 2007 09 12 | 703 | 0.1+ | 1.1+ |
| 2003 09 16 | 699 | 1.5+ | 0.8- | 2003 09 30 | 704 | 0.3+ | 0.0  | 2007 10 20 | 703 | 1.3+ | 1.7+ |
| 2003 09 16 | 699 | 1.6- | 1.0+ | 2003 10 24 | 645 | 0.2- | 0.5- | 2007 10 20 | 703 | 0.2- | 0.1- |
| 2003 09 22 | 691 | 0.2+ | 0.4- | 2003 10 24 | 645 | 0.2- | 0.5- | 2007 10 20 | 703 | 0.8- | 0.6+ |
| 2003 09 22 | 691 | 0.1+ | 0.3- | 2006 05 07 | G96 | 0.3+ | 0.2+ | 2007 10 20 | 703 | 1.3- | 0.3- |
| 2003 09 22 | 691 | 0.1+ | 0.2- | 2006 05 07 | G96 | 0.1- | 0.8+ |            |     |      |      |
| 2003 09 29 | 699 | 1.3- | 0.6+ | 2006 05 07 | G96 | 0.2+ | 0.3+ |            |     |      |      |

**2003 SK<sub>299</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 324.44574  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22920268 | $\omega$ | 115.43341 | +0.61331964   | -0.77234727 |
| <i>a</i> | 2.6443743  | $\Omega$ | 295.72790 | +0.64262664   | +0.60962647 |
| <i>e</i> | 0.2961627  | <i>i</i> | 10.57207  | +0.45920586   | +0.17842441 |
| <i>P</i> | 4.30       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 30 | 691 | 0.0  | 0.4- | 2003 10 16 | 446 | 0.4+ | 0.3- | 2003 11 21 | 704 | 0.4+ | 0.0  |
| 2000 01 30 | 691 | 0.2- | 0.1- | 2003 10 16 | 446 | 0.7+ | 0.7- | 2003 11 21 | 704 | 0.0  | 0.1- |
| 2000 01 30 | 691 | 0.1- | 0.2- | 2003 10 18 | 644 | 0.3- | 0.1+ | 2003 11 21 | 704 | 0.3- | 0.2+ |
| 2003 09 19 | 644 | 0.2+ | 0.2+ | 2003 10 18 | 644 | 0.5- | 0.4- | 2003 11 21 | 704 | 1.0+ | 0.1- |
| 2003 09 19 | 644 | 0.1+ | 0.2+ | 2003 10 18 | 644 | 0.3- | 0.1- | 2003 12 18 | 704 | 0.0  | 0.1+ |
| 2003 09 19 | 644 | 0.3+ | 0.2+ | 2003 10 19 | 446 | 0.2+ | 1.0- | 2003 12 18 | 704 | 0.1- | 0.4+ |
| 2003 09 19 | 644 | 0.1- | 0.1+ | 2003 10 19 | 446 | 0.6+ | 0.7- | 2003 12 18 | 704 | 0.0  | 0.2- |
| 2003 09 19 | 644 | 0.3+ | 0.0  | 2003 10 19 | 644 | 0.5- | 0.2- | 2003 12 18 | 704 | 0.7- | 0.6+ |
| 2003 09 19 | 644 | 0.4- | 0.1+ | 2003 10 19 | 644 | 0.3- | 0.1+ | 2003 12 18 | 704 | 0.4- | 0.1- |
| 2003 09 29 | 699 | 1.2+ | 0.9- | 2003 10 19 | 644 | 0.3- | 0.3- | 2003 12 28 | 704 | 0.3+ | 0.8+ |
| 2003 09 29 | 699 | 0.1- | 0.4+ | 2003 10 22 | 699 | 0.1- | 0.3- | 2003 12 28 | 704 | 0.1+ | 1.4+ |
| 2003 09 29 | 699 | 0.3- | 0.1+ | 2003 10 22 | 699 | 0.3+ | 0.4- | 2003 12 28 | 704 | 0.6- | 0.5+ |
| 2003 09 29 | 699 | 0.2- | 0.2- | 2003 10 22 | 699 | 0.3- | 0.2- | 2003 12 28 | 704 | 0.4- | 0.8+ |
| 2003 09 30 | 699 | 0.9- | 0.2- | 2003 10 22 | 699 | 0.1+ | 0.1- | 2003 12 30 | 704 | 0.9+ | 1.9+ |
| 2003 09 30 | 699 | 0.1+ | 0.1- | 2003 10 23 | 704 | 0.3- | 0.1- | 2003 12 30 | 704 | 0.2+ | 0.7+ |
| 2003 09 30 | 699 | 0.1+ | 0.1- | 2003 10 23 | 704 | 0.7+ | 0.4+ | 2003 12 30 | 704 | 0.1+ | 0.4+ |
| 2003 09 30 | 699 | 0.1+ | 0.1- | 2003 10 23 | 704 | 0.0  | 0.1+ | 2007 12 05 | G96 | 0.2- | 0.1+ |
| 2003 10 02 | 704 | 0.2- | 0.1- | 2003 10 23 | 704 | 0.2- | 0.3- | 2007 12 05 | G96 | 0.3+ | 0.1- |
| 2003 10 02 | 704 | 0.2+ | 0.5+ | 2003 10 23 | 704 | 0.9- | 0.9- | 2007 12 05 | G96 | 0.1- | 0.0  |
| 2003 10 02 | 704 | 0.4+ | 0.5+ | 2003 11 14 | 644 | 0.0  | 0.1+ | 2007 12 05 | G96 | 0.1- | 0.0  |
| 2003 10 04 | 446 | 0.0  | 0.2- | 2003 11 14 | 644 | 0.1- | 0.1- |            |     |      |      |
| 2003 10 04 | 446 | 0.2- | 0.2+ | 2003 11 14 | 644 | 0.1+ | 0.1+ |            |     |      |      |

**2003 SA<sub>301</sub> = 2007 VQ<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.75479  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22350543 | $\omega$ | 33.56613  | +0.95061002   | +0.30121087 |
| <i>a</i> | 2.6891230  | $\Omega$ | 308.72293 | -0.30169718   | +0.83995916 |
| <i>e</i> | 0.0369828  | <i>i</i> | 5.51035   | -0.07293418   | +0.45137636 |
| <i>P</i> | 4.41       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 04 11 | 691 | 0.1+ | 0.7+ | 2003 09 19 | 691 | 0.2- | 0.5+ | 2007 09 12 | G96 | 0.0  | 0.1- |
| 1997 04 11 | 691 | 0.3+ | 0.4+ | 2003 09 19 | 691 | 0.2- | 0.2+ | 2007 10 12 | G96 | 0.1+ | 0.1- |
| 1997 04 11 | 691 | 0.5+ | 0.4+ | 2003 10 03 | 691 | 0.3+ | 0.1+ | 2007 10 12 | G96 | 0.2- | 0.0  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 644 | 0.1-  | 0.6+  | 2003 10 03 | 691 | 0.1+ | 0.1- | 2007 10 12 | G96 | 0.1+ | 0.0  |
| 2003 09 17 | 644 | 0.6-  | 0.3+  | 2003 10 03 | 691 | 0.2+ | 0.1+ | 2007 10 12 | G96 | 0.1- | 0.2- |
| 2003 09 17 | 644 | 0.1-  | 0.3+  | 2004 12 11 | 691 | 0.2- | 0.0  | 2007 11 03 | G96 | 0.3+ | 0.2- |
| 2003 09 17 | 644 | 0.3-  | 0.4+  | 2004 12 11 | 691 | 0.2- | 0.2+ | 2007 11 03 | G96 | 0.1- | 0.1+ |
| 2003 09 17 | 644 | 0.1+  | 0.7+  | 2004 12 11 | 691 | 0.1- | 0.2- | 2007 11 03 | G96 | 0.1- | 0.1- |
| 2003 09 17 | 644 | 0.4+  | 0.4+  | 2005 01 18 | 691 | 0.1+ | 0.1+ | 2007 11 03 | G96 | 0.1- | 0.4- |
| 2003 09 18 | 599 | (1.7+ | 1.4+) | 2005 01 18 | 691 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.3- | 0.2+ |
| 2003 09 18 | 599 | (0.4- | 1.8+) | 2005 01 18 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.7+ | 0.3+ |
| 2003 09 18 | 599 | 1.0-  | 0.9-  | 2007 09 12 | G96 | 0.0  | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.2+ |
| 2003 09 18 | 599 | 0.1-  | 0.6+  | 2007 09 12 | G96 | 0.5+ | 0.0  | 2007 11 05 | G96 | 0.5- | 0.1- |
| 2003 09 19 | 691 | 0.4-  | 0.3+  | 2007 09 12 | G96 | 0.1- | 0.2+ |            |     |      |      |

**2003 SC<sub>301</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.14382   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28635043 | $\omega$ | 173.34650 | +0.73416016   | -0.67662563 |
| <i>a</i> | 2.2796639  | $\Omega$ | 229.39665 | +0.61947173   | +0.70153667 |
| <i>e</i> | 0.1171881  | <i>i</i> | 4.26396   | +0.27796337   | +0.22366058 |
| <i>P</i> | 3.44       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 644 | 0.0  | 0.1+ | 2003 09 30 | 699 | 0.7- | 1.3- | 2003 11 20 | 645 | 0.1+ | 0.1- |
| 2003 09 17 | 644 | 0.3- | 0.1+ | 2003 09 30 | 699 | 0.0  | 0.5- | 2005 03 08 | 691 | 0.1+ | 0.2+ |
| 2003 09 17 | 644 | 0.1+ | 0.7+ | 2003 10 24 | 691 | 0.3+ | 0.4+ | 2005 03 08 | 691 | 0.1+ | 0.2+ |
| 2003 09 19 | 691 | 0.1- | 0.1+ | 2003 10 24 | 691 | 0.8- | 0.4+ | 2005 03 08 | 691 | 0.1- | 0.2+ |
| 2003 09 19 | 691 | 0.0  | 0.1+ | 2003 10 24 | 691 | 0.3- | 0.6+ | 2007 12 06 | 691 | 0.1- | 0.2+ |
| 2003 09 19 | 691 | 0.3+ | 0.1+ | 2003 11 19 | 645 | 0.0  | 0.1- | 2007 12 06 | 691 | 0.0  | 0.3- |
| 2003 09 30 | 699 | 1.4+ | 0.4- | 2003 11 19 | 645 | 0.0  | 0.1- | 2007 12 06 | 691 | 0.2+ | 0.1+ |
| 2003 09 30 | 699 | 0.3+ | 0.6+ | 2003 11 20 | 645 | 0.0  | 0.0  |            |     |      |      |

**2003 SJ<sub>307</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.80199   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26878989 | $\omega$ | 123.99893 | +0.70821040   | -0.67715604 |
| <i>a</i> | 2.3779028  | $\Omega$ | 279.51929 | +0.56236692   | +0.71212455 |
| <i>e</i> | 0.1968567  | <i>i</i> | 11.68512  | +0.42682723   | +0.18530604 |
| <i>P</i> | 3.67       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 14 | 644 | 0.1+  | 0.0   | 2003 11 20 | 704 | 0.2-  | 0.9+  | 2007 11 11 | G96 | 0.2+  | 0.3-  |
| 2003 09 14 | 644 | 0.0   | 0.0   | 2003 11 20 | 704 | 0.0   | 0.6+  | 2007 11 11 | G96 | 0.1+  | 0.2-  |
| 2003 09 14 | 644 | 0.2+  | 0.1-  | 2003 11 20 | 704 | 0.2-  | 0.5+  | 2007 11 11 | G96 | 0.4+  | 0.2-  |
| 2003 09 26 | 704 | 0.2-  | 0.2-  | 2003 11 20 | 704 | 0.2-  | 0.3+  | 2007 11 11 | G96 | 0.1+  | 0.2-  |
| 2003 09 26 | 704 | 0.5+  | 0.2-  | 2003 11 20 | 704 | 0.2-  | 0.3-  | 2007 11 18 | 704 | 0.4+  | 0.7+  |
| 2003 09 26 | 704 | 0.7+  | 0.9+  | 2003 11 21 | 644 | 0.5-  | 0.4-  | 2007 11 18 | 704 | 0.0   | 0.7+  |
| 2003 09 26 | 704 | 0.4-  | 0.3+  | 2003 11 21 | 644 | 0.4-  | 0.2-  | 2007 11 18 | 704 | 1.0+  | 0.8+  |
| 2003 09 26 | 704 | 0.4-  | 0.2+  | 2003 11 21 | 644 | 0.3-  | 0.3-  | 2007 11 18 | 704 | (0.6+ | 1.6+) |
| 2003 09 30 | 699 | 0.4+  | 0.1-  | 2003 11 23 | 704 | 0.4-  | 0.5+  | 2007 12 04 | G96 | 0.1+  | 0.4-  |
| 2003 09 30 | 699 | 0.1+  | 0.1-  | 2003 11 23 | 704 | 0.3+  | 0.3-  | 2007 12 04 | G96 | 0.1-  | 0.2-  |
| 2003 09 30 | 699 | 0.1+  | 0.4-  | 2003 11 23 | 704 | 0.2+  | 0.5-  | 2007 12 04 | G96 | 0.5+  | 0.1-  |
| 2003 09 30 | 699 | 0.3+  | 0.5-  | 2003 12 15 | 703 | 0.2+  | 0.3+  | 2007 12 04 | 691 | 0.3-  | 0.5+  |
| 2003 10 02 | 704 | 0.2-  | 0.0   | 2003 12 15 | 703 | 0.2+  | 0.8-  | 2007 12 04 | 691 | 0.0   | 0.1-  |
| 2003 10 02 | 704 | 0.4-  | 0.2+  | 2003 12 15 | 703 | 0.7-  | 1.2-  | 2007 12 04 | 691 | 0.7-  | 0.5-  |
| 2003 10 02 | 704 | 0.7-  | 0.3+  | 2003 12 15 | 703 | 0.5+  | 0.2-  | 2007 12 10 | 704 | 0.1+  | 1.2+  |
| 2003 10 18 | 644 | 0.2+  | 0.2+  | 2003 12 19 | 704 | 0.4-  | 0.0   | 2007 12 10 | 704 | 0.5+  | 1.0+  |
| 2003 10 18 | 644 | 0.4+  | 0.1+  | 2003 12 19 | 704 | 0.3+  | 0.3-  | 2007 12 10 | 704 | 0.1+  | 1.0+  |
| 2003 10 18 | 644 | 0.5+  | 0.2+  | 2003 12 19 | 704 | 0.4+  | 0.1-  | 2007 12 10 | 704 | 0.3+  | 0.7+  |
| 2003 10 19 | 644 | 0.4+  | 0.1+  | 2003 12 19 | 704 | 0.4+  | 0.0   | 2007 12 10 | 704 | 0.1+  | 0.3+  |
| 2003 10 19 | 644 | 0.3+  | 0.1-  | 2003 12 19 | 704 | 0.4+  | 0.5-  | 2007 12 14 | 704 | 1.3+  | 1.0-  |
| 2003 10 19 | 644 | 0.1+  | 0.3-  | 2003 12 27 | 704 | 0.5-  | 0.5-  | 2007 12 14 | 704 | 0.0   | 0.2+  |
| 2003 11 03 | 704 | 0.0   | 0.0   | 2003 12 27 | 704 | (1.0+ | 2.0-) | 2007 12 14 | 704 | 0.8+  | 0.5-  |
| 2003 11 03 | 704 | (1.6+ | 0.6-) | 2003 12 27 | 704 | (1.8+ | 0.7+) | 2007 12 14 | 704 | 0.8-  | 0.3-  |
| 2003 11 03 | 704 | 0.0   | 0.8-  | 2003 12 27 | 704 | 0.2-  | 0.7-  | 2007 12 14 | D29 | 0.5-  | 0.3-  |
| 2003 11 03 | 704 | 0.2-  | 0.0   | 2003 12 29 | 704 | 0.5-  | 0.1+  | 2007 12 14 | D29 | 0.1-  | 0.5-  |
| 2003 11 03 | 704 | 0.3+  | 0.4-  | 2003 12 29 | 704 | 0.2+  | 0.4+  | 2007 12 14 | D29 | 0.1+  | 0.6-  |
| 2003 11 14 | 644 | 0.4-  | 0.1+  | 2003 12 29 | 704 | 0.1-  | 0.7+  | 2007 12 14 | D29 | 0.2-  | 0.8-  |

## M.P.O. 129652

2003 11 14 644 0.4− 0.2+ 2003 12 29 704 0.4+ 0.6+  
 2003 11 14 644 0.3− 0.2+ 2003 12 29 704 0.6+ 0.9+

**2003 SG<sub>309</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 323.85008  |          |           |             |             |          |   |
| <i>n</i> | 0.22428004 | <i>ω</i> | 39.84418  | +0.96403348 | −0.26276357 |          |   |
| <i>a</i> | 2.6829277  | <i>Ω</i> | 335.30274 | +0.21292999 | +0.85348772 |          |   |
| <i>e</i> | 0.0580857  | <i>i</i> | 5.48455   | +0.15906061 | +0.45001557 |          |   |
| <i>P</i> | 4.39       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.1+  | 0.2−  | 2003 10 01 | 699 | 0.8− | 0.6+ | 2007 09 10 | G96 | 0.1+ | 0.2+ |
| 2003 09 18 | 691 | 0.0   | 0.1+  | 2003 10 16 | 291 | 0.1+ | 0.2+ | 2007 10 09 | G96 | 0.4− | 0.3− |
| 2003 09 18 | 691 | 0.0   | 0.0   | 2003 10 16 | 291 | 0.1+ | 0.0  | 2007 10 09 | G96 | 0.4+ | 0.3+ |
| 2003 09 27 | 704 | 0.8−  | 0.0   | 2003 10 16 | 291 | 0.2+ | 0.2+ | 2007 10 09 | G96 | 0.2+ | 0.5− |
| 2003 09 27 | 704 | 0.7−  | 0.4−  | 2003 10 29 | 691 | 0.0  | 0.1− | 2007 10 09 | G96 | 0.1− | 0.1− |
| 2003 09 27 | 704 | 0.0   | 0.8−  | 2003 10 29 | 691 | 0.0  | 0.0  | 2007 10 31 | G96 | 0.1+ | 0.1− |
| 2003 09 27 | 704 | 0.2−  | 0.6−  | 2003 10 29 | 691 | 0.1+ | 0.0  | 2007 10 31 | G96 | 0.3− | 0.2− |
| 2003 10 01 | 699 | 0.0   | 0.6−  | 2007 09 10 | G96 | 0.0  | 0.1+ | 2007 10 31 | G96 | 0.1+ | 0.1+ |
| 2003 10 01 | 699 | (0.8− | 2.0−) | 2007 09 10 | G96 | 0.3− | 0.4+ | 2007 10 31 | G96 | 0.4+ | 0.3− |
| 2003 10 01 | 699 | 0.1−  | 1.0+  | 2007 09 10 | G96 | 0.1− | 0.0  |            |     |      |      |

**2003 SW<sub>322</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 163.89988  |          |           |             |             |          |   |
| <i>n</i> | 0.24375682 | <i>ω</i> | 209.67373 | −0.98025425 | +0.18520817 |          |   |
| <i>a</i> | 2.5380384  | <i>Ω</i> | 340.62915 | −0.11351016 | −0.81391248 |          |   |
| <i>e</i> | 0.1018392  | <i>i</i> | 12.05623  | −0.16191682 | −0.55067631 |          |   |
| <i>P</i> | 4.04       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 16 | 691 | 0.0  | 0.1+ | 2003 10 22 | 645 | 0.1+ | 0.1+ | 2007 08 24 | 691 | 0.1+ | 0.0  |
| 2003 09 16 | 691 | 0.2+ | 0.3− | 2003 10 22 | 645 | 0.0  | 0.1+ | 2007 09 10 | 691 | 0.0  | 0.1− |
| 2003 09 16 | 691 | 0.1+ | 0.0  | 2003 10 24 | 645 | 0.0  | 0.1+ | 2007 09 10 | 691 | 0.5− | 0.2− |
| 2003 09 28 | 645 | 0.1− | 0.2− | 2003 10 24 | 645 | 0.5− | 0.5+ | 2007 09 10 | 691 | 0.1+ | 0.2+ |
| 2003 09 28 | 645 | 0.1− | 0.1− | 2007 08 10 | 291 | 0.3+ | 0.2− | 2007 10 08 | G96 | 0.2+ | 0.0  |
| 2003 09 29 | 645 | 0.0  | 0.1− | 2007 08 10 | 291 | 0.1+ | 0.3− | 2007 10 08 | G96 | 0.4+ | 0.4− |
| 2003 09 29 | 645 | 0.1+ | 0.2− | 2007 08 10 | 291 | 0.0  | 0.2− | 2007 10 08 | G96 | 0.0  | 0.1+ |
| 2003 10 17 | 645 | 0.0  | 0.0  | 2007 08 24 | 691 | 0.5− | 1.1+ | 2007 10 08 | G96 | 0.3+ | 0.3− |
| 2003 10 17 | 645 | 0.1+ | 0.0  | 2007 08 24 | 691 | 0.4− | 0.2+ |            |     |      |      |

**2003 SQ<sub>325</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 351.02993  |          |           |             |             |          |   |
| <i>n</i> | 0.23803787 | <i>ω</i> | 209.03239 | +0.94781841 | −0.31809950 |          |   |
| <i>a</i> | 2.5785290  | <i>Ω</i> | 169.45007 | +0.31032703 | +0.90524086 |          |   |
| <i>e</i> | 0.2964707  | <i>i</i> | 6.67520   | +0.07305740 | +0.28169431 |          |   |
| <i>P</i> | 4.14       | <i>H</i> | 18.2      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 644 | 0.2− | 0.2+ | 2003 10 16 | 644 | 0.0  | 0.3+ | 2007 09 03 | 703 | 1.7+ | 0.5+ |
| 2003 09 17 | 644 | 0.1+ | 0.2− | 2003 10 16 | 644 | 0.1− | 0.3+ | 2007 09 03 | 703 | 0.3− | 0.0  |
| 2003 09 17 | 644 | 0.0  | 0.1+ | 2003 10 22 | 645 | 0.1+ | 0.2− | 2007 09 03 | 703 | 1.2− | 0.6+ |
| 2003 09 28 | 704 | 0.4− | 0.4+ | 2003 10 22 | 645 | 0.0  | 0.2− | 2007 09 03 | 703 | 0.0  | 0.9+ |
| 2003 09 28 | 704 | 0.2+ | 0.2+ | 2003 10 23 | 645 | 0.0  | 0.1− | 2007 09 12 | G96 | 0.1+ | 0.2− |
| 2003 09 28 | 704 | 0.1+ | 0.6− | 2003 10 23 | 645 | 0.0  | 0.1− | 2007 09 12 | G96 | 0.3+ | 0.8− |
| 2003 09 28 | 704 | 0.3+ | 0.2− | 2003 10 24 | 645 | 0.0  | 0.2− | 2007 09 12 | G96 | 0.4− | 0.3− |
| 2003 10 16 | 644 | 0.1− | 0.7+ | 2003 10 24 | 645 | 0.0  | 0.1− | 2007 09 12 | G96 | 0.2− | 0.8− |

## 2007 DEC. 24

**2003 SD<sub>326</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 355.74070  |          |           |             |             |          |   |
| <i>n</i> | 0.26610371 | <i>ω</i> | 62.49825  | +0.51315065 | −0.85829014 |          |   |
| <i>a</i> | 2.3938785  | <i>Ω</i> | 356.62057 | +0.76297347 | +0.45818254 |          |   |
| <i>e</i> | 0.1885119  | <i>i</i> | 3.69693   | +0.39312580 | +0.23109910 |          |   |
| <i>P</i> | 3.70       | <i>H</i> | 18.4      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.1+ | 0.3+ | 2003 11 20 | 645 | 0.0   | 0.0   | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2003 09 18 | 691 | 0.3+ | 0.4+ | 2003 11 20 | 645 | 0.1+  | 0.1−  | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2003 09 18 | 691 | 0.1− | 0.2+ | 2007 10 24 | G96 | 0.4+  | 0.0   | 2007 12 13 | 704 | 0.1+ | 0.3− |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 10 24 | G96 | 0.6+  | 0.2−  | 2007 12 13 | 704 | 0.8+ | 0.3− |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 10 24 | G96 | 0.4+  | 0.3+  | 2007 12 13 | 704 | 0.1− | 0.1− |
| 2003 09 29 | 645 | 0.0  | 0.1− | 2007 10 24 | G96 | 1.1+  | 0.0   | 2007 12 13 | 704 | 1.0+ | 0.1− |
| 2003 09 29 | 645 | 0.0  | 0.1− | 2007 11 19 | 691 | 0.6−  | 0.1+  | 2007 12 15 | 704 | 0.1+ | 0.8− |
| 2003 10 18 | 645 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.8−  | 0.2+  | 2007 12 15 | 704 | 0.1+ | 0.3− |
| 2003 10 18 | 645 | 0.1− | 0.1+ | 2007 11 19 | 691 | 0.4−  | 0.0   | 2007 12 15 | 704 | 1.3+ | 0.8+ |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2007 11 20 | 704 | (0.6+ | 2.0+) | 2007 12 15 | 704 | 0.5+ | 0.2− |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2007 11 20 | 704 | 1.3+  | 0.8+  | 2007 12 15 | 704 | 0.2+ | 0.1+ |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.7+  | 1.2+  |            |     |      |      |
| 2003 10 23 | 645 | 0.0  | 0.1− | 2007 11 20 | 691 | 0.1+  | 0.0   |            |     |      |      |

**2003 SY<sub>326</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 37.93097   |          |           |             |             |          |   |
| <i>n</i> | 0.24444338 | <i>ω</i> | 305.69440 | +0.71853535 | +0.69520733 |          |   |
| <i>a</i> | 2.5332839  | <i>Ω</i> | 10.31314  | −0.59692772 | +0.63109682 |          |   |
| <i>e</i> | 0.1903698  | <i>i</i> | 6.36346   | −0.35690931 | +0.34409821 |          |   |
| <i>P</i> | 4.03       | <i>H</i> | 18.1      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.1− | 0.1+ | 2003 10 22 | 645 | 0.0  | 0.0  | 2007 10 04 | G96 | 0.5+ | 0.1− |
| 2003 09 18 | 691 | 0.2+ | 0.1+ | 2003 10 22 | 645 | 0.0  | 0.1− | 2007 10 04 | G96 | 0.1− | 0.0  |
| 2003 09 18 | 691 | 0.0  | 0.1− | 2003 10 24 | 645 | 0.0  | 0.1+ | 2007 10 04 | G96 | 0.0  | 0.1+ |
| 2003 09 28 | 291 | 0.1+ | 0.3+ | 2003 10 24 | 645 | 0.0  | 0.1+ | 2007 10 12 | G96 | 0.2+ | 0.1− |
| 2003 09 28 | 291 | 0.1− | 0.5+ | 2007 09 13 | G96 | 0.3− | 0.1− | 2007 10 12 | G96 | 0.3+ | 0.1+ |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 09 13 | G96 | 0.2+ | 0.1− | 2007 10 12 | G96 | 0.1− | 0.2+ |
| 2003 09 28 | 645 | 0.1− | 0.0  | 2007 09 13 | G96 | 0.2− | 0.1− | 2007 10 12 | G96 | 0.1− | 0.1+ |
| 2003 09 28 | 291 | 0.0  | 0.4+ | 2007 09 13 | G96 | 0.3− | 0.6+ | 2007 10 31 | G96 | 0.5− | 0.0  |
| 2003 09 29 | 645 | 0.0  | 0.2− | 2007 09 13 | G96 | 0.1− | 0.1− | 2007 10 31 | G96 | 0.0  | 0.2− |
| 2003 09 29 | 645 | 0.0  | 0.0  | 2007 09 13 | G96 | 0.2− | 0.1− | 2007 10 31 | G96 | 0.4− | 0.5+ |
| 2003 10 18 | 645 | 0.0  | 0.1− | 2007 09 13 | G96 | 0.3+ | 0.2− | 2007 10 31 | G96 | 0.5+ | 0.2+ |
| 2003 10 18 | 645 | 0.0  | 0.0  | 2007 10 04 | G96 | 0.0  | 0.1− |            |     |      |      |

**2003 SM<sub>330</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 133.10203  |          |           |             |             |          |   |
| <i>n</i> | 0.23634976 | <i>ω</i> | 203.73991 | −0.74495449 | +0.66205489 |          |   |
| <i>a</i> | 2.5907923  | <i>Ω</i> | 18.47683  | −0.56311574 | −0.55813445 |          |   |
| <i>e</i> | 0.0498522  | <i>i</i> | 14.99772  | −0.35769187 | −0.50016923 |          |   |
| <i>P</i> | 4.17       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 26 | 645 | 0.0  | 0.1− | 2003 10 19 | 645 | 0.0  | 0.0  | 2007 09 14 | 703 | 1.1+ | 0.9+ |
| 2003 09 26 | 645 | 0.1+ | 0.1− | 2003 10 19 | 645 | 0.1− | 0.0  | 2007 09 14 | 703 | 1.1− | 1.0− |
| 2003 09 29 | 645 | 0.1− | 0.0  | 2003 10 22 | 645 | 0.0  | 0.0  | 2007 09 14 | 703 | 0.2+ | 0.7+ |
| 2003 09 29 | 645 | 0.0  | 0.0  | 2003 10 22 | 645 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.2− |
| 2003 09 30 | 691 | 0.1− | 0.0  | 2003 11 20 | 645 | 0.3+ | 0.1+ | 2007 10 16 | G96 | 0.4− | 0.1− |
| 2003 09 30 | 691 | 0.2− | 0.1+ | 2003 11 20 | 645 | 0.2+ | 0.1+ | 2007 10 16 | G96 | 0.3− | 0.0  |
| 2003 09 30 | 691 | 0.2− | 0.1+ | 2007 09 14 | 703 | 0.2+ | 0.3− | 2007 10 16 | G96 | 0.2+ | 0.2− |

2007 DEC. 24

M.P.O. 129653

**2003 SH<sub>341</sub> = 2007 VH<sub>290</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 54.95893   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.27124621 | $\omega$ 111.16244 | +0.94720964   | +0.32004413 |          |  |
| <i>a</i> | 2.3635254  | $\Omega$ 230.17717 | -0.30262188   | +0.87276119 |          |  |
| <i>e</i> | 0.2207809  | <i>i</i> 1.42668   | -0.10589570   | +0.36859146 |          |  |
| <i>P</i> | 3.63       | <i>H</i> 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 16 | 691 | 0.1+ | 0.3+ | 2003 09 28 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.1- | 0.1+ |
| 2003 09 16 | 691 | 0.1- | 0.3+ | 2003 10 17 | 691 | 0.2+ | 0.4- | 2007 12 05 | 704 | 0.4+ | 1.1+ |
| 2003 09 16 | 691 | 0.0  | 0.4+ | 2003 10 17 | 691 | 0.0  | 0.2- | 2007 12 05 | 704 | 1.2+ | 0.0  |
| 2003 09 22 | 699 | 0.1- | 0.3+ | 2003 10 17 | 691 | 0.2+ | 0.1- | 2007 12 05 | 704 | 1.3+ | 0.8+ |
| 2003 09 22 | 699 | 0.3+ | 0.4- | 2007 11 14 | 691 | 0.1- | 0.2+ | 2007 12 15 | G96 | 0.1- | 0.0  |
| 2003 09 22 | 699 | 0.2- | 0.7- | 2007 11 14 | 691 | 0.2- | 0.2- | 2007 12 15 | G96 | 0.5- | 0.1- |
| 2003 09 22 | 699 | 0.1- | 0.6+ | 2007 11 14 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.4- | 0.0  |
| 2003 09 28 | 691 | 0.2- | 0.1- | 2007 11 19 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.1- | 0.4- |
| 2003 09 28 | 691 | 0.1- | 0.2- | 2007 11 19 | 691 | 0.1- | 0.0  |            |     |      |      |

**2003 SX<sub>349</sub> = 2002 JH<sub>132</sub> = 2007 WQ<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 200.28423  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.27512203 | $\omega$ 195.48160 | -0.87492195   | +0.48331067 |          |  |
| <i>a</i> | 2.3412752  | $\Omega$ 13.54506  | -0.42939864   | -0.74527369 |          |  |
| <i>e</i> | 0.0891587  | <i>i</i> 7.45070   | -0.22389370   | -0.45932333 |          |  |
| <i>P</i> | 3.58       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 10 10 | 691 | 0.1- | 0.1- | 2003 09 18 | 691 | 0.1+ | 0.2+ | 2005 01 06 | 703 | 0.2-  | 0.4+  |
| 1996 10 10 | 691 | 0.1- | 0.2- | 2003 09 28 | 645 | 0.0  | 0.0  | 2005 02 04 | 699 | 1.3-  | 0.0   |
| 1996 10 10 | 691 | 0.2- | 0.3- | 2003 09 28 | 645 | 0.0  | 0.0  | 2005 02 04 | 699 | 0.5+  | 0.7-  |
| 2002 05 09 | 704 | 1.2- | 0.6+ | 2003 09 29 | 704 | 0.4+ | 1.0- | 2005 02 04 | 699 | 1.6+  | 0.3-  |
| 2002 05 09 | 704 | 0.4- | 1.0+ | 2003 09 29 | 704 | 0.4+ | 0.0  | 2005 02 04 | 699 | (3.0+ | 0.5-) |
| 2002 05 09 | 704 | 0.9+ | 1.2- | 2003 09 29 | 704 | 0.7- | 0.4- | 2007 11 17 | 691 | 0.3-  | 0.1-  |
| 2002 05 09 | 704 | 0.3+ | 0.3+ | 2003 09 29 | 704 | 0.3- | 0.0  | 2007 11 17 | 691 | 0.4-  | 0.0   |
| 2002 05 10 | 644 | 0.0  | 0.7+ | 2003 09 29 | 645 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.1-  | 0.2+  |
| 2002 05 10 | 644 | 0.4- | 0.2+ | 2003 09 29 | 645 | 0.1+ | 0.0  | 2007 11 20 | 691 | 0.4-  | 0.1+  |
| 2002 05 10 | 644 | 0.1- | 0.7+ | 2005 01 06 | 703 | 0.2- | 0.5- | 2007 11 20 | 691 | 0.2-  | 0.1-  |
| 2003 09 18 | 691 | 0.0  | 0.3+ | 2005 01 06 | 703 | 0.0  | 1.1+ | 2007 11 20 | 691 | 0.2-  | 0.3-  |
| 2003 09 18 | 691 | 0.0  | 0.3+ | 2005 01 06 | 703 | 0.4+ | 0.7- |            |     |       |       |

**2003 SL<sub>351</sub> = 2007 WJ<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 66.80232   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.26993253 | $\omega$ 248.06508 | +0.91347794   | +0.40005117 |          |  |
| <i>a</i> | 2.3711875  | $\Omega$ 88.28898  | -0.34049749   | +0.85152178 |          |  |
| <i>e</i> | 0.1071818  | <i>i</i> 4.26160   | -0.22275439   | +0.33892434 |          |  |
| <i>P</i> | 3.65       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 06 18 | 691 | 0.3- | 0.8+ | 2003 09 28 | 704 | 0.5- | 0.2+ | 2007 11 20 | G96 | 0.1- | 0.0  |
| 1999 06 18 | 691 | 0.2+ | 0.6- | 2003 10 19 | 644 | 0.1+ | 0.6+ | 2007 11 20 | G96 | 0.3- | 0.0  |
| 1999 06 18 | 691 | 0.2- | 0.6+ | 2003 10 19 | 644 | 0.5+ | 0.4+ | 2007 11 20 | G96 | 0.2+ | 0.2- |
| 2003 09 19 | 644 | 0.1- | 0.4- | 2003 10 19 | 644 | 0.1+ | 0.3+ | 2007 11 20 | G96 | 0.2+ | 0.4- |
| 2003 09 19 | 644 | 0.3+ | 0.1+ | 2005 02 02 | 691 | 0.6+ | 0.6+ | 2007 11 20 | G96 | 0.1- | 0.2- |
| 2003 09 19 | 644 | 0.4+ | 0.1+ | 2005 02 02 | 691 | 0.2+ | 0.8+ | 2007 11 21 | G96 | 0.0  | 0.1- |
| 2003 09 28 | 704 | 0.9- | 0.1+ | 2005 02 02 | 691 | 0.1- | 0.9+ | 2007 11 21 | G96 | 0.2- | 0.1- |
| 2003 09 28 | 704 | 0.3+ | 0.8+ | 2007 11 20 | G96 | 0.3+ | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.1- |
| 2003 09 28 | 704 | 0.8- | 0.4- | 2007 11 20 | G96 | 0.1+ | 0.2- | 2007 11 21 | G96 | 0.1- | 0.1- |

**2003 SH<sub>352</sub> = 2006 HM<sub>97</sub> = 2007 VS<sub>218</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 88.20881   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.27061036 | $\omega$ 279.84565 | +0.63470086   | +0.77237875 |          |  |
| <i>a</i> | 2.3672262  | $\Omega$ 29.59553  | -0.68839766   | +0.57936563 |          |  |
| <i>e</i> | 0.2300963  | <i>i</i> 2.80924   | -0.35108900   | +0.26032007 |          |  |
| <i>P</i> | 3.64       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 1  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 09 28 | 691 | 0.1- | 0.0  | 2006 04 30 | 691 | 0.1+ | 0.1+ | 2006 06 02 | 691 | 0.5+ | 0.0  |
| 1992 09 28 | 691 | 0.7+ | 0.0  | 2006 04 30 | 691 | 0.1- | 0.0  | 2006 06 02 | 691 | 0.3+ | 0.5+ |
| 1992 09 28 | 691 | 0.1- | 0.3- | 2006 04 30 | 691 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1- | 0.1- |
| 2003 09 19 | 691 | 0.4- | 0.2+ | 2006 05 04 | 691 | 0.2+ | 0.2+ | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2003 09 19 | 691 | 0.3- | 0.1+ | 2006 05 04 | 691 | 0.4+ | 0.1+ | 2007 11 09 | 691 | 0.3+ | 0.2+ |
| 2003 09 19 | 691 | 0.0  | 0.1+ | 2006 05 04 | 691 | 0.2+ | 0.1- | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2003 09 28 | 691 | 0.0  | 0.3+ | 2006 05 20 | 691 | 0.4- | 0.4+ | 2007 11 13 | 691 | 0.1+ | 0.6+ |
| 2003 09 28 | 691 | 0.0  | 0.2+ | 2006 05 20 | 691 | 0.0  | 0.1- | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2003 09 28 | 691 | 0.3+ | 0.2+ | 2006 05 20 | 691 | 0.1- | 0.4+ | 2007 11 13 | 691 | 0.1- | 0.2+ |
| 2006 04 24 | G96 | 0.3+ | 0.2- | 2006 05 20 | 691 | 0.1- | 0.4+ | 2007 11 13 | 691 | 0.2- | 0.4+ |
| 2006 04 24 | G96 | 0.3- | 0.2- | 2006 05 20 | 691 | 0.3- | 0.2+ | 2007 11 13 | 691 | 0.3- | 0.2+ |
| 2006 04 24 | G96 | 0.1+ | 0.3- | 2006 05 20 | 691 | 0.3+ | 0.5+ |            |     |      |      |
| 2006 04 24 | G96 | 0.1- | 0.4- | 2006 06 02 | 691 | 0.1+ | 0.4+ |            |     |      |      |

**2003 SG<sub>363</sub> = 2007 UD<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 320.83000  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.24510707 | $\omega$ 237.58401 | +0.18289273   | -0.97685170 |          |  |
| <i>a</i> | 2.5287088  | $\Omega$ 202.67908 | +0.97066783   | +0.19733487 |          |  |
| <i>e</i> | 0.1628919  | <i>i</i> 16.72446  | +0.15605839   | -0.08258155 |          |  |
| <i>P</i> | 4.02       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 26 | 691 | 0.0  | 0.3+ | 2003 09 27 | 691 | 0.0  | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.1- |
| 1995 10 26 | 691 | 0.1- | 0.0  | 2003 09 27 | 691 | 0.6+ | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.1- |
| 1995 10 26 | 691 | 0.3- | 0.1+ | 2003 10 16 | 691 | 0.2+ | 0.1- | 2007 10 18 | G96 | 0.0  | 0.2- |
| 2003 09 22 | 291 | 0.0  | 0.6- | 2003 10 16 | 691 | 1.1+ | 0.0  | 2007 10 18 | G96 | 0.1- | 0.2- |
| 2003 09 22 | 291 | 0.0  | 0.4- | 2003 10 16 | 691 | 0.4+ | 0.1+ | 2007 10 30 | 691 | 0.4- | 0.1+ |
| 2003 09 22 | 691 | 0.3+ | 0.1+ | 2003 11 28 | 645 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.4- | 0.1+ |
| 2003 09 22 | 691 | 0.3+ | 0.2+ | 2003 11 28 | 645 | 0.1- | 0.0  | 2007 10 30 | 691 | 0.0  | 0.1+ |
| 2003 09 22 | 291 | 1.5- | 0.3- | 2007 10 04 | 691 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.4- | 0.2+ |
| 2003 09 22 | 691 | 0.1- | 0.1+ | 2007 10 04 | 691 | 0.0  | 0.4+ | 2007 11 03 | 691 | 0.8+ | 1.1- |
| 2003 09 27 | 691 | 0.4+ | 0.0  | 2007 10 04 | 691 | 0.0  | 0.3+ | 2007 11 03 | 691 | 0.6- | 0.4+ |

**2003 ST<sub>364</sub> = 2007 WU<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 335.57420  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.27215957 | $\omega$ 226.88434 | +0.02637942   | -0.99823249 |          |  |
| <i>a</i> | 2.3582345  | $\Omega$ 221.69339 | +0.93884200   | +0.04303642 |          |  |
| <i>e</i> | 0.2026970  | <i>i</i> 4.59226   | +0.34333632   | -0.04098491 |          |  |
| <i>P</i> | 3.62       | <i>H</i> 18.0      | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 18 | 608 | 0.0  | 0.1- | 2007 10 09 | G96 | 0.6- | 0.1- | 2007 11 21 | G96 | 0.1- | 0.1- |
| 2001 01 18 | 608 | 0.0  | 0.6+ | 2007 10 09 | G96 | 0.4- | 0.2- | 2007 11 21 | G96 | 0.4+ | 0.0  |
| 2001 01 18 | 608 | 0.3+ | 0.7+ | 2007 11 08 | 691 | 0.2- | 0.2+ | 2007 11 21 | G96 | 0.6+ | 0.1- |
| 2003 09 26 | 645 | 0.0  | 0.1+ | 2007 11 08 | 691 | 0.1- | 0.1+ | 2007 11 21 | G96 | 0.2+ | 0.1- |
| 2003 09 26 | 645 | 0.0  | 0.0  | 2007 11 08 | 691 | 0.2- | 0.1+ | 2007 11 21 | G96 | 0.3+ | 0.0  |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 11 20 | G96 | 0.2+ | 0.2- | 2007 12 04 | 704 | 0.2- | 0.2- |
| 2003 09 28 | 645 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.2- | 2007 12 04 | 704 | 0.6- | 0.3- |
| 2003 09 29 | 645 | 0.0  | 0.1- | 2007 11 20 | G96 | 0.2+ | 0.1- | 2007 12 04 | 704 | 0.5+ | 0.4+ |
| 2003 09 29 | 645 | 0.0  | 0.1- | 2007 11 20 | G96 | 0.3+ | 0.2- | 2007 12 04 | 704 | 0.7+ | 0.3- |
| 2007 10 09 | G96 | 0.5- | 0.2- | 2007 11 21 | G96 | 0.4+ | 0.2+ | 2007 12 04 | 704 | 0.1- | 0.7- |
| 2007 10 09 | G96 | 0.3- | 0.2- | 2007 11 21 | G96 | 0.1+ | 0.1- |            |     |      |      |

**2003 SF<sub>369</sub> = 2007 UX<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |          |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> | 103.43827  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
| <i>n</i> | 0.27412931 | $\omega$ | 83.25215  |          | +0.34605501 |          | +0.93774676 |
| <i>a</i> | 2.3469242  | $\Omega$ | 207.05260 |          | −0.88446841 |          | +0.31553910 |
| <i>e</i> | 0.1356167  | <i>i</i> | 3.73325   |          | −0.31298812 |          | +0.14514163 |
| <i>P</i> | 3.60       | <i>H</i> | 17.7      | <i>G</i> | 0.15        | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 29 | 691 | 0.1- | 0.5- | 2006 05 21 | 691 | 0.1+ | 0.6+ | 2007 10 12 | 691 | 0.0  | 0.2- |
| 2000 11 29 | 691 | 0.2+ | 0.1- | 2006 05 21 | 691 | 0.1- | 0.4+ | 2007 10 12 | 691 | 0.2- | 0.8+ |
| 2000 11 29 | 691 | 0.0  | 0.4- | 2006 05 21 | 691 | 0.0  | 0.5+ | 2007 10 12 | 691 | 0.2- | 0.8+ |
| 2003 09 26 | 645 | 0.0  | 0.1- | 2006 05 29 | 691 | 0.1- | 0.1+ | 2007 10 12 | 691 | 0.1+ | 0.1+ |
| 2003 09 26 | 645 | 0.1+ | 0.1- | 2006 05 29 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 691 | 0.1+ | 0.1+ |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2006 05 29 | 691 | 0.3+ | 0.0  | 2007 10 30 | 691 | 0.3- | 0.2- |
| 2003 09 28 | 645 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.2+ | 0.3- | 2007 10 30 | 691 | 0.0  | 0.2+ |
| 2003 09 29 | 645 | 0.1+ | 0.0  | 2007 09 10 | G96 | 0.4+ | 0.1+ | 2007 10 30 | 691 | 0.1+ | 0.2+ |
| 2003 09 29 | 645 | 0.0  | 0.0  | 2007 09 10 | G96 | 0.1+ | 0.2- | 2007 11 03 | 691 | 0.1- | 0.3+ |
| 2003 10 17 | 691 | 0.0  | 0.0  | 2007 09 10 | G96 | 1.7- | 2.5- | 2007 11 03 | 691 | 0.4+ | 0.4+ |
| 2003 10 17 | 691 | 0.6- | 0.1+ | 2007 09 18 | G96 | 0.3+ | 0.1+ | 2007 11 03 | 691 | 0.3+ | 0.4+ |
| 2003 10 17 | 691 | 0.0  | 0.0  | 2007 09 18 | G96 | 0.5+ | 0.0  | 2007 11 14 | 691 | 0.2+ | 0.6+ |
| 2006 05 21 | G96 | 0.2- | 0.1+ | 2007 09 18 | G96 | 0.2+ | 0.1+ | 2007 11 14 | 691 | 0.7- | 0.5+ |
| 2006 05 21 | G96 | 0.2+ | 0.1+ | 2007 09 18 | G96 | 0.5+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.2+ |
| 2006 05 21 | G96 | 0.5- | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.2- |            |     |      |      |

**2003 SA<sub>392</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 15.38151   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.23148718 | $\omega$ | 232.23947 | +0.93956446 |          | +0.33347072 |          |
| $a$ | 2.6269477  | $\Omega$ | 108.16290 | -0.28281919 |          | +0.88363275 |          |
| $e$ | 0.0477379  | $i$      | 4.68224   | -0.19295579 |          | +0.32861900 |          |
| $P$ | 4.26       | $H$      | 16.9      | $G$         | 0.15     | $U$         | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 26 | 645 | 0.0  | 0.1- | 2003 10 23 | 645 | 0.0  | 0.1- | 2007 09 13 | G96 | 0.1+ | 0.2- |
| 2003 09 26 | 645 | 0.0  | 0.0  | 2005 01 19 | 691 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.1- |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2005 01 19 | 691 | 0.1+ | 0.1+ | 2007 10 16 | G96 | 0.1+ | 0.0  |
| 2003 09 28 | 645 | 0.0  | 0.1+ | 2005 01 19 | 691 | 0.0  | 0.1- | 2007 10 16 | G96 | 0.4+ | 0.1+ |
| 2003 09 30 | 645 | 0.1- | 0.0  | 2007 09 13 | G96 | 0.2- | 0.0  | 2007 10 16 | G96 | 0.7- | 0.1+ |
| 2003 09 30 | 645 | 0.0  | 0.0  | 2007 09 13 | G96 | 0.1+ | 0.0  |            |     |      |      |
| 2003 10 23 | 645 | 0.0  | 0.1- | 2007 09 13 | G96 | 0.1- | 0.2+ |            |     |      |      |

**2003 SJ<sub>395</sub> = 2007 XV<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 357.58733  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.26104016 | $\omega$ | 291.91941 |     | +0.52189876 |     | -0.84800785 |
| $a$ | 2.4247362  | $\Omega$ | 126.29049 |     | +0.81875718 |     | +0.46767982 |
| $e$ | 0.1473726  | $i$      | 6.56971   |     | +0.23928719 |     | +0.24931561 |
| $P$ | 3.78       | $H$      | 17.6      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 02 14 | 691 | 0.1+ | 0.1+ | 2003 10 27 | 699 | 0.7-  | 0.1+  | 2007 12 04 | 703 | 0.7-  | 0.7-  |
| 1997 02 14 | 691 | 0.1+ | 0.1- | 2003 10 27 | 699 | 1.3-  | 0.0   | 2007 12 04 | 703 | 0.0   | 0.3+  |
| 1997 02 14 | 691 | 0.2- | 0.3- | 2003 10 27 | 699 | 0.5-  | 0.1+  | 2007 12 04 | 703 | 0.3-  | 0.1+  |
| 2003 09 26 | 645 | 0.0  | 0.0  | 2003 10 27 | 699 | (1.9+ | 0.5+) | 2007 12 05 | 699 | 0.1+  | 0.3-  |
| 2003 09 26 | 645 | 0.1+ | 0.0  | 2007 11 03 | G96 | 0.1-  | 0.1-  | 2007 12 05 | 699 | (0.3+ | 1.6-) |
| 2003 09 27 | 645 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.3-  | 0.0   | 2007 12 05 | 699 | 0.5+  | 0.8+  |
| 2003 09 27 | 645 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.2-  | 0.3+  | 2007 12 05 | 699 | 0.1-  | 0.6+  |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.1+  | 0.2-  |            |     |       |       |
| 2003 09 28 | 645 | 0.1- | 0.1- | 2007 12 04 | 703 | 0.7+  | 0.0   |            |     |       |       |

**2003 SV<sub>406</sub> = 2007 TE<sub>289</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 59.01284   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.23931027 | $\omega$ | 222.73118 | +0.55282009 |          | +0.80435917 |          |
| $a$ | 2.5693809  | $\Omega$ | 81.96754  | -0.69284070 |          | +0.58883226 |          |
| $e$ | 0.1601490  | $i$      | 12.70104  | -0.46299214 |          | +0.07926473 |          |
| $P$ | 4.12       | $H$      | 16.5      | $G$         | 0.15     | $U$         | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 10 | 699 | 0.8+ | 0.6- | 2006 05 01 | 703 | 0.4- | 1.3+ | 2007 10 11 | 703 | 0.1- | 0.0  |
| 2002 05 10 | 699 | 0.2+ | 0.2+ | 2006 05 27 | 703 | 1.9- | 0.5- | 2007 10 15 | 699 | 0.4+ | 0.2- |
| 2002 05 10 | 699 | 0.4- | 0.1- | 2006 05 27 | 703 | 0.1+ | 1.6- | 2007 10 15 | 699 | 0.5- | 0.3+ |
| 2002 05 10 | 699 | 0.6- | 0.8+ | 2006 05 27 | 703 | 0.5- | 1.0- | 2007 10 15 | 699 | 0.1- | 0.8- |
| 2003 09 27 | 645 | 0.1+ | 0.0  | 2006 05 27 | 703 | 0.1- | 0.6- | 2007 10 15 | 699 | 0.7+ | 1.2- |
| 2003 09 27 | 645 | 0.1+ | 0.0  | 2007 09 14 | 703 | 0.7- | 0.4+ | 2007 10 19 | 703 | 0.6+ | 0.0  |
| 2003 09 28 | 645 | 0.1+ | 0.0  | 2007 09 14 | 703 | 0.3+ | 0.5+ | 2007 10 19 | 703 | 2.1+ | 0.6- |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 09 14 | 703 | 1.2- | 0.2- | 2007 10 19 | 703 | 0.2- | 0.7+ |
| 2003 10 01 | 699 | 2.7- | 1.3- | 2007 09 14 | 703 | 0.6- | 1.3+ | 2007 10 19 | 703 | 0.2+ | 0.4+ |
| 2003 10 01 | 699 | 0.4+ | 0.5- | 2007 09 14 | 703 | 0.6- | 0.7- | 2007 11 11 | 703 | 1.4+ | 1.4+ |
| 2003 10 01 | 699 | 0.2- | 0.4+ | 2007 09 14 | 703 | 0.3- | 0.4- | 2007 11 11 | 703 | 0.2- | 0.1- |
| 2003 10 01 | 699 | 1.0- | 0.2+ | 2007 09 14 | 703 | 2.0- | 1.3- | 2007 11 11 | 703 | 0.3+ | 0.4+ |
| 2006 05 01 | 703 | 2.7+ | 1.9+ | 2007 10 11 | 703 | 1.3- | 0.3- | 2007 11 11 | 703 | 0.7+ | 0.1+ |
| 2006 05 01 | 703 | 0.2- | 0.1+ | 2007 10 11 | 703 | 0.3+ | 1.0+ |            |     |      |      |
| 2006 05 01 | 703 | 0.2+ | 0.3+ | 2007 10 11 | 703 | 0.3+ | 0.3+ |            |     |      |      |

**2003 TL<sub>5</sub> = 2003 TA<sub>58</sub> = 2007 WV<sub>5</sub>**Id. Minor Planet Center (d, *MPO* 102379; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |          |   |
|-----|------------|----------|-----------|-------------|-------------|----------|---|
| $M$ | 332.63281  |          | (2000.0)  |             | <b>P</b>    | <b>Q</b> |   |
| $n$ | 0.25936181 | $\omega$ | 141.41709 | +0.09437029 | -0.99225719 |          |   |
| $a$ | 2.4351854  | $\Omega$ | 303.02794 | +0.88783203 | +0.12057700 |          |   |
| $e$ | 0.1201356  | $i$      | 5.52667   | +0.45038709 | -0.02977998 |          |   |
| $P$ | 3.80       | $H$      | 16.8      | $G$         | 0.15        | $U$      | 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 02 | 636 | (1.0- | 2.1-) | 2003 10 27 | 691 | 0.2-  | 0.2-  | 2007 11 20 | 704 | 0.0  | 0.2+ |
| 2003 10 02 | 636 | (1.2- | 1.7-) | 2003 10 27 | 691 | 0.1-  | 0.1-  | 2007 11 20 | 704 | 0.0  | 0.9- |
| 2003 10 02 | 636 | (1.8- | 0.7-) | 2003 10 29 | 699 | 0.2+  | 1.0+  | 2007 11 20 | 704 | 0.7+ | 0.7+ |
| 2003 10 02 | 636 | 1.2-  | 0.2-  | 2003 10 29 | 699 | (0.3+ | 2.1+) | 2007 11 20 | G96 | 0.3- | 0.4- |
| 2003 10 02 | 636 | (1.6- | 0.7+) | 2003 10 29 | 699 | 0.2-  | 0.5-  | 2007 11 20 | G96 | 0.1- | 0.3- |
| 2003 10 03 | 691 | 0.1+  | 0.0   | 2003 10 29 | 699 | 1.4+  | 0.9+  | 2007 11 20 | G96 | 0.0  | 0.3- |
| 2003 10 03 | 691 | 0.2+  | 0.2+  | 2007 11 12 | G96 | 0.0   | 0.3-  | 2007 11 20 | G96 | 0.2- | 0.4- |
| 2003 10 03 | 691 | 0.1+  | 0.1+  | 2007 11 12 | G96 | 0.1-  | 0.4-  | 2007 12 13 | 704 | 1.7- | 0.2+ |
| 2003 10 03 | 113 | 0.5+  | 0.1-  | 2007 11 12 | G96 | 0.0   | 0.5-  | 2007 12 13 | 704 | 1.2- | 0.4+ |
| 2003 10 03 | 113 | 0.7+  | 0.2+  | 2007 11 12 | G96 | 0.1-  | 0.4-  | 2007 12 13 | 704 | 0.8- | 0.1+ |
| 2003 10 03 | 113 | 1.4+  | 0.1+  | 2007 11 17 | 704 | 0.7+  | 1.0+  | 2007 12 13 | 704 | 0.4- | 0.8+ |
| 2003 10 17 | 691 | 0.1-  | 0.1-  | 2007 11 17 | 704 | 0.4-  | 0.1-  | 2007 12 16 | 704 | 0.1+ | 0.0  |
| 2003 10 17 | 691 | 0.1-  | 0.0   | 2007 11 17 | 704 | 0.9-  | 0.7-  | 2007 12 16 | 704 | 1.3+ | 0.1- |
| 2003 10 17 | 691 | 0.2-  | 0.1+  | 2007 11 17 | 704 | 0.1-  | 0.2+  | 2007 12 16 | 704 | 1.2+ | 0.1- |
| 2003 10 20 | 644 | 0.0   | 0.1+  | 2007 11 17 | 704 | 0.4+  | 0.8+  | 2007 12 16 | 704 | 1.1+ | 0.3- |
| 2003 10 20 | 644 | 0.0   | 0.1+  | 2007 11 18 | D35 | 0.1-  | 0.3+  | 2007 12 16 | 704 | 1.1+ | 0.7+ |
| 2003 10 20 | 644 | 0.2+  | 0.0   | 2007 11 18 | D35 | 0.5-  | 0.2-  |            |     |      |      |
| 2003 10 27 | 691 | 0.4-  | 0.2-  | 2007 11 18 | D35 | 0.3+  | 0.3-  |            |     |      |      |

**2003 TP<sub>6</sub> = 2007 UL<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 63.67788   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.25720311 | $\omega$ | 248.92622 | +0.57397763 |          | +0.78989354 |          |
| $a$ | 2.4487921  | $\Omega$ | 57.94865  | -0.62439621 |          | +0.59276402 |          |
| $e$ | 0.2530414  | $i$      | 14.75825  | -0.52979151 |          | +0.15715920 |          |
| $P$ | 3.83       | $H$      | 16.3      | $G$         | 0.15     | $U$         | 4        |

Residuals in seconds of arc

|            |     |       |       |            |     |     |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-----|------|------------|-----|------|------|
| 2003 10 01 | 699 | (1.9+ | 0.4+) | 2007 10 13 | G96 | 0.0 | 0.1+ | 2007 11 03 | G96 | 0.1+ | 0.2+ |
| 2003 10 01 | 699 | 0.7+  | 0.5-  | 2007 10 13 | G96 | 0.0 | 0.1- | 2007 11 04 | G96 | 0.2+ | 0.3- |

2007 DEC. 24

M.P.O. 129655

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2003 10 01 699 0.3− 0.4+   | 2007 10 13 G96 0.0 0.0   | 2007 11 04 G96 0.2+ 0.4−   |
| 2003 10 01 699 0.8− 0.1+   | 2007 10 13 G96 0.0 0.0   | 2007 11 04 G96 0.5+ 0.4−   |
| 2003 10 02 608 0.4+ 0.3+   | 2007 10 30 703 0.7− 0.2− | 2007 11 04 G96 0.5+ 0.2−   |
| 2003 10 02 608 0.2+ 0.0    | 2007 10 30 703 0.3− 0.1+ | 2007 12 05 703 0.5− 0.3+   |
| 2003 10 02 608 0.1− 0.3−   | 2007 10 30 703 0.3+ 0.2− | 2007 12 05 703 (2.7− 0.7−) |
| 2003 10 18 699 0.7+ 0.2+   | 2007 10 30 703 0.3+ 0.5+ | 2007 12 05 703 0.6− 0.2−   |
| 2003 10 18 699 0.8− 0.1−   | 2007 11 03 G96 0.0 0.1+  | 2007 12 05 703 (1.7− 1.6−) |
| 2003 10 18 699 (2.2+ 0.3−) | 2007 11 03 G96 0.2− 0.2+ |                            |
| 2003 10 18 699 0.1− 0.0    | 2007 11 03 G96 0.0 0.2+  |                            |

**2003 TQ<sub>7</sub> = 2007 VK<sub>57</sub>**

|                                         |            |          |           |
|-----------------------------------------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC      |           |
| <i>M</i>                                | 12.66833   | (2000.0) |           |
| <i>n</i>                                | 0.26051436 | <i>ω</i> | 307.97742 |
| <i>a</i>                                | 2.4279977  | <i>Ω</i> | 80.90744  |
| <i>e</i>                                | 0.1968732  | <i>i</i> | 7.82663   |
| <i>P</i>                                | 3.78       | <i>H</i> | 16.8      |
|                                         |            | <i>G</i> | 0.15      |
|                                         |            | <i>U</i> | 3         |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 09 25 608 0.3+ 0.2−   | 2007 11 05 691 0.2− 0.1− | 2007 11 13 691 0.2− 0.1− |
| 2003 09 25 608 0.1− 0.4−   | 2007 11 05 691 0.1− 0.1− | 2007 11 15 699 1.1+ 0.2− |
| 2003 09 25 608 0.3+ 0.1+   | 2007 11 05 D29 0.3+ 0.1+ | 2007 11 15 699 0.2+ 0.3− |
| 2003 10 01 699 (1.7+ 0.9−) | 2007 11 05 D29 0.3+ 0.1− | 2007 11 15 699 0.3+ 0.2+ |
| 2003 10 01 699 0.1− 0.2+   | 2007 11 05 D29 0.2+ 0.3− | 2007 11 15 699 0.3− 0.8− |
| 2003 10 01 699 0.4+ 0.1+   | 2007 11 05 D29 0.3+ 0.1− | 2007 11 20 703 1.2+ 0.5− |
| 2003 10 01 699 0.4+ 0.5−   | 2007 11 07 704 0.1+ 0.3+ | 2007 11 20 691 0.2− 0.3− |
| 2003 10 03 608 0.2− 0.1−   | 2007 11 07 704 0.8+ 0.1+ | 2007 11 20 703 0.4− 0.8− |
| 2003 10 03 608 0.2+ 0.2−   | 2007 11 07 704 0.2+ 0.5+ | 2007 11 20 703 1.3+ 0.5+ |
| 2003 10 03 608 0.1− 0.5−   | 2007 11 07 704 0.6+ 0.2+ | 2007 11 20 703 0.8+ 0.8+ |
| 2003 10 18 699 0.8− 0.2+   | 2007 11 07 704 1.1+ 0.3− | 2007 11 20 691 0.1− 0.1− |
| 2003 10 18 699 0.7− 0.6+   | 2007 11 09 703 0.4+ 1.0+ | 2007 11 20 691 0.1− 0.2+ |
| 2003 10 18 699 0.0 0.2+    | 2007 11 09 703 0.5+ 0.8+ | 2007 12 04 704 0.2− 0.3− |
| 2003 10 18 699 0.4+ 0.5+   | 2007 11 09 703 0.0 0.6+  | 2007 12 04 704 0.7− 0.2+ |
| 2007 10 14 701 0.3+ 0.2+   | 2007 11 09 703 0.0 0.2+  | 2007 12 04 704 0.0 0.4−  |
| 2007 10 14 701 0.0 0.0     | 2007 11 12 704 0.6− 0.2− | 2007 12 04 704 0.1+ 0.2− |
| 2007 10 14 701 0.3− 0.0    | 2007 11 12 704 0.1− 0.3+ | 2007 12 04 704 0.4− 0.3− |
| 2007 10 14 701 0.4− 0.1+   | 2007 11 12 704 0.1− 0.5+ | 2007 12 12 A77 0.1+ 0.2+ |
| 2007 11 01 691 0.1− 0.1−   | 2007 11 12 704 0.7− 0.6+ | 2007 12 12 A77 0.8+ 0.1− |
| 2007 11 01 691 0.3− 0.2−   | 2007 11 12 704 0.4− 1.0+ | 2007 12 12 A77 0.3− 0.3+ |
| 2007 11 01 691 0.1− 0.0    | 2007 11 13 691 0.1− 0.1− |                          |
| 2007 11 05 691 0.0 0.1−    | 2007 11 13 691 0.1− 0.0  |                          |

**2003 TY<sub>15</sub>**

|                                         |            |          |           |
|-----------------------------------------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC      |           |
| <i>M</i>                                | 8.58253    | (2000.0) |           |
| <i>n</i>                                | 0.26812649 | <i>ω</i> | 299.87722 |
| <i>a</i>                                | 2.3818235  | <i>Ω</i> | 118.77394 |
| <i>e</i>                                | 0.1968625  | <i>i</i> | 4.25913   |
| <i>P</i>                                | 3.68       | <i>H</i> | 17.7      |
|                                         |            | <i>G</i> | 0.15      |
|                                         |            | <i>U</i> | 2         |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1999 09 07 691 0.2− 0.6+ | 2003 10 15 699 0.2+ 0.1− | 2003 10 19 704 0.4+ 0.4− |
| 1999 09 07 691 0.0 0.3+  | 2003 10 16 644 0.1− 0.3+ | 2003 10 19 704 0.8− 0.4− |
| 2003 09 28 699 1.0+ 0.2+ | 2003 10 16 644 0.0 0.2+  | 2003 10 23 645 0.0 0.1−  |
| 2003 09 28 699 0.5+ 0.4+ | 2003 10 16 644 0.2+ 0.2+ | 2003 10 23 645 0.0 0.1−  |
| 2003 09 28 699 0.3+ 0.3− | 2003 10 16 644 0.1+ 0.3+ | 2003 12 19 644 0.1− 0.2+ |
| 2003 09 28 699 0.1− 1.5− | 2003 10 16 644 0.0 0.2+  | 2003 12 19 644 0.2− 0.4+ |
| 2003 09 30 645 0.0 0.1−  | 2003 10 16 644 0.0 0.2+  | 2003 12 19 644 0.1− 0.7+ |
| 2003 09 30 645 0.1+ 0.1− | 2003 10 19 704 0.0 0.0   | 2007 12 04 691 0.1+ 0.1− |
| 2003 10 15 699 0.9− 0.1+ | 2003 10 19 645 0.0 0.1+  | 2007 12 04 691 0.3− 0.0  |
| 2003 10 15 699 0.0 0.7+  | 2003 10 19 645 0.0 0.0   | 2007 12 04 691 0.3+ 0.6+ |
| 2003 10 15 699 0.1+ 0.9+ | 2003 10 19 704 0.4− 0.3+ |                          |

**2003 TF<sub>26</sub>**

|                                         |            |          |           |
|-----------------------------------------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC      |           |
| <i>M</i>                                | 37.24091   | (2000.0) |           |
| <i>n</i>                                | 0.25898355 | <i>ω</i> | 3.90016   |
| <i>a</i>                                | 2.4375560  | <i>Ω</i> | 349.77744 |
| <i>e</i>                                | 0.1674727  | <i>i</i> | 6.41973   |
| <i>P</i>                                | 3.81       | <i>H</i> | 18.1      |
|                                         |            | <i>G</i> | 0.15      |
|                                         |            | <i>U</i> | 3         |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 09 18 644 0.0 0.4+    | 2003 10 01 691 0.1+ 0.2− | 2007 10 09 691 0.1+ 0.1+ |
| 2003 09 18 644 0.1+ 0.3−   | 2003 10 16 691 0.2− 0.3+ | 2007 10 18 691 0.1− 0.1− |
| 2003 09 18 644 0.4+ 0.1+   | 2003 10 16 691 0.2− 0.1+ | 2007 10 18 691 0.0 0.2−  |
| 2003 09 28 699 0.8+ 0.2+   | 2003 10 16 691 0.0 0.0   | 2007 10 18 691 0.4− 0.6+ |
| 2003 09 28 699 0.9+ 0.3+   | 2003 10 19 644 0.2− 0.2+ | 2007 11 15 G96 0.4+ 0.1− |
| 2003 09 28 699 (1.6− 0.7+) | 2003 10 19 644 0.2− 0.0  | 2007 11 15 G96 0.1+ 0.2− |
| 2003 09 28 699 (1.9− 0.0)  | 2003 10 19 644 0.3+ 0.3− | 2007 11 15 G96 0.4+ 0.2− |
| 2003 10 01 691 0.3− 0.1−   | 2007 10 09 691 0.1+ 0.2− | 2007 11 15 G96 0.2+ 0.3− |
| 2003 10 01 691 0.0 0.2−    | 2007 10 09 691 0.1+ 0.1− |                          |

**2003 TJ<sub>59</sub> = 2007 VJ<sub>296</sub>**

|                                         |            |          |           |
|-----------------------------------------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC      |           |
| <i>M</i>                                | 10.21924   | (2000.0) |           |
| <i>n</i>                                | 0.25743006 | <i>ω</i> | 234.87210 |
| <i>a</i>                                | 2.4473526  | <i>Ω</i> | 162.95997 |
| <i>e</i>                                | 0.2322392  | <i>i</i> | 7.28035   |
| <i>P</i>                                | 3.83       | <i>H</i> | 17.4      |
|                                         |            | <i>G</i> | 0.15      |
|                                         |            | <i>U</i> | 3         |

Residuals in seconds of arc

|                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| 1999 08 17 691 0.2− 0.4+ | 2003 10 15 699 0.4+ 0.4+   | 2003 10 27 699 0.9− 0.0    |
| 1999 08 17 691 0.1+ 0.0  | 2003 10 15 699 (2.1+ 0.0)  | 2007 11 04 G96 0.2+ 0.4−   |
| 1999 08 17 691 0.0 0.2+  | 2003 10 15 699 0.2− 0.4+   | 2007 11 04 G96 0.0 0.2−    |
| 2003 09 20 699 0.3− 0.0  | 2003 10 20 704 (1.9− 0.5−) | 2007 11 04 G96 0.1+ 0.2−   |
| 2003 09 20 699 0.6− 0.2− | 2003 10 20 704 (2.1− 0.5−) | 2007 11 04 G96 0.1− 0.3−   |
| 2003 09 20 699 0.9+ 0.6− | 2003 10 20 704 0.1+ 1.0+   | 2007 11 15 703 1.4+ 0.9+   |
| 2003 09 20 699 0.2+ 0.8+ | 2003 10 20 704 0.8− 0.6+   | 2007 11 15 703 (1.0+ 1.7+) |
| 2003 09 28 704 0.2+ 0.6+ | 2003 10 20 704 0.8− 0.4+   | 2007 11 15 703 0.6− 1.4+   |
| 2003 09 28 704 0.2− 0.8− | 2003 10 23 645 0.0 0.1−    | 2007 11 15 703 0.1+ 0.0    |
| 2003 09 28 704 0.1+ 0.1− | 2003 10 23 645 0.0 0.1−    | 2007 11 20 703 0.7− 0.2+   |
| 2003 09 28 699 0.3− 0.4− | 2003 10 24 645 0.1+ 0.1−   | 2007 11 20 703 0.1+ 0.5+   |
| 2003 09 28 699 0.7+ 0.5+ | 2003 10 24 645 0.1+ 0.1−   | 2007 11 20 703 0.7− 0.9+   |
| 2003 09 28 699 0.2− 0.5+ | 2003 10 27 699 0.3− 0.2+   | 2007 11 20 703 0.0 0.3+    |
| 2003 09 28 699 0.5+ 0.6+ | 2003 10 27 699 0.5− 0.0    |                            |
| 2003 10 15 699 0.4− 0.6− | 2003 10 27 699 0.2+ 0.3+   |                            |

**2003 UG<sub>4</sub>**

|                                         |            |          |           |
|-----------------------------------------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            | MPC      |           |
| <i>M</i>                                | 300.85143  | (2000.0) |           |
| <i>n</i>                                | 0.22863060 | <i>ω</i> | 201.01915 |
| <i>a</i>                                | 2.6487836  | <i>Ω</i> | 244.72125 |
| <i>e</i>                                | 0.2237629  | <i>i</i> | 13.32266  |
| <i>P</i>                                | 4.31       | <i>H</i> | 16.4      |
|                                         |            | <i>G</i> | 0.15      |
|                                         |            | <i>U</i> | 4         |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 10 05 704 0.3+ 0.8− | 2003 10 22 704 0.7− 0.0  | 2003 12 10 644 0.4+ 0.2− |
| 2003 10 05 704 0.3− 0.1+ | 2003 10 29 699 0.0 0.3−  | 2003 12 13 703 0.5− 0.7+ |
| 2003 10 05 704 0.4+ 0.6+ | 2003 10 29 699 0.2+ 0.8− | 2003 12 13 703 0.3− 0.7− |
| 2003 10 05 704 0.1− 0.9+ | 2003 10 29 699 0.3+ 0.5− | 2003 12 13 703 0.6− 0.4− |
| 2003 10 16 644 0.2− 0.3− | 2003 10 29 699 0.4− 1.0− | 2003 12 13 703 1.1− 0.7− |
| 2003 10 16 644 0.1− 0.3− | 2003 11 02 704 0.6− 0.1+ | 2003 12 21 608 0.4+ 0.3+ |
| 2003 10 16 644 0.1+ 0.1− | 2003 11 02 704 0.4− 0.8+ | 2003 12 21 608 0.2+ 0.2− |
| 2003 10 17 699 0.1− 1.8− | 2003 11 02 704 0.4+ 0.1− | 2003 12 21 608 0.0 0.2+  |
| 2003 10 17 699 0.5− 0.3+ | 2003 11 19 704 0.4+ 1.6+ | 2003 12 22 704 0.2+ 0.2+ |
| 2003 10 17 699 0.2− 1.0+ | 2003 11 19 704 0.8+ 0.8+ | 2003 12 22 704 0.7+ 0.3− |
| 2003 10 17 699 0.3− 0.3− | 2003 11 19 704 1.1+ 0.9+ | 2003 12 22 704 0.8− 1.1− |
| 2003 10 18 644 0.1+ 0.0  | 2003 11 19 704 0.8+ 0.7+ | 2003 12 22 704 0.6− 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 18 | 644 | 0.1+ | 0.1− | 2003 11 19 | 704 | 0.6+ | 0.7+ | 2007 10 08 | 703 | 0.8− | 0.2+ |
| 2003 10 18 | 644 | 0.3+ | 0.0  | 2003 11 21 | 691 | 0.0  | 0.1− | 2007 10 08 | 703 | 0.9− | 1.1− |
| 2003 10 19 | 644 | 0.1+ | 0.1+ | 2003 11 21 | 691 | 0.2− | 0.2+ | 2007 10 08 | 703 | 1.2− | 0.4− |
| 2003 10 19 | 644 | 0.0  | 0.2+ | 2003 11 21 | 691 | 0.0  | 0.0  | 2007 10 08 | 703 | 0.8+ | 0.7− |
| 2003 10 19 | 644 | 0.0  | 0.1+ | 2003 11 23 | 691 | 0.1+ | 0.1− | 2007 10 19 | 703 | 1.5+ | 0.5− |
| 2003 10 22 | 704 | 0.7− | 0.1+ | 2003 11 23 | 691 | 0.3+ | 0.0  | 2007 10 19 | 703 | 0.5+ | 0.4− |
| 2003 10 22 | 704 | 0.2+ | 0.4+ | 2003 11 23 | 691 | 0.4+ | 0.0  | 2007 10 19 | 703 | 0.4+ | 1.2+ |
| 2003 10 22 | 704 | 0.7− | 0.1− | 2003 12 10 | 644 | 0.4+ | 0.2− | 2007 10 19 | 703 | 0.2− | 1.6+ |
| 2003 10 22 | 704 | 0.1− | 0.2− | 2003 12 10 | 644 | 0.0  | 0.3− |            |     |      |      |

**2003 UH<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 323.87177  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22435255 | $\omega$ | 86.32155  | +0.76228629 | −0.63022034 |
| <i>a</i> | 2.6823495  | $\Omega$ | 312.67415 | +0.48511585 | +0.70713205 |
| <i>e</i> | 0.2800626  | <i>i</i> | 11.56936  | +0.42846497 | +0.32060347 |
| <i>P</i> | 4.39       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 16 | 628 | 0.2− | 0.2+ | 2003 10 22 | 699 | 0.2− | 0.0  | 2003 10 28 | 113 | 0.0  | 0.4− |
| 2003 10 16 | 628 | 0.2+ | 0.4+ | 2003 10 22 | 699 | 0.6− | 0.9+ | 2003 11 06 | 628 | 0.7+ | 0.4+ |
| 2003 10 17 | 628 | 0.3− | 0.1− | 2003 10 22 | 699 | 0.9+ | 0.5− | 2003 11 06 | 628 | 0.4+ | 0.6+ |
| 2003 10 17 | 628 | 0.0  | 0.2+ | 2003 10 22 | 699 | 0.3+ | 0.2− | 2003 11 21 | 644 | 0.0  | 0.3+ |
| 2003 10 17 | 628 | 0.3+ | 0.3− | 2003 10 28 | 621 | 0.3+ | 0.1+ | 2003 11 21 | 644 | 0.1− | 0.1+ |
| 2003 10 17 | 628 | 0.4+ | 0.1− | 2003 10 28 | 621 | 0.6+ | 0.0  | 2003 11 21 | 644 | 0.6− | 0.1+ |
| 2003 10 18 | 644 | 0.1+ | 0.2+ | 2003 10 28 | 621 | 0.1− | 0.1− | 2007 09 15 | G96 | 0.2+ | 0.2+ |
| 2003 10 18 | 644 | 0.1+ | 0.1+ | 2003 10 28 | 628 | 0.1+ | 0.5− | 2007 09 15 | G96 | 0.1+ | 0.2− |
| 2003 10 18 | 644 | 0.2+ | 0.2+ | 2003 10 28 | 628 | 0.1+ | 0.6− | 2007 09 15 | G96 | 0.2− | 0.1− |
| 2003 10 18 | 628 | 0.3− | 0.3− | 2003 10 28 | 628 | 0.3+ | 0.4− | 2007 09 15 | G96 | 0.2+ | 0.4− |
| 2003 10 19 | 628 | 0.8− | 1.3− | 2003 10 28 | 113 | 0.4− | 0.3+ | 2007 10 17 | G96 | 0.2− | 0.1+ |
| 2003 10 19 | 644 | 0.2− | 0.2+ | 2003 10 28 | 113 | 0.5− | 0.1− | 2007 10 17 | G96 | 0.2− | 0.7+ |
| 2003 10 19 | 644 | 0.0  | 0.2+ | 2003 10 28 | 113 | 0.2− | 0.3+ | 2007 10 17 | G96 | 0.0  | 0.1+ |
| 2003 10 19 | 644 | 0.1− | 0.2+ | 2003 10 28 | 113 | 0.5− | 0.3− | 2007 10 17 | G96 | 0.2− | 0.1− |

**2003 UA<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 13.84137   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.26267673 | $\omega$ | 190.99538 | +0.72198606 | −0.68970706 |
| <i>a</i> | 2.4146544  | $\Omega$ | 212.83031 | +0.64227934 | +0.69770594 |
| <i>e</i> | 0.1067146  | <i>i</i> | 5.83729   | +0.25731959 | +0.19367655 |
| <i>P</i> | 3.75       | <i>H</i> | 17.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 22 | 691 | 0.2−  | 0.1−  | 2003 10 24 | 704 | 0.2+ | 0.3− | 2007 11 21 | G96 | 0.1−  | 0.1+  |
| 2003 09 22 | 691 | 0.4−  | 0.2−  | 2003 10 25 | 691 | 0.4− | 0.1+ | 2007 11 21 | G96 | 0.4+  | 0.2−  |
| 2003 09 22 | 691 | 0.3−  | 0.0   | 2003 10 25 | 691 | 0.1+ | 0.4+ | 2007 12 01 | 300 | 0.4−  | 0.0   |
| 2003 09 27 | 691 | 0.2+  | 0.1−  | 2003 10 25 | 691 | 0.2− | 0.2+ | 2007 12 01 | 300 | 0.3−  | 1.3−  |
| 2003 09 27 | 691 | 0.0   | 0.2−  | 2003 10 28 | 704 | 0.2− | 0.7+ | 2007 12 01 | 300 | 0.2−  | 0.2+  |
| 2003 09 27 | 691 | 0.1−  | 0.2−  | 2003 10 28 | 704 | 0.1+ | 0.4+ | 2007 12 01 | 300 | 0.6−  | 0.7−  |
| 2003 10 16 | 691 | 0.2+  | 0.0   | 2003 10 28 | 704 | 1.3+ | 0.2+ | 2007 12 01 | 300 | 0.7−  | 0.6−  |
| 2003 10 16 | 691 | 0.3+  | 0.1−  | 2003 10 28 | 704 | 0.2− | 0.9− | 2007 12 03 | 300 | 0.0   | 0.2−  |
| 2003 10 16 | 691 | 0.1+  | 0.2−  | 2003 11 28 | 691 | 0.0  | 0.6+ | 2007 12 03 | 300 | 0.3+  | 0.6−  |
| 2003 10 18 | 947 | 0.7+  | 0.0   | 2003 11 28 | 691 | 0.1− | 0.4+ | 2007 12 03 | 300 | 0.6+  | 0.6−  |
| 2003 10 18 | 947 | (1.9+ | 0.1+) | 2003 11 28 | 691 | 0.0  | 0.1− | 2007 12 03 | 300 | 0.3−  | 0.1−  |
| 2003 10 18 | 947 | 0.3+  | 0.3+  | 2007 11 08 | 691 | 0.3− | 0.1+ | 2007 12 04 | 703 | (1.2+ | 2.1+) |
| 2003 10 21 | 947 | 0.4−  | 0.1+  | 2007 11 08 | 691 | 0.4− | 0.0  | 2007 12 04 | 703 | 0.6−  | 1.2+  |
| 2003 10 21 | 947 | 0.2−  | 0.2−  | 2007 11 08 | 691 | 1.0+ | 0.5− | 2007 12 04 | 703 | 0.2+  | 0.8+  |
| 2003 10 24 | 704 | 0.1+  | 0.4−  | 2007 11 21 | G96 | 0.2+ | 0.1+ | 2007 12 04 | 703 | 0.1+  | 1.1+  |
| 2003 10 24 | 704 | 0.3−  | 0.2−  | 2007 11 21 | G96 | 0.0  | 0.2+ |            |     |       |       |

**2003 UQ<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 32.73414   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.27064891 | $\omega$ | 349.71787 | +0.88897705 | −0.44914675 |
| <i>a</i> | 2.3670015  | $\Omega$ | 37.38910  | +0.42992043 | +0.75128871 |
| <i>e</i> | 0.2008476  | <i>i</i> | 8.46341   | +0.15776000 | +0.48356227 |
| <i>P</i> | 3.64       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 18 | 599 | 0.2− | 0.3+ | 2003 10 20 | 704 | 0.7+ | 0.2+ | 2003 10 31 | 683 | 0.1+  | 1.2+  |
| 2003 09 18 | 599 | 0.3− | 0.5+ | 2003 10 20 | 704 | 1.0+ | 0.0  | 2003 10 31 | 683 | (0.4− | 2.1+) |
| 2003 09 18 | 599 | 0.3− | 0.4+ | 2003 10 20 | 704 | 0.6+ | 0.6− | 2003 10 31 | 683 | 0.9−  | 1.0+  |
| 2003 09 19 | 599 | 0.1− | 0.4+ | 2003 10 20 | 704 | 0.7+ | 0.4+ | 2003 11 21 | 704 | 0.4+  | 0.3−  |
| 2003 09 19 | 704 | 1.3− | 0.3+ | 2003 10 21 | 678 | 0.0  | 0.8− | 2003 11 21 | 704 | 1.1−  | 0.9−  |
| 2003 09 19 | 704 | 0.6− | 0.0  | 2003 10 21 | 678 | 0.1+ | 0.7− | 2003 11 21 | 704 | 0.4−  | 0.6+  |
| 2003 09 19 | 704 | 0.7− | 0.5+ | 2003 10 21 | 678 | 0.4+ | 1.5+ | 2003 11 21 | 704 | 1.2−  | 1.4−  |
| 2003 09 19 | 704 | 1.2− | 0.0  | 2003 10 21 | 644 | 0.0  | 0.1+ | 2003 11 21 | 704 | (1.6− | 2.2−) |
| 2003 09 19 | 704 | 0.6− | 0.8+ | 2003 10 21 | 644 | 0.0  | 0.1− | 2003 12 19 | 644 | 0.9−  | 0.2+  |
| 2003 09 26 | 645 | 0.1+ | 0.1− | 2003 10 21 | 644 | 0.1+ | 0.0  | 2003 12 19 | 644 | 0.6−  | 0.2+  |
| 2003 09 26 | 645 | 0.1+ | 0.1− | 2003 10 24 | 704 | 0.2− | 0.5− | 2003 12 19 | 644 | 0.8−  | 0.1+  |
| 2003 09 28 | 704 | 0.0  | 0.2+ | 2003 10 24 | 704 | 0.5− | 0.4− | 2003 12 21 | 704 | (0.3+ | 2.8+) |
| 2003 09 28 | 704 | 0.1+ | 0.2+ | 2003 10 24 | 704 | 0.1− | 0.1− | 2003 12 21 | 704 | 0.2+  | 0.3+  |
| 2003 09 28 | 699 | 0.6− | 0.3− | 2003 10 24 | 704 | 0.6− | 0.2− | 2003 12 21 | 704 | 0.8+  | 0.4+  |
| 2003 09 28 | 704 | 0.3+ | 0.2− | 2003 10 24 | 704 | 0.3− | 0.0  | 2007 12 02 | 704 | 0.0   | 0.4−  |
| 2003 09 28 | 699 | 0.2− | 0.7+ | 2003 10 27 | 678 | 0.5− | 1.7+ | 2007 12 02 | 704 | 0.2+  | 0.3+  |
| 2003 09 28 | 704 | 0.1− | 0.2− | 2003 10 27 | 678 | 0.5+ | 1.6+ | 2007 12 02 | 704 | 0.3+  | 0.4−  |
| 2003 09 28 | 699 | 0.7+ | 0.1+ | 2003 10 28 | 704 | 0.0  | 0.2+ | 2007 12 02 | 704 | 1.7+  | 0.7−  |
| 2003 09 28 | 704 | 0.2+ | 0.2− | 2003 10 28 | 704 | 0.4+ | 0.5+ | 2007 12 02 | 704 | 1.1−  | 0.9+  |
| 2003 09 28 | 699 | 0.2+ | 0.8+ | 2003 10 28 | 704 | 0.0  | 0.2+ | 2007 12 05 | 699 | 0.2+  | 0.7−  |
| 2003 09 30 | 645 | 0.1+ | 0.1− | 2003 10 28 | 704 | 0.1− | 0.3+ | 2007 12 05 | 699 | 1.1−  | 0.3−  |
| 2003 09 30 | 645 | 0.1+ | 0.1− | 2003 10 29 | 699 | 0.1+ | 0.3− | 2007 12 05 | 699 | 0.1−  | 0.4−  |
| 2003 10 15 | 644 | 0.8− | 0.3+ | 2003 10 29 | 699 | 0.1− | 0.3− | 2007 12 05 | 699 | 0.2−  | 0.3+  |
| 2003 10 15 | 644 | 0.7− | 0.3+ | 2003 10 29 | 699 | 0.3− | 0.0  |            |     |       |       |
| 2003 10 15 | 644 | 0.7− | 0.3+ | 2003 10 29 | 699 | 0.1+ | 0.3+ |            |     |       |       |

**2003 UQ<sub>49</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 338.37988  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.24591521 | $\omega$ | 168.14608 | +0.49423449 | −0.83863210 |
| <i>a</i> | 2.5231658  | $\Omega$ | 251.85486 | +0.77661107 | +0.54429150 |
| <i>e</i> | 0.0907856  | <i>i</i> | 13.94292  | +0.39065012 | −0.02104672 |
| <i>P</i> | 4.01       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 16 | 644 | 0.1+ | 0.3− | 2003 11 19 | 704 | 0.1− | 0.9− | 2007 11 01 | 703 | 0.7+  | 1.2−  |
| 2003 10 16 | 644 | 0.0  | 0.0  | 2003 11 23 | 691 | 0.2− | 0.2− | 2007 11 01 | 703 | 0.0   | 0.2−  |
| 2003 10 16 | 644 | 0.0  | 0.0  | 2003 11 23 | 691 | 0.1+ | 0.0  | 2007 11 01 | 703 | 0.3+  | 0.9+  |
| 2003 10 19 | 644 | 0.3− | 0.4− | 2003 11 23 | 691 | 0.1+ | 0.2+ | 2007 11 09 | 703 | 0.6−  | 0.3+  |
| 2003 10 19 | 644 | 0.1− | 0.3− | 2007 10 09 | 703 | 0.3− | 0.1+ | 2007 11 09 | 703 | 0.6+  | 0.2−  |
| 2003 10 19 | 644 | 0.0  | 0.0  | 2007 10 09 | 703 | 0.9− | 0.8+ | 2007 11 09 | 703 | 0.3+  | 1.0+  |
| 2003 10 22 | 704 | 0.6+ | 0.6− | 2007 10 09 | 703 | 0.3− | 0.3+ | 2007 11 09 | 703 | 0.1−  | 1.3+  |
| 2003 10 22 | 704 | 0.5+ | 0.6+ | 2007 10 09 | 703 | 0.2+ | 0.1+ | 2007 12 02 | 704 | (0.7− | 2.0−) |
| 2003 10 22 | 704 | 0.2− | 0.3+ | 2007 10 21 | 703 | 0.4− | 0.1− | 2007 12 02 | 704 | 0.1+  | 0.9−  |
| 2003 11 19 | 704 | 0.6− | 0.3+ | 2007 10 21 | 703 | 0.3− | 0.7− | 2007 12 02 | 704 | 0.1−  | 0.5+  |
| 2003 11 19 | 704 | 0.6− | 0.1+ | 2007 10 21 | 703 | 0.6− | 0.2− | 2007 12 02 | 704 | 0.0   | 0.3+  |
| 2003 11 19 | 704 | 0.3− | 0.7− | 2007 10 21 | 703 | 0.9+ | 0.0  |            |     |       |       |
| 2003 11 19 | 704 | 1.4+ | 0.8+ | 2007 11 01 | 703 | 0.3+ | 0.6− |            |     |       |       |

2007 DEC. 24

M.P.O. 129657

**2003 UZ<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 354.62352  | (2000.0)           | <b>P</b>       |             | <b>Q</b>  |                          |
|-----------------------------|------------|--------------------|----------------|-------------|-----------|--------------------------|
| <i>n</i>                    | 0.21316923 | $\omega$ 19.69180  | +0.91870512    | +0.38993971 |           |                          |
| <i>a</i>                    | 2.7753625  | $\Omega$ 317.18768 | -0.37359169    | +0.80655230 |           |                          |
| <i>e</i>                    | 0.0684080  | <i>i</i> 5.29139   | -0.12810216    | +0.44432017 |           |                          |
| <i>P</i>                    | 4.62       | <i>H</i> 16.1      | <i>G</i> 0.15  | <i>U</i> 3  |           |                          |
| Residuals in seconds of arc |            |                    |                |             |           |                          |
| 2003 09 20                  | 644        | 0.1+ 0.1+          | 2003 10 24     | 446         | 0.1- 0.2+ | 2007 09 05 G96 0.1+ 0.1+ |
| 2003 09 20                  | 644        | 0.2+ 0.1-          | 2003 10 24     | 446         | 0.6+ 0.0  | 2007 10 09 G96 0.2+ 0.6- |
| 2003 09 20                  | 644        | 0.0 0.1-           | 2003 10 24     | 446         | 0.3- 0.2- | 2007 10 09 G96 0.4- 0.2- |
| 2003 10 03                  | 691        | 0.1- 0.2+          | 2003 10 27     | 691         | 0.1- 0.1- | 2007 10 09 G96 0.2- 0.2- |
| 2003 10 03                  | 691        | 0.1- 0.0           | 2003 10 27     | 691         | 0.0 0.0   | 2007 10 09 G96 0.1+ 0.0  |
| 2003 10 03                  | 691        | 0.1- 0.2+          | 2003 10 27     | 691         | 0.0 0.1-  | 2007 11 04 G96 0.4+ 0.2- |
| 2003 10 17                  | 691        | 0.1+ 0.1-          | 2007 09 05 G96 |             | 0.1- 0.3+ | 2007 11 04 G96 0.2+ 0.1- |
| 2003 10 17                  | 691        | 0.0 0.0            | 2007 09 05 G96 |             | 0.0 0.2+  | 2007 11 04 G96 0.0 0.2-  |
| 2003 10 17                  | 691        | 0.2+ 0.0           | 2007 09 05 G96 |             | 0.0 0.1+  | 2007 11 04 G96 0.1- 0.4+ |

**2003 UJ<sub>56</sub> = 2007 VS<sub>300</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 19.35803   | (2000.0)           | <b>P</b>       |             | <b>Q</b>    |                            |
|-----------------------------|------------|--------------------|----------------|-------------|-------------|----------------------------|
| <i>n</i>                    | 0.25258735 | $\omega$ 253.62278 | +0.96557151    | -0.24524457 |             |                            |
| <i>a</i>                    | 2.4785346  | $\Omega$ 120.50054 | +0.26003125    | +0.90037492 |             |                            |
| <i>e</i>                    | 0.2963358  | <i>i</i> 5.77890   | +0.00744418    | +0.35941633 |             |                            |
| <i>P</i>                    | 3.90       | <i>H</i> 18.0      | <i>G</i> 0.15  | <i>U</i> 5  |             |                            |
| Residuals in seconds of arc |            |                    |                |             |             |                            |
| 2003 10 17                  | 683        | (0.6+ 2.3-)        | 2003 10 24     | 704         | 0.3- 0.2+   | 2007 11 14 699 0.4- 0.9+   |
| 2003 10 17                  | 683        | 1.2- 0.4-          | 2003 10 24     | 704         | 0.6- 0.1-   | 2007 11 14 699 0.6- 0.2+   |
| 2003 10 17                  | 683        | 0.2- 0.3-          | 2003 10 24     | 704         | 0.2+ 0.2+   | 2007 11 17 703 0.4+ 0.3-   |
| 2003 10 18                  | 683        | 0.3+ 0.0           | 2003 10 24     | 704         | 0.0 0.1+    | 2007 11 17 703 0.6+ 1.1-   |
| 2003 10 18                  | 683        | 0.1+ 1.2+          | 2007 10 24 G96 |             | 0.4+ 0.2-   | 2007 11 17 703 1.3+ 1.1-   |
| 2003 10 18                  | 683        | 0.1+ 0.8+          | 2007 10 24 G96 |             | 0.0 0.4-    | 2007 11 17 703 0.4+ 0.4+   |
| 2003 10 19                  | 683        | 0.4+ 0.2-          | 2007 10 24 G96 |             | 0.1+ 0.3-   | 2007 12 02 704 0.4- 0.6+   |
| 2003 10 19                  | 683        | 1.4+ 1.0+          | 2007 10 24 G96 |             | 0.2+ 0.4-   | 2007 12 02 704 0.1+ 0.6+   |
| 2003 10 19                  | 683        | 0.9- 0.5-          | 2007 11 04 G96 |             | 0.2- 0.2-   | 2007 12 02 704 0.3- 0.5+   |
| 2003 10 20                  | 704        | 0.2+ 0.3-          | 2007 11 04 G96 |             | 0.2- 0.4-   | 2007 12 02 704 1.0- 1.2-   |
| 2003 10 20                  | 704        | 0.2+ 0.2+          | 2007 11 04 G96 |             | 0.2- 0.2-   | 2007 12 05 699 0.0 0.5+    |
| 2003 10 20                  | 704        | 0.3- 0.2+          | 2007 11 04 G96 |             | 0.4- 0.4-   | 2007 12 05 703 1.4- 0.3+   |
| 2003 10 20                  | 704        | 0.1+ 0.1+          | 2007 11 09 703 |             | 0.5+ 0.2+   | 2007 12 05 703 (0.3- 1.7+) |
| 2003 10 20                  | 704        | 0.0 0.4-           | 2007 11 09 703 |             | 0.3+ 0.8+   | 2007 12 05 703 1.0+ 1.2+   |
| 2003 10 22                  | 683        | 0.0 0.8-           | 2007 11 09 703 |             | (1.7+ 1.5+) | 2007 12 05 699 0.5- 0.3+   |
| 2003 10 22                  | 683        | (2.3+ 0.0 )        | 2007 11 09 703 |             | (2.1+ 0.8+) | 2007 12 05 703 0.1+ 0.6-   |
| 2003 10 22                  | 683        | 1.1+ 0.1+          | 2007 11 14 699 |             | (2.0+ 1.0+) | 2007 12 05 699 (1.6- 0.5+) |
| 2003 10 24                  | 704        | 0.9- 0.1-          | 2007 11 14 699 |             | 0.2+ 0.5-   | 2007 12 05 699 0.5+ 0.3-   |

**2003 US<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 30.38560   | (2000.0)           | <b>P</b>       |             | <b>Q</b>  |                          |
|-----------------------------|------------|--------------------|----------------|-------------|-----------|--------------------------|
| <i>n</i>                    | 0.26275275 | $\omega$ 273.32333 | +0.92813740    | -0.35256118 |           |                          |
| <i>a</i>                    | 2.4141887  | $\Omega$ 107.34734 | +0.37140484    | +0.85565860 |           |                          |
| <i>e</i>                    | 0.1361543  | <i>i</i> 7.18726   | +0.02488785    | +0.37887857 |           |                          |
| <i>P</i>                    | 3.75       | <i>H</i> 17.3      | <i>G</i> 0.15  | <i>U</i> 3  |           |                          |
| Residuals in seconds of arc |            |                    |                |             |           |                          |
| 2003 09 28                  | 699        | 0.1- 0.9-          | 2003 10 19     | 704         | 0.1+ 1.3+ | 2007 12 03 D35 0.3- 0.1- |
| 2003 09 28                  | 699        | 0.2- 0.8-          | 2003 10 19     | 704         | 0.3- 0.6- | 2007 12 03 D35 0.3+ 1.3+ |
| 2003 09 28                  | 699        | 0.2+ 0.7-          | 2003 10 19     | 704         | 1.2+ 0.3- | 2007 12 03 D35 0.3+ 1.0+ |
| 2003 09 28                  | 699        | 0.8- 0.2-          | 2003 10 28 608 |             | 0.8+ 0.8+ | 2007 12 04 300 0.5+ 0.7- |
| 2003 10 15                  | 699        | 0.3+ 0.4-          | 2003 10 28 608 |             | 0.4+ 0.8+ | 2007 12 04 300 0.7- 1.4- |
| 2003 10 15                  | 699        | 0.0 0.4-           | 2003 10 28 608 |             | 0.4+ 1.1+ | 2007 12 04 300 0.7- 0.4- |
| 2003 10 15                  | 699        | 0.4- 0.2+          | 2003 11 24 644 |             | 0.1- 0.6+ | 2007 12 04 300 0.4- 0.6- |
| 2003 10 15                  | 699        | 1.0- 0.2-          | 2003 11 24 644 |             | 0.2+ 0.1- | 2007 12 05 300 0.1+ 0.4- |
| 2003 10 16                  | 644        | 0.4- 0.1-          | 2003 11 24 644 |             | 0.2+ 0.7+ | 2007 12 05 300 0.1+ 0.6- |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2003 10 16 | 644 | 0.2- 0.2- | 2005 03 16 | 703 | 0.4- 0.1+ | 2007 12 05 | 300 | 0.4+ 0.3+ |
| 2003 10 16 | 644 | 0.2- 0.1+ | 2005 03 16 | 703 | 0.4+ 0.1- | 2007 12 05 | 300 | 0.4+ 0.1+ |
| 2003 10 19 | 704 | 0.7- 0.4+ | 2005 03 16 | 703 | 0.3- 0.2+ | 2007 12 05 | 300 | 0.4+ 0.1- |
| 2003 10 19 | 704 | 0.1+ 0.9+ | 2005 03 16 | 703 | 0.6+ 0.8+ |            |     |           |

**2003 UU<sub>70</sub> = 2007 VW<sub>283</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 9.26883    | (2000.0)           | <b>P</b>       |             | <b>Q</b>  |                          |
|-----------------------------|------------|--------------------|----------------|-------------|-----------|--------------------------|
| <i>n</i>                    | 0.25845172 | $\omega$ 339.11404 | +0.75291845    | -0.65579161 |           |                          |
| <i>a</i>                    | 2.4408987  | $\Omega$ 61.98843  | +0.61233339    | +0.66731386 |           |                          |
| <i>e</i>                    | 0.2092849  | <i>i</i> 3.58716   | +0.24116721    | +0.35302914 |           |                          |
| <i>P</i>                    | 3.81       | <i>H</i> 18.8      | <i>G</i> 0.15  | <i>U</i> 3  |           |                          |
| Residuals in seconds of arc |            |                    |                |             |           |                          |
| 2003 10 18                  | 691        | 0.2+ 0.1-          | 2003 11 01     | 926         | 0.1- 0.2+ | 2007 11 14 691 0.5- 0.1- |
| 2003 10 18                  | 691        | 0.2+ 0.1-          | 2003 11 01     | 926         | 0.3- 0.1+ | 2007 11 18 691 0.1+ 0.4+ |
| 2003 10 18                  | 691        | 0.1- 0.1-          | 2003 11 01     | 926         | 0.2- 0.3+ | 2007 11 18 691 0.3- 0.2+ |
| 2003 10 20                  | 691        | 0.1+ 0.2+          | 2007 10 14 G96 |             | 0.6+ 0.4- | 2007 11 18 691 0.2- 0.1+ |
| 2003 10 20                  | 691        | 0.0 0.0            | 2007 10 14 G96 |             | 1.0+ 0.3- | 2007 12 15 G96 0.7+ 0.2+ |
| 2003 10 20                  | 691        | 0.2- 0.2+          | 2007 10 14 G96 |             | 0.4+ 0.5- | 2007 12 15 G96 0.7+ 0.1- |
| 2003 11 01                  | 926        | 0.2- 0.3-          | 2007 10 14 G96 |             | 0.2- 0.3- | 2007 12 15 G96 1.0+ 0.5+ |
| 2003 11 01                  | 926        | 0.0 0.2+           | 2007 11 14 691 |             | 0.2- 0.1- | 2007 12 15 G96 0.1+ 0.3- |
| 2003 11 01                  | 926        | 0.3- 0.1+          | 2007 11 14 691 |             | 0.0 0.3-  |                          |

**2003 UE<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 3.90871    | (2000.0)           | <b>P</b>       |             | <b>Q</b>  |                          |
|-----------------------------|------------|--------------------|----------------|-------------|-----------|--------------------------|
| <i>n</i>                    | 0.22926979 | $\omega$ 334.36180 | +0.96982051    | +0.23405330 |           |                          |
| <i>a</i>                    | 2.6438582  | $\Omega$ 12.68087  | -0.13292638    | +0.74244234 |           |                          |
| <i>e</i>                    | 0.2156604  | <i>i</i> 18.13222  | -0.20439853    | +0.62769294 |           |                          |
| <i>P</i>                    | 4.30       | <i>H</i> 17.0      | <i>G</i> 0.15  | <i>U</i> 4  |           |                          |
| Residuals in seconds of arc |            |                    |                |             |           |                          |
| 2003 09 22                  | 691        | 0.1+ 0.2-          | 2003 10 22     | 704         | 0.9+ 0.5- | 2003 11 02 704 0.4+ 0.0  |
| 2003 09 22                  | 691        | 0.3+ 0.1-          | 2003 10 22     | 704         | 0.5- 0.2- | 2003 11 02 704 0.1- 0.2- |
| 2003 09 22                  | 691        | 0.2+ 0.1-          | 2003 10 22     | 704         | 0.9- 0.6+ | 2003 11 19 704 0.5- 0.1+ |
| 2003 09 27                  | 704        | 0.9- 0.5+          | 2003 10 22     | 704         | 1.4- 0.0  | 2003 11 19 704 0.6- 0.4- |
| 2003 09 27                  | 704        | 0.6- 1.1-          | 2003 10 29 699 |             | 1.0+ 0.2- | 2003 11 19 704 1.3- 0.2- |
| 2003 09 27                  | 704        | 0.7+ 0.6+          | 2003 10 29 699 |             | 0.2+ 0.2- | 2003 11 19 704 1.0- 0.6+ |
| 2003 09 27                  | 704        | 1.4- 0.4+          | 2003 10 29 699 |             | 0.6+ 0.4- | 2007 07 16 E12 1.1- 0.1- |
| 2003 09 27                  | 704        | 1.2+ 0.0           | 2003 10 29 699 |             | 0.4+ 1.1+ | 2007 07 16 E12 0.0 0.4-  |
| 2003 10 17                  | 644        | 0.0 0.1+           | 2003 11 02 691 |             | 0.6+ 0.3- | 2007 07 16 E12 0.0 0.6+  |
| 2003 10 17                  | 644        | 0.1+ 0.3+          | 2003 11 02 704 |             | 0.8+ 0.1- | 2007 07 16 E12 0.1+ 0.4- |
| 2003 10 17                  | 644        | 0.2+ 0.2+          | 2003 11 02 691 |             | 0.6+ 0.3- | 2007 08 13 E12 0.8+ 0.2+ |
| 2003 10 20                  | 644        | 0.2- 0.0           | 2003 11 02 704 |             | 0.1+ 0.2+ | 2007 08 13 E12 0.3+ 0.9- |
| 2003 10 20                  | 644        | 0.1- 0.1+          | 2003 11 02 704 |             | 0.2- 0.2- | 2007 08 13 E12 0.5- 0.7+ |
| 2003 10 20                  | 644        | 0.1+ 0.1+          | 2003 11 02 691 |             | 0.6+ 0.2- | 2007 08 13 E12 0.1+ 0.3+ |

**2003 UW<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i>                    | 3.10568    | (2000.0)           | <b>P</b>      |             | <b>Q</b>  |                          |
|-----------------------------|------------|--------------------|---------------|-------------|-----------|--------------------------|
| <i>n</i>                    | 0.25941902 | $\omega$ 133.56691 | +0.59207824   | -0.79585581 |           |                          |
| <i>a</i>                    | 2.4348273  | $\Omega$ 279.70598 | +0.69737318   | +0.58478639 |           |                          |
| <i>e</i>                    | 0.2303807  | <i>i</i> 7.38615   | +0.40387375   | +0.15696628 |           |                          |
| <i>P</i>                    | 3.80       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |           |                          |
| Residuals in seconds of arc |            |                    |               |             |           |                          |
| 1992 12 24                  | 691        | 0.4+ 0.5+          | 2003 10 20    | 644         | 0.1- 0.1+ | 2007 12 08 J75 0.3- 0.5+ |
| 1992 12 24                  | 691        | 0.4- 0.2-          | 2003 10 20    | 644         | 0.4- 0.0  | 2007 12 08 J75 0.4+ 0.0  |
| 1992 12 24                  | 691        | 0.0 0.2-           | 2003 10 20    | 644         | 0.2- 0.1+ | 2007 12 09 620 0.3- 0.1- |
| 1999 10 13                  | 645        | 0.1+ 0.1-          | 2003 10 22    | 704         | 0.5+ 0.4+ | 2007 12 09 620 0.5- 0.1- |
| 1999 10 13                  | 645        | 0.0 0.1-           | 2003 10 22    | 704         | 0.0 0.0   | 2007 12 09 620 0.7- 0.1+ |
| 2003 09 22                  | 644        | 0.3- 0.3+          | 2003 10 22    | 704         | 0.3+ 0.7+ | 2007 12 13 704 0.7+ 0.2- |
| 2003 09 22                  | 644        | 0.4- 0.1+          | 2003 10 22    | 704         | 0.5- 0.2+ | 2007 12 13 704 0.6- 0.9- |
| 2003 09 22                  | 644        | 0.1- 0.1+          | 2007 12 04    | 703         | 0.3+ 0.4+ | 2007 12 13 704 0.5+ 0.7- |

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|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 10 17 699 0.9− 0.7+ | 2007 12 04 703 0.1− 0.8− | 2007 12 13 704 0.4+ 0.4− |
| 2003 10 17 699 0.3+ 0.5+ | 2007 12 04 703 0.4+ 0.1+ | 2007 12 13 704 0.6+ 0.6− |
| 2003 10 17 699 0.2− 0.4+ | 2007 12 04 703 1.1− 0.2+ |                          |
| 2003 10 17 699 0.3+ 0.9+ | 2007 12 08 J75 0.1+ 0.1+ |                          |

**2003 UX<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 298.89767  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22710322 | <i>ω</i> 96.14788  | +0.30863860   | −0.94723385 |
| <i>a</i> | 2.6606466  | <i>Ω</i> 335.33077 | +0.76993733   | +0.30221953 |
| <i>e</i> | 0.1460875  | <i>i</i> 11.96747  | +0.55851475   | +0.10682410 |
| <i>P</i> | 4.34       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 19 644 0.2− 0.0  | 2003 10 17 699 0.6+ 0.6− | 2007 08 10 691 0.1+ 0.0  |
| 2003 09 19 644 0.2+ 0.2− | 2003 10 17 699 0.3− 0.3+ | 2007 08 23 691 0.3− 0.2+ |
| 2003 09 19 644 0.2− 0.4+ | 2003 10 17 699 0.9+ 0.8− | 2007 08 23 691 0.2− 0.1+ |
| 2003 09 29 699 0.6+ 0.6− | 2003 10 20 644 0.2+ 0.1− | 2007 08 23 691 0.0 0.1−  |
| 2003 09 29 699 1.5− 0.3− | 2003 10 20 644 0.4+ 0.2+ | 2007 09 15 691 0.0 0.0   |
| 2003 09 29 699 0.6− 0.6+ | 2003 10 20 644 0.1− 0.5+ | 2007 09 15 691 0.0 0.0   |
| 2003 09 29 699 0.2+ 0.1− | 2003 10 22 704 0.6− 1.3+ | 2007 09 15 691 0.3− 0.1+ |
| 2003 10 05 691 0.3+ 0.3− | 2003 10 22 704 0.9− 0.1+ | 2007 10 09 G96 0.5+ 0.0  |
| 2003 10 05 691 0.5+ 0.2− | 2003 10 22 704 0.1+ 0.4− | 2007 10 09 G96 0.1+ 0.1− |
| 2003 10 05 691 0.4+ 0.2− | 2007 08 10 691 0.1− 0.0  | 2007 10 09 G96 0.1− 0.0  |
| 2003 10 17 699 0.2− 0.4+ | 2007 08 10 691 0.0 0.2−  | 2007 10 09 G96 0.5+ 0.0  |

**2003 UD<sub>77</sub> = 2007 VR<sub>288</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 3.12170    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25242071 | <i>ω</i> 160.96623 | +0.75979542   | −0.63324441 |
| <i>a</i> | 2.4796253  | <i>Ω</i> 239.22036 | +0.57205143   | +0.75882393 |
| <i>e</i> | 0.1976494  | <i>i</i> 9.87563   | +0.30897909   | +0.15227531 |
| <i>P</i> | 3.90       | <i>H</i> 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 29 291 0.1− 0.2− | 2003 10 20 644 0.1− 0.2+ | 2007 10 18 691 0.2+ 0.2− |
| 2003 09 29 291 0.0 0.3−  | 2003 10 20 644 0.3+ 0.0  | 2007 11 13 699 0.0 0.3+  |
| 2003 09 29 291 0.2− 0.2− | 2003 11 22 691 0.0 0.1−  | 2007 11 13 699 0.1+ 1.3+ |
| 2003 09 29 291 0.0 0.1+  | 2003 11 22 691 0.2− 0.2+ | 2007 11 13 699 0.4− 0.3− |
| 2003 09 29 291 0.3− 0.2+ | 2003 11 22 691 0.2+ 0.1− | 2007 11 13 699 0.6+ 0.6− |
| 2003 09 29 291 0.3− 0.1+ | 2007 10 09 691 0.1− 0.3− | 2007 11 19 691 0.1− 0.0  |
| 2003 10 17 691 0.0 0.1−  | 2007 10 09 691 0.1− 0.2− | 2007 11 19 691 0.2− 0.0  |
| 2003 10 17 691 0.3+ 0.1+ | 2007 10 09 691 0.1− 0.4− | 2007 11 19 691 0.1− 0.2− |
| 2003 10 17 691 0.1+ 0.1+ | 2007 10 18 691 0.1− 0.1− |                          |
| 2003 10 20 644 0.0 0.5+  | 2007 10 18 691 0.2+ 0.2− |                          |

**2003 UW<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 20.23035   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26203699 | <i>ω</i> 308.15406 | +0.63253304   | −0.75537977 |
| <i>a</i> | 2.4185829  | <i>Ω</i> 101.72589 | +0.75402243   | +0.55002901 |
| <i>e</i> | 0.1706888  | <i>i</i> 10.06881  | +0.17706535   | +0.35618743 |
| <i>P</i> | 3.76       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 22 699 1.0− 0.2+ | 2003 11 19 703 0.1− 0.3+ | 2003 12 22 691 0.1− 0.3+ |
| 2003 09 22 699 0.8+ 0.3− | 2003 11 19 703 0.0 0.2+  | 2003 12 22 691 0.2− 0.1+ |
| 2003 09 22 699 0.7+ 1.0− | 2003 11 19 703 0.2+ 0.3+ | 2003 12 22 691 0.0 0.2+  |
| 2003 09 22 699 0.1− 0.0  | 2003 11 19 703 0.4+ 0.2+ | 2006 06 20 G96 0.1+ 0.5+ |
| 2003 10 19 699 0.2+ 0.4− | 2003 11 20 644 0.2− 0.0  | 2006 06 20 G96 0.1− 0.1+ |
| 2003 10 19 699 0.1+ 0.6− | 2003 11 20 644 0.2− 0.0  | 2006 06 20 G96 0.2− 0.0  |
| 2003 10 19 699 0.2+ 0.2+ | 2003 11 20 644 0.1+ 0.1+ | 2006 06 20 G96 0.2+ 0.2+ |
| 2003 10 19 699 0.2+ 0.4− | 2003 11 23 699 0.1+ 0.3+ | 2007 12 04 699 0.3+ 0.3− |
| 2003 10 20 704 0.1+ 1.0+ | 2003 11 23 699 0.1+ 0.1− | 2007 12 04 704 0.5− 0.6+ |
| 2003 10 20 704 0.1+ 0.2− | 2003 11 23 699 0.5+ 0.0  | 2007 12 04 699 0.4− 0.2− |

## 2007 DEC. 24

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 10 20 704 0.4+ 0.0  | 2003 11 23 699 0.4− 0.1+ | 2007 12 04 704 0.5+ 0.6+ |
| 2003 10 20 704 0.2− 0.1+ | 2003 12 11 703 0.1− 1.3− | 2007 12 04 699 0.9− 1.1− |
| 2003 10 29 608 0.3− 0.0  | 2003 12 11 703 0.1− 0.5+ | 2007 12 04 704 0.3+ 0.0  |
| 2003 10 29 608 0.5− 0.3− | 2003 12 11 703 0.2− 0.9+ | 2007 12 04 704 0.2+ 0.0  |
| 2003 10 29 608 0.2− 0.3− | 2003 12 11 703 0.8+ 1.1− | 2007 12 04 699 0.4+ 0.1− |

**2003 UQ<sub>91</sub> = 2002 LN<sub>15</sub> = 2007 UA<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 169.52879  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26202223 | <i>ω</i> 175.15137 | −0.59139926   | +0.80152192 |
| <i>a</i> | 2.4186738  | <i>Ω</i> 58.56470  | −0.74327686   | −0.49933829 |
| <i>e</i> | 0.1714557  | <i>i</i> 5.94496   | −0.31270822   | −0.32897399 |
| <i>P</i> | 3.76       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 06 06 704 0.4− 0.5+ | 2003 10 21 291 0.4+ 0.0  | 2007 10 08 G96 0.1+ 0.0  |
| 2002 06 06 704 1.1− 0.8+ | 2003 10 21 291 0.3+ 0.2+ | 2007 10 08 G96 0.2− 0.1+ |
| 2002 06 06 704 0.4− 0.0  | 2003 10 22 291 0.1− 0.2+ | 2007 10 20 691 0.7− 0.0  |
| 2002 06 06 704 0.5− 1.0+ | 2003 10 22 291 0.2− 0.2+ | 2007 10 20 691 0.6− 0.6+ |
| 2002 06 06 704 0.5− 0.6+ | 2003 10 22 291 0.0 0.1+  | 2007 10 20 691 0.4− 0.2+ |
| 2002 06 08 704 0.8+ 0.3− | 2006 07 29 E12 0.3+ 0.7− | 2007 10 31 691 0.4+ 0.6+ |
| 2002 06 08 704 0.6+ 0.2− | 2006 07 29 E12 0.1− 0.6− | 2007 10 31 691 0.4− 0.2+ |
| 2002 06 08 704 0.6+ 0.4− | 2006 07 29 E12 0.1+ 0.4− | 2007 10 31 691 1.1− 0.3+ |
| 2002 06 08 704 0.8+ 0.3+ | 2007 10 08 G96 0.1+ 0.3− | 2007 11 05 G96 0.4+ 0.1+ |
| 2002 06 08 704 0.9+ 0.6+ | 2007 10 08 G96 0.4+ 0.0  | 2007 11 05 G96 0.2− 0.3+ |
| 2003 10 20 691 0.3− 0.0  | 2007 10 08 G96 0.2+ 0.3− | 2007 11 05 G96 0.3+ 0.1+ |
| 2003 10 20 691 0.3− 0.1− | 2007 10 08 G96 0.4+ 0.1+ | 2007 11 05 G96 0.2+ 0.1− |
| 2003 10 20 691 0.1− 0.0  | 2007 10 08 G96 0.4+ 0.1+ |                          |
| 2003 10 21 291 0.1− 0.0  | 2007 10 08 G96 0.1+ 0.0  |                          |

**2003 UX<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 24.24784   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26129138 | <i>ω</i> 176.04396 | +0.91036150   | −0.41380814 |
| <i>a</i> | 2.4231818  | <i>Ω</i> 208.40064 | +0.37954086   | +0.83705202 |
| <i>e</i> | 0.1746826  | <i>i</i> 0.26275   | +0.16489594   | +0.35792001 |
| <i>P</i> | 3.77       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 19 691 0.0 0.2+  | 2003 10 21 644 0.0 0.1+  | 2007 11 02 691 0.1+ 0.0  |
| 2003 09 19 691 0.2− 0.2+ | 2003 10 21 704 0.7+ 0.4− | 2007 11 14 691 0.3+ 0.2− |
| 2003 09 19 691 0.1− 0.2+ | 2003 10 23 291 0.2− 0.3− | 2007 11 14 691 1.3− 0.7+ |
| 2003 09 29 691 0.1− 0.0  | 2003 10 23 291 0.2− 0.2− | 2007 11 14 691 0.3+ 0.2− |
| 2003 09 29 691 0.1+ 0.3+ | 2003 10 23 291 0.2− 0.5− | 2007 11 19 691 0.2+ 0.3− |
| 2003 09 29 691 0.1+ 0.2+ | 2005 04 02 G96 0.3− 0.5+ | 2007 11 19 691 0.0 0.2−  |
| 2003 10 18 691 0.2− 0.1+ | 2005 04 02 G96 0.7+ 0.1− | 2007 11 19 691 0.5− 0.2− |
| 2003 10 18 691 0.1+ 0.2+ | 2005 04 02 G96 0.3+ 0.2+ | 2007 12 04 G96 0.4+ 0.1− |
| 2003 10 18 691 0.0 0.0   | 2005 04 02 G96 0.1+ 1.2+ | 2007 12 04 G96 0.6+ 0.0  |
| 2003 10 21 644 0.0 0.1+  | 2007 09 15 G96 0.0 0.0   | 2007 12 04 G96 0.3+ 0.1− |
| 2003 10 21 704 0.8+ 0.0  | 2007 09 15 G96 0.4− 0.1− | 2007 12 05 704 0.3− 0.7+ |
| 2003 10 21 704 0.1+ 0.7− | 2007 09 15 G96 0.1− 0.2− | 2007 12 05 704 0.8+ 0.4+ |
| 2003 10 21 644 0.2− 0.1+ | 2007 09 15 G96 0.1+ 0.1+ | 2007 12 05 704 0.4+ 0.7+ |
| 2003 10 21 704 0.4+ 0.6+ | 2007 11 02 691 0.4+ 0.2− |                          |
| 2003 10 21 704 0.6+ 0.4+ | 2007 11 02 691 0.2+ 0.2+ |                          |

**2003 UC<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 298.22218  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22470688 | <i>ω</i> 40.64214 | +0.44271798   | −0.89597678 |
| <i>a</i> | 2.6795290  | <i>Ω</i> 23.14547 | +0.79786258   | +0.37581452 |
| <i>e</i> | 0.0959460  | <i>i</i> 5.11152  | +0.40916513   | +0.23662008 |
| <i>P</i> | 4.39       | <i>H</i> 16.7     | <i>G</i> 0.15 | <i>U</i> 4  |



## 2007 DEC. 24

## M.P.O. 129659

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 04 26 | 691 | 0.3+ | 0.4+ | 2003 10 21 | 704 | 0.4−  | 0.2+  | 2003 10 24 | 704 | 0.5+ | 1.2− |
| 2001 04 26 | 691 | 0.2+ | 0.6+ | 2003 10 24 | 704 | 0.0   | 0.4+  | 2003 10 26 | 291 | 0.1+ | 0.3− |
| 2001 04 26 | 691 | 0.2+ | 0.4+ | 2003 10 24 | 704 | 0.7+  | 0.1−  | 2003 10 26 | 691 | 0.3− | 0.4− |
| 2003 09 19 | 691 | 0.2− | 0.0  | 2003 10 24 | 704 | 0.7−  | 0.2+  | 2003 10 26 | 291 | 0.1+ | 0.2− |
| 2003 09 19 | 691 | 0.3− | 0.0  | 2003 10 24 | 704 | 0.1+  | 0.5+  | 2003 10 26 | 691 | 0.4− | 0.6− |
| 2003 09 19 | 691 | 0.2− | 0.0  | 2003 10 24 | 704 | 0.9−  | 0.2−  | 2003 10 26 | 291 | 0.1− | 0.1− |
| 2003 09 29 | 691 | 0.1− | 0.1+ | 2003 10 24 | 704 | 0.8+  | 0.2−  | 2003 10 26 | 691 | 0.2+ | 0.3− |
| 2003 09 29 | 691 | 0.1− | 0.3+ | 2003 10 24 | 704 | 0.5−  | 0.5+  | 2007 09 03 | 703 | 1.2+ | 0.2+ |
| 2003 09 29 | 691 | 0.1− | 0.0  | 2003 10 24 | 704 | 1.1+  | 0.1−  | 2007 09 03 | 703 | 0.2+ | 0.1+ |
| 2003 10 18 | 691 | 0.1− | 0.0  | 2003 10 24 | 704 | 0.8+  | 0.1−  | 2007 09 03 | 703 | 1.2+ | 0.5+ |
| 2003 10 18 | 691 | 0.1+ | 0.0  | 2003 10 24 | 704 | 0.2+  | 0.4+  | 2007 09 03 | 703 | 0.1+ | 0.2+ |
| 2003 10 18 | 691 | 0.0  | 0.1− | 2003 10 24 | 704 | 1.3−  | 0.2+  | 2007 09 11 | 691 | 0.6− | 0.1− |
| 2003 10 21 | 699 | 0.2+ | 0.2+ | 2003 10 24 | 704 | (2.7+ | 0.3−) | 2007 09 11 | 691 | 0.5− | 0.0  |
| 2003 10 21 | 699 | 0.3+ | 0.3− | 2003 10 24 | 704 | 0.8−  | 0.3−  | 2007 09 11 | 691 | 0.8− | 0.1− |
| 2003 10 21 | 699 | 0.6− | 0.3+ | 2003 10 24 | 704 | 0.5+  | 0.4+  | 2007 10 16 | G96 | 0.7− | 0.2− |
| 2003 10 21 | 699 | 0.4− | 0.3− | 2003 10 24 | 704 | 0.7−  | 0.3−  | 2007 10 16 | G96 | 0.3− | 0.2− |
| 2003 10 21 | 704 | 0.3+ | 0.3+ | 2003 10 24 | 704 | 0.4+  | 0.3−  | 2007 10 16 | G96 | 0.1+ | 0.4− |
| 2003 10 21 | 704 | 0.4− | 0.4+ | 2003 10 24 | 704 | 0.9−  | 0.5+  | 2007 10 16 | G96 | 0.1− | 0.1+ |
| 2003 10 21 | 704 | 0.7+ | 0.3+ | 2003 10 24 | 704 | 1.8+  | 0.5+  |            |     |      |      |

2003 UM<sub>95</sub> = 2007 WW<sub>54</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 53.36271   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.25918295 | <i>ω</i> 321.30762 | +0.96868605   | +0.22060644 |
| <i>a</i> | 2.4363056  | <i>Ω</i> 26.62200  | −0.11178421   | +0.79722286 |
| <i>e</i> | 0.0839846  | <i>i</i> 14.72920  | −0.22170168   | +0.56193284 |
| <i>P</i> | 3.80       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 21 | 599 | 0.4+  | 0.2+  | 2003 10 24 | 704 | (0.0  | 1.6−) | 2007 11 08 | 703 | 0.4−  | 1.2+  |
| 2003 09 21 | 599 | 0.1−  | 0.1+  | 2003 10 24 | 704 | 0.7+  | 0.7+  | 2007 11 20 | G96 | 0.1+  | 0.3−  |
| 2003 09 21 | 599 | 0.1+  | 0.2−  | 2003 10 24 | 704 | 0.2+  | 0.3−  | 2007 11 20 | G96 | 0.0   | 0.5−  |
| 2003 10 18 | 691 | 0.3−  | 0.1−  | 2003 10 24 | 704 | (1.6− | 0.3−) | 2007 11 20 | G96 | 0.0   | 0.5−  |
| 2003 10 18 | 691 | 0.0   | 0.1−  | 2003 10 26 | 291 | 0.2−  | 0.1−  | 2007 11 20 | G96 | 0.3+  | 0.6−  |
| 2003 10 18 | 691 | 0.1+  | 0.2−  | 2003 10 26 | 291 | 0.1−  | 0.2−  | 2007 11 21 | 703 | 0.5−  | 0.7−  |
| 2003 10 21 | 704 | 0.2−  | 0.8+  | 2003 10 26 | 291 | 0.0   | 0.0   | 2007 11 21 | 703 | 0.7+  | 0.7+  |
| 2003 10 21 | 704 | 0.5−  | 0.6+  | 2003 10 28 | 704 | (1.6− | 1.8+) | 2007 11 21 | 703 | (0.4− | 2.1−) |
| 2003 10 21 | 704 | 0.3−  | 0.6+  | 2003 10 28 | 704 | (0.8− | 2.7+) | 2007 11 21 | 703 | (1.1− | 1.8−) |
| 2003 10 21 | 704 | 0.9−  | 0.5−  | 2003 10 28 | 704 | (1.6− | 2.4+) | 2007 12 03 | 704 | (0.9+ | 2.3+) |
| 2003 10 24 | 704 | 0.4+  | 0.5+  | 2003 10 28 | 704 | (1.2− | 2.7+) | 2007 12 03 | 704 | 0.2+  | 0.5+  |
| 2003 10 24 | 704 | 0.8+  | 0.6+  | 2003 10 28 | 704 | (1.7− | 2.8+) | 2007 12 03 | 704 | 0.2−  | 0.4+  |
| 2003 10 24 | 704 | 0.3+  | 0.2+  | 2007 11 08 | 703 | 0.9−  | 0.0   | 2007 12 03 | 704 | 1.1+  | 0.5+  |
| 2003 10 24 | 704 | (2.0+ | 1.2−) | 2007 11 08 | 703 | 0.0   | 0.1−  |            |     |       |       |
| 2003 10 24 | 704 | 0.9+  | 0.6−  | 2007 11 08 | 703 | 0.2−  | 0.4−  |            |     |       |       |

2003 UN<sub>95</sub> = 2007 WA<sub>7</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 20.77113   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.25833419 | <i>ω</i> 355.10237 | +0.91196200   | −0.40582527 |
| <i>a</i> | 2.4416390  | <i>Ω</i> 29.07496  | +0.38050548   | +0.78169134 |
| <i>e</i> | 0.1329473  | <i>i</i> 7.12312   | +0.15343041   | +0.47356573 |
| <i>P</i> | 3.82       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 29 | 704 | 0.1− | 1.1+ | 2003 10 21 | 704 | 0.1− | 0.2+ | 2007 11 18 | 704 | 0.1+ | 0.6+ |
| 2003 09 29 | 704 | 0.7+ | 0.7− | 2003 10 21 | 704 | 0.5− | 0.2− | 2007 11 18 | 704 | 0.0  | 0.4+ |
| 2003 09 29 | 704 | 0.2− | 1.1+ | 2003 10 21 | 644 | 0.4− | 0.2− | 2007 11 20 | 704 | 0.1− | 0.2− |
| 2003 09 29 | 704 | 0.8− | 1.2+ | 2003 10 21 | 704 | 0.4− | 0.8− | 2007 11 20 | 704 | 0.7− | 0.4− |
| 2003 09 29 | 704 | 0.6− | 0.2+ | 2003 10 21 | 644 | 0.6+ | 0.2− | 2007 11 20 | 704 | 0.9− | 0.7− |
| 2003 09 29 | 691 | 0.0  | 0.1− | 2003 10 28 | 704 | 0.3+ | 0.7+ | 2007 11 20 | 704 | 0.7− | 1.3− |
| 2003 09 29 | 691 | 0.2+ | 0.2− | 2003 10 28 | 704 | 0.2− | 0.1− | 2007 11 20 | 704 | 1.4− | 0.7− |
| 2003 09 29 | 691 | 0.1+ | 0.0  | 2003 10 28 | 704 | 0.2+ | 0.5+ | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2003 10 18 | 691 | 0.1+ | 0.1− | 2003 10 28 | 704 | 0.3+ | 0.4+ | 2007 11 20 | G96 | 0.1+ | 0.0  |
| 2003 10 18 | 691 | 0.0  | 0.2− | 2003 10 28 | 704 | 0.2+ | 0.2+ | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2003 10 18 | 691 | 0.4+ | 0.0  | 2007 09 15 | G96 | 0.1+ | 0.2− | 2007 12 12 | 704 | 0.6+ | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 21 | 699 | 0.2− | 0.2− | 2007 09 15 | G96 | 0.0  | 0.1− | 2007 12 12 | 704 | 0.2− | 0.9− |
| 2003 10 21 | 699 | 0.1− | 0.2+ | 2007 09 15 | G96 | 0.2+ | 0.2− | 2007 12 12 | 704 | 0.4+ | 0.9+ |
| 2003 10 21 | 699 | 0.4− | 0.8+ | 2007 09 15 | G96 | 0.1+ | 0.1+ | 2007 12 12 | 704 | 0.8− | 0.8− |
| 2003 10 21 | 644 | 0.4− | 0.3− | 2007 10 21 | G96 | 0.4+ | 0.1− | 2007 12 12 | 704 | 0.2+ | 0.4+ |
| 2003 10 21 | 644 | 0.3+ | 0.3− | 2007 10 21 | G96 | 0.3+ | 0.1− | 2007 12 13 | 704 | 0.3+ | 0.4+ |
| 2003 10 21 | 704 | 0.0  | 0.1− | 2007 10 21 | G96 | 0.3+ | 0.1− | 2007 12 13 | 704 | 0.3+ | 0.9+ |
| 2003 10 21 | 699 | 0.9− | 0.1− | 2007 10 21 | G96 | 0.3+ | 0.2− | 2007 12 13 | 704 | 0.6+ | 0.3+ |
| 2003 10 21 | 704 | 0.3− | 0.1+ | 2007 11 18 | 704 | 0.7+ | 0.1+ | 2007 12 13 | 704 | 0.0  | 0.7+ |
| 2003 10 21 | 644 | 0.3− | 0.3− | 2007 11 18 | 704 | 0.4− | 0.0  |            |     |      |      |
| 2003 10 21 | 644 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.1+ | 0.2+ |            |     |      |      |

2003 UW<sub>111</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 52.01782   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.27308937 | <i>ω</i> 313.65713 | +0.99183471   | −0.10733575 |
| <i>a</i> | 2.3528786  | <i>Ω</i> 52.62359  | +0.12682914   | +0.88673035 |
| <i>e</i> | 0.2637920  | <i>i</i> 4.97174   | −0.01335236   | +0.44965356 |
| <i>P</i> | 3.61       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 23 | 704 | 0.4+ | 0.8+ | 2003 10 20 | 704 | 0.6− | 0.0  | 2003 11 03 | 608 | 0.1− | 0.8− |
| 2003 08 23 | 704 | 0.6− | 0.4+ | 2003 10 20 | 704 | 0.2+ | 0.1+ | 2003 11 03 | 608 | 0.5− | 0.9− |
| 2003 08 23 | 704 | 1.1+ | 0.9+ | 2003 10 20 | 691 | 0.1+ | 0.1− | 2003 11 18 | 699 | 0.5− | 1.1+ |
| 2003 08 23 | 704 | 0.2− | 0.8+ | 2003 10 20 | 691 | 0.0  | 0.1− | 2003 11 18 | 699 | 0.4+ | 0.4+ |
| 2003 08 23 | 704 | 0.1+ | 0.9+ | 2003 10 20 | 691 | 0.1+ | 0.1− | 2003 11 18 | 699 | 0.5− | 0.1+ |
| 2003 09 03 | 704 | 0.6+ | 0.1− | 2003 10 21 | 699 | 0.1− | 0.1− | 2003 11 18 | 699 | 0.5+ | 0.2+ |
| 2003 09 03 | 704 | 0.6− | 0.4− | 2003 10 21 | 699 | 0.2− | 0.1− | 2003 11 21 | 704 | 0.4+ | 0.2− |
| 2003 09 03 | 704 | 1.0− | 0.6+ | 2003 10 21 | 699 | 0.3+ | 0.2+ | 2003 11 21 | 704 | 0.1− | 0.1− |
| 2003 09 22 | 644 | 0.2+ | 0.0  | 2003 10 21 | 644 | 0.4+ | 0.3− | 2003 11 21 | 704 | 0.6+ | 0.1− |
| 2003 09 22 | 644 | 0.1+ | 0.0  | 2003 10 21 | 699 | 0.2− | 0.5− | 2003 11 21 | 704 | 0.4− | 0.2− |
| 2003 09 22 | 644 | 0.1+ | 0.1− | 2003 10 21 | 644 | 0.4+ | 0.2− | 2003 11 21 | 704 | 0.3− | 0.4+ |
| 2003 09 28 | 704 | 0.2− | 0.2− | 2003 10 21 | 644 | 0.3+ | 0.3− | 2003 11 24 | 691 | 0.4+ | 0.1− |
| 2003 09 28 | 704 | 0.5− | 0.4− | 2003 10 25 | 704 | 0.2− | 0.2− | 2003 11 24 | 691 | 0.4+ | 0.1− |
| 2003 09 28 | 704 | 0.2− | 0.3− | 2003 10 25 | 704 | 0.3− | 0.5− | 2003 11 24 | 691 | 0.4+ | 0.0  |
| 2003 09 28 | 704 | 0.3− | 0.1− | 2003 10 25 | 704 | 0.5− | 0.5− | 2007 11 03 | G96 | 0.5+ | 0.2− |
| 2003 09 28 | 704 | 0.2+ | 0.3− | 2003 10 25 | 704 | 0.1− | 0.2+ | 2007 11 03 | G96 | 0.6+ | 0.1+ |
| 2003 10 15 | 644 | 0.1− | 0.0  | 2003 10 25 | 704 | 0.6− | 0.0  | 2007 11 03 | G96 | 0.2+ | 0.1− |
| 2003 10 15 | 644 | 0.2− | 0.1+ | 2003 10 28 | 704 | 0.7− | 0.5+ | 2007 11 03 | G96 | 0.3+ | 0.1− |
| 2003 10 15 | 644 | 0.1− | 0.1+ | 2003 10 28 | 704 | 0.9+ | 0.2+ | 2007 12 05 | 691 | 0.1− | 0.1+ |
| 2003 10 17 | 644 | 0.4− | 0.2− | 2003 10 28 | 704 | 0.7+ | 0.1− | 2007 12 05 | 691 | 0.2− | 0.1− |
| 2003 10 17 | 644 | 0.2− | 0.3− | 2003 10 28 | 704 | 0.1+ | 0.4+ | 2007 12 05 | 691 | 0.2− | 0.1+ |
| 2003 10 17 | 644 | 0.2− | 0.2− | 2003 10 28 | 608 | 0.3− | 0.6+ | 2007 12 15 | 704 | 1.1− | 0.7+ |
| 2003 10 20 | 704 | 0.1− | 0.2+ | 2003 10 28 | 608 | 0.3− | 0.5+ | 2007 12 15 | 704 | 0.8+ | 0.5+ |
| 2003 10 20 | 704 | 0.2− | 0.6+ | 2003 10 28 | 608 | 0.3− | 0.3+ | 2007 12 15 | 704 | 0.9+ | 0.9+ |
| 2003 10 20 | 704 | 0.2− | 0.7+ | 2003 11 03 | 608 | 0.3− | 0.3− | 2007 12 15 | 704 | 0.2+ | 0.1− |

2003 UP<sub>115</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |                    |               |             |
|----------|------------|--------------------|---------------|-------------|
| <i>M</i> | 9.07342    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.26842114 | <i>ω</i> 117.75927 | +0.37035095   | −0.92723700 |
| <i>a</i> | 2.3800801  | <i>Ω</i> 310.39321 | +0.82457624   | +0.35564597 |
| <i>e</i> | 0.1711028  | <i>i</i> 4.17313   | +0.42768469   | +0.11724966 |
| <i>P</i> | 3.67       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i>    |

**2003 UT<sub>116</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.59249   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26923321 | $\omega$ 286.86055 | +0.77780454   | -0.62616605 |
| <i>a</i> | 2.3752917  | $\Omega$ 111.94105 | +0.59659570   | +0.70844261 |
| <i>e</i> | 0.2042191  | <i>i</i> 3.34899   | +0.19772118   | +0.32561502 |
| <i>P</i> | 3.66       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 644 | 0.0   | 0.1+  | 2003 10 21 | 704 | 0.0  | 0.2+ | 2003 11 26 | 699 | 0.2+ | 0.5- |
| 2003 09 22 | 644 | 0.1+  | 0.0   | 2003 10 22 | 691 | 0.2- | 0.1- | 2003 11 26 | 699 | 0.6- | 0.5- |
| 2003 09 22 | 644 | 0.1+  | 0.1-  | 2003 10 22 | 691 | 0.2- | 0.2- | 2003 11 26 | 699 | 0.1- | 0.1+ |
| 2003 09 28 | 704 | 1.2+  | 1.4+  | 2003 10 22 | 691 | 0.2- | 0.2- | 2003 12 13 | 703 | 0.5+ | 1.0+ |
| 2003 09 28 | 704 | (2.7+ | 0.1-) | 2003 10 25 | 704 | 0.5+ | 0.1+ | 2003 12 13 | 703 | 0.6- | 0.0  |
| 2003 09 28 | 704 | (2.3+ | 0.8-) | 2003 10 25 | 704 | 0.0  | 0.1+ | 2003 12 13 | 703 | 0.4+ | 0.4- |
| 2003 09 28 | 704 | 1.3-  | 1.1+  | 2003 10 25 | 704 | 0.5+ | 0.2+ | 2003 12 13 | 703 | 0.7- | 0.1+ |
| 2003 10 14 | 699 | 0.2-  | 0.6-  | 2003 10 25 | 704 | 0.5+ | 0.3+ | 2007 12 02 | D35 | 0.1+ | 0.0  |
| 2003 10 14 | 699 | 0.3-  | 0.6-  | 2003 10 25 | 704 | 0.0  | 0.2+ | 2007 12 02 | D35 | 0.2+ | 0.1+ |
| 2003 10 14 | 699 | 0.3+  | 0.9+  | 2003 10 29 | 704 | 0.2+ | 0.4+ | 2007 12 02 | D35 | 0.2- | 0.5- |
| 2003 10 14 | 699 | 0.8-  | 0.5-  | 2003 10 29 | 704 | 0.5+ | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2003 10 21 | 704 | 0.2+  | 0.5-  | 2003 10 29 | 704 | 0.7+ | 0.4+ | 2007 12 05 | 704 | 0.3- | 0.1+ |
| 2003 10 21 | 704 | 0.0   | 0.0   | 2003 10 29 | 704 | 0.5- | 0.3+ | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2003 10 21 | 704 | 0.3-  | 0.6-  | 2003 10 29 | 704 | 0.4+ | 0.0  |            |     |      |      |
| 2003 10 21 | 704 | 0.3+  | 0.1-  | 2003 11 26 | 699 | 1.1+ | 0.4- |            |     |      |      |

**2003 UQ<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.38176  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26243237 | $\omega$ 149.15704 | +0.39962104   | -0.91598769 |
| <i>a</i> | 2.4161531  | $\Omega$ 277.26796 | +0.83354286   | +0.37927788 |
| <i>e</i> | 0.1579861  | <i>i</i> 2.05849   | +0.38145685   | +0.13082367 |
| <i>P</i> | 3.76       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.2+ | 0.0  | 2003 10 24 | 704 | 0.2-  | 0.1-  | 2007 12 06 | G96 | 0.5+ | 0.5- |
| 2003 09 18 | 691 | 0.2- | 0.1+ | 2003 10 24 | 704 | 0.7-  | 0.4-  | 2007 12 06 | G96 | 0.2- | 0.3- |
| 2003 09 18 | 691 | 0.1- | 0.1- | 2003 10 24 | 704 | 0.2-  | 0.2-  | 2007 12 06 | G96 | 0.2- | 0.4- |
| 2003 10 01 | 691 | 0.3+ | 0.2- | 2003 10 25 | 704 | 0.1-  | 0.2+  | 2007 12 06 | G96 | 0.0  | 0.5- |
| 2003 10 01 | 691 | 0.0  | 0.1+ | 2003 10 25 | 704 | 0.2+  | 0.0   | 2007 12 10 | 704 | 0.6+ | 0.2+ |
| 2003 10 01 | 691 | 0.3- | 0.0  | 2003 10 25 | 704 | 0.3-  | 0.0   | 2007 12 10 | 704 | 0.6+ | 0.4+ |
| 2003 10 18 | 691 | 0.1+ | 0.1- | 2003 10 25 | 704 | 0.1-  | 0.5-  | 2007 12 10 | 704 | 0.5+ | 0.3- |
| 2003 10 18 | 691 | 0.2+ | 0.0  | 2003 10 25 | 704 | 0.5+  | 0.1+  | 2007 12 12 | 704 | 0.6+ | 0.5+ |
| 2003 10 18 | 691 | 0.1+ | 0.2- | 2003 10 26 | 691 | 0.6-  | 0.3+  | 2007 12 12 | 704 | 0.1- | 0.4+ |
| 2003 10 21 | 699 | 0.6- | 0.4+ | 2003 10 26 | 691 | 0.1-  | 0.1-  | 2007 12 12 | 704 | 0.4+ | 0.2- |
| 2003 10 21 | 699 | 0.9+ | 0.1- | 2003 10 26 | 691 | 0.1+  | 0.2+  | 2007 12 14 | 704 | 0.5- | 0.4- |
| 2003 10 21 | 699 | 0.2+ | 0.0  | 2007 12 04 | 703 | 0.2-  | 0.2-  | 2007 12 14 | 704 | 1.0- | 0.2+ |
| 2003 10 21 | 699 | 0.6+ | 0.1- | 2007 12 04 | 703 | 0.4+  | 0.7+  | 2007 12 14 | 704 | 0.7- | 0.6- |
| 2003 10 24 | 704 | 0.8+ | 0.1- | 2007 12 04 | 703 | 0.5-  | 0.1-  | 2007 12 14 | 704 | 0.3+ | 1.0+ |
| 2003 10 24 | 704 | 0.1+ | 0.5+ | 2007 12 04 | 703 | (0.5+ | 1.7-) | 2007 12 14 | 704 | 0.6- | 0.0  |

**2003 UP<sub>125</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.32094   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28041252 | $\omega$ 334.87463 | +0.54185076   | -0.82742836 |
| <i>a</i> | 2.3117336  | $\Omega$ 81.99526  | +0.79409333   | +0.44650390 |
| <i>e</i> | 0.1631933  | <i>i</i> 8.56691   | +0.27534258   | +0.34058270 |
| <i>P</i> | 3.51       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 01 | 699 | 0.2+  | 0.8+  | 2003 10 20 | 704 | 0.2+ | 0.2- | 2003 11 26 | 699 | 1.2+ | 0.9- |
| 2003 10 01 | 699 | 1.9-  | 0.1-  | 2003 10 20 | 704 | 0.6- | 0.2+ | 2003 11 26 | 699 | 0.3+ | 0.7+ |
| 2003 10 01 | 699 | 0.9+  | 0.1+  | 2003 10 22 | 645 | 0.2- | 0.3- | 2005 05 07 | 691 | 0.1+ | 0.6+ |
| 2003 10 01 | 699 | 1.0-  | 0.0   | 2003 10 22 | 644 | 0.4- | 0.1- | 2005 05 07 | 691 | 0.4+ | 0.3+ |
| 2003 10 15 | 699 | (1.1- | 2.3-) | 2003 10 22 | 645 | 0.2- | 0.3- | 2005 05 07 | 691 | 0.1+ | 0.2+ |
| 2003 10 15 | 699 | 0.1+  | 0.2+  | 2003 10 22 | 644 | 0.3- | 0.2- | 2007 09 18 | G96 | 0.0  | 0.1+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 15 | 699 | 0.4+ | 0.6+ | 2003 10 22 | 644 | 0.2-  | 0.0   | 2007 09 18 | G96 | 0.3- | 0.1- |
| 2003 10 15 | 699 | 1.2+ | 0.3- | 2003 10 24 | 645 | 0.1-  | 0.4-  | 2007 09 18 | G96 | 0.1+ | 0.3- |
| 2003 10 20 | 704 | 0.5+ | 0.4+ | 2003 10 24 | 645 | 0.1-  | 0.4-  | 2007 09 18 | G96 | 0.2+ | 0.8+ |
| 2003 10 20 | 704 | 0.1+ | 0.3- | 2003 11 26 | 699 | (2.8- | 2.4-) |            |     |      |      |
| 2003 10 20 | 704 | 0.7- | 0.5+ | 2003 11 26 | 699 | 0.2+  | 0.9+  |            |     |      |      |

**2003 US<sub>126</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.66444  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25653390 | $\omega$ 135.97831 | +0.32085116   | -0.94266651 |
| <i>a</i> | 2.4530489  | $\Omega$ 295.11087 | +0.83852834   | +0.32780684 |
| <i>e</i> | 0.1109453  | <i>i</i> 5.82122   | +0.44036888   | +0.06263002 |
| <i>P</i> | 3.84       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 05 | 704 | 0.5- | 0.4+ | 2003 11 19 | 704 | 0.6+ | 0.2- | 2007 11 20 | 704 | 0.2+ | 0.6+ |
| 2003 10 05 | 704 | 0.5- | 0.6- | 2003 11 19 | 699 | 0.7- | 0.3- | 2007 11 20 | 704 | 0.1+ | 0.3- |
| 2003 10 05 | 704 | 0.5+ | 0.5+ | 2003 11 19 | 704 | 0.3+ | 0.1- | 2007 12 12 | 704 | 0.3+ | 0.0  |
| 2003 10 20 | 644 | 0.1- | 0.3- | 2003 11 19 | 704 | 0.8+ | 0.6- | 2007 12 12 | 704 | 0.8- | 0.4- |
| 2003 10 20 | 644 | 0.1+ | 0.1- | 2003 11 19 | 704 | 0.3+ | 0.2+ | 2007 12 12 | 704 | 0.6+ | 0.3- |
| 2003 10 20 | 644 | 0.1+ | 0.2+ | 2003 11 19 | 704 | 0.2+ | 0.1- | 2007 12 12 | 704 | 0.5+ | 0.7- |
| 2003 10 22 | 704 | 0.7- | 0.3- | 2007 11 13 | 703 | 0.5- | 0.8+ | 2007 12 13 | 704 | 0.3+ | 0.1- |
| 2003 10 22 | 704 | 0.6+ | 0.1- | 2007 11 13 | 703 | 0.3- | 0.8- | 2007 12 13 | 704 | 0.1- | 0.2+ |
| 2003 10 22 | 704 | 0.0  | 0.3- | 2007 11 13 | 703 | 0.4- | 0.3- | 2007 12 13 | 704 | 0.6+ | 0.0  |
| 2003 10 22 | 644 | 0.1- | 0.1+ | 2007 11 17 | 704 | 0.1+ | 0.1+ | 2007 12 13 | 704 | 0.2+ | 0.1- |
| 2003 10 22 | 704 | 0.2+ | 0.4+ | 2007 11 17 | 704 | 0.3+ | 0.0  | 2007 12 13 | 704 | 0.1- | 0.1+ |
| 2003 10 22 | 644 | 0.1- | 0.1+ | 2007 11 17 | 704 | 0.5- | 0.1+ | 2007 12 15 | 704 | 0.1+ | 0.4- |
| 2003 10 22 | 644 | 0.1+ | 0.3+ | 2007 11 17 | 704 | 0.3- | 0.1- | 2007 12 15 | 704 | 0.1- | 0.3+ |
| 2003 11 19 | 699 | 0.7- | 0.1- | 2007 11 17 | 704 | 0.0  | 0.3+ | 2007 12 15 | 704 | 0.7- | 0.8+ |
| 2003 11 19 | 699 | 0.2+ | 0.5- | 2007 11 20 | 704 | 1.0+ | 0.1+ | 2007 12 15 | 704 | 0.8- | 0.7+ |
| 2003 11 19 | 699 | 0.6- | 1.3+ | 2007 11 20 | 704 | 0.8+ | 0.4- | 2007 12 15 | 704 | 0.6- | 0.2+ |

**2003 UJ<sub>127</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 302.39035  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22843114 | $\omega$ 33.37126 | +0.27601731   | -0.95510276 |
| <i>a</i> | 2.6503253  | $\Omega$ 40.89817 | +0.84194285   | +0.18622575 |
| <i>e</i> | 0.1102544  | <i>i</i> 9.46559  | +0.46362342   | +0.23043153 |
| <i>P</i> | 4.31       | <i>H</i> 16.9     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 02 | 691 | 0.2- | 0.4- | 2003 10 28 | 704 | 0.7- | 0.4+ | 2007 09 14 | 703 | 1.1+ | 0.6- |
| 2003 10 02 | 691 | 0.1- | 0.2- | 2003 10 28 | 704 | 0.5- | 0.3+ | 2007 09 14 | 703 | 0.5- | 1.8- |
| 2003 10 02 | 691 | 0.1- | 0.2- | 2003 10 28 | 704 | 0.5- | 0.9+ | 2007 09 14 | 703 | 1.0+ | 0.2- |
| 2003 10 21 | 691 | 0.0  | 0.3- | 2003 10 28 | 704 | 0.9- | 1.1+ | 2007 09 14 | 703 | 1.0+ | 1.6+ |
| 2003 10 21 | 691 | 0.4+ | 0.2- | 2003 10 28 | 704 | 1.0+ | 0.4+ | 2007 10 04 | 703 | 0.0  | 0.2+ |
| 2003 10 21 | 691 | 0.4+ | 0.1- | 2003 11 15 | 291 | 0.3+ | 0.4+ | 2007 10 04 | 703 | 0.6- | 1.1+ |
| 2003 10 22 | 291 | 0.1- | 0.1- | 2003 11 15 | 291 | 0.3+ | 0.4+ | 2007 10 04 | 703 | 0.7- | 0.1+ |
| 2003 10 22 | 291 | 0.0  | 0.1+ | 2003 11 15 | 291 | 0.6+ | 0.1+ | 2007 10 04 | 703 | 0.3- | 0.8+ |
| 2003 10 22 | 291 | 0.2- | 0.0  | 2003 11 21 | 704 | 1.0- | 0.8- | 2007 10 20 | G96 | 0.4- | 0.1- |
| 2003 10 25 | 291 | 0.1- | 0.2- | 2003 11 21 | 704 | 0.6+ | 0.5- | 2007 10 20 | G96 | 0.2- | 0.2- |
| 2003 10 25 | 291 | 0.1- | 0.2- | 2003 11 21 | 704 | 0.3- | 0.2+ | 2007 10 20 | G96 | 0.5- | 0.2- |
| 2003 10 25 | 291 | 0.1- | 0.2- | 2003 11 21 | 704 | 1.2+ | 1.2- | 2007 10 20 | G96 | 0.2- | 0.5- |

**2003 UD<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.87434   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28010662 | $\omega$ 90.59078  | +0.81526901   | -0.57601475 |
| <i>a</i> | 2.3134164  | $\Omega$ 304.58150 | +0.49838261   | +0.75028212 |
| <i>e</i> | 0.2300838  | <i>i</i> 4.14616   | +0.29487491   | +0.32447457 |
| <i>P</i> | 3.52       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |     |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-----|------|------------|-----|------|------|
| 2003 09 27 | 704 | 0.0  | 0.9- | 2003 11 16 | 691 | 0.0 | 0.0  | 2003 12 15 | 703 | 0.4- | 0.9+ |
| 2003 09 27 | 704 | 0.3- | 0.7- | 2003 11 16 | 691 | 0.0 | 0.1+ | 2003 12 15 | 703 | 0.2- | 0.3+ |

2007 DEC. 24

M.P.O. 129661

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 704 | 0.2− | 0.1− | 2003 11 19 | 699 | 0.1+ | 0.2− | 2003 12 15 | 703 | 1.0− | 0.2+ |
| 2003 09 27 | 704 | 0.4− | 0.0  | 2003 11 19 | 699 | 0.7+ | 0.4+ | 2003 12 18 | 704 | 0.3− | 0.4− |
| 2003 09 27 | 704 | 0.4+ | 0.6+ | 2003 11 19 | 699 | 0.4+ | 0.6− | 2003 12 18 | 704 | 0.5+ | 0.1− |
| 2003 10 05 | 704 | 0.5+ | 0.2− | 2003 11 19 | 699 | 0.9+ | 0.3− | 2003 12 18 | 704 | 0.8+ | 0.1− |
| 2003 10 05 | 704 | 0.3− | 0.2− | 2003 11 19 | 704 | 0.1+ | 0.3+ | 2003 12 18 | 704 | 0.5− | 0.0  |
| 2003 10 05 | 704 | 0.8+ | 0.0  | 2003 11 19 | 704 | 0.4+ | 0.0  | 2003 12 23 | 704 | 0.1− | 0.6+ |
| 2003 10 05 | 704 | 0.5+ | 0.2− | 2003 11 19 | 704 | 0.2+ | 0.0  | 2003 12 23 | 704 | 0.6+ | 0.1+ |
| 2003 10 05 | 704 | 0.1+ | 0.2+ | 2003 11 19 | 704 | 0.2+ | 0.2+ | 2003 12 23 | 704 | 0.3+ | 1.2+ |
| 2003 10 18 | 644 | 0.5− | 0.2+ | 2003 11 19 | 704 | 0.1− | 0.1+ | 2003 12 23 | 704 | 0.0  | 1.7+ |
| 2003 10 18 | 644 | 0.5− | 0.3+ | 2003 11 19 | 691 | 0.1− | 0.3− | 2003 12 23 | 704 | 0.6+ | 0.1+ |
| 2003 10 18 | 644 | 0.5− | 0.1+ | 2003 11 19 | 691 | 0.1− | 0.2− | 2003 12 28 | 704 | 0.3− | 0.0  |
| 2003 10 22 | 704 | 0.3+ | 0.2+ | 2003 11 19 | 691 | 0.0  | 0.1− | 2003 12 28 | 704 | 0.1− | 0.4+ |
| 2003 10 22 | 704 | 0.8+ | 0.2− | 2003 11 21 | 644 | 0.0  | 0.0  | 2003 12 28 | 704 | 0.2− | 0.2+ |
| 2003 10 22 | 704 | 0.1− | 0.3+ | 2003 11 21 | 644 | 0.2+ | 0.2− | 2003 12 28 | 704 | 0.1+ | 0.7+ |
| 2003 10 22 | 704 | 0.5+ | 0.3+ | 2003 11 21 | 644 | 0.0  | 0.1− | 2003 12 28 | 699 | 1.2+ | 0.2− |
| 2003 10 22 | 704 | 0.1+ | 0.9− | 2003 11 21 | 644 | 0.1+ | 0.1− | 2003 12 28 | 699 | 0.5+ | 0.1− |
| 2003 10 30 | 704 | 0.3+ | 1.2+ | 2003 11 21 | 644 | 0.0  | 0.1− | 2003 12 28 | 699 | 0.5+ | 0.1− |
| 2003 10 30 | 704 | 0.4− | 0.1+ | 2003 11 21 | 644 | 0.1+ | 0.3− | 2003 12 28 | 699 | 0.9− | 0.7− |
| 2003 10 30 | 704 | 0.4− | 0.3− | 2003 11 24 | 699 | 0.1− | 0.4− | 2007 11 09 | G96 | 0.4− | 0.2− |
| 2003 10 30 | 704 | 0.6+ | 0.1− | 2003 11 24 | 699 | 0.0  | 0.2+ | 2007 11 09 | G96 | 0.1+ | 1.0− |
| 2003 11 03 | 704 | 0.3+ | 0.1− | 2003 11 24 | 699 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.5− | 0.3+ |
| 2003 11 03 | 704 | 0.1− | 0.2− | 2003 11 24 | 699 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.0  | 0.3− |
| 2003 11 03 | 704 | 0.2− | 0.1− | 2003 11 26 | 704 | 0.3− | 0.3+ | 2007 12 05 | G96 | 0.3− | 0.3− |
| 2003 11 03 | 704 | 0.2+ | 0.8− | 2003 11 26 | 704 | 0.7− | 0.6+ | 2007 12 05 | G96 | 0.3− | 0.3− |
| 2003 11 14 | 644 | 0.3− | 0.1− | 2003 11 26 | 704 | 0.3− | 0.1− | 2007 12 05 | G96 | 0.2− | 0.9− |
| 2003 11 14 | 644 | 0.2− | 0.1− | 2003 11 26 | 704 | 0.8− | 0.2+ | 2007 12 05 | G96 | 0.3+ | 0.0  |
| 2003 11 14 | 644 | 0.2− | 0.0  | 2003 11 26 | 704 | 0.7− | 0.2+ |            |     |      |      |
| 2003 11 16 | 691 | 0.2− | 0.0  | 2003 12 15 | 703 | 0.7− | 0.3+ |            |     |      |      |

**2003 UR<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 36.84125   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.25490634 | $\omega$ | 241.26571 | +0.99230521 | −0.05520364 |
| <i>a</i> | 2.4634795  | $\Omega$ | 121.69888 | +0.08928326 | +0.93918929 |
| <i>e</i> | 0.1494897  | <i>i</i> | 7.48464   | −0.08578383 | +0.33893366 |
| <i>P</i> | 3.87       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 704 | 0.2− | 0.4+ | 2003 11 20 | 645 | 0.0  | 0.1− | 2007 11 13 | G96 | 0.4+ | 0.3− |
| 2003 10 20 | 704 | 0.1+ | 0.4+ | 2003 11 20 | 645 | 0.0  | 0.1− | 2007 11 13 | G96 | 0.1+ | 0.2− |
| 2003 10 20 | 704 | 0.5− | 0.6+ | 2005 02 09 | 691 | 0.2− | 0.1+ | 2007 11 13 | G96 | 0.2+ | 0.1− |
| 2003 10 20 | 704 | 0.0  | 1.0+ | 2005 02 09 | 691 | 0.0  | 0.2+ | 2007 11 13 | G96 | 0.1− | 0.2− |
| 2003 10 22 | 704 | 0.2+ | 0.6+ | 2005 02 09 | 691 | 0.3+ | 0.2+ | 2007 11 18 | G96 | 0.3+ | 0.1− |
| 2003 10 22 | 704 | 0.2+ | 1.0+ | 2006 06 04 | G96 | 0.2− | 0.3+ | 2007 11 18 | G96 | 0.2− | 0.2− |
| 2003 10 22 | 704 | 0.2+ | 0.7+ | 2006 06 04 | G96 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.1− | 0.1− |
| 2003 10 24 | 704 | 0.7− | 0.9+ | 2006 06 04 | G96 | 0.3− | 0.2− | 2007 11 18 | G96 | 0.4+ | 0.2− |
| 2003 10 24 | 704 | 0.3− | 0.1− | 2006 06 04 | G96 | 0.4+ | 0.1+ | 2007 12 05 | 703 | 0.2+ | 0.1+ |
| 2003 10 24 | 704 | 0.5− | 1.0+ | 2007 11 04 | G96 | 0.2+ | 0.1− | 2007 12 05 | 703 | 0.6− | 0.6− |
| 2003 11 19 | 644 | 0.2− | 0.2+ | 2007 11 04 | G96 | 0.1+ | 0.3− | 2007 12 05 | 703 | 1.0− | 0.1− |
| 2003 11 19 | 644 | 0.1+ | 0.4+ | 2007 11 04 | G96 | 0.4+ | 0.0  | 2007 12 05 | 703 | 0.3+ | 0.4+ |
| 2003 11 19 | 644 | 0.2+ | 0.1+ | 2007 11 04 | G96 | 0.1+ | 0.3− |            |     |      |      |

**2003 UP<sub>140</sub> = 2003 SZ<sub>186</sub> = 2003 SA<sub>232</sub> = 2007 VG<sub>192</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 10.91084   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.27590942 | $\omega$ | 343.43267 | +0.42241412 | −0.90374773 |
| <i>a</i> | 2.3368188  | $\Omega$ | 81.53638  | +0.83935621 | +0.36115225 |
| <i>e</i> | 0.2165776  | <i>i</i> | 4.01922   | +0.34212200 | +0.22980230 |
| <i>P</i> | 3.57       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 699 | 0.1− | 0.5− | 2003 10 18 | 699 | 0.2+ | 0.1− | 2007 11 11 | G96 | 0.5+ | 0.3+ |
| 2003 09 22 | 699 | 0.8+ | 0.4− | 2003 10 18 | 699 | 0.1+ | 0.3+ | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2003 09 22 | 699 | 1.0− | 0.9+ | 2003 10 18 | 699 | 0.6− | 1.4− | 2007 11 11 | G96 | 0.3+ | 0.2+ |
| 2003 09 22 | 699 | 0.6− | 0.3+ | 2007 10 19 | G96 | 0.3− | 0.1− | 2007 11 21 | G96 | 0.1− | 0.1+ |
| 2003 09 24 | 608 | 0.0  | 0.6+ | 2007 10 19 | G96 | 0.3+ | 0.3− | 2007 11 21 | G96 | 0.2− | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 24 | 608 | 0.2+ | 0.5+ | 2007 10 19 | G96 | 0.1− | 0.2+ | 2007 11 21 | G96 | 0.4− | 0.1− |
| 2003 09 24 | 608 | 0.2− | 0.5+ | 2007 10 19 | G96 | 0.3− | 0.5− | 2007 11 21 | G96 | 0.4+ | 0.2+ |
| 2003 10 16 | 699 | 0.1+ | 0.2+ | 2007 11 04 | G96 | 0.3− | 0.1− | 2007 12 06 | G96 | 0.2− | 0.3+ |
| 2003 10 16 | 699 | 0.8+ | 0.5− | 2007 11 04 | G96 | 0.2+ | 0.1− | 2007 12 06 | G96 | 0.2− | 0.4− |
| 2003 10 16 | 699 | 0.7− | 0.4− | 2007 11 04 | G96 | 0.3− | 0.1+ | 2007 12 06 | G96 | 0.0  | 0.4+ |
| 2003 10 16 | 699 | 0.6+ | 0.6+ | 2007 11 04 | G96 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2003 10 18 | 699 | 0.2+ | 0.7− | 2007 11 11 | G96 | 0.1+ | 0.0  |            |     |      |      |

**2003 UG<sub>141</sub> = 2007 UG<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 31.20886   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.26613009 | $\omega$ | 286.54045 | +0.96885501 | −0.20589776 |
| <i>a</i> | 2.3937203  | $\Omega$ | 85.50064  | +0.24467963 | +0.88147242 |
| <i>e</i> | 0.1327568  | <i>i</i> | 7.93198   | −0.03810312 | +0.42498528 |
| <i>P</i> | 3.70       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 17 | 644 | 0.1− | 0.0  | 2007 10 24 | G96 | 0.2+ | 0.0  | 2007 11 18 | 699 | 0.6− | 0.4− |
| 2003 10 17 | 644 | 0.3+ | 0.3+ | 2007 10 24 | G96 | 0.0  | 0.1− | 2007 11 18 | 699 | 0.3+ | 0.9− |
| 2003 10 17 | 644 | 0.0  | 0.2+ | 2007 10 24 | G96 | 0.2+ | 0.3− | 2007 11 18 | 699 | 0.3− | 1.0− |
| 2003 10 17 | 644 | 0.2+ | 0.3+ | 2007 10 24 | G96 | 0.1+ | 0.1− | 2007 11 20 | 703 | 0.1+ | 0.1− |
| 2003 10 17 | 644 | 0.4+ | 0.6+ | 2007 10 24 | G96 | 0.3− | 0.2+ | 2007 11 20 | 703 | 0.2+ | 0.2+ |
| 2003 10 17 | 644 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.0  | 0.0  | 2007 11 20 | 703 | 0.4+ | 0.7+ |
| 2003 10 18 | 699 | 0.7+ | 0.6− | 2007 10 24 | G96 | 0.2− | 0.1+ | 2007 11 20 | 703 | 0.5+ | 0.3− |
| 2003 10 18 | 699 | 0.1− | 0.2− | 2007 10 25 | G96 | 0.2− | 0.0  | 2007 11 29 | 704 | 0.9+ | 1.1+ |
| 2003 10 18 | 699 | 0.2− | 0.3− | 2007 10 25 | G96 | 0.1+ | 0.0  | 2007 11 29 | 704 | 0.4+ | 1.2+ |
| 2003 10 18 | 699 | 0.6− | 0.2− | 2007 10 25 | G96 | 0.5+ | 0.2+ | 2007 11 29 | 704 | 0.7+ | 0.3+ |
| 2003 10 19 | 704 | 0.2− | 0.4+ | 2007 10 25 | G96 | 0.4+ | 0.1+ | 2007 12 04 | 704 | 0.6− | 0.0  |
| 2003 10 19 | 704 | 0.0  | 0.2− | 2007 11 08 | G96 | 0.5− | 0.2− | 2007 12 04 | 704 | 0.2− | 1.0− |
| 2003 10 19 | 704 | 0.6+ | 0.3+ | 2007 11 08 | G96 | 0.2+ | 0.1+ | 2007 12 04 | 704 | 0.6− | 0.1+ |
| 2003 10 19 | 704 | 1.1− | 0.2+ | 2007 11 08 | G96 | 0.1− | 0.0  | 2007 12 04 | 704 | 1.0− | 0.1− |
| 2003 10 19 | 704 | 0.1+ | 0.7− | 2007 11 08 | G96 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.3− | 0.2+ |
| 2007 10 24 | G96 | 0.0  | 0.1− | 2007 11 18 | 699 | 0.4− | 0.1+ |            |     |      |      |

**2003 UD<sub>159</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 65.90679   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.27023742 | $\omega$ | 306.12945 | +0.99949065 | +0.00920757 |
| <i>a</i> | 2.3694037  | $\Omega$ | 53.36265  | +0.00442182 | +0.90828103 |
| <i>e</i> | 0.2006776  | <i>i</i> | 2.18230   | −0.03160513 | +0.41825925 |
| <i>P</i> | 3.65       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 03 | 291 | 0.3+ | 0.7+ | 2003 11 02 | 704 | 0.4−  | 0.1+  | 2003 11 29 | 691 | 0.3− | 0.1+ |
| 2002 06 03 | 291 | 0.0  | 0.6+ | 2003 11 15 | 691 | 0.0   | 0.2+  | 2003 11 29 | 691 | 0.1− | 0.2+ |
| 2002 06 03 | 291 | 0.3+ | 0.4+ | 2003 11 15 | 691 | 0.0   | 0.1+  | 2003 11 29 | 691 | 0.3− | 0.1− |
| 2003 10 20 | 691 | 0.2− | 0.2+ | 2003 11 15 | 691 | 0.0   | 0.1+  | 2003 12 01 | 291 | 0.4+ | 0.2− |
| 2003 10 20 | 691 | 0.4− | 0.1+ | 2003 11 16 | 703 | 0.5+  | 0.0   | 2003 12 01 | 291 | 0.4+ | 0.2− |
| 2003 10 20 | 691 | 0.2− | 0.2+ | 2003 11 16 | 703 | 0.3+  | 0.5−  | 2003 12 01 | 291 | 0.4+ | 0.2− |
| 2003 10 22 | 695 | 0.2− | 0.1− | 2003 11 16 | 703 | 0.4+  | 0.1+  | 2003 12 22 | 691 | 0.1− | 0.1+ |
| 2003 10 22 | 695 | 0.2− | 0.0  | 2003 11 16 | 703 | 0.2+  | 0.5+  | 2003 12 22 | 691 | 0.1− | 0.1− |
| 2003 10 23 | 608 | 0.1− | 0.2− | 2003 11 19 | 699 | 0.2+  | 0.3+  | 2003 12 22 | 691 | 0.3+ | 0.6+ |
| 2003 10 23 | 608 | 0.7− | 0.1+ | 2003 11 19 | 699 | 0.7−  | 0.3+  | 2007 10 15 | G96 | 0.1− | 0.5− |
| 2003 10 23 | 608 | 0.5+ | 0.6− | 2003 11 19 | 699 | 0.1+  | 1.1+  | 2007 10 15 | G96 | 0.9+ | 0.1− |
| 2003 10 28 | 704 | 0.5+ | 0.8+ | 2003 11 19 | 699 | 0.2−  | 0.4+  | 2007 10 15 | G96 | 0.8+ | 0.3− |
| 2003 10 28 | 704 | 0.5+ | 0.7+ | 2003 11 21 | 704 | 0.9+  | 0.7+  | 2007 10 15 | G96 | 0.2− | 0.0  |
| 2003 10 28 | 704 | 1.1+ | 0.4+ | 2003 11 21 | 704 | (0.9+ | 2.8+) | 2007 11 05 | G96 | 0.7+ | 0.3+ |
| 2003 10 28 | 608 | 0.2− | 0.8− | 2003 11 21 | 704 | 0.4−  | 0.4+  | 2007 11 05 | G96 | 0.8+ | 0.4+ |
| 2003 10 28 | 608 | 0.8+ | 0.8− | 2003 11 21 | 704 | 0.5+  | 0.6+  | 2007 11 05 | G96 | 0.6+ | 0.1− |
| 2003 10 28 | 608 | 0.6+ | 0.4− | 2003 11 21 | 704 | 0.5+  | 1.1+  | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 2003 10 29 | 699 | 0.2+ | 0.3− | 2003 11 24 | 699 | 0.4+  | 0.1−  | 2007 12 04 | G96 | 0.3+ | 0.3− |
| 2003 10 29 | 699 | 1.4− | 0.0  | 2003 11 24 | 703 | 0.9−  | 0.7−  | 2007 12 04 | G96 | 0.3− | 0.0  |
| 2003 10 29 | 699 | 0.2+ | 0.8+ | 2003 11 24 | 699 | 0.3−  | 0.4−  | 2007 12 04 | G96 | 0.2+ | 0.7− |
| 2003 10 29 | 699 | 0.5− | 0.0  | 2003 11 24 | 703 | 0.4−  | 0.8−  | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2003 11 02 | 704 | 0.2+ | 0.5+ | 2003 11 24 | 699 | 0.2−  | 0.7−  | 2007 12 04 | 691 | 0.4− | 0.2+ |
| 2003 11 02 | 704 | 0.2− | 0.3+ | 2003 11 24 | 703 | 1.1−  | 0.1−  | 2007 12 04 | 691 | 0.3− | 0.4− |

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2007 DEC. 24

2003 11 02 704 0.3− 0.7+ 2003 11 24 699 1.2− 0.9− 2007 12 04 691 0.2− 0.7+  
 2003 11 02 704 0.0 0.2− 2003 11 24 703 (0.2− 3.7−)

**2003 UZ<sub>170</sub> = 2007 TN<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.25046   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23494994 | $\omega$ | 115.69818 | +0.88158059   | +0.44742604 |
| <i>a</i> | 2.6010727  | $\Omega$ | 218.23753 | −0.47076457   | +0.85672675 |
| <i>e</i> | 0.1714944  | <i>i</i> | 14.06556  | +0.03458866   | +0.25657206 |
| <i>P</i> | 4.20       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2003 10 19 691 | 0.2− | 0.2− | 2003 11 16 291 | 0.6+ | 0.6+ | 2007 10 08 703 | 0.3−  | 0.5+  |
| 2003 10 19 691 | 0.2− | 0.4− | 2006 04 09 691 | 0.2+ | 0.1− | 2007 10 08 703 | 0.4−  | 0.1+  |
| 2003 10 19 691 | 0.2− | 0.4− | 2006 04 09 691 | 0.1+ | 0.1+ | 2007 10 08 703 | 0.9−  | 0.4−  |
| 2003 10 23 699 | 0.3+ | 0.1+ | 2006 04 09 691 | 0.4+ | 0.5+ | 2007 10 08 703 | 0.4−  | 0.5+  |
| 2003 10 23 699 | 1.3− | 1.9+ | 2006 04 26 807 | 0.3+ | 0.5+ | 2007 10 09 699 | 0.7−  | 0.2+  |
| 2003 10 23 699 | 1.2− | 0.9+ | 2006 04 26 807 | 0.5+ | 0.6+ | 2007 10 09 699 | 0.7−  | 1.8−  |
| 2003 10 23 699 | 0.2− | 0.2+ | 2006 05 03 G96 | 0.4− | 0.9+ | 2007 10 09 699 | 0.4−  | 0.1−  |
| 2003 10 24 704 | 0.2+ | 0.2− | 2006 05 03 G96 | 0.0  | 0.7+ | 2007 10 09 699 | (2.2− | 1.2−) |
| 2003 10 24 704 | 0.3+ | 0.4+ | 2006 05 03 G96 | 0.1− | 0.7+ | 2007 10 19 703 | (0.1+ | 2.1+) |
| 2003 10 24 704 | 0.2− | 0.3+ | 2006 05 03 G96 | 0.3− | 1.0+ | 2007 10 19 703 | 0.8+  | 0.3+  |
| 2003 10 24 704 | 0.0  | 0.1+ | 2007 09 13 703 | 0.0  | 0.2− | 2007 10 19 703 | 0.5+  | 1.4+  |
| 2003 10 24 704 | 0.4− | 0.2− | 2007 09 13 703 | 0.8+ | 0.3− | 2007 10 19 703 | 0.7+  | 0.5+  |
| 2003 11 16 291 | 1.7+ | 0.3+ | 2007 09 13 703 | 1.1+ | 0.1+ |                |       |       |
| 2003 11 16 291 | 0.5+ | 0.6+ | 2007 09 13 703 | 0.1− | 0.1− |                |       |       |

**2003 UT<sub>172</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.88552    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25997551 | $\omega$ | 313.17535 | +0.50962345   | −0.85112222 |
| <i>a</i> | 2.4313515  | $\Omega$ | 105.78276 | +0.82250449   | +0.43894700 |
| <i>e</i> | 0.1614646  | <i>i</i> | 7.52344   | +0.25252783   | +0.28795224 |
| <i>P</i> | 3.79       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2003 09 20 704 | 0.4+ | 1.0+ | 2003 10 26 608 | 0.3+ | 0.3− | 2003 12 21 703 | 0.3+  | 0.8−  |
| 2003 09 20 704 | 0.3− | 0.2+ | 2003 10 26 608 | 0.4+ | 0.5− | 2003 12 21 703 | 0.1−  | 0.9+  |
| 2003 09 20 704 | 0.5+ | 0.1+ | 2003 10 26 608 | 0.4+ | 0.2− | 2003 12 22 704 | 1.0−  | 1.3+  |
| 2003 09 20 704 | 0.3+ | 0.6+ | 2003 11 19 703 | 0.4+ | 0.1− | 2003 12 22 704 | 0.5+  | 1.1+  |
| 2003 10 20 704 | 0.3+ | 0.9− | 2003 11 19 703 | 1.1− | 0.2+ | 2003 12 22 704 | (0.4− | 2.3+) |
| 2003 10 20 704 | 0.1+ | 0.2+ | 2003 11 19 703 | 0.9− | 0.7+ | 2007 11 19 D29 | 1.1+  | 1.1−  |
| 2003 10 20 704 | 0.3− | 0.2+ | 2003 11 19 703 | 1.4− | 0.6− | 2007 11 19 D29 | 0.3−  | 0.2−  |
| 2003 10 20 704 | 0.7+ | 0.3− | 2003 12 01 703 | 0.7− | 0.9− | 2007 11 19 D29 | 0.2−  | 0.5−  |
| 2003 10 20 704 | 0.4+ | 0.2+ | 2003 12 01 703 | 0.4− | 0.4+ | 2007 11 19 D29 | 0.1−  | 0.1−  |
| 2003 10 23 699 | 0.1+ | 0.2− | 2003 12 01 703 | 1.0− | 0.2+ | 2007 12 04 704 | 0.2+  | 0.3+  |
| 2003 10 23 699 | 1.2+ | 0.9− | 2003 12 01 703 | 0.9− | 0.6+ | 2007 12 04 704 | 0.6−  | 0.3−  |
| 2003 10 23 699 | 0.1− | 0.2− | 2003 12 21 703 | 0.8+ | 0.8+ | 2007 12 04 704 | 0.5+  | 0.6−  |
| 2003 10 23 699 | 0.8+ | 0.5− | 2003 12 21 703 | 0.0  | 0.1− | 2007 12 04 704 | 0.3−  | 0.6+  |

**2003 US<sub>175</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 247.68028  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22308467 | $\omega$ | 271.37582 | −0.11202089   | −0.99360007 |
| <i>a</i> | 2.6925032  | $\Omega$ | 185.12430 | +0.96402065   | −0.10512316 |
| <i>e</i> | 0.0076754  | <i>i</i> | 9.34236   | +0.24107159   | −0.04132825 |
| <i>P</i> | 4.42       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1994 10 08 691 | 0.2− | 0.3+ | 2003 10 19 691 | 0.0  | 0.2+ | 2003 10 24 704 | 0.8+ | 0.2+ |
| 1994 10 08 691 | 0.3+ | 0.2+ | 2003 10 19 691 | 0.1+ | 0.1+ | 2003 10 24 704 | 0.3− | 0.9− |
| 1994 10 08 691 | 0.3− | 0.2− | 2003 10 21 644 | 0.1− | 0.0  | 2006 01 31 691 | 0.0  | 0.3+ |
| 2003 09 20 599 | 0.0  | 0.2− | 2003 10 21 644 | 0.4− | 0.2+ | 2006 01 31 691 | 0.0  | 0.1+ |
| 2003 09 20 599 | 0.1+ | 0.2− | 2003 10 21 644 | 0.0  | 0.0  | 2006 01 31 691 | 0.2+ | 0.4+ |
| 2003 09 20 599 | 0.2+ | 0.1+ | 2003 10 22 645 | 0.0  | 0.1− | 2007 09 20 291 | 0.1− | 0.1+ |

2003 09 20 599 0.2− 0.4− 2003 10 22 645 0.0 0.1− 2007 09 20 291 0.1+ 0.2−  
 2003 10 19 691 0.1− 0.4+ 2003 10 24 704 0.2− 0.6+ 2007 09 20 291 0.1+ 0.1−

**2003 UD<sub>186</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 43.96310   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28967271 | $\omega$ | 52.16590 | +0.47288395   | −0.88086007 |
| <i>a</i> | 2.2622000  | $\Omega$ | 9.68390  | +0.76271644   | +0.39694238 |
| <i>e</i> | 0.1771879  | <i>i</i> | 7.37563  | +0.44118522   | +0.25791914 |
| <i>P</i> | 3.40       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 28 691 | 0.1− | 0.3+ | 2003 10 27 691 | 0.1+ | 0.0  | 2003 11 19 704 | 0.6+ | 0.2− |
| 2003 09 28 691 | 0.7+ | 0.4+ | 2003 10 29 699 | 0.1+ | 0.6− | 2003 12 10 644 | 0.0  | 0.3− |
| 2003 09 28 691 | 0.3− | 0.1+ | 2003 10 29 699 | 1.2− | 0.3− | 2003 12 10 644 | 0.2− | 0.3− |
| 2003 10 22 704 | 0.2+ | 0.1+ | 2003 10 29 699 | 0.2− | 0.6− | 2003 12 10 644 | 0.3− | 0.4− |
| 2003 10 22 704 | 0.5+ | 0.4+ | 2003 10 29 699 | 0.6− | 0.3− | 2003 12 13 644 | 0.1− | 0.1+ |
| 2003 10 22 704 | 0.5+ | 0.3+ | 2003 10 30 704 | 0.1+ | 0.6+ | 2003 12 13 644 | 0.2− | 0.4− |
| 2003 10 22 704 | 0.1+ | 0.3+ | 2003 10 30 704 | 0.9+ | 0.7− | 2003 12 13 644 | 0.3− | 0.1− |
| 2003 10 22 704 | 0.8+ | 0.8+ | 2003 10 30 704 | 0.6− | 0.2+ | 2003 12 19 704 | 1.0− | 0.8+ |
| 2003 10 23 608 | 0.9− | 1.8− | 2003 10 30 704 | 0.6+ | 0.0  | 2003 12 19 704 | 1.1− | 0.2+ |
| 2003 10 23 608 | 0.2+ | 1.8− | 2003 10 30 704 | 0.0  | 0.4+ | 2003 12 19 704 | 0.3− | 0.3+ |
| 2003 10 23 608 | 0.2+ | 1.4− | 2003 11 02 704 | 0.4+ | 0.1+ | 2003 12 19 704 | 0.5− | 0.7+ |
| 2003 10 25 704 | 0.1+ | 0.5+ | 2003 11 02 704 | 0.1− | 0.6+ | 2003 12 19 704 | 0.1+ | 0.7+ |
| 2003 10 25 704 | 0.1+ | 0.1+ | 2003 11 02 704 | 0.0  | 0.4− | 2005 04 17 691 | 0.1+ | 0.4+ |
| 2003 10 25 704 | 0.0  | 0.5+ | 2003 11 02 704 | 0.5− | 0.5− | 2005 04 17 691 | 0.3+ | 0.5+ |
| 2003 10 25 704 | 0.5+ | 0.2+ | 2003 11 19 704 | 0.1+ | 0.6+ | 2005 04 17 691 | 0.3+ | 0.4+ |
| 2003 10 25 704 | 0.0  | 0.6+ | 2003 11 19 704 | 0.9− | 1.9+ | 2007 11 19 691 | 0.0  | 0.2− |
| 2003 10 27 691 | 0.2− | 0.0  | 2003 11 19 704 | 0.0  | 0.8+ | 2007 11 19 691 | 0.0  | 0.3− |
| 2003 10 27 691 | 0.1− | 0.0  | 2003 11 19 704 | 0.5− | 0.9+ | 2007 11 19 691 | 0.3− | 0.1− |

**2003 UP<sub>198</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.80261   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26433369 | $\omega$ | 292.17546 | +0.82610467   | −0.56042769 |
| <i>a</i> | 2.4045531  | $\Omega$ | 101.95631 | +0.53666357   | +0.75053268 |
| <i>e</i> | 0.1875337  | <i>i</i> | 3.45297   | +0.17188159   | +0.35017353 |
| <i>P</i> | 3.73       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 04 704 | 0.1− | 0.9+ | 2003 10 21 691 | 0.1+ | 0.2− | 2003 11 18 699 | 1.2+ | 0.6− |
| 2003 09 04 704 | 0.0  | 0.7+ | 2003 10 21 704 | 0.4− | 0.2+ | 2003 11 18 699 | 0.4− | 0.1+ |
| 2003 09 04 704 | 0.3+ | 0.3+ | 2003 10 21 704 | 0.2+ | 0.0  | 2003 11 18 699 | 0.5+ | 0.1+ |
| 2003 09 04 704 | 0.1− | 0.1+ | 2003 10 21 691 | 0.2+ | 0.1− | 2003 12 13 703 | 0.4− | 1.0+ |
| 2003 09 22 644 | 0.1+ | 0.3+ | 2003 10 21 704 | 0.2− | 0.0  | 2003 12 13 703 | 0.6− | 0.4− |
| 2003 09 22 644 | 0.2− | 0.2+ | 2003 10 21 704 | 0.2+ | 0.1− | 2003 12 13 703 | 0.5+ | 0.3− |
| 2003 09 22 644 | 0.3− | 0.1+ | 2003 10 24 608 | 1.3+ | 0.3− | 2003 12 13 703 | 0.4+ | 0.2+ |
| 2003 09 28 704 | 0.3− | 0.1+ | 2003 10 24 608 | 1.3+ | 0.3− | 2003 12 23 704 | 0.1− | 1.1+ |
| 2003 09 28 704 | 0.3− | 0.7+ | 2003 10 24 608 | 0.9+ | 0.3− | 2003 12 23 704 | 0.5− | 0.4+ |
| 2003 09 28 704 | 0.5− | 0.0  | 2003 10 25 704 | 0.3− | 0.2− | 2003 12 23 704 | 0.1− | 0.6+ |
| 2003 09 28 704 | 0.3− | 0.5+ | 2003 10 25 704 | 0.1− | 0.2− | 2005 03 11 691 | 0.2+ | 0.1+ |
| 2003 09 28 704 | 0.2− | 0.1+ | 2003 10 25 704 | 0.4− | 0.1− | 2005 03 11 691 | 0.0  | 0.2+ |
| 2003 10 14 699 | 0.4− | 0.5− | 2003 10 25 704 | 0.4− | 0.6+ | 2005 03 11 691 | 0.1+ | 0.3+ |
| 2003 10 14 699 | 1.7− | 0.4+ | 2003 10 25 704 | 0.2− | 0.0  | 2007 12 05 704 | 0.3− | 0.3− |
| 2003 10 14 699 | 0.6− | 0.2− | 2003 10 29 704 | 0.6− | 0.1− | 2007 12 05 704 | 0.2− | 0.6− |
| 2003 10 14 699 | 0.0  | 0.4− | 2003 10 29 704 | 0.5− | 0.1− | 2007 12 05 704 | 0.1− | 0.4+ |
| 2003 10 21 691 | 0.2+ | 0.2+ | 2003 10 29 704 | 0.1− | 0.0  | 2007 12 05 704 | 0.6+ | 0.5− |
| 2003 10 21 704 | 0.3− | 0.2− | 2003 11 18 699 | 0.5+ | 0.6− |                |      |      |

2007 DEC. 24

M.P.O. 129663

**2003 US<sub>199</sub> = 2007 VJ<sub>219</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.96018   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26078550 | $\omega$ | 336.46331 | +0.81845456   | -0.57364372 |
| <i>a</i> | 2.4263145  | $\Omega$ | 58.58144  | +0.53304713   | +0.73687930 |
| <i>e</i> | 0.1882440  | <i>i</i> | 2.19161   | +0.21445953   | +0.35768950 |
| <i>P</i> | 3.78       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 29 | 691 | 0.4-  | 0.0   | 2003 10 24 | 704 | 1.0+  | 1.0+  | 2007 12 06 | G96 | 0.1+ | 0.2- |
| 2003 09 29 | 691 | 0.3-  | 0.0   | 2003 10 24 | 704 | 0.2+  | 0.2+  | 2007 12 06 | G96 | 0.1+ | 0.2- |
| 2003 09 29 | 691 | 0.0   | 0.1+  | 2007 09 18 | G96 | 0.3+  | 0.1+  | 2007 12 06 | G96 | 0.2- | 0.0  |
| 2003 10 21 | 699 | 0.5-  | 0.1+  | 2007 09 18 | G96 | 0.5+  | 0.2+  | 2007 12 06 | G96 | 0.1+ | 0.3- |
| 2003 10 21 | 699 | 1.1-  | 1.2+  | 2007 09 18 | G96 | 0.6+  | 0.1+  | 2007 12 10 | 704 | 0.1+ | 0.8+ |
| 2003 10 21 | 699 | 0.9-  | 0.2-  | 2007 09 18 | G96 | (0.4+ | 2.5-) | 2007 12 10 | 704 | 0.4+ | 0.7- |
| 2003 10 21 | 644 | 0.1-  | 0.0   | 2007 11 01 | 691 | 0.4+  | 0.9-  | 2007 12 10 | 704 | 0.8+ | 1.1+ |
| 2003 10 21 | 704 | (1.7+ | 0.4-) | 2007 11 01 | 691 | 0.2-  | 0.3-  | 2007 12 10 | 704 | 0.4+ | 0.4+ |
| 2003 10 21 | 699 | 0.8-  | 0.1+  | 2007 11 01 | 691 | 0.0   | 0.1-  | 2007 12 12 | 704 | 0.5- | 1.0+ |
| 2003 10 21 | 704 | 0.9+  | 0.6-  | 2007 11 09 | 691 | 0.1-  | 0.1-  | 2007 12 12 | 704 | 0.7+ | 0.5+ |
| 2003 10 21 | 644 | 0.1-  | 0.4+  | 2007 11 09 | 691 | 0.0   | 0.1-  | 2007 12 12 | 704 | 0.8- | 0.2+ |
| 2003 10 21 | 704 | (1.7+ | 0.1-) | 2007 11 09 | 691 | 0.0   | 0.2-  | 2007 12 12 | 704 | 0.1+ | 0.9+ |
| 2003 10 21 | 704 | 0.6+  | 0.1-  | 2007 11 13 | 691 | 0.3-  | 0.3-  | 2007 12 14 | 704 | 0.5- | 0.6+ |
| 2003 10 21 | 704 | 0.9+  | 0.2-  | 2007 11 13 | 691 | 0.2-  | 0.0   | 2007 12 14 | 704 | 0.4- | 0.3+ |
| 2003 10 21 | 644 | 0.1-  | 0.3+  | 2007 11 13 | 691 | 0.2-  | 0.0   | 2007 12 14 | 704 | 0.6+ | 0.8+ |
| 2003 10 24 | 704 | 1.3+  | 1.0-  | 2007 12 04 | 703 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.0  | 0.3+ |
| 2003 10 24 | 704 | 0.6+  | 0.0   | 2007 12 04 | 703 | (1.6- | 0.6+) |            |     |      |      |
| 2003 10 24 | 704 | 0.2+  | 0.0   | 2007 12 04 | 703 | 0.5+  | 0.8+  |            |     |      |      |

**2003 UM<sub>208</sub> = 2007 TB<sub>261</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.16265  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24612666 | $\omega$ | 53.21513 | -0.52372301   | -0.84990818 |
| <i>a</i> | 2.5217205  | $\Omega$ | 68.46492 | +0.76036333   | -0.49709801 |
| <i>e</i> | 0.0717530  | <i>i</i> | 3.57821  | +0.38413776   | -0.17478461 |
| <i>P</i> | 4.00       | <i>H</i> | 16.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 18 | 809 | 0.8- | 0.6+ | 2003 11 21 | 699 | 0.9- | 0.1- | 2007 10 10 | 691 | 0.5+ | 1.5+ |
| 2003 10 22 | 691 | 0.1- | 0.1- | 2003 11 21 | 699 | 0.1- | 0.4- | 2007 10 14 | 691 | 0.1- | 0.1- |
| 2003 10 22 | 691 | 0.2- | 0.1+ | 2005 03 30 | 703 | 0.2- | 1.7+ | 2007 10 14 | 691 | 0.4- | 0.3- |
| 2003 10 22 | 691 | 0.6+ | 0.6+ | 2005 03 30 | 703 | 0.2+ | 0.3- | 2007 10 14 | 691 | 0.0  | 0.0  |
| 2003 10 24 | 704 | 1.2+ | 0.8- | 2005 03 30 | 703 | 0.5- | 0.1+ | 2007 10 18 | 691 | 0.5- | 0.2- |
| 2003 10 24 | 704 | 0.4+ | 0.4+ | 2005 03 30 | 703 | 0.3- | 1.3- | 2007 10 18 | 691 | 0.0  | 0.3- |
| 2003 10 24 | 704 | 0.1+ | 0.1- | 2005 05 11 | G96 | 0.6+ | 0.2- | 2007 10 18 | 691 | 0.4- | 0.1- |
| 2003 10 24 | 704 | 0.4+ | 0.2- | 2005 05 11 | G96 | 0.5+ | 0.0  | 2007 11 01 | G96 | 0.4+ | 0.3- |
| 2003 10 24 | 704 | 1.2+ | 1.1- | 2005 05 11 | G96 | 0.6+ | 0.1- | 2007 11 01 | G96 | 0.1+ | 0.4- |
| 2003 10 28 | 704 | 0.2- | 0.2+ | 2005 05 11 | G96 | 0.7+ | 0.2+ | 2007 11 01 | G96 | 0.2+ | 0.4- |
| 2003 10 28 | 704 | 0.1- | 0.7+ | 2007 10 09 | G96 | 0.7- | 1.2+ | 2007 11 01 | G96 | 0.4+ | 0.3- |
| 2003 10 28 | 704 | 0.8- | 0.6+ | 2007 10 09 | G96 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.3- |
| 2003 10 28 | 704 | 0.1- | 1.1+ | 2007 10 09 | G96 | 0.3+ | 0.4- | 2007 11 09 | G96 | 0.5+ | 0.5- |
| 2003 10 28 | 704 | 1.1- | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.4- | 2007 11 09 | G96 | 0.5+ | 0.5- |
| 2003 11 21 | 699 | 2.1+ | 1.1+ | 2007 10 10 | 691 | 0.3- | 0.2- | 2007 11 09 | G96 | 0.5+ | 0.5- |
| 2003 11 21 | 699 | 0.9- | 0.7- | 2007 10 10 | 691 | 0.1- | 0.2- |            |     |      |      |

**2003 UN<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.97569   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26548961 | $\omega$ | 355.91149 | +0.99504006   | +0.09946815 |
| <i>a</i> | 2.3975685  | $\Omega$ | 358.37857 | -0.09005189   | +0.89571401 |
| <i>e</i> | 0.1339950  | <i>i</i> | 2.37344   | -0.04226044   | +0.43336186 |
| <i>P</i> | 3.71       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 02 | 691 | 0.1- | 0.2- | 2003 10 24 | 704 | 0.1- | 0.3+ | 2003 10 29 | 704 | 0.6+ | 0.9- |
| 2001 01 02 | 691 | 0.3- | 0.2- | 2003 10 24 | 704 | 0.2- | 0.6+ | 2003 11 24 | 691 | 0.1+ | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 02 | 691 | 0.1+ | 0.4- | 2003 10 25 | 704 | 0.3- | 0.5+ | 2003 11 24 | 691 | 0.1- | 0.1- |
| 2003 09 27 | 691 | 0.4- | 0.1- | 2003 10 25 | 704 | 0.5+ | 0.8+ | 2003 11 24 | 691 | 0.0  | 0.3- |
| 2003 09 27 | 691 | 0.1- | 0.0  | 2003 10 25 | 704 | 0.0  | 0.2+ | 2007 12 12 | 704 | 0.0  | 0.8+ |
| 2003 09 27 | 691 | 0.5- | 0.1- | 2003 10 25 | 704 | 0.3- | 0.8+ | 2007 12 12 | 704 | 0.0  | 1.0+ |
| 2003 10 16 | 691 | 0.3+ | 0.1- | 2003 10 25 | 704 | 0.0  | 0.4+ | 2007 12 12 | 704 | 0.8+ | 0.4+ |
| 2003 10 16 | 691 | 0.1+ | 0.1- | 2003 10 25 | 291 | 0.0  | 0.2- | 2007 12 14 | 704 | 0.6- | 0.4+ |
| 2003 10 16 | 691 | 0.2+ | 0.1- | 2003 10 25 | 291 | 0.1+ | 0.2- | 2007 12 14 | 704 | 0.0  | 0.3+ |
| 2003 10 24 | 704 | 0.2+ | 0.9+ | 2003 10 25 | 291 | 0.0  | 0.3- | 2007 12 14 | 704 | 0.2- | 0.8+ |
| 2003 10 24 | 704 | 0.2+ | 0.7+ | 2003 10 29 | 704 | 1.4+ | 0.4+ | 2007 12 14 | 704 | 0.5- | 0.5+ |
| 2003 10 24 | 704 | 0.1- | 0.6+ | 2003 10 29 | 704 | 0.0  | 0.4- |            |     |      |      |

**2003 UE<sub>217</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.38989    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26143186 | $\omega$ | 334.32916 | +0.62528822   | -0.77772362 |
| <i>a</i> | 2.4223137  | $\Omega$ | 76.89945  | +0.72692535   | +0.55038591 |
| <i>e</i> | 0.1804915  | <i>i</i> | 3.79727   | +0.28389112   | +0.30367962 |
| <i>P</i> | 3.77       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 22 | 644 | 0.6- | 0.1+ | 2003 10 25 | 704 | 0.3-  | 0.1-  | 2007 12 05 | 704 | 0.2+ | 0.4+ |
| 2003 09 22 | 644 | 0.6- | 0.1- | 2003 10 25 | 704 | 0.8-  | 0.2+  | 2007 12 05 | 704 | 0.4- | 0.4+ |
| 2003 09 22 | 644 | 0.6- | 0.0  | 2003 10 25 | 704 | 0.5-  | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.5+ |
| 2003 09 28 | 704 | 0.5- | 0.4+ | 2003 11 03 | 608 | (0.7+ | 2.0-) | 2007 12 05 | 704 | 0.3+ | 0.4+ |
| 2003 09 28 | 704 | 0.3- | 0.7+ | 2003 11 03 | 608 | 0.5-  | 0.4-  | 2007 12 05 | 620 | 0.1+ | 0.2+ |
| 2003 09 28 | 704 | 0.1- | 0.5+ | 2003 11 03 | 608 | 0.3-  | 0.5-  | 2007 12 05 | 620 | 0.2- | 0.5+ |
| 2003 09 28 | 704 | 0.2+ | 0.7+ | 2003 11 18 | 699 | 0.8-  | 1.5-  | 2007 12 05 | 620 | 0.3+ | 0.2- |
| 2003 09 28 | 704 | 0.2- | 0.0  | 2003 11 18 | 699 | 0.0   | 0.6+  | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2003 10 14 | 699 | 0.2+ | 0.3- | 2003 11 18 | 699 | 1.1+  | 0.6-  | 2007 12 14 | 704 | 0.3+ | 0.8+ |
| 2003 10 14 | 699 | 0.7+ | 0.5- | 2003 11 18 | 699 | (0.1- | 2.3-) | 2007 12 14 | 704 | 0.3+ | 0.7+ |
| 2003 10 14 | 699 | 0.5- | 0.2- | 2003 11 19 | 644 | 0.0   | 0.1-  | 2007 12 14 | 704 | 0.1+ | 0.7+ |
| 2003 10 14 | 699 | 1.1+ | 0.7+ | 2003 11 19 | 644 | 0.0   | 0.3-  | 2007 12 14 | 704 | 0.5+ | 0.7+ |
| 2003 10 21 | 704 | 1.3+ | 0.1+ | 2003 11 19 | 644 | 0.1+  | 0.0   | 2007 12 15 | 691 | 0.5+ | 0.2- |
| 2003 10 21 | 704 | 0.1+ | 0.4+ | 2003 11 28 | 691 | 0.2+  | 0.1-  | 2007 12 15 | 691 | 0.1- | 0.3+ |
| 2003 10 21 | 704 | 0.7+ | 0.4+ | 2003 11 28 | 691 | 0.1-  | 0.2+  | 2007 12 15 | 691 | 0.1+ | 0.2+ |
| 2003 10 21 | 704 | 0.9+ | 0.5- | 2003 11 28 | 691 | 0.0   | 0.1-  | 2007 12 16 | 691 | 0.3- | 0.0  |
| 2003 10 21 | 704 | 0.3+ | 0.3+ | 2007 12 05 | J75 | 0.0   | 0.2+  | 2007 12 16 | 691 | 0.2+ | 0.2+ |
| 2003 10 25 | 704 | 0.1+ | 0.3- | 2007 12 05 | J75 | 0.0   | 1.0+  | 2007 12 16 | 691 | 0.7- | 1.9- |
| 2003 10 25 | 704 | 0.7- | 0.7- | 2007 12 05 | J75 | 0.4-  | 0.5+  |            |     |      |      |

**2003 UC<sub>225</sub> = 2007 VX<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.05235   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25629166 | $\omega$ | 111.22110 | +0.85362917   | -0.51908805 |
| <i>a</i> | 2.4545944  | $\Omega$ | 280.07299 | +0.46016129   | +0.79037073 |
| <i>e</i> | 0.1753165  | <i>i</i> | 2.51379   | +0.24406725   | +0.32536395 |
| <i>P</i> | 3.85       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 691 | 0.2- | 0.3+ | 2003 10 29 | 291 | 0.1+ | 0.2- | 2007 11 06 | 691 | 0.1- | 0.2+ |
| 2003 10 22 | 691 | 0.1+ | 0.1+ | 2007 10 24 | G96 | 1.0+ | 0.5- | 2007 11 06 | 691 | 0.1- | 0.1- |
| 2003 10 22 | 691 | 0.2- | 0.1+ | 2007 10 24 | G96 | 0.6+ | 0.3- | 2007 11 06 | 691 | 0.3- | 0.1- |
| 2003 10 25 | 704 | 0.3+ | 0.1- | 2007 10 24 | G96 | 0.5+ | 0.6- | 2007 12 15 | G96 | 0.1- | 0.4+ |
| 2003 10 25 | 704 | 0.2+ | 0.2- | 2007 10 24 | G96 | 0.5+ | 0.2- | 2007 12 15 | G96 | 0.0  | 0.1- |
| 2003 10 25 | 704 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.6- | 0.0  | 2007 12 15 | G96 | 1.0+ | 0.3- |
| 2003 10 29 | 291 | 0.0  | 0.1- | 2007 11 02 | 691 | 0.3+ | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2003 10 29 | 291 | 0.1+ | 0.2- | 2007 11 02 | 691 | 0.2- | 0.4+ |            |     |      |      |

**2003 UJ<sub>230</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 331.76667  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.21783564 | $\omega$ | 194.15167 | +0.95323979 | -0.30211701 |
| $a$ | 2.7355843  | $\Omega$ | 183.46182 | +0.28819224 | +0.91638045 |
| $e$ | 0.1411944  | $i$      | 7.32100   | +0.09098971 | +0.26262557 |
| $P$ | 4.52       | $H$      | 16.8      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 05 03 | 691 | 0.0  | 0.6+ | 2003 10 25 | 704 | 0.5− | 0.5+ | 2003 11 19 | 644 | 0.1− | 0.4+ |
| 1997 05 03 | 691 | 0.1+ | 0.0  | 2003 10 25 | 704 | 0.3+ | 0.2+ | 2006 04 08 | 691 | 0.6− | 1.0+ |
| 1997 05 03 | 691 | 0.0  | 0.8+ | 2003 10 25 | 704 | 0.3− | 0.9+ | 2006 04 08 | 691 | 0.1+ | 1.1+ |
| 2003 10 02 | 291 | 0.3+ | 0.0  | 2003 10 29 | 704 | 0.1− | 1.2+ | 2006 04 08 | 691 | 1.3+ | 0.8+ |
| 2003 10 02 | 291 | 0.6+ | 0.3− | 2003 10 29 | 704 | 0.5+ | 0.1− | 2007 10 12 | G96 | 0.2− | 0.0  |
| 2003 10 02 | 291 | 0.4+ | 0.5− | 2003 10 29 | 704 | 0.0  | 0.1+ | 2007 10 12 | G96 | 0.2+ | 0.3− |
| 2003 10 23 | 691 | 0.0  | 0.0  | 2003 10 29 | 704 | 1.6− | 1.1+ | 2007 10 12 | G96 | 0.0  | 0.1+ |
| 2003 10 23 | 691 | 0.1− | 0.1+ | 2003 11 19 | 644 | 0.1− | 0.0  | 2007 10 12 | G96 | 0.1− | 0.0  |
| 2003 10 23 | 691 | 0.1+ | 0.2+ | 2003 11 19 | 644 | 0.0  | 0.1+ |            |     |      |      |

**2003 UE<sub>231</sub> = 2007 WT<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC        |  |  |  | MPC         |  |  |  |
|------------|--|--|--|-------------|--|--|--|
| <i>M</i>   |  |  |  | <i>P</i>    |  |  |  |
| 7.72961    |  |  |  | (2000.0)    |  |  |  |
| <i>n</i>   |  |  |  | <i>Q</i>    |  |  |  |
| 0.26167478 |  |  |  | $\omega$    |  |  |  |
| 2.4208143  |  |  |  | 40.31867    |  |  |  |
| <i>a</i>   |  |  |  | +0.66268206 |  |  |  |
| 0.1440331  |  |  |  | $\Omega$    |  |  |  |
| <i>P</i>   |  |  |  | +0.67101879 |  |  |  |
| 3.77       |  |  |  | +0.58874440 |  |  |  |
|            |  |  |  | $i$         |  |  |  |
|            |  |  |  | 3.38357     |  |  |  |
|            |  |  |  | +0.33254513 |  |  |  |
|            |  |  |  | +0.30429955 |  |  |  |
|            |  |  |  | $H$         |  |  |  |
|            |  |  |  | 17.4        |  |  |  |
|            |  |  |  | $G$         |  |  |  |
|            |  |  |  | 0.15        |  |  |  |
|            |  |  |  | $U$         |  |  |  |
|            |  |  |  | 2           |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.3− | 0.4+ | 2003 10 25 | 704 | 0.1+ | 0.9− | 2007 11 19 | G96 | 0.7+ | 0.2− |
| 2003 09 18 | 691 | 0.2− | 0.3+ | 2003 10 25 | 704 | 0.4− | 0.5+ | 2007 11 19 | G96 | 0.4+ | 0.1− |
| 2003 09 18 | 691 | 0.2− | 0.0  | 2003 10 25 | 704 | 0.3− | 0.0  | 2007 11 19 | G96 | 0.5+ | 0.2− |
| 2003 09 29 | 691 | 0.1+ | 0.0  | 2005 04 02 | G96 | 0.2− | 0.0  | 2007 11 20 | 691 | 0.2− | 0.2− |
| 2003 09 29 | 691 | 0.3+ | 0.0  | 2005 04 02 | G96 | 0.1− | 0.4+ | 2007 11 20 | 691 | 0.3+ | 0.0  |
| 2003 09 29 | 691 | 0.1− | 0.2− | 2005 04 02 | G96 | 0.6+ | 0.4− | 2007 11 20 | 691 | 0.3− | 0.2− |
| 2003 10 24 | 704 | 0.3+ | 0.6+ | 2005 04 02 | G96 | 0.1− | 0.4+ | 2007 12 15 | 704 | 0.1− | 1.5+ |
| 2003 10 24 | 704 | 0.0  | 0.2+ | 2007 08 24 | 691 | 0.4+ | 0.2+ | 2007 12 15 | 704 | 0.4− | 0.1+ |
| 2003 10 24 | 704 | 0.1+ | 0.1+ | 2007 08 24 | 691 | 0.0  | 0.1− | 2007 12 15 | 704 | 0.3− | 0.5+ |
| 2003 10 24 | 704 | 0.2+ | 0.5+ | 2007 08 24 | 691 | 0.1− | 1.0− | 2007 12 15 | 704 | 0.6− | 0.2+ |
| 2003 10 24 | 704 | 0.3+ | 0.3− | 2007 11 19 | G96 | 0.6+ | 0.3− | 2007 12 15 | 704 | 0.1− | 0.6+ |

**2003 UM<sub>232</sub> = 2007 VC<sub>198</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC        |  |  |  | MPC         |  |  |  |
|------------|--|--|--|-------------|--|--|--|
| <i>M</i>   |  |  |  | <i>P</i>    |  |  |  |
| 346.58651  |  |  |  | (2000.0)    |  |  |  |
| <i>n</i>   |  |  |  | <i>Q</i>    |  |  |  |
| 0.27623400 |  |  |  | $\omega$    |  |  |  |
| 2.3349878  |  |  |  | 172.37558   |  |  |  |
| <i>a</i>   |  |  |  | −0.30552440 |  |  |  |
| 0.1714990  |  |  |  | $\Omega$    |  |  |  |
| <i>P</i>   |  |  |  | +0.87208043 |  |  |  |
| 3.57       |  |  |  | −0.26871616 |  |  |  |
|            |  |  |  | $i$         |  |  |  |
|            |  |  |  | 1.65523     |  |  |  |
|            |  |  |  | +0.38227028 |  |  |  |
|            |  |  |  | −0.14770750 |  |  |  |
|            |  |  |  | $H$         |  |  |  |
|            |  |  |  | 17.5        |  |  |  |
|            |  |  |  | $G$         |  |  |  |
|            |  |  |  | 0.15        |  |  |  |
|            |  |  |  | $U$         |  |  |  |
|            |  |  |  | 2           |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 691 | 0.1−  | 0.2+  | 2003 11 24 | 691 | 0.2− | 0.1+ | 2007 11 08 | G96 | 0.1+ | 0.4− |
| 2003 09 28 | 691 | 0.1−  | 0.0   | 2003 12 01 | 291 | 0.2+ | 0.1+ | 2007 11 08 | G96 | 0.1− | 0.4+ |
| 2003 09 28 | 691 | 0.1−  | 0.1+  | 2003 12 01 | 291 | 0.4+ | 0.3− | 2007 11 08 | G96 | 0.1+ | 0.2− |
| 2003 10 24 | 704 | 0.2+  | 0.2−  | 2003 12 01 | 291 | 0.5− | 0.2− | 2007 11 11 | G96 | 0.1− | 0.2+ |
| 2003 10 24 | 704 | 0.1+  | 0.1+  | 2005 05 16 | G96 | 0.2+ | 0.5+ | 2007 11 11 | G96 | 0.1+ | 0.4+ |
| 2003 10 24 | 704 | (2.4+ | 0.6+) | 2005 05 16 | G96 | 0.1− | 0.5+ | 2007 11 11 | G96 | 0.4− | 0.4+ |
| 2003 10 24 | 704 | 0.7+  | 0.2+  | 2005 05 16 | G96 | 0.1− | 0.1+ | 2007 11 11 | G96 | 0.0  | 0.1+ |
| 2003 10 24 | 704 | 0.8+  | 0.2+  | 2005 05 16 | G96 | 0.3+ | 0.2− | 2007 12 06 | G96 | 0.0  | 0.6− |
| 2003 10 25 | 691 | 0.2−  | 0.1+  | 2007 10 15 | G96 | 0.0  | 0.2+ | 2007 12 06 | G96 | 0.1− | 0.0  |
| 2003 10 25 | 691 | 0.0   | 0.1−  | 2007 10 15 | G96 | 0.5+ | 0.1+ | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2003 10 25 | 691 | 0.2+  | 0.3−  | 2007 10 15 | G96 | 0.0  | 0.2− | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2003 11 24 | 691 | 0.0   | 0.1+  | 2007 10 15 | G96 | 0.0  | 0.3− |            |     |      |      |
| 2003 11 24 | 691 | 0.1−  | 0.2+  | 2007 11 08 | G96 | 0.2− | 0.3+ |            |     |      |      |

**2003 UM<sub>237</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC        |  |  |  | MPC         |  |  |  |
|------------|--|--|--|-------------|--|--|--|
| <i>M</i>   |  |  |  | <i>P</i>    |  |  |  |
| 252.60299  |  |  |  | (2000.0)    |  |  |  |
| <i>n</i>   |  |  |  | <i>Q</i>    |  |  |  |
| 0.22145430 |  |  |  | $\omega$    |  |  |  |
| 2.7057020  |  |  |  | 98.29768    |  |  |  |
| <i>a</i>   |  |  |  | −0.45527240 |  |  |  |
| 0.0940809  |  |  |  | $\Omega$    |  |  |  |
| <i>P</i>   |  |  |  | +0.70912771 |  |  |  |
| 4.45       |  |  |  | −0.40946369 |  |  |  |
|            |  |  |  | $i$         |  |  |  |
|            |  |  |  | 12.36455    |  |  |  |
|            |  |  |  | +0.53839107 |  |  |  |
|            |  |  |  | −0.21120613 |  |  |  |
|            |  |  |  | $H$         |  |  |  |
|            |  |  |  | 15.9        |  |  |  |
|            |  |  |  | $G$         |  |  |  |
|            |  |  |  | 0.15        |  |  |  |
|            |  |  |  | $U$         |  |  |  |
|            |  |  |  | 2           |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 02 | 691 | 0.3−  | 0.1−  | 2003 11 02 | 704 | 0.2−  | 0.3+  | 2007 09 10 | 291 | 0.2− | 0.2− |
| 2003 10 02 | 691 | 0.0   | 0.1−  | 2003 11 02 | 704 | 0.7+  | 0.7+  | 2007 09 10 | 291 | 0.3− | 0.0  |
| 2003 10 02 | 691 | 0.0   | 0.1−  | 2003 11 20 | 704 | 0.8−  | 0.9−  | 2007 09 10 | 291 | 0.2− | 0.2− |
| 2003 10 23 | 608 | 0.0   | 0.2−  | 2003 11 20 | 704 | 0.7−  | 0.5+  | 2007 09 12 | 703 | 0.6+ | 2.0+ |
| 2003 10 23 | 608 | 0.3−  | 1.1−  | 2003 11 20 | 704 | (0.5+ | 1.7+) | 2007 09 12 | 703 | 0.9− | 0.1− |
| 2003 10 23 | 608 | 0.3+  | 0.1−  | 2003 11 21 | 691 | 0.0   | 0.0   | 2007 09 12 | 703 | 0.1− | 0.3+ |
| 2003 10 25 | 704 | 0.6−  | 0.7+  | 2003 11 21 | 691 | 0.1+  | 0.1+  | 2007 09 12 | 703 | 0.2+ | 1.0− |
| 2003 10 25 | 704 | 0.8+  | 0.7+  | 2003 11 21 | 691 | 0.1+  | 0.1+  | 2007 10 15 | G96 | 0.7+ | 0.1+ |
| 2003 10 25 | 704 | (1.2− | 1.5−) | 2005 03 11 | 703 | 0.7−  | 0.1+  | 2007 10 15 | G96 | 0.2+ | 0.4− |
| 2003 10 25 | 704 | 0.6+  | 0.4−  | 2005 03 11 | 703 | 0.7−  | 0.2−  | 2007 10 15 | G96 | 0.4+ | 0.4− |
| 2003 10 25 | 704 | 0.1−  | 0.6+  | 2005 03 11 | 703 | 0.9+  | 0.1+  | 2007 10 15 | G96 | 0.0  | 0.2− |
| 2003 10 29 | 699 | 0.7+  | 0.6−  | 2005 03 11 | 703 | 0.0   | 0.7−  | 2007 11 03 | G96 | 0.3+ | 0.3− |
| 2003 10 29 | 699 | 0.9−  | 0.0   | 2007 09 03 | 703 | 1.4+  | 1.3+  | 2007 11 03 | G96 | 0.4− | 0.3− |
| 2003 10 29 | 699 | (1.9+ | 0.6+) | 2007 09 03 | 703 | 1.0+  | 0.9−  | 2007 11 03 | G96 | 0.5+ | 0.2− |
| 2003 10 29 | 699 | 0.4−  | 0.3−  | 2007 09 03 | 703 | 0.6+  | 1.5+  | 2007 11 03 | G96 | 0.3− | 0.2− |
| 2003 11 02 | 704 | 0.5+  | 1.0+  | 2007 09 03 | 703 | 0.3−  | 0.4−  |            |     |      |      |

**2003 UK<sub>243</sub> = 2003 TN<sub>59</sub> = 2005 EK<sub>40</sub> = 2007 TC<sub>163</sub>**

2007 DEC. 24

M.P.O. 129665

**2003 US<sub>249</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 333.92940  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.21124325 | $\omega$ | 301.62216 | +0.98746713 | -0.06791637 |
| $a$ | 2.7922062  | $\Omega$ | 62.61859  | +0.12684350 | +0.87864286 |
| $e$ | 0.2198619  | $i$      | 9.23238   | -0.09391164 | +0.47262469 |
| $P$ | 4.67       | $H$      | 16.7      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 22 | 699 | 0.6+ | 0.2+ | 2003 10 29 | 699 | 1.4- | 0.2+ | 2003 11 21 | 704 | 0.2-  | 0.4+  |
| 1998 09 22 | 699 | 0.5- | 0.7- | 2003 10 29 | 699 | 0.1- | 0.7+ | 2003 11 21 | 704 | 0.6+  | 1.4+  |
| 1998 09 22 | 699 | 0.2+ | 0.3- | 2003 10 29 | 691 | 0.2+ | 0.0  | 2003 11 24 | 699 | 0.5+  | 0.5-  |
| 2003 10 18 | 699 | 0.8- | 0.1- | 2003 10 29 | 699 | 0.3- | 0.4+ | 2003 11 24 | 699 | 1.0-  | 0.3-  |
| 2003 10 18 | 699 | 0.7+ | 0.5+ | 2003 10 29 | 691 | 0.1+ | 0.2+ | 2003 11 24 | 699 | 0.1+  | 1.3-  |
| 2003 10 18 | 699 | 0.1- | 0.1+ | 2003 10 29 | 699 | 0.9- | 0.1- | 2003 11 24 | 699 | 0.0   | 0.2+  |
| 2003 10 18 | 699 | 0.4+ | 0.1+ | 2003 10 29 | 691 | 0.3+ | 0.1+ | 2003 12 01 | 704 | (2.3- | 2.5-) |
| 2003 10 25 | 704 | 0.3- | 0.5- | 2003 11 01 | 704 | 1.0+ | 0.4+ | 2003 12 01 | 704 | 0.1+  | 0.5-  |
| 2003 10 25 | 704 | 0.5- | 0.3- | 2003 11 01 | 704 | 0.2+ | 0.7- | 2003 12 01 | 704 | 0.6+  | 0.2-  |
| 2003 10 25 | 704 | 0.1+ | 0.2- | 2003 11 01 | 704 | 0.6+ | 1.3+ | 2003 12 01 | 704 | 1.1+  | 0.2-  |
| 2003 10 25 | 704 | 0.8- | 0.2+ | 2003 11 16 | 691 | 0.0  | 0.3- | 2007 07 10 | E12 | 0.3+  | 1.6+  |
| 2003 10 25 | 704 | 0.4- | 0.3+ | 2003 11 16 | 691 | 0.0  | 0.3- | 2007 07 10 | E12 | 0.4-  | 0.4+  |
| 2003 10 27 | 608 | 0.1+ | 0.5- | 2003 11 16 | 691 | 0.2- | 0.4- | 2007 07 10 | E12 | 0.4+  | 0.0   |
| 2003 10 27 | 608 | 0.0  | 1.4- | 2003 11 19 | 699 | 0.0  | 0.2+ | 2007 07 10 | E12 | 0.3-  | 0.4-  |
| 2003 10 27 | 608 | 0.5+ | 1.2- | 2003 11 19 | 699 | 1.3+ | 0.7- | 2007 08 07 | E12 | 0.0   | 0.2-  |
| 2003 10 28 | 704 | 0.4- | 0.1+ | 2003 11 19 | 699 | 0.2+ | 0.5+ | 2007 08 07 | E12 | 0.3-  | 0.1-  |
| 2003 10 28 | 704 | 0.3- | 0.1+ | 2003 11 19 | 699 | 0.5+ | 0.6+ | 2007 08 07 | E12 | 0.1+  | 0.1+  |
| 2003 10 28 | 704 | 0.1- | 0.1- | 2003 11 21 | 704 | 0.5+ | 0.5- | 2007 08 07 | E12 | 0.1+  | 0.9-  |
| 2003 10 28 | 704 | 0.1+ | 0.4+ | 2003 11 21 | 704 | 0.5- | 0.6+ |            |     |       |       |
| 2003 10 28 | 704 | 1.7- | 1.6+ | 2003 11 21 | 704 | 0.5- | 0.7+ |            |     |       |       |

**2003 UJ<sub>257</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 317.62669  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22655788 | $\omega$ | 128.73321 | +0.58785937 | -0.80782012 |
| $a$ | 2.6649144  | $\Omega$ | 285.20859 | +0.72770090 | +0.55127317 |
| $e$ | 0.0521263  | $i$      | 2.55329   | +0.35337339 | +0.20862536 |
| $P$ | 4.35       | $H$      | 16.0      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 25 | 704 | 0.9+ | 0.0  | 2003 11 24 | 704 | 0.1-  | 0.2+  | 2007 09 12 | 699 | 1.2- | 0.1+ |
| 2003 10 25 | 704 | 0.6+ | 1.1- | 2003 11 24 | 704 | 0.7+  | 0.9+  | 2007 10 11 | G96 | 0.4+ | 0.7- |
| 2003 10 25 | 704 | 0.1+ | 0.6- | 2003 11 24 | 704 | 0.2+  | 1.2+  | 2007 10 11 | G96 | 0.2+ | 0.6- |
| 2003 10 25 | 704 | 0.2+ | 0.0  | 2003 11 24 | 699 | (0.2+ | 1.7-) | 2007 10 11 | G96 | 0.5+ | 0.4- |
| 2003 10 29 | 704 | 0.9- | 0.5+ | 2003 11 24 | 704 | 0.7+  | 0.4-  | 2007 10 11 | G96 | 0.3+ | 0.3- |
| 2003 10 29 | 704 | 0.1+ | 0.5+ | 2003 11 24 | 699 | 0.2+  | 0.3+  | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2003 10 29 | 704 | 0.8- | 0.3+ | 2003 11 24 | 699 | 0.5-  | 0.9-  | 2007 12 04 | G96 | 0.1+ | 0.1- |
| 2003 10 29 | 704 | 1.4- | 1.3+ | 2003 11 24 | 699 | (1.9- | 0.1+) | 2007 12 04 | G96 | 0.2+ | 1.0- |
| 2003 11 18 | 644 | 0.3+ | 0.4- | 2007 09 12 | 699 | 0.4-  | 0.7+  | 2007 12 04 | G96 | 0.3+ | 0.3- |
| 2003 11 18 | 644 | 0.5- | 0.3- | 2007 09 12 | 699 | 0.1+  | 1.2+  |            |     |      |      |
| 2003 11 18 | 644 | 0.1- | 0.4- | 2007 09 12 | 699 | 0.0   | 0.4+  |            |     |      |      |

**2003 UV<sub>261</sub> = 2007 RY<sub>254</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 167.53367  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.21823851 | $\omega$ | 335.67597 | -0.99023975 | +0.13182847 |
| $a$ | 2.7322166  | $\Omega$ | 212.00119 | -0.10975082 | -0.93761233 |
| $e$ | 0.0402674  | $i$      | 4.89704   | -0.08590694 | -0.32172096 |
| $P$ | 4.52       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 01 27 | 691 | 0.3- | 0.1+ | 2003 10 28 | 704 | 0.5-  | 0.4+  | 2006 06 21 | 691 | 0.5+ | 0.5+ |
| 1996 01 27 | 691 | 0.1- | 0.3+ | 2003 10 28 | 704 | (0.1- | 2.1+) | 2006 06 21 | 691 | 0.2+ | 0.5+ |
| 1996 01 27 | 691 | 0.2+ | 0.2- | 2003 11 16 | 291 | 0.9+  | 0.6+  | 2006 06 21 | 691 | 0.1- | 0.5+ |
| 2003 09 28 | 691 | 0.1- | 0.0  | 2003 11 16 | 291 | 0.6+  | 0.3+  | 2007 09 14 | 691 | 0.8- | 0.6+ |
| 2003 09 28 | 691 | 0.1+ | 0.1- | 2003 11 16 | 291 | 0.8+  | 0.3+  | 2007 09 14 | 691 | 0.4- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 691 | 0.0  | 0.0  | 2005 01 13 | 691 | 0.6+ | 0.7+ | 2007 09 14 | 691 | 0.1- | 0.0  |
| 2003 10 26 | 291 | 0.4- | 0.3- | 2005 01 13 | 691 | 0.5+ | 0.6+ | 2007 09 19 | 691 | 0.3+ | 0.0  |
| 2003 10 26 | 291 | 0.2+ | 0.3- | 2005 01 13 | 691 | 0.8+ | 0.5+ | 2007 09 19 | 691 | 0.1+ | 0.0  |
| 2003 10 26 | 291 | 0.4- | 0.3- | 2005 02 02 | 703 | 0.5- | 0.8+ | 2007 09 19 | 691 | 0.0  | 0.2- |
| 2003 10 28 | 704 | 0.1- | 0.1+ | 2005 02 02 | 703 | 0.7- | 0.6- | 2007 09 30 | 691 | 0.6- | 0.3+ |
| 2003 10 28 | 704 | 0.3- | 0.2- | 2005 02 02 | 703 | 0.3- | 0.6+ | 2007 09 30 | 691 | 0.3+ | 0.2+ |
| 2003 10 28 | 704 | 0.2- | 0.1+ | 2005 02 02 | 703 | 0.1+ | 0.7- | 2007 09 30 | 691 | 0.1- | 0.4+ |

**2003 UW<sub>265</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 297.31029  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23463088 | $\omega$ | 214.85367 | -0.45188636 | -0.88948787 |
| $a$ | 2.6034302  | $\Omega$ | 262.09666 | +0.83325635 | -0.39368707 |
| $e$ | 0.1750662  | $i$      | 3.93062   | +0.31856330 | -0.23199531 |
| $P$ | 4.20       | $H$      | 16.5      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 11 18 | 691 | 0.2-  | 0.7-  | 2003 11 21 | 644 | 0.6+  | 0.2-  | 2003 12 04 | 703 | 1.0-  | 0.4+  |
| 1995 11 18 | 691 | 0.3-  | 0.5-  | 2003 11 21 | 644 | 0.4+  | 0.1+  | 2003 12 04 | 703 | 0.7-  | 1.1+  |
| 1995 11 18 | 691 | 0.1-  | 0.6-  | 2003 11 21 | 644 | 0.8+  | 0.0   | 2003 12 19 | 691 | 0.1-  | 0.1+  |
| 1998 08 28 | 691 | 0.1+  | 0.3-  | 2003 11 23 | 291 | 0.0   | 0.5-  | 2003 12 19 | 691 | 0.1-  | 0.3+  |
| 1998 08 28 | 691 | 0.1+  | 0.4-  | 2003 11 23 | 291 | 0.1-  | 0.5-  | 2003 12 19 | 691 | 0.0   | 0.1+  |
| 1998 08 28 | 691 | 0.2+  | 0.2-  | 2003 11 23 | 291 | 0.2-  | 0.3-  | 2003 12 22 | 704 | 0.7-  | 0.1+  |
| 2003 10 27 | 691 | 0.4-  | 0.1+  | 2003 11 24 | 704 | 0.4+  | 0.4+  | 2003 12 22 | 704 | 0.2-  | 0.1+  |
| 2003 10 27 | 691 | 0.4-  | 0.3+  | 2003 11 24 | 704 | 0.4+  | 0.0   | 2003 12 22 | 704 | 0.4-  | 0.4+  |
| 2003 10 27 | 691 | 0.4-  | 0.2+  | 2003 11 24 | 704 | 0.5+  | 0.2+  | 2003 12 22 | 704 | 0.7-  | 0.2+  |
| 2003 10 29 | 704 | 0.6+  | 0.6+  | 2003 11 24 | 704 | 0.5+  | 0.0   | 2003 12 22 | 704 | 0.9-  | 0.1-  |
| 2003 10 29 | 704 | 0.8+  | 0.6+  | 2003 11 24 | 704 | 0.5+  | 0.1+  | 2007 11 13 | 699 | 0.1-  | 0.6-  |
| 2003 10 29 | 704 | 0.4-  | 1.0+  | 2003 11 24 | 704 | 0.2-  | 0.5+  | 2007 11 13 | 699 | 0.3+  | 1.1-  |
| 2003 11 19 | 691 | 0.2+  | 0.3-  | 2003 11 24 | 704 | 0.5+  | 0.1+  | 2007 11 13 | 699 | (0.3- | 2.3-) |
| 2003 11 19 | 691 | 0.3+  | 0.0   | 2003 11 24 | 704 | 0.1+  | 0.2-  | 2007 11 13 | 699 | 0.5-  | 1.2-  |
| 2003 11 19 | 691 | 0.3+  | 0.1-  | 2003 11 24 | 704 | 0.2+  | 0.1+  | 2007 11 17 | 703 | 0.3+  | 0.3+  |
| 2003 11 21 | 704 | (0.1+ | 2.7+) | 2003 11 26 | 704 | 0.1-  | 0.3+  | 2007 11 17 | 703 | (0.1- | 1.6+) |
| 2003 11 21 | 704 | 0.3+  | 0.5+  | 2003 11 26 | 704 | 0.5+  | 0.8+  | 2007 11 17 | 703 | 1.0+  | 1.0+  |
| 2003 11 21 | 704 | 1.0+  | 0.7+  | 2003 11 26 | 704 | (1.5- | 0.3-) | 2007 11 17 | 703 | 1.0-  | 0.9+  |
| 2003 11 21 | 704 | (1.8+ | 0.6+) | 2003 12 04 | 703 | 1.1+  | 0.5-  |            |     |       |       |
| 2003 11 21 | 704 | (0.0  | 2.3+) | 2003 12 04 | 703 | 0.6-  | 0.7+  |            |     |       |       |

**2003 UG<sub>268</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 36.61318   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.25875773 | $\omega$ | 318.33697 | +0.98768729 | -0.15054906 |
| $a$ | 2.4389740  | $\Omega$ | 50.37266  | +0.15412601 | +0.88982597 |
| $e$ | 0.2067915  | $i$      | 3.16541   | +0.02681393 | +0.43074901 |
| $P$ | 3.81       | $H$      | 17.2      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 21 | 691 | 0.2+  | 0.2+  | 2003 11 18 | 644 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.5- |
| 2003 10 21 | 691 | 0.2-  | 0.3+  | 2003 11 18 | 644 | 0.1+ | 0.2+ | 2007 11 09 | 691 | 0.1- | 0.3- |
| 2003 10 21 | 691 | 0.2-  | 0.1+  | 2003 11 18 | 644 | 0.5+ | 0.5+ | 2007 11 09 | 691 | 0.4- | 0.2- |
| 2003 10 28 | 704 | 1.0-  | 0.0   | 2003 11 18 | 644 | 0.1+ | 0.1+ | 2007 12 05 | 703 | 1.2+ | 0.6+ |
| 2003 10 28 | 704 | 0.1-  | 0.5-  | 2003 11 18 | 644 | 0.0  | 0.1+ | 2007 12 05 | 703 | 0.0  | 0.3- |
| 2003 10 28 | 704 | 0.3+  | 0.6-  | 2003 11 19 | 291 | 0.1+ | 0.2+ | 2007 12 05 | 703 | 1.3- | 0.9+ |
| 2003 10 28 | 704 | 0.3-  | 0.4+  | 2003 11 19 | 291 | 0.1+ | 0.1+ | 2007 12 05 | 703 | 0.5- | 0.3+ |
| 2003 10 29 | 703 | 0.9+  | 0.9-  | 2003 11 19 | 291 | 0.1- | 0.2+ | 2007 12 06 | G96 | 0.2+ | 0.2- |
| 2003 10 29 | 703 | 0.3-  | 0.9-  | 2003 11 30 | 691 | 0.1+ | 0.1- | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2003 10 29 | 703 | (1.4- | 1.6-) | 2003 11 30 | 691 | 0.0  | 0.2- | 2007 12 06 | G96 | 0.2- | 0.4- |
| 2003 10 29 | 703 | 0.5+  | 0.8-  | 2003 11 30 | 691 | 0.1+ | 0.0  | 2007 12 06 | G96 | 0.4+ | 0.3- |
| 2003 11 01 | 704 | 0.6-  | 0.2-  | 2007 09 15 | G96 | 0.2+ | 0.0  | 2007 12 14 | 704 | 0.2- | 0.2+ |
| 2003 11 01 | 704 | 0.0   | 0.2-  | 2007 09 15 | G96 | 0.0  | 0.1+ | 2007 12 14 | 704 | 1.3+ | 1.4+ |
| 2003 11 01 | 704 | 0.6-  | 0.7+  | 2007 09 15 | G96 | 0.4+ | 0.1+ | 2007 12 14 | 704 | 0.6- | 0.3- |
| 2003 11 18 | 644 | 0.1+  | 0.1+  | 2007 09 15 | G96 | 0.4+ | 0.1+ | 2007 12 14 | 704 | 0.5+ | 0.6+ |

**2003 UZ<sub>268</sub> = 2007 VB<sub>118</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.50669   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.25689050 | $\omega$ | 16.68026  | +0.92181606 |          |          | +0.38734086 |
| <i>a</i> | 2.4507783  | $\Omega$ | 320.52020 | -0.35826456 |          |          | +0.83667584 |
| <i>e</i> | 0.2006251  | <i>i</i> | 1.34342   | -0.14799206 |          |          | +0.38722164 |
| <i>P</i> | 3.84       | <i>H</i> | 19.0      | <i>G</i>    | 0.15     | <i>U</i> | 5           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 291 | 0.2- | 0.2+ | 2003 10 18 | 691 | 0.1- | 0.2- | 2003 10 29 | 291 | 0.0  | 0.2+ |
| 2003 09 19 | 291 | 0.1+ | 0.1+ | 2003 10 18 | 691 | 0.3- | 0.3- | 2007 11 04 | 691 | 0.4- | 0.1- |
| 2003 09 19 | 291 | 0.2- | 0.0  | 2003 10 28 | 291 | 0.5+ | 0.2+ | 2007 11 04 | 691 | 0.4- | 0.5+ |
| 2003 09 28 | 691 | 0.1+ | 0.2+ | 2003 10 28 | 291 | 0.3+ | 0.1- | 2007 11 04 | 691 | 0.1- | 0.2+ |
| 2003 09 28 | 691 | 0.1+ | 0.1+ | 2003 10 28 | 291 | 0.0  | 0.2- | 2007 11 07 | 291 | 0.1- | 0.0  |
| 2003 09 28 | 691 | 0.1+ | 0.2- | 2003 10 29 | 291 | 0.2- | 0.2+ | 2007 11 07 | 291 | 0.8+ | 0.6- |
| 2003 10 18 | 691 | 0.2- | 0.3- | 2003 10 29 | 291 | 0.1- | 0.0  | 2007 11 07 | 291 | 0.1+ | 0.1+ |

**2003 UG<sub>271</sub> = 2007 VH<sub>292</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.81139   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26154867 | $\omega$ | 277.57150 | +0.97185748 |          |          | +0.14733019 |
| <i>a</i> | 2.4215924  | $\Omega$ | 74.09156  | -0.05306848 |          |          | +0.89715800 |
| <i>e</i> | 0.2721413  | <i>i</i> | 11.01886  | -0.22951422 |          |          | +0.41641487 |
| <i>P</i> | 3.77       | <i>H</i> | 16.4      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 608 | 0.4+ | 0.4+ | 2003 11 16 | 703 | 0.2- | 0.2- | 2007 12 05 | 704 | 0.3- | 0.2+ |
| 2003 09 28 | 608 | 0.6+ | 0.3+ | 2003 11 16 | 703 | 1.2- | 0.7+ | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2003 09 28 | 608 | 0.4+ | 0.1- | 2003 11 16 | 703 | 0.6+ | 0.8- | 2007 12 05 | 704 | 0.1- | 0.2+ |
| 2003 10 17 | 644 | 0.2- | 0.0  | 2007 11 14 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2003 10 17 | 644 | 0.3- | 0.0  | 2007 11 14 | 691 | 0.4+ | 0.1- | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2003 10 17 | 644 | 0.5- | 0.1- | 2007 11 14 | 691 | 0.1+ | 0.1+ | 2007 12 05 | G96 | 0.5+ | 0.4- |
| 2003 10 18 | 699 | 0.6- | 0.4- | 2007 11 19 | 691 | 0.3- | 0.3- | 2007 12 05 | G96 | 0.4+ | 0.3- |
| 2003 10 18 | 699 | 0.4- | 0.1+ | 2007 11 19 | 691 | 0.0  | 0.1- | 2007 12 05 | G96 | 0.3+ | 0.4- |
| 2003 10 18 | 699 | 0.2- | 0.2- | 2007 11 19 | 691 | 0.2- | 0.2- | 2007 12 05 | G96 | 0.2+ | 0.4- |
| 2003 10 18 | 699 | 0.1- | 0.2+ | 2007 11 19 | 691 | 0.2+ | 0.2+ | 2007 12 14 | 704 | 0.6- | 1.0+ |
| 2003 10 25 | 699 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.2- | 0.1- | 2007 12 14 | 704 | 0.3- | 0.5+ |
| 2003 10 25 | 699 | 0.7+ | 0.0  | 2007 11 19 | 691 | 0.1- | 0.1+ | 2007 12 14 | 704 | 0.3- | 0.2+ |
| 2003 10 25 | 699 | 0.6+ | 0.1- | 2007 12 03 | 703 | 0.7- | 1.1- | 2007 12 14 | 704 | 0.0  | 0.3+ |
| 2003 10 25 | 699 | 0.5+ | 0.7- | 2007 12 03 | 703 | 1.3+ | 0.4- | 2007 12 14 | 704 | 0.7+ | 0.7- |
| 2003 11 16 | 703 | 0.1- | 1.4+ | 2007 12 03 | 703 | 0.2- | 0.7+ |            |     |      |      |

**2003 UD<sub>275</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 339.43691  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23650681 | $\omega$ | 170.26860 | +0.68930592 |          |          | -0.72235496 |
| <i>a</i> | 2.5896453  | $\Omega$ | 236.13154 | +0.66012841 |          |          | +0.65771415 |
| <i>e</i> | 0.2480377  | <i>i</i> | 3.82038   | +0.29847585 |          |          | +0.21357762 |
| <i>P</i> | 4.17       | <i>H</i> | 18.2      | <i>G</i>    | 0.15     | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 02 | 691 | 0.1+ | 0.0  | 2003 11 02 | 704 | 0.0  | 0.3+ | 2007 09 13 | 691 | 0.1- | 0.1+ |
| 2003 10 02 | 691 | 0.0  | 0.2+ | 2003 11 02 | 704 | 0.4- | 0.2+ | 2007 09 13 | 691 | 0.4- | 0.2+ |
| 2003 10 02 | 691 | 0.1+ | 0.0  | 2003 11 19 | 691 | 0.3- | 0.3- | 2007 09 20 | 691 | 0.1+ | 0.1+ |
| 2003 10 21 | 691 | 0.1- | 0.1+ | 2003 11 19 | 691 | 0.0  | 0.0  | 2007 09 20 | 691 | 0.1+ | 0.1- |
| 2003 10 21 | 691 | 0.1- | 0.0  | 2003 11 19 | 691 | 0.2- | 0.1- | 2007 09 20 | 691 | 0.2+ | 0.2+ |
| 2003 10 21 | 691 | 0.2- | 0.2+ | 2003 11 19 | 644 | 0.1- | 0.0  | 2007 10 20 | G96 | 0.2+ | 0.0  |
| 2003 10 24 | 704 | 0.4+ | 0.2+ | 2003 11 19 | 644 | 0.1- | 0.1- | 2007 10 20 | G96 | 0.2+ | 0.6- |
| 2003 10 24 | 704 | 0.5+ | 0.6- | 2003 11 19 | 644 | 0.1- | 0.4- | 2007 10 20 | G96 | 0.2- | 0.4- |
| 2003 10 24 | 704 | 0.1- | 0.2+ | 2003 11 30 | 691 | 0.0  | 0.2- | 2007 10 20 | G96 | 0.4+ | 0.3- |
| 2003 10 24 | 704 | 1.2- | 0.9- | 2003 11 30 | 291 | 0.0  | 0.2+ | 2007 11 12 | G96 | 0.0  | 0.2- |
| 2003 10 29 | 704 | 0.6+ | 1.0+ | 2003 11 30 | 691 | 0.3+ | 0.3+ | 2007 11 12 | G96 | 0.3- | 1.4- |
| 2003 10 29 | 704 | 0.6+ | 0.0  | 2003 11 30 | 291 | 0.1+ | 0.4+ | 2007 11 12 | G96 | 0.2- | 0.3+ |
| 2003 10 29 | 704 | 0.9+ | 0.4- | 2003 11 30 | 691 | 0.0  | 0.3- | 2007 11 12 | G96 | 0.5+ | 0.4- |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2003 11 02 | 704 | 0.4- | 0.2+ | 2003 11 30 | 291 | 0.1- | 0.2+ |
| 2003 11 02 | 704 | 0.7+ | 0.1- | 2007 09 13 | 691 | 0.0  | 0.1- |

**2003 UQ<sub>297</sub> = 1999 TR<sub>42</sub> = 1999 TK<sub>334</sub> = 2007 VA<sub>263</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.27953   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.25688638 | $\omega$ | 38.15748  | +0.92941012 |          |          | -0.36883109 |
| <i>a</i> | 2.4508044  | $\Omega$ | 343.47239 | +0.32671010 |          |          | +0.83826343 |
| <i>e</i> | 0.1677691  | <i>i</i> | 2.55215   | +0.17163142 |          |          | +0.40159439 |
| <i>P</i> | 3.84       | <i>H</i> | 18.5      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 03 | 691 | 0.3- | 0.1+ | 2003 09 27 | 691 | 0.1- | 0.0  | 2003 11 22 | 691 | 0.6- | 0.2- |
| 1999 10 03 | 691 | 0.2- | 0.3+ | 2003 09 27 | 691 | 0.1+ | 0.2+ | 2003 11 22 | 691 | 0.3+ | 0.1+ |
| 1999 10 03 | 691 | 0.2+ | 0.2- | 2003 09 27 | 691 | 0.1+ | 0.1+ | 2003 11 22 | 691 | 0.1- | 0.2- |
| 1999 10 09 | 691 | 0.1+ | 0.1- | 2003 10 16 | 691 | 0.2+ | 0.4+ | 2007 11 13 | 691 | 0.2+ | 0.2+ |
| 1999 10 09 | 691 | 0.1+ | 0.1- | 2003 10 16 | 691 | 0.2- | 0.3+ | 2007 11 13 | 691 | 0.5- | 0.4- |
| 1999 10 09 | 691 | 0.2+ | 0.2- | 2003 10 16 | 691 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.8+ | 0.6+ |
| 2003 09 22 | 691 | 0.3- | 0.4- | 2003 10 25 | 691 | 0.1+ | 0.4- | 2007 11 17 | 691 | 0.3- | 0.0  |
| 2003 09 22 | 691 | 0.2- | 0.2- | 2003 10 25 | 691 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.6- | 0.1+ |
| 2003 09 22 | 691 | 0.0  | 0.2+ | 2003 10 25 | 691 | 0.4+ | 0.0  | 2007 11 17 | 691 | 0.4+ | 0.5- |

**2003 UH<sub>300</sub> = 2007 VY<sub>229</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.65801    |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.25350229 | $\omega$ | 346.53191 | +0.85709271 |          |          | -0.51301503 |
| <i>a</i> | 2.4725673  | $\Omega$ | 44.43547  | +0.47865201 |          |          | +0.75930642 |
| <i>e</i> | 0.2209466  | <i>i</i> | 3.84815   | +0.19048449 |          |          | +0.40033652 |
| <i>P</i> | 3.89       | <i>H</i> | 18.8      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 691 | 0.1- | 0.0  | 2003 10 25 | 691 | 0.4+ | 0.0  | 2007 11 07 | 691 | 0.2- | 0.2+ |
| 2003 09 27 | 691 | 0.0  | 0.1- | 2003 11 24 | 691 | 0.2- | 0.1- | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2003 09 27 | 691 | 0.4- | 0.0  | 2003 11 24 | 691 | 0.2+ | 0.2- | 2007 11 07 | 691 | 0.2- | 0.2+ |
| 2003 10 16 | 691 | 0.2- | 0.1+ | 2003 11 24 | 691 | 0.1+ | 0.3- | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 2003 10 16 | 691 | 0.5- | 0.1+ | 2007 10 17 | G96 | 0.2- | 0.1- | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2003 10 16 | 691 | 0.4+ | 0.1+ | 2007 10 17 | G96 | 0.3+ | 0.2- | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2003 10 25 | 691 | 0.5+ | 0.2+ | 2007 10 17 | G96 | 0.3+ | 0.2- |            |     |      |      |
| 2003 10 25 | 691 | 0.2- | 0.0  | 2007 10 17 | G96 | 0.2+ | 0.4- |            |     |      |      |

**2003 UR<sub>316</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.60114  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.22428771 | $\omega$ | 80.93899  | +0.96741240 |          |          | -0.21849111 |
| <i>a</i> | 2.6828665  | $\Omega$ | 291.59964 | +0.14194689 |          |          | +0.88647217 |
| <i>e</i> | 0.1289079  | <i>i</i> | 7.91066   | +0.20967674 |          |          | +0.40795677 |
| <i>P</i> | 4.39       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 27 | 691 | 0.1-  | 0.3-  | 2003 11 19 | 704 | 0.5-  | 0.2+  | 2005 03 03 | 703 | 0.0  | 0.7+ |
| 2003 10 27 | 691 | 0.1-  | 0.1-  | 2003 11 19 | 704 | (1.9- | 1.8+) | 2005 03 03 | 703 | 0.6+ | 0.2- |
| 2003 10 27 | 691 | 0.1-  | 0.1-  | 2003 11 19 | 704 | 0.6-  | 1.4+  | 2005 03 03 | 703 | 0.1- | 1.0- |
| 2003 11 03 | 704 | 1.1-  | 0.9+  | 2003 11 19 | 704 | (2.6- | 0.0 ) | 2005 03 03 | 703 | 0.4- | 0.6+ |
| 2003 11 03 | 704 | 0.4+  | 0.5+  | 2003 11 19 | 704 | 0.1-  | 0.4+  | 2007 09 04 | 703 | 0.8+ | 1.1+ |
| 2003 11 03 | 704 | (1.5+ | 0.3+) | 2003 11 19 | 704 | 0.2-  | 0.2-  | 2007 09 04 | 703 | 0.4- | 0.8- |
| 2003 11 03 | 704 | 1.1+  | 0.3+  | 2003 11 19 | 704 | 0.6+  | 0.1+  | 2007 09 04 | 703 | 0.4+ | 0.9+ |
| 2003 11 03 | 704 | 0.4-  | 0.5+  | 2003 11 19 | 704 | 1.2+  | 0.5-  | 2007 09 04 | 703 | 0.9- | 0.5- |
| 2003 11 14 | 644 | 0.0   | 0.1+  | 2003 11 19 | 691 | 0.0   | 0.1-  | 2007 11 16 | G96 | 0.1+ | 0.2- |
| 2003 11 14 | 644 | 0.0   | 0.1+  | 2003 11 19 | 691 | 0.1+  | 0.2-  | 2007 11 16 | G96 | 0.0  | 0.1- |
| 2003 11 14 | 644 | 0.1-  | 0.0   | 2003 11 19 | 691 | 0.1-  | 0.2-  | 2007 11 16 | G96 | 0.0  | 0.2- |
| 2003 11 14 | 644 | 0.3+  | 0.1-  | 2003 12 28 | 704 | 0.4+  | 0.2+  | 2007 11 16 | G96 | 0.1- | 0.3- |
| 2003 11 14 | 644 | 0.1-  | 0.2+  | 2003 12 28 | 704 | (1.7+ | 0.3-) |            |     |      |      |
| 2003 11 14 | 644 | 0.2+  | 0.1+  | 2003 12 28 | 704 | (2.2+ | 1.0-) |            |     |      |      |



2007 DEC. 24

M.P.O. 129667

**2003 UT<sub>316</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.62002  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25939174 | $\omega$ 340.52530 | -0.12555627   | -0.99064148 |
| <i>a</i> | 2.4349980  | $\Omega$ 116.65669 | +0.91797984   | -0.13646909 |
| <i>e</i> | 0.1413497  | <i>i</i> 3.43364   | +0.37622951   | +0.00237788 |
| <i>P</i> | 3.80       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 29 | 699 | 1.3+  | 0.8-  | 2003 11 24 | 699 | 0.2+ | 0.2- | 2005 04 14 | 691 | 0.2- | 0.0  |
| 2003 10 29 | 699 | 0.8-  | 0.1-  | 2003 11 24 | 699 | 0.8+ | 1.2- | 2005 04 14 | 691 | 0.1+ | 0.2+ |
| 2003 10 29 | 699 | 0.7+  | 0.3+  | 2003 11 24 | 699 | 0.2- | 0.5+ | 2005 04 14 | 691 | 0.0  | 0.2- |
| 2003 10 29 | 699 | 0.0   | 0.9+  | 2003 12 01 | 704 | 0.1- | 0.2+ | 2007 12 04 | 704 | 1.0+ | 0.5+ |
| 2003 11 19 | 699 | (0.5- | 1.8+) | 2003 12 01 | 704 | 0.2+ | 0.6+ | 2007 12 04 | 704 | 0.5+ | 0.4+ |
| 2003 11 19 | 699 | 0.4-  | 0.9-  | 2003 12 01 | 704 | 0.6+ | 0.3+ | 2007 12 04 | 704 | 0.9+ | 0.2+ |
| 2003 11 19 | 699 | (1.7- | 0.1+) | 2004 02 20 | 291 | 0.5+ | 0.1+ | 2007 12 16 | 691 | 0.2- | 0.4- |
| 2003 11 19 | 699 | 0.5-  | 0.5-  | 2004 02 20 | 291 | 0.3- | 0.2+ | 2007 12 16 | 691 | 0.2- | 0.0  |
| 2003 11 24 | 699 | 1.5-  | 0.3+  | 2004 02 20 | 291 | 0.4- | 0.1+ | 2007 12 16 | 691 | 0.2- | 0.1- |

**2003 UV<sub>320</sub> = 2007 TM<sub>185</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 36.03258   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23162829 | $\omega$ 291.43241 | +0.82386953   | +0.55118925 |
| <i>a</i> | 2.6258806  | $\Omega$ 35.49967  | -0.39822103   | +0.72868038 |
| <i>e</i> | 0.1830740  | <i>i</i> 13.14097  | -0.40331007   | +0.40646686 |
| <i>P</i> | 4.26       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 704 | 0.1+ | 1.1- | 2006 04 19 | G96 | 0.1+ | 0.1+ | 2007 10 13 | 704 | 0.9+ | 1.2+ |
| 2003 10 24 | 704 | 0.8- | 0.3+ | 2006 04 19 | G96 | 0.4- | 0.5+ | 2007 10 13 | 704 | 0.2+ | 1.4- |
| 2003 10 24 | 704 | 1.1+ | 0.8- | 2006 04 19 | G96 | 0.2+ | 0.3+ | 2007 10 13 | 704 | 0.3+ | 0.8- |
| 2003 10 24 | 704 | 0.3- | 0.1- | 2006 05 31 | G96 | 0.2+ | 0.4+ | 2007 10 13 | 704 | 0.7- | 0.1+ |
| 2003 10 29 | 704 | 0.9+ | 1.1+ | 2006 05 31 | G96 | 0.0  | 0.0  | 2007 10 13 | 704 | 0.2- | 0.0  |
| 2003 10 29 | 704 | 0.2+ | 1.2+ | 2006 05 31 | G96 | 0.4- | 0.1+ | 2007 10 18 | 704 | 0.1+ | 1.0- |
| 2003 10 29 | 704 | 0.3+ | 1.1+ | 2006 05 31 | G96 | 0.1- | 0.0  | 2007 10 18 | 704 | 0.7- | 0.6+ |
| 2003 10 29 | 704 | 0.7+ | 0.9+ | 2007 09 05 | 703 | 0.2+ | 1.1+ | 2007 10 18 | 704 | 1.9- | 0.8- |
| 2003 11 21 | 691 | 1.1- | 0.3- | 2007 09 05 | 703 | 0.0  | 0.8- | 2007 10 18 | 704 | 0.6- | 0.6- |
| 2003 11 21 | 691 | 1.1- | 0.4- | 2007 09 05 | 703 | 0.1+ | 0.7+ | 2007 10 19 | 703 | 0.1- | 0.6+ |
| 2003 11 21 | 691 | 0.9- | 0.4- | 2007 09 05 | 703 | 1.3- | 1.2- | 2007 10 19 | 703 | 0.4+ | 0.3+ |
| 2006 04 07 | 691 | 0.8+ | 0.4+ | 2007 10 12 | 703 | 0.4- | 0.5+ | 2007 10 19 | 703 | 1.4+ | 0.3- |
| 2006 04 07 | 691 | 0.5+ | 0.4+ | 2007 10 12 | 703 | 0.5+ | 0.5+ | 2007 10 19 | 703 | 1.4+ | 1.3+ |
| 2006 04 07 | 691 | 0.6+ | 0.3+ | 2007 10 12 | 703 | 1.1- | 0.5- |            |     |      |      |
| 2006 04 19 | G96 | 0.1+ | 0.0  | 2007 10 12 | 703 | 0.9+ | 1.4+ |            |     |      |      |

**2003 UO<sub>327</sub> = 2007 VE<sub>127</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 81.34039   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25636046 | $\omega$ 77.23927  | +0.15306880   | +0.98413642 |
| <i>a</i> | 2.4541552  | $\Omega$ 202.17743 | -0.97357086   | +0.13460979 |
| <i>e</i> | 0.1205319  | <i>i</i> 13.74620  | -0.16949848   | +0.11556688 |
| <i>P</i> | 3.84       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 30 | 691 | 0.1+ | 0.1+ | 2007 09 09 | 691 | 0.8+ | 0.1+ | 2007 10 14 | G96 | 0.2+ | 0.1+ |
| 2003 09 30 | 691 | 0.1- | 0.3- | 2007 09 09 | 691 | 0.4- | 0.2+ | 2007 11 01 | G96 | 0.1+ | 0.2- |
| 2003 09 30 | 691 | 0.1+ | 0.5- | 2007 09 09 | 691 | 0.1- | 0.2- | 2007 11 01 | G96 | 0.2- | 0.1+ |
| 2003 10 17 | 645 | 0.0  | 0.0  | 2007 09 19 | 691 | 0.3- | 0.0  | 2007 11 01 | G96 | 0.0  | 0.2+ |
| 2003 10 17 | 645 | 0.0  | 0.0  | 2007 09 19 | 691 | 0.1+ | 0.2+ | 2007 11 01 | G96 | 0.1+ | 0.1- |
| 2003 10 19 | 645 | 0.1- | 0.1+ | 2007 09 19 | 691 | 0.2- | 0.1- | 2007 11 07 | G96 | 0.1+ | 0.2- |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 10 14 | G96 | 0.5+ | 0.1- | 2007 11 07 | G96 | 0.2+ | 0.2- |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 10 14 | G96 | 0.3- | 0.3- | 2007 11 07 | G96 | 0.6- | 0.1- |
| 2003 10 24 | 645 | 0.1+ | 0.1+ | 2007 10 14 | G96 | 0.1+ | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.2- |

**2003 UP<sub>328</sub> = 2007 TV<sub>325</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 310.38350  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26805845 | $\omega$ 192.81970 | +0.05339715   | -0.99460628 |
| <i>a</i> | 2.3822265  | $\Omega$ 254.17184 | +0.92413748   | +0.08295672 |
| <i>e</i> | 0.0308378  | <i>i</i> 5.30320   | +0.37831027   | -0.06226179 |
| <i>P</i> | 3.68       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 691 | 0.1- | 0.1+ | 2005 01 08 | 599 | 0.4+ | 0.1+ | 2007 10 15 | 691 | 0.1- | 0.0  |
| 2003 09 20 | 691 | 0.0  | 0.0  | 2005 01 08 | 599 | 0.6- | 0.1- | 2007 10 15 | 691 | 0.1- | 0.2- |
| 2003 09 20 | 691 | 0.1- | 0.3+ | 2005 01 08 | 599 | 0.1+ | 0.1- | 2007 10 19 | 691 | 0.3- | 0.2+ |
| 2003 10 17 | 645 | 0.1+ | 0.1- | 2007 10 11 | 691 | 0.1+ | 0.2- | 2007 10 19 | 691 | 0.1+ | 0.1- |
| 2003 10 17 | 645 | 0.1- | 0.4- | 2007 10 11 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.4+ | 0.4+ |
| 2003 10 24 | 645 | 0.2+ | 0.1- | 2007 10 11 | 691 | 0.2- | 0.0  |            |     |      |      |
| 2003 10 24 | 645 | 0.1+ | 0.1- | 2007 10 15 | 691 | 0.1- | 0.1- |            |     |      |      |

**2003 UZ<sub>331</sub> = 2007 UP<sub>120</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 262.32388  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26637076 | $\omega$ 292.59907 | -0.76047464   | -0.64671004 |
| <i>a</i> | 2.3922782  | $\Omega$ 207.21599 | +0.63290951   | -0.71794810 |
| <i>e</i> | 0.1000440  | <i>i</i> 7.37287   | +0.14527173   | -0.25752020 |
| <i>P</i> | 3.70       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 06 | 691 | 0.0  | 0.1- | 2003 10 22 | 645 | 0.2+ | 0.2+ | 2007 10 21 | 691 | 0.5- | 0.0  |
| 1996 10 06 | 691 | 0.2- | 0.5+ | 2005 02 02 | 644 | 0.2+ | 0.0  | 2007 10 21 | 691 | 0.2- | 0.1- |
| 1996 10 06 | 691 | 0.0  | 0.3+ | 2005 02 02 | 644 | 0.1+ | 0.6+ | 2007 10 30 | G96 | 0.5+ | 0.3+ |
| 2003 09 30 | 691 | 0.1- | 0.4+ | 2005 02 02 | 644 | 0.1- | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.0  |
| 2003 09 30 | 691 | 0.2- | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.6- | 2007 10 30 | G96 | 0.3+ | 0.0  |
| 2003 09 30 | 691 | 0.1- | 0.2+ | 2007 09 14 | G96 | 0.3+ | 0.6- | 2007 10 30 | G96 | 0.2- | 0.3- |
| 2003 10 18 | 645 | 0.1- | 0.0  | 2007 09 14 | G96 | 0.3+ | 0.5- | 2007 11 05 | G96 | 0.1- | 0.1- |
| 2003 10 18 | 645 | 0.0  | 0.1+ | 2007 09 14 | G96 | 0.2+ | 0.4- | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2003 10 22 | 691 | 0.1+ | 0.4+ | 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.3- | 0.0  |
| 2003 10 22 | 691 | 0.1- | 0.4+ | 2007 10 08 | 691 | 0.5- | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.7- |
| 2003 10 22 | 691 | 0.1- | 0.5+ | 2007 10 08 | 691 | 0.2- | 0.0  |            |     |      |      |
| 2003 10 22 | 645 | 0.1- | 0.1+ | 2007 10 21 | 691 | 0.4- | 0.2+ |            |     |      |      |

**2003 UY<sub>334</sub> = 2007 VJ<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.85633   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26150470 | $\omega$ 1.21996   | +0.99993769   | +0.01085240 |
| <i>a</i> | 2.4218638  | $\Omega$ 358.15215 | -0.01080505   | +0.88217020 |
| <i>e</i> | 0.1263875  | <i>i</i> 4.64990   | -0.00280335   | +0.47080566 |
| <i>P</i> | 3.77       | <i>H</i> 18.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 18 | 645 | 0.2- | 0.0  | 2007 10 21 | 691 | 0.3+ | 0.1- | 2007 11 04 | 691 | 0.0  | 0.2- |
| 2003 10 18 | 645 | 0.3+ | 0.0  | 2007 10 21 | 691 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.3- | 0.1- |
| 2003 10 22 | 645 | 0.1- | 0.1+ | 2007 10 21 | 691 | 0.4- | 0.3+ | 2007 11 04 | 691 | 0.3+ | 0.1+ |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.3- | 0.2+ | 2007 11 18 | 691 | 0.2+ | 0.2- |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.4- | 0.1- | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.1+ | 0.2- |

**2003 UO<sub>336</sub> = 2003 UN<sub>414</sub> = 2007 VW<sub>129</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 123.75266  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26254058 | $\omega$ 91.59007  | -0.01780588   | +0.99983980 |
| <i>a</i> | 2.4154892  | $\Omega$ 177.38759 | -0.93249206   | -0.01594924 |
| <i>e</i> | 0.0335220  | <i>i</i> 2.28995   | -0.36075132   | -0.00812329 |
| <i>P</i> | 3.75       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 18 691 | 0.1+ | 0.5+ | 2003 10 19 645 | 0.1+ | 0.1− | 2007 11 01 G96 | 0.0  | 0.2− |
| 2003 09 18 691 | 0.3+ | 0.3+ | 2003 10 19 645 | 0.0  | 0.1− | 2007 11 01 G96 | 0.1+ | 0.6− |
| 2003 09 18 691 | 0.1+ | 0.2+ | 2003 10 22 645 | 0.0  | 0.1− | 2007 11 01 G96 | 0.4− | 0.3+ |
| 2003 09 29 691 | 0.0  | 0.3+ | 2003 10 22 645 | 0.1− | 0.0  | 2007 11 07 G96 | 0.4+ | 0.1− |
| 2003 09 29 691 | 0.0  | 0.3+ | 2007 10 04 691 | 0.3− | 0.5+ | 2007 11 07 G96 | 0.3+ | 0.3+ |
| 2003 09 29 691 | 0.3− | 0.0  | 2007 10 04 691 | 0.1+ | 0.2+ | 2007 11 07 G96 | 0.2+ | 0.0  |
| 2003 10 18 645 | 0.0  | 0.0  | 2007 10 04 691 | 0.0  | 0.0  |                |      |      |
| 2003 10 18 645 | 0.0  | 0.0  | 2007 11 01 G96 | 0.6− | 0.1− |                |      |      |

**2003 UN<sub>338</sub> = 2007 VF<sub>129</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.44915   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25813592 | $\omega$ | 135.00613 | +0.45154780   | +0.89220367 |
| <i>a</i> | 2.4428891  | $\Omega$ | 161.83128 | −0.82634145   | +0.42188858 |
| <i>e</i> | 0.1777152  | <i>i</i> | 1.61473   | −0.33654776   | +0.16119133 |
| <i>P</i> | 3.82       | <i>H</i> | 18.8      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 16 291 | 0.2− | 0.0  | 2003 10 19 645 | 0.1− | 0.0  | 2007 11 01 G96 | 0.1+ | 0.3− |
| 2003 09 16 291 | 0.4+ | 0.2− | 2003 10 22 645 | 0.1+ | 0.0  | 2007 11 07 G96 | 0.2+ | 0.1− |
| 2003 09 16 291 | 0.1− | 0.1+ | 2003 10 22 645 | 0.2+ | 0.2+ | 2007 11 07 G96 | 0.4− | 0.3− |
| 2003 10 18 645 | 0.3− | 0.1− | 2007 11 01 G96 | 0.4− | 0.3− | 2007 11 07 G96 | 0.5+ | 0.3+ |
| 2003 10 18 645 | 0.1+ | 0.2+ | 2007 11 01 G96 | 0.3+ | 0.6+ | 2007 11 07 G96 | 0.2− | 0.2+ |
| 2003 10 19 645 | 0.1− | 0.1− | 2007 11 01 G96 | 0.1− | 0.2− |                |      |      |

**2003 UU<sub>339</sub> = 2007 VK<sub>195</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 276.35561  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24210954 | $\omega$ | 249.99635 | −0.42707027   | −0.90078741 |
| <i>a</i> | 2.5495377  | $\Omega$ | 225.54479 | +0.86535017   | −0.38191888 |
| <i>e</i> | 0.0845446  | <i>i</i> | 6.32969   | +0.26225954   | −0.20668820 |
| <i>P</i> | 4.07       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 29 691 | 0.5− | 0.0  | 2005 03 10 703 | 1.2+ | 1.3− | 2007 10 16 G96 | 0.5+ | 0.5− |
| 2003 09 29 691 | 0.2− | 0.0  | 2005 03 10 703 | 0.8− | 0.3+ | 2007 11 07 G96 | 0.3+ | 0.0  |
| 2003 09 29 691 | 0.3− | 0.1− | 2005 03 10 703 | 0.8+ | 0.6+ | 2007 11 07 G96 | 0.2+ | 0.5+ |
| 2003 10 18 691 | 0.1+ | 0.0  | 2007 10 11 G96 | 0.2− | 0.0  | 2007 11 07 G96 | 0.2+ | 0.1+ |
| 2003 10 18 691 | 0.2− | 0.2+ | 2007 10 11 G96 | 0.0  | 0.0  | 2007 11 07 G96 | 0.1+ | 0.1− |
| 2003 10 18 691 | 0.1− | 0.0  | 2007 10 11 G96 | 0.3− | 0.3− | 2007 11 11 G96 | 0.0  | 0.5− |
| 2003 10 24 704 | 0.2− | 0.7+ | 2007 10 11 G96 | 0.6− | 0.0  | 2007 11 11 G96 | 0.1+ | 0.4− |
| 2003 10 24 704 | 0.8+ | 1.4+ | 2007 10 16 G96 | 0.0  | 0.4− | 2007 11 11 G96 | 0.2+ | 0.8− |
| 2003 10 24 704 | 0.3− | 0.8+ | 2007 10 16 G96 | 0.3+ | 0.3− | 2007 11 11 G96 | 0.3− | 0.4− |
| 2005 03 10 703 | 1.4− | 0.1− | 2007 10 16 G96 | 0.4+ | 0.1− |                |      |      |

**2003 UH<sub>340</sub> = 2007 VY<sub>105</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.39143   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25758521 | $\omega$ | 74.70868  | +0.98040623   | +0.19579850 |
| <i>a</i> | 2.4463698  | $\Omega$ | 273.99634 | −0.18802071   | +0.89743669 |
| <i>e</i> | 0.2134987  | <i>i</i> | 1.24071   | −0.05875228   | +0.39531042 |
| <i>P</i> | 3.83       | <i>H</i> | 18.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1999 08 17 691 | 0.3− | 0.1+ | 2003 09 29 691 | 0.6+ | 0.2− | 2003 10 24 704 | 0.1− | 0.1− |
| 1999 08 17 691 | 0.5− | 0.2− | 2003 09 29 691 | 0.5+ | 0.1+ | 2007 11 03 691 | 0.3− | 0.1+ |
| 1999 08 17 691 | 0.1− | 0.2+ | 2003 09 29 691 | 0.6+ | 0.2+ | 2007 11 03 691 | 0.1+ | 0.2+ |
| 2002 04 08 807 | 0.1+ | 0.0  | 2003 10 18 691 | 0.1− | 0.1− | 2007 11 03 691 | 0.2− | 0.3+ |
| 2002 04 08 807 | 0.2+ | 0.3+ | 2003 10 18 691 | 0.1+ | 0.1+ | 2007 11 07 691 | 0.7− | 0.1− |
| 2003 09 18 691 | 0.2+ | 0.2− | 2003 10 18 691 | 0.6− | 0.0  | 2007 11 07 691 | 0.5− | 0.1+ |
| 2003 09 18 691 | 0.6+ | 0.2− | 2003 10 24 704 | 0.0  | 0.1− | 2007 11 07 691 | 0.5+ | 0.2− |
| 2003 09 18 691 | 0.2+ | 0.2+ | 2003 10 24 704 | 0.4− | 0.1+ |                |      |      |

**2003 UQ<sub>340</sub> = 2007 UD<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 256.88961  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26458218 | $\omega$ | 126.98466 | −0.95745333   | −0.28583158 |
| <i>a</i> | 2.4030473  | $\Omega$ | 36.45475  | +0.23890672   | −0.86240125 |
| <i>e</i> | 0.0627797  | <i>i</i> | 3.83993   | +0.16188484   | −0.41780903 |
| <i>P</i> | 3.73       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 29 691 | 0.2+ | 0.0  | 2003 10 23 291 | 0.1+ | 0.1+ | 2007 10 30 691 | 0.3− | 0.2+ |
| 2003 09 29 691 | 0.4− | 0.0  | 2003 10 23 291 | 0.1+ | 0.1− | 2007 10 30 691 | 0.0  | 0.3− |
| 2003 09 29 691 | 0.3− | 0.1+ | 2007 10 16 G96 | 0.2+ | 0.1− | 2007 11 03 691 | 0.0  | 0.2+ |
| 2003 10 18 691 | 0.0  | 0.0  | 2007 10 16 G96 | 0.2+ | 0.1− | 2007 11 03 691 | 0.1+ | 0.1+ |
| 2003 10 18 691 | 0.3+ | 0.0  | 2007 10 16 G96 | 0.2+ | 0.0  | 2007 11 03 691 | 0.1+ | 0.1− |
| 2003 10 18 691 | 0.1− | 0.1+ | 2007 10 16 G96 | 0.2− | 0.1− |                |      |      |
| 2003 10 23 291 | 0.1+ | 0.1− | 2007 10 30 691 | 0.2− | 0.2+ |                |      |      |

**2003 UF<sub>342</sub> = 2007 VK<sub>117</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.91225   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27923469 | $\omega$ | 87.90588  | +0.99497335   | +0.00250770 |
| <i>a</i> | 2.3182297  | $\Omega$ | 271.93991 | −0.04244256   | +0.91601710 |
| <i>e</i> | 0.1324106  | <i>i</i> | 5.74874   | +0.09070098   | +0.40113139 |
| <i>P</i> | 3.53       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2003 09 18 691 | 0.1+ | 0.6+ | 2005 02 14 691 | 0.1−  | 0.0   | 2007 12 06 G96 | 0.4+ | 0.2− |
| 2003 09 18 691 | 0.3− | 0.5+ | 2005 02 14 691 | 0.0   | 0.2+  | 2007 12 06 G96 | 0.0  | 0.2− |
| 2003 09 18 691 | 0.1+ | 0.5+ | 2007 11 03 691 | 0.1+  | 0.0   | 2007 12 10 704 | 1.4+ | 1.8+ |
| 2003 09 18 644 | 0.1− | 0.6+ | 2007 11 03 691 | 0.1−  | 0.1−  | 2007 12 10 704 | 0.2− | 0.3+ |
| 2003 09 18 644 | 0.1− | 0.5+ | 2007 11 03 691 | 0.1+  | 0.2−  | 2007 12 10 704 | 0.4− | 0.1+ |
| 2003 09 18 644 | 0.2− | 0.5+ | 2007 11 07 691 | 0.0   | 0.2−  | 2007 12 10 704 | 0.8− | 0.6+ |
| 2003 10 19 645 | 0.0  | 0.1− | 2007 11 07 691 | 0.4−  | 0.1−  | 2007 12 14 704 | 0.3+ | 1.3+ |
| 2003 10 19 645 | 0.0  | 0.0  | 2007 11 07 691 | 0.1+  | 0.2−  | 2007 12 14 704 | 0.1+ | 0.5+ |
| 2003 10 22 645 | 0.0  | 0.0  | 2007 11 18 704 | 1.0+  | 0.1+  | 2007 12 14 704 | 2.1− | 0.4+ |
| 2003 10 22 645 | 0.0  | 0.1− | 2007 11 18 704 | 0.1+  | 0.3−  | 2007 12 14 704 | 0.1+ | 0.2+ |
| 2003 10 24 645 | 0.0  | 0.1− | 2007 11 18 704 | (1.1− | 2.7+) | 2007 12 14 704 | 0.5− | 0.5− |
| 2003 10 24 645 | 0.0  | 0.1− | 2007 12 06 G96 | 0.6+  | 0.2−  |                |      |      |
| 2005 02 14 691 | 0.3+ | 0.2+ | 2007 12 06 G96 | 0.3+  | 0.2−  |                |      |      |

**2003 UE<sub>343</sub> = 2000 YU<sub>59</sub> = 2005 EO<sub>99</sub> = 2007 TH<sub>325</sub>**Id. Minor Planet Center (*MPO* 128068; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 293.50705  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26719860 | $\omega$ | 179.36659 | −0.45055118   | −0.89081239 |
| <i>a</i> | 2.3873344  | $\Omega$ | 297.41108 | +0.81879114   | −0.38608161 |
| <i>e</i> | 0.1447985  | <i>i</i> | 3.79758   | +0.35578744   | −0.23957105 |
| <i>P</i> | 3.69       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 12 30 704 | 0.8− | 0.5− | 2003 10 24 645 | 0.1− | 0.0  | 2007 10 15 691 | 0.7− | 0.5+ |
| 2000 12 30 704 | 0.4− | 0.3+ | 2003 10 24 645 | 0.1− | 0.0  | 2007 10 15 691 | 0.6− | 0.4+ |
| 2000 12 30 704 | 0.5+ | 0.4− | 2003 11 16 645 | 0.0  | 0.2− | 2007 10 15 691 | 0.6− | 0.2− |
| 2001 01 02 704 | 0.2+ | 0.3− | 2003 11 16 645 | 0.1− | 0.4− | 2007 10 19 691 | 0.1− | 0.1− |
| 2001 01 02 704 | 0.7+ | 0.1− | 2005 03 03 703 | 0.3− | 0.5+ | 2007 10 19 691 | 0.1+ | 0.9+ |
| 2001 01 02 704 | 0.3− | 0.4+ | 2005 03 03 703 | 0.5− | 0.0  | 2007 10 19 691 | 0.0  | 0.4− |
| 2003 09 22 699 | 0.0  | 0.2+ | 2005 03 03 703 | 0.2+ | 0.1− | 2007 10 21 703 | 0.1− | 1.0− |
| 2003 09 22 699 | 0.5− | 1.4+ | 2005 03 03 703 | 0.6− | 0.5+ | 2007 10 21 703 | 0.5− | 1.1− |
| 2003 09 22 699 | 0.6− | 0.9+ | 2005 03 10 699 | 0.8+ | 0.3+ | 2007 10 21 703 | 1.1+ | 0.1− |
| 2003 09 22 699 | 1.1+ | 0.8+ | 2005 03 10 699 | 1.2+ | 1.1+ | 2007 10 21 703 | 0.1+ | 0.9− |
| 2003 10 17 645 | 0.1− | 0.2− | 2005 03 10 699 | 1.2+ | 0.3− | 2007 11 02 704 | 0.9+ | 0.1+ |
| 2003 10 17 645 | 0.0  | 0.1− | 2005 03 10 699 | 1.1− | 0.2− | 2007 11 02 704 | 0.2− | 0.7+ |
| 2003 10 18 645 | 0.1− | 0.3− | 2007 10 07 691 | 0.3− | 0.4− | 2007 11 02 704 | 0.1− | 1.6+ |
| 2003 10 18 645 | 0.1− | 0.2− | 2007 10 07 691 | 0.3− | 0.1+ | 2007 11 07 704 | 1.0+ | 1.3+ |
| 2003 10 19 645 | 0.0  | 0.3− | 2007 10 07 691 | 0.4− | 0.1− | 2007 11 07 704 | 0.4− | 1.0− |

## 2007 DEC. 24

|            |     |     |      |            |     |      |      |            |     |      |      |
|------------|-----|-----|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 19 | 645 | 0.0 | 0.3− | 2007 10 11 | 691 | 0.1− | 0.3− | 2007 11 07 | 704 | 0.5+ | 1.5+ |
| 2003 10 22 | 645 | 0.0 | 0.2− | 2007 10 11 | 691 | 0.3− | 0.0  | 2007 11 07 | 704 | 1.0+ | 0.4− |
| 2003 10 22 | 645 | 0.0 | 0.0  | 2007 10 11 | 691 | 0.5− | 0.2− | 2007 11 07 | 704 | 0.0  | 0.0  |

**2003 UH<sub>349</sub> = 2007 VS<sub>141</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 283.70213  |          |      | (2000.0)  |          | <b>P</b>    |  | <b>Q</b>    |   |  |  |
|----------|------------|----------|------|-----------|----------|-------------|--|-------------|---|--|--|
| <i>n</i> | 0.27035338 | $\omega$ |      | 43.37275  |          | −0.81623580 |  | −0.57529063 |   |  |  |
| <i>a</i> | 2.3687261  | $\Omega$ |      | 101.43446 |          | +0.51420721 |  | −0.76519884 |   |  |  |
| <i>e</i> | 0.1537310  | <i>i</i> |      | 3.09460   |          | +0.26334400 |  | −0.28898342 |   |  |  |
| <i>P</i> | 3.65       | <i>H</i> | 18.0 |           | <i>G</i> | 0.15        |  | <i>U</i>    | 4 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 06 | 691 | 0.2+ | 0.2+ | 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 08 | 691 | 0.4− | 0.1+ |
| 2000 12 06 | 691 | 0.0  | 0.0  | 2007 10 20 | G96 | 0.5+ | 0.5− | 2007 11 08 | 691 | 0.1+ | 0.0  |
| 2000 12 06 | 691 | 0.3− | 0.4− | 2007 10 20 | G96 | 0.1+ | 0.0  | 2007 11 08 | 691 | 0.0  | 0.2+ |
| 2003 10 19 | 645 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.5+ | 0.1− | 2007 11 19 | 691 | 0.1+ | 0.2+ |
| 2003 10 19 | 645 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2003 10 22 | 645 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.3+ | 0.0  | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2003 10 22 | 645 | 0.1− | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.3+ |            |     |      |      |
| 2003 10 24 | 645 | 0.1− | 0.0  | 2007 11 04 | 691 | 0.2+ | 0.3− |            |     |      |      |

**2003 UN<sub>352</sub> = 2003 UP<sub>414</sub> = 2007 VW<sub>56</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 310.85504  |          |      | (2000.0)  |          | <b>P</b>    |  | <b>Q</b>    |   |  |  |
|----------|------------|----------|------|-----------|----------|-------------|--|-------------|---|--|--|
| <i>n</i> | 0.26322919 | $\omega$ |      | 349.20242 |          | −0.41927623 |  | −0.90640026 |   |  |  |
| <i>a</i> | 2.4112747  | $\Omega$ |      | 125.56724 |          | +0.83758558 |  | −0.40805840 |   |  |  |
| <i>e</i> | 0.1654742  | <i>i</i> |      | 3.62565   |          | +0.35022541 |  | −0.10921038 |   |  |  |
| <i>P</i> | 3.74       | <i>H</i> | 18.0 |           | <i>G</i> | 0.15        |  | <i>U</i>    | 4 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 17 | 691 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.6+ | 0.0  | 2007 11 05 | 691 | 0.3− | 0.2− |
| 1992 11 17 | 691 | 0.1+ | 0.3− | 2007 10 20 | G96 | 0.2+ | 0.1− | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 1992 11 17 | 691 | 0.2+ | 0.9− | 2007 10 20 | G96 | 0.1− | 0.2− | 2007 11 09 | 691 | 0.2+ | 0.3+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.2− | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.3− | 0.1− | 2007 11 20 | 691 | 0.3+ | 0.1+ |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.1− | 0.2+ | 2007 11 20 | 691 | 0.0  | 0.2+ |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.2− | 0.2+ |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.1− | 0.2− |            |     |      |      |
| 2003 10 24 | 645 | 0.1− | 0.0  | 2007 11 05 | 691 | 0.2− | 0.3+ |            |     |      |      |

**2003 UH<sub>359</sub> = 2007 UG<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 29.77678   |          |      | (2000.0)  |          | <b>P</b>    |  | <b>Q</b>    |   |  |  |
|----------|------------|----------|------|-----------|----------|-------------|--|-------------|---|--|--|
| <i>n</i> | 0.25527618 | $\omega$ |      | 313.41067 |          | +0.99147809 |  | −0.11688915 |   |  |  |
| <i>a</i> | 2.4610996  | $\Omega$ |      | 53.38374  |          | +0.13027332 |  | +0.89048323 |   |  |  |
| <i>e</i> | 0.2009929  | <i>i</i> |      | 4.10924   |          | −0.00025737 |  | +0.43974600 |   |  |  |
| <i>P</i> | 3.86       | <i>H</i> | 18.0 |           | <i>G</i> | 0.15        |  | <i>U</i>    | 3 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 19 | 691 | 0.0  | 0.1− | 2007 09 11 | 291 | 0.1+ | 0.3+ | 2007 11 18 | 691 | 0.3− | 0.1+ |
| 2003 10 19 | 691 | 0.0  | 0.0  | 2007 09 11 | 291 | 0.1− | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2003 10 19 | 691 | 0.1− | 0.2− | 2007 10 30 | 691 | 0.3+ | 0.5− | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2003 10 23 | 695 | 0.3+ | 0.0  | 2007 10 30 | 691 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.2− |
| 2003 10 23 | 695 | 0.4+ | 0.1+ | 2007 10 30 | 691 | 0.1− | 0.4+ | 2007 12 15 | G96 | 0.1+ | 0.3− |
| 2003 11 20 | 695 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2003 11 20 | 695 | 0.1− | 0.1+ | 2007 11 03 | 691 | 0.3− | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.4+ |
| 2007 09 11 | 291 | 0.1− | 0.1− | 2007 11 03 | 691 | 0.0  | 0.1+ |            |     |      |      |

## M.P.O. 129669

**2003 UH<sub>366</sub> = 2007 VC<sub>255</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 342.37448  |          |      | (2000.0)  |          | <b>P</b>    |  | <b>Q</b>    |   |  |  |
|----------|------------|----------|------|-----------|----------|-------------|--|-------------|---|--|--|
| <i>n</i> | 0.23070075 | $\omega$ |      | 146.87650 |          | +0.78617140 |  | −0.61715652 |   |  |  |
| <i>a</i> | 2.6329142  | $\Omega$ |      | 251.26618 |          | +0.55930580 |  | +0.73284355 |   |  |  |
| <i>e</i> | 0.1888368  | <i>i</i> |      | 1.96305   |          | +0.26289077 |  | +0.28645796 |   |  |  |
| <i>P</i> | 4.27       | <i>H</i> | 17.6 |           | <i>G</i> | 0.15        |  | <i>U</i>    | 4 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 691 | 0.1− | 0.1+ | 2003 11 29 | 691 | 0.3− | 0.3+ | 2007 11 11 | G96 | 0.3+ | 0.4− |
| 2003 10 20 | 691 | 0.2− | 0.1+ | 2007 09 13 | 703 | 0.9− | 0.4− | 2007 11 11 | G96 | 0.5+ | 0.6− |
| 2003 10 20 | 691 | 0.1+ | 0.1+ | 2007 09 13 | 703 | 1.0− | 1.2+ | 2007 11 17 | G96 | 0.2− | 0.4− |
| 2003 10 24 | 695 | 0.0  | 0.2+ | 2007 09 13 | 703 | 0.1− | 0.1+ | 2007 11 17 | G96 | 0.1− | 0.5− |
| 2003 10 24 | 695 | 0.3+ | 0.4+ | 2007 09 13 | 703 | 1.4+ | 1.1+ | 2007 11 17 | G96 | 0.1− | 0.5− |
| 2003 11 29 | 691 | 0.1− | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.5− | 2007 11 17 | G96 | 0.1+ | 0.2− |
| 2003 11 29 | 691 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.4+ | 0.4− |            |     |      |      |

**2003 UO<sub>374</sub> = 2007 VX<sub>151</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 341.63427  |          |      | (2000.0)  |          | <b>P</b>    |  | <b>Q</b>    |   |  |  |
|----------|------------|----------|------|-----------|----------|-------------|--|-------------|---|--|--|
| <i>n</i> | 0.26076241 | $\omega$ |      | 185.42221 |          | +0.64952269 |  | −0.75698638 |   |  |  |
| <i>a</i> | 2.4264577  | $\Omega$ |      | 224.09828 |          | +0.70139798 |  | +0.63275582 |   |  |  |
| <i>e</i> | 0.0887816  | <i>i</i> |      | 5.88552   |          | +0.29353220 |  | +0.16306959 |   |  |  |
| <i>P</i> | 3.78       | <i>H</i> | 17.8 |           | <i>G</i> | 0.15        |  | <i>U</i>    | 4 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 691 | 0.1− | 0.3+ | 2003 10 24 | 645 | 0.0  | 0.2− | 2007 11 02 | G96 | 0.2− | 0.1+ |
| 2003 09 20 | 691 | 0.2− | 0.1+ | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 02 | G96 | 0.1+ | 0.0  |
| 2003 09 20 | 691 | 0.3+ | 0.1+ | 2007 10 18 | 691 | 0.2− | 0.0  | 2007 11 09 | 691 | 0.1− | 0.2+ |
| 2003 10 22 | 645 | 0.0  | 0.1− | 2007 10 18 | 691 | 0.2+ | 0.1− | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 2003 10 22 | 645 | 0.0  | 0.1− | 2007 11 02 | G96 | 0.2+ | 0.1− | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 2003 10 24 | 645 | 0.1+ | 0.2− | 2007 11 02 | G96 | 0.0  | 0.2− |            |     |      |      |

**2003 UA<sub>376</sub> = 2005 FH<sub>12</sub> = 2005 GW<sub>224</sub> = 2007 TK<sub>320</sub>**Id. Minor Planet Center (*MPO* 128070; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 317.96851  |          |      | (2000.0)  |          | <b>P</b>    |  | <b>Q</b>    |   |  |  |
|----------|------------|----------|------|-----------|----------|-------------|--|-------------|---|--|--|
| <i>n</i> | 0.25382909 | $\omega$ |      | 159.95213 |          | +0.16866861 |  | −0.98545613 |   |  |  |
| <i>a</i> | 2.4704446  | $\Omega$ |      | 280.33312 |          | +0.90144844 |  | +0.16270271 |   |  |  |
| <i>e</i> | 0.1794793  | <i>i</i> |      | 1.20372   |          | +0.39867483 |  | +0.04903096 |   |  |  |
| <i>P</i> | 3.88       | <i>H</i> | 17.6 |           | <i>G</i> | 0.15        |  | <i>U</i>    | 2 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.2− | 0.5− | 2005 03 04 | 691 | 0.0  | 0.0  | 2007 09 24 | 691 | 0.3− | 0.2+ |
| 2001 02 20 | 645 | 0.2− | 0.5− | 2005 03 04 | 691 | 0.1+ | 0.5+ | 2007 10 07 | 703 | 0.5− | 0.4− |
| 2003 09 29 | 691 | 0.1+ | 0.2+ | 2005 03 16 | 691 | 0.4+ | 0.1+ | 2007 10 07 | 703 | 1.1+ | 0.5− |
| 2003 09 29 | 691 | 0.0  | 0.2+ | 2005 03 16 | 691 | 0.3+ | 0.1+ | 2007 10 07 | 703 | 0.5+ | 0.8+ |
| 2003 09 29 | 691 | 0.1+ | 0.2+ | 2005 03 16 | 691 | 0.2+ | 0.3+ | 2007 10 07 | 703 | 0.8+ | 0.5− |
| 2003 10 18 | 645 | 0.0  | 0.2− | 2005 04 12 | G96 | 0.8− | 0.3+ | 2007 10 13 | 703 | 0.0  | 1.7+ |
| 2003 10 18 | 645 | 0.2+ | 0.2− | 2005 04 12 | G96 | 0.5− | 0.1+ | 2007 10 13 | 703 | 0.7+ | 0.6+ |
| 2003 10 19 | 645 | 0.0  | 0.2− | 2005 04 12 | G96 | 0.2+ | 0.1+ | 2007 10 13 | 703 | 0.6− | 1.5+ |
| 2003 10 19 | 645 | 0.0  | 0.2− | 2005 04 12 | G96 | 0.2+ | 0.3+ | 2007 10 13 | 703 | 1.5− | 0.1− |
| 2003 10 22 | 645 | 0.1+ | 0.3− | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 10 15 | 691 | 0.2− | 0.2− |
| 2003 10 22 | 645 | 0.1− | 0.2− | 2007 09 14 | G96 | 0.3+ | 0.1− | 2007 10 15 | 691 | 0.0  | 0.4− |
| 2003 10 24 | 645 | 0.0  | 0.2− | 2007 09 14 | G96 | 0.6− | 0.7− | 2007 10 15 | 691 | 0.2− | 0.4− |
| 2003 10 24 | 645 | 0.0  | 0.2− | 2007 09 24 | 691 | 0.2− | 0.4− |            |     |      |      |
| 2005 03 04 | 691 | 0.4+ | 0.5− | 2007 09 24 | 691 | 0.1− | 0.0  |            |     |      |      |

**2003 UO<sub>379</sub> = 2007 UD<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 228.43449  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28016986 | $\omega$ | 151.31559 | -0.95952388   | +0.27554578 |
| <i>a</i> | 2.3130682  | $\Omega$ | 44.80492  | -0.27158578   | -0.85062946 |
| <i>e</i> | 0.1493426  | <i>i</i> | 4.73824   | -0.07453242   | -0.44777678 |
| <i>P</i> | 3.52       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 645 | 0.0  | 0.0  | 2003 10 24 | 645 | 0.1+ | 0.0  | 2005 02 01 | 703 | 0.1+ | 0.6- |
| 2003 09 28 | 645 | 0.1- | 0.0  | 2005 01 13 | 691 | 0.2+ | 0.4+ | 2007 10 30 | 691 | 0.2+ | 0.1- |
| 2003 10 19 | 645 | 0.1+ | 0.0  | 2005 01 13 | 691 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.3+ | 0.0  |
| 2003 10 19 | 645 | 0.0  | 0.1+ | 2005 01 13 | 691 | 0.1+ | 0.2+ | 2007 10 30 | 691 | 0.4- | 0.0  |
| 2003 10 22 | 645 | 0.1- | 0.1+ | 2005 02 01 | 703 | 0.6- | 1.3+ | 2007 11 03 | 691 | 0.1- | 0.3- |
| 2003 10 22 | 645 | 0.2- | 0.0  | 2005 02 01 | 703 | 0.2+ | 1.1- | 2007 11 03 | 691 | 0.0  | 0.1- |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2005 02 01 | 703 | 0.1- | 0.3- | 2007 11 03 | 691 | 0.1- | 0.1+ |

**2003 UA<sub>381</sub> = 2007 VQ<sub>277</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 212.78470  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26368078 | $\omega$ | 160.70580 | -0.97749128   | +0.19503699 |
| <i>a</i> | 2.4085208  | $\Omega$ | 30.89095  | -0.20824184   | -0.83074780 |
| <i>e</i> | 0.0393657  | <i>i</i> | 9.01474   | -0.03385459   | -0.52136231 |
| <i>P</i> | 3.74       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 26 | 645 | 0.0  | 0.2- | 2003 10 19 | 691 | 0.2+ | 0.1+ | 2007 10 19 | 691 | 0.8- | 0.1+ |
| 2000 11 26 | 645 | 0.0  | 0.1- | 2003 10 22 | 645 | 0.1+ | 0.2- | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2003 09 25 | 644 | 0.3- | 0.0  | 2003 10 22 | 645 | 0.1+ | 0.3- | 2007 11 14 | 691 | 0.1+ | 0.1+ |
| 2003 09 25 | 644 | 0.6+ | 0.2+ | 2003 10 24 | 645 | 0.1+ | 0.4- | 2007 11 14 | 691 | 0.4- | 0.0  |
| 2003 09 25 | 644 | 0.5- | 0.2+ | 2003 10 24 | 645 | 0.1+ | 0.4- | 2007 11 18 | 691 | 0.3+ | 0.2+ |
| 2003 10 19 | 691 | 0.1- | 0.3+ | 2007 10 19 | 691 | 0.5+ | 0.1- | 2007 11 18 | 691 | 0.2- | 0.2+ |
| 2003 10 19 | 691 | 0.2+ | 0.0  | 2007 10 19 | 691 | 0.6+ | 0.1- | 2007 11 18 | 691 | 0.3- | 0.2+ |

**2003 UG<sub>381</sub> = 1997 CV<sub>30</sub> = 2007 VT<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.76929  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25108201 | $\omega$ | 353.45166 | +0.41401947   | -0.90883901 |
| <i>a</i> | 2.4884313  | $\Omega$ | 72.08095  | +0.83756654   | +0.35841980 |
| <i>e</i> | 0.0683736  | <i>i</i> | 3.07166   | +0.35646903   | +0.21341719 |
| <i>P</i> | 3.93       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 01 25 | 691 | 0.4- | 0.7+ | 2003 10 24 | 645 | 0.1+ | 0.1- | 2007 10 19 | G96 | 0.1+ | 0.0  |
| 1993 01 25 | 691 | 0.3- | 1.6- | 2003 11 16 | 645 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.4+ | 0.0  |
| 1993 01 25 | 691 | 0.5+ | 0.1+ | 2003 11 16 | 645 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.3- | 0.3- |
| 1997 02 04 | 691 | 0.4- | 0.3+ | 2007 09 13 | G96 | 0.7+ | 0.3- | 2007 10 19 | G96 | 0.4+ | 0.2- |
| 1997 02 04 | 691 | 0.3- | 0.0  | 2007 09 13 | G96 | 0.6+ | 0.4- | 2007 11 07 | 691 | 0.1- | 0.4+ |
| 1997 02 06 | 691 | 0.2+ | 0.6- | 2007 09 13 | G96 | 0.1+ | 0.3- | 2007 11 07 | 691 | 0.1- | 0.3+ |
| 1997 02 10 | 691 | 0.1+ | 0.1+ | 2007 09 13 | G96 | 0.1+ | 0.4- | 2007 11 07 | 691 | 0.4- | 0.6+ |
| 1997 02 10 | 691 | 0.5+ | 0.4+ | 2007 10 09 | G96 | 0.7+ | 1.0- | 2007 11 09 | 691 | 0.2- | 0.2+ |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2007 10 09 | G96 | 0.2- | 0.2- | 2007 11 09 | 691 | 0.2- | 0.4+ |
| 2003 10 22 | 645 | 0.0  | 0.1- | 2007 10 09 | G96 | 0.0  | 0.3- | 2007 11 09 | 691 | 0.4- | 0.3+ |
| 2003 10 24 | 645 | 0.1+ | 0.1- | 2007 10 09 | G96 | 0.3+ | 0.1- |            |     |      |      |

**2003 UB<sub>387</sub> = 2007 VB<sub>287</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.67160   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25658622 | $\omega$ | 228.99800 | +0.96260635   | -0.26659196 |
| <i>a</i> | 2.4527154  | $\Omega$ | 146.38179 | +0.26725047   | +0.90542045 |
| <i>e</i> | 0.0865782  | <i>i</i> | 4.98842   | +0.04434179   | +0.33036728 |
| <i>P</i> | 3.84       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 22 | 691 | 0.2+  | 0.1-  | 2003 11 18 | 699 | 0.5- | 0.2+ | 2007 11 18 | G96 | 0.5-  | 0.3-  |
| 2003 10 22 | 691 | 0.2+  | 0.0   | 2003 11 19 | 644 | 0.1- | 0.0  | 2007 11 18 | G96 | 0.7-  | 0.3-  |
| 2003 10 22 | 691 | 0.3+  | 0.2-  | 2003 11 19 | 644 | 0.1- | 0.0  | 2007 12 05 | 699 | 0.2+  | 0.2-  |
| 2003 10 27 | 704 | 0.3-  | 0.3-  | 2003 11 19 | 644 | 0.3- | 0.1- | 2007 12 05 | 703 | (0.0  | 1.7+) |
| 2003 10 27 | 704 | 1.0-  | 0.9+  | 2007 11 15 | 699 | 1.1+ | 0.0  | 2007 12 05 | 703 | 0.4+  | 0.7+  |
| 2003 10 27 | 704 | 0.8-  | 0.7+  | 2007 11 15 | 699 | 0.2+ | 0.8- | 2007 12 05 | 703 | 0.0   | 0.5+  |
| 2003 10 27 | 704 | 0.9-  | 0.2+  | 2007 11 15 | 699 | 0.2- | 0.5+ | 2007 12 05 | 699 | 0.6-  | 0.5+  |
| 2003 11 18 | 699 | 0.3+  | 0.4-  | 2007 11 15 | 699 | 0.9+ | 1.0- | 2007 12 05 | 703 | (1.7- | 1.9+) |
| 2003 11 18 | 699 | (2.4+ | 0.5-) | 2007 11 18 | G96 | 0.3- | 0.3- | 2007 12 05 | 699 | 0.1+  | 0.1-  |
| 2003 11 18 | 699 | 0.8+  | 0.4+  | 2007 11 18 | G96 | 0.5- | 0.3- | 2007 12 05 | 699 | 0.1+  | 0.7+  |

**2003 US<sub>402</sub> = 2007 UY<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 207.11655  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27111186 | $\omega$ | 8.44002   | -0.95466578   | +0.29764116 |
| <i>a</i> | 2.3643061  | $\Omega$ | 188.88039 | -0.27489712   | -0.88766667 |
| <i>e</i> | 0.1496769  | <i>i</i> | 1.77981   | -0.11421392   | -0.35136537 |
| <i>P</i> | 3.64       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 24 | 566 | 0.3- | 0.4+ | 2003 10 23 | 645 | 0.0  | 0.2- | 2007 10 30 | G96 | 0.4+ | 0.3- |
| 1998 02 24 | 566 | 0.2+ | 0.4- | 2003 10 23 | 645 | 0.1+ | 0.1- | 2007 10 30 | G96 | 0.1+ | 0.2+ |
| 1998 02 24 | 566 | 0.2- | 0.6- | 2003 10 24 | 645 | 0.0  | 0.1- | 2007 10 30 | G96 | 0.3+ | 0.3- |
| 1998 04 21 | 691 | 0.2- | 0.2- | 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.1- | 0.0  |
| 1998 04 21 | 691 | 0.2- | 0.2- | 2004 12 13 | 691 | 0.3+ | 0.2+ | 2007 11 02 | G96 | 0.3+ | 0.4- |
| 1998 04 21 | 691 | 0.1+ | 0.5- | 2004 12 13 | 691 | 0.3+ | 0.3+ | 2007 11 02 | G96 | 0.3+ | 0.3+ |
| 2002 05 17 | 644 | 0.1+ | 0.5+ | 2004 12 13 | 691 | 0.1+ | 0.4+ | 2007 11 02 | G96 | 0.1+ | 0.5+ |
| 2002 05 17 | 644 | 0.2+ | 0.6+ | 2005 03 13 | G96 | 0.6- | 0.4+ | 2007 11 02 | G96 | 0.1+ | 0.4+ |
| 2002 05 17 | 644 | 0.2+ | 0.5+ | 2005 03 13 | G96 | 0.5- | 0.3+ | 2007 11 02 | G96 | 0.0  | 0.2+ |
| 2002 06 16 | 644 | 0.3+ | 0.8+ | 2005 03 13 | G96 | 0.6- | 0.4+ | 2007 11 02 | G96 | 0.1- | 0.1+ |
| 2002 06 16 | 644 | 0.1+ | 1.1+ | 2005 03 13 | G96 | 0.5- | 0.3+ | 2007 11 02 | G96 | 0.4+ | 0.0  |
| 2002 06 16 | 644 | 0.3+ | 1.0+ | 2007 10 18 | 691 | 0.3- | 0.0  | 2007 11 02 | 291 | 0.1+ | 0.2+ |
| 2003 09 18 | 691 | 0.2- | 0.4+ | 2007 10 18 | 691 | 0.4- | 0.2+ | 2007 11 02 | 291 | 0.1+ | 0.2+ |
| 2003 09 18 | 691 | 0.3- | 0.6+ | 2007 10 18 | 691 | 0.4- | 0.1- | 2007 11 02 | 291 | 0.1+ | 0.1+ |
| 2003 09 18 | 691 | 0.1- | 0.3+ | 2007 10 30 | G96 | 0.5+ | 0.2- |            |     |      |      |

**2003 UZ<sub>404</sub> = 2007 RZ<sub>244</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.47376   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24814826 | $\omega$ | 218.90515 | +0.99494639   | -0.09355545 |
| <i>a</i> | 2.5080059  | $\Omega$ | 146.40919 | +0.10039519   | +0.93264285 |
| <i>e</i> | 0.0671489  | <i>i</i> | 3.77818   | -0.00157895   | +0.34846046 |
| <i>P</i> | 3.97       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 26 | 691 | 0.0  | 0.1- | 2006 05 26 | G96 | 0.3- | 0.3+ | 2007 09 18 | 691 | 0.2- | 0.0  |
| 2001 01 26 | 691 | 0.1+ | 0.5+ | 2006 05 26 | G96 | 0.1- | 0.2+ | 2007 09 20 | 691 | 0.5- | 0.0  |
| 2001 01 26 | 691 | 0.0  | 0.2+ | 2006 05 26 | G96 | 0.1+ | 0.4+ | 2007 09 20 | 691 | 0.5- | 0.1+ |
| 2003 10 23 | 645 | 0.1+ | 0.1- | 2006 05 26 | G96 | 0.4+ | 0.9- | 2007 09 20 | 691 | 0.5- | 0.1+ |
| 2003 10 23 | 645 | 0.1+ | 0.0  | 2007 09 11 | 691 | 0.1- | 0.1- | 2007 10 15 | G96 | 0.4+ | 0.2- |
| 2003 10 24 | 645 | 0.0  | 0.1- | 2007 09 11 | 691 | 0.9- | 0.6+ | 2007 10 15 | G96 | 0.7+ | 0.2- |
| 2003 10 24 | 645 | 0.1+ | 0.1- | 2007 09 11 | 691 | 0.1+ | 0.4+ | 2007 10 15 | G96 | 0.3+ | 0.4- |
| 2003 11 16 | 645 | 0.0  | 0.1- | 2007 09 18 | 691 | 0.0  | 0.2+ | 2007 10 15 | G96 | 0.7+ | 0.4- |
| 2003 11 16 | 645 | 0.1- | 0.1- | 2007 09 18 | 691 | 0.1- | 0.8+ |            |     |      |      |

**2003 UD<sub>405</sub> = 2007 US<sub>104</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 255.28958  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27536241 | $\omega$ | 51.84587  | -0.98488572   | -0.16714120 |
| <i>a</i> | 2.3399125  | $\Omega$ | 118.49030 | +0.13830673   | -0.91680351 |
| <i>e</i> | 0.0523139  | <i>i</i> | 2.96296   | +0.10426581   | -0.36267773 |
| <i>P</i> | 3.58       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 01 12 | 691 | 0.1− | 0.2− | 2005 02 09 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 691 | 0.4− | 0.6− |
| 1994 01 12 | 691 | 0.0  | 0.3− | 2005 03 16 | G96 | 0.2− | 0.1− | 2007 11 07 | 691 | 0.1− | 0.2− |
| 2003 09 30 | 691 | 0.2− | 0.1+ | 2005 03 16 | G96 | 0.1− | 0.0  | 2007 11 07 | 691 | 0.4+ | 0.5+ |
| 2003 09 30 | 691 | 0.2− | 0.3+ | 2005 03 16 | G96 | 0.1+ | 0.2− | 2007 11 18 | G96 | 0.2+ | 0.2− |
| 2003 09 30 | 691 | 0.2− | 0.2+ | 2005 03 16 | G96 | 0.1+ | 0.3+ | 2007 11 18 | G96 | 0.4+ | 0.5− |
| 2003 10 23 | 645 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.2+ | 0.1+ | 2007 11 18 | G96 | 0.5+ | 0.1− |
| 2003 10 23 | 645 | 0.0  | 0.1− | 2007 10 30 | 691 | 0.1− | 0.1− | 2007 11 18 | G96 | 0.6+ | 0.2− |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.4− | 0.8+ | 2007 11 19 | 691 | 0.2− | 0.3− |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.4− | 0.0  | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2005 02 09 | 691 | 0.2+ | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.1− | 2007 11 19 | 691 | 0.2+ | 0.6+ |
| 2005 02 09 | 691 | 0.2− | 0.2+ | 2007 11 03 | 691 | 0.3+ | 0.1+ |            |     |      |      |

**2003 UY<sub>412</sub> = 2007 VT<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 263.74042  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23450306 | $\omega$ | 263.46608 | −0.55630440   | −0.79237136 |
| <i>a</i> | 2.6043762  | $\Omega$ | 223.62075 | +0.83032463   | −0.54199084 |
| <i>e</i> | 0.0298841  | <i>i</i> | 21.27731  | −0.03296088   | −0.27998850 |
| <i>P</i> | 4.20       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1993 05 23 | 691 | 0.1− | 0.2+ | 2003 11 30 | 703 | 1.0−  | 0.2−  | 2007 10 30 | 703 | 0.9−  | 0.5+  |
| 1993 05 23 | 691 | 0.1+ | 0.0  | 2003 11 30 | 703 | (0.3− | 1.7+) | 2007 10 30 | 703 | 0.9−  | 1.0−  |
| 2003 10 23 | 691 | 0.2+ | 0.1+ | 2003 11 30 | 703 | 0.1−  | 0.6+  | 2007 10 30 | 703 | 1.1+  | 0.5−  |
| 2003 10 23 | 691 | 0.1+ | 0.2+ | 2003 11 30 | 703 | 0.3−  | 0.0   | 2007 10 30 | 703 | 0.9−  | 0.3−  |
| 2003 10 23 | 691 | 0.1+ | 0.4+ | 2007 09 20 | 703 | 0.2−  | 0.9−  | 2007 11 02 | 704 | 0.1−  | 0.2−  |
| 2003 10 28 | 704 | 0.1+ | 0.2− | 2007 09 20 | 703 | 0.2+  | 0.6+  | 2007 11 02 | 704 | 0.2+  | 0.2+  |
| 2003 10 28 | 704 | 1.0+ | 0.4− | 2007 09 20 | 703 | 1.1+  | 1.3+  | 2007 11 02 | 704 | 0.7−  | 0.2−  |
| 2003 10 28 | 704 | 0.3+ | 0.0  | 2007 09 20 | 703 | 0.1+  | 1.2+  | 2007 11 02 | 704 | 0.1+  | 0.2+  |
| 2003 10 28 | 704 | 0.0  | 0.1− | 2007 10 12 | 699 | 0.8−  | 0.8−  | 2007 11 08 | 704 | (0.4− | 1.9−) |
| 2003 11 16 | 691 | 0.2− | 0.0  | 2007 10 12 | 699 | 0.9+  | 0.8−  | 2007 11 08 | 704 | (0.2+ | 2.2−) |
| 2003 11 16 | 691 | 0.1− | 0.0  | 2007 10 12 | 699 | 0.5+  | 0.5−  | 2007 11 08 | 704 | (0.8− | 2.0−) |
| 2003 11 16 | 691 | 0.1− | 0.1− | 2007 10 12 | 699 | 0.5+  | 0.1−  |            |     |       |       |

**2003 UF<sub>413</sub> = 2003 UO<sub>414</sub> = 2002 CL<sub>221</sub> = 2007 VN<sub>141</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 140.77916  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27340583 | $\omega$ | 163.18102 | −0.18993755   | +0.97976395 |
| <i>a</i> | 2.3510627  | $\Omega$ | 95.83597  | −0.90792754   | −0.15081118 |
| <i>e</i> | 0.1983700  | <i>i</i> | 3.63880   | −0.37361919   | −0.13160014 |
| <i>P</i> | 3.60       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 05 09 | 691 | 0.2+  | 0.3+  | 2003 10 15 | 699 | 0.8+  | 0.5−  | 2005 01 18 | 691 | 0.4+ | 0.2− |
| 1995 05 09 | 691 | 0.1−  | 0.5+  | 2003 10 15 | 699 | 0.8−  | 1.5+  | 2005 01 18 | 691 | 0.0  | 0.2− |
| 1995 05 09 | 691 | 0.1−  | 0.5+  | 2003 10 15 | 699 | (3.3− | 0.4+) | 2005 01 18 | 691 | 0.3+ | 0.3− |
| 1999 08 13 | 703 | 1.4+  | 0.0   | 2003 10 22 | 645 | 0.2+  | 0.0   | 2007 11 04 | 691 | 0.0  | 0.1− |
| 1999 08 13 | 703 | 0.2+  | 1.4+  | 2003 10 22 | 645 | 0.1+  | 0.1−  | 2007 11 04 | 691 | 0.4− | 0.3− |
| 1999 08 13 | 703 | 2.8−  | 1.6+  | 2003 10 24 | 645 | 0.2+  | 0.0   | 2007 11 04 | 691 | 0.0  | 0.2+ |
| 1999 08 13 | 703 | 2.0−  | 0.9+  | 2003 10 24 | 645 | 0.2+  | 0.0   | 2007 11 08 | 691 | 0.8− | 0.7+ |
| 2002 02 10 | 704 | 0.3+  | 0.7+  | 2003 10 25 | 704 | 0.4+  | 0.0   | 2007 11 08 | 691 | 1.1− | 0.6+ |
| 2002 02 10 | 704 | 1.2+  | 1.0+  | 2003 10 25 | 704 | 0.7+  | 0.0   | 2007 11 08 | 691 | 1.4− | 1.2+ |
| 2002 02 10 | 704 | 0.7+  | 1.4+  | 2003 10 25 | 704 | 1.0−  | 0.8+  | 2007 11 19 | 691 | 0.1− | 0.1− |
| 2002 02 12 | 704 | 1.7+  | 1.4+  | 2005 01 10 | 185 | 0.8+  | 0.3−  | 2007 11 19 | 691 | 0.2− | 0.3+ |
| 2002 02 12 | 704 | (0.7+ | 2.0+) | 2005 01 10 | 185 | 0.4+  | 0.0   | 2007 11 19 | 691 | 0.4− | 0.1+ |
| 2002 02 12 | 704 | 0.9+  | 0.7+  | 2005 01 10 | 185 | 0.1+  | 0.4−  |            |     |      |      |
| 2003 10 15 | 699 | 1.2−  | 0.9+  | 2005 01 10 | 185 | 0.2+  | 0.6−  |            |     |      |      |

**2003 VT<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 348.20643  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24014107 | $\omega$ | 52.19917 | +0.42138018   | −0.89639474 |
| <i>a</i> | 2.5634514  | $\Omega$ | 14.86018 | +0.56708977   | +0.14210198 |
| <i>e</i> | 0.2152418  | <i>i</i> | 32.43013 | +0.70770611   | +0.41986129 |
| <i>P</i> | 4.10       | <i>H</i> | 15.3     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 06 | 704 | 0.3+ | 0.1− | 2003 11 19 | 704 | 0.2+ | 0.4+ | 2004 01 13 | 704 | 0.5+  | 0.3+  |
| 2003 11 06 | 704 | 0.1− | 0.0  | 2003 11 19 | 704 | 0.2− | 0.2− | 2007 09 20 | 703 | 1.0+  | 0.4−  |
| 2003 11 06 | 704 | 0.0  | 0.1− | 2003 11 19 | 704 | 0.2− | 0.0  | 2007 09 20 | 703 | 0.1−  | 0.6+  |
| 2003 11 06 | 704 | 0.3+ | 0.2− | 2003 11 19 | 704 | 0.6− | 0.5− | 2007 09 20 | 703 | 0.6+  | 0.0   |
| 2003 11 06 | 704 | 0.1+ | 0.0  | 2003 11 19 | 704 | 0.4− | 0.1− | 2007 10 20 | A24 | 0.3−  | 0.4−  |
| 2003 11 16 | 704 | 0.4− | 0.9+ | 2003 11 20 | 704 | 0.2+ | 0.1+ | 2007 10 20 | A24 | 0.5−  | 0.4+  |
| 2003 11 16 | 704 | 0.3+ | 0.6+ | 2003 11 20 | 704 | 0.1+ | 0.2− | 2007 10 20 | A24 | (2.1− | 2.3+) |
| 2003 11 16 | 704 | 0.1− | 0.3+ | 2003 11 20 | 704 | 0.3− | 0.3− | 2007 12 08 | B03 | 0.4+  | 0.1+  |
| 2003 11 16 | 704 | 0.1− | 0.4+ | 2003 11 20 | 704 | 0.6+ | 0.3+ | 2007 12 08 | B03 | 0.7−  | 0.5−  |
| 2003 11 18 | 704 | 0.6+ | 0.0  | 2004 01 13 | 704 | 0.1− | 0.4+ | 2007 12 08 | B03 | 0.1−  | 0.1+  |
| 2003 11 18 | 704 | 0.7− | 0.5− | 2004 01 13 | 704 | 0.4+ | 0.0  | 2007 12 08 | B03 | 0.3+  | 0.2−  |
| 2003 11 18 | 704 | 0.4− | 0.3− | 2004 01 13 | 704 | 0.5+ | 0.3+ |            |     |       |       |
| 2003 11 18 | 704 | 0.9− | 0.5− | 2004 01 13 | 704 | 0.6+ | 0.1− |            |     |       |       |

**2003 VR<sub>4</sub> = 2007 RG<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.29325   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21418096 | $\omega$ | 335.26564 | +0.49744698   | +0.86731428 |
| <i>a</i> | 2.7666155  | $\Omega$ | 324.55815 | −0.79075124   | +0.44496708 |
| <i>e</i> | 0.0764205  | <i>i</i> | 1.74676   | −0.35673377   | +0.22309242 |
| <i>P</i> | 4.60       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 691 | 0.3− | 0.0  | 2005 01 17 | 691 | 0.1+ | 0.1− | 2007 09 03 | 703 | 0.3+ | 1.0− |
| 2003 10 20 | 691 | 0.1− | 0.0  | 2005 01 17 | 691 | 0.4+ | 0.3+ | 2007 09 03 | 703 | 0.0  | 0.2− |
| 2003 10 20 | 691 | 0.0  | 0.6− | 2005 03 08 | G96 | 0.1− | 0.3− | 2007 09 03 | 703 | 0.8− | 0.3+ |
| 2003 11 15 | 691 | 0.2+ | 0.8− | 2005 03 08 | G96 | 0.4− | 0.0  | 2007 09 12 | G96 | 0.4+ | 0.2− |
| 2003 11 15 | 691 | 0.3+ | 0.1+ | 2005 03 08 | G96 | 0.2− | 0.1+ | 2007 09 12 | G96 | 0.3+ | 0.1− |
| 2003 11 15 | 691 | 0.1+ | 0.1− | 2005 03 08 | G96 | 0.4− | 0.1− | 2007 09 12 | G96 | 0.2− | 0.2− |
| 2003 11 16 | 691 | 0.2+ | 0.1+ | 2006 04 19 | 691 | 0.1+ | 0.3+ | 2007 09 12 | G96 | 0.1+ | 0.1− |
| 2003 11 16 | 691 | 0.0  | 0.0  | 2006 04 19 | 691 | 0.2− | 0.3− | 2007 09 14 | 699 | 0.2− | 0.9+ |
| 2003 11 16 | 691 | 0.1+ | 0.0  | 2006 04 19 | 691 | 0.1− | 0.2− | 2007 09 14 | 699 | 0.2+ | 0.0  |
| 2003 11 19 | 699 | 0.0  | 1.8− | 2006 06 02 | G96 | 0.3− | 0.0  | 2007 09 14 | 699 | 0.0  | 0.5+ |
| 2003 11 19 | 699 | 0.4− | 0.7+ | 2006 06 02 | G96 | 0.1− | 0.2− | 2007 09 14 | 699 | 0.7− | 0.0  |
| 2003 11 19 | 699 | 1.0+ | 1.1+ | 2006 06 02 | G96 | 0.3+ | 0.3− | 2007 10 11 | G96 | 0.5+ | 0.1+ |
| 2003 11 19 | 699 | 1.0− | 0.3+ | 2006 06 02 | G96 | 0.1+ | 0.4− | 2007 10 11 | G96 | 0.1− | 0.1+ |
| 2003 12 16 | 291 | 0.1− | 0.3+ | 2007 08 23 | 691 | 0.5+ | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.1+ |
| 2003 12 16 | 291 | 0.2+ | 0.1+ | 2007 08 23 | 691 | 0.3− | 0.3+ | 2007 10 11 | G96 | 0.3+ | 0.1+ |
| 2003 12 16 | 291 | 0.2+ | 0.6− | 2007 08 23 | 691 | 0.3− | 0.5+ |            |     |      |      |
| 2005 01 17 | 691 | 0.6+ | 0.1+ | 2007 09 03 | 703 | 0.3− | 0.6− |            |     |      |      |

**2003 VZ<sub>5</sub> = 2007 VM<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 185.15557  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26361332 | $\omega$ | 184.90886 | −0.55843880   | +0.82531844 |
| <i>a</i> | 2.4089316  | $\Omega$ | 51.16985  | −0.75739207   | −0.46613945 |
| <i>e</i> | 0.0834366  | <i>i</i> | 6.16354   | −0.33838345   | −0.31869026 |
| <i>P</i> | 3.74       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 691 | 0.3− | 0.0  | 2003 11 17 | 649 | 0.6+ | 1.3+ | 2007 11 02 | 691 | 0.1+ | 0.1+ |
| 2003 10 22 | 691 | 0.0  | 0.2− | 2005 02 10 | 599 | 0.1− | 0.7− | 2007 11 06 | 691 | 0.2+ | 0.2+ |
| 2003 10 22 | 691 | 0.4− | 0.3− | 2005 02 10 | 599 | 0.2− | 0.1− | 2007 11 06 | 691 | 0.1− | 0.5+ |
| 2003 11 15 | 291 | 0.1− | 0.0  | 2005 02 10 | 599 | 0.2+ | 0.6+ | 2007 11 06 | 691 | 0.7− | 0.1− |
| 2003 11 15 | 291 | 0.2+ | 0.2+ | 2007 09 15 | G96 | 0.0  | 0.4− | 2007 11 17 | 691 | 0.0  | 0.2− |
| 2003 11 15 | 291 | 0.7+ | 0.0  | 2007 09 15 | G96 | 0.4+ | 0.1+ | 2007 11 17 | 691 | 0.2− | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 15 | 413 | 0.0  | 0.2− | 2007 09 15 | G96 | 0.2+ | 0.0  | 2007 11 17 | 691 | 0.0  | 0.1+ |
| 2003 11 15 | 413 | 0.2− | 0.2− | 2007 09 15 | G96 | 0.5+ | 0.1− | 2007 12 13 | A77 | 0.4+ | 0.9− |
| 2003 11 17 | 649 | 0.4− | 0.3− | 2007 11 02 | 691 | 0.1− | 0.2− | 2007 12 13 | A77 | 0.9+ | 0.2+ |
| 2003 11 17 | 649 | 0.5− | 0.3+ | 2007 11 02 | 691 | 0.1+ | 0.1− | 2007 12 14 | A77 | 0.5+ | 0.6+ |

**2003 VS<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 298.15885  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22030257 | $\omega$ | 2.84016  | +0.23161318   | −0.96846953 |
| <i>a</i> | 2.7151240  | $\Omega$ | 73.78061 | +0.89063950   | +0.17315813 |
| <i>e</i> | 0.1180904  | <i>i</i> | 5.48447  | +0.39130118   | +0.17911737 |
| <i>P</i> | 4.47       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 20 | 691 | 0.2+ | 0.2+ | 2003 11 05 | 699 | (0.5+ | 2.4+) | 2003 11 21 | 695 | 0.1− | 0.3− |
| 2003 10 20 | 691 | 0.3+ | 0.3+ | 2003 11 15 | 691 | 0.1+  | 0.0   | 2003 11 26 | 704 | 0.2+ | 0.6+ |
| 2003 10 20 | 691 | 0.1− | 0.2+ | 2003 11 15 | 691 | 0.3+  | 0.0   | 2003 11 26 | 704 | 0.0  | 0.2+ |
| 2003 10 23 | 695 | 0.1− | 0.0  | 2003 11 15 | 691 | 0.2+  | 0.0   | 2003 11 26 | 704 | 0.4+ | 0.8+ |
| 2003 10 23 | 695 | 0.1− | 0.0  | 2003 11 18 | 703 | 0.1+  | 0.2+  | 2003 11 26 | 704 | 0.1+ | 0.9+ |
| 2003 10 28 | 704 | 0.1+ | 0.1+ | 2003 11 18 | 703 | 0.6+  | 0.6+  | 2003 11 26 | 704 | 0.5− | 1.3+ |
| 2003 10 28 | 704 | 0.5+ | 0.0  | 2003 11 18 | 703 | 0.2+  | 0.8−  | 2007 09 12 | 703 | 0.9− | 0.4− |
| 2003 10 28 | 704 | 1.1+ | 0.6+ | 2003 11 18 | 703 | 0.9−  | 1.5−  | 2007 09 12 | 703 | 0.3− | 0.2− |
| 2003 11 03 | 704 | 0.0  | 0.2− | 2003 11 19 | 699 | 0.6−  | 0.5−  | 2007 09 12 | 703 | 0.4+ | 0.8+ |
| 2003 11 03 | 704 | 0.6+ | 1.2− | 2003 11 19 | 699 | 0.7−  | 0.3−  | 2007 09 12 | 703 | 0.0  | 0.7+ |
| 2003 11 03 | 704 | 1.1− | 0.4+ | 2003 11 19 | 699 | 0.1+  | 0.2+  | 2007 10 16 | G96 | 0.3+ | 0.2− |
| 2003 11 03 | 704 | 0.4− | 0.2− | 2003 11 19 | 699 | 0.1+  | 0.2−  | 2007 10 16 | G96 | 0.3+ | 0.1− |
| 2003 11 03 | 704 | 1.2− | 0.2+ | 2003 11 21 | 695 | 0.4−  | 0.2−  | 2007 10 16 | G96 | 0.4+ | 0.4− |
| 2003 11 05 | 699 | 0.3− | 1.5− | 2003 11 21 | 704 | 0.2+  | 0.3−  | 2007 10 16 | G96 | 0.2− | 0.2− |
| 2003 11 05 | 699 | 0.2+ | 0.8+ | 2003 11 21 | 704 | 0.2+  | 0.1−  |            |     |      |      |
| 2003 11 05 | 699 | 0.4+ | 0.2− | 2003 11 21 | 704 | 0.1+  | 0.1−  |            |     |      |      |

**2003 WR<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 327.39508  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22546403 | $\omega$ | 171.46552 | +0.64860205   | −0.73408119 |
| <i>a</i> | 2.6735268  | $\Omega$ | 237.82690 | +0.68354660   | +0.67800484 |
| <i>e</i> | 0.1008584  | <i>i</i> | 13.74372  | +0.33478267   | +0.03787131 |
| <i>P</i> | 4.37       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 25 | 704 | 0.0   | 0.6+  | 2003 11 19 | 703 | 0.4+ | 1.3− | 2003 12 22 | 691 | 0.2− | 0.1+ |
| 2003 10 25 | 704 | 0.0   | 0.2+  | 2003 11 19 | 699 | 0.3− | 0.2+ | 2003 12 22 | 691 | 0.1+ | 0.3+ |
| 2003 10 25 | 704 | 0.4−  | 0.0   | 2003 11 21 | 704 | 0.6− | 0.3− | 2003 12 22 | 691 | 0.2+ | 0.4+ |
| 2003 10 25 | 704 | 0.6+  | 0.3+  | 2003 11 21 | 704 | 0.6+ | 0.3− | 2007 09 13 | 703 | 0.0  | 0.8− |
| 2003 10 25 | 704 | 0.5−  | 0.3+  | 2003 11 21 | 704 | 0.1− | 0.2− | 2007 09 13 | 703 | 0.6− | 0.6− |
| 2003 11 16 | 691 | 0.1+  | 0.1+  | 2003 11 21 | 704 | 0.4+ | 0.3− | 2007 09 13 | 703 | 1.1− | 0.1− |
| 2003 11 16 | 691 | 0.0   | 0.1+  | 2003 11 21 | 704 | 0.1− | 0.4− | 2007 09 13 | 703 | 0.7+ | 0.1− |
| 2003 11 16 | 691 | 0.1+  | 0.1−  | 2003 11 24 | 699 | 0.4− | 0.1− | 2007 09 14 | G96 | 1.0+ | 0.4− |
| 2003 11 18 | 291 | 0.0   | 0.0   | 2003 11 24 | 699 | 0.3− | 0.3+ | 2007 09 14 | G96 | 0.6+ | 0.4− |
| 2003 11 18 | 291 | 0.0   | 0.1−  | 2003 11 24 | 699 | 0.8+ | 0.1+ | 2007 09 14 | G96 | 0.5+ | 0.4− |
| 2003 11 18 | 291 | 0.1+  | 0.0   | 2003 11 24 | 699 | 1.0− | 0.1+ | 2007 10 08 | 703 | 0.3− | 0.6+ |
| 2003 11 19 | 699 | 0.4−  | 0.4+  | 2003 11 29 | 691 | 0.2− | 0.1+ | 2007 10 08 | 703 | 0.1− | 1.3+ |
| 2003 11 19 | 703 | 0.2+  | 0.3+  | 2003 11 29 | 691 | 0.2− | 0.0  | 2007 10 08 | 703 | 1.2− | 0.9+ |
| 2003 11 19 | 699 | 0.5−  | 0.0   | 2003 11 29 | 691 | 0.2− | 0.0  | 2007 10 08 | 703 | 0.5− | 0.7+ |
| 2003 11 19 | 703 | 0.1−  | 0.2−  | 2003 12 01 | 291 | 0.2+ | 0.3− | 2007 11 01 | G96 | 0.2+ | 0.1+ |
| 2003 11 19 | 703 | (0.6+ | 1.6−) | 2003 12 01 | 291 | 0.0  | 0.2− | 2007 11 01 | G96 | 0.1+ | 0.3− |
| 2003 11 19 | 699 | 0.1−  | 0.4+  | 2003 12 01 | 291 | 0.4+ | 0.3− | 2007 11 01 | G96 | 0.4+ | 0.2− |

**2003 WQ<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.91772   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27289746 | $\omega$ | 295.27470 | +0.84387446   | −0.53582897 |
| <i>a</i> | 2.3539815  | $\Omega$ | 97.13659  | +0.50173890   | +0.76984916 |
| <i>e</i> | 0.2252870  | <i>i</i> | 1.59543   | +0.19008938   | +0.34672697 |
| <i>P</i> | 3.61       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 26 | 691 | 0.1−  | 0.1+  | 2003 11 19 | 691 | 0.1+ | 0.0  | 2003 11 30 | 691 | 0.1− | 0.1− |
| 2003 10 26 | 691 | 0.1+  | 0.2−  | 2003 11 19 | 699 | 0.6+ | 0.4− | 2003 12 21 | 691 | 0.1+ | 0.1+ |
| 2003 10 26 | 691 | 0.1−  | 0.0   | 2003 11 19 | 699 | 0.1+ | 0.1− | 2003 12 21 | 691 | 0.0  | 0.1+ |
| 2003 11 16 | 703 | 0.9−  | 0.2+  | 2003 11 21 | 704 | 0.4− | 0.2− | 2003 12 21 | 691 | 0.1− | 0.0  |
| 2003 11 16 | 703 | 0.3+  | 1.6+  | 2003 11 21 | 704 | 0.3− | 0.4+ | 2007 11 18 | G96 | 0.5+ | 0.1− |
| 2003 11 16 | 703 | 1.2−  | 0.1−  | 2003 11 21 | 704 | 0.4− | 0.1+ | 2007 11 18 | G96 | 0.4− | 0.5− |
| 2003 11 16 | 703 | (2.2− | 0.0 ) | 2003 11 21 | 704 | 0.2− | 0.8+ | 2007 11 18 | G96 | 0.0  | 0.1− |
| 2003 11 18 | 644 | 0.0   | 0.1+  | 2003 11 21 | 704 | 0.1− | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.3− |
| 2003 11 18 | 644 | 0.0   | 0.0   | 2003 11 24 | 699 | 0.1+ | 0.4− | 2007 11 19 | G96 | 0.3− | 0.1+ |
| 2003 11 18 | 644 | 0.1+  | 0.2+  | 2003 11 24 | 699 | 0.2+ | 0.3− | 2007 11 19 | G96 | 0.3+ | 0.5+ |
| 2003 11 19 | 691 | 0.2+  | 0.1+  | 2003 11 24 | 699 | 0.4− | 0.6− | 2007 11 19 | G96 | 0.2− | 0.2+ |
| 2003 11 19 | 691 | 0.2+  | 0.1+  | 2003 11 24 | 699 | 0.5+ | 0.0  | 2007 11 19 | G96 | 0.1− | 0.2+ |
| 2003 11 19 | 699 | 0.4+  | 0.5−  | 2003 11 30 | 691 | 0.0  | 0.1− |            |     |      |      |
| 2003 11 19 | 699 | 0.8−  | 0.8−  | 2003 11 30 | 691 | 0.1+ | 0.1− |            |     |      |      |

**2003 WC<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.55568   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28039379 | $\omega$ | 245.55156 | +0.99172202   | +0.11774715 |
| <i>a</i> | 2.3118365  | $\Omega$ | 107.65344 | −0.08945777   | +0.91971939 |
| <i>e</i> | 0.2516535  | <i>i</i> | 3.08095   | −0.09211268   | +0.37450213 |
| <i>P</i> | 3.52       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 644 | 0.2+ | 0.4− | 2003 10 25 | 704 | 1.3+ | 0.2− | 2003 12 15 | 926 | 0.2− | 0.2+ |
| 2003 09 22 | 644 | 0.2+ | 0.3− | 2003 10 25 | 704 | 0.3+ | 0.0  | 2003 12 15 | 926 | 0.5− | 0.0  |
| 2003 09 22 | 644 | 0.5+ | 0.6− | 2003 10 25 | 704 | 0.8+ | 0.8− | 2003 12 15 | 926 | 0.2+ | 0.0  |
| 2003 09 28 | 704 | 0.4+ | 0.1− | 2003 10 25 | 704 | 1.3+ | 0.3− | 2003 12 15 | 926 | 0.2− | 0.2+ |
| 2003 09 28 | 704 | 0.4+ | 0.2+ | 2003 11 16 | 703 | 0.2− | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.7− |
| 2003 09 28 | 704 | 0.1+ | 0.1+ | 2003 11 16 | 703 | 0.6− | 0.4− | 2007 11 11 | G96 | 0.4− | 0.6− |
| 2003 09 28 | 704 | 0.2− | 0.2− | 2003 11 16 | 703 | 0.9− | 0.5+ | 2007 11 11 | G96 | 0.2− | 0.2− |
| 2003 09 28 | 704 | 0.0  | 0.1+ | 2003 11 16 | 703 | 0.1+ | 0.2+ | 2007 11 11 | G96 | 0.1− | 0.2− |
| 2003 10 20 | 691 | 0.1+ | 0.2+ | 2003 11 19 | 644 | 0.4+ | 0.1− | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 2003 10 20 | 691 | 0.8− | 0.2+ | 2003 11 19 | 644 | 0.3+ | 0.2+ | 2007 12 05 | G96 | 0.2+ | 0.0  |
| 2003 10 20 | 691 | 0.7− | 0.1+ | 2003 11 19 | 644 | 0.5+ | 0.0  | 2007 12 05 | G96 | 0.1+ | 0.0  |
| 2003 10 25 | 704 | 0.6+ | 0.3− | 2003 12 15 | 926 | 0.3+ | 0.4+ | 2007 12 05 | G96 | 0.1+ | 0.4+ |

**2003 WT<sub>13</sub> = 2003 WQ<sub>193</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.49617  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22227857 | $\omega$ | 324.31352 | +0.99340665   | −0.07947844 |
| <i>a</i> | 2.6990089  | $\Omega$ | 40.49150  | +0.10968696   | +0.86854172 |
| <i>e</i> | 0.0632275  | <i>i</i> | 7.31019   | −0.03334673   | +0.48920186 |
| <i>P</i> | 4.43       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 049 | 0.0  | 0.5+ | 2003 11 18 | 644 | 0.3− | 0.3+ | 2007 10 15 | G96 | 0.8+ | 0.9+ |
| 2003 10 22 | 049 | 0.2+ | 0.3− | 2003 11 18 | 644 | 0.5− | 0.2+ | 2007 10 15 | G96 | 0.4+ | 0.4+ |
| 2003 10 22 | 049 | 0.2− | 0.3− | 2003 11 18 | 644 | 0.2− | 0.1+ | 2007 10 15 | G96 | 0.6− | 0.2− |
| 2003 11 16 | 691 | 0.1− | 0.2+ | 2003 11 20 | 691 | 0.2+ | 0.1+ | 2007 10 15 | G96 | 0.6− | 1.1− |
| 2003 11 16 | 691 | 0.2+ | 0.4− | 2003 11 20 | 691 | 0.2+ | 0.2− |            |     |      |      |
| 2003 11 16 | 691 | 0.1+ | 0.1+ | 2003 11 20 | 691 | 0.4+ | 0.2− |            |     |      |      |

**2003 WY<sub>14</sub> = 2007 VG<sub>275</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 46.06978   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25373566 | $\omega$ | 153.68454 | +0.98955742   | +0.14412762 |
| <i>a</i> | 2.4710510  | $\Omega$ | 198.02898 | −0.13326495   | +0.90999589 |
| <i>e</i> | 0.1970244  | <i>i</i> | 0.33845   | −0.05492327   | +0.38876048 |
| <i>P</i> | 3.88       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |     |      |            |     |      |      |      |
|------------|-----|-----|------|------------|-----|------|------|------|
| 2003 10 23 | 691 | 0.0 | 0.1− | 2003 11 20 | 291 | 0.3− | 0.2+ | 2007 |
|------------|-----|-----|------|------------|-----|------|------|------|

## 2007 DEC. 24

M.P.O. 129673

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 23 | 691 | 0.1− | 0.0  | 2003 11 20 | 291 | 0.1− | 0.4+ | 2007 11 13 | 691 | 0.1− | 0.1+ |
| 2003 11 16 | 691 | 0.2− | 0.2− | 2003 11 30 | 691 | 0.2− | 0.2− | 2007 11 18 | 691 | 0.0  | 0.3+ |
| 2003 11 16 | 691 | 0.1+ | 0.0  | 2003 11 30 | 691 | 0.2+ | 0.3− | 2007 11 18 | 691 | 0.3+ | 0.7− |
| 2003 11 16 | 691 | 0.2+ | 0.0  | 2003 11 30 | 691 | 0.3+ | 0.2− | 2007 11 18 | 691 | 0.0  | 0.2+ |

2003 WA<sub>23</sub> = 2007 US<sub>37</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 60.34649   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.22951777 | $\omega$ | 252.41668 | +0.71807062 |      | +0.67499576 |   |
| <i>a</i> | 2.6419535  | $\Omega$ | 64.75211  | −0.54603407 |      | +0.69746980 |   |
| <i>e</i> | 0.0810211  | <i>i</i> | 10.80600  | −0.43153376 |      | +0.24065869 |   |
| <i>P</i> | 4.29       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 11 18 | 691 | 0.0   | 0.0   | 2003 11 24 | 699 | 0.7+  | 0.6+  | 2007 10 19 | 703 | 1.1+  | 0.0   |
| 2003 11 18 | 691 | 0.2−  | 0.1+  | 2003 11 24 | 699 | 0.8−  | 0.7−  | 2007 10 19 | 703 | 0.7+  | 0.5−  |
| 2003 11 18 | 691 | 0.3−  | 0.2−  | 2003 12 18 | 691 | 0.3+  | 0.1−  | 2007 10 19 | 703 | 0.6−  | 0.0   |
| 2003 11 19 | 699 | 0.2+  | 0.5−  | 2003 12 18 | 691 | 0.2+  | 0.0   | 2007 10 19 | 703 | 0.3−  | 0.3+  |
| 2003 11 19 | 699 | 0.1+  | 0.1−  | 2003 12 18 | 691 | 0.2−  | 0.1−  | 2007 10 21 | G96 | 0.1−  | 0.2−  |
| 2003 11 19 | 699 | 0.0   | 0.4+  | 2006 06 22 | 644 | 0.2−  | 0.0   | 2007 10 21 | G96 | 0.3+  | 0.1−  |
| 2003 11 19 | 699 | 0.9+  | 0.3+  | 2006 06 22 | 644 | 0.2+  | 0.1+  | 2007 10 21 | G96 | 0.1+  | 0.1−  |
| 2003 11 19 | 599 | 0.1−  | 0.4+  | 2006 06 22 | 644 | 0.2+  | 0.5+  | 2007 10 21 | G96 | 0.1−  | 0.2−  |
| 2003 11 19 | 599 | 0.3−  | 0.0   | 2007 09 18 | 699 | (0.2− | 1.8+) | 2007 10 31 | 703 | 0.3+  | 0.5−  |
| 2003 11 19 | 599 | 0.2−  | 0.0   | 2007 09 18 | 699 | 0.8−  | 0.1−  | 2007 10 31 | 703 | 0.3+  | 0.8+  |
| 2003 11 21 | 704 | (1.2− | 2.6−) | 2007 09 18 | 699 | 0.8−  | 0.5−  | 2007 10 31 | 703 | 0.1−  | 0.7+  |
| 2003 11 21 | 704 | 0.7−  | 0.9+  | 2007 09 18 | 699 | 0.0   | 0.7−  | 2007 10 31 | 703 | 0.4+  | 0.4+  |
| 2003 11 21 | 704 | 0.0   | 0.1−  | 2007 10 10 | 703 | 0.7−  | 0.2+  | 2007 11 07 | 703 | (0.0  | 1.6+) |
| 2003 11 21 | 704 | 0.1+  | 0.4+  | 2007 10 10 | 703 | 0.2+  | 0.5+  | 2007 11 07 | 703 | 0.9+  | 1.4−  |
| 2003 11 24 | 699 | 0.0   | 0.1−  | 2007 10 10 | 703 | 0.1−  | 0.5+  | 2007 11 07 | 703 | 0.3+  | 0.1+  |
| 2003 11 24 | 699 | 0.6+  | 0.9+  | 2007 10 10 | 703 | 0.4−  | 0.1+  | 2007 11 07 | 703 | (0.4− | 2.8−) |

2003 WS<sub>26</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 13.58846   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.23287543 | $\omega$ | 290.95496 | +0.86259702 |      | −0.11984522 |   |
| <i>a</i> | 2.6164971  | $\Omega$ | 78.66325  | +0.36219024 |      | +0.82458591 |   |
| <i>e</i> | 0.3295872  | <i>i</i> | 30.08416  | −0.35319202 |      | +0.55289709 |   |
| <i>P</i> | 4.23       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.2+  | 0.4−  | 2003 12 04 | 704 | 0.7−  | 0.3−  | 2007 10 13 | 703 | 0.6− | 0.7+ |
| 2003 11 20 | 704 | 1.4−  | 0.6−  | 2003 12 04 | 704 | 0.0   | 0.1+  | 2007 10 13 | 703 | 0.1+ | 0.6+ |
| 2003 11 20 | 704 | 1.1−  | 0.3−  | 2003 12 04 | 704 | 1.1−  | 0.3−  | 2007 10 13 | 703 | 0.4+ | 0.7− |
| 2003 11 20 | 704 | 0.9−  | 0.9−  | 2003 12 17 | 704 | 0.3−  | 0.1+  | 2007 10 13 | 703 | 0.5− | 0.2+ |
| 2003 11 20 | 704 | (1.7− | 1.0−) | 2003 12 17 | 704 | 0.3+  | 0.1−  | 2007 10 13 | 703 | 0.3− | 0.4+ |
| 2003 11 21 | 854 | 0.8+  | 0.0   | 2003 12 17 | 704 | 1.4+  | 0.5−  | 2007 11 02 | 703 | 0.3+ | 1.0+ |
| 2003 11 21 | 854 | 0.3+  | 0.4+  | 2003 12 17 | 704 | 0.6+  | 0.5−  | 2007 11 02 | 703 | 0.2+ | 0.3+ |
| 2003 11 21 | 854 | 0.1+  | 0.2+  | 2003 12 17 | 704 | 0.7+  | 0.5−  | 2007 11 02 | 703 | 0.2+ | 0.3+ |
| 2003 11 21 | 704 | 0.1−  | 0.3+  | 2003 12 18 | 704 | 0.7−  | 0.3+  | 2007 11 02 | 703 | 0.3− | 0.5+ |
| 2003 11 21 | 704 | 0.6+  | 0.1+  | 2003 12 18 | 704 | 1.3−  | 0.5+  | 2007 11 13 | 703 | 0.3− | 0.6+ |
| 2003 11 21 | 704 | 1.4+  | 0.3+  | 2003 12 18 | 704 | 0.3−  | 0.4+  | 2007 11 13 | 703 | 1.0− | 0.2− |
| 2003 11 21 | 704 | 0.7+  | 0.7+  | 2003 12 27 | 704 | (2.3− | 0.6+) | 2007 11 13 | 703 | 1.5+ | 1.2− |
| 2003 11 23 | 704 | 0.3+  | 0.1−  | 2003 12 27 | 704 | 1.3−  | 0.4+  | 2007 11 13 | 703 | 0.3− | 0.1− |
| 2003 11 23 | 704 | 0.5−  | 0.0   | 2003 12 27 | 704 | 0.3+  | 1.0+  | 2007 11 18 | 703 | 0.2− | 0.2− |
| 2003 11 23 | 704 | 0.6+  | 0.4+  | 2003 12 27 | 704 | 0.4−  | 0.8+  | 2007 11 18 | 703 | 0.4− | 0.3+ |
| 2003 11 23 | 704 | 0.2+  | 0.2+  | 2003 12 28 | 704 | 0.2+  | 0.8+  | 2007 11 18 | 703 | 0.5− | 0.0  |
| 2003 11 23 | 704 | 0.4−  | 0.1+  | 2003 12 28 | 704 | 0.2−  | 0.9+  | 2007 11 18 | 703 | 0.0  | 0.4+ |
| 2003 11 23 | 926 | 0.2+  | 0.2−  | 2003 12 28 | 704 | 0.1+  | 0.2+  | 2007 11 19 | 699 | 0.2− | 0.4− |
| 2003 11 23 | 926 | 0.1+  | 0.1+  | 2003 12 28 | 704 | 0.1−  | 0.9+  | 2007 11 19 | 699 | 0.3− | 0.2+ |
| 2003 11 23 | 926 | 0.0   | 0.2+  | 2006 06 19 | 691 | 0.2+  | 0.6+  | 2007 11 19 | 699 | 0.6+ | 0.5− |
| 2003 11 23 | 704 | 0.2−  | 0.4+  | 2006 06 19 | 691 | 0.3+  | 0.2+  | 2007 11 19 | 699 | 0.1+ | 0.5− |
| 2003 11 24 | 704 | 0.3−  | 0.8−  | 2006 06 19 | 691 | 0.2+  | 0.1+  | 2007 12 06 | 703 | 0.2− | 0.1+ |
| 2003 11 24 | 704 | 0.0   | 0.7−  | 2007 09 20 | E12 | 0.3+  | 0.1−  | 2007 12 06 | 703 | 0.4− | 0.2− |
| 2003 11 24 | 704 | 0.0   | 0.5−  | 2007 09 20 | E12 | 0.2+  | 0.0   | 2007 12 06 | 703 | 0.1+ | 0.1− |
| 2003 11 24 | 704 | 0.0   | 0.5−  | 2007 09 20 | E12 | 0.6+  | 0.4−  | 2007 12 06 | 703 | 0.1− | 0.2− |
| 2003 11 24 | 691 | 0.2+  | 0.1−  | 2007 09 20 | E12 | 0.5−  | 0.4−  | 2007 12 16 | 699 | 0.0  | 0.4+ |

2003 WC<sub>33</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 345.98335  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.27743862 | $\omega$ | 193.20245 | −0.51900151 |      | −0.85382489 |   |
| <i>a</i> | 2.3282241  | $\Omega$ | 288.07591 | +0.78803601 |      | −0.45970597 |   |
| <i>e</i> | 0.1782305  | <i>i</i> | 2.42692   | +0.33111430 |      | −0.24424061 |   |
| <i>P</i> | 3.55       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |       |            |     |       |       |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|-------|-------|
| 2001 03 21 | 608 | 0.0  | 0.2+ | 2003 11 20 | 704 | 0.4+ | 0.8+  | 2007 11 08 | G96 | (1.7+ | 0.4+) |
| 2001 03 21 | 608 | 0.1+ | 0.4+ | 2003 11 20 | 704 | 1.2− | 0.9+  | 2007 11 08 | G96 | 0.5+  | 0.3−  |
| 2001 03 21 | 608 | 0.0  | 0.2− | 2003 11 20 | 704 | 0.8+ | 0.8+  | 2007 11 08 | G96 | 0.5+  | 0.2−  |
| 2003 10 25 | 704 | 0.3+ | 0.1+ | 2003 11 20 | 704 | 0.6− | 1.0+  | 2007 11 18 | G96 | 0.1+  | 0.3−  |
| 2003 10 25 | 704 | 0.1− | 0.1− | 2003 11 20 | 704 | 0.9− | 0.8+  | 2007 11 18 | G96 | 0.3−  | 0.3−  |
| 2003 10 25 | 704 | 0.3+ | 0.7− | 2003 11 24 | 704 | 0.1+ | 0.2+  | 2007 11 18 | G96 | 0.2−  | 0.4−  |
| 2003 10 25 | 704 | 0.1+ | 0.3− | 2003 11 24 | 704 | 0.1+ | 0.1−  | 2007 11 18 | G96 | 0.5+  | 0.1+  |
| 2003 10 25 | 704 | 0.0  | 0.6+ | 2003 11 24 | 704 | 0.1− | 0.7+  | 2007 11 21 | 691 | 0.0   | 0.3+  |
| 2003 10 25 | 691 | 0.3+ | 0.3− | 2003 11 24 | 704 | 0.7− | 0.7+  | 2007 11 21 | 691 | 0.6−  | 0.2+  |
| 2003 10 25 | 691 | 0.1+ | 0.4− | 2006 09 27 | G96 | 0.4+ | 0.2−  | 2007 11 21 | 691 | 0.2−  | 0.2+  |
| 2003 10 25 | 691 | 0.1− | 0.4− | 2006 09 27 | G96 | 0.2+ | 0.2−  | 2007 12 04 | G96 | 0.5+  | 0.7−  |
| 2003 11 18 | 644 | 0.2− | 0.0  | 2006 09 27 | G96 | (0.0 | 2.1−) | 2007 12 04 | G96 | 0.5+  | 1.0−  |
| 2003 11 18 | 644 | 0.1− | 0.2+ | 2006 09 27 | G96 | 0.2− | 0.5−  | 2007 12 04 | G96 | 0.6+  | 0.7−  |
| 2003 11 18 | 644 | 0.1+ | 0.1+ | 2007 11 08 | G96 | 0.1− | 0.4−  | 2007 12 04 | G96 | 0.4−  | 0.9−  |

2003 WP<sub>36</sub> = 2007 WH<sub>38</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> | 354.32017  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.25285219 | $\omega$ | 156.83651 | +0.40616384 |      | −0.90198734 |   |
| <i>a</i> | 2.4768036  | $\Omega$ | 268.93314 | +0.81380710 |      | +0.42994122 |   |
| <i>e</i> | 0.2045861  | <i>i</i> | 8.42316   | +0.41563078 |      | +0.03961550 |   |
| <i>P</i> | 3.90       | <i>H</i> | 17.5      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 25 | 691 | 0.1− | 0.1− | 2003 11 20 | 704 | 0.3− | 1.4+ | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2003 10 25 | 691 | 0.0  | 0.1− | 2003 11 21 | 691 | 0.2− | 0.0  | 2007 12 04 | 703 | 0.3+ | 0.0  |
| 2003 10 25 | 691 | 0.0  | 0.1− | 2003 11 21 | 691 | 0.0  | 0.0  | 2007 12 04 | 703 | 0.9− | 0.6− |
| 2003 11 19 | 704 | 0.0  | 0.8+ | 2003 11 21 | 691 | 0.2+ | 0.0  | 2007 12 04 | 703 | 0.8− | 0.6− |
| 2003 11 19 | 704 | 0.7+ | 0.0  | 2007 11 19 | G96 | 0.3+ | 0.3− | 2007 12 04 | 703 | 1.0− | 0.7+ |
| 2003 11 19 | 704 | 0.3− | 0.4− | 2007 11 19 | G96 | 0.5+ | 0.2− | 2007 12 10 | 704 | 0.7+ | 0.6+ |
| 2003 11 19 | 704 | 0.2− | 0.3− | 2007 11 19 | G96 | 0.1+ | 0.3− | 2007 12 10 | 704 | 1.3+ | 0.2+ |
| 2003 11 19 | 704 | 0.3− | 0.1+ | 2007 11 19 | G96 | 0.3+ | 0.3− | 2007 12 10 | 704 | 0.9+ | 0.4+ |
| 2003 11 20 | 704 | 0.5+ | 0.8+ | 2007 11 20 | 691 | 0.2− | 0.1− |            |     |      |      |
| 2003 11 20 | 704 | 0.2+ | 0.1− | 2007 11 20 | 691 | 0.1− | 0.1− |            |     |      |      |

2003 WO<sub>44</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> | 311.24845  | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.22006528 | $\omega$ | 42.30437 | +0.51250147 |      | −0.85547333 |   |
| <i>a</i> | 2.7170754  | $\Omega$ | 17.28700 | +0.70572236 |      | +0.37039382 |   |
| <i>e</i> | 0.0743788  | <i>i</i> | 14.46234 | +0.48918115 |      | +0.36190302 |   |
| <i>P</i> | 4.48       | <i>H</i> | 15.8     | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

## M.P.O. 129674

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 19 | 644 | 0.0  | 0.1− | 2007 09 14 | 703 | 0.7−  | 0.1+  | 2007 12 06 | G96 | 0.4+ | 0.1− |
| 2003 11 20 | 704 | 0.2− | 0.5+ | 2007 09 14 | 703 | 0.9+  | 0.4+  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2003 11 20 | 704 | 0.1+ | 0.2− | 2007 09 18 | 699 | (1.7+ | 2.0−) |            |     |      |      |
| 2003 11 20 | 704 | 0.5+ | 0.7+ | 2007 09 18 | 699 | 0.4+  | 0.3+  |            |     |      |      |

**2003 WJ<sub>46</sub> = 2007 VP<sub>56</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 14.21827   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.24744748 | $\omega$ | 314.07288 |          | +0.89802557 |          | −0.40921544 |
| <i>a</i> | 2.5127389  | $\Omega$ | 70.69244  |          | +0.43646638 |          | +0.78263185 |
| <i>e</i> | 0.2171117  | <i>i</i> | 9.85522   |          | +0.05520121 |          | +0.46907368 |
| <i>P</i> | 3.98       | <i>H</i> | 17.1      | <i>G</i> | 0.15        | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 703 | (2.0− | 1.0+) | 2007 11 01 | 691 | 0.0  | 0.1− | 2007 11 12 | 704 | 0.6+ | 0.5+ |
| 2003 11 18 | 703 | 0.9−  | 0.7−  | 2007 11 01 | 691 | 0.1+ | 0.4− | 2007 11 18 | G96 | 0.7+ | 0.2− |
| 2003 11 18 | 703 | 0.8−  | 0.6−  | 2007 11 01 | 691 | 0.0  | 0.1− | 2007 11 18 | G96 | 0.5+ | 0.2− |
| 2003 11 18 | 703 | 0.6−  | 0.6+  | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 11 18 | G96 | 0.4+ | 0.2− |
| 2003 11 21 | 691 | 0.3+  | 0.0   | 2007 11 05 | 691 | 0.1− | 0.1+ | 2007 11 18 | G96 | 0.8+ | 0.2− |
| 2003 11 21 | 691 | 0.4+  | 0.0   | 2007 11 05 | 691 | 0.0  | 0.2− | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2003 11 21 | 691 | 0.3+  | 0.0   | 2007 11 05 | D29 | 0.8+ | 0.3+ | 2007 11 20 | 691 | 0.3− | 0.2− |
| 2003 11 24 | 699 | 1.0−  | 0.7+  | 2007 11 05 | D29 | 0.8+ | 0.3− | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2003 11 24 | 699 | 0.2−  | 0.7−  | 2007 11 05 | D29 | 0.6− | 0.1− | 2007 11 20 | 703 | 0.4+ | 0.3+ |
| 2003 11 24 | 699 | 0.5−  | 0.2+  | 2007 11 05 | D29 | 0.1+ | 0.0  | 2007 11 20 | 703 | 1.0+ | 0.1− |
| 2003 11 24 | 699 | 0.0   | 0.0   | 2007 11 09 | 691 | 0.2− | 0.1+ | 2007 11 20 | 703 | 1.5− | 0.7+ |
| 2007 10 14 | G96 | 0.3+  | 0.2−  | 2007 11 09 | 691 | 0.1− | 0.0  | 2007 11 20 | 703 | 0.3+ | 0.5+ |
| 2007 10 14 | G96 | 0.1−  | 0.1+  | 2007 11 09 | 691 | 0.1+ | 0.0  | 2007 12 05 | 704 | 0.5+ | 0.1+ |
| 2007 10 14 | G96 | 0.1+  | 0.1+  | 2007 11 09 | 703 | 0.6− | 0.4+ | 2007 12 05 | 704 | 0.8− | 0.1+ |
| 2007 10 14 | G96 | 0.3−  | 0.2+  | 2007 11 09 | 703 | 1.1− | 1.0+ | 2007 12 05 | 704 | 0.0  | 0.3− |
| 2007 10 14 | G96 | 0.3+  | 0.0   | 2007 11 09 | 703 | 0.2− | 0.7+ | 2007 12 05 | 704 | 0.1+ | 0.2+ |
| 2007 10 14 | G96 | 0.1−  | 0.2+  | 2007 11 09 | 703 | 0.3+ | 1.1+ | 2007 12 05 | 704 | 0.4+ | 0.3− |
| 2007 10 14 | G96 | 0.1−  | 0.1−  | 2007 11 12 | 704 | 0.6+ | 0.1− |            |     |      |      |
| 2007 10 14 | G96 | 0.3−  | 0.2+  | 2007 11 12 | 704 | 0.8+ | 0.2+ |            |     |      |      |

**2003 WJ<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 88.23242   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.27305954 | $\omega$ | 282.91026 |          | +0.88917101 |          | +0.45567492 |
| <i>a</i> | 2.3530500  | $\Omega$ | 49.99767  |          | −0.39590596 |          | +0.81178415 |
| <i>e</i> | 0.1917327  | <i>i</i> | 3.11733   |          | −0.22941966 |          | +0.36519427 |
| <i>P</i> | 3.61       | <i>H</i> | 17.6      | <i>G</i> | 0.15        | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 291 | 0.2+ | 0.0  | 2003 11 18 | 644 | 0.9+ | 0.1− | 2007 12 04 | G96 | 0.2+ | 0.4− |
| 2003 10 20 | 291 | 0.3+ | 0.1+ | 2003 11 21 | 704 | 0.7− | 0.5− | 2007 12 04 | G96 | 0.4− | 0.1− |
| 2003 10 20 | 291 | 0.2+ | 0.1+ | 2003 11 21 | 704 | 0.1+ | 0.2− | 2007 12 04 | G96 | 0.4− | 0.1− |
| 2003 10 28 | 704 | 0.8− | 0.5+ | 2003 11 21 | 704 | 0.3+ | 0.6+ | 2007 12 04 | G96 | 0.4− | 0.2+ |
| 2003 10 28 | 704 | 0.8− | 1.7− | 2003 11 21 | 704 | 0.2+ | 0.8+ | 2007 12 05 | 691 | 0.5+ | 0.0  |
| 2003 10 28 | 704 | 1.6− | 0.5+ | 2003 11 21 | 704 | 0.6+ | 0.9+ | 2007 12 05 | 691 | 0.0  | 0.3+ |
| 2003 10 28 | 704 | 1.4− | 0.1+ | 2003 11 24 | 291 | 0.1− | 0.1+ | 2007 12 05 | 691 | 0.3− | 0.2− |
| 2003 11 18 | 644 | 0.6+ | 0.0  | 2003 11 24 | 291 | 0.0  | 0.3− |            |     |      |      |
| 2003 11 18 | 644 | 0.4+ | 0.4+ | 2003 11 24 | 291 | 0.0  | 0.1− |            |     |      |      |

**2003 WR<sub>59</sub> = 2007 TC<sub>324</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 3.63748    |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.23960169 | $\omega$ | 160.38695 |          | +0.86551962 |          | −0.47203656 |
| <i>a</i> | 2.5672971  | $\Omega$ | 228.93944 |          | +0.42476146 |          | +0.86895469 |
| <i>e</i> | 0.1784897  | <i>i</i> | 12.83523  |          | +0.26543077 |          | +0.14865810 |
| <i>P</i> | 4.11       | <i>H</i> | 17.3      | <i>G</i> | 0.15        | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.1+ | 0.0  | 2007 09 25 | G96 | 0.5+ | 0.1− | 2007 10 21 | 703 | 0.8− | 0.2+ |
| 2003 11 18 | 691 | 0.3+ | 0.1− | 2007 09 25 | G96 | 0.5+ | 0.1− | 2007 11 03 | 699 | 1.1+ | 1.2+ |
| 2003 11 18 | 691 | 0.2− | 0.0  | 2007 09 25 | G96 | 0.1+ | 0.4− | 2007 11 03 | 699 | 1.0− | 0.2+ |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 699 | 0.2− | 0.1+ | 2007 09 25 | G96 | 0.6+ | 0.3− | 2007 11 03 | 699 | 0.2− | 0.4+ |
| 2003 11 19 | 699 | 0.4− | 0.2+ | 2007 10 11 | 691 | 0.2− | 0.1− | 2007 11 03 | 699 | 1.3− | 0.1− |
| 2003 11 19 | 699 | 0.3− | 0.6+ | 2007 10 11 | 691 | 0.2− | 0.0  | 2007 11 17 | 703 | 0.2+ | 0.4+ |
| 2003 11 19 | 699 | 0.5− | 0.1− | 2007 10 11 | 691 | 0.0  | 0.2+ | 2007 11 17 | 703 | 0.6+ | 0.1− |
| 2003 11 21 | 704 | 0.1+ | 0.9− | 2007 10 15 | 691 | 0.1+ | 0.1− | 2007 11 17 | 703 | 0.9+ | 0.4− |
| 2003 11 21 | 704 | 1.0+ | 0.4+ | 2007 10 15 | 691 | 0.0  | 0.1− | 2007 11 17 | 703 | 0.3+ | 0.0  |
| 2003 11 21 | 704 | 0.4+ | 0.5− | 2007 10 15 | 691 | 0.0  | 0.2− | 2007 12 05 | G96 | 0.1+ | 0.1− |
| 2003 12 22 | 691 | 0.2− | 0.3− | 2007 10 21 | 703 | 0.4− | 0.7− | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2003 12 22 | 691 | 0.2− | 0.1+ | 2007 10 21 | 703 | 0.3− | 1.2+ | 2007 12 05 | G96 | 0.3+ | 0.1− |
| 2003 12 22 | 691 | 0.3+ | 0.1+ | 2007 10 21 | 703 | 0.3− | 0.1+ |            |     |      |      |

**2003 WX<sub>60</sub> = 2007 UP<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 4.46806    |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.23378796 | $\omega$ | 322.54116 |          | +0.93746486 |          | −0.33928213 |
| <i>a</i> | 2.6096842  | $\Omega$ | 57.46585  |          | +0.33749709 |          | +0.83131830 |
| <i>e</i> | 0.1493513  | <i>i</i> | 5.29244   |          | +0.08517831 |          | +0.44022440 |
| <i>P</i> | 4.22       | <i>H</i> | 17.6      | <i>G</i> | 0.15        | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.2−  | 0.1−  | 2003 11 30 | 691 | 0.1− | 0.0  | 2007 10 30 | 691 | 0.4− | 0.1− |
| 2003 11 19 | 691 | 0.1−  | 0.0   | 2006 05 25 | 568 | 0.2+ | 0.6+ | 2007 10 30 | 691 | 0.1+ | 0.1− |
| 2003 11 19 | 691 | 0.0   | 0.0   | 2006 05 25 | 568 | 0.1+ | 0.6+ | 2007 11 03 | 691 | 0.1+ | 0.1+ |
| 2003 11 21 | 704 | 0.3+  | 0.2+  | 2006 05 25 | 568 | 0.1+ | 0.6+ | 2007 11 03 | 691 | 0.2− | 0.1− |
| 2003 11 21 | 704 | 1.2+  | 0.1−  | 2007 10 13 | 703 | 0.4− | 0.5+ | 2007 11 03 | 691 | 0.9− | 0.3+ |
| 2003 11 21 | 704 | (1.9− | 0.7−) | 2007 10 13 | 703 | 2.0+ | 0.8+ | 2007 11 07 | 691 | 0.3+ | 0.0  |
| 2003 11 21 | 704 | 0.1−  | 1.1+  | 2007 10 13 | 703 | 0.7− | 0.1+ | 2007 11 07 | 691 | 0.4− | 0.2+ |
| 2003 11 21 | 704 | 0.1−  | 1.2+  | 2007 10 13 | 703 | 2.1+ | 0.2+ | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2003 11 30 | 291 | 0.0   | 0.3−  | 2007 10 19 | G96 | 0.2+ | 0.5− | 2007 11 13 | 691 | 0.2− | 0.1− |
| 2003 11 30 | 291 | 0.0   | 0.2+  | 2007 10 19 | G96 | 0.6+ | 0.1+ | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2003 11 30 | 291 | 0.1−  | 0.1−  | 2007 10 19 | G96 | 0.3− | 0.7− | 2007 11 13 | 691 | 0.2+ | 0.0  |
| 2003 11 30 | 691 | 0.0   | 0.1+  | 2007 10 19 | G96 | 1.3+ | 0.6− |            |     |      |      |
| 2003 11 30 | 691 | 0.1−  | 0.1+  | 2007 10 30 | 691 | 0.3+ | 0.3− |            |     |      |      |

**2003 WE<sub>66</sub> = 2007 UA<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 350.40899  |          | (2000.0) |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.22444340 | $\omega$ | 7.46076  |          | +0.85498560 |          | −0.51541047 |
| <i>a</i> | 2.6816257  | $\Omega$ | 23.84082 |          | +0.46814970 |          | +0.71886621 |
| <i>e</i> | 0.0875688  | <i>i</i> | 8.23487  |          | +0.22323862 |          | +0.46645839 |
| <i>P</i> | 4.39       | <i>H</i> | 16.5     | <i>G</i> | 0.15        | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 704 | 0.3−  | 0.9+  | 2003 11 24 | 704 | 0.8+ | 1.3− | 2007 10 19 | G96 | 0.5+ | 0.2− |
| 2003 11 19 | 704 | 1.1+  | 0.2+  | 2007 09 11 | 691 | 0.1− | 0.1− | 2007 10 19 | G96 | 0.1+ | 0.0  |
| 2003 11 19 | 704 | 1.0+  | 0.4−  | 2007 09 11 | 691 | 0.4− | 0.3+ | 2007 10 19 | G96 | 0.2+ | 0.1− |
| 2003 11 21 | 704 | (0.6− | 2.3−) | 2007 09 11 | 691 | 0.4− | 0.0  | 2007 10 30 | G96 | 0.4− | 0.1+ |
| 2003 11 21 | 704 | 1.2−  | 1.1−  | 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 10 30 | G96 | 0.3+ | 0.1− |
| 2003 11 21 | 704 | 0.1+  | 0.2−  | 2007 10 09 | G96 | 0.3+ | 0.2− | 2007 10 30 | G96 | 0.5+ | 0.2− |
| 2003 11 21 | 704 | 0.6−  | 0.6−  | 2007 10 09 | G96 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.1+ |
| 2003 11 21 | 644 | 0.0   | 0.1+  | 2007 10 09 | G96 | 0.3− | 0.2− | 2007 11 17 | G96 | 0.2+ | 0.2+ |
| 2003 11 21 | 644 | 0.1−  | 0.6+  | 2007 10 18 | G96 | 0.1+ | 0.1+ | 2007 11 17 | G96 | 0.4+ | 0.1− |
| 2003 11 21 | 644 | 0.3−  | 0.5+  | 2007 10 18 | G96 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.2+ |
| 2003 11 24 | 704 | 0.2−  | 0.8+  | 2007 10 18 | G96 | 0.2− | 0.1− | 2007 11 17 | G96 | 0.4+ | 0.0  |
| 2003 11 24 | 704 | 0.4+  | 0.5+  | 2007 10 18 | G96 | 0.3+ | 0.2− |            |     |      |      |
| 2003 11 24 | 704 | 0.7−  | 0.4+  | 2007 10 19 | G96 | 0.3+ | 0.0  |            |     |      |      |

**2003 WN<sub>81</sub> = 2007 VF<sub>268</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 343.27353  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.23480147 | $\omega$ | 294.67494 |     | +0.50105395 |     | −0.86275345 |
| $a$ | 2.6021690  | $\Omega$ | 125.08572 |     | +0.82095375 |     | +0.44904804 |
| $e$ | 0.1964970  | $i$      | 4.75509   |     | +0.27382453 |     | +0.23240557 |
| $P$ | 4.20       | $H$      | 17.2      | $G$ | 0.15        | $U$ | 4           |



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M.P.O. 129675

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 20 | 291 | 0.1+ | 0.1+ | 2007 10 07 | 703 | 0.2+ | 0.1- | 2007 11 12 | 704 | 0.4+  | 1.0+  |
| 2003 11 20 | 291 | 0.0  | 0.0  | 2007 10 07 | 703 | 0.2- | 0.4+ | 2007 11 12 | 704 | (1.5- | 1.7+) |
| 2003 11 20 | 291 | 0.2+ | 0.0  | 2007 10 07 | 703 | 1.2- | 0.1+ | 2007 11 12 | 704 | 0.6+  | 1.2+  |
| 2003 11 21 | 644 | 0.2- | 0.0  | 2007 10 21 | G96 | 0.6+ | 0.1- | 2007 11 15 | 704 | 0.1+  | 0.5-  |
| 2003 11 21 | 644 | 0.2- | 0.0  | 2007 10 21 | G96 | 0.7+ | 0.3- | 2007 11 15 | 704 | (0.4- | 2.0-) |
| 2003 11 21 | 644 | 0.1- | 0.4+ | 2007 10 21 | G96 | 0.7+ | 0.3- | 2007 11 15 | 704 | 0.9-  | 0.3-  |
| 2003 12 01 | 704 | 0.3- | 1.1+ | 2007 10 21 | G96 | 0.0  | 0.5- | 2007 11 15 | 704 | 0.8+  | 0.6-  |
| 2003 12 01 | 704 | 0.2+ | 0.6- | 2007 11 02 | G96 | 0.3+ | 0.0  | 2007 11 18 | 703 | 0.3+  | 0.0   |
| 2003 12 01 | 704 | 0.3+ | 0.2- | 2007 11 02 | G96 | 0.1+ | 0.1- | 2007 11 18 | 703 | 1.5-  | 0.6-  |
| 2003 12 01 | 704 | 0.5- | 0.5- | 2007 11 02 | G96 | 0.1- | 0.1+ | 2007 11 18 | 703 | 0.5+  | 0.6-  |
| 2003 12 01 | 704 | 0.5- | 0.2- | 2007 11 02 | G96 | 0.0  | 0.0  | 2007 11 18 | 703 | (0.2- | 2.3-) |
| 2007 10 07 | 703 | 0.4- | 0.4+ | 2007 11 12 | 704 | 1.1- | 0.4+ |            |     |       |       |

2003 WO<sub>81</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 37.35566   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23983142 | $\omega$ | 296.76593 | +0.91443590   | -0.32692560 |
| <i>a</i> | 2.5656574  | $\Omega$ | 83.11272  | +0.40020352   | +0.81831000 |
| <i>e</i> | 0.3268618  | <i>i</i> | 13.90585  | -0.06036658   | +0.47274560 |
| <i>P</i> | 4.11       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.7-  | 1.3-  | 2004 01 19 | 704 | 0.3+ | 0.7- | 2007 11 18 | 704 | 0.1+ | 0.7+ |
| 2003 11 20 | 704 | 0.1-  | 0.1+  | 2004 01 19 | 704 | 0.2- | 0.9- | 2007 11 18 | 704 | 0.4- | 1.0+ |
| 2003 11 20 | 704 | 1.1+  | 0.8-  | 2004 01 19 | 704 | 0.4- | 1.1- | 2007 11 18 | 704 | 0.3- | 0.8+ |
| 2003 11 21 | 644 | 0.5+  | 0.6+  | 2004 01 30 | 699 | 0.1+ | 0.9- | 2007 11 18 | G96 | 0.4- | 0.3- |
| 2003 11 21 | 644 | 0.5+  | 0.5+  | 2004 01 30 | 699 | 0.7+ | 0.4+ | 2007 11 18 | 704 | 0.2- | 0.5+ |
| 2003 11 21 | 644 | 0.7+  | 0.4+  | 2004 01 30 | 699 | 1.0- | 0.0  | 2007 11 18 | G96 | 0.2- | 0.4- |
| 2003 12 17 | 644 | 0.0   | 0.3+  | 2004 01 30 | 699 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.0  | 0.3- |
| 2003 12 17 | 644 | 0.4+  | 0.3+  | 2004 01 30 | 699 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.1+ | 0.8+ |
| 2003 12 17 | 644 | 0.2-  | 0.4+  | 2004 01 30 | 699 | 0.2- | 0.6- | 2007 11 18 | G96 | 0.3- | 0.1- |
| 2003 12 18 | 703 | 0.2-  | 0.3+  | 2004 01 30 | 699 | 0.2+ | 1.0- | 2007 11 19 | 699 | 0.0  | 0.8- |
| 2003 12 18 | 703 | 0.8-  | 0.8+  | 2004 01 30 | 699 | 1.4+ | 0.1+ | 2007 11 19 | 699 | 0.6- | 0.9+ |
| 2003 12 18 | 703 | 1.1-  | 0.2-  | 2004 02 10 | 644 | 0.1+ | 0.2+ | 2007 11 19 | 699 | 0.5- | 0.3+ |
| 2003 12 18 | 703 | 0.8-  | 0.2+  | 2004 02 10 | 644 | 0.2- | 0.1+ | 2007 11 19 | 699 | 0.3- | 0.9- |
| 2003 12 18 | 704 | 0.3-  | 0.4+  | 2004 02 10 | 644 | 0.4- | 0.1+ | 2007 11 20 | 704 | 1.0+ | 1.4- |
| 2003 12 18 | 704 | 0.1-  | 0.6+  | 2004 02 11 | 704 | 0.0  | 0.4+ | 2007 11 20 | 704 | 0.2- | 0.2- |
| 2003 12 18 | 704 | 0.5-  | 0.6+  | 2004 02 11 | 704 | 0.9+ | 0.0  | 2007 11 20 | 704 | 0.4- | 0.2- |
| 2003 12 18 | 704 | (0.6+ | 1.7+) | 2004 02 11 | 704 | 0.7+ | 0.4- | 2007 11 20 | 704 | 0.1+ | 0.9- |
| 2003 12 18 | 704 | (0.4+ | 1.8+) | 2004 02 11 | 704 | 0.9+ | 0.1+ | 2007 12 04 | 699 | 0.7+ | 0.0  |
| 2004 01 18 | 644 | 0.1-  | 0.2+  | 2007 10 07 | G96 | 0.1+ | 0.3- | 2007 12 04 | 699 | 0.4+ | 0.7+ |
| 2004 01 18 | 644 | 0.1-  | 0.4+  | 2007 10 07 | G96 | 0.3- | 0.5- | 2007 12 04 | 699 | 1.1+ | 0.4+ |
| 2004 01 18 | 703 | 0.6+  | 0.1+  | 2007 10 07 | G96 | 0.1+ | 0.5- | 2007 12 04 | 699 | 0.1- | 0.2+ |
| 2004 01 18 | 703 | 0.6-  | 0.9+  | 2007 10 07 | G96 | 0.1+ | 0.4- | 2007 12 16 | 704 | 0.3+ | 0.3+ |
| 2004 01 18 | 703 | 0.6-  | 0.4+  | 2007 11 07 | G96 | 0.0  | 0.2- | 2007 12 16 | 704 | 0.2+ | 0.1+ |
| 2004 01 18 | 644 | 0.2-  | 0.0   | 2007 11 07 | G96 | 0.2- | 0.2- | 2007 12 16 | 704 | 0.0  | 0.6+ |
| 2004 01 18 | 703 | (1.6+ | 0.6-) | 2007 11 07 | G96 | 0.2+ | 0.3- | 2007 12 16 | 704 | 0.0  | 0.2+ |
| 2004 01 19 | 704 | 0.6-  | 1.1-  | 2007 11 07 | G96 | 0.1- | 0.3- | 2007 12 16 | 704 | 0.0  | 0.3+ |

2003 WZ<sub>81</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 327.94148  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23354845 | $\omega$ | 133.89855 | +0.65484846   | -0.74345925 |
| <i>a</i> | 2.6114681  | $\Omega$ | 274.68354 | +0.64846597   | +0.64502224 |
| <i>e</i> | 0.1106780  | <i>i</i> | 7.83124   | +0.38815639   | +0.17667666 |
| <i>P</i> | 4.22       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 07 | 703 | 0.8+ | 0.4+ | 2003 10 22 | 704 | 0.5+ | 0.6- | 2003 11 24 | 291 | 0.1+ | 0.4- |
| 1999 12 07 | 703 | 1.0- | 0.9+ | 2003 10 22 | 704 | 0.4- | 0.8- | 2003 11 24 | 291 | 0.2+ | 0.2- |
| 1999 12 07 | 703 | 0.0  | 0.8+ | 2003 10 29 | 699 | 0.1+ | 0.4- | 2003 11 24 | 291 | 0.2+ | 0.3- |
| 1999 12 07 | 703 | 0.0  | 0.5- | 2003 10 29 | 699 | 1.2- | 0.1- | 2007 09 11 | 703 | 1.1+ | 0.2- |
| 2003 09 30 | 704 | 1.1+ | 0.9- | 2003 10 29 | 699 | 0.4- | 0.5- | 2007 09 11 | 703 | 0.1+ | 1.0+ |
| 2003 09 30 | 704 | 1.1- | 0.4- | 2003 10 29 | 699 | 0.3+ | 0.2- | 2007 09 11 | 703 | 0.7+ | 0.9+ |
| 2003 09 30 | 704 | 0.2- | 0.6+ | 2003 11 19 | 704 | 1.0+ | 0.3- | 2007 09 11 | 703 | 0.8+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 05 | 704 | 0.6- | 0.2+ | 2003 11 19 | 704 | 1.0+ | 0.7+ | 2007 10 08 | 703 | 0.9- | 0.9+ |
| 2003 10 05 | 704 | 0.0  | 0.1+ | 2003 11 19 | 704 | 0.2- | 0.4+ | 2007 10 08 | 703 | 0.5+ | 0.7+ |
| 2003 10 05 | 704 | 0.6+ | 0.6+ | 2003 11 19 | 704 | 0.2+ | 0.4+ | 2007 10 08 | 703 | 0.8- | 0.4- |
| 2003 10 05 | 704 | 0.3+ | 1.4+ | 2003 11 19 | 704 | 1.0- | 0.8+ | 2007 10 08 | 703 | 0.0  | 0.2- |
| 2003 10 17 | 699 | 0.1+ | 0.7- | 2003 11 22 | 691 | 0.3+ | 0.2- | 2007 10 19 | 703 | 0.8- | 0.5- |
| 2003 10 17 | 699 | 0.6- | 0.1+ | 2003 11 22 | 691 | 0.2+ | 0.2- | 2007 10 19 | 703 | 0.1- | 0.5- |
| 2003 10 17 | 699 | 0.4- | 0.6- | 2003 11 22 | 691 | 0.4+ | 0.3- | 2007 10 19 | 703 | 0.9- | 0.4- |
| 2003 10 17 | 699 | 0.1+ | 0.6- | 2003 11 24 | 291 | 0.0  | 0.0  | 2007 10 19 | 703 | 0.6- | 0.2- |
| 2003 10 22 | 704 | 0.5- | 0.3- | 2003 11 24 | 291 | 0.2+ | 0.2+ |            |     |      |      |
| 2003 10 22 | 704 | 0.7+ | 0.2+ | 2003 11 24 | 291 | 0.2+ | 0.0  |            |     |      |      |

2003 WW<sub>85</sub> = 2007 VB<sub>94</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 1.60343    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24521703 | $\omega$ | 132.43196 | +0.73790257   | -0.66592583 |
| <i>a</i> | 2.5279528  | $\Omega$ | 269.63517 | +0.58252087   | +0.71053139 |
| <i>e</i> | 0.2734250  | <i>i</i> | 6.30038   | +0.34083608   | +0.22734982 |
| <i>P</i> | 4.02       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 11 20 | 704 | 0.4- | 0.6- | 2003 12 22 | 704 | (2.3+ | 0.2+) | 2007 11 17 | 704 | 0.0   | 0.4-  |
| 2003 11 20 | 704 | 0.4- | 0.5- | 2007 11 07 | 704 | (0.4- | 1.8+) | 2007 11 17 | 704 | 0.2-  | 0.1+  |
| 2003 11 20 | 704 | 0.3- | 0.4- | 2007 11 07 | 704 | 0.4+  | 0.1+  | 2007 11 17 | 704 | 0.5-  | 0.1+  |
| 2003 11 20 | 691 | 0.0  | 0.1- | 2007 11 07 | 704 | 0.2+  | 0.3+  | 2007 11 17 | 704 | 0.4+  | 0.4+  |
| 2003 11 20 | 691 | 0.1- | 0.1- | 2007 11 07 | 704 | 0.6+  | 0.2+  | 2007 11 20 | G96 | 0.1-  | 0.4-  |
| 2003 11 20 | 691 | 0.1+ | 0.2- | 2007 11 07 | 704 | 0.4-  | 0.6+  | 2007 11 20 | G96 | 0.0   | 0.4-  |
| 2003 11 23 | 704 | 0.2+ | 0.2+ | 2007 11 09 | 704 | 0.0   | 0.0   | 2007 11 20 | G96 | 0.2+  | 0.4-  |
| 2003 11 23 | 704 | 0.1+ | 0.6- | 2007 11 09 | 704 | 0.1+  | 0.1-  | 2007 11 20 | G96 | 0.2+  | 0.3-  |
| 2003 11 23 | 704 | 0.2+ | 0.4- | 2007 11 09 | 704 | 0.4+  | 0.1+  | 2007 12 12 | 704 | 0.1-  | 1.0+  |
| 2003 11 23 | 704 | 0.5+ | 0.2+ | 2007 11 09 | 704 | 0.3+  | 0.2+  | 2007 12 12 | 704 | (1.0+ | 2.6+) |
| 2003 11 24 | 704 | 0.1- | 0.1- | 2007 11 09 | 704 | 0.3+  | 0.1+  | 2007 12 12 | 704 | 1.3+  | 0.8+  |
| 2003 11 24 | 704 | 0.2- | 0.2- | 2007 11 09 | G96 | 0.2-  | 0.5-  | 2007 12 12 | 704 | 0.3-  | 0.6-  |
| 2003 11 24 | 704 | 0.5- | 0.3- | 2007 11 09 | G96 | 0.0   | 0.3-  | 2007 12 13 | 704 | 0.0   | 0.8+  |
| 2003 11 24 | 704 | 0.1+ | 0.3- | 2007 11 09 | G96 | 0.1-  | 0.3-  | 2007 12 13 | 704 | 0.5-  | 0.1+  |
| 2003 11 24 | 704 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.2+  | 0.4-  | 2007 12 13 | 704 | 0.1-  | 0.3+  |
| 2003 12 19 | 691 | 0.0  | 0.2- | 2007 11 13 | 699 | 0.1-  | 0.8+  | 2007 12 13 | 704 | 0.4-  | 1.0+  |
| 2003 12 19 | 691 | 0.1+ | 0.1- | 2007 11 13 | 699 | 0.5-  | 0.7+  | 2007 12 13 | 704 | 0.3-  | 0.4+  |
| 2003 12 19 | 691 | 0.0  | 0.3- | 2007 11 13 | 699 | 1.0-  | 0.2-  | 2007 12 16 | 691 | 0.1+  | 0.0   |
| 2003 12 22 | 704 | 0.5+ | 0.3+ | 2007 11 13 | 699 | 0.6-  | 1.0+  | 2007 12 16 | 691 | 0.1-  | 0.3+  |
| 2003 12 22 | 704 | 0.5+ | 0.9+ | 2007 11 17 | 704 | 0.2-  | 0.1-  | 2007 12 16 | 691 | 0.0   | 0.1+  |

2003 WR<sub>90</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 331.74963  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25445715 | $\omega$ | 136.20691 | -0.09577737   | -0.99453961 |
| <i>a</i> | 2.4663778  | $\Omega$ | 319.23671 | +0.89490096   | -0.06780087 |
| <i>e</i> | 0.1820902  | <i>i</i> | 3.63926   | +0.43586577   | -0.07933479 |
| <i>P</i> | 3.87       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |             |      |            |     |             |            |            |      |      |      |
|------------|-----|-------------|------|------------|-----|-------------|------------|------------|------|------|------|
| 1999 10 13 | 645 | 0.0         | 0.1- | 2003 11 20 | 704 | (2.8- 1.4+) | 2007 11 19 | G96        | 0.4+ | 0.3- |      |
| 1999 10 13 | 645 | 0.1+        | 0.1- | 2003 11 20 | 704 | (1.7+ 0.5-) | 2007 11 20 | 704        | 0.3+ | 0.4+ |      |
| 2001 03 26 | 695 | 0.2+        | 0.2+ | 2003 11 24 | 691 | 0.0         | 0.0        | 2007 11 20 | 704  | 0.3+ | 1.0+ |
| 2001 03 26 | 695 | 0.2-        | 0.0  | 2003 11 24 | 704 | 1.0+        | 1.4+       | 2007 11 20 | 704  | 0.6+ | 0.9+ |
| 2003 10 23 | 691 | 0.1+        | 0.3+ | 2003 11 24 | 691 | 0.0         | 0.0        | 2007 11 20 | 704  | 0.8+ | 0.5+ |
| 2003 10 23 | 691 | 0.2-        | 0.2+ | 2003 11 24 | 704 | 1.1+        | 0.6-       | 2007 11 20 | 704  | 0.1- | 0.5+ |
| 2003 10 23 | 691 | 0.1+        | 0.1+ | 2003 11 24 | 704 | 0.4-        | 0.5+       | 2007 11 20 | 691  | 0.1- | 0.1- |
| 2003 10 23 | 699 | (0.1+ 3.9-) |      | 2003 11 24 | 691 | 0.2-        | 0.1+       | 2007 11 20 | 691  | 0.2+ | 0.3- |
| 2003 10 23 | 699 | (8.1- 1.4-) |      | 2003 11 24 | 704 | 0.4+        | 1.1+       | 2007 11 20 | 691  | 0.1+ | 0.2- |
| 2003 11 02 | 704 | 0.1+        | 1.3- | 2007 11 02 | 691 | 0.3+        | 0.2-       | 2007 12 12 | 704  | 0.5- | 0.6- |
| 2003 11 02 | 291 | 0.5-        | 0.2+ | 2007 11 02 | 691 | 0.0         | 0.2-       | 2007 12 12 | 704  | 0.0  | 0.0  |
| 2003 11 02 | 291 | 0.4-        | 0.2+ | 2007 11 02 | 691 | 0.1-        | 0.2-       | 2007 12 12 | 704  | 1.0- | 0.5- |
| 2003 11 02 | 704 | 0.0         | 0.6- | 2007 11 13 | 703 | 0.8-        | 1.3+       | 2007 12 12 | 704  | 0.6- | 1.5- |
| 2003 11 02 | 291 | 0.2-        | 0.1+ | 2007 11 13 | 703 | 1.1-        | 0.5-       | 2007 12 13 | 704  | 0.0  | 0.1- |
| 2003 11 02 | 704 | 0.4+        | 0.4- | 2007 11 13 | 703 | 0.2-        | 0.3-       | 2007 12 13 | 704  | 0.2- | 0.2- |
| 2003 11 18 | 644 | 0.2-        | 0.3+ | 2007 11 13 | 703 | 0.5-        | 0.2-       | 2007 12 13 | 704  | 0.1+ | 0.1+ |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 18 | 644 | 0.2+  | 0.4+  | 2007 11 18 | 704 | 0.2−  | 0.3−  | 2007 12 13 | 704 | 0.0  | 0.3− |
| 2003 11 18 | 644 | 0.0   | 0.2+  | 2007 11 18 | 704 | 0.1−  | 0.1+  | 2007 12 13 | 704 | 0.1+ | 0.1+ |
| 2003 11 19 | 699 | 0.0   | 0.1−  | 2007 11 18 | 704 | 0.1+  | 0.2+  | 2007 12 15 | 704 | 0.1− | 0.2+ |
| 2003 11 19 | 699 | 0.1−  | 0.2+  | 2007 11 18 | 704 | 0.2+  | 0.3−  | 2007 12 15 | 704 | 0.9+ | 0.2+ |
| 2003 11 19 | 699 | 0.4−  | 0.8+  | 2007 11 18 | 704 | 0.1+  | 0.3+  | 2007 12 15 | 704 | 0.3+ | 0.6+ |
| 2003 11 19 | 699 | 0.2−  | 1.1−  | 2007 11 19 | G96 | (1.7+ | 1.0+) | 2007 12 15 | 704 | 0.3+ | 0.2+ |
| 2003 11 20 | 704 | (2.0− | 1.1+) | 2007 11 19 | G96 | 0.1+  | 0.4−  | 2007 12 15 | 704 | 0.5+ | 0.6+ |
| 2003 11 20 | 704 | (1.6− | 2.3−) | 2007 11 19 | G96 | 0.5+  | 0.3−  |            |     |      |      |

**2003 WJ<sub>92</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.12608   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26067601 | $\omega$ | 277.62708 | +0.83176674   | −0.55104194 |
| <i>a</i> | 2.4269938  | $\Omega$ | 115.83435 | +0.53421022   | +0.76162197 |
| <i>e</i> | 0.2064034  | <i>i</i> | 4.28229   | +0.15094217   | +0.34100552 |
| <i>P</i> | 3.78       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 27 | 704 | 0.6+ | 0.0  | 2003 12 01 | 704 | 0.2−  | 0.1−  | 2003 12 23 | 704 | 0.2+ | 0.8− |
| 2003 10 27 | 704 | 0.8+ | 0.1− | 2003 12 01 | 704 | 0.1+  | 0.2+  | 2003 12 23 | 704 | 0.5− | 0.4+ |
| 2003 10 27 | 704 | 1.6− | 0.7+ | 2003 12 01 | 704 | 0.1+  | 0.0   | 2003 12 23 | 704 | 0.1+ | 0.6+ |
| 2003 11 18 | 644 | 0.2+ | 0.0  | 2003 12 04 | 703 | 1.2+  | 0.4+  | 2003 12 23 | 704 | 0.4− | 0.2− |
| 2003 11 18 | 644 | 0.1+ | 0.6− | 2003 12 04 | 703 | 0.7−  | 0.0   | 2003 12 23 | 704 | 0.7− | 0.3− |
| 2003 11 18 | 644 | 0.1− | 0.0  | 2003 12 04 | 703 | 0.2+  | 0.1−  | 2004 01 12 | 644 | 0.1+ | 0.3+ |
| 2003 11 19 | 699 | 0.2+ | 0.4− | 2003 12 04 | 703 | 0.6+  | 0.6+  | 2004 01 12 | 644 | 0.1+ | 0.4+ |
| 2003 11 19 | 699 | 0.1+ | 0.1+ | 2003 12 17 | 699 | 0.2+  | 0.3+  | 2004 01 12 | 644 | 0.1+ | 0.5+ |
| 2003 11 19 | 699 | 0.7+ | 0.7+ | 2003 12 17 | 699 | 0.2+  | 0.1+  | 2007 12 14 | A77 | 0.0  | 0.6− |
| 2003 11 19 | 699 | 0.1− | 0.6+ | 2003 12 17 | 699 | 0.7−  | 0.3+  | 2007 12 14 | A77 | 0.2− | 0.6− |
| 2003 11 24 | 699 | 0.8+ | 0.0  | 2003 12 17 | 699 | (2.7− | 2.4+) | 2007 12 14 | A77 | 0.1+ | 0.3+ |
| 2003 11 24 | 699 | 0.7− | 0.0  | 2003 12 21 | 704 | 1.4+  | 1.0−  | 2007 12 15 | A77 | 0.1− | 0.2+ |
| 2003 11 24 | 699 | 0.5− | 0.6− | 2003 12 21 | 704 | 0.4−  | 0.4−  | 2007 12 15 | A77 | 0.0  | 0.1+ |
| 2003 11 24 | 699 | 0.4− | 0.8− | 2003 12 21 | 704 | 0.6−  | 0.0   | 2007 12 15 | A77 | 0.2+ | 0.3+ |
| 2003 12 01 | 704 | 0.3+ | 0.3− | 2003 12 21 | 704 | 0.4−  | 0.5+  |            |     |      |      |
| 2003 12 01 | 704 | 0.2− | 0.3− | 2003 12 21 | 704 | 0.3−  | 0.2−  |            |     |      |      |

**2003 WY<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.89234  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22646837 | $\omega$ | 88.94955  | +0.63318613   | −0.75753811 |
| <i>a</i> | 2.6656166  | $\Omega$ | 320.26586 | +0.57379185   | +0.59709802 |
| <i>e</i> | 0.1543016  | <i>i</i> | 14.38257  | +0.51945956   | +0.26383700 |
| <i>P</i> | 4.35       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 21 | 704 | 0.1− | 0.8− | 2003 12 15 | 704 | 0.0  | 0.0  | 2007 09 13 | 703 | 0.3− | 1.1− |
| 2003 11 21 | 704 | 0.4− | 0.4+ | 2003 12 15 | 704 | 0.3+ | 0.1+ | 2007 09 13 | 703 | 0.3+ | 0.2+ |
| 2003 11 21 | 704 | 0.1− | 0.4− | 2003 12 15 | 704 | 0.1− | 0.1+ | 2007 09 13 | 703 | 0.9+ | 0.9+ |
| 2003 11 21 | 704 | 0.1+ | 0.8− | 2003 12 18 | 704 | 0.4+ | 0.3+ | 2007 09 13 | 703 | 0.6+ | 0.5+ |
| 2003 11 24 | 704 | 0.6− | 0.5− | 2003 12 18 | 704 | 0.0  | 0.4− | 2007 10 08 | 703 | 0.0  | 0.1− |
| 2003 11 24 | 704 | 0.2− | 0.2− | 2003 12 18 | 704 | 0.2− | 0.5+ | 2007 10 08 | 703 | 0.6− | 0.3− |
| 2003 11 24 | 704 | 0.3− | 0.3− | 2003 12 18 | 704 | 0.0  | 0.2+ | 2007 10 08 | 703 | 0.3+ | 0.4− |
| 2003 11 26 | 704 | 0.8+ | 0.1+ | 2003 12 18 | 704 | 0.7− | 0.3− | 2007 10 08 | 703 | 0.1− | 1.1+ |
| 2003 11 26 | 704 | 0.0  | 0.6+ | 2007 09 05 | 699 | 0.1− | 0.6+ | 2007 10 14 | 703 | 0.1− | 0.3+ |
| 2003 11 26 | 704 | 0.4+ | 0.1+ | 2007 09 05 | 699 | 0.8+ | 0.0  | 2007 10 14 | 703 | 0.2− | 0.4− |
| 2003 11 26 | 704 | 0.4+ | 0.4+ | 2007 09 05 | 699 | 0.5+ | 0.4− | 2007 10 14 | 703 | 1.2− | 0.0  |
| 2003 11 26 | 704 | 0.2+ | 0.9+ | 2007 09 05 | 699 | 1.3− | 0.4− | 2007 10 14 | 703 | 0.3+ | 0.2− |

**2003 WF<sub>104</sub> = 2007 VV<sub>278</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 31.01816   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24196637 | $\omega$ | 121.39752 | +0.98587086   | −0.03144786 |
| <i>a</i> | 2.5505433  | $\Omega$ | 240.87158 | −0.02080194   | +0.95163017 |
| <i>e</i> | 0.2122859  | <i>i</i> | 10.85645  | +0.16621050   | +0.30563222 |
| <i>P</i> | 4.07       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 21 | 704 | 0.5− | 0.4+ | 2007 10 21 | G96 | 0.5+ | 0.5− | 2007 11 18 | 691 | 0.5− | 0.0  |
| 2003 11 21 | 704 | 0.5− | 0.6− | 2007 10 21 | G96 | 0.4+ | 0.3− | 2007 11 18 | 691 | 0.4− | 0.0  |
| 2003 11 21 | 704 | 0.0  | 0.9− | 2007 10 21 | G96 | 0.3+ | 0.5− | 2007 12 05 | 704 | 0.9+ | 0.4+ |
| 2003 11 21 | 704 | 0.2+ | 0.2− | 2007 10 21 | G96 | 0.3+ | 0.5− | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2003 11 21 | 704 | 0.2+ | 0.7+ | 2007 11 02 | 691 | 0.2− | 0.3+ | 2007 12 05 | 704 | 0.0  | 0.4+ |
| 2003 11 24 | 691 | 0.3− | 0.2+ | 2007 11 02 | 691 | 0.1− | 0.2+ | 2007 12 05 | 704 | 0.7+ | 0.4+ |
| 2003 11 24 | 691 | 0.1+ | 0.2+ | 2007 11 02 | 691 | 0.6+ | 0.0  | 2007 12 05 | 704 | 0.7+ | 0.1− |
| 2003 11 24 | 691 | 0.1− | 0.0  | 2007 11 14 | 691 | 0.1− | 0.2− | 2007 12 06 | G96 | 0.4+ | 0.1− |
| 2003 11 30 | 691 | 0.2+ | 0.1− | 2007 11 14 | 691 | 0.2− | 0.0  | 2007 12 06 | G96 | 0.8+ | 0.1+ |
| 2003 11 30 | 691 | 0.1+ | 0.1− | 2007 11 14 | 691 | 0.2− | 0.1− | 2007 12 06 | G96 | 0.2+ | 0.5− |
| 2003 11 30 | 691 | 0.2+ | 0.1− | 2007 11 18 | 691 | 0.3− | 0.1+ | 2007 12 06 | G96 | 0.2+ | 0.0  |

**2003 WP<sub>106</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 288.38507  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22070866 | $\omega$ | 211.38920 | −0.26552526   | −0.95012646 |
| <i>a</i> | 2.7117926  | $\Omega$ | 254.44241 | +0.91599690   | −0.19569394 |
| <i>e</i> | 0.1613257  | <i>i</i> | 9.77583   | +0.30074243   | −0.24282419 |
| <i>P</i> | 4.47       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 04 | 645 | 0.0  | 0.1+ | 2003 11 30 | 691 | 0.0   | 0.2−  | 2003 12 27 | 691 | 0.1+  | 0.1+  |
| 2000 03 04 | 645 | 0.0  | 0.1+ | 2003 11 30 | 691 | 0.0   | 0.3−  | 2004 01 12 | 644 | 0.0   | 0.2+  |
| 2003 11 21 | 704 | 0.8+ | 0.6+ | 2003 11 30 | 691 | 0.1−  | 0.2−  | 2004 01 12 | 644 | 0.1+  | 0.4+  |
| 2003 11 21 | 704 | 1.0+ | 0.4+ | 2003 12 17 | 291 | (2.3− | 0.5+) | 2004 01 12 | 644 | 0.1+  | 0.2+  |
| 2003 11 21 | 704 | 0.3+ | 0.6− | 2003 12 17 | 291 | 0.4−  | 0.3−  | 2004 01 17 | 644 | 0.1−  | 0.2+  |
| 2003 11 21 | 644 | 0.1− | 0.1− | 2003 12 17 | 291 | 0.4−  | 0.3−  | 2004 01 17 | 644 | 0.5+  | 0.2−  |
| 2003 11 21 | 644 | 0.3+ | 0.1− | 2003 12 17 | 644 | 0.0   | 0.2+  | 2004 01 17 | 644 | 0.1+  | 0.3+  |
| 2003 11 21 | 644 | 0.1− | 0.0  | 2003 12 17 | 644 | 0.2+  | 0.0   | 2007 09 18 | 703 | 0.8−  | 0.5−  |
| 2003 11 23 | 704 | 0.4− | 1.3+ | 2003 12 17 | 644 | 0.3+  | 0.3+  | 2007 09 18 | 703 | 0.3−  | 0.7+  |
| 2003 11 23 | 704 | 0.2− | 1.1− | 2003 12 21 | 704 | 0.2−  | 0.8+  | 2007 09 18 | 703 | 0.7−  | 1.0+  |
| 2003 11 23 | 704 | 0.7− | 0.8+ | 2003 12 21 | 704 | 0.2+  | 0.6+  | 2007 09 18 | 703 | 0.8+  | 1.1+  |
| 2003 11 23 | 704 | 0.8− | 0.9+ | 2003 12 21 | 704 | 0.0   | 0.3+  | 2007 10 14 | 703 | (0.1+ | 1.9+) |
| 2003 11 24 | 691 | 0.1+ | 0.1− | 2003 12 21 | 704 | 0.0   | 0.5+  | 2007 10 14 | 703 | 0.0   | 0.8+  |
| 2003 11 24 | 691 | 0.1− | 0.1− | 2003 12 27 | 691 | 0.1+  | 0.1−  | 2007 10 14 | 703 | (1.2− | 1.6+) |
| 2003 11 24 | 691 | 0.1− | 0.3− | 2003 12 27 | 691 | 0.3+  | 0.1−  | 2007 10 14 | 703 | 0.3+  | 0.0   |

**2003 WK<sub>110</sub> = 2001 HG<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.01343  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21698464 | $\omega$ | 15.99762 | +0.71848219   | −0.69488473 |
| <i>a</i> | 2.7427321  | $\Omega$ | 28.09523 | +0.63088777   | +0.63272691 |
| <i>e</i> | 0.1931727  | <i>i</i> | 3.68987  | +0.29285484   | +0.34174826 |
| <i>P</i> | 4.54       | <i>H</i> | 16.2     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 24 | 691 | 0.1+ | 1.1+ | 2003 11 20 | 704 | 0.0  | 0.4+ | 2003 12 13 | 703 | 0.1− | 0.2+ |
| 2001 04 24 | 691 | 0.1+ | 0.5+ | 2003 11 20 | 704 | 0.4+ | 0.0  | 2003 12 13 | 703 | 0.3− | 0.4+ |
| 2001 04 24 | 691 | 0.7+ | 0.4+ | 2003 11 20 | 704 | 0.1− | 0.1+ | 2003 12 19 | 704 | 0.1+ | 0.7+ |
| 2003 10 18 | 699 | 0.6+ | 0.2+ | 2003 11 24 | 704 | 0.1− | 0.1+ | 2003 12 19 | 704 | 0.3+ | 0.1+ |
| 2003 10 18 | 699 | 0.2+ | 0.0  | 2003 11 24 | 704 | 0.8+ | 1.0+ | 2003 12 19 | 704 | 0.0  | 0.2− |
| 2003 10 18 | 699 | 0.5− | 0.3+ | 2003 11 24 | 704 | 0.9+ | 0.1− | 2003 12 19 | 704 | 0.2+ | 0.1+ |
| 2003 10 18 | 699 | 0.2− | 0.0  | 2003 11 24 | 704 | 0.0  | 0.6+ | 2003 12 19 | 704 | 0.1− | 0.0  |
| 2003 10 18 | 691 | 0.3+ | 0.4− | 2003 12 01 | 691 | 0.1+ | 0.0  | 2007 08 11 | 699 | 0.0  | 0.6+ |
| 2003 10 18 | 691 | 0.3+ | 0.5− | 2003 12 01 | 691 | 0.0  | 0.0  | 2007 08 11 | 699 | 0.1− | 0.2− |
| 2003 10 18 | 691 | 0.3+ | 0.3− | 2003 12 01 | 691 | 0.1+ | 0.1+ | 2007 08 11 | 699 | 0.1− | 0.1− |
| 2003 10 24 | 704 | 0.2− | 0.3+ | 2003 12 01 | 704 | 0.6− | 0.3− | 2007 08 11 | 699 | 0.3− | 0.6+ |
| 2003 10 24 | 704 | 0.7+ | 0.3+ | 2003 12 01 | 704 | 0.2− | 0.3+ | 2007 09 04 | 703 | 0.3− | 0.0  |
| 2003 10 24 | 704 | 0.1+ | 0.4+ | 2003 12 01 | 704 | 0.6− | 0.0  | 2007 09 04 | 703 | 1.0+ | 0.4+ |
| 2003 10 24 | 704 | 0.0  | 0.1− | 2003 12 04 | 703 | 1.3− | 0.5− | 2007 09 04 | 703 | 0.8− | 0.8+ |
| 2003 10 29 | 704 | 0.1+ | 0.3+ | 2003 12 04 | 703 | 0.3+ | 0.0  | 2007 09 04 | 703 | 0.4+ | 0.0  |
| 2003 10 29 | 704 | 0.1+ | 0.2− | 2003 12 04 | 703 | 0.9− | 0.8− | 2007 10 16 | G96 | 0.3+ | 0.6− |
| 2003 10 29 | 704 | 0.1+ | 0.3− | 2003 12 04 | 703 | 0.9− | 0.1− | 2007 10 16 | G96 | 0.4− | 0.3− |
| 2003 10 29 | 704 | 0.0  | 0.6− | 2003 12 13 | 703 | 0.0  | 0.3− | 2007 10 16 | G96 | 0.0  | 0.4− |
| 2003 11 20 | 704 | 0.3− | 0.2+ | 2003 12 13 | 703 | 0.0  | 0.2+ | 2007 10 16 | G96 | 0.2− | 0.2− |

2007 DEC. 24

M.P.O. 129677

**2003 WB<sub>116</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 312.16758  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24307713 | $\omega$ 162.44043 | -0.60618296   | -0.79436399 |
| <i>a</i> | 2.5427675  | $\Omega$ 324.84472 | +0.72130728   | -0.52839759 |
| <i>e</i> | 0.2654556  | <i>i</i> 3.89279   | +0.33504928   | -0.29963618 |
| <i>P</i> | 4.05       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.3-  | 0.6+  | 2003 12 23 | 704 | 0.0  | 0.5- | 2007 11 20 | G96 | 0.1+ | 0.3- |
| 2003 11 20 | 704 | 0.5-  | 0.6+  | 2003 12 23 | 704 | 0.4+ | 1.0+ | 2007 12 04 | 703 | 0.8- | 0.9- |
| 2003 11 20 | 704 | 0.0   | 0.2+  | 2003 12 23 | 704 | 0.7+ | 0.8+ | 2007 12 04 | 703 | 0.1+ | 0.2- |
| 2003 11 20 | 704 | 0.3-  | 0.7+  | 2003 12 23 | 704 | 0.6- | 0.9- | 2007 12 04 | 703 | 0.3- | 0.1+ |
| 2003 11 20 | 704 | 0.6-  | 1.0+  | 2003 12 25 | 691 | 0.0  | 0.2- | 2007 12 04 | 703 | 0.4+ | 0.3+ |
| 2003 11 24 | 704 | (1.4+ | 1.8+) | 2003 12 25 | 691 | 0.1+ | 0.1- | 2007 12 12 | 704 | 0.4- | 0.6+ |
| 2003 11 24 | 704 | (1.9+ | 1.1-) | 2003 12 25 | 691 | 0.2+ | 0.2- | 2007 12 12 | 704 | 0.6+ | 0.4- |
| 2003 11 24 | 704 | (1.4+ | 2.1+) | 2004 01 22 | 704 | 0.2- | 0.2+ | 2007 12 12 | 704 | 0.5+ | 0.2- |
| 2003 11 24 | 704 | (1.4+ | 2.8+) | 2004 01 22 | 704 | 0.8- | 0.2+ | 2007 12 13 | 704 | 0.7+ | 1.0+ |
| 2003 12 04 | 704 | 0.3+  | 0.0   | 2004 01 22 | 704 | 0.0  | 0.6- | 2007 12 13 | 704 | 0.1- | 0.9+ |
| 2003 12 04 | 704 | 0.5-  | 0.4-  | 2004 01 22 | 704 | 0.5+ | 0.4+ | 2007 12 13 | 704 | 0.4- | 0.7+ |
| 2003 12 04 | 704 | 0.7+  | 0.9+  | 2007 11 12 | G96 | 0.0  | 0.3- | 2007 12 13 | 704 | 0.7- | 0.3- |
| 2003 12 18 | 704 | 0.3-  | 0.1-  | 2007 11 12 | G96 | 0.2+ | 0.3- | 2007 12 13 | 704 | 0.1- | 0.9+ |
| 2003 12 18 | 704 | 0.3-  | 0.2+  | 2007 11 12 | G96 | 0.2- | 0.3- | 2007 12 16 | 704 | 0.3+ | 0.9- |
| 2003 12 18 | 704 | 0.5-  | 0.4-  | 2007 11 12 | G96 | 0.4+ | 0.7- | 2007 12 16 | 704 | 0.3- | 0.2- |
| 2003 12 18 | 704 | 0.4+  | 0.4-  | 2007 11 20 | G96 | 0.2+ | 0.3- | 2007 12 16 | 704 | 0.0  | 0.0  |
| 2003 12 18 | 704 | 0.7+  | 0.7-  | 2007 11 20 | G96 | 0.3+ | 0.3- | 2007 12 16 | 704 | 0.8- | 0.4+ |
| 2003 12 23 | 704 | 0.1+  | 0.0   | 2007 11 20 | G96 | 0.4+ | 0.4- |            |     |      |      |

**2003 WJ<sub>116</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.75472  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24006069 | $\omega$ 175.62291 | +0.24848337   | -0.94975031 |
| <i>a</i> | 2.5640236  | $\Omega$ 259.90543 | +0.88273381   | +0.30293471 |
| <i>e</i> | 0.1512394  | <i>i</i> 11.14751  | +0.39879448   | -0.07877129 |
| <i>P</i> | 4.11       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.5+ | 1.5+ | 2003 12 14 | 691 | 0.1-  | 0.3-  | 2007 11 17 | 704 | 0.3- | 0.6- |
| 2003 11 20 | 704 | 0.0  | 1.1- | 2003 12 21 | 704 | 0.3-  | 0.5+  | 2007 11 17 | 704 | 0.6+ | 0.8- |
| 2003 11 20 | 704 | 0.3- | 0.8- | 2003 12 21 | 704 | 0.6+  | 0.3+  | 2007 11 17 | 704 | 0.8+ | 1.0+ |
| 2003 11 20 | 704 | 0.2- | 0.4- | 2003 12 21 | 704 | (0.4+ | 1.9+) | 2007 11 18 | G96 | 0.2- | 0.2- |
| 2003 11 24 | 704 | 0.3+ | 0.2- | 2007 11 15 | G96 | 0.1-  | 0.0   | 2007 11 18 | G96 | 0.3- | 0.2- |
| 2003 11 24 | 704 | 0.1+ | 0.2- | 2007 11 15 | G96 | 0.0   | 0.6-  | 2007 11 18 | G96 | 0.1- | 0.2- |
| 2003 11 24 | 704 | 0.7+ | 0.4+ | 2007 11 15 | G96 | 0.0   | 0.0   | 2007 11 18 | G96 | 0.2- | 0.2- |
| 2003 11 30 | 691 | 0.2- | 0.2+ | 2007 11 15 | G96 | 0.4-  | 0.1-  | 2007 11 18 | 704 | 0.1+ | 0.6+ |
| 2003 11 30 | 691 | 0.0  | 0.2+ | 2007 11 15 | G96 | 0.0   | 0.2-  | 2007 11 18 | 704 | 0.5+ | 0.8+ |
| 2003 11 30 | 691 | 0.1- | 0.1+ | 2007 11 15 | G96 | 0.4-  | 0.3-  | 2007 11 18 | 704 | 0.4+ | 0.0  |
| 2003 12 14 | 691 | 0.0  | 0.1- | 2007 11 15 | G96 | 0.4-  | 0.1-  | 2007 11 18 | 704 | 0.3+ | 1.0+ |
| 2003 12 14 | 691 | 0.0  | 0.1- | 2007 11 15 | G96 | 0.3-  | 0.1-  |            |     |      |      |

**2003 WN<sub>117</sub> = 2007 WD<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.25005   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24316689 | $\omega$ 1.50076   | +0.83539677   | +0.54771983 |
| <i>a</i> | 2.5421417  | $\Omega$ 325.16148 | -0.50512661   | +0.73204930 |
| <i>e</i> | 0.1392596  | <i>i</i> 4.61777   | -0.21670103   | +0.40510097 |
| <i>P</i> | 4.05       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 23 | 645 | 0.2- | 0.0  | 2005 03 03 | 703 | (1.5+ | 1.0+) | 2007 11 20 | 704 | 0.5+ | 0.9+ |
| 2000 12 23 | 645 | 0.2- | 0.0  | 2005 03 03 | 703 | 0.4+  | 0.4+  | 2007 11 20 | 704 | 0.1+ | 0.2+ |
| 2001 02 03 | 691 | 0.1+ | 0.3- | 2005 03 03 | 703 | 0.2+  | 1.2+  | 2007 11 20 | 691 | 0.3- | 0.2- |
| 2001 02 03 | 691 | 0.4+ | 0.0  | 2005 04 02 | 691 | 0.2+  | 0.1+  | 2007 11 20 | 691 | 0.3- | 0.4- |
| 2001 02 03 | 691 | 0.2+ | 0.0  | 2005 04 02 | 691 | 0.3+  | 0.0   | 2007 11 20 | 691 | 0.1- | 0.2- |
| 2003 11 20 | 704 | 0.0  | 1.2+ | 2005 04 02 | 691 | 0.0   | 0.1+  | 2007 12 12 | 704 | 1.4+ | 0.6- |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.6+  | 0.7+  | 2005 04 12 | G96 | 0.4-  | 0.4-  | 2007 12 12 | 704 | 0.8- | 0.6+ |
| 2003 11 20 | 704 | 1.0-  | 0.1+  | 2005 04 12 | G96 | 0.4-  | 0.8-  | 2007 12 12 | 704 | 0.4- | 0.0  |
| 2003 11 24 | 704 | 0.6+  | 0.0   | 2005 04 12 | G96 | 0.3-  | 0.3-  | 2007 12 13 | 704 | 0.6+ | 0.2+ |
| 2003 11 24 | 704 | 0.4+  | 0.1-  | 2005 04 12 | G96 | 0.1+  | 0.0   | 2007 12 13 | 704 | 0.2- | 0.1- |
| 2003 11 24 | 704 | 0.6+  | 0.0   | 2007 11 17 | 704 | 0.5+  | 0.3-  | 2007 12 13 | 704 | 0.1+ | 0.0  |
| 2005 02 02 | 691 | 0.2+  | 0.1-  | 2007 11 17 | 704 | 0.0   | 0.7+  | 2007 12 13 | 704 | 0.3+ | 0.2- |
| 2005 02 02 | 691 | 0.1-  | 0.2+  | 2007 11 17 | 704 | 0.6+  | 0.0   | 2007 12 13 | 704 | 0.6- | 0.3- |
| 2005 02 02 | 691 | 0.1+  | 0.1-  | 2007 11 17 | 704 | 0.4+  | 0.0   | 2007 12 15 | 704 | 1.0- | 0.4- |
| 2005 02 16 | 809 | 0.1-  | 0.2-  | 2007 11 17 | 704 | 0.7+  | 0.5+  | 2007 12 15 | 704 | 0.3- | 0.0  |
| 2005 02 16 | 809 | 0.0   | 0.2+  | 2007 11 20 | 704 | (1.1+ | 2.1+) | 2007 12 15 | 704 | 1.3- | 0.2- |
| 2005 02 16 | 809 | 0.3-  | 0.1-  | 2007 11 20 | 704 | 0.5+  | 0.1+  | 2007 12 15 | 704 | 0.0  | 0.5- |
| 2005 03 03 | 703 | (1.9- | 0.8+) | 2007 11 20 | 704 | 0.9+  | 0.9+  |            |     |      |      |

**2003 WZ<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.97366   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24194683 | $\omega$ 298.90540 | +0.98622011   | +0.11864429 |
| <i>a</i> | 2.5506806  | $\Omega$ 54.50953  | -0.05120635   | +0.88160789 |
| <i>e</i> | 0.1844979  | <i>i</i> 8.14078   | -0.15731434   | +0.45682716 |
| <i>P</i> | 4.07       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.0  | 0.3+ | 2003 12 17 | 704 | 0.1- | 0.2+ | 2007 11 19 | 691 | 0.1+ | 0.4+ |
| 2003 11 20 | 704 | 0.6- | 0.1+ | 2003 12 17 | 704 | 0.4+ | 0.3- | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2003 11 20 | 704 | 0.0  | 0.1+ | 2003 12 30 | 704 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2003 11 20 | 704 | 0.5- | 0.8+ | 2003 12 30 | 704 | 0.0  | 0.2- | 2007 11 20 | 704 | 0.4- | 0.2- |
| 2003 11 24 | 704 | 1.0+ | 0.2- | 2003 12 30 | 704 | 0.4- | 0.4+ | 2007 11 20 | 704 | 0.0  | 0.2- |
| 2003 11 24 | 704 | 0.2+ | 0.2- | 2003 12 30 | 704 | 0.2- | 0.4+ | 2007 11 20 | 704 | 0.1+ | 0.1+ |
| 2003 11 24 | 704 | 0.1+ | 0.6- | 2007 11 18 | 704 | 0.1- | 0.2- | 2007 11 20 | 704 | 0.2- | 0.4- |
| 2003 12 17 | 704 | 0.2- | 0.7- | 2007 11 18 | 704 | 0.4+ | 0.6- |            |     |      |      |
| 2003 12 17 | 704 | 0.3+ | 0.1- | 2007 11 18 | 704 | 0.4- | 0.2- |            |     |      |      |

**2003 WN<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 339.46265  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23343340 | $\omega$ 33.19837 | +0.57344163   | -0.81870993 |
| <i>a</i> | 2.6123261  | $\Omega$ 21.85631 | +0.73323611   | +0.49676209 |
| <i>e</i> | 0.2868480  | <i>i</i> 4.56712  | +0.36541689   | +0.28799560 |
| <i>P</i> | 4.22       | <i>H</i> 17.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 704 | 0.3- | 0.4- | 2003 12 18 | 704 | 0.0  | 0.4+ | 2007 10 19 | G96 | 0.2+ | 0.2- |
| 2003 10 24 | 704 | 0.0  | 0.7+ | 2003 12 18 | 704 | 0.1+ | 0.3- | 2007 10 19 | G96 | 0.2- | 0.3- |
| 2003 10 24 | 704 | 0.2+ | 0.6+ | 2003 12 18 | 704 | 0.6+ | 0.5- | 2007 10 19 | G96 | 0.1- | 0.2- |
| 2003 10 24 | 704 | 0.3- | 0.0  | 2003 12 18 | 704 | 0.0  | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.1- |
| 2003 10 24 | 704 | 0.4+ | 0.4+ | 2007 09 10 | 691 | 0.9+ | 0.5+ | 2007 10 30 | G96 | 0.2+ | 0.4- |
| 2003 11 20 | 704 | 0.2+ | 1.1- | 2007 09 10 | 691 | 0.4- | 0.2- | 2007 10 30 | G96 | 0.0  | 0.0  |
| 2003 11 20 | 704 | 0.2+ | 0.0  | 2007 09 10 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.1- | 0.8- |
| 2003 11 20 | 704 | 0.4- | 0.4- | 2007 09 19 | 691 | 0.3- | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.3- |
| 2003 11 20 | 704 | 1.2- | 0.2+ | 2007 09 19 | 691 | 0.3- | 0.5+ | 2007 11 09 | G96 | 0.0  | 0.1- |
| 2003 11 24 | 704 | 0.2+ | 0.4+ | 2007 09 19 | 691 | 0.1- | 0.0  | 2007 11 09 | G96 | 0.9- | 0.3- |
| 2003 11 24 | 704 | 0.3+ | 1.1+ | 2007 10 09 | G96 | 0.0  | 0.5- | 2007 11 09 | G96 | 0.6- | 0.1- |
| 2003 11 24 | 704 | 0.5+ | 0.0  | 2007 10 09 | G96 | 0.0  | 0.4- | 2007 12 04 | G96 | 0.1- | 0.2+ |
| 2003 12 17 | 644 | 0.5- | 0.1+ | 2007 10 09 | G96 | 0.0  | 0.5- | 2007 12 04 | G96 | 0.5+ | 0.3- |
| 2003 12 17 | 644 | 0.2- | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.3- | 2007 12 04 | G96 | 0.6+ | 0.7+ |
| 2003 12 17 | 644 | 0.1+ | 0.5- | 2007 10 19 | G96 | 1.1+ | 0.4- | 2007 12 04 | G96 | 0.6+ | 0.2+ |

**2003 WV<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 294.09798  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24378186 | $\omega$ 227.30479 | -0.70365218   | -0.66849390 |
| <i>a</i> | 2.5378646  | $\Omega$ 269.18761 | +0.70176898   | -0.60073303 |
| <i>e</i> | 0.1273417  | <i>i</i> 13.93579  | +0.11132792   | -0.43844695 |
| <i>P</i> | 4.04       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 12 05 | 703 | 0.2+  | 0.7-  | 2003 12 18 | 704 | 0.8+ | 0.9- | 2007 10 24 | G96 | 0.2-  | 0.4-  |
| 1999 12 05 | 703 | 0.2+  | 0.5-  | 2003 12 18 | 704 | 0.1- | 0.7- | 2007 10 24 | G96 | 0.1-  | 0.3+  |
| 1999 12 05 | 703 | 0.1-  | 0.5-  | 2003 12 18 | 704 | 0.7+ | 1.0+ | 2007 10 24 | G96 | 0.8-  | 0.2-  |
| 1999 12 05 | 703 | (0.6- | 2.4-) | 2003 12 18 | 704 | 0.9+ | 0.1+ | 2007 12 04 | 703 | 0.4-  | 0.3-  |
| 2003 11 20 | 704 | 0.7+  | 0.4-  | 2003 12 22 | 704 | 0.5+ | 0.2- | 2007 12 04 | 703 | 0.1+  | 0.1+  |
| 2003 11 20 | 704 | 0.3-  | 0.1-  | 2003 12 22 | 704 | 0.6- | 0.3+ | 2007 12 04 | 703 | 0.3-  | 0.7+  |
| 2003 11 20 | 704 | 0.0   | 0.1+  | 2003 12 22 | 704 | 0.2- | 0.1- | 2007 12 04 | 703 | 0.7-  | 0.1+  |
| 2003 11 20 | 704 | 0.3-  | 0.2-  | 2003 12 22 | 704 | 1.4- | 0.2+ | 2007 12 12 | 704 | 0.6+  | 1.1-  |
| 2003 11 24 | 704 | 0.7+  | 0.2+  | 2003 12 27 | 704 | 0.1- | 0.2+ | 2007 12 12 | 704 | (0.2+ | 1.9-) |
| 2003 11 24 | 704 | 0.1-  | 0.7+  | 2003 12 27 | 704 | 0.1- | 0.4+ | 2007 12 12 | 704 | 0.2+  | 1.0+  |
| 2003 11 24 | 704 | 0.4-  | 0.0   | 2003 12 27 | 704 | 0.8- | 0.3+ | 2007 12 12 | 704 | 0.3+  | 0.1-  |
| 2003 11 24 | 704 | 0.2+  | 0.5+  | 2003 12 27 | 704 | 0.6+ | 0.8+ | 2007 12 12 | 704 | 0.1-  | 0.2+  |
| 2003 11 24 | 704 | 1.1-  | 0.7+  | 2003 12 27 | 704 | 0.7- | 0.1+ | 2007 12 13 | 704 | 0.9+  | 0.3-  |
| 2003 12 04 | 704 | 0.4+  | 0.4+  | 2004 01 12 | 644 | 0.1- | 0.3- | 2007 12 13 | 704 | 0.2+  | 0.8+  |
| 2003 12 04 | 704 | 0.4+  | 0.1-  | 2004 01 12 | 644 | 0.2+ | 0.1- | 2007 12 13 | 704 | 0.7+  | 0.0   |
| 2003 12 04 | 704 | 0.1+  | 1.5-  | 2004 01 12 | 644 | 0.3+ | 0.3- | 2007 12 13 | 704 | 0.2+  | 0.6+  |
| 2003 12 04 | 704 | 1.0-  | 0.6-  | 2007 10 24 | G96 | 0.9- | 0.5- | 2007 12 13 | 704 | 0.5+  | 0.4+  |

2003 WR<sub>124</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 337.60361  |          | (2000.0) | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.25598999 | $\omega$ | 74.74691 | -0.37376352 | -0.92590989 |
| <i>a</i> | 2.4565224  | $\Omega$ | 37.34833 | +0.81263591 | -0.35532498 |
| <i>e</i> | 0.1589592  | <i>i</i> | 5.17283  | +0.44712830 | -0.12819924 |
| <i>P</i> | 3.85       | <i>H</i> | 17.0     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 11 19 | 691 | 0.1+ | 0.1+ | 2003 12 18 | 012 | 0.2+  | 0.7-  | 2003 12 23 | 704 | 0.1+ | 0.6+ |
| 1995 11 19 | 691 | 0.2- | 0.3- | 2003 12 18 | 012 | 0.8-  | 0.4-  | 2003 12 23 | 704 | 0.1- | 1.4+ |
| 1995 11 19 | 691 | 0.1- | 0.3+ | 2003 12 18 | 704 | 0.2+  | 0.3-  | 2003 12 23 | 704 | 0.2- | 0.2+ |
| 2003 11 20 | 704 | 0.9+ | 0.5- | 2003 12 18 | 704 | 0.3-  | 0.6-  | 2003 12 23 | 704 | 0.6+ | 0.9+ |
| 2003 11 20 | 704 | 1.0+ | 0.4- | 2003 12 18 | 704 | 0.9-  | 0.1-  | 2004 01 16 | 644 | 0.2+ | 0.5- |
| 2003 11 20 | 704 | 0.3+ | 0.4- | 2003 12 18 | 704 | 0.3+  | 0.4-  | 2004 01 16 | 644 | 0.1+ | 0.3- |
| 2003 11 24 | 704 | 0.3+ | 0.6- | 2003 12 19 | 704 | 0.3-  | 0.6-  | 2004 01 16 | 644 | 0.4- | 0.3- |
| 2003 11 24 | 704 | 0.6- | 0.1- | 2003 12 19 | 704 | 0.9+  | 0.2+  | 2007 12 14 | D29 | 0.6+ | 0.8- |
| 2003 11 24 | 704 | 0.2- | 0.0  | 2003 12 19 | 704 | 0.1-  | 0.1+  | 2007 12 14 | D29 | 0.1- | 0.2- |
| 2003 11 24 | 704 | 0.4- | 0.1- | 2003 12 21 | 704 | 0.0   | 0.7+  | 2007 12 14 | D29 | 0.1- | 0.0  |
| 2003 12 17 | 012 | 0.4- | 0.2- | 2003 12 21 | 704 | 0.2-  | 0.3+  | 2007 12 14 | D29 | 0.1- | 0.7- |
| 2003 12 17 | 012 | 0.7+ | 0.2- | 2003 12 21 | 704 | 0.0   | 1.3+  | 2007 12 16 | 704 | 0.2+ | 0.2+ |
| 2003 12 18 | 012 | 0.3- | 0.7- | 2003 12 21 | 704 | 0.3-  | 0.1-  | 2007 12 16 | 704 | 0.4+ | 0.8+ |
| 2003 12 18 | 012 | 0.1- | 0.4+ | 2003 12 21 | 704 | 0.3+  | 0.3+  | 2007 12 16 | 704 | 0.6- | 0.7+ |
| 2003 12 18 | 012 | 0.3- | 0.0  | 2003 12 23 | 704 | (0.3+ | 1.8+) | 2007 12 16 | 704 | 0.4- | 0.3+ |

2003 WC<sub>127</sub> = 2007 XS<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 41.51365   |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.24395780 | $\omega$ | 296.39374 | +0.95235862 | -0.19456299 |
| <i>a</i> | 2.5366444  | $\Omega$ | 75.57709  | +0.28281466 | +0.85161697 |
| <i>e</i> | 0.2073487  | <i>i</i> | 14.03419  | -0.11414433 | +0.48671735 |
| <i>P</i> | 4.04       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 20 | 704 | 0.6- | 0.0  | 2003 12 18 | 704 | 0.5- | 0.1+ | 2007 12 10 | 704 | 0.6+  | 0.3+  |
| 2003 11 20 | 704 | 0.0  | 0.3+ | 2003 12 23 | 704 | 0.2+ | 0.3+ | 2007 12 10 | 704 | 1.0+  | 0.6+  |
| 2003 11 20 | 704 | 0.1- | 0.4- | 2003 12 23 | 704 | 0.6- | 0.2+ | 2007 12 10 | 704 | 1.0+  | 0.3+  |
| 2003 11 20 | 704 | 0.7- | 0.7- | 2003 12 23 | 704 | 0.4- | 0.1- | 2007 12 13 | 704 | 0.3+  | 0.1-  |
| 2003 11 24 | 704 | 0.2+ | 0.1+ | 2003 12 23 | 704 | 0.1+ | 0.3+ | 2007 12 13 | 704 | (2.5+ | 0.2+) |
| 2003 11 24 | 704 | 0.5+ | 0.3+ | 2003 12 23 | 704 | 0.6+ | 0.3+ | 2007 12 13 | 704 | 0.3+  | 0.3+  |
| 2003 11 24 | 704 | 0.4+ | 0.2+ | 2003 12 28 | 704 | 0.1+ | 0.3+ | 2007 12 13 | 704 | 0.4+  | 0.3+  |
| 2003 12 04 | 704 | 0.4+ | 0.2+ | 2003 12 28 | 704 | 0.0  | 0.4+ | 2007 12 15 | 704 | 0.3-  | 0.9-  |
| 2003 12 04 | 704 | 0.5+ | 0.3- | 2003 12 28 | 704 | 0.1+ | 0.1+ | 2007 12 15 | 704 | 0.2-  | 0.3-  |
| 2003 12 04 | 704 | 0.5+ | 0.8- | 2003 12 28 | 704 | 0.3- | 0.6- | 2007 12 15 | 704 | 0.2-  | 0.2+  |
| 2003 12 04 | 704 | 0.3+ | 0.1+ | 2003 12 28 | 704 | 0.1- | 0.3+ | 2007 12 16 | 691 | 0.1-  | 0.1-  |
| 2003 12 18 | 704 | 0.1- | 0.3- | 2007 12 05 | 691 | 0.3- | 0.1+ | 2007 12 16 | 691 | 0.0   | 0.3-  |
| 2003 12 18 | 704 | 0.2- | 0.1- | 2007 12 05 | 691 | 0.1- | 0.1- | 2007 12 16 | 691 | 0.0   | 0.2-  |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2003 12 18 | 704 | 0.3- | 0.3+ | 2007 12 05 | 691 | 0.3- | 0.4+ |
| 2003 12 18 | 704 | 0.1- | 0.4- | 2007 12 10 | 704 | 0.3+ | 0.2+ |

2003 WY<sub>128</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 325.73347  |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.25980035 | $\omega$ | 103.79597 | -0.31825143 | -0.94799666 |
| <i>a</i> | 2.4324443  | $\Omega$ | 4.76773   | +0.84865615 | -0.28690987 |
| <i>e</i> | 0.1477166  | <i>i</i> | 2.95427   | +0.42249115 | -0.13778625 |
| <i>P</i> | 3.79       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 26 | 691 | 0.1+ | 0.1+ | 2003 11 21 | 691 | 0.3+ | 0.2+ | 2007 12 13 | 704 | 0.1+ | 0.1- |
| 2001 03 26 | 691 | 0.0  | 0.1+ | 2003 11 21 | 691 | 0.1+ | 0.3+ | 2007 12 13 | 704 | 0.6+ | 0.6- |
| 2001 03 26 | 691 | 0.1+ | 0.2+ | 2003 11 21 | 691 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.5+ | 0.3- |
| 2003 10 22 | 691 | 0.3- | 0.1+ | 2003 11 24 | 704 | 0.7+ | 0.3+ | 2007 12 13 | 704 | 1.2+ | 0.4- |
| 2003 10 22 | 691 | 0.2- | 0.4+ | 2003 11 24 | 704 | 0.4- | 0.1- | 2007 12 15 | 704 | 0.3+ | 1.1- |
| 2003 10 22 | 691 | 0.4- | 0.1+ | 2003 11 24 | 704 | 0.6- | 0.2+ | 2007 12 15 | 704 | 1.0- | 0.2- |
| 2003 10 29 | 704 | 0.6- | 0.2- | 2005 04 17 | 691 | 0.3+ | 0.4+ | 2007 12 15 | 704 | 1.2- | 0.3+ |
| 2003 10 29 | 704 | 0.4- | 1.5+ | 2005 04 17 | 691 | 0.1+ | 0.3+ | 2007 12 15 | 704 | 0.2- | 0.2- |
| 2003 10 29 | 704 | 0.4- | 0.9+ | 2005 04 17 | 691 | 0.0  | 0.3+ |            |     |      |      |

2003 WF<sub>131</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 61.02505   |          | (2000.0)  | <i>P</i>    | <i>Q</i>    |
| <i>n</i> | 0.24723427 | $\omega$ | 45.23683  | +0.96407638 | +0.25932765 |
| <i>a</i> | 2.5141833  | $\Omega$ | 299.65344 | -0.25855104 | +0.86653050 |
| <i>e</i> | 0.1230162  | <i>i</i> | 3.79357   | -0.06089406 | +0.42646695 |
| <i>P</i> | 3.99       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 22 | 645 | 0.0   | 0.0   | 2003 11 24 | 704 | 0.8+  | 0.3+  | 2007 11 13 | 703 | (0.2+ | 1.7+) |
| 2001 02 22 | 645 | 0.0   | 0.0   | 2003 11 24 | 704 | 0.3+  | 0.7+  | 2007 11 18 | 704 | 0.3-  | 0.4-  |
| 2003 10 25 | 704 | 0.6+  | 0.1-  | 2003 11 24 | 704 | 0.4+  | 0.3-  | 2007 11 18 | 704 | 0.4-  | 1.3-  |
| 2003 10 25 | 704 | 0.3+  | 0.5-  | 2003 11 24 | 704 | 0.3+  | 0.4-  | 2007 11 18 | 704 | 0.2-  | 0.3-  |
| 2003 10 25 | 704 | 0.0   | 0.1-  | 2003 12 18 | 704 | 0.6+  | 1.3+  | 2007 11 19 | G96 | 0.1-  | 0.1-  |
| 2003 10 25 | 704 | 0.4-  | 0.2+  | 2003 12 18 | 704 | 0.9-  | 0.7+  | 2007 11 19 | G96 | 0.1-  | 0.1-  |
| 2003 11 21 | 704 | 0.3-  | 0.1-  | 2003 12 18 | 704 | 0.8-  | 0.0   | 2007 11 19 | G96 | 0.0   | 0.3-  |
| 2003 11 21 | 704 | (0.8+ | 1.5+) | 2003 12 18 | 691 | 0.1+  | 0.3-  | 2007 11 19 | G96 | 0.0   | 0.2-  |
| 2003 11 21 | 704 | 0.1+  | 0.1+  | 2003 12 18 | 691 | 0.1+  | 0.5-  | 2007 11 20 | 704 | 0.0   | 0.3-  |
| 2003 11 21 | 704 | 0.0   | 0.8+  | 2003 12 18 | 691 | 0.9-  | 0.4-  | 2007 11 20 | 704 | 0.6-  | 0.7+  |
| 2003 11 21 | 704 | 0.7-  | 0.2+  | 2003 12 22 | 704 | (0.3- | 1.7-) | 2007 11 20 | 704 | 1.2+  | 0.3+  |
| 2003 11 21 | 644 | 0.1+  | 0.2+  | 2003 12 22 | 704 | 0.4-  | 0.0   | 2007 11 30 | A77 | 0.3+  | 0.2+  |
| 2003 11 21 | 644 | 0.0   | 0.3+  | 2003 12 22 | 704 | 1.4+  | 0.5+  | 2007 11 30 | A77 | 0.2-  | 0.2+  |
| 2003 11 21 | 644 | 0.4+  | 0.3+  | 2003 12 22 | 704 | 0.2-  | 0.1+  | 2007 11 30 | A77 | 0.4-  | 0.5+  |
| 2003 11 23 | 704 | 0.2-  | 0.0   | 2003 12 22 | 704 | 1.2+  | 0.6-  | 2007 12 13 | 704 | 0.5+  | 0.7+  |
| 2003 11 23 | 704 | 0.7+  | 0.1-  | 2007 10 24 | G96 | 0.2+  | 0.2-  | 2007 12 13 | 704 | 0.3-  | 0.0   |
| 2003 11 23 | 704 | 0.6+  | 0.5+  | 2007 10 24 | G96 | 0.6-  | 0.1+  | 2007 12 13 | 704 | 0.2-  | 0.1+  |
| 2003 11 23 | 704 | 0.4-  | 0.8+  | 2007 10 24 | G96 | 0.3+  | 0.4-  | 2007 12 13 | 704 | 0.3+  | 0.8+  |
| 2003 11 24 | 704 | 0.4-  | 1.0-  | 2007 10 24 | G96 | 0.1+  | 0.4-  |            |     |       |       |
| 2003 11 24 | 704 | 0.1+  | 0.1-  | 2007 11 13 | 703 | 0.3+  | 1.1+  |            |     |       |       |

2003 WA<sub>147</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 25.53603   |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.23418913 | $\omega$ | 280.71806 | +0.97851094 | +0.05252055 |
| $a$ | 2.6067030  | $\Omega$ | 76.49182  | +0.03996211 | +0.90037714 |
| $e$ | 0.1712152  | $i$      | 11.83341  | -0.20228537 | +0.43192892 |
| $P$ | 4.21       | $H$      | 16.7      | $G$ 0.15    | $U$ 3       |

## 2007 DEC. 24

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 24 | 699 | 1.1− | 0.7+ | 2007 10 08 | 699 | 0.7+  | 0.9−  | 2007 11 15 | 703 | 0.5− | 0.0  |
| 2003 11 24 | 699 | 0.0  | 0.2+ | 2007 10 19 | 703 | 1.3−  | 0.7−  | 2007 11 15 | 703 | 0.3+ | 0.2+ |
| 2003 11 24 | 699 | 0.2− | 0.3+ | 2007 10 19 | 703 | 0.9+  | 0.4+  | 2007 11 17 | 703 | 0.8− | 0.8− |
| 2003 12 01 | 691 | 0.1− | 0.1+ | 2007 10 19 | 703 | 0.7+  | 0.0   | 2007 11 17 | 703 | 0.9− | 0.3− |
| 2003 12 01 | 691 | 0.0  | 0.1+ | 2007 10 19 | 703 | 0.4+  | 1.0+  | 2007 11 17 | 703 | 0.7− | 0.9− |
| 2003 12 01 | 691 | 0.2− | 0.0  | 2007 10 31 | 703 | (1.8+ | 0.1+) | 2007 11 17 | 703 | 0.7+ | 0.4− |
| 2003 12 14 | 691 | 0.1− | 0.0  | 2007 10 31 | 703 | 0.8+  | 0.5+  | 2007 12 06 | 703 | 2.0+ | 0.7− |
| 2003 12 14 | 691 | 0.2− | 0.2+ | 2007 10 31 | 703 | 0.4+  | 0.6+  | 2007 12 06 | 703 | 0.5+ | 0.1− |
| 2003 12 14 | 691 | 0.2− | 0.1+ | 2007 10 31 | 703 | (1.2+ | 2.3+) | 2007 12 06 | 703 | 1.1− | 0.8− |
| 2003 12 21 | 704 | 0.2+ | 0.5+ | 2007 11 07 | 703 | 1.1−  | 0.4+  | 2007 12 06 | 703 | 0.1+ | 0.4+ |
| 2003 12 21 | 704 | 0.1+ | 0.5− | 2007 11 07 | 703 | 1.0−  | 0.4+  |            |     |      |      |

2003 WJ<sub>159</sub> = 2007 VZ<sub>298</sub>

|                                         |            |          |  |           |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|--|-----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |  |           |  |          |      |             |          |             |  |
| <i>M</i> 25.24637                       |            |          |  | (2000.0)  |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.24340353 | <i>ω</i> |  | 218.60935 |  |          |      | +0.97560342 |          | −0.19761442 |  |
| <i>a</i>                                | 2.5404938  | <i>Ω</i> |  | 152.33378 |  |          |      | +0.21442302 |          | +0.95120613 |  |
| <i>e</i>                                | 0.2132930  | <i>i</i> |  | 11.88646  |  |          |      | −0.04712460 |          | +0.23697140 |  |
| <i>P</i>                                | 4.05       | <i>H</i> |  | 16.5      |  | <i>G</i> | 0.15 |             | <i>U</i> | 2           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 16 | 291 | 0.3+ | 0.3+ | 2003 12 01 | 704 | 0.5+ | 0.5+ | 2007 09 13 | 703 | 0.5− | 0.3+ |
| 2002 06 16 | 291 | 0.1− | 0.0  | 2003 12 01 | 704 | 0.1− | 0.1+ | 2007 09 13 | 703 | 0.0  | 0.9− |
| 2002 06 16 | 291 | 0.1− | 0.9+ | 2003 12 01 | 704 | 0.6− | 0.2− | 2007 11 11 | 703 | 0.7+ | 0.4+ |
| 2003 11 29 | 704 | 0.3− | 0.3− | 2003 12 01 | 704 | 0.5− | 0.1+ | 2007 11 11 | 703 | 0.1+ | 0.4+ |
| 2003 11 29 | 704 | 0.1+ | 0.7+ | 2006 06 16 | 691 | 0.1+ | 0.1+ | 2007 11 11 | 703 | 0.4− | 0.3− |
| 2003 11 29 | 704 | 0.4+ | 0.1+ | 2006 06 16 | 691 | 0.4− | 0.1− | 2007 11 11 | 703 | 0.1+ | 0.2− |
| 2003 11 29 | 704 | 0.6+ | 0.5− | 2006 06 16 | 691 | 0.3+ | 0.2− | 2007 11 19 | 703 | 0.2+ | 0.7+ |
| 2003 11 29 | 704 | 0.2+ | 0.3+ | 2007 09 13 | 703 | 0.8− | 0.3+ | 2007 11 19 | 703 | 0.1+ | 0.0  |
| 2003 12 01 | 704 | 0.3− | 0.2− | 2007 09 13 | 703 | 0.2+ | 0.4− | 2007 11 19 | 703 | 0.0  | 0.6− |

2003 WS<sub>171</sub>

|                                         |            |          |  |           |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|--|-----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |  |           |  |          |      |             |          |             |  |
| <i>M</i> 291.11019                      |            |          |  | (2000.0)  |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.21294261 | <i>ω</i> |  | 126.02881 |  |          |      | +0.20975308 |          | −0.96901781 |  |
| <i>a</i>                                | 2.7773311  | <i>Ω</i> |  | 311.32202 |  |          |      | +0.83190791 |          | +0.24695413 |  |
| <i>e</i>                                | 0.2213425  | <i>i</i> |  | 10.00028  |  |          |      | +0.51374398 |          | −0.00426015 |  |
| <i>P</i>                                | 4.63       | <i>H</i> |  | 16.1      |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 07 26 | 691 | 0.0  | 0.1+ | 2003 12 03 | 699 | 0.1− | 0.1− | 2003 12 28 | 704 | 0.9− | 0.3+ |
| 1993 07 26 | 691 | 0.2+ | 0.6+ | 2003 12 03 | 704 | 0.0  | 0.2+ | 2003 12 28 | 704 | 0.2+ | 0.5− |
| 1993 07 26 | 691 | 0.7− | 0.4+ | 2003 12 03 | 704 | 0.0  | 0.4− | 2003 12 30 | 704 | 0.6+ | 0.3+ |
| 2003 11 03 | 704 | 0.3+ | 1.1− | 2003 12 03 | 699 | 0.3− | 0.5+ | 2003 12 30 | 704 | 0.1− | 0.4+ |
| 2003 11 03 | 704 | 0.7+ | 0.6− | 2003 12 03 | 704 | 0.4− | 0.2+ | 2003 12 30 | 704 | 0.7+ | 1.4+ |
| 2003 11 03 | 704 | 0.2+ | 0.4+ | 2003 12 03 | 704 | 0.3+ | 0.6− | 2003 12 30 | 704 | 0.9+ | 0.7+ |
| 2003 11 03 | 704 | 0.0  | 0.3− | 2003 12 03 | 699 | 0.8− | 0.5− | 2007 07 18 | G96 | 0.0  | 0.6− |
| 2003 11 14 | 644 | 0.6− | 0.2− | 2003 12 03 | 699 | 0.4− | 0.0  | 2007 07 18 | G96 | 0.3− | 0.2− |
| 2003 11 14 | 644 | 0.6− | 0.2− | 2003 12 17 | 704 | 0.4− | 0.1+ | 2007 07 18 | G96 | 0.5+ | 0.8− |
| 2003 11 14 | 644 | 0.5− | 0.1+ | 2003 12 17 | 704 | 0.3+ | 0.6+ | 2007 07 18 | G96 | 0.3− | 0.3− |
| 2003 11 29 | 704 | 0.1+ | 0.4+ | 2003 12 17 | 704 | 0.1− | 0.7+ | 2007 08 12 | D29 | 0.1+ | 0.3+ |
| 2003 11 29 | 704 | 0.2− | 0.1− | 2003 12 17 | 704 | 0.3+ | 0.0  | 2007 08 12 | D29 | 0.2+ | 0.4+ |
| 2003 11 29 | 704 | 0.2+ | 0.1− | 2003 12 17 | 704 | 0.4+ | 0.4− | 2007 08 12 | D29 | 0.1+ | 0.7+ |
| 2003 11 29 | 704 | 0.3− | 0.6− | 2003 12 28 | 704 | 0.3− | 0.0  | 2007 08 12 | D29 | 0.1− | 0.1+ |
| 2003 12 03 | 704 | 0.3+ | 0.5− | 2003 12 28 | 704 | 0.4+ | 0.1+ |            |     |      |      |

2003 WN<sub>175</sub> = 2007 TU<sub>58</sub>

|                                         |            |          |  |           |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|--|-----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |  |           |  |          |      |             |          |             |  |
| <i>M</i> 292.91071                      |            |          |  | (2000.0)  |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.21384402 | <i>ω</i> |  | 184.02675 |  |          |      | +0.26038681 |          | −0.96413454 |  |
| <i>a</i>                                | 2.7695209  | <i>Ω</i> |  | 250.88607 |  |          |      | +0.88734592 |          | +0.25995684 |  |
| <i>e</i>                                | 0.0489954  | <i>i</i> |  | 3.11917   |  |          |      | +0.38054689 |          | +0.05354474 |  |
| <i>P</i>                                | 4.61       | <i>H</i> |  | 17.2      |  | <i>G</i> | 0.15 |             | <i>U</i> | 5           |  |

## M.P.O. 129679

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.2+  | 0.1+  | 2003 11 30 | 691 | 0.0  | 0.3+ | 2007 10 08 | 691 | 0.6− | 0.6− |
| 2003 11 19 | 691 | 0.0   | 0.2−  | 2003 11 30 | 691 | 0.0  | 0.3+ | 2007 10 08 | 691 | 0.2− | 0.0  |
| 2003 11 19 | 691 | 0.3−  | 0.2−  | 2003 11 30 | 691 | 0.2+ | 0.4+ | 2007 10 08 | 691 | 0.1− | 0.1− |
| 2003 11 20 | 695 | (4.6− | 0.9−) | 2007 10 05 | 691 | 0.4+ | 0.1+ | 2007 10 08 | 691 | 0.1− | 0.5− |
| 2003 11 20 | 695 | (5.1− | 1.0−) | 2007 10 05 | 691 | 0.6+ | 0.5+ | 2007 10 12 | 691 | 0.1+ | 0.3− |
| 2003 11 30 | 291 | 0.4−  | 0.2−  | 2007 10 05 | 691 | 0.5+ | 0.6+ | 2007 10 12 | 691 | 0.3+ | 0.0  |
| 2003 11 30 | 291 | 0.1+  | 0.1−  | 2007 10 08 | 691 | 0.4− | 0.3− | 2007 10 12 | 691 | 0.4+ | 0.0  |
| 2003 11 30 | 291 | 0.2+  | 0.3−  | 2007 10 08 | 691 | 0.9− | 0.6+ |            |     |      |      |

2003 WH<sub>178</sub> = 2007 VY<sub>265</sub>

|                                         |            |          |  |           |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|--|-----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |  |           |  |          |      |             |          |             |  |
| <i>M</i> 23.99233                       |            |          |  | (2000.0)  |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.26110373 | <i>ω</i> |  | 334.48468 |  |          |      | +0.90769558 |          | −0.41838681 |  |
| <i>a</i>                                | 2.4243427  | <i>Ω</i> |  | 50.28665  |  |          |      | +0.39183261 |          | +0.81753811 |  |
| <i>e</i>                                | 0.1926881  | <i>i</i> |  | 2.40409   |  |          |      | +0.15018634 |          | +0.39570685 |  |
| <i>P</i>                                | 3.77       | <i>H</i> |  | 18.2      |  | <i>G</i> | 0.15 |             | <i>U</i> | 2           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 29 | 691 | 0.0  | 0.1− | 2007 11 05 | 691 | 0.1+ | 0.3+ | 2007 12 06 | G96 | 0.1+ | 0.2− |
| 2003 09 29 | 691 | 0.1+ | 0.2− | 2007 11 05 | 691 | 0.4+ | 0.3+ | 2007 12 06 | G96 | 0.1− | 0.0  |
| 2003 09 29 | 691 | 0.1+ | 0.0  | 2007 11 13 | 691 | 0.0  | 0.2− | 2007 12 06 | G96 | 0.1− | 0.1− |
| 2003 11 20 | 695 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.2− | 0.0  | 2007 12 14 | 704 | 0.7+ | 0.5− |
| 2003 11 20 | 695 | 0.0  | 0.0  | 2007 11 13 | 691 | 0.2− | 0.0  | 2007 12 14 | 704 | 0.9+ | 0.4− |
| 2003 11 24 | 691 | 0.1+ | 0.2+ | 2007 11 17 | 691 | 0.1+ | 0.1− | 2007 12 14 | 704 | 0.5− | 0.1− |
| 2003 11 24 | 691 | 0.0  | 0.1+ | 2007 11 17 | 691 | 0.5− | 0.2+ | 2007 12 14 | 704 | 0.5+ | 0.1− |
| 2003 11 24 | 691 | 0.2− | 0.0  | 2007 11 17 | 691 | 0.1+ | 0.0  |            |     |      |      |
| 2007 11 05 | 691 | 0.2− | 0.1− | 2007 12 06 | G96 | 0.1+ | 0.1− |            |     |      |      |

2003 WF<sub>190</sub> = 2007 VQ<sub>244</sub>

|                                         |            |          |  |           |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|--|-----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |  |           |  |          |      |             |          |             |  |
| <i>M</i> 21.94146                       |            |          |  | (2000.0)  |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.23978011 | <i>ω</i> |  | 38.10769  |  |          |      | +0.96346703 |          | −0.23436046 |  |
| <i>a</i>                                | 2.5660234  | <i>Ω</i> |  | 334.52056 |  |          |      | +0.10284315 |          | +0.77066827 |  |
| <i>e</i>                                | 0.3185321  | <i>i</i> |  | 17.53910  |  |          |      | +0.24729448 |          | +0.59257539 |  |
| <i>P</i>                                | 4.11       | <i>H</i> |  | 16.3      |  | <i>G</i> | 0.15 |             | <i>U</i> | 5           |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 704 | 0.1− | 0.3− | 2003 12 15 | 704 | 0.4+ | 0.3+ | 2007 11 16 | 704 | 0.2+ | 0.3− |
| 2003 11 24 | 704 | 0.0  | 0.1+ | 2007 11 15 | 704 | 0.3− | 0.5+ | 2007 11 16 | 704 | 0.1+ | 0.3− |
| 2003 11 24 | 704 | 0.0  | 0.1− | 2007 11 15 | 704 | 1.2− | 0.4+ | 2007 11 16 | 704 | 0.2+ | 0.5− |
| 2003 11 24 | 704 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 0.4+ | 0.2+ | 2007 11 16 | 704 | 0.1+ | 0.5− |
| 2003 12 15 | 704 | 0.0  | 0.2+ | 2007 11 15 | 704 | 0.4+ | 0.3+ |            |     |      |      |
| 2003 12 15 | 704 | 0.4− | 0.5− | 2007 11 15 | 704 | 0.1+ | 0.0  |            |     |      |      |

2003 WC<sub>193</sub>

|                                         |            |          |  |           |  |          |      |             |          |             |  |
|-----------------------------------------|------------|----------|--|-----------|--|----------|------|-------------|----------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |  |           |  |          |      |             |          |             |  |
| <i>M</i> 47.53581                       |            |          |  | (2000.0)  |  |          |      | <b>P</b>    |          | <b>Q</b>    |  |
| <i>n</i>                                | 0.24583275 | <i>ω</i> |  | 55.05534  |  |          |      | +0.98583673 |          | −0.16045591 |  |
| <i>a</i>                                | 2.5237300  | <i>Ω</i> |  | 314.12285 |  |          |      | +0.12297446 |          | +0.88940618 |  |
| <i>e</i>                                | 0.2131088  | <i>i</i> |  | 3.89671   |  |          |      | +0.11403165 |          | +0.42803102 |  |
| <i>P</i>                                | 4.01       | <i>H</i> |  | 15.6      |  | <i>G</i> | 0.15 |             | <i>U</i> | 4           |  |

Residuals in seconds of arc

|         |
|---------|
| 2003 11 |
|---------|

2003 12 22 704 0.5− 0.1− 2005 03 17 691 0.0 0.1+  
 2003 12 22 704 0.8+ 1.1+ 2005 03 17 691 0.0 0.1−

**2003 XG<sub>13</sub> = 2007 WH<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 263.73069  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28372738 | $\omega$ | 271.61680 | −0.80488730   | +0.59197564 |
| <i>a</i> | 2.2936926  | $\Omega$ | 304.68263 | −0.52242851   | −0.74001513 |
| <i>e</i> | 0.0885913  | <i>i</i> | 2.89196   | −0.28146916   | −0.31928428 |
| <i>P</i> | 3.47       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 11 24 691 0.1− 0.2+ | 2003 12 14 291 0.3+ 0.0  | 2007 11 19 G96 0.2− 0.4− |
| 2003 11 24 691 0.0 0.1+  | 2003 12 14 291 0.2− 0.0  | 2007 11 19 G96 0.1− 0.3− |
| 2003 11 24 691 0.3+ 0.2− | 2003 12 16 291 0.3+ 0.2− | 2007 11 20 G96 0.4− 0.4+ |
| 2003 11 30 691 0.1+ 0.3+ | 2003 12 16 291 0.2+ 0.5− | 2007 11 20 G96 0.7+ 0.2+ |
| 2003 11 30 691 0.1+ 0.3+ | 2003 12 16 291 0.2− 0.5− | 2007 11 20 G96 0.2+ 0.1+ |
| 2003 11 30 691 0.1+ 0.3+ | 2007 11 19 G96 0.0 0.0   | 2007 11 20 G96 0.3− 0.2+ |
| 2003 12 14 291 0.7− 0.2+ | 2007 11 19 G96 0.2+ 0.0  |                          |

**2003 XY<sub>28</sub> = 2007 VH<sub>233</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 106.50839  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24149886 | $\omega$ | 233.13978 | +0.37289985   | +0.91873606 |
| <i>a</i> | 2.5538339  | $\Omega$ | 59.24338  | −0.79594172   | +0.38867360 |
| <i>e</i> | 0.1317836  | <i>i</i> | 8.69312   | −0.47688834   | +0.06969138 |
| <i>P</i> | 4.08       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 06 18 644 0.3+ 0.0  | 2007 10 20 G96 0.2− 0.3− | 2007 11 14 691 0.2− 0.0  |
| 2002 06 18 644 0.1+ 0.2+ | 2007 10 31 G96 0.3+ 0.2− | 2007 11 14 691 0.4+ 0.1− |
| 2002 06 18 644 0.2+ 0.2+ | 2007 10 31 G96 0.3+ 0.3− | 2007 11 14 704 0.5+ 0.3+ |
| 2002 07 06 644 0.2− 0.1+ | 2007 10 31 691 0.1− 0.0  | 2007 11 14 704 0.2+ 0.1+ |
| 2002 07 06 644 0.2− 0.1+ | 2007 10 31 G96 0.3− 0.4− | 2007 11 14 704 0.9+ 1.0+ |
| 2002 07 06 644 0.2− 0.0  | 2007 10 31 691 0.1− 0.2+ | 2007 11 14 704 0.7+ 0.3+ |
| 2003 12 01 691 0.2+ 0.1− | 2007 10 31 G96 0.3+ 0.1− | 2007 11 18 691 0.2− 0.2+ |
| 2003 12 01 691 0.2+ 0.1+ | 2007 10 31 691 0.2− 0.5− | 2007 11 18 691 0.5− 0.5+ |
| 2003 12 01 691 0.0 0.0   | 2007 10 31 691 0.1+ 0.2− | 2007 11 18 691 0.1− 0.1+ |
| 2003 12 14 691 0.1− 0.1− | 2007 10 31 691 0.2− 0.2− | 2007 12 05 704 0.4+ 0.0  |
| 2003 12 14 691 0.1+ 0.3− | 2007 10 31 691 0.2− 0.1+ | 2007 12 05 704 0.3+ 0.7+ |
| 2003 12 14 691 0.2− 0.3− | 2007 11 05 D29 1.1+ 1.3− | 2007 12 05 704 0.7+ 1.1+ |
| 2005 03 01 703 0.2+ 0.7+ | 2007 11 05 D29 0.1− 0.0  | 2007 12 05 704 0.6− 1.1+ |
| 2005 03 01 703 0.5− 0.8+ | 2007 11 05 D29 0.1+ 0.7− | 2007 12 05 704 0.3− 1.3+ |
| 2005 03 01 703 0.2+ 0.1+ | 2007 11 05 D29 0.7+ 0.5+ | 2007 12 06 G96 0.2+ 0.3− |
| 2005 03 01 703 0.4+ 0.7− | 2007 11 08 691 0.3− 0.3+ | 2007 12 06 G96 0.3+ 0.4− |
| 2007 10 20 G96 0.1+ 0.2− | 2007 11 08 691 0.2− 0.2+ | 2007 12 06 G96 0.1+ 0.1− |
| 2007 10 20 G96 0.1+ 0.2− | 2007 11 08 691 0.1− 0.0  | 2007 12 06 G96 0.1+ 0.5− |
| 2007 10 20 G96 0.1− 0.2− | 2007 11 14 691 0.1− 0.0  |                          |

**2003 YV<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.05876    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23675942 | $\omega$ | 291.49016 | +0.74663910   | −0.44206707 |
| <i>a</i> | 2.5878029  | $\Omega$ | 97.92114  | +0.62042298   | +0.73235435 |
| <i>e</i> | 0.3923228  | <i>i</i> | 30.12492  | −0.24001122   | +0.51791294 |
| <i>P</i> | 4.16       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 12 18 704 0.2− 0.4−   | 2003 12 19 704 0.3+ 0.8− | 2003 12 29 704 0.1− 0.3− |
| 2003 12 18 704 0.2+ 0.5−   | 2003 12 19 704 0.6+ 1.2+ | 2003 12 30 704 0.1− 0.2+ |
| 2003 12 18 704 0.4− 0.5−   | 2003 12 19 704 0.5+ 0.7− | 2003 12 30 704 0.2− 0.2+ |
| 2003 12 18 704 (1.7− 1.7−) | 2003 12 20 704 0.9+ 0.7+ | 2003 12 30 704 0.2− 0.1+ |
| 2003 12 18 704 1.0− 0.5−   | 2003 12 20 704 0.6− 0.3+ | 2003 12 30 704 1.1− 0.3− |
| 2003 12 18 246 0.4− 0.7−   | 2003 12 20 704 0.0 0.7+  | 2003 12 30 704 0.9+ 0.1+ |
| 2003 12 18 246 0.4+ 0.4−   | 2003 12 20 704 0.5+ 0.2+ | 2004 01 19 704 0.5+ 1.4− |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 12 18 246 0.7− 0.5− | 2003 12 20 704 0.6+ 0.4− | 2004 01 19 704 0.0 1.4−  |
| 2003 12 18 246 0.1− 0.7− | 2003 12 21 704 0.5+ 0.0  | 2004 01 19 704 0.4+ 0.4+ |
| 2003 12 18 246 0.3+ 0.3− | 2003 12 21 704 0.3+ 0.8+ | 2007 12 05 703 1.2+ 0.3− |
| 2003 12 18 246 0.0 0.1−  | 2003 12 21 704 0.3+ 0.9+ | 2007 12 05 703 0.8+ 0.0  |
| 2003 12 19 649 0.0 0.4−  | 2003 12 21 704 0.1+ 0.7+ | 2007 12 05 703 0.0 0.0   |
| 2003 12 19 649 0.1− 0.6− | 2003 12 23 704 0.6− 0.3− | 2007 12 05 703 1.8− 0.7− |
| 2003 12 19 649 0.4− 0.4− | 2003 12 23 704 0.3− 0.5+ | 2007 12 06 J95 0.3− 0.4+ |
| 2003 12 19 649 0.1− 0.1− | 2003 12 23 704 0.1+ 0.6− | 2007 12 06 J95 0.1− 0.0  |
| 2003 12 19 649 0.4− 0.7− | 2003 12 23 704 0.4+ 0.3+ | 2007 12 06 B03 0.1− 0.1+ |
| 2003 12 19 649 0.4− 0.7− | 2003 12 27 704 1.2− 1.1+ | 2007 12 06 B03 0.3+ 0.3− |
| 2003 12 19 926 0.1+ 0.8− | 2003 12 27 704 0.4− 0.1+ | 2007 12 06 B03 0.2+ 0.8− |
| 2003 12 19 854 0.7− 0.1+ | 2003 12 27 704 0.7− 0.0  | 2007 12 06 H55 0.2+ 0.1− |
| 2003 12 19 926 0.1+ 0.1+ | 2003 12 27 704 0.1− 0.3+ | 2007 12 06 H55 0.1+ 0.1− |
| 2003 12 19 926 0.3− 0.8+ | 2003 12 27 704 0.3+ 0.6+ | 2007 12 06 H55 0.1+ 0.1− |
| 2003 12 19 854 0.9− 0.0  | 2003 12 28 704 1.4+ 0.6+ | 2007 12 06 651 0.2+ 0.2+ |
| 2003 12 19 854 0.1− 0.3+ | 2003 12 28 704 0.1− 0.6+ | 2007 12 06 651 0.2+ 0.0  |
| 2003 12 19 704 0.3− 0.1− | 2003 12 28 704 0.0 1.0+  | 2007 12 06 651 0.3+ 0.2− |
| 2003 12 19 704 0.3− 0.1− | 2003 12 28 704 1.2+ 0.6+ | 2007 12 06 G96 0.1+ 0.0  |
| 2003 12 19 704 0.4− 0.6− | 2003 12 29 704 0.0 0.6+  | 2007 12 06 G96 0.3+ 0.1+ |
| 2003 12 19 704 0.5+ 0.9+ | 2003 12 29 704 0.5+ 0.2− | 2007 12 06 G96 0.0 0.0   |
| 2003 12 19 704 0.2+ 0.7− | 2003 12 29 704 0.1+ 0.2+ | 2007 12 06 G96 0.3+ 0.1+ |
| 2003 12 19 704 0.1+ 1.0+ | 2003 12 29 704 0.1+ 0.2− |                          |

**2003 YB<sub>2</sub> = 2007 XP<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 291.45535  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26099031 | $\omega$ | 256.16896 | −0.93619990   | +0.04726781 |
| <i>a</i> | 2.4250450  | $\Omega$ | 285.64670 | +0.12689204   | −0.87862401 |
| <i>e</i> | 0.2312480  | <i>i</i> | 21.20326  | −0.32776234   | −0.47516902 |
| <i>P</i> | 3.78       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 12 17 704 0.7+ 0.2−   | 2006 10 04 G96 0.0 0.3+  | 2007 12 05 691 0.3− 0.1− |
| 2003 12 17 704 0.2+ 0.3−   | 2006 10 04 G96 0.2+ 0.8− | 2007 12 06 704 1.1+ 0.0  |
| 2003 12 17 704 (2.6− 0.6+) | 2006 10 04 G96 0.3+ 0.1+ | 2007 12 06 704 0.2− 0.2+ |
| 2003 12 17 704 0.0 0.2−    | 2006 10 04 G96 0.2− 0.0  | 2007 12 06 704 0.0 0.3+  |
| 2003 12 17 704 0.1− 0.6+   | 2006 10 04 G96 0.1− 0.3− | 2007 12 06 704 0.1− 0.1+ |
| 2003 12 18 704 1.0− 0.7+   | 2006 10 04 G96 0.4+ 0.0  | 2007 12 10 704 0.0 1.0+  |
| 2003 12 18 704 0.3− 0.5+   | 2007 11 12 G96 0.3− 0.2− | 2007 12 10 704 0.7+ 0.1+ |
| 2003 12 18 704 0.2+ 0.1+   | 2007 11 12 G96 0.4− 0.1− | 2007 12 10 704 0.8+ 0.1− |
| 2003 12 18 704 0.8+ 0.6−   | 2007 11 12 G96 0.1− 0.0  | 2007 12 10 704 0.5+ 0.7+ |
| 2003 12 19 704 1.0+ 0.2+   | 2007 11 12 G96 0.2− 0.2− | 2007 12 10 704 0.9− 1.6+ |
| 2003 12 19 704 0.3+ 0.3+   | 2007 12 04 699 0.1+ 0.1− | 2007 12 14 704 0.1− 0.1+ |
| 2003 12 19 704 (2.0+ 0.2+) | 2007 12 04 699 0.7+ 0.3− | 2007 12 14 704 0.3+ 0.3+ |
| 2003 12 19 704 0.2− 0.6+   | 2007 12 04 699 0.3+ 0.4+ | 2007 12 14 704 0.5+ 0.2− |
| 2003 12 29 704 0.3− 0.1+   | 2007 12 04 699 0.8+ 0.7− | 2007 12 14 704 0.6+ 0.1+ |
| 2003 12 29 704 0.0 0.1+    | 2007 12 04 703 0.8+ 1.0− | 2007 12 14 D29 0.8− 0.6− |
| 2003 12 29 704 0.3− 0.3−   | 2007 12 04 703 0.1+ 0.1+ | 2007 12 14 D29 0.1− 0.6− |
| 2003 12 29 704 0.6− 0.3+   | 2007 12 04 703 0.1− 0.3− | 2007 12 14 D29 0.2+ 0.5− |
| 2003 12 29 704 0.1+ 0.3+   | 2007 12 04 703 0.7− 0.7− | 2007 12 14 D29 0.1− 0.6− |
| 2006 10 04 G96 0.1+ 0.3+   | 2007 12 05 691 0.6− 0.1− |                          |
| 2006 10 04 G96 0.3− 0.1−   | 2007 12 05 691 0.3− 0.0  |                          |

**2003 YV<sub>9</sub> = 1999 XT<sub>140</sub> = 2007 VM<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.81323  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23992476 | $\omega$ | 167.17882 | +0.24742113   | −0.96527131 |
| <i>a</i> | 2.5649919  | $\Omega$ | 268.44996 | +0.88138572   | +0.26017817 |
| <i>e</i> | 0.2050488  | <i>i</i> | 4.81278   | +0.40242017   | +0.02363499 |
| <i>P</i> | 4.11       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1995 12 20 691 0.3− 0.1− | 2003 12 18 704 (0.3− 1.7−) | 2007 11 05 691 0.1− 0.1− |
| 1995 12 20 691 0.0 0.1−  | 2003 12 21 704 0.2− 0.8+   | 2007 11 13 691 0.2+ 0.2− |
| 1995 12 20 691 0.1+ 0.2− | 2003 12 21 704 1.4+ 1.0+   | 2007 11 13 691 0.3− 0.1− |
| 1999 12 02 691 0.0 0.1−  | 2003 12 21 704 0.9+ 0.5+   | 2007 11 13 691 0.1− 0.1− |

## 2007 DEC. 24

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 02 | 691 | 0.1+ | 0.0  | 2003 12 21 | 704 | (1.6+ | 1.3+) | 2007 11 13 | 703 | 1.1+ | 0.1- |
| 1999 12 02 | 691 | 0.4- | 0.1- | 2003 12 21 | 704 | 0.7+  | 0.9+  | 2007 11 13 | 703 | 0.8+ | 0.1+ |
| 1999 12 08 | 691 | 0.2+ | 0.4- | 2003 12 21 | 704 | (1.1+ | 2.1+) | 2007 11 20 | 704 | 0.1- | 0.1+ |
| 1999 12 08 | 691 | 0.1- | 0.2- | 2003 12 21 | 704 | 1.0+  | 1.4+  | 2007 11 20 | 704 | 0.6+ | 0.0  |
| 1999 12 08 | 691 | 0.0  | 0.4- | 2003 12 24 | 704 | 0.9+  | 0.0   | 2007 11 20 | 704 | 0.5+ | 0.5- |
| 2003 12 17 | 291 | 0.8- | 1.0+ | 2003 12 24 | 704 | 1.3+  | 0.2-  | 2007 12 10 | 704 | 0.9- | 0.7+ |
| 2003 12 17 | 291 | 0.4- | 0.5- | 2003 12 24 | 704 | 0.7-  | 0.1+  | 2007 12 10 | 704 | 0.4+ | 0.5- |
| 2003 12 17 | 291 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.1-  | 0.1-  | 2007 12 10 | 704 | 0.2+ | 1.0- |
| 2003 12 18 | 704 | 0.2+ | 0.2+ | 2007 11 01 | 691 | 0.1-  | 0.0   | 2007 12 14 | 704 | 0.5- | 0.1+ |
| 2003 12 18 | 704 | 0.4+ | 0.1+ | 2007 11 01 | 691 | 0.2-  | 0.0   | 2007 12 14 | 704 | 0.7+ | 0.1+ |
| 2003 12 18 | 704 | 0.7- | 0.3+ | 2007 11 05 | 691 | 0.2-  | 0.0   | 2007 12 14 | 704 | 0.8+ | 0.8+ |
| 2003 12 18 | 704 | 0.6- | 0.7+ | 2007 11 05 | 691 | 0.1-  | 0.1-  | 2007 12 14 | 704 | 0.6+ | 0.5+ |

2003 YU<sub>12</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 281.73369  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22404767 | $\omega$ | 73.26571 | -0.84053192 | -0.50257530 |
| <i>a</i> | 2.6847824  | $\Omega$ | 76.15631 | +0.38275239 | -0.81514493 |
| <i>e</i> | 0.1300594  | <i>i</i> | 12.02563 | +0.38341452 | -0.28802225 |
| <i>P</i> | 4.40       | <i>H</i> | 15.8     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 04 11 | 691 | 0.2+ | 0.6+ | 2003 12 27 | 704 | 0.0   | 0.4-  | 2005 05 21 | G96 | 0.6+  | 0.1+  |
| 1996 04 11 | 691 | 0.2+ | 0.2- | 2003 12 28 | 691 | 0.1+  | 0.0   | 2005 05 21 | G96 | 0.3-  | 0.2+  |
| 1996 04 11 | 691 | 0.1- | 0.1+ | 2003 12 28 | 691 | 0.0   | 0.2+  | 2005 05 21 | G96 | 0.3+  | 0.6+  |
| 2003 12 17 | 699 | 0.7+ | 0.1- | 2003 12 28 | 691 | 0.0   | 0.1+  | 2005 05 21 | G96 | 0.0   | 0.5+  |
| 2003 12 17 | 699 | 0.1- | 0.6- | 2003 12 29 | 704 | 0.2+  | 0.3-  | 2007 11 20 | G96 | 0.0   | 0.2+  |
| 2003 12 17 | 699 | 0.8+ | 0.3- | 2003 12 29 | 704 | 0.2-  | 0.6-  | 2007 11 20 | G96 | 0.1-  | 0.0   |
| 2003 12 17 | 699 | 0.2- | 1.3- | 2003 12 29 | 704 | 0.2+  | 0.7-  | 2007 11 20 | G96 | 0.2-  | 0.1-  |
| 2003 12 17 | 699 | 0.1+ | 0.8+ | 2003 12 29 | 704 | 0.0   | 0.9-  | 2007 11 20 | G96 | 0.1-  | 0.3+  |
| 2003 12 17 | 699 | 0.2+ | 1.5+ | 2003 12 29 | 704 | 0.5-  | 0.1+  | 2007 11 21 | G96 | 0.4-  | 0.1+  |
| 2003 12 17 | 699 | 0.9+ | 0.2- | 2004 01 16 | 699 | 0.1+  | 0.2+  | 2007 11 21 | G96 | 0.1+  | 0.2+  |
| 2003 12 17 | 699 | 0.2- | 0.5+ | 2004 01 16 | 699 | 0.5-  | 0.4+  | 2007 11 21 | G96 | 0.1+  | 0.2+  |
| 2003 12 18 | 704 | 0.2+ | 0.5+ | 2004 01 16 | 699 | 0.5-  | 0.1+  | 2007 11 21 | G96 | 0.4-  | 0.2+  |
| 2003 12 18 | 704 | 0.0  | 0.6+ | 2004 01 16 | 699 | 0.6-  | 0.3-  | 2007 12 04 | 704 | 0.7-  | 0.7+  |
| 2003 12 18 | 704 | 0.4+ | 0.5+ | 2004 01 19 | 704 | (8.5+ | 0.3-) | 2007 12 04 | 704 | (0.2+ | 1.8+) |
| 2003 12 18 | 704 | 0.3+ | 0.5- | 2004 01 19 | 704 | (7.1+ | 0.3+) | 2007 12 04 | 704 | 0.1+  | 1.0+  |
| 2003 12 27 | 704 | 0.2+ | 0.5- | 2004 01 19 | 704 | (8.3+ | 0.6-) | 2007 12 04 | 704 | 0.7-  | 1.4+  |
| 2003 12 27 | 704 | 0.9- | 0.9- | 2004 01 19 | 704 | (8.2+ | 0.5-) |            |     |       |       |

2003 YS<sub>16</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 329.49567  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23180861 | $\omega$ | 24.85455 | -0.13561681 | -0.98774788 |
| <i>a</i> | 2.6245187  | $\Omega$ | 73.01563 | +0.89497388 | -0.15556448 |
| <i>e</i> | 0.1703817  | <i>i</i> | 4.63091  | +0.42500568 | +0.01240203 |
| <i>P</i> | 4.25       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 17 | 691 | 0.0   | 0.1-  | 2003 12 28 | 691 | 0.1- | 0.4- | 2007 12 03 | 703 | 0.6+  | 0.1-  |
| 2003 12 17 | 691 | 0.2-  | 0.0   | 2004 01 22 | 704 | 0.1- | 1.2+ | 2007 12 03 | 703 | 0.2+  | 0.4-  |
| 2003 12 17 | 691 | 0.1-  | 0.1-  | 2004 01 22 | 704 | 0.5+ | 0.6+ | 2007 12 04 | 699 | 0.5+  | 0.4-  |
| 2003 12 18 | 704 | 0.0   | 0.4+  | 2004 01 22 | 704 | 0.1+ | 1.2+ | 2007 12 04 | 699 | 0.6+  | 1.0+  |
| 2003 12 18 | 704 | 0.0   | 0.1-  | 2004 01 22 | 704 | 0.4+ | 0.4+ | 2007 12 04 | G96 | 0.1-  | 0.1-  |
| 2003 12 18 | 704 | 0.2-  | 0.4-  | 2005 06 13 | G96 | 0.2+ | 0.3+ | 2007 12 04 | 699 | 0.8+  | 0.3-  |
| 2003 12 18 | 704 | 1.2-  | 0.4+  | 2005 06 13 | G96 | 0.2+ | 0.2+ | 2007 12 04 | G96 | 0.3-  | 0.2-  |
| 2003 12 18 | 704 | 0.8-  | 0.4-  | 2005 06 13 | G96 | 0.1+ | 0.3+ | 2007 12 04 | G96 | 0.1+  | 0.1-  |
| 2003 12 22 | 704 | 0.5+  | 0.5+  | 2005 06 13 | G96 | 0.1- | 0.2+ | 2007 12 04 | G96 | 0.1-  | 0.2-  |
| 2003 12 22 | 704 | 0.5+  | 0.4+  | 2007 10 24 | G96 | 0.5+ | 0.3- | 2007 12 04 | 699 | 0.2-  | 0.5+  |
| 2003 12 22 | 704 | 0.2+  | 0.1+  | 2007 10 24 | G96 | 0.3+ | 0.1+ | 2007 12 05 | 704 | 0.4-  | 0.7+  |
| 2003 12 22 | 704 | (0.3- | 1.6+) | 2007 11 09 | 691 | 0.2- | 0.3+ | 2007 12 05 | 704 | (0.6- | 1.8+) |
| 2003 12 22 | 704 | 0.4+  | 0.7+  | 2007 11 09 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.2-  | 0.1+  |
| 2003 12 27 | 704 | 0.1-  | 0.0   | 2007 11 09 | 691 | 0.2- | 0.3+ | 2007 12 05 | 704 | 0.1+  | 0.4+  |
| 2003 12 27 | 704 | 0.1-  | 0.2-  | 2007 11 29 | D35 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.1+  | 0.5+  |
| 2003 12 27 | 704 | 0.9+  | 0.4+  | 2007 11 29 | D35 | 0.1- | 0.2- | 2007 12 15 | G96 | 0.2+  | 0.4-  |
| 2003 12 27 | 704 | 0.1+  | 0.1+  | 2007 11 29 | D35 | 0.1- | 0.0  | 2007 12 15 | G96 | 0.4+  | 0.5-  |

## M.P.O. 129681

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 691 | 0.1+ | 0.3- | 2007 12 03 | 703 | 0.2- | 0.2- | 2007 12 15 | G96 | 0.2+ | 0.7- |
| 2003 12 28 | 691 | 0.1- | 0.4- | 2007 12 03 | 703 | 0.5- | 0.4+ | 2007 12 15 | G96 | 0.2+ | 0.9- |

2003 YZ<sub>19</sub> = 2000 EK<sub>207</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 352.48607  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23344905 | $\omega$ | 69.99411  | +0.35423149 | -0.93515763 |
| <i>a</i> | 2.6122093  | $\Omega$ | 359.25897 | +0.84267795 | +0.31943570 |
| <i>e</i> | 0.2050145  | <i>i</i> | 2.24583   | +0.40547986 | +0.15310467 |
| <i>P</i> | 4.22       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 03 11 | 691 | 0.1+ | 0.0  | 2004 01 22 | 704 | 0.4+ | 0.3- | 2007 11 17 | 691 | 0.4-  | 0.0   |
| 2000 03 11 | 691 | 0.3- | 0.6+ | 2004 01 22 | 704 | 0.7+ | 0.4+ | 2007 11 20 | 704 | (1.6- | 0.0)  |
| 2000 03 11 | 691 | 0.4+ | 0.0  | 2007 11 06 | 691 | 0.1+ | 0.0  | 2007 11 20 | 704 | 0.2+  | 0.0   |
| 2003 12 17 | 691 | 0.2+ | 0.4- | 2007 11 06 | 691 | 0.1- | 0.1- | 2007 11 20 | 704 | 0.1-  | 1.0+  |
| 2003 12 17 | 691 | 0.0  | 0.0  | 2007 11 06 | 691 | 0.2- | 0.0  | 2007 11 20 | 704 | 0.8-  | 0.2-  |
| 2003 12 17 | 691 | 0.0  | 0.5+ | 2007 11 10 | D29 | 0.9+ | 0.0  | 2007 12 10 | 704 | 0.7+  | 0.0   |
| 2003 12 19 | 691 | 0.3- | 0.2- | 2007 11 10 | D29 | 0.2+ | 0.4- | 2007 12 10 | 704 | 0.7+  | 0.6+  |
| 2003 12 19 | 691 | 0.1- | 0.1- | 2007 11 10 | D29 | 0.5+ | 0.1- | 2007 12 10 | 704 | 0.3+  | 0.4+  |
| 2003 12 19 | 691 | 0.2- | 0.2- | 2007 11 10 | D29 | 0.3+ | 0.5- | 2007 12 10 | 704 | (1.0+ | 1.6+) |
| 2004 01 13 | 699 | 1.0- | 0.1- | 2007 11 15 | 704 | 0.3+ | 1.1+ | 2007 12 15 | 704 | 0.0   | 0.3+  |
| 2004 01 13 | 699 | 0.9- | 0.2- | 2007 11 15 | 704 | 0.5+ | 0.1- | 2007 12 15 | 704 | 0.3-  | 0.3-  |
| 2004 01 13 | 699 | 0.8+ | 0.2- | 2007 11 15 | 704 | 0.2+ | 0.0  | 2007 12 15 | 704 | 0.4-  | 0.4+  |
| 2004 01 13 | 699 | 0.1- | 0.3- | 2007 11 15 | 704 | 0.2+ | 0.9+ | 2007 12 15 | 704 | 0.4-  | 0.6-  |
| 2004 01 22 | 704 | 0.2- | 0.5- | 2007 11 15 | 704 | 0.1- | 0.2+ | 2007 12 15 | 704 | 0.3-  | 0.4-  |
| 2004 01 22 | 704 | 0.6+ | 0.2+ | 2007 11 17 | 691 | 0.2- | 0.2+ |            |     |       |       |
| 2004 01 22 | 704 | 0.6+ | 0.7- | 2007 11 17 | 691 | 0.0  | 0.1- |            |     |       |       |

2003 YY<sub>20</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 332.31764  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22934634 | $\omega$ | 153.81820 | -0.06501578 | -0.99423349 |
| <i>a</i> | 2.6432699  | $\Omega$ | 299.80314 | +0.89742742 | -0.02088720 |
| <i>e</i> | 0.1421387  | <i>i</i> | 5.64006   | +0.43634502 | -0.10518310 |
| <i>P</i> | 4.30       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 17 | 691 | 0.5- | 0.2- | 2003 12 29 | 699 | 0.2- | 0.6- | 2007 12 12 | 704 | 1.1-  | 0.2-  |
| 2003 12 17 | 691 | 0.0  | 0.1- | 2003 12 29 | 699 | 1.2+ | 1.3+ | 2007 12 13 | 704 | 0.3+  | 0.0   |
| 2003 12 17 | 691 | 0.1- | 0.2+ | 2004 01 21 | 704 | 0.5- | 0.1+ | 2007 12 13 | 704 | 0.8+  | 0.9-  |
| 2003 12 19 | 691 | 0.1- | 0.0  | 2004 01 21 | 704 | 0.3- | 0.7+ | 2007 12 13 | 704 | 0.0   | 0.5-  |
| 2003 12 19 | 691 | 0.4+ | 0.0  | 2004 01 21 | 704 | 0.6+ | 0.2+ | 2007 12 13 | 704 | 1.0-  | 0.3-  |
| 2003 12 19 | 691 | 0.3+ | 0.0  | 2004 01 27 | 691 | 0.1- | 0.0  | 2007 12 13 | 704 | 0.4+  | 0.6+  |
| 2003 12 21 | 691 | 0.1+ | 0.2+ | 2004 01 27 | 691 | 0.0  | 0.1- | 2007 12 15 | 704 | 0.3-  | 0.4-  |
| 2003 12 21 | 691 | 0.1- | 0.0  | 2004 01 27 | 691 | 0.0  | 0.1- | 2007 12 15 | 704 | 0.6+  | 0.7+  |
| 2003 12 21 | 691 | 0.1- | 0.1+ | 2007 12 12 | 704 | 0.1- | 0.6+ | 2007 12 15 | 704 | 0.0   | 0.2-  |
| 2003 12 29 | 699 | 0.3- | 0.4- | 2007 12 12 | 704 | 0.1+ | 0.3+ | 2007 12 15 | 704 | 0.2-  | 0.2+  |
| 2003 12 29 | 699 | 0.2+ | 1.0- | 2007 12 12 | 704 | 0.5+ | 0.2+ | 2007 12 15 | 704 | (1.6+ | 0.4-) |

2003 YO<sub>27</sub> = 2007 VT<sub>92</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 338.03511  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23325147 | $\omega$ | 166.19332 | +0.48168021 | -0.85592970 |
| <i>a</i> | 2.6136843  | $\Omega$ | 254.72228 | +0.78439208 | +0.51678898 |
| <i>e</i> | 0.1698507  | <i>i</i> | 11.24209  | +0.39078541 | +0.01770592 |
| <i>P</i> | 4.23       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |     |
|------------|-----|-------|-------|------------|-----|------|-----|
| 2003 11 21 | 704 | (0.4- | 2.3+) | 2003 12 17 | 291 | 1.2- | 0.0 |
|------------|-----|-------|-------|------------|-----|------|-----|

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 704 | 0.1+ | 0.3+ | 2003 12 19 | 704 | 0.2+ | 0.3- | 2007 11 09 | 704 | 0.5+ | 1.0- |
| 2003 11 24 | 704 | 0.0  | 0.8+ | 2007 11 02 | G96 | 0.5- | 0.0  | 2007 11 09 | 704 | 0.2+ | 0.4- |
| 2003 11 24 | 704 | 0.2+ | 0.4+ | 2007 11 02 | G96 | 0.2- | 0.2- | 2007 11 09 | 704 | 0.9+ | 0.0  |
| 2003 11 30 | 691 | 0.2- | 0.1+ | 2007 11 02 | G96 | 0.5- | 0.1- | 2007 11 09 | 704 | 0.1- | 1.4- |
| 2003 11 30 | 691 | 0.1- | 0.3+ | 2007 11 02 | G96 | 0.3- | 0.0  | 2007 11 09 | 704 | 0.0  | 0.5+ |
| 2003 11 30 | 691 | 0.1- | 0.3+ | 2007 11 03 | 704 | 0.6+ | 0.4+ |            |     |      |      |

**2003 YG<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 333.84786  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22479815 | $\omega$ | 337.19790 | +0.22351612   | -0.94974389 |
| <i>a</i> | 2.6788037  | $\Omega$ | 99.32442  | +0.92501294   | +0.13581989 |
| <i>e</i> | 0.1632570  | <i>i</i> | 12.83154  | +0.30723218   | +0.28202747 |
| <i>P</i> | 4.38       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 23 | 291 | 0.3- | 0.1+ | 2003 12 21 | 704 | (0.5- | 1.6+) | 2007 10 19 | 703 | 1.0- | 0.9+ |
| 2001 05 23 | 291 | 0.1- | 0.1+ | 2003 12 29 | 691 | 0.0   | 0.0   | 2007 11 07 | 703 | 0.3- | 0.8- |
| 2001 05 23 | 291 | 0.6+ | 0.5+ | 2003 12 29 | 691 | 0.2-  | 0.0   | 2007 11 07 | 703 | 0.8- | 0.3- |
| 2003 12 01 | 704 | 0.4+ | 0.5- | 2003 12 29 | 691 | 0.0   | 0.1+  | 2007 11 07 | 703 | 0.7+ | 0.1- |
| 2003 12 01 | 704 | 0.3- | 0.6- | 2004 01 17 | 644 | 0.3-  | 0.7+  | 2007 11 07 | 703 | 0.3- | 1.0+ |
| 2003 12 01 | 704 | 0.3+ | 0.5+ | 2004 01 17 | 644 | 0.3-  | 0.9+  | 2007 11 15 | 703 | 0.6- | 0.2+ |
| 2003 12 01 | 704 | 0.1+ | 0.2- | 2004 01 17 | 644 | 0.1-  | 1.0+  | 2007 11 15 | 703 | 0.4+ | 0.8+ |
| 2003 12 17 | 691 | 0.0  | 0.0  | 2004 01 22 | 704 | 0.6+  | 0.2+  | 2007 11 15 | 703 | 0.3- | 0.3- |
| 2003 12 17 | 691 | 0.1- | 0.3- | 2004 01 22 | 704 | 0.0   | 0.8+  | 2007 11 15 | 703 | 0.4- | 0.2+ |
| 2003 12 17 | 691 | 0.3- | 0.1- | 2004 01 22 | 704 | 0.7+  | 0.5+  | 2007 11 18 | 699 | 0.8- | 0.1+ |
| 2003 12 19 | 704 | 0.3+ | 0.4+ | 2004 01 22 | 704 | 0.5+  | 0.1+  | 2007 11 18 | 699 | 0.0  | 0.1- |
| 2003 12 19 | 704 | 0.7- | 0.1- | 2007 10 10 | 703 | (0.1+ | 1.8+) | 2007 11 18 | 699 | 1.1+ | 1.2- |
| 2003 12 19 | 704 | 0.4+ | 0.3- | 2007 10 10 | 703 | 0.7+  | 1.2+  | 2007 11 18 | 699 | 1.1+ | 0.5- |
| 2003 12 19 | 704 | 0.0  | 0.2+ | 2007 10 10 | 703 | 1.0-  | 0.7+  | 2007 12 06 | 703 | 1.0- | 0.3- |
| 2003 12 19 | 704 | 1.3+ | 0.5+ | 2007 10 10 | 703 | 0.4-  | 1.2+  | 2007 12 06 | 703 | 1.0+ | 0.5- |
| 2003 12 21 | 704 | 0.2- | 0.2- | 2007 10 19 | 703 | 0.4+  | 0.2+  | 2007 12 06 | 703 | 0.3+ | 0.2+ |
| 2003 12 21 | 704 | 0.0  | 0.4- | 2007 10 19 | 703 | 0.1-  | 0.2-  | 2007 12 06 | 703 | 0.2+ | 1.1- |
| 2003 12 21 | 704 | 0.4+ | 0.6- | 2007 10 19 | 703 | 0.1+  | 0.5+  |            |     |      |      |

**2003 YR<sub>31</sub> = 2007 VM<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 326.65833  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23605807 | $\omega$ | 24.84004 | -0.08490321   | -0.99404871 |
| <i>a</i> | 2.5929261  | $\Omega$ | 70.09035 | +0.90161067   | -0.10580559 |
| <i>e</i> | 0.2250261  | <i>i</i> | 4.16292  | +0.42413400   | +0.02592935 |
| <i>P</i> | 4.18       | <i>H</i> | 17.2     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 18 | 704 | 0.3-  | 1.0+  | 2005 05 07 | G96 | 0.2- | 0.1- | 2007 11 07 | 704 | 0.7+  | 0.1+  |
| 2003 12 18 | 704 | 0.2-  | 0.8+  | 2005 05 07 | G96 | 0.6- | 0.2+ | 2007 11 07 | 703 | 0.5+  | 0.3+  |
| 2003 12 18 | 704 | 0.8-  | 0.5+  | 2005 05 07 | G96 | 0.1+ | 0.3+ | 2007 11 07 | 703 | 0.5-  | 0.8-  |
| 2003 12 18 | 704 | 0.2+  | 0.6+  | 2005 05 07 | G96 | 1.0+ | 0.5+ | 2007 11 07 | 703 | 0.6+  | 0.5-  |
| 2003 12 19 | 704 | 0.3-  | 0.5-  | 2007 10 08 | G96 | 0.1- | 0.5- | 2007 11 07 | 703 | 0.1+  | 0.7+  |
| 2003 12 19 | 704 | 0.1-  | 0.4-  | 2007 10 08 | G96 | 0.2- | 0.4- | 2007 11 14 | 704 | (0.2+ | 1.7+) |
| 2003 12 19 | 704 | 0.5-  | 0.3-  | 2007 10 08 | G96 | 0.2+ | 0.5- | 2007 11 14 | 704 | 0.2+  | 0.5+  |
| 2003 12 19 | 704 | 0.5+  | 0.6-  | 2007 10 08 | G96 | 0.1+ | 0.5- | 2007 11 14 | 704 | 0.5+  | 0.3+  |
| 2003 12 19 | 704 | 0.2-  | 0.1-  | 2007 10 21 | 691 | 0.2- | 0.2- | 2007 11 14 | 704 | 0.6+  | 0.0   |
| 2003 12 20 | 704 | 0.9+  | 0.1-  | 2007 10 21 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.1+  | 1.4+  |
| 2003 12 20 | 704 | 0.0   | 0.3+  | 2007 10 21 | 691 | 0.1- | 0.1+ | 2007 11 20 | 291 | 0.4-  | 0.2-  |
| 2003 12 20 | 704 | 0.3-  | 0.5-  | 2007 11 03 | 691 | 0.2- | 0.1- | 2007 11 20 | 291 | 0.3-  | 0.0   |
| 2003 12 20 | 704 | 0.9+  | 0.2+  | 2007 11 03 | 691 | 0.2- | 0.0  | 2007 11 20 | 291 | 0.1-  | 0.2-  |
| 2003 12 20 | 704 | 0.2+  | 0.2+  | 2007 11 03 | 691 | 0.3- | 0.1- | 2007 12 03 | 703 | 0.2-  | 0.6-  |
| 2003 12 22 | 704 | 0.9+  | 0.3+  | 2007 11 05 | 704 | 1.0+ | 0.7+ | 2007 12 03 | 703 | 0.2+  | 0.4+  |
| 2003 12 22 | 704 | 0.0   | 0.8-  | 2007 11 05 | 704 | 0.5+ | 0.2+ | 2007 12 03 | 703 | 0.5-  | 0.8-  |
| 2003 12 22 | 704 | (2.1+ | 0.4+) | 2007 11 05 | 704 | 0.6+ | 0.9+ | 2007 12 03 | 703 | 0.7-  | 0.6-  |
| 2003 12 22 | 704 | 0.4+  | 0.6+  | 2007 11 05 | 704 | 0.4- | 0.9+ | 2007 12 05 | 704 | 0.5+  | 0.7-  |
| 2003 12 27 | 704 | 0.2-  | 0.5-  | 2007 11 07 | 704 | 1.5+ | 0.8+ | 2007 12 05 | 704 | 0.2+  | 0.3+  |
| 2003 12 27 | 704 | 0.5-  | 0.6-  | 2007 11 07 | 704 | 0.5+ | 0.5+ | 2007 12 05 | 704 | 1.0+  | 0.3+  |
| 2003 12 27 | 704 | 0.5-  | 0.3-  | 2007 11 07 | 704 | 0.3- | 0.2+ | 2007 12 05 | 704 | 0.1-  | 0.8+  |

**2003 YD<sub>33</sub> = 2007 VO<sub>300</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 4.11567    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.24632689 | $\omega$ | 272.09560 | +0.63608163   | -0.76763426 |
| <i>a</i> | 2.5203538  | $\Omega$ | 138.06138 | +0.74634059   | +0.58628518 |
| <i>e</i> | 0.1910457  | <i>i</i> | 6.73186   | +0.19589764   | +0.25885776 |
| <i>P</i> | 4.00       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 691 | 0.0   | 0.2-  | 2003 12 20 | 704 | 0.5- | 0.2- | 2007 11 15 | 703 | 0.0  | 0.1+ |
| 2003 11 24 | 691 | 0.1+  | 0.3-  | 2003 12 20 | 704 | 0.6- | 0.4+ | 2007 12 05 | 699 | 0.6- | 0.1+ |
| 2003 11 24 | 691 | 0.0   | 0.2-  | 2003 12 20 | 704 | 0.0  | 0.1- | 2007 12 05 | 699 | 0.3+ | 0.3- |
| 2003 12 16 | 703 | (0.6+ | 1.7+) | 2003 12 20 | 704 | 0.1- | 0.3- | 2007 12 05 | 699 | 0.3+ | 0.4- |
| 2003 12 16 | 703 | (1.7+ | 0.8-) | 2007 11 14 | 699 | 0.0  | 0.3- | 2007 12 05 | 699 | 0.1- | 0.4+ |
| 2003 12 16 | 703 | 0.7+  | 0.1-  | 2007 11 14 | 699 | 0.2- | 0.8- | 2007 12 16 | 704 | 0.4+ | 1.1+ |
| 2003 12 16 | 703 | 0.8+  | 0.6+  | 2007 11 14 | 699 | 0.4- | 0.2+ | 2007 12 16 | 704 | 0.8- | 0.8+ |
| 2003 12 16 | 691 | 0.1-  | 0.3-  | 2007 11 14 | 699 | 0.5+ | 1.4+ | 2007 12 16 | 704 | 0.3+ | 0.7+ |
| 2003 12 16 | 691 | 0.3+  | 0.3-  | 2007 11 15 | 703 | 0.2+ | 0.2+ | 2007 12 16 | 704 | 0.6- | 0.5+ |
| 2003 12 16 | 691 | 0.2+  | 0.3-  | 2007 11 15 | 703 | 0.5+ | 1.0+ |            |     |      |      |
| 2003 12 20 | 704 | 1.2-  | 1.2+  | 2007 11 15 | 703 | 0.8- | 0.3+ |            |     |      |      |

**2003 YF<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 329.41648  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.24049104 | $\omega$ | 228.04675 | -0.07447836   | -0.98858627 |
| <i>a</i> | 2.5609639  | $\Omega$ | 226.73200 | +0.95987062   | -0.03546272 |
| <i>e</i> | 0.1515312  | <i>i</i> | 10.36101  | +0.27037266   | -0.14642260 |
| <i>P</i> | 4.10       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 22 | 691 | 0.1+  | 0.0   | 2007 10 09 | G96 | 0.4+ | 0.8- | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 2001 05 22 | 691 | 0.1-  | 0.3+  | 2007 10 09 | G96 | 0.2- | 0.2- | 2007 11 20 | G96 | 0.3+ | 0.3- |
| 2001 05 22 | 691 | 0.0   | 0.1+  | 2007 10 09 | G96 | 0.2- | 0.1- | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 2003 12 01 | 704 | 0.5-  | 0.3+  | 2007 10 09 | G96 | 0.3+ | 0.1- | 2007 11 29 | 704 | 0.1+ | 0.1- |
| 2003 12 01 | 704 | 0.5+  | 1.3-  | 2007 11 14 | 300 | 0.3+ | 0.0  | 2007 11 29 | 704 | 0.1+ | 0.2- |
| 2003 12 01 | 704 | 0.6-  | 0.4-  | 2007 11 14 | 300 | 0.1- | 0.6+ | 2007 11 29 | 704 | 0.2+ | 0.4- |
| 2003 12 01 | 704 | 0.6-  | 0.6+  | 2007 11 14 | 300 | 0.3- | 1.3+ | 2007 11 29 | 704 | 0.4- | 1.0+ |
| 2003 12 18 | 608 | 0.7+  | 0.5+  | 2007 11 14 | 300 | 0.5+ | 0.0  | 2007 12 04 | 704 | 0.2- | 0.2- |
| 2003 12 18 | 608 | 0.9+  | 0.4+  | 2007 11 14 | 300 | 0.4- | 0.4+ | 2007 12 04 | 704 | 0.4- | 0.3+ |
| 2003 12 18 | 608 | 0.7+  | 0.8+  | 2007 11 14 | 300 | 0.3+ | 0.7+ | 2007 12 04 | 704 | 0.1+ | 0.2+ |
| 2003 12 20 | 704 | 0.4-  | 0.2-  | 2007 11 18 | 699 | 0.7- | 0.4- | 2007 12 04 | 704 | 0.1- | 0.3- |
| 2003 12 20 | 704 | 0.3+  | 0.1-  | 2007 11 18 | 699 | 0.4+ | 1.1- | 2007 12 04 | 704 | 0.1- | 0.4+ |
| 2003 12 20 | 704 | (2.0+ | 0.5-) | 2007 11 18 | 699 | 0.2- | 0.9- | 2007 12 05 | 699 | 0.2+ | 0.1- |
| 2003 12 20 | 704 | 0.1-  | 0.6-  | 2007 11 18 | 699 | 0.1- | 0.7- | 2007 12 05 | 699 | 0.3- | 1.1+ |
| 2003 12 20 | 704 | 0.4-  | 0.1+  | 2007 11 18 | 300 | 0.0  | 0.0  | 2007 12 05 | 699 | 0.1- | 0.2+ |
| 2004 02 11 | 644 | 0.2-  | 0.1-  | 2007 11 18 | 300 | 0.1+ | 0.1- | 2007 12 05 | 699 | 0.2- | 0.2+ |
| 2004 02 11 | 644 | 0.1-  | 0.5-  | 2007 11 18 | 300 | 0.7- | 0.8+ | 2007 12 06 | G96 | 0.3- | 0.2- |
| 2004 02 11 | 644 | 0.1-  | 0.1-  | 2007 11 20 | 703 | 0.5- | 0.7+ | 2007 12 06 | G96 | 0.0  | 0.2- |
| 2005 06 12 | G96 | 0.2-  | 0.4-  | 2007 11 20 | 703 | 0.1+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.3- |
| 2005 06 12 | G96 | 0.0   | 0.6-  | 2007 11 20 | 703 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.0  | 0.1- |
| 2005 06 12 | G96 | 0.3+  | 0.1+  | 2007 11 20 | 703 | 0.3+ | 0.2+ |            |     |      |      |
| 2005 06 12 | G96 | 0.1+  | 0.1+  | 2007 11 20 | G96 | 0.5+ | 0.3- |            |     |      |      |

**2003 YW<sub>39</sub> = 2004 BZ<sub>160</sub> = 2007 VA<sub>120</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 303.69576  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20305578 | $\omega$ | 357.73223 | +0.04358662 | -0.99746346 |
| $a$ | 2.8667676  | $\Omega$ | 89.76605  | +0.91749363 | +0.01767403 |
| $e$ | 0.0756175  | $i$      | 3.22604   | +0.39535510 | +0.06895131 |
| $P$ | 4.85       | $H$      | 16.5      | $G$ 0.15    | $U$ 3       |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 691 | 0.0  | 0.0  | 2007 09 20 | 691 | 0.1− | 0.0  | 2007 11 05 | 691 | 0.2+ | 0.3+ |
| 2003 12 21 | 691 | 0.2− | 0.1− | 2007 09 20 | 691 | 0.0  | 0.2− | 2007 11 05 | 691 | 0.2− | 0.1+ |
| 2003 12 21 | 691 | 0.0  | 0.1− | 2007 09 20 | 691 | 0.1− | 0.1+ | 2007 11 07 | 691 | 0.1− | 0.1+ |
| 2004 01 27 | 691 | 0.2+ | 0.2+ | 2007 10 09 | G96 | 0.2+ | 0.2− | 2007 11 07 | 691 | 0.1− | 0.3+ |
| 2004 01 27 | 691 | 0.2+ | 0.1+ | 2007 10 09 | G96 | 0.5+ | 0.3− | 2007 11 07 | 691 | 0.2− | 0.2− |
| 2004 01 27 | 691 | 0.1+ | 0.4+ | 2007 10 09 | G96 | 0.2+ | 0.4− | 2007 11 09 | 691 | 0.1− | 0.6+ |
| 2005 04 06 | 691 | 0.5− | 0.0  | 2007 10 09 | G96 | 0.6+ | 0.4− | 2007 11 09 | 691 | 0.0  | 0.1− |
| 2005 04 06 | 691 | 0.3+ | 0.1+ | 2007 10 19 | G96 | 0.5+ | 0.1− | 2007 11 09 | 691 | 0.1+ | 0.1+ |
| 2005 04 06 | 691 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.4− |            |     |      |      |

2003 YT<sub>40</sub> = 2007 UP<sub>107</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 311.52322  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.19929018 | <i>ω</i> | 134.93627 | +0.23010162 |      | −0.97305674 |   |  |  |  |  |
| <i>a</i>                                | 2.9027666  | <i>Ω</i> | 301.75543 | +0.88795049 |      | +0.21607801 |   |  |  |  |  |
| <i>e</i>                                | 0.0207146  | <i>i</i> | 0.98540   | +0.39824262 |      | +0.08044180 |   |  |  |  |  |
| <i>P</i>                                | 4.95       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 01 | 691 | 0.2+ | 0.0  | 2005 03 11 | G96 | 0.2− | 0.3− | 2007 10 18 | G96 | 0.3+ | 0.1+ |
| 1997 11 01 | 691 | 0.2+ | 0.2+ | 2005 03 11 | G96 | 0.4− | 0.0  | 2007 10 30 | 691 | 0.4− | 0.3+ |
| 1997 11 01 | 691 | 0.5− | 0.1− | 2005 03 11 | G96 | 0.6− | 0.0  | 2007 10 30 | 691 | 0.3− | 0.3+ |
| 2003 12 19 | 691 | 0.1+ | 0.0  | 2005 04 17 | 691 | 0.2+ | 0.4+ | 2007 10 30 | 691 | 0.1+ | 0.0  |
| 2003 12 19 | 691 | 0.2+ | 0.1− | 2005 04 17 | 691 | 0.2+ | 0.6+ | 2007 11 04 | 691 | 0.1+ | 0.1+ |
| 2003 12 19 | 691 | 0.5+ | 0.1− | 2005 04 17 | 691 | 0.5+ | 0.2+ | 2007 11 04 | 691 | 0.3− | 0.2+ |
| 2003 12 21 | 291 | 0.6− | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.3+ | 2007 11 04 | 691 | 0.3− | 0.2+ |
| 2003 12 21 | 291 | 0.4− | 0.1+ | 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.6+ | 0.2+ |
| 2003 12 21 | 691 | 0.4+ | 0.1− | 2007 09 14 | G96 | 0.5− | 0.2− | 2007 11 05 | G96 | 0.8+ | 0.0  |
| 2003 12 21 | 291 | 0.6− | 0.1− | 2007 09 14 | G96 | 0.1− | 0.1+ | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2003 12 21 | 691 | 0.1+ | 0.3+ | 2007 10 18 | G96 | 0.3+ | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.2+ |
| 2003 12 21 | 691 | 0.4+ | 0.1− | 2007 10 18 | G96 | 0.2+ | 0.2− |            |     |      |      |
| 2005 03 11 | G96 | 0.5− | 0.1− | 2007 10 18 | G96 | 0.2+ | 0.2− |            |     |      |      |

2003 YG<sub>41</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 261.80160  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.24175983 | <i>ω</i> | 102.67148 | −0.88913933 |      | +0.44487769 |   |  |  |  |  |
| <i>a</i>                                | 2.5519958  | <i>Ω</i> | 103.82753 | −0.45094203 |      | −0.81174510 |   |  |  |  |  |
| <i>e</i>                                | 0.1697055  | <i>i</i> | 6.34478   | −0.07799061 |      | −0.37835663 |   |  |  |  |  |
| <i>P</i>                                | 4.08       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 02 23 | 691 | 0.2+ | 0.1− | 2004 01 22 | 704 | 0.2− | 0.0  | 2007 11 05 | G96 | 0.1− | 0.2− |
| 1992 02 23 | 691 | 0.3− | 0.2− | 2004 01 22 | 704 | 0.4− | 0.2+ | 2007 12 04 | G96 | 0.3− | 0.8− |
| 1992 02 23 | 691 | 0.0  | 0.1+ | 2004 01 22 | 704 | 0.4− | 0.4+ | 2007 12 04 | G96 | 0.2+ | 0.5− |
| 2003 12 19 | 691 | 0.1− | 0.0  | 2004 01 22 | 704 | 0.0  | 0.1− | 2007 12 04 | G96 | 0.2+ | 0.7− |
| 2003 12 19 | 691 | 0.3+ | 0.1+ | 2004 01 27 | 691 | 0.0  | 0.1− | 2007 12 04 | G96 | 0.1+ | 0.5− |
| 2003 12 19 | 691 | 0.0  | 0.2+ | 2004 01 27 | 691 | 0.0  | 0.0  | 2007 12 04 | 691 | 0.2− | 0.3+ |
| 2003 12 21 | 691 | 0.1− | 0.2+ | 2004 01 27 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 691 | 0.3+ | 0.1− |
| 2003 12 21 | 691 | 0.2− | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.2− | 2007 12 04 | 691 | 0.0  | 0.1− |
| 2003 12 21 | 691 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.2− | 0.1+ |            |     |      |      |
| 2004 01 22 | 704 | 0.9+ | 0.2− | 2007 11 05 | G96 | 0.1+ | 0.2− |            |     |      |      |

2003 YK<sub>44</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 17.42417   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.23930730 | <i>ω</i> | 106.32047 | +0.67692607 |      | −0.73368958 |   |  |  |  |  |
| <i>a</i>                                | 2.5694021  | <i>Ω</i> | 300.92415 | +0.64638433 |      | +0.63084006 |   |  |  |  |  |
| <i>e</i>                                | 0.2270761  | <i>i</i> | 3.93788   | +0.35207725 |      | +0.25246866 |   |  |  |  |  |
| <i>P</i>                                | 4.12       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 04 | 291 | 0.0  | 0.2+ | 2004 01 15 | 691 | 0.0  | 0.5+ | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 2002 07 04 | 291 | 0.2− | 0.3+ | 2004 01 15 | 691 | 0.0  | 0.5+ | 2007 12 04 | G96 | 0.4+ | 0.5− |
| 2002 07 04 | 291 | 0.0  | 0.4+ | 2004 01 21 | 704 | 0.6− | 0.1+ | 2007 12 04 | G96 | 0.5+ | 0.6− |

## M.P.O. 129683

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 19 | 691 | 0.2+ | 0.1− | 2004 01 21 | 704 | (0.1+ | 1.7+) | 2007 12 05 | 691 | 0.1+ | 0.3− |
| 2003 12 19 | 691 | 0.2+ | 0.2− | 2004 01 21 | 704 | 1.2+  | 0.3+  | 2007 12 05 | 691 | 0.4− | 0.7+ |
| 2003 12 19 | 691 | 0.3+ | 0.0  | 2004 01 21 | 704 | 0.6+  | 0.0   | 2007 12 05 | 691 | 0.2+ | 0.3− |
| 2003 12 21 | 291 | 0.3− | 0.1+ | 2004 01 24 | 704 | 0.2+  | 0.2+  | 2007 12 10 | 704 | 0.1− | 0.4+ |
| 2003 12 21 | 291 | 0.1− | 0.7− | 2004 01 24 | 704 | 0.2−  | 0.7−  | 2007 12 10 | 704 | 0.1+ | 0.9+ |
| 2003 12 21 | 291 | 0.4− | 0.1+ | 2004 01 24 | 704 | 0.1−  | 0.4−  | 2007 12 10 | 704 | 0.1− | 0.3+ |
| 2004 01 15 | 691 | 0.0  | 0.5+ | 2007 12 04 | G96 | 0.1+  | 0.2+  |            |     |      |      |

2003 YG<sub>61</sub> = 2000 CD<sub>60</sub> = 2007 VV<sub>244</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 342.76056  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.23333963 | <i>ω</i> | 176.29007 | +0.23068328 |      | −0.97040807 |   |  |  |  |  |
| <i>a</i>                                | 2.6130259  | <i>Ω</i> | 260.36277 | +0.89086303 |      | +0.24013384 |   |  |  |  |  |
| <i>e</i>                                | 0.1903846  | <i>i</i> | 4.15126   | +0.39134166 |      | +0.02537566 |   |  |  |  |  |
| <i>P</i>                                | 4.22       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 02 02 | 704 | 0.2+  | 0.3−  | 2003 12 23 | 704 | 0.1+  | 0.4−  | 2007 11 15 | 704 | 0.1+ | 0.6+ |
| 2000 02 02 | 704 | 0.0   | 0.4−  | 2003 12 23 | 704 | 0.3+  | 0.5−  | 2007 11 18 | 300 | 0.9− | 0.3+ |
| 2000 02 02 | 704 | 0.4−  | 0.2+  | 2005 05 16 | G96 | 0.1+  | 0.0   | 2007 11 18 | 300 | 0.3− | 0.5+ |
| 2000 02 02 | 704 | 0.6+  | 0.8+  | 2005 05 16 | G96 | 0.2−  | 0.2+  | 2007 11 18 | 300 | 0.2− | 0.2+ |
| 2000 02 02 | 704 | 0.4+  | 0.3+  | 2005 05 16 | G96 | 0.3+  | 0.1−  | 2007 11 18 | 300 | 0.5− | 0.2+ |
| 2000 02 08 | 704 | 0.1+  | 1.2+  | 2005 05 16 | G96 | 0.0   | 0.1+  | 2007 11 20 | 704 | 0.1+ | 0.1− |
| 2000 02 08 | 704 | 0.4−  | 0.8+  | 2007 10 19 | 699 | 0.7−  | 0.2−  | 2007 11 20 | 704 | 0.4+ | 0.2− |
| 2000 02 08 | 704 | 0.0   | 1.0+  | 2007 10 19 | 699 | 0.7−  | 0.3−  | 2007 11 20 | 704 | 0.3+ | 0.6+ |
| 2000 02 08 | 704 | 0.1+  | 1.6+  | 2007 10 19 | 699 | 0.6−  | 0.4−  | 2007 11 20 | 704 | 0.1− | 1.4− |
| 2000 02 08 | 704 | 0.8+  | 0.5−  | 2007 10 19 | 699 | (2.0+ | 1.3−) | 2007 11 20 | 704 | 0.1+ | 0.5− |
| 2002 08 06 | 644 | 0.0   | 0.5+  | 2007 11 02 | 691 | 0.1−  | 0.0   | 2007 12 03 | 703 | 0.5+ | 0.2− |
| 2002 08 06 | 644 | 0.4−  | 0.9+  | 2007 11 02 | 691 | 0.2−  | 0.2+  | 2007 12 03 | 703 | 0.5− | 0.0  |
| 2002 08 06 | 644 | 0.1−  | 0.8+  | 2007 11 02 | 691 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.1− | 0.3+ |
| 2003 12 19 | 704 | 0.0   | 1.1−  | 2007 11 13 | 703 | 0.1−  | 0.0   | 2007 12 03 | 703 | 0.4+ | 0.2+ |
| 2003 12 19 | 704 | 0.1+  | 0.4+  | 2007 11 13 | 703 | 0.3−  | 0.6+  | 2007 12 10 | 704 | 1.1+ | 0.1+ |
| 2003 12 19 | 704 | 0.2−  | 0.4−  | 2007 11 13 | 703 | 0.0   | 0.1+  | 2007 12 10 | 704 | 0.1− | 0.9− |
| 2003 12 19 | 704 | 0.1−  | 0.1−  | 2007 11 13 | 703 | 0.8−  | 0.2+  | 2007 12 10 | 704 | 0.2− | 0.1+ |
| 2003 12 19 | 704 | 0.7−  | 0.1−  | 2007 11 14 | 300 | 0.9+  | 0.2−  | 2007 12 10 | 704 | 0.2+ | 0.1+ |
| 2003 12 21 | 704 | 0.7−  | 0.4−  | 2007 11 14 | 300 | 0.6+  | 0.7+  | 2007 12 10 | 704 | 0.2+ | 0.1+ |
| 2003 12 21 | 704 | 0.3−  | 0.6−  | 2007 11 14 | 300 | 0.3+  | 0.2+  | 2007 12 15 | G96 | 0.3− | 0.2+ |
| 2003 12 21 | 704 | 0.5−  | 0.6−  | 2007 11 14 | 300 | 0.4+  | 0.3+  | 2007 12 15 | G96 | 0.2− | 0.3+ |
| 2003 12 21 | 704 | (0.1+ | 1.6−) | 2007 11 15 | 704 | 0.4+  | 0.3+  | 2007 12 15 | G96 | 0.0  | 0.2+ |
| 2003 12 23 | 704 | 0.9+  | 0.1−  | 2007 11 15 | 704 | 0.3+  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.4+ |
| 2003 12 23 | 704 | 0.4+  | 0.4−  | 2007 11 15 | 704 | 0.6+  | 0.1−  |            |     |      |      |
| 2003 12 23 | 704 | 0.3+  | 0.2−  | 2007 11 15 | 704 | 0.7+  | 0.1−  |            |     |      |      |

2003 YM<sub>97</sub>

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             | MPC      |             |
| <i>M</i>                                | 311.27451  |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             |
| <i>n</i>                                | 0.21468654 | <i>ω</i> | 313.52073 |          | +0.49299936 |          | −0.86617701 |
| <i>a</i>                                | 2.7622703  | <i>Ω</i> | 106.77411 |          | +0.82084979 |          | +0.43191451 |
| <i>e</i>                                | 0.0788671  | <i>i</i> | 4.90024   |          | +0.28836998 |          | +0.25137074 |
| <i>P</i>                                | 4.59       | <i>H</i> | 16.1      | <i>G</i> | 0.15        | <i>U</i> | 2           |

**2003 YV<sub>97</sub> = 2007 RY<sub>198</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 353.90057  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.22934390 | $\omega$ | 132.36952 | +0.89559592 | -0.40654038 |
| $a$ | 2.6432886  | $\Omega$ | 252.35053 | +0.33169260 | +0.88082349 |
| $e$ | 0.3069499  | $i$      | 10.92762  | +0.29645905 | +0.24264150 |
| $P$ | 4.30       | $H$      | 17.2      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 19 | 704 | 0.5+  | 0.2-  | 2007 09 05 | 699 | 0.3+ | 0.2+ | 2007 10 08 | 703 | 0.6+ | 0.9+ |
| 2003 12 19 | 704 | 0.1+  | 0.0   | 2007 09 13 | 703 | 0.7- | 0.9- | 2007 10 08 | 703 | 1.2+ | 1.2+ |
| 2003 12 19 | 704 | 0.5+  | 0.1-  | 2007 09 13 | 703 | 0.0  | 0.4+ | 2007 10 14 | 703 | 1.1- | 0.0  |
| 2003 12 19 | 704 | 1.4+  | 1.3-  | 2007 09 13 | 703 | 0.4- | 0.4- | 2007 10 14 | 703 | 0.4- | 0.0  |
| 2003 12 23 | 704 | 0.7-  | 0.5+  | 2007 09 13 | 703 | 0.1- | 0.1- | 2007 10 14 | 703 | 0.2- | 0.5- |
| 2003 12 23 | 704 | (1.7+ | 0.1-) | 2007 09 14 | 699 | 0.7- | 0.1- | 2007 10 14 | 703 | 0.6+ | 0.3+ |
| 2003 12 23 | 704 | 0.2-  | 0.0   | 2007 09 14 | 699 | 0.8+ | 0.1- | 2007 11 03 | 703 | 0.1- | 0.5- |
| 2003 12 23 | 704 | 0.7-  | 0.4-  | 2007 09 14 | 699 | 0.6- | 0.0  | 2007 11 03 | 703 | 0.1- | 0.8- |
| 2003 12 23 | 704 | 0.3+  | 0.9+  | 2007 09 14 | 699 | 0.1- | 0.1- | 2007 11 03 | 703 | 0.1- | 0.3+ |
| 2003 12 25 | 691 | 0.2-  | 0.1+  | 2007 10 08 | 703 | 0.2+ | 1.2+ | 2007 11 03 | 703 | 0.3+ | 0.5- |
| 2003 12 25 | 691 | 0.0   | 0.1+  | 2007 10 08 | 703 | 0.1- | 0.9- | 2007 11 16 | 703 | 0.1- | 0.4- |
| 2003 12 25 | 691 | 0.1-  | 0.0   | 2007 10 08 | 703 | 0.6+ | 1.3+ | 2007 11 16 | 703 | 0.0  | 0.8- |
| 2007 09 05 | 699 | 0.7+  | 0.0   | 2007 10 08 | 703 | 1.2- | 0.2+ | 2007 11 16 | 703 | 0.1- | 0.7- |
| 2007 09 05 | 699 | 0.0   | 0.7-  | 2007 10 08 | 703 | 1.2+ | 1.1+ | 2007 11 16 | 703 | 0.4- | 0.4- |
| 2007 09 05 | 699 | 0.6-  | 0.3-  | 2007 10 08 | 703 | 0.2+ | 0.3+ |            |     |      |      |

**2003 YZ<sub>107</sub> = 2007 XQ<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 17.47507   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.23611308 | $\omega$ | 328.79999 | +0.78092554 | -0.58932556 |     |   |
| $a$ | 2.5925234  | $\Omega$ | 68.73456  | +0.60904480 | +0.64486155 |     |   |
| $e$ | 0.1886964  | $i$      | 12.83410  | +0.13863527 | +0.48667132 |     |   |
| $P$ | 4.17       | $H$      | 16.6      | $G$         | 0.15        | $U$ | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 14 | 691 | 0.2- | 0.3- | 2003 12 28 | 691 | 0.1+  | 0.2-  | 2007 12 11 | 620 | 0.4+ | 0.0  |
| 2003 12 14 | 691 | 0.3+ | 0.2- | 2003 12 28 | 691 | 0.0   | 0.0   | 2007 12 11 | 620 | 0.3+ | 0.2+ |
| 2003 12 14 | 691 | 0.0  | 0.1+ | 2003 12 28 | 691 | 0.2+  | 0.0   | 2007 12 11 | 620 | 0.1- | 0.0  |
| 2003 12 25 | 461 | 0.1+ | 0.3- | 2003 12 29 | 704 | 1.5-  | 0.0   | 2007 12 11 | 620 | 0.1- | 0.1- |
| 2003 12 26 | 461 | 0.4- | 0.3+ | 2003 12 29 | 704 | 0.1-  | 1.4+  | 2007 12 15 | 704 | 0.3- | 0.7- |
| 2003 12 26 | 461 | 0.1+ | 0.0  | 2003 12 29 | 704 | (0.3- | 1.7+) | 2007 12 15 | 704 | 0.4- | 1.2- |
| 2003 12 26 | 461 | 0.2- | 0.0  | 2007 12 10 | J75 | 0.2+  | 0.5+  | 2007 12 15 | 704 | 0.2- | 0.2- |
| 2003 12 26 | 461 | 0.6+ | 0.0  | 2007 12 10 | J75 | 0.3+  | 1.4+  | 2007 12 15 | 704 | 0.5- | 0.2- |
| 2003 12 26 | 461 | 0.2- | 0.3+ | 2007 12 10 | J75 | 0.3+  | 0.9+  | 2007 12 15 | 704 | 0.0  | 0.1- |
| 2003 12 26 | 461 | 0.0  | 0.4- | 2007 12 11 | 620 | 0.0   | 0.1+  |            |     |      |      |
| 2003 12 26 | 461 | 0.4- | 0.3+ | 2007 12 11 | 620 | 0.2+  | 0.4-  |            |     |      |      |

**2003 YK<sub>112</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 353.95122  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23986954 | $\omega$ | 94.36675  | +0.29709322 | -0.95441135 |
| $a$ | 2.5653856  | $\Omega$ | 338.28256 | +0.84217464 | +0.27617363 |
| $e$ | 0.1244157  | $i$      | 4.47780   | +0.44997498 | +0.11325678 |
| $P$ | 4.11       | $H$      | 16.0      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 09 04 | 809 | 0.7- | 0.2+ | 2003 12 27 | 704 | 0.0  | 0.2- | 2007 11 18 | 704 | 0.5+  | 0.6-  |
| 1994 09 04 | 809 | 0.3- | 0.4- | 2003 12 28 | 704 | 0.8- | 0.1+ | 2007 11 18 | 704 | 0.1-  | 0.2+  |
| 1994 09 04 | 809 | 0.9+ | 0.6+ | 2003 12 28 | 704 | 0.3- | 0.6- | 2007 11 20 | 704 | 0.6-  | 0.4+  |
| 2003 12 04 | 704 | 0.6+ | 0.5+ | 2003 12 28 | 704 | 0.1+ | 0.5+ | 2007 11 20 | 704 | (1.9- | 0.4-) |
| 2003 12 04 | 704 | 0.5+ | 0.7- | 2003 12 28 | 704 | 0.2- | 0.7- | 2007 11 20 | 704 | 0.2-  | 0.1+  |
| 2003 12 04 | 704 | 0.3+ | 0.2- | 2003 12 28 | 704 | 0.2+ | 0.1- | 2007 11 20 | 704 | 0.3-  | 0.7-  |
| 2003 12 04 | 704 | 0.4- | 0.3- | 2003 12 28 | 704 | 0.5- | 0.6- | 2007 12 13 | 704 | 0.3-  | 0.8+  |
| 2003 12 18 | 704 | 0.1- | 0.2- | 2003 12 28 | 704 | 0.1- | 0.4+ | 2007 12 13 | 704 | 1.4-  | 0.6+  |
| 2003 12 18 | 704 | 0.4+ | 0.7- | 2003 12 28 | 704 | 1.0- | 0.4- | 2007 12 13 | 704 | 0.1-  | 0.4+  |
| 2003 12 18 | 704 | 0.2- | 0.2- | 2003 12 28 | 704 | 0.2+ | 0.3- | 2007 12 13 | 704 | 0.6-  | 1.0+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 18 | 704 | 1.0+  | 0.4+  | 2004 02 26 | 695 | 0.3- | 0.1+ | 2007 12 16 | 704 | 1.4+ | 0.5+ |
| 2003 12 23 | 704 | 0.5+  | 1.2+  | 2004 02 26 | 695 | 0.1- | 0.0  | 2007 12 16 | 704 | 0.2- | 0.1+ |
| 2003 12 23 | 704 | (0.4+ | 1.6+) | 2007 09 15 | 291 | 0.2- | 0.0  | 2007 12 16 | 704 | 0.5+ | 0.3- |
| 2003 12 23 | 704 | (2.3+ | 2.3+) | 2007 09 15 | 291 | 0.6+ | 0.0  | 2007 12 16 | 704 | 1.2+ | 0.5+ |
| 2003 12 23 | 704 | 0.7+  | 1.1+  | 2007 09 15 | 291 | 0.5- | 0.3- | 2007 12 16 | 704 | 0.2+ | 0.2- |
| 2003 12 27 | 704 | 0.5+  | 0.4-  | 2007 11 18 | 704 | 0.4- | 0.4- |            |     |      |      |
| 2003 12 27 | 704 | 1.0-  | 0.3+  | 2007 11 18 | 704 | 0.4+ | 1.0- |            |     |      |      |

**2003 YX<sub>113</sub> = 2007 VJ<sub>297</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 346.42361  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22874706 | $\omega$ | 245.57360 | +0.60544404 | -0.79406530 |
| $a$ | 2.6478845  | $\Omega$ | 166.74437 | +0.78841083 | +0.58913329 |
| $e$ | 0.1620724  | $i$      | 13.57792  | +0.10883874 | +0.14960703 |
| $P$ | 4.31       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 06 02 | 691 | 0.1+ | 0.3-  | 2005 04 04 | 703 | 0.2- | 1.8+ | 2007 10 19 | 703 | 0.3- | 0.6+ |
| 1997 06 02 | 691 | 0.1- | 0.0   | 2005 04 04 | 703 | 0.8+ | 1.2+ | 2007 10 19 | 699 | 0.6+ | 0.4- |
| 2003 11 29 | 704 | (0.0 | 1.8-) | 2005 04 04 | 703 | 0.4- | 0.9+ | 2007 10 19 | 703 | 1.0- | 0.3+ |
| 2003 11 29 | 704 | 1.0+ | 0.1-  | 2007 09 11 | 703 | 0.7- | 0.5+ | 2007 10 19 | 703 | 1.1- | 0.1+ |
| 2003 11 29 | 704 | 0.0  | 0.4+  | 2007 09 11 | 703 | 0.5- | 0.3+ | 2007 10 19 | 703 | 0.5+ | 2.4- |
| 2003 11 29 | 704 | 0.1+ | 0.2+  | 2007 09 11 | 703 | 1.5- | 0.2- | 2007 11 11 | 703 | 0.1- | 0.8+ |
| 2003 12 24 | 704 | 0.0  | 0.0   | 2007 09 11 | 703 | 0.2- | 0.1+ | 2007 11 11 | 703 | 0.1+ | 0.2+ |
| 2003 12 24 | 704 | 0.4+ | 0.8+  | 2007 10 10 | 703 | 1.4+ | 1.4+ | 2007 11 11 | 703 | 0.3- | 0.4+ |
| 2003 12 24 | 704 | 0.4+ | 0.1+  | 2007 10 10 | 703 | 0.4+ | 0.7+ | 2007 11 18 | 703 | 1.6- | 0.4+ |
| 2003 12 28 | 703 | 0.0  | 1.6-  | 2007 10 10 | 703 | 1.0+ | 0.4+ | 2007 11 18 | 703 | 0.7- | 0.1- |
| 2003 12 28 | 703 | 0.5- | 1.5-  | 2007 10 10 | 703 | 0.0  | 1.4+ | 2007 11 18 | 703 | 0.4- | 0.3- |
| 2003 12 28 | 703 | 0.9- | 0.5-  | 2007 10 19 | 699 | 1.3+ | 0.2- | 2007 11 18 | 703 | 0.1- | 0.4+ |
| 2003 12 28 | 703 | 0.3- | 0.2+  | 2007 10 19 | 699 | 1.3+ | 0.4+ |            |     |      |      |
| 2005 04 04 | 703 | 0.5+ | 0.9+  | 2007 10 19 | 699 | 0.7+ | 0.5- |            |     |      |      |

**2003 YK<sub>114</sub> = 2004 BY<sub>45</sub> = 2007 VK<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 152.76168  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.21959359 | $\omega$ | 160.77522 | -0.15722627 | +0.98268265 |     |   |
| $a$ | 2.7209649  | $\Omega$ | 100.08532 | -0.91861586 | -0.10907851 |     |   |
| $e$ | 0.0018586  | $i$      | 5.71576   | -0.36252560 | -0.14978880 |     |   |
| $P$ | 4.49       | $H$      | 15.6      | $G$         | 0.15        | $U$ | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 09 | 599 | 1.3+  | 0.0   | 2004 01 24 | 704 | 0.2+ | 0.6+ | 2007 11 09 | 691 | 0.4- | 0.1- |
| 2002 09 09 | 599 | 0.4-  | 0.2+  | 2004 01 24 | 704 | 0.9+ | 0.7+ | 2007 11 15 | 699 | 0.8+ | 0.1- |
| 2002 09 18 | 599 | 0.4-  | 0.4+  | 2005 02 09 | 691 | 0.3- | 0.4+ | 2007 11 15 | 699 | 0.0  | 0.8- |
| 2002 09 19 | 599 | 1.1-  | 0.1-  | 2005 02 09 | 691 | 0.3- | 0.3+ | 2007 11 15 | 699 | 0.2+ | 0.7+ |
| 2002 09 19 | 599 | 0.4-  | 0.2+  | 2005 02 09 | 691 | 0.1+ | 0.6+ | 2007 11 15 | 699 | 0.2+ | 0.5+ |
| 2002 10 07 | 608 | 0.1-  | 0.0   | 2005 04 07 | 691 | 0.3+ | 0.3+ | 2007 11 20 | 691 | 0.1- | 0.1- |
| 2002 10 07 | 608 | 0.1-  | 1.0+  | 2005 04 07 | 691 | 0.3+ | 0.5+ | 2007 11 20 | 691 | 0.4- | 0.1- |
| 2002 10 07 | 608 | 0.5-  | 0.6-  | 2005 04 07 | 691 | 0.2+ | 0.3+ | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2003 12 21 | 704 | 0.4-  | 0.1-  | 2006 07 25 | 644 | 0.2- | 0.7+ | 2007 12 04 | 704 | 0.0  | 1.2+ |
| 2003 12 21 | 704 | 0.1-  | 0.1-  | 2006 07 25 | 644 | 0.1+ | 0.5+ | 2007 12 04 | 704 | 0.2+ | 0.7+ |
| 2003 12 21 | 704 | 0.3-  | 0.8-  | 2006 07 25 | 644 | 0.0  | 0.3+ | 2007 12 04 | 704 | 0.3+ | 1.2+ |
| 2003 12 25 | 608 | (0.1+ | 2.9+) | 2006 08 20 | 644 | 0.2- | 0.3+ | 2007 12 04 | 704 | 0.1- | 1.1+ |
| 2003 12 25 | 608 | (0.4- | 2.6+) | 2006 08 20 | 644 | 0.1+ | 0.5+ | 2007 12 04 | 704 | 0.2- | 1.8+ |
| 2003 12 25 | 608 | (0.4+ | 2.2+) | 2006 08 20 | 644 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2003 12 28 | 691 | 0.1-  | 0.0   | 2006 08 20 | 644 | 0.2+ | 0.5+ | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2003 12 28 | 691 | 0.3+  | 0.0   | 2006 08 20 | 644 | 0.2+ | 0.3+ | 2007 12 05 | 704 | 0.2- | 0.6+ |
| 2003 12 28 | 691 | 0.2-  | 0.2-  | 2006 08 20 | 644 | 0.4+ | 0.4+ | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2004 01 21 | 704 | 0.1+  | 0.1+  | 2007 11 06 | D29 | 0.3+ | 0.6- | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2004 01 21 | 704 | 0.9+  | 0.4+  | 2007 11 06 | D29 | 0.3+ | 0.4- | 2007 12 05 | H07 | 0.6+ | 0.1+ |
| 2004 01 21 | 704 | 1.3+  | 1.4+  | 2007 11 06 | D29 | 0.1+ | 0.6- | 2007 12 05 | H07 | 0.2- | 0.1+ |
| 2004 01 24 | 704 | 0.4-  | 0.4-  | 2007 11 06 | D29 | 0.1+ | 0.1+ | 2007 12 05 | H07 | 0.1+ | 0.4- |
| 2004 01 24 | 704 | 0.3+  | 1.4-  | 2007 11 09 | 691 | 0.1- | 0.1+ | 2007 12 05 | H07 | 0.2+ | 0.1+ |
| 2004 01 24 | 704 | 0.5-  | 0.4+  | 2007 11 09 | 691 | 0.3- | 0.1+ | 2007 12 05 | H07 | 0.2- | 0.1+ |

2007 DEC. 24

M.P.O. 129685

**2003 YP<sub>116</sub> = 2007 VQ<sub>268</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.61944    | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22221458 | $\omega$ 322.95992 | +0.74577911   | -0.65404050 |
| <i>a</i> | 2.6995271  | $\Omega$ 78.38614  | +0.63801290   | +0.64648761 |
| <i>e</i> | 0.0787434  | <i>i</i> 7.42998   | +0.19171087   | +0.39279104 |
| <i>P</i> | 4.44       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 19 | 644 | 0.1+ | 0.2- | 2004 01 22 | 704 | 0.5+ | 0.1+ | 2007 11 08 | G96 | 0.2+ | 0.1- |
| 2002 08 19 | 644 | 0.0  | 0.1+ | 2004 01 22 | 704 | 0.0  | 0.9+ | 2007 11 12 | 704 | 1.0- | 0.3- |
| 2002 08 19 | 644 | 0.0  | 0.2- | 2007 10 12 | G96 | 0.4+ | 0.1- | 2007 11 12 | 704 | 0.9+ | 0.4- |
| 2003 12 27 | 704 | 0.2+ | 1.0+ | 2007 10 12 | G96 | 0.5+ | 0.3- | 2007 11 12 | 704 | 1.0+ | 0.1- |
| 2003 12 27 | 704 | 0.2+ | 1.0- | 2007 10 12 | G96 | 0.4+ | 0.1- | 2007 11 12 | 704 | 0.9- | 0.4+ |
| 2003 12 27 | 704 | 0.1+ | 0.8- | 2007 10 12 | G96 | 0.5+ | 0.2- | 2007 11 12 | 704 | 0.9+ | 0.3+ |
| 2003 12 27 | 704 | 0.5+ | 0.1+ | 2007 10 21 | 691 | 0.3- | 0.1- | 2007 11 15 | 704 | 0.2- | 1.0+ |
| 2003 12 28 | 691 | 0.0  | 0.1- | 2007 10 21 | 691 | 0.4- | 0.1+ | 2007 11 15 | 704 | 0.8+ | 0.1- |
| 2003 12 28 | 691 | 0.2- | 0.0  | 2007 10 21 | 691 | 0.2- | 0.0  | 2007 11 15 | 704 | 0.2- | 0.6+ |
| 2003 12 28 | 691 | 0.3- | 0.1- | 2007 11 08 | G96 | 0.3+ | 0.2- | 2007 11 15 | 704 | 0.2+ | 0.2+ |
| 2004 01 22 | 704 | 0.1+ | 0.1- | 2007 11 08 | G96 | 0.3- | 0.3- | 2007 11 15 | 704 | 0.0  | 0.2+ |

**2003 YR<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 251.60206  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17609591 | $\omega$ 154.80194 | -0.24827097   | -0.95919559 |
| <i>a</i> | 3.1523653  | $\Omega$ 309.27344 | +0.85653213   | -0.15213668 |
| <i>e</i> | 0.0780670  | <i>i</i> 10.06541  | +0.45245357   | -0.23832382 |
| <i>P</i> | 5.60       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 12 27 | 688 | 0.2- | 1.0- | 2003 12 28 | 704 | 0.9+  | 0.7+  | 2004 01 27 | 691 | 0.0  | 0.2+ |
| 1997 12 27 | 688 | 0.3+ | 1.6- | 2003 12 28 | 704 | 0.9+  | 0.0   | 2004 01 27 | 691 | 0.1- | 0.2+ |
| 2003 12 22 | 704 | 0.0  | 0.6- | 2004 01 19 | 699 | 0.8+  | 0.2-  | 2007 09 03 | 703 | 0.1- | 0.7+ |
| 2003 12 22 | 704 | 0.0  | 0.1- | 2004 01 19 | 699 | 0.1+  | 0.0   | 2007 09 03 | 703 | 1.7- | 0.0  |
| 2003 12 22 | 704 | 0.5- | 0.3- | 2004 01 19 | 699 | (0.7+ | 2.2-) | 2007 09 03 | 703 | 0.1+ | 0.2+ |
| 2003 12 22 | 704 | 0.0  | 0.3- | 2004 01 19 | 699 | 0.9-  | 0.9-  | 2007 09 03 | 703 | 0.2+ | 0.4- |
| 2003 12 22 | 704 | 1.1+ | 0.3- | 2004 01 22 | 704 | 0.9-  | 0.0   | 2007 09 08 | 699 | 0.1+ | 0.1+ |
| 2003 12 27 | 704 | 0.6+ | 0.1- | 2004 01 22 | 704 | 0.5-  | 0.6+  | 2007 09 08 | 699 | 0.6- | 0.3- |
| 2003 12 27 | 704 | 0.8+ | 0.6- | 2004 01 22 | 704 | 0.5-  | 0.3-  | 2007 09 08 | 699 | 0.3- | 1.5+ |
| 2003 12 27 | 704 | 0.7+ | 0.2+ | 2004 01 22 | 704 | 0.0   | 0.4-  | 2007 09 08 | 699 | 0.2+ | 1.0+ |
| 2003 12 27 | 704 | 0.6+ | 0.7+ | 2004 01 26 | 699 | 0.9-  | 1.0+  | 2007 10 07 | G96 | 0.6+ | 0.2- |
| 2003 12 27 | 704 | 0.0  | 0.8+ | 2004 01 26 | 699 | 0.2+  | 0.0   | 2007 10 07 | G96 | 0.4+ | 0.5- |
| 2003 12 28 | 704 | 0.5+ | 0.8+ | 2004 01 26 | 699 | 0.2+  | 0.4+  | 2007 10 07 | G96 | 0.1+ | 0.1- |
| 2003 12 28 | 704 | 0.5- | 0.1+ | 2004 01 26 | 699 | 1.3-  | 0.4+  | 2007 10 07 | G96 | 0.3+ | 0.6- |
| 2003 12 28 | 704 | 0.3+ | 0.7+ | 2004 01 27 | 691 | 0.3-  | 0.2+  |            |     |      |      |

**2003 YX<sub>121</sub> = 2000 BY<sub>42</sub> = 2007 VF<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 204.01424  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22195728 | $\omega$ 66.22458  | -0.97484687   | +0.22206496 |
| <i>a</i> | 2.7016129  | $\Omega$ 126.60044 | -0.21212935   | -0.89832537 |
| <i>e</i> | 0.0402005  | <i>i</i> 1.35563   | -0.06837191   | -0.37907610 |
| <i>P</i> | 4.44       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 03 18 | 691 | 0.6- | 0.1+ | 2003 12 29 | 691 | 0.1+ | 0.1- | 2007 10 04 | 691 | 0.9- | 0.2+ |
| 1996 03 18 | 691 | 0.6+ | 0.2+ | 2005 03 11 | G96 | 0.2- | 0.1+ | 2007 10 04 | 691 | 0.3- | 0.1- |
| 1996 03 18 | 691 | 1.3- | 0.6- | 2005 03 11 | G96 | 0.2- | 0.0  | 2007 11 01 | G96 | 0.3+ | 0.1- |
| 2000 01 28 | 691 | 0.2+ | 0.2- | 2005 03 11 | G96 | 0.3+ | 0.7+ | 2007 11 01 | G96 | 0.0  | 0.3- |
| 2000 01 28 | 691 | 1.0+ | 0.9- | 2005 03 11 | G96 | 0.2- | 0.2+ | 2007 11 01 | G96 | 0.4- | 0.1- |
| 2000 01 28 | 691 | 0.5+ | 0.1+ | 2005 04 04 | G96 | 0.3+ | 0.0  | 2007 11 01 | G96 | 0.2- | 0.4- |
| 2003 11 29 | 691 | 0.4- | 0.3- | 2005 04 04 | G96 | 0.1- | 0.5+ | 2007 11 02 | G96 | 0.3+ | 0.3- |
| 2003 11 29 | 691 | 0.0  | 0.2- | 2005 04 04 | G96 | 0.4- | 0.1+ | 2007 11 02 | G96 | 0.0  | 0.5- |
| 2003 11 29 | 691 | 0.3- | 0.1+ | 2005 04 04 | G96 | 0.2- | 0.2+ | 2007 11 02 | G96 | 0.1- | 0.3- |
| 2003 12 25 | 691 | 0.1+ | 0.6+ | 2006 07 21 | G96 | 0.8+ | 0.2- | 2007 11 02 | G96 | 0.3+ | 0.3- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 691 | 0.0  | 0.2+ | 2006 07 21 | G96 | 0.7+ | 0.1- | 2007 11 07 | G96 | 0.3- | 0.4- |
| 2003 12 25 | 691 | 0.2+ | 0.2+ | 2006 07 21 | G96 | 0.7+ | 0.1+ | 2007 11 07 | G96 | 0.4- | 0.3- |
| 2003 12 29 | 691 | 0.3+ | 0.6+ | 2006 07 21 | G96 | 1.1+ | 0.1- | 2007 11 07 | G96 | 0.3+ | 0.3- |
| 2003 12 29 | 691 | 0.5- | 0.2- | 2007 10 04 | 691 | 0.6+ | 0.5- | 2007 11 07 | G96 | 0.3+ | 0.3- |

**2003 YE<sub>123</sub> = 2007 VC<sub>293</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.82714  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22353610 | $\omega$ 338.23810 | +0.10476469   | -0.97525679 |
| <i>a</i> | 2.6888770  | $\Omega$ 105.32408 | +0.93961446   | +0.03293796 |
| <i>e</i> | 0.1624093  | <i>i</i> 11.64528  | +0.32580520   | +0.21860761 |
| <i>P</i> | 4.41       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 22 | 704 | 0.3+ | 0.7+ | 2004 01 28 | 691 | 0.3+  | 0.0   | 2007 11 14 | 699 | 0.1- | 0.3+ |
| 2003 12 22 | 704 | 0.0  | 0.1+ | 2004 01 28 | 691 | 0.1+  | 0.0   | 2007 11 15 | 703 | 0.5+ | 0.8- |
| 2003 12 22 | 704 | 0.5- | 0.6+ | 2004 02 11 | 699 | 0.8+  | 1.1-  | 2007 11 15 | 703 | 0.6+ | 0.3- |
| 2003 12 22 | 704 | 0.5- | 0.2- | 2004 02 11 | 699 | 1.0-  | 0.6+  | 2007 11 15 | 703 | 0.8- | 0.4- |
| 2003 12 22 | 704 | 0.0  | 0.1+ | 2004 02 11 | 699 | 0.7+  | 0.1-  | 2007 11 15 | 703 | 0.7- | 0.0  |
| 2003 12 27 | 704 | 0.6- | 0.1- | 2004 02 11 | 699 | 0.6+  | 0.3-  | 2007 11 19 | G96 | 0.3+ | 0.4+ |
| 2003 12 27 | 704 | 0.2+ | 0.3+ | 2007 11 02 | 703 | 0.7-  | 0.5-  | 2007 11 19 | G96 | 0.2+ | 0.4+ |
| 2003 12 27 | 704 | 0.1- | 0.1- | 2007 11 02 | 703 | 1.0-  | 0.5-  | 2007 11 19 | G96 | 0.1+ | 0.2+ |
| 2003 12 27 | 704 | 0.0  | 0.2+ | 2007 11 02 | 703 | 0.1-  | 1.0-  | 2007 11 19 | G96 | 0.4+ | 0.0  |
| 2003 12 29 | 691 | 0.0  | 0.1+ | 2007 11 02 | 703 | 0.5-  | 0.6+  | 2007 12 05 | 703 | 0.2- | 0.3- |
| 2003 12 29 | 691 | 0.1- | 0.0  | 2007 11 14 | 699 | (2.3+ | 0.0 ) | 2007 12 05 | 703 | 0.5- | 0.1+ |
| 2003 12 29 | 691 | 0.2- | 0.0  | 2007 11 14 | 699 | 1.4+  | 1.3+  | 2007 12 05 | 703 | 0.8+ | 0.1- |
| 2004 01 28 | 691 | 0.1+ | 0.2- | 2007 11 14 | 699 | 0.1-  | 0.3-  | 2007 12 05 | 703 | 0.4+ | 0.6+ |

**2003 YN<sub>124</sub> = 2007 TA<sub>398</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.12541   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21326268 | $\omega$ 38.72604  | +0.99630027   | -0.07650019 |
| <i>a</i> | 2.7745516  | $\Omega$ 325.60047 | +0.05082711   | +0.89193713 |
| <i>e</i> | 0.0896409  | <i>i</i> 3.97461   | +0.06929921   | +0.44564098 |
| <i>P</i> | 4.62       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 05 | 691 | 0.1+ | 0.0  | 2003 12 28 | 691 | 0.2+ | 0.3- | 2007 10 15 | 691 | 0.1+ | 0.1+ |
| 2000 02 05 | 691 | 0.1- | 0.1- | 2003 12 28 | 691 | 0.1- | 0.1+ | 2007 10 19 | 691 | 0.1+ | 0.1+ |
| 2000 02 05 | 691 | 0.1+ | 0.3+ | 2003 12 29 | 691 | 0.1- | 0.3+ | 2007 10 19 | 691 | 0.1+ | 0.2+ |
| 2002 09 14 | 644 | 0.2- | 0.5+ | 2003 12 29 | 691 | 0.1- | 0.2+ | 2007 10 19 | 691 | 0.2- | 0.1+ |
| 2002 09 14 | 644 | 0.3- | 0.9+ | 2003 12 29 | 691 | 0.1+ | 0.0  | 2007 10 23 | 691 | 0.2- | 0.4+ |
| 2002 09 14 | 644 | 0.3- | 0.3+ | 2007 10 11 | 691 | 0.1+ | 0.2- | 2007 10 23 | 691 | 0.1- | 0.1- |
| 2003 12 18 | 691 | 0.2+ | 0.0  | 2007 10 11 | 691 | 0.2- | 0.2- | 2007 10 23 | 691 | 0.0  | 0.2+ |
| 2003 12 18 | 691 | 0.3- | 0.2- | 2007 10 11 | 691 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.1- | 0.1- |
| 2003 12 18 | 691 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.3+ | 0.2- |
| 2003 12 28 | 691 | 0.3+ | 0.0  | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.3- |

**2003 YH<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 272.51638  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21503221 | $\omega$ 83.92652  | -0.97370223   | +0.07760991 |
| <i>a</i> | 2.7593092  | $\Omega$ 100.38116 | -0.15110368   | -0.92363529 |
| <i>e</i> | 0.2344971  | <i>i</i> 12.57764  | +0.17050412   | -0.37533259 |
| <i>P</i> | 4.58       | <i>H</i> 15.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 19 | 704 | 0.5- | 0.3+ | 2004 02 15 | 704 | 0.8+ | 0.5+ | 2004 04 14 | 703 | 0.5+ | 0.2+ |
| 2003 12 19 | 704 | 0.3+ | 0.3- | 2004 02 15 | 704 | 0.9+ | 0.1- | 2004 04 14 | 703 | 0.1+ | 0.1- |
| 2003 12 19 | 704 | 0.1- | 0.0  | 2004 02 22 | 951 | 0.6- | 0.1- | 2004 04 14 | 703 | 0.7+ | 0.3- |
| 2003 12 19 | 704 | 0.1- | 0.7+ | 2004 02 23 | 951 | 0.6- | 0.1- | 2004 04 14 | 703 | 0.3+ | 0.4+ |
| 2003 12 27 | 704 | 0.2+ | 0.3+ | 2004 02 23 | 951 | 0.4- | 0.5- | 2004 05 24 | 704 | 0.1+ | 0.3- |
| 2003 12 27 | 704 | 0.1- | 0.2- | 2004 03 02 | 012 | 0.5- | 0.5- | 2004 05 24 | 704 | 0.6+ | 1.4+ |
| 2003 12 27 | 704 | 0.5+ | 0.9+ | 2004 03 02 | 012 | 0.7+ | 0.6- | 2004 05 24 | 704 | 0.2+ | 0.3+ |
| 2003 12 27 | 704 | 0.6+ | 0.1+ | 2004 03 02 | 012 | 0.1+ | 0.8- | 2004 05 24 | 704 | 0.2+ | 1.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 704 | 0.1+ | 0.4+ | 2004 03 02 | 012 | 0.1- | 0.7- | 2004 05 24 | 704 | 0.3- | 0.4+ |
| 2003 12 29 | 704 | 0.0  | 0.1- | 2004 03 02 | 012 | 0.0  | 0.4- | 2007 12 04 | 704 | 0.2+ | 0.7+ |
| 2003 12 29 | 704 | 0.5- | 0.0  | 2004 03 02 | 012 | 0.4+ | 0.4- | 2007 12 04 | 704 | 0.4+ | 0.5+ |
| 2003 12 29 | 704 | 0.1- | 0.3+ | 2004 03 02 | 012 | 0.3- | 0.5- | 2007 12 04 | 703 | 0.4- | 0.6+ |
| 2004 01 05 | 699 | 0.3+ | 0.3+ | 2004 03 09 | 644 | 0.4- | 0.0  | 2007 12 04 | 704 | 1.2- | 0.2+ |
| 2004 01 05 | 699 | 0.0  | 0.8- | 2004 03 09 | 644 | 0.4- | 0.0  | 2007 12 04 | 703 | 0.5+ | 0.4- |
| 2004 01 05 | 699 | 0.7- | 0.5- | 2004 03 09 | 644 | 0.4- | 0.0  | 2007 12 04 | 703 | 0.1- | 0.1- |
| 2004 01 05 | 699 | 0.2+ | 0.3- | 2004 03 18 | 644 | 0.2- | 0.1- | 2007 12 04 | 704 | 0.6- | 0.6+ |
| 2004 01 28 | 703 | 0.0  | 0.3+ | 2004 03 18 | 644 | 0.4- | 0.1- | 2007 12 04 | 703 | 0.8- | 0.1+ |
| 2004 01 28 | 703 | 0.3+ | 0.9- | 2004 03 18 | 644 | 0.2- | 0.2- | 2007 12 04 | 704 | 0.9+ | 0.0  |
| 2004 01 28 | 703 | 0.0  | 0.3+ | 2004 03 28 | 704 | 0.1+ | 0.0  | 2007 12 05 | G96 | 0.3+ | 0.2- |
| 2004 01 28 | 703 | 0.9- | 0.1+ | 2004 03 28 | 704 | 0.3- | 0.6+ | 2007 12 05 | G96 | 0.3+ | 0.1+ |
| 2004 01 30 | 704 | 0.7- | 0.4+ | 2004 03 28 | 704 | 0.6- | 0.9+ | 2007 12 05 | G96 | 0.1- | 0.4- |
| 2004 01 30 | 704 | 0.8- | 0.0  | 2004 03 28 | 704 | 0.2+ | 0.2+ | 2007 12 05 | G96 | 0.1- | 0.3- |
| 2004 01 30 | 704 | 0.4- | 0.3+ | 2004 03 28 | 704 | 0.9- | 0.3+ | 2007 12 05 | G96 | 0.1+ | 0.4- |
| 2004 01 30 | 704 | 0.1+ | 0.1+ | 2004 04 12 | 704 | 0.4- | 0.1+ | 2007 12 05 | G96 | 0.1+ | 0.3- |
| 2004 01 30 | 704 | 0.3- | 0.7+ | 2004 04 12 | 704 | 0.9+ | 0.3- | 2007 12 05 | G96 | 0.1+ | 0.3- |
| 2004 02 15 | 704 | 0.6+ | 0.5+ | 2004 04 12 | 704 | 0.1+ | 0.9- | 2007 12 05 | G96 | 0.3+ | 0.0  |
| 2004 02 15 | 704 | 0.5+ | 0.6+ | 2004 04 12 | 704 | 1.1+ | 0.6- |            |     |      |      |
| 2004 02 15 | 704 | 0.7+ | 0.5+ | 2004 04 12 | 704 | 0.0  | 1.2- |            |     |      |      |

**2003 YV<sub>130</sub> = 2007 XU**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 31.65984   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.24338184 | $\omega$ | 50.65489  | +0.97717788 | -0.19971233 |
| <i>a</i> | 2.5406447  | $\Omega$ | 320.71144 | +0.14205964 | +0.86771276 |
| <i>e</i> | 0.3150129  | <i>i</i> | 6.56315   | +0.15793179 | +0.45518078 |
| <i>P</i> | 4.05       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 17 | 704 | 0.5- | 0.5- | 2003 12 28 | 704 | 0.1- | 0.6- | 2007 12 02 | 704 | 0.2-  | 0.0   |
| 2003 12 17 | 704 | 0.5+ | 0.1+ | 2003 12 28 | 704 | 0.1+ | 0.4- | 2007 12 02 | 704 | 0.4-  | 0.5+  |
| 2003 12 17 | 704 | 0.2- | 0.2+ | 2003 12 28 | 704 | 0.4+ | 0.4- | 2007 12 03 | 704 | 0.4+  | 0.7-  |
| 2003 12 17 | 704 | 0.2- | 0.3+ | 2003 12 28 | 704 | 0.3- | 0.0  | 2007 12 03 | 704 | (0.3- | 1.7-) |
| 2003 12 23 | 704 | 0.3+ | 0.2- | 2003 12 28 | 704 | 0.6+ | 0.5+ | 2007 12 03 | 704 | (0.5- | 1.9-) |
| 2003 12 23 | 704 | 0.9+ | 0.2- | 2003 12 29 | 704 | 0.2- | 0.7+ | 2007 12 03 | 704 | 1.0+  | 0.1-  |
| 2003 12 23 | 704 | 0.9+ | 0.1+ | 2003 12 29 | 704 | 0.0  | 0.4+ | 2007 12 03 | 704 | 0.4-  | 0.8-  |
| 2003 12 28 | 704 | 0.3- | 0.4- | 2003 12 29 | 704 | 0.1- | 0.2+ | 2007 12 16 | 704 | 0.0   | 0.2+  |
| 2003 12 28 | 704 | 0.6- | 0.3- | 2003 12 29 | 704 | 0.1+ | 0.7+ | 2007 12 16 | 704 | 0.7+  | 0.2+  |
| 2003 12 28 | 704 | 0.5- | 0.2- | 2003 12 29 | 704 | 0.1+ | 1.1+ | 2007 12 16 | 704 | 0.7-  | 0.5+  |
| 2003 12 28 | 704 | 0.8- | 0.9- | 2007 12 02 | 704 | 0.5- | 0.1- | 2007 12 16 | 704 | 0.5+  | 0.2+  |
| 2003 12 28 | 704 | 0.1- | 0.2- | 2007 12 02 | 704 | 0.1- | 1.0+ | 2007 12 16 | 704 | 0.1-  | 0.6-  |

**2003 YZ<sub>136</sub> = 2007 WS<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 30.36358   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23422054 | $\omega$ | 55.95977  | +0.98607504 | -0.16325934 |
| <i>a</i> | 2.6064700  | $\Omega$ | 313.41392 | +0.13457004 | +0.89519059 |
| <i>e</i> | 0.2595567  | <i>i</i> | 2.49805   | +0.09770835 | +0.41470495 |
| <i>P</i> | 4.21       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 02 08 | 691 | 0.2- | 0.7- | 2003 12 29 | 704 | (2.0- | 1.2+) | 2007 11 11 | D29 | 0.7- | 0.4- |
| 2000 02 08 | 691 | 0.2- | 0.7- | 2003 12 29 | 704 | 0.7+  | 0.3+  | 2007 11 11 | D29 | 0.1- | 0.2- |
| 2000 02 08 | 691 | 0.1- | 0.6- | 2003 12 29 | 704 | 0.4+  | 1.4+  | 2007 11 11 | D29 | 0.2+ | 0.4- |
| 2003 12 22 | 704 | 1.1- | 0.2+ | 2003 12 29 | 704 | (0.0  | 1.8+) | 2007 11 18 | 704 | 0.1+ | 0.6- |
| 2003 12 22 | 704 | 0.0  | 0.2+ | 2003 12 29 | 704 | 0.6-  | 1.1+  | 2007 11 18 | 704 | 0.3+ | 0.0  |
| 2003 12 22 | 704 | 0.7+ | 0.1+ | 2003 12 29 | 704 | 1.2-  | 0.6+  | 2007 11 18 | 704 | 0.3+ | 0.3- |
| 2003 12 22 | 704 | 0.0  | 0.6+ | 2003 12 29 | 704 | 0.2+  | 0.4+  | 2007 11 20 | 704 | 0.2- | 0.5- |
| 2003 12 27 | 704 | 0.2+ | 1.0+ | 2003 12 29 | 704 | (1.5+ | 2.5+) | 2007 11 20 | 704 | 0.5- | 0.4+ |
| 2003 12 27 | 704 | 0.6+ | 0.1- | 2003 12 29 | 704 | 0.6-  | 0.3-  | 2007 11 20 | 704 | 0.2- | 0.2+ |
| 2003 12 27 | 704 | 0.7- | 0.5+ | 2003 12 29 | 704 | (0.8- | 1.6+) | 2007 11 20 | 704 | 0.2- | 0.3- |
| 2003 12 27 | 704 | 0.1- | 1.0+ | 2003 12 29 | 704 | 1.3+  | 0.3+  | 2007 11 20 | 691 | 0.2- | 0.2- |
| 2003 12 27 | 704 | 0.3- | 0.6- | 2003 12 29 | 704 | 0.1+  | 0.7-  | 2007 11 20 | 691 | 0.1- | 0.3- |
| 2003 12 27 | 704 | 0.0  | 0.9+ | 2003 12 29 | 704 | 1.1-  | 0.8+  | 2007 11 20 | 691 | 0.1- | 0.3- |
| 2003 12 27 | 704 | 0.0  | 0.4+ | 2003 12 30 | 704 | 0.3-  | 0.9-  | 2007 12 10 | 704 | 0.2+ | 0.4- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 27 | 704 | 0.4+  | 0.5-  | 2003 12 30 | 704 | 0.2- | 0.5- | 2007 12 10 | 704 | 0.7+ | 0.9- |
| 2003 12 29 | 704 | (0.3- | 2.1+) | 2003 12 30 | 704 | 0.5+ | 0.5- | 2007 12 10 | 704 | 0.3+ | 0.2+ |
| 2003 12 29 | 704 | 0.5+  | 0.1-  | 2003 12 30 | 704 | 0.1+ | 0.1- | 2007 12 15 | 704 | 0.4+ | 1.0+ |
| 2003 12 29 | 704 | (4.1- | 1.2-) | 2003 12 30 | 704 | 0.1+ | 0.3- | 2007 12 15 | 704 | 0.2- | 1.5+ |
| 2003 12 29 | 704 | 1.0+  | 0.7-  | 2005 03 08 | 691 | 0.2+ | 0.4+ | 2007 12 15 | 704 | 0.6+ | 0.6+ |
| 2003 12 29 | 704 | 1.2+  | 1.4+  | 2005 03 08 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.3+ | 1.1+ |
| 2003 12 29 | 704 | 0.7+  | 0.1+  | 2005 03 08 | 691 | 0.0  | 0.2+ | 2007 12 15 | 704 | 0.2- | 1.3+ |
| 2003 12 29 | 704 | 0.9-  | 1.4+  | 2007 11 11 | D29 | 0.1+ | 0.3- |            |     |      |      |

**2003 YS<sub>138</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 17.30982   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.26202570 | $\omega$ | 149.72606 | -0.44040250 | -0.89504583 |
| <i>a</i> | 2.4186524  | $\Omega$ | 326.25998 | +0.79626181 | -0.35323633 |
| <i>e</i> | 0.1998953  | <i>i</i> | 7.26883   | +0.41474422 | -0.27224449 |
| <i>P</i> | 3.76       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 704 | 1.3- | 0.6+ | 2004 01 29 | 704 | 0.3+ | 0.2- | 2004 03 01 | 703 | 0.5- | 0.1+ |
| 2003 12 22 | 704 | 1.0- | 0.7+ | 2004 02 11 | 644 | 0.2+ | 0.1+ | 2004 03 01 | 703 | 0.2- | 0.8- |
| 2003 12 22 | 704 | 0.3+ | 0.2- | 2004 02 11 | 644 | 0.3+ | 0.0  | 2004 03 17 | 691 | 0.1+ | 0.3+ |
| 2003 12 27 | 704 | 0.6+ | 0.3+ | 2004 02 11 | 644 | 0.4+ | 0.0  | 2004 03 17 | 691 | 0.0  | 0.1- |
| 2003 12 27 | 704 | 0.3+ | 0.7+ | 2004 02 14 | 691 | 0.2- | 0.1+ | 2004 03 17 | 691 | 0.1- | 0.0  |
| 2003 12 27 | 704 | 0.6+ | 0.7- | 2004 02 14 | 691 | 0.0  | 0.0  | 2004 03 18 | 704 | 1.3- | 0.5- |
| 2003 12 27 | 704 | 0.5- | 0.2+ | 2004 02 14 | 691 | 0.2- | 0.1+ | 2004 03 18 | 704 | 0.0  | 0.1+ |
| 2003 12 28 | 699 | 0.0  | 0.5- | 2004 02 17 | 608 | 0.1+ | 0.1- | 2004 03 18 | 704 | 0.4- | 0.1+ |
| 2003 12 28 | 699 | 0.8- | 0.3+ | 2004 02 17 | 608 | 0.3+ | 0.5- | 2004 03 18 | 704 | 0.6- | 1.1+ |
| 2003 12 28 | 699 | 0.9- | 1.8- | 2004 02 17 | 608 | 0.1+ | 0.5- | 2004 03 18 | 704 | 0.7- | 0.3+ |
| 2003 12 28 | 699 | 0.1- | 1.3- | 2004 02 18 | 704 | 1.2+ | 0.3- | 2004 03 26 | 691 | 0.5+ | 0.1+ |
| 2004 01 23 | 699 | 0.7+ | 0.0  | 2004 02 18 | 704 | 0.0  | 1.0+ | 2004 03 26 | 691 | 0.1+ | 0.6+ |
| 2004 01 23 | 699 | 0.1- | 0.3- | 2004 02 18 | 704 | 0.0  | 0.5+ | 2004 03 26 | 691 | 0.4+ | 0.3- |
| 2004 01 23 | 699 | 0.2- | 0.2- | 2004 02 18 | 704 | 0.6+ | 0.2+ | 2006 09 19 | 699 | 0.6- | 0.3- |
| 2004 01 23 | 699 | 0.4- | 0.4- | 2004 02 18 | 704 | 0.1- | 0.0  | 2006 09 19 | 699 | 0.5+ | 0.0  |
| 2004 01 24 | 704 | 0.3+ | 0.2+ | 2004 02 26 | 704 | 0.2+ | 0.3- | 2006 09 19 | 699 | 1.5- | 1.9+ |
| 2004 01 24 | 704 | 0.1+ | 0.2- | 2004 02 26 | 704 | 0.3+ | 0.3- | 2006 09 19 | 699 | 0.4+ | 0.5+ |
| 2004 01 24 | 704 | 0.3+ | 0.5+ | 2004 02 26 | 704 | 0.3+ | 0.5- | 2007 11 20 | G96 | 0.6- | 0.7- |
| 2004 01 24 | 704 | 0.4+ | 0.7+ | 2004 02 26 | 704 | 0.4+ | 0.6- | 2007 11 20 | G96 | 0.4- | 0.2- |
| 2004 01 24 | 704 | 0.1- | 0.5+ | 2004 02 26 | 704 | 0.3+ | 0.3- | 2007 11 20 | G96 | 0.2+ | 0.5- |
| 2004 01 29 | 704 | 0.2+ | 0.8+ | 2004 03 01 | 703 | 0.3+ | 0.5+ | 2007 11 20 | G96 | 0.0  | 0.2- |
| 2004 01 29 | 704 | 0.9- | 0.4+ | 2004 03 01 | 703 | 0.7- | 0.0  |            |     |      |      |

**2003 YF<sub>139</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 316.15431  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.21999580 | $\omega$ | 129.43687 | +0.60059261 | -0.75687224 |
| <i>a</i> | 2.7176475  | $\Omega$ | 281.71469 | +0.62860107 | +0.64618766 |
| <i>e</i> | 0.2550750  | <i>i</i> | 15.26173  | +0.49411457 | +0.09790770 |
| <i>P</i> | 4.48       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 02 | 704 | 0.2+ | 0.0  | 2003 12 03 | 704 | 0.3+ | 0.2- | 2003 12 30 | 704 | 0.2- | 0.0  |
| 2003 10 02 | 704 | 0.1+ | 0.6+ | 2003 12 03 | 704 | 0.3+ | 0.3- | 2007 09 12 | 703 | 0.2- | 0.1- |
| 2003 10 02 | 704 | 0.7+ | 0.1+ | 2003 12 03 | 704 | 0.1+ | 0.0  | 2007 09 12 | 703 | 0.9+ | 0.3+ |
| 2003 10 02 | 704 | 0.1- | 0.5+ | 2003 12 17 | 704 | 1.1+ | 0.8- | 2007 09 12 | 703 | 0.2+ | 0.3+ |
| 2003 10 16 | 704 | 0.2- | 0.1- | 2003 12 17 | 704 | 0.1+ | 1.0- | 2007 09 12 | 703 | 0.8- | 0.2- |
| 2003 10 16 | 704 | 0.6+ | 0.1- | 2003 12 17 | 704 | 0.1- | 0.3+ | 2007 12 05 | G96 | 0.0  | 0.3- |
| 2003 10 16 | 704 | 0.6- | 0.0  | 2003 12 17 | 704 | 0.4- | 0.2- | 2007 12 05 | G96 | 0.3+ | 0.4- |
| 2003 10 16 | 704 | 0.2+ | 0.6+ | 2003 12 17 | 704 | 0.1- | 0.1- | 2007 12 05 | G96 | 0.3+ | 0.2- |
| 2003 11 21 | 704 | 0.2- | 0.3+ | 2003 12 28 | 704 | 0.2- | 0.2+ | 2007 12 05 | G96 | 0.1- | 0.1- |
| 2003 11 21 | 704 | 0.6- | 0.3+ | 2003 12 28 | 704 | 0.2+ | 0.5+ | 2007 12 05 | G96 | 0.2- | 0.2+ |
| 2003 11 21 | 704 | 0.0  | 0.0  | 2003 12 28 | 704 | 0.0  | 0.3+ | 2007 12 05 | G96 | 0.2+ | 0.3- |
| 2003 11 21 | 704 | 0.1- | 0.8+ | 2003 12 28 | 704 | 0.8+ | 0.3- | 2007 12 05 | G96 | 0.1- | 0.2- |
| 2003 11 21 | 704 | 0.3+ | 0.4- | 2003 12 30 | 704 | 0.6- | 0.1- | 2007 12 05 | G96 | 0.2+ | 0.2- |
| 2003 12 03 | 704 | 0.4- | 0.8- | 2003 12 30 | 704 | 0.3- | 0.3+ |            |     |      |      |
| 2003 12 03 | 704 | 0.1+ | 0.0  | 2003 12 30 | 704 | 0.5- | 0.2+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129687

**2003 YW<sub>144</sub> = 2007 XR<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 1.03898    | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23436879 | $\omega$ 350.30748 | +0.42485223   | -0.87193656 |
| <i>a</i> | 2.6053708  | $\Omega$ 74.21742  | +0.84657987   | +0.28746799 |
| <i>e</i> | 0.1559566  | <i>i</i> 14.64922  | +0.32062925   | +0.39634428 |
| <i>P</i> | 4.21       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 704 | 0.0   | 0.1-  | 2004 01 28 | 703 | 0.8+ | 0.9+ | 2007 12 08 | 300 | 0.6+ | 0.2+ |
| 2003 12 28 | 704 | 0.2+  | 0.4-  | 2004 01 28 | 703 | 0.6- | 0.1+ | 2007 12 08 | 300 | 0.6+ | 0.1- |
| 2003 12 28 | 704 | 0.2+  | 0.6-  | 2004 01 28 | 703 | 0.0  | 0.5+ | 2007 12 08 | 300 | 1.2- | 0.6- |
| 2003 12 28 | 704 | 0.1+  | 0.1-  | 2004 01 28 | 703 | 0.5+ | 0.6- | 2007 12 09 | 300 | 0.3+ | 0.8- |
| 2003 12 29 | 703 | (2.5- | 1.0-) | 2007 11 05 | 691 | 0.1+ | 0.1- | 2007 12 09 | 300 | 0.1- | 0.2- |
| 2003 12 29 | 703 | (1.3- | 2.1-) | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 12 09 | 300 | 0.6+ | 0.9- |
| 2003 12 29 | 703 | (2.4- | 0.3-) | 2007 11 05 | 691 | 0.4- | 0.2+ | 2007 12 09 | 300 | 0.1+ | 0.0  |
| 2003 12 29 | 703 | 0.2+  | 1.2+  | 2007 11 13 | 691 | 0.1- | 0.1+ | 2007 12 09 | 300 | 0.6+ | 0.3+ |
| 2003 12 30 | 704 | 1.4+  | 0.8+  | 2007 11 13 | 691 | 0.0  | 0.1+ | 2007 12 10 | 704 | 0.3+ | 0.3- |
| 2003 12 30 | 704 | 0.5-  | 0.1-  | 2007 11 13 | 691 | 0.0  | 0.1+ | 2007 12 10 | 704 | 0.6- | 0.5- |
| 2003 12 30 | 704 | 0.1+  | 1.1+  | 2007 12 05 | 691 | 0.2- | 0.1+ | 2007 12 10 | 704 | 0.4- | 0.6+ |
| 2004 01 19 | 704 | 0.9-  | 1.2-  | 2007 12 05 | 691 | 0.1- | 0.1- | 2007 12 14 | 704 | 0.7+ | 0.8+ |
| 2004 01 19 | 704 | (0.1- | 2.1-) | 2007 12 05 | 691 | 0.3- | 0.3- | 2007 12 14 | 704 | 0.7+ | 0.8+ |
| 2004 01 19 | 704 | 1.5-  | 1.1-  | 2007 12 08 | 300 | 0.3- | 0.7+ | 2007 12 14 | 704 | 0.3+ | 0.2+ |
| 2004 01 19 | 704 | (2.6- | 1.2-) | 2007 12 08 | 300 | 0.2+ | 0.3- | 2007 12 14 | 704 | 0.6+ | 0.3+ |
| 2004 01 19 | 704 | (1.9- | 0.3-) | 2007 12 08 | 300 | 0.3+ | 0.2- | 2007 12 14 | 704 | 0.6+ | 0.4+ |

**2003 YT<sub>146</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 337.12811  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23599068 | $\omega$ 29.86257 | -0.37894672   | -0.89555573 |
| <i>a</i> | 2.5934198  | $\Omega$ 83.26455 | +0.79574346   | -0.44397265 |
| <i>e</i> | 0.2303105  | <i>i</i> 13.58068 | +0.47243172   | +0.02946548 |
| <i>P</i> | 4.18       | <i>H</i> 16.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 12 28 | 704 | 0.9+ | 0.1- | 2004 01 31 | 704 | 0.8+  | 0.3-  | 2007 12 04 | G96 | 0.3+  | 0.1-  |
| 2003 12 28 | 704 | 0.2+ | 0.1- | 2004 01 31 | 704 | (0.3+ | 1.6-) | 2007 12 04 | G96 | 0.2+  | 0.1-  |
| 2003 12 28 | 704 | 0.0  | 0.5+ | 2004 01 31 | 704 | (0.7- | 1.8-) | 2007 12 04 | G96 | 0.3-  | 0.2-  |
| 2003 12 28 | 704 | 0.9- | 0.2+ | 2004 02 02 | 704 | 1.2+  | 1.0-  | 2007 12 05 | 691 | 0.3-  | 0.1-  |
| 2003 12 30 | 704 | 0.1+ | 0.6+ | 2004 02 02 | 704 | 1.4+  | 0.9-  | 2007 12 05 | 691 | 0.3-  | 0.1+  |
| 2003 12 30 | 704 | 0.1- | 0.5+ | 2004 02 02 | 704 | 1.2+  | 1.1-  | 2007 12 05 | 691 | 0.2+  | 0.1+  |
| 2003 12 30 | 704 | 0.2- | 0.1- | 2004 02 02 | 704 | 0.4+  | 0.5-  | 2007 12 10 | 704 | 0.4+  | 0.5-  |
| 2003 12 30 | 704 | 0.6- | 0.0  | 2004 02 10 | 644 | 0.1-  | 0.1+  | 2007 12 10 | 704 | 0.6+  | 0.0   |
| 2004 01 14 | 644 | 0.1- | 0.4- | 2004 02 10 | 644 | 0.1-  | 0.1+  | 2007 12 10 | 704 | (1.5+ | 0.3-) |
| 2004 01 14 | 644 | 0.3- | 0.0  | 2004 02 10 | 644 | 0.2-  | 0.2-  | 2007 12 10 | 704 | 0.8+  | 0.3+  |
| 2004 01 14 | 644 | 0.5- | 0.1- | 2004 02 11 | 704 | 0.5-  | 1.4-  | 2007 12 14 | 704 | 0.7-  | 0.2+  |
| 2004 01 30 | 703 | 0.6- | 0.6+ | 2004 02 11 | 704 | 0.3-  | 0.3-  | 2007 12 14 | 704 | 0.5-  | 0.0   |
| 2004 01 30 | 703 | 0.3- | 0.5+ | 2004 02 11 | 704 | 0.4-  | 0.1+  | 2007 12 14 | 704 | 0.1-  | 0.7-  |
| 2004 01 30 | 703 | 0.1+ | 0.4+ | 2004 02 11 | 704 | 0.1+  | 0.8+  | 2007 12 14 | 704 | 0.2+  | 0.4-  |
| 2004 01 30 | 703 | 0.2+ | 0.8+ | 2004 02 11 | 704 | 0.9-  | 0.1-  | 2007 12 15 | 704 | 0.1+  | 0.5+  |
| 2004 01 31 | 699 | 0.5+ | 1.3+ | 2004 02 18 | 703 | 0.2+  | 0.1+  | 2007 12 15 | 704 | 0.1-  | 0.2+  |
| 2004 01 31 | 699 | 0.0  | 0.4+ | 2004 02 18 | 703 | 0.4-  | 1.1+  | 2007 12 15 | 704 | 0.3+  | 0.0   |
| 2004 01 31 | 699 | 0.5+ | 0.2+ | 2004 02 18 | 703 | 1.1-  | 0.4-  | 2007 12 15 | 704 | 0.6+  | 0.2-  |
| 2004 01 31 | 699 | 0.3+ | 0.3- | 2004 02 18 | 703 | 0.0   | 0.2+  | 2007 12 15 | 704 | 0.0   | 0.3+  |
| 2004 01 31 | 704 | 0.5- | 0.7- | 2007 12 04 | G96 | 0.2+  | 0.3-  |            |     |       |       |

**2003 YJ<sub>147</sub> = 2007 TY<sub>408</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 335.48032  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22115306 | $\omega$ 23.62558 | +0.70584924   | -0.70530028 |
| <i>a</i> | 2.7081585  | $\Omega$ 21.66744 | +0.61819329   | +0.56799142 |
| <i>e</i> | 0.2508543  | <i>i</i> 10.26422 | +0.34585243   | +0.42419012 |
| <i>P</i> | 4.46       | <i>H</i> 16.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 704 | (2.1- | 0.2-) | 2007 10 04 | 703 | 0.7- | 0.3- | 2007 10 21 | 691 | 0.2- | 0.1+ |
| 2003 12 29 | 704 | (2.4- | 0.1+) | 2007 10 04 | 703 | 0.7- | 1.0- | 2007 11 13 | G96 | 0.3+ | 0.5- |
| 2003 12 29 | 704 | 1.0-  | 0.4-  | 2007 10 04 | 703 | 0.0  | 0.3+ | 2007 11 13 | G96 | 0.3+ | 0.4- |
| 2003 12 30 | 704 | 0.5+  | 0.1+  | 2007 10 04 | 703 | 0.2- | 0.8+ | 2007 11 13 | G96 | 0.4+ | 0.1- |
| 2003 12 30 | 704 | 0.2+  | 0.5+  | 2007 10 15 | G96 | 0.2+ | 0.1- | 2007 11 13 | G96 | 1.0+ | 0.3- |
| 2003 12 30 | 704 | 0.2+  | 0.5+  | 2007 10 15 | G96 | 0.3+ | 0.2+ | 2007 12 06 | G96 | 0.0  | 0.4- |
| 2007 09 05 | 703 | 0.8+  | 0.1+  | 2007 10 15 | G96 | 0.4+ | 0.3+ | 2007 12 06 | G96 | 0.1- | 0.7+ |
| 2007 09 05 | 703 | 0.7-  | 0.9+  | 2007 10 15 | G96 | 0.5+ | 0.2- | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2007 09 05 | 703 | 0.4-  | 0.5-  | 2007 10 21 | 691 | 0.0  | 0.2+ | 2007 12 06 | G96 | 0.6+ | 0.5- |
| 2007 09 05 | 703 | 0.1-  | 0.4+  | 2007 10 21 | 691 | 0.1- | 0.1- |            |     |      |      |

**2003 YC<sub>148</sub> = 2007 VY<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 233.70553  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22245181 | $\omega$ 162.03358 | -0.99258061   | +0.07901268 |
| <i>a</i> | 2.6976075  | $\Omega$ 23.10202  | -0.11834978   | -0.80209323 |
| <i>e</i> | 0.1154096  | <i>i</i> 13.62306  | +0.02787589   | -0.59194885 |
| <i>P</i> | 4.43       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 15 | 704 | 0.3+  | 0.1+  | 2005 04 18 | 703 | 0.1- | 0.3- | 2007 11 02 | D29 | 0.0  | 0.3- |
| 2003 12 15 | 704 | 0.4-  | 0.1+  | 2005 05 10 | 699 | 0.2- | 0.7+ | 2007 11 08 | 703 | 0.2+ | 0.8+ |
| 2003 12 15 | 704 | 0.4+  | 0.1+  | 2005 05 10 | 699 | 0.2+ | 0.3+ | 2007 11 08 | 703 | 0.4+ | 0.3- |
| 2003 12 29 | 704 | 0.3-  | 0.5-  | 2005 05 10 | 699 | 0.1+ | 0.4+ | 2007 11 08 | 703 | 0.0  | 0.9+ |
| 2003 12 29 | 704 | 0.2+  | 0.1-  | 2005 05 10 | 699 | 0.3+ | 0.0  | 2007 11 08 | 703 | 0.4- | 0.9+ |
| 2003 12 29 | 704 | 0.4-  | 0.5+  | 2007 09 26 | G96 | 0.6+ | 0.2- | 2007 11 15 | G96 | 0.1+ | 0.2- |
| 2003 12 29 | 704 | 0.0   | 0.3-  | 2007 09 26 | G96 | 0.4+ | 0.1+ | 2007 11 15 | G96 | 0.3+ | 0.3- |
| 2003 12 29 | 704 | (0.4+ | 1.6-) | 2007 09 26 | G96 | 0.5+ | 0.0  | 2007 11 15 | G96 | 0.0  | 0.2- |
| 2003 12 30 | 704 | 0.3+  | 0.2-  | 2007 09 26 | G96 | 0.3+ | 0.1- | 2007 11 15 | G96 | 0.3+ | 0.3- |
| 2003 12 30 | 704 | (0.4- | 2.0+) | 2007 10 09 | 691 | 0.1- | 0.0  | 2007 11 15 | G96 | 0.3+ | 0.1- |
| 2003 12 30 | 704 | (0.1- | 1.9+) | 2007 10 09 | 691 | 0.0  | 0.1- | 2007 11 15 | G96 | 0.5+ | 0.1- |
| 2005 04 03 | E12 | 0.1-  | 1.0+  | 2007 10 09 | 691 | 0.6- | 0.0  | 2007 11 15 | G96 | 0.3+ | 0.2- |
| 2005 04 03 | E12 | 1.1+  | 0.0   | 2007 10 18 | 691 | 0.2- | 0.3+ | 2007 11 15 | G96 | 0.1+ | 0.2- |
| 2005 04 03 | E12 | 0.3-  | 0.2+  | 2007 10 18 | 691 | 0.2- | 0.2+ | 2007 12 02 | 704 | 0.0  | 0.1- |
| 2005 04 03 | E12 | (1.4- | 1.7+) | 2007 10 18 | 691 | 0.2- | 0.4+ | 2007 12 02 | 704 | 0.5- | 0.5+ |
| 2005 04 18 | 703 | 0.0   | 0.4-  | 2007 11 02 | D29 | 0.4+ | 0.3- | 2007 12 02 | 704 | 0.4- | 0.5- |
| 2005 04 18 | 703 | 0.7+  | 0.5+  | 2007 11 02 | D29 | 0.4+ | 0.1- | 2007 12 02 | 704 | 0.2+ | 0.1+ |
| 2005 04 18 | 703 | 0.3-  | 0.0   | 2007 11 02 | D29 | 0.1- | 0.1+ |            |     |      |      |

**2003 YB<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 313.00372  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23221510 | $\omega$ 52.19910 | -0.76144507   | -0.51905257 |
| <i>a</i> | 2.6214550  | $\Omega$ 93.24339 | +0.40141286   | -0.84791826 |
| <i>e</i> | 0.0534762  | <i>i</i> 22.88822 | +0.50898833   | -0.10779172 |
| <i>P</i> | 4.24       | <i>H</i> 15.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 30 | 704 | 0.5+ | 0.3- | 2004 01 23 | 704 | 0.4+ | 0.8- | 2007 11 21 | G96 | 0.4+ | 0.1- |
| 2003 12 30 | 704 | 0.7+ | 0.0  | 2004 02 02 | 699 | 0.4- | 0.3+ | 2007 11 21 | G96 | 0.1+ | 0.1- |
| 2003 12 30 | 704 | 0.2- | 0.3+ | 2004 02 02 | 699 | 0.1+ | 0.9+ | 2007 11 21 | G96 | 0.3+ | 0.3- |
| 2004 01 14 | 644 | 0.5- | 0.4- | 2004 02 02 | 699 | 0.6- | 0.4- | 2007 11 21 | G96 | 0.0  | 0.1- |
| 2004 01 14 | 644 | 0.1- | 0.2- | 2004 02 02 | 699 | 0.5- | 1.2+ | 2007 12 04 | 703 | 0.5+ | 0.2+ |
| 2004 01 14 | 644 | 0.0  | 0.0  | 2004 02 09 | 644 | 0.0  | 0.3- | 2007 12 04 | 703 | 0.7+ | 0.2- |
| 2004 01 19 | 704 | 0.7- | 0.9- | 2004 02 09 | 644 | 0.3+ | 0.0  | 2007 12 04 | 703 | 0.5- | 0.5- |
| 2004 01 19 | 704 | 0.2- | 0.2+ | 2004 02 09 | 644 | 0.2+ | 0.2+ | 2007 12 04 | 703 | 0.3- | 0.4- |
| 2004 01 19 | 704 | 0.5- | 0.4+ | 2004 02 15 | 201 | 0.1+ | 0.1+ | 2007 12 05 | 691 | 0.2- | 0.0  |
| 2004 01 19 | 704 | 0.4+ | 1.5- | 2004 02 15 | 201 | 0.5+ | 0.0  | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2004 01 23 | 704 | 0.4+ | 0.4+ | 2007 11 07 | G96 | 0.1+ | 0.3- | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2004 01 23 | 704 | 0.0  | 0.3+ | 2007 11 07 | G96 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.6- | 0.5+ |
| 2004 01 23 | 704 | 0.2+ | 0.2- | 2007 11 07 | G96 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.9+ | 0.9+ |
| 2004 01 23 | 704 | 0.0  | 0.0  | 2007 11 07 | G96 | 0.1+ | 0.1+ | 2007 12 13 | 704 | 0.1- | 0.2+ |

**2003 YP<sub>158</sub> = 2007 WH<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.48135  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24579609 | $\omega$ | 58.61719 | -0.22237594   | -0.95816120 |
| <i>a</i> | 2.5239810  | $\Omega$ | 45.39735 | +0.78631200   | -0.28553895 |
| <i>e</i> | 0.0699173  | <i>i</i> | 14.66149 | +0.57642206   | +0.01986515 |
| <i>P</i> | 4.01       | <i>H</i> | 15.6     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 17 | 704 | 0.4+ | 0.2+ | 2005 04 15 | 699 | 0.2+  | 0.0   | 2007 11 17 | 704 | 0.5- | 0.1- |
| 2003 12 17 | 704 | 0.2+ | 0.1- | 2005 04 15 | 699 | 0.6+  | 0.2+  | 2007 11 20 | 704 | 0.1- | 0.4+ |
| 2003 12 17 | 704 | 0.3+ | 0.1+ | 2005 04 15 | 699 | 0.6-  | 0.0   | 2007 11 20 | 704 | 0.1+ | 1.0+ |
| 2003 12 17 | 704 | 0.2+ | 0.8- | 2007 08 22 | 691 | 0.0   | 0.3+  | 2007 11 20 | 704 | 0.9- | 0.3+ |
| 2003 12 17 | 704 | 0.0  | 0.2- | 2007 08 22 | 691 | 0.3-  | 0.2-  | 2007 11 20 | 704 | 0.1- | 0.5- |
| 2003 12 29 | 704 | 0.4- | 0.9- | 2007 08 22 | 691 | (1.2+ | 2.2-) | 2007 12 16 | 704 | 0.2+ | 1.5+ |
| 2003 12 29 | 704 | 0.2+ | 1.3- | 2007 11 17 | 704 | (0.5- | 1.7+) | 2007 12 16 | 704 | 0.5+ | 0.8+ |
| 2003 12 29 | 704 | 0.5+ | 0.6- | 2007 11 17 | 704 | 0.3-  | 0.4-  | 2007 12 16 | 704 | 0.4+ | 1.0+ |
| 2003 12 29 | 704 | 0.8+ | 0.7- | 2007 11 17 | 704 | 1.0-  | 0.7+  |            |     |      |      |
| 2005 04 15 | 699 | 0.5+ | 0.9+ | 2007 11 17 | 704 | 0.1+  | 0.3+  |            |     |      |      |

**2003 YH<sub>169</sub> = 2007 VJ<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.13700  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23670237 | $\omega$ | 69.93351  | +0.47392284   | -0.88051020 |
| <i>a</i> | 2.5882187  | $\Omega$ | 351.75614 | +0.77977011   | +0.42489510 |
| <i>e</i> | 0.3173653  | <i>i</i> | 3.97782   | +0.40909133   | +0.21015696 |
| <i>P</i> | 4.16       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 03 11 | 691 | 0.3+ | 0.6- | 2007 10 17 | D29 | 0.2- | 0.3+ | 2007 11 17 | 704 | 0.4+  | 0.3+  |
| 1996 03 11 | 691 | 0.0  | 0.2+ | 2007 10 17 | D29 | 0.1- | 0.5- | 2007 11 17 | 704 | 1.3+  | 0.3-  |
| 1996 03 11 | 691 | 0.2- | 0.6+ | 2007 10 17 | D29 | 0.3- | 0.1- | 2007 11 17 | 704 | 0.7+  | 0.6-  |
| 2003 12 18 | 704 | 0.1+ | 0.4- | 2007 11 02 | 691 | 0.3- | 0.1+ | 2007 11 20 | 704 | 0.1+  | 0.4-  |
| 2003 12 18 | 704 | 0.6+ | 0.3+ | 2007 11 02 | 704 | 0.4- | 0.1- | 2007 11 20 | 704 | 0.1-  | 0.2+  |
| 2003 12 18 | 704 | 0.4+ | 0.2- | 2007 11 02 | 691 | 0.3- | 0.1+ | 2007 11 20 | 704 | 0.4+  | 0.4-  |
| 2003 12 18 | 704 | 0.1+ | 1.1- | 2007 11 02 | 704 | 0.5- | 0.6- | 2007 11 20 | 704 | 0.5+  | 0.2-  |
| 2003 12 23 | 704 | 0.1+ | 0.7+ | 2007 11 02 | 704 | 0.9+ | 1.4+ | 2007 11 20 | 704 | 0.5+  | 0.1-  |
| 2003 12 23 | 704 | 0.4- | 0.6+ | 2007 11 02 | 691 | 0.3- | 0.1+ | 2007 11 20 | 704 | 0.2-  | 0.7-  |
| 2003 12 23 | 704 | 0.0  | 0.6+ | 2007 11 02 | 704 | 0.3- | 0.8+ | 2007 11 20 | 704 | 0.2+  | 0.7-  |
| 2003 12 23 | 704 | 0.5+ | 0.9+ | 2007 11 02 | 704 | 0.5- | 0.9+ | 2007 11 20 | 704 | (0.3- | 1.7-) |
| 2003 12 23 | 704 | 0.2+ | 1.1+ | 2007 11 07 | 704 | 0.3+ | 0.2+ | 2007 11 20 | 704 | 0.1+  | 0.7-  |
| 2003 12 28 | 704 | 0.7- | 0.4- | 2007 11 07 | 704 | 0.3+ | 0.2+ | 2007 11 20 | 704 | (0.0  | 2.9-) |
| 2003 12 28 | 704 | 0.4+ | 0.7- | 2007 11 07 | 704 | 0.5+ | 0.2+ | 2007 12 13 | 704 | 0.5-  | 0.3-  |
| 2003 12 28 | 704 | 0.2- | 0.3+ | 2007 11 07 | 704 | 0.2+ | 0.7+ | 2007 12 13 | 704 | 0.1-  | 0.4-  |
| 2003 12 28 | 704 | 0.7- | 0.1- | 2007 11 07 | 704 | 0.1+ | 0.8+ | 2007 12 13 | 704 | 0.2-  | 0.2-  |
| 2003 12 28 | 704 | 0.1- | 0.9- | 2007 11 13 | 703 | 0.1+ | 0.1+ | 2007 12 13 | 704 | 0.4-  | 0.4-  |
| 2007 09 27 | G96 | 0.4+ | 0.4- | 2007 11 13 | 703 | 0.3- | 0.3+ | 2007 12 13 | 704 | 0.6-  | 0.2-  |
| 2007 09 27 | G96 | 0.3- | 0.1- | 2007 11 13 | 703 | 0.2- | 0.1+ | 2007 12 16 | 704 | 0.2+  | 0.6-  |
| 2007 09 27 | G96 | 0.2+ | 0.2- | 2007 11 13 | 703 | 0.0  | 0.3+ | 2007 12 16 | 704 | 0.2+  | 0.5-  |
| 2007 09 27 | G96 | 0.5+ | 0.0  | 2007 11 17 | 704 | 0.0  | 0.5+ | 2007 12 16 | 704 | 0.1+  | 0.4-  |
| 2007 10 17 | D29 | 0.7- | 0.4+ | 2007 11 17 | 704 | 0.7+ | 0.4+ | 2007 12 16 | 704 | 0.4+  | 0.0   |

**2003 YJ<sub>181</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 280.82481  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22312991 | $\omega$ | 242.77299 | -0.88591754   | -0.44430746 |
| <i>a</i> | 2.6921393  | $\Omega$ | 270.58694 | +0.45857312   | -0.79580322 |
| <i>e</i> | 0.1679625  | <i>i</i> | 7.65468   | +0.06971943   | -0.41144637 |
| <i>P</i> | 4.42       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 12 | 699 | 1.0- | 0.9+ | 2004 01 16 | 703 | 0.6- | 1.0+ | 2007 11 18 | 704 | 1.2+ | 0.1- |
| 2000 03 12 | 699 | 0.9+ | 0.2- | 2004 01 16 | 703 | 0.6+ | 0.9+ | 2007 11 18 | 704 | 0.3+ | 0.5+ |
| 2000 03 12 | 699 | 0.7+ | 0.0  | 2004 01 16 | 703 | 0.5+ | 0.4+ | 2007 11 20 | 704 | 1.0+ | 0.6- |
| 2000 03 12 | 699 | 0.3- | 0.4+ | 2004 01 23 | 704 | 0.6- | 0.2- | 2007 11 20 | 704 | 0.3+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 23 | 704 | 0.3+ | 0.2- | 2004 01 23 | 704 | 0.2- | 0.4+ | 2007 11 20 | 704 | 0.5- | 0.0  |
| 2003 12 23 | 704 | 0.3+ | 0.6+ | 2004 01 23 | 704 | 0.3- | 1.1+ | 2007 11 20 | 704 | 0.6- | 1.3- |
| 2003 12 23 | 704 | 0.5+ | 0.3+ | 2004 01 23 | 704 | 0.3- | 0.6+ | 2007 11 20 | 704 | 0.0  | 1.1- |
| 2003 12 29 | 699 | 0.6+ | 0.3- | 2004 01 23 | 704 | 0.2- | 0.7- | 2007 12 13 | 704 | 0.8- | 1.2+ |
| 2003 12 29 | 699 | 0.5+ | 0.1- | 2004 04 14 | 645 | 0.0  | 0.2- | 2007 12 13 | 704 | 0.4+ | 0.1- |
| 2003 12 29 | 699 | 0.1- | 0.3- | 2004 04 14 | 645 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.1- | 0.8+ |
| 2003 12 29 | 699 | 0.5- | 0.1+ | 2007 11 12 | G96 | 0.2- | 0.3- | 2007 12 15 | 704 | 0.5- | 0.1- |
| 2004 01 14 | 644 | 0.3+ | 0.2+ | 2007 11 12 | G96 | 0.5- | 0.5- | 2007 12 15 | 704 | 0.5+ | 0.1- |
| 2004 01 14 | 644 | 0.6+ | 0.0  | 2007 11 12 | G96 | 0.3- | 0.4- | 2007 12 15 | 704 | 0.3- | 0.3- |
| 2004 01 14 | 644 | 0.6+ | 0.2+ | 2007 11 12 | G96 | 0.0  | 0.6- | 2007 12 15 | 704 | 0.4- | 0.0  |
| 2004 01 16 | 703 | 0.5- | 0.6+ | 2007 11 18 | 704 | 0.5+ | 0.6+ | 2007 12 15 | 704 | 0.2- | 0.3+ |

**2004 AC<sub>2</sub> = 2007 WF<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 327.43675  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21948314 | $\omega$ | 345.31161 | +0.02804502   | -0.99699308 |
| <i>a</i> | 2.7218777  | $\Omega$ | 103.04234 | +0.92443783   | -0.00162533 |
| <i>e</i> | 0.0920482  | <i>i</i> | 4.25241   | +0.38030010   | +0.07747359 |
| <i>P</i> | 4.49       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 28 | 691 | 0.0   | 0.1-  | 2004 01 22 | 704 | 0.2- | 0.5- | 2007 11 18 | G96 | 0.2+  | 0.4-  |
| 2003 12 28 | 691 | 0.1+  | 0.4-  | 2005 05 10 | 691 | 0.3+ | 0.3+ | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2003 12 28 | 691 | 0.6+  | 0.3-  | 2005 05 10 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.7+  | 0.4-  |
| 2004 01 13 | 699 | 0.2-  | 0.1+  | 2005 05 10 | 691 | 0.2- | 0.1- | 2007 11 18 | G96 | 0.0   | 0.3-  |
| 2004 01 13 | 699 | 0.3-  | 0.6+  | 2007 10 10 | 691 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.5-  | 0.2+  |
| 2004 01 13 | 699 | 1.1-  | 0.7+  | 2007 10 10 | 691 | 0.1+ | 0.3+ | 2007 11 20 | 691 | 0.2-  | 0.2+  |
| 2004 01 13 | 699 | (0.5+ | 1.6+) | 2007 10 10 | 691 | 0.3- | 0.1- | 2007 11 20 | 691 | 0.2-  | 0.4+  |
| 2004 01 15 | 691 | 0.1-  | 0.3+  | 2007 10 20 | 703 | 0.7+ | 0.4- | 2007 11 20 | 703 | (2.0+ | 0.0 ) |
| 2004 01 15 | 691 | 0.2-  | 0.4+  | 2007 10 20 | 703 | 1.1+ | 0.4+ | 2007 11 20 | 703 | 0.2+  | 0.8+  |
| 2004 01 15 | 691 | 0.3-  | 0.4+  | 2007 10 20 | 703 | 0.8+ | 0.9+ | 2007 11 20 | 703 | (0.6- | 1.8+) |
| 2004 01 19 | 699 | 0.3+  | 0.4-  | 2007 10 20 | 703 | 0.9- | 0.2+ | 2007 11 20 | 703 | (0.1+ | 1.5+) |
| 2004 01 19 | 699 | 0.2-  | 0.6-  | 2007 11 01 | 691 | 0.1- | 0.0  | 2007 12 04 | 704 | 0.5-  | 1.2+  |
| 2004 01 19 | 699 | 0.5+  | 0.1-  | 2007 11 01 | 691 | 0.1+ | 0.0  | 2007 12 04 | 704 | (0.2+ | 2.2+) |
| 2004 01 19 | 699 | 0.5+  | 0.6-  | 2007 11 01 | 691 | 0.2+ | 0.0  | 2007 12 04 | 704 | 1.1+  | 0.6-  |
| 2004 01 22 | 704 | 0.2-  | 0.3-  | 2007 11 05 | 691 | 0.1- | 1.3- | 2007 12 04 | 704 | 0.5+  | 0.4+  |
| 2004 01 22 | 704 | 0.1+  | 0.8-  | 2007 11 05 | 691 | 0.0  | 0.1+ |            |     |       |       |
| 2004 01 22 | 704 | 0.2+  | 0.1-  | 2007 11 05 | 691 | 0.1- | 0.3+ |            |     |       |       |

**2004 AB<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 231.81433  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18128786 | $\omega$ | 139.54892 | -0.60421583   | -0.79532512 |
| <i>a</i> | 3.0918867  | $\Omega$ | 347.36675 | +0.66132280   | -0.46636694 |
| <i>e</i> | 0.1291144  | <i>i</i> | 12.89205  | +0.44449453   | -0.38724647 |
| <i>P</i> | 5.44       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 645 | 0.1- | 0.4- | 2003 12 29 | 704 | 0.1+ | 0.6+ | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 2003 11 20 | 645 | 0.0  | 0.5- | 2004 01 11 | 644 | 0.4+ | 0.0  | 2007 09 20 | 691 | 0.4- | 0.4+ |
| 2003 12 15 | 704 | 0.6+ | 0.1- | 2004 01 11 | 644 | 0.3- | 0.4+ | 2007 09 20 | 691 | 0.6- | 0.2- |
| 2003 12 15 | 704 | 0.8- | 0.0  | 2004 01 11 | 644 | 0.3- | 0.2+ | 2007 09 20 | 691 | 0.0  | 0.2+ |
| 2003 12 15 | 704 | 0.1+ | 0.2+ | 2004 01 16 | 644 | 0.3- | 0.3+ | 2007 10 11 | G96 | 0.1- | 0.1- |
| 2003 12 15 | 704 | 0.3+ | 0.3- | 2004 01 16 | 644 | 0.3- | 0.1+ | 2007 10 11 | G96 | 0.3+ | 0.1- |
| 2003 12 29 | 704 | 0.4+ | 0.3- | 2004 01 16 | 644 | 0.0  | 0.2- | 2007 10 11 | G96 | 0.3+ | 0.1+ |
| 2003 12 29 | 704 | 0.5- | 0.9+ | 2007 09 12 | G96 | 0.1- | 0.0  | 2007 10 11 | G96 | 0.2+ | 0.3+ |
| 2003 12 29 | 704 | 0.2+ | 0.4- | 2007 09 12 | G96 | 0.3+ | 0.2- |            |     |      |      |
| 2003 12 29 | 704 | 0.4+ | 0.6- | 2007 09 12 | G96 | 0.1- | 0.4- |            |     |      |      |

2007 DEC. 24

M.P.O. 129689

**2004 AD<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.78915  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.21055378 | $\omega$ 75.48767  | +0.40959890   | −0.91177231 |          |  |
| <i>a</i> | 2.7982984  | $\Omega$ 350.17105 | +0.75462882   | +0.35711639 |          |  |
| <i>e</i> | 0.2576593  | <i>i</i> 10.12167  | +0.51260519   | +0.20282786 |          |  |
| <i>P</i> | 4.68       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 17 | 704 | 0.3+ | 0.2− | 2004 01 14 | 644 | 0.3+ | 0.0  | 2007 09 11 | G96 | 0.1+ | 0.1− |
| 2003 12 17 | 704 | 0.1+ | 0.1− | 2004 01 16 | 644 | 0.0  | 0.2− | 2007 09 11 | G96 | 0.1+ | 0.1− |
| 2003 12 17 | 704 | 1.4− | 0.3− | 2004 01 16 | 644 | 0.2+ | 0.0  | 2007 10 08 | G96 | 0.1− | 0.1− |
| 2003 12 28 | 704 | 0.2+ | 0.4− | 2004 01 16 | 644 | 0.3− | 0.3− | 2007 10 08 | G96 | 0.6− | 0.1− |
| 2003 12 28 | 704 | 0.1− | 0.7− | 2004 01 19 | 704 | 0.4− | 0.6+ | 2007 10 08 | G96 | 0.0  | 0.2+ |
| 2003 12 28 | 704 | 0.5+ | 0.6+ | 2004 01 19 | 704 | 0.2− | 0.9+ | 2007 10 08 | G96 | 0.3− | 0.1− |
| 2003 12 28 | 704 | 0.2− | 0.1+ | 2004 01 19 | 704 | 0.1+ | 0.2− | 2007 10 19 | G96 | 0.1− | 0.1+ |
| 2003 12 28 | 704 | 0.2− | 0.1+ | 2004 01 19 | 704 | 0.3+ | 0.7+ | 2007 10 19 | G96 | 0.1− | 0.3+ |
| 2004 01 14 | 644 | 0.2+ | 0.4− | 2007 09 11 | G96 | 0.4+ | 0.0  | 2007 10 19 | G96 | 0.0  | 0.3− |
| 2004 01 14 | 644 | 0.3+ | 0.1− | 2007 09 11 | G96 | 0.2+ | 0.2+ | 2007 10 19 | G96 | 0.1+ | 0.2+ |

**2004 AP<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 50.90098   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.25598183 | $\omega$ 258.32228 | +0.77525453   | −0.60817750 |          |  |
| <i>a</i> | 2.4565746  | $\Omega$ 138.80790 | +0.63164351   | +0.74756266 |          |  |
| <i>e</i> | 0.2834951  | <i>i</i> 15.01210  | −0.00262483   | +0.26696479 |          |  |
| <i>P</i> | 3.85       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |          |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 24 | 699 | 0.7−  | 1.2+  | 2004 01 26 | 699 | 0.3+ | 0.0  | 2004 02 17 | 608 | 0.3−  | 0.7−  |
| 2003 10 24 | 699 | 1.5−  | 0.0   | 2004 01 26 | 699 | 0.1− | 0.5− | 2004 02 17 | 608 | 0.4−  | 0.8−  |
| 2003 10 24 | 699 | (2.1− | 1.2+) | 2004 01 30 | 704 | 0.4− | 0.8+ | 2004 02 26 | 704 | (0.1+ | 1.6+) |
| 2003 10 24 | 699 | 0.7+  | 1.5−  | 2004 01 30 | 704 | 0.0  | 1.0+ | 2004 02 26 | 704 | 0.6+  | 1.2+  |
| 2003 12 22 | 704 | 0.2+  | 0.0   | 2004 01 30 | 704 | 0.2+ | 0.7+ | 2004 02 26 | 704 | 0.5+  | 1.0+  |
| 2003 12 22 | 704 | 0.7+  | 0.0   | 2004 01 30 | 704 | 0.8+ | 0.7+ | 2004 02 26 | 704 | (0.6+ | 2.0+) |
| 2003 12 22 | 704 | 0.4+  | 0.1+  | 2004 01 30 | 704 | 0.3+ | 0.8+ | 2004 02 26 | 704 | (0.2+ | 1.8+) |
| 2003 12 22 | 704 | 0.4−  | 0.2+  | 2004 02 10 | 106 | 0.2+ | 0.3− | 2004 03 17 | 645 | 0.0   | 0.1−  |
| 2003 12 22 | 704 | 1.1−  | 0.9+  | 2004 02 10 | 106 | 0.4− | 0.3− | 2004 03 17 | 645 | 0.0   | 0.1−  |
| 2003 12 28 | 699 | 0.9+  | 0.0   | 2004 02 10 | 106 | 0.4− | 1.1− | 2004 03 19 | 644 | 0.1+  | 0.7+  |
| 2003 12 28 | 699 | 0.4−  | 0.8+  | 2004 02 11 | 703 | 0.7− | 0.2− | 2004 03 19 | 644 | 0.1−  | 0.6+  |
| 2003 12 28 | 699 | 0.1+  | 0.1−  | 2004 02 11 | 703 | 0.3− | 0.6− | 2004 03 19 | 644 | 0.1+  | 0.5+  |
| 2003 12 28 | 699 | 1.0+  | 0.2+  | 2004 02 11 | 699 | 0.3− | 0.5− | 2004 04 15 | 645 | 0.0   | 0.0   |
| 2004 01 13 | 699 | 1.3−  | 0.4−  | 2004 02 11 | 699 | 0.0  | 0.1+ | 2004 04 15 | 645 | 0.0   | 0.1+  |
| 2004 01 13 | 699 | 0.0   | 0.7−  | 2004 02 11 | 703 | 0.5+ | 1.1+ | 2004 04 16 | 645 | 0.0   | 0.0   |
| 2004 01 13 | 699 | 0.1+  | 0.5−  | 2004 02 11 | 699 | 0.1− | 0.1− | 2004 04 16 | 645 | 0.1+  | 0.0   |
| 2004 01 13 | 699 | 0.2−  | 0.0   | 2004 02 11 | 703 | 0.1− | 0.0  | 2004 04 19 | 704 | 0.6+  | 0.2−  |
| 2004 01 21 | 704 | 0.3+  | 0.3+  | 2004 02 11 | 699 | 0.7− | 0.6− | 2004 04 19 | 704 | 1.0+  | 0.2+  |
| 2004 01 21 | 704 | 0.0   | 0.6+  | 2004 02 11 | 699 | 1.0− | 0.1− | 2004 04 19 | 704 | 0.7+  | 0.4−  |
| 2004 01 21 | 704 | 0.0   | 0.3+  | 2004 02 11 | 699 | 0.1− | 0.1− | 2004 04 19 | 704 | 0.3−  | 0.6+  |
| 2004 01 21 | 704 | 0.5+  | 0.4+  | 2004 02 11 | 699 | 0.2− | 0.5− | 2006 07 24 | 704 | 0.1−  | 0.2+  |
| 2004 01 21 | 704 | 0.3+  | 0.2+  | 2004 02 11 | 699 | 0.2+ | 0.0  | 2006 07 24 | 704 | 0.2+  | 0.9+  |
| 2004 01 22 | 704 | 0.1+  | 0.3+  | 2004 02 14 | 691 | 0.1+ | 0.1− | 2006 07 24 | 704 | 0.1+  | 0.5+  |
| 2004 01 22 | 704 | 0.1−  | 0.1+  | 2004 02 14 | 691 | 0.0  | 0.0  | 2006 07 24 | 704 | 0.0   | 0.2+  |
| 2004 01 22 | 704 | 0.1−  | 0.1+  | 2004 02 14 | 691 | 0.1+ | 0.2− | 2006 07 24 | 704 | 0.2−  | 0.4+  |
| 2004 01 22 | 704 | 0.1−  | 0.4+  | 2004 02 16 | 644 | 0.3+ | 0.2+ | 2007 11 19 | 703 | (0.2− | 1.6+) |
| 2004 01 22 | 704 | 0.0   | 0.4+  | 2004 02 16 | 644 | 0.1+ | 0.2+ | 2007 11 19 | 703 | 0.3−  | 0.2+  |
| 2004 01 24 | 704 | 0.2+  | 0.2−  | 2004 02 16 | 704 | 0.5− | 1.2− | 2007 11 19 | 703 | 0.2−  | 0.7+  |
| 2004 01 24 | 704 | 0.3+  | 0.4−  | 2004 02 16 | 644 | 0.2+ | 0.4+ | 2007 11 19 | 703 | 0.7−  | 1.1+  |
| 2004 01 24 | 704 | 0.1+  | 0.1−  | 2004 02 16 | 704 | 0.4− | 1.4− | 2007 12 05 | 704 | 1.5+  | 0.7+  |
| 2004 01 24 | 704 | 0.1−  | 0.1−  | 2004 02 16 | 704 | 0.2+ | 1.1− | 2007 12 05 | 704 | 0.7−  | 0.6+  |
| 2004 01 24 | 704 | 0.1+  | 0.3−  | 2004 02 16 | 704 | 0.2+ | 0.9− | 2007 12 05 | 704 | 1.0+  | 1.4+  |
| 2004 01 26 | 699 | 0.6−  | 0.0   | 2004 02 16 | 704 | 0.4+ | 0.5+ | 2007 12 05 | 704 | 0.5−  | 1.1+  |
| 2004 01 26 | 699 | 0.3−  | 0.3−  | 2004 02 17 | 608 | 0.6− | 0.4− |            |     |       |       |

**2004 AH<sub>14</sub> = 2007 RH<sub>147</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.58939  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.19116084 | $\omega$ 276.23618 | +0.27865538   | −0.95756694 |          |  |
| <i>a</i> | 2.9844898  | $\Omega$ 157.16571 | +0.93899037   | +0.25555714 |          |  |
| <i>e</i> | 0.1082011  | <i>i</i> 10.93258  | +0.20161416   | +0.13325202 |          |  |
| <i>P</i> | 5.16       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 645 | 0.0  | 0.3− | 2004 01 23 | 704 | 0.8+ | 0.1− | 2007 09 12 | 703 | 0.1− | 0.4+ |
| 2002 09 05 | 645 | 0.1− | 0.3− | 2004 01 23 | 704 | 0.1+ | 0.2+ | 2007 09 12 | 703 | 0.0  | 0.7+ |
| 2002 10 15 | 644 | 0.1+ | 0.5+ | 2004 04 13 | 645 | 0.0  | 0.1− | 2007 10 04 | 703 | 0.7+ | 0.4+ |
| 2002 10 15 | 644 | 0.1− | 0.4+ | 2004 04 13 | 645 | 0.1+ | 0.0  | 2007 10 04 | 703 | 1.4+ | 0.7+ |
| 2002 10 15 | 644 | 0.1− | 0.3+ | 2007 09 03 | 703 | 1.4− | 0.8+ | 2007 10 04 | 703 | 1.0− | 0.2− |
| 2004 01 13 | 699 | 0.3− | 0.7− | 2007 09 03 | 703 | 0.4− | 0.7+ | 2007 10 04 | 703 | 0.9− | 0.1+ |
| 2004 01 13 | 699 | 1.2− | 0.2+ | 2007 09 03 | 703 | 0.7+ | 1.1− | 2007 10 16 | G96 | 0.1− | 0.4− |
| 2004 01 13 | 699 | 0.5+ | 0.3+ | 2007 09 03 | 703 | 1.2+ | 0.7+ | 2007 10 16 | G96 | 0.4+ | 0.4− |
| 2004 01 13 | 699 | 1.1− | 0.7− | 2007 09 11 | D29 | 1.6+ | 1.0− | 2007 10 16 | G96 | 0.2+ | 0.3− |
| 2004 01 13 | 644 | 0.2+ | 0.0  | 2007 09 11 | D29 | 0.8− | 0.4− | 2007 10 16 | G96 | 0.3+ | 0.3− |
| 2004 01 13 | 644 | 0.4+ | 0.1+ | 2007 09 11 | D29 | 1.2− | 0.4− | 2007 10 16 | G96 | 0.1+ | 0.2− |
| 2004 01 13 | 644 | 0.4+ | 0.2+ | 2007 09 11 | D29 | 0.2− | 0.5− | 2007 10 16 | G96 | 0.2− | 0.1− |
| 2004 01 23 | 704 | 0.2+ | 0.6+ | 2007 09 12 | 703 | 0.3+ | 0.3+ | 2007 10 16 | G96 | 0.1− | 0.1− |
| 2004 01 23 | 704 | 0.2− | 0.3− | 2007 09 12 | 703 | 0.2− | 0.0  | 2007 10 16 | G96 | 0.3− | 0.3− |

**2004 AL<sub>22</sub> = 2007 WP<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.03377   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.22249372 | $\omega$ 96.47054  | +0.88608542   | −0.45620482 |          |  |
| <i>a</i> | 2.6972687  | $\Omega$ 290.69809 | +0.38302994   | +0.82032489 |          |  |
| <i>e</i> | 0.0954944  | <i>i</i> 5.03104   | +0.26103771   | +0.34488292 |          |  |
| <i>P</i> | 4.43       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.1− | 0.1+ | 2004 01 15 | 691 | 0.1− | 0.2+ | 2007 11 19 | G96 | 1.0+ | 1.0− |
| 2002 09 13 | 644 | 0.3− | 0.2+ | 2004 01 27 | 691 | 0.3+ | 0.0  | 2007 11 19 | G96 | 0.1+ | 0.0  |
| 2002 09 13 | 644 | 0.2+ | 0.0  | 2004 01 27 | 691 | 0.0  | 0.0  | 2007 11 19 | G96 | 0.3+ | 0.1+ |
| 2003 12 21 | 691 | 0.2− | 0.1+ | 2004 01 27 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.4− | 0.0  |
| 2003 12 21 | 691 | 0.3− | 0.2+ | 2004 02 16 | 691 | 0.3+ | 0.1− | 2007 11 20 | 691 | 0.4− | 0.1+ |
| 2003 12 21 | 691 | 0.2− | 0.3+ | 2004 02 16 | 691 | 0.5+ | 0.1− | 2007 11 20 | 691 | 0.6− | 0.5+ |
| 2004 01 15 | 691 | 0.0  | 0.0  | 2004 02 16 | 691 | 0.3− | 0.2− |            |     |      |      |
| 2004 01 15 | 691 | 0.2+ | 0.3+ | 2007 11 19 | G96 | 0.1− | 0.1− |            |     |      |      |

**2004 BB<sub>7</sub> = 2007 VU<sub>218</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.92387   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.23035182 | $\omega$ 350.31927 | +0.88667938   | −0.46064476 |          |  |
| <i>a</i> | 2.6355724  | $\Omega$ 37.19410  | +0.42854080   | +0.78613788 |          |  |
| <i>e</i> | 0.1910375  | <i>i</i> 3.80117   | +0.17364465   | +0.41206023 |          |  |
| <i>P</i> | 4.28       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 16 | 691 | 0.1+ | 0.3− | 2007 09 15 | G96 | 0.1+ | 0.4− | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 2004 01 16 | 691 | 0.1− | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.4− | 2007 11 13 | 691 | 0.1− | 0.1− |
| 2004 01 16 | 691 | 0.1+ | 0.1− | 2007 09 15 | G96 | 0.3+ | 0.2− | 2007 11 28 | D29 | 0.3+ | 0.1− |
| 2004 01 18 | 691 | 0.2+ | 0.1− | 2007 11 01 | 691 | 0.5− | 0.1+ | 2007 11 28 | D29 | 0.2+ | 0.0  |
| 2004 01 18 | 691 | 0.3+ | 0.2− | 2007 11 01 | 691 | 0.2+ | 0.1− | 2007 11 28 | D29 | 0.0  | 0.0  |
| 2004 01 18 | 691 | 0.1− | 0.1+ | 2007 11 01 | 691 | 0.1+ | 0.1+ | 2007 11 28 | D29 | 0.3− | 0.2− |

**2004 BC<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 297.59761  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21468256 | $\omega$ 4.77421   | -0.55416258   | -0.82740231 |
| <i>a</i> | 2.7623044  | $\Omega$ 118.90611 | +0.76023109   | -0.54767121 |
| <i>e</i> | 0.1098636  | <i>i</i> 5.97694   | +0.33904649   | -0.12434495 |
| <i>P</i> | 4.59       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 05 | 645 | 0.0  | 0.0  | 2004 01 24 | 704 | 0.3+ | 1.0+ | 2004 02 23 | 704 | 0.4- | 0.3+ |
| 2000 05 05 | 645 | 0.0  | 0.1- | 2004 01 30 | 691 | 0.0  | 0.2- | 2004 02 23 | 704 | 0.7+ | 0.3+ |
| 2004 01 17 | 644 | 0.3+ | 0.1+ | 2004 01 30 | 691 | 0.0  | 0.1- | 2004 02 23 | 704 | 0.6+ | 0.6- |
| 2004 01 17 | 644 | 0.0  | 0.1+ | 2004 01 30 | 691 | 0.1- | 0.3- | 2004 02 23 | 704 | 0.4- | 0.1- |
| 2004 01 17 | 644 | 0.1+ | 0.1+ | 2004 01 30 | 704 | 0.5+ | 0.0  | 2007 11 02 | G96 | 0.2- | 0.4- |
| 2004 01 19 | 691 | 0.0  | 0.1- | 2004 01 30 | 704 | 0.6+ | 0.5+ | 2007 11 02 | G96 | 0.6- | 0.5- |
| 2004 01 19 | 691 | 0.1+ | 0.3- | 2004 01 30 | 704 | 0.5+ | 0.5- | 2007 11 02 | G96 | 0.0  | 0.3- |
| 2004 01 19 | 691 | 0.0  | 0.1- | 2004 01 30 | 704 | 0.4- | 0.2- | 2007 11 02 | G96 | 0.1+ | 0.3- |
| 2004 01 22 | 704 | 0.2- | 0.4+ | 2004 02 12 | 691 | 0.2- | 0.1+ | 2007 11 17 | 703 | 0.7- | 1.0+ |
| 2004 01 22 | 704 | 0.3- | 0.2- | 2004 02 12 | 691 | 0.0  | 0.2- | 2007 11 17 | 703 | 0.2- | 0.6+ |
| 2004 01 22 | 704 | 0.5- | 0.6+ | 2004 02 12 | 691 | 0.1- | 0.1- | 2007 11 17 | 703 | 0.7+ | 0.2+ |
| 2004 01 22 | 704 | 0.2- | 0.8+ | 2004 02 14 | 691 | 0.1- | 0.1+ | 2007 11 17 | 703 | 0.9+ | 0.2+ |
| 2004 01 22 | 704 | 0.1+ | 0.7+ | 2004 02 14 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.6- |
| 2004 01 24 | 704 | 0.1- | 0.7- | 2004 02 14 | 691 | 0.4- | 0.0  | 2007 11 18 | G96 | 0.1- | 0.5- |
| 2004 01 24 | 704 | 0.4+ | 0.8+ | 2004 02 17 | 644 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.1+ | 0.6- |
| 2004 01 24 | 704 | 0.3+ | 0.3+ | 2004 02 17 | 644 | 0.1- | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.4- |
| 2004 01 24 | 704 | 1.1+ | 1.0+ | 2004 02 17 | 644 | 0.0  | 0.4+ |            |     |      |      |

**2004 BB<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.44265  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22043913 | $\omega$ 158.62856 | -0.31306382   | -0.94355117 |
| <i>a</i> | 2.7140026  | $\Omega$ 309.44808 | +0.84979581   | -0.22743878 |
| <i>e</i> | 0.1054629  | <i>i</i> 8.05300   | +0.42407324   | -0.24079616 |
| <i>P</i> | 4.47       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 699 | 0.0  | 0.7- | 2004 01 22 | 704 | 0.4+ | 0.8+ | 2004 04 13 | 645 | 0.1+ | 0.1+ |
| 2003 12 29 | 699 | 1.5+ | 0.5+ | 2004 01 22 | 704 | 0.4+ | 1.2+ | 2004 04 13 | 645 | 0.1- | 0.2- |
| 2003 12 29 | 699 | 0.2+ | 0.5- | 2004 01 22 | 704 | 0.8+ | 0.2+ | 2004 04 15 | 645 | 0.0  | 0.1- |
| 2003 12 29 | 699 | 0.6+ | 1.8+ | 2004 01 22 | 704 | 0.6- | 0.0  | 2004 04 15 | 645 | 0.1- | 0.1- |
| 2004 01 16 | 691 | 0.0  | 0.2- | 2004 01 22 | 704 | 0.0  | 0.5- | 2004 04 16 | 645 | 0.1- | 0.1- |
| 2004 01 16 | 691 | 0.2+ | 0.2- | 2004 01 22 | 704 | 0.4- | 0.3+ | 2004 04 16 | 645 | 0.1- | 0.1- |
| 2004 01 16 | 691 | 0.2- | 0.1- | 2004 01 22 | 704 | 0.5+ | 0.3- | 2006 07 21 | G96 | 0.0  | 0.0  |
| 2004 01 19 | 699 | 0.3- | 0.2- | 2004 01 24 | 704 | 0.5- | 1.4+ | 2006 07 21 | G96 | 0.0  | 0.1+ |
| 2004 01 19 | 699 | 0.7+ | 1.0- | 2004 01 24 | 704 | 0.6+ | 0.7+ | 2006 07 21 | G96 | 0.2- | 0.1+ |
| 2004 01 19 | 699 | 1.5- | 0.6+ | 2004 01 24 | 704 | 1.8- | 0.2+ | 2006 07 21 | G96 | 0.3- | 0.2+ |
| 2004 01 19 | 699 | 0.1+ | 0.9- | 2004 01 24 | 704 | 0.2- | 1.8+ | 2007 11 18 | 703 | 0.5- | 0.4+ |
| 2004 01 19 | 703 | 1.0+ | 1.3+ | 2004 01 26 | 699 | 0.7+ | 0.1- | 2007 11 18 | 703 | 0.3+ | 0.1- |
| 2004 01 19 | 703 | 0.8+ | 0.7+ | 2004 01 26 | 699 | 1.1+ | 0.4+ | 2007 11 18 | 703 | 0.6- | 0.9- |
| 2004 01 19 | 703 | 0.9+ | 0.1- | 2004 01 26 | 699 | 1.1+ | 0.3+ | 2007 11 18 | 703 | 0.3+ | 0.4- |
| 2004 01 19 | 703 | 0.4- | 1.1+ | 2004 01 26 | 699 | 0.2+ | 0.0  | 2007 11 20 | G96 | 0.1+ | 0.6- |
| 2004 01 22 | 704 | 0.2- | 0.3+ | 2004 02 13 | 691 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.1+ | 0.6- |
| 2004 01 22 | 704 | 0.3+ | 0.7+ | 2004 02 13 | 691 | 0.1+ | 0.1- | 2007 11 20 | G96 | 0.3+ | 0.6- |
| 2004 01 22 | 704 | 0.3- | 0.1- | 2004 02 13 | 691 | 0.5- | 0.0  | 2007 11 20 | G96 | 0.7+ | 0.6- |

**2004 BE<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.48200   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23127536 | $\omega$ 337.14494 | +0.72666306   | -0.64357696 |
| <i>a</i> | 2.6285514  | $\Omega$ 65.18770  | +0.66411184   | +0.56852105 |
| <i>e</i> | 0.2730634  | <i>i</i> 15.35489  | +0.17583019   | +0.51243782 |
| <i>P</i> | 4.26       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 04 17 | 691 | 0.1- | 0.3- | 2004 01 19 | 704 | 0.6-  | 0.7+  | 2007 12 08 | 300 | 0.2- | 0.2+ |
| 2001 04 17 | 691 | 0.1+ | 0.1+ | 2004 01 19 | 704 | (2.2- | 0.4-) | 2007 12 08 | 300 | 0.0  | 0.2+ |
| 2001 04 17 | 691 | 0.0  | 0.2+ | 2004 01 19 | 704 | 0.1-  | 1.3+  | 2007 12 08 | 300 | 0.2- | 0.0  |
| 2003 12 17 | 644 | 0.4+ | 0.1+ | 2004 01 30 | 703 | 1.3-  | 0.5-  | 2007 12 14 | 300 | 0.2+ | 0.2- |
| 2003 12 17 | 644 | 0.4- | 0.1- | 2004 01 30 | 703 | 0.2+  | 0.1-  | 2007 12 14 | 300 | 0.3- | 0.2+ |
| 2003 12 17 | 644 | 0.1+ | 0.3- | 2004 01 30 | 703 | 0.7+  | 0.2+  | 2007 12 14 | 300 | 0.1- | 0.0  |
| 2003 12 30 | 704 | 0.1- | 0.1- | 2004 01 30 | 703 | 0.7+  | 0.2-  | 2007 12 14 | 300 | 0.3+ | 0.5- |
| 2003 12 30 | 704 | 0.6+ | 0.2+ | 2004 02 15 | 703 | 0.5+  | 0.5+  | 2007 12 14 | 300 | 0.4- | 0.2- |
| 2003 12 30 | 704 | 0.3+ | 0.6- | 2004 02 15 | 703 | 0.1+  | 1.0-  | 2007 12 16 | 704 | 0.1- | 0.2+ |
| 2003 12 30 | 704 | 0.7+ | 0.8- | 2004 02 15 | 703 | (0.1- | 2.9-) | 2007 12 16 | 704 | 0.5+ | 0.3+ |
| 2004 01 17 | 644 | 0.7- | 0.5- | 2004 02 15 | 703 | 0.3-  | 0.8+  | 2007 12 16 | 704 | 0.4+ | 0.2- |
| 2004 01 17 | 644 | 0.5- | 0.6- | 2007 12 08 | 300 | 0.4-  | 0.0   | 2007 12 16 | 704 | 0.0  | 0.4+ |
| 2004 01 17 | 644 | 0.6- | 0.4- | 2007 12 08 | 300 | 0.0   | 0.2+  | 2007 12 16 | 704 | 0.0  | 0.2- |
| 2004 01 19 | 704 | 0.3+ | 0.8+ | 2007 12 08 | 300 | 0.2+  | 0.0   |            |     |      |      |

**2004 BW<sub>28</sub> = 2007 VW<sub>272</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.23438  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23667786 | $\omega$ 36.03107 | -0.52415944   | -0.84911165 |
| <i>a</i> | 2.5883975  | $\Omega$ 85.66540 | +0.76521927   | -0.50325459 |
| <i>e</i> | 0.1287867  | <i>i</i> 3.75580  | +0.37375975   | -0.16045007 |
| <i>P</i> | 4.16       | <i>H</i> 17.0     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 18 | 644 | 0.1+ | 0.2+ | 2004 02 11 | 691 | 0.2- | 0.1- | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2004 01 18 | 644 | 0.1+ | 0.5+ | 2004 02 11 | 691 | 0.1- | 0.2- | 2007 11 18 | G96 | 0.2- | 0.3- |
| 2004 01 18 | 644 | 0.2+ | 0.4+ | 2004 02 16 | 704 | 0.1+ | 0.7+ | 2007 11 18 | G96 | 0.1- | 0.0  |
| 2004 01 22 | 704 | 0.1- | 0.4- | 2004 02 16 | 704 | 0.9+ | 1.1- | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2004 01 22 | 704 | 0.1- | 0.2- | 2004 02 16 | 704 | 1.1+ | 0.4+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2004 01 22 | 704 | 0.3+ | 0.2+ | 2004 02 16 | 704 | 0.4+ | 0.5+ | 2007 12 04 | G96 | 0.2- | 0.1+ |
| 2004 01 22 | 704 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.3+ | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.1- |
| 2004 01 22 | 704 | 0.6- | 0.5+ | 2007 11 11 | G96 | 0.3- | 0.1- | 2007 12 04 | G96 | 0.0  | 0.0  |
| 2004 02 11 | 691 | 0.3- | 0.1- | 2007 11 11 | G96 | 0.2- | 0.1+ | 2007 12 04 | G96 | 0.1- | 0.2- |

**2004 BY<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.96832    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23961312 | $\omega$ 98.21202  | +0.18541341   | -0.98255204 |
| <i>a</i> | 2.5672154  | $\Omega$ 341.08374 | +0.88290591   | +0.17309833 |
| <i>e</i> | 0.1987453  | <i>i</i> 2.58243   | +0.43139196   | +0.06803276 |
| <i>P</i> | 4.11       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 27 | 691 | 0.1- | 0.1- | 2004 01 30 | 704 | 0.2+ | 0.2+ | 2007 11 11 | G96 | 0.2- | 0.5- |
| 2000 02 27 | 691 | 0.1+ | 0.2+ | 2004 01 30 | 704 | 0.5+ | 0.0  | 2007 11 11 | G96 | 0.1- | 0.4- |
| 2000 02 27 | 691 | 0.1- | 0.0  | 2004 01 30 | 704 | 0.1+ | 0.8- | 2007 11 11 | G96 | 0.5- | 0.5- |
| 2003 12 27 | 704 | 1.4+ | 0.1+ | 2004 02 14 | 691 | 0.1- | 0.0  | 2007 12 05 | 691 | 0.5- | 0.2- |
| 2003 12 27 | 704 | 0.8+ | 0.3- | 2004 02 14 | 691 | 0.2- | 0.1+ | 2007 12 05 | 691 | 0.5- | 0.3- |
| 2003 12 27 | 704 | 0.2+ | 0.0  | 2004 02 14 | 691 | 0.1+ | 0.1- | 2007 12 05 | 691 | 0.7- | 0.0  |
| 2003 12 27 | 704 | 0.6+ | 0.1+ | 2004 02 22 | 291 | 0.4+ | 0.4+ | 2007 12 10 | 704 | 0.7+ | 0.7+ |
| 2003 12 27 | 704 | 0.3- | 0.3+ | 2004 02 22 | 291 | 0.0  | 0.0  | 2007 12 10 | 704 | 0.1+ | 1.4- |
| 2004 01 19 | 691 | 0.3- | 0.2+ | 2004 02 22 | 291 | 0.1+ | 0.0  | 2007 12 10 | 704 | 0.7+ | 0.7+ |
| 2004 01 19 | 691 | 0.1- | 0.2+ | 2004 02 23 | 704 | 0.2+ | 0.2+ | 2007 12 10 | 704 | 0.4- | 0.1+ |
| 2004 01 19 | 691 | 0.2- | 0.4+ | 2004 02 23 | 704 | 0.4+ | 0.6+ | 2007 12 10 | 704 | 1.0+ | 0.0  |
| 2004 01 22 | 704 | 0.1+ | 0.8+ | 2004 02 23 | 704 | 0.0  | 0.9+ | 2007 12 15 | 704 | 0.7+ | 0.5+ |
| 2004 01 22 | 704 | 0.1- | 0.1+ | 2004 02 23 | 704 | 0.6+ | 0.0  | 2007 12 15 | 704 | 1.2+ | 0.1+ |
| 2004 01 22 | 704 | 0.2- | 0.6+ | 2004 02 23 | 704 | 0.5+ | 0.5+ | 2007 12 15 | 704 | 0.9+ | 0.4+ |
| 2004 01 22 | 704 | 0.1+ | 0.3+ | 2004 03 18 | 645 | 0.1- | 0.2- | 2007 12 15 | 704 | 0.9+ | 0.1+ |
| 2004 01 22 | 704 | 0.6+ | 0.5+ | 2004 03 18 | 645 | 0.2- | 0.3- | 2007 12 15 | 704 | 0.3+ | 0.3- |
| 2004 01 30 | 704 | 0.0  | 0.2- | 2007 11 11 | G96 | 0.2+ | 0.4- |            |     |      |      |



2007 DEC. 24

M.P.O. 129691

**2004 BS<sub>37</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.92424  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22863695 | $\omega$ 104.06632 | +0.03157835   | -0.99936981 |
| <i>a</i> | 2.6487345  | $\Omega$ 344.09738 | +0.89268377   | +0.03549507 |
| <i>e</i> | 0.2369603  | <i>i</i> 3.39175   | +0.44957590   | -0.00028343 |
| <i>P</i> | 4.31       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 19 | 704 | 0.2-  | 0.3-  | 2004 01 31 | 599 | 0.1+ | 0.0  | 2004 02 23 | 704 | 0.6-  | 0.5+  |
| 2003 12 19 | 704 | 0.4-  | 0.1+  | 2004 01 31 | 599 | 0.2+ | 0.0  | 2004 02 27 | 695 | 0.2-  | 0.0   |
| 2003 12 19 | 704 | 0.7+  | 0.4+  | 2004 02 10 | 333 | 0.3- | 0.1+ | 2004 02 27 | 695 | 0.2-  | 0.1-  |
| 2004 01 05 | 703 | (1.8- | 0.7+) | 2004 02 10 | 333 | 0.3- | 0.0  | 2004 03 01 | 691 | 0.0   | 0.1+  |
| 2004 01 05 | 703 | 0.1-  | 0.7-  | 2004 02 10 | 333 | 0.3- | 0.3+ | 2004 03 01 | 691 | 0.1+  | 0.2+  |
| 2004 01 05 | 703 | (1.4- | 2.0+) | 2004 02 10 | 644 | 0.0  | 0.2+ | 2004 03 01 | 691 | 0.2-  | 0.3+  |
| 2004 01 05 | 703 | 1.4-  | 0.2-  | 2004 02 10 | 644 | 0.8- | 0.0  | 2007 11 07 | 691 | 0.0   | 0.0   |
| 2004 01 19 | 703 | 1.0-  | 0.7+  | 2004 02 10 | 703 | 0.9+ | 0.4- | 2007 11 07 | 691 | 0.1-  | 0.2+  |
| 2004 01 19 | 703 | 0.3+  | 0.2+  | 2004 02 10 | 644 | 0.0  | 0.3+ | 2007 11 07 | 691 | 0.1-  | 0.0   |
| 2004 01 19 | 703 | 0.9-  | 0.8-  | 2004 02 10 | 703 | 1.2- | 1.3- | 2007 11 18 | 704 | 0.7+  | 0.4-  |
| 2004 01 19 | 703 | 1.0-  | 0.6-  | 2004 02 10 | 703 | 1.4+ | 0.3- | 2007 11 18 | 704 | (0.2+ | 2.4-) |
| 2004 01 22 | 704 | 0.2+  | 0.1+  | 2004 02 10 | 703 | 0.9- | 1.1- | 2007 11 18 | 704 | 0.3-  | 1.3-  |
| 2004 01 22 | 704 | 0.0   | 0.2-  | 2004 02 12 | 691 | 0.2- | 0.1- | 2007 11 18 | 704 | 1.0+  | 0.5-  |
| 2004 01 22 | 704 | 0.5+  | 0.4+  | 2004 02 12 | 691 | 0.1- | 0.2- | 2007 11 20 | 704 | 0.4+  | 0.2-  |
| 2004 01 22 | 704 | 0.2+  | 0.9+  | 2004 02 12 | 691 | 0.1- | 0.1- | 2007 11 20 | 704 | 0.6+  | 0.0   |
| 2004 01 22 | 704 | 0.2-  | 0.4+  | 2004 02 14 | 608 | 0.6+ | 1.0+ | 2007 11 20 | 704 | 0.7+  | 0.2-  |
| 2004 01 26 | 699 | 0.2-  | 0.6+  | 2004 02 14 | 608 | 0.4+ | 0.3+ | 2007 11 20 | 704 | 0.3+  | 0.3-  |
| 2004 01 26 | 699 | 0.5+  | 0.1+  | 2004 02 14 | 608 | 0.7+ | 0.3+ | 2007 11 20 | 691 | 0.2-  | 0.0   |
| 2004 01 26 | 699 | 0.1-  | 0.1+  | 2004 02 16 | 704 | 0.4+ | 0.9+ | 2007 11 20 | 691 | 0.1-  | 0.0   |
| 2004 01 26 | 699 | 0.6-  | 0.2-  | 2004 02 16 | 704 | 0.8+ | 0.1- | 2007 11 20 | 691 | 0.2-  | 0.2-  |
| 2004 01 30 | 704 | 1.1+  | 1.5-  | 2004 02 16 | 704 | 0.3+ | 0.1- | 2007 12 15 | 704 | 0.2-  | 0.7+  |
| 2004 01 30 | 704 | 0.1+  | 0.0   | 2004 02 16 | 704 | 0.5+ | 0.1+ | 2007 12 15 | 704 | 0.5+  | 0.7+  |
| 2004 01 30 | 704 | 0.9+  | 0.5-  | 2004 02 16 | 704 | 0.3+ | 0.9+ | 2007 12 15 | 704 | 0.1-  | 1.2+  |
| 2004 01 30 | 704 | 0.5+  | 1.0-  | 2004 02 23 | 704 | 0.2+ | 0.2- | 2007 12 15 | 704 | 0.2-  | 0.9+  |
| 2004 01 30 | 704 | 0.9+  | 0.7-  | 2004 02 23 | 704 | 0.1- | 0.1- | 2007 12 15 | 704 | 0.4-  | 0.6+  |
| 2004 01 31 | 599 | 0.2+  | 0.5-  | 2004 02 23 | 704 | 0.2- | 0.6+ |            |     |       |       |

**2004 BM<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 247.00408  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20975950 | $\omega$ 222.72490 | -0.95147125   | -0.26316798 |
| <i>a</i> | 2.8053580  | $\Omega$ 301.36014 | +0.30770117   | -0.82155313 |
| <i>e</i> | 0.0291735  | <i>i</i> 10.76638  | -0.00473761   | -0.50575989 |
| <i>P</i> | 4.70       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 691 | 0.1- | 0.1+ | 2004 01 24 | 673 | 0.2- | 0.2- | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2003 12 28 | 691 | 0.0  | 0.0  | 2004 01 24 | 673 | 0.4+ | 0.1- | 2007 11 17 | G96 | 0.1+ | 0.2+ |
| 2003 12 28 | 691 | 0.1- | 0.1+ | 2004 01 24 | 704 | 0.2+ | 0.3+ | 2007 11 17 | G96 | 0.1- | 0.1+ |
| 2004 01 21 | 704 | 0.6- | 1.0+ | 2004 01 24 | 704 | 1.0+ | 0.0  | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2004 01 21 | 704 | 1.0- | 0.1+ | 2004 01 24 | 704 | 0.2- | 0.5- | 2007 11 18 | G96 | 0.1+ | 0.1+ |
| 2004 01 21 | 704 | 0.1+ | 0.9+ | 2004 01 24 | 704 | 0.1+ | 1.3- | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2004 01 23 | 673 | 0.2- | 0.1- | 2004 01 24 | 704 | 0.8+ | 0.3+ | 2007 11 18 | G96 | 0.1- | 0.1- |
| 2004 01 23 | 673 | 0.6- | 0.0  | 2004 02 16 | 691 | 0.3+ | 0.1- | 2007 11 18 | G96 | 0.1- | 0.2- |
| 2004 01 23 | 673 | 1.0- | 0.1- | 2004 02 16 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2004 01 24 | 673 | 0.5- | 0.2- | 2004 02 16 | 691 | 0.3+ | 0.0  |            |     |      |      |

**2004 BP<sub>45</sub> = 2007 VA<sub>297</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.28322  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21993915 | $\omega$ 346.00362 | +0.06334747   | -0.98440919 |
| <i>a</i> | 2.7181141  | $\Omega$ 100.17313 | +0.93093045   | -0.00096802 |
| <i>e</i> | 0.1624068  | <i>i</i> 9.59666   | +0.35966039   | +0.17589091 |
| <i>P</i> | 4.48       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 13 | 644 | 0.1- | 0.3+ | 2004 01 24 | 704 | 0.6+ | 0.1+ | 2007 10 15 | 703 | 1.2+ | 1.1+ |
| 2002 08 13 | 644 | 0.0  | 0.1- | 2007 10 11 | 703 | 0.8- | 0.4+ | 2007 10 15 | 703 | 0.0  | 0.5+ |
| 2002 08 13 | 644 | 0.0  | 0.2+ | 2007 10 11 | 703 | 1.0+ | 0.4+ | 2007 11 11 | 703 | 0.6+ | 0.9- |
| 2004 01 21 | 704 | 0.4- | 0.1- | 2007 10 11 | 703 | 0.9- | 0.9- | 2007 11 11 | 703 | 1.0+ | 0.4- |
| 2004 01 21 | 704 | 0.8- | 0.0  | 2007 10 11 | 703 | 1.3- | 0.2- | 2007 11 11 | 703 | 0.2+ | 0.5- |
| 2004 01 21 | 704 | 0.3+ | 0.5- | 2007 10 11 | 703 | 1.0- | 0.3+ | 2007 11 11 | 703 | 1.6+ | 0.6+ |
| 2004 01 21 | 704 | 1.4- | 1.2+ | 2007 10 11 | 703 | 0.4- | 0.3- | 2007 11 17 | 703 | 0.7- | 1.1+ |
| 2004 01 21 | 704 | 0.3- | 0.6+ | 2007 10 11 | 703 | 1.6- | 0.7- | 2007 11 17 | 703 | 0.9+ | 0.9- |
| 2004 01 24 | 704 | 0.8+ | 0.5- | 2007 10 11 | 703 | 0.6- | 0.3- | 2007 11 17 | 703 | 0.2- | 0.4- |
| 2004 01 24 | 704 | 0.5+ | 0.4- | 2007 10 15 | 703 | 1.0+ | 0.3- | 2007 11 17 | 703 | 0.2- | 0.1- |
| 2004 01 24 | 704 | 0.5+ | 0.4+ | 2007 10 15 | 703 | 0.5+ | 1.0+ |            |     |      |      |

**2004 BU<sub>50</sub> = 1999 FH<sub>87</sub> = 2005 JQ<sub>184</sub> = 2007 TJ<sub>107</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 279.61495  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17803703 | $\omega$ 216.00485 | +0.00393812   | -0.99983293 |
| <i>a</i> | 3.1294101  | $\Omega$ 233.77617 | +0.92257114   | +0.01051913 |
| <i>e</i> | 0.0615387  | <i>i</i> 1.26782   | +0.38580692   | -0.01494837 |
| <i>P</i> | 5.54       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 10 | 691 | (2.9+ | 4.0-) | 2004 01 24 | 704 | 1.4+ | 0.9+ | 2007 08 23 | 691 | 0.4- | 0.3- |
| 1999 03 10 | 691 | 0.4-  | 0.5-  | 2004 01 28 | 691 | 0.0  | 0.0  | 2007 08 23 | 691 | 0.6- | 0.2+ |
| 1999 03 10 | 691 | 0.2-  | 0.4-  | 2004 01 28 | 691 | 0.1+ | 0.1- | 2007 10 04 | G96 | 0.2- | 0.1+ |
| 1999 03 21 | 645 | 0.0   | 0.0   | 2004 01 28 | 691 | 0.3+ | 0.1- | 2007 10 04 | G96 | 0.1- | 0.1+ |
| 1999 03 21 | 645 | 0.0   | 0.0   | 2005 03 11 | G96 | 0.1- | 0.2- | 2007 10 04 | G96 | 0.1- | 0.0  |
| 1999 03 22 | 645 | 0.1-  | 0.0   | 2005 03 11 | G96 | 0.1+ | 0.1+ | 2007 10 04 | G96 | 0.1- | 0.1+ |
| 1999 03 22 | 645 | 0.1-  | 0.0   | 2005 03 11 | G96 | 0.3- | 0.2+ | 2007 10 10 | G96 | 0.1- | 0.1+ |
| 2001 08 22 | 691 | 0.6+  | 0.0   | 2005 03 11 | G96 | 0.2+ | 0.1+ | 2007 10 10 | G96 | 0.0  | 0.2+ |
| 2001 08 22 | 691 | 0.3+  | 0.7+  | 2005 04 17 | 691 | 0.7+ | 0.5+ | 2007 10 10 | G96 | 0.1+ | 0.1+ |
| 2001 08 22 | 691 | 0.4+  | 0.4+  | 2005 04 17 | 691 | 0.8+ | 0.6+ | 2007 10 10 | G96 | 0.4- | 0.0  |
| 2002 10 16 | 644 | 0.1+  | 1.3+  | 2005 04 17 | 691 | 0.3+ | 0.7+ | 2007 10 20 | G96 | 0.8- | 0.1- |
| 2002 10 16 | 644 | 0.3-  | 1.3+  | 2005 05 11 | G96 | 0.5- | 0.1+ | 2007 10 20 | G96 | 0.4- | 0.4+ |
| 2002 10 16 | 644 | 0.2-  | 1.6+  | 2005 05 11 | G96 | 0.1- | 0.1+ | 2007 10 20 | G96 | 0.0  | 0.4- |
| 2004 01 21 | 704 | 0.7+  | 0.8+  | 2005 05 11 | G96 | 0.5- | 0.3+ | 2007 10 20 | G96 | 0.0  | 0.1+ |
| 2004 01 21 | 704 | 1.5+  | 0.2+  | 2005 05 11 | G96 | 0.3- | 0.4+ | 2007 12 06 | G96 | 0.1+ | 0.4- |
| 2004 01 21 | 704 | 0.2+  | 1.1-  | 2005 05 14 | G96 | 0.5+ | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2004 01 21 | 704 | 0.6+  | 1.4+  | 2005 05 14 | G96 | 0.2- | 0.1- | 2007 12 06 | G96 | 0.2- | 0.4- |
| 2004 01 24 | 704 | 0.3+  | 0.9+  | 2005 05 14 | G96 | 0.2- | 0.1- | 2007 12 06 | G96 | 0.6- | 0.3- |
| 2004 01 24 | 704 | 0.0   | 0.6+  | 2005 05 14 | G96 | 0.1- | 0.1- |            |     |      |      |
| 2004 01 24 | 704 | 0.9+  | 1.2+  | 2007 08 23 | 691 | 0.3- | 0.2- |            |     |      |      |

**2004 BY<sub>54</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.39360   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18084526 | $\omega$ 45.65907  | +0.94975961   | +0.10190547 |
| <i>a</i> | 3.0969293  | $\Omega$ 306.22302 | -0.26094551   | +0.77988964 |
| <i>e</i> | 0.0267512  | <i>i</i> 21.51990  | +0.17281238   | +0.61756572 |
| <i>P</i> | 5.45       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 01 26 | 691 | 0.5- | 0.0  | 2004 01 24 | 704 | 0.5+ | 0.8+ | 2007 09 03 | G96 | 0.2- | 0.0  |
| 1993 01 26 | 691 | 0.0  | 0.6- | 2004 01 24 | 704 | 0.5+ | 1.0+ | 2007 09 03 | G96 | 0.1- | 0.0  |
| 1993 01 26 | 691 | 0.2- | 0.4- | 2004 01 24 | 704 | 0.4+ | 0.6+ | 2007 09 03 | G96 | 0.4+ | 0.3- |
| 2004 01 17 | 644 | 0.2+ | 0.4+ | 2004 01 28 | 691 | 0.1+ | 0.2- | 2007 10 16 | 703 | 0.1- | 0.0  |
| 2004 01 17 | 644 | 0.3+ | 0.0  | 2004 01 28 | 691 | 0.0  | 0.2- | 2007 10 16 | 703 | 0.3- | 0.3+ |
| 2004 01 17 | 644 | 0.8- | 0.2+ | 2004 01 28 | 691 | 0.3- | 0.3- | 2007 10 16 | 703 | 0.4+ | 0.3+ |
| 2004 01 22 | 704 | 0.9+ | 1.0+ | 2004 02 11 | 644 | 0.5+ | 0.1+ | 2007 10 16 | 703 | 1.2+ | 1.0+ |
| 2004 01 22 | 704 | 0.1- | 0.2- | 2004 02 11 | 644 | 0.1+ | 0.1+ | 2007 11 08 | G96 | 0.1- | 0.1- |
| 2004 01 22 | 704 | 1.0+ | 0.8+ | 2004 02 11 | 644 | 0.1- | 0.3+ | 2007 11 08 | G96 | 0.3- | 0.2- |
| 2004 01 22 | 704 | 0.1+ | 0.2+ | 2004 02 17 | 644 | 0.0  | 0.1- | 2007 11 08 | G96 | 0.5- | 0.3- |
| 2004 01 22 | 704 | 0.4+ | 1.4+ | 2004 02 17 | 644 | 0.0  | 0.3+ | 2007 11 08 | G96 | 0.2- | 0.3- |
| 2004 01 24 | 704 | 0.2- | 0.2- | 2004 02 17 | 644 | 0.2- | 0.2- |            |     |      |      |
| 2004 01 24 | 704 | 0.4+ | 0.6+ | 2007 09 03 | G96 | 0.7- | 0.0  |            |     |      |      |

**2004 BR<sub>65</sub> = 2007 XT<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 16.91598   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22843780 | $\omega$ | 316.62313 | +0.74123179   | -0.67038898 |
| <i>a</i> | 2.6502737  | $\Omega$ | 85.50646  | +0.62479392   | +0.67054909 |
| <i>e</i> | 0.1542203  | <i>i</i> | 1.95279   | +0.24537317   | +0.31771455 |
| <i>P</i> | 4.31       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 16 | 691 | 0.2+ | 0.2- | 2004 01 27 | 691 | 0.1- | 0.0  | 2007 09 18 | G96 | 0.4+ | 0.2- |
| 2004 01 16 | 691 | 0.1+ | 0.1+ | 2004 02 13 | 691 | 0.8+ | 0.0  | 2007 09 18 | G96 | 0.1- | 0.1+ |
| 2004 01 16 | 691 | 0.5- | 0.1+ | 2004 02 13 | 691 | 0.0  | 0.0  | 2007 12 12 | J75 | 0.6- | 0.4+ |
| 2004 01 22 | 704 | 0.5+ | 0.4+ | 2004 02 13 | 691 | 0.4- | 0.1+ | 2007 12 12 | J75 | 1.2- | 0.0  |
| 2004 01 22 | 704 | 0.7+ | 0.1+ | 2005 04 10 | G96 | 0.1+ | 0.2+ | 2007 12 13 | J75 | 0.9- | 0.1- |
| 2004 01 22 | 704 | 0.5- | 0.7+ | 2005 04 10 | G96 | 0.5+ | 0.0  | 2007 12 14 | 620 | 1.4+ | 0.5+ |
| 2004 01 22 | 704 | 0.2+ | 0.2- | 2005 04 10 | G96 | 0.3- | 0.4- | 2007 12 14 | 620 | 1.0+ | 0.2- |
| 2004 01 22 | 704 | 0.1- | 0.3- | 2005 04 10 | G96 | 0.3- | 0.2+ | 2007 12 14 | 620 | 0.3+ | 0.7- |
| 2004 01 27 | 691 | 0.1- | 0.1- | 2007 09 18 | G96 | 0.2- | 0.1+ |            |     |      |      |
| 2004 01 27 | 691 | 0.2- | 0.2- | 2007 09 18 | G96 | 0.2- | 0.1+ |            |     |      |      |

**2004 BX<sub>74</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 358.87484  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23875177 | $\omega$ | 211.23913 | +0.15833336   | -0.98700738 |
| <i>a</i> | 2.5733863  | $\Omega$ | 229.66545 | +0.91314443   | +0.15690246 |
| <i>e</i> | 0.1465580  | <i>i</i> | 2.05473   | +0.37562987   | +0.03461277 |
| <i>P</i> | 4.13       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |     |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-----|------|------------|-----|------|------|
| 2003 12 22 | 691 | 0.3+ | 0.0  | 2004 01 27 | 691 | 0.0 | 0.0  | 2005 05 13 | G96 | 0.0  | 0.6- |
| 2003 12 22 | 691 | 0.2+ | 0.0  | 2004 01 27 | 691 | 0.0 | 0.0  | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2003 12 22 | 691 | 0.1+ | 0.2- | 2004 02 17 | 645 | 0.0 | 0.0  | 2007 12 05 | 704 | 0.2- | 0.1- |
| 2004 01 16 | 691 | 0.1- | 0.2+ | 2004 02 17 | 645 | 0.0 | 0.0  | 2007 12 05 | 704 | 0.3- | 0.7+ |
| 2004 01 16 | 691 | 0.1- | 0.1- | 2004 04 13 | 645 | 0.0 | 0.0  | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2004 01 16 | 691 | 0.0  | 0.1+ | 2004 04 13 | 645 | 0.0 | 0.0  | 2007 12 05 | 704 | 0.4+ | 0.1- |
| 2004 01 26 | 699 | 0.3- | 0.1+ | 2004 04 15 | 645 | 0.0 | 0.0  | 2007 12 16 | 691 | 0.0  | 0.3- |
| 2004 01 26 | 699 | 0.6+ | 1.2+ | 2004 04 15 | 645 | 0.0 | 0.0  | 2007 12 16 | 691 | 0.2- | 0.1- |
| 2004 01 26 | 699 | 0.8- | 0.8+ | 2005 05 13 | G96 | 0.0 | 0.0  | 2007 12 16 | 691 | 0.1+ | 0.1- |
| 2004 01 26 | 699 | 0.8- | 0.7- | 2005 05 13 | G96 | 0.0 | 0.2+ |            |     |      |      |
| 2004 01 27 | 691 | 0.0  | 0.1- | 2005 05 13 | G96 | 0.0 | 0.0  |            |     |      |      |

**2004 BK<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 338.81848  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23118252 | $\omega$ | 4.58331  | -0.19107766   | -0.97772151 |
| <i>a</i> | 2.6292551  | $\Omega$ | 96.45012 | +0.89777508   | -0.20986790 |
| <i>e</i> | 0.2035355  | <i>i</i> | 5.01659  | +0.39684914   | +0.00401521 |
| <i>P</i> | 4.26       | <i>H</i> | 16.1     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 13 | 699 | 1.0+  | 0.3+  | 2004 01 30 | 704 | 0.8+ | 1.0+ | 2004 02 16 | 691 | 0.2+ | 0.1- |
| 2004 01 13 | 699 | 0.5-  | 0.9+  | 2004 01 30 | 704 | 0.3+ | 0.3+ | 2004 02 19 | 608 | 0.1- | 0.1- |
| 2004 01 13 | 699 | 0.9-  | 0.4+  | 2004 01 30 | 704 | 0.3+ | 0.0  | 2004 02 19 | 608 | 0.0  | 0.1- |
| 2004 01 13 | 699 | 0.4+  | 0.5+  | 2004 01 30 | 704 | 0.4+ | 0.2+ | 2004 02 19 | 608 | 0.0  | 0.4- |
| 2004 01 22 | 704 | 0.4-  | 0.9+  | 2004 02 14 | 608 | 0.7+ | 0.1- | 2007 12 04 | 691 | 0.3- | 0.2+ |
| 2004 01 22 | 704 | (1.7+ | 0.5+) | 2004 02 14 | 608 | 0.4+ | 0.2+ | 2007 12 04 | 691 | 0.2- | 0.1- |
| 2004 01 22 | 704 | 1.4-  | 0.6+  | 2004 02 14 | 608 | 0.8+ | 0.3- | 2007 12 04 | 691 | 0.2- | 0.1+ |
| 2004 01 22 | 704 | 0.1-  | 0.3+  | 2004 02 15 | 704 | 0.9- | 0.1+ | 2007 12 15 | J75 | 0.4+ | 0.3- |
| 2004 01 22 | 704 | 0.6+  | 0.5+  | 2004 02 15 | 704 | 0.9- | 0.3- | 2007 12 15 | J75 | 1.0+ | 0.1- |
| 2004 01 28 | 703 | 0.3-  | 1.2-  | 2004 02 15 | 704 | 0.0  | 1.3+ | 2007 12 15 | J75 | 0.4+ | 0.3- |
| 2004 01 28 | 703 | 0.6+  | 1.3-  | 2004 02 15 | 704 | 1.1- | 0.7- | 2007 12 16 | J75 | 0.1- | 0.3- |
| 2004 01 28 | 703 | 0.3-  | 0.8-  | 2004 02 15 | 704 | 1.0- | 0.1- | 2007 12 16 | J75 | 0.8+ | 0.1- |
| 2004 01 28 | 703 | 0.1-  | 0.6-  | 2004 02 16 | 691 | 0.1+ | 0.1- | 2007 12 16 | J75 | 0.3+ | 0.7- |
| 2004 01 30 | 704 | 0.2-  | 1.0+  | 2004 02 16 | 691 | 0.2+ | 0.2- |            |     |      |      |

**2004 BD<sub>77</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 272.12019  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18843452 | $\omega$ | 40.33812 | -0.28737196   | -0.95698043 |
| <i>a</i> | 3.0132077  | $\Omega$ | 66.39651 | +0.86713805   | -0.27770645 |
| <i>e</i> | 0.0973496  | <i>i</i> | 2.50641  | +0.40680335   | -0.08406891 |
| <i>P</i> | 5.23       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 691 | 0.1+ | 0.2- | 2004 01 28 | 691 | 0.2+ | 0.4+ | 2007 09 13 | G96 | 0.2- | 0.1+ |
| 2003 12 21 | 691 | 0.1+ | 0.5- | 2004 01 28 | 691 | 0.0  | 0.4+ | 2007 09 13 | G96 | 0.2+ | 0.0  |
| 2003 12 21 | 691 | 0.1- | 0.0  | 2004 01 28 | 691 | 0.1- | 0.3+ | 2007 09 13 | G96 | 0.5- | 0.4+ |
| 2004 01 16 | 691 | 0.0  | 0.1- | 2004 02 11 | 691 | 0.3- | 0.3- | 2007 09 13 | G96 | 0.3+ | 0.4+ |
| 2004 01 16 | 691 | 0.4+ | 0.1+ | 2004 02 11 | 691 | 0.4- | 0.3+ | 2007 09 13 | G96 | 0.1+ | 0.1- |
| 2004 01 16 | 691 | 0.2- | 0.3+ | 2004 02 11 | 691 | 0.1- | 0.1+ | 2007 09 13 | G96 | 0.2- | 0.1+ |
| 2004 01 22 | 704 | 0.2+ | 0.2- | 2005 05 10 | 807 | 0.1- | 0.1+ | 2007 10 15 | G96 | 0.5+ | 0.2+ |
| 2004 01 22 | 704 | 0.9- | 0.1- | 2005 05 10 | 807 | 0.1+ | 0.1+ | 2007 10 15 | G96 | 0.2+ | 0.9- |
| 2004 01 22 | 704 | 0.4+ | 0.5+ | 2007 09 13 | G96 | 0.2- | 0.1+ | 2007 10 15 | G96 | 0.1- | 0.2- |
| 2004 01 22 | 704 | 0.7+ | 0.9- | 2007 09 13 | G96 | 0.5- | 0.3+ | 2007 10 15 | G96 | 0.2+ | 0.0  |

**2004 BR<sub>90</sub> = 2007 VW<sub>269</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 323.44387  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21687121 | $\omega$ | 176.54662 | -0.19896855   | -0.97918183 |
| <i>a</i> | 2.7436884  | $\Omega$ | 284.92708 | +0.89813851   | -0.16578887 |
| <i>e</i> | 0.1606328  | <i>i</i> | 2.38325   | +0.39212082   | -0.11711956 |
| <i>P</i> | 4.54       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 24 | 704 | (1.5+ | 1.3+) | 2004 02 19 | 608 | 0.4-  | 0.3-  | 2007 11 15 | 704 | 0.4+ | 0.1- |
| 2004 01 24 | 704 | (0.4- | 2.1+) | 2007 10 14 | G96 | 0.8+  | 0.6-  | 2007 11 15 | 704 | 0.3- | 0.6+ |
| 2004 01 24 | 704 | 0.5+  | 1.3+  | 2007 10 14 | G96 | 0.1+  | 0.3-  | 2007 11 15 | 704 | 1.1+ | 0.1- |
| 2004 01 24 | 704 | 1.2+  | 0.3+  | 2007 10 14 | G96 | 0.6+  | 0.3-  | 2007 11 20 | 704 | 0.2- | 0.7+ |
| 2004 01 24 | 704 | 0.0   | 1.5+  | 2007 10 14 | G96 | 0.4+  | 0.4-  | 2007 11 20 | 704 | 0.1+ | 0.2- |
| 2004 01 29 | 704 | (2.0+ | 0.2+) | 2007 11 02 | 691 | 0.3-  | 0.0   | 2007 11 20 | 704 | 0.2- | 0.4+ |
| 2004 01 29 | 704 | 0.2+  | 0.2-  | 2007 11 02 | 691 | 0.3-  | 0.1+  | 2007 11 20 | 704 | 0.4- | 0.7+ |
| 2004 01 29 | 704 | 0.1-  | 0.3-  | 2007 11 02 | 691 | 0.2-  | 0.3-  | 2007 12 03 | 703 | 0.2+ | 0.0  |
| 2004 01 29 | 704 | 0.1+  | 0.7+  | 2007 11 13 | 699 | 0.9+  | 0.3+  | 2007 12 03 | 703 | 0.4- | 0.3- |
| 2004 02 12 | 691 | 0.2-  | 0.3-  | 2007 11 13 | 699 | 0.3+  | 0.1+  | 2007 12 03 | 703 | 0.2- | 0.9+ |
| 2004 02 12 | 691 | 0.0   | 0.3-  | 2007 11 13 | 699 | 0.6+  | 0.1-  | 2007 12 03 | 703 | 0.2- | 0.3- |
| 2004 02 12 | 691 | 0.1-  | 0.2-  | 2007 11 13 | 699 | (2.0+ | 0.4-) | 2007 12 10 | 704 | 0.6+ | 0.4+ |
| 2004 02 17 | 704 | 0.1-  | 0.6+  | 2007 11 13 | 703 | 0.2-  | 0.7-  | 2007 12 10 | 704 | 0.1+ | 0.0  |
| 2004 02 17 | 704 | 0.2-  | 0.9+  | 2007 11 13 | 703 | 0.7-  | 0.3-  | 2007 12 10 | 704 | 0.2+ | 0.3+ |
| 2004 02 17 | 704 | 0.5+  | 0.1+  | 2007 11 13 | 703 | 0.8-  | 0.2+  | 2007 12 15 | G96 | 0.5+ | 0.5- |
| 2004 02 17 | 704 | 0.1+  | 0.2-  | 2007 11 13 | 703 | 1.3-  | 0.5+  | 2007 12 15 | G96 | 0.3+ | 0.6- |
| 2004 02 19 | 608 | 0.2-  | 0.4-  | 2007 11 15 | 704 | 0.3+  | 0.9+  | 2007 12 15 | G96 | 0.2+ | 0.7- |
| 2004 02 19 | 608 | 0.6-  | 0.8-  | 2007 11 15 | 704 | 0.8+  | 0.6+  | 2007 12 15 | G96 | 0.1+ | 0.7- |

**2004 BT<sub>94</sub> = 2007 WR<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 306.97039  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21968570 | $\omega$ | 244.52677 | -0.67260434   | -0.71420349 |
| <i>a</i> | 2.7202043  | $\Omega$ | 249.17633 | +0.73130083   | -0.60150047 |
| <i>e</i> | 0.1267494  | <i>i</i> | 11.96001  | +0.11314809   | -0.35792535 |
| <i>P</i> | 4.49       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 28 | 704 | 0.1- | 0.5- | 2004 02 13 | 644 | 0.1+ | 0.3+ | 2007 11 16 | 734 | 0.0  | 0.3+ |
| 2004 01 28 | 704 | 0.3- | 0.7+ | 2004 02 13 | 644 | 0.1+ | 0.1- | 2007 11 16 | 734 | 0.0  | 0.0  |
| 2004 01 28 | 704 | 0.2- | 0.5- | 2004 02 17 | 644 | 0.3- | 0.0  | 2007 11 17 | 734 | 0.5+ | 0.8+ |
| 2004 01 28 | 704 | 0.5+ | 0.2- | 2004 02 17 | 644 | 0.1- | 0.1- | 2007 11 17 | 734 | 0.3- | 0.0  |
| 2004 01 28 | 704 | 0.4- | 1.1+ | 2004 02 17 | 644 | 0.1- | 0.0  | 2007 11 17 | 734 | 0.5- | 0.0  |
| 2004 01 29 | 699 | 0.5- | 0.2+ | 2004 02 19 | 704 | 0.4+ | 0.1+ | 2007 11 17 | 734 | 0.3+ | 0.3+ |
| 2004 01 29 | 699 | 1.1- | 0.7+ | 2004 02 19 | 704 | 0.5- | 0.1- | 2007 12 04 | 691 | 0.1+ | 0.2- |
| 2004 01 29 | 699 | 0.5+ | 1.1- | 2004 02 19 | 704 | 0.5+ | 0.2- | 2007 12 04 | 691 | 0.1- | 0.1+ |

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M.P.O. 129693

2004 01 29 699 0.6+ 0.5- 2004 02 19 704 0.3+ 0.6+ 2007 12 04 691 0.2- 0.1-  
 2004 02 13 644 0.5+ 0.3- 2007 11 16 734 0.4+ 1.1-

**2004 BQ<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 217.34284  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.17369837 | $\omega$ | 269.19795 | -0.97425130              |
| <i>a</i> | 3.1813068  | $\Omega$ | 266.24927 | +0.15563057              |
| <i>e</i> | 0.1896258  | <i>i</i> | 12.21624  | -0.16313656              |
| <i>P</i> | 5.67       | <i>H</i> | 15.3      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|                          |                          |                           |
|--------------------------|--------------------------|---------------------------|
| 1997 12 29 691 0.3- 0.7- | 2004 02 14 699 0.2+ 0.1- | 2004 03 18 704 0.1+ 0.2+  |
| 1997 12 29 691 0.1- 0.7- | 2004 02 14 699 0.3- 0.5+ | 2004 03 18 704 0.4+ 0.5+  |
| 1997 12 29 691 0.4- 0.6- | 2004 02 19 704 0.0 0.1-  | 2004 03 18 704 0.2- 0.2+  |
| 2000 06 01 691 0.3- 0.4- | 2004 02 19 704 0.1- 0.1- | 2004 03 18 704 0.0 0.7+   |
| 2000 06 01 691 0.2+ 0.5+ | 2004 02 19 704 0.0 0.4-  | 2004 03 18 704 0.2- 0.3+  |
| 2000 06 01 691 0.0 0.3+  | 2004 02 19 704 0.1+ 0.2- | 2004 03 26 699 0.4- 0.3-  |
| 2004 01 17 608 0.3- 0.4+ | 2004 02 19 704 0.3- 0.5- | 2004 03 26 699 0.2- 0.5+  |
| 2004 01 17 608 0.5- 0.2+ | 2004 02 27 608 0.2+ 1.6- | 2004 03 26 699 0.8- 0.3+  |
| 2004 01 17 608 0.0 0.4+  | 2004 02 27 608 0.0 0.8-  | 2004 03 26 699 0.9- 1.5+  |
| 2004 01 28 704 0.5- 0.7+ | 2004 02 27 608 0.3+ 0.5- | 2004 04 24 703 (0.0 2.4+) |
| 2004 01 28 704 0.4- 0.6- | 2004 03 13 644 0.2+ 0.3+ | 2004 04 24 703 1.0+ 1.4+  |
| 2004 01 28 704 0.6- 0.4+ | 2004 03 13 644 0.3+ 0.5+ | 2004 04 24 703 0.6+ 0.6+  |
| 2004 01 28 704 0.3- 0.0  | 2004 03 13 644 0.2+ 0.5+ | 2004 04 24 703 1.1+ 1.5-  |
| 2004 01 30 608 0.4+ 0.0  | 2004 03 16 704 0.7+ 0.1- | 2007 10 14 703 0.2- 0.5+  |
| 2004 01 30 608 0.2+ 0.8+ | 2004 03 16 704 0.6+ 0.4+ | 2007 10 14 703 0.1- 0.7+  |
| 2004 01 30 608 0.4+ 0.4+ | 2004 03 16 704 0.6+ 0.1- | 2007 10 14 703 0.5- 0.9+  |
| 2004 02 14 699 0.2- 0.0  | 2004 03 16 704 0.5+ 0.2+ | 2007 10 14 703 0.3- 1.2+  |
| 2004 02 14 699 0.7+ 1.1- | 2004 03 16 704 0.4- 0.1+ |                           |

**2004 BJ<sub>113</sub> = 2007 VR<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 3.07501    | (2000.0) | <b>P</b> | <b>Q</b>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.23251371 | $\omega$ | 35.36979 | +0.41307244              |
| <i>a</i> | 2.6192101  | $\Omega$ | 30.68913 | +0.77651318              |
| <i>e</i> | 0.1606606  | <i>i</i> | 12.74189 | +0.47581346              |
| <i>P</i> | 4.24       | <i>H</i> | 15.9     | <i>G</i> 0.15 <i>U</i> 4 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2004 01 28 703 0.4+ 0.0  | 2004 01 30 699 0.4- 0.3+ | 2007 11 09 704 0.1- 0.1+ |
| 2004 01 28 703 0.8+ 0.1+ | 2007 11 03 704 1.4+ 0.4+ | 2007 11 09 704 0.1+ 0.7- |
| 2004 01 28 703 0.3+ 0.5+ | 2007 11 03 704 0.6- 0.1- | 2007 12 03 704 0.5+ 0.3- |
| 2004 01 28 703 0.6- 0.7+ | 2007 11 03 704 0.1- 0.0  | 2007 12 03 704 0.3- 0.6- |
| 2004 01 30 699 0.1+ 1.0- | 2007 11 09 704 0.1- 0.0  | 2007 12 03 704 0.5+ 0.3+ |
| 2004 01 30 699 0.4- 0.2- | 2007 11 09 704 0.2- 0.1+ | 2007 12 03 704 0.5- 0.7+ |
| 2004 01 30 699 0.1- 0.3- | 2007 11 09 704 0.5- 0.0  |                          |

**2004 BP<sub>115</sub> = 2007 WL<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 299.60176  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21748214 | $\omega$ | 7.77293   | -0.64804291              |
| <i>a</i> | 2.7385478  | $\Omega$ | 122.72613 | +0.69009827              |
| <i>e</i> | 0.1746271  | <i>i</i> | 8.97364   | +0.32218748              |
| <i>P</i> | 4.53       | <i>H</i> | 16.5      | <i>G</i> 0.15 <i>U</i> 5 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2004 01 22 704 0.1- 0.6+ | 2004 01 31 691 0.1- 0.2- | 2004 02 16 704 0.5+ 1.3+ |
| 2004 01 22 704 0.7+ 0.0  | 2004 01 31 691 0.1- 0.0  | 2007 11 17 703 1.1- 0.5- |
| 2004 01 22 704 0.8+ 0.5+ | 2004 02 11 691 0.1- 0.0  | 2007 11 17 703 0.1- 1.1+ |
| 2004 01 22 704 0.2+ 0.3+ | 2004 02 11 691 0.1- 0.2- | 2007 11 17 703 0.1- 0.1- |
| 2004 01 30 704 0.5- 0.4+ | 2004 02 11 691 0.0 0.1-  | 2007 11 17 703 0.1- 1.1- |
| 2004 01 30 704 0.7- 0.6+ | 2004 02 16 704 0.1+ 0.4+ | 2007 11 19 G96 0.3+ 0.3+ |
| 2004 01 30 704 0.4+ 0.6- | 2004 02 16 704 1.5+ 0.7- | 2007 11 19 G96 0.5+ 0.0  |
| 2004 01 31 691 0.2- 0.3- | 2004 02 16 704 0.1- 0.6+ | 2007 11 19 G96 0.5+ 0.3+ |

**2004 BB<sub>116</sub> = 2007 TN<sub>181</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 63.08783   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.19022827 | $\omega$ | 237.27093 | +0.78871477              |
| <i>a</i> | 2.9942359  | $\Omega$ | 86.39981  | -0.47573897              |
| <i>e</i> | 0.0090532  | <i>i</i> | 11.51928  | -0.38936030              |
| <i>P</i> | 5.18       | <i>H</i> | 15.1      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1998 01 18 691 0.2- 0.6- | 2004 01 31 704 1.2+ 1.2+   | 2007 10 10 703 0.7- 0.4- |
| 1998 01 18 691 0.0 0.2-  | 2004 01 31 704 (2.1+ 0.7+) | 2007 10 10 703 0.4+ 0.2+ |
| 1998 01 18 691 0.1+ 0.5- | 2004 01 31 704 0.1- 0.5+   | 2007 10 10 703 0.4+ 0.7- |
| 2000 04 28 699 0.3+ 1.1+ | 2005 05 04 703 0.8- 0.7+   | 2007 10 10 703 0.8- 0.9- |
| 2000 04 28 699 1.2+ 0.9+ | 2005 05 04 703 0.7- 0.8+   | 2007 10 15 703 0.7+ 0.7+ |
| 2000 04 28 699 1.1+ 1.2+ | 2005 05 04 703 0.0 1.0+    | 2007 10 15 703 0.8- 0.5+ |
| 2000 04 28 699 2.4+ 0.8+ | 2005 05 04 703 0.8- 0.5+   | 2007 10 15 703 0.8- 0.2+ |
| 2001 08 10 644 0.3+ 0.3- | 2006 06 23 644 0.2- 0.1-   | 2007 10 15 703 1.8- 1.7+ |
| 2001 08 10 644 0.1+ 0.2- | 2006 06 23 644 0.3- 0.1+   | 2007 11 02 703 0.4+ 0.8+ |
| 2001 08 10 644 0.5- 0.2- | 2006 06 23 644 0.1- 0.4+   | 2007 11 02 703 0.2- 0.6+ |
| 2002 10 16 699 0.5- 1.3+ | 2007 10 08 699 0.0 1.1+    | 2007 11 02 703 0.9+ 0.5+ |
| 2002 10 16 699 0.1- 0.6+ | 2007 10 08 699 0.0 0.1+    | 2007 11 02 703 0.9+ 0.8+ |
| 2002 10 16 699 0.2- 0.2- | 2007 10 08 699 0.2+ 0.3-   | 2007 11 11 703 0.4- 0.1- |
| 2002 10 16 699 0.4+ 1.0+ | 2007 10 08 699 0.3- 1.2+   | 2007 11 11 703 0.1- 0.1- |
| 2004 01 26 699 0.5+ 0.9+ | 2007 10 10 703 0.9- 1.0+   | 2007 11 11 703 0.9- 0.1- |
| 2004 01 26 699 0.8+ 0.5- | 2007 10 10 703 (0.5- 1.7+) | 2007 11 11 703 0.3- 0.1+ |
| 2004 01 26 699 0.1+ 1.0+ | 2007 10 10 703 (0.1- 2.0+) |                          |
| 2004 01 26 699 0.2- 0.7+ | 2007 10 10 703 0.8+ 1.3+   |                          |

**2004 BQ<sub>120</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 223.66558  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.17441966 | $\omega$ | 133.89392 | -0.76021493              |
| <i>a</i> | 3.1725302  | $\Omega$ | 5.71235   | +0.52552837              |
| <i>e</i> | 0.1753422  | <i>i</i> | 11.31576  | +0.38195967              |
| <i>P</i> | 5.65       | <i>H</i> | 15.3      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1999 03 22 699 0.6+ 0.5+ | 2003 12 29 704 0.3- 0.3+ | 2004 02 09 644 0.2+ 0.0  |
| 1999 03 22 699 0.5+ 0.9+ | 2004 01 19 704 0.1- 0.8+ | 2004 02 09 644 0.0 0.2+  |
| 1999 03 22 699 0.5+ 1.1+ | 2004 01 19 704 0.0 0.5+  | 2004 02 11 704 0.4- 0.4+ |
| 2002 10 31 644 0.3- 0.4+ | 2004 01 19 704 0.1+ 0.4+ | 2004 02 11 704 0.4+ 0.2+ |
| 2002 10 31 644 0.3- 0.3+ | 2004 01 19 704 0.2+ 0.5+ | 2004 02 11 704 0.4+ 0.7- |
| 2002 10 31 644 0.1- 0.4+ | 2004 01 19 704 0.2+ 0.2- | 2004 02 11 704 0.5- 0.4- |
| 2003 12 29 703 0.4+ 0.6- | 2004 01 31 704 0.3- 0.4+ | 2007 09 12 691 0.7- 0.3+ |
| 2003 12 29 703 0.2+ 0.9- | 2004 01 31 704 0.4- 0.7- | 2007 09 12 691 0.8- 0.3+ |
| 2003 12 29 703 0.7+ 1.6- | 2004 01 31 704 0.1+ 0.7+ | 2007 09 12 691 0.3- 0.5+ |
| 2003 12 29 703 1.4- 1.3+ | 2004 01 31 704 0.3+ 0.3+ | 2007 10 09 G96 1.1+ 1.4+ |
| 2003 12 29 704 0.2- 1.0+ | 2004 02 02 704 0.1+ 0.1- | 2007 10 09 G96 0.2- 0.4- |
| 2003 12 29 704 0.6- 0.3- | 2004 02 02 704 0.3+ 0.7- | 2007 10 09 G96 0.7- 0.2+ |
| 2003 12 29 704 0.1- 0.2+ | 2004 02 02 704 0.2+ 0.6+ | 2007 10 09 G96 0.2+ 0.1- |
| 2003 12 29 704 0.6+ 0.7- | 2004 02 09 644 0.0 0.1-  |                          |

**2004 BP<sub>149</sub> = 2005 GK<sub>219</sub> = 2007 VU<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 42.70041   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21896776 | $\omega$ | 348.76232 | +0.97284015              |
| <i>a</i> | 2.7261470  | $\Omega$ | 24.61813  | +0.21382630              |
| <i>e</i> | 0.0755338  | <i>i</i> | 1.09157   | +0.08865861              |
| <i>P</i> | 4.50       | <i>H</i> | 16.5      | <i>G</i> 0.15 <i>U</i> 4 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2004 01 16 691 0.3+ 0.2+ | 2005 04 12 691 0.1+ 0.0  | 2007 11 17 691 0.2- 0.3- |
| 2004 01 16 691 0.1+ 0.1+ | 2005 04 12 691 0.3+ 0.1- | 2007 11 17 691 0.2+ 1.0+ |
| 2004 01 16 691 0.1+ 0.0  | 2005 05 14 G96 0.6- 0.0  | 2007 11 17 691 0.4- 0.1- |
| 2004 01 22 704 0.2- 0.4+ | 2005 05 14 G96 0.6- 0.2- | 2007 11 17 691 0.2- 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 22 | 704 | 0.2− | 0.6− | 2005 05 14 | G96 | 0.8− | 0.1− | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2004 01 22 | 704 | 1.0+ | 0.7+ | 2005 05 14 | G96 | 0.6− | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.2− |
| 2004 02 11 | 691 | 0.1+ | 0.2+ | 2007 11 02 | 691 | 0.5− | 0.1+ | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2004 02 11 | 691 | 0.3− | 0.0  | 2007 11 02 | 691 | 0.2− | 0.1− | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2004 02 11 | 691 | 0.3− | 0.2− | 2007 11 02 | 691 | 0.3+ | 0.1− | 2007 12 15 | G96 | 0.7+ | 0.4− |
| 2005 04 02 | G96 | 0.6− | 0.3− | 2007 11 06 | 691 | 0.3+ | 0.0  | 2007 12 15 | G96 | 0.7+ | 0.5− |
| 2005 04 02 | G96 | 0.5− | 0.0  | 2007 11 06 | 691 | 0.2+ | 0.2− | 2007 12 15 | G96 | 1.1+ | 0.6− |
| 2005 04 02 | G96 | 0.4− | 0.3− | 2007 11 06 | 691 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.8+ | 0.7− |
| 2005 04 02 | G96 | 0.6− | 0.1− | 2007 11 17 | 691 | 0.0  | 0.2− |            |     |      |      |
| 2005 04 12 | 691 | 0.6+ | 0.2− | 2007 11 17 | 691 | 0.3− | 0.1− |            |     |      |      |

**2004 BJ<sub>150</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 13.67756   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22124409 | $\omega$ | 296.58079 | +0.61714956   | −0.77893011 |
| <i>a</i> | 2.7074156  | $\Omega$ | 114.86308 | +0.75851161   | +0.55131379 |
| <i>e</i> | 0.0442909  | <i>i</i> | 7.04809   | +0.20925238   | +0.29886618 |
| <i>P</i> | 4.45       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 18 | 291 | 0.4− | 0.1− | 2004 02 01 | 413 | 0.1− | 0.4− | 2007 12 04 | 704 | (1.1− | 2.5+) |
| 2003 12 18 | 291 | 0.5− | 0.0  | 2004 02 01 | 413 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.8−  | 0.9+  |
| 2003 12 18 | 291 | 0.3+ | 0.1+ | 2004 02 17 | 645 | 0.0  | 0.1− | 2007 12 04 | 704 | (3.0− | 3.8+) |
| 2004 01 17 | 644 | 0.3+ | 0.5+ | 2004 02 17 | 645 | 0.0  | 0.1− | 2007 12 04 | 704 | 0.5+  | 1.4+  |
| 2004 01 17 | 644 | 0.4+ | 0.4+ | 2007 11 08 | G96 | 0.4− | 0.3− | 2007 12 04 | 704 | (2.4− | 2.9+) |
| 2004 01 17 | 644 | 0.6+ | 0.4+ | 2007 11 08 | G96 | 0.4+ | 0.6− | 2007 12 05 | G96 | 0.1−  | 0.2−  |
| 2004 01 22 | 704 | 0.5+ | 0.7+ | 2007 11 08 | G96 | 0.1− | 0.5− | 2007 12 05 | G96 | 0.0   | 0.1−  |
| 2004 01 22 | 704 | 0.5+ | 0.7+ | 2007 11 08 | G96 | 0.1− | 0.5− | 2007 12 05 | G96 | 0.2+  | 0.3−  |
| 2004 01 22 | 704 | 0.2+ | 0.6+ | 2007 12 04 | 704 | 0.1− | 0.2+ | 2007 12 05 | G96 | 0.4+  | 0.3−  |

**2004 CB<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 292.84116  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21591008 | $\omega$ | 230.55776 | −0.83957355   | −0.53048493 |
| <i>a</i> | 2.7518247  | $\Omega$ | 277.10603 | +0.52759721   | −0.74488935 |
| <i>e</i> | 0.1591727  | <i>i</i> | 6.77447   | +0.12945049   | −0.40463020 |
| <i>P</i> | 4.56       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 23 | 704 | 0.8+  | 0.7−  | 2004 02 14 | 608 | 0.5−  | 0.4−  | 2004 03 15 | 704 | 0.3+ | 0.4+ |
| 2004 01 23 | 704 | 0.7+  | 0.7+  | 2004 02 14 | 608 | 0.0   | 0.1+  | 2007 11 18 | 704 | 0.9+ | 0.2+ |
| 2004 01 23 | 704 | (2.5+ | 0.3−) | 2004 02 14 | 608 | 0.2−  | 0.1−  | 2007 11 18 | 704 | 0.6+ | 0.7+ |
| 2004 01 23 | 704 | 1.0+  | 0.2−  | 2004 02 17 | 683 | 0.9+  | 0.3−  | 2007 11 18 | 704 | 1.2− | 1.0+ |
| 2004 01 23 | 704 | 0.3+  | 1.0+  | 2004 02 17 | 683 | 1.5+  | 0.4−  | 2007 11 18 | 704 | 0.3+ | 0.2− |
| 2004 01 27 | 683 | 0.6+  | 0.9+  | 2004 02 17 | 683 | 0.5+  | 0.8+  | 2007 11 19 | G96 | 1.0− | 1.1+ |
| 2004 01 27 | 683 | (0.2+ | 2.2+) | 2004 02 18 | 683 | 0.9−  | 0.4−  | 2007 11 19 | G96 | 0.2+ | 0.4− |
| 2004 01 27 | 683 | (0.0  | 1.8+) | 2004 02 18 | 683 | (0.0  | 1.8−) | 2007 11 19 | G96 | 0.0  | 0.2− |
| 2004 01 29 | 704 | 1.0−  | 0.1−  | 2004 02 18 | 683 | 0.1−  | 0.2+  | 2007 11 19 | G96 | 0.3+ | 0.1− |
| 2004 01 29 | 704 | 0.4−  | 0.8+  | 2004 02 18 | 691 | 0.1−  | 0.2−  | 2007 11 20 | 704 | 0.2+ | 0.1− |
| 2004 01 29 | 704 | 0.7−  | 0.2+  | 2004 02 18 | 691 | 0.1−  | 0.2−  | 2007 11 20 | 704 | 0.4+ | 0.6+ |
| 2004 01 29 | 704 | 1.0−  | 0.1+  | 2004 02 18 | 691 | 0.2−  | 0.3−  | 2007 11 20 | 704 | 0.6+ | 0.0  |
| 2004 01 29 | 704 | 0.6+  | 1.1−  | 2004 02 19 | 704 | 0.1−  | 0.4+  | 2007 11 20 | 704 | 0.1+ | 0.2− |
| 2004 02 11 | 683 | 0.5−  | 0.6−  | 2004 02 19 | 704 | 0.2+  | 1.2+  | 2007 11 20 | 691 | 0.4− | 0.3− |
| 2004 02 11 | 683 | (2.2− | 0.8−) | 2004 02 19 | 704 | (0.7− | 2.1+) | 2007 11 20 | 691 | 0.2− | 0.3− |
| 2004 02 12 | 683 | (0.5− | 2.1−) | 2004 02 19 | 704 | 0.0   | 1.1+  | 2007 11 20 | 691 | 0.1− | 0.3− |
| 2004 02 12 | 683 | 0.2−  | 0.8−  | 2004 02 19 | 704 | (0.4+ | 1.8+) | 2007 12 10 | 704 | 0.5+ | 0.7+ |
| 2004 02 12 | 683 | 0.5−  | 0.8−  | 2004 02 23 | 704 | 0.6−  | 1.0+  | 2007 12 10 | 704 | 0.2+ | 0.5+ |
| 2004 02 13 | 683 | 0.2+  | 0.3+  | 2004 02 23 | 704 | 0.3−  | 0.4−  | 2007 12 10 | 704 | 0.3− | 0.4+ |
| 2004 02 13 | 644 | 0.5+  | 0.3−  | 2004 02 23 | 704 | 0.7+  | 0.1−  | 2007 12 15 | 704 | 0.3− | 0.2− |
| 2004 02 13 | 683 | 0.4−  | 0.2+  | 2004 03 15 | 704 | 0.3+  | 0.6+  | 2007 12 15 | 704 | 0.3+ | 0.1− |
| 2004 02 13 | 683 | 0.2+  | 0.7+  | 2004 03 15 | 704 | 0.2−  | 0.4−  | 2007 12 15 | 704 | 0.5+ | 0.1+ |
| 2004 02 13 | 644 | 0.0   | 0.2−  | 2004 03 15 | 704 | 0.2−  | 0.0   | 2007 12 15 | 704 | 0.0  | 0.0  |
| 2004 02 13 | 644 | 0.4+  | 0.1−  | 2004 03 15 | 704 | 0.2+  | 0.2−  | 2007 12 15 | 704 | 0.1+ | 0.4− |

**2004 CJ<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 264.30543  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22984716 | $\omega$ | 73.84794  | −0.92440743   | +0.37477772 |
| <i>a</i> | 2.6394288  | $\Omega$ | 128.10777 | −0.37520964   | −0.86025772 |
| <i>e</i> | 0.2039957  | <i>i</i> | 5.16235   | −0.06847362   | −0.34568529 |
| <i>P</i> | 4.29       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 19 | 291 | 0.4− | 0.4+ | 2004 02 14 | 185 | 1.2+ | 0.6− | 2004 03 15 | 185 | 1.6− | 0.4− |
| 2003 12 19 | 291 | 0.0  | 0.6+ | 2004 02 16 | 185 | 0.0  | 0.5+ | 2004 03 16 | 185 | 0.8− | 0.7− |
| 2003 12 19 | 291 | 0.9− | 0.5+ | 2004 02 16 | 185 | 0.4+ | 0.9+ | 2004 03 21 | 926 | 0.0  | 0.3− |
| 2004 02 09 | 185 | 1.5+ | 1.2− | 2004 02 18 | H36 | 0.9+ | 0.2+ | 2004 03 21 | 926 | 0.0  | 0.0  |
| 2004 02 09 | 185 | 0.4+ | 0.4+ | 2004 02 18 | H36 | 0.1− | 0.3+ | 2005 07 03 | G96 | 0.2+ | 0.4+ |
| 2004 02 09 | 185 | 2.0+ | 0.4− | 2004 02 18 | H36 | 0.5− | 0.3+ | 2005 07 03 | G96 | 0.2+ | 0.7+ |
| 2004 02 11 | 691 | 0.3+ | 0.4+ | 2004 02 22 | J95 | 0.6+ | 0.5− | 2005 07 03 | G96 | 0.5− | 0.3+ |
| 2004 02 11 | 691 | 0.2+ | 0.3+ | 2004 02 22 | J95 | 1.0− | 0.8− | 2005 07 03 | G96 | 0.2− | 0.7+ |
| 2004 02 11 | 691 | 0.1+ | 0.3+ | 2004 02 27 | 448 | 0.2+ | 0.3− | 2007 12 04 | 691 | 0.2+ | 0.1+ |
| 2004 02 14 | 691 | 0.3+ | 0.2+ | 2004 02 27 | 448 | 0.3− | 0.4− | 2007 12 04 | 691 | 0.2− | 0.3− |
| 2004 02 14 | 691 | 0.0  | 0.2+ | 2004 02 27 | 448 | 0.5− | 0.2− | 2007 12 04 | 691 | 0.0  | 0.1− |
| 2004 02 14 | 691 | 0.1+ | 0.0  | 2004 03 14 | 185 | 0.3− | 0.5+ |            |     |      |      |

**2004 CJ<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 338.64013  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22642695 | $\omega$ | 184.53523 | −0.28423027   | −0.92904839 |
| <i>a</i> | 2.6659416  | $\Omega$ | 282.11524 | +0.88708424   | −0.16112789 |
| <i>e</i> | 0.0879929  | <i>i</i> | 14.01711  | +0.36372340   | −0.33302687 |
| <i>P</i> | 4.35       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 01 | 644 | 0.1+ | 0.0  | 2004 02 13 | 644 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.3− | 0.1− |
| 2002 11 01 | 644 | 0.1− | 0.1− | 2004 02 19 | 704 | 0.3+ | 0.6+ | 2007 12 05 | 691 | 0.3− | 0.1− |
| 2002 11 01 | 644 | 0.1+ | 0.0  | 2004 02 19 | 704 | 0.1+ | 0.5− | 2007 12 05 | 691 | 0.1− | 0.2− |
| 2004 01 29 | 704 | 0.3+ | 1.2− | 2004 02 19 | 704 | 0.6+ | 0.1− | 2007 12 05 | 691 | 0.1− | 0.1+ |
| 2004 01 29 | 704 | 0.2+ | 0.2− | 2004 02 19 | 704 | 0.2− | 0.0  | 2007 12 06 | 704 | 1.2− | 0.9− |
| 2004 01 29 | 704 | 0.4+ | 0.4− | 2004 03 16 | 704 | 0.5− | 0.1− | 2007 12 06 | 704 | 0.2− | 0.2+ |
| 2004 01 29 | 704 | 0.6+ | 0.3+ | 2004 03 16 | 704 | 0.7− | 0.3− | 2007 12 06 | 704 | 0.6+ | 0.1− |
| 2004 02 12 | 644 | 0.4− | 0.1+ | 2004 03 16 | 704 | 0.1+ | 1.0+ | 2007 12 06 | 704 | 0.5+ | 0.2+ |
| 2004 02 12 | 644 | 0.3− | 0.1+ | 2004 03 16 | 704 | 0.1− | 0.2− | 2007 12 06 | 704 | 0.1+ | 0.0  |
| 2004 02 12 | 644 | 0.2− | 0.1+ | 2007 11 12 | G96 | 0.1+ | 0.3− | 2007 12 14 | 704 | 0.6+ | 0.8+ |
| 2004 02 13 | 644 | 0.0  | 0.1− | 2007 11 12 | G96 | 0.2− | 0.3− | 2007 12 14 | 704 | 0.4+ | 0.5+ |
| 2004 02 13 | 699 | 0.2− | 0.5− | 2007 11 12 | G96 | 0.0  | 0.4− | 2007 12 14 | 704 | 0.3+ | 0.7+ |
| 2004 02 13 | 699 | 0.1− | 0.2+ | 2007 11 12 | G96 | 0.3+ | 0.3− | 2007 12 14 | 704 | 0.8+ | 0.9+ |
| 2004 02 13 | 644 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.1+ | 0.2− | 2007 12 14 | 704 | 0.2+ | 0.7+ |
| 2004 02 13 | 699 | 0.3+ | 0.1+ | 2007 12 04 | G96 | 0.1− | 0.2− |            |     |      |      |
| 2004 02 13 | 699 | 0.7− | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.4− |            |     |      |      |

**2004 CV<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 175.50632  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17906477 | $\omega$ | 312.98738 | −0.54880519   | +0.80498759 |
| <i>a</i> | 3.1174245  | $\Omega$ | 282.39533 | −0.68401357   | −0.58743284 |
| <i>e</i> | 0.2018383  | <i>i</i> | 13.34333  | −0.48056040   | −0.08317236 |
| <i>P</i> | 5.50       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 12 | 333 | 0.5− | 0.2− | 2004 02 19 | 704 | 0.3− | 0.6− | 2004 03 16 | 704 | 1.2− | 0.6+ |
| 2004 02 12 | 333 | 0.2− | 0.3− | 2004 02 19 | 704 | 0.5+ | 0.4− | 2004 03 16 | 704 | 0.3+ | 1.2+ |
| 2004 02 12 | 333 | 0.1− | 0.0  | 2004 02 19 | 704 | 0.9+ | 1.3+ | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2004 02 12 | 644 | 0.2+ | 0.3+ | 2004 02 27 | 333 | 0.7− | 0.1− | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2004 02 12 | 644 | 0.1+ | 0.3+ | 2004 02 27 | 333 | 0.9− | 0.3− | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2004 02 12 | 644 | 0.1+ | 0.3+ | 2004 03 15 | 703 | 0.4+ | 0.1− | 2007 11 20 | G96 | 0.2+ | 0.1+ |
| 2004 02 16 | 333 | 1.2+ | 1.1− | 2004 03 15 | 703 | 0.9− | 0.7+ | 2007 11 21 | G96 | 0.2− | 0.0  |
| 2004 02 16 | 333 | 0.4+ | 0.9− | 2004 03 15 | 703 | 0.1+ | 0.0  | 2007 11 21 | G96 | 0.4− | 0.0  |

2007 DEC. 24

M.P.O. 129695

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 16 | 333 | 0.2− | 0.1+ | 2004 03 15 | 703 | 0.0  | 0.4− | 2007 11 21 | G96 | 0.2− | 0.1+ |
| 2004 02 19 | 704 | 0.0  | 0.5− | 2004 03 16 | 704 | 0.4+ | 0.3− | 2007 11 21 | G96 | 0.1− | 0.1+ |
| 2004 02 19 | 704 | 0.1− | 0.8+ | 2004 03 16 | 704 | 0.7+ | 0.5− |            |     |      |      |

**2004 CL<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 283.68938  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18225076 | $\omega$ | 114.38464 | −0.01951288  | −0.99206559  |
| $a$ | 3.0809866  | $\Omega$ | 335.73073 | +0.77239810  | +0.06391784  |
| $e$ | 0.2246255  | $i$      | 17.58774  | +0.63483889  | −0.10826066  |
| $P$ | 5.41       | $H$      | 16.0      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 03 | 644 | 0.1+ | 0.4− | 2004 02 17 | 704 | 0.1+ | 0.0  | 2004 03 14 | 703 | 1.1− | 0.2+ |
| 2002 10 03 | 644 | 0.6+ | 0.6− | 2004 02 19 | 704 | 0.2+ | 0.6+ | 2004 03 14 | 703 | 0.6− | 1.2− |
| 2002 10 03 | 644 | 0.1− | 0.3+ | 2004 02 19 | 704 | 0.6+ | 0.6+ | 2004 03 14 | 703 | 0.6− | 0.3+ |
| 2004 01 23 | 704 | 0.9+ | 0.0  | 2004 02 19 | 704 | 0.4+ | 0.4+ | 2004 03 18 | 704 | 0.2− | 0.5+ |
| 2004 01 23 | 704 | 0.1− | 1.3− | 2004 02 19 | 704 | 0.5+ | 0.5− | 2004 03 18 | 704 | 0.1+ | 0.7+ |
| 2004 01 23 | 704 | 0.8+ | 0.1− | 2004 02 23 | 704 | 0.3− | 0.2+ | 2004 03 18 | 704 | 0.5+ | 1.3+ |
| 2004 01 23 | 704 | 0.6+ | 0.5+ | 2004 02 23 | 704 | 0.3+ | 0.2− | 2004 03 18 | 704 | 0.1− | 0.1− |
| 2004 02 10 | 644 | 0.1+ | 0.2− | 2004 02 23 | 704 | 0.2+ | 0.2+ | 2004 03 18 | 704 | 0.1+ | 1.1− |
| 2004 02 10 | 644 | 0.7+ | 0.4− | 2004 02 23 | 704 | 0.4+ | 0.0  | 2007 09 12 | G96 | 0.4− | 0.2+ |
| 2004 02 10 | 644 | 0.2+ | 0.5+ | 2004 02 23 | 704 | 0.0  | 0.2− | 2007 09 12 | G96 | 0.1− | 0.1+ |
| 2004 02 16 | 691 | 0.3− | 0.2− | 2004 02 29 | 691 | 0.2− | 0.3+ | 2007 09 12 | G96 | 1.1− | 0.0  |
| 2004 02 16 | 691 | 0.1− | 0.1− | 2004 02 29 | 691 | 0.3− | 0.0  | 2007 09 12 | G96 | 0.6− | 0.1+ |
| 2004 02 16 | 691 | 0.3− | 0.2− | 2004 02 29 | 691 | 0.3− | 0.2+ | 2007 10 11 | G96 | 0.4+ | 0.1+ |
| 2004 02 17 | 704 | 0.2− | 0.0  | 2004 03 01 | 291 | 0.0  | 0.1+ | 2007 10 11 | G96 | 0.0  | 0.4+ |
| 2004 02 17 | 704 | 0.3− | 0.1− | 2004 03 01 | 291 | 0.3− | 0.2− | 2007 10 11 | G96 | 0.6+ | 0.3+ |
| 2004 02 17 | 704 | 0.1− | 0.3+ | 2004 03 01 | 291 | 0.5+ | 0.1+ | 2007 10 11 | G96 | 0.2+ | 0.1+ |
| 2004 02 17 | 704 | 0.4− | 0.3+ | 2004 03 14 | 703 | 0.9− | 0.6− |            |     |      |      |

**2004 CM<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 233.48658  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.17971045 | $\omega$ | 8.86338   | −0.97718239  | −0.21091577  |
| $a$ | 3.1099530  | $\Omega$ | 158.90991 | +0.19035353  | −0.92200968  |
| $e$ | 0.1495881  | $i$      | 3.99704   | +0.09423437  | −0.32467319  |
| $P$ | 5.48       | $H$      | 16.5      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 12 | 291 | 0.1+ | 0.1+ | 2004 02 29 | 291 | 0.1+ | 0.1− | 2007 10 19 | 691 | 0.2− | 0.2+ |
| 2004 02 12 | 291 | 0.2− | 0.2+ | 2004 03 14 | 691 | 0.0  | 0.1+ | 2007 10 19 | 691 | 0.2− | 0.2+ |
| 2004 02 12 | 291 | 0.0  | 0.1+ | 2004 03 14 | 691 | 0.0  | 0.1− | 2007 10 19 | 691 | 0.5− | 0.2+ |
| 2004 02 17 | 691 | 0.2+ | 0.2− | 2004 03 14 | 691 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.1− |
| 2004 02 17 | 691 | 0.1− | 0.1− | 2007 10 10 | G96 | 0.4+ | 0.0  | 2007 10 19 | G96 | 0.3− | 0.1− |
| 2004 02 17 | 691 | 0.2+ | 0.2− | 2007 10 10 | G96 | 0.2− | 0.2+ | 2007 10 19 | G96 | 0.4+ | 0.3− |
| 2004 02 29 | 291 | 0.3− | 0.0  | 2007 10 10 | G96 | 0.4− | 0.0  | 2007 10 19 | G96 | 0.6+ | 0.2− |
| 2004 02 29 | 291 | 0.1− | 0.1+ | 2007 10 10 | G96 | 0.0  | 0.0  |            |     |      |      |

**2004 CK<sub>65</sub> = 2007 VT<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 168.25086  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.16629458 | $\omega$ | 160.43235 | −0.69748716 | +0.71321855 |
| $a$ | 3.2750453  | $\Omega$ | 65.27054  | −0.66723915 | −0.61100886 |
| $e$ | 0.2802729  | $i$      | 4.38872   | −0.26134954 | −0.34349304 |
| $P$ | 5.93       | $H$      | 15.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 05 | 691 | 0.2− | 0.2− | 2004 02 15 | 704 | 0.8+ | 0.6+ | 2007 11 01 | G96 | 0.4+ | 0.2+ |
| 2000 09 05 | 691 | 0.1+ | 0.0  | 2004 02 15 | 704 | 1.3+ | 0.3+ | 2007 11 01 | G96 | 0.3+ | 0.1+ |
| 2000 09 05 | 691 | 0.2+ | 0.1− | 2004 04 15 | 645 | 0.1− | 0.0  | 2007 11 02 | G96 | 0.5+ | 0.1+ |
| 2001 10 24 | 691 | 0.8+ | 0.0  | 2004 04 15 | 645 | 0.2− | 0.1− | 2007 11 02 | G96 | 0.0  | 0.1+ |
| 2001 10 24 | 691 | 0.4− | 0.6− | 2007 10 10 | 691 | 0.2− | 0.2+ | 2007 11 02 | G96 | 0.6− | 0.2− |
| 2001 10 24 | 691 | 0.0  | 0.8− | 2007 10 10 | 691 | 0.2− | 0.4− | 2007 11 02 | G96 | 0.5+ | 0.2− |
| 2004 02 14 | 608 | 0.3+ | 0.4+ | 2007 10 10 | 691 | 0.0  | 0.5+ | 2007 11 09 | G96 | 0.1− | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 14 | 608 | 0.4− | 0.3− | 2007 10 18 | 691 | 0.4+ | 0.2+ | 2007 11 09 | G96 | 0.0  | 0.1− |
| 2004 02 14 | 608 | 0.3+ | 0.3+ | 2007 10 18 | 691 | 0.7− | 0.5+ | 2007 11 09 | G96 | 0.3+ | 0.2+ |
| 2004 02 15 | 704 | 0.7+ | 0.1+ | 2007 10 18 | 691 | 0.2− | 0.4+ | 2007 11 09 | G96 | 0.3+ | 0.0  |
| 2004 02 15 | 704 | 0.7+ | 0.2− | 2007 11 01 | G96 | 0.0  | 0.2− |            |     |      |      |
| 2004 02 15 | 704 | 0.7+ | 0.2+ | 2007 11 01 | G96 | 0.4+ | 0.0  |            |     |      |      |

**2004 CP<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 299.34659  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27094879 | $\omega$ | 62.49229  | −0.82508366 | +0.56217764 |
| $a$ | 2.3652546  | $\Omega$ | 151.60649 | −0.55121331 | −0.77893236 |
| $e$ | 0.0781254  | $i$      | 6.82486   | −0.12410015 | −0.27788608 |
| $P$ | 3.64       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 15 | 644 | 0.0  | 0.6+ | 2004 02 17 | 704 | 1.2− | 0.2− | 2004 02 29 | 691 | 0.1+ | 0.4− |
| 2002 10 15 | 644 | 0.0  | 0.3+ | 2004 02 17 | 704 | 0.1+ | 0.4− | 2004 02 29 | 691 | 0.1+ | 0.4− |
| 2002 10 15 | 644 | 0.2− | 0.7+ | 2004 02 17 | 704 | 0.2− | 0.0  | 2005 07 11 | G96 | 0.3− | 0.6+ |
| 2004 01 29 | 704 | 0.4+ | 0.6+ | 2004 02 17 | 704 | 0.3+ | 0.2+ | 2005 07 11 | G96 | 0.1− | 0.4+ |
| 2004 01 29 | 704 | 1.3+ | 0.8+ | 2004 02 17 | 704 | 0.2− | 0.2+ | 2005 07 11 | G96 | 0.2+ | 0.5+ |
| 2004 01 29 | 704 | 0.0  | 0.3+ | 2004 02 18 | 608 | 0.5− | 0.6+ | 2006 11 25 | G96 | 0.2+ | 0.4− |
| 2004 01 29 | 704 | 0.2+ | 0.4− | 2004 02 18 | 608 | 0.1− | 1.1+ | 2006 11 25 | G96 | 0.3+ | 0.2− |
| 2004 02 11 | 703 | 1.2+ | 1.0+ | 2004 02 18 | 608 | 0.2− | 0.9+ | 2006 11 25 | G96 | 0.3− | 0.3− |
| 2004 02 11 | 703 | 0.6+ | 0.5+ | 2004 02 26 | 704 | 0.4− | 0.5− | 2006 11 25 | G96 | 0.1− | 0.5− |
| 2004 02 11 | 691 | 0.1− | 0.0  | 2004 02 26 | 704 | 0.1− | 0.2− | 2007 11 20 | G96 | 0.0  | 0.4− |
| 2004 02 11 | 703 | 0.7+ | 1.4+ | 2004 02 26 | 704 | 0.5− | 0.4+ | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2004 02 11 | 703 | 0.3+ | 0.9+ | 2004 02 26 | 704 | 0.1+ | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.3− |
| 2004 02 11 | 691 | 0.1− | 0.1− | 2004 02 26 | 704 | 0.8− | 0.6− | 2007 11 20 | G96 | 0.2− | 0.4− |
| 2004 02 11 | 691 | 0.1− | 0.1− | 2004 02 29 | 691 | 0.0  | 0.1− |            |     |      |      |

**2004 CS<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 293.09983  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18544324 | $\omega$ | 316.30425 | +0.03292824 | −0.99886729 |
| $a$ | 3.0455241  | $\Omega$ | 131.77741 | +0.92917700 | +0.01793471 |
| $e$ | 0.2316935  | $i$      | 2.64003   | +0.36816550 | +0.04407372 |
| $P$ | 5.31       | $H$      | 16.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 06 | 691 | 0.2−  | 0.2−  | 2004 02 11 | 644 | 0.2− | 0.1+ | 2004 02 23 | 704 | 0.6− | 0.8+ |
| 1997 12 06 | 691 | 0.0   | 0.1+  | 2004 02 11 | 644 | 0.2+ | 0.2+ | 2004 02 23 | 704 | 0.5+ | 0.8+ |
| 1997 12 06 | 691 | 0.2+  | 0.5−  | 2004 02 11 | 644 | 0.2+ | 0.4+ | 2007 09 11 | G96 | 0.6− | 0.3+ |
| 1999 03 20 | 645 | 0.1−  | 0.2−  | 2004 02 17 | 691 | 0.1− | 0.1− | 2007 09 11 | G96 | 0.2− | 0.0  |
| 1999 03 20 | 645 | 0.0   | 0.2−  | 2004 02 17 | 691 | 0.0  | 0.0  | 2007 09 11 | G96 | 0.3− | 0.4+ |
| 2002 10 31 | 645 | 0.1+  | 0.1+  | 2004 02 17 | 691 | 0.1− | 0.1− | 2007 09 11 | G96 | 0.2− | 0.1− |
| 2002 10 31 | 645 | 0.1+  | 0.2+  | 2004 02 17 | 704 | 0.0  | 0.5+ | 2007 10 08 | G96 | 0.1− | 0.3+ |
| 2004 01 24 | 704 | (0.4+ | 2.3−) | 2004 02 17 | 704 | 0.2+ | 0.0  | 2007 10 08 | G96 | 0.1− | 0.3+ |
| 2004 01 24 | 704 | 0.4+  | 0.6−  | 2004 02 17 | 704 | 0.1− | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.3+ |
| 2004 01 24 | 704 | 0.2+  | 1.0−  | 2004 02 23 | 704 | 0.0  | 0.5+ | 2007 10 08 | G96 | 0.3+ | 0.1− |

**2004 CA<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|           |            |          |           |             |             |
|-----------|------------|----------|-----------|-------------|-------------|
| $\dot{M}$ | 264.03413  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$       | 0.17290374 | $\omega$ | 122.61691 | −0.34056021 | −0.93399247 |
| $a$       | 3.1910465  | $\Omega$ | 345.99254 | +0.64106704 | −0.14659098 |
| $e$       | 0.2151644  | $i$      | 26.51532  | +0.68778761 | −0.32583608 |
| $P$       | 5.70       | $H$      | 15.4      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 11 | 644 | 0.5− | 0.1− | 2004 03 15 | 703 | 0.1− | 1.1− | 2004 03 30 | 691 | 0.1− | 0.1− |
| 2004 02 11 | 644 | 0.4− | 0.2− | 2004 03 19 | 704 | 0.6+ | 0.3+ | 2004 03 30 | 691 | 0.1− | 0.3− |
| 2004 02 11 | 644 | 0.2− | 0.7− | 2004 03 19 | 704 | 0.7+ | 0.4− | 2004 03 30 | 691 | 0.1+ | 0.0  |
| 2004 02 17 | 704 | 0.2+ | 0.0  | 2004 03 19 | 704 | 0.6− | 0.1− | 2007 09 11 | G96 | 0.6+ | 0.7+ |
| 2004 02 17 | 704 | 0.2− | 0.1+ | 2004 03 19 | 704 | 0.4+ | 0.1− | 2007 09 11 | G96 | 0.6+ | 0.5+ |
| 2004 02 17 | 704 | 0.4+ | 0.5+ | 2004 03 22 | 704 | 0.0  | 0.6− | 2007 09 11 | G96 | 0.1+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 17 | 704 | 0.1− | 0.4+ | 2004 03 22 | 704 | 0.4− | 0.2+ | 2007 09 11 | G96 | 0.7+ | 0.5+ |
| 2004 02 17 | 704 | 0.3+ | 0.2+ | 2004 03 22 | 704 | 1.1+ | 0.1− | 2007 09 20 | 691 | 0.5− | 0.9− |
| 2004 03 15 | 703 | 0.3− | 1.2− | 2004 03 22 | 704 | 1.0− | 0.2− | 2007 09 20 | 691 | 1.0− | 0.2− |
| 2004 03 15 | 704 | 0.1+ | 0.1+ | 2004 03 22 | 704 | 0.3+ | 0.4+ | 2007 09 20 | 691 | 0.3− | 0.5+ |
| 2004 03 15 | 704 | 0.9− | 1.4+ | 2004 03 27 | 704 | 0.8− | 0.3+ | 2007 10 08 | G96 | 0.0  | 0.3− |
| 2004 03 15 | 703 | 0.2− | 0.4− | 2004 03 27 | 704 | 0.7− | 0.3+ | 2007 10 08 | G96 | 0.1− | 0.5− |
| 2004 03 15 | 704 | 0.6+ | 0.2+ | 2004 03 27 | 704 | 0.2− | 0.2+ | 2007 10 08 | G96 | 0.1− | 0.0  |
| 2004 03 15 | 703 | 1.9+ | 1.2+ | 2004 03 27 | 704 | 0.8− | 0.2+ | 2007 10 08 | G96 | 0.0  | 0.4− |
| 2004 03 15 | 704 | 0.9+ | 0.8− | 2004 03 27 | 704 | 0.2− | 0.5+ |            |     |      |      |

**2004 CF<sub>88</sub> = 2007 VG<sub>197</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.97353   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.19462911 | <i>ω</i> | 257.00427 | +0.98039755 | −0.01325713 |
| <i>a</i> | 2.9489281  | <i>Ω</i> | 103.49661 | +0.08206963 | +0.93453677 |
| <i>e</i> | 0.1554387  | <i>i</i> | 11.66366  | −0.17912350 | +0.35561957 |
| <i>P</i> | 5.06       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 07 | 608 | 0.1+ | 0.6− | 2007 10 10 | 703 | 0.4− | 0.2+ | 2007 11 07 | 703 | 0.5− | 0.4− |
| 2002 10 07 | 608 | 0.0  | 0.3− | 2007 10 10 | 703 | 1.2− | 0.0  | 2007 11 07 | 703 | 0.5− | 0.8− |
| 2002 10 07 | 608 | 0.4− | 0.3− | 2007 10 19 | 699 | 0.3+ | 0.0  | 2007 11 11 | 703 | 0.4+ | 0.5+ |
| 2002 11 07 | 645 | 0.1+ | 0.1− | 2007 10 19 | 699 | 0.4+ | 0.0  | 2007 11 11 | 703 | 0.3− | 0.6+ |
| 2002 11 07 | 645 | 0.1+ | 0.1− | 2007 10 19 | 699 | 0.6− | 1.3− | 2007 11 11 | 703 | 0.5+ | 0.8+ |
| 2004 01 18 | 644 | 0.1− | 0.0  | 2007 10 19 | 703 | 0.2+ | 0.6+ | 2007 11 11 | 703 | 0.4+ | 0.6+ |
| 2004 01 18 | 644 | 0.2− | 0.4+ | 2007 10 19 | 699 | 0.4− | 0.1− | 2007 11 18 | 703 | 0.4− | 0.9+ |
| 2004 01 18 | 644 | 0.4+ | 0.4+ | 2007 10 19 | 703 | 0.7+ | 0.4+ | 2007 11 18 | 703 | 0.1+ | 0.7+ |
| 2004 02 11 | 691 | 0.2− | 0.1+ | 2007 10 19 | 703 | 0.3− | 1.0+ | 2007 11 18 | 703 | 0.2+ | 0.9+ |
| 2004 02 11 | 691 | 0.1− | 0.0  | 2007 10 19 | 703 | 0.7+ | 0.8+ | 2007 11 18 | 703 | 0.3− | 0.8+ |
| 2004 02 11 | 691 | 0.2− | 0.1+ | 2007 11 02 | 703 | 0.3+ | 0.5− | 2007 12 06 | 703 | 0.6+ | 0.3− |
| 2004 02 18 | 691 | 0.3+ | 0.0  | 2007 11 02 | 703 | 0.5− | 0.4+ | 2007 12 06 | 703 | 0.2+ | 0.7+ |
| 2004 02 18 | 691 | 0.0  | 0.0  | 2007 11 02 | 703 | 0.7− | 0.8+ | 2007 12 06 | 703 | 0.1− | 0.5− |
| 2004 02 18 | 691 | 0.2+ | 0.2− | 2007 11 02 | 703 | 0.9− | 1.0+ | 2007 12 06 | 703 | 0.1+ | 0.1+ |
| 2007 10 10 | 703 | 0.8− | 0.0  | 2007 11 07 | 703 | 0.0  | 0.3− |            |     |      |      |
| 2007 10 10 | 703 | 0.6− | 0.2− | 2007 11 07 | 703 | 0.1+ | 0.1− |            |     |      |      |

**2004 CM<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 66.84436   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18440342 | <i>ω</i> | 205.25059 | +0.74048021 | +0.64600189 |
| <i>a</i> | 3.0569621  | <i>Ω</i> | 113.21344 | −0.57731531 | +0.75262205 |
| <i>e</i> | 0.1236568  | <i>i</i> | 11.63780  | −0.34408734 | +0.12744258 |
| <i>P</i> | 5.34       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 10 | 644 | 0.0  | 0.9− | 2004 02 18 | 691 | 0.2+ | 0.1+ | 2006 06 03 | G96 | 1.2− | 0.3− |
| 2002 12 10 | 644 | 0.4+ | 0.6− | 2004 03 17 | 645 | 0.0  | 0.0  | 2006 06 03 | G96 | 0.6− | 0.3+ |
| 2002 12 10 | 644 | 0.3+ | 0.8− | 2004 03 17 | 645 | 0.0  | 0.1− | 2007 10 19 | 703 | 0.3+ | 0.1+ |
| 2004 01 18 | 644 | 0.8+ | 0.4+ | 2004 03 18 | 645 | 0.1− | 0.1+ | 2007 10 19 | 703 | 0.1+ | 0.5+ |
| 2004 01 18 | 644 | 0.6+ | 0.3+ | 2004 03 18 | 645 | 0.0  | 0.0  | 2007 10 19 | 703 | 1.0− | 0.9− |
| 2004 01 18 | 644 | 1.2+ | 0.5+ | 2006 05 05 | G96 | 0.5− | 0.0  | 2007 10 19 | 703 | 0.5− | 0.2+ |
| 2004 02 11 | 691 | 0.0  | 0.1− | 2006 05 05 | G96 | 0.5+ | 0.2− | 2007 11 15 | 703 | 0.7+ | 0.6+ |
| 2004 02 11 | 691 | 0.4− | 0.1+ | 2006 05 05 | G96 | 0.1− | 0.3+ | 2007 11 15 | 703 | 0.3+ | 0.4+ |
| 2004 02 11 | 691 | 0.0  | 0.2+ | 2006 05 05 | G96 | 1.0+ | 0.0  | 2007 11 15 | 703 | 0.7+ | 0.3+ |
| 2004 02 18 | 691 | 0.3+ | 0.3+ | 2006 06 03 | G96 | 0.7+ | 0.1+ | 2007 11 15 | 703 | 1.3− | 0.5+ |
| 2004 02 18 | 691 | 0.2− | 0.4− | 2006 06 03 | G96 | 0.3+ | 0.0  |            |     |      |      |

**2004 CZ<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 284.57568  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21089142 | <i>ω</i> | 350.24370 | −0.85082609 | −0.52250530 |
| <i>a</i> | 2.7953108  | <i>Ω</i> | 157.98162 | +0.49152174 | −0.82879174 |
| <i>e</i> | 0.1623754  | <i>i</i> | 8.51730   | +0.18574535 | −0.20023102 |
| <i>P</i> | 4.67       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 645 | 0.0   | 0.0   | 2004 02 26 | 704 | 0.1+ | 0.9+ | 2004 03 18 | 704 | 0.1+ | 1.0+ |
| 2002 10 30 | 645 | 0.0   | 0.0   | 2004 02 26 | 704 | 0.3− | 0.7+ | 2007 11 13 | G96 | 0.1− | 0.2− |
| 2004 02 12 | 691 | 0.1+  | 0.1−  | 2004 02 26 | 704 | 0.4− | 0.2+ | 2007 11 13 | G96 | 0.1+ | 0.2+ |
| 2004 02 12 | 691 | 0.2+  | 0.2−  | 2004 02 26 | 704 | 0.2− | 0.5+ | 2007 11 13 | G96 | 0.2+ | 0.2− |
| 2004 02 12 | 691 | 0.1+  | 0.1−  | 2004 02 26 | 704 | 0.3− | 1.2+ | 2007 11 13 | G96 | 0.3+ | 0.0  |
| 2004 02 14 | 703 | 0.3−  | 0.4−  | 2004 02 29 | 691 | 0.4− | 0.3− | 2007 11 19 | G96 | 0.1− | 0.1− |
| 2004 02 14 | 703 | 0.4−  | 0.0   | 2004 02 29 | 691 | 0.0  | 0.3− | 2007 11 19 | G96 | 0.1− | 0.1− |
| 2004 02 14 | 703 | 0.4+  | 1.1+  | 2004 02 29 | 691 | 0.5− | 0.4− | 2007 11 19 | G96 | 0.3− | 0.0  |
| 2004 02 14 | 703 | 0.6−  | 0.6+  | 2004 03 10 | 644 | 0.2− | 0.0  | 2007 11 19 | G96 | 0.0  | 0.1− |
| 2004 02 14 | 699 | 1.0+  | 0.1+  | 2004 03 10 | 644 | 0.2− | 0.3− | 2007 12 05 | 703 | 0.8+ | 1.0+ |
| 2004 02 18 | 704 | 1.3+  | 0.8−  | 2004 03 10 | 644 | 0.0  | 0.2− | 2007 12 05 | 703 | 0.1− | 0.0  |
| 2004 02 18 | 704 | (1.6+ | 0.9+) | 2004 03 18 | 704 | 0.9− | 0.3− | 2007 12 05 | 703 | 0.7− | 0.5− |
| 2004 02 18 | 704 | 1.3+  | 0.2+  | 2004 03 18 | 704 | 0.9+ | 0.2+ | 2007 12 05 | 703 | 0.1+ | 0.5− |
| 2004 02 18 | 704 | 0.3+  | 0.6+  | 2004 03 18 | 704 | 0.6+ | 0.7+ |            |     |      |      |

**2004 CX<sub>128</sub> = 2007 VD<sub>226</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.58588  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.19101438 | <i>ω</i> | 53.90274  | +0.72946232 | −0.68334036 |
| <i>a</i> | 2.9860151  | <i>Ω</i> | 349.08819 | +0.56430174 | +0.62639705 |
| <i>e</i> | 0.0834496  | <i>i</i> | 9.27414   | +0.38658540 | +0.37506357 |
| <i>P</i> | 5.16       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 02 14 | 691 | 0.0  | 0.2+ | 2007 09 25 | G96 | 0.1−  | 0.1+  | 2007 11 09 | 703 | 1.0− | 0.4− |
| 2004 02 14 | 691 | 0.2+ | 0.2− | 2007 09 25 | G96 | 0.0   | 0.1+  | 2007 11 09 | 703 | 0.5− | 0.1+ |
| 2004 02 14 | 691 | 0.1+ | 0.2+ | 2007 09 25 | G96 | 0.1+  | 0.2−  | 2007 11 09 | 703 | 0.1+ | 0.1+ |
| 2004 02 29 | 691 | 0.3− | 0.0  | 2007 09 25 | G96 | 0.2+  | 0.0   | 2007 11 13 | 703 | 0.3+ | 0.1− |
| 2004 02 29 | 691 | 0.1+ | 0.5− | 2007 10 08 | 703 | 0.9+  | 0.2−  | 2007 11 13 | 703 | 0.3+ | 1.0+ |
| 2004 02 29 | 691 | 0.4− | 0.0  | 2007 10 08 | 703 | (2.2+ | 0.3+) | 2007 11 13 | 703 | 0.3− | 0.3+ |
| 2004 03 17 | 691 | 0.0  | 0.1+ | 2007 10 08 | 703 | 0.7−  | 0.0   | 2007 11 13 | 703 | 1.2+ | 0.4− |
| 2004 03 17 | 691 | 0.2+ | 0.2+ | 2007 10 08 | 703 | 0.0   | 0.2+  |            |     |      |      |
| 2004 03 17 | 691 | 0.0  | 0.0  | 2007 11 09 | 703 | 0.5−  | 0.8−  |            |     |      |      |

**2004 CC<sub>129</sub> = 2007 UH<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 137.91223  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17581701 | <i>ω</i> | 202.69259 | −0.11443293 | +0.99306599 |
| <i>a</i> | 3.1556981  | <i>Ω</i> | 60.74574  | −0.90665347 | −0.09331971 |
| <i>e</i> | 0.1023952  | <i>i</i> | 1.76861   | −0.40605983 | −0.07149391 |
| <i>P</i> | 5.61       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 31 | 807 | 0.4− | 0.3− | 2005 06 14 | G96 | 0.2− | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.0  |
| 2000 07 31 | 807 | 0.6− | 0.3− | 2005 06 14 | G96 | 0.1− | 0.0  | 2007 10 30 | G96 | 0.7− | 0.1+ |
| 2001 10 14 | 291 | 0.1− | 0.1+ | 2005 06 14 | G96 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.1+ |
| 2001 10 14 | 291 | 0.2− | 0.8+ | 2005 06 14 | G96 | 0.8− | 0.6− | 2007 10 30 | G96 | 0.1+ | 0.1− |
| 2001 10 14 | 291 | 0.3+ | 0.2− | 2006 08 28 | 691 | 0.2− | 0.5+ | 2007 11 05 | G96 | 0.1+ | 0.2+ |
| 2004 02 14 | 691 | 0.2+ | 0.5+ | 2006 08 28 | 691 | 0.0  | 0.4+ | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2004 02 14 | 691 | 0.1− | 0.1+ | 2006 08 28 | 691 | 0.3+ | 0.6+ | 2007 11 05 | G96 | 0.6− | 0.0  |
| 2004 02 14 | 691 | 0.3− | 0.1+ | 2006 09 30 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.1− | 0.1− |
| 2004 02 29 | 691 | 0.4+ | 0.4− | 2006 09 30 | G96 | 0.7− | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.4− |
| 2004 02 29 | 691 | 0.3+ | 0.3+ | 2006 09 30 | G96 | 0.5− | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.1− |
| 2004 02 29 | 691 | 0.2− | 0.3− | 2006 09 30 | G96 | 0.5+ | 0.2+ | 2007 12 15 | G96 | 0.4− | 0.3− |
| 2004 03 17 | 691 | 0.1− | 0.8+ | 2007 10 12 | 691 | 0.1+ | 0.3− | 2007 12 15 | G96 | 0.2− | 0.6− |
| 2004 03 17 | 691 | 0.4+ | 0.4+ | 2007 10 12 | 691 | 0.1+ | 0.2− |            |     |      |      |
| 2004 03 17 | 691 | 0.3+ | 0.2+ | 2007 10 12 | 691 | 0.4− | 0.2− |            |     |      |      |

2007 DEC. 24

M.P.O. 129697

**2004 DB<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 263.86645  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20291055 | $\omega$ 309.50006 | -0.97111425   | -0.20355907 |
| <i>a</i> | 2.8681353  | $\Omega$ 219.21523 | +0.22923931   | -0.94071584 |
| <i>e</i> | 0.1233244  | <i>i</i> 11.35714  | -0.06623025   | -0.27132528 |
| <i>P</i> | 4.86       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 645 | 0.0  | 0.1+ | 2004 02 19 | 704 | 0.7-  | 0.5-  | 2004 04 14 | 699 | 0.2+ | 1.6+ |
| 2001 10 15 | 645 | 0.0  | 0.1+ | 2004 03 16 | 704 | 0.1+  | 0.4+  | 2007 11 28 | A13 | 0.1+ | 0.4- |
| 2004 01 16 | 644 | 0.1+ | 0.5- | 2004 03 16 | 704 | 0.4-  | 1.1+  | 2007 11 28 | A13 | 0.2+ | 0.4- |
| 2004 01 16 | 644 | 0.5+ | 0.1- | 2004 03 16 | 704 | 0.5+  | 0.1+  | 2007 11 28 | A13 | 0.6- | 0.4- |
| 2004 01 16 | 644 | 0.1+ | 0.2+ | 2004 03 16 | 704 | 0.2+  | 0.7+  | 2007 12 03 | 704 | 0.4- | 0.0  |
| 2004 02 18 | 703 | 0.9- | 0.5- | 2004 03 16 | 704 | 0.6+  | 0.6-  | 2007 12 03 | 704 | 1.0- | 0.2- |
| 2004 02 18 | 703 | 0.6- | 0.1+ | 2004 03 27 | 703 | 1.2+  | 0.7+  | 2007 12 03 | 704 | 0.1- | 0.3+ |
| 2004 02 18 | 703 | 0.3+ | 0.2+ | 2004 03 27 | 703 | 0.4+  | 0.4+  | 2007 12 03 | 704 | 0.6+ | 0.4+ |
| 2004 02 18 | 703 | 0.5- | 0.8- | 2004 03 27 | 703 | 0.5+  | 1.8+  | 2007 12 04 | 704 | 0.2+ | 0.7+ |
| 2004 02 19 | 704 | 0.7- | 0.5- | 2004 03 27 | 703 | (0.3+ | 2.5+) | 2007 12 04 | 704 | 0.6+ | 0.0  |
| 2004 02 19 | 704 | 0.5- | 0.1- | 2004 04 14 | 699 | (1.6- | 1.0-) | 2007 12 04 | 704 | 0.3+ | 0.8+ |
| 2004 02 19 | 704 | 0.5- | 0.0  | 2004 04 14 | 699 | 0.7+  | 0.3-  | 2007 12 04 | 704 | 0.1- | 0.1- |
| 2004 02 19 | 704 | 0.3- | 0.0  | 2004 04 14 | 699 | 1.4+  | 0.3-  | 2007 12 04 | 704 | 0.1+ | 0.1+ |

**2004 DT<sub>54</sub> = 2007 UM<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 127.08220  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18771565 | $\omega$ 139.22869 | +0.11550031   | +0.99329528 |
| <i>a</i> | 3.0208956  | $\Omega$ 137.40312 | -0.91321770   | +0.10813282 |
| <i>e</i> | 0.0103280  | <i>i</i> 0.41607   | -0.39075965   | +0.04088728 |
| <i>P</i> | 5.25       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 11 | 691 | 0.6+ | 0.0  | 2005 04 11 | G96 | 0.4- | 1.0+ | 2006 09 26 | G96 | 0.2- | 0.4+ |
| 1999 03 11 | 691 | 0.1+ | 0.2+ | 2005 04 11 | G96 | 0.2+ | 0.5+ | 2007 10 30 | 691 | 0.2+ | 0.1+ |
| 1999 03 11 | 691 | 0.7+ | 0.3+ | 2005 04 11 | G96 | 0.1- | 0.6+ | 2007 10 30 | 691 | 0.2- | 0.0  |
| 2001 08 19 | 807 | 0.4- | 0.3+ | 2005 05 13 | G96 | 0.3- | 0.3+ | 2007 10 30 | 691 | 0.1+ | 0.3- |
| 2001 08 19 | 807 | 0.8- | 0.6+ | 2005 05 13 | G96 | 0.4- | 0.3+ | 2007 10 30 | G96 | 0.3+ | 0.2- |
| 2001 09 16 | 691 | 0.4- | 0.5+ | 2005 05 13 | G96 | 0.1- | 0.3+ | 2007 10 30 | G96 | 0.4+ | 0.2- |
| 2001 09 16 | 691 | 0.2- | 0.9+ | 2005 05 13 | G96 | 0.1- | 0.5+ | 2007 10 30 | G96 | 0.8+ | 0.2+ |
| 2001 09 16 | 691 | 0.1- | 0.6+ | 2005 06 13 | G96 | 0.7- | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.0  |
| 2002 12 08 | 291 | 0.5- | 0.2+ | 2005 06 13 | G96 | 0.2- | 0.4+ | 2007 10 31 | 691 | 0.5- | 0.3+ |
| 2002 12 08 | 291 | 0.3- | 0.1- | 2005 06 13 | G96 | 0.6- | 0.6+ | 2007 10 31 | 691 | 0.1- | 0.0  |
| 2002 12 08 | 291 | 0.8- | 0.1- | 2005 06 13 | G96 | 0.1- | 0.1- | 2007 10 31 | 691 | 0.5- | 0.4+ |
| 2004 02 11 | 644 | 0.8+ | 1.1+ | 2006 07 20 | D35 | 1.2+ | 0.5+ | 2007 11 05 | G96 | 0.7+ | 0.3- |
| 2004 02 11 | 644 | 0.3+ | 0.6+ | 2006 07 20 | D35 | 0.1+ | 1.0+ | 2007 11 05 | G96 | 0.8+ | 0.4- |
| 2004 02 11 | 644 | 1.5+ | 0.2- | 2006 07 20 | D35 | 0.0  | 0.4+ | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2004 02 22 | 691 | 0.2+ | 0.3+ | 2006 07 21 | G96 | 0.2- | 0.1- | 2007 11 05 | G96 | 0.5+ | 0.3- |
| 2004 02 22 | 691 | 0.1+ | 0.2+ | 2006 07 21 | G96 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 1.0+ | 0.2- |
| 2004 02 22 | 691 | 0.2+ | 0.3+ | 2006 07 21 | G96 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.5+ | 0.5+ |
| 2004 02 29 | 691 | 0.2- | 0.2+ | 2006 07 21 | G96 | 0.3+ | 0.4+ | 2007 11 15 | 704 | 0.3+ | 1.4+ |
| 2004 02 29 | 691 | 0.2- | 0.2+ | 2006 09 26 | G96 | 0.3- | 0.1+ | 2007 11 15 | 704 | 1.4+ | 0.2+ |
| 2004 02 29 | 691 | 0.2- | 0.4+ | 2006 09 26 | G96 | 0.2- | 0.3+ |            |     |      |      |
| 2005 04 11 | G96 | 0.4- | 0.1- | 2006 09 26 | G96 | 0.3- | 0.2+ |            |     |      |      |

**2004 DO<sub>61</sub> = 2007 WR<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 334.46396  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21792744 | $\omega$ 135.39002 | -0.07721218   | -0.99634994 |
| <i>a</i> | 2.7348160  | $\Omega$ 318.99754 | +0.89854531   | -0.05371894 |
| <i>e</i> | 0.1983171  | <i>i</i> 3.18054   | +0.43203542   | -0.06634051 |
| <i>P</i> | 4.52       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |     |     |            |     |      |      |            |     |      |      |
|------------|-----|-----|-----|------------|-----|------|------|------------|-----|------|------|
| 2002 10 31 | 645 | 0.0 | 0.0 | 2004 03 18 | 704 | 0.5+ | 0.9+ | 2007 11 20 | 691 | 0.1+ | 0.1- |
| 2002 10 31 | 645 | 0.0 | 0.0 | 2007 10 24 | G96 | 0.2- | 0.4+ | 2007 12 12 | 704 | 0.4- | 0.0  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 11 | 644 | 0.0   | 0.1-  | 2007 10 24 | G96 | 0.5+ | 0.3- | 2007 12 12 | 704 | 1.4- | 0.3+ |
| 2004 02 11 | 644 | 0.2+  | 0.1-  | 2007 10 24 | G96 | 0.2+ | 0.2- | 2007 12 12 | 704 | 0.4- | 0.4+ |
| 2004 02 11 | 644 | 0.5+  | 0.0   | 2007 10 24 | G96 | 0.2- | 0.3- | 2007 12 13 | 704 | 0.8+ | 0.8+ |
| 2004 02 26 | 704 | 0.9-  | 0.7+  | 2007 11 08 | 691 | 0.1+ | 0.2- | 2007 12 13 | 704 | 1.0+ | 0.2- |
| 2004 02 26 | 704 | (0.9- | 2.1+) | 2007 11 08 | 691 | 0.0  | 0.3- | 2007 12 13 | 704 | 0.2+ | 0.3+ |
| 2004 02 26 | 704 | 1.2-  | 0.6+  | 2007 11 08 | 691 | 0.3- | 0.1- | 2007 12 13 | 704 | 0.5+ | 0.4+ |
| 2004 02 26 | 704 | 1.2-  | 0.1+  | 2007 11 19 | G96 | 0.0  | 0.1- | 2007 12 13 | 704 | 0.6- | 0.3+ |
| 2004 02 29 | 691 | 0.1-  | 0.3-  | 2007 11 19 | G96 | 0.6+ | 0.3- | 2007 12 15 | 704 | 0.4- | 2.1+ |
| 2004 02 29 | 691 | 0.3+  | 0.0   | 2007 11 19 | G96 | 0.1+ | 0.3- | 2007 12 15 | 704 | 0.6+ | 0.7+ |
| 2004 02 29 | 691 | 0.2+  | 0.2-  | 2007 11 19 | G96 | 0.6+ | 0.2- | 2007 12 15 | 704 | 1.1- | 0.6+ |
| 2004 03 18 | 704 | 0.7+  | 0.2-  | 2007 11 20 | 691 | 0.0  | 0.1- | 2007 12 15 | 704 | 0.1+ | 1.4- |
| 2004 03 18 | 704 | (2.0+ | 0.5+) | 2007 11 20 | 691 | 0.1- | 0.1- |            |     |      |      |

**2004 DN<sub>65</sub> = 2007 VA<sub>228</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 288.47840  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19898479 | $\omega$ 334.90923 | -0.70169412   | -0.70481988 |
| <i>a</i> | 2.9057359  | $\Omega$ 159.12525 | +0.69303100   | -0.70913610 |
| <i>e</i> | 0.1458969  | <i>i</i> 17.00071  | +0.16532814   | -0.01883932 |
| <i>P</i> | 4.95       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 13 | 291 | 0.0  | 0.3- | 2004 03 18 | 691 | 0.1- | 0.1- | 2007 11 12 | G96 | 0.0  | 0.1+ |
| 2004 02 13 | 291 | 0.3+ | 0.0  | 2004 03 18 | 691 | 0.1+ | 0.0  | 2007 11 12 | G96 | 0.4+ | 0.1- |
| 2004 02 13 | 291 | 0.6+ | 0.2- | 2004 03 18 | 691 | 0.0  | 0.1- | 2007 11 12 | G96 | 0.0  | 0.2- |
| 2004 02 22 | 695 | 0.4- | 0.2- | 2007 10 12 | G96 | 0.5+ | 0.5- | 2007 11 13 | G96 | 0.3- | 0.1- |
| 2004 02 22 | 695 | 0.3- | 0.2- | 2007 10 12 | G96 | 0.5+ | 0.5- | 2007 11 13 | G96 | 0.4- | 0.2+ |
| 2004 02 23 | 704 | 0.0  | 0.2+ | 2007 10 12 | G96 | 0.5+ | 0.2- | 2007 11 13 | G96 | 0.4- | 0.3- |
| 2004 02 23 | 704 | 0.4+ | 0.1+ | 2007 10 12 | G96 | 0.6- | 1.3+ | 2007 11 13 | G96 | 0.1+ | 0.3+ |
| 2004 02 23 | 704 | 0.7- | 0.8+ | 2007 11 12 | G96 | 0.1- | 0.0  |            |     |      |      |

**2004 DB<sub>67</sub> = 2005 EB<sub>109</sub> = 2007 TK<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.28588   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18508705 | $\omega$ 6.23929   | +0.42767245   | +0.89049401 |
| <i>a</i> | 3.0494301  | $\Omega$ 289.16923 | -0.83628863   | +0.32457630 |
| <i>e</i> | 0.1023126  | <i>i</i> 9.46306   | -0.34310000   | +0.31885834 |
| <i>P</i> | 5.33       | <i>H</i> 15.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|-------|
| 1999 01 13 | 691 | 0.0  | 0.3- | 2005 03 04 | 703 | 0.5+  | 0.5-  | 2007 10 09 | 699 | 0.3+ | 0.3-  |
| 1999 01 13 | 691 | 0.1- | 0.1- | 2005 03 10 | 699 | (0.6+ | 1.8+) | 2007 10 09 | 699 | 0.2+ | 0.1+  |
| 1999 01 13 | 691 | 0.2+ | 0.0  | 2005 03 10 | 699 | 1.2-  | 0.7+  | 2007 10 09 | 699 | 0.6+ | 0.4+  |
| 2002 11 14 | 644 | 0.5- | 0.0  | 2005 03 10 | 699 | 0.4+  | 1.1+  | 2007 10 09 | 699 | (0.0 | 2.1-) |
| 2002 11 14 | 644 | 0.5- | 0.1+ | 2005 03 10 | 699 | 0.8+  | 0.0   | 2007 10 19 | 703 | 0.8+ | 0.4+  |
| 2002 11 14 | 644 | 0.3- | 0.1+ | 2007 09 11 | 703 | 0.8-  | 0.3-  | 2007 10 19 | 703 | 0.3+ | 0.7-  |
| 2004 02 26 | 695 | 0.1- | 0.3+ | 2007 09 11 | 703 | 1.1-  | 0.3+  | 2007 10 19 | 703 | 0.8+ | 1.0+  |
| 2004 02 26 | 695 | 0.4- | 0.4+ | 2007 09 11 | 703 | 0.1-  | 0.3+  | 2007 10 19 | 703 | 1.3+ | 1.4+  |
| 2004 02 27 | 695 | 0.4+ | 0.0  | 2007 09 11 | 703 | 0.4-  | 0.2-  | 2007 11 01 | G96 | 0.1+ | 0.4-  |
| 2004 02 27 | 695 | 0.2- | 0.1+ | 2007 10 08 | 703 | (1.7- | 0.1-) | 2007 11 01 | G96 | 0.2+ | 0.3-  |
| 2005 03 04 | 703 | 0.7- | 0.1- | 2007 10 08 | 703 | 0.5-  | 0.2+  | 2007 11 01 | G96 | 0.1- | 0.4-  |
| 2005 03 04 | 703 | 0.7+ | 0.3+ | 2007 10 08 | 703 | 0.5-  | 0.1+  |            |     |      |       |
| 2005 03 04 | 703 | 0.0  | 0.3+ | 2007 10 08 | 703 | 0.5-  | 0.5-  |            |     |      |       |

**2004 EE**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.85403  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18144138 | $\omega$ 121.30914 | -0.52613996   | -0.85039532 |
| <i>a</i> | 3.0901424  | $\Omega$ 0.45276   | +0.65923970   | -0.40945391 |
| <i>e</i> | 0.1540129  | <i>i</i> 15.66119  | +0.53719620   | -0.33041687 |
| <i>P</i> | 5.43       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 645 | 0.2- | 0.3+ | 2004 03 17 | 691 | 0.1+ | 0.1+ | 2004 04 15 | 691 | 0.1- | 0.2+ |
| 2001 09 19 | 645 | 0.2- | 0.3+ | 2004 03 17 | 691 | 0.1- | 0.2+ | 2004 04 15 | 691 | 0.1+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 01 28 | 645 | 0.0  | 0.1+ | 2004 03 18 | 704 | 0.7+ | 1.0+ | 2004 04 15 | 691 | 0.3-  | 0.3+  |
| 2003 01 28 | 645 | 0.0  | 0.1+ | 2004 03 18 | 704 | 0.3- | 0.1- | 2004 04 22 | 691 | 0.1+  | 0.1-  |
| 2004 02 26 | 704 | 0.6+ | 0.3+ | 2004 03 18 | 704 | 1.5+ | 0.1- | 2004 04 22 | 691 | 0.2+  | 0.1-  |
| 2004 02 26 | 704 | 1.2+ | 0.7- | 2004 03 18 | 704 | 0.1- | 0.8+ | 2004 04 22 | 691 | 0.1-  | 0.3+  |
| 2004 02 26 | 704 | 1.3+ | 0.3- | 2004 03 18 | 704 | 1.4+ | 0.0  | 2007 10 08 | 703 | (0.3- | 1.7+) |
| 2004 03 11 | 673 | 0.2+ | 0.5+ | 2004 03 24 | 699 | 0.4- | 0.4- | 2007 10 08 | 703 | 0.5-  | 0.3-  |
| 2004 03 11 | 673 | 0.5+ | 0.5+ | 2004 03 24 | 699 | 0.1- | 0.4+ | 2007 10 08 | 703 | 0.7-  | 0.1+  |
| 2004 03 11 | 673 | 1.1- | 0.9+ | 2004 03 24 | 699 | 0.0  | 0.3+ | 2007 10 08 | 703 | 0.9-  | 0.2+  |
| 2004 03 12 | 673 | 0.1- | 0.1+ | 2004 03 24 | 699 | 0.4- | 0.3- | 2007 10 13 | 735 | 0.1+  | 0.3-  |
| 2004 03 12 | 673 | 0.3+ | 0.2+ | 2004 03 27 | 704 | 0.1- | 0.9+ | 2007 10 13 | 735 | 0.5-  | 0.3-  |
| 2004 03 12 | 673 | 0.7+ | 0.2+ | 2004 03 27 | 704 | 0.3+ | 0.5+ | 2007 10 13 | 735 | (1.8- | 3.2+) |
| 2004 03 15 | 703 | 1.0+ | 0.1- | 2004 03 27 | 704 | 0.1+ | 0.3- | 2007 10 14 | 703 | 0.8+  | 1.3+  |
| 2004 03 15 | 703 | 0.5+ | 0.2- | 2004 03 27 | 704 | 1.0+ | 0.6- | 2007 10 14 | 703 | 0.5-  | 0.9+  |
| 2004 03 15 | 703 | 0.4+ | 0.7+ | 2004 03 29 | 691 | 0.1- | 0.1+ | 2007 10 14 | 703 | 1.1+  | 0.9+  |
| 2004 03 15 | 703 | 0.7+ | 0.2+ | 2004 03 29 | 691 | 0.1- | 0.2+ | 2007 10 14 | 703 | 0.3-  | 0.4-  |
| 2004 03 17 | 691 | 0.1+ | 0.2+ | 2004 03 29 | 691 | 0.1+ | 0.0  |            |     |       |       |

**2004 EO<sub>3</sub> = 2007 VD<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 312.78393  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.19636226 | $\omega$ | 60.53880 | -0.30753056 | -0.93297985 |
| <i>a</i> | 2.9315504  | $\Omega$ | 48.61761 | +0.76368748 | -0.35924703 |
| <i>e</i> | 0.0595569  | <i>i</i> | 14.43285 | +0.56763227 | -0.02213997 |
| <i>P</i> | 5.02       | <i>H</i> | 15.3     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 10 | 644 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.1+ | 0.1- | 2007 11 17 | 691 | 0.1+ | 0.2- |
| 2004 03 10 | 644 | 0.1- | 0.1- | 2007 10 16 | G96 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.4- | 0.1- |
| 2004 03 10 | 644 | 0.0  | 0.3- | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 12 13 | 704 | 0.2- | 0.4- |
| 2004 03 14 | 704 | 0.1+ | 0.3+ | 2007 11 01 | 691 | 0.3- | 0.1- | 2007 12 13 | 704 | 0.1- | 0.3- |
| 2004 03 14 | 704 | 0.1- | 0.1- | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.1- | 0.5+ |
| 2004 03 14 | 704 | 0.2+ | 0.2+ | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.6+ | 0.1- |
| 2007 09 14 | G96 | 0.3- | 0.2+ | 2007 11 05 | 691 | 0.2- | 0.1+ | 2007 12 15 | 704 | 0.0  | 0.5+ |
| 2007 09 14 | G96 | 0.0  | 0.2+ | 2007 11 05 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.4+ | 0.3+ |
| 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.2+ | 0.7+ |
| 2007 09 14 | G96 | 0.2- | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.0  |            |     |      |      |
| 2007 10 16 | G96 | 0.0  | 0.1- | 2007 11 17 | 691 | 0.2+ | 0.1- |            |     |      |      |

**2004 EJ<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 218.14763  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.18691868 | $\omega$ | 139.10928 | -0.90082136 | +0.42647477 |
| <i>a</i> | 3.0294765  | $\Omega$ | 66.30885  | -0.41793136 | -0.80080520 |
| <i>e</i> | 0.1569851  | <i>i</i> | 5.10530   | -0.11770408 | -0.42051195 |
| <i>P</i> | 5.27       | <i>H</i> | 15.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 645 | 0.0   | 0.1+  | 2004 03 20 | 704 | 0.4+  | 0.4-  | 2007 10 31 | 691 | 0.0  | 0.2- |
| 2001 10 15 | 645 | 0.0   | 0.1+  | 2004 03 20 | 704 | 0.4+  | 0.3-  | 2007 10 31 | 691 | 0.1+ | 0.2+ |
| 2004 02 17 | 704 | 0.4+  | 0.8+  | 2004 03 22 | 704 | 0.1+  | 0.7+  | 2007 10 31 | 691 | 0.7+ | 0.0  |
| 2004 02 17 | 704 | 0.3+  | 0.1-  | 2004 03 22 | 704 | 0.2+  | 0.3-  | 2007 11 08 | 691 | 0.4+ | 0.1+ |
| 2004 02 17 | 704 | 0.2+  | 0.5-  | 2004 03 22 | 704 | 0.3-  | 0.3-  | 2007 11 08 | 691 | 0.7- | 0.2- |
| 2004 02 17 | 704 | 0.2-  | 0.8+  | 2004 03 22 | 704 | 0.1+  | 1.1+  | 2007 11 08 | 691 | 0.2+ | 0.7+ |
| 2004 02 17 | 704 | 0.5+  | 0.2-  | 2004 03 26 | 703 | (1.6- | 1.0-) | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2004 03 10 | 644 | 0.1+  | 0.1+  | 2004 03 26 | 703 | 1.0-  | 0.0   | 2007 11 19 | 691 | 0.1- | 0.0  |
| 2004 03 10 | 644 | 0.1-  | 0.3+  | 2004 03 26 | 703 | 0.4-  | 0.4-  | 2007 11 19 | 691 | 0.4- | 0.1- |
| 2004 03 10 | 644 | 0.2-  | 0.1+  | 2004 03 26 | 703 | 0.1-  | 0.6+  | 2007 12 04 | G96 | 0.1+ | 0.3- |
| 2004 03 15 | 704 | 0.7+  | 0.2-  | 2007 09 11 | 291 | 0.2-  | 0.3-  | 2007 12 04 | G96 | 0.6+ | 0.1- |
| 2004 03 15 | 704 | 0.4+  | 0.5+  | 2007 09 11 | 291 | 0.4-  | 0.1-  | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2004 03 15 | 704 | 0.4-  | 0.7-  | 2007 09 11 | 291 | 0.4-  | 0.0   | 2007 12 04 | G96 | 0.4+ | 0.3- |
| 2004 03 15 | 704 | (2.0+ | 0.4+) | 2007 10 10 | G96 | 0.3+  | 0.3-  | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2004 03 20 | 704 | 0.1-  | 0.1-  | 2007 10 10 | G96 | 0.2+  | 0.3-  | 2007 12 15 | G96 | 0.4+ | 0.2+ |
| 2004 03 20 | 704 | 0.3+  | 0.2+  | 2007 10 10 | G96 | 0.0   | 0.2-  | 2007 12 15 | G96 | 0.4+ | 0.1- |
| 2004 03 20 | 704 | 0.7-  | 0.0   | 2007 10 10 | G96 | 0.5+  | 0.3-  | 2007 12 15 | G96 | 0.4+ | 0.1+ |

**2004 EJ<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 278.37966  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.17788439 | $\omega$ | 39.05196 | -0.34567534 | -0.93756802 |
| <i>a</i> | 3.1312001  | $\Omega$ | 71.20105 | +0.85043730 | -0.33032160 |
| <i>e</i> | 0.1594139  | <i>i</i> | 2.32494  | +0.39656647 | -0.10887540 |
| <i>P</i> | 5.54       | <i>H</i> | 15.7     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 10 | 644 | 0.1+ | 0.2- | 2004 03 11 | 644 | 0.3- | 0.1+ | 2004 03 28 | 691 | 0.3- | 0.1- |
| 2002 12 10 | 644 | 0.2- | 0.0  | 2004 03 15 | 704 | 0.4+ | 0.3- | 2004 03 28 | 691 | 0.2- | 0.1+ |
| 2002 12 10 | 644 | 0.3+ | 0.0  | 2004 03 15 | 704 | 0.2+ | 0.1+ | 2007 09 15 | G96 | 0.1- | 0.0  |
| 2004 02 23 | 704 | 0.8+ | 0.0  | 2004 03 15 | 704 | 0.5+ | 0.7+ | 2007 09 15 | G96 | 0.1+ | 0.1+ |
| 2004 02 23 | 704 | 0.2+ | 0.2+ | 2004 03 15 | 704 | 0.3- | 0.8+ | 2007 09 15 | G96 | 0.2+ | 0.2+ |
| 2004 02 23 | 704 | 0.1- | 0.3- | 2004 03 15 | 704 | 0.3+ | 1.2- | 2007 09 15 | G96 | 0.0  | 0.0  |
| 2004 02 23 | 704 | 0.5- | 0.4- | 2004 03 19 | 704 | 0.0  | 0.8+ | 2007 10 16 | G96 | 0.3+ | 0.4- |
| 2004 02 23 | 704 | 0.5+ | 0.2+ | 2004 03 19 | 704 | 0.2- | 0.6- | 2007 10 16 | G96 | 0.3- | 0.4+ |
| 2004 03 11 | 644 | 0.3- | 0.1- | 2004 03 19 | 704 | 0.2+ | 0.5+ | 2007 10 16 | G96 | 0.5- | 0.2+ |
| 2004 03 11 | 644 | 0.6- | 0.2+ | 2004 03 28 | 691 | 0.4- | 0.3- | 2007 10 16 | G96 | 0.0  | 0.2+ |

**2004 EP<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 334.67734  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22891537 | $\omega$ | 78.99436 | -0.31873308 | -0.94051585 |
| <i>a</i> | 2.6465864  | $\Omega$ | 30.41622 | +0.75334732 | -0.32669113 |
| <i>e</i> | 0.2819858  | <i>i</i> | 13.43620 | +0.57521913 | -0.09328901 |
| <i>P</i> | 4.31       | <i>H</i> | 16.2     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 704 | 1.4+ | 0.4- | 2004 03 14 | 704 | 0.2+ | 0.3- | 2004 03 25 | 704 | 1.1+ | 0.2- |
| 2003 12 29 | 704 | 0.3- | 1.0- | 2004 03 14 | 704 | 0.8- | 0.9- | 2004 07 15 | 807 | 0.3- | 0.5+ |
| 2003 12 29 | 704 | 0.5+ | 0.1- | 2004 03 14 | 704 | 0.2+ | 0.0  | 2004 07 16 | 807 | 1.1+ | 0.5- |
| 2003 12 29 | 704 | 0.1+ | 0.4- | 2004 03 14 | 704 | 0.5+ | 0.6- | 2007 11 09 | 704 | 0.7+ | 0.3- |
| 2004 01 30 | 704 | 0.4+ | 0.3+ | 2004 03 18 | 703 | 0.1- | 0.3+ | 2007 11 09 | 704 | 0.6+ | 0.6+ |
| 2004 01 30 | 704 | 0.0  | 0.3+ | 2004 03 18 | 644 | 0.1- | 0.1+ | 2007 11 09 | 704 | 0.2+ | 0.1+ |
| 2004 01 30 | 704 | 0.0  | 0.8+ | 2004 03 18 | 703 | 0.5+ | 0.1- | 2007 11 09 | 704 | 0.1- | 0.1- |
| 2004 01 30 | 704 | 0.7- | 0.8+ | 2004 03 18 | 703 | 0.7- | 0.5- | 2007 11 09 | 704 | 1.6- | 0.2- |
| 2004 01 30 | 704 | 0.8- | 0.6+ | 2004 03 18 | 644 | 0.0  | 0.0  | 2007 12 03 | 704 | 0.1+ | 0.4- |
| 2004 02 15 | 704 | 0.2- | 0.2- | 2004 03 18 | 703 | 0.0  | 1.2+ | 2007 12 03 | 704 | 0.2- | 0.8- |
| 2004 02 15 | 704 | 0.5- | 0.3- | 2004 03 18 | 644 | 0.2- | 0.0  | 2007 12 03 | 704 | 0.1+ | 0.6+ |
| 2004 02 15 | 704 | 0.0  | 0.2+ | 2004 03 25 | 704 | 0.4+ | 0.3+ | 2007 12 03 | 704 | 0.1+ | 0.4+ |
| 2004 02 15 | 704 | 0.3- | 0.3- | 2004 03 25 | 704 | 0.7+ | 0.4- | 2007 12 03 | 704 | 0.1+ | 0.2+ |
| 2004 03 14 | 704 | 0.7- | 0.1+ | 2004 03 25 | 704 | 0.2- | 0.6+ |            |     |      |      |

**2004 EZ<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 265.62297  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.18106563 | $\omega$ | 337.03476 | -0.75993655 | -0.64997047 |
| <i>a</i> | 3.0944160  | $\Omega$ | 162.42187 | +0.59935230 | -0.70420995 |
| <i>e</i> | 0.1225502  | <i>i</i> | 1.11958   | +0.25154176 | -0.28570393 |
| <i>P</i> | 5.44       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 20 | 807 | 0.2-  | 0.8+  | 2004 03 18 | 704 | (1.8+ | 0.6+) | 2004 04 12 | 691 | 0.2+ | 0.7- |
| 2001 08 20 | 807 | 0.5-  | 0.8+  | 2004 03 18 | 704 | (2.4+ | 0.3-) | 2004 04 24 | 691 | 0.4- | 0.7+ |
| 2004 02 13 | 291 | 0.1-  | 0.0   | 2004 03 18 | 704 | 0.7+  | 0.4-  | 2004 04 24 | 691 | 0.2- | 0.2+ |
| 2004 02 13 | 291 | 0.5-  | 0.0   | 2004 03 18 | 704 | 0.2-  | 0.4+  | 2004 04 24 | 691 | 0.3+ | 0.0  |
| 2004 02 13 | 291 | 0.1-  | 0.1+  | 2004 03 29 | 291 | 0.0   | 0.0   | 2007 10 09 | 691 | 0.6+ | 0.0  |
| 2004 02 26 | 704 | 0.4-  | 0.4+  | 2004 03 29 | 291 | 0.2+  | 0.1+  | 2007 10 09 | 691 | 0.6- | 0.6+ |
| 2004 02 26 | 704 | 0.6+  | 0.1+  | 2004 03 29 | 291 | 0.1+  | 0.2+  | 2007 10 09 | 691 | 0.4+ | 0.4- |
| 2004 02 26 | 704 | 0.0   | 0.3-  | 2004 03 30 | 691 | 0.1-  | 0.5+  | 2007 10 21 | 691 | 0.1+ | 0.3+ |
| 2004 02 26 | 704 | (1.0- | 1.9-) | 2004 03 30 | 691 | 0.1+  | 0.2+  | 2007 10 21 | 691 | 0.8- | 0.3+ |
| 2004 03 15 | 691 | 0.1+  | 0.0   | 2004 03 30 | 691 | 0.1+  | 0.1+  | 2007 10 21 | 691 | 0.8- | 0.0  |
| 2004 03 15 | 691 | 0.0   | 0.1-  | 2004 03 31 | 691 | 0.5-  | 0.2-  | 2007 10 30 | G96 | 0.9+ | 0.6- |
| 2004 03 15 | 691 | 0.2+  | 0.1-  | 2004 03 31 | 691 | 0.2-  | 0.3+  | 2007 10 30 | G96 | 1.4+ | 0.5- |



2007 DEC. 24

M.P.O. 129699

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 16 | 291 | 0.1+ | 0.1− | 2004 03 31 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.9+ | 0.7− |
| 2004 03 16 | 291 | 0.0  | 0.2− | 2004 04 12 | 691 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.9+ | 0.4− |
| 2004 03 16 | 291 | 0.2+ | 0.2− | 2004 04 12 | 691 | 0.1+ | 0.2− |            |     |      |      |

**2004 EQ<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 327.76706  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21508467 | $\omega$ | 121.17179 | −0.42564937   | −0.90477330 |
| <i>a</i> | 2.7588605  | $\Omega$ | 353.96617 | +0.77652165   | −0.35704007 |
| <i>e</i> | 0.2600492  | <i>i</i> | 7.88399   | +0.46458233   | −0.23218025 |
| <i>P</i> | 4.58       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 01 09 | 699 | 0.5−  | 1.2+  | 2004 03 24 | 699 | 0.9− | 1.3− | 2004 04 11 | 644 | 0.4+ | 0.2+ |
| 1999 01 09 | 699 | 1.2−  | 0.2+  | 2004 03 27 | 704 | 0.6+ | 0.8+ | 2004 04 11 | 644 | 0.1+ | 0.0  |
| 1999 01 09 | 699 | 1.7+  | 1.8−  | 2004 03 27 | 704 | 0.6− | 0.2− | 2004 04 19 | 691 | 0.1− | 0.2− |
| 2004 02 26 | 704 | (1.9+ | 1.1−) | 2004 03 27 | 704 | 0.0  | 0.2− | 2004 04 19 | 691 | 0.2− | 0.1− |
| 2004 02 26 | 704 | 0.6+  | 0.2+  | 2004 03 27 | 704 | 0.8+ | 0.1+ | 2004 04 19 | 691 | 0.0  | 0.1− |
| 2004 02 26 | 704 | 0.7+  | 0.3+  | 2004 03 27 | 704 | 0.5− | 0.7+ | 2004 04 28 | 691 | 0.1− | 0.2+ |
| 2004 03 14 | 644 | 0.1−  | 0.2+  | 2004 03 28 | 704 | 0.7+ | 0.0  | 2004 04 28 | 691 | 0.1− | 0.2+ |
| 2004 03 14 | 644 | 0.4−  | 0.1+  | 2004 03 28 | 704 | 0.9+ | 0.4− | 2004 04 28 | 691 | 0.0  | 0.1− |
| 2004 03 14 | 644 | 0.4−  | 0.0   | 2004 03 28 | 704 | 0.4+ | 0.9− | 2007 12 01 | 300 | 0.2− | 0.1+ |
| 2004 03 18 | 704 | 0.6+  | 0.2−  | 2004 03 28 | 704 | 0.4− | 0.6− | 2007 12 01 | 300 | 0.9− | 0.1+ |
| 2004 03 18 | 704 | 0.3−  | 0.3+  | 2004 03 28 | 704 | 0.1− | 0.8+ | 2007 12 01 | 300 | 0.3+ | 0.2+ |
| 2004 03 18 | 704 | 0.1−  | 1.0+  | 2004 03 29 | 704 | 1.3− | 0.1− | 2007 12 01 | 300 | 0.4− | 0.5+ |
| 2004 03 18 | 704 | 0.5−  | 0.4−  | 2004 03 29 | 704 | 0.8+ | 1.1− | 2007 12 02 | 300 | 0.2+ | 0.5− |
| 2004 03 18 | 704 | 1.1−  | 0.3+  | 2004 03 29 | 704 | 0.2+ | 0.7+ | 2007 12 02 | 300 | 0.2− | 0.7− |
| 2004 03 20 | 704 | 0.1−  | 0.1−  | 2004 03 29 | 704 | 0.7+ | 0.4− | 2007 12 02 | 300 | 0.2+ | 0.3+ |
| 2004 03 20 | 704 | 0.8+  | 0.0   | 2004 03 30 | 704 | 0.1− | 0.8− | 2007 12 02 | 300 | 0.2+ | 0.3− |
| 2004 03 20 | 704 | 1.2+  | 0.5+  | 2004 03 30 | 704 | 0.3− | 0.2+ | 2007 12 02 | 300 | 0.5+ | 0.0  |
| 2004 03 20 | 704 | 0.8−  | 0.1−  | 2004 03 30 | 704 | 0.0  | 0.3− | 2007 12 02 | 300 | 0.2+ | 0.7+ |
| 2004 03 24 | 699 | 1.0+  | 0.8+  | 2004 03 30 | 704 | 0.4− | 0.1− | 2007 12 02 | 300 | 0.1+ | 0.3− |
| 2004 03 24 | 699 | 0.3−  | 0.1+  | 2004 03 30 | 704 | 0.6− | 0.8+ |            |     |      |      |
| 2004 03 24 | 699 | 1.0+  | 0.2−  | 2004 04 11 | 644 | 0.4− | 0.2+ |            |     |      |      |

**2004 ED<sub>72</sub> = 2004 FS<sub>163</sub>**Id. Minor Planet Center (d, *MPO* 77916)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |               |               |
|-----|------------|----------|-----------|---------------|---------------|
| $M$ | 224.63992  |          | (2000.0)  | <b>P</b>      | <b>Q</b>      |
| $n$ | 0.15421882 | $\omega$ | 335.32290 | $-0.83492663$ | $-0.54890030$ |
| $a$ | 3.4438518  | $\Omega$ | 171.05759 | $+0.53801114$ | $-0.82936332$ |
| $e$ | 0.0857453  | $i$      | 14.94031  | $+0.11593768$ | $-0.10423507$ |
| $P$ | 6.39       | $H$      | 15.4      | $G$ 0.15      | $U$ 4         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 02 26 | 704 | 0.1+ | 0.3+ | 2004 03 20 | 699 | 0.3−  | 0.1+  | 2004 03 31 | 691 | 0.1+ | 0.1− |
| 2004 02 26 | 704 | 0.6− | 0.8− | 2004 03 20 | 699 | 0.6+  | 0.5+  | 2004 03 31 | 691 | 0.1− | 0.2− |
| 2004 02 26 | 704 | 0.4− | 0.1− | 2004 03 20 | 699 | 0.4−  | 0.3+  | 2004 03 31 | 691 | 0.4+ | 0.4+ |
| 2004 02 26 | 704 | 0.0  | 0.1− | 2004 03 20 | 699 | 0.0   | 0.1−  | 2004 04 12 | 691 | 0.3− | 0.3− |
| 2004 02 26 | 704 | 0.0  | 0.3− | 2004 03 21 | 691 | 0.1−  | 0.1−  | 2004 04 12 | 691 | 0.5− | 0.4− |
| 2004 03 15 | 704 | 0.2+ | 0.6+ | 2004 03 21 | 691 | 0.2−  | 0.1+  | 2004 04 12 | 691 | 0.7− | 0.3− |
| 2004 03 15 | 704 | 0.5+ | 0.3− | 2004 03 21 | 691 | 0.1−  | 0.3−  | 2007 09 13 | G96 | 0.2− | 0.1+ |
| 2004 03 15 | 704 | 0.5+ | 0.7− | 2004 03 27 | 704 | 0.0   | 0.7+  | 2007 09 13 | G96 | 0.3− | 0.1− |
| 2004 03 15 | 704 | 0.0  | 0.3+ | 2004 03 27 | 704 | 0.3+  | 0.8+  | 2007 09 13 | G96 | 0.1+ | 0.2+ |
| 2004 03 15 | 704 | 1.6+ | 0.0  | 2004 03 27 | 704 | (2.4+ | 0.4+) | 2007 09 13 | G96 | 0.0  | 0.2− |
| 2004 03 18 | 704 | 0.1− | 0.2+ | 2004 03 27 | 704 | 0.8+  | 0.1+  | 2007 10 15 | G96 | 0.2+ | 0.3+ |
| 2004 03 18 | 704 | 0.1− | 0.4− | 2004 03 27 | 704 | 0.4−  | 0.2−  | 2007 10 15 | G96 | 0.5+ | 0.0  |
| 2004 03 18 | 704 | 0.2− | 0.3+ | 2004 03 30 | 691 | 0.1−  | 0.0   | 2007 10 15 | G96 | 0.6− | 0.0  |
| 2004 03 18 | 704 | 0.5− | 0.4+ | 2004 03 30 | 691 | 0.1−  | 0.1−  | 2007 10 15 | G96 | 0.2+ | 0.2− |
| 2004 03 18 | 704 | 0.3+ | 0.0  | 2004 03 30 | 691 | 0.1−  | 0.1−  |            |     |      |      |

**2004 EZ<sub>74</sub> = 2007 ST<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 279.87712  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18460934 | $\omega$ | 118.82531 | −0.48699363 | −0.87340477 |
| $a$ | 3.0546885  | $\Omega$ | 0.32457   | +0.71433392 | −0.39905185 |
| $e$ | 0.1718220  | $i$      | 11.65200  | +0.50255771 | −0.27914463 |
| $P$ | 5.34       | $H$      | 16.6      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 16 | 291 | 0.3+ | 0.2− | 2004 03 19 | 704 | 0.9− | 1.9+ | 2007 09 24 | 691 | 0.0  | 0.0  |
| 2004 02 16 | 291 | 0.0  | 0.1− | 2004 03 28 | 691 | 0.1+ | 0.1− | 2007 09 24 | 691 | 0.1+ | 0.1+ |
| 2004 02 16 | 291 | 0.1+ | 0.1− | 2004 03 28 | 691 | 0.0  | 0.3− | 2007 10 07 | G96 | 0.2− | 0.1+ |
| 2004 03 14 | 691 | 0.4+ | 0.3− | 2004 03 28 | 691 | 0.1− | 0.2− | 2007 10 07 | G96 | 0.0  | 0.2− |
| 2004 03 14 | 691 | 0.2+ | 0.4− | 2007 09 19 | 691 | 0.0  | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.1− |
| 2004 03 14 | 691 | 0.2+ | 0.4− | 2007 09 19 | 691 | 0.0  | 0.4+ | 2007 10 07 | G96 | 0.2+ | 0.3− |
| 2004 03 19 | 704 | 0.1+ | 0.0  | 2007 09 19 | 691 | 0.2− | 0.4+ |            |     |      |      |
| 2004 03 19 | 704 | 0.4− | 0.4+ | 2007 09 24 | 691 | 0.1− | 0.4− |            |     |      |      |

**2004 EW<sub>75</sub> = 2007 WU<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 285.07329  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.19358720 | $\omega$ | 5.04362   | −0.71057489 | −0.70265389 |
| $a$ | 2.9594996  | $\Omega$ | 130.24448 | +0.64385832 | −0.67047159 |
| $e$ | 0.1095849  | $i$      | 2.77015   | +0.28377772 | −0.23821284 |
| $P$ | 5.09       | $H$      | 16.1      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 10 | 644 | 0.1− | 0.2+ | 2004 03 19 | 704 | 1.2+ | 0.7− | 2007 11 18 | G96 | 0.6+ | 0.8− |
| 2002 12 10 | 644 | 0.3+ | 0.3+ | 2004 03 19 | 704 | 1.4+ | 0.1− | 2007 11 18 | G96 | 0.5+ | 0.4− |
| 2002 12 10 | 644 | 0.4− | 0.2+ | 2004 03 21 | 691 | 0.1− | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.5− |
| 2004 03 15 | 691 | 0.3− | 0.2+ | 2004 03 21 | 691 | 0.1+ | 0.1− | 2007 11 18 | G96 | 0.4+ | 0.7− |
| 2004 03 15 | 691 | 0.3− | 0.2+ | 2004 03 21 | 691 | 0.2− | 0.1+ | 2007 11 20 | 691 | 0.0  | 0.5+ |
| 2004 03 15 | 691 | 0.1− | 0.2+ | 2007 10 10 | G96 | 0.3+ | 0.4− | 2007 11 20 | 691 | 0.3− | 0.3+ |
| 2004 03 15 | 704 | 0.1− | 1.0+ | 2007 10 10 | G96 | 0.1− | 0.2− | 2007 11 20 | 691 | 0.2+ | 0.4− |
| 2004 03 15 | 704 | 0.9+ | 1.2− | 2007 10 10 | G96 | 0.4+ | 0.2− | 2007 12 06 | 691 | 0.1− | 0.0  |
| 2004 03 15 | 704 | 0.1+ | 1.4− | 2007 10 10 | G96 | 1.0+ | 0.2− | 2007 12 06 | 691 | 0.1+ | 0.0  |
| 2004 03 15 | 704 | 0.1− | 0.0  | 2007 11 02 | 691 | 0.1− | 0.3− | 2007 12 06 | 691 | 0.0  | 0.3+ |
| 2004 03 19 | 704 | 0.5+ | 0.6− | 2007 11 02 | 691 | 0.3− | 0.0  |            |     |      |      |
| 2004 03 19 | 704 | 0.2− | 0.2+ | 2007 11 02 | 691 | 0.3− | 0.2+ |            |     |      |      |

**2004 EK<sub>87</sub> = 2005 JP<sub>184</sub> = 2007 UW<sub>57</sub>**Id. Minor Planet Center (*MPO* 128132; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 349.72273  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18691949 | $\omega$ | 3.08451  | +0.55734591 | −0.82981870 |
| $a$ | 3.0294677  | $\Omega$ | 53.04482 | +0.76102391 | +0.49723959 |
| $e$ | 0.1018159  | $i$      | 1.98540  | +0.33197611 | +0.25328582 |
| $P$ | 5.27       | $H$      | 16.0     | $G$         | 0.15        |
|     |            |          |          | $U$         | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 01 10 | 291 | 0.0  | 0.1+ | 2007 10 14 | 691 | 0.3− | 0.1− | 2007 11 05 | G96 | 0.3+  | 0.2−  |
| 2003 01 10 | 291 | 0.2+ | 0.3− | 2007 10 30 | G96 | 0.6+ | 0.3− | 2007 11 05 | 704 | 0.0   | 0.6−  |
| 2003 01 10 | 291 | 0.1− | 0.3− | 2007 10 30 | G96 | 0.4+ | 0.3− | 2007 11 07 | 703 | 0.3−  | 0.4+  |
| 2004 02 27 | 695 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.2− | 2007 11 07 | 703 | (1.9− | 0.3+) |
| 2004 02 27 | 695 | 0.4− | 0.2+ | 2007 10 30 | G96 | 0.1− | 0.2− | 2007 11 07 | 703 | 0.4+  | 0.2+  |
| 2004 03 14 | 691 | 0.1+ | 0.4+ | 2007 10 31 | 691 | 0.2+ | 0.1− | 2007 11 07 | 703 | (0.6− | 1.7+) |
| 2004 03 14 | 691 | 0.3+ | 0.2+ | 2007 10 31 | 691 | 0.2− | 0.1+ | 2007 11 15 | 704 | 0.7−  | 1.2+  |
| 2004 03 14 | 691 | 0.1− | 0.2+ | 2007 10 31 | 691 | 0.0  | 0.1− | 2007 11 15 | 704 | 1.1−  | 0.3+  |
| 2004 03 21 | 691 | 0.1+ | 0.4− | 2007 11 04 | 691 | 0.0  | 0.2+ | 2007 11 15 | 704 | (1.7− | 0.4−) |
| 2004 03 21 | 691 | 0.1− | 0.2− | 2007 11 04 | 691 | 0.1− | 0.0  | 2007 11 15 | 704 | 0.4−  | 1.2+  |
| 2004 03 21 | 691 | 0.1− | 0.0  | 2007 11 04 | 691 | 0.1+ | 0.1− | 2007 11 15 | 704 | (1.6− | 0.3−) |
| 2005 05 13 | G96 | 0.1− | 0.4− | 2007 11 05 | 704 | 0.5+ | 0.5+ | 2007 11 17 | 703 | 0.6+  | 0.3−  |
| 2005 05 13 | G96 | 1.0− | 0.2− | 2007 11 05 | 704 | 0.6− | 0.5+ | 2007 11 17 | 703 | 0.0   | 1.1+  |
| 2005 05 13 | G96 | 0.7+ | 0.2− | 2007 11 05 | G96 | 0.5+ | 0.2− | 2007 11 17 | 703 | 0.1+  | 0.2−  |
| 2005 05 13 | G96 | 0.3+ | 0.3+ | 2007 11 05 | G96 | 0.3+ | 0.3− | 2007 11 17 | 703 | 0.5+  | 0.7+  |

## M.P.O. 129700

2007 10 14 691 0.2− 0.1− 2007 11 05 704 0.2+ 0.9−  
2007 10 14 691 0.1− 0.0 2007 11 05 G96 0.5+ 0.2−

**2004 EK<sub>94</sub> = 2007 TF<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 303.82085  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.17906239 | $\omega$ | 80.33247 | −0.16086760   | −0.98497201 |
| <i>a</i> | 3.1174521  | $\Omega$ | 19.27074 | +0.81430345   | −0.16844434 |
| <i>e</i> | 0.0729979  | <i>i</i> | 10.98052 | +0.55770199   | −0.03816603 |
| <i>P</i> | 5.50       | <i>H</i> | 15.2     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |             |                |             |                |             |
|------------|-----|-------------|----------------|-------------|----------------|-------------|
| 2004 03 15 | 703 | (0.6− 2.1+) | 2004 03 20 704 | 1.3+ 0.2−   | 2007 10 13 691 | 0.1− 0.1−   |
| 2004 03 15 | 703 | 1.3+ 0.1+   | 2004 03 20 704 | 0.3− 0.0    | 2007 10 13 691 | 0.1− 0.1+   |
| 2004 03 15 | 703 | 0.2+ 0.1+   | 2004 03 20 704 | 0.5− 0.6−   | 2007 10 13 691 | 0.1+ 0.1+   |
| 2004 03 15 | 704 | (0.8+ 2.3+) | 2004 03 22 704 | 0.1− 0.6−   | 2007 10 20 703 | 0.5+ 1.0+   |
| 2004 03 15 | 703 | 0.3− 1.4+   | 2004 03 22 704 | 0.5+ 0.4+   | 2007 10 20 703 | (1.8+ 0.7−) |
| 2004 03 15 | 704 | 0.1+ 0.4+   | 2004 03 22 704 | (0.4− 2.0−) | 2007 10 20 703 | 0.1− 0.3+   |
| 2004 03 15 | 704 | 0.2− 0.9+   | 2004 03 26 691 | 0.2+ 0.2−   | 2007 10 20 703 | 0.1+ 0.9+   |
| 2004 03 15 | 691 | 0.2− 0.2+   | 2004 03 26 691 | 0.0 0.1−    | 2007 11 12 703 | (1.9+ 0.5+) |
| 2004 03 15 | 691 | 0.1− 0.0    | 2004 03 26 691 | 0.0 0.2−    | 2007 11 12 703 | 0.6+ 0.2+   |
| 2004 03 15 | 691 | 0.2− 0.1+   | 2007 10 09 691 | 0.1− 0.2−   | 2007 11 12 703 | 0.6− 0.2−   |
| 2004 03 20 | 704 | 1.4− 0.6−   | 2007 10 09 691 | 0.1+ 0.2−   | 2007 11 12 703 | 0.7+ 0.1+   |
| 2004 03 20 | 704 | 0.6+ 0.6−   | 2007 10 09 691 | 0.2− 0.2−   |                |             |

**2004 EB<sub>107</sub> = 2007 TG<sub>97</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 268.75248  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17484090 | $\omega$ | 320.68525 | −0.58024614   | −0.81439291 |
| <i>a</i> | 3.1674324  | $\Omega$ | 164.77593 | +0.75548624   | −0.54227825 |
| <i>e</i> | 0.1522224  | <i>i</i> | 1.93479   | +0.30422847   | −0.20663611 |
| <i>P</i> | 5.64       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |           |                |           |                |           |
|------------|-----|-----------|----------------|-----------|----------------|-----------|
| 2004 03 15 | 691 | 0.0 0.2+  | 2007 10 08 G96 | 0.5+ 0.5+ | 2007 10 09 G96 | 0.3+ 0.4+ |
| 2004 03 15 | 691 | 0.1+ 0.0  | 2007 10 08 G96 | 0.3+ 0.1− | 2007 10 09 G96 | 0.2− 0.1− |
| 2004 03 15 | 691 | 0.1+ 0.2− | 2007 10 08 G96 | 0.3− 0.2− | 2007 10 09 G96 | 0.7− 0.5− |
| 2004 03 27 | 291 | 0.3− 0.1+ | 2007 10 08 G96 | 0.0 0.3+  | 2007 10 18 G96 | 0.9+ 1.6− |
| 2004 03 27 | 291 | 0.1+ 0.2+ | 2007 10 09 G96 | 0.1− 0.2+ | 2007 10 18 G96 | 0.2− 0.2+ |
| 2004 03 27 | 291 | 0.0 0.0   | 2007 10 09 G96 | 0.0 0.2+  | 2007 10 18 G96 | 0.3+ 0.5+ |
| 2004 04 13 | 691 | 0.2+ 0.1− | 2007 10 09 G96 | 0.1− 0.0  | 2007 10 18 G96 | 0.3− 0.1+ |
| 2004 04 13 | 691 | 0.1+ 0.1− | 2007 10 09 G96 | 0.1− 0.2− |                |           |
| 2004 04 13 | 691 | 0.3− 0.0  | 2007 10 09 G96 | 0.3− 0.2+ |                |           |

**2004 FA<sub>1</sub> = 2007 TM<sub>381</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 49.94162   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22469483 | $\omega$ | 276.31197 | +0.85946261   | +0.50134705 |
| <i>a</i> | 2.6796249  | $\Omega$ | 53.64412  | −0.40614527   | +0.78832590 |
| <i>e</i> | 0.1431848  | <i>i</i> | 7.12389   | −0.31043525   | +0.35664186 |
| <i>P</i> | 4.39       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |           |                |           |                |           |
|------------|-----|-----------|----------------|-----------|----------------|-----------|
| 2000 01 03 | 691 | 0.0 0.2+  | 2004 03 18 290 | 0.1− 0.1+ | 2007 10 18 691 | 0.2+ 0.0  |
| 2000 01 03 | 691 | 0.4− 0.6− | 2004 03 18 290 | 0.1+ 0.3+ | 2007 10 18 691 | 0.0 0.0   |
| 2000 01 03 | 691 | 0.3+ 0.3− | 2004 03 20 290 | 0.2− 0.1+ | 2007 10 18 691 | 0.0 0.1+  |
| 2002 06 20 | 644 | 0.1− 0.2+ | 2004 03 20 290 | 0.6− 0.0  | 2007 10 23 691 | 0.4− 0.2+ |
| 2002 06 20 | 644 | 0.2− 0.7− | 2004 03 20 290 | 0.2− 0.1+ | 2007 10 23 691 | 0.1− 0.2+ |
| 2002 06 20 | 644 | 0.1+ 0.3− | 2004 04 13 290 | 0.3− 0.6+ | 2007 10 23 691 | 0.3+ 0.6+ |
| 2002 07 06 | 644 | 0.1+ 0.1− | 2004 04 13 290 | 0.8+ 0.6+ | 2007 10 30 703 | 0.9− 0.5− |
| 2002 07 06 | 644 | 0.2+ 0.2+ | 2004 04 13 290 | 0.8+ 0.4+ | 2007 10 30 703 | 0.5− 0.2− |
| 2002 07 06 | 644 | 0.0 0.1−  | 2007 10 06 691 | 0.0 0.5−  | 2007 10 30 703 | 0.8− 0.5− |
| 2004 03 17 | 290 | 0.2− 0.2+ | 2007 10 06 691 | 0.2+ 0.0  | 2007 10 30 703 | 0.1+ 0.3− |
| 2004 03 17 | 290 | 0.4− 0.2+ | 2007 10 06 691 | 0.1+ 0.4+ | 2007 11 09 G96 | 0.5+ 0.3− |
| 2004 03 17 | 290 | 0.1− 0.1+ | 2007 10 14 691 | 0.0 0.1−  | 2007 11 09 G96 | 0.1+ 0.2− |

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2004 03 17 290 0.3− 0.3+ 2007 10 14 691 0.1− 0.1+ 2007 11 09 G96 1.3+ 0.2−  
2004 03 18 290 0.2− 0.2+ 2007 10 14 691 0.0 0.3− 2007 11 09 G96 0.2− 0.1−

**2004 FB<sub>5</sub> = 2007 UP<sub>102</sub> = 2007 VB<sub>272</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 267.71344  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18700533 | $\omega$ | 237.16822 | −0.78995055   | −0.61300796 |
| <i>a</i> | 3.0285406  | $\Omega$ | 265.02053 | +0.56720414   | −0.72179025 |
| <i>e</i> | 0.0550095  | <i>i</i> | 0.81210   | +0.23293260   | −0.32130993 |
| <i>P</i> | 5.27       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |             |                |           |                |           |
|------------|-----|-------------|----------------|-----------|----------------|-----------|
| 1993 01 21 | 691 | 0.2+ 0.4+   | 2004 03 22 735 | 1.0− 0.5+ | 2007 11 04 G96 | 0.1+ 0.1− |
| 1993 01 21 | 691 | 0.6− 0.2−   | 2004 03 23 735 | 0.8− 0.8+ | 2007 11 04 G96 | 0.1+ 0.2+ |
| 2001 09 19 | 691 | 0.2+ 0.2+   | 2006 08 28 691 | 0.2+ 0.1+ | 2007 11 04 G96 | 0.6+ 0.3− |
| 2001 09 19 | 691 | 0.0 0.0     | 2006 08 28 691 | 0.4− 0.3+ | 2007 11 04 G96 | 0.1+ 0.0  |
| 2001 09 19 | 691 | 0.2+ 0.2−   | 2006 08 28 691 | 0.0 0.0   | 2007 11 04 691 | 0.4− 0.3+ |
| 2002 11 26 | 291 | 0.1− 0.6−   | 2006 09 26 G96 | 0.2− 0.9− | 2007 11 04 691 | 0.4− 0.1− |
| 2002 11 26 | 291 | 0.6+ 0.1+   | 2006 09 26 G96 | 0.1+ 0.2− | 2007 11 04 691 | 0.4− 0.3+ |
| 2002 11 26 | 291 | 0.5+ 0.3−   | 2006 09 26 G96 | 0.3+ 0.1+ | 2007 11 04 G96 | 0.8+ 0.0  |
| 2004 03 11 | 735 | 1.2+ 0.5+   | 2006 09 26 G96 | 0.6− 0.3− | 2007 11 04 G96 | 0.0 0.2−  |
| 2004 03 11 | 735 | 0.9+ 0.4+   | 2007 10 10 691 | 0.3− 0.1− | 2007 11 04 G96 | 0.2+ 0.1− |
| 2004 03 11 | 735 | 0.4− 1.0−   | 2007 10 10 691 | 0.0 0.9+  | 2007 11 04 G96 | 0.3+ 0.2− |
| 2004 03 12 | 735 | (1.5− 0.7+) | 2007 10 10 691 | 0.5− 0.3+ | 2007 11 05 G96 | 0.2+ 0.0  |
| 2004 03 12 | 735 | 0.5− 1.4+   | 2007 10 18 691 | 0.2− 0.2+ | 2007 11 05 G96 | 0.1+ 0.1− |
| 2004 03 12 | 735 | 0.4+ 1.0−   | 2007 10 18 691 | 0.4− 0.0  | 2007 11 05 G96 | 0.4+ 0.2− |
| 2004 03 18 | 735 | 0.3+ 0.3−   | 2007 10 18 691 | 0.0 0.1+  | 2007 11 05 G96 | 0.2+ 0.1− |
| 2004 03 18 | 735 | 0.2− 0.3+   | 2007 10 30 G96 | 0.7+ 0.2− | 2007 11 11 G96 | 0.5+ 0.3− |
| 2004 03 18 | 735 | 1.1+ 0.7+   | 2007 10 30 G96 | 0.5− 0.0  | 2007 11 11 G96 | 0.0 0.3−  |
| 2004 03 20 | 735 | 0.4+ 0.1+   | 2007 10 30 G96 | 0.0 0.0   | 2007 11 11 G96 | 0.7+ 0.1− |
| 2004 03 20 | 735 | 0.1+ 0.5+   | 2007 10 30 G96 | 0.1− 0.1+ | 2007 11 11 G96 | 0.2+ 0.3− |
| 2004 03 20 | 735 | 0.2− 1.1−   | 2007 10 30 G96 | 0.6− 0.1+ | 2007 11 11 G96 | 0.2+ 0.1− |
| 2004 03 22 | 735 | 0.1+ 1.2+   | 2007 10 30 G96 | 0.8+ 0.3+ | 2007 11 11 G96 | 0.2+ 0.2− |
| 2004 03 22 | 735 | 0.2− 0.3−   | 2007 10 30 G96 | 0.3+ 0.3+ | 2007 11 11 G96 | 0.3+ 0.2− |
| 2004 03 22 | 735 | 0.3+ 0.8−   | 2007 10 30 G96 | 0.1+ 0.3− | 2007 11 11 G96 | 0.2− 0.2− |

**2004 FZ<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 278.17460  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19220682 | $\omega$ | 351.68158 | −0.92695596   | −0.37500579 |
| <i>a</i> | 2.9736523  | $\Omega$ | 166.27785 | +0.34684964   | −0.86788831 |
| <i>e</i> | 0.1558498  | <i>i</i> | 2.68300   | +0.14299640   | −0.32579216 |
| <i>P</i> | 5.13       | <i>H</i> | 15.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |           |                |             |                |             |
|------------|-----|-----------|----------------|-------------|----------------|-------------|
| 2004 03 16 | 704 | 0.5+ 0.0  | 2004 03 28 704 | 0.8+ 1.0+   | 2004 04 22 704 | 0.7− 0.8−   |
| 2004 03 16 | 704 | 0.4+ 0.3+ | 2004 03 28 704 | 0.5− 0.1+   | 2004 04 22 703 | 0.6+ 0.2+   |
| 2004 03 16 | 704 | 0.4− 0.4+ | 2004 03 28 704 | (1.8+ 0.4+) | 2004 04 22 703 | 0.4− 0.8+   |
| 2004 03 16 | 704 | 0.2− 1.0+ | 2004 03 28 704 | 0.1− 0.4+   | 2004 04 22 704 | 0.4+ 0.0    |
| 2004 03 18 | 704 | 0.3+ 0.3+ | 2004 03 29 704 | 0.6+ 0.2+   | 2004 04 22 703 | (2.0+ 0.9+) |
| 2004 03 18 | 704 | 0.4+ 0.2+ | 2004 03 29 704 | (0.6+ 1.6−) | 2004 04 22 704 | 0.5− 1.1−   |
| 2004 03 18 | 704 | 0.0 0.1−  | 2004 03 29 704 | 0.2− 0.2+   | 2004 04 22 704 | 0.4− 0.2+   |
| 2004 03 18 | 704 | 0.0 0.1−  | 2004 03 29 704 | 1.1+ 0.3+   | 2004 04 22 704 | 0.5+ 0.8+   |
| 2004 03 18 | 704 | 0.4+ 0.3− | 2004 03 31 704 | 0.1+ 0.6−   | 2004 04 22 704 | 0.6− 0.1−   |
| 2004 03 19 | 704 | 0.3− 0.4+ | 2004 03 31 704 | 0.4+ 0.3−   | 2007 10 20 G96 | 0.2+ 0.0    |
| 2004 03 19 | 704 | 0.2− 0.6+ | 2004 03 31 704 | 0.1− 0.6−   | 2007 10 20 G96 | 0.0 0.0     |
| 2004 03 19 | 704 | 0.3+ 0.3− | 2004 03 31 704 | 1.0+ 0.7−   | 2007 10 20 G96 | 0.3+ 0.0    |
| 2004 03 19 | 704 | 0.3+ 0.2+ | 2004 04 11 644 | 0.1+ 0.1+   | 2007 10 20 G96 | 0.1+ 0.1−   |
| 2004 03 19 | 704 | 0.0 0.0   | 2004 04 11 644 | 0.0 0.1+    | 2007 11 04 691 | 0.1− 0.3+   |
| 2004 03 20 | 699 | 1.3− 1.0− | 2004 04 11 644 | 0.0 0.4+    | 2007 11 04 691 | 0.1− 0.1+   |
| 2004 03 20 | 699 | 1.3− 0.2− | 2004 04 11 644 | 0.2− 0.2−   | 2007 11 04 691 | 0.1− 0.0    |
| 2004 03 20 | 699 | 0.2+ 0.6− | 2004 04 11 644 | 0.2− 0.3+   | 2007 11 08 691 | 0.2− 0.1+   |
| 2004 03 20 | 699 | 0.6− 1.2− | 2004 04 11 644 | 0.1− 0.2−   | 2007 11 08 691 | 0.4− 0.1+   |
| 2004 03 22 | 704 | 0.2+ 0.5− | 2004 04 16 704 | 0.7− 0.3+   | 2007 11 08 691 | (2.7− 2.0−) |
| 2004 03 22 | 704 | 0.1+ 0.0  | 2004 04 16 704 | 0.2+ 0.1+   | 2007 11 20 G96 | 0.3+ 0.4+   |
| 2004 03 22 | 704 | 0.5+ 0.2− | 2004 04 16 704 | 1.0+ 0.2−   | 2007 11 20 G96 | 0.4+ 0.1−   |

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|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 22 | 704 | 0.0  | 0.8− | 2004 04 16 | 704 | 0.1−  | 0.8−  | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2004 03 22 | 704 | 0.1− | 0.2− | 2004 04 16 | 704 | 0.1−  | 0.4+  | 2007 11 20 | G96 | 0.2− | 0.1+ |
| 2004 03 27 | 704 | 0.1+ | 0.2− | 2004 04 19 | 704 | 0.5−  | 0.8+  | 2007 11 21 | G96 | 0.2− | 0.2+ |
| 2004 03 27 | 704 | 0.4− | 0.4− | 2004 04 19 | 704 | 0.6−  | 0.2−  | 2007 11 21 | G96 | 0.1− | 0.2+ |
| 2004 03 27 | 704 | 0.1+ | 0.3− | 2004 04 19 | 704 | 1.3−  | 0.1+  | 2007 11 21 | G96 | 0.2− | 0.2+ |
| 2004 03 27 | 704 | 0.1− | 0.3+ | 2004 04 19 | 704 | 0.9−  | 0.2+  | 2007 12 04 | 704 | 0.2− | 0.3− |
| 2004 03 27 | 704 | 0.3− | 0.2+ | 2004 04 19 | 704 | 0.6−  | 0.7−  | 2007 12 04 | 704 | 0.7+ | 0.8− |
| 2004 03 28 | 704 | 0.1+ | 0.3+ | 2004 04 22 | 704 | 0.0   | 0.1−  | 2007 12 04 | 704 | 0.8+ | 0.3− |
| 2004 03 28 | 704 | 1.1+ | 1.2− | 2004 04 22 | 704 | (2.1+ | 1.3+) | 2007 12 04 | 704 | 1.3+ | 0.3− |
| 2004 03 28 | 704 | 0.1− | 0.3+ | 2004 04 22 | 704 | 0.7+  | 0.9+  | 2007 12 04 | 704 | 0.1+ | 0.6− |
| 2004 03 28 | 704 | 0.6+ | 1.1+ | 2004 04 22 | 704 | 0.0   | 0.6+  |            |     |      |      |
| 2004 03 28 | 704 | 0.1+ | 0.1− | 2004 04 22 | 703 | 1.0+  | 1.0+  |            |     |      |      |

2004 FU<sub>71</sub> = 2007 UX<sub>106</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 230.17531  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.17772976 | $\omega$ | 149.30210 | −0.99863592 |      | +0.04230885 |   |  |  |  |  |
| <i>a</i>                                | 3.1330160  | $\Omega$ | 33.16497  | −0.05146542 |      | −0.89646654 |   |  |  |  |  |
| <i>e</i>                                | 0.0291979  | <i>i</i> | 3.20642   | +0.00880980 |      | −0.44108695 |   |  |  |  |  |
| <i>P</i>                                | 5.55       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 24 | 691 | 0.4− | 1.2− | 2004 03 17 | 691 | 0.2+ | 0.2+ | 2007 10 31 | G96 | 0.3+ | 0.4− |
| 1993 03 24 | 691 | 0.8− | 0.5− | 2004 03 23 | 691 | 0.2+ | 0.6+ | 2007 10 31 | G96 | 0.2+ | 0.6+ |
| 1993 03 24 | 691 | 0.2− | 1.0− | 2004 03 23 | 691 | 0.3+ | 0.5+ | 2007 11 04 | 691 | 0.0  | 0.3+ |
| 2000 08 01 | 807 | 0.1− | 0.2+ | 2004 03 23 | 691 | 0.0  | 0.5+ | 2007 11 04 | 691 | 0.1− | 0.0  |
| 2000 08 01 | 807 | 0.1+ | 0.3− | 2007 10 07 | 691 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2004 02 26 | 695 | 0.0  | 0.4+ | 2007 10 07 | 691 | 0.4+ | 0.2− | 2007 12 05 | 691 | 0.7+ | 0.2+ |
| 2004 02 26 | 695 | 0.0  | 0.4+ | 2007 10 07 | 691 | 0.1− | 0.5− | 2007 12 05 | 691 | 0.3− | 0.1− |
| 2004 03 17 | 691 | 0.0  | 0.4+ | 2007 10 31 | G96 | 0.4+ | 0.1+ | 2007 12 05 | 691 | 0.7− | 0.3− |
| 2004 03 17 | 691 | 0.5+ | 0.2+ | 2007 10 31 | G96 | 0.3+ | 0.9− |            |     |      |      |

2004 FM<sub>84</sub> = 2007 VW<sub>116</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 233.21076  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.20014791 | $\omega$ | 160.72600 | −0.89416066 |      | +0.42524260 |   |  |  |  |  |
| <i>a</i>                                | 2.8944675  | $\Omega$ | 45.27723  | −0.43233316 |      | −0.73855910 |   |  |  |  |  |
| <i>e</i>                                | 0.1088532  | <i>i</i> | 11.37719  | −0.11646782 |      | −0.52316268 |   |  |  |  |  |
| <i>P</i>                                | 4.92       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 645 | 0.0  | 0.0  | 2004 03 23 | 704 | 0.0  | 0.8+ | 2004 04 13 | 703 | 0.4− | 0.4− |
| 2003 12 25 | 645 | 0.0  | 0.1− | 2004 03 23 | 704 | 0.1− | 0.6+ | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2004 03 18 | 703 | 1.0− | 0.1+ | 2004 03 23 | 704 | 0.6+ | 0.7+ | 2007 11 03 | 691 | 0.1− | 0.0  |
| 2004 03 18 | 703 | 0.2− | 0.2+ | 2004 03 23 | 704 | 1.0+ | 0.5+ | 2007 11 03 | 691 | 0.1+ | 0.0  |
| 2004 03 18 | 703 | 0.1+ | 1.1+ | 2004 04 13 | 703 | 0.2+ | 0.9− | 2007 11 07 | 691 | 0.1+ | 0.2− |
| 2004 03 18 | 703 | 0.2− | 0.6− | 2004 04 13 | 703 | 0.9− | 0.9− | 2007 11 07 | 691 | 0.2− | 0.0  |
| 2004 03 23 | 704 | 1.0+ | 0.4+ | 2004 04 13 | 703 | 0.3− | 0.6− | 2007 11 07 | 691 | 0.1+ | 0.1+ |

2004 FT<sub>91</sub> = 2007 VD<sub>291</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 178.22398  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.17162133 | $\omega$ | 169.45182 | −0.36741051 |      | +0.90189505 |   |  |  |  |  |
| <i>a</i>                                | 3.2069230  | $\Omega$ | 78.69108  | −0.86929268 |      | −0.24617621 |   |  |  |  |  |
| <i>e</i>                                | 0.0995440  | <i>i</i> | 13.39379  | −0.33066562 |      | −0.35494028 |   |  |  |  |  |
| <i>P</i>                                | 5.74       | <i>H</i> | 15.1      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 22 | 699 | 0.6−  | 0.8−  | 2004 03 23 | 704 | 0.1+  | 0.4+  | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2004 03 22 | 704 | 0.3−  | 0.6−  | 2004 03 28 | 703 | 0.6−  | 0.0   | 2007 11 14 | 691 | 0.3− | 0.1− |
| 2004 03 22 | 699 | (2.2− | 0.0 ) | 2004 03 28 | 703 | (0.4+ | 1.7−) | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2004 03 22 | 704 | 0.2+  | 0.3+  | 2004 03 28 | 703 | 0.9−  | 0.3−  | 2007 11 19 | 691 | 0.2+ | 0.1+ |
| 2004 03 22 | 704 | 0.3−  | 0.6−  | 2004 03 28 | 703 | 0.2−  | 0.7+  | 2007 11 19 | 691 | 0.1− | 0.3+ |
| 2004 03 22 | 699 | 0.1−  | 0.0   | 2004 04 12 | 703 | 1.3−  | 0.1+  | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2004 03 22 | 704 | 0.1+  | 0.2−  | 2004 04 12 | 703 | 0.2−  | 0.6+  | 2007 12 05 | 704 | 0.0  | 0.6− |

## M.P.O. 129701

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 22 | 704 | 0.1+ | 0.6− | 2004 04 12 | 703 | (1.5− | 2.7+) | 2007 12 05 | 704 | 0.0  | 0.6+ |
| 2004 03 22 | 699 | 1.2+ | 0.5+ | 2004 04 12 | 703 | 0.8+  | 0.3−  | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2004 03 23 | 704 | 0.0  | 0.0  | 2004 04 16 | 704 | 0.7+  | 0.1−  | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2004 03 23 | 704 | 1.1+ | 0.6+ | 2004 04 16 | 704 | 0.5−  | 0.1−  | 2007 12 15 | G96 | 0.2− | 0.0  |
| 2004 03 23 | 704 | 1.2+ | 0.1− | 2004 04 16 | 704 | 0.4−  | 0.3+  | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2004 03 23 | 704 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.3−  | 0.5−  |            |     |      |      |

2004 FU<sub>92</sub>

|                                         |            |       |                    |            |             |       |             |            |     |       |       |
|-----------------------------------------|------------|-------|--------------------|------------|-------------|-------|-------------|------------|-----|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |                    |            |             | MPC   |             |            |     |       |       |
| <i>M</i>                                | 225.27592  |       | (2000.0)           |            | <b>P</b>    |       | <b>Q</b>    |            |     |       |       |
| <i>n</i>                                | 0.17371597 |       | $\omega$ 184.30905 |            | −0.98077607 |       | +0.19169753 |            |     |       |       |
| <i>a</i>                                | 3.1810919  |       | $\Omega$ 7.06507   |            | −0.16900042 |       | −0.74099718 |            |     |       |       |
| <i>e</i>                                | 0.0787083  |       | <i>i</i> 17.25023  |            | −0.09755591 |       | −0.64356448 |            |     |       |       |
| <i>P</i>                                | 5.67       |       | <i>H</i>           | 14.9       | <i>G</i>    | 0.15  | <i>U</i>    | 2          |     |       |       |
| Residuals in seconds of arc             |            |       |                    |            |             |       |             |            |     |       |       |
| 2001 10 20                              | 644        | 0.2−  | 0.4+               | 2004 03 27 | 704         | (1.9+ | 0.1+)       | 2004 04 22 | 703 | (1.6− | 0.4+) |
| 2001 10 20                              | 644        | 0.2−  | 0.1+               | 2004 03 27 | 704         | (1.8+ | 0.0 )       | 2004 04 22 | 703 | 0.8−  | 0.3+  |
| 2001 10 20                              | 644        | 0.2−  | 0.3+               | 2004 03 27 | 704         | (2.0+ | 0.0 )       | 2004 04 28 | 691 | 0.1−  | 0.4+  |
| 2004 02 26                              | 704        | 0.5+  | 1.0+               | 2004 03 27 | 704         | (1.7+ | 0.6−)       | 2004 04 28 | 691 | 0.1+  | 0.3+  |
| 2004 02 26                              | 704        | 0.4+  | 0.4+               | 2004 04 14 | 246         | 0.1−  | 0.1+        | 2004 04 28 | 691 | 0.2−  | 0.2+  |
| 2004 02 26                              | 704        | 0.1+  | 0.0                | 2004 04 14 | 246         | 0.6−  | 0.3−        | 2007 11 17 | G96 | 0.1−  | 0.1−  |
| 2004 03 18                              | 704        | 0.4−  | 0.6−               | 2004 04 14 | 246         | 0.1+  | 0.4−        | 2007 11 17 | G96 | 0.1−  | 0.0   |
| 2004 03 18                              | 704        | 0.1+  | 0.6−               | 2004 04 14 | 246         | 0.3−  | 0.9−        | 2007 11 17 | G96 | 0.3−  | 0.2−  |
| 2004 03 18                              | 704        | 0.8+  | 0.5−               | 2004 04 14 | 246         | 0.9−  | 0.1−        | 2007 11 17 | G96 | 0.2+  | 0.0   |
| 2004 03 18                              | 704        | 0.6+  | 0.6−               | 2004 04 14 | 246         | 0.5−  | 0.1−        | 2007 11 18 | G96 | 0.0   | 0.1−  |
| 2004 03 24                              | 699        | 1.3+  | 0.3+               | 2004 04 20 | 704         | 0.1−  | 0.0         | 2007 11 18 | G96 | 0.1+  | 0.1−  |
| 2004 03 24                              | 699        | 0.5+  | 0.5−               | 2004 04 20 | 704         | 0.4+  | 1.2−        | 2007 11 18 | G96 | 0.1+  | 0.1−  |
| 2004 03 24                              | 699        | 0.1−  | 0.7−               | 2004 04 20 | 704         | 0.2−  | 0.3−        | 2007 11 18 | G96 | 0.3+  | 0.1+  |
| 2004 03 24                              | 699        | 0.4+  | 0.3−               | 2004 04 22 | 703         | 0.4−  | 0.9+        |            |     |       |       |
| 2004 03 27                              | 704        | (1.9+ | 0.1+)              | 2004 04 22 | 703         | 0.5+  | 1.1+        |            |     |       |       |

2004 FT<sub>93</sub> = 2004 FX<sub>62</sub> = 2005 NV<sub>124</sub>Id. Minor Planet Center (d, *MPO* 77916; unpublished)

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 275.85111  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.21465123 | $\omega$ | 22.13955  | −0.95094616 |      | +0.30916954 |   |  |  |  |  |
| <i>a</i>                                | 2.7625732  | $\Omega$ | 175.82509 | −0.30133686 |      | −0.91787250 |   |  |  |  |  |
| <i>e</i>                                | 0.1266017  | <i>i</i> | 8.49286   | −0.06998213 |      | −0.24884587 |   |  |  |  |  |
| <i>P</i>                                | 4.59       | <i>H</i> | 16.6      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |     |            |     |      |      |            |
|------------|-----|------|-----|------------|-----|------|------|------------|
| 2004 03 19 | 704 | 0.1+ | 0.0 | 2004 03 28 | 691 | 0.1− | 0.2+ | 2004 04 20 |
|------------|-----|------|-----|------------|-----|------|------|------------|

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 07 28 | 691 | 0.4+ | 0.5- | 2004 03 26 | 691 | 0.3+ | 0.0  | 2007 11 12 | 703 | 0.4+  | 0.3-  |
| 1995 07 28 | 691 | 0.0  | 0.8- | 2004 03 26 | 691 | 0.1- | 0.2- | 2007 11 12 | 703 | 0.9-  | 0.4+  |
| 1995 07 28 | 691 | 0.3- | 0.5- | 2006 08 13 | 644 | 0.2+ | 0.7+ | 2007 11 12 | 703 | 0.2+  | 0.4+  |
| 2002 11 16 | 644 | 0.1- | 0.2- | 2006 08 13 | 644 | 0.2- | 0.6+ | 2007 11 12 | 703 | 0.1+  | 0.3+  |
| 2002 11 16 | 644 | 0.1- | 0.0  | 2006 08 13 | 644 | 0.6- | 0.5+ | 2007 11 19 | 703 | (0.6- | 1.6-) |
| 2002 11 16 | 644 | 0.5- | 0.4- | 2007 11 03 | 703 | 0.3+ | 0.2- | 2007 11 19 | 703 | 0.3-  | 0.6-  |
| 2004 02 29 | 691 | 0.1- | 0.2+ | 2007 11 03 | 703 | 0.7- | 0.9+ | 2007 11 19 | 703 | 0.6+  | 0.3-  |
| 2004 02 29 | 691 | 0.0  | 0.2+ | 2007 11 03 | 703 | 0.6+ | 0.2- | 2007 11 19 | 703 | 0.9+  | 0.4+  |
| 2004 02 29 | 691 | 0.1- | 0.2+ | 2007 11 03 | 703 | 0.2- | 0.0  | 2007 12 05 | 703 | 0.2+  | 0.0   |
| 2004 03 23 | 291 | 0.0  | 0.2- | 2007 11 06 | D29 | 0.4+ | 0.0  | 2007 12 05 | 703 | 0.3-  | 1.4-  |
| 2004 03 23 | 291 | 0.3- | 0.1- | 2007 11 06 | D29 | 0.3- | 0.5- | 2007 12 05 | 703 | 0.4+  | 0.5-  |
| 2004 03 23 | 291 | 0.3- | 0.3+ | 2007 11 06 | D29 | 0.4+ | 0.7- | 2007 12 05 | 703 | 0.1+  | 0.7-  |
| 2004 03 26 | 691 | 0.3+ | 0.1- | 2007 11 06 | D29 | 0.1+ | 0.7- |            |     |       |       |

**2004 FQ<sub>103</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.18747  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21633731 | $\omega$ | 120.43239 | -0.97127636 | -0.21619508 |
| <i>a</i> | 2.7482006  | $\Omega$ | 47.28271  | +0.14387533 | -0.86631320 |
| <i>e</i> | 0.2051712  | <i>i</i> | 7.77610   | +0.18953133 | -0.45029005 |
| <i>P</i> | 4.56       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 12 25 | 645 | 0.1-  | 0.1-  | 2004 03 10 | 703 | 0.1-  | 0.2+  | 2007 11 20 | 291 | 0.5-  | 0.1-  |
| 2003 12 25 | 645 | 0.1-  | 0.1-  | 2004 03 10 | 703 | (1.8- | 0.5+) | 2007 11 20 | 291 | 0.2-  | 0.1+  |
| 2004 01 28 | 645 | 0.0   | 0.2-  | 2004 03 23 | 704 | 1.0+  | 1.2+  | 2007 11 20 | 291 | 0.5-  | 0.1-  |
| 2004 01 28 | 645 | 0.0   | 0.2-  | 2004 03 23 | 704 | 0.3-  | 0.2-  | 2007 12 13 | 704 | 1.4+  | 1.3+  |
| 2004 02 16 | 704 | (1.9- | 0.3+) | 2004 03 23 | 704 | 1.0+  | 0.9+  | 2007 12 13 | 704 | 1.3+  | 0.1-  |
| 2004 02 16 | 704 | 0.5+  | 0.1+  | 2004 03 23 | 704 | 1.2+  | 0.8+  | 2007 12 13 | 704 | 0.5-  | 0.4+  |
| 2004 02 16 | 704 | 0.3-  | 0.8+  | 2004 03 23 | 704 | (1.5+ | 1.6+) | 2007 12 13 | 704 | 0.5+  | 0.8+  |
| 2004 02 16 | 704 | (0.3- | 1.7+) | 2004 03 26 | 703 | 0.0   | 1.1+  | 2007 12 15 | 704 | (0.3- | 1.7+) |
| 2004 02 16 | 704 | 0.1-  | 0.7+  | 2004 03 26 | 703 | 0.5+  | 1.3+  | 2007 12 15 | 704 | 0.2-  | 1.2+  |
| 2004 03 10 | 703 | 0.4-  | 0.8+  | 2004 03 26 | 703 | 0.5-  | 0.1-  | 2007 12 15 | 704 | 0.8+  | 0.5+  |
| 2004 03 10 | 703 | 0.1-  | 0.4+  | 2004 03 26 | 703 | 0.5-  | 0.7+  |            |     |       |       |

**2004 FF<sub>143</sub> = 2007 TU<sub>404</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 324.23844  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18427360 | $\omega$ | 117.39398 | +0.10244223 | -0.99448273 |
| <i>a</i> | 3.0583977  | $\Omega$ | 326.70245 | +0.89751660 | +0.10219204 |
| <i>e</i> | 0.0374197  | <i>i</i> | 2.35685   | +0.42891670 | +0.02368288 |
| <i>P</i> | 5.35       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 26 | 691 | 0.1- | 0.0  | 2004 03 31 | 291 | 0.2+ | 0.1- | 2007 10 19 | 691 | 0.2- | 0.3- |
| 2001 08 26 | 691 | 0.1+ | 0.1+ | 2004 03 31 | 291 | 0.0  | 0.0  | 2007 10 19 | 691 | 0.7- | 0.1- |
| 2001 08 26 | 691 | 0.0  | 0.1- | 2004 03 31 | 291 | 0.3- | 0.1- | 2007 10 19 | 691 | 0.2- | 0.1- |
| 2004 03 18 | 691 | 0.0  | 0.1+ | 2007 10 07 | 691 | 0.1- | 0.5+ | 2007 11 02 | 691 | 0.2+ | 0.0  |
| 2004 03 18 | 691 | 0.0  | 0.2+ | 2007 10 07 | 691 | 0.2+ | 0.0  | 2007 11 02 | 691 | 0.2+ | 0.0  |
| 2004 03 18 | 691 | 0.0  | 0.2+ | 2007 10 07 | 691 | 0.0  | 0.2- | 2007 11 02 | 691 | 0.1+ | 0.1- |
| 2004 03 28 | 691 | 0.1+ | 0.1+ | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.0  | 0.2- |
| 2004 03 28 | 691 | 0.1+ | 0.1- | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.1+ | 0.2+ |
| 2004 03 28 | 691 | 0.0  | 0.2- | 2007 10 15 | 691 | 0.4+ | 0.1- | 2007 11 19 | 691 | 0.1- | 0.0  |

**2004 FW<sub>147</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 287.26432  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23158654 | $\omega$ | 109.11460 | -0.52739195 | +0.82882808 |
| <i>a</i> | 2.6261962  | $\Omega$ | 127.62074 | -0.84086695 | -0.47769721 |
| <i>e</i> | 0.1266348  | <i>i</i> | 13.64253  | -0.12165730 | -0.29128918 |
| <i>P</i> | 4.26       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 16 | 704 | 0.5+  | 0.3+  | 2004 04 26 | 704 | 0.6-  | 0.0   | 2004 06 10 | 704 | 0.0  | 0.1+ |
| 2004 03 16 | 704 | 0.9+  | 0.7-  | 2004 04 26 | 704 | (0.4+ | 2.4-) | 2004 06 10 | 704 | 0.3+ | 0.4+ |
| 2004 03 16 | 704 | (1.2+ | 1.8-) | 2004 04 26 | 704 | (3.6- | 1.1-) | 2004 06 10 | 704 | 0.8+ | 0.1+ |
| 2004 03 26 | 699 | 1.1-  | 0.3+  | 2004 05 13 | 704 | 0.2+  | 0.1+  | 2004 06 13 | 704 | 0.7+ | 0.4- |
| 2004 03 26 | 699 | 1.2+  | 0.5+  | 2004 05 13 | 704 | 0.2-  | 0.4+  | 2004 06 13 | 704 | 0.2+ | 1.0- |
| 2004 03 26 | 699 | 0.6-  | 0.5+  | 2004 05 13 | 704 | 0.3-  | 0.4-  | 2004 06 13 | 704 | 0.9+ | 0.2- |
| 2004 03 26 | 699 | 2.0+  | 1.4-  | 2004 05 13 | 704 | 0.3-  | 0.1-  | 2004 06 13 | 704 | 0.0  | 0.0  |
| 2004 04 16 | 704 | 1.4-  | 0.1+  | 2004 05 13 | 704 | 0.3-  | 0.2-  | 2005 08 27 | 644 | 0.4- | 0.6+ |
| 2004 04 16 | 704 | 0.2-  | 0.0   | 2004 06 07 | 703 | (2.6- | 1.8-) | 2005 08 27 | 644 | 0.2- | 0.6+ |
| 2004 04 16 | 704 | 0.3-  | 0.5+  | 2004 06 07 | 703 | 0.8-  | 0.2-  | 2005 08 27 | 644 | 0.1+ | 0.6+ |
| 2004 04 16 | 704 | 0.6+  | 0.1+  | 2004 06 07 | 703 | 1.5-  | 0.2-  | 2007 12 05 | 291 | 0.1- | 0.1+ |
| 2004 04 16 | 704 | 0.8+  | 0.6+  | 2004 06 07 | 703 | 0.2-  | 0.0   | 2007 12 05 | 291 | 0.1- | 0.1- |
| 2004 04 26 | 704 | 0.7-  | 0.5+  | 2004 06 10 | 704 | 0.5+  | 0.2+  | 2007 12 05 | 291 | 0.3+ | 0.5+ |
| 2004 04 26 | 704 | 1.1-  | 0.2+  | 2004 06 10 | 704 | 1.0+  | 0.5+  |            |     |      |      |

**2004 GL<sub>7</sub> = 2007 VH<sub>50</sub> = 2007 VN<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 174.33256  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17499587 | $\omega$ | 210.11812 | -0.58159238 | +0.81050872 |
| <i>a</i> | 3.1655622  | $\Omega$ | 24.52589  | -0.70896304 | -0.46314132 |
| <i>e</i> | 0.0444746  | <i>i</i> | 9.63392   | -0.39890062 | -0.35857457 |
| <i>P</i> | 5.63       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 15 | 691 | 0.2+ | 0.3+ | 2004 04 13 | 291 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.2+ | 0.4+ |
| 2001 11 15 | 691 | 0.0  | 0.6- | 2004 04 13 | 291 | 0.3- | 0.2- | 2007 11 07 | 691 | 0.2+ | 0.1- |
| 2001 11 15 | 691 | 0.1- | 0.1+ | 2004 04 13 | 291 | 0.2- | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.0  |
| 2004 03 27 | 691 | 0.1+ | 0.2- | 2007 11 01 | 691 | 0.0  | 0.1- | 2007 11 09 | 691 | 0.1+ | 0.3+ |
| 2004 03 27 | 691 | 0.1- | 0.1+ | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 11 09 | 691 | 0.0  | 0.0  |
| 2004 03 27 | 691 | 0.1- | 0.0  | 2007 11 01 | 691 | 0.1+ | 0.2- | 2007 11 09 | 691 | 0.2+ | 0.1+ |
| 2004 04 12 | 291 | 0.3+ | 0.0  | 2007 11 05 | 691 | 0.1- | 0.1+ | 2007 11 17 | 691 | 0.4- | 0.4+ |
| 2004 04 12 | 291 | 0.4+ | 0.0  | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.3- |
| 2004 04 12 | 291 | 0.1- | 0.0  | 2007 11 05 | 691 | 0.7- | 0.1- | 2007 11 17 | 691 | 0.1+ | 0.1- |

**2004 GK<sub>25</sub> = 2007 WS**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.68934  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18406840 | $\omega$ | 241.63464 | -0.00640073 | -0.99987688 |
| <i>a</i> | 3.0606704  | $\Omega$ | 208.74286 | +0.92757609 | -0.00058421 |
| <i>e</i> | 0.1990552  | <i>i</i> | 1.70728   | +0.37357948 | -0.01568086 |
| <i>P</i> | 5.35       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 16 | 691 | 0.4+ | 0.2- | 2007 10 31 | G96 | 0.0   | 0.3-  | 2007 11 19 | 620 | 0.9- | 0.3+ |
| 1996 10 16 | 691 | 0.2- | 0.1- | 2007 10 31 | G96 | 0.3+  | 0.5-  | 2007 11 19 | 620 | 0.6- | 0.5+ |
| 2004 04 14 | 291 | 0.0  | 0.0  | 2007 10 31 | G96 | 0.1+  | 0.4-  | 2007 11 19 | 691 | 0.5- | 0.1+ |
| 2004 04 14 | 291 | 0.1+ | 0.3+ | 2007 10 31 | G96 | 0.5+  | 0.3-  | 2007 11 19 | 691 | 0.1- | 0.2- |
| 2004 04 14 | 291 | 0.3+ | 0.2+ | 2007 11 03 | 699 | 0.4+  | 1.3+  | 2007 11 19 | 691 | 0.0  | 0.1- |
| 2004 04 16 | 691 | 0.2- | 0.1- | 2007 11 03 | 699 | 0.2+  | 0.2-  | 2007 12 04 | G96 | 0.0  | 0.5- |
| 2004 04 16 | 691 | 0.1- | 0.4+ | 2007 11 03 | 699 | (1.8+ | 0.0 ) | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2004 04 16 | 691 | 0.2- | 0.3- | 2007 11 03 | 699 | 0.1-  | 0.8-  | 2007 12 04 | G96 | 0.5+ | 0.2- |
| 2004 04 22 | 691 | 0.6- | 0.4- | 2007 11 08 | 691 | 0.1+  | 0.1+  | 2007 12 04 | G96 | 0.3+ | 0.3- |
| 2004 04 22 | 691 | 0.4+ | 0.3- | 2007 11 08 | 691 | 0.3-  | 0.0   | 2007 12 04 | 104 | 0.1+ | 0.4- |
| 2004 04 22 | 691 | 0.1+ | 0.3- | 2007 11 08 | 691 | 0.2-  | 0.2-  | 2007 12 04 | 104 | 0.3- | 0.4- |
| 2007 09 10 | G96 | 0.2- | 0.2- | 2007 11 14 | 704 | 0.1-  | 0.4+  | 2007 12 04 | 104 | 0.0  | 0.1+ |
| 2007 09 10 | G96 | 0.2- | 0.0  | 2007 11 14 | 704 | 0.4+  | 0.5+  | 2007 12 05 | H07 | 0.2+ | 0.4- |
| 2007 09 10 | G96 | 0.2+ | 0.1- | 2007 11 14 | 704 | 0.6+  | 0.3-  | 2007 12 05 | H07 | 0.4- | 0.3+ |
| 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 11 14 | 704 | 0.5+  | 0.3+  | 2007 12 05 | H07 | 0.5+ | 0.7- |
| 2007 09 18 | G96 | 0.2- | 0.0  | 2007 11 14 | 704 | 0.0   | 0.6+  | 2007 12 05 | 704 | 0.3- | 0.7+ |
| 2007 09 18 | G96 | 0.2+ | 0.1+ | 2007 11 17 | J75 | 0.5+  | 0.3+  | 2007 12 05 | 704 | 0.1- | 0.2- |
| 2007 09 18 | G96 | 0.1- | 0.2+ | 2007 11 17 | J75 | 0.9+  | 0.3+  | 2007 12 05 | 704 | 0.1- | 0.2+ |
| 2007 09 18 | G96 | 0.2- | 0.1+ | 2007 11 17 | J75 | 0.3+  | 0.7+  | 2007 12 05 | 704 | 0.0  | 1.0+ |
| 2007 10 17 | G96 | 0.2- | 0.5- | 2007 11 17 | 620 | 0.6-  | 0.4-  | 2007 12 05 | 704 | 0.2+ | 0.4+ |
| 2007 10 17 | G96 | 0.4+ | 0.1- | 2007 11 18 | 620 | 0.0   | 0.0   | 2007 12 12 | A77 | 0.3+ | 0.2- |

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2007 10 17 G96 0.6+ 0.1- 2007 11 18 620 0.5+ 0.0 2007 12 12 A77 0.1- 0.2+  
 2007 10 17 G96 0.3+ 0.2- 2007 11 19 620 0.1+ 0.6- 2007 12 12 A77 0.7- 0.6+

**2004 GH<sub>52</sub> = 2007 VF<sub>53</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 297.01418  |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.18160338 | $\omega$ | 296.01950 | -0.61993994 | -0.78447279 |          |   |     |  |
| <i>a</i> | 3.0883044  | $\Omega$ | 192.33485 | +0.74487638 | -0.58171708 |          |   |     |  |
| <i>e</i> | 0.1125363  | <i>i</i> | 4.46775   | +0.24664478 | -0.21495972 |          |   |     |  |
| <i>P</i> | 5.43       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 2 |     |  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 10 14 691 0.2- 0.5+ | 2004 04 25 691 0.4- 0.5+ | 2007 11 01 691 0.6- 0.3+ |
| 2001 10 14 691 0.1+ 0.3+ | 2004 04 25 691 0.1- 0.3- | 2007 11 01 691 0.1+ 0.2+ |
| 2001 10 14 691 0.0 0.5-  | 2004 04 25 691 0.1+ 0.0  | 2007 11 01 691 0.1- 0.2+ |
| 2004 04 13 691 0.1+ 0.0  | 2004 07 15 807 0.1+ 0.2- | 2007 11 05 691 0.1- 0.1+ |
| 2004 04 13 691 0.2+ 0.0  | 2004 07 15 807 0.3- 0.1+ | 2007 11 05 691 0.5- 0.7+ |
| 2004 04 13 691 0.2+ 0.1+ | 2007 10 20 G96 0.5+ 0.3- | 2007 11 05 691 0.2- 0.1- |
| 2004 04 19 691 0.0 0.1+  | 2007 10 20 G96 0.4+ 0.0  | 2007 11 05 691 0.5+ 0.5- |
| 2004 04 19 691 0.1+ 0.1- | 2007 10 20 G96 0.8+ 0.6- | 2007 11 05 691 0.4- 0.2+ |
| 2004 04 19 691 0.0 0.0   | 2007 10 20 G96 0.1+ 0.1- | 2007 11 05 691 0.3- 0.2- |

**2004 GA<sub>57</sub> = 2007 UO<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 263.72362  |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.17914981 | $\omega$ | 143.07832 | -0.85716471 | -0.51504126 |          |   |     |  |
| <i>a</i> | 3.1164379  | $\Omega$ | 5.92177   | +0.47001207 | -0.78307612 |          |   |     |  |
| <i>e</i> | 0.1441781  | <i>i</i> | 0.59826   | +0.21061176 | -0.34860335 |          |   |     |  |
| <i>P</i> | 5.50       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 2 |     |  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1993 03 24 809 0.5+ 1.1+ | 2004 04 19 691 0.2- 0.2+ | 2007 10 31 G96 0.1+ 0.1- |
| 1998 01 25 691 0.1- 0.3- | 2007 10 07 G96 0.3+ 0.4+ | 2007 10 31 G96 0.8- 0.0  |
| 1998 01 25 691 0.0 0.2-  | 2007 10 07 G96 0.1+ 0.3+ | 2007 10 31 G96 0.4+ 0.0  |
| 1998 01 25 691 0.1- 0.1- | 2007 10 07 G96 0.1- 0.5+ | 2007 11 02 G96 0.5+ 0.4- |
| 2004 04 14 691 0.3+ 0.1+ | 2007 10 07 G96 0.3- 0.7+ | 2007 11 02 G96 0.5+ 0.2- |
| 2004 04 14 691 0.2+ 0.1- | 2007 10 18 691 0.2- 0.1- | 2007 11 02 G96 0.1- 0.1+ |
| 2004 04 14 691 0.2+ 0.0  | 2007 10 18 691 0.1- 0.1+ | 2007 11 02 G96 0.0 0.1+  |
| 2004 04 19 691 0.0 0.3+  | 2007 10 18 691 0.3- 0.1+ |                          |
| 2004 04 19 691 0.4- 0.2- | 2007 10 31 G96 0.5- 0.1- |                          |

**2004 GC<sub>57</sub> = 2007 VU<sub>295</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 282.61049  |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.17083231 | $\omega$ | 295.70582 | -0.58172351 | -0.81238118 |          |   |     |  |
| <i>a</i> | 3.2167900  | $\Omega$ | 190.16449 | +0.80394639 | -0.56671037 |          |   |     |  |
| <i>e</i> | 0.0294943  | <i>i</i> | 13.24393  | +0.12356361 | -0.13739057 |          |   |     |  |
| <i>P</i> | 5.77       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 3 |     |  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1995 10 26 691 0.2- 0.4+ | 2004 04 14 691 0.1- 0.7- | 2007 11 14 G96 0.2- 0.2- |
| 1995 10 26 691 0.9+ 0.5- | 2004 04 19 691 0.3+ 0.2- | 2007 11 14 G96 0.1+ 0.1- |
| 1995 10 26 691 0.7- 0.0  | 2004 04 19 691 0.6+ 0.1- | 2007 11 14 G96 0.0 0.3+  |
| 2004 03 30 291 0.4- 0.0  | 2004 04 19 691 0.2+ 0.4+ | 2007 11 14 G96 0.2+ 0.6- |
| 2004 03 30 291 0.2- 0.4+ | 2007 10 12 G96 0.3- 0.1- | 2007 11 20 G96 0.0 0.3+  |
| 2004 03 30 291 0.4- 0.2- | 2007 10 12 G96 0.0 0.1+  | 2007 11 20 G96 0.1- 0.2+ |
| 2004 04 14 691 0.2+ 0.1- | 2007 10 12 G96 0.2- 0.0  | 2007 11 20 G96 0.0 0.1-  |
| 2004 04 14 691 0.0 0.3+  | 2007 10 12 G96 0.5+ 0.0  | 2007 11 20 G96 0.0 0.2+  |

**2004 GG<sub>77</sub> = 2007 VE<sub>117</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |           | P           |             | Q        |   | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 100.59488  |          |           |             |             |          |   |     |  |
| <i>n</i> | 0.17676113 | $\omega$ | 64.31830  | +0.71049834 | +0.58540695 |          |   |     |  |
| <i>a</i> | 3.1444513  | $\Omega$ | 257.31045 | -0.69783818 | +0.65761100 |          |   |     |  |
| <i>e</i> | 0.0578119  | <i>i</i> | 23.59554  | +0.09063101 | +0.47417980 |          |   |     |  |
| <i>P</i> | 5.58       | <i>H</i> | 14.5      | <i>G</i>    | 0.15        | <i>U</i> | 0 |     |  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2001 11 11 699 0.3- 0.3+   | 2004 04 24 E12 0.4+ 0.7+   | 2007 11 07 691 0.1+ 0.1- |
| 2001 11 11 699 0.2- 0.6+   | 2004 04 24 E12 0.4- 0.2-   | 2007 11 07 691 0.2+ 0.1- |
| 2001 11 11 699 0.4+ 0.3-   | 2004 04 24 E12 0.2+ 0.2-   | 2007 11 07 691 0.0 0.2-  |
| 2001 11 11 699 0.0 0.4+    | 2006 08 12 644 0.4+ 0.4+   | 2007 11 09 691 0.0 0.1-  |
| 2004 03 18 E12 (2.9- 3.2+) | 2006 08 12 644 0.1+ 0.1+   | 2007 11 09 691 0.0 0.2-  |
| 2004 03 18 E12 (2.0- 2.3+) | 2006 08 12 644 0.1+ 0.3+   | 2007 11 09 691 0.0 0.1+  |
| 2004 03 18 E12 (2.8- 3.7+) | 2006 11 16 703 0.4- 1.3-   | 2007 12 14 704 0.9+ 0.1- |
| 2004 03 18 E12 (0.7- 3.5+) | 2006 11 16 703 (2.0+ 1.2-) | 2007 12 14 704 0.7+ 0.5+ |
| 2004 04 13 E12 0.1+ 0.2+   | 2006 11 16 703 0.1+ 0.1-   | 2007 12 14 704 0.7+ 1.2+ |
| 2004 04 13 E12 0.4+ 0.2-   | 2006 11 16 703 0.0 0.0     | 2007 12 16 691 0.1- 0.2- |
| 2004 04 13 E12 0.5+ 0.3+   | 2007 11 03 691 0.2- 0.1-   | 2007 12 16 691 0.1- 0.2- |
| 2004 04 13 E12 0.3+ 0.6-   | 2007 11 03 691 0.3- 0.6+   | 2007 12 16 691 0.3- 0.5- |
| 2004 04 24 E12 1.5- 0.6+   | 2007 11 03 691 0.1+ 0.4+   |                          |

**2004 HL<sub>21</sub> = 2007 TJ<sub>392</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |          | P           |             | Q        |   | MPC |  |
|----------|------------|----------|----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 286.04104  |          |          |             |             |          |   |     |  |
| <i>n</i> | 0.17398707 | $\omega$ | 48.99004 | -0.56230712 | -0.82615972 |          |   |     |  |
| <i>a</i> | 3.1777866  | $\Omega$ | 75.25983 | +0.74719825 | -0.52608739 |          |   |     |  |
| <i>e</i> | 0.2053175  | <i>i</i> | 2.11250  | +0.35426752 | -0.20172300 |          |   |     |  |
| <i>P</i> | 5.66       | <i>H</i> | 15.8     | <i>G</i>    | 0.15        | <i>U</i> | 3 |     |  |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2004 03 26 291 0.2- 0.0  | 2007 09 12 G96 0.1+ 0.1+ | 2007 10 08 G96 0.2- 0.2+   |
| 2004 03 26 291 0.1+ 0.1+ | 2007 09 12 G96 0.4- 0.2- | 2007 10 15 703 (1.8+ 0.8+) |
| 2004 03 26 291 0.1+ 0.1+ | 2007 09 12 G96 0.4- 0.1- | 2007 10 15 703 0.1+ 0.8+   |
| 2004 04 16 691 0.0 0.3-  | 2007 10 08 G96 0.4- 0.0  | 2007 10 15 703 0.1- 0.0    |
| 2004 04 16 691 0.1+ 0.0  | 2007 10 08 G96 0.2+ 0.1+ | 2007 10 15 703 (0.4+ 2.5+) |
| 2004 04 16 691 0.0 0.1-  | 2007 10 08 G96 0.4+ 0.5- | 2007 10 19 G96 0.3- 0.3-   |
| 2004 04 22 691 0.0 0.1+  | 2007 10 08 G96 0.3+ 0.2- | 2007 10 19 G96 0.1+ 0.3-   |
| 2004 04 22 691 0.0 0.1+  | 2007 10 08 G96 0.2+ 0.4+ | 2007 10 19 G96 0.0 0.2-    |
| 2004 04 22 691 0.1- 0.0  | 2007 10 08 G96 0.2+ 0.3+ | 2007 10 19 G96 0.2- 0.2-   |
| 2007 09 12 G96 0.1+ 0.1+ | 2007 10 08 G96 0.1+ 0.2+ |                            |

**2004 HY<sub>37</sub> = 2007 VA<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | (2000.0) |          | P           |             | Q        |   | MPC |  |
|----------|------------|----------|----------|-------------|-------------|----------|---|-----|--|
| <i>M</i> | 320.83797  |          |          |             |             |          |   |     |  |
| <i>n</i> | 0.18354267 | $\omega$ | 54.82038 | -0.19176475 | -0.97193880 |          |   |     |  |
| <i>a</i> | 3.0665121  | $\Omega$ | 46.84845 | +0.82878269 | -0.23472239 |          |   |     |  |
| <i>e</i> | 0.0970077  | <i>i</i> | 10.76292 | +0.52568577 | +0.01550403 |          |   |     |  |
| <i>P</i> | 5.37       | <i>H</i> | 15.5     | <i>G</i>    | 0.15        | <i>U</i> | 1 |     |  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 10 16 644 1.8- 2.6+ | 2004 04 26 691 0.0 0.1-  | 2007 11 20 704 0.5- 0.7+ |
| 2001 10 16 644 1.5- 1.9+ | 2004 04 26 691 0.1- 0.1+ | 2007 11 20 704 0.2+ 0.2- |
| 2001 10 16 644 1.9- 2.0+ | 2007 09 10 G96 0.7- 0.4- | 2007 11 20 704 0.4- 0.3+ |
| 2001 10 24 644 0.1- 1.0+ | 2007 09 10 G96 0.1- 0.2- | 2007 11 20 704 0.0 0.5+  |
| 2001 10 24 644 0.2- 1.0+ | 2007 09 10 G96 0.1- 0.2+ | 2007 12 04 703 1.4- 0.8+ |
| 2001 10 24 644 0.2- 1.0+ | 2007 09 10 G96 0.2- 0.1- | 2007 12 04 703 0.6+ 1.0+ |
| 2002 12 12 644 0.2+ 0.0  | 2007 10 10 G96 0.2- 0.0  | 2007 12 04 703 0.1+ 0.0  |
| 2002 12 12 644 0.1- 0.1+ | 2007 10 10 G96 0.1- 0.3- | 2007 12 04 703 1.0+ 1.2- |
| 2002 12 12 644 0.1+ 0.0  | 2007 10 10 G96 0.0 0.3-  | 2007 12 12 704 0.2+ 1.1+ |
| 2004 03 26 691 0.1+ 0.1+ | 2007 10 10 G96 0.2+ 0.3- | 2007 12 12 704 0.1- 0.2- |
| 2004 03 26 691 0.3+ 0.1+ | 2007 11 15 704 0.2- 0.6- | 2007 12 12 704 0.5+ 0.0  |
| 2004 03 26 691 0.1+ 0.1+ | 2007 11 15 704 0.7- 0.2+ | 2007 12 12 704 0.1- 0.7+ |
| 2004 04 23 291 0.0 0.3+  | 2007 11 15 704 1.2+ 0.5+ | 2007 12 13 704 0.3+ 0.4- |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 23 | 291 | 0.3+ | 0.3+ | 2007 11 15 | 704 | 1.5+ | 0.3- | 2007 12 13 | 704 | 0.6- | 0.1+ |
| 2004 04 23 | 291 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 1.2- | 0.3- | 2007 12 13 | 704 | 0.3+ | 0.1+ |
| 2004 04 24 | 291 | 0.2+ | 0.2+ | 2007 11 17 | G96 | 0.3- | 0.3- | 2007 12 13 | 704 | 0.4- | 1.0+ |
| 2004 04 24 | 291 | 0.4+ | 0.3+ | 2007 11 17 | G96 | 0.3+ | 0.3- | 2007 12 13 | 704 | 0.4- | 0.1+ |
| 2004 04 24 | 291 | 0.3+ | 0.6+ | 2007 11 17 | G96 | 0.1- | 0.1- |            |     |      |      |
| 2004 04 26 | 691 | 0.3- | 0.2+ | 2007 11 17 | G96 | 0.0  | 0.2- |            |     |      |      |

**2004 HW<sub>55</sub> = 2007 XZ<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.17323464 | <i>ω</i> | 107.03831 | -0.95452449 | +0.08217815 |          |   |
| <i>a</i> | 3.1869816  | <i>Ω</i> | 78.39783  | -0.20590396 | -0.87689119 |          |   |
| <i>e</i> | 0.0429951  | <i>i</i> | 17.01132  | +0.21560741 | -0.47361228 |          |   |
| <i>P</i> | 5.69       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 04 16 | 704 | 0.3- | 0.8- | 2004 04 26 | 699 | 0.4+  | 0.2+  | 2007 12 05 | 704 | 0.9+  | 0.5-  |
| 2004 04 16 | 704 | 0.4+ | 0.4- | 2007 12 04 | 691 | 0.2-  | 0.4+  | 2007 12 05 | 704 | 1.2+  | 0.4-  |
| 2004 04 16 | 704 | 0.2- | 0.3- | 2007 12 04 | 691 | 0.3-  | 0.4+  | 2007 12 05 | 704 | 0.6+  | 0.2+  |
| 2004 04 16 | 704 | 0.1+ | 0.4- | 2007 12 04 | 691 | (1.8+ | 0.3+) | 2007 12 05 | 703 | 0.1+  | 0.8-  |
| 2004 04 24 | 704 | 0.0  | 0.4+ | 2007 12 04 | G96 | 0.1+  | 0.3-  | 2007 12 05 | 703 | 0.4+  | 0.1-  |
| 2004 04 24 | 704 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.2-  | 0.2+  | 2007 12 05 | 703 | 0.9-  | 1.0+  |
| 2004 04 24 | 704 | 0.7- | 0.8+ | 2007 12 04 | G96 | 0.1+  | 0.2-  | 2007 12 05 | 703 | (1.7- | 1.3+) |
| 2004 04 26 | 699 | 0.5+ | 0.8+ | 2007 12 04 | G96 | 0.0   | 0.1+  | 2007 12 15 | 691 | 0.2-  | 0.1-  |
| 2004 04 26 | 699 | 0.6- | 0.4+ | 2007 12 05 | 704 | 0.6+  | 0.6-  | 2007 12 15 | 691 | 0.2-  | 0.1-  |
| 2004 04 26 | 699 | 0.5+ | 0.7- | 2007 12 05 | 704 | 1.5+  | 0.5-  | 2007 12 15 | 691 | 0.2-  | 0.1-  |

**2004 JW<sub>3</sub> = 2007 VL<sub>275</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.15199879 | <i>ω</i> | 273.77623 | +0.98190150 | +0.17946760 |          |   |
| <i>a</i> | 3.4773037  | <i>Ω</i> | 75.89227  | -0.13934748 | +0.90094347 |          |   |
| <i>e</i> | 0.0540291  | <i>i</i> | 3.57680   | -0.12826426 | +0.39508510 |          |   |
| <i>P</i> | 6.48       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-------|
| 2000 10 02 | 691 | 0.3+ | 0.5+ | 2004 05 13 | 291 | 0.1- | 0.4+ | 2007 11 18 | 691 | 0.0  | 0.5+  |
| 2000 10 02 | 691 | 0.1+ | 0.3+ | 2004 05 13 | 291 | 0.3- | 0.6+ | 2007 12 04 | G96 | 0.4+ | 0.3+  |
| 2000 10 02 | 691 | 0.2- | 0.2+ | 2004 05 14 | 291 | 0.3+ | 0.6+ | 2007 12 04 | G96 | 0.0  | 0.3+  |
| 2000 10 29 | 691 | 0.0  | 0.5+ | 2004 05 14 | 291 | 0.1+ | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.1+  |
| 2000 10 29 | 691 | 0.5- | 0.0  | 2004 05 14 | 291 | 0.1- | 0.9+ | 2007 12 04 | G96 | 0.2+ | 0.5+  |
| 2000 10 29 | 691 | 0.4- | 0.5+ | 2006 08 29 | 691 | 0.1- | 0.2- | 2007 12 05 | 704 | (0.0 | 2.0-) |
| 2004 04 20 | 291 | 0.2+ | 0.3- | 2006 08 29 | 691 | 0.1- | 0.3+ | 2007 12 05 | 704 | 0.4+ | 0.2-  |
| 2004 04 20 | 291 | 0.4+ | 0.3- | 2006 08 29 | 691 | 0.1- | 0.4+ | 2007 12 05 | 704 | 0.1+ | 0.2-  |
| 2004 04 20 | 291 | 0.6+ | 0.3- | 2007 11 13 | 691 | 0.4- | 0.1- | 2007 12 15 | G96 | 0.4+ | 0.1+  |
| 2004 05 09 | 291 | 0.3+ | 0.2+ | 2007 11 13 | 691 | 0.1+ | 0.6+ | 2007 12 15 | G96 | 0.2+ | 0.1+  |
| 2004 05 09 | 291 | 0.2+ | 0.5+ | 2007 11 13 | 691 | 0.4- | 0.2+ | 2007 12 15 | G96 | 0.1- | 0.1-  |
| 2004 05 09 | 291 | 0.0  | 0.7+ | 2007 11 18 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.2+ | 0.2+  |
| 2004 05 13 | 291 | 0.0  | 0.5+ | 2007 11 18 | 691 | 0.2- | 0.1+ |            |     |      |       |

**2004 LZ<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.23447067 | <i>ω</i> | 320.10373 | -0.67077944 | +0.61443762 |          |   |
| <i>a</i> | 2.6046160  | <i>Ω</i> | 263.07751 | -0.52759756 | -0.78892651 |          |   |
| <i>e</i> | 0.5476861  | <i>i</i> | 24.73406  | -0.52124443 | +0.00783428 |          |   |
| <i>P</i> | 4.20       | <i>H</i> | 18.2      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 06 13 | 704 | 0.4-  | 0.5+  | 2004 06 14 | 704 | 0.2+ | 0.1+ | 2004 06 18 | 118 | 0.5+ | 0.0  |
| 2004 06 13 | 704 | 0.2-  | 0.3+  | 2004 06 14 | 704 | 0.2- | 0.0  | 2004 06 18 | 704 | 0.9+ | 0.1- |
| 2004 06 13 | 704 | 0.9-  | 0.3+  | 2004 06 14 | 704 | 0.1+ | 0.0  | 2004 06 18 | 704 | 0.4+ | 0.2- |
| 2004 06 13 | 704 | 0.5-  | 0.8+  | 2004 06 14 | G70 | 0.6- | 0.1+ | 2004 06 18 | 704 | 0.6+ | 0.2- |
| 2004 06 13 | 704 | (2.1- | 1.7+) | 2004 06 14 | 704 | 0.1+ | 0.6+ | 2004 06 18 | 704 | 0.5+ | 0.1- |
| 2004 06 14 | 557 | 1.2+  | 0.8-  | 2004 06 14 | 704 | 0.6+ | 0.2- | 2004 06 21 | 704 | 0.0  | 0.3- |

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|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 06 14 | 012 | 1.1- | 0.5+ | 2004 06 14 | 704 | 0.8- | 0.3+ | 2004 06 21 | 704 | 0.1+  | 0.7+  |
| 2004 06 14 | 012 | 0.4+ | 0.5- | 2004 06 14 | 926 | 0.1+ | 0.2+ | 2004 06 21 | 704 | 0.2+  | 0.4+  |
| 2004 06 14 | 557 | 0.3- | 0.5- | 2004 06 14 | 926 | 0.2- | 0.3+ | 2004 06 21 | 704 | 0.2-  | 0.4-  |
| 2004 06 14 | 557 | 0.8+ | 0.0  | 2004 06 14 | 926 | 0.1- | 0.4+ | 2004 06 24 | G70 | 0.7+  | 0.6-  |
| 2004 06 14 | 012 | 0.6- | 0.8- | 2004 06 15 | 704 | 0.1- | 0.3+ | 2004 06 24 | G70 | 0.2+  | 0.4-  |
| 2004 06 14 | 557 | 0.0  | 0.0  | 2004 06 15 | 704 | 0.1+ | 0.1+ | 2004 06 26 | 941 | 0.2+  | 0.1-  |
| 2004 06 14 | 012 | 0.7- | 0.8+ | 2004 06 15 | 704 | 0.5+ | 0.2+ | 2004 06 26 | 941 | 0.5-  | 0.0   |
| 2004 06 14 | 557 | 0.6+ | 0.2+ | 2004 06 15 | 704 | 0.3+ | 0.4+ | 2004 06 27 | 941 | 1.1-  | 0.4-  |
| 2004 06 14 | 012 | 0.1- | 0.1+ | 2004 06 15 | 704 | 0.5+ | 0.4- | 2004 07 07 | 673 | (2.5- | 1.4+) |
| 2004 06 14 | 734 | 0.6- | 0.7+ | 2004 06 15 | 926 | 0.1+ | 0.1+ | 2004 07 07 | 673 | 1.3-  | 1.0+  |
| 2004 06 14 | 734 | 0.6+ | 1.6- | 2004 06 15 | 926 | 0.2- | 0.3+ | 2004 07 07 | 673 | 1.0-  | 0.9+  |
| 2004 06 14 | 734 | 0.2+ | 0.8+ | 2004 06 15 | 926 | 0.1- | 0.4+ | 2004 07 09 | 938 | 0.2+  | 0.3-  |
| 2004 06 14 | 734 | 0.9- | 1.9- | 2004 06 16 | 704 | 0.0  | 0.2- | 2004 07 26 | 952 | 0.5+  | 1.2-  |
| 2004 06 14 | G70 | 0.9- | 0.0  | 2004 06 16 | 704 | 1.0- | 0.1- | 2004 07 26 | 952 | 0.3+  | 0.8-  |
| 2004 06 14 | 704 | 0.1- | 0.3+ | 2004 06 16 | 704 | 0.1+ | 0.3- | 2004 07 26 | 952 | 0.3+  | 0.6-  |
| 2004 06 14 | 704 | 0.2- | 0.8+ | 2004 06 16 | 704 | 0.3+ | 0.2- | 2004 07 26 | 952 | 0.4+  | 0.6-  |
| 2004 06 14 | 854 | 0.8+ | 0.0  | 2004 06 16 | 704 | 0.3+ | 0.5+ | 2004 07 26 | J95 | 0.1+  | 0.2-  |
| 2004 06 14 | 854 | 0.1- | 0.9+ | 2004 06 16 | 118 | 1.1+ | 0.3+ | 2004 07 26 | J95 | 0.1-  | 0.7+  |
| 2004 06 14 | 854 | 0.2- | 0.1- | 2004 06 16 | 118 | 0.6+ | 0.3- | 2004 07 26 | J95 | 0.2-  | 0.2+  |
| 2004 06 14 | 704 | 0.3- | 1.0- | 2004 06 18 | 118 | 0.6+ | 1.9- | 2007 12 05 | 291 | 1.4+  | 1.5+  |
| 2004 06 14 | 704 | 0.1- | 0.2+ | 2004 06 18 | 118 | 0.2- | 1.0- | 2007 12 05 | 291 | 0.7-  | 0.7-  |
| 2004 06 14 | G70 | 0.3- | 0.9+ | 2004 06 18 | 118 | 0.1+ | 0.0  | 2007 12 05 | 291 | 0.6-  | 0.7-  |

**2004 MK<sub>4</sub> = 2003 AQ<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.38083681 | <i>ω</i> | 233.06243 | +0.80419055 | +0.44879138 |          |   |
| <i>a</i> | 1.8849946  | <i>Ω</i> | 97.15529  | -0.33818589 | +0.88466673 |          |   |
| <i>e</i> | 0.0690259  | <i>i</i> | 23.12609  | -0.48878202 | +0.12629756 |          |   |
| <i>P</i> | 2.59       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 02 | 704 | 0.3-  | 1.2-  | 2004 06 12 | 599 | 1.6- | 1.0- | 2004 06 22 | 599 | 0.3+ | 0.1- |
| 2003 01 02 | 704 | 0.1+  | 0.2-  | 2004 06 12 | 599 | 1.4- | 1.3- | 2004 06 22 | 599 | 1.4+ | 0.4- |
| 2003 01 02 | 704 | 0.6+  | 1.0-  | 2004 06 12 | 599 | 1.4- | 1.1- | 2007 11 19 | 703 | 0.8- | 0.5+ |
| 2003 01 04 | 704 | (1.0+ | 2.5-) | 2004 06 22 | 599 | 0.2+ | 0.0  | 2007 11 19 | 703 | 0.0  | 1.0- |
| 2003 01 04 | 704 | 0.0   | 0.4-  | 2004 06 22 | 599 | 0.0  | 0.0  | 2007 11 19 | 703 | 0.9+ | 0.9+ |
| 2003 01 04 | 704 | 1.0+  | 1.2-  | 2004 06 22 | 599 | 0.6+ | 0.2+ | 2007 11 19 | 703 | 0.4- | 0.4+ |
| 2003 01 04 | 704 | 0.9+  | 0.4-  | 2004 06 22 | 599 | 0.1+ | 0.4+ |            |     |      |      |
| 2004 06 12 | 599 | (2.2- | 0.6-) | 2004 06 22 | 599 | 0.4+ | 0.6- |            |     |      |      |

**2004 PR<sub>21</sub> = 2007 DW<sub>108</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.18565060 | <i>ω</i> | 350.40543 | +0.74957565 | +0.66090098 |          |   |
| <i>a</i> | 3.0432559  | <i>Ω</i> | 328.12979 | -0.60259829 | +0.65841437 |          |   |
| <i>e</i> | 0.2394004  | <i>i</i> | 3.98477   | -0.27388255 | +0.36013944 |          |   |
| <i>P</i> | 5.31       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 08 08 | 644 | 0.3- | 0.1+ | 2004 08 09 | 699 | 1.2- | 0.4- | 2005 12 01 | 691 | 0.1- | 0.1- |
| 2004 08 08 | 644 | 0.3- | 0.0  | 2004 08 22 | E12 | 0.1+ | 0.0  | 2005 12 01 | 691 | 0.1+ | 0.0  |
| 2004 08 08 | 644 | 0.1+ | 0.4- | 2004 08 22 | E12 | 0.5+ | 0.4+ | 2007 02 22 | 290 | 0.3+ | 0.2+ |
| 2004 08 09 | 699 | 0.0  | 0.3+ | 2004 08 22 | E12 | 0.3+ | 0.7+ | 2007 02 22 | 290 | 0.4- | 0.4+ |
| 2004 08 09 | 699 | 0.8- | 0.8- | 2004 08 22 | E12 | 1.1+ | 0.5+ | 2007 02 23 | 290 | 0.0  | 0.1+ |
| 2004 08 09 | 699 | 0.3+ | 0.2+ | 2005 12 01 | 691 | 0.0  | 0.1+ | 2007 02 23 | 290 | 0.3+ | 0.1+ |

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M.P.O. 129705

Residuals in seconds of arc

|            |     |      |     |            |     |            |     |      |   |            |     |            |     |     |     |     |   |
|------------|-----|------|-----|------------|-----|------------|-----|------|---|------------|-----|------------|-----|-----|-----|-----|---|
| 2004 08 10 | 644 | 0.0  | 0.0 | 2004 09 16 | 704 | 0.3        | −   | 0.6  | − | 2007 11 06 | 691 | 0.3        | −   | 0.1 | +   |     |   |
| 2004 08 10 | 644 | 0.3  | −   | 0.5        | +   | 2004 09 16 | 704 | 0.6  | − | 1.0        | +   | 2007 11 06 | 691 | 0.1 | −   | 0.1 | + |
| 2004 08 10 | 644 | 0.1  | +   | 0.2        | −   | 2004 09 16 | 704 | 0.2  | − | 0.4        | +   | 2007 11 18 | G96 | 0.4 | +   | 0.2 | − |
| 2004 08 25 | 704 | 0.9  | +   | 0.8        | −   | 2004 09 16 | 704 | 0.1  | + | 0.6        | +   | 2007 11 18 | G96 | 0.3 | +   | 0.2 | − |
| 2004 08 25 | 704 | 0.3  | +   | 0.0        | −   | 2004 09 17 | 113 | (1.1 | + | 1.6        | +   | 2007 11 18 | G96 | 0.3 | +   | 0.3 | − |
| 2004 08 25 | 704 | (1.7 | −   | 0.1        | −)  | 2004 09 17 | 113 | 0.8  | − | 0.0        | −   | 2007 11 18 | G96 | 0.2 | +   | 0.3 | − |
| 2004 08 25 | 704 | 0.0  | 1.0 | −          | −   | 2004 09 23 | 704 | 0.1  | + | 0.0        | −   | 2007 11 21 | G96 | 0.5 | +   | 0.4 | − |
| 2004 08 25 | 704 | 0.0  | 0.3 | −          | −   | 2004 09 23 | 704 | 0.2  | − | 0.2        | −   | 2007 11 21 | 703 | 1.1 | −   | 1.1 | + |
| 2004 09 06 | 704 | 0.2  | −   | 0.1        | +   | 2004 09 23 | 704 | 1.3  | + | 0.2        | +   | 2007 11 21 | G96 | 0.0 | 0.3 | −   | − |
| 2004 09 06 | 704 | 0.1  | +   | 0.5        | +   | 2004 09 23 | 704 | 0.1  | + | 0.4        | −   | 2007 11 21 | 703 | 0.1 | −   | 0.4 | + |
| 2004 09 06 | 704 | 0.0  | 0.0 | 0.0        | −   | 2007 10 20 | D29 | 0.1  | + | 0.8        | −   | 2007 11 21 | G96 | 0.1 | +   | 0.1 | − |
| 2004 09 08 | 704 | 0.2  | +   | 0.3        | +   | 2007 10 20 | D29 | 0.1  | + | 0.3        | −   | 2007 11 21 | 703 | 0.3 | +   | 1.0 | + |
| 2004 09 08 | 704 | 0.2  | −   | 0.2        | +   | 2007 10 20 | D29 | 0.5  | + | 0.1        | +   | 2007 11 21 | G96 | 0.2 | +   | 0.4 | − |
| 2004 09 08 | 704 | 0.0  | 0.4 | −          | −   | 2007 10 20 | D29 | 0.2  | − | 0.1        | +   | 2007 11 21 | 703 | 0.7 | +   | 0.5 | − |
| 2004 09 08 | 704 | 0.5  | −   | 0.1        | +   | 2007 11 06 | 691 | 0.3  | − | 0.1        | −   |            |     |     |     |     |   |

2004 RE<sub>2</sub> = 2007 WN<sub>4</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 140.77093  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.37174739 | $\omega$ | 7.70367   | −0.11362477 |          | +0.93893598 |          |
| <i>a</i> | 1.9155968  | $\Omega$ | 256.20414 | −0.92844459 |          | −0.21671777 |          |
| <i>e</i> | 0.0506597  | <i>i</i> | 19.53838  | −0.35366658 |          | +0.26726884 |          |
| <i>P</i> | 2.65       | <i>H</i> | 16.8      | <i>G</i>    | 0.15     | <i>U</i>    | 3        |

Residuals in seconds of arc

|            |     |     |     |     |   |            |     |     |     |     |   |            |     |     |   |     |   |
|------------|-----|-----|-----|-----|---|------------|-----|-----|-----|-----|---|------------|-----|-----|---|-----|---|
| 1999 12 13 | 703 | 0.7 | +   | 0.5 | − | 2004 09 17 | 704 | 0.4 | −   | 0.1 | − | 2007 11 21 | G96 | 0.1 | + | 0.2 | − |
| 1999 12 13 | 703 | 1.7 | −   | 0.1 | − | 2004 09 17 | 704 | 0.1 | −   | 0.3 | − | 2007 11 21 | G96 | 0.2 | − | 0.2 | − |
| 1999 12 13 | 703 | 1.2 | +   | 0.8 | + | 2004 09 17 | 704 | 0.7 | +   | 0.2 | − | 2007 11 21 | G96 | 0.2 | − | 0.1 | − |
| 1999 12 13 | 703 | 0.3 | −   | 0.1 | + | 2007 11 20 | G96 | 0.0 | 0.1 | +   | − | 2007 11 21 | G96 | 0.4 | − | 0.3 | − |
| 2004 09 06 | 704 | 1.1 | −   | 0.7 | + | 2007 11 20 | G96 | 0.0 | 0.2 | +   | − | 2007 11 21 | G96 | 0.2 | − | 0.2 | − |
| 2004 09 06 | 704 | 0.1 | +   | 0.0 | − | 2007 11 20 | G96 | 0.1 | −   | 0.2 | + | 2007 11 21 | G96 | 0.4 | − | 0.2 | − |
| 2004 09 06 | 704 | 0.2 | +   | 1.4 | + | 2007 11 20 | G96 | 0.1 | −   | 0.2 | + | 2007 11 21 | G96 | 0.1 | + | 0.1 | − |
| 2004 09 06 | 704 | 0.6 | +   | 0.0 | − | 2007 11 20 | 673 | 0.6 | −   | 0.5 | + | 2007 12 04 | G96 | 0.3 | − | 0.4 | − |
| 2004 09 07 | 704 | 0.8 | +   | 0.9 | − | 2007 11 20 | 673 | 0.7 | −   | 0.4 | − | 2007 12 04 | G96 | 0.1 | − | 0.3 | − |
| 2004 09 07 | 704 | 0.8 | −   | 0.8 | + | 2007 11 20 | 673 | 0.1 | −   | 0.3 | − | 2007 12 04 | G96 | 0.4 | − | 0.3 | − |
| 2004 09 07 | 704 | 0.7 | −   | 0.8 | − | 2007 11 20 | G96 | 0.2 | −   | 0.1 | − | 2007 12 04 | G96 | 0.2 | − | 0.4 | − |
| 2004 09 07 | 704 | 0.9 | −   | 0.0 | − | 2007 11 20 | G96 | 0.2 | −   | 0.2 | − | 2007 12 12 | 704 | 1.5 | + | 0.2 | + |
| 2004 09 07 | 704 | 0.5 | −   | 0.0 | − | 2007 11 20 | G96 | 0.3 | −   | 0.1 | − | 2007 12 12 | 704 | 0.6 | + | 0.1 | − |
| 2004 09 16 | 704 | 0.0 | 0.5 | −   | − | 2007 11 20 | G96 | 0.1 | +   | 0.1 | − | 2007 12 12 | 704 | 0.8 | + | 1.3 | + |
| 2004 09 16 | 704 | 0.0 | 0.1 | +   | − | 2007 11 21 | 703 | 0.2 | −   | 0.6 | + | 2007 12 12 | 704 | 1.3 | + | 0.4 | + |
| 2004 09 16 | 704 | 1.0 | +   | 0.2 | + | 2007 11 21 | 703 | 0.3 | +   | 1.1 | + | 2007 12 13 | 704 | 0.6 | + | 0.3 | − |
| 2004 09 16 | 704 | 1.1 | +   | 0.6 | + | 2007 11 21 | 703 | 0.2 | −   | 0.1 | + | 2007 12 13 | 704 | 0.9 | + | 0.0 | − |
| 2004 09 16 | 704 | 0.9 | +   | 0.3 | + | 2007 11 21 | 703 | 0.7 | −   | 0.2 | − | 2007 12 13 | 704 | 0.1 | + | 0.4 | − |
| 2004 09 17 | 704 | 0.6 | −   | 1.4 | − | 2007 11 21 | G96 | 0.3 | −   | 0.1 | − |            |     |     |   |     |   |

2004 RQ<sub>80</sub> = 1960 SU

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MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 303.87042  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.26856043 | $\omega$ | 356.21657 | +0.99752057 |          | +0.07037371 |          |
| <i>a</i> | 2.3792571  | $\Omega$ | 359.74629 | −0.06116573 |          | +0.86336931 |          |
| <i>e</i> | 0.2319953  | <i>i</i> | 6.61713   | −0.03480622 |          | +0.49964085 |          |
| <i>P</i> | 3.67       | <i>H</i> | 18.3      | <i>G</i>    | 0.15     | <i>U</i>    | 3        |

Residuals in seconds of arc

|            |     |     |     |     |   |            |     |     |     |     |   |            |     |     |     |     |   |
|------------|-----|-----|-----|-----|---|------------|-----|-----|-----|-----|---|------------|-----|-----|-----|-----|---|
| 1960 09 24 | 675 | 0.4 | −   | 0.2 | + | 2004 09 10 | 691 | 0.2 | +   | 0.0 | − | 2004 09 16 | 691 | 0.1 | −   | 0.0 | − |
| 1960 09 24 | 675 | 0.0 | 0.4 | −   | − | 2004 09 10 | 691 | 0.4 | +   | 0.1 | − | 2004 09 16 | 691 | 0.0 | 0.1 | +   | − |
| 1960 09 26 | 675 | 0.2 | +   | 0.4 | − | 2004 09 14 | 699 | 0.7 | +   | 0.2 | + | 2004 09 17 | 704 | 0.5 | +   | 1.0 | + |
| 1960 09 26 | 675 | 0.3 | +   | 0.4 | − | 2004 09 14 | 699 | 0.6 | −   | 0.7 | − | 2004 09 17 | 704 | 0.0 | 1.0 | −   | − |
| 2004 09 08 | 704 | 1.0 | −   | 0.4 | − | 2004 09 14 | 699 | 0.5 | −   | 0.2 | + | 2004 09 17 | 704 | 0.0 | 0.9 | −   | − |
| 2004 09 08 | 704 | 0.7 | −   | 0.4 | + | 2004 09 14 | 699 | 0.2 | −   | 0.5 | + | 2004 09 17 | 704 | 0.3 | +   | 1.1 | − |
| 2004 09 08 | 704 | 0.1 | −   | 0.1 | − | 2004 09 15 | 691 | 0.0 | 0.1 | +   | − | 2004 10 12 | 691 | 0.1 | −   | 0.1 | − |
| 2004 09 08 | 704 | 0.5 | +   | 0.2 | + | 2004 09 15 | 691 | 0.1 | −   | 0.1 | + | 2004 10 12 | 691 | 0.1 | −   | 0.0 | − |
| 2004 09 08 | 704 | 0.2 | −   | 0.0 | − | 2004 09 15 | 691 | 0.1 | −   | 0.1 | + | 2004 10 12 | 691 | 0.2 | +   | 0.1 | + |
| 2004 09 10 | 691 | 0.3 | +   | 0.0 | − | 2004 09 16 | 691 | 0.2 | −   | 0.1 | + |            |     |     |     |     |   |

2004 RA<sub>114</sub>

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MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 36.32165   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.37596966 | $\omega$ | 83.15455  | +0.76328983 |          | −0.60757197 |          |
| <i>a</i> | 1.9012279  | $\Omega$ | 313.96497 | +0.40299372 |          | +0.71349061 |          |
| <i>e</i> | 0.1317071  | <i>i</i> | 17.76813  | +0.50496010 |          | +0.34898059 |          |
| <i>P</i> | 2.62       | <i>H</i> | 16.6      | <i>G</i>    | 0.15     | <i>U</i>    | 3        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 08 29 | 699 | 0.6+  | 0.7+  | 2004 10 04 | 704 | 0.1+ | 0.3+ | 2004 11 09 | 703 | 0.3- | 0.5+ |
| 2004 08 29 | 699 | (0.7- | 2.3+) | 2004 10 04 | 704 | 0.3+ | 0.4- | 2004 11 09 | 703 | 0.5- | 0.1+ |
| 2004 08 29 | 699 | 0.6+  | 0.1-  | 2004 10 04 | 704 | 0.2- | 0.1+ | 2004 11 10 | 704 | 0.2- | 0.9- |
| 2004 08 29 | 699 | 0.2-  | 0.8-  | 2004 10 04 | 704 | 0.2+ | 0.5- | 2004 11 10 | 704 | 0.1- | 0.3- |
| 2004 09 07 | 644 | 0.1-  | 0.0   | 2004 10 07 | 644 | 0.3- | 0.2- | 2004 11 10 | 704 | 0.7+ | 1.1+ |
| 2004 09 07 | 644 | 0.1-  | 0.1+  | 2004 10 07 | 644 | 0.2- | 0.3- | 2004 11 10 | 704 | 0.4+ | 0.4- |
| 2004 09 07 | 644 | 0.0   | 0.1-  | 2004 10 07 | 644 | 0.2- | 0.3- | 2004 11 10 | 704 | 0.2+ | 0.7- |
| 2004 09 12 | 704 | 0.3-  | 0.1-  | 2004 10 08 | 704 | 0.0  | 0.1+ | 2004 12 02 | 703 | 0.3- | 0.2+ |
| 2004 09 12 | 704 | 0.4-  | 0.2-  | 2004 10 08 | 704 | 0.8- | 0.2+ | 2004 12 02 | 703 | 0.3- | 0.6- |
| 2004 09 12 | 704 | 0.2-  | 0.8-  | 2004 10 08 | 704 | 0.4- | 0.3+ | 2004 12 02 | 703 | 1.2- | 0.6- |
| 2004 09 12 | 704 | 0.4-  | 0.3-  | 2004 10 08 | 704 | 0.5- | 0.3+ | 2004 12 02 | 703 | 0.7+ | 0.2- |
| 2004 09 12 | 704 | 0.6-  | 0.1-  | 2004 10 08 | 704 | 0.2- | 0.4+ | 2004 12 16 | 704 | 0.1+ | 0.3+ |
| 2004 09 15 | 704 | 0.4+  | 0.2+  | 2004 10 13 | 699 | 0.1+ | 0.2+ | 2004 12 16 | 704 | 0.4+ | 0.1+ |
| 2004 09 15 | 704 | 0.7+  | 0.3-  | 2004 10 13 | 699 | 0.2+ | 0.1- | 2004 12 16 | 704 | 0.8+ | 0.0  |
| 2004 09 15 | 704 | 0.8+  | 0.7-  | 2004 10 13 | 699 | 0.5- | 0.3- | 2004 12 16 | 704 | 0.8+ | 0.6+ |
| 2004 09 15 | 704 | 0.0   | 0.8+  | 2004 10 13 | 699 | 0.0  | 0.2- | 2004 12 16 | 704 | 0.6- | 0.5+ |
| 2004 09 15 | 704 | 0.0   | 0.5-  | 2004 10 14 | 644 | 0.2- | 0.2- | 2007 11 20 | 703 | 0.5- | 0.8- |
| 2004 09 20 | 106 | 0.7+  | 0.5-  | 2004 10 14 | 644 | 0.3- | 0.2- | 2007 11 20 | 703 | 0.7- | 0.8- |
| 2004 09 20 | 106 | 0.2-  | 0.8-  | 2004 10 14 | 644 | 0.2- | 0.3- | 2007 11 20 | 703 | 0.4- | 0.4- |
| 2004 09 20 | 106 | 0.7-  | 0.2-  | 2004 11 06 | 703 | 0.3+ | 0.8- | 2007 11 20 | 703 | 0.4- | 0.2- |
| 2004 09 23 | 704 | 0.5+  | 1.6+  | 2004 11 06 | 703 | 0.0  | 0.1- | 2007 12 03 | 704 | 0.1- | 0.7+ |
| 2004 09 23 | 704 | 0.4+  | 1.5+  | 2004 11 06 | 703 | 0.3+ | 0.3- | 2007 12 03 | 704 | 0.7+ | 1.0+ |
| 2004 09 23 | 704 | 0.5+  | 1.3+  | 2004 11 06 | 703 | 0.9- | 0.2+ | 2007 12 03 | 704 | 1.1+ | 0.2+ |
| 2004 09 23 | 704 | 0.6+  | 1.4+  | 2004 11 09 | 703 | 0.3+ | 0.2+ |            |     |      |      |
| 2004 10 04 | 704 | 0.2+  | 0.2+  | 2004 11 09 | 703 | 0.2- | 0.4- |            |     |      |      |

## M.P.O. 129706

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 08 13 | 807 | 0.2− | 0.3− | 2004 10 12 | 691 | 0.0  | 0.2+ | 2006 02 24 | G96 | 0.6− | 0.1+ |
| 2004 08 13 | 807 | 0.3− | 0.4− | 2005 11 26 | 691 | 0.2+ | 0.2− | 2006 02 24 | G96 | 0.3− | 0.3+ |
| 2004 09 13 | 691 | 0.0  | 0.1− | 2005 11 26 | 691 | 0.2+ | 0.2− | 2006 02 24 | G96 | 0.3− | 0.1− |
| 2004 09 13 | 691 | 0.1− | 0.1− | 2005 11 26 | 691 | 0.1+ | 0.2− | 2007 03 10 | 691 | 0.5+ | 0.5+ |
| 2004 09 13 | 691 | 0.2− | 0.2− | 2005 11 30 | 691 | 0.2− | 0.1+ | 2007 03 10 | 691 | 0.2+ | 0.2+ |
| 2004 09 17 | 704 | 0.3− | 0.5+ | 2005 11 30 | 691 | 0.2− | 0.4+ | 2007 03 10 | 691 | 0.2− | 0.5+ |
| 2004 09 17 | 704 | 0.9+ | 1.3+ | 2005 11 30 | 691 | 0.1+ | 0.2− |            |     |      |      |
| 2004 09 17 | 704 | 0.8− | 0.0  | 2005 12 08 | 691 | 0.1+ | 0.1− |            |     |      |      |

2004 SQ<sub>18</sub> = 2007 UF<sub>37</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 157.94313  | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.34962287 | $\omega$ | 41.56564  | −0.59397717 | +0.80128770 |          |   |
| <i>a</i> | 1.9955816  | $\Omega$ | 192.56552 | −0.79725428 | −0.59821004 |          |   |
| <i>e</i> | 0.0191303  | <i>i</i> | 19.21986  | −0.10759522 | +0.00909816 |          |   |
| <i>P</i> | 2.82       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 08 18 | 644 | 0.0  | 0.1+ | 2004 09 23 | 704 | 1.1+  | 1.2+  | 2007 10 12 | 703 | 1.4+  | 0.4−  |
| 2001 08 18 | 644 | 0.4+ | 0.2+ | 2004 09 23 | 704 | 0.4−  | 0.5−  | 2007 10 12 | 703 | (2.1+ | 1.7+) |
| 2001 08 18 | 644 | 0.2+ | 0.2+ | 2004 09 23 | 704 | 0.1+  | 0.2+  | 2007 10 19 | 703 | 0.2+  | 0.0   |
| 2004 09 18 | 704 | 0.1− | 0.1− | 2006 04 07 | G96 | 0.3+  | 0.4+  | 2007 10 19 | 703 | 0.6−  | 0.8+  |
| 2004 09 18 | 704 | 0.1+ | 0.6− | 2006 04 07 | G96 | 0.1−  | 0.3+  | 2007 10 19 | 703 | 0.8−  | 0.5+  |
| 2004 09 18 | 704 | 0.9+ | 0.0  | 2006 04 07 | G96 | 0.1−  | 0.4+  | 2007 10 19 | 703 | 0.2+  | 0.4+  |
| 2004 09 18 | 704 | 0.1+ | 0.5− | 2006 04 07 | G96 | 0.0   | 0.4+  | 2007 10 21 | G96 | 0.1−  | 0.2+  |
| 2004 09 18 | 704 | 0.7− | 0.1+ | 2007 10 07 | 703 | 0.7−  | 0.4−  | 2007 10 21 | G96 | 0.2+  | 0.2−  |
| 2004 09 21 | 704 | 0.7− | 0.6− | 2007 10 07 | 703 | (1.9− | 0.2+) | 2007 10 21 | G96 | 0.1−  | 0.3−  |
| 2004 09 21 | 704 | 0.8− | 0.5+ | 2007 10 07 | 703 | 0.7−  | 0.9−  | 2007 10 21 | G96 | 0.0   | 0.3+  |
| 2004 09 21 | 704 | 0.4− | 0.7+ | 2007 10 07 | 703 | (1.7− | 0.2+) | 2007 11 11 | 703 | 0.2−  | 0.9+  |
| 2004 09 23 | 704 | 0.4− | 0.7+ | 2007 10 12 | 703 | 0.0   | 0.5−  | 2007 11 11 | 703 | 1.0+  | 0.5+  |
| 2004 09 23 | 704 | 0.1− | 0.7− | 2007 10 12 | 703 | 1.2+  | 0.9+  | 2007 11 11 | 703 | 0.3−  | 0.9−  |

2004 SB<sub>20</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 228.89685  | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.76596327 | $\omega$ | 209.32780 | −0.53001796 | +0.80734053 |          |   |
| <i>a</i> | 1.1830345  | $\Omega$ | 30.96004  | −0.64604778 | −0.18630945 |          |   |
| <i>e</i> | 0.4131700  | <i>i</i> | 30.27923  | −0.54927518 | −0.55990182 |          |   |
| <i>P</i> | 1.29       | <i>H</i> | 18.5      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 09 21 | 704 | (1.7+ | 0.2+) | 2004 09 22 | G90 | 0.6−  | 0.2+  | 2004 10 18 | 704 | 0.3−  | 0.5+  |
| 2004 09 21 | 704 | 1.2+  | 0.5+  | 2004 09 23 | 704 | 0.2+  | 0.2+  | 2004 10 18 | 704 | 0.4−  | 1.3+  |
| 2004 09 21 | 704 | 1.0+  | 0.8+  | 2004 09 23 | 704 | 0.1−  | 0.9−  | 2004 10 19 | 704 | 0.4−  | 0.3−  |
| 2004 09 21 | 704 | 1.1+  | 0.3+  | 2004 09 23 | 704 | 0.4−  | 0.2−  | 2004 10 19 | 704 | 0.3+  | 0.9−  |
| 2004 09 22 | H06 | 0.2−  | 0.3−  | 2004 09 23 | 704 | 0.1+  | 0.5+  | 2004 10 19 | 704 | 0.1−  | 1.2+  |
| 2004 09 22 | H06 | 0.4+  | 0.6+  | 2004 09 23 | 704 | 0.2−  | 0.6+  | 2004 10 19 | 704 | 0.0   | 1.0+  |
| 2004 09 22 | H06 | 0.8+  | 0.7−  | 2004 09 24 | 704 | 0.0   | 0.8+  | 2004 10 19 | 704 | 0.2−  | 0.1+  |
| 2004 09 22 | 651 | 0.0   | 0.3+  | 2004 09 24 | 704 | 0.3+  | 0.4+  | 2004 11 04 | 691 | 0.0   | 0.3+  |
| 2004 09 22 | 651 | 0.2−  | 0.0   | 2004 09 24 | 704 | 0.4−  | 0.4+  | 2004 11 04 | 691 | 0.1+  | 0.3+  |
| 2004 09 22 | 651 | 0.5−  | 0.1+  | 2004 09 24 | 704 | 1.3−  | 0.0   | 2004 11 04 | 691 | 0.2+  | 0.2−  |
| 2004 09 22 | 704 | 0.6+  | 0.2−  | 2004 09 28 | 474 | 0.1−  | 0.2+  | 2004 11 04 | 448 | 0.6+  | 1.2−  |
| 2004 09 22 | 704 | 0.5+  | 0.3−  | 2004 09 28 | 474 | 0.1−  | 0.3−  | 2004 11 04 | 448 | 0.5+  | 1.4−  |
| 2004 09 22 | H36 | (3.5− | 0.1−) | 2004 10 06 | 704 | (1.7− | 2.1−) | 2004 11 04 | 448 | 0.1+  | 0.5−  |
| 2004 09 22 | 704 | 0.9+  | 0.7−  | 2004 10 06 | 704 | 0.9+  | 1.1−  | 2004 12 07 | 448 | (0.2− | 1.8+) |
| 2004 09 22 | H36 | (2.3+ | 0.7−) | 2004 10 06 | 704 | 0.4−  | 0.8−  | 2004 12 07 | 448 | 0.2+  | 1.3+  |
| 2004 09 22 | 704 | 0.2−  | 0.1+  | 2004 10 06 | 704 | 1.1−  | 0.8−  | 2004 12 07 | 448 | (2.9+ | 0.5+) |
| 2004 09 22 | H36 | 0.2−  | 0.7−  | 2004 10 06 | 704 | 0.4−  | 0.5−  | 2007 11 18 | 696 | 0.5+  | 0.1+  |
| 2004 09 22 | 673 | 0.9−  | 0.3+  | 2004 10 11 | 428 | (2.2+ | 0.6−) | 2007 11 18 | 696 | 0.5−  | 1.7−  |
| 2004 09 22 | 673 | 0.4−  | 0.3−  | 2004 10 11 | 428 | 1.4+  | 0.4−  | 2007 11 27 | H55 | 0.5−  | 0.2+  |
| 2004 09 22 | 673 | 0.0   | 0.0   | 2004 10 11 | 428 | 0.7−  | 0.9−  | 2007 11 27 | H55 | 1.1+  | 1.5+  |
| 2004 09 22 | 673 | 0.6−  | 0.1−  | 2004 10 11 | 084 | 0.8−  | 0.4−  | 2007 11 27 | H55 | 0.1−  | 0.2−  |
| 2004 09 22 | G90 | 0.5−  | 0.3+  | 2004 10 18 | 704 | 0.4−  | 0.7+  |            |     |       |       |
| 2004 09 22 | G90 | 0.2+  | 0.3+  | 2004 10 18 | 704 | 0.4+  | 0.0   |            |     |       |       |

## 2007 DEC. 24

2004 TW<sub>82</sub> = 2004 TK<sub>363</sub>Id. Minor Planet Center (d, *MPO* 77916)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 328.71209  | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.31152343 | $\omega$ | 54.00825  | +0.78086102 | −0.62463553 |          |   |
| <i>a</i> | 2.1551404  | $\Omega$ | 344.64015 | +0.56125998 | +0.70801746 |          |   |
| <i>e</i> | 0.1183198  | <i>i</i> | 2.01250   | +0.27430512 | +0.32945672 |          |   |
| <i>P</i> | 3.16       | <i>H</i> | 18.4      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 09 24 | 291 | 0.3− | 0.2− | 2004 10 09 | 691 | 0.0  | 0.1− | 2007 09 19 | G96 | 0.1+ | 0.2+ |
| 2004 09 24 | 291 | 0.0  | 0.2+ | 2004 10 13 | 691 | 0.2− | 0.0  | 2007 09 19 | G96 | 0.3− | 0.3+ |
| 2004 09 24 | 291 | 0.0  | 0.3+ | 2004 10 13 | 691 | 0.1+ | 0.1+ | 2007 09 19 | G96 | 0.2− | 0.3+ |
| 2004 10 05 | 691 | 0.0  | 0.2+ | 2004 10 13 | 691 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.1− |
| 2004 10 05 | 691 | 0.0  | 0.0  | 2004 11 04 | 691 | 0.2+ | 0.2− | 2007 10 08 | G96 | 0.7+ | 0.2− |
| 2004 10 05 | 691 | 0.0  | 0.0  | 2004 11 04 | 691 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.1+ | 0.6− |
| 2004 10 09 | 691 | 0.0  | 0.2+ | 2004 11 04 | 691 | 0.3+ | 0.0  | 2007 10 08 | G96 | 0.4− | 0.5− |
| 2004 10 09 | 691 | 0.1+ | 0.2+ | 2007 09 19 | G96 | 0.0  | 0.1+ |            |     |      |      |

2004 TC<sub>149</sub> = 2007 TL<sub>306</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 34.64265   | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.31799327 | $\omega$ | 79.10081  | +0.76338786 | +0.64503323 |          |   |
| <i>a</i> | 2.1258083  | $\Omega$ | 240.72150 | −0.60690830 | +0.69811420 |          |   |
| <i>e</i> | 0.2094011  | <i>i</i> | 2.24848   | −0.22113637 | +0.31075504 |          |   |
| <i>P</i> | 3.10       | <i>H</i> | 19.4      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 06 | 691 | 0.1+ | 0.6+ | 2004 10 14 | 691 | 0.0  | 0.5− | 2007 09 30 | 691 | 0.4− | 0.6+ |
| 2004 10 06 | 691 | 0.2+ | 0.1− | 2004 10 14 | 691 | 0.1− | 0.6− | 2007 10 08 | 691 | 0.4+ | 0.4+ |
| 2004 10 06 | 691 | 0.1+ | 0.3+ | 2007 08 23 | 691 | 0.0  | 0.3− | 2007 10 08 | 691 | 0.1+ | 0.6− |
| 2004 10 10 | 691 | 0.0  | 0.2+ | 2007 08 23 | 691 | 0.2+ | 0.2+ | 2007 10 08 | 691 | 0.5− | 0.3+ |
| 2004 10 10 | 691 | 0.2− | 0.2+ | 2007 08 23 | 691 | 0.1− | 0.5− | 2007 10 15 | 691 | 0.1+ | 0.2+ |
| 2004 10 10 | 691 | 0.1− | 0.0  | 2007 09 30 | 691 | 0.0  | 0.3− | 2007 10 15 | 691 | 0.0  | 0.0  |
| 2004 10 14 | 691 | 0.1+ | 0.5− | 2007 09 30 | 691 | 0.2+ | 0.2+ | 2007 10 15 | 691 | 0.3− | 0.2+ |

2004 TH<sub>177</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | Q           |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 12.97068   | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.31132017 | $\omega$ | 147.12137 | +0.93533286 | +0.35319037 |          |   |
| <i>a</i> | 2.1560784  | $\Omega$ | 192.24575 | −0.34167291 | +0.88705395 |          |   |
| <i>e</i> | 0.2012357  | <i>i</i> | 5.47135   | −0.09171728 | +0.29730766 |          |   |
| <i>P</i> | 3.17       | <i>H</i> | 18.4      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 06 07 | 691 | 0.0  | 0.3− | 2004 10 09 | 704 | 0.2− | 0.2+ | 2007 09 13 | 699 | 1.5− | 0.2− |
| 1994 06 07 | 691 | 0.4− | 0.1− | 2004 10 09 | 704 | 0.1+ | 0.1+ | 2007 09 13 | 699 | 0.9+ | 1.6+ |
| 1994 06 07 | 691 | 0.4+ | 0.3+ | 2004 10 09 | 704 | 0.4− | 0.3+ | 2007 09 14 | 691 | 0.1+ | 0.3− |
| 2004 09 10 | 691 | 0.1+ | 0.4− | 2004 10 10 | 691 | 0.3+ | 0.1− | 2007 09 14 | 691 | 0.1+ | 0.4− |
| 2004 09 10 | 691 | 0.1+ | 0.5− | 2004 10 10 | 691 | 0.2+ | 0.2− | 2007 09 14 | 691 | 0.0  | 0.3− |
| 2004 09 10 | 691 | 0.1+ | 0.5− | 2004 10 10 | 691 | 0.3− | 0.1+ | 2007 10 09 | G96 | 0.2+ | 0.5− |
| 2004 09 23 | 691 | 0.2− | 0.3− | 2004 10 14 | 691 | 0.1+ | 0.2− | 2007 10 09 | G96 | 0.2+ | 0.3− |
| 2004 09 23 | 691 | 0.1− | 0.3− | 2004 10 14 | 691 | 0.0  | 0.1− | 2007 10 09 | G96 | 0.0  | 0.7− |
| 2004 09 23 | 691 | 0.0  | 0.1− | 2004 10 14 | 691 | 0.1+ | 0.1− | 2007 10 09 | G96 | 0.5+ | 0.6− |
| 2004 10 04 | 291 | 0.2− | 0.1− | 2004 10 20 | 704 | 0.5− | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.2− |
| 2004 10 04 | 291 | 0.1− | 0.1− | 2004 10 20 | 704 | 0.1− | 0.7+ | 2007 10 18 | G96 | 0.0  | 0.8− |
| 2004 10 04 | 291 | 0.1+ | 0.1− | 2004 10 20 | 704 | 0.3+ | 0.6+ | 2007 10 18 | G96 | 0.3− | 0.6− |
| 2004 10 09 | 704 | 0.7− | 1.5+ | 2007 09 13 | 699 | 0.2− | 1.3+ | 2007 10 18 | G96 | 0.5+ | 0.7− |
| 2004 10 09 | 704 | 1.1+ | 0.2− | 2007 09 13 | 699 | 0.3− | 1.7+ |            |     |      |      |



2007 DEC. 24

M.P.O. 129707

**2004 TM<sub>208</sub> = 2007 VE<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.54637  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.28736742 | $\omega$ | 135.47128 | +0.95836013 | +0.28055392 |          |          |
| <i>a</i> | 2.2742823  | $\Omega$ | 208.36281 | -0.28314415 | +0.90936288 |          |          |
| <i>e</i> | 0.1367973  | <i>i</i> | 6.43573   | -0.03708434 | +0.30716225 |          |          |
| <i>P</i> | 3.43       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        | <i>U</i> | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 04 28 | 291 | 0.1+ | 0.8+ | 2004 10 10 | 691 | 0.0  | 0.2+ | 2007 11 03 | G96 | 0.3- | 0.2+ |
| 2003 04 28 | 291 | 0.1+ | 0.5+ | 2004 10 14 | 691 | 0.2+ | 0.3+ | 2007 11 03 | G96 | 0.3- | 0.3- |
| 2003 04 28 | 291 | 0.3+ | 0.9+ | 2004 10 14 | 691 | 0.5- | 0.3+ | 2007 11 03 | G96 | 0.5- | 0.2- |
| 2004 10 07 | 291 | 0.2+ | 0.2+ | 2004 10 14 | 691 | 0.3- | 0.6+ | 2007 11 04 | G96 | 0.3+ | 0.2- |
| 2004 10 07 | 291 | 0.2+ | 0.1- | 2007 08 04 | A77 | 0.4+ | 0.1+ | 2007 11 04 | G96 | 0.0  | 0.0  |
| 2004 10 07 | 291 | 0.3+ | 0.2+ | 2007 08 04 | A77 | 0.5+ | 0.5+ | 2007 11 04 | G96 | 0.1+ | 0.3+ |
| 2004 10 10 | 691 | 0.2- | 0.2+ | 2007 08 04 | A77 | 0.2- | 0.5- | 2007 11 04 | G96 | 0.3- | 0.2- |
| 2004 10 10 | 691 | 0.1- | 0.0  | 2007 11 03 | G96 | 0.1- | 0.1+ |            |     |      |      |

**2004 TY<sub>295</sub> = 2007 RK<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.67261   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.30673847 | $\omega$ | 0.12012   | +0.98488788 | +0.17316556 |          |          |
| <i>a</i> | 2.1774953  | $\Omega$ | 349.90637 | -0.15891628 | +0.89646378 |          |          |
| <i>e</i> | 0.1972625  | <i>i</i> | 1.01018   | -0.06885835 | +0.40788035 |          |          |
| <i>P</i> | 3.21       | <i>H</i> | 18.6      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 08 | 691 | 0.2+ | 0.3- | 2007 08 23 | 691 | 0.4- | 0.3- | 2007 10 07 | G96 | 0.5- | 0.1- |
| 1991 10 08 | 691 | 0.3- | 0.0  | 2007 08 23 | 691 | 0.0  | 0.0  | 2007 10 07 | G96 | 0.3- | 0.1- |
| 1991 10 08 | 691 | 0.4+ | 0.3- | 2007 08 23 | 691 | 0.2- | 0.1+ | 2007 10 07 | G96 | 0.2- | 0.1+ |
| 2004 10 10 | 691 | 0.3+ | 0.3- | 2007 09 10 | G96 | 0.1+ | 0.5+ | 2007 10 30 | G96 | 0.4+ | 0.4- |
| 2004 10 10 | 691 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.5+ | 0.7+ | 2007 10 30 | G96 | 0.1- | 0.5- |
| 2004 10 10 | 691 | 0.0  | 0.5- | 2007 09 10 | G96 | 0.3+ | 0.8+ | 2007 10 30 | G96 | 0.1+ | 0.6- |
| 2004 10 14 | 691 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.5+ | 0.6+ | 2007 10 30 | G96 | 0.6+ | 0.7- |
| 2004 10 14 | 691 | 0.2- | 0.4+ | 2007 09 12 | 699 | 0.5+ | 0.5+ | 2007 11 09 | G96 | 0.5+ | 0.2- |
| 2004 10 14 | 691 | 0.1- | 0.3+ | 2007 09 12 | 699 | 0.3- | 0.3+ | 2007 11 09 | G96 | 0.1- | 0.5- |
| 2004 10 23 | 691 | 0.1+ | 0.3+ | 2007 09 12 | 699 | 0.3+ | 0.5+ | 2007 11 09 | G96 | 0.0  | 0.0  |
| 2004 10 23 | 691 | 0.4- | 0.1+ | 2007 09 12 | 699 | 0.3- | 0.1- | 2007 11 09 | G96 | 0.2+ | 0.1- |
| 2004 10 23 | 691 | 0.1+ | 0.2+ | 2007 10 07 | G96 | 0.1- | 0.4- |            |     |      |      |

**2004 UV**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 201.58847  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.36620419 | $\omega$ | 329.03494 | -0.65272237 | +0.69397611 |          |          |
| <i>a</i> | 1.9348791  | $\Omega$ | 258.30886 | -0.61595606 | -0.71966256 |          |          |
| <i>e</i> | 0.0673958  | <i>i</i> | 18.07915  | -0.44108008 | -0.02197610 |          |          |
| <i>P</i> | 2.69       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 07 13 | 644 | 0.1-  | 0.2+  | 2004 10 21 | 704 | 0.6+  | 0.4-  | 2007 12 09 | 114 | 0.6-  | 1.2-  |
| 2001 07 13 | 644 | 0.1-  | 0.5+  | 2004 10 21 | 704 | 0.2+  | 0.3-  | 2007 12 09 | 114 | (1.6+ | 1.5+) |
| 2001 07 13 | 644 | 0.2-  | 0.4+  | 2006 05 29 | E12 | 0.3+  | 0.6+  | 2007 12 14 | J75 | 1.1+  | 0.3+  |
| 2004 10 07 | 644 | 0.1-  | 0.0   | 2006 05 29 | E12 | 0.2-  | 0.1+  | 2007 12 14 | J75 | 0.8+  | 0.4+  |
| 2004 10 07 | 644 | 0.3-  | 0.1+  | 2006 05 29 | E12 | 0.3-  | 0.6+  | 2007 12 14 | J75 | 0.2+  | 0.2+  |
| 2004 10 07 | 644 | 0.4-  | 0.2-  | 2006 06 16 | 644 | 0.0   | 0.1+  | 2007 12 15 | 691 | 0.1-  | 0.1-  |
| 2004 10 16 | 704 | (1.7- | 0.8-) | 2006 06 16 | 644 | 0.0   | 0.0   | 2007 12 15 | 691 | 0.3-  | 0.5+  |
| 2004 10 16 | 704 | 0.9-  | 0.2-  | 2006 06 16 | 644 | 0.3+  | 0.0   | 2007 12 15 | 691 | 0.1+  | 0.1+  |
| 2004 10 16 | 704 | 0.5-  | 0.2+  | 2007 12 09 | 114 | (2.4- | 1.8-) |            |     |       |       |
| 2004 10 21 | 704 | 1.4+  | 0.4+  | 2007 12 09 | 114 | 0.9+  | 0.4+  |            |     |       |       |

**2004 VY<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 274.01034  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.27466521 | $\omega$ | 280.38740 | +0.07291476 | -0.99722464 |          |          |
| <i>a</i> | 2.3438705  | $\Omega$ | 165.40577 | +0.93681819 | +0.06330630 |          |          |
| <i>e</i> | 0.2076004  | <i>i</i> | 3.42389   | +0.34213318 | +0.03918328 |          |          |
| <i>P</i> | 3.59       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 11 03 | 691 | 0.2+ | 0.0  | 2004 11 04 | 703 | 0.3- | 0.2+ | 2004 11 30 | 699 | 0.3+ | 0.2- |
| 2004 11 03 | 691 | 0.1+ | 0.1+ | 2004 11 04 | 699 | 1.2+ | 0.5+ | 2004 11 30 | 699 | 0.6+ | 0.3- |
| 2004 11 03 | 699 | 1.0- | 0.1- | 2004 11 04 | 699 | 0.0  | 0.6- | 2004 11 30 | 699 | 0.6- | 0.5+ |
| 2004 11 03 | 691 | 0.1+ | 0.2+ | 2004 11 12 | 703 | 0.6- | 0.0  | 2004 12 16 | 699 | 0.3+ | 0.2- |
| 2004 11 03 | 699 | 0.1- | 0.9+ | 2004 11 12 | 703 | 0.3+ | 0.4- | 2004 12 16 | 699 | 0.5+ | 0.2- |
| 2004 11 03 | 699 | 0.0  | 0.1+ | 2004 11 12 | 703 | 0.4- | 0.4- | 2004 12 16 | 699 | 0.1- | 0.6+ |
| 2004 11 03 | 699 | 0.2+ | 1.0+ | 2004 11 12 | 703 | 0.3+ | 0.5+ | 2004 12 16 | 699 | 1.1- | 0.1+ |
| 2004 11 03 | 644 | 0.0  | 0.0  | 2004 11 17 | E12 | 0.2- | 1.1- | 2007 09 11 | G96 | 0.1+ | 0.2+ |
| 2004 11 03 | 644 | 0.1+ | 0.3+ | 2004 11 17 | E12 | 0.0  | 0.1- | 2007 09 11 | G96 | 0.1+ | 0.5+ |
| 2004 11 03 | 644 | 0.1+ | 0.3+ | 2004 11 17 | E12 | 0.4+ | 0.0  | 2007 09 11 | G96 | 0.1- | 0.2+ |
| 2004 11 04 | 703 | 0.7- | 0.7- | 2004 11 17 | E12 | 0.3+ | 0.4- | 2007 09 11 | G96 | 0.2- | 0.1- |
| 2004 11 04 | 699 | 0.8+ | 0.8- | 2004 11 18 | E12 | 0.4+ | 0.1- | 2007 10 12 | G96 | 0.4- | 0.0  |
| 2004 11 04 | 703 | 0.3- | 0.4+ | 2004 11 18 | E12 | 0.2+ | 0.6- | 2007 10 12 | G96 | 0.3+ | 0.2- |
| 2004 11 04 | 699 | 0.7+ | 0.0  | 2004 11 18 | E12 | 0.2- | 0.1+ | 2007 10 12 | G96 | 0.0  | 0.4- |
| 2004 11 04 | 703 | 1.2- | 0.4+ | 2004 11 30 | 699 | 0.2- | 0.0  | 2007 10 12 | G96 | 0.3+ | 0.4- |

**2004 VG<sub>23</sub> = 2004 WA<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 259.47464  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.22513249 | $\omega$ | 203.15968 | +0.86674023 | -0.49874208 |          |          |
| <i>a</i> | 2.6761509  | $\Omega$ | 186.76170 | +0.46301201 | +0.80772553 |          |          |
| <i>e</i> | 0.2115042  | <i>i</i> | 2.04790   | +0.18542180 | +0.31438162 |          |          |
| <i>P</i> | 4.38       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 5        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1960 09 24 | 675 | 0.2+ | 0.0  | 2004 11 05 | 644 | 0.3+ | 0.1- | 2004 11 19 | 703 | 0.3- | 0.1+ |
| 1960 09 24 | 675 | 0.0  | 0.1+ | 2004 11 07 | 704 | 0.5+ | 0.2+ | 2004 11 19 | 703 | 0.6+ | 0.8- |
| 1960 09 26 | 675 | 0.1+ | 0.1- | 2004 11 07 | 704 | 0.1- | 0.1- | 2004 12 02 | 699 | 0.1+ | 0.9+ |
| 1960 09 26 | 675 | 0.0  | 0.3+ | 2004 11 07 | 704 | 1.2+ | 0.6- | 2004 12 02 | 699 | 0.6- | 0.3+ |
| 2004 10 15 | G96 | 0.1+ | 0.5- | 2004 11 17 | 599 | 0.5- | 0.2- | 2004 12 02 | 699 | 0.2+ | 0.2+ |
| 2004 10 15 | G96 | 0.1+ | 0.3- | 2004 11 17 | 599 | 0.6- | 0.1- | 2004 12 02 | 699 | 1.2+ | 0.8+ |
| 2004 10 15 | G96 | 0.0  | 0.5- | 2004 11 17 | 599 | 0.6- | 0.2- | 2004 12 20 | G96 | 0.1- | 0.4- |
| 2004 10 15 | G96 | 0.0  | 0.2- | 2004 11 17 | 599 | 0.4- | 0.2- | 2004 12 20 | G96 | 0.2+ | 0.6- |
| 2004 11 05 | 644 | 0.3- | 0.3+ | 2004 11 19 | 703 | 0.0  | 1.9+ | 2004 12 20 | G96 | 0.1+ | 0.3- |
| 2004 11 05 | 644 | 0.3- | 0.2+ | 2004 11 19 | 703 | 0.9- | 0.2+ | 2004 12 20 | G96 | 0.3+ | 0.3- |

**2004 VU<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 220.16329  |          | (2000.0) |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.28040458 | $\omega$ | 75.02875 | -0.87223475 | -0.48603463 |          |          |
| <i>a</i> | 2.3117772  | $\Omega$ | 75.86495 | +0.42432832 | -0.80749464 |          |          |
| <i>e</i> | 0.1317930  | <i>i</i> | 3.22541  | +0.24321187 | -0.33424951 |          |          |
| <i>P</i> | 3.52       | <i>H</i> | 18.2     | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 11 04 | 691 | 0.0  | 0.0  | 2004 11 20 | 691 | 0.0  | 0.0  | 2006 05 20 | 691 | 0.3- | 0.4+ |
| 2004 11 04 | 691 | 0.0  | 0.2+ | 2004 11 20 | 691 | 0.1- | 0.2+ | 2006 05 20 | 691 | 0.1- | 0.6+ |
| 2004 11 04 | 691 | 0.1- | 0.5- | 2004 11 20 | 691 | 0.1- | 0.1+ | 2006 06 01 | 691 | 0.1- | 0.1- |
| 2004 11 10 | 691 | 0.0  | 0.2+ | 2006 04 25 | G96 | 0.1+ | 0.7- | 2006 06 01 | 691 | 0.1- | 0.0  |
| 2004 11 10 | 691 | 0.2+ | 0.1+ | 2006 04 25 | G96 | 0.1- | 0.1+ | 2006 06 01 | 691 | 0.1- | 0.2- |
| 2004 11 10 | 691 | 0.0  | 0.3+ | 2006 04 25 | G96 | 0.3+ | 0.1+ | 2007 09 10 | 691 | 0.2+ | 0.0  |
| 2004 11 11 | 695 | 0.0  | 0.1+ | 2006 04 25 | G96 | 0.6+ | 0.3+ | 2007 09 10 | 691 | 0.2- | 0.2- |
| 2004 11 11 | 695 | 0.1- | 0.1+ | 2006 05 20 | 691 | 0.0  | 0.3+ | 2007 09 10 | 691 | 0.0  | 0.2+ |

**2004 VA<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 348.50288  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29008435 | $\omega$ 316.63915 | +0.98418343   | -0.13553885 |
| <i>a</i> | 2.2600594  | $\Omega$ 51.50217  | +0.17392365   | +0.86164922 |
| <i>e</i> | 0.1523462  | <i>i</i> 8.38089   | -0.03366812   | +0.48907038 |
| <i>P</i> | 3.40       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 15 | G96 | 0.1+ | 0.0  | 2004 11 17 | 599 | 0.3+ | 0.0  | 2004 12 11 | 703 | 0.8+ | 1.1- |
| 2004 10 15 | G96 | 0.1+ | 0.1- | 2004 11 17 | 599 | 0.0  | 0.1- | 2004 12 11 | 703 | 0.1- | 0.1- |
| 2004 10 15 | G96 | 0.1+ | 0.1- | 2004 11 17 | 599 | 0.2+ | 0.1- | 2004 12 11 | 703 | 0.4+ | 0.2+ |
| 2004 10 15 | G96 | 0.1+ | 0.1- | 2004 12 02 | 699 | 0.5+ | 0.5+ | 2004 12 11 | 703 | 0.3- | 0.0  |
| 2004 10 20 | 704 | 0.8- | 1.4+ | 2004 12 02 | 699 | 0.3- | 0.4+ | 2007 08 11 | E12 | 0.3+ | 0.3+ |
| 2004 10 20 | 704 | 0.8- | 0.9+ | 2004 12 02 | 699 | 0.1- | 0.5+ | 2007 08 11 | E12 | 0.2+ | 0.1- |
| 2004 10 20 | 704 | 0.5- | 1.3- | 2004 12 02 | 699 | 0.1- | 0.3+ | 2007 08 11 | E12 | 0.5+ | 0.1- |
| 2004 11 07 | 704 | 0.5+ | 0.4- | 2004 12 02 | 644 | 0.0  | 0.1- | 2007 08 11 | E12 | 0.4- | 1.4- |
| 2004 11 07 | 704 | 0.0  | 0.3- | 2004 12 02 | 644 | 0.1- | 0.1+ | 2007 09 17 | E12 | 0.3- | 0.1+ |
| 2004 11 07 | 704 | 0.0  | 0.2+ | 2004 12 02 | 704 | 0.1+ | 0.3+ | 2007 09 17 | E12 | 0.1- | 0.6+ |
| 2004 11 09 | 703 | 0.6+ | 0.1+ | 2004 12 02 | 704 | 0.3+ | 0.5- | 2007 09 17 | E12 | 0.0  | 0.5+ |
| 2004 11 09 | 703 | 0.0  | 0.0  | 2004 12 02 | 644 | 0.3- | 0.1- | 2007 09 17 | E12 | 0.1- | 0.1+ |
| 2004 11 09 | 703 | 0.6+ | 0.5- | 2004 12 02 | 704 | 0.2+ | 0.1- |            |     |      |      |
| 2004 11 09 | 703 | 1.0- | 0.0  | 2004 12 02 | 704 | 0.9- | 0.1- |            |     |      |      |

**2004 VE<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 247.18916  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27980025 | $\omega$ 256.07934 | -0.91771803   | -0.16740486 |
| <i>a</i> | 2.3151048  | $\Omega$ 273.34193 | +0.31125653   | -0.86648929 |
| <i>e</i> | 0.2466911  | <i>i</i> 21.15232  | -0.24680557   | -0.47028920 |
| <i>P</i> | 3.52       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 30 | 566 | 0.5- | 0.6- | 2004 11 18 | 704 | 0.4- | 0.2+ | 2004 12 14 | 703 | 0.3- | 0.1+ |
| 1997 12 30 | 566 | 0.8- | 0.3+ | 2004 11 18 | 704 | 0.2+ | 0.1- | 2004 12 14 | 703 | 0.8- | 0.0  |
| 1997 12 30 | 566 | 0.1+ | 0.0  | 2004 12 08 | 704 | 0.1- | 0.1+ | 2004 12 14 | 703 | 0.5- | 0.2+ |
| 1997 12 30 | 566 | 0.1+ | 1.0- | 2004 12 08 | 704 | 0.6+ | 0.8+ | 2005 01 13 | A16 | 1.0+ | 1.2- |
| 1997 12 30 | 566 | 0.4+ | 0.5- | 2004 12 08 | 704 | 0.4+ | 1.2+ | 2005 01 13 | A16 | 0.2- | 0.5- |
| 1997 12 30 | 566 | 0.5- | 0.8- | 2004 12 08 | 704 | 0.5+ | 1.0+ | 2007 10 21 | 703 | 0.5- | 0.5+ |
| 2003 09 22 | 644 | 0.1- | 0.5- | 2004 12 13 | 691 | 0.2+ | 0.4+ | 2007 10 21 | 703 | 1.1+ | 0.0  |
| 2003 09 22 | 644 | 0.1+ | 0.4- | 2004 12 13 | 691 | 0.3+ | 0.4+ | 2007 10 21 | 703 | 0.3+ | 0.4- |
| 2003 09 22 | 644 | 0.4- | 0.1- | 2004 12 13 | 691 | 0.1+ | 0.3+ | 2007 10 21 | 703 | 0.1- | 1.2- |
| 2004 11 13 | 703 | 0.5+ | 1.1+ | 2004 12 14 | 704 | 1.0- | 0.6- | 2007 11 04 | 703 | 0.4- | 0.2+ |
| 2004 11 13 | 703 | 0.2+ | 0.3- | 2004 12 14 | 704 | 0.7- | 0.4- | 2007 11 04 | 703 | 0.8+ | 0.6- |
| 2004 11 13 | 703 | 0.2+ | 0.2- | 2004 12 14 | 704 | 0.1+ | 0.4- | 2007 11 04 | 703 | 0.0  | 0.7+ |
| 2004 11 13 | 703 | 0.2- | 0.3+ | 2004 12 14 | 704 | 1.4- | 1.2- | 2007 11 04 | 703 | 0.3+ | 0.3+ |
| 2004 11 18 | 704 | 1.3+ | 0.9- | 2004 12 14 | 704 | 0.2+ | 0.4- |            |     |      |      |
| 2004 11 18 | 704 | 0.3- | 0.1+ | 2004 12 14 | 703 | 0.2- | 0.0  |            |     |      |      |

**2004 XL<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 309.86811  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26964969 | $\omega$ 104.01790 | +0.73421127   | -0.67798434 |
| <i>a</i> | 2.3728453  | $\Omega$ 298.68211 | +0.60616301   | +0.67827445 |
| <i>e</i> | 0.1314783  | <i>i</i> 2.32904   | +0.30577807   | +0.28333902 |
| <i>P</i> | 3.66       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 22 | 691 | 0.2+ | 0.3- | 2004 12 02 | 703 | 0.9- | 0.2- | 2004 12 16 | 704 | 0.2- | 0.3- |
| 2000 09 22 | 691 | 0.0  | 0.4- | 2004 12 08 | 704 | 0.4+ | 0.2- | 2004 12 16 | 704 | 0.2+ | 0.5- |
| 2000 09 22 | 691 | 0.1+ | 0.1- | 2004 12 08 | 704 | 1.1+ | 0.4+ | 2004 12 16 | 704 | 0.1+ | 0.4+ |
| 2002 02 20 | 291 | 0.0  | 0.2+ | 2004 12 08 | 704 | 1.6+ | 0.4+ | 2004 12 16 | 704 | 0.5- | 0.0  |
| 2002 02 20 | 291 | 0.3+ | 0.3+ | 2004 12 10 | 599 | 0.0  | 0.1+ | 2007 08 11 | 699 | 0.4- | 0.5+ |
| 2002 02 20 | 291 | 0.1+ | 0.4+ | 2004 12 10 | 599 | 0.0  | 0.0  | 2007 08 11 | 699 | 0.4+ | 0.9+ |
| 2004 11 20 | 691 | 0.3+ | 0.1+ | 2004 12 10 | 599 | 0.5+ | 0.5+ | 2007 08 11 | 699 | 1.4- | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 11 20 | 691 | 0.0  | 0.2+ | 2004 12 11 | 599 | 0.1- | 0.2+ | 2007 08 11 | 699 | 1.4+ | 0.4- |
| 2004 11 20 | 691 | 0.3+ | 0.1+ | 2004 12 14 | 704 | 0.8- | 0.9+ | 2007 10 12 | G96 | 0.0  | 0.2+ |
| 2004 12 02 | 703 | 0.2+ | 1.0- | 2004 12 14 | 704 | 0.5- | 0.6+ | 2007 10 12 | G96 | 0.4- | 0.1+ |
| 2004 12 02 | 703 | 0.8- | 0.1- | 2004 12 14 | 704 | 0.4+ | 0.0  | 2007 10 12 | G96 | 0.6- | 0.1+ |
| 2004 12 02 | 703 | 1.1- | 0.8- | 2004 12 14 | 704 | 0.2- | 0.2+ | 2007 10 12 | G96 | 0.1+ | 0.1+ |

**2004 XK<sub>28</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 301.52365  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.29125941 | $\omega$ 36.82916 | -0.22021062   | -0.97229354 |
| <i>a</i> | 2.2539766  | $\Omega$ 66.01104 | +0.87324259   | -0.23233209 |
| <i>e</i> | 0.2163507  | <i>i</i> 4.92513  | +0.43468915   | -0.02582787 |
| <i>P</i> | 3.38       | <i>H</i> 17.9     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 03 | 691 | 0.0  | 0.8- | 2004 12 15 | 691 | 0.2- | 0.1+ | 2005 02 03 | 704 | 0.1+ | 0.3+ |
| 1997 11 03 | 691 | 0.1- | 0.1- | 2004 12 15 | 691 | 0.2- | 0.0  | 2005 02 03 | 704 | 0.2+ | 0.4- |
| 1997 11 03 | 691 | 0.6+ | 0.3- | 2004 12 19 | 691 | 0.0  | 0.1+ | 2005 02 03 | 704 | 0.1+ | 0.3- |
| 2004 12 10 | 699 | 0.9+ | 0.1+ | 2004 12 19 | 691 | 0.0  | 0.1+ | 2005 02 04 | G96 | 0.0  | 0.0  |
| 2004 12 10 | 699 | 0.3- | 0.1- | 2004 12 19 | 691 | 0.2- | 0.1+ | 2005 02 04 | G96 | 0.1+ | 0.1+ |
| 2004 12 10 | 699 | 0.1+ | 0.1+ | 2005 01 07 | 704 | 0.3+ | 0.1- | 2005 02 04 | G96 | 0.1+ | 0.1+ |
| 2004 12 10 | 699 | 0.3+ | 1.1- | 2005 01 07 | 704 | 0.1- | 0.6- | 2005 02 04 | G96 | 0.0  | 0.1+ |
| 2004 12 11 | 691 | 0.3- | 0.3+ | 2005 01 07 | 704 | 0.2- | 0.3- | 2007 09 14 | 691 | 0.4- | 0.5+ |
| 2004 12 11 | 691 | 0.2- | 0.2+ | 2005 01 07 | 704 | 0.1- | 0.2- | 2007 09 14 | 691 | 0.0  | 0.4+ |
| 2004 12 11 | 691 | 0.3- | 0.3+ | 2005 01 16 | 704 | 0.0  | 0.3+ | 2007 09 14 | 691 | 0.3- | 0.4+ |
| 2004 12 15 | 704 | 1.0+ | 1.5+ | 2005 01 16 | 704 | 0.5- | 0.5+ | 2007 10 21 | G96 | 0.0  | 0.2- |
| 2004 12 15 | 704 | 0.6- | 0.3+ | 2005 01 16 | 704 | 0.5+ | 0.0  | 2007 10 21 | G96 | 0.0  | 0.3- |
| 2004 12 15 | 704 | 0.1+ | 0.1+ | 2005 02 03 | 704 | 0.9- | 0.1+ | 2007 10 21 | G96 | 0.0  | 0.4- |
| 2004 12 15 | 691 | 0.0  | 0.1- | 2005 02 03 | 704 | 0.4+ | 0.8- | 2007 10 21 | G96 | 0.3+ | 0.4+ |

**2004 XY<sub>36</sub> = 2007 TP<sub>376</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.47127   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29992457 | $\omega$ 271.96562 | +0.97905035   | +0.16981536 |
| <i>a</i> | 2.2103515  | $\Omega$ 78.27019  | -0.10874995   | +0.90258364 |
| <i>e</i> | 0.1507412  | <i>i</i> 6.58916   | -0.17214491   | +0.39560777 |
| <i>P</i> | 3.29       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 11 | 599 | 0.2- | 0.1+ | 2004 12 16 | 701 | 0.1- | 0.6- | 2007 10 17 | 699 | 0.7+ | 0.4- |
| 2004 12 11 | 599 | 0.2- | 0.2+ | 2007 10 08 | 699 | 0.8- | 1.0+ | 2007 10 17 | 699 | 0.2+ | 0.0  |
| 2004 12 11 | 599 | 0.0  | 0.1+ | 2007 10 08 | 699 | 1.3+ | 0.9+ | 2007 10 19 | 703 | 0.1+ | 0.5+ |
| 2004 12 11 | 599 | 0.4- | 0.4+ | 2007 10 08 | 699 | 0.0  | 0.8- | 2007 10 19 | 703 | 0.5- | 0.6- |
| 2004 12 12 | 599 | 0.3- | 0.2+ | 2007 10 08 | 699 | 0.9- | 0.9- | 2007 10 19 | 703 | 0.3+ | 0.6+ |
| 2004 12 12 | 599 | 0.1+ | 0.2+ | 2007 10 10 | 703 | 0.3- | 0.3- | 2007 10 19 | 703 | 0.5- | 0.0  |
| 2004 12 12 | 599 | 0.1- | 0.3+ | 2007 10 10 | 703 | 0.1- | 0.4- | 2007 10 31 | 703 | 1.1- | 0.9+ |
| 2004 12 15 | 701 | 0.1+ | 0.1+ | 2007 10 10 | 703 | 0.3- | 0.1+ | 2007 10 31 | 703 | 0.4+ | 0.4- |
| 2004 12 15 | 701 | 0.8+ | 0.4- | 2007 10 10 | 703 | 0.1- | 0.1+ | 2007 10 31 | 703 | 0.3+ | 0.3- |
| 2004 12 16 | 701 | 0.0  | 0.3- | 2007 10 17 | 699 | 0.7+ | 0.1- | 2007 10 31 | 703 | 0.7+ | 0.6- |
| 2004 12 16 | 701 | 0.2+ | 0.2- | 2007 10 17 | 699 | 0.1+ | 0.6+ |            |     |      |      |

**2004 XU<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 288.18247  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26538200 | $\omega$ 94.09903  | -0.00564716   | -0.99996936 |
| <i>a</i> | 2.3982166  | $\Omega$ 356.21180 | +0.88183549   | -0.00242370 |
| <i>e</i> | 0.0868212  | <i>i</i> 4.70641   | +0.47152335   | -0.00744328 |
| <i>P</i> | 3.71       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 12 09 | 703 | 0.6+ | 0.3+ | 2004 12 15 | 704 | 0.5+ | 0.2- | 2005 02 04 | G96 | 0.4-  | 0.7-  |
| 2004 12 09 | 703 | 1.0- | 0.2+ | 2004 12 15 | 704 | 1.0+ | 0.0  | 2007 09 13 | 699 | (0.4+ | 2.5-) |
| 2004 12 09 | 703 | 0.5- | 0.8- | 2005 01 06 | 703 | 0.4+ | 0.1- | 2007 09 13 | 699 | 0.6+  | 1.3+  |
| 2004 12 09 | 703 | 0.8- | 0.8+ | 2005 01 06 | 703 | 0.3- | 0.4- | 2007 09 13 | 699 | 0.6-  | 0.3+  |
| 2004 12 14 | 599 | 0.2+ | 0.0  | 2005 01 06 | 703 | 0.8- | 0.0  | 2007 09 13 | 699 | 0.2-  | 0.6-  |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 14 | 599 | 0.1+ | 0.2+ | 2005 01 06 | 703 | 0.1- | 0.9- | 2007 10 10 | G96 | 0.1- | 0.2- |
| 2004 12 14 | 599 | 0.1+ | 0.0  | 2005 01 19 | 704 | 0.5+ | 0.9+ | 2007 10 10 | G96 | 0.3- | 0.3- |
| 2004 12 14 | 599 | 0.5+ | 0.0  | 2005 01 19 | 704 | 0.8+ | 0.3- | 2007 10 10 | G96 | 0.1- | 0.1- |
| 2004 12 15 | 599 | 0.1- | 0.3+ | 2005 01 19 | 704 | 0.4+ | 0.9+ | 2007 10 10 | G96 | 0.5- | 0.2- |
| 2004 12 15 | 599 | 0.1- | 0.1- | 2005 01 19 | 704 | 1.6- | 0.7+ | 2007 10 20 | G96 | 0.5+ | 0.2+ |
| 2004 12 15 | 599 | 0.1+ | 0.0  | 2005 02 04 | G96 | 0.2+ | 0.1- | 2007 10 20 | G96 | 0.2+ | 0.4- |
| 2004 12 15 | 599 | 0.2- | 0.1- | 2005 02 04 | G96 | 0.3- | 0.2- | 2007 10 20 | G96 | 0.1+ | 0.1- |
| 2004 12 15 | 704 | 1.1+ | 0.3- | 2005 02 04 | G96 | 0.2- | 0.1- | 2007 10 20 | G96 | 0.4+ | 0.0  |

2004 XH<sub>52</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.72511    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29955717 | $\omega$ | 290.38322 | +0.88769523   | -0.44407213 |
| <i>a</i> | 2.2121585  | $\Omega$ | 96.14725  | +0.45474272   | +0.80417494 |
| <i>e</i> | 0.1402179  | <i>i</i> | 7.02757   | +0.07215423   | +0.39509824 |
| <i>P</i> | 3.29       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 23 | 644 | 0.1+ | 0.8+ | 2004 12 19 | 691 | 0.1+ | 0.2- | 2007 10 30 | 703 | 0.4- | 0.1- |
| 2002 02 23 | 644 | 0.2+ | 0.7+ | 2005 01 15 | 704 | 0.2- | 0.3- | 2007 10 30 | 703 | 0.6- | 0.3+ |
| 2002 02 23 | 644 | 0.1- | 0.3+ | 2005 01 15 | 704 | 0.5- | 0.2- | 2007 10 30 | 703 | 0.9- | 0.2- |
| 2004 12 08 | 704 | 0.5+ | 0.6- | 2005 01 15 | 704 | 0.1+ | 1.4+ | 2007 10 30 | 703 | 0.1- | 0.8+ |
| 2004 12 08 | 704 | 0.4- | 0.4- | 2005 01 17 | 704 | 0.8- | 0.2+ | 2007 11 05 | 703 | 0.5+ | 0.3- |
| 2004 12 08 | 704 | 0.1+ | 0.7- | 2005 01 17 | 704 | 0.4- | 1.0+ | 2007 11 05 | 703 | 0.0  | 0.3+ |
| 2004 12 14 | 704 | 0.3- | 1.1+ | 2005 01 17 | 704 | 0.8+ | 0.1- | 2007 11 05 | 703 | 1.1- | 0.1+ |
| 2004 12 14 | 704 | 0.2- | 0.3+ | 2005 01 17 | 704 | 0.2+ | 1.1- | 2007 11 05 | 703 | 0.6- | 0.1+ |
| 2004 12 14 | 704 | 0.7- | 0.4+ | 2007 10 10 | 703 | 0.2+ | 0.3+ | 2007 11 18 | 291 | 0.2- | 0.0  |
| 2004 12 14 | 691 | 0.1+ | 0.2- | 2007 10 10 | 703 | 0.2- | 0.0  | 2007 11 18 | 291 | 0.1- | 0.1- |
| 2004 12 14 | 704 | 0.1- | 1.0+ | 2007 10 10 | 703 | 0.6+ | 0.8+ | 2007 11 18 | 291 | 0.2- | 0.2- |
| 2004 12 14 | 704 | 0.4- | 0.6+ | 2007 10 10 | 703 | 0.1+ | 0.4+ | 2007 11 18 | 699 | 1.1+ | 0.1- |
| 2004 12 14 | 691 | 0.2+ | 0.2- | 2007 10 19 | 699 | 0.4+ | 0.7+ | 2007 11 18 | 699 | 1.1+ | 0.4+ |
| 2004 12 14 | 691 | 0.1+ | 0.2- | 2007 10 19 | 699 | 0.1- | 0.0  | 2007 11 18 | 699 | 0.9- | 1.0+ |
| 2004 12 19 | 691 | 0.1+ | 0.1- | 2007 10 19 | 699 | 0.8+ | 0.4- | 2007 11 18 | 699 | 0.6+ | 1.2- |
| 2004 12 19 | 691 | 0.1+ | 0.2- | 2007 10 19 | 699 | 0.7+ | 0.4- |            |     |      |      |

2004 XA<sub>66</sub> = 1991 RV<sub>42</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 326.82130  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23958060 | $\omega$ | 150.75489 | +0.99459882   | +0.10190680 |
| <i>a</i> | 2.5674478  | $\Omega$ | 203.42068 | -0.10223366   | +0.92904656 |
| <i>e</i> | 0.1977588  | <i>i</i> | 2.84122   | -0.01792923   | +0.35565080 |
| <i>P</i> | 4.11       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 09 04 | 260 | 0.1+ | 0.4+ | 2002 04 03 | 691 | 0.3+ | 0.1+ | 2004 12 20 | 735 | (1.3+ | 4.2+) |
| 1991 09 04 | 260 | 0.3+ | 0.9+ | 2004 12 02 | 691 | 0.3+ | 0.4- | 2004 12 21 | 691 | 0.1+  | 0.4+  |
| 1991 09 06 | 260 | 0.3- | 0.3+ | 2004 12 02 | 691 | 0.2- | 0.3- | 2004 12 21 | 691 | 0.0   | 0.1+  |
| 1991 09 06 | 260 | 0.1- | 0.6+ | 2004 12 02 | 691 | 0.1- | 0.1- | 2004 12 21 | 691 | 0.2-  | 0.2+  |
| 1991 09 12 | 691 | 0.0  | 0.1+ | 2004 12 12 | 691 | 0.0  | 0.0  | 2006 03 04 | 691 | 0.0   | 0.5+  |
| 1991 09 12 | 691 | 0.1- | 0.0  | 2004 12 12 | 691 | 0.3- | 0.4+ | 2006 03 04 | 691 | 0.4+  | 0.1+  |
| 1991 09 12 | 691 | 0.3- | 0.3+ | 2004 12 12 | 691 | 0.1+ | 0.1+ | 2006 03 04 | 691 | 0.1-  | 0.0   |
| 2002 04 03 | 691 | 0.0  | 0.0  | 2004 12 20 | 735 | 0.3- | 0.9- |            |     |       |       |
| 2002 04 03 | 691 | 0.2- | 0.5+ | 2004 12 20 | 735 | 1.4+ | 1.2+ |            |     |       |       |

2004 XT<sub>84</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 255.98716  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25685533 | $\omega$ | 270.69125 | -0.27583693   | -0.96116120 |
| <i>a</i> | 2.4510020  | $\Omega$ | 195.33002 | +0.89503786   | -0.25337888 |
| <i>e</i> | 0.1678049  | <i>i</i> | 1.97645   | +0.35045858   | -0.10939969 |
| <i>P</i> | 3.84       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 10 01 | 691 | 0.4+ | 0.2+ | 2001 01 21 | 691 | 0.3+ | 0.2- | 2004 12 21 | 691 | 0.3+ | 0.2+ |
| 1992 10 01 | 691 | 0.3- | 0.2- | 2004 12 12 | 691 | 0.0  | 0.1+ | 2004 12 21 | 691 | 0.1+ | 0.0  |

## M.P.O. 129709

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 10 01 | 691 | 0.1- | 0.0  | 2004 12 12 | 691 | 0.3- | 0.7+ | 2007 09 04 | G96 | 0.7+ | 0.3+ |
| 2000 12 06 | 691 | 0.1+ | 0.4- | 2004 12 12 | 691 | 0.0  | 0.1+ | 2007 09 04 | G96 | 0.5- | 0.3- |
| 2000 12 06 | 691 | 0.1+ | 0.2- | 2004 12 14 | 704 | 0.3- | 0.1+ | 2007 09 04 | G96 | 0.5- | 0.3+ |
| 2000 12 06 | 691 | 0.1+ | 0.4- | 2004 12 14 | 704 | 0.5+ | 0.6- | 2007 09 04 | G96 | 0.4- | 0.1- |
| 2000 12 16 | 691 | 0.0  | 0.1- | 2004 12 14 | 704 | 0.3+ | 0.9+ | 2007 09 15 | G96 | 0.0  | 0.3+ |
| 2000 12 16 | 691 | 0.1- | 0.1- | 2004 12 16 | 691 | 0.2- | 0.1- | 2007 09 15 | G96 | 0.1- | 0.2- |
| 2000 12 16 | 691 | 0.1- | 0.1- | 2004 12 16 | 691 | 0.0  | 0.1+ | 2007 09 15 | G96 | 0.3+ | 0.0  |
| 2001 01 21 | 691 | 0.2+ | 0.1+ | 2004 12 16 | 691 | 0.2- | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.3+ |
| 2001 01 21 | 691 | 0.5- | 0.5- | 2004 12 21 | 691 | 0.0  | 0.1+ |            |     |      |      |

2004 XT<sub>85</sub> = 2007 UE<sub>125</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 296.13925  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29863483 | $\omega$ | 231.29976 | -0.35999463   | -0.93258804 |
| <i>a</i> | 2.2167110  | $\Omega$ | 239.81906 | +0.86508310   | -0.32318225 |
| <i>e</i> | 0.1477629  | <i>i</i> | 1.73299   | +0.34933522   | -0.16072581 |
| <i>P</i> | 3.30       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 13 | 691 | 0.2+ | 0.0  | 2005 01 08 | 599 | 0.1- | 0.3+ | 2007 10 16 | 291 | 0.1+ | 0.0  |
| 2004 12 13 | 691 | 0.0  | 0.1- | 2005 01 08 | 599 | 0.1+ | 0.3- | 2007 10 16 | 291 | 0.0  | 0.0  |
| 2004 12 13 | 691 | 0.4+ | 0.1+ | 2005 01 08 | 599 | 1.1+ | 0.4- | 2007 10 16 | 291 | 0.1- | 0.6+ |
| 2004 12 14 | 704 | 0.3- | 0.1- | 2007 10 16 | 291 | 0.1- | 0.0  | 2007 10 16 | 291 | 0.1- | 0.2- |
| 2004 12 14 | 704 | 1.2- | 0.1- | 2007 10 16 | 291 | 0.6+ | 0.2- | 2007 10 16 | 291 | 0.4- | 0.3- |
| 2004 12 14 | 704 | 0.7- | 0.3+ | 2007 10 16 | 291 | 0.0  | 0.0  |            |     |      |      |
| 2005 01 08 | 599 | 1.1- | 0.1+ | 2007 10 16 | 291 | 0.0  | 0.2+ |            |     |      |      |

2004 XW<sub>109</sub> = 2007 RZ<sub>226</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 225.49987  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25697415 | $\omega$ | 126.88023 | -0.91066448   | -0.41115627 |
| <i>a</i> | 2.4502464  | $\Omega$ | 28.90639  | +0.34737040   | -0.81506638 |
| <i>e</i> | 0.1557816  | <i>i</i> | 4.80685   | +0.22366046   | -0.40818784 |
| <i>P</i> | 3.84       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 04 16 | 691 | 0.3+  | 0.4+  | 2005 01 07 | 704 | 0.6+  | 0.4-  | 2005 02 03 | 704 | 0.3+ | 0.2+ |
| 1994 04 16 | 691 | 0.1+  | 0.3+  | 2005 01 07 | 704 | 0.4+  | 0.3-  | 2005 02 03 | 704 | 0.1+ | 0.1- |
| 1994 04 16 | 691 | 0.2+  | 0.4+  | 2005 01 07 | 704 | 0.7+  | 0.0   | 2007 09 10 | 691 | 0.1- | 0.3+ |
| 2002 06 13 | 644 | 0.0   | 0.5+  | 2005 01 07 | 704 | 0.1+  | 0.3-  | 2007 09 10 | 691 | 0.2- | 0.1+ |
| 2002 06 13 | 644 | 0.3+  | 0.5+  | 2005 01 07 | 704 | 0.7+  | 0.2-  | 2007 09 10 | 691 | 0.2- | 0.3+ |
| 2002 06 13 | 644 | 0.0   | 0.5+  | 2005 01 08 | 704 | 0.4+  | 0.2+  | 2007 09 15 | G96 | 0.0  | 0.3+ |
| 2004 12 13 | 699 | (2.0- | 0.7+) | 2005 01 08 | 704 | 0.1+  | 0.1+  | 2007 09 15 | G96 | 0.1+ | 0.2+ |
| 2004 12 13 | 699 | 0.7-  | 0.4+  | 2005 01 08 | 704 | 0.1+  | 0.0   | 2007 09 15 | G96 | 0.3- | 0.2+ |
| 2004 12 13 | 699 | 0.4+  | 0.6+  | 2005 01 08 | 704 | (0.3- | 1.6+) | 2007 09 19 | 691 | 0.3- | 0.4+ |
| 2004 12 13 | 699 | 0.1+  | 0.9-  | 2005 01 08 | 704 | 0.1-  | 0.5+  | 2007 09 19 | 691 | 0.3- | 0.4+ |
| 2004 12 15 | 704 | 0.0   | 0.8+  | 2005 01 16 | 704 | 0.1-  | 0.5-  | 2007 09 19 | 691 | 0.2+ | 0.3- |
| 2004 12 15 | 704 | 0.6-  | 0.5+  | 2005 01 16 | 704 | 0.1-  | 0.0   | 2007 10 20 | G96 | 0.1+ | 0.0  |
| 2004 12 15 | 704 | 0.4+  | 0.7+  | 2005 01 16 | 704 | 0.1+  | 0.1-  | 2007 10 20 | G96 | 0.1- | 0.2- |
| 2004 12 15 | 704 | 0.7-  | 0.2-  | 2005 01 16 | 704 | 0.2-  | 0.1-  | 2007 10 20 | G96 | 0.3- | 0.2+ |
| 2004 12 15 | 704 | 0.2-  | 1.2+  | 2005 01 19 | 704 | 0.5-  | 0.4+  | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2004 12 19 | 691 | 0.2-  | 0.1-  | 2005 01 19 | 704 | 0.3-  | 0.4+  | 2007 11 07 | G96 | 0.2- | 0.0  |
| 2004 12 19 | 691 | 0.8+  | 0.2-  | 2005 01 19 | 704 | (1.7- | 0.4+) | 2007 11 07 | G96 | 0.2+ | 0.0  |
| 2004 12 19 | 691 | 0.0   | 0.2+  | 2005 01 19 | 704 | 0.1-  | 0.2-  | 2007 11 07 | G96 | 0.1- | 0.1+ |
| 2004 12 21 | 703 | 0.5-  | 0.7+  | 2005 01 19 | 704 | 0.5-  | 0.4+  | 2007 12 05 | G96 | 0.2+ | 0.4+ |
| 2004 12 21 | 703 | 0.3-  | 0.9+  | 2005 02 03 | 704 | 0.4-  | 0.7+  | 2007 12 05 | G96 | 0.4+ | 0.1- |
| 2004 12 21 | 703 | 1.0-  | 0.4+  | 2005 02 03 | 704 | 0.1-  | 0.5-  | 2007 12 05 | G96 | 0.2+ | 0.3+ |
| 2004 12 21 | 703 | 0.4-  | 0.3-  | 2005 02 03 | 704 | 0.3+  | 0.6-  | 2007 12 05 | G96 | 0.5+ | 0.2+ |

**2004 XE<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.08520  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28117362 | $\omega$ | 99.43057  | +0.32610845   | -0.94447365 |
| <i>a</i> | 2.3075600  | $\Omega$ | 331.43501 | +0.83090766   | +0.30669775 |
| <i>e</i> | 0.1322251  | <i>i</i> | 4.83284   | +0.45082783   | +0.11792379 |
| <i>P</i> | 3.51       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 12 14 | 691 | 0.6+ | 0.3- | 2005 01 06 | 703 | 0.0  | 0.4- | 2007 09 13 | 703 | (2.5+ | 1.9+) |
| 2004 12 14 | 691 | 0.4+ | 0.0  | 2005 01 06 | 703 | 0.6- | 1.0+ | 2007 09 13 | 703 | 0.2+  | 0.2+  |
| 2004 12 14 | 691 | 0.5+ | 0.1- | 2005 01 07 | 704 | 0.5- | 0.2- | 2007 09 13 | 703 | 1.5+  | 0.5+  |
| 2004 12 19 | 691 | 0.0  | 0.6- | 2005 01 07 | 704 | 0.6+ | 0.3+ | 2007 09 13 | 703 | 0.2+  | 0.2+  |
| 2004 12 19 | 691 | 0.4+ | 0.2- | 2005 01 07 | 704 | 0.2- | 1.1+ | 2007 10 20 | G96 | 0.6-  | 0.3-  |
| 2004 12 19 | 691 | 0.6+ | 0.4- | 2005 01 16 | 704 | 0.5- | 0.2+ | 2007 10 20 | G96 | 0.2-  | 0.2-  |
| 2005 01 06 | 703 | 0.8- | 0.7+ | 2005 01 16 | 704 | 0.4+ | 0.4- | 2007 10 20 | G96 | 0.6-  | 0.2-  |
| 2005 01 06 | 703 | 0.9- | 0.4- | 2005 01 16 | 704 | 0.2+ | 0.5- | 2007 10 20 | G96 | 0.5-  | 0.2-  |

**2004 XD<sub>161</sub> = 2007 VE<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.84652  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29229289 | $\omega$ | 98.59790  | +0.71782743   | -0.69020080 |
| <i>a</i> | 2.2486605  | $\Omega$ | 305.10872 | +0.58676107   | +0.67037092 |
| <i>e</i> | 0.0369412  | <i>i</i> | 6.41208   | +0.37474688   | +0.27244392 |
| <i>P</i> | 3.37       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 07 26 | 691 | 0.0  | 0.1+ | 2004 12 19 | 691 | 0.1+ | 0.1+ | 2007 11 03 | A77 | 0.7+ | 0.4- |
| 1993 07 26 | 691 | 0.4- | 0.1- | 2005 01 18 | 691 | 0.1- | 0.2+ | 2007 11 04 | A77 | 0.1+ | 0.3+ |
| 1993 07 26 | 691 | 0.2+ | 0.4+ | 2005 01 18 | 691 | 0.1- | 0.2+ | 2007 11 16 | G96 | 0.1+ | 0.4- |
| 2004 12 14 | 691 | 0.1+ | 0.0  | 2005 01 18 | 691 | 0.2- | 0.1+ | 2007 11 16 | G96 | 0.3- | 0.4- |
| 2004 12 14 | 691 | 0.0  | 0.1- | 2007 11 02 | A77 | 0.6+ | 0.2+ | 2007 11 16 | G96 | 0.1- | 0.4- |
| 2004 12 14 | 691 | 0.1- | 0.3- | 2007 11 03 | A77 | 0.1+ | 0.4- | 2007 11 16 | G96 | 0.1+ | 0.2- |
| 2004 12 19 | 691 | 0.0  | 0.2+ | 2007 11 03 | A77 | 1.2- | 0.5+ |            |     |      |      |
| 2004 12 19 | 691 | 0.3+ | 0.1+ | 2007 11 03 | A77 | 0.2+ | 0.5+ |            |     |      |      |

**2004 XZ<sub>166</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 230.31063  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26564880 | $\omega$ | 123.90533 | -0.80256058   | +0.45446324 |
| <i>a</i> | 2.3966106  | $\Omega$ | 85.95731  | -0.58893515   | -0.70687472 |
| <i>e</i> | 0.2649160  | <i>i</i> | 22.79498  | +0.09514151   | -0.54202518 |
| <i>P</i> | 3.71       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 12 02 | 703 | 0.4+  | 0.0   | 2005 02 10 | 106 | 0.2-  | 0.6-  | 2005 04 20 | 704 | 0.3+ | 0.6+ |
| 2004 12 02 | 703 | 0.6+  | 0.7-  | 2005 02 20 | 704 | (0.2- | 2.1+) | 2005 05 01 | 704 | 0.1- | 0.1+ |
| 2004 12 02 | 703 | 0.7+  | 0.3+  | 2005 02 20 | 704 | 0.3+  | 1.0+  | 2005 05 01 | 704 | 0.3- | 0.2- |
| 2004 12 02 | 703 | 0.3-  | 0.8-  | 2005 02 20 | 704 | 1.9+  | 0.3-  | 2005 05 01 | 704 | 0.5+ | 0.2- |
| 2004 12 11 | 703 | 0.5+  | 0.1-  | 2005 02 20 | 704 | 0.5+  | 0.9+  | 2005 05 01 | 704 | 0.0  | 0.4+ |
| 2004 12 11 | 703 | 0.2-  | 0.3-  | 2005 02 20 | 704 | 0.4-  | 1.6+  | 2005 05 31 | 704 | 0.8+ | 1.5+ |
| 2004 12 11 | 703 | 1.2+  | 0.3-  | 2005 03 22 | 704 | 0.5+  | 0.1+  | 2005 05 31 | 704 | 0.9+ | 1.0- |
| 2004 12 11 | 703 | 0.4-  | 0.3-  | 2005 03 22 | 704 | 1.1+  | 0.4-  | 2005 05 31 | 704 | 0.6+ | 1.2+ |
| 2004 12 21 | 703 | 0.5-  | 0.2-  | 2005 03 22 | 704 | 0.4+  | 0.1-  | 2005 05 31 | 704 | 0.2+ | 0.0  |
| 2004 12 21 | 703 | 0.2-  | 0.1-  | 2005 03 22 | 704 | 0.2-  | 0.1-  | 2005 06 07 | 704 | 0.5+ | 0.2+ |
| 2004 12 21 | 703 | 0.9-  | 0.1+  | 2005 03 22 | 704 | 0.2-  | 0.6-  | 2005 06 07 | 704 | 0.8+ | 0.4+ |
| 2004 12 21 | 703 | 0.7-  | 0.7-  | 2005 03 27 | 699 | 0.4-  | 0.3-  | 2005 06 07 | 704 | 0.1+ | 0.2+ |
| 2005 01 16 | 704 | 0.1+  | 1.3+  | 2005 03 27 | 699 | 0.2-  | 0.6-  | 2005 06 07 | 704 | 0.7+ | 1.3- |
| 2005 01 16 | 704 | (0.4- | 2.7+) | 2005 03 27 | 699 | 0.1-  | 0.4-  | 2005 07 05 | 703 | 0.4- | 0.2- |
| 2005 01 16 | 704 | 0.3+  | 0.9+  | 2005 03 27 | 699 | 0.5-  | 0.5-  | 2005 07 05 | 703 | 0.5- | 0.8+ |
| 2005 01 16 | 704 | 0.5+  | 1.4+  | 2005 04 01 | 704 | 0.1+  | 0.2-  | 2005 07 05 | 703 | 0.4+ | 0.4+ |
| 2005 01 16 | 704 | 0.3+  | 1.0+  | 2005 04 01 | 704 | 0.1-  | 0.5-  | 2005 07 05 | 703 | 0.7- | 1.7+ |
| 2005 01 17 | 703 | 1.1-  | 0.2-  | 2005 04 01 | 704 | 0.1+  | 0.1-  | 2007 11 04 | G96 | 0.3- | 0.2+ |
| 2005 01 17 | 703 | 1.1-  | 0.1+  | 2005 04 01 | 704 | 0.1-  | 0.1-  | 2007 11 04 | G96 | 0.0  | 0.4+ |
| 2005 01 17 | 703 | 1.5-  | 0.4-  | 2005 04 01 | 704 | 0.1-  | 0.5-  | 2007 11 04 | G96 | 0.2- | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 17 | 703 | 1.2- | 0.0  | 2005 04 12 | 703 | 0.2- | 0.1- | 2007 11 04 | G96 | 0.2- | 0.3+ |
| 2005 01 19 | 704 | 0.1+ | 0.0  | 2005 04 12 | 703 | 0.1+ | 0.2- | 2007 12 04 | 703 | 0.2- | 0.3+ |
| 2005 01 19 | 704 | 0.8- | 0.6- | 2005 04 12 | 703 | 0.2- | 0.1- | 2007 12 04 | 703 | 0.1- | 0.7+ |
| 2005 01 19 | 704 | 0.1- | 0.6+ | 2005 04 12 | 703 | 0.3- | 0.2- | 2007 12 04 | 703 | 0.5- | 0.4- |
| 2005 02 10 | 106 | 0.3- | 1.1- | 2005 04 20 | 704 | 0.1+ | 0.2+ | 2007 12 04 | 703 | 0.0  | 1.6+ |
| 2005 02 10 | 106 | 0.5- | 1.4- | 2005 04 20 | 704 | 0.3+ | 0.7+ |            |     |      |      |

**2004 YW<sub>12</sub> = 2007 WS<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.04121   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29534085 | $\omega$ | 237.35789 | +0.93697904   | +0.31947479 |
| <i>a</i> | 2.2331627  | $\Omega$ | 103.67306 | -0.25142138   | +0.89764419 |
| <i>e</i> | 0.1784655  | <i>i</i> | 8.37020   | -0.24260579   | +0.30359638 |
| <i>P</i> | 3.34       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 02 | 699 | 0.5- | 1.4- | 2004 12 19 | G96 | 0.5- | 0.3- | 2007 11 17 | 703 | 0.3- | 0.3+ |
| 2000 10 02 | 699 | 0.2+ | 0.2- | 2004 12 19 | G96 | 0.1- | 0.3- | 2007 11 18 | 703 | 0.2- | 0.1- |
| 2000 10 02 | 699 | 0.2+ | 0.8+ | 2004 12 19 | G96 | 0.2- | 0.7+ | 2007 11 18 | 703 | 0.7+ | 0.3+ |
| 2000 10 02 | 699 | 0.2+ | 0.6+ | 2005 01 17 | 691 | 0.1- | 0.1+ | 2007 11 18 | 703 | 0.1+ | 0.1+ |
| 2004 12 18 | G96 | 0.3- | 0.5- | 2005 01 17 | 691 | 0.0  | 0.1- | 2007 11 18 | 703 | 0.4+ | 0.5- |
| 2004 12 18 | G96 | 0.2- | 0.1+ | 2005 01 17 | 691 | 0.4+ | 0.1+ | 2007 12 04 | 703 | 1.0+ | 0.4- |
| 2004 12 18 | G96 | 0.2+ | 0.1+ | 2007 11 17 | 703 | 1.3- | 0.4+ | 2007 12 04 | 703 | 0.4+ | 0.4+ |
| 2004 12 18 | G96 | 0.0  | 0.4- | 2007 11 17 | 703 | 0.2+ | 0.1+ | 2007 12 04 | 703 | 0.1+ | 0.5+ |
| 2004 12 19 | G96 | 0.1+ | 0.5- | 2007 11 17 | 703 | 0.6- | 0.6- | 2007 12 04 | 703 | 0.5- | 0.2+ |

**2004 YJ<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 305.72763  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22561230 | $\omega$ | 104.77122 | +0.40650601   | -0.88030162 |
| <i>a</i> | 2.6723553  | $\Omega$ | 318.38000 | +0.63033422   | +0.46400444 |
| <i>e</i> | 0.0541527  | <i>i</i> | 21.60757  | +0.66138615   | +0.09883790 |
| <i>P</i> | 4.37       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 12 20 | G96 | 0.1-  | 0.2-  | 2005 02 09 | 699 | 0.9+  | 0.0   | 2007 09 05 | 699 | 1.0-  | 0.1-  |
| 2004 12 20 | G96 | 0.1-  | 0.1-  | 2005 02 09 | 699 | 0.6-  | 0.2+  | 2007 09 05 | 699 | 0.9-  | 0.2+  |
| 2004 12 20 | G96 | 0.0   | 0.1-  | 2005 02 09 | 699 | 0.2+  | 0.2-  | 2007 09 14 | 699 | 1.3+  | 0.7+  |
| 2004 12 20 | G96 | 0.3-  | 0.2+  | 2005 02 09 | 699 | 0.9-  | 0.0   | 2007 09 14 | 699 | 0.2-  | 0.3-  |
| 2005 02 02 | 683 | 0.3+  | 0.1+  | 2005 03 10 | 703 | 0.0   | 1.0+  | 2007 09 14 | 699 | 1.1+  | 0.3+  |
| 2005 02 02 | 683 | (2.1- | 0.0 ) | 2005 03 10 | 703 | 0.3-  | 0.4-  | 2007 09 14 | 699 | 0.2+  | 0.1-  |
| 2005 02 02 | 683 | 0.3+  | 0.1-  | 2005 03 10 | 703 | 0.1-  | 0.0   | 2007 10 08 | 703 | (2.6- | 1.3-) |
| 2005 02 03 | 683 | 0.7-  | 0.3+  | 2005 03 10 | 703 | 0.4-  | 0.2-  | 2007 10 08 | 703 | 0.5-  | 0.1-  |
| 2005 02 03 | 683 | 1.9+  | 0.3-  | 2007 09 05 | 699 | (1.2- | 2.6-) | 2007 10 08 | 703 | 0.6+  | 0.4-  |
| 2005 02 03 | 683 | (2.8+ | 0.8-) | 2007 09 05 | 699 | 0.5-  | 0.4-  | 2007 10 08 | 703 | 0.4-  | 0.4+  |

**2005 AN = 2002 GW<sub>142</sub> = 2007 UN<sub>67</sub>**Id. Minor Planet Center (*MPO* 128153; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 265.33536  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27843223 | $\omega$ | 288.29266 | -0.70400351   | -0.70998913 |
| <i>a</i> | 2.3226818  | $\Omega$ | 206.48174 | +0.66526428   | -0.65081225 |
| <i>e</i> | 0.1206268  | <i>i</i> | 2.20556   | +0.24860107   | -0.26899601 |
| <i>P</i> | 3.54       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 691 | 0.2- | 0.0  | 2005 01 05 | 941 | 0.0  | 0.1- | 2007 10 18 | G96 | 0.2+ | 0.2- |
| 2002 04 08 | 691 | 0.3+ | 0.8- | 2005 01 05 | 941 | 0.3- | 0.2- | 2007 10 18 | G96 | 0.3+ | 0.2- |
| 2002 04 08 | 691 | 0.1+ | 0.1+ | 2005 01 05 | 941 | 0.2- | 0.1- | 2007 10 18 | G96 | 0.4+ | 0.0  |
| 2002 04 13 | 691 | 0.4- | 0.1- | 2005 01 06 | 941 | 0.4- | 0.1- | 2007 10 18 | G96 | 0.4+ | 0.0  |
| 2002 04 13 | 691 | 0.6- | 0.1- | 2005 01 06 | 941 | 0.4- | 0.1- | 2007 10 30 | G96 | 0.5- | 0.0  |
| 2002 04 13 | 691 | 0.1+ | 0.5- | 2005 01 06 | 941 | 0.3- | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.0  |
| 2002 04 14 | 704 | 0.6- | 0.5- | 2005 01 06 | 941 | 0.1- | 0.0  | 2007 10 30 | G96 | 0.5- | 0.3- |
| 2002 04 14 | 704 | 0.4+ | 0.1- | 2005 01 06 | 941 | 0.5- | 0.1+ | 2007 10 30 | G96 | 0.3- | 0.1- |
| 2002 04 14 | 704 | 0.6+ | 0.7+ | 2005 01 08 | 941 | 0.4+ | 0.2- | 2007 11 02 | G96 | 0.2+ | 0.4+ |

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|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 14 | 704 | 0.9+  | 0.6+  | 2005 01 08 | 941 | 0.4+ | 0.0  | 2007 11 02 | G96 | 0.2- | 0.5+ |
| 2002 04 14 | 704 | 0.5-  | 0.1-  | 2005 01 08 | 941 | 0.4+ | 0.1+ | 2007 11 02 | G96 | 0.0  | 0.4+ |
| 2002 05 04 | 291 | 0.3+  | 0.3+  | 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 11 02 | G96 | 0.0  | 0.6+ |
| 2002 05 04 | 291 | 0.1-  | 0.5+  | 2007 09 14 | G96 | 0.1- | 0.3+ | 2007 11 05 | G96 | 0.2+ | 0.4- |
| 2002 05 04 | 291 | 0.0   | 0.7+  | 2007 09 14 | G96 | 0.7+ | 0.4+ | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2004 12 13 | 691 | 0.5+  | 0.7+  | 2007 09 14 | G96 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.1- | 0.8- |
| 2004 12 13 | 691 | 0.3+  | 0.2+  | 2007 10 07 | G96 | 0.0  | 0.3- | 2007 11 05 | G96 | 0.0  | 0.1- |
| 2004 12 13 | 691 | 0.6+  | 0.1+  | 2007 10 07 | G96 | 0.1- | 0.0  | 2007 11 15 | 691 | 0.4- | 0.4+ |
| 2005 01 05 | 941 | (2.2- | 0.6-) | 2007 10 07 | G96 | 0.1+ | 0.3- | 2007 11 15 | 691 | 0.5- | 0.2+ |
| 2005 01 05 | 941 | 0.1-  | 0.2-  | 2007 10 07 | G96 | 0.1- | 0.2- | 2007 11 15 | 691 | 0.4- | 0.3+ |

2005 AP<sub>5</sub>

|                                         |            |          |          |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |             |          |   |  |  |  |  |
|                                         |            |          |          | MPC         |             |          |   |  |  |  |  |
| <i>M</i>                                | 289.21903  |          | (2000.0) | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.28684941 | <i>ω</i> | 81.34613 | -0.46747255 | -0.88278860 |          |   |  |  |  |  |
| <i>a</i>                                | 2.2770195  | <i>Ω</i> | 36.64009 | +0.77740806 | -0.43552650 |          |   |  |  |  |  |
| <i>e</i>                                | 0.1565596  | <i>i</i> | 4.46000  | +0.42083979 | -0.17607087 |          |   |  |  |  |  |
| <i>P</i>                                | 3.44       | <i>H</i> | 18.0     | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 02 | 645 | 0.0  | 0.1- | 2005 01 06 | 703 | 0.3+  | 0.6+  | 2007 10 09 | 691 | 0.2- | 0.3+ |
| 2000 10 02 | 645 | 0.0  | 0.0  | 2005 01 07 | 704 | 0.0   | 0.9+  | 2007 10 09 | 691 | 0.2- | 0.2+ |
| 2002 04 08 | 644 | 0.3+ | 0.6+ | 2005 01 07 | 704 | 1.0-  | 1.4+  | 2007 10 09 | 691 | 0.0  | 0.3+ |
| 2002 04 08 | 644 | 0.2+ | 0.7+ | 2005 01 07 | 704 | (0.5- | 1.7+) | 2007 10 21 | 691 | 0.0  | 0.3+ |
| 2002 04 08 | 644 | 0.3+ | 0.6+ | 2005 01 19 | 704 | 0.7+  | 0.0   | 2007 10 21 | 691 | 0.2- | 0.3- |
| 2004 12 21 | 703 | 1.3- | 0.3- | 2005 01 19 | 704 | 0.6+  | 0.4-  | 2007 10 21 | 691 | 0.2- | 0.3+ |
| 2004 12 21 | 703 | 1.1- | 1.1- | 2005 01 19 | 704 | 0.1-  | 1.0+  | 2007 10 30 | G96 | 0.5+ | 0.0  |
| 2004 12 21 | 703 | 0.3+ | 0.2- | 2005 01 19 | 704 | 0.6+  | 0.2-  | 2007 10 30 | G96 | 0.5+ | 0.1- |
| 2004 12 21 | 703 | 0.1- | 0.7+ | 2005 01 19 | 704 | 0.3+  | 0.3-  | 2007 10 30 | G96 | 0.6+ | 0.1+ |
| 2005 01 06 | 703 | 0.4- | 0.4- | 2005 01 20 | 704 | 0.5-  | 1.0-  | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 2005 01 06 | 703 | 0.7+ | 0.1- | 2005 01 20 | 704 | 0.5+  | 0.4-  |            |     |      |      |
| 2005 01 06 | 703 | 1.0- | 0.1+ | 2005 01 20 | 704 | 1.2+  | 0.8-  |            |     |      |      |

2005 AV<sub>6</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
|                                         |            |          |           | MPC         |             |          |   |  |  |  |  |
| <i>M</i>                                | 229.65811  |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.21645410 | <i>ω</i> | 149.18341 | -0.41581759 | -0.89869949 |          |   |  |  |  |  |
| <i>a</i>                                | 2.7472120  | <i>Ω</i> | 324.83582 | +0.77728198 | -0.27160568 |          |   |  |  |  |  |
| <i>e</i>                                | 0.1208498  | <i>i</i> | 14.00834  | +0.47215300 | -0.34433935 |          |   |  |  |  |  |
| <i>P</i>                                | 4.55       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 01 06 | 703 | 1.0- | 0.0  | 2005 01 19 | 704 | 0.1- | 0.1- | 2005 02 14 | 704 | 0.9+  | 1.1+  |
| 2005 01 06 | 703 | 1.6- | 0.5+ | 2005 01 19 | 704 | 0.5- | 0.8- | 2005 03 01 | 691 | 0.0   | 0.3-  |
| 2005 01 06 | 703 | 0.1+ | 1.0- | 2005 01 31 | 644 | 0.1- | 0.1- | 2005 03 01 | 691 | 0.1+  | 0.3-  |
| 2005 01 06 | 703 | 0.3+ | 0.3- | 2005 01 31 | 644 | 0.3+ | 0.0  | 2005 03 01 | 691 | 0.2-  | 0.3-  |
| 2005 01 07 | 704 | 1.2+ | 0.6- | 2005 01 31 | 644 | 0.2+ | 0.0  | 2005 03 09 | 703 | 0.7-  | 0.6-  |
| 2005 01 07 | 704 | 1.1+ | 0.2+ | 2005 02 01 | 703 | 0.7- | 0.9+ | 2005 03 09 | 703 | 1.9-  | 1.2-  |
| 2005 01 07 | 704 | 0.5- | 0.1+ | 2005 02 01 | 703 | 0.4+ | 0.4- | 2005 03 09 | 703 | (2.1- | 0.2+) |
| 2005 01 16 | 704 | 0.7+ | 0.2- | 2005 02 01 | 703 | 0.2+ | 0.9+ | 2005 03 09 | 703 | (3.5- | 0.7-) |
| 2005 01 16 | 704 | 0.8+ | 0.6- | 2005 02 01 | 703 | 0.4- | 0.3+ | 2007 09 10 | G96 | 0.6+  | 0.3+  |
| 2005 01 16 | 704 | 0.5+ | 0.5- | 2005 02 03 | 704 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.4+  | 0.1+  |
| 2005 01 16 | 704 | 0.1- | 0.2- | 2005 02 03 | 704 | 1.2- | 0.9+ | 2007 09 10 | G96 | 0.4-  | 0.1-  |
| 2005 01 16 | 704 | 0.4- | 0.3+ | 2005 02 03 | 704 | 0.2- | 0.1- | 2007 09 10 | G96 | 0.0   | 0.1-  |
| 2005 01 18 | 691 | 0.1+ | 0.1- | 2005 02 14 | 704 | 0.9+ | 0.5+ | 2007 10 09 | G96 | 0.5-  | 0.3-  |
| 2005 01 18 | 691 | 0.1+ | 0.2- | 2005 02 14 | 704 | 0.2+ | 0.2- | 2007 10 09 | G96 | 0.1+  | 0.2-  |
| 2005 01 18 | 691 | 0.0  | 0.2- | 2005 02 14 | 704 | 0.4+ | 0.9+ | 2007 10 09 | G96 | 0.2+  | 0.5-  |
| 2005 01 19 | 704 | 0.6+ | 0.3+ | 2005 02 14 | 704 | 0.0  | 0.7+ | 2007 10 09 | G96 | 0.3-  | 0.4+  |

## M.P.O. 129711

2005 AS<sub>7</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
|                                         |            |          |           | MPC         |             |          |   |  |  |  |  |
| <i>M</i>                                | 182.96512  |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.21270631 | <i>ω</i> | 204.73489 | -0.97817921 | -0.18784587 |          |   |  |  |  |  |
| <i>a</i>                                | 2.7793877  | <i>Ω</i> | 324.07994 | +0.20673647 | -0.83762019 |          |   |  |  |  |  |
| <i>e</i>                                | 0.1456655  | <i>i</i> | 8.70274   | +0.02062678 | -0.51293893 |          |   |  |  |  |  |
| <i>P</i>                                | 4.63       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 30 | 691 | 0.1+ | 0.0  | 2005 01 18 | 691 | 0.1+ | 0.2- | 2005 02 13 | H06 | 0.3+ | 0.9- |
| 2003 09 30 | 691 | 0.1+ | 0.4- | 2005 01 18 | 691 | 0.0  | 0.1+ | 2005 02 14 | 704 | 1.0- | 1.0+ |
| 2003 09 30 | 691 | 0.2+ | 0.3- | 2005 01 18 | 691 | 0.3+ | 0.2- | 2005 02 14 | 704 | 0.1+ | 0.2- |
| 2005 01 06 | 703 | 0.1+ | 1.1- | 2005 01 19 | 704 | 0.3+ | 0.9- | 2005 02 14 | 704 | 0.1+ | 0.0  |
| 2005 01 06 | 703 | 0.6- | 0.5- | 2005 01 19 | 704 | 0.1- | 1.9+ | 2005 02 14 | 704 | 0.6- | 0.4+ |
| 2005 01 06 | 703 | 0.2- | 0.1+ | 2005 01 19 | 704 | 0.4+ | 0.8- | 2005 02 14 | 704 | 0.8- | 1.2+ |
| 2005 01 06 | 703 | 0.1- | 0.2- | 2005 01 19 | 704 | 0.2- | 0.3+ | 2005 03 02 | 703 | 0.0  | 0.5+ |
| 2005 01 07 | 704 | 0.9- | 0.0  | 2005 01 19 | 704 | 0.1+ | 0.4- | 2005 03 02 | 703 | 0.2+ | 0.0  |
| 2005 01 07 | 704 | 0.2- | 0.3+ | 2005 02 01 | 703 | 0.4- | 0.3- | 2005 03 02 | 703 | 0.1- | 0.3+ |
| 2005 01 07 | 704 | 0.4- | 0.6+ | 2005 02 01 | 703 | 0.7- | 0.1+ | 2005 03 02 | 703 | 0.3- | 0.5- |
| 2005 01 07 | 704 | 0.3+ | 0.9- | 2005 02 01 | 703 | 0.5- | 0.4+ | 2007 09 10 | 691 | 0.7- | 0.4+ |
| 2005 01 15 | 691 | 0.2+ | 0.2- | 2005 02 01 | 703 | 0.6- | 0.3- | 2007 09 10 | 691 | 0.1+ | 0.2- |
| 2005 01 15 | 691 | 0.4+ | 0.1- | 2005 02 03 | 704 | 0.6+ | 0.2- | 2007 09 10 | 691 | 0.8- | 1.1+ |
| 2005 01 15 | 691 | 0.3- | 0.6+ | 2005 02 03 | 704 | 0.6+ | 0.2- | 2007 10 10 | G96 | 0.1+ | 0.1+ |
| 2005 01 16 | 704 | 0.4+ | 0.1+ | 2005 02 03 | 704 | 1.0+ | 0.3- | 2007 10 10 | G96 | 0.2- | 0.1+ |
| 2005 01 16 | 704 | 0.6+ | 0.7+ | 2005 02 03 | 704 | 0.5+ | 0.1+ | 2007 10 10 | G96 | 0.5+ | 0.0  |
| 2005 01 16 | 704 | 1.0+ | 1.1+ | 2005 02 03 | 704 | 0.7+ | 0.2+ | 2007 10 10 | G96 | 0.4+ | 0.1- |
| 2005 01 16 | 704 | 0.0  | 0.2+ | 2005 02 13 | H06 | 0.0  | 1.2- |            |     |      |      |

2005 AY<sub>25</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
|                                         |            |          |           | MPC         |             |          |   |  |  |  |  |
| <i>M</i>                                | 309.40029  |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.28328437 | <i>ω</i> | 267.32237 | +0.11779099 | -0.99303770 |          |   |  |  |  |  |
| <i>a</i>                                | 2.2960833  | <i>Ω</i> | 175.91243 | +0.91760352 | +0.10838468 |          |   |  |  |  |  |
| <i>e</i>                                | 0.2078007  | <i>i</i> | 0.95711   | +0.37964333 | +0.04613997 |          |   |  |  |  |  |
| <i>P</i>                                | 3.48       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        | <i>U</i> | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 691 | 0.5+ | 0.2+ | 2005 01 13 | 699 | 0.6- | 1.2+ | 2005 02 02 | 704 | 0.1- | 0.2- |
| 2002 04 08 | 691 | 0.0  | 0.4+ | 2005 01 13 | 699 | 0.2- | 0.4+ | 2005 02 02 | 704 | 0.2+ | 0.7+ |
| 2002 04 08 | 691 | 0.0  | 0.6+ | 2005 01 13 | 699 | 0.6- | 0.0  | 2005 02 02 | 704 | 0.1- | 0.3- |
| 2004 12 20 | G96 | 0.1- | 0.0  | 2005 01 15 | 704 | 1.4+ | 0.3- | 2007 09 11 | 691 | 0.3- | 0.4+ |
| 2004 12 20 | G96 | 0.1- | 0.5- | 2005 01 15 | 704 | 0.0  | 0.2+ | 2007 09 11 | 691 | 0.2- | 0.5+ |
| 2004 12 20 | G96 | 0.2- | 0.4- | 2005 01 15 | 704 | 0.0  | 0.1- | 2007 09 11 | 691 | 0.2- | 0.3+ |
| 2004 12 20 | G96 | 0.1- | 0.3- | 2005 01 15 | 704 | 0.6+ | 0.4- | 2007 10 04 | G96 | 0.2+ | 0.2+ |
| 2005 01 01 | 703 | 0.6+ | 0.4+ | 2005 01 15 | 704 | 0.0  | 0.5- | 2007 10 04 | G96 | 0.1+ | 0.3+ |
| 2005 01 01 | 703 | 0.1+ | 0.8- | 2005 01 16 | 704 | 0.4+ | 1.3- | 2007 10 04 | G96 | 0.7- | 0.3+ |
| 2005 01 01 | 703 | 1.0- | 0.1- | 2005 01 16 | 704 | 0.0  | 0.7- | 2007 10 04 | G96 | 0.6+ | 0.9+ |
| 2005 01 01 | 703 | 0.7- | 0.2+ | 2005 01 16 | 704 | 0.2- | 0.1+ | 2007 11 17 | G96 | 0.1+ | 0.3- |
| 2005 01 11 | 704 | 0.7+ | 0.1+ | 2005 01 17 | 704 | 0.6- | 0.1+ | 2007 11 17 | G96 | 0.1- | 0.1- |
| 2005 01 11 | 704 | 1.1+ | 0.4- | 2005 01 17 | 704 | 0.2+ | 0.2- | 2007 11 17 | G96 | 0.5+ | 0.0  |
| 2005 01 11 | 704 | 0.3+ | 0.7- | 2005 01 17 | 704 | 0.3- | 0.6+ | 2007 11 17 | G96 | 0.1+ | 0.2+ |
| 2005 01 11 | 704 | 0.6+ | 0.0  | 2005 02 01 | 703 | 0.7- | 0.5+ | 2007 12 05 | G96 | 0.1- | 0.4- |
| 2005 01 13 | 691 | 0.1- | 0.3+ | 2005 02 01 | 703 | 1.2+ | 1.4+ | 2007 12 05 | G96 | 0.4  | 0.0  |
| 2005 01 13 | 691 | 0.2- | 0.1+ | 2005 02 01 | 703 | 0.1- | 0.7+ | 2007 12 05 | G96 | 0.0  | 0.3- |
| 2005 01 13 | 691 | 0.3- | 0.2+ | 2005 02 01 | 703 | 0.2+ | 0.3+ | 2007 12 05 | G96 | 0.2+ | 0.2- |
| 2005 01 13 | 699 | 0.9+ | 0.5+ | 2005 02 02 | 704 | 0.1- | 0.2- |            |     |      |      |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 01 13 H06 | 0.1+ | 0.3+ | 2005 01 17 704 | 1.0+ | 0.6+ | 2005 02 09 699 | 0.9+ | 1.7- |
| 2005 01 13 H06 | 0.5- | 0.0  | 2005 01 18 H06 | 1.0- | 0.4- | 2005 02 09 699 | 0.7+ | 0.9+ |
| 2005 01 13 H06 | 0.1+ | 1.1+ | 2005 01 18 H06 | 1.8- | 0.5+ | 2005 02 09 699 | 0.9+ | 1.9- |
| 2005 01 14 H06 | 1.4- | 0.1+ | 2005 01 19 691 | 0.4+ | 0.1- | 2005 02 09 699 | 0.3- | 0.7- |
| 2005 01 14 H06 | 0.1- | 0.6- | 2005 01 19 691 | 0.4+ | 0.0  | 2005 02 13 H06 | 0.0  | 0.4- |
| 2005 01 15 H06 | 0.7- | 0.1- | 2005 01 19 691 | 0.3+ | 0.2+ | 2005 02 13 H06 | 0.3- | 0.8- |
| 2005 01 15 H06 | 0.8- | 0.1+ | 2005 01 31 H06 | 0.1+ | 0.2- | 2007 09 13 G96 | 0.0  | 0.1+ |
| 2005 01 15 H06 | 0.1+ | 0.4+ | 2005 02 02 704 | 0.4- | 0.5+ | 2007 09 13 G96 | 0.4+ | 0.2+ |
| 2005 01 16 H06 | 0.2- | 0.2+ | 2005 02 02 704 | 0.5- | 0.5+ | 2007 09 13 G96 | 0.2+ | 0.1+ |
| 2005 01 16 H06 | 0.7- | 0.2- | 2005 02 02 704 | 0.5- | 0.2+ | 2007 09 13 G96 | 0.1- | 0.3- |
| 2005 01 17 H06 | 0.1- | 0.1- | 2005 02 02 704 | 0.1- | 1.4+ | 2007 10 15 G96 | 0.0  | 0.1+ |
| 2005 01 17 704 | 0.3+ | 0.6+ | 2005 02 03 H06 | 0.5- | 0.7- | 2007 10 15 G96 | 0.0  | 0.0  |
| 2005 01 17 704 | 1.0+ | 0.2+ | 2005 02 03 H06 | 0.1+ | 0.3- | 2007 10 15 G96 | 0.1- | 0.4- |
| 2005 01 17 704 | 0.5+ | 0.3- | 2005 02 03 H06 | 0.3- | 0.4+ | 2007 10 15 G96 | 0.2- | 0.4- |

**2005 AO<sub>28</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 32.41335   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.30536993 | $\omega$ | 346.59919 | +0.93439598   | -0.35377857 |
| <i>a</i> | 2.1839961  | $\Omega$ | 34.21203  | +0.33330725   | +0.82683490 |
| <i>e</i> | 0.2011704  | <i>i</i> | 4.26059   | +0.12573954   | +0.43724681 |
| <i>P</i> | 3.23       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 1996 04 13 691 | 0.1+ | 0.4+ | 2005 01 19 704 | 0.6+  | 1.4-  | 2005 02 14 704 | (0.4- | 1.9+) |
| 1996 04 13 691 | 0.3+ | 0.2+ | 2005 01 19 704 | 1.3+  | 0.5-  | 2005 02 14 704 | 0.2-  | 1.6+  |
| 1996 04 13 691 | 0.0  | 0.1+ | 2005 01 19 704 | 0.3+  | 0.7-  | 2005 02 14 704 | 1.1+  | 0.5+  |
| 2005 01 06 703 | 0.7+ | 0.5+ | 2005 01 19 704 | 0.9-  | 0.5-  | 2007 08 10 691 | 0.7-  | 0.9+  |
| 2005 01 06 703 | 1.2- | 0.1+ | 2005 01 19 704 | 0.3+  | 0.8-  | 2007 08 10 691 | 0.3+  | 0.2+  |
| 2005 01 06 703 | 0.8- | 0.0  | 2005 01 19 704 | 0.0   | 0.1+  | 2007 08 10 691 | 0.1-  | 0.2+  |
| 2005 01 06 703 | 0.3- | 0.1- | 2005 01 19 704 | 0.6+  | 0.7-  | 2007 11 09 D29 | 0.5+  | 0.3-  |
| 2005 01 16 704 | 0.5+ | 0.7+ | 2005 01 19 704 | 0.1+  | 0.2-  | 2007 11 09 D29 | 0.4+  | 0.5-  |
| 2005 01 16 704 | 0.2- | 0.2+ | 2005 01 19 704 | 0.6+  | 0.5+  | 2007 11 09 D29 | 0.6+  | 0.7+  |
| 2005 01 16 704 | 0.1+ | 0.2+ | 2005 02 01 703 | 0.1-  | 0.7-  | 2007 11 09 D29 | 0.2+  | 0.3+  |
| 2005 01 16 704 | 1.4+ | 1.0+ | 2005 02 01 703 | (2.4- | 0.1+) | 2007 12 13 704 | 0.1-  | 0.3-  |
| 2005 01 16 704 | 1.2- | 1.0+ | 2005 02 01 703 | (1.7- | 0.6-) | 2007 12 13 704 | 0.2-  | 0.0   |
| 2005 01 17 704 | 0.7+ | 0.6+ | 2005 02 01 703 | (1.0- | 1.7-) | 2007 12 13 704 | 0.7+  | 0.4-  |
| 2005 01 17 704 | 0.9- | 0.7- | 2005 02 03 704 | 0.2-  | 0.2-  | 2007 12 13 704 | 0.5-  | 0.3-  |
| 2005 01 17 704 | 0.6+ | 0.7+ | 2005 02 03 704 | 0.2-  | 0.3-  | 2007 12 13 704 | 0.2+  | 0.5-  |
| 2005 01 17 704 | 0.3- | 0.7+ | 2005 02 03 704 | 0.2-  | 0.7-  | 2007 12 15 704 | 0.1+  | 0.3+  |
| 2005 01 17 704 | 0.0  | 0.6+ | 2005 02 03 704 | 0.2+  | 0.1+  | 2007 12 15 704 | 0.3-  | 0.0   |
| 2005 01 18 691 | 0.3- | 0.0  | 2005 02 03 704 | 0.1+  | 0.5-  | 2007 12 15 704 | 0.2-  | 0.3+  |
| 2005 01 18 691 | 0.2- | 0.1- | 2005 02 14 704 | 0.2-  | 0.5-  | 2007 12 15 704 | 0.5-  | 0.2+  |
| 2005 01 18 691 | 0.2- | 0.1- | 2005 02 14 704 | 0.4+  | 0.2+  | 2007 12 15 704 | 0.2-  | 0.3+  |

**2005 AS<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 213.37184  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.25752215 | $\omega$ | 26.64299  | -0.99918036   | -0.02921876 |
| <i>a</i> | 2.4467691  | $\Omega$ | 151.64030 | +0.01759555   | -0.93678367 |
| <i>e</i> | 0.1269595  | <i>i</i> | 3.38125   | +0.03645559   | -0.34868699 |
| <i>P</i> | 3.83       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 1998 05 16 691 | 0.2+ | 0.7+ | 2005 01 13 691 | 0.2+  | 0.0   | 2005 02 01 703 | (0.3+ | 1.8-) |
| 1998 05 16 691 | 0.1+ | 0.5+ | 2005 01 15 704 | 0.8-  | 0.4+  | 2007 10 09 G96 | 0.7+  | 0.1+  |
| 2003 09 29 691 | 0.2- | 0.0  | 2005 01 15 704 | 0.2-  | 1.2+  | 2007 10 09 G96 | 0.7+  | 0.0   |
| 2003 09 29 691 | 0.2- | 0.5+ | 2005 01 15 704 | 0.5+  | 1.1+  | 2007 10 09 G96 | 0.0   | 0.0   |
| 2003 09 29 691 | 0.1+ | 0.2+ | 2005 01 17 704 | 0.7-  | 0.1-  | 2007 10 09 G96 | 0.5+  | 0.1+  |
| 2003 10 24 691 | 0.1+ | 0.1+ | 2005 01 17 704 | 0.2-  | 0.1-  | 2007 10 19 G96 | 0.3-  | 0.1+  |
| 2003 10 24 691 | 0.2+ | 0.3+ | 2005 01 17 704 | (0.3+ | 2.3+) | 2007 10 19 G96 | 0.0   | 0.1-  |
| 2003 10 24 691 | 0.4- | 0.1+ | 2005 01 17 704 | 0.3+  | 1.0+  | 2007 10 19 G96 | 0.1+  | 0.1+  |
| 2004 12 20 G96 | 0.1- | 0.0  | 2005 01 19 691 | 0.2+  | 0.1+  | 2007 10 19 G96 | 0.3+  | 0.3-  |
| 2004 12 20 G96 | 0.0  | 0.1+ | 2005 01 19 691 | 0.1+  | 0.1+  | 2007 11 13 691 | 0.0   | 0.2+  |
| 2004 12 20 G96 | 0.0  | 0.1- | 2005 01 19 691 | 0.2+  | 0.0   | 2007 11 13 691 | 0.5-  | 0.3-  |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 12 20 G96 | 0.3- | 0.1- | 2005 02 01 703 | 0.3- | 0.4+ | 2007 11 13 691 | 0.2- | 0.2+ |
| 2005 01 13 691 | 0.2+ | 0.0  | 2005 02 01 703 | 1.0- | 0.3+ |                |      |      |
| 2005 01 13 691 | 0.2+ | 0.1- | 2005 02 01 703 | 1.0- | 1.3- |                |      |      |

**2005 AA<sub>35</sub> = 2007 WB<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 177.70231  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.29713934 | $\omega$ | 12.96185  | -0.52283392   | +0.85114551 |
| <i>a</i> | 2.2241425  | $\Omega$ | 225.53883 | -0.78783485   | -0.50347422 |
| <i>e</i> | 0.0548120  | <i>i</i> | 3.76463   | -0.32551643   | -0.14854304 |
| <i>P</i> | 3.32       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 09 07 691 | 0.3+ | 0.3- | 2002 03 06 644 | 0.1- | 0.4- | 2007 09 14 G96 | 0.1+ | 0.0  |
| 2000 09 07 691 | 0.3+ | 0.1- | 2004 12 13 691 | 0.3+ | 0.0  | 2007 10 15 G96 | 0.6+ | 0.2- |
| 2000 09 07 691 | 0.1+ | 0.2- | 2004 12 13 691 | 0.2+ | 0.2+ | 2007 10 15 G96 | 0.7+ | 0.3- |
| 2000 10 05 691 | 0.2- | 0.1- | 2004 12 13 691 | 0.3+ | 0.0  | 2007 10 15 G96 | 0.3+ | 0.1+ |
| 2000 10 05 691 | 0.1- | 0.1- | 2005 01 13 704 | 1.4- | 0.9- | 2007 10 15 G96 | 0.4+ | 0.1- |
| 2000 10 05 691 | 0.1- | 0.1- | 2005 01 13 704 | 1.2- | 0.7- | 2007 11 18 691 | 0.2- | 0.6+ |
| 2000 11 29 691 | 0.1- | 0.2+ | 2005 01 13 704 | 1.2+ | 0.9- | 2007 11 18 691 | 1.1- | 0.8- |
| 2000 11 29 691 | 0.3- | 0.5+ | 2005 01 13 704 | 0.7- | 0.8+ | 2007 11 18 691 | 0.2+ | 0.1+ |
| 2000 11 29 691 | 0.1+ | 0.1+ | 2005 01 16 691 | 0.1- | 0.0  | 2007 11 21 G96 | 0.7+ | 0.0  |
| 2002 02 16 644 | 0.5- | 0.3+ | 2005 01 16 691 | 0.1- | 0.1- | 2007 11 21 G96 | 0.0  | 0.1+ |
| 2002 02 16 644 | 0.6+ | 0.0  | 2005 01 16 691 | 0.0  | 0.2- | 2007 11 21 G96 | 0.1- | 0.2+ |
| 2002 02 16 644 | 0.1- | 0.6+ | 2007 09 14 G96 | 0.2+ | 0.1- | 2007 12 05 704 | 0.1+ | 0.9+ |
| 2002 03 06 644 | 0.0  | 0.3- | 2007 09 14 G96 | 0.0  | 0.5- | 2007 12 05 704 | 0.8+ | 0.1+ |
| 2002 03 06 644 | 0.2- | 0.4- | 2007 09 14 G96 | 0.4+ | 0.0  | 2007 12 05 704 | 0.6+ | 0.5+ |

**2005 AF<sub>41</sub> = 2007 TT<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 306.26356  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.29383783 | $\omega$ | 244.66207 | -0.25264698   | -0.96749652 |
| <i>a</i> | 2.2407715  | $\Omega$ | 219.97713 | +0.89373464   | -0.22901782 |
| <i>e</i> | 0.1229103  | <i>i</i> | 0.97694   | +0.37068571   | -0.10724426 |
| <i>P</i> | 3.35       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 1995 02 03 691 | 0.8+  | 0.3-  | 2005 03 09 G96 | 0.3-  | 0.0   | 2007 11 07 703 | 0.2- | 0.2+ |
| 1995 02 03 691 | 0.8-  | 0.3-  | 2005 03 09 G96 | 0.5-  | 0.0   | 2007 11 07 703 | 0.5- | 1.2- |
| 1995 02 03 691 | 0.3-  | 0.4-  | 2005 03 09 G96 | 0.4-  | 0.0   | 2007 11 09 G96 | 0.3+ | 0.2- |
| 2002 03 17 691 | 0.2+  | 0.6+  | 2007 10 04 691 | 0.2+  | 0.3+  | 2007 11 09 G96 | 0.1+ | 0.3- |
| 2002 03 17 691 | 0.2+  | 0.3+  | 2007 10 04 691 | 0.1-  | 0.1-  | 2007 11 09 G96 | 0.0  | 0.4- |
| 2002 03 17 691 | (0.5- | 2.1+) | 2007 10 04 691 | 0.1-  | 0.1+  | 2007 11 09 G96 | 0.0  | 0.4- |
| 2002 04 04 644 | 0.3+  | 0.8+  | 2007 10 08 691 | 0.1-  | 0.3+  | 2007 11 17 G96 | 0.7+ | 0.1+ |
| 2002 04 04 644 | 0.2+  | 0.6+  | 2007 10 08 691 | 0.1+  | 0.0   | 2007 11 17 G96 | 0.4+ | 0.4+ |
| 2002 04 04 644 | 0.5+  | 0.5+  | 2007 10 08 691 | 0.1+  | 0.2+  | 2007 11 17 G96 | 0.0  | 0.2+ |
| 2005 01 15 704 | 0.0   | 0.4-  | 2007 10 21 691 | 0.6-  | 0.3+  | 2007 11 17 G96 | 0.5- | 0.6+ |
| 2005 01 15 704 | 0.0   | 0.3+  | 2007 10 21 691 | 0.5+  | 0.0   | 2007 11 17 G96 | 0.5+ | 0.3+ |
| 2005 01 15 704 | 0.3+  | 0.1-  | 2007 10 21 691 | 0.1-  | 0.2+  | 2007 11 17 G96 | 0.7- | 0.7+ |
| 2005 01 15 704 | 0.5-  | 0.1+  | 2007 10 30 691 | 0.2-  | 0.1+  | 2007 11 17 G96 | 0.4+ | 0.2+ |
| 2005 01 15 704 | 0.8-  | 0.1-  | 2007 10 30 691 | 0.2-  | 0.2+  | 2007 12 05 704 | 0.9+ | 0.4- |
| 2005 01 16 691 | 0.1+  | 0.1+  | 2007 10 30 691 | (1.8+ | 0.6-) | 2007 12 05 704 | 0.0  | 1.3- |
| 2005 01 16 691 | 0.1+  | 0.1+  | 2007 10 30 G96 | 0.0   | 0.3+  | 2007 12 05 704 | 0.0  | 1.1- |
| 2005 01 16 691 | 0.1+  | 0.2+  | 2007 10 30 G96 | 0.2+  | 0.0   | 2007 12 06 G96 | 0.4+ | 0.6- |
| 2005 01 17 704 | (0.6+ | 2.5+) | 2007 10 30 G96 | 0.5+  | 0.1-  | 2007 12 06 G96 | 0.3- | 0.4- |
| 2005 01 17 704 | 1.3+  | 0.7+  | 2007 10 30 G96 | 0.3+  | 0.0   | 2007 12 06 G96 | 0.4+ | 0.2- |
| 2005 01 17 704 | 0.1-  | 0.1+  | 2007 11 07 703 | 0.3-  | 1.5+  | 2007 12 06 G96 | 0.1+ | 0.1- |
| 2005 03 09 G96 | 0.4-  | 0.2-  | 2007 11 07 703 | 0.0   | 0.2-  |                |      |      |

2007 DEC. 24

M.P.O. 129713

**2005 AC<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 276.56494  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23251555 | $\omega$ 299.53077 | +0.34446725   | -0.92388682 |
| <i>a</i> | 2.6191963  | $\Omega$ 129.35185 | +0.91856593   | +0.29503291 |
| <i>e</i> | 0.1649075  | <i>i</i> 12.44644  | +0.19385291   | +0.24369803 |
| <i>P</i> | 4.24       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 01 06 | 704 | 0.8+ | 1.0+ | 2005 01 20 | 699 | 0.5-  | 0.2-  | 2005 02 09 | 699 | 1.3- | 0.7+ |
| 2005 01 06 | 704 | 0.1- | 0.0  | 2005 01 20 | 699 | 0.7+  | 0.6-  | 2005 02 09 | 699 | 0.4+ | 0.1- |
| 2005 01 06 | 704 | 0.1+ | 0.2+ | 2005 02 01 | 703 | 1.0-  | 0.1+  | 2005 02 09 | 699 | 0.2+ | 0.2+ |
| 2005 01 15 | 704 | 0.4+ | 1.0+ | 2005 02 01 | 703 | 0.8-  | 0.3-  | 2005 02 09 | 699 | 0.1+ | 0.5+ |
| 2005 01 15 | 704 | 0.0  | 0.5- | 2005 02 01 | 703 | 0.8-  | 0.4-  | 2005 03 14 | G96 | 0.1- | 0.0  |
| 2005 01 15 | 704 | 0.5- | 0.5- | 2005 02 01 | 703 | 1.1-  | 0.4-  | 2005 03 14 | G96 | 0.1- | 0.3+ |
| 2005 01 15 | 704 | 0.7+ | 0.7+ | 2005 02 02 | 704 | 0.3+  | 0.0   | 2005 03 14 | G96 | 0.1+ | 0.1+ |
| 2005 01 15 | 704 | 1.4+ | 0.5+ | 2005 02 02 | 704 | 0.2+  | 0.5-  | 2005 03 14 | G96 | 0.1- | 0.0  |
| 2005 01 16 | 691 | 0.1+ | 0.3- | 2005 02 02 | 704 | 0.0   | 0.2+  | 2007 06 21 | G96 | 0.3- | 0.3+ |
| 2005 01 16 | 691 | 0.0  | 0.2- | 2005 02 02 | 704 | 0.1-  | 0.5-  | 2007 06 21 | G96 | 0.0  | 0.3+ |
| 2005 01 16 | 691 | 0.2+ | 0.2- | 2005 02 03 | 704 | 0.1-  | 0.3-  | 2007 06 21 | G96 | 0.2- | 0.2+ |
| 2005 01 17 | 704 | 0.8+ | 0.9- | 2005 02 03 | 704 | 0.2-  | 0.4+  | 2007 06 21 | G96 | 0.1+ | 0.1+ |
| 2005 01 17 | 704 | 0.1+ | 0.2+ | 2005 02 03 | 704 | 0.3+  | 0.6+  | 2007 09 05 | G96 | 0.6+ | 1.1+ |
| 2005 01 17 | 704 | 0.6- | 0.6- | 2005 02 03 | 704 | 0.6+  | 0.9+  | 2007 09 05 | G96 | 0.1+ | 0.4+ |
| 2005 01 17 | 704 | 0.1- | 0.1- | 2005 02 04 | 704 | 0.4+  | 0.2-  | 2007 09 05 | G96 | 0.1+ | 0.4+ |
| 2005 01 20 | 699 | 0.4- | 0.5+ | 2005 02 04 | 704 | 0.1+  | 1.1+  | 2007 09 05 | G96 | 0.4- | 0.1- |
| 2005 01 20 | 699 | 0.1+ | 0.1- | 2005 02 04 | 704 | (0.8+ | 2.1+) |            |     |      |      |

**2005 AT<sub>45</sub> = 2007 UJ<sub>37</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.16071    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29279687 | $\omega$ 277.41519 | +0.84078021   | -0.53460549 |
| <i>a</i> | 2.2460793  | $\Omega$ 114.93721 | +0.52639469   | +0.77045319 |
| <i>e</i> | 0.1938319  | <i>i</i> 5.40134   | +0.12648030   | +0.34727345 |
| <i>P</i> | 3.37       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 01 29 | 691 | 0.0  | 0.4- | 2005 01 17 | 704 | 0.2+  | 0.2-  | 2007 10 19 | 703 | 1.1+ | 0.6+ |
| 1995 01 29 | 691 | 0.1- | 0.6+ | 2005 01 17 | 704 | 0.8+  | 0.2-  | 2007 10 19 | 703 | 0.4+ | 0.7+ |
| 1995 01 29 | 691 | 0.0  | 0.6- | 2005 01 18 | 691 | 0.4-  | 0.0   | 2007 10 21 | G96 | 0.5+ | 0.2- |
| 2004 12 20 | G96 | 0.2- | 0.3- | 2005 01 18 | 691 | 0.0   | 0.1+  | 2007 10 21 | G96 | 0.3+ | 0.2- |
| 2004 12 20 | G96 | 0.1- | 0.6- | 2005 01 18 | 691 | 0.1-  | 0.0   | 2007 10 21 | G96 | 0.2+ | 0.2- |
| 2004 12 20 | G96 | 0.1- | 0.4- | 2005 02 02 | 704 | 0.2-  | 0.9+  | 2007 10 21 | G96 | 0.1+ | 0.1- |
| 2004 12 20 | G96 | 0.2- | 0.6- | 2005 02 02 | 704 | 0.3+  | 0.1+  | 2007 11 07 | 703 | 0.6- | 0.1+ |
| 2005 01 15 | 704 | 0.9- | 0.2+ | 2005 02 02 | 704 | 0.4+  | 1.0+  | 2007 11 07 | 703 | 0.5- | 0.1- |
| 2005 01 15 | 704 | 1.0+ | 0.7+ | 2005 02 02 | 704 | 0.2-  | 0.3+  | 2007 11 07 | 703 | 1.1- | 0.4- |
| 2005 01 15 | 704 | 0.2- | 0.3- | 2006 04 25 | 691 | 0.2-  | 0.3+  | 2007 11 07 | 703 | 0.0  | 1.0- |
| 2005 01 15 | 704 | 0.4+ | 0.5+ | 2006 04 25 | 691 | 0.6+  | 0.0   | 2007 11 17 | 703 | 0.0  | 0.2- |
| 2005 01 17 | 704 | 0.5+ | 0.2- | 2006 04 25 | 691 | 0.2-  | 0.5+  | 2007 11 17 | 703 | 0.2- | 0.5+ |
| 2005 01 17 | 704 | 0.8+ | 0.4+ | 2007 10 10 | 703 | 0.1+  | 0.4+  | 2007 11 17 | 703 | 0.2+ | 0.5- |
| 2005 01 17 | 704 | 0.4+ | 0.0  | 2007 10 10 | 703 | (2.0- | 1.8+) | 2007 11 17 | 703 | 0.0  | 0.1- |
| 2005 01 17 | 704 | 0.4+ | 0.6+ | 2007 10 10 | 703 | 0.1-  | 0.8+  | 2007 12 06 | 703 | 0.1- | 0.2- |
| 2005 01 17 | 704 | 0.4- | 0.9+ | 2007 10 10 | 703 | 1.1-  | 1.4+  | 2007 12 06 | 703 | 0.3- | 0.2+ |
| 2005 01 17 | 704 | 0.1+ | 0.5- | 2007 10 19 | 703 | 0.4+  | 0.4+  | 2007 12 06 | 703 | 0.5- | 1.1- |
| 2005 01 17 | 704 | 0.3+ | 0.2- | 2007 10 19 | 703 | 0.4-  | 0.7+  | 2007 12 06 | 703 | 0.4+ | 0.4+ |

**2005 AP<sub>52</sub> = 2007 VV<sub>80</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 266.41327  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27230525 | $\omega$ 110.83963 | -0.71333053   | -0.70056454 |
| <i>a</i> | 2.3573933  | $\Omega$ 24.70067  | +0.62470157   | -0.64802920 |
| <i>e</i> | 0.1294583  | <i>i</i> 2.63433   | +0.31765942   | -0.29877665 |
| <i>P</i> | 3.62       | <i>H</i> 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 13 | 691 | 0.3- | 0.2+ | 2005 03 14 | G96 | 0.0  | 0.2- | 2007 11 04 | 691 | 0.4- | 0.2+ |
| 2005 01 13 | 691 | 0.1+ | 0.1- | 2007 10 07 | G96 | 0.2+ | 0.5+ | 2007 11 04 | 691 | 0.5+ | 0.2+ |
| 2005 01 13 | 691 | 0.2- | 0.1+ | 2007 10 07 | G96 | 0.0  | 0.6- | 2007 11 04 | 691 | 0.1- | 0.0  |
| 2005 01 18 | 691 | 0.3+ | 0.1- | 2007 10 07 | G96 | 0.2- | 0.2- | 2007 11 05 | G96 | 0.4+ | 0.3+ |
| 2005 01 18 | 691 | 0.3- | 0.0  | 2007 10 07 | G96 | 0.8- | 0.5- | 2007 11 05 | G96 | 0.1- | 0.0  |
| 2005 01 18 | 691 | 0.2+ | 0.1+ | 2007 10 18 | G96 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.0  |
| 2005 03 14 | G96 | 0.2+ | 0.6+ | 2007 10 18 | G96 | 0.3+ | 0.3- | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 2005 03 14 | G96 | 0.1+ | 0.4- | 2007 10 18 | G96 | 0.1+ | 0.0  |            |     |      |      |
| 2005 03 14 | G96 | 0.2- | 0.2- | 2007 10 18 | G96 | 0.1- | 0.2+ |            |     |      |      |

**2005 AK<sub>59</sub> = 1978 WH<sub>8</sub> = 2007 VY<sub>290</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.46977   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30623802 | $\omega$ 323.69218 | +0.79113224   | -0.61013713 |
| <i>a</i> | 2.1798669  | $\Omega$ 73.96314  | +0.57116807   | +0.71185050 |
| <i>e</i> | 0.1494090  | <i>i</i> 2.55980   | +0.21880774   | +0.34785276 |
| <i>P</i> | 3.22       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1978 11 29 | 675 | 0.2-  | 0.2-  | 2005 03 14 | G96 | 0.3-  | 0.8-  | 2007 11 19 | 691 | 0.1+  | 0.1-  |
| 1978 11 30 | 675 | 0.2+  | 0.5+  | 2005 03 14 | G96 | 0.0   | 0.7-  | 2007 12 04 | 703 | (0.6+ | 2.5-) |
| 1994 12 03 | 691 | 0.1+  | 0.1+  | 2005 03 14 | G96 | 0.3+  | 0.4-  | 2007 12 04 | 703 | 0.9+  | 0.1-  |
| 1994 12 03 | 691 | 0.0   | 1.0-  | 2005 03 14 | G96 | 0.0   | 0.5-  | 2007 12 04 | 703 | 0.1+  | 0.4+  |
| 1994 12 03 | 691 | 0.3+  | 0.1-  | 2006 05 20 | G96 | 0.7+  | 0.2+  | 2007 12 04 | 703 | 0.4+  | 0.6+  |
| 1996 04 19 | 691 | 0.1-  | 0.2+  | 2006 05 20 | G96 | (1.8+ | 0.7+) | 2007 12 04 | G96 | 0.4+  | 0.1-  |
| 1996 04 19 | 691 | 0.2-  | 0.1+  | 2006 05 20 | G96 | 0.4+  | 0.0   | 2007 12 04 | G96 | 0.2+  | 0.1-  |
| 1996 04 19 | 691 | 0.0   | 0.1+  | 2006 05 20 | G96 | 0.0   | 0.1-  | 2007 12 04 | G96 | 0.1-  | 0.1-  |
| 2005 01 15 | 704 | (1.7+ | 0.7+) | 2007 11 02 | 691 | 0.3-  | 0.3+  | 2007 12 04 | G96 | 0.1-  | 0.1-  |
| 2005 01 15 | 704 | (2.3+ | 0.2+) | 2007 11 02 | 691 | 0.2-  | 0.3+  | 2007 12 05 | 704 | 0.1+  | 0.1+  |
| 2005 01 15 | 704 | 0.5+  | 0.4-  | 2007 11 02 | 691 | 0.1-  | 0.1+  | 2007 12 05 | 704 | 0.2+  | 0.1+  |
| 2005 01 15 | 704 | 0.7+  | 0.3+  | 2007 11 14 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 0.2+  | 0.1+  |
| 2005 01 18 | 691 | 0.1+  | 0.0   | 2007 11 14 | 691 | 0.2-  | 0.2+  | 2007 12 05 | 704 | 0.4-  | 0.3+  |
| 2005 01 18 | 691 | 0.3+  | 0.3-  | 2007 11 14 | 691 | 0.3-  | 0.2+  | 2007 12 05 | 704 | 0.3-  | 0.0   |
| 2005 01 18 | 691 | 0.6-  | 0.1+  | 2007 11 14 | 691 | 0.4-  | 0.2-  | 2007 12 14 | 704 | 0.1+  | 0.6-  |
| 2005 01 20 | 704 | 0.3-  | 1.1+  | 2007 11 14 | 691 | 0.1-  | 0.1+  | 2007 12 14 | 704 | 0.4-  | 0.2+  |
| 2005 01 20 | 704 | 0.4+  | 0.1-  | 2007 11 14 | 691 | 0.1-  | 0.2+  | 2007 12 14 | 704 | 0.1+  | 0.3+  |
| 2005 01 20 | 704 | 0.9+  | 0.0   | 2007 11 19 | 691 | 0.1+  | 0.0   | 2007 12 14 | 704 | 0.8+  | 0.2+  |
| 2005 01 20 | 704 | 0.2-  | 0.1-  | 2007 11 19 | 691 | 0.2+  | 0.1-  | 2007 12 14 | 704 | 0.1-  | 0.1-  |

**2005 AT<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 214.23226  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27194889 | $\omega$ 229.93052 | -0.91863364   | +0.39484800 |
| <i>a</i> | 2.3594523  | $\Omega$ 333.31670 | -0.35204726   | -0.83451103 |
| <i>e</i> | 0.1486480  | <i>i</i> 1.83733   | -0.17937381   | -0.38429987 |
| <i>P</i> | 3.62       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 30 | 691 | 0.2+ | 0.1- | 2005 02 02 | 704 | 0.4-  | 0.4+  | 2005 03 04 | G96 | 0.2- | 0.3- |
| 2003 09 30 | 691 | 0.1- | 0.1- | 2005 02 02 | 704 | 0.2+  | 0.5-  | 2005 03 04 | 097 | 0.1- | 0.0  |
| 2003 09 30 | 691 | 0.1+ | 0.1- | 2005 02 02 | 704 | 0.9-  | 0.0   | 2005 03 04 | 097 | 0.4- | 0.1- |
| 2005 01 15 | 691 | 0.2+ | 0.1- | 2005 02 02 | 704 | 0.3-  | 0.0   | 2005 03 04 | 097 | 0.6- | 0.3- |
| 2005 01 15 | 691 | 0.3+ | 0.1- | 2005 02 03 | 704 | (1.0+ | 1.8+) | 2005 03 05 | 097 | 0.3+ | 0.3+ |
| 2005 01 15 | 691 | 0.3+ | 0.3- | 2005 02 03 | 704 | 0.3+  | 1.5+  | 2005 03 05 | 097 | 0.2+ | 0.1+ |
| 2005 01 19 | 691 | 0.1+ | 0.1+ | 2005 02 03 | 704 | 0.7+  | 1.0+  | 2005 03 05 | 097 | 0.0  | 0.3+ |
| 2005 01 19 | 691 | 0.2+ | 0.2+ | 2005 03 04 | G96 | 0.0   | 0.0   | 2007 10 15 | 691 | 0.3+ | 0.1+ |
| 2005 01 19 | 691 | 0.9- | 0.2+ | 2005 03 04 | G96 | 0.0   | 0.0   | 2007 10 15 | 691 | 0.1- | 0.0  |
| 2005 02 01 | 703 | 0.7+ | 1.3- | 2005 03 04 | G96 | 0.5-  | 0.1-  | 2007 10 15 | 691 | 0.1- | 0.0  |
| 2005 02 01 | 703 | 1.1+ | 0.0  | 2005 03 04 | G96 | 0.3-  | 0.3-  | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2005 02 01 | 703 | 0.1- | 0.7- | 2005 03 04 | G96 | 0.1-  | 0.2-  | 2007 12 05 | 691 | 0.3- | 0.2+ |
| 2005 02 01 | 703 | 0.1- | 0.2+ | 2005 03 04 | G96 | 0.3-  | 0.1-  | 2007 12 05 | 691 | 0.2+ | 0.1- |
| 2005 02 02 | 704 | 0.2- | 0.2+ | 2005 03 04 | G96 | 0.1-  | 0.2-  |            |     |      |      |

**2005 AZ<sub>77</sub> = 2007 VX<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.96790   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27184076 | $\omega$ 21.95736  | +0.99052252   | -0.13490339 |
| <i>a</i> | 2.3600779  | $\Omega$ 345.72304 | +0.10522558   | +0.86610897 |
| <i>e</i> | 0.1513457  | <i>i</i> 6.00782   | +0.08827637   | +0.48130689 |
| <i>P</i> | 3.63       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 15 | 691 | 0.1- | 0.2- | 2007 10 16 | 703 | 0.4+ | 0.5+ | 2007 11 08 | 704 | 0.4+ | 0.2+ |
| 2005 01 15 | 691 | 0.2+ | 0.1+ | 2007 10 16 | 703 | 0.0  | 0.6+ | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2005 01 15 | 691 | 0.1- | 0.2- | 2007 10 16 | 703 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.4+ | 0.3- |
| 2005 01 19 | 691 | 0.2- | 0.1- | 2007 10 16 | 703 | 0.6+ | 0.5- | 2007 11 18 | G96 | 0.2+ | 0.4- |
| 2005 01 19 | 691 | 0.2- | 0.1+ | 2007 11 02 | 704 | 0.5- | 0.4+ | 2007 11 18 | G96 | 0.1+ | 0.4- |
| 2005 01 19 | 691 | 0.6+ | 0.3+ | 2007 11 02 | 704 | 0.4- | 0.4- | 2007 11 18 | G96 | 0.1- | 0.1- |
| 2005 02 02 | 691 | 0.1+ | 0.2+ | 2007 11 02 | 704 | 0.1- | 0.0  | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 2005 02 02 | 691 | 0.1- | 0.3+ | 2007 11 02 | 704 | 0.1- | 0.8+ | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 2005 02 02 | 691 | 0.2- | 0.3- | 2007 11 02 | 704 | 0.3- | 0.4+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2007 10 09 | 691 | 0.6- | 0.2+ | 2007 11 08 | 704 | 0.3+ | 0.7+ | 2007 11 19 | 291 | 0.1- | 0.1- |
| 2007 10 09 | 691 | 0.6+ | 0.6- | 2007 11 08 | 704 | 0.3- | 0.2+ | 2007 11 19 | 291 | 0.1- | 0.1- |
| 2007 10 09 | 691 | 0.1- | 0.2+ | 2007 11 08 | 704 | 0.6+ | 1.1+ | 2007 11 19 | 291 | 0.1- | 0.2- |

**2005 BE<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 290.15472  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.34418786 | $\omega$ 162.07367 | -0.25891352   | +0.95915823 |
| <i>a</i> | 2.0165346  | $\Omega$ 92.80168  | -0.89957592   | -0.19649885 |
| <i>e</i> | 0.6242041  | <i>i</i> 6.54958   | -0.35174842   | -0.20347895 |
| <i>P</i> | 2.86       | <i>H</i> 18.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 01 18 | 691 | 0.0   | 0.2+  | 2005 08 25 | 423 | 0.0  | 0.1- | 2005 09 01 | E12 | 0.2-  | 0.0   |
| 2005 01 18 | 691 | 0.3+  | 0.2-  | 2005 08 27 | 423 | 0.0  | 0.1+ | 2005 09 01 | E12 | 0.2+  | 0.1-  |
| 2005 01 18 | 691 | 0.1+  | 0.1+  | 2005 08 27 | 423 | 0.1+ | 0.0  | 2005 09 06 | E12 | 0.1+  | 0.2-  |
| 2005 01 19 | 696 | 0.3-  | 0.6+  | 2005 08 27 | 423 | 0.1- | 0.1- | 2005 09 06 | E12 | 0.0   | 0.2+  |
| 2005 01 19 | 696 | 1.1-  | 0.7-  | 2005 08 27 | 423 | 0.2- | 0.3+ | 2005 09 06 | E12 | 0.1+  | 0.1+  |
| 2005 01 19 | 291 | (0.8+ | 2.0-) | 2005 08 27 | 423 | 0.2- | 0.2+ | 2005 09 08 | E12 | (0.6- | 1.6-) |
| 2005 01 19 | 291 | (3.0- | 0.4+) | 2005 08 27 | 423 | 0.2+ | 0.0  | 2005 09 08 | E12 | 0.1+  | 0.0   |
| 2005 01 19 | 291 | 0.0   | 0.9-  | 2005 08 27 | 423 | 0.0  | 0.0  | 2005 09 08 | E12 | 0.3-  | 0.1+  |
| 2005 01 19 | 448 | 0.7+  | 0.2+  | 2005 08 27 | 423 | 0.1- | 0.1+ | 2005 09 09 | E12 | 0.3+  | 0.0   |
| 2005 01 19 | 448 | 0.4-  | 0.3+  | 2005 08 27 | 423 | 0.1+ | 0.0  | 2005 09 09 | E12 | 0.0   | 0.2+  |
| 2005 01 19 | 448 | 0.0   | 0.1-  | 2005 08 27 | 423 | 0.0  | 0.1+ | 2005 09 09 | E12 | 0.1+  | 0.3+  |
| 2005 01 19 | 701 | 0.6+  | 0.1-  | 2005 08 27 | 423 | 0.0  | 0.0  | 2005 09 09 | E12 | 0.1-  | 0.3+  |
| 2005 01 19 | 701 | 0.8-  | 0.9-  | 2005 08 27 | 423 | 0.2- | 0.1+ | 2005 09 09 | E12 | 0.1+  | 0.4+  |
| 2005 01 29 | 448 | 0.4-  | 0.3+  | 2005 08 27 | 423 | 0.0  | 0.1+ | 2005 09 09 | E12 | 0.2+  | 0.1+  |
| 2005 01 29 | 448 | 0.1+  | 0.2-  | 2005 08 27 | 423 | 0.1+ | 0.0  | 2005 09 09 | E12 | 0.0   | 0.0   |
| 2005 01 29 | 448 | 0.1-  | 0.3+  | 2005 08 27 | 423 | 0.0  | 0.1- | 2005 09 09 | E12 | 0.0   | 0.0   |
| 2005 02 01 | 701 | 0.5-  | 0.6+  | 2005 08 27 | 423 | 0.2- | 0.0  | 2005 09 09 | E12 | 0.1-  | 0.2-  |
| 2005 02 01 | 701 | 1.1-  | 0.8+  | 2005 08 27 | 423 | 0.0  | 0.3- | 2005 09 20 | 428 | 0.5+  | 0.0   |
| 2005 02 06 | 246 | 1.2+  | 1.0+  | 2005 08 27 | 423 | 0.1- | 0.0  | 2005 09 20 | 428 | 0.4+  | 0.2-  |
| 2005 02 06 | 246 | 0.9+  | 0.9+  | 2005 08 27 | 423 | 0.4+ | 0.1- | 2005 09 20 | 428 | 0.6+  | 0.3-  |
| 2005 02 06 | 246 | 1.5+  | 0.1-  | 2005 08 27 | 423 | 0.3- | 0.1- | 2005 09 20 | 428 | 0.4+  | 0.0   |
| 2005 02 06 | 246 | 0.5+  | 0.6+  | 2005 08 27 | 423 | 0.1+ | 0.1- | 2005 09 30 | E12 | 0.3-  | 0.2-  |
| 2005 02 16 | F65 | 0.5-  | 0.3+  | 2005 08 30 | 834 | 0.6- | 0.4+ | 2005 09 30 | E12 | 0.5+  | 0.5+  |
| 2005 02 16 | F65 | 0.6-  | 0.2+  | 2005 08 30 | 834 | 0.3- | 0.5+ | 2005 09 30 | E12 | 0.2-  | 0.3+  |
| 2005 02 16 | F65 | 0.3-  | 0.0   | 2005 08 30 | 834 | 0.1+ | 0.5+ | 2005 09 30 | E12 | 0.3+  | 0.2+  |
| 2005 03 17 | 715 | 0.7-  | 0.1+  | 2005 08 30 | E12 | 0.1- | 0.1- | 2005 10 02 | E12 | 1.2+  | 0.4-  |
| 2005 03 17 | 715 | 0.8-  | 0.5+  | 2005 08 30 | E12 | 0.1+ | 0.3- | 2005 10 02 | E12 | 0.2+  | 0.2+  |
| 2005 03 17 | 715 | 0.7+  | 0.3+  | 2005 08 30 | E12 | 0.1+ | 0.3+ | 2005 10 02 | E12 | 0.5-  | 0.3+  |
| 2005 05 16 | 696 | 0.2-  | 0.7+  | 2005 08 30 | E12 | 0.1+ | 0.2+ | 2005 10 05 | 110 | 0.1+  | 0.6-  |
| 2005 05 16 | 696 | 0.0   | 0.2-  | 2005 08 30 | E12 | 0.1- | 0.2- | 2005 10 05 | 110 | 0.0   | 0.6-  |
| 2005 05 16 | 696 | 0.9-  | 0.1+  | 2005 08 30 | E12 | 0.1+ | 0.1- | 2005 10 05 | 110 | 0.6+  | 1.3-  |
| 2005 08 25 | 423 | 0.1-  | 0.2-  | 2005 08 30 | E12 | 0.1- | 0.3+ | 2007 11 10 | H55 | 0.4+  | 0.2+  |
| 2005 08 25 | 423 | 0.1-  | 0.1+  | 2005 08 30 | E12 | 0.2- | 0.2+ | 2007 11 10 | H55 | 0.1-  | 0.3+  |
| 2005 08 25 | 423 | 0.2-  | 0.2-  | 2005 08 30 | E12 | 0.1- | 0.0  | 2007 11 10 | H55 | 0.3+  | 0.5+  |
| 2005 08 25 | 423 | 0.1-  | 0.1-  | 2005 08 30 | E12 | 0.1+ | 0.4- | 2007 11 16 | H55 | 0.1+  | 0.3+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 08 25 | 423 | 0.1- | 0.3- | 2005 09 01 | E12 | 0.2- | 0.2+ | 2007 11 16 | H55 | 0.3+ | 0.4+ |
| 2005 08 25 | 423 | 0.1- | 0.1- | 2005 09 01 | E12 | 0.1+ | 0.2+ | 2007 11 16 | H55 | 0.4- | 0.7+ |

**2005 BM<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 229.29743  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25722564 | $\omega$ 23.57068  | -0.92387302   | -0.37638566 |
| <i>a</i> | 2.4486491  | $\Omega$ 134.12953 | +0.33399059   | -0.88129903 |
| <i>e</i> | 0.0567415  | <i>i</i> 5.53470   | +0.18683931   | -0.28573739 |
| <i>P</i> | 3.83       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 16 | 691 | 0.3+ | 0.1- | 2005 01 19 | 691 | 0.1+ | 0.0  | 2005 02 09 | 699 | 0.2- | 0.1+ |
| 2005 01 16 | 691 | 0.2+ | 0.1- | 2005 02 01 | 644 | 0.1- | 0.7+ | 2005 03 04 | G96 | 0.3- | 0.4+ |
| 2005 01 16 | 691 | 0.1+ | 0.4- | 2005 02 01 | 703 | 0.0  | 0.1+ | 2005 03 04 | G96 | 0.2+ | 0.2- |
| 2005 01 17 | 704 | 0.5+ | 0.1- | 2005 02 01 | 644 | 0.3+ | 0.4+ | 2005 03 04 | G96 | 0.1+ | 0.2- |
| 2005 01 17 | 704 | 0.0  | 0.7- | 2005 02 01 | 703 | 0.8- | 0.0  | 2005 03 04 | G96 | 0.2+ | 0.1+ |
| 2005 01 17 | 704 | 0.1- | 0.3+ | 2005 02 01 | 703 | 0.5+ | 0.9- | 2007 09 10 | 691 | 0.2- | 0.1+ |
| 2005 01 17 | 704 | 0.2+ | 0.1- | 2005 02 01 | 644 | 0.1+ | 0.4+ | 2007 09 10 | 691 | 0.1- | 0.0  |
| 2005 01 17 | 704 | 0.4- | 0.1+ | 2005 02 01 | 703 | 0.2+ | 1.0- | 2007 09 10 | 691 | 0.2- | 0.2- |
| 2005 01 17 | 704 | 0.6- | 0.1+ | 2005 02 02 | 704 | 1.0+ | 0.2- | 2007 10 21 | G96 | 0.2+ | 0.0  |
| 2005 01 17 | 704 | 0.2- | 0.2+ | 2005 02 02 | 704 | 0.5+ | 0.5+ | 2007 10 21 | G96 | 0.1+ | 0.1+ |
| 2005 01 17 | 704 | 0.0  | 0.3+ | 2005 02 02 | 704 | 0.1+ | 0.4- | 2007 10 21 | G96 | 0.1+ | 0.1- |
| 2005 01 17 | 704 | 0.7- | 0.9+ | 2005 02 09 | 699 | 1.4+ | 0.4- | 2007 10 21 | G96 | 0.0  | 0.1+ |
| 2005 01 19 | 691 | 0.1- | 0.0  | 2005 02 09 | 699 | 0.9- | 1.0+ |            |     |      |      |
| 2005 01 19 | 691 | 0.1+ | 0.0  | 2005 02 09 | 699 | 1.4- | 0.6- |            |     |      |      |

**2005 BZ<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.43040  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26580675 | $\omega$ 154.63133 | +0.53323052   | -0.84580178 |
| <i>a</i> | 2.3956611  | $\Omega$ 263.14052 | +0.77323790   | +0.49537832 |
| <i>e</i> | 0.1327744  | <i>i</i> 0.97355   | +0.34317396   | +0.19803958 |
| <i>P</i> | 3.71       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 18 | G96 | 0.0  | 0.3- | 2005 01 31 | 701 | 0.5+ | 0.4+ | 2007 08 10 | 691 | 0.3- | 0.2+ |
| 2004 12 18 | G96 | 0.2- | 0.2- | 2005 01 31 | 701 | 0.1+ | 0.4+ | 2007 09 10 | G96 | 0.5+ | 0.1- |
| 2004 12 18 | G96 | 0.0  | 0.2- | 2005 01 31 | 701 | 0.1- | 1.0+ | 2007 09 10 | G96 | 0.2+ | 0.1- |
| 2004 12 18 | G96 | 0.3- | 0.4- | 2005 03 09 | G96 | 0.3+ | 0.4- | 2007 09 10 | G96 | 0.3+ | 0.1- |
| 2005 01 15 | 704 | 0.2+ | 0.4+ | 2005 03 09 | G96 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.5+ | 0.1+ |
| 2005 01 15 | 704 | 0.1- | 0.1+ | 2005 03 09 | G96 | 0.1- | 0.7- | 2007 09 19 | 691 | 0.3+ | 0.0  |
| 2005 01 15 | 704 | 0.2- | 0.6+ | 2005 03 09 | G96 | 0.2- | 0.3- | 2007 09 19 | 691 | 0.5- | 0.0  |
| 2005 01 29 | 701 | 0.4- | 0.6- | 2007 08 10 | 691 | 0.5- | 0.1+ | 2007 09 19 | 691 | 0.5- | 0.2- |
| 2005 01 29 | 701 | 0.4+ | 0.0  | 2007 08 10 | 691 | 0.2- | 0.1+ |            |     |      |      |

**2005 CZ<sub>10</sub> = 2007 TW<sub>370</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 72.68389   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19796748 | $\omega$ 310.89443 | +0.39177379   | +0.91667306 |
| <i>a</i> | 2.9156819  | $\Omega$ 341.69724 | -0.75042739   | +0.26875422 |
| <i>e</i> | 0.2628034  | <i>i</i> 14.54941  | -0.53232699   | +0.29577300 |
| <i>P</i> | 4.98       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 14 | 644 | 0.0  | 0.1- | 2005 04 04 | G96 | 0.3- | 0.0  | 2007 10 16 | 703 | 0.3- | 0.7+ |
| 2002 11 14 | 644 | 0.0  | 0.1+ | 2005 04 04 | G96 | 0.1- | 0.2- | 2007 10 16 | 703 | 0.9- | 0.0  |
| 2002 11 14 | 644 | 0.1+ | 0.0  | 2005 04 04 | G96 | 0.3- | 0.1- | 2007 10 16 | 703 | 0.4+ | 0.1+ |
| 2003 11 20 | 645 | 0.1- | 0.1- | 2007 09 13 | 703 | 0.5+ | 0.2+ | 2007 10 21 | 703 | 0.3- | 1.3+ |
| 2003 11 20 | 645 | 0.0  | 0.2- | 2007 09 13 | 703 | 0.4+ | 0.3+ | 2007 10 21 | 703 | 0.4+ | 1.3+ |
| 2005 02 01 | 691 | 0.1- | 0.1+ | 2007 09 13 | 703 | 0.4- | 0.0  | 2007 10 21 | 703 | 2.5+ | 0.1+ |
| 2005 02 01 | 691 | 0.1+ | 0.2+ | 2007 09 13 | 703 | 0.9- | 0.4- | 2007 10 21 | 703 | 1.0+ | 0.1- |
| 2005 02 01 | 691 | 0.0  | 0.3+ | 2007 10 12 | 699 | 1.1- | 0.1+ | 2007 11 13 | 703 | 0.4- | 0.5- |
| 2005 02 04 | 691 | 0.3+ | 0.2+ | 2007 10 12 | 699 | 0.2+ | 0.1+ | 2007 11 13 | 703 | 1.5- | 0.7+ |
| 2005 02 04 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 699 | 0.9- | 0.1- | 2007 11 13 | 703 | 0.7- | 0.3- |



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2005 02 04 691 0.5+ 0.2+ 2007 10 12 699 (1.8- 0.3-) 2007 11 13 703 0.9- 0.0  
 2005 04 04 G96 0.0 0.1- 2007 10 16 703 0.7+ 0.4+

**2005 CJ<sub>11</sub> = 2007 WV<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 257.95427  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26153722 | $\omega$ | 47.05739  | -0.84178110   | -0.53703126 |
| <i>a</i> | 2.4216630  | $\Omega$ | 100.39014 | +0.47763893   | -0.78826506 |
| <i>e</i> | 0.1180049  | <i>i</i> | 3.19325   | +0.25152660   | -0.30039245 |
| <i>P</i> | 3.77       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2003 09 30 691 | 0.3- | 0.3- | 2005 02 03 704 | 0.4+  | 0.6+  | 2005 02 14 704 | 0.5+  | 0.3+  |
| 2003 09 30 691 | 0.1- | 0.5+ | 2005 02 04 G96 | 0.1-  | 0.2-  | 2005 02 14 704 | (1.7+ | 0.6-) |
| 2003 09 30 691 | 0.2+ | 0.3+ | 2005 02 04 G96 | 0.2-  | 0.4-  | 2007 10 09 G96 | 0.1-  | 0.6-  |
| 2004 12 20 G96 | 0.1- | 0.4- | 2005 02 04 G96 | 0.1-  | 0.5-  | 2007 10 09 G96 | 0.5+  | 0.6-  |
| 2004 12 20 G96 | 0.0  | 0.4- | 2005 02 04 G96 | 0.0   | 0.4-  | 2007 10 09 G96 | 0.0   | 0.5-  |
| 2004 12 20 G96 | 0.4+ | 0.7- | 2005 02 09 691 | 0.3-  | 0.2-  | 2007 10 09 G96 | 0.2+  | 0.3-  |
| 2004 12 20 G96 | 0.2- | 0.1- | 2005 02 09 691 | 0.1+  | 0.2-  | 2007 11 17 291 | 0.1-  | 0.0   |
| 2005 02 01 691 | 0.2+ | 0.2+ | 2005 02 09 699 | 0.5+  | 0.5+  | 2007 11 17 291 | 0.0   | 0.0   |
| 2005 02 01 691 | 0.1- | 0.3+ | 2005 02 09 691 | 0.0   | 0.0   | 2007 11 17 291 | 0.3-  | 0.0   |
| 2005 02 01 691 | 0.0  | 0.2+ | 2005 02 09 699 | 0.0   | 0.7+  | 2007 11 18 291 | 0.2+  | 0.3+  |
| 2005 02 03 704 | 1.1- | 1.1- | 2005 02 09 699 | 1.1+  | 0.0   | 2007 11 18 291 | 0.1-  | 0.1-  |
| 2005 02 03 704 | 0.0  | 0.1- | 2005 02 09 699 | 0.2-  | 0.5+  | 2007 11 18 291 | 0.3+  | 0.1+  |
| 2005 02 03 704 | 0.0  | 0.8+ | 2005 02 14 704 | (2.6+ | 0.5-) |                |       |       |

**2005 CY<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 98.18817   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18435799 | $\omega$ | 288.09436 | -0.49181829   | +0.85864182 |
| <i>a</i> | 3.0574644  | $\Omega$ | 311.56187 | -0.70795581   | -0.49089409 |
| <i>e</i> | 0.1423805  | <i>i</i> | 11.12647  | -0.50686620   | -0.14750328 |
| <i>P</i> | 5.35       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 1994 01 21 691 | 0.0  | 0.4+ | 2005 02 02 703 | 0.0   | 0.7+  | 2005 03 04 691 | 0.1- | 0.0  |
| 1994 01 21 691 | 0.3- | 0.2- | 2005 02 02 703 | 1.2+  | 1.5+  | 2005 03 04 691 | 0.2- | 0.1+ |
| 1994 01 21 691 | 0.2- | 0.5- | 2005 02 03 704 | 1.3+  | 0.8+  | 2005 03 13 G96 | 0.1- | 0.5- |
| 1994 01 21 691 | 0.1- | 0.9- | 2005 02 03 704 | (1.6+ | 2.7+) | 2005 03 13 G96 | 0.6- | 0.4- |
| 1994 01 21 691 | 0.4- | 0.5- | 2005 02 03 704 | 0.5-  | 0.5+  | 2005 03 13 G96 | 0.4- | 0.3- |
| 1994 01 21 691 | 0.0  | 0.7- | 2005 02 03 704 | 0.2+  | 0.5+  | 2005 03 13 G96 | 0.3- | 0.6- |
| 2005 01 17 691 | 0.2- | 0.2+ | 2005 02 03 704 | 0.2+  | 0.2+  | 2007 09 02 G96 | 0.2- | 0.3- |
| 2005 01 17 691 | 0.0  | 0.1- | 2005 02 04 691 | 0.1+  | 0.2+  | 2007 09 02 G96 | 0.3- | 0.0  |
| 2005 01 17 691 | 0.5- | 0.0  | 2005 02 04 691 | 0.1-  | 0.1-  | 2007 09 02 G96 | 0.2+ | 0.1- |
| 2005 02 02 704 | 0.4- | 0.8+ | 2005 02 04 691 | 0.1-  | 0.2+  | 2007 09 02 G96 | 0.5- | 0.1- |
| 2005 02 02 704 | 0.6+ | 0.5+ | 2005 02 09 699 | 0.2+  | 0.3-  | 2007 09 11 703 | 1.1- | 0.5+ |
| 2005 02 02 704 | 0.2+ | 1.0- | 2005 02 09 699 | 0.1+  | 0.4-  | 2007 09 11 703 | 0.5+ | 0.0  |
| 2005 02 02 703 | 0.3- | 0.1+ | 2005 02 09 699 | 0.1+  | 0.6+  | 2007 09 11 703 | 0.9+ | 0.8+ |
| 2005 02 02 703 | 0.2+ | 0.2- | 2005 02 09 699 | 0.3+  | 1.0-  | 2007 09 11 703 | 0.1- | 0.3+ |
| 2005 02 02 704 | 0.4+ | 1.1+ | 2005 03 04 691 | 0.2+  | 0.0   |                |      |      |

**2005 CG<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 267.03339  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28085299 | $\omega$ | 79.41922 | -0.96516027   | -0.25711099 |
| <i>a</i> | 2.3093159  | $\Omega$ | 85.66918 | +0.21696519   | -0.89015820 |
| <i>e</i> | 0.1568876  | <i>i</i> | 2.79225  | +0.14625923   | -0.37618122 |
| <i>P</i> | 3.51       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2000 11 19 691 | 0.3- | 0.7- | 2005 02 14 704 | 0.4+ | 0.6+ | 2005 03 12 704 | 0.5+  | 0.0   |
| 2000 11 19 691 | 1.1+ | 1.3- | 2005 02 14 704 | 1.0+ | 0.4- | 2005 03 16 703 | 1.2-  | 0.8+  |
| 2000 11 19 691 | 0.0  | 1.2- | 2005 03 04 704 | 0.7+ | 0.5+ | 2005 03 16 703 | 0.2+  | 0.1-  |
| 2003 09 26 645 | 0.1- | 0.3+ | 2005 03 04 704 | 0.6- | 0.5- | 2005 03 16 703 | 0.2-  | 0.1+  |
| 2003 09 26 645 | 0.1- | 0.1+ | 2005 03 04 704 | 0.0  | 1.4+ | 2005 03 16 703 | (1.7- | 0.9-) |

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2004 12 20 G96 | (0.5+ | 2.0+) | 2005 03 04 704 | 0.4- | 1.0+ | 2007 10 15 G96 | 0.6+ | 0.4+ |
| 2004 12 20 G96 | 0.6-  | 0.2+  | 2005 03 04 704 | 0.9+ | 0.1+ | 2007 10 15 G96 | 0.5+ | 0.0  |
| 2004 12 20 G96 | 0.3+  | 0.2+  | 2005 03 08 699 | 0.7- | 0.8+ | 2007 10 15 G96 | 0.4+ | 0.3- |
| 2004 12 20 G96 | 0.1-  | 0.3-  | 2005 03 08 699 | 0.5- | 0.3+ | 2007 10 15 G96 | 0.4+ | 0.1- |
| 2005 02 02 703 | 0.3-  | 0.7-  | 2005 03 08 699 | 0.7+ | 1.2+ | 2007 11 08 691 | 0.2- | 0.3+ |
| 2005 02 02 703 | (2.0- | 0.7-) | 2005 03 08 699 | 0.6+ | 0.4- | 2007 11 08 691 | 0.1- | 0.3+ |
| 2005 02 02 703 | 1.3-  | 0.8-  | 2005 03 08 704 | 0.9+ | 0.7+ | 2007 11 08 691 | 0.3- | 0.4+ |
| 2005 02 02 703 | 1.4-  | 0.6-  | 2005 03 08 704 | 0.3- | 0.4+ | 2007 12 05 704 | 0.9- | 1.6+ |
| 2005 02 03 704 | 0.1-  | 0.3-  | 2005 03 08 704 | 0.8+ | 0.2+ | 2007 12 05 704 | 0.3- | 0.6+ |
| 2005 02 03 704 | 0.2-  | 0.1-  | 2005 03 11 699 | 0.8+ | 1.2- | 2007 12 05 704 | 0.1- | 0.8+ |
| 2005 02 03 704 | 1.1-  | 0.0   | 2005 03 11 699 | 1.4- | 1.1+ | 2007 12 05 704 | 0.6- | 1.8+ |
| 2005 02 03 704 | (1.6- | 0.3+) | 2005 03 11 699 | 0.1- | 0.5- | 2007 12 05 704 | 0.2+ | 0.9+ |
| 2005 02 03 704 | 0.5-  | 0.0   | 2005 03 11 699 | 0.2+ | 0.3- | 2007 12 06 G96 | 0.2+ | 0.2- |
| 2005 02 14 704 | 1.1+  | 0.4+  | 2005 03 12 704 | 0.5+ | 0.7+ | 2007 12 06 G96 | 0.6+ | 0.1+ |
| 2005 02 14 704 | 1.1+  | 0.5+  | 2005 03 12 704 | 0.2+ | 0.2+ | 2007 12 06 G96 | 0.3+ | 0.1+ |
| 2005 02 14 704 | 1.1+  | 0.2+  | 2005 03 12 704 | 0.4+ | 0.3+ | 2007 12 06 G96 | 0.4- | 0.1- |

**2005 CY<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 211.52163  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23323566 | $\omega$ | 76.95839 | -0.94397673   | -0.32419951 |
| <i>a</i> | 2.6138024  | $\Omega$ | 84.09838 | +0.27364290   | -0.87339747 |
| <i>e</i> | 0.1061878  | <i>i</i> | 3.55427  | +0.18446541   | -0.36341649 |
| <i>P</i> | 4.23       | <i>H</i> | 16.8     | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2005 01 19 691 | 0.2-  | 0.0   | 2005 02 01 703 | 0.3- | 1.8- | 2005 03 03 691 | 0.3- | 0.2- |
| 2005 01 19 691 | 0.1-  | 0.2+  | 2005 02 03 704 | 0.4- | 0.5+ | 2005 03 03 691 | 0.3- | 0.2- |
| 2005 01 19 691 | 0.1-  | 0.1-  | 2005 02 03 704 | 0.8+ | 0.1- | 2007 09 19 691 | 0.6+ | 1.4+ |
| 2005 01 19 691 | 0.1-  | 0.1-  | 2005 02 03 704 | 0.9+ | 0.5+ | 2007 09 19 691 | 0.2- | 0.7- |
| 2005 01 19 691 | 0.2+  | 0.2+  | 2005 02 09 699 | 1.0+ | 0.1+ | 2007 09 19 691 | 0.5- | 0.6+ |
| 2005 01 19 691 | 0.2-  | 0.1+  | 2005 02 09 699 | 0.3+ | 0.7+ | 2007 10 15 G96 | 0.4- | 0.9- |
| 2005 02 01 703 | (3.1- | 0.4+) | 2005 02 09 699 | 0.9- | 0.0  | 2007 10 15 G96 | 0.3+ | 0.0  |
| 2005 02 01 703 | 0.9-  | 0.4-  | 2005 02 09 699 | 1.9+ | 0.2+ | 2007 10 15 G96 | 0.2- | 0.5- |
| 2005 02 01 703 | 0.6-  | 0.4+  | 2005 03 03 691 | 0.8- | 0.2+ | 2007 10 15 G96 | 0.4+ | 0.1+ |

**2005 CH<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 292.65749  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.29278504 | $\omega$ | 43.00405 | -0.77738660   | -0.62738893 |
| <i>a</i> | 2.2461399  | $\Omega$ | 98.08237 | +0.56398965   | -0.72710202 |
| <i>e</i> | 0.1737079  | <i>i</i> | 2.62316  | +0.27854218   | -0.27875755 |
| <i>P</i> | 3.37       | <i>H</i> | 17.8     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 12 20 G96 | 0.1+ | 0.2- | 2005 02 09 691 | 0.0  | 0.1+ | 2007 11 20 G96 | 0.4+ | 0.0  |
| 2004 12 20 G96 | 0.0  | 0.1+ | 2005 02 09 G96 | 0.1- | 0.5- | 2007 11 20 G96 | 0.2+ | 0.4+ |
| 2004 12 20 G96 | 0.1+ | 0.4- | 2005 02 09 G96 | 0.0  | 0.4- | 2007 11 20 G96 | 0.0  | 0.0  |
| 2004 12 20 G96 | 0.3- | 0.1- | 2005 02 09 G96 | 0.0  | 0.6- | 2007 11 21 G96 | 0.1+ | 0.3- |
| 2005 02 01 691 | 0.1- | 0.2+ | 2005 02 09 G96 | 0.4- | 0.7- | 2007 11 21 G96 | 0.1- | 0.3- |
| 2005 02 01 691 | 0.0  | 0.1+ | 2007 11 08 691 | 0.2+ | 0.2+ | 2007 11 21 G96 | 0.3+ | 0.2- |
| 2005 02 01 691 | 0.0  | 0.3+ | 2007 11 08 691 | 0.1- | 0.5+ | 2007 11 21 G96 | 0.3- | 0.2- |
| 2005 02 04 G96 | 0.0  | 0.4- | 2007 11 08 691 | 0.4- | 0.2- | 2007 11 21 G96 | 0.2+ | 0.1- |
| 2005 02 04 G96 | 0.0  | 0.2- | 2007 11 18 G96 | 0.5+ | 0.4- | 2007 11 21 G96 | 0.2+ | 0.1- |
| 2005 02 04 G96 | 0.1+ | 0.3- | 2007 11 18 G96 | 0.3+ | 0.3- | 2007 11 21 G96 | 0.9- | 0.1- |
| 2005 02 04 G96 | 0.0  | 0.3- | 2007 11 18 G96 | 0.1+ | 0.4- | 2007 11 21 G96 | 0.2- | 0.0  |
| 2005 02 09 691 | 0.2+ | 0.2+ | 2007 11 18 G96 | 0.3+ | 0.0  |                |      |      |
| 2005 02 09 691 | 0.1+ | 0.1+ | 2007 11 20 G96 | 0.5+ | 0.2+ |                |      |      |

**2005 CD<sub>32</sub> = 2007 TL<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 266.70985  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22148450 | $\omega$ | 89.36577 | -0.07133173   | -0.99744084 |
| <i>a</i> | 2.7054561  | $\Omega$ | 4.73291  | +0.89015363   | -0.06585322 |
| <i>e</i> | 0.0518067  | <i>i</i> | 3.37247  | +0.45004256   | -0.02784114 |
| <i>P</i> | 4.45       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 28 | 691 | 0.0  | 0.1+ | 2005 02 01 | 691 | 0.3+ | 0.4+ | 2007 10 11 | 691 | 0.1+  | 0.3+  |
| 2003 09 28 | 691 | 0.1- | 0.1+ | 2005 02 04 | G96 | 0.2+ | 0.1+ | 2007 10 11 | 691 | 0.2-  | 0.2+  |
| 2003 09 28 | 691 | 0.0  | 0.1+ | 2005 02 04 | G96 | 0.2+ | 0.2- | 2007 10 11 | 691 | 0.2-  | 0.2+  |
| 2003 10 19 | 691 | 0.1+ | 0.0  | 2005 02 04 | G96 | 1.2- | 0.6- | 2007 10 13 | 691 | 1.7-  | 0.7+  |
| 2003 10 19 | 691 | 0.2- | 0.0  | 2005 02 04 | G96 | 0.4+ | 1.0- | 2007 10 13 | 691 | 0.4-  | 1.3+  |
| 2003 10 19 | 691 | 0.1+ | 0.2- | 2007 09 11 | G96 | 0.2- | 1.9- | 2007 10 13 | 691 | (1.6+ | 4.0+) |
| 2004 12 20 | G96 | 0.3+ | 0.2- | 2007 09 11 | G96 | 1.0+ | 0.5- | 2007 10 19 | G96 | 0.0   | 0.2-  |
| 2004 12 20 | G96 | 0.1- | 0.1+ | 2007 09 11 | G96 | 0.5+ | 0.4- | 2007 10 19 | G96 | 0.5+  | 0.0   |
| 2004 12 20 | G96 | 0.3- | 0.3- | 2007 09 11 | G96 | 0.6+ | 0.2- | 2007 10 19 | G96 | 0.5+  | 0.2-  |
| 2004 12 20 | G96 | 1.1- | 0.1+ | 2007 10 05 | 691 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.5+  | 0.3+  |
| 2005 02 01 | 691 | 0.4+ | 0.5+ | 2007 10 05 | 691 | 0.4- | 0.3- |            |     |       |       |
| 2005 02 01 | 691 | 0.3+ | 0.6+ | 2007 10 05 | 691 | 0.5- | 0.4+ |            |     |       |       |

**2005 CV<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 307.09606  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27092879 | $\omega$ | 270.61003 | +0.16413224   | -0.98640340 |
| <i>a</i> | 2.3653710  | $\Omega$ | 169.93168 | +0.92287974   | +0.15057908 |
| <i>e</i> | 0.2146589  | <i>i</i> | 2.72203   | +0.34835842   | +0.06583512 |
| <i>P</i> | 3.64       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 12 16 | 691 | 0.0  | 0.6- | 2005 02 04 | 699 | 0.5+ | 0.0  | 2005 03 04 | 691 | 0.4+ | 0.2- |
| 1993 12 16 | 691 | 0.6- | 0.7+ | 2005 02 04 | 699 | 0.3+ | 0.9+ | 2005 03 04 | 691 | 0.3- | 0.3+ |
| 1993 12 16 | 691 | 0.7+ | 0.2+ | 2005 02 04 | 699 | 0.8- | 0.1- | 2007 09 11 | G96 | 0.1- | 0.2- |
| 2005 01 13 | 691 | 0.0  | 0.0  | 2005 02 09 | 699 | 0.1+ | 1.8- | 2007 09 11 | G96 | 0.2+ | 0.2+ |
| 2005 01 13 | 691 | 0.1+ | 0.1- | 2005 02 09 | 699 | 1.3- | 0.4+ | 2007 09 11 | G96 | 0.0  | 0.2- |
| 2005 01 13 | 691 | 0.1+ | 0.1+ | 2005 02 09 | 699 | 0.6+ | 1.1- | 2007 09 11 | G96 | 0.3+ | 0.1- |
| 2005 02 02 | 704 | 0.1- | 0.7- | 2005 02 09 | 699 | 1.0- | 0.3- | 2007 10 15 | 691 | 0.1- | 0.1+ |
| 2005 02 02 | 704 | 0.0  | 0.2- | 2005 02 09 | 704 | 0.7+ | 0.2+ | 2007 10 15 | 691 | 0.1- | 0.1- |
| 2005 02 02 | 704 | 0.1+ | 0.0  | 2005 02 09 | 704 | 0.1+ | 0.7+ | 2007 10 15 | 691 | 0.1- | 0.1- |
| 2005 02 02 | 704 | 0.0  | 0.1+ | 2005 02 09 | 704 | 0.5- | 0.3+ |            |     |      |      |
| 2005 02 04 | 699 | 0.8+ | 0.9+ | 2005 03 04 | 691 | 0.0  | 0.3+ |            |     |      |      |

**2005 CO<sub>47</sub> = 2007 VV<sub>138</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.16157  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27357329 | $\omega$ | 271.16455 | +0.54904476   | -0.83505249 |
| <i>a</i> | 2.3501031  | $\Omega$ | 145.45906 | +0.78938189   | +0.50426853 |
| <i>e</i> | 0.1122217  | <i>i</i> | 3.55665   | +0.27463808   | +0.22000136 |
| <i>P</i> | 3.60       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 04 | 691 | 0.0  | 0.1+ | 2005 03 04 | G96 | 0.6- | 0.3+ | 2007 11 02 | D29 | 0.2+ | 0.4+ |
| 2003 09 04 | 691 | 0.2+ | 0.2+ | 2005 03 04 | G96 | 0.3- | 0.3+ | 2007 11 02 | D29 | 0.1- | 0.1+ |
| 2003 09 04 | 691 | 0.4- | 0.3+ | 2005 03 12 | 695 | 0.0  | 0.3+ | 2007 11 08 | G96 | 0.1- | 0.1+ |
| 2005 02 02 | 691 | 0.5+ | 0.4+ | 2005 03 12 | 695 | 0.1- | 0.4+ | 2007 11 08 | G96 | 0.1+ | 0.0  |
| 2005 02 02 | 691 | 0.3+ | 0.2- | 2007 10 08 | 691 | 0.1- | 0.0  | 2007 11 08 | G96 | 0.1+ | 0.0  |
| 2005 02 02 | 691 | 0.0  | 0.5+ | 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 11 08 | G96 | 0.3- | 0.1+ |
| 2005 02 09 | G96 | 0.4- | 0.2- | 2007 10 08 | 691 | 0.1- | 0.2+ | 2007 11 12 | G96 | 0.1+ | 0.9- |
| 2005 02 09 | G96 | 0.3- | 0.4- | 2007 10 20 | 691 | 0.0  | 0.2+ | 2007 11 12 | G96 | 0.3+ | 0.7- |
| 2005 02 09 | G96 | 0.0  | 0.3- | 2007 10 20 | 691 | 0.1- | 0.1- | 2007 11 12 | G96 | 0.1+ | 1.1- |
| 2005 02 09 | G96 | 0.3- | 0.0  | 2007 10 20 | 691 | 0.1- | 0.4+ | 2007 11 12 | G96 | 0.5+ | 0.9- |
| 2005 03 04 | G96 | 0.4- | 0.1- | 2007 11 02 | D29 | 0.5+ | 0.3+ |            |     |      |      |
| 2005 03 04 | G96 | 0.1- | 0.2+ | 2007 11 02 | D29 | 0.0  | 0.6- |            |     |      |      |

**2005 CX<sub>49</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.28195   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21856630 | $\omega$ | 351.76650 | +0.57444404   | +0.80775656 |
| <i>a</i> | 2.7294842  | $\Omega$ | 313.17272 | -0.74027440   | +0.44361850 |
| <i>e</i> | 0.0198011  | <i>i</i> | 10.46389  | -0.34929624   | +0.38824215 |
| <i>P</i> | 4.51       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 01 | 699 | (1.1- | 2.2+) | 2005 02 09 | 704 | 1.2+ | 0.8+ | 2005 03 17 | G96 | 0.3- | 0.4- |
| 2001 04 01 | 699 | 0.0   | 0.5-  | 2005 02 09 | 704 | 0.5+ | 0.0  | 2007 09 11 | 703 | 0.5- | 0.9+ |
| 2001 04 01 | 699 | 0.5+  | 0.2-  | 2005 02 09 | 704 | 1.0- | 0.5- | 2007 09 11 | 703 | 0.6+ | 0.6+ |
| 2001 04 01 | 699 | 0.3-  | 1.1+  | 2005 02 09 | 704 | 0.4- | 0.7- | 2007 09 11 | 703 | 0.0  | 0.2+ |
| 2005 01 18 | 703 | (1.0+ | 2.2+) | 2005 03 03 | 703 | 0.8+ | 0.5- | 2007 09 11 | 703 | 0.3- | 1.1+ |
| 2005 01 18 | 703 | 0.9-  | 0.5-  | 2005 03 03 | 703 | 0.5- | 0.3+ | 2007 11 16 | G96 | 0.8- | 0.3- |
| 2005 01 18 | 703 | 0.9-  | 0.9+  | 2005 03 03 | 703 | 0.9+ | 1.4+ | 2007 11 16 | G96 | 0.2+ | 0.4- |
| 2005 01 18 | 703 | 0.5-  | 0.5-  | 2005 03 03 | 703 | 0.1- | 0.4+ | 2007 11 16 | G96 | 0.0  | 0.6- |
| 2005 02 02 | 704 | 0.2+  | 0.2-  | 2005 03 17 | G96 | 0.1- | 0.2- | 2007 11 16 | G96 | 0.2- | 0.7- |
| 2005 02 02 | 704 | 1.2+  | 0.4+  | 2005 03 17 | G96 | 0.1- | 0.1- |            |     |      |      |
| 2005 02 02 | 704 | 0.7+  | 0.3+  | 2005 03 17 | G96 | 0.3- | 0.0  |            |     |      |      |

**2005 CX<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 232.72110  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21858545 | $\omega$ | 146.82275 | -0.61843399   | -0.78236354 |
| <i>a</i> | 2.7293248  | $\Omega$ | 341.04102 | +0.66246653   | -0.46852358 |
| <i>e</i> | 0.1394031  | <i>i</i> | 13.12982  | +0.42270262   | -0.41035708 |
| <i>P</i> | 4.51       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 691 | 0.3+ | 0.2- | 2005 03 02 | 703 | 1.0+ | 0.6- | 2007 09 11 | G96 | 0.4- | 0.1+ |
| 2003 09 21 | 691 | 0.3- | 0.2+ | 2005 03 10 | G96 | 0.3- | 0.3+ | 2007 09 11 | G96 | 0.6- | 0.1+ |
| 2003 09 21 | 691 | 0.2+ | 0.2- | 2005 03 10 | G96 | 0.5- | 0.4+ | 2007 09 11 | G96 | 0.6- | 0.0  |
| 2005 02 03 | 704 | 0.9+ | 0.1+ | 2005 03 10 | G96 | 0.1- | 0.1+ | 2007 09 19 | G96 | 0.5+ | 0.1+ |
| 2005 02 03 | 704 | 0.8+ | 0.7- | 2005 03 10 | G96 | 0.4- | 0.2+ | 2007 09 19 | G96 | 0.3- | 0.2+ |
| 2005 02 03 | 704 | 0.7+ | 0.6+ | 2005 04 09 | G96 | 0.1- | 0.4+ | 2007 09 19 | G96 | 0.0  | 0.2- |
| 2005 02 03 | 704 | 1.3+ | 0.0  | 2005 04 09 | G96 | 0.4- | 0.3+ | 2007 09 19 | G96 | 0.4+ | 0.1+ |
| 2005 02 09 | 691 | 0.2- | 0.1- | 2005 04 09 | G96 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.2- |
| 2005 02 09 | 691 | 0.3- | 0.1+ | 2005 04 09 | G96 | 0.1- | 0.0  | 2007 10 08 | G96 | 0.6+ | 0.1+ |
| 2005 02 09 | 691 | 0.1- | 0.0  | 2007 08 23 | 691 | 0.6- | 0.7+ | 2007 10 08 | G96 | 0.3+ | 0.3- |
| 2005 03 02 | 703 | 0.2+ | 0.6+ | 2007 08 23 | 691 | 0.4- | 0.2+ | 2007 10 08 | G96 | 0.0  | 0.0  |
| 2005 03 02 | 703 | 0.3- | 0.9- | 2007 08 23 | 691 | 0.2- | 0.4+ |            |     |      |      |
| 2005 03 02 | 703 | 1.5- | 0.2+ | 2007 09 11 | G96 | 0.2+ | 0.1- |            |     |      |      |

**2005 CV<sub>57</sub> = 2007 VZ<sub>256</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.09904  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27924045 | $\omega$ | 310.31679 | +0.14605217   | -0.98573614 |
| <i>a</i> | 2.3181978  | $\Omega$ | 131.07947 | +0.93796672   | +0.11111139 |
| <i>e</i> | 0.0614696  | <i>i</i> | 6.36934   | +0.31446333   | +0.12640620 |
| <i>P</i> | 3.53       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 26 | 807 | 0.1-  | 0.8+  | 2005 02 09 | 699 | 0.4- | 0.1+ | 2007 11 13 | G96 | 0.4+ | 0.2- |
| 2003 08 26 | 807 | 0.2-  | 0.4+  | 2005 02 09 | 699 | 0.8- | 0.7- | 2007 11 13 | G96 | 0.5+ | 0.4- |
| 2005 01 17 | 691 | 0.2+  | 0.1+  | 2005 02 09 | 699 | 0.4+ | 1.0+ | 2007 11 13 | G96 | 0.7+ | 0.4- |
| 2005 01 17 | 691 | 0.2+  | 0.2+  | 2005 03 09 | 691 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.6+ | 0.5- |
| 2005 01 17 | 691 | 0.1+  | 0.1-  | 2005 03 09 | 691 | 0.2+ | 0.1- | 2007 11 17 | G96 | 0.3+ | 0.7- |
| 2005 02 02 | 704 | 0.2+  | 0.7+  | 2005 03 09 | 691 | 0.1+ | 0.1+ | 2007 11 17 | G96 | 0.4+ | 0.5- |
| 2005 02 02 | 704 | 0.1-  | 0.7-  | 2007 11 07 | 291 | 0.1- | 0.0  | 2007 11 17 | G96 | 0.5+ | 0.4- |
| 2005 02 02 | 703 | 0.8-  | 0.2+  | 2007 11 07 | 291 | 0.0  | 0.1+ | 2007 12 06 | 703 | 0.1- | 1.2- |
| 2005 02 02 | 703 | 1.0-  | 0.6+  | 2007 11 07 | 291 | 0.1- | 0.0  | 2007 12 06 | 703 | 1.4- | 0.5+ |
| 2005 02 02 | 704 | 0.1+  | 0.2-  | 2007 11 07 | 291 | 0.2- | 0.1+ | 2007 12 06 | 703 | 0.4+ | 1.9+ |
| 2005 02 02 | 703 | (1.8- | 0.1-) | 2007 11 07 | 291 | 0.0  | 0.0  | 2007 12 06 | 703 | 0.2- | 1.3+ |

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2005 02 02 703 0.4− 0.8− 2007 11 07 291 0.0 0.0  
 2005 02 09 699 0.1− 0.3+ 2007 11 13 G96 0.1+ 0.3−

**2005 CD<sub>59</sub> = 2007 VZ<sub>191</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 34.24963   | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.30872325 | $\omega$ 99.73783  | +0.79032176   | −0.61259870 |  |
| <i>a</i> | 2.1681525  | $\Omega$ 298.04061 | +0.55727734   | +0.72598510 |  |
| <i>e</i> | 0.1657498  | <i>i</i> 0.69418   | +0.25462419   | +0.31251954 |  |
| <i>P</i> | 3.19       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2005 01 19 691 0.0 0.0     | 2005 02 09 699 0.7− 0.6+ | 2007 11 04 G96 0.0 0.4−  |
| 2005 01 19 691 0.0 0.1+    | 2005 02 09 699 0.4+ 0.3− | 2007 11 11 G96 0.0 0.0   |
| 2005 01 19 691 0.2+ 0.0    | 2005 03 08 G96 0.4− 0.8− | 2007 11 11 G96 0.0 0.4−  |
| 2005 02 02 703 (0.1+ 1.6+) | 2005 03 08 G96 0.2− 0.6− | 2007 11 11 G96 0.1+ 0.3+ |
| 2005 02 02 703 0.1+ 1.3+   | 2005 03 08 G96 0.4− 0.7− | 2007 11 11 G96 0.2+ 0.2+ |
| 2005 02 02 703 0.2+ 0.3+   | 2005 03 08 G96 0.2− 0.8− | 2007 11 21 G96 0.1− 0.2− |
| 2005 02 02 703 0.5+ 0.8+   | 2007 11 04 G96 0.1− 0.0  | 2007 11 21 G96 0.1− 0.0  |
| 2005 02 09 699 (1.9+ 0.4−) | 2007 11 04 G96 0.3+ 0.0  | 2007 11 21 G96 0.0 0.3−  |
| 2005 02 09 699 0.4+ 0.0    | 2007 11 04 G96 0.4− 0.0  | 2007 11 21 G96 0.0 0.2−  |

**2005 CQ<sub>59</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 168.22331  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.17959500 | $\omega$ 201.12755 | −0.88617425   | −0.33548721 |  |
| <i>a</i> | 3.1112856  | $\Omega$ 314.88460 | +0.46275985   | −0.60594454 |  |
| <i>e</i> | 0.1215304  | <i>i</i> 26.81259  | +0.02342053   | −0.72130406 |  |
| <i>P</i> | 5.49       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2005 01 19 691 0.2− 0.1−   | 2005 02 02 704 0.5+ 0.9− | 2007 08 11 621 0.5− 0.0  |
| 2005 01 19 691 0.0 0.0     | 2005 02 02 704 0.8+ 0.6+ | 2007 08 11 621 0.6+ 0.4− |
| 2005 01 19 691 0.1− 0.0    | 2005 02 09 699 0.7− 0.5+ | 2007 08 12 621 0.3+ 0.6+ |
| 2005 02 02 703 0.7− 0.6+   | 2005 02 09 699 1.1− 0.5− | 2007 09 15 G96 0.1+ 0.2− |
| 2005 02 02 703 1.6− 0.6+   | 2005 02 09 699 1.2+ 0.2+ | 2007 09 15 G96 0.6− 0.2+ |
| 2005 02 02 704 0.3+ 0.8−   | 2005 02 09 699 0.4− 0.2− | 2007 09 15 G96 0.4+ 0.1− |
| 2005 02 02 703 0.6+ 0.6+   | 2005 02 14 691 0.2+ 0.3+ | 2007 09 15 G96 0.3− 0.2− |
| 2005 02 02 703 (2.3− 1.9+) | 2005 02 14 691 0.0 0.1−  |                          |
| 2005 02 02 704 1.0+ 0.6−   | 2005 02 14 691 0.2+ 0.2− |                          |

**2005 CD<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC               |               |             |  |
|----------|------------|-------------------|---------------|-------------|--|
| <i>M</i> | 321.13533  | (2000.0)          | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.29400408 | $\omega$ 10.79107 | −0.23504925   | −0.97012767 |  |
| <i>a</i> | 2.2399267  | $\Omega$ 92.82339 | +0.88724109   | −0.23937006 |  |
| <i>e</i> | 0.1060925  | <i>i</i> 3.44599  | +0.39693210   | −0.03942444 |  |
| <i>P</i> | 3.35       | <i>H</i> 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2004 12 20 G96 0.0 0.4−  | 2005 02 09 699 1.1− 0.6+ | 2007 11 18 G96 0.2+ 0.2− |
| 2004 12 20 G96 0.1+ 0.3− | 2005 02 09 699 0.4+ 1.0+ | 2007 11 18 G96 0.3+ 0.1− |
| 2004 12 20 G96 0.1− 0.5− | 2005 02 09 699 0.1− 0.1+ | 2007 11 18 G96 0.5+ 0.0  |
| 2004 12 20 G96 0.3+ 0.7− | 2005 02 09 699 0.3+ 0.3+ | 2007 11 19 691 0.1− 0.2− |
| 2005 01 13 691 0.0 0.1+  | 2005 02 14 704 0.7+ 0.4+ | 2007 11 19 691 0.2− 0.0  |
| 2005 01 13 691 0.2− 0.2− | 2005 02 14 704 0.2+ 0.1− | 2007 11 19 691 0.1+ 0.1+ |
| 2005 01 13 691 0.1− 0.5− | 2005 02 14 704 0.6− 0.7+ | 2007 12 03 703 0.2− 1.0+ |
| 2005 02 03 704 0.9+ 0.6+ | 2007 11 03 691 0.1+ 0.1+ | 2007 12 03 703 0.5− 0.1+ |
| 2005 02 03 704 0.3− 0.1+ | 2007 11 03 691 0.1+ 0.1+ | 2007 12 03 703 0.0 0.2+  |
| 2005 02 03 704 0.1+ 0.1− | 2007 11 03 691 0.1− 0.0  | 2007 12 03 703 0.5+ 0.5− |

**2005 CO<sub>60</sub> = 2007 VJ<sub>183</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 358.65013  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.28863651 | $\omega$ 97.80889  | +0.66914532   | −0.73995179 |  |
| <i>a</i> | 2.2676109  | $\Omega$ 309.95410 | +0.64162516   | +0.62189405 |  |
| <i>e</i> | 0.1532094  | <i>i</i> 5.13975   | +0.37491558   | +0.25635745 |  |
| <i>P</i> | 3.41       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2005 01 17 691 0.4− 0.1−   | 2007 10 21 703 0.7+ 0.8+ | 2007 12 02 704 0.1+ 0.1+ |
| 2005 01 17 691 0.2+ 0.2+   | 2007 10 21 703 1.1− 0.9+ | 2007 12 04 G96 0.1− 0.5− |
| 2005 01 17 691 0.2− 0.2−   | 2007 10 21 703 0.2+ 0.9+ | 2007 12 04 G96 0.3− 0.5− |
| 2005 02 04 691 0.1+ 0.1+   | 2007 11 08 703 0.4− 0.1+ | 2007 12 04 G96 0.3+ 0.4− |
| 2005 02 04 691 0.2+ 0.1−   | 2007 11 08 703 1.0− 0.4− | 2007 12 04 G96 0.2− 0.4− |
| 2005 02 04 691 0.0 0.0     | 2007 11 08 703 0.5− 0.0  | 2007 12 16 704 0.4+ 0.1+ |
| 2005 02 09 699 0.9+ 0.3+   | 2007 11 08 703 0.3+ 0.1− | 2007 12 16 704 0.7− 0.2+ |
| 2005 02 09 699 0.2− 0.2+   | 2007 11 09 G96 0.2+ 0.5− | 2007 12 16 704 0.5− 0.1− |
| 2005 02 09 699 0.2+ 1.3+   | 2007 11 09 G96 0.3+ 0.6− | 2007 12 16 704 0.3− 0.0  |
| 2005 02 09 699 (1.6+ 0.1+) | 2007 11 09 G96 0.3+ 0.5− | 2007 12 16 704 0.1+ 0.3− |
| 2005 03 09 G96 0.1− 0.8−   | 2007 11 09 G96 0.3+ 0.7− | 2007 12 16 704 1.1+ 0.4+ |
| 2005 03 09 G96 0.3− 0.2−   | 2007 12 02 704 0.4+ 0.3− | 2007 12 16 704 0.7+ 0.2+ |
| 2005 03 09 G96 0.1+ 0.4−   | 2007 12 02 704 0.3+ 0.0  | 2007 12 16 704 0.3+ 0.6+ |
| 2005 03 09 G96 0.0 0.5−    | 2007 12 02 704 0.0 0.5+  | 2007 12 16 704 0.2− 0.3− |
| 2007 10 21 703 0.1− 0.3+   | 2007 12 02 704 0.4+ 0.3+ | 2007 12 16 704 0.3− 0.1+ |

**2005 CT<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC                |               |             |  |
|----------|------------|--------------------|---------------|-------------|--|
| <i>M</i> | 288.89379  | (2000.0)           | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.28206308 | $\omega$ 119.17192 | −0.71070990   | −0.70325172 |  |
| <i>a</i> | 2.3027063  | $\Omega$ 16.16280  | +0.62071121   | −0.63900196 |  |
| <i>e</i> | 0.1067624  | <i>i</i> 3.73296   | +0.33107256   | −0.31163042 |  |
| <i>P</i> | 3.49       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2003 09 16 691 0.1+ 0.3+   | 2005 03 02 703 0.4− 0.3−   | 2007 11 02 691 0.1− 0.1+ |
| 2003 09 16 691 0.1− 0.3+   | 2005 03 02 703 1.5− 0.1+   | 2007 11 02 691 0.5− 0.2+ |
| 2003 09 16 691 0.4− 0.1+   | 2005 03 09 704 1.0− 1.1+   | 2007 11 02 691 0.2− 0.0  |
| 2005 02 02 703 (1.8− 1.0−) | 2005 03 09 704 1.3+ 1.0+   | 2007 11 14 300 0.5+ 0.3− |
| 2005 02 02 703 (1.1+ 1.7−) | 2005 03 09 704 0.5− 0.4−   | 2007 11 14 300 0.4+ 0.3+ |
| 2005 02 02 703 0.5− 0.1+   | 2005 03 09 704 0.8+ 1.2+   | 2007 11 14 300 0.5+ 0.1− |
| 2005 02 02 703 (1.9− 0.6+) | 2005 03 12 704 1.1+ 0.2−   | 2007 11 14 300 0.0 0.5−  |
| 2005 02 09 691 0.1− 0.3−   | 2005 03 12 704 0.9+ 0.4+   | 2007 11 17 G96 0.4+ 0.5− |
| 2005 02 09 699 0.2+ 1.3+   | 2005 03 12 704 0.3− 1.1+   | 2007 11 17 G96 0.0 0.3−  |
| 2005 02 09 691 0.1+ 0.4+   | 2005 03 14 G96 0.5− 0.1−   | 2007 11 17 G96 0.2+ 0.4− |
| 2005 02 09 699 0.5− 0.2−   | 2005 03 14 G96 0.1+ 0.5−   | 2007 11 17 G96 0.4+ 0.3− |
| 2005 02 09 691 0.1+ 0.4−   | 2005 03 14 G96 0.5− 0.1−   | 2007 11 17 300 0.4− 0.7− |
| 2005 02 09 699 0.3+ 0.2−   | 2005 03 14 G96 0.0 0.6+    | 2007 11 17 300 0.6− 0.2− |
| 2005 02 09 699 0.2+ 0.3+   | 2005 03 16 704 0.1+ 0.2+   | 2007 12 13 704 0.3+ 0.3+ |
| 2005 02 14 704 0.2+ 1.1−   | 2005 03 16 704 0.7− 1.0+   | 2007 12 13 704 0.3− 0.1+ |
| 2005 02 14 704 0.5+ 0.1−   | 2005 03 16 704 (0.2− 1.5+) | 2007 12 13 704 0.7+ 0.0  |
| 2005 02 14 704 0.0 0.2−    | 2007 10 14 G96 0.3+ 0.7−   | 2007 12 13 704 0.2+ 0.9+ |
| 2005 02 14 704 0.7+ 0.5+   | 2007 10 14 G96 0.2+ 0.2−   | 2007 12 13 704 0.1+ 1.0+ |
| 2005 03 02 703 0.6− 0.6−   | 2007 10 14 G96 0.2+ 0.2−   |                          |
| 2005 03 02 703 1.2+ 1.1−   | 2007 10 14 G96 0.1+ 0.4−   |                          |

**2005 CS<sub>65</sub> = 2007 VP<sub>292</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            | MPC               |               |             |  |
|----------|------------|-------------------|---------------|-------------|--|
| <i>M</i> | 328.78722  | (2000.0)          | <b>P</b>      | <b>Q</b>    |  |
| <i>n</i> | 0.28342686 | $\omega$ 11.16030 | −0.13485390   | −0.98850469 |  |
| <i>a</i> | 2.2953137  | $\Omega$ 86.61610 | +0.90374774   | −0.15099080 |  |
| <i>e</i> | 0.0785091  | <i>i</i> 3.92658  | +0.40626893   | +0.00776303 |  |
| <i>P</i> | 3.48       | <i>H</i> 16.9     | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 12 15 | 691 | 0.1− | 0.1− | 2005 02 14 | 704 | 0.1+ | 0.5− | 2007 11 19 | 691 | 0.1+ | 0.2− |
| 1993 12 15 | 691 | 0.6+ | 0.2+ | 2005 03 11 | 699 | 0.6+ | 0.6+ | 2007 11 19 | 691 | 0.0  | 0.1− |
| 1993 12 15 | 691 | 0.5− | 0.0  | 2005 03 11 | 699 | 0.8+ | 0.4− | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2005 02 09 | 691 | 0.1− | 0.3+ | 2005 03 11 | 699 | 0.9+ | 0.4− | 2007 12 05 | 704 | 0.4+ | 0.7+ |
| 2005 02 09 | 691 | 0.1+ | 0.0  | 2005 03 11 | 699 | 0.3− | 0.2− | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2005 02 09 | 691 | 0.3− | 0.2+ | 2007 11 14 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2005 02 14 | 704 | 0.5− | 0.8− | 2007 11 14 | 691 | 0.2− | 0.1+ | 2007 12 05 | 704 | 0.3− | 0.6+ |
| 2005 02 14 | 704 | 0.4− | 0.5+ | 2007 11 14 | 691 | 0.1− | 0.0  |            |     |      |      |
| 2005 02 14 | 704 | 0.2− | 0.6− | 2007 11 19 | 691 | 0.3+ | 0.4− |            |     |      |      |

**2005 CV<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 253.28986  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27304266 | $\omega$ | 87.85658 | −0.99710547   | −0.05570313 |
| <i>a</i> | 2.3531469  | $\Omega$ | 88.94734 | +0.03055685   | −0.91682583 |
| <i>e</i> | 0.1445960  | <i>i</i> | 2.96676  | +0.06962009   | −0.39538279 |
| <i>P</i> | 3.61       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 09 | 691 | 0.1+ | 0.3− | 2005 03 04 | 704 | 0.5+  | 0.3−  | 2005 04 06 | 644 | 0.2+ | 0.4+ |
| 2005 02 09 | 691 | 0.0  | 0.2− | 2005 03 04 | 704 | 0.1−  | 0.8−  | 2005 04 06 | 644 | 0.2+ | 0.2+ |
| 2005 02 09 | 691 | 0.1+ | 0.3− | 2005 03 09 | 704 | 0.5−  | 1.6+  | 2005 04 06 | 644 | 0.4+ | 0.6+ |
| 2005 02 14 | 704 | 0.5+ | 0.1+ | 2005 03 09 | 704 | 0.8−  | 1.5+  | 2005 04 15 | 691 | 0.1+ | 0.2+ |
| 2005 02 14 | 704 | 1.1+ | 0.9− | 2005 03 09 | 704 | (2.6− | 3.5+) | 2005 04 15 | 691 | 0.1− | 0.1+ |
| 2005 02 14 | 704 | 0.3+ | 1.1− | 2005 03 09 | 704 | (2.0− | 4.2+) | 2005 04 15 | 691 | 0.3+ | 0.1− |
| 2005 02 14 | 704 | 0.7+ | 0.8− | 2005 03 16 | 704 | 0.9+  | 0.8+  | 2007 10 20 | G96 | 0.1+ | 0.1+ |
| 2005 03 02 | 703 | 0.3+ | 0.5+ | 2005 03 16 | 704 | 1.4−  | 0.5+  | 2007 10 20 | G96 | 0.3+ | 0.3+ |
| 2005 03 02 | 703 | 0.7− | 0.0  | 2005 03 16 | 704 | 0.9−  | 0.3+  | 2007 10 20 | G96 | 0.4+ | 0.0  |
| 2005 03 02 | 703 | 0.1+ | 0.6− | 2005 03 16 | 704 | 0.2+  | 0.2−  | 2007 10 20 | G96 | 0.0  | 0.2+ |
| 2005 03 02 | 703 | 1.4− | 0.6− | 2005 03 16 | 703 | 0.6+  | 0.0   | 2007 12 05 | 704 | 0.3− | 0.7+ |
| 2005 03 04 | 704 | 0.2+ | 1.0+ | 2005 03 16 | 703 | 1.0−  | 0.1−  | 2007 12 05 | 704 | 0.2− | 0.4+ |
| 2005 03 04 | 704 | 0.1− | 0.3− | 2005 03 16 | 703 | 0.2−  | 0.6+  | 2007 12 05 | 704 | 0.6− | 0.3− |
| 2005 03 04 | 704 | 0.1− | 0.1+ | 2005 03 16 | 703 | 0.4−  | 0.1−  |            |     |      |      |

**2005 CD<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 182.55497  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22043358 | $\omega$ | 6.93390   | −0.98135474   | +0.19217744 |
| <i>a</i> | 2.7140481  | $\Omega$ | 184.15027 | −0.17844491   | −0.91729086 |
| <i>e</i> | 0.1199802  | <i>i</i> | 2.59131   | −0.07141631   | −0.34877688 |
| <i>P</i> | 4.47       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 18 | 691 | 0.0   | 0.5+  | 2005 02 09 | 704 | 0.7+ | 0.5+ | 2005 03 09 | G96 | 0.5− | 0.4− |
| 2001 05 18 | 691 | 0.1+  | 0.1+  | 2005 02 09 | 704 | 1.0+ | 0.3− | 2005 03 09 | G96 | 0.5− | 0.5− |
| 2001 05 18 | 691 | (2.1+ | 0.3+) | 2005 02 14 | 691 | 0.0  | 0.2− | 2005 03 09 | G96 | 0.5− | 0.4− |
| 2003 11 20 | 691 | 0.2−  | 0.1−  | 2005 02 14 | 691 | 0.3− | 0.2− | 2005 03 09 | G96 | 0.5− | 0.3− |
| 2003 11 20 | 691 | 0.1−  | 0.3+  | 2005 02 14 | 691 | 0.1− | 0.4− | 2007 10 07 | G96 | 0.4− | 0.2− |
| 2003 11 20 | 691 | 0.1+  | 0.1+  | 2005 03 01 | 691 | 0.2− | 0.0  | 2007 10 07 | G96 | 0.3+ | 0.2− |
| 2005 02 09 | 704 | 0.2−  | 1.1+  | 2005 03 01 | 691 | 0.0  | 0.1− | 2007 10 07 | G96 | 0.2+ | 0.1+ |
| 2005 02 09 | 704 | 0.9+  | 1.0+  | 2005 03 01 | 691 | 0.0  | 0.2− | 2007 10 07 | G96 | 0.0  | 0.0  |

**2005 CE<sub>72</sub> = 1990 QZ<sub>16</sub> = 2003 XO<sub>37</sub> = 2007 VJ<sub>289</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.95820   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23598985 | $\omega$ | 351.97897 | +0.91232437   | +0.40368963 |
| <i>a</i> | 2.5934258  | $\Omega$ | 343.68433 | −0.36083529   | +0.71348831 |
| <i>e</i> | 0.1937632  | <i>i</i> | 14.12315  | −0.19355137   | +0.57268588 |
| <i>P</i> | 4.18       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1990 08 26 | 809 | 0.5− | 0.4− | 2005 04 04 | G96 | 0.5− | 0.5− | 2007 10 12 | 699 | 1.8− | 1.4+ |
| 1990 08 26 | 809 | 0.2+ | 0.5− | 2005 04 04 | G96 | 0.3− | 0.3− | 2007 10 16 | 703 | 0.3+ | 0.1+ |
| 1990 08 26 | 809 | 1.4+ | 0.3− | 2005 04 04 | G96 | 0.3− | 0.6− | 2007 10 16 | 703 | 0.4− | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 04 | 704 | 0.7− | 0.3+ | 2005 04 04 | G96 | 0.4− | 0.5− | 2007 10 16 | 703 | 0.1+ | 0.5+ |
| 2003 12 04 | 704 | 0.3− | 0.0  | 2007 09 13 | 703 | 0.5+ | 0.2+ | 2007 10 16 | 703 | 0.1− | 0.2+ |
| 2003 12 04 | 704 | 0.3+ | 0.4− | 2007 09 13 | 703 | 0.6+ | 0.6+ | 2007 11 13 | 703 | 0.4− | 0.6− |
| 2003 12 15 | 704 | 0.2− | 0.4− | 2007 09 13 | 703 | 0.6+ | 0.4+ | 2007 11 13 | 703 | 0.5− | 0.6− |
| 2003 12 15 | 704 | 0.9+ | 0.3+ | 2007 09 13 | 703 | 0.2− | 0.3+ | 2007 11 13 | 703 | 0.6− | 0.2− |
| 2003 12 15 | 704 | 0.4+ | 0.0  | 2007 10 09 | 703 | 0.1+ | 0.2+ | 2007 11 13 | 703 | 0.2− | 0.6− |
| 2005 02 01 | 691 | 0.1+ | 0.0  | 2007 10 09 | 703 | 0.2− | 0.4+ | 2007 11 19 | 703 | 0.0  | 0.1+ |
| 2005 02 01 | 691 | 0.3− | 0.1+ | 2007 10 09 | 703 | 0.4− | 0.3− | 2007 11 19 | 703 | 0.7+ | 0.0  |
| 2005 02 01 | 691 | 0.1+ | 0.1+ | 2007 10 09 | 703 | 0.8− | 1.1− | 2007 11 19 | 703 | 0.0  | 0.4− |
| 2005 02 09 | 691 | 0.4+ | 0.3+ | 2007 10 12 | 699 | 0.8+ | 0.6− | 2007 11 19 | 703 | 0.7+ | 0.0  |
| 2005 02 09 | 691 | 0.4+ | 0.1− | 2007 10 12 | 699 | 0.4+ | 0.0  |            |     |      |      |
| 2005 02 09 | 691 | 0.0  | 0.3+ | 2007 10 12 | 699 | 0.8+ | 0.4+ |            |     |      |      |

**2005 DG<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 297.09467  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26436826 | $\omega$ | 130.07079 | −0.24174391   | −0.96963883 |
| <i>a</i> | 2.4043435  | $\Omega$ | 333.84885 | +0.86285457   | −0.19742157 |
| <i>e</i> | 0.1900061  | <i>i</i> | 4.80049   | +0.44389399   | −0.14430962 |
| <i>P</i> | 3.73       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 16 | 809 | 0.2+ | 0.1+ | 2005 02 18 | 809 | 0.2+ | 0.1− | 2005 03 11 | G96 | 0.4− | 0.0  |
| 2005 02 16 | 809 | 0.1+ | 0.0  | 2005 02 18 | 809 | 0.1+ | 0.1− | 2007 09 19 | 691 | 0.4+ | 0.0  |
| 2005 02 16 | 809 | 0.0  | 0.1+ | 2005 03 09 | G96 | 0.4− | 0.1+ | 2007 09 19 | 691 | 0.8− | 0.0  |
| 2005 02 17 | 809 | 0.1+ | 0.1+ | 2005 03 09 | G96 | 0.2− | 0.3− | 2007 09 19 | 691 | 0.4− | 0.6+ |
| 2005 02 17 | 809 | 0.2− | 0.0  | 2005 03 09 | G96 | 1.0+ | 1.0+ | 2007 10 07 | G96 | 0.7+ | 0.1− |
| 2005 02 17 | 809 | 0.0  | 0.1+ | 2005 03 09 | G96 | 0.3− | 0.2− | 2007 10 07 | G96 | 0.0  | 0.5− |
| 2005 02 18 | 809 | 0.0  | 0.2− | 2005 03 11 | G96 | 0.0  | 0.2+ | 2007 10 07 | G96 | 0.2+ | 0.1+ |
| 2005 02 18 | 809 | 0.1+ | 0.0  | 2005 03 11 | G96 | 0.0  | 0.3− |            |     |      |      |
| 2005 02 18 | 809 | 0.1+ | 0.0  | 2005 03 11 | G96 | 0.5− | 0.4− |            |     |      |      |

**2005 EP<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 264.98628  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23358406 | $\omega$ | 125.53304 | −0.10374252   | −0.99432464 |
| <i>a</i> | 2.6112027  | $\Omega$ | 330.39529 | +0.89638479   | −0.08319887 |
| <i>e</i> | 0.1764897  | <i>i</i> | 2.73581   | +0.43096612   | −0.06630577 |
| <i>P</i> | 4.22       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 31 | 691 | 0.2− | 0.0  | 2005 03 01 | 701 | 0.4+ | 0.3− | 2005 03 08 | G96 | 0.3− | 0.2− |
| 2001 03 31 | 691 | 0.2+ | 0.4− | 2005 03 01 | 701 | 0.0  | 0.3− | 2005 03 08 | 701 | 0.2− | 0.1+ |
| 2001 03 31 | 691 | 0.1− | 0.1+ | 2005 03 01 | 701 | 0.5+ | 0.4− | 2005 03 08 | 701 | 0.2− | 0.3+ |
| 2005 01 17 | 703 | 1.3− | 0.1− | 2005 03 04 | G96 | 0.1− | 0.0  | 2007 09 11 | G96 | 0.8− | 0.5− |
| 2005 01 17 | 703 | 0.8+ | 0.3+ | 2005 03 04 | G96 | 0.1+ | 0.3− | 2007 09 11 | G96 | 0.7+ | 0.2+ |
| 2005 01 17 | 703 | 1.2− | 0.2− | 2005 03 04 | G96 | 0.0  | 0.1− | 2007 09 11 | G96 | 0.4− | 0.0  |
| 2005 01 17 | 703 | 0.8+ | 0.9− | 2005 03 04 | G96 | 0.1+ | 0.3+ | 2007 09 11 | G96 | 0.0  | 0.3− |
| 2005 02 09 | 699 | 0.2+ | 1.1+ | 2005 03 08 | 701 | 0.8+ | 0.3+ | 2007 10 04 | G96 | 0.3+ | 0.1− |
| 2005 02 09 | 699 | 0.5− | 0.4+ | 2005 03 08 | G96 | 0.0  | 0.3− | 2007 10 04 | G96 | 0.2+ | 0.3− |
| 2005 02 09 | 699 | 0.2+ | 0.1− | 2005 03 08 | G96 | 0.4− | 0.0  | 2007 10 04 | G96 | 0.0  | 0.2− |
| 2005 02 09 | 699 | 0.4+ | 0.0  | 2005 03 08 | G96 | 0.2− | 0.1− | 2007 10 04 | G96 | 0.5+ | 0.3+ |

**2005 EX<sub>11</sub> = 2007 UC<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 257.86987  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24694695 | $\omega$ | 14.55312  | −0.72366376   | −0.68688165 |
| <i>a</i> | 2.5161330  | $\Omega$ | 121.86012 | +0.62504241   | −0.69351875 |
| <i>e</i> | 0.0430827  | <i>i</i> | 4.53222   | +0.29263073   | −0.21731392 |
| <i>P</i> | 3.99       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 15 | 561 | 0.9− | 0.5+ | 2005 03 02 | 703 | 0.5− | 1.5− | 2007 10 10 | D35 | 0.5− | 0.6+ |
| 1999 09 15 | 561 | 0.3+ | 0.2+ | 2005 03 02 | 703 | 0.4+ | 0.2− | 2007 10 19 | 699 | 0.2+ | 0.3− |
| 1999 09 15 | 561 | 0.4− | 0.1+ | 2005 03 04 | 704 | 0.6+ | 0.2+ | 2007 10 19 | 699 | 1.0+ | 1.4− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 19 | 608 | 0.4− | 0.1+ | 2005 03 04 | 704 | 0.9+ | 0.0  | 2007 10 19 | 699 | 0.4+ | 0.0  |
| 2001 03 19 | 608 | 0.1+ | 0.4+ | 2005 03 04 | 704 | 0.6+ | 0.6+ | 2007 10 19 | 699 | 1.4+ | 0.6− |
| 2001 03 19 | 608 | 0.3+ | 0.1− | 2005 03 04 | 704 | 0.1− | 1.1+ | 2007 10 20 | G96 | 0.0  | 0.2− |
| 2003 09 22 | 644 | 0.2− | 0.2+ | 2005 03 04 | 704 | 0.0  | 0.4+ | 2007 10 20 | G96 | 0.3+ | 0.2− |
| 2003 09 22 | 644 | 0.2+ | 0.6+ | 2005 03 12 | 704 | 0.8− | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.0  |
| 2003 09 22 | 644 | 0.3+ | 0.5+ | 2005 03 12 | 704 | 0.3+ | 0.7+ | 2007 10 20 | G96 | 0.4+ | 0.2− |
| 2003 10 20 | 644 | 0.1+ | 0.4+ | 2005 03 12 | 704 | 0.8− | 0.4− | 2007 10 30 | 703 | 0.1− | 0.9− |
| 2003 10 20 | 644 | 0.0  | 0.4+ | 2005 03 12 | 704 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.6− | 0.0  |
| 2003 10 20 | 644 | 0.3+ | 0.2+ | 2005 03 12 | 704 | 0.1− | 0.2+ | 2007 10 30 | 703 | 0.7− | 0.9+ |
| 2005 03 02 | 703 | 1.1− | 0.2− | 2007 10 10 | D35 | 1.1− | 0.8+ | 2007 10 30 | 703 | 0.2− | 0.8− |
| 2005 03 02 | 703 | 0.6+ | 0.8− | 2007 10 10 | D35 | 0.4− | 0.1− |            |     |      |      |

**2005 EZ<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 233.30587  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.25724192 | $\omega$ | 35.71174  | −0.99706959   | +0.07177063 |
| <i>a</i> | 2.4485457  | $\Omega$ | 148.37275 | −0.07649286   | −0.93065217 |
| <i>e</i> | 0.1273975  | <i>i</i> | 2.89452   | −0.00103696   | −0.35879732 |
| <i>P</i> | 3.83       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 691 | 0.1+ | 0.1+ | 2005 03 10 | G96 | 0.2− | 0.0  | 2007 10 10 | 691 | 0.1+ | 0.1+ |
| 2005 03 03 | 691 | 0.1− | 0.1− | 2005 03 10 | G96 | 0.2− | 0.4+ | 2007 10 10 | G96 | 0.4+ | 0.7− |
| 2005 03 03 | 691 | 0.1− | 0.1− | 2005 03 17 | 703 | 0.6+ | 0.1+ | 2007 10 10 | G96 | 0.4+ | 0.3− |
| 2005 03 04 | G96 | 0.5+ | 1.0− | 2005 03 17 | 703 | 1.1− | 0.1− | 2007 10 10 | 691 | 0.7− | 0.2+ |
| 2005 03 04 | G96 | 0.2− | 0.1− | 2005 03 17 | 703 | 0.4+ | 0.6+ | 2007 11 18 | G96 | 0.3+ | 0.1− |
| 2005 03 04 | G96 | 0.4− | 0.1+ | 2005 03 17 | 703 | 0.2+ | 0.7− | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2005 03 04 | G96 | 0.2− | 0.2+ | 2005 04 11 | G96 | 0.2− | 0.1+ | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2005 03 09 | 699 | 0.3− | 0.3+ | 2005 04 11 | G96 | 0.1+ | 0.3+ | 2007 11 18 | G96 | 0.7+ | 0.3− |
| 2005 03 09 | 699 | 1.0+ | 0.6− | 2005 04 11 | G96 | 0.4+ | 0.0  | 2007 11 20 | 691 | 0.4− | 0.2+ |
| 2005 03 09 | 699 | 0.3− | 1.0+ | 2005 04 11 | G96 | 0.0  | 0.2+ | 2007 11 20 | 691 | 0.6+ | 0.3− |
| 2005 03 09 | 699 | 0.7+ | 0.6− | 2007 10 10 | 691 | 0.4− | 0.3+ | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2005 03 10 | G96 | 0.2− | 0.1+ | 2007 10 10 | G96 | 0.5+ | 0.1− |            |     |      |      |
| 2005 03 10 | G96 | 0.2− | 0.0  | 2007 10 10 | G96 | 0.5+ | 0.2− |            |     |      |      |

**2005 EV<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 309.81818  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.26631836 | $\omega$ | 311.29968 | −0.05817389   | −0.99547113 |
| <i>a</i> | 2.3925920  | $\Omega$ | 141.83736 | +0.94844309   | −0.07861617 |
| <i>e</i> | 0.1700117  | <i>i</i> | 6.98917   | +0.31156299   | +0.05344836 |
| <i>P</i> | 3.70       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 03 | 703 | 0.3−  | 0.3−  | 2005 03 16 | 704 | 0.6−  | 0.5+  | 2007 09 21 | D29 | 0.5− | 0.6− |
| 2005 03 03 | 703 | 0.9−  | 0.6−  | 2005 03 16 | 704 | 0.5−  | 0.0   | 2007 10 10 | 703 | 0.6+ | 0.4+ |
| 2005 03 03 | 703 | 0.3+  | 0.6−  | 2005 03 16 | 704 | (0.7− | 1.6−) | 2007 10 10 | 703 | 0.4+ | 0.4+ |
| 2005 03 03 | 703 | 0.4−  | 0.5−  | 2005 03 16 | 703 | 0.0   | 0.7+  | 2007 10 10 | 703 | 0.3− | 1.3+ |
| 2005 03 04 | 704 | 0.0   | 0.2−  | 2005 03 16 | 703 | 0.2+  | 0.5−  | 2007 10 10 | 703 | 0.5− | 0.0  |
| 2005 03 04 | 704 | 0.2+  | 0.5−  | 2005 03 16 | 703 | 0.5−  | 0.3+  | 2007 10 19 | 703 | 0.4+ | 0.3+ |
| 2005 03 04 | 704 | 0.2−  | 0.5−  | 2005 03 16 | 703 | 0.4+  | 1.4−  | 2007 10 19 | 703 | 0.4− | 0.4− |
| 2005 03 04 | 704 | 0.2+  | 0.2−  | 2005 04 02 | 703 | 0.6+  | 1.0−  | 2007 10 19 | 703 | 0.4+ | 0.1− |
| 2005 03 08 | 699 | 0.6+  | 1.3+  | 2005 04 02 | 703 | (1.1− | 3.2−) | 2007 10 19 | 703 | 0.5− | 0.0  |
| 2005 03 08 | 699 | 0.6−  | 0.1−  | 2005 04 02 | 703 | 1.1−  | 0.3+  | 2007 11 11 | 703 | 1.5+ | 0.5− |
| 2005 03 08 | 699 | 0.6−  | 1.4+  | 2005 04 02 | 703 | (1.2− | 2.4−) | 2007 11 11 | 703 | 1.2+ | 0.0  |
| 2005 03 08 | 699 | 0.8+  | 0.0   | 2005 04 04 | 691 | 0.3+  | 0.0   | 2007 11 11 | 703 | 0.1− | 0.8− |
| 2005 03 09 | 704 | (1.7+ | 0.4+) | 2005 04 04 | 691 | 0.2−  | 0.3+  | 2007 11 11 | 703 | 0.9− | 0.6+ |
| 2005 03 09 | 704 | 0.8+  | 0.3+  | 2005 04 04 | 691 | 0.2+  | 0.0   | 2007 11 17 | 703 | 0.0  | 0.7+ |
| 2005 03 09 | 704 | 0.2−  | 0.7+  | 2007 09 21 | D29 | 0.2−  | 0.3+  | 2007 11 17 | 703 | 0.5− | 0.8− |
| 2005 03 09 | 704 | 0.8+  | 0.1+  | 2007 09 21 | D29 | 1.0−  | 0.7−  | 2007 11 17 | 703 | 0.3− | 0.3+ |
| 2005 03 09 | 704 | 0.1+  | 0.2−  | 2007 09 21 | D29 | 0.2+  | 0.5−  | 2007 11 17 | 703 | 0.4+ | 0.3+ |

**2005 EX<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 218.45915  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21200839 | $\omega$ | 334.57751 | −0.84621889   | −0.53275985 |
| <i>a</i> | 2.7854841  | $\Omega$ | 173.20952 | +0.50091241   | −0.80114966 |
| <i>e</i> | 0.1448693  | <i>i</i> | 4.35275   | +0.18165999   | −0.27262825 |
| <i>P</i> | 4.65       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 03 | 703 | 1.1−  | 0.5−  | 2005 03 08 | 704 | 0.8−  | 0.6+  | 2005 03 17 | 704 | 0.8− | 1.4+ |
| 2005 03 03 | 703 | (0.6− | 2.6−) | 2005 03 08 | G96 | 0.3−  | 0.4−  | 2005 03 17 | 704 | 0.9+ | 0.2− |
| 2005 03 03 | 703 | 1.2−  | 0.1−  | 2005 03 08 | G96 | 0.3−  | 0.3−  | 2005 04 10 | 691 | 0.3+ | 0.2+ |
| 2005 03 03 | 703 | 0.0   | 0.5−  | 2005 03 08 | G96 | 0.4−  | 0.1+  | 2005 04 10 | 691 | 0.4+ | 0.3+ |
| 2005 03 04 | 691 | 0.2−  | 0.2−  | 2005 03 09 | 699 | 0.5+  | 1.0+  | 2005 04 10 | 691 | 0.2+ | 0.5+ |
| 2005 03 04 | 691 | 0.0   | 0.4−  | 2005 03 09 | 699 | 0.2−  | 0.4−  | 2005 05 10 | G96 | 0.2− | 0.1− |
| 2005 03 04 | 691 | 0.0   | 0.1−  | 2005 03 09 | 699 | 0.1−  | 0.1+  | 2005 05 10 | G96 | 0.4− | 0.2− |
| 2005 03 04 | 704 | 0.3+  | 0.4+  | 2005 03 09 | 699 | 1.2+  | 0.7−  | 2005 05 10 | G96 | 0.1− | 0.2− |
| 2005 03 04 | 704 | 0.2+  | 0.3+  | 2005 03 11 | 704 | 0.1−  | 0.2−  | 2005 05 10 | G96 | 0.0  | 0.1+ |
| 2005 03 04 | 704 | 0.3+  | 0.6+  | 2005 03 11 | 704 | 0.7−  | 1.0−  | 2007 09 10 | G96 | 0.0  | 0.5+ |
| 2005 03 04 | 704 | 0.5+  | 1.4+  | 2005 03 11 | 704 | 0.2−  | 0.2+  | 2007 09 10 | G96 | 0.4+ | 0.7+ |
| 2005 03 04 | G96 | 0.4−  | 0.2−  | 2005 03 11 | 704 | (2.1− | 1.4−) | 2007 09 10 | G96 | 0.1+ | 0.4+ |
| 2005 03 04 | 704 | 0.3−  | 0.4+  | 2005 03 11 | 704 | (1.3+ | 3.7−) | 2007 09 10 | G96 | 0.1− | 0.6+ |
| 2005 03 04 | G96 | 0.4−  | 0.4−  | 2005 03 14 | 704 | 1.4+  | 0.1+  | 2007 10 04 | G96 | 0.1− | 0.5+ |
| 2005 03 04 | G96 | 0.8−  | 0.4+  | 2005 03 14 | 704 | 0.6+  | 0.5+  | 2007 10 04 | G96 | 0.2+ | 0.2+ |
| 2005 03 04 | G96 | 0.6−  | 0.3−  | 2005 03 14 | 704 | 1.2+  | 0.4−  | 2007 10 04 | G96 | 0.7− | 0.4+ |
| 2005 03 08 | 704 | 0.9+  | 0.4−  | 2005 03 14 | 704 | 0.7+  | 0.4−  | 2007 10 04 | G96 | 0.4− | 0.7+ |
| 2005 03 08 | 704 | 0.0   | 0.3+  | 2005 03 14 | 704 | 0.8+  | 0.8+  | 2007 10 11 | G96 | 0.3+ | 0.4+ |
| 2005 03 08 | 704 | 1.2−  | 0.3+  | 2005 03 17 | 704 | 0.4−  | 0.4+  | 2007 10 11 | G96 | 0.1− | 0.2− |
| 2005 03 08 | 704 | 1.0+  | 0.5−  | 2005 03 17 | 704 | 0.6+  | 0.7+  | 2007 10 11 | G96 | 0.5− | 0.0  |
| 2005 03 08 | G96 | 0.4−  | 0.3−  | 2005 03 17 | 704 | 0.3+  | 0.4+  | 2007 10 11 | G96 | 0.4− | 0.8− |

**2005 EX<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 316.17647  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28643302 | $\omega$ | 52.71314 | −0.44044238   | −0.89558191 |
| <i>a</i> | 2.2792257  | $\Omega$ | 63.53101 | +0.79990334   | −0.42322292 |
| <i>e</i> | 0.1680183  | <i>i</i> | 4.02268  | +0.40763360   | −0.13716926 |
| <i>P</i> | 3.44       | <i>H</i> | 17.1     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 03 | 703 | 0.1−  | 0.6−  | 2005 03 12 | 704 | 1.1+  | 0.4+  | 2007 11 14 | 691 | 0.5− | 0.1+ |
| 2005 03 03 | 703 | 0.5+  | 1.2−  | 2005 03 12 | 704 | 0.2−  | 0.2−  | 2007 11 14 | 691 | 2.0+ | 0.7− |
| 2005 03 03 | 703 | 0.8−  | 1.2−  | 2005 03 12 | 704 | 1.0+  | 0.1+  | 2007 12 04 | 703 | 0.3− | 0.6+ |
| 2005 03 03 | 703 | (1.8− | 0.1−) | 2005 03 16 | 704 | (1.7− | 0.9+) | 2007 12 04 | 703 | 0.7− | 0.1+ |
| 2005 03 04 | 704 | 0.3+  | 0.3−  | 2005 03 16 | 704 | 0.7−  | 1.3+  | 2007 12 04 | 703 | 1.1− | 0.9+ |
| 2005 03 04 | 704 | 0.2+  | 1.3−  | 2005 03 16 | 704 | 1.0−  | 0.2−  | 2007 12 04 | 703 | 1.0+ | 0.6− |
| 2005 03 04 | 704 | 0.1−  | 0.7−  | 2005 03 16 | 704 | 0.9−  | 1.4+  | 2007 12 04 | G96 | 0.4− | 0.1− |
| 2005 03 04 | 704 | (0.8− | 1.8+) | 2005 03 16 | 704 | 1.0−  | 0.2−  | 2007 12 04 | G96 | 0.2− | 0.0  |
| 2005 03 04 | 704 | 0.2+  | 0.8−  | 2005 03 30 | 703 | 0.2+  | 1.1−  | 2007 12 04 | G96 | 0.0  | 0.1− |
| 2005 03 08 | 699 | 0.5+  | 0.2+  | 2005 03 30 | 703 | 0.5−  | 0.6−  | 2007 12 04 | G96 | 0.2− | 0.0  |
| 2005 03 08 | 699 | 0.3+  | 0.5+  | 2005 03 30 | 703 | 0.7−  | 0.3+  | 2007 12 05 | 704 | 0.6− | 0.7+ |
| 2005 03 08 | 699 | 0.2+  | 0.4+  | 2005 03 30 | 703 | 0.7−  | 1.0−  | 2007 12 05 | 704 | 0.9− | 0.5+ |
| 2005 03 08 | 699 | 0.1+  | 0.5−  | 2005 04 17 | 691 | 0.1+  | 0.1+  | 2007 12 05 | 704 | 0.2− | 0.4+ |
| 2005 03 09 | 699 | 0.3−  | 0.8−  | 2005 04 17 | 691 | 0.3+  | 0.0   | 2007 12 05 | 704 | 0.6− | 0.4+ |
| 2005 03 09 | 699 | (1.9+ | 0.7−) | 2005 04 17 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 704 | 0.5− | 0.8+ |
| 2005 03 09 | 699 | 0.8+  | 0.4+  | 2007 10 14 | G96 | 0.4+  | 0.2−  | 2007 12 10 | 704 | 0.2− | 0.5+ |
| 2005 03 09 | 699 | 0.8+  | 1.0+  | 2007 10 14 | G96 | 0.0   | 0.1+  | 2007 12 10 | 704 | 0.5+ | 0.1+ |
| 2005 03 09 | 704 | 0.5−  | 0.2+  | 2007 10 14 | G96 | 0.5+  | 0.4−  | 2007 12 10 | 704 | 0.3− | 0.1− |
| 2005 03 09 | 704 | 0.1+  | 0.5+  | 2007 10 14 | G96 | 0.1+  | 0.0   | 2007 12 10 | 704 | 0.3+ | 0.1+ |
| 2005 03 09 | 704 | 0.5−  | 0.5+  | 2007 11 05 | G96 | 0.2−  | 0.2−  | 2007 12 15 | G96 | 0.2+ | 0.1− |
| 2005 03 09 | 704 | 1.1−  | 0.6+  | 2007 11 05 | G96 | 0.3−  | 0.1−  | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2005 03 09 | 704 | 0.2−  | 0.5+  | 2007 11 05 | G96 | 0.3−  | 0.1−  | 2007 12 15 | G96 | 0.1− | 0.1− |
| 2005 03 12 | 704 | 0.9+  | 0.2+  | 2007 11 05 | G96 | 0.1+  | 0.4−  | 2007 12 15 | G96 | 0.4+ | 0.2− |
| 2005 03 12 | 704 | 0.2−  | 0.4+  | 2007 11 14 | 691 | 0.6−  | 0.0   |            |     |      |      |

**2005 EO<sub>25</sub> = 2007 RB<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 271.13111  | (2000.0)           | P             |             | Q |  |
|----------|------------|--------------------|---------------|-------------|---|--|
| <i>n</i> | 0.20306173 | $\omega$ 297.69380 | +0.02014207   | −0.99955741 |   |  |
| <i>a</i> | 2.8667115  | $\Omega$ 151.12688 | +0.93252469   | +0.01088588 |   |  |
| <i>e</i> | 0.0342376  | <i>i</i> 2.59857   | +0.36054404   | +0.02768540 |   |  |
| <i>P</i> | 4.85       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 04 | 691 | 0.1+ | 0.1− | 2005 03 04 | G96 | 0.7− | 0.3− | 2007 09 10 | G96 | 0.1+ | 0.1+ |
| 2000 02 04 | 691 | 0.1+ | 0.3− | 2005 03 04 | G96 | 0.8− | 0.1+ | 2007 09 10 | G96 | 0.3+ | 0.4+ |
| 2000 02 04 | 691 | 0.4+ | 0.1+ | 2005 03 04 | G96 | 0.5− | 0.2− | 2007 09 10 | G96 | 0.0  | 0.1+ |
| 2000 04 05 | 691 | 0.4− | 0.3− | 2005 03 07 | 701 | 0.3+ | 0.1+ | 2007 09 10 | G96 | 0.2− | 0.1− |
| 2000 04 05 | 691 | 0.1− | 0.4− | 2005 03 07 | 701 | 0.2+ | 0.4+ | 2007 09 10 | G96 | 0.2+ | 0.1+ |
| 2000 04 05 | 691 | 0.5− | 0.2− | 2005 03 07 | 701 | 0.2+ | 0.0  | 2007 09 10 | G96 | 0.1− | 0.0  |
| 2005 03 03 | 701 | 0.5+ | 0.5+ | 2005 03 08 | 701 | 0.1+ | 0.6+ | 2007 09 30 | 691 | 0.2− | 0.1− |
| 2005 03 03 | 701 | 0.6+ | 0.5+ | 2005 03 08 | 701 | 0.5+ | 0.7+ | 2007 09 30 | 691 | 0.3− | 0.4+ |
| 2005 03 03 | 701 | 0.2− | 0.6+ | 2007 09 06 | J87 | 0.7+ | 0.3+ | 2007 09 30 | 691 | 0.1+ | 0.2− |
| 2005 03 04 | 691 | 0.1+ | 0.3+ | 2007 09 07 | J87 | 0.7+ | 0.3+ | 2007 10 09 | 691 | 0.5− | 0.2+ |
| 2005 03 04 | 691 | 0.2+ | 0.5+ | 2007 09 07 | J87 | 1.1+ | 0.1+ | 2007 10 09 | 691 | 0.2− | 0.2+ |
| 2005 03 04 | 691 | 0.5+ | 0.3+ | 2007 09 10 | G96 | 0.2+ | 0.3+ | 2007 10 09 | 691 | 0.3− | 0.2+ |
| 2005 03 04 | G96 | 0.3− | 0.4+ | 2007 09 10 | G96 | 0.4+ | 0.3+ |            |     |      |      |

**2005 EU<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 16.23401   | (2000.0)          | P             |             | Q |  |
|----------|------------|-------------------|---------------|-------------|---|--|
| <i>n</i> | 0.31326318 | $\omega$ 28.82404 | +0.37739665   | −0.92498440 |   |  |
| <i>a</i> | 2.1471538  | $\Omega$ 39.05027 | +0.83553220   | +0.31941762 |   |  |
| <i>e</i> | 0.1032316  | <i>i</i> 4.04571  | +0.39932156   | +0.20585492 |   |  |
| <i>P</i> | 3.15       | <i>H</i> 17.8     | <i>G</i> 0.15 | <i>U</i> 2  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 31 | 691 | 0.5+ | 1.1+ | 2005 03 04 | G98 | 0.1− | 0.1+ | 2007 11 13 | G98 | 0.6− | 0.0  |
| 1994 10 31 | 691 | 0.2− | 0.6− | 2005 03 04 | G98 | 0.5+ | 0.1− | 2007 11 18 | G96 | 0.4+ | 0.4− |
| 1994 10 31 | 691 | 0.3− | 0.3− | 2005 03 04 | G98 | 0.6+ | 0.5− | 2007 11 18 | G96 | 0.4− | 0.4+ |
| 2002 03 05 | 645 | 0.0  | 0.0  | 2005 03 04 | G98 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.2− | 0.4− |
| 2002 03 05 | 645 | 0.0  | 0.0  | 2005 03 04 | G98 | 0.5+ | 0.3+ | 2007 11 18 | G96 | 0.4− | 0.4− |
| 2005 03 02 | G98 | 0.1+ | 0.0  | 2005 03 04 | G98 | 0.8+ | 0.6+ | 2007 12 16 | G98 | 0.4+ | 0.4+ |
| 2005 03 02 | G98 | 0.3+ | 0.2+ | 2005 03 09 | G98 | 0.4+ | 0.2+ | 2007 12 16 | G98 | 0.0  | 0.2− |
| 2005 03 02 | G98 | 0.1− | 0.5+ | 2005 03 09 | G98 | 0.4− | 0.1− | 2007 12 16 | G98 | 0.6− | 0.1− |
| 2005 03 02 | G98 | 0.5− | 0.3− | 2005 03 09 | G98 | 0.9− | 0.0  | 2007 12 16 | G98 | 0.0  | 0.5− |
| 2005 03 02 | G98 | 0.4− | 0.4+ | 2007 11 13 | G98 | 0.1− | 0.4− |            |     |      |      |
| 2005 03 02 | G98 | 0.2− | 0.3+ | 2007 11 13 | G98 | 1.0+ | 0.0  |            |     |      |      |

**2005 EH<sub>31</sub> = 2007 WS<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 162.37068  | (2000.0)           | P             |             | Q |  |
|----------|------------|--------------------|---------------|-------------|---|--|
| <i>n</i> | 0.24371035 | $\omega$ 219.05531 | −0.52073712   | +0.84877915 |   |  |
| <i>a</i> | 2.5383611  | $\Omega$ 20.08857  | −0.70101441   | −0.36382383 |   |  |
| <i>e</i> | 0.0808586  | <i>i</i> 15.48262  | −0.48724905   | −0.38367456 |   |  |
| <i>P</i> | 4.04       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 25 | 691 | 0.1+ | 0.1+ | 2005 03 02 | 703 | 1.8− | 1.7− | 2007 11 16 | G96 | 0.1+ | 0.1− |
| 2003 10 25 | 691 | 0.1+ | 0.0  | 2005 03 09 | 703 | 1.2+ | 0.0  | 2007 11 16 | G96 | 0.2+ | 0.1− |
| 2003 10 25 | 691 | 0.2− | 0.0  | 2005 03 09 | 703 | 0.6+ | 0.0  | 2007 11 17 | G96 | 0.1− | 0.2− |
| 2005 03 01 | 703 | 0.3+ | 0.3− | 2005 03 09 | 703 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.3+ | 0.2− |
| 2005 03 01 | 703 | 0.2+ | 0.1− | 2005 03 09 | 703 | 1.1+ | 1.0+ | 2007 11 17 | G96 | 0.0  | 0.0  |
| 2005 03 01 | 703 | 0.2− | 0.4+ | 2007 10 09 | 691 | 0.4− | 0.3+ | 2007 11 17 | G96 | 0.2− | 0.0  |
| 2005 03 01 | 703 | 1.4− | 0.2− | 2007 10 09 | 691 | 0.3− | 0.1− | 2007 11 17 | G96 | 0.3+ | 0.2+ |
| 2005 03 02 | 703 | 0.4− | 1.0+ | 2007 10 09 | 691 | 0.4− | 0.3− | 2007 11 17 | G96 | 0.2+ | 0.2+ |
| 2005 03 02 | 703 | 0.9+ | 0.4+ | 2007 11 16 | G96 | 0.3+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.1+ |
| 2005 03 02 | 703 | 0.4− | 0.2− | 2007 11 16 | G96 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.2− | 0.2+ |

**2005 EO<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 82.15189   | (2000.0)           | P             |             | Q |  |
|----------|------------|--------------------|---------------|-------------|---|--|
| <i>n</i> | 0.18964575 | $\omega$ 288.19627 | +0.18176941   | +0.98304908 |   |  |
| <i>a</i> | 3.0003641  | $\Omega$ 352.15915 | −0.82272205   | +0.13868457 |   |  |
| <i>e</i> | 0.0637784  | <i>i</i> 10.11822  | −0.53859848   | +0.11992124 |   |  |
| <i>P</i> | 5.20       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |   |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 03 | 691 | 0.1+  | 0.3+  | 2005 03 16 | G96 | 0.5− | 0.2− | 2005 04 12 | G96 | 0.0   | 0.1+  |
| 2005 03 03 | 691 | 0.0   | 0.4+  | 2005 03 16 | G96 | 0.6− | 0.2− | 2005 04 12 | G96 | 0.2−  | 0.0   |
| 2005 03 03 | 691 | 0.2+  | 0.2−  | 2005 03 16 | G96 | 1.3− | 0.4+ | 2005 05 12 | G96 | 0.2−  | 0.2+  |
| 2005 03 08 | G96 | 0.4−  | 0.3−  | 2005 03 17 | 683 | 0.2+ | 0.3− | 2005 05 12 | G96 | 0.1−  | 0.2+  |
| 2005 03 08 | G96 | 0.4−  | 0.2−  | 2005 03 17 | 683 | 0.3− | 1.0− | 2005 05 12 | G96 | 0.1−  | 0.1−  |
| 2005 03 08 | 704 | 0.1+  | 0.1−  | 2005 03 17 | 683 | 0.4+ | 1.4+ | 2005 05 12 | G96 | 0.0   | 0.5+  |
| 2005 03 08 | G96 | 0.2−  | 0.3−  | 2005 03 17 | 704 | 0.3+ | 0.3− | 2007 09 13 | G96 | 0.2+  | 0.0   |
| 2005 03 08 | G96 | 0.2−  | 0.5−  | 2005 03 17 | 704 | 0.6+ | 0.1+ | 2007 09 13 | G96 | 0.1+  | 0.1−  |
| 2005 03 08 | 704 | 1.0+  | 0.1−  | 2005 03 17 | G96 | 0.3− | 0.4− | 2007 09 13 | G96 | 0.1−  | 0.1+  |
| 2005 03 08 | 704 | 0.2+  | 0.2−  | 2005 03 17 | 704 | 0.3+ | 0.2− | 2007 09 13 | G96 | 0.3+  | 0.1−  |
| 2005 03 08 | 704 | 0.5+  | 0.2−  | 2005 03 17 | G96 | 0.7− | 0.3− | 2007 09 18 | 683 | (2.7− | 0.8+) |
| 2005 03 08 | 704 | 0.7+  | 0.1+  | 2005 03 17 | G96 | 0.5+ | 0.4+ | 2007 09 18 | 683 | 0.3−  | 0.1−  |
| 2005 03 09 | 699 | 0.2−  | 1.4+  | 2005 03 17 | G96 | 0.6− | 0.9− | 2007 09 18 | 683 | 0.9−  | 0.9+  |
| 2005 03 09 | 699 | 1.0+  | 0.3+  | 2005 04 04 | 703 | 1.3− | 1.2+ | 2007 10 10 | G96 | 0.3−  | 0.2−  |
| 2005 03 09 | 683 | 1.2−  | 0.2−  | 2005 04 04 | 703 | 0.9+ | 1.2− | 2007 10 10 | G96 | 0.0   | 0.0   |
| 2005 03 09 | 699 | 0.2+  | 0.4+  | 2005 04 04 | 703 | 0.7+ | 0.8+ | 2007 10 10 | G96 | 0.1−  | 0.1−  |
| 2005 03 09 | 683 | (2.3− | 0.0 ) | 2005 04 04 | 703 | 0.6+ | 0.0  | 2007 10 10 | G96 | 0.3−  | 0.1−  |
| 2005 03 09 | 699 | 0.2+  | 0.3+  | 2005 04 06 | G96 | 0.1− | 0.3− | 2007 11 12 | G96 | 0.8+  | 0.1+  |
| 2005 03 09 | 683 | 0.9+  | 0.8−  | 2005 04 06 | G96 | 0.3− | 0.3− | 2007 11 12 | G96 | 0.9+  | 0.1−  |
| 2005 03 16 | 683 | 0.3+  | 0.1−  | 2005 04 06 | G96 | 0.3− | 0.2− | 2007 11 12 | G96 | 0.2−  | 0.1−  |
| 2005 03 16 | 683 | 0.9−  | 0.6−  | 2005 04 06 | G96 | 0.2− | 0.2− | 2007 11 12 | G96 | 0.1−  | 0.0   |
| 2005 03 16 | 683 | 0.2+  | 0.9+  | 2005 04 12 | G96 | 0.2− | 0.0  |            |     |       |       |
| 2005 03 16 | G96 | 0.1−  | 0.1−  | 2005 04 12 | G96 | 0.3− | 0.1− |            |     |       |       |

**2005 EY<sub>54</sub> = 2007 TZ<sub>111</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 54.61916   | (2000.0)           | P             |             | Q |  |
|----------|------------|--------------------|---------------|-------------|---|--|
| <i>n</i> | 0.18098272 | $\omega$ 316.61460 | +0.60520031   | +0.79489511 |   |  |
| <i>a</i> | 3.0953610  | $\Omega$ 350.34807 | −0.64146822   | +0.45473662 |   |  |
| <i>e</i> | 0.2036030  | <i>i</i> 14.96447  | −0.47143515   | +0.40169189 |   |  |
| <i>P</i> | 5.45       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 05 | 691 | 0.1+ | 0.1+ | 2005 03 08 | G96 | 0.4− | 0.2− | 2007 09 12 | 703 | 0.1− | 0.6+ |
| 1994 03 05 | 691 | 0.0  | 0.1− | 2005 03 08 | G96 | 0.4+ | 0.3− | 2007 09 12 | 703 | 0.7+ | 0.6+ |
| 1994 03 05 | 691 | 0.2+ | 0.1− | 2005 03 08 | G96 | 0.2− | 0.2+ | 2007 09 12 | 703 | 0.2− | 0.2+ |
| 1996 10 08 | 691 | 0.1− | 0.1+ | 2005 03 10 | 695 | 0.1+ | 0.3+ | 2007 09 12 | 703 | 0.0  | 0.1+ |
| 1996 10 08 | 691 | 0.2+ | 0.4− | 2005 03 10 | 695 | 0.1+ | 0.3+ | 2007 10 08 | 703 | 0.3− | 0.3+ |
| 1996 10 08 | 691 | 0.1+ | 0.3− | 2005 04 02 | G96 | 0.4+ | 0.2+ | 2007 10 08 | 703 | 0.7− | 0.3− |
| 1996 11 07 | 691 | 0.7+ | 0.5− | 2005 04 02 | G96 | 0.3+ | 0.2− | 2007 10 08 | 703 | 0.3− | 0.6+ |
| 1996 11 07 | 691 | 0.1+ | 0.1+ | 2005 04 02 | G96 | 0.2− | 0.4+ | 2007 10 08 | 703 | 0.2+ | 0.3− |
| 1996 11 07 | 691 | 0.2+ | 0.5− | 2005 04 02 | G96 | 0.1− | 0.1+ | 2007 10 09 | 699 | 0.8+ | 0.4− |
| 2001 07 24 | 644 | 0.3− | 0.6+ | 2005 04 11 | 691 | 0.6+ | 0.4+ | 2007 10 09 | 699 | 1.2− | 1.0+ |
| 2001 07 24 | 644 | 0.0  | 0.1+ | 2005 04 11 | 691 | 0.1+ | 0.4+ | 2007 10 09 | 699 | 0.5+ | 0.2+ |
| 2001 07 24 | 644 | 0.6− | 0.6+ | 2005 04 11 | 691 | 0.1+ | 0.3+ | 2007 10 09 | 699 | 0.6+ | 1.6+ |
| 2005 03 04 | 691 | 0.0  | 0.8+ | 2005 05 08 | G96 | 0.1− | 0.2+ | 2007 10 14 | 703 | 0.6− | 0.0  |
| 2005 03 04 | 691 | 0.7+ | 0.1+ | 2005 05 08 | G96 | 0.2− | 0.5− | 2007 10 14 | 703 | 0.7− | 0.1− |
| 2005 03 04 | 691 | 0.6+ | 0.2+ | 2005 05 08 | G96 | 0.1− | 0.1+ | 2007 10 14 | 703 | 0.1+ | 0.1− |
| 2005 03 08 | G96 | 0.3− | 0.2+ | 2005 05 08 | G96 | 0.2− | 0.3− | 2007 10 14 | 703 | 1.0− | 0.4− |

2007 DEC. 24

M.P.O. 129721

**2005 EO<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 213.31797  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26089205 | $\omega$ | 147.21899 | -0.80737230   | +0.58892205 |
| <i>a</i> | 2.4256538  | $\Omega$ | 68.90378  | -0.54939666   | -0.72786346 |
| <i>e</i> | 0.1324299  | <i>i</i> | 2.23243   | -0.21520520   | -0.35126287 |
| <i>P</i> | 3.78       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 691 | 0.3-  | 0.1+  | 2005 03 09 | 704 | 1.0+ | 0.1+ | 2007 11 05 | G96 | 0.9+ | 0.1- |
| 2005 03 03 | 691 | 0.1-  | 0.5+  | 2005 03 09 | 704 | 0.7+ | 0.0  | 2007 11 05 | G96 | 0.6+ | 0.1- |
| 2005 03 03 | 691 | 0.1-  | 0.1-  | 2005 03 16 | G96 | 0.6- | 0.4- | 2007 11 05 | G96 | 0.4+ | 0.3+ |
| 2005 03 03 | 703 | 0.9-  | 0.5+  | 2005 03 16 | G96 | 0.5- | 0.2- | 2007 11 05 | G96 | 0.4- | 0.0  |
| 2005 03 03 | 703 | 1.1-  | 1.4+  | 2005 03 16 | G96 | 0.8- | 0.0  | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2005 03 03 | 703 | 1.1-  | 0.6-  | 2005 03 16 | G96 | 0.6- | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.3+ |
| 2005 03 03 | 703 | 0.5+  | 0.4-  | 2005 04 10 | 691 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2005 03 09 | 699 | (0.9+ | 1.6-) | 2005 04 10 | 691 | 0.1+ | 0.4- | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2005 03 09 | 699 | 1.0+  | 0.4-  | 2005 04 10 | 691 | 0.0  | 0.2+ | 2007 12 04 | G96 | 0.2- | 0.0  |
| 2005 03 09 | 699 | 0.8+  | 0.3+  | 2005 05 11 | G96 | 0.4- | 0.1- | 2007 12 04 | G96 | 0.0  | 0.6- |
| 2005 03 09 | 704 | 0.8+  | 1.1-  | 2005 05 11 | G96 | 0.3- | 0.7- | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2005 03 09 | 699 | 1.3+  | 1.0+  | 2005 05 11 | G96 | 0.0  | 0.0  |            |     |      |      |
| 2005 03 09 | 704 | 1.2+  | 0.6-  | 2005 05 11 | G96 | 0.2- | 0.2- |            |     |      |      |

**2005 EM<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 281.75582  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18152824 | $\omega$ | 71.87287  | +0.37546943   | -0.92674837 |
| <i>a</i> | 3.0891566  | $\Omega$ | 356.00568 | +0.76678822   | +0.31827414 |
| <i>e</i> | 0.0142834  | <i>i</i> | 10.46748  | +0.52063282   | +0.19959716 |
| <i>P</i> | 5.43       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 691 | 0.5+ | 0.1- | 2005 03 12 | 691 | 0.4+ | 0.1+ | 2007 09 11 | 691 | 0.3+ | 0.1+ |
| 2005 03 03 | 691 | 0.4+ | 0.2+ | 2005 03 12 | 691 | 0.3+ | 0.3+ | 2007 09 11 | 691 | 0.1- | 0.2- |
| 2005 03 03 | 691 | 0.1+ | 0.0  | 2005 03 12 | 691 | 0.4+ | 0.3+ | 2007 09 11 | 691 | 0.2- | 0.1+ |
| 2005 03 09 | G96 | 0.4- | 0.0  | 2005 04 06 | G96 | 0.2- | 0.2- | 2007 10 15 | G96 | 0.1+ | 0.1- |
| 2005 03 09 | G96 | 0.5- | 0.3- | 2005 04 06 | G96 | 0.0  | 0.1- | 2007 10 15 | G96 | 0.7- | 0.6+ |
| 2005 03 09 | G96 | 0.7- | 0.1+ | 2005 04 06 | G96 | 0.0  | 0.0  | 2007 10 15 | G96 | 0.2+ | 0.2- |
| 2005 03 09 | G96 | 0.5- | 0.0  | 2005 04 06 | G96 | 0.4+ | 0.1- | 2007 10 15 | G96 | 0.4+ | 0.1- |

**2005 EP<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.13360  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17971600 | $\omega$ | 61.27909  | -0.47272176   | +0.88121135 |
| <i>a</i> | 3.1098890  | $\Omega$ | 180.51198 | -0.83738097   | -0.44950147 |
| <i>e</i> | 0.1135722  | <i>i</i> | 5.31800   | -0.27445810   | -0.14633857 |
| <i>P</i> | 5.48       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 15 | 608 | 0.2+ | 0.5+ | 2005 03 14 | 704 | 0.4+ | 1.2+ | 2007 09 10 | G96 | 0.2- | 0.2- |
| 2001 08 15 | 608 | 0.2- | 0.1- | 2005 03 14 | 704 | 0.6+ | 0.0  | 2007 09 10 | G96 | 0.3+ | 0.1- |
| 2001 08 15 | 608 | 0.1- | 0.2- | 2005 03 31 | 333 | 0.9- | 0.4+ | 2007 09 10 | G96 | 0.0  | 0.1- |
| 2005 03 03 | 691 | 0.0  | 0.2+ | 2005 03 31 | 333 | 0.0  | 0.4- | 2007 09 10 | G96 | 0.1- | 0.1+ |
| 2005 03 03 | 691 | 0.2- | 0.2- | 2005 04 01 | 333 | 0.5+ | 0.1- | 2007 09 10 | G96 | 0.2- | 0.1- |
| 2005 03 03 | 691 | 0.1- | 0.2- | 2005 04 01 | 333 | 0.4+ | 0.6+ | 2007 09 10 | G96 | 0.0  | 0.1+ |
| 2005 03 09 | 691 | 0.1- | 0.2- | 2005 04 02 | G96 | 0.1- | 0.2- | 2007 09 10 | G96 | 0.1- | 0.2- |
| 2005 03 09 | 691 | 0.1- | 0.1- | 2005 04 02 | G96 | 0.1- | 0.2- | 2007 10 08 | G96 | 0.1- | 0.3+ |
| 2005 03 09 | 691 | 0.1- | 0.1- | 2005 04 02 | G96 | 0.3- | 0.2- | 2007 10 08 | G96 | 0.4+ | 0.2+ |
| 2005 03 14 | 704 | 1.2+ | 0.9+ | 2005 04 02 | G96 | 0.2- | 0.3- | 2007 10 08 | G96 | 0.2+ | 0.2+ |
| 2005 03 14 | 704 | 0.9- | 0.7- | 2007 09 10 | G96 | 0.1- | 0.2- | 2007 10 08 | G96 | 0.0  | 0.1+ |

**2005 EA<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 251.42896  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23404908 | $\omega$ | 326.68232 | -0.65301297   | -0.75431201 |
| <i>a</i> | 2.6077428  | $\Omega$ | 163.74214 | +0.73693149   | -0.65348886 |
| <i>e</i> | 0.1968760  | <i>i</i> | 14.00045  | +0.17465981   | -0.06297390 |
| <i>P</i> | 4.21       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 04 | 691 | 0.6- | 0.4- | 2005 03 12 | 704 | 0.3+  | 0.1-  | 2005 04 13 | 691 | 0.1- | 0.2+ |
| 2005 03 04 | 691 | 0.3- | 0.2- | 2005 03 12 | 704 | 0.2-  | 0.3+  | 2007 09 10 | 691 | 0.6- | 0.5+ |
| 2005 03 04 | 691 | 0.4- | 0.3- | 2005 03 12 | 704 | 0.1-  | 0.6+  | 2007 09 10 | 691 | 1.1- | 1.2+ |
| 2005 03 09 | 704 | 1.5+ | 0.4- | 2005 04 06 | 703 | 0.3-  | 0.2-  | 2007 09 10 | 691 | 0.1+ | 0.8+ |
| 2005 03 09 | 704 | 0.4+ | 0.5+ | 2005 04 06 | 703 | 0.2+  | 1.2+  | 2007 10 15 | G96 | 0.3- | 0.3+ |
| 2005 03 09 | 704 | 1.0+ | 0.5- | 2005 04 06 | 703 | 0.8-  | 1.3-  | 2007 10 15 | G96 | 0.8+ | 0.1+ |
| 2005 03 09 | 704 | 0.4+ | 1.1+ | 2005 04 06 | 703 | (0.3+ | 2.6+) | 2007 10 15 | G96 | 0.7+ | 0.4- |
| 2005 03 12 | 704 | 0.1+ | 0.9+ | 2005 04 13 | 691 | 0.3-  | 0.3+  | 2007 10 15 | G96 | 0.2+ | 0.1- |
| 2005 03 12 | 704 | 0.2- | 0.0  | 2005 04 13 | 691 | 0.2-  | 0.3+  |            |     |      |      |

**2005 EH<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 314.20143  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24066282 | $\omega$ | 270.09212 | +0.07515067   | -0.99695864 |
| <i>a</i> | 2.5597451  | $\Omega$ | 175.44137 | +0.98660914   | +0.07133451 |
| <i>e</i> | 0.0699429  | <i>i</i> | 15.04861  | +0.14475765   | +0.03138230 |
| <i>P</i> | 4.10       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 04 16 | 645 | 0.0  | 0.1+ | 2005 03 08 | 699 | 1.4+  | 0.7-  | 2005 03 16 | 691 | 0.2- | 0.7- |
| 2001 04 16 | 645 | 0.0  | 0.2+ | 2005 03 08 | 699 | 0.1+  | 0.0   | 2005 03 16 | 691 | 0.2+ | 0.1+ |
| 2003 11 21 | 644 | 0.2+ | 0.2+ | 2005 03 08 | 699 | 0.7+  | 0.8-  | 2005 03 16 | 691 | 0.1+ | 0.1+ |
| 2003 11 21 | 644 | 0.1+ | 0.1- | 2005 03 08 | 699 | (0.4+ | 1.9+) | 2007 09 09 | 291 | 0.0  | 0.2+ |
| 2003 11 21 | 644 | 0.1+ | 0.2+ | 2005 03 09 | G96 | 0.7-  | 0.4-  | 2007 09 09 | 291 | 0.2- | 0.3+ |
| 2003 11 24 | 644 | 0.1- | 1.0- | 2005 03 09 | G96 | 0.0   | 0.2-  | 2007 09 09 | 291 | 0.0  | 0.3+ |
| 2003 11 24 | 644 | 0.2+ | 0.3- | 2005 03 09 | G96 | 0.7-  | 0.2-  | 2007 11 02 | 703 | 1.0+ | 0.7+ |
| 2003 11 24 | 644 | 0.1- | 0.0  | 2005 03 09 | G96 | 0.2-  | 0.4-  | 2007 11 02 | 703 | 0.6- | 0.1- |
| 2005 03 04 | 691 | 0.2- | 0.6+ | 2005 03 12 | 691 | 0.1+  | 0.1-  | 2007 11 02 | 703 | 0.4- | 1.0- |
| 2005 03 04 | 691 | 0.2- | 0.2+ | 2005 03 12 | 691 | 0.1-  | 0.0   | 2007 11 02 | 703 | 0.1+ | 1.7+ |
| 2005 03 04 | 691 | 0.1+ | 0.0  | 2005 03 12 | 691 | 0.1-  | 0.1+  |            |     |      |      |

**2005 ER<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 185.11756  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18893051 | $\omega$ | 22.43805  | -0.94886580   | -0.29191230 |
| <i>a</i> | 3.0079318  | $\Omega$ | 139.96142 | +0.25378513   | -0.93178439 |
| <i>e</i> | 0.0433461  | <i>i</i> | 10.76621  | +0.18774131   | -0.21578938 |
| <i>P</i> | 5.22       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 14 | 704 | 0.6+  | 0.1+  | 2005 03 09 | 704 | 0.7+ | 0.0  | 2005 03 16 | 703 | 0.0  | 0.4+ |
| 2005 02 14 | 704 | 0.2+  | 0.9+  | 2005 03 09 | 704 | 0.1- | 0.0  | 2005 03 16 | 704 | 1.2- | 0.7- |
| 2005 02 14 | 704 | 0.4+  | 0.1-  | 2005 03 09 | 704 | 0.5+ | 0.5+ | 2005 03 16 | 704 | 0.0  | 0.6- |
| 2005 02 14 | 704 | 0.1-  | 0.5+  | 2005 03 09 | 704 | 0.5+ | 1.4+ | 2005 04 02 | 703 | 0.1+ | 0.2- |
| 2005 02 14 | 704 | 0.3+  | 1.0-  | 2005 03 12 | 704 | 0.1+ | 0.5+ | 2005 04 02 | 703 | 0.3- | 0.4- |
| 2005 03 04 | 704 | 0.2-  | 0.1+  | 2005 03 12 | 704 | 0.1- | 0.8+ | 2005 04 02 | 703 | 0.5+ | 1.7- |
| 2005 03 04 | 704 | 0.1+  | 0.1+  | 2005 03 12 | 704 | 0.1+ | 0.7+ | 2005 04 02 | 703 | 1.5- | 1.4- |
| 2005 03 04 | 704 | 0.1-  | 0.2+  | 2005 03 12 | 704 | 0.6+ | 0.5+ | 2006 06 09 | 644 | 0.2- | 0.0  |
| 2005 03 04 | 704 | 0.7+  | 0.5-  | 2005 03 12 | 704 | 0.2+ | 0.3+ | 2006 06 09 | 644 | 0.1+ | 0.0  |
| 2005 03 04 | 704 | 0.2-  | 0.2-  | 2005 03 16 | 704 | 0.4- | 0.4- | 2006 06 09 | 644 | 0.1+ | 0.2+ |
| 2005 03 09 | 699 | 0.1-  | 1.2+  | 2005 03 16 | 703 | 0.9- | 0.1- | 2007 09 11 | 691 | 0.1- | 0.7+ |
| 2005 03 09 | 699 | (2.7+ | 0.7+) | 2005 03 16 | 703 | 1.0- | 0.4+ | 2007 09 11 | 691 | 0.2- | 0.6+ |
| 2005 03 09 | 699 | 0.6+  | 1.6+  | 2005 03 16 | 704 | 0.7- | 0.5- | 2007 09 11 | 691 | 0.1- | 0.7+ |
| 2005 03 09 | 699 | 1.8+  | 0.7+  | 2005 03 16 | 703 | 0.9- | 0.6- |            |     |      |      |
| 2005 03 09 | 704 | 0.1+  | 0.2-  | 2005 03 16 | 704 | 0.1- | 0.6- |            |     |      |      |

**2005 EQ<sub>86</sub> = 2005 GR<sub>211</sub>**Id. Minor Planet Center (d, *MPO* 87832)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 217.06625  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21251853 | $\omega$ | 150.47959 | -0.85782677   | -0.51392775 |
| <i>a</i> | 2.7810247  | $\Omega$ | 358.58104 | +0.44060503   | -0.73201047 |
| <i>e</i> | 0.1616260  | <i>i</i> | 7.87154   | +0.26457598   | -0.44725712 |
| <i>P</i> | 4.64       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | 704 | 0.6+ | 1.0+ | 2005 04 04 | G96 | 0.3- | 0.2- | 2005 05 08 | G96 | 0.2- | 0.0  |
| 2005 03 04 | 704 | 0.5+ | 0.7+ | 2005 04 04 | G96 | 0.6- | 0.2- | 2007 08 24 | 691 | 0.1+ | 0.3+ |
| 2005 03 04 | 704 | 1.4+ | 0.9- | 2005 04 04 | G96 | 0.4- | 0.1- | 2007 08 24 | 691 | 0.1- | 0.6+ |
| 2005 03 09 | 699 | 0.5- | 0.1+ | 2005 04 10 | 691 | 0.0  | 0.4+ | 2007 08 24 | 691 | 0.2- | 0.1+ |
| 2005 03 09 | 699 | 0.4+ | 0.3+ | 2005 04 10 | 691 | 0.1- | 0.4+ | 2007 09 10 | G96 | 0.1- | 0.6+ |
| 2005 03 09 | 699 | 1.2+ | 0.5+ | 2005 04 10 | 691 | 0.0  | 0.4+ | 2007 09 10 | G96 | 0.0  | 0.8+ |
| 2005 03 09 | 704 | 0.6- | 0.2+ | 2005 05 04 | G96 | 1.1+ | 0.5- | 2007 09 10 | G96 | 0.5- | 0.4+ |
| 2005 03 09 | 704 | 0.1- | 0.1+ | 2005 05 04 | G96 | 0.3- | 0.0  | 2007 09 10 | G96 | 0.5- | 0.6+ |
| 2005 03 09 | 699 | 0.0  | 0.4+ | 2005 05 04 | G96 | 0.3+ | 0.6+ | 2007 09 11 | G96 | 0.4- | 0.4- |
| 2005 03 09 | 704 | 0.4+ | 0.3- | 2005 05 04 | G96 | 0.0  | 0.2+ | 2007 09 11 | G96 | 0.5- | 0.3+ |
| 2005 03 09 | 704 | 0.2- | 0.1+ | 2005 05 08 | G96 | 0.1- | 0.3+ | 2007 09 11 | G96 | 0.1- | 0.0  |
| 2005 03 09 | 704 | 0.3+ | 0.0  | 2005 05 08 | G96 | 0.1- | 0.2+ | 2007 09 11 | G96 | 0.2- | 0.8+ |
| 2005 04 04 | G96 | 0.5- | 0.2- | 2005 05 08 | G96 | 0.1- | 0.1+ |            |     |      |      |

**2005 EC<sub>87</sub> = 2007 VY<sub>189</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 331.16233  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28209163 | $\omega$ | 82.05831 | +0.00575712   | -0.99997612 |
| <i>a</i> | 2.3025510  | $\Omega$ | 7.61496  | +0.90572856   | +0.00359438 |
| <i>e</i> | 0.2227279  | <i>i</i> | 1.65292  | +0.42381911   | +0.00590216 |
| <i>P</i> | 3.49       | <i>H</i> | 18.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 26 | 691 | 0.2+ | 0.1- | 2007 10 15 | 691 | 0.1-  | 0.1-  | 2007 11 14 | J75 | 0.5+ | 0.1- |
| 2000 10 26 | 691 | 0.0  | 0.1- | 2007 10 19 | 691 | 0.2-  | 0.1-  | 2007 11 15 | J75 | 0.3- | 0.8+ |
| 2000 10 26 | 691 | 0.0  | 0.2- | 2007 10 19 | 691 | 0.3+  | 1.0-  | 2007 11 15 | J75 | 0.3- | 0.5+ |
| 2005 03 04 | G96 | 0.8- | 0.5- | 2007 10 19 | 691 | (1.8+ | 1.2-) | 2007 11 15 | J75 | 1.3- | 0.8+ |
| 2005 03 04 | G96 | 0.6- | 0.1- | 2007 10 31 | 691 | 0.0   | 0.2+  | 2007 11 15 | 704 | 0.2+ | 0.7- |
| 2005 03 04 | G96 | 0.2- | 0.0  | 2007 10 31 | G96 | 0.1+  | 0.3-  | 2007 11 15 | 704 | 0.0  | 0.5- |
| 2005 03 04 | G96 | 0.7- | 0.3- | 2007 10 31 | G96 | 0.8+  | 0.1-  | 2007 11 15 | 704 | 0.7- | 0.2- |
| 2005 03 09 | G96 | 0.2- | 0.2- | 2007 10 31 | 691 | 0.1-  | 0.1-  | 2007 11 15 | 704 | 0.6+ | 0.2+ |
| 2005 03 09 | G96 | 0.3+ | 0.3- | 2007 10 31 | G96 | 0.4+  | 0.3-  | 2007 11 16 | 620 | 0.7- | 0.3+ |
| 2005 03 09 | G96 | 0.0  | 0.3+ | 2007 10 31 | G96 | 0.7+  | 0.2-  | 2007 11 16 | 620 | 0.2- | 0.1+ |
| 2005 03 09 | G96 | 0.4+ | 0.0  | 2007 10 31 | 691 | 0.1-  | 0.1-  | 2007 11 16 | 620 | 0.2- | 0.2+ |
| 2005 03 16 | 691 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.1+  | 0.1+  | 2007 11 19 | 691 | 0.2- | 0.1- |
| 2005 03 16 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.1-  | 0.1+  | 2007 11 19 | 691 | 0.4- | 0.3- |
| 2005 03 16 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.0   | 0.6+  | 2007 11 19 | 691 | 0.4- | 0.0  |
| 2007 09 26 | G96 | 0.2- | 0.1- | 2007 11 12 | A77 | 1.3+  | 0.4+  | 2007 11 20 | 704 | 0.4- | 0.1- |
| 2007 09 26 | G96 | 0.6- | 0.2+ | 2007 11 12 | A77 | 0.9+  | 0.2+  | 2007 11 20 | 704 | 0.8+ | 1.0+ |
| 2007 09 26 | G96 | 0.4+ | 0.2- | 2007 11 13 | A77 | 1.3+  | 0.2-  | 2007 11 20 | 704 | 0.2- | 0.3+ |
| 2007 09 26 | G96 | 0.4+ | 0.2+ | 2007 11 14 | J75 | 0.5+  | 0.2-  | 2007 11 20 | 704 | 0.7+ | 0.6+ |
| 2007 10 15 | 691 | 0.0  | 0.3+ | 2007 11 14 | J75 | 0.9+  | 0.2+  |            |     |      |      |
| 2007 10 15 | 691 | 0.0  | 0.1- | 2007 11 14 | J75 | 0.8-  | 0.5+  |            |     |      |      |

**2005 EX<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 123.58392  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18794723 | $\omega$ | 58.06474  | -0.53621149   | +0.84408076 |
| <i>a</i> | 3.0184137  | $\Omega$ | 179.49289 | -0.83404343   | -0.52942742 |
| <i>e</i> | 0.1000111  | <i>i</i> | 14.51308  | -0.12980292   | -0.08505459 |
| <i>P</i> | 5.24       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 08 | 699 | 0.2- | 0.3+ | 2005 03 13 | 691 | 0.2+ | 0.4- | 2005 05 06 | G96 | 0.4- | 0.2- |
| 2005 03 08 | 699 | 0.6+ | 0.6- | 2005 03 17 | 703 | 1.1- | 0.1- | 2007 09 10 | G96 | 0.5- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 08 | 699 | 0.2+ | 0.7- | 2005 03 17 | 703 | 0.7- | 0.8- | 2007 09 10 | G96 | 0.2+ | 0.1- |
| 2005 03 08 | 704 | 0.2+ | 0.5+ | 2005 03 17 | 703 | 0.6- | 0.2- | 2007 09 10 | G96 | 0.2+ | 0.1- |
| 2005 03 08 | 704 | 0.0  | 0.8+ | 2005 03 17 | 703 | 0.9- | 1.2+ | 2007 09 10 | G96 | 0.3+ | 0.2+ |
| 2005 03 08 | 699 | 0.5+ | 0.2- | 2005 04 12 | G96 | 0.0  | 0.3- | 2007 10 20 | G96 | 0.2- | 0.0  |
| 2005 03 08 | 704 | 0.2+ | 1.1+ | 2005 04 12 | G96 | 0.0  | 0.1- | 2007 10 20 | G96 | 0.1+ | 0.2+ |
| 2005 03 08 | 704 | 0.0  | 0.4+ | 2005 04 12 | G96 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.3- | 0.2- |
| 2005 03 08 | 704 | 0.1+ | 0.5+ | 2005 04 12 | G96 | 0.2+ | 0.1- | 2007 10 20 | G96 | 0.1- | 0.2+ |
| 2005 03 09 | 699 | 0.5+ | 0.7- | 2005 04 13 | 691 | 0.5+ | 0.2+ | 2007 10 20 | G96 | 0.0  | 0.3- |
| 2005 03 09 | 699 | 1.3- | 1.1+ | 2005 04 13 | 691 | 0.4+ | 0.1+ | 2007 10 20 | G96 | 0.2+ | 0.2- |
| 2005 03 09 | 699 | 0.2+ | 0.8- | 2005 04 13 | 691 | 0.6+ | 0.1- | 2007 10 20 | G96 | 0.4- | 0.0  |
| 2005 03 09 | 699 | 0.1+ | 0.6- | 2005 05 06 | G96 | 0.2+ | 0.2+ | 2007 10 20 | G96 | 0.5+ | 0.2+ |
| 2005 03 13 | 691 | 0.1+ | 0.2- | 2005 05 06 | G96 | 0.3+ | 0.1+ |            |     |      |      |
| 2005 03 13 | 691 | 0.1+ | 0.2- | 2005 05 06 | G96 | 0.1- | 0.1- |            |     |      |      |

**2005 EF<sub>92</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 217.82201  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21310687 | $\omega$ | 154.93354 | -0.93976002   | -0.34141203 |
| <i>a</i> | 2.7759038  | $\Omega$ | 5.19245   | +0.27335839   | -0.78043416 |
| <i>e</i> | 0.1493016  | <i>i</i> | 10.82574  | +0.20524694   | -0.52379419 |
| <i>P</i> | 4.62       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 27 | 691 | 0.2+  | 0.2-  | 2005 03 16 | 691 | 0.3+  | 0.1+  | 2005 04 15 | 703 | 0.3+ | 0.0  |
| 2003 10 27 | 691 | 0.2-  | 0.3-  | 2005 04 04 | 703 | 0.8-  | 0.3-  | 2005 04 15 | 703 | 0.5- | 0.3- |
| 2003 10 27 | 691 | 0.1+  | 0.3+  | 2005 04 04 | 703 | 0.2-  | 0.4-  | 2005 04 15 | 703 | 0.2- | 0.6- |
| 2005 03 08 | 699 | 0.0   | 0.9+  | 2005 04 04 | 703 | 0.7+  | 0.0   | 2005 04 15 | 703 | 0.7+ | 0.4- |
| 2005 03 08 | 699 | 0.2-  | 0.0   | 2005 04 04 | 703 | 0.3+  | 1.0-  | 2007 09 11 | G96 | 0.2+ | 0.0  |
| 2005 03 08 | 699 | 0.1-  | 0.2-  | 2005 04 05 | G96 | 0.2-  | 0.1-  | 2007 09 11 | G96 | 0.3+ | 0.1+ |
| 2005 03 08 | 699 | 0.9+  | 0.6+  | 2005 04 05 | G96 | 0.1+  | 0.1+  | 2007 09 11 | G96 | 0.3- | 0.2+ |
| 2005 03 09 | 699 | (0.1- | 1.8-) | 2005 04 05 | G96 | 0.1-  | 0.1-  | 2007 09 11 | G96 | 0.4+ | 0.3+ |
| 2005 03 09 | 699 | 0.4-  | 0.1-  | 2005 04 05 | G96 | 0.4-  | 0.2+  | 2007 10 08 | G96 | 0.3- | 0.1- |
| 2005 03 09 | 699 | 0.9-  | 1.0+  | 2005 04 12 | G96 | 0.4-  | 0.1+  | 2007 10 08 | G96 | 0.1+ | 0.0  |
| 2005 03 09 | 699 | 0.4-  | 0.5-  | 2005 04 12 | G96 | 0.2-  | 0.1+  | 2007 10 08 | G96 | 0.1- | 0.2- |
| 2005 03 10 | G96 | 0.3-  | 0.4-  | 2005 04 12 | G96 | 0.2+  | 0.1+  | 2007 10 08 | G96 | 0.3- | 0.1+ |
| 2005 03 10 | G96 | 0.2-  | 0.4-  | 2005 04 12 | G96 | 0.4-  | 0.0   | 2007 11 07 | G96 | 0.1- | 0.3+ |
| 2005 03 10 | G96 | 0.1-  | 0.5-  | 2005 04 13 | 699 | 0.8-  | 0.2+  | 2007 11 07 | G96 | 0.3- | 0.1+ |
| 2005 03 10 | G96 | 0.1+  | 0.4-  | 2005 04 13 | 699 | 0.6+  | 1.0+  | 2007 11 07 | G96 | 0.0  | 0.8+ |
| 2005 03 16 | 691 | 0.2+  | 0.2+  | 2005 04 13 | 699 | (2.6+ | 0.1+) | 2007 11 07 | G96 | 0.8- | 0.0  |
| 2005 03 16 | 691 | 0.5+  | 0.2+  | 2005 04 13 | 699 | 0.5-  | 0.2+  |            |     |      |      |

**2005 ED<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 291.32019  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24259064 | $\omega$ | 175.02323 | +0.33768922   | -0.93641366 |
| <i>a</i> | 2.5461659  | $\Omega$ | 255.21572 | +0.86014763   | +0.34814878 |
| <i>e</i> | 0.2032146  | <i>i</i> | 5.66061   | +0.38224605   | +0.04383943 |
| <i>P</i> | 4.06       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 20 | 599 | 0.0  | 0.3+ | 2005 02 02 | 644 | 0.3+ | 0.0  | 2005 03 11 | 699 | 1.6+  | 0.7-  |
| 2003 08 20 | 599 | 0.2- | 0.7+ | 2005 02 14 | 703 | 0.3- | 0.2+ | 2005 03 11 | 699 | (2.5+ | 2.3+) |
| 2003 08 20 | 599 | 0.5- | 0.6+ | 2005 02 14 | 703 | 0.6- | 0.2- | 2005 03 11 | 699 | 1.6+  | 1.4+  |
| 2005 01 13 | 704 | 0.5- | 0.5+ | 2005 02 14 | 703 | 0.4- | 0.2- | 2005 03 11 | 699 | 0.9+  | 1.2-  |
| 2005 01 13 | 704 | 0.2- | 0.7- | 2005 02 14 | 703 | 0.3+ | 0.6+ | 2006 05 23 | G96 | 0.3+  | 0.5+  |
| 2005 01 13 | 704 | 0.3- | 0.1+ | 2005 03 03 | 703 | 1.5- | 0.1- | 2006 05 23 | G96 | 0.3-  | 0.0   |
| 2005 01 13 | 704 | 0.4+ | 0.6+ | 2005 03 03 | 703 | 1.0- | 0.1- | 2006 05 23 | G96 | 0.3+  | 0.1+  |
| 2005 02 02 | 704 | 0.0  | 0.3+ | 2005 03 03 | 703 | 1.9- | 0.7+ | 2006 05 23 | G96 | 0.2-  | 0.0   |
| 2005 02 02 | 704 | 0.3+ | 1.1+ | 2005 03 03 | 703 | 1.4- | 0.1+ | 2007 10 16 | G96 | 0.0   | 0.1-  |
| 2005 02 02 | 704 | 1.7+ | 0.4- | 2005 03 10 | 703 | 0.6- | 0.2+ | 2007 10 16 | G96 | 0.3-  | 0.0   |
| 2005 02 02 | 704 | 0.7+ | 0.7+ | 2005 03 10 | 703 | 0.1- | 0.3+ | 2007 10 16 | G96 | 0.2+  | 0.2+  |
| 2005 02 02 | 644 | 0.7+ | 0.1- | 2005 03 10 | 703 | 0.5+ | 0.7- | 2007 10 16 | G96 | 0.2-  | 0.4+  |
| 2005 02 02 | 644 | 0.3+ | 0.2- | 2005 03 10 | 703 | 0.3+ | 0.4- |            |     |       |       |



2007 DEC. 24

M.P.O. 129723

**2005 EA<sub>97</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.54698  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23254341 | $\omega$ | 292.47585 | +0.03861190   | -0.99419065 |
| <i>a</i> | 2.6189871  | $\Omega$ | 154.67708 | +0.98124692   | +0.01872218 |
| <i>e</i> | 0.1013598  | <i>i</i> | 13.58545  | +0.18884812   | +0.10599263 |
| <i>P</i> | 4.24       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 16 | 645 | 0.0  | 0.0  | 2005 03 10 | G96 | 0.1- | 0.4- | 2007 08 24 | 691 | 0.4- | 0.5+ |
| 1999 10 16 | 645 | 0.0  | 0.0  | 2005 03 10 | G96 | 0.1- | 0.1- | 2007 08 24 | 691 | 0.2- | 0.4+ |
| 2005 02 09 | G96 | 0.6- | 0.1- | 2005 03 10 | G96 | 0.1- | 0.1- | 2007 08 24 | 691 | 0.3- | 0.4+ |
| 2005 02 09 | G96 | 0.1+ | 0.1- | 2005 03 12 | 704 | 0.7+ | 0.4+ | 2007 09 12 | 691 | 0.0  | 0.2- |
| 2005 02 09 | G96 | 0.2- | 0.1- | 2005 03 12 | 704 | 0.3- | 0.8+ | 2007 09 12 | 691 | 0.2+ | 0.0  |
| 2005 02 09 | G96 | 0.5- | 0.1- | 2005 03 12 | 704 | 0.7+ | 0.1- | 2007 09 12 | 691 | 0.3- | 0.3+ |
| 2005 03 03 | 703 | 0.0  | 0.4+ | 2005 03 12 | 704 | 0.6+ | 0.8+ | 2007 10 16 | G96 | 0.3+ | 0.1+ |
| 2005 03 03 | 703 | 0.4+ | 0.3+ | 2007 07 18 | G96 | 0.1+ | 0.1- | 2007 10 16 | G96 | 0.1+ | 0.2- |
| 2005 03 03 | 703 | 0.2+ | 0.9- | 2007 07 18 | G96 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.5+ | 0.0  |
| 2005 03 03 | 703 | 0.7- | 0.5+ | 2007 07 18 | G96 | 0.6- | 0.1- | 2007 10 16 | G96 | 0.2+ | 0.0  |
| 2005 03 10 | G96 | 0.1- | 0.2- | 2007 07 18 | G96 | 0.0  | 0.1- |            |     |      |      |

**2005 EC<sub>98</sub> = 2007 TD<sub>381</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 196.93674  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23960683 | $\omega$ | 6.53714   | -0.95181543   | +0.30536085 |
| <i>a</i> | 2.5672604  | $\Omega$ | 191.36508 | -0.28747340   | -0.92058005 |
| <i>e</i> | 0.0442136  | <i>i</i> | 8.26333   | -0.10680088   | -0.24348948 |
| <i>P</i> | 4.11       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 29 | 691 | 0.2-  | 0.1-  | 2005 03 10 | 703 | 1.0- | 0.5- | 2007 10 14 | 691 | 0.4+ | 0.6- |
| 2003 10 29 | 691 | 0.1+  | 0.1-  | 2005 03 10 | 699 | 0.6+ | 0.4+ | 2007 10 18 | 691 | 0.1- | 0.1- |
| 2003 10 29 | 691 | 0.1+  | 0.0   | 2005 03 10 | 703 | 0.6- | 0.2+ | 2007 10 18 | 691 | 0.8- | 0.2- |
| 2005 03 03 | 703 | 0.1-  | 0.2-  | 2005 03 10 | 703 | 0.9- | 0.2- | 2007 10 18 | 691 | 0.2+ | 0.0  |
| 2005 03 03 | 703 | (1.8+ | 0.3-) | 2007 09 15 | G96 | 0.6+ | 0.0  | 2007 10 30 | 703 | 0.5+ | 0.6+ |
| 2005 03 03 | 703 | 1.2+  | 0.0   | 2007 09 15 | G96 | 0.4+ | 0.0  | 2007 10 30 | 703 | 0.8+ | 0.1+ |
| 2005 03 03 | 703 | 0.4+  | 0.4+  | 2007 09 15 | G96 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.4- | 1.1+ |
| 2005 03 07 | 683 | (0.1- | 1.7-) | 2007 09 15 | G96 | 0.4+ | 0.3- | 2007 10 30 | 703 | 0.5+ | 0.5+ |
| 2005 03 07 | 683 | 1.1+  | 0.4+  | 2007 10 06 | 691 | 0.1- | 0.1- | 2007 11 13 | G96 | 0.0  | 0.4- |
| 2005 03 10 | 699 | 0.2-  | 0.7-  | 2007 10 06 | 691 | 0.1+ | 0.1- | 2007 11 13 | G96 | 0.5+ | 0.2- |
| 2005 03 10 | 699 | 0.0   | 0.4+  | 2007 10 06 | 691 | 0.0  | 0.5+ | 2007 11 13 | G96 | 0.1- | 0.4- |
| 2005 03 10 | 699 | 0.5-  | 0.2+  | 2007 10 14 | 691 | 0.5- | 0.6+ | 2007 11 13 | G96 | 0.6+ | 0.3- |
| 2005 03 10 | 703 | (1.9- | 0.3+) | 2007 10 14 | 691 | 0.3- | 0.0  |            |     |      |      |

**2005 ER<sub>116</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 148.03669  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17634068 | $\omega$ | 38.38866  | -0.90775752   | +0.41888739 |
| <i>a</i> | 3.1494475  | $\Omega$ | 166.32229 | -0.40459917   | -0.86004129 |
| <i>e</i> | 0.0977319  | <i>i</i> | 5.47843   | -0.11079614   | -0.29131141 |
| <i>P</i> | 5.59       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 04 | G96 | 0.2- | 0.4- | 2005 03 16 | 691 | 0.3+ | 0.5+ | 2005 04 11 | G96 | (1.7+ | 2.2+) |
| 2005 03 04 | G96 | 0.1- | 0.2- | 2005 03 16 | 691 | 0.2+ | 0.5+ | 2005 04 11 | G96 | 0.2-  | 0.4+  |
| 2005 03 04 | G96 | 0.2- | 0.3- | 2005 03 16 | 691 | 0.5+ | 0.0  | 2005 04 11 | G96 | 0.6-  | 0.2+  |
| 2005 03 04 | G96 | 0.2- | 0.0  | 2005 04 04 | 703 | 0.6+ | 1.2- | 2005 04 11 | G96 | 0.3-  | 0.2+  |
| 2005 03 10 | G96 | 0.2- | 0.0  | 2005 04 04 | G96 | 0.2- | 0.2+ | 2007 10 08 | 691 | (0.7+ | 2.3+) |
| 2005 03 10 | G96 | 0.2- | 0.1- | 2005 04 04 | G96 | 0.5- | 0.0  | 2007 10 08 | 691 | 0.2-  | 0.2+  |
| 2005 03 10 | G96 | 0.2- | 0.0  | 2005 04 04 | 703 | 0.1+ | 1.1- | 2007 10 08 | 691 | 1.0+  | 0.7+  |
| 2005 03 10 | G96 | 0.1- | 0.2- | 2005 04 04 | G96 | 0.4- | 0.1+ | 2007 10 15 | 691 | 0.5-  | 0.0   |
| 2005 03 12 | 691 | 0.3+ | 0.5+ | 2005 04 04 | 703 | 1.3+ | 0.8+ | 2007 10 15 | 691 | 0.0   | 0.3-  |
| 2005 03 12 | 691 | 0.2+ | 0.5+ | 2005 04 04 | G96 | 0.2- | 0.0  | 2007 10 15 | 691 | 0.4-  | 0.3-  |
| 2005 03 12 | 691 | 0.4+ | 0.5+ | 2005 04 04 | 703 | 0.1+ | 0.6- |            |     |       |       |

**2005 EF<sub>119</sub> = 2007 VJ<sub>252</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 296.51704  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27841123 | $\omega$ | 282.01389 | -0.68665612   | -0.72461448 |
| <i>a</i> | 2.3227986  | $\Omega$ | 211.60622 | +0.70291933   | -0.64118819 |
| <i>e</i> | 0.1980757  | <i>i</i> | 6.42305   | +0.18549339   | -0.25260951 |
| <i>P</i> | 3.54       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 18 | 645 | 0.1-  | 0.0   | 2005 05 14 | G96 | 0.1- | 0.2- | 2007 11 15 | 699 | 0.1+ | 0.5+ |
| 2003 10 18 | 645 | 0.0   | 0.1-  | 2005 05 14 | G96 | 0.2+ | 0.2+ | 2007 11 15 | 699 | 0.7+ | 0.8+ |
| 2003 10 23 | 645 | 0.0   | 0.0   | 2007 10 12 | 691 | 0.2+ | 0.1- | 2007 11 15 | 699 | 0.4- | 0.5+ |
| 2003 10 23 | 645 | 0.1+  | 0.1+  | 2007 10 12 | 691 | 0.1- | 0.0  | 2007 11 15 | 699 | 0.0  | 0.2+ |
| 2005 03 07 | 704 | 0.0   | 0.9+  | 2007 10 12 | 691 | 0.0  | 0.2- | 2007 11 18 | G96 | 0.4+ | 0.1- |
| 2005 03 07 | 704 | 0.3-  | 0.3+  | 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.0  |
| 2005 03 07 | 704 | 0.0   | 0.1+  | 2007 11 02 | 691 | 0.2- | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.1- |
| 2005 03 11 | 699 | 0.5+  | 0.1+  | 2007 11 02 | 691 | 0.1+ | 0.2- | 2007 11 18 | G96 | 0.3+ | 0.1- |
| 2005 03 11 | 699 | 0.3+  | 0.4-  | 2007 11 12 | 703 | 0.2+ | 0.5+ | 2007 11 20 | 691 | 0.4- | 0.3- |
| 2005 03 11 | 699 | 0.1-  | 1.0-  | 2007 11 12 | 703 | 1.5+ | 0.5- | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2005 03 11 | 699 | 0.3-  | 0.2+  | 2007 11 12 | 703 | 0.3+ | 0.2- | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2005 03 13 | 703 | (2.4- | 0.0 ) | 2007 11 12 | 703 | 0.7+ | 0.4- | 2007 11 20 | 703 | 0.1+ | 0.5+ |
| 2005 03 13 | 703 | (6.1- | 4.2-) | 2007 11 14 | 704 | 0.5+ | 0.6+ | 2007 11 20 | 703 | 0.7- | 0.2- |
| 2005 03 13 | 703 | (2.2- | 0.5+) | 2007 11 14 | 704 | 0.2+ | 0.1- | 2007 11 20 | 703 | 0.9- | 0.7+ |
| 2005 03 13 | 703 | (2.3- | 0.2-) | 2007 11 14 | 704 | 0.6+ | 0.2+ | 2007 11 20 | 703 | 1.3- | 0.6- |
| 2005 05 14 | G96 | 0.4-  | 0.1-  | 2007 11 14 | 704 | 0.3+ | 0.3+ |            |     |      |      |
| 2005 05 14 | G96 | 0.2+  | 0.1+  | 2007 11 14 | 704 | 0.2- | 0.4- |            |     |      |      |

**2005 EF<sub>127</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 86.60939   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18606153 | $\omega$ | 105.35577 | -0.41681213   | +0.90033336 |
| <i>a</i> | 3.0387735  | $\Omega$ | 139.27193 | -0.89011647   | -0.37635163 |
| <i>e</i> | 0.0682839  | <i>i</i> | 11.06019  | -0.18428328   | -0.21853899 |
| <i>P</i> | 5.30       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 17 | 691 | 0.1+ | 0.2- | 2005 03 10 | G96 | 0.8- | 0.5- | 2006 06 19 | 691 | 0.0  | 0.0  |
| 2005 01 17 | 691 | 0.1- | 0.1+ | 2005 03 10 | G96 | 0.5- | 0.2- | 2007 07 19 | G96 | 0.1- | 0.1- |
| 2005 01 17 | 691 | 0.2+ | 0.4- | 2005 03 10 | G96 | 0.4- | 0.1- | 2007 07 19 | G96 | 0.3+ | 0.1+ |
| 2005 02 09 | 699 | 1.8+ | 0.3- | 2005 03 10 | G96 | 0.5- | 0.0  | 2007 07 19 | G96 | 0.0  | 0.1- |
| 2005 02 09 | 699 | 1.5+ | 0.7+ | 2005 03 11 | G96 | 0.3- | 0.1- | 2007 07 19 | G96 | 0.3- | 0.4- |
| 2005 02 09 | 699 | 0.1- | 1.0+ | 2005 03 11 | G96 | 0.8- | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.2- |
| 2005 02 09 | 699 | 0.7+ | 0.1+ | 2005 03 11 | G96 | 0.5- | 0.0  | 2007 10 16 | G96 | 0.3- | 0.6+ |
| 2005 03 09 | 691 | 0.2- | 0.0  | 2005 03 11 | G96 | 0.1- | 0.1+ | 2007 10 16 | G96 | 0.4- | 0.3+ |
| 2005 03 09 | 691 | 0.2- | 0.2- | 2006 06 19 | 691 | 0.1+ | 0.2+ | 2007 10 16 | G96 | 0.4+ | 0.3+ |
| 2005 03 09 | 691 | 0.0  | 0.4+ | 2006 06 19 | 691 | 0.0  | 0.2+ |            |     |      |      |

**2005 EB<sub>130</sub> = 2007 TJ<sub>191</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.54865   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17687856 | $\omega$ | 269.28852 | -0.24627157   | +0.96641201 |
| <i>a</i> | 3.1430594  | $\Omega$ | 345.78837 | -0.72674415   | -0.23428795 |
| <i>e</i> | 0.0523827  | <i>i</i> | 17.41378  | -0.64124352   | -0.10562665 |
| <i>P</i> | 5.57       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 03 | 645 | 0.1+ | 0.0  | 2005 03 17 | 703 | (1.5+ | 2.4+) | 2007 10 04 | G96 | 0.4+ | 0.4+ |
| 2003 11 03 | 645 | 0.1- | 0.0  | 2007 08 10 | 691 | 0.5-  | 0.4+  | 2007 10 04 | G96 | 0.2- | 0.1+ |
| 2005 03 09 | 691 | 0.2+ | 0.0  | 2007 08 10 | 691 | 0.8-  | 0.2+  | 2007 10 04 | G96 | 0.2+ | 0.4+ |
| 2005 03 09 | 691 | 0.8- | 0.7+ | 2007 08 10 | 691 | 0.3-  | 0.1+  | 2007 10 11 | G96 | 0.0  | 1.0+ |
| 2005 03 09 | 691 | 0.0  | 0.3+ | 2007 09 10 | G96 | 0.7+  | 0.4-  | 2007 10 11 | G96 | 0.4- | 0.1- |
| 2005 03 10 | 703 | 1.1+ | 0.0  | 2007 09 10 | G96 | 0.0   | 0.3+  | 2007 10 11 | G96 | 0.2- | 0.2+ |
| 2005 03 10 | 703 | 0.0  | 1.3+ | 2007 09 10 | G96 | 0.6+  | 0.4-  | 2007 10 11 | G96 | 0.0  | 0.3+ |
| 2005 03 10 | 703 | 0.2- | 0.5+ | 2007 09 10 | G96 | 0.0   | 0.4+  | 2007 10 15 | 291 | 0.1- | 0.2+ |
| 2005 03 10 | 703 | 1.2+ | 0.2+ | 2007 09 10 | G96 | 0.5+  | 0.6-  | 2007 10 15 | 291 | 0.1- | 0.1+ |

## M.P.O. 129724

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 13 | 691 | 0.4+  | 0.2+  | 2007 09 10 | G96 | 0.1− | 0.2+ | 2007 10 15 | 291 | 0.3+ | 0.2+ |
| 2005 03 13 | 691 | 0.4+  | 0.1+  | 2007 09 10 | G96 | 0.5+ | 0.4− | 2007 11 11 | G96 | 0.3− | 0.1− |
| 2005 03 13 | 691 | 0.5+  | 0.3−  | 2007 09 19 | 691 | 0.2− | 0.3+ | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2005 03 17 | 703 | 0.8+  | 0.6+  | 2007 09 19 | 691 | 0.2− | 0.2+ | 2007 11 11 | G96 | 0.3− | 0.5− |
| 2005 03 17 | 703 | (2.1+ | 1.1+) | 2007 09 19 | 691 | 0.3− | 0.0  | 2007 11 11 | G96 | 0.0  | 0.3+ |
| 2005 03 17 | 703 | 0.9+  | 1.2+  | 2007 10 04 | G96 | 0.5+ | 0.4+ |            |     |      |      |

**2005 EC<sub>138</sub>**

|                                         |            |          |           |             |             |          |   |          |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |  |  |
| <i>M</i> 260.07364                      |            |          |           | (2000.0)    |             |          |   |          |  |  |  |
|                                         |            |          |           | <b>P</b>    |             |          |   | <b>Q</b> |  |  |  |
| <i>n</i>                                | 0.26428608 | $\omega$ | 137.04542 | −0.99854290 | +0.04712599 |          |   |          |  |  |  |
| <i>a</i>                                | 2.4048419  | $\Omega$ | 45.67599  | −0.05381812 | −0.90543124 |          |   |          |  |  |  |
| <i>e</i>                                | 0.1247854  | <i>i</i> | 2.10611   | +0.00396161 | −0.42186895 |          |   |          |  |  |  |
| <i>P</i>                                | 3.73       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        | <i>U</i> | 3 |          |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.1+ | 0.6− | 2005 04 11 | 691 | 0.0  | 0.0  | 2006 08 28 | 691 | 0.2− | 0.2+ |
| 2005 03 09 | G96 | 0.1− | 0.5− | 2005 04 11 | 691 | 0.7− | 0.2− | 2006 08 28 | 691 | 0.1+ | 0.3+ |
| 2005 03 09 | G96 | 0.3− | 0.4− | 2005 04 11 | 691 | 0.2+ | 0.3+ | 2007 12 06 | 691 | 0.1+ | 0.1+ |
| 2005 03 09 | G96 | 0.0  | 0.4− | 2005 04 18 | 691 | 0.1+ | 0.1+ | 2007 12 06 | 691 | 0.1+ | 0.5+ |
| 2005 03 11 | 691 | 0.3+ | 0.1+ | 2005 04 18 | 691 | 0.0  | 0.3− | 2007 12 06 | 691 | 0.4− | 0.0  |
| 2005 03 11 | 691 | 0.4+ | 0.2+ | 2005 04 18 | 691 | 0.1+ | 0.1− | 2007 12 06 | 691 | 0.1+ | 0.1− |
| 2005 03 11 | 691 | 0.4+ | 0.0  | 2005 05 08 | 691 | 0.1+ | 0.3+ | 2007 12 06 | 691 | 0.1− | 0.2+ |
| 2005 03 17 | 691 | 0.1− | 0.1+ | 2005 05 08 | 691 | 0.1+ | 0.6+ | 2007 12 06 | 691 | 0.1+ | 0.6+ |
| 2005 03 17 | 691 | 0.1− | 0.1+ | 2005 05 08 | 691 | 0.1− | 0.5+ |            |     |      |      |
| 2005 03 17 | 691 | 0.1+ | 0.0  | 2006 08 28 | 691 | 0.4− | 0.7+ |            |     |      |      |

**2005 EY<sub>138</sub>**

|                                         |            |          |           |             |             |          |   |          |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |  |  |
| <i>M</i> 152.58244                      |            |          |           | (2000.0)    |             |          |   |          |  |  |  |
|                                         |            |          |           | <b>P</b>    |             |          |   | <b>Q</b> |  |  |  |
| <i>n</i>                                | 0.21310240 | $\omega$ | 74.10221  | −0.30757450 | +0.95152059 |          |   |          |  |  |  |
| <i>a</i>                                | 2.7759426  | $\Omega$ | 177.97933 | −0.89831227 | −0.28949043 |          |   |          |  |  |  |
| <i>e</i>                                | 0.0549530  | <i>i</i> | 4.14266   | −0.31374032 | −0.10394159 |          |   |          |  |  |  |
| <i>P</i>                                | 4.63       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 2 |          |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.4−  | 0.2+  | 2005 04 11 | 691 | 0.1− | 0.0  | 2006 09 25 | G96 | 0.2− | 0.7+ |
| 2005 03 09 | G96 | 0.0   | 0.3−  | 2005 04 11 | 691 | 0.0  | 0.0  | 2006 09 25 | G96 | 0.3− | 0.7+ |
| 2005 03 09 | G96 | (1.9− | 0.0 ) | 2005 04 11 | 691 | 0.1− | 0.0  | 2006 09 25 | G96 | 0.2+ | 0.3+ |
| 2005 03 09 | G96 | 0.7−  | 0.2+  | 2005 05 07 | 691 | 0.3+ | 0.1+ | 2006 09 25 | G96 | 0.1+ | 1.1− |
| 2005 03 11 | 691 | 0.1+  | 0.0   | 2005 05 07 | 691 | 0.3− | 0.3+ | 2007 10 21 | 691 | 0.2− | 0.1− |
| 2005 03 11 | 691 | 0.1+  | 0.2−  | 2005 05 07 | 691 | 0.1− | 0.3+ | 2007 10 21 | 691 | 0.1− | 0.5+ |
| 2005 03 11 | 691 | 0.5+  | 0.0   | 2005 05 11 | G96 | 0.0  | 0.5− | 2007 10 21 | 691 | 0.4− | 0.4− |
| 2005 03 17 | 691 | 0.0   | 0.2+  | 2005 05 11 | G96 | 0.6− | 0.3− | 2007 11 20 | 691 | 0.2+ | 0.0  |
| 2005 03 17 | 691 | 0.1+  | 0.1−  | 2005 05 11 | G96 | 0.3− | 0.3− | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2005 03 17 | 691 | 0.2+  | 0.1+  | 2005 05 11 | G96 | 0.1− | 0.4− | 2007 11 20 | 691 | 0.3+ | 0.2+ |

**2005 EW<sub>143</sub>**

|                                         |            |          |           |             |             |          |   |          |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |  |  |
| <i>M</i> 276.92542                      |            |          |           | (2000.0)    |             |          |   |          |  |  |  |
|                                         |            |          |           | <b>P</b>    |             |          |   | <b>Q</b> |  |  |  |
| <i>n</i>                                | 0.28172785 | $\omega$ | 144.36183 | −0.97121355 | −0.23797008 |          |   |          |  |  |  |
| <i>a</i>                                | 2.3045326  | $\Omega$ | 21.87878  | +0.21135939 | −0.88158561 |          |   |          |  |  |  |
| <i>e</i>                                | 0.1401689  | <i>i</i> | 1.64535   | +0.10987016 | −0.40764820 |          |   |          |  |  |  |
| <i>P</i>                                | 3.50       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |          |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 03 | 691 | 0.2+ | 0.1+ | 2005 03 14 | 704 | (1.9+ | 1.8+) | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2005 03 03 | 691 | 0.1+ | 0.1+ | 2005 03 14 | 704 | 0.6+  | 0.6+  | 2007 11 18 | 691 | 0.2+ | 0.2− |
| 2005 03 03 | 691 | 0.1− | 0.3+ | 2005 03 14 | 704 | 0.5+  | 0.2+  | 2007 12 05 | 691 | 0.1− | 0.0  |
| 2005 03 10 | G96 | 0.5− | 0.5− | 2005 04 04 | G96 | 0.2−  | 0.5−  | 2007 12 05 | 691 | 0.1+ | 0.2+ |
| 2005 03 10 | G96 | 0.2− | 0.5− | 2005 04 04 | G96 | 0.2−  | 0.4−  | 2007 12 05 | 691 | 0.1+ | 0.1− |
| 2005 03 10 | G96 | 0.2− | 0.5− | 2005 04 04 | G96 | 0.2−  | 0.7−  | 2007 12 06 | 691 | 0.3+ | 0.2− |
| 2005 03 10 | G96 | 0.2− | 0.5− | 2005 04 04 | G96 | 0.2−  | 0.6−  | 2007 12 06 | 691 | 0.2− | 0.0  |
| 2005 03 11 | 691 | 0.0  | 0.2+ | 2005 05 06 | G96 | 0.3−  | 0.3−  | 2007 12 06 | 691 | 0.1+ | 0.3− |
| 2005 03 11 | 691 | 0.1+ | 0.1− | 2005 05 06 | G96 | 0.2−  | 0.2−  | 2007 12 06 | 691 | 0.1− | 0.5+ |

## 2007 DEC. 24

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 11 | 691 | 0.1−  | 0.0   | 2005 05 06 | G96 | 0.2+ | 0.6− | 2007 12 06 | 691 | 0.1−  | 0.0   |
| 2005 03 14 | 704 | 0.2+  | 0.4+  | 2005 05 06 | G96 | 0.0  | 1.3+ | 2007 12 06 | 691 | (1.7− | 0.2+) |
| 2005 03 14 | 704 | (0.8+ | 1.9+) | 2007 11 18 | 691 | 0.2− | 0.1+ |            |     |       |       |

**2005 EL<sub>145</sub> = 2007 TA<sub>399</sub>**

|                                         |            |          |          |             |             |          |   |          |  |  |  |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|----------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |             |          |   |          |  |  |  |
| <i>M</i> 330.20468                      |            |          |          | (2000.0)    |             |          |   |          |  |  |  |
|                                         |            |          |          | <b>P</b>    |             |          |   | <b>Q</b> |  |  |  |
| <i>n</i>                                | 0.26818747 | $\omega$ | 70.41214 | +0.13769807 | −0.99023603 |          |   |          |  |  |  |
| <i>a</i>                                | 2.3814624  | $\Omega$ | 11.73658 | +0.86402281 | +0.10936733 |          |   |          |  |  |  |
| <i>e</i>                                | 0.2061508  | <i>i</i> | 6.13017  | +0.48425596 | +0.08643719 |          |   |          |  |  |  |
| <i>P</i>                                | 3.68       | <i>H</i> | 17.7     | <i>G</i>    | 0.15        | <i>U</i> | 3 |          |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 10 | G96 | 0.1− | 0.4− | 2005 03 12 | 691 | 0.2+ | 0.0  | 2007 10 15 | 691 | 0.0   | 0.2+  |
| 2005 03 10 | G96 | 0.9− | 0.1− | 2005 03 16 | 691 | 0.0  | 0.2+ | 2007 10 19 | 691 | 0.1−  | 0.3+  |
| 2005 03 10 | G96 | 0.0  | 0.1− | 2005 03 16 | 691 | 0.1+ | 0.1+ | 2007 10 19 | 691 | (1.3− | 1.9+) |
| 2005 03 10 | G96 | 0.3− | 0.3− | 2005 03 16 | 691 | 0.3− | 0.5+ | 2007 10 19 | 691 | 0.0   | 0.1+  |
| 2005 03 10 | G96 | 0.0  | 0.5− | 2005 04 02 | G96 | 0.8+ | 0.5− | 2007 11 08 | G96 | 0.5+  | 0.1−  |
| 2005 03 10 | G96 | 0.4− | 0.3+ | 2005 04 02 | G96 | 0.1+ | 0.5− | 2007 11 08 | G96 | 0.9+  | 0.2−  |
| 2005 03 10 | G96 | 0.0  | 0.0  | 2005 04 02 | G96 | 0.8− | 0.2− | 2007 11 08 | G96 | 0.3+  | 0.2−  |
| 2005 03 10 | G96 | 0.1+ | 0.4− | 2005 04 02 | G96 | 0.3− | 0.6− | 2007 11 08 | G96 | 0.5+  | 0.1−  |
| 2005 03 11 | 691 | 0.1+ | 0.0  | 2007 10 05 | 691 | 0.1− | 0.1− | 2007 11 12 | 703 | 0.5+  | 0.6+  |
| 2005 03 11 | 691 | 0.4+ | 0.2− | 2007 10 05 | 691 | 0.3− | 0.1+ | 2007 11 12 | 703 | 0.6+  | 0.4−  |
| 2005 03 11 | 691 | 0.1− | 0.2− | 2007 10 05 | 691 | 0.3− | 0.2− | 2007 11 12 | 703 | 1.2−  | 1.4−  |
| 2005 03 12 | 691 | 0.2+ | 0.5+ | 2007 10 15 | 691 | 0.0  | 0.1+ | 2007 11 12 | 703 | (0.5+ | 2.1−) |
| 2005 03 12 | 691 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.0  | 0.1+ |            |     |       |       |

**2005 EZ<sub>149</sub> = 2007 VZ<sub>138</sub>**

|                                         |            |          |           |             |             |          |   |          |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|----------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |          |  |  |  |
| <i>M</i> 117.09998                      |            |          |           | (2000.0)    |             |          |   |          |  |  |  |
|                                         |            |          |           | <b>P</b>    |             |          |   | <b>Q</b> |  |  |  |
| <i>n</i>                                | 0.20984908 | $\omega$ | 198.84577 | +0.19227167 | +0.97754673 |          |   |          |  |  |  |
| <i>a</i>                                | 2.8045596  | $\Omega$ | 82.31049  | −0.88881507 | +0.21071260 |          |   |          |  |  |  |
| <i>e</i>                                | 0.0645804  | <i>i</i> | 4.99121   | −0.41598001 | +0.00161068 |          |   |          |  |  |  |
| <i>P</i>                                | 4.70       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 0 |          |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 645 | 0.0  | 0.1+ | 2005 03 11 | 691 | 0.1+ | 0.3− | 2007 10 20 | 691 | 0.2+ | 0.2− |
| 2002 10 30 | 645 | 0.1− | 0.1+ | 2005 03 11 | 691 | 0.1+ | 0.4+ | 2007 10 20 | 691 | 0.1+ | 0.4− |
| 2004 01 27 | 691 | 0.1+ | 0.1− | 2005 05 04 | 691 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2004 01 27 | 691 | 0.0  | 0.0  | 2005 05 04 | 691 | 0.2+ | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.1+ |
| 2004 01 27 | 691 | 0.0  | 0.0  | 2005 05 04 | 691 | 0.1+ | 0.4+ | 2007 11 03 | 691 | 0.3− | 0.3+ |
| 2005 03 10 | 691 | 0.1− | 0.3+ | 2007 10 08 | 691 | 0.6− | 0.1+ | 2007 11 08 | G96 | 0.4+ | 0.1− |
| 2005 03 10 | 691 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.1− | 0.4− | 2007 11 08 | G96 | 0.7+ | 0.1− |
| 2005 03 10 | 691 | 0.1− | 0.1− | 2007 10 08 | 691 | 0.0  | 0.2+ | 2007 11 08 | G96 | 0.8+ | 0.1− |
| 2005 03 11 | 691 | 0.1− | 0.0  | 2007 10 20 | 691 | 0.2+ | 0.2+ | 2007 11 08 | G96 | 0.4+ | 0.3− |

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|            |     |     |      |            |     |      |      |            |     |      |      |
|------------|-----|-----|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | 691 | 0.0 | 0.3+ | 2007 11 05 | 691 | 0.1− | 0.2+ | 2007 12 05 | 704 | 0.2+ | 0.9+ |
| 2005 03 10 | 691 | 0.0 | 0.0  | 2007 11 05 | 691 | 0.3− | 0.3− | 2007 12 05 | 704 | 0.7+ | 0.5+ |

**2005 EN<sub>155</sub> = 2007 VU<sub>264</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 275.40711  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26653969 | $\omega$ | 145.53685 | −0.94516932   | −0.32634672 |
| <i>a</i> | 2.3912673  | $\Omega$ | 15.43032  | +0.28820290   | −0.85130213 |
| <i>e</i> | 0.1296797  | <i>i</i> | 2.66265   | +0.15360353   | −0.41083147 |
| <i>P</i> | 3.70       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 695 | 0.1− | 0.1+ | 2005 03 12 | 691 | 0.3+ | 0.2− | 2006 10 20 | 695 | 0.0  | 0.2+ |
| 2003 11 24 | 695 | 0.1− | 0.4+ | 2005 03 12 | 691 | 0.6+ | 0.2− | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2005 03 08 | G96 | 0.3+ | 0.2− | 2005 05 04 | G96 | 0.1− | 0.3+ | 2007 11 13 | 691 | 0.3+ | 0.0  |
| 2005 03 08 | G96 | 0.2− | 0.2+ | 2005 05 04 | G96 | 0.1+ | 0.1− | 2007 11 13 | 691 | 0.2− | 0.0  |
| 2005 03 08 | G96 | 0.4− | 0.0  | 2005 05 04 | G96 | 0.3− | 0.4+ | 2007 11 17 | 691 | 0.0  | 0.1+ |
| 2005 03 08 | G96 | 0.3− | 0.5+ | 2005 05 04 | G96 | 0.2− | 0.3− | 2007 11 17 | 691 | 0.1− | 0.3− |
| 2005 03 12 | 691 | 0.4+ | 0.1+ | 2006 10 20 | 695 | 0.1− | 0.2+ | 2007 11 17 | 691 | 0.0  | 0.1− |

**2005 EY<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.17136   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17649765 | $\omega$ | 339.85525 | +0.89560922   | +0.44447203 |
| <i>a</i> | 3.1475799  | $\Omega$ | 353.66509 | −0.38230766   | +0.74823018 |
| <i>e</i> | 0.0861154  | <i>i</i> | 9.45776   | −0.22743125   | +0.49254057 |
| <i>P</i> | 5.58       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.2− | 0.2− | 2005 04 02 | G96 | 0.1− | 0.6− | 2007 09 12 | G96 | 0.0  | 0.0  |
| 2005 03 09 | G96 | 0.3− | 0.8− | 2005 04 02 | G96 | 0.0  | 0.1− | 2007 09 12 | G96 | 0.6+ | 0.1+ |
| 2005 03 09 | G96 | 0.1+ | 0.2+ | 2005 04 02 | G96 | 0.1− | 0.6− | 2007 09 12 | G96 | 0.0  | 0.0  |
| 2005 03 09 | G96 | 0.3− | 0.6+ | 2007 06 16 | 291 | 0.0  | 0.0  | 2007 09 20 | 691 | 0.5− | 0.3+ |
| 2005 03 12 | 691 | 0.2+ | 0.0  | 2007 06 16 | 291 | 0.2− | 0.3+ | 2007 09 20 | 691 | 0.4− | 0.1+ |
| 2005 03 12 | 691 | 0.1+ | 0.1+ | 2007 06 16 | 291 | 0.4− | 0.0  | 2007 09 20 | 691 | 0.6− | 0.0  |
| 2005 03 12 | 691 | 0.4+ | 0.4+ | 2007 09 12 | G96 | 0.1− | 0.3− | 2007 10 19 | G96 | 0.1+ | 0.5− |
| 2005 03 16 | 691 | 0.0  | 0.2+ | 2007 09 12 | G96 | 0.4+ | 0.1− | 2007 10 19 | G96 | 0.9+ | 0.2+ |
| 2005 03 16 | 691 | 0.0  | 0.7+ | 2007 09 12 | G96 | 0.1+ | 0.0  | 2007 10 19 | G96 | 0.5− | 0.1+ |
| 2005 03 16 | 691 | 0.3+ | 0.2+ | 2007 09 12 | G96 | 0.4+ | 0.1− | 2007 10 19 | G96 | 0.2+ | 0.2− |
| 2005 04 02 | G96 | 0.4− | 0.5− | 2007 09 12 | G96 | 0.0  | 0.2− |            |     |      |      |

**2005 EE<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 140.19133  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17640274 | $\omega$ | 202.75839 | −0.68189037   | +0.73030364 |
| <i>a</i> | 3.1487089  | $\Omega$ | 24.31209  | −0.65483506   | −0.58451910 |
| <i>e</i> | 0.1184244  | <i>i</i> | 5.71721   | −0.32590884   | −0.35354492 |
| <i>P</i> | 5.59       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.4− | 0.3− | 2005 04 09 | G96 | 0.3− | 0.1− | 2007 09 12 | G96 | 0.1+ | 0.3+ |
| 2005 03 09 | G96 | 0.1− | 0.1+ | 2005 04 09 | G96 | 0.0  | 0.2− | 2007 10 08 | G96 | 0.0  | 0.6− |
| 2005 03 09 | G96 | 0.7− | 0.1+ | 2005 04 09 | G96 | 0.2− | 0.2+ | 2007 10 08 | G96 | 0.6+ | 0.2− |
| 2005 03 09 | G96 | 0.1− | 0.1− | 2005 04 09 | G96 | 0.4− | 0.4− | 2007 10 08 | G96 | 0.0  | 0.2− |
| 2005 03 12 | 691 | 0.2+ | 0.1− | 2005 05 13 | 691 | 0.5+ | 0.3− | 2007 10 08 | G96 | 0.0  | 0.3− |
| 2005 03 12 | 691 | 0.0  | 0.2+ | 2005 05 13 | 691 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.0  | 0.2− |
| 2005 03 12 | 691 | 0.1− | 0.1− | 2005 05 13 | 691 | 0.1+ | 0.1− | 2007 10 19 | G96 | 0.1− | 0.1− |
| 2005 04 02 | 691 | 0.1+ | 0.1− | 2007 09 12 | G96 | 0.2− | 0.0  | 2007 10 19 | G96 | 0.6− | 0.3− |
| 2005 04 02 | 691 | 0.4+ | 0.2+ | 2007 09 12 | G96 | 0.5+ | 0.3+ | 2007 10 19 | G96 | 0.1− | 0.1− |
| 2005 04 02 | 691 | 0.5+ | 0.1+ | 2007 09 12 | G96 | 0.5+ | 0.2+ |            |     |      |      |

**2005 EQ<sub>161</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 135.26026  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17090626 | $\omega$ | 157.01634 | −0.66163811   | +0.74864472 |
| <i>a</i> | 3.2158620  | $\Omega$ | 71.53094  | −0.69464805   | −0.59088678 |
| <i>e</i> | 0.1244774  | <i>i</i> | 2.53944   | −0.28231029   | −0.30063915 |
| <i>P</i> | 5.77       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.6− | 0.3− | 2005 04 02 | 691 | 0.1+ | 0.1+ | 2007 09 14 | G96 | 1.0+ | 0.6− |
| 2005 03 09 | G96 | 0.2+ | 0.2− | 2005 04 11 | G96 | 0.1− | 0.1+ | 2007 09 14 | G96 | 0.1− | 0.1+ |
| 2005 03 09 | G96 | 0.4− | 0.1− | 2005 04 11 | G96 | 0.1+ | 0.0  | 2007 09 14 | G96 | 0.1+ | 0.5− |
| 2005 03 09 | G96 | 0.1− | 0.2− | 2005 04 11 | G96 | 0.2− | 0.2+ | 2007 09 14 | G96 | 0.3− | 1.1− |
| 2005 03 12 | 691 | 0.2+ | 0.1+ | 2005 04 11 | G96 | 0.4− | 0.0  | 2007 10 16 | G96 | 0.5− | 0.2+ |
| 2005 03 12 | 691 | 0.5+ | 0.3− | 2005 05 10 | G96 | 0.4+ | 0.1− | 2007 10 16 | G96 | 0.1− | 0.7+ |
| 2005 03 12 | 691 | 0.0  | 0.3+ | 2005 05 10 | G96 | 0.0  | 0.1− | 2007 10 16 | G96 | 0.3− | 0.7+ |
| 2005 04 02 | 691 | 0.6+ | 0.3+ | 2005 05 10 | G96 | 0.0  | 0.4+ | 2007 10 16 | G96 | 0.1+ | 0.7+ |
| 2005 04 02 | 691 | 0.2+ | 0.1− | 2005 05 10 | G96 | 0.2− | 0.2+ |            |     |      |      |

**2005 EL<sub>164</sub> = 2007 UM<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.97984   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21552383 | $\omega$ | 257.53012 | +0.91795391   | +0.34402385 |
| <i>a</i> | 2.7551115  | $\Omega$ | 82.08535  | −0.23965169   | +0.87770054 |
| <i>e</i> | 0.1903426  | <i>i</i> | 11.50213  | −0.31611341   | +0.33360058 |
| <i>P</i> | 4.57       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 11 | 703 | 0.4+  | 0.5+  | 2006 05 06 | G96 | (0.6− | 2.6+) | 2007 10 19 | 703 | 0.4+ | 0.1+ |
| 2005 03 11 | 703 | 0.9−  | 0.9+  | 2006 05 06 | G96 | 0.0   | 0.0   | 2007 10 19 | 703 | 0.5+ | 0.1+ |
| 2005 03 11 | 703 | 0.5−  | 0.7−  | 2006 05 06 | G96 | 0.1−  | 0.4−  | 2007 10 31 | 703 | 0.3− | 0.4+ |
| 2005 03 11 | 703 | (1.9+ | 0.2+) | 2006 05 24 | 644 | 0.5−  | 0.1−  | 2007 10 31 | 703 | 0.1− | 0.5+ |
| 2005 03 12 | G96 | 0.4+  | 0.2+  | 2006 05 24 | 644 | 0.2−  | 0.1−  | 2007 10 31 | 703 | 0.4+ | 0.0  |
| 2005 03 12 | G96 | 0.6+  | 0.3+  | 2006 05 24 | 644 | 0.2+  | 0.0   | 2007 10 31 | 703 | 0.9+ | 0.1+ |
| 2005 03 12 | G96 | 0.1−  | 0.1−  | 2006 05 24 | 644 | 0.0   | 0.0   | 2007 11 07 | 703 | 0.7+ | 0.6+ |
| 2005 03 12 | G96 | 0.2−  | 0.4+  | 2006 05 24 | 644 | 0.1−  | 0.2−  | 2007 11 07 | 703 | 0.0  | 0.4− |
| 2005 03 12 | G96 | 0.3+  | 0.1+  | 2006 05 24 | 644 | 0.0   | 0.1+  | 2007 11 07 | 703 | 0.1+ | 0.5− |
| 2005 03 12 | G96 | 0.5+  | 0.0   | 2006 06 20 | 644 | 0.0   | 0.2+  | 2007 11 07 | 703 | 0.1+ | 0.4+ |
| 2005 03 12 | G96 | 0.2+  | 0.1+  | 2006 06 20 | 691 | 1.1+  | 0.4+  | 2007 11 15 | 703 | 0.5+ | 0.5+ |
| 2005 03 12 | G96 | 0.1−  | 0.0   | 2006 06 20 | 644 | 0.0   | 0.2+  | 2007 11 15 | 703 | 0.5− | 0.3+ |
| 2005 03 17 | G96 | 0.6+  | 0.1+  | 2006 06 20 | 691 | 0.0   | 0.2+  | 2007 11 15 | 703 | 0.5− | 0.9− |
| 2005 03 17 | G96 | 0.2−  | 0.1−  | 2006 06 20 | 644 | 0.5−  | 0.7+  | 2007 11 15 | 703 | 1.1− | 0.5− |
| 2005 03 17 | G96 | 0.2−  | 0.2−  | 2006 06 20 | 691 | 0.4−  | 0.1+  | 2007 12 06 | 703 | 1.1− | 0.3+ |
| 2005 03 17 | G96 | 0.1−  | 0.1+  | 2007 10 10 | 703 | 1.1−  | 0.7−  | 2007 12 06 | 703 | 0.3− | 0.9+ |
| 2006 05 06 | G96 | 0.4−  | 0.1−  | 2007 10 10 | 703 | 0.8+  | 0.9+  | 2007 12 06 | 703 | 0.5− | 0.8+ |
| 2006 05 06 | G96 | 0.1+  | 0.4−  | 2007 10 10 | 703 | 0.1+  | 0.6+  | 2007 12 06 | 703 | 0.8− | 0.4− |
| 2006 05 06 | G96 | 0.1−  | 0.1−  | 2007 10 10 | 703 | 0.2−  | 0.1−  |            |     |      |      |
| 2006 05 06 | G96 | 0.0   | 0.2−  | 2007 10 19 | 703 | 0.3+  | 0.1−  |            |     |      |      |

**2005 EE<sub>168</sub> = 2007 TW<sub>192</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 330.48065  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19754747 | $\omega$ | 158.31436 | +0.85593960   | −0.51695400 |
| <i>a</i> | 2.9198132  | $\Omega$ | 232.81871 | +0.47231318   | +0.79049182 |
| <i>e</i> | 0.0972794  | <i>i</i> | 0.80716   | +0.21044635   | +0.32845280 |
| <i>P</i> | 4.99       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 12 | 645 | 0.1− | 0.2+ | 2005 03 11 | G96 | 0.0  | 0.1+ | 2007 08 23 | 691 | 0.2− | 0.1+ |
| 2000 02 12 | 645 | 0.1− | 0.2+ | 2005 03 11 | G96 | 0.2− | 0.1+ | 2007 09 10 | G96 | 0.1+ | 0.8− |
| 2000 03 03 | 645 | 0.3+ | 0.1− | 2005 03 11 | G96 | 0.3− | 0.2− | 2007 09 10 | G96 | 0.3+ | 0.6− |
| 2000 03 03 | 645 | 0.3+ | 0.1− | 2005 03 12 | 691 | 0.2+ | 0.1+ | 2007 09 10 | G96 | 0.1+ | 0.7− |
| 2000 04 03 | 691 | 0.0  | 0.2+ | 2005 03 12 | 691 | 0.3+ | 0.2+ | 2007 09 10 | G96 | 0.4+ | 0.7− |
| 2000 04 03 | 691 | 0.3− | 0.3+ | 2005 03 12 | 691 | 0.4+ | 0.2+ | 2007 09 30 | 691 | 0.2− | 0.2+ |
| 2000 04 03 | 691 | 0.0  | 0.2+ | 2005 04 05 | G96 | 0.6+ | 0.2− | 2007 09 30 | 691 | 0.2+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 14 | 644 | 0.2+ | 0.4+ | 2005 04 05 | G96 | 0.2- | 0.3- | 2007 09 30 | 691 | 0.2- | 0.0  |
| 2002 09 14 | 644 | 0.2- | 0.4+ | 2005 04 05 | G96 | 0.0  | 0.3- | 2007 10 06 | 691 | 0.2- | 0.0  |
| 2002 09 14 | 644 | 0.5- | 0.6+ | 2005 04 05 | G96 | 0.1- | 0.0  | 2007 10 06 | 691 | 0.4- | 0.0  |
| 2002 09 30 | 621 | 0.4+ | 0.3+ | 2007 08 10 | 691 | 0.5+ | 0.2+ | 2007 10 06 | 691 | 0.2+ | 0.2+ |
| 2002 09 30 | 621 | 0.7- | 0.8- | 2007 08 10 | 691 | 0.5+ | 0.3+ | 2007 10 12 | 691 | 0.2- | 0.4+ |
| 2002 09 30 | 621 | 0.2+ | 0.9+ | 2007 08 10 | 691 | 0.1+ | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.2+ |
| 2002 09 30 | 621 | 0.2+ | 0.3+ | 2007 08 23 | 691 | 1.0- | 0.9- | 2007 10 12 | 691 | 0.0  | 0.3+ |
| 2005 03 11 | G96 | 0.3- | 0.1+ | 2007 08 23 | 691 | 0.3+ | 0.5+ |            |     |      |      |

**2005 ET<sub>168</sub> = 2007 UL<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 308.22343  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.26523226 | $\omega$ | 260.14005 | -0.41123021  | -0.91142428  |
| $a$ | 2.3991192  | $\Omega$ | 214.15287 | +0.84577112  | -0.37579765  |
| $e$ | 0.1680579  | $i$      | 1.42711   | +0.33994253  | -0.16757656  |
| $P$ | 3.72       | $H$      | 17.9      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 291 | 0.2+ | 0.1- | 2005 03 12 | 691 | 0.4+ | 0.5+ | 2007 10 30 | 691 | 0.2+ | 0.0  |
| 2003 09 20 | 291 | 0.3- | 0.2+ | 2005 04 05 | G96 | 0.3- | 0.0  | 2007 10 30 | 691 | 0.1+ | 0.0  |
| 2003 09 20 | 291 | 0.2- | 0.3+ | 2005 04 05 | G96 | 0.2- | 0.0  | 2007 11 03 | 691 | 0.0  | 0.3- |
| 2003 09 27 | 691 | 0.0  | 0.0  | 2005 04 05 | G96 | 0.8- | 0.6- | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 2003 09 27 | 691 | 0.1+ | 0.0  | 2005 04 05 | G96 | 0.0  | 0.4+ | 2007 11 03 | 691 | 0.3- | 0.4+ |
| 2003 09 27 | 691 | 0.1+ | 0.3+ | 2007 10 08 | 691 | 0.1+ | 0.5+ | 2007 11 14 | 691 | 0.1+ | 0.1+ |
| 2005 03 11 | G96 | 0.3- | 0.1- | 2007 10 08 | 691 | 0.6+ | 0.3- | 2007 11 14 | 691 | 0.2- | 0.1+ |
| 2005 03 11 | G96 | 0.7- | 0.4- | 2007 10 08 | 691 | 0.6+ | 0.3- | 2007 11 14 | 691 | 0.5- | 0.2+ |
| 2005 03 11 | G96 | 0.5- | 0.1+ | 2007 10 20 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.7+ | 1.3- |
| 2005 03 11 | G96 | 0.3+ | 0.2+ | 2007 10 20 | 691 | 0.1- | 0.1+ | 2007 12 15 | G96 | 0.7+ | 1.2- |
| 2005 03 12 | 691 | 0.2+ | 0.4+ | 2007 10 20 | 691 | 1.0- | 0.4+ | 2007 12 15 | G96 | 0.2+ | 1.2- |
| 2005 03 12 | 691 | 0.4+ | 0.2+ | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.8- |

**2005 ED<sub>175</sub> = 2007 VJ<sub>190</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 32.26108   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23942506 | $\omega$ | 47.37960  | +0.96893691 | -0.24437358 |
| $a$ | 2.5685596  | $\Omega$ | 326.71257 | +0.20177974 | +0.86998412 |
| $e$ | 0.0797650  | $i$      | 3.96853   | +0.14299022 | +0.42826298 |
| $P$ | 4.12       | $H$      | 16.4      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 08 | 691 | 0.2-  | 0.1+  | 2005 04 04 | 703 | (3.3- | 0.3-) | 2007 11 14 | 300 | 0.6- | 0.0  |
| 2005 03 08 | 691 | 0.2+  | 0.5-  | 2007 10 21 | G96 | 0.5+  | 0.3-  | 2007 11 14 | 300 | 0.2- | 1.2+ |
| 2005 03 08 | 691 | 0.3+  | 0.1+  | 2007 10 21 | G96 | 0.1-  | 0.1-  | 2007 11 20 | G96 | 0.0  | 0.4- |
| 2005 03 13 | 691 | 0.1+  | 0.0   | 2007 10 21 | G96 | 0.1+  | 0.1-  | 2007 11 20 | G96 | 0.0  | 0.8- |
| 2005 03 13 | 691 | 0.1+  | 0.2+  | 2007 10 21 | G96 | 0.5+  | 0.1-  | 2007 11 20 | G96 | 0.1- | 0.5- |
| 2005 03 13 | 691 | 0.0   | 0.1-  | 2007 11 05 | D29 | 0.5-  | 0.0   | 2007 11 20 | G96 | 0.2- | 0.4- |
| 2005 03 17 | 691 | 0.4+  | 0.6+  | 2007 11 05 | D29 | 0.4+  | 0.1-  | 2007 12 13 | 704 | 0.9+ | 0.8+ |
| 2005 03 17 | 691 | 0.3-  | 0.3-  | 2007 11 05 | D29 | 0.4+  | 0.2-  | 2007 12 13 | 704 | 0.7+ | 0.7- |
| 2005 03 17 | 691 | 0.2-  | 0.0   | 2007 11 05 | D29 | 0.2-  | 1.1-  | 2007 12 13 | 704 | 0.2- | 1.3+ |
| 2005 03 17 | 703 | 1.4-  | 0.3-  | 2007 11 13 | 300 | 0.2-  | 0.1-  | 2007 12 13 | 704 | 0.3- | 0.2+ |
| 2005 03 17 | 703 | (1.6- | 1.9-) | 2007 11 13 | 300 | 0.1+  | 0.6-  | 2007 12 15 | 704 | 0.1+ | 0.1+ |
| 2005 03 17 | 703 | 0.2+  | 0.5-  | 2007 11 14 | 300 | 0.2-  | 0.1+  | 2007 12 15 | 704 | 0.1+ | 0.4+ |
| 2005 03 17 | 703 | (2.5- | 2.1-) | 2007 11 14 | 300 | 0.1-  | 0.7+  | 2007 12 15 | 704 | 0.4+ | 1.4- |
| 2005 04 04 | 703 | 0.4-  | 0.4+  | 2007 11 14 | 300 | 0.9-  | 0.3+  | 2007 12 15 | 704 | 0.4+ | 0.4+ |
| 2005 04 04 | 703 | (0.4- | 2.3+) | 2007 11 14 | 300 | 0.2-  | 0.3+  | 2007 12 15 | 704 | 0.8- | 0.9+ |
| 2005 04 04 | 703 | (1.9+ | 1.0+) | 2007 11 14 | 300 | 0.2+  | 0.2+  |            |     |      |      |

**2005 ER<sub>183</sub> = 2002 RP<sub>258</sub> = 2007 UW<sub>111</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 67.69079   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.21634480 | $\omega$ | 122.09870 | +0.81172204  | +0.58400405  |
| $a$ | 2.7481372  | $\Omega$ | 202.17095 | -0.54176038  | +0.74853772  |
| $e$ | 0.0372861  | $i$      | 1.03640   | -0.21818116  | +0.31405501  |
| $P$ | 4.56       | $H$      | 17.1      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 14 | 691 | 0.1- | 0.2+ | 2005 03 09 | G96 | 0.2+ | 0.1- | 2007 10 30 | G96 | 0.5+ | 0.0  |
| 1998 11 14 | 691 | 0.2+ | 0.4+ | 2005 03 13 | 691 | 0.2+ | 0.4+ | 2007 11 04 | G96 | 0.0  | 0.2+ |
| 1998 11 14 | 691 | 0.2+ | 0.3+ | 2005 03 13 | 691 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.4- | 0.3- |
| 2000 02 11 | 691 | 0.7- | 0.0  | 2005 03 13 | 691 | 0.5+ | 0.2+ | 2007 11 04 | G96 | 0.4+ | 0.0  |
| 2000 02 11 | 691 | 0.5- | 0.6- | 2005 04 05 | G96 | 0.1+ | 0.3+ | 2007 11 04 | G96 | 0.1- | 0.1+ |
| 2000 02 11 | 691 | 0.3+ | 0.1- | 2005 04 05 | G96 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.6+ | 0.1+ |
| 2002 09 12 | 644 | 0.1- | 0.2- | 2005 04 05 | G96 | 0.1- | 0.1+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2002 09 12 | 644 | 0.3+ | 0.3- | 2005 04 05 | G96 | 0.4+ | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.5+ |
| 2002 09 14 | 644 | 0.7- | 0.1- | 2007 10 12 | 691 | 0.4- | 0.1+ | 2007 11 18 | G96 | 0.1+ | 0.5- |
| 2002 09 14 | 644 | 0.1+ | 0.5- | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 12 05 | G96 | 0.1- | 0.4- |
| 2002 09 14 | 644 | 0.3- | 0.1+ | 2007 10 12 | 691 | 0.3- | 0.1+ | 2007 12 05 | G96 | 0.1- | 0.4- |
| 2005 03 09 | G96 | 0.5+ | 0.3+ | 2007 10 30 | G96 | 0.3+ | 0.1- | 2007 12 05 | G96 | 0.5- | 0.1+ |
| 2005 03 09 | G96 | 0.3- | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 12 05 | G96 | 0.7+ | 0.3+ |
| 2005 03 09 | G96 | 0.7- | 0.2- | 2007 10 30 | G96 | 0.1+ | 0.0  |            |     |      |      |

**2005 EZ<sub>184</sub> = 2007 WV<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 120.10646  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21409268 | $\omega$ | 29.72474  | +0.23424342 | +0.97123056 |
| $a$ | 2.7673760  | $\Omega$ | 253.85031 | -0.90053510 | +0.20014014 |
| $e$ | 0.0547292  | $i$      | 2.56039   | -0.36628753 | +0.12905475 |
| $P$ | 4.60       | $H$      | 16.4      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | 691 | 0.5+ | 0.2- | 2005 03 17 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.0  | 0.2- |
| 2005 03 09 | 691 | 0.1+ | 0.4+ | 2005 03 17 | 691 | 0.1- | 0.1+ | 2007 11 04 | 691 | 0.2+ | 0.0  |
| 2005 03 09 | 691 | 0.2- | 0.1+ | 2005 03 17 | 691 | 0.3+ | 0.1+ | 2007 11 04 | 691 | 0.2+ | 0.1+ |
| 2005 03 13 | 691 | 0.0  | 0.1+ | 2006 05 24 | G96 | 0.5- | 0.7+ | 2007 11 17 | A77 | 0.9+ | 0.2+ |
| 2005 03 13 | 691 | 0.1+ | 0.2+ | 2006 05 24 | G96 | 0.3- | 0.5+ | 2007 11 18 | A77 | 0.7+ | 0.8+ |
| 2005 03 13 | 691 | 0.1- | 0.1- | 2006 05 24 | G96 | 0.5+ | 0.9+ | 2007 11 18 | A77 | 1.4+ | 0.1+ |
| 2005 03 17 | G96 | 0.6- | 0.3- | 2006 05 24 | G96 | 0.4- | 0.4+ | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2005 03 17 | G96 | 0.6- | 0.3- | 2007 10 15 | 691 | 0.3+ | 0.1+ | 2007 11 19 | 691 | 0.8- | 0.2- |
| 2005 03 17 | G96 | 0.8- | 0.1- | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.3- | 0.7+ |
| 2005 03 17 | G96 | 0.3- | 0.4- | 2007 10 15 | 691 | 0.4- | 0.1- |            |     |      |      |

**2005 EC<sub>187</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 242.42477  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27025024 | $\omega$ | 358.99005 | -0.85705508 | +0.51503903 |
| $a$ | 2.3693288  | $\Omega$ | 212.02208 | -0.47252640 | -0.79644754 |
| $e$ | 0.1513676  | $i$      | 1.49507   | -0.20536651 | -0.31686923 |
| $P$ | 3.65       | $H$      | 17.6      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | G96 | 0.6- | 0.3- | 2005 04 04 | 691 | 0.2+ | 0.3- | 2005 05 13 | G96 | 0.9- | 0.1- |
| 2005 03 10 | G96 | 0.4- | 0.1- | 2005 04 04 | 691 | 0.4+ | 0.1- | 2005 05 13 | G96 | 0.3- | 0.1+ |
| 2005 03 10 | G96 | 0.5- | 0.1- | 2005 04 04 | 704 | 1.0+ | 0.6- | 2005 05 13 | G96 | 0.4- | 0.2- |
| 2005 03 10 | G96 | 0.6- | 0.1- | 2005 04 04 | 704 | 0.6+ | 0.7+ | 2005 07 09 | 675 | 0.5+ | 0.6- |
| 2005 03 13 | 691 | 0.1- | 0.2+ | 2005 04 04 | 704 | 0.0  | 1.4- | 2006 10 20 | 695 | 0.2- | 0.3+ |
| 2005 03 13 | 691 | 0.2+ | 0.1+ | 2005 04 04 | 704 | 0.8- | 0.1+ | 2006 10 20 | 695 | 0.1- | 0.2+ |
| 2005 03 13 | 691 | 0.0  | 0.4+ | 2005 05 04 | G96 | 0.4- | 0.2- | 2007 12 04 | 691 | 0.2+ | 0.2- |
| 2005 03 17 | 691 | 0.1+ | 0.3+ | 2005 05 04 | G96 | 0.7- | 0.1- | 2007 12 04 | 691 | 0.0  | 0.1+ |
| 2005 03 17 | 691 | 0.2+ | 0.3+ | 2005 05 04 | G96 | 0.5- | 0.2- | 2007 12 04 | 691 | 0.2- | 0.3- |
| 2005 03 17 | 691 | 0.2+ | 0.2+ | 2005 05 04 | G96 | 0.5- | 0.1- |            |     |      |      |
| 2005 04 04 | 691 | 0.0  | 0.2- | 2005 05 13 | G96 | 0.4- | 0.1- |            |     |      |      |

**2005 EU<sub>189</sub> = 2003 TW<sub>24</sub> = 2007 VV<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 197.87388  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26686290 | $\omega$ | 276.67905 | -0.88290702 | +0.46406764 |
| $a$ | 2.3893361  | $\Omega$ | 290.99150 | -0.39483872 | -0.81620877 |
| $e$ | 0.0614183  | $i$      | 4.39395   | -0.25412121 | -0.34415762 |
| $P$ | 3.69       | $H$      | 17.5      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 01 | 691 | 0.2+ | 0.4+ | 2005 03 11 | G96 | 0.6− | 0.0  | 2007 11 01 | 691 | 0.4− | 0.2− |
| 2003 10 01 | 691 | 0.2− | 0.3− | 2005 03 11 | G96 | 0.5− | 0.0  | 2007 11 01 | 691 | 0.2+ | 0.0  |
| 2003 10 01 | 691 | 0.0  | 0.0  | 2005 03 11 | G96 | 0.4− | 0.4− | 2007 11 05 | 691 | 0.2− | 0.3− |
| 2003 10 16 | 691 | 0.0  | 0.0  | 2005 03 11 | G96 | 0.5− | 0.1− | 2007 11 05 | 691 | 0.1+ | 0.5+ |
| 2003 10 16 | 691 | 0.2+ | 0.1− | 2005 03 13 | G96 | 0.2− | 0.0  | 2007 11 05 | 691 | 0.3+ | 0.2− |
| 2003 10 16 | 691 | 0.1− | 0.0  | 2005 03 13 | G96 | 0.4− | 0.1− | 2007 11 19 | 691 | 0.1− | 0.2+ |
| 2005 01 17 | 691 | 0.3+ | 0.1− | 2005 03 13 | G96 | 0.3+ | 0.0  | 2007 11 19 | 691 | 0.4+ | 0.1− |
| 2005 01 17 | 691 | 0.1+ | 0.0  | 2005 03 13 | G96 | 0.4− | 0.2+ | 2007 11 19 | 691 | 0.1− | 0.3− |
| 2005 01 17 | 691 | 0.2+ | 0.1+ | 2007 11 01 | 691 | 0.2− | 0.4+ |            |     |      |      |

**2005 EN<sub>192</sub> = 2005 GH<sub>213</sub>**Id. Minor Planet Center (d, *MPO* 98188)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 233.97152  |          | (2000.0)  | $\mathbf{P}$  | $\mathbf{Q}$  |
|-----|------------|----------|-----------|---------------|---------------|
| $n$ | 0.20913930 | $\omega$ | 308.67608 | $-0.72458377$ | $-0.68910807$ |
| $a$ | 2.8109014  | $\Omega$ | 187.78418 | $+0.65378858$ | $-0.68250918$ |
| $e$ | 0.0335591  | $i$      | 4.40927   | $+0.21803406$ | $-0.24353909$ |
| $P$ | 4.71       | $H$      | 15.9      | $G$ 0.15      | $U$ 3         |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 03 11 | G96 | 0.2− | 0.1+ | 2005 04 13 | 691 | 0.1−  | 0.0   | 2007 10 12 | 703 | (1.6− | 1.0+) |
| 2005 03 11 | G96 | 0.1− | 0.1+ | 2005 04 13 | 691 | 0.1−  | 0.1+  | 2007 10 12 | 291 | 0.0   | 0.2+  |
| 2005 03 11 | G96 | 0.1− | 0.0  | 2005 05 13 | G96 | 0.3−  | 0.1−  | 2007 10 12 | 291 | 0.2+  | 0.2+  |
| 2005 03 11 | G96 | 0.1− | 0.1+ | 2005 05 13 | G96 | 0.7+  | 0.1+  | 2007 10 12 | 291 | 0.1−  | 0.1+  |
| 2005 03 13 | 691 | 0.0  | 0.1+ | 2005 05 13 | G96 | 0.8−  | 0.2−  | 2007 10 20 | G96 | 0.4+  | 0.4−  |
| 2005 03 13 | 691 | 0.1+ | 0.2+ | 2005 05 13 | G96 | 0.1+  | 0.1−  | 2007 10 20 | G96 | 0.3−  | 0.5−  |
| 2005 03 13 | 691 | 0.2+ | 0.6− | 2007 09 13 | G96 | 0.1−  | 0.1−  | 2007 10 20 | G96 | 0.6+  | 0.3+  |
| 2005 04 06 | G96 | 0.1+ | 0.2+ | 2007 09 13 | G96 | 0.2−  | 0.0   | 2007 10 20 | G96 | 0.0   | 0.3−  |
| 2005 04 06 | G96 | 0.1+ | 0.0  | 2007 09 13 | G96 | 0.1+  | 0.1−  | 2007 10 31 | G96 | 0.8+  | 0.4+  |
| 2005 04 06 | G96 | 0.2+ | 0.1+ | 2007 09 13 | G96 | 0.0   | 0.1−  | 2007 10 31 | G96 | 0.3−  | 0.2+  |
| 2005 04 06 | G96 | 0.2− | 0.0  | 2007 10 12 | 703 | (1.7− | 5.6−) | 2007 10 31 | G96 | 0.2+  | 0.2+  |
| 2005 04 13 | 691 | 0.1+ | 0.2+ | 2007 10 12 | 703 | 0.9−  | 1.1−  | 2007 10 31 | G96 | 0.9−  | 0.1−  |

**2005 EW<sub>195</sub> = 2007 VT<sub>107</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 131.14874  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.22744100 | $\omega$ | 25.82290  | +0.10037662  | +0.99480521  |
| $a$ | 2.6580116  | $\Omega$ | 249.94179 | −0.91594541  | +0.08574202  |
| $e$ | 0.0612933  | $i$      | 1.03360   | −0.38854671  | +0.05487161  |
| $P$ | 4.33       | $H$      | 16.7      | $G$ 0.15     | $U$ 0        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 01 16 | 691 | 0.1− | 0.1+ | 2005 04 04 | 703 | 0.0   | 0.5+  | 2007 11 03 | 691 | 0.3− | 0.2+ |
| 2000 01 16 | 691 | 0.0  | 0.1− | 2005 04 04 | 703 | 1.1+  | 0.4−  | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2000 01 16 | 691 | 0.2+ | 0.0  | 2005 04 04 | 703 | 0.7+  | 0.1+  | 2007 11 03 | 691 | 0.1− | 0.3+ |
| 2001 05 30 | 691 | 0.0  | 0.2− | 2005 04 04 | 703 | (2.4+ | 0.7+) | 2007 11 07 | 691 | 0.0  | 0.2− |
| 2001 05 30 | 691 | 0.4+ | 0.4+ | 2005 04 05 | G96 | 0.1−  | 0.3−  | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2001 05 30 | 691 | 0.4− | 0.1− | 2005 04 05 | G96 | 0.3−  | 0.3+  | 2007 11 07 | 691 | 0.1+ | 0.3− |
| 2002 09 12 | 644 | 0.5− | 0.2+ | 2005 04 05 | G96 | 0.2+  | 0.3−  | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2002 09 12 | 644 | 0.2− | 0.6+ | 2005 04 05 | G96 | 0.4−  | 0.1+  | 2007 11 14 | 691 | 0.7− | 0.3− |
| 2002 09 12 | 644 | 0.4− | 0.7+ | 2006 09 26 | G96 | 0.5−  | 0.0   | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2005 03 11 | G96 | 0.2− | 0.2− | 2006 09 26 | G96 | 0.4+  | 0.0   | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2005 03 11 | G96 | 0.2− | 0.0  | 2006 09 26 | G96 | 0.7+  | 0.2−  | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2005 03 11 | G96 | 0.2− | 0.1+ | 2006 09 26 | G96 | 0.0   | 0.2−  | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2005 03 11 | G96 | 0.4− | 0.0  | 2007 10 17 | G96 | 0.2−  | 0.4−  | 2007 12 15 | G96 | 0.3+ | 0.5− |
| 2005 03 13 | 691 | 0.5+ | 0.3+ | 2007 10 17 | G96 | 0.6+  | 0.2−  | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2005 03 13 | 691 | 0.7− | 0.2+ | 2007 10 17 | G96 | 0.2−  | 0.0   | 2007 12 15 | G96 | 0.1− | 0.9− |
| 2005 03 13 | 691 | 0.3+ | 0.1− | 2007 10 17 | G96 | 0.4+  | 0.3−  | 2007 12 15 | G96 | 1.4+ | 0.4− |

**2005 EP<sub>196</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 226.91128  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23453867 | $\omega$ | 71.64268  | −0.99924249 | −0.01175386 |
| $a$ | 2.6041125  | $\Omega$ | 107.67082 | −0.00350633 | −0.92222741 |
| $e$ | 0.2257850  | $i$      | 2.23140   | +0.03875753 | −0.38646922 |
| $P$ | 4.20       | $H$      | 16.7      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 26 | 691 | 0.1+  | 0.2+  | 2005 03 31 | 699 | 1.0+ | 0.2+ | 2005 04 30 | 691 | 0.1+ | 0.0  |
| 2001 05 26 | 691 | 0.1−  | 0.1+  | 2005 03 31 | 699 | 0.2+ | 0.8+ | 2005 04 30 | 691 | 0.1− | 0.1+ |
| 2001 05 26 | 691 | 0.1+  | 0.0   | 2005 03 31 | 699 | 1.0− | 1.8+ | 2005 05 04 | 644 | 0.3+ | 0.0  |
| 2005 03 08 | 699 | 0.4−  | 0.5−  | 2005 04 09 | 699 | 1.1+ | 0.3− | 2005 05 04 | 644 | 0.1+ | 0.1+ |
| 2005 03 08 | 699 | 0.9−  | 0.9−  | 2005 04 09 | 699 | 0.1+ | 0.2+ | 2005 05 04 | 644 | 0.2− | 0.4+ |
| 2005 03 08 | 699 | (2.1− | 1.8+) | 2005 04 09 | 699 | 0.6+ | 0.2+ | 2005 05 12 | G96 | 0.2− | 0.4− |
| 2005 03 08 | 699 | 0.5−  | 1.5+  | 2005 04 09 | 699 | 0.2+ | 0.3+ | 2005 05 12 | G96 | 0.1− | 0.9− |
| 2005 03 11 | 691 | 0.4+  | 0.1+  | 2005 04 10 | G96 | 0.2− | 0.3− | 2005 05 12 | G96 | 0.0  | 0.7− |
| 2005 03 11 | 691 | 0.3+  | 0.1+  | 2005 04 10 | G96 | 0.4− | 0.2− | 2005 05 12 | G96 | 0.6− | 0.1− |
| 2005 03 11 | 691 | 0.1+  | 0.1−  | 2005 04 10 | G96 | 0.8− | 0.5− | 2006 08 21 | 807 | 0.2− | 0.5+ |
| 2005 03 13 | 703 | 0.6−  | 0.0   | 2005 04 10 | G96 | 0.2+ | 0.6− | 2006 08 21 | 807 | 0.4− | 0.3+ |
| 2005 03 13 | 703 | 1.3−  | 0.7+  | 2005 04 13 | 704 | 0.5+ | 0.2+ | 2007 10 20 | G96 | 0.3+ | 0.5+ |
| 2005 03 13 | 703 | 0.4−  | 0.0   | 2005 04 13 | 704 | 1.4+ | 0.2− | 2007 10 20 | G96 | 0.6− | 0.7+ |
| 2005 03 13 | 703 | 1.3−  | 0.0   | 2005 04 13 | 704 | 1.0+ | 0.4+ | 2007 10 20 | G96 | 0.5− | 0.5+ |
| 2005 03 31 | 699 | 1.5+  | 0.2+  | 2005 04 30 | 691 | 0.1+ | 0.2+ | 2007 10 20 | G96 | 0.3+ | 0.5+ |

**2005 EK<sub>197</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 220.86069  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24384258 | $\omega$ | 208.42295 | −0.98109349 | +0.18972995 |
| $a$ | 2.5374433  | $\Omega$ | 342.38993 | −0.14489600 | −0.85088776 |
| $e$ | 0.0601842  | $i$      | 7.25100   | −0.12829930 | −0.48989036 |
| $P$ | 4.04       | $H$      | 16.1      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 04 | 691 | 0.0   | 0.0   | 2007 10 24 | G96 | 0.1−  | 0.1+  | 2007 11 18 | 701 | 0.7+ | 0.2+ |
| 2005 03 04 | 691 | 0.0   | 0.1+  | 2007 10 24 | G96 | 0.6−  | 0.3+  | 2007 11 18 | 701 | 0.5+ | 0.2+ |
| 2005 03 04 | 691 | 0.3+  | 0.2−  | 2007 10 24 | G96 | 0.1−  | 0.3+  | 2007 11 18 | 701 | 0.2− | 0.3+ |
| 2005 03 11 | 704 | (0.2+ | 1.7−) | 2007 11 15 | G96 | 0.1−  | 0.1−  | 2007 11 18 | 701 | 0.2+ | 0.3− |
| 2005 03 11 | 704 | 0.3−  | 0.4−  | 2007 11 15 | G96 | 0.0   | 0.1−  | 2007 11 19 | 701 | 0.3+ | 0.3− |
| 2005 03 11 | 704 | 0.5+  | 1.3−  | 2007 11 15 | G96 | 0.2−  | 0.1−  | 2007 11 19 | 701 | 0.1+ | 0.4− |
| 2005 03 11 | 704 | 0.7+  | 0.1−  | 2007 11 15 | G96 | 0.1−  | 0.1−  | 2007 11 19 | 701 | 0.8− | 0.7− |
| 2005 03 13 | 703 | 0.7−  | 0.7+  | 2007 11 15 | G96 | 0.2−  | 0.1−  | 2007 11 19 | 291 | 0.0  | 0.1− |
| 2005 03 13 | 703 | 0.8−  | 0.6+  | 2007 11 15 | G96 | 0.1−  | 0.0   | 2007 11 19 | 291 | 0.6+ | 0.2+ |
| 2005 03 13 | 703 | 0.1−  | 0.4−  | 2007 11 15 | G96 | 0.2+  | 0.6−  | 2007 11 19 | 291 | 0.2+ | 0.1− |
| 2005 03 13 | 703 | 0.3+  | 1.1+  | 2007 11 15 | G96 | 0.6+  | 0.4−  | 2007 11 20 | 291 | 0.1+ | 0.1+ |
| 2005 03 17 | 703 | 0.8+  | 0.8+  | 2007 11 17 | G96 | (1.6+ | 0.9−) | 2007 11 20 | 291 | 0.4− | 0.3+ |
| 2005 03 17 | 703 | 0.4−  | 0.3−  | 2007 11 17 | G96 | 0.1+  | 0.3+  | 2007 11 20 | 291 | 0.9− | 0.0  |
| 2005 03 17 | 703 | 0.4+  | 0.9−  | 2007 11 17 | G96 | 0.2−  | 0.1+  | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2005 03 17 | 703 | 0.7+  | 0.0   | 2007 11 17 | G96 | 0.1+  | 0.1−  | 2007 11 20 | G96 | 0.4− | 0.1+ |
| 2005 04 04 | 703 | 0.4−  | 1.2+  | 2007 11 18 | 704 | 0.0   | 0.5−  | 2007 11 20 | G96 | 0.1− | 0.1− |
| 2005 04 04 | 703 | 0.4−  | 0.4+  | 2007 11 18 | 704 | 0.3−  | 0.1−  | 2007 11 20 | G96 | 0.3+ | 0.0  |
| 2005 04 04 | 703 | 0.8−  | 0.6−  | 2007 11 18 | 704 | 0.4+  | 0.2−  | 2007 12 01 | H55 | 0.1+ | 0.1+ |
| 2005 04 04 | 703 | 0.7−  | 0.4−  | 2007 11 18 | 704 | 0.2+  | 1.3+  | 2007 12 01 | H55 | 0.4+ | 0.4+ |
| 2007 10 24 | G96 | (1.8+ | 0.9+) | 2007 11 18 | 704 | 0.2−  | 0.8−  | 2007 12 01 | H55 | 0.3+ | 0.2+ |

**2005 EH<sub>203</sub> = 2005 GU<sub>159</sub>**Id. Minor Planet Center (d, *MPO* 87832)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 114.50228  |          | (2000.0)  | $\mathbf{P}$ |      | $\mathbf{Q}$ |   |
|-----|------------|----------|-----------|--------------|------|--------------|---|
| $n$ | 0.17927129 | $\omega$ | 68.01528  | −0.07002302  |      | +0.99624935  |   |
| $a$ | 3.1150299  | $\Omega$ | 198.19128 | −0.96474479  |      | −0.08059256  |   |
| $e$ | 0.0392218  | $i$      | 9.37105   | −0.25370115  |      | +0.03149714  |   |
| $P$ | 5.50       | $H$      | 15.6      | $G$          | 0.15 | $U$          | 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 10 G96 | 0.2+ | 0.3+ | 2005 04 12 G96 | 0.0  | 0.1− | 2007 10 07 G96 | 0.4+ | 0.2+ |
| 2005 03 10 G96 | 0.1+ | 0.1+ | 2005 04 12 G96 | 0.2− | 0.0  | 2007 10 07 G96 | 0.1+ | 0.2+ |
| 2005 03 10 G96 | 0.2− | 0.4+ | 2005 04 12 G96 | 0.5− | 0.2− | 2007 10 07 G96 | 0.2− | 0.2+ |
| 2005 03 10 G96 | 0.1+ | 0.4+ | 2005 04 12 G96 | 0.3− | 0.2− | 2007 10 07 G96 | 0.2+ | 0.2+ |
| 2005 03 14 G96 | 0.1+ | 0.2+ | 2005 04 12 G96 | 0.1− | 0.0  | 2007 10 18 G96 | 0.9+ | 0.3+ |
| 2005 03 14 G96 | 0.5− | 0.4+ | 2005 04 16 691 | 0.2+ | 0.1+ | 2007 10 18 G96 | 0.2+ | 0.0  |
| 2005 03 14 G96 | 0.3− | 0.1+ | 2005 04 16 691 | 0.3+ | 0.2+ | 2007 10 18 G96 | 0.1+ | 0.1+ |
| 2005 03 14 G96 | 0.2+ | 0.2+ | 2005 04 16 691 | 0.2+ | 0.3+ | 2007 10 18 G96 | 0.6+ | 0.3+ |
| 2005 04 10 G96 | 0.0  | 0.1+ | 2005 05 02 621 | 0.6+ | 0.3− | 2007 11 05 G96 | 0.3− | 0.5− |
| 2005 04 10 G96 | 0.1− | 0.0  | 2005 05 02 621 | 0.7− | 0.8− | 2007 11 05 G96 | 0.8− | 0.7− |
| 2005 04 10 G96 | 0.1− | 0.1− | 2005 05 02 621 | 0.1− | 0.3− | 2007 11 05 G96 | 0.0  | 0.6− |
| 2005 04 10 G96 | 0.4− | 0.1+ | 2007 09 14 G96 | 0.1− | 0.2− | 2007 11 13 691 | 0.0  | 0.1+ |
| 2005 04 12 G96 | 0.2− | 0.1+ | 2007 09 14 G96 | 0.4+ | 0.0  | 2007 11 13 691 | 0.2− | 0.2+ |
| 2005 04 12 G96 | 0.3+ | 0.0  | 2007 09 14 G96 | 0.1+ | 0.4+ | 2007 11 13 691 | 0.4− | 0.2+ |
| 2005 04 12 G96 | 0.1− | 0.0  | 2007 09 14 G96 | 0.4+ | 0.1+ |                |      |      |

**2005 ED<sub>205</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 250.81839  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23436223 | $\omega$ | 129.92425 | −0.96939049   | −0.23956141 |
| <i>a</i> | 2.6054194  | $\Omega$ | 36.30777  | +0.18830128   | −0.86597237 |
| <i>e</i> | 0.0677948  | <i>i</i> | 5.21123   | +0.15755859   | −0.43897856 |
| <i>P</i> | 4.21       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2005 03 11 691 | 0.1+ | 0.4+ | 2005 04 10 691 | 0.3+  | 0.2+  | 2007 09 09 G96 | 0.1− | 0.1− |
| 2005 03 11 691 | 0.4+ | 0.0  | 2005 04 10 691 | 0.1+  | 0.0   | 2007 09 09 G96 | 0.5+ | 0.3+ |
| 2005 03 11 691 | 0.2− | 0.2+ | 2005 04 11 691 | 0.3+  | 0.0   | 2007 09 09 G96 | 0.2+ | 0.6+ |
| 2005 03 14 G96 | 1.2− | 0.1− | 2005 04 11 691 | 0.1+  | 0.0   | 2007 09 09 G96 | 0.4+ | 0.3− |
| 2005 03 14 G96 | 0.4− | 0.0  | 2005 04 11 691 | (1.5+ | 1.8+) | 2007 11 04 691 | 0.2+ | 0.0  |
| 2005 03 14 G96 | 0.4− | 0.5− | 2005 04 18 691 | 0.5+  | 0.1−  | 2007 11 04 691 | 0.3+ | 0.4− |
| 2005 03 14 G96 | 0.8− | 0.2− | 2005 04 18 691 | 0.1−  | 0.0   | 2007 11 04 691 | 0.2+ | 0.4− |
| 2005 04 05 G96 | 0.2− | 0.0  | 2005 04 18 691 | 0.1−  | 0.4−  | 2007 12 04 691 | 0.2− | 0.1− |
| 2005 04 05 G96 | 0.0  | 0.6− | 2005 05 06 G96 | 0.3−  | 0.0   | 2007 12 04 691 | 0.3− | 0.0  |
| 2005 04 05 G96 | 0.2− | 0.2− | 2005 05 06 G96 | 0.7+  | 0.9+  | 2007 12 04 691 | 0.3− | 0.1− |
| 2005 04 05 G96 | 0.6− | 0.2− | 2005 05 06 G96 | 0.6+  | 1.3+  | 2007 12 06 691 | 0.7− | 0.2− |
| 2005 04 06 G96 | 0.3− | 0.2− | 2005 05 06 G96 | 0.0   | 0.6+  | 2007 12 06 691 | 0.4− | 0.8+ |
| 2005 04 06 G96 | 0.7− | 0.5− | 2005 05 08 G96 | 0.3−  | 0.3−  | 2007 12 06 691 | 0.0  | 0.6− |
| 2005 04 06 G96 | 0.3− | 0.4− | 2005 05 08 G96 | 0.5−  | 0.1−  | 2007 12 16 691 | 0.0  | 0.2− |
| 2005 04 06 G96 | 0.3− | 0.3− | 2005 05 08 G96 | 0.9−  | 0.2−  | 2007 12 16 691 | 0.2+ | 0.0  |
| 2005 04 10 691 | 0.2+ | 0.1− | 2005 05 08 G96 | 0.8−  | 0.0   | 2007 12 16 691 | 0.9+ | 1.1+ |

**2005 EO<sub>206</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 168.90761  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17212692 | $\omega$ | 183.35726 | −0.99671383   | +0.08066997 |
| <i>a</i> | 3.2006401  | $\Omega$ | 1.33780   | −0.06504744   | −0.74307209 |
| <i>e</i> | 0.0868375  | <i>i</i> | 18.32911  | −0.04827401   | −0.66433141 |
| <i>P</i> | 5.73       | <i>H</i> | 14.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 03 691 | 0.4+ | 0.5+ | 2005 04 07 704 | 0.9+ | 0.7− | 2005 05 06 703 | 1.1− | 0.4+ |
| 2005 03 03 691 | 0.1+ | 0.3+ | 2005 04 07 704 | 0.5+ | 1.2+ | 2005 05 06 703 | 0.1+ | 1.1+ |
| 2005 03 03 691 | 0.1− | 0.1+ | 2005 04 09 704 | 0.0  | 0.2+ | 2005 05 06 703 | 0.3− | 0.4+ |
| 2005 03 13 703 | 0.9− | 0.4+ | 2005 04 09 704 | 0.9+ | 0.1− | 2007 09 12 691 | 0.1+ | 0.1− |
| 2005 03 13 703 | 0.2+ | 0.2− | 2005 04 09 704 | 0.6+ | 0.9− | 2007 09 12 691 | 0.4− | 0.4+ |
| 2005 03 13 703 | 0.1+ | 0.2− | 2005 04 09 704 | 0.1− | 0.1− | 2007 09 12 691 | 0.1+ | 0.1+ |
| 2005 03 13 703 | 0.4− | 0.5+ | 2005 04 09 704 | 0.2+ | 0.2− | 2007 10 08 G96 | 0.1+ | 0.2− |
| 2005 03 14 G96 | 0.4− | 0.0  | 2005 04 14 703 | 0.1− | 0.0  | 2007 10 08 G96 | 0.0  | 0.0  |
| 2005 03 14 G96 | 0.4− | 0.2− | 2005 04 14 703 | 0.2− | 0.0  | 2007 10 08 G96 | 0.1− | 0.1+ |
| 2005 03 14 G96 | 0.1+ | 0.4− | 2005 04 14 703 | 0.4− | 0.4− | 2007 10 08 G96 | 0.1+ | 0.2− |
| 2005 03 14 G96 | 0.3− | 0.1− | 2005 04 14 703 | 0.0  | 0.3− |                |      |      |
| 2005 04 07 704 | 1.4+ | 1.1− | 2005 05 06 703 | 1.1− | 0.2− |                |      |      |

**2005 EF<sub>217</sub> = 2002 RO<sub>234</sub> = 2007 TQ<sub>314</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 174.47900  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21964207 | $\omega$ | 53.82202  | −0.83386932   | +0.55115284 |
| <i>a</i> | 2.7205645  | $\Omega$ | 159.57222 | −0.52991493   | −0.78424431 |
| <i>e</i> | 0.0580917  | <i>i</i> | 4.91022   | −0.15444132   | −0.28494108 |
| <i>P</i> | 4.49       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 1996 03 11 691 | 0.1+ | 0.5− | 2005 03 09 704 | 0.2−  | 0.4+  | 2006 05 06 G96 | 0.1+ | 0.1+ |
| 1996 03 11 691 | 0.2+ | 0.2+ | 2005 03 09 704 | (0.1− | 2.5+) | 2006 05 06 G96 | 0.3+ | 0.1+ |
| 1996 03 11 691 | 0.0  | 0.1+ | 2005 03 09 704 | 0.3+  | 0.9−  | 2006 05 06 G96 | 0.1+ | 0.0  |
| 2002 09 14 644 | 0.2− | 0.3− | 2005 03 09 704 | 0.4−  | 0.1+  | 2006 05 06 G96 | 0.1− | 0.3+ |
| 2002 09 14 644 | 0.1− | 0.1+ | 2005 03 09 704 | 0.0   | 0.6+  | 2007 10 11 G96 | 0.1+ | 0.2− |
| 2002 09 14 644 | 0.1+ | 0.2+ | 2005 03 09 704 | 0.2−  | 1.3+  | 2007 10 11 G96 | 0.6+ | 0.2− |
| 2002 09 15 644 | 0.4− | 0.4− | 2005 03 09 704 | 0.0   | 0.4−  | 2007 10 11 G96 | 0.6+ | 0.1− |
| 2002 09 15 644 | 0.5− | 0.2+ | 2005 03 09 704 | 0.6−  | 0.1−  | 2007 10 11 G96 | 0.6+ | 0.3− |
| 2002 09 15 644 | 0.4+ | 0.3+ | 2005 03 10 G96 | 1.1−  | 1.1+  | 2007 10 15 691 | 0.1− | 0.0  |
| 2003 11 24 691 | 0.1− | 0.2+ | 2005 03 10 G96 | 1.2+  | 0.2−  | 2007 10 15 691 | 0.3− | 0.0  |
| 2003 11 24 691 | 0.3+ | 0.1+ | 2005 03 10 G96 | 0.0   | 0.3−  | 2007 10 15 691 | 0.6− | 0.2+ |
| 2003 11 24 691 | 0.1− | 0.2+ | 2005 03 10 G96 | 0.2−  | 0.1−  | 2007 10 19 691 | 0.2− | 0.2+ |
| 2003 12 16 691 | 0.0  | 0.2+ | 2005 05 10 G96 | 0.4−  | 0.1−  | 2007 10 19 691 | 0.3+ | 0.6− |
| 2003 12 16 691 | 0.0  | 0.1+ | 2005 05 10 G96 | 0.1+  | 0.1−  | 2007 10 19 691 | 0.2− | 0.1+ |
| 2003 12 16 691 | 0.1− | 0.1− | 2005 05 10 G96 | 0.2−  | 0.6−  |                |      |      |
| 2005 03 09 704 | 1.3+ | 0.8− | 2005 05 10 G96 | 0.2−  | 0.3−  |                |      |      |

**2005 EO<sub>219</sub> = 2007 VK<sub>176</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 239.68104  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18627406 | $\omega$ | 119.80617 | −0.61886021   | −0.78501729 |
| <i>a</i> | 3.0364616  | $\Omega$ | 8.58937   | +0.64183768   | −0.52559414 |
| <i>e</i> | 0.0406433  | <i>i</i> | 10.63626  | +0.45283157   | −0.32786988 |
| <i>P</i> | 5.29       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 10 G96 | 0.4− | 0.0  | 2007 09 13 G96 | 0.0  | 0.1− | 2007 11 05 G96 | 0.2− | 0.2− |
| 2005 03 10 G96 | 0.4− | 0.0  | 2007 09 13 G96 | 0.3+ | 0.0  | 2007 11 05 G96 | 0.1− | 0.1− |
| 2005 03 10 G96 | 0.5− | 0.0  | 2007 09 13 G96 | 0.0  | 0.1− | 2007 11 09 G96 | 0.3+ | 0.1+ |
| 2005 03 10 G96 | 0.2− | 0.0  | 2007 09 13 G96 | 0.1+ | 0.2+ | 2007 11 09 G96 | 0.8+ | 0.1+ |
| 2005 03 13 691 | 0.1+ | 0.1− | 2007 10 12 G96 | 0.3− | 0.3+ | 2007 11 09 G96 | 0.1+ | 0.1+ |
| 2005 03 13 691 | 0.3+ | 0.1− | 2007 10 12 G96 | 0.1− | 0.1+ | 2007 11 09 G96 | 0.0  | 0.1− |
| 2005 03 13 691 | 0.1+ | 0.1− | 2007 10 12 G96 | 0.0  | 0.3+ | 2007 12 06 G96 | 0.1+ | 0.1+ |
| 2005 04 04 691 | 0.1+ | 0.2+ | 2007 10 12 G96 | 0.1− | 0.4− | 2007 12 06 G96 | 0.0  | 0.3− |
| 2005 04 04 691 | 0.2− | 0.1+ | 2007 11 05 G96 | 0.5− | 0.3− | 2007 12 06 G96 | 0.4+ | 0.1+ |
| 2005 04 04 691 | 0.1− | 0.1− | 2007 11 05 G96 | 0.3− | 0.2− | 2007 12 06 G96 | 0.1+ | 0.4− |

**2005 EH<sub>236</sub> = 2007 WS<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 317.09150  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28035747 | $\omega$ | 103.11098 | −0.39120080   | −0.92020924 |
| <i>a</i> | 2.3120362  | $\Omega$ | 9.94935   | +0.81173607   | −0.35182393 |
| <i>e</i> | 0.1677884  | <i>i</i> | 4.41479   | +0.43364326   | −0.17156596 |
| <i>P</i> | 3.52       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2003 08 25 807 | 0.1− | 0.5+ | 2005 03 16 691 | 0.1− | 0.7+ | 2007 11 19 G96 | 0.1+  | 0.1−  |
| 2003 08 25 807 | 0.4− | 0.3+ | 2005 04 02 G96 | 0.6− | 0.2− | 2007 11 19 G96 | 0.4+  | 0.2−  |
| 2005 03 10 G96 | 0.1− | 0.9− | 2005 04 02 G96 | 0.4− | 0.3+ | 2007 11 19 G96 | 0.3+  | 0.2−  |
| 2005 03 10 G96 | 0.5− | 0.2− | 2005 04 02 G96 | 0.6+ | 0.1+ | 2007 11 20 691 | (1.8− | 2.2−) |
| 2005 03 10 G96 | 0.5− | 0.4− | 2005 04 02 G96 | 0.2+ | 0.2− | 2007 11 20 691 | 0.0   | 0.0   |
| 2005 03 10 G96 | 0.3− | 0.5− | 2007 11 04 691 | 0.3− | 0.4− | 2007 11 20 691 | 0.2+  | 0.2−  |
| 2005 03 16 691 | 0.2+ | 0.1− | 2007 11 04 691 | 0.1− | 0.1+ |                |       |       |
| 2005 03 16 691 | 0.4+ | 0.1+ | 2007 11 04 691 | 0.2− | 0.7+ |                |       |       |

**2005 EO<sub>241</sub> = 2007 WP<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 238.29054  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.26647385 | $\omega$ | 80.42111  | −0.96100692 |          | +0.24983318 |          |
| <i>a</i> | 2.3916612  | $\Omega$ | 113.97052 | −0.27581222 |          | −0.89675313 |          |
| <i>e</i> | 0.2369969  | <i>i</i> | 7.45320   | +0.01983242 |          | −0.36526319 |          |
| <i>P</i> | 3.70       | <i>H</i> | 17.6      | <i>G</i>    | 0.15     | <i>U</i>    | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 02 | 703 | 0.3+ | 0.3+ | 2005 03 11 | 699 | 1.1+ | 0.2− | 2007 11 18 | G96 | 0.5+ | 0.3− |
| 2005 03 02 | 703 | 0.1− | 0.0  | 2005 03 11 | 699 | 0.3+ | 0.0  | 2007 11 18 | G96 | 0.1− | 0.1− |
| 2005 03 02 | 703 | 0.2+ | 0.6− | 2005 03 11 | 699 | 1.3+ | 0.1− | 2007 11 18 | G96 | 0.2− | 0.3− |
| 2005 03 02 | 703 | 0.8− | 0.2− | 2005 03 11 | 699 | 0.7+ | 0.7− | 2007 11 18 | G96 | 0.2+ | 0.1− |
| 2005 03 11 | 703 | 1.2− | 0.6+ | 2005 03 16 | 703 | 0.5− | 0.1− | 2007 11 19 | G96 | 0.1− | 0.0  |
| 2005 03 11 | 703 | 0.1+ | 1.0+ | 2005 03 16 | 703 | 0.2+ | 1.0− | 2007 11 19 | G96 | 0.0  | 0.1+ |
| 2005 03 11 | 703 | 1.4− | 0.6+ | 2005 03 16 | 703 | 0.0  | 0.2+ | 2007 11 19 | G96 | 0.4− | 0.3+ |
| 2005 03 11 | 703 | 0.5+ | 0.3+ | 2005 03 16 | 703 | 0.6− | 0.0  | 2007 11 19 | G96 | 0.2+ | 0.4+ |

**2005 EY<sub>241</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 222.58105  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.23138388 | $\omega$ | 151.09027 | −0.96054604 |          | −0.27165443 |          |
| <i>a</i> | 2.6277294  | $\Omega$ | 13.54866  | +0.17989978 |          | −0.77036959 |          |
| <i>e</i> | 0.2058779  | <i>i</i> | 14.74479  | +0.21210227 |          | −0.57683148 |          |
| <i>P</i> | 4.26       | <i>H</i> | 16.5      | <i>G</i>    | 0.15     | <i>U</i>    | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 691 | 0.0  | 0.3+ | 2005 04 02 | 699 | 1.5+ | 0.8+ | 2005 04 09 | 703 | 0.5+ | 0.8− |
| 2003 09 22 | 691 | 0.2− | 0.1+ | 2005 04 02 | 699 | 0.6+ | 0.6+ | 2005 04 09 | 703 | 0.7− | 0.2− |
| 2003 09 22 | 691 | 0.1− | 0.0  | 2005 04 02 | 703 | 0.9− | 0.2− | 2007 09 13 | G96 | 0.1+ | 0.1+ |
| 2005 03 11 | 703 | 0.6− | 0.2− | 2005 04 02 | 703 | 1.3− | 0.8− | 2007 09 13 | G96 | 0.1+ | 0.1+ |
| 2005 03 11 | 703 | 0.4+ | 0.2+ | 2005 04 02 | 703 | 0.8+ | 0.8− | 2007 09 13 | G96 | 0.1− | 0.0  |
| 2005 03 11 | 703 | 0.1+ | 0.2+ | 2005 04 02 | 699 | 0.1− | 1.1+ | 2007 09 13 | G96 | 0.0  | 0.5+ |
| 2005 03 11 | 703 | 0.0  | 0.7− | 2005 04 02 | 703 | 1.4− | 0.1+ | 2007 10 08 | G96 | 0.2− | 0.1− |
| 2005 03 16 | 703 | 1.0− | 0.1− | 2005 04 06 | 644 | 1.3+ | 0.5+ | 2007 10 08 | G96 | 0.3− | 0.0  |
| 2005 03 16 | 703 | 0.5− | 0.2− | 2005 04 06 | 644 | 0.5+ | 0.3+ | 2007 10 08 | G96 | 0.1− | 0.2− |
| 2005 03 16 | 703 | 0.3− | 0.5+ | 2005 04 06 | 644 | 0.6+ | 0.4+ | 2007 10 08 | G96 | 0.4+ | 0.1− |
| 2005 03 16 | 703 | 0.8− | 0.2− | 2005 04 09 | 703 | 0.5− | 0.6− |            |     |      |      |
| 2005 04 02 | 699 | 1.3+ | 0.0  | 2005 04 09 | 703 | 0.8+ | 0.5+ |            |     |      |      |

**2005 EQ<sub>243</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 215.28090  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.22901010 | $\omega$ | 159.79610 | −0.98416756 |          | −0.17247169 |          |
| <i>a</i> | 2.6458565  | $\Omega$ | 10.52465  | +0.11565857 |          | −0.79953150 |          |
| <i>e</i> | 0.2168232  | <i>i</i> | 12.91909  | +0.13430305 |          | −0.57532851 |          |
| <i>P</i> | 4.30       | <i>H</i> | 16.4      | <i>G</i>    | 0.15     | <i>U</i>    | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | 699 | 0.1+ | 1.6+ | 2005 04 02 | 699 | 0.6+ | 0.5− | 2005 05 13 | G96 | 0.1− | 0.2+ |
| 2005 03 11 | 699 | 0.5− | 0.2+ | 2005 04 06 | 644 | 0.7+ | 0.6+ | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 2005 03 11 | 699 | 0.3+ | 0.1+ | 2005 04 06 | 644 | 0.5+ | 0.3+ | 2007 09 12 | G96 | 0.4+ | 0.3+ |
| 2005 03 11 | 699 | 0.1− | 0.5− | 2005 04 06 | 644 | 0.7+ | 0.0  | 2007 09 12 | G96 | 0.2− | 0.1− |
| 2005 03 16 | 703 | 0.9− | 0.5− | 2005 05 11 | G96 | 0.4− | 0.2− | 2007 09 12 | G96 | 0.4− | 0.2− |
| 2005 03 16 | 703 | 0.1− | 0.5− | 2005 05 11 | G96 | 0.0  | 0.1− | 2007 10 09 | G96 | 0.2+ | 0.1+ |
| 2005 03 16 | 703 | 0.7− | 0.3− | 2005 05 11 | G96 | 0.0  | 0.2− | 2007 10 09 | G96 | 0.1+ | 0.1+ |
| 2005 03 16 | 703 | 0.7− | 0.7+ | 2005 05 11 | G96 | 0.1− | 0.0  | 2007 10 09 | G96 | 0.3− | 0.0  |
| 2005 04 02 | 699 | 0.3+ | 0.4− | 2005 05 13 | G96 | 0.2− | 0.3+ | 2007 10 09 | G96 | 0.2+ | 0.4− |
| 2005 04 02 | 699 | 0.3+ | 0.9− | 2005 05 13 | G96 | 0.3− | 0.1− |            |     |      |      |
| 2005 04 02 | 699 | 0.5+ | 0.0  | 2005 05 13 | G96 | 0.1+ | 0.1+ |            |     |      |      |

**2005 EA<sub>247</sub> = 2007 UM<sub>77</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.60230   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.23589678 | $\omega$ | 188.99529 | +0.94938180 |          | +0.29316552 |          |
| <i>a</i> | 2.5941080  | $\Omega$ | 153.10894 | −0.27046026 |          | +0.94554500 |          |
| <i>e</i> | 0.0945925  | <i>i</i> | 14.44419  | −0.15976682 |          | +0.14141649 |          |
| <i>P</i> | 4.18       | <i>H</i> | 16.0      | <i>G</i>    | 0.15     | <i>U</i>    | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 703 | 0.8− | 0.5− | 2007 10 15 | 703 | 0.0  | 0.7+ | 2007 11 11 | 703 | 0.6+ | 0.2+ |
| 2005 03 03 | 703 | 0.3+ | 0.5− | 2007 10 15 | 703 | 0.8+ | 0.1− | 2007 11 11 | 703 | 0.4+ | 0.5− |
| 2005 03 03 | 703 | 1.3− | 0.0  | 2007 10 15 | 703 | 0.5+ | 0.8+ | 2007 11 11 | 703 | 1.0− | 1.0− |
| 2005 03 03 | 703 | 0.3− | 1.3+ | 2007 10 15 | 703 | 0.8− | 1.1+ | 2007 11 11 | 703 | 0.6− | 0.2− |
| 2005 03 12 | 704 | 0.6+ | 0.4+ | 2007 10 31 | 703 | 0.6− | 0.4− | 2007 11 11 | 703 | 0.0  | 0.0  |
| 2005 03 12 | 704 | 1.1+ | 0.1− | 2007 10 31 | 703 | 0.4− | 0.1− | 2007 11 12 | 703 | 0.4− | 0.6− |
| 2005 03 12 | 704 | 1.3+ | 0.1+ | 2007 10 31 | 703 | 0.4− | 0.1− | 2007 11 12 | 703 | 0.6− | 0.4− |
| 2005 03 16 | 703 | 0.6− | 0.4− | 2007 10 31 | 703 | 0.3− | 0.8− | 2007 11 12 | 703 | 0.3+ | 0.6− |
| 2005 03 16 | 703 | 0.5− | 0.8+ | 2007 11 02 | 703 | 0.2+ | 0.0  | 2007 11 12 | 703 | 0.6+ | 0.7+ |
| 2005 03 16 | 703 | 1.2+ | 0.2+ | 2007 11 02 | 703 | 0.0  | 0.4− | 2007 11 18 | 703 | 0.2+ | 0.7+ |
| 2005 03 16 | 703 | 0.9− | 1.1− | 2007 11 02 | 703 | 1.4+ | 1.0− | 2007 11 18 | 703 | 0.6+ | 0.2− |
| 2007 09 11 | 703 | 0.4− | 0.0  | 2007 11 02 | 703 | 0.4− | 0.8− | 2007 11 18 | 703 | 0.5− | 0.1+ |
| 2007 09 11 | 703 | 0.5+ | 0.5+ | 2007 11 11 | 703 | 0.6+ | 1.2+ | 2007 11 18 | 703 | 0.0  | 0.0  |
| 2007 09 11 | 703 | 0.1+ | 1.4− | 2007 11 11 | 703 | 0.8− | 0.7+ |            |     |      |      |
| 2007 09 11 | 703 | 0.4+ | 1.1+ | 2007 11 11 | 703 | 0.2+ | 1.3+ |            |     |      |      |

**2005 EF<sub>251</sub> = 2003 UP<sub>377</sub> = 2007 TW<sub>267</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 297.10617  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.25891146 | $\omega$ | 268.87780 | −0.25772891 |          | −0.96607425 |          |
| <i>a</i> | 2.4380084  | $\Omega$ | 196.08714 | +0.90863602 |          | −0.23648321 |          |
| <i>e</i> | 0.1029556  | <i>i</i> | 3.43933   | +0.32856718 |          | −0.10380862 |          |
| <i>P</i> | 3.81       | <i>H</i> | 17.6      | <i>G</i>    | 0.15     | <i>U</i>    | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.1− | 0.1+ | 2005 03 10 | 703 | 0.6− | 0.3− | 2007 10 13 | 691 | 0.1− | 0.4+ |
| 2003 09 18 | 691 | 0.2+ | 0.1+ | 2005 03 10 | 703 | 0.6− | 0.3− | 2007 10 13 | 691 | 0.3− | 0.1− |
| 2003 09 18 | 691 | 0.1+ | 0.2+ | 2005 03 17 | G96 | 0.0  | 0.4− | 2007 10 13 | 691 | 0.1− | 0.1+ |
| 2003 10 18 | 645 | 0.1+ | 0.1− | 2005 03 17 | G96 | 0.1− | 0.0  | 2007 10 13 | 691 | 0.0  | 0.3+ |
| 2003 10 18 | 645 | 0.2+ | 0.1− | 2005 03 17 | G96 | 0.0  | 0.4− | 2007 10 13 | 691 | 0.0  | 0.2+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2005 03 17 | G96 | 0.2− | 0.4− | 2007 10 13 | 691 | 0.6− | 0.6+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2005 05 08 | G96 | 0.6+ | 0.5− | 2007 10 21 | 691 | 0.3+ | 0.2+ |
| 2003 10 22 | 645 | 0.0  | 0.1− | 2005 05 08 | G96 | 0.1− | 0.4− | 2007 10 21 | 691 | 0.1+ | 0.4+ |
| 2003 10 22 | 645 | 0.2− | 0.1− | 2005 05 08 | G96 | 0.8− | 0.0  | 2007 10 21 | 691 | 0.3+ | 0.7− |
| 2003 10 23 | 645 | 0.1− | 0.1− | 2005 05 08 | G96 | 0.2+ | 0.5− | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 2003 10 23 | 645 | 0.1+ | 0.1− | 2007 10 09 | 691 | 0.3− | 0.2+ | 2007 11 05 | G96 | 0.8+ | 0.3− |
| 2005 03 10 | 703 | 0.5+ | 0.2+ | 2007 10 09 | 691 | 0.1− | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 2005 03 10 | 703 | 0.2− | 1.3− | 2007 10 09 | 691 | 0.3− | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.3− |

**2005 EC<sub>260</sub> = 2005 GT<sub>216</sub> = 2007 WD<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 300.26074  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.26050204 | $\omega$ | 320.85450 | −0.63422196 |          | −0.77310150 |          |
| <i>a</i> | 2.4280743  | $\Omega$ | 168.49882 | +0.71991718 |          | −0.59464303 |          |
| <i>e</i> | 0.1364590  | <i>i</i> | 2.51534   | +0.28192509 |          | −0.22071189 |          |
| <i>P</i> | 3.78       | <i>H</i> | 17.2      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 07 | 691 | 0.2+ | 0.9− | 2003 09 28 | 691 | 0.0  | 0.4+ | 2005 04 11 | 691 | 0.1+ | 0.1− |
| 1996 12 07 | 691 | 0.0  | 0.0  | 2003 09 28 | 691 | 0.2− | 0.6+ | 2007 10 20 | G96 | 0.0  | 0.0  |
| 1996 12 07 | 691 | 0.3− | 0.2− | 2005 03 11 | 691 | 0.2+ | 0.3− | 2007 10 20 | G96 | 0.3− | 0.0  |
| 1999 09 18 | 691 | 0.1− | 0.0  | 2005 03 11 | 691 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.1− | 0.0  |
| 1999 09 18 | 691 | 0.1+ | 0.0  | 2005 03 11 | 691 | 0.1+ | 0.1− | 2007 10 20 | G96 | 0.1+ | 0.3+ |
| 1999 09 18 | 691 | 0.0  | 0.3− | 2005 03 17 | 691 | 0.1− | 0.0  | 2007 11 20 | G96 | 0.2+ | 0.1+ |
| 2000 12 23 | 645 | 0.0  | 0.1+ | 2005 03 17 | 691 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.0  | 0.1+ |
| 2000 12 23 | 645 | 0.0  | 0.0  | 2005 03 17 | 691 | 0.1− | 0.3+ | 2007 11 20 | G96 | 0.2− | 0.0  |

## M.P.O. 129730

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 02 | 699 | 0.9+ | 0.8+ | 2005 04 01 | 691 | 0.1− | 0.4+ | 2007 11 20 | G96 | 0.2− | 0.2− |
| 2001 03 02 | 699 | 0.9+ | 0.2− | 2005 04 01 | 691 | 0.2+ | 0.0  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2001 03 02 | 699 | 1.4− | 1.1− | 2005 04 01 | 691 | 0.1− | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2001 03 02 | 699 | 0.1− | 1.1+ | 2005 04 11 | 691 | 0.1− | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 2003 09 28 | 691 | 0.0  | 0.5+ | 2005 04 11 | 691 | 0.1− | 0.1− | 2007 11 21 | G96 | 0.0  | 0.1+ |

**2005 EC<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 224.55052  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
| <i>n</i> | 0.21682436 | $\omega$ | 117.72850 | −0.90414046 | −0.42051759 |          |          |
| <i>a</i> | 2.7440836  | $\Omega$ | 37.54200  | +0.33525116 | −0.80781513 |          |          |
| <i>e</i> | 0.1154343  | <i>i</i> | 7.11417   | +0.26483333 | −0.41303713 |          |          |
| <i>P</i> | 4.55       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 5        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 03 | 703 | 1.5− | 0.6+ | 2005 03 12 | 704 | 1.2+ | 0.7+ | 2005 05 11 | G96 | 0.0  | 0.3− |
| 2005 03 03 | 703 | 0.3+ | 1.7− | 2005 03 18 | 703 | 0.4− | 0.1+ | 2005 05 11 | G96 | 0.2− | 0.3− |
| 2005 03 03 | 703 | 0.0  | 0.3− | 2005 03 18 | 703 | 1.8− | 0.2+ | 2007 11 03 | G96 | 0.3+ | 0.3+ |
| 2005 03 03 | 703 | 1.2− | 0.6+ | 2005 03 18 | 703 | 0.2+ | 1.0+ | 2007 11 03 | G96 | 0.3− | 0.2− |
| 2005 03 12 | 704 | 0.4+ | 0.6− | 2005 03 18 | 703 | 0.3− | 0.1+ | 2007 11 03 | G96 | 0.1+ | 0.6− |
| 2005 03 12 | 704 | 1.5+ | 0.8− | 2005 05 11 | G96 | 0.4− | 0.2− | 2007 11 03 | G96 | 0.2+ | 0.0  |
| 2005 03 12 | 704 | 1.7+ | 0.4+ | 2005 05 11 | G96 | 0.2− | 0.1+ |            |     |      |      |

**2005 EW<sub>274</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 255.40947  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
| <i>n</i> | 0.27919603 | $\omega$ | 151.48161 | −0.99746964 | −0.06870452 |          |          |
| <i>a</i> | 2.3184437  | $\Omega$ | 24.59907  | +0.05398952 | −0.89928456 |          |          |
| <i>e</i> | 0.1114278  | <i>i</i> | 2.51632   | +0.04625414 | −0.43193399 |          |          |
| <i>P</i> | 3.53       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 17 | 291 | 0.0  | 0.1− | 2005 03 08 | 699 | 0.2+  | 0.2−  | 2005 04 11 | G96 | 0.0  | 0.3+ |
| 2003 10 17 | 291 | 0.1− | 0.2+ | 2005 03 09 | 704 | 1.0+  | 0.1+  | 2005 04 11 | G96 | 0.4+ | 0.1− |
| 2003 10 17 | 291 | 0.0  | 0.1+ | 2005 03 09 | 704 | (0.3+ | 2.6−) | 2005 04 11 | G96 | 0.3− | 0.3− |
| 2005 02 09 | 691 | 0.2+ | 0.2− | 2005 03 09 | 704 | 0.3−  | 0.6+  | 2005 04 11 | G96 | 0.2+ | 0.3− |
| 2005 02 09 | 691 | 0.1+ | 0.1− | 2005 03 09 | 704 | 1.2+  | 0.2+  | 2007 11 17 | 691 | 0.0  | 0.3− |
| 2005 02 09 | 691 | 0.1+ | 0.2− | 2005 03 16 | G96 | 0.6−  | 0.4−  | 2007 11 17 | 691 | 0.0  | 0.0  |
| 2005 03 08 | 699 | 0.1− | 0.0  | 2005 03 16 | G96 | 0.4−  | 0.0   | 2007 11 17 | 691 | 0.1− | 0.2+ |
| 2005 03 08 | 699 | 0.8− | 0.8+ | 2005 03 16 | G96 | 0.3−  | 0.0   |            |     |      |      |
| 2005 03 08 | 699 | 1.0− | 1.9+ | 2005 03 16 | G96 | 0.2−  | 0.2−  |            |     |      |      |

**2005 EO<sub>278</sub> = 2005 GO<sub>211</sub>**Id. Minor Planet Center (d, *MPO* 102379)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 127.92921  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
| <i>n</i> | 0.20273354 | $\omega$ | 253.95887 | +0.08373891 | +0.99196722 |          |          |
| <i>a</i> | 2.8698045  | $\Omega$ | 21.53333  | −0.78668679 | +0.12420795 |          |          |
| <i>e</i> | 0.1297625  | <i>i</i> | 14.96959  | −0.61164670 | −0.02394601 |          |          |
| <i>P</i> | 4.86       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 05 | 645 | 0.1− | 0.0  | 2005 04 02 | G96 | 0.0   | 0.0   | 2005 04 11 | G96 | 0.4− | 0.3− |
| 2000 05 05 | 645 | 0.1+ | 0.0  | 2005 04 09 | G96 | 0.5−  | 0.1+  | 2005 04 11 | G96 | 0.3− | 0.2− |
| 2005 03 09 | G96 | 0.4− | 0.0  | 2005 04 09 | G96 | 1.0−  | 0.9+  | 2005 04 11 | G96 | 0.5− | 0.0  |
| 2005 03 09 | G96 | 0.2− | 0.2− | 2005 04 09 | G96 | 0.3−  | 0.0   | 2005 04 11 | G96 | 0.4− | 0.0  |
| 2005 03 09 | G96 | 0.9− | 0.5− | 2005 04 09 | G96 | (0.1+ | 2.1+) | 2007 11 20 | G96 | 0.9+ | 0.4+ |
| 2005 03 09 | G96 | 0.3+ | 0.1− | 2005 04 10 | G96 | 0.2−  | 0.1−  | 2007 11 20 | G96 | 0.9− | 0.3+ |
| 2005 03 17 | 691 | 0.4+ | 0.1+ | 2005 04 10 | G96 | 0.2−  | 0.1−  | 2007 11 20 | G96 | 0.5+ | 0.5+ |
| 2005 03 17 | 691 | 0.3+ | 0.3+ | 2005 04 10 | G96 | 0.3−  | 0.1+  | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2005 03 17 | 691 | 0.0  | 0.2− | 2005 04 10 | G96 | 0.3−  | 0.1−  | 2007 11 21 | G96 | 0.4− | 0.6− |
| 2005 04 02 | G96 | 0.3+ | 0.3− | 2005 04 11 | 691 | 0.2+  | 0.0   | 2007 11 21 | G96 | 0.1+ | 0.3− |
| 2005 04 02 | G96 | 0.2− | 0.1+ | 2005 04 11 | 691 | 0.3+  | 0.1+  | 2007 11 21 | G96 | 0.3− | 0.2− |
| 2005 04 02 | G96 | 0.3− | 0.2− | 2005 04 11 | 691 | 0.3+  | 0.0   | 2007 11 21 | G96 | 0.2− | 0.2− |

## 2007 DEC. 24

**2005 EG<sub>290</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 119.46651  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
| <i>n</i> | 0.21115896 | $\omega$ | 261.25397 | +0.30789513 | +0.94602880 |          |          |
| <i>a</i> | 2.7929492  | $\Omega$ | 27.35065  | −0.76322466 | +0.30906501 |          |          |
| <i>e</i> | 0.0761950  | <i>i</i> | 12.71776  | −0.56805697 | +0.09751068 |          |          |
| <i>P</i> | 4.67       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 599 | 0.6− | 0.3− | 2005 04 04 | G96 | 0.4− | 0.0  | 2005 04 09 | 691 | 0.1+ | 0.1+ |
| 2002 10 04 | 599 | 0.3− | 0.2+ | 2005 04 04 | G96 | 0.3− | 0.2− | 2005 04 11 | 691 | 0.1+ | 0.3+ |
| 2002 10 04 | 599 | 0.5+ | 0.6+ | 2005 04 05 | G96 | 0.6− | 0.5− | 2005 04 11 | 691 | 0.3+ | 0.3+ |
| 2005 03 09 | G96 | 0.3− | 0.1− | 2005 04 05 | G96 | 0.3− | 0.1− | 2005 04 11 | 691 | 0.3+ | 0.2+ |
| 2005 03 09 | G96 | 0.4− | 0.1+ | 2005 04 05 | G96 | 0.3− | 0.3− | 2005 05 12 | G96 | 0.7− | 0.1+ |
| 2005 03 09 | G96 | 0.5− | 0.1− | 2005 04 05 | G96 | 0.1− | 0.2− | 2005 05 12 | G96 | 0.4− | 0.3− |
| 2005 03 09 | G96 | 0.7+ | 0.4− | 2005 04 05 | G96 | 0.3− | 0.0  | 2005 05 12 | G96 | 0.6− | 0.0  |
| 2005 03 17 | 691 | 0.0  | 0.1+ | 2005 04 05 | G96 | 0.4− | 0.4− | 2005 05 12 | G96 | 0.6− | 0.4− |
| 2005 03 17 | 691 | 0.2− | 0.1− | 2005 04 05 | G96 | 0.3− | 0.2− | 2007 11 15 | G96 | 0.0  | 0.1+ |
| 2005 03 17 | 691 | 0.2+ | 0.4− | 2005 04 05 | G96 | 0.5− | 0.0  | 2007 11 15 | G96 | 0.0  | 0.1+ |
| 2005 04 04 | G96 | 1.6+ | 0.6− | 2005 04 09 | 691 | 0.1+ | 0.1+ | 2007 11 15 | G96 | 0.0  | 0.2− |
| 2005 04 04 | G96 | 0.6− | 0.0  | 2005 04 09 | 691 | 0.4+ | 0.3+ | 2007 11 15 | G96 | 0.0  | 0.1+ |

**2005 EY<sub>290</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 166.31569  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
| <i>n</i> | 0.21545142 | $\omega$ | 152.90146 | −0.56438712 | +0.81444586 |          |          |
| <i>a</i> | 2.7557288  | $\Omega$ | 82.44759  | −0.77988020 | −0.47254459 |          |          |
| <i>e</i> | 0.1575678  | <i>i</i> | 7.80966   | −0.27065486 | −0.33671881 |          |          |
| <i>P</i> | 4.57       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 645 | 0.0   | 0.0   | 2005 03 30 | 703 | 0.6+ | 0.5+ | 2006 08 20 | 644 | 0.6− | 0.1+ |
| 2002 09 05 | 645 | 0.0   | 0.0   | 2005 03 30 | 703 | 0.3− | 0.3+ | 2006 08 20 | 644 | 0.1+ | 0.1+ |
| 2005 03 10 | 703 | 0.5+  | 0.4−  | 2005 03 30 | 703 | 1.1+ | 0.5+ | 2006 08 20 | 644 | 0.1+ | 0.4+ |
| 2005 03 10 | 703 | 0.6+  | 0.6−  | 2005 04 06 | 703 | 0.9− | 1.1+ | 2007 10 10 | G96 | 0.1− | 0.1+ |
| 2005 03 10 | 703 | 0.4+  | 0.3−  | 2005 04 06 | 703 | 0.0  | 0.3+ | 2007 10 10 | G96 | 0.5+ | 0.5+ |
| 2005 03 10 | 703 | 0.6+  | 0.8−  | 2005 04 06 | 703 | 1.1− | 0.3− | 2007 10 10 | G96 | 0.2+ | 0.1+ |
| 2005 03 16 | 703 | (2.5+ | 2.6−) | 2005 04 06 | 703 | 0.0  | 0.3− | 2007 10 10 | G96 | 0.4+ | 0.0  |
| 2005 03 16 | 703 | 0.2+  | 0.6−  | 2005 04 16 | 703 | 0.4− | 0.1+ | 2007 11 08 | G96 | 0.3+ | 0.3+ |
| 2005 03 16 | 703 | 0.3+  | 0.5+  | 2005 04 16 | 703 | 0.6− | 0.2+ | 2007 11 08 | G96 | 0.6− | 0.1+ |
| 2005 03 16 | 703 | 0.1+  | 0.1−  | 2005 04 16 | 703 | 1.0+ | 0.9+ | 2007 11 08 | G96 | 0.5− | 0.3− |
| 2005 03 30 | 703 | 0.8−  | 0.5+  | 2005 04 16 | 703 | 0.6− | 0.2+ | 2007 11 08 | G96 | 0.3− | 0.1− |

**2005 ET<sub>304</sub> = 2007 TM<sub>215</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |          |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>M</i> | 161.93748  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
| <i>n</i> | 0.18924962 | $\omega$ | 216.57573 | −0.49331239 | +0.86656265 |          |          |
| <i>a</i> | 3.0045496  | $\Omega$ | 24.14183  | −0.74785310 | −0.37814553 |          |          |
| <i>e</i> | 0.0719829  | <i>i</i> | 10.64885  | −0.44425064 | −0.32569177 |          |          |
| <i>P</i> | 5.21       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | 695 | 0.2+ | 0.1− | 2007 10 07 | 691 | 0.0  | 0.3− | 2007 10 15 | 691 | 0.1− | 0.2+ |
| 2005 03 11 | 695 | 0.3+ | 0.0  | 2007 10 07 | 691 | 0.3− | 0.1− | 2007 10 15 | 691 | 0.1− | 0.1+ |
| 2005 03 12 | 695 | 0.3+ | 0.1− | 2007 10 07 | 691 | 0.1+ | 0.2+ | 2007 11 02 | 691 | 0.0  | 0.0  |
| 2005 03 14 | G96 | 0.1+ | 0.5+ | 2007 10 11 | 691 | 0.3+ | 0.1+ | 2007 11 02 | 691 | 0.1− | 0.0  |
| 2005 03 14 | G96 | 0.1+ | 0.1+ | 2007 10 11 | 691 | 0.2− | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.1− |
| 2005 03 14 | G96 | 0.3− | 0.2− | 2007 10 11 | 691 | 0.1− | 0.0  |            |     |      |      |
| 2005 03 14 | G96 | 0.6− | 0.1+ | 2007 10 15 | 691 | 0.4+ | 0.0  |            |     |      |      |



2007 DEC. 24

M.P.O. 129731

**2005 EO<sub>306</sub> = 2007 VM<sub>245</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 242.63868  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27357862 | $\omega$ | 8.53415   | −0.99993360 |          |          | +0.01077790 |
| <i>a</i> | 2.3500726  | $\Omega$ | 172.07997 | −0.01152216 |          |          | −0.92868105 |
| <i>e</i> | 0.0782665  | <i>i</i> | 1.69646   | −0.00020708 |          |          | −0.37072274 |
| <i>P</i> | 3.60       | <i>H</i> | 17.1      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 17 | 691 | 0.2+ | 0.1+ | 2005 03 08 | 704 | 1.3+ | 0.1− | 2007 10 15 | G96 | 0.0  | 0.3− |
| 1999 08 17 | 691 | 0.0  | 0.4+ | 2005 03 08 | G96 | 0.4− | 0.1+ | 2007 10 15 | G96 | 0.2− | 0.4− |
| 1999 08 17 | 691 | 0.1+ | 0.1− | 2005 03 08 | G96 | 0.5− | 0.0  | 2007 10 15 | G96 | 0.2− | 0.3− |
| 2003 09 30 | 691 | 0.0  | 0.2+ | 2005 03 08 | G96 | 0.3− | 0.1− | 2007 11 14 | 300 | 0.3+ | 0.4− |
| 2003 09 30 | 691 | 0.2− | 0.0  | 2005 03 11 | 695 | 0.4− | 0.3+ | 2007 11 14 | 300 | 0.0  | 0.0  |
| 2003 09 30 | 691 | 0.2+ | 0.1+ | 2005 03 11 | 695 | 0.5− | 0.2+ | 2007 11 14 | 300 | 0.6+ | 0.0  |
| 2003 10 19 | 691 | 0.2+ | 0.2− | 2006 05 26 | G96 | 0.1− | 0.3+ | 2007 11 14 | 300 | 0.2+ | 0.1− |
| 2003 10 19 | 691 | 0.2− | 0.0  | 2006 05 26 | G96 | 0.1+ | 0.6+ | 2007 11 14 | 300 | 0.3+ | 1.0− |
| 2003 10 19 | 691 | 0.6− | 0.2− | 2006 05 26 | G96 | 0.6− | 0.6+ | 2007 11 18 | 300 | 0.2+ | 0.6+ |
| 2005 02 09 | 699 | 2.0+ | 2.1+ | 2006 05 26 | G96 | 0.4− | 0.4+ | 2007 11 18 | 300 | 0.8+ | 0.3+ |
| 2005 02 09 | 699 | 0.8+ | 1.1+ | 2006 06 22 | 691 | 0.1− | 0.9+ | 2007 11 18 | 300 | 0.1− | 0.7+ |
| 2005 02 09 | 699 | 1.9+ | 0.5+ | 2006 06 22 | 691 | 0.2− | 0.6+ | 2007 11 18 | 300 | 0.0  | 0.3+ |
| 2005 02 09 | 699 | 1.5− | 0.7+ | 2006 06 22 | 691 | 0.1− | 0.2+ | 2007 11 18 | 300 | 0.4− | 0.1− |
| 2005 03 08 | 704 | 1.1− | 0.2− | 2007 09 15 | G96 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.0  | 1.9+ |
| 2005 03 08 | 704 | 0.8+ | 1.0+ | 2007 09 15 | G96 | 0.3+ | 0.3− | 2007 12 05 | 704 | 0.4+ | 1.3+ |
| 2005 03 08 | 704 | 0.3+ | 0.5+ | 2007 09 15 | G96 | 0.2+ | 0.2+ | 2007 12 05 | 704 | 1.4− | 0.3+ |
| 2005 03 08 | 704 | 0.5+ | 0.7+ | 2007 09 15 | G96 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.0  | 1.4+ |
| 2005 03 08 | G96 | 0.8− | 0.1+ | 2007 10 15 | G96 | 0.4− | 0.0  |            |     |      |      |

**2005 FE<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 288.33113  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.32071186 | $\omega$ | 144.95115 | −0.54973150 |          |          | +0.80399690 |
| <i>a</i> | 2.1137780  | $\Omega$ | 90.66868  | −0.80883109 |          |          | −0.44449068 |
| <i>e</i> | 0.5339149  | <i>i</i> | 13.10265  | −0.20877633 |          |          | −0.39498989 |
| <i>P</i> | 3.07       | <i>H</i> | 19.4      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 23 | 704 | 0.4+ | 1.0+ | 2005 03 29 | A83 | 0.1+ | 0.4− | 2005 04 30 | 734 | 0.1+ | 0.2− |
| 2005 03 23 | 704 | 0.5− | 0.1+ | 2005 03 29 | A83 | 0.1+ | 0.3− | 2005 04 30 | 734 | 0.3+ | 0.0  |
| 2005 03 23 | 704 | 0.9− | 0.5+ | 2005 03 29 | A83 | 0.7+ | 0.3− | 2005 04 30 | 734 | 0.5+ | 0.6− |
| 2005 03 23 | 704 | 0.1+ | 0.2− | 2005 04 01 | 461 | 0.4− | 0.3+ | 2005 05 25 | 198 | 0.0  | 0.3+ |
| 2005 03 24 | J95 | 0.1+ | 1.3− | 2005 04 01 | 461 | 0.3− | 0.4+ | 2005 05 25 | 198 | 0.1+ | 0.2+ |
| 2005 03 24 | J95 | 0.0  | 0.4+ | 2005 04 01 | 461 | 0.5− | 0.2+ | 2005 05 25 | 198 | 0.1+ | 0.2+ |
| 2005 03 24 | J95 | 1.0− | 1.4+ | 2005 04 04 | 106 | 1.2− | 0.3− | 2005 05 25 | 198 | 0.1+ | 0.2+ |
| 2005 03 25 | H06 | 1.5+ | 0.6+ | 2005 04 04 | 106 | 0.6+ | 0.2+ | 2005 05 25 | 198 | 0.2+ | 0.5+ |
| 2005 03 25 | H06 | 0.6− | 0.6+ | 2005 04 04 | 106 | 0.1+ | 0.0  | 2005 06 18 | G96 | 0.2− | 0.1− |
| 2005 03 25 | H06 | 0.4+ | 0.3+ | 2005 04 06 | 106 | 0.3− | 0.1+ | 2005 06 18 | G96 | 0.1− | 0.1− |
| 2005 03 25 | J95 | 0.3+ | 0.1− | 2005 04 06 | 106 | 0.3+ | 0.2+ | 2005 06 18 | G96 | 0.1− | 0.0  |
| 2005 03 25 | J95 | 0.2+ | 1.1− | 2005 04 06 | 106 | 0.1− | 0.4+ | 2005 06 18 | G96 | 0.3− | 0.0  |
| 2005 03 25 | J95 | 0.5+ | 0.1+ | 2005 04 19 | F65 | 0.1− | 0.1+ | 2007 12 15 | 291 | 1.1− | 0.5− |
| 2005 03 29 | A83 | 0.8− | 0.6− | 2005 04 19 | F65 | 0.1+ | 0.1+ | 2007 12 15 | 291 | 1.1+ | 0.6+ |
| 2005 03 29 | A83 | 0.1− | 0.2− | 2005 04 30 | 734 | 0.1+ | 0.3− | 2007 12 15 | 291 | 0.1+ | 0.5+ |

**2005 GD<sub>6</sub> = 2007 VF<sub>249</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.92671  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.22488569 | $\omega$ | 258.96758 | −0.00000102 |          |          | −0.99890580 |
| <i>a</i> | 2.6781085  | $\Omega$ | 191.34954 | +0.98495736 |          |          | +0.00808029 |
| <i>e</i> | 0.0651035  | <i>i</i> | 13.74769  | +0.17279759 |          |          | −0.04606411 |
| <i>P</i> | 4.38       | <i>H</i> | 16.6      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 04 | 645 | 0.0  | 0.1− | 2005 04 18 | 691 | 0.1+ | 0.3− | 2007 11 15 | G96 | 0.2− | 0.2+ |
| 2000 03 04 | 645 | 0.0  | 0.1− | 2005 04 18 | 691 | 0.5+ | 0.3− | 2007 11 15 | G96 | 0.3− | 0.1+ |
| 2005 04 01 | 691 | 0.4− | 0.2+ | 2007 10 20 | G96 | 0.3+ | 0.3+ | 2007 11 15 | G96 | 0.4− | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 01 | 691 | 0.2− | 0.3+ | 2007 10 20 | G96 | 0.1+ | 0.4+ | 2007 11 15 | G96 | 0.2− | 0.1+ |
| 2005 04 01 | 691 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.6+ | 0.2+ | 2007 11 15 | G96 | 0.0  | 0.2+ |
| 2005 04 02 | 691 | 0.1− | 0.3+ | 2007 11 14 | G96 | 0.1+ | 0.4− | 2007 11 15 | G96 | 0.4+ | 0.2− |
| 2005 04 02 | 691 | 0.2+ | 0.1+ | 2007 11 14 | G96 | 0.0  | 0.1− | 2007 11 15 | G96 | 0.1− | 0.1+ |
| 2005 04 02 | 691 | 0.0  | 0.0  | 2007 11 14 | G96 | 0.1− | 0.4− | 2007 11 15 | G96 | 0.1− | 0.1+ |
| 2005 04 18 | 691 | 0.3− | 0.2+ | 2007 11 14 | G96 | 0.1− | 0.1− |            |     |      |      |

**2005 GU<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 306.99092  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.29513557 | $\omega$ | 19.86558  | −0.93749351 |          |          | −0.33514924 |
| <i>a</i> | 2.2341981  | $\Omega$ | 140.15826 | +0.29624259 |          |          | −0.90987454 |
| <i>e</i> | 0.1609313  | <i>i</i> | 8.41045   | +0.18260956 |          |          | −0.24454716 |
| <i>P</i> | 3.34       | <i>H</i> | 16.6      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 08 | 599 | 0.3− | 0.3− | 2005 04 04 | 703 | 0.0  | 0.0  | 2005 05 13 | 704 | 1.6+ | 0.2+ |
| 2005 01 08 | 599 | 1.1+ | 0.3− | 2005 04 04 | 703 | 0.5− | 0.8− | 2005 05 18 | 644 | 0.4+ | 0.0  |
| 2005 01 08 | 599 | 0.0  | 0.1+ | 2005 04 13 | 703 | 0.1− | 0.1− | 2005 05 18 | 644 | 0.2+ | 0.2− |
| 2005 01 08 | 599 | 0.1− | 0.0  | 2005 04 13 | 703 | 1.2− | 0.4− | 2005 05 18 | 644 | 0.1+ | 0.1+ |
| 2005 04 01 | 699 | 1.5− | 0.4− | 2005 04 13 | 703 | 0.1+ | 0.0  | 2006 09 14 | 703 | 1.0− | 0.2+ |
| 2005 04 01 | 699 | 0.9− | 0.1− | 2005 04 13 | 703 | 0.2− | 0.4− | 2006 09 14 | 703 | 0.6+ | 0.6+ |
| 2005 04 01 | 699 | 0.6− | 0.4+ | 2005 04 18 | 704 | 0.7− | 0.2+ | 2006 09 14 | 703 | 1.2+ | 1.5− |
| 2005 04 01 | 699 | 1.1− | 0.1+ | 2005 04 18 | 704 | 0.9+ | 0.2+ | 2006 09 14 | 703 | 1.0− | 0.7+ |
| 2005 04 03 | 644 | 0.1+ | 0.1− | 2005 04 18 | 704 | 0.7+ | 0.9+ | 2007 12 04 | 704 | 0.2+ | 0.4− |
| 2005 04 03 | 644 | 0.4+ | 0.1− | 2005 04 18 | 704 | 0.5+ | 0.5+ | 2007 12 04 | 704 | 0.2+ | 1.0+ |
| 2005 04 03 | 644 | 0.4+ | 0.0  | 2005 04 18 | 704 | 0.4+ | 0.9+ | 2007 12 04 | 704 | 0.2− | 0.5+ |
| 2005 04 04 | 703 | 0.3− | 0.3− | 2005 05 13 | 704 | 1.8+ | 0.1+ | 2007 12 04 | 704 | 0.1− | 0.4− |
| 2005 04 04 | 703 | 0.8− | 0.1− | 2005 05 13 | 704 | 0.5+ | 0.5− |            |     |      |      |

**2005 GA<sub>10</sub> = 2007 UH<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 177.57649  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21921834 | $\omega$ | 0.44557   | −0.70765189 |          |          | +0.62747899 |
| <i>a</i> | 2.7240692  | $\Omega$ | 224.56048 | −0.64968081 |          |          | −0.75856231 |
| <i>e</i> | 0.2439434  | <i>i</i> | 27.57502  | −0.27774747 |          |          | +0.17565121 |
| <i>P</i> | 4.50       | <i>H</i> | 16.3      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 01 | E12 | 0.2+ | 0.8− | 2005 04 06 | 413 | 0.1+ | 0.3+ | 2007 11 04 | 691 | 0.4+ | 0.1+ |
| 2005 04 01 | E12 | 0.5+ | 0.1+ | 2007 10 11 | 691 | 0.6− | 0.2− | 2007 11 04 | 691 | 0.3+ | 0.0  |
| 2005 04 01 | E12 | 0.4+ | 1.6+ | 2007 10 11 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.1− | 0.3+ |
| 2005 04 01 | E12 | 0.2+ | 0.7− | 2007 10 11 | 691 | 0.2− | 0.0  | 2007 11 09 | G96 | 0.2+ | 0.4− |
| 2005 04 02 | 413 | 0.4− | 0.3− | 2007 10 30 | G96 | 0.7+ | 0.1− | 2007 11 09 | G96 | 0.1+ | 0.2− |
| 2005 04 02 | 413 | 0.4− | 0.3− | 2007 10 30 | G96 | 0.7+ | 0.1− | 2007 11 09 | G96 | 0.0  | 0.2− |
| 2005 04 03 | 413 | 0.3− | 0.1− | 2007 10 30 | G96 | 0.7+ | 0.3+ | 2007 11 09 | G96 | 0.0  | 0.2− |
| 2005 04 03 | 413 | 0.2− | 0.2− | 2007 10 30 | G96 | 0.6+ | 0.3− | 2007 11 17 | G96 | 0.6− | 0.0  |
| 2005 04 03 | 413 | 0.2− | 0.0  | 2007 10 31 | 691 | 0.1+ | 0.1+ | 2007 11 17 | G96 | 0.4− | 0.9− |
| 2005 04 06 | 413 | 0.1+ | 0.3+ | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 11 17 | G96 | 0.2− | 0.1− |
| 2005 04 06 | 413 | 0.1+ | 0.3+ | 2007 10 31 | 691 | 0.3− | 0.2+ | 2007 11 17 | G96 | 0.1+ | 0.1+ |

**2005 GV<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 127.41081  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17790446 | $\omega$ | 229.21745 | −0.26059359 |          |          | +0.95737928 |
| <i>a</i> | 3.1309646  | $\Omega$ | 26.47371  | −0.78008930 |          |          | −0.13278613 |
| <i>e</i> | 0.1781178  | <i>i</i> | 16.22572  | −0.56881602 |          |          | −0.25650098 |
| <i>P</i> | 5.54       | <i>H</i> | 15.6      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 01 | 691 | 0.2+ | 0.0  | 2005 04 11 | 691 | 0.0  | 0.2− | 2005 04 18 | 691 | 0.1− | 0.0  |
| 2005 04 01 | 691 | 0.1+ | 0.0  | 2005 04 11 | 691 | 0.1− | 0.0  | 2005 05 12 | G96 | 0.2− | 0.1+ |
| 2005 04 01 | 691 | 0.1+ | 0.2− | 2005 04 11 | 699 | 1.2+ | 0.1+ | 2005 05 12 | G96 | 0.6− | 0.0  |
| 2005 04 04 | G96 | 0.8− | 0.2− | 2005 04 11 | 699 | 0.4+ | 0.0  | 2005 05 12 | G96 | 0.6− | 0.1+ |
| 2005 04 04 | G96 | 0.2− | 0.4− | 2005 04 11 | 699 | 0.6+ | 0.9+ | 2005 05 12 | G96 | 0.5− | 0.0  |

|                |        |        |                |       |       |                |      |      |
|----------------|--------|--------|----------------|-------|-------|----------------|------|------|
| 2005 04 04 G96 | 0.2−   | 0.3−   | 2005 04 11 699 | 0.7+  | 0.4−  | 2007 09 15 G96 | 1.2+ | 0.1− |
| 2005 04 04 G96 | 0.3−   | 0.3−   | 2005 04 12 704 | 0.9+  | 1.0−  | 2007 09 15 G96 | 0.6+ | 0.4− |
| 2005 04 04 704 | (0.6+) | (1.6+) | 2005 04 12 704 | 0.4−  | 0.7+  | 2007 09 15 G96 | 0.8+ | 0.3− |
| 2005 04 04 704 | 1.0+   | 1.2+   | 2005 04 12 704 | 1.0+  | 0.3+  | 2007 09 15 G96 | 0.8+ | 0.5− |
| 2005 04 04 704 | 0.2+   | 0.4+   | 2005 04 12 704 | (0.5− | 1.7−) | 2007 10 09 691 | 0.0  | 0.2+ |
| 2005 04 05 G96 | 0.7−   | 0.1+   | 2005 04 12 704 | 0.1−  | 0.8−  | 2007 10 09 691 | 0.4− | 0.2− |
| 2005 04 05 G96 | 0.8−   | 0.0    | 2005 04 15 699 | 0.6+  | 0.2−  | 2007 10 09 691 | 0.6− | 0.3+ |
| 2005 04 05 G96 | 0.9−   | 0.1+   | 2005 04 15 699 | 0.7−  | 0.0   | 2007 11 08 G96 | 0.1+ | 0.2− |
| 2005 04 05 G96 | 0.9−   | 0.1−   | 2005 04 15 699 | 0.6+  | 0.9+  | 2007 11 08 G96 | 0.5+ | 0.1− |
| 2005 04 10 695 | 0.1−   | 0.0    | 2005 04 15 699 | 0.4−  | 0.0   | 2007 11 08 G96 | 0.4+ | 0.2− |
| 2005 04 10 695 | 0.1−   | 0.1+   | 2005 04 18 691 | 0.1−  | 0.3+  | 2007 11 08 G96 | 0.5+ | 0.0  |
| 2005 04 11 691 | 0.1+   | 0.2−   | 2005 04 18 691 | 0.4+  | 0.1−  |                |      |      |

**2005 GW<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 208.05987  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18350929 | $\omega$ | 323.81610 | −0.82762288 | −0.56124751 |
| $a$ | 3.0668840  | $\Omega$ | 182.07414 | +0.54768925 | −0.80500941 |
| $e$ | 0.0349065  | $i$      | 10.26465  | +0.12278782 | −0.19225266 |
| $P$ | 5.37       | $H$      | 15.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 10 30 645 | 0.0  | 0.1− | 2005 04 02 G96 | 0.4− | 0.2+ | 2005 04 05 G96 | 0.1− | 0.1− |
| 2002 10 30 645 | 0.1+ | 0.1− | 2005 04 02 G96 | 0.7− | 0.2+ | 2005 05 09 G96 | 0.0  | 0.1− |
| 2004 01 16 691 | 0.1− | 0.0  | 2005 04 02 G96 | 0.0  | 0.3− | 2005 05 09 G96 | 0.3− | 0.3− |
| 2004 01 16 691 | 0.2+ | 0.1− | 2005 04 02 G96 | 0.1− | 0.1− | 2005 05 09 G96 | 0.0  | 0.1− |
| 2004 01 16 691 | 0.2− | 0.0  | 2005 04 04 G96 | 0.1+ | 0.2− | 2005 05 09 G96 | 0.0  | 0.1+ |
| 2005 03 01 691 | 0.7+ | 0.1− | 2005 04 04 G96 | 0.2− | 0.0  | 2007 09 04 G96 | 0.0  | 0.2+ |
| 2005 03 01 691 | 0.3+ | 0.3+ | 2005 04 04 G96 | 0.0  | 0.1− | 2007 09 04 G96 | 0.1− | 0.5− |
| 2005 03 01 691 | 0.5+ | 0.2+ | 2005 04 04 G96 | 0.1− | 0.1− | 2007 09 04 G96 | 0.2+ | 0.2+ |
| 2005 03 17 691 | 0.2+ | 0.1+ | 2005 04 04 G96 | 0.2+ | 0.1+ | 2007 09 04 G96 | 0.0  | 0.4+ |
| 2005 03 17 691 | 0.4+ | 0.0  | 2005 04 04 G96 | 0.0  | 0.0  | 2007 10 09 691 | 0.1+ | 0.2− |
| 2005 03 17 691 | 0.2+ | 0.5+ | 2005 04 04 G96 | 0.1− | 0.0  | 2007 10 09 691 | 0.3+ | 0.1− |
| 2005 04 02 G96 | 0.3− | 0.8− | 2005 04 04 G96 | 0.1− | 0.0  | 2007 10 09 691 | 0.0  | 0.2− |
| 2005 04 02 G96 | 0.1− | 0.1+ | 2005 04 05 G96 | 0.0  | 0.2− | 2007 10 09 691 | 0.4− | 0.1+ |
| 2005 04 02 G96 | 0.3− | 0.2+ | 2005 04 05 G96 | 0.2+ | 0.3+ | 2007 10 09 691 | 0.2− | 0.0  |
| 2005 04 02 G96 | 0.1− | 0.4− | 2005 04 05 G96 | 0.1− | 0.2+ | 2007 10 09 691 | 0.0  | 0.1+ |

**2005 GW<sub>18</sub> = 2007 TG<sub>233</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 27.73191   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22730914 | $\omega$ | 197.92059 | +0.97882668 | −0.20466176 |
| $a$ | 2.6590395  | $\Omega$ | 173.88600 | +0.19153945 | +0.90986763 |
| $e$ | 0.1037799  | $i$      | 1.85490   | +0.07218700 | +0.36090782 |
| $P$ | 4.34       | $H$      | 17.1      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2005 04 02 G96 | 0.6− | 0.4− | 2007 09 18 G96 | 0.1+  | 0.3−  | 2007 11 14 704 | 0.4−  | 0.8+  |
| 2005 04 02 G96 | 0.1+ | 0.2− | 2007 09 18 G96 | 0.3−  | 0.3−  | 2007 11 14 704 | 0.0   | 0.4+  |
| 2005 04 02 G96 | 0.1− | 0.2− | 2007 10 08 691 | 0.5+  | 0.1−  | 2007 11 14 704 | (0.2− | 1.9+) |
| 2005 04 02 G96 | 0.6− | 0.5+ | 2007 10 08 691 | 0.3−  | 0.1−  | 2007 11 15 704 | 1.4+  | 0.5+  |
| 2005 04 04 G96 | 0.6+ | 0.2− | 2007 10 08 691 | 0.0   | 0.1+  | 2007 11 15 704 | 0.7+  | 0.1+  |
| 2005 04 04 G96 | 0.2− | 0.0  | 2007 10 12 691 | 0.1+  | 0.1+  | 2007 11 15 704 | 0.3+  | 0.7+  |
| 2005 04 04 G96 | 0.1+ | 0.1− | 2007 10 12 691 | 0.2+  | 0.4−  | 2007 11 15 704 | 0.9+  | 0.8+  |
| 2005 04 04 G96 | 0.4− | 0.3− | 2007 10 12 691 | 0.1−  | 0.1−  | 2007 12 05 691 | 0.0   | 0.3−  |
| 2005 04 12 695 | 0.6+ | 0.1+ | 2007 11 03 691 | 0.1−  | 0.1−  | 2007 12 05 691 | 0.2−  | 0.2+  |
| 2005 04 12 695 | 0.2+ | 0.2+ | 2007 11 03 691 | 0.1−  | 0.0   | 2007 12 05 691 | 0.1−  | 0.0   |
| 2007 09 18 G96 | 0.4− | 0.3− | 2007 11 03 691 | 0.4−  | 0.1−  |                |       |       |
| 2007 09 18 G96 | 0.1− | 0.2+ | 2007 11 14 704 | (1.2+ | 2.3+) |                |       |       |

**2005 GS<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 192.86626  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22526164 | $\omega$ | 182.73498 | −0.66656522 | +0.72482422 |
| $a$ | 2.6751280  | $\Omega$ | 45.54155  | −0.67922013 | −0.49429277 |
| $e$ | 0.1256470  | $i$      | 14.12036  | −0.30716578 | −0.47990052 |
| $P$ | 4.38       | $H$      | 15.9      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 1998 11 18 950 | 0.5−  | 0.3+  | 2005 04 07 691 | 0.0   | 0.1+  | 2005 04 13 704 | 0.6−  | 0.4+  |
| 1998 11 18 950 | 0.1−  | 0.3+  | 2005 04 07 691 | 0.0   | 0.1+  | 2005 05 08 704 | 1.4+  | 0.3+  |
| 1998 11 18 950 | 0.4+  | 0.4+  | 2005 04 07 691 | 0.2−  | 0.0   | 2005 05 08 704 | 0.3+  | 0.8−  |
| 2002 10 15 644 | 0.8−  | 0.7+  | 2005 04 09 704 | 0.7+  | 1.4+  | 2005 05 08 704 | 0.3+  | 0.3+  |
| 2002 10 15 644 | 0.7−  | 0.8+  | 2005 04 09 704 | 0.3+  | 0.8+  | 2005 06 04 703 | (1.7− | 0.1+) |
| 2002 10 15 644 | 1.0−  | 1.1+  | 2005 04 09 704 | 0.4+  | 0.2+  | 2005 06 04 703 | (1.6− | 0.7+) |
| 2005 04 01 699 | 0.4+  | 0.3−  | 2005 04 09 704 | 0.6+  | 1.0+  | 2005 06 04 703 | (2.0− | 0.3−) |
| 2005 04 01 699 | 0.3+  | 0.7+  | 2005 04 09 704 | 0.6+  | 0.9+  | 2005 06 04 703 | 1.3−  | 0.5−  |
| 2005 04 01 699 | 1.2+  | 0.6+  | 2005 04 13 699 | 0.2+  | 0.1−  | 2007 11 19 691 | 0.1−  | 0.1−  |
| 2005 04 01 699 | 1.2+  | 0.2+  | 2005 04 13 699 | 0.5−  | 0.4+  | 2007 11 19 691 | 0.1+  | 0.0   |
| 2005 04 05 703 | (0.2− | 2.0−) | 2005 04 13 699 | (2.0+ | 0.7+) | 2007 11 19 691 | 0.0   | 0.3−  |
| 2005 04 05 703 | 0.7−  | 1.0−  | 2005 04 13 704 | 0.7−  | 0.5−  | 2007 11 20 691 | 0.0   | 0.3+  |
| 2005 04 05 703 | 1.3−  | 0.3−  | 2005 04 13 699 | 0.6+  | 0.4−  | 2007 11 20 691 | 0.2+  | 0.2+  |
| 2005 04 05 703 | (1.7− | 1.5−) | 2005 04 13 704 | 0.3−  | 1.0−  | 2007 11 20 691 | 0.1−  | 0.1−  |

**2005 GK<sub>27</sub> = 2002 UD<sub>43</sub> = 2006 QJ<sub>91</sub> = 2007 UL<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 127.12685  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20487600 | $\omega$ | 51.86533  | +0.05148326 | +0.99504525 |
| $a$ | 2.8497625  | $\Omega$ | 221.33397 | −0.95183339 | +0.02311287 |
| $e$ | 0.1292521  | $i$      | 7.39937   | −0.30226260 | +0.09669927 |
| $P$ | 4.81       | $H$      | 15.4      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 1997 10 04 691 | 0.2−  | 0.0   | 2005 04 14 703 | 0.1+  | 0.7+  | 2007 11 03 691 | 0.4+ | 0.0  |
| 1997 10 04 691 | 0.2−  | 0.1−  | 2005 04 14 703 | (1.6− | 0.6+) | 2007 11 14 691 | 0.0  | 0.3+ |
| 1997 10 04 691 | 0.2+  | 0.4−  | 2005 04 14 703 | 0.6+  | 0.0   | 2007 11 14 691 | 0.4+ | 0.2+ |
| 2002 10 30 291 | 0.4−  | 0.3+  | 2005 04 14 703 | 0.6+  | 0.3+  | 2007 11 14 691 | 0.3− | 0.1− |
| 2002 10 30 291 | 0.0   | 0.0   | 2006 08 16 644 | 0.2−  | 0.6+  | 2007 11 18 691 | 0.3− | 0.0  |
| 2002 10 30 291 | 0.1+  | 0.0   | 2006 08 16 644 | 0.1−  | 0.6+  | 2007 11 18 691 | 0.0  | 0.0  |
| 2002 11 04 291 | 0.2−  | 0.0   | 2006 08 16 644 | 0.1−  | 0.8+  | 2007 11 18 691 | 0.0  | 0.1+ |
| 2002 11 04 291 | 0.0   | 0.0   | 2006 08 21 644 | 0.0   | 0.6+  | 2007 12 03 703 | 0.3+ | 0.9− |
| 2002 11 04 291 | 0.0   | 0.1−  | 2006 08 21 644 | 0.1−  | 0.6+  | 2007 12 03 703 | 0.9− | 0.5− |
| 2002 11 11 291 | 0.2+  | 0.3+  | 2006 08 21 644 | 0.5−  | 0.5+  | 2007 12 03 703 | 0.2+ | 1.6− |
| 2002 11 11 291 | 0.3+  | 0.3+  | 2007 09 10 G96 | 0.4+  | 0.6−  | 2007 12 03 703 | 0.5− | 0.0  |
| 2002 11 11 291 | 0.6+  | 0.4+  | 2007 09 10 G96 | 0.4+  | 0.4−  | 2007 12 04 691 | 0.7− | 0.2+ |
| 2005 04 03 644 | 0.1+  | 0.6+  | 2007 09 10 G96 | 0.3+  | 0.4−  | 2007 12 04 691 | 0.1− | 0.1− |
| 2005 04 03 644 | 0.0   | 0.3+  | 2007 09 10 G96 | 0.3+  | 0.4−  | 2007 12 04 691 | 0.4− | 0.4+ |
| 2005 04 03 644 | 0.1+  | 0.5+  | 2007 10 30 691 | 0.2+  | 0.1−  | 2007 12 06 691 | 0.2− | 0.2− |
| 2005 04 05 699 | 1.0+  | 1.2+  | 2007 10 30 691 | 0.1+  | 0.0   | 2007 12 06 691 | 0.4− | 0.1+ |
| 2005 04 05 699 | 0.9−  | 1.1+  | 2007 10 30 691 | 0.0   | 0.2+  | 2007 12 06 691 | 0.1− | 0.1+ |
| 2005 04 05 699 | (2.2+ | 1.0+) | 2007 11 03 691 | 0.2+  | 0.1−  |                |      |      |
| 2005 04 05 699 | 0.3+  | 1.0+  | 2007 11 03 691 | 0.6+  | 0.8+  |                |      |      |

**2005 GJ<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 145.45728  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17622822 | $\omega$ | 38.57233  | −0.76448181 | +0.64459030 |
| $a$ | 3.1507873  | $\Omega$ | 181.63704 | −0.64000946 | −0.76048312 |
| $e$ | 0.1736087  | $i$      | 17.14258  | −0.07717154 | −0.07854148 |
| $P$ | 5.59       | $H$      | 15.4      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1996 10 09 691 | 0.2− | 0.2+ | 2005 04 04 703 | 0.5− | 0.4− | 2005 04 13 704 | 0.5+ | 0.3+ |
| 1996 10 09 691 | 0.3− | 0.5+ | 2005 04 04 703 | 0.0  | 0.5− | 2005 04 13 704 | 0.1+ | 0.3+ |
| 1996 10 09 691 | 0.2+ | 0.5+ | 2005 04 04 703 | 0.6− | 0.0  | 2005 04 14 683 | 0.5+ | 1.6− |

2007 DEC. 24

M.P.O. 129733

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 07 | 645 | 0.3+ | 0.0  | 2005 04 05 | 704 | 1.2+ | 0.8+ | 2005 04 14 | 683 | 1.0- | 1.3- |
| 2002 11 07 | 645 | 0.3+ | 0.0  | 2005 04 05 | 704 | 1.2+ | 0.4+ | 2005 04 14 | 683 | 0.2- | 1.8+ |
| 2005 03 08 | G96 | 0.1- | 0.1- | 2005 04 05 | 704 | 0.8+ | 0.2+ | 2007 09 13 | G96 | 0.2- | 0.1+ |
| 2005 03 08 | G96 | 0.7- | 0.1- | 2005 04 05 | 704 | 0.5+ | 1.2+ | 2007 09 13 | G96 | 0.3+ | 0.1+ |
| 2005 03 08 | G96 | 0.3- | 0.7- | 2005 04 05 | 704 | 0.3+ | 0.6+ | 2007 09 13 | G96 | 0.3- | 0.1+ |
| 2005 03 08 | G96 | 0.3- | 0.0  | 2005 04 12 | 683 | 0.0  | 1.2+ | 2007 09 13 | G96 | 0.0  | 0.1+ |
| 2005 04 01 | 644 | 0.0  | 0.0  | 2005 04 12 | 683 | 0.2+ | 0.7+ | 2007 10 16 | G96 | 0.2- | 0.3+ |
| 2005 04 01 | 644 | 0.2- | 0.2+ | 2005 04 12 | 683 | 1.6- | 1.4+ | 2007 10 16 | G96 | 0.1- | 0.3+ |
| 2005 04 01 | 644 | 0.2- | 1.0- | 2005 04 13 | 704 | 0.2+ | 0.2+ | 2007 10 16 | G96 | 0.0  | 0.4+ |
| 2005 04 04 | 703 | 0.5- | 0.4- | 2005 04 13 | 704 | 1.1+ | 0.9- | 2007 10 16 | G96 | 0.2+ | 0.2+ |

**2005 GO<sub>34</sub> = 2001 SS<sub>320</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 122.20749  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.17679430 | $\omega$ | 230.42159 | -0.07764718 | +0.99159167 |
| <i>a</i> | 3.1440579  | $\Omega$ | 35.53661  | -0.85139232 | -0.01192196 |
| <i>e</i> | 0.1960403  | <i>i</i> | 10.25976  | -0.51875045 | -0.12885584 |
| <i>P</i> | 5.57       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 21 | 704 | 0.9-  | 0.3+  | 2005 04 07 | G96 | 0.2- | 0.4- | 2005 05 04 | 568 | 0.1+ | 0.3- |
| 2001 09 21 | 704 | 0.3-  | 0.6+  | 2005 04 07 | G96 | 0.1- | 0.6- | 2005 05 04 | 568 | 0.0  | 0.4- |
| 2001 09 21 | 704 | 0.2-  | 1.2+  | 2005 04 09 | G91 | 0.0  | 0.2+ | 2005 05 04 | 568 | 0.1+ | 0.3- |
| 2005 03 16 | G96 | 0.3-  | 0.7-  | 2005 04 09 | G91 | 0.1- | 0.2+ | 2005 05 05 | 568 | 0.1- | 0.2- |
| 2005 03 16 | G96 | 0.7-  | 0.8-  | 2005 04 09 | G91 | 0.0  | 0.1+ | 2005 05 08 | G96 | 0.1+ | 0.1+ |
| 2005 03 16 | G96 | 0.4-  | 0.6-  | 2005 04 10 | G91 | 0.2+ | 0.1+ | 2005 05 08 | G96 | 0.2- | 0.0  |
| 2005 03 16 | G96 | 0.6-  | 0.5-  | 2005 04 10 | G91 | 0.1+ | 0.1+ | 2005 05 08 | G96 | 0.1- | 0.2+ |
| 2005 04 01 | 699 | 0.2-  | 1.4+  | 2005 04 10 | G91 | 0.1+ | 0.1+ | 2005 05 08 | G96 | 0.3- | 0.1+ |
| 2005 04 01 | 699 | 1.3+  | 0.5+  | 2005 04 11 | 699 | 0.7- | 0.2+ | 2005 05 09 | 699 | 0.9+ | 1.3+ |
| 2005 04 01 | 699 | 0.7+  | 1.2+  | 2005 04 11 | 699 | 1.5+ | 1.2+ | 2005 05 09 | 699 | 0.3- | 0.9+ |
| 2005 04 01 | 699 | 0.5+  | 0.2+  | 2005 04 11 | 699 | 0.8- | 0.9+ | 2005 05 09 | 699 | 0.0  | 0.5+ |
| 2005 04 04 | 704 | 0.4+  | 0.5-  | 2005 04 11 | 699 | 0.2- | 0.6- | 2005 05 09 | 699 | 0.8+ | 0.6+ |
| 2005 04 04 | 704 | 0.7+  | 1.4+  | 2005 04 12 | 704 | 1.4+ | 0.5- | 2007 10 15 | 691 | 0.3+ | 0.0  |
| 2005 04 04 | 704 | (0.1+ | 1.5+) | 2005 04 12 | 704 | 0.1- | 0.7- | 2007 10 15 | 691 | 0.2- | 0.4- |
| 2005 04 06 | 691 | 0.1-  | 0.1+  | 2005 04 12 | 704 | 0.9+ | 1.0- | 2007 10 15 | 691 | 0.7- | 0.1+ |
| 2005 04 06 | 691 | 0.1+  | 0.0   | 2005 04 15 | A50 | 0.9- | 0.4+ | 2007 10 31 | G96 | 0.8+ | 0.3+ |
| 2005 04 06 | 691 | 0.1+  | 0.0   | 2005 04 15 | A50 | 0.9- | 0.5+ | 2007 10 31 | G96 | 0.8+ | 0.0  |
| 2005 04 06 | G96 | 0.3-  | 0.3-  | 2005 04 15 | A50 | 0.2- | 0.5+ | 2007 10 31 | G96 | 0.3+ | 0.0  |
| 2005 04 06 | G96 | 0.4-  | 0.2-  | 2005 04 15 | A50 | 0.4- | 0.1+ | 2007 10 31 | G96 | 0.4+ | 0.4- |
| 2005 04 06 | G96 | 0.9-  | 0.5-  | 2005 04 18 | 703 | 0.2- | 1.2- | 2007 11 19 | 691 | 0.2- | 0.2+ |
| 2005 04 06 | G96 | 0.1-  | 0.4-  | 2005 04 18 | 703 | 0.1+ | 1.0- | 2007 11 19 | 691 | 0.1+ | 0.3+ |
| 2005 04 07 | G96 | 0.1-  | 0.4-  | 2005 04 18 | 703 | 0.1- | 0.6- | 2007 11 19 | 691 | 0.1- | 0.3+ |
| 2005 04 07 | G96 | 0.1-  | 0.4-  | 2005 04 18 | 703 | 0.2+ | 0.4- |            |     |      |      |

**2005 GD<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 282.49104  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.29349392 | $\omega$ | 344.98092 | -0.86961901 | -0.49320046 |
| <i>a</i> | 2.2425217  | $\Omega$ | 165.40263 | +0.46176672 | -0.82875570 |
| <i>e</i> | 0.1002474  | <i>i</i> | 5.17165   | +0.17474060 | -0.26441879 |
| <i>P</i> | 3.36       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.0  | 0.3+ | 2005 02 09 | 699 | 0.5- | 0.3- | 2005 04 05 | G96 | 0.1- | 0.4+ |
| 2003 09 19 | 691 | 0.0  | 0.0  | 2005 02 09 | 704 | 0.4- | 0.4+ | 2005 04 05 | G96 | 0.2+ | 0.0  |
| 2003 09 19 | 691 | 0.1- | 0.1+ | 2005 02 09 | 704 | 0.6+ | 0.6+ | 2005 04 06 | G96 | 0.0  | 0.3+ |
| 2005 02 02 | 704 | 0.9+ | 0.4+ | 2005 02 09 | 704 | 1.3+ | 0.1+ | 2005 04 06 | G96 | 0.1+ | 0.1- |
| 2005 02 02 | 704 | 0.2- | 0.6- | 2005 02 09 | 704 | 1.1+ | 0.5+ | 2005 04 06 | G96 | 0.2- | 0.3+ |
| 2005 02 02 | 704 | 0.8- | 1.0- | 2005 03 09 | 691 | 0.2- | 0.1+ | 2005 04 06 | G96 | 0.1+ | 0.3+ |
| 2005 02 02 | 704 | 0.1- | 1.3+ | 2005 03 09 | 691 | 0.3- | 0.1+ | 2007 12 04 | 703 | 0.5+ | 1.5+ |
| 2005 02 09 | 699 | 0.3- | 0.4- | 2005 03 09 | 691 | 0.2- | 0.0  | 2007 12 04 | 703 | 0.7- | 0.3+ |
| 2005 02 09 | 699 | 0.6+ | 0.6- | 2005 04 05 | G96 | 0.2+ | 0.1- | 2007 12 04 | 703 | 0.5+ | 0.7- |
| 2005 02 09 | 699 | 0.5+ | 0.7- | 2005 04 05 | G96 | 0.2+ | 0.3+ | 2007 12 04 | 703 | 0.3- | 1.5- |

**2005 GN<sub>42</sub> = 2007 TU<sub>112</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 257.17861  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.25725435 | $\omega$ | 298.46712 | -0.75245507 | -0.65853612 |
| <i>a</i> | 2.4484669  | $\Omega$ | 200.35194 | +0.61562571 | -0.69677431 |
| <i>e</i> | 0.1561853  | <i>i</i> | 1.96041   | +0.23412894 | -0.28431627 |
| <i>P</i> | 3.83       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 19 | 691 | 0.1- | 0.0  | 2005 04 06 | G96 | 0.6- | 0.5- | 2007 10 08 | G96 | 0.1+ | 0.1+ |
| 2005 01 19 | 691 | 0.1+ | 0.3+ | 2005 04 06 | G96 | 0.4- | 0.3- | 2007 10 10 | G96 | 0.4+ | 0.1+ |
| 2005 01 19 | 691 | 0.0  | 0.3+ | 2007 09 13 | G96 | 0.6+ | 1.0+ | 2007 10 10 | G96 | 0.4+ | 0.2- |
| 2005 04 05 | G96 | 0.0  | 0.5- | 2007 09 13 | G96 | 0.3- | 0.2- | 2007 10 10 | G96 | 0.1- | 0.3- |
| 2005 04 05 | G96 | 0.1+ | 0.2+ | 2007 09 13 | G96 | 1.0- | 0.3+ | 2007 10 10 | G96 | 0.5+ | 0.3- |
| 2005 04 05 | G96 | 0.3+ | 0.0  | 2007 09 13 | G96 | 0.5- | 0.2+ | 2007 10 19 | G96 | 0.4+ | 0.4+ |
| 2005 04 05 | G96 | 0.1+ | 0.6+ | 2007 10 08 | G96 | 0.1+ | 0.2- | 2007 10 19 | G96 | 0.3+ | 0.1- |
| 2005 04 06 | G96 | 0.3+ | 0.0  | 2007 10 08 | G96 | 0.4- | 0.1- | 2007 10 19 | G96 | 0.2- | 0.4+ |
| 2005 04 06 | G96 | 0.2+ | 0.3- | 2007 10 08 | G96 | 0.1+ | 0.4- | 2007 10 19 | G96 | 0.3- | 1.0- |

**2005 GL<sub>48</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 176.55816  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22545317 | $\omega$ | 67.98340  | -0.45751341 | +0.88919426 |
| <i>a</i> | 2.6736126  | $\Omega$ | 174.78488 | -0.83075997 | -0.42588359 |
| <i>e</i> | 0.0873291  | <i>i</i> | 2.44638   | -0.31704787 | -0.16720268 |
| <i>P</i> | 4.37       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 05 | G96 | 1.0- | 0.8+ | 2005 04 09 | 691 | 0.4+ | 0.1- | 2005 05 10 | G96 | 0.5- | 0.0  |
| 2005 04 05 | G96 | 0.7- | 0.1- | 2005 04 11 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.4+ | 0.1- |
| 2005 04 05 | G96 | 0.9- | 0.3- | 2005 04 11 | 691 | 0.4+ | 0.0  | 2007 11 18 | G96 | 0.1+ | 0.1- |
| 2005 04 05 | G96 | 0.4- | 0.1+ | 2005 04 11 | 691 | 0.2+ | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.2+ |
| 2005 04 06 | G96 | 0.5- | 0.3- | 2005 04 18 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2005 04 06 | G96 | 1.3- | 0.2- | 2005 04 18 | 691 | 0.1- | 0.4+ | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2005 04 06 | G96 | 0.6- | 0.0  | 2005 04 18 | 691 | 0.3+ | 0.3- | 2007 11 19 | 691 | 0.1- | 0.1+ |
| 2005 04 06 | G96 | 0.5- | 0.0  | 2005 05 10 | G96 | 0.4- | 0.8+ | 2007 11 19 | 691 | 0.1- | 0.0  |
| 2005 04 09 | 691 | 0.6+ | 0.1- | 2005 05 10 | G96 | 0.5- | 0.0  |            |     |      |      |
| 2005 04 09 | 691 | 0.1+ | 0.2- | 2005 05 10 | G96 | 0.6- | 0.3+ |            |     |      |      |

**2005 GG<sub>53</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 263.97905  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23357766 | $\omega$ | 122.72507 | -0.92499168 | -0.34956034 |
| <i>a</i> | 2.6112504  | $\Omega$ | 37.42642  | +0.21077411 | -0.79823990 |
| <i>e</i> | 0.1149720  | <i>i</i> | 14.19087  | +0.31617189 | -0.49053096 |
| <i>P</i> | 4.22       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |             |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|-------------|------|
| 1994 10 06 | 691 | 0.2- | 0.1+ | 2007 10 14 | G96 | 0.0         | 0.1- | 2007 11 20 | 704 | 0.8-        | 1.1+ |
| 1994 10 06 | 691 | 0.0  | 0.3+ | 2007 10 14 | G96 | 0.0         | 0.6- | 2007 11 20 | G96 | 0.1-        | 0.1- |
| 1994 10 06 | 691 | 0.3- | 0.4+ | 2007 10 14 | G96 | 0.1-        | 0.1- | 2007 11 20 | G96 | 0.2-        | 0.1+ |
| 2005 04 02 | G96 | 0.1- | 0.0  | 2007 10 21 | G96 | 1.0-        | 0.0  | 2007 11 20 | G96 | 0.3-        | 0.1- |
| 2005 04 02 | G96 | 0.3- | 0.2- | 2007 10 21 | G96 | 0.2-        | 0.6- | 2007 12 02 | 704 | (2.9+ 0.6+) |      |
| 2005 04 02 | G96 | 0.3- | 0.2- | 2007 10 21 | G96 | 0.1+        | 0.0  | 2007 12 02 | 704 | 0.4+        | 0.1- |
| 2005 04 02 | G96 | 0.2- | 0.2- | 2007 10 21 | G96 | 0.4+        | 0.3- | 2007 12 02 | 704 | 0.5+        | 0.0  |
| 2005 04 07 | 691 | 0.0  | 0.4+ | 2007 11 02 | 691 | 0.3-        | 0.0  | 2007 12 02 | 704 | 0.7+        | 0.7+ |
| 2005 04 07 | 691 | 0.1+ | 0.5+ | 2007 11 02 | 691 | 0.4-        | 0.2- | 2007 12 02 | 704 | 0.7+        | 1.0+ |
| 2005 04 07 | 691 | 0.1+ | 0.4+ | 2007 11 02 | 691 | 0.2-        | 0.1- | 2007 12 04 | G96 | 0.1-        | 0.1- |
| 2005 04 17 | 691 | 0.2+ | 0.0  | 2007 11 18 | 704 | 1.2+        | 0.2+ | 2007 12 04 | G96 | 0.1+        | 0.2- |
| 2005 04 17 | 691 | 0.1+ | 0.0  | 2007 11 18 | 704 | 0.4-        | 0.6- | 2007 12 04 | G96 | 0.1-        | 0.1+ |
| 2005 04 17 | 691 | 0.2+ | 0.0  | 2007 11 18 | 704 | 1.1+        | 0.3+ | 2007 12 04 | G96 | 0.2-        | 0.1- |
| 2005 05 19 | 644 | 0.5+ | 0.4+ | 2007 11 20 | 704 | 0.2-        | 1.1+ | 2007 12 16 | 704 | 0.1-        | 0.7+ |
| 2005 05 19 | 644 | 0.3+ | 0.2+ | 2007 11 20 | 704 | (1.6- 0.6+) |      | 2007 12 16 | 704 | 0.4+        | 0.2+ |
| 2005 05 19 | 644 | 0.5+ | 0.5+ | 2007 11 20 | 704 | 0.5+        | 1.2+ | 2007 12 16 | 704 | 0.6-        | 0.7+ |
| 2007 10 14 | G96 | 0.1+ | 0.5- | 2007 11 20 | G96 | 0.0         | 0.1- |            |     |             |      |

**2005 GY<sub>54</sub> = 2007 RE<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 280.96092  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19735350 | $\omega$ | 226.14176 | +0.09071296   | -0.99578053 |
| <i>a</i> | 2.9217260  | $\Omega$ | 218.66000 | +0.91994833   | +0.08912151 |
| <i>e</i> | 0.0834349  | <i>i</i> | 1.27199   | +0.38140036   | +0.02187467 |
| <i>P</i> | 4.99       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 04 06 | 691 | 0.2+ | 0.4- | 2005 04 07 | G96 | 0.3+ | 0.3- | 2007 09 10 | G96 | 0.1-  | 0.2-  |
| 1995 04 06 | 691 | 0.5- | 0.1+ | 2005 04 07 | G96 | 0.2- | 0.0  | 2007 09 14 | 691 | 0.2-  | 0.2-  |
| 1995 04 06 | 691 | 0.1- | 0.7- | 2005 04 07 | G96 | 0.0  | 0.1+ | 2007 09 14 | 691 | 0.1-  | 0.2+  |
| 1997 09 28 | 691 | 0.1- | 0.3+ | 2005 04 07 | G96 | 0.7- | 0.4+ | 2007 09 14 | 691 | 0.2-  | 0.2+  |
| 1997 09 28 | 691 | 0.1- | 0.0  | 2007 08 24 | 691 | 0.1+ | 1.0+ | 2007 10 04 | G96 | 0.2-  | 0.4-  |
| 1997 09 28 | 691 | 0.0  | 0.2+ | 2007 08 24 | 691 | 0.1- | 0.4+ | 2007 10 04 | G96 | 0.1+  | 0.1-  |
| 2005 03 17 | 691 | 0.4+ | 0.5+ | 2007 08 24 | 691 | 0.4- | 0.4+ | 2007 10 04 | G96 | 0.6-  | 0.5-  |
| 2005 03 17 | 691 | 0.6+ | 0.3+ | 2007 09 10 | 691 | 0.6+ | 0.1- | 2007 10 04 | G96 | 0.4+  | 0.2-  |
| 2005 03 17 | 691 | 0.5+ | 0.2+ | 2007 09 10 | 691 | 0.1+ | 0.1- | 2007 10 11 | G96 | (0.7- | 2.1-) |
| 2005 04 05 | G96 | 0.3- | 0.2- | 2007 09 10 | 691 | 0.3- | 0.1- | 2007 10 11 | G96 | 1.1+  | 0.8-  |
| 2005 04 05 | G96 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.0  | 0.4- | 2007 10 11 | G96 | 0.1+  | 0.1-  |
| 2005 04 05 | G96 | 0.1- | 0.4- | 2007 09 10 | G96 | 0.3+ | 0.0  | 2007 10 11 | G96 | 0.3-  | 0.3+  |
| 2005 04 05 | G96 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.1+ | 0.0  |            |     |       |       |

**2005 GS<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 282.83924  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28582250 | $\omega$ | 0.15919   | -0.96431801   | -0.23929022 |
| <i>a</i> | 2.2824701  | $\Omega$ | 164.50407 | +0.24242929   | -0.97005929 |
| <i>e</i> | 0.1909525  | <i>i</i> | 25.08592  | +0.10638988   | +0.04153513 |
| <i>P</i> | 3.45       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | 704 | 0.2- | 0.5+ | 2005 03 16 | 704 | 0.7+ | 0.6+ | 2005 04 09 | 703 | 0.0  | 0.7- |
| 2005 03 09 | 704 | 0.5+ | 0.3- | 2005 03 16 | 704 | 1.3+ | 0.4+ | 2005 04 09 | 703 | 0.3+ | 0.2+ |
| 2005 03 09 | 704 | 0.9+ | 0.3- | 2005 03 16 | 704 | 0.8+ | 0.2- | 2005 04 09 | 703 | 0.5- | 0.4- |
| 2005 03 16 | 703 | 1.9- | 0.8- | 2005 03 16 | 704 | 0.4+ | 0.1+ | 2005 04 09 | 703 | 0.1+ | 0.1- |
| 2005 03 16 | 703 | 1.0- | 1.0- | 2005 04 02 | 703 | 0.1+ | 0.4+ | 2007 11 20 | G96 | 0.1- | 0.1- |
| 2005 03 16 | 703 | 0.3- | 0.1- | 2005 04 02 | 703 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.0  | 0.1- |
| 2005 03 16 | 703 | 0.9- | 1.2- | 2005 04 02 | 703 | 0.7- | 1.3+ | 2007 11 20 | G96 | 0.0  | 0.3+ |
| 2005 03 16 | 704 | 0.3+ | 1.5+ | 2005 04 02 | 703 | 0.0  | 0.1+ |            |     |      |      |

**2005 GR<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 230.01108  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26192273 | $\omega$ | 121.41048 | -0.73436692   | +0.65509286 |
| <i>a</i> | 2.4192863  | $\Omega$ | 100.15814 | -0.66776592   | -0.65039543 |
| <i>e</i> | 0.0848920  | <i>i</i> | 10.39751  | -0.12163019   | -0.38449855 |
| <i>P</i> | 3.76       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.1- | 0.0  | 2005 04 13 | 703 | 0.7+  | 0.6+  | 2005 05 18 | 644 | 0.2+ | 0.2+ |
| 2003 11 18 | 691 | 0.1+ | 0.2- | 2005 04 13 | 703 | 0.9-  | 1.0+  | 2005 05 18 | 644 | 0.5+ | 0.2- |
| 2003 11 18 | 691 | 0.1+ | 0.4- | 2005 04 13 | 703 | (2.3- | 0.2-) | 2006 09 18 | 703 | 0.9+ | 0.1+ |
| 2005 03 17 | 703 | 0.2- | 1.1- | 2005 04 13 | 703 | 0.7+  | 0.7-  | 2006 09 18 | 703 | 0.3+ | 0.6- |
| 2005 03 17 | 703 | 0.0  | 1.2- | 2005 04 16 | 703 | (2.0- | 1.0-) | 2006 09 18 | 703 | 0.8- | 0.0  |
| 2005 03 17 | 703 | 0.4- | 0.2+ | 2005 04 16 | 703 | 1.4-  | 1.2-  | 2006 09 18 | 703 | 0.2+ | 0.6- |
| 2005 03 17 | 703 | 0.2- | 0.8- | 2005 04 16 | 703 | 1.1-  | 0.5-  | 2007 12 04 | 691 | 0.2- | 0.1+ |
| 2005 04 03 | 644 | 0.4+ | 0.1+ | 2005 04 16 | 703 | 0.6-  | 1.1-  | 2007 12 04 | 691 | 0.1+ | 0.2+ |
| 2005 04 03 | 644 | 0.7+ | 0.5+ | 2005 05 08 | 703 | 1.1-  | 0.2+  | 2007 12 04 | 691 | 0.5+ | 0.1- |
| 2005 04 03 | 644 | 0.5+ | 0.7+ | 2005 05 08 | 703 | 0.1-  | 0.2+  | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2005 04 08 | 704 | 0.5+ | 0.5- | 2005 05 08 | 703 | 0.4+  | 0.4+  | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2005 04 08 | 704 | 0.1+ | 0.1+ | 2005 05 08 | 703 | 0.4-  | 0.6+  | 2007 12 16 | 691 | 0.2- | 0.1- |
| 2005 04 08 | 704 | 0.6+ | 0.2+ | 2005 05 18 | 644 | 0.4+  | 0.1+  |            |     |      |      |

**2005 GM<sub>71</sub> = 2007 VU<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 122.06315  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20899774 | $\omega$ | 258.41223 | +0.12018883   | +0.99156092 |
| <i>a</i> | 2.8121706  | $\Omega$ | 18.70025  | -0.84152357   | +0.12772793 |
| <i>e</i> | 0.1189569  | <i>i</i> | 8.71796   | -0.52668086   | +0.02219272 |
| <i>P</i> | 4.72       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 14 | G96 | 0.1- | 0.1+ | 2005 04 09 | G96 | 0.3+ | 0.8+ | 2007 11 13 | 691 | 0.3- | 0.1+ |
| 2005 03 14 | G96 | 0.1- | 0.4- | 2005 05 13 | G96 | 0.2- | 0.1- | 2007 11 13 | 691 | 0.0  | 0.5- |
| 2005 03 14 | G96 | 0.4- | 0.3- | 2005 05 13 | G96 | 0.1- | 0.1- | 2007 11 13 | 691 | 0.0  | 0.3- |
| 2005 03 14 | G96 | 0.1+ | 0.1- | 2005 05 13 | G96 | 0.1- | 0.4- | 2007 11 17 | 691 | 1.7+ | 1.1+ |
| 2005 04 04 | 703 | 0.1- | 0.0  | 2005 05 13 | G96 | 0.2- | 0.1- | 2007 11 17 | 691 | 0.3- | 0.1+ |
| 2005 04 04 | 703 | 0.8+ | 1.1- | 2007 11 01 | 691 | 0.5- | 0.5- | 2007 11 17 | 691 | 0.4+ | 0.0  |
| 2005 04 04 | 703 | 1.0- | 0.4- | 2007 11 01 | 691 | 0.2- | 0.2- | 2007 12 14 | 291 | 0.0  | 0.2+ |
| 2005 04 04 | 703 | 0.0  | 0.3+ | 2007 11 01 | 691 | 0.2- | 0.0  | 2007 12 14 | 291 | 0.3- | 0.1- |
| 2005 04 09 | G96 | 0.8+ | 1.2+ | 2007 11 07 | 691 | 0.2- | 0.3- | 2007 12 14 | 291 | 0.2- | 0.1+ |
| 2005 04 09 | G96 | 0.4- | 0.2+ | 2007 11 07 | 691 | 0.1+ | 0.2+ |            |     |      |      |
| 2005 04 09 | G96 | 0.3+ | 0.1+ | 2007 11 07 | 691 | 0.1- | 0.0  |            |     |      |      |

**2005 GR<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 196.67265  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21946007 | $\omega$ | 161.11275 | -0.76883294   | +0.59770957 |
| <i>a</i> | 2.7220685  | $\Omega$ | 57.72698  | -0.61583497   | -0.59642384 |
| <i>e</i> | 0.1323534  | <i>i</i> | 15.59066  | -0.17217200   | -0.53574422 |
| <i>P</i> | 4.49       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 11 15 | 691 | 0.1+  | 0.6-  | 2005 04 18 | 703 | 0.2+ | 0.2- | 2005 05 12 | 704 | 0.6+  | 1.2+  |
| 1998 11 15 | 691 | 0.2+  | 0.0   | 2005 04 18 | 703 | 0.5- | 0.4+ | 2005 05 12 | 704 | 1.1+  | 0.5-  |
| 1998 11 15 | 691 | 0.1+  | 0.0   | 2005 05 03 | 704 | 0.2+ | 0.2- | 2005 05 12 | 704 | (2.9+ | 2.2-) |
| 2005 04 04 | 703 | 0.5-  | 0.5-  | 2005 05 03 | 704 | 0.4+ | 0.6- | 2005 05 14 | 704 | (0.2+ | 1.9+) |
| 2005 04 04 | 703 | 0.9-  | 0.6-  | 2005 05 03 | 704 | 0.7+ | 0.0  | 2005 05 14 | 704 | 1.1+  | 0.3-  |
| 2005 04 04 | 703 | 0.1-  | 0.1+  | 2005 05 03 | 704 | 0.3- | 0.3+ | 2005 05 14 | 704 | 1.4+  | 0.0   |
| 2005 04 04 | 703 | 0.5-  | 0.6-  | 2005 05 03 | 704 | 0.1+ | 0.8+ | 2005 05 14 | 704 | 0.7+  | 0.4-  |
| 2005 04 07 | 699 | 1.0-  | 0.6-  | 2005 05 04 | 703 | 0.8- | 0.0  | 2005 06 03 | 703 | 0.7-  | 0.6-  |
| 2005 04 07 | 699 | 0.1+  | 0.5+  | 2005 05 04 | 703 | 0.6+ | 0.3- | 2005 06 03 | 703 | 0.0   | 0.0   |
| 2005 04 07 | 699 | 0.6+  | 0.5+  | 2005 05 04 | 703 | 0.9+ | 0.2- | 2005 06 03 | 703 | 0.5-  | 1.0-  |
| 2005 04 07 | 699 | (1.6+ | 0.0 ) | 2005 05 04 | 703 | 1.0- | 0.2- | 2005 06 03 | 703 | (1.9- | 1.2-) |
| 2005 04 09 | 704 | 0.4-  | 0.1+  | 2005 05 07 | 703 | 1.4- | 0.9+ | 2007 10 10 | G96 | 0.3+  | 0.3+  |
| 2005 04 09 | 704 | 1.1+  | 0.3-  | 2005 05 07 | 703 | 0.0  | 0.2+ | 2007 10 10 | G96 | 0.3+  | 0.2+  |
| 2005 04 09 | 704 | 1.0+  | 0.4-  | 2005 05 07 | 703 | 1.0- | 1.0+ | 2007 10 10 | G96 | 0.6+  | 0.2+  |
| 2005 04 09 | 704 | 0.1-  | 0.0   | 2005 05 07 | 703 | 1.4- | 0.1- | 2007 10 10 | G96 | 0.5+  | 0.4+  |
| 2005 04 09 | 704 | 0.5+  | 0.1+  | 2005 05 08 | 704 | 0.3+ | 1.1+ | 2007 11 19 | 691 | 0.3-  | 0.0   |
| 2005 04 18 | 703 | 0.6-  | 0.1-  | 2005 05 08 | 704 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.2-  | 0.4+  |
| 2005 04 18 | 703 | (2.5- | 0.7-) | 2005 05 08 | 704 | 0.3+ | 0.6+ | 2007 11 19 | 691 | 0.3-  | 0.1+  |

**2005 GW<sub>82</sub> = 2007 TY<sub>277</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 256.15468  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22935113 | $\omega$ | 132.50116 | -0.64755881   | -0.76200869 |
| <i>a</i> | 2.6432330  | $\Omega$ | 357.84899 | +0.67159587   | -0.56872099 |
| <i>e</i> | 0.0160944  | <i>i</i> | 4.91615   | +0.36003691   | -0.30967594 |
| <i>P</i> | 4.30       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 01 | 691 | 0.6+ | 0.1- | 2005 05 04 | G96 | 0.4+ | 0.3- | 2007 10 11 | G96 | 0.4+ | 0.1- |
| 2003 12 01 | 691 | 0.3+ | 0.1- | 2005 05 04 | G96 | 0.0  | 0.7- | 2007 10 13 | 691 | 0.3- | 0.0  |
| 2003 12 01 | 691 | 0.3+ | 0.0  | 2005 05 04 | G96 | 0.2+ | 0.5- | 2007 10 13 | 691 | 0.5- | 0.1+ |
| 2003 12 19 | 691 | 0.3- | 0.5- | 2005 05 04 | G96 | 0.3- | 0.4+ | 2007 10 13 | 691 | 0.0  | 0.0  |
| 2003 12 19 | 691 | 0.4- | 0.2+ | 2007 10 04 | 691 | 0.1- | 0.1- | 2007 10 16 | 691 | 0.3- | 0.4+ |
| 2003 12 19 | 691 | 0.3- | 0.3- | 2007 10 04 | 691 | 0.1- | 0.0  | 2007 10 16 | 691 | 0.4- | 0.3+ |
| 2005 04 04 | G96 | 0.1- | 0.3- | 2007 10 04 | 691 | 0.2- | 0.2- | 2007 10 16 | 691 | 0.1+ | 0.2+ |

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2005 04 04 G96 | 0.3− | 0.8− | 2007 10 11 G96 | (1.8+ | 0.2+) | 2007 10 31 691 | (1.5− | 2.1+) |
| 2005 04 04 G96 | 0.1− | 0.0  | 2007 10 11 G96 | 0.6+  | 0.1+  | 2007 10 31 691 | 0.4−  | 0.2+  |
| 2005 04 04 G96 | 0.3− | 0.1− | 2007 10 11 G96 | 1.4+  | 0.0   | 2007 10 31 691 | 0.1+  | 0.9+  |
| 2005 04 10 691 | 0.0  | 0.8+ | 2007 10 11 G96 | 1.0+  | 0.1−  | 2007 11 07 691 | 0.1−  | 0.2+  |
| 2005 04 10 691 | 0.6+ | 0.3+ | 2007 10 11 G96 | 0.8+  | 0.1+  | 2007 11 07 691 | 0.0   | 0.1−  |
| 2005 04 10 691 | 0.1+ | 0.4+ | 2007 10 11 G96 | 1.3+  | 0.0   | 2007 11 07 691 | 0.1+  | 0.4−  |

**2005 GS<sub>87</sub> = 2007 VU<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 212.10020  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21595132 | $\omega$ | 117.18683 | −0.90333297 | +0.41644122 |
| $a$ | 2.7514744  | $\Omega$ | 87.57603  | −0.42088675 | −0.81432633 |
| $e$ | 0.0909360  | $i$      | 5.90529   | −0.08272784 | −0.40428867 |
| $P$ | 4.56       | $H$      | 17.4      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 10 05 645 | 0.0  | 0.1+ | 2005 04 11 691 | 0.2+ | 0.0  | 2007 11 05 691 | 0.2+ | 0.2− |
| 2002 10 05 645 | 0.0  | 0.0  | 2005 04 11 691 | 0.1− | 0.5+ | 2007 11 09 691 | 0.0  | 0.2+ |
| 2002 10 10 645 | 0.0  | 0.0  | 2005 04 11 691 | 0.1− | 0.5− | 2007 11 09 691 | 0.1+ | 0.3+ |
| 2002 10 10 645 | 0.1− | 0.1+ | 2005 04 15 691 | 0.1− | 0.4+ | 2007 11 09 691 | 0.1+ | 0.5+ |
| 2003 12 29 691 | 0.1+ | 0.0  | 2005 04 15 691 | 0.2− | 0.3+ | 2007 11 13 691 | 1.2− | 0.1− |
| 2003 12 29 691 | 0.2+ | 0.2− | 2005 04 15 691 | 0.1− | 0.3+ | 2007 11 13 691 | 0.4+ | 0.5+ |
| 2003 12 29 691 | 0.2− | 0.1+ | 2005 05 11 691 | 0.6+ | 0.3+ | 2007 11 13 691 | 0.1+ | 1.0+ |
| 2005 04 04 G96 | 0.1− | 0.4− | 2005 05 11 691 | 0.6+ | 0.6+ | 2007 11 20 691 | 0.1− | 0.1+ |
| 2005 04 04 G96 | 0.3− | 0.2− | 2005 05 11 691 | 0.2+ | 0.7+ | 2007 11 20 691 | 0.3+ | 0.0  |
| 2005 04 04 G96 | 0.3+ | 0.3+ | 2007 11 05 691 | 0.2+ | 0.0  | 2007 11 20 691 | 0.4− | 0.0  |
| 2005 04 04 G96 | 0.0  | 0.1+ | 2007 11 05 691 | 0.4− | 0.1+ |                |      |      |

**2005 GB<sub>88</sub> = 2007 TE<sub>43</sub> = 2007 TM<sub>296</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 109.32112  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17685171 | $\omega$ | 58.64676  | +0.09023717 | +0.98135183 |
| $a$ | 3.1433775  | $\Omega$ | 217.71166 | −0.98175384 | +0.05901064 |
| $e$ | 0.1989118  | $i$      | 16.10905  | −0.16738174 | +0.18293805 |
| $P$ | 5.57       | $H$      | 15.5      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 04 05 699 | 0.2+ | 0.4+ | 2007 09 10 G96 | 0.7+ | 0.0  | 2007 10 10 691 | 0.3− | 0.1− |
| 2005 04 05 699 | 0.1+ | 0.4− | 2007 09 10 G96 | 0.2+ | 0.2+ | 2007 10 10 691 | 0.4− | 0.2+ |
| 2005 04 05 699 | 0.8− | 0.3+ | 2007 09 10 G96 | 0.7+ | 0.1− | 2007 10 16 691 | 0.1+ | 0.3+ |
| 2005 04 05 699 | 0.5− | 1.1+ | 2007 10 07 G96 | 0.4+ | 0.0  | 2007 10 16 691 | 0.0  | 0.3− |
| 2005 04 10 691 | 0.3+ | 0.1+ | 2007 10 07 G96 | 0.7+ | 0.3− | 2007 10 16 691 | 0.2− | 0.2− |
| 2005 04 10 691 | 0.2+ | 0.1− | 2007 10 07 G96 | 0.8+ | 0.7− | 2007 10 20 291 | 0.3− | 0.5+ |
| 2005 04 10 691 | 0.1+ | 0.0  | 2007 10 07 G96 | 1.1+ | 0.5− | 2007 10 20 291 | 0.2− | 0.4+ |
| 2005 04 11 699 | 0.7+ | 0.3− | 2007 10 08 G96 | 0.8+ | 0.2− | 2007 10 20 291 | 0.3− | 0.3+ |
| 2005 04 11 699 | 0.7− | 0.1− | 2007 10 08 G96 | 0.7+ | 0.0  | 2007 11 03 691 | 0.0  | 0.4− |
| 2005 04 11 699 | 0.8− | 0.3− | 2007 10 08 G96 | 0.7+ | 0.2− | 2007 11 03 691 | 0.2− | 0.1− |
| 2005 04 11 699 | 0.4− | 0.1− | 2007 10 08 G96 | 0.2+ | 0.3− | 2007 11 03 691 | 0.1+ | 0.2− |
| 2007 09 10 G96 | 0.1+ | 0.3+ | 2007 10 10 691 | 0.1+ | 0.2+ |                |      |      |

**2005 GX<sub>90</sub> = 2007 VK<sub>276</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 250.49283  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22933260 | $\omega$ | 160.54701 | −0.92950899 | −0.36877297 |
| $a$ | 2.6433754  | $\Omega$ | 357.79820 | +0.32129750 | −0.80384558 |
| $e$ | 0.0880033  | $i$      | 6.60556   | +0.18105509 | −0.46673203 |
| $P$ | 4.30       | $H$      | 16.6      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 14 G96 | 0.3− | 0.1− | 2005 04 10 691 | 0.4+ | 0.2+ | 2007 11 14 691 | 0.2− | 0.0  |
| 2005 03 14 G96 | 0.2− | 0.3+ | 2005 04 10 691 | 0.1+ | 0.2− | 2007 11 14 691 | 0.2− | 0.3− |
| 2005 03 14 G96 | 0.2+ | 0.1− | 2005 04 15 691 | 0.1− | 0.1− | 2007 11 14 691 | 0.2− | 0.2+ |
| 2005 03 14 G96 | 0.4− | 0.1− | 2005 04 15 691 | 0.3− | 0.3+ | 2007 11 18 691 | 0.0  | 0.0  |
| 2005 04 06 691 | 0.3+ | 0.1+ | 2005 04 15 691 | 0.2+ | 0.1− | 2007 11 18 691 | 0.1− | 0.2− |
| 2005 04 06 691 | 0.2+ | 0.1+ | 2007 10 11 691 | 0.5− | 0.4+ | 2007 11 18 691 | 0.2+ | 0.2+ |

|                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|
| 2005 04 06 691 | 0.0  | 0.1− | 2007 10 11 691 | 0.6+ | 0.2− |
| 2005 04 10 691 | 0.1− | 0.1− | 2007 10 11 691 | 0.4+ | 0.1− |

**2005 GE<sub>98</sub> = 2007 VY<sub>219</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 325.06470  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26403496 | $\omega$ | 28.35754 | −0.33420570 | −0.94157265 |
| $a$ | 2.4063665  | $\Omega$ | 81.19225 | +0.85653823 | −0.32193144 |
| $e$ | 0.1379632  | $i$      | 2.42445  | +0.39325413 | −0.09900051 |
| $P$ | 3.73       | $H$      | 17.6     | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 04 07 G96 | 0.0  | 0.4− | 2005 04 14 691 | 0.2+ | 0.0  | 2007 12 12 J75 | 0.2+ | 0.5+ |
| 2005 04 07 G96 | 0.5− | 0.2− | 2005 04 14 691 | 0.1+ | 0.3− | 2007 12 12 J75 | 0.2− | 0.5+ |
| 2005 04 07 G96 | 0.5− | 0.1− | 2007 11 09 691 | 0.0  | 0.1+ | 2007 12 13 J75 | 0.5+ | 0.1− |
| 2005 04 07 G96 | 0.1− | 0.7− | 2007 11 09 691 | 0.1− | 0.2+ | 2007 12 14 620 | 0.7+ | 0.0  |
| 2005 04 10 691 | 0.1+ | 0.2+ | 2007 11 09 691 | 0.0  | 0.1+ | 2007 12 14 620 | 0.8+ | 0.0  |
| 2005 04 10 691 | 0.1− | 0.2+ | 2007 11 13 691 | 0.5− | 0.1+ | 2007 12 16 691 | 0.1+ | 0.1− |
| 2005 04 10 691 | 0.0  | 0.3+ | 2007 11 13 691 | 0.2+ | 0.1− | 2007 12 16 691 | 0.0  | 0.4− |
| 2005 04 14 691 | 0.1+ | 0.2+ | 2007 11 13 691 | 0.1− | 0.3+ | 2007 12 16 691 | 0.2− | 0.2− |

**2005 GR<sub>100</sub> = 2007 TZ<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 32.68318   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.19273232 | $\omega$ | 333.07307 | +0.99182329 | +0.11051373 |
| $a$ | 2.9682445  | $\Omega$ | 20.87805  | −0.05814629 | +0.83650518 |
| $e$ | 0.1069430  | $i$      | 10.31644  | −0.11360264 | +0.53669898 |
| $P$ | 5.11       | $H$      | 16.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2002 11 01 644 | 0.2− | 0.3− | 2005 04 09 G96 | (0.9+ | 3.8+) | 2007 10 13 691 | 0.2− | 0.6− |
| 2002 11 01 644 | 0.8+ | 0.8− | 2005 04 11 691 | 0.5+  | 0.4+  | 2007 10 13 691 | 0.4− | 0.0  |
| 2002 11 01 644 | 0.1+ | 0.4− | 2005 04 11 691 | 0.4+  | 0.2+  | 2007 10 13 691 | 0.2− | 0.1− |
| 2004 02 17 645 | 0.0  | 0.1− | 2005 04 11 691 | 0.4+  | 0.2−  | 2007 10 21 691 | 0.2− | 0.0  |
| 2004 02 17 645 | 0.1− | 0.2− | 2005 04 11 G96 | 0.3+  | 0.2+  | 2007 10 21 691 | 0.2− | 0.1− |
| 2005 04 09 691 | 0.5+ | 0.4+ | 2005 04 11 G96 | 0.4−  | 0.1−  | 2007 10 21 691 | 0.1− | 0.1− |
| 2005 04 09 691 | 0.1+ | 0.2+ | 2005 04 11 G96 | 0.2+  | 0.0   | 2007 11 03 699 | 0.6− | 1.7+ |
| 2005 04 09 691 | 0.0  | 0.2− | 2005 04 11 G96 | 0.1−  | 0.1+  | 2007 11 03 699 | 0.6+ | 0.5+ |
| 2005 04 09 G96 | 0.1+ | 0.2+ | 2007 10 09 691 | 0.1−  | 0.4+  | 2007 11 03 699 | 0.8+ | 0.1+ |
| 2005 04 09 G96 | 0.8− | 0.4+ | 2007 10 09 691 | 0.1+  | 0.1+  | 2007 11 03 699 | 1.7− | 1.2+ |
| 2005 04 09 G96 | 0.3+ | 0.6+ | 2007 10 09 691 | 0.1+  | 0.2+  |                |      |      |

**2005 GO<sub>105</sub> = 2001 MU<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 60.96864   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20108571 | $\omega$ | 200.55843 | +0.95848468 | +0.28384251 |
| $a$ | 2.8854612  | $\Omega$ | 142.91752 | −0.25490586 | +0.89570137 |
| $e$ | 0.1153126  | $i$      | 2.58676   | −0.12778939 | +0.34227545 |
| $P$ | 4.90       | $H$      | 16.1      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 06 18 691 | 0.2+ | 0.0  | 2005 04 14 691 | 0.1− | 0.0  | 2007 11 20 G96 | 0.2+ | 0.1− |
| 2001 06 18 691 | 0.1− | 0.1+ | 2005 04 14 691 | 0.1+ | 0.1− | 2007 11 20 G96 | 0.6+ | 0.4− |
| 2001 06 18 691 | 0.1− | 0.2+ | 2005 05 13 691 | 0.1+ | 0.1− | 2007 11 20 G96 | 0.3+ | 0.1− |
| 2005 04 10 691 | 0.0  | 0.2+ | 2005 05 13 691 | 0.2+ | 0.1+ | 2007 11 20 G96 | 0.2+ | 0.1− |
| 2005 04 10 691 | 0.1+ | 0.0  | 2005 05 13 691 | 0.4+ | 0.1+ | 2007 11 20 G96 | 0.6+ | 0.2− |
| 2005 04 10 691 | 0.1+ | 0.1+ | 2007 11 04 691 | 0.2− | 0.3− | 2007 11 20 G96 | 0.3+ | 0.1+ |
| 2005 04 11 G96 | 0.8− | 0.2− | 2007 11 04 691 | 0.0  | 0.0  | 2007 11 21 G96 | 0.2+ | 0.0  |
| 2005 04 11 G96 | 0.6− | 0.2− | 2007 11 04 691 | 0.5− | 0.1+ | 2007 11 21 G96 | 0.2− | 0.0  |
| 2005 04 11 G96 | 0.6− | 0.0  | 2007 11 08 691 | 0.1− | 0.2+ | 2007 11 21 G96 | 0.0  | 0.1− |
| 2005 04 11 G96 | 1.0− | 0.0  | 2007 11 08 691 | 0.0  | 0.2+ | 2007 11 21 G96 | 0.1+ | 0.0  |
| 2005 04 12 695 | 0.4− | 0.1− | 2007 11 08 691 | 0.1− | 0.0  | 2007 12 15 A77 | 0.6+ | 1.2+ |
| 2005 04 12 695 | 0.3− | 0.0  | 2007 11 20 G96 | 0.5+ | 0.2− | 2007 12 15 A77 | 0.0  | 0.3+ |
| 2005 04 14 691 | 0.2+ | 0.2+ | 2007 11 20 G96 | 0.2+ | 0.5− | 2007 12 15 A77 | 0.6− | 0.7+ |

**2005 GV<sub>106</sub> = 2007 VF<sub>135</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 245.32751  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|-----|--|
| <i>n</i> | 0.20985815 | $\omega$ | 127.33299 | −0.86055410 | −0.50848886 |          |     |  |
| <i>a</i> | 2.8044788  | $\Omega$ | 22.15124  | +0.43880255 | −0.76975289 |          |     |  |
| <i>e</i> | 0.0174311  | <i>i</i> | 4.52709   | +0.25864833 | −0.38590099 |          |     |  |
| <i>P</i> | 4.70       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 5   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 10 | G96 | 0.1+ | 0.0  | 2005 04 11 | G96 | 0.4− | 0.2− | 2007 10 16 | 691 | 1.0− | 0.3+ |
| 2005 04 10 | G96 | 0.1+ | 0.0  | 2007 10 07 | 621 | 0.9+ | 0.1− | 2007 11 03 | 291 | 0.1− | 0.2+ |
| 2005 04 10 | G96 | 0.3− | 0.1+ | 2007 10 07 | 621 | 0.1− | 0.1+ | 2007 11 03 | 291 | 0.2+ | 0.3+ |
| 2005 04 10 | G96 | 0.2− | 0.1+ | 2007 10 07 | 621 | 0.5+ | 0.1+ | 2007 11 03 | 291 | 0.1+ | 0.2+ |
| 2005 04 11 | 691 | 0.2+ | 0.3− | 2007 10 07 | G96 | 0.2− | 0.2− | 2007 11 07 | G96 | 0.2+ | 0.3− |
| 2005 04 11 | 691 | 0.4+ | 0.0  | 2007 10 07 | G96 | 0.7+ | 0.4− | 2007 11 07 | G96 | 0.6+ | 0.0  |
| 2005 04 11 | 691 | 0.1+ | 0.1− | 2007 10 07 | G96 | 0.1+ | 0.0  | 2007 11 07 | G96 | 0.1+ | 0.0  |
| 2005 04 11 | G96 | 0.3+ | 0.3+ | 2007 10 07 | G96 | 0.1+ | 0.5− | 2007 11 07 | G96 | 0.4− | 0.5− |
| 2005 04 11 | G96 | 0.2− | 0.1− | 2007 10 16 | 691 | 0.8− | 0.3+ |            |     |      |      |
| 2005 04 11 | G96 | 0.1− | 0.0  | 2007 10 16 | 691 | 0.6− | 0.3+ |            |     |      |      |

**2005 GD<sub>107</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 347.22672  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|-----|--|
| <i>n</i> | 0.17969834 | $\omega$ | 192.29386 | +0.94784936 | −0.31819882 |          |     |  |
| <i>a</i> | 3.1100928  | $\Omega$ | 186.34920 | +0.30458277 | +0.92114696 |          |     |  |
| <i>e</i> | 0.1179594  | <i>i</i> | 9.47063   | +0.09386654 | +0.22413788 |          |     |  |
| <i>P</i> | 5.48       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 3   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.1− | 0.1− | 2005 04 11 | G96 | 0.0  | 0.4− | 2007 09 12 | 699 | 0.6+ | 0.9+ |
| 2005 03 09 | G96 | 0.3− | 0.2+ | 2005 04 12 | 691 | 0.1+ | 0.2+ | 2007 10 08 | G96 | 0.4+ | 0.2− |
| 2005 03 09 | G96 | 0.0  | 0.4− | 2005 04 12 | 691 | 0.0  | 0.3+ | 2007 10 08 | G96 | 0.3+ | 0.2− |
| 2005 03 09 | G96 | 0.3− | 0.4− | 2005 04 12 | 691 | 0.2+ | 0.2+ | 2007 10 08 | G96 | 0.4− | 0.2− |
| 2005 04 02 | 691 | 0.3+ | 0.1− | 2005 05 11 | G96 | 0.2− | 0.3− | 2007 10 08 | G96 | 0.0  | 0.1− |
| 2005 04 02 | 691 | 0.2+ | 0.1+ | 2005 05 11 | G96 | 0.2− | 0.3− | 2007 10 30 | G96 | 0.2− | 0.0  |
| 2005 04 02 | 691 | 0.2+ | 0.0  | 2005 05 11 | G96 | 0.5− | 0.2− | 2007 10 30 | G96 | 0.7+ | 0.8+ |
| 2005 04 10 | G96 | 0.3− | 0.1+ | 2005 05 11 | G96 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.2− | 0.3− |
| 2005 04 10 | G96 | 0.3− | 0.2+ | 2007 08 23 | 691 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.4− | 0.4− |
| 2005 04 10 | G96 | 0.5− | 0.0  | 2007 08 23 | 691 | 0.3− | 0.1+ | 2007 11 09 | G96 | 0.6− | 0.1+ |
| 2005 04 10 | G96 | 0.6− | 0.1+ | 2007 08 23 | 691 | 0.1− | 0.2− | 2007 11 09 | G96 | 0.1− | 0.1+ |
| 2005 04 11 | G96 | 0.1+ | 0.6− | 2007 09 12 | 699 | 1.1+ | 0.1− | 2007 11 09 | G96 | 0.2− | 0.4+ |
| 2005 04 11 | G96 | 0.0  | 0.2− | 2007 09 12 | 699 | 0.1− | 0.1+ | 2007 11 09 | G96 | 0.8+ | 0.0  |
| 2005 04 11 | G96 | 0.1− | 0.4− | 2007 09 12 | 699 | 0.2+ | 0.6− |            |     |      |      |

**2005 GT<sub>107</sub> = 2007 UJ<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 153.51669  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|-----|--|
| <i>n</i> | 0.21315309 | $\omega$ | 223.21770 | −0.35549658 | +0.93376300 |          |     |  |
| <i>a</i> | 2.7755026  | $\Omega$ | 26.04027  | −0.82985799 | −0.29497061 |          |     |  |
| <i>e</i> | 0.0448147  | <i>i</i> | 5.40317   | −0.43006731 | −0.20267952 |          |     |  |
| <i>P</i> | 4.62       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 3   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 17 | 691 | 0.1+ | 0.1− | 2005 04 11 | 691 | 0.1+ | 0.1− | 2007 10 31 | G96 | 0.3+ | 0.1+ |
| 2005 03 17 | 691 | 0.1+ | 0.1− | 2005 04 11 | 691 | 0.0  | 0.0  | 2007 10 31 | G96 | 0.3+ | 0.3− |
| 2005 03 17 | 691 | 0.0  | 0.1+ | 2005 04 11 | 691 | 0.2+ | 0.1− | 2007 10 31 | G96 | 0.3+ | 0.6− |
| 2005 04 02 | G96 | 0.0  | 0.0  | 2005 05 04 | G96 | 0.2− | 0.2− | 2007 11 02 | 691 | 0.3+ | 0.1− |
| 2005 04 02 | G96 | 0.4− | 0.4+ | 2005 05 04 | G96 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.0  | 0.3+ |
| 2005 04 02 | G96 | 0.2− | 0.2+ | 2005 05 04 | G96 | 0.5− | 0.3+ | 2007 11 02 | 691 | 0.2+ | 0.2+ |
| 2005 04 02 | G96 | 0.4− | 0.0  | 2005 05 04 | G96 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2005 04 10 | G96 | 0.2− | 0.2+ | 2007 10 15 | 691 | 0.3− | 0.3− | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2005 04 10 | G96 | 0.2− | 0.1+ | 2007 10 15 | 691 | 0.1− | 0.3+ | 2007 11 19 | 691 | 0.1− | 0.1− |
| 2005 04 10 | G96 | 0.1− | 0.0  | 2007 10 15 | 691 | 0.3− | 0.2+ |            |     |      |      |
| 2005 04 10 | G96 | 0.2− | 0.0  | 2007 10 31 | G96 | 0.1+ | 0.2− |            |     |      |      |

**2005 GZ<sub>107</sub> = 2007 TV<sub>267</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 334.00017  | (2000.0) | <b>P</b> |             | <b>Q</b>    |          | MPC |  |
|----------|------------|----------|----------|-------------|-------------|----------|-----|--|
| <i>n</i> | 0.20949917 | $\omega$ | 26.30035 | +0.51656706 | −0.85428485 |          |     |  |
| <i>a</i> | 2.8076815  | $\Omega$ | 32.68973 | +0.76547600 | +0.43043214 |          |     |  |
| <i>e</i> | 0.0385256  | <i>i</i> | 6.15737  | +0.38367299 | +0.29141991 |          |     |  |
| <i>P</i> | 4.70       | <i>H</i> | 16.5     | <i>G</i>    | 0.15        | <i>U</i> | 3   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 18 | 691 | 0.1+ | 0.1+ | 2005 05 04 | G96 | 0.1− | 0.4− | 2007 10 21 | 691 | 0.2− | 0.1+ |
| 2003 12 18 | 691 | 0.0  | 0.0  | 2005 05 04 | G96 | 0.1− | 0.1− | 2007 10 21 | 691 | 0.5+ | 0.3+ |
| 2003 12 18 | 691 | 0.1− | 0.3− | 2007 09 25 | G96 | 0.6+ | 0.5− | 2007 10 21 | 691 | 0.2− | 0.1+ |
| 2005 04 10 | G96 | 0.2− | 0.3+ | 2007 09 25 | G96 | 1.2+ | 0.8− | 2007 11 01 | G96 | 0.2− | 0.0  |
| 2005 04 10 | G96 | 0.0  | 0.3+ | 2007 09 25 | G96 | 1.0+ | 1.2− | 2007 11 01 | G96 | 0.0  | 0.0  |
| 2005 04 10 | G96 | 0.0  | 0.2+ | 2007 09 25 | G96 | 0.8+ | 0.4− | 2007 11 01 | G96 | 0.1− | 0.1− |
| 2005 04 10 | G96 | 0.7− | 0.1− | 2007 10 09 | 691 | 0.1− | 0.4− | 2007 11 01 | G96 | 0.1+ | 0.0  |
| 2005 04 11 | 691 | 0.2− | 0.4+ | 2007 10 09 | 691 | 0.3− | 0.7+ | 2007 11 17 | G96 | 0.5+ | 0.2+ |
| 2005 04 11 | 691 | 0.4+ | 0.2− | 2007 10 09 | 691 | 0.1− | 0.3− | 2007 11 17 | G96 | 0.1− | 0.1+ |
| 2005 04 11 | 691 | 0.3+ | 0.1+ | 2007 10 13 | 691 | 0.0  | 0.3− | 2007 11 17 | G96 | 0.4+ | 0.7+ |
| 2005 05 04 | G96 | 0.0  | 0.2+ | 2007 10 13 | 691 | 0.3− | 0.5+ | 2007 11 17 | G96 | 0.4+ | 0.1+ |
| 2005 05 04 | G96 | 0.1+ | 0.3+ | 2007 10 13 | 691 | 0.6− | 0.2+ |            |     |      |      |

**2005 GF<sub>116</sub> = 2007 VJ<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 69.21620   | (2000.0) | <b>P</b>  |             | <b>Q</b>    |          | MPC |  |
|----------|------------|----------|-----------|-------------|-------------|----------|-----|--|
| <i>n</i> | 0.19305385 | $\omega$ | 120.58401 | +0.86521241 | +0.48851581 |          |     |  |
| <i>a</i> | 2.9649479  | $\Omega$ | 210.59611 | −0.50132276 | +0.83873824 |          |     |  |
| <i>e</i> | 0.1350116  | <i>i</i> | 12.82249  | −0.00910936 | +0.24056280 |          |     |  |
| <i>P</i> | 5.11       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 0   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 22 | 645 | 0.0  | 0.1− | 2005 04 12 | 691 | 0.3+ | 0.4+ | 2007 11 02 | G96 | 0.5+  | 0.0   |
| 1999 03 22 | 645 | 0.0  | 0.1− | 2005 04 12 | 691 | 0.2+ | 0.0  | 2007 11 02 | G96 | 0.2+  | 0.2−  |
| 2001 07 14 | 644 | 0.3− | 0.1+ | 2005 04 17 | 691 | 0.2+ | 0.3+ | 2007 11 06 | D29 | (1.8+ | 0.5+) |
| 2001 07 14 | 644 | 0.2− | 0.4+ | 2005 04 17 | 691 | 0.2+ | 0.4+ | 2007 11 06 | D29 | 0.6−  | 0.5+  |
| 2001 07 14 | 644 | 0.4− | 0.2+ | 2005 04 17 | 691 | 0.0  | 0.2+ | 2007 11 06 | D29 | 0.3−  | 0.5+  |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2005 05 08 | G96 | 0.4− | 0.1− | 2007 11 06 | D29 | 1.0−  | 0.3+  |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2005 05 08 | G96 | 0.9− | 0.0  | 2007 11 18 | G96 | 0.5+  | 0.0   |
| 2002 12 10 | 644 | 0.2+ | 0.9+ | 2005 05 08 | G96 | 0.5− | 0.2+ | 2007 11 18 | G96 | 1.3−  | 0.4+  |
| 2002 12 10 | 644 | 0.1+ | 0.9+ | 2005 05 08 | G96 | 0.5− | 0.2− | 2007 11 18 | G96 | 0.1+  | 0.0   |
| 2002 12 10 | 644 | 0.5+ | 0.8+ | 2006 06 01 | 691 | 0.2+ | 0.3+ | 2007 11 18 | G96 | 0.1−  | 0.0   |
| 2005 04 11 | 691 | 0.1− | 0.2+ | 2006 06 01 | 691 | 0.2+ | 0.2+ | 2007 11 20 | 703 | 0.0   | 1.8+  |
| 2005 04 11 | 691 | 0.1+ | 0.1+ | 2006 06 01 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 703 | 1.2+  | 0.8+  |
| 2005 04 11 | 691 | 0.0  | 0.4+ | 2007 11 02 | G96 | 0.1− | 0.1+ | 2007 11 20 | 703 | 0.3−  | 0.4+  |
| 2005 04 12 | 691 | 0.3− | 0.1− | 2007 11 02 | G96 | 0.1+ | 0.0  | 2007 11 20 | 703 | 0.1−  | 0.4+  |

**2005 GL<sub>117</sub> = 2007 VB<sub>124</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |      |             |   |  |  |
|-----|------------|----------|-----------|-------------|------|-------------|---|--|--|
| $M$ | 187.84950  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| $n$ | 0.21098583 | $\omega$ | 341.44270 | −0.78840080 |      | +0.61340362 |   |  |  |
| $a$ | 2.7944769  | $\Omega$ | 236.48254 | −0.55710795 |      | −0.74399739 |   |  |  |
| $e$ | 0.1412126  | $i$      | 3.19575   | −0.26087336 |      | −0.26496016 |   |  |  |
| $P$ | 4.67       | $H$      | 16.0      | $G$         | 0.15 | $U$         | 3 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 17 | G96 | 0.1− | 0.7− | 2005 04 18 | 703 | 0.9− | 0.3+ | 2007 11 04 | G96 | 0.3+ | 0.2− |
| 2005 03 17 | G96 | 0.4+ | 1.0− | 2005 05 14 | G96 | 0.1+ | 0.3− | 2007 11 04 | G96 | 0.0  | 0.1− |
| 2005 03 17 | G96 | 0.5− | 0.5− | 2005 05 14 | G96 | 0.3− | 0.1+ | 2007 11 04 | G96 | 0.3+ | 0.3− |
| 2005 03 17 | G96 | 0.4− | 0.5− | 2005 05 14 | G96 | 0.5− | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.1− |
| 2005 04 11 | 691 | 0.1+ | 0.1+ | 2005 05 14 | G96 | 0.4− | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 2005 04 11 | 691 | 0.0  | 0.0  | 2006 08 28 | 703 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2005 04 11 | 691 | 0.2+ | 0.0  | 2006 08 28 | 703 | 0.2− | 0.9+ | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2005 04 12 | 691 | 0.1+ | 0.3+ | 2006 08 28 | 703 | 0.1− | 1.1− | 2007 11 05 | G96 | 0.8+ | 0.4− |
| 2005 04 12 | 691 | 0.1− | 0.2+ | 2006 08 28 | 703 | 0.5+ | 1.3− | 2007 11 11 | G96 | 0.2+ | 0.1− |
| 2005 04 12 | 691 | 0.1− | 0.1+ | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 11 | G96 | 0.2+ | 0.3− |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 15 | 691 | 0.0  | 0.1− | 2007 10 18 | 691 | 0.2− | 0.4+ | 2007 11 11 | G96 | 0.9+ | 0.4− |
| 2005 04 15 | 691 | 0.7+ | 0.5− | 2007 10 18 | 691 | 1.1− | 0.1− | 2007 11 11 | G96 | 0.2− | 0.4− |
| 2005 04 15 | 691 | 0.0  | 0.1+ | 2007 11 04 | G96 | 0.5+ | 0.1− | 2007 11 11 | G96 | 0.1− | 0.1− |
| 2005 04 18 | 703 | 0.4− | 0.9− | 2007 11 04 | G96 | 0.6+ | 0.8+ | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 2005 04 18 | 703 | 0.5− | 1.4− | 2007 11 04 | G96 | 0.6+ | 0.2− | 2007 11 11 | G96 | 0.2+ | 0.4− |
| 2005 04 18 | 703 | 0.9− | 0.3− | 2007 11 04 | G96 | 0.1− | 0.8− | 2007 11 11 | G96 | 0.2+ | 0.3− |

**2005 GT<sub>123</sub>**

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             | MPC         |          |   |
| $M$                                     | 186.26654  | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| $n$                                     | 0.22230861 | $\varpi$ | 153.63856 | −0.58796967 | +0.77966883 |          |   |
| $a$                                     | 2.6987658  | $\Omega$ | 79.59360  | −0.77543789 | −0.46751097 |          |   |
| $e$                                     | 0.1383119  | $i$      | 12.65197  | −0.23019068 | −0.41659334 |          |   |
| $P$                                     | 4.43       | $H$      | 15.4      | $G$         | 0.15        | $U$      | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 01 | 699 | 0.3− | 0.2− | 2005 04 13 | 703 | 0.4− | 0.4+ | 2005 05 06 | 704 | 0.5+ | 0.0  |
| 2005 04 01 | 699 | 0.4− | 0.3+ | 2005 04 13 | 703 | 0.1− | 0.2− | 2005 05 06 | 704 | 0.4+ | 0.5+ |
| 2005 04 01 | 699 | 1.1+ | 0.3− | 2005 04 18 | 704 | 0.3+ | 0.3+ | 2005 05 06 | 704 | 0.4+ | 0.5+ |
| 2005 04 01 | 699 | 0.1− | 0.0  | 2005 04 18 | 704 | 0.4+ | 1.2+ | 2005 05 06 | 704 | 0.6+ | 0.2+ |
| 2005 04 08 | 704 | 0.2+ | 0.1− | 2005 04 18 | 704 | 0.1− | 0.2− | 2007 12 14 | A77 | 0.3+ | 0.1+ |
| 2005 04 08 | 704 | 0.5+ | 0.1+ | 2005 04 18 | 704 | 1.3+ | 0.7− | 2007 12 14 | A77 | 0.5− | 0.2+ |
| 2005 04 08 | 704 | 0.1− | 0.3+ | 2005 05 04 | 703 | 0.6− | 0.9− | 2007 12 14 | A77 | 0.5− | 0.1+ |
| 2005 04 08 | 704 | 0.1− | 0.4− | 2005 05 04 | 703 | 0.6− | 1.6− | 2007 12 15 | A77 | 0.1+ | 0.0  |
| 2005 04 13 | 703 | 0.8− | 0.1+ | 2005 05 04 | 703 | 0.9− | 1.0+ | 2007 12 15 | A77 | 0.3+ | 0.7− |
| 2005 04 13 | 703 | 0.9− | 0.5− | 2005 05 04 | 703 | 0.2− | 0.1− | 2007 12 15 | A77 | 0.3+ | 0.4+ |

**2005 GO<sub>124</sub> = 2007 UU<sub>87</sub>**

|                                         |            |          |           |     |             |             |   |
|-----------------------------------------|------------|----------|-----------|-----|-------------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |     | MPC         |             |   |
| $M$                                     | 211.71475  |          | (2000.0)  |     | <b>P</b>    | <b>Q</b>    |   |
| $n$                                     | 0.24615216 | $\varpi$ | 154.88150 |     | −0.90171084 | +0.39186560 |   |
| $a$                                     | 2.5215463  | $\Omega$ | 49.45132  |     | −0.42604571 | −0.73357594 |   |
| $e$                                     | 0.0567543  | $i$      | 13.90823  |     | −0.07350246 | −0.55525462 |   |
| $P$                                     | 4.00       | $H$      | 16.2      | $G$ | 0.15        | $U$         | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 01 | 691 | 0.1− | 0.0  | 2005 04 09 | 703 | 0.6− | 0.9+ | 2007 10 17 | G96 | 0.1− | 0.2− |
| 2003 12 01 | 691 | 0.2+ | 0.2− | 2005 04 12 | 704 | 0.5+ | 0.4− | 2007 10 17 | G96 | 0.3+ | 0.1+ |
| 2003 12 01 | 691 | 0.2+ | 0.3− | 2005 04 12 | 704 | 0.3− | 0.1+ | 2007 10 17 | G96 | 0.2− | 0.2− |
| 2005 03 16 | 703 | 1.1+ | 0.3− | 2005 04 12 | 704 | 1.3+ | 1.4− | 2007 10 30 | 691 | 0.2− | 0.1− |
| 2005 03 16 | 703 | 1.5+ | 0.3− | 2005 04 12 | 704 | 0.1− | 0.9+ | 2007 10 30 | 691 | 0.4− | 0.0  |
| 2005 03 16 | 703 | 1.5− | 0.9− | 2007 10 09 | G96 | 0.8+ | 0.0  | 2007 10 30 | 691 | 0.5− | 0.6+ |
| 2005 03 16 | 703 | 0.4− | 0.2+ | 2007 10 09 | G96 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 2005 04 09 | 703 | 0.2− | 0.7− | 2007 10 09 | G96 | 0.2+ | 0.0  | 2007 11 03 | 691 | 0.2− | 0.1+ |
| 2005 04 09 | 703 | 0.8− | 1.0+ | 2007 10 09 | G96 | 0.4+ | 0.4− | 2007 11 03 | 691 | 0.5− | 0.2+ |
| 2005 04 09 | 703 | 0.6− | 1.0+ | 2007 10 17 | G96 | 0.4+ | 0.3+ |            |     |      |      |

**2005 GE<sub>130</sub> = 2007 VC<sub>186</sub>**

|                                         |            |          |           |     |             |             |   |
|-----------------------------------------|------------|----------|-----------|-----|-------------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |     | MPC         |             |   |
| $M$                                     | 90.76030   |          | (2000.0)  |     | <b>P</b>    | <b>Q</b>    |   |
| $n$                                     | 0.18153105 | $\omega$ | 266.61849 |     | +0.52751659 | +0.84922999 |   |
| $a$                                     | 3.0891247  | $\Omega$ | 35.25053  |     | -0.76266920 | +0.48538689 |   |
| $e$                                     | 0.0711893  | $i$      | 2.29609   |     | -0.37424849 | +0.20786531 |   |
| $P$                                     | 5.43       | $H$      | 16.0      | $G$ | 0.15        | $U$         | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 13 | 691 | 0.5− | 0.3+ | 2007 10 21 | 691 | 0.9− | 0.7+ | 2007 11 09 | G96 | 0.3+ | 0.0  |
| 1996 09 13 | 691 | 0.3+ | 0.1− | 2007 10 21 | 691 | 0.2− | 0.1+ | 2007 11 09 | G96 | 0.0  | 0.3− |
| 1996 09 13 | 691 | 0.3+ | 0.5− | 2007 10 21 | 691 | 0.2+ | 0.1+ | 2007 11 10 | H55 | 0.4− | 0.4+ |
| 2005 04 07 | 691 | 0.2+ | 0.1− | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 11 10 | H55 | 0.5− | 0.3+ |
| 2005 04 07 | 691 | 0.4+ | 0.0  | 2007 10 30 | G96 | 1.5+ | 0.1− | 2007 11 10 | H55 | 0.5− | 0.2+ |
| 2005 04 07 | 691 | 0.4− | 0.1+ | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.1− |
| 2005 04 14 | 691 | 0.2− | 0.3− | 2007 10 30 | G96 | 0.6+ | 0.4− | 2007 11 11 | G96 | 0.1− | 0.3+ |
| 2005 04 14 | 691 | 0.1− | 0.0  | 2007 11 09 | G96 | 0.1− | 0.2− | 2007 11 11 | G96 | 0.1+ | 0.5− |
| 2005 04 14 | 691 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.4− | 0.2− | 2007 11 11 | G96 | 0.2+ | 0.0  |

## M.P.O. 129737

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 07 | G96 | 0.1+ | 0.3+ | 2007 11 09 | G96 | 0.5− | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.2− |
| 2005 05 07 | G96 | 0.3+ | 0.6+ | 2007 11 09 | G96 | 0.3− | 0.3− | 2007 11 11 | G96 | 0.4+ | 0.3− |
| 2005 05 07 | G96 | 0.3+ | 0.3+ | 2007 11 09 | G96 | 0.2+ | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.4− |
| 2005 05 07 | G96 | 0.3+ | 0.2+ | 2007 11 09 | G96 | 0.0  | 0.2− | 2007 11 11 | G96 | 0.6+ | 0.0  |

**2005 GS<sub>131</sub>**

|                                         |            |          |           |     |              |             |     |              |             |     |  |
|-----------------------------------------|------------|----------|-----------|-----|--------------|-------------|-----|--------------|-------------|-----|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |     |              |             |     |              |             | MPC |  |
| $M$                                     | 141.26373  | (2000.0) |           |     | $\mathbf{P}$ |             |     | $\mathbf{Q}$ |             |     |  |
| $n$                                     | 0.19571945 | $\omega$ | 212.89606 |     |              | -0.36646395 |     |              | +0.92092178 |     |  |
| $a$                                     | 2.9379657  | $\Omega$ | 36.11145  |     |              | -0.79760979 |     |              | -0.23750619 |     |  |
| $e$                                     | 0.0583365  | $i$      | 13.01154  |     |              | -0.47908537 |     |              | -0.30902086 |     |  |
| $P$                                     | 5.04       | $H$      | 16.6      | $G$ |              | 0.15        | $U$ |              | 3           |     |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 24 | 691 | 0.3+ | 0.0  | 2005 04 18 | 691 | 0.1+ | 0.0  | 2007 10 12 | 691 | 1.1− | 0.9+ |
| 2000 04 24 | 691 | 0.3+ | 0.4+ | 2005 05 04 | 691 | 0.0  | 0.4+ | 2007 10 20 | 691 | 0.1− | 0.1+ |
| 2000 04 24 | 691 | 0.0  | 0.5+ | 2005 05 04 | 691 | 0.1+ | 0.3+ | 2007 10 20 | 691 | 0.1− | 0.2+ |
| 2005 04 01 | 691 | 0.0  | 0.1− | 2005 05 04 | 691 | 0.2+ | 0.3+ | 2007 10 20 | 691 | 0.2− | 0.1− |
| 2005 04 01 | 691 | 0.1− | 0.4− | 2005 05 10 | G96 | 0.5− | 0.2+ | 2007 10 30 | G96 | 0.1− | 0.1+ |
| 2005 04 01 | 691 | 0.2− | 0.1+ | 2005 05 10 | G96 | 0.3− | 0.4+ | 2007 10 30 | G96 | 0.1+ | 0.1+ |
| 2005 04 10 | 691 | 0.3− | 0.2+ | 2005 05 10 | G96 | 0.1− | 0.5+ | 2007 10 30 | G96 | 0.6+ | 0.1− |
| 2005 04 10 | 691 | 0.1+ | 0.0  | 2005 05 10 | G96 | 0.9− | 0.0  | 2007 10 30 | G96 | 1.0+ | 0.3+ |
| 2005 04 10 | 691 | 0.1− | 0.2− | 2007 09 15 | G96 | 0.0  | 0.3− | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 2005 04 14 | 691 | 0.1+ | 0.1+ | 2007 09 15 | G96 | 0.4+ | 0.1+ | 2007 11 18 | G96 | 0.5+ | 0.4+ |
| 2005 04 14 | 691 | 0.3− | 0.3− | 2007 09 15 | G96 | 0.3+ | 0.6− | 2007 11 18 | G96 | 0.2+ | 0.1− |
| 2005 04 14 | 691 | 0.1+ | 0.1+ | 2007 09 15 | G96 | 0.3+ | 0.4− | 2007 11 18 | G96 | 0.6− | 1.4− |
| 2005 04 18 | 691 | 0.4+ | 0.3− | 2007 10 12 | 691 | 0.0  | 0.2+ |            |     |      |      |
| 2005 04 18 | 691 | 0.4+ | 0.0  | 2007 10 12 | 691 | 0.0  | 0.4+ |            |     |      |      |

**2005 GF<sub>133</sub>**

|                                         |            |          |           |     |              |     |             |              |  |     |  |
|-----------------------------------------|------------|----------|-----------|-----|--------------|-----|-------------|--------------|--|-----|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |     |              |     |             |              |  | MPC |  |
| $M$                                     | 17.53625   | (2000.0) |           |     | $\mathbf{P}$ |     |             | $\mathbf{Q}$ |  |     |  |
| $n$                                     | 0.22246545 | $\omega$ | 285.72535 |     | +0.82994033  |     | -0.55488533 |              |  |     |  |
| $a$                                     | 2.6974972  | $\Omega$ | 108.00990 |     | +0.53216370  |     | +0.75661660 |              |  |     |  |
| $e$                                     | 0.0609779  | $i$      | 3.46377   |     | +0.16733453  |     | +0.34588090 |              |  |     |  |
| $P$                                     | 4.43       | $H$      | 16.4      | $G$ | 0.15         | $U$ | 1           |              |  |     |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 17 | 291 | 0.2+  | 0.1+  | 2005 04 18 | 691 | 0.3+ | 0.4+ | 2007 11 14 | 704 | 0.6+ | 0.2− |
| 2003 12 17 | 291 | 0.0   | 0.1−  | 2005 04 18 | 691 | 0.1+ | 0.4+ | 2007 11 14 | 704 | 0.7+ | 0.3− |
| 2003 12 17 | 291 | 0.2−  | 0.2−  | 2005 04 18 | 691 | 0.3+ | 0.3+ | 2007 11 14 | 704 | 0.3− | 0.6+ |
| 2005 03 16 | G96 | 1.2−  | 0.0   | 2006 06 21 | 691 | 0.4− | 0.4+ | 2007 11 14 | 704 | 0.9+ | 0.8− |
| 2005 03 16 | G96 | 0.4−  | 0.6−  | 2006 06 21 | 691 | 0.1− | 0.4+ | 2007 11 14 | 704 | 0.4+ | 0.1− |
| 2005 03 16 | G96 | 0.2−  | 0.3−  | 2006 06 21 | 691 | 0.1+ | 0.5+ | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2005 03 16 | G96 | (1.6− | 0.7−) | 2007 10 31 | 691 | 0.3− | 0.5+ | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2005 04 10 | 691 | 0.0   | 0.2−  | 2007 10 31 | 691 | 0.2− | 0.4+ | 2007 11 19 | 691 | 0.1− | 0.2+ |
| 2005 04 10 | 691 | 0.2+  | 0.2−  | 2007 10 31 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 1.3− | 0.2− |
| 2005 04 10 | 691 | 0.0   | 0.3+  | 2007 11 12 | 704 | 1.1+ | 0.8+ | 2007 12 05 | 704 | 0.3+ | 0.8+ |
| 2005 04 14 | 691 | 0.2+  | 0.4+  | 2007 11 12 | 704 | 0.5− | 0.9+ | 2007 12 05 | 704 | 0.6− | 0.8+ |
| 2005 04 14 | 691 | 0.1−  | 0.6+  | 2007 11 12 | 704 | 0.2− | 1.3+ | 2007 12 05 | 704 | 1.1− | 0.8+ |
| 2005 04 14 | 691 | 0.3+  | 0.4+  | 2007 11 12 | 704 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.2− | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 12 | G96 | 0.3+ | 0.0  | 2005 04 12 | G96 | 0.0  | 0.0  | 2007 09 08 | G96 | 0.1- | 0.1+ |
| 2005 04 12 | G96 | 0.7+ | 0.1- | 2005 04 12 | G96 | 0.3- | 0.1+ | 2007 10 12 | 691 | 1.1+ | 0.4- |
| 2005 04 12 | G96 | 0.2- | 0.2+ | 2005 04 12 | G96 | 0.2- | 0.1- | 2007 10 12 | 691 | 1.4- | 0.2+ |
| 2005 04 12 | G96 | 0.0  | 0.0  | 2005 04 14 | 703 | 0.9+ | 0.4+ | 2007 10 12 | 691 | 0.4- | 0.2- |
| 2005 04 12 | G96 | 0.2- | 0.1+ | 2005 04 14 | 703 | 0.1- | 0.6- | 2007 10 20 | 691 | 0.1- | 0.3+ |
| 2005 04 12 | G96 | 0.2- | 0.2+ | 2005 04 14 | 703 | 0.1+ | 1.1- | 2007 10 20 | 691 | 0.2- | 0.4+ |
| 2005 04 12 | G96 | 0.0  | 0.1+ | 2005 04 14 | 703 | 0.1- | 0.0  | 2007 10 20 | 691 | 0.2+ | 0.3+ |
| 2005 04 12 | G96 | 0.1- | 0.3+ | 2005 05 01 | 644 | 0.3+ | 0.1+ |            |     |      |      |
| 2005 04 12 | G96 | 0.2- | 0.0  | 2005 05 01 | 644 | 0.2+ | 0.0  |            |     |      |      |

**2005 GH<sub>145</sub> = 2007 UP<sub>100</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.23250923 | $\omega$ | 206.88397 | -0.25526411 | -0.96628410 |          |   |
| <i>a</i> | 2.6192438  | $\Omega$ | 257.92083 | +0.89316965 | -0.22231801 |          |   |
| <i>e</i> | 0.0226733  | <i>i</i> | 1.97462   | +0.37025424 | -0.12988361 |          |   |
| <i>P</i> | 4.24       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 11 | 691 | 0.2+ | 0.1+ | 2006 05 24 | G96 | 0.2- | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.2+ |
| 2005 04 11 | 691 | 0.1+ | 0.0  | 2006 05 24 | G96 | 0.4+ | 0.3+ | 2007 11 14 | 691 | 0.2+ | 0.3+ |
| 2005 04 11 | 691 | 0.1- | 0.1+ | 2007 09 15 | G96 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2005 04 15 | 691 | 0.1- | 0.1+ | 2007 09 15 | G96 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.1+ | 0.1- |
| 2005 04 15 | 691 | 0.3+ | 0.1+ | 2007 09 15 | G96 | 0.1- | 0.1- | 2007 11 18 | 691 | 0.2+ | 0.2- |
| 2005 04 15 | 691 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2005 04 17 | 691 | 0.2+ | 0.2- | 2007 10 30 | 691 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2005 04 17 | 691 | 0.2+ | 0.0  | 2007 10 30 | 691 | 0.4- | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2005 04 17 | 691 | 0.1- | 0.1+ | 2007 10 30 | 691 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2006 05 24 | G96 | 0.4- | 0.6+ | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.1+ | 0.4- |
| 2006 05 24 | G96 | 0.2- | 0.3+ | 2007 11 03 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.2+ | 0.2- |

**2005 GW<sub>149</sub> = 2007 VP<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.19396872 | $\omega$ | 172.60619 | +0.40402357 | +0.91093625 |          |   |
| <i>a</i> | 2.9556176  | $\Omega$ | 121.19090 | -0.84417865 | +0.40642731 |          |   |
| <i>e</i> | 0.0685117  | <i>i</i> | 5.59666   | -0.35231714 | +0.07079548 |          |   |
| <i>P</i> | 5.08       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 12 | 691 | 0.0  | 0.1- | 2005 04 15 | 691 | 0.3+ | 0.2- | 2007 11 05 | 691 | 0.3+ | 0.1+ |
| 2004 02 12 | 691 | 0.1- | 0.2+ | 2005 04 30 | 691 | 0.5- | 0.4+ | 2007 11 05 | 691 | 0.2+ | 0.2- |
| 2004 02 12 | 691 | 0.2+ | 0.0  | 2005 04 30 | 691 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.2- | 0.1- |
| 2005 04 11 | 691 | 0.2- | 0.1- | 2005 04 30 | 691 | 0.2+ | 0.3+ | 2007 11 09 | 691 | 0.3- | 0.3- |
| 2005 04 11 | 691 | 0.0  | 0.5- | 2005 05 11 | 691 | 0.2- | 0.2+ | 2007 11 09 | 691 | 0.4- | 0.1+ |
| 2005 04 11 | 691 | 0.3+ | 0.9- | 2005 05 11 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.4+ |
| 2005 04 15 | 691 | 0.1+ | 0.1+ | 2005 05 11 | 691 | 0.3+ | 0.4+ | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2005 04 15 | 691 | 0.2- | 0.1+ | 2007 11 05 | 691 | 0.4+ | 0.2- | 2007 11 20 | 691 | 0.0  | 0.0  |

**2005 GQ<sub>151</sub> = 2007 VQ<sub>80</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.20078776 | $\omega$ | 5.47025   | -0.76788333 | +0.63897755 |          |   |
| <i>a</i> | 2.8883151  | $\Omega$ | 214.38115 | -0.59073740 | -0.73376507 |          |   |
| <i>e</i> | 0.1056299  | <i>i</i> | 4.61334   | -0.24775900 | -0.23086037 |          |   |
| <i>P</i> | 4.91       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.1- | 0.2- | 2005 04 12 | G96 | 0.3- | 0.3- | 2006 06 19 | 691 | 0.1- | 0.3+ |
| 2000 03 03 | 645 | 0.0  | 0.2- | 2005 04 12 | G96 | 0.0  | 0.2+ | 2006 06 19 | 691 | 0.2+ | 0.6+ |
| 2005 03 17 | 691 | 0.3+ | 0.3+ | 2005 04 13 | 699 | 1.3- | 0.1- | 2006 06 19 | 691 | 0.3+ | 0.7+ |
| 2005 03 17 | 691 | 0.4+ | 0.2+ | 2005 04 13 | 699 | 0.3- | 0.0  | 2007 11 04 | 691 | 0.6- | 0.7+ |
| 2005 03 17 | 691 | 0.2+ | 0.4+ | 2005 04 13 | 699 | 0.3+ | 0.1- | 2007 11 04 | 691 | 0.2- | 0.3+ |
| 2005 04 02 | 644 | 0.8+ | 0.7+ | 2005 04 13 | 699 | 1.6- | 0.7- | 2007 11 04 | 691 | 0.1+ | 0.2+ |
| 2005 04 02 | 644 | 0.9+ | 0.4+ | 2006 06 19 | G96 | 0.0  | 0.3- | 2007 11 05 | G96 | 0.1- | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | 644 | 0.6+ | 0.6+ | 2006 06 19 | G96 | 0.0  | 0.4- | 2007 11 05 | G96 | 0.5+ | 0.2- |
| 2005 04 12 | G96 | 0.2+ | 0.1- | 2006 06 19 | G96 | 0.4- | 0.4- | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2005 04 12 | G96 | 0.1+ | 0.2- | 2006 06 19 | G96 | 0.2- | 0.1- | 2007 11 05 | G96 | 0.0  | 0.2+ |

**2005 GZ<sub>158</sub> = 2004 BR<sub>141</sub> = 2007 TG<sub>77</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC         |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 128.80079 | $\omega$ | 346.50132 | -0.22763014 | +0.97094504 |          |   |
| <i>a</i> | 3.0921605 | $\Omega$ | 270.30361 | -0.88640126 | -0.23799927 |          |   |
| <i>e</i> | 0.1137504 | <i>i</i> | 4.23382   | -0.40308477 | -0.02494140 |          |   |
| <i>P</i> | 5.44      | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 19 | 691 | 0.0  | 0.3+ | 2005 04 16 | 691 | 0.3+ | 0.2+ | 2007 10 05 | 691 | 0.2- | 0.1- |
| 2004 01 19 | 691 | 0.2- | 0.1- | 2005 04 16 | 691 | 0.1+ | 0.3+ | 2007 10 09 | 691 | 0.2+ | 0.3+ |
| 2004 01 19 | 691 | 0.3- | 0.0  | 2005 04 16 | 691 | 0.0  | 0.4+ | 2007 10 09 | 691 | 0.0  | 0.1+ |
| 2004 01 28 | 691 | 0.2+ | 0.0  | 2006 05 26 | G96 | 0.3+ | 0.2+ | 2007 10 09 | 691 | 0.0  | 0.5+ |
| 2004 01 28 | 691 | 0.2+ | 0.1+ | 2006 05 26 | G96 | 0.2- | 0.3+ | 2007 10 13 | 691 | 0.1- | 0.4+ |
| 2004 01 28 | 691 | 0.2+ | 0.1+ | 2006 05 26 | G96 | 0.2- | 0.1+ | 2007 10 13 | 691 | 0.1- | 0.3+ |
| 2005 04 12 | 691 | 0.1+ | 0.2+ | 2006 05 26 | G96 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.2- | 0.3+ |
| 2005 04 12 | 691 | 0.1- | 0.8+ | 2007 10 05 | 691 | 1.0- | 0.0  |            |     |      |      |
| 2005 04 12 | 691 | 0.3+ | 0.1+ | 2007 10 05 | 691 | 0.6+ | 0.6+ |            |     |      |      |

**2005 GN<sub>159</sub> = 2007 VU<sub>182</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.22951926 | $\omega$ | 331.92848 | -0.99525379 | -0.03218549 |          |   |
| <i>a</i> | 2.6419421  | $\Omega$ | 206.70672 | +0.05196397 | -0.97368307 |          |   |
| <i>e</i> | 0.1261610  | <i>i</i> | 11.79106  | -0.08227784 | -0.22562218 |          |   |
| <i>P</i> | 4.29       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.3- | 0.4- | 2007 10 08 | G96 | 0.8- | 0.5- | 2007 11 08 | G96 | 0.0  | 0.4- |
| 2005 04 02 | G96 | 0.4- | 0.1- | 2007 10 08 | G96 | 0.8+ | 0.6+ | 2007 11 08 | G96 | 0.6+ | 0.0  |
| 2005 04 02 | G96 | 0.4- | 0.3+ | 2007 10 08 | G96 | 0.4- | 0.4- | 2007 11 08 | G96 | 0.4+ | 0.2- |
| 2005 04 02 | G96 | 0.1- | 0.1- | 2007 10 08 | G96 | 0.7+ | 0.4+ | 2007 11 08 | G96 | 0.5- | 0.1- |
| 2005 04 12 | 691 | 0.1+ | 0.3+ | 2007 10 20 | 691 | 0.4- | 0.6+ | 2007 11 08 | G96 | 0.1- | 0.1- |
| 2005 04 12 | 691 | 0.7- | 0.1+ | 2007 10 20 | 691 | 0.8- | 0.8+ | 2007 11 09 | G96 | 0.3+ | 0.2- |
| 2005 04 12 | 691 | 0.4+ | 0.2+ | 2007 10 20 | 691 | 0.6- | 0.1- | 2007 11 09 | G96 | 0.3+ | 0.3- |
| 2005 04 16 | 691 | 0.4+ | 0.1- | 2007 11 08 | G96 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.3+ | 0.2+ |
| 2005 04 16 | 691 | 0.4+ | 0.1+ | 2007 11 08 | G96 | 0.0  | 0.2- | 2007 11 09 | G96 | 0.2+ | 0.3+ |
| 2005 04 16 | 691 | 0.6+ | 0.0  | 2007 11 08 | G96 | 0.1+ | 0.2+ |            |     |      |      |

**2005 GD<sub>160</sub> = 2007 UD<sub>109</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           | MPC         |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 224.65366 | $\omega$ | 139.74770 | -0.97994793 | +0.14752419 |          |   |
| <i>a</i> | 2.7033957 | $\Omega$ | 49.26365  | -0.19522916 | -0.84530046 |          |   |
| <i>e</i> | 0.1137438 | <i>i</i> | 10.18114  | +0.03984507 | -0.51352093 |          |   |
| <i>P</i> | 4.44      | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | 691 | 0.0   | 0.1+  | 2005 04 30 | 691 | 0.1+ | 0.1- | 2007 11 04 | 691 | 0.1+ | 0.4+ |
| 2005 04 02 | 691 | 0.1+  | 0.0   | 2005 04 30 | 691 | 0.1- | 0.2- | 2007 11 04 | 691 | 0.4- | 0.0  |
| 2005 04 02 | 691 | 0.3+  | 0.2-  | 2005 04 30 | 691 | 0.2+ | 0.1+ | 2007 11 04 | 691 | 1.1- | 0.4- |
| 2005 04 12 | 691 | 0.1-  | 0.0   | 2007 10 16 | G96 | 0.9+ | 0.0  | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2005 04 12 | 691 | 0.0   | 0.1-  | 2007 10 16 | G96 | 0.4+ | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.3- |
| 2005 04 12 | 691 | 0.1-  | 0.0   | 2007 10 16 | G96 | 0.3+ | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.1- |
| 2005 04 12 | G96 | 0.4-  | 0.3-  | 2007 10 16 | G96 | 1.0+ | 0.5- | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2005 04 12 | G96 | 0.6-  | 0.4-  | 2007 10 16 | 691 | 0.1- | 0.2+ | 2007 11 20 | G96 | 0.1+ | 0.2+ |
| 2005 04 12 | G96 | 0.9-  | 0.5+  | 2007 10 16 | 691 | 0.3+ | 0.2- | 2007 11 20 | G96 | 0.3+ | 0.1+ |
| 2005 04 12 | G96 | (0.5- | 1.8-) | 2007 10 16 | 691 | 0.6- | 0.3+ | 2007 11 20 | G96 | 0.4+ | 0.1- |
| 2005 04 16 | 691 | 0.0   | 0.1+  | 2007 10 30 | 691 | 0.3+ | 0.0  | 2007 11 20 | G96 | 0.5+ | 0.1+ |
| 2005 04 16 | 691 | 0.1-  | 0.3+  | 2007 10 30 | 691 | 0.3+ | 0.2+ |            |     |      |      |
| 2005 04 16 | 691 | 0.1+  | 0.1+  | 2007 10 30 | 691 | 0.1+ | 0.1- |            |     |      |      |



2007 DEC. 24

M.P.O. 129739

**2005 GN<sub>160</sub> = 2007 TT<sub>235</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 107.77688  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.17044622 | $\omega$ | 160.80639 | +0.01945798 |          | +0.99909863 |          |
| <i>a</i> | 3.2216459  | $\Omega$ | 110.29424 | -0.92248834 |          | +0.03249088 |          |
| <i>e</i> | 0.1065929  | <i>i</i> | 2.30528   | -0.38553424 |          | -0.02731800 |          |
| <i>P</i> | 5.78       | <i>H</i> | 16.5      | <i>G</i>    | 0.15     | <i>U</i>    | 3        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 04 12 G96 | 0.4- | 0.0  | 2005 04 12 G96 | 0.1- | 0.5- | 2007 10 09 G96 | 0.0  | 0.2+ |
| 2005 04 12 G96 | 0.2- | 0.2- | 2005 04 16 691 | 0.0  | 0.2+ | 2007 10 11 691 | 0.0  | 0.5+ |
| 2005 04 12 G96 | 0.0  | 0.2- | 2005 04 16 691 | 0.5+ | 0.0  | 2007 10 11 691 | 0.8- | 0.1- |
| 2005 04 12 G96 | 0.0  | 0.1- | 2005 04 16 691 | 0.1- | 0.1- | 2007 10 11 691 | 0.1+ | 0.1- |
| 2005 04 12 G96 | 0.3- | 0.3- | 2007 09 12 G96 | 0.2- | 0.0  | 2007 10 19 691 | 0.1- | 0.3+ |
| 2005 04 12 G96 | 0.2- | 0.8+ | 2007 09 12 G96 | 0.5+ | 0.4- | 2007 10 19 691 | 0.1- | 0.3- |
| 2005 04 12 G96 | 0.3- | 0.0  | 2007 09 12 G96 | 0.8+ | 0.4- | 2007 10 19 691 | 0.3+ | 0.2+ |
| 2005 04 12 G96 | 0.0  | 0.1- | 2007 09 12 G96 | 0.5+ | 0.1- | 2007 11 07 G96 | 1.3+ | 0.6- |
| 2005 04 12 G96 | 0.3- | 0.3- | 2007 10 09 G96 | 0.5+ | 0.1+ | 2007 11 07 G96 | 0.2- | 0.1+ |
| 2005 04 12 G96 | 0.1+ | 0.0  | 2007 10 09 G96 | 0.1+ | 0.1- | 2007 11 07 G96 | 0.1+ | 0.2- |
| 2005 04 12 G96 | 0.3- | 0.1+ | 2007 10 09 G96 | 0.1+ | 0.1+ | 2007 11 07 G96 | 0.7- | 0.9- |

**2005 GZ<sub>162</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.21210  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.22831090 | $\omega$ | 237.35147 | +0.43871377 |          | -0.89745402 |          |
| <i>a</i> | 2.6512557  | $\Omega$ | 187.10016 | +0.89732947 |          | +0.44025212 |          |
| <i>e</i> | 0.0640258  | <i>i</i> | 21.79704  | +0.04827057 |          | -0.02746539 |          |
| <i>P</i> | 4.32       | <i>H</i> | 16.4      | <i>G</i>    | 0.15     | <i>U</i>    | 2        |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2002 10 05 645 | 0.0  | 0.0  | 2005 04 28 941 | 0.3+  | 0.1+  | 2007 10 17 703 | 0.2-  | 0.1-  |
| 2002 10 05 645 | 0.0  | 0.0  | 2005 04 28 941 | 0.1+  | 0.1+  | 2007 11 11 703 | 0.3+  | 0.1+  |
| 2005 03 09 G96 | 0.6- | 0.2+ | 2005 04 28 941 | 0.2-  | 0.5+  | 2007 11 11 703 | 0.1-  | 0.4+  |
| 2005 03 09 G96 | 1.0- | 0.4+ | 2005 04 28 941 | 0.6-  | 0.6+  | 2007 11 11 703 | 1.3-  | 0.7-  |
| 2005 03 09 G96 | 0.7- | 0.1+ | 2005 05 04 691 | 0.1-  | 0.3+  | 2007 11 11 703 | (0.9- | 1.7+) |
| 2005 03 09 G96 | 0.4- | 0.4+ | 2005 05 04 691 | 0.3+  | 0.0   | 2007 11 15 703 | 0.1+  | 0.1+  |
| 2005 04 15 941 | 0.2+ | 0.0  | 2005 05 04 691 | 0.4+  | 0.3-  | 2007 11 15 703 | 0.4-  | 0.1-  |
| 2005 04 15 941 | 0.0  | 0.1+ | 2005 05 14 941 | 0.2+  | 0.2-  | 2007 11 15 703 | 0.2+  | 0.2-  |
| 2005 04 15 941 | 0.2+ | 0.3- | 2005 05 14 941 | 0.1+  | 0.1-  | 2007 11 15 703 | 0.3-  | 0.1+  |
| 2005 04 15 941 | 0.6+ | 0.2- | 2005 05 14 941 | 0.2-  | 0.2-  | 2007 11 17 941 | 0.4+  | 0.2+  |
| 2005 04 15 941 | 0.5+ | 0.2+ | 2005 05 14 941 | 0.2-  | 0.1-  | 2007 11 17 941 | 0.2+  | 0.0   |
| 2005 04 15 941 | 0.9+ | 0.2+ | 2005 05 14 941 | 0.3-  | 0.2-  | 2007 11 17 941 | 0.1+  | 0.3-  |
| 2005 04 16 941 | 0.7- | 0.1+ | 2007 10 10 703 | 0.1+  | 0.4+  | 2007 11 17 941 | 0.1-  | 0.4-  |
| 2005 04 16 941 | 0.8- | 0.1- | 2007 10 10 703 | 0.3-  | 0.6+  | 2007 11 17 941 | 0.2-  | 0.7-  |
| 2005 04 16 941 | 0.4- | 0.2- | 2007 10 10 703 | 0.4+  | 0.8+  | 2007 11 18 703 | 0.5+  | 0.2-  |
| 2005 04 16 941 | 0.4- | 0.3- | 2007 10 10 703 | (1.6+ | 0.5+) | 2007 11 18 703 | 0.1+  | 0.4+  |
| 2005 04 16 941 | 0.1+ | 0.0  | 2007 10 17 703 | 0.8+  | 1.3+  | 2007 11 18 703 | 0.6+  | 0.4-  |
| 2005 04 16 941 | 0.2+ | 0.5+ | 2007 10 17 703 | 0.7-  | 0.1+  | 2007 11 18 703 | 0.4-  | 0.4+  |
| 2005 04 28 941 | 0.8+ | 0.0  | 2007 10 17 703 | 0.2+  | 0.4-  |                |       |       |

**2005 GD<sub>164</sub> = 2007 VL<sub>49</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 90.92929   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.19252183 | $\omega$ | 281.16944 | +0.63759278 |          | +0.76506840 |          |
| <i>a</i> | 2.9704077  | $\Omega$ | 29.06304  | -0.61422934 |          | +0.57557195 |          |
| <i>e</i> | 0.0917853  | <i>i</i> | 10.70749  | -0.46497071 |          | +0.28876855 |          |
| <i>P</i> | 5.12       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 08 16 644 | 0.0  | 0.2- | 2005 04 17 691 | 0.1+ | 0.1+ | 2007 11 05 691 | 0.0  | 0.0  |
| 2001 08 16 644 | 0.1- | 0.2+ | 2005 04 17 691 | 0.2+ | 0.3+ | 2007 11 05 691 | 0.4- | 0.3+ |
| 2001 08 16 644 | 0.2- | 0.1+ | 2005 05 01 644 | 0.2- | 0.9+ | 2007 11 05 691 | 0.0  | 0.1+ |
| 2004 02 11 644 | 0.6+ | 0.1+ | 2005 05 01 644 | 0.1+ | 0.6+ | 2007 12 13 704 | 0.5+ | 0.1- |
| 2004 02 11 644 | 0.0  | 0.2- | 2005 05 01 644 | 0.3+ | 0.1+ | 2007 12 13 704 | 0.7+ | 0.1- |
| 2004 02 11 644 | 0.6+ | 0.7+ | 2006 08 14 644 | 0.1+ | 0.7+ | 2007 12 13 704 | 1.0+ | 1.3+ |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 04 10 G96 | 0.3- | 0.0  | 2006 08 14 644 | 0.3- | 0.5+ | 2007 12 16 704 | 0.6+ | 0.0  |
| 2005 04 10 G96 | 1.2- | 0.0  | 2006 08 14 644 | 0.2+ | 0.7+ | 2007 12 16 704 | 0.8+ | 0.4+ |
| 2005 04 10 G96 | 0.4- | 0.1+ | 2007 11 01 691 | 0.5- | 0.1- | 2007 12 16 704 | 1.0+ | 0.6+ |
| 2005 04 10 G96 | 0.4- | 0.2- | 2007 11 01 691 | 0.0  | 0.2+ |                |      |      |
| 2005 04 17 691 | 0.5+ | 0.1+ | 2007 11 01 691 | 0.5- | 0.2- |                |      |      |

**2005 GJ<sub>165</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 212.94845  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.21447805 | $\omega$ | 355.63118 | -0.99759926 |          | +0.06866876 |          |
| <i>a</i> | 2.7640601  | $\Omega$ | 188.32225 | -0.06151296 |          | -0.93811916 |          |
| <i>e</i> | 0.1374869  | <i>i</i> | 3.54977   | -0.03180984 |          | -0.33943636 |          |
| <i>P</i> | 4.60       | <i>H</i> | 16.8      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1996 05 12 691 | 0.1+ | 0.2+ | 2005 04 11 691 | 0.2+ | 0.2+ | 2005 05 10 G96 | 0.4- | 0.2+ |
| 1996 05 12 691 | 0.1+ | 0.2- | 2005 04 11 691 | 0.0  | 0.1+ | 2005 05 10 G96 | 0.3- | 0.0  |
| 1996 05 12 691 | 0.1- | 0.1+ | 2005 04 18 691 | 0.0  | 0.3+ | 2007 10 09 691 | 0.3- | 0.0  |
| 2002 10 05 645 | 0.0  | 0.0  | 2005 04 18 691 | 0.1+ | 0.4- | 2007 10 09 691 | 0.0  | 0.5+ |
| 2002 10 05 645 | 0.0  | 0.0  | 2005 04 18 691 | 0.4+ | 0.1+ | 2007 10 09 691 | 0.3- | 0.9+ |
| 2005 03 08 G96 | 0.2- | 0.1- | 2005 05 08 691 | 0.0  | 0.2+ | 2007 11 05 G96 | 0.2+ | 0.1+ |
| 2005 03 08 G96 | 0.5- | 0.2+ | 2005 05 08 691 | 0.0  | 0.2+ | 2007 11 05 G96 | 0.3+ | 0.2+ |
| 2005 03 08 G96 | 0.6- | 0.3+ | 2005 05 08 691 | 0.2+ | 0.3+ | 2007 11 05 G96 | 0.2- | 0.1+ |
| 2005 03 08 G96 | 0.4- | 0.4+ | 2005 05 10 G96 | 0.3- | 0.1+ | 2007 11 05 G96 | 0.5+ | 0.0  |
| 2005 04 11 691 | 0.3+ | 0.1+ | 2005 05 10 G96 | 0.6- | 0.0  |                |      |      |

**2005 GJ<sub>172</sub> = 2007 VL<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.56033  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.23991927 | $\omega$ | 337.78317 | -0.10071318 |          | -0.99356526 |          |
| <i>a</i> | 2.5650311  | $\Omega$ | 117.96394 | +0.92141386 |          | -0.11279235 |          |
| <i>e</i> | 0.0959667  | <i>i</i> | 3.36325   | +0.37530435 |          | +0.01029385 |          |
| <i>P</i> | 4.11       | <i>H</i> | 17.6      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 15 | 691 | 0.2+ | 0.2+ | 2005 04 14 | 691 | 0.2+ | 0.2+ | 2007 11 13 | 691 | 0.1- | 0.0  |
| 2001 05 15 | 691 | 0.2- | 0.1+ | 2005 04 18 | 691 | 0.5+ | 0.3+ | 2007 11 13 | 691 | 0.0  | 0.3+ |
| 2001 05 15 | 691 | 0.2- | 0.1- | 2005 04 18 | 691 | 0.1- | 0.2+ | 2007 11 18 | G96 | 0.6+ | 0.3+ |
| 2003 12 16 | 691 | 0.2- | 0.5- | 2005 04 18 | 691 | 0.2- | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.2- |
| 2003 12 16 | 691 | 0.4+ | 0.5- | 2007 11 01 | 691 | 0.4- | 0.9+ | 2007 11 18 | G96 | 0.5+ | 0.1+ |
| 2003 12 16 | 691 | 0.1+ | 0.2- | 2007 11 01 | 691 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2005 04 02 | 691 | 0.0  | 0.2- | 2007 11 01 | 691 | 0.3- | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.1- |
| 2005 04 02 | 691 | 0.2+ | 0.1- | 2007 11 05 | 691 | 0.2- | 0.4+ | 2007 11 20 | 691 | 0.1- | 0.1+ |
| 2005 04 02 | 691 | 0.1- | 0.2- | 2007 11 05 | 691 | 0.0  | 0.3+ | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2005 04 14 | 691 | 0.1+ | 0.5+ | 2007 11 05 | 691 | 0.1- | 0.1- |            |     |      |      |
| 2005 04 14 | 691 | 0.1- | 0.4+ | 2007 11 13 | 691 | 0.1- | 0.1- |            |     |      |      |

**2005 GL<sub>174</sub> = 2007 VL<sub>247</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.96306   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.18803503 | $\omega$ | 130.15079 | +0.75973350 |          | +0.64966576 |          |
| <i>a</i> | 3.0174740  | $\Omega$ | 189.44298 | -0.63553816 |          | +0.73307188 |          |
| <i>e</i> | 0.0928170  | <i>i</i> | 9.54013   | -0.13746365 |          | +0.20134552 |          |
| <i>P</i> | 5.24       | <i>H</i> | 15.6      | <i>G</i>    | 0.15     | <i>U</i>    | 3        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 14 G96 | 0.5- | 0.3- | 2005 04 18 691 | 0.6+ | 0.2+ | 2007 11 13 G96 | 0.1+ | 0.3- |
| 2005 03 14 G96 | 0.5- | 0.2- | 2006 08 12 644 | 0.0  | 0.3- | 2007 11 13 G96 | 0.2+ | 0.3- |
| 2005 03 14 G96 | 0.5- | 0.6- | 2006 08 12 644 | 0.1- | 0.4+ | 2007 11 13 G96 | 0.2- | 0.1- |
| 2005 03 14 G96 | 0.3- | 0.0  | 2006 08 12 644 | 0.1+ | 0.1- | 2007 11 15 G96 | 0.2- | 0.2+ |
| 2005 04 14 691 | 0.2+ | 0.3+ | 2007 10 12 G96 | 0.2+ | 0.2+ | 2007 11 15 G96 | 0.1- | 0.2+ |
| 2005 04 14 691 | 0.0  | 0.4+ | 2007 10 12 G96 | 0.1+ | 0.1+ | 2007 11 15 G96 | 0.2- | 0.3+ |
| 2005 04 14 691 | 0.1+ | 0.1+ | 2007 10 12 G96 | 0.1+ | 0.1- | 2007 11 15 G96 | 0.0  | 0.2+ |
| 2005 04 18 691 | 0.2+ | 0.2+ | 2007 10 12 G96 | 0.1+ | 0.1- |                |      |      |
| 2005 04 18 691 | 0.4+ | 0.3+ | 2007 11 13 G96 | 0.1- | 0.3+ |                |      |      |

**2005 GH<sub>193</sub> = 2007 TE<sub>134</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.88315   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26078521 | $\omega$ 192.22239 | +0.95678179   | -0.29080418 |
| <i>a</i> | 2.4263163  | $\Omega$ 184.68427 | +0.26807573   | +0.88364327 |
| <i>e</i> | 0.1793528  | <i>i</i> 0.87231   | +0.11271211   | +0.36688895 |
| <i>P</i> | 3.78       | <i>H</i> 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 691 | 0.1+ | 0.0  | 2007 10 10 | 691 | 0.1- | 0.1+ | 2007 11 09 | G96 | 0.5+ | 0.3- |
| 2003 09 27 | 691 | 0.2+ | 0.1+ | 2007 10 10 | 691 | 0.1- | 0.3+ | 2007 11 09 | G96 | 0.4+ | 0.2- |
| 2003 09 27 | 691 | 0.1- | 0.1+ | 2007 10 10 | 691 | 0.3- | 0.1- | 2007 11 17 | G96 | 0.4+ | 0.1+ |
| 2003 10 17 | 691 | 0.0  | 0.1- | 2007 10 18 | 691 | 0.0  | 0.1+ | 2007 11 17 | G96 | 0.1- | 0.4- |
| 2003 10 17 | 691 | 0.1+ | 0.3+ | 2007 10 18 | 691 | 0.3- | 0.0  | 2007 11 17 | G96 | 0.3+ | 0.1+ |
| 2003 10 17 | 691 | 0.4- | 0.1+ | 2007 10 18 | 691 | 0.2- | 0.1+ | 2007 11 17 | G96 | 0.4+ | 0.1- |
| 2005 04 10 | 695 | 0.0  | 0.8+ | 2007 10 30 | G96 | 0.0  | 0.2- | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2005 04 10 | 695 | 0.6+ | 0.5+ | 2007 10 30 | G96 | 0.2+ | 0.2- | 2007 12 06 | G96 | 0.2- | 0.3- |
| 2005 04 11 | 695 | 0.2+ | 0.7+ | 2007 10 30 | G96 | 0.3+ | 0.1- | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2005 04 12 | 695 | 0.0  | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.5- | 2007 12 06 | G96 | 0.3+ | 0.4- |
| 2005 04 13 | 695 | 0.0  | 0.4+ | 2007 11 09 | G96 | 0.0  | 0.1- | 2007 12 06 | G96 | 0.2- | 0.2- |
| 2007 10 07 | G96 | 0.4+ | 0.2- | 2007 11 09 | G96 | 0.1- | 0.3- | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2007 10 07 | G96 | 0.2+ | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.0  | 2007 12 06 | G96 | 0.2- | 0.3+ |
| 2007 10 07 | G96 | 0.0  | 0.1- | 2007 11 09 | G96 | 0.5+ | 0.6- | 2007 12 06 | G96 | 0.2+ | 0.5+ |
| 2007 10 07 | G96 | 0.3+ | 0.4+ | 2007 11 09 | G96 | 0.0  | 0.0  |            |     |      |      |

**2005 GW<sub>208</sub> = 2003 UQ<sub>392</sub> = 2007 WQ<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 245.28311  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25953696 | $\omega$ 112.59602 | -0.97139695   | -0.05548263 |
| <i>a</i> | 2.4340897  | $\Omega$ 64.88322  | -0.06518111   | -0.87267362 |
| <i>e</i> | 0.1520679  | <i>i</i> 14.77361  | +0.22834051   | -0.48514167 |
| <i>P</i> | 3.80       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 645 | 0.0  | 0.1- | 2005 04 02 | 699 | 1.2+ | 0.8+ | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2003 10 22 | 645 | 0.2+ | 0.2- | 2005 04 02 | 699 | 0.0  | 0.4- | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2003 10 24 | 645 | 0.1+ | 0.1- | 2005 04 02 | 699 | 0.5- | 0.6- | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 2003 10 24 | 645 | 0.1+ | 0.1- | 2005 04 02 | 699 | 0.3+ | 1.1+ | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2005 03 09 | 703 | 0.6- | 0.3- | 2005 04 10 | 703 | 0.7- | 1.1- | 2007 11 20 | G96 | 0.1- | 0.1+ |
| 2005 03 09 | 703 | 0.8- | 0.7+ | 2005 04 10 | 703 | 0.5+ | 0.8- | 2007 11 20 | G96 | 0.0  | 0.2+ |
| 2005 03 09 | 703 | 0.1+ | 0.6+ | 2005 04 10 | 703 | 0.0  | 0.9- | 2007 11 20 | G96 | 0.3- | 0.1- |
| 2005 03 09 | 703 | 0.9+ | 0.1+ | 2005 04 10 | 703 | 0.5- | 0.3+ | 2007 11 20 | G96 | 0.1- | 0.0  |

**2005 GN<sub>210</sub> = 2007 VY<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 103.61536  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18201686 | $\omega$ 192.20654 | +0.07885559   | +0.95019824 |
| <i>a</i> | 3.0836255  | $\Omega$ 82.88659  | -0.88716923   | +0.20482897 |
| <i>e</i> | 0.0535893  | <i>i</i> 17.68859  | -0.45465652   | -0.23487955 |
| <i>P</i> | 5.41       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 06 09 | 691 | 0.1+ | 0.0  | 2005 04 12 | 699 | 1.3+  | 1.3+  | 2006 07 20 | E12 | 0.2+ | 0.6- |
| 2000 06 09 | 691 | 0.1+ | 0.0  | 2005 04 12 | 699 | 1.7+  | 0.5-  | 2007 10 11 | 703 | 0.9+ | 1.2- |
| 2000 06 09 | 691 | 0.3+ | 0.2- | 2005 04 16 | 703 | 0.9+  | 0.6+  | 2007 10 11 | 703 | 0.1+ | 0.5- |
| 2001 08 17 | 644 | 0.8- | 0.2- | 2005 04 16 | 703 | 0.1+  | 0.7-  | 2007 10 11 | 703 | 0.6- | 0.2+ |
| 2001 08 17 | 644 | 0.5- | 0.3+ | 2005 04 16 | 703 | 0.9-  | 1.3+  | 2007 10 11 | 703 | 0.3- | 1.1+ |
| 2001 08 17 | 644 | 0.6- | 0.2+ | 2005 04 16 | 703 | (2.6+ | 0.6+) | 2007 10 15 | 703 | 0.6- | 0.3- |
| 2004 01 18 | 703 | 0.2- | 1.4+ | 2005 04 30 | H06 | 0.2+  | 0.0   | 2007 10 15 | 703 | 0.5- | 0.3+ |
| 2004 01 18 | 703 | 0.6+ | 0.6+ | 2005 04 30 | H06 | 0.9+  | 0.9-  | 2007 10 15 | 703 | 0.3- | 0.4- |
| 2004 01 18 | 703 | 0.3+ | 1.7- | 2005 04 30 | H06 | 0.4+  | 0.6-  | 2007 10 15 | 703 | 1.6+ | 0.3- |
| 2004 01 18 | 703 | 1.6- | 0.6- | 2005 05 08 | 703 | 0.9-  | 2.7+  | 2007 11 02 | F84 | 0.4+ | 0.3- |
| 2005 03 17 | 703 | 0.3+ | 0.5+ | 2005 05 08 | 703 | 0.6+  | 0.2-  | 2007 11 02 | F84 | 0.8+ | 1.0- |
| 2005 03 17 | 703 | 1.6- | 1.3- | 2005 05 08 | 703 | 0.1+  | 0.2-  | 2007 11 04 | F85 | 0.4+ | 0.1+ |
| 2005 03 17 | 703 | 2.3- | 0.4- | 2005 05 08 | 703 | 2.1-  | 1.0-  | 2007 11 04 | F85 | 0.4+ | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 17 | 703 | 0.8- | 1.3- | 2006 07 20 | E12 | 0.1- | 0.5- | 2007 11 04 | F85 | 0.3+ | 1.0+ |
| 2005 04 12 | 699 | 0.6+ | 0.5- | 2006 07 20 | E12 | 0.1+ | 0.1- |            |     |      |      |
| 2005 04 12 | 699 | 0.7- | 0.3+ | 2006 07 20 | E12 | 0.7- | 0.2- |            |     |      |      |

**2005 GC<sub>216</sub> = 2007 UL<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.62531    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21813832 | $\omega$ 356.60072 | +0.86318758   | -0.50161130 |
| <i>a</i> | 2.7330531  | $\Omega$ 33.70286  | +0.46562654   | +0.74696871 |
| <i>e</i> | 0.0072294  | <i>i</i> 5.93625   | +0.19519000   | +0.43637581 |
| <i>P</i> | 4.52       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 10 29 | 691 | 0.1- | 0.4+ | 2005 04 10 | G96 | 0.6-  | 0.1-  | 2007 10 31 | G96 | 0.4+ | 0.7- |
| 1998 10 29 | 691 | 0.2- | 0.3- | 2005 04 12 | 695 | 0.4-  | 0.3-  | 2007 11 02 | G96 | 0.4- | 0.5+ |
| 1998 10 29 | 691 | 0.4+ | 0.2- | 2005 04 12 | 695 | (3.2+ | 2.6+) | 2007 11 02 | G96 | 0.0  | 0.1+ |
| 2005 04 01 | 691 | 0.1+ | 0.2+ | 2007 10 12 | 691 | 0.3-  | 0.2-  | 2007 11 02 | G96 | 0.3+ | 0.1+ |
| 2005 04 01 | 691 | 0.1+ | 0.2- | 2007 10 12 | 691 | 0.0   | 0.2-  | 2007 11 02 | G96 | 0.2+ | 0.4+ |
| 2005 04 01 | 691 | 0.3+ | 0.0  | 2007 10 12 | 691 | 0.3-  | 0.1+  | 2007 11 04 | G96 | 0.3+ | 0.5+ |
| 2005 04 10 | G96 | 0.4- | 0.7+ | 2007 10 31 | G96 | 0.1+  | 0.0   | 2007 11 04 | G96 | 0.3+ | 0.3+ |
| 2005 04 10 | G96 | 0.3- | 0.1- | 2007 10 31 | G96 | 0.2+  | 0.2+  | 2007 11 04 | G96 | 0.2+ | 0.5+ |
| 2005 04 10 | G96 | 0.3- | 0.1- | 2007 10 31 | G96 | 0.0   | 0.4+  | 2007 11 04 | G96 | 0.3+ | 0.7- |

**2005 GA<sub>217</sub> = 2007 RP<sub>195</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.28637   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17681461 | $\omega$ 150.85114 | +0.94970681   | +0.31114622 |
| <i>a</i> | 3.1438172  | $\Omega$ 191.19076 | -0.31079831   | +0.92284439 |
| <i>e</i> | 0.1033828  | <i>i</i> 10.47507  | -0.03822799   | +0.22703801 |
| <i>P</i> | 5.57       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2005 04 09 | G96 | 0.3- | 0.2- | 2007 09 15 | 691 | 0.1- | 0.2+ |
| 1999 03 20 | 645 | 0.0  | 0.1+ | 2005 04 09 | G96 | 0.1- | 0.2- | 2007 10 09 | G96 | 0.0  | 0.1+ |
| 2005 03 08 | G96 | 0.4- | 0.3- | 2007 09 12 | 691 | 0.1- | 0.2+ | 2007 10 09 | G96 | 0.0  | 0.1+ |
| 2005 03 08 | G96 | 0.4- | 0.5- | 2007 09 12 | 691 | 0.4- | 0.2+ | 2007 10 09 | G96 | 0.1+ | 0.1+ |
| 2005 03 08 | G96 | 0.0  | 0.2+ | 2007 09 12 | 691 | 0.3- | 0.3+ | 2007 10 09 | G96 | 0.2+ | 0.0  |
| 2005 03 08 | G96 | 0.3- | 0.0  | 2007 09 14 | G96 | 0.0  | 0.1- | 2007 10 19 | G96 | 0.5+ | 0.1+ |
| 2005 04 02 | 691 | 0.9+ | 0.6+ | 2007 09 14 | G96 | 0.2- | 0.3- | 2007 10 19 | G96 | 0.1+ | 0.0  |
| 2005 04 02 | 691 | 0.4+ | 0.3+ | 2007 09 14 | G96 | 0.1+ | 0.4- | 2007 10 19 | G96 | 0.2+ | 0.0  |
| 2005 04 02 | 691 | 0.5+ | 0.6+ | 2007 09 14 | G96 | 0.1- | 0.2- | 2007 10 19 | G96 | 0.3+ | 0.1+ |
| 2005 04 09 | G96 | 0.2- | 0.2- | 2007 09 15 | 691 | 0.5- | 0.2- |            |     |      |      |
| 2005 04 09 | G96 | 0.0  | 0.0  | 2007 09 15 | 691 | 0.0  | 0.2+ |            |     |      |      |

**2005 GP<sub>220</sub> = 2007 VD<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.29823   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23528177 | $\omega$ 346.73495 | +0.90088889   | +0.43398864 |
| <i>a</i> | 2.5986265  | $\Omega$ 347.53649 | -0.39508878   | +0.81295885 |
| <i>e</i> | 0.0477942  | <i>i</i> 1.93426   | -0.17973328   | +0.38826766 |
| <i>P</i> | 4.19       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 12 | 695 | 0.1- | 0.2+ | 2005 04 06 | G96 | 0.6+ | 0.6- | 2007 11 01 | 691 | 0.2+ | 0.1+ |
| 2005 03 12 | 695 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.3- | 2007 11 01 | 691 | 0.6+ | 0.2+ |
| 2005 04 05 | G96 | 0.1- | 0.2+ | 2007 10 16 | G96 | 0.1- | 0.5- | 2007 11 05 | 691 | 0.3- | 0.3+ |
| 2005 04 05 | G96 | 0.2+ | 0.3+ | 2007 10 16 | G96 | 0.1+ | 0.2- | 2007 11 05 | 691 | 0.0  | 0.1- |
| 2005 04 05 | G96 | 0.1+ | 0.2+ | 2007 10 16 | G96 | 0.1- | 0.6- | 2007 11 05 | 691 | 0.2+ | 0.0  |
| 2005 04 05 | G96 | 0.3- | 0.2- | 2007 11 01 | 691 | 0.1- | 0.1+ | 2007 11 09 | 691 | 0.1+ | 0.1- |
| 2005 04 06 | G96 | 0.2- | 0.2- | 2007 11 01 | 691 | 0.0  | 0.1- | 2007 11 09 | 691 | 0.5- | 0.0  |
| 2005 04 06 | G96 | 0.1- | 0.2+ | 2007 11 01 | 691 | 0.2+ | 0.1+ | 2007 11 09 | 691 | 0.2- | 0.1+ |
| 2005 04 06 | G96 | 0.1- | 0.3- | 2007 11 01 | 691 | 0.2- | 0.5- |            |     |      |      |

2007 DEC. 24

M.P.O. 129741

**2005 HW<sub>2</sub> = 2007 UY<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 270.75428  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24401675 | $\omega$ | 118.13470 | -0.88869839   | -0.45553692 |
| <i>a</i> | 2.5362357  | $\Omega$ | 34.83770  | +0.38225329   | -0.79874343 |
| <i>e</i> | 0.2088921  | <i>i</i> | 5.22012   | +0.25317503   | -0.39305859 |
| <i>P</i> | 4.04       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 07 | 691 | 0.2+ | 0.3- | 2005 05 16 | G96 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.1- | 0.3+ |
| 2005 04 07 | 691 | 0.4- | 0.1+ | 2005 06 02 | G96 | 0.0  | 0.6+ | 2007 11 03 | 691 | 0.6- | 0.5+ |
| 2005 04 07 | 691 | 0.1+ | 0.1+ | 2005 06 02 | G96 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.3+ |
| 2005 04 17 | 691 | 0.2+ | 0.3+ | 2005 06 02 | G96 | 0.1- | 0.3+ | 2007 11 03 | 691 | 0.3- | 0.8+ |
| 2005 04 17 | 691 | 0.0  | 0.2+ | 2005 06 02 | G96 | 0.0  | 0.3+ | 2007 11 03 | 691 | 0.4- | 0.0  |
| 2005 04 17 | 691 | 0.1+ | 0.4+ | 2007 10 16 | 691 | 0.2- | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.0  |
| 2005 04 18 | 691 | 0.2+ | 0.4+ | 2007 10 16 | 691 | 0.3- | 0.4+ | 2007 11 09 | G96 | 0.6+ | 0.2- |
| 2005 04 18 | 691 | 0.1+ | 0.4+ | 2007 10 16 | 691 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.1- |
| 2005 04 18 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.6+ | 0.2+ | 2007 11 09 | G96 | 0.8+ | 0.3+ |
| 2005 05 16 | G96 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.2- | 2007 11 09 | G96 | 0.5+ | 0.2- |
| 2005 05 16 | G96 | 0.2- | 0.0  | 2007 10 30 | G96 | 0.9+ | 0.0  |            |     |      |      |
| 2005 05 16 | G96 | 0.4+ | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.2- |            |     |      |      |

**2005 HS<sub>3</sub> = 2001 PX<sub>38</sub> = 2007 UM<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.41161   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17787212 | $\omega$ | 299.92574 | +0.89593003   | +0.40653747 |
| <i>a</i> | 3.1313441  | $\Omega$ | 36.93727  | -0.22898085   | +0.76797760 |
| <i>e</i> | 0.0942607  | <i>i</i> | 17.32830  | -0.38062732   | +0.49491181 |
| <i>P</i> | 5.54       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 11 | 644 | 0.8+  | 0.3-  | 2005 05 04 | 850 | (2.4+ | 2.2-) | 2007 10 19 | 703 | 1.1+ | 1.3- |
| 2001 08 11 | 644 | 0.7+  | 0.7-  | 2005 05 04 | 850 | (2.3+ | 2.5+) | 2007 10 19 | 703 | 0.9- | 0.1- |
| 2001 08 11 | 644 | 0.5+  | 0.3-  | 2005 05 07 | 850 | (0.5+ | 2.7-) | 2007 10 19 | 703 | 0.6+ | 0.3+ |
| 2001 08 17 | 644 | 0.5-  | 0.7+  | 2005 05 07 | 850 | (0.6- | 1.9-) | 2007 10 19 | 703 | 0.7- | 0.3- |
| 2001 08 17 | 644 | 0.9-  | 0.3+  | 2005 05 07 | 850 | 1.0+  | 1.1+  | 2007 10 19 | 703 | 0.3+ | 0.0  |
| 2001 08 17 | 644 | 0.6-  | 0.3+  | 2005 05 08 | 850 | 0.6-  | 0.9-  | 2007 10 21 | G96 | 0.5- | 0.4- |
| 2005 04 27 | 850 | 0.6-  | 0.7-  | 2005 05 08 | 850 | 1.2+  | 0.5+  | 2007 10 21 | G96 | 0.0  | 0.2- |
| 2005 04 27 | 850 | 1.0-  | 0.2+  | 2007 10 11 | 703 | 0.1+  | 0.9+  | 2007 10 21 | G96 | 0.0  | 0.1- |
| 2005 04 27 | 850 | 0.0   | 1.2-  | 2007 10 11 | 703 | 0.0   | 1.2+  | 2007 10 21 | G96 | 0.0  | 0.1- |
| 2005 04 27 | 850 | 0.4+  | 0.2+  | 2007 10 11 | 703 | 1.0+  | 0.1+  | 2007 10 31 | 703 | 1.1- | 0.8+ |
| 2005 04 28 | 850 | 1.4+  | 0.0   | 2007 10 11 | 703 | 0.1+  | 0.8+  | 2007 10 31 | 703 | 1.3- | 0.4+ |
| 2005 04 28 | 850 | 0.0   | 1.0+  | 2007 10 19 | 703 | 0.1-  | 0.2+  | 2007 10 31 | 703 | 0.5- | 0.0  |
| 2005 04 28 | 850 | 1.2-  | 0.5+  | 2007 10 19 | 703 | 0.9+  | 0.6-  | 2007 10 31 | 703 | 0.8- | 1.2- |
| 2005 04 28 | 850 | (0.1+ | 2.0+) | 2007 10 19 | 703 | 1.2+  | 0.2+  |            |     |      |      |

**2005 JO = 2007 VQ<sub>141</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.69688   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19748450 | $\omega$ | 164.23070 | +0.98116795   | +0.19310039 |
| <i>a</i> | 2.9204339  | $\Omega$ | 184.64306 | -0.18285610   | +0.92080581 |
| <i>e</i> | 0.0521594  | <i>i</i> | 3.29858   | -0.06223427   | +0.33886413 |
| <i>P</i> | 4.99       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 10 | 695 | 0.2+ | 0.3+ | 2005 05 03 | 691 | 0.0  | 0.2+ | 2007 11 04 | 691 | 0.2- | 0.2+ |
| 2000 04 10 | 695 | 0.1- | 0.4+ | 2005 05 03 | 691 | 0.5+ | 0.1+ | 2007 11 04 | 691 | 0.1- | 0.5+ |
| 2004 02 13 | 691 | 0.0  | 0.2+ | 2005 05 04 | 691 | 0.2- | 0.2- | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2004 02 13 | 691 | 0.1+ | 0.5+ | 2005 05 04 | 691 | 0.2+ | 0.2+ | 2007 11 08 | 691 | 0.3+ | 0.3+ |
| 2004 02 13 | 691 | 0.1- | 0.1- | 2005 05 04 | 691 | 0.2+ | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.1+ |
| 2005 04 16 | 691 | 0.0  | 0.6+ | 2007 10 20 | G96 | 0.1+ | 0.2- | 2007 11 08 | 691 | 0.0  | 0.3+ |
| 2005 04 16 | 691 | 0.1- | 0.6+ | 2007 10 20 | G96 | 0.2+ | 0.3- | 2007 11 19 | 691 | 0.3- | 0.3+ |
| 2005 04 16 | 691 | 0.4- | 0.4- | 2007 10 20 | G96 | 0.4+ | 0.2- | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2005 05 03 | 691 | 0.4+ | 0.3+ | 2007 10 20 | G96 | 0.5- | 0.2- | 2007 11 19 | 691 | 0.1- | 0.1+ |

**2005 JQ<sub>2</sub> = 2007 VC<sub>129</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 254.52926  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21803197 | $\omega$ | 99.52933 | -0.89801283   | -0.43598794 |
| <i>a</i> | 2.7339418  | $\Omega$ | 54.64506 | +0.36990678   | -0.82084874 |
| <i>e</i> | 0.1356994  | <i>i</i> | 4.15231  | +0.23820566   | -0.36894696 |
| <i>P</i> | 4.52       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 10 23 | 691 | 0.1+ | 0.3- | 2005 05 04 | G96 | 0.0   | 0.6-  | 2007 10 23 | 691 | 0.3- | 0.2- |
| 1998 10 23 | 691 | 0.4+ | 0.2- | 2005 05 04 | G96 | 0.0   | 0.2-  | 2007 10 23 | 691 | 0.1- | 0.5- |
| 1998 10 23 | 691 | 0.0  | 0.5- | 2005 05 04 | G96 | 0.7-  | 1.0-  | 2007 10 23 | 691 | 0.3- | 0.3- |
| 2005 04 17 | 691 | 0.5+ | 0.1+ | 2005 05 16 | 701 | 0.3-  | 0.4-  | 2007 11 01 | G96 | 0.2+ | 0.1- |
| 2005 04 17 | 691 | 0.5+ | 0.1- | 2005 05 16 | 701 | 0.2-  | 0.4+  | 2007 11 01 | G96 | 0.6+ | 0.1+ |
| 2005 04 17 | 691 | 0.6- | 0.4- | 2005 05 16 | 701 | (0.1- | 3.4+) | 2007 11 01 | G96 | 0.5+ | 0.2+ |
| 2005 05 03 | 691 | 0.2+ | 0.1- | 2005 06 12 | G96 | 0.2-  | 0.6-  | 2007 11 01 | G96 | 0.2+ | 0.2+ |
| 2005 05 03 | 691 | 0.0  | 0.1+ | 2005 06 12 | G96 | 0.3-  | 0.7-  | 2007 11 07 | G96 | 0.8+ | 0.3- |
| 2005 05 03 | 701 | 0.8+ | 0.9+ | 2005 06 12 | G96 | 0.1-  | 0.7-  | 2007 11 07 | G96 | 0.4+ | 0.2- |
| 2005 05 03 | 691 | 0.1+ | 0.0  | 2005 06 12 | G96 | 0.8-  | 0.2-  | 2007 11 07 | G96 | 0.7+ | 0.4- |
| 2005 05 03 | 701 | 0.9- | 0.0  | 2007 10 18 | 691 | 0.2+  | 0.1-  | 2007 11 07 | G96 | 0.8+ | 0.3- |
| 2005 05 03 | 701 | 0.3- | 0.1+ | 2007 10 18 | 691 | 0.1+  | 0.0   |            |     |      |      |
| 2005 05 04 | G96 | 0.2- | 0.5- | 2007 10 18 | 691 | 0.9-  | 2.0+  |            |     |      |      |

**2005 JO<sub>11</sub> = 2007 UT<sub>111</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 276.95979  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23651856 | $\omega$ | 283.75698 | -0.71394989   | -0.69988230 |
| <i>a</i> | 2.5895595  | $\Omega$ | 211.83342 | +0.65680983   | -0.65902481 |
| <i>e</i> | 0.1454453  | <i>i</i> | 2.28001   | +0.24264458   | -0.27541074 |
| <i>P</i> | 4.17       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 11 | 691 | 0.5- | 0.1+ | 2005 05 05 | 568 | 0.1+ | 0.8+ | 2007 11 04 | G96 | 0.3+ | 0.5- |
| 1994 09 11 | 691 | 0.0  | 0.1- | 2005 05 08 | G96 | 0.1- | 0.3+ | 2007 11 04 | G96 | 0.3+ | 0.5- |
| 1994 09 11 | 691 | 0.1+ | 0.7+ | 2005 05 08 | G96 | 0.2- | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.4- |
| 2003 12 18 | 691 | 0.1- | 0.4+ | 2005 05 08 | G96 | 0.1- | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.5- |
| 2003 12 18 | 691 | 0.2- | 0.3+ | 2005 05 08 | G96 | 0.1- | 0.0  | 2007 11 17 | G96 | 0.5+ | 0.1- |
| 2003 12 18 | 691 | 0.1+ | 0.5+ | 2007 10 08 | 691 | 0.5- | 0.2+ | 2007 11 17 | G96 | 0.4+ | 0.5- |
| 2005 04 17 | 691 | 0.4+ | 0.1+ | 2007 10 08 | 691 | 0.8- | 0.6+ | 2007 11 17 | G96 | 0.3+ | 0.0  |
| 2005 04 17 | 691 | 0.1+ | 0.8+ | 2007 10 08 | 691 | 0.1- | 0.7+ | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2005 04 17 | 691 | 0.1+ | 0.3+ | 2007 10 30 | G96 | 0.7+ | 0.3+ | 2007 12 05 | G96 | 0.0  | 0.1+ |
| 2005 05 04 | 568 | 0.5+ | 1.0+ | 2007 10 30 | G96 | 0.2+ | 0.2- | 2007 12 05 | G96 | 0.1- | 0.2+ |
| 2005 05 04 | 568 | 0.5+ | 1.2+ | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 12 05 | G96 | 0.3+ | 0.2+ |
| 2005 05 04 | 568 | 0.5+ | 1.2+ | 2007 10 30 | G96 | 0.6+ | 0.0  | 2007 12 05 | G96 | 0.1+ | 0.3+ |

**2005 JW<sub>12</sub> = 2007 VE<sub>142</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.87635  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22410468 | $\omega$ | 208.72383 | +0.58465073   | -0.81080023 |
| <i>a</i> | 2.6843271  | $\Omega$ | 205.52885 | +0.75622631   | +0.55716466 |
| <i>e</i> | 0.1071481  | <i>i</i> | 3.73111   | +0.29377762   | +0.17936141 |
| <i>P</i> | 4.40       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 10 | 695 | 0.2- | 0.1+ | 2007 10 20 | G96 | 0.0  | 0.4+ | 2007 11 08 | 691 | 0.0  | 0.2- |
| 2005 04 10 | 695 | 0.1- | 0.6- | 2007 10 20 | G96 | 0.1+ | 0.1+ | 2007 11 08 | 691 | 0.4+ | 0.1- |
| 2005 05 04 | 568 | 0.2+ | 0.4+ | 2007 10 20 | G96 | 0.3+ | 0.4+ | 2007 11 19 | 691 | 0.2+ | 0.2- |
| 2005 05 04 | 568 | 0.1+ | 0.4+ | 2007 11 04 | 691 | 0.3- | 0.1+ | 2007 11 19 | 691 | 0.4+ | 0.2+ |
| 2005 05 04 | 568 | 0.0  | 0.4+ | 2007 11 04 | 691 | 0.6- | 0.0  | 2007 11 19 | 691 | 0.3- | 0.0  |
| 2005 05 05 | 568 | 0.2+ | 0.2- | 2007 11 04 | 691 | 0.1+ | 0.1+ |            |     |      |      |
| 2007 10 20 | G96 | 0.3+ | 0.5+ | 2007 11 08 | 691 | 0.0  | 0.1- |            |     |      |      |

**2005 JN<sub>23</sub> = 2007 VD<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 266.83051  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26250598 | $\omega$ | 61.51498  | -0.96862278   | -0.24716877 |
| <i>a</i> | 2.4157014  | $\Omega$ | 104.16513 | +0.21761129   | -0.89403004 |
| <i>e</i> | 0.1539698  | <i>i</i> | 1.53829   | +0.12006343   | -0.37365476 |
| <i>P</i> | 3.75       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 15 | 691 | 0.7- | 0.7+ | 2005 05 03 | 691 | 0.1+ | 0.4+ | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2001 03 15 | 691 | 0.4+ | 0.1- | 2005 05 09 | G96 | 0.1+ | 0.4- | 2007 11 18 | 691 | 0.1- | 0.4+ |
| 2001 03 15 | 691 | 0.3+ | 0.3- | 2005 05 09 | G96 | 0.2+ | 0.1- | 2007 11 18 | 691 | 0.4- | 0.2+ |
| 2005 03 12 | 691 | 0.3- | 0.3- | 2005 05 09 | G96 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.4+ | 0.3- |
| 2005 03 12 | 691 | 0.2- | 0.2- | 2005 05 09 | G96 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.4+ | 0.3+ |
| 2005 03 12 | 691 | 0.1- | 0.1- | 2007 11 07 | 691 | 0.3+ | 0.2+ | 2007 11 18 | G96 | 1.1+ | 0.5+ |
| 2005 04 01 | 691 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.4- | 0.4+ | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2005 04 01 | 691 | 0.1- | 0.3- | 2007 11 07 | 691 | 0.0  | 0.1- | 2007 12 06 | G96 | 0.4+ | 0.4- |
| 2005 04 01 | 691 | 0.1+ | 0.4- | 2007 11 08 | 691 | 0.1- | 0.1+ | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2005 05 03 | 691 | 0.3+ | 0.7+ | 2007 11 08 | 691 | 0.1- | 0.3- | 2007 12 06 | G96 | 0.0  | 0.3- |
| 2005 05 03 | 691 | 0.3- | 0.5+ | 2007 11 08 | 691 | 0.3- | 0.3- | 2007 12 06 | G96 | 1.1+ | 0.5- |

**2005 JB<sub>25</sub> = 2007 UK<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 231.63929  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21007087 | $\omega$ | 321.13475 | -0.99596709   | +0.00201638 |
| <i>a</i> | 2.8025852  | $\Omega$ | 219.26576 | +0.02446107   | -0.95577042 |
| <i>e</i> | 0.0529965  | <i>i</i> | 8.14733   | -0.08632036   | -0.29410686 |
| <i>P</i> | 4.69       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 03 | 691 | 0.1- | 0.0  | 2006 09 16 | 691 | 0.0  | 0.3- | 2007 11 03 | 691 | 0.1+ | 0.1+ |
| 2005 05 03 | 691 | 0.1- | 0.3+ | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2005 05 03 | 691 | 0.0  | 0.3+ | 2007 10 12 | 691 | 0.3+ | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.1+ |
| 2005 05 08 | 691 | 0.1+ | 0.2- | 2007 10 12 | 691 | 1.1+ | 0.6- | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2005 05 08 | 691 | 0.4+ | 0.2+ | 2007 10 20 | 691 | 0.1- | 0.3+ | 2007 11 05 | G96 | 0.8+ | 0.2+ |
| 2005 05 08 | 691 | 0.1+ | 0.2+ | 2007 10 20 | 691 | 0.7- | 0.2- | 2007 11 20 | 691 | 0.2- | 0.3+ |
| 2005 05 09 | G96 | 0.1+ | 0.5+ | 2007 10 20 | 691 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.1+ | 0.2+ |
| 2005 05 09 | G96 | 0.3- | 0.1- | 2007 10 30 | 691 | 0.1- | 0.3+ | 2007 11 20 | 691 | 0.3- | 0.2- |
| 2005 05 09 | G96 | 0.4- | 0.2- | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 12 03 | 104 | 0.5+ | 0.1- |
| 2005 05 09 | G96 | 0.3- | 0.3+ | 2007 10 30 | 691 | 0.0  | 0.2+ | 2007 12 03 | 104 | 0.5- | 0.7+ |
| 2006 09 16 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.4- | 0.4+ | 2007 12 03 | 104 | 0.1+ | 0.7- |
| 2006 09 16 | 691 | 0.0  | 0.4+ | 2007 11 03 | 691 | 0.2- | 0.1+ |            |     |      |      |

**2005 JZ<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 122.90561  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19015042 | $\omega$ | 238.09572 | +0.18890410   | +0.97376239 |
| <i>a</i> | 2.9950530  | $\Omega$ | 43.37936  | -0.82700831   | +0.22743272 |
| <i>e</i> | 0.1167824  | <i>i</i> | 10.64679  | -0.52950212   | -0.00782064 |
| <i>P</i> | 5.18       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 04 06 | G96 | 0.4+  | 0.0   | 2005 05 08 | 699 | 0.0  | 0.1+ | 2006 09 17 | 699 | (3.4- | 1.2+) |
| 2005 04 06 | G96 | 0.4+  | 0.2-  | 2005 05 10 | G96 | 0.0  | 0.1+ | 2006 09 17 | 699 | (2.3- | 0.5-) |
| 2005 04 06 | G96 | 0.0   | 0.1-  | 2005 05 10 | G96 | 0.2+ | 0.3+ | 2007 09 15 | G96 | 0.0   | 0.3-  |
| 2005 04 06 | G96 | 0.0   | 0.0   | 2005 05 10 | G96 | 0.3+ | 0.1+ | 2007 09 15 | G96 | 0.8+  | 0.1-  |
| 2005 04 18 | 703 | 0.3-  | 1.2-  | 2005 05 10 | G96 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.3+  | 0.0   |
| 2005 04 18 | 703 | 1.2-  | 1.3-  | 2005 06 01 | G96 | 0.0  | 0.1+ | 2007 09 15 | G96 | 0.1+  | 0.1-  |
| 2005 04 18 | 703 | 0.9-  | 0.4+  | 2005 06 01 | G96 | 0.0  | 0.1+ | 2007 10 14 | G96 | 0.1+  | 0.6-  |
| 2005 04 18 | 703 | (2.2- | 1.4-) | 2005 06 01 | G96 | 0.0  | 0.2- | 2007 10 14 | G96 | 0.4+  | 0.3-  |
| 2005 05 04 | 704 | 0.5-  | 0.2-  | 2005 06 01 | G96 | 0.0  | 0.2+ | 2007 10 14 | G96 | 0.2-  | 0.2-  |
| 2005 05 04 | 704 | 0.3+  | 0.7+  | 2005 06 27 | 644 | 0.4+ | 0.2- | 2007 10 14 | G96 | (0.5- | 1.8+) |
| 2005 05 04 | 704 | 0.1-  | 0.6-  | 2005 06 27 | 644 | 0.7+ | 0.4+ | 2007 12 13 | 704 | 0.1-  | 0.3-  |
| 2005 05 08 | 699 | 1.0-  | 0.7-  | 2005 06 27 | 644 | 0.6+ | 0.3+ | 2007 12 13 | 704 | 0.3+  | 0.1-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 08 | 699 | 0.4+ | 0.7+ | 2006 09 17 | 699 | 0.3+ | 0.0  | 2007 12 13 | 704 | 1.3- | 0.8+ |
| 2005 05 08 | 699 | 0.3+ | 0.7+ | 2006 09 17 | 699 | 0.1- | 0.2- | 2007 12 13 | 704 | 0.3- | 0.7+ |

**2005 JB<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 94.82253   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22522486 | $\omega$ | 267.41384 | +0.97411900   | +0.05690327 |
| <i>a</i> | 2.6754192  | $\Omega$ | 89.26135  | +0.03401046   | +0.91987732 |
| <i>e</i> | 0.0764482  | <i>i</i> | 12.63704  | -0.22346242   | +0.38805635 |
| <i>P</i> | 4.38       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 04 | 691 | 0.5+ | 0.3- | 2005 06 10 | 691 | 0.1+  | 0.2+  | 2007 11 13 | G96 | 0.2+ | 0.1+ |
| 2005 05 04 | 691 | 0.5- | 0.1+ | 2005 06 10 | 691 | 0.2+  | 0.3+  | 2007 11 13 | G96 | 0.4+ | 0.5+ |
| 2005 05 04 | 691 | 0.2- | 0.2+ | 2005 06 10 | 691 | 0.1+  | 0.1-  | 2007 11 13 | G96 | 0.2+ | 0.1+ |
| 2005 05 08 | 691 | 0.0  | 0.0  | 2006 09 22 | 703 | (2.1+ | 0.9+) | 2007 11 13 | G96 | 0.0  | 0.1+ |
| 2005 05 08 | 691 | 0.3+ | 0.1+ | 2006 09 22 | 703 | 0.4-  | 0.3+  | 2007 11 13 | G96 | 0.8+ | 0.2+ |
| 2005 05 08 | 691 | 0.1- | 0.0  | 2006 09 22 | 703 | 0.8-  | 0.6-  | 2007 11 18 | G96 | 0.3- | 0.4+ |
| 2005 05 16 | G96 | 0.3- | 0.1- | 2006 09 22 | 703 | 0.5+  | 1.5+  | 2007 11 18 | G96 | 0.2- | 0.2- |
| 2005 05 16 | G96 | 0.0  | 0.0  | 2007 11 13 | G96 | 0.1+  | 0.4+  | 2007 11 18 | G96 | 0.3- | 0.2+ |
| 2005 05 16 | G96 | 0.0  | 0.2+ | 2007 11 13 | G96 | 0.0   | 0.5+  | 2007 11 18 | G96 | 0.3- | 0.3+ |
| 2005 05 16 | G96 | 0.2- | 0.0  | 2007 11 13 | G96 | 0.2-  | 0.1+  |            |     |      |      |

**2005 JA<sub>78</sub> = 2007 VC<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 150.79152  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20427039 | $\omega$ | 166.49908 | -0.15747018   | +0.97921036 |
| <i>a</i> | 2.8553922  | $\Omega$ | 94.32930  | -0.91752737   | -0.09719650 |
| <i>e</i> | 0.0187153  | <i>i</i> | 7.36754   | -0.36516663   | -0.17804468 |
| <i>P</i> | 4.83       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 04 27 | 699 | 0.1-  | 0.2+  | 2005 05 10 | 691 | 0.4+  | 0.0   | 2007 11 01 | 691 | 0.0  | 0.1+ |
| 2000 04 27 | 699 | 0.7-  | 0.4-  | 2005 05 10 | 691 | 0.3+  | 0.1+  | 2007 11 05 | 691 | 0.1- | 0.1+ |
| 2000 04 27 | 699 | 0.2-  | 0.7-  | 2005 05 10 | 691 | 0.1+  | 0.5+  | 2007 11 05 | 691 | 0.4- | 0.1+ |
| 2000 04 27 | 699 | 0.1-  | 1.0+  | 2005 05 11 | 699 | (2.7- | 0.5+) | 2007 11 05 | 691 | 0.1- | 0.2- |
| 2002 11 13 | 644 | 0.3+  | 0.8+  | 2005 05 11 | 699 | 0.6-  | 0.7-  | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2002 11 13 | 644 | 0.0   | 0.6+  | 2005 05 11 | 699 | 0.4-  | 0.5-  | 2007 11 09 | 691 | 0.1- | 0.2+ |
| 2002 11 13 | 644 | 0.3-  | 0.5+  | 2005 05 11 | 699 | 0.6-  | 0.1+  | 2007 11 09 | 691 | 0.1- | 0.2+ |
| 2004 02 17 | 644 | 0.4+  | 0.2-  | 2007 10 20 | G96 | 0.1-  | 0.1+  | 2007 11 20 | 691 | 0.4- | 0.1- |
| 2004 02 17 | 644 | 0.2+  | 0.2-  | 2007 10 20 | G96 | 0.2+  | 0.2+  | 2007 11 20 | 691 | 1.1+ | 0.6- |
| 2004 02 17 | 644 | 0.2+  | 0.1-  | 2007 10 20 | G96 | 0.1+  | 0.1-  | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2005 04 30 | 691 | 0.1+  | 0.7+  | 2007 10 20 | G96 | 0.4+  | 0.1+  | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2005 04 30 | 691 | (0.7+ | 1.8+) | 2007 11 01 | 691 | 0.2-  | 0.1+  | 2007 12 05 | 704 | 0.6- | 0.4+ |
| 2005 04 30 | 691 | 0.1+  | 0.0   | 2007 11 01 | 691 | 0.0   | 0.2+  | 2007 12 05 | 704 | 0.1- | 0.0  |

**2005 JA<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 85.61382   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19564748 | $\omega$ | 101.08960 | +0.79266060   | +0.59692427 |
| <i>a</i> | 2.9386862  | $\Omega$ | 222.41816 | -0.60606139   | +0.74944103 |
| <i>e</i> | 0.0304227  | <i>i</i> | 10.59104  | -0.06617215   | +0.28639057 |
| <i>P</i> | 5.04       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 11 | G96 | 0.3+ | 0.1+ | 2007 08 22 | 691 | 0.4- | 0.7+ | 2007 11 19 | 691 | 0.1+ | 0.0  |
| 2005 04 11 | G96 | 0.1- | 0.2+ | 2007 08 22 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.1- | 0.1- |
| 2005 04 11 | G96 | 0.1+ | 0.3+ | 2007 09 10 | G96 | 0.2- | 0.3+ | 2007 11 20 | 703 | 0.2- | 1.2+ |
| 2005 04 11 | G96 | 0.2- | 0.4+ | 2007 09 10 | G96 | 0.2+ | 0.0  | 2007 11 20 | 691 | 0.2- | 0.1- |
| 2005 05 08 | 691 | 0.3+ | 0.6+ | 2007 09 18 | G96 | 0.5+ | 0.2- | 2007 11 20 | 703 | 0.1- | 0.7+ |
| 2005 05 08 | 691 | 0.2+ | 0.3+ | 2007 09 18 | G96 | 0.2+ | 0.2- | 2007 11 20 | 703 | 0.7+ | 0.9+ |
| 2005 05 08 | 691 | 0.3+ | 0.3+ | 2007 09 18 | G96 | 0.3+ | 0.1- | 2007 11 20 | 703 | 0.3+ | 1.1- |
| 2005 05 12 | 691 | 0.2- | 1.3+ | 2007 09 18 | G96 | 0.5+ | 0.2- | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2005 05 12 | 691 | 0.1- | 0.2+ | 2007 10 10 | G96 | 0.8+ | 0.1- | 2007 12 04 | 704 | 0.6- | 0.6- |
| 2005 05 12 | 691 | 0.0  | 0.4+ | 2007 10 10 | G96 | 0.7+ | 0.0  | 2007 12 04 | 704 | 0.5- | 0.3- |

## 2007 DEC. 24

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 05 19 | 644 | 0.2+ | 0.4+ | 2007 10 10 | G96 | 0.1+  | 0.1−  | 2007 12 04 | 704 | 0.2+  | 0.2+  |
| 2005 05 19 | 644 | 0.1+ | 0.5+ | 2007 10 10 | G96 | 0.6+  | 0.2−  | 2007 12 04 | 704 | 0.1+  | 0.7+  |
| 2005 05 19 | 644 | 0.3+ | 0.5+ | 2007 11 08 | 691 | 0.0   | 0.0   | 2007 12 05 | 704 | (1.2− | 3.1+) |
| 2005 05 20 | G96 | 0.3− | 0.4+ | 2007 11 08 | 691 | 0.0   | 0.1+  | 2007 12 05 | 704 | 1.7−  | 2.5+  |
| 2005 05 20 | G96 | 0.4− | 0.8+ | 2007 11 08 | 691 | 0.2+  | 0.1+  | 2007 12 05 | 704 | (1.0− | 3.9+) |
| 2005 05 20 | G96 | 0.0  | 0.7+ | 2007 11 12 | 703 | 0.7+  | 0.3+  | 2007 12 05 | 704 | 1.2−  | 2.9+  |
| 2005 05 20 | G96 | 0.1− | 0.5+ | 2007 11 12 | 703 | (0.2− | 1.8+) | 2007 12 05 | 104 | 0.6+  | 0.0   |
| 2006 08 22 | 644 | 0.4− | 0.7+ | 2007 11 12 | 703 | 0.6+  | 0.9+  | 2007 12 05 | 104 | 0.5+  | 0.4+  |
| 2006 08 22 | 644 | 0.3− | 0.7+ | 2007 11 12 | 703 | (1.7− | 3.0+) | 2007 12 05 | 104 | 0.6+  | 0.7+  |
| 2006 08 22 | 644 | 0.2− | 0.9+ | 2007 11 19 | 691 | 0.1+  | 0.1+  |            |     |       |       |
| 2007 08 22 | 691 | 0.4− | 0.0  | 2007 11 19 | 691 | 0.1−  | 0.0   |            |     |       |       |

2005 JB<sub>87</sub> = 2007 UP<sub>121</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 298.13918  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22567387 | $\omega$ | 258.42944 | +0.05520410   | −0.99804638 |
| <i>a</i> | 2.6718692  | $\Omega$ | 188.56903 | +0.97543816   | +0.06016506 |
| <i>e</i> | 0.1586042  | <i>i</i> | 11.32359  | +0.21324374   | −0.01684010 |
| <i>P</i> | 4.37       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 12 | 691 | 0.3+ | 0.4− | 2005 05 12 | G96 | 0.1− | 0.1+ | 2007 10 20 | G96 | 0.3− | 0.4+ |
| 2005 03 12 | 691 | 0.1+ | 0.1+ | 2005 05 12 | G96 | 0.1+ | 0.5+ | 2007 10 31 | G96 | 0.1+ | 0.2− |
| 2005 03 12 | 691 | 0.0  | 0.5+ | 2005 05 12 | G96 | 0.3− | 0.5+ | 2007 10 31 | G96 | 0.4− | 0.0  |
| 2005 04 06 | G96 | 0.0  | 0.0  | 2005 05 12 | G96 | 0.2+ | 0.2− | 2007 10 31 | G96 | 0.5− | 0.4+ |
| 2005 04 06 | G96 | 0.1+ | 0.2− | 2007 10 10 | G96 | 0.3+ | 0.2− | 2007 10 31 | G96 | 0.1+ | 0.3+ |
| 2005 04 06 | G96 | 0.6+ | 1.0+ | 2007 10 10 | G96 | 0.3+ | 0.2− | 2007 11 05 | G96 | 0.6− | 0.1− |
| 2005 04 06 | G96 | 0.2+ | 0.2− | 2007 10 10 | G96 | 0.3+ | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2005 05 09 | G96 | 0.4− | 0.2− | 2007 10 10 | G96 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.3− |
| 2005 05 09 | G96 | 0.1− | 0.2− | 2007 10 20 | G96 | 0.6− | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2005 05 09 | G96 | 0.5− | 0.2− | 2007 10 20 | G96 | 0.4− | 0.0  |            |     |      |      |
| 2005 05 09 | G96 | 0.2− | 0.5− | 2007 10 20 | G96 | 0.2+ | 0.6+ |            |     |      |      |

2005 JK<sub>95</sub> = 2007 RD<sub>19</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.40919  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18212661 | $\omega$ | 63.81285  | −0.36130414   | +0.93203313 |
| <i>a</i> | 3.0823866  | $\Omega$ | 185.24558 | −0.92660855   | −0.36221466 |
| <i>e</i> | 0.1231911  | <i>i</i> | 17.71095  | −0.10419174   | −0.01071324 |
| <i>P</i> | 5.41       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 04 | 645 | 0.0   | 0.3+  | 2005 05 08 | G96 | 0.2+  | 0.5−  | 2007 09 13 | A77 | 0.3− | 0.7+ |
| 2000 05 04 | 645 | 0.1+  | 0.3+  | 2005 05 08 | G96 | 0.2−  | 0.3−  | 2007 09 13 | A77 | 0.8+ | 0.1− |
| 2002 10 29 | 645 | 0.0   | 0.3−  | 2005 05 13 | G96 | 0.0   | 0.2+  | 2007 09 15 | A77 | 0.7+ | 0.3− |
| 2002 10 29 | 645 | 0.0   | 0.2−  | 2005 05 13 | G96 | 0.1+  | 0.5−  | 2007 09 15 | A77 | 0.1− | 0.3+ |
| 2005 03 10 | 703 | 1.1−  | 1.4+  | 2005 05 13 | G96 | 0.8+  | 0.3+  | 2007 09 15 | A77 | 0.2+ | 1.2+ |
| 2005 03 10 | 703 | 0.5+  | 0.6+  | 2005 05 13 | G96 | 0.0   | 0.2−  | 2007 09 15 | A77 | 0.3− | 0.5− |
| 2005 03 10 | 703 | 0.8−  | 0.6+  | 2007 09 12 | 691 | (2.6− | 1.5−) | 2007 10 08 | G96 | 0.2− | 0.2− |
| 2005 03 10 | 703 | (0.9− | 2.3+) | 2007 09 12 | 691 | 0.7−  | 0.7+  | 2007 10 08 | G96 | 0.1+ | 0.3− |
| 2005 05 08 | G96 | 0.8+  | 0.7+  | 2007 09 12 | 691 | 0.3−  | 0.5+  | 2007 10 08 | G96 | 0.2− | 0.2− |
| 2005 05 08 | G96 | 0.1+  | 0.2+  | 2007 09 13 | A77 | 0.1+  | 0.5+  | 2007 10 08 | G96 | 0.0  | 0.1− |

2005 JP<sub>100</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 159.60809  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21160117 | $\omega$ | 212.01042 | −0.17502571   | +0.97434628 |
| <i>a</i> | 2.7890567  | $\Omega$ | 48.32623  | −0.85867430   | −0.08075835 |
| <i>e</i> | 0.0998156  | <i>i</i> | 10.91813  | −0.48170992   | −0.21006527 |
| <i>P</i> | 4.66       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 11 | 291 | 0.4− | 0.5+ | 2005 05 13 | 704 | 0.0  | 0.7+ | 2007 11 04 | 691 | 0.0  | 0.3+ |
| 2002 11 11 | 291 | 0.6− | 0.5+ | 2005 05 13 | 704 | 0.5+ | 0.2+ | 2007 11 04 | 691 | 0.4− | 0.3− |
| 2002 11 11 | 291 | 0.0  | 0.7+ | 2005 05 13 | 704 | 0.4+ | 0.4+ | 2007 11 19 | G96 | 0.6+ | 0.2− |

## M.P.O. 129743

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 16 | 691 | 0.0  | 0.4+ | 2005 05 13 | 704 | 0.1+  | 0.9+  | 2007 11 19 | G96 | 0.7+ | 0.3− |
| 2005 04 16 | 691 | 0.0  | 0.1− | 2005 06 01 | G96 | 0.5−  | 0.1−  | 2007 11 19 | G96 | 0.4+ | 0.4− |
| 2005 04 16 | 691 | 0.1+ | 0.0  | 2005 06 01 | G96 | 0.5−  | 0.1+  | 2007 11 19 | G96 | 0.6+ | 0.3− |
| 2005 04 30 | 691 | 0.2+ | 0.2+ | 2005 06 01 | G96 | 0.4−  | 0.1−  | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2005 04 30 | 691 | 0.1− | 0.2+ | 2005 06 01 | G96 | 0.5−  | 0.1−  | 2007 11 20 | 691 | 0.0  | 0.1− |
| 2005 04 30 | 691 | 0.1+ | 0.2+ | 2006 09 20 | 703 | 0.2+  | 0.6−  | 2007 11 20 | 691 | 0.2+ | 0.2− |
| 2005 05 09 | 699 | 0.2− | 0.4+ | 2006 09 20 | 703 | (0.8+ | 1.6+) | 2007 12 13 | 704 | 0.3+ | 0.3+ |
| 2005 05 09 | 699 | 0.9+ | 0.9− | 2006 09 20 | 703 | (0.5− | 2.6+) | 2007 12 13 | 704 | 1.0− | 0.6+ |
| 2005 05 09 | 699 | 0.8+ | 0.5− | 2006 09 20 | 703 | (6.1− | 2.3+) | 2007 12 13 | 704 | 0.7+ | 0.3− |
| 2005 05 09 | 699 | 1.0+ | 0.3− | 2007 11 04 | 691 | 0.2−  | 0.1+  | 2007 12 13 | 704 | 0.3+ | 1.5− |

2005 JZ<sub>103</sub> = 2007 VM<sub>77</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 134.77712  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18059196 | $\omega$ | 104.49578 | −0.12529157   | +0.99210064 |
| <i>a</i> | 3.0998245  | $\Omega$ | 158.30373 | −0.91658132   | −0.11336102 |
| <i>e</i> | 0.1510077  | <i>i</i> | 0.95975   | −0.37971135   | −0.05371777 |
| <i>P</i> | 5.46       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.3− | 0.2+ | 2005 05 13 | G96 | 0.2− | 0.0  | 2007 11 03 | 691 | 0.4− | 0.1+ |
| 2005 04 02 | G96 | 0.1− | 0.1− | 2005 05 13 | G96 | 0.1+ | 0.2− | 2007 11 03 | 691 | 0.3− | 1.2+ |
| 2005 04 02 | G96 | 0.2+ | 0.2+ | 2005 05 13 | G96 | 0.2− | 0.2− | 2007 11 03 | 691 | 0.1+ | 0.2− |
| 2005 04 02 | G96 | 0.3+ | 0.0  | 2005 05 13 | G96 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.0  | 0.1− |
| 2005 05 10 | G96 | 0.3+ | 0.0  | 2005 06 13 | G96 | 0.1+ | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2005 05 10 | G96 | 0.0  | 0.0  | 2005 06 13 | G96 | 0.2− | 0.1+ | 2007 11 05 | G96 | 0.3− | 0.2− |
| 2005 05 10 | G96 | 0.6+ | 0.1+ | 2005 06 13 | G96 | 0.2+ | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.0  |
| 2005 05 10 | G96 | 0.2+ | 0.0  | 2005 06 13 | G96 | 0.1− | 0.2+ |            |     |      |      |

2005 JC<sub>105</sub> = 2007 VP<sub>257</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.33995   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23647663 | $\omega$ | 8.62983  | +0.73624660   | −0.67228220 |
| <i>a</i> | 2.5898656  | $\Omega$ | 34.02565 | +0.61233402   | +0.61320491 |
| <i>e</i> | 0.0514190  | <i>i</i> | 7.94195  | +0.28807635   | +0.41474859 |
| <i>P</i> | 4.17       | <i>H</i> | 16.0     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 13 | 644 | 0.1− | 0.2+ | 2005 05 13 | 691 | 0.4+ | 0.0  | 2007 11 18 | 704 | 0.1+  | 0.1+  |
| 2002 08 13 | 644 | 0.1− | 0.6+ | 2005 05 13 | 691 | 0.7+ | 0.0  | 2007 11 18 | 704 | 0.5+  | 0.1+  |
| 2002 08 13 | 644 | 0.2− | 0.4+ | 2006 07 20 | E12 | 0.9+ | 0.5+ | 2007 11 20 | 704 | 0.4+  | 0.1+  |
| 2002 08 13 | 644 | 0.1+ | 0.6+ | 2006 07 20 | E12 | 0.2− | 0.2+ | 2007 11 20 | 704 | 0.3+  | 0.6−  |
| 2002 08 13 | 644 | 0.5− | 0.4+ | 2006 07 20 | E12 | 0.4− | 0.8+ | 2007 11 20 | 704 | 0.2−  | 0.1−  |
| 2002 08 13 | 644 | 0.1− | 0.8+ | 2006 07 20 | E12 | 0.8− | 0.5+ | 2007 11 20 | 704 | 0.4−  | 0.7−  |
| 2005 03 10 | 691 | 0.1− | 0.1− | 2007 11 02 | 691 | 0.3− | 0.1+ | 2007 12 12 | 704 | (0.9− | 2.3+) |
| 2005 03 10 | 691 | 0.4− | 0.2+ | 2007 11 02 | 691 | 0.2− | 0.0  | 2007 12 12 | 704 | 0.4−  | 0.9+  |
| 2005 03 10 | 691 | 0.5+ | 0.1+ | 2007 11 02 | 691 | 0.3− | 0.1+ | 2007 12 12 | 704 | 0.3+  | 0.6+  |
| 2005 04 01 | 691 | 0.3+ | 0.2+ | 2007 11 13 | 703 | 0.1+ | 0.2+ | 2007 12 12 | 704 | 0.1+  | 0.7+  |
| 2005 04 01 | 691 | 0.2+ | 0.2+ | 2007 11 13 | 703 | 0.4+ | 0.2+ | 2007 12 13 | 704 | (0.4− | 1.6+) |
| 2005 04 01 | 691 | 0.1+ | 0.4+ | 2007 11 13 | 703 | 0.7− | 0.5− | 2007 12 13 | 704 | 0.9−  | 0.7+  |
| 2005 05 04 | 644 | 0.5− | 0.3− | 2007 11 13 | 703 | 0.1− | 0.7− | 2007 12 13 | 704 | 0.4+  | 0.1−  |
| 2005 05 04 | 644 | 0.2− | 0.1+ | 2007 11 17 | G96 | 0.3+ | 0.0  | 2007 12 13 | 704 | 0.7+  | 0.6+  |
| 2005 05 04 | 644 | 0.1− | 0.4+ | 2007 11 17 | G96 | 0.1+ | 0.1− | 2007 12 15 | 704 | 0.4−  | 0.7+  |
| 2005 05 11 | G96 | 1.1− | 0.1− | 2007 11 17 | G96 | 0.0  | 0.1− | 2007 12 15 | 704 | 0.8−  | 0.5+  |
| 2005 05 11 | G96 | 0.7− | 0.3− | 2007 11 17 | G96 | 0.3+ | 0.1− | 2007 12 15 | 704 | 0.1+  | 1.2+  |
| 2005 05 11 | G96 | 0.6− | 0.3− | 2007 11 18 | 704 | 0.8+ | 0.8+ | 2007 12 15 | 704 | 0.9−  | 0.5+  |
| 2005 05 11 | G96 | 0.8− | 0.6− | 2007 11 18 | 704 | 0.9+ | 0.2− | 2007 12 15 | 704 | 0.3−  | 0.9+  |
| 2005 05 13 | 691 | 0.1+ | 0.6+ | 2007 11 18 | 704 | 0.4+ | 0.6− |            |     |       |       |

**2005 JC<sub>111</sub> = 2007 VA<sub>239</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 205.11581  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22072855 | $\omega$ | 156.14861 | -0.73821202   | +0.64417662 |
| <i>a</i> | 2.7116297  | $\Omega$ | 65.50060  | -0.64888644   | -0.59700226 |
| <i>e</i> | 0.0835049  | <i>i</i> | 12.70943  | -0.18436215   | -0.47814724 |
| <i>P</i> | 4.47       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 645 | 0.0   | 0.1+  | 2005 05 14 | G96 | 0.2- | 0.1- | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2002 09 05 | 645 | 0.0   | 0.0   | 2005 05 14 | 644 | 0.5+ | 0.3+ | 2007 11 13 | 691 | 0.6+ | 0.2+ |
| 2005 05 08 | 699 | 0.4-  | 0.6-  | 2005 05 14 | 644 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2005 05 08 | 699 | 0.6+  | 0.7-  | 2005 05 14 | 644 | 0.1- | 0.1+ | 2007 11 14 | 691 | 0.1+ | 0.1+ |
| 2005 05 08 | 691 | 0.3+  | 0.2+  | 2005 06 13 | G96 | 0.4- | 0.1+ | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2005 05 08 | 699 | 0.1+  | 0.1-  | 2005 06 13 | G96 | 0.0  | 0.5+ | 2007 12 15 | G96 | 1.0+ | 0.1+ |
| 2005 05 08 | 691 | 0.2+  | 0.2+  | 2005 06 13 | G96 | 0.2- | 0.6+ | 2007 12 15 | G96 | 0.8+ | 0.1+ |
| 2005 05 08 | 699 | (0.4- | 2.3+) | 2005 06 13 | G96 | 0.4- | 0.4+ | 2007 12 15 | G96 | 0.6+ | 0.2- |
| 2005 05 08 | 691 | 0.2+  | 0.3+  | 2005 06 27 | 644 | 0.1- | 0.6+ | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2005 05 14 | G96 | 0.0   | 0.3+  | 2005 06 27 | 644 | 0.1- | 0.6+ | 2007 12 16 | J95 | 0.2- | 0.2+ |
| 2005 05 14 | G96 | 0.1-  | 0.0   | 2005 06 27 | 644 | 0.1- | 0.2+ | 2007 12 16 | J95 | 0.2+ | 0.4- |
| 2005 05 14 | G96 | 0.1-  | 0.0   | 2007 11 13 | 691 | 0.0  | 0.2- | 2007 12 16 | J95 | 1.3- | 0.7+ |

**2005 JH<sub>114</sub> = 2007 VK<sub>53</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.61441   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18991478 | $\omega$ | 111.51561 | +0.71244303   | +0.70033900 |
| <i>a</i> | 2.9975300  | $\Omega$ | 204.10064 | -0.67719392   | +0.66967377 |
| <i>e</i> | 0.0752358  | <i>i</i> | 6.20857   | -0.18393838   | +0.24710793 |
| <i>P</i> | 5.19       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 06 23 | 691 | 0.2- | 0.3+ | 2005 04 16 | 691 | 0.1- | 0.0  | 2007 11 01 | 691 | 0.2+ | 0.3- |
| 2000 06 23 | 691 | 0.2+ | 0.2- | 2005 04 16 | 691 | 0.0  | 0.3+ | 2007 11 01 | 691 | 0.2+ | 0.1+ |
| 2000 06 23 | 691 | 0.0  | 0.2+ | 2005 05 10 | 691 | 0.1+ | 0.2- | 2007 11 05 | 691 | 0.3+ | 0.0  |
| 2000 07 03 | 691 | 0.3+ | 0.0  | 2005 05 10 | 691 | 0.1+ | 0.2+ | 2007 11 05 | 691 | 0.3- | 0.1+ |
| 2000 07 03 | 691 | 0.1+ | 0.2+ | 2005 05 10 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.1- | 0.1+ |
| 2000 07 03 | 691 | 0.4- | 0.1- | 2005 05 14 | G96 | 0.3- | 0.1- | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2004 02 18 | 691 | 0.0  | 0.1- | 2005 05 14 | G96 | 0.2- | 0.3+ | 2007 11 20 | 691 | 0.4- | 0.5+ |
| 2004 02 18 | 691 | 0.0  | 0.0  | 2005 05 14 | G96 | 0.1+ | 0.2- | 2007 11 20 | 691 | 0.2- | 0.3+ |
| 2004 02 18 | 691 | 0.1- | 0.0  | 2005 05 14 | G96 | 0.4- | 0.2+ |            |     |      |      |
| 2005 04 16 | 691 | 0.1+ | 0.1+ | 2007 11 01 | 691 | 0.1+ | 0.1- |            |     |      |      |

**2005 JB<sub>123</sub> = 2007 VK<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.09092  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23409627 | $\omega$ | 210.38848 | +0.14542503   | -0.98419311 |
| <i>a</i> | 2.6073923  | $\Omega$ | 231.44174 | +0.93175222   | +0.17059257 |
| <i>e</i> | 0.1981910  | <i>i</i> | 7.42636   | +0.33270012   | -0.04756142 |
| <i>P</i> | 4.21       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 03 04 | 645 | 0.0  | 0.0  | 2006 05 25 | 691 | 0.3+  | 0.3+  | 2007 11 06 | 691 | 0.0  | 0.1- |
| 2000 03 04 | 645 | 0.0  | 0.0  | 2006 05 25 | 691 | 0.2+  | 0.3+  | 2007 11 21 | 703 | 0.4+ | 0.2- |
| 2002 08 15 | 644 | 0.6- | 0.5- | 2006 05 25 | 691 | 0.6+  | 0.4+  | 2007 11 21 | 703 | 0.4- | 0.8- |
| 2002 08 15 | 644 | 0.7- | 0.3+ | 2007 08 24 | 691 | 0.4-  | 0.0   | 2007 11 21 | 703 | 0.5+ | 0.3+ |
| 2002 08 15 | 644 | 0.7- | 0.0  | 2007 08 24 | 691 | 0.2-  | 0.0   | 2007 11 21 | 703 | 0.1+ | 0.5+ |
| 2005 04 11 | G96 | 0.7- | 0.1- | 2007 08 24 | 691 | 0.1-  | 0.1-  | 2007 12 03 | 703 | 0.4- | 0.2- |
| 2005 04 11 | G96 | 0.6- | 0.1- | 2007 10 19 | D29 | 0.5+  | 0.2+  | 2007 12 03 | 703 | 0.3+ | 0.1+ |
| 2005 04 11 | G96 | 0.2- | 0.5- | 2007 10 19 | D29 | 0.6+  | 0.3+  | 2007 12 03 | 703 | 0.2+ | 0.3- |
| 2005 04 11 | G96 | 0.1- | 0.2+ | 2007 10 19 | D29 | 0.2+  | 0.5+  | 2007 12 03 | 703 | 0.7+ | 0.2- |
| 2005 05 11 | 691 | 0.2- | 0.0  | 2007 10 19 | D29 | (2.0+ | 0.8+) | 2007 12 04 | 704 | 0.4- | 1.6+ |
| 2005 05 11 | 691 | 0.1- | 0.5+ | 2007 11 02 | 691 | 0.2-  | 0.2+  | 2007 12 04 | 704 | 0.1- | 1.2+ |
| 2005 05 11 | 691 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.1-  | 0.0   | 2007 12 04 | 704 | 0.2+ | 0.5+ |
| 2005 05 16 | 691 | 0.3+ | 0.2+ | 2007 11 02 | 691 | 0.1-  | 0.1+  | 2007 12 04 | 704 | 0.4+ | 0.6+ |

|            |     |      |      |            |     |      |     |            |     |      |      |
|------------|-----|------|------|------------|-----|------|-----|------------|-----|------|------|
| 2005 05 16 | 691 | 0.1+ | 0.2+ | 2007 11 06 | 691 | 0.1- | 0.0 | 2007 12 04 | 704 | 0.5+ | 0.6+ |
| 2005 05 16 | 691 | 0.2- | 0.4+ | 2007 11 06 | 691 | 0.1- | 0.0 |            |     |      |      |

**2005 JF<sub>124</sub> = 2007 VL<sub>165</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 291.22482  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25704679 | $\omega$ | 301.81780 | -0.79831135   | -0.60212175 |
| <i>a</i> | 2.4497848  | $\Omega$ | 201.16797 | +0.56332473   | -0.73941429 |
| <i>e</i> | 0.1515044  | <i>i</i> | 1.93315   | +0.21298880   | -0.30119081 |
| <i>P</i> | 3.83       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 12 25 | 691 | 0.1-  | 0.4+  | 2003 11 20 | 691 | 0.2+ | 0.2+ | 2007 11 05 | 691 | 0.1-  | 0.2+  |
| 1992 12 25 | 691 | (4.4- | 5.7-) | 2003 11 20 | 691 | 0.3+ | 0.4+ | 2007 11 05 | 691 | 0.1-  | 0.3+  |
| 1992 12 25 | 691 | 0.6-  | 0.3-  | 2003 11 20 | 691 | 0.3+ | 0.3+ | 2007 11 05 | 691 | 0.2-  | 0.0   |
| 1997 03 03 | 691 | 0.4+  | 0.4-  | 2005 04 02 | G96 | 0.1- | 0.4- | 2007 11 09 | 691 | 0.1-  | 0.3+  |
| 1997 03 03 | 691 | 0.6+  | 0.6-  | 2005 04 02 | G96 | 0.2- | 0.0  | 2007 11 09 | 691 | 0.0   | 0.2-  |
| 1997 03 03 | 691 | 0.3+  | 0.6-  | 2005 04 02 | G96 | 0.3- | 0.4- | 2007 11 09 | 691 | 0.1+  | 0.0   |
| 1997 03 11 | 691 | 0.4-  | 0.4-  | 2005 04 02 | G96 | 0.3- | 0.2- | 2007 11 14 | 691 | 0.1+  | 0.1+  |
| 1997 03 11 | 691 | (5.4+ | 1.4+) | 2005 04 17 | 691 | 0.4+ | 0.5+ | 2007 11 14 | 691 | 0.1-  | 0.2+  |
| 1997 03 11 | 691 | 0.5-  | 0.8-  | 2005 04 17 | 691 | 0.4+ | 0.6+ | 2007 11 14 | 691 | (1.3- | 1.8+) |
| 2001 03 28 | 691 | 0.3-  | 0.5+  | 2005 04 17 | 691 | 0.6+ | 0.5+ | 2007 11 18 | 691 | 0.0   | 0.0   |
| 2001 03 28 | 691 | 0.0   | 0.7+  | 2005 05 11 | G96 | 0.8- | 0.4+ | 2007 11 18 | 691 | 0.4+  | 0.8+  |
| 2001 03 28 | 691 | 0.1+  | 0.6+  | 2005 05 11 | G96 | 0.7- | 0.0  | 2007 11 18 | 691 | 0.3-  | 0.2-  |
| 2001 04 23 | 691 | 0.0   | 0.1+  | 2005 05 11 | G96 | 0.5+ | 0.7+ | 2007 12 05 | 704 | 0.1+  | 1.3+  |
| 2001 04 23 | 691 | 0.1-  | 0.2+  | 2005 05 11 | G96 | 0.3- | 0.6+ | 2007 12 05 | 704 | 0.5+  | 0.4+  |
| 2001 04 23 | 691 | 0.5+  | 0.5+  | 2005 05 14 | G96 | 0.1- | 0.1+ | 2007 12 05 | 704 | 1.1-  | 0.2+  |
| 2003 10 22 | 691 | 0.1-  | 0.3+  | 2005 05 14 | G96 | 0.4- | 0.2+ | 2007 12 05 | 704 | 0.3-  | 0.5+  |
| 2003 10 22 | 691 | 0.4-  | 0.1-  | 2005 05 14 | G96 | 0.2- | 0.2- |            |     |       |       |
| 2003 10 22 | 691 | 0.4-  | 0.3+  | 2005 05 14 | G96 | 0.1- | 0.1+ |            |     |       |       |

**2005 JA<sub>126</sub> = 2007 TX<sub>108</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.38348  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23858832 | $\omega$ | 89.78765  | +0.02776996   | -0.99960017 |
| <i>a</i> | 2.5745614  | $\Omega$ | 358.58770 | +0.80956486   | +0.02561347 |
| <i>e</i> | 0.0965828  | <i>i</i> | 12.47197  | +0.58637324   | +0.01197717 |
| <i>P</i> | 4.13       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 644 | 0.1+ | 0.6- | 2005 05 14 | G96 | 0.2- | 0.8+ | 2007 10 07 | 703 | 0.4- | 0.6+ |
| 2003 10 22 | 644 | 0.3+ | 0.5- | 2005 05 14 | G96 | 0.2- | 0.1- | 2007 10 07 | 703 | 0.5- | 0.7+ |
| 2003 10 22 | 644 | 0.6+ | 0.6- | 2005 05 14 | G96 | 0.0  | 0.2- | 2007 10 09 | 699 | 0.9- | 0.3- |
| 2005 03 01 | 691 | 0.4+ | 0.2+ | 2005 05 14 | G96 | 0.4- | 0.1+ | 2007 10 09 | 699 | 0.1- | 1.4- |
| 2005 03 01 | 691 | 0.4+ | 0.4+ | 2007 09 20 | 703 | 0.3+ | 0.5+ | 2007 10 09 | 699 | 1.2+ | 0.1- |
| 2005 03 01 | 691 | 0.4+ | 0.1+ | 2007 09 20 | 703 | 0.5+ | 0.4+ | 2007 10 09 | 699 | 0.3+ | 0.7- |
| 2005 05 12 | G96 | 0.2+ | 0.5- | 2007 09 20 | 703 | 0.9- | 0.2- | 2007 10 13 | 703 | 0.7- | 0.5- |
| 2005 05 12 | G96 | 0.6+ | 0.0  | 2007 09 20 | 703 | 1.3+ | 0.3+ | 2007 10 13 | 703 | 0.1+ | 1.7+ |
| 2005 05 12 | G96 | 0.1- | 0.4+ | 2007 10 07 | 703 | 0.3- | 0.1- | 2007 10 13 | 703 | 0.7+ | 0.0  |
| 2005 05 12 | G96 | 0.0  | 0.2- | 2007 10 07 | 703 | 1.4- | 1.2+ | 2007 10 13 | 703 | 0.6- | 0.5+ |

**2005 JK<sub>158</sub> = 2007 VJ<sub>195</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 187.10242  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19108821 | $\omega$ | 286.67029 | -0.96394929   | +0.26127522 |
| <i>a</i> | 2.9852459  | $\Omega$ | 268.49708 | -0.22087866   | -0.89126289 |
| <i>e</i> | 0.1805569  | <i>i</i> | 2.88814   | -0.14837243   | -0.37065579 |
| <i>P</i> | 5.16       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 14 | 703 | 0.1+ | 0.2- | 2005 05 11 | 291 | 0.1- | 0.6- | 2007 10 16 | G96 | 0.3+ | 0.0  |
| 2005 04 14 | 703 | 0.1- | 0.8- | 2005 05 11 | 291 | 0.7- | 0.4+ | 2007 11 07 | G96 | 0.1- | 0.2+ |
| 2005 04 14 | 703 | 0.6+ | 0.1- | 2007 10 10 | G96 | 0.3+ | 0.3- | 2007 11 07 | G96 | 0.1- | 0.1+ |
| 2005 04 14 | 703 | 0.8- | 0.3+ | 2007 10 10 | G96 | 0.1+ | 0.3- | 2007 11 07 | G96 | 0.8- | 0.2+ |
| 2005 05 06 | 703 | 1.7+ | 0.6+ | 2007 10 10 | G96 | 0.1- | 0.4- | 2007 11 07 | G96 | 0.2- | 0.1+ |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 06 | 703 | 0.5+ | 0.3- | 2007 10 10 | G96 | 0.3- | 0.1- | 2007 11 11 | G96 | 0.5+ | 0.1- |
| 2005 05 06 | 703 | 1.3- | 0.1- | 2007 10 16 | G96 | 0.0  | 0.4+ | 2007 11 11 | G96 | 0.8+ | 0.3- |
| 2005 05 06 | 703 | 1.2+ | 0.7+ | 2007 10 16 | G96 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.1+ | 0.6- |
| 2005 05 11 | 291 | 1.2- | 0.2- | 2007 10 16 | G96 | 0.2- | 0.5+ | 2007 11 11 | G96 | 0.0  | 0.0  |

**2005 JO<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.49919  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22163035 | $\omega$ 20.56012 | -0.01275372   | -0.99280935 |
| <i>a</i> | 2.7042691  | $\Omega$ 70.32263 | +0.89884445   | -0.06353422 |
| <i>e</i> | 0.0497827  | <i>i</i> 7.26199  | +0.43808217   | +0.10145440 |
| <i>P</i> | 4.45       | <i>H</i> 16.7     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 08 | 691 | 0.2+ | 0.2+ | 2007 11 05 | 691 | 0.1- | 0.4+ | 2007 12 04 | G96 | 0.6+  | 0.2-  |
| 2005 05 08 | 691 | 0.2+ | 0.4+ | 2007 11 05 | 691 | 0.3- | 0.1+ | 2007 12 04 | G96 | 0.5+  | 0.0   |
| 2005 05 08 | 691 | 0.2+ | 0.2+ | 2007 11 14 | 691 | 0.4- | 0.0  | 2007 12 04 | 701 | 0.0   | 0.0   |
| 2005 05 12 | 691 | 0.1+ | 0.3- | 2007 11 14 | 691 | 0.2+ | 0.2- | 2007 12 05 | 704 | (1.8+ | 0.4+) |
| 2005 05 12 | 691 | 0.6- | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.3- | 2007 12 05 | 704 | (2.3+ | 0.7+) |
| 2005 05 12 | 691 | 0.2+ | 0.4- | 2007 11 18 | 691 | 0.1+ | 0.2- | 2007 12 05 | 704 | 0.8+  | 0.9+  |
| 2005 05 19 | G96 | 0.2- | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.0   | 0.0   |
| 2005 05 19 | G96 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.0  | 0.2- | 2007 12 15 | G96 | 0.1+  | 0.0   |
| 2005 05 19 | G96 | 0.5- | 0.1- | 2007 12 03 | 703 | 0.3- | 0.1+ | 2007 12 15 | G96 | 0.7+  | 0.1-  |
| 2005 05 19 | G96 | 0.0  | 0.3- | 2007 12 03 | 703 | 1.0- | 0.5+ | 2007 12 15 | G96 | 0.0   | 0.1-  |
| 2005 06 13 | G96 | 0.3- | 0.3- | 2007 12 03 | 703 | 0.7- | 0.3+ | 2007 12 15 | G96 | 0.4+  | 0.1-  |
| 2005 06 13 | G96 | 0.2- | 0.2- | 2007 12 03 | 703 | 0.5+ | 1.0+ | 2007 12 15 | G96 | 0.5+  | 0.2-  |
| 2005 06 13 | G96 | 0.5- | 0.1+ | 2007 12 04 | 701 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.4-  | 0.0   |
| 2005 06 13 | G96 | 0.1+ | 0.0  | 2007 12 04 | 701 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.2-  | 0.2-  |
| 2007 11 05 | 691 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.2+ | 0.1- |            |     |       |       |

**2005 JZ<sub>170</sub> = 2007 VG<sub>129</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.33010    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20036642 | $\omega$ 217.35443 | +0.91104928   | -0.41222660 |
| <i>a</i> | 2.8923628  | $\Omega$ 166.98386 | +0.38599555   | +0.84626682 |
| <i>e</i> | 0.0560823  | <i>i</i> 1.94519   | +0.14490223   | +0.33749325 |
| <i>P</i> | 4.92       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 13 | 691 | 0.2+ | 0.3+ | 2005 04 04 | G96 | 0.2+ | 0.4- | 2007 10 20 | 703 | 0.9- | 0.5+ |
| 2000 04 13 | 691 | 0.0  | 0.1+ | 2005 04 17 | 691 | 0.0  | 0.0  | 2007 10 20 | 703 | 0.3- | 1.3+ |
| 2000 04 13 | 691 | 0.1+ | 0.0  | 2005 04 17 | 691 | 0.1+ | 0.4+ | 2007 10 20 | 703 | 0.2- | 1.6+ |
| 2002 10 10 | 644 | 0.4- | 0.7+ | 2005 04 17 | 691 | 0.2+ | 0.2+ | 2007 11 01 | G96 | 0.5+ | 0.6- |
| 2002 10 10 | 644 | 0.4- | 0.8+ | 2005 05 10 | 807 | 0.2+ | 0.3+ | 2007 11 01 | G96 | 0.2- | 0.7- |
| 2002 10 10 | 644 | 0.3- | 0.6+ | 2005 05 10 | G96 | 0.1- | 0.0  | 2007 11 01 | G96 | 0.4+ | 0.3- |
| 2004 01 28 | 691 | 0.0  | 0.2+ | 2005 05 10 | G96 | 0.3- | 0.1- | 2007 11 01 | G96 | 0.3+ | 0.5- |
| 2004 01 28 | 691 | 0.1- | 0.1- | 2005 05 10 | G96 | 0.9- | 0.6+ | 2007 11 07 | G96 | 0.4+ | 0.1- |
| 2004 01 28 | 691 | 0.1+ | 0.1- | 2005 05 10 | 807 | 0.4+ | 0.3+ | 2007 11 07 | G96 | 0.0  | 0.3+ |
| 2005 04 04 | G96 | 0.2- | 0.2+ | 2005 05 10 | G96 | 0.5- | 0.2- | 2007 11 07 | G96 | 0.4+ | 0.2- |
| 2005 04 04 | G96 | 0.3+ | 0.0  | 2005 05 11 | 807 | 0.1+ | 0.1+ | 2007 11 07 | G96 | 0.0  | 0.2+ |
| 2005 04 04 | G96 | 0.2- | 0.4- | 2007 10 20 | 703 | 0.4- | 0.5+ |            |     |      |      |

**2005 JO<sub>177</sub> = 2007 VR<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 184.96398  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20918593 | $\omega$ 2.30557   | -0.69438550   | +0.71267775 |
| <i>a</i> | 2.8104837  | $\Omega$ 223.73925 | -0.66250679   | -0.68716656 |
| <i>e</i> | 0.1263909  | <i>i</i> 8.28246   | -0.28091552   | -0.14104093 |
| <i>P</i> | 4.71       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 14 | 691 | 0.1- | 0.3+ | 2005 05 14 | 644 | 0.3+ | 0.2+ | 2007 11 04 | 291 | 0.6- | 0.5+ |
| 2005 04 14 | 691 | 0.1+ | 0.1- | 2005 05 14 | 644 | 0.2+ | 0.1+ | 2007 11 04 | 291 | 0.4- | 0.3+ |
| 2005 04 14 | 691 | 0.0  | 0.1- | 2005 05 14 | 644 | 0.4+ | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2005 05 07 | G96 | 0.0  | 0.0  | 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.2- |

## M.P.O. 129745

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 07 | G96 | 0.2- | 0.1- | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.1+ |
| 2005 05 07 | G96 | 0.3- | 0.2- | 2007 10 12 | 691 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.4- |
| 2005 05 07 | G96 | 0.3- | 0.3- | 2007 11 04 | 291 | 0.3- | 0.2- |            |     |      |      |

**2005 JH<sub>182</sub> = 2007 UG<sub>105</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 84.27886   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18176888 | $\omega$ 249.03801 | +0.75138215   | +0.59392162 |
| <i>a</i> | 3.0864295  | $\Omega$ 73.39280  | -0.43666447   | +0.77423521 |
| <i>e</i> | 0.1272206  | <i>i</i> 17.46128  | -0.49472113   | +0.21867087 |
| <i>P</i> | 5.42       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 04 | 691 | 0.4+  | 0.1+  | 2005 06 01 | 691 | 0.1+ | 0.4- | 2007 11 18 | G96 | 0.3+  | 0.5-  |
| 2005 05 04 | 691 | 0.9-  | 0.1-  | 2007 10 20 | G96 | 0.5+ | 0.4- | 2007 11 18 | G96 | 0.7+  | 0.2-  |
| 2005 05 04 | 691 | 0.0   | 0.3-  | 2007 10 20 | G96 | 0.5+ | 0.3- | 2007 11 18 | G96 | 0.5+  | 0.1-  |
| 2005 05 10 | 691 | 0.1-  | 0.3+  | 2007 10 20 | G96 | 0.4+ | 0.3- | 2007 11 18 | G96 | 0.4+  | 0.4-  |
| 2005 05 10 | 691 | 0.0   | 0.1+  | 2007 10 20 | G96 | 0.4+ | 0.5- | 2007 12 05 | 704 | 0.8+  | 0.4+  |
| 2005 05 10 | 691 | (3.1+ | 0.6+) | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 12 05 | 704 | (1.7+ | 1.5+) |
| 2005 05 14 | 691 | 0.2-  | 0.2+  | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 12 05 | 704 | 0.4-  | 0.9-  |
| 2005 05 14 | 691 | 0.1-  | 0.1+  | 2007 10 30 | 691 | 0.8- | 0.1+ | 2007 12 05 | 704 | 0.4+  | 0.7+  |
| 2005 05 14 | 691 | 0.8+  | 0.2+  | 2007 11 03 | 691 | 0.2- | 0.4+ | 2007 12 05 | 704 | 0.3-  | 0.7+  |
| 2005 06 01 | 691 | 0.1-  | 0.0   | 2007 11 03 | 691 | 0.2+ | 0.0  |            |     |       |       |
| 2005 06 01 | 691 | 0.0   | 0.2-  | 2007 11 03 | 691 | 0.0  | 0.2- |            |     |       |       |

**2005 KD<sub>3</sub> = 2007 WL<sub>48</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 163.44213  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20912392 | $\omega$ 44.34058  | -0.34682525   | +0.93700001 |
| <i>a</i> | 2.8110393  | $\Omega$ 205.45294 | -0.88528496   | -0.34173783 |
| <i>e</i> | 0.0484529  | <i>i</i> 5.57507   | -0.30981090   | -0.07243096 |
| <i>P</i> | 4.71       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 16 | 691 | 0.2+ | 0.0  | 2005 05 19 | G96 | 0.3- | 0.6- | 2007 11 08 | 691 | 0.0  | 0.4+ |
| 2005 04 16 | 691 | 0.4+ | 0.3+ | 2005 05 19 | G96 | 0.7- | 0.3- | 2007 11 08 | 691 | 0.2- | 0.3+ |
| 2005 04 16 | 691 | 0.2+ | 0.1+ | 2005 05 19 | G96 | 0.6- | 0.2- | 2007 11 20 | G96 | 0.5+ | 0.0  |
| 2005 04 30 | 691 | 0.2- | 0.4+ | 2006 09 19 | 691 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2005 04 30 | 691 | 0.3+ | 0.2+ | 2006 09 19 | 691 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.1- | 0.3+ |
| 2005 04 30 | 691 | 0.0  | 0.4+ | 2006 09 19 | 691 | 0.1- | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.1- |
| 2005 05 17 | G96 | 0.1- | 0.4- | 2007 10 20 | G96 | 0.2- | 0.2- | 2007 11 21 | G96 | 0.0  | 0.1+ |
| 2005 05 17 | G96 | 0.3- | 0.4- | 2007 10 20 | G96 | 0.4+ | 0.1- | 2007 11 21 | G96 | 0.8+ | 0.4- |
| 2005 05 17 | G96 | 0.6- | 0.2- | 2007 10 20 | G96 | 0.4+ | 0.1+ | 2007 11 21 | G96 | 0.0  | 0.2- |
| 2005 05 17 | G96 | 0.1+ | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.2+ | 2007 11 21 | G96 | 0.6+ | 0.0  |
| 2005 05 19 | G96 | 0.4- | 0.1+ | 2007 11 08 | 691 | 0.8- | 0.4+ |            |     |      |      |

**2005 KE<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 213.56702  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21440311 | $\omega$ 321.04014 | -0.37851726   | +0.91375736 |
| <i>a</i> | 2.7647041  | $\Omega$ 286.27324 | -0.80612831   | -0.40378409 |
| <i>e</i> | 0.2538916  | <i>i</i> 8.84212   | -0.45484264   | -0.04478723 |
| <i>P</i> | 4.60       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 16 | 644 | 0.2- | 0.0  | 2005 06 28 | 644 | 0.0  | 0.1- | 2005 07 11 | G96 | 0.8+  | 1.0-  |
| 2005 05 16 | 644 | 0.1- | 0.1- | 2005 06 28 | 644 | 0.1+ | 0.2- | 2005 07 12 | 703 | 0.6-  | 0.7-  |
| 2005 05 16 | 644 | 0.0  | 0.0  | 2005 06 28 | 644 | 0.1+ | 0.1- | 2005 07 12 | 703 | 0.5-  | 0.7+  |
| 2005 05 20 | 644 | 0.1- | 0.1+ | 2005 07 02 | 691 | 0.3+ | 0.3+ | 2005 07 12 | 703 | (0.2- | 2.2-) |
| 2005 05 20 | 644 | 0.2- | 0.2- | 2005 07 02 | 691 | 0.1+ | 0.2+ | 2005 07 12 | 703 | 0.1-  | 0.5-  |
| 2005 05 20 | 644 | 0.4- | 0.0  | 2005 07 02 | 691 | 0.1+ | 0.3+ | 2005 07 15 | 691 | 0.1+  | 0.1-  |
| 2005 06 15 | G96 | 0.2- | 0.4- | 2005 07 04 | 704 | 0.8- | 1.0- | 2005 07 15 | 691 | 0.1+  | 0.0   |
| 2005 06 15 | G96 | 0.2- | 0.4- | 2005 07 04 | 704 | 1.0- | 0.7- | 2005 07 15 | 691 | 0.0   | 0.1-  |
| 2005 06 15 | G96 | 0.4+ | 0.4- | 2005 07 04 | 704 | 0.4- | 0.2- | 2005 07 30 | E12 | 0.1-  | 0.2-  |
| 2005 06 15 | G96 | 0.3- | 0.4- | 2005 07 04 | 704 | 0.7- | 0.3- | 2005 07 30 | E12 | 0.1-  | 0.6-  |

## M.P.O. 129746

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 21 | 644 | 0.3− | 0.1+ | 2005 07 05 | 644 | 1.4− | 0.0  | 2005 07 30 | E12 | 0.1− | 1.0− |
| 2005 06 21 | 644 | 0.3+ | 0.4+ | 2005 07 05 | 644 | 0.0  | 0.3+ | 2005 07 30 | E12 | 0.2− | 0.2− |
| 2005 06 21 | 644 | 0.2− | 0.3− | 2005 07 05 | 644 | 0.1− | 0.3+ | 2007 12 04 | G96 | 0.1+ | 0.4− |
| 2005 06 21 | 644 | 0.1− | 0.1− | 2005 07 10 | 691 | 0.5+ | 0.6+ | 2007 12 04 | G96 | 0.2+ | 0.5− |
| 2005 06 21 | 644 | 0.1+ | 0.2+ | 2005 07 10 | 691 | 0.2+ | 0.3+ | 2007 12 04 | G96 | 0.6+ | 0.9− |
| 2005 06 21 | 644 | 0.0  | 0.0  | 2005 07 10 | 691 | 0.1+ | 0.1+ | 2007 12 04 | G96 | 0.1+ | 0.8− |
| 2005 06 27 | 691 | 0.1+ | 0.2+ | 2005 07 11 | G96 | 0.1+ | 0.5− | 2007 12 05 | 691 | 0.1− | 0.3+ |
| 2005 06 27 | 691 | 0.1+ | 0.3+ | 2005 07 11 | G96 | 0.0  | 0.6− | 2007 12 05 | 691 | 0.2− | 0.3+ |
| 2005 06 27 | 691 | 0.0  | 0.3+ | 2005 07 11 | G96 | 0.7− | 0.5− | 2007 12 05 | 691 | 0.1+ | 0.3+ |

2005 LO<sub>1</sub> = 2007 VO<sub>301</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 12.52964   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.18481714 | $\omega$ | 269.94348 | +0.73452842 |      | −0.66146554 |   |  |  |  |  |
| <i>a</i>                                | 3.0523984  | $\Omega$ | 131.46710 | +0.67471912 |      | +0.68816840 |   |  |  |  |  |
| <i>e</i>                                | 0.0969553  | <i>i</i> | 11.65902  | +0.07226418 |      | +0.29814023 |   |  |  |  |  |
| <i>P</i>                                | 5.33       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 13 | 691 | 0.6+ | 0.1− | 2005 06 03 | 691 | 0.3+  | 0.2+  | 2007 11 17 | 703 | 0.2− | 0.8− |
| 2005 05 13 | 691 | 1.2− | 0.4− | 2005 06 28 | 691 | 0.5−  | 0.0   | 2007 11 17 | 703 | 0.8+ | 0.2− |
| 2005 05 13 | 691 | 0.5+ | 0.1+ | 2005 06 28 | 691 | 0.2+  | 0.1−  | 2007 11 17 | 703 | 0.3− | 0.9+ |
| 2005 06 01 | G96 | 0.3− | 0.1+ | 2005 06 28 | 691 | 0.3−  | 0.2+  | 2007 12 04 | 703 | 0.6+ | 1.0+ |
| 2005 06 01 | G96 | 0.4− | 0.1− | 2007 11 15 | 703 | 0.2−  | 0.5−  | 2007 12 04 | 703 | 1.4− | 0.1− |
| 2005 06 01 | G96 | 0.1− | 0.1− | 2007 11 15 | 703 | 0.2+  | 0.1−  | 2007 12 04 | 703 | 1.4+ | 0.6+ |
| 2005 06 01 | G96 | 0.1+ | 0.1− | 2007 11 15 | 703 | 0.5−  | 0.3−  | 2007 12 04 | 703 | 0.5− | 0.2+ |
| 2005 06 03 | 691 | 0.3+ | 0.3− | 2007 11 15 | 703 | (3.2+ | 0.4+) |            |     |      |      |
| 2005 06 03 | 691 | 0.1+ | 0.3+ | 2007 11 17 | 703 | 0.0   | 0.6−  |            |     |      |      |

2005 LS<sub>12</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 258.00722  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.23735657 | $\omega$ | 59.85924  | −0.90243057 |      | +0.13245474 |   |  |  |  |  |
| <i>a</i>                                | 2.5834608  | $\Omega$ | 124.58860 | −0.18263542 |      | −0.97944946 |   |  |  |  |  |
| <i>e</i>                                | 0.2248136  | <i>i</i> | 29.86706  | +0.39020939 |      | −0.15210028 |   |  |  |  |  |
| <i>P</i>                                | 4.15       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 01 19 | 691 | 0.3+ | 0.1− | 2005 06 08 | 704 | 0.5− | 1.1− | 2005 06 23 | 644 | 0.2+ | 0.0  |
| 1996 01 19 | 691 | 0.3− | 0.2+ | 2005 06 09 | 704 | 0.4+ | 0.2+ | 2005 06 23 | 644 | 0.1+ | 0.1− |
| 1996 01 19 | 691 | 0.0  | 0.0  | 2005 06 09 | 704 | 0.2+ | 0.1+ | 2005 06 23 | 644 | 0.3+ | 0.1− |
| 2005 06 05 | 704 | 0.8+ | 0.4+ | 2005 06 09 | 704 | 0.1+ | 0.0  | 2005 07 28 | 644 | 0.1− | 0.4+ |
| 2005 06 05 | 704 | 0.3+ | 0.6+ | 2005 06 09 | 704 | 0.4− | 0.1+ | 2005 07 28 | 644 | 0.0  | 0.5+ |
| 2005 06 05 | 704 | 0.0  | 0.3+ | 2005 06 11 | 704 | 0.4+ | 0.3− | 2005 07 28 | 644 | 0.3− | 0.6+ |
| 2005 06 08 | 704 | 0.5− | 0.6− | 2005 06 11 | 704 | 0.6− | 0.8+ | 2007 12 07 | D35 | 0.4− | 1.1+ |
| 2005 06 08 | 704 | 0.5+ | 0.0  | 2005 06 11 | 704 | 0.5− | 0.2− | 2007 12 07 | D35 | 0.0  | 0.1+ |
| 2005 06 08 | 704 | 0.4− | 0.1− | 2005 06 11 | 704 | 0.3+ | 0.9+ | 2007 12 07 | D35 | 0.1+ | 0.5− |
| 2005 06 08 | 704 | 0.3+ | 1.2− | 2005 06 11 | 704 | 0.2− | 0.0  |            |     |      |      |

2005 LS<sub>22</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 209.11584  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.17035971 | $\omega$ | 297.68112 | −0.79351631 |      | +0.58928656 |   |  |  |  |  |
| <i>a</i>                                | 3.2227364  | $\Omega$ | 278.81314 | −0.49004039 |      | −0.76675928 |   |  |  |  |  |
| <i>e</i>                                | 0.0899268  | <i>i</i> | 8.84219   | −0.36082167 |      | −0.25460078 |   |  |  |  |  |
| <i>P</i>                                | 5.79       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 08 | 691 | 0.2− | 0.0  | 2005 06 16 | 691 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.4− | 0.4+ |
| 2005 06 08 | 691 | 0.2− | 0.1+ | 2005 06 16 | 691 | 0.1+ | 0.3− | 2007 11 19 | 691 | 0.2− | 0.2− |
| 2005 06 08 | 691 | 0.0  | 0.0  | 2005 06 16 | 691 | 0.3+ | 0.1+ | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2005 06 12 | 691 | 0.2− | 0.1+ | 2005 07 04 | G96 | 0.5+ | 0.1− | 2007 11 19 | G96 | 0.4+ | 0.2− |
| 2005 06 12 | 691 | 0.1+ | 0.3− | 2005 07 04 | G96 | 0.5+ | 0.2− | 2007 11 19 | G96 | 0.6+ | 0.1− |
| 2005 06 12 | 691 | 0.3− | 0.0  | 2005 07 04 | G96 | 0.1− | 0.1− | 2007 11 19 | G96 | 0.1+ | 0.1− |
| 2005 06 14 | G96 | 0.8+ | 0.4+ | 2005 07 04 | G96 | 0.1− | 0.1− | 2007 11 19 | G96 | 0.1+ | 0.2− |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 14 | G96 | 0.3+ | 0.3+ | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.0  | 0.5+ |
| 2005 06 14 | G96 | 0.3− | 0.5+ | 2007 11 02 | 691 | 0.3− | 0.2+ | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2005 06 14 | G96 | 0.2+ | 0.2+ | 2007 11 02 | 691 | 1.2+ | 1.0− | 2007 11 20 | 691 | 0.3− | 0.1+ |

2005 LA<sub>29</sub> = 2007 TU<sub>232</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 327.57056  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.20299551 | $\omega$ | 256.27299 | +0.10002145 |      | −0.99497697 |   |  |  |  |  |
| <i>a</i>                                | 2.8673350  | $\Omega$ | 187.98993 | +0.92381368 |      | +0.09438408 |   |  |  |  |  |
| <i>e</i>                                | 0.0382630  | <i>i</i> | 1.67649   | +0.36954566 |      | +0.03335376 |   |  |  |  |  |
| <i>P</i>                                | 4.86       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 10 01 | 691 | 0.0  | 0.4− | 2005 06 10 | 691 | 0.0  | 0.2+ | 2007 10 12 | 691 | 0.3− | 0.2+ |
| 1992 10 01 | 691 | 0.1+ | 0.3− | 2005 06 10 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.6− | 0.7+ |
| 1992 10 01 | 691 | 0.5− | 0.8+ | 2005 06 13 | G96 | 0.2+ | 0.4+ | 2007 11 14 | 691 | 0.1− | 0.1+ |
| 2002 10 31 | 644 | 0.9+ | 1.2+ | 2005 06 13 | G96 | 0.2− | 0.8+ | 2007 11 14 | 691 | 0.3− | 0.1− |
| 2002 10 31 | 644 | 0.5+ | 0.9+ | 2005 06 13 | G96 | 0.6− | 0.4+ | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2002 10 31 | 644 | 0.6+ | 0.6+ | 2005 06 13 | G96 | 0.8− | 0.5+ | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2004 02 12 | 691 | 0.2+ | 0.1+ | 2005 06 14 | 691 | 0.4+ | 0.5+ | 2007 11 18 | 691 | 0.1− | 0.1+ |
| 2004 02 12 | 691 | 0.1− | 0.1+ | 2005 06 14 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 691 | 0.2− | 0.2− |
| 2004 02 12 | 691 | 0.1+ | 0.1+ | 2005 06 14 | 691 | 0.2+ | 0.3− | 2007 12 04 | 691 | 0.2+ | 0.0  |
| 2005 04 07 | G96 | 0.4− | 0.6+ | 2007 09 10 | G96 | 0.0  | 0.4− | 2007 12 04 | 691 | 0.2+ | 0.1− |
| 2005 04 07 | G96 | 0.4− | 0.6+ | 2007 09 10 | G96 | 0.2+ | 0.5− | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2005 04 07 | G96 | 0.2− | 0.1+ | 2007 09 10 | G96 | 0.3+ | 0.2− | 2007 12 05 | 704 | 0.2+ | 0.5+ |
| 2005 04 07 | G96 | 0.4− | 0.1− | 2007 09 10 | G96 | 0.1− | 0.5− | 2007 12 05 | 704 | 0.2− | 0.1− |
| 2005 05 07 | G96 | 0.0  | 0.1+ | 2007 10 08 | 691 | 0.1− | 0.1− | 2007 12 05 | 704 | 0.5+ | 0.4− |
| 2005 05 07 | G96 | 0.1− | 0.4+ | 2007 10 08 | 691 | 0.2+ | 0.2+ | 2007 12 05 | 704 | 0.6+ | 1.1− |
| 2005 05 07 | G96 | 0.2− | 0.4+ | 2007 10 08 | 691 | 0.1− | 0.0  | 2007 12 06 | 691 | 0.0  | 0.3+ |
| 2005 05 07 | G96 | 0.3− | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.0  | 0.1+ |
| 2005 06 10 | 691 | 0.5+ | 0.0  | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 12 06 | 691 | 0.0  | 0.1+ |

2005 LY<sub>29</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 204.76718  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.19585279 | $\omega$ | 4.80872   | −0.90280859 |      | +0.42571616 |   |  |  |  |  |
| <i>a</i>                                | 2.9366321  | $\Omega$ | 200.72036 | −0.40006933 |      | −0.88333306 |   |  |  |  |  |
| <i>e</i>                                | 0.0559884  | <i>i</i> | 9.90291   | −0.15773770 |      | −0.19618476 |   |  |  |  |  |
| <i>P</i>                                | 5.03       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 07 04 | 691 | 0.2+ | 0.5− | 2005 06 11 | 691 | 0.4+ | 0.1− | 2007 10 21 | 691 | 0.4− | 0.1− |
| 2000 07 04 | 691 | 0.1+ | 0.3+ | 2005 06 13 | G96 | 0.1− | 0.1− | 2007 10 21 | 691 | 0.0  | 0.2+ |
| 2000 07 04 | 691 | 0.4− | 0.4− | 2005 06 13 | G96 | 0.3− | 0.6+ | 2007 10 24 | G96 | 0.3+ | 1.1− |
| 2005 04 30 | 691 | 0.3+ | 0.0  | 2005 06 13 | G96 | 0.4− | 0.3+ | 2007 10 24 | G96 | 0.5+ | 0.3− |
| 2005 04 30 | 691 | 0.3+ | 0.8+ | 2005 06 13 | G96 | 1.2− | 0.6+ | 2007 10 24 | G96 | 0.7+ | 0.1+ |
| 2005 04 30 | 691 | 0.6− | 0.4− | 2005 06 15 | 691 | 0.2− | 0.2+ | 2007 10 24 | G96 | 0.2+ | 0.4+ |
| 2005 05 17 | G96 | 0.8− | 0.0  | 2005 06 15 | 691 | 0.1+ | 0.2+ | 2007 11 20 | G96 | 0.2+ | 0.3− |
| 2005 05 17 | G96 | 0.4− | 0.0  | 2005 06 15 | 691 | 0.4+ | 0.2− | 2007 11 20 | G96 | 0.3− | 0.2− |
| 2005 05 17 | G96 | 0.3− | 0.1+ | 2006 09 19 | 691 | 0.1− | 0.0  | 2007 11 20 | G96 | 0.2+ | 0.1+ |
| 2005 05 17 | G96 | 0.6− | 0.2− | 2006 09 19 | 691 | 0.1+ | 0.1− | 2007 11 20 | G96 | 0.4+ | 0.2+ |
| 2005 06 11 | 691 | 0.0  | 0.4− | 2006 09 19 | 691 | 0.0  | 0.2+ |            |     |      |      |
| 2005 06 11 | 691 | 0.3+ | 0.2− | 2007 10 21 | 691 | 0.1− | 0.1+ |            |     |      |      |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 11 | 691 | 0.0  | 0.2− | 2006 09 26 | G96 | 0.2− | 0.1+ | 2007 11 19 | G96 | 0.1− | 0.3+ |
| 2005 06 15 | 691 | 0.2+ | 0.5+ | 2006 09 26 | G96 | 0.3+ | 0.1− | 2007 11 19 | G96 | 0.2+ | 0.1+ |
| 2005 06 15 | 691 | 0.2+ | 0.5+ | 2006 09 26 | G96 | 0.2− | 0.5− | 2007 12 01 | 941 | 0.1+ | 0.2− |
| 2005 06 15 | 691 | 0.5+ | 0.2+ | 2007 11 18 | 941 | 0.3+ | 0.4+ | 2007 12 01 | 941 | 0.0  | 0.3− |
| 2005 06 27 | 691 | 0.0  | 0.0  | 2007 11 18 | 941 | 0.0  | 0.3+ | 2007 12 01 | 941 | 0.0  | 0.3− |
| 2005 06 27 | 691 | 0.1− | 0.1+ | 2007 11 18 | 941 | 0.1− | 0.4+ | 2007 12 01 | 941 | 0.3+ | 0.4− |
| 2005 06 27 | 691 | 0.1+ | 0.0  | 2007 11 18 | 941 | 0.4− | 0.3+ |            |     |      |      |
| 2005 07 04 | 691 | 0.1− | 0.1− | 2007 11 18 | 941 | 0.8− | 0.4+ |            |     |      |      |

2005 LW<sub>39</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 320.86121  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.35139025 | $\omega$ | 274.94430 | −0.85915508 | −0.23856973 |
| <i>a</i> | 1.9888846  | $\Omega$ | 251.83647 | +0.36420041 | −0.90652720 |
| <i>e</i> | 0.7150491  | <i>i</i> | 28.45318  | −0.35945878 | −0.34827133 |
| <i>P</i> | 2.80       | <i>H</i> | 20.0      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 1           |

Residuals in seconds of arc

|            |     |        |       |            |     |      |      |            |     |      |      |
|------------|-----|--------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 15 | 704 | 0.6+   | 0.3−  | 2005 06 17 | 176 | 0.0  | 0.6− | 2005 06 24 | 649 | 0.4− | 0.4+ |
| 2005 06 15 | 704 | 0.7+   | 0.3−  | 2005 06 17 | 176 | 0.1− | 0.5− | 2005 06 24 | 649 | 0.2− | 0.3+ |
| 2005 06 15 | 704 | 0.3−   | 0.9+  | 2005 06 17 | 176 | 0.2− | 0.6− | 2005 06 24 | 649 | 0.4− | 0.0  |
| 2005 06 15 | 704 | 0.1−   | 0.7+  | 2005 06 18 | G96 | 0.4− | 0.3− | 2005 06 25 | 941 | 0.1+ | 0.2− |
| 2005 06 15 | 704 | 0.4+   | 0.1−  | 2005 06 18 | G96 | 0.0  | 0.4− | 2005 06 25 | 941 | 0.0  | 0.1− |
| 2005 06 15 | 595 | 0.3+   | 0.7−  | 2005 06 18 | G96 | 0.2− | 0.3− | 2005 06 25 | 941 | 0.3+ | 0.2− |
| 2005 06 15 | 595 | 0.5+   | 1.1+  | 2005 06 18 | G96 | 0.3− | 0.5− | 2005 06 25 | 941 | 0.1+ | 0.3− |
| 2005 06 15 | 595 | (1.1+) | 1.8−) | 2005 06 18 | 941 | 0.2− | 0.1− | 2005 06 25 | 941 | 0.0  | 0.1− |
| 2005 06 15 | 595 | 0.5+   | 0.5−  | 2005 06 18 | 941 | 0.1− | 0.1− | 2005 06 28 | 649 | 0.2− | 0.4− |
| 2005 06 15 | 595 | 1.1+   | 0.8−  | 2005 06 18 | 941 | 0.0  | 0.2− | 2005 06 28 | 649 | 0.2+ | 0.0  |
| 2005 06 15 | 595 | 0.1−   | 0.6+  | 2005 06 18 | 941 | 0.1+ | 0.5− | 2005 06 28 | 649 | 0.7+ | 0.1− |
| 2005 06 15 | 595 | 0.6−   | 0.3−  | 2005 06 18 | 941 | 0.0  | 0.2− | 2005 06 28 | 649 | 0.1+ | 0.1− |
| 2005 06 15 | 595 | 0.2+   | 0.3−  | 2005 06 18 | J95 | 0.3− | 0.4+ | 2005 06 29 | 176 | 0.1− | 0.2− |
| 2005 06 15 | 147 | 0.1+   | 0.3−  | 2005 06 18 | J95 | 0.5− | 0.3+ | 2005 06 29 | 176 | 0.1− | 0.1− |
| 2005 06 15 | 147 | 0.8−   | 0.7+  | 2005 06 18 | J95 | 0.3− | 0.3+ | 2005 06 29 | 176 | 0.0  | 0.0  |
| 2005 06 15 | 147 | 0.6−   | 0.1+  | 2005 06 19 | 932 | 0.1+ | 0.0  | 2005 06 29 | 176 | 0.0  | 0.1+ |
| 2005 06 15 | 147 | (1.6+) | 1.7−) | 2005 06 19 | 932 | 0.0  | 0.1− | 2005 07 02 | 941 | 0.3− | 0.3− |
| 2005 06 16 | 673 | 0.3−   | 0.3+  | 2005 06 19 | 932 | 0.1+ | 0.0  | 2005 07 02 | 941 | 0.4− | 0.1− |
| 2005 06 16 | 673 | 0.8−   | 1.1+  | 2005 06 19 | 198 | 0.2+ | 0.1+ | 2005 07 02 | 941 | 0.4− | 0.3− |
| 2005 06 16 | 704 | 0.8+   | 0.4+  | 2005 06 19 | 198 | 0.2− | 0.3+ | 2005 07 02 | 941 | 0.4− | 0.4− |
| 2005 06 16 | 673 | 0.5−   | 0.1+  | 2005 06 19 | 198 | 0.3− | 0.3+ | 2005 07 02 | 941 | 0.3− | 0.5− |
| 2005 06 16 | 704 | 0.7+   | 0.3+  | 2005 06 19 | 198 | 0.3− | 0.2+ | 2005 07 02 | 941 | 0.1− | 0.4− |
| 2005 06 16 | 854 | 0.8+   | 0.7−  | 2005 06 19 | 540 | 0.1− | 0.4+ | 2005 07 11 | 291 | 0.4+ | 0.2+ |
| 2005 06 16 | 673 | 0.3+   | 0.2+  | 2005 06 19 | 198 | 0.5− | 0.1− | 2005 07 11 | 291 | 0.2+ | 0.0  |
| 2005 06 16 | 854 | 1.2+   | 0.5−  | 2005 06 19 | 540 | 0.2+ | 0.1+ | 2005 07 11 | 291 | 0.4+ | 0.1+ |
| 2005 06 16 | 854 | 0.4+   | 1.1+  | 2005 06 19 | 540 | 0.2+ | 0.4+ | 2005 07 16 | 291 | 0.4+ | 0.2− |
| 2005 06 16 | 673 | 1.5+   | 0.1+  | 2005 06 19 | J95 | 0.1− | 0.1− | 2005 07 16 | 291 | 0.4+ | 0.0  |
| 2005 06 16 | 704 | 1.1+   | 1.0+  | 2005 06 19 | J95 | 0.1− | 0.0  | 2005 07 16 | 291 | 0.4+ | 0.2+ |
| 2005 06 16 | 673 | 1.3+   | 0.0   | 2005 06 19 | J95 | 0.7− | 0.2− | 2005 08 24 | 568 | 0.0  | 0.0  |
| 2005 06 16 | 704 | 0.6+   | 0.3+  | 2005 06 22 | 649 | 0.5− | 0.1− | 2005 08 24 | 568 | 0.0  | 0.0  |
| 2005 06 16 | 704 | 0.9+   | 1.0+  | 2005 06 22 | 649 | 0.2− | 0.2− | 2007 11 17 | 696 | 0.7− | 0.1+ |
| 2005 06 17 | J95 | 0.1+   | 0.3−  | 2005 06 22 | 649 | 0.0  | 0.3+ | 2007 11 17 | 696 | 0.7− | 0.1+ |
| 2005 06 17 | 170 | 0.2+   | 0.7+  | 2005 06 22 | 649 | 0.3− | 0.3− | 2007 11 19 | 689 | 1.1+ | 0.8+ |
| 2005 06 17 | 170 | 0.1−   | 0.5+  | 2005 06 22 | J95 | 0.1− | 0.5− | 2007 11 19 | 689 | 0.2+ | 0.4+ |
| 2005 06 17 | 170 | 0.1−   | 0.0   | 2005 06 22 | J95 | 0.1− | 0.2− | 2007 11 19 | 689 | 0.0  | 0.5+ |
| 2005 06 17 | J95 | 0.9−   | 0.1+  | 2005 06 22 | J95 | 0.2− | 0.4− | 2007 12 14 | 291 | 0.2+ | 0.0  |
| 2005 06 17 | 170 | 0.1−   | 0.0   | 2005 06 24 | 932 | 0.1+ | 0.4− | 2007 12 14 | 291 | 0.2− | 0.0  |
| 2005 06 17 | J95 | 0.4+   | 0.4+  | 2005 06 24 | 932 | 0.0  | 0.1+ | 2007 12 14 | 291 | 0.1+ | 0.4+ |
| 2005 06 17 | 176 | 0.3+   | 0.7−  | 2005 06 24 | 932 | 0.3+ | 0.2− |            |     |      |      |
| 2005 06 17 | 176 | 0.4+   | 0.9−  | 2005 06 24 | 649 | 0.1+ | 0.4+ |            |     |      |      |

2005 LZ<sub>45</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.52756  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.08416166 | $\omega$ | 238.63909 | +0.91744966 | +0.15618731 |
| <i>a</i> | 5.1569533  | $\Omega$ | 110.12665 | −0.06768775 | +0.96758753 |
| <i>e</i> | 0.0794121  | <i>i</i> | 22.93645  | −0.39205164 | +0.19844371 |
| <i>P</i> | 11.71      | <i>H</i> | 13.0      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 4           |

## M.P.O. 129747

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 05 27 | 691 | 0.3− | 0.3− | 2005 06 17 | 691 | 0.0  | 0.3+ | 2007 08 11 | E12 | 0.4+ | 0.4− |
| 1993 05 27 | 691 | 0.2− | 0.5− | 2005 06 17 | 691 | 0.1+ | 0.2+ | 2007 09 07 | E12 | 0.2− | 0.2+ |
| 1993 05 27 | 691 | 0.2− | 0.6− | 2005 06 17 | 691 | 0.2+ | 0.1+ | 2007 09 07 | E12 | 1.0+ | 0.2+ |
| 2005 06 13 | 691 | 0.0  | 0.3+ | 2005 07 03 | 691 | 0.1− | 0.1− | 2007 09 07 | E12 | 0.2− | 0.6− |
| 2005 06 13 | 691 | 0.1+ | 0.2+ | 2005 07 03 | 691 | 0.0  | 0.3+ | 2007 09 07 | E12 | 0.3− | 0.4− |
| 2005 06 13 | 691 | 0.0  | 0.0  | 2005 07 03 | 691 | 0.0  | 0.0  | 2007 09 17 | E12 | 0.3− | 1.1+ |
| 2005 06 17 | 691 | 0.2+ | 0.1− | 2007 08 11 | E12 | 0.5− | 0.0  | 2007 09 17 | E12 | 0.5+ | 0.1− |
| 2005 06 17 | 691 | 0.0  | 0.1+ | 2007 08 11 | E12 | 0.5+ | 0.2− | 2007 09 17 | E12 | 0.2− | 0.5+ |
| 2005 06 17 | 691 | 0.2+ | 0.2+ | 2007 08 11 | E12 | 0.1− | 0.8− | 2007 09 17 | E12 | 0.5− | 0.3+ |

2005 MN<sub>10</sub> = 2007 WT<sub>23</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 164.19765  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18201390 | $\omega$ | 51.11979  | −0.48132455 | +0.87640083 |
| <i>a</i> | 3.0836590  | $\Omega$ | 190.14420 | −0.82937132 | −0.46116580 |
| <i>e</i> | 0.1259850  | <i>i</i> | 5.13253   | −0.28367214 | −0.13873603 |
| <i>P</i> | 5.42       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 05 14 | 691 | 0.4+  | 0.0   | 2005 06 01 | 691 | 0.1+ | 0.1+ | 2007 10 10 | 691 | 0.1− | 0.4+ |
| 1994 05 14 | 691 | 0.0   | 0.2+  | 2005 06 27 | 691 | 0.2+ | 0.2+ | 2007 10 10 | G96 | 0.5+ | 0.4− |
| 1994 05 14 | 691 | 0.4+  | 0.2+  | 2005 06 27 | 691 | 0.1+ | 0.1+ | 2007 10 10 | G96 | 0.9+ | 0.3+ |
| 1999 04 09 | 691 | (0.9− | 3.7−) | 2005 06 27 | 691 | 0.0  | 0.1+ | 2007 10 10 | 691 | 0.2+ | 0.3+ |
| 1999 04 09 | 691 | 0.5+  | 0.5−  | 2005 06 30 | 691 | 0.1− | 0.2+ | 2007 10 10 | G96 | 0.2+ | 0.0  |
| 1999 04 09 | 691 | 0.4−  | 0.5−  | 2005 06 30 | 691 | 0.1− | 0.0  | 2007 10 10 | G96 | 0.1+ | 0.0  |
| 1999 04 11 | 691 | 1.1−  | 1.2−  | 2005 06 30 | 691 | 0.1+ | 0.0  | 2007 10 10 | 691 | 0.7− | 0.6− |
| 1999 04 11 | 691 | (3.7+ | 4.1−) | 2006 08 29 | 691 | 0.0  | 0.3− | 2007 11 18 | G96 | 0.1+ | 0.3+ |
| 1999 04 11 | 691 | 0.8−  | 0.1−  | 2006 08 29 | 691 | 0.2+ | 0.2− | 2007 11 18 | G96 | 0.1+ | 0.3+ |
| 2001 09 21 | 691 | 0.3−  | 0.1−  | 2006 08 29 | 691 | 0.2− | 0.4− | 2007 11 18 | G96 | 0.1− | 0.2− |
| 2001 09 21 | 691 | 0.0   | 0.1−  | 2006 09 28 | G96 | 0.0  | 0.5− | 2007 11 18 | G96 | 0.5+ | 0.2+ |
| 2001 09 21 | 691 | 0.4−  | 0.1+  | 2006 09 28 | G96 | 0.1+ | 0.0  | 2007 11 20 | 691 | 0.3− | 0.1− |
| 2005 06 01 | 691 | 0.1+  | 0.1+  | 2006 09 28 | G96 | 0.1+ | 0.4− | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2005 06 01 | 691 | 0.0   | 0.1+  | 2006 09 28 | G96 | 0.2+ | 0.9− | 2007 11 20 | 691 | 0.3− | 0.3+ |

2005 NU<sub>49</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 81.13890   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.12515892 | $\omega$ | 56.59839  | +0.90151706 | +0.41618919 |
| <i>a</i> | 3.9581737  | $\Omega$ | 278.55975 | −0.42608077 | +0.80579426 |
| <i>e</i> | 0.1601732  | <i>i</i> | 6.88535   | −0.07564505 | +0.42128633 |
| <i>P</i> | 7.87       | <i>H</i> | 14.6      | <i>G</i>    | 0.15        |
|          |            |          |           |             | <i>U</i>    |
|          |            |          |           |             | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 19 | G96 | 0.1− | 0.2− | 2005 06 27 | 644 | 0.1+ | 0.2+ | 2005 07 30 | E12 | 0.4− | 0.2− |
| 2005 05 19 | G96 | 0.2− | 0.4− | 2005 07 04 | G96 | 0.1− | 0.1+ | 2005 07 30 | E12 | 0.4− | 0.3− |
| 2005 05 19 | G96 | 0.3− | 0.2− | 2005 07 04 | G96 | 0.1+ | 0.1+ | 2005 07 30 | E12 | 0.1+ | 0.3+ |
| 2005 05 19 | G96 | 0.5+ | 1.0+ | 2005 07 04 | G96 | 0.3− | 0.1+ | 2007 11 14 | 691 | 0.4− | 0.2− |
| 2005 06 18 | G96 | 0.1+ | 0.0  | 2005 07 04 | G96 | 0.1− | 0.0  | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2005 06 18 | G96 | 0.3+ | 0.2− | 2005 07 11 | G96 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.1− | 0.1− |
| 2005 06 18 | G96 | 0.0  | 0.1+ | 2005 07 11 | G96 | 0.1− | 0.0  | 2007 11 18 | 691 | 0.2− | 0.1+ |
| 2005 06 18 | G96 | 0.3+ | 0.1− | 2005 07 11 | G96 | 0.2− | 0.2− | 2007 11 18 | 691 | 0.4+ | 0.2+ |
| 2005 06 27 | 644 | 0.1+ | 0.1+ | 2005 07 11 | G96 | 0.2− | 0.1− | 2007 11 18 | 691 | 0.3+ | 0.0  |
| 2005 06 27 | 644 | 0.1+ | 0.1− | 2005 07 30 | E12 | 0.8+ | 0.1+ |            |     |      |      |

## Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2005 07 28 644 0.3+ 0.1+ | 2005 08 02 J95 0.8− 0.0  | 2005 08 15 E12 0.2− 0.3− |
| 2005 07 28 644 0.0 0.3+  | 2005 08 07 734 0.0 0.2+  | 2005 08 15 E12 0.0 0.1−  |
| 2005 07 28 644 0.1− 0.4+ | 2005 08 07 734 0.2− 0.2+ | 2005 09 21 413 0.2+ 0.2− |
| 2005 07 29 734 0.2+ 0.4+ | 2005 08 07 734 0.3− 0.2+ | 2005 09 21 413 0.1+ 0.1− |
| 2005 07 29 734 0.1− 0.0  | 2005 08 10 E12 0.0 1.2−  | 2005 11 29 474 0.1− 1.1− |
| 2005 07 29 734 0.3+ 0.0  | 2005 08 10 E12 0.1+ 0.5− | 2005 11 29 474 0.7− 0.4− |
| 2005 07 29 734 0.1+ 0.1+ | 2005 08 10 E12 0.7− 0.4− | 2005 11 29 474 0.4+ 0.2− |
| 2005 07 29 734 0.1− 0.2+ | 2005 08 10 E12 0.7− 0.1− | 2005 11 29 474 0.1+ 0.9− |
| 2005 07 29 H06 0.7+ 0.5+ | 2005 08 13 E12 0.2− 0.2+ | 2005 12 23 291 0.1− 0.2− |
| 2005 07 29 H06 0.3+ 0.5+ | 2005 08 13 E12 0.2+ 0.2+ | 2005 12 23 291 0.2+ 0.9+ |
| 2005 08 01 E12 0.0 0.4+  | 2005 08 13 E12 0.1+ 0.3− | 2005 12 23 291 0.5− 0.4+ |
| 2005 08 01 E12 0.0 0.0   | 2005 08 13 E12 0.3− 0.3− | 2007 12 03 291 0.1− 0.5− |
| 2005 08 01 E12 0.0 0.3+  | 2005 08 15 E12 0.4+ 0.5+ | 2007 12 03 291 0.3+ 0.8+ |
| 2005 08 02 J95 1.2+ 0.0  | 2005 08 15 E12 0.9− 0.3+ |                          |

2005 RJ<sub>40</sub>

|                                         |                    |               |             |
|-----------------------------------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                |               |             |
| <i>M</i> 184.93228                      | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> 0.19888913                     | <i>ω</i> 327.70988 | +0.61124655   | +0.78810938 |
| <i>a</i> 2.9066675                      | <i>Ω</i> 339.67425 | −0.67451034   | +0.47080299 |
| <i>e</i> 0.0880713                      | <i>i</i> 12.05311  | −0.41402109   | +0.39652005 |
| <i>P</i> 4.96                           | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

## Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2000 08 30 103 0.9+ 0.3− | 2005 09 06 699 (2.4− 0.6+) | 2005 11 01 G96 0.1− 0.2− |
| 2000 08 30 103 0.0 0.6−  | 2005 09 13 691 0.0 0.1+    | 2005 11 01 G96 0.0 0.2−  |
| 2000 08 30 103 0.3+ 0.8− | 2005 09 13 691 0.2− 0.2+   | 2005 11 01 G96 0.3+ 0.1− |
| 2005 08 27 699 0.1− 0.6− | 2005 09 13 691 0.1− 0.0    | 2005 11 01 G96 0.4+ 0.2− |
| 2005 08 27 699 0.7− 0.0  | 2005 09 26 691 0.0 0.1−    | 2007 11 20 G96 0.5− 0.3− |
| 2005 08 27 699 0.9+ 1.0+ | 2005 09 26 691 0.2+ 0.3−   | 2007 11 20 G96 0.6+ 0.2− |
| 2005 08 27 699 0.3− 1.0+ | 2005 09 26 691 0.0 0.2−    | 2007 11 20 G96 0.1− 0.2+ |
| 2005 09 06 699 0.1− 0.0  | 2005 10 09 691 0.2− 0.0    | 2007 11 20 G96 0.2− 0.1+ |
| 2005 09 06 699 0.2− 0.4+ | 2005 10 09 691 0.2− 0.1+   |                          |
| 2005 09 06 699 0.6+ 0.2+ | 2005 10 09 691 0.1+ 0.3+   |                          |

2005 VT<sub>5</sub>

|                                         |                    |               |             |
|-----------------------------------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                |               |             |
| <i>M</i> 292.28649                      | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> 0.56441030                     | <i>ω</i> 319.33078 | −0.97471286   | −0.00758052 |
| <i>a</i> 1.4501272                      | <i>Ω</i> 221.90572 | +0.04126685   | −0.98834091 |
| <i>e</i> 0.2611174                      | <i>i</i> 19.53463  | −0.21961757   | −0.15206834 |
| <i>P</i> 1.75                           | <i>H</i> 19.2      | <i>G</i> 0.15 | <i>U</i> 3  |

## Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2005 11 06 704 1.4− 0.3− | 2005 11 11 734 1.9− 0.6−   | 2005 12 05 448 0.5− 0.8− |
| 2005 11 06 704 1.0− 0.1+ | 2005 11 11 854 0.7+ 0.1−   | 2005 12 05 448 0.6+ 1.1− |
| 2005 11 06 704 0.5− 0.6+ | 2005 11 11 854 0.6− 0.2+   | 2005 12 05 448 0.4− 0.5+ |
| 2005 11 10 703 0.2+ 1.3− | 2005 11 11 854 0.1+ 0.9−   | 2005 12 23 291 0.1+ 0.1− |
| 2005 11 10 703 0.2+ 0.1− | 2005 11 11 204 1.0− 0.2−   | 2005 12 23 291 0.2− 0.1+ |
| 2005 11 10 703 0.4− 0.0  | 2005 11 11 204 0.4− 0.1+   | 2005 12 23 291 0.0 0.2−  |
| 2005 11 10 703 1.0− 0.8+ | 2005 11 12 204 0.5− 0.0    | 2006 01 10 291 1.4− 1.2+ |
| 2005 11 10 703 1.7− 1.0+ | 2005 11 12 673 0.5− 0.3−   | 2006 01 10 291 0.5+ 0.2+ |
| 2005 11 10 703 0.0 0.4−  | 2005 11 12 673 1.4+ 1.8+   | 2006 01 31 291 0.1+ 0.2− |
| 2005 11 10 703 1.0− 1.4− | 2005 11 12 673 1.9+ 2.9+   | 2006 01 31 291 0.0 0.4−  |
| 2005 11 10 703 0.6− 0.3+ | 2005 11 12 673 (3.2+ 4.4+) | 2006 01 31 291 0.2+ 0.2− |
| 2005 11 11 649 0.8− 0.2+ | 2005 11 17 J95 0.1− 0.4−   | 2007 11 16 H55 0.1+ 0.1− |
| 2005 11 11 649 0.6+ 0.9− | 2005 11 17 J95 0.8+ 0.8+   | 2007 11 16 H55 0.1− 0.8− |
| 2005 11 11 649 0.0 0.2+  | 2005 11 17 J95 0.0 0.5−    | 2007 11 16 H55 0.8− 0.1− |
| 2005 11 11 734 1.2− 1.7− | 2005 11 24 J95 0.7+ 0.4−   | 2007 12 06 H55 0.4+ 0.2+ |
| 2005 11 11 649 1.1− 0.5− | 2005 11 24 J95 0.9+ 0.1−   | 2007 12 06 H55 0.1+ 0.3+ |
| 2005 11 11 734 0.9− 0.3+ | 2005 11 24 J95 0.2− 0.2−   | 2007 12 06 H55 0.1+ 0.3+ |

2005 XD<sub>1</sub>

|                                         |                    |               |             |
|-----------------------------------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                |               |             |
| <i>M</i> 312.00086                      | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> 0.47791248                     | <i>ω</i> 198.51657 | −0.57191378   | −0.76370556 |
| <i>a</i> 1.6202069                      | <i>Ω</i> 287.44379 | +0.78669702   | −0.40719723 |
| <i>e</i> 0.3064252                      | <i>i</i> 18.29333  | +0.23242726   | −0.50094335 |
| <i>P</i> 2.06                           | <i>H</i> 19.1      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2005 12 04 703 0.5+ 1.1+ | 2005 12 10 704 0.6+ 0.6−   | 2006 01 06 448 0.0 0.2−  |
| 2005 12 04 703 0.4− 0.3− | 2005 12 10 704 1.1+ 0.2+   | 2006 01 06 448 0.1+ 0.4− |
| 2005 12 04 703 1.4− 0.2− | 2005 12 10 704 0.2+ 0.3−   | 2006 01 06 448 0.1− 0.2− |
| 2005 12 04 703 0.2− 0.1− | 2005 12 10 704 0.9+ 0.4−   | 2006 01 09 704 0.9+ 0.4+ |
| 2005 12 05 J95 0.4− 0.1+ | 2005 12 13 F65 0.1− 0.0    | 2006 01 09 704 0.9+ 0.2+ |
| 2005 12 05 J95 0.9− 0.2− | 2005 12 13 F65 0.2+ 0.4−   | 2006 01 09 704 0.2+ 0.1− |
| 2005 12 05 J95 0.2+ 0.2− | 2005 12 13 F65 0.1− 0.7−   | 2006 01 09 704 1.1+ 0.6− |
| 2005 12 05 854 0.5+ 0.6− | 2005 12 25 703 0.8− 0.4−   | 2006 01 28 E12 0.4− 0.2− |
| 2005 12 05 854 0.2+ 0.2+ | 2005 12 25 703 0.2− 0.6−   | 2006 01 28 E12 0.6− 0.2+ |
| 2005 12 05 854 1.5+ 0.7+ | 2005 12 25 703 1.2− 0.2−   | 2006 01 28 E12 0.3− 0.0  |
| 2005 12 05 703 0.2− 0.8+ | 2005 12 25 703 0.1− 0.3−   | 2007 12 03 673 0.0 0.0   |
| 2005 12 05 703 0.7− 1.0+ | 2005 12 25 413 0.0 0.2−    | 2007 12 03 673 0.2+ 0.0  |
| 2005 12 05 703 0.5+ 0.9− | 2005 12 25 413 0.3− 0.3−   | 2007 12 03 673 0.2+ 0.0  |
| 2005 12 05 703 0.9− 0.3− | 2005 12 29 711 0.1− 0.0    | 2007 12 05 130 0.0 0.5+  |
| 2005 12 05 G96 0.2− 0.2− | 2005 12 29 711 (2.8− 0.4−) | 2007 12 05 130 0.6− 0.2+ |
| 2005 12 05 G96 0.4− 0.2− | 2005 12 29 711 0.3− 0.9+   | 2007 12 05 130 0.1+ 0.7+ |
| 2005 12 05 G96 0.1− 0.3− | 2005 12 30 704 0.2− 0.5+   | 2007 12 16 J34 0.3+ 0.2+ |
| 2005 12 05 G96 0.7− 0.1+ | 2005 12 30 704 0.2+ 0.7+   | 2007 12 16 J34 0.3− 0.4+ |
| 2005 12 07 448 0.0 0.4−  | 2005 12 30 704 0.4+ 0.5+   | 2007 12 17 J34 0.4− 0.4+ |
| 2005 12 07 448 0.3− 0.0  | 2005 12 30 704 0.9+ 0.7+   | 2007 12 17 J34 0.1+ 0.2+ |
| 2005 12 07 448 0.0 0.1−  | 2005 12 30 704 0.8+ 0.8+   | 2007 12 17 J34 0.0 0.1+  |

2005 XK<sub>8</sub>

|                                         |                    |               |             |
|-----------------------------------------|--------------------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC                |               |             |
| <i>M</i> 328.18660                      | (2000.0)           | <b>P</b>      | <b>Q</b>    |
| <i>n</i> 0.48203803                     | <i>ω</i> 173.36544 | −0.03198545   | −0.90419434 |
| <i>a</i> 1.6109492                      | <i>Ω</i> 277.83024 | +0.89612083   | +0.16278672 |
| <i>e</i> 0.2540669                      | <i>i</i> 25.46316  | +0.44265606   | −0.39488363 |
| <i>P</i> 2.04                           | <i>H</i> 19.8      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2005 12 07 703 0.7− 0.2+ | 2005 12 10 703 0.3− 0.1− | 2005 12 27 704 0.6+ 0.4−   |
| 2005 12 07 703 0.3+ 0.0  | 2005 12 13 F65 0.3− 0.6+ | 2005 12 27 704 0.2+ 0.5+   |
| 2005 12 07 703 0.4− 0.6− | 2005 12 18 J95 0.5− 0.4− | 2006 01 05 448 0.0 0.8−    |
| 2005 12 07 703 0.1− 0.2− | 2005 12 18 J95 0.2+ 0.4+ | 2006 01 05 448 0.3+ 0.3−   |
| 2005 12 07 703 0.6− 0.8+ | 2005 12 18 J95 0.6+ 0.0  | 2006 01 05 448 0.1+ 0.3+   |
| 2005 12 07 703 1.1+ 0.0  | 2005 12 22 703 0.4+ 0.3− | 2006 01 09 734 (0.9− 3.8−) |
| 2005 12 07 703 0.0 0.1+  | 2005 12 22 703 0.1− 0.2+ | 2006 01 09 734 0.7− 1.0−   |
| 2005 12 07 703 0.3− 0.4+ | 2005 12 22 703 0.5− 0.8− | 2006 01 09 734 0.0 0.3−    |
| 2005 12 08 854 1.3− 1.5− | 2005 12 22 703 0.6− 0.2− | 2006 01 09 734 1.5− 1.7+   |
| 2005 12 08 854 0.1+ 0.5+ | 2005 12 24 691 0.0 0.1−  | 2006 01 09 198 0.1+ 0.1+   |
| 2005 12 08 854 0.0 0.0   | 2005 12 24 691 0.3+ 0.7+ | 2006 01 09 198 0.1+ 0.0    |
| 2005 12 08 703 0.7− 0.0  | 2005 12 24 691 0.0 0.1+  | 2006 01 09 198 0.0 0.1+    |
| 2005 12 08 703 0.2− 0.4− | 2005 12 25 699 0.5+ 0.5+ | 2006 01 09 198 0.1− 0.1+   |
| 2005 12 08 703 0.1+ 0.3+ | 2005 12 25 699 1.3+ 0.6− | 2006 01 09 198 0.2− 0.0    |
| 2005 12 08 703 0.1− 0.2+ | 2005 12 25 699 0.7+ 0.2+ | 2006 01 10 704 0.3− 0.5+   |
| 2005 12 10 147 0.3− 0.1+ | 2005 12 26 170 0.1+ 0.9− | 2006 01 10 704 0.5− 0.9+   |
| 2005 12 10 147 0.1− 0.0  | 2005 12 26 170 0.2+ 0.5− | 2006 01 10 704 0.1− 0.5−   |
| 2005 12 10 147 0.1+ 0.4− | 2005 12 26 170 0.1+ 0.6− | 2007 11 17 696 0.1+ 0.3+   |
| 2005 12 10 147 0.2+ 0.4− | 2005 12 26 170 0.1− 0.7− | 2007 11 17 696 0.3− 0.5−   |
| 2005 12 10 703 0.1− 0.6+ | 2005 12 27 704 0.1+ 0.1− | 2007 11 17 696 0.2+ 0.6+   |
| 2005 12 10 703 0.1− 0.4+ | 2005 12 27 704 0.2+ 0.3− | 2007 11 17 696 0.2− 0.1−   |
| 2005 12 10 703 0.5− 0.1+ | 2005 12 27 704 0.0 0.3−  |                            |

2007 DEC. 24

M.P.O. 129749

**2005 YE<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 80.66672   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29731222 | $\omega$ 317.30971 | −0.40648363   | +0.90808680 |
| <i>a</i> | 2.2232803  | $\Omega$ 288.47781 | −0.80700809   | −0.40854504 |
| <i>e</i> | 0.1423644  | <i>i</i> 6.09748   | −0.42837950   | −0.09202884 |
| <i>P</i> | 3.32       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 09 13 | 644 | 0.0  | 0.0  | 2006 01 04 | 691 | 0.1− | 0.2+ | 2006 01 24 | 704 | 0.7+ | 0.2+ |
| 2004 09 13 | 644 | 0.2+ | 0.2+ | 2006 01 04 | G96 | 0.2− | 0.8− | 2006 01 24 | 704 | 0.6+ | 0.6+ |
| 2004 09 13 | 644 | 0.3− | 0.1+ | 2006 01 04 | G96 | 0.1+ | 0.0  | 2006 01 24 | 704 | 0.4+ | 0.7+ |
| 2005 12 22 | 691 | 0.3+ | 0.1+ | 2006 01 06 | G96 | 0.8+ | 0.3− | 2006 01 24 | 704 | 1.3− | 1.1− |
| 2005 12 22 | 691 | 0.4+ | 0.2− | 2006 01 06 | G96 | 0.0  | 0.1+ | 2006 02 04 | G96 | 0.1+ | 0.1− |
| 2005 12 22 | 691 | 0.2− | 0.2+ | 2006 01 06 | G96 | 0.1− | 0.4− | 2006 02 04 | G96 | 0.3+ | 0.0  |
| 2005 12 25 | G96 | 0.7− | 0.1+ | 2006 01 06 | G96 | 0.3− | 0.3− | 2006 02 04 | G96 | 0.7− | 0.1− |
| 2005 12 25 | G96 | 0.3+ | 0.4− | 2006 01 08 | 691 | 0.3+ | 0.3+ | 2006 02 04 | G96 | 0.4− | 0.1− |
| 2005 12 25 | G96 | 0.4− | 0.2− | 2006 01 08 | 691 | 0.0  | 0.2+ | 2007 10 16 | G96 | 0.1+ | 0.2− |
| 2005 12 25 | G96 | 0.0  | 0.0  | 2006 01 08 | 691 | 0.2+ | 0.3+ | 2007 10 16 | G96 | 0.0  | 0.3+ |
| 2006 01 04 | 691 | 0.4+ | 0.5+ | 2006 01 23 | G96 | 0.1+ | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.5− |
| 2006 01 04 | 691 | 0.5− | 0.2+ | 2006 01 23 | G96 | 0.3− | 0.1+ | 2007 10 16 | G96 | 0.3− | 0.0  |
| 2006 01 04 | G96 | 0.5− | 0.1+ | 2006 01 23 | G96 | 0.3+ | 0.1+ |            |     |      |      |
| 2006 01 04 | G96 | 0.2+ | 0.1+ | 2006 01 23 | G96 | 0.3+ | 0.1− |            |     |      |      |

**2005 YB<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 82.06519   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29691152 | $\omega$ 291.26445 | −0.44370480   | +0.89473843 |
| <i>a</i> | 2.2252801  | $\Omega$ 312.29141 | −0.79473231   | −0.41898905 |
| <i>e</i> | 0.1249652  | <i>i</i> 3.92905   | −0.41415770   | −0.15456818 |
| <i>P</i> | 3.32       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 12 26 | G96 | 0.0  | 0.1− | 2006 01 23 | 691 | 0.1+ | 0.4+ | 2006 02 20 | G96 | 0.4+ | 0.3− |
| 2005 12 26 | G96 | 0.4− | 0.1− | 2006 01 23 | 691 | 0.3+ | 0.2− | 2006 02 20 | G96 | 0.0  | 0.0  |
| 2005 12 26 | G96 | 0.4− | 0.0  | 2006 01 23 | G96 | 0.3+ | 0.1− | 2006 02 20 | G96 | 0.0  | 0.2+ |
| 2005 12 26 | G96 | 0.2+ | 0.0  | 2006 01 23 | G96 | 0.1− | 0.1+ | 2007 08 08 | H07 | 0.2− | 0.4+ |
| 2005 12 27 | 691 | 0.1+ | 0.0  | 2006 01 23 | G96 | 0.1− | 0.1− | 2007 08 08 | H07 | 0.3− | 0.3+ |
| 2005 12 27 | 691 | 0.1− | 0.0  | 2006 01 23 | G96 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.1+ | 0.1+ |
| 2005 12 27 | 691 | 0.2− | 0.3− | 2006 02 06 | G96 | 0.3− | 0.3+ | 2007 09 10 | G96 | 0.0  | 0.4− |
| 2006 01 08 | 691 | 0.4+ | 0.2+ | 2006 02 06 | G96 | 0.4− | 0.1+ | 2007 09 10 | G96 | 0.4+ | 0.1− |
| 2006 01 08 | 691 | 0.3+ | 0.2+ | 2006 02 06 | G96 | 0.1− | 0.1+ | 2007 09 10 | G96 | 0.1− | 0.0  |
| 2006 01 08 | 691 | 0.4+ | 0.0  | 2006 02 06 | G96 | 0.1− | 0.0  |            |     |      |      |
| 2006 01 23 | 691 | 0.2+ | 0.0  | 2006 02 20 | G96 | 0.5− | 0.1− |            |     |      |      |

**2005 YQ<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 144.07406  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 1.53645337 | $\omega$ 339.96739 | −0.10222412   | +0.92387498 |
| <i>a</i> | 0.7438005  | $\Omega$ 282.73480 | −0.85338830   | −0.27194573 |
| <i>e</i> | 0.3332814  | <i>i</i> 22.21540  | −0.51115423   | +0.26925925 |
| <i>P</i> | 0.64       | <i>H</i> 20.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 12 30 | 703 | 0.1+ | 0.1+ | 2006 01 03 | 143 | 0.3+ | 0.0  | 2006 01 10 | 448 | (0.4− | 2.2+) |
| 2005 12 30 | 703 | 0.6− | 0.2− | 2006 01 03 | 143 | 0.1+ | 0.1− | 2006 01 10 | 448 | 1.5−  | 0.5+  |
| 2005 12 30 | 703 | 0.0  | 0.3− | 2006 01 04 | G96 | 0.3+ | 0.1− | 2006 01 10 | 291 | 0.4−  | 0.6+  |
| 2005 12 30 | 703 | 1.4− | 0.8− | 2006 01 04 | G96 | 0.4+ | 0.2− | 2006 01 10 | 291 | 0.1−  | 0.7+  |
| 2005 12 30 | 703 | 0.2− | 0.1− | 2006 01 04 | G96 | 0.2− | 0.1− | 2006 01 10 | 291 | 0.3−  | 0.6+  |
| 2005 12 30 | 703 | 0.7− | 0.6+ | 2006 01 04 | G96 | 0.5+ | 0.3− | 2006 01 11 | J95 | 0.0   | 0.4−  |
| 2005 12 30 | 703 | 1.3− | 0.0  | 2006 01 04 | G96 | 0.2+ | 0.4− | 2006 01 11 | J95 | 0.5+  | 0.5−  |
| 2005 12 30 | 703 | 0.3+ | 0.4+ | 2006 01 04 | G96 | 0.0  | 0.5− | 2006 01 18 | 448 | 0.0   | 0.9−  |
| 2005 12 30 | 703 | 0.4− | 0.0  | 2006 01 04 | G96 | 0.1− | 0.2− | 2006 01 18 | 448 | 0.5+  | 0.0   |
| 2005 12 30 | 703 | 0.0  | 0.2− | 2006 01 04 | G96 | 0.4+ | 0.5− | 2006 01 18 | 448 | 0.9−  | 0.5+  |
| 2005 12 30 | 703 | 0.4− | 0.1+ | 2006 01 04 | J95 | 0.1+ | 0.2− | 2007 11 19 | 291 | (1.6− | 2.0+) |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 12 30 | J95 | 0.1− | 0.2− | 2006 01 04 | J95 | 0.1+ | 0.2− | 2007 11 19 | 291 | 0.7−  | 0.3+  |
| 2005 12 30 | J95 | 0.2+ | 0.1+ | 2006 01 04 | J95 | 0.1+ | 0.1− | 2007 11 19 | 291 | 0.3−  | 0.0   |
| 2005 12 30 | J95 | 0.1+ | 0.3+ | 2006 01 05 | G88 | 0.1+ | 0.4− | 2007 12 15 | 291 | 0.3−  | 1.0−  |
| 2005 12 31 | G96 | 0.6+ | 0.7+ | 2006 01 05 | G88 | 0.6− | 0.0  | 2007 12 15 | 291 | 1.4−  | 0.4+  |
| 2005 12 31 | G96 | 0.4+ | 0.4− | 2006 01 05 | G88 | 0.4− | 0.4+ | 2007 12 15 | 291 | (1.8− | 0.0 ) |
| 2006 01 03 | 143 | 0.2+ | 0.2+ | 2006 01 10 | 448 | 0.2+ | 0.7+ |            |     |       |       |

**2006 BX<sub>45</sub> = 2005 YP<sub>271</sub>**Id. Minor Planet Center (d, *MPO* 102380)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 156.27905  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29159580 | $\omega$ 220.02135 | −0.99659094   | +0.00850878 |
| <i>a</i> | 2.2522428  | $\Omega$ 320.23424 | +0.03247169   | −0.87393000 |
| <i>e</i> | 0.0782323  | <i>i</i> 7.37086   | −0.07584255   | −0.48597732 |
| <i>P</i> | 3.38       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 12 28 | G96 | 0.8+ | 0.4− | 2006 01 30 | 691 | 0.4+ | 0.6+ | 2006 02 26 | 704 | 0.2+ | 0.6− |
| 2005 12 28 | G96 | 0.2+ | 0.7− | 2006 01 30 | 691 | 0.3+ | 0.6+ | 2006 03 03 | G96 | 0.1+ | 0.3− |
| 2005 12 28 | G96 | 0.6+ | 0.1− | 2006 02 07 | 703 | 0.2+ | 0.5− | 2006 03 03 | G96 | 0.2− | 0.4− |
| 2005 12 28 | G96 | 0.0  | 0.8+ | 2006 02 07 | 703 | 0.6+ | 1.0− | 2006 03 03 | G96 | 0.1+ | 0.0  |
| 2006 01 23 | 703 | 0.3− | 1.6+ | 2006 02 07 | 703 | 0.3− | 0.5− | 2006 03 03 | G96 | 0.3+ | 0.1− |
| 2006 01 23 | 703 | 1.2− | 0.4+ | 2006 02 07 | 703 | 0.9− | 1.3− | 2006 03 05 | 704 | 1.5+ | 0.3+ |
| 2006 01 23 | 703 | 1.1− | 1.3+ | 2006 02 20 | 703 | 0.5− | 0.2− | 2006 03 05 | 704 | 1.1+ | 0.6+ |
| 2006 01 23 | 703 | 0.5− | 0.5− | 2006 02 20 | 703 | 0.6− | 0.2− | 2006 03 05 | 704 | 0.4+ | 1.1+ |
| 2006 01 23 | G96 | 0.2− | 0.2− | 2006 02 20 | 703 | 0.7− | 0.2+ | 2007 08 11 | 699 | 0.1+ | 0.8+ |
| 2006 01 23 | G96 | 0.0  | 0.2− | 2006 02 20 | 703 | 0.7− | 0.6− | 2007 08 11 | 699 | 0.5− | 0.5+ |
| 2006 01 23 | G96 | 0.2+ | 0.1− | 2006 02 22 | 699 | 0.0  | 0.0  | 2007 08 11 | 699 | 0.2+ | 0.1− |
| 2006 01 23 | G96 | 0.1− | 0.0  | 2006 02 22 | 699 | 0.1− | 0.6+ | 2007 08 11 | 699 | 1.4+ | 0.2− |
| 2006 01 26 | 691 | 0.3+ | 0.4+ | 2006 02 22 | 699 | 0.2− | 0.6+ | 2007 09 11 | G96 | 0.2− | 0.6− |
| 2006 01 26 | 691 | 0.3+ | 0.5+ | 2006 02 22 | 699 | 0.7− | 0.4+ | 2007 09 11 | G96 | 0.2+ | 0.2− |
| 2006 01 26 | 691 | 0.5+ | 0.2+ | 2006 02 25 | 691 | 0.3+ | 0.2+ | 2007 09 11 | G96 | 0.1+ | 0.3− |
| 2006 01 28 | G96 | 0.5− | 0.1+ | 2006 02 25 | 691 | 0.1+ | 0.1+ | 2007 09 11 | G96 | 0.1− | 0.5− |
| 2006 01 28 | G96 | 0.1− | 0.2− | 2006 02 25 | 691 | 0.1+ | 0.1+ | 2007 10 09 | G96 | 0.9− | 0.2+ |
| 2006 01 28 | G96 | 0.3− | 1.1− | 2006 02 26 | 704 | 0.3+ | 0.6+ | 2007 10 09 | G96 | 0.1+ | 0.1+ |
| 2006 01 28 | G96 | 0.6+ | 0.9− | 2006 02 26 | 704 | 1.0− | 0.2− | 2007 10 09 | G96 | 0.7− | 0.6+ |
| 2006 01 30 | 691 | 0.4+ | 0.6+ | 2006 02 26 | 704 | 1.0+ | 1.1− | 2007 10 09 | G96 | 0.3− | 0.2+ |

**2006 BA<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 101.55759  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26696799 | $\omega$ 245.03543 | −0.65917062   | +0.75078095 |
| <i>a</i> | 2.3887090  | $\Omega$ 343.50465 | −0.62430228   | −0.57800265 |
| <i>e</i> | 0.2069583  | <i>i</i> 8.64631   | −0.41921446   | −0.31975131 |
| <i>P</i> | 3.69       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 01 23 | 691 | 0.2+ | 0.0  | 2006 02 04 | 691 | 0.4+ | 0.2+ | 2006 04 21 | G96 | 0.3+ | 0.4+ |
| 2006 01 23 | 691 | 0.2+ | 0.1− | 2006 02 04 | 704 | 0.7− | 0.4+ | 2006 04 21 | G96 | 0.4+ | 0.5+ |
| 2006 01 23 | 691 | 0.4+ | 0.0  | 2006 02 04 | 704 | 1.1− | 0.9+ | 2006 04 21 | G96 | 0.2+ | 0.5+ |
| 2006 01 26 | 703 | 1.0− | 0.6+ | 2006 02 04 | 704 | 0.7− | 0.6+ | 2007 08 23 | 691 | 0.7− | 0.6+ |
| 2006 01 26 | 703 | 0.8+ | 1.0− | 2006 02 04 | 704 | 0.3+ | 0.6+ | 2007 08 23 | 691 | 0.3− | 0.4+ |
| 2006 01 26 | 703 | 0.5− | 0.9− | 2006 02 04 | 704 | 1.3− | 1.1+ | 2007 08 23 | 691 | 0.4− | 0.9+ |
| 2006 01 26 | 703 | 0.2+ | 1.0− | 2006 04 20 | G96 | 0.1+ | 0.0  | 2007 09 12 | G96 | 0.4− | 0.3+ |
| 2006 01 27 | 691 | 0.4+ | 0.2− | 2006 04 20 | G96 | 0.0  | 0.1+ | 2007 09 12 | G96 | 0.2− | 0.0  |
| 2006 01 27 | 691 | 0.4+ | 0.1− | 2006 04 20 | G96 | 0.5+ | 0.2+ | 2007 09 12 | G96 | 0.1− | 0.5+ |
| 2006 01 27 | 691 | 0.3+ | 0.0  | 2006 04 20 | G96 | 0.5− | 0.1+ | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 2006 01 31 | 691 | 0.1+ | 0.1− | 2006 04 20 | G96 | 0.2+ | 0.1+ | 2007 10 08 | G96 | 0.6− | 0.4+ |
| 2006 01 31 | 691 | 0.2+ | 0.1− | 2006 04 20 | G96 | 0.6+ | 0.5+ | 2007 10 08 | G96 | 0.2+ | 0.2+ |
| 2006 01 31 | 691 | 0.2+ | 0.2− | 2006 04 20 | G96 | 0.9+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.2− |
| 2006 02 04 | 691 | 0.3+ | 0.2+ | 2006 04 20 | G96 | 0.3− | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.1+ |
| 2006 02 04 | 691 | 0.5+ | 0.0  | 2006 04 21 | G96 | 0.5+ | 0.3+ |            |     |      |      |

**2006 BY<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 168.80967  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29602293 | $\omega$ | 18.11352  | -0.99319387   | +0.11573522 |
| <i>a</i> | 2.2297311  | $\Omega$ | 168.50892 | -0.11333064   | -0.93435241 |
| <i>e</i> | 0.1242859  | <i>i</i> | 3.76696   | -0.02687203   | -0.33703255 |
| <i>P</i> | 3.33       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 09 17 | 691 | 0.1+ | 0.2+ | 2006 02 20 | 691 | 0.6+ | 0.0  | 2006 03 24 | 704 | 0.2- | 0.3- |
| 2004 09 17 | 691 | 0.2- | 0.2- | 2006 02 20 | 691 | 0.6+ | 0.1- | 2006 03 24 | 704 | 0.8+ | 0.7+ |
| 2004 09 17 | 691 | 0.0  | 0.3+ | 2006 02 24 | 691 | 0.3+ | 0.1+ | 2006 03 24 | 704 | 1.5+ | 0.1- |
| 2006 01 10 | G96 | 0.4+ | 0.3- | 2006 02 24 | 691 | 0.1+ | 0.2+ | 2006 03 26 | G96 | 0.3- | 0.0  |
| 2006 01 10 | G96 | 0.0  | 0.1+ | 2006 02 24 | 691 | 0.3+ | 0.1+ | 2006 03 26 | G96 | 0.6- | 0.7- |
| 2006 01 10 | G96 | 0.2+ | 0.2+ | 2006 03 21 | G96 | 0.3- | 0.1- | 2006 03 26 | G96 | 0.5- | 0.1- |
| 2006 01 10 | G96 | 0.0  | 0.1- | 2006 03 21 | G96 | 0.3- | 0.2- | 2007 08 10 | 291 | 0.0  | 0.4+ |
| 2006 01 23 | G96 | 0.1+ | 0.4+ | 2006 03 21 | G96 | 0.2- | 0.1+ | 2007 08 10 | 291 | 0.2- | 0.1+ |
| 2006 01 23 | G96 | 0.2- | 0.2+ | 2006 03 21 | G96 | 0.2- | 0.2- | 2007 08 10 | 291 | 0.1- | 0.2+ |
| 2006 01 23 | G96 | 0.0  | 0.2+ | 2006 03 24 | 691 | 0.2+ | 0.6+ | 2007 08 10 | 691 | 0.1- | 0.4+ |
| 2006 01 23 | G96 | 0.4- | 0.0  | 2006 03 24 | 691 | 1.6- | 0.8+ | 2007 08 10 | 691 | 0.1- | 0.2+ |
| 2006 01 28 | G96 | 0.1- | 0.1- | 2006 03 24 | 691 | 0.0  | 0.3+ | 2007 08 10 | 691 | 0.1- | 0.3- |
| 2006 01 28 | G96 | 0.1+ | 0.3+ | 2006 03 24 | 699 | 0.5+ | 0.2+ | 2007 09 10 | G96 | 0.0  | 0.2+ |
| 2006 01 28 | G96 | 0.5- | 0.2- | 2006 03 24 | 699 | 0.5- | 0.1- | 2007 09 10 | G96 | 0.2- | 0.7- |
| 2006 01 28 | G96 | 0.7- | 0.3- | 2006 03 24 | 699 | 0.4+ | 0.2- | 2007 09 10 | G96 | 0.0  | 0.1+ |
| 2006 02 20 | 691 | 0.3+ | 0.1+ | 2006 03 24 | 699 | 0.6+ | 0.5- | 2007 09 10 | G96 | 0.4+ | 0.3+ |

**2006 BC<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 103.81761  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26337353 | $\omega$ | 51.40563  | -0.73883924   | +0.67384071 |
| <i>a</i> | 2.4103936  | $\Omega$ | 170.95005 | -0.63203852   | -0.68909366 |
| <i>e</i> | 0.1581633  | <i>i</i> | 2.70896   | -0.23376033   | -0.26662449 |
| <i>P</i> | 3.74       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 01 23 | G96 | 0.3- | 0.3- | 2006 02 04 | G96 | 0.2+ | 0.3- | 2006 03 23 | G96 | 0.2- | 0.3+ |
| 2006 01 23 | G96 | 0.3- | 0.0  | 2006 02 07 | 691 | 0.2+ | 0.2- | 2006 03 23 | G96 | 0.1- | 0.0  |
| 2006 01 23 | G96 | 0.4- | 0.3- | 2006 02 07 | 691 | 0.0  | 0.1+ | 2006 03 23 | G96 | 0.1+ | 0.2+ |
| 2006 01 23 | G96 | 0.5- | 0.3+ | 2006 02 07 | 691 | 0.2+ | 0.3- | 2007 07 18 | G96 | 0.2- | 0.2- |
| 2006 01 30 | 691 | 0.2+ | 0.2- | 2006 02 07 | 291 | 0.5+ | 0.3+ | 2007 07 18 | G96 | 0.3+ | 0.1- |
| 2006 01 30 | 691 | 0.3+ | 0.1+ | 2006 02 07 | 291 | 0.4+ | 0.2+ | 2007 07 18 | G96 | 0.4- | 0.2- |
| 2006 01 30 | 691 | 0.1- | 0.3- | 2006 02 07 | 291 | 0.3+ | 0.2+ | 2007 07 18 | G96 | 0.1+ | 0.4- |
| 2006 02 03 | 691 | 0.0  | 0.2+ | 2006 02 24 | G96 | 0.1+ | 0.1+ | 2007 09 11 | G96 | 0.1+ | 0.5+ |
| 2006 02 03 | 691 | 0.4+ | 0.3- | 2006 02 24 | G96 | 0.0  | 0.3+ | 2007 09 11 | G96 | 0.1- | 0.2+ |
| 2006 02 03 | 691 | 0.2+ | 0.1- | 2006 02 24 | G96 | 0.2- | 0.7+ | 2007 09 11 | G96 | 0.2+ | 0.5+ |
| 2006 02 04 | G96 | 0.3+ | 0.3- | 2006 02 24 | G96 | 0.8- | 0.2+ | 2007 09 11 | G96 | 0.2- | 0.4+ |
| 2006 02 04 | G96 | 0.3- | 0.0  | 2006 03 23 | G96 | 0.1+ | 0.2+ |            |     |      |      |

**2006 BA<sub>148</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.73277   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.47326645 | $\omega$ | 25.95277  | +0.98503824   | +0.09257076 |
| <i>a</i> | 1.6307932  | $\Omega$ | 327.69234 | -0.16169117   | +0.78828422 |
| <i>e</i> | 0.6139551  | <i>i</i> | 15.78199  | +0.05962910   | +0.60830801 |
| <i>P</i> | 2.08       | <i>H</i> | 18.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 01 31 | 691 | 0.7-  | 0.0   | 2006 02 02 | G96 | 0.2+  | 0.2-  | 2006 02 08 | 291 | 0.3+ | 0.3- |
| 2006 01 31 | 691 | 0.1+  | 0.0   | 2006 02 02 | G96 | 0.0   | 0.1+  | 2006 02 08 | 291 | 0.2+ | 0.0  |
| 2006 01 31 | 691 | 0.1-  | 0.0   | 2006 02 02 | G96 | 0.7+  | 0.6-  | 2006 02 20 | G96 | 0.6- | 0.3- |
| 2006 02 01 | 701 | 0.7-  | 0.6+  | 2006 02 02 | 291 | 0.4-  | 0.2-  | 2006 02 20 | G96 | 0.3- | 0.1+ |
| 2006 02 01 | 701 | (3.2- | 1.1+) | 2006 02 02 | 291 | 0.0   | 0.1+  | 2006 02 20 | G96 | 0.7- | 0.0  |
| 2006 02 01 | G96 | 0.1-  | 0.3-  | 2006 02 02 | 291 | 0.2-  | 0.1-  | 2006 02 20 | G96 | 0.5- | 0.3- |
| 2006 02 01 | G96 | 0.2-  | 0.2-  | 2006 02 02 | 246 | (0.3- | 2.0+) | 2006 02 20 | G96 | 0.6- | 0.3- |
| 2006 02 01 | G96 | 0.0   | 0.4-  | 2006 02 02 | 246 | 0.7-  | 0.6+  | 2006 02 20 | G96 | 1.1- | 0.1- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 02 01 | G96 | 0.9+ | 0.2- | 2006 02 02 | 246 | 1.2+  | 0.5+  | 2006 02 20 | G96 | 0.3- | 0.5+ |
| 2006 02 01 | 291 | 0.2- | 0.2+ | 2006 02 03 | 734 | 1.6-  | 1.5+  | 2006 02 20 | G96 | 1.1- | 0.2+ |
| 2006 02 01 | F65 | 0.6- | 0.2+ | 2006 02 03 | 734 | (2.9+ | 6.7-) | 2006 02 28 | 291 | 0.5+ | 0.6+ |
| 2006 02 01 | F65 | 0.4- | 0.0  | 2006 02 03 | 701 | 0.9+  | 0.3-  | 2006 02 28 | 291 | 0.7+ | 0.3+ |
| 2006 02 01 | F65 | 0.3- | 0.0  | 2006 02 03 | 734 | (4.3+ | 3.1+) | 2006 02 28 | 291 | 0.6- | 0.1+ |
| 2006 02 01 | F65 | 0.3- | 0.2- | 2006 02 03 | 701 | 1.2-  | 0.5+  | 2006 03 04 | 691 | 0.4- | 0.4- |
| 2006 02 01 | 291 | 0.2+ | 0.5+ | 2006 02 03 | G96 | 0.3-  | 0.7-  | 2006 03 04 | 691 | 0.2+ | 0.1- |
| 2006 02 01 | 291 | 0.5+ | 0.4+ | 2006 02 03 | G96 | 0.1+  | 0.7-  | 2006 03 04 | 691 | 0.4+ | 0.3- |
| 2006 02 02 | 651 | 0.7+ | 0.5- | 2006 02 03 | G96 | 0.2-  | 0.9-  | 2007 12 05 | 291 | 0.4+ | 0.2- |
| 2006 02 02 | 651 | 0.6+ | 0.6- | 2006 02 03 | G96 | 1.2+  | 1.8-  | 2007 12 05 | 291 | 0.0  | 0.2- |
| 2006 02 02 | 651 | 0.6+ | 0.4+ | 2006 02 08 | 291 | 0.7+  | 0.2-  | 2007 12 05 | 291 | 0.4- | 0.3+ |

**2006 BD<sub>153</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.71356   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28142118 | $\omega$ | 281.94825 | -0.22787388   | +0.97303761 |
| <i>a</i> | 2.3062065  | $\Omega$ | 334.79372 | -0.85759597   | -0.21791028 |
| <i>e</i> | 0.1254082  | <i>i</i> | 4.80255   | -0.46108854   | -0.07558390 |
| <i>P</i> | 3.50       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 01 25 | 691 | 0.0  | 0.0  | 2006 03 24 | G96 | 0.4- | 0.1- | 2007 10 04 | G96 | 0.5+ | 0.1+ |
| 2006 01 25 | 691 | 0.2+ | 0.0  | 2006 03 24 | G96 | 0.2+ | 0.2+ | 2007 10 04 | G96 | 0.1+ | 0.1+ |
| 2006 01 25 | 691 | 0.3+ | 0.4- | 2006 03 24 | G96 | 0.8- | 0.5+ | 2007 10 13 | G96 | 0.2+ | 0.1- |
| 2006 01 31 | 691 | 0.2- | 0.2+ | 2006 03 24 | G96 | 0.2- | 0.1+ | 2007 10 13 | G96 | 0.0  | 0.1- |
| 2006 01 31 | 691 | 0.1- | 0.1- | 2007 09 12 | G96 | 0.1- | 0.1+ | 2007 10 13 | G96 | 0.3- | 0.3- |
| 2006 01 31 | 691 | 0.1- | 0.1+ | 2007 09 12 | G96 | 0.1+ | 0.1+ | 2007 10 13 | G96 | 0.0  | 0.1- |
| 2006 02 23 | G96 | 0.1- | 0.1+ | 2007 09 12 | G96 | 0.2+ | 0.1+ | 2007 11 07 | 291 | 0.1+ | 0.1+ |
| 2006 02 23 | G96 | 0.3+ | 0.3+ | 2007 09 12 | G96 | 0.2- | 0.2- | 2007 11 07 | 291 | 0.1- | 0.0  |
| 2006 02 23 | G96 | 0.2+ | 0.1- | 2007 10 04 | G96 | 0.2- | 0.2- | 2007 11 07 | 291 | 0.2- | 0.0  |
| 2006 02 23 | G96 | 0.1+ | 0.1+ | 2007 10 04 | G96 | 0.4+ | 0.0  |            |     |      |      |

**2006 BD<sub>241</sub> = 2006 DE<sub>47</sub>**Id. Minor Planet Center (d, *MPO* 98191)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 120.77213  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28744553 | $\omega$ | 244.29069 | -0.76638652   | +0.64013625 |
| <i>a</i> | 2.2738702  | $\Omega$ | 335.39911 | -0.53348630   | -0.68076355 |
| <i>e</i> | 0.1772431  | <i>i</i> | 7.40324   | -0.35783247   | -0.35607101 |
| <i>P</i> | 3.43       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 01 26 | 703 | (0.5- | 2.2+) | 2006 02 21 | 699 | 0.7- | 0.0  | 2006 03 05 | G96 | (0.1+ | 2.2-) |
| 2006 01 26 | 703 | 0.5-  | 0.1+  | 2006 02 21 | 699 | 0.5- | 0.6+ | 2006 03 24 | G96 | 0.2+  | 0.0   |
| 2006 01 26 | 703 | (3.2- | 1.5-) | 2006 02 21 | 699 | 0.6- | 0.4+ | 2006 03 24 | G96 | 0.0   | 0.0   |
| 2006 01 26 | 703 | 0.2-  | 0.2-  | 2006 02 25 | G96 | 0.0  | 0.2- | 2006 03 24 | G96 | 0.3+  | 0.3-  |
| 2006 01 31 | 691 | 0.2-  | 0.2+  | 2006 02 25 | G96 | 0.4- | 0.3- | 2006 03 24 | G96 | 0.1+  | 0.2-  |
| 2006 01 31 | 691 | 0.2-  | 0.2+  | 2006 02 25 | G96 | 0.2- | 0.1- | 2007 08 10 | 691 | 0.4-  | 0.1+  |
| 2006 01 31 | 691 | 0.0   | 0.2+  | 2006 02 25 | G96 | 0.2- | 0.2- | 2007 08 10 | 691 | 0.1-  | 0.1+  |
| 2006 02 04 | 704 | 1.6+  | 0.3-  | 2006 03 03 | 691 | 0.1+ | 0.2+ | 2007 08 10 | 691 | 0.3-  | 0.1+  |
| 2006 02 04 | 691 | 0.2-  | 0.2+  | 2006 03 03 | 691 | 0.4+ | 0.4+ | 2007 08 23 | 691 | 0.3-  | 0.3+  |
| 2006 02 04 | 704 | 0.3+  | 0.5-  | 2006 03 03 | 691 | 0.0  | 0.8+ | 2007 08 23 | 691 | 0.1-  | 0.1-  |
| 2006 02 04 | 691 | 0.0   | 0.3+  | 2006 03 05 | 691 | 0.0  | 0.5+ | 2007 08 23 | 691 | 0.3-  | 0.9+  |
| 2006 02 04 | 704 | 0.8+  | 0.9-  | 2006 03 05 | 691 | 0.0  | 0.5+ | 2007 09 10 | G96 | 0.5+  | 0.3-  |
| 2006 02 04 | 704 | 1.0+  | 0.5+  | 2006 03 05 | 691 | 0.0  | 0.5+ | 2007 09 10 | G96 | 0.2+  | 0.2-  |
| 2006 02 04 | 691 | 0.1+  | 0.2+  | 2006 03 05 | G96 | 0.2- | 0.0  | 2007 09 10 | G96 | 0.3+  | 0.2-  |
| 2006 02 04 | 704 | 1.1+  | 1.4-  | 2006 03 05 | G96 | 0.2- | 0.0  |            |     |       |       |
| 2006 02 21 | 699 | 0.9-  | 0.5-  | 2006 03 05 | G96 | 0.3- | 0.0  |            |     |       |       |

2007 DEC. 24

M.P.O. 129751

**2006 CH<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 109.27355  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28147438 | $\omega$ 64.57811  | -0.59868159   | +0.80070745 |
| <i>a</i> | 2.3059159  | $\Omega$ 168.57308 | -0.76791909   | -0.56625145 |
| <i>e</i> | 0.1286344  | <i>i</i> 6.13242   | -0.22777317   | -0.19551694 |
| <i>P</i> | 3.50       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 02 | 691 | 0.0  | 0.3+ | 2006 03 03 | G96 | 0.6- | 1.5- | 2006 03 24 | 291 | 0.3+ | 0.1- |
| 2006 02 02 | 691 | 0.2+ | 0.2- | 2006 03 05 | 691 | 0.1+ | 0.1+ | 2006 03 24 | 291 | 0.6+ | 0.4- |
| 2006 02 02 | 691 | 0.0  | 0.0  | 2006 03 05 | 691 | 0.1+ | 0.2+ | 2007 09 10 | G96 | 0.3+ | 0.2- |
| 2006 02 06 | 691 | 0.2+ | 0.2+ | 2006 03 05 | 691 | 0.2+ | 0.3+ | 2007 09 10 | G96 | 0.1- | 0.1+ |
| 2006 02 06 | 691 | 0.4- | 0.4+ | 2006 03 09 | 691 | 0.2+ | 0.5+ | 2007 09 10 | G96 | 0.2+ | 0.0  |
| 2006 02 06 | 691 | 0.1+ | 0.1+ | 2006 03 09 | 691 | 0.9+ | 0.3- | 2007 09 10 | G96 | 0.2+ | 0.1- |
| 2006 03 03 | 691 | 0.3- | 0.0  | 2006 03 09 | 691 | 0.1+ | 0.2- | 2007 10 08 | G96 | 0.1- | 0.1- |
| 2006 03 03 | 691 | 0.2- | 0.0  | 2006 03 23 | G96 | 0.3- | 0.0  | 2007 10 08 | G96 | 0.2- | 0.3- |
| 2006 03 03 | 691 | 0.2- | 0.2- | 2006 03 23 | G96 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.1+ | 0.2- |
| 2006 03 03 | G96 | 0.3- | 0.1+ | 2006 03 23 | G96 | 0.2- | 0.1+ | 2007 10 08 | G96 | 0.2- | 0.1- |
| 2006 03 03 | G96 | 0.3- | 0.1+ | 2006 03 23 | G96 | 0.3- | 0.0  |            |     |      |      |
| 2006 03 03 | G96 | 0.4- | 0.1- | 2006 03 24 | 291 | 0.2+ | 0.3- |            |     |      |      |

**2006 DB<sub>28</sub> = 2002 CM<sub>315</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 207.38648  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26291716 | $\omega$ 96.89819 | -0.26948514   | -0.96297511 |
| <i>a</i> | 2.4131821  | $\Omega$ 8.74646  | +0.86283416   | -0.24491848 |
| <i>e</i> | 0.1644812  | <i>i</i> 2.83817  | +0.42766222   | -0.11266707 |
| <i>P</i> | 3.75       | <i>H</i> 17.9     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 07 30 | 807 | 0.5- | 0.4+ | 2002 02 06 | 608 | 0.6- | 0.2+ | 2006 02 25 | G96 | (0.1+ | 1.5-) |
| 2000 07 30 | 807 | 0.1+ | 0.5+ | 2002 02 14 | 644 | 0.0  | 0.2- | 2006 02 25 | G96 | 0.6-  | 0.3-  |
| 2002 01 07 | 691 | 0.4- | 0.1- | 2002 02 14 | 644 | 1.0+ | 0.4- | 2006 02 25 | G96 | 0.0   | 0.1-  |
| 2002 01 07 | 691 | 0.0  | 0.1- | 2002 03 04 | 644 | 0.0  | 0.4+ | 2006 02 25 | G96 | 0.6-  | 0.1+  |
| 2002 01 07 | 691 | 0.1+ | 0.4- | 2002 03 04 | 644 | 0.5- | 0.4+ | 2006 03 02 | 691 | 0.0   | 0.1+  |
| 2002 01 11 | 644 | 0.8+ | 0.9+ | 2002 03 04 | 644 | 0.7- | 0.2- | 2006 03 02 | 691 | 0.2+  | 0.2-  |
| 2002 01 11 | 644 | 0.2+ | 1.4+ | 2006 02 20 | 691 | 0.3- | 0.0  | 2006 03 02 | 691 | 0.6+  | 0.2-  |
| 2002 01 11 | 644 | 0.4+ | 0.4+ | 2006 02 20 | 691 | 0.2- | 0.1+ | 2006 03 06 | 691 | 0.3+  | 0.2+  |
| 2002 02 04 | 644 | 0.4+ | 0.1+ | 2006 02 20 | 691 | 0.2- | 0.2+ | 2006 03 06 | 691 | 0.1+  | 0.1-  |
| 2002 02 04 | 644 | 0.1+ | 0.1- | 2006 02 24 | 691 | 0.0  | 0.2+ | 2006 03 06 | 691 | 0.0   | 0.3-  |
| 2002 02 04 | 644 | 0.1- | 0.2- | 2006 02 24 | 691 | 0.1- | 0.1- |            |     |       |       |
| 2002 02 06 | 608 | 0.0  | 0.1+ | 2006 02 24 | 691 | 0.2- | 0.1+ |            |     |       |       |

**2006 DK<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 96.21568   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29388419 | $\omega$ 275.10957 | +0.05654950   | +0.99839681 |
| <i>a</i> | 2.2405359  | $\Omega$ 358.12699 | -0.88387435   | +0.04892550 |
| <i>e</i> | 0.1412496  | <i>i</i> 4.28356   | -0.46429333   | +0.02846227 |
| <i>P</i> | 3.35       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 03 16 | 691 | 0.0  | 0.2+ | 2006 02 20 | G96 | 0.7- | 0.1+ | 2006 03 06 | 691 | 0.0  | 0.1+ |
| 1996 03 16 | 691 | 0.2+ | 0.0  | 2006 02 24 | 691 | 0.1+ | 0.0  | 2006 03 24 | 699 | 1.0+ | 0.6- |
| 1996 03 16 | 691 | 0.1- | 0.2+ | 2006 02 24 | 691 | 0.0  | 0.0  | 2006 03 24 | 699 | 0.1+ | 0.2- |
| 1997 10 25 | 910 | 0.3- | 0.3+ | 2006 02 24 | 691 | 0.1+ | 0.1- | 2006 03 24 | 699 | 1.4+ | 1.1- |
| 1997 10 25 | 910 | 0.2- | 0.2+ | 2006 03 02 | 691 | 0.3+ | 0.1- | 2006 03 24 | 699 | 0.6- | 0.4+ |
| 1997 10 25 | 910 | 0.6+ | 0.1- | 2006 03 02 | 691 | 0.2- | 0.5+ | 2007 09 14 | G96 | 0.0  | 0.1- |
| 2006 02 20 | G96 | 0.6- | 0.6+ | 2006 03 02 | 691 | 0.0  | 0.2- | 2007 09 14 | G96 | 0.2- | 0.2+ |
| 2006 02 20 | G96 | 1.5- | 0.0  | 2006 03 06 | 691 | 0.3+ | 0.0  | 2007 09 14 | G96 | 0.2+ | 0.5- |
| 2006 02 20 | G96 | 0.8- | 0.1+ | 2006 03 06 | 691 | 0.5+ | 0.2+ | 2007 09 14 | G96 | 0.1+ | 0.1- |

**2006 DA<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 267.54268  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.36355700 | $\omega$ 127.34221 | -0.40900344   | -0.90840843 |
| <i>a</i> | 1.9442602  | $\Omega$ 346.00102 | +0.68211345   | -0.24126142 |
| <i>e</i> | 0.0486536  | <i>i</i> 20.99269  | +0.60616618   | -0.34144847 |
| <i>P</i> | 2.71       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 01 30 | 703 | 0.0   | 0.3+  | 2006 02 25 | 704 | 0.0  | 0.4+ | 2006 03 05 | G96 | 0.2- | 0.0  |
| 2006 01 30 | 703 | 0.3-  | 0.1+  | 2006 02 25 | 704 | 0.9+ | 0.5+ | 2006 03 05 | G96 | 0.0  | 0.0  |
| 2006 01 30 | 703 | 0.1+  | 0.1-  | 2006 02 26 | G96 | 0.0  | 0.2- | 2006 03 09 | 699 | 0.2- | 1.2- |
| 2006 01 30 | 703 | 1.3-  | 0.2-  | 2006 02 26 | G96 | 0.4+ | 0.0  | 2006 03 09 | 699 | 1.0+ | 1.2- |
| 2006 02 20 | 703 | (2.4- | 0.7-) | 2006 02 26 | G96 | 0.3- | 0.2- | 2006 03 09 | 699 | 0.4+ | 0.5- |
| 2006 02 20 | 703 | 0.0   | 0.8+  | 2006 02 26 | G96 | 0.3- | 0.0  | 2006 03 09 | 699 | 0.6+ | 0.7+ |
| 2006 02 20 | 703 | 1.4-  | 0.7+  | 2006 02 27 | 691 | 0.2+ | 0.1+ | 2007 09 09 | 691 | 0.6- | 0.6- |
| 2006 02 20 | 703 | 0.6-  | 0.9-  | 2006 02 27 | 691 | 0.2+ | 0.2+ | 2007 09 09 | 691 | 0.7- | 0.7- |
| 2006 02 24 | 704 | 0.3+  | 0.5+  | 2006 02 27 | 691 | 0.3+ | 0.3+ | 2007 09 09 | 691 | 0.5- | 0.5- |
| 2006 02 24 | 704 | 0.0   | 1.1+  | 2006 03 03 | 691 | 0.0  | 0.1- | 2007 10 10 | 699 | 1.5- | 1.1+ |
| 2006 02 24 | 704 | 0.4+  | 0.5-  | 2006 03 03 | 691 | 0.1- | 0.2- | 2007 10 10 | 699 | 1.0+ | 0.3- |
| 2006 02 24 | 704 | 0.0   | 0.5+  | 2006 03 03 | 691 | 0.1- | 0.2- | 2007 10 10 | 699 | 1.5+ | 0.9+ |
| 2006 02 25 | 704 | 1.2+  | 0.1+  | 2006 03 05 | G96 | 0.4- | 0.1- | 2007 10 10 | 699 | 0.5+ | 0.3+ |
| 2006 02 25 | 704 | 0.5-  | 0.2+  | 2006 03 05 | G96 | 0.7- | 0.3- |            |     |      |      |

**2006 DH<sub>112</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 131.77660  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27038032 | $\omega$ 229.54410 | -0.94428520   | +0.32324100 |
| <i>a</i> | 2.3685688  | $\Omega$ 329.16726 | -0.25333297   | -0.83403064 |
| <i>e</i> | 0.0594923  | <i>i</i> 6.94497   | -0.21011394   | -0.44711089 |
| <i>P</i> | 3.65       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 20 | 695 | 0.1+ | 0.0  | 2006 02 27 | G96 | 0.0  | 0.1- | 2006 03 23 | 703 | 0.0  | 0.5- |
| 2000 09 20 | 695 | 0.1- | 0.0  | 2006 02 27 | G96 | 0.0  | 0.2- | 2006 03 23 | 703 | 0.3+ | 0.5- |
| 2006 01 26 | 691 | 0.0  | 0.3+ | 2006 02 27 | G96 | 0.0  | 0.1- | 2006 03 23 | 703 | 1.1- | 0.8+ |
| 2006 01 26 | 691 | 0.2+ | 0.3+ | 2006 02 27 | G96 | 0.0  | 0.1- | 2006 03 23 | 703 | 0.1+ | 0.9+ |
| 2006 01 26 | 691 | 0.1- | 0.2+ | 2006 03 02 | G96 | 0.3+ | 0.2- | 2007 09 10 | G96 | 0.9- | 0.5+ |
| 2006 02 07 | 691 | 1.1+ | 0.2+ | 2006 03 02 | G96 | 0.2- | 0.1- | 2007 09 10 | G96 | 0.4+ | 0.2+ |
| 2006 02 07 | 691 | 0.3- | 0.0  | 2006 03 02 | G96 | 0.2- | 0.4- | 2007 09 10 | G96 | 0.3+ | 0.1+ |
| 2006 02 07 | 691 | 0.3+ | 0.3+ | 2006 03 02 | G96 | 0.1- | 0.2- | 2007 09 10 | G96 | 0.0  | 0.1- |

**2006 DK<sub>122</sub> = 2007 TO<sub>287</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 81.32562   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26418776 | $\omega$ 229.36975 | +0.03748017   | +0.98644545 |
| <i>a</i> | 2.4054385  | $\Omega$ 43.59479  | -0.83259562   | +0.11923102 |
| <i>e</i> | 0.2004939  | <i>i</i> 13.39565  | -0.55261177   | -0.11273572 |
| <i>P</i> | 3.73       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 02 23 | 699 | (2.0+ | 0.9+) | 2006 04 02 | 703 | (0.7- | 2.0-) | 2007 10 19 | 703 | 0.2+ | 0.5+ |
| 2006 02 23 | 699 | 0.1-  | 1.0+  | 2006 04 02 | 703 | 0.3-  | 0.6-  | 2007 10 19 | 703 | 0.6- | 0.6+ |
| 2006 02 23 | 699 | 0.8-  | 0.1-  | 2007 10 11 | 703 | 0.9-  | 0.7-  | 2007 10 19 | 703 | 0.8+ | 0.4- |
| 2006 02 23 | 699 | 0.8+  | 1.3+  | 2007 10 11 | 703 | 0.4+  | 0.5-  | 2007 10 19 | 703 | 0.5+ | 0.8+ |
| 2006 02 28 | 703 | 0.0   | 0.5-  | 2007 10 11 | 703 | 0.3-  | 0.1+  | 2007 11 09 | 703 | 0.2- | 0.4- |
| 2006 02 28 | 703 | 0.4-  | 0.0   | 2007 10 11 | 703 | 0.4-  | 0.6+  | 2007 11 09 | 703 | 0.1+ | 0.1- |
| 2006 02 28 | 703 | 0.3+  | 0.7-  | 2007 10 15 | 699 | 0.5+  | 0.5-  | 2007 11 09 | 703 | 0.8+ | 0.0  |
| 2006 02 28 | 703 | (2.2- | 0.4+) | 2007 10 15 | 699 | 0.3-  | 0.2-  | 2007 11 09 | 703 | 1.2- | 0.0  |
| 2006 04 02 | 703 | 0.1-  | 0.5-  | 2007 10 15 | 699 | 0.4+  | 0.5-  |            |     |      |      |
| 2006 04 02 | 703 | 0.4+  | 0.2-  | 2007 10 15 | 699 | 0.5+  | 0.2+  |            |     |      |      |

**2006 DD<sub>159</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 92.22562   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22330053 | $\omega$ 244.91458 | -0.55158177   | +0.83356683 |
| <i>a</i> | 2.6907677  | $\Omega$ 351.41506 | -0.67299775   | -0.46626774 |
| <i>e</i> | 0.2637554  | <i>i</i> 11.74868  | -0.49277943   | -0.29624437 |
| <i>P</i> | 4.41       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 02 03 | 691 | 0.3- | 0.7+ | 2006 03 23 | 703 | 0.1+ | 0.0  | 2006 04 02 | G96 | 0.1+ | 0.3- |
| 1997 02 03 | 691 | 0.1- | 0.7- | 2006 03 23 | 703 | 0.1- | 0.0  | 2006 04 02 | G96 | 0.2+ | 0.1- |
| 1997 02 03 | 691 | 0.0  | 0.8- | 2006 03 24 | 699 | 0.6+ | 1.3+ | 2006 04 07 | 691 | 0.3+ | 0.0  |
| 2003 10 02 | 691 | 0.0  | 0.3+ | 2006 03 24 | 699 | 1.1+ | 0.6+ | 2006 04 07 | 691 | 0.3+ | 0.3+ |
| 2003 10 02 | 691 | 0.4- | 0.5+ | 2006 03 24 | 699 | 0.2+ | 0.4+ | 2006 04 07 | 691 | 0.0  | 0.2+ |
| 2003 10 02 | 691 | 0.4- | 0.3+ | 2006 03 24 | 699 | 0.2+ | 0.5+ | 2007 08 24 | 691 | 0.3- | 0.2+ |
| 2006 02 27 | 691 | 0.3+ | 0.2+ | 2006 03 25 | G96 | 0.4- | 0.0  | 2007 08 24 | 691 | 0.6- | 0.2+ |
| 2006 02 27 | 691 | 0.3+ | 0.1+ | 2006 03 25 | G96 | 0.2- | 0.2+ | 2007 08 24 | 691 | 0.6- | 0.9+ |
| 2006 02 27 | 691 | 0.3+ | 0.4+ | 2006 03 25 | G96 | 0.5- | 0.0  | 2007 09 11 | G96 | 0.1+ | 0.4- |
| 2006 03 03 | 691 | 0.2+ | 0.2+ | 2006 03 25 | G96 | 0.3- | 0.0  | 2007 09 11 | G96 | 0.4+ | 0.0  |
| 2006 03 03 | 691 | 0.1+ | 0.1+ | 2006 04 02 | 691 | 0.0  | 0.1+ | 2007 09 11 | G96 | 0.5- | 0.0  |
| 2006 03 03 | 691 | 0.0  | 0.2+ | 2006 04 02 | 691 | 0.2+ | 0.2+ | 2007 09 11 | G96 | 0.1- | 0.4+ |
| 2006 03 05 | G96 | 0.3+ | 0.0  | 2006 04 02 | 691 | 0.1+ | 0.2+ | 2007 10 04 | G96 | 0.7+ | 0.3+ |
| 2006 03 05 | G96 | 0.3- | 0.2- | 2006 04 02 | 691 | 0.0  | 0.1- | 2007 10 04 | G96 | 0.0  | 0.3+ |
| 2006 03 05 | G96 | 0.0  | 0.1- | 2006 04 02 | 691 | 0.0  | 0.0  | 2007 10 04 | G96 | 0.3- | 0.1- |
| 2006 03 05 | G96 | 0.0  | 0.2- | 2006 04 02 | 691 | 0.1+ | 0.2+ | 2007 10 04 | G96 | 0.1+ | 0.1+ |
| 2006 03 23 | 703 | 0.2- | 0.4+ | 2006 04 02 | G96 | 0.7- | 0.8- |            |     |      |      |
| 2006 03 23 | 703 | 0.8- | 0.1+ | 2006 04 02 | G96 | 0.7+ | 1.1- |            |     |      |      |

**2006 DE<sub>178</sub> = 2007 RK<sub>217</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.30582   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28914396 | $\omega$ 152.24296 | +0.33419068   | +0.94153461 |
| <i>a</i> | 2.2649570  | $\Omega$ 137.24219 | -0.87598326   | +0.32702894 |
| <i>e</i> | 0.1696719  | <i>i</i> 3.61185   | -0.34780731   | +0.08102249 |
| <i>P</i> | 3.41       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 05 22 | 691 | 0.0  | 0.3+ | 2006 05 05 | G96 | 0.8-  | 0.2+  | 2007 10 04 | 703 | 0.8- | 0.1- |
| 2003 05 22 | 691 | 0.1+ | 0.5+ | 2006 05 05 | G96 | 0.6-  | 0.1+  | 2007 10 04 | 703 | 2.5- | 0.4- |
| 2003 05 22 | 691 | 0.2+ | 0.5+ | 2006 05 05 | G96 | 0.3-  | 0.1-  | 2007 10 04 | 703 | 1.0- | 0.7- |
| 2004 11 10 | 691 | 0.1- | 0.2+ | 2006 05 05 | G96 | 0.5-  | 0.1-  | 2007 10 04 | 703 | 1.8- | 0.0  |
| 2004 11 10 | 691 | 0.2+ | 0.3+ | 2007 09 08 | 699 | 0.1-  | 1.8+  | 2007 10 11 | 703 | 1.1- | 0.4+ |
| 2004 11 10 | 691 | 0.2- | 0.3+ | 2007 09 08 | 699 | 0.4-  | 0.4+  | 2007 10 11 | 703 | 1.1+ | 1.3+ |
| 2006 02 27 | 691 | 0.0  | 0.7- | 2007 09 08 | 699 | 2.3+  | 1.1+  | 2007 10 11 | 703 | 1.3- | 1.3+ |
| 2006 02 27 | 691 | 0.1- | 0.2+ | 2007 09 08 | 699 | 1.6+  | 0.5-  | 2007 10 11 | 703 | 0.6+ | 1.8+ |
| 2006 02 27 | 691 | 0.7+ | 0.7+ | 2007 09 13 | G96 | 0.2-  | 0.3-  | 2007 10 21 | G96 | 0.1+ | 0.2+ |
| 2006 02 27 | G96 | 0.5+ | 0.5+ | 2007 09 13 | G96 | 0.1+  | 0.3-  | 2007 10 21 | G96 | 0.3+ | 0.2- |
| 2006 02 27 | G96 | 0.1+ | 0.4+ | 2007 09 13 | G96 | 0.0   | 0.3-  | 2007 10 21 | G96 | 0.1+ | 0.1- |
| 2006 02 27 | G96 | 0.2+ | 0.3+ | 2007 09 13 | G96 | 0.3-  | 0.3-  | 2007 10 21 | G96 | 0.3+ | 0.0  |
| 2006 02 27 | G96 | 0.3- | 0.3+ | 2007 09 14 | 699 | 1.0+  | 0.1-  | 2007 11 12 | G96 | 0.1- | 0.2+ |
| 2006 03 03 | 691 | 0.0  | 0.3+ | 2007 09 14 | 699 | (0.5+ | 1.7+) | 2007 11 12 | G96 | 0.0  | 0.1- |
| 2006 03 03 | 691 | 0.1+ | 0.3+ | 2007 09 14 | 699 | 0.4+  | 0.0   | 2007 11 12 | G96 | 0.1+ | 0.0  |
| 2006 03 03 | 691 | 0.2+ | 0.0  | 2007 09 14 | 699 | 0.3-  | 0.9+  | 2007 11 12 | G96 | 0.3- | 0.0  |

**2006 DX<sub>180</sub> = 2007 TK<sub>387</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 91.33884   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30154221 | $\omega$ 254.39610 | +0.20427447   | +0.97826470 |
| <i>a</i> | 2.2024394  | $\Omega$ 27.46867  | -0.86593605   | +0.19755802 |
| <i>e</i> | 0.1469137  | <i>i</i> 4.43127   | -0.45653773   | +0.06300003 |
| <i>P</i> | 3.27       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 11 11 | 691 | 0.2- | 0.1- | 2006 03 26 | G96 | 0.2- | 0.0  | 2007 10 13 | 691 | 0.4- | 0.2+ |
| 2004 11 11 | 691 | 0.1+ | 0.1- | 2006 03 26 | G96 | 0.0  | 0.1+ | 2007 10 13 | 691 | 0.2+ | 0.5- |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 11 11 | 691 | 0.1+ | 0.1- | 2006 03 26 | G96 | 0.0  | 0.1- | 2007 10 18 | G96 | 0.3+  | 0.1-  |
| 2006 02 27 | 691 | 0.3+ | 0.0  | 2006 03 26 | G96 | 0.7- | 0.6+ | 2007 10 18 | G96 | 0.3+  | 0.1-  |
| 2006 02 27 | 691 | 0.4+ | 0.1+ | 2006 05 05 | G96 | 0.0  | 0.3+ | 2007 10 18 | G96 | 0.4+  | 0.1-  |
| 2006 02 27 | 691 | 0.3+ | 0.1- | 2006 05 05 | G96 | 0.2- | 0.1+ | 2007 10 18 | G96 | 0.6+  | 0.1+  |
| 2006 03 03 | 691 | 0.1+ | 0.0  | 2006 05 05 | G96 | 0.0  | 0.3+ | 2007 10 20 | 703 | (0.6- | 2.3+) |
| 2006 03 03 | 691 | 0.4- | 0.1- | 2006 05 05 | G96 | 0.2- | 0.2- | 2007 10 20 | 703 | 0.6-  | 0.6+  |
| 2006 03 03 | 691 | 0.1- | 0.1+ | 2007 09 25 | G96 | 0.9+ | 0.1- | 2007 10 20 | 703 | 0.1-  | 0.6+  |
| 2006 03 04 | G96 | 0.0  | 0.1- | 2007 09 25 | G96 | 0.6+ | 0.1+ | 2007 11 01 | G96 | 0.7+  | 0.0   |
| 2006 03 04 | G96 | 0.4- | 0.2- | 2007 09 25 | G96 | 0.6+ | 0.2- | 2007 11 01 | G96 | 0.6+  | 0.1+  |
| 2006 03 04 | G96 | 0.2- | 0.2- | 2007 09 25 | G96 | 0.0  | 0.3+ | 2007 11 01 | G96 | 0.6+  | 0.1-  |
| 2006 03 04 | G96 | 0.1- | 0.2- | 2007 10 13 | 691 | 1.2- | 0.5+ | 2007 11 01 | G96 | 0.5+  | 0.1+  |

**2006 DM<sub>207</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 138.84164  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26955072 | $\omega$ 1.67947   | -0.88755246   | +0.45967351 |
| <i>a</i> | 2.3734261  | $\Omega$ 205.75724 | -0.42351305   | -0.84041617 |
| <i>e</i> | 0.1568037  | <i>i</i> 4.06915   | -0.18134862   | -0.28705562 |
| <i>P</i> | 3.66       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 25 | 691 | 0.3- | 0.0  | 2006 03 24 | 699 | 0.0  | 0.7- | 2007 08 24 | 691 | 0.2+ | 0.1+ |
| 2006 02 25 | 691 | 0.3- | 0.0  | 2006 04 07 | 703 | 0.3- | 0.4+ | 2007 08 24 | 691 | 0.4- | 0.1- |
| 2006 02 25 | 691 | 0.1- | 0.0  | 2006 04 07 | 703 | 0.8- | 0.2+ | 2007 09 14 | 691 | 0.0  | 0.3+ |
| 2006 03 04 | 691 | 0.0  | 0.3+ | 2006 04 07 | 703 | 0.7- | 0.7+ | 2007 09 14 | 691 | 0.0  | 0.2- |
| 2006 03 04 | 691 | 0.0  | 0.2+ | 2006 04 20 | 703 | 0.1- | 0.3+ | 2007 09 14 | 691 | 0.2- | 0.0  |
| 2006 03 04 | 691 | 0.1- | 0.2- | 2006 04 20 | 703 | 0.9- | 0.6- | 2007 10 11 | G96 | 0.1- | 0.2- |
| 2006 03 24 | 699 | 1.1+ | 1.2- | 2006 04 20 | 703 | 1.5+ | 0.4- | 2007 10 11 | G96 | 0.3+ | 0.0  |
| 2006 03 24 | 699 | 0.6+ | 0.5+ | 2006 04 20 | 703 | 0.4- | 0.2+ | 2007 10 11 | G96 | 0.3+ | 0.2- |
| 2006 03 24 | 699 | 0.5+ | 0.0  | 2007 08 24 | 691 | 0.1+ | 0.1+ | 2007 10 11 | G96 | 0.2- | 0.1- |

**2006 DB<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 129.27437  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30563890 | $\omega$ 62.02617  | -0.49729231   | +0.86757987 |
| <i>a</i> | 2.1827146  | $\Omega$ 178.14781 | -0.81936724   | -0.46876254 |
| <i>e</i> | 0.0832733  | <i>i</i> 4.17272   | -0.28519762   | -0.16603271 |
| <i>P</i> | 3.22       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 05 27 | 691 | 0.2+ | 0.0  | 2006 03 25 | J87 | 0.0  | 0.1- | 2006 03 25 | J87 | 0.5+ | 0.2+ |
| 2003 05 27 | 691 | 0.1- | 0.1- | 2006 03 25 | J87 | 0.1+ | 0.3- | 2006 03 26 | G96 | 0.1+ | 0.2+ |
| 2003 05 27 | 691 | 0.0  | 0.4+ | 2006 03 25 | J87 | 0.8+ | 0.0  | 2006 03 26 | G96 | 0.3+ | 0.2+ |
| 2006 02 24 | G96 | 0.2- | 0.1+ | 2006 03 25 | J87 | 0.2- | 0.9- | 2006 03 26 | G96 | 0.2+ | 0.3+ |
| 2006 02 24 | G96 | 0.6+ | 0.3+ | 2006 03 25 | J87 | 0.0  | 0.2- | 2006 03 26 | G96 | 0.9- | 0.1- |
| 2006 02 24 | G96 | 0.1+ | 0.1+ | 2006 03 25 | J87 | 1.1+ | 0.6+ | 2006 04 07 | G96 | 0.3- | 0.2- |
| 2006 02 24 | G96 | 0.1- | 0.0  | 2006 03 25 | J87 | 0.8- | 0.2- | 2006 04 07 | G96 | 1.0+ | 0.5- |
| 2006 03 02 | 695 | 0.2+ | 0.7+ | 2006 03 25 | 734 | 0.3+ | 0.2- | 2006 04 07 | G96 | 0.4- | 0.2- |
| 2006 03 02 | 695 | 0.0  | 0.7+ | 2006 03 25 | 734 | 0.0  | 0.2- | 2006 04 07 | G96 | 0.2- | 0.3- |
| 2006 03 02 | 695 | 0.1+ | 0.7+ | 2006 03 25 | 734 | 0.7- | 0.1- | 2007 09 12 | G96 | 0.1- | 0.1- |
| 2006 03 23 | G96 | 0.5- | 0.1- | 2006 03 25 | 734 | 0.8- | 0.2- | 2007 09 12 | G96 | 0.3- | 0.1- |
| 2006 03 23 | G96 | 0.5- | 0.0  | 2006 03 25 | 734 | 0.2+ | 0.3+ | 2007 09 12 | G96 | 0.2- | 0.0  |
| 2006 03 23 | G96 | 0.0  | 0.0  | 2006 03 25 | G96 | 0.2- | 0.1+ | 2007 09 12 | G96 | 0.3- | 0.2+ |
| 2006 03 24 | G96 | 0.3+ | 0.0  | 2006 03 25 | G96 | 0.1- | 0.1+ | 2007 10 18 | G96 | 0.1- | 0.1+ |
| 2006 03 24 | G96 | 0.5+ | 0.1+ | 2006 03 25 | G96 | 0.3- | 0.1+ | 2007 10 18 | G96 | 0.1- | 0.3+ |
| 2006 03 24 | G96 | 0.2+ | 0.0  | 2006 03 25 | G96 | 0.1- | 0.1+ | 2007 10 18 | G96 | 0.5- | 0.4+ |
| 2006 03 24 | G96 | 0.0  | 0.1+ | 2006 03 25 | J87 | 0.8- | 0.0  | 2007 10 18 | G96 | 0.6+ | 0.3+ |
| 2006 03 24 | G96 | 0.2- | 0.2+ | 2006 03 25 | J87 | 0.4+ | 0.1+ | 2007 11 03 | G96 | 0.1- | 0.6+ |
| 2006 03 24 | G96 | 0.1- | 0.3+ | 2006 03 25 | J87 | 0.1+ | 0.8+ | 2007 11 03 | G96 | 0.1- | 0.3+ |
| 2006 03 24 | G96 | 0.0  | 0.2+ | 2006 03 25 | J87 | 1.1+ | 0.1+ | 2007 11 03 | G96 | 0.1+ | 0.3+ |
| 2006 03 25 | J87 | 0.0  | 0.4- | 2006 03 25 | J87 | 0.1+ | 0.2- | 2007 11 03 | G96 | 0.1+ | 0.6+ |
| 2006 03 25 | J87 | 0.1+ | 0.2- | 2006 03 25 | J87 | 0.4- | 0.3- |            |     |      |      |

2007 DEC. 24

M.P.O. 129753

**2006 EA<sub>10</sub> = 2007 RH<sub>74</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 69.95846   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23881409 | $\omega$ | 105.89938 | -0.03446367   | +0.99854045 |
| <i>a</i> | 2.5729385  | $\Omega$ | 161.97087 | -0.96064055   | -0.02162199 |
| <i>e</i> | 0.1791944  | <i>i</i> | 7.72152   | -0.27564831   | -0.04949206 |
| <i>P</i> | 4.13       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 24 | 691 | 0.0  | 0.1+ | 2006 03 03 | G96 | 0.2- | 0.1- | 2007 09 10 | G96 | 0.3- | 0.0  |
| 2006 02 24 | 691 | 0.3+ | 0.3+ | 2006 03 06 | 691 | 0.0  | 0.0  | 2007 09 11 | G96 | 0.3- | 0.0  |
| 2006 02 24 | 691 | 0.6+ | 0.3+ | 2006 03 06 | 691 | 0.2+ | 0.3- | 2007 09 11 | G96 | 0.0  | 0.1- |
| 2006 03 02 | 691 | 0.3+ | 0.4+ | 2006 03 06 | 691 | 0.0  | 0.2- | 2007 09 11 | G96 | 0.4+ | 0.2+ |
| 2006 03 02 | 691 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.3+ | 0.0  | 2007 09 11 | G96 | 0.1+ | 0.1+ |
| 2006 03 02 | 691 | 0.6+ | 0.2+ | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 09 30 | 691 | 0.8- | 0.3- |
| 2006 03 03 | G96 | 0.4- | 0.2- | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 09 30 | 691 | 0.3+ | 0.1+ |
| 2006 03 03 | G96 | 1.2- | 0.2+ | 2007 09 10 | G96 | 0.1- | 0.1- | 2007 09 30 | 691 | 0.0  | 0.3+ |
| 2006 03 03 | G96 | 0.2+ | 0.3- | 2007 09 10 | G96 | 0.1- | 0.0  |            |     |      |      |

**2006 ER<sub>10</sub> = 2002 NP<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.60816  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17798812 | $\omega$ | 259.09306 | +0.78961967   | +0.61239886 |
| <i>a</i> | 3.1299835  | $\Omega$ | 63.13249  | -0.54485350   | +0.72850929 |
| <i>e</i> | 0.1583490  | <i>i</i> | 2.46200   | -0.28219751   | +0.30698835 |
| <i>P</i> | 5.54       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 14 | 644 | 0.0  | 0.0  | 2002 08 08 | 644 | 0.2- | 0.1+ | 2006 03 06 | 691 | 0.3+ | 0.1- |
| 2002 07 14 | 644 | 0.1+ | 0.3- | 2006 03 02 | 691 | 0.4- | 0.1+ | 2006 03 06 | 691 | 0.0  | 0.2- |
| 2002 07 14 | 644 | 0.3+ | 0.2+ | 2006 03 02 | 691 | 0.2+ | 0.1- | 2006 03 06 | 691 | 0.1- | 0.1- |
| 2002 07 18 | 644 | 0.4- | 0.6- | 2006 03 02 | 691 | 0.2+ | 0.2- | 2006 03 26 | G96 | 0.1+ | 0.8+ |
| 2002 07 18 | 644 | 0.2- | 0.2- | 2006 03 04 | G96 | 0.1- | 0.2+ | 2006 03 26 | G96 | 0.8+ | 0.7+ |
| 2002 07 18 | 644 | 0.0  | 0.2- | 2006 03 04 | G96 | 1.0- | 0.3+ | 2006 03 26 | G96 | 0.1- | 0.2+ |
| 2002 08 08 | 644 | 0.1+ | 0.4+ | 2006 03 04 | G96 | 0.1+ | 0.2- | 2006 03 26 | G96 | 0.1+ | 0.7+ |
| 2002 08 08 | 644 | 0.3+ | 0.5+ | 2006 03 04 | G96 | 0.9- | 0.3- |            |     |      |      |

**2006 EB<sub>23</sub> = 2007 TB<sub>291</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.88551   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22725620 | $\omega$ | 300.19852 | +0.34225386   | +0.93881587 |
| <i>a</i> | 2.6594524  | $\Omega$ | 349.59635 | -0.77186319   | +0.25751242 |
| <i>e</i> | 0.2560111  | <i>i</i> | 12.33016  | -0.53580735   | +0.22871841 |
| <i>P</i> | 4.34       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 14 | 644 | 0.5- | 0.2+ | 2006 03 04 | G96 | 0.1- | 0.2+ | 2007 10 02 | E12 | 0.8-  | 0.5-  |
| 2003 10 14 | 644 | 0.1- | 0.2+ | 2006 03 05 | 691 | 0.3+ | 0.1+ | 2007 10 13 | 703 | 0.3-  | 1.0-  |
| 2003 10 14 | 644 | 0.0  | 0.5+ | 2006 03 05 | 691 | 0.1- | 0.3+ | 2007 10 13 | 703 | 0.7+  | 1.1+  |
| 2006 01 28 | 691 | 0.4+ | 0.2+ | 2006 03 05 | 691 | 0.2+ | 0.0  | 2007 10 13 | 703 | 1.2-  | 0.5-  |
| 2006 01 28 | 691 | 0.4+ | 0.0  | 2006 04 21 | G96 | 0.3+ | 0.4+ | 2007 10 13 | 703 | (1.3- | 2.3+) |
| 2006 01 28 | 691 | 0.4+ | 0.0  | 2006 04 21 | G96 | 0.2+ | 0.7+ | 2007 10 14 | G96 | 0.3+  | 0.3+  |
| 2006 03 03 | 691 | 0.1+ | 0.1- | 2006 04 21 | G96 | 0.0  | 0.0  | 2007 10 14 | G96 | 0.2+  | 0.1+  |
| 2006 03 03 | 691 | 0.0  | 0.1+ | 2006 04 21 | G96 | 0.4+ | 0.5+ | 2007 10 14 | G96 | 0.1+  | 0.1-  |
| 2006 03 03 | 691 | 0.4- | 0.2- | 2007 08 08 | E12 | 0.4+ | 0.4+ | 2007 10 14 | G96 | 0.0   | 0.1-  |
| 2006 03 04 | 691 | 0.4- | 0.3+ | 2007 08 08 | E12 | 0.5- | 0.3+ | 2007 10 15 | G96 | 0.3+  | 0.0   |
| 2006 03 04 | 691 | 0.0  | 0.2- | 2007 08 08 | E12 | 0.2+ | 0.2+ | 2007 10 15 | G96 | 0.0   | 0.2+  |
| 2006 03 04 | 691 | 0.2+ | 0.1- | 2007 08 08 | E12 | 0.2- | 0.0  | 2007 10 15 | G96 | 0.2-  | 0.1-  |
| 2006 03 04 | G96 | 0.2+ | 0.2+ | 2007 10 02 | E12 | 0.3+ | 0.6+ | 2007 10 15 | G96 | 0.1+  | 0.1+  |
| 2006 03 04 | G96 | 0.0  | 0.1+ | 2007 10 02 | E12 | 0.4- | 0.1- |            |     |       |       |
| 2006 03 04 | G96 | 0.0  | 0.4+ | 2007 10 02 | E12 | 0.1- | 0.9+ |            |     |       |       |

**2006 EX<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 143.49656  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28219861 | $\omega$ | 94.65176  | -0.91038101   | +0.39819602 |
| <i>a</i> | 2.3019690  | $\Omega$ | 108.84766 | -0.41085470   | -0.83772686 |
| <i>e</i> | 0.0758343  | <i>i</i> | 6.82444   | -0.04903920   | -0.37370261 |
| <i>P</i> | 3.49       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 02 23 | 699 | 0.9+ | 0.1+ | 2006 03 23 | 703 | 0.1+ | 0.8+ | 2006 04 08 | 703 | (2.5- | 0.7+) |
| 2006 02 23 | 699 | 1.1- | 0.3+ | 2006 03 23 | A80 | 1.3+ | 0.9- | 2006 04 08 | 703 | 1.8-  | 1.2+  |
| 2006 02 23 | 699 | 0.0  | 0.6+ | 2006 03 23 | A80 | 0.8+ | 0.9- | 2006 04 08 | 703 | 0.6+  | 0.6+  |
| 2006 02 23 | 699 | 0.1+ | 0.4+ | 2006 03 23 | A80 | 1.0+ | 0.9- | 2006 04 08 | 703 | 0.1+  | 0.0   |
| 2006 03 03 | 703 | 0.6+ | 0.7- | 2006 03 24 | 683 | 1.3- | 1.1- | 2007 07 25 | D35 | 0.5-  | 0.5-  |
| 2006 03 03 | 703 | 0.1- | 0.1+ | 2006 03 24 | 683 | 0.3- | 1.5- | 2007 07 25 | D35 | 0.0   | 0.7-  |
| 2006 03 03 | 703 | 0.0  | 0.0  | 2006 03 24 | 683 | 1.6- | 1.9- | 2007 07 25 | D35 | 0.3-  | 0.4-  |
| 2006 03 05 | 704 | 0.9+ | 0.8+ | 2006 03 24 | 699 | 0.1+ | 0.2+ | 2007 09 04 | 703 | 0.7-  | 0.7+  |
| 2006 03 05 | 704 | 0.7+ | 0.1- | 2006 03 24 | 699 | 0.5- | 0.8+ | 2007 09 04 | 703 | 0.1-  | 0.5+  |
| 2006 03 05 | 704 | 0.9+ | 0.2+ | 2006 03 24 | 699 | 0.5+ | 1.1+ | 2007 09 04 | 703 | 0.0   | 0.7+  |
| 2006 03 23 | 683 | 0.5+ | 0.3- | 2006 03 24 | 699 | 0.1- | 1.2+ | 2007 09 04 | 703 | 0.6+  | 1.5+  |
| 2006 03 23 | 683 | 0.1+ | 0.3+ | 2006 04 02 | 703 | 0.2- | 0.5+ | 2007 09 14 | 703 | 0.4-  | 0.5-  |
| 2006 03 23 | 703 | 0.8- | 0.3- | 2006 04 02 | 703 | 0.1- | 0.2+ | 2007 09 14 | 703 | 0.5-  | 0.0   |
| 2006 03 23 | 703 | 0.1+ | 0.1+ | 2006 04 02 | 703 | 0.2+ | 0.4+ | 2007 09 14 | 703 | 1.6+  | 0.5-  |
| 2006 03 23 | 683 | 0.6- | 0.5- | 2006 04 02 | 703 | 0.6- | 0.1+ | 2007 09 14 | 703 | 0.0   | 0.1-  |

**2006 ET<sub>42</sub> = 2007 UX<sub>59</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 88.34752   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30672946 | $\omega$ | 54.65499  | +0.41183598   | +0.91005633 |
| <i>a</i> | 2.1775379  | $\Omega$ | 239.73028 | -0.85265471   | +0.36672917 |
| <i>e</i> | 0.1995727  | <i>i</i> | 3.10509   | -0.32151372   | +0.19315068 |
| <i>P</i> | 3.21       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 04 | 691 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.1- | 0.2+ | 2007 11 13 | 291 | 0.2+ | 0.1+ |
| 2006 03 04 | 691 | 0.1+ | 0.3- | 2007 10 30 | G96 | 0.9+ | 0.4- | 2007 11 13 | 291 | 0.4+ | 0.0  |
| 2006 03 04 | 691 | 0.0  | 0.3- | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 11 13 | 291 | 0.3+ | 0.1- |
| 2006 03 05 | 691 | 0.0  | 0.3+ | 2007 10 30 | G96 | 0.2- | 0.5- | 2007 12 15 | 291 | 0.0  | 0.2- |
| 2006 03 05 | 691 | 0.0  | 0.1- | 2007 10 30 | G96 | 0.1+ | 0.3- | 2007 12 15 | G96 | 0.4+ | 0.1- |
| 2006 03 05 | 691 | 0.5+ | 0.3+ | 2007 10 31 | 691 | 0.3- | 0.3- | 2007 12 15 | 291 | 0.2- | 0.6+ |
| 2006 03 09 | 691 | 0.2- | 0.0  | 2007 10 31 | 691 | 0.3- | 0.1- | 2007 12 15 | 291 | 0.2- | 0.1+ |
| 2006 03 09 | 691 | 0.4- | 0.2- | 2007 10 31 | 691 | 0.1- | 0.4- | 2007 12 15 | G96 | 0.3+ | 0.2- |
| 2006 03 09 | 691 | 0.1- | 0.2+ | 2007 11 04 | 691 | 0.3- | 0.1+ | 2007 12 15 | G96 | 0.0  | 1.1- |
| 2007 10 19 | 691 | 0.2- | 0.4+ | 2007 11 04 | 691 | 0.1- | 0.3+ | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2007 10 19 | 691 | 0.3+ | 0.3+ | 2007 11 04 | 691 | 0.2+ | 0.2- |            |     |      |      |

**2006 EC<sub>63</sub> = 2007 VH<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.15200  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28210406 | $\omega$ | 1.54869   | -0.13131629   | +0.99070079 |
| <i>a</i> | 2.3024833  | $\Omega$ | 260.90665 | -0.90992439   | -0.13470945 |
| <i>e</i> | 0.1909436  | <i>i</i> | 2.06664   | -0.39343822   | -0.01911288 |
| <i>P</i> | 3.49       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 291 | 0.3+ | 0.6- | 2006 03 09 | 691 | 0.1+ | 0.1- | 2007 10 08 | 691 | 0.3- | 0.0  |
| 2003 10 24 | 291 | 0.0  | 0.3+ | 2006 03 09 | 691 | 0.1- | 0.3- | 2007 10 08 | 691 | 0.3- | 0.1+ |
| 2003 10 24 | 291 | 0.2- | 0.3- | 2006 03 26 | 699 | 0.9- | 0.9- | 2007 11 02 | G96 | 0.1+ | 0.4- |
| 2006 03 05 | 691 | 0.1+ | 0.1- | 2006 03 26 | 699 | 0.6- | 0.4+ | 2007 11 02 | G96 | 0.1- | 0.0  |
| 2006 03 05 | 691 | 0.0  | 0.0  | 2006 03 26 | 699 | 0.9- | 0.3+ | 2007 11 02 | G96 | 0.1- | 0.0  |
| 2006 03 05 | 691 | 0.1- | 0.4- | 2006 03 26 | 699 | 0.3- | 1.1+ | 2007 11 02 | G96 | 0.1- | 0.3+ |
| 2006 03 09 | 691 | 0.2+ | 0.3- | 2006 04 21 | 691 | 0.0  | 0.2+ | 2007 11 03 | 291 | 0.3+ | 0.1- |
| 2006 03 09 | 691 | 0.2+ | 0.0  | 2006 04 21 | 691 | 0.3+ | 0.1+ | 2007 11 03 | 291 | 0.3+ | 0.0  |
| 2006 03 09 | 691 | 0.2- | 0.2+ | 2006 04 21 | 691 | 0.0  | 0.3+ | 2007 11 03 | 291 | 0.3+ | 0.2+ |
| 2006 03 09 | 691 | 0.1+ | 0.3- | 2007 10 08 | 691 | 0.1- | 0.1- |            |     |      |      |

**2006 EA<sub>64</sub> = 2007 TY<sub>241</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 79.72649   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23352317 | $\omega$ | 280.66769 | -0.13848279   | +0.98841654 |
| <i>a</i> | 2.6116565  | $\Omega$ | 341.03181 | -0.81749820   | -0.14947549 |
| <i>e</i> | 0.1855076  | <i>i</i> | 11.01250  | -0.55903418   | -0.02626447 |
| <i>P</i> | 4.22       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 05 | 691 | 0.4+ | 0.2- | 2007 08 23 | 691 | 0.9- | 0.2- | 2007 09 30 | 691 | 0.1- | 0.3+ |
| 2006 03 05 | 691 | 0.6+ | 0.0  | 2007 08 23 | 691 | 0.3- | 0.2- | 2007 09 30 | 691 | 0.1- | 0.1- |
| 2006 03 05 | 691 | 0.5+ | 0.2+ | 2007 08 23 | 691 | 0.6- | 0.5- | 2007 09 30 | 691 | 0.6- | 1.3+ |
| 2006 03 09 | 691 | 0.3+ | 0.3- | 2007 09 10 | 691 | 0.8- | 0.7- | 2007 10 08 | 691 | 0.2+ | 0.2- |
| 2006 03 09 | 691 | 0.6+ | 0.1- | 2007 09 10 | 691 | 0.3- | 0.2+ | 2007 10 08 | 691 | 0.6+ | 0.1+ |
| 2006 03 09 | 691 | 0.6+ | 0.4- | 2007 09 10 | 691 | 0.1- | 0.2- | 2007 10 08 | 691 | 0.3+ | 0.1- |
| 2006 04 21 | 703 | 0.0  | 0.5+ | 2007 09 14 | 699 | 0.7+ | 0.2+ | 2007 10 12 | G96 | 0.9+ | 0.4- |
| 2006 04 21 | 703 | 0.8- | 0.7- | 2007 09 14 | 699 | 1.5- | 1.4+ | 2007 10 12 | G96 | 0.4+ | 0.4- |
| 2006 04 21 | 703 | 1.6- | 1.1+ | 2007 09 14 | 699 | 0.6+ | 0.4- | 2007 10 12 | G96 | 0.4+ | 0.3- |
| 2006 04 21 | 703 | 0.6- | 0.0  | 2007 09 14 | 699 | 0.7+ | 0.4+ | 2007 10 12 | G96 | 0.5+ | 0.3- |

**2006 FD<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 141.49651  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29772099 | $\omega$ | 210.41303 | -0.44687166   | +0.89346362 |
| <i>a</i> | 2.2212448  | $\Omega$ | 33.10412  | -0.80327808   | -0.37858668 |
| <i>e</i> | 0.1472378  | <i>i</i> | 4.73020   | -0.39376394   | -0.24165035 |
| <i>P</i> | 3.31       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 03 24 | G96 | 0.3- | 0.2- | 2006 04 19 | G96 | 0.4- | 0.1+ | 2006 06 01 | G96 | 0.2-  | 0.2+  |
| 2006 03 24 | G96 | 0.3- | 0.2+ | 2006 04 19 | G96 | 0.3+ | 0.1- | 2007 10 12 | 691 | 0.3+  | 0.9+  |
| 2006 03 25 | 691 | 0.1- | 0.2+ | 2006 05 31 | G96 | 0.2+ | 0.1- | 2007 10 12 | 691 | 0.6-  | 0.1-  |
| 2006 03 25 | 691 | 0.2+ | 0.2+ | 2006 05 31 | G96 | 0.2- | 0.2+ | 2007 10 12 | 691 | 0.2+  | 0.3+  |
| 2006 03 25 | 691 | 0.0  | 0.1+ | 2006 05 31 | G96 | 0.0  | 0.1+ | 2007 10 20 | 691 | (0.7- | 3.6-) |
| 2006 04 07 | 691 | 0.4+ | 0.1+ | 2006 05 31 | G96 | 0.1+ | 0.0  | 2007 10 20 | 691 | 0.1-  | 0.1+  |
| 2006 04 07 | 691 | 0.4+ | 0.2+ | 2006 06 01 | G96 | 0.2- | 0.0  | 2007 10 20 | 691 | 0.4-  | 0.3+  |
| 2006 04 07 | 691 | 0.5+ | 0.1+ | 2006 06 01 | G96 | 0.2+ | 0.3+ |            |     |       |       |
| 2006 04 19 | G96 | 0.2- | 0.1- | 2006 06 01 | G96 | 0.1- | 0.1- |            |     |       |       |

**2006 FE<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 138.21896  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26379341 | $\omega$ | 161.32825 | -0.78311214   | +0.62095854 |
| <i>a</i> | 2.4078352  | $\Omega$ | 57.10520  | -0.57557520   | -0.70311603 |
| <i>e</i> | 0.1317008  | <i>i</i> | 2.31046   | -0.23547517   | -0.34646550 |
| <i>P</i> | 3.74       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 22 | 644 | 0.1- | 0.4+ | 2006 04 07 | 691 | 0.5+ | 0.2+ | 2006 05 22 | G96 | 0.2- | 0.2+ |
| 2002 02 22 | 644 | 0.4+ | 0.3+ | 2006 04 07 | 691 | 0.0  | 0.3+ | 2007 09 13 | G96 | 0.1- | 0.2+ |
| 2002 02 22 | 644 | 0.0  | 0.1+ | 2006 04 07 | 691 | 0.3+ | 0.3+ | 2007 09 13 | G96 | 0.2- | 0.1+ |
| 2006 03 26 | G96 | 0.1+ | 0.0  | 2006 05 06 | G96 | 0.1+ | 0.1+ | 2007 09 13 | G96 | 0.1+ | 0.4+ |
| 2006 03 26 | G96 | 0.5- | 0.0  | 2006 05 06 | G96 | 0.1+ | 0.0  | 2007 09 13 | G96 | 0.3- | 0.0  |
| 2006 03 26 | G96 | 0.1+ | 0.3+ | 2006 05 06 | G96 | 0.0  | 0.0  | 2007 10 13 | G96 | 1.0- | 0.5+ |
| 2006 03 26 | G96 | 0.1+ | 0.1- | 2006 05 06 | G96 | 0.1- | 0.1+ | 2007 10 13 | G96 | 0.1+ | 0.6+ |
| 2006 04 02 | 691 | 0.4+ | 0.0  | 2006 05 22 | G96 | 0.2- | 0.2+ | 2007 10 13 | G96 | 0.5+ | 0.1- |
| 2006 04 02 | 691 | 0.2+ | 0.1+ | 2006 05 22 | G96 | 0.4- | 0.3- | 2007 10 13 | G96 | 0.2- | 0.4+ |
| 2006 04 02 | 691 | 0.2+ | 0.1+ | 2006 05 22 | G96 | 0.4- | 0.4- |            |     |      |      |

**2006 FJ<sub>43</sub> = 2007 VM<sub>262</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 97.06893   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27993144 | $\omega$ | 166.54598 | +0.12217516   | +0.99103339 |
| <i>a</i> | 2.3143814  | $\Omega$ | 110.45068 | -0.91586839   | -0.13357406 |
| <i>e</i> | 0.1827576  | <i>i</i> | 3.30962   | -0.38243733   | -0.00328575 |
| <i>P</i> | 3.52       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 07 | 691 | 0.4+ | 0.1- | 2006 04 02 | 691 | 0.0  | 0.5+ | 2007 10 09 | G96 | 0.2- | 0.6+ |
| 1995 02 07 | 691 | 0.4- | 0.1- | 2006 04 02 | 691 | 0.1+ | 0.2+ | 2007 11 13 | G96 | 0.2- | 0.0  |
| 2003 07 05 | 691 | 0.0  | 0.5+ | 2006 04 02 | 691 | 0.1+ | 0.4+ | 2007 11 13 | G96 | 0.1+ | 0.2+ |
| 2003 07 05 | 691 | 0.2- | 0.4+ | 2006 04 07 | 691 | 0.1- | 0.2+ | 2007 11 13 | G96 | 0.3- | 0.1+ |
| 2003 07 05 | 691 | 0.2- | 0.3+ | 2006 04 07 | 691 | 0.0  | 0.4+ | 2007 11 13 | G96 | 0.6+ | 0.5+ |
| 2006 03 29 | 704 | 0.0  | 0.7+ | 2006 04 07 | 691 | 0.0  | 0.4+ | 2007 11 17 | 291 | 0.1- | 0.4+ |
| 2006 03 29 | 704 | 0.2- | 0.1- | 2007 10 09 | G96 | 0.6- | 0.6+ | 2007 11 17 | 291 | 0.4- | 0.3+ |
| 2006 03 29 | 704 | 0.7+ | 1.1+ | 2007 10 09 | G96 | 0.1- | 0.7+ | 2007 11 17 | 291 | 0.2- | 0.2+ |
| 2006 03 29 | 704 | 1.1+ | 0.5+ | 2007 10 09 | G96 | 0.2- | 0.6+ |            |     |      |      |

**2006 GU<sub>15</sub> = 2007 TZ<sub>260</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.23068   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26830580 | $\omega$ | 207.85735 | +0.48854508   | +0.87118129 |
| <i>a</i> | 2.3807622  | $\Omega$ | 91.42400  | -0.79122121   | +0.46582992 |
| <i>e</i> | 0.1869736  | <i>i</i> | 2.78942   | -0.36782155   | +0.15506657 |
| <i>P</i> | 3.67       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 25 | 644 | 0.1- | 0.3+ | 2006 04 08 | G96 | 0.0  | 0.2- | 2007 10 14 | 691 | 0.6- | 0.0  |
| 2003 08 25 | 644 | 0.1- | 0.1- | 2006 05 24 | G96 | 0.2- | 0.3+ | 2007 10 14 | 691 | 0.1+ | 0.1- |
| 2003 08 25 | 644 | 0.2+ | 0.3- | 2006 05 24 | G96 | 0.3+ | 0.1- | 2007 10 18 | 691 | 0.4+ | 0.1+ |
| 2006 04 02 | 691 | 0.1+ | 0.3+ | 2006 05 24 | G96 | 0.5- | 0.5+ | 2007 10 18 | 691 | 0.2+ | 0.0  |
| 2006 04 02 | 691 | 0.1+ | 0.1- | 2006 05 24 | G96 | 0.5- | 0.0  | 2007 10 18 | 691 | 0.3+ | 0.3+ |
| 2006 04 02 | 691 | 0.3+ | 0.0  | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 07 | G96 | 0.5+ | 0.3- |
| 2006 04 08 | G96 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 07 | G96 | 0.5+ | 0.3- |
| 2006 04 08 | G96 | 0.2- | 0.1- | 2007 10 10 | 691 | 0.3- | 0.1- | 2007 11 07 | G96 | 0.5+ | 0.2- |
| 2006 04 08 | G96 | 0.4- | 0.0  | 2007 10 14 | 691 | 0.3- | 0.2+ | 2007 11 07 | G96 | 0.4+ | 0.3- |

**2006 GN<sub>17</sub> = 2007 RC<sub>245</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.19711   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21110956 | $\omega$ | 263.31724 | +0.42479814   | +0.90196076 |
| <i>a</i> | 2.7933849  | $\Omega$ | 32.17797  | -0.76239095   | +0.40262049 |
| <i>e</i> | 0.2731851  | <i>i</i> | 8.37270   | -0.48816656   | +0.15608819 |
| <i>P</i> | 4.67       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 02 | 691 | 0.0  | 0.1+ | 2007 09 11 | 691 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.0  |
| 2006 04 02 | 691 | 0.1- | 0.3+ | 2007 09 11 | 691 | 0.1+ | 0.2- | 2007 10 08 | G96 | 0.1+ | 0.1- |
| 2006 04 02 | 691 | 0.0  | 0.2+ | 2007 09 11 | 691 | 0.0  | 0.2+ | 2007 10 08 | G96 | 0.1- | 0.1+ |
| 2006 04 07 | 691 | 0.4+ | 0.0  | 2007 09 18 | 691 | 0.1- | 0.3+ | 2007 10 08 | G96 | 0.2+ | 0.1- |
| 2006 04 07 | 691 | 0.1+ | 0.2- | 2007 09 18 | 691 | 0.0  | 0.1- | 2007 12 06 | G96 | 0.2- | 0.7+ |
| 2006 04 07 | 691 | 0.0  | 0.3+ | 2007 09 18 | 691 | 0.1- | 0.2+ | 2007 12 06 | G96 | 0.1- | 0.6+ |
| 2006 04 24 | 691 | 0.2- | 0.2+ | 2007 09 20 | 691 | 0.0  | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.7+ |
| 2006 04 24 | 691 | 0.3+ | 0.1- | 2007 09 20 | 691 | 0.1+ | 0.2+ | 2007 12 06 | G96 | 0.2- | 0.7+ |
| 2006 04 24 | 691 | 0.2+ | 0.1+ | 2007 09 20 | 691 | 0.5- | 0.4- |            |     |      |      |



2007 DEC. 24

M.P.O. 129755

**2006 GS<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 125.91973  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27305966 | $\omega$ | 27.68040  | -0.73316242   | +0.67941329 |
| <i>a</i> | 2.3530493  | $\Omega$ | 195.23243 | -0.64284846   | -0.70655226 |
| <i>e</i> | 0.0679435  | <i>i</i> | 6.44750   | -0.22185294   | -0.19794313 |
| <i>P</i> | 3.61       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 23 | 291 | 0.0  | 0.5+ | 2006 03 26 | 699 | 0.7- | 0.6- | 2006 04 21 | 691 | 0.1+ | 0.0  |
| 2006 03 23 | 291 | 0.2- | 0.3+ | 2006 04 02 | G96 | 0.7- | 0.1- | 2006 05 21 | G96 | 0.5+ | 0.4- |
| 2006 03 23 | 291 | 0.2- | 0.3+ | 2006 04 02 | G96 | 0.5- | 0.0  | 2006 05 21 | G96 | 0.2- | 0.3- |
| 2006 03 23 | 291 | 0.3+ | 0.1+ | 2006 04 02 | G96 | 0.3- | 0.1- | 2006 05 21 | G96 | 0.2+ | 0.3+ |
| 2006 03 23 | 291 | 0.3+ | 0.2+ | 2006 04 02 | G96 | 0.4- | 0.2- | 2006 05 21 | G96 | 0.0  | 0.1- |
| 2006 03 23 | 291 | 0.2+ | 0.2+ | 2006 04 07 | G96 | 0.0  | 0.0  | 2007 09 04 | G96 | 0.1+ | 0.1+ |
| 2006 03 23 | 291 | 0.1+ | 0.3+ | 2006 04 07 | G96 | 0.4- | 0.1- | 2007 09 04 | G96 | 0.2+ | 0.0  |
| 2006 03 23 | 291 | 0.1+ | 0.3+ | 2006 04 07 | G96 | 0.1- | 0.2- | 2007 09 04 | G96 | 0.2- | 0.1- |
| 2006 03 23 | 291 | 0.3+ | 0.3+ | 2006 04 07 | G96 | 0.3- | 0.1- | 2007 09 04 | G96 | 0.1- | 0.0  |
| 2006 03 23 | 291 | 0.3+ | 0.1+ | 2006 04 19 | G96 | 0.0  | 0.1- | 2007 10 09 | G96 | 0.0  | 0.1+ |
| 2006 03 23 | 291 | 0.1+ | 0.2- | 2006 04 19 | G96 | 0.3- | 0.0  | 2007 10 09 | G96 | 0.1- | 0.2+ |
| 2006 03 23 | 291 | 0.3+ | 0.1+ | 2006 04 19 | G96 | 0.1+ | 0.1- | 2007 10 09 | G96 | 0.1- | 0.2+ |
| 2006 03 26 | 699 | 1.2+ | 0.5- | 2006 04 19 | G96 | 0.0  | 0.1- | 2007 10 09 | G96 | 0.0  | 0.1+ |
| 2006 03 26 | 699 | 0.7- | 0.3+ | 2006 04 21 | 691 | 0.1- | 0.1+ |            |     |      |      |
| 2006 03 26 | 699 | 1.0+ | 0.0  | 2006 04 21 | 691 | 0.3+ | 0.1+ |            |     |      |      |

**2006 GF<sub>25</sub> = 2007 VN<sub>295</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 114.59043  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30073756 | $\omega$ | 193.22830 | +0.11038280   | +0.99365400 |
| <i>a</i> | 2.2063662  | $\Omega$ | 83.11218  | -0.90988187   | +0.10978121 |
| <i>e</i> | 0.1627161  | <i>i</i> | 1.24777   | -0.39991328   | +0.02449125 |
| <i>P</i> | 3.28       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 03 | 645 | 0.1- | 0.2+ | 2006 04 07 | 691 | 0.3+ | 0.2+ | 2007 10 20 | 691 | 0.1- | 0.1- |
| 2000 09 03 | 645 | 0.1- | 0.3+ | 2006 04 07 | 691 | 0.0  | 0.1+ | 2007 10 20 | 691 | 0.2+ | 0.1+ |
| 2006 03 24 | G96 | 0.0  | 0.1+ | 2006 05 06 | G96 | 0.6- | 0.2+ | 2007 10 20 | 691 | 0.2+ | 0.2+ |
| 2006 03 24 | G96 | 0.1+ | 0.2- | 2006 05 06 | G96 | 0.2- | 0.3+ | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2006 03 24 | G96 | 0.2- | 0.1+ | 2006 05 06 | G96 | 0.2+ | 0.3+ | 2007 11 14 | 691 | 0.1- | 0.2+ |
| 2006 03 24 | G96 | 0.0  | 0.1+ | 2006 05 06 | G96 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 1.0+ |
| 2006 04 02 | 691 | 0.4+ | 0.1+ | 2006 05 20 | G96 | 0.1- | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.3- |
| 2006 04 02 | 691 | 0.1+ | 0.2+ | 2006 05 20 | G96 | 0.0  | 0.1- | 2007 11 20 | G96 | 0.5+ | 0.2+ |
| 2006 04 02 | 691 | 0.2+ | 0.1- | 2006 05 20 | G96 | 0.0  | 0.1- | 2007 11 20 | G96 | 0.5- | 0.2- |
| 2006 04 07 | 691 | 0.4+ | 0.1+ | 2006 05 20 | G96 | 0.4- | 0.6- | 2007 11 20 | G96 | 0.2+ | 0.3- |

**2006 GQ<sub>28</sub> = 2007 TO<sub>267</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.39718   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27166266 | $\omega$ | 135.68084 | +0.92452512   | +0.37869087 |
| <i>a</i> | 2.3611093  | $\Omega$ | 202.17520 | -0.37361134   | +0.87825666 |
| <i>e</i> | 0.1331408  | <i>i</i> | 6.53725   | -0.07528525   | +0.29199053 |
| <i>P</i> | 3.63       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 03 | 691 | 0.5+ | 0.2- | 2006 05 26 | G96 | 0.2+ | 0.5+ | 2007 10 13 | 691 | 0.3+ | 0.2+ |
| 2003 07 03 | 691 | 0.3- | 0.0  | 2006 05 26 | G96 | 0.2- | 0.3+ | 2007 10 20 | 703 | 1.3+ | 0.7+ |
| 2003 07 03 | 691 | 0.1- | 0.0  | 2007 09 25 | G96 | 0.7+ | 0.6- | 2007 10 20 | 703 | 1.1- | 0.5+ |
| 2006 04 02 | 691 | 0.0  | 0.5+ | 2007 09 25 | G96 | 0.2+ | 0.4- | 2007 10 20 | 703 | 0.3- | 0.0  |
| 2006 04 02 | 691 | 0.0  | 0.3+ | 2007 09 25 | G96 | 0.3+ | 0.8- | 2007 10 20 | 703 | 0.0  | 0.3- |
| 2006 04 02 | 691 | 0.3+ | 0.3+ | 2007 09 25 | G96 | 0.4+ | 0.7- | 2007 11 05 | G96 | 0.7+ | 0.5+ |
| 2006 04 07 | 691 | 0.1- | 0.2+ | 2007 10 09 | 691 | 0.0  | 0.4+ | 2007 11 05 | G96 | 0.2+ | 0.3+ |
| 2006 04 07 | 691 | 0.2+ | 0.5+ | 2007 10 09 | 691 | 0.0  | 0.5+ | 2007 11 05 | G96 | 0.3+ | 0.3+ |
| 2006 04 07 | 691 | 0.0  | 0.1+ | 2007 10 09 | 691 | 0.9- | 0.8+ | 2007 11 05 | G96 | 0.4+ | 0.2+ |
| 2006 05 26 | G96 | 0.1- | 0.4+ | 2007 10 13 | 691 | 0.3- | 0.1- |            |     |      |      |
| 2006 05 26 | G96 | 0.0  | 0.4+ | 2007 10 13 | 691 | 0.4- | 0.1+ |            |     |      |      |

**2006 HM<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 109.90881  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27259784 | $\omega$ | 199.38018 | -0.15883774   | +0.98150427 |
| <i>a</i> | 2.3557061  | $\Omega$ | 61.60582  | -0.88904432   | -0.09511589 |
| <i>e</i> | 0.0926006  | <i>i</i> | 6.97743   | -0.42938417   | -0.16613953 |
| <i>P</i> | 3.62       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 06 | 691 | 0.1- | 0.4+ | 2006 04 19 | 703 | 0.7- | 0.7+ | 2006 05 01 | 703 | 0.9- | 0.4- |
| 1995 04 06 | 691 | 0.4+ | 0.0  | 2006 04 19 | 703 | 0.2- | 0.1- | 2006 05 01 | 703 | 0.4+ | 0.7+ |
| 1995 04 06 | 691 | 0.1+ | 0.3- | 2006 04 19 | 703 | 0.7- | 0.2+ | 2006 05 01 | 703 | 0.5+ | 0.5- |
| 2003 07 08 | 644 | 0.2- | 0.2+ | 2006 04 19 | 703 | 0.4+ | 0.2+ | 2006 05 01 | 703 | 0.5- | 0.1- |
| 2003 07 08 | 644 | 0.4- | 0.0  | 2006 04 20 | 691 | 0.4+ | 0.4+ | 2006 05 06 | 691 | 1.4- | 0.7+ |
| 2003 07 08 | 644 | 0.3- | 0.1+ | 2006 04 20 | 691 | 0.4+ | 0.1+ | 2006 05 06 | 691 | 0.4+ | 0.0  |
| 2004 12 21 | 691 | 0.1+ | 0.2- | 2006 04 20 | 691 | 0.0  | 0.4- | 2006 05 06 | 691 | 0.6+ | 0.3+ |
| 2004 12 21 | 691 | 0.6- | 0.2+ | 2006 04 24 | 691 | 0.4+ | 0.0  | 2007 10 21 | G96 | 0.4+ | 0.1+ |
| 2004 12 21 | 691 | 0.2- | 0.6+ | 2006 04 24 | 691 | 0.0  | 0.0  | 2007 10 21 | G96 | 0.0  | 0.1+ |
| 2006 04 19 | 699 | 0.7- | 0.6+ | 2006 04 24 | 691 | 0.5+ | 0.2+ | 2007 10 21 | G96 | 0.2- | 0.2- |
| 2006 04 19 | 699 | 0.9+ | 1.8- | 2006 04 27 | 691 | 0.5+ | 0.2+ | 2007 10 21 | G96 | 0.6+ | 0.3+ |
| 2006 04 19 | 699 | 0.9+ | 0.7- | 2006 04 27 | 691 | 0.6+ | 0.3+ |            |     |      |      |
| 2006 04 19 | 699 | 1.1- | 0.4+ | 2006 04 27 | 691 | 0.7- | 1.4- |            |     |      |      |

**2006 HX<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.51195  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.46802861 | $\omega$ | 49.41818 | +0.07488299   | -0.97179809 |
| <i>a</i> | 1.6429378  | $\Omega$ | 38.11505 | +0.76994911   | -0.08615323 |
| <i>e</i> | 0.2508721  | <i>i</i> | 21.23973 | +0.63369623   | +0.21951329 |
| <i>P</i> | 2.11       | <i>H</i> | 19.4     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 20 | 691 | 0.2- | 0.1+ | 2006 04 21 | G96 | 0.7- | 0.1+ | 2006 05 01 | 695 | 0.4+ | 0.2+ |
| 2006 04 20 | 691 | 0.2- | 0.4- | 2006 04 21 | G96 | 0.5- | 0.1+ | 2006 05 03 | G96 | 0.6- | 0.1- |
| 2006 04 20 | 691 | 0.7- | 0.1- | 2006 04 21 | 651 | 1.0- | 0.7- | 2006 05 03 | G96 | 0.4- | 0.2- |
| 2006 04 20 | 291 | 0.2- | 0.1+ | 2006 04 21 | 651 | 0.1+ | 0.2- | 2006 05 03 | G96 | 0.3- | 0.2- |
| 2006 04 20 | 291 | 0.9+ | 0.4- | 2006 04 21 | 651 | 0.6+ | 0.2+ | 2006 05 03 | G96 | 0.5- | 0.0  |
| 2006 04 20 | 291 | 1.3+ | 0.5- | 2006 04 25 | 291 | 0.2- | 0.6+ | 2006 05 21 | 696 | 1.0- | 0.5- |
| 2006 04 21 | 734 | 0.1+ | 0.6+ | 2006 04 25 | 291 | 0.1+ | 0.1- | 2006 05 21 | 696 | 0.3+ | 0.2+ |
| 2006 04 21 | 734 | 0.6- | 0.5- | 2006 04 25 | 291 | 0.3+ | 0.0  | 2006 05 23 | 291 | 0.1+ | 0.2+ |
| 2006 04 21 | 734 | 0.4- | 0.5- | 2006 04 26 | 696 | 0.2+ | 0.3+ | 2006 05 23 | 291 | 0.1- | 0.2- |
| 2006 04 21 | 734 | 0.7- | 0.7- | 2006 04 26 | 696 | 0.3+ | 0.2+ | 2006 05 23 | 291 | 0.5+ | 0.3- |
| 2006 04 21 | 291 | 0.0  | 0.2+ | 2006 04 27 | 291 | 0.6+ | 0.5+ | 2007 12 05 | 291 | 0.1+ | 0.1- |
| 2006 04 21 | 291 | 0.4- | 0.0  | 2006 04 27 | 291 | 0.0  | 0.5+ | 2007 12 05 | 291 | 0.5- | 0.0  |
| 2006 04 21 | 291 | 0.5- | 0.0  | 2006 04 27 | 291 | 0.1+ | 0.0  | 2007 12 05 | 291 | 0.1- | 0.2+ |
| 2006 04 21 | G96 | 0.1- | 0.2+ | 2006 05 01 | 695 | 0.3- | 0.0  |            |     |      |      |

**2006 HD<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 137.95711  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26405388 | $\omega$ | 133.85767 | -0.63476322   | +0.77017352 |
| <i>a</i> | 2.4062515  | $\Omega$ | 96.63453  | -0.72577298   | -0.56648593 |
| <i>e</i> | 0.1376186  | <i>i</i> | 3.60851   | -0.26519660   | -0.29313212 |
| <i>P</i> | 3.73       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 05 | 645 | 0.1+ | 0.2+ | 2006 04 21 | 703 | 1.1- | 0.7- | 2006 05 19 | 703 | 1.3- | 0.0  |
| 2002 03 05 | 645 | 0.1+ | 0.3+ | 2006 04 25 | 644 | 0.3+ | 0.2- | 2006 05 19 | 703 | 0.2+ | 0.4+ |
| 2006 04 08 | 691 | 0.1+ | 0.3+ | 2006 04 25 | 644 | 0.1- | 0.0  | 2006 05 19 | 703 | 0.5- | 1.1- |
| 2006 04 08 | 691 | 0.2+ | 0.2+ | 2006 04 25 | 644 | 0.0  | 0.3+ | 2006 05 24 | G96 | 0.2- | 0.2- |
| 2006 04 08 | 691 | 0.3+ | 0.1+ | 2006 05 03 | 691 | 0.3+ | 0.0  | 2006 05 24 | G96 | 0.3- | 0.1- |
| 2006 04 18 | 691 | 0.7+ | 0.1- | 2006 05 03 | 691 | 0.5+ | 0.0  | 2006 05 24 | G96 | 0.3- | 0.2- |
| 2006 04 18 | 691 | 0.3+ | 0.4- | 2006 05 03 | 691 | 0.6+ | 0.1+ | 2006 05 24 | G96 | 0.4- | 0.2- |
| 2006 04 18 | 691 | 0.1+ | 0.2+ | 2006 05 03 | 691 | 0.4+ | 0.1+ | 2007 09 18 | 691 | 0.1+ | 0.2- |
| 2006 04 21 | 691 | 0.2+ | 0.2+ | 2006 05 03 | 691 | 0.5+ | 0.0  | 2007 09 18 | 691 | 0.1+ | 0.6+ |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 21 | 691 | 0.4+ | 0.0  | 2006 05 03 | 691 | 0.3+ | 0.1+ | 2007 09 18 | 691 | 0.2+ | 0.2+ |
| 2006 04 21 | 691 | 0.3+ | 0.1− | 2006 05 08 | 691 | 0.8+ | 0.2+ | 2007 10 16 | G96 | 0.3− | 0.1− |
| 2006 04 21 | 703 | 1.4− | 0.7− | 2006 05 08 | 691 | 0.7+ | 0.2+ | 2007 10 16 | G96 | 0.1− | 0.3+ |
| 2006 04 21 | 703 | 0.8− | 0.1+ | 2006 05 08 | 691 | 0.5+ | 0.1+ | 2007 10 16 | G96 | 0.3− | 0.1+ |
| 2006 04 21 | 703 | 0.6− | 0.4+ | 2006 05 19 | 703 | 0.7− | 1.5+ | 2007 10 16 | G96 | 0.0  | 0.3+ |

**2006 HL<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 122.31592  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28459003 | $\omega$ | 169.18463 | −0.34221814   | +0.93864681 |
| <i>a</i> | 2.2890552  | $\Omega$ | 80.79270  | −0.86528645   | −0.29707602 |
| <i>e</i> | 0.1794494  | <i>i</i> | 2.48306   | −0.36628691   | −0.17517991 |
| <i>P</i> | 3.46       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 24 | 691 | 0.1− | 0.1− | 2006 04 21 | 691 | 0.0  | 0.2− | 2007 09 14 | G96 | 0.1+ | 0.4+ |
| 2006 03 24 | 691 | 0.3+ | 0.2− | 2006 04 21 | 691 | 0.1− | 0.1− | 2007 09 14 | G96 | 0.3+ | 0.5+ |
| 2006 03 24 | 691 | 0.1+ | 0.4− | 2006 04 25 | 691 | 0.1− | 1.4+ | 2007 09 14 | G96 | 0.6− | 0.1− |
| 2006 04 19 | 699 | 0.6+ | 0.9+ | 2006 04 25 | 691 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.2+ |
| 2006 04 19 | 699 | 0.7− | 1.3+ | 2006 04 25 | 691 | 1.5− | 0.4− | 2007 10 08 | G96 | 0.4+ | 0.1+ |
| 2006 04 19 | 699 | 0.9+ | 1.8− | 2006 05 25 | G96 | 0.4− | 0.3− | 2007 10 08 | G96 | 0.2+ | 0.5+ |
| 2006 04 19 | 699 | 0.4+ | 0.6− | 2006 05 25 | G96 | 0.2− | 0.3− | 2007 10 08 | G96 | 0.1− | 0.4+ |
| 2006 04 20 | 703 | 0.6+ | 0.8+ | 2006 05 25 | G96 | 0.1− | 0.1− | 2007 10 19 | G96 | 0.5− | 0.1− |
| 2006 04 20 | 703 | 1.0− | 0.1− | 2006 05 25 | G96 | 0.1− | 0.2+ | 2007 10 19 | G96 | 0.3− | 0.1+ |
| 2006 04 20 | 703 | 0.7+ | 0.4+ | 2006 05 27 | 688 | 0.0  | 0.2+ | 2007 10 19 | G96 | 0.1− | 0.1− |
| 2006 04 20 | 703 | 0.8+ | 0.9+ | 2006 05 27 | 688 | 0.4+ | 0.1+ | 2007 10 19 | G96 | 0.3− | 0.2− |
| 2006 04 21 | 691 | 0.1+ | 0.2− | 2007 09 14 | G96 | 0.0  | 0.1− |            |     |      |      |

**2006 HV<sub>19</sub> = 2007 UT<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.48201  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28010823 | $\omega$ | 233.41688 | −0.11343814   | +0.99215162 |
| <i>a</i> | 2.3134075  | $\Omega$ | 30.19728  | −0.87489348   | −0.07466094 |
| <i>e</i> | 0.1417890  | <i>i</i> | 6.00300   | −0.47084305   | −0.10030406 |
| <i>P</i> | 3.52       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 11 | 691 | 0.3+ | 0.3+ | 2006 04 19 | G96 | 0.4− | 0.3− | 2007 10 18 | G96 | 0.2− | 0.7+ |
| 1999 04 11 | 691 | 0.6+ | 0.0  | 2006 04 19 | G96 | 0.4− | 0.3+ | 2007 10 18 | G96 | 0.3− | 0.5+ |
| 1999 04 11 | 691 | 0.1+ | 0.2+ | 2006 04 19 | G96 | 0.2− | 0.1− | 2007 10 18 | G96 | 0.5− | 0.2+ |
| 1999 04 22 | 691 | 0.0  | 0.3+ | 2006 04 24 | 691 | 0.1− | 0.6+ | 2007 10 18 | G96 | 0.1− | 0.4+ |
| 1999 04 22 | 691 | 0.1+ | 0.1− | 2006 04 24 | 691 | 0.5+ | 0.1+ | 2007 10 30 | G96 | 0.3− | 0.9+ |
| 1999 04 22 | 691 | 0.3− | 0.4+ | 2006 04 24 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.2− | 0.2+ |
| 2006 03 26 | G96 | 0.2− | 0.3+ | 2007 09 12 | G96 | 0.3− | 0.2− | 2007 10 30 | G96 | 0.3− | 0.4+ |
| 2006 03 26 | G96 | 0.5− | 0.2+ | 2007 09 12 | G96 | 0.1− | 0.0  | 2007 10 30 | G96 | 0.2− | 0.6+ |
| 2006 03 26 | G96 | 0.5− | 0.2+ | 2007 09 12 | G96 | 0.1+ | 0.2+ | 2007 11 02 | G96 | 0.1− | 0.7+ |
| 2006 03 26 | G96 | 0.3− | 0.2+ | 2007 09 12 | G96 | 0.1− | 0.4− | 2007 11 02 | G96 | 0.3− | 0.7+ |
| 2006 04 09 | 691 | 0.2+ | 0.2− | 2007 10 08 | G96 | 0.2− | 0.5+ | 2007 11 02 | G96 | 0.3− | 0.8+ |
| 2006 04 09 | 691 | 0.0  | 0.1− | 2007 10 08 | G96 | 0.2− | 0.3+ | 2007 11 02 | G96 | 0.4− | 0.7+ |
| 2006 04 09 | 691 | 0.3+ | 0.0  | 2007 10 08 | G96 | 0.2− | 0.3+ |            |     |      |      |
| 2006 04 19 | G96 | 0.1− | 0.1+ | 2007 10 08 | G96 | 0.1− | 0.6+ |            |     |      |      |

**2006 HN<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.25343   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19270567 | $\omega$ | 94.57855  | +0.25085964   | +0.96713438 |
| <i>a</i> | 2.9685182  | $\Omega$ | 190.23954 | −0.95464600   | +0.24006669 |
| <i>e</i> | 0.2538944  | <i>i</i> | 13.49373  | −0.16037597   | +0.08377992 |
| <i>P</i> | 5.11       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 20 | 691 | 0.2− | 0.4− | 2006 05 09 | G96 | 0.2+ | 0.2+ | 2007 09 12 | G96 | 0.0  | 0.1− |
| 2006 04 20 | 691 | 0.2+ | 0.2− | 2006 05 09 | G96 | 0.2+ | 0.1+ | 2007 09 12 | G96 | 0.4− | 0.3+ |
| 2006 04 20 | 691 | 0.3+ | 0.1+ | 2006 05 09 | G96 | 0.6− | 0.3− | 2007 09 12 | G96 | 0.8− | 0.8− |
| 2006 04 24 | 691 | 0.3+ | 0.3− | 2006 05 09 | G96 | 0.6− | 0.5+ | 2007 10 09 | G96 | 0.3− | 0.1+ |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 24 | 691 | 0.4+ | 0.3− | 2006 05 09 | G96 | 0.2− | 0.7+ | 2007 10 09 | G96 | 0.2− | 0.2+ |
| 2006 04 24 | 691 | 0.2+ | 0.4− | 2006 05 09 | G96 | 0.3− | 0.8+ | 2007 10 09 | G96 | 0.2+ | 0.1+ |
| 2006 04 29 | 691 | 0.3+ | 0.1− | 2006 05 22 | G96 | 0.2+ | 0.1+ | 2007 10 09 | G96 | 0.2− | 0.1− |
| 2006 04 29 | 691 | 0.4+ | 0.1− | 2006 05 22 | G96 | 0.1+ | 0.1− | 2007 10 19 | G96 | 0.3− | 0.4+ |
| 2006 04 29 | 691 | 0.3+ | 0.0  | 2006 05 22 | G96 | 0.4− | 0.4− | 2007 10 19 | G96 | 1.2+ | 0.0  |
| 2006 05 09 | G96 | 0.1+ | 0.1+ | 2006 05 22 | G96 | 0.2− | 0.3− | 2007 10 19 | G96 | 0.5+ | 0.3− |
| 2006 05 09 | G96 | 0.5− | 0.4+ | 2007 09 12 | G96 | 0.0  | 0.2− | 2007 10 19 | G96 | 0.2+ | 0.4+ |

**2006 HQ<sub>32</sub> = 2007 VC<sub>132</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 99.25501   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28125625 | $\omega$ | 254.06332 | +0.08414020   | +0.99624238 |
| <i>a</i> | 2.3071080  | $\Omega$ | 20.79612  | −0.89068510   | +0.08443147 |
| <i>e</i> | 0.2107132  | <i>i</i> | 3.31520   | −0.44676669   | +0.01929908 |
| <i>P</i> | 3.50       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 01 31 | G96 | 0.6+ | 0.2+ | 2006 04 07 | G96 | 0.6−  | 0.0   | 2007 10 08 | 691 | 0.2− | 0.2+ |
| 2006 01 31 | G96 | 0.1− | 0.4+ | 2006 04 19 | G96 | 0.7−  | 0.2+  | 2007 10 21 | 691 | 0.4− | 0.3+ |
| 2006 01 31 | G96 | 0.7− | 0.4+ | 2006 04 19 | G96 | 0.2−  | 0.3+  | 2007 10 21 | 691 | 0.9− | 0.2+ |
| 2006 01 31 | G96 | 0.2− | 0.7− | 2006 04 19 | G96 | 0.6−  | 0.1−  | 2007 10 21 | 691 | 0.1+ | 0.2− |
| 2006 03 06 | 691 | 0.1+ | 0.2− | 2006 04 19 | G96 | 0.0   | 0.3+  | 2007 11 02 | G96 | 0.6+ | 0.0  |
| 2006 03 06 | 691 | 0.3+ | 0.0  | 2006 04 25 | 691 | 0.1+  | 0.2+  | 2007 11 02 | G96 | 0.9+ | 0.2− |
| 2006 03 06 | 691 | 0.4+ | 0.3− | 2006 04 25 | 691 | 0.1−  | 0.0   | 2007 11 02 | G96 | 0.1+ | 0.3− |
| 2006 03 24 | G96 | 0.1+ | 0.3+ | 2006 04 25 | 691 | 0.1−  | 0.3−  | 2007 11 02 | G96 | 0.4+ | 0.5− |
| 2006 03 24 | G96 | 0.2− | 0.2+ | 2006 05 05 | G96 | 0.4−  | 0.1−  | 2007 11 07 | G96 | 0.5+ | 0.0  |
| 2006 03 24 | G96 | 0.1− | 0.4+ | 2006 05 05 | G96 | 0.8+  | 0.5+  | 2007 11 07 | G96 | 0.4+ | 0.3− |
| 2006 03 24 | G96 | 0.3+ | 0.1+ | 2006 05 05 | G96 | 0.8+  | 0.5+  | 2007 11 07 | G96 | 0.4+ | 0.8− |
| 2006 04 07 | G96 | 0.1− | 0.1+ | 2006 05 05 | G96 | (1.9+ | 1.2+) | 2007 11 07 | G96 | 0.9+ | 0.7− |
| 2006 04 07 | G96 | 0.3− | 0.4+ | 2007 10 08 | 691 | 0.2+  | 0.3+  |            |     |      |      |
| 2006 04 07 | G96 | 0.4− | 0.2− | 2007 10 08 | 691 | 0.1+  | 0.1+  |            |     |      |      |

**2006 HJ<sub>39</sub> = 2007 VJ<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 63.60050   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23698233 | $\omega$ | 133.21073 | +0.75375807   | +0.65707706 |
| <i>a</i> | 2.5861799  | $\Omega$ | 185.73764 | −0.62804167   | +0.71584066 |
| <i>e</i> | 0.2540254  | <i>i</i> | 5.69766   | −0.19342292   | +0.23626657 |
| <i>P</i> | 4.16       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.0  | 0.0  | 2006 05 08 | 691 | 0.3+ | 0.6+ | 2007 11 05 | 704 | 0.1+ | 1.2+ |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2006 05 08 | 691 | 0.2+ | 0.1+ | 2007 11 05 | 704 | 0.4− | 0.4+ |
| 2002 06 02 | 644 | 0.1− | 0.3+ | 2007 10 20 | G96 | 0.2+ | 0.1+ | 2007 11 05 | 704 | 1.0− | 0.7+ |
| 2002 06 02 | 644 | 0.1− | 0.5+ | 2007 10 20 | G96 | 0.5+ | 0.1+ | 2007 11 05 | 704 | 0.2+ | 0.6+ |
| 2002 06 02 | 644 | 0.0  | 0.3+ | 2007 10 20 | G96 | 0.0  | 0.2+ | 2007 11 13 | 691 | 0.3+ | 0.1+ |
| 2006 04 21 | 691 | 0.1+ | 0.2+ | 2007 10 20 | G96 | 0.2+ | 0.0  | 2007 11 13 | 691 | 0.2+ | 0.0  |
| 2006 04 21 | 691 | 0.1− | 0.3+ | 2007 11 01 | 691 | 0.5− | 0.2− | 2007 11 13 | 691 | 0.2+ | 0.1+ |
| 2006 04 21 | 691 | 0.0  | 0.3+ | 2007 11 01 | 691 | 0.2− | 0.1− | 2007 12 04 | 704 | 0.1+ | 0.2− |
| 2006 04 25 | 691 | 0.0  | 0.3− | 2007 11 01 | 691 | 0.1+ | 0.4+ | 2007 12 04 | 704 | 0.4− | 1.2+ |
| 2006 04 25 | 691 | 0.2+ | 0.3+ | 2007 11 05 | 691 | 0.2− | 0.3+ | 2007 12 04 | 704 | 1.0+ | 2.0+ |
| 2006 04 25 | 691 | 0.1− | 0.4+ | 2007 11 05 | 691 | 0.4− | 0.0  | 2007 12 04 | 704 | 0.1− | 1.1+ |
| 2006 05 08 | 691 | 0.0  | 0.2+ | 2007 11 05 | 691 | 0.0  | 0.0  |            |     |      |      |

**2006 HD<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 119.11998  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24435599 | $\omega$ | 114.91733 | −0.39519903   | +0.91690162 |
| <i>a</i> | 2.5338879  | $\Omega$ | 131.68631 | −0.86743744   | −0.35252716 |
| <i>e</i> | 0.1642072  | <i>i</i> | 4.28199   | −0.30227474   | −0.18712570 |
| <i>P</i> | 4.03       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 21 | 691 | 0.1− | 0.3+ | 2006 05 03 | 691 | 0.8− | 0.6+ | 2007 09 18 | 691 | 1.4− | 0.6− |
| 2006 04 21 | 691 | 0.2+ | 0.1− | 2006 05 03 | 691 | 0.0  | 0.2+ | 2007 09 18 | 691 | 0.4+ | 0.6+ |

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M.P.O. 129757

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 21 | 691 | 0.3+ | 0.0  | 2006 05 03 | 691 | 0.5− | 0.5− | 2007 09 18 | 691 | 0.6+ | 0.1− |
| 2006 04 25 | 691 | 0.1+ | 0.2+ | 2006 05 07 | 691 | 0.4− | 0.1+ | 2007 10 21 | G96 | 0.8+ | 0.9− |
| 2006 04 25 | 691 | 0.3+ | 0.1− | 2006 05 07 | 691 | 0.3− | 0.3− | 2007 10 21 | G96 | 0.1− | 0.3− |
| 2006 04 25 | 691 | 0.3+ | 0.3+ | 2006 05 07 | 691 | 0.2+ | 0.2− | 2007 10 21 | G96 | 0.6+ | 1.0+ |
| 2006 04 29 | 691 | 0.0  | 0.2− | 2006 05 22 | 691 | 0.1+ | 0.2+ | 2007 10 21 | G96 | 1.0− | 0.5+ |
| 2006 04 29 | 691 | 0.4+ | 0.3+ | 2006 05 22 | 691 | 0.1− | 0.4− |            |     |      |      |
| 2006 04 29 | 691 | 0.3+ | 0.3− | 2006 05 22 | 691 | 0.2+ | 0.1− |            |     |      |      |

**2006 HK<sub>40</sub> = 2007 UH<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 104.10704  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28715837 | $\omega$ | 279.98246 | +0.24549664   | +0.96939015 |
| <i>a</i> | 2.2753859  | $\Omega$ | 4.23430   | −0.86827118   | +0.22160938 |
| <i>e</i> | 0.1698875  | <i>i</i> | 2.91804   | −0.43108764   | +0.10569774 |
| <i>P</i> | 3.43       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 25 | G96 | 0.4− | 0.4+ | 2006 05 07 | G96 | 0.4+ | 0.0  | 2007 10 31 | 691 | 0.2+ | 0.1+ |
| 2006 02 25 | G96 | 0.6− | 0.1+ | 2006 05 07 | G96 | 0.3+ | 0.1− | 2007 11 02 | 691 | 0.3− | 0.4− |
| 2006 02 25 | G96 | 0.4− | 0.3+ | 2006 05 07 | G96 | 0.2+ | 0.3− | 2007 11 02 | 691 | 0.0  | 0.1− |
| 2006 02 25 | G96 | 1.3+ | 1.2− | 2006 05 07 | G96 | 0.1+ | 0.1− | 2007 11 02 | 691 | 0.1− | 0.3− |
| 2006 04 21 | 703 | 0.4− | 0.3+ | 2007 10 11 | 691 | 0.0  | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.0  |
| 2006 04 21 | 703 | 0.4− | 0.3+ | 2007 10 11 | 691 | 0.1+ | 0.2− | 2007 11 04 | 691 | 0.1+ | 0.0  |
| 2006 04 21 | 703 | 0.0  | 0.3− | 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2006 04 21 | 703 | 0.1− | 1.1+ | 2007 10 19 | 691 | 0.2+ | 0.0  | 2007 11 19 | 691 | 0.2+ | 0.0  |
| 2006 04 24 | 699 | 1.3− | 0.6− | 2007 10 19 | 691 | 0.1+ | 0.2+ | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2006 04 24 | 699 | 1.4+ | 1.1+ | 2007 10 19 | 691 | 0.1+ | 0.3+ | 2007 11 19 | 691 | 0.2− | 0.1− |
| 2006 04 24 | 699 | 0.6+ | 0.9− | 2007 10 31 | 691 | 0.0  | 0.2+ |            |     |      |      |
| 2006 04 24 | 699 | 0.6− | 0.3+ | 2007 10 31 | 691 | 0.2− | 0.2+ |            |     |      |      |

**2006 HP<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 126.53861  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23638974 | $\omega$ | 151.30233 | −0.70027140   | +0.70977882 |
| <i>a</i> | 2.5905002  | $\Omega$ | 74.13171  | −0.66920140   | −0.61542349 |
| <i>e</i> | 0.0647840  | <i>i</i> | 4.55446   | −0.24857485   | −0.34273598 |
| <i>P</i> | 4.17       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 11 | 691 | 0.2+ | 0.6+ | 2006 04 24 | 691 | 0.8+ | 0.5− | 2006 05 23 | G96 | 0.9− | 0.2− |
| 2004 12 11 | 691 | 0.1− | 0.6+ | 2006 04 24 | 691 | 0.3+ | 0.2− | 2006 05 23 | G96 | 0.2− | 0.2− |
| 2004 12 11 | 691 | 0.0  | 0.3+ | 2006 04 24 | 691 | 0.1+ | 0.1+ | 2006 05 25 | 644 | 0.3+ | 0.2− |
| 2006 02 06 | 691 | 0.4+ | 0.5+ | 2006 05 01 | 691 | 0.1+ | 0.1+ | 2006 05 25 | 644 | 0.1+ | 0.4− |
| 2006 02 06 | 691 | 0.4+ | 0.0  | 2006 05 01 | 691 | 0.2+ | 0.0  | 2006 05 25 | 644 | 0.2− | 0.1+ |
| 2006 02 06 | 691 | 0.4+ | 0.6+ | 2006 05 01 | 691 | 1.3+ | 0.0  | 2007 09 12 | 703 | 0.7+ | 1.8+ |
| 2006 04 08 | 691 | 0.2+ | 0.3+ | 2006 05 03 | 691 | 0.0  | 0.2+ | 2007 09 12 | 703 | 0.9− | 0.4+ |
| 2006 04 08 | 691 | 0.1− | 0.4+ | 2006 05 03 | 691 | 0.2+ | 0.0  | 2007 09 12 | 703 | 1.1+ | 0.9+ |
| 2006 04 08 | 691 | 0.0  | 0.5+ | 2006 05 03 | 691 | 0.1+ | 0.2+ | 2007 09 12 | 703 | 0.4+ | 0.5+ |
| 2006 04 21 | 703 | 0.0  | 0.3− | 2006 05 05 | 691 | 0.2+ | 0.2+ | 2007 10 16 | G96 | 0.7− | 0.3− |
| 2006 04 21 | 703 | 0.0  | 0.6+ | 2006 05 05 | 691 | 0.1+ | 0.6+ | 2007 10 16 | G96 | 1.0− | 1.0− |
| 2006 04 21 | 703 | 0.6− | 0.7+ | 2006 05 05 | 691 | 0.1+ | 0.1+ | 2007 10 16 | G96 | 0.1− | 0.3− |
| 2006 04 21 | 703 | 1.8− | 0.6− | 2006 05 23 | G96 | 0.4− | 0.4− | 2007 10 16 | G96 | 0.7− | 0.2− |

**2006 HD<sub>66</sub> = 2007 RU<sub>149</sub> = 2007 TA<sub>288</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.28527   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22304648 | $\omega$ | 302.03057 | +0.97181877   | +0.12120695 |
| <i>a</i> | 2.6928105  | $\Omega$ | 51.81663  | +0.00458071   | +0.84781117 |
| <i>e</i> | 0.2369441  | <i>i</i> | 14.90492  | −0.23568475   | +0.51626069 |
| <i>P</i> | 4.42       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 24 | 691 | 0.1+ | 0.0  | 2007 09 14 | 703 | 1.2− | 0.0  | 2007 10 19 | 703 | 0.2− | 0.3− |
| 2006 04 24 | 691 | 0.4+ | 0.1− | 2007 09 14 | 703 | 0.6− | 0.1− | 2007 11 02 | 703 | 1.0+ | 0.7+ |
| 2006 04 24 | 691 | 0.1− | 0.0  | 2007 09 14 | 703 | 0.7− | 0.2− | 2007 11 02 | 703 | 0.6+ | 0.3+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 05 01 | 691 | 0.3− | 0.1+ | 2007 10 10 | A50 | 0.0   | 0.7−  | 2007 11 02 | 703 | 0.2+ | 1.2+ |
| 2006 05 01 | 691 | 0.1− | 0.2+ | 2007 10 10 | A50 | 1.0−  | 0.4−  | 2007 11 02 | 703 | 0.9+ | 0.9+ |
| 2006 05 01 | 691 | 0.0  | 0.1− | 2007 10 10 | A50 | 0.8−  | 0.6−  | 2007 11 17 | 703 | 0.9− | 0.2− |
| 2006 05 05 | 691 | 0.1− | 0.1− | 2007 10 10 | A50 | (0.3− | 1.9−) | 2007 11 17 | 703 | 0.2+ | 0.1− |
| 2006 05 05 | 691 | 0.0  | 0.1− | 2007 10 11 | 703 | 0.1−  | 0.4−  | 2007 11 17 | 703 | 0.1+ | 0.2+ |
| 2006 05 05 | 691 | 0.0  | 0.1− | 2007 10 11 | 703 | 0.1+  | 0.0   | 2007 11 17 | 703 | 1.0− | 0.7− |
| 2007 09 12 | 703 | 0.4− | 0.0  | 2007 10 11 | 703 | 0.2+  | 0.5−  | 2007 11 29 | 704 | 0.1+ | 0.3− |
| 2007 09 12 | 703 | 0.2− | 0.0  | 2007 10 11 | 703 | 0.1−  | 0.1−  | 2007 11 29 | 704 | 0.2− | 0.2− |
| 2007 09 12 | 703 | 0.2+ | 0.6− | 2007 10 15 | 699 | 0.3−  | 0.4+  | 2007 11 29 | 704 | 0.1+ | 0.1+ |
| 2007 09 12 | 703 | 0.7− | 0.6− | 2007 10 15 | 699 | 0.1−  | 0.1−  | 2007 11 29 | 704 | 0.5+ | 0.4− |
| 2007 09 14 | 703 | 1.3+ | 1.0+ | 2007 10 15 | 699 | 0.2−  | 0.2+  | 2007 12 04 | 704 | 0.6+ | 0.3+ |
| 2007 09 14 | 703 | 0.6+ | 0.7+ | 2007 10 15 | 699 | 0.3+  | 0.4−  | 2007 12 04 | 704 | 0.6+ | 0.3− |
| 2007 09 14 | 703 | 1.2+ | 0.5+ | 2007 10 19 | 703 | 0.1−  | 0.4−  | 2007 12 04 | 704 | 0.1+ | 0.3+ |
| 2007 09 14 | 703 | 1.3+ | 0.8+ | 2007 10 19 | 703 | (2.1− | 0.3−) | 2007 12 04 | 704 | 0.8− | 0.3+ |
| 2007 09 14 | 703 | 0.1+ | 0.2+ | 2007 10 19 | 703 | 0.3−  | 0.6−  |            |     |      |      |

**2006 HN<sub>70</sub> = 2007 VD<sub>139</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.86170   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.31296961 | $\omega$ | 221.38133 | +0.90108191   | +0.43166211 |
| <i>a</i> | 2.1484963  | $\Omega$ | 113.00105 | −0.38508121   | +0.84046424 |
| <i>e</i> | 0.1514370  | <i>i</i> | 2.58173   | −0.19940874   | +0.32754799 |
| <i>P</i> | 3.15       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 04 26 | 691 | 0.1+ | 0.4− | 2006 04 30 | 691 | 0.1+ | 0.3− | 2007 11 03 | 691 | 0.5− | 0.4+ |
| 2003 04 26 | 691 | 0.1+ | 0.0  | 2006 05 01 | 691 | 0.4+ | 0.1− | 2007 11 03 | 691 | 0.1+ | 0.1+ |
| 2003 04 26 | 691 | 0.1− | 0.5+ | 2006 05 01 | 691 | 0.1− | 0.4+ | 2007 11 03 | 691 | 0.1+ | 0.2+ |
| 2006 03 24 | 691 | 0.1− | 0.2+ | 2006 05 01 | 691 | 0.4− | 0.1− | 2007 11 08 | G96 | 0.1− | 0.2+ |
| 2006 03 24 | 691 | 0.4+ | 0.5− | 2007 10 08 | 691 | 0.4− | 0.1+ | 2007 11 08 | G96 | 0.3+ | 0.2− |
| 2006 03 24 | 691 | 0.1+ | 0.3− | 2007 10 08 | 691 | 0.5− | 0.5+ | 2007 11 08 | G96 | 0.2+ | 0.1− |
| 2006 04 25 | 691 | 0.2− | 0.5+ | 2007 10 08 | 691 | 0.0  | 0.5− | 2007 11 08 | G96 | 0.1+ | 0.1− |
| 2006 04 25 | 691 | 0.6+ | 0.2− | 2007 11 02 | D29 | 0.2+ | 0.7− | 2007 11 17 | 703 | 0.6+ | 0.2− |
| 2006 04 25 | 691 | 0.0  | 0.5+ | 2007 11 02 | D29 | 1.5+ | 0.1+ | 2007 11 17 | 703 | 1.0− | 0.3− |
| 2006 04 30 | 691 | 0.2− | 0.1− | 2007 11 02 | D29 | 0.3+ | 0.5− | 2007 11 17 | 703 | 1.0+ | 0.5− |
| 2006 04 30 | 691 | 0.2− | 0.3+ | 2007 11 02 | D29 | 0.0  | 0.3+ | 2007 11 17 | 703 | 0.9+ | 0.3+ |

**2006 HH<sub>74</sub> = 2003 WM<sub>63</sub> = 2007 TS<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.96503   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22453791 | $\omega$ | 286.05585 | +0.94476531   | +0.24575877 |
| <i>a</i> | 2.6808731  | $\Omega$ | 60.16723  | −0.10901327   | +0.85957860 |
| <i>e</i> | 0.1745567  | <i>i</i> | 14.47569  | −0.30908676   | +0.44802596 |
| <i>P</i> | 4.39       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.5− | 0.5− | 2006 04 29 | 691 | 0.2+ | 0.2+ | 2007 10 06 | E12 | 0.4− | 0.2+ |
| 2003 11 19 | 691 | 0.4− | 0.8− | 2006 04 29 | 691 | 0.1+ | 0.1− | 2007 10 06 | E12 | 0.2− | 0.5− |
| 2003 11 19 | 691 | 0.2− | 0.7− | 2007 09 14 | 703 | 0.1− | 0.2− | 2007 10 06 | E12 | 0.5+ | 0.2+ |
| 2003 11 21 | 704 | 0.4− | 1.4+ | 2007 09 14 | 703 | 0.5− | 0.4+ | 2007 10 12 | 703 | 0.3+ | 0.4+ |
| 2003 11 21 | 704 | 1.4+ | 0.1− | 2007 09 14 | 703 | 0.4− | 0.3+ | 2007 10 12 | 703 | 0.9− | 0.6+ |
| 2003 11 21 | 704 | 0.2− | 0.4+ | 2007 09 14 | 703 | 0.7+ | 0.9− | 2007 10 12 | 703 | 0.0  | 0.4− |
| 2003 11 21 | 704 | 0.2+ | 0.3+ | 2007 10 05 | E12 | 0.1− | 0.8+ | 2007 10 12 | 703 | 0.6− | 0.5− |
| 2006 04 25 | 691 | 0.3− | 0.0  | 2007 10 05 | E12 | 0.7+ | 0.2+ | 2007 10 12 | 703 | 0.1− | 0.3+ |
| 2006 04 25 | 691 | 0.0  | 0.1+ | 2007 10 05 | E12 | 0.5+ | 0.4− | 2007 10 12 | 703 | 0.0  | 0.4+ |
| 2006 04 25 | 691 | 0.0  | 0.1+ | 2007 10 05 | E12 | 0.4− | 0.6− | 2007 10 12 | 703 | 0.1+ | 0.2− |
| 2006 04 29 | 691 | 0.1+ | 0.0  | 2007 10 06 | E12 | 1.0+ | 0.2− | 2007 10 12 | 703 | 0.2− | 0.1+ |

**2006 HN<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.52085 |  | (2000.0) | <b>P</b> | <b>Q</b> </ |
|----------|----------|--|----------|----------|-------------|
|----------|----------|--|----------|----------|-------------|

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 04 25 | 691 | 0.2− | 0.2− | 2006 05 07 | 691 | 0.1− | 0.2+ | 2006 05 27 | 703 | 0.8+  | 0.7−  |
| 2006 04 25 | 691 | 0.2− | 0.0  | 2006 05 07 | 691 | 0.9+ | 0.4+ | 2007 09 14 | 703 | (1.0+ | 2.3+) |
| 2006 04 25 | 691 | 0.3− | 0.1− | 2006 05 07 | 691 | 0.1− | 0.3+ | 2007 09 14 | 703 | 0.5−  | 0.4+  |
| 2006 04 29 | 691 | 0.4− | 0.1− | 2006 05 08 | 691 | 0.0  | 0.3+ | 2007 09 14 | 703 | 0.5+  | 0.3+  |
| 2006 04 29 | 691 | 0.0  | 0.3− | 2006 05 08 | 691 | 0.3+ | 0.3+ | 2007 09 14 | 703 | 0.0   | 0.1−  |
| 2006 04 29 | 691 | 0.1− | 0.1− | 2006 05 08 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 703 | 0.3−  | 0.7+  |
| 2006 05 04 | 691 | 0.1+ | 0.1− | 2006 05 27 | 703 | 0.7− | 0.3+ | 2007 10 12 | 703 | 0.1−  | 0.2+  |
| 2006 05 04 | 691 | 0.2− | 0.1− | 2006 05 27 | 703 | 0.0  | 0.3− | 2007 10 12 | 703 | 0.1+  | 1.0−  |
| 2006 05 04 | 691 | 0.1+ | 0.2+ | 2006 05 27 | 703 | 0.1+ | 0.4− | 2007 10 12 | 703 | 0.4+  | 0.5−  |

**2006 HN<sub>78</sub> = 2007 TJ<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 38.31232   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21284328 | $\omega$ | 105.23290 | +0.58134981   | +0.81226607 |
| <i>a</i> | 2.7781952  | $\Omega$ | 200.53248 | −0.78880051   | −0.54831273 |
| <i>e</i> | 0.2290383  | <i>i</i> | 7.78336   | −0.19956491   | +0.19893963 |
| <i>P</i> | 4.63       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 26 | G96 | 0.4+ | 0.3+ | 2007 09 03 | 703 | 0.2+ | 1.8+ | 2007 10 12 | G96 | 0.1+ | 0.3− |
| 2006 04 26 | G96 | 0.3+ | 0.0  | 2007 09 03 | 703 | 0.4− | 0.8− | 2007 10 12 | G96 | 0.6+ | 0.8− |
| 2006 04 26 | G96 | 0.3− | 0.4− | 2007 09 03 | 703 | 0.6+ | 0.2+ | 2007 10 12 | G96 | 1.6+ | 0.5+ |
| 2006 04 26 | G96 | 0.6− | 0.1− | 2007 09 03 | 703 | 0.5− | 0.6− | 2007 10 12 | G96 | 0.4+ | 0.3− |
| 2006 04 30 | 691 | 0.3− | 0.0  | 2007 10 06 | 691 | 0.1− | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.2+ |
| 2006 04 30 | 691 | 0.2+ | 0.2+ | 2007 10 06 | 691 | 0.5+ | 0.1+ | 2007 11 07 | G96 | 0.2− | 0.1+ |
| 2006 04 30 | 691 | 0.2− | 0.2− | 2007 10 06 | 691 | 0.2− | 0.1+ | 2007 11 07 | G96 | 0.4− | 0.2+ |
| 2006 05 01 | 691 | 0.2+ | 0.1− | 2007 10 08 | 691 | 0.3− | 0.5− | 2007 11 07 | G96 | 0.2− | 0.2+ |
| 2006 05 01 | 691 | 0.3+ | 0.1+ | 2007 10 08 | 691 | 0.1− | 0.1− |            |     |      |      |
| 2006 05 01 | 691 | 0.1− | 0.0  | 2007 10 08 | 691 | 0.3− | 0.0  |            |     |      |      |

**2006 HJ<sub>87</sub> = 2007 TS<sub>387</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 61.68890   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24265133 | $\omega$ | 100.98611 | +0.50387151   | +0.86344593 |
| <i>a</i> | 2.5457413  | $\Omega$ | 199.32698 | −0.81809490   | +0.46813319 |
| <i>e</i> | 0.2337493  | <i>i</i> | 4.15358   | −0.27718990   | +0.18791605 |
| <i>P</i> | 4.06       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 644 | 0.1+ | 0.5+ | 2006 03 25 | 691 | 0.0  | 0.3+ | 2007 10 04 | 691 | 0.6− | 0.0  |
| 2002 04 08 | 644 | 0.1+ | 0.5+ | 2006 03 25 | 691 | 0.1+ | 0.3− | 2007 10 13 | 691 | 0.3− | 0.3+ |
| 2002 04 08 | 644 | 0.6+ | 0.4+ | 2006 04 30 | 691 | 0.1+ | 0.1− | 2007 10 13 | 691 | 0.0  | 0.7+ |
| 2002 04 12 | 291 | 0.3+ | 0.3+ | 2006 04 30 | 691 | 0.1− | 0.1+ | 2007 10 13 | 691 | 0.3− | 0.1+ |
| 2002 04 12 | 291 | 0.5− | 0.3+ | 2006 04 30 | 691 | 0.1+ | 0.2− | 2007 10 18 | G96 | 0.5+ | 0.1+ |
| 2002 04 12 | 291 | 0.2+ | 0.1− | 2006 05 01 | 691 | 0.1− | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.3− |
| 2003 10 21 | 691 | 0.3+ | 0.1+ | 2006 05 01 | 691 | 0.1+ | 0.2+ | 2007 10 18 | G96 | 0.4+ | 0.1− |
| 2003 10 21 | 691 | 0.1− | 0.0  | 2006 05 01 | 691 | 0.1+ | 0.5+ | 2007 10 21 | 691 | 0.1− | 0.4+ |
| 2003 10 21 | 691 | 0.2− | 0.1+ | 2007 10 04 | 691 | 0.3− | 0.8+ | 2007 10 21 | 691 | 0.1+ | 0.1+ |
| 2006 03 25 | 691 | 0.3− | 0.1− | 2007 10 04 | 691 | 0.2− | 0.2+ | 2007 10 21 | 691 | 0.0  | 0.1− |

**2006 HO<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 94.40244   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23877041 | $\omega$ | 221.50546 | +0.01418398   | +0.98039445 |
| <i>a</i> | 2.5732524  | $\Omega$ | 50.27699  | −0.83678217   | +0.11923339 |
| <i>e</i> | 0.1110318  | <i>i</i> | 14.80458  | −0.54735218   | −0.15687611 |
| <i>P</i> | 4.13       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 26 | 691 | 0.1− | 0.2+ | 2006 05 16 | 644 | 0.5+ | 0.5− | 2006 06 02 | G96 | 0.1− | 0.3− |
| 2006 04 26 | 691 | 1.5+ | 0.4− | 2006 05 16 | E12 | 0.3− | 0.1+ | 2006 06 02 | G96 | 0.4− | 0.7− |
| 2006 04 26 | 691 | 0.1− | 0.1− | 2006 05 16 | E12 | 1.0− | 0.1+ | 2006 06 15 | 644 | 0.4− | 0.2+ |
| 2006 04 28 | 704 | 0.4− | 1.1+ | 2006 05 16 | E12 | 0.0  | 0.0  | 2006 06 15 | 644 | 0.4− | 0.2− |
| 2006 04 28 | 704 | 1.1− | 0.2+ | 2006 05 16 | E12 | 0.1− | 0.1+ | 2006 06 15 | 644 | 0.1− | 0.0  |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 04 28 | 704 | 0.6+ | 0.1+ | 2006 05 18 | 644 | 0.1− | 0.3− | 2007 09 12 | 703 | 1.1+  | 1.3−  |
| 2006 04 30 | 691 | 0.1− | 0.3+ | 2006 05 18 | 644 | 0.2+ | 0.0  | 2007 09 12 | 703 | 0.1−  | 0.4−  |
| 2006 04 30 | 691 | 0.0  | 0.2+ | 2006 05 18 | 644 | 0.0  | 0.2− | 2007 09 12 | 703 | 1.0−  | 0.3−  |
| 2006 04 30 | 691 | 0.0  | 0.2+ | 2006 05 20 | 691 | 0.1+ | 0.2− | 2007 09 12 | 703 | 0.6−  | 0.5−  |
| 2006 05 01 | 704 | 0.3− | 0.3+ | 2006 05 20 | 691 | 0.7+ | 1.2− | 2007 10 11 | 703 | 0.6+  | 0.9+  |
| 2006 05 01 | 704 | 0.1− | 0.4+ | 2006 05 20 | 691 | 0.3+ | 0.3+ | 2007 10 11 | 703 | 0.5+  | 1.0+  |
| 2006 05 01 | 704 | 0.4− | 0.6− | 2006 05 27 | 704 | 0.9+ | 0.5+ | 2007 10 11 | 703 | 0.3+  | 0.1−  |
| 2006 05 08 | 691 | 0.1+ | 0.0  | 2006 05 27 | 704 | 0.1− | 0.4− | 2007 10 11 | 703 | 0.7+  | 1.2+  |
| 2006 05 08 | 691 | 0.1+ | 0.0  | 2006 05 27 | 704 | 1.2+ | 1.1+ | 2007 10 17 | 699 | 0.5−  | 0.9−  |
| 2006 05 08 | 691 | 0.1+ | 0.2− | 2006 05 27 | 704 | 1.3− | 1.3+ | 2007 10 17 | 699 | 1.4−  | 0.5+  |
| 2006 05 16 | 644 | 0.3+ | 0.2− | 2006 06 02 | G96 | 0.1+ | 0.1− | 2007 10 17 | 699 | 0.1+  | 0.3+  |
| 2006 05 16 | 644 | 0.5+ | 0.3− | 2006 06 02 | G96 | 0.4− | 0.3− | 2007 10 17 | 699 | (0.1− | 2.4+) |

**2006 HN<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.43274   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18348918 | $\omega$ | 351.54303 | −0.19828529   | +0.97975275 |
| <i>a</i> | 3.0671081  | $\Omega$ | 267.01696 | −0.89763421   | −0.19287174 |
| <i>e</i> | 0.1681510  | <i>i</i> | 1.58966   | −0.39361881   | −0.05371259 |
| <i>P</i> | 5.37       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 23 | 691 | 0.5+ | 0.2+ | 2006 05 04 | 691 | 0.1− | 0.1+ | 2007 08 24 | 691 | 0.3− | 0.3− |
| 1997 11 23 | 691 | 0.5− | 1.0+ | 2006 05 04 | 691 | 0.2+ | 0.1+ | 2007 08 24 | 691 | 0.0  | 0.1− |
| 1997 11 23 | 691 | 1.1− | 2.0+ | 2006 05 20 | 691 | 0.3+ | 0.2+ | 2007 09 14 | 691 | 0.1+ | 0.1+ |
| 2006 04 07 | 691 | 0.2− | 0.7+ | 2006 05 20 | 691 | 0.2+ | 0.4+ | 2007 09 14 | 691 | 0.0  | 0.2+ |
| 2006 04 07 | 691 | 0.4− | 0.1+ | 2006 05 20 | 691 | 0.4+ | 0.2+ | 2007 09 14 | 691 | 0.1− | 0.1+ |
| 2006 04 07 | 691 | 0.5− | 0.1+ | 2006 06 02 | G96 | 0.5+ | 0.2+ | 2007 10 11 | G96 | 0.5+ | 0.1+ |
| 2006 04 26 | 691 | 0.1− | 0.2+ | 2006 06 02 | G96 | 0.3+ | 0.1− | 2007 10 11 | G96 | 0.0  | 0.1− |
| 2006 04 26 | 691 | 0.1+ | 0.1+ | 2006 06 02 | G96 | 0.2+ | 0.2− | 2007 10 11 | G96 | 0.6+ | 0.0  |
| 2006 04 26 | 691 | 0.1+ | 0.3+ | 2006 06 02 | G96 | 0.4+ | 0.5+ | 2007 10 11 | G96 | 0.7+ | 0.2− |
| 2006 05 03 | G96 | 0.2− | 0.0  | 2006 06 02 | G96 | 0.0  | 0.0  | 2007 11 07 | G96 | 0.0  | 0.3− |
| 2006 05 03 | G96 | 0.0  | 0.2+ | 2006 06 02 | G96 | 0.2− | 0.5− | 2007 11 07 | G96 | 0.5+ | 0.2− |
| 2006 05 03 | G96 | 0.2+ | 0.1+ | 2006 06 02 | G96 | 0.1− | 0.2+ | 2007 11 07 | G96 | 0.0  | 0.2+ |
| 2006 05 03 | G96 | 0.1− | 0.2+ | 2006 06 02 | G96 | 0.6+ | 0.4− | 2007 11 07 | G96 | 0.4+ | 0.1− |
| 2006 05 04 | 691 | 0.3+ | 0.1+ | 2007 08 24 | 691 | 0.2− | 0.1− |            |     |      |      |

**2006 HM<sub>96</sub> = 2007 UE<sub>98</sub> = 2007 UC<sub>125</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 87.11795   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25920858 | $\omega$ | 246.05563 | +0.52036745   | +0.85297351 |
| <i>a</i> | 2.4361450  | $\Omega$ | 55.36296  | −0.76441037   | +0.48650942 |
| <i>e</i> | 0.2023628  | <i>i</i> | 2.83320   | −0.38065012   | +0.18906289 |
| <i>P</i> | 3.80       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 03 | 691 | 0.1− | 0.2− | 2006 05 04 | 691 | 0.0  | 0.5+ | 2007 10 30 | 691 | 0.1− | 0.3− |
| 1998 03 03 | 691 | 0.0  | 0.1− | 2006 05 20 | G96 | 0.2+ | 0.1+ | 2007 10 30 | 691 | 0.6− | 0.0  |
| 1998 03 03 | 691 | 0.0  | 0.0  | 2006 05 20 | G96 | 0.0  | 0.1− | 2007 11 03 | 691 | 0.0  | 0.0  |
| 2003 10 23 | 695 | 0.3− | 0.5+ | 2006 05 20 | G96 | 0.2− | 0.0  | 2007 11 03 | 691 | 0.1− | 0.3+ |
| 2003 10 23 | 695 | 0.2− | 0.5+ | 2006 05 20 | G96 | 0.4− | 0.0  | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 2006 04 19 | G96 | 0.2+ | 0.4+ | 2007 09 10 | G96 | 0.2+ | 0.6− | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2006 04 19 | G96 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.0  | 0.3− | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2006 04 19 | G96 | 0.1− | 0.3+ | 2007 09 10 | G96 | 0.2+ | 0.3+ | 2007 11 18 | 691 | 0.2− | 0.2+ |
| 2006 04 19 | G96 | 0.1− | 0.0  | 2007 09 10 | G96 | 0.0  | 0.1+ | 2007 12 06 | G96 | 1.2− | 1.4+ |
| 2006 04 30 | 691 | 0.2+ | 0.4+ | 2007 10 17 | G96 | 0.3+ | 0.1+ | 2007 12 06 | G96 | 1.3+ | 0.7+ |
| 2006 04 30 | 691 | 0.4+ | 0.1+ | 2007 10 17 | G96 | 0.9+ | 0.3− | 2007 12 06 | G96 | 1.1+ | 0.2− |
| 2006 04 30 | 691 | 0.3+ | 0.2+ | 2007 10 17 | G96 | 0.2+ | 0.1+ | 2007 12 06 | G96 | 0.4+ | 0.2+ |
| 2006 05 04 | 691 | 0.1− | 0.2+ | 2007 10 17 | G96 | 0.4+ | 0.1− |            |     |      |      |
| 2006 05 04 | 691 | 0.1+ | 0.5+ | 2007 10 30 | 691 | 0.2− | 1.1+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129759

**2006 HU<sub>102</sub> = 2007 VA<sub>209</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |     | (2000.0) |      | <b>P</b>    |     | <b>Q</b>    |      |
|-----------------------------|-----|----------|------|-------------|-----|-------------|------|
| <i>n</i>                    |     | $\omega$ |      | +0.98803474 |     | +0.14878103 |      |
| <i>a</i>                    |     | $\Omega$ |      | -0.12369623 |     | +0.92180295 |      |
| <i>e</i>                    |     | <i>i</i> |      | -0.09212267 |     | +0.35797140 |      |
| <i>P</i>                    |     | <i>H</i> |      | 0.15        |     | <i>U</i>    |      |
| Residuals in seconds of arc |     |          |      |             |     |             |      |
| 2003 09 19                  | 691 | 0.0      | 0.2+ | 2006 04 30  | 691 | 0.2+        | 0.1+ |
| 2003 09 19                  | 691 | 0.1-     | 0.1- | 2006 05 02  | G96 | 0.3+        | 0.5+ |
| 2003 09 19                  | 691 | 0.1+     | 0.1- | 2006 05 02  | G96 | 0.1-        | 0.0  |
| 2004 12 19                  | G96 | 0.4-     | 0.0  | 2006 05 02  | G96 | 0.3-        | 0.1+ |
| 2004 12 19                  | G96 | 0.2+     | 0.5- | 2006 05 02  | G96 | 0.2-        | 0.3+ |
| 2004 12 19                  | G96 | 0.5-     | 0.4+ | 2006 05 21  | 691 | 0.2+        | 0.2+ |
| 2004 12 19                  | G96 | 0.1-     | 0.2+ | 2006 05 21  | 691 | 0.0         | 0.0  |
| 2005 01 19                  | 691 | 0.5+     | 0.3+ | 2006 05 21  | 691 | 0.2-        | 0.4+ |
| 2005 01 19                  | 691 | 0.5+     | 0.0  | 2007 10 09  | G96 | 0.5+        | 0.1- |
| 2005 01 19                  | 691 | 0.2-     | 0.2- | 2007 10 09  | G96 | 0.7+        | 0.1- |
| 2006 04 30                  | 691 | 0.2+     | 0.4- | 2007 10 09  | G96 | 0.3+        | 0.2- |
| 2006 04 30                  | 691 | 0.3+     | 0.3- | 2007 10 09  | G96 | 0.1+        | 0.1- |

**2006 HG<sub>107</sub> = 2007 TH<sub>354</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |     | (2000.0) |      | <b>P</b>    |     | <b>Q</b>    |      |
|-----------------------------|-----|----------|------|-------------|-----|-------------|------|
| <i>n</i>                    |     | $\omega$ |      | +0.58755774 |     | +0.76762879 |      |
| <i>a</i>                    |     | $\Omega$ |      | -0.60370299 |     | +0.62648460 |      |
| <i>e</i>                    |     | <i>i</i> |      | -0.53881221 |     | +0.13514098 |      |
| <i>P</i>                    |     | <i>H</i> |      | 0.15        |     | <i>U</i>    |      |
| Residuals in seconds of arc |     |          |      |             |     |             |      |
| 2002 11 27                  | 599 | 0.2+     | 0.4+ | 2006 05 19  | 703 | 0.2-        | 0.3+ |
| 2002 11 27                  | 599 | 0.1+     | 0.7- | 2006 05 19  | 703 | 0.2-        | 0.2+ |
| 2002 11 28                  | 599 | 0.1-     | 0.3+ | 2006 05 19  | 703 | 0.5-        | 0.7+ |
| 2002 11 28                  | 599 | 0.3-     | 0.2+ | 2006 05 19  | 703 | 0.6-        | 0.2- |
| 2006 04 30                  | 691 | 0.2+     | 0.2- | 2007 10 10  | 703 | 0.2+        | 0.1+ |
| 2006 04 30                  | 691 | 0.3+     | 0.0  | 2007 10 10  | 703 | 0.0         | 0.4+ |
| 2006 04 30                  | 691 | 0.4+     | 0.0  | 2007 10 10  | 703 | 0.4-        | 0.4- |
| 2006 05 05                  | 691 | 0.2+     | 0.1- | 2007 10 10  | 703 | 0.2-        | 0.7- |
| 2006 05 05                  | 691 | 0.6-     | 0.2+ | 2007 10 15  | 703 | 0.8+        | 0.2+ |
| 2006 05 05                  | 691 | 0.2+     | 0.0  | 2007 10 15  | 703 | 0.5+        | 0.2- |
| 2006 05 05                  | 699 | 1.2-     | 0.8+ | 2007 10 15  | 703 | 0.3-        | 0.5- |
| 2006 05 05                  | 699 | 0.5+     | 0.1- | 2007 10 15  | 703 | 0.1+        | 0.4- |
| 2006 05 05                  | 699 | 0.4+     | 0.7- | 2007 10 19  | 703 | 0.0         | 0.2- |
| 2006 05 05                  | 699 | 0.1+     | 0.9+ | 2007 10 19  | 703 | 0.4+        | 0.4- |

**2006 HF<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |     | (2000.0) |       | <b>P</b>    |     | <b>Q</b>    |      |
|-----------------------------|-----|----------|-------|-------------|-----|-------------|------|
| <i>n</i>                    |     | $\omega$ |       | -0.78935105 |     | +0.46644829 |      |
| <i>a</i>                    |     | $\Omega$ |       | -0.36958374 |     | -0.88021349 |      |
| <i>e</i>                    |     | <i>i</i> |       | -0.49023748 |     | -0.08746546 |      |
| <i>P</i>                    |     | <i>H</i> |       | 0.15        |     | <i>U</i>    |      |
| Residuals in seconds of arc |     |          |       |             |     |             |      |
| 2004 12 11                  | 703 | 0.0      | 0.2+  | 2006 05 18  | E12 | 0.4-        | 0.1- |
| 2004 12 11                  | 703 | 0.6+     | 0.0   | 2006 05 18  | E12 | 0.5-        | 0.0  |
| 2004 12 11                  | 703 | (0.2+    | 2.2+) | 2006 05 18  | E12 | 0.2-        | 0.4+ |
| 2004 12 11                  | 703 | 0.5-     | 1.5+  | 2006 05 24  | E12 | 0.1-        | 0.0  |
| 2006 04 24                  | E12 | 0.5-     | 0.0   | 2006 05 24  | E12 | 0.6-        | 0.4- |
| 2006 04 24                  | E12 | 0.1-     | 0.1-  | 2006 05 24  | E12 | 0.3-        | 0.2+ |
| 2006 04 24                  | E12 | 0.7+     | 1.3+  | 2006 05 24  | E12 | 0.0         | 0.0  |
| 2006 05 05                  | E12 | 0.2-     | 0.1+  | 2006 05 31  | E12 | 0.1+        | 0.3+ |
| 2006 05 05                  | E12 | 0.3+     | 0.6-  | 2006 05 31  | E12 | 0.2+        | 0.0  |

|            |     |     |      |            |     |      |      |            |     |      |      |
|------------|-----|-----|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 05 | E12 | 0.0 | 0.1- | 2006 05 31 | E12 | 0.6+ | 0.3- | 2007 10 16 | 703 | 0.1+ | 0.5- |
| 2006 05 05 | E12 | 0.0 | 0.2- | 2006 06 14 | E12 | 0.4+ | 0.3+ | 2007 10 16 | 703 | 0.1- | 0.6+ |

**2006 HD<sub>117</sub> = 2007 VC<sub>284</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |     | (2000.0) |      | <b>P</b>    |     | <b>Q</b>    |      |
|-----------------------------|-----|----------|------|-------------|-----|-------------|------|
| <i>n</i>                    |     | $\omega$ |      | +0.75102234 |     | +0.64065171 |      |
| <i>a</i>                    |     | $\Omega$ |      | -0.52178106 |     | +0.72414436 |      |
| <i>e</i>                    |     | <i>i</i> |      | -0.40461088 |     | +0.25530440 |      |
| <i>P</i>                    |     | <i>H</i> |      | 0.15        |     | <i>U</i>    |      |
| Residuals in seconds of arc |     |          |      |             |     |             |      |
| 2006 04 26                  | G96 | 0.1+     | 0.2- | 2006 05 08  | G96 | 0.2-        | 0.1+ |
| 2006 04 26                  | G96 | 0.4-     | 0.2- | 2006 05 19  | G96 | 0.1+        | 0.3+ |
| 2006 04 26                  | G96 | 0.1-     | 0.2- | 2006 05 19  | G96 | 0.3-        | 0.3+ |
| 2006 04 26                  | G96 | 0.4+     | 0.2- | 2006 05 19  | G96 | 0.2+        | 0.2+ |
| 2006 05 08                  | G96 | 0.3+     | 0.2- | 2006 05 19  | G96 | 0.3-        | 0.1+ |
| 2006 05 08                  | G96 | 0.0      | 0.1+ | 2006 06 22  | 644 | 0.2-        | 0.2- |
| 2006 05 08                  | G96 | 0.2+     | 0.2+ | 2006 06 22  | 644 | 0.3+        | 0.1- |

**2006 HO<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |     | (2000.0) |      | <b>P</b>    |     | <b>Q</b>    |      |
|-----------------------------|-----|----------|------|-------------|-----|-------------|------|
| <i>n</i>                    |     | $\omega$ |      | -0.94587597 |     | -0.30693113 |      |
| <i>a</i>                    |     | $\Omega$ |      | +0.27918838 |     | -0.93519857 |      |
| <i>e</i>                    |     | <i>i</i> |      | +0.16544635 |     | -0.17662650 |      |
| <i>P</i>                    |     | <i>H</i> |      | 0.15        |     | <i>U</i>    |      |
| Residuals in seconds of arc |     |          |      |             |     |             |      |
| 2001 03 29                  | 608 | 0.2+     | 0.3- | 2006 05 08  | 691 | 0.7+        | 0.6+ |
| 2001 03 29                  | 608 | 0.1-     | 0.0  | 2006 05 08  | 691 | 0.0         | 0.1+ |
| 2001 03 29                  | 608 | 0.2-     | 0.4- | 2006 05 28  | G96 | 0.0         | 0.4- |
| 2006 04 19                  | 691 | 0.1-     | 0.2+ | 2006 05 28  | G96 | 0.1-        | 0.6- |
| 2006 04 19                  | 691 | 0.2-     | 0.5+ | 2006 05 28  | G96 | 0.3+        | 0.1+ |
| 2006 04 30                  | 691 | 0.2+     | 0.1+ | 2006 05 28  | G96 | 0.4-        | 0.2- |
| 2006 04 30                  | 691 | 0.2+     | 0.1+ | 2006 05 28  | G96 | 0.0         | 0.0  |
| 2006 04 30                  | 691 | 0.1+     | 0.2+ | 2006 05 28  | G96 | 0.1-        | 0.5- |
| 2006 04 30                  | 691 | 0.0      | 0.4+ | 2006 05 28  | G96 | 0.1+        | 0.0  |
| 2006 05 08                  | 691 | 0.1-     | 0.0  | 2006 05 28  | G96 | 0.4-        | 0.2- |

**2006 HO<sub>127</sub> = 2007 VX<sub>139</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |     | (2000.0) |      | <b>P</b>    |     | <b>Q</b>    |      |
|-----------------------------|-----|----------|------|-------------|-----|-------------|------|
| <i>n</i>                    |     | $\omega$ |      | +0.92041792 |     | +0.38822561 |      |
| <i>a</i>                    |     | $\Omega$ |      | -0.37862182 |     | +0.85597532 |      |
| <i>e</i>                    |     | <i>i</i> |      | -0.09734663 |     | +0.34144859 |      |
| <i>P</i>                    |     | <i>H</i> |      | 0.15        |     | <i>U</i>    |      |
| Residuals in seconds of arc |     |          |      |             |     |             |      |
| 2003 08 28                  | 644 | 0.1+     | 0.2- | 2006 05 01  | 695 | 0.3+        | 0.1- |
| 2003 08 28                  | 644 | 0.2-     | 0.0  | 2006 05 20  | 691 | 0.3+        | 0.4+ |
| 2003 08 28                  | 644 | 0.1+     | 0.2- | 2006 05 20  | 691 | 0.2-        | 0.5+ |
| 2003 08 28                  | 644 | 0.0      | 0.1+ | 2006 05 20  | 691 | 0.1+        | 0.2+ |
| 2003 08 28                  | 644 | 0.3+     | 0.0  | 2007 10 09  | G96 | 0.3-        | 0.4+ |
| 2003 08 28                  | 644 | 0.2-     | 0.2+ | 2007 10 09  | G96 | 0.2-        | 0.1- |
| 2006 04 28                  | 807 | 0.2+     | 0.2- | 2007 10 09  | G96 | 0.3+        | 0.1- |
| 2006 04 28                  | 807 | 0.7-     | 0.3- | 2007 10 09  | G96 | 0.3+        | 0.7- |
| 2006 05 01                  | 695 | 0.2+     | 0.1+ | 2007 11 03  | 691 | 0.3-        | 0.2+ |

**2006 JK = 2007 TN<sub>175</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 140.21798  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.30048133 | $\omega$ | 233.51789 | -0.32593463   | +0.94474655 |  |
| <i>a</i> | 2.2076203  | $\Omega$ | 17.55879  | -0.82612513   | -0.26665374 |  |
| <i>e</i> | 0.0979791  | <i>i</i> | 6.65010   | -0.45965626   | -0.19065609 |  |
| <i>P</i> | 3.28       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 07 | 691 | 0.3+  | 0.2+  | 2006 05 05 | 699 | 0.5- | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.3+ |
| 2006 04 07 | 691 | 0.2+  | 0.3+  | 2006 05 24 | 699 | 0.1- | 0.7+ | 2007 10 12 | 691 | 0.2- | 0.0  |
| 2006 04 07 | 691 | 0.3+  | 0.2+  | 2006 05 24 | 699 | 0.2+ | 0.4- | 2007 10 12 | 691 | 0.1- | 0.2- |
| 2006 05 01 | 428 | (1.6- | 0.0 ) | 2006 05 24 | 699 | 0.7+ | 0.1- | 2007 11 07 | G96 | 0.0  | 0.0  |
| 2006 05 01 | 428 | 0.7-  | 0.6+  | 2006 05 24 | 699 | 0.5- | 0.5- | 2007 11 07 | G96 | 0.4+ | 0.0  |
| 2006 05 02 | 428 | 1.4-  | 0.1-  | 2007 10 04 | 691 | 0.3- | 0.0  | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2006 05 02 | 428 | 0.4+  | 0.9+  | 2007 10 04 | 691 | 0.1+ | 0.2- | 2007 11 07 | G96 | 0.2- | 0.1+ |
| 2006 05 04 | 428 | 0.9+  | 0.9-  | 2007 10 04 | 691 | 0.7- | 0.3+ | 2007 11 08 | G96 | 0.1+ | 0.1- |
| 2006 05 05 | 699 | 0.6+  | 0.4-  | 2007 10 08 | 691 | 0.5- | 0.5- | 2007 11 08 | G96 | 0.5+ | 0.3- |
| 2006 05 05 | 699 | 0.9-  | 0.2+  | 2007 10 08 | 691 | 0.1- | 0.1- | 2007 11 08 | G96 | 0.4+ | 0.1- |
| 2006 05 05 | 699 | 0.9-  | 0.3-  | 2007 10 08 | 691 | 1.0+ | 1.3+ | 2007 11 08 | G96 | 0.5+ | 0.0  |

**2006 JB<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 145.68923  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.30192942 | $\omega$ | 199.83538 | -0.44847775   | +0.89154355 |  |
| <i>a</i> | 2.2005560  | $\Omega$ | 43.58206  | -0.80713012   | -0.37350923 |  |
| <i>e</i> | 0.1132724  | <i>i</i> | 5.27551   | -0.38393837   | -0.25620491 |  |
| <i>P</i> | 3.26       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 04 08 | 691 | 0.6+  | 0.3+  | 2006 05 03 | G96 | 0.2-  | 0.1-  | 2007 10 12 | 691 | 0.5+ | 1.2+ |
| 2006 04 08 | 691 | 0.5+  | 0.2+  | 2006 05 03 | G96 | 0.2-  | 0.1+  | 2007 10 12 | 691 | 0.2- | 0.2- |
| 2006 04 08 | 691 | 0.5+  | 0.2+  | 2006 05 03 | G96 | 0.3-  | 0.1+  | 2007 10 12 | 691 | 0.1+ | 0.0  |
| 2006 04 19 | G96 | 0.1-  | 0.2+  | 2006 05 03 | G96 | 0.3-  | 0.1-  | 2007 10 20 | 691 | 0.0  | 0.3- |
| 2006 04 19 | G96 | 0.2-  | 0.2+  | 2006 05 04 | G96 | 0.1+  | 0.3-  | 2007 10 20 | 691 | 0.2- | 0.0  |
| 2006 04 19 | G96 | 0.1-  | 0.3+  | 2006 05 04 | G96 | 0.3-  | 0.5-  | 2007 10 20 | 691 | 1.1- | 0.4+ |
| 2006 04 19 | G96 | 0.3-  | 0.2+  | 2006 05 04 | G96 | 0.0   | 0.4-  | 2007 11 04 | G96 | 0.1+ | 0.1- |
| 2006 05 01 | 704 | 0.5+  | 0.5-  | 2006 05 04 | G96 | 0.1+  | 0.1-  | 2007 11 04 | G96 | 0.8+ | 0.1- |
| 2006 05 01 | 704 | 0.5-  | 0.4-  | 2006 05 05 | 699 | 0.3+  | 1.1+  | 2007 11 04 | G96 | 0.4+ | 0.4+ |
| 2006 05 01 | 704 | 0.9+  | 1.3+  | 2006 05 05 | 699 | (0.5+ | 1.6+) | 2007 11 04 | G96 | 0.0  | 0.1- |
| 2006 05 01 | 704 | (1.7+ | 0.6-) | 2006 05 05 | 699 | 0.8+  | 1.2+  | 2007 11 17 | G96 | 0.4+ | 0.2+ |
| 2006 05 02 | G96 | 0.0   | 0.0   | 2006 05 05 | 699 | 0.4-  | 0.8+  | 2007 11 17 | G96 | 0.7+ | 0.1+ |
| 2006 05 02 | G96 | 0.1-  | 0.1+  | 2006 05 25 | G96 | 0.8-  | 0.0   | 2007 11 17 | G96 | 0.5+ | 0.1- |
| 2006 05 02 | G96 | 0.0   | 0.1+  | 2006 05 25 | G96 | 0.6-  | 0.2-  | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2006 05 02 | G96 | 0.2-  | 0.0   | 2006 05 25 | G96 | 0.6-  | 0.0   | 2007 12 05 | G96 | 0.1+ | 0.2+ |
| 2006 05 03 | G96 | 0.4-  | 0.0   | 2006 05 25 | G96 | 0.5-  | 0.0   | 2007 12 05 | G96 | 0.3+ | 0.2- |
| 2006 05 03 | G96 | 0.0   | 0.2-  | 2007 10 08 | 691 | 0.3-  | 0.3+  | 2007 12 05 | G96 | 0.0  | 0.2+ |
| 2006 05 03 | G96 | 0.3-  | 0.2-  | 2007 10 08 | 691 | 0.5-  | 0.1+  | 2007 12 05 | G96 | 0.6+ | 0.1+ |
| 2006 05 03 | G96 | 0.3-  | 0.2-  | 2007 10 08 | 691 | 0.1+  | 0.1-  |            |     |      |      |

**2006 JM<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 171.17269  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.21477230 | $\omega$ | 24.53360  | -0.98773641   | -0.14882721 |  |
| <i>a</i> | 2.7615349  | $\Omega$ | 146.80002 | +0.12519758   | -0.93559648 |  |
| <i>e</i> | 0.0446195  | <i>i</i> | 4.94438   | +0.09328640   | -0.32017136 |  |
| <i>P</i> | 4.59       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 691 | 0.0  | 0.1+ | 2006 05 03 | 691 | 0.3+ | 0.3+ | 2006 05 22 | 691 | 0.2+ | 0.0  |
| 2003 10 20 | 691 | 0.1- | 0.1+ | 2006 05 03 | 691 | 0.3+ | 0.3- | 2006 05 22 | 691 | 0.7- | 0.5- |
| 2003 10 20 | 691 | 0.0  | 0.0  | 2006 05 03 | 691 | 0.2- | 0.2+ | 2006 05 22 | 691 | 0.2+ | 0.0  |
| 2005 01 16 | 691 | 0.4+ | 0.2+ | 2006 05 05 | 691 | 0.3- | 0.3+ | 2007 09 13 | G96 | 0.2- | 0.6+ |
| 2005 01 16 | 691 | 0.1+ | 0.3+ | 2006 05 05 | 691 | 0.0  | 0.0  | 2007 09 13 | G96 | 0.6- | 0.3+ |
| 2005 01 16 | 691 | 0.3- | 0.2+ | 2006 05 05 | 691 | 0.0  | 0.6- | 2007 09 13 | G96 | 0.2+ | 0.3- |

|            |     |      |      |            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-----|
| 2006 05 01 | 691 | 0.2+ | 0.0  | 2006 05 07 | 691 | 0.2- | 0.2+ | 2007 09 13 | G96 | 0.4+ | 0.0 |
| 2006 05 01 | 691 | 0.0  | 0.1- | 2006 05 07 | 691 | 0.1+ | 0.3+ |            |     |      |     |
| 2006 05 01 | 691 | 0.0  | 0.1+ | 2006 05 07 | 691 | 0.2+ | 0.5+ |            |     |      |     |

**2006 JR<sub>5</sub> = 2007 UK<sub>117</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 95.75076   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.25568516 | $\omega$ | 50.03620  | +0.21337727   | +0.97660984 |  |
| <i>a</i> | 2.4584745  | $\Omega$ | 232.30413 | -0.90626095   | +0.18772152 |  |
| <i>e</i> | 0.1589476  | <i>i</i> | 1.92074   | -0.36491262   | +0.10485156 |  |
| <i>P</i> | 3.85       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 15 | 691 | 0.1+ | 0.3+ | 2006 05 03 | G96 | 0.0  | 0.3- | 2007 10 31 | G96 | 0.1- | 0.3+ |
| 1999 09 15 | 691 | 0.1- | 0.2- | 2006 05 03 | G96 | 0.4- | 0.2- | 2007 10 31 | G96 | 0.5+ | 0.2+ |
| 1999 09 15 | 691 | 0.1- | 0.2- | 2006 05 03 | G96 | 0.2- | 0.2- | 2007 11 04 | G96 | 0.1+ | 0.1+ |
| 2002 04 12 | 691 | 1.1+ | 0.5+ | 2006 05 03 | G96 | 0.4- | 0.1- | 2007 11 04 | G96 | 0.2+ | 0.3+ |
| 2002 04 12 | 691 | 0.4- | 0.1- | 2006 05 04 | 691 | 0.0  | 0.1+ | 2007 11 04 | G96 | 0.2+ | 0.3+ |
| 2002 04 12 | 691 | 0.6- | 0.1+ | 2006 05 04 | 691 | 0.2+ | 0.5+ | 2007 11 04 | G96 | 0.4+ | 0.4+ |
| 2003 10 01 | 691 | 0.0  | 0.2- | 2006 05 04 | 691 | 0.2+ | 0.1- | 2007 11 07 | G96 | 0.4+ | 0.0  |
| 2003 10 01 | 691 | 0.1+ | 0.2- | 2007 10 09 | 691 | 0.3- | 0.3+ | 2007 11 07 | G96 | 0.2- | 0.5- |
| 2003 10 01 | 691 | 0.2+ | 0.2+ | 2007 10 09 | 691 | 0.5- | 0.2+ | 2007 11 07 | G96 | 0.7+ | 0.0  |
| 2006 04 07 | 691 | 0.1+ | 0.2- | 2007 10 09 | 691 | 0.4- | 0.9+ | 2007 11 07 | G96 | 0.0  | 0.1- |
| 2006 04 07 | 691 | 0.0  | 0.5+ | 2007 10 31 | G96 | 0.4+ | 0.3+ |            |     |      |      |
| 2006 04 07 | 691 | 0.0  | 0.4+ | 2007 10 31 | G96 | 0.2- | 0.2- |            |     |      |      |

**2006 JN<sub>15</sub> = 2007 UZ<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 110.91215  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.27333549 | $\omega$ | 34.87304  | +0.01026993   | +0.99968942 |  |
| <i>a</i> | 2.3514660  | $\Omega$ | 235.72562 | -0.92356984   | +0.00077891 |  |
| <i>e</i> | 0.1486136  | <i>i</i> | 1.57457   | -0.38329268   | +0.02490880 |  |
| <i>P</i> | 3.61       | <i>H</i> | 18.5      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 05 | 645 | 0.0  | 0.0  | 2006 05 06 | 691 | 0.2- | 0.4+ | 2007 10 31 | G96 | 0.5+ | 0.5- |
| 2002 03 05 | 645 | 0.0  | 0.0  | 2006 05 25 | G96 | 0.2+ | 0.1+ | 2007 10 31 | G96 | 0.4+ | 0.4- |
| 2006 05 02 | G96 | 0.3- | 0.3+ | 2006 05 25 | G96 | 0.0  | 0.1- | 2007 10 31 | G96 | 0.0  | 0.4- |
| 2006 05 02 | G96 | 0.0  | 0.3+ | 2006 05 25 | G96 | 0.3+ | 0.3- | 2007 10 31 | G96 | 0.4+ | 0.3- |
| 2006 05 02 | G96 | 0.4- | 0.0  | 2006 05 25 | G96 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.9+ | 0.2+ |
| 2006 05 02 | G96 | 0.0  | 0.1- | 2007 10 12 | 691 | 0.3- | 0.4+ | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2006 05 06 | 691 | 0.3+ | 0.1- | 2007 10 12 | 691 | 0.3- | 0.2+ | 2007 11 02 | G96 | 0.4+ | 0.2- |
| 2006 05 06 | 691 | 0.0  | 0.2- | 2007 10 12 | 691 | 0.3- | 0.1+ | 2007 11 02 | G96 | 0.3+ | 0.0  |

**2006 JG<sub>16</sub> = 2007 VR<sub>207</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 107.88166  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.26898936 | $\omega$ | 238.69043 | +0.08274784   | +0.99641409 |  |
| <i>a</i> | 2.3767271  | $\Omega$ | 36.06911  | -0.90384128   | +0.08249978 |  |
| <i>e</i> | 0.1736669  | <i>i</i> | 1.71855   | -0.41979010   | +0.01878179 |  |
| <i>P</i> | 3.66       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 02 | G96 | 0.2- | 0.2+ | 2006 06 01 | G96 | 0.4- | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.3+ |
| 2006 05 02 | G96 | 0.1+ | 0.4+ | 2006 06 01 | G96 | 0.3- | 0.1- | 2007 11 11 | G96 | 0.2- | 0.1+ |
| 2006 05 02 | G96 | 0.1+ | 0.4+ | 2007 10 16 | 691 | 0.5+ | 0.0  | 2007 11 11 | G96 | 0.1- | 0.3+ |
| 2006 05 02 | G96 | 0.5- | 0.4+ | 2007 10 16 | 691 | 0.1- | 0.2- | 2007 11 11 | G96 | 0.3+ | 0.5+ |
| 2006 05 06 | 691 | 0.2+ | 0.4+ | 2007 10 16 | 691 | 0.4- | 0.3+ | 2007 11 12 | G96 | 0.0  | 0.3+ |
| 2006 05 06 | 691 | 0.2+ | 0.5+ | 2007 11 11 | G96 | 0.2+ | 0.1+ | 2007 11 12 | G96 | 1.1- | 0.2+ |
| 2006 05 06 | 691 | 0.7+ | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.1+ | 2007 11 12 | G96 | 0.2- | 0.0  |
| 2006 06 01 | G96 | 1.5+ | 0.1- | 2007 11 11 | G96 | 0.4- | 0.4+ | 2007 11 12 | G96 | 0.3+ | 0.0  |
| 2006 06 01 | G96 | 0.5- | 0.0  | 2007 11 11 | G96 | 0.1- | 0.2+ |            |     |      |      |

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M.P.O. 129761

**2006 JN<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.80127   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.18287736 | $\omega$ | 240.17463 | +0.81130085 | +0.52169356 |          |          |
| <i>a</i> | 3.0739450  | $\Omega$ | 87.18647  | -0.40228084 | +0.82566114 |          |          |
| <i>e</i> | 0.1953747  | <i>i</i> | 15.31867  | -0.42421816 | +0.21475453 |          |          |
| <i>P</i> | 5.39       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |     |      |            |     |      |      |            |     |      |      |
|------------|-----|-----|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.0 | 0.1- | 2006 04 20 | 691 | 0.2+ | 0.2- | 2006 05 06 | 691 | 0.6- | 0.4- |
| 2002 10 05 | 645 | 0.0 | 0.1- | 2006 04 20 | 691 | 0.3- | 0.1- | 2006 05 06 | 691 | 0.1- | 0.0  |
| 2002 10 11 | 645 | 0.0 | 0.1- | 2006 04 20 | 691 | 0.5+ | 0.7+ | 2006 05 23 | 691 | 0.1+ | 0.1- |
| 2002 10 11 | 645 | 0.0 | 0.0  | 2006 04 20 | 291 | 0.1- | 0.2+ | 2006 05 23 | 691 | 0.2+ | 0.2- |
| 2002 10 31 | 645 | 0.0 | 0.0  | 2006 04 20 | 291 | 0.1+ | 0.0  | 2006 05 23 | 691 | 0.2- | 0.1- |
| 2002 10 31 | 645 | 0.0 | 0.0  | 2006 04 20 | 291 | 0.5+ | 0.0  | 2007 09 14 | E12 | 0.0  | 0.2- |
| 2002 11 07 | 645 | 0.0 | 0.0  | 2006 05 02 | 691 | 0.0  | 0.1- | 2007 09 14 | E12 | 0.1- | 0.2- |
| 2002 11 07 | 645 | 0.0 | 0.0  | 2006 05 02 | 691 | 0.1+ | 0.4- | 2007 09 14 | E12 | 0.4+ | 0.1+ |
| 2002 11 07 | 645 | 0.0 | 0.0  | 2006 05 02 | 691 | 0.0  | 0.4+ | 2007 09 14 | E12 | 0.3- | 0.4+ |
| 2002 11 07 | 645 | 0.0 | 0.0  | 2006 05 06 | 691 | 0.3- | 0.3+ |            |     |      |      |

**2006 JC<sub>29</sub> = 2007 WV<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 79.78508   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.26191030 | $\omega$ | 163.84420 | +0.58683673 | +0.80895347 |          |          |
| <i>a</i> | 2.4193628  | $\Omega$ | 142.06915 | -0.74902997 | +0.55872142 |          |          |
| <i>e</i> | 0.1944052  | <i>i</i> | 3.25328   | -0.30753336 | +0.18282412 |          |          |
| <i>P</i> | 3.76       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 21 | 691 | 0.1+ | 0.3- | 2006 05 07 | 691 | 0.0  | 0.0  | 2007 10 21 | 691 | 0.6- | 0.4+ |
| 1999 08 21 | 691 | 0.1- | 0.2+ | 2006 05 07 | 691 | 1.4+ | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.2- |
| 1999 08 21 | 691 | 0.0  | 0.1- | 2006 05 07 | 691 | 0.4- | 0.1- | 2007 11 18 | G96 | 0.2+ | 0.4- |
| 2006 04 08 | 691 | 0.0  | 0.1- | 2007 10 10 | G96 | 1.0+ | 0.1+ | 2007 11 18 | G96 | 0.1+ | 0.7- |
| 2006 04 08 | 691 | 0.2+ | 0.2+ | 2007 10 10 | G96 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2006 04 08 | 691 | 0.2+ | 0.1+ | 2007 10 10 | G96 | 0.1+ | 0.3+ | 2007 11 20 | G96 | 0.1+ | 0.2- |
| 2006 05 03 | 691 | 0.7- | 0.2+ | 2007 10 10 | G96 | 0.6- | 0.2- | 2007 11 20 | G96 | 0.3+ | 0.1+ |
| 2006 05 03 | 691 | 0.2- | 0.3- | 2007 10 21 | 691 | 0.1- | 0.6+ | 2007 11 20 | G96 | 0.1- | 0.1- |
| 2006 05 03 | 691 | 0.4- | 0.0  | 2007 10 21 | 691 | 0.4- | 0.4+ | 2007 11 20 | G96 | 0.1- | 0.1- |

**2006 JR<sub>35</sub> = 2002 SS<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 308.94928  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.18222071 | $\omega$ | 295.78208 | +0.85388414 | -0.50003493 |          |          |
| <i>a</i> | 3.0813254  | $\Omega$ | 94.52318  | +0.51415811 | +0.76738081 |          |          |
| <i>e</i> | 0.0876405  | <i>i</i> | 8.32777   | +0.08076699 | +0.40136239 |          |          |
| <i>P</i> | 5.41       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 01 | 644 | 0.2+ | 0.2+ | 2002 09 28 | 608 | 0.7- | 0.3- | 2006 05 08 | 691 | 0.1- | 0.2+ |
| 2002 09 01 | 644 | 0.4+ | 0.2+ | 2002 09 28 | 608 | 0.2- | 0.3+ | 2006 05 08 | 691 | 0.0  | 0.0  |
| 2002 09 12 | 608 | 0.0  | 0.7- | 2002 09 28 | 608 | 0.9- | 0.2- | 2006 05 08 | 691 | 0.4- | 0.8- |
| 2002 09 12 | 608 | 0.2+ | 0.1- | 2002 10 02 | 608 | 0.1- | 0.6- | 2006 05 29 | 691 | 0.3+ | 0.0  |
| 2002 09 12 | 608 | 0.1- | 0.7- | 2002 10 02 | 608 | 1.2- | 0.3+ | 2006 05 29 | 691 | 0.0  | 0.1+ |
| 2002 09 16 | 608 | 0.1+ | 0.1+ | 2006 04 26 | 691 | 0.3+ | 0.1+ | 2006 05 29 | 691 | 0.0  | 0.1+ |
| 2002 09 16 | 608 | 0.1+ | 0.1- | 2006 04 26 | 691 | 0.0  | 0.2+ | 2006 06 02 | 691 | 0.1+ | 0.1- |
| 2002 09 16 | 608 | 0.3+ | 0.1- | 2006 04 26 | 691 | 0.1+ | 0.2- | 2006 06 02 | 691 | 0.1- | 0.1- |
| 2002 09 17 | 644 | 0.6+ | 0.7+ | 2006 05 04 | 691 | 0.2- | 0.1- | 2006 06 02 | 691 | 0.0  | 0.1+ |
| 2002 09 17 | 644 | 0.7+ | 0.7+ | 2006 05 04 | 691 | 0.1- | 0.4+ |            |     |      |      |
| 2002 09 17 | 644 | 0.6+ | 0.4+ | 2006 05 04 | 691 | 0.2+ | 0.1+ |            |     |      |      |

**2006 JJ<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 54.80862   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.21649428 | $\omega$ | 95.56390  | +0.61357457 | +0.78645161 |          |          |
| <i>a</i> | 2.7468721  | $\Omega$ | 212.62300 | -0.76649997 | +0.57163259 |          |          |
| <i>e</i> | 0.1323368  | <i>i</i> | 7.55198   | -0.18974730 | +0.23394453 |          |          |
| <i>P</i> | 4.55       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 04 | 691 | 0.4- | 0.3+ | 2006 05 25 | 691 | 0.3- | 0.2+ | 2007 10 14 | G96 | 0.4+ | 0.6- |
| 2006 05 04 | 691 | 0.0  | 0.2- | 2006 06 02 | 691 | 0.1- | 0.3+ | 2007 10 14 | G96 | 0.1+ | 0.1- |
| 2006 05 04 | 691 | 0.6+ | 0.2- | 2006 06 02 | 691 | 0.3+ | 0.1+ | 2007 10 14 | G96 | 0.7+ | 0.2- |
| 2006 05 08 | 691 | 0.2- | 0.4- | 2006 06 02 | 691 | 0.0  | 0.1+ | 2007 11 07 | G96 | 0.1+ | 0.1+ |
| 2006 05 08 | 691 | 0.3+ | 0.1- | 2007 09 09 | 691 | 0.1- | 0.0  | 2007 11 07 | G96 | 0.2- | 0.3- |
| 2006 05 08 | 691 | 0.4- | 0.5- | 2007 09 09 | 691 | 0.1- | 0.0  | 2007 11 07 | G96 | 0.5+ | 0.1- |
| 2006 05 25 | 691 | 0.1+ | 0.2+ | 2007 09 09 | 691 | 0.1- | 0.1+ |            |     |      |      |
| 2006 05 25 | 691 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.1- | 0.1- |            |     |      |      |

**2006 JO<sub>37</sub> = 2007 VU<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 82.00935   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.25428973 | $\omega$ | 196.49428 | +0.53615726 | +0.84078449 |          |          |
| <i>a</i> | 2.4674603  | $\Omega$ | 105.98455 | -0.76539240 | +0.52167398 |          |          |
| <i>e</i> | 0.2212550  | <i>i</i> | 4.47130   | -0.35596328 | +0.14469865 |          |          |
| <i>P</i> | 3.88       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 691 | 0.1+ | 0.1+ | 2006 05 09 | 691 | 0.0  | 0.3+ | 2007 11 09 | 691 | 0.1+ | 0.0  |
| 2003 10 24 | 691 | 0.0  | 0.0  | 2006 05 09 | 691 | 0.2+ | 0.1+ | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2003 10 24 | 691 | 0.0  | 0.4- | 2007 11 01 | 691 | 0.5- | 0.6+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2006 05 05 | 691 | 0.2- | 0.2+ | 2007 11 01 | 691 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.6+ | 0.4- |
| 2006 05 05 | 691 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.3+ | 0.6- |
| 2006 05 05 | 691 | 0.2+ | 0.3- | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.1- | 0.3- |
| 2006 05 08 | 691 | 0.1+ | 0.2- | 2007 11 05 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 691 | 0.3- | 0.1- |
| 2006 05 08 | 691 | 0.3- | 0.5- | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2006 05 08 | 691 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2006 05 09 | 691 | 0.1- | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.2- |            |     |      |      |

**2006 JT<sub>37</sub> = 2007 VM<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 104.55352  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.26597943 | $\omega$ | 66.18833  | -0.06292375 | +0.99699889 |          |          |
| <i>a</i> | 2.3946241  | $\Omega$ | 200.35819 | -0.95635146 | -0.07315557 |          |          |
| <i>e</i> | 0.1328488  | <i>i</i> | 7.44840   | -0.28536380 | +0.02532742 |          |          |
| <i>P</i> | 3.71       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 25 | G96 | 0.3+ | 0.0  | 2006 05 30 | G96 | 0.1- | 0.4- | 2007 10 18 | G96 | 0.2+ | 0.1- |
| 2006 02 25 | G96 | 0.5- | 0.1- | 2006 05 30 | G96 | 0.5- | 0.2- | 2007 10 18 | G96 | 0.1- | 0.1- |
| 2006 02 25 | G96 | 0.4+ | 0.2- | 2006 05 30 | G96 | 0.6- | 0.3- | 2007 10 18 | G96 | 0.2+ | 0.1- |
| 2006 02 25 | G96 | 0.0  | 0.1- | 2006 05 30 | G96 | 0.5- | 0.2- | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2006 04 26 | 807 | 0.1- | 0.1+ | 2007 09 15 | G96 | 0.1+ | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2006 04 26 | 807 | 0.1+ | 0.0  | 2007 09 15 | G96 | 1.1+ | 0.4- | 2007 11 05 | G96 | 0.5+ | 0.2- |
| 2006 05 05 | G96 | 0.6- | 0.1- | 2007 09 15 | G96 | 0.4+ | 0.1- | 2007 11 05 | G96 | 0.8+ | 0.2- |
| 2006 05 05 | G96 | 1.1- | 1.5+ | 2007 09 15 | G96 | 0.4+ | 0.3- | 2007 11 09 | 691 | 0.3- | 0.0  |
| 2006 05 05 | G96 | 0.3+ | 0.4+ | 2007 10 04 | 691 | 0.0  | 0.5+ | 2007 11 09 | 691 | 0.2- | 0.2+ |
| 2006 05 08 | 691 | 0.2+ | 0.2- | 2007 10 04 | 691 | 0.9- | 0.5- | 2007 11 09 | 691 | 0.0  | 0.3+ |
| 2006 05 08 | 691 | 0.1+ | 0.5+ | 2007 10 04 | 691 | 0.3+ | 0.5+ |            |     |      |      |
| 2006 05 08 | 691 | 0.5+ | 0.2- | 2007 10 18 | G96 | 0.0  | 0.2- |            |     |      |      |

**2006 JT<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 116.92664  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26553220 | $\omega$ 213.33715 | +0.11572067   | +0.97622477 |
| <i>a</i> | 2.3973122  | $\Omega$ 63.90763  | -0.86087586   | +0.19062022 |
| <i>e</i> | 0.2458554  | <i>i</i> 11.77598  | -0.49548105   | -0.10319459 |
| <i>P</i> | 3.71       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 05 06 G96 | 0.4- | 0.2+ | 2006 05 19 G96 | 0.2+ | 0.1+ | 2006 06 16 644 | 0.2+ | 0.2- |
| 2006 05 06 G96 | 0.4- | 0.0  | 2006 05 19 G96 | 0.2+ | 0.0  | 2007 10 20 G96 | 0.7+ | 0.4- |
| 2006 05 06 G96 | 0.0  | 0.0  | 2006 05 27 704 | 0.3+ | 0.2+ | 2007 10 20 G96 | 0.2+ | 0.1- |
| 2006 05 06 G96 | 0.2+ | 0.2+ | 2006 05 27 704 | 0.5- | 0.7- | 2007 10 20 G96 | 0.2+ | 0.0  |
| 2006 05 08 E12 | 0.6+ | 0.1- | 2006 05 27 704 | 0.8- | 1.0- | 2007 10 20 G96 | 0.6+ | 0.7+ |
| 2006 05 08 E12 | 0.3- | 0.2- | 2006 05 27 704 | 0.6- | 0.7+ | 2007 11 18 691 | 0.6- | 0.6- |
| 2006 05 08 E12 | 0.3- | 0.0  | 2006 05 27 704 | 0.0  | 0.1- | 2007 11 18 691 | 0.3- | 0.3+ |
| 2006 05 08 E12 | 0.8+ | 0.3- | 2006 06 04 G96 | 0.2+ | 0.1- | 2007 11 18 691 | 0.2+ | 0.4+ |
| 2006 05 17 644 | 0.0  | 0.0  | 2006 06 04 G96 | 0.1- | 0.2+ | 2007 12 04 G96 | 0.8+ | 0.1+ |
| 2006 05 17 644 | 0.8+ | 0.4+ | 2006 06 04 G96 | 0.2- | 0.0  | 2007 12 04 G96 | 0.4+ | 0.5- |
| 2006 05 17 644 | 0.0  | 0.2+ | 2006 06 04 G96 | 0.0  | 0.1+ | 2007 12 04 G96 | 0.1+ | 0.1- |
| 2006 05 19 G96 | 0.1- | 0.1+ | 2006 06 16 644 | 0.1+ | 0.0  | 2007 12 04 G96 | 0.2+ | 0.1+ |
| 2006 05 19 G96 | 0.1- | 0.0  | 2006 06 16 644 | 0.1+ | 0.4+ |                |      |      |

**2006 JC<sub>50</sub> = 2007 VA<sub>205</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 110.21023  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26761513 | $\omega$ 220.45373 | -0.02083428   | +0.99599893 |
| <i>a</i> | 2.3848566  | $\Omega$ 48.54044  | -0.88475374   | +0.02211138 |
| <i>e</i> | 0.2192801  | <i>i</i> 6.65896   | -0.46559291   | -0.08658647 |
| <i>P</i> | 3.68       | <i>H</i> 18.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 03 23 691 | 1.0+ | 0.1+ | 2006 05 02 G96 | 0.2- | 0.0  | 2006 05 22 G96 | 0.3- | 0.2+ |
| 2006 03 23 691 | 0.7- | 0.3+ | 2006 05 02 G96 | 0.1+ | 0.1+ | 2007 11 09 G96 | 0.3- | 0.4- |
| 2006 03 23 691 | 0.3- | 0.6- | 2006 05 02 G96 | 0.3- | 0.1- | 2007 11 09 G96 | 0.2- | 0.5- |
| 2006 04 20 691 | 0.3- | 0.1- | 2006 05 06 691 | 0.2- | 0.1+ | 2007 11 09 G96 | 0.8+ | 0.2+ |
| 2006 04 20 691 | 0.5+ | 0.1+ | 2006 05 06 691 | 0.3+ | 0.6+ | 2007 11 09 G96 | 0.3- | 0.2- |
| 2006 04 20 691 | 0.1- | 0.1- | 2006 05 06 691 | 0.3+ | 0.2+ | 2007 11 12 G96 | 0.2+ | 0.1- |
| 2006 04 26 807 | 0.7+ | 0.2+ | 2006 05 22 G96 | 0.1+ | 0.1- | 2007 11 12 G96 | 0.1- | 0.2+ |
| 2006 04 26 807 | 0.0  | 0.1+ | 2006 05 22 G96 | 0.2+ | 0.2- | 2007 11 12 G96 | 0.5- | 0.2+ |
| 2006 05 02 G96 | 0.2- | 0.1- | 2006 05 22 G96 | 0.1+ | 0.3- | 2007 11 12 G96 | 0.3+ | 0.7+ |

**2006 JP<sub>70</sub> = 2007 UJ<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.34107   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27541626 | $\omega$ 289.71232 | +0.83615463   | +0.54781450 |
| <i>a</i> | 2.3396075  | $\Omega$ 37.08474  | -0.48476585   | +0.76136555 |
| <i>e</i> | 0.0732125  | <i>i</i> 2.59388   | -0.25660768   | +0.34673011 |
| <i>P</i> | 3.58       | <i>H</i> 18.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 03 12 645 | 0.0  | 0.1- | 2007 10 08 G96 | 0.3- | 0.1+ | 2007 10 19 G96 | 0.2- | 0.3+ |
| 2002 03 12 645 | 0.0  | 0.1+ | 2007 10 08 G96 | 0.1- | 0.0  | 2007 10 19 G96 | 0.0  | 0.2- |
| 2006 04 26 691 | 0.3- | 0.2+ | 2007 10 08 G96 | 0.1- | 0.1- | 2007 10 19 G96 | 0.2+ | 0.4- |
| 2006 04 26 691 | 0.0  | 0.2+ | 2007 10 08 G96 | 0.2- | 0.0  | 2007 11 05 G96 | 0.1+ | 0.2- |
| 2006 04 26 691 | 0.1+ | 0.2- | 2007 10 18 G96 | 0.2- | 0.1- | 2007 11 05 G96 | 0.6+ | 0.4- |
| 2006 05 01 568 | 0.4+ | 0.1- | 2007 10 18 G96 | 0.3+ | 0.4+ | 2007 11 05 G96 | 0.0  | 0.5+ |
| 2006 05 01 568 | 0.5+ | 0.0  | 2007 10 18 G96 | 0.1+ | 0.2+ | 2007 11 05 G96 | 0.1- | 0.1+ |
| 2006 05 01 568 | 0.4+ | 0.1- | 2007 10 18 G96 | 0.0  | 0.1+ |                |      |      |
| 2006 05 02 568 | 0.2- | 0.5- | 2007 10 19 G96 | 0.1+ | 0.1- |                |      |      |

**2006 JQ<sub>75</sub> = 2007 VP<sub>238</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.28753   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28107476 | $\omega$ 287.59433 | +0.97856452   | +0.20455329 |
| <i>a</i> | 2.3081010  | $\Omega$ 60.60811  | -0.17703758   | +0.89475708 |
| <i>e</i> | 0.2380969  | <i>i</i> 1.56942   | -0.10521016   | +0.39694802 |
| <i>P</i> | 3.51       | <i>H</i> 19.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 04 26 807 | 0.4- | 0.5- | 2006 05 02 568 | 0.3+ | 0.2+ | 2007 11 14 691 | 0.3+ | 0.3- |
| 2006 04 26 807 | 0.1- | 0.2+ | 2007 11 13 691 | 0.9+ | 0.1+ | 2007 12 15 G96 | 0.0  | 0.1+ |
| 2006 04 27 807 | 0.1- | 0.5+ | 2007 11 13 691 | 0.1+ | 0.2+ | 2007 12 15 G96 | 0.2+ | 0.3+ |
| 2006 05 01 568 | 0.1+ | 0.1- | 2007 11 13 691 | 0.3- | 0.1+ | 2007 12 15 G96 | 0.8- | 0.3- |
| 2006 05 01 568 | 0.0  | 0.4- | 2007 11 14 691 | 0.0  | 0.1+ | 2007 12 15 G96 | 0.4+ | 0.3+ |
| 2006 05 01 568 | 0.2+ | 0.1- | 2007 11 14 691 | 0.9- | 0.2- |                |      |      |

**2006 KE<sub>4</sub> = 2007 UD<sub>87</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 121.97570  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30179469 | $\omega$ 33.58549  | +0.09191423   | +0.99248584 |
| <i>a</i> | 2.2012109  | $\Omega$ 241.80631 | -0.93257870   | +0.05736386 |
| <i>e</i> | 0.1463602  | <i>i</i> 5.25807   | -0.34906840   | +0.10807985 |
| <i>P</i> | 3.27       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2002 01 15 461 | 0.0   | 0.2-  | 2007 10 14 G96 | 0.5+ | 0.1- | 2007 11 09 300 | 0.6+ | 0.0  |
| 2002 01 15 461 | 0.3-  | 0.3+  | 2007 10 14 G96 | 0.3+ | 0.1+ | 2007 11 15 704 | 0.9- | 0.3- |
| 2002 01 15 461 | 0.5+  | 0.0   | 2007 10 14 G96 | 0.6+ | 0.0  | 2007 11 15 704 | 0.1- | 0.0  |
| 2004 12 14 691 | 0.0   | 0.1+  | 2007 10 14 G96 | 0.8+ | 0.1+ | 2007 11 15 704 | 0.3- | 0.6- |
| 2004 12 14 691 | 0.0   | 0.1-  | 2007 10 30 691 | 0.4- | 0.3+ | 2007 11 15 704 | 0.6- | 0.7+ |
| 2004 12 14 691 | 0.1-  | 0.0   | 2007 10 30 691 | 0.3- | 0.0  | 2007 11 15 704 | 1.2- | 0.0  |
| 2006 05 06 G96 | 0.3-  | 0.3-  | 2007 10 30 691 | 0.1- | 0.1- | 2007 11 18 691 | 0.3+ | 0.2+ |
| 2006 05 06 G96 | 0.3+  | 0.2-  | 2007 11 03 691 | 0.1+ | 0.3+ | 2007 11 18 691 | 0.4+ | 0.2+ |
| 2006 05 06 G96 | 0.6+  | 0.1-  | 2007 11 03 691 | 0.2+ | 0.2+ | 2007 11 18 691 | 0.0  | 0.2+ |
| 2006 05 19 703 | 0.9-  | 0.8+  | 2007 11 03 691 | 0.2- | 0.1- | 2007 12 04 691 | 0.5- | 0.1+ |
| 2006 05 19 703 | 1.1-  | 0.6-  | 2007 11 07 300 | 0.4- | 0.3- | 2007 12 04 691 | 0.6- | 0.2- |
| 2006 05 19 703 | 0.1-  | 0.3-  | 2007 11 07 300 | 0.4- | 0.8- | 2007 12 04 691 | 0.0  | 0.0  |
| 2006 05 19 703 | 0.3-  | 0.1+  | 2007 11 07 300 | 0.7+ | 0.1- | 2007 12 06 691 | 0.4+ | 0.1+ |
| 2006 05 20 699 | 0.3+  | 0.0   | 2007 11 07 300 | 0.2- | 0.3- | 2007 12 06 691 | 0.0  | 0.1+ |
| 2006 05 20 699 | 0.1+  | 1.1+  | 2007 11 09 300 | 0.7+ | 0.3- | 2007 12 06 691 | 0.5- | 0.3- |
| 2006 05 20 699 | (2.8+ | 0.2-) | 2007 11 09 300 | 0.4+ | 0.1+ | 2007 12 15 G96 | 0.7+ | 0.1+ |
| 2006 05 20 699 | 1.2+  | 1.2+  | 2007 11 09 300 | 0.5+ | 0.3- | 2007 12 15 G96 | 0.6+ | 0.4- |
| 2006 05 31 G96 | 0.2+  | 0.0   | 2007 11 09 300 | 0.2+ | 0.2- | 2007 12 15 G96 | 1.0+ | 0.1- |
| 2006 05 31 G96 | 0.5+  | 0.0   | 2007 11 09 300 | 0.4+ | 0.1+ | 2007 12 15 G96 | 0.9+ | 0.1- |
| 2006 05 31 G96 | 0.1+  | 0.0   | 2007 11 09 300 | 0.4+ | 0.1- |                |      |      |

**2006 KD<sub>6</sub> = 2002 CS<sub>189</sub> = 2007 VH<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 320.37007  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.29900729 | $\omega$ 4.68197  | +0.32387010   | -0.94593392 |
| <i>a</i> | 2.2148698  | $\Omega$ 66.42175 | +0.86739907   | +0.28935930 |
| <i>e</i> | 0.0565614  | <i>i</i> 1.11342  | +0.37779228   | +0.14656129 |
| <i>P</i> | 3.30       | <i>H</i> 17.9     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2002 02 10 704 | 0.7+  | 0.6-  | 2006 05 28 691 | 0.1- | 0.1- | 2007 10 18 G96 | 0.6+ | 0.1- |
| 2002 02 10 704 | 0.5+  | 0.6-  | 2006 05 28 691 | 0.2- | 0.1+ | 2007 11 03 691 | 0.6- | 0.3+ |
| 2002 02 10 704 | (2.0+ | 0.7+) | 2006 05 28 691 | 0.1- | 0.1+ | 2007 11 03 691 | 0.2- | 0.0  |
| 2002 02 12 704 | 0.3+  | 1.5+  | 2007 09 12 G96 | 0.0  | 0.5- | 2007 11 03 691 | 0.3- | 0.3+ |
| 2002 02 12 704 | 0.2-  | 0.3+  | 2007 09 12 G96 | 0.1+ | 0.4- | 2007 11 05 691 | 0.4+ | 0.1- |
| 2002 02 12 704 | 1.0-  | 1.2+  | 2007 09 12 G96 | 0.2+ | 0.5- | 2007 11 05 691 | 0.0  | 0.4+ |
| 2002 02 12 704 | 0.1-  | 0.7-  | 2007 09 12 G96 | 0.2+ | 0.3- | 2007 11 05 691 | 0.1- | 0.1+ |
| 2006 05 19 G96 | 0.1+  | 0.3+  | 2007 10 08 G96 | 0.1+ | 0.1- | 2007 11 13 691 | 0.2- | 0.1+ |
| 2006 05 19 G96 | 0.3+  | 0.5+  | 2007 10 08 G96 | 0.2+ | 0.1- | 2007 11 13 691 | 0.1- | 0.3+ |
| 2006 05 19 G96 | 0.1-  | 0.1-  | 2007 10 08 G96 | 0.1+ | 0.1- | 2007 11 13 691 | 0.1- | 0.2+ |



2007 DEC. 24

M.P.O. 129763

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 19 | G96 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.1+ | 0.3− | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2006 05 20 | 691 | 0.3+ | 0.1− | 2007 10 18 | G96 | 0.4+ | 0.4− | 2007 12 06 | G96 | 0.6− | 0.0  |
| 2006 05 20 | 691 | 0.1+ | 0.3+ | 2007 10 18 | G96 | 0.7+ | 0.2− | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2006 05 20 | 691 | 0.2+ | 0.5+ | 2007 10 18 | G96 | 0.4+ | 0.1+ | 2007 12 06 | G96 | 0.3+ | 0.2+ |

2006 KF<sub>9</sub> = 2007 TY<sub>151</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 337.62516  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.26363306 | $\omega$ | 167.69104 |     | +0.74314242  |     | -0.66436227  |
| $a$ | 2.4088114  | $\Omega$ | 234.23738 |     | +0.60528110  |     | +0.71825297  |
| $e$ | 0.1142546  | $i$      | 5.64113   |     | +0.28526152  |     | +0.20672552  |
| $P$ | 3.74       | $H$      | 16.5      | $G$ | 0.15         | $U$ | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 24 | 644 | 0.4− | 0.2+ | 2006 05 24 | 691 | 0.2+  | 0.0   | 2007 10 09 | 704 | 1.3− | 0.5+ |
| 2003 09 24 | 644 | 0.0  | 0.3+ | 2006 05 24 | 691 | 0.0   | 0.1+  | 2007 10 09 | 704 | 0.3+ | 0.2+ |
| 2003 09 24 | 644 | 0.1+ | 0.2+ | 2006 05 24 | 691 | 0.5+  | 0.6+  | 2007 10 09 | 704 | 0.5+ | 0.1+ |
| 2005 01 07 | 703 | 1.0− | 0.7+ | 2006 05 28 | 691 | 0.2−  | 0.2+  | 2007 10 12 | 704 | 0.4− | 0.5+ |
| 2005 01 07 | 703 | 0.2− | 0.6+ | 2006 05 28 | 691 | 0.2−  | 0.5−  | 2007 10 12 | 704 | 0.3+ | 0.4+ |
| 2005 01 07 | 703 | 0.1− | 1.3+ | 2006 05 28 | 691 | 0.5−  | 0.4+  | 2007 10 12 | 704 | 0.1+ | 0.2+ |
| 2005 01 07 | 703 | 0.2+ | 0.0  | 2006 06 01 | 691 | 0.3+  | 0.0   | 2007 10 12 | 704 | 0.1− | 0.4+ |
| 2005 02 02 | 703 | 1.1+ | 0.4+ | 2006 06 01 | 691 | 0.1+  | 0.2+  | 2007 10 12 | 704 | 0.1+ | 0.3+ |
| 2005 02 02 | 703 | 0.1+ | 0.5+ | 2006 06 01 | 691 | (2.6+ | 1.0−) | 2007 10 13 | 703 | 0.3+ | 0.5+ |
| 2005 02 02 | 703 | 0.8+ | 0.7+ | 2006 06 19 | G96 | 0.1−  | 0.1+  | 2007 10 13 | 703 | 0.5− | 0.3+ |
| 2005 02 02 | 703 | 0.0  | 0.4− | 2006 06 19 | G96 | 0.5−  | 0.6−  | 2007 10 13 | 703 | 0.1+ | 0.3+ |
| 2006 05 19 | G96 | 0.0  | 0.0  | 2006 06 19 | G96 | 0.1+  | 0.3−  | 2007 10 13 | 703 | 0.7− | 0.0  |
| 2006 05 19 | G96 | 0.0  | 0.1− | 2006 06 19 | G96 | 0.3+  | 0.3−  | 2007 11 12 | G96 | 0.0  | 0.2− |
| 2006 05 19 | G96 | 0.1− | 0.1− | 2007 09 13 | 703 | 0.2+  | 0.6−  | 2007 11 12 | G96 | 0.4+ | 0.2− |
| 2006 05 20 | 691 | 0.1+ | 0.1+ | 2007 09 13 | 703 | 0.1+  | 0.0   | 2007 11 12 | G96 | 0.1+ | 0.4− |
| 2006 05 20 | 691 | 0.0  | 0.1+ | 2007 09 13 | 703 | 0.0   | 0.3+  | 2007 11 12 | G96 | 0.1− | 0.1− |
| 2006 05 20 | 691 | 0.0  | 0.0  | 2007 09 13 | 703 | 0.5−  | 0.6+  |            |     |      |      |

2006 KH<sub>11</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 250.13403  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $n$ | 0.37041835 | $\omega$ | 112.45992 |     | -0.90931086  |     | -0.10420035  |
| $a$ | 1.9201761  | $\Omega$ | 63.66064  |     | -0.14332779  |     | -0.83046772  |
| $e$ | 0.1082837  | $i$      | 26.71348  |     | +0.39065445  |     | -0.54723455  |
| $P$ | 2.66       | $H$      | 17.5      | $G$ | 0.15         | $U$ | 2            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 05 | 691 | 0.1+ | 0.2− | 2006 05 20 | G96 | 0.0  | 0.3+ | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 1999 12 05 | 691 | 0.3+ | 0.3− | 2006 05 20 | G96 | 0.2+ | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 1999 12 05 | 691 | 0.3+ | 0.4− | 2006 05 20 | G96 | 0.4+ | 0.3+ | 2007 11 14 | 691 | 0.6− | 0.2+ |
| 2006 05 06 | G96 | 0.4− | 0.2+ | 2006 05 20 | E12 | 0.5− | 0.2− | 2007 11 18 | 691 | 0.2− | 0.0  |
| 2006 05 06 | G96 | 0.1− | 0.0  | 2006 05 20 | E12 | 0.3+ | 0.3− | 2007 11 18 | 691 | 0.2− | 0.2+ |
| 2006 05 06 | G96 | 0.1+ | 0.2+ | 2006 05 20 | E12 | 0.5+ | 0.4+ | 2007 11 18 | 691 | 0.2− | 0.1+ |
| 2006 05 06 | G96 | 0.1− | 0.0  | 2006 05 23 | G96 | 0.1− | 0.3+ | 2007 12 13 | 704 | 0.3+ | 0.6+ |
| 2006 05 06 | G96 | 0.0  | 0.2+ | 2006 05 23 | G96 | 0.2+ | 0.3+ | 2007 12 13 | 704 | 1.0+ | 0.6+ |
| 2006 05 06 | G96 | 0.3+ | 0.1+ | 2006 05 23 | G96 | 0.2− | 0.3+ | 2007 12 13 | 704 | 0.1+ | 0.3+ |
| 2006 05 06 | G96 | 0.2+ | 0.3+ | 2006 05 23 | G96 | 0.1− | 0.4+ | 2007 12 13 | 704 | 0.5+ | 0.6+ |
| 2006 05 06 | G96 | 0.4+ | 1.4− | 2006 05 24 | 644 | 0.1+ | 0.3+ | 2007 12 13 | 704 | 0.6+ | 0.0  |
| 2006 05 19 | G96 | 0.3+ | 0.1+ | 2006 05 24 | 644 | 0.5+ | 0.2+ | 2007 12 15 | 704 | 0.4+ | 1.5+ |
| 2006 05 19 | G96 | 0.0  | 0.2+ | 2006 05 24 | 644 | 0.3+ | 0.5+ | 2007 12 15 | 704 | 0.5− | 1.3+ |
| 2006 05 19 | G96 | 0.1− | 0.2+ | 2007 11 07 | 691 | 0.1− | 0.1− | 2007 12 15 | 704 | 0.9− | 0.2+ |
| 2006 05 19 | G96 | 0.2+ | 0.2+ | 2007 11 07 | 691 | 0.2− | 0.1− | 2007 12 15 | 704 | 0.5+ | 0.6+ |
| 2006 05 20 | G96 | 0.1+ | 0.4+ | 2007 11 07 | 691 | 0.5− | 0.2− |            |     |      |      |

2006 KD<sub>15</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.47358   |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.23295433 | $\omega$ | 190.00099 |          | +0.32101276 |          | +0.93744089 |
| <i>a</i> | 2.6159064  | $\Omega$ | 98.82018  |          | −0.85923318 |          | +0.34811453 |
| <i>e</i> | 0.2796758  | <i>i</i> | 7.83694   |          | −0.39833297 |          | +0.00456637 |
| <i>P</i> | 4.23       | <i>H</i> | 16.7      | <i>G</i> | 0.15        | <i>U</i> | 5           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 20 | 703 | 0.1− | 0.6− | 2006 05 22 | 691 | 0.3+ | 0.0  | 2007 11 18 | G96 | 0.0  | 0.2− |
| 2006 05 20 | 703 | 0.9− | 0.6+ | 2006 05 26 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.1+ |
| 2006 05 20 | 703 | 1.1− | 0.3− | 2006 05 26 | 691 | 0.2+ | 0.1+ | 2007 11 18 | G96 | 0.1− | 0.2+ |
| 2006 05 20 | 703 | 0.7− | 0.1+ | 2006 05 26 | 691 | 0.4+ | 0.0  | 2007 11 21 | G96 | 0.5− | 0.1+ |
| 2006 05 20 | 644 | 0.1− | 0.0  | 2006 05 26 | 703 | 1.4− | 0.2− | 2007 11 21 | G96 | 0.1+ | 0.4− |
| 2006 05 20 | 644 | 0.0  | 0.0  | 2006 05 26 | 703 | 0.5− | 0.2+ | 2007 11 21 | G96 | 0.6+ | 0.3− |
| 2006 05 20 | 644 | 0.1+ | 0.1+ | 2006 05 26 | 703 | 0.8− | 0.4− | 2007 11 21 | G96 | 0.1− | 0.3+ |
| 2006 05 22 | 691 | 0.4+ | 0.1− | 2006 05 26 | 703 | 1.0− | 0.3− |            |     |      |      |
| 2006 05 22 | 691 | 0.4+ | 0.1+ | 2007 11 18 | G96 | 0.2− | 0.1+ |            |     |      |      |

2006 KG<sub>19</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 131.45646  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.23692812 | $\omega$ | 54.12417  |     | -0.63023228 |     | +0.77636407 |
| $a$ | 2.5865744  | $\Omega$ | 176.77327 |     | -0.75075510 |     | -0.60670724 |
| $e$ | 0.1906427  | $i$      | 8.30507   |     | -0.19792437 |     | -0.17077807 |
| $P$ | 4.16       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 23 | 703 | 0.5− | 0.2+ | 2006 05 27 | 703 | 0.2− | 0.6+ | 2006 06 23 | 644 | 0.1− | 0.0  |
| 2006 04 23 | 703 | 1.3− | 1.1+ | 2006 05 27 | 703 | 0.4+ | 0.6+ | 2006 06 23 | 644 | 0.3− | 0.5− |
| 2006 04 23 | 703 | 0.6+ | 0.3− | 2006 05 31 | 691 | 0.3+ | 0.1+ | 2006 06 23 | 644 | 0.1+ | 0.4− |
| 2006 04 23 | 703 | 0.7− | 0.2− | 2006 05 31 | 691 | 0.2+ | 0.2+ | 2007 09 12 | G96 | 0.1+ | 0.0  |
| 2006 05 21 | 644 | 0.1+ | 0.3− | 2006 05 31 | 691 | 0.3+ | 0.1− | 2007 09 12 | G96 | 0.3− | 0.3+ |
| 2006 05 21 | 644 | 0.1+ | 0.1− | 2006 06 03 | 703 | 1.4− | 0.4− | 2007 09 12 | G96 | 0.0  | 0.0  |
| 2006 05 21 | 644 | 0.3+ | 0.5− | 2006 06 03 | 703 | 0.6− | 0.0  | 2007 09 12 | G96 | 0.1+ | 0.0  |
| 2006 05 23 | 691 | 0.2+ | 0.0  | 2006 06 03 | 703 | 0.4− | 0.3− | 2007 10 18 | G96 | 0.1− | 0.0  |
| 2006 05 23 | 691 | 0.2+ | 0.1+ | 2006 06 03 | 703 | 0.6− | 0.3− | 2007 10 18 | G96 | 0.1+ | 0.3− |
| 2006 05 23 | 691 | 0.2+ | 0.0  | 2006 06 17 | 691 | 0.1− | 0.1+ | 2007 10 18 | G96 | 0.4+ | 0.1− |
| 2006 05 27 | 691 | 0.0  | 0.3− | 2006 06 17 | 691 | 0.2− | 0.0  | 2007 10 18 | G96 | 0.1+ | 0.1− |
| 2006 05 27 | 691 | 0.3+ | 0.0  | 2006 06 17 | 691 | 0.2− | 0.1− | 2007 11 02 | G96 | 0.3− | 0.0  |
| 2006 05 27 | 691 | 0.4+ | 0.2+ | 2006 06 18 | 644 | 0.3− | 0.2+ | 2007 11 02 | G96 | 0.5− | 0.0  |
| 2006 05 27 | 703 | 0.1− | 0.4+ | 2006 06 18 | 644 | 0.2− | 0.3− | 2007 11 02 | G96 | 0.2− | 0.6+ |
| 2006 05 27 | 703 | 1.5− | 0.1− | 2006 06 18 | 644 | 0.1− | 0.1− | 2007 11 02 | G96 | 0.5+ | 0.1+ |

2006 KG<sub>33</sub> = 2007 VT<sub>91</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 32.81739   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.22948714 | $\omega$ | 127.88979 |     | +0.98574815 |     | +0.06477285 |
| $a$ | 2.6421886  | $\Omega$ | 228.96574 |     | −0.10476281 |     | +0.95846194 |
| $e$ | 0.2858294  | $i$      | 11.87785  |     | +0.13162574 |     | +0.27776823 |
| $P$ | 4.29       | $H$      | 16.7      | $G$ | 0.15        | $U$ | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2006 05 06 | G96 | 0.2− | 0.1− | 2007 10 24 | G96 | 0.0   | 0.1−  | 2007 11 14 | 704 | (1.5+ | 1.8+) |
| 2006 05 06 | G96 | 0.8− | 0.1+ | 2007 11 08 | 691 | 0.4−  | 0.0   | 2007 11 14 | 704 | 0.5+  | 0.3+  |
| 2006 05 06 | G96 | 0.5− | 0.4− | 2007 11 08 | 691 | 0.4−  | 0.1+  | 2007 11 14 | 704 | 0.1+  | 0.1−  |
| 2006 05 06 | G96 | 1.0− | 0.5− | 2007 11 08 | 691 | 1.5−  | 0.2+  | 2007 11 14 | 704 | 0.7+  | 1.0+  |
| 2006 05 20 | 691 | 0.1− | 0.3+ | 2007 11 08 | H07 | 1.1+  | 0.8+  | 2007 11 20 | G96 | 0.1+  | 0.3−  |
| 2006 05 20 | 691 | 0.1+ | 0.2+ | 2007 11 08 | H07 | 0.4+  | 0.4+  | 2007 11 20 | G96 | 0.4+  | 0.5−  |
| 2006 05 20 | 691 | 0.1− | 0.4+ | 2007 11 08 | H07 | (1.5+ | 0.1−) | 2007 11 20 | G96 | 0.2+  | 0.3−  |
| 2006 05 24 | 691 | 0.0  | 0.0  | 2007 11 09 | H07 | 0.2−  | 0.6+  | 2007 11 20 | G96 | 0.0   | 0.3−  |
| 2006 05 24 | 691 | 0.2+ | 0.2− | 2007 11 09 | H07 | 0.6+  | 0.3+  | 2007 12 04 | 704 | 0.0   | 0.5+  |
| 2006 05 24 | 691 | 0.1− | 0.2− | 2007 11 09 | H07 | 0.2+  | 0.0   | 2007 12 04 | 704 | 0.6−  | 0.2−  |
| 2006 05 25 | 691 | 0.4− | 0.1− | 2007 11 09 | H07 | 0.0   | 0.1+  | 2007 12 04 | 704 | 0.4+  | 0.1+  |
| 2006 05 25 | 691 | 0.0  | 0.1+ | 2007 11 09 | H07 | 0.3+  | 0.5+  | 2007 12 04 | 704 | 0.1+  | 0.2+  |
| 2006 05 25 | 691 | 0.3+ | 0.3+ | 2007 11 09 | H07 | 0.0   | 0.2+  | 2007 12 04 | 704 | 0.1−  | 0.6+  |
| 2006 05 29 | 691 | 0.1− | 0.2+ | 2007 11 09 | H07 | 0.5+  | 0.0   | 2007 12 05 | 699 | 0.3+  | 0.1−  |
| 2006 05 29 | 691 | 0.1− | 0.3+ | 2007 11 09 | H07 | 0.3−  | 0.1−  | 2007 12 05 | 699 | 0.9+  | 0.0   |
| 2006 05 29 | 691 | 0.9+ | 0.1+ | 2007 11 09 | H07 | 0.7+  | 0.4+  | 2007 12 05 | 699 | 1.5+  | 0.2−  |
| 2007 10 24 | G96 | 0.6+ | 0.2− | 2007 11 11 | H07 | (2.8+ | 1.2−) | 2007 12 05 | 699 | 0.2+  | 0.3−  |
| 2007 10 24 | G96 | 0.3+ | 0.1+ | 2007 11 11 | H07 | 0.4+  | 0.1−  |            |     |       |       |
| 2007 10 24 | G96 | 0.7− | 0.0  | 2007 11 11 | H07 | 0.2+  | 0.2−  |            |     |       |       |

**2006 KG<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.18263   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29089611 | $\omega$ | 104.73324 | +0.85340486   | +0.51667096 |
| <i>a</i> | 2.2558529  | $\Omega$ | 224.21565 | -0.50815008   | +0.79519407 |
| <i>e</i> | 0.1617837  | <i>i</i> | 5.67256   | -0.11611907   | +0.31736022 |
| <i>P</i> | 3.39       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 05 20 | 691 | 0.2- | 0.4- | 2006 05 29 | 691 | 0.4+  | 0.4+  | 2007 12 05 | G96 | 0.5+ | 0.5- |
| 2006 05 20 | 691 | 0.7- | 0.5+ | 2006 06 02 | 691 | 0.2+  | 0.2-  | 2007 12 05 | G96 | 0.4+ | 0.8- |
| 2006 05 20 | 691 | 0.3- | 0.1- | 2006 06 02 | 691 | 0.1+  | 0.2-  | 2007 12 05 | G96 | 0.8+ | 0.4- |
| 2006 05 25 | 691 | 0.3+ | 0.2- | 2006 06 02 | 691 | 0.0   | 0.2-  | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2006 05 25 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 691 | 0.4-  | 0.1+  | 2007 12 06 | G96 | 0.1+ | 0.6- |
| 2006 05 25 | 691 | 0.1- | 0.2+ | 2007 11 20 | 691 | 0.1+  | 0.7+  | 2007 12 06 | G96 | 0.4+ | 0.1- |
| 2006 05 29 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.3-  | 0.1+  | 2007 12 06 | G96 | 0.3+ | 0.3- |
| 2006 05 29 | 691 | 0.1+ | 0.2+ | 2007 12 05 | G96 | (2.0+ | 2.0-) |            |     |      |      |

**2006 KC<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.69398   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24149971 | $\omega$ | 233.03378 | +0.79161578   | +0.60264726 |
| <i>a</i> | 2.5538280  | $\Omega$ | 89.68626  | -0.52367085   | +0.75415438 |
| <i>e</i> | 0.2573206  | <i>i</i> | 5.78536   | -0.31482265   | +0.26089739 |
| <i>P</i> | 4.08       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 26 | G96 | 0.4+ | 0.5- | 2006 06 20 | 644 | 0.4- | 0.1- | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2006 04 26 | G96 | 0.2+ | 0.3- | 2006 06 20 | 691 | 0.1- | 0.3+ | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2006 04 26 | G96 | 0.1+ | 0.5- | 2006 06 20 | 644 | 0.1+ | 0.0  | 2007 11 13 | 691 | 0.2+ | 0.2- |
| 2006 05 21 | G96 | 0.0  | 0.1- | 2006 06 20 | 691 | 0.2+ | 0.4+ | 2007 12 04 | 691 | 0.2- | 0.1+ |
| 2006 05 21 | G96 | 0.4- | 0.0  | 2006 06 20 | 644 | 0.4- | 0.1+ | 2007 12 04 | 691 | 0.2- | 0.2+ |
| 2006 05 21 | G96 | 0.8- | 0.4- | 2006 06 20 | 691 | 0.3+ | 0.3+ | 2007 12 04 | 691 | 0.1- | 0.2+ |
| 2006 05 21 | G96 | 0.5- | 0.1- | 2006 07 21 | G96 | 0.1+ | 0.0  | 2007 12 04 | 703 | 0.7+ | 0.1+ |
| 2006 05 25 | 644 | 0.5- | 0.3- | 2006 07 21 | G96 | 0.0  | 0.2- | 2007 12 04 | 703 | 1.0- | 0.7- |
| 2006 05 25 | 644 | 0.3- | 0.0  | 2006 07 21 | G96 | 0.3- | 0.2- | 2007 12 04 | 703 | 0.2- | 0.5+ |
| 2006 05 25 | 644 | 0.3- | 0.1- | 2006 07 21 | G96 | 0.1+ | 0.2- | 2007 12 04 | 703 | 0.4+ | 0.6+ |
| 2006 05 28 | 703 | 0.1- | 0.6+ | 2006 07 21 | G96 | 0.3+ | 0.1- | 2007 12 04 | G96 | 0.6+ | 0.2- |
| 2006 05 28 | 703 | 1.2+ | 0.1+ | 2006 07 21 | G96 | 0.2+ | 0.9- | 2007 12 04 | G96 | 0.2- | 0.0  |
| 2006 05 28 | 703 | 0.8+ | 0.3+ | 2006 07 21 | G96 | 0.2- | 0.0  | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2006 05 28 | 703 | 0.0  | 0.0  | 2006 07 21 | G96 | 0.3- | 0.2- | 2007 12 04 | G96 | 0.0  | 0.0  |

**2006 KS<sub>54</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 68.64747   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22133493 | $\omega$ | 242.70684 | +0.69877288   | +0.67160118 |
| <i>a</i> | 2.7066748  | $\Omega$ | 73.95362  | -0.53156031   | +0.71791602 |
| <i>e</i> | 0.2745168  | <i>i</i> | 14.85034  | -0.47870669   | +0.18316232 |
| <i>P</i> | 4.45       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 07 | G96 | 0.5- | 0.1+ | 2006 05 25 | 691 | 0.2- | 0.1+ | 2007 11 20 | G96 | 0.1- | 0.1+ |
| 2006 05 07 | G96 | 1.3+ | 0.9- | 2006 05 25 | 691 | 0.2- | 0.1- | 2007 11 20 | G96 | 0.2+ | 0.1+ |
| 2006 05 07 | G96 | 0.0  | 0.1+ | 2006 05 25 | 691 | 0.2+ | 0.1+ | 2007 11 20 | G96 | 0.3- | 0.0  |
| 2006 05 07 | G96 | 0.2- | 0.3+ | 2006 05 29 | 691 | 0.1+ | 0.1- | 2007 11 21 | G96 | 0.2+ | 0.0  |
| 2006 05 21 | 691 | 0.0  | 0.1+ | 2006 05 29 | 691 | 0.3+ | 0.1- | 2007 11 21 | G96 | 0.5- | 0.2+ |
| 2006 05 21 | 691 | 0.0  | 0.1+ | 2006 05 29 | 691 | 0.1+ | 0.1- | 2007 11 21 | G96 | 0.2+ | 0.2- |
| 2006 05 21 | 691 | 0.3- | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.1- | 2007 11 21 | G96 | 0.0  | 0.1- |

**2006 KJ<sub>74</sub> = 2007 VN<sub>297</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 1.00766    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24086981 | $\omega$ | 275.62488 | +0.87062751   | -0.44557962 |
| <i>a</i> | 2.5582784  | $\Omega$ | 110.98353 | +0.49106944   | +0.81241743 |
| <i>e</i> | 0.2084697  | <i>i</i> | 12.90260  | -0.02930089   | +0.37608073 |
| <i>P</i> | 4.09       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 05 23 | 691 | 0.0  | 0.2- | 2006 06 04 | 691 | 0.0  | 0.1+ | 2007 11 11 | 703 | 0.2+  | 0.2-  |
| 2006 05 23 | 691 | 0.1+ | 0.1- | 2006 06 04 | 691 | 0.2+ | 0.3- | 2007 11 11 | 703 | 0.4+  | 0.0   |
| 2006 05 23 | 691 | 0.1- | 0.0  | 2007 10 18 | 703 | 0.6+ | 0.2+ | 2007 11 11 | 703 | 0.5+  | 0.4+  |
| 2006 05 27 | 691 | 0.0  | 0.2+ | 2007 10 18 | 703 | 0.5- | 0.4+ | 2007 11 11 | 703 | 0.6+  | 0.8+  |
| 2006 05 27 | 691 | 0.5- | 0.2- | 2007 10 18 | 703 | 0.0  | 0.3+ | 2007 11 15 | 703 | 0.8-  | 0.3-  |
| 2006 05 27 | 691 | 0.2+ | 0.3+ | 2007 10 18 | 703 | 0.4+ | 0.5- | 2007 11 15 | 703 | 0.0   | 0.1-  |
| 2006 05 31 | 691 | 0.2+ | 0.0  | 2007 11 02 | 703 | 0.0  | 0.1+ | 2007 11 15 | 703 | 0.3-  | 0.2+  |
| 2006 05 31 | 691 | 0.1+ | 0.3- | 2007 11 02 | 703 | 1.0- | 0.1+ | 2007 11 15 | 703 | (2.2+ | 0.3+) |
| 2006 05 31 | 691 | 0.4- | 0.4+ | 2007 11 02 | 703 | 0.1+ | 0.9- |            |     |       |       |
| 2006 06 04 | 691 | 0.0  | 0.0  | 2007 11 02 | 703 | 0.3- | 0.7- |            |     |       |       |

**2006 KY<sub>77</sub> = 2007 VK<sub>269</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.75376   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28107733 | $\omega$ | 249.69123 | +0.96558983   | +0.22285521 |
| <i>a</i> | 2.3080870  | $\Omega$ | 97.24628  | -0.15794571   | +0.91203020 |
| <i>e</i> | 0.1397766  | <i>i</i> | 7.76662   | -0.20661423   | +0.34429124 |
| <i>P</i> | 3.51       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 24 | G96 | 0.3-  | 0.3-  | 2006 05 28 | 703 | 0.8- | 1.1+ | 2007 11 15 | 704 | 0.0  | 1.0- |
| 2006 05 24 | G96 | 0.3-  | 0.2-  | 2007 11 14 | 704 | 0.4+ | 0.6+ | 2007 12 04 | 704 | 0.1+ | 0.6+ |
| 2006 05 24 | G96 | 0.1-  | 0.3-  | 2007 11 14 | 704 | 0.1+ | 0.1- | 2007 12 04 | 704 | 0.1- | 0.3+ |
| 2006 05 24 | G96 | 0.1-  | 0.2-  | 2007 11 14 | 704 | 0.3- | 0.4+ | 2007 12 04 | 704 | 0.2- | 0.0  |
| 2006 05 26 | 691 | 0.3+  | 0.1-  | 2007 11 14 | 704 | 0.1+ | 0.6- | 2007 12 04 | 704 | 0.1- | 0.1- |
| 2006 05 26 | 691 | 0.0   | 0.0   | 2007 11 14 | 704 | 0.5- | 0.1+ | 2007 12 04 | 704 | 0.5- | 0.0  |
| 2006 05 26 | 691 | 0.3+  | 0.1-  | 2007 11 15 | 704 | 0.0  | 0.6- | 2007 12 05 | 699 | 0.0  | 0.8- |
| 2006 05 28 | 703 | (2.3- | 0.2-) | 2007 11 15 | 704 | 0.0  | 0.2+ | 2007 12 05 | 699 | 0.5- | 0.5+ |
| 2006 05 28 | 703 | 0.5-  | 0.0   | 2007 11 15 | 704 | 0.1- | 0.2+ | 2007 12 05 | 699 | 0.7+ | 0.2+ |
| 2006 05 28 | 703 | 0.4-  | 0.2+  | 2007 11 15 | 704 | 0.2+ | 0.7+ | 2007 12 05 | 699 | 0.4+ | 0.5- |

**2006 KU<sub>79</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 66.39022   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23738997 | $\omega$ | 232.57799 | +0.81058960   | +0.54412651 |
| <i>a</i> | 2.5832185  | $\Omega$ | 93.46534  | -0.44500429   | +0.81264050 |
| <i>e</i> | 0.2013287  | <i>i</i> | 12.52663  | -0.38067791   | +0.20866663 |
| <i>P</i> | 4.15       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|------|
| 2006 05 08 | G96 | 0.3+ | 0.0  | 2006 06 05 | 704 | 0.4-  | 0.5+  | 2007 11 09 | 703 | 0.4+  | 0.5+ |
| 2006 05 08 | G96 | 0.0  | 0.0  | 2006 06 05 | 704 | 0.2-  | 0.8-  | 2007 11 09 | 703 | 1.1-  | 0.3+ |
| 2006 05 08 | G96 | 0.3- | 0.4- | 2006 06 20 | 703 | 0.5+  | 0.7+  | 2007 11 17 | 703 | 0.7+  | 0.3- |
| 2006 05 08 | G96 | 0.2- | 0.1- | 2006 06 20 | 703 | 0.8-  | 0.6+  | 2007 11 17 | 703 | 0.2+  | 0.0  |
| 2006 05 25 | G96 | 0.1- | 0.0  | 2006 06 20 | 703 | 0.7+  | 0.6-  | 2007 11 17 | 703 | (1.6- | 0.0) |
| 2006 05 25 | G96 | 0.2- | 0.2- | 2006 06 20 | 703 | 1.4-  | 0.0   | 2007 11 17 | 703 | 0.5-  | 0.5+ |
| 2006 05 26 | 704 | 0.3+ | 0.3+ | 2006 06 21 | 691 | 0.1+  | 0.1+  | 2007 12 02 | 704 | 0.1-  | 0.4+ |
| 2006 05 26 | 704 | 0.1- | 0.3+ | 2006 06 21 | 691 | 0.2+  | 0.0   | 2007 12 02 | 704 | 0.1+  | 1.2+ |
| 2006 05 26 | 704 | 0.8+ | 1.1+ | 2006 06 21 | 691 | 0.1+  | 0.1-  | 2007 12 02 | 704 | 1.3-  | 0.3+ |
| 2006 06 01 | G96 | 0.0  | 0.2- | 2007 11 04 | G96 | 0.0   | 0.6-  | 2007 12 02 | 704 | 0.1+  | 0.4- |
| 2006 06 01 | G96 | 0.1- | 0.3- | 2007 11 04 | G96 | 0.0   | 0.6-  | 2007 12 05 | 703 | 0.8-  | 0.5- |
| 2006 06 01 | G96 | 0.3+ | 0.2- | 2007 11 04 | G96 | 0.2+  | 0.6-  | 2007 12 05 | 703 | 0.1-  | 0.7+ |
| 2006 06 01 | G96 | 0.3- | 0.2- | 2007 11 04 | G96 | 0.4+  | 0.7-  | 2007 12 05 | 703 | 1.1+  | 0.5+ |
| 2006 06 05 | 704 | 0.1- | 0.1- | 2007 11 09 | 703 | 0.2+  | 0.0   | 2007 12 05 | 703 | 0.2+  | 0.1+ |
| 2006 06 05 | 704 | 0.2+ | 0.6+ | 2007 11 09 | 703 | (0.8+ | 1.6+) |            |     |       |      |

2007 DEC. 24

M.P.O. 129765

**2006 KS<sub>80</sub> = 2003 SN<sub>365</sub> = 2007 UC<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27513316 | $\omega$ | 66.47530  | -0.16350287 | +0.98617780 |          |   |
| <i>a</i> | 2.3412121  | $\Omega$ | 194.19286 | -0.94035872 | -0.16401639 |          |   |
| <i>e</i> | 0.1331529  | <i>i</i> | 6.28364   | -0.29831576 | -0.02349410 |          |   |
| <i>P</i> | 3.58       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 26 | 645 | 0.0  | 0.0  | 2006 05 25 | G96 | 0.2- | 0.3- | 2007 10 16 | 691 | 0.1+ | 0.0  |
| 2003 09 26 | 645 | 0.1- | 0.1+ | 2006 05 26 | 691 | 0.1+ | 0.0  | 2007 10 16 | 691 | 0.0  | 0.1+ |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2006 05 26 | 691 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.4- | 0.2+ |
| 2003 09 28 | 645 | 0.1+ | 0.0  | 2006 05 26 | 691 | 0.0  | 0.1+ | 2007 10 20 | 691 | 0.1+ | 0.1- |
| 2006 05 07 | G96 | 0.2- | 0.2- | 2006 05 30 | 691 | 0.2+ | 0.1- | 2007 10 20 | 691 | 0.2+ | 0.1- |
| 2006 05 07 | G96 | 0.2- | 0.2- | 2006 05 30 | 691 | 0.1+ | 0.2+ | 2007 10 20 | 691 | 0.0  | 0.2- |
| 2006 05 07 | G96 | 0.3- | 0.6- | 2006 05 30 | 691 | 0.1+ | 0.1+ | 2007 11 02 | G96 | 0.5+ | 0.0  |
| 2006 05 07 | G96 | 0.4- | 0.0  | 2007 10 08 | 691 | 0.2- | 0.2+ | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2006 05 25 | G96 | 0.5- | 0.3- | 2007 10 08 | 691 | 0.1- | 0.4+ | 2007 11 02 | G96 | 0.4+ | 0.4+ |
| 2006 05 25 | G96 | 0.4- | 0.1- | 2007 10 08 | 691 | 0.1- | 0.8- | 2007 11 02 | G96 | 0.6+ | 0.4- |

**2006 KC<sub>83</sub> = 2007 TK<sub>302</sub> = 2007 TJ<sub>228</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27942872 | $\omega$ | 239.31163 | -0.31051303 | +0.95052298 |          |   |
| <i>a</i> | 2.3171564  | $\Omega$ | 12.60864  | -0.85679600 | -0.27560027 |          |   |
| <i>e</i> | 0.1907831  | <i>i</i> | 2.45908   | -0.41168225 | -0.14335465 |          |   |
| <i>P</i> | 3.53       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 20 | 699 | 0.1+ | 0.6+ | 2006 05 31 | G96 | 0.1- | 0.3- | 2007 10 12 | 691 | 0.3+ | 0.1+ |
| 2006 05 20 | 699 | 1.3- | 0.6+ | 2006 05 31 | G96 | 0.1+ | 0.3- | 2007 10 16 | 691 | 0.0  | 0.2+ |
| 2006 05 20 | 699 | 0.5+ | 1.0+ | 2006 05 31 | G96 | 0.2+ | 0.5- | 2007 10 16 | 691 | 0.2+ | 0.1+ |
| 2006 05 20 | 699 | 1.8+ | 0.1- | 2007 10 08 | 691 | 1.0- | 0.1+ | 2007 10 16 | 691 | 0.2+ | 0.0  |
| 2006 05 26 | 644 | 0.3- | 0.1- | 2007 10 08 | 691 | 0.3+ | 0.0  | 2007 10 21 | 691 | 0.4- | 0.0  |
| 2006 05 26 | 644 | 0.3- | 0.1+ | 2007 10 08 | 691 | 0.6+ | 0.2+ | 2007 10 21 | 691 | 0.0  | 0.1+ |
| 2006 05 26 | 644 | 0.8- | 0.5- | 2007 10 12 | 691 | 0.2+ | 0.4+ | 2007 10 21 | 691 | 0.2- | 0.0  |
| 2006 05 31 | G96 | 0.2+ | 0.2- | 2007 10 12 | 691 | 0.5- | 0.7- |            |     |      |      |

**2006 KG<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.29367641 | $\omega$ | 212.08462 | +0.18959763 | +0.97318232 |          |   |
| <i>a</i> | 2.2415925  | $\Omega$ | 69.12766  | -0.86881852 | +0.22808958 |          |   |
| <i>e</i> | 0.1228083  | <i>i</i> | 8.01391   | -0.45739165 | -0.02985492 |          |   |
| <i>P</i> | 3.36       | <i>H</i> | 18.0      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 25 | 691 | 0.0  | 0.0  | 2006 06 02 | 691 | 0.0  | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.1+ |
| 2006 05 25 | 691 | 0.2+ | 0.0  | 2006 06 02 | 691 | 0.2- | 0.3+ | 2007 10 20 | G96 | 0.7+ | 0.2+ |
| 2006 05 25 | 691 | 0.1+ | 0.2+ | 2006 06 19 | G96 | 1.0- | 0.4+ | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2006 05 29 | 691 | 0.0  | 0.2- | 2006 06 19 | G96 | 0.0  | 0.2- | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2006 05 29 | 691 | 0.0  | 0.1- | 2006 06 19 | G96 | 0.1- | 0.3- | 2007 11 19 | 691 | 0.3- | 0.3+ |
| 2006 05 29 | 691 | 0.1+ | 0.2- | 2006 06 19 | G96 | 0.1- | 0.0  | 2007 11 19 | 691 | 0.3- | 0.0  |
| 2006 06 02 | 691 | 0.2+ | 0.2+ | 2007 10 20 | G96 | 0.2+ | 0.0  |            |     |      |      |

**2006 KL<sub>100</sub> = 2007 UW<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.28792240 | $\omega$ | 210.62996 | -0.21286254 | +0.97600465 |          |   |
| <i>a</i> | 2.2713588  | $\Omega$ | 47.12282  | -0.88329076 | -0.17214538 |          |   |
| <i>e</i> | 0.1363233  | <i>i</i> | 3.58909   | -0.41771637 | -0.13334503 |          |   |
| <i>P</i> | 3.42       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 19 | 691 | 0.0   | 0.1-  | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.1- | 0.3- |
| 2000 10 19 | 691 | 0.1-  | 0.0   | 2007 10 30 | G96 | 0.8+ | 0.2- | 2007 11 11 | G96 | 0.6+ | 0.2- |
| 2000 10 19 | 691 | 0.1+  | 0.2+  | 2007 10 30 | G96 | 0.7+ | 0.0  | 2007 11 11 | G96 | 0.7+ | 0.3- |
| 2006 05 23 | 428 | 0.1+  | 0.7+  | 2007 10 30 | G96 | 0.1+ | 0.3- | 2007 11 11 | G96 | 0.0  | 0.7- |
| 2006 05 23 | 428 | 0.3+  | 1.0-  | 2007 10 30 | G96 | 0.6+ | 0.2- | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2006 05 29 | 428 | 0.2-  | 0.4+  | 2007 11 02 | 291 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.6- | 0.1- |
| 2006 05 29 | 428 | 0.7+  | 0.1+  | 2007 11 02 | 291 | 0.2- | 0.0  | 2007 11 14 | 691 | 0.2+ | 0.2- |
| 2006 05 30 | 428 | (2.3- | 0.4+) | 2007 11 02 | 291 | 0.3- | 0.3+ | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2006 05 30 | 428 | 1.0-  | 0.3-  | 2007 11 03 | 691 | 0.2- | 0.3+ | 2007 11 18 | 691 | 0.0  | 0.3- |
| 2007 10 30 | 691 | 0.1+  | 0.1+  | 2007 11 03 | 691 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.5- | 0.2+ |
| 2007 10 30 | 691 | 0.1+  | 0.4-  | 2007 11 03 | 691 | 0.2+ | 0.0  |            |     |      |      |

**2006 KH<sub>112</sub> = 2007 UK<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.29669290 | $\omega$ | 171.04894 | -0.99990434 | -0.01274502 |          |   |
| <i>a</i> | 2.2263731  | $\Omega$ | 8.22652   | +0.00917807 | -0.90202046 |          |   |
| <i>e</i> | 0.0447989  | <i>i</i> | 2.15210   | +0.01034748 | -0.43150510 |          |   |
| <i>P</i> | 3.32       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 13 | 691 | 0.1- | 0.6- | 2006 05 23 | G96 | 0.3- | 0.0  | 2007 10 04 | 691 | 0.3+ | 0.5+ |
| 1999 03 13 | 691 | 0.1- | 0.5- | 2006 05 23 | G96 | 0.1- | 0.0  | 2007 10 04 | 691 | 0.2- | 0.1+ |
| 1999 03 13 | 691 | 0.1+ | 0.1- | 2006 05 31 | G96 | 0.2+ | 0.2+ | 2007 10 18 | G96 | 0.2+ | 0.1- |
| 2000 08 30 | I03 | 0.1- | 0.0  | 2006 05 31 | G96 | 0.2+ | 0.2+ | 2007 10 18 | G96 | 0.2+ | 0.2- |
| 2000 08 30 | I03 | 0.7+ | 0.2+ | 2006 05 31 | G96 | 0.1+ | 0.1+ | 2007 10 18 | G96 | 0.3+ | 0.1- |
| 2000 08 30 | I03 | 0.8- | 0.3- | 2006 05 31 | G96 | 0.5- | 0.1- | 2007 10 18 | G96 | 0.5+ | 0.0  |
| 2002 01 13 | 691 | 0.3+ | 0.2+ | 2006 06 01 | G96 | 0.2+ | 0.3- | 2007 10 20 | 703 | 0.2+ | 0.4- |
| 2002 01 13 | 691 | 0.3- | 0.3+ | 2006 06 01 | G96 | 0.0  | 0.0  | 2007 10 20 | 703 | 0.4+ | 0.4- |
| 2002 01 13 | 691 | 0.3- | 0.0  | 2006 06 01 | G96 | 0.3+ | 0.1- | 2007 10 20 | 703 | 1.3- | 0.4- |
| 2006 05 23 | G96 | 0.3- | 0.2+ | 2006 06 01 | G96 | 0.1+ | 0.5- | 2007 10 20 | 703 | 0.5+ | 1.0- |
| 2006 05 23 | G96 | 0.0  | 0.1- | 2007 10 04 | 691 | 0.1- | 0.9+ |            |     |      |      |

**2006 KW<sub>137</sub> = 2007 TR<sub>287</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21880463 | $\omega$ | 316.94008 | +0.94233816 | -0.29653029 |          |   |
| <i>a</i> | 2.7275018  | $\Omega$ | 60.91870  | +0.33441423 | +0.81650534 |          |   |
| <i>e</i> | 0.2245351  | <i>i</i> | 10.22536  | +0.01288094 | +0.49536735 |          |   |
| <i>P</i> | 4.50       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 23 | G96 | 0.3- | 0.1- | 2006 05 26 | 568 | 0.2- | 0.3- | 2007 10 15 | 699 | 0.9+ | 0.8- |
| 2006 05 23 | G96 | 0.0  | 0.1+ | 2007 10 11 | 703 | 0.7+ | 0.3- | 2007 10 15 | 699 | 0.4+ | 0.3- |
| 2006 05 23 | G96 | 0.2+ | 0.2- | 2007 10 11 | 703 | 0.6- | 0.9+ | 2007 10 19 | 703 | 0.4- | 0.6+ |
| 2006 05 23 | G96 | 0.4+ | 0.2+ | 2007 10 11 | 703 | 0.9- | 0.4+ | 2007 10 19 | 703 | 0.5- | 0.4- |
| 2006 05 25 | 568 | 0.1+ | 0.2+ | 2007 10 11 | 703 | 1.2- | 0.3- | 2007 10 19 | 703 | 0.0  | 0.3+ |
| 2006 05 25 | 568 | 0.1- | 0.0  | 2007 10 15 | 699 | 1.9+ | 0.5- | 2007 10 19 | 703 | 0.8- | 0.1+ |
| 2006 05 25 | 568 | 0.0  | 0.1+ | 2007 10 15 | 699 | 0.4+ | 0.2+ |            |     |      |      |

**2006 LJ = 2007 TW<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23823434 | $\omega$ | 142.49369 | -0.88836995 | +0.20236884 |          |   |
| <i>a</i> | 2.5771111  | $\Omega$ | 54.44250  | -0.43472280 | -0.65950970 |          |   |
| <i>e</i> | 0.0112903  | <i>i</i> | 30.43663  | +0.14769874 | -0.72394323 |          |   |
| <i>P</i> | 4.14       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 12 13 | 691 | 0.3- | 0.1+ | 2006 05 29 | E12 | 0.8+ | 0.2- | 2007 10 05 | E12 | 0.7- | 0.1+ |
| 1991 12 13 | 691 | 0.2- | 0.3+ | 2006 05 29 | E12 | 0.4- | 1.4- | 2007 10 05 | E12 | 0.6+ | 0.5- |
| 1995 12 19 | 691 | 0.2- | 0.0  | 2006 05 29 | E12 | 0.2+ | 0.5- | 2007 10 05 | E12 | 0.2- | 0.8- |
| 1995 12 19 | 691 | 0.2+ | 0.4- | 2006 05 31 | 428 | 0.6- | 0.1- | 2007 10 06 | E12 | 0.6- | 0.2- |
| 1995 12 19 | 691 | 0.0  | 0.1- | 2006 06 01 | 428 | 0.6- | 0.5+ | 2007 10 06 | E12 | 0.3+ | 1.1+ |

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2003 10 26 | 699 | (1.1+ 3.4-) | 2006 06 01 | 428 | 0.8- 0.0  | 2007 10 06 | E12 | 0.2+ 0.4- |
| 2003 10 26 | 699 | 1.5+ 0.3+   | 2006 06 02 | 428 | 0.4- 1.0+ | 2007 10 06 | E12 | 0.6+ 0.4+ |
| 2003 10 26 | 699 | 0.3- 0.1+   | 2006 06 02 | 428 | 0.5+ 1.4+ | 2007 10 19 | E12 | 0.2+ 0.1- |
| 2003 10 26 | 699 | 1.0+ 1.2-   | 2007 09 09 | E12 | 0.1+ 0.1- | 2007 10 19 | E12 | 0.7- 0.4+ |
| 2006 04 25 | G96 | 0.0 0.6-    | 2007 09 09 | E12 | 0.5- 0.8+ | 2007 10 19 | E12 | 0.4- 0.2+ |
| 2006 04 25 | G96 | 0.3+ 0.1-   | 2007 09 09 | E12 | 0.1+ 0.1- | 2007 10 19 | E12 | 0.1- 0.3+ |
| 2006 04 25 | G96 | 0.5+ 0.1-   | 2007 09 09 | E12 | 0.9- 0.5- |            |     |           |
| 2006 04 25 | G96 | 0.3+ 0.0    | 2007 10 05 | E12 | 0.2+ 0.2+ |            |     |           |

**2006 MU<sub>7</sub> = 2007 UH<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.39803   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18480914 | $\omega$ | 111.42310 | +0.97882181   | +0.20393401 |
| <i>a</i> | 3.0524865  | $\Omega$ | 236.81387 | -0.19483549   | +0.90127201 |
| <i>e</i> | 0.1145699  | <i>i</i> | 1.22245   | -0.06282513   | +0.38225604 |
| <i>P</i> | 5.33       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2002 12 05 | 291 | 0.0 0.4+  | 2006 06 18 | 691 | 0.1- 0.2- | 2007 10 14 | 691 | 0.3- 0.1+ |
| 2002 12 05 | 291 | 0.3- 0.1- | 2006 06 22 | 691 | 0.1+ 0.3+ | 2007 10 14 | 691 | 0.3- 0.1+ |
| 2002 12 05 | 291 | 0.5- 0.1+ | 2006 06 22 | 691 | 0.3- 0.1- | 2007 10 18 | 691 | 0.2- 0.0  |
| 2003 01 04 | 291 | 0.3+ 0.3+ | 2006 06 22 | 691 | 0.1+ 0.0  | 2007 10 18 | 691 | 0.2- 0.3+ |
| 2003 01 04 | 291 | 0.5+ 0.3- | 2006 07 21 | G96 | 0.0 0.3+  | 2007 10 18 | 691 | 0.1- 0.0  |
| 2003 01 04 | 291 | 0.2+ 0.0  | 2006 07 21 | G96 | 0.2+ 0.0  | 2007 10 30 | G96 | 0.9+ 0.2- |
| 2005 04 10 | G96 | 0.7- 0.1- | 2006 07 21 | G96 | 0.3- 0.1+ | 2007 10 30 | G96 | 1.1+ 0.1- |
| 2005 04 10 | G96 | 0.2+ 0.1- | 2006 07 21 | G96 | 0.0 0.1-  | 2007 10 30 | G96 | 0.8+ 0.0  |
| 2005 04 10 | G96 | 0.1+ 0.1+ | 2007 09 10 | G96 | 0.6+ 0.1- | 2007 10 30 | G96 | 0.4+ 0.1- |
| 2005 04 10 | G96 | 0.5+ 0.1+ | 2007 09 10 | G96 | 0.8+ 0.0  | 2007 11 02 | 291 | 0.0 0.1-  |
| 2006 05 25 | G96 | 0.5- 0.2- | 2007 09 10 | G96 | 0.5+ 0.4- | 2007 11 02 | 291 | 0.1+ 0.1- |
| 2006 05 25 | G96 | 0.5- 0.2+ | 2007 09 10 | G96 | 0.8+ 0.1- | 2007 11 02 | 291 | 0.2+ 0.0  |
| 2006 05 25 | G96 | 0.2- 0.1+ | 2007 10 06 | 691 | 0.6- 0.1+ | 2007 11 11 | G96 | 0.4+ 0.0  |
| 2006 05 25 | G96 | 0.3+ 0.0  | 2007 10 06 | 691 | 0.1- 0.3- | 2007 11 11 | G96 | 0.5+ 0.0  |
| 2006 06 18 | 691 | 0.2+ 0.0  | 2007 10 06 | 691 | 0.4- 0.1- | 2007 11 11 | G96 | 0.6+ 0.2- |
| 2006 06 18 | 691 | 0.2+ 0.1+ | 2007 10 14 | 691 | 0.1- 0.3+ | 2007 11 11 | G96 | 0.8+ 0.2- |

**2006 MY<sub>7</sub> = 2007 WZ<sub>48</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.64967   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22407222 | $\omega$ | 200.40216 | +0.87145921   | +0.48883721 |
| <i>a</i> | 2.6845863  | $\Omega$ | 130.26917 | -0.44242097   | +0.81864681 |
| <i>e</i> | 0.0810826  | <i>i</i> | 3.00222   | -0.21171331   | +0.30142261 |
| <i>P</i> | 4.40       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2000 02 10 | 691 | 0.2- 0.3- | 2006 06 18 | 691 | 0.5- 0.2+ | 2007 11 20 | G96 | 0.0 0.2+  |
| 2000 02 10 | 691 | 0.3- 0.1- | 2006 06 18 | 691 | 0.0 0.1-  | 2007 11 20 | G96 | 0.1+ 0.1- |
| 2000 02 10 | 691 | 0.0 0.6-  | 2006 06 18 | 691 | 0.1+ 0.0  | 2007 11 20 | G96 | 0.7- 1.0+ |
| 2001 05 17 | 691 | 0.3+ 0.3+ | 2006 06 22 | 691 | 0.1- 0.1+ | 2007 11 21 | G96 | 0.4+ 0.2+ |
| 2001 05 17 | 691 | 0.1- 0.1+ | 2006 06 22 | 691 | 0.1- 0.1+ | 2007 11 21 | G96 | 0.2+ 0.0  |
| 2001 05 17 | 691 | 0.4+ 0.4+ | 2006 06 22 | 691 | 0.1+ 0.8- | 2007 11 21 | G96 | 0.2- 0.2- |
| 2005 03 11 | 691 | 0.1+ 0.0  | 2006 07 21 | G96 | 0.2+ 0.2+ | 2007 11 21 | G96 | 0.2+ 0.1+ |
| 2005 03 11 | 691 | 0.2+ 0.3+ | 2006 07 21 | G96 | 0.1+ 0.0  |            |     |           |
| 2005 03 11 | 691 | 0.1- 0.3+ | 2007 11 20 | G96 | 0.1- 0.2+ |            |     |           |

**2006 MW<sub>11</sub> = 2007 VV<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.46956   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29944437 | $\omega$ | 254.29012 | +0.94787286   | -0.30583798 |
| <i>a</i> | 2.2127140  | $\Omega$ | 123.44014 | +0.31764655   | +0.88465823 |
| <i>e</i> | 0.1410538  | <i>i</i> | 6.15320   | +0.02525304   | +0.35191327 |
| <i>P</i> | 3.29       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |           |            |     |          |            |     |           |
|------------|-----|-----------|------------|-----|----------|------------|-----|-----------|
| 2005 01 16 | 691 | 0.2+ 0.1+ | 2006 06 23 | 691 | 0.1+ 0.0 | 2007 11 09 | 703 | 0.8- 0.6+ |
| 2005 01 16 | 691 | 0.1- 0.1+ | 2006 06 23 | 691 | 0.0 0.1+ | 2007 11 14 | 699 | 1.7+ 0.9- |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2005 01 16 | 691 | 0.2+ 0.1+ | 2007 10 17 | G96 | 0.6- 0.2- | 2007 11 14 | 699 | 0.1- 0.1- |
| 2005 03 10 | G96 | 0.2- 1.0- | 2007 10 17 | G96 | 0.1- 0.1- | 2007 11 14 | 699 | 0.6+ 0.6+ |
| 2005 03 10 | G96 | 0.3- 0.3- | 2007 10 17 | G96 | 0.1- 0.0  | 2007 11 14 | 699 | 1.0+ 0.6- |
| 2005 03 10 | G96 | 0.6- 0.5- | 2007 10 17 | G96 | 0.3- 0.0  | 2007 11 17 | 703 | 1.2- 0.2- |
| 2005 03 10 | G96 | 0.3- 0.4- | 2007 11 02 | 703 | 0.2- 0.4- | 2007 11 17 | 703 | 0.1+ 0.2- |
| 2006 04 19 | 691 | 0.6+ 0.4+ | 2007 11 02 | 703 | 0.0 0.7-  | 2007 11 17 | 703 | 0.3- 0.3+ |
| 2006 04 19 | 691 | 0.2+ 0.4+ | 2007 11 02 | 703 | 0.1+ 0.5+ | 2007 11 17 | 703 | 0.4+ 0.2+ |
| 2006 04 19 | 691 | 0.4+ 0.5- | 2007 11 02 | 703 | 0.8- 0.5- | 2007 11 18 | G96 | 0.2+ 0.1+ |
| 2006 05 24 | G96 | 0.9- 0.4- | 2007 11 04 | G96 | 0.1- 0.0  | 2007 11 18 | G96 | 0.2+ 0.1+ |
| 2006 05 24 | G96 | 0.9- 0.0  | 2007 11 04 | G96 | 0.2- 0.1+ | 2007 11 18 | G96 | 0.2+ 0.1+ |
| 2006 05 24 | G96 | 0.4- 0.1+ | 2007 11 04 | G96 | 0.2+ 0.3- | 2007 11 18 | G96 | 0.1+ 0.0  |
| 2006 06 19 | 691 | 0.1- 0.1- | 2007 11 04 | G96 | 0.5- 0.0  | 2007 11 20 | 703 | 0.5- 0.1+ |
| 2006 06 19 | 691 | 0.5- 0.6- | 2007 11 09 | 703 | 0.1- 1.0+ | 2007 11 20 | 703 | 0.5+ 0.6+ |
| 2006 06 19 | 691 | 0.1- 0.2+ | 2007 11 09 | 703 | 0.5- 0.2+ | 2007 11 20 | 703 | 0.0 0.7-  |
| 2006 06 23 | 691 | 0.0 0.4+  | 2007 11 09 | 703 | 0.7+ 0.5+ | 2007 11 20 | 703 | 0.0 0.5+  |

**2006 NM**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 90.54255   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21210689 | $\omega$ | 29.97415  | +0.78081135   | +0.58230830 |
| <i>a</i> | 2.7846216  | $\Omega$ | 292.67180 | -0.61082997   | +0.63540520 |
| <i>e</i> | 0.6151993  | <i>i</i> | 14.20219  | -0.13122642   | +0.50712648 |
| <i>P</i> | 4.65       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |        |        |
|------------|-----|------|------|------------|-----|------|------|------------|-----|--------|--------|
| 2006 07 03 | E12 | 0.0  | 0.0  | 2006 09 09 | J68 | 0.3+ | 0.1+ | 2006 10 11 | A48 | 0.8+   | 0.6+   |
| 2006 07 03 | E12 | 0.1+ | 0.1- | 2006 09 09 | J68 | 0.4+ | 0.2+ | 2006 10 11 | A48 | 0.8+   | 0.1-   |
| 2006 07 03 | E12 | 0.2+ | 0.2+ | 2006 09 09 | H67 | 0.4- | 0.4- | 2006 10 12 | 379 | 0.3-   | 0.4+   |
| 2006 07 03 | E12 | 0.0  | 0.0  | 2006 09 09 | H98 | 0.1- | 0.3- | 2006 10 12 | 379 | 0.2+   | 0.1-   |
| 2006 07 03 | E12 | 0.1+ | 0.2+ | 2006 09 09 | H67 | 0.4+ | 0.4+ | 2006 10 12 | 379 | 0.2-   | 0.3-   |
| 2006 07 03 | E12 | 0.4- | 0.1- | 2006 09 09 | H98 | 0.3- | 0.4- | 2006 10 12 | 379 | 0.3+   | 0.1-   |
| 2006 07 03 | E12 | 0.2+ | 0.0  | 2006 09 09 | H98 | 0.5- | 0.1- | 2006 10 12 | 379 | 0.5-   | 0.2-   |
| 2006 07 03 | E12 | 0.2- | 0.1- | 2006 09 09 | H67 | 0.1- | 0.1+ | 2006 10 12 | 198 | 0.1-   | 0.1+   |
| 2006 07 03 | E12 | 0.1- | 0.5+ | 2006 09 09 | H67 | 0.1+ | 0.1+ | 2006 10 12 | 198 | 0.0    | 0.0    |
| 2006 07 03 | E12 | 0.1+ | 0.1- | 2006 09 09 | H67 | 0.2+ | 0.3+ | 2006 10 12 | 198 | 0.1-   | 0.2+   |
| 2006 07 03 | I77 | 0.4- | 0.5+ | 2006 09 09 | I13 | 0.2+ | 0.3- | 2006 10 12 | 198 | 0.1-   | 0.1+   |
| 2006 07 03 | I77 | 0.2- | 0.2- | 2006 09 09 | I13 | 0.1- | 0.2- | 2006 10 12 | 198 | 0.2-   | 0.0    |
| 2006 07 03 | I77 | 0.2+ | 0.3- | 2006 09 09 | I13 | 0.0  | 0.0  | 2006 10 12 | 084 | 0.5+   | 0.2+   |
| 2006 07 04 | E12 | 0.1+ | 0.0  | 2006 09 09 | I13 | 0.1+ | 0.1- | 2006 10 13 | J94 | 0.4-   | 0.0    |
| 2006 07 04 | E12 | 0.3- | 0.1+ | 2006 09 09 | I13 | 0.1- | 0.2- | 2006 10 13 | A24 | 0.1-   | 0.3+   |
| 2006 07 04 | E12 | 0.3- | 0.1+ | 2006 09 09 | A89 | 0.1+ | 0.4- | 2006 10 13 | 940 | 0.0    | 0.3+   |
| 2006 07 04 | E12 | 0.1- | 0.2- | 2006 09 09 | A89 | 0.1+ | 0.6- | 2006 10 13 | J94 | 0.2+   | 0.6-   |
| 2006 07 04 | 423 | 0.3- | 0.0  | 2006 09 09 | A89 | 0.3+ | 0.3- | 2006 10 13 | J94 | 0.1+   | 0.0    |
| 2006 07 04 | 423 | 0.1- | 0.1- | 2006 09 09 | J68 | 0.2+ | 0.3- | 2006 10 13 | 940 | 0.2-   | 0.0    |
| 2006 07 04 | 423 | 0.1- | 0.0  | 2006 09 09 | J68 | 0.3- | 0.2- | 2006 10 13 | 940 | 0.2-   | 0.2+   |
| 2006 07 04 | 423 | 0.1- | 0.3- | 2006 09 10 | J68 | 0.1+ | 0.0  | 2006 10 13 | A24 | 0.0    | 0.0    |
| 2006 07 04 | 423 | 0.3- | 0.0  | 2006 09 10 | H45 | 0.1- | 0.2- | 2006 10 13 | A24 | 0.3-   | 0.2+   |
| 2006 07 04 | E12 | 0.1+ | 0.0  | 2006 09 10 | H45 | 0.2- | 0.2- | 2006 10 13 | A24 | 0.0    | 0.2+   |
| 2006 07 04 | E12 | 0.3- | 0.2- | 2006 09 10 | H45 | 0.1- | 0.2- | 2006 10 15 | 113 | 0.6-   | 0.5+   |
| 2006 07 04 | E12 | 0.3- | 0.1- | 2006 09 10 | H45 | 0.2- | 0.2- | 2006 10 15 | 113 | 0.1+   | 0.2-   |
| 2006 07 04 | E12 | 0.4- | 0.3+ | 2006 09 10 | H45 | 0.1- | 0.2- | 2006 10 15 | 113 | 0.1-   | 0.3-   |
| 2006 07 05 | 673 | 0.5+ | 0.2+ | 2006 09 10 | H45 | 0.2- | 0.2- | 2006 10 15 | 113 | 0.0    | 0.1-   |
| 2006 07 05 | 673 | 0.4+ | 0.3+ | 2006 09 10 | H45 | 0.1- | 0.3- | 2006 10 15 | 113 | 0.1-   | 0.1-   |
| 2006 07 05 | 673 | 0.2+ | 0.3+ | 2006 09 10 | 240 | 0.0  | 0.4- | 2006 10 15 | A24 | 0.2-   | 0.3+   |
| 2006 07 05 | 673 | 0.1+ | 0.1- | 2006 09 10 | 240 | 0.1+ | 0.2- | 2006 10 15 | A24 | 0.0    | 0.0    |
| 2006 07 05 | 423 | 0.1- | 0.4- | 2006 09 10 | 240 | 0.0  | 0.3- | 2006 10 15 | A24 | 0.3+   | 0.1+   |
| 2006 07 05 | 423 | 0.0  | 0.2- | 2006 09 10 | 240 | 0.1- | 0.1- | 2006 10 15 | A24 | 0.0    | 0.4+   |
| 2006 07 05 | 423 | 0.1+ | 0.2- | 2006 09 10 | 240 | 0.1+ | 0.0  | 2006 10 15 | A24 | 0.6+   | 1.3-   |
| 2006 07 05 | 423 | 0.0  | 0.1- | 2006 09 10 | 240 | 0.1+ | 0.1- | 2006 10 15 | A24 | 0.1-   | 0.2+   |
| 2006 07 05 | E12 | 0.0  | 0.1- | 2006 09 10 | 240 | 0.1- | 0.1- | 2006 10 15 | B09 | 2.6-   | 1.0+   |
| 2006 07 05 | E12 | 0.1+ | 0.0  | 2006 09 10 | 240 | 0.1- | 0.2- | 2006 10 15 | B09 | (3.4-  | 1.0+)  |
| 2006 07 05 | E12 | 0.3- | 0.2- | 2006 09 10 | 240 | 0.1+ | 0.1- | 2006 10 15 | B09 | (16.4+ | 17.6-) |
| 2006 07 05 | E12 | 0.3- | 0.1- | 2006 09 10 | 240 | 0.0  | 0.1- | 2006 10 16 | 379 | 0.0    | 0.1+   |
| 2006 07 05 | I77 | 0.1- | 0.3- | 2006 09 10 | 240 | 0.2+ | 0.1- | 2006 10 16 | 379 | 0.0    | 0.1-   |
| 2006 07 05 | I77 | 0.0  | 0.3- | 2006 09 10 | 240 | 0.1+ | 0.2- | 2006 10 16 | 379 | 0.2+   | 0.2-   |
| 2006 07 05 | I77 | 0.2+ | 0.3- | 2006 09 10 | 240 | 0.0  | 0.0  | 2006 10 16 | 379 | 0.1-   | 0.1+   |
| 2006 07 06 | H36 | 0.2+ | 2.0- | 2006 09 10 | 240 | 0.1+ | 0.1- | 2006 10 16 | 379 | 0.4-   | 0.3-   |

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M.P.O. 129767

|                |      |      |                |      |      |                |      |      |                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2006 07 06 H36 | 1.0- | 0.3- | 2006 09 10 240 | 0.1+ | 0.1- | 2006 10 16 379 | 0.4- | 0.3- | 2006 07 27 379 | 0.2+ | 0.2+ | 2006 09 13 127 | 0.2+  | 0.1-  | 2006 10 21 H45 | 0.1- | 0.2- |
| 2006 07 06 423 | 0.4- | 0.0  | 2006 09 10 084 | 0.0  | 0.5- | 2006 10 16 379 | 0.1- | 0.2- | 2006 07 27 379 | 0.3- | 0.0  | 2006 09 13 127 | 0.2+  | 0.2+  | 2006 10 21 H45 | 0.1- | 0.3- |
| 2006 07 06 423 | 0.0  | 0.0  | 2006 09 10 084 | 0.2+ | 0.1- | 2006 10 16 379 | 0.4- | 0.1- | 2006 07 27 379 | 0.4- | 0.0  | 2006 09 14 113 | 0.0   | 0.2-  | 2006 10 21 H45 | 0.0  | 0.4- |
| 2006 07 06 423 | 0.3  | 0.1- | 2006 09 10 A48 | 1.0+ | 0.7+ | 2006 10 16 113 | 0.0  | 0.1- | 2006 07 27 379 | 0.0  | 0.2+ | 2006 09 14 113 | 0.1+  | 0.1-  | 2006 10 24 H45 | 0.1- | 0.2- |
| 2006 07 06 423 | 0.3+ | 0.0  | 2006 09 10 A48 | 0.7+ | 0.7+ | 2006 10 16 113 | 0.1+ | 0.2- | 2006 07 27 379 | 0.0  | 0.1+ | 2006 09 14 113 | 0.1+  | 0.1-  | 2006 10 24 H45 | 0.1- | 0.1- |
| 2006 07 06 423 | 0.1- | 0.1- | 2006 09 10 A48 | 1.1+ | 0.8+ | 2006 10 16 113 | 0.0  | 0.2- | 2006 07 27 379 | 0.2- | 0.2- | 2006 09 14 113 | 0.1+  | 0.1-  | 2006 10 24 H45 | 0.2- | 0.1- |
| 2006 07 06 E12 | 0.1- | 0.2+ | 2006 09 10 A48 | 0.7+ | 0.8+ | 2006 10 16 113 | 0.1+ | 0.2- | 2006 07 29 J87 | 0.0  | 0.1- | 2006 09 14 113 | 0.1+  | 0.3-  | 2006 10 24 H45 | 0.1- | 0.2- |
| 2006 07 06 E12 | 0.0  | 0.1+ | 2006 09 10 A06 | 0.6- | 0.4- | 2006 10 16 113 | 0.1+ | 0.1- | 2006 07 29 J87 | 0.1- | 0.1- | 2006 09 15 H68 | 0.7+  | 0.2+  | 2006 10 24 H45 | 0.1- | 0.3- |
| 2006 07 06 E12 | 0.5- | 0.6- | 2006 09 10 A06 | 0.4+ | 0.2+ | 2006 10 16 A27 | 0.1- | 0.0  | 2006 07 29 J87 | 0.0  | 0.2- | 2006 09 15 H68 | 0.7+  | 0.2+  | 2006 10 24 H45 | 0.1- | 0.2- |
| 2006 07 06 E12 | 0.0  | 0.3- | 2006 09 10 A06 | 0.1- | 0.1+ | 2006 10 16 A27 | 0.2+ | 0.3- | 2006 08 05 E12 | 0.1- | 0.1- | 2006 09 15 H68 | 1.1+  | 1.3+  | 2006 10 24 151 | 0.2- | 0.1+ |
| 2006 07 06 E26 | 0.1- | 0.2- | 2006 09 10 J68 | 0.2+ | 0.0  | 2006 10 16 A27 | 0.0  | 0.1+ | 2006 08 05 E12 | 0.2- | 0.0  | 2006 09 15 H68 | 0.9+  | 0.9+  | 2006 10 24 151 | 0.1- | 0.1+ |
| 2006 07 06 E26 | 0.0  | 0.1- | 2006 09 10 J68 | 0.0  | 0.1+ | 2006 10 16 A27 | 0.3- | 0.4+ | 2006 08 05 E12 | 0.2- | 0.3+ | 2006 09 15 H68 | 1.3+  | 1.2+  | 2006 10 24 151 | 0.0  | 0.1+ |
| 2006 07 06 E12 | 0.2+ | 0.5+ | 2006 09 11 J68 | 1.6+ | 0.6+ | 2006 10 16 A27 | 0.1+ | 0.1+ | 2006 08 06 D35 | 1.6+ | 2.1+ | 2006 09 15 084 | 0.4-  | 0.2-  | 2006 10 24 151 | 0.1- | 0.0  |
| 2006 07 06 E12 | 0.2- | 0.5+ | 2006 09 11 H98 | 0.1- | 0.3- | 2006 10 16 145 | 0.2- | 0.2- | 2006 08 06 D35 | 1.7+ | 2.1+ | 2006 09 15 084 | 0.0   | 0.1-  | 2006 10 24 151 | 0.0  | 0.0  |
| 2006 07 06 E12 | 0.2- | 0.5- | 2006 09 11 H98 | 0.0  | 0.2- | 2006 10 16 145 | 0.2- | 0.2- | 2006 08 06 D35 | 1.9+ | 2.1+ | 2006 09 15 585 | (3.5- | 1.7-) | 2006 10 24 151 | 0.1- | 0.0  |
| 2006 07 06 E12 | 0.6- | 0.3- | 2006 09 11 H98 | 0.3- | 0.1- | 2006 10 16 A27 | 0.1- | 0.0  | 2006 08 07 379 | 0.5- | 0.1+ | 2006 09 15 585 | 1.3-  | 0.7-  | 2006 10 24 071 | 1.6- | 0.3+ |
| 2006 07 06 844 | 0.1- | 0.1+ | 2006 09 11 H98 | 0.4- | 0.1- | 2006 10 16 145 | 0.2- | 0.1- | 2006 08 07 379 | 0.7- | 0.0  | 2006 09 15 585 | 0.1+  | 0.2-  | 2006 10 24 071 | 0.1- | 0.1+ |
| 2006 07 06 844 | 0.1+ | 0.9+ | 2006 09 11 G63 | 0.2+ | 0.7+ | 2006 10 16 639 | 0.1+ | 0.0  | 2006 08 07 379 | 0.6- | 0.5- | 2006 09 15 585 | 0.1+  | 0.2+  | 2006 10 24 071 | 1.9+ | 0.1- |
| 2006 07 06 844 | 0.1+ | 0.2- | 2006 09 11 G63 | 0.2- | 1.1+ | 2006 10 16 145 | 0.5+ | 0.4- | 2006 08 07 379 | 0.4- | 0.5- | 2006 09 15 J94 | 0.2-  | 0.8-  | 2006 10 24 A24 | 0.5+ | 0.3+ |
| 2006 07 07 423 | 0.2- | 0.1- | 2006 09 11 G63 | 0.6- | 0.1- | 2006 10 16 639 | 0.2+ | 0.3+ | 2006 08 07 379 | 0.5- | 0.7- | 2006 09 15 585 | 2.2-  | 1.1-  | 2006 10 24 A53 | 0.1- | 0.2+ |
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| 2006 07 25 379 | 0.7- | 0.5- | 2006 09 13 G63 | 0.2- | 0.1- | 2006 10 18 379 | 0.2- | 0.1+ | 2006 08 17 461 | 0.1+ | 0.2+ | 2006 09 20 379 | 0.0   | 0     |                |      |      |

|            |     |      |      |            |     |      |      |            |     |      |      |            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 19 | 379 | 0.5- | 0.3- | 2006 09 20 | 151 | 0.5- | 0.2+ | 2006 10 29 | A48 | 0.2+ | 0.1- | 2006 08 30 | 240 | 0.0  | 0.0  | 2006 09 25 | H51 | 0.9+ | 0.4+ | 2006 11 13 | 434 | 0.2- | 0.3- |
| 2006 08 19 | 379 | 0.1- | 0.0  | 2006 09 20 | 151 | 0.1- | 0.1+ | 2006 10 29 | A48 | 0.6+ | 0.3+ | 2006 08 30 | 240 | 0.0  | 0.0  | 2006 09 27 | 379 | 0.3- | 0.1- | 2006 11 13 | 434 | 0.3+ | 0.6- |
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| 2006 08 19 | 379 | 0.1- | 0.0  | 2006 09 20 | 151 | 0.0  | 0.4+ | 2006 10 29 | A48 | 0.8+ | 0.1+ | 2006 08 30 | 240 | 0.1+ | 0.0  | 2006 09 27 | 379 | 0.0  | 0.4- | 2006 11 13 | A24 | 0.2- | 0.3+ |
| 2006 08 19 | 379 | 0.2+ | 0.1- | 2006 09 20 | 113 | 0.1+ | 0.2- | 2006 10 29 | 084 | 0.0  | 0.1- | 2006 08 30 | 240 | 0.1+ | 0.0  | 2006 09 27 | 379 | 0.0  | 0.2- | 2006 11 15 | 726 | 1.6- | 1.7- |
| 2006 08 19 | 198 | 0.2- | 0.1+ | 2006 09 20 | 151 | 0.1- | 0.3+ | 2006 10 29 | 084 | 0.0  | 0.0  | 2006 08 30 | 240 | 0.1+ | 0.2+ | 2006 09 27 | 379 | 0.4+ | 0.3- | 2006 11 15 | 726 | 0.1- | 0.1+ |
| 2006 08 19 | 198 | 0.0  | 0.0  | 2006 09 20 | 151 | 0.1- | 0.3+ | 2006 10 30 | 726 | 0.3- | 0.0  | 2006 08 30 | 560 | 0.3+ | 0.1+ | 2006 09 27 | 379 | 0.0  | 0.3- | 2006 11 15 | 726 | 0.2+ | 0.4- |
| 2006 08 19 | 198 | 0.0  | 0.1+ | 2006 09 20 | 113 | 0.0  | 0.2- | 2006 10 30 | 726 | 0.1- | 0.8+ | 2006 08 30 | 560 | 0.5+ | 0.3+ | 2006 09 27 | 084 | 0.1+ | 0.3- | 2006 11 15 | 704 | 0.3+ | 0.0  |
| 2006 08 19 | 198 | 0.2- | 0.1- | 2006 09 20 | 113 | 0.1+ | 0.1- | 2006 10 30 | 726 | 0.3- | 0.2- | 2006 08 30 | 560 | 0.4+ | 0.1+ | 2006 09 27 | 084 | 0.0  | 0.6- | 2006 11 15 | 704 | 1.0+ | 0.2+ |
| 2006 08 19 | 084 | 0.2+ | 0.0  | 2006 09 20 | 113 | 0.0  | 0.1- | 2006 10 30 | 726 | 0.6- | 0.6+ | 2006 08 30 | 160 | 0.1+ | 0.1- | 2006 09 28 | A53 | 0.2+ | 0.1+ | 2006 11 15 | 704 | 0.5+ | 0.4+ |
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| 2006 08 21 | 130 | 0.0  | 0.0  | 2006 09 21 | 379 | 0.1+ | 0.3- | 2006 10 30 | 726 | 0.0  | 0.5- | 2006 08 30 | 160 | 0.0  | 0.1- | 2006 09 28 | A53 | 0.1+ | 0.4+ | 2006 11 15 | 113 | 0.1+ | 0.0  |
| 2006 08 21 | 130 | 0.1- | 0.2- | 2006 09 21 | 379 | 0.4- | 0.2- | 2006 10 30 | 151 | 0.1- | 0.1+ | 2006 08 30 | 160 | 0.0  | 0.0  | 2006 09 28 | 240 | 0.2+ | 0.1- | 2006 11 15 | 113 | 0.0  | 0.0  |
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| 2006 08 21 | A81 | 0.1+ | 0.3- | 2006 09 21 | 379 | 0.0  | 0.3- | 2006 10 30 | 151 | 0.1- | 0.1+ | 2006 08 31 | 379 | 0.0  | 0.0  | 2006 09 28 | A53 | 0.1+ | 0.1- | 2006 11 15 | 113 | 0.0  | 0.1+ |
| 2006 08 21 | A81 | 0.7+ | 0.4- | 2006 09 21 | 379 | 0.2- | 0.1- | 2006 10 30 | 151 | 0.1+ | 0.1+ | 2006 08 31 | 379 | 0.2+ | 0.9- | 2006 09 28 | 240 | 0.0  | 0.2- | 2006 11 16 | 726 | 0.4+ | 0.2+ |
| 2006 08 21 | A81 | 0.5+ | 0.2+ | 2006 09 21 | 379 | 0.3- | 0.2- | 2006 10 30 | 151 | 0.0  | 0.1+ | 2006 08 31 | 379 | 0.1+ | 0.6- | 2006 09 28 | 084 | 0.1- | 0.1- | 2006 11 16 | 726 | 0.3+ | 0.7+ |
| 2006 08 22 | A53 | 0.2- | 0.1+ | 2006 09 21 | 379 | 0.3- | 0.1- | 2006 10 30 | 151 | 0.1  | 0.0  | 2006 08 31 | 379 | 0.2- | 0.8- | 2006 09 28 | 240 | 0.1+ | 0.2- | 2006 11 16 | 726 | 0.1- | 0.4- |
| 2006 08 22 | A53 | 0.1- | 0.3- | 2006 09 21 | 113 | 0.1+ | 0.2- | 2006 11 01 | 703 | 0.1+ | 0.0  | 2006 09 01 | 704 | 0.2- | 0.0  | 2006 09 28 | 240 | 0.4+ | 0.1- | 2006 11 16 | 726 | 0.2+ | 0.7+ |
| 2006 08 22 | A53 | 0.1+ | 0.1+ | 2006 09 21 | 113 | 0.1+ | 0.3- | 2006 11 01 | 703 | 0.0  | 0.2- | 2006 09 01 | 704 | 0.3+ | 0.1+ | 2006 09 28 | 240 | 0.4+ | 0.1- | 2006 11 16 | 726 | 0.2+ | 0.1+ |
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| 2006 08 22 | 204 | 0.2- | 0.3- | 2006 09 21 | 113 | 0.0  | 0.1- | 2006 11 01 | A53 | 0.7- | 0.3+ | 2006 09 01 | 379 | 0.1- | 0.2- | 2006 09 28 | 240 | 0.0  | 0.2- | 2006 11 16 | 113 | 0.1+ | 0.1- |
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| 2006 08 23 | 639 | 0.0  | 0.0  | 2006 09 21 | 151 | 0.1- | 0.2+ | 2006 11 02 | A56 | 0.6+ | 1.5+ | 2006 09 01 | 379 | 0.2- | 0.2- | 2006 10 03 | 704 | 0.3+ | 0.8- | 2006 11 16 | 113 | 0.2- | 0.2+ |
| 2006 08 23 | 639 | 0.1- | 0.0  | 2006 09 21 | 151 | 0.0  | 0.1+ | 2006 11 02 | A56 | 0.0  | 0.9+ | 2006 09 01 | 379 | 0.0  | 0.0  | 2006 10 03 | 704 | 1.5+ | 1.3+ | 2006 11 19 | 726 | 1.2- | 1.4- |
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| 2006 08 24 | 379 | 0.3+ | 0.2+ | 2006 09 22 | A89 | 0.0  | 0.4- | 2006 11 03 | A24 | 0.3- | 0.5+ | 2006 09 01 | 379 | 0.3- | 0.1+ | 2006 10 05 | 560 | 0.1+ | 0.2+ | 2006 11 20 | 726 | 0.4+ | 0.1+ |
| 2006 08 24 | 379 | 0.3+ | 0.7- | 2006 09 22 | A89 | 0.1+ | 0.5- | 2006 11 03 | A24 | 0.5+ | 0.1- | 2006 09 01 | 379 | 0.4- | 0.4- | 2006 10 05 | 560 | 0.2+ | 0.3+ | 2006 11 22 | 726 | 0.5+ | 0.2+ |
| 2006 08 24 | 379 | 0.1+ | 0.6- | 2006 09 22 | 084 | 0.2- | 0.2- | 2006 11 04 | 084 | 0.3- | 0.1- | 2006 09 01 | 379 | 0.3- | 0.2- | 2006 10 05 | 560 | 0.0  | 0.3+ | 2006 11 22 | 726 | 0.6- | 0.3+ |
| 2006 08 24 | 084 | 0.1+ | 0.0  | 2006 09 22 | 084 | 0.0  | 0.1- | 2006 11 04 | 084 | 0.1+ | 0.5- | 2006 09 01 | 379 | 0.3+ | 0.1+ | 2006 10 05 | A53 | 0.3- | 0.4+ | 2006 11 22 | 726 | 0.7+ | 0.7+ |
| 2006 08 24 | 084 | 0.5- | 0.4- | 2006 09 22 | A89 | 0.1- | 0.4- | 2006 11 07 | 355 | 0.2+ | 0.4+ | 2006 09 01 | 379 | 0.2- | 0.3- | 2006 10 05 | A53 | 0.1+ | 0.1- | 2006 11 22 | 726 | 0.0  | 2.5- |
| 2006 08 25 | G63 | 0.3+ | 0.1+ | 2006 09 22 | A89 | 0.2+ | 0.4- | 2006 11 07 | 355 | 0.6- | 0.6- | 2006 09 01 | 160 | 0.2- | 0.3- | 2006 10 05 | A53 | 0.2+ | 0.1+ | 2006 11 22 | 726 | 0.6- | 0.4- |
| 2006 08 25 | G63 | 0.2+ | 0.3+ | 2006 09 23 | A48 | 0.8+ | 0.4+ | 2006 11 07 | 355 | 0.3- | 0.3+ | 2006 09 01 | 160 | 0.2- | 0.1- | 2006 10 05 | A53 | 0.2- | 0.7+ | 2006 11 22 | 726 | 0.0  | 0.8+ |
| 2006 08 25 | G63 | 0.3+ | 0.1- | 2006 09 23 | A48 | 0.7+ | 0.2+ | 2006 11 07 | 355 | 0.1- | 0.4+ | 2006 09 01 | 160 | 0.1- | 0.2- | 2006 10 05 | 203 | 0.1- | 0.1- | 2006 11 22 | 703 | 0.4- | 0.1- |
| 2006 08 25 | G63 | 0.5- | 0.3- | 2006 09 23 | A48 | 0.9+ | 0.6+ | 2006 11 08 | 113 | 0.1+ | 0.2- | 2006 09 01 | 160 | 0.1- | 0.1- | 2006 10 05 | 203 | 0.1- | 0.3- | 2006 11 22 | 703 | 0.2- | 0.1+ |
| 2006 08 25 | G63 | 0.2- | 0.4- | 2006 09 23 | A48 | 0.7+ | 0.5+ | 2006 11 08 | 113 | 0.1+ | 0.2- | 2006 09 01 | 160 | 0.2- | 0.1+ | 2006 10 06 | A48 | 0.5+ | 0.1+ | 2006 11 22 | 703 | 0.3- | 0.1+ |
| 2006 08 25 | G63 | 0.1- | 0.0  | 2006 09 23 | A53 | 0.1- | 0.0  | 2006 11 08 | 113 | 0.1+ | 0.1- | 2006 09 01 | 160 | 0.2- | 0.1- | 2006 10 06 | A48 | 0.7+ | 0.3+ | 2006 11 22 | 703 | 0.1- | 0.1+ |
| 2006 08 25 | G63 | 0.9- | 1.3- | 2006 09 23 | A53 | 0.2+ | 0.2- | 2006 11 08 | 113 | 0.1- | 0.1- | 2006 09 01 | J87 | 0.1- | 0.3- | 2006 10 06 | A48 | 0.9+ | 0.2+ | 2006 11 27 | 113 | 0.3+ | 0.0  |
| 2006 08 25 | G63 | 0.3+ | 0.5- | 2006 09 23 | A27 | 0.0  | 0.5+ | 2006 11 08 | 113 | 0.3+ | 0.2- | 2006 09 01 | J87 | 0.2- | 0.2- | 2006 10 06 | A48 | 0.4+ | 0.0  | 2006 11 27 | 113 | 0.4- | 0.0  |
| 2006 08 26 | 473 | 0.4+ | 0.1- | 2006 09 23 | A53 | 0.1- | 0.0  | 2006 11 08 | A24 | 0.2- | 0.3+ | 2006 09 01 | J87 | 0.1- | 0.3- | 2006 10 06 | 160 | 0.4- | 0.0  | 2006 11 27 | 113 | 0.2+ | 0.1- |
| 2006 08 27 | G63 | 0.2+ | 0.4+ | 2006 09 23 | A27 | 0.6- | 0.7- | 2006 11 08 | A24 | 0.2- | 0.2+ | 2006 09 02 | 379 | 0.1- | 0.1- | 2006 10 06 | 160 | 0.0  | 0.1+ | 2006 11 27 | 113 | 0.0  | 0.0  |
| 2006 08 27 | G63 | 0.4- | 0.2- | 2006 09 23 | A53 | 0.0  | 0.0  | 2006 11 08 | A24 | 0.2- | 0.1+ | 2006 09 02 | 379 | 0.2- | 0.4- | 2006 10 06 | 160 | 0.0  | 0.1+ | 2006 11 27 | 113 | 0.3+ | 0.3- |
| 2006 08 27 | G63 | 0.3- | 0.1- | 2006 09 23 | A27 | 0.6- | 0.4- | 2006 11 09 | 355 | 0.5+ | 0.5+ | 2006 09 02 | 379 | 0.1- | 0.3- | 200        |     |      |      |            |     |      |      |

2007 DEC. 24

M.P.O. 129769

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 04 | 379 | 0.4− | 0.7− | 2006 10 08 | 639 | 0.0  | 0.2+ | 2006 12 12 | 113 | 0.2− | 0.1+ |
| 2006 09 04 | 379 | 0.1− | 0.1+ | 2006 10 08 | 639 | 0.0  | 0.0  | 2006 12 12 | 113 | 0.0  | 0.1+ |
| 2006 09 04 | 084 | 0.2+ | 0.1− | 2006 10 08 | 639 | 0.1− | 0.1+ | 2006 12 12 | 113 | 0.0  | 0.1+ |
| 2006 09 04 | 240 | 0.2+ | 0.1− | 2006 10 08 | 560 | 0.0  | 0.3+ | 2006 12 12 | 113 | 0.0  | 0.1+ |
| 2006 09 04 | 240 | 0.2+ | 0.1− | 2006 10 08 | 560 | 0.1+ | 0.1+ | 2006 12 12 | 113 | 0.1+ | 0.1− |
| 2006 09 04 | 240 | 0.1+ | 0.2− | 2006 10 08 | 560 | 0.2+ | 0.2+ | 2006 12 13 | 240 | 0.4+ | 0.3+ |
| 2006 09 04 | 240 | 0.2+ | 0.1− | 2006 10 08 | A48 | 0.6+ | 0.2+ | 2006 12 13 | 240 | 0.5+ | 0.3+ |
| 2006 09 04 | 240 | 0.2+ | 0.1− | 2006 10 08 | A48 | 0.6+ | 0.2+ | 2006 12 13 | 240 | 0.6+ | 0.1+ |
| 2006 09 04 | 240 | 0.2+ | 0.1− | 2006 10 08 | A48 | 0.6+ | 0.1+ | 2006 12 13 | 240 | 0.3+ | 0.1− |
| 2006 09 04 | 240 | 0.3+ | 0.1− | 2006 10 08 | A48 | 0.5+ | 0.0  | 2006 12 13 | 240 | 0.5+ | 0.5− |
| 2006 09 04 | 240 | 0.2+ | 0.0  | 2006 10 09 | H67 | 0.1+ | 0.0  | 2006 12 13 | A53 | 0.7− | 0.1+ |
| 2006 09 04 | 240 | 0.0  | 0.0  | 2006 10 09 | H67 | 0.5− | 0.1− | 2006 12 13 | A53 | 0.1− | 0.1+ |
| 2006 09 04 | 240 | 0.1+ | 0.2− | 2006 10 09 | H67 | 0.1+ | 0.0  | 2006 12 13 | A53 | 0.4− | 0.0  |
| 2006 09 04 | 240 | 0.3+ | 0.0  | 2006 10 09 | 379 | 0.2− | 0.2+ | 2006 12 14 | A94 | 0.2− | 0.4+ |
| 2006 09 04 | 240 | 0.3+ | 0.0  | 2006 10 09 | 379 | 0.0  | 0.0  | 2006 12 14 | A94 | 1.1− | 0.1+ |
| 2006 09 04 | 203 | 0.1− | 0.1− | 2006 10 09 | 379 | 0.0  | 0.1+ | 2006 12 14 | A94 | 1.1− | 0.4+ |
| 2006 09 04 | 473 | 0.0  | 0.1− | 2006 10 09 | 379 | 0.0  | 0.0  | 2006 12 15 | 113 | 0.4+ | 0.0  |
| 2006 09 04 | 203 | 0.2− | 0.1− | 2006 10 09 | 379 | 0.1+ | 0.1− | 2006 12 15 | 113 | 0.3+ | 0.1+ |
| 2006 09 05 | 379 | 0.2− | 0.3− | 2006 10 09 | 379 | 0.2+ | 0.1+ | 2006 12 15 | 113 | 0.2+ | 0.3+ |
| 2006 09 05 | 379 | 0.1− | 0.0  | 2006 10 09 | 379 | 0.2+ | 0.3+ | 2006 12 15 | 113 | 0.2+ | 0.3+ |
| 2006 09 05 | 379 | 0.2− | 0.2− | 2006 10 09 | 379 | 0.2− | 0.2− | 2006 12 15 | 113 | 0.2+ | 0.4+ |
| 2006 09 05 | 379 | 0.5− | 0.1+ | 2006 10 09 | 379 | 0.1− | 0.1+ | 2006 12 16 | 704 | 0.9+ | 1.1+ |
| 2006 09 05 | 379 | 0.1− | 0.2− | 2006 10 09 | 379 | 0.2− | 0.1− | 2006 12 16 | 704 | 0.2− | 1.0+ |
| 2006 09 05 | 473 | 0.5+ | 0.0  | 2006 10 09 | 379 | 0.0  | 0.1+ | 2006 12 16 | 704 | 0.9− | 0.2− |
| 2006 09 06 | H45 | 0.0  | 0.0  | 2006 10 09 | 379 | 0.1+ | 0.0  | 2006 12 16 | 704 | 0.2+ | 0.3+ |
| 2006 09 06 | H45 | 0.1− | 0.1− | 2006 10 09 | 379 | 0.2− | 0.1− | 2006 12 23 | H45 | 0.1− | 0.3+ |
| 2006 09 06 | H45 | 1.0− | 0.1− | 2006 10 09 | 379 | 0.0  | 0.0  | 2006 12 23 | H45 | 0.1+ | 0.1+ |
| 2006 09 06 | H45 | 0.5− | 0.0  | 2006 10 09 | 379 | 0.2− | 0.1− | 2006 12 23 | H45 | 0.1+ | 0.4+ |
| 2006 09 06 | H45 | 0.0  | 0.1− | 2006 10 09 | 379 | 0.0  | 0.0  | 2006 12 23 | H45 | 0.1− | 0.5+ |
| 2006 09 06 | H45 | 0.2− | 0.0  | 2006 10 09 | 113 | 0.1+ | 0.2− | 2006 12 23 | H45 | 0.0  | 0.1+ |
| 2006 09 06 | H45 | 0.1− | 0.1− | 2006 10 09 | 113 | 0.1− | 0.1− | 2007 01 03 | H55 | 0.6+ | 0.4+ |
| 2006 09 06 | 639 | 0.2+ | 0.2+ | 2006 10 09 | 113 | 0.0  | 0.2− | 2007 01 03 | H55 | 0.2+ | 0.6+ |
| 2006 09 06 | 639 | 0.1+ | 0.2+ | 2006 10 09 | 113 | 0.1+ | 0.2− | 2007 01 03 | H55 | 0.2− | 0.4+ |
| 2006 09 06 | 639 | 0.1+ | 0.2+ | 2006 10 09 | 113 | 0.1+ | 0.1− | 2007 01 03 | H55 | 0.0  | 0.3− |
| 2006 09 06 | 639 | 0.0  | 0.0  | 2006 10 09 | 113 | 0.1− | 0.1− | 2007 01 03 | H55 | 0.2+ | 0.1− |
| 2006 09 06 | 639 | 0.1− | 0.1+ | 2006 10 09 | A53 | 0.1+ | 0.2+ | 2007 01 03 | H55 | 0.2− | 0.1+ |
| 2006 09 07 | J94 | 0.5− | 0.1− | 2006 10 09 | A53 | 0.1+ | 0.3+ | 2007 01 08 | H45 | 0.0  | 0.1+ |
| 2006 09 07 | J65 | 1.2− | 0.7+ | 2006 10 09 | A53 | 0.1+ | 0.1+ | 2007 01 08 | H45 | 0.1+ | 0.4− |
| 2006 09 07 | J65 | 0.6+ | 0.8+ | 2006 10 09 | A53 | 0.4+ | 0.2+ | 2007 01 08 | H45 | 0.2+ | 0.0  |
| 2006 09 07 | J65 | 0.2− | 0.5+ | 2006 10 09 | A53 | 0.0  | 0.2+ | 2007 01 08 | H45 | 0.2+ | 0.3− |
| 2006 09 07 | J65 | 0.4+ | 0.5+ | 2006 10 09 | 203 | 0.1− | 0.1+ | 2007 01 08 | H45 | 0.1− | 0.1− |
| 2006 09 07 | J94 | 0.1− | 0.4− | 2006 10 09 | 203 | 0.0  | 0.2− | 2007 01 10 | 704 | 0.9− | 0.3− |
| 2006 09 07 | J94 | 0.1+ | 0.2− | 2006 10 10 | 379 | 0.3− | 0.2− | 2007 01 10 | 704 | 0.3− | 0.3− |
| 2006 09 07 | J65 | 0.5− | 0.8+ | 2006 10 10 | 379 | 0.1− | 0.3− | 2007 01 10 | 704 | 0.2+ | 0.5+ |
| 2006 09 07 | J65 | 0.6− | 0.7+ | 2006 10 10 | 379 | 0.4− | 0.0  | 2007 01 17 | 703 | 0.2+ | 0.6− |
| 2006 09 07 | J65 | 0.2+ | 0.8− | 2006 10 10 | 379 | 0.3− | 0.0  | 2007 01 17 | 703 | 0.2+ | 0.0  |
| 2006 09 07 | J68 | 0.2+ | 0.1+ | 2006 10 10 | 379 | 0.1− | 0.2+ | 2007 01 17 | 703 | 0.0  | 0.8+ |
| 2006 09 07 | J68 | 0.4− | 0.1− | 2006 10 10 | 379 | 0.3− | 0.4+ | 2007 01 17 | 703 | 1.2+ | 0.0  |
| 2006 09 07 | J65 | 0.4− | 0.2+ | 2006 10 10 | 379 | 0.2− | 0.1− | 2007 03 15 | G96 | 0.0  | 0.5+ |
| 2006 09 07 | J65 | 1.1+ | 0.1− | 2006 10 10 | 379 | 0.2− | 0.2− | 2007 03 15 | G96 | 0.3− | 0.0  |
| 2006 09 07 | J65 | 1.0+ | 0.4− | 2006 10 11 | 113 | 0.2+ | 0.2− | 2007 03 15 | G96 | 0.0  | 0.3+ |
| 2006 09 07 | J68 | 0.6− | 0.2− | 2006 10 11 | 113 | 0.1− | 0.1− | 2007 03 15 | G96 | 0.3− | 0.1+ |
| 2006 09 08 | 046 | 0.4+ | 0.0  | 2006 10 11 | 113 | 0.2+ | 0.2− | 2007 12 06 | H55 | 0.2− | 0.1+ |
| 2006 09 08 | 046 | 0.3+ | 0.0  | 2006 10 11 | A53 | 0.1+ | 0.6+ | 2007 12 06 | H55 | 0.3− | 0.1− |
| 2006 09 08 | 046 | 0.1− | 0.0  | 2006 10 11 | A53 | 0.3+ | 0.4+ | 2007 12 06 | H55 | 0.7+ | 0.3− |
| 2006 09 08 | 046 | 0.3+ | 0.0  | 2006 10 11 | A53 | 0.3+ | 0.4+ | 2007 12 14 | H55 | 0.1+ | 0.2− |
| 2006 09 08 | 046 | 0.3+ | 0.1− | 2006 10 11 | A53 | 0.2+ | 0.0  | 2007 12 14 | H55 | 0.0  | 0.3+ |
| 2006 09 08 | 046 | 0.3+ | 0.0  | 2006 10 11 | A48 | 0.6+ | 0.4+ | 2007 12 14 | H55 | 0.2− | 0.5+ |
| 2006 09 08 | J68 | 0.6+ | 0.3+ | 2006 10 11 | A48 | 0.7+ | 0.2+ |            |     |      |      |

**2006 OO**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 88.64074   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.19555795 | $\omega$ | 141.31732 | +0.58369276   | +0.80970555 |
| <i>a</i> | 2.9395830  | $\Omega$ | 164.09414 | −0.78910865   | +0.58327466 |
| <i>e</i> | 0.0918265  | <i>i</i> | 12.78785  | −0.19133818   | +0.06455684 |
| <i>P</i> | 5.04       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 13 | 703 | 0.8− | 1.4+ | 2006 07 18 | 224 | 0.0  | 0.2+ | 2006 08 15 | 958 | 0.0  | 0.0  |
| 2005 04 13 | 703 | 2.2+ | 1.0+ | 2006 07 18 | 224 | 0.1+ | 0.0  | 2007 10 16 | 703 | 1.3− | 0.3+ |
| 2005 04 13 | 703 | 0.8− | 0.4− | 2006 07 18 | 224 | 0.1+ | 0.2− | 2007 10 16 | 703 | 0.7+ | 0.2− |
| 2005 04 13 | 703 | 0.4− | 1.1− | 2006 07 19 | 224 | 0.9+ | 0.3− | 2007 10 16 | 703 | 0.1− | 0.4+ |
| 2006 06 02 | 691 | 0.1+ | 0.2− | 2006 07 26 | 224 | 0.5− | 0.1+ | 2007 10 16 | 703 | 0.8+ | 0.1+ |
| 2006 06 02 | 691 | 0.2− | 0.1− | 2006 07 26 | 224 | 1.1− | 0.0  | 2007 11 07 | 703 | 0.1+ | 0.1− |
| 2006 06 02 | 691 | 0.0  | 0.3− | 2006 07 26 | 224 | 0.5+ | 0.9+ | 2007 11 07 | 703 | 0.9− | 0.2+ |
| 2006 07 18 | 224 | 0.7− | 0.5+ | 2006 08 15 | 958 | 0.4− | 1.0+ | 2007 11 07 | 703 | 0.8− | 0.1+ |
| 2006 07 18 | 224 | 0.1− | 0.1+ | 2006 08 15 | 958 | 1.4+ | 0.2− | 2007 11 07 | 703 | 1.4+ | 0.4− |

**2006 OQ<sub>1</sub> = 2004 DN<sub>66</sub> = 2005 EF<sub>100</sub> = 2007 VG<sub>183</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 110.78297  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21384449 | $\omega$ | 185.57639 | +0.21650542   | +0.97026500 |
| <i>a</i> | 2.7695168  | $\Omega$ | 96.96122  | −0.89145390   | +0.24166895 |
| <i>e</i> | 0.1274094  | <i>i</i> | 6.25895   | −0.39803937   | −0.01348884 |
| <i>P</i> | 4.61       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 06 27 | 691 | 0.3+  | 0.4+  | 2005 03 10 | 699 | 0.7+ | 0.1− | 2006 08 19 | 644 | 0.3−  | 0.4+  |
| 2001 06 27 | 691 | 0.4+  | 0.3+  | 2005 04 18 | 691 | 0.3− | 0.1− | 2006 08 19 | 644 | 0.1−  | 0.4+  |
| 2001 06 27 | 691 | 0.1+  | 0.3+  | 2005 04 18 | 691 | 0.1+ | 0.0  | 2006 08 19 | 644 | 0.2+  | 0.2+  |
| 2002 09 05 | 645 | 0.0   | 0.0   | 2005 04 18 | 691 | 0.1− | 0.3− | 2006 08 19 | 644 | 0.1−  | 0.1+  |
| 2002 09 05 | 645 | 0.1−  | 0.0   | 2006 05 04 | G96 | 0.7+ | 0.7− | 2007 10 12 | G96 | 0.2+  | 0.3+  |
| 2004 02 26 | 695 | 0.0   | 0.3+  | 2006 05 04 | G96 | 0.1+ | 0.6− | 2007 10 12 | G96 | 0.6+  | 0.2+  |
| 2004 02 26 | 695 | 0.0   | 0.8+  | 2006 05 04 | G96 | 0.0  | 0.1− | 2007 10 12 | G96 | 0.1+  | 0.1+  |
| 2004 02 27 | 695 | 0.2−  | 0.1−  | 2006 05 04 | G96 | 0.0  | 0.1+ | 2007 10 12 | G96 | 0.5+  | 0.2+  |
| 2004 02 27 | 695 | 0.1+  | 0.4+  | 2006 07 17 | 428 | 0.5− | 0.5− | 2007 11 08 | G96 | 0.1+  | 0.0   |
| 2005 03 03 | 703 | 0.9−  | 0.2−  | 2006 07 17 | 428 | 0.1− | 0.3+ | 2007 11 08 | G96 | 0.3+  | 0.1+  |
| 2005 03 03 | 703 | 0.4−  | 0.5+  | 2006 07 18 | 428 | 0.9− | 1.0− | 2007 11 08 | G96 | 0.1−  | 0.2+  |
| 2005 03 03 | 703 | 0.9−  | 0.7+  | 2006 07 19 | 428 | 0.8+ | 0.7− | 2007 11 08 | G96 | 0.2+  | 0.2+  |
| 2005 03 03 | 703 | 0.5−  | 0.2+  | 2006 07 20 | 428 | 0.2− | 0.4− | 2007 11 09 | 703 | 0.3−  | 0.6+  |
| 2005 03 10 | 699 | (0.5+ | 1.6+) | 2006 07 20 | 428 | 0.2+ | 0.4+ | 2007 11 09 | 703 | 0.2+  | 0.4+  |
| 2005 03 10 | 699 | 0.4+  | 1.3+  | 2006 08 19 | 644 | 0.1− | 0.6+ | 2007 11 09 | 703 | 0.4−  | 0.8+  |
| 2005 03 10 | 699 | 1.5+  | 0.1+  | 2006 08 19 | 644 | 0.0  | 0.3+ | 2007 11 09 | 703 | (0.4− | 1.7+) |

**2006 PM**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 90.54409   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18332803 | $\omega$ | 63.48001  | +0.79941565   | +0.53297824 |
| <i>a</i> | 3.0689052  | $\Omega$ | 263.11076 | −0.60065968   | +0.71823033 |
| <i>e</i> | 0.0572257  | <i>i</i> | 16.21656  | +0.01194015   | +0.44730234 |
| <i>P</i> | 5.38       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |        |
|------------|-----|------|--------|
| 2006 08 06 | 941 | 0.3− | 0.2−</ |
|------------|-----|------|--------|

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 08 16 | 941 | 0.9+ | 0.5− | 2006 09 20 | 703 | 0.2+  | 0.6+  | 2007 12 10 | 704 | 0.2− | 0.1+ |
| 2006 08 16 | 941 | 1.2+ | 0.5− | 2007 11 18 | 704 | 0.6+  | 0.1−  |            |     |      |      |
| 2006 08 31 | 941 | 0.0  | 0.3+ | 2007 11 18 | 704 | (2.2+ | 0.0 ) |            |     |      |      |

**2006 PZ<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 87.63940   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22159837 | $\omega$ | 70.37889  | +0.79159091 | +0.60709500 |
| $a$ | 2.7045292  | $\Omega$ | 252.17997 | −0.58439764 | +0.71897155 |
| $e$ | 0.1136194  | $i$      | 4.18179   | −0.17850275 | +0.33840150 |
| $P$ | 4.45       | $H$      | 16.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 09 16 | 691 | 0.2− | 0.1+ | 2006 08 13 | 644 | 0.2+ | 0.0  | 2007 12 03 | 701 | 0.2−  | 0.0   |
| 1993 09 16 | 691 | 0.1+ | 0.1− | 2006 08 13 | 644 | 0.1+ | 0.0  | 2007 12 03 | 701 | 0.1+  | 0.4+  |
| 1993 09 16 | 691 | 0.1+ | 0.2+ | 2006 08 13 | 644 | 0.5+ | 0.1+ | 2007 12 04 | G96 | 0.1+  | 0.2−  |
| 2002 10 04 | 644 | 0.2− | 0.1+ | 2007 11 02 | 691 | 0.1− | 0.3− | 2007 12 04 | G96 | 0.2+  | 0.0   |
| 2002 10 04 | 644 | 0.1− | 0.1+ | 2007 11 02 | 691 | 0.0  | 0.3− | 2007 12 04 | G96 | 0.4+  | 0.2−  |
| 2002 10 04 | 644 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.5+  | 0.3−  |
| 2006 05 30 | G96 | 0.3+ | 0.3− | 2007 11 17 | 691 | 0.2− | 0.5+ | 2007 12 05 | 704 | (1.2+ | 2.2+) |
| 2006 05 30 | G96 | 0.4+ | 0.5− | 2007 11 17 | 691 | 0.3− | 0.1− | 2007 12 05 | 704 | 0.5+  | 0.1+  |
| 2006 05 30 | G96 | 0.1− | 0.0  | 2007 11 17 | 691 | 0.4− | 0.1− | 2007 12 05 | 704 | 1.1+  | 0.9+  |
| 2006 05 30 | G96 | 0.1− | 0.1− | 2007 11 30 | H55 | 0.4+ | 0.4+ | 2007 12 06 | 701 | 0.3+  | 0.2−  |
| 2006 06 19 | G96 | 0.5− | 0.6− | 2007 11 30 | H55 | 0.0  | 0.2− | 2007 12 06 | 701 | 1.2+  | 0.2−  |
| 2006 06 19 | G96 | 0.1− | 0.7− | 2007 11 30 | H55 | 0.7− | 0.9− | 2007 12 06 | 701 | 1.0+  | 0.4+  |
| 2006 06 19 | G96 | 0.1− | 0.3− | 2007 12 03 | 701 | 0.6+ | 0.2− | 2007 12 06 | 701 | 0.5−  | 0.7−  |
| 2006 06 19 | G96 | 0.0  | 0.4− | 2007 12 03 | 701 | 0.2+ | 0.0  | 2007 12 06 | 701 | 0.6+  | 0.4−  |
| 2006 07 20 | 644 | 0.3− | 0.1+ | 2007 12 03 | 701 | 0.2− | 0.0  | 2007 12 06 | 701 | 0.8−  | 0.7−  |
| 2006 07 20 | 644 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.8+ | 1.4+ | 2007 12 06 | 701 | 0.4−  | 0.0   |
| 2006 07 20 | 644 | 0.2− | 0.2+ | 2007 12 03 | 703 | 0.8− | 0.1− | 2007 12 15 | G96 | 0.5−  | 0.4+  |
| 2006 08 12 | 644 | 0.2− | 0.0  | 2007 12 03 | 701 | 0.1+ | 0.3− | 2007 12 15 | G96 | 0.3−  | 0.1+  |
| 2006 08 12 | 644 | 0.5+ | 0.1+ | 2007 12 03 | 703 | 0.9− | 0.3− | 2007 12 15 | G96 | 0.5+  | 0.1+  |
| 2006 08 12 | 644 | 0.1+ | 0.6+ | 2007 12 03 | 701 | 0.2+ | 0.3− | 2007 12 15 | G96 | 0.9+  | 0.0   |

**2006 PC<sub>2</sub> = 2007 WX<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 146.99968  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26312229 | $\omega$ | 34.46914  | −0.01655880 | +0.99831115 |
| $a$ | 2.4119277  | $\Omega$ | 234.64378 | −0.93204162 | −0.03557310 |
| $e$ | 0.1586301  | $i$      | 3.91495   | −0.36197269 | +0.04592825 |
| $P$ | 3.75       | $H$      | 16.9      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 30 | G96 | 0.4− | 0.2+ | 2006 08 12 | 644 | 0.0  | 0.3− | 2007 11 19 | 691 | 0.4− | 0.3− |
| 2006 05 30 | G96 | 0.3+ | 0.2− | 2006 08 12 | 644 | 0.2− | 0.0  | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2006 05 30 | G96 | 0.0  | 0.2− | 2006 08 13 | 644 | 0.1− | 0.0  | 2007 11 19 | 691 | 0.0  | 0.3+ |
| 2006 05 30 | G96 | 0.2+ | 0.0  | 2006 08 13 | 644 | 0.1+ | 0.2− | 2007 11 21 | G96 | 0.4+ | 0.1− |
| 2006 06 22 | 691 | 0.0  | 0.1+ | 2006 08 13 | 644 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.7+ | 0.1− |
| 2006 06 22 | 691 | 0.1+ | 0.2+ | 2006 08 18 | 644 | 0.3+ | 0.0  | 2007 11 21 | G96 | 0.4+ | 0.1− |
| 2006 06 22 | 691 | 0.1− | 0.0  | 2006 08 18 | 644 | 0.0  | 0.0  | 2007 11 21 | G96 | 0.2+ | 0.1− |
| 2006 08 12 | 644 | 0.0  | 0.1− | 2006 08 18 | 644 | 0.2+ | 0.0  |            |     |      |      |

**2006 PZ<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 36.50426   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.12457546 | $\omega$ | 160.79499 | +0.99970386 | −0.01967299 |
| $a$ | 3.9705230  | $\Omega$ | 200.34823 | +0.01315557 | +0.93208336 |
| $e$ | 0.2822881  | $i$      | 2.36080   | +0.02047246 | +0.36170926 |
| $P$ | 7.91       | $H$      | 15.7      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 13 | 644 | 0.5− | 0.5+ | 2006 09 14 | 703 | 0.4+ | 0.3− | 2006 10 19 | G96 | 0.6+ | 0.5− |
| 2006 08 13 | 644 | 0.1+ | 0.2+ | 2006 09 14 | 703 | 0.5− | 0.6+ | 2006 11 16 | G96 | 0.2+ | 0.1+ |
| 2006 08 13 | 644 | 0.2− | 0.4+ | 2006 09 14 | 703 | 0.3+ | 1.0− | 2006 11 16 | G96 | 0.0  | 0.1+ |
| 2006 08 18 | 644 | 0.3− | 0.2+ | 2006 09 26 | G96 | 0.8− | 0.1− | 2006 11 16 | G96 | 0.3+ | 0.2− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 18 | 644 | 0.1+  | 0.1+  | 2006 09 26 | G96 | 0.7− | 0.2− | 2006 11 16 | G96 | 0.4− | 0.4− |
| 2006 08 18 | 644 | 0.0   | 0.1−  | 2006 09 26 | G96 | 0.6− | 0.0  | 2007 11 14 | 691 | 0.1− | 0.3+ |
| 2006 08 19 | 691 | 0.2+  | 0.3+  | 2006 09 26 | G96 | 0.4− | 0.1+ | 2007 11 14 | 691 | 1.0− | 0.2− |
| 2006 08 19 | 691 | 0.1−  | 0.1+  | 2006 10 19 | G96 | 0.3− | 0.6− | 2007 11 14 | 691 | 0.1− | 0.0  |
| 2006 08 19 | 691 | 0.2+  | 0.2+  | 2006 10 19 | G96 | 0.0  | 0.6− | 2007 11 18 | 691 | 0.2+ | 0.0  |
| 2006 08 28 | 703 | (1.9+ | 0.5+) | 2006 10 19 | G96 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2006 08 28 | 703 | 0.6+  | 0.2+  | 2006 10 19 | G96 | 0.4+ | 0.2+ | 2007 11 18 | 691 | 0.2+ | 0.2− |
| 2006 08 28 | 703 | 0.0   | 0.7−  | 2006 10 19 | G96 | 0.1− | 0.0  | 2007 12 05 | 704 | 0.9+ | 0.2+ |
| 2006 08 28 | 703 | 0.1−  | 0.5−  | 2006 10 19 | G96 | 0.2+ | 0.3− | 2007 12 05 | 704 | 1.0+ | 0.3− |
| 2006 09 14 | 703 | (1.2+ | 1.6−) | 2006 10 19 | G96 | 0.3+ | 0.2− | 2007 12 05 | 704 | 1.0+ | 0.0  |

**2006 PU<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 27.50787   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18998713 | $\omega$ | 259.13423 | +0.90915645 | −0.38565406 |
| $a$ | 2.9967689  | $\Omega$ | 123.37550 | +0.41591739 | +0.85999627 |
| $e$ | 0.0999226  | $i$      | 10.84896  | −0.02114878 | +0.33418163 |
| $P$ | 5.19       | $H$      | 15.5      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 25 | 699 | 0.2+ | 0.7+ | 2006 08 20 | 644 | 0.0  | 0.1− | 2007 11 15 | 703 | 0.9+ | 0.6− |
| 2001 08 25 | 699 | 0.9− | 0.8− | 2006 08 20 | 644 | 0.2− | 0.1+ | 2007 11 17 | 703 | 0.2− | 0.5+ |
| 2001 08 25 | 699 | 1.0+ | 0.1+ | 2006 08 20 | 644 | 0.0  | 0.1− | 2007 11 17 | 703 | 0.1− | 0.1− |
| 2001 08 25 | 699 | 0.3− | 0.2+ | 2007 11 15 | 703 | 0.3− | 0.3+ | 2007 11 17 | 703 | 1.6− | 0.5− |
| 2006 07 25 | 644 | 0.2+ | 0.2+ | 2007 11 15 | 703 | 0.4+ | 0.4+ | 2007 11 17 | 703 | 0.1+ | 0.6+ |
| 2006 07 25 | 644 | 0.2+ | 0.0  | 2007 11 15 | 703 | 0.1− | 0.4− | 2007 12 05 | 703 | 0.1+ | 0.4+ |
| 2006 07 25 | 644 | 0.1+ | 0.0  | 2007 11 15 | 703 | 0.4+ | 0.1− | 2007 12 05 | 703 | 0.3+ | 0.4− |
| 2006 08 14 | 644 | 0.0  | 0.3− | 2007 11 15 | 703 | 0.1+ | 0.8− | 2007 12 05 | 703 | 0.0  | 0.9+ |
| 2006 08 14 | 644 | 0.2− | 0.3− | 2007 11 15 | 703 | 0.3− | 0.6+ | 2007 12 05 | 703 | 1.2+ | 1.3− |
| 2006 08 14 | 644 | 0.0  | 0.1+ | 2007 11 15 | 703 | 0.9− | 0.3+ |            |     |      |      |

**2006 PT<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 69.83732   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23107544 | $\omega$ | 258.67823 | +0.99476485 | −0.06521398 |
| $a$ | 2.6300673  | $\Omega$ | 105.02473 | +0.09025237 | +0.92177286 |
| $e$ | 0.1636933  | $i$      | 4.67258   | −0.04793117 | +0.38220666 |
| $P$ | 4.27       | $H$      | 17.3      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 11 | 691 | 0.4+ | 0.2+ | 2006 08 14 | 644 | 0.0  | 0.3+ | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 2004 02 11 | 691 | 0.4− | 0.0  | 2006 08 17 | 644 | 0.2− | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.6− |
| 2004 02 11 | 691 | 0.3+ | 0.2+ | 2006 08 17 | 644 | 0.4− | 0.1+ | 2007 11 11 | G96 | 1.0+ | 0.4− |
| 2004 02 26 | 695 | 0.2− | 0.2+ | 2006 08 17 | 644 | 0.1+ | 0.3+ | 2007 12 03 | 691 | 0.1+ | 0.2+ |
| 2004 02 26 | 695 | 0.1− | 0.1+ | 2006 08 21 | 807 | 0.0  | 0.1+ | 2007 12 03 | 691 | 0.9− | 0.2+ |
| 2006 08 14 | 644 | 0.1+ | 0.2+ | 2006 08 21 | 807 | 0.1− | 0.2+ | 2007 12 03 | 691 | 0.3+ | 0.1− |
| 2006 08 14 | 644 | 0.0  | 0.4+ | 2007 11 11 | G96 | 0.4+ | 0.5− |            |     |      |      |

**2006 PG<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 56.63772   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17309603 | $\omega$ | 286.33948 | +0.90327274 | +0.01968176 |
| $a$ | 3.1886827  | $\Omega$ | 74.15697  | +0.20319203 | +0.86020868 |
| $e$ | 0.0844411  | $i$      | 26.45788  | -0.37790389 | +0.50956222 |
| $P$ | 5.69       | $H$      | 15.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 07 | 645 | 0.0  | 0.1− | 2006 09 29 | E12 | 0.6+ | 0.5+ | 2007 12 03 | 703 | 0.1+  | 0.5−  |
| 2002 11 07 | 645 | 0.0  | 0.1− | 2006 09 29 | E12 | 0.1− | 0.4− | 2007 12 03 | 703 | 1.4+  | 0.1−  |
| 2006 08 14 | E12 | 0.5+ | 0.6− | 2006 09 29 | E12 | 0.2+ | 0.1− | 2007 12 04 | G96 | 0.7+  | 0.3−  |
| 2006 08 14 | E12 | 0.1+ | 0.6+ | 2007 11 08 | 691 | 0.5+ | 0.4− | 2007 12 04 | G96 | 0.8+  | 0.1−  |
| 2006 08 14 | E12 | 0.7+ | 1.3− | 2007 11 08 | 691 | 0.8+ | 0.3− | 2007 12 04 | G96 | 0.8+  | 0.2−  |
| 2006 08 14 | E12 | 0.0  | 0.5− | 2007 11 08 | 691 | 0.3+ | 0.2− | 2007 12 05 | 704 | (0.1+ | 1.8+) |
| 2006 08 26 | E12 | 0.8− | 0.3− | 2007 11 19 | 291 | 0.5− | 0.0  | 2007 12 05 | 704 | 0.1+  | 0.8+  |
| 2006 08 26 | E12 | 0.5+ | 0.2− | 2007 11 19 | 291 | 0.4− | 0.1+ | 2007 12 05 | 704 | 0.1+  | 0.7+  |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 26 | E12 | 0.7− | 0.5+ | 2007 11 19 | 291 | 0.3− | 0.0  | 2007 12 05 | 704 | 0.3− | 0.1+ |
| 2006 08 26 | E12 | 0.5− | 0.2+ | 2007 11 19 | 291 | 0.8− | 0.3+ | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2006 09 19 | E12 | 0.1+ | 0.5− | 2007 11 19 | 291 | 0.8− | 0.3+ | 2007 12 14 | 704 | 0.0  | 0.9+ |
| 2006 09 19 | E12 | 0.1+ | 0.1+ | 2007 11 19 | 291 | 0.9− | 0.3+ | 2007 12 14 | 704 | 0.4+ | 0.9+ |
| 2006 09 19 | E12 | 0.5− | 0.5− | 2007 12 03 | 703 | 1.0+ | 0.4− | 2007 12 14 | 704 | 1.1+ | 0.2+ |
| 2006 09 19 | E12 | 1.3+ | 0.5+ | 2007 12 03 | 703 | 0.3+ | 0.2+ |            |     |      |      |

2006 QB<sub>2</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 77.69766   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.17487582 | $\omega$ | 18.89930  | +0.82941503 |      | +0.55560985 |   |
| <i>a</i>                                | 3.1670108  | $\Omega$ | 307.20980 | −0.52146706 |      | +0.73278255 |   |
| <i>e</i>                                | 0.1368464  | <i>i</i> | 4.17902   | −0.20035672 |      | +0.39284531 |   |
| <i>P</i>                                | 5.64       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 06 20 | G96 | 0.1+ | 0.4− | 2006 08 19 | 691 | 0.0  | 0.4+ | 2006 09 14 | 703 | 0.8− | 0.4− |
| 2006 06 20 | G96 | 0.2− | 0.1− | 2006 08 19 | 691 | 0.3− | 0.2+ | 2006 09 27 | G96 | 0.0  | 0.4− |
| 2006 06 20 | G96 | 0.8− | 0.4+ | 2006 08 19 | 691 | 0.0  | 0.2+ | 2006 09 27 | G96 | 0.3+ | 0.2− |
| 2006 06 20 | G96 | 0.1+ | 0.1+ | 2006 08 22 | 644 | 0.0  | 0.1+ | 2006 09 27 | G96 | 0.5+ | 0.4− |
| 2006 08 17 | 644 | 0.6− | 0.2− | 2006 08 22 | 644 | 0.2+ | 0.2− | 2006 09 27 | G96 | 0.1+ | 0.2− |
| 2006 08 17 | 644 | 0.4− | 0.3+ | 2006 08 22 | 644 | 0.1− | 0.4− | 2007 10 24 | G96 | 0.7+ | 0.2− |
| 2006 08 17 | 644 | 0.4− | 0.2− | 2006 08 28 | 691 | 0.4+ | 0.1− | 2007 10 24 | G96 | 0.5+ | 0.8− |
| 2006 08 17 | A50 | 0.3− | 0.3+ | 2006 08 28 | 691 | 0.1+ | 0.2+ | 2007 10 24 | G96 | 0.1− | 0.8− |
| 2006 08 17 | A50 | 0.8+ | 0.2+ | 2006 08 28 | 691 | 0.3+ | 0.1− | 2007 10 24 | G96 | 0.2+ | 0.2− |
| 2006 08 18 | 644 | 0.1− | 0.2− | 2006 09 14 | 703 | 0.6− | 0.3+ | 2007 11 20 | 691 | 0.4+ | 0.1− |
| 2006 08 18 | 644 | 0.1− | 0.1− | 2006 09 14 | 703 | 0.0  | 0.4− | 2007 11 20 | 691 | 0.5+ | 0.3− |
| 2006 08 18 | 644 | 0.2+ | 0.1+ | 2006 09 14 | 703 | 0.4− | 1.5− | 2007 11 20 | 691 | 1.2− | 1.0+ |

2006 QP<sub>4</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 103.04036  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.18180027 | $\omega$ | 15.00605  | +0.40462515 |      | +0.90278394 |   |
| <i>a</i>                                | 3.0860743  | $\Omega$ | 279.03728 | −0.85349387 |      | +0.31555687 |   |
| <i>e</i>                                | 0.2395305  | <i>i</i> | 8.49016   | −0.32836976 |      | +0.29224136 |   |
| <i>P</i>                                | 5.42       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 17 | 644 | 0.2− | 0.1− | 2006 08 19 | 461 | 0.4+ | 0.3+ | 2006 08 29 | 703 | 0.3− | 1.5− |
| 2006 08 17 | 644 | 0.1+ | 0.0  | 2006 08 19 | 461 | 0.3+ | 0.5− | 2006 08 29 | 703 | 0.5+ | 0.1− |
| 2006 08 17 | 644 | 0.3− | 0.1+ | 2006 08 19 | 461 | 0.3+ | 0.2+ | 2006 08 29 | 703 | 0.0  | 0.2+ |
| 2006 08 18 | 461 | 0.2− | 0.1+ | 2006 08 21 | 461 | 0.1+ | 0.0  | 2007 11 19 | G96 | 0.2+ | 0.0  |
| 2006 08 18 | 461 | 0.1− | 0.0  | 2006 08 21 | 461 | 0.1− | 0.0  | 2007 11 19 | G96 | 0.4− | 0.5− |
| 2006 08 18 | 461 | 0.2− | 0.0  | 2006 08 21 | 461 | 0.0  | 0.0  | 2007 11 19 | G96 | 0.1+ | 0.2− |
| 2006 08 18 | 461 | 0.2+ | 0.1+ | 2006 08 22 | 644 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.1+ | 0.1+ |
| 2006 08 18 | 461 | 0.1+ | 0.3+ | 2006 08 22 | 644 | 0.0  | 0.2− | 2007 11 20 | 691 | 0.1− | 0.2+ |
| 2006 08 19 | 461 | 0.3+ | 0.5− | 2006 08 22 | 644 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.1+ | 0.1− |
| 2006 08 19 | 461 | 0.4− | 0.2+ | 2006 08 29 | 703 | 0.3− | 1.5+ |            |     |      |      |

2006 QN<sub>29</sub> = 2007 XE<sub>6</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 76.40059   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.17260701 | $\omega$ | 215.66260 | +0.83015652 |      | +0.54186410 |   |
| <i>a</i>                                | 3.1947025  | $\Omega$ | 111.01177 | −0.47336321 |      | +0.80939300 |   |
| <i>e</i>                                | 0.1502821  | <i>i</i> | 8.08177   | −0.29456310 |      | +0.22642056 |   |
| <i>P</i>                                | 5.71       | <i>H</i> | 15.1      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 11 20 | 699 | 0.3− | 0.3+ | 2005 06 28 | 644 | 0.0  | 0.4+ | 2006 08 19 | 644 | 0.2−  | 0.1+  |
| 2001 11 20 | 699 | 0.8− | 1.2+ | 2005 06 28 | 644 | 0.1− | 0.1− | 2006 08 23 | 704 | 0.7+  | 0.1−  |
| 2001 11 20 | 699 | 0.2− | 0.2+ | 2005 06 28 | 644 | 0.3+ | 0.2+ | 2006 08 23 | 704 | 0.7+  | 0.6−  |
| 2001 11 20 | 699 | 0.2+ | 1.1+ | 2005 06 28 | 644 | 0.3+ | 0.3+ | 2006 08 23 | 704 | 0.7+  | 0.7−  |
| 2005 04 17 | 691 | 0.2+ | 0.0  | 2005 06 28 | 644 | 0.2− | 0.7+ | 2006 08 23 | 704 | 0.2−  | 0.4−  |
| 2005 04 17 | 691 | 0.2+ | 0.0  | 2006 08 16 | 644 | 0.3− | 0.6+ | 2006 08 23 | 704 | 0.3−  | 0.2−  |
| 2005 04 17 | 691 | 0.1+ | 0.0  | 2006 08 16 | 644 | 0.4− | 0.4+ | 2007 12 04 | 703 | (1.7− | 0.3+) |

## M.P.O. 129771

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 16 | 691 | 0.3+ | 0.2+ | 2006 08 16 | 644 | 0.1− | 0.6+ | 2007 12 04 | 703 | 1.3− | 0.4+ |
| 2005 05 16 | 691 | 0.1− | 0.1+ | 2006 08 16 | E12 | 0.6− | 0.7+ | 2007 12 04 | 703 | 0.7− | 0.7+ |
| 2005 05 16 | 691 | 0.0  | 0.4+ | 2006 08 16 | E12 | 0.2− | 0.1+ | 2007 12 04 | 703 | 0.3− | 1.4+ |
| 2005 06 01 | 691 | 0.1− | 0.0  | 2006 08 16 | E12 | 0.2+ | 0.8+ | 2007 12 05 | 699 | 0.6+ | 0.2+ |
| 2005 06 01 | 691 | 0.2− | 0.1+ | 2006 08 16 | E12 | 0.2+ | 0.9− | 2007 12 05 | 699 | 1.0+ | 0.1− |
| 2005 06 01 | 691 | 0.0  | 0.1+ | 2006 08 19 | 644 | 0.7− | 0.0  | 2007 12 05 | 699 | 0.0  | 0.0  |
| 2005 06 28 | 644 | 0.1+ | 0.2+ | 2006 08 19 | 644 | 0.2+ | 0.2− | 2007 12 05 | 699 | 0.3+ | 0.2− |

2006 QB<sub>41</sub> = 2007 WX<sub>38</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 137.69482  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.21836979 | $\omega$ | 267.62499 | +0.21756506 |      | +0.97575438 |   |
| <i>a</i>                                | 2.7311214  | $\Omega$ | 15.00564  | −0.85490402 |      | +0.20229574 |   |
| <i>e</i>                                | 0.0284530  | <i>i</i> | 5.28537   | −0.47096131 |      | +0.08354532 |   |
| <i>P</i>                                | 4.51       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 17 | G96 | 0.3− | 0.2− | 2006 08 17 | 644 | 0.5+ | 0.1+ | 2006 08 24 | 644 | 0.3+  | 0.2+  |
| 2005 03 17 | G96 | 0.1− | 0.1+ | 2006 08 18 | 644 | 0.1+ | 0.4+ | 2007 11 19 | G96 | (1.8+ | 1.1−) |
| 2005 03 17 | G96 | 0.1+ | 0.0  | 2006 08 18 | 644 | 0.1− | 0.3− | 2007 11 19 | G96 | 0.1+  | 0.3−  |
| 2005 03 17 | G96 | 0.4− | 0.2+ | 2006 08 18 | 644 | 0.1+ | 0.0  | 2007 11 19 | G96 | 0.3+  | 0.4−  |
| 2005 05 01 | 644 | 0.4+ | 0.3+ | 2006 08 23 | 644 | 0.5− | 0.2+ | 2007 11 20 | 691 | 0.4−  | 0.1+  |
| 2005 05 01 | 644 | 0.4+ | 0.5+ | 2006 08 23 | 644 | 0.1− | 0.0  | 2007 11 20 | 691 | 0.1−  | 0.2+  |
| 2005 05 01 | 644 | 0.4+ | 0.4+ | 2006 08 23 | 644 | 0.1− | 0.1+ | 2007 11 20 | 691 | 0.2+  | 0.2+  |
| 2005 05 19 | 644 | 0.2+ | 0.4+ | 2006 08 23 | 644 | 0.1− | 0.0  | 2007 12 13 | 704 | (0.3− | 1.7+) |
| 2005 05 19 | 644 | 0.2+ | 0.3+ | 2006 08 23 | 644 | 0.3− | 0.0  | 2007 12 13 | 704 | (1.1+ | 2.6+) |
| 2005 05 19 | 644 | 0.1+ | 0.6+ | 2006 08 23 | 644 | 0.4− | 0.1+ | 2007 12 13 | 704 | (0.5+ | 2.4+) |
| 2006 08 17 | 644 | 0.2− | 0.3+ | 2006 08 24 | 644 | 0.1− | 0.1+ | 2007 12 13 | 704 | 0.3+  | 1.5+  |
| 2006 08 17 | 644 | 0.0  | 0.3+ | 2006 08 24 | 644 | 0.6+ | 0.1− | 2007 12 13 | 704 | (0.1− | 3.5+) |

2006 QA<sub>45</sub> = 2003 WB<sub>191</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 87.52539   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.27966512 | $\omega$ | 241.43463 | +0.97437949 |      | −0.20392622 |   |
| <i>a</i>                                | 2.3158504  | $\Omega$ | 130.16666 | +0.22385327 |      | +0.92016079 |   |
| <i>e</i>                                | 0.1251364  | <i>i</i> | 7.13089   | −0.02177898 |      | +0.33424276 |   |
| <i>P</i>                                | 3.52       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 21 | 644 | 0.1+ | 0.4+ | 2006 08 18 | 644 | 0.2− | 0.2+ | 2006 08 28 | 699 | 0.1+ | 0.0  |
| 2003 11 21 | 644 | 0.4+ | 0.7+ | 2006 08 18 | 644 | 0.2+ | 0.1+ | 2006 08 28 | 699 | 1.1+ | 1.2+ |
| 2003 11 21 | 644 | 0.3+ | 0.7+ | 2006 08 18 | 644 | 0.1− | 0.2+ | 2006 08 28 | 699 | 0.5+ | 0.2− |
| 2003 12 28 | 691 | 0.2− | 0.2− | 2006 08 19 | 644 | 0.1− | 0.0  | 2007 11 19 | G96 | 0.2− | 0.4+ |
| 2003 12 28 | 691 | 0.1+ | 0.3− | 2006 08 19 | 644 | 0.1− | 0.0  | 2007 11 19 | G96 | 0.2− | 0.5+ |
| 2003 12 28 | 691 | 0.0  | 0.2− | 2006 08 19 | 644 | 0.2− | 0.1+ | 2007 11 19 | G96 | 0.3− | 0.3+ |
| 2006 05 26 | G96 | 0.3+ | 0.3+ | 2006 08 24 | 644 | 0.1− | 0.2− | 2007 11 19 | G96 | 0.1+ | 0.1+ |
| 2006 05 26 | G96 | 0.1− | 0.6− | 2006 08 24 | 644 | 0.1− | 0.1+ | 2007 12 04 | G96 | 0.3− | 0.1+ |
| 2006 05 26 | G96 | 0.1+ | 0.0  | 2006 08 24 | 644 | 0.2− | 0.1+ | 2007 12 04 | G96 | 0.4+ | 0.7+ |
| 2006 05 26 | G96 | 0.2− | 0.1+ | 2006 08 24 | 644 | 0.2− | 0.2− | 2007 12 04 | G96 | 0.4+ | 0.1+ |
| 2006 08 16 | 644 | 0.4− | 0.3− | 2006 08 24 | 644 | 0.2− | 0.0  | 2007 12 04 | G96 | 0.5+ | 0.3+ |
| 2006 08 16 | 644 | 0.2− | 0.1+ | 2006 08 24 | 644 | 0.3− | 0.1− |            |     |      |      |
| 2006 08 16 | 644 | 0.3− | 0.0  | 2006 08 28 | 699 | 0.4+ | 0.2− |            |     |      |      |

2006 QJ<sub>57</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 112.85696  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.28394891 | $\omega$ | 56.91327  | +0.97924061 |      | +0.18099849 |   |
| <i>a</i>                                | 2.2924995  | $\Omega$ | 292.51508 | −0.20268790 |      | +0.87951996 |   |
| <i>e</i>                                | 0.1382953  | <i>i</i> | 5.66915   | +0.00233354 |      | +0.44009565 |   |
| <i>P</i>                                | 3.47       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 07 21 | 703 | 0.4− | 0.4+ | 2006 08 30 | 704 | 0.4− | 0.2− | 2006 09 25 | 704 | 0.6+ | 0.8+ |
| 2006 08 24 | 704 | 1.1− | 0.9+ | 2006 08 30 | 699 | 0.5+ | 0.0  | 2006 09 25 | 704 | 0.8− | 0.8+ |
| 2006 08 24 | 704 | 0.0  | 1.2+ | 2006 08 30 | 704 | 0.9− | 0.6+ | 2006 09 25 | 704 | 0.2+ | 1.5+ |
| 2006 08 24 | 704 | 0.5+ | 0.5+ | 2006 08 30 | 704 | 0.2− | 0.1+ | 2006 09 30 | 699 | 0.2+ | 0.7+ |
| 2006 08 24 | 704 | 1.0+ | 1.6+ | 2006 08 30 | 699 | 0.2− | 0.6− | 2006 09 30 | 699 | 0.1− | 0.3− |
| 2006 08 25 | H06 | 0.3− | 1.3− | 2006 08 30 | 704 | 0.8− | 0.0  | 2006 09 30 | 699 | 0.9+ | 0.0  |
| 2006 08 25 | H06 | 0.2− | 0.9− | 2006 08 30 | 704 | 0.6− | 0.6− | 2006 09 30 | 699 | 0.5+ | 0.9+ |
| 2006 08 25 | H06 | 0.5+ | 0.8− | 2006 08 30 | 699 | 0.4+ | 0.4+ | 2007 11 19 | G96 | 0.2− | 0.0  |
| 2006 08 27 | 699 | 0.0  | 0.5+ | 2006 09 16 | H06 | 0.2+ | 0.5− | 2007 11 19 | G96 | 0.6− | 0.1+ |
| 2006 08 27 | 699 | 0.3+ | 0.0  | 2006 09 16 | H06 | 0.9+ | 0.1+ | 2007 11 19 | G96 | 1.1+ | 0.1+ |
| 2006 08 27 | H06 | 0.6− | 0.5+ | 2006 09 16 | H06 | 0.5+ | 1.4− | 2007 11 19 | G96 | 0.9− | 0.0  |
| 2006 08 27 | H06 | 0.1+ | 0.3+ | 2006 09 18 | 703 | 0.9+ | 1.0− | 2007 12 04 | G96 | 0.3+ | 0.2+ |
| 2006 08 27 | H06 | 1.0− | 0.4− | 2006 09 18 | 703 | 1.1− | 0.6− | 2007 12 04 | G96 | 0.4+ | 0.1+ |
| 2006 08 27 | 699 | 0.3+ | 0.3+ | 2006 09 18 | 703 | 0.4− | 0.6− | 2007 12 04 | G96 | 0.1− | 0.0  |
| 2006 08 27 | 699 | 0.3− | 0.6+ | 2006 09 18 | 703 | 0.7− | 1.2− | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 2006 08 29 | 703 | 0.3+ | 0.7− | 2006 09 20 | 699 | 1.0− | 0.4− |            |     |      |      |
| 2006 08 29 | 703 | 0.4− | 0.1+ | 2006 09 20 | 699 | 0.6+ | 0.4− |            |     |      |      |

**2006 QT<sub>59</sub> = 2007 WQ<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 88.48757   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17456830 | $\omega$ | 106.09069 | +0.74339461   | +0.66766380 |
| <i>a</i> | 3.1707291  | $\Omega$ | 212.05428 | −0.63878802   | +0.69104614 |
| <i>e</i> | 0.1627719  | <i>i</i> | 4.30820   | −0.19827836   | +0.27691205 |
| <i>P</i> | 5.65       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 28 | 691 | 0.2− | 0.1− | 2005 05 07 | G96 | 0.1− | 0.3− | 2007 11 03 | 691 | 0.2− | 0.2+ |
| 1995 08 28 | 691 | 0.3− | 0.1+ | 2005 05 07 | G96 | 0.3+ | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.3+ |
| 1995 08 28 | 691 | 0.3− | 0.1− | 2006 08 19 | 644 | 0.1− | 0.2+ | 2007 11 03 | 691 | 0.3− | 0.4+ |
| 1995 10 28 | 691 | 0.1+ | 0.1− | 2006 08 19 | 644 | 0.0  | 0.5+ | 2007 11 07 | 691 | 0.5− | 0.1+ |
| 1995 10 28 | 691 | 0.0  | 0.0  | 2006 08 19 | 644 | 0.3+ | 0.1+ | 2007 11 07 | 691 | 0.2− | 0.1− |
| 1995 10 28 | 691 | 0.2+ | 0.3+ | 2006 08 28 | 699 | 1.0− | 0.0  | 2007 11 07 | 691 | 0.2− | 0.6− |
| 1999 04 11 | 691 | 0.1+ | 0.6+ | 2006 08 28 | 699 | 0.5+ | 1.1− | 2007 11 18 | G96 | 0.1+ | 0.2− |
| 1999 04 11 | 691 | 0.3+ | 0.8+ | 2006 08 28 | 699 | 0.9− | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.5− |
| 2001 10 21 | 691 | 0.3+ | 0.2+ | 2006 08 28 | 699 | 0.6+ | 0.6+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2001 10 21 | 691 | 0.0  | 1.0+ | 2006 08 29 | 703 | 0.3− | 0.8+ | 2007 11 18 | G96 | 0.5+ | 0.1+ |
| 2001 10 21 | 691 | 0.3+ | 0.2+ | 2006 08 29 | 703 | 0.7+ | 0.3+ | 2007 11 19 | 691 | 0.8+ | 1.4− |
| 2005 05 07 | G96 | 0.2+ | 0.2− | 2006 08 29 | 703 | 0.3− | 0.7+ | 2007 11 19 | 691 | 0.1− | 0.5+ |
| 2005 05 07 | G96 | 0.0  | 0.3− | 2006 08 29 | 703 | 0.3+ | 1.4− | 2007 11 19 | 691 | 0.1− | 0.2+ |

**2006 QA<sub>76</sub> = 2007 VP<sub>254</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 194.40489  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17402812 | $\omega$ | 226.49554 | −0.82166510   | +0.56907956 |
| <i>a</i> | 3.1772868  | $\Omega$ | 348.07213 | −0.46830712   | −0.70591266 |
| <i>e</i> | 0.0335374  | <i>i</i> | 8.86691   | −0.32489213   | −0.42170578 |
| <i>P</i> | 5.66       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 23 | 691 | 0.1+ | 0.4+ | 2006 08 28 | 691 | 0.3+ | 0.1+ | 2006 09 26 | G96 | 0.1− | 0.5− |
| 2004 03 23 | 691 | 0.1+ | 0.5+ | 2006 08 28 | 691 | 0.0  | 0.3+ | 2007 11 15 | G96 | 0.1− | 0.1+ |
| 2004 03 23 | 691 | 0.2+ | 0.4+ | 2006 08 28 | 691 | 0.2+ | 0.2+ | 2007 11 15 | G96 | 0.3− | 0.2− |
| 2004 04 13 | 691 | 0.3+ | 0.6+ | 2006 08 28 | 691 | 0.1− | 0.2+ | 2007 11 15 | G96 | 0.1− | 0.1+ |
| 2004 04 13 | 691 | 0.4+ | 0.2+ | 2006 08 28 | 691 | 0.5− | 1.2+ | 2007 11 15 | G96 | 0.4− | 0.2+ |
| 2004 04 13 | 691 | 0.3+ | 0.1+ | 2006 08 28 | 691 | 0.2− | 0.2+ | 2007 11 16 | G96 | 0.2+ | 0.3− |
| 2006 08 21 | 691 | 0.0  | 0.2+ | 2006 09 26 | G96 | 0.6− | 0.6− | 2007 11 16 | G96 | 0.8+ | 1.1+ |
| 2006 08 21 | 691 | 0.0  | 0.3+ | 2006 09 26 | G96 | 0.0  | 0.2+ | 2007 11 16 | G96 | 0.6− | 0.0  |
| 2006 08 21 | 691 | 0.0  | 0.1+ | 2006 09 26 | G96 | 0.2− | 0.1− | 2007 11 16 | G96 | 0.0  | 0.0  |

**2006 QZ<sub>79</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 42.73684   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.12580421 | $\omega$ | 182.90261 | +0.99421657   | +0.10433862 |
| <i>a</i> | 3.9446269  | $\Omega$ | 170.98871 | −0.09497176   | +0.96476971 |
| <i>e</i> | 0.1896013  | <i>i</i> | 9.34504   | −0.05013748   | +0.24152197 |
| <i>P</i> | 7.83       | <i>H</i> | 14.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 24 | 704 | 0.6− | 0.8+ | 2006 09 14 | 703 | 0.1+ | 0.5− | 2006 11 16 | G96 | 0.3− | 0.2− |
| 2006 08 24 | 704 | 0.3− | 0.1+ | 2006 09 14 | 703 | 0.2+ | 0.2− | 2006 11 16 | G96 | 0.5− | 0.1− |
| 2006 08 24 | 704 | 0.2− | 0.1+ | 2006 09 14 | 703 | 0.1+ | 0.6+ | 2006 11 16 | G96 | 0.4+ | 0.2+ |
| 2006 08 24 | 704 | 0.0  | 0.3− | 2006 09 14 | 703 | 0.0  | 0.9+ | 2006 11 16 | G96 | 0.3− | 0.5− |
| 2006 08 28 | 703 | 0.3− | 0.1+ | 2006 09 27 | G96 | 0.2+ | 0.0  | 2007 11 13 | G96 | 0.2+ | 0.1− |
| 2006 08 28 | 703 | 0.1− | 0.0  | 2006 09 27 | G96 | 0.1+ | 0.0  | 2007 11 13 | G96 | 0.0  | 0.3− |
| 2006 08 28 | 699 | 0.3− | 0.2− | 2006 09 27 | G96 | 0.1− | 0.4+ | 2007 11 13 | G96 | 0.1− | 0.2− |
| 2006 08 28 | 703 | 0.2+ | 0.8− | 2006 09 27 | G96 | 0.9+ | 0.7+ | 2007 11 13 | G96 | 0.3+ | 0.3− |
| 2006 08 28 | 703 | 1.5+ | 0.0  | 2006 10 27 | G96 | 0.1+ | 0.0  | 2007 12 05 | 703 | 0.9+ | 1.3+ |
| 2006 08 28 | 699 | 0.6− | 0.2− | 2006 10 27 | G96 | 0.3− | 0.1− | 2007 12 05 | 703 | 0.7− | 0.6− |
| 2006 08 28 | 699 | 0.4+ | 0.9+ | 2006 10 27 | G96 | 0.1− | 0.9− | 2007 12 05 | 703 | 0.3− | 0.2+ |
| 2006 08 28 | 699 | 0.7− | 0.2− | 2006 10 27 | G96 | 0.5+ | 0.9− | 2007 12 05 | 703 | 0.3− | 0.2+ |

**2006 QR<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 20.90971   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17447671 | $\omega$ | 94.67542  | +0.34291446   | −0.92667963 |
| <i>a</i> | 3.1718386  | $\Omega$ | 333.59137 | +0.66454603   | +0.35508236 |
| <i>e</i> | 0.2918847  | <i>i</i> | 20.23940  | +0.66391886   | +0.12321276 |
| <i>P</i> | 5.65       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 21 | 695 | 0.1+        | 0.1+ | 2006 08 30 | 704 | 0.4+ | 0.1− | 2006 09 17 | 703 | 1.1− | 0.4+ |
| 2000 09 21 | 695 | 0.1−        | 0.0  | 2006 08 30 | 699 | 0.0  | 0.1− | 2006 09 30 | 699 | 0.8− | 1.0+ |
| 2006 08 22 | 644 | 0.9+        | 0.0  | 2006 08 30 | 704 | 1.0+ | 0.4− | 2006 09 30 | 699 | 1.0+ | 0.2− |
| 2006 08 22 | 644 | 0.1+        | 0.0  | 2006 08 30 | 704 | 0.9+ | 0.8− | 2006 09 30 | 699 | 0.5+ | 0.8− |
| 2006 08 22 | 644 | 0.2−        | 0.3− | 2006 08 30 | 699 | 0.1+ | 0.3+ | 2006 09 30 | 699 | 0.5+ | 0.2− |
| 2006 08 24 | 704 | 0.8−        | 0.3+ | 2006 08 30 | 704 | 0.6− | 0.7+ | 2007 11 18 | 703 | 1.3− | 1.0+ |
| 2006 08 24 | 704 | 0.8−        | 0.9+ | 2006 08 30 | 704 | 0.3+ | 0.4− | 2007 11 18 | 703 | 0.2+ | 1.2− |
| 2006 08 24 | 704 | 1.1−        | 0.6− | 2006 09 13 | 644 | 0.2− | 0.4− | 2007 11 18 | 703 | 0.4− | 0.1+ |
| 2006 08 29 | 703 | 0.6+        | 0.6+ | 2006 09 13 | 644 | 0.0  | 0.3− | 2007 11 18 | 703 | 0.6+ | 0.9+ |
| 2006 08 29 | 703 | 0.5+        | 0.0  | 2006 09 13 | 644 | 0.4− | 0.2− | 2007 11 21 | G96 | 0.1+ | 0.5− |
| 2006 08 29 | 703 | 0.0         | 0.2+ | 2006 09 17 | 703 | 1.0− | 0.5+ | 2007 11 21 | G96 | 0.3+ | 0.2− |
| 2006 08 29 | 703 | 0.6+        | 0.2− | 2006 09 17 | 703 | 0.5− | 0.1+ | 2007 11 21 | G96 | 0.1− | 0.0  |
| 2006 08 30 | 699 | (1.7+ 0.1−) |      | 2006 09 17 | 703 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.5+ | 0.1− |

**2006 QK<sub>100</sub> = 2007 VH<sub>263</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 90.18287   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.16916634 | $\omega$ | 269.21277 | +0.66755134   | +0.73723416 |
| <i>a</i> | 3.2378750  | $\Omega$ | 43.28161  | −0.60827763   | +0.62071294 |
| <i>e</i> | 0.1537659  | <i>i</i> | 8.74346   | −0.42938741   | +0.26683562 |
| <i>P</i> | 5.83       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |             |      |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 21 | 691 | 0.1−        | 0.3+ | 2006 08 24 | 644 | 0.1− | 0.2+ | 2007 08 24 | 691 | 0.2− | 0.2− |
| 1999 04 21 | 691 | 0.3+        | 0.1+ | 2006 08 24 | 644 | 0.2+ | 0.4+ | 2007 11 13 | 691 | 0.3+ | 0.0  |
| 1999 04 21 | 691 | (3.2− 0.9+) |      | 2006 08 28 | E12 | 0.2+ | 0.2+ | 2007 11 13 | 691 | 0.3− | 0.1+ |
| 2000 07 10 | 699 | 0.3−        | 0.6− | 2006 08 28 | E12 | 0.5+ | 0.5+ | 2007 11 13 | 691 | 0.0  | 0.2− |
| 2000 07 10 | 699 | 0.4+        | 0.1− | 2006 08 28 | E12 | 0.8− | 0.8+ | 2007 11 17 | 691 | 0.1+ | 0.2+ |
| 2000 07 10 | 699 | 0.9+        | 0.5− | 2006 08 28 | E12 | 0.5+ | 0.6+ | 2007 11 17 | 691 | 0.0  | 0.1− |
| 2000 07 10 | 699 | 0.1−        | 0.6− | 2006 09 14 | 644 | 0.4− | 0.1− | 2007 11 17 | 691 | 0.3− | 0.0  |
| 2006 08 24 | 644 | 0.1−        | 0.1− | 2006 09 14 | 644 | 0.4− | 0.6− | 2007 12 13 | 704 | 0.5− | 1.3+ |
| 2006 08 24 | 644 | 0.4−        | 0.2− | 2006 09 14 | 644 | 0.2− | 0.5+ | 2007 12 13 | 704 | 0.5+ | 0.6+ |
| 2006 08 24 | 644 | 0.2−        | 0.1+ | 2007 08 24 | 691 | 0.0  | 0.2− | 2007 12 13 | 704 | 0.8+ | 0.   |

2007 DEC. 24

M.P.O. 129773

**2006 QM<sub>104</sub> = 2004 CU<sub>130</sub> = 2007 VO<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 43.74884   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20586399 | $\omega$ | 115.03419 | +0.97196983   | -0.23438125 |
| <i>a</i> | 2.8406373  | $\Omega$ | 258.52529 | +0.20835539   | +0.89506281 |
| <i>e</i> | 0.0832944  | <i>i</i> | 1.07821   | +0.10891589   | +0.37937843 |
| <i>P</i> | 4.79       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 12 | 691 | 0.0   | 0.1+  | 2006 08 28 | 703 | 0.1- | 1.4+ | 2007 11 17 | 691 | 0.1- | 0.3+ |
| 2004 02 12 | 691 | 0.1-  | 0.2+  | 2006 08 29 | 704 | 0.2+ | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.0  |
| 2004 02 12 | 691 | 0.2+  | 0.4+  | 2006 08 29 | 704 | 0.2+ | 1.3+ | 2007 11 19 | 691 | 0.0  | 0.3- |
| 2004 03 20 | 691 | 0.3-  | 0.1-  | 2006 08 29 | 704 | 0.7- | 0.6+ | 2007 11 19 | 691 | 0.1+ | 0.1- |
| 2004 03 20 | 691 | 0.2+  | 0.2+  | 2006 10 20 | G96 | 0.5+ | 0.1+ | 2007 11 19 | 691 | 0.1- | 0.2+ |
| 2004 03 20 | 691 | 0.1+  | 0.1+  | 2006 10 20 | G96 | 0.0  | 0.2- | 2007 12 05 | 704 | 0.6+ | 0.9+ |
| 2005 04 17 | 691 | 0.1-  | 0.1+  | 2006 10 20 | G96 | 0.0  | 0.1- | 2007 12 05 | 704 | 0.3- | 0.4+ |
| 2005 04 17 | 691 | 0.1-  | 0.0   | 2006 10 20 | G96 | 0.3- | 0.4+ | 2007 12 05 | 704 | 0.1- | 0.2+ |
| 2005 04 17 | 691 | 0.1-  | 0.1+  | 2007 11 01 | 691 | 0.3- | 0.2- | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2005 05 07 | 691 | 0.2+  | 0.3+  | 2007 11 01 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.8+ | 0.7+ |
| 2005 05 07 | 691 | 0.1+  | 0.3+  | 2007 11 01 | 691 | 0.0  | 0.3- | 2007 12 05 | G96 | 0.4+ | 0.1+ |
| 2005 05 07 | 691 | 0.1+  | 0.1+  | 2007 11 02 | 691 | 0.3+ | 0.1+ | 2007 12 05 | G96 | 0.6+ | 0.0  |
| 2006 08 14 | 644 | 0.2-  | 0.4+  | 2007 11 02 | 691 | 0.0  | 0.3+ | 2007 12 05 | G96 | 0.4+ | 0.0  |
| 2006 08 14 | 644 | 0.3-  | 0.6+  | 2007 11 02 | 691 | 0.2+ | 0.0  | 2007 12 05 | G96 | 0.7+ | 0.1+ |
| 2006 08 14 | 644 | 0.2-  | 0.5+  | 2007 11 05 | 691 | 0.4- | 0.2- | 2007 12 14 | 704 | 0.2- | 0.7+ |
| 2006 08 28 | 703 | 0.7-  | 0.0   | 2007 11 05 | 691 | 0.9- | 0.2- | 2007 12 14 | 704 | 0.5+ | 0.5+ |
| 2006 08 28 | 703 | 0.0   | 0.3-  | 2007 11 05 | 691 | 0.3- | 0.1+ | 2007 12 14 | 704 | 0.2- | 0.8+ |
| 2006 08 28 | 703 | (0.9- | 2.6+) | 2007 11 17 | 691 | 0.1+ | 0.0  |            |     |      |      |

**2006 QO<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.85413   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18240410 | $\omega$ | 287.05525 | +0.85937984   | -0.50354421 |
| <i>a</i> | 3.0792597  | $\Omega$ | 103.25873 | +0.49699383   | +0.78163521 |
| <i>e</i> | 0.1489361  | <i>i</i> | 5.24249   | +0.12026398   | +0.36808914 |
| <i>P</i> | 5.40       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 04 14 | 691 | 0.1+  | 0.3+  | 2006 09 17 | 699 | (0.2- | 1.8+) | 2006 10 02 | 703 | 0.6- | 0.3+ |
| 2004 04 14 | 691 | 0.2-  | 0.4+  | 2006 09 17 | 699 | (0.4+ | 3.0+) | 2006 10 22 | 644 | 0.2+ | 0.1- |
| 2004 04 14 | 691 | 0.5+  | 0.4+  | 2006 09 17 | 699 | (0.2- | 2.7+) | 2006 10 22 | 644 | 0.4+ | 0.3- |
| 2006 08 28 | 699 | 0.7+  | 0.3-  | 2006 09 17 | 699 | 0.1+  | 0.3-  | 2006 10 22 | 644 | 0.1+ | 0.6- |
| 2006 08 28 | 699 | 1.2-  | 0.8+  | 2006 09 26 | 152 | 0.7+  | 0.5+  | 2007 11 04 | G96 | 0.8+ | 0.1+ |
| 2006 08 28 | 699 | 1.2-  | 0.4-  | 2006 09 26 | 152 | 0.7-  | 0.1+  | 2007 11 04 | G96 | 0.6+ | 0.2- |
| 2006 08 28 | 699 | 1.0-  | 0.4-  | 2006 09 26 | 152 | 0.2+  | 0.7+  | 2007 11 04 | G96 | 0.8+ | 0.1- |
| 2006 08 29 | 691 | 0.0   | 0.3+  | 2006 09 30 | 703 | 0.6+  | 1.3-  | 2007 11 04 | G96 | 0.9+ | 0.2+ |
| 2006 08 29 | 691 | 0.3+  | 0.6+  | 2006 09 30 | 703 | 0.2-  | 0.4-  | 2007 12 03 | 691 | 0.3+ | 0.0  |
| 2006 08 29 | 691 | 0.2+  | 0.5+  | 2006 09 30 | 703 | 0.5-  | 0.3+  | 2007 12 03 | 691 | 0.0  | 0.0  |
| 2006 09 14 | 703 | (1.0- | 1.9+) | 2006 09 30 | 703 | 0.8-  | 0.4-  | 2007 12 03 | 691 | 0.1+ | 0.0  |
| 2006 09 14 | 703 | 0.2-  | 0.8-  | 2006 10 02 | 703 | (0.2- | 1.9+) | 2007 12 15 | 691 | 0.3- | 0.5+ |
| 2006 09 14 | 703 | 0.1-  | 0.2+  | 2006 10 02 | 703 | 0.6+  | 0.9+  | 2007 12 15 | 691 | 0.5- | 0.0  |
| 2006 09 14 | 703 | 1.0-  | 0.8-  | 2006 10 02 | 703 | 0.3+  | 0.7+  | 2007 12 15 | 691 | 0.1- | 0.2+ |

**2006 QV<sub>128</sub> = 2007 WU<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.70090   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19730141 | $\omega$ | 304.85962 | +0.81804049   | +0.57419833 |
| <i>a</i> | 2.9222403  | $\Omega$ | 20.16117  | -0.49118100   | +0.72751324 |
| <i>e</i> | 0.0417609  | <i>i</i> | 5.53717   | -0.29925069   | +0.37552731 |
| <i>P</i> | 5.00       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 16 | 691 | 0.1- | 0.1- | 2006 08 28 | 699 | 0.1+ | 0.2+ | 2007 11 19 | G96 | 0.4+ | 0.3- |
| 2004 02 16 | 691 | 0.2+ | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.2- | 0.4+ |
| 2004 02 16 | 691 | 0.2- | 0.1+ | 2007 11 08 | 691 | 0.2- | 0.2- | 2007 11 20 | 704 | 0.1+ | 0.3- |
| 2006 08 17 | 644 | 0.1- | 0.3- | 2007 11 08 | 691 | 0.1- | 0.1- | 2007 11 20 | 704 | 0.7+ | 0.6- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 17 | 644 | 0.3- | 0.1- | 2007 11 18 | 704 | 0.6- | 0.9+ | 2007 11 20 | 691 | 0.4+ | 0.3- |
| 2006 08 17 | 644 | 0.3+ | 0.1+ | 2007 11 18 | 704 | 0.1- | 0.9+ | 2007 11 20 | 691 | 0.6- | 0.3- |
| 2006 08 18 | 644 | 0.2+ | 0.2- | 2007 11 18 | 704 | 1.1- | 0.6- | 2007 11 20 | 691 | 0.1+ | 0.1+ |
| 2006 08 18 | 644 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.8- | 0.1+ | 2007 12 15 | 704 | 0.5- | 1.0+ |
| 2006 08 18 | 644 | 0.2+ | 0.0  | 2007 11 18 | 704 | 0.9- | 0.5+ | 2007 12 15 | 704 | 1.3+ | 0.7+ |
| 2006 08 28 | 699 | 0.4- | 0.2+ | 2007 11 19 | G96 | 0.3+ | 0.2- | 2007 12 15 | 704 | 0.4+ | 1.0+ |
| 2006 08 28 | 699 | 1.1- | 0.5+ | 2007 11 19 | G96 | 0.6+ | 0.2- | 2007 12 15 | 704 | 0.5+ | 0.4+ |
| 2006 08 28 | 699 | 0.8+ | 0.1+ | 2007 11 19 | G96 | 0.6+ | 0.3- | 2007 12 15 | 704 | 1.0+ | 0.1+ |

**2006 QB<sub>155</sub> = 2007 WC<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 102.31334  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17598792 | $\omega$ | 72.63408  | +0.45346791   | +0.88530740 |
| <i>a</i> | 3.1536547  | $\Omega$ | 224.79718 | -0.86312417   | +0.40740835 |
| <i>e</i> | 0.2150088  | <i>i</i> | 8.40123   | -0.22222405   | +0.22416342 |
| <i>P</i> | 5.60       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 12 | 691 | 0.0  | 0.1+ | 2005 06 01 | G96 | 0.1- | 0.0  | 2006 09 18 | 703 | 0.2- | 1.0+ |
| 2001 11 12 | 691 | 0.0  | 0.0  | 2005 06 01 | G96 | 0.1- | 0.0  | 2006 09 18 | 703 | 0.2- | 0.3+ |
| 2001 11 12 | 691 | 0.0  | 0.2+ | 2005 06 01 | G96 | 0.4- | 0.0  | 2007 10 14 | G96 | 0.6+ | 0.1- |
| 2005 03 17 | G96 | 0.0  | 0.0  | 2005 06 01 | G96 | 0.1- | 0.1- | 2007 10 14 | G96 | 0.1+ | 0.2+ |
| 2005 03 17 | G96 | 0.4- | 0.1- | 2006 08 18 | 644 | 0.0  | 0.2- | 2007 10 14 | G96 | 0.1- | 0.0  |
| 2005 03 17 | G96 | 0.2- | 0.3- | 2006 08 18 | 644 | 0.5- | 0.2+ | 2007 10 14 | G96 | 0.9+ | 0.7+ |
| 2005 03 17 | G96 | 0.6- | 0.5+ | 2006 08 18 | 644 | 0.3- | 0.1+ | 2007 11 18 | G96 | 0.1- | 0.1+ |
| 2005 04 14 | 691 | 0.1+ | 0.2+ | 2006 08 30 | 699 | 0.2+ | 0.3+ | 2007 11 18 | G96 | 0.1+ | 0.1+ |
| 2005 04 14 | 691 | 0.1+ | 0.1+ | 2006 08 30 | 699 | 0.5+ | 0.7- | 2007 11 18 | G96 | 0.2+ | 0.1- |
| 2005 04 14 | 691 | 0.2+ | 0.4+ | 2006 08 30 | 699 | 0.1+ | 1.4+ | 2007 11 18 | G96 | 0.2- | 0.1+ |
| 2005 05 01 | 644 | 0.4+ | 0.3+ | 2006 08 30 | 699 | 0.1+ | 0.2+ | 2007 11 19 | 691 | 0.5- | 0.3+ |
| 2005 05 01 | 644 | 0.7+ | 0.3+ | 2006 09 18 | 703 | 0.8- | 1.9- | 2007 11 19 | 691 | 0.5- | 0.3+ |
| 2005 05 01 | 644 | 0.4+ | 0.6+ | 2006 09 18 | 703 | 0.8+ | 0.0  | 2007 11 19 | 691 | 0.3- | 0.1+ |

**2006 QX<sub>156</sub> = 2007 VK<sub>282</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 107.84692  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17023314 | $\omega$ | 54.57849  | +0.47059522   | +0.88232073 |
| <i>a</i> | 3.2243337  | $\Omega$ | 243.49593 | -0.81208588   | +0.42996470 |
| <i>e</i> | 0.1124033  | <i>i</i> | 0.45391   | -0.34504589   | +0.19141702 |
| <i>P</i> | 5.79       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 10 03 | 691 | 0.6+ | 0.4- | 2006 08 19 | 691 | 0.1+  | 0.2+  | 2007 10 16 | G96 | 0.2+ | 0.2- |
| 1995 10 03 | 691 | 0.2+ | 0.5- | 2006 08 19 | 691 | 0.1-  | 0.5+  | 2007 10 16 | G96 | 0.1- | 0.5+ |
| 1995 10 03 | 691 | 0.1- | 0.3- | 2006 08 19 | 691 | 0.1+  | 0.1+  | 2007 10 16 | G96 | 0.3+ | 0.4+ |
| 2000 08 26 | 807 | 0.2- | 0.0  | 2006 08 27 | 691 | 0.2+  | 0.2+  | 2007 10 16 | G96 | 1.0+ | 1.6+ |
| 2000 08 26 | 807 | 0.4- | 0.1+ | 2006 08 27 | 691 | 0.1+  | 0.1+  | 2007 10 16 | G96 | 0.0  | 0.0  |
| 2004 03 17 | 291 | 0.3+ | 0.3+ | 2006 08 27 | 691 | 0.2+  | 0.4+  | 2007 10 16 | G96 | 0.4- | 0.1+ |
| 2004 03 17 | 291 | 0.2- | 0.2+ | 2006 09 25 | G96 | (1.5+ | 3.1-) | 2007 11 14 | 691 | 0.4- | 0.6- |
| 2004 03 17 | 291 | 0.6+ | 0.1+ | 2006 09 25 | G96 | 0.2-  | 0.2-  | 2007 11 14 | 691 | 0.2+ | 0.1- |
| 2005 06 14 | G96 | 0.1+ | 0.3+ | 2006 09 25 | G96 | 0.4+  | 0.2-  | 2007 11 14 | 691 | 0.5- | 0.1- |
| 2005 06 14 | G96 | 1.7- | 0.0  | 2006 09 25 | G96 | 0.3-  | 0.1+  | 2007 11 18 | 691 | 0.4- | 0.2- |
| 2005 06 14 | G96 | 0.4- | 0.5+ | 2007 10 16 | G96 | 0.9-  | 0.5+  | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2005 06 14 | G96 | 1.9+ | 0.2+ | 2007 10 16 | G96 | 0.3+  | 0.8+  | 2007 11 18 | 691 | 0.1- | 0.2- |

**2006 QT<sub>165</sub> = 2007 VC<sub>264</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 128.32432  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18347740 | $\omega$ | 14.75540  | +0.13367938   | +0.98567268 |
| <i>a</i> | 3.0672394  | $\Omega$ | 263.00555 | -0.91942333   | +0.08461792 |
| <i>e</i> | 0.1973533  | <i>i</i> | 5.94803   | -0.36985209   | +0.14590812 |
| <i>P</i> | 5.37       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |     |            |     |      |    |
|------------|-----|------|-----|------------|-----|------|----|
| 1995 09 03 | 691 | 0.1- | 0.0 | 2006 08 29 | 703 | 0.7+ | 0. |
|------------|-----|------|-----|------------|-----|------|----|

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 09 03 | 691 | 0.1+ | 0.0  | 2006 09 16 | 644 | 0.2+ | 0.3+ | 2007 11 17 | 691 | 0.2- | 0.1- |
| 1999 03 21 | 645 | 0.0  | 0.1+ | 2006 09 16 | 644 | 0.1- | 0.2+ | 2007 11 17 | 691 | 0.3+ | 0.2- |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2006 09 16 | 644 | 0.1- | 0.0  | 2007 12 15 | G96 | 1.0+ | 0.3- |
| 2006 08 21 | 691 | 0.3+ | 0.3+ | 2007 11 13 | 691 | 0.4- | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.4- |
| 2006 08 21 | 691 | 0.2+ | 0.2+ | 2007 11 13 | 691 | 0.2+ | 0.0  | 2007 12 15 | G96 | 1.0+ | 0.6+ |
| 2006 08 21 | 691 | 0.0  | 0.2+ | 2007 11 13 | 691 | 0.1- | 0.0  | 2007 12 15 | G96 | 1.1+ | 0.1- |
| 2006 08 29 | 703 | 0.9- | 0.1- | 2007 11 17 | 691 | 0.2+ | 0.0  |            |     |      |      |
| 2006 08 29 | 703 | 1.0- | 1.1- | 2007 11 17 | 691 | 0.2- | 0.3+ |            |     |      |      |

2006 RO<sub>2</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.18036041 | $\omega$ | 76.11076  | +0.84300693 | +0.50967240 |          |   |
| <i>a</i> | 3.1024771  | $\Omega$ | 252.99769 | -0.53624336 | +0.77120764 |          |   |
| <i>e</i> | 0.1004180  | <i>i</i> | 10.35979  | -0.04221817 | +0.38140900 |          |   |
| <i>P</i> | 5.46       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 06 28 | 691 | 0.1+ | 0.4+ | 2006 09 13 | 621 | 0.2+  | 0.0   | 2007 11 17 | G96 | 0.1+ | 0.1- |
| 1995 06 28 | 691 | 0.1- | 0.1- | 2006 09 23 | 621 | 0.0   | 0.6+  | 2007 11 17 | G96 | 0.1+ | 0.2- |
| 1995 06 28 | 691 | 0.2- | 0.2+ | 2006 09 23 | 621 | 0.7+  | 0.2-  | 2007 11 17 | G96 | 0.1+ | 0.1- |
| 2006 08 22 | 644 | 0.5- | 0.1+ | 2006 09 23 | 621 | 0.6+  | 1.0-  | 2007 11 17 | G96 | 0.1+ | 0.3- |
| 2006 08 22 | 644 | 0.5- | 0.3+ | 2006 09 24 | 621 | 0.3+  | 0.2-  | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2006 08 22 | 644 | 0.4- | 0.3+ | 2006 09 24 | 621 | 0.2+  | 0.2-  | 2007 12 15 | G96 | 0.1- | 0.2+ |
| 2006 09 11 | 621 | 0.2- | 0.0  | 2006 09 24 | 621 | 0.2+  | 0.0   | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2006 09 11 | 621 | 0.4- | 0.2+ | 2007 10 21 | G96 | (1.6+ | 1.6+) | 2007 12 15 | G96 | 0.2- | 0.4- |
| 2006 09 11 | 621 | 0.2+ | 0.2+ | 2007 10 21 | G96 | 0.5+  | 0.4-  | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2006 09 12 | 621 | 0.0  | 0.2- | 2007 10 21 | G96 | 0.5+  | 0.5-  | 2007 12 15 | G96 | 0.7+ | 0.1- |
| 2006 09 12 | 621 | 0.1+ | 0.0  | 2007 10 21 | G96 | 0.4+  | 0.4-  | 2007 12 15 | G96 | 0.1+ | 0.3+ |
| 2006 09 12 | 621 | 0.5+ | 0.6- | 2007 11 02 | 691 | 0.1-  | 0.0   | 2007 12 15 | G96 | 0.0  | 0.2- |
| 2006 09 13 | 621 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.1-  | 0.0   |            |     |      |      |
| 2006 09 13 | 621 | 0.1- | 0.6- | 2007 11 02 | 691 | 0.6-  | 0.8+  |            |     |      |      |

2006 RU<sub>13</sub> = 2007 VD<sub>45</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.19668059 | $\omega$ | 314.68310 | -0.74457358 | +0.65237388 |          |   |
| <i>a</i> | 2.9283864  | $\Omega$ | 266.57565 | -0.56534947 | -0.72896429 |          |   |
| <i>e</i> | 0.1053205  | <i>i</i> | 8.14853   | -0.35495092 | -0.20741116 |          |   |
| <i>P</i> | 5.01       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 18 | 644 | 0.2+ | 0.4+ | 2006 09 14 | 691 | 0.1- | 0.1- | 2007 10 21 | 691 | 0.0  | 0.1- |
| 2004 01 18 | 644 | 0.0  | 0.6+ | 2006 09 14 | 691 | 0.0  | 0.3+ | 2007 10 21 | 691 | 0.2+ | 0.5+ |
| 2004 01 18 | 644 | 0.1- | 0.4+ | 2006 09 16 | 691 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.1+ | 0.0  |
| 2004 04 14 | 645 | 0.1+ | 0.0  | 2006 09 16 | 691 | 0.1+ | 0.3+ | 2007 11 01 | 691 | 0.3+ | 0.2- |
| 2004 04 14 | 645 | 0.1+ | 0.1+ | 2006 09 16 | 691 | 0.1+ | 0.3+ | 2007 11 01 | 691 | 0.1+ | 0.0  |
| 2004 04 16 | 645 | 0.0  | 0.1+ | 2006 09 18 | 691 | 0.0  | 0.4+ | 2007 11 05 | 691 | 0.2+ | 0.5- |
| 2004 04 16 | 645 | 0.0  | 0.0  | 2006 09 18 | 691 | 0.2- | 0.1+ | 2007 11 05 | 691 | 0.3- | 0.3- |
| 2005 06 03 | 703 | 1.6- | 0.9+ | 2006 09 18 | 691 | 0.0  | 0.3+ | 2007 11 05 | 691 | 0.2+ | 0.2- |
| 2005 06 03 | 703 | 0.8+ | 0.9- | 2006 09 23 | 691 | 0.4- | 0.0  | 2007 11 20 | 691 | 0.1- | 0.2- |
| 2005 06 03 | 703 | 0.4- | 0.5- | 2006 09 23 | 691 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.3- | 0.2+ |
| 2005 06 03 | 703 | 1.0+ | 0.4- | 2006 09 23 | 691 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.3- | 0.3+ |
| 2006 09 14 | 691 | 0.0  | 0.0  | 2007 10 21 | 691 | 0.1+ | 0.0  |            |     |      |      |

2006 RN<sub>14</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.18818252 | $\omega$ | 80.69405  | +0.67274297 | +0.72934461 |          |   |
| <i>a</i> | 3.0158972  | $\Omega$ | 232.34113 | -0.72542743 | +0.61715219 |          |   |
| <i>e</i> | 0.0970912  | <i>i</i> | 9.04020   | -0.14550581 | +0.29526194 |          |   |
| <i>P</i> | 5.24       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

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Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 11 | 691 | 0.1- | 0.4+ | 2006 09 20 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.2- |
| 2005 05 11 | 691 | 0.1+ | 0.3+ | 2006 09 20 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2005 05 11 | 691 | 0.0  | 0.0  | 2006 09 20 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.3- |
| 2006 09 14 | 691 | 0.0  | 0.1+ | 2006 09 22 | 691 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.4+ | 0.1- |
| 2006 09 14 | 691 | 0.1- | 0.1- | 2006 09 22 | 691 | 0.4- | 0.0  | 2007 11 19 | 691 | 0.0  | 0.3- |
| 2006 09 14 | 691 | 0.1+ | 0.0  | 2006 09 22 | 691 | 0.3+ | 0.0  | 2007 11 19 | 691 | 0.3- | 0.7+ |
| 2006 09 16 | 691 | 0.3+ | 0.1- | 2006 09 26 | 691 | 0.0  | 0.4- | 2007 11 19 | 691 | 0.1- | 0.5+ |
| 2006 09 16 | 691 | 0.1- | 0.3+ | 2006 09 26 | 691 | 0.1- | 0.1+ |            |     |      |      |
| 2006 09 16 | 691 | 0.0  | 0.3+ | 2006 09 26 | 691 | 0.1- | 0.2- |            |     |      |      |

2006 RU<sub>14</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.18627413 | $\omega$ | 262.76188 | -0.52459246 | -0.84324918 |          |   |
| <i>a</i> | 3.0364608  | $\Omega$ | 219.60709 | +0.83551018 | -0.48349691 |          |   |
| <i>e</i> | 0.0740612  | <i>i</i> | 10.59248  | +0.16347932 | -0.23486498 |          |   |
| <i>P</i> | 5.29       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 28 | 691 | 0.1+ | 0.3+ | 2007 09 18 | G96 | 0.4+ | 0.5+ | 2007 11 03 | 691 | 0.2+ | 0.1+ |
| 2004 03 28 | 691 | 0.3- | 0.2+ | 2007 09 18 | G96 | 0.2+ | 0.1- | 2007 11 03 | 691 | 0.2- | 0.5+ |
| 2004 03 28 | 691 | 0.3+ | 0.1- | 2007 09 18 | G96 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.1+ | 0.4- |
| 2006 09 14 | 691 | 0.0  | 0.0  | 2007 09 18 | G96 | 0.2+ | 0.1- | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2006 09 14 | 691 | 0.1+ | 0.1- | 2007 09 18 | G96 | 0.8- | 0.7- | 2007 11 18 | G96 | 0.1- | 0.4- |
| 2006 09 14 | 691 | 0.0  | 0.1+ | 2007 09 18 | G96 | 0.3+ | 0.3+ | 2007 11 18 | G96 | 0.8+ | 0.0  |
| 2006 09 16 | 691 | 0.1+ | 0.1+ | 2007 09 18 | G96 | 0.2+ | 0.1- | 2007 11 20 | 703 | 0.4- | 1.1- |
| 2006 09 16 | 691 | 0.2+ | 0.0  | 2007 09 18 | G96 | 0.2- | 0.3+ | 2007 11 20 | 703 | 0.9- | 1.3- |
| 2006 09 16 | 691 | 0.1- | 0.0  | 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 11 20 | 703 | 1.3+ | 0.3+ |
| 2006 09 18 | 691 | 0.3- | 0.2+ | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 20 | 703 | 0.8+ | 0.4- |
| 2006 09 18 | 691 | 0.0  | 0.1- | 2007 10 08 | 691 | 0.1- | 0.4+ |            |     |      |      |
| 2006 09 18 | 691 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.2- | 0.1+ |            |     |      |      |

2006 RB<sub>26</sub> = 2007 UL<sub>102</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.14657795 | $\omega$ | 150.75753 | +0.92981769 | -0.36246680 |          |   |
| <i>a</i> | 3.5625170  | $\Omega$ | 230.63528 | +0.31961839 | +0.88113739 |          |   |
| <i>e</i> | 0.0483967  | <i>i</i> | 4.72566   | +0.18243669 | +0.30366877 |          |   |
| <i>P</i> | 6.72       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 29 | 691 | 0.1- | 0.1- | 2007 10 10 | 691 | 0.2+ | 0.1- | 2007 10 30 | G96 | 0.5+ | 0.4- |
| 2006 08 29 | 691 | 0.1+ | 0.2- | 2007 10 10 | 691 | 0.0  | 0.2- | 2007 11 03 | 691 | 1.2- | 0.9+ |
| 2006 08 29 | 691 | 0.2- | 0.2- | 2007 10 10 | 691 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.4+ | 1.0- |
| 2006 09 14 | 691 | 0.5+ | 0.4+ | 2007 10 18 | 691 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.3+ |
| 2006 09 14 | 691 | 0.0  | 0.1+ | 2007 10 18 | 691 | 0.2+ | 0.1- | 2007 11 04 | 691 | 0.2- | 0.1- |
| 2006 09 14 | 691 | 0.1- | 0.1+ | 2007 10 18 | 691 | 0.1- | 0.0  | 2007 11 04 | 691 | 0.2+ | 0.1+ |
| 2006 09 17 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.8+ | 0.4- | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2006 09 17 | 691 | 0.2- | 0.3- | 2007 10 30 | G96 | 0.4+ | 0.0  |            |     |      |      |
| 2006 09 17 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.7+ | 0.1+ |            |     |      |      |

2006 RK<sub>30</sub> = 2007 WU<sub>49</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.17442051 | $\omega$ | 127.44240 | +0.97047278 | +0.22305282 |          |   |
| <i>a</i> | 3.1725198  | $\Omega$ | 219.90508 | -0.24041118 | +0.92540896 |          |   |
| <i>e</i> | 0.0763327  | <i>i</i> | 8.22854   | +0.01962290 | +0.30637510 |          |   |
| <i>P</i> | 5.65       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 13 | 691 | 0.4+ | 0.2- | 2006 09 17 | 691 | 0.1- | 0.1+ | 2007 10 20 | G96 | 0.0  | 0.5- |
| 2001 10 13 | 691 | 0.0  | 0.5+ | 2006 09 17 | 691 | 0.6- | 0.2+ | 2007 11 20 | G96 | 0.1+ | 0.2- |
| 2001 10 13 | 691 | 0.5- | 0.0  | 2006 09 17 | 691 | 0.4- | 0.4- | 2007 11 20 | G96 | 0.0  | 0.0  |
| 2006 09 15 | 691 | 0.1- | 0.2- | 2006 09 19 | 691 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.0  | 0.3- |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 15 | 691 | 0.2+ | 0.1− | 2006 09 19 | 691 | 0.4+ | 0.1− | 2007 11 20 | G96 | 0.1− | 0.2+ |
| 2006 09 15 | 691 | 0.6+ | 0.1+ | 2006 09 19 | 691 | 0.2+ | 0.3+ | 2007 11 21 | G96 | 0.0  | 0.0  |
| 2006 09 17 | 691 | 0.2− | 0.4− | 2007 10 20 | G96 | 0.1− | 0.2− | 2007 11 21 | G96 | 0.3− | 0.3+ |
| 2006 09 17 | 691 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.3+ | 0.2− | 2007 11 21 | G96 | 0.4− | 0.4− |
| 2006 09 17 | 691 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.7+ | 0.1− | 2007 11 21 | G96 | 0.1− | 0.1+ |

**2006 RN<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 85.84631   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21719635 | $\omega$ 259.02798 | +0.98896731   | −0.12863217 |
| <i>a</i> | 2.7409495  | $\Omega$ 108.33127 | +0.14689389   | +0.91561904 |
| <i>e</i> | 0.2082985  | <i>i</i> 4.43883   | −0.01912721   | +0.38091409 |
| <i>P</i> | 4.54       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 12 | 703 | 0.2− | 0.6− | 2006 09 26 | 704 | 0.0  | 0.4+ | 2006 10 19 | 644 | 0.1+ | 0.1− |
| 2006 09 12 | 703 | 0.1+ | 1.1− | 2006 09 26 | 704 | 0.1− | 0.1− | 2006 10 19 | 644 | 0.3− | 0.2+ |
| 2006 09 12 | 703 | 0.1− | 0.2+ | 2006 09 26 | 704 | 1.4+ | 0.4+ | 2006 10 19 | 644 | 0.2− | 0.1+ |
| 2006 09 12 | 703 | 0.5− | 0.8− | 2006 09 26 | 704 | 0.5+ | 0.7− | 2006 10 20 | 644 | 0.1+ | 0.2+ |
| 2006 09 16 | 704 | 0.2+ | 0.2− | 2006 09 26 | 703 | 0.0  | 0.6+ | 2006 10 20 | 644 | 0.1− | 0.2+ |
| 2006 09 16 | 704 | 1.2+ | 0.5− | 2006 09 26 | 703 | 0.1− | 0.6+ | 2006 10 20 | 644 | 0.4+ | 0.2+ |
| 2006 09 16 | 704 | 0.0  | 0.2+ | 2006 09 26 | 703 | 0.8− | 0.2+ | 2006 10 21 | 644 | 0.1+ | 0.3+ |
| 2006 09 16 | 704 | 0.5− | 1.1+ | 2006 09 26 | 703 | 0.4− | 0.2+ | 2006 10 21 | 644 | 0.0  | 0.1+ |
| 2006 09 18 | 703 | 0.6− | 0.5− | 2006 09 30 | 704 | 0.6+ | 1.2+ | 2006 10 21 | 644 | 0.0  | 0.0  |
| 2006 09 18 | 703 | 0.2− | 0.7− | 2006 09 30 | 704 | 1.0− | 0.3+ | 2006 10 21 | 644 | 0.1− | 0.2+ |
| 2006 09 18 | 703 | 0.4− | 0.0  | 2006 09 30 | 704 | 0.8− | 0.4+ | 2006 10 21 | 644 | 0.0  | 0.1+ |
| 2006 09 18 | 703 | 0.6− | 0.3− | 2006 09 30 | 704 | 0.3− | 1.0+ | 2006 10 21 | 644 | 0.0  | 0.1+ |
| 2006 09 18 | 699 | 0.2− | 0.5+ | 2006 10 02 | G96 | 0.3+ | 0.1− | 2007 11 19 | G96 | 0.7− | 0.4− |
| 2006 09 18 | 699 | 0.0  | 0.9+ | 2006 10 02 | G96 | 0.5+ | 0.2− | 2007 11 19 | G96 | 0.1+ | 0.1+ |
| 2006 09 18 | 699 | 0.8+ | 0.4+ | 2006 10 02 | G96 | 0.2+ | 0.3− | 2007 11 19 | G96 | 0.2+ | 0.6+ |
| 2006 09 18 | 699 | 0.4+ | 1.0− | 2006 10 02 | G96 | 0.3+ | 0.3− | 2007 11 19 | G96 | 0.6− | 0.0  |
| 2006 09 20 | 644 | 0.1+ | 0.1+ | 2006 10 16 | 703 | 0.5− | 0.5− | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2006 09 20 | 644 | 0.1+ | 0.0  | 2006 10 16 | 703 | 0.1− | 0.6+ | 2007 11 20 | G96 | 0.3− | 0.1+ |
| 2006 09 20 | 644 | 0.1+ | 0.2+ | 2006 10 16 | 703 | 0.4+ | 0.9− | 2007 11 20 | G96 | 0.0  | 0.0  |
| 2006 09 26 | 704 | 1.1+ | 1.6− | 2006 10 16 | 703 | 0.7− | 1.0− | 2007 11 20 | G96 | 1.1+ | 0.6− |

**2006 RA<sub>41</sub> = 2007 WF<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 326.11376  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18869620 | $\omega$ 189.49565 | −0.08825542   | −0.98119534 |
| <i>a</i> | 3.0104213  | $\Omega$ 265.70887 | +0.92482676   | −0.01670102 |
| <i>e</i> | 0.0346673  | <i>i</i> 9.91234   | +0.37000871   | −0.19229347 |
| <i>P</i> | 5.22       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 09 14 | 691 | 0.4+ | 0.0  | 2007 11 02 | 691 | 0.2+  | 0.0   | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2006 09 14 | 691 | 0.1− | 0.4+ | 2007 11 02 | 691 | 0.3−  | 0.0   | 2007 11 19 | G96 | 0.4+ | 0.2− |
| 2006 09 14 | 691 | 0.3+ | 0.0  | 2007 11 02 | 691 | 0.1−  | 0.1−  | 2007 11 19 | G96 | 0.2+ | 0.3− |
| 2006 09 18 | 691 | 0.2− | 0.2+ | 2007 11 13 | 703 | 1.1−  | 0.3−  | 2007 11 19 | G96 | 0.4+ | 0.1− |
| 2006 09 18 | 691 | 0.2− | 0.0  | 2007 11 13 | 703 | 0.3−  | 0.5−  | 2007 11 19 | G96 | 0.3+ | 0.2− |
| 2006 09 18 | 691 | 0.1− | 0.1+ | 2007 11 13 | 703 | (1.9+ | 0.2−) | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2006 09 20 | 691 | 0.1+ | 0.2− | 2007 11 13 | 703 | 1.3+  | 0.4+  | 2007 11 20 | 691 | 0.1+ | 0.1− |
| 2006 09 20 | 691 | 0.1− | 0.1− | 2007 11 19 | 691 | 0.0   | 0.2+  | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2006 09 20 | 691 | 0.1− | 0.2− | 2007 11 19 | 691 | 0.1−  | 0.1+  |            |     |      |      |

**2006 RB<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.76121   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19984693 | $\omega$ 240.61882 | +0.98517808   | −0.17092805 |
| <i>a</i> | 2.8973729  | $\Omega$ 129.21914 | +0.16312407   | +0.90757191 |
| <i>e</i> | 0.1545516  | <i>i</i> 1.06601   | +0.05305357   | +0.38353205 |
| <i>P</i> | 4.93       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 04 | 291 | 0.0  | 0.6+ | 2006 09 19 | 703 | 0.5+ | 0.2− | 2006 10 16 | 703 | 1.6− | 0.0  |
| 2003 01 04 | 291 | 0.3+ | 0.4+ | 2006 09 23 | 691 | 0.2+ | 0.3+ | 2006 10 16 | 703 | 0.2+ | 1.0− |
| 2003 01 04 | 291 | 0.0  | 0.5+ | 2006 09 23 | 691 | 0.3+ | 0.0  | 2006 10 16 | 703 | 0.4− | 0.4− |
| 2006 09 15 | 691 | 0.3+ | 0.3− | 2006 09 23 | 691 | 0.1− | 0.3+ | 2006 10 16 | 703 | 0.6+ | 0.1− |
| 2006 09 15 | 691 | 0.2+ | 0.2− | 2006 09 26 | G96 | 0.1+ | 0.1− | 2006 11 10 | 705 | 0.1+ | 0.0  |
| 2006 09 15 | 691 | 0.3+ | 0.3− | 2006 09 26 | G96 | 0.0  | 0.1− | 2006 11 10 | 705 | 0.0  | 0.1− |
| 2006 09 19 | 691 | 0.3− | 0.2+ | 2006 09 26 | G96 | 0.1+ | 0.1− | 2006 11 14 | 705 | 0.2+ | 0.1− |
| 2006 09 19 | 691 | 0.1+ | 0.2+ | 2006 09 27 | 691 | 0.1+ | 0.0  | 2006 11 14 | 705 | 0.1+ | 0.1− |
| 2006 09 19 | 691 | 0.0  | 0.0  | 2006 09 27 | 691 | 0.3+ | 0.0  | 2007 10 14 | G96 | 0.6− | 0.8− |
| 2006 09 19 | 703 | 0.4+ | 1.0+ | 2006 09 27 | 691 | 0.0  | 0.3+ | 2007 10 14 | G96 | 0.9+ | 0.6− |
| 2006 09 19 | 703 | 1.0− | 0.1− | 2006 10 01 | 691 | 0.1+ | 0.4+ | 2007 10 14 | G96 | 0.2− | 0.0  |
| 2006 09 19 | 703 | 0.7− | 0.4+ | 2006 10 01 | 691 | 0.0  | 0.2+ | 2007 10 14 | G96 | 0.5− | 0.5− |
| 2006 09 19 | 703 | 0.4− | 0.4− | 2006 10 01 | 691 | 0.2+ | 0.4+ |            |     |      |      |

**2006 RN<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.71276   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21316020 | $\omega$ 176.84018 | +0.65679513   | −0.75319488 |
| <i>a</i> | 2.7754408  | $\Omega$ 232.10041 | +0.69083230   | +0.62031477 |
| <i>e</i> | 0.1131949  | <i>i</i> 2.63662   | +0.30227617   | +0.21887683 |
| <i>P</i> | 4.62       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 645 | 0.0  | 0.0  | 2006 10 19 | G96 | 0.7+ | 0.4− | 2007 11 19 | G96 | 0.3− | 0.2+ |
| 2001 09 19 | 645 | 0.0  | 0.1− | 2006 10 19 | G96 | 0.1+ | 0.1− | 2007 11 19 | G96 | 0.4− | 0.7− |
| 2006 09 15 | 691 | 0.1− | 0.3+ | 2006 11 15 | G96 | 0.1+ | 0.1− | 2007 11 19 | G96 | 0.6+ | 0.4+ |
| 2006 09 15 | 691 | 0.3− | 0.0  | 2006 11 15 | G96 | 0.1+ | 0.4− | 2007 11 19 | G96 | 0.1− | 0.3− |
| 2006 09 15 | 691 | 0.1− | 0.2+ | 2006 11 15 | G96 | 0.1+ | 0.3− | 2007 11 19 | G96 | 0.3− | 0.0  |
| 2006 09 19 | 691 | 0.1+ | 0.0  | 2006 11 15 | G96 | 0.1+ | 0.0  | 2007 11 19 | G96 | 0.4− | 0.3+ |
| 2006 09 19 | 691 | 0.1− | 0.1+ | 2007 10 19 | G96 | 1.3+ | 0.2+ | 2007 11 19 | G96 | 0.0  | 0.0  |
| 2006 09 19 | 691 | 0.1− | 0.0  | 2007 10 19 | G96 | 0.4+ | 0.5+ | 2007 11 19 | G96 | 0.0  | 0.6− |
| 2006 10 17 | 703 | 0.1− | 0.0  | 2007 10 19 | G96 | 0.9− | 0.9− | 2007 11 20 | G96 | 0.1− | 0.1− |
| 2006 10 17 | 703 | 0.6− | 0.7− | 2007 10 19 | G96 | 1.0− | 0.1− | 2007 11 20 | G96 | 0.2+ | 0.3− |
| 2006 10 17 | 703 | 0.7+ | 0.8+ | 2007 11 19 | G96 | 0.4− | 0.2− | 2007 11 20 | G96 | 0.9+ | 0.3− |
| 2006 10 17 | 703 | 0.1− | 1.4+ | 2007 11 19 | G96 | 0.2− | 0.2+ | 2007 11 20 | G96 | 0.7+ | 0.2+ |
| 2006 10 19 | G96 | 0.3+ | 0.1− | 2007 11 19 | G96 | 0.6− | 0.3− |            |     |      |      |
| 2006 10 19 | G96 | 0.2+ | 0.1− | 2007 11 19 | G96 | 0.4− | 0.4− |            |     |      |      |

**2006 ST<sub>10</sub> = 2007 XV<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.23349   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18386186 | $\omega$ 146.53081 | +0.77166397   | −0.61577871 |
| <i>a</i> | 3.0629621  | $\Omega$ 252.29515 | +0.54072131   | +0.76695334 |
| <i>e</i> | 0.0552755  | <i>i</i> 9.62141   | +0.33489577   | +0.18055237 |
| <i>P</i> | 5.36       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2006 09 16 | 691 | 0.2+ | 0.1+ | 2007 12 04 | 701 | 0.2+  | 0.1+  | 2007 12 05 | 701 | 0.3+  | 0.3+  |
| 2006 09 16 | 691 | 0.1+ | 0.2+ | 2007 12 04 | G96 | 0.1−  | 0.0   | 2007 12 05 | 701 | 0.1−  | 0.2−  |
| 2006 09 16 | 691 | 0.0  | 0.2+ | 2007 12 04 | G96 | 0.0   | 0.1−  | 2007 12 05 | 701 | 0.0   | 0.0   |
| 2006 09 18 | 691 | 0.1+ | 0.2− | 2007 12 04 | 701 | 0.1−  | 0.4+  | 2007 12 05 | 701 | 0.3−  | 0.0   |
| 2006 09 18 | 691 | 0.2− | 0.0  | 2007 12 04 | G96 | 0.1+  | 0.1−  | 2007 12 06 | 701 | 0.5+  | 0.3+  |
| 2006 09 18 | 691 | 0.1− | 0.3− | 2007 12 04 | 701 | 0.2−  | 0.1+  | 2007 12 06 | 701 | 0.4−  | 0.2−  |
| 2006 09 22 | 691 | 0.1+ | 0.0  | 2007 12 04 | 701 | 0.4−  | 0.0   | 2007 12 06 | 701 | 0.4+  | 0.2−  |
| 2006 09 22 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.7+  | 0.0   | 2007 12 06 | 701 | 0.5+  | 0.2−  |
| 2006 09 22 | 691 | 0.1− | 0.0  | 2007 12 05 | 701 | 0.1+  | 0.0   | 2007 12 06 | 701 | 0.4−  | 0.1+  |
| 2007 11 17 | 691 | 0.0  | 0.3− | 2007 12 05 | 701 | 0.2−  | 0.1+  | 2007 12 06 | 701 | 0.8−  | 0.5−  |
| 2007 11 17 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | (0.2− | 1.8+) | 2007 12 15 | G96 | 0.3−  | 0.2−  |
| 2007 11 17 | 691 | 0.2+ | 0.0  | 2007 12 05 | 704 | 0.0   | 0.9+  | 2007 12 15 | G96 | 0.9+  | 0.8−  |
| 2007 12 04 | 701 | 0.1+ | 0.1+ | 2007 12 05 | 701 | 0.3−  | 0.2−  | 2007 12 15 | G96 | 0.1+  | 0.2−  |
| 2007 12 04 | 701 | 1.2− | 0.3− | 2007 12 05 | 704 | 0.2−  | 1.1+  | 2007 12 15 | G96 | (1.5+ | 2.2−) |
| 2007 12 04 | G96 | 0.4+ | 0.1− | 2007 12 05 | 704 | 0.1+  | 0.6+  |            |     |       |       |

**2006 SD<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 72.24876   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17284693 | $\omega$ 358.42918 | +0.94123657   | -0.31964796 |
| <i>a</i> | 3.1917455  | $\Omega$ 21.23219  | +0.31306953   | +0.70451983 |
| <i>e</i> | 0.0205996  | <i>i</i> 17.53019  | +0.12673273   | +0.63362212 |
| <i>P</i> | 5.70       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 19 | 691 | 0.3+ | 0.4- | 2006 09 24 | 691 | 0.1- | 0.2- | 2006 10 20 | 691 | 0.4-  | 0.3+  |
| 2000 10 19 | 691 | 0.4+ | 0.7- | 2006 09 24 | 691 | 0.2- | 0.0  | 2006 10 20 | 691 | 0.4-  | 0.4+  |
| 2000 10 19 | 691 | 0.3+ | 0.2- | 2006 09 24 | 691 | 0.1+ | 0.0  | 2006 10 20 | 691 | 0.2-  | 0.2+  |
| 2006 09 18 | G98 | 0.1+ | 0.2+ | 2006 09 25 | G98 | 0.6- | 0.6+ | 2006 11 11 | G98 | (1.9+ | 0.6+) |
| 2006 09 18 | G98 | 0.4- | 0.3+ | 2006 09 25 | G98 | 0.2+ | 0.4+ | 2006 11 11 | G98 | 0.5+  | 0.2-  |
| 2006 09 18 | G98 | 0.2+ | 0.3+ | 2006 09 25 | G98 | 0.2+ | 0.4- | 2006 11 11 | G98 | 0.4+  | 0.5-  |
| 2006 09 19 | G98 | 0.1- | 0.6+ | 2006 09 28 | 691 | 0.0  | 0.2- | 2006 11 11 | G98 | 0.5-  | 0.5+  |
| 2006 09 19 | G98 | 0.2+ | 0.5+ | 2006 09 28 | 691 | 0.1- | 0.1- | 2006 11 25 | G96 | 0.3-  | 0.1-  |
| 2006 09 19 | G98 | 0.1+ | 0.6+ | 2006 09 28 | 691 | 0.1+ | 0.1- | 2006 11 25 | G96 | 0.4+  | 0.5-  |
| 2006 09 19 | G98 | 0.1+ | 0.3- | 2006 10 02 | 691 | 0.1- | 0.1- | 2006 11 25 | G96 | 0.5-  | 0.2-  |
| 2006 09 19 | G98 | 0.2+ | 0.2- | 2006 10 02 | 691 | 0.4- | 0.3+ | 2006 11 25 | G96 | 0.3-  | 0.2-  |
| 2006 09 20 | G98 | 0.4+ | 0.0  | 2006 10 02 | 691 | 0.2- | 0.2+ | 2007 12 16 | G98 | 0.4-  | 0.6-  |
| 2006 09 20 | G98 | 0.3- | 0.5+ | 2006 10 16 | 691 | 0.3+ | 0.0  | 2007 12 16 | G98 | 0.4-  | 0.9-  |
| 2006 09 20 | G98 | 0.5+ | 0.0  | 2006 10 16 | 691 | 0.2+ | 0.2+ | 2007 12 16 | G98 | 0.5+  | 0.6-  |
| 2006 09 20 | G98 | 0.4+ | 0.2+ | 2006 10 16 | 691 | 0.1+ | 0.2- |            |     |       |       |

**2006 SR<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.86409   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.12623525 | $\omega$ 315.69109 | +0.92218687   | -0.35314825 |
| <i>a</i> | 3.9356423  | $\Omega$ 65.59280  | +0.38514281   | +0.80152458 |
| <i>e</i> | 0.1964716  | <i>i</i> 9.97021   | +0.03516237   | +0.48253981 |
| <i>P</i> | 7.81       | <i>H</i> 15.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 08 28 | D35 | 0.2-  | 0.2+  | 2006 09 19 | 703 | 0.9+  | 0.1-  | 2007 11 14 | 691 | 0.4- | 0.1+ |
| 2006 08 28 | D35 | 0.2-  | 0.5+  | 2006 09 25 | 703 | 0.1+  | 1.1-  | 2007 12 06 | 691 | 0.2+ | 0.2- |
| 2006 08 28 | D35 | 0.2+  | 0.3+  | 2006 09 25 | 703 | 0.1-  | 0.2+  | 2007 12 06 | 691 | 0.1- | 0.2+ |
| 2006 09 17 | 699 | 1.2-  | 0.1+  | 2006 09 25 | 703 | (0.3- | 2.2+) | 2007 12 06 | 691 | 0.3- | 0.3+ |
| 2006 09 17 | 699 | 1.2+  | 0.4+  | 2006 09 25 | 703 | (0.5+ | 2.0+) | 2007 12 15 | 704 | 0.3+ | 0.7+ |
| 2006 09 17 | 699 | (1.8+ | 2.0-) | 2006 10 12 | 644 | 0.3-  | 0.3+  | 2007 12 15 | 704 | 0.0  | 0.3- |
| 2006 09 17 | 699 | 0.0   | 1.2-  | 2006 10 12 | 644 | 0.3+  | 0.1+  | 2007 12 15 | 704 | 0.7+ | 0.1+ |
| 2006 09 19 | 703 | 0.2-  | 0.4+  | 2006 10 12 | 644 | 0.3+  | 0.0   | 2007 12 15 | 704 | 0.5- | 1.0- |
| 2006 09 19 | 703 | 0.4-  | 0.1+  | 2007 11 14 | 691 | 0.2+  | 0.2-  | 2007 12 15 | 704 | 0.1- | 0.2- |
| 2006 09 19 | 703 | 0.5-  | 0.2-  | 2007 11 14 | 691 | 0.3+  | 0.0   |            |     |      |      |

**2006 SJ<sub>29</sub> = 2007 WZ<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 160.71535  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18014809 | $\omega$ 313.39510 | -0.51281804   | +0.84631597 |
| <i>a</i> | 3.1049142  | $\Omega$ 285.22692 | -0.73816930   | -0.52038782 |
| <i>e</i> | 0.0964706  | <i>i</i> 8.58930   | -0.43831923   | -0.11377959 |
| <i>P</i> | 5.47       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 17 | 691 | 0.1+ | 0.1+ | 2006 09 25 | 691 | 0.2+ | 0.1+ | 2007 11 16 | G96 | 0.0  | 0.0  |
| 2006 09 17 | 691 | 0.2+ | 0.1+ | 2006 09 25 | 691 | 0.1- | 0.2- | 2007 11 16 | G96 | 0.2- | 0.1- |
| 2006 09 17 | 691 | 0.0  | 0.1+ | 2006 09 27 | 691 | 0.4+ | 0.0  | 2007 11 16 | G96 | 0.2- | 0.0  |
| 2006 09 19 | 691 | 0.1- | 0.1+ | 2006 09 27 | 691 | 0.3+ | 0.1+ | 2007 11 16 | G96 | 0.4- | 0.0  |
| 2006 09 19 | 691 | 0.0  | 0.0  | 2006 09 27 | 691 | 0.3+ | 0.1+ | 2007 11 16 | G96 | 0.2+ | 0.1- |
| 2006 09 19 | 691 | 0.1+ | 0.1+ | 2006 09 30 | 691 | 0.2- | 0.0  | 2007 11 16 | G96 | 0.0  | 0.2- |
| 2006 09 22 | 691 | 0.1- | 0.3- | 2006 09 30 | 691 | 0.3- | 0.1+ | 2007 11 19 | 291 | 0.2+ | 0.2+ |
| 2006 09 22 | 691 | 0.4- | 0.2- | 2006 09 30 | 691 | 0.1- | 0.0  | 2007 11 19 | 291 | 0.4- | 0.1- |
| 2006 09 22 | 691 | 0.2- | 0.2- | 2007 11 16 | G96 | 0.1+ | 0.0  | 2007 11 19 | 291 | 0.4+ | 0.1+ |
| 2006 09 25 | 691 | 0.0  | 0.0  | 2007 11 16 | G96 | 0.0  | 0.2- |            |     |      |      |

**2006 SC<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.96116    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17834688 | $\omega$ 182.72102 | +0.56374511   | -0.81336678 |
| <i>a</i> | 3.1257846  | $\Omega$ 233.00664 | +0.76114827   | +0.57911563 |
| <i>e</i> | 0.0768595  | <i>i</i> 10.35885  | +0.32069418   | +0.05531337 |
| <i>P</i> | 5.53       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 16 | 695 | 0.3+ | 0.2+ | 2006 09 20 | 691 | 0.0  | 0.1+ | 2007 11 08 | 691 | 0.1+ | 0.8+ |
| 2001 11 16 | 695 | 0.1- | 0.1+ | 2006 09 26 | 691 | 0.0  | 0.1- | 2007 11 19 | 691 | 0.1- | 0.4- |
| 2001 11 16 | 695 | 0.3- | 0.2+ | 2006 09 26 | 691 | 0.1+ | 0.2- | 2007 11 19 | 691 | 0.2- | 0.0  |
| 2001 11 16 | 695 | 0.0  | 0.2+ | 2006 09 26 | 691 | 0.7+ | 0.3- | 2007 11 19 | 691 | 0.2+ | 0.0  |
| 2006 09 18 | 691 | 0.7- | 0.2- | 2006 09 30 | 691 | 0.5+ | 0.1+ | 2007 11 21 | G96 | 0.5+ | 0.2- |
| 2006 09 18 | 691 | 0.3- | 0.1+ | 2006 09 30 | 691 | 0.0  | 0.4- | 2007 11 21 | G96 | 0.3+ | 0.3- |
| 2006 09 18 | 691 | 0.0  | 0.0  | 2006 09 30 | 691 | 0.1+ | 0.4+ | 2007 11 21 | G96 | 0.7+ | 0.4- |
| 2006 09 20 | 691 | 0.4- | 0.1+ | 2007 11 08 | 691 | 0.1- | 0.0  | 2007 11 21 | G96 | 0.0  | 0.2- |
| 2006 09 20 | 691 | 0.1+ | 0.2+ | 2007 11 08 | 691 | 0.3- | 0.2- |            |     |      |      |

**2006 SP<sub>49</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 80.88776   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17285743 | $\omega$ 164.78862 | +0.98634771   | -0.14847603 |
| <i>a</i> | 3.1916163  | $\Omega$ 204.10014 | +0.12692993   | +0.96102709 |
| <i>e</i> | 0.0693513  | <i>i</i> 10.04548  | +0.10491420   | +0.23319907 |
| <i>P</i> | 5.70       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 18 | 691 | 0.2- | 0.0  | 2006 09 28 | G98 | 0.5+ | 0.1- | 2006 11 01 | 691 | 0.1- | 0.1- |
| 2006 09 18 | 691 | 0.4- | 0.7+ | 2006 09 28 | 691 | 0.1- | 0.2+ | 2006 11 01 | 691 | 0.1+ | 0.1- |
| 2006 09 18 | 691 | 0.0  | 0.2+ | 2006 09 28 | G98 | 0.1+ | 0.1+ | 2006 11 16 | G98 | 0.5- | 0.6+ |
| 2006 09 19 | G98 | 0.1+ | 0.0  | 2006 09 28 | G98 | 0.4+ | 0.2+ | 2006 11 16 | G98 | 0.2- | 0.5- |
| 2006 09 19 | G98 | 0.3- | 0.5- | 2006 09 28 | G98 | 0.0  | 0.2- | 2006 11 16 | G96 | 0.0  | 0.5- |
| 2006 09 19 | G98 | 0.5+ | 0.3+ | 2006 10 11 | 691 | 0.0  | 0.1- | 2006 11 16 | G96 | 0.1+ | 0.5- |
| 2006 09 19 | G98 | 0.2+ | 0.1- | 2006 10 11 | 691 | 0.1- | 0.2+ | 2006 11 16 | G96 | 0.3+ | 0.4- |
| 2006 09 19 | G98 | 0.0  | 0.8+ | 2006 10 11 | 691 | 0.2+ | 0.1+ | 2006 11 16 | G98 | 0.3- | 0.1- |
| 2006 09 20 | G98 | 0.5- | 1.0- | 2006 10 19 | 691 | 0.1+ | 0.2- | 2006 11 16 | G96 | 0.6- | 0.2- |
| 2006 09 20 | G98 | 0.1- | 0.3- | 2006 10 19 | 691 | 0.1+ | 0.4- | 2006 11 16 | G98 | 0.5- | 0.6+ |
| 2006 09 20 | G98 | 0.2+ | 0.2- | 2006 10 19 | 691 | 0.1- | 0.3- | 2006 11 20 | 691 | 0.2- | 0.0  |
| 2006 09 24 | 691 | 0.1- | 0.3- | 2006 10 21 | 703 | 1.8+ | 0.2- | 2006 11 20 | 691 | 0.2- | 0.2- |
| 2006 09 24 | 691 | 0.2+ | 0.0  | 2006 10 21 | 703 | 1.2- | 0.1- | 2006 11 20 | 691 | 0.0  | 0.1+ |
| 2006 09 24 | 691 | 0.2+ | 0.2+ | 2006 10 21 | 703 | 1.3+ | 0.5- | 2007 12 03 | G98 | 0.1+ | 0.1- |
| 2006 09 25 | G98 | 0.3- | 0.2- | 2006 10 21 | 703 | 0.4+ | 0.9+ | 2007 12 03 | G98 | 0.1+ | 0.0  |
| 2006 09 25 | G98 | 0.2- | 0.6- | 2006 10 28 | 691 | 0.0  | 0.2+ | 2007 12 04 | G98 | 0.2+ | 0.0  |
| 2006 09 25 | G98 | 0.0  | 0.3- | 2006 10 28 | 691 | 0.0  | 0.4+ | 2007 12 04 | G98 | 0.6- | 0.7+ |
| 2006 09 28 | 691 | 0.2- | 0.1- | 2006 10 28 | 691 | 0.1+ | 0.2+ | 2007 12 04 | G98 | 0.1+ | 0.4- |
| 2006 09 28 | 691 | 0.0  | 0.1- | 2006 11 01 | 691 | 0.5+ | 0.4+ | 2007 12 04 | G98 | 0.1+ | 0.1- |

**2006 SP<sub>56</sub> = 2007 XS<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 73.35575   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18101249 | $\omega$ 266.59410 | +0.97100530   | +0.12355821 |
| <i>a</i> | 3.0950217  | $\Omega$ 86.23563  | -0.03180296   | +0.91522975 |
| <i>e</i> | 0.0590061  | <i>i</i> 11.83498  | -0.23693308   | +0.38352037 |
| <i>P</i> | 5.44       | <i>H</i> 14.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 09 20 | 703 | 0.8- | 0.6- | 2006 10 12 | E12 | 0.2+ | 0.9+ | 2007 12 04 | 691 | 0.0   | 0.1-  |
| 2006 09 20 | 703 | 0.2- | 1.1- | 2006 10 12 | E12 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.2+  | 1.0-  |
| 2006 09 20 | 703 | 1.4+ | 0.1+ | 2006 10 12 | E12 | 0.6+ | 0.5+ | 2007 12 04 | 691 | 0.4+  | 0.8+  |
| 2006 09 20 | 703 | 0.5+ | 0.5- | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 04 | 691 | (0.4+ | 1.8-) |
| 2006 09 21 | 699 | 0.8- | 0.9- | 2007 11 05 | 691 | 0.1- | 0.1- | 2007 12 04 | 691 | 0.3-  | 0.0   |
| 2006 09 21 | 699 | 0.8+ | 0.5- | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 12 15 | J75 | 0.2+  | 0.2+  |
| 2006 09 21 | 699 | 1.0+ | 0.5+ | 2007 11 13 | 691 | 0.4+ | 0.0  | 2007 12 15 | J75 | 0.5-  | 0.6+  |
| 2006 09 21 | 699 | 0.3+ | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.1- | 2007 12 15 | J75 | 0.4-  | 0.2+  |

## 2007 DEC. 24

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 09 26 | 703 | 0.4− | 0.1− | 2007 11 13 | 691 | 0.1−  | 0.2+  | 2007 12 16 | 620 | 0.3+ | 1.1+ |
| 2006 09 26 | 703 | 0.5− | 1.0+ | 2007 11 17 | 691 | 0.1−  | 0.1−  | 2007 12 16 | 620 | 0.1− | 0.5− |
| 2006 09 26 | 703 | 1.0− | 0.3+ | 2007 11 17 | 691 | 0.1−  | 0.1+  | 2007 12 16 | 620 | 0.0  | 0.3− |
| 2006 09 26 | 703 | 0.7− | 0.3+ | 2007 11 17 | 691 | 0.0   | 0.2−  |            |     |      |      |
| 2006 10 12 | E12 | 0.4− | 0.2+ | 2007 12 04 | 691 | (0.7− | 2.1−) |            |     |      |      |

2006 SA<sub>58</sub> = 2007 VG<sub>185</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 324.17344  |          | (2000.0)  |  | <b>P</b>      |  | <b>Q</b>    |
|----------|------------|----------|-----------|--|---------------|--|-------------|
| <i>n</i> | 0.19565470 | $\omega$ | 215.39077 |  | −0.22038642   |  | −0.96300030 |
| <i>a</i> | 2.9386139  | $\Omega$ | 247.78657 |  | +0.92908288   |  | −0.15881969 |
| <i>e</i> | 0.1000952  | <i>i</i> | 9.64533   |  | +0.29704349   |  | −0.21773086 |
| <i>P</i> | 5.04       | <i>H</i> | 16.0      |  | <i>G</i> 0.15 |  | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 645 | 0.0  | 0.1− | 2007 09 10 | 291 | 0.2− | 0.2− | 2007 12 03 | 703 | 0.0  | 1.3+ |
| 2001 10 15 | 645 | 0.0  | 0.1− | 2007 09 10 | 291 | 0.2− | 0.1− | 2007 12 03 | 703 | 1.0+ | 0.3+ |
| 2006 08 28 | 703 | 0.9− | 1.1+ | 2007 10 16 | G96 | 0.0  | 0.2− | 2007 12 03 | 703 | 0.2− | 1.0− |
| 2006 08 28 | 703 | 0.4+ | 0.2− | 2007 10 16 | G96 | 0.1+ | 0.3− | 2007 12 03 | 703 | 0.2+ | 0.6+ |
| 2006 08 28 | 703 | 0.3+ | 0.2− | 2007 10 16 | G96 | 0.2+ | 0.2− | 2007 12 03 | 703 | 0.5+ | 0.2+ |
| 2006 08 28 | 703 | 0.2+ | 0.4+ | 2007 11 06 | 691 | 0.2− | 0.3+ | 2007 12 03 | 703 | 0.1− | 1.2+ |
| 2006 09 18 | 691 | 0.1+ | 0.1− | 2007 11 06 | 691 | 0.0  | 0.1− | 2007 12 03 | 703 | 0.3+ | 0.2+ |
| 2006 09 18 | 691 | 0.2+ | 0.0  | 2007 11 06 | 691 | 0.0  | 0.1− | 2007 12 03 | 703 | 0.1+ | 0.0  |
| 2006 09 18 | 691 | 0.2− | 0.3+ | 2007 11 09 | D29 | 0.5+ | 0.5− | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2006 09 22 | 691 | 0.4− | 0.2+ | 2007 11 09 | D29 | 0.7− | 1.2− | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2006 09 22 | 691 | 0.1− | 0.4+ | 2007 11 18 | 691 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.4+ | 0.3− |
| 2006 09 22 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1− | 2007 12 04 | G96 | 0.2+ | 0.3− |
| 2006 09 26 | 691 | 0.1− | 0.1+ | 2007 11 18 | 691 | 0.1− | 0.0  | 2007 12 05 | 704 | 0.6− | 0.6+ |
| 2006 09 26 | 691 | 0.1− | 0.5− | 2007 11 30 | J87 | 0.3+ | 0.3− | 2007 12 05 | 704 | 0.2− | 1.3+ |
| 2006 09 26 | 691 | 0.2+ | 0.0  | 2007 11 30 | J87 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.1− | 1.0+ |
| 2007 09 10 | 291 | 0.2− | 0.3− | 2007 11 30 | J87 | 0.4+ | 0.1− | 2007 12 05 | 704 | 0.3− | 0.6+ |

2006 SU<sub>65</sub> = 2007 XB<sub>20</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.44093  |          | (2000.0)  |  | <b>P</b>      |  | <b>Q</b>    |
|----------|------------|----------|-----------|--|---------------|--|-------------|
| <i>n</i> | 0.17405714 | $\omega$ | 115.89501 |  | +0.49001879   |  | −0.85920694 |
| <i>a</i> | 3.1769337  | $\Omega$ | 303.98226 |  | +0.72276972   |  | +0.49481709 |
| <i>e</i> | 0.0848830  | <i>i</i> | 10.21979  |  | +0.48732486   |  | +0.13007490 |
| <i>P</i> | 5.66       | <i>H</i> | 16.0      |  | <i>G</i> 0.15 |  | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 19 | 691 | 0.1+ | 0.1− | 2006 09 23 | 691 | 0.0  | 0.0  | 2007 12 13 | 673 | 0.5+ | 0.1− |
| 2006 09 19 | 691 | 0.0  | 0.1− | 2006 09 23 | 691 | 0.3+ | 0.2+ | 2007 12 13 | 673 | 0.4− | 0.2− |
| 2006 09 19 | 691 | 0.3− | 0.0  | 2006 09 23 | 691 | 0.1− | 0.2− | 2007 12 13 | 673 | 0.1− | 0.3− |
| 2006 09 23 | 691 | 0.2+ | 0.1+ | 2006 09 28 | 691 | 0.0  | 0.0  | 2007 12 14 | 673 | 0.4+ | 0.1− |
| 2006 09 23 | 691 | 0.3+ | 0.2+ | 2006 09 28 | 691 | 0.1− | 0.1+ | 2007 12 14 | 673 | 0.2+ | 0.2+ |
| 2006 09 23 | 691 | 0.3− | 0.2− | 2006 09 28 | 691 | 0.2− | 0.0  | 2007 12 14 | 673 | 0.6− | 0.5+ |

2006 SK<sub>77</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 130.61189  |          | (2000.0)  |  | <b>P</b>      |  | <b>Q</b>    |
|----------|------------|----------|-----------|--|---------------|--|-------------|
| <i>n</i> | 0.21643528 | $\omega$ | 9.89823   |  | +0.00915725   |  | +0.94239199 |
| <i>a</i> | 2.7473713  | $\Omega$ | 261.20063 |  | −0.93902692   |  | −0.10684087 |
| <i>e</i> | 0.4517553  | <i>i</i> | 19.77746  |  | −0.34372167   |  | +0.31698953 |
| <i>P</i> | 4.55       | <i>H</i> | 14.9      |  | <i>G</i> 0.15 |  | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 06 04 | 703 | 0.5− | 0.1− | 2006 10 02 | 703 | 0.4+ | 0.0  | 2006 10 20 | 704 | 0.3+ | 0.3− |
| 2006 06 04 | 703 | 0.3− | 0.8+ | 2006 10 02 | 704 | 0.1+ | 0.9+ | 2006 10 20 | 703 | 0.4− | 0.3− |
| 2006 06 04 | 703 | 0.4+ | 0.3− | 2006 10 02 | 703 | 0.6− | 1.3+ | 2006 10 20 | 703 | 0.3− | 0.1+ |
| 2006 06 04 | 703 | 0.5− | 0.2+ | 2006 10 02 | 703 | 0.6+ | 0.0  | 2006 11 15 | 703 | 0.6− | 0.1+ |
| 2006 09 18 | 703 | 0.5− | 0.1+ | 2006 10 02 | 703 | 0.7+ | 0.9+ | 2006 11 15 | 703 | 0.2− | 0.9− |
| 2006 09 18 | 703 | 0.4+ | 0.7− | 2006 10 02 | 704 | 0.3+ | 0.0  | 2006 11 15 | 703 | 0.6+ | 0.3+ |
| 2006 09 18 | 703 | 0.4+ | 0.5− | 2006 10 02 | 704 | 0.2− | 0.3+ | 2006 11 15 | 703 | 0.5− | 0.1− |
| 2006 09 18 | 703 | 0.1− | 0.4− | 2006 10 02 | 704 | 0.2+ | 0.6+ | 2007 11 18 | G96 | 0.0  | 0.1+ |

## M.P.O. 129777

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 09 22 | 699 | 0.6+ | 0.2− | 2006 10 02 | 703 | 0.3+  | 0.2+  | 2007 11 18 | G96 | 0.2− | 0.2− |
| 2006 09 22 | 699 | 0.6+ | 0.4+ | 2006 10 02 | 703 | 0.4−  | 0.4−  | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2006 09 22 | 699 | 0.5+ | 0.5− | 2006 10 02 | 703 | 0.8−  | 0.5−  | 2007 11 18 | G96 | 0.4− | 0.1− |
| 2006 09 22 | 699 | 0.8+ | 0.1− | 2006 10 02 | 703 | 0.6−  | 0.6+  | 2007 12 05 | G96 | 0.3− | 0.1+ |
| 2006 09 25 | 703 | 0.2+ | 0.4− | 2006 10 20 | 704 | (1.6+ | 0.3+) | 2007 12 05 | G96 | 0.4+ | 0.2+ |
| 2006 09 25 | 703 | 0.1− | 0.1− | 2006 10 20 | 704 | 0.2−  | 0.8+  | 2007 12 05 | G96 | 0.1+ | 0.2+ |
| 2006 09 25 | 703 | 0.0  | 0.4− | 2006 10 20 | 703 | 0.6+  | 0.2−  | 2007 12 05 | G96 | 0.3+ | 0.0  |
| 2006 09 25 | 703 | 0.3− | 0.6− | 2006 10 20 | 704 | 1.3−  | 0.0   |            |     |      |      |
| 2006 10 02 | 704 | 0.0  | 0.2− | 2006 10 20 | 703 | 0.1−  | 0.4−  |            |     |      |      |

2006 SN<sub>77</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 36.68759   |          | (2000.0)  |  | <b>P</b>      |  | <b>Q</b>    |
|----------|------------|----------|-----------|--|---------------|--|-------------|
| <i>n</i> | 0.17454375 | $\omega$ | 216.36391 |  | +0.48158606   |  | −0.87389384 |
| <i>a</i> | 3.1710263  | $\Omega$ | 205.04880 |  | +0.83645149   |  | +0.48087154 |
| <i>e</i> | 0.0954213  | <i>i</i> | 8.99756   |  | +0.26157938   |  | +0.07121883 |
| <i>P</i> | 5.65       | <i>H</i> | 16.5      |  | <i>G</i> 0.15 |  | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 18 | 691 | 0.2− | 0.4− | 2006 10 02 | 691 | 0.1− | 0.2+ | 2006 10 27 | G96 | 0.1− | 0.6− |
| 2006 09 18 | 691 | 0.4− | 0.0  | 2006 10 02 | 691 | 0.1− | 0.1+ | 2006 10 27 | G96 | 0.1+ | 0.4− |
| 2006 09 18 | 691 | 0.1+ | 0.2− | 2006 10 15 | 691 | 0.5+ | 0.2− | 2006 10 27 | G96 | 0.1− | 0.6− |
| 2006 09 20 | G98 | 0.1+ | 0.0  | 2006 10 15 | 691 | 0.3+ | 0.1+ | 2006 10 31 | 691 | 0.0  | 0.1− |
| 2006 09 20 | G98 | 0.1− | 0.3+ | 2006 10 15 | 691 | 0.3+ | 0.1− | 2006 10 31 | 691 | 0.1− | 0.2− |
| 2006 09 20 | G98 | 0.3− | 0.7+ | 2006 10 19 | 691 | 0.1− | 0.1− | 2006 10 31 | 691 | 0.2− | 0.3+ |
| 2006 09 20 | G98 | 0.5+ | 0.5− | 2006 10 19 | 691 | 0.1− | 0.2+ | 2006 11 16 | G98 | 0.1+ | 0.0  |
| 2006 09 20 | G98 | 0.5+ | 0.0  | 2006 10 19 | 691 | 0.0  | 0.2+ | 2006 11 16 | G96 | 0.3+ | 0.5− |
| 2006 09 24 | G98 | 0.1+ | 0.1− | 2006 10 21 | 644 | 0.2− | 0.4+ | 2006 11 16 | G96 | 0.0  | 0.1− |
| 2006 09 24 | G98 | 0.2+ | 0.5− | 2006 10 21 | 644 | 0.3+ | 0.0  | 2006 11 16 | G96 | 0.2+ | 0.3− |
| 2006 09 24 | G98 | 0.8+ | 0.2− | 2006 10 21 | 644 | 0.2+ | 0.6+ | 2006 11 16 | G98 | 0.0  | 0.1+ |
| 2006 09 24 | G98 | 0.1+ | 0.2− | 2006 10 23 | 691 | 0.3− | 0.2− | 2006 11 16 | G96 | 0.3+ | 0.3− |
| 2006 09 26 | G98 | 0.1− | 0.1+ | 2006 10 23 | 691 | 0.4− | 0.3− | 2006 11 16 | G98 | 0.2+ | 0.5+ |
| 2006 09 26 | G98 | 0.1+ | 0.3− | 2006 10 23 | 691 | 0.3− | 0.3− | 2007 12 16 | G98 | 0.1− | 0.2− |
| 2006 09 28 | 691 | 0.2+ | 0.2+ | 2006 10 27 | 691 | 0.2+ | 0.2+ | 2007 12 16 | G98 | 0.5+ | 0.1+ |
| 2006 09 28 | 691 | 0.0  | 0.1+ | 2006 10 27 | 691 | 0.1+ | 0.3+ | 2007 12 16 | G98 | 0.4− | 0.1+ |
| 2006 09 28 | 691 | 0.2− | 0.0  | 2006 10 27 | 691 | 0.1− | 0.4+ |            |     |      |      |
| 2006 10 02 | 691 | 0.0  | 0.2+ | 2006 10 27 | G96 | 0.1+ | 0.2− |            |     |      |      |

2006 SD<sub>84</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 250.26119  |          | (2000.0)  |  | <b>P</b>      |  | <b>Q</b>    |
|----------|------------|----------|-----------|--|---------------|--|-------------|
| <i>n</i> | 0.24646495 | $\omega$ | 51.96302  |  | −0.82965514   |  | +0.55794190 |
| <i>a</i> | 2.5194125  | $\Omega$ | 161.92496 |  | −0.52973531   |  | −0.77584666 |
| <i>e</i> | 0.1127547  | <i>i</i> | 3.56975   |  | −0.17621820   |  | −0.29455525 |
| <i>P</i> | 4.00       | <i>H</i> | 17.0      |  | <i>G</i> 0.15 |  | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 08 | 645 | 0.0  | 0.0  | 2006 09 25 | 691 | 0.3+ | 0.4+ | 2006 10 22 | G96 | 0.3− | 0.2− |
| 2002 11 08 | 645 | 0.0  | 0.0  | 2006 09 25 | 691 | 0.1+ | 0.2+ | 2006 11 17 | G96 | 0.1− | 0.1+ |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2006 09 28 | 691 | 0.0  | 0.5− | 2006 11 17 | G96 | 0.2− | 0.2− |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2006 09 28 | 691 | 0.3− | 0.5− | 2006 11 17 | G96 | 0.3+ | 0.1− |
| 2006 09 18 | 691 | 0.1+ | 0.2+ | 2006 09 28 | 691 | 0.0  | 0.2− | 2006 11 17 | G96 | 0.2+ | 0.3− |
| 2006 09 18 | 691 | 0.1+ | 0.2+ | 2006 10 22 | G96 | 0.3− | 0.6− | 2007 12 06 | 691 | 0.3− | 0.2+ |
| 2006 09 18 | 691 | 0.0  | 0.3+ | 2006 10 22 | G96 | 0.3− | 0.2− | 2007 12 06 | 691 | 0.1+ | 0.1+ |
| 2006 09 25 | 691 | 0.2+ | 0.3+ | 2006 10 22 | G96 | 0.3+ | 0.5− | 2007 12 06 | 691 | 0.1+ | 0.1+ |

2006 SU<sub>98</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 62.59219   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22041314 | $\omega$ | 202.18360 |     | +0.66855095 |     | −0.74362489 |
| $a$ | 2.7142160  | $\Omega$ | 205.86313 |     | +0.68497540 |     | +0.61986498 |
| $e$ | 0.0651254  | $i$      | 1.03135   |     | +0.28956576 |     | +0.25057818 |
| $P$ | 4.47       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 2           |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 06 | 691 | 0.1− | 0.2− | 2006 10 15 | 691 | 0.3−  | 0.2+  | 2006 10 27 | G96 | 0.7+ | 0.4− |
| 2000 05 06 | 691 | 0.3+ | 0.1+ | 2006 10 19 | 691 | 0.2+  | 0.1+  | 2006 10 27 | G96 | 0.0  | 0.1− |
| 2000 05 06 | 691 | 0.1− | 0.5+ | 2006 10 19 | 691 | 0.1+  | 0.1+  | 2006 10 27 | G96 | 0.1+ | 0.2− |
| 2006 09 18 | 691 | 0.0  | 0.0  | 2006 10 19 | 691 | 0.1+  | 0.1+  | 2006 10 27 | G96 | 0.3+ | 0.4− |
| 2006 09 18 | 691 | 0.1+ | 0.3+ | 2006 10 20 | 703 | (0.1+ | 1.9+) | 2006 10 31 | 691 | 0.0  | 0.3+ |
| 2006 09 18 | 691 | 0.1− | 0.3+ | 2006 10 20 | 703 | 0.1+  | 0.7−  | 2006 10 31 | 691 | 0.3− | 0.3− |
| 2006 09 25 | G96 | 0.3+ | 0.1+ | 2006 10 20 | 703 | 0.4−  | 0.4+  | 2006 10 31 | 691 | 0.0  | 0.2− |
| 2006 09 25 | G96 | 0.2+ | 0.2− | 2006 10 20 | 703 | (1.7− | 0.7−) | 2006 11 09 | 644 | 0.5− | 0.2+ |
| 2006 09 25 | G96 | 0.1+ | 0.2− | 2006 10 21 | 703 | 1.2−  | 1.0+  | 2006 11 09 | 644 | 0.2− | 0.1− |
| 2006 09 25 | G96 | 0.0  | 0.0  | 2006 10 21 | 703 | 0.9−  | 0.7+  | 2006 11 09 | 644 | 0.0  | 0.1+ |
| 2006 09 28 | 691 | 0.4+ | 0.1+ | 2006 10 21 | 703 | 0.5−  | 0.8+  | 2006 12 21 | 695 | 0.4+ | 0.3+ |
| 2006 09 28 | 691 | 0.5+ | 0.1+ | 2006 10 21 | 703 | 0.3+  | 0.1+  | 2006 12 21 | 695 | 0.2+ | 0.3+ |
| 2006 09 28 | 691 | 0.2+ | 0.1− | 2006 10 21 | 644 | 0.5−  | 0.1+  | 2007 11 19 | G96 | 0.0  | 0.0  |
| 2006 10 02 | 691 | 0.0  | 0.1+ | 2006 10 21 | 644 | 0.1+  | 0.4+  | 2007 11 19 | G96 | 0.1+ | 0.2− |
| 2006 10 02 | 691 | 0.2− | 0.0  | 2006 10 21 | 644 | 0.2+  | 0.2+  | 2007 11 19 | G96 | 0.1+ | 0.3+ |
| 2006 10 02 | 691 | 0.1− | 0.1+ | 2006 10 23 | 691 | 0.1−  | 0.2−  | 2007 11 19 | G96 | 0.1+ | 0.0  |
| 2006 10 11 | 691 | 0.2+ | 0.1− | 2006 10 23 | 691 | 0.1−  | 0.1−  | 2007 12 04 | G96 | 0.6− | 0.1− |
| 2006 10 11 | 691 | 0.1+ | 0.0  | 2006 10 23 | 691 | 0.2−  | 0.3−  | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2006 10 11 | 691 | 0.3+ | 0.1+ | 2006 10 27 | 691 | 0.2−  | 0.2−  | 2007 12 04 | G96 | 0.2+ | 1.1+ |
| 2006 10 15 | 691 | 0.2− | 0.2+ | 2006 10 27 | 691 | 0.1−  | 0.2−  | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2006 10 15 | 691 | 0.1+ | 0.2− | 2006 10 27 | 691 | 0.1−  | 0.2−  |            |     |      |      |

2006 SQ<sub>107</sub> = 2007 VQ<sub>296</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.12432268 | $\omega$ | 248.66097 | +0.87586315 | −0.46685761 |          |   |
| <i>a</i> | 3.9759032  | $\Omega$ | 138.90020 | +0.48212541 | +0.83587047 |          |   |
| <i>e</i> | 0.1715944  | <i>i</i> | 10.70399  | +0.02046550 | +0.28872915 |          |   |
| <i>P</i> | 7.93       | <i>H</i> | 14.2      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 06 22 | 599 | 0.5− | 0.2− | 2006 09 25 | 703 | 0.2− | 0.1+ | 2006 10 23 | 644 | 0.1− | 0.4− |
| 2004 06 22 | 599 | 0.8+ | 0.1+ | 2006 09 25 | 703 | 0.2+ | 0.3+ | 2006 10 23 | 644 | 0.4+ | 0.4− |
| 2004 06 22 | 599 | 0.1− | 0.5+ | 2006 09 25 | 703 | 0.5+ | 0.3+ | 2006 10 23 | 644 | 0.2+ | 0.2− |
| 2005 06 13 | 691 | 0.1+ | 0.3+ | 2006 09 25 | 703 | 0.2− | 0.5+ | 2007 11 15 | 703 | 0.0  | 0.6− |
| 2005 06 13 | 691 | 0.1+ | 0.2+ | 2006 10 09 | 644 | 0.3+ | 0.4− | 2007 11 15 | 703 | 0.5+ | 0.5+ |
| 2005 06 13 | 691 | 0.1− | 0.3+ | 2006 10 09 | 644 | 0.3+ | 0.0  | 2007 11 15 | 703 | 0.3+ | 0.2+ |
| 2005 07 11 | G96 | 0.7− | 0.3− | 2006 10 09 | 644 | 0.1+ | 0.0  | 2007 11 15 | 703 | 0.7+ | 0.2− |
| 2005 07 11 | G96 | 0.5+ | 0.0  | 2006 10 22 | 644 | 0.1+ | 0.2− | 2007 11 20 | 703 | 0.5+ | 0.1− |
| 2005 07 11 | G96 | 0.1+ | 0.9− | 2006 10 22 | 644 | 0.1− | 0.4− | 2007 11 20 | 703 | 0.2− | 0.9+ |
| 2006 09 19 | 703 | 0.3+ | 1.0+ | 2006 10 22 | 644 | 0.1− | 0.2− | 2007 11 20 | 703 | 0.5− | 0.3− |
| 2006 09 19 | 703 | 0.1− | 0.2− | 2006 10 23 | 644 | 0.2− | 0.2− | 2007 11 20 | 703 | 1.4− | 0.2− |
| 2006 09 19 | 703 | 1.0− | 0.3+ | 2006 10 23 | 644 | 0.4− | 0.3− |            |     |      |      |
| 2006 09 19 | 703 | 0.5− | 0.5+ | 2006 10 23 | 644 | 0.4+ | 0.2− |            |     |      |      |

2006 SQ<sub>120</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18624226 | $\omega$ | 296.88818 | +0.60999046 | −0.78355081 |          |   |
| <i>a</i> | 3.0368072  | $\Omega$ | 115.02244 | +0.76540763 | +0.54402741 |          |   |
| <i>e</i> | 0.2107331  | <i>i</i> | 7.49211   | +0.20509218 | +0.30013716 |          |   |
| <i>P</i> | 5.29       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 25 | 644 | 0.0  | 0.3− | 2006 09 25 | 699 | 0.3− | 0.7+ | 2006 10 21 | 644 | 0.1+ | 0.3− |
| 2001 10 25 | 644 | 0.3− | 0.4+ | 2006 09 25 | 699 | 0.1− | 0.5+ | 2006 10 22 | 703 | 0.1+ | 0.0  |
| 2001 10 25 | 644 | 0.1+ | 0.3+ | 2006 09 29 | 699 | 1.3+ | 0.2− | 2006 10 22 | 703 | 0.3− | 0.8− |
| 2006 08 28 | 705 | 0.1− | 0.1− | 2006 09 29 | 699 | 0.5− | 0.5− | 2006 10 22 | 703 | 0.5− | 0.8+ |
| 2006 08 28 | 705 | 0.1− | 0.1− | 2006 09 29 | 699 | 0.0  | 0.2+ | 2006 10 22 | 644 | 0.0  | 0.4+ |
| 2006 09 11 | 705 | 0.0  | 0.1− | 2006 09 29 | 699 | 0.3+ | 0.1+ | 2006 10 22 | 703 | 0.3− | 0.4− |
| 2006 09 11 | 705 | 0.1+ | 0.0  | 2006 10 16 | 703 | 1.1+ | 0.3− | 2006 10 22 | 644 | 0.1+ | 0.1− |
| 2006 09 12 | 705 | 0.1+ | 0.0  | 2006 10 16 | 703 | 0.2− | 0.2+ | 2006 10 22 | 644 | 0.4+ | 0.4+ |
| 2006 09 12 | 705 | 0.0  | 0.0  | 2006 10 16 | 703 | 0.4− | 0.1+ | 2006 10 23 | 644 | 0.2− | 0.5− |
| 2006 09 18 | 703 | 0.2+ | 0.7− | 2006 10 16 | 703 | 0.6+ | 0.2+ | 2006 10 23 | 644 | 0.6− | 0.2− |
| 2006 09 18 | 703 | 0.2− | 0.2− | 2006 10 21 | 644 | 0.2+ | 0.4− | 2006 10 23 | 644 | 0.3− | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 18 | 703 | 0.5+ | 0.6− | 2006 10 21 | 644 | 0.0  | 0.1+ | 2007 10 16 | G96 | 0.1+ | 0.4− |
| 2006 09 18 | 703 | 0.4− | 0.9+ | 2006 10 21 | 644 | 0.2+ | 0.1+ | 2007 10 16 | G96 | 0.1+ | 0.0  |
| 2006 09 25 | 699 | 0.3− | 0.1− | 2006 10 21 | 644 | 0.1+ | 0.1+ | 2007 10 16 | G96 | 0.1+ | 0.0  |
| 2006 09 25 | 699 | 0.2− | 0.9+ | 2006 10 21 | 644 | 0.2− | 0.1− | 2007 10 16 | G96 | 0.4− | 0.1+ |

2006 SS<sub>135</sub> = 2007 WQ<sub>43</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |           | (2000.0) |           | P           |             | Q        |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 100.98255 | $\omega$ | 38.73366  | +0.48083154 | +0.83158702 |          |   |
| <i>a</i> | 3.1503399 | $\Omega$ | 261.64848 | −0.85805118 | +0.38104260 |          |   |
| <i>e</i> | 0.2039025 | <i>i</i> | 16.31652  | −0.18041400 | +0.40406628 |          |   |
| <i>P</i> | 5.59      | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 13 | 644 | 0.2+ | 0.2+ | 2006 09 27 | 703 | 0.2− | 0.5+ | 2007 11 19 | G96 | 0.3+ | 0.1− |
| 2006 08 13 | 644 | 0.1− | 0.4+ | 2006 09 27 | 703 | 0.4+ | 0.5+ | 2007 11 20 | G96 | 0.1− | 0.1− |
| 2006 08 13 | 644 | 0.5− | 0.3+ | 2006 09 27 | 703 | 0.3+ | 0.3+ | 2007 11 20 | G96 | 0.5+ | 0.0  |
| 2006 09 20 | 703 | 0.5− | 0.9− | 2006 09 27 | 703 | 0.2− | 0.3− | 2007 11 20 | G96 | 0.3+ | 0.1− |
| 2006 09 20 | 703 | 0.6+ | 0.2+ | 2007 11 19 | G96 | 0.3− | 0.1− | 2007 11 20 | G96 | 0.1− | 0.3+ |
| 2006 09 20 | 703 | 0.2+ | 0.1+ | 2007 11 19 | G96 | 0.1− | 0.0  |            |     |      |      |
| 2006 09 20 | 703 | 0.1− | 1.4− | 2007 11 19 | G96 | 0.4− | 0.2+ |            |     |      |      |

2006 SM<sub>164</sub> = 2007 WQ<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19447535 | $\omega$ | 81.21714  | +0.63815462 | +0.75579611 |          |   |
| <i>a</i> | 2.9504823  | $\Omega$ | 229.49655 | −0.76022408 | +0.58844428 |          |   |
| <i>e</i> | 0.0390006  | <i>i</i> | 11.12664  | −0.12172933 | +0.28723782 |          |   |
| <i>P</i> | 5.07       | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 15 | G96 | 0.4−  | 0.1−  | 2006 09 25 | 691 | 0.0  | 0.4+ | 2007 10 20 | G96 | 0.1+ | 0.3− |
| 2005 05 15 | G96 | 0.1+  | 0.7+  | 2006 09 27 | 691 | 0.1+ | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.2− |
| 2005 05 15 | G96 | 0.2−  | 0.2+  | 2006 09 27 | 691 | 0.0  | 0.2− | 2007 11 18 | G96 | 0.0  | 0.4− |
| 2005 05 15 | G96 | 0.5+  | 0.2−  | 2006 09 27 | 691 | 0.2+ | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.5− |
| 2006 09 18 | 703 | (1.1− | 1.7−) | 2006 10 02 | G96 | 0.2− | 0.5− | 2007 11 18 | G96 | 0.3+ | 0.3− |
| 2006 09 18 | 703 | 0.1+  | 0.1−  | 2006 10 02 | G96 | 0.6− | 0.4− | 2007 11 18 | G96 | 0.1− | 0.3− |
| 2006 09 18 | 703 | 0.3+  | 0.2+  | 2006 10 02 | G96 | 0.7− | 0.6− | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2006 09 18 | 703 | (0.2− | 1.7+) | 2006 10 02 | G96 | 0.1− | 0.2− | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2006 09 25 | 691 | 0.1−  | 0.3−  | 2007 10 20 | G96 | 0.1+ | 0.1− | 2007 11 19 | 691 | 0.0  | 0.4+ |
| 2006 09 25 | 691 | 0.0   | 0.2+  | 2007 10 20 | G96 | 0.1− | 0.1− |            |     |      |      |

2006 SA<sub>286</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21063047 | $\omega$ | 300.73006 | +0.29941827 | −0.95071760 |          |   |
| <i>a</i> | 2.7976191  | $\Omega$ | 131.62259 | +0.90809092 | +0.25805746 |          |   |
| <i>e</i> | 0.1540997  | <i>i</i> | 6.18416   | +0.29277905 | +0.17187903 |          |   |
| <i>P</i> | 4.68       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 18 | 703 | 0.5− | 0.5+ | 2006 10 16 | 703 | 0.2− | 0.2+ | 2007 10 19 | G96 | 0.0  | 0.1+ |
| 2006 09 18 | 703 | 0.2− | 0.7+ | 2006 10 16 | 703 | 0.9− | 0.3+ | 2007 10 19 | G96 | 0.2+ | 0.1− |
| 2006 09 18 | 703 | 0.8+ | 0.0  | 2006 10 16 | 703 | 0.7− | 0.7+ | 2007 10 19 | G96 | 0.4+ | 0.3− |
| 2006 09 18 | 703 | 0.6+ | 1.0− | 2006 10 16 | 703 | 0.7+ | 1.1− | 2007 11 19 | G96 | 0.1+ | 0.1+ |
| 2006 09 30 | 703 | 0.2− | 0.2+ | 2006 10 16 | 703 | 0.1− | 0.3− | 2007 11 19 | G96 | 0.0  | 0.1− |
| 2006 09 30 | 703 | 0.2− | 0.5− | 2006 10 16 | 703 | 0.1+ | 0.7− | 2007 11 19 | G96 | 0.4+ | 0.2+ |
| 2006 09 30 | 703 | 0.5+ | 0.5− | 2006 10 16 | 703 | 0.4− | 0.4+ | 2007 11 19 | G96 | 0.2+ | 0.1− |
| 2006 09 30 | 703 | 0.7+ | 0.7− | 2006 10 16 | 703 | 0.3+ | 1.1+ | 2007 12 04 | G96 | 0.0  | 0.1+ |
| 2006 10 02 | 703 | 0.0  | 0.5+ | 2006 10 22 | 644 | 0.1+ | 0.2+ | 2007 12 04 | G96 | 0.1+ | 0.1+ |
| 2006 10 02 | 703 | 0.3− | 0.4+ | 2006 10 22 | 644 | 0.6+ | 0.2+ | 2007 12 04 | G96 | 0.0  | 0.2− |
| 2006 10 02 | 703 | 1.1− | 0.2+ | 2006 10 22 | 644 | 0.7+ | 0.1+ | 2007 12 04 | G96 | 0.4− | 0.1+ |
| 2006 10 02 | 703 | 0.3− | 0.8− | 2007 10 19 | G96 | 0.9− | 0.1− |            |     |      |      |



2007 DEC. 24

M.P.O. 129779

**2006 SZ<sub>331</sub> = 2006 TD<sub>101</sub> = 2001 YL<sub>7</sub>**Id. Minor Planet Center (*MPO* 128286; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |     |             |     |             |
|-----|------------|----------|----------|-----|-------------|-----|-------------|
| $M$ | 347.93459  |          | (2000.0) |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.18184832 | $\omega$ | 97.38530 |     | -0.52528928 |     | -0.84712153 |
| $a$ | 3.0855306  | $\Omega$ | 24.82215 |     | +0.68553200 |     | -0.47723990 |
| $e$ | 0.0442604  | $i$      | 11.03460 |     | +0.50410024 |     | -0.23372461 |
| $P$ | 5.42       | $H$      | 15.8     | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 24 | 691 | 0.1- | 0.3- | 2001 12 18 | 704 | 0.5- | 0.5- | 2006 10 02 | G96 | 0.1- | 0.2- |
| 1995 10 24 | 691 | 0.2+ | 0.1+ | 2001 12 22 | 704 | 0.4+ | 0.2- | 2006 10 02 | G96 | 0.0  | 0.3- |
| 1995 10 24 | 691 | 0.4+ | 0.1+ | 2001 12 22 | 704 | 0.6+ | 0.6+ | 2006 10 02 | G96 | 0.2+ | 0.3- |
| 1995 11 23 | 691 | 0.6- | 0.3+ | 2001 12 22 | 704 | 0.8+ | 1.0+ | 2006 10 15 | 691 | 0.2+ | 0.0  |
| 1995 11 23 | 691 | 0.8- | 0.2+ | 2003 03 26 | 691 | 0.1- | 0.3+ | 2006 10 15 | 691 | 0.6- | 0.3+ |
| 1995 11 23 | 691 | 0.1- | 0.1- | 2003 03 26 | 691 | 0.2+ | 0.0  | 2006 10 15 | 691 | 0.3+ | 0.7+ |
| 2000 09 05 | 645 | 0.1- | 0.2+ | 2003 03 26 | 691 | 0.6+ | 0.1+ | 2006 10 19 | 691 | 0.2- | 0.1- |
| 2000 09 05 | 645 | 0.1- | 0.2+ | 2003 04 08 | 691 | 0.2- | 1.1+ | 2006 10 19 | 691 | 0.2- | 0.1- |
| 2001 12 17 | 704 | 0.4+ | 0.1+ | 2003 04 08 | 691 | 0.4+ | 0.7+ | 2006 10 19 | 691 | 0.2- | 0.0  |
| 2001 12 17 | 704 | 0.6+ | 0.6+ | 2003 04 08 | 691 | 0.8+ | 1.0+ | 2007 11 07 | G96 | 0.6- | 0.4- |
| 2001 12 17 | 704 | 0.3- | 0.1+ | 2006 09 28 | G96 | 0.3- | 0.3- | 2007 11 07 | G96 | 0.3- | 0.5- |
| 2001 12 17 | 704 | 0.8+ | 0.3+ | 2006 09 28 | G96 | 0.3- | 0.5- | 2007 11 07 | G96 | 0.2- | 0.7- |
| 2001 12 18 | 704 | 0.3+ | 1.2- | 2006 09 28 | G96 | 0.0  | 0.5+ | 2007 11 07 | G96 | 0.2- | 0.7- |
| 2001 12 18 | 704 | 0.3+ | 1.1- | 2006 09 28 | G96 | 0.5+ | 0.3+ |            |     |      |      |
| 2001 12 18 | 704 | 0.4+ | 1.3- | 2006 10 02 | G96 | 0.2- | 0.3- |            |     |      |      |

**2006 TU<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |          |             |          |             |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>M</i> | 233.24193  |          | (2000.0)  |          | <b>P</b>    |          | <b>Q</b>    |
| <i>n</i> | 0.26584951 | $\omega$ | 316.95636 |          | -0.29589898 |          | +0.95449965 |
| <i>a</i> | 2.3954042  | $\Omega$ | 295.80093 |          | -0.86483786 |          | -0.28417763 |
| <i>e</i> | 0.1042501  | <i>i</i> | 2.35983   |          | -0.40558510 |          | -0.09040740 |
| <i>P</i> | 3.71       | <i>H</i> | 16.9      | <i>G</i> | 0.15        | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 01 23 | 691 | 0.6+ | 0.3- | 2006 10 15 | 691 | 0.1- | 0.4- | 2006 11 22 | 691 | 0.2+ | 0.1+ |
| 1993 01 23 | 691 | 0.8- | 1.0+ | 2006 10 15 | 691 | 0.1- | 0.0  | 2006 11 22 | 691 | 0.1+ | 0.2+ |
| 1993 01 23 | 691 | 0.4+ | 0.1- | 2006 10 19 | 691 | 0.2- | 0.1- | 2006 11 22 | 691 | 0.5+ | 0.2+ |
| 2006 10 02 | G96 | 0.4+ | 0.2- | 2006 10 19 | 691 | 0.3- | 0.1+ | 2007 11 19 | G96 | 0.8- | 0.5- |
| 2006 10 02 | G96 | 0.1- | 0.5- | 2006 10 19 | 691 | 0.0  | 0.3+ | 2007 11 19 | G96 | 0.2- | 0.1- |
| 2006 10 02 | G96 | 0.5+ | 0.3- | 2006 10 28 | 691 | 0.0  | 0.1- | 2007 11 19 | G96 | 0.0  | 0.5- |
| 2006 10 02 | G96 | 0.0  | 0.1- | 2006 10 28 | 691 | 0.2- | 0.2- | 2007 11 19 | G96 | 0.4- | 0.3- |
| 2006 10 11 | 691 | 0.0  | 0.1- | 2006 10 28 | 691 | 0.1+ | 0.2- | 2007 12 04 | G96 | 0.1- | 0.2+ |
| 2006 10 11 | 691 | 0.2- | 0.9+ | 2006 11 01 | 691 | 0.1- | 0.1- | 2007 12 04 | G96 | 0.5- | 0.3- |
| 2006 10 11 | 691 | 0.1- | 0.2+ | 2006 11 01 | 691 | 0.1+ | 0.3- | 2007 12 04 | G96 | 0.7+ | 1.0- |
| 2006 10 15 | 691 | 0.1+ | 0.0  | 2006 11 01 | 691 | 0.1+ | 0.2- | 2007 12 04 | G96 | 0.2- | 0.7- |

**2006 TJ<sub>75</sub> = 2006 SM<sub>372</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 71.00499   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.12457296 | $\omega$ | 275.27566 |     | +0.98295241 |     | +0.06710632 |
| $a$ | 3.9705762  | $\Omega$ | 80.95546  |     | +0.01052125 |     | +0.90895758 |
| $e$ | 0.2059895  | $i$      | 9.98157   |     | -0.18355887 |     | +0.41145214 |
| $P$ | 7.91       | $H$      | 15.0      | $G$ | 0.15        | $U$ | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.0   | 0.1-  | 2006 10 22 | 703 | 0.1+ | 0.7- | 2006 11 24 | G96 | 0.0  | 0.2- |
| 1998 09 19 | 645 | 0.1+  | 0.1-  | 2006 10 22 | 703 | 0.0  | 0.1+ | 2006 11 24 | G96 | 0.3+ | 0.1+ |
| 2005 07 29 | E12 | 0.5-  | 0.0   | 2006 10 22 | 703 | 0.7+ | 0.5+ | 2006 11 24 | G96 | 0.2+ | 0.1- |
| 2005 07 29 | E12 | 0.0   | 1.0+  | 2006 11 08 | 644 | 0.1+ | 0.3+ | 2007 11 02 | G96 | 0.3+ | 0.3- |
| 2005 07 29 | E12 | 0.4-  | 0.6+  | 2006 11 08 | 644 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.5+ | 0.6- |
| 2005 07 29 | E12 | 0.6+  | 0.3-  | 2006 11 08 | 644 | 0.0  | 0.3+ | 2007 11 02 | G96 | 0.2- | 0.7- |
| 2006 09 25 | 682 | 0.2+  | 1.0+  | 2006 11 09 | 644 | 0.4- | 0.4+ | 2007 11 02 | G96 | 1.0+ | 0.3- |
| 2006 09 25 | 682 | (1.6+ | 1.6+) | 2006 11 09 | 644 | 0.3- | 0.2- | 2007 11 29 | 682 | 0.0  | 0.5+ |
| 2006 10 11 | 644 | 0.1-  | 0.1+  | 2006 11 09 | 644 | 0.0  | 0.2+ | 2007 11 29 | 682 | 0.6- | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 10 11 | 644 | 0.1- | 0.0  | 2006 11 13 | 703 | 1.4- | 0.3- | 2007 12 04 | G96 | 0.4+ | 0.4+ |
| 2006 10 11 | 644 | 0.0  | 0.2+ | 2006 11 13 | 703 | 0.2- | 1.1- | 2007 12 04 | G96 | 0.4+ | 0.4+ |
| 2006 10 11 | 644 | 0.1+ | 0.2+ | 2006 11 13 | 703 | 0.5+ | 0.7- | 2007 12 04 | G96 | 0.5+ | 0.1+ |
| 2006 10 11 | 644 | 0.1- | 0.1+ | 2006 11 13 | 703 | 0.1+ | 0.2+ | 2007 12 04 | G96 | 0.0  | 0.1+ |
| 2006 10 11 | 644 | 0.0  | 0.1- | 2006 11 19 | 703 | 0.2- | 0.6+ | 2007 12 05 | 691 | 0.2- | 0.3- |
| 2006 10 12 | 644 | 0.1- | 0.2+ | 2006 11 19 | 703 | 0.8- | 0.3+ | 2007 12 05 | 691 | 0.3- | 0.1+ |
| 2006 10 12 | 644 | 0.1- | 0.2+ | 2006 11 19 | 703 | 0.1+ | 1.1+ | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2006 10 12 | 644 | 0.3+ | 0.4+ | 2006 11 19 | 703 | 0.2- | 0.5- | 2007 12 05 | 682 | 0.4- | 0.4+ |
| 2006 10 22 | 703 | 0.6- | 0.0  | 2006 11 24 | G96 | 0.4+ | 0.2- | 2007 12 05 | 682 | 0.2+ | 0.7+ |

**2006 UM<sub>22</sub> = 2007 VP<sub>214</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 148.54007  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.17335534 | $\omega$ | 88.13828  |     | -0.17068895 |     | +0.98523542 |
| $a$ | 3.1855021  | $\Omega$ | 171.99692 |     | -0.93770672 |     | -0.15828481 |
| $e$ | 0.1324760  | $i$      | 5.47501   |     | -0.30260764 |     | -0.06524641 |
| $P$ | 5.69       | $H$      | 15.9      | $G$ | 0.15        | $U$ | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 20 | G96 | 0.3- | 0.2+ | 2006 09 25 | G96 | 0.1- | 0.1- | 2006 10 20 | G96 | 0.2- | 0.2- |
| 2005 05 20 | G96 | 0.0  | 0.4+ | 2006 09 25 | G96 | 0.3- | 0.0  | 2006 10 20 | G96 | 0.2- | 0.2+ |
| 2005 05 20 | G96 | 0.3- | 0.5+ | 2006 09 25 | G96 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.5+ | 0.2+ |
| 2005 05 20 | G96 | 0.0  | 0.5+ | 2006 10 16 | G96 | 0.2+ | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.1- |
| 2005 07 11 | G96 | 0.4+ | 0.5- | 2006 10 16 | G96 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1- | 0.0  |
| 2005 07 11 | G96 | 0.1- | 0.3- | 2006 10 16 | G96 | 0.3+ | 0.5- | 2007 11 13 | 691 | 0.2- | 0.3+ |
| 2005 07 11 | G96 | 0.4+ | 0.0  | 2006 10 16 | G96 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2005 07 11 | G96 | 0.0  | 0.3- | 2006 10 20 | G96 | 0.2+ | 0.1+ | 2007 11 13 | 691 | 0.4- | 0.3+ |
| 2006 09 25 | G96 | 0.2+ | 0.1+ | 2006 10 20 | G96 | 0.3- | 0.1+ |            |     |      |      |

**2006 UY<sub>134</sub> = 2006 SN<sub>371</sub>**Id. Minor Planet Center (d, *MPO* 111444)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 32.67845   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.22409337 | $\omega$ | 219.44315 |     | +0.12157892 |     | -0.99242999 |
| $a$ | 2.6844174  | $\Omega$ | 223.58163 |     | +0.91692061 |     | +0.11899083 |
| $e$ | 0.0755486  | $i$      | 1.44277   |     | +0.38009888 |     | +0.03039585 |
| $P$ | 4.40       | $H$      | 16.3      | $G$ | 0.15        | $U$ | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 19 | 691 | 0.2+ | 0.0  | 2006 10 27 | 691 | 0.1- | 0.1+ | 2006 11 17 | 703 | 1.2- | 0.0  |
| 2006 09 19 | 691 | 0.1- | 0.2+ | 2006 10 27 | G96 | 0.1+ | 0.2- | 2007 01 08 | G96 | 0.1+ | 0.1+ |
| 2006 09 19 | 691 | 0.1- | 0.1+ | 2006 10 27 | G96 | 0.3+ | 0.3- | 2007 01 08 | G96 | 0.1+ | 0.1- |
| 2006 10 19 | 644 | 0.1+ | 0.1+ | 2006 10 27 | G96 | 0.5+ | 0.3- | 2007 01 08 | G96 | 0.0  | 0.4+ |
| 2006 10 19 | 644 | 0.4+ | 0.1+ | 2006 10 27 | G96 | 0.2+ | 0.3- | 2007 01 08 | G96 | 1.1+ | 0.6+ |
| 2006 10 19 | 644 | 0.4+ | 0.7+ | 2006 10 28 | G96 | 0.2+ | 0.2- | 2007 02 06 | G96 | 0.2- | 0.2- |
| 2006 10 20 | 644 | 0.1- | 0.1+ | 2006 10 28 | G96 | 0.1+ | 0.3- | 2007 02 06 | G96 | 0.2- | 0.1- |
| 2006 10 20 | 644 | 0.2- | 0.4+ | 2006 10 28 | G96 | 0.1+ | 0.3- | 2007 02 06 | G96 | 0.6- | 0.2- |
| 2006 10 20 | 644 | 0.1- | 0.3+ | 2006 10 31 | 691 | 0.0  | 0.1+ | 2007 02 06 | G96 | 0.0  | 0.0  |
| 2006 10 20 | 644 | 0.2- | 0.3+ | 2006 10 31 | 691 | 0.0  | 0.5+ | 2007 11 18 | G96 | 0.1+ | 0.7- |
| 2006 10 20 | 644 | 0.2- | 0.2- | 2006 10 31 | 691 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.2- | 0.2- |
| 2006 10 20 | 644 | 0.1- | 0.6- | 2006 11 13 | G96 | 0.2+ | 0.4- | 2007 11 18 | G96 | 0.0  | 0.2+ |
| 2006 10 21 | 703 | 0.7- | 0.4- | 2006 11 13 | G96 | 0.3+ | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2006 10 21 | 703 | 0.3+ | 0.6- | 2006 11 13 | G96 | 0.1- | 0.7- | 2007 12 05 | G96 | 0.1+ | 0.3+ |
| 2006 10 21 | 703 | 0.9- | 0.3- | 2006 11 13 | G96 | 0.0  | 0.3- | 2007 12 05 | G96 | 0.5- | 0.1- |
| 2006 10 21 | 703 | 0.1- | 0.4+ | 2006 11 17 | 703 | 0.4+ | 0.4+ | 2007 12 05 | G96 | 0.2+ | 0.5+ |
| 2006 10 27 | 691 | 0.1- | 0.1- | 2006 11 17 | 703 | 0.6+ | 1.2- | 2007 12 05 | G96 | 0.0  | 0.4+ |
| 2006 10 27 | 691 | 0.2- | 0.1- | 2006 11 17 | 703 | 0.4- | 0.3+ |            |     |      |      |

**2006 UK<sub>153</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 80.15132   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21721279 | $\omega$ | 85.74091  | +0.99168967   | -0.11397532 |
| <i>a</i> | 2.7408112  | $\Omega$ | 280.79585 | +0.08003142   | +0.90969927 |
| <i>e</i> | 0.0524367  | <i>i</i> | 3.48293   | +0.10073017   | +0.39932049 |
| <i>P</i> | 4.54       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 19 | 703 | 0.0  | 0.2+ | 2006 10 21 | 691 | 0.1- | 0.1+ | 2007 11 11 | G96 | 0.5- | 0.2- |
| 2006 09 19 | 703 | 0.0  | 0.3- | 2006 10 21 | 691 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.5+ | 0.1- |
| 2006 09 19 | 703 | 0.2+ | 0.6+ | 2006 10 23 | 691 | 0.2- | 0.3- | 2007 11 11 | G96 | 1.1+ | 0.1- |
| 2006 09 19 | 703 | 0.8- | 0.2- | 2006 10 23 | 691 | 0.2+ | 0.3+ | 2007 11 11 | G96 | 0.5+ | 0.1- |
| 2006 10 11 | 691 | 0.4+ | 0.1+ | 2006 10 23 | 691 | 0.1+ | 0.3- | 2007 12 03 | 691 | 0.1+ | 0.3- |
| 2006 10 11 | 691 | 0.4+ | 0.0  | 2006 10 23 | 691 | 0.1+ | 0.2+ | 2007 12 03 | 691 | 0.4- | 0.2+ |
| 2006 10 11 | 691 | 0.2+ | 0.1+ | 2006 10 23 | 691 | 0.1- | 0.2- | 2007 12 03 | 691 | 0.7- | 0.1+ |
| 2006 10 21 | 691 | 0.3- | 0.3- | 2006 10 23 | 691 | 0.1- | 0.0  | 2007 12 15 | 691 | 0.0  | 0.3+ |
| 2006 10 21 | 691 | 0.1+ | 0.1- | 2006 10 27 | 691 | 0.3+ | 0.5+ | 2007 12 15 | 691 | 0.3+ | 0.2- |
| 2006 10 21 | 691 | 0.0  | 0.6- | 2006 10 27 | 691 | 0.2- | 0.5+ | 2007 12 15 | 691 | 0.3+ | 0.0  |
| 2006 10 21 | 691 | 0.3- | 0.1- | 2006 10 27 | 691 | 0.4- | 0.0  |            |     |      |      |

**2006 UA<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.39025  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22422617 | $\omega$ | 358.72926 | -0.73515710   | -0.67401342 |
| <i>a</i> | 2.6833574  | $\Omega$ | 138.58378 | +0.62292034   | -0.71383158 |
| <i>e</i> | 0.1278380  | <i>i</i> | 6.28820   | +0.26742153   | -0.19013254 |
| <i>P</i> | 4.40       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 14 | 291 | 0.1- | 0.1- | 2006 10 21 | G96 | 0.2- | 0.0  | 2007 11 19 | G96 | 0.3+ | 0.2+ |
| 2006 09 14 | 291 | 0.1- | 0.0  | 2006 10 21 | G96 | 0.2+ | 0.2- | 2007 11 19 | G96 | 0.1+ | 0.1- |
| 2006 09 14 | 291 | 0.2- | 0.2+ | 2006 10 21 | G96 | 0.8+ | 0.7- | 2007 11 19 | G96 | 0.4+ | 0.1+ |
| 2006 09 30 | 705 | 0.3+ | 0.4- | 2006 10 21 | G96 | 0.1+ | 0.3- | 2007 11 19 | G96 | 0.2- | 0.1+ |
| 2006 09 30 | 705 | 0.4+ | 0.3- | 2006 10 22 | 291 | 0.2- | 0.4+ | 2007 11 19 | G96 | 0.1+ | 0.0  |
| 2006 10 01 | 705 | 0.3+ | 0.3- | 2006 10 22 | 291 | 0.3- | 0.5+ | 2007 11 19 | G96 | 0.0  | 0.1- |
| 2006 10 01 | 705 | 0.5+ | 0.3- | 2006 10 22 | 291 | 0.4- | 0.3+ | 2007 11 20 | G96 | 0.2+ | 0.5- |
| 2006 10 02 | G96 | 0.0  | 0.7- | 2007 11 18 | G96 | 0.8+ | 0.1- | 2007 11 20 | G96 | 0.0  | 0.4+ |
| 2006 10 02 | G96 | 0.1+ | 0.4- | 2007 11 18 | G96 | 0.0  | 0.4- | 2007 11 20 | G96 | 0.2- | 0.1- |
| 2006 10 02 | G96 | 0.3+ | 0.3- | 2007 11 18 | G96 | 0.3+ | 0.3- | 2007 11 20 | G96 | 0.5+ | 0.3- |
| 2006 10 02 | G96 | 0.4+ | 0.5- | 2007 11 18 | G96 | 0.1- | 1.1- | 2007 11 21 | G96 | 0.4+ | 0.2- |
| 2006 10 04 | 705 | 0.2+ | 0.1- | 2007 11 19 | G96 | 0.8- | 1.7+ | 2007 11 21 | G96 | 0.3+ | 0.1- |
| 2006 10 04 | 705 | 0.2+ | 0.2- | 2007 11 19 | G96 | 0.1- | 0.0  | 2007 11 21 | G96 | 0.0  | 0.3- |
| 2006 10 12 | 705 | 0.3+ | 0.1+ | 2007 11 19 | G96 | 0.0  | 0.1- | 2007 11 21 | G96 | 0.0  | 0.5- |
| 2006 10 12 | 705 | 0.3+ | 0.1- | 2007 11 19 | G96 | 0.2+ | 0.1+ | 2007 11 21 | 691 | 0.1- | 0.5+ |
| 2006 10 13 | 705 | 0.3+ | 0.2- | 2007 11 19 | G96 | 0.1+ | 0.2+ | 2007 11 21 | 691 | 0.2- | 0.3- |
| 2006 10 13 | 705 | 0.4+ | 0.1- | 2007 11 19 | G96 | 0.1- | 0.1- | 2007 11 21 | 691 | 0.3- | 0.1+ |

**2006 UJ<sub>215</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.51598  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21180389 | $\omega$ | 115.67330 | -0.78720603   | -0.61216292 |
| <i>a</i> | 2.7872767  | $\Omega$ | 26.77556  | +0.48963148   | -0.69395852 |
| <i>e</i> | 0.1225304  | <i>i</i> | 9.53013   | +0.37492358   | -0.37904899 |
| <i>P</i> | 4.65       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 25 | G96 | 0.5- | 0.8- | 2006 10 28 | G98 | 0.8+ | 0.3+ | 2006 11 15 | 691 | 0.4+ | 0.1+ |
| 2006 09 25 | G96 | 0.3- | 0.9- | 2006 10 29 | 691 | 0.1- | 0.1+ | 2006 11 18 | 691 | 0.2- | 0.1+ |
| 2006 09 25 | G96 | 0.3+ | 0.6- | 2006 10 29 | 691 | 0.0  | 0.1+ | 2006 11 18 | 691 | 0.1- | 0.2+ |
| 2006 09 25 | G96 | 0.4+ | 0.0  | 2006 10 29 | 691 | 0.1- | 0.2+ | 2006 11 18 | 691 | 0.3- | 0.1+ |
| 2006 10 16 | 691 | 0.3+ | 0.7+ | 2006 10 29 | G98 | 0.3+ | 0.0  | 2006 11 23 | 691 | 0.1+ | 0.3- |
| 2006 10 16 | 691 | 0.4- | 0.2+ | 2006 10 29 | G98 | 0.3+ | 0.5+ | 2006 11 23 | 691 | 0.2+ | 0.5- |
| 2006 10 16 | 691 | 0.2- | 0.2- | 2006 10 29 | G98 | 0.4+ | 0.3+ | 2006 11 23 | 691 | 0.4- | 0.3- |
| 2006 10 27 | G98 | 0.1- | 0.2- | 2006 10 29 | G98 | 0.1+ | 0.3- | 2007 12 05 | G98 | 0.0  | 0.4- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 10 27 | G98 | 0.2- | 0.2- | 2006 11 11 | G98 | 0.3- | 0.1+ | 2007 12 05 | G98 | 0.1+ | 0.1+ |
| 2006 10 27 | G98 | 0.3- | 0.5+ | 2006 11 11 | G98 | 0.6+ | 0.4- | 2007 12 05 | G98 | 0.1- | 0.1+ |
| 2006 10 27 | G98 | 0.4- | 0.1- | 2006 11 11 | G98 | 0.2+ | 0.0  | 2007 12 05 | G98 | 0.7+ | 0.4- |
| 2006 10 27 | G98 | 0.3+ | 0.0  | 2006 11 11 | G98 | 0.2- | 0.2+ | 2007 12 05 | G98 | 0.8+ | 0.2- |
| 2006 10 27 | G98 | 0.2+ | 0.3+ | 2006 11 13 | G98 | 0.6+ | 0.0  | 2007 12 16 | G98 | 0.1+ | 0.3+ |
| 2006 10 27 | G98 | 0.0  | 0.6+ | 2006 11 13 | G98 | 0.5+ | 0.0  | 2007 12 16 | G98 | 0.1- | 0.5+ |
| 2006 10 28 | G98 | 0.4+ | 0.3+ | 2006 11 13 | G98 | 0.1- | 0.4- | 2007 12 16 | G98 | 0.3- | 0.1+ |
| 2006 10 28 | G98 | 0.7+ | 0.2+ | 2006 11 15 | 691 | 0.2- | 0.1- | 2007 12 16 | G98 | 1.0- | 0.0  |
| 2006 10 28 | G98 | 0.5+ | 0.3- | 2006 11 15 | 691 | 0.0  | 0.1- |            |     |      |      |

**2006 UD<sub>295</sub> = 2007 WZ<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 222.50266  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21375800 | $\omega$ | 209.82342 | -0.90115496   | +0.43347135 |
| <i>a</i> | 2.7702638  | $\Omega$ | 355.85611 | -0.38367117   | -0.80260243 |
| <i>e</i> | 0.0403977  | <i>i</i> | 3.74877   | -0.20178247   | -0.40979499 |
| <i>P</i> | 4.61       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 03 | 691 | 0.5+ | 0.3+ | 2006 08 21 | 691 | 0.2- | 0.5+ | 2007 11 19 | G96 | 0.2+ | 0.2- |
| 1997 10 03 | 691 | 0.0  | 0.4- | 2006 08 21 | 691 | 0.0  | 0.1+ | 2007 11 19 | G96 | 0.5+ | 0.4- |
| 1997 10 03 | 691 | 0.3- | 0.2- | 2006 10 19 | 695 | 0.2- | 0.2+ | 2007 11 20 | 691 | 0.4- | 0.2+ |
| 2004 02 11 | 691 | 0.1+ | 0.3+ | 2006 10 19 | 695 | 0.1- | 0.1+ | 2007 11 20 | 691 | 0.4- | 0.2+ |
| 2004 02 11 | 691 | 0.0  | 0.5+ | 2006 10 20 | 695 | 0.2- | 0.2+ | 2007 11 20 | 691 | 0.4- | 0.0  |
| 2004 02 11 | 691 | 0.2+ | 0.3+ | 2007 11 19 | G96 | 0.2+ | 0.2- |            |     |      |      |
| 2006 08 21 | 691 | 0.1- | 0.2+ | 2007 11 19 | G96 | 0.5+ | 0.1- |            |     |      |      |

**2006 VM<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 134.67073  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27220273 | $\omega$ | 60.44568  | +0.99224043   | +0.11514061 |
| <i>a</i> | 2.3579852  | $\Omega$ | 292.90856 | -0.12420973   | +0.90109422 |
| <i>e</i> | 0.2847825  | <i>i</i> | 2.91982   | -0.00555544   | +0.41805723 |
| <i>P</i> | 3.62       | <i>H</i> | 18.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 26 | 695 | 1.0+ | 1.0+ | 2002 08 06 | 644 | 0.1- | 0.2+ | 2002 08 27 | 644 | 0.1+ | 0.0  |
| 2001 03 26 | 695 | 0.1- | 1.0+ | 2002 08 07 | 644 | 0.0  | 0.1+ | 2006 11 14 | 691 | 0.1- | 0.0  |
| 2002 07 04 | 644 | 0.2+ | 0.2- | 2002 08 07 | 644 | 0.2- | 0.0  | 2006 11 14 | 691 | 0.3- | 0.1- |
| 2002 07 04 | 644 | 0.1+ | 0.2+ | 2002 08 07 | 644 | 0.2- | 0.2+ | 2006 11 14 | 691 | 0.7+ | 0.1+ |
| 2002 07 04 | 644 | 0.8+ | 0.0  | 2002 08 11 | 608 | 0.1+ | 0.2+ | 2006 11 18 | 691 | 0.1+ | 0.3+ |
| 2002 07 22 | 644 | 0.4- | 0.2+ | 2002 08 17 | 644 | 0.3- | 0.5- | 2006 11 18 | 691 | 0.1- | 0.1- |
| 2002 07 22 | 644 | 0.3- | 0.0  | 2002 08 17 | 644 | 0.2+ | 0.4+ | 2006 11 18 | 691 | 0.3- | 0.1+ |
| 2002 07 22 | 644 | 0.3+ | 0.2+ | 2002 08 17 | 644 | 0.5- | 0.3- | 2006 12 21 | 695 | 0.2- | 0.0  |
| 2002 08 06 | 644 | 0.0  | 0.2+ | 2002 08 27 | 644 | 0.0  | 0.3- | 2006 12 21 | 695 | 0.2- | 0.0  |
| 2002 08 06 | 644 | 0.0  | 0.3+ | 2002 08 27 | 644 | 0.2+ | 0.4+ |            |     |      |      |

**2006 WX<sub>190</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 123.24321  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23612292 | $\omega$ | 309.37924 | +0.85573839   | -0.45464008 |
| <i>a</i> | 2.5924514  | $\Omega$ | 78.95947  | +0.51726407   | +0.74042670 |
| <i>e</i> | 0.0981040  | <i>i</i> | 14.57626  | +0.01223490   | +0.49504617 |
| <i>P</i> | 4.17       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 13 | 644 | 0.1+ | 0.5- | 2006 11 25 | 691 | 0.1+ | 0.0  | 2006 12 14 | 704 | 0.3- | 0.6- |
| 2003 01 13 | 644 | 0.2- | 0.2- | 2006 12 01 | 691 | 0.4- | 0.1+ | 2006 12 16 | 691 | 0.3+ | 0.1+ |
| 2003 01 13 | 644 | 0.1+ | 0.0  | 2006 12 01 | 691 | 1.1- | 0.4- | 2006 12 16 | 691 | 0.3+ | 0.0  |
| 2004 04 15 | 644 | 0.1+ | 0.2+ | 2006 12 01 | 691 | 0.0  | 0.0  | 2006 12 16 | 691 | 0.1+ | 0.1+ |
| 2004 04 15 | 644 | 0.0  | 0.1- | 2006 12 14 | 704 | 1.0+ | 0.6+ | 2007 01 15 | 561 | 0.1+ | 0.7+ |
| 2004 04 15 | 644 | 0.0  | 0.1+ | 2006 12 14 | 704 | 0.5+ | 0.3+ | 2007 01 15 | 561 | 0.6- | 0.2- |
| 2006 11 25 | 691 | 0.2+ | 0.1+ | 2006 12 14 | 704 | 0.3- | 0.1+ | 2007 01 15 | 561 | 0.0  | 0.2+ |
| 2006 11 25 | 691 | 0.2+ | 0.1+ | 2006 12 14 | 704 | 0.5+ | 0.7- |            |     |      |      |

2007 DEC. 24

M.P.O. 129781

2006 YF<sub>13</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 101.48138  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 1.11890841 | $\omega$ 95.32769  | +0.50333109   | +0.86053793 |          |  |
| <i>a</i> | 0.9189101  | $\Omega$ 205.37056 | -0.84739589   | +0.47384369 |          |  |
| <i>e</i> | 0.4034926  | <i>i</i> 10.53078  | -0.16905032   | +0.18694018 |          |  |
| <i>P</i> | 0.88       | <i>H</i> 20.0      | <i>G</i> 0.15 | <i>U</i> 5  |          |  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2006 12 26 E12 | 0.1- | 0.4+ | 2006 12 26 246 | 0.5-  | 0.2-  | 2007 01 05 448 | 0.1+ | 1.4+ |
| 2006 12 26 E12 | 0.1+ | 0.7+ | 2006 12 26 246 | 0.7+  | 0.3-  | 2007 01 05 448 | 0.2+ | 0.1+ |
| 2006 12 26 E12 | 0.8- | 0.6- | 2006 12 27 703 | 0.6+  | 0.0   | 2007 01 05 448 | 0.1+ | 0.4+ |
| 2006 12 26 E12 | 0.5- | 0.0  | 2006 12 27 703 | 0.5+  | 0.3+  | 2007 01 06 E12 | 0.4- | 0.1- |
| 2006 12 26 E12 | 0.1- | 0.1- | 2006 12 27 703 | 0.7-  | 0.5-  | 2007 01 06 E12 | 0.2+ | 0.2- |
| 2006 12 26 E12 | 0.0  | 0.4+ | 2006 12 27 703 | 0.3+  | 0.3-  | 2007 01 15 448 | 0.3+ | 0.9- |
| 2006 12 26 E12 | 0.2- | 0.2- | 2006 12 27 H36 | 0.1+  | 0.3+  | 2007 01 15 448 | 0.1+ | 0.4- |
| 2006 12 26 E12 | 0.8+ | 0.2- | 2006 12 27 H36 | (1.9+ | 1.5-) | 2007 01 15 448 | 0.3- | 0.3- |
| 2006 12 26 A44 | 1.0- | 0.2- | 2006 12 27 H36 | 0.4-  | 0.3-  | 2007 01 26 682 | 0.4+ | 0.3+ |
| 2006 12 26 176 | 0.2- | 0.4+ | 2006 12 27 H36 | 0.5+  | 0.2+  | 2007 01 26 682 | 1.1+ | 0.3- |
| 2006 12 26 A44 | 1.1- | 0.9- | 2006 12 27 854 | 0.1+  | 0.5-  | 2007 01 26 682 | 0.4- | 0.4+ |
| 2006 12 26 176 | 0.0  | 0.2+ | 2006 12 27 854 | 0.3+  | 0.4-  | 2007 02 19 291 | 0.3- | 0.7+ |
| 2006 12 26 176 | 0.1- | 0.1+ | 2006 12 27 854 | 0.2+  | 0.1-  | 2007 02 19 291 | 0.3+ | 0.4- |
| 2006 12 26 176 | 0.1+ | 0.2+ | 2006 12 27 E12 | 0.1+  | 0.1-  | 2007 02 19 291 | 0.6- | 0.5- |
| 2006 12 26 A44 | 1.0- | 0.4- | 2006 12 27 E12 | 0.1+  | 0.2-  | 2007 11 27 H55 | 0.7- | 1.7+ |
| 2006 12 26 176 | 0.2- | 0.0  | 2006 12 30 F84 | 0.4+  | 0.1+  | 2007 11 27 H55 | 0.4+ | 1.8+ |
| 2006 12 26 473 | 0.0  | 0.2+ | 2006 12 30 F84 | 0.1-  | 0.0   | 2007 11 27 H55 | 0.7- | 0.1- |
| 2006 12 26 473 | 0.9- | 0.0  | 2006 12 31 673 | 0.1-  | 0.9+  | 2007 12 06 H55 | 1.0- | 0.3+ |
| 2006 12 26 246 | 0.7+ | 0.2+ | 2006 12 31 673 | 0.2+  | 0.2+  | 2007 12 06 H55 | 0.5+ | 0.2+ |
| 2006 12 26 246 | 0.4+ | 0.1- | 2006 12 31 673 | 0.2+  | 0.2+  | 2007 12 06 H55 | 0.8+ | 0.0  |
| 2006 12 26 246 | 1.2+ | 0.5- | 2006 12 31 673 | 0.4+  | 0.5-  |                |      |      |

2007 EH<sub>88</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 46.18243   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.82843622 | $\omega$ 324.22045 | +0.84816931   | +0.52953489 |          |  |
| <i>a</i> | 1.1227852  | $\Omega$ 3.88786   | -0.42414954   | +0.69494079 |          |  |
| <i>e</i> | 0.4411995  | <i>i</i> 12.08811  | -0.31734206   | +0.48646696 |          |  |
| <i>P</i> | 1.19       | <i>H</i> 19.7      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 1994 03 06 691 | 0.4-  | 1.3-  | 2007 03 15 711 | 0.9+  | 0.5+  | 2007 03 16 734 | 0.3+ | 0.3- |
| 1994 03 06 691 | 0.5-  | 0.0   | 2007 03 15 448 | 1.0+  | 0.1+  | 2007 03 16 734 | 0.4+ | 0.1+ |
| 1994 03 06 691 | 0.4-  | 0.5-  | 2007 03 15 711 | 0.5+  | 1.0+  | 2007 03 16 G96 | 0.2+ | 0.1+ |
| 2007 03 14 G96 | 0.2-  | 0.2-  | 2007 03 15 G96 | 0.0   | 0.2+  | 2007 03 16 734 | 0.3+ | 0.4- |
| 2007 03 14 G96 | 0.0   | 0.0   | 2007 03 15 711 | 0.5-  | 0.4+  | 2007 03 16 G96 | 0.2- | 0.2+ |
| 2007 03 14 G96 | 0.2-  | 0.1+  | 2007 03 15 G96 | 0.1-  | 0.2+  | 2007 03 16 G96 | 0.1- | 0.2- |
| 2007 03 14 G96 | 0.1+  | 0.1+  | 2007 03 15 448 | 0.2-  | 0.5+  | 2007 03 20 448 | 0.3+ | 0.7+ |
| 2007 03 14 G96 | 0.2-  | 0.2+  | 2007 03 15 G96 | 0.0   | 0.1+  | 2007 03 20 448 | 0.2+ | 0.0  |
| 2007 03 14 G96 | 0.1+  | 0.1+  | 2007 03 15 673 | (5.2- | 0.0 ) | 2007 03 20 448 | 0.2+ | 0.3- |
| 2007 03 14 G96 | 0.1-  | 0.3+  | 2007 03 15 673 | 1.4+  | 0.3+  | 2007 04 10 540 | 0.3+ | 0.2+ |
| 2007 03 14 143 | 0.0   | 0.3-  | 2007 03 15 673 | 1.5+  | 0.1-  | 2007 04 10 540 | 0.2+ | 0.7+ |
| 2007 03 14 143 | 0.5+  | 0.3-  | 2007 03 15 673 | 1.3+  | 0.2-  | 2007 04 10 540 | 0.6+ | 0.8+ |
| 2007 03 14 246 | 0.5-  | 0.4+  | 2007 03 15 104 | (1.7- | 0.1+) | 2007 11 10 H55 | 0.5- | 0.4- |
| 2007 03 14 246 | 0.3-  | 0.3+  | 2007 03 15 104 | 0.2-  | 0.3+  | 2007 11 10 H55 | 0.1- | 0.5- |
| 2007 03 14 246 | 0.1-  | 0.1+  | 2007 03 15 104 | 0.7+  | 0.7+  | 2007 11 10 H55 | 0.2- | 0.6- |
| 2007 03 14 246 | (1.7+ | 0.3-) | 2007 03 15 595 | 0.2+  | 0.5+  | 2007 11 17 696 | 0.6+ | 0.3- |
| 2007 03 14 246 | 0.5-  | 0.0   | 2007 03 15 595 | 0.5+  | 0.1+  | 2007 11 17 696 | 0.9+ | 1.1- |
| 2007 03 14 246 | 0.2-  | 0.5+  | 2007 03 16 651 | (0.6+ | 4.9-) | 2007 11 17 696 | 0.2+ | 0.9- |
| 2007 03 14 J95 | 0.5-  | 0.2+  | 2007 03 16 651 | (2.0- | 0.3+) | 2007 11 27 H55 | 0.5- | 1.1+ |
| 2007 03 14 J95 | 0.2+  | 0.2-  | 2007 03 16 651 | (1.9- | 2.5-) | 2007 11 27 H55 | 0.6- | 0.8+ |
| 2007 03 14 J95 | 0.3-  | 0.4-  | 2007 03 16 673 | 0.8+  | 0.3+  | 2007 11 27 H55 | 0.3- | 0.6+ |
| 2007 03 14 595 | 0.0   | 0.7+  | 2007 03 16 673 | 0.1-  | 0.7+  | 2007 11 27 H55 | 0.4- | 0.0  |
| 2007 03 15 595 | 0.3-  | 0.0   | 2007 03 16 673 | 0.4-  | 0.7+  | 2007 11 27 H55 | 0.0  | 0.0  |
| 2007 03 15 448 | 0.6-  | 0.4-  | 2007 03 16 673 | 0.9+  | 0.5+  | 2007 11 27 H55 | 0.6- | 0.5+ |

2007 EO<sub>202</sub> = 1996 GX<sub>6</sub> = 2005 XF<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 129.44130  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.17533060 | $\omega$ 283.58444 | +0.07125004   | -0.99741091 |          |  |
| <i>a</i> | 3.1615319  | $\Omega$ 162.32104 | +0.92710630   | +0.06261858 |          |  |
| <i>e</i> | 0.0493925  | <i>i</i> 1.83830   | +0.36796377   | +0.03536079 |          |  |
| <i>P</i> | 5.62       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |          |  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1996 04 12 691 | 0.2+ | 0.1+ | 2005 12 01 691 | 0.1+ | 0.3- | 2007 03 16 G96 | 1.0+ | 0.8+ |
| 1996 04 12 691 | 0.0  | 0.5+ | 2005 12 01 691 | 0.0  | 0.0  | 2007 03 16 G96 | 0.4+ | 0.2+ |
| 1996 04 12 691 | 0.3+ | 0.3+ | 2005 12 01 691 | 0.1+ | 0.1- | 2007 03 26 691 | 0.1+ | 0.3+ |
| 1996 04 19 691 | 0.5- | 1.2- | 2005 12 05 691 | 0.5+ | 0.6+ | 2007 03 26 691 | 0.2+ | 0.1+ |
| 1996 04 19 691 | 0.3- | 0.4- | 2005 12 05 691 | 0.1- | 0.2- | 2007 03 26 691 | 0.1- | 0.3+ |
| 1996 04 19 691 | 0.4- | 0.2- | 2005 12 05 691 | 0.1- | 0.3- | 2007 03 26 G96 | 0.1- | 0.2+ |
| 2002 04 18 691 | 0.2+ | 0.5+ | 2007 03 09 691 | 0.0  | 0.1+ | 2007 03 26 G96 | 0.0  | 0.2+ |
| 2002 04 18 691 | 0.6+ | 0.3+ | 2007 03 09 691 | 0.2- | 0.3+ | 2007 03 26 G96 | 0.2+ | 0.2+ |
| 2002 04 18 691 | 0.1+ | 0.0  | 2007 03 09 691 | 0.4- | 0.3+ | 2007 03 26 G96 | 0.2+ | 0.3+ |
| 2004 10 12 691 | 0.6- | 0.0  | 2007 03 09 G96 | 0.0  | 0.0  | 2007 04 23 290 | 0.1+ | 0.2+ |
| 2004 10 12 691 | 0.6- | 0.1- | 2007 03 09 G96 | 0.1- | 0.4+ | 2007 04 23 290 | 0.0  | 0.3+ |
| 2004 10 12 691 | 0.3- | 0.1+ | 2007 03 09 G96 | 0.1- | 0.0  | 2007 04 24 290 | 0.8+ | 0.6- |
| 2004 11 04 691 | 0.0  | 0.6+ | 2007 03 09 G96 | 0.2- | 0.0  | 2007 04 24 290 | 0.2+ | 0.3- |
| 2004 11 04 691 | 0.4+ | 0.1+ | 2007 03 16 G96 | 0.1- | 0.2+ |                |      |      |
| 2004 11 04 691 | 0.4+ | 0.7+ | 2007 03 16 G96 | 0.2+ | 0.3+ |                |      |      |

2007 JR<sub>9</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 343.89463  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.17396505 | $\omega$ 230.55331 | +0.34199325   | +0.90742649 |          |  |
| <i>a</i> | 3.1780548  | $\Omega$ 61.08965  | -0.75352758   | +0.42006587 |          |  |
| <i>e</i> | 0.2251309  | <i>i</i> 16.19626  | -0.56145954   | -0.01103817 |          |  |
| <i>P</i> | 5.67       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2003 10 29 691 | 0.2-  | 0.6+  | 2007 05 09 699 | 0.2+ | 0.2+ | 2007 05 11 H06 | 0.1- | 0.9+ |
| 2003 10 29 691 | 0.1-  | 0.4+  | 2007 05 09 703 | 0.3- | 0.1+ | 2007 05 13 H06 | 0.5- | 0.7+ |
| 2003 10 29 699 | 1.0-  | 0.7-  | 2007 05 09 699 | 0.1- | 0.9+ | 2007 05 14 H06 | 0.5+ | 0.1- |
| 2003 10 29 699 | 0.0   | 0.2-  | 2007 05 09 703 | 1.0- | 0.3- | 2007 05 14 H06 | 0.5- | 0.2- |
| 2003 10 29 691 | 0.2-  | 0.2+  | 2007 05 09 703 | 0.0  | 0.5+ | 2007 05 14 H06 | 0.2- | 0.9- |
| 2003 10 29 699 | 0.0   | 0.6+  | 2007 05 09 703 | 0.6- | 1.1- | 2007 05 17 703 | 0.6+ | 0.4- |
| 2003 10 29 699 | (3.1+ | 2.2+) | 2007 05 09 A50 | 0.9- | 0.7- | 2007 05 17 703 | 0.3+ | 0.1+ |
| 2006 02 27 703 | 1.0+  | 0.5+  | 2007 05 09 A50 | 0.2- | 0.5- | 2007 05 17 703 | 0.0  | 0.7+ |
| 2006 02 27 703 | 0.3+  | 0.3-  | 2007 05 09 A50 | 0.4- | 0.0  | 2007 05 17 703 | 0.1- | 0.3- |
| 2006 02 27 703 | 1.4-  | 0.6+  | 2007 05 09 A50 | 1.1+ | 1.3+ | 2007 05 22 703 | 0.2- | 0.3- |
| 2006 02 27 703 | 0.1+  | 0.9-  | 2007 05 09 A50 | 1.6+ | 1.8+ | 2007 05 22 703 | 0.5- | 0.8+ |
| 2007 04 20 704 | 0.6+  | 0.2-  | 2007 05 09 A50 | 1.3+ | 1.2+ | 2007 05 22 703 | 0.2- | 0.2+ |
| 2007 04 20 704 | 0.8+  | 0.5-  | 2007 05 10 H06 | 0.4+ | 0.9- | 2007 05 22 703 | 0.5- | 0.8+ |
| 2007 04 20 704 | 0.2+  | 1.7-  | 2007 05 10 H06 | 0.6+ | 1.2- | 2007 06 08 703 | 0.5- | 0.7+ |
| 2007 04 20 704 | 1.2+  | 0.0   | 2007 05 10 H06 | 0.7+ | 1.2- | 2007 06 08 703 | 0.6- | 0.4+ |
| 2007 05 09 699 | 0.2+  | 1.4+  | 2007 05 11 H06 | 0.5+ | 0.0  | 2007 06 08 703 | 1.2- | 0.2+ |
| 2007 05 09 699 | 0.4+  | 0.7+  | 2007 05 11 H06 | 0.6- | 0.1- | 2007 06 08 703 | 0.3+ | 1.2+ |

2007 JF<sub>43</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 282.16829  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.00395853 | $\omega$ 121.14464 | +0.84010146   | +0.52902586 |          |  |
| <i>a</i> | 39.5773544 | $\Omega$ 207.46719 | -0.54238128   | +0.82220936 |          |  |
| <i>e</i> | 0.1831691  | <i>i</i> 15.05920  | +0.00721669   | +0.21000814 |          |  |
| <i>P</i> | 249        | <i>H</i> 5.2       | <i>G</i> 0.15 | <i>U</i> 5  |          |  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 04 13 644 | 0.4- | 0.4+ | 2007 05 10 675 | 0.9+ | 0.4+ | 2007 06 21 675 | 0.4+ | 0.2- |
| 2002 04 13 644 | 0.1+ | 0.1+ | 2007 05 11 675 | 0.6+ | 0.5+ | 2007 07 18 675 | 0.3- | 0.5- |
| 2002 04 14 644 | 0.3+ | 0.2- | 2007 05 11 675 | 1.0- | 0.3+ | 2007 07 28 675 | 0.2- | 0.1+ |

2002 05 19 644 0.1− 0.4− 2007 06 20 675 0.1− 0.1− 2007 07 31 675 0.1+ 0.2−  
 2007 05 10 675 0.2− 0.2− 2007 06 20 675 0.0 0.2−

**2007 MF<sub>15</sub> = 2002 CD<sub>227</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.19434   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24095730 | $\omega$ | 11.44547  | −0.31837747   | +0.94380670 |
| <i>a</i> | 2.5576591  | $\Omega$ | 240.04427 | −0.87761966   | −0.32882434 |
| <i>e</i> | 0.2557719  | <i>i</i> | 5.87491   | −0.35835670   | −0.03321853 |
| <i>P</i> | 4.09       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 06 | 644 | 0.3+ | 0.9+ | 2003 09 24 | 644 | 0.0  | 0.3+ | 2007 06 24 | 691 | 0.0  | 0.2+ |
| 2002 02 06 | 644 | 0.6+ | 0.9+ | 2005 12 30 | 691 | 0.2+ | 0.1+ | 2007 06 24 | 691 | 0.1− | 0.3+ |
| 2002 02 06 | 644 | 0.5+ | 1.0+ | 2005 12 30 | 691 | 0.8+ | 0.5+ | 2007 06 24 | 691 | 0.0  | 0.1+ |
| 2002 02 07 | 644 | 0.0  | 0.2− | 2005 12 30 | 691 | 0.8+ | 0.2+ | 2007 07 15 | J75 | 0.4+ | 0.1− |
| 2002 02 07 | 644 | 0.3+ | 0.0  | 2006 01 31 | 703 | 0.9− | 0.1− | 2007 07 16 | J75 | 0.1− | 0.4+ |
| 2002 02 07 | 644 | 0.2+ | 0.2+ | 2006 01 31 | 703 | 0.3− | 0.7+ | 2007 07 16 | J75 | 0.1− | 0.1+ |
| 2003 07 23 | 644 | 0.5− | 0.5+ | 2006 01 31 | 703 | 0.3− | 0.7− | 2007 08 21 | E12 | 0.1+ | 0.2+ |
| 2003 07 23 | 644 | 0.5− | 0.6+ | 2006 01 31 | 703 | 0.7− | 0.2+ | 2007 08 21 | E12 | 0.2− | 0.3− |
| 2003 07 23 | 644 | 0.4− | 0.4+ | 2007 06 20 | 691 | 0.2− | 0.5+ | 2007 08 21 | E12 | 0.7+ | 0.0  |
| 2003 09 24 | 644 | 0.0  | 0.4+ | 2007 06 20 | 691 | 0.6− | 0.2+ | 2007 08 21 | E12 | 0.0  | 0.2+ |
| 2003 09 24 | 644 | 0.1+ | 0.1+ | 2007 06 20 | 691 | 0.2+ | 0.6− |            |     |      |      |

**2007 NO<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.31966   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17731819 | $\omega$ | 66.88034  | +0.35896294   | +0.91672146 |
| <i>a</i> | 3.1378622  | $\Omega$ | 225.40033 | −0.92084291   | +0.31717693 |
| <i>e</i> | 0.2461500  | <i>i</i> | 14.26143  | −0.15229556   | +0.24294146 |
| <i>P</i> | 5.56       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 28 | 644 | 0.0  | 0.6− | 2007 07 16 | 106 | 0.2− | 0.5− | 2007 09 13 | 703 | 0.8− | 0.1+ |
| 2002 10 28 | 644 | 1.0+ | 0.3− | 2007 07 16 | 106 | 0.7+ | 0.1− | 2007 09 13 | 703 | 0.4− | 0.5+ |
| 2002 10 28 | 644 | 0.5+ | 0.1− | 2007 07 16 | 106 | 2.0− | 0.6− | 2007 09 13 | 703 | 0.1− | 0.7+ |
| 2002 10 31 | 644 | 0.1− | 0.3− | 2007 09 03 | G96 | 0.1− | 0.3− | 2007 10 08 | 699 | 0.1− | 1.2− |
| 2002 10 31 | 644 | 0.5− | 0.1+ | 2007 09 03 | G96 | 0.1− | 0.5− | 2007 10 08 | 699 | 0.8+ | 1.2− |
| 2002 10 31 | 644 | 0.1− | 0.1− | 2007 09 03 | G96 | 0.5− | 0.5− | 2007 10 08 | 699 | 0.7+ | 0.8− |
| 2002 11 12 | 644 | 0.3+ | 0.4+ | 2007 09 03 | G96 | 0.4− | 0.5− | 2007 10 08 | 699 | 0.3− | 0.8− |
| 2002 11 12 | 644 | 0.2− | 0.2− | 2007 09 05 | 699 | 1.0+ | 0.2− | 2007 10 14 | 703 | 1.2+ | 0.4+ |
| 2002 11 12 | 644 | 0.2− | 0.6+ | 2007 09 05 | 699 | 0.3+ | 0.1− | 2007 10 14 | 703 | 0.7+ | 1.1+ |
| 2002 11 22 | 644 | 0.4− | 0.1− | 2007 09 05 | 699 | 1.1+ | 2.0+ | 2007 10 14 | 703 | 1.0+ | 1.2+ |
| 2002 11 22 | 644 | 0.4− | 0.3+ | 2007 09 05 | 699 | 0.5+ | 0.3− | 2007 10 14 | 703 | 1.1+ | 1.5+ |
| 2002 11 22 | 644 | 0.1− | 0.1+ | 2007 09 13 | 703 | 0.6− | 0.1+ | 2007 12 06 | G96 | 0.4− | 0.3− |
| 2007 07 15 | 106 | 1.0− | 0.0  | 2007 09 13 | 703 | 0.7− | 0.4+ | 2007 12 06 | G96 | 0.5− | 0.1− |
| 2007 07 15 | 106 | 0.2+ | 0.1+ | 2007 09 13 | 703 | 0.8− | 0.7+ | 2007 12 06 | G96 | 0.5− | 0.2− |
| 2007 07 15 | 106 | 0.2− | 0.1− | 2007 09 13 | 703 | 1.0− | 0.0  | 2007 12 06 | G96 | 0.1− | 0.3− |
| 2007 07 15 | 106 | 1.3+ | 0.5− | 2007 09 13 | 703 | 0.1− | 0.1+ |            |     |      |      |

**2007 PW<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 31.59843   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23467371 | $\omega$ | 226.20908 | +0.23241722   | +0.95575453 |
| <i>a</i> | 2.6031134  | $\Omega$ | 58.05594  | −0.82017137   | +0.29224247 |
| <i>e</i> | 0.2431925  | <i>i</i> | 12.26893  | −0.52278213   | −0.03358013 |
| <i>P</i> | 4.20       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 11 15 | 691 | 0.1− | 0.2+ | 2007 07 22 | E12 | 0.0  | 0.1− | 2007 08 09 | E12 | 0.1− | 0.2− |
| 1995 11 15 | 691 | 0.1− | 0.0  | 2007 07 22 | E12 | 0.3− | 0.5− | 2007 09 01 | E12 | 0.2− | 0.2+ |
| 1995 11 15 | 691 | 0.1+ | 0.0  | 2007 07 22 | E12 | 1.0− | 0.5+ | 2007 09 01 | E12 | 0.6− | 0.2− |
| 2003 08 28 | 644 | 0.3+ | 0.3− | 2007 07 22 | E12 | 0.4− | 0.1+ | 2007 09 01 | E12 | 0.2− | 0.3+ |
| 2003 08 28 | 644 | 0.2+ | 0.2− | 2007 08 08 | E12 | 0.9+ | 0.9+ | 2007 09 01 | E12 | 0.1+ | 0.4+ |
| 2003 08 28 | 644 | 0.3+ | 0.3− | 2007 08 08 | E12 | 0.6+ | 0.1+ | 2007 09 14 | E12 | 0.3+ | 0.1− |

2007 06 09 E12 1.2+ 0.3− 2007 08 08 E12 0.3+ 0.1+ 2007 09 14 E12 0.4+ 0.8−  
 2007 06 09 E12 0.2+ 0.0 2007 08 08 E12 0.0 0.1− 2007 09 14 E12 0.0 0.1−  
 2007 06 09 E12 0.7− 0.5− 2007 08 09 E12 0.1+ 0.1−  
 2007 06 09 E12 0.4− 0.0 2007 08 09 E12 0.2− 0.6+

**2007 PN<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.40004   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26899112 | $\omega$ | 295.38826 | +0.95309263   | +0.30013263 |
| <i>a</i> | 2.3767167  | $\Omega$ | 47.17313  | −0.25495375   | +0.86582133 |
| <i>e</i> | 0.2152455  | <i>i</i> | 3.06206   | −0.16313498   | +0.40034213 |
| <i>P</i> | 3.66       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 16 | 691 | 0.1− | 0.0  | 2007 08 11 | 704 | 0.3− | 0.6+ | 2007 09 15 | 699 | 0.3+ | 0.0  |
| 2004 12 16 | 691 | 0.3+ | 0.2+ | 2007 08 11 | 704 | 1.1− | 0.9+ | 2007 09 15 | 699 | 0.1+ | 0.6− |
| 2004 12 16 | 691 | 0.2− | 0.1+ | 2007 08 21 | 699 | 0.4− | 0.4+ | 2007 09 15 | 699 | 0.7− | 0.0  |
| 2006 04 21 | G96 | 0.0  | 0.3+ | 2007 08 21 | 699 | 0.8+ | 0.3− | 2007 10 02 | E12 | 0.2+ | 0.4− |
| 2006 04 21 | G96 | 0.3+ | 0.1+ | 2007 08 21 | 699 | 0.1+ | 0.6+ | 2007 10 02 | E12 | 0.0  | 0.3+ |
| 2006 04 21 | G96 | 0.1+ | 0.6+ | 2007 08 21 | 699 | 0.1− | 0.3− | 2007 10 02 | E12 | 0.7− | 0.5− |
| 2007 08 08 | 704 | 0.0  | 0.5+ | 2007 09 03 | 703 | 1.2+ | 0.6− | 2007 10 02 | E12 | 0.7+ | 0.7+ |
| 2007 08 08 | 704 | 0.2+ | 0.1− | 2007 09 03 | 703 | 0.0  | 0.3− | 2007 10 16 | G96 | 0.2− | 0.1− |
| 2007 08 08 | 704 | 0.1− | 0.6+ | 2007 09 03 | 703 | 0.1+ | 0.7− | 2007 10 16 | G96 | 0.2+ | 0.5− |
| 2007 08 08 | 704 | 0.1− | 0.1− | 2007 09 03 | 703 | 0.5− | 0.2+ | 2007 10 16 | G96 | 0.1+ | 0.0  |
| 2007 08 11 | 704 | 0.3− | 0.3− | 2007 09 15 | 699 | 0.3− | 1.2+ | 2007 10 16 | G96 | 0.5+ | 0.1− |

**2007 PW<sub>17</sub> = 2004 XU<sub>124</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.02613  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28428165 | $\omega$ | 35.66084  | +0.98943750   | −0.14487694 |
| <i>a</i> | 2.2907103  | $\Omega$ | 332.66807 | +0.13039557   | +0.90431151 |
| <i>e</i> | 0.2250576  | <i>i</i> | 0.61267   | +0.06332793   | +0.40153626 |
| <i>P</i> | 3.47       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2000 08 27 | 807 | 0.1+ | 0.2− | 2007 08 06 | D35 | 0.1−        | 0.9+ | 2007 09 04 | 703 | 0.5+ | 0.5+ |
| 2000 08 27 | 807 | 0.0  | 0.3− | 2007 08 09 | 704 | 0.4+        | 0.3+ | 2007 10 04 | G96 | 0.4− | 0.4− |
| 2002 03 05 | 691 | 0.4+ | 0.3− | 2007 08 09 | 704 | 0.2+        | 0.6− | 2007 10 04 | G96 | 0.3+ | 0.2− |
| 2002 03 05 | 691 | 0.0  | 0.1+ | 2007 08 09 | 704 | (0.5+ 1.8+) |      | 2007 10 04 | G96 | 0.0  | 0.2− |
| 2002 03 05 | 691 | 0.2− | 0.7+ | 2007 08 09 | 704 | 0.0         | 0.1+ | 2007 10 04 | G96 | 0.2+ | 0.1− |
| 2004 12 11 | 691 | 0.1− | 0.0  | 2007 08 09 | 704 | 0.0         | 0.6+ | 2007 10 12 | G96 | 0.6− | 0.0  |
| 2004 12 11 | 691 | 0.1− | 0.0  | 2007 08 11 | 699 | 0.1+        | 0.9+ | 2007 10 12 | G96 | 0.1− | 0.1− |
| 2004 12 11 | 691 | 0.1− | 0.2+ | 2007 08 11 | 699 | 0.5+        | 0.5− | 2007 10 12 | G96 | 0.1− | 0.5− |
| 2004 12 16 | 704 | 0.2− | 0.1+ | 2007 08 11 | 699 | 0.9−        | 0.3− | 2007 10 12 | G96 | 0.2− | 0.3− |
| 2004 12 16 | 704 | 0.3+ | 0.8+ | 2007 08 11 | 699 | 0.1+        | 0.8+ | 2007 10 31 | G96 | 0.2− | 0.2− |
| 2004 12 16 | 704 | 1.3+ | 0.4− | 2007 09 04 | 703 | 0.3+        | 1.1+ | 2007 10 31 | G96 | 0.2− | 0.5− |
| 2007 08 06 | D35 | 0.2− | 0.2+ | 2007 09 04 | 703 | 0.5+        | 0.5+ | 2007 10 31 | G96 | 0.2− | 0.3− |
| 2007 08 06 | D35 | 1.1− | 0.1+ | 2007 09 04 | 703 | 0.3−        | 0.1+ | 2007 10 31 | G96 | 0.2+ | 0.3− |

**2007 PA<sub>23</sub> = 2007 UG<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.03082   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23102944 | $\omega$ | 189.34586 | +0.94927348   | +0.29044443 |
| <i>a</i> | 2.6304164  | $\Omega$ | 152.81131 | −0.26877882   | +0.94835650 |
| <i>e</i> | 0.2660121  | <i>i</i> | 15.29185  | −0.16321090   | +0.12752245 |
| <i>P</i> | 4.27       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 05 | 291 | 0.2+ | 0.2− | 2007 08 11 | 704 | 0.5+ | 0.5+ | 2007 10 11 | 703 | 0.4− | 0.4+ |
| 2002 05 05 | 291 | 0.1− | 0.1+ | 2007 08 11 | 704 | 0.0  | 0.0  | 2007 10 11 | 703 | 0.8− | 0.5+ |
| 2002 05 05 | 291 | 0.2− | 0.2− | 2007 08 11 | 704 | 0.2+ | 0.1− | 2007 10 11 | 703 | 0.4− | 0.3+ |
| 2003 11 21 | 703 | 0.6− | 0.0  | 2007 08 11 | 704 | 0.3+ | 0.6+ | 2007 10 18 | 703 | 0.2− | 0.1− |
| 2003 11 21 | 703 | 1.3+ | 1.5+ | 2007 08 12 | 704 | 1.1+ | 0.4+ | 2007 10 18 | 703 | 0.5− | 0.3− |
| 2003 11 21 | 703 | 0.8− | 0.6− | 2007 08 12 | 704 | 0.1− | 0.9+ | 2007 10 18 | 703 | 0.2+ | 0.2− |
| 2003 11 21 | 703 | 0.1+ | 1.0− | 2007 08 12 | 704 | 0.1+ | 0.6+ | 2007 10 18 | 703 | 0.1+ | 0.0  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 08 | G96 | 0.2− | 0.5+ | 2007 09 12 | 703 | 0.2+ | 0.0  | 2007 10 22 | E12 | 0.6+ | 0.4− |
| 2005 03 08 | G96 | 0.1− | 0.1− | 2007 09 12 | 703 | 0.8− | 0.4− | 2007 10 22 | E12 | 0.5+ | 0.1+ |
| 2005 03 08 | G96 | 0.3+ | 0.0  | 2007 09 12 | 703 | 0.6− | 0.4− | 2007 10 22 | E12 | 0.4+ | 0.8− |
| 2005 03 08 | G96 | 0.1+ | 0.9+ | 2007 10 11 | 703 | 0.2− | 0.1− | 2007 10 22 | E12 | 0.2+ | 0.2− |

2007 PK<sub>25</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 13.32764   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18354266 | <i>ω</i> | 204.21561 | +0.80351943 | −0.59087096 |
| <i>a</i> | 3.0665122  | <i>Ω</i> | 192.79339 | +0.58542961 | +0.80637778 |
| <i>e</i> | 0.3771179  | <i>i</i> | 19.05818  | +0.10783642 | +0.02502748 |
| <i>P</i> | 5.37       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 06 16 | 644 | 0.4− | 0.2+ | 2003 01 14 | 644 | 0.1−  | 0.2+  | 2007 08 15 | 704 | 0.8+ | 0.2+ |
| 2001 06 16 | 644 | 0.2− | 0.4+ | 2003 01 14 | 644 | 0.2−  | 0.0   | 2007 08 15 | 704 | 0.7+ | 0.0  |
| 2001 06 16 | 644 | 0.6− | 0.5+ | 2003 02 06 | 644 | 0.0   | 0.2+  | 2007 10 19 | 704 | 0.1+ | 0.1+ |
| 2001 07 12 | 644 | 0.6− | 1.2− | 2003 02 06 | 644 | 0.2−  | 0.1+  | 2007 10 19 | 704 | 0.6+ | 0.2+ |
| 2001 07 12 | 644 | 0.7− | 1.0− | 2003 02 06 | 644 | 0.3+  | 0.0   | 2007 10 19 | 704 | 0.4− | 0.1+ |
| 2001 07 12 | 644 | 0.7− | 1.0− | 2004 04 20 | 691 | 0.2+  | 0.5+  | 2007 10 19 | 704 | 1.3+ | 0.5+ |
| 2001 07 27 | 644 | 0.3− | 0.1− | 2004 04 20 | 691 | 0.3+  | 0.2+  | 2007 10 19 | 704 | 0.2+ | 0.0  |
| 2001 07 27 | 644 | 0.6− | 0.1+ | 2004 04 20 | 691 | 0.3−  | 0.0   | 2007 10 20 | 704 | 0.3+ | 0.2+ |
| 2001 07 27 | 644 | 0.1− | 0.1+ | 2007 08 11 | 704 | 0.6−  | 0.2+  | 2007 10 20 | 704 | 0.1+ | 0.2+ |
| 2001 07 27 | 644 | 0.1+ | 0.3+ | 2007 08 11 | 704 | 0.6+  | 1.5+  | 2007 10 20 | 704 | 0.4− | 0.2− |
| 2001 08 01 | 644 | 0.9+ | 1.5+ | 2007 08 11 | 704 | 0.6−  | 0.3−  | 2007 11 20 | 703 | 0.4− | 0.7+ |
| 2001 08 01 | 644 | 1.1+ | 1.4+ | 2007 08 11 | 704 | 0.5+  | 0.6+  | 2007 11 20 | 703 | 0.3+ | 0.3+ |
| 2001 08 01 | 644 | 1.2+ | 1.6+ | 2007 08 11 | 704 | 0.6+  | 0.5−  | 2007 11 20 | 703 | 0.1+ | 0.5+ |
| 2001 09 21 | 644 | 0.0  | 0.1+ | 2007 08 14 | 704 | 1.1−  | 0.0   | 2007 11 20 | 703 | 0.2− | 0.1+ |
| 2001 09 21 | 644 | 0.1+ | 0.0  | 2007 08 14 | 704 | 1.0−  | 0.6+  | 2007 12 06 | 703 | 0.3− | 0.9− |
| 2001 09 21 | 644 | 0.1− | 0.0  | 2007 08 14 | 704 | 0.0   | 0.2−  | 2007 12 06 | 703 | 0.2− | 0.4− |
| 2002 12 27 | 644 | 0.0  | 0.3+ | 2007 08 14 | 704 | 0.2−  | 0.4−  | 2007 12 06 | 703 | 0.0  | 0.0  |
| 2002 12 27 | 644 | 0.4+ | 0.4+ | 2007 08 14 | 704 | 0.5−  | 0.4−  | 2007 12 06 | 703 | 0.1+ | 0.2+ |
| 2002 12 27 | 644 | 0.2− | 0.2+ | 2007 08 15 | 704 | (2.0− | 0.4−) |            |     |      |      |
| 2003 01 14 | 644 | 0.3− | 0.1+ | 2007 08 15 | 704 | (1.3− | 2.2+) |            |     |      |      |

2007 PA<sub>27</sub> = 2004 TF<sub>318</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 52.02436   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.30636313 | <i>ω</i> | 15.22772  | +0.48142430 | +0.87625612 |
| <i>a</i> | 2.1792734  | <i>Ω</i> | 283.55433 | −0.80631132 | +0.43375020 |
| <i>e</i> | 0.1530533  | <i>i</i> | 1.18742   | −0.34364618 | +0.20984749 |
| <i>P</i> | 3.22       | <i>H</i> | 18.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 5           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 11 | 691 | 0.2+ | 0.3− | 2007 07 18 | G96 | 0.2+ | 0.4− | 2007 09 15 | G96 | 0.0  | 0.0  |
| 2004 10 11 | 691 | 0.1− | 0.1− | 2007 07 18 | G96 | 0.0  | 0.5− | 2007 09 15 | G96 | 0.4+ | 0.0  |
| 2004 10 11 | 691 | 0.2+ | 0.0  | 2007 07 18 | G96 | 0.2− | 0.3+ | 2007 09 15 | G96 | 0.5+ | 0.0  |
| 2004 10 15 | 691 | 0.0  | 0.1+ | 2007 08 07 | 675 | 0.8− | 0.2+ | 2007 09 15 | G96 | 0.1+ | 0.2− |
| 2004 10 15 | 691 | 0.1− | 0.1− | 2007 08 07 | 675 | 0.6+ | 0.0  | 2007 09 30 | 691 | 0.4− | 0.0  |
| 2004 10 15 | 691 | 0.1− | 0.1+ | 2007 08 08 | 675 | 0.0  | 0.1+ | 2007 09 30 | 691 | 0.2− | 0.2− |
| 2007 07 18 | G96 | 0.0  | 0.1− | 2007 08 08 | 675 | 0.2+ | 0.4+ | 2007 09 30 | 691 | 0.7− | 0.6+ |

2007 PH<sub>42</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 330.88031  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.24084365 | <i>ω</i> | 247.62625 | +0.89389841 | −0.44152538 |
| <i>a</i> | 2.5584637  | <i>Ω</i> | 138.46468 | +0.44212986 | +0.83988703 |
| <i>e</i> | 0.1743650  | <i>i</i> | 6.70902   | +0.07393795 | +0.31566613 |
| <i>P</i> | 4.09       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 21 | 691 | 0.1+ | 0.8− | 2005 04 09 | G96 | 0.1+ | 0.1+ | 2007 08 11 | 699 | 0.5+ | 0.4+ |
| 2001 02 21 | 691 | 0.0  | 0.2+ | 2005 04 09 | G96 | 0.3− | 0.5− | 2007 08 11 | 699 | 0.3− | 0.7− |
| 2001 02 21 | 691 | 0.1− | 0.5+ | 2005 04 09 | G96 | 0.1+ | 0.2+ | 2007 08 18 | 699 | 0.3− | 0.8+ |
| 2003 09 04 | 691 | 0.1+ | 0.3+ | 2006 05 07 | G96 | 0.9+ | 0.2+ | 2007 08 18 | 699 | 0.6− | 0.4− |

## M.P.O. 129783

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 04 | 691 | 0.1− | 0.2+ | 2006 05 07 | G96 | 1.4+  | 0.4−  | 2007 08 18 | 699 | 0.2+ | 0.9+ |
| 2003 09 04 | 691 | 0.2− | 0.2+ | 2006 05 07 | G96 | 1.6−  | 0.5+  | 2007 08 18 | 699 | 0.6+ | 1.3+ |
| 2005 01 17 | 691 | 0.2− | 0.5+ | 2006 05 07 | G96 | 0.0   | 0.4+  | 2007 09 13 | G96 | 0.4+ | 0.0  |
| 2005 01 17 | 691 | 0.3+ | 0.2+ | 2007 06 21 | 291 | 0.6−  | 0.6+  | 2007 09 13 | G96 | 0.6+ | 0.0  |
| 2005 01 17 | 691 | 0.1+ | 0.3+ | 2007 06 21 | 291 | 0.5−  | 0.3+  | 2007 09 13 | G96 | 0.8+ | 0.2+ |
| 2005 02 04 | 691 | 0.1− | 0.5+ | 2007 06 21 | 291 | 0.9−  | 0.4+  | 2007 09 13 | G96 | 1.1+ | 0.1+ |
| 2005 02 04 | 691 | 0.0  | 0.3+ | 2007 07 18 | G96 | 0.7+  | 0.0   | 2007 10 16 | G96 | 0.0  | 0.3− |
| 2005 02 04 | 691 | 0.1− | 0.2+ | 2007 07 18 | G96 | 0.1+  | 0.0   | 2007 10 16 | G96 | 0.1− | 0.5− |
| 2005 03 04 | 691 | 0.2+ | 0.4+ | 2007 07 18 | G96 | 0.5+  | 0.1−  | 2007 10 16 | G96 | 0.4+ | 0.3+ |
| 2005 03 04 | 691 | 0.2− | 0.4+ | 2007 07 18 | G96 | 0.6+  | 0.1−  | 2007 10 16 | G96 | 0.1− | 1.2+ |
| 2005 03 04 | 691 | 0.4+ | 0.2+ | 2007 08 11 | 699 | (0.1+ | 1.9+) |            |     |      |      |
| 2005 04 09 | G96 | 0.0  | 0.4+ | 2007 08 11 | 699 | 0.3−  | 0.2+  |            |     |      |      |

2007 PV<sub>42</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 318.83158  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28070675 | <i>ω</i> | 250.17588 | +0.81080230 | −0.58180272 |
| <i>a</i> | 2.3101179  | <i>Ω</i> | 145.31516 | +0.57028717 | +0.76058149 |
| <i>e</i> | 0.1133936  | <i>i</i> | 6.46477   | +0.13180351 | +0.28813432 |
| <i>P</i> | 3.51       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 08 14 | 691 | 0.3− | 0.3+ | 2004 12 16 | 699 | 0.7+ | 0.7+ | 2007 08 09 | 704 | 1.3+  | 0.9−  |
| 1993 08 14 | 691 | 0.4+ | 0.8+ | 2004 12 16 | 699 | 0.5+ | 0.2− | 2007 08 09 | 704 | 0.4−  | 0.4+  |
| 1993 08 14 | 691 | 0.6− | 0.6+ | 2004 12 16 | 699 | 1.4− | 0.3+ | 2007 08 09 | 704 | 0.9−  | 0.3+  |
| 2002 01 18 | 644 | 0.2+ | 0.7+ | 2004 12 16 | 699 | 1.1− | 0.2+ | 2007 08 15 | 704 | 0.6−  | 1.2+  |
| 2002 01 18 | 644 | 0.1− | 0.6+ | 2006 03 25 | 691 | 0.1− | 0.5+ | 2007 08 15 | 704 | (1.3+ | 2.4+) |
| 2002 01 18 | 644 | 0.1− | 0.2+ | 2006 03 25 | 691 | 0.0  | 0.2+ | 2007 08 15 | 704 | 1.0+  | 1.1+  |
| 2002 01 26 | 644 | 0.4− | 0.2+ | 2006 03 25 | 691 | 0.1− | 0.1+ | 2007 08 15 | 704 | 0.7+  | 0.8+  |
| 2002 01 26 | 644 | 0.7− | 0.6− | 2007 07 09 | D35 | 0.0  | 0.5+ | 2007 09 10 | G96 | 0.1+  | 0.0   |
| 2002 01 26 | 644 | 0.6− | 0.0  | 2007 07 09 | D35 | 0.1+ | 0.0  | 2007 09 10 | G96 | 0.2+  | 0.1−  |
| 2002 02 05 | 644 | 0.2− | 0.3+ | 2007 07 09 | D35 | 0.0  | 0.7+ | 2007 09 10 | G96 | 0.6+  | 0.7−  |
| 2002 02 05 | 644 | 0.4− | 0.1+ | 2007 07 18 | G96 | 0.1+ | 0.0  | 2007 09 10 | G96 | 0.3−  | 0.2+  |
| 2002 02 05 | 644 | 0.7− | 0.1− | 2007 07 18 | G96 | 0.2− | 0.1+ | 2007 10 16 | G96 | 0.5−  | 0.0   |
| 2002 02 07 | 691 | 0.7+ | 0.5+ | 2007 07 18 | G96 | 0.1+ | 0.0  | 2007 10 16 | G96 | 1.0−  | 0.1−  |
| 2002 02 07 | 691 | 0.6+ | 0.7+ | 2007 07 18 | G96 | 0.3− | 0.3+ | 2007 10 16 | G96 | 0.4−  | 0.6+  |
| 2002 02 07 | 691 | 0.5+ | 0.7+ | 2007 08 09 | 704 | 0.2− | 0.8− | 2007 10 16 | G96 | 0.5+  | 1.1+  |

2007 QK<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.34481   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26762896 | <i>ω</i> | 15.32745  | +0.86304008 | +0.49994330 |
| <i>a</i> | 2.3847745  | <i>Ω</i> | 314.44224 | −0.47344150 | +0.75071668 |
| <i>e</i> | 0.1590952  | <i>i</i> | 5.80721   | −0.17611066 | +0.43183464 |
| <i>P</i> | 3.68       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 24 | 699 | 0.4− | 0.3+ | 2007 08 22 | 699 | 0.8+ | 0.7+ | 2007 10 12 | 699 | 1.2−  | 1.0−  |
| 2000 11 24 | 699 | 0.6+ | 0.2− | 2007 08 22 | 699 | 0.9+ | 1.2+ | 2007 10 12 | 699 | (2.6− | 1.7−) |
| 2000 11 24 | 699 | 0.9+ | 0.4− | 2007 08 22 | 699 | 0.3+ | 0.9+ | 2007 10 12 | 699 | 0.2−  | 1.0+  |
| 2000 11 24 | 699 | 0.5− | 0.3+ | 2007 09 03 | 703 | 0.1+ | 0.1− | 2007 10 12 | 699 | 1.0−  | 0.4+  |
| 2002 03 12 | 645 | 0.1+ | 0.1+ | 2007 09 03 | 703 | 0.3− | 0.4+ | 2007 10 26 | G96 | 0.4+  | 0.0   |
| 2002 03 12 | 645 | 0.0  | 0.1+ | 2007 09 03 | 703 | 1.2− | 0.1+ | 2007 10 26 | G96 | 0.1+  | 0.8−  |
| 2007 08 21 | 699 | 0.4+ | 0.2− | 2007 09 13 | G96 | 0.0  | 0.0  | 2007 10 26 | G96 | 0.5−  | 0.2+  |
| 2007 08 21 | 699 | 0.0  | 0.1+ | 2007 09 13 | G96 | 0.2+ | 0.1+ | 2007 10 26 | G96 | 0.3+  | 0.1+  |
| 2007 08 21 | 699 | 0.6− | 0.4− | 2007 09 13 | G96 | 0.2− | 0.0  |            |     |       |       |
| 2007 08 22 | 699 | 0.4− | 0.9+ | 2007 09 13 | G96 | 0.1− | 0.0  |            |     |       |       |

2007 QT<sub>11</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 98.75895   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.28456068 | $\omega$ | 327.14593 | -0.49698215 | +0.86757563 |
| $a$ | 2.2892126  | $\Omega$ | 273.04777 | -0.79223150 | -0.46205664 |
| $e$ | 0.1842859  | $i$      | 1.02846   | -0.35408754 | -0.18389176 |
| $P$ | 3.46       | $H$      | 18.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 08 16 | 691 | 0.5− | 0.3+ | 2006 01 21 | G96 | 0.3− | 0.4− | 2007 08 10 | 691 | 0.0  | 0.2+ |
| 1993 08 16 | 691 | 0.1− | 0.2− | 2006 01 21 | G96 | 0.8− | 0.4+ | 2007 08 23 | 691 | 0.5− | 0.8+ |
| 1993 08 16 | 691 | 0.1+ | 0.1+ | 2006 02 01 | 691 | 0.3+ | 0.4+ | 2007 08 23 | 691 | 0.0  | 0.2+ |
| 2000 09 03 | 645 | 0.2+ | 0.2− | 2006 02 01 | 691 | 0.3+ | 0.2+ | 2007 08 23 | 691 | 0.9− | 0.2− |
| 2000 09 03 | 645 | 0.2+ | 0.2− | 2006 02 01 | 691 | 0.4+ | 0.0  | 2007 08 24 | 691 | 0.1+ | 0.2+ |
| 2006 01 05 | G96 | 0.2− | 0.1− | 2006 02 01 | G96 | 0.3+ | 0.3− | 2007 08 24 | 691 | 0.2+ | 0.9+ |
| 2006 01 05 | G96 | 0.4− | 0.1+ | 2006 02 01 | G96 | 0.1− | 0.2− | 2007 08 24 | 691 | 0.1− | 0.1+ |
| 2006 01 05 | G96 | 0.1− | 0.2− | 2006 02 01 | G96 | 0.2+ | 0.0  | 2007 10 04 | G96 | 0.2+ | 0.2− |
| 2006 01 05 | G96 | 0.2+ | 0.3+ | 2006 02 01 | G96 | 0.1− | 0.4− | 2007 10 04 | G96 | 0.3+ | 0.1− |
| 2006 01 05 | G96 | 0.6− | 0.1− | 2006 02 07 | G96 | 0.4− | 0.2+ | 2007 10 04 | G96 | 0.9− | 0.1− |
| 2006 01 05 | G96 | 0.5− | 0.3− | 2006 02 07 | G96 | 0.4− | 0.2− | 2007 10 04 | G96 | 0.2− | 0.4− |
| 2006 01 05 | G96 | 0.2+ | 0.1− | 2006 02 07 | G96 | 0.2− | 0.0  | 2007 10 11 | G96 | 0.1+ | 0.5− |
| 2006 01 05 | G96 | 0.3+ | 0.1+ | 2006 02 07 | G96 | 0.1− | 0.3− | 2007 10 11 | G96 | 0.7− | 0.6− |
| 2006 01 21 | G96 | 0.7− | 0.2− | 2007 08 10 | 691 | 0.1+ | 0.2+ | 2007 10 11 | G96 | 0.2− | 0.1+ |
| 2006 01 21 | G96 | 0.3− | 0.4− | 2007 08 10 | 691 | 0.2− | 0.2+ | 2007 10 11 | G96 | 0.1+ | 0.1− |

**2007 RE**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 328.38433  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.24247112 | $\omega$ | 46.96827  | +0.87575714 | −0.47776548 |
| $a$ | 2.5470025  | $\Omega$ | 341.23654 | +0.35619344 | +0.73625764 |
| $e$ | 0.1562234  | $i$      | 12.42456  | +0.32584607 | +0.47923359 |
| $P$ | 4.06       | $H$      | 17.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 21 | 691 | 0.2− | 0.3+ | 2007 09 01 | 413 | 0.0  | 0.2+ | 2007 10 13 | G96 | 0.2+ | 0.2− |
| 1999 08 21 | 691 | 0.2− | 0.1+ | 2007 09 01 | 413 | 0.1+ | 0.1+ | 2007 10 13 | G96 | 0.5+ | 0.2− |
| 1999 08 21 | 691 | 0.7− | 0.2− | 2007 09 01 | 413 | 0.1− | 0.2+ | 2007 10 13 | G96 | 0.0  | 0.2+ |
| 2003 09 20 | 291 | 0.3+ | 0.2+ | 2007 09 02 | 413 | 0.0  | 0.2− | 2007 10 13 | G96 | 0.3− | 0.1− |
| 2003 09 20 | 291 | 0.5+ | 0.2+ | 2007 09 02 | 413 | 0.4− | 0.1+ | 2007 10 13 | G96 | 0.3+ | 0.4− |
| 2003 09 20 | 291 | 0.5+ | 0.4+ | 2007 09 02 | 413 | 0.3− | 0.1+ | 2007 10 13 | G96 | 0.2+ | 0.5− |
| 2005 03 11 | 691 | 0.3+ | 0.3+ | 2007 09 06 | 413 | 0.6− | 0.2+ | 2007 10 13 | G96 | 0.3+ | 0.6+ |
| 2005 03 11 | 691 | 0.1− | 0.1+ | 2007 09 06 | 413 | 0.2− | 0.1+ | 2007 10 13 | G96 | 0.3− | 0.3− |
| 2005 03 11 | 691 | 0.3+ | 0.4+ | 2007 09 06 | 413 | 0.1− | 0.5− |            |     |      |      |

**2007 RT<sub>4</sub> = 1999 CJ<sub>141</sub> = 2004 BD<sub>153</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 326.71717  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19674626 | $\omega$ | 96.67186  | +0.70727101   | −0.70474078 |
| <i>a</i> | 2.9277348  | $\Omega$ | 308.15532 | +0.61737019   | +0.65415403 |
| <i>e</i> | 0.1914217  | <i>i</i> | 4.06563   | +0.34441509   | +0.27463236 |
| <i>P</i> | 5.01       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 02 10 | 691 | 0.4− | 0.9− | 2004 01 27 | 691 | 0.3− | 0.3+ | 2007 09 04 | G96 | 0.5+ | 0.2− |
| 1999 02 10 | 691 | 0.2− | 0.5− | 2004 02 11 | 691 | 0.2+ | 0.2+ | 2007 09 04 | G96 | 0.3+ | 0.4− |
| 1999 02 10 | 691 | 0.0  | 0.7− | 2004 02 11 | 691 | 0.4+ | 0.6+ | 2007 09 14 | 691 | 0.1− | 0.2− |
| 1999 02 13 | 691 | 0.3+ | 0.3+ | 2004 02 11 | 691 | 0.4+ | 0.3− | 2007 09 14 | 691 | 0.0  | 0.2− |
| 1999 02 13 | 691 | 0.4− | 0.1− | 2007 09 03 | 703 | 1.4− | 1.3− | 2007 09 14 | 691 | 0.1+ | 0.4+ |
| 2002 09 14 | 644 | 0.4− | 1.0+ | 2007 09 03 | 703 | 0.1+ | 0.1− | 2007 09 30 | 691 | 0.0  | 0.2− |
| 2002 09 14 | 644 | 0.5− | 0.9+ | 2007 09 03 | 703 | 0.4+ | 0.0  | 2007 09 30 | 691 | 0.6+ | 0.2− |
| 2002 09 14 | 644 | 0.3− | 0.6+ | 2007 09 03 | 703 | 0.3− | 0.1+ | 2007 09 30 | 691 | 0.2+ | 0.1+ |
| 2004 01 27 | 691 | 0.1− | 0.4+ | 2007 09 04 | G96 | 0.4+ | 0.4− |            |     |      |      |
| 2004 01 27 | 691 | 0.1− | 0.2+ | 2007 09 04 | G96 | 0.7+ | 0.2− |            |     |      |      |

**2007 RK<sub>9</sub> = 2006 DY<sub>181</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 34.84169   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.23539971 | $\omega$ | 209.13058 | +0.49727093 | +0.86563678 |
| $a$ | 2.5977584  | $\Omega$ | 90.74366  | −0.78429466 | +0.47722426 |
| $e$ | 0.1519159  | $i$      | 3.34040   | −0.37094946 | +0.15142645 |
| $P$ | 4.19       | $H$      | 16.9      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 691 | 0.1− | 0.2+ | 2006 02 27 | 691 | 0.1+ | 0.6+ | 2007 09 04 | 703 | 0.6+ | 0.1− |
| 2003 09 21 | 691 | 0.0  | 0.1+ | 2006 02 27 | 691 | 0.2+ | 0.7+ | 2007 09 04 | 703 | 0.2+ | 0.6− |
| 2003 09 21 | 691 | 0.2− | 0.2+ | 2006 03 03 | 691 | 0.1+ | 0.5+ | 2007 09 06 | 413 | 0.1− | 0.1+ |
| 2003 09 24 | 644 | 0.0  | 0.5+ | 2006 03 03 | 691 | 0.0  | 0.0  | 2007 09 06 | 413 | 0.4− | 0.4+ |
| 2003 09 24 | 644 | 0.4− | 0.3+ | 2006 03 03 | 691 | 0.1+ | 0.1+ | 2007 09 06 | 413 | 0.3− | 0.9+ |
| 2003 09 24 | 644 | 0.1− | 0.4+ | 2007 08 06 | D35 | 0.1+ | 0.4+ | 2007 10 16 | G96 | 0.3+ | 0.3− |
| 2004 12 14 | 691 | 0.1− | 0.1− | 2007 08 06 | D35 | 0.4− | 0.7+ | 2007 10 16 | G96 | 0.2− | 0.5− |
| 2004 12 14 | 691 | 0.1− | 0.2+ | 2007 08 06 | D35 | 0.5− | 0.0  | 2007 10 16 | G96 | 0.3+ | 0.0  |
| 2004 12 14 | 691 | 0.3+ | 0.4+ | 2007 09 04 | 703 | 0.8+ | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.0  |
| 2006 02 27 | 691 | 0.3+ | 0.2+ | 2007 09 04 | 703 | 0.6− | 1.0− |            |     |      |      |

**2007 RH<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 35.41063   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.29944786 | $\omega$ | 15.19428  | +0.75358264 | +0.65526934 |
| $a$ | 2.2126968  | $\Omega$ | 303.74502 | −0.60947738 | +0.66667619 |
| $e$ | 0.1940006  | $i$      | 3.60612   | −0.24627327 | +0.35519704 |
| $P$ | 3.29       | $H$      | 17.7      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2003 03 31 | 809 | 0.2+ | 0.3+ | 2007 09 07 | 704 | 1.0−        | 0.8+ | 2007 09 17 | 704 | 0.0  | 0.4+ |
| 2003 03 31 | 809 | 0.2+ | 0.5+ | 2007 09 10 | 703 | 0.3+        | 0.2+ | 2007 09 17 | 704 | 0.5− | 0.4+ |
| 2003 03 31 | 809 | 0.1+ | 0.4+ | 2007 09 10 | 703 | 0.9−        | 1.1− | 2007 09 17 | 704 | 0.1+ | 0.3+ |
| 2004 11 11 | 691 | 0.2− | 0.1+ | 2007 09 10 | 703 | 0.6+        | 0.1− | 2007 10 07 | 703 | 0.5+ | 0.5+ |
| 2004 11 11 | 691 | 0.1− | 0.2+ | 2007 09 12 | 699 | (0.2+ 2.4−) |      | 2007 10 07 | 703 | 0.6+ | 0.7+ |
| 2004 11 11 | 691 | 0.1− | 0.3+ | 2007 09 12 | 699 | 1.0+        | 0.4− | 2007 10 07 | 703 | 0.2+ | 0.6− |
| 2004 11 20 | 691 | 0.1+ | 0.1+ | 2007 09 12 | 699 | 1.0+        | 0.7− | 2007 10 07 | 703 | 0.1− | 0.4+ |
| 2004 11 20 | 691 | 0.9+ | 0.1− | 2007 09 12 | 699 | 0.4−        | 0.4− | 2007 10 12 | 704 | 1.2− | 1.2+ |
| 2004 11 20 | 691 | 0.0  | 0.1+ | 2007 09 14 | 704 | 1.1+        | 0.4+ | 2007 10 12 | 704 | 0.6+ | 0.7+ |
| 2007 09 03 | 703 | 0.5− | 0.9− | 2007 09 14 | 704 | 0.2+        | 0.1+ | 2007 10 12 | 704 | 1.3+ | 0.4+ |
| 2007 09 03 | 703 | 0.3+ | 0.2− | 2007 09 14 | 704 | (2.5+ 0.4+) |      | 2007 10 12 | 704 | 0.7− | 0.7+ |
| 2007 09 03 | 703 | 0.0  | 0.1− | 2007 09 14 | 704 | 0.3−        | 0.3− | 2007 11 12 | G96 | 0.1+ | 0.6− |
| 2007 09 03 | 703 | 0.4+ | 0.2+ | 2007 09 14 | 704 | 0.7+        | 1.0− | 2007 11 12 | G96 | 0.6− | 0.7− |
| 2007 09 07 | 704 | 0.6− | 0.2+ | 2007 09 14 | 699 | 0.4+        | 0.3+ | 2007 11 12 | G96 | 0.8− | 0.7− |
| 2007 09 07 | 704 | 1.0− | 0.5+ | 2007 09 14 | 699 | 0.3−        | 0.5− | 2007 11 12 | G96 | 0.2+ | 0.8− |
| 2007 09 07 | 704 | 0.5− | 0.3+ | 2007 09 14 | 699 | 0.1−        | 0.2− |            |     |      |      |
| 2007 09 07 | 704 | 0.5− | 0.5+ | 2007 09 17 | 704 | 0.2−        | 0.3+ |            |     |      |      |

**2007 RE<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 353.29862  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.20360681 | $\omega$ | 219.64919 | +0.78493546 | −0.61957702 |
| $a$ | 2.8615929  | $\Omega$ | 178.63531 | +0.57659358 | +0.73000905 |
| $e$ | 0.0707350  | $i$      | 1.91434   | +0.22675133 | +0.28846334 |
| $P$ | 4.84       | $H$      | 16.5      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 15 | 691 | 0.3− | 0.0  | 2007 09 14 | 673 | 0.0  | 0.1− | 2007 10 15 | 703 | 0.3− | 0.3+ |
| 2004 01 15 | 691 | 0.3− | 0.3− | 2007 09 14 | 673 | 0.3+ | 0.2− | 2007 10 15 | 703 | 0.9− | 1.0+ |
| 2004 01 15 | 691 | 0.0  | 0.2− | 2007 09 15 | 673 | 0.2− | 0.3− | 2007 10 20 | 703 | 0.0  | 0.5+ |
| 2004 02 13 | 291 | 0.5+ | 0.1+ | 2007 09 15 | 673 | 0.3− | 0.1− | 2007 10 20 | 703 | 0.8+ | 0.5+ |
| 2004 02 13 | 291 | 0.0  | 0.3+ | 2007 09 15 | 673 | 0.1+ | 0.1+ | 2007 10 20 | 703 | 0.5+ | 0.2− |
| 2004 02 13 | 291 | 0.1+ | 0.0  | 2007 09 25 | G96 | 0.1− | 0.2+ | 2007 10 20 | 703 | 0.3− | 0.7+ |
| 2005 04 05 | G96 | 0.2− | 0.3+ | 2007 09 25 | G96 | 0.1+ | 0.8− | 2007 11 05 | G96 | 0.4− | 0.3− |
| 2005 04 05 | G96 | 0.5+ | 0.2+ | 2007 09 25 | G96 | 0.1+ | 0.2+ | 2007 11 05 | G96 | 0.1+ | 0.5− |
| 2005 04 05 | G96 | 0.1+ | 0.5+ | 2007 09 25 | G96 | 0.1− | 0.2− | 2007 11 05 | G96 | 0.4− | 0.7− |
| 2005 04 05 | G96 | 0.2+ | 0.9+ | 2007 10 15 | 703 | 0.2+ | 1.3+ | 2007 11 05 | G96 | 0.2+ | 0.8− |
| 2007 09 14 | 673 | 0.3− | 0.0  | 2007 10 15 | 703 | 0.2+ | 1.1+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129785

**2007 RH<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.68308   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28351843 | $\omega$ | 122.35065 | +0.49271004   | +0.87019327 |
| <i>a</i> | 2.2948194  | $\Omega$ | 177.16793 | -0.80307354   | +0.45501592 |
| <i>e</i> | 0.2238742  | <i>i</i> | 0.81199   | -0.33512640   | +0.18900842 |
| <i>P</i> | 3.48       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 04 25 | 691 | 0.3- | 0.1- | 2007 09 03 | 703 | 0.8+ | 0.5- | 2007 09 16 | 704 | 0.6- | 0.3+ |
| 2003 04 25 | 691 | 0.4- | 0.1+ | 2007 09 03 | 703 | 0.9- | 0.4- | 2007 09 16 | 704 | 0.3- | 0.2- |
| 2003 04 25 | 691 | 0.4- | 0.2+ | 2007 09 03 | 703 | 0.9- | 0.7- | 2007 09 16 | 704 | 0.3+ | 0.7+ |
| 2003 05 25 | 691 | 0.8+ | 0.8+ | 2007 09 03 | 703 | 0.0  | 0.6- | 2007 10 07 | G96 | 0.5- | 0.3+ |
| 2003 05 25 | 691 | 0.4+ | 0.3+ | 2007 09 11 | G96 | 0.6+ | 0.0  | 2007 10 07 | G96 | 0.3- | 0.2+ |
| 2003 05 25 | 691 | 0.6+ | 0.2+ | 2007 09 11 | G96 | 0.5+ | 0.1- | 2007 10 07 | G96 | 0.6- | 0.8+ |
| 2007 07 18 | G96 | 0.4+ | 0.5- | 2007 09 11 | G96 | 0.8+ | 0.2- | 2007 10 07 | G96 | 0.2+ | 0.3- |
| 2007 07 18 | G96 | 0.2+ | 0.7- | 2007 09 11 | G96 | 0.5+ | 0.1+ | 2007 10 30 | G96 | 0.3- | 0.3- |
| 2007 07 18 | G96 | 0.6+ | 0.2- | 2007 09 14 | 699 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.1+ |
| 2007 07 18 | G96 | 0.2- | 0.1- | 2007 09 14 | 699 | 0.5- | 1.1+ | 2007 10 30 | G96 | 0.0  | 0.3+ |
| 2007 08 10 | 691 | 0.0  | 0.3+ | 2007 09 14 | 699 | 0.3- | 0.1- | 2007 10 30 | G96 | 0.4- | 0.1- |
| 2007 08 10 | 691 | 0.1- | 0.1+ | 2007 09 14 | J87 | 0.6+ | 0.5+ | 2007 11 09 | G96 | 0.0  | 0.0  |
| 2007 08 10 | 691 | 0.1- | 0.1+ | 2007 09 14 | J87 | 0.7+ | 0.5+ | 2007 11 09 | G96 | 0.0  | 0.2+ |
| 2007 08 23 | 691 | 0.2- | 0.2- | 2007 09 14 | J87 | 0.4+ | 0.6+ | 2007 11 09 | G96 | 0.2+ | 0.3+ |
| 2007 08 23 | 691 | 0.2- | 0.2- | 2007 09 16 | 704 | 0.4- | 0.4+ | 2007 11 09 | G96 | 0.2+ | 0.4+ |
| 2007 08 23 | 691 | 0.6- | 0.8- | 2007 09 16 | 704 | 0.1- | 0.4- |            |     |      |      |

**2007 RT<sub>20</sub> = 2004 TS<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.32998   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30800371 | $\omega$ | 278.81222 | -0.03817580   | +0.99925240 |
| <i>a</i> | 2.1715279  | $\Omega$ | 348.99440 | -0.90378770   | -0.03713287 |
| <i>e</i> | 0.1669418  | <i>i</i> | 1.83212   | -0.42627504   | -0.01076071 |
| <i>P</i> | 3.20       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 291 | 0.1- | 0.3+ | 2006 01 22 | G96 | 0.2+  | 0.6-  | 2007 09 03 | 703 | 0.3- | 0.3+ |
| 2001 10 15 | 291 | 1.2- | 0.7- | 2006 01 22 | G96 | 0.2+  | 0.5-  | 2007 09 03 | 703 | 0.1- | 0.6- |
| 2001 10 15 | 291 | 0.4- | 0.4+ | 2006 01 22 | G96 | 0.2-  | 0.4-  | 2007 09 05 | G96 | 0.1+ | 0.0  |
| 2003 02 23 | 291 | 0.1- | 0.6+ | 2006 01 22 | G96 | 0.0   | 0.0   | 2007 09 05 | G96 | 0.1- | 0.2- |
| 2003 02 23 | 291 | 0.4+ | 0.7+ | 2006 01 22 | G96 | 0.6+  | 0.3-  | 2007 09 05 | G96 | 0.3+ | 0.0  |
| 2003 02 23 | 291 | 0.5+ | 0.1+ | 2006 01 22 | G96 | 0.2-  | 0.7-  | 2007 09 05 | G96 | 0.3+ | 0.2- |
| 2004 10 05 | 691 | 0.6+ | 0.2+ | 2006 01 30 | 691 | 0.3+  | 0.1-  | 2007 09 12 | G96 | 0.2- | 0.4- |
| 2004 10 05 | 691 | 0.4+ | 0.2+ | 2006 01 30 | 691 | 0.4-  | 0.3+  | 2007 09 12 | G96 | 0.0  | 0.2- |
| 2004 10 05 | 691 | 0.5+ | 0.4+ | 2006 01 30 | 691 | 0.3-  | 0.3+  | 2007 09 12 | G96 | 0.3- | 0.2- |
| 2004 10 08 | 691 | 0.0  | 0.4+ | 2007 08 09 | 691 | 0.3-  | 0.1+  | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 2004 10 08 | 691 | 0.2+ | 0.3+ | 2007 08 09 | 691 | 0.2+  | 0.2+  | 2007 10 19 | G96 | 0.1- | 0.2+ |
| 2004 10 08 | 691 | 0.1+ | 0.4+ | 2007 08 09 | 691 | 0.2+  | 0.1+  | 2007 10 19 | G96 | 0.1- | 0.1- |
| 2006 01 22 | G96 | 0.7- | 0.1+ | 2007 09 03 | 703 | (2.2- | 0.4-) | 2007 10 19 | G96 | 0.1- | 0.3- |
| 2006 01 22 | G96 | 0.2- | 0.2- | 2007 09 03 | 703 | 0.1+  | 0.0   | 2007 10 19 | G96 | 0.1- | 0.2- |

**2007 RX<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.67520  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17400485 | $\omega$ | 213.57354 | +0.98320711   | -0.16120467 |
| <i>a</i> | 3.1775702  | $\Omega$ | 155.27593 | +0.17639146   | +0.95966433 |
| <i>e</i> | 0.1867648  | <i>i</i> | 11.80116  | -0.04679570   | +0.23034200 |
| <i>P</i> | 5.66       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 17 | 608 | 0.0  | 0.9+ | 2006 06 20 | 691 | 0.3+ | 0.2+ | 2007 09 06 | 699 | 0.7+ | 0.5+ |
| 2001 07 17 | 608 | 0.5- | 1.1+ | 2007 08 11 | J75 | 0.1- | 0.3- | 2007 09 12 | G96 | 0.1- | 0.7- |
| 2001 07 17 | 608 | 0.2+ | 0.6+ | 2007 08 11 | J75 | 0.5- | 0.5- | 2007 09 12 | G96 | 0.2- | 0.3- |
| 2002 12 08 | 644 | 0.2- | 0.7+ | 2007 08 11 | J75 | 0.2- | 0.5- | 2007 09 12 | G96 | 0.2+ | 0.7- |
| 2002 12 08 | 644 | 0.3- | 0.5+ | 2007 08 21 | 699 | 0.4- | 0.9+ | 2007 09 12 | G96 | 0.1- | 0.6- |
| 2002 12 08 | 644 | 0.6- | 0.1- | 2007 08 21 | 699 | 0.6- | 0.4+ | 2007 09 15 | 704 | 0.5- | 0.9+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 13 | 644 | 0.0  | 0.8+ | 2007 08 21 | 699 | 0.3- | 0.2- | 2007 09 15 | 704 | 0.3+ | 0.9+ |
| 2002 12 13 | 644 | 0.0  | 0.8+ | 2007 08 21 | 699 | 0.1+ | 0.5+ | 2007 09 15 | 704 | 0.1+ | 0.1+ |
| 2002 12 13 | 644 | 0.4+ | 0.8+ | 2007 09 03 | 703 | 0.5+ | 0.2- | 2007 09 15 | 704 | 0.6+ | 1.1+ |
| 2004 02 11 | 644 | 0.4+ | 0.1- | 2007 09 03 | 703 | 0.2- | 0.3- | 2007 09 15 | 704 | 0.2+ | 0.8+ |
| 2004 02 11 | 644 | 0.1+ | 0.3+ | 2007 09 03 | 703 | 0.3+ | 0.5+ | 2007 10 07 | 704 | 0.3- | 0.3+ |
| 2004 02 11 | 644 | 0.2- | 0.5+ | 2007 09 03 | 703 | 0.2- | 0.2+ | 2007 10 07 | 704 | 0.3- | 0.6- |
| 2006 05 25 | G96 | 0.5- | 0.3+ | 2007 09 06 | 704 | 0.2- | 0.5- | 2007 10 07 | 704 | 0.2+ | 0.4- |
| 2006 05 25 | G96 | 0.0  | 0.1+ | 2007 09 06 | 699 | 0.2+ | 0.2- | 2007 10 07 | 704 | 1.3- | 1.6- |
| 2006 05 25 | G96 | 0.1+ | 0.1+ | 2007 09 06 | 704 | 0.6+ | 0.4+ | 2007 10 16 | G96 | 0.3+ | 0.5- |
| 2006 05 25 | G96 | 0.1+ | 0.2+ | 2007 09 06 | 699 | 0.8+ | 0.8- | 2007 10 16 | G96 | 0.2+ | 0.3- |
| 2006 06 20 | 691 | 0.2+ | 0.4+ | 2007 09 06 | 704 | 0.2- | 0.5+ | 2007 10 16 | G96 | 0.4+ | 0.4- |
| 2006 06 20 | 691 | 0.2+ | 0.4+ | 2007 09 06 | 704 | 0.3- | 0.3- |            |     |      |      |

**2007 RY<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.35428   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26591554 | $\omega$ | 182.70751 | +0.79853460   | +0.60098497 |
| <i>a</i> | 2.3950076  | $\Omega$ | 140.28696 | -0.55127109   | +0.75285433 |
| <i>e</i> | 0.2028094  | <i>i</i> | 3.05500   | -0.24174919   | +0.26837925 |
| <i>P</i> | 3.71       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 18 | 695 | 0.1+ | 0.5+ | 2007 08 09 | 691 | 0.3- | 0.3- | 2007 09 03 | 703 | 0.6+ | 0.3+ |
| 2002 03 18 | 695 | 0.2+ | 0.6+ | 2007 08 09 | 691 | 0.2- | 0.5- | 2007 09 03 | 703 | 0.4+ | 0.6- |
| 2006 03 06 | 691 | 0.2+ | 0.1- | 2007 08 09 | 691 | 0.2- | 0.3- | 2007 09 06 | 699 | 1.3- | 0.3- |
| 2006 03 06 | 691 | 0.2+ | 0.1- | 2007 08 22 | 699 | 0.1- | 1.6+ | 2007 09 06 | 699 | 0.9+ | 0.2+ |
| 2006 03 06 | 691 | 1.1+ | 0.1+ | 2007 08 22 | 699 | 0.2+ | 0.4+ | 2007 09 06 | 699 | 0.3+ | 0.7- |
| 2006 03 06 | G96 | 0.6+ | 0.4+ | 2007 08 22 | 699 | 0.7- | 0.6+ | 2007 09 06 | 699 | 0.1+ | 0.2+ |
| 2006 03 26 | G96 | 0.9- | 0.4- | 2007 08 22 | 699 | 0.1- | 0.2+ | 2007 10 05 | 291 | 0.1+ | 0.2+ |
| 2006 03 26 | G96 | 0.0  | 0.1- | 2007 09 03 | 703 | 0.6+ | 0.2- | 2007 10 05 | 291 | 0.2- | 0.3+ |
| 2006 03 26 | G96 | 1.0- | 0.6+ | 2007 09 03 | 703 | 0.3- | 0.1- | 2007 10 05 | 291 | 0.3- | 0.1- |

**2007 RZ<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.30928  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26286375 | $\omega$ | 356.67018 | +0.91573957   | -0.40157186 |
| <i>a</i> | 2.4135090  | $\Omega$ | 27.01737  | +0.36926149   | +0.82877018 |
| <i>e</i> | 0.1910988  | <i>i</i> | 1.60108   | +0.15832561   | +0.38971789 |
| <i>P</i> | 3.75       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 10 05 | 691 | 0.2- | 0.4+ | 2007 08 22 | 699 | 0.2-  | 0.2+  | 2007 09 15 | 699 | 0.2-  | 0.3-  |
| 1996 10 05 | 691 | 0.1- | 0.5+ | 2007 09 03 | 703 | 0.5+  | 0.5+  | 2007 09 15 | 291 | 0.0   | 0.2+  |
| 1996 10 05 | 691 | 0.0  | 0.8+ | 2007 09 03 | 703 | 1.0+  | 0.5-  | 2007 09 15 | 291 | 0.1+  | 0.2+  |
| 2000 12 30 | 691 | 1.1- | 0.2+ | 2007 09 03 | 703 | 1.0+  | 0.1-  | 2007 09 15 | 291 | 0.2+  | 0.2+  |
| 2000 12 30 | 691 | 0.0  | 0.4+ | 2007 09 03 | 703 | 0.3+  | 0.2+  | 2007 09 18 | 699 | 1.4+  | 0.5-  |
| 2000 12 30 | 691 | 0.0  | 0.2+ | 2007 09 06 | 699 | (0.3- | 2.4+) | 2007 09 18 | 699 | 1.5-  | 0.8+  |
| 2002 04 08 | 691 | 1.3+ | 1.2+ | 2007 09 06 | 699 | 0.5-  | 0.2+  | 2007 09 18 | 699 | (2.0- | 2.3+) |
| 2002 04 08 | 691 | 0.7+ | 0.5+ | 2007 09 06 | 699 | 0.4-  | 1.0+  | 2007 09 18 | 699 | 0.3+  | 1.8+  |
| 2002 04 08 | 691 | 0.4+ | 0.9+ | 2007 09 06 | 699 | 0.6-  | 0.3-  | 2007 09 19 | 704 | 0.5+  | 1.1+  |
| 2005 01 19 | 691 | 0.5+ | 0.1- | 2007 09 12 | G96 | 0.0   | 0.7-  | 2007 09 19 | 704 | 0.0   | 0.1+  |
| 2005 01 19 | 691 | 0.2+ | 0.2+ | 2007 09 12 | G96 | 0.1+  | 0.2-  | 2007 09 19 | 704 | 0.1+  | 0.0   |
| 2005 01 19 | 691 | 0.4+ | 0.1+ | 2007 09 12 | G96 | 0.2-  | 0.3-  | 2007 09 19 | 704 | 0.5-  | 0.4+  |
| 2006 05 02 | G96 | 0.5- | 0.7+ | 2007 09 12 | G96 | 0.0   | 0.4-  | 2007 09 20 | 691 | 0.3-  | 0.0   |
| 2006 05 02 | G96 | 0.4- | 0.3+ | 2007 09 13 | 704 | 0.7+  | 0.7-  | 2007 09 20 | 691 | 0.5-  | 0.1-  |
| 2006 05 02 | G96 | 0.5- | 0.2+ | 2007 09 13 | 704 | 0.3-  | 0.3+  | 2007 09 20 | 691 | 0.3-  | 0.2+  |
| 2006 05 02 | G96 | 0.2+ | 0.1+ | 2007 09 13 | 704 | 0.3+  | 0.6-  | 2007 11 09 | G96 | 0.2-  | 0.1-  |
| 2007 08 22 | 699 | 0.1- | 0.2- | 2007 09 15 | 699 | 0.1-  | 0.5-  | 2007 11 09 | G96 | 0.1-  | 0.5-  |
| 2007 08 22 | 699 | 0.5+ | 0.8+ | 2007 09 15 | 699 | 0.1+  | 0.2-  | 2007 11 09 | G96 | 0.8-  | 0.5-  |
| 2007 08 22 | 699 | 0.6- | 0.4+ | 2007 09 15 | 699 | 0.2-  | 0.2-  | 2007 11 09 | G96 | 0.3-  | 0.4-  |

**2007 RN<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 85.77125   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18456529 | $\omega$ | 94.94573  | -0.21692560   | +0.97426203 |
| <i>a</i> | 3.0551745  | $\Omega$ | 162.16324 | -0.95605940   | -0.19934874 |
| <i>e</i> | 0.0471935  | <i>i</i> | 11.54295  | -0.19721485   | -0.10523108 |
| <i>P</i> | 5.34       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 02 | 691 | 0.2+ | 0.1+ | 2007 06 12 | 291 | 0.2-  | 0.3+  | 2007 09 05 | G96 | 0.4- | 0.1- |
| 2005 02 02 | 691 | 0.1+ | 0.2+ | 2007 06 12 | 291 | 0.2-  | 0.1+  | 2007 09 05 | G96 | 0.1- | 0.0  |
| 2005 02 02 | 691 | 0.0  | 0.0  | 2007 08 10 | 691 | 0.1+  | 0.2-  | 2007 09 05 | G96 | 0.1- | 0.2+ |
| 2005 03 03 | 703 | 0.4- | 0.9+ | 2007 08 10 | 691 | 0.3-  | 0.0   | 2007 09 05 | G96 | 0.4- | 0.0  |
| 2005 03 03 | 703 | 1.2+ | 1.0+ | 2007 08 10 | 691 | (2.3- | 1.2-) | 2007 09 19 | G96 | 0.1- | 0.4+ |
| 2005 03 03 | 703 | 0.1- | 0.4+ | 2007 08 24 | 691 | 0.1+  | 0.0   | 2007 09 19 | G96 | 0.1+ | 0.4+ |
| 2005 03 03 | 703 | 0.3+ | 1.1+ | 2007 08 24 | 691 | 0.2-  | 0.7+  | 2007 09 19 | G96 | 0.1- | 0.6+ |
| 2005 04 04 | G96 | 0.4- | 0.4+ | 2007 08 24 | 691 | (0.2- | 1.8+) | 2007 09 19 | G96 | 0.1- | 0.5+ |
| 2005 04 04 | G96 | 0.2- | 0.2+ | 2007 09 03 | 703 | 0.4+  | 0.9+  | 2007 10 11 | G96 | 0.1- | 0.3+ |
| 2005 04 04 | G96 | 0.4- | 0.5+ | 2007 09 03 | 703 | 0.6+  | 0.8+  | 2007 10 11 | G96 | 0.0  | 0.1+ |
| 2005 04 04 | G96 | 0.1- | 0.5+ | 2007 09 03 | 703 | 0.1+  | 0.3+  | 2007 10 11 | G96 | 0.0  | 0.2+ |
| 2007 06 12 | 291 | 0.3+ | 0.2- | 2007 09 03 | 703 | 0.4+  | 1.0-  | 2007 10 11 | G96 | 0.1- | 0.3+ |

**2007 RO<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.41309  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22606031 | $\omega$ | 136.28271 | +0.68562719   | -0.63338301 |
| <i>a</i> | 2.6688234  | $\Omega$ | 266.68579 | +0.52899933   | +0.77211449 |
| <i>e</i> | 0.0870695  | <i>i</i> | 21.06375  | +0.50007505   | +0.05162537 |
| <i>P</i> | 4.36       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 699 | 0.1- | 0.3- | 2007 09 04 | G96 | 0.1+ | 0.2- | 2007 11 04 | 703 | 0.1+ | 0.5- |
| 2003 10 22 | 699 | 0.3+ | 0.0  | 2007 09 04 | G96 | 0.1- | 0.2- | 2007 11 11 | 703 | 0.1- | 0.4- |
| 2003 10 22 | 699 | 0.3- | 0.2- | 2007 09 10 | 703 | 0.3+ | 0.3+ | 2007 11 11 | 703 | 0.3- | 0.4+ |
| 2003 10 22 | 699 | 0.1+ | 0.1- | 2007 09 10 | 703 | 0.1- | 0.3+ | 2007 11 11 | 703 | 0.1+ | 1.2+ |
| 2003 11 21 | 644 | 0.1+ | 0.5+ | 2007 09 10 | 703 | 0.6+ | 0.7- | 2007 11 11 | 703 | 1.0- | 0.6- |
| 2003 11 21 | 644 | 0.1- | 0.5+ | 2007 09 10 | 703 | 0.3- | 0.2- | 2007 11 12 | 703 | 0.6- | 0.6+ |
| 2003 11 21 | 644 | 0.3- | 0.4+ | 2007 10 13 | 703 | 1.1+ | 1.1+ | 2007 11 12 | 703 | 0.5- | 0.0  |
| 2007 06 26 | 703 | 0.4- | 0.1+ | 2007 10 13 | 703 | 0.5+ | 0.5+ | 2007 11 12 | 703 | 1.4- | 0.9- |
| 2007 06 26 | 703 | 0.4- | 0.3+ | 2007 10 13 | 703 | 0.6+ | 0.2- | 2007 11 13 | 291 | 0.5+ | 0.3- |
| 2007 06 26 | 703 | 0.8- | 0.3+ | 2007 10 13 | 703 | 0.4- | 1.5+ | 2007 11 13 | 291 | 0.3+ | 0.2- |
| 2007 06 26 | 703 | 0.8- | 0.0  | 2007 11 04 | 703 | 0.0  | 0.3- | 2007 11 13 | 291 | 0.2+ | 0.1- |
| 2007 09 04 | G96 | 0.1- | 0.2- | 2007 11 04 | 703 | 0.4- | 0.2- |            |     |      |      |
| 2007 09 04 | G96 | 0.2+ | 0.1- | 2007 11 04 | 703 | 0.1- | 0.1- |            |     |      |      |

**2007 RR<sub>24</sub> = 2002 CZ<sub>273</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.43164   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23646468 | $\omega$ | 305.76010 | +0.15378245   | +0.95368271 |
| <i>a</i> | 2.5899529  | $\Omega$ | 329.74086 | -0.65656209   | -0.09691021 |
| <i>e</i> | 0.3178529  | <i>i</i> | 30.86759  | -0.73842886   | -0.28477657 |
| <i>P</i> | 4.17       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 08 | 291 | 0.1+ | 0.1+ | 2007 08 18 | 699 | 0.3+ | 0.3- | 2007 09 11 | G96 | 0.2- | 0.7- |
| 2002 02 08 | 291 | 0.6+ | 0.2- | 2007 09 04 | 703 | 0.5+ | 0.4+ | 2007 09 11 | G96 | 0.2+ | 0.5- |
| 2002 02 08 | 291 | 0.4+ | 0.3- | 2007 09 04 | 703 | 0.3- | 0.2+ | 2007 09 11 | G96 | 0.3- | 0.7- |
| 2002 02 10 | 704 | 0.2+ | 0.1- | 2007 09 04 | 703 | 0.6+ | 1.0+ | 2007 09 11 | G96 | 0.3- | 0.7- |
| 2002 02 10 | 704 | 0.4+ | 0.2- | 2007 09 04 | 703 | 0.8+ | 0.1- | 2007 09 13 | 699 | 1.7- | 0.5- |
| 2002 02 10 | 704 | 0.7- | 1.3+ | 2007 09 04 | 703 | 0.2+ | 1.2+ | 2007 09 13 | 699 | 0.0  | 0.8+ |
| 2007 08 18 | 699 | 0.6- | 0.3+ | 2007 09 04 | 703 | 0.4+ | 0.7- | 2007 09 13 | 699 | 1.1- | 0.3+ |
| 2007 08 18 | 699 | 0.7- | 0.7- | 2007 09 04 | 703 | 0.8+ | 0.7+ | 2007 09 13 | 699 | 0.7+ | 0.3+ |
| 2007 08 18 | 699 | 0.2+ | 0.5+ | 2007 09 04 | 703 | 0.4- | 0.3- |            |     |      |      |

**2007 RV<sub>25</sub> = 2006 JK<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 113.14344  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20631040 | $\omega$ | 294.43715 | -0.64644814   | +0.76271222 |
| <i>a</i> | 2.8365382  | $\Omega$ | 295.27433 | -0.69201778   | -0.59683828 |
| <i>e</i> | 0.0058861  | <i>i</i> | 1.22687   | -0.32127278   | -0.24910667 |
| <i>P</i> | 4.78       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 26 | 691 | 0.2+ | 0.7+ | 2006 05 05 | 691 | 0.1+ | 0.4- | 2007 09 05 | G96 | 0.5+ | 0.1+ |
| 2001 04 26 | 691 | 0.2+ | 0.4+ | 2006 05 05 | 691 | 0.5- | 0.5+ | 2007 09 15 | G96 | 0.2+ | 0.3+ |
| 2001 04 26 | 691 | 0.5+ | 1.2+ | 2006 05 05 | 691 | 0.2- | 0.4- | 2007 09 15 | G96 | 0.6+ | 0.4+ |
| 2005 03 08 | G96 | 0.2+ | 0.2- | 2007 09 04 | G96 | 0.2+ | 0.4- | 2007 09 15 | G96 | 0.1- | 0.1- |
| 2005 03 08 | G96 | 0.2+ | 0.1+ | 2007 09 04 | G96 | 0.1- | 0.3- | 2007 09 15 | G96 | 0.1- | 0.4+ |
| 2005 03 08 | G96 | 0.2- | 0.3+ | 2007 09 04 | G96 | 0.1+ | 0.4+ | 2007 10 04 | G96 | 0.1+ | 0.3+ |
| 2005 03 08 | G96 | 0.2- | 0.1- | 2007 09 04 | G96 | 0.5- | 0.0  | 2007 10 04 | G96 | 0.2- | 0.3+ |
| 2006 05 01 | 691 | 0.1+ | 0.4- | 2007 09 05 | G96 | 0.1- | 0.1+ | 2007 10 04 | G96 | 0.0  | 0.2- |
| 2006 05 01 | 691 | 0.1+ | 0.3- | 2007 09 05 | G96 | 0.5- | 0.1- | 2007 10 04 | G96 | 0.4- | 0.3- |
| 2006 05 01 | 691 | 0.1- | 1.1- | 2007 09 05 | G96 | 0.1- | 0.1+ |            |     |      |      |

**2007 RF<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.34544   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27062887 | $\omega$ | 160.61720 | +0.75469868   | +0.65585428 |
| <i>a</i> | 2.3671183  | $\Omega$ | 158.37064 | -0.60781917   | +0.70864777 |
| <i>e</i> | 0.2270099  | <i>i</i> | 2.62535   | -0.24695294   | +0.26014130 |
| <i>P</i> | 3.64       | <i>H</i> | 18.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 06 | 691 | 0.6+ | 0.0  | 2003 07 04 | 691 | 0.3-  | 0.3+  | 2007 09 11 | G96 | 0.1- | 0.3- |
| 2000 10 06 | 691 | 0.1+ | 0.5+ | 2003 07 04 | 691 | 0.4-  | 0.2+  | 2007 09 11 | G96 | 0.1+ | 0.0  |
| 2000 10 06 | 691 | 0.3+ | 0.1- | 2007 08 22 | 699 | 0.4+  | 1.5+  | 2007 09 11 | G96 | 0.3+ | 0.1- |
| 2000 10 29 | 691 | 0.3- | 0.3+ | 2007 08 22 | 699 | 0.2-  | 0.6+  | 2007 09 11 | G96 | 0.4+ | 0.1- |
| 2000 10 29 | 691 | 0.3- | 0.2+ | 2007 08 22 | 699 | 0.2-  | 1.1+  | 2007 10 10 | G96 | 0.3+ | 0.6- |
| 2000 10 29 | 691 | 0.8- | 0.6+ | 2007 08 22 | 699 | (2.1+ | 0.8+) | 2007 10 10 | G96 | 0.5+ | 0.3- |
| 2003 05 23 | 691 | 0.7+ | 0.1- | 2007 09 04 | G96 | 0.3-  | 0.5-  | 2007 10 10 | G96 | 0.4- | 0.4- |
| 2003 05 23 | 691 | 0.1- | 0.2- | 2007 09 04 | G96 | 0.0   | 0.4-  | 2007 10 10 | G96 | 0.6- | 0.5- |
| 2003 05 23 | 691 | 0.2+ | 0.2+ | 2007 09 04 | G96 | 0.0   | 0.3-  |            |     |      |      |
| 2003 07 04 | 691 | 0.3- | 0.2+ | 2007 09 04 | G96 | 0.0   | 0.7-  |            |     |      |      |

**2007 RB<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 320.45965  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24324756 | $\omega$ | 16.26042 | +0.68217001   | -0.72864857 |
| <i>a</i> | 2.5415796  | $\Omega$ | 30.80595 | +0.65690360   | +0.57411681 |
| <i>e</i> | 0.2125032  | <i>i</i> | 6.83551  | +0.32112574   | +0.37344497 |
| <i>P</i> | 4.05       | <i>H</i> | 15.9     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 02 | 691 | 0.4- | 0.4+ | 2005 03 11 | 703 | 0.2+ | 0.0  | 2007 09 04 | 703 | 1.1- | 0.2- |
| 1991 10 02 | 691 | 0.3- | 0.5+ | 2005 03 11 | 703 | 0.0  | 0.4+ | 2007 09 04 | 703 | 0.3- | 0.5+ |
| 1991 10 02 | 691 | 0.2- | 0.1+ | 2006 06 01 | G96 | 0.3- | 0.3+ | 2007 09 07 | E12 | 0.3+ | 0.0  |
| 2003 07 08 | 644 | 0.0  | 0.4+ | 2006 06 01 | G96 | 0.2+ | 0.0  | 2007 09 07 | E12 | 0.2- | 0.1+ |
| 2003 07 08 | 644 | 0.1+ | 0.3+ | 2006 06 01 | G96 | 0.1+ | 0.0  | 2007 09 07 | E12 | 0.5- | 0.3+ |
| 2003 07 08 | 644 | 0.1+ | 0.1- | 2006 06 01 | G96 | 0.2+ | 0.1+ | 2007 09 07 | E12 | 0.3- | 0.7+ |
| 2003 10 03 | 608 | 0.8+ | 0.1+ | 2007 08 14 | E12 | 0.0  | 0.0  | 2007 10 02 | E12 | 0.5+ | 0.4+ |
| 2003 10 03 | 608 | 0.5+ | 0.2- | 2007 08 14 | E12 | 0.1- | 0.5- | 2007 10 02 | E12 | 0.1+ | 0.1+ |
| 2003 10 03 | 608 | 0.4+ | 0.5- | 2007 08 14 | E12 | 0.5- | 0.3- | 2007 10 02 | E12 | 0.3+ | 0.1- |
| 2005 03 11 | 703 | 0.1+ | 1.6+ | 2007 09 04 | 703 | 0.1+ | 0.1- | 2007 10 02 | E12 | 0.3+ | 0.0  |
| 2005 03 11 | 703 | 0.5+ | 0.2- | 2007 09 04 | 703 | 0.2- | 0.1- |            |     |      |      |



2007 DEC. 24

M.P.O. 129787

2007 RV<sub>34</sub> = 1996 FA<sub>25</sub> = 2006 JH<sub>13</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 7.03213    |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21299279 | $\omega$ | 177.55066 | +0.97948269 |          |          | +0.20084902 |
| <i>a</i> | 2.7768950  | $\Omega$ | 170.81257 | -0.18661424 |          |          | +0.93491059 |
| <i>e</i> | 0.0845073  | <i>i</i> | 5.94338   | -0.07608405 |          |          | +0.29257797 |
| <i>P</i> | 4.63       | <i>H</i> | 16.2      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |             |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------------|-----|------|------|------------|-----|------|------|
| 1996 03 11 | 691 | (4.6+ 2.1-) | 2003 12 21 | 691 | 0.0  | 0.1+ | 2007 09 06 | 699 | 0.4- | 0.5- |
| 1996 03 11 | 691 | 0.2-        | 2005 03 09 | G96 | 0.0  | 0.3+ | 2007 09 06 | 699 | 1.3+ | 1.0+ |
| 1996 03 11 | 691 | 0.1+        | 2005 03 09 | G96 | 0.3- | 0.0  | 2007 09 06 | 699 | 0.9+ | 0.4+ |
| 1996 03 26 | 691 | 0.0         | 2005 03 09 | G96 | 0.1+ | 0.2- | 2007 09 10 | G96 | 0.2- | 0.6- |
| 1996 03 26 | 691 | 0.4-        | 2005 03 09 | G96 | 0.1+ | 0.1- | 2007 09 10 | G96 | 0.0  | 0.5- |
| 1996 03 26 | 691 | 0.5-        | 2005 04 06 | G96 | 0.4+ | 0.2- | 2007 09 10 | G96 | 0.1+ | 0.7- |
| 1998 10 01 | 691 | 0.2+        | 2005 04 06 | G96 | 0.1+ | 0.4- | 2007 10 09 | 691 | 0.4- | 0.6+ |
| 1998 10 01 | 691 | 0.1+        | 2005 04 06 | G96 | 0.4- | 0.1- | 2007 10 09 | 691 | 0.1- | 0.1+ |
| 1998 10 01 | 691 | 0.3+        | 2005 04 06 | G96 | 0.1+ | 0.1+ | 2007 10 09 | 691 | 0.1- | 0.0  |
| 2003 11 19 | 699 | 0.4-        | 2006 05 01 | 691 | 0.3+ | 0.0  | 2007 10 09 | 691 | 0.5- | 0.0  |
| 2003 11 19 | 699 | 0.3-        | 2006 05 01 | 691 | 0.2+ | 0.2+ | 2007 10 09 | 691 | 0.3- | 0.2+ |
| 2003 11 19 | 699 | 1.0+        | 2006 05 01 | 691 | 0.3+ | 0.2+ | 2007 10 09 | 691 | 0.9- | 0.4- |
| 2003 11 19 | 699 | 0.5+        | 2006 05 05 | 691 | 0.1- | 0.3- | 2007 10 19 | G96 | 0.3+ | 0.2- |
| 2003 11 26 | 691 | 0.3-        | 2006 05 05 | 691 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 0.2+ | 0.3- |
| 2003 11 26 | 691 | 0.3-        | 2006 05 05 | 691 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 0.3- | 0.1- |
| 2003 11 26 | 691 | 0.2-        | 2007 08 23 | 104 | 0.9- | 0.8+ | 2007 10 19 | G96 | 0.2+ | 0.3- |
| 2003 12 21 | 691 | 0.2-        | 2007 08 23 | 104 | 0.0  | 0.3+ |            |     |      |      |
| 2003 12 21 | 691 | 0.1+        | 2007 09 06 | 699 | 0.5+ | 0.9- |            |     |      |      |

2007 RS<sub>38</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 30.58457   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17485675 | $\omega$ | 307.84368 | +0.68345966 |          |          | +0.72994506 |
| <i>a</i> | 3.1672411  | $\Omega$ | 5.29216   | -0.63978489 |          |          | +0.60421012 |
| <i>e</i> | 0.3079827  | <i>i</i> | 4.94065   | -0.35150843 |          |          | +0.31954708 |
| <i>P</i> | 5.64       | <i>H</i> | 15.9      | <i>G</i>    | 0.15     | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|------|
| 2001 05 25 | 644 | 0.8- | 0.5+ | 2007 09 16 | 704 | 1.0+  | 0.2-  | 2007 10 15 | 703 | 0.7-  | 0.1+ |
| 2001 05 25 | 644 | 0.2- | 0.5+ | 2007 09 16 | 704 | 0.2-  | 0.9+  | 2007 10 15 | 703 | 1.2-  | 0.0  |
| 2001 05 25 | 644 | 0.9- | 0.2+ | 2007 09 16 | 704 | 0.0   | 0.1+  | 2007 10 15 | 703 | 0.3-  | 1.2+ |
| 2001 07 29 | 644 | 0.7+ | 0.2- | 2007 09 16 | 704 | 0.0   | 0.1+  | 2007 10 15 | 703 | 0.2+  | 0.6+ |
| 2001 07 29 | 644 | 0.5+ | 0.8- | 2007 09 19 | 704 | 0.0   | 0.5-  | 2007 10 18 | 704 | (1.0+ | 2.0- |
| 2001 07 29 | 644 | 0.2+ | 0.3- | 2007 09 19 | 704 | 0.3+  | 0.6-  | 2007 10 18 | 704 | 0.5+  | 0.6+ |
| 2006 05 07 | G96 | 0.3+ | 0.0  | 2007 09 19 | 704 | 0.2+  | 0.6-  | 2007 10 18 | 704 | 0.5-  | 0.8+ |
| 2006 05 07 | G96 | 0.1+ | 0.1+ | 2007 09 19 | 704 | 0.2-  | 0.1+  | 2007 10 20 | G96 | 0.3+  | 0.4- |
| 2006 05 07 | G96 | 0.2+ | 0.4+ | 2007 09 19 | 704 | 0.3+  | 0.1-  | 2007 10 20 | G96 | 0.1+  | 0.2- |
| 2006 05 07 | G96 | 0.0  | 0.3+ | 2007 10 06 | 704 | 0.8+  | 0.5+  | 2007 10 20 | G96 | 0.1+  | 0.3- |
| 2007 09 08 | 699 | 1.0- | 0.0  | 2007 10 06 | 704 | 0.6+  | 0.4+  | 2007 10 20 | G96 | 0.2+  | 0.0  |
| 2007 09 08 | 699 | 0.5- | 0.5- | 2007 10 06 | 704 | 0.0   | 0.8+  | 2007 10 20 | 701 | 0.1-  | 0.1+ |
| 2007 09 08 | 699 | 0.0  | 0.6- | 2007 10 06 | 704 | 0.4+  | 0.3+  | 2007 10 20 | 701 | 0.8-  | 0.4+ |
| 2007 09 08 | 699 | 0.2- | 0.1+ | 2007 10 06 | 704 | 0.0   | 0.1+  | 2007 10 20 | 701 | 0.5-  | 0.1+ |
| 2007 09 11 | G96 | 0.0  | 0.4- | 2007 10 08 | 704 | (1.7- | 0.3-) | 2007 10 20 | 701 | 0.0   | 0.1- |
| 2007 09 11 | G96 | 0.2+ | 0.4- | 2007 10 08 | 704 | 0.2-  | 0.3+  | 2007 11 17 | G96 | 0.3-  | 0.2+ |
| 2007 09 11 | G96 | 0.3+ | 0.4- | 2007 10 08 | 704 | 0.7-  | 1.2+  | 2007 11 17 | G96 | 0.4-  | 0.1- |
| 2007 09 13 | 699 | 0.5- | 0.4+ | 2007 10 11 | 704 | 0.1-  | 0.2+  | 2007 11 17 | G96 | 0.5-  | 0.0  |
| 2007 09 13 | 699 | 0.7+ | 0.7- | 2007 10 11 | 704 | 0.7-  | 0.3+  | 2007 11 17 | G96 | 0.5-  | 0.1+ |
| 2007 09 13 | 699 | 0.7+ | 0.4- | 2007 10 11 | 704 | (1.6- | 0.5-) | 2007 12 05 | G96 | 0.2+  | 0.2- |
| 2007 09 13 | 699 | 0.5+ | 0.3+ | 2007 10 14 | 704 | 0.1+  | 0.6-  | 2007 12 05 | G96 | 0.1-  | 0.3- |
| 2007 09 14 | 699 | 0.2+ | 0.5+ | 2007 10 14 | 704 | 0.7+  | 1.3-  | 2007 12 05 | G96 | 0.3+  | 0.2- |
| 2007 09 14 | 699 | 0.3+ | 0.1+ | 2007 10 14 | 704 | 0.7+  | 0.3-  | 2007 12 05 | G96 | 0.1-  | 0.2- |
| 2007 09 14 | 699 | 0.2+ | 0.1+ | 2007 10 14 | 704 | 0.1-  | 0.2-  |            |     |       |      |
| 2007 09 14 | 699 | 0.5- | 0.3+ | 2007 10 14 | 704 | 0.4-  | 0.4-  |            |     |       |      |

2007 RX<sub>38</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 33.80684   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.29845007 | $\omega$ | 334.52640 | +0.81478579 |          |          | +0.57968137 |
| <i>a</i> | 2.2176257  | $\Omega$ | 350.02829 | -0.52190442 |          |          | +0.72610388 |
| <i>e</i> | 0.2136816  | <i>i</i> | 3.20324   | -0.25246760 |          |          | +0.36978732 |
| <i>P</i> | 3.30       | <i>H</i> | 18.2      | <i>G</i>    | 0.15     | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |             |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------------|------|
| 1997 09 26 | 910 | 0.4+ | 0.3- | 2007 09 13 | 704 | 0.2- | 0.4+ | 2007 10 06 | 704 | 0.0         | 0.5+ |
| 1997 09 26 | 910 | 0.6+ | 0.9- | 2007 09 13 | 704 | 0.5+ | 0.3- | 2007 10 06 | 704 | 0.5+        | 0.7+ |
| 1997 09 26 | 910 | 0.2- | 0.6- | 2007 09 13 | 703 | 0.7+ | 0.1+ | 2007 10 06 | 704 | 0.1+        | 0.3- |
| 2004 11 11 | 691 | 0.2- | 0.3+ | 2007 09 13 | 699 | 0.2- | 0.1+ | 2007 10 06 | 704 | 0.5-        | 0.3+ |
| 2004 11 11 | 691 | 0.1+ | 0.2+ | 2007 09 13 | 703 | 0.0  | 0.3- | 2007 10 07 | 699 | 0.4+        | 0.4+ |
| 2004 11 11 | 691 | 0.1+ | 0.1+ | 2007 09 13 | 703 | 0.0  | 1.1- | 2007 10 07 | 699 | (2.1+ 0.8-) |      |
| 2006 03 05 | G96 | 0.1- | 0.5+ | 2007 09 13 | 703 | 0.4+ | 0.2+ | 2007 10 07 | 699 | 0.1+        | 1.1- |
| 2006 03 05 | G96 | 0.2- | 0.0  | 2007 09 13 | 699 | 0.6+ | 0.2- | 2007 10 07 | 699 | 0.4+        | 0.4+ |
| 2006 03 05 | G96 | 0.3+ | 0.2+ | 2007 09 13 | 699 | 0.2- | 0.6- | 2007 10 09 | A77 | 0.3-        | 0.2- |
| 2006 03 05 | G96 | 0.4+ | 0.3+ | 2007 09 13 | 699 | 0.5+ | 0.6- | 2007 10 09 | A77 | 0.1-        | 0.1+ |
| 2007 09 02 | 703 | 0.1- | 0.1+ | 2007 09 14 | G96 | 0.1- | 0.4- | 2007 10 09 | A77 | 0.2+        | 0.2+ |
| 2007 09 02 | 703 | 0.7- | 0.8- | 2007 09 14 | G96 | 0.1+ | 0.5- | 2007 10 10 | A77 | 0.0         | 0.3- |
| 2007 09 02 | 703 | 0.2- | 0.5- | 2007 09 14 | G96 | 0.2+ | 0.5- | 2007 10 10 | A77 | 0.2-        | 0.8- |
| 2007 09 02 | 703 | 1.9- | 0.1+ | 2007 09 14 | G96 | 0.1- | 0.6- | 2007 10 10 | A77 | 1.2-        | 0.1- |
| 2007 09 08 | 699 | 0.2- | 0.7+ | 2007 09 16 | 704 | 0.8- | 0.1+ | 2007 10 11 | G96 | 0.3+        | 0.4- |
| 2007 09 08 | 699 | 0.6+ | 0.4+ | 2007 09 16 | 704 | 0.7- | 0.1+ | 2007 10 11 | G96 | 0.1-        | 0.4- |
| 2007 09 08 | 699 | 0.5- | 1.1+ | 2007 09 16 | 704 | 0.5- | 0.4+ | 2007 10 11 | G96 | 0.2+        | 0.1- |
| 2007 09 08 | 699 | 0.3- | 0.4- | 2007 09 16 | 704 | 0.5- | 0.7+ | 2007 10 11 | G96 | 0.1-        | 0.3- |
| 2007 09 10 | G96 | 0.4+ | 0.5- | 2007 09 16 | 704 | 0.1+ | 0.3+ | 2007 10 11 | G96 | 0.1+        | 0.5- |
| 2007 09 10 | G96 | 0.2- | 0.4- | 2007 09 19 | 704 | 0.2+ | 0.9+ | 2007 10 11 | G96 | 0.5-        | 0.7- |
| 2007 09 10 | G96 | 0.2+ | 0.4- | 2007 09 19 | 704 | 0.9- | 1.6+ | 2007 10 11 | G96 | 0.8+        | 0.3- |
| 2007 09 10 | G96 | 0.1+ | 0.4- | 2007 09 19 | 704 | 0.8- | 1.3+ | 2007 10 11 | G96 | 0.1+        | 0.5- |
| 2007 09 11 | D29 | 0.2- | 0.4- | 2007 09 21 | 704 | 0.1+ | 1.3+ | 2007 11 11 | G96 | 0.0         | 0.4- |
| 2007 09 11 | D29 | 0.1- | 0.3- | 2007 09 21 | 704 | 0.2+ | 1.0+ | 2007 11 11 | G96 | 0.3+        | 0.3- |
| 2007 09 11 | D29 | 0.1+ | 0.4- | 2007 09 21 | 704 | 0.3+ | 1.1+ | 2007 11 11 | G96 | 0.1-        | 0.4- |
| 2007 09 11 | D29 | 0.1- | 0.1- | 2007 09 21 | 704 | 0.1+ | 0.8+ | 2007 11 11 | G96 | 0.9+        | 0.5- |
| 2007 09 13 | 704 | 0.7+ | 0.8+ | 2007 09 21 | 704 | 0.6+ | 1.4+ |            |     |             |      |
| 2007 09 13 | 704 | 0.3+ | 0.6+ | 2007 10 06 | 704 | 0.1+ | 0.7+ |            |     |             |      |

2007 RL<sub>39</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 22.45924   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.22520340 | $\omega$ | 324.80384 | +0.89477854 |          |          | +0.44638340 |
| <i>a</i> | 2.6755891  | $\Omega$ | 8.70387   | -0.39185296 |          |          | +0.79645052 |
| <i>e</i> | 0.1353232  | <i>i</i> | 4.03209   | -0.21406218 |          |          | +0.40793189 |
| <i>P</i> | 4.38       | <i>H</i> | 16.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 19 | 691 | 0.0  | 0.3+ | 2007 09 08 | A50 | 0.4+ | 0.2- | 2007 10 08 | 691 | 0.1- | 0.1+ |
| 2001 03 19 | 691 | 0.2+ | 0.0  | 2007 09 10 | 691 | 0.1- | 0.1- | 2007 10 08 | 691 | 0.3+ | 0.3- |
| 2001 03 19 | 691 | 0.2+ | 0.6+ | 2007 09 10 | 691 | 0.2- | 0.1+ | 2007 10 08 | 691 | 0.2+ | 0.1- |
| 2003 10 22 | 691 | 0.0  | 0.0  | 2007 09 10 | 691 | 0.0  | 0.1+ | 2007 10 10 | 691 | 0.3+ | 0.1- |
| 2003 10 22 | 691 | 0.1- | 0.3+ | 2007 09 12 | 699 | 0.2+ | 0.2- | 2007 10 10 | 691 | 0.3+ | 0.1+ |
| 2003 10 22 | 691 | 0.1- | 0.0  | 2007 09 12 | 699 | 0.2+ | 0.4+ | 2007 10 10 | 691 | 0.1+ | 0.2- |
| 2005 02 02 | 691 | 0.1- | 0.4+ | 2007 09 12 | 699 | 0.0  | 0.5+ | 2007 10 19 | G96 | 0.3+ | 0.4- |
| 2005 02 02 | 691 | 0.6+ | 0.1+ | 2007 09 12 | 699 | 0.8+ | 0.2- | 2007 10 19 | G96 | 0.3+ | 0.3- |
| 2005 02 02 | 691 | 0.4- | 0.3- | 2007 09 14 | 691 | 0.0  | 0.6+ | 2007 10 19 | G96 | 0.3+ | 0.1- |
| 2007 08 24 | 691 | 0.1+ | 0.0  | 2007 09 14 | 691 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.9+ | 0.2- |
| 2007 08 24 | 691 | 0.1- | 0.0  | 2007 09 14 | 699 | 0.7+ | 0.1+ | 2007 11 09 | G96 | 0.1+ | 0.3- |
| 2007 08 24 | 691 | 0.1- | 0.0  | 2007 09 14 | 691 | 0.0  | 0.1- | 2007 11 09 | G96 | 0.5+ | 0.0  |
| 2007 08 24 | 691 | 0.7- | 0.7+ | 2007 09 14 | 699 | 0.2- | 0.1+ | 2007 11 09 | G96 | 0.8+ | 0.0  |
| 2007 08 24 | 691 | 0.0  | 0.0  | 2007 09 14 | 699 | 0.1- | 0.8- | 2007 11 09 | G96 | 0.7+ | 0.3- |
| 2007 08 24 | 691 | 0.1- | 0.2+ | 2007 09 14 | 699 | 0.9- | 0.5- | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2007 09 08 | A50 | 0.4- | 0.4+ | 2007 09 30 | 691 | 0.6- | 0.3+ | 2007 12 06 | G96 | 0.2+ | 0.4- |
| 2007 09 08 | A50 | 0.3+ | 0.1- | 2007 09 30 | 691 | 0.5- | 0.1+ | 2007 12 06 | G96 | 0.4+ | 0.4- |
| 2007 09 08 | A50 | 0.7+ | 0.2+ | 2007 09 30 | 691 | 0.5- | 0.0  | 2007 12 06 | G96 | 0.6+ | 0.7- |

**2007 RW<sub>39</sub> = 1999 FG<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 94.36403   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27984841 | $\omega$ 218.53466 | -0.13420058   | +0.98642807 |
| <i>a</i> | 2.3148391  | $\Omega$ 43.98607  | -0.87208539   | -0.07222697 |
| <i>e</i> | 0.0837714  | <i>i</i> 7.82927   | -0.47059247   | -0.14745485 |
| <i>P</i> | 3.52       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 04 26 | 691 | 0.5- | 0.6- | 2004 11 11 | 691 | 0.2+ | 0.2- | 2007 09 13 | G96 | 0.2+ | 0.1- |
| 1992 04 26 | 691 | 0.4- | 1.0- | 2007 09 09 | G96 | 0.1+ | 0.0  | 2007 09 13 | G96 | 0.1+ | 0.0  |
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2007 09 09 | G96 | 0.8- | 0.4- | 2007 09 13 | G96 | 0.3+ | 0.1+ |
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2007 09 10 | G96 | 0.1- | 0.1- | 2007 10 20 | G96 | 0.2+ | 0.1- |
| 1999 03 22 | 645 | 0.1+ | 0.1+ | 2007 09 10 | G96 | 0.5- | 0.2- | 2007 10 20 | G96 | 0.2+ | 0.1- |
| 1999 03 22 | 645 | 0.1+ | 0.1+ | 2007 09 10 | G96 | 0.1- | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.0  |
| 2004 11 11 | 691 | 0.0  | 0.2- | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 10 20 | G96 | 0.2+ | 0.3+ |
| 2004 11 11 | 691 | 0.1+ | 0.4- | 2007 09 13 | G96 | 0.3+ | 0.0  |            |     |      |      |

**2007 RR<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.89350    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22661614 | $\omega$ 349.26561 | +0.99460032   | +0.10252460 |
| <i>a</i> | 2.6644576  | $\Omega$ 4.93573   | -0.07583599   | +0.82385067 |
| <i>e</i> | 0.1073280  | <i>i</i> 10.77898  | -0.07084570   | +0.55745743 |
| <i>P</i> | 4.35       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 03 | 691 | 0.2+  | 0.0   | 2007 09 09 | 699 | 0.4+ | 0.5- | 2007 09 18 | 704 | 0.5+  | 0.1-  |
| 2003 10 03 | 691 | 0.1+  | 0.0   | 2007 09 09 | 699 | 0.4- | 0.4+ | 2007 10 04 | 703 | 0.3-  | 1.5+  |
| 2003 10 03 | 691 | 0.2+  | 0.2-  | 2007 09 09 | 699 | 0.2- | 0.0  | 2007 10 04 | 703 | 0.5+  | 1.2+  |
| 2003 10 22 | 644 | 0.3+  | 0.2-  | 2007 09 09 | 699 | 1.0- | 0.0  | 2007 10 04 | 703 | (0.8- | 3.1+) |
| 2003 10 22 | 644 | 0.5+  | 0.1+  | 2007 09 12 | 703 | 0.3- | 0.2+ | 2007 10 04 | 703 | (1.8+ | 4.0+) |
| 2003 10 22 | 644 | 0.7+  | 0.1+  | 2007 09 12 | 703 | 0.8+ | 0.3+ | 2007 10 12 | 699 | 1.4-  | 1.2+  |
| 2003 11 19 | 699 | 0.7-  | 0.9+  | 2007 09 12 | 703 | 0.4+ | 0.2- | 2007 10 12 | 699 | 0.3+  | 1.0-  |
| 2003 11 19 | 699 | 1.3-  | 0.5-  | 2007 09 12 | 703 | 1.0- | 0.5- | 2007 10 12 | 699 | 0.8+  | 0.4-  |
| 2003 11 19 | 699 | 0.5+  | 0.3-  | 2007 09 12 | 691 | 0.2- | 0.4- | 2007 10 12 | 699 | 0.5-  | 0.5-  |
| 2003 11 19 | 699 | 0.6-  | 0.4+  | 2007 09 12 | 691 | 0.3- | 0.4- | 2007 10 30 | G96 | 0.5+  | 0.8-  |
| 2007 09 03 | 703 | (3.0+ | 0.1+) | 2007 09 12 | 691 | 0.1- | 0.5- | 2007 10 30 | G96 | 0.9+  | 0.4-  |
| 2007 09 03 | 703 | 0.6+  | 0.5+  | 2007 09 18 | 704 | 0.3- | 0.7+ | 2007 10 30 | G96 | 0.3+  | 0.3-  |
| 2007 09 03 | 703 | 0.2-  | 0.0   | 2007 09 18 | 704 | 0.2- | 0.4- | 2007 10 30 | G96 | 0.3+  | 0.1-  |
| 2007 09 03 | 703 | 0.2+  | 0.0   | 2007 09 18 | 704 | 0.2+ | 0.3+ |            |     |       |       |

**2007 RC<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 175.43012  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27687441 | $\omega$ 293.05299 | -0.97521510   | +0.20816553 |
| <i>a</i> | 2.3313859  | $\Omega$ 259.02767 | -0.16453174   | -0.90886088 |
| <i>e</i> | 0.0596026  | <i>i</i> 4.38054   | -0.14793515   | -0.36144019 |
| <i>P</i> | 3.56       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 13 | 645 | 0.1+ | 0.1+ | 2004 12 11 | 599 | 0.4- | 0.9- | 2007 09 20 | 691 | 0.5- | 0.1+ |
| 2002 02 13 | 645 | 0.2+ | 0.1+ | 2004 12 11 | 599 | 0.3+ | 0.8- | 2007 09 20 | 691 | 0.4- | 0.1+ |
| 2002 03 05 | 645 | 0.0  | 0.2+ | 2004 12 11 | 599 | 0.4- | 0.5+ | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2002 03 05 | 645 | 0.0  | 0.1+ | 2007 09 09 | 691 | 0.2- | 0.2+ | 2007 10 20 | G96 | 0.9+ | 0.3- |
| 2002 03 12 | 645 | 0.1+ | 0.1+ | 2007 09 09 | 691 | 0.6- | 0.1+ | 2007 10 20 | G96 | 0.5+ | 0.0  |
| 2002 03 12 | 645 | 0.1+ | 0.1+ | 2007 09 09 | 691 | 0.5- | 0.2+ | 2007 10 20 | G96 | 0.5+ | 0.8+ |
| 2004 11 04 | 691 | 0.0  | 0.4+ | 2007 09 13 | 691 | 0.1- | 0.1- | 2007 10 21 | G96 | 0.0  | 0.1- |
| 2004 11 04 | 691 | 0.0  | 0.3+ | 2007 09 13 | 691 | 0.1- | 0.0  | 2007 10 21 | G96 | 0.7- | 0.1+ |
| 2004 11 04 | 691 | 0.1+ | 0.3+ | 2007 09 13 | 691 | 0.1+ | 0.1- | 2007 10 21 | G96 | 1.1+ | 0.5- |
| 2004 12 11 | 599 | 0.3+ | 0.1- | 2007 09 20 | 691 | 0.1- | 0.4+ | 2007 10 21 | G96 | 0.3- | 0.1- |

**2007 RO<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.96424   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17313284 | $\omega$ 159.60326 | +0.99245180   | +0.10160796 |
| <i>a</i> | 3.1882307  | $\Omega$ 195.06333 | -0.11093766   | +0.98251061 |
| <i>e</i> | 0.1725157  | <i>i</i> 15.32072  | +0.05227112   | +0.15604079 |
| <i>P</i> | 5.69       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 09 20 | 645 | 0.0  | 0.0  | 2007 09 13 | 691 | 0.2+ | 0.2- | 2007 10 10 | G96 | 0.3+  | 0.1-  |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2007 09 13 | 703 | 0.4- | 0.6+ | 2007 10 10 | G96 | 0.5+  | 0.1-  |
| 2005 04 09 | G96 | 0.1+ | 0.2+ | 2007 09 17 | 704 | 0.7+ | 0.9+ | 2007 10 10 | G96 | 0.1+  | 0.2-  |
| 2005 04 09 | G96 | 0.3- | 0.2- | 2007 09 17 | 704 | 0.5+ | 0.8+ | 2007 10 10 | G96 | 0.4+  | 0.1-  |
| 2005 04 09 | G96 | 0.1- | 0.1- | 2007 09 17 | 704 | 0.5+ | 0.6+ | 2007 10 10 | G96 | 0.4+  | 0.4-  |
| 2005 04 09 | G96 | 0.2+ | 0.1+ | 2007 09 20 | 691 | 0.1+ | 0.1- | 2007 10 10 | G96 | 0.6+  | 0.2-  |
| 2007 09 09 | 691 | 0.0  | 0.4- | 2007 09 20 | 691 | 0.2+ | 0.2- | 2007 10 15 | 704 | 0.8-  | 0.4+  |
| 2007 09 09 | 691 | 0.2+ | 0.5- | 2007 09 20 | 691 | 0.5- | 0.3- | 2007 10 15 | 704 | (2.2+ | 0.3-) |
| 2007 09 09 | 691 | 0.2- | 0.4- | 2007 10 07 | 703 | 0.2- | 0.2+ | 2007 10 15 | 704 | 0.9-  | 0.1+  |
| 2007 09 13 | 691 | 0.5- | 0.1+ | 2007 10 07 | 703 | 0.3+ | 0.4+ | 2007 10 15 | 704 | 0.3+  | 0.8+  |
| 2007 09 13 | 703 | 0.7- | 0.1+ | 2007 10 07 | 703 | 1.2+ | 0.1- | 2007 11 17 | G96 | 0.4+  | 0.0   |
| 2007 09 13 | 691 | 0.5- | 0.7+ | 2007 10 07 | 703 | 0.5+ | 0.8+ | 2007 11 17 | G96 | 0.2-  | 0.1+  |
| 2007 09 13 | 703 | 0.4- | 0.4+ | 2007 10 10 | G96 | 0.4+ | 0.3- | 2007 11 17 | G96 | 0.3+  | 0.2+  |
| 2007 09 13 | 703 | 0.1- | 0.3+ | 2007 10 10 | G96 | 0.1+ | 0.1- | 2007 11 17 | G96 | 0.3+  | 0.2+  |

**2007 RB<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.92935   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29860791 | $\omega$ 121.77049 | +0.98598893   | +0.15833168 |
| <i>a</i> | 2.2168442  | $\Omega$ 229.17516 | -0.16662155   | +0.91982090 |
| <i>e</i> | 0.1738472  | <i>i</i> 3.97881   | -0.00794295   | +0.35897158 |
| <i>P</i> | 3.30       | <i>H</i> 18.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 11 10 | 695 | 0.2+ | 0.5+ | 2007 09 14 | 704 | 0.4+  | 0.4+  | 2007 10 13 | 703 | 0.7+ | 0.1- |
| 2004 11 10 | 695 | 0.5+ | 0.1- | 2007 09 14 | 704 | 0.5-  | 0.1+  | 2007 10 13 | 703 | 0.5+ | 0.2+ |
| 2004 11 20 | 691 | 0.2- | 0.0  | 2007 09 14 | 704 | 0.0   | 0.5-  | 2007 10 13 | 703 | 0.7+ | 0.4+ |
| 2004 11 20 | 691 | 0.3- | 0.1+ | 2007 09 17 | A50 | (0.5- | 3.1+) | 2007 10 20 | G96 | 0.2+ | 0.1- |
| 2004 11 20 | 691 | 0.2- | 0.1+ | 2007 09 17 | A50 | 0.3+  | 1.7+  | 2007 10 20 | G96 | 0.0  | 0.2- |
| 2007 09 09 | 691 | 0.0  | 0.3- | 2007 09 17 | A50 | 0.1-  | 0.8+  | 2007 10 20 | G96 | 0.1- | 0.0  |
| 2007 09 09 | 691 | 0.2- | 0.6- | 2007 09 17 | A50 | 0.0   | 0.6-  | 2007 10 20 | G96 | 0.3- | 0.0  |
| 2007 09 09 | 691 | 0.0  | 0.0  | 2007 09 20 | 691 | 0.1-  | 0.0   | 2007 11 11 | G96 | 0.1- | 0.4- |
| 2007 09 13 | 691 | 0.1- | 0.1- | 2007 09 20 | 691 | 0.1-  | 0.0   | 2007 11 11 | G96 | 0.9- | 0.5- |
| 2007 09 13 | 691 | 0.1- | 0.0  | 2007 09 20 | 691 | 0.1+  | 0.0   | 2007 11 11 | G96 | 0.5+ | 0.4- |
| 2007 09 13 | 691 | 0.1- | 0.2- | 2007 10 13 | 703 | 0.5-  | 0.1-  | 2007 11 11 | G96 | 0.3+ | 0.2- |

**2007 RX<sub>46</sub> = 2005 EC<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.86400   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18087423 | $\omega$ 287.46978 | -0.10218803   | +0.99287955 |
| <i>a</i> | 3.0965986  | $\Omega$ 336.40623 | -0.84477463   | -0.11911193 |
| <i>e</i> | 0.1344616  | <i>i</i> 8.79809   | -0.52527463   | -0.00159472 |
| <i>P</i> | 5.45       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 01 | 691 | 0.2- | 0.4- | 2005 04 12 | 691 | 0.6+ | 0.2+ | 2007 09 13 | 691 | 0.2- | 0.1+ |
| 2003 12 01 | 691 | 0.1+ | 0.2- | 2005 04 12 | G96 | 0.2+ | 0.1+ | 2007 09 13 | 691 | 0.0  | 0.3- |
| 2003 12 01 | 691 | 0.1- | 0.1- | 2005 04 12 | G96 | 0.3+ | 0.1- | 2007 09 20 | 691 | 0.1- | 0.6+ |
| 2005 03 03 | 703 | 0.2- | 0.5- | 2005 04 12 | 691 | 0.6+ | 0.3+ | 2007 09 20 | 691 | 0.3- | 0.5+ |
| 2005 03 03 | 703 | 0.0  | 0.3+ | 2005 04 12 | G96 | 0.1+ | 0.2- | 2007 09 20 | 691 | 0.1- | 0.1+ |
| 2005 03 03 | 703 | 0.2- | 1.7+ | 2007 09 09 | 691 | 0.2- | 0.5+ | 2007 10 21 | G96 | 0.3+ | 0.0  |
| 2005 03 03 | 703 | 0.2- | 0.6+ | 2007 09 09 | 691 | 0.4- | 0.3+ | 2007 10 21 | G96 | 0.2- | 0.0  |
| 2005 04 12 | 691 | 0.6+ | 0.1+ | 2007 09 09 | 691 | 0.3- | 0.3+ | 2007 10 21 | G96 | 0.3+ | 0.3- |
| 2005 04 12 | G96 | 0.2- | 0.3- | 2007 09 13 | 691 | 0.3- | 0.3+ | 2007 10 21 | G96 | 0.4+ | 0.0  |

## 2007 DEC. 24

## M.P.O. 129789

2007 RP<sub>49</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 156.52494  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22532617 | $\omega$ | 22.93647  | -0.79528110   | +0.60566597 |
| <i>a</i> | 2.6746171  | $\Omega$ | 194.43331 | -0.57134074   | -0.76334693 |
| <i>e</i> | 0.0731164  | <i>i</i> | 6.07884   | -0.20272573   | -0.22465572 |
| <i>P</i> | 4.37       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 02 09 699 | 1.4+ | 0.6- | 2005 03 17 G96 | 0.1+ | 0.0  | 2007 09 14 G96 | 0.2+ | 0.1+ |
| 2005 02 09 699 | 0.0  | 0.9+ | 2007 09 09 G96 | 0.2+ | 0.2- | 2007 09 14 G96 | 0.1+ | 0.0  |
| 2005 02 09 699 | 0.2- | 0.4+ | 2007 09 09 G96 | 0.1+ | 0.4- | 2007 10 09 G96 | 0.1+ | 0.0  |
| 2005 02 09 699 | 1.3- | 0.2- | 2007 09 09 G96 | 0.1+ | 0.2- | 2007 10 09 G96 | 0.4+ | 0.0  |
| 2005 02 14 691 | 0.1+ | 0.3- | 2007 09 09 G96 | 0.0  | 0.1- | 2007 10 09 G96 | 0.3+ | 0.0  |
| 2005 02 14 691 | 0.2+ | 0.2- | 2007 09 13 691 | 0.3- | 0.7+ | 2007 10 09 G96 | 0.0  | 0.0  |
| 2005 02 14 691 | 0.0  | 0.3- | 2007 09 13 691 | 0.0  | 0.1+ | 2007 10 19 G96 | 0.2- | 0.1+ |
| 2005 03 17 G96 | 0.1- | 0.3+ | 2007 09 13 691 | 0.4- | 0.0  | 2007 10 19 G96 | 0.1- | 0.2+ |
| 2005 03 17 G96 | 0.2- | 0.2+ | 2007 09 14 G96 | 0.1- | 0.2- | 2007 10 19 G96 | 0.6+ | 0.2- |
| 2005 03 17 G96 | 0.1+ | 0.1- | 2007 09 14 G96 | 0.6- | 0.4+ | 2007 10 19 G96 | 0.4- | 0.3- |

2007 RE<sub>50</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 82.53438   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17931045 | $\omega$ | 44.69697  | +0.08002985   | +0.99110664 |
| <i>a</i> | 3.1145763  | $\Omega$ | 230.19224 | -0.94888821   | +0.04308233 |
| <i>e</i> | 0.1102396  | <i>i</i> | 7.95500   | -0.30529721   | +0.12590289 |
| <i>P</i> | 5.50       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 05 01 699 | 0.4- | 0.6+ | 2002 11 14 291 | 0.2+ | 0.3+ | 2007 09 13 691 | 0.2- | 0.1+ |
| 2000 05 01 699 | 0.3+ | 0.1- | 2007 09 09 691 | 0.1+ | 0.1+ | 2007 09 13 691 | 0.3- | 0.3+ |
| 2000 05 01 699 | 0.5+ | 0.1+ | 2007 09 09 691 | 0.1+ | 0.0  | 2007 09 19 691 | 0.4- | 0.1+ |
| 2000 05 01 699 | 0.3- | 0.4- | 2007 09 09 691 | 0.1- | 0.0  | 2007 09 19 691 | 0.4- | 0.5+ |
| 2001 08 17 644 | 0.1- | 0.1+ | 2007 09 12 703 | 0.2- | 0.8- | 2007 09 19 691 | 0.1+ | 0.5- |
| 2001 08 17 644 | 0.1+ | 0.3+ | 2007 09 12 703 | 0.3- | 0.4- | 2007 10 12 704 | 0.2+ | 0.2+ |
| 2001 08 17 644 | 0.1- | 0.2+ | 2007 09 12 703 | 0.5+ | 0.3- | 2007 10 12 704 | 0.0  | 0.6- |
| 2002 11 14 291 | 0.1- | 0.5+ | 2007 09 12 703 | 0.8+ | 0.2+ | 2007 10 12 704 | 0.0  | 0.3+ |
| 2002 11 14 291 | 0.3- | 0.3+ | 2007 09 13 691 | 0.1- | 0.2+ | 2007 10 12 704 | 0.7+ | 0.3- |

2007 RH<sub>52</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.83472    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23780608 | $\omega$ | 154.42250 | +0.99276138   | -0.09346538 |
| <i>a</i> | 2.5802042  | $\Omega$ | 211.22690 | +0.06893654   | +0.95769701 |
| <i>e</i> | 0.1744988  | <i>i</i> | 8.36563   | +0.09834940   | +0.27217762 |
| <i>P</i> | 4.14       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 1999 11 02 691 | 0.3+ | 0.1- | 2007 09 14 704 | 0.2+  | 0.2+  | 2007 10 12 704 | 0.1+  | 0.5+  |
| 1999 11 02 691 | 0.4- | 0.3+ | 2007 09 14 704 | 0.4+  | 0.0   | 2007 10 12 704 | 0.0   | 0.2-  |
| 1999 11 02 691 | 0.0  | 0.8+ | 2007 09 14 704 | 0.1-  | 0.3-  | 2007 10 13 703 | 1.4-  | 0.2+  |
| 1999 11 02 691 | 0.0  | 0.2+ | 2007 09 14 704 | 0.3+  | 0.2+  | 2007 10 13 703 | 0.2-  | 0.0   |
| 1999 11 02 691 | 0.2- | 0.1- | 2007 09 22 704 | (1.8+ | 1.1+) | 2007 10 13 703 | 0.2-  | 0.9-  |
| 1999 11 02 691 | 0.0  | 0.1- | 2007 09 22 704 | 0.1-  | 0.5+  | 2007 10 13 703 | 0.8+  | 0.5+  |
| 2003 10 02 691 | 0.1+ | 0.3- | 2007 09 22 704 | 0.4-  | 0.3+  | 2007 10 15 704 | 1.0+  | 0.5+  |
| 2003 10 02 691 | 0.2+ | 0.1- | 2007 09 22 704 | 0.7+  | 1.1+  | 2007 10 15 704 | 0.7+  | 1.5-  |
| 2003 10 02 691 | 0.1+ | 0.2- | 2007 09 22 704 | (1.3+ | 1.7+) | 2007 10 15 704 | (0.6+ | 1.6+) |
| 2006 05 02 G96 | 0.3+ | 0.5+ | 2007 09 30 291 | 0.3-  | 0.1+  | 2007 10 15 704 | 0.8+  | 1.1+  |
| 2006 05 02 G96 | 0.3- | 0.3+ | 2007 09 30 291 | 0.2-  | 0.1-  | 2007 10 17 699 | 0.5-  | 0.2+  |
| 2006 05 02 G96 | 0.2+ | 1.1+ | 2007 09 30 291 | 0.2-  | 0.2+  | 2007 10 17 699 | 0.9+  | 1.4-  |
| 2006 05 02 G96 | 0.1+ | 0.2- | 2007 10 09 704 | 0.0   | 0.2-  | 2007 10 17 699 | 0.4+  | 0.4+  |
| 2007 09 09 691 | 0.0  | 0.1- | 2007 10 09 704 | 0.2+  | 0.1+  | 2007 10 17 699 | 0.2+  | 1.1-  |
| 2007 09 09 691 | 0.5- | 0.1- | 2007 10 09 704 | 1.4+  | 0.1-  | 2007 11 07 G96 | 0.0   | 0.1+  |
| 2007 09 09 691 | 0.1+ | 0.1+ | 2007 10 09 704 | 0.4-  | 0.3-  | 2007 11 07 G96 | 0.4-  | 0.1-  |
| 2007 09 12 703 | 1.1- | 0.6- | 2007 10 09 704 | 0.6+  | 0.3+  | 2007 11 07 G96 | 0.1+  | 0.1-  |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2007 09 12 703 | 0.0  | 0.1- | 2007 10 11 704 | 0.0  | 0.3+ | 2007 12 04 G96 | 0.5+ | 1.0- |
| 2007 09 12 703 | 0.1+ | 0.7+ | 2007 10 11 704 | 0.3+ | 0.7+ | 2007 12 04 G96 | 0.6- | 0.2- |
| 2007 09 12 703 | 0.2+ | 0.1- | 2007 10 11 704 | 0.1+ | 0.4+ | 2007 12 04 G96 | 0.6- | 0.0  |
| 2007 09 13 691 | 0.1- | 0.1+ | 2007 10 12 704 | 0.2+ | 0.1- | 2007 12 04 G96 | 0.5- | 0.4- |
| 2007 09 13 691 | 0.3- | 0.0  | 2007 10 12 704 | 0.6+ | 0.5+ |                |      |      |
| 2007 09 13 691 | 0.1- | 0.2- | 2007 10 12 704 | 0.8+ | 0.5- |                |      |      |

2007 RK<sub>58</sub> = 1982 UO<sub>4</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.85527   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23798613 | $\omega$ | 345.95849 | +0.94829094   | -0.31058653 |
| <i>a</i> | 2.5789027  | $\Omega$ | 32.37087  | +0.30173110   | +0.81814459 |
| <i>e</i> | 0.2857698  | <i>i</i> | 7.01891   | +0.09850190   | +0.48391677 |
| <i>P</i> | 4.14       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 1982 10 20 033 | 0.1+ | 0.1- | 2007 10 14 G96 | 0.5-  | 0.3-  | 2007 11 07 704 | 0.5+ | 0.3+ |
| 2007 09 09 G96 | 0.5- | 0.3- | 2007 10 23 704 | 0.3-  | 0.1+  | 2007 11 07 704 | 0.4+ | 0.8+ |
| 2007 09 09 G96 | 0.2- | 0.4- | 2007 10 23 704 | 0.5-  | 0.4+  | 2007 11 07 704 | 0.2- | 0.7+ |
| 2007 09 09 G96 | 0.1+ | 0.1- | 2007 10 23 704 | 0.5+  | 0.5-  | 2007 11 07 704 | 0.1+ | 0.4- |
| 2007 09 09 G96 | 0.1+ | 0.3- | 2007 10 23 704 | 0.3+  | 0.4-  | 2007 11 13 703 | 0.6- | 0.4- |
| 2007 09 10 G96 | 0.3- | 0.4- | 2007 10 23 704 | 0.5+  | 0.6+  | 2007 11 13 703 | 0.6- | 0.0  |
| 2007 09 10 G96 | 0.5- | 0.2- | 2007 11 01 704 | (0.8+ | 2.0-) | 2007 11 13 703 | 0.6- | 0.3- |
| 2007 09 10 G96 | 0.1- | 0.2- | 2007 11 01 704 | 0.2-  | 0.0   | 2007 11 13 703 | 0.5- | 0.1- |
| 2007 09 10 G96 | 0.4+ | 0.2- | 2007 11 01 704 | 0.8+  | 0.5-  | 2007 11 17 G96 | 0.0  | 0.3- |
| 2007 09 13 704 | 0.1- | 0.3- | 2007 11 02 691 | 0.2-  | 0.1-  | 2007 11 17 G96 | 0.0  | 0.3- |
| 2007 09 13 704 | 0.2- | 0.7+ | 2007 11 02 691 | 0.2-  | 0.2-  | 2007 11 17 G96 | 0.5+ | 0.2- |
| 2007 09 13 704 | 0.1+ | 1.1+ | 2007 11 02 691 | 0.0   | 0.3-  | 2007 11 17 G96 | 0.1+ | 0.3- |
| 2007 09 19 704 | 0.5- | 0.7+ | 2007 11 02 703 | 0.4+  | 0.2-  | 2007 11 18 704 | 0.2+ | 0.0  |
| 2007 09 19 704 | 0.2+ | 0.9+ | 2007 11 02 703 | 1.1+  | 0.1+  | 2007 11 18 704 | 0.3- | 0.2+ |
| 2007 09 19 704 | 0.1- | 0.4- | 2007 11 02 703 | 0.2-  | 0.7-  | 2007 11 18 704 | 0.3- | 0.3- |
| 2007 09 19 704 | 0.3+ | 0.1- | 2007 11 02 703 | 1.0-  | 0.0   | 2007 11 18 704 | 0.4- | 0.3+ |
| 2007 10 08 704 | 1.3+ | 0.4+ | 2007 11 05 D29 | 0.2-  | 0.5-  | 2007 11 18 704 | 0.2+ | 0.2+ |
| 2007 10 08 704 | 0.8+ | 0.1- | 2007 11 05 D29 | 0.5+  | 0.3-  | 2007 11 20 G96 | 0.4+ | 0.3- |
| 2007 10 08 704 | 1.1- | 1.2+ | 2007 11 05 D29 | 0.3+  | 0.7-  | 2007 11 20 G96 | 0.2+ | 0.3- |
| 2007 10 14 704 | 0.5+ | 1.4+ | 2007 11 05 D29 | 0.6+  | 0.3-  | 2007 11 20 G96 | 0.4+ | 0.4- |
| 2007 10 14 704 | 0.3- | 0.2+ | 2007 11 06 704 | 0.5+  | 0.8+  | 2007 11 20 G96 | 0.2+ | 0.4- |
| 2007 10 14 704 | 0.5+ | 0.0  | 2007 11 06 704 | 0.1+  | 0.1+  | 2007 12 16 704 | 0.5- | 0.8+ |
| 2007 10 14 G96 | 0.0  | 0.4- | 2007 11 06 704 | 0.7-  | 0.2-  | 2007 12 16 704 | 0.5- | 0.1+ |
| 2007 10 14 704 | 0.3+ | 0.7+ | 2007 11 06 704 | 0.0   | 1.4+  | 2007 12 16 704 | 0.4- | 0.6+ |
| 2007 10 14 G96 | 0.5- | 0.4- | 2007 11 07 704 | 0.3+  | 0.8+  | 2007 12 16 704 | 0.1+ | 0.6+ |

2007 RJ<sub>60</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.07440   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.31606480 | $\omega$ | 19.57935  | +0.43091316   | +0.89953663 |
| <i>a</i> | 2.1344466  | $\Omega$ | 276.00132 | -0.83724921   | +0.36887888 |
| <i>e</i> | 0.1910017  | <i>i</i> | 4.13707   | -0.33664165   | +0.23401329 |
| <i>P</i> | 3.12       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 02 12 645 | 0.0  | 0.0  | 2007 09 10 703 | 0.4- | 0.4+ | 2007 09 14 699 | 0.4+ | 1.0+ |
| 2000 02 12 645 | 0.0  | 0.0  | 2007 09 10 703 | 0.3- | 0.7+ | 2007 09 14 699 | 0.3+ | 0.2+ |
| 2004 10 06 644 | 0.1- | 0.3+ | 2007 09 10 703 | 0.2+ | 0.0  | 2007 10 12 G96 | 0.4- | 0.4- |
| 2004 10 06 644 | 0.0  | 0.0  | 2007 09 10 703 | 0.4- | 1.0+ | 2007 10 12 G96 | 0.1- | 0.4- |
| 2004 10 06 644 | 0.1- | 0.2+ | 2007 09 12 699 | 0.7+ | 0.7+ | 2007 10 12 G96 | 0.1- | 0.1- |
| 2007 08 17 D29 | 0.1- | 0.1- | 2007 09 12 699 | 0.7+ | 0.4+ | 2007 10 12 G96 | 0.0  | 0.2- |
| 2007 08 17 D29 | 0.2- | 0.0  | 2007 09 12 699 | 0.8+ | 0.5- | 2007 11 07 291 | 0.1- | 0.2- |
| 2007 08 17 D29 | 1.1- | 0.2- | 2007 09 12 699 | 0.9- | 0.7- | 2007 11 07 291 | 0.1- | 0.1- |
| 2007 08 17 D29 | 0.4+ | 0.7- | 2007 09 14 699 | 0.4+ | 0.1+ | 2007 11 07 291 | 0.0  | 0.1- |

**2007 RQ<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.77648  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17861530 | $\omega$ 21.99493  | +0.99369249   | -0.10080399 |
| <i>a</i> | 3.1226521  | $\Omega$ 343.56111 | +0.05796138   | +0.83674960 |
| <i>e</i> | 0.1031798  | <i>i</i> 9.99777   | +0.09599848   | +0.53822734 |
| <i>P</i> | 5.52       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 08 | 691 | 0.3- | 0.4+ | 2007 08 16 | D29 | 0.1- | 0.3+ | 2007 09 11 | G96 | 0.3+ | 0.1+ |
| 1996 09 08 | 691 | 0.1- | 0.2+ | 2007 08 16 | D29 | 0.0  | 0.1+ | 2007 09 19 | 691 | 0.0  | 0.1+ |
| 1996 09 08 | 691 | 0.3- | 0.4+ | 2007 09 03 | 703 | 0.1- | 0.9+ | 2007 09 19 | 691 | 0.1- | 0.4+ |
| 2002 11 01 | 644 | 0.3- | 0.1+ | 2007 09 03 | 703 | 0.6- | 0.6+ | 2007 09 19 | 691 | 0.2- | 0.3+ |
| 2002 11 01 | 644 | 0.1- | 0.2+ | 2007 09 03 | 703 | 0.9- | 1.1- | 2007 10 08 | G96 | 0.6+ | 0.2- |
| 2002 11 01 | 644 | 0.0  | 0.4+ | 2007 09 03 | 703 | 0.3+ | 0.6- | 2007 10 08 | G96 | 0.4+ | 0.1- |
| 2002 11 14 | 644 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.0  | 0.2- | 2007 10 08 | G96 | 0.3+ | 0.4- |
| 2002 11 14 | 644 | 0.0  | 0.2- | 2007 09 10 | G96 | 0.1- | 0.2- | 2007 10 08 | G96 | 0.2+ | 0.3- |
| 2002 11 14 | 644 | 0.0  | 0.0  | 2007 09 10 | G96 | 0.1- | 0.4- | 2007 10 12 | G96 | 0.3+ | 0.1+ |
| 2003 12 21 | 645 | 0.1- | 0.3- | 2007 09 10 | G96 | 0.3+ | 0.1- | 2007 10 12 | G96 | 0.5+ | 0.1- |
| 2003 12 21 | 645 | 0.1- | 0.3- | 2007 09 11 | G96 | 0.1- | 0.0  | 2007 10 12 | G96 | 0.7+ | 0.1- |
| 2007 08 16 | D29 | 0.1+ | 0.3- | 2007 09 11 | G96 | 0.2- | 0.0  | 2007 10 12 | G96 | 0.2+ | 0.3- |
| 2007 08 16 | D29 | 0.0  | 0.5- | 2007 09 11 | G96 | 0.2- | 0.2+ |            |     |      |      |

**2007 RB<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 242.55570  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20678453 | $\omega$ 149.06831 | -0.36628314   | -0.93042081 |
| <i>a</i> | 2.8322007  | $\Omega$ 322.41427 | +0.84950957   | -0.32893304 |
| <i>e</i> | 0.0193425  | <i>i</i> 1.16492   | +0.37969745   | -0.16161734 |
| <i>P</i> | 4.77       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 13 | 691 | 0.1+ | 0.3- | 2003 11 15 | 691 | 0.1- | 0.1+ | 2007 08 23 | 691 | 0.5- | 0.4+ |
| 1998 10 13 | 691 | 0.4+ | 0.4- | 2003 12 16 | 291 | 0.2- | 0.4+ | 2007 09 10 | G96 | 0.4+ | 0.2- |
| 1998 10 13 | 691 | 0.0  | 0.7- | 2003 12 16 | 291 | 0.1- | 0.4+ | 2007 09 10 | G96 | 0.3+ | 0.1- |
| 2000 01 11 | 691 | 0.1+ | 0.0  | 2003 12 16 | 291 | 0.5- | 0.2+ | 2007 09 10 | G96 | 0.5+ | 0.2- |
| 2000 01 11 | 691 | 0.1- | 0.3- | 2005 02 09 | G96 | 0.2+ | 0.0  | 2007 09 10 | G96 | 0.4+ | 0.0  |
| 2000 01 11 | 691 | 0.0  | 0.2+ | 2005 02 09 | G96 | 0.2+ | 0.2+ | 2007 09 10 | G96 | 0.2+ | 0.1- |
| 2001 04 27 | 691 | 0.3- | 0.3+ | 2005 02 09 | G96 | 0.3+ | 0.1- | 2007 09 10 | G96 | 0.0  | 0.1- |
| 2001 04 27 | 691 | 0.1+ | 0.1- | 2005 02 09 | G96 | 0.1+ | 0.3+ | 2007 09 10 | G96 | 0.1+ | 0.2- |
| 2001 04 27 | 691 | 0.1- | 0.2+ | 2005 04 02 | G96 | 0.2- | 0.2- | 2007 09 11 | 691 | 0.1- | 0.0  |
| 2002 08 08 | 644 | 0.2- | 1.1+ | 2005 04 02 | G96 | 0.4- | 0.3- | 2007 09 11 | 691 | 0.6- | 0.4- |
| 2002 08 08 | 644 | 0.2- | 0.8+ | 2005 04 02 | G96 | 0.3- | 0.3- | 2007 09 11 | 691 | 0.1+ | 0.2+ |
| 2002 08 08 | 644 | 0.1+ | 0.6+ | 2005 04 02 | G96 | 0.2+ | 0.1- | 2007 10 08 | G96 | 0.4- | 0.4- |
| 2003 10 18 | 691 | 0.0  | 0.1+ | 2007 08 10 | 691 | 0.2- | 0.2- | 2007 10 08 | G96 | 0.8+ | 0.2- |
| 2003 10 18 | 691 | 0.2- | 0.1+ | 2007 08 10 | 691 | 0.0  | 0.1- | 2007 10 08 | G96 | 0.0  | 0.5- |
| 2003 10 18 | 691 | 0.2+ | 0.2+ | 2007 08 10 | 691 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.1+ | 0.1- |
| 2003 11 15 | 691 | 0.1- | 0.3+ | 2007 08 23 | 691 | 0.4- | 0.1- |            |     |      |      |
| 2003 11 15 | 691 | 0.0  | 0.7+ | 2007 08 23 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2007 RL<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 38.70079   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17935225 | $\omega$ 139.95664 | +0.58946114   | +0.80698273 |
| <i>a</i> | 3.1140924  | $\Omega$ 166.03724 | -0.77426569   | +0.57722050 |
| <i>e</i> | 0.1019673  | <i>i</i> 8.64169   | -0.23032195   | +0.12488143 |
| <i>P</i> | 5.50       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 05 31 | 691 | 1.1+  | 1.0-  | 2006 05 02 | G96 | 0.3- | 0.1+ | 2007 09 11 | 691 | 0.1- | 0.2+ |
| 1995 05 31 | 691 | (2.0+ | 1.1-) | 2006 05 02 | G96 | 0.0  | 0.1+ | 2007 09 11 | 691 | 0.0  | 0.2+ |
| 1995 05 31 | 691 | 1.4+  | 0.9-  | 2006 05 02 | G96 | 0.1+ | 0.1+ | 2007 09 19 | 691 | 0.5- | 0.5+ |
| 1995 06 22 | 691 | 0.2-  | 0.4+  | 2006 05 02 | G96 | 0.1- | 0.2+ | 2007 09 19 | 691 | 0.1- | 0.2+ |
| 1995 06 22 | 691 | 0.6-  | 0.2+  | 2006 05 23 | 691 | 0.4+ | 0.4+ | 2007 09 19 | 691 | 0.2- | 0.3+ |
| 1995 06 22 | 691 | 0.7-  | 0.1+  | 2006 05 23 | 691 | 0.2+ | 0.5+ | 2007 10 08 | G96 | 0.2- | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 07 04 | 691 | 0.5- | 0.1+ | 2006 05 23 | 691 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.1- | 1.0- |
| 1995 07 04 | 691 | 0.6- | 0.2- | 2007 08 10 | 691 | 0.2- | 0.3+ | 2007 10 08 | G96 | 0.0  | 1.4- |
| 1995 07 04 | 691 | 0.3- | 0.5- | 2007 08 10 | 691 | 0.6- | 0.2+ | 2007 10 08 | G96 | 1.1+ | 0.7- |
| 2000 05 04 | 645 | 0.1- | 0.1- | 2007 08 10 | 691 | 0.0  | 0.4+ | 2007 10 19 | G96 | 0.1+ | 0.1- |
| 2000 05 04 | 645 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.4+ | 0.2- |
| 2005 03 08 | G96 | 0.7+ | 0.3- | 2007 09 10 | G96 | 0.1- | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.3+ |
| 2005 03 08 | G96 | 0.1+ | 0.3- | 2007 09 10 | G96 | 0.3+ | 0.1- | 2007 10 19 | G96 | 0.1+ | 0.1- |
| 2005 03 08 | G96 | 0.4- | 0.2+ | 2007 09 10 | G96 | 0.1+ | 0.0  |            |     |      |      |
| 2005 03 08 | G96 | 0.4- | 0.1+ | 2007 09 11 | 691 | 0.1- | 0.5+ |            |     |      |      |

**2007 RP<sub>65</sub> = 2006 EY<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.29140   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25389847 | $\omega$ 307.93526 | +0.30444999   | +0.95252180 |
| <i>a</i> | 2.4699946  | $\Omega$ 339.78897 | -0.87069530   | +0.27679163 |
| <i>e</i> | 0.1762100  | <i>i</i> 0.58463   | -0.38626403   | +0.12684090 |
| <i>P</i> | 3.88       | <i>H</i> 18.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 02 | 691 | 0.4- | 0.0  | 2007 08 10 | 691 | 0.0  | 0.7- | 2007 09 11 | G96 | 0.4+ | 0.2- |
| 2006 03 02 | 691 | 0.3- | 0.6+ | 2007 09 10 | G96 | 0.3+ | 0.1- | 2007 09 19 | 691 | 0.1- | 0.4+ |
| 2006 03 02 | 691 | 0.5+ | 0.5+ | 2007 09 10 | G96 | 0.1- | 0.5- | 2007 09 19 | 691 | 0.2- | 0.5+ |
| 2006 03 05 | G96 | 0.3+ | 0.1- | 2007 09 10 | G96 | 0.1+ | 0.4- | 2007 09 19 | 691 | 0.2- | 0.3+ |
| 2006 03 05 | G96 | 0.1+ | 0.3- | 2007 09 11 | 691 | 0.3- | 0.1+ | 2007 10 08 | G96 | 0.1+ | 0.1- |
| 2006 03 05 | G96 | 0.4+ | 0.2- | 2007 09 11 | 691 | 0.4- | 0.6+ | 2007 10 08 | G96 | 0.4+ | 0.1+ |
| 2006 03 05 | G96 | 0.2- | 0.5+ | 2007 09 11 | 691 | 0.4- | 0.3+ | 2007 10 08 | G96 | 0.1- | 0.0  |
| 2007 08 10 | 691 | 0.3- | 0.2+ | 2007 09 11 | G96 | 0.3- | 0.0  | 2007 10 08 | G96 | 0.1- | 0.0  |
| 2007 08 10 | 691 | 0.7+ | 0.6+ | 2007 09 11 | G96 | 0.2+ | 0.2- |            |     |      |      |

**2007 RO<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 327.78211  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18313511 | $\omega$ 228.30378 | +0.81547624   | -0.57849469 |
| <i>a</i> | 3.0710600  | $\Omega$ 167.00534 | +0.55247039   | +0.76846393 |
| <i>e</i> | 0.1421441  | <i>i</i> 4.72022   | +0.17255424   | +0.27350883 |
| <i>P</i> | 5.38       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 02 | 691 | 0.4+ | 0.6- | 2005 04 11 | G96 | 0.1+ | 0.1- | 2007 09 10 | G96 | 0.0  | 0.5- |
| 1991 10 02 | 691 | 0.0  | 0.7- | 2005 04 11 | G96 | 0.3- | 0.2+ | 2007 09 10 | G96 | 0.2+ | 0.4- |
| 1991 10 02 | 691 | 0.0  | 0.2- | 2007 08 10 | 691 | 0.4- | 0.0  | 2007 09 10 | G96 | 0.3+ | 0.4- |
| 2000 04 10 | 695 | 0.0  | 0.3+ | 2007 08 10 | 691 | 0.4- | 0.4- | 2007 09 11 | 691 | 0.1+ | 0.8+ |
| 2000 04 10 | 695 | 0.2+ | 0.1+ | 2007 08 10 | 691 | 0.4- | 0.4- | 2007 09 11 | 691 | 0.6- | 0.2+ |
| 2002 10 10 | 644 | 0.4- | 0.5+ | 2007 09 03 | 703 | 1.4+ | 1.7+ | 2007 09 11 | 691 | 0.4- | 0.2+ |
| 2002 10 10 | 644 | 0.1+ | 0.6+ | 2007 09 03 | 703 | 0.3- | 0.3+ | 2007 10 08 | G96 | 0.2- | 0.6- |
| 2002 10 10 | 644 | 0.1- | 0.5+ | 2007 09 03 | 703 | 1.7+ | 1.6+ | 2007 10 08 | G96 | 0.0  | 0.8- |
| 2005 04 11 | G96 | 0.1- | 0.1- | 2007 09 03 | 703 | 1.1- | 0.7+ | 2007 10 08 | G96 | 0.2- | 1.0- |
| 2005 04 11 | G96 | 0.1+ | 0.0  | 2007 09 10 | G96 | 0.0  | 0.6- | 2007 10 08 | G96 | 0.0  | 0.2- |

**2007 RQ<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.18055  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23879381 | $\omega$ 196.40994 | +0.99551469   | -0.09312480 |
| <i>a</i> | 2.5730842  | $\Omega$ 168.89352 | +0.09357947   | +0.94335377 |
| <i>e</i> | 0.2736326  | <i>i</i> 4.96795   | +0.01390655   | +0.31845163 |
| <i>P</i> | 4.13       | <i>H</i> 18.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 699 | 0.1+ | 0.7+ | 2007 09 10 | G96 | 0.3+ | 0.4- | 2007 09 15 | 699 | 0.9+ | 0.6+ |
| 2003 09 19 | 699 | 0.8+ | 0.1+ | 2007 09 10 | G96 | 0.5+ | 0.4- | 2007 09 19 | 691 | 0.2- | 0.1+ |
| 2003 09 19 | 699 | 0.7- | 0.2+ | 2007 09 10 | G96 | 0.3+ | 0.5- | 2007 09 19 | 691 | 0.2- | 0.0  |
| 2003 09 19 | 699 | 0.1- | 1.2+ | 2007 09 10 | G96 | 0.5+ | 0.2- | 2007 09 19 | 691 | 0.0  | 0.0  |
| 2003 10 15 | 644 | 0.1- | 0.4- | 2007 09 11 | 691 | 0.3- | 0.2- | 2007 10 19 | G96 | 0.4- | 0.3- |
| 2003 10 15 | 644 | 0.1- | 0.2- | 2007 09 11 | 691 | 0.7- | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.2- |
| 2003 10 15 | 644 | 0.3- | 0.3- | 2007 09 11 | 691 | 0.2- | 0.0  | 2007 10 19 | G96 | 0.0  | 0.5- |

## 2007 DEC. 24

M.P.O. 129791

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2007 08 24 | 691 | 0.1− | 0.3+ | 2007 09 15 | 699 | 0.6−  | 0.8+  | 2007 10 19 | G96 | 0.2+ | 0.4− |
| 2007 08 24 | 691 | 0.1− | 0.2+ | 2007 09 15 | 699 | (2.5+ | 0.4+) |            |     |      |      |
| 2007 08 24 | 691 | 0.0  | 0.3+ | 2007 09 15 | 699 | 0.1+  | 0.8−  |            |     |      |      |

2007 RH<sub>67</sub> = 1994 RE<sub>14</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 0.98572    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.22483198 | $\omega$ | 158.76336 | +0.99464182 |      | +0.10313872 |   |  |  |  |  |
| <i>a</i>                                | 2.6785350  | $\Omega$ | 195.32178 | −0.09828967 |      | +0.92222864 |   |  |  |  |  |
| <i>e</i>                                | 0.1016353  | <i>i</i> | 1.53421   | −0.03204352 |      | +0.37263486 |   |  |  |  |  |
| <i>P</i>                                | 4.38       | <i>H</i> | 17.7      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 12 | 691 | 0.2− | 0.1− | 2003 10 25 | 291 | 0.7+ | 0.3− | 2007 09 10 | G96 | 0.1− | 0.1− |
| 1994 09 12 | 691 | 0.4+ | 0.2+ | 2003 10 25 | 291 | 0.2− | 0.1− | 2007 09 10 | G96 | 0.2+ | 0.2+ |
| 1994 09 12 | 691 | 0.4+ | 0.1+ | 2003 10 25 | 291 | 0.1+ | 0.2− | 2007 09 10 | G96 | 0.1− | 0.1− |
| 1994 09 30 | 691 | 0.5+ | 0.1− | 2003 11 16 | 291 | 0.2− | 0.6+ | 2007 09 10 | G96 | 0.3+ | 0.1− |
| 1994 09 30 | 691 | 0.1− | 0.3+ | 2003 11 16 | 291 | 0.0  | 0.9+ | 2007 09 10 | G96 | 0.1+ | 0.1− |
| 1994 09 30 | 691 | 1.2− | 0.1+ | 2003 11 16 | 291 | 0.3+ | 0.6+ | 2007 09 11 | 691 | 0.1− | 0.1− |
| 2003 09 28 | 691 | 0.6− | 0.4− | 2007 08 10 | 691 | 0.2− | 0.7+ | 2007 09 11 | 691 | 0.0  | 0.2+ |
| 2003 09 28 | 691 | 0.0  | 0.2− | 2007 08 10 | 691 | 0.3− | 0.2+ | 2007 09 11 | 691 | 0.0  | 0.0  |
| 2003 09 28 | 691 | 0.1− | 0.2− | 2007 08 10 | 691 | 0.4− | 0.3+ | 2007 10 08 | G96 | 0.2+ | 0.4− |
| 2003 10 19 | 691 | 0.0  | 0.2− | 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.4− |
| 2003 10 19 | 691 | 0.1− | 0.2− | 2007 09 10 | G96 | 0.4− | 0.2− | 2007 10 08 | G96 | 0.4− | 0.2− |
| 2003 10 19 | 691 | 0.2− | 0.3− | 2007 09 10 | G96 | 0.4+ | 0.1+ | 2007 10 08 | G96 | 0.6+ | 0.3− |

2007 RX<sub>68</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 23.27089   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.26634212 | $\omega$ | 330.06604 | +0.92707690 |      | +0.37450105 |   |  |  |  |  |
| <i>a</i>                                | 2.3924497  | $\Omega$ | 7.99407   | −0.31576894 |      | +0.80408670 |   |  |  |  |  |
| <i>e</i>                                | 0.1303162  | <i>i</i> | 6.87802   | −0.20203562 |      | +0.46172885 |   |  |  |  |  |
| <i>P</i>                                | 3.70       | <i>H</i> | 16.6      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 09 | 691 | 0.4+  | 0.7+  | 2007 09 15 | 704 | 0.4+ | 0.3− | 2007 10 15 | 703 | 0.6+ | 0.0  |
| 2002 03 09 | 691 | 0.4+  | 0.3+  | 2007 09 18 | 704 | 0.4− | 0.3+ | 2007 10 15 | 703 | 0.6− | 0.5+ |
| 2002 03 09 | 691 | 0.1+  | 0.6+  | 2007 09 18 | 704 | 0.3− | 0.3+ | 2007 10 15 | 703 | 0.7− | 0.2− |
| 2005 02 04 | G96 | 0.1+  | 0.0   | 2007 09 18 | 704 | 0.3+ | 0.6+ | 2007 10 30 | G96 | 0.2+ | 0.3+ |
| 2005 02 04 | G96 | 0.9+  | 0.2+  | 2007 09 18 | 704 | 0.2− | 0.1− | 2007 10 30 | G96 | 0.0  | 0.3+ |
| 2005 02 04 | G96 | 0.3−  | 0.3−  | 2007 09 18 | 704 | 0.1− | 0.2+ | 2007 10 30 | G96 | 0.3− | 0.0  |
| 2005 02 04 | G96 | 0.6−  | 0.1+  | 2007 10 06 | 704 | 0.7− | 0.9− | 2007 10 30 | G96 | 0.2− | 0.2+ |
| 2006 02 25 | G96 | 0.3+  | 0.5+  | 2007 10 06 | 704 | 1.4− | 0.1− | 2007 11 09 | G96 | 0.3− | 1.0+ |
| 2006 02 25 | G96 | 0.3+  | 0.5+  | 2007 10 06 | 704 | 1.3− | 0.8− | 2007 11 09 | G96 | 0.8+ | 0.2+ |
| 2006 02 25 | G96 | 0.4+  | 0.5+  | 2007 10 06 | 704 | 1.2− | 0.1+ | 2007 11 09 | G96 | 0.4− | 0.4+ |
| 2006 02 25 | G96 | 0.2−  | 0.0   | 2007 10 06 | 704 | 0.4− | 0.2+ | 2007 11 09 | G96 | 0.1− | 0.8− |
| 2007 09 03 | 703 | 0.4−  | 0.5+  | 2007 10 11 | 699 | 1.0+ | 0.2− | 2007 11 09 | G96 | 0.3− | 0.4+ |
| 2007 09 03 | 703 | 0.7−  | 0.4+  | 2007 10 11 | 699 | 0.8+ | 0.9− | 2007 11 09 | G96 | 0.2+ | 0.2+ |
| 2007 09 03 | 703 | (2.5− | 0.2−) | 2007 10 11 | 699 | 1.1− | 0.6− | 2007 11 09 | G96 | 0.1+ | 0.3+ |
| 2007 09 03 | 703 | (1.7− | 0.2+) | 2007 10 11 | 699 | 0.5+ | 1.1+ | 2007 11 09 | G96 | 0.6+ | 0.2+ |
| 2007 09 10 | 691 | 0.1−  | 0.1+  | 2007 10 13 | G96 | 0.3+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.1− |
| 2007 09 10 | 691 | 0.0   | 0.1+  | 2007 10 13 | G96 | 0.2+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.2− |
| 2007 09 10 | 691 | 0.1−  | 0.1+  | 2007 10 13 | G96 | 0.3+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.3− |
| 2007 09 12 | 699 | 0.5−  | 1.2+  | 2007 10 13 | G96 | 0.3+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.1− |
| 2007 09 12 | 699 | 0.2−  | 1.0+  | 2007 10 14 | 704 | 0.3+ | 0.5+ | 2007 12 04 | G96 | 0.3+ | 0.4− |
| 2007 09 12 | 699 | 0.2−  | 0.3+  | 2007 10 14 | 704 | 0.0  | 0.2+ | 2007 12 04 | G96 | 0.6+ | 0.4− |
| 2007 09 12 | 699 | 0.4−  | 0.6+  | 2007 10 14 | 704 | 0.5+ | 0.2+ | 2007 12 04 | G96 | 0.3− | 0.1+ |
| 2007 09 15 | 704 | (1.7− | 0.2+) | 2007 10 14 | 704 | 0.7+ | 1.2+ | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2007 09 15 | 704 | 0.2−  | 0.9−  | 2007 10 14 | 704 | 0.8+ | 0.4+ |            |     |      |      |
| 2007 09 15 | 704 | (0.7− | 1.9+) | 2007 10 15 | 703 | 0.7+ | 0.7− |            |     |      |      |

2007 RX<sub>71</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 46.88969   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.27294201 | $\omega$ | 148.42272 | +0.46477733 |      | +0.88303677 |   |  |  |  |  |
| <i>a</i>                                | 2.3537254  | $\Omega$ | 149.13299 | −0.83647815 |      | +0.46197663 |   |  |  |  |  |
| <i>e</i>                                | 0.2293443  | <i>i</i> | 7.28128   | −0.29032111 |      | +0.08260548 |   |  |  |  |  |
| <i>P</i>                                | 3.61       | <i>H</i> | 18.5      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 05 25 | 691 | 0.2− | 0.2+ | 2007 07 18 | G96 | 0.3+ | 0.3− | 2007 09 12 | G96 | 0.3+ | 0.0  |
| 2003 05 25 | 691 | 0.2− | 0.3− | 2007 08 24 | 691 | 0.5− | 0.0  | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 2003 05 25 | 691 | 0.2− | 0.1− | 2007 08 24 | 691 | 0.3− | 0.1− | 2007 09 14 | 691 | 0.4− | 0.0  |
| 2003 06 08 | 291 | 0.3+ | 0.2+ | 2007 08 24 | 691 | 0.2+ | 0.4+ | 2007 09 14 | 691 | 0.1− | 0.0  |
| 2003 06 08 | 291 | 0.2+ | 0.1+ | 2007 09 10 | 691 | 0.1− | 0.1+ | 2007 09 14 | 691 | 0.1+ | 0.5+ |
| 2003 06 08 | 291 | 0.1+ | 0.1+ | 2007 09 10 | 691 | 0.1− | 0.2− | 2007 10 15 | G96 | 0.1− | 0.2− |
| 2007 07 18 | G96 | 0.3+ | 0.0  | 2007 09 10 | 691 | 0.1+ | 0.3+ | 2007 10 15 | G96 | 0.4+ | 0.2+ |
| 2007 07 18 | G96 | 0.1+ | 0.6− | 2007 09 12 | G96 | 0.1− | 0.0  | 2007 10 15 | G96 | 0.1− | 0.3− |
| 2007 07 18 | G96 | 0.6− | 0.6− | 2007 09 12 | G96 | 0.4+ | 0.0  | 2007 10 15 | G96 | 0.0  | 0.2+ |

2007 RJ<sub>73</sub> = 1998 SU<sub>16</sub>

|                                         |            |          |          |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |          |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 287.76499  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.21387242 | $\omega$ | 5.22692  | +0.29346943 |      | −0.95588566 |   |  |  |  |  |
| <i>a</i>                                | 2.7692757  | $\Omega$ | 67.70777 | +0.87659041 |      | +0.26382720 |   |  |  |  |  |
| <i>e</i>                                | 0.0506278  | <i>i</i> | 0.77914  | +0.38139867 |      | +0.12914262 |   |  |  |  |  |
| <i>P</i>                                | 4.61       | <i>H</i> | 17.0     | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 17 | 691 | 0.0  | 0.6− | 2007 08 10 | 691 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.2+ | 0.2+ |
| 1998 09 17 | 691 | 0.3+ | 0.5− | 2007 08 10 | 691 | 0.2− | 0.2− | 2007 09 12 | G96 | 0.4+ | 0.1− |
| 1998 09 17 | 691 | 0.4+ | 0.0  | 2007 08 10 | 691 | 0.0  | 0.3− | 2007 09 12 | G96 | 0.2+ | 0.2− |
| 1998 09 24 | 691 | 0.1− | 0.4− | 2007 09 10 | G96 | 0.2− | 0.0  | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 1998 09 24 | 691 | 0.2− | 0.0  | 2007 09 10 | G96 | 0.3− | 0.2+ | 2007 09 12 | G96 | 0.2− | 0.2+ |
| 1998 09 24 | 691 | 0.1+ | 0.3− | 2007 09 10 | G96 | 0.3− | 0.2− | 2007 09 12 | G96 | 0.1+ | 0.0  |
| 2003 11 21 | 291 | 0.4− | 0.3+ | 2007 09 10 | G96 | 0.3− | 0.1+ | 2007 09 12 | G96 | 0.1+ | 0.1+ |
| 2003 11 21 | 291 | 0.2+ | 0.0  | 2007 09 10 | G96 | 0.5− | 0.3+ | 2007 09 12 | G96 | 0.5+ | 0.1+ |
| 2003 11 21 | 291 | 0.0  | 0.3+ | 2007 09 10 | G96 | 0.1+ | 0.6+ | 2007 09 12 | G96 | 0.0  | 0.3− |
| 2005 04 04 | G96 | 0.4+ | 0.2+ | 2007 09 10 | G96 | 0.0  | 0.4+ | 2007 09 12 | G96 | 0.4+ | 0.1− |
| 2005 04 04 | G96 | 0.1− | 0.1+ | 2007 09 10 | G96 | 0.1− | 0.4+ | 2007 10 09 | 691 | 0.3− | 0.4+ |
| 2005 04 04 | G96 | 0.0  | 0.3+ | 2007 09 12 | G96 | 0.8− | 0.0  | 2007 10 09 | 691 | 0.6+ | 0.5+ |
| 2005 04 04 | G96 | 0.0  | 0.3+ | 2007 09 12 | G96 | 0.1− | 0.0  | 2007 10 09 | 691 | 0.3− | 0.1+ |

2007 RE<sub>75</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 262.43381  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.21144905 | $\omega$ | 301.88012 | −0.09274279 |      | −0.99479596 |   |  |  |  |  |
| <i>a</i>                                | 2.7903942  | $\Omega$ | 153.34417 | +0.94234829 |      | −0.10137745 |   |  |  |  |  |
| <i>e</i>                                | 0.0158657  | <i>i</i> | 5.39583   | +0.32152524 |      | +0.01017872 |   |  |  |  |  |
| <i>P</i>                                | 4.66       | <i>H</i> | 15.7      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 06 | 644 | 0.1−  | 0.5+  | 2005 02 09 | 699 | 0.1+ | 1.7+ | 2007 09 10 | G96 | 0.2+ | 0.2− |
| 2002 08 06 | 644 | 0.1−  | 0.6+  | 2005 04 02 | G96 | 0.1+ | 0.2+ | 2007 09 10 | G96 | 0.1− | 0.0  |
| 2002 08 06 | 644 | 0.1−  | 0.6+  | 2005 04 02 | G96 | 0.0  | 0.3+ | 2007 09 10 | G96 | 0.2+ | 0.1− |
| 2003 11 21 | 691 | 0.1−  | 0.1−  | 2005 04 02 | G96 | 0.0  | 0.2− | 2007 09 11 | G96 | 0.2− | 0.1+ |
| 2003 11 21 | 691 | 0.0   | 0.2−  | 2005 04 02 | G96 | 0.2+ | 0.3− | 2007 09 11 | G96 | 0.3+ | 0.1+ |
| 2003 11 21 | 691 | 0.1+  | 0.1−  | 2006 05 25 | G96 | 0.3+ | 0.0  | 2007 09 11 | G96 | 0.3+ | 0.2+ |
| 2004 12 20 | G96 | 0.4+  | 0.3−  | 2006 05 25 | G96 | 0.5− | 0.1+ | 2007 09 11 | G96 | 0.2+ | 0.2+ |
| 2004 12 20 | G96 | 0.8+  | 0.6+  | 2006 05 25 | G96 | 0.0  | 0.1+ | 2007 10 13 | 691 | 0.3− | 0.5+ |
| 2004 12 20 | G96 | 0.4+  | 0.1−  | 2006 05 25 | G96 | 0.3+ | 0.1+ | 2007 10 13 | 691 | 0.3− | 0.1+ |
| 2004 12 20 | G96 | 0.6+  | 0.0   | 2007 08 23 | 691 | 0.1− | 0.4− | 2007 10 13 | 691 | 0.6− | 0.1− |
| 2005 02 09 | 699 | (2.0+ | 0.6+) | 2007 08 23 | 691 | 0.2− | 0.2+ | 2007 10 19 | 691 | 1.0+ | 1.2+ |
| 2005 02 09 | 699 | 0.3+  | 0.2+  | 2007 08 23 | 691 | 0.7− | 0.0  | 2007 10 19 | 691 | 0.5− | 0.3+ |
| 2005 02 09 | 699 | 1.1−  | 1.8+  | 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.2− | 0.6+ |

**2007 RH<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 264.83279  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25306535 | $\omega$ 296.72105 | -0.22909582   | -0.97333300 |
| <i>a</i> | 2.4754126  | $\Omega$ 166.50724 | +0.91001386   | -0.21844448 |
| <i>e</i> | 0.0999892  | <i>i</i> 2.88566   | +0.34552840   | -0.07003480 |
| <i>P</i> | 3.89       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 21 | 691 | 0.1- | 0.4- | 2005 01 13 | 691 | 0.6+ | 0.7+ | 2007 09 10 | G96 | 0.2+ | 0.8- |
| 1992 11 21 | 691 | 0.0  | 0.2- | 2005 01 13 | 691 | 0.1+ | 0.3+ | 2007 09 11 | 691 | 0.2- | 0.0  |
| 1992 11 21 | 691 | 0.1+ | 0.2- | 2005 01 13 | 691 | 0.0  | 0.4+ | 2007 09 11 | 691 | 0.0  | 0.2- |
| 2002 05 17 | 644 | 0.1- | 0.3+ | 2005 03 13 | G96 | 0.1- | 0.0  | 2007 09 11 | 691 | 0.0  | 0.1- |
| 2002 05 17 | 644 | 0.2+ | 0.1- | 2005 03 13 | G96 | 0.1- | 0.1+ | 2007 10 09 | 691 | 0.3- | 0.6- |
| 2002 05 17 | 644 | 0.7+ | 0.0  | 2005 03 13 | G96 | 0.3- | 0.1+ | 2007 10 09 | 691 | 1.0+ | 0.4- |
| 2003 08 26 | 807 | 0.2+ | 0.2+ | 2005 03 13 | G96 | 0.3- | 0.1+ | 2007 10 09 | 691 | 0.2- | 0.5+ |
| 2003 08 26 | 807 | 0.2+ | 0.2+ | 2006 05 21 | G96 | 0.9- | 0.3+ | 2007 10 11 | 691 | 0.2+ | 0.1+ |
| 2003 09 19 | 291 | 0.1+ | 0.6+ | 2006 05 21 | G96 | 0.1+ | 0.5+ | 2007 10 11 | 691 | 0.1+ | 0.2+ |
| 2003 09 19 | 291 | 0.5- | 0.4+ | 2006 05 21 | G96 | 0.1+ | 0.5+ | 2007 10 11 | 691 | 0.2- | 0.4+ |
| 2003 09 19 | 291 | 0.2- | 0.6+ | 2006 05 21 | G96 | 0.3- | 0.5+ | 2007 10 12 | 691 | 0.0  | 0.4- |
| 2003 10 01 | 691 | 0.3- | 0.3+ | 2007 08 10 | 691 | 0.2- | 0.1- | 2007 10 12 | 691 | 0.4- | 0.2- |
| 2003 10 01 | 691 | 0.3+ | 0.1- | 2007 08 10 | 691 | 0.3- | 0.4+ | 2007 10 12 | 691 | 0.5- | 0.6+ |
| 2003 10 01 | 691 | 0.2+ | 0.4+ | 2007 08 10 | 691 | 0.1- | 0.0  | 2007 10 19 | G96 | 0.7+ | 0.4- |
| 2004 12 13 | 691 | 0.1- | 0.3+ | 2007 09 10 | G96 | 0.2+ | 1.0- | 2007 10 19 | G96 | 0.5+ | 0.2- |
| 2004 12 13 | 691 | 0.1- | 0.3+ | 2007 09 10 | G96 | 0.6+ | 0.3- | 2007 10 19 | G96 | 0.3+ | 0.3+ |
| 2004 12 13 | 691 | 0.1- | 0.3- | 2007 09 10 | G96 | 0.5+ | 0.9- | 2007 10 19 | G96 | 0.8+ | 0.1- |

**2007 RH<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.78350    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20369163 | $\omega$ 36.37514  | +0.95986684   | +0.28007931 |
| <i>a</i> | 2.8607985  | $\Omega$ 307.35353 | -0.26143423   | +0.87480246 |
| <i>e</i> | 0.0724033  | <i>i</i> 1.04760   | -0.10152725   | +0.39531789 |
| <i>P</i> | 4.84       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 03 | 691 | 0.2- | 0.1+ | 2006 05 09 | G96 | 0.2- | 0.2- | 2007 09 10 | G96 | 0.0  | 0.1- |
| 2000 02 03 | 691 | 0.1+ | 0.1- | 2006 05 09 | G96 | 0.1+ | 0.0  | 2007 09 11 | 691 | 0.0  | 0.0  |
| 2000 02 03 | 691 | 0.0  | 0.1- | 2007 08 10 | 691 | 0.4- | 0.0  | 2007 09 11 | 691 | 0.1- | 0.0  |
| 2000 02 11 | 691 | 0.0  | 0.3+ | 2007 08 10 | 691 | 0.2- | 0.1+ | 2007 09 11 | 691 | 0.2- | 0.2- |
| 2000 02 11 | 691 | 0.3+ | 0.1+ | 2007 08 10 | 691 | 0.3- | 0.0  | 2007 09 12 | G96 | 0.6+ | 0.2- |
| 2000 02 11 | 691 | 0.2+ | 0.1- | 2007 08 23 | 691 | 0.3- | 0.2- | 2007 09 12 | G96 | 0.0  | 0.1- |
| 2003 12 14 | 291 | 0.1+ | 0.0  | 2007 08 23 | 691 | 0.3- | 0.0  | 2007 09 12 | G96 | 0.2+ | 0.0  |
| 2003 12 14 | 291 | 0.2- | 0.1- | 2007 08 23 | 691 | 1.2+ | 1.0+ | 2007 09 12 | G96 | 0.3+ | 0.0  |
| 2003 12 14 | 291 | 0.3- | 0.2- | 2007 09 10 | G96 | 0.0  | 0.2- | 2007 09 30 | 691 | 0.3- | 0.1- |
| 2005 03 08 | G96 | 0.2+ | 0.4- | 2007 09 10 | G96 | 0.3+ | 0.3- | 2007 09 30 | 691 | 0.1- | 0.2- |
| 2005 03 08 | G96 | 0.4- | 0.1+ | 2007 09 10 | G96 | 0.2+ | 0.3- | 2007 09 30 | 691 | 0.0  | 0.1+ |
| 2005 03 08 | G96 | 0.4+ | 0.3- | 2007 09 10 | G96 | 0.0  | 0.2- | 2007 10 09 | 691 | 0.5- | 0.5+ |
| 2005 03 08 | G96 | 0.1- | 0.2+ | 2007 09 10 | G96 | 0.0  | 0.1+ | 2007 10 09 | 691 | 0.6- | 0.1+ |
| 2006 05 09 | G96 | 0.0  | 0.2+ | 2007 09 10 | G96 | 0.4+ | 0.1+ | 2007 10 09 | 691 | 0.2- | 0.4+ |
| 2006 05 09 | G96 | 0.3- | 0.1+ | 2007 09 10 | G96 | 0.3+ | 0.0  |            |     |      |      |

**2007 RR<sub>80</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.54367   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28726286 | $\omega$ 279.33405 | -0.12078083   | +0.99244613 |
| <i>a</i> | 2.2748341  | $\Omega$ 343.68181 | -0.87807613   | -0.11691877 |
| <i>e</i> | 0.1657083  | <i>i</i> 4.39053   | -0.46302731   | -0.03715741 |
| <i>P</i> | 3.43       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 25 | G96 | 0.2+ | 0.1- | 2007 09 10 | G96 | 0.2- | 0.1- | 2007 10 04 | G96 | 0.2+ | 0.3- |
| 2006 02 25 | G96 | 0.3- | 0.0  | 2007 09 10 | G96 | 0.1+ | 0.1- | 2007 10 04 | G96 | 0.1- | 0.1- |
| 2006 02 25 | G96 | 0.2+ | 0.0  | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 10 04 | G96 | 0.1- | 0.3- |
| 2006 02 25 | G96 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.4+ | 0.1+ | 2007 10 11 | G96 | 0.2- | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 05 | G96 | 0.4+ | 0.3+ | 2007 09 12 | 699 | 0.4- | 0.9+ | 2007 10 11 | G96 | 0.3- | 0.3+ |
| 2006 03 05 | G96 | 0.0  | 0.3+ | 2007 09 12 | 699 | 0.3- | 0.6+ | 2007 10 11 | G96 | 0.2+ | 0.5- |
| 2006 03 05 | G96 | 0.2+ | 0.2+ | 2007 09 12 | 699 | 0.7+ | 0.1- | 2007 10 11 | G96 | 0.1+ | 0.3- |
| 2006 03 05 | G96 | 0.2- | 0.2+ | 2007 09 12 | 699 | 0.8- | 0.5+ | 2007 11 07 | G96 | 0.1+ | 0.2+ |
| 2007 09 10 | 703 | 0.8- | 0.9- | 2007 09 19 | 691 | 0.2- | 0.1- | 2007 11 07 | G96 | 0.3+ | 0.5- |
| 2007 09 10 | 703 | 0.6+ | 0.2+ | 2007 09 19 | 691 | 0.3- | 0.1- | 2007 11 07 | G96 | 0.0  | 0.1+ |
| 2007 09 10 | 703 | 0.4+ | 0.7+ | 2007 09 19 | 691 | 0.4- | 0.1+ | 2007 11 07 | G96 | 0.2+ | 0.0  |
| 2007 09 10 | 703 | 0.4+ | 0.2+ | 2007 10 04 | G96 | 0.1+ | 0.1- |            |     |      |      |

**2007 RE<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 78.50994   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23844600 | $\omega$ 338.31985 | +0.17285638   | +0.96118727 |
| <i>a</i> | 2.5755858  | $\Omega$ 301.04527 | -0.86277626   | +0.04244959 |
| <i>e</i> | 0.0898765  | <i>i</i> 14.53582  | -0.47511871   | +0.27261157 |
| <i>P</i> | 4.13       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 01 | 699 | 0.2- | 0.2- | 2003 10 15 | 644 | 0.2+  | 0.5+  | 2007 09 05 | 699 | 0.3+ | 1.5+ |
| 2001 02 01 | 699 | 1.0- | 0.3+ | 2003 10 15 | 644 | 0.1+  | 0.4+  | 2007 09 10 | 703 | 0.6- | 0.4- |
| 2001 02 01 | 699 | 0.0  | 0.7+ | 2006 04 05 | E12 | 0.6+  | 0.9+  | 2007 09 10 | 703 | 0.4- | 0.9+ |
| 2001 02 01 | 699 | 0.0  | 1.3+ | 2006 04 05 | E12 | 0.6+  | 0.6+  | 2007 09 10 | 703 | 0.1+ | 0.6+ |
| 2001 02 13 | 209 | 0.3- | 0.6+ | 2006 04 05 | E12 | 0.3-  | 0.2-  | 2007 09 10 | 703 | 0.1+ | 0.2+ |
| 2001 02 13 | 209 | 1.1+ | 0.5+ | 2006 04 05 | E12 | 0.5+  | 0.6+  | 2007 09 13 | 703 | 0.5+ | 0.5+ |
| 2001 02 13 | 209 | 1.5+ | 0.5+ | 2006 05 05 | E12 | 0.8+  | 0.8+  | 2007 09 13 | 703 | 1.4- | 0.2+ |
| 2003 09 19 | 644 | 0.4+ | 0.2+ | 2006 05 05 | E12 | 0.6+  | 0.7+  | 2007 09 13 | 703 | 0.1+ | 0.3+ |
| 2003 09 19 | 644 | 0.4+ | 0.1+ | 2006 05 24 | E12 | 0.9+  | 0.3-  | 2007 09 13 | 703 | 0.3- | 0.3+ |
| 2003 09 19 | 644 | 0.3+ | 0.1+ | 2006 05 24 | E12 | 0.7+  | 0.2+  | 2007 10 14 | 703 | 0.1+ | 0.9+ |
| 2003 09 29 | 699 | 0.1- | 0.2+ | 2006 05 24 | E12 | 0.7-  | 0.6+  | 2007 10 14 | 703 | 0.8- | 0.1- |
| 2003 09 29 | 699 | 0.2- | 0.6- | 2006 05 24 | E12 | 1.4-  | 0.7+  | 2007 10 14 | 703 | 0.4+ | 0.1- |
| 2003 09 29 | 699 | 0.7- | 0.2- | 2007 09 05 | 699 | (2.5+ | 0.6+) | 2007 10 14 | 703 | 0.5- | 0.0  |
| 2003 09 29 | 699 | 0.2- | 0.3+ | 2007 09 05 | 699 | 0.8+  | 0.2-  |            |     |      |      |
| 2003 10 15 | 644 | 0.2+ | 0.5+ | 2007 09 05 | 699 | 1.9-  | 0.7-  |            |     |      |      |

**2007 RN<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.04216  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22461181 | $\omega$ 198.67953 | +0.90224649   | -0.43118795 |
| <i>a</i> | 2.6802851  | $\Omega$ 186.87054 | +0.40107989   | +0.84364421 |
| <i>e</i> | 0.2023335  | <i>i</i> 2.54543   | +0.15838623   | +0.31990842 |
| <i>P</i> | 4.39       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.2+ | 0.2+ | 2005 03 09 | G96 | 0.6+ | 0.0  | 2007 09 10 | G96 | 0.1+ | 0.1+ |
| 2003 11 18 | 691 | 0.2+ | 0.1+ | 2007 08 10 | 691 | 0.2- | 0.4+ | 2007 09 10 | G96 | 0.1- | 0.0  |
| 2003 11 18 | 691 | 0.1+ | 0.1- | 2007 08 10 | 691 | 0.2+ | 0.2+ | 2007 09 11 | 691 | 0.1+ | 0.0  |
| 2003 12 22 | 691 | 0.4- | 0.1- | 2007 08 10 | 691 | 0.4- | 1.2+ | 2007 09 11 | 691 | 0.0  | 0.1- |
| 2003 12 22 | 691 | 0.0  | 0.0  | 2007 08 23 | 691 | 0.2- | 0.0  | 2007 09 11 | 691 | 0.3+ | 0.0  |
| 2003 12 22 | 691 | 0.2- | 0.2+ | 2007 08 23 | 691 | 0.1+ | 0.1- | 2007 10 08 | G96 | 0.1+ | 0.1- |
| 2005 03 09 | G96 | 0.2- | 0.1+ | 2007 08 23 | 691 | 0.0  | 0.6- | 2007 10 08 | G96 | 0.1- | 0.4- |
| 2005 03 09 | G96 | 0.0  | 0.0  | 2007 09 10 | G96 | 0.0  | 0.1- | 2007 10 08 | G96 | 0.3+ | 0.2- |
| 2005 03 09 | G96 | 0.3- | 0.1- | 2007 09 10 | G96 | 0.3- | 0.1- | 2007 10 08 | G96 | 0.1+ | 0.2- |

**2007 RR<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 314.49790  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17966259 | $\omega$ 238.74884 | +0.70287908   | -0.71000097 |
| <i>a</i> | 3.1105053  | $\Omega$ 166.31906 | +0.69875408   | +0.67786217 |
| <i>e</i> | 0.0418370  | <i>i</i> 10.50539  | +0.13305539   | +0.19079178 |
| <i>P</i> | 5.49       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 691 | 0.0  | 0.0  | 2007 08 23 | 691 | 0.0  | 0.1- | 2007 10 09 | 691 | 0.1+ | 0.2- |
| 2003 12 22 | 691 | 0.1- | 0.3+ | 2007 09 10 | G96 | 0.4+ | 0.1- | 2007 10 09 | 691 | 0.1+ | 0.1- |
| 2003 12 22 | 691 | 0.1+ | 0.4+ | 2007 09 10 | G96 | 0.2+ | 0.2- | 2007 10 09 | 691 | 0.2+ | 0.0  |

**M.P.O. 129793**

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 11 | 691 | 0.2+  | 0.2+  | 2007 09 10 | G96 | 0.6+  | 0.2-  | 2007 10 11 | 691 | 0.0  | 0.1- |
| 2005 03 11 | 691 | 0.2+  | 0.4+  | 2007 09 10 | G96 | 0.4+  | 0.2-  | 2007 10 11 | 691 | 0.1- | 0.1- |
| 2005 03 11 | 691 | 0.1-  | 0.4+  | 2007 09 12 | 699 | (1.6+ | 0.9+) | 2007 10 11 | 691 | 0.6+ | 0.3+ |
| 2005 04 04 | 703 | 0.4-  | 1.1+  | 2007 09 12 | 699 | 1.4+  | 0.6+  | 2007 10 11 | 691 | 0.6- | 0.1- |
| 2005 04 04 | 703 | 0.0   | 0.1+  | 2007 09 12 | 699 | 0.3-  | 0.5+  | 2007 10 11 | 691 | 0.1+ | 0.4+ |
| 2005 04 04 | 703 | (2.5- | 0.7-) | 2007 09 12 | 699 | 0.6-  | 1.3+  | 2007 10 11 | 691 | 0.0  | 0.0  |
| 2005 04 04 | 703 | (0.0  | 3.8-) | 2007 09 19 | 704 | 0.5-  | 0.5-  | 2007 10 13 | 691 | 0.1- | 0.1- |
| 2007 08 10 | 691 | 0.2+  | 0.2+  | 2007 09 19 | 704 | 0.2-  | 0.3+  | 2007 10 13 | 691 | 0.2- | 0.2- |
| 2007 08 10 | 691 | 0.1+  | 0.5+  | 2007 09 19 | 704 | 0.3+  | 0.8+  | 2007 10 13 | 691 | 0.6- | 0.8+ |
| 2007 08 10 | 691 | 0.4+  | 0.4+  | 2007 10 09 | 691 | 0.2-  | 0.0   | 2007 10 13 | 691 | 0.3- | 0.3- |
| 2007 08 23 | 691 | 0.4-  | 0.1+  | 2007 10 09 | 691 | 0.1+  | 0.0   | 2007 10 13 | 691 | 0.3- | 0.1- |
| 2007 08 23 | 691 | 0.1+  | 0.0   | 2007 10 09 | 691 | 0.1+  | 0.0   | 2007 10 13 | 691 | 0.1+ | 0.3  |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |             |           | MPC         |      |             |                          |
|-----------------------------------------|------------|-------------|-----------|-------------|------|-------------|--------------------------|
| $M$                                     | 39.32169   | (2000.0)    |           | $P$         |      | $Q$         |                          |
| $n$                                     | 0.30225033 | $\omega$    | 187.00358 | +0.79878285 |      | +0.59936324 |                          |
| $a$                                     | 2.1989981  | $\Omega$    | 136.03315 | −0.54827466 |      | +0.76084543 |                          |
| $e$                                     | 0.1806054  | $i$         | 4.30008   | −0.24767086 |      | +0.24875276 |                          |
| $P$                                     | 3.26       | $H$         | 17.9      | $G$         | 0.15 | $U$         | 2                        |
| Residuals in seconds of arc             |            |             |           |             |      |             |                          |
| 2000 07 02                              | 691        | 0.1+        | 0.1−      | 2007 09 12  | 703  | (0.8+ 2.2+) | 2007 10 04 703 0.4− 0.8+ |
| 2000 07 02                              | 691        | 0.2+        | 0.0       | 2007 09 15  | 691  | 0.3− 0.6−   | 2007 10 12 703 1.2+ 0.4+ |
| 2000 07 02                              | 691        | 0.1−        | 0.6+      | 2007 09 15  | 691  | 0.6− 0.1−   | 2007 10 12 703 1.0− 0.5+ |
| 2004 11 04                              | 691        | 0.1−        | 0.2+      | 2007 09 15  | 691  | 0.4− 0.4−   | 2007 10 12 703 1.2+ 1.0+ |
| 2004 11 04                              | 691        | 0.1−        | 0.2+      | 2007 09 18  | 704  | 0.2− 0.5+   | 2007 10 12 703 0.1+ 1.5− |
| 2004 11 04                              | 691        | 0.1−        | 0.0       | 2007 09 18  | 704  | 1.1− 1.2−   | 2007 10 13 704 0.4+ 0.3+ |
| 2006 03 03                              | 691        | 0.4−        | 0.4+      | 2007 09 18  | 704  | 1.5− 0.1−   | 2007 10 13 704 0.1− 0.1− |
| 2006 03 03                              | 691        | 0.3+        | 0.7+      | 2007 09 18  | 704  | 0.7− 0.4+   | 2007 10 13 704 0.4+ 0.2− |
| 2006 03 03                              | 691        | 0.6+        | 0.2+      | 2007 10 04  | 703  | 0.2+ 0.1+   | 2007 10 13 704 1.1+ 0.8− |
| 2007 09 10                              | 691        | 0.2−        | 0.5−      | 2007 10 04  | 703  | 0.3− 0.3+   | 2007 10 13 704 0.5+ 0.2+ |
| 2007 09 10                              | 691        | 0.5−        | 0.6−      | 2007 10 04  | 703  | 0.6+ 0.5+   | 2007 10 15 703 1.4+ 0.8− |
| 2007 09 10                              | 691        | 1.0−        | 1.1−      | 2007 10 04  | 703  | 0.6− 0.3−   | 2007 10 15 703 0.3+ 0.0  |
| 2007 09 12                              | 703        | 1.3+        | 1.9+      | 2007 10 04  | 703  | 0.3− 0.7+   | 2007 10 15 703 0.4+ 0.0  |
| 2007 09 12                              | 703        | (2.2+ 2.6+) |           | 2007 10 04  | 703  | 0.2− 0.1+   | 2007 10 15 703 0.6+ 0.1+ |
| 2007 09 12                              | 703        | 1.1+        | 1.0+      | 2007 10 04  | 703  | 1.4− 0.3+   |                          |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |       |             |            |                |
|-----------------------------------------|------------|----------|-----------|------------|-------------|-------|-------------|------------|----------------|
| $M$                                     | 220.64274  |          | (2000.0)  |            | $P$         |       | $Q$         |            |                |
| $n$                                     | 0.35960418 | $\omega$ | 338.99448 |            | -0.90245815 |       | -0.42958228 |            |                |
| $a$                                     | 1.9584819  | $\Omega$ | 175.18660 |            | +0.42920517 |       | -0.90302383 |            |                |
| $e$                                     | 0.0477491  | $i$      | 22.46786  |            | +0.03677233 |       | -0.00265247 |            |                |
| $P$                                     | 2.74       | $H$      | 17.4      |            | $G$         | 0.15  | $U$         | 2          |                |
| Residuals in seconds of arc             |            |          |           |            |             |       |             |            |                |
| 1996 09 13                              | 691        | 0.2-     | 0.0       | 2006 03 23 | 703         | 1.5-  | 0.3+        | 2007 09 11 | G96 0.6+ 0.4-  |
| 1996 09 13                              | 691        | 0.0      | 0.0       | 2006 03 23 | 703         | 1.1+  | 0.0         | 2007 09 11 | G96 0.0 0.1-   |
| 1996 09 13                              | 691        | 0.2-     | 0.1-      | 2006 03 23 | 703         | (0.6- | 2.2-)       | 2007 09 14 | G99 0.6- 0.4+  |
| 1998 03 05                              | 691        | 0.1-     | 0.4+      | 2006 04 03 | G96         | 0.0   | 0.1+        | 2007 09 14 | G99 0.3+ 0.9+  |
| 1998 03 05                              | 691        | 0.4+     | 0.3+      | 2006 04 03 | G96         | 0.2+  | 0.1+        | 2007 09 14 | G99 0.2+ 1.7+  |
| 1998 03 05                              | 691        | 0.4+     | 0.2+      | 2006 04 03 | G96         | 0.5+  | 0.1-        | 2007 09 14 | G99 (0.1+ 2.6+ |
| 2006 02 23                              | 699        | 0.6+     | 0.3-      | 2006 04 03 | G96         | 0.2+  | 0.4-        | 2007 09 19 | G04 0.5- 0.6+  |
| 2006 02 23                              | 699        | 0.2+     | 1.0+      | 2007 09 10 | G96         | 0.3+  | 0.2-        | 2007 09 19 | G04 1.1- 0.2-  |
| 2006 02 23                              | 699        | 0.2+     | 0.7+      | 2007 09 10 | G96         | 0.0   | 0.1-        | 2007 09 19 | G04 0.0 0.4+   |
| 2006 02 23                              | 699        | 1.0+     | 0.3+      | 2007 09 10 | G96         | 0.3-  | 0.1-        | 2007 09 19 | G04 0.1+ 0.0   |
| 2006 03 09                              | 703        | 0.9-     | 0.2+      | 2007 09 10 | G96         | 0.1-  | 0.0         | 2007 09 19 | G04 0.1+ 0.5+  |
| 2006 03 09                              | 703        | 0.1-     | 0.6-      | 2007 09 11 | 691         | 0.2-  | 0.0         | 2007 10 20 | G96 0.4+ 0.6-  |
| 2006 03 09                              | 703        | 0.5-     | 0.4-      | 2007 09 11 | 691         | 0.1-  | 0.0         | 2007 10 20 | G96 0.2+ 0.4-  |
| 2006 03 09                              | 703        | 0.2-     | 0.1-      | 2007 09 11 | 691         | 0.2-  | 0.0         | 2007 10 20 | G96 0.2+ 0.4-  |
| 2006 03 23                              | 703        | 1.1-     | 0.1+      | 2007 09 11 | G96         | 0.5+  | 0.2-        | 2007 10 20 | G96 0.7+ 0.2   |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |                                                                                                                     |          |           | MPC         |      |             |      |            |     |      |      |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------|-----------|-------------|------|-------------|------|------------|-----|------|------|
| $M$                                     | 25.15533                                                                                                            |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |      |            |     |      |      |
| $n$                                     | 0.26451444                                                                                                          | $\omega$ | 354.29518 | +0.91577964 |      | +0.40165826 |      |            |     |      |      |
| $a$                                     | 2.4034576                                                                                                           | $\Omega$ | 342.02109 | -0.36798501 |      | +0.83463999 |      |            |     |      |      |
| $e$                                     | 0.2001568                                                                                                           | $i$      | 0.79406   | -0.16104251 |      | +0.37689087 |      |            |     |      |      |
| $P$                                     | 3.73 <th><math>H</math></th> <td>17.4</td> <th><math>G</math></th> <td>0.15</td> <th><math>U</math></th> <td>3</td> | $H$      | 17.4      | $G$         | 0.15 | $U$         | 3    |            |     |      |      |
| Residuals in seconds of arc             |                                                                                                                     |          |           |             |      |             |      |            |     |      |      |
| 1996 10 04                              | 691                                                                                                                 | 0.4-     | 0.3+      | 2007 09 13  | 699  | 0.4-        | 0.6+ | 2007 10 11 | 704 | 1.5- | 0.7+ |
| 1996 10 04                              | 691                                                                                                                 | 0.0      | 0.0       | 2007 09 16  | 704  | 0.5-        | 0.2- | 2007 10 11 | 704 | 2.0- | 1.3+ |
| 1996 10 04                              | 691                                                                                                                 | 0.2-     | 0.2+      | 2007 09 16  | 704  | 0.8-        | 0.6- | 2007 10 11 | G96 | 0.4- | 0.0  |
| 1996 10 18                              | 691                                                                                                                 | 0.4+     | 0.3+      | 2007 09 16  | 704  | 1.5-        | 0.3- | 2007 10 11 | G96 | 0.0  | 0.4- |
| 1996 10 18                              | 691                                                                                                                 | 0.0      | 0.3-      | 2007 09 16  | 704  | 0.9-        | 0.4+ | 2007 10 11 | G96 | 0.2- | 0.4- |
| 1996 10 18                              | 691                                                                                                                 | 0.1+     | 0.3-      | 2007 09 19  | 704  | 1.4+        | 0.8+ | 2007 10 15 | G96 | 0.1+ | 0.3- |
| 2007 09 10                              | G96                                                                                                                 | 0.7+     | 1.0-      | 2007 09 19  | 704  | 0.5+        | 0.4+ | 2007 10 15 | G96 | 0.2- | 0.4- |
| 2007 09 10                              | G96                                                                                                                 | 0.4+     | 1.0-      | 2007 09 19  | 704  | 1.4+        | 0.5+ | 2007 10 15 | G96 | 0.2- | 0.3- |
| 2007 09 10                              | G96                                                                                                                 | 0.6+     | 0.8-      | 2007 09 19  | 704  | 0.2-        | 0.4+ | 2007 10 15 | G96 | 0.1- | 0.2- |
| 2007 09 10                              | G96                                                                                                                 | 0.2+     | 0.9-      | 2007 09 21  | 704  | 0.4+        | 0.6+ | 2007 10 15 | 703 | 0.1- | 0.4- |
| 2007 09 11                              | 691                                                                                                                 | 0.2-     | 0.4-      | 2007 09 21  | 704  | 0.1+        | 0.2+ | 2007 10 15 | 703 | 1.1- | 0.4- |
| 2007 09 11                              | 691                                                                                                                 | 0.1+     | 0.3-      | 2007 09 21  | 704  | 0.2+        | 0.3+ | 2007 10 15 | 703 | 0.2+ | 0.4- |
| 2007 09 11                              | 691                                                                                                                 | 0.1-     | 1.1+      | 2007 09 21  | 704  | 0.5+        | 0.4+ | 2007 10 15 | 703 | 0.3- | 0.5- |
| 2007 09 11                              | D29                                                                                                                 | 0.8+     | 0.4+      | 2007 09 21  | 704  | 0.2+        | 0.3+ | 2007 10 18 | 704 | 0.8+ | 0.3- |
| 2007 09 11                              | D29                                                                                                                 | 1.2+     | 0.2+      | 2007 09 28  | D35  | 0.2-        | 0.4- | 2007 10 18 | 704 | 0.3+ | 0.5- |
| 2007 09 11                              | D29                                                                                                                 | 0.3+     | 0.4+      | 2007 09 28  | D35  | 0.4-        | 0.2- | 2007 10 18 | 704 | 0.4+ | 1.0+ |
| 2007 09 11                              | D29                                                                                                                 | 0.7+     | 0.7-      | 2007 09 28  | D35  | 0.2-        | 0.1+ | 2007 10 18 | 704 | 0.1- | 0.7- |
| 2007 09 13                              | 704                                                                                                                 | 0.7+     | 0.3+      | 2007 10 06  | 704  | 0.2-        | 0.2- | 2007 11 17 | G96 | 0.4+ | 0.2+ |
| 2007 09 13                              | 704                                                                                                                 | 0.3+     | 0.5+      | 2007 10 06  | 704  | 0.1+        | 0.0  | 2007 11 17 | G96 | 1.1+ | 0.3- |
| 2007 09 13                              | 704                                                                                                                 | 0.7+     | 0.3+      | 2007 10 06  | 704  | 0.2+        | 0.7- | 2007 11 17 | G96 | 0.5+ | 0.1- |
| 2007 09 13                              | 704                                                                                                                 | 0.9+     | 0.2+      | 2007 10 06  | 704  | 0.0         | 0.3+ | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2007 09 13                              | 699                                                                                                                 | 0.9-     | 0.7-      | 2007 10 06  | 704  | 0.6+        | 0.2- |            |     |      |      |
| 2007 09 13                              | 699                                                                                                                 | 1.4-     | 0.5-      | 2007 10 11  | 704  | 1.6-        | 0.2+ |            |     |      |      |

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            | MPC         |      |             |            |     |      |      |
|-----------------------------------------|------------|----------|----------|------------|-------------|------|-------------|------------|-----|------|------|
| $M$                                     | 294.74565  |          | (2000.0) |            | $P$         |      | $Q$         |            |     |      |      |
| $n$                                     | 0.21991145 | $\omega$ | 65.00541 |            | +0.12847029 |      | -0.99152749 |            |     |      |      |
| $a$                                     | 2.7183424  | $\Omega$ | 17.64526 |            | +0.88551810 |      | +0.10597558 |            |     |      |      |
| $e$                                     | 0.0253596  | $i$      | 3.63151  |            | +0.44648973 |      | +0.07511602 |            |     |      |      |
| $P$                                     | 4.48       | $H$      | 16.9     |            | $G$         | 0.15 | $U$         | 4          |     |      |      |
| Residuals in seconds of arc             |            |          |          |            |             |      |             |            |     |      |      |
| 2003 11 19                              | 691        | 0.4+     | 0.2-     | 2007 09 10 | G96         | 0.3- | 0.2+        | 2007 10 07 | H55 | 0.1+ | 0.1+ |
| 2003 11 19                              | 691        | 0.2-     | 0.0      | 2007 09 12 | 691         | 0.6- | 0.1+        | 2007 10 07 | G96 | 0.3+ | 0.2- |
| 2003 11 19                              | 691        | 0.2+     | 0.4+     | 2007 09 12 | 691         | 0.7- | 0.4-        | 2007 10 07 | G96 | 0.3- | 0.4- |
| 2003 12 21                              | 691        | 0.1+     | 0.0      | 2007 09 12 | 691         | 0.3- | 0.5-        | 2007 10 07 | G96 | 0.4+ | 0.3- |
| 2003 12 21                              | 691        | 0.2-     | 0.2+     | 2007 09 14 | G96         | 0.0  | 0.1-        | 2007 10 07 | G96 | 0.1+ | 0.0  |
| 2003 12 21                              | 691        | 0.4-     | 0.2-     | 2007 09 14 | G96         | 0.2+ | 0.1-        | 2007 10 08 | H55 | 0.3+ | 0.3+ |
| 2005 04 11                              | G96        | 0.3-     | 0.1+     | 2007 09 14 | G96         | 0.2- | 0.2-        | 2007 10 08 | H55 | 0.5+ | 0.6+ |
| 2005 04 11                              | G96        | 0.5-     | 0.7-     | 2007 09 14 | G96         | 0.3+ | 0.1-        | 2007 10 08 | H55 | 0.8+ | 0.3+ |
| 2005 04 11                              | G96        | 0.3+     | 0.4-     | 2007 10 05 | H55         | 0.3- | 0.2+        | 2007 10 19 | G96 | 0.1+ | 0.5- |
| 2005 04 11                              | G96        | 0.2+     | 0.2+     | 2007 10 05 | H55         | 0.0  | 0.3+        | 2007 10 19 | G96 | 0.2+ | 0.4- |
| 2007 09 10                              | G96        | 0.1-     | 0.2-     | 2007 10 05 | H55         | 0.5- | 0.4+        | 2007 10 19 | G96 | 0.6+ | 0.2- |
| 2007 09 10                              | G96        | 0.4+     | 0.2-     | 2007 10 07 | H55         | 0.5- | 0.3+        | 2007 10 19 | G96 | 0.1+ | 0.1+ |
| 2007 09 10                              | G96        | 0.2-     | 0.4-     | 2007 10 07 | H55         | 0.1- | 0.5+        |            |     |      |      |

|                      |                    |          |           |
|----------------------|--------------------|----------|-----------|
| Epoch 2007 Oct. 27.0 | TT = JDT 2454400.5 | MPC      |           |
| $M$                  | 60.47773           | (2000.0) |           |
| $n$                  | 0.18100150         | $\omega$ | 142.08935 |
| $a$                  | 3.0951469          | $\Omega$ | 164.77024 |
| $e$                  | 0.1264603          | $i$      | 8.49587   |
| $P$                  | 5.45               | $H$      | 16.2      |
|                      |                    | $G$      | 0.15      |
|                      |                    | $U$      | 4         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 12 | 691 | 0.2− | 0.3+ | 2007 09 10 | 691 | 0.3− | 0.6+ | 2007 10 09 | D29 | 0.2− | 0.1+ |
| 2005 03 12 | 691 | 0.3− | 0.0  | 2007 09 10 | 691 | 0.0  | 0.0  | 2007 10 09 | D29 | 0.0  | 0.4− |
| 2005 03 12 | 691 | 0.2+ | 0.3− | 2007 09 11 | 691 | 0.1− | 0.3− | 2007 10 09 | D29 | 0.5− | 0.9− |
| 2005 04 11 | G96 | 0.4+ | 0.3+ | 2007 09 11 | 691 | 0.3− | 0.1− | 2007 10 09 | D29 | 1.0+ | 0.0  |
| 2005 04 11 | G96 | 0.1− | 0.2+ | 2007 09 11 | 691 | 0.1− | 0.0  | 2007 10 21 | G96 | 0.2+ | 0.2+ |
| 2005 04 11 | G96 | 0.3+ | 0.5+ | 2007 09 18 | 691 | 0.6− | 0.2+ | 2007 10 21 | G96 | 0.2+ | 0.2+ |
| 2005 04 11 | G96 | 0.0  | 0.1− | 2007 09 18 | 691 | 1.1− | 0.1+ | 2007 10 21 | G96 | 0.8+ | 0.1+ |
| 2007 09 10 | 691 | 0.4− | 0.2− | 2007 09 18 | 691 | 1.2+ | 1.5+ | 2007 10 21 | G96 | 0.1− | 0.2− |

**2007 RS<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 31.69499   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22563351 | $\omega$ | 110.70828 | +0.50795027   | +0.86055187 |
| <i>a</i> | 2.6721878  | $\Omega$ | 190.07800 | −0.84873132   | +0.49248697 |
| <i>e</i> | 0.2737385  | <i>i</i> | 12.51117  | −0.14711112   | +0.13002713 |
| <i>P</i> | 4.37       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 10 09 | 691 | 0.3+ | 0.4− | 2007 06 19 | 703 | 0.4+  | 0.9−  | 2007 09 11 | 703 | 0.1− | 0.5− |
| 1994 10 09 | 691 | 0.0  | 0.2− | 2007 06 19 | 703 | 0.4−  | 0.7−  | 2007 09 11 | 703 | 0.5− | 0.7− |
| 1994 10 09 | 691 | 0.2− | 0.1− | 2007 06 19 | 703 | 0.2−  | 0.3−  | 2007 09 11 | 703 | 0.3− | 0.1− |
| 2002 02 16 | 807 | 0.0  | 0.4+ | 2007 08 23 | 683 | (0.2+ | 2.5−) | 2007 09 13 | 699 | 0.6+ | 0.3+ |
| 2002 02 16 | 807 | 0.2+ | 0.4+ | 2007 08 23 | 683 | 0.6+  | 0.2−  | 2007 09 13 | 699 | 0.3− | 0.1− |
| 2002 02 16 | 807 | 0.0  | 0.5+ | 2007 08 23 | 683 | 1.3−  | 0.3+  | 2007 09 13 | 699 | 0.1+ | 0.1+ |
| 2002 02 16 | 807 | 0.1+ | 0.2+ | 2007 09 05 | 703 | 1.1+  | 0.9+  | 2007 09 13 | 699 | 0.3+ | 0.6+ |
| 2006 03 05 | 691 | 0.0  | 0.2− | 2007 09 05 | 703 | 0.7+  | 0.9+  | 2007 10 07 | G96 | 0.5+ | 0.2− |
| 2006 03 05 | 691 | 0.0  | 0.3+ | 2007 09 05 | 703 | 0.1+  | 0.7+  | 2007 10 07 | G96 | 0.0  | 0.6+ |
| 2006 03 05 | 691 | 0.2− | 0.1− | 2007 09 05 | 703 | 1.5−  | 0.9+  | 2007 10 07 | G96 | 0.1+ | 0.0  |
| 2007 06 19 | 703 | 0.8+ | 0.4− | 2007 09 11 | 703 | 0.8−  | 0.6−  | 2007 10 07 | G96 | 0.2+ | 0.1− |

**2007 RM<sub>100</sub> = 2007 RS<sub>25</sub> = 2005 EB<sub>231</sub> = 2006 HX<sub>117</sub>**Id. Minor Planet Center (*MPO* 128304; d, *ibid.*; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.76423    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18625321 | $\omega$ | 179.93616 | +0.89858966   | +0.42961245 |
| <i>a</i> | 3.0366882  | $\Omega$ | 154.03580 | −0.40267223   | +0.88821009 |
| <i>e</i> | 0.1120276  | <i>i</i> | 11.76567  | −0.17433213   | +0.16283727 |
| <i>P</i> | 5.29       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | G96 | 0.1− | 0.8− | 2007 08 22 | 699 | 0.0  | 0.1− | 2007 09 13 | G96 | 0.7+ | 0.3− |
| 2005 03 10 | G96 | 0.2+ | 0.2+ | 2007 09 04 | G96 | 0.3− | 0.1+ | 2007 09 13 | G96 | 0.6+ | 0.3− |
| 2005 03 10 | G96 | 0.1+ | 0.0  | 2007 09 04 | G96 | 0.6− | 0.0  | 2007 09 13 | G96 | 0.0  | 0.3− |
| 2005 03 10 | G96 | 0.3− | 0.3+ | 2007 09 04 | G96 | 0.7− | 0.1− | 2007 09 13 | G96 | 0.2+ | 0.4− |
| 2006 04 29 | 691 | 0.0  | 0.2− | 2007 09 04 | G96 | 0.2− | 0.1− | 2007 09 14 | G96 | 0.0  | 0.2+ |
| 2006 04 29 | 691 | 0.1− | 0.5− | 2007 09 05 | G96 | 0.5− | 0.0  | 2007 09 14 | G96 | 0.7+ | 0.2+ |
| 2006 04 29 | 691 | 0.1+ | 0.0  | 2007 09 05 | G96 | 0.2− | 0.0  | 2007 09 14 | G96 | 0.3− | 0.1+ |
| 2006 05 07 | 691 | 0.1+ | 0.0  | 2007 09 05 | G96 | 0.6− | 0.1− | 2007 09 14 | G96 | 0.2− | 0.1+ |
| 2006 05 07 | 691 | 0.1− | 0.1+ | 2007 09 05 | G96 | 0.3− | 0.1− | 2007 10 14 | G96 | 0.6+ | 0.2+ |
| 2006 05 07 | 691 | 0.1− | 0.6+ | 2007 09 11 | G96 | 0.1− | 0.1+ | 2007 10 14 | G96 | 0.3+ | 0.3+ |
| 2007 08 22 | 699 | 0.4+ | 1.0− | 2007 09 11 | G96 | 0.4+ | 0.2− | 2007 10 14 | G96 | 0.2+ | 0.2+ |
| 2007 08 22 | 699 | 1.0− | 0.8+ | 2007 09 11 | G96 | 0.3+ | 0.1− | 2007 10 14 | G96 | 0.5+ | 0.1+ |
| 2007 08 22 | 699 | 0.5+ | 1.0+ | 2007 09 11 | G96 | 0.2− | 0.2− |            |     |      |      |

**2007 RZ<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.18425  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.36526039 | $\omega$ | 40.38535  | +0.91841667   | −0.38283298 |
| <i>a</i> | 1.9382108  | $\Omega$ | 341.37134 | +0.23143011   | +0.72439778 |
| <i>e</i> | 0.1110701  | <i>i</i> | 18.19588  | +0.32085968   | +0.57331210 |
| <i>P</i> | 2.70       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 02 | G96 | 0.2− | 0.2+ | 2007 09 03 | 703 | 0.1+ | 0.7+ | 2007 09 12 | 699 | 0.2+ | 0.1− |
| 2006 02 02 | G96 | 0.6− | 0.3− | 2007 09 03 | 703 | 0.1+ | 0.3− | 2007 09 12 | 699 | 0.3− | 1.1− |
| 2006 02 02 | G96 | 0.3+ | 0.3− | 2007 09 03 | 703 | 0.2+ | 0.2+ | 2007 10 08 | 703 | 0.1− | 0.2+ |
| 2006 02 02 | G96 | 0.2− | 0.6− | 2007 09 03 | 703 | 0.2− | 0.4+ | 2007 10 08 | 703 | 0.3+ | 0.5− |
| 2006 03 03 | 691 | 0.2− | 0.1+ | 2007 09 11 | 703 | 0.4− | 0.1+ | 2007 10 08 | 703 | 0.3− | 0.0  |
| 2006 03 03 | 691 | 0.1+ | 0.2+ | 2007 09 11 | 703 | 0.4− | 0.4+ | 2007 10 08 | 703 | 0.1+ | 0.0  |
| 2006 03 03 | 691 | 0.0  | 0.2+ | 2007 09 11 | 703 | 1.2+ | 0.2+ | 2007 10 19 | 703 | 0.6− | 0.0  |
| 2006 03 05 | 291 | 0.2+ | 0.0  | 2007 09 11 | 703 | 0.1+ | 0.3− | 2007 10 19 | 703 | 0.3+ | 0.4+ |
| 2006 03 05 | 291 | 0.0  | 0.0  | 2007 09 12 | 699 | 1.1+ | 0.2− | 2007 10 19 | 703 | 1.0− | 0.0  |
| 2006 03 05 | 291 | 0.1+ | 0.1+ | 2007 09 12 | 699 | 0.3+ | 0.1− | 2007 10 19 | 703 | 0.7− | 0.4− |

**2007 RR<sub>102</sub> = 2006 FZ<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 192.40773  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29791303 | $\omega$ | 156.49444 | −0.97229866   | −0.23370649 |
| <i>a</i> | 2.2202901  | $\Omega$ | 9.99276   | +0.21055803   | −0.88329351 |
| <i>e</i> | 0.1110767  | <i>i</i> | 1.34503   | +0.10149203   | −0.40641587 |
| <i>P</i> | 3.31       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 14 | 691 | 0.0  | 0.0  | 2006 03 25 | G96 | 0.3+ | 0.4+ | 2007 09 12 | G96 | 0.0  | 0.1− |
| 2004 10 14 | 691 | 0.0  | 0.1+ | 2006 03 25 | G96 | 0.5+ | 0.0  | 2007 09 12 | G96 | 0.0  | 0.1− |
| 2004 10 14 | 691 | 0.1− | 0.2+ | 2006 03 26 | 699 | 0.6− | 0.8+ | 2007 09 12 | G96 | 0.0  | 0.1+ |
| 2005 10 24 | 568 | 0.2+ | 0.5+ | 2006 03 26 | 699 | 0.3+ | 1.5+ | 2007 09 12 | G96 | 0.1− | 0.2+ |
| 2005 10 24 | 568 | 0.1+ | 0.4+ | 2006 03 26 | 699 | 0.8+ | 0.6+ | 2007 09 12 | G96 | 0.5− | 0.3+ |
| 2005 10 24 | 568 | 0.2+ | 0.4+ | 2006 03 26 | 699 | 0.2+ | 0.5− | 2007 09 12 | G96 | 0.2− | 0.2+ |
| 2005 10 31 | 568 | 0.2+ | 0.3+ | 2006 05 06 | G96 | 0.4− | 0.1− | 2007 09 12 | G96 | 0.1+ | 0.3+ |
| 2005 10 31 | 568 | 0.3+ | 0.3+ | 2006 05 06 | G96 | 0.1+ | 0.3− | 2007 09 12 | G96 | 0.1− | 0.3+ |
| 2005 10 31 | 568 | 0.2+ | 0.4+ | 2006 05 06 | G96 | 0.1+ | 0.2− | 2007 09 12 | G96 | 0.2− | 0.3+ |
| 2005 12 02 | 568 | 0.2+ | 0.4+ | 2006 05 06 | G96 | 0.0  | 0.2− | 2007 09 12 | G96 | 0.3+ | 0.1+ |
| 2005 12 02 | 568 | 0.2+ | 0.4+ | 2007 08 10 | 691 | 0.3− | 0.1+ | 2007 09 12 | G96 | 0.4− | 0.3+ |
| 2005 12 02 | 568 | 0.1+ | 0.4+ | 2007 08 10 | 691 | 0.2− | 0.0  | 2007 10 08 | G96 | 0.1+ | 0.1+ |
| 2006 03 23 | G96 | 0.3− | 0.0  | 2007 08 10 | 691 | 0.5− | 0.0  | 2007 10 08 | G96 | 0.7+ | 0.1− |
| 2006 03 23 | G96 | 0.1− | 0.0  | 2007 09 11 | G96 | 0.1− | 0.2− | 2007 10 08 | G96 | 0.2+ | 0.1− |
| 2006 03 23 | G96 | 0.3+ | 0.2+ | 2007 09 11 | G96 | 0.1− | 0.1− | 2007 10 08 | G96 | 0.6+ | 0.1− |
| 2006 03 23 | G96 | 0.1+ | 0.1+ | 2007 09 11 | G96 | 0.2− | 0.1− | 2007 10 11 | 691 | 0.4+ | 0.2+ |
| 2006 03 25 | G96 | 0.2− | 0.1+ | 2007 09 11 | G96 | 0.2+ | 0.1− | 2007 10 11 | 691 | 0.1+ | 0.2+ |
| 2006 03 25 | G96 | 0.1+ | 0.4+ | 2007 09 12 | G96 | 0.6+ | 0.0  | 2007 10 11 | 691 | 0.3− | 0.1+ |

**2007 RN<sub>104</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.03308   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17163591 | $\omega$ | 288.48800 | +0.93169474   | +0.36229628 |
| <i>a</i> | 3.2067415  | $\Omega$ | 50.27942  | −0.31909890   | +0.85079743 |
| <i>e</i> | 0.1522172  | <i>i</i> | 1.95186   | −0.17355349   | +0.38063779 |
| <i>P</i> | 5.74       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 25 | 691 | 0.0  | 0.4− | 2007 09 09 | 699 | 1.9− | 1.3+ | 2007 10 05 | 691 | 0.2− | 0.1− |
| 2000 04 25 | 691 | 0.3− | 0.0  | 2007 09 09 | 699 | 0.2+ | 0.4+ | 2007 10 11 | 691 | 0.6− | 0.5+ |
| 2000 04 25 | 691 | 0.1+ | 0.1− | 2007 09 09 | 699 | 0.9+ | 0.7+ | 2007 10 11 | 691 | 0.1− | 0.1− |
| 2005 03 12 | 691 | 0.5− | 0.2− | 2007 09 09 | 699 | 0.7+ | 0.0  | 2007 10 11 | 691 | 0.2− | 0.0  |
| 2005 03 12 | 691 | 0.5+ | 0.7+ | 2007 09 11 | G96 | 0.3+ | 0.3− | 2007 10 11 | 691 | 0.3+ | 0.1− |
| 2005 03 12 | 691 | 0.5+ | 0.5+ | 2007 09 11 | G96 | 0.6+ | 0.2− | 2007 10 11 | 691 | 0.3− | 0.2+ |
| 2005 04 04 | G96 | 0.1− | 0.1− | 2007 09 11 | G96 | 0.5+ | 0.3− | 2007 10 11 | 691 | 0.0  | 0.3+ |
| 2005 04 04 | G96 | 0.2− | 0.7+ | 2007 09 11 | G96 | 0.3+ | 0.4− | 2007 10 13 | 691 | 0.3− | 0.3+ |
| 2005 04 04 | G96 | 0.2− | 0.2− | 2007 09 12 | 703 | 0.2+ | 0.0  | 2007 10 13 | 691 | 0.1− | 0.2− |
| 2005 04 04 | G96 | 0.3+ | 0.1+ | 2007 09 12 | 703 | 0.3+ | 0.2+ | 2007 10 13 | 691 | 0.3− | 0.0  |
| 2006 05 23 | G96 | 0.0  | 0.3+ | 2007 09 12 | 703 | 1.1+ | 0.0  | 2007 11 13 | G96 | 0.3+ | 0.3− |
| 2006 05 23 | G96 | 0.5+ | 0.1+ | 2007 09 12 | 703 | 0.6+ | 1.4− | 2007 11 13 | G96 | 0.7+ | 0.3− |
| 2006 05 23 | G96 | 0.4+ | 0.2+ | 2007 10 05 | 691 | 0.0  | 0.2− | 2007 11 13 | G96 | 0.1+ | 0.6+ |
| 2006 05 23 | G96 | 0.7− | 0.5+ | 2007 10 05 | 691 | 0.1+ | 0.1+ | 2007 11 13 | G96 | 0.6+ | 0.3− |



2007 DEC. 24

M.P.O. 129795

**2007 RR<sub>109</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.82824   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26318428 | $\omega$ 116.61575 | +0.62924596   | +0.77698146 |
| <i>a</i> | 2.4115490  | $\Omega$ 192.43235 | -0.74038191   | +0.59194417 |
| <i>e</i> | 0.0842837  | <i>i</i> 4.98044   | -0.23639829   | +0.21424732 |
| <i>P</i> | 3.75       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1992 09 29 | 691 | 0.0   | 0.0   | 2007 09 08 | 699 | 0.5- | 1.4- | 2007 09 19 | 704 | 0.5+ | 0.2+ |
| 1992 09 29 | 691 | 0.2+  | 0.1+  | 2007 09 11 | 691 | 0.9- | 0.1+ | 2007 09 19 | 683 | 0.4- | 1.2- |
| 1992 09 29 | 691 | 0.1-  | 0.0   | 2007 09 11 | 691 | 0.3- | 0.3- | 2007 09 19 | 683 | 0.5+ | 1.7- |
| 2002 03 20 | 691 | 0.2+  | 0.1+  | 2007 09 11 | 691 | 0.5- | 0.2+ | 2007 10 06 | 704 | 0.4+ | 1.0+ |
| 2002 03 20 | 691 | 0.1-  | 0.3+  | 2007 09 12 | 691 | 0.3- | 0.2+ | 2007 10 06 | 704 | 0.3- | 0.3+ |
| 2002 03 20 | 691 | 0.1-  | 0.0   | 2007 09 12 | 691 | 0.3- | 0.0  | 2007 10 06 | 704 | 0.3+ | 0.0  |
| 2006 03 25 | 691 | 0.2+  | 0.3+  | 2007 09 12 | 691 | 0.2- | 0.1+ | 2007 10 06 | 704 | 0.6- | 0.2+ |
| 2006 03 25 | 691 | 0.0   | 0.5+  | 2007 09 13 | 704 | 0.2+ | 1.3- | 2007 10 06 | 704 | 0.4+ | 0.5+ |
| 2006 03 25 | 691 | 0.2+  | 0.0   | 2007 09 13 | 704 | 0.1+ | 0.9+ | 2007 10 07 | G96 | 0.2+ | 0.0  |
| 2006 05 06 | 691 | 0.2-  | 0.1+  | 2007 09 13 | 704 | 0.1+ | 1.4+ | 2007 10 07 | G96 | 0.2+ | 0.1- |
| 2006 05 06 | 691 | 0.2+  | 0.1-  | 2007 09 14 | G96 | 0.5- | 0.2+ | 2007 10 07 | G96 | 0.0  | 0.2+ |
| 2006 05 06 | 691 | 0.2+  | 0.2-  | 2007 09 14 | G96 | 0.1- | 0.3+ | 2007 10 07 | G96 | 0.1- | 0.2+ |
| 2006 05 06 | G96 | 0.1-  | 0.1+  | 2007 09 14 | G96 | 0.4- | 0.1+ | 2007 10 19 | G96 | 0.8+ | 0.1- |
| 2006 05 06 | G96 | 0.1+  | 0.2-  | 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.1+ |
| 2006 05 06 | G96 | 0.5-  | 0.0   | 2007 09 19 | 704 | 1.1- | 0.2+ | 2007 10 19 | G96 | 0.6+ | 0.2+ |
| 2007 09 08 | 699 | (1.0- | 2.1-) | 2007 09 19 | 704 | 0.1+ | 1.4- | 2007 10 19 | G96 | 0.5+ | 0.4+ |
| 2007 09 08 | 699 | 0.9+  | 0.5+  | 2007 09 19 | 704 | 0.0  | 0.2- |            |     |      |      |
| 2007 09 08 | 699 | 0.5+  | 0.5+  | 2007 09 19 | 704 | 0.1- | 0.2+ |            |     |      |      |

**2007 RP<sub>112</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.94566   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22109536 | $\omega$ 341.85559 | +0.98809058   | +0.15284051 |
| <i>a</i> | 2.7086297  | $\Omega$ 9.40638   | -0.12421460   | +0.86055308 |
| <i>e</i> | 0.0850517  | <i>i</i> 6.25198   | -0.09081705   | +0.48588906 |
| <i>P</i> | 4.46       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 17 | 691 | 1.4- | 0.2+ | 2007 09 12 | 691 | 0.0  | 0.1- | 2007 10 05 | 188 | 0.5+ | 0.2+ |
| 1998 09 17 | 691 | 0.3+ | 0.4+ | 2007 09 12 | 691 | 0.4- | 0.0  | 2007 10 05 | 188 | 0.3+ | 0.2+ |
| 1998 09 17 | 691 | 0.6+ | 0.4+ | 2007 09 12 | 691 | 0.4- | 0.3- | 2007 10 07 | G96 | 0.4+ | 0.0  |
| 2001 03 26 | 695 | 0.4- | 0.1- | 2007 09 14 | G96 | 0.1- | 0.1- | 2007 10 07 | G96 | 0.2+ | 0.1- |
| 2001 03 26 | 695 | 0.1+ | 0.4- | 2007 09 14 | G96 | 0.1- | 0.3- | 2007 10 07 | G96 | 0.1- | 0.2- |
| 2003 12 18 | 691 | 0.4- | 0.0  | 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 10 07 | G96 | 0.3+ | 0.1- |
| 2003 12 18 | 691 | 0.3+ | 0.1- | 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 11 09 | G96 | 0.3+ | 0.3- |
| 2003 12 18 | 691 | 0.0  | 0.4+ | 2007 10 02 | 188 | 0.2- | 0.2- | 2007 11 09 | G96 | 0.6+ | 0.6+ |
| 2007 09 11 | 691 | 0.0  | 0.2- | 2007 10 02 | 188 | 0.0  | 0.3- | 2007 11 09 | G96 | 0.1- | 0.3- |
| 2007 09 11 | 691 | 0.3- | 0.3+ | 2007 10 02 | 188 | 0.2- | 0.2- | 2007 11 09 | G96 | 0.3- | 0.2- |
| 2007 09 11 | 691 | 0.3- | 0.0  | 2007 10 05 | 188 | 0.5+ | 0.3+ |            |     |      |      |

**2007 RQ<sub>112</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 259.84167  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17961217 | $\omega$ 302.35211 | -0.50549357   | -0.86280721 |
| <i>a</i> | 3.1110874  | $\Omega$ 177.97996 | +0.83960025   | -0.49355969 |
| <i>e</i> | 0.0639717  | <i>i</i> 10.33241  | +0.19886597   | -0.10937347 |
| <i>P</i> | 5.49       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 22 | 645 | 0.1+ | 0.1+ | 2005 04 18 | 691 | 0.2+ | 0.6+ | 2007 09 14 | G96 | 0.2+ | 0.0  |
| 1999 03 22 | 645 | 0.1+ | 0.1+ | 2005 04 18 | 691 | 0.2+ | 0.6+ | 2007 09 14 | G96 | 0.6+ | 0.1+ |
| 1999 03 25 | 691 | 0.4- | 0.7- | 2005 04 18 | 691 | 0.0  | 0.8+ | 2007 10 08 | G96 | 0.0  | 0.1- |
| 1999 03 25 | 691 | 0.6- | 1.6- | 2007 09 11 | 691 | 0.4- | 0.2- | 2007 10 08 | G96 | 0.1+ | 0.1- |
| 1999 03 25 | 691 | 0.1- | 0.7- | 2007 09 11 | 691 | 0.1- | 0.2- | 2007 10 08 | G96 | 0.0  | 0.0  |
| 2001 09 19 | 645 | 0.1+ | 0.0  | 2007 09 11 | 691 | 0.3- | 0.1+ | 2007 10 08 | G96 | 0.5- | 0.4+ |
| 2001 09 19 | 645 | 0.1+ | 0.1+ | 2007 09 12 | 691 | 0.1- | 0.1- | 2007 10 16 | G96 | 0.1- | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 27 | 699 | 0.7- | 1.9+ | 2007 09 12 | 691 | 0.2- | 0.2- | 2007 10 16 | G96 | 0.0  | 0.0  |
| 2004 01 27 | 699 | 0.8+ | 0.6- | 2007 09 12 | 691 | 0.4- | 0.2+ | 2007 10 16 | G96 | 0.1+ | 0.0  |
| 2004 01 27 | 699 | 0.4- | 0.2+ | 2007 09 14 | G96 | 0.4+ | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.1- |
| 2004 01 27 | 699 | 0.9+ | 0.2+ | 2007 09 14 | G96 | 0.4+ | 0.1- |            |     |      |      |

**2007 RM<sub>113</sub> = 1994 PK<sub>12</sub> = 2007 VQ<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.98980   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23137070 | $\omega$ 202.97845 | +0.99467704   | +0.01356810 |
| <i>a</i> | 2.6278293  | $\Omega$ 155.56821 | +0.00497888   | +0.98380635 |
| <i>e</i> | 0.2619037  | <i>i</i> 14.29762  | -0.10292132   | +0.17872039 |
| <i>P</i> | 4.26       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 08 10 | 809 | 0.8+  | 1.7+  | 2007 10 11 | 703 | 0.2- | 0.1+ | 2007 11 03 | G96 | 0.2+  | 0.3-  |
| 1994 08 10 | 809 | (1.0+ | 2.6+) | 2007 10 11 | 703 | 0.6- | 0.7+ | 2007 11 03 | G96 | 0.2+  | 0.3-  |
| 1994 08 10 | 809 | 0.7+  | 0.7+  | 2007 10 11 | 703 | 0.5- | 0.4+ | 2007 11 11 | 703 | 0.4+  | 0.1-  |
| 1994 08 11 | 809 | 0.8-  | 1.0-  | 2007 10 11 | 703 | 1.1- | 1.1+ | 2007 11 11 | 703 | 0.5+  | 0.9-  |
| 1994 08 11 | 809 | 0.1-  | 0.3-  | 2007 10 15 | 703 | 0.2+ | 0.8+ | 2007 11 11 | 703 | 0.7+  | 0.2+  |
| 1994 08 11 | 809 | 0.6-  | 0.6-  | 2007 10 15 | 703 | 0.8+ | 0.6+ | 2007 11 11 | 703 | 0.7-  | 0.9+  |
| 2007 09 11 | 703 | 0.2+  | 0.9-  | 2007 10 15 | 703 | 0.8+ | 0.4+ | 2007 11 18 | 703 | 0.4+  | 0.2+  |
| 2007 09 11 | 703 | 0.9-  | 0.3-  | 2007 10 15 | 703 | 1.2+ | 1.3- | 2007 11 18 | 703 | 0.9-  | 0.0   |
| 2007 09 11 | 703 | 0.2+  | 0.8-  | 2007 11 02 | 703 | 0.1- | 0.0  | 2007 11 18 | 703 | 1.0-  | 0.1+  |
| 2007 09 11 | 703 | 0.1+  | 0.6-  | 2007 11 02 | 703 | 0.2- | 0.4- | 2007 11 18 | 703 | (1.8- | 2.1-) |
| 2007 09 12 | 703 | 0.3+  | 0.2-  | 2007 11 02 | 703 | 0.3+ | 0.1- | 2007 11 18 | 703 | (0.6+ | 1.7-) |
| 2007 09 12 | 703 | 0.4-  | 0.2+  | 2007 11 02 | 703 | 0.3- | 0.8- | 2007 11 18 | 703 | (2.3+ | 1.5-) |
| 2007 09 12 | 703 | 0.5-  | 0.6+  | 2007 11 03 | G96 | 0.5+ | 0.3- | 2007 11 18 | 703 | 0.1-  | 0.9+  |
| 2007 09 12 | 703 | 0.3+  | 0.7-  | 2007 11 03 | G96 | 0.3+ | 0.2- | 2007 11 18 | 703 | 0.1-  | 0.5+  |

**2007 RG<sub>115</sub> = 2005 GZ<sub>173</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 299.09656  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17980233 | $\omega$ 240.63197 | +0.22445098   | -0.97143480 |
| <i>a</i> | 3.1088934  | $\Omega$ 196.92865 | +0.96040614   | +0.23390691 |
| <i>e</i> | 0.0407439  | <i>i</i> 15.34324  | +0.16505091   | -0.04002485 |
| <i>P</i> | 5.48       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 645 | 0.0  | 0.1- | 2005 04 18 | 691 | 0.3+ | 0.0  | 2007 09 20 | 691 | 0.3- | 0.6+ |
| 2001 09 20 | 645 | 0.0  | 0.1- | 2007 09 11 | 691 | 0.3- | 0.2+ | 2007 09 20 | 691 | 0.3- | 0.2+ |
| 2002 11 06 | 699 | 0.2+ | 0.9+ | 2007 09 11 | 691 | 0.1- | 0.3+ | 2007 09 20 | 691 | 0.2- | 0.2+ |
| 2002 11 06 | 699 | 0.2+ | 0.1+ | 2007 09 11 | 691 | 0.9+ | 0.4+ | 2007 10 10 | G96 | 0.6+ | 0.0  |
| 2002 11 06 | 699 | 0.3+ | 0.6- | 2007 09 13 | 291 | 0.3- | 0.1- | 2007 10 10 | G96 | 0.2- | 0.0  |
| 2002 11 06 | 699 | 0.7- | 0.2- | 2007 09 13 | 291 | 0.1- | 0.1+ | 2007 10 10 | G96 | 0.2+ | 0.4+ |
| 2005 04 14 | 691 | 0.2+ | 0.3+ | 2007 09 13 | 291 | 0.0  | 0.0  | 2007 10 10 | G96 | 0.0  | 0.3+ |
| 2005 04 14 | 691 | 0.1+ | 0.1+ | 2007 09 13 | G96 | 0.1- | 0.4- | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2005 04 14 | 691 | 0.0  | 0.1+ | 2007 09 13 | G96 | 0.3+ | 0.0  | 2007 11 09 | G96 | 0.0  | 0.1+ |
| 2005 04 18 | 691 | 0.2- | 0.4+ | 2007 09 13 | G96 | 0.0  | 0.1- | 2007 11 09 | G96 | 0.4+ | 0.1+ |
| 2005 04 18 | 691 | 0.1- | 0.4+ | 2007 09 13 | G96 | 0.1- | 0.1- | 2007 11 09 | G96 | 0.4+ | 0.1- |

**2007 RN<sub>118</sub> = 2007 TM<sub>357</sub> = 1996 AJ<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.91921   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22821405 | $\omega$ 159.20807 | +0.92241232   | +0.38620342 |
| <i>a</i> | 2.6520058  | $\Omega$ 178.07137 | -0.36054979   | +0.86257187 |
| <i>e</i> | 0.0668168  | <i>i</i> 2.65176   | -0.13841732   | +0.32682822 |
| <i>P</i> | 4.32       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 09 | 691 | 0.1+ | 0.2- | 2007 09 11 | G96 | 0.2+ | 0.8- | 2007 10 15 | 703 | 0.4- | 0.1+ |
| 1994 10 09 | 691 | 0.4- | 0.3+ | 2007 09 11 | G96 | 0.1+ | 0.4- | 2007 10 15 | 703 | 0.5+ | 0.0  |
| 1994 10 09 | 691 | 0.2+ | 0.5- | 2007 09 11 | G96 | 0.1- | 0.9- | 2007 10 15 | 703 | 0.2+ | 1.0- |
| 1996 01 13 | 691 | 0.5- | 0.0  | 2007 09 11 | G96 | 0.3+ | 0.9- | 2007 10 18 | G96 | 0.7+ | 0.5+ |
| 1996 01 13 | 691 | 0.1+ | 0.4- | 2007 09 12 | G96 | 0.4+ | 0.4+ | 2007 10 18 | G96 | 0.6+ | 0.0  |
| 1996 01 13 | 691 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.4+ | 0.4+ | 2007 10 18 | G96 | 0.6+ | 0.5+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 01 19 | 691 | 0.2+ | 0.1− | 2007 09 12 | G96 | 0.0  | 0.4+ | 2007 10 18 | G96 | 0.6+ | 0.6+ |
| 1996 01 19 | 691 | 0.1− | 0.1− | 2007 09 12 | G96 | 0.3+ | 0.5+ | 2007 11 04 | 691 | 0.6− | 0.0  |
| 2001 04 18 | 691 | 0.4+ | 0.2− | 2007 10 08 | G96 | 0.0  | 0.2− | 2007 11 04 | 691 | 0.1+ | 0.1+ |
| 2001 04 18 | 691 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.3− | 2007 11 04 | 691 | 0.3− | 0.6+ |
| 2001 04 18 | 691 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.3− | 2007 11 15 | 691 | 0.2− | 0.3+ |
| 2003 12 21 | 691 | 0.3+ | 0.0  | 2007 10 08 | G96 | 0.0  | 0.2− | 2007 11 15 | 691 | 0.5− | 0.2+ |
| 2003 12 21 | 691 | 0.1+ | 0.1− | 2007 10 13 | 703 | 0.8− | 0.6+ | 2007 11 15 | 691 | 0.2− | 0.3+ |
| 2003 12 21 | 691 | 0.1+ | 0.0  | 2007 10 13 | 703 | 1.0+ | 0.3+ | 2007 12 05 | 106 | 0.9− | 0.6− |
| 2005 02 02 | 691 | 0.2− | 0.3+ | 2007 10 13 | 703 | 0.5− | 1.2+ | 2007 12 05 | 106 | 0.9− | 0.4+ |
| 2005 02 02 | 691 | 0.2− | 0.2+ | 2007 10 13 | 703 | 0.3+ | 0.4− | 2007 12 05 | 106 | 1.2+ | 1.1− |
| 2005 02 02 | 691 | 0.2− | 0.2+ | 2007 10 15 | 703 | 0.2− | 1.2− | 2007 12 05 | 106 | 0.7+ | 0.1+ |

**2007 RR<sub>118</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 343.99491  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17781745 | $\omega$ | 213.56430 | +0.70607321 | −0.70761446 |
| <i>a</i> | 3.1319859  | $\Omega$ | 191.60228 | +0.67585432 | +0.68486920 |
| <i>e</i> | 0.0581417  | <i>i</i> | 7.78625   | +0.21138011 | +0.17388489 |
| <i>P</i> | 5.54       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 16 | 691 | 0.2− | 0.5+ | 2007 09 11 | G96 | 1.1− | 0.1− | 2007 10 08 | G96 | 0.2+ | 0.1+ |
| 2005 04 16 | 691 | 0.2+ | 0.2− | 2007 09 11 | G96 | 0.4− | 0.3− | 2007 10 08 | G96 | 0.1+ | 0.1+ |
| 2005 04 16 | 691 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.4+ | 0.3+ | 2007 10 08 | G96 | 0.1− | 0.1+ |
| 2005 05 13 | 691 | 0.2+ | 0.4+ | 2007 09 12 | G96 | 0.4+ | 0.5+ | 2007 10 19 | G96 | 0.4+ | 0.4− |
| 2005 05 13 | 691 | 0.3− | 0.5− | 2007 09 12 | G96 | 0.1− | 0.2+ | 2007 10 19 | G96 | 0.0  | 0.4− |
| 2005 05 13 | 691 | 0.3+ | 0.5+ | 2007 09 12 | G96 | 0.3+ | 0.4+ | 2007 10 19 | G96 | 0.6+ | 0.3− |
| 2006 05 25 | 691 | 0.3+ | 0.3− | 2007 10 08 | G96 | 0.3− | 0.1− | 2007 10 19 | G96 | 0.0  | 0.3− |
| 2006 05 25 | 691 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 10 20 | 703 | 0.4− | 0.3− |
| 2006 05 25 | 691 | 0.2− | 0.1− | 2007 10 08 | G96 | 0.2− | 0.0  | 2007 10 20 | 703 | 1.2+ | 0.6+ |
| 2007 09 11 | G96 | 0.3− | 0.1− | 2007 10 08 | G96 | 0.1+ | 0.3− | 2007 10 20 | 703 | 0.2+ | 0.3− |
| 2007 09 11 | G96 | 0.2− | 0.1− | 2007 10 08 | G96 | 0.1− | 0.1+ | 2007 10 20 | 703 | 0.7− | 1.4+ |

**2007 RA<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 346.54324  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26571666 | $\omega$ | 355.72438 | +0.83176681 | −0.55500162 |
| <i>a</i> | 2.3962026  | $\Omega$ | 37.99410  | +0.50987999 | +0.75546100 |
| <i>e</i> | 0.2151848  | <i>i</i> | 1.09020   | +0.21951394 | +0.34821240 |
| <i>P</i> | 3.71       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 10 16 | 566 | 0.3+ | 0.4− | 2007 09 16 | 704 | 0.0  | 1.1+ | 2007 10 12 | G96 | 0.1+  | 0.4−  |
| 1996 10 16 | 566 | 0.0  | 0.3− | 2007 09 16 | 704 | 0.0  | 1.1+ | 2007 10 12 | G96 | 0.3+  | 0.4−  |
| 1996 10 16 | 566 | 0.0  | 0.0  | 2007 09 16 | 704 | 0.3+ | 0.3+ | 2007 10 14 | 704 | 0.3−  | 0.2+  |
| 2006 05 20 | 691 | 0.2− | 0.1− | 2007 09 16 | 704 | 0.4+ | 0.3+ | 2007 10 14 | 704 | 0.2−  | 0.6+  |
| 2006 05 20 | 691 | 0.0  | 0.1− | 2007 09 19 | 704 | 0.1− | 0.9+ | 2007 10 14 | 704 | 0.6−  | 0.3−  |
| 2006 05 20 | 691 | 0.2+ | 0.1+ | 2007 09 19 | 704 | 1.0− | 0.4+ | 2007 10 14 | 704 | 0.6−  | 0.4+  |
| 2007 09 11 | D29 | 0.2+ | 1.2− | 2007 09 19 | 704 | 0.3+ | 1.2+ | 2007 10 14 | 704 | 0.6+  | 0.0   |
| 2007 09 11 | D29 | 0.6+ | 1.4− | 2007 09 19 | 704 | 0.3+ | 1.1+ | 2007 10 15 | 703 | 0.8−  | 0.1+  |
| 2007 09 11 | D29 | 0.1− | 0.8− | 2007 09 19 | 704 | 0.8+ | 0.6+ | 2007 10 15 | 703 | 0.0   | 0.0   |
| 2007 09 11 | D29 | 0.3+ | 1.1− | 2007 10 04 | G96 | 0.8− | 0.6− | 2007 10 15 | 703 | 0.2−  | 0.2+  |
| 2007 09 13 | 704 | 0.0  | 0.3+ | 2007 10 04 | G96 | 0.3+ | 0.3− | 2007 10 15 | 703 | 0.4−  | 0.4+  |
| 2007 09 13 | 704 | 1.0− | 0.0  | 2007 10 04 | G96 | 0.3+ | 0.5− | 2007 10 18 | 704 | 0.0   | 0.7+  |
| 2007 09 13 | 704 | 0.0  | 0.1+ | 2007 10 06 | 704 | 0.5− | 0.4+ | 2007 10 18 | 704 | 1.3−  | 1.3+  |
| 2007 09 13 | 704 | 0.2− | 0.0  | 2007 10 06 | 704 | 0.7− | 0.3+ | 2007 10 18 | 704 | 0.5+  | 0.3+  |
| 2007 09 13 | 704 | 0.5+ | 0.6+ | 2007 10 06 | 704 | 0.3− | 0.1− | 2007 10 18 | 704 | (0.4+ | 3.0+) |
| 2007 09 13 | 699 | 1.0+ | 0.0  | 2007 10 06 | 704 | 0.9− | 0.2+ | 2007 11 05 | G96 | 0.2+  | 0.6−  |
| 2007 09 13 | G96 | 0.1+ | 0.5− | 2007 10 06 | 704 | 0.5− | 0.5− | 2007 11 05 | G96 | 0.1+  | 0.4−  |
| 2007 09 13 | G96 | 0.2− | 0.4− | 2007 10 08 | 704 | 0.3− | 0.1− | 2007 11 05 | G96 | 0.2−  | 0.4−  |
| 2007 09 13 | G96 | 0.2+ | 0.6− | 2007 10 08 | 704 | 0.3− | 1.2− | 2007 11 05 | G96 | 0.1+  | 0.4−  |
| 2007 09 13 | 699 | 0.2− | 0.4+ | 2007 10 08 | 699 | 0.4+ | 0.1− | 2007 11 14 | 704 | 0.6+  | 0.5+  |
| 2007 09 13 | G96 | 0.3+ | 0.4− | 2007 10 08 | 704 | 0.1+ | 1.3− | 2007 11 14 | 704 | 0.1−  | 0.2−  |
| 2007 09 13 | 699 | 0.9+ | 0.9+ | 2007 10 08 | 699 | 0.1+ | 0.2− | 2007 11 14 | 704 | 0.7−  | 0.2+  |
| 2007 09 13 | 699 | 0.2+ | 0.1− | 2007 10 08 | 699 | 0.2− | 1.3− | 2007 11 14 | 704 | 0.1+  | 0.2+  |
| 2007 09 14 | 699 | 0.9+ | 1.1− | 2007 10 08 | 699 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.6+  | 0.9+  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 14 | 699 | 0.7−  | 0.6+  | 2007 10 11 | 704 | 0.2+ | 0.2+ | 2007 12 05 | 704 | 0.1− | 0.8+ |
| 2007 09 14 | 699 | (1.5− | 0.1+) | 2007 10 11 | 704 | 0.0  | 0.3− | 2007 12 05 | 704 | 1.8+ | 0.6+ |
| 2007 09 15 | 699 | 0.6−  | 0.7+  | 2007 10 11 | 704 | 0.2+ | 0.4+ | 2007 12 05 | G96 | 0.2− | 0.6− |
| 2007 09 15 | 699 | 0.2−  | 0.5−  | 2007 10 11 | 704 | 0.3+ | 0.1+ | 2007 12 05 | G96 | 0.4− | 0.5− |
| 2007 09 15 | 699 | 0.2+  | 0.9+  | 2007 10 12 | G96 | 0.0  | 0.4− | 2007 12 05 | G96 | 0.6− | 0.6− |
| 2007 09 16 | 704 | 1.1+  | 0.2+  | 2007 10 12 | G96 | 0.4+ | 0.3− | 2007 12 05 | G96 | 0.4− | 0.1− |

**2007 RB<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 9.09167    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21763920 | $\omega$ | 191.17666 | +0.99782195 | +0.06186469 |
| <i>a</i> | 2.7372300  | $\Omega$ | 165.21853 | −0.05146123 | +0.94717206 |
| <i>e</i> | 0.2384158  | <i>i</i> | 5.14814   | −0.04126848 | +0.31470279 |
| <i>P</i> | 4.53       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 17 | 809 | 0.1+ | 0.1+ | 2007 09 13 | G96 | 0.0  | 0.4− | 2007 10 07 | 699 | 0.9− | 0.8+ |
| 2005 02 17 | 809 | 0.0  | 0.1+ | 2007 09 15 | 704 | 0.6− | 0.3− | 2007 10 07 | 699 | 1.1− | 0.2+ |
| 2005 02 17 | 809 | 0.1+ | 0.1+ | 2007 09 15 | 699 | 0.8+ | 0.9+ | 2007 10 11 | 699 | 0.1+ | 0.5+ |
| 2005 02 18 | 809 | 0.1+ | 0.0  | 2007 09 15 | 704 | 0.3− | 0.1− | 2007 10 11 | 699 | 0.8+ | 0.3− |
| 2005 02 18 | 809 | 0.1− | 0.1− | 2007 09 15 | 699 | 0.1+ | 0.2− | 2007 10 11 | 699 | 0.3+ | 0.2+ |
| 2005 02 18 | 809 | 0.0  | 0.0  | 2007 09 15 | 704 | 0.2− | 0.4− | 2007 10 11 | 699 | 0.5− | 1.3− |
| 2007 09 11 | G96 | 0.2− | 0.5− | 2007 09 15 | 699 | 0.3+ | 0.1+ | 2007 10 13 | 704 | 0.6+ | 0.2− |
| 2007 09 11 | G96 | 0.4+ | 0.1− | 2007 09 15 | 699 | 0.8+ | 0.1− | 2007 10 13 | 704 | 0.3− | 0.1+ |
| 2007 09 11 | G96 | 0.1− | 0.0  | 2007 09 16 | 704 | 1.2+ | 0.9+ | 2007 10 13 | G96 | 0.1− | 0.3− |
| 2007 09 11 | G96 | 0.2− | 0.0  | 2007 09 16 | 704 | 0.0  | 0.1+ | 2007 10 13 | 704 | 0.3+ | 0.2− |
| 2007 09 11 | D29 | 0.5+ | 0.7− | 2007 09 16 | 704 | 0.8+ | 0.2+ | 2007 10 13 | G96 | 0.1− | 0.0  |
| 2007 09 11 | D29 | 0.7+ | 0.5− | 2007 09 16 | 704 | 0.3+ | 0.3+ | 2007 10 13 | 704 | 0.3− | 0.4− |
| 2007 09 11 | D29 | 0.3+ | 0.5− | 2007 09 16 | 704 | 0.4+ | 0.7+ | 2007 10 13 | G96 | 0.0  | 0.0  |
| 2007 09 11 | D29 | 0.2+ | 0.3− | 2007 09 19 | 704 | 0.4+ | 0.1+ | 2007 10 13 | G96 | 0.0  | 0.2− |
| 2007 09 13 | 704 | 0.7− | 1.5− | 2007 09 19 | 704 | 0.2+ | 0.3+ | 2007 10 13 | 704 | 0.3+ | 0.3− |
| 2007 09 13 | 704 | 0.7− | 0.1− | 2007 09 19 | 704 | 0.5+ | 1.0+ | 2007 10 18 | 704 | 0.3− | 1.5+ |
| 2007 09 13 | 704 | 0.6− | 0.8+ | 2007 09 19 | 704 | 0.3+ | 0.7+ | 2007 10 18 | 704 | 0.4− | 1.6+ |
| 2007 09 13 | 704 | 1.6− | 0.4+ | 2007 09 28 | D35 | 0.6− | 0.4− | 2007 10 18 | 704 | 0.4+ | 0.4+ |
| 2007 09 13 | 704 | 1.4− | 0.8+ | 2007 09 28 | D35 | 0.4− | 0.0  | 2007 11 17 | G96 | 0.0  | 0.3− |
| 2007 09 13 | G96 | 0.2− | 0.3− | 2007 09 28 | D35 | 0.1− | 0.1− | 2007 11 17 | G96 | 0.4+ | 0.2− |
| 2007 09 13 | G96 | 0.1+ | 0.2− | 2007 10 07 | 699 | 0.1− | 0.0  | 2007 11 17 | G96 | 0.1+ | 0.3− |
| 2007 09 13 | G96 | 0.2− | 0.3− | 2007 10 07 | 699 | 0.8+ | 1.1− | 2007 11 17 | G96 | 0.1− | 0.4− |

**2007 RD<sub>119</sub> = 2007 TK<sub>357</sub>**Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 342.34922  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18044266 | $\omega$ | 238.64682 | +0.80467696 | −0.59245001 |
| <i>a</i> | 3.1015341  | $\Omega$ | 157.61132 | +0.57338885 | +0.75856761 |
| <i>e</i> | 0.2276530  | <i>i</i> | 5.83214   | +0.15401369 | +0.27125296 |
| <i>P</i> | 5.46       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 28 | 699 | 0.1− | 0.1− | 2007 09 11 | D29 | 1.0+ | 0.5− | 2007 10 11 | 699 | 0.2− | 0.8− |
| 2002 11 28 | 699 | 0.0  | 0.3− | 2007 09 11 | D29 | 0.0  | 0.2− | 2007 10 11 | 699 | 0.3− | 0.7− |
| 2002 11 28 | 699 | 0.6− | 0.1+ | 2007 09 13 | G96 | 0.1− | 0.2− | 2007 10 11 | 699 | 0.1+ | 0.4+ |
| 2002 11 28 | 699 | 0.1+ | 0.5− | 2007 09 13 | G96 | 0.3− | 0.2− | 2007 10 13 | G96 | 0.4+ | 0.4− |
| 2002 12 10 | 644 | 0.2+ | 0.3+ | 2007 09 13 | G96 | 0.1+ | 0.3− | 2007 10 13 | G96 | 0.3+ | 0.1− |
| 2002 12 10 | 644 | 0.3+ | 0.4+ | 2007 09 13 | G96 | 0.2+ | 0.2− | 2007 10 13 | G96 | 0.3+ | 0.2− |
| 2002 12 10 | 644 | 0.1+ | 0.0  | 2007 09 15 | 699 | 0.3− | 0.2− | 2007 10 13 | G96 | 0.1+ | 0.2− |
| 2004 02 22 | 695 | 0.1+ | 0.0  | 2007 09 15 | 699 | 0.3− | 1.5+ | 2007 10 15 | 703 | 0.2+ | 0.0  |
| 2004 02 22 | 695 | 0.1− | 0.0  | 2007 09 15 | 699 | 0.8− | 0.8+ | 2007 10 15 | 703 | 0.0  | 0.9+ |
| 2007 09 11 | D29 | 0.0  | 0.6− | 2007 09 15 | 699 | 0.1− | 0.7+ | 2007 10 15 | 703 | 0.1− | 1.5+ |
| 2007 09 11 | D29 | 0.2+ | 0.6− | 2007 10 11 | 699 | 0.3− | 0.7− | 2007 10 15 | 703 | 0.2+ | 0.2+ |

2007 DEC. 24

M.P.O. 129797

**2007 RD<sub>120</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 82.54727   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20609294 | $\omega$ 227.56245 | +0.19530103   | +0.98000979 |
| <i>a</i> | 2.8385332  | $\Omega$ 53.73833  | -0.88544291   | +0.19281950 |
| <i>e</i> | 0.0342918  | <i>i</i> 2.69588   | -0.42172071   | +0.04900460 |
| <i>P</i> | 4.78       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 14 | 691 | 0.7+ | 0.3- | 2005 03 04 | G96 | 0.4- | 0.2+ | 2007 09 13 | G96 | 0.1- | 0.2- |
| 1998 11 14 | 691 | 0.6+ | 0.3- | 2005 03 04 | G96 | 0.1+ | 0.1+ | 2007 10 06 | 704 | 0.7+ | 0.1- |
| 1998 11 23 | 691 | 0.5- | 0.6- | 2005 03 04 | G96 | 0.3- | 0.3+ | 2007 10 06 | 704 | 1.0+ | 1.5+ |
| 1998 11 23 | 691 | 0.2- | 0.4- | 2005 03 04 | G96 | 0.1+ | 0.1+ | 2007 10 06 | 704 | 0.3+ | 0.2+ |
| 1998 11 23 | 691 | 0.4- | 0.4- | 2005 03 16 | G96 | 0.1- | 0.2+ | 2007 10 06 | 704 | 0.4+ | 0.1+ |
| 2002 08 29 | 644 | 0.1- | 0.6+ | 2005 03 16 | G96 | 0.1- | 0.2+ | 2007 10 13 | 704 | 0.5- | 0.6+ |
| 2002 08 29 | 644 | 0.3- | 0.3+ | 2005 03 16 | G96 | 0.3- | 0.2+ | 2007 10 13 | 704 | 0.8- | 1.2+ |
| 2002 08 29 | 644 | 0.0  | 0.4+ | 2005 03 16 | G96 | 0.4- | 0.3+ | 2007 10 13 | 704 | 0.4- | 0.3+ |
| 2003 12 14 | 691 | 0.2+ | 0.0  | 2005 04 02 | 691 | 0.3+ | 0.2+ | 2007 10 15 | G96 | 0.4- | 0.2- |
| 2003 12 14 | 691 | 0.2- | 0.1+ | 2005 04 02 | 691 | 0.3+ | 0.5+ | 2007 10 15 | G96 | 0.0  | 0.4- |
| 2003 12 14 | 691 | 0.1+ | 0.0  | 2005 04 02 | 691 | 0.4+ | 0.5+ | 2007 10 15 | G96 | 0.4- | 0.2- |
| 2003 12 19 | 691 | 0.2+ | 0.1+ | 2007 09 11 | D35 | 0.1+ | 0.4- | 2007 10 15 | G96 | 0.3- | 0.2- |
| 2003 12 19 | 691 | 0.1+ | 0.1+ | 2007 09 11 | D35 | 0.2- | 0.1- | 2007 10 15 | 703 | 0.0  | 0.5- |
| 2003 12 19 | 691 | 0.0  | 0.3+ | 2007 09 11 | D35 | 0.8- | 0.1- | 2007 10 15 | 703 | 0.3- | 0.1- |
| 2005 02 01 | 691 | 0.7+ | 0.2+ | 2007 09 13 | G96 | 0.2+ | 0.0  | 2007 10 15 | 703 | 0.4+ | 0.5+ |
| 2005 02 01 | 691 | 0.5+ | 0.5+ | 2007 09 13 | G96 | 0.1+ | 0.4- | 2007 10 15 | 703 | 0.4- | 1.1+ |
| 2005 02 01 | 691 | 0.6+ | 0.0  | 2007 09 13 | G96 | 0.0  | 0.3- |            |     |      |      |

**2007 RQ<sub>124</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.54629  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.20986886 | $\omega$ 21.44555 | +0.91322356   | -0.40742655 |
| <i>a</i> | 2.8043833  | $\Omega$ 2.61463  | +0.35556723   | +0.79070712 |
| <i>e</i> | 0.1251493  | <i>i</i> 6.45880  | +0.19898409   | +0.45693092 |
| <i>P</i> | 4.70       | <i>H</i> 16.2     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 06 | 644 | 0.0  | 0.3- | 2007 08 16 | D29 | 0.2- | 0.3- | 2007 09 13 | G96 | 0.1- | 0.0  |
| 2002 08 06 | 644 | 0.5+ | 0.4- | 2007 08 16 | D29 | 0.1- | 0.3+ | 2007 09 13 | G96 | 0.1- | 0.1- |
| 2002 08 06 | 644 | 0.1- | 0.5- | 2007 08 16 | D29 | 0.2- | 0.2- | 2007 09 13 | G96 | 0.1- | 0.1+ |
| 2005 03 10 | 695 | 0.1+ | 0.2+ | 2007 09 03 | 703 | 0.4+ | 0.6+ | 2007 09 13 | G96 | 0.1- | 0.1+ |
| 2005 03 10 | 695 | 0.1+ | 0.3+ | 2007 09 03 | 703 | 0.8+ | 0.1+ | 2007 09 13 | G96 | 0.4+ | 0.1- |
| 2005 04 11 | G96 | 0.8- | 1.0- | 2007 09 03 | 703 | 0.1+ | 0.4- | 2007 09 13 | G96 | 0.0  | 0.1+ |
| 2005 04 11 | G96 | 0.5+ | 0.0  | 2007 09 03 | 703 | 0.7- | 0.2- | 2007 09 15 | 699 | 0.9- | 0.1+ |
| 2005 04 11 | G96 | 0.4+ | 0.6+ | 2007 09 12 | G96 | 0.0  | 0.1+ | 2007 09 15 | 699 | 0.6+ | 0.2- |
| 2005 04 11 | G96 | 0.0  | 0.5+ | 2007 09 12 | G96 | 0.4+ | 0.2+ | 2007 09 15 | 699 | 0.4+ | 1.2+ |
| 2007 06 17 | 291 | 0.3- | 0.9+ | 2007 09 12 | G96 | 0.2+ | 0.2+ | 2007 09 15 | 699 | 0.7+ | 0.9- |
| 2007 06 17 | 291 | 0.7- | 0.7+ | 2007 09 12 | G96 | 0.1+ | 0.2+ | 2007 10 10 | 691 | 0.5- | 0.9- |
| 2007 06 17 | 291 | 0.6- | 0.4+ | 2007 09 13 | G96 | 0.1- | 0.0  | 2007 10 10 | 691 | 0.4- | 0.0  |
| 2007 08 16 | D29 | 0.1+ | 0.4- | 2007 09 13 | G96 | 0.1- | 0.1- | 2007 10 10 | 691 | 0.4- | 0.2+ |

**2007 RE<sub>126</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 1.88271    | (2000.0)         | <b>P</b>      | <b>Q</b>    |
|----------|------------|------------------|---------------|-------------|
| <i>n</i> | 0.25498416 | $\omega$ 0.61513 | +0.99842047   | -0.05615008 |
| <i>a</i> | 2.4629783  | $\Omega$ 2.60608 | +0.05136409   | +0.89831382 |
| <i>e</i> | 0.0604213  | <i>i</i> 2.43397 | +0.02276599   | +0.43575160 |
| <i>P</i> | 3.87       | <i>H</i> 17.2    | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 23 | 807 | 0.2- | 0.3+ | 2007 09 14 | D35 | 0.3- | 0.5+ | 2007 10 07 | G96 | 0.1- | 0.1- |
| 2003 08 23 | 807 | 0.1- | 0.3+ | 2007 09 14 | D35 | 0.0  | 0.8+ | 2007 10 08 | 691 | 0.2- | 0.0  |
| 2005 01 18 | 691 | 0.0  | 0.0  | 2007 09 15 | D35 | 0.2- | 0.4+ | 2007 10 08 | 691 | 0.3- | 0.0  |
| 2005 01 18 | 691 | 0.0  | 0.0  | 2007 09 15 | D35 | 0.1+ | 0.5+ | 2007 10 08 | 691 | 0.0  | 0.1- |
| 2005 01 18 | 691 | 0.1+ | 0.2+ | 2007 09 15 | D35 | 0.3+ | 0.4+ | 2007 10 12 | 691 | 0.1- | 0.1- |
| 2006 05 31 | G96 | 0.0  | 0.4+ | 2007 09 15 | J87 | 1.6+ | 0.2+ | 2007 10 12 | 691 | 0.1- | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 31 | G96 | 0.3- | 0.3- | 2007 09 15 | J87 | 0.9+ | 0.3+ | 2007 10 12 | 691 | 0.3- | 0.1- |
| 2006 05 31 | G96 | 0.1+ | 0.0  | 2007 09 15 | J87 | 1.2+ | 0.3+ | 2007 10 14 | 691 | 0.1- | 0.0  |
| 2006 05 31 | G96 | 0.0  | 0.3- | 2007 09 16 | 704 | 1.3+ | 0.5+ | 2007 10 14 | 691 | 0.0  | 0.1- |
| 2007 09 12 | G96 | 0.1- | 0.0  | 2007 09 16 | 704 | 1.3+ | 0.3- | 2007 10 14 | 691 | 0.1- | 0.0  |
| 2007 09 12 | G96 | 0.5+ | 0.1- | 2007 09 16 | 704 | 0.9+ | 0.2- | 2007 11 09 | G96 | 0.2- | 0.4- |
| 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 09 16 | 704 | 0.1+ | 1.3+ | 2007 11 09 | G96 | 0.2+ | 0.5- |
| 2007 09 12 | G96 | 0.0  | 0.1- | 2007 10 06 | 691 | 0.2- | 0.5- | 2007 11 09 | G96 | 0.6+ | 0.1- |
| 2007 09 14 | 699 | 0.5+ | 0.7+ | 2007 10 06 | 691 | 0.7- | 0.2+ | 2007 11 09 | G96 | 0.0  | 0.6- |
| 2007 09 14 | 699 | 0.0  | 0.4+ | 2007 10 06 | 691 | 0.3- | 0.2- | 2007 12 06 | G96 | 0.7- | 0.0  |
| 2007 09 14 | 699 | 0.2- | 0.4+ | 2007 10 07 | G96 | 0.3+ | 0.3- | 2007 12 06 | G96 | 0.3+ | 0.2- |
| 2007 09 14 | 699 | 0.1- | 0.5- | 2007 10 07 | G96 | 0.2+ | 0.2- | 2007 12 06 | G96 | 0.8+ | 0.4- |
| 2007 09 14 | D35 | 0.1- | 0.3+ | 2007 10 07 | G96 | 0.1+ | 0.1- | 2007 12 06 | G96 | 0.0  | 0.0  |

**2007 RW<sub>128</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 181.11374  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21937116 | $\omega$ 177.97888 | -0.95770576   | +0.28217358 |
| <i>a</i> | 2.7228039  | $\Omega$ 18.70928  | -0.26640901   | -0.79546132 |
| <i>e</i> | 0.1625165  | <i>i</i> 10.12173  | -0.10874702   | -0.53630157 |
| <i>P</i> | 4.49       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 14 | 644 | 0.2- | 0.6+ | 2005 03 09 | 703 | 0.6+ | 0.5- | 2007 10 08 | G96 | 0.5+ | 0.4- |
| 2001 05 14 | 644 | 0.2+ | 0.2+ | 2007 09 12 | G96 | 0.2- | 0.2+ | 2007 10 08 | G96 | 0.3- | 0.3+ |
| 2001 05 14 | 644 | 0.0  | 0.4+ | 2007 09 12 | G96 | 0.1+ | 0.2+ | 2007 10 08 | G96 | 0.1+ | 0.1- |
| 2001 05 25 | 644 | 0.4+ | 0.1- | 2007 09 12 | G96 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.2- | 0.5+ |
| 2001 05 25 | 644 | 0.4- | 0.8- | 2007 09 12 | G96 | 0.3+ | 0.8- | 2007 10 09 | G96 | 0.1+ | 0.1+ |
| 2001 05 25 | 644 | 0.0  | 0.5- | 2007 09 13 | G96 | 0.9- | 0.1- | 2007 10 09 | G96 | 0.1- | 0.1+ |
| 2005 03 01 | 703 | 0.2- | 1.5- | 2007 09 13 | G96 | 0.0  | 0.2+ | 2007 10 09 | G96 | 0.3- | 0.1- |
| 2005 03 01 | 703 | 1.7- | 0.4+ | 2007 09 13 | G96 | 0.1- | 0.2+ | 2007 10 09 | G96 | 0.1+ | 0.0  |
| 2005 03 01 | 703 | 0.7+ | 0.6+ | 2007 09 13 | G96 | 0.3+ | 0.1- | 2007 10 18 | G96 | 0.2+ | 0.1+ |
| 2005 03 01 | 703 | 0.7- | 0.5+ | 2007 10 08 | G96 | 0.0  | 0.2+ | 2007 10 18 | G96 | 0.2- | 0.0  |
| 2005 03 09 | 703 | 0.4+ | 0.5+ | 2007 10 08 | G96 | 0.0  | 0.2- | 2007 10 18 | G96 | 0.0  | 0.1- |
| 2005 03 09 | 703 | 0.5+ | 0.4+ | 2007 10 08 | G96 | 0.3+ | 0.2- | 2007 10 18 | G96 | 0.1+ | 0.1+ |
| 2005 03 09 | 703 | 0.4+ | 0.3- | 2007 10 08 | G96 | 0.2+ | 0.1- |            |     |      |      |

**2007 RX<sub>128</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.06284   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18946072 | $\omega$ 315.43473 | +0.87788897   | +0.47638226 |
| <i>a</i> | 3.0023174  | $\Omega$ 16.31313  | -0.37655036   | +0.74956025 |
| <i>e</i> | 0.0877276  | <i>i</i> 9.98270   | -0.29583912   | +0.45958609 |
| <i>P</i> | 5.20       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 10 | G96 | 0.2+ | 0.2+ | 2007 09 13 | G96 | 0.4+  | 0.2-  | 2007 10 08 | G96 | 0.1- | 0.3- |
| 2005 03 10 | G96 | 0.4- | 0.2- | 2007 09 13 | G96 | 0.3+  | 0.3-  | 2007 10 08 | G96 | 0.2+ | 0.4- |
| 2005 03 10 | G96 | 0.7+ | 0.0  | 2007 09 13 | G96 | 0.1+  | 0.1-  | 2007 10 10 | G96 | 0.4+ | 0.8+ |
| 2005 03 10 | G96 | 0.2- | 0.2- | 2007 09 13 | G96 | 0.6+  | 0.0   | 2007 10 10 | G96 | 0.9+ | 0.1+ |
| 2005 04 04 | G96 | 0.3+ | 0.3+ | 2007 10 04 | 703 | 0.8-  | 0.5+  | 2007 10 10 | G96 | 0.2+ | 0.4- |
| 2005 04 04 | G96 | 0.2+ | 0.3- | 2007 10 04 | 703 | 0.1+  | 0.6+  | 2007 10 10 | G96 | 0.1+ | 0.2- |
| 2005 04 04 | G96 | 0.2- | 0.1- | 2007 10 04 | 703 | 0.7-  | 1.2-  | 2007 10 19 | G96 | 0.1+ | 0.5- |
| 2005 04 04 | G96 | 0.4- | 0.1+ | 2007 10 04 | 703 | 0.9-  | 0.1-  | 2007 10 19 | G96 | 0.2+ | 0.4- |
| 2005 05 06 | G96 | 0.5- | 0.5+ | 2007 10 06 | 704 | (1.0- | 2.2+) | 2007 10 19 | G96 | 0.1- | 0.3- |
| 2005 05 06 | G96 | 0.5- | 0.1- | 2007 10 06 | 704 | 0.4-  | 1.0+  | 2007 10 19 | G96 | 0.2+ | 0.2- |
| 2005 05 06 | G96 | 0.3+ | 0.4+ | 2007 10 06 | 704 | 0.1+  | 0.8+  | 2007 10 20 | 703 | 1.0- | 1.3- |
| 2005 05 06 | G96 | 1.2+ | 0.5+ | 2007 10 07 | 699 | 0.3-  | 0.2-  | 2007 10 20 | 703 | 0.5+ | 0.1- |
| 2007 09 12 | G96 | 0.3+ | 0.1+ | 2007 10 07 | 699 | 0.7+  | 0.4-  | 2007 10 20 | 703 | 0.4+ | 1.4+ |
| 2007 09 12 | G96 | 0.4+ | 0.2+ | 2007 10 07 | 699 | 0.5-  | 0.6+  | 2007 10 20 | 703 | 1.0+ | 0.2+ |
| 2007 09 12 | G96 | 0.1+ | 0.0  | 2007 10 07 | 699 | 0.4-  | 1.4+  | 2007 11 01 | G96 | 0.1- | 0.0  |
| 2007 09 12 | G96 | 0.4+ | 0.0  | 2007 10 08 | 704 | 1.2-  | 0.2+  | 2007 11 01 | G96 | 0.1+ | 0.4- |
| 2007 09 13 | G96 | 0.0  | 0.0  | 2007 10 08 | 704 | 0.9-  | 0.2+  | 2007 11 01 | G96 | 0.2+ | 0.1- |
| 2007 09 13 | G96 | 0.1+ | 0.1+ | 2007 10 08 | 704 | 0.9-  | 0.5+  | 2007 11 01 | G96 | 0.3- | 0.3- |
| 2007 09 13 | G96 | 0.3+ | 0.1+ | 2007 10 08 | G96 | 0.2-  | 0.4-  |            |     |      |      |
| 2007 09 13 | G96 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.2+  | 0.3-  |            |     |      |      |

**2007 RF<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.34338   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27284710 | $\omega$ 317.75722 | +0.97202281   | +0.23441447 |
| <i>a</i> | 2.3542712  | $\Omega$ 28.69574  | -0.20636531   | +0.88254165 |
| <i>e</i> | 0.0855832  | <i>i</i> 1.77628   | -0.11218297   | +0.40763966 |
| <i>P</i> | 3.61       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 13 | 691 | 0.2+ | 0.1- | 2006 05 31 | G96 | 0.7- | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 2002 03 13 | 691 | 0.1- | 0.5+ | 2006 05 31 | G96 | 0.3- | 0.1+ | 2007 11 01 | 691 | 0.3- | 0.4+ |
| 2002 03 13 | 691 | 0.0  | 0.0  | 2006 05 31 | G96 | 0.3- | 0.0  | 2007 11 01 | 691 | 0.2- | 0.1+ |
| 2003 08 05 | 691 | 0.1- | 0.1+ | 2007 09 12 | G96 | 0.1- | 0.3- | 2007 11 01 | 691 | 0.3- | 0.6+ |
| 2003 08 05 | 691 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.2- | 0.0  | 2007 11 17 | G96 | 0.7+ | 0.4- |
| 2003 08 05 | 691 | 0.1+ | 0.1+ | 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.1- |
| 2006 04 02 | 691 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2006 04 02 | 691 | 0.5+ | 0.2- | 2007 09 13 | G96 | 0.2+ | 0.1- | 2007 11 17 | G96 | 0.0  | 0.5- |
| 2006 04 02 | 691 | 0.1+ | 0.5+ | 2007 09 13 | G96 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.2+ |
| 2006 05 03 | G96 | 0.3- | 0.2+ | 2007 09 13 | G96 | 0.3- | 0.0  | 2007 12 06 | G96 | 0.5+ | 0.3- |
| 2006 05 03 | G96 | 0.0  | 0.2- | 2007 09 13 | G96 | 0.1+ | 0.2- | 2007 12 06 | G96 | 0.1+ | 0.1- |
| 2006 05 03 | G96 | 0.1- | 0.1- | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 12 06 | G96 | 0.2- | 0.4- |
| 2006 05 03 | G96 | 0.5- | 0.1- | 2007 10 30 | G96 | 0.6+ | 0.2- |            |     |      |      |
| 2006 05 31 | G96 | 0.6- | 0.0  | 2007 10 30 | G96 | 0.1- | 0.0  |            |     |      |      |

**2007 RM<sub>134</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.21996   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18678117 | $\omega$ 205.46147 | +0.96042338   | +0.25412550 |
| <i>a</i> | 3.0309632  | $\Omega$ 139.27874 | -0.21618593   | +0.93825104 |
| <i>e</i> | 0.0718056  | <i>i</i> 10.06818  | -0.17564334   | +0.23474502 |
| <i>P</i> | 5.28       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 24 | 691 | 0.2- | 0.2+ | 2005 04 16 | 703 | 0.0  | 0.7- | 2007 09 15 | A50 | 0.3- | 0.1+ |
| 1995 04 24 | 691 | 0.3- | 0.1- | 2005 04 16 | 703 | 0.2+ | 0.8- | 2007 09 15 | 699 | 0.0  | 0.8- |
| 1995 04 24 | 691 | 0.6+ | 0.0  | 2005 04 16 | 703 | 0.4- | 0.6- | 2007 09 15 | 699 | 0.5- | 0.7- |
| 2002 10 15 | 644 | 0.1+ | 0.1- | 2007 09 11 | D29 | 0.2- | 0.5- | 2007 09 15 | 699 | 0.3+ | 0.8+ |
| 2002 10 15 | 644 | 0.1+ | 0.0  | 2007 09 11 | D29 | 0.1- | 0.3- | 2007 09 15 | 699 | 0.3- | 0.8- |
| 2002 10 15 | 644 | 0.0  | 0.0  | 2007 09 11 | D29 | 0.0  | 0.3- | 2007 10 04 | 703 | 0.3- | 0.7- |
| 2002 10 31 | 291 | 0.1- | 0.2- | 2007 09 11 | D29 | 0.1- | 0.2- | 2007 10 04 | 703 | 0.9- | 0.1- |
| 2002 10 31 | 291 | 0.1- | 0.0  | 2007 09 12 | 703 | 1.3+ | 0.6- | 2007 10 04 | 703 | 0.1- | 0.6- |
| 2002 10 31 | 291 | 0.0  | 0.0  | 2007 09 12 | 703 | 0.4+ | 0.7- | 2007 10 04 | 703 | 0.2- | 0.1- |
| 2005 03 18 | 703 | 1.0- | 0.1+ | 2007 09 12 | 703 | 0.4+ | 0.0  | 2007 10 11 | 703 | 0.1- | 0.2+ |
| 2005 03 18 | 703 | 0.9+ | 0.5+ | 2007 09 12 | 703 | 0.4+ | 0.2+ | 2007 10 11 | 703 | 0.7- | 0.2+ |
| 2005 03 18 | 703 | 0.5+ | 0.4+ | 2007 09 14 | 703 | 1.2+ | 1.6+ | 2007 10 11 | 703 | 0.6- | 0.4+ |
| 2005 03 18 | 703 | 0.9+ | 0.3+ | 2007 09 14 | 703 | 0.5- | 0.3+ | 2007 10 11 | 703 | 0.4+ | 0.5+ |
| 2005 04 06 | 703 | 0.1- | 0.2- | 2007 09 14 | 703 | 0.1- | 0.7+ | 2007 10 20 | G96 | 0.0  | 0.4- |
| 2005 04 06 | 703 | 0.2- | 0.2+ | 2007 09 14 | 703 | 0.3+ | 0.1- | 2007 10 20 | G96 | 0.2+ | 0.6- |
| 2005 04 06 | 703 | 0.8- | 0.9- | 2007 09 15 | A50 | 0.6+ | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.4- |
| 2005 04 06 | 703 | 1.4- | 0.1- | 2007 09 15 | A50 | 0.3+ | 0.8+ | 2007 10 20 | G96 | 0.6- | 0.1+ |
| 2005 04 16 | 703 | 0.8+ | 0.1- | 2007 09 15 | A50 | 0.2- | 0.8+ |            |     |      |      |

**2007 RJ<sub>135</sub> = 2005 GB<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 66.53538   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18828627 | $\omega$ 323.86546 | +0.37432129   | +0.92610071 |
| <i>a</i> | 3.0147892  | $\Omega$ 328.04034 | -0.82853129   | +0.31119579 |
| <i>e</i> | 0.0819928  | <i>i</i> 5.10808   | -0.41643664   | +0.21329478 |
| <i>P</i> | 5.23       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 30 | 691 | 0.0  | 0.5+ | 2007 09 13 | 703 | 0.5- | 0.1+ | 2007 09 15 | 683 | 0.2+ | 0.6+ |
| 1997 11 30 | 691 | 0.2+ | 0.4- | 2007 09 13 | 683 | 0.6+ | 0.9+ | 2007 09 15 | 683 | 1.7+ | 1.7+ |
| 1997 11 30 | 691 | 0.1+ | 0.8- | 2007 09 13 | 703 | 0.4- | 0.6+ | 2007 10 08 | 699 | 1.3+ | 1.2- |
| 2004 02 26 | 695 | 0.1+ | 0.6+ | 2007 09 13 | 699 | 1.0+ | 1.8+ | 2007 10 08 | 699 | 0.6- | 0.9- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 02 26 | 695 | 0.0  | 0.6+ | 2007 09 13 | 683 | (1.3+ | 3.3+) | 2007 10 08 | 699 | 0.1+ | 0.8- |
| 2005 03 11 | G96 | 0.2+ | 0.0  | 2007 09 13 | 703 | 0.4-  | 0.3+  | 2007 10 08 | 699 | 0.8- | 0.2+ |
| 2005 03 11 | G96 | 0.1- | 0.3+ | 2007 09 13 | 703 | 1.4-  | 0.3+  | 2007 10 13 | 703 | 0.7+ | 0.8- |
| 2005 03 11 | G96 | 0.3+ | 0.1+ | 2007 09 13 | 699 | 0.4-  | 0.8-  | 2007 10 13 | 703 | 0.1- | 0.2- |
| 2005 03 11 | G96 | 0.3- | 0.1+ | 2007 09 13 | 699 | 0.5-  | 0.2+  | 2007 10 13 | 703 | 0.1- | 0.1+ |
| 2005 04 12 | G96 | 0.3+ | 0.2- | 2007 09 13 | 703 | 0.5-  | 0.6+  | 2007 10 13 | 703 | 0.3- | 0.2+ |
| 2005 04 12 | G96 | 0.0  | 0.2- | 2007 09 13 | 703 | 0.3+  | 0.1-  | 2007 10 20 | G96 | 0.1+ | 0.4- |
| 2005 04 12 | G96 | 0.2- | 0.1- | 2007 09 13 | 703 | 0.3+  | 0.1+  | 2007 10 20 | G96 | 0.3- | 0.4- |
| 2005 04 12 | G96 | 0.3- | 0.1- | 2007 09 13 | 699 | 0.2+  | 0.1-  | 2007 10 20 | G96 | 0.3- | 0.4- |
| 2007 09 13 | 683 | 0.2- | 0.7- | 2007 09 13 | 703 | 0.0   | 0.2-  | 2007 10 20 | G96 | 0.1- | 0.2- |

**2007 RJ<sub>136</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.49546  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17777156 | $\omega$ 230.93559 | +0.77770686   | -0.62570037 |
| <i>a</i> | 3.1325248  | $\Omega$ 167.40176 | +0.62753810   | +0.76707417 |
| <i>e</i> | 0.1029617  | <i>i</i> 16.12831  | +0.03698610   | +0.14176132 |
| <i>P</i> | 5.54       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 10 | 645 | 0.0  | 0.1- | 2007 09 14 | G96 | 0.3+  | 0.1-  | 2007 09 19 | 704 | 0.3+ | 0.5- |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.4+  | 0.3-  | 2007 09 19 | 704 | 0.8+ | 0.6+ |
| 2003 01 24 | 809 | 0.2- | 0.2- | 2007 09 14 | 691 | 0.1-  | 0.2+  | 2007 09 19 | 704 | 0.1- | 0.4- |
| 2003 01 24 | 809 | 0.2+ | 0.2- | 2007 09 14 | 691 | 0.1-  | 0.1-  | 2007 10 04 | 703 | 0.3- | 0.5- |
| 2003 01 24 | 809 | 0.2+ | 0.1+ | 2007 09 14 | 699 | 0.7+  | 0.1-  | 2007 10 04 | 703 | 1.1- | 0.9+ |
| 2003 01 24 | 809 | 0.3+ | 0.1- | 2007 09 14 | 691 | 0.2-  | 0.1-  | 2007 10 04 | 703 | 0.2- | 0.8+ |
| 2004 02 11 | 644 | 0.0  | 0.8+ | 2007 09 14 | 699 | (2.0+ | 1.1+) | 2007 10 04 | 703 | 0.1+ | 0.7- |
| 2004 02 11 | 644 | 0.0  | 0.8+ | 2007 09 14 | 699 | (1.0- | 1.9+) | 2007 10 06 | 691 | 0.1- | 0.2- |
| 2004 02 11 | 644 | 0.2+ | 0.7+ | 2007 09 14 | 699 | 0.1+  | 0.5+  | 2007 10 06 | 691 | 0.2- | 0.0  |
| 2007 08 10 | 691 | 0.0  | 0.0  | 2007 09 14 | D35 | 0.4+  | 0.5+  | 2007 10 06 | 691 | 0.0  | 0.0  |
| 2007 08 10 | 691 | 0.3+ | 0.5- | 2007 09 14 | D35 | 0.3+  | 0.4+  | 2007 10 10 | 691 | 0.1- | 0.0  |
| 2007 08 10 | 691 | 0.3- | 0.3+ | 2007 09 14 | D35 | 0.1+  | 0.4+  | 2007 10 10 | 691 | 0.1- | 0.1+ |
| 2007 08 23 | 691 | 0.5- | 0.1+ | 2007 09 16 | D35 | 0.4+  | 0.5+  | 2007 10 10 | 691 | 0.4+ | 0.0  |
| 2007 08 23 | 691 | 0.2- | 0.2- | 2007 09 16 | D35 | 0.5+  | 0.2+  | 2007 10 10 | 691 | 0.2+ | 0.5- |
| 2007 08 23 | 691 | 0.2- | 0.2- | 2007 09 16 | D35 | 0.4+  | 0.4+  | 2007 10 10 | 691 | 0.2+ | 0.5+ |
| 2007 09 14 | G96 | 0.1+ | 0.1- | 2007 09 19 | 704 | (1.2- | 1.9+) | 2007 10 10 | 691 | 0.3+ | 0.3+ |
| 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 09 19 | 704 | 1.4-  | 0.8+  |            |     |      |      |

**2007 RS<sub>137</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 31.63918   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26697275 | $\omega$ 53.08879  | +0.82216870   | +0.56892732 |
| <i>a</i> | 2.3886807  | $\Omega$ 272.22820 | -0.52812711   | +0.74991515 |
| <i>e</i> | 0.1911682  | <i>i</i> 1.08851   | -0.21241561   | +0.33756330 |
| <i>P</i> | 3.69       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 16 | 691 | 0.1+ | 0.2- | 2007 09 15 | 704 | 0.3- | 1.5+ | 2007 10 10 | G96 | 0.0  | 0.3- |
| 2000 12 16 | 691 | 0.2- | 0.4+ | 2007 09 15 | 704 | 0.2- | 0.8+ | 2007 10 10 | G96 | 0.2+ | 0.4- |
| 2000 12 16 | 691 | 0.0  | 0.1- | 2007 09 15 | D35 | 0.2- | 0.2- | 2007 10 10 | G96 | 0.2- | 0.3- |
| 2006 03 25 | G96 | 0.1- | 0.1+ | 2007 09 15 | D35 | 0.3- | 0.0  | 2007 10 10 | G96 | 0.1- | 0.3- |
| 2006 03 25 | G96 | 0.4- | 0.2+ | 2007 09 15 | D35 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.1- | 0.2- |
| 2006 03 25 | G96 | 0.4+ | 0.2+ | 2007 09 16 | D35 | 0.2- | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2006 03 25 | G96 | 0.0  | 0.5- | 2007 09 16 | D35 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2007 09 13 | 704 | 0.2+ | 0.2- | 2007 09 16 | D35 | 0.2+ | 0.2+ | 2007 11 05 | G96 | 0.3- | 0.1- |
| 2007 09 13 | 704 | 0.2+ | 0.5+ | 2007 09 19 | 704 | 0.3- | 0.6- | 2007 11 17 | G96 | 0.1- | 0.3+ |
| 2007 09 13 | 704 | 0.1+ | 0.4+ | 2007 09 19 | 704 | 0.2- | 0.1- | 2007 11 17 | G96 | 0.1- | 0.2- |
| 2007 09 13 | 704 | 0.1- | 0.0  | 2007 09 19 | 704 | 0.3+ | 0.7+ | 2007 11 17 | G96 | 0.3- | 0.0  |
| 2007 09 14 | 699 | 0.5- | 0.5- | 2007 09 19 | 704 | 0.2- | 0.2+ | 2007 11 17 | G96 | 0.2- | 0.3- |
| 2007 09 14 | 699 | 1.1- | 0.4- | 2007 10 06 | 704 | 1.0+ | 0.5- | 2007 12 05 | G96 | 0.1+ | 0.0  |
| 2007 09 14 | 699 | 0.3- | 0.7- | 2007 10 06 | 704 | 1.2+ | 0.5+ | 2007 12 05 | G96 | 0.1- | 0.2+ |
| 2007 09 14 | 699 | 0.3+ | 0.2- | 2007 10 06 | 704 | 0.5+ | 0.6+ | 2007 12 05 | G96 | 0.2+ | 0.4- |
| 2007 09 15 | 704 | 0.4+ | 0.5- | 2007 10 06 | 704 | 0.4+ | 0.1- | 2007 12 05 | G96 | 0.2- | 0.2+ |

2007 DEC. 24

M.P.O. 129799

**2007 RA<sub>140</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.81322  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25945429 | $\omega$ 192.98374 | +0.93830267   | -0.34578819 |
| <i>a</i> | 2.4346067  | $\Omega$ 187.25057 | +0.32025639   | +0.87359418 |
| <i>e</i> | 0.1869288  | <i>i</i> 1.95928   | +0.13047582   | +0.34243794 |
| <i>P</i> | 3.80       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 05 | 691 | 0.2- | 0.2+ | 2007 09 12 | 699 | 0.2+ | 1.0+ | 2007 09 16 | 704 | 0.2+ | 0.0  |
| 2003 07 05 | 691 | 0.1- | 0.3+ | 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 10 07 | G96 | 0.2- | 0.6- |
| 2003 07 05 | 691 | 0.0  | 0.1+ | 2007 09 12 | G96 | 0.0  | 0.2- | 2007 10 07 | G96 | 0.3- | 0.2+ |
| 2003 08 26 | 807 | 0.1+ | 0.2+ | 2007 09 12 | 699 | 1.9+ | 0.8- | 2007 10 07 | G96 | 0.1+ | 0.0  |
| 2003 08 26 | 807 | 0.1- | 0.7+ | 2007 09 12 | G96 | 0.2+ | 0.2- | 2007 10 07 | G96 | 0.1+ | 0.9- |
| 2005 02 04 | 691 | 0.1+ | 0.4+ | 2007 09 12 | G96 | 0.1- | 0.3- | 2007 10 07 | G96 | 0.2- | 0.4- |
| 2005 02 04 | 691 | 0.4+ | 0.3+ | 2007 09 13 | 704 | 0.1- | 0.3+ | 2007 10 07 | G96 | 0.1- | 0.4- |
| 2005 02 04 | 691 | 0.1+ | 0.6+ | 2007 09 13 | 704 | 0.5+ | 0.8+ | 2007 10 07 | G96 | 0.2+ | 0.3- |
| 2005 03 09 | G96 | 0.7- | 0.1+ | 2007 09 13 | 704 | 0.5+ | 0.1- | 2007 11 05 | G96 | 0.4- | 0.1+ |
| 2005 03 09 | G96 | 0.3- | 0.0  | 2007 09 15 | G96 | 0.3- | 0.5- | 2007 11 05 | G96 | 0.2- | 0.3+ |
| 2005 03 09 | G96 | 0.1+ | 0.1- | 2007 09 15 | G96 | 0.2+ | 0.5- | 2007 11 05 | G96 | 0.2- | 0.0  |
| 2005 03 09 | G96 | 0.3- | 0.2+ | 2007 09 15 | G96 | 0.9- | 0.1+ | 2007 11 05 | G96 | 0.0  | 0.1+ |
| 2007 08 23 | 691 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.4- | 0.0  | 2007 11 09 | G96 | 0.1- | 0.7+ |
| 2007 08 23 | 691 | 0.2- | 0.3+ | 2007 09 16 | 704 | 0.1+ | 0.6+ | 2007 11 09 | G96 | 0.6- | 0.3- |
| 2007 08 23 | 691 | 0.4- | 0.8+ | 2007 09 16 | 704 | 0.5+ | 0.3+ | 2007 11 09 | G96 | 0.2+ | 0.5- |
| 2007 09 12 | 699 | 0.2+ | 0.1- | 2007 09 16 | 704 | 0.7+ | 0.0  | 2007 11 09 | G96 | 0.1- | 0.4- |
| 2007 09 12 | 699 | 0.1+ | 0.3- | 2007 09 16 | 704 | 0.8- | 0.6- |            |     |      |      |

**2007 RS<sub>140</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.99073   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21512486 | $\omega$ 343.94211 | +0.90809927   | +0.41806590 |
| <i>a</i> | 2.7585169  | $\Omega$ 351.22997 | -0.36478667   | +0.76160409 |
| <i>e</i> | 0.1376541  | <i>i</i> 9.06145   | -0.20563658   | +0.49515666 |
| <i>P</i> | 4.58       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 06 | 644 | 0.1+ | 0.2+ | 2007 09 14 | 699 | 1.8+  | 0.1+  | 2007 10 09 | 704 | 1.6- | 0.5- |
| 2002 07 06 | 644 | 0.1+ | 0.3+ | 2007 09 14 | 699 | 0.9+  | 1.2+  | 2007 10 09 | 704 | 0.2+ | 0.3+ |
| 2002 07 06 | 644 | 0.2- | 0.3- | 2007 09 14 | 699 | 0.4+  | 0.7-  | 2007 10 11 | G96 | 0.0  | 0.2- |
| 2005 02 04 | 691 | 0.2+ | 0.4- | 2007 09 16 | 704 | 0.5+  | 0.1-  | 2007 10 11 | G96 | 0.2- | 0.2- |
| 2005 02 04 | 691 | 0.1- | 0.0  | 2007 09 16 | 704 | 0.4-  | 0.3-  | 2007 10 11 | G96 | 0.2- | 0.2- |
| 2005 02 04 | 691 | 0.4+ | 0.0  | 2007 09 16 | 704 | 0.0   | 0.9+  | 2007 10 11 | G96 | 0.0  | 0.2- |
| 2005 03 14 | G96 | 0.6+ | 0.3- | 2007 09 16 | 704 | 0.8-  | 0.6+  | 2007 10 11 | G96 | 0.7- | 0.2- |
| 2005 03 14 | G96 | 0.3- | 0.2+ | 2007 09 16 | 704 | 0.3-  | 0.4-  | 2007 10 11 | G96 | 0.3- | 0.3- |
| 2005 03 14 | G96 | 0.3+ | 0.8+ | 2007 09 16 | D35 | 0.1-  | 0.2-  | 2007 10 11 | G96 | 0.6- | 0.4- |
| 2005 03 14 | G96 | 0.8- | 0.5+ | 2007 09 16 | D35 | 0.1-  | 0.1-  | 2007 10 11 | G96 | 0.3- | 0.5- |
| 2007 09 04 | G96 | 0.2- | 0.5- | 2007 09 16 | D35 | 0.1+  | 0.2-  | 2007 10 12 | 704 | 0.9+ | 1.0- |
| 2007 09 04 | G96 | 0.4- | 0.5- | 2007 10 06 | 704 | 0.1+  | 0.3-  | 2007 10 12 | 704 | 0.6- | 0.6+ |
| 2007 09 04 | G96 | 0.1- | 1.0- | 2007 10 06 | 704 | 0.2-  | 0.8+  | 2007 10 12 | 704 | 0.6- | 0.2+ |
| 2007 09 04 | G96 | 0.2- | 0.4- | 2007 10 06 | 704 | 0.3+  | 0.6+  | 2007 11 12 | G96 | 0.7+ | 0.1+ |
| 2007 09 13 | 704 | 0.6+ | 0.5+ | 2007 10 06 | 704 | 0.7+  | 0.2-  | 2007 11 12 | G96 | 0.7+ | 0.1+ |
| 2007 09 13 | 704 | 0.4+ | 0.2- | 2007 10 09 | 704 | 0.4+  | 0.3-  | 2007 11 12 | G96 | 0.2+ | 0.5- |
| 2007 09 13 | 704 | 1.0+ | 1.6+ | 2007 10 09 | 704 | (2.0+ | 0.1+) | 2007 11 12 | G96 | 0.1+ | 0.0  |
| 2007 09 14 | 699 | 1.5- | 1.4+ | 2007 10 09 | 704 | 0.6-  | 1.1+  |            |     |      |      |

**2007 RA<sub>141</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.99275  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26118952 | $\omega$ 212.40743 | +0.96700193   | -0.25430194 |
| <i>a</i> | 2.4238117  | $\Omega$ 162.30522 | +0.24322675   | +0.90348709 |
| <i>e</i> | 0.1968722  | <i>i</i> 2.90813   | +0.07581567   | +0.34502407 |
| <i>P</i> | 3.77       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 08 | 599 | 0.4- | 0.9+ | 2007 09 13 | 704 | 0.3+ | 0.8+ | 2007 10 13 | G96 | 0.0  | 0.3- |
| 2003 07 09 | 599 | 0.1- | 0.2+ | 2007 09 13 | 704 | 0.4+ | 0.2+ | 2007 10 13 | 704 | 0.0  | 0.7+ |
| 2003 07 09 | 599 | 0.5- | 0.8+ | 2007 09 13 | 704 | 0.1+ | 1.0+ | 2007 10 13 | G96 | 0.3+ | 0.3- |
| 2003 07 09 | 599 | 0.2+ | 0.9+ | 2007 09 13 | 704 | 1.3+ | 0.3+ | 2007 10 13 | 704 | 0.8+ | 0.5+ |
| 2005 01 17 | 691 | 0.1- | 0.4+ | 2007 09 16 | 704 | 0.4- | 0.5+ | 2007 10 13 | G96 | 0.5+ | 0.3- |
| 2005 01 17 | 691 | 0.1- | 0.3+ | 2007 09 16 | 704 | 0.0  | 0.7+ | 2007 10 13 | G96 | 0.1+ | 0.3- |
| 2005 01 17 | 691 | 0.1+ | 0.4+ | 2007 09 16 | 704 | 0.8+ | 1.4+ | 2007 10 13 | 704 | 0.7- | 0.3+ |
| 2005 02 04 | 691 | 0.1- | 0.2+ | 2007 09 16 | 704 | 0.1+ | 0.5+ | 2007 10 14 | 704 | 0.0  | 1.7+ |
| 2005 02 04 | 691 | 0.3+ | 0.1- | 2007 09 16 | 704 | 0.3+ | 1.5+ | 2007 10 14 | 704 | 0.2+ | 1.3- |
| 2005 02 04 | 691 | 0.0  | 0.1- | 2007 09 19 | 704 | 0.9- | 1.1- | 2007 10 14 | 704 | 0.7+ | 0.7- |
| 2005 03 09 | G96 | 0.9+ | 0.7+ | 2007 09 19 | 704 | 1.3- | 0.1+ | 2007 10 14 | 704 | 0.1+ | 0.5- |
| 2005 03 09 | G96 | 0.4+ | 0.3+ | 2007 09 19 | 704 | 1.2- | 1.3- | 2007 10 15 | 703 | 0.1+ | 0.1+ |
| 2005 03 09 | G96 | 0.2- | 0.3- | 2007 09 19 | 704 | 0.8- | 1.3- | 2007 10 15 | 703 | 1.2+ | 0.0  |
| 2005 03 09 | G96 | 0.4+ | 0.2+ | 2007 10 11 | 699 | 0.2- | 0.1+ | 2007 10 15 | 703 | 0.1+ | 0.6- |
| 2007 08 21 | 699 | 0.8+ | 1.2- | 2007 10 11 | 699 | 0.2+ | 0.5- | 2007 10 15 | 703 | 0.1- | 0.1- |
| 2007 08 21 | 699 | 0.4- | 0.9- | 2007 10 11 | 699 | 0.3- | 0.4+ | 2007 11 17 | G96 | 0.3- | 0.4- |
| 2007 08 21 | 699 | 1.6- | 0.9+ | 2007 10 11 | 699 | 0.2- | 0.6- | 2007 11 17 | G96 | 0.0  | 0.7- |
| 2007 08 21 | 699 | 0.3+ | 0.0  | 2007 10 13 | 704 | 1.1- | 0.2- | 2007 11 17 | G96 | 0.3- | 0.1- |
| 2007 09 13 | 704 | 0.6+ | 1.5+ | 2007 10 13 | 704 | 0.4+ | 0.5+ | 2007 11 17 | G96 | 0.6- | 0.5- |

**2007 RZ<sub>142</sub> = 2007 TM<sub>337</sub> = 2000 JU<sub>92</sub>**Id. Minor Planet Center (d, *MPO* 129052; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 296.47257  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18607133 | $\omega$ 261.30630 | +0.30264254   | -0.95197188 |
| <i>a</i> | 3.0386668  | $\Omega$ 170.67294 | +0.94762061   | +0.29532426 |
| <i>e</i> | 0.0571159  | <i>i</i> 16.65255  | +0.10209152   | +0.08082773 |
| <i>P</i> | 5.30       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 03 07 | 691 | 0.2-  | 0.3+  | 2007 09 12 | 699 | 0.2+ | 0.3+ | 2007 10 13 | 703 | 1.3-  | 0.1-  |
| 1994 03 07 | 691 | 0.3+  | 0.0   | 2007 09 12 | 699 | 0.9- | 0.7+ | 2007 10 13 | 703 | 0.2+  | 0.3-  |
| 1994 03 07 | 691 | 0.3+  | 0.2-  | 2007 09 14 | 704 | 0.4- | 0.0  | 2007 10 13 | 703 | (0.6+ | 2.9-) |
| 2000 05 04 | 645 | 0.0   | 0.0   | 2007 09 14 | 704 | 0.0  | 0.8+ | 2007 10 15 | G96 | 0.5+  | 0.2-  |
| 2000 05 04 | 645 | 0.0   | 0.0   | 2007 09 14 | 704 | 0.4- | 0.5+ | 2007 10 15 | G96 | 0.1+  | 0.3-  |
| 2000 05 10 | 645 | 0.0   | 0.0   | 2007 09 14 | 704 | 0.7- | 0.1+ | 2007 10 15 | G96 | 0.1+  | 0.2-  |
| 2000 05 10 | 645 | 0.0   | 0.1-  | 2007 09 14 | 704 | 0.1- | 0.6+ | 2007 10 15 | G96 | 0.3+  | 0.3-  |
| 2002 10 28 | 644 | 0.7-  | 0.1+  | 2007 09 14 | D35 | 0.2- | 0.3+ | 2007 10 15 | 703 | 0.0   | 0.5+  |
| 2002 10 28 | 644 | 0.8-  | 0.0   | 2007 09 14 | D35 | 0.6- | 0.1- | 2007 10 15 | 703 | (1.5- | 0.5+) |
| 2002 10 28 | 644 | 0.8-  | 0.1+  | 2007 09 14 | D35 | 0.1- | 0.0  | 2007 10 15 | 703 | 1.0-  | 1.0+  |
| 2005 04 04 | 703 | 0.4-  | 0.3+  | 2007 09 16 | 704 | 1.0- | 0.3  | 2007 10 15 | 703 | 0.5-  | 0.7-  |
| 2005 04 04 | 703 | 0.2-  | 1.3+  | 2007 09 16 | 704 | 0.6- | 0.1+ | 2007 11 03 | G96 | 0.0   | 0.2-  |
| 2005 04 04 | 703 | 0.5+  | 1.1-  | 2007 09 16 | 704 | 0.4- | 0.7+ | 2007 11 03 | G96 | 0.0   | 0.5-  |
| 2005 04 04 | 703 | 0.5-  | 0.5+  | 2007 10 06 | J95 | 0.7+ | 0.3- | 2007 11 03 | G96 | 0.2+  | 0.4-  |
| 2007 09 12 | 699 | (2.6+ | 1.1+) | 2007 10 06 | J95 | 1.0+ | 0.2- | 2007 11 03 | G96 | 0.2+  | 0.3-  |
| 2007 09 12 | 699 | 1.0+  | 1.4+  | 2007 10 13 | 703 | 0.6- | 0.1+ |            |     |       |       |

**2007 RL<sub>143</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 306.84762  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17925748 | $\omega$ 249.99499 | +0.20628294   | -0.97767675 |
| <i>a</i> | 3.1151899  | $\Omega$ 188.40631 | +0.96842140   | +0.20983142 |
| <i>e</i> | 0.2222403  | <i>i</i> 15.85658  | +0.14002623   | -0.01090657 |
| <i>P</i> | 5.50       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 13 | 291 | 0.7+ | 0.5+ | 2007 09 14 | 704 | 0.4+ | 0.7- | 2007 10 12 | 691 | 0.5- | 0.0  |
| 2002 08 13 | 291 | 0.5+ | 0.8+ | 2007 09 14 | 704 | 0.9+ | 1.3+ | 2007 10 12 | 691 | 0.4- | 0.2- |
| 2002 08 13 | 291 | 0.3+ | 0.6+ | 2007 09 17 | 704 | 0.1+ | 0.5+ | 2007 10 12 | 691 | 0.3- | 0.1- |
| 2002 11 03 | 608 | 0.3- | 0.2+ | 2007 09 17 | 704 | 1.1+ | 0.5- | 2007 10 19 | 691 | 0.5- | 0.2- |
| 2002 11 03 | 608 | 0.5- | 0.5- | 2007 09 17 | 704 | 1.1+ | 1.0+ | 2007 10 19 | 691 | 0.2- | 0.4- |
| 2002 11 03 | 608 | 0.2- | 0.4- | 2007 09 17 | 704 | 0.0  | 0.7+ | 2007 10 19 | 691 | 0.2- | 0.5- |
| 2004 04 24 | 691 | 0.3- | 0    | 2007 10 05 | 691 | 0.4- | 0    | 2007 11 09 | G96 | 0.1+ | 0.1- |
| 2004 04 24 | 691 | 0.1- | 0.5+ | 2007 10 05 | 691 | 0.3- | 0.1+ | 2007 11 09 | G96 | 0.4- | 0.3- |
| 2004 04 24 | 691 | 0.5+ | 0.4- | 2007 10 05 | 691 | 0.1- | 0    | 2007 11 09 | G96 | 0.9+ | 0.0  |

## M.P.O. 129800

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 14 | 704 | 0.1+ | 0.3− | 2007 10 10 | 691 | 0.8− | 0.2− | 2007 11 09 | G96 | 0.4+ | 0.4+ |
| 2007 09 14 | 704 | 0.0  | 0.1+ | 2007 10 10 | 691 | 0.5− | 0.7− |            |     |      |      |
| 2007 09 14 | 704 | 0.3+ | 0.5− | 2007 10 10 | 691 | 0.7− | 0.2− |            |     |      |      |

**2007 RW<sub>143</sub> = 2003 YP<sub>125</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 306.21774  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21531596 | $\omega$ | 118.46724 | +0.19098380 | −0.97695837 |
| $a$ | 2.7568844  | $\Omega$ | 320.15679 | +0.84057076 | +0.21289905 |
| $e$ | 0.1881296  | $i$      | 8.55211   | +0.50691813 | +0.01504484 |
| $P$ | 4.58       | $H$      | 16.3      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 05 05 | 645 | 0.1+ | 0.2+ | 2007 09 04 | 703 | 0.5+  | 0.3−  | 2007 09 17 | 704 | 0.2+ | 0.9+ |
| 2000 05 05 | 645 | 0.1+ | 0.1+ | 2007 09 04 | 703 | 0.1+  | 0.4−  | 2007 09 17 | 704 | 1.1+ | 0.1+ |
| 2003 12 27 | 704 | 0.9− | 0.6− | 2007 09 04 | 703 | 0.3−  | 0.4−  | 2007 09 17 | 704 | 1.0+ | 0.3− |
| 2003 12 27 | 704 | 1.1− | 0.4+ | 2007 09 04 | 703 | (0.6− | 2.8−) | 2007 10 14 | 703 | 0.5+ | 0.4− |
| 2003 12 27 | 704 | 0.8− | 1.0+ | 2007 09 14 | 704 | (2.3− | 1.7+) | 2007 10 14 | 703 | 0.5+ | 0.7− |
| 2003 12 27 | 704 | 0.9− | 0.8+ | 2007 09 14 | 704 | 1.5−  | 1.3+  | 2007 10 14 | 703 | 0.5− | 0.8− |
| 2003 12 29 | 704 | 0.7+ | 0.2− | 2007 09 14 | 704 | 0.1+  | 0.8−  | 2007 10 14 | 703 | 0.1+ | 0.1+ |
| 2003 12 29 | 704 | 1.7+ | 1.1− | 2007 09 14 | 704 | 0.7−  | 0.0   |            |     |      |      |
| 2003 12 29 | 704 | 1.4+ | 0.1− | 2007 09 14 | 704 | 1.2−  | 1.9+  |            |     |      |      |

**2007 RU<sub>144</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 353.84591  |          | (2000.0)  | $\mathbf{P}$ |      | $\mathbf{Q}$ |   |
|-----|------------|----------|-----------|--------------|------|--------------|---|
| $n$ | 0.21810860 | $\omega$ | 146.82628 | +0.96020500  |      | −0.26991365  |   |
| $a$ | 2.7333014  | $\Omega$ | 229.00333 | +0.23106014  |      | +0.91207129  |   |
| $e$ | 0.0971798  | $i$      | 5.45767   | +0.15689987  |      | +0.30866256  |   |
| $P$ | 4.52       | $H$      | 16.3      | $G$          | 0.15 | $U$          | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.2− | 0.1+ | 2007 09 14 | 699 | 0.0   | 0.7+  | 2007 10 20 | G96 | 0.7+ | 0.0  |
| 2003 11 19 | 691 | 0.1− | 0.3+ | 2007 09 17 | 704 | 0.2+  | 0.0   | 2007 10 20 | G96 | 0.4+ | 0.0  |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2007 09 17 | 704 | 0.1+  | 0.1+  | 2007 10 20 | G96 | 0.6+ | 0.2+ |
| 2003 12 14 | 691 | 0.1+ | 0.4+ | 2007 09 17 | 704 | 0.2+  | 0.1−  | 2007 10 20 | G96 | 0.1+ | 0.0  |
| 2003 12 14 | 691 | 0.2+ | 0.3+ | 2007 09 17 | 704 | 0.3−  | 0.4+  | 2007 10 20 | G96 | 0.0  | 0.1+ |
| 2003 12 14 | 691 | 0.1− | 0.4+ | 2007 09 20 | 691 | 0.2−  | 0.3−  | 2007 10 20 | G96 | 0.2− | 0.1− |
| 2006 05 26 | G96 | 0.1− | 0.3+ | 2007 09 20 | 691 | 0.1−  | 0.3−  | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2006 05 26 | G96 | 0.3+ | 0.5+ | 2007 09 20 | 691 | 0.1−  | 0.3−  | 2007 10 21 | G96 | 0.1+ | 0.7− |
| 2006 05 26 | G96 | 0.1− | 0.3+ | 2007 10 04 | 683 | 0.1−  | 0.1+  | 2007 10 21 | G96 | 0.1− | 0.3− |
| 2007 09 14 | 704 | 0.0  | 0.4− | 2007 10 04 | 683 | 0.1+  | 0.0   | 2007 10 21 | G96 | 0.1+ | 0.6− |
| 2007 09 14 | 704 | 0.1+ | 1.0+ | 2007 10 04 | 683 | (1.4− | 2.5+) | 2007 10 21 | G96 | 0.2+ | 0.3− |
| 2007 09 14 | 704 | 0.1− | 0.1− | 2007 10 20 | G96 | 0.1+  | 0.0   | 2007 11 12 | G96 | 0.6− | 0.1+ |
| 2007 09 14 | 704 | 0.1− | 0.9+ | 2007 10 20 | G96 | 0.4−  | 0.1−  | 2007 11 12 | G96 | 0.0  | 0.2− |
| 2007 09 14 | 699 | 0.2+ | 0.4− | 2007 10 20 | G96 | 0.2−  | 0.1−  | 2007 11 12 | G96 | 0.5+ | 0.5− |
| 2007 09 14 | 699 | 0.7− | 1.5+ | 2007 10 20 | G96 | 0.1−  | 0.4−  | 2007 11 12 | G96 | 0.6− | 0.1− |
| 2007 09 14 | 699 | 0.5− | 0.1− | 2007 10 20 | G96 | 0.4+  | 0.3−  |            |     |      |      |

**2007 RN<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 338.80473  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27099663 | $\omega$ | 213.74848 | +0.56262097 | −0.82590827 |
| $a$ | 2.3649763  | $\Omega$ | 202.08267 | +0.77834158 | +0.54406967 |
| $e$ | 0.1766029  | $i$      | 5.57351   | +0.27864320 | +0.14786388 |
| $P$ | 3.64       | $H$      | 16.8      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 14 | 703 | 0.5− | 0.7− | 2007 10 11 | 704 | 0.2− | 0.6+ | 2007 10 20 | 703 | 0.5+ | 0.6+ |
| 2005 02 14 | 703 | 1.1+ | 0.6+ | 2007 10 11 | 699 | 0.5+ | 0.4+ | 2007 10 20 | 704 | 0.9+ | 0.9+ |
| 2005 02 14 | 703 | 0.5+ | 0.0  | 2007 10 11 | 704 | 0.7− | 0.7+ | 2007 10 20 | 704 | 0.7− | 0.6+ |
| 2005 02 14 | 703 | 0.9− | 0.9+ | 2007 10 11 | 704 | 0.2− | 0.3+ | 2007 10 20 | 704 | 0.8− | 0.7+ |
| 2006 06 04 | G96 | 0.3− | 0.4+ | 2007 10 11 | 699 | 0.7+ | 0.5+ | 2007 10 30 | G96 | 0.2+ | 0.4− |
| 2006 06 04 | G96 | 0.4+ | 0.1− | 2007 10 11 | 704 | 0.5− | 0.6+ | 2007 10 30 | G96 | 0.3+ | 0.3− |
| 2006 06 04 | G96 | 0.1− | 0.1+ | 2007 10 11 | 699 | 0.1− | 1.0+ | 2007 10 30 | G96 | 0.0  | 0.3− |

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|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 06 04 | G96 | 0.1+  | 0.1−  | 2007 10 11 | 699 | 0.8+ | 0.3− | 2007 10 30 | G96 | 0.1+  | 0.3−  |
| 2007 09 14 | 704 | 0.0   | 0.7+  | 2007 10 12 | A77 | 0.4+ | 0.4+ | 2007 11 01 | 691 | 0.1−  | 0.4−  |
| 2007 09 14 | 704 | (0.6− | 1.7+) | 2007 10 12 | A77 | 0.2+ | 0.7+ | 2007 11 01 | 691 | 0.2+  | 0.1−  |
| 2007 09 14 | 704 | 1.1+  | 0.6+  | 2007 10 12 | A77 | 0.3+ | 0.2+ | 2007 11 01 | 691 | 0.1−  | 0.0   |
| 2007 09 16 | 704 | 0.2+  | 0.7+  | 2007 10 13 | 703 | 0.1− | 0.3− | 2007 11 05 | 704 | 0.9+  | 1.4+  |
| 2007 09 16 | 704 | 0.1−  | 0.8+  | 2007 10 13 | 703 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.6−  | 0.6+  |
| 2007 09 16 | 704 | 0.2+  | 0.2−  | 2007 10 13 | 703 | 0.5− | 0.1+ | 2007 11 05 | 704 | 0.1−  | 1.0+  |
| 2007 09 20 | 703 | 0.2−  | 0.4−  | 2007 10 13 | 703 | 0.2+ | 0.1− | 2007 11 05 | 704 | 0.0   | 0.8+  |
| 2007 09 20 | 703 | 0.0   | 1.2−  | 2007 10 13 | A77 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.0   | 0.3−  |
| 2007 09 20 | 703 | 0.5−  | 0.1−  | 2007 10 13 | A77 | 0.1− | 0.1+ | 2007 11 05 | G96 | 0.0   | 0.4−  |
| 2007 09 20 | 703 | 0.3+  | 0.5−  | 2007 10 13 | A77 | 0.3+ | 0.1+ | 2007 11 05 | G96 | 0.1+  | 0.6−  |
| 2007 10 06 | 704 | 0.1+  | 0.1−  | 2007 10 14 | 704 | 0.6− | 0.5+ | 2007 11 05 | 704 | 0.4−  | 1.4+  |
| 2007 10 06 | 704 | 0.7−  | 0.5−  | 2007 10 14 | 704 | 1.0− | 0.1+ | 2007 11 05 | G96 | 0.1+  | 0.4−  |
| 2007 10 06 | 704 | 0.4−  | 0.2−  | 2007 10 14 | 704 | 0.2− | 0.5+ | 2007 11 14 | 704 | (1.7+ | 1.7−) |
| 2007 10 06 | 704 | 0.5−  | 0.6−  | 2007 10 14 | 704 | 0.6− | 0.0  | 2007 11 14 | 704 | 0.1−  | 0.1+  |
| 2007 10 06 | 704 | 0.6−  | 0.4−  | 2007 10 18 | G96 | 0.3+ | 0.2− | 2007 11 14 | 704 | 1.1+  | 0.4−  |
| 2007 10 08 | 704 | 0.2+  | 0.4+  | 2007 10 18 | G96 | 0.4+ | 0.4− | 2007 11 14 | 704 | 0.5−  | 0.3+  |
| 2007 10 08 | 704 | 0.4−  | 0.5−  | 2007 10 18 | G96 | 0.5+ | 0.3− | 2007 11 15 | 691 | 0.1−  | 0.0   |
| 2007 10 08 | 704 | 0.4+  | 0.3−  | 2007 10 18 | G96 | 0.2+ | 0.2− | 2007 11 15 | 691 | 0.1+  | 0.0   |
| 2007 10 08 | 704 | 0.4−  | 0.0   | 2007 10 18 | 291 | 0.4− | 0.2− | 2007 11 15 | 691 | 0.4+  | 0.3−  |
| 2007 10 08 | 704 | 0.3+  | 0.6−  | 2007 10 18 | 291 | 0.2− | 0.1− | 2007 11 28 | 106 | 0.4+  | 0.2+  |
| 2007 10 10 | D29 | 0.4+  | 0.7−  | 2007 10 18 | 291 | 0.4− | 0.2− | 2007 11 28 | 106 | 1.2+  | 0.1+  |
| 2007 10 10 | D29 | 0.3+  | 0.6−  | 2007 10 19 | G96 | 0.1+ | 0.3− | 2007 11 28 | 106 | 0.3+  | 0.0   |
| 2007 10 10 | D29 | 0.5+  | 0.8−  | 2007 10 19 | G96 | 0.5+ | 0.3− | 2007 11 28 | 106 | (1.5+ | 1.6−) |
| 2007 10 10 | D29 | 0.2+  | 0.4−  | 2007 10 19 | G96 | 0.6+ | 0.2− | 2007 12 05 | 704 | 1.1−  | 0.4−  |
| 2007 10 10 | A77 | (1.5− | 0.3−) | 2007 10 19 | G96 | 0.2+ | 0.4− | 2007 12 05 | 704 | 1.2−  | 0.1−  |
| 2007 10 11 | A77 | 1.1−  | 1.0+  | 2007 10 20 | 703 | 0.2+ | 0.0  | 2007 12 05 | 704 | (2.0− | 1.4+) |
| 2007 10 11 | A77 | (1.7− | 0.5+) | 2007 10 20 | 703 | 0.4+ | 0.6+ | 2007 12 05 | 704 | 0.0   | 0.3−  |
| 2007 10 11 | 704 | 0.0   | 0.0   | 2007 10 20 | 703 | 0.6− | 1.0+ | 2007 12 05 | 704 | 0.5+  | 0.1+  |

**2007 RY<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 355.39948  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.36142691 | $\omega$ | 36.55337 | +0.70898692 | −0.70366272 |
| $a$ | 1.9518917  | $\Omega$ | 8.65504  | +0.55047140 | +0.51064838 |
| $e$ | 0.1406685  | $i$      | 18.14513 | +0.44081605 | +0.49406174 |
| $P$ | 2.73       | $H$      | 17.3     | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 03 08 | 644 | 0.7+ | 0.5+ | 2006 02 25 | G96 | 0.3+ | 0.1+ | 2007 10 09 | 703 | 0.0  | 0.0  |
| 2003 03 08 | 644 | 0.7+ | 0.8+ | 2006 02 25 | G96 | 1.5- | 0.2+ | 2007 10 09 | 703 | 0.7- | 0.0  |
| 2003 03 08 | 644 | 0.7+ | 0.6+ | 2006 02 25 | G96 | 0.1- | 0.3- | 2007 10 09 | 703 | 0.4- | 1.7- |
| 2004 07 15 | E12 | 0.0  | 0.4+ | 2007 09 10 | 703 | 0.1- | 1.1+ | 2007 11 03 | 703 | 0.1+ | 0.0  |
| 2004 07 15 | E12 | 0.0  | 0.4+ | 2007 09 10 | 703 | 0.4+ | 0.6- | 2007 11 03 | 703 | 0.3+ | 0.2- |
| 2004 07 15 | E12 | 0.1+ | 0.3- | 2007 09 10 | 703 | 0.4+ | 0.5+ | 2007 11 03 | 703 | 0.1+ | 0.1+ |
| 2004 07 15 | E12 | 0.4- | 0.0  | 2007 09 10 | 703 | 0.2- | 1.0+ | 2007 11 03 | 703 | 0.1- | 0.3- |
| 2004 08 16 | E12 | 0.1+ | 0.1+ | 2007 09 14 | 704 | 0.1- | 1.2+ | 2007 11 09 | 106 | 0.1+ | 0.7+ |
| 2004 08 16 | E12 | 0.1+ | 0.1+ | 2007 09 14 | 704 | 0.1+ | 0.6+ | 2007 11 09 | 106 | 0.0  | 0.6- |
| 2004 08 16 | E12 | 0.8- | 1.0- | 2007 09 14 | 704 | 0.2+ | 0.3+ | 2007 11 09 | 106 | 0.6- | 0.0  |
| 2004 08 16 | E12 | 0.2+ | 0.2+ | 2007 09 14 | 704 | 0.4- | 0.2- | 2007 11 09 | 106 | 0.5+ | 0.1- |
| 2006 02 07 | G96 | 0.1- | 0.4- | 2007 09 14 | 704 | 0.1- | 0.1+ | 2007 11 12 | 106 | 0.2+ | 0.3- |
| 2006 02 07 | G96 | 0.1- | 0.5- | 2007 09 17 | 704 | 0.2- | 0.2+ | 2007 11 12 | 106 | 0.2+ | 0.2- |
| 2006 02 07 | G96 | 0.0  | 0.2- | 2007 09 17 | 704 | 0.5- | 0.1+ | 2007 11 12 | 106 | 0.5+ | 0.1- |
| 2006 02 07 | G96 | 0.5- | 0.5- | 2007 09 17 | 704 | 0.0  | 0.4+ | 2007 11 12 | 106 | 0.1+ | 0.1- |
| 2006 02 25 | G96 | 0.7+ | 0.5+ | 2007 10 09 | 703 | 0.1+ | 0.4- |            |     |      |      |

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M.P.O. 129801

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 17 | 699 | 0.0  | 0.5− | 2007 10 12 | 704 | 1.5+ | 0.2− | 2007 11 02 | 704 | 0.1− | 0.1− |
| 1998 10 17 | 699 | 0.2+ | 0.6+ | 2007 10 12 | 704 | 1.5+ | 0.1− | 2007 11 08 | 704 | 0.2− | 0.2+ |
| 1998 10 17 | 699 | 0.3+ | 0.8− | 2007 10 12 | 704 | 1.5+ | 0.1− | 2007 11 08 | 704 | 0.2− | 0.6+ |
| 2000 04 04 | 645 | 0.1− | 0.0  | 2007 10 15 | 704 | 0.3− | 0.6− | 2007 11 08 | 704 | 0.1+ | 0.2− |
| 2000 04 04 | 645 | 0.1+ | 0.1− | 2007 10 15 | 704 | 0.5− | 0.2− | 2007 11 08 | 704 | 0.4− | 0.4+ |
| 2007 09 14 | 704 | 0.4− | 0.1+ | 2007 10 15 | 704 | 0.3− | 1.9− | 2007 11 08 | 704 | 0.5− | 0.3+ |
| 2007 09 14 | 704 | 0.3− | 0.3+ | 2007 10 15 | 704 | 1.3− | 0.7− | 2007 11 12 | 703 | 0.2+ | 0.0  |
| 2007 09 14 | 704 | 0.4− | 0.0  | 2007 10 15 | 704 | 0.1− | 0.2− | 2007 11 12 | 703 | 0.0  | 0.2− |
| 2007 09 14 | 704 | 0.1− | 0.8+ | 2007 10 18 | 699 | 0.1− | 0.2− | 2007 11 12 | 703 | 0.4− | 0.1+ |
| 2007 09 14 | 704 | 0.7− | 0.3− | 2007 10 18 | 699 | 0.1− | 0.7− | 2007 11 12 | 703 | 0.4+ | 0.1− |
| 2007 09 17 | 704 | 0.1− | 1.0+ | 2007 10 18 | 699 | 0.5− | 0.2− | 2007 11 12 | 703 | 0.0  | 0.2− |
| 2007 09 17 | 704 | 0.1+ | 0.1+ | 2007 10 21 | 703 | 0.0  | 0.1+ | 2007 11 12 | 703 | 0.7− | 0.4+ |
| 2007 09 17 | 704 | 0.1− | 0.1+ | 2007 10 21 | 703 | 0.3+ | 0.2+ | 2007 11 12 | 703 | 0.4− | 0.1− |
| 2007 09 25 | G96 | 0.0  | 0.4− | 2007 10 21 | 703 | 0.3+ | 0.2− | 2007 11 12 | 703 | 0.6− | 0.3+ |
| 2007 09 25 | G96 | 0.3− | 0.7− | 2007 10 21 | 703 | 0.3+ | 0.1− | 2007 11 13 | H51 | 0.3+ | 0.2− |
| 2007 09 25 | G96 | 0.2− | 0.3− | 2007 10 23 | 704 | 0.2+ | 0.5+ | 2007 11 13 | H51 | 0.1− | 0.2− |
| 2007 09 25 | G96 | 0.1− | 0.6− | 2007 10 23 | 704 | 0.2+ | 0.5+ | 2007 11 13 | H51 | 0.2+ | 0.1+ |
| 2007 10 06 | D29 | 0.1− | 0.2− | 2007 10 23 | 704 | 0.0  | 0.7+ | 2007 11 17 | 704 | 0.2− | 0.3− |
| 2007 10 06 | D29 | 0.3− | 0.3− | 2007 10 23 | 704 | 0.8+ | 0.5+ | 2007 11 17 | 704 | 0.2+ | 0.7+ |
| 2007 10 06 | D29 | 0.6− | 0.2− | 2007 10 23 | 704 | 0.9− | 1.7+ | 2007 11 17 | 704 | 0.2+ | 0.0  |
| 2007 10 06 | D29 | 0.8− | 0.3− | 2007 11 01 | 703 | 0.3+ | 0.0  | 2007 11 17 | 704 | 0.4+ | 0.2+ |
| 2007 10 08 | 703 | 0.3− | 0.3− | 2007 11 01 | 703 | 1.7+ | 1.0+ | 2007 11 17 | 704 | 0.0  | 0.0  |
| 2007 10 08 | 703 | 0.2− | 0.2+ | 2007 11 01 | 703 | 0.5− | 1.2+ | 2007 12 02 | 704 | 0.0  | 0.1+ |
| 2007 10 08 | 703 | 0.1− | 0.1+ | 2007 11 02 | 704 | 0.4+ | 0.1− | 2007 12 02 | 704 | 0.6− | 0.4+ |
| 2007 10 08 | 703 | 0.1− | 0.4− | 2007 11 02 | 704 | 0.1+ | 0.3− | 2007 12 02 | 704 | 0.4− | 0.0  |
| 2007 10 12 | 704 | 1.4+ | 0.5− | 2007 11 02 | 704 | 0.1− | 0.1− | 2007 12 02 | 704 | 0.8− | 0.1− |
| 2007 10 12 | 704 | 1.4+ | 0.4− | 2007 11 02 | 704 | 0.2+ | 0.1+ |            |     |      |      |

2007 RY<sub>147</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 19.10178   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.24402344 | $\omega$ | 259.14778 | +0.95204217  | +0.29150118  |
| $a$ | 2.5361894  | $\Omega$ | 83.85524  | −0.23124853  | +0.88449029  |
| $e$ | 0.1809058  | $i$      | 5.36520   | −0.20034924  | +0.36428558  |
| $P$ | 4.04       | $H$      | 17.3      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 699 | 0.2− | 0.1+ | 2007 09 11 | D29 | 0.8− | 0.6− | 2007 10 04 | 703 | 0.1+ | 0.1+ |
| 2003 09 22 | 699 | 0.1+ | 0.1− | 2007 09 11 | D29 | 0.2+ | 0.3− | 2007 10 15 | 703 | 1.3− | 0.2+ |
| 2003 09 22 | 699 | 0.4− | 0.0  | 2007 09 11 | D29 | 0.0  | 0.3− | 2007 10 15 | 703 | 0.1+ | 0.6− |
| 2003 09 22 | 699 | 0.2− | 0.5− | 2007 09 11 | D29 | 0.8+ | 0.2− | 2007 10 15 | 703 | 0.6− | 0.2− |
| 2003 09 30 | 691 | 0.1+ | 0.3+ | 2007 09 14 | 703 | 0.7+ | 0.2− | 2007 10 15 | 703 | 0.4− | 0.3+ |
| 2003 09 30 | 691 | 0.2+ | 0.3+ | 2007 09 14 | 703 | 0.5− | 0.8+ | 2007 10 20 | G96 | 0.9+ | 0.2− |
| 2003 09 30 | 691 | 0.1+ | 0.2+ | 2007 09 14 | 703 | 0.2− | 0.3+ | 2007 10 20 | G96 | 0.7+ | 0.0  |
| 2006 05 30 | G96 | 0.7+ | 0.1− | 2007 09 14 | 703 | 0.2+ | 1.1+ | 2007 10 20 | G96 | 0.4+ | 0.2− |
| 2006 05 30 | G96 | 0.2+ | 0.2+ | 2007 10 04 | 703 | 0.7+ | 0.3+ | 2007 10 20 | G96 | 0.2+ | 0.4− |
| 2006 05 30 | G96 | 0.3− | 0.2+ | 2007 10 04 | 703 | 1.0− | 0.6− |            |     |      |      |
| 2006 05 30 | G96 | 0.8− | 0.5− | 2007 10 04 | 703 | 0.1+ | 0.1− |            |     |      |      |

2007 RJ<sub>148</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 348.10794  |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.35275444 | $\omega$ | 228.61851 | +0.85983856 | −0.49202547 |
| $a$ | 1.9837536  | $\Omega$ | 159.65100 | +0.49987821 | +0.86562158 |
| $e$ | 0.0875294  | $i$      | 23.08380  | −0.10392027 | +0.09279124 |
| $P$ | 2.79       | $H$      | 17.5      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 01 10 | G96 | 0.6− | 0.3+ | 2007 09 05 | 703 | 0.2− | 0.6+ | 2007 09 14 | 703 | 0.4+ | 0.0  |
| 2006 01 10 | G96 | 0.0  | 0.1− | 2007 09 05 | 703 | 0.2+ | 0.7+ | 2007 09 14 | 703 | 0.5− | 0.5− |
| 2006 01 10 | G96 | 0.2+ | 0.1− | 2007 09 05 | 703 | 0.7+ | 0.5+ | 2007 09 14 | 703 | 1.1− | 0.4− |
| 2006 01 10 | G96 | 0.1− | 0.3− | 2007 09 11 | D29 | 0.1+ | 0.5− | 2007 09 14 | 703 | 1.3+ | 0.4+ |
| 2006 01 26 | G96 | 0.3− | 0.3+ | 2007 09 11 | D29 | 0.5+ | 0.2+ | 2007 09 14 | 703 | 0.7+ | 0.5+ |
| 2006 01 26 | G96 | 0.2− | 0.0  | 2007 09 11 | D29 | 0.5− | 0.5− | 2007 09 14 | 703 | 0.0  | 0.0  |
| 2006 01 26 | G96 | 0.1− | 0.0  | 2007 09 11 | D29 | 0.4− | 0.1− | 2007 10 12 | 703 | 0.2+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 01 26 | G96 | 1.1+ | 0.1+ | 2007 09 14 | 703 | 0.3− | 1.0+ | 2007 10 12 | 703 | 0.4− | 0.2+ |
| 2007 09 05 | 703 | 0.0  | 0.0  | 2007 09 14 | 703 | 0.6− | 1.8− | 2007 10 12 | 703 | 0.3− | 0.1− |

2007 RZ<sub>149</sub> = 2005 FN<sub>12</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |               |               |
|-----|------------|----------|-----------|---------------|---------------|
| $M$ | 106.17275  |          | (2000.0)  | $\mathbf{P}$  | $\mathbf{Q}$  |
| $n$ | 0.18275350 | $\omega$ | 341.79465 | $-0.18504874$ | $+0.97004861$ |
| $a$ | 3.0753338  | $\Omega$ | 277.31247 | $-0.88077249$ | $-0.23473392$ |
| $e$ | 0.0356225  | $i$      | 9.12866   | $-0.43588621$ | $+0.06249545$ |
| $P$ | 5.39       | $H$      | 15.3      | $G$ 0.15      | $U$ 1         |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 27 | 644 | 0.4− | 0.7+ | 2005 04 14 | 703 | 0.1− | 0.3+ | 2007 09 13 | 106 | 1.1− | 0.4− |
| 2001 08 27 | 644 | 0.2− | 1.0+ | 2005 04 14 | 703 | 0.4+ | 0.6+ | 2007 09 13 | 106 | 0.6− | 0.4+ |
| 2001 08 27 | 644 | 0.4− | 0.6+ | 2007 09 12 | D35 | 0.5+ | 0.7+ | 2007 10 08 | 703 | 0.8+ | 0.1+ |
| 2003 12 28 | 691 | 0.2− | 0.3+ | 2007 09 12 | D35 | 0.2+ | 0.3+ | 2007 10 08 | 703 | 0.6− | 0.8− |
| 2003 12 28 | 691 | 0.2+ | 0.1+ | 2007 09 12 | D35 | 0.5+ | 0.2+ | 2007 10 08 | 703 | 1.7+ | 0.5− |
| 2003 12 28 | 691 | 0.1+ | 0.1+ | 2007 09 13 | 703 | 0.2+ | 0.5+ | 2007 10 08 | 703 | 0.3+ | 0.2− |
| 2005 03 17 | 599 | 0.6+ | 0.1− | 2007 09 13 | 703 | 0.0  | 0.1+ | 2007 10 19 | 703 | 1.8− | 1.0+ |
| 2005 03 18 | 599 | 0.4+ | 0.1− | 2007 09 13 | 703 | 0.3+ | 0.3+ | 2007 10 19 | 703 | 0.4− | 0.4+ |
| 2005 03 18 | 599 | 0.0  | 0.6+ | 2007 09 13 | 703 | 0.5+ | 0.3+ | 2007 10 19 | 703 | 2.7− | 0.5− |
| 2005 04 14 | 703 | 0.3+ | 1.0+ | 2007 09 13 | 106 | 0.7+ | 0.1+ | 2007 10 19 | 703 | 0.3− | 0.1+ |
| 2005 04 14 | 703 | 0.3− | 0.3+ | 2007 09 13 | 106 | 0.9+ | 0.7− |            |     |      |      |

2007 RR<sub>150</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 290.81230  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.22439578 | $\omega$ | 123.95830 | +0.28307277  | −0.95780852  |
| $a$ | 2.6820050  | $\Omega$ | 309.51851 | +0.85731969  | +0.27593595  |
| $e$ | 0.0758298  | $i$      | 3.69585   | +0.42996832  | +0.08038775  |
| $P$ | 4.39       | $H$      | 16.0      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 17 | 691 | 0.2− | 0.5− | 2005 03 11 | G96 | 0.0   | 0.2+  | 2007 09 08 | 699 | 1.4− | 0.9− |
| 2003 10 17 | 691 | 0.0  | 0.3− | 2005 03 11 | G96 | 0.0   | 0.3+  | 2007 09 08 | 699 | 0.4− | 1.1+ |
| 2003 10 17 | 691 | 0.5− | 0.4− | 2005 03 11 | G96 | 0.3+  | 0.1−  | 2007 09 08 | 699 | 1.2+ | 0.3− |
| 2003 10 29 | 699 | 0.8+ | 1.6+ | 2005 03 11 | G96 | 0.1+  | 0.0   | 2007 09 08 | 699 | 0.2+ | 0.1+ |
| 2003 10 29 | 699 | 0.1+ | 0.6+ | 2007 08 24 | 691 | 0.3−  | 0.1−  | 2007 09 14 | 691 | 0.1− | 0.1− |
| 2003 10 29 | 699 | 0.2− | 0.9− | 2007 08 24 | 691 | 0.0   | 0.2+  | 2007 09 14 | 691 | 0.3− | 0.0  |
| 2003 10 29 | 699 | 0.0  | 0.2− | 2007 08 24 | 691 | 0.2−  | 0.3−  | 2007 09 14 | 691 | 0.2− | 0.1− |
| 2004 12 20 | G96 | 0.2− | 0.1+ | 2007 09 03 | 703 | (2.9− | 0.5−) | 2007 09 30 | 691 | 0.3− | 0.1+ |
| 2004 12 20 | G96 | 0.1+ | 0.2− | 2007 09 03 | 703 | 0.2−  | 0.2+  | 2007 09 30 | 691 | 0.7+ | 0.5− |
| 2004 12 20 | G96 | 0.3− | 0.4+ | 2007 09 03 | 703 | 1.5+  | 0.0   | 2007 09 30 | 691 | 0.5− | 1.1+ |
| 2004 12 20 | G96 | 0.1+ | 0.2− | 2007 09 03 | 703 | (2.1+ | 1.1−) |            |     |      |      |

2007 RL<sub>154</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 354.50703  |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.21432292 | $\omega$ | 139.28205 | +0.99683405 | −0.07124258 |
| $a$ | 2.7653937  | $\Omega$ | 224.84181 | +0.05351960 | +0.92958253 |
| $e$ | 0.0855285  | $i$      | 2.86977   | +0.05880084 | +0.36166394 |
| $P$ | 4.60       | $H$      | 17.0      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.2− | 0.0  | 2006 06 01 | 691 | 0.1+ | 0.4+ | 2007 09 10 | 703 | 0.1− | 0.9+ |
| 2003 11 19 | 691 | 0.1− | 0.1− | 2006 06 01 | 691 | 0.3− | 0.2+ | 2007 09 14 | 691 | 0.0  | 0.0  |
| 2003 11 19 | 691 | 0.1+ | 0.1− | 2006 06 01 | 691 | 0.1+ | 0.1+ | 2007 09 14 | 691 | 0.0  | 0.1+ |
| 2003 12 21 | 691 | 0.0  | 0.3+ | 2007 09 03 | 703 | 1.2+ | 0.6+ | 2007 09 14 | 691 | 0.0  | 0.1+ |
| 2003 12 21 | 691 | 0.1+ | 0.1+ | 2007 09 03 | 703 | 0.3− | 1.0+ | 2007 10 11 | G96 | 0.3+ | 0.3− |
| 2003 12 21 | 691 | 0.0  | 0.1+ | 2007 09 03 | 703 | 1.0+ | 0.4− | 2007 10 11 | G96 | 0.4− | 0.4− |
| 2006 05 19 | G96 | 0.0  | 0.2+ | 2007 09 03 | 703 | 1.6− | 1.4− | 2007 10 11 | G96 | 0.0  | 0.2− |
| 2006 05 19 | G96 | 0.7− | 0.1− | 2007 09 10 | 703 | 0.6− | 0.3+ | 2007 10 11 | G96 | 0.5+ | 0.1− |
| 2006 05 19 | G96 | 1.0+ | 0.1− | 2007 09 10 | 703 | 0.3+ | 0.6− |            |     |      |      |
| 2006 05 19 | G96 | 0.2− | 0.3− | 2007 09 10 | 703 | 0.4− | 0.2+ |            |     |      |      |

**2007 RP<sub>154</sub> = 2005 AG<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.81232  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29088361 | $\omega$ 85.67341  | +0.58585086   | -0.80964781 |
| <i>a</i> | 2.2559175  | $\Omega$ 328.37934 | +0.71424388   | +0.53644173 |
| <i>e</i> | 0.1944127  | <i>i</i> 3.86538   | +0.38292879   | +0.23811906 |
| <i>P</i> | 3.39       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 09 | 291 | 0.2+ | 0.5+ | 2005 01 12 | 704 | 0.2- | 0.6- | 2007 09 10 | 703 | 0.3+ | 0.6+ |
| 2002 02 09 | 291 | 0.4+ | 0.4+ | 2005 01 12 | 704 | 0.2+ | 1.5- | 2007 09 10 | 703 | 0.4- | 0.5+ |
| 2002 02 09 | 291 | 0.1+ | 0.7+ | 2007 08 10 | 691 | 0.1- | 0.4+ | 2007 09 10 | 703 | 0.0  | 1.5+ |
| 2002 03 05 | 645 | 0.1+ | 0.2+ | 2007 08 10 | 691 | 0.2- | 0.1+ | 2007 09 10 | 703 | 0.4+ | 1.1+ |
| 2002 03 05 | 645 | 0.1+ | 0.2+ | 2007 08 10 | 691 | 0.1+ | 0.3+ | 2007 09 14 | 691 | 0.0  | 0.0  |
| 2005 01 07 | 704 | 0.5- | 0.2+ | 2007 08 23 | 691 | 0.0  | 0.2- | 2007 09 14 | 691 | 0.1- | 0.2+ |
| 2005 01 07 | 704 | 0.2- | 0.9+ | 2007 08 23 | 691 | 0.2- | 0.6- | 2007 09 14 | 691 | 0.2+ | 0.2+ |
| 2005 01 07 | 704 | 0.7+ | 1.3+ | 2007 08 23 | 691 | 0.7- | 0.1+ | 2007 10 08 | G96 | 0.1+ | 0.2- |
| 2005 01 07 | 704 | 0.5- | 0.6+ | 2007 09 10 | 691 | 0.1- | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.1- |
| 2005 01 12 | 704 | 0.7+ | 0.4- | 2007 09 10 | 691 | 0.1- | 0.0  | 2007 10 08 | G96 | 0.5+ | 0.3- |
| 2005 01 12 | 704 | 0.2- | 0.7- | 2007 09 10 | 691 | 0.8- | 1.6- | 2007 10 08 | G96 | 0.1+ | 0.4- |

**2007 RS<sub>155</sub> = 2000 WG<sub>129</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 316.16908  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.12607107 | $\omega$ 123.22285 | +0.51594688   | -0.85620403 |
| <i>a</i> | 3.9390584  | $\Omega$ 295.69422 | +0.77574106   | +0.48023187 |
| <i>e</i> | 0.2167471  | <i>i</i> 1.69860   | +0.36335192   | +0.19050462 |
| <i>P</i> | 7.82       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 19 | 691 | 0.1+ | 0.3- | 2007 08 24 | 691 | 0.7- | 0.2+ | 2007 09 14 | 691 | 0.0  | 0.1- |
| 2000 11 19 | 691 | 0.1- | 0.3- | 2007 08 24 | 691 | 0.3- | 0.3+ | 2007 10 04 | G96 | 0.6+ | 0.1+ |
| 2000 11 19 | 691 | 0.2+ | 0.3- | 2007 09 10 | 691 | 0.6- | 0.2+ | 2007 10 04 | G96 | 0.1+ | 0.0  |
| 2000 11 21 | 704 | 0.6- | 0.1- | 2007 09 10 | 691 | 0.2- | 0.1+ | 2007 10 04 | G96 | 0.0  | 0.3+ |
| 2000 11 21 | 704 | 0.6+ | 0.3+ | 2007 09 10 | 691 | 0.6- | 0.1+ | 2007 10 04 | G96 | 0.5+ | 0.9+ |
| 2000 11 21 | 704 | 0.1+ | 0.5+ | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 10 11 | G96 | 0.5+ | 0.0  |
| 2000 11 21 | 704 | 0.6- | 1.5+ | 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.1+ |
| 2003 04 07 | 691 | 0.1+ | 1.2+ | 2007 09 10 | G96 | 0.4- | 0.0  | 2007 10 11 | G96 | 0.2+ | 0.3+ |
| 2003 04 07 | 691 | 1.2+ | 1.3+ | 2007 09 10 | G96 | 0.1- | 0.0  | 2007 10 11 | G96 | 0.1+ | 0.1+ |
| 2003 04 07 | 691 | 0.4+ | 1.2+ | 2007 09 14 | 691 | 0.3- | 0.0  |            |     |      |      |
| 2007 08 24 | 691 | 0.5- | 0.3+ | 2007 09 14 | 691 | 0.3- | 0.0  |            |     |      |      |

**2007 RU<sub>155</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 299.63009  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23637149 | $\omega$ 88.24895  | +0.30944331   | -0.94801905 |
| <i>a</i> | 2.5906336  | $\Omega$ 343.14309 | +0.73858094   | +0.28875724 |
| <i>e</i> | 0.1150295  | <i>i</i> 14.82433  | +0.59895161   | +0.13371290 |
| <i>P</i> | 4.17       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 09 | 691 | 0.2+  | 0.1-  | 2007 09 10 | 691 | 0.1- | 0.2- | 2007 09 14 | 691 | 0.0  | 0.3+ |
| 2005 02 09 | 691 | 0.3+  | 0.2-  | 2007 09 10 | 691 | 0.2- | 0.1+ | 2007 10 08 | G96 | 0.6- | 0.1+ |
| 2005 02 09 | 691 | 0.2-  | 0.0   | 2007 09 10 | 691 | 0.2- | 0.1+ | 2007 10 08 | G96 | 0.1- | 0.2+ |
| 2005 04 02 | G96 | (3.2+ | 0.4-) | 2007 09 10 | G96 | 0.2- | 0.0  | 2007 10 08 | G96 | 0.8+ | 0.2- |
| 2005 04 02 | G96 | 0.2-  | 0.2+  | 2007 09 10 | G96 | 0.6+ | 0.2+ | 2007 10 08 | G96 | 0.3- | 0.5- |
| 2005 04 02 | G96 | 0.3-  | 0.3+  | 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 10 12 | G96 | 0.6- | 0.1- |
| 2005 04 02 | G96 | 0.2-  | 0.3+  | 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 10 12 | G96 | 0.2+ | 0.1+ |
| 2005 04 10 | 695 | 0.1+  | 0.2+  | 2007 09 14 | 691 | 0.1- | 0.5- | 2007 10 12 | G96 | 0.2+ | 0.3- |
| 2005 04 10 | 695 | 0.5+  | 0.5-  | 2007 09 14 | 691 | 0.0  | 0.5+ | 2007 10 12 | G96 | 0.0  | 0.1+ |

**2007 RZ<sub>155</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 137.24291  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21916297 | $\omega$ 234.92063 | -0.85359778   | +0.52006763 |
| <i>a</i> | 2.7245279  | $\Omega$ 336.37280 | -0.45025535   | -0.76553259 |
| <i>e</i> | 0.1007483  | <i>i</i> 4.29399   | -0.26199420   | -0.37880010 |
| <i>P</i> | 4.50       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 12 23 | 645 | 0.1- | 0.2+ | 2005 03 16 | G96 | 0.2- | 0.3+ | 2007 09 10 | 703 | 0.5+  | 0.3+  |
| 2000 12 23 | 645 | 0.1- | 0.2+ | 2005 03 16 | G96 | 0.3- | 0.4+ | 2007 09 10 | G96 | 0.0   | 0.2+  |
| 2001 03 02 | 699 | 1.9+ | 0.5- | 2005 03 16 | G96 | 0.2+ | 0.4+ | 2007 09 10 | G96 | 0.2-  | 0.1+  |
| 2001 03 02 | 699 | 0.0  | 0.5+ | 2005 03 16 | G96 | 0.2- | 0.1+ | 2007 09 10 | G96 | 0.2-  | 0.0   |
| 2001 03 02 | 699 | 0.6- | 1.1+ | 2006 05 17 | E12 | 0.3+ | 0.2- | 2007 09 10 | G96 | 0.0   | 0.1+  |
| 2001 03 02 | 699 | 0.5+ | 1.6+ | 2006 05 17 | E12 | 0.5- | 0.5+ | 2007 09 14 | 691 | 0.0   | 0.3+  |
| 2001 04 16 | 645 | 0.1- | 0.1+ | 2006 05 17 | E12 | 0.7+ | 0.8+ | 2007 09 14 | 691 | 0.3-  | 0.2+  |
| 2001 04 16 | 645 | 0.1- | 0.1+ | 2006 05 17 | E12 | 0.1- | 0.3+ | 2007 09 14 | 691 | 0.0   | 0.0   |
| 2003 09 30 | 691 | 0.1- | 0.3+ | 2007 08 10 | 691 | 0.1- | 0.1+ | 2007 10 04 | G96 | (3.0+ | 1.0-) |
| 2003 09 30 | 691 | 0.2- | 0.2+ | 2007 08 10 | 691 | 0.5- | 0.3+ | 2007 10 04 | G96 | 0.3+  | 0.1-  |
| 2003 09 30 | 691 | 0.0  | 0.6+ | 2007 08 10 | 691 | 0.4- | 0.3+ | 2007 10 04 | G96 | 0.5+  | 0.2+  |
| 2003 10 17 | 691 | 0.0  | 0.0  | 2007 08 23 | 691 | 0.6- | 0.1+ | 2007 10 04 | G96 | 0.1+  | 0.1+  |
| 2003 10 17 | 691 | 0.1- | 0.1- | 2007 08 23 | 691 | 0.3- | 0.1+ | 2007 10 11 | G96 | 0.1-  | 0.1+  |
| 2003 10 17 | 691 | 0.1+ | 0.1+ | 2007 08 23 | 691 | 0.1- | 0.1+ | 2007 10 11 | G96 | 0.2+  | 0.1+  |
| 2005 01 18 | 691 | 0.2+ | 0.2+ | 2007 09 10 | 703 | 0.9- | 1.7+ | 2007 10 11 | G96 | 0.0   | 0.0   |
| 2005 01 18 | 691 | 0.2+ | 0.2+ | 2007 09 10 | 703 | 0.7- | 0.1+ | 2007 10 11 | G96 | 0.1-  | 0.0   |
| 2005 01 18 | 691 | 0.3+ | 0.2+ | 2007 09 10 | 703 | 0.6+ | 0.2- |            |     |       |       |

**2007 RB<sub>157</sub> = 2007 TS<sub>393</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.01119  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.12460204 | $\omega$ 249.85442 | +0.82403948   | -0.56531577 |
| <i>a</i> | 3.9699584  | $\Omega$ 144.54138 | +0.54074269   | +0.76530095 |
| <i>e</i> | 0.2530688  | <i>i</i> 3.66754   | +0.16898603   | +0.30778652 |
| <i>P</i> | 7.91       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 25 | 691 | 0.0  | 0.3- | 2007 08 23 | 691 | 0.1-  | 0.4+  | 2007 10 15 | 691 | 0.2- | 0.1+ |
| 2000 11 25 | 691 | 0.1+ | 0.2- | 2007 08 23 | 691 | (3.3- | 1.8+) | 2007 10 15 | 691 | 0.0  | 0.2+ |
| 2000 11 25 | 691 | 0.1- | 0.1- | 2007 09 11 | G96 | 1.1+  | 0.6-  | 2007 10 19 | 691 | 0.1+ | 0.0  |
| 2002 01 19 | 291 | 0.1+ | 0.6+ | 2007 09 11 | G96 | 0.8+  | 0.4-  | 2007 10 19 | 691 | 0.5- | 0.4+ |
| 2002 01 19 | 291 | 0.1+ | 0.3+ | 2007 09 11 | G96 | 0.5+  | 0.4-  | 2007 10 19 | 691 | 0.2- | 0.1+ |
| 2002 01 19 | 291 | 0.2+ | 0.3+ | 2007 09 11 | G96 | 0.4+  | 0.3-  | 2007 10 19 | G96 | 0.5+ | 0.3- |
| 2007 08 10 | 691 | 0.0  | 0.0  | 2007 09 14 | 291 | 0.1-  | 0.0   | 2007 10 19 | G96 | 0.7+ | 0.0  |
| 2007 08 10 | 691 | 0.3- | 0.0  | 2007 09 14 | 291 | 0.1-  | 0.1+  | 2007 10 19 | G96 | 0.4+ | 0.2- |
| 2007 08 10 | 691 | 0.0  | 0.5+ | 2007 09 14 | 291 | 0.1-  | 0.0   | 2007 10 19 | G96 | 0.6+ | 0.3- |
| 2007 08 23 | 691 | 0.1- | 0.1- | 2007 10 15 | 691 | 0.0   | 0.1-  |            |     |      |      |

**2007 RG<sub>157</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.84504  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.08288548 | $\omega$ 27.13597 | +0.83860073   | -0.54460338 |
| <i>a</i> | 5.2097525  | $\Omega$ 5.90784  | +0.47519654   | +0.72013210 |
| <i>e</i> | 0.0408385  | <i>i</i> 6.96898  | +0.26634011   | +0.42990337 |
| <i>P</i> | 11.89      | <i>H</i> 13.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 16 | 691 | 0.8+ | 0.8- | 2007 09 11 | G96 | 0.4+ | 0.5- | 2007 10 05 | 691 | 0.3- | 0.0  |
| 1996 10 16 | 691 | 0.0  | 0.3- | 2007 09 11 | G96 | 0.3+ | 0.5- | 2007 10 05 | 691 | 0.3- | 0.2- |
| 1996 10 16 | 691 | 0.1- | 0.1- | 2007 09 14 | 691 | 0.2- | 0.2- | 2007 10 08 | 691 | 0.1+ | 0.1- |
| 2002 03 21 | 691 | 0.6- | 0.8+ | 2007 09 14 | 691 | 0.3- | 0.3- | 2007 10 08 | 691 | 0.1- | 0.4+ |
| 2002 03 21 | 691 | 0.0  | 0.3+ | 2007 09 14 | 699 | 0.4- | 0.3+ | 2007 10 08 | 691 | 0.1+ | 0.3- |
| 2002 03 21 | 691 | 0.1- | 0.3+ | 2007 09 14 | 691 | 0.2- | 0.2- | 2007 10 12 | 691 | 0.0  | 0.1- |
| 2002 04 15 | 644 | 0.6+ | 0.4+ | 2007 09 14 | 699 | 0.7+ | 1.4+ | 2007 10 12 | 691 | 0.3- | 0.3+ |
| 2002 04 15 | 644 | 0.6+ | 0.5+ | 2007 09 14 | 699 | 1.3+ | 0.6+ | 2007 10 12 | 691 | 0.2- | 0.0  |
| 2002 04 15 | 644 | 0.6+ | 0.4- | 2007 09 14 | 699 | 1.1+ | 0.1- | 2007 10 14 | 691 | 0.3- | 0.0  |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 20 | 644 | 0.2+ | 0.8− | 2007 09 30 | 691 | 0.0  | 0.3− | 2007 10 14 | 691 | 0.1− | 0.8+ |
| 2006 08 20 | 644 | 0.3+ | 0.4− | 2007 09 30 | 691 | 0.1+ | 0.2− | 2007 10 14 | 691 | 0.1− | 0.1+ |
| 2006 08 20 | 644 | 0.5+ | 0.7− | 2007 09 30 | 691 | 0.1− | 0.0  | 2007 10 15 | 691 | 0.9− | 0.2+ |
| 2007 08 24 | 691 | 0.1− | 0.0  | 2007 10 04 | 703 | 0.3− | 0.6+ | 2007 10 15 | 691 | 0.4− | 0.0  |
| 2007 08 24 | 691 | 0.1+ | 0.0  | 2007 10 04 | 703 | 1.3− | 0.2+ | 2007 10 15 | 691 | 0.6− | 0.7+ |
| 2007 08 24 | 691 | 0.1− | 0.1− | 2007 10 04 | 703 | 0.4+ | 1.4+ | 2007 10 19 | 691 | 0.2− | 0.1+ |
| 2007 09 11 | G96 | 0.1− | 0.3− | 2007 10 04 | 703 | 0.4+ | 1.0+ | 2007 10 19 | 691 | 0.3− | 0.1+ |
| 2007 09 11 | G96 | 0.4+ | 0.5− | 2007 10 05 | 691 | 0.4− | 0.0  | 2007 10 19 | 691 | 0.4− | 0.1+ |

2007 RJ<sub>162</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 32.63488   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21653894 | $\omega$ | 353.14698 | +0.85226009   | +0.52127868 |
| <i>a</i> | 2.7464943  | $\Omega$ | 335.28127 | −0.47483923   | +0.73572529 |
| <i>e</i> | 0.1304564  | <i>i</i> | 6.01685   | −0.21950044   | +0.43240818 |
| <i>P</i> | 4.55       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 12 | 644 | 0.2− | 0.1+ | 2007 09 13 | 703 | 0.0   | 0.3+  | 2007 09 19 | 683 | 0.2− | 0.5− |
| 2002 07 12 | 644 | 0.4− | 0.1+ | 2007 09 13 | 683 | 0.5+  | 1.5+  | 2007 09 19 | 683 | 0.6− | 0.2− |
| 2002 07 12 | 644 | 0.0  | 0.0  | 2007 09 13 | 703 | 1.1+  | 0.5+  | 2007 10 09 | 704 | 1.2+ | 0.2+ |
| 2002 08 10 | 807 | 0.2+ | 0.2+ | 2007 09 13 | 699 | 0.6+  | 0.7+  | 2007 10 09 | 704 | 0.7+ | 1.1− |
| 2002 08 10 | 807 | 0.3+ | 0.3+ | 2007 09 13 | 703 | 0.1+  | 1.4+  | 2007 10 09 | 704 | 0.5+ | 0.0  |
| 2005 03 04 | G96 | 0.3+ | 0.1− | 2007 09 13 | 683 | 1.9+  | 1.3+  | 2007 10 09 | 704 | 0.1− | 0.4+ |
| 2005 03 04 | G96 | 0.0  | 0.1− | 2007 09 13 | 703 | 0.1+  | 0.3+  | 2007 10 12 | 704 | 0.5+ | 0.9+ |
| 2005 03 04 | G96 | 0.5+ | 0.0  | 2007 09 13 | 699 | 0.8+  | 0.1+  | 2007 10 12 | 704 | 0.0  | 0.6+ |
| 2005 03 04 | G96 | 0.1− | 0.7+ | 2007 09 13 | 699 | 0.3+  | 0.1+  | 2007 10 12 | 704 | 0.4− | 0.9− |
| 2005 04 02 | G96 | 0.1+ | 0.3+ | 2007 09 13 | 699 | 0.5−  | 0.6−  | 2007 10 12 | 704 | 1.9− | 0.6− |
| 2005 04 02 | G96 | 0.1− | 0.0  | 2007 09 14 | 699 | 0.6+  | 0.5+  | 2007 10 13 | 703 | 0.5+ | 0.4+ |
| 2005 04 02 | G96 | 0.1− | 0.4+ | 2007 09 14 | 699 | 0.3−  | 1.3+  | 2007 10 13 | 703 | 0.4− | 0.3+ |
| 2005 04 02 | G96 | 0.0  | 0.3+ | 2007 09 14 | 699 | 0.6−  | 0.5−  | 2007 10 13 | 703 | 0.0  | 0.6+ |
| 2007 09 08 | 699 | 1.5− | 0.7− | 2007 09 14 | 699 | 1.0−  | 1.0−  | 2007 10 13 | 703 | 1.5− | 0.1+ |
| 2007 09 08 | 699 | 1.1+ | 1.8− | 2007 09 18 | 683 | 0.8−  | 0.5−  | 2007 10 20 | G96 | 0.1− | 0.1− |
| 2007 09 08 | 699 | 0.3+ | 0.6− | 2007 09 18 | 683 | 0.4+  | 0.1+  | 2007 10 20 | G96 | 0.2+ | 0.2− |
| 2007 09 08 | 699 | 0.5− | 0.9+ | 2007 09 18 | 683 | 1.2−  | 1.8−  | 2007 10 20 | G96 | 0.2− | 0.1− |
| 2007 09 13 | 683 | 0.4+ | 0.5− | 2007 09 19 | 683 | (1.2− | 3.3−) | 2007 10 20 | G96 | 0.5− | 0.4− |

2007 RP<sub>165</sub> = 2001 GE<sub>2</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 311.18253  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22257547 | $\omega$ | 223.41053 | +0.57125072   | −0.82057019 |
| <i>a</i> | 2.6966082  | $\Omega$ | 191.79163 | +0.77547590   | +0.54691713 |
| <i>e</i> | 0.0588750  | <i>i</i> | 5.15536   | +0.26890471   | +0.16597051 |
| <i>P</i> | 4.43       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 05 30 | 691 | (4.2+ | 2.4−) | 2003 11 21 | 691 | 0.2− | 0.1+ | 2007 09 10 | 691 | 0.2− | 0.4+ |
| 1997 05 30 | 691 | 0.1+  | 0.1+  | 2003 11 21 | 691 | 0.3− | 0.1+ | 2007 09 14 | 691 | 0.2− | 0.3+ |
| 1997 05 30 | 691 | 0.3−  | 0.1+  | 2003 11 21 | 691 | 0.4− | 0.0  | 2007 09 14 | 691 | 0.2− | 0.2+ |
| 2001 04 13 | 691 | 0.0   | 0.8+  | 2005 02 02 | 691 | 0.0  | 0.8+ | 2007 09 14 | 691 | 0.3− | 0.3+ |
| 2001 04 13 | 691 | 0.0   | 0.7+  | 2005 02 02 | 691 | 0.0  | 0.3+ | 2007 09 15 | G96 | 0.0  | 0.1− |
| 2001 04 13 | 691 | 0.6+  | 0.9+  | 2005 02 02 | 691 | 0.3+ | 0.4+ | 2007 09 15 | G96 | 0.1− | 0.1− |
| 2001 04 16 | 691 | 0.3+  | 0.4+  | 2006 06 04 | G96 | 0.5− | 0.1+ | 2007 09 15 | G96 | 0.8− | 0.6+ |
| 2001 04 16 | 691 | 0.6+  | 0.2+  | 2006 06 04 | G96 | 0.5− | 0.0  | 2007 09 15 | G96 | 0.6+ | 0.7+ |
| 2001 04 16 | 691 | 0.6+  | 0.2+  | 2006 06 04 | G96 | 0.5− | 0.1− | 2007 10 19 | G96 | 0.2+ | 0.1− |
| 2003 10 24 | 691 | 0.1+  | 0.4+  | 2006 06 04 | G96 | 0.6+ | 0.1− | 2007 10 19 | G96 | 0.2+ | 0.2+ |
| 2003 10 24 | 691 | 0.0   | 0.3+  | 2007 09 10 | 691 | 0.2− | 0.4+ | 2007 10 19 | G96 | 0.3+ | 0.1− |
| 2003 10 24 | 691 | 0.2−  | 0.4+  | 2007 09 10 | 691 | 0.2− | 0.4+ | 2007 10 19 | G96 | 0.9+ | 0.4+ |

## M.P.O. 129803

2007 RW<sub>165</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 266.01874  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23873534 | $\omega$ | 263.14251 | −0.37493059   | −0.92654486 |
| <i>a</i> | 2.5735044  | $\Omega$ | 208.93729 | +0.87363736   | −0.34206021 |
| <i>e</i> | 0.1575376  | <i>i</i> | 3.63624   | +0.31013677   | −0.15655489 |
| <i>P</i> | 4.13       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 11 07 | 691 | 0.2− | 0.2− | 2005 03 30 | 644 | 0.6+ | 0.0  | 2007 09 10 | 691 | 0.1− | 0.3+ |
| 1991 11 07 | 691 | 0.2+ | 0.2− | 2005 03 30 | 644 | 0.4+ | 0.6+ | 2007 09 14 | 691 | 0.1+ | 0.3+ |
| 1991 11 07 | 691 | 0.1+ | 0.7− | 2005 03 30 | 644 | 0.2− | 0.2+ | 2007 09 14 | 691 | 0.2+ | 0.3+ |
| 2003 09 18 | 691 | 0.0  | 0.2+ | 2005 05 08 | G96 | 0.1+ | 0.0  | 2007 09 14 | 691 | 0.4− | 0.4+ |
| 2003 09 18 | 691 | 0.1+ | 0.1+ | 2005 05 08 | G96 | 0.0  | 0.1+ | 2007 10 06 | 691 | 0.2− | 0.4+ |
| 2003 09 18 | 691 | 0.0  | 0.1+ | 2005 05 08 | G96 | 0.2− | 0.3− | 2007 10 06 | 691 | 0.3− | 0.2+ |
| 2003 10 16 | 644 | 0.4− | 0.2+ | 2005 05 08 | G96 | 0.2+ | 0.3− | 2007 10 06 | 691 | 0.0  | 0.5+ |
| 2003 10 16 | 644 | 0.4− | 0.2+ | 2007 08 23 | 691 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.1+ | 0.0  |
| 2003 10 16 | 644 | 0.3− | 0.0  | 2007 08 23 | 691 | 0.3− | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.2− |
| 2005 02 03 | 683 | 0.9+ | 0.9+ | 2007 08 23 | 691 | 0.1+ | 0.2+ | 2007 10 19 | G96 | 0.2+ | 0.4− |
| 2005 02 03 | 683 | 1.9− | 1.6+ | 2007 09 10 | 691 | 0.0  | 0.5+ | 2007 10 19 | G96 | 0.2− | 0.4− |
| 2005 02 03 | 683 | 1.0+ | 0.4− | 2007 09 10 | 691 | 0.1+ | 0.2+ |            |     |      |      |

2007 RC<sub>166</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 54.72269   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26901635 | $\omega$ | 77.58356  | +0.32827446   | +0.94430966 |
| <i>a</i> | 2.3765681  | $\Omega$ | 211.60964 | −0.88259071   | +0.29808036 |
| <i>e</i> | 0.2023221  | <i>i</i> | 2.48190   | −0.33655537   | +0.13938206 |
| <i>P</i> | 3.66       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 12 | 691 | 0.0  | 0.3− | 2007 09 10 | 691 | 0.3− | 0.1− | 2007 09 15 | G96 | 0.6+ | 0.3− |
| 1996 09 12 | 691 | 0.3+ | 0.0  | 2007 09 10 | 691 | 0.0  | 0.3+ | 2007 09 15 | G96 | 0.4+ | 0.2− |
| 1996 09 12 | 691 | 0.0  | 0.5− | 2007 09 10 | 691 | 0.1− | 0.3+ | 2007 09 15 | G96 | 0.2+ | 0.2− |
| 2006 01 30 | 691 | 0.1− | 0.3+ | 2007 09 10 | 691 | 0.2− | 0.2+ | 2007 09 15 | G96 | 0.4+ | 0.1− |
| 2006 01 30 | 691 | 0.1− | 0.3+ | 2007 09 10 | 703 | 0.2+ | 0.7− | 2007 09 19 | 691 | 0.1+ | 0.4+ |
| 2006 01 30 | 691 | 0.0  | 0.3+ | 2007 09 10 | 703 | 0.6− | 0.2− | 2007 09 19 | 691 | 0.0  | 0.3+ |
| 2006 03 02 | G96 | 0.3− | 0.0  | 2007 09 10 | 691 | 0.1− | 0.2+ | 2007 09 19 | 691 | 0.3− | 0.1+ |
| 2006 03 02 | G96 | 0.1− | 0.1− | 2007 09 10 | 691 | 0.9+ | 0.7+ | 2007 10 19 | G96 | 0.4− | 0.1− |
| 2006 03 02 | G96 | 0.7+ | 0.4− | 2007 09 10 | 703 | 0.6− | 1.0− | 2007 10 19 | G96 | 0.0  | 0.2+ |
| 2006 03 02 | G96 | 0.2− | 0.3− | 2007 09 10 | 703 | 0.2− | 0.3− | 2007 10 19 | G96 | 0.1− | 0.1− |
| 2007 08 23 | 691 | 0.3− | 0.1+ | 2007 09 14 | 691 | 0.0  | 0.3+ | 2007 10 19 | G96 | 0.3+ | 0.2− |
| 2007 08 23 | 691 | 0.1− | 0.2+ | 2007 09 14 | 691 | 0.0  | 0.5+ |            |     |      |      |
| 2007 08 23 | 691 | 0.0  | 0.4+ | 2007 09 14 | 691 | 0.3− | 0.3+ |            |     |      |      |

2007 RN<sub>172</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 72.72823   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20322810 | $\omega$ | 212.70868 | +0.37514108   | +0.92427014 |
| <i>a</i> | 2.8651468  | $\Omega$ | 79.40934  | −0.83427615   | +0.36987574 |
| <i>e</i> | 0.0872515  | <i>i</i> | 4.12267   | −0.40404513   | +0.09442805 |
| <i>P</i> | 4.85       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 04 13 | 691 | 0.2+ | 0.0  | 2005 02 09 | 691 | 0.6+ | 0.1+ | 2007 09 14 | 691 | 0.4− | 0.4− |
| 1996 04 13 | 691 | 0.1− | 0.1+ | 2005 02 09 | 691 | 0.0  | 0.7+ | 2007 09 18 | 691 | 0.2− | 0.0  |
| 1996 04 13 | 691 | 0.1− | 0.1− | 2007 09 10 | 691 | 0.4+ | 0.3− | 2007 09 18 | 691 | 0.3− | 0.2+ |
| 2001 05 23 | 291 | 0.2− | 0.5+ | 2007 09 10 | 691 | 0.4− | 0.1+ | 2007 09 18 | 691 | 0.2− | 0.2+ |
| 2001 05 23 | 291 | 0.1− | 0.3+ | 2007 09 10 | 691 | 0.3− | 0.2+ | 2007 10 20 | G96 | 0.2+ | 0.0  |
| 2001 05 23 | 291 | 0.2+ | 0.6+ | 2007 09 10 | 691 | 0.2− | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.0  |
| 2001 06 01 | 691 | 0.1+ | 0.3− | 2007 09 10 | 691 | 0.9+ | 0.5+ | 2007 10 20 | G96 | 0.0  | 0.1+ |
| 2001 06 01 | 691 | 0.1+ | 0.3− | 2007 09 10 | 691 | 0.5− | 0.2+ | 2007 10 20 | G96 | 0.2+ | 0.3+ |
| 2001 06 01 | 691 | 0.1+ | 0.2− | 2007 09 14 | 691 | 0.2− | 0.0  |            |     |      |      |
| 2005 02 09 | 691 | 0.2− | 0.3+ | 2007 09 14 | 691 | 0.1− | 0.2+ |            |     |      |      |

**2007 RZ<sub>172</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.06104   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21793366 | $\omega$ | 303.36061 | +0.99627493   | -0.06987845 |
| <i>a</i> | 2.7347639  | $\Omega$ | 60.69267  | +0.08473365   | +0.90209694 |
| <i>e</i> | 0.0659227  | <i>i</i> | 3.32196   | -0.01601505   | +0.42583814 |
| <i>P</i> | 4.52       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 14 | 291 | 0.0  | 0.4+ | 2007 09 10 | 691 | 0.3- | 0.0  | 2007 10 09 | G96 | 0.4- | 0.1- |
| 2003 12 14 | 291 | 0.2- | 0.2- | 2007 09 10 | 691 | 0.3- | 0.6+ | 2007 10 09 | G96 | 0.2+ | 0.8- |
| 2003 12 14 | 691 | 0.1+ | 0.3+ | 2007 09 10 | 691 | 0.2+ | 0.0  | 2007 10 09 | G96 | 0.4+ | 0.0  |
| 2003 12 14 | 291 | 0.0  | 0.0  | 2007 09 14 | 691 | 0.4- | 0.2- | 2007 10 09 | G96 | 0.4+ | 0.1- |
| 2003 12 14 | 691 | 0.0  | 0.0  | 2007 09 14 | 691 | 0.1- | 0.3- | 2007 10 16 | G96 | 0.7+ | 0.5+ |
| 2003 12 14 | 691 | 0.1- | 0.2+ | 2007 09 14 | 691 | 0.2- | 0.5- | 2007 10 16 | G96 | 0.2+ | 0.3+ |
| 2003 12 19 | 691 | 0.1- | 0.0  | 2007 09 18 | H55 | 0.4- | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.0  |
| 2003 12 19 | 691 | 0.2- | 0.5- | 2007 09 18 | H55 | 0.2+ | 0.4+ | 2007 10 16 | G96 | 0.1+ | 0.3+ |
| 2003 12 19 | 691 | 0.3+ | 0.2- | 2007 09 18 | H55 | 0.5- | 0.0  |            |     |      |      |

**2007 RR<sub>174</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.86608    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23456177 | $\omega$ | 227.05242 | +0.96127797   | -0.27078247 |
| <i>a</i> | 2.6039415  | $\Omega$ | 148.55630 | +0.27267473   | +0.90767201 |
| <i>e</i> | 0.1815325  | <i>i</i> | 5.63262   | +0.03991424   | +0.32063746 |
| <i>P</i> | 4.20       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.1- | 0.3+ | 2007 09 10 | 691 | 0.1- | 0.0  | 2007 10 11 | 703 | 0.6+ | 0.8- |
| 2003 11 18 | 691 | 0.1- | 0.9+ | 2007 09 14 | 691 | 0.2- | 0.0  | 2007 10 11 | 703 | 0.8- | 0.5+ |
| 2003 11 18 | 691 | 0.1- | 0.1+ | 2007 09 14 | 691 | 0.3- | 0.3+ | 2007 10 11 | 703 | 0.1+ | 0.0  |
| 2005 03 10 | G96 | 0.1- | 0.1+ | 2007 09 14 | 691 | 0.4+ | 0.5+ | 2007 10 17 | 699 | 0.4+ | 0.3+ |
| 2005 03 10 | G96 | 0.0  | 0.3+ | 2007 09 18 | 691 | 0.2+ | 0.2+ | 2007 10 17 | 699 | 1.6+ | 1.0- |
| 2005 03 10 | G96 | 0.1+ | 0.2- | 2007 09 18 | 691 | 0.1+ | 0.1- | 2007 10 17 | 699 | 0.2+ | 0.6- |
| 2005 03 10 | G96 | 0.1- | 0.3- | 2007 09 18 | 691 | 0.3- | 0.7+ | 2007 10 17 | 699 | 1.1+ | 0.4- |
| 2006 05 26 | 691 | 0.3+ | 0.2+ | 2007 10 07 | 699 | 0.3- | 0.8- | 2007 10 19 | 703 | 0.0  | 0.4- |
| 2006 05 26 | 691 | 0.1- | 0.0  | 2007 10 07 | 699 | 0.6+ | 1.2- | 2007 10 19 | 703 | 0.5- | 0.5+ |
| 2006 05 26 | 691 | 0.0  | 0.4+ | 2007 10 07 | 699 | 0.3+ | 0.9+ | 2007 10 19 | 703 | 0.4- | 0.9- |
| 2007 09 10 | 691 | 0.6- | 0.2+ | 2007 10 07 | 699 | 1.1- | 0.0  | 2007 10 19 | 703 | 0.3+ | 1.1+ |
| 2007 09 10 | 691 | 0.4- | 0.2+ | 2007 10 11 | 703 | 0.8- | 0.1+ |            |     |      |      |

**2007 RL<sub>176</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.60358   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26043134 | $\omega$ | 12.04095  | -0.00072399   | +0.99996385 |
| <i>a</i> | 2.4285137  | $\Omega$ | 257.91801 | -0.91819926   | -0.00402067 |
| <i>e</i> | 0.1613185  | <i>i</i> | 0.49641   | -0.39611815   | +0.00749225 |
| <i>P</i> | 3.78       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 01 08 | 691 | (0.7- | 2.4+) | 2006 05 03 | G96 | 0.1+ | 0.1- | 2007 10 04 | 703 | 1.0- | 1.1+ |
| 1994 01 08 | 691 | 0.2-  | 0.7+  | 2006 05 03 | G96 | 0.2- | 0.2- | 2007 10 04 | 703 | 0.3- | 0.4+ |
| 1994 01 08 | 691 | 0.4-  | 0.4-  | 2006 05 03 | G96 | 0.0  | 0.1+ | 2007 10 09 | G96 | 0.3+ | 0.1+ |
| 2000 12 03 | 691 | 0.2+  | 0.1-  | 2006 05 03 | G96 | 0.3- | 0.6+ | 2007 10 09 | G96 | 0.3+ | 0.3- |
| 2000 12 03 | 691 | 0.5+  | 0.1-  | 2007 09 09 | G96 | 0.3+ | 0.2- | 2007 10 09 | G96 | 0.3+ | 0.3+ |
| 2000 12 03 | 691 | 0.1+  | 0.3-  | 2007 09 09 | G96 | 0.6+ | 0.1- | 2007 10 09 | G96 | 0.3+ | 0.2+ |
| 2002 04 10 | 695 | 0.2+  | 0.5+  | 2007 09 09 | G96 | 0.4+ | 0.4+ | 2007 10 19 | G96 | 0.1- | 0.2- |
| 2002 04 10 | 695 | 0.6+  | 0.5+  | 2007 09 09 | G96 | 0.2+ | 0.4- | 2007 10 19 | G96 | 0.1+ | 0.1- |
| 2003 09 04 | 106 | 0.0   | 0.0   | 2007 09 14 | G96 | 0.2+ | 0.2+ | 2007 10 19 | G96 | 0.1+ | 0.3- |
| 2003 09 04 | 106 | 0.3+  | 0.5+  | 2007 09 14 | G96 | 0.3+ | 0.4+ | 2007 10 19 | G96 | 0.2+ | 0.2+ |
| 2003 09 05 | 106 | 0.0   | 0.4-  | 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 11 01 | G96 | 0.2+ | 0.2- |
| 2006 03 05 | 691 | 0.1+  | 0.2-  | 2007 09 14 | G96 | 0.2- | 0.1- | 2007 11 01 | G96 | 0.2- | 0.1- |
| 2006 03 05 | 691 | 0.1+  | 0.0   | 2007 10 04 | 703 | 1.4- | 1.3- | 2007 11 01 | G96 | 0.3- | 0.2+ |
| 2006 03 05 | 691 | 0.2+  | 0.1-  | 2007 10 04 | 703 | 1.7- | 1.0+ | 2007 11 01 | G96 | 0.3+ | 0.0  |

**2007 RE<sub>177</sub> = 2007 TW<sub>280</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 280.17647  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22962040 | $\omega$ | 98.39840  | -0.10867349   | -0.99407537 |
| <i>a</i> | 2.6411662  | $\Omega$ | 357.83725 | +0.88923833   | -0.09628653 |
| <i>e</i> | 0.0317901  | <i>i</i> | 3.12690   | +0.44434814   | -0.05042885 |
| <i>P</i> | 4.29       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 21 | 691 | 0.3- | 0.1+ | 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 10 07 | G96 | 0.4+ | 0.1- |
| 2003 10 21 | 691 | 0.1+ | 0.0  | 2007 09 10 | G96 | 0.2+ | 0.1- | 2007 10 07 | G96 | 0.5+ | 0.1+ |
| 2003 10 21 | 691 | 0.1+ | 0.2+ | 2007 09 10 | G96 | 0.6+ | 0.3+ | 2007 10 07 | G96 | 0.1+ | 0.0  |
| 2005 02 09 | 691 | 0.0  | 0.0  | 2007 09 12 | 691 | 0.9- | 0.1- | 2007 10 14 | G96 | 0.0  | 0.2+ |
| 2005 02 09 | 691 | 0.1+ | 0.2+ | 2007 09 12 | 691 | 0.5- | 0.2+ | 2007 10 14 | G96 | 0.6+ | 0.3+ |
| 2005 02 09 | 691 | 0.1+ | 0.4- | 2007 09 12 | 691 | 0.2- | 0.4- | 2007 10 14 | G96 | 0.3+ | 0.1- |
| 2005 03 10 | G96 | 0.2- | 0.1+ | 2007 09 14 | G96 | 0.7+ | 0.3+ | 2007 10 14 | G96 | 0.1- | 0.1+ |
| 2005 03 10 | G96 | 0.3- | 0.4+ | 2007 09 14 | G96 | 0.1+ | 0.2- | 2007 10 19 | G96 | 0.6+ | 0.1+ |
| 2005 03 10 | G96 | 0.3- | 0.2- | 2007 09 14 | G96 | 0.5+ | 0.2- | 2007 10 19 | G96 | 0.4+ | 0.2- |
| 2005 03 10 | G96 | 0.5- | 0.2- | 2007 09 14 | G96 | 0.5+ | 0.1- | 2007 10 19 | G96 | 0.4- | 0.7- |
| 2007 09 10 | G96 | 0.5+ | 0.3+ | 2007 10 07 | G96 | 0.8+ | 0.2- | 2007 10 19 | G96 | 0.6+ | 0.3- |

**2007 RX<sub>177</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.97291   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23273658 | $\omega$ | 230.97567 | +0.74089692   | +0.66835418 |
| <i>a</i> | 2.6175377  | $\Omega$ | 86.97773  | -0.59391992   | +0.69797782 |
| <i>e</i> | 0.1464220  | <i>i</i> | 3.79758   | -0.31357756   | +0.25715686 |
| <i>P</i> | 4.23       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 691 | 0.1- | 0.3+ | 2006 05 24 | G96 | 0.1+ | 0.3+ | 2007 09 18 | 691 | 0.2- | 0.1- |
| 2003 10 24 | 691 | 0.1- | 0.3+ | 2006 05 24 | G96 | 0.1- | 0.1+ | 2007 09 18 | 691 | 0.1- | 0.1- |
| 2003 10 24 | 691 | 0.1+ | 0.3+ | 2007 09 10 | 691 | 0.2- | 0.2+ | 2007 09 18 | 691 | 0.2- | 0.0  |
| 2003 11 21 | 691 | 0.2+ | 0.3- | 2007 09 10 | 691 | 0.0  | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.1- |
| 2003 11 21 | 691 | 0.1- | 0.2- | 2007 09 10 | 691 | 0.1- | 0.1+ | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2003 11 21 | 691 | 0.0  | 0.0  | 2007 09 14 | 691 | 0.3+ | 0.2+ | 2007 10 20 | G96 | 0.5+ | 0.1- |
| 2006 05 24 | G96 | 0.2+ | 0.1+ | 2007 09 14 | 691 | 0.5+ | 0.7- | 2007 10 20 | G96 | 0.2- | 0.1+ |
| 2006 05 24 | G96 | 0.1- | 0.3- | 2007 09 14 | 691 | 0.8- | 0.2+ |            |     |      |      |

**2007 RE<sub>178</sub> = 2001 FQ<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 96.83233   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22576047 | $\omega$ | 232.26878 | +0.07303905   | +0.99392454 |
| <i>a</i> | 2.6711859  | $\Omega$ | 42.15018  | -0.87209104   | +0.10370246 |
| <i>e</i> | 0.0366384  | <i>i</i> | 7.04756   | -0.48386209   | -0.03687554 |
| <i>P</i> | 4.37       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 19 | 691 | 0.1- | 0.2+ | 2003 11 16 | 691 | 0.3- | 0.0  | 2007 09 18 | 691 | 0.1- | 0.4- |
| 2001 03 19 | 691 | 0.6+ | 0.4- | 2007 09 10 | 691 | 0.3+ | 0.1- | 2007 09 18 | 691 | 0.2- | 0.0  |
| 2001 03 19 | 691 | 0.1+ | 0.4+ | 2007 09 10 | 691 | 0.1- | 0.3- | 2007 10 20 | G96 | 0.3+ | 0.6- |
| 2001 03 21 | 691 | 0.4- | 0.2- | 2007 09 10 | 691 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.1+ | 0.0  |
| 2001 03 21 | 691 | 0.1- | 0.2+ | 2007 09 14 | 691 | 0.4+ | 0.1+ | 2007 10 20 | G96 | 0.2+ | 0.0  |
| 2001 03 21 | 691 | 0.2- | 0.4- | 2007 09 14 | 691 | 0.1- | 0.1+ | 2007 10 20 | G96 | 0.1- | 0.2+ |
| 2003 11 16 | 691 | 0.4+ | 0.3+ | 2007 09 14 | 691 | 0.1- | 0.4+ |            |     |      |      |
| 2003 11 16 | 691 | 0.1- | 0.1- | 2007 09 18 | 691 | 0.4- | 0.2+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129805

**2007 RN<sub>179</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 283.43547  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24090151 | $\omega$ | 280.90405 | -0.68978356   | -0.72380199 |
| <i>a</i> | 2.5580540  | $\Omega$ | 212.73116 | +0.67632974   | -0.63549210 |
| <i>e</i> | 0.0860328  | <i>i</i> | 1.86402   | +0.25841192   | -0.26881308 |
| <i>P</i> | 4.09       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 24 | 691 | 0.1- | 0.3+ | 2007 09 10 | G96 | 0.6+ | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.1+ |
| 2001 04 24 | 691 | 0.1+ | 0.3+ | 2007 09 10 | G96 | 0.6+ | 0.6+ | 2007 10 16 | 691 | 0.1+ | 0.1- |
| 2001 04 24 | 691 | 0.2+ | 0.3+ | 2007 09 10 | G96 | 0.2- | 0.2- | 2007 10 16 | 691 | 0.1- | 0.3- |
| 2003 12 19 | 691 | 0.2+ | 0.2+ | 2007 09 10 | G96 | 0.3+ | 0.2- | 2007 10 16 | 691 | 0.2- | 0.2- |
| 2003 12 19 | 691 | 0.0  | 0.3- | 2007 09 14 | G96 | 0.1- | 0.3+ | 2007 11 14 | 691 | 0.3- | 0.2+ |
| 2003 12 19 | 691 | 0.0  | 0.4- | 2007 09 14 | G96 | 0.2+ | 0.4- | 2007 11 14 | 691 | 0.3- | 0.1+ |
| 2005 04 09 | 691 | 0.7- | 0.6- | 2007 09 14 | G96 | 0.0  | 0.3- | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2005 04 09 | 691 | 0.0  | 0.1- | 2007 09 14 | G96 | 0.7+ | 0.3+ | 2007 11 14 | G96 | 0.8+ | 0.4- |
| 2005 04 09 | 691 | 0.5+ | 0.2+ | 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 11 14 | G96 | 0.5+ | 0.4- |
| 2005 05 04 | G96 | 0.3+ | 0.2+ | 2007 10 08 | 691 | 0.2+ | 0.1+ | 2007 11 14 | G96 | 0.0  | 0.4- |
| 2005 05 04 | G96 | 0.4+ | 0.2+ | 2007 10 08 | 691 | 0.2- | 0.2+ | 2007 12 05 | 691 | 0.1+ | 0.1+ |
| 2005 05 04 | G96 | 0.1+ | 0.0  | 2007 10 12 | 691 | 0.1- | 0.3+ | 2007 12 05 | 691 | 0.1- | 0.6+ |
| 2005 05 04 | G96 | 0.1- | 0.4+ | 2007 10 12 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 691 | 0.2- | 0.2+ |

**2007 RT<sub>179</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.27560    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27942583 | $\omega$ | 6.48981  | +0.65640228   | -0.75351748 |
| <i>a</i> | 2.3171724  | $\Omega$ | 42.49269 | +0.68969250   | +0.57966319 |
| <i>e</i> | 0.1514270  | <i>i</i> | 3.11509  | +0.30571277   | +0.31016446 |
| <i>P</i> | 3.53       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|------|------------|-----|------|------|
| 2002 04 06 | 807 | 0.3- | 0.3+ | 2007 10 16 | G96 | 0.3+  | 0.1- | 2007 11 15 | 704 | 0.1- | 0.8+ |
| 2002 04 06 | 807 | 0.0  | 0.2+ | 2007 10 16 | G96 | 0.3+  | 0.2- | 2007 11 15 | 704 | 0.4- | 0.6+ |
| 2002 04 13 | 691 | 0.1- | 0.8+ | 2007 11 05 | 691 | 0.1+  | 0.0  | 2007 11 17 | 691 | 0.0  | 0.0  |
| 2002 04 13 | 691 | 0.3+ | 0.3+ | 2007 11 05 | 691 | 0.1+  | 0.1- | 2007 11 17 | 691 | 0.1+ | 0.1- |
| 2002 04 13 | 691 | 0.4+ | 0.3+ | 2007 11 05 | 691 | 0.7-  | 0.2+ | 2007 11 17 | 691 | 0.7- | 1.2+ |
| 2003 08 23 | 644 | 0.3- | 0.7+ | 2007 11 09 | 691 | 0.1-  | 0.1+ | 2007 12 04 | 703 | 0.1- | 0.1+ |
| 2003 08 23 | 644 | 0.0  | 0.8+ | 2007 11 09 | 691 | 0.0   | 0.0  | 2007 12 04 | 703 | 1.0+ | 0.0  |
| 2003 08 23 | 644 | 0.5- | 1.0+ | 2007 11 09 | 691 | 0.1-  | 0.1+ | 2007 12 04 | 703 | 0.1+ | 0.6+ |
| 2007 09 10 | G96 | 0.3- | 0.1- | 2007 11 13 | 699 | 0.5+  | 0.0  | 2007 12 04 | 703 | 0.8- | 0.5+ |
| 2007 09 10 | G96 | 0.1- | 0.2+ | 2007 11 13 | 691 | 0.2-  | 0.4- | 2007 12 10 | 704 | 0.9+ | 0.1+ |
| 2007 09 10 | G96 | 0.3+ | 0.0  | 2007 11 13 | 699 | 1.2+  | 0.1+ | 2007 12 10 | 704 | 0.2+ | 0.8- |
| 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 11 13 | 691 | 0.1-  | 0.1+ | 2007 12 10 | 704 | 0.6+ | 0.5- |
| 2007 09 14 | G96 | 0.3- | 0.2- | 2007 11 13 | 691 | 0.0   | 0.1+ | 2007 12 14 | 704 | 0.8+ | 0.2+ |
| 2007 09 14 | G96 | 0.2- | 0.0  | 2007 11 13 | 699 | 1.2+  | 1.2- | 2007 12 14 | 704 | 1.1+ | 0.3- |
| 2007 09 14 | G96 | 0.0  | 0.1- | 2007 11 13 | 699 | (1.8+ | 0.0) | 2007 12 14 | 704 | 0.3+ | 0.4+ |
| 2007 09 14 | G96 | 0.0  | 0.1- | 2007 11 15 | 704 | 0.5-  | 0.1- | 2007 12 14 | 704 | 0.6+ | 0.1+ |
| 2007 10 16 | G96 | 0.1- | 0.2- | 2007 11 15 | 704 | 0.8-  | 0.2- |            |     |      |      |
| 2007 10 16 | G96 | 0.5+ | 0.3- | 2007 11 15 | 704 | 1.0-  | 0.4+ |            |     |      |      |

**2007 RZ<sub>179</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 51.92109   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28788504 | $\omega$ | 127.73703 | +0.93032765   | +0.36299610 |
| <i>a</i> | 2.2715553  | $\Omega$ | 211.07819 | -0.36017925   | +0.87762992 |
| <i>e</i> | 0.2098806  | <i>i</i> | 5.80321   | -0.06900274   | +0.31304880 |
| <i>P</i> | 3.42       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 06 | 699 | 0.1- | 0.3- | 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 11 12 | 704 | 0.4- | 0.4+ |
| 2000 10 06 | 699 | 0.1- | 0.0  | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 11 12 | 704 | 0.3- | 1.2- |
| 2000 10 06 | 699 | 0.1- | 1.2+ | 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 11 12 | 704 | 0.7+ | 0.6+ |
| 2000 10 06 | 699 | 0.1- | 1.4+ | 2007 09 14 | G96 | 0.4+ | 0.3- | 2007 11 12 | 704 | 1.2+ | 0.2+ |
| 2006 04 21 | G96 | 0.1+ | 0.0  | 2007 09 14 | G96 | 0.6+ | 0.0  | 2007 12 04 | 704 | 0.4+ | 1.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 21 | G96 | 0.1+ | 0.1- | 2007 09 14 | G96 | 0.1+ | 0.1- | 2007 12 04 | 703 | 0.4- | 0.6- |
| 2006 04 21 | G96 | 0.2+ | 0.1+ | 2007 10 20 | G96 | 0.3+ | 0.1- | 2007 12 04 | 704 | 1.0+ | 0.8+ |
| 2006 04 21 | G96 | 0.0  | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.1- | 2007 12 04 | 703 | 1.5- | 0.6- |
| 2006 05 22 | G96 | 0.5- | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.0  | 2007 12 04 | 703 | 0.1+ | 0.7+ |
| 2006 05 22 | G96 | 0.6+ | 0.3- | 2007 10 20 | G96 | 0.5+ | 0.2- | 2007 12 04 | 704 | 0.2- | 0.6+ |
| 2006 05 22 | G96 | 0.4- | 0.0  | 2007 11 04 | 691 | 0.5- | 0.1- | 2007 12 04 | 703 | 1.1- | 0.1+ |
| 2006 05 22 | G96 | 0.1- | 0.2+ | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 04 | 704 | 1.9+ | 0.4+ |
| 2007 08 22 | 691 | 0.5- | 0.5- | 2007 11 04 | 691 | 0.3- | 0.1- | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2007 08 22 | 691 | 0.0  | 0.1- | 2007 11 08 | 691 | 0.1- | 0.1- | 2007 12 06 | G96 | 0.3+ | 0.1+ |
| 2007 08 22 | 691 | 0.0  | 0.1- | 2007 11 08 | 691 | 0.2- | 0.2- | 2007 12 06 | G96 | 0.5+ | 0.0  |
| 2007 09 10 | G96 | 0.8+ | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.1+ | 0.3- |
| 2007 09 10 | G96 | 0.5+ | 0.1- | 2007 11 12 | 704 | 0.1+ | 0.1+ |            |     |      |      |

**2007 RD<sub>182</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.84701   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22253636 | $\omega$ | 158.47185 | +0.60788880   | +0.79154815 |
| <i>a</i> | 2.6969241  | $\Omega$ | 148.86441 | -0.74503968   | +0.59588730 |
| <i>e</i> | 0.0429442  | <i>i</i> | 6.95728   | -0.27456706   | +0.13553547 |
| <i>P</i> | 4.43       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.1- | 0.1+ | 2005 03 11 | G96 | 0.4- | 0.2- | 2007 09 12 | G96 | 0.0  | 0.1+ |
| 2001 02 20 | 645 | 0.1- | 0.1+ | 2005 03 11 | G96 | 0.1- | 0.0  | 2007 09 14 | G96 | 0.1+ | 0.2+ |
| 2001 03 16 | 691 | 0.4+ | 0.5+ | 2005 03 11 | G96 | 0.3- | 0.1+ | 2007 09 14 | G96 | 0.3- | 0.2+ |
| 2001 03 16 | 691 | 0.1+ | 0.3+ | 2005 03 11 | G96 | 0.3- | 0.0  | 2007 09 14 | G96 | 0.1+ | 0.2+ |
| 2001 03 16 | 691 | 0.0  | 0.4+ | 2007 08 21 | 699 | 0.8- | 1.6+ | 2007 09 14 | G96 | 0.4+ | 0.2+ |
| 2003 10 20 | 644 | 0.1+ | 0.1- | 2007 08 21 | 699 | 1.6+ | 0.9- | 2007 10 14 | G96 | 0.2- | 0.1- |
| 2003 10 20 | 644 | 0.1- | 0.1+ | 2007 08 21 | 699 | 1.2- | 0.4- | 2007 10 14 | G96 | 0.1- | 0.2+ |
| 2003 10 20 | 644 | 0.0  | 0.0  | 2007 08 21 | 699 | 0.8- | 0.8+ | 2007 10 14 | G96 | 0.2- | 0.5- |
| 2005 01 17 | 691 | 0.4+ | 0.0  | 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 10 14 | G96 | 0.5+ | 0.3- |
| 2005 01 17 | 691 | 0.4+ | 0.3+ | 2007 09 12 | G96 | 0.2+ | 0.2+ |            |     |      |      |
| 2005 01 17 | 691 | 0.2+ | 0.2+ | 2007 09 12 | G96 | 0.1+ | 0.0  |            |     |      |      |

**2007 RW<sub>184</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.57464    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27236863 | $\omega$ | 164.86317 | +0.98893048   | -0.14265559 |
| <i>a</i> | 2.3570275  | $\Omega$ | 203.45564 | +0.12324980   | +0.94291922 |
| <i>e</i> | 0.1231418  | <i>i</i> | 5.88550   | +0.08261955   | +0.30091979 |
| <i>P</i> | 3.62       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 02 23 | 691 | 0.0  | 0.2+ | 2007 09 18 | G96 | 0.1+  | 0.4-  | 2007 10 12 | 704 | 0.7+ | 0.3+ |
| 1998 02 23 | 691 | 0.1- | 0.1+ | 2007 09 18 | G96 | 0.1-  | 0.3-  | 2007 10 12 | 704 | 0.2- | 0.0  |
| 1998 02 23 | 691 | 0.2+ | 0.1+ | 2007 10 07 | 703 | 0.2-  | 0.0   | 2007 10 12 | 704 | 0.2+ | 0.4+ |
| 2006 04 02 | 691 | 0.1- | 0.4+ | 2007 10 07 | 703 | 0.1+  | 0.7+  | 2007 10 15 | 703 | 0.2- | 0.9+ |
| 2006 04 02 | 691 | 0.1+ | 0.6+ | 2007 10 07 | 703 | 0.4-  | 0.2+  | 2007 10 15 | 703 | 0.2- | 1.3+ |
| 2006 04 02 | 691 | 0.2+ | 0.1+ | 2007 10 07 | 703 | 0.9-  | 0.5+  | 2007 10 15 | 703 | 0.7- | 0.0  |
| 2007 09 13 | 703 | 0.9- | 1.0+ | 2007 10 09 | 704 | (0.2+ | 1.7+) | 2007 10 15 | 703 | 0.4+ | 0.4- |
| 2007 09 13 | 703 | 0.2- | 0.1+ | 2007 10 09 | 704 | 0.3-  | 0.1+  | 2007 11 17 | G96 | 0.6+ | 0.1+ |
| 2007 09 13 | 703 | 0.1- | 0.3- | 2007 10 09 | 704 | 1.1+  | 0.5+  | 2007 11 17 | G96 | 0.0  | 0.0  |
| 2007 09 13 | 703 | 0.2- | 0.3+ | 2007 10 12 | 704 | 0.1-  | 0.1+  | 2007 11 17 | G96 | 0.2- | 0.1+ |
| 2007 09 14 | G96 | 0.2- | 0.3- | 2007 10 12 | 704 | 0.2-  | 0.0   | 2007 11 17 | G96 | 0.2- | 0.1- |
| 2007 09 14 | G96 | 0.5+ | 0.3- | 2007 10 12 | 704 | 0.9+  | 0.6-  | 2007 12 05 | G96 | 0.2+ | 0.1+ |
| 2007 09 14 | G96 | 0.1+ | 0.3- | 2007 10 12 | 704 | 0.2+  | 0.2-  | 2007 12 05 | G96 | 0.1- | 0.4+ |
| 2007 09 14 | G96 | 0.2+ | 0.3- | 2007 10 12 | 704 | 0.5-  | 1.3+  | 2007 12 05 | G96 | 0.2- | 0.3+ |
| 2007 09 18 | G96 | 0.1- | 0.6- | 2007 10 12 | 704 | 0.0   | 0.3-  | 2007 12 05 | G96 | 0.5- | 0.4+ |
| 2007 09 18 | G96 | 0.1+ | 0.2- | 2007 10 12 | 704 | 0.1+  | 0.4+  |            |     |      |      |

**2007 RS<sub>187</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.76502  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24294449 | $\omega$ 293.22917 | +0.43214334   | -0.87915474 |
| <i>a</i> | 2.5436929  | $\Omega$ 129.60150 | +0.89295099   | +0.38602105 |
| <i>e</i> | 0.2696748  | <i>i</i> 15.10987  | +0.12605818   | +0.27941848 |
| <i>P</i> | 4.06       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 24 | 644 | 0.3+ | 0.3+ | 2007 09 14 | G96 | 0.1+  | 0.5-  | 2007 11 11 | 703 | 0.7- | 0.0  |
| 2003 11 24 | 644 | 0.2+ | 0.2+ | 2007 09 14 | G96 | 0.4+  | 0.1-  | 2007 11 11 | 703 | 0.5- | 0.8+ |
| 2003 11 24 | 644 | 0.1+ | 0.3- | 2007 09 14 | G96 | 0.0   | 0.3-  | 2007 11 18 | 703 | 0.4+ | 0.5+ |
| 2003 12 22 | 644 | 0.3- | 0.4- | 2007 09 14 | G96 | 0.3+  | 0.2-  | 2007 11 18 | 703 | 0.1+ | 0.4+ |
| 2003 12 22 | 644 | 0.1- | 0.2- | 2007 10 10 | 703 | 0.8-  | 1.3-  | 2007 11 18 | 703 | 0.1- | 0.2- |
| 2003 12 22 | 644 | 0.1+ | 0.1- | 2007 10 10 | 703 | 0.7-  | 0.7-  | 2007 11 18 | 703 | 0.1+ | 0.4+ |
| 2003 12 22 | 644 | 0.1- | 0.2- | 2007 10 10 | 703 | 0.3+  | 1.4-  | 2007 12 06 | 703 | 0.7- | 0.1+ |
| 2003 12 22 | 644 | 0.4- | 0.0  | 2007 10 10 | 703 | (1.6+ | 0.9+) | 2007 12 06 | 703 | 0.2- | 0.8- |
| 2003 12 22 | 644 | 0.3+ | 0.1- | 2007 11 03 | 703 | 0.5+  | 0.6+  | 2007 12 06 | 703 | 0.2- | 0.3- |
| 2007 09 13 | 703 | 1.0- | 0.5+ | 2007 11 03 | 703 | 0.0   | 0.9+  | 2007 12 06 | 703 | 0.5+ | 0.2- |
| 2007 09 13 | 703 | 0.1+ | 1.1- | 2007 11 03 | 703 | 0.7+  | 0.4+  | 2007 12 13 | 704 | 0.7- | 0.9+ |
| 2007 09 13 | 703 | 0.0  | 1.2+ | 2007 11 03 | 703 | 0.7+  | 0.6+  | 2007 12 13 | 704 | 1.1+ | 0.3- |
| 2007 09 13 | 703 | 0.4- | 0.6+ | 2007 11 11 | 703 | 0.4+  | 0.1+  | 2007 12 13 | 704 | 0.2- | 0.5- |

**2007 RF<sub>190</sub> = 2006 BW<sub>135</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.28867  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.38724431 | $\omega$ 62.87592  | +0.82354639   | -0.54261715 |
| <i>a</i> | 1.8641436  | $\Omega$ 329.13866 | +0.33486412   | +0.70032534 |
| <i>e</i> | 0.1298000  | <i>i</i> 18.80376  | +0.45786173   | +0.46380065 |
| <i>P</i> | 2.55       | <i>H</i> 18.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 645 | 0.1+ | 0.2- | 2007 09 04 | 703 | 1.0+ | 0.8- | 2007 09 14 | 699 | 0.4+ | 0.6- |
| 2002 10 06 | 645 | 0.2+ | 0.2- | 2007 09 04 | 703 | 0.4+ | 0.4- | 2007 09 14 | 699 | 0.4+ | 0.1+ |
| 2006 01 27 | G96 | 0.5- | 0.1+ | 2007 09 04 | 703 | 0.2- | 0.4- | 2007 09 14 | 699 | 0.3+ | 0.1+ |
| 2006 01 27 | G96 | 0.5- | 0.4+ | 2007 09 04 | 703 | 0.3- | 0.3- | 2007 10 08 | 703 | 0.6- | 0.3+ |
| 2006 01 27 | G96 | 0.3+ | 0.8- | 2007 09 11 | 703 | 0.3- | 0.1- | 2007 10 08 | 703 | 0.2- | 0.7- |
| 2006 01 27 | G96 | 0.3- | 0.1- | 2007 09 11 | 703 | 1.1+ | 0.3+ | 2007 10 08 | 703 | 0.9- | 0.3- |
| 2006 01 30 | 691 | 0.1+ | 0.2+ | 2007 09 11 | 703 | 1.5- | 1.1+ | 2007 10 08 | 703 | 0.0  | 0.1+ |
| 2006 01 30 | 691 | 0.4+ | 0.1- | 2007 09 11 | 703 | 0.0  | 1.0+ |            |     |      |      |
| 2006 01 30 | 691 | 0.4+ | 0.3+ | 2007 09 14 | 699 | 0.1- | 0.5+ |            |     |      |      |

**2007 RE<sub>192</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 319.70455  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17896648 | $\omega$ 236.50161 | +0.48514946   | -0.87432455 |
| <i>a</i> | 3.1185658  | $\Omega$ 184.54098 | +0.84857117   | +0.47451535 |
| <i>e</i> | 0.1406815  | <i>i</i> 9.93511   | +0.21108521   | +0.10194005 |
| <i>P</i> | 5.51       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 15 | 691 | 0.4- | 0.2+ | 2007 09 21 | 704 | 0.6+ | 1.7+ | 2007 10 14 | 246 | 0.5+ | 0.3+ |
| 2005 04 15 | 691 | 0.3- | 0.3+ | 2007 09 21 | 704 | 0.6+ | 1.4+ | 2007 10 14 | 246 | 0.3- | 0.2+ |
| 2005 04 15 | 691 | 0.3+ | 0.0  | 2007 09 21 | 704 | 0.2+ | 0.7+ | 2007 10 14 | 246 | 0.2- | 0.3+ |
| 2005 04 30 | 691 | 0.1+ | 0.1- | 2007 09 21 | 704 | 0.3+ | 0.0  | 2007 10 14 | 246 | 0.2+ | 0.2- |
| 2005 04 30 | 691 | 0.2+ | 0.0  | 2007 09 21 | 704 | 0.2+ | 1.4+ | 2007 10 15 | G96 | 0.0  | 0.4- |
| 2005 04 30 | 691 | 0.1+ | 0.3- | 2007 10 06 | 704 | 0.0  | 1.8- | 2007 10 15 | G96 | 0.0  | 0.3- |
| 2007 09 11 | D29 | 0.3- | 0.2- | 2007 10 06 | 704 | 0.9- | 0.8- | 2007 10 15 | G96 | 0.2- | 0.5- |
| 2007 09 11 | D29 | 0.1- | 0.1- | 2007 10 06 | 704 | 0.5- | 0.3+ | 2007 10 15 | G96 | 0.2- | 0.4- |
| 2007 09 11 | D29 | 0.3- | 0.5- | 2007 10 12 | 291 | 0.1- | 0.3- | 2007 10 15 | 703 | 0.2- | 0.9+ |
| 2007 09 11 | D29 | 0.6- | 0.1- | 2007 10 12 | 291 | 0.0  | 0.2- | 2007 10 15 | 703 | 1.0+ | 0.4- |
| 2007 09 14 | G96 | 0.0  | 0.4- | 2007 10 12 | 291 | 0.2- | 0.3- | 2007 10 15 | 703 | 0.7- | 0.4+ |
| 2007 09 14 | G96 | 0.3- | 0.4- | 2007 10 14 | G96 | 0.3+ | 0.6- | 2007 10 15 | 703 | 0.1- | 0.3+ |
| 2007 09 14 | G96 | 0.1- | 0.3- | 2007 10 14 | G96 | 0.0  | 0.8- | 2007 10 18 | 704 | 1.2+ | 1.3+ |
| 2007 09 14 | 699 | 0.8+ | 0.2- | 2007 10 14 | G96 | 0.2- | 0.7- | 2007 10 18 | 704 | 0.2- | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 14 | 699 | 0.3- | 0.3- | 2007 10 14 | G96 | 0.2+ | 0.7- | 2007 10 18 | 704 | 0.1- | 0.7+ |
| 2007 09 14 | 699 | 0.3- | 0.7- | 2007 10 14 | 246 | 0.1+ | 0.0  | 2007 10 18 | 704 | 0.4- | 0.8+ |
| 2007 09 14 | 699 | 1.0+ | 0.1+ | 2007 10 14 | 246 | 0.5- | 0.4+ |            |     |      |      |

**2007 RJ<sub>192</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.28859   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28747264 | $\omega$ 169.30324 | +0.35210576   | +0.93554190 |
| <i>a</i> | 2.2737273  | $\Omega$ 121.30772 | -0.86112650   | +0.33552173 |
| <i>e</i> | 0.1630695  | <i>i</i> 1.87670   | -0.36671880   | +0.11039257 |
| <i>P</i> | 3.43       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 04 29 | 691 | 0.1+ | 0.8+ | 2006 01 26 | 691 | 0.4+ | 0.0  | 2007 08 24 | 691 | 0.0  | 0.0  |
| 2003 04 29 | 691 | 0.3+ | 0.7+ | 2006 01 26 | 691 | 0.4+ | 0.3+ | 2007 08 24 | 691 | 0.1- | 0.1- |
| 2003 04 29 | 691 | 0.5+ | 0.6+ | 2006 01 26 | G96 | 0.9- | 0.7+ | 2007 09 12 | 703 | 0.1+ | 1.1+ |
| 2003 06 05 | 691 | 0.1+ | 0.4+ | 2006 01 26 | G96 | 0.4+ | 0.3+ | 2007 09 12 | 703 | 0.9+ | 0.5+ |
| 2003 06 05 | 691 | 0.0  | 0.5+ | 2006 01 26 | G96 | 0.0  | 0.2+ | 2007 09 12 | 703 | 0.4- | 0.6- |
| 2003 06 05 | 691 | 0.1+ | 0.3+ | 2006 01 26 | G96 | 0.1+ | 0.0  | 2007 09 12 | 703 | 0.8- | 1.4+ |
| 2004 11 10 | 691 | 0.1+ | 0.7+ | 2006 02 20 | 691 | 0.5+ | 0.5+ | 2007 09 14 | 699 | 0.6- | 0.3- |
| 2004 11 10 | 691 | 0.5- | 0.8+ | 2006 02 20 | 691 | 0.2+ | 0.3+ | 2007 09 14 | 699 | 0.2- | 0.6+ |
| 2004 11 10 | 691 | 0.1- | 0.8+ | 2006 02 20 | 691 | 0.2+ | 0.7+ | 2007 09 14 | 699 | 0.4+ | 0.2+ |
| 2006 01 26 | 691 | 0.2+ | 0.2+ | 2007 08 24 | 691 | 0.1- | 0.1- | 2007 09 14 | 699 | 0.7- | 0.8+ |

**2007 RQ<sub>196</sub> = 2006 DH<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.56172   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28045434 | $\omega$ 338.32784 | +0.73731318   | +0.67423098 |
| <i>a</i> | 2.3115038  | $\Omega$ 339.09677 | -0.60112888   | +0.62629386 |
| <i>e</i> | 0.1334255  | <i>i</i> 6.79460   | -0.30824234   | +0.39136759 |
| <i>P</i> | 3.51       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.1+ | 0.3- | 2006 02 27 | G96 | 0.2- | 0.0  | 2007 09 13 | G96 | 0.6+ | 0.2- |
| 1999 03 20 | 645 | 0.1+ | 0.3- | 2006 02 27 | G96 | 0.2- | 0.1+ | 2007 09 14 | G96 | 0.7- | 0.6+ |
| 2000 08 31 | 691 | 0.0  | 0.5- | 2006 02 27 | G96 | 0.0  | 0.1- | 2007 09 14 | G96 | 0.1- | 0.5+ |
| 2000 08 31 | 691 | 0.2+ | 0.6- | 2007 09 03 | 703 | 0.8- | 0.2- | 2007 09 14 | G96 | 0.1+ | 0.7+ |
| 2000 08 31 | 691 | 0.6+ | 0.9- | 2007 09 03 | 703 | 0.6+ | 0.1- | 2007 09 14 | G96 | 0.3- | 0.8+ |
| 2006 02 24 | G96 | 0.1- | 0.2+ | 2007 09 03 | 703 | 1.6- | 0.1+ | 2007 10 04 | G96 | 0.2- | 0.1- |
| 2006 02 24 | G96 | 0.1- | 0.3+ | 2007 09 03 | 703 | 1.0+ | 0.3+ | 2007 10 04 | G96 | 0.1+ | 0.1- |
| 2006 02 24 | G96 | 0.9+ | 0.2+ | 2007 09 13 | G96 | 0.3+ | 0.1- | 2007 10 04 | G96 | 0.1- | 0.2+ |
| 2006 02 24 | G96 | 0.3+ | 0.0  | 2007 09 13 | G96 | 0.0  | 0.0  | 2007 10 04 | G96 | 0.3- | 0.3+ |
| 2006 02 27 | G96 | 0.4- | 0.6+ | 2007 09 13 | G96 | 0.2+ | 0.0  |            |     |      |      |

**2007 RR<sub>198</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.41098   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27017244 | $\omega$ 287.26938 | +0.63451574   | +0.77285368 |
| <i>a</i> | 2.3697836  | $\Omega$ 22.12287  | -0.69939280   | +0.57925641 |
| <i>e</i> | 0.1916515  | <i>i</i> 1.41898   | -0.32899770   | +0.25915093 |
| <i>P</i> | 3.65       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 09 | 691 | 0.0   | 0.0   | 2007 08 21 | 699 | 0.1+ | 0.7- | 2007 09 13 | G96 | 0.2- | 0.2- |
| 1999 04 09 | 691 | 0.2+  | 0.0   | 2007 08 21 | 699 | 0.4- | 1.0+ | 2007 09 13 | G96 | 0.0  | 0.4- |
| 1999 04 09 | 691 | 0.2-  | 0.1-  | 2007 08 21 | 699 | 0.6- | 0.4+ | 2007 09 13 | G96 | 0.1+ | 0.3- |
| 2002 02 08 | 695 | 0.0   | 0.3+  | 2007 08 21 | 699 | 0.0  | 0.6+ | 2007 09 13 | G96 | 0.2+ | 0.3- |
| 2002 02 08 | 695 | 0.1+  | 0.3+  | 2007 08 22 | 699 | 1.6+ | 1.3+ | 2007 09 14 | G96 | 0.2- | 0.4- |
| 2004 12 16 | 691 | 0.2-  | 0.0   | 2007 08 22 | 699 | 1.5- | 1.2+ | 2007 09 14 | G96 | 0.2- | 0.3- |
| 2004 12 16 | 691 | 0.5+  | 0.1-  | 2007 08 22 | 699 | 0.5- | 0.6- | 2007 09 14 | G96 | 0.0  | 0.3- |
| 2004 12 16 | 691 | 0.3-  | 0.4+  | 2007 08 22 | 699 | 0.2+ | 0.4+ | 2007 09 14 | G96 | 0.1+ | 0.5- |
| 2007 08 11 | 699 | 1.4-  | 0.9+  | 2007 09 06 | 699 | 0.7+ | 0.1+ | 2007 10 11 | G96 | 0.1+ | 0.6- |
| 2007 08 11 | 699 | 0.2-  | 0.1-  | 2007 09 06 | 699 | 0.8+ | 0.0  | 2007 10 11 | G96 | 0.5+ | 0.6- |
| 2007 08 11 | 699 | 1.1+  | 0.2-  | 2007 09 06 | 699 | 0.6- | 0.5+ | 2007 10 11 | G96 | 0.3+ | 0.5- |
| 2007 08 11 | 699 | (2.6- | 0.0 ) | 2007 09 06 | 699 | 0.5+ | 0.1+ | 2007 10 11 | G96 | 0.4- | 0.8- |

2007 DEC. 24

M.P.O. 129807

**2007 RN<sub>200</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.06635   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.22568300 | $\omega$ | 16.40349  | +0.98149536 | +0.19011378 |          |          |
| <i>a</i> | 2.6717972  | $\Omega$ | 332.60521 | -0.18079818 | +0.88070811 |          |          |
| <i>e</i> | 0.1726274  | <i>i</i> | 2.85058   | -0.06307830 | +0.43383175 |          |          |
| <i>P</i> | 4.37       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 21 | 807 | 0.7+ | 0.4+ | 2007 09 14 | 699 | 0.0   | 1.2-  | 2007 10 15 | 704 | 0.1- | 0.3- |
| 2001 05 22 | 807 | 0.7+ | 0.4+ | 2007 09 14 | 699 | (0.2+ | 2.0-) | 2007 10 15 | 704 | 0.3- | 0.7- |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2007 09 22 | 704 | 0.4-  | 0.9+  | 2007 10 15 | 704 | 0.1- | 0.1+ |
| 2003 11 19 | 691 | 0.2- | 0.1+ | 2007 09 22 | 704 | 0.2-  | 0.5+  | 2007 10 15 | 704 | 0.4- | 0.7+ |
| 2003 11 19 | 691 | 0.0  | 0.1+ | 2007 09 22 | 704 | (2.9- | 2.4+) | 2007 10 20 | 703 | 0.3+ | 0.6- |
| 2005 03 08 | G96 | 0.1- | 0.3+ | 2007 10 04 | 703 | 0.3+  | 0.5+  | 2007 10 20 | 703 | 0.1+ | 0.2+ |
| 2005 03 08 | G96 | 0.3+ | 0.4+ | 2007 10 04 | 703 | 0.5-  | 1.4+  | 2007 10 20 | 703 | 0.3- | 0.0  |
| 2005 03 08 | G96 | 0.1+ | 0.3+ | 2007 10 04 | 703 | 0.3+  | 1.1+  | 2007 10 20 | 703 | 0.5+ | 0.2- |
| 2005 03 08 | G96 | 0.3+ | 0.1+ | 2007 10 04 | 703 | 0.0   | 0.5+  | 2007 10 20 | 704 | 1.1- | 0.1+ |
| 2006 05 31 | G96 | 0.1- | 0.5+ | 2007 10 04 | 703 | 0.2+  | 0.6+  | 2007 10 20 | 704 | 0.6- | 0.3- |
| 2006 05 31 | G96 | 0.1+ | 0.4+ | 2007 10 04 | 703 | 0.0   | 0.9+  | 2007 10 20 | 704 | 0.2- | 0.5+ |
| 2006 05 31 | G96 | 0.0  | 0.3- | 2007 10 04 | 703 | 0.2+  | 0.5+  | 2007 10 20 | 704 | 0.7- | 0.0  |
| 2006 05 31 | G96 | 0.4- | 0.6+ | 2007 10 04 | 703 | 0.0   | 0.5+  | 2007 10 31 | 703 | 0.3- | 0.4- |
| 2007 09 13 | 699 | 0.1+ | 0.4+ | 2007 10 09 | 704 | 0.1+  | 0.2-  | 2007 10 31 | 703 | 0.9- | 0.0  |
| 2007 09 13 | 699 | 0.4- | 0.4- | 2007 10 09 | 704 | 0.0   | 0.7+  | 2007 10 31 | 703 | 0.2- | 0.8+ |
| 2007 09 13 | 699 | 0.4- | 0.8- | 2007 10 09 | 704 | 0.4+  | 0.5+  | 2007 10 31 | 703 | 0.1- | 0.8- |
| 2007 09 13 | 699 | 0.1- | 0.9- | 2007 10 09 | 704 | 0.3+  | 1.2+  | 2007 11 01 | 703 | 0.3+ | 0.1- |
| 2007 09 13 | 691 | 0.1- | 0.3- | 2007 10 12 | 704 | 0.4+  | 0.0   | 2007 11 01 | 703 | 1.4+ | 0.4+ |
| 2007 09 13 | 691 | 0.2- | 0.1- | 2007 10 12 | 704 | 0.4-  | 0.6+  | 2007 11 01 | 703 | 1.4+ | 0.5- |
| 2007 09 13 | 691 | 0.1- | 0.0  | 2007 10 12 | 704 | 0.2+  | 0.7+  | 2007 11 01 | 703 | 0.9+ | 0.5+ |
| 2007 09 14 | G96 | 0.2- | 0.6- | 2007 10 12 | 704 | 0.5-  | 0.2+  | 2007 12 15 | G96 | 0.3+ | 1.7- |
| 2007 09 14 | G96 | 0.0  | 0.4- | 2007 10 12 | 704 | 0.2-  | 0.0   | 2007 12 15 | G96 | 0.7- | 2.3- |
| 2007 09 14 | G96 | 0.2+ | 0.6- | 2007 10 14 | G96 | 0.3+  | 0.4-  | 2007 12 15 | G96 | 0.4+ | 0.4- |
| 2007 09 14 | G96 | 0.3- | 0.5- | 2007 10 14 | G96 | 0.5+  | 0.3-  | 2007 12 15 | G96 | 0.0  | 1.1- |
| 2007 09 14 | 699 | 0.2- | 0.7+ | 2007 10 14 | G96 | 0.5+  | 0.2-  |            |     |      |      |
| 2007 09 14 | 699 | 0.8+ | 1.4+ | 2007 10 14 | G96 | 0.4+  | 0.3-  |            |     |      |      |

**2007 RH<sub>202</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.33669  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.27075106 | $\omega$ | 82.26303  | +0.55516192 | -0.83161214 |          |          |
| <i>a</i> | 2.3664061  | $\Omega$ | 333.99824 | +0.74926983 | +0.50771583 |          |          |
| <i>e</i> | 0.1793649  | <i>i</i> | 1.92331   | +0.36109551 | +0.22504639 |          |          |
| <i>P</i> | 3.64       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 01 09 | 691 | 0.5- | 0.0  | 2007 09 14 | G96 | 0.0   | 0.5-  | 2007 10 14 | 704 | 0.7+ | 0.4- |
| 1994 01 09 | 691 | 0.7+ | 0.4- | 2007 09 14 | G96 | 0.4+  | 0.2-  | 2007 10 14 | 704 | 0.9+ | 0.3+ |
| 1994 01 09 | 691 | 0.5- | 0.4- | 2007 10 04 | 703 | 0.3-  | 0.7+  | 2007 10 14 | 704 | 1.4+ | 0.8+ |
| 2000 12 21 | 691 | 0.5- | 1.3+ | 2007 10 04 | 703 | 0.6-  | 0.4+  | 2007 10 14 | G96 | 0.1- | 0.2- |
| 2000 12 21 | 691 | 0.3+ | 0.1- | 2007 10 04 | 703 | 0.4-  | 0.8+  | 2007 10 14 | G96 | 0.1+ | 0.2- |
| 2000 12 21 | 691 | 0.2+ | 0.1- | 2007 10 04 | 703 | 0.8-  | 0.2-  | 2007 10 14 | G96 | 0.2- | 0.3- |
| 2004 12 20 | G96 | 0.1+ | 0.3+ | 2007 10 09 | 704 | 0.1+  | 0.2-  | 2007 10 14 | G96 | 0.0  | 0.7- |
| 2004 12 20 | G96 | 0.1+ | 0.0  | 2007 10 09 | 704 | 0.5-  | 0.5+  | 2007 10 17 | 699 | 0.8- | 0.0  |
| 2004 12 20 | G96 | 0.2+ | 0.0  | 2007 10 09 | 704 | 0.5+  | 0.3+  | 2007 10 17 | 699 | 0.4+ | 1.1- |
| 2004 12 20 | G96 | 0.0  | 0.1- | 2007 10 09 | 704 | 0.2-  | 0.2-  | 2007 10 17 | 699 | 0.2- | 0.9- |
| 2005 03 04 | G96 | 0.1- | 0.3- | 2007 10 09 | 699 | 0.7-  | 0.5+  | 2007 10 17 | 699 | 0.1- | 1.1+ |
| 2005 03 04 | G96 | 0.1- | 0.0  | 2007 10 09 | 699 | 0.4-  | 1.1-  | 2007 10 20 | 703 | 1.3- | 0.0  |
| 2005 03 04 | G96 | 0.2- | 0.0  | 2007 10 09 | 699 | 0.7+  | 0.1+  | 2007 10 20 | 703 | 0.5- | 0.5- |
| 2005 03 04 | G96 | 0.0  | 0.2- | 2007 10 09 | 699 | (2.5+ | 1.2+) | 2007 10 20 | 703 | 0.2+ | 0.6+ |
| 2007 09 13 | 691 | 0.1- | 0.1+ | 2007 10 13 | 703 | 0.8+  | 1.1+  | 2007 10 20 | 703 | 1.8- | 0.5+ |
| 2007 09 13 | 691 | 0.2- | 0.0  | 2007 10 13 | 703 | 0.6-  | 0.5+  | 2007 11 07 | G96 | 0.0  | 0.6- |
| 2007 09 13 | 691 | 0.1- | 0.0  | 2007 10 13 | 703 | 0.6+  | 0.0   | 2007 11 07 | G96 | 0.2+ | 0.5- |
| 2007 09 14 | G96 | 0.2- | 0.2- | 2007 10 14 | 704 | 1.3+  | 0.2+  | 2007 11 07 | G96 | 0.3- | 0.7- |
| 2007 09 14 | G96 | 0.2+ | 0.5- | 2007 10 14 | 704 | 1.9+  | 0.6+  | 2007 11 07 | G96 | 0.0  | 0.4- |

**2007 RT<sub>203</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.41570   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.27516590 | $\omega$ | 59.63838  | +0.52472229 | +0.85124674 |          |          |
| <i>a</i> | 2.3410264  | $\Omega$ | 242.01266 | -0.78362690 | +0.47991398 |          |          |
| <i>e</i> | 0.1967167  | <i>i</i> | 0.43774   | -0.33255887 | +0.21227710 |          |          |
| <i>P</i> | 3.58       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 30 | 691 | 0.1+ | 0.1- | 2007 09 14 | G96 | 0.5- | 0.1+ | 2007 10 19 | G96 | 0.4+ | 0.4+ |
| 2000 11 30 | 691 | 0.1- | 0.0  | 2007 09 14 | G96 | 0.0  | 0.1+ | 2007 10 19 | G96 | 0.2- | 0.2+ |
| 2000 11 30 | 691 | 0.2+ | 0.1- | 2007 09 14 | G96 | 0.2- | 0.3+ | 2007 10 19 | G96 | 0.5+ | 0.4+ |
| 2002 02 09 | 291 | 0.1- | 0.0  | 2007 09 14 | G96 | 0.1- | 0.2- | 2007 11 01 | G96 | 0.3+ | 0.1- |
| 2002 02 09 | 291 | 0.2+ | 0.4+ | 2007 10 04 | 703 | 1.0- | 0.3- | 2007 11 01 | G96 | 0.1- | 0.0  |
| 2002 02 09 | 291 | 0.1- | 0.2+ | 2007 10 04 | 703 | 0.6- | 1.4- | 2007 11 01 | G96 | 0.1+ | 0.3- |
| 2005 12 03 | 568 | 0.4+ | 0.1- | 2007 10 04 | 703 | 0.2+ | 0.7- | 2007 11 01 | G96 | 0.2+ | 0.3- |
| 2005 12 03 | 568 | 0.3+ | 0.0  | 2007 10 04 | 703 | 0.0  | 0.3- | 2007 12 04 | G96 | 0.1+ | 0.2- |
| 2005 12 03 | 568 | 0.4+ | 0.3- | 2007 10 05 | J87 | 0.4+ | 1.0+ | 2007 12 04 | G96 | 0.0  | 0.4- |
| 2007 09 09 | G96 | 0.4+ | 0.0  | 2007 10 05 | J87 | 0.5+ | 0.8+ | 2007 12 04 | G96 | 0.4+ | 0.3- |
| 2007 09 09 | G96 | 0.1+ | 0.0  | 2007 10 05 | J87 | 0.4+ | 1.1+ | 2007 12 04 | G96 | 0.8- | 0.0  |
| 2007 09 09 | G96 | 0.2- | 0.0  | 2007 10 09 | G96 | 0.3- | 0.1- | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2007 09 09 | G96 | 0.1- | 0.2- | 2007 10 09 | G96 | 0.4+ | 0.1- | 2007 12 06 | G96 | 0.2+ | 0.2- |
| 2007 09 13 | 691 | 0.3- | 0.1+ | 2007 10 09 | G96 | 0.1- | 0.0  | 2007 12 06 | G96 | 1.4+ | 0.3- |
| 2007 09 13 | 691 | 0.2- | 0.2+ | 2007 10 09 | G96 | 0.6- | 0.3- | 2007 12 06 | G96 | 0.8+ | 0.1- |
| 2007 09 13 | 691 | 0.1- | 0.3+ | 2007 10 19 | G96 | 0.5+ | 0.1- |            |     |      |      |

**2007 RN<sub>204</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 348.97049  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.22830679 | $\omega$ | 171.51957 | +0.81147860 | -0.58048675 |          |          |
| <i>a</i> | 2.6512875  | $\Omega$ | 224.19258 | +0.53033197 | +0.77993240 |          |          |
| <i>e</i> | 0.1818501  | <i>i</i> | 5.54545   | +0.24545973 | +0.23396707 |          |          |
| <i>P</i> | 4.32       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 691 | 0.1+ | 0.1- | 2007 09 19 | 691 | 0.1- | 0.2- | 2007 10 12 | 704 | 0.2+ | 0.7+ |
| 2003 11 24 | 691 | 0.1+ | 0.1- | 2007 09 19 | 691 | 0.2- | 0.4- | 2007 10 13 | 703 | 0.6- | 0.1- |
| 2003 11 24 | 691 | 0.1- | 0.2- | 2007 09 19 | 691 | 1.5+ | 0.8- | 2007 10 13 | 703 | 0.8- | 0.8- |
| 2003 12 16 | 691 | 0.0  | 0.0  | 2007 09 24 | 691 | 0.7- | 0.8- | 2007 10 13 | 703 | 1.0- | 1.1- |
| 2003 12 16 | 691 | 0.1  | 0.2- | 2007 09 24 | 691 | 0.4- | 0.3- | 2007 10 13 | 703 | 1.7- | 0.3- |
| 2003 12 16 | 691 | 0.0  | 0.2- | 2007 09 24 | 691 | 0.5- | 0.3- | 2007 10 20 | 703 | 1.7+ | 0.5+ |
| 2005 03 08 | 691 | 0.1+ | 0.4+ | 2007 10 09 | 704 | 0.0  | 0.7+ | 2007 10 20 | 703 | 0.6+ | 0.9+ |
| 2005 03 08 | 691 | 0.2+ | 0.4+ | 2007 10 09 | 704 | 0.5- | 0.3+ | 2007 10 20 | 703 | 0.5- | 0.3+ |
| 2005 03 08 | 691 | 0.1- | 0.0  | 2007 10 09 | 704 | 0.3- | 0.1- | 2007 10 20 | 703 | 0.6- | 0.6+ |
| 2007 09 09 | 691 | 0.2- | 0.1- | 2007 10 09 | 704 | 0.2+ | 0.6+ | 2007 11 07 | G96 | 0.1- | 0.3- |
| 2007 09 09 | 691 | 0.0  | 0.2+ | 2007 10 09 | 704 | 1.5+ | 1.6+ | 2007 11 07 | G96 | 0.1- | 0.2- |
| 2007 09 09 | 691 | 1.1+ | 0.3+ | 2007 10 12 | 704 | 0.5+ | 0.9+ | 2007 11 07 | G96 | 0.0  | 0.4- |
| 2007 09 15 | 691 | 0.1- | 0.3- | 2007 10 12 | 704 | 0.3+ | 0.6+ | 2007 11 07 | G96 | 0.0  | 0.4- |
| 2007 09 15 | 691 | 0.2- | 0.4- | 2007 10 12 | 704 | 1.0+ | 0.1+ |            |     |      |      |
| 2007 09 15 | 691 | 0.5- | 0.6- | 2007 10 12 | 704 | 0.0  | 0.1+ |            |     |      |      |

**2007 RW<sub>204</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 19.05927   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.22008829 | $\omega$ | 139.49455 | +0.99723973 |          | +0.04244527 |          |
| $a$ | 2.7168861  | $\Omega$ | 218.20393 | -0.06001691 |          | +0.94386807 |          |
| $e$ | 0.0296188  | $i$      | 5.65299   | +0.04371375 |          | +0.32758428 |          |
| $P$ | 4.48       | $H$      | 16.0      | $G$         | 0.15     | $U$         | 3        |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 11 | 644 | 0.2− | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.5− | 2007 11 07 | G96 | 0.5− | 0.3+ |
| 2002 08 11 | 644 | 0.9+ | 0.1+ | 2007 10 07 | G96 | 0.4+ | 0.3− | 2007 11 07 | G96 | 0.4− | 0.0  |
| 2002 08 11 | 644 | 1.0− | 0.2− | 2007 10 07 | G96 | 0.1+ | 0.3− | 2007 11 07 | G96 | 0.2− | 0.2− |
| 2002 08 11 | 644 | 0.0  | 0.3− | 2007 10 07 | G96 | 0.3+ | 0.4− | 2007 11 07 | G96 | 0.6− | 0.2+ |
| 2007 09 09 | 691 | 0.2+ | 0.1− | 2007 10 09 | 699 | 0.9+ | 0.5+ | 2007 11 07 | 291 | 0.0  | 0.1+ |
| 2007 09 09 | 691 | 0.3+ | 0.1+ | 2007 10 09 | 699 | 0.3− | 0.4− | 2007 11 07 | 291 | 0.1− | 0.1+ |
| 2007 09 09 | 691 | 0.0  | 0.1− | 2007 10 09 | 699 | 0.3− | 1.1+ | 2007 11 07 | 291 | 0.1− | 0.2+ |
| 2007 09 15 | 691 | 0.3− | 0.0  | 2007 10 09 | 699 | 0.4− | 0.5− | 2007 12 04 | G96 | 0.2+ | 0.1− |
| 2007 09 15 | 691 | 0.1+ | 0.0  | 2007 10 13 | 703 | 0.4+ | 0.2+ | 2007 12 04 | G96 | 0.1+ | 0.3+ |
| 2007 09 15 | 691 | 0.1+ | 0.1+ | 2007 10 13 | 703 | 0.4− | 0.8+ | 2007 12 04 | G96 | 0.5+ | 0.4− |
| 2007 09 19 | 691 | 0.1+ | 0.2− | 2007 10 13 | 703 | 1.3− | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.5− |

**2007 RD<sub>205</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 278.16942  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.20569074 | $\omega$ | 259.49314 | −0.27431136   | −0.95889949 |
| <i>a</i> | 2.8422322  | $\Omega$ | 206.77275 | +0.93324052   | −0.24724873 |
| <i>e</i> | 0.0566298  | <i>i</i> | 9.26981   | +0.23198148   | −0.13921150 |
| <i>P</i> | 4.79       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 08 | 645 | 0.0  | 0.1− | 2005 05 13 | G96 | 0.1+ | 0.2+ | 2007 09 24 | 691 | 0.1− | 0.4+ |
| 2002 11 08 | 645 | 0.1+ | 0.2− | 2007 09 09 | 691 | 0.2− | 0.1− | 2007 09 24 | 691 | 0.0  | 0.0  |
| 2005 04 09 | 691 | 0.3+ | 0.0  | 2007 09 09 | 691 | 0.1+ | 0.1− | 2007 11 01 | G96 | 0.1− | 0.3+ |
| 2005 04 09 | 691 | 0.3+ | 0.2− | 2007 09 09 | 691 | 0.1− | 0.1− | 2007 11 01 | G96 | 0.3+ | 0.0  |
| 2005 04 09 | 691 | 0.1− | 0.2− | 2007 09 15 | 691 | 0.0  | 0.1+ | 2007 11 01 | G96 | 0.1+ | 0.1− |
| 2005 05 13 | G96 | 0.4− | 0.1− | 2007 09 15 | 691 | 0.1+ | 0.1− | 2007 11 01 | G96 | 0.1− | 0.3+ |
| 2005 05 13 | G96 | 0.2− | 0.2+ | 2007 09 15 | 691 | 0.2− | 0.1− |            |     |      |      |
| 2005 05 13 | G96 | 0.0  | 0.2+ | 2007 09 24 | 691 | 0.1+ | 0.0  |            |     |      |      |

**2007 RC<sub>208</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 244.84454  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17772738 | $\omega$ | 118.31104 | −0.69092350   | −0.72103832 |
| <i>a</i> | 3.1330439  | $\Omega$ | 15.74732  | +0.57739530   | −0.59386986 |
| <i>e</i> | 0.0951634  | <i>i</i> | 11.09679  | +0.43501653   | −0.35696265 |
| <i>P</i> | 5.55       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 18 | 645 | 0.0  | 0.0  | 2007 09 10 | 691 | 0.1− | 0.1+ | 2007 10 09 | G96 | 0.5− | 0.1− |
| 2004 03 18 | 645 | 0.1− | 0.0  | 2007 09 15 | G96 | 0.6+ | 0.3− | 2007 10 09 | G96 | 0.3− | 0.8+ |
| 2004 04 15 | 645 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.0  | 2007 10 09 | G96 | 0.5+ | 0.3− |
| 2004 04 15 | 645 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.1+ | 2007 10 09 | G96 | 0.3+ | 0.2− |
| 2004 04 16 | 645 | 0.0  | 0.1+ | 2007 09 15 | 691 | 0.3− | 0.4+ | 2007 10 16 | G96 | 0.2+ | 0.2+ |
| 2004 04 16 | 645 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.3+ | 0.2+ | 2007 10 16 | G96 | 0.0  | 0.1− |
| 2007 09 10 | 691 | 0.0  | 0.1− | 2007 09 15 | 691 | 0.4− | 0.2− | 2007 10 16 | G96 | 0.3− | 0.1− |
| 2007 09 10 | 691 | 0.1− | 0.2− | 2007 09 15 | 691 | 0.5− | 0.1+ | 2007 10 16 | G96 | 0.2+ | 0.2− |

**2007 RW<sub>210</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 31.88692   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23515179 | $\omega$ | 140.37453 | +0.70019051   | +0.71380967 |
| <i>a</i> | 2.5995840  | $\Omega$ | 174.01623 | −0.68517823   | +0.67752091 |
| <i>e</i> | 0.1656162  | <i>i</i> | 7.97163   | −0.20065902   | +0.17731658 |
| <i>P</i> | 4.19       | <i>H</i> | 18.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 19 | 645 | 0.1+ | 0.0  | 2007 09 11 | 691 | 0.1− | 0.1+ | 2007 09 19 | 691 | 0.0  | 0.1+ |
| 2003 10 19 | 645 | 0.1+ | 0.0  | 2007 09 15 | 691 | 0.2+ | 0.3− | 2007 10 19 | G96 | 1.1− | 1.5+ |
| 2003 10 23 | 645 | 0.1− | 0.1+ | 2007 09 15 | 691 | 0.2− | 0.1− | 2007 10 19 | G96 | 0.6+ | 0.6− |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2007 09 15 | 691 | 0.1− | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.6− |
| 2007 09 11 | 691 | 0.2+ | 0.2− | 2007 09 19 | 691 | 0.1− | 0.2− | 2007 10 19 | G96 | 0.2+ | 0.7− |
| 2007 09 11 | 691 | 0.0  | 1.0+ | 2007 09 19 | 691 | 0.2+ | 0.2− |            |     |      |      |

**2007 RA<sub>211</sub> = 2000 CN<sub>129</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 34.79621   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.20289105 | $\omega$ | 26.45335  | +0.72730525   | +0.68573888 |
| <i>a</i> | 2.8683190  | $\Omega$ | 290.22325 | −0.63486721   | +0.65667180 |
| <i>e</i> | 0.0228765  | <i>i</i> | 1.71567   | −0.26071192   | +0.31391773 |
| <i>P</i> | 4.86       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 11 20 | 691 | 0.1− | 0.2+ | 2003 12 14 | 691 | 0.1+ | 0.1− | 2007 08 10 | 691 | 0.0  | 0.0  |
| 1993 11 20 | 691 | 0.1+ | 0.1+ | 2005 03 09 | G96 | 0.5− | 0.2+ | 2007 09 11 | 691 | 0.2− | 0.2− |
| 1993 11 20 | 691 | 0.4− | 0.2+ | 2005 03 09 | G96 | 0.4− | 0.4+ | 2007 09 11 | 691 | 0.0  | 0.1+ |
| 2000 02 03 | 691 | 0.1− | 0.2− | 2005 03 09 | G96 | 1.0− | 0.7+ | 2007 09 11 | 691 | 0.1− | 0.0  |
| 2000 02 03 | 691 | 0.2+ | 0.1+ | 2005 03 09 | G96 | 0.3− | 0.3+ | 2007 09 15 | 691 | 0.0  | 0.1+ |
| 2000 02 03 | 691 | 0.0  | 0.0  | 2006 05 23 | G96 | 0.2− | 0.1+ | 2007 09 15 | 691 | 0.2+ | 0.2+ |
| 2000 02 08 | 691 | 0.1+ | 0.2− | 2006 05 23 | G96 | 0.0  | 0.1− | 2007 09 15 | 691 | 0.2+ | 0.3− |
| 2000 02 08 | 691 | 0.1+ | 0.2− | 2006 05 23 | G96 | 0.3+ | 0.3+ | 2007 10 09 | G96 | 0.4+ | 0.1− |
| 2000 02 08 | 691 | 0.1+ | 0.1− | 2006 05 23 | G96 | 0.1+ | 0.2+ | 2007 10 09 | G96 | 0.3+ | 0.1− |
| 2003 12 14 | 691 | 0.1+ | 0.1− | 2007 08 10 | 691 | 0.1− | 0.1− | 2007 10 09 | G96 | 0.3+ | 0.3− |
| 2003 12 14 | 691 | 0.1− | 0.0  | 2007 08 10 | 691 | 0.1+ | 0.0  | 2007 10 09 | G96 | 0.3+ | 0.3− |

**2007 RT<sub>216</sub> = 2002 BG<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 74.78498   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.27091863 | $\omega$ | 44.44474  | +0.21557519   | +0.97436468 |
| <i>a</i> | 2.3654302  | $\Omega$ | 238.10489 | −0.91569597   | −0.17882696 |
| <i>e</i> | 0.1349409  | <i>i</i> | 4.34675   | −0.33915812   | +0.13650780 |
| <i>P</i> | 3.64       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 30 | 645 | 0.1+  | 0.2−  | 2007 09 13 | 699 | 0.3+ | 0.0  | 2007 10 13 | 703 | 0.5− | 0.2− |
| 2000 11 30 | 645 | 0.1+  | 0.2−  | 2007 09 13 | 703 | 0.1+ | 0.8+ | 2007 10 13 | 703 | 0.0  | 0.9− |
| 2002 01 19 | 291 | 0.0   | 0.1+  | 2007 09 13 | 703 | 0.6+ | 0.9+ | 2007 10 20 | G96 | 0.3− | 0.3− |
| 2002 01 19 | 291 | 0.1+  | 0.3+  | 2007 09 13 | 699 | 0.4− | 1.1+ | 2007 10 20 | G96 | 0.1− | 0.2− |
| 2002 01 19 | 291 | 0.0   | 0.3+  | 2007 09 13 | 699 | 0.0  | 1.0− | 2007 10 20 | G96 | 0.1+ | 0.3− |
| 2004 12 12 | 691 | 0.1−  | 0.3+  | 2007 09 14 | 699 | 0.3− | 0.9− | 2007 10 20 | G96 | 0.2− | 0.3− |
| 2004 12 12 | 691 | 0.1−  | 0.1+  | 2007 09 14 | 699 | 0.1+ | 0.9+ | 2007 11 12 | G96 | 0.1+ | 0.4− |
| 2004 12 12 | 691 | 0.2+  | 0.0   | 2007 09 14 | 699 | 0.2+ | 1.1+ | 2007 11 12 | G96 | 0.6− | 0.9− |
| 2007 09 13 | 699 | (0.3− | 2.1−) | 2007 09 14 | 699 | 0.1− | 1.5+ | 2007 11 12 | G96 | 0.1− | 0.2+ |
| 2007 09 13 | 703 | 0.6+  | 0.0   | 2007 10 13 | 703 | 0.4+ | 0.1+ | 2007 11 12 | G96 | 0.3− | 0.3− |
| 2007 09 13 | 703 | 0.6+  | 0.1−  | 2007 10 13 | 703 | 0.3− | 0.6− |            |     |      |      |

**2007 RH<sub>217</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 44.66807   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18692149 | $\omega$ | 145.33224 | +0.72997096   | +0.68303581 |
| <i>a</i> | 3.0294461  | $\Omega$ | 171.45415 | −0.65854121   | +0.71251065 |
| <i>e</i> | 0.1532063  | <i>i</i> | 9.52345   | −0.18293680   | +0.16059472 |
| <i>P</i> | 5.27       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 09 09 | 691 | 0.0  | 0.7− | 2005 04 04 | G96 | 0.3+ | 0.2− | 2007 09 19 | 691 | 0.2+ | 0.3+ |
| 1991 09 09 | 691 | 0.3+ | 0.5− | 2005 04 04 | G96 | 0.1− | 0.3+ | 2007 09 19 | 691 | 0.2− | 0.1+ |
| 1991 09 09 | 691 | 0.1+ | 0.5− | 2006 06 15 | 691 | 0.0  | 0.3+ | 2007 10 07 | 704 | 0.0  | 0.5− |
| 2000 03 03 | 645 | 0.2+ | 0.1− | 2006 06 15 | 691 | 0.1+ | 0.3+ | 2007 10 07 | 704 | 0.3+ | 0.1− |
| 2000 03 03 | 645 | 0.1+ | 0.1− | 2006 06 15 | 691 | 0.1− | 0.3+ | 2007 10 07 | 704 | 0.8− | 0.4− |
| 2000 05 04 | 645 | 0.1− | 0.1+ | 2007 09 13 | G96 | 0.4+ | 0.0  | 2007 10 19 | 703 | 1.5− | 1.4+ |
| 2000 05 04 | 645 | 0.1− | 0.2+ | 2007 09 13 | G96 | 0.5+ | 0.1− | 2007 10 19 | 703 | 0.5− | 0.7+ |
| 2005 03 08 | G96 | 0.0  | 0.2− | 2007 09 13 | G96 | 0.4+ | 0.0  | 2007 10 19 | 703 | 0.6− | 0.7+ |
| 2005 03 08 | G96 | 0.0  | 0.2+ | 2007 09 13 | G96 | 0.4+ | 0.0  | 2007 10 19 | 703 | 0.6− | 1.1− |
| 2005 03 08 | G96 | 0.2− | 0.1− | 2007 09 15 | 691 | 0.1− | 0.2+ | 2007 10 20 | G96 | 0.1+ | 0.1− |
| 2005 03 08 | G96 | 0.0  | 0.1− | 2007 09 15 | 691 | 0.2+ | 0.2+ | 2007 10 20 | G96 | 0.8+ | 0.1+ |
| 2005 04 04 | G96 | 0.1+ | 0.1+ | 2007 09 15 | 691 | 0.1+ | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.2+ |
| 2005 04 04 | G96 | 0.0  | 0.0  | 2007 09 19 | 691 | 0.5− | 0.4+ | 2007 10 20 | G96 | 0.4+ | 0.2+ |

2007 DEC. 24

M.P.O. 129809

**2007 RA<sub>218</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.37147   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26446890 | $\omega$ 220.87495 | +0.97066760   | -0.23994581 |
| <i>a</i> | 2.4037335  | $\Omega$ 152.99707 | +0.22837361   | +0.90043260 |
| <i>e</i> | 0.1864844  | <i>i</i> 1.91589   | +0.07516584   | +0.36283212 |
| <i>P</i> | 3.73       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.0  | 0.1- | 2006 05 20 | 691 | 0.7+ | 0.1+ | 2007 09 15 | G96 | 0.1+ | 0.0  |
| 2003 09 19 | 691 | 0.1+ | 0.1- | 2006 05 20 | 691 | 0.6- | 0.1+ | 2007 09 15 | G96 | 0.0  | 0.2- |
| 2003 09 19 | 691 | 0.1+ | 0.1- | 2007 09 13 | G96 | 0.1+ | 0.1- | 2007 11 03 | 691 | 0.3- | 0.1+ |
| 2003 09 24 | 644 | 0.5- | 0.1+ | 2007 09 13 | G96 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.1- | 0.2+ |
| 2003 09 24 | 644 | 0.2+ | 0.2+ | 2007 09 13 | G96 | 0.1- | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2003 09 24 | 644 | 0.2+ | 0.2+ | 2007 09 13 | G96 | 0.4- | 0.1- | 2007 11 17 | 703 | 0.4+ | 0.7+ |
| 2003 09 24 | 644 | 0.5- | 0.0  | 2007 09 15 | G96 | 0.1- | 0.2- | 2007 11 17 | 703 | 0.4+ | 0.5+ |
| 2003 09 24 | 644 | 0.1+ | 0.6+ | 2007 09 15 | G96 | 0.0  | 0.2- | 2007 11 17 | 703 | 0.7- | 1.2+ |
| 2003 09 24 | 644 | 0.7- | 0.0  | 2007 09 15 | G96 | 0.0  | 0.1- | 2007 11 17 | 703 | 0.1- | 0.9+ |
| 2003 10 22 | 695 | 0.1+ | 0.1+ | 2007 09 15 | G96 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2003 10 22 | 695 | 0.2+ | 0.1+ | 2007 09 15 | G96 | 0.1- | 0.2- | 2007 11 18 | G96 | 0.7+ | 0.2- |
| 2006 05 20 | 691 | 0.1+ | 0.5+ | 2007 09 15 | G96 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.4- |

**2007 RB<sub>220</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 124.74282  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22289185 | $\omega$ 252.11866 | -0.40279158   | +0.91523108 |
| <i>a</i> | 2.6940559  | $\Omega$ 354.09629 | -0.79620824   | -0.35604124 |
| <i>e</i> | 0.0913049  | <i>i</i> 5.87949   | -0.45145474   | -0.18864438 |
| <i>P</i> | 4.42       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |             |            |     |      |      |            |     |      |      |
|------------|-----|-------------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 29 | 691 | (3.9+ 0.2+) | 2007 09 14 | G96 | 0.4+ | 0.1+ | 2007 09 24 | 691 | 0.1- | 0.0  |
| 1998 09 29 | 691 | 0.2- 0.3+   | 2007 09 14 | G96 | 0.8+ | 0.2+ | 2007 09 24 | 691 | 0.4- | 0.5+ |
| 1998 09 29 | 691 | 0.0 0.0     | 2007 09 14 | G96 | 0.6- | 0.4- | 2007 10 16 | G96 | 0.0  | 0.1- |
| 2003 11 16 | 691 | 0.3+ 0.0    | 2007 09 15 | 691 | 0.6- | 0.1+ | 2007 10 16 | G96 | 0.3- | 0.1- |
| 2003 11 16 | 691 | 0.2- 0.0    | 2007 09 15 | 691 | 0.4- | 0.4+ | 2007 10 16 | G96 | 0.0  | 0.2- |
| 2003 11 16 | 691 | 0.2+ 0.6-   | 2007 09 15 | 691 | 0.4- | 0.0  | 2007 10 16 | G96 | 0.1- | 0.1- |
| 2005 03 09 | 691 | 0.1+ 0.4+   | 2007 09 19 | 691 | 0.3+ | 0.0  | 2007 11 07 | G96 | 0.4+ | 0.0  |
| 2005 03 09 | 691 | 0.2+ 0.4+   | 2007 09 19 | 691 | 0.1+ | 0.3- | 2007 11 07 | G96 | 0.2+ | 0.2- |
| 2005 03 09 | 691 | 0.0 0.1+    | 2007 09 19 | 691 | 0.4- | 0.7+ | 2007 11 07 | G96 | 0.1+ | 0.0  |
| 2007 09 14 | G96 | 0.5+ 0.1+   | 2007 09 24 | 691 | 0.2- | 0.3+ | 2007 11 07 | G96 | 0.4+ | 0.3- |

**2007 RD<sub>220</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 92.13010   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26280228 | $\omega$ 315.04310 | +0.01208891   | +0.99975467 |
| <i>a</i> | 2.4138853  | $\Omega$ 315.63958 | -0.90979275   | +0.00329597 |
| <i>e</i> | 0.1479411  | <i>i</i> 1.52112   | -0.41488675   | +0.02190307 |
| <i>P</i> | 3.75       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 14 | 691 | 0.4+ | 0.7+ | 2006 04 18 | 699 | 0.9+ | 0.5+ | 2007 09 15 | 691 | 0.0  | 0.3+ |
| 2002 02 14 | 691 | 0.6+ | 1.0+ | 2006 04 18 | 699 | 0.1+ | 0.9+ | 2007 10 14 | G96 | 0.3+ | 0.1- |
| 2002 02 14 | 691 | 0.2+ | 0.7+ | 2006 04 18 | 699 | 1.4- | 0.6+ | 2007 10 14 | G96 | 0.3+ | 0.2+ |
| 2003 09 04 | 691 | 0.0  | 0.0  | 2006 05 31 | G96 | 0.2- | 0.3- | 2007 10 14 | G96 | 0.1+ | 0.0  |
| 2003 09 04 | 691 | 0.1- | 0.2+ | 2006 05 31 | G96 | 0.3+ | 0.3- | 2007 10 14 | G96 | 0.2+ | 0.1+ |
| 2003 09 04 | 291 | 0.2- | 0.5+ | 2006 05 31 | G96 | 0.4+ | 0.6- | 2007 11 01 | G96 | 0.2- | 0.1+ |
| 2003 09 04 | 691 | 0.2- | 0.2+ | 2006 05 31 | G96 | 0.3+ | 0.9- | 2007 11 01 | G96 | 0.4- | 0.2- |
| 2003 09 04 | 291 | 0.4- | 0.7+ | 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 11 01 | G96 | 0.1- | 0.2+ |
| 2003 09 04 | 291 | 0.1- | 0.4+ | 2007 09 14 | G96 | 0.1- | 0.2- | 2007 11 01 | G96 | 0.3+ | 0.1+ |
| 2006 03 25 | 691 | 0.1+ | 0.0  | 2007 09 14 | G96 | 0.0  | 0.1- | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2006 03 25 | 691 | 0.0  | 0.2+ | 2007 09 14 | G96 | 0.0  | 0.4+ | 2007 11 07 | G96 | 0.3- | 0.3- |
| 2006 03 25 | 691 | 0.5+ | 0.1- | 2007 09 15 | 691 | 0.1- | 0.8+ | 2007 11 07 | G96 | 0.3- | 0.2- |
| 2006 04 18 | 699 | 0.3- | 0.8+ | 2007 09 15 | 691 | 0.3- | 0.5+ | 2007 11 07 | G96 | 0.1- | 0.3- |

**2007 RO<sub>221</sub> = 2005 EN<sub>255</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 70.72988   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21377532 | $\omega$ 91.94241  | +0.59479195   | +0.80339526 |
| <i>a</i> | 2.7701142  | $\Omega$ 214.60427 | -0.75570097   | +0.54697144 |
| <i>e</i> | 0.0745686  | <i>i</i> 2.81630   | -0.27411418   | +0.23532597 |
| <i>P</i> | 4.61       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 19 | 691 | 0.6- | 0.2- | 2005 04 12 | G96 | 0.2- | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.2- |
| 1998 10 19 | 691 | 0.4+ | 1.4+ | 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.3- |
| 1998 10 19 | 691 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.6+ | 0.2- | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 2001 04 24 | 291 | 0.2+ | 0.5+ | 2007 09 14 | G96 | 0.6+ | 0.2- | 2007 10 31 | 691 | 0.1+ | 0.0  |
| 2001 04 24 | 291 | 0.0  | 0.6+ | 2007 09 14 | G96 | 0.0  | 0.3- | 2007 10 31 | 691 | 0.1- | 0.1+ |
| 2001 04 24 | 291 | 0.3+ | 0.5+ | 2007 09 15 | G96 | 0.4+ | 0.2- | 2007 10 31 | 691 | 0.3- | 0.2+ |
| 2005 03 11 | G96 | 0.1- | 0.0  | 2007 09 15 | G96 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.5- | 1.2+ |
| 2005 03 11 | G96 | 0.1+ | 0.2+ | 2007 09 15 | G96 | 0.2+ | 0.2- | 2007 11 04 | 691 | 0.2+ | 0.4+ |
| 2005 03 11 | G96 | 0.1- | 0.1+ | 2007 09 15 | G96 | 0.4+ | 0.0  | 2007 11 04 | 691 | 0.3- | 0.0  |
| 2005 03 11 | G96 | 0.1+ | 0.1+ | 2007 10 04 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.1+ |
| 2005 03 17 | G96 | 0.4- | 0.4- | 2007 10 04 | 691 | 0.1+ | 0.5- | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2005 03 17 | G96 | 0.1+ | 0.1- | 2007 10 04 | 691 | 0.3- | 0.4- | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 2005 03 17 | G96 | 0.2+ | 0.3- | 2007 10 18 | G96 | 0.1- | 0.5- | 2007 11 05 | G96 | 0.2+ | 0.1+ |
| 2005 03 17 | G96 | 0.3- | 0.2- | 2007 10 18 | G96 | 0.0  | 0.4- | 2007 11 05 | 691 | 0.2- | 0.4+ |
| 2005 04 12 | G96 | 0.4- | 0.3- | 2007 10 18 | G96 | 0.1+ | 0.6- | 2007 11 15 | 691 | 0.2- | 0.1+ |
| 2005 04 12 | G96 | 0.3+ | 0.2+ | 2007 10 18 | G96 | 0.2+ | 0.3- | 2007 11 15 | 691 | 0.1+ | 0.1- |
| 2005 04 12 | G96 | 0.4+ | 0.0  | 2007 10 30 | G96 | 0.2- | 0.4- |            |     |      |      |

**2007 RU<sub>222</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.87014   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17514326 | $\omega$ 278.85503 | +0.80185692   | +0.55890752 |
| <i>a</i> | 3.1637860  | $\Omega$ 47.49305  | -0.37006357   | +0.74217521 |
| <i>e</i> | 0.2454495  | <i>i</i> 16.65615  | -0.46912517   | +0.36986260 |
| <i>P</i> | 5.63       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |             |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------------|------|
| 2006 04 02 | 691 | 0.1+ | 0.2+ | 2006 06 02 | G96 | 0.2- | 0.7- | 2007 09 15 | 703 | 1.0+        | 0.1+ |
| 2006 04 02 | 691 | 0.1+ | 0.0  | 2007 08 23 | E12 | 0.9- | 0.6+ | 2007 09 15 | 703 | 1.3+        | 0.2- |
| 2006 04 02 | 691 | 0.4+ | 0.3+ | 2007 08 23 | E12 | 0.3+ | 0.7+ | 2007 09 15 | 703 | 0.6+        | 0.2- |
| 2006 06 02 | 691 | 0.0  | 0.1+ | 2007 08 23 | E12 | 0.6- | 0.1- | 2007 09 15 | 703 | 0.3+        | 0.7- |
| 2006 06 02 | 691 | 0.5- | 0.5+ | 2007 08 23 | E12 | 0.8- | 0.7- | 2007 10 12 | 703 | 0.1+        | 0.4- |
| 2006 06 02 | 691 | 0.4+ | 0.5+ | 2007 09 14 | E12 | 0.1+ | 0.0  | 2007 10 12 | 703 | 0.3-        | 0.9+ |
| 2006 06 02 | G96 | 0.4- | 0.1+ | 2007 09 14 | E12 | 0.4+ | 0.2- | 2007 10 12 | 703 | 0.7+        | 0.3+ |
| 2006 06 02 | G96 | 0.1- | 0.7- | 2007 09 14 | E12 | 1.0- | 0.7- | 2007 10 12 | 703 | (1.7+ 2.5+) |      |
| 2006 06 02 | G96 | 0.1+ | 0.3- | 2007 09 14 | E12 | 1.2- | 0.6+ |            |     |             |      |

**2007 RD<sub>226</sub> = 2003 FR<sub>77</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 106.55718  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.31196949 | $\omega$ 279.02919 | -0.41651365   | +0.90881883 |
| <i>a</i> | 2.1530856  | $\Omega$ 326.32442 | -0.81636922   | -0.38539092 |
| <i>e</i> | 0.1219378  | <i>i</i> 2.45628   | -0.40007208   | -0.15975662 |
| <i>P</i> | 3.16       | <i>H</i> 18.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 01 | 688 | 0.2- | 0.6+ | 2006 01 07 | G96 | 0.5- | 0.4- | 2006 03 23 | G96 | 0.5+ | 0.2- |
| 2000 05 01 | 688 | 0.0  | 0.2+ | 2006 01 07 | G96 | 0.5- | 0.3- | 2007 09 10 | 691 | 0.3- | 0.2+ |
| 2000 05 01 | 688 | 0.2+ | 0.6+ | 2006 01 26 | G96 | 0.1+ | 0.1- | 2007 09 10 | 691 | 0.2- | 0.4+ |
| 2003 03 13 | 291 | 0.4- | 0.6+ | 2006 01 26 | G96 | 0.1- | 0.3- | 2007 09 10 | 691 | 0.8- | 0.2+ |
| 2003 03 13 | 291 | 0.2- | 0.1+ | 2006 01 26 | G96 | 0.3- | 0.2- | 2007 09 15 | G96 | 0.1- | 0.0  |
| 2003 03 13 | 291 | 0.2- | 0.3+ | 2006 01 26 | G96 | 0.4- | 0.1- | 2007 09 15 | G96 | 0.0  | 0.1+ |
| 2003 03 27 | 691 | 0.0  | 0.1- | 2006 02 20 | 703 | 0.9+ | 1.9+ | 2007 09 15 | G96 | 0.1+ | 0.2+ |
| 2003 03 27 | 691 | 0.4+ | 0.4- | 2006 02 20 | 703 | 0.2- | 0.6+ | 2007 09 15 | G96 | 0.2+ | 0.1+ |
| 2003 03 27 | 691 | 0.7+ | 0.7- | 2006 02 20 | 703 | 0.1+ | 1.2+ | 2007 09 19 | 691 | 0.3- | 0.3+ |
| 2003 03 30 | 644 | 0.5+ | 0.3+ | 2006 02 20 | G96 | 0.1- | 0.2- | 2007 09 19 | 691 | 0.2- | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 03 30 | 644 | 0.6+ | 0.6− | 2006 02 20 | 703 | 1.5− | 0.3− | 2007 09 19 | 691 | 0.3− | 0.5+ |
| 2003 03 30 | 644 | 0.3+ | 0.7+ | 2006 02 20 | G96 | 0.1− | 0.2+ | 2007 10 19 | G96 | 0.2+ | 0.6+ |
| 2004 10 13 | 691 | 0.3+ | 0.5+ | 2006 02 20 | G96 | 0.3+ | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.2+ |
| 2004 10 13 | 691 | 0.2− | 0.7+ | 2006 02 20 | G96 | 1.8+ | 0.2+ | 2007 10 19 | G96 | 0.2+ | 0.4− |
| 2004 10 13 | 691 | 0.5− | 0.0  | 2006 03 23 | G96 | 0.1+ | 0.4+ | 2007 10 19 | G96 | 0.2+ | 0.2− |
| 2006 01 07 | G96 | 0.6− | 0.1− | 2006 03 23 | G96 | 0.2− | 0.1− |            |     |      |      |
| 2006 01 07 | G96 | 0.6+ | 0.3− | 2006 03 23 | G96 | 0.3− | 0.3− |            |     |      |      |

**2007 RO<sub>226</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 98.46710   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.17536615 | $\omega$ | 251.33717 | −0.05235780 |      | +0.99730779 |   |  |  |  |  |
| <i>a</i>                                | 3.1611047  | $\Omega$ | 15.92497  | −0.83115516 |      | −0.01502104 |   |  |  |  |  |
| <i>e</i>                                | 0.0534653  | <i>i</i> | 10.78446  | −0.55357001 |      | −0.07177417 |   |  |  |  |  |
| <i>P</i>                                | 5.62       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 16 | 644 | 0.1− | 0.2+ | 2007 09 10 | 691 | 0.5− | 0.3+ | 2007 10 11 | 704 | 0.5− | 0.6+ |
| 2004 01 16 | 644 | 0.2+ | 0.6+ | 2007 09 15 | G96 | 0.5+ | 0.5+ | 2007 10 11 | 704 | 0.6− | 0.1+ |
| 2004 01 16 | 644 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.4− | 2007 10 19 | G96 | 0.2+ | 0.4− |
| 2005 03 08 | G96 | 0.3− | 0.0  | 2007 09 15 | G96 | 0.2− | 0.3− | 2007 10 19 | G96 | 0.2− | 0.3− |
| 2005 03 08 | G96 | 0.4− | 0.2− | 2007 09 19 | 691 | 0.3− | 0.2+ | 2007 10 19 | G96 | 0.2+ | 0.4− |
| 2005 03 08 | G96 | 0.3− | 0.0  | 2007 09 19 | 691 | 0.1− | 0.1− | 2007 10 19 | G96 | 0.1− | 0.2− |
| 2005 03 08 | G96 | 0.3− | 0.1+ | 2007 09 19 | 691 | 0.2− | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.6+ |
| 2005 04 02 | 691 | 0.3+ | 0.4+ | 2007 10 06 | 704 | 0.7+ | 1.0+ | 2007 10 30 | G96 | 0.4+ | 0.4+ |
| 2005 04 02 | 691 | 0.2+ | 0.4+ | 2007 10 06 | 704 | 1.0+ | 1.4+ | 2007 10 30 | G96 | 0.1+ | 0.1+ |
| 2005 04 02 | 691 | 0.5+ | 0.5+ | 2007 10 06 | 704 | 0.9− | 0.5+ | 2007 10 30 | G96 | 0.3+ | 0.2− |
| 2005 05 04 | 691 | 0.9+ | 0.5+ | 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 11 09 | G96 | 0.3− | 0.0  |
| 2005 05 04 | 691 | 0.8+ | 0.5+ | 2007 10 09 | G96 | 0.2− | 0.0  | 2007 11 09 | G96 | 0.1− | 0.2− |
| 2005 05 04 | 691 | 0.5+ | 0.5+ | 2007 10 09 | G96 | 0.1+ | 0.4− | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2007 09 10 | 691 | 0.4− | 0.3+ | 2007 10 09 | G96 | 0.1− | 0.4− | 2007 11 09 | G96 | 0.8− | 0.3+ |
| 2007 09 10 | 691 | 0.0  | 0.1+ | 2007 10 11 | 704 | 0.5− | 0.1− |            |     |      |      |

**2007 RO<sub>227</sub>**

|                                         |            |          |          |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |          |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 11.44360   |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.29624682 | $\omega$ | 21.94231 | +0.89375796 |      | −0.44854482 |   |  |  |  |  |
| <i>a</i>                                | 2.2286075  | $\Omega$ | 4.70959  | +0.40771444 |      | +0.81046755 |   |  |  |  |  |
| <i>e</i>                                | 0.1912227  | <i>i</i> | 1.43861  | +0.18699100 |      | +0.37676239 |   |  |  |  |  |
| <i>P</i>                                | 3.33       | <i>H</i> | 18.1     | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 05 | 645 | 0.0  | 0.0  | 2007 10 24 | G96 | 0.3+ | 0.3− | 2007 11 07 | H55 | 0.1− | 0.5+ |
| 2002 03 05 | 645 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.3+ | 0.4− | 2007 11 08 | 691 | 0.2− | 0.4+ |
| 2005 01 18 | 691 | 0.1− | 0.3− | 2007 10 24 | G96 | 0.2+ | 0.6− | 2007 11 08 | 691 | 0.2+ | 0.3− |
| 2005 01 18 | 691 | 0.0  | 0.1− | 2007 10 31 | 691 | 0.7− | 0.2+ | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2005 01 18 | 691 | 0.0  | 0.2− | 2007 10 31 | G96 | 0.3+ | 0.1− | 2007 11 13 | 699 | 0.3+ | 1.0− |
| 2007 09 10 | G96 | 0.1+ | 0.1− | 2007 10 31 | G96 | 0.4+ | 0.3− | 2007 11 13 | 699 | 0.3+ | 0.5− |
| 2007 09 10 | G96 | 0.4− | 0.2− | 2007 10 31 | 691 | 0.0  | 0.1+ | 2007 11 13 | 699 | 0.4+ | 0.4+ |
| 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 10 31 | G96 | 0.4+ | 0.4− | 2007 11 13 | 699 | 0.1+ | 0.3− |
| 2007 09 10 | G96 | 0.5+ | 0.1− | 2007 10 31 | G96 | 0.4+ | 0.2− | 2007 11 15 | 704 | 0.1+ | 1.2+ |
| 2007 09 15 | G96 | 0.0  | 0.1− | 2007 10 31 | 691 | 0.1− | 0.1+ | 2007 11 15 | 704 | 0.4+ | 0.8+ |
| 2007 09 15 | G96 | 0.1+ | 0.2− | 2007 11 04 | 691 | 0.1− | 0.0  | 2007 11 15 | 704 | 1.2+ | 1.0+ |
| 2007 09 15 | G96 | 0.3+ | 0.3− | 2007 11 04 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.4− | 1.0+ |
| 2007 09 15 | G96 | 0.1− | 0.4− | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2+ | 0.9+ |
| 2007 09 26 | G96 | 0.4+ | 0.2− | 2007 11 06 | 291 | 0.5− | 0.4+ | 2007 11 19 | 691 | 0.2+ | 0.3− |
| 2007 09 26 | G96 | 0.5+ | 0.4− | 2007 11 06 | 291 | 0.1+ | 0.5+ | 2007 11 19 | 691 | 0.1− | 0.2− |
| 2007 09 26 | G96 | 0.7+ | 0.4− | 2007 11 06 | 291 | 0.3− | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.4− |
| 2007 09 26 | G96 | 0.3+ | 0.1− | 2007 11 07 | 291 | 0.1− | 0.0  | 2007 12 03 | 703 | 0.1− | 0.3+ |
| 2007 10 11 | 691 | 0.2− | 0.2− | 2007 11 07 | 291 | 0.2− | 0.1− | 2007 12 03 | 703 | 0.4+ | 0.6− |
| 2007 10 11 | 691 | 0.1− | 0.2− | 2007 11 07 | 291 | 0.2− | 0.1− | 2007 12 03 | 703 | 1.0+ | 0.8+ |
| 2007 10 11 | 691 | 0.1− | 0.3− | 2007 11 07 | H55 | 0.1− | 0.7+ | 2007 12 03 | 703 | 0.4+ | 0.1+ |
| 2007 10 24 | G96 | 0.2+ | 0.8− | 2007 11 07 | H55 | 0.0  | 0.2+ |            |     |      |      |

**2007 RX<sub>227</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 9.53571    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.27211908 | $\omega$ | 340.56425 | +0.77767376 |      | −0.62760015 |   |  |  |  |  |
| <i>a</i>                                | 2.3584684  | $\Omega$ | 58.36377  | +0.58233632 |      | +0.69718479 |   |  |  |  |  |
| <i>e</i>                                | 0.1781510  | <i>i</i> | 2.46566   | +0.23687114 |      | +0.34648436 |   |  |  |  |  |
| <i>P</i>                                | 3.62       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 04 03 | 691 | 0.0  | 0.4− | 2007 10 24 | G96 | 0.3+  | 0.3−  | 2007 11 15 | 704 | 0.1− | 0.2+ |
| 1998 04 03 | 691 | 0.2− | 0.2− | 2007 10 24 | G96 | 0.4+  | 0.1+  | 2007 11 15 | 704 | 0.3− | 0.1+ |
| 1998 04 03 | 691 | 0.2− | 0.3− | 2007 10 24 | G96 | 0.6+  | 0.9−  | 2007 11 15 | 704 | 0.0  | 0.7− |
| 2005 04 04 | 691 | 0.1− | 0.3+ | 2007 10 30 | 691 | (1.6− | 0.3+) | 2007 11 18 | 691 | 0.2− | 0.1− |
| 2005 04 04 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.2+  | 0.3+  | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2005 04 04 | 691 | 0.3+ | 0.2+ | 2007 10 30 | 691 | 0.6−  | 0.0   | 2007 11 18 | 691 | 0.1− | 0.0  |
| 2007 09 10 | G96 | 0.3+ | 0.3− | 2007 11 03 | 691 | 0.0   | 0.5+  | 2007 12 03 | 703 | 0.3− | 0.5+ |
| 2007 09 10 | G96 | 0.0  | 0.5− | 2007 11 03 | 691 | 0.2−  | 0.1+  | 2007 12 03 | 703 | 1.1+ | 0.4+ |
| 2007 09 10 | G96 | 0.1+ | 0.4− | 2007 11 03 | 691 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.3+ | 0.1− |
| 2007 09 10 | G96 | 0.3+ | 0.4− | 2007 11 05 | 704 | 0.1−  | 1.2+  | 2007 12 03 | 703 | 0.6+ | 0.3− |
| 2007 09 15 | G96 | 0.1+ | 0.1− | 2007 11 05 | 704 | 0.3+  | 0.2−  | 2007 12 05 | 704 | 0.5+ | 0.1+ |
| 2007 09 15 | G96 | 0.2+ | 0.2− | 2007 11 05 | 704 | 0.9−  | 0.1−  | 2007 12 05 | 704 | 0.5+ | 0.1+ |
| 2007 09 15 | G96 | 0.1+ | 0.3− | 2007 11 05 | 704 | 0.1−  | 0.2+  | 2007 12 05 | 704 | 0.0  | 0.2+ |
| 2007 09 15 | G96 | 0.1− | 0.3− | 2007 11 05 | 704 | 0.7+  | 0.2+  | 2007 12 05 | 704 | 0.4+ | 0.4− |
| 2007 10 09 | G96 | 0.2+ | 0.3− | 2007 11 07 | 691 | 0.2−  | 0.0   | 2007 12 05 | 704 | 0.2+ | 0.2+ |
| 2007 10 09 | G96 | 0.4+ | 0.4− | 2007 11 07 | 691 | 0.2−  | 0.0   | 2007 12 15 | G96 | 0.1+ | 0.5− |
| 2007 10 09 | G96 | 0.4+ | 0.3− | 2007 11 07 | 691 | 0.2−  | 0.1+  | 2007 12 15 | G96 | 0.1+ | 0.6− |
| 2007 10 09 | G96 | 0.5+ | 0.6− | 2007 11 15 | 704 | 0.0   | 0.6−  | 2007 12 15 | G96 | 0.6+ | 0.3− |
| 2007 10 24 | G96 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.6−  | 0.5−  | 2007 12 15 | G96 | 0.2+ | 0.1− |

**2007 RZ<sub>227</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 36.91207   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.19202287 | $\omega$ | 309.08847 | +0.96769256 |      | −0.25017435 |   |  |  |  |  |
| <i>a</i>                                | 2.9755511  | $\Omega$ | 65.41955  | +0.24066927 |      | +0.87943169 |   |  |  |  |  |
| <i>e</i>                                | 0.0496399  | <i>i</i> | 1.97669   | +0.07516249 |      | +0.40498482 |   |  |  |  |  |
| <i>P</i>                                | 5.13       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 06 | 695 | 0.1− | 0.1− | 2007 09 15 | G96 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2002 12 06 | 695 | 0.1+ | 0.1− | 2007 09 15 | G96 | 0.5+ | 0.0  | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2004 03 14 | 691 | 0.4+ | 0.1− | 2007 09 15 | G96 | 0.3+ | 0.0  | 2007 11 18 | 691 | 0.2+ | 0.1− |
| 2004 03 14 | 691 | 0.1− | 0.1− | 2007 09 15 | G96 | 0.3− | 0.7+ | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2004 03 14 | 691 | 0.1− | 0.3+ | 2007 10 30 | 691 | 0.3− | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2005 05 13 | G96 | 0.3− | 0.2− | 2007 10 30 | 691 | 0.3− | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2005 05 13 | G96 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.0  | 0.3− |
| 2005 05 13 | G96 | 0.1+ | 0.3− | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.4− |
| 2005 05 13 | G96 | 0.2− | 0.0  | 2007 11 07 | 691 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.2− |
| 2007 09 10 | G96 | 0.6+ | 0.0  | 2007 11 07 | 691 | 0.3− | 0.2− | 2007 12 15 | G96 | 0.2+ | 0.4− |
| 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.3− |
| 2007 09 10 | G96 | 0.6+ | 0.3− | 2007 11 14 | 691 | 0.2+ | 0.2− |            |     |      |      |
| 2007 09 10 | G96 | 0.4+ | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.0  |            |     |      |      |



## 2007 DEC. 24

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 05 15 G96 | 0.1− | 0.0  | 2007 09 15 G96 | 0.1− | 0.3+ | 2007 11 13 691 | 0.3− | 0.1− |
| 2005 05 15 G96 | 0.6− | 0.4+ | 2007 11 04 691 | 0.1− | 0.3+ | 2007 11 20 691 | 0.0  | 0.4− |
| 2005 06 14 691 | 0.4+ | 0.1− | 2007 11 04 691 | 0.0  | 0.3+ | 2007 11 20 691 | 0.1+ | 0.1+ |
| 2005 06 14 691 | 0.1+ | 0.1+ | 2007 11 04 691 | 1.1− | 0.4− | 2007 11 20 691 | 0.2− | 0.2+ |
| 2005 06 14 691 | 0.4+ | 0.0  | 2007 11 05 691 | 0.2+ | 0.2+ | 2007 11 21 G96 | 0.6+ | 0.2+ |
| 2007 09 10 G96 | 0.3− | 0.3+ | 2007 11 05 691 | 0.2+ | 0.0  | 2007 11 21 G96 | 0.7+ | 0.4− |
| 2007 09 10 G96 | 0.2− | 0.1− | 2007 11 05 691 | 0.0  | 0.1+ | 2007 11 21 G96 | 0.4+ | 0.0  |
| 2007 09 10 G96 | 0.1− | 0.5+ | 2007 11 09 691 | 0.1− | 0.2+ | 2007 11 21 G96 | 0.1− | 0.2− |

2007 RA<sub>231</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.76334   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.30938094 | $\omega$ | 120.45535 | +0.26441566              |
| <i>a</i> | 2.1650786  | $\Omega$ | 164.82194 | +0.25814351              |
| <i>e</i> | 0.1741163  | <i>i</i> | 5.18903   | +0.06195389              |
| <i>P</i> | 3.19       | <i>H</i> | 17.7      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 03 30 695 | 0.1+ | 0.0  | 2007 09 11 691 | 0.2− | 0.2+ | 2007 10 21 413 | 0.2+ | 0.3+ |
| 2003 03 30 695 | 0.3+ | 0.1+ | 2007 09 11 691 | 0.0  | 0.2+ | 2007 10 21 413 | 0.1+ | 0.1+ |
| 2003 04 01 645 | 0.1− | 0.2+ | 2007 09 15 G96 | 0.3+ | 0.1− | 2007 10 21 413 | 0.1− | 0.0  |
| 2003 04 01 645 | 0.1− | 0.2+ | 2007 09 15 G96 | 0.1− | 0.1− | 2007 11 17 G96 | 0.2+ | 0.4− |
| 2006 01 31 G96 | 0.0  | 0.5+ | 2007 09 15 G96 | 0.2+ | 0.2− | 2007 11 17 G96 | 0.3+ | 0.5− |
| 2006 01 31 G96 | 0.3− | 0.2− | 2007 09 15 G96 | 0.0  | 0.0  | 2007 11 17 G96 | 0.1− | 0.2− |
| 2006 01 31 G96 | 0.2+ | 0.2− | 2007 10 20 413 | 0.1− | 0.4+ | 2007 11 17 G96 | 0.2+ | 0.2− |
| 2006 01 31 G96 | 0.1+ | 0.1− | 2007 10 20 413 | 0.2− | 0.4+ |                |      |      |
| 2007 09 11 691 | 0.4− | 0.1− | 2007 10 20 413 | 0.3− | 0.6+ |                |      |      |

2007 RG<sub>231</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 249.80222  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.23751205 | $\omega$ | 127.09921 | −0.65746818              |
| <i>a</i> | 2.5823333  | $\Omega$ | 4.10058   | +0.54320446              |
| <i>e</i> | 0.1310250  | <i>i</i> | 11.86539  | +0.37068788              |
| <i>P</i> | 4.15       | <i>H</i> | 16.9      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 10 01 691 | 0.1+ | 0.0  | 2007 09 11 691 | 0.5− | 0.4− | 2007 10 10 G96 | 0.1+ | 0.2− |
| 2003 10 01 691 | 0.0  | 0.1+ | 2007 09 11 691 | 0.1− | 0.1+ | 2007 10 10 G96 | 0.3+ | 0.1+ |
| 2003 10 01 691 | 0.3− | 0.3+ | 2007 09 11 691 | 0.2+ | 0.1+ | 2007 10 10 G96 | 0.4+ | 0.1+ |
| 2005 03 02 703 | 0.3− | 0.1+ | 2007 09 11 G96 | 0.2+ | 0.1+ | 2007 10 10 G96 | 0.4+ | 0.1− |
| 2005 03 02 703 | 0.3− | 1.0+ | 2007 09 11 G96 | 0.0  | 0.0  | 2007 10 12 291 | 0.7− | 0.3+ |
| 2005 03 02 703 | 0.5− | 0.2+ | 2007 09 11 G96 | 0.2− | 0.4− | 2007 10 12 291 | 0.8− | 0.0  |
| 2005 03 02 703 | 0.3+ | 0.3− | 2007 09 11 G96 | 0.1+ | 0.3− | 2007 10 12 291 | 0.3− | 0.1+ |
| 2005 03 16 703 | 0.5+ | 0.8+ | 2007 09 15 G96 | 0.0  | 0.2− | 2007 10 31 G96 | 0.3− | 0.0  |
| 2005 03 16 703 | 0.5+ | 1.4− | 2007 09 15 G96 | 0.1+ | 0.3+ | 2007 10 31 G96 | 0.8+ | 0.2− |
| 2005 03 16 703 | 0.8− | 0.9− | 2007 09 15 G96 | 0.1+ | 0.2− | 2007 10 31 G96 | 0.7+ | 0.3+ |
| 2005 03 16 703 | 0.5+ | 0.3+ | 2007 09 15 G96 | 0.1+ | 0.1− | 2007 10 31 G96 | 0.1− | 0.1− |

2007 RQ<sub>232</sub> = 2007 TT<sub>337</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.26746  | (2000.0) | <b>P</b> | <b>Q</b>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.21003496 | $\omega$ | 6.12905  | +0.72955570              |
| <i>a</i> | 2.8029047  | $\Omega$ | 37.04076 | +0.62387086              |
| <i>e</i> | 0.0682243  | <i>i</i> | 4.80975  | +0.28023852              |
| <i>P</i> | 4.69       | <i>H</i> | 16.3     | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 1998 11 25 691 | 0.1−  | 0.1+  | 2007 09 15 699 | 0.2+ | 1.3+ | 2007 10 13 703 | 0.2− | 0.2+ |
| 1998 11 25 691 | 0.0   | 0.1+  | 2007 09 15 699 | 0.1− | 0.6+ | 2007 10 13 703 | 0.3− | 0.3− |
| 1998 11 25 691 | 0.1+  | 0.2−  | 2007 09 15 699 | 0.4+ | 0.9+ | 2007 10 15 G96 | 0.1− | 0.0  |
| 2005 03 11 691 | 0.0   | 0.3+  | 2007 09 15 699 | 0.7− | 0.3− | 2007 10 15 G96 | 0.2− | 0.3− |
| 2005 03 11 691 | 0.0   | 0.1+  | 2007 10 04 703 | 0.9− | 0.4+ | 2007 10 15 G96 | 0.3− | 0.2− |
| 2005 03 11 691 | 0.3+  | 0.2+  | 2007 10 04 703 | 0.4− | 0.2− | 2007 10 15 G96 | 0.2+ | 0.5− |
| 2007 09 11 D29 | (2.8− | 2.1−) | 2007 10 04 703 | 0.7− | 0.3+ | 2007 11 17 G96 | 0.5+ | 0.3+ |

## M.P.O. 129811

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 2007 09 11 D29 | (2.2− | 0.0 ) | 2007 10 04 703 | (2.5− | 1.2+) | 2007 11 17 G96 | 1.0+ | 0.1+ |
| 2007 09 11 D29 | (2.2− | 2.4−) | 2007 10 13 703 | 0.5+  | 0.3−  | 2007 11 17 G96 | 0.5+ | 0.4+ |
| 2007 09 11 D29 | (2.5− | 1.4−) | 2007 10 13 703 | 0.6−  | 0.2−  | 2007 11 17 G96 | 0.4+ | 0.1+ |

2007 RS<sub>232</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.53483    | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.28344569 | $\omega$ | 329.71529 | +0.97467573              |
| <i>a</i> | 2.2952120  | $\Omega$ | 42.65246  | +0.22091673              |
| <i>e</i> | 0.1799334  | <i>i</i> | 6.38168   | +0.03468446              |
| <i>P</i> | 3.48       | <i>H</i> | 17.1      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 09 24 699 | 0.4+ | 0.1− | 2007 09 11 D29 | 0.1+ | 0.4− | 2007 10 16 G96 | 0.2+ | 0.0  |
| 2000 09 24 699 | 0.9− | 0.1− | 2007 09 11 D29 | 0.1− | 0.0  | 2007 10 16 G96 | 0.5+ | 0.0  |
| 2000 09 24 699 | 0.1+ | 0.3+ | 2007 09 12 703 | 0.8+ | 0.4+ | 2007 10 16 G96 | 0.2+ | 0.0  |
| 2000 09 24 699 | 0.9+ | 1.1− | 2007 09 12 703 | 0.5+ | 0.3− | 2007 11 14 704 | 0.3− | 0.8+ |
| 2006 03 26 G96 | 0.1+ | 0.2+ | 2007 09 12 703 | 0.7+ | 0.5− | 2007 11 14 704 | 1.4+ | 0.0  |
| 2006 03 26 G96 | 0.3+ | 0.4+ | 2007 09 12 703 | 0.6− | 0.2− | 2007 11 14 704 | 0.3+ | 0.0  |
| 2006 03 26 G96 | 0.4− | 0.3+ | 2007 09 15 699 | 0.1− | 0.0  | 2007 11 14 704 | 0.2+ | 0.0  |
| 2006 03 26 G96 | 0.1− | 0.0  | 2007 09 15 699 | 0.1+ | 0.1+ | 2007 11 14 704 | 0.9+ | 0.6+ |
| 2006 05 02 G96 | 0.3− | 0.5− | 2007 09 15 699 | 0.5− | 0.2− | 2007 11 17 703 | 0.9− | 0.2− |
| 2006 05 02 G96 | 0.1+ | 0.2− | 2007 09 15 699 | 0.2− | 0.0  | 2007 11 17 703 | 1.1+ | 0.7− |
| 2006 05 02 G96 | 0.7− | 0.2− | 2007 10 04 703 | 1.0− | 0.3+ | 2007 11 17 G96 | 0.0  | 0.1+ |
| 2006 05 02 G96 | 0.7+ | 0.5− | 2007 10 04 703 | 0.3− | 0.4+ | 2007 11 17 703 | 1.0+ | 1.2− |
| 2007 09 05 703 | 0.4− | 0.5+ | 2007 10 04 703 | 1.1− | 0.3− | 2007 11 17 G96 | 0.3− | 0.1− |
| 2007 09 05 703 | 0.4+ | 0.7+ | 2007 10 15 703 | 0.3+ | 0.5− | 2007 11 17 G96 | 0.7− | 0.2− |
| 2007 09 05 703 | 0.3+ | 0.3− | 2007 10 15 703 | 0.2− | 0.8+ | 2007 11 17 703 | 0.3− | 0.9− |
| 2007 09 05 703 | 0.2− | 0.0  | 2007 10 15 703 | 1.1− | 0.9+ | 2007 11 17 G96 | 0.5− | 0.0  |
| 2007 09 11 D29 | 0.1+ | 0.1+ | 2007 10 15 703 | 0.1+ | 0.7+ |                |      |      |
| 2007 09 11 D29 | 0.4− | 0.0  | 2007 10 16 G96 | 0.5+ | 0.1− |                |      |      |

2007 RN<sub>233</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.10554  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.21185530 | $\omega$ | 249.86644 | +0.82012311              |
| <i>a</i> | 2.7868259  | $\Omega$ | 144.45311 | +0.56407769              |
| <i>e</i> | 0.2381209  | <i>i</i> | 8.34758   | +0.09599188              |
| <i>P</i> | 4.65       | <i>H</i> | 16.7      | <i>G</i> 0.15 <i>U</i> 4 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 02 16 691 | 0.3+ | 0.0  | 2007 09 15 699 | 0.0  | 0.3− | 2007 10 12 703 | 0.2− | 0.1− |
| 2004 02 16 691 | 0.1+ | 0.2+ | 2007 09 15 699 | 0.9+ | 0.9− | 2007 10 12 703 | 0.1− | 0.8− |
| 2004 02 16 691 | 0.0  | 0.1− | 2007 10 04 703 | 0.3− | 0.5− | 2007 10 12 703 | 0.1− | 0.1− |
| 2004 02 17 645 | 0.2− | 0.0  | 2007 10 04 703 | 0.2+ | 0.1+ | 2007 10 15 699 | 0.5− | 0.6− |
| 2004 02 17 645 | 0.2− | 0.0  | 2007 10 04 703 | 0.2− | 0.5− | 2007 10 15 699 | 0.6− | 0.5− |
| 2007 09 12 703 | 0.1− | 0.2+ | 2007 10 04 703 | 0.3− | 0.1+ | 2007 10 15 699 | 0.1− | 0.7− |
| 2007 09 12 703 | 1.4+ | 0.2+ | 2007 10 07 703 | 0.3− | 0.3+ | 2007 10 15 703 | 0.5− | 0.4+ |
| 2007 09 12 703 | 0.4− | 0.1− | 2007 10 07 703 | 0.5− | 0.1− | 2007 10 15 699 | 0.3− | 0.9− |
| 2007 09 12 703 | 0.1+ | 0.9+ | 2007 10 07 703 | 0.5− | 0.0  | 2007 10 15 703 | 1.5+ | 1.2+ |
| 2007 09 15 699 | 0.7− | 0.1− | 2007 10 07 703 | 0.1− | 0.6+ | 2007 10 15 703 | 0.6+ | 0.9+ |
| 2007 09 15 699 | 0.7− | 0.6+ | 2007 10 12 703 | 1.3+ | 0.3+ | 2007 10 15 703 | 0.3+ | 0.6+ |

2007 RC<sub>236</sub> = 2007 TK<sub>350</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.75934  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.28222990 | $\omega$ | 266.07752 | +0.94583006              |
| <i>a</i> | 2.3017988  | $\Omega$ | 112.80189 | +0.30801334              |
| <i>e</i> | 0.2360777  | <i>i</i> | 1.62882   | +0.10263182              |
| <i>P</i> | 3.49       | <i>H</i> | 18.2      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 03 12 645 | 0.1+ | 0.1+ | 2007 09 13 G96 | 0.3+ | 0.0  | 2007 09 18 699 | 0.5+ | 1.3+ |
| 2002 03 12 645 | 0.0  | 0.1+ | 2007 09 13 G96 | 0.0  | 0.1− | 2007 10 14 G96 | 0.4+ | 0.2− |
| 2004 12 12 691 | 0.1+ | 0.2+ | 2007 09 13 G96 | 0.1− | 0.3− | 2007 10 14 G96 | 0.2− | 0.4− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 12 | 691 | 0.2− | 0.5+ | 2007 09 15 | 699 | 0.7− | 0.4+ | 2007 10 14 | G96 | 0.2− | 0.5− |
| 2004 12 12 | 691 | 0.1+ | 0.4− | 2007 09 15 | 699 | 1.4+ | 0.1+ | 2007 10 14 | G96 | 0.2+ | 0.4− |
| 2007 09 03 | 703 | 0.7− | 0.5+ | 2007 09 15 | 699 | 1.7+ | 0.0  | 2007 10 15 | G96 | 0.0  | 0.3− |
| 2007 09 03 | 703 | 0.2+ | 0.5+ | 2007 09 15 | 699 | 0.3+ | 0.2+ | 2007 10 15 | G96 | 0.1− | 0.2− |
| 2007 09 03 | 703 | 0.6− | 0.3+ | 2007 09 18 | 699 | 0.1− | 1.6+ | 2007 10 15 | G96 | 0.4+ | 0.5− |
| 2007 09 03 | 703 | 1.8− | 0.1+ | 2007 09 18 | 699 | 0.8− | 0.3+ | 2007 10 15 | G96 | 0.1− | 0.5− |
| 2007 09 13 | G96 | 0.3− | 0.1− | 2007 09 18 | 699 | 0.7− | 0.8+ |            |     |      |      |

**2007 RY<sub>236</sub>**

|                                         |            |          |           |          |             |      |  |             |   |  |  |
|-----------------------------------------|------------|----------|-----------|----------|-------------|------|--|-------------|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |      |  |             |   |  |  |
| MPC                                     |            |          |           |          |             |      |  |             |   |  |  |
| <i>M</i>                                | 32.59618   |          |           | (2000.0) | <b>P</b>    |      |  | <b>Q</b>    |   |  |  |
| <i>n</i>                                | 0.22763878 | $\omega$ | 112.85360 |          | +0.94189652 |      |  | +0.28518080 |   |  |  |
| <i>a</i>                                | 2.6564719  | $\Omega$ | 231.05266 |          | −0.32396336 |      |  | +0.91087120 |   |  |  |
| <i>e</i>                                | 0.1324409  | <i>i</i> | 13.19217  |          | +0.08876198 |      |  | +0.29830449 |   |  |  |
| <i>P</i>                                | 4.33       | <i>H</i> | 15.9      |          | <i>G</i>    | 0.15 |  | <i>U</i>    | 2 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 16 | 691 | 0.0  | 0.3+ | 2007 09 13 | 703 | 0.9− | 1.0− | 2007 11 02 | 704 | 0.1−  | 0.1−  |
| 2003 10 16 | 691 | 0.1+ | 0.2+ | 2007 09 15 | 699 | 0.6+ | 0.7− | 2007 11 02 | 704 | 0.1−  | 1.4+  |
| 2003 10 16 | 691 | 0.0  | 0.0  | 2007 09 15 | 699 | 0.4+ | 0.6− | 2007 11 08 | 704 | 1.2+  | 0.1+  |
| 2003 12 17 | 699 | 0.1− | 1.3− | 2007 09 15 | 699 | 0.4− | 0.1+ | 2007 11 08 | 704 | (1.7+ | 0.3+) |
| 2003 12 17 | 699 | 0.3+ | 0.4+ | 2007 09 15 | 699 | 0.6+ | 0.5+ | 2007 11 08 | 704 | (2.0+ | 0.3+) |
| 2003 12 17 | 699 | 1.7− | 0.3− | 2007 09 20 | 703 | 0.0  | 0.7− | 2007 11 08 | 704 | (1.7+ | 0.5−) |
| 2003 12 17 | 699 | 1.0+ | 0.2− | 2007 09 20 | 703 | 0.1+ | 0.2− | 2007 11 08 | 703 | 0.4−  | 0.1−  |
| 2006 05 06 | G96 | 0.2− | 0.1+ | 2007 09 20 | 703 | 0.1+ | 0.4+ | 2007 11 08 | 703 | 0.6−  | 0.6−  |
| 2006 05 06 | G96 | 0.5− | 0.3− | 2007 09 20 | 703 | 0.3+ | 0.0  | 2007 11 08 | 703 | 0.2−  | 0.2−  |
| 2006 05 06 | G96 | 0.6− | 1.0+ | 2007 10 14 | 703 | 0.1− | 0.0  | 2007 11 08 | 703 | 0.5−  | 0.2−  |
| 2006 05 06 | G96 | 0.0  | 0.0  | 2007 10 14 | 703 | 0.7− | 0.6+ | 2007 11 17 | 704 | 1.3+  | 1.4+  |
| 2006 06 02 | 691 | 0.1− | 0.3+ | 2007 10 14 | 703 | 0.4+ | 0.4+ | 2007 11 17 | 704 | 0.4−  | 0.7+  |
| 2006 06 02 | 691 | 0.0  | 0.3+ | 2007 10 14 | 703 | 0.1− | 0.0  | 2007 11 17 | 704 | 0.4−  | 0.4+  |
| 2006 06 02 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.5− | 0.7− | 2007 11 17 | 704 | 0.0   | 0.0   |
| 2006 06 16 | 691 | 0.1+ | 0.1− | 2007 10 30 | 703 | 0.8+ | 0.7− | 2007 11 17 | 704 | 0.3+  | 0.2+  |
| 2006 06 16 | 691 | 0.1− | 0.3− | 2007 10 30 | 703 | 0.8− | 0.1+ | 2007 11 18 | 704 | 1.4+  | 0.1+  |
| 2006 06 16 | 691 | 0.2+ | 0.2− | 2007 10 30 | 703 | 0.2+ | 0.0  | 2007 11 18 | 704 | 0.4+  | 0.9+  |
| 2007 09 13 | 703 | 0.7− | 0.3− | 2007 11 02 | 704 | 0.4− | 0.1− | 2007 11 18 | 704 | 0.5+  | 0.5+  |
| 2007 09 13 | 703 | 0.2+ | 0.7− | 2007 11 02 | 704 | 0.7− | 0.2− | 2007 11 18 | 704 | 0.1−  | 0.4−  |
| 2007 09 13 | 703 | 0.1+ | 0.2+ | 2007 11 02 | 704 | 0.9− | 0.2+ |            |     |       |       |

**2007 RU<sub>239</sub> = 2007 TB<sub>288</sub> = 2000 YL<sub>143</sub> = 2006 HD<sub>119</sub>**

|                                         |            |          |           |          |             |      |  |             |   |  |  |
|-----------------------------------------|------------|----------|-----------|----------|-------------|------|--|-------------|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |      |  |             |   |  |  |
| MPC                                     |            |          |           |          |             |      |  |             |   |  |  |
| <i>M</i>                                | 2.62084    |          |           | (2000.0) | <b>P</b>    |      |  | <b>Q</b>    |   |  |  |
| <i>n</i>                                | 0.26427858 | $\omega$ | 290.90733 |          | +0.97608578 |      |  | −0.17648619 |   |  |  |
| <i>a</i>                                | 2.4048874  | $\Omega$ | 79.42879  |          | +0.21390979 |      |  | +0.88376291 |   |  |  |
| <i>e</i>                                | 0.1250682  | <i>i</i> | 7.41835   |          | −0.03871887 |      |  | +0.43337713 |   |  |  |
| <i>P</i>                                | 3.73       | <i>H</i> | 16.7      |          | <i>G</i>    | 0.15 |  | <i>U</i>    | 3 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 704 | 0.6+ | 0.4+ | 2007 09 14 | 703 | 0.9− | 0.6− | 2007 10 11 | 703 | 0.6− | 0.2− |
| 2000 12 30 | 704 | 0.3− | 1.3+ | 2007 09 14 | 703 | 1.1− | 0.2− | 2007 10 11 | 703 | 1.3+ | 0.3− |
| 2000 12 30 | 704 | 0.2− | 0.7+ | 2007 09 15 | 699 | 0.4− | 0.1+ | 2007 10 11 | 703 | 0.7+ | 0.5+ |
| 2000 12 30 | 704 | 0.1− | 1.0− | 2007 09 15 | 699 | 0.2+ | 0.3− | 2007 10 15 | 699 | 1.1+ | 0.3+ |
| 2000 12 30 | 704 | 0.2− | 0.4− | 2007 09 15 | 699 | 0.9+ | 0.2+ | 2007 10 15 | 699 | 0.6+ | 0.0  |
| 2006 04 30 | 691 | 0.2+ | 0.1− | 2007 09 15 | 699 | 1.0− | 0.3+ | 2007 10 15 | 699 | 0.2− | 0.7− |
| 2006 04 30 | 691 | 0.0  | 0.0  | 2007 10 04 | 703 | 0.1+ | 0.5+ | 2007 10 15 | 699 | 0.1− | 0.2+ |
| 2006 04 30 | 691 | 0.1+ | 0.2− | 2007 10 04 | 703 | 0.7− | 0.1− | 2007 11 11 | 703 | 0.1+ | 0.3− |
| 2006 05 09 | 691 | 0.3− | 0.4+ | 2007 10 04 | 703 | 0.0  | 0.6− | 2007 11 11 | 703 | 0.1− | 0.1+ |
| 2006 05 09 | 691 | 0.1+ | 0.0  | 2007 10 04 | 703 | 1.2− | 0.1+ | 2007 11 11 | 703 | 0.3+ | 1.1− |
| 2006 05 09 | 691 | 0.0  | 0.3+ | 2007 10 11 | 703 | 1.3+ | 0.4+ | 2007 11 11 | 703 | 0.2+ | 0.9+ |
| 2007 09 14 | 703 | 0.3− | 0.2+ | 2007 10 11 | 703 | 0.4− | 0.4+ |            |     |      |      |
| 2007 09 14 | 703 | 0.5− | 0.1+ | 2007 10 11 | 703 | 0.6+ | 0.8+ |            |     |      |      |

**2007 RV<sub>239</sub> = 2002 KL<sub>11</sub> = 2003 XX<sub>27</sub>**Id. Minor Planet Center (*MPO* 128321; unpublished)

|                                         |            |          |           |          |             |      |  |             |   |  |  |
|-----------------------------------------|------------|----------|-----------|----------|-------------|------|--|-------------|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |      |  |             |   |  |  |
| MPC                                     |            |          |           |          |             |      |  |             |   |  |  |
| <i>M</i>                                | 28.80759   |          |           | (2000.0) | <b>P</b>    |      |  | <b>Q</b>    |   |  |  |
| <i>n</i>                                | 0.22463306 | $\omega$ | 265.96515 |          | +0.78372124 |      |  | +0.60995295 |   |  |  |
| <i>a</i>                                | 2.6801161  | $\Omega$ | 56.40658  |          | −0.49928441 |      |  | +0.73092894 |   |  |  |
| <i>e</i>                                | 0.3059446  | <i>i</i> | 8.08905   |          | −0.36945378 |      |  | +0.30610503 |   |  |  |
| <i>P</i>                                | 4.39       | <i>H</i> | 16.6      |          | <i>G</i>    | 0.15 |  | <i>U</i>    | 1 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 17 | 291 | 0.1+ | 0.5+ | 2007 09 05 | 703 | 0.1− | 0.3− | 2007 10 11 | 703 | 0.1+ | 0.5+ |
| 2002 05 17 | 291 | 0.1− | 0.2+ | 2007 09 05 | 703 | 0.4− | 0.5+ | 2007 10 11 | 703 | 0.3+ | 0.2+ |
| 2002 05 17 | 291 | 0.0  | 0.5+ | 2007 09 05 | 703 | 0.6+ | 0.5− | 2007 10 11 | 703 | 0.1+ | 0.2− |
| 2002 05 19 | 644 | 0.7+ | 0.5+ | 2007 09 05 | 703 | 0.2− | 0.3+ | 2007 10 11 | 703 | 0.1− | 0.3− |
| 2002 05 19 | 644 | 0.5+ | 0.7+ | 2007 09 14 | 703 | 0.5+ | 0.2+ | 2007 10 15 | 703 | 0.9− | 0.8+ |
| 2002 05 19 | 644 | 0.3+ | 0.7+ | 2007 09 14 | 703 | 0.6− | 0.2+ | 2007 10 15 | 703 | 0.5+ | 0.5+ |
| 2003 12 01 | 691 | 0.2− | 0.4+ | 2007 09 14 | 703 | 0.2− | 0.0  | 2007 10 15 | 703 | 0.6+ | 0.2+ |
| 2003 12 01 | 691 | 0.1+ | 0.2+ | 2007 09 14 | 703 | 0.2+ | 0.1+ | 2007 10 15 | 703 | 0.9+ | 0.3+ |
| 2003 12 01 | 691 | 0.0  | 0.1+ | 2007 09 15 | 699 | 0.2− | 1.0+ | 2007 11 02 | 703 | 0.1− | 0.1− |
| 2003 12 01 | 691 | 0.1+ | 0.3+ | 2007 09 15 | 699 | 0.0  | 0.5+ | 2007 11 02 | 703 | 0.1− | 1.0+ |
| 2003 12 01 | 691 | 0.0  | 0.1+ | 2007 09 15 | 699 | 0.2− | 0.7− | 2007 11 02 | 703 | 0.5− | 0.5− |
| 2003 12 01 | 691 | 0.0  | 0.3+ | 2007 09 15 | 699 | 1.6− | 0.1− | 2007 11 02 | 703 | 0.5+ | 0.3+ |
| 2003 12 14 | 691 | 0.1− | 0.0  | 2007 09 17 | D29 | 0.2− | 0.7− | 2007 11 12 | 704 | 0.1+ | 0.9+ |
| 2003 12 14 | 691 | 0.3− | 0.2+ | 2007 09 17 | D29 | 0.7+ | 0.8− | 2007 11 12 | 704 | 0.3− | 1.0+ |
| 2003 12 14 | 691 | 0.1− | 0.2+ | 2007 09 17 | D29 | 0.0  | 0.4− | 2007 11 12 | 704 | 0.1+ | 0.0  |
| 2006 04 08 | G96 | 0.3+ | 0.6+ | 2007 09 17 | D29 | 0.2+ | 0.6− | 2007 11 12 | 704 | 1.7− | 0.2+ |
| 2006 04 08 | G96 | 0.2+ | 0.4+ | 2007 10 04 | 703 | 0.7− | 0.1+ | 2007 11 12 | 704 | 0.3− | 0.7+ |
| 2006 04 08 | G96 | 0.6+ | 1.1+ | 2007 10 04 | 703 | 0.8+ | 0.3− |            |     |      |      |
| 2006 04 08 | G96 | 0.3+ | 0.7+ | 2007 10 04 | 703 | 0.1+ | 0.0  |            |     |      |      |

**2007 RL<sub>240</sub>**

|                                         |            |          |           |          |             |      |  |             |   |  |  |
|-----------------------------------------|------------|----------|-----------|----------|-------------|------|--|-------------|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |      |  |             |   |  |  |
| MPC                                     |            |          |           |          |             |      |  |             |   |  |  |
| <i>M</i>                                | 44.23942   |          |           | (2000.0) | <b>P</b>    |      |  | <b>Q</b>    |   |  |  |
| <i>n</i>                                | 0.23541305 | $\omega$ | 327.12002 |          | +0.91944502 |      |  | +0.39298608 |   |  |  |
| <i>a</i>                                | 2.5976603  | $\Omega$ | 9.76779   |          | −0.34137152 |      |  | +0.81480621 |   |  |  |
| <i>e</i>                                | 0.0608056  | <i>i</i> | 4.57088   |          | −0.19515722 |      |  | +0.42620743 |   |  |  |
| <i>P</i>                                | 4.19       | <i>H</i> | 17.4      |          | <i>G</i>    | 0.15 |  | <i>U</i>    | 1 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.0  | 0.1− | 2007 09 14 | G96 | 0.6+ | 0.4− | 2007 11 04 | 691 | 0.6+ | 0.3− |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.3+ | 0.9− | 2007 11 04 | 691 | 0.1− | 0.5+ |
| 2003 10 25 | 691 | 0.3+ | 0.2− | 2007 09 14 | G96 | 0.4+ | 0.7− | 2007 11 04 | 691 | 0.3− | 0.3+ |
| 2003 10 25 | 691 | 0.2+ | 0.1− | 2007 09 14 | G96 | 0.5+ | 0.7− | 2007 11 09 | 691 | 0.2− | 0.5+ |
| 2003 10 25 | 691 | 0.1+ | 0.2− | 2007 09 15 | G96 | 0.4+ | 0.1− | 2007 11 09 | 691 | 0.3− | 0.3+ |
| 2003 11 21 | 691 | 0.1− | 0.5− | 2007 09 15 | G96 | 0.3+ | 0.4+ | 2007 11 09 | 691 | 0.2− | 0.5+ |
| 2003 11 21 | 691 | 0.1− | 0.0  | 2007 09 15 | G96 | 0.8+ | 0.3+ | 2007 11 15 | 691 | 0.3− | 0.4+ |
| 2003 11 21 | 691 | 0.1+ | 0.4− | 2007 09 15 | G96 | 0.7+ | 0.2− | 2007 11 15 | 691 | 0.0  | 0.3− |
| 2005 02 09 | 691 | 0.5+ | 0.6+ | 2007 09 15 | 291 | 0.6− | 0.1+ | 2007 11 15 | 691 | 0.4+ | 0.1+ |
| 2005 02 09 | 691 | 0.0  | 0.2+ | 2007 09 15 | 291 | 0.4− | 0.1− |            |     |      |      |
| 2005 02 09 | 691 | 0.2− | 0.1+ | 2007 09 15 | 291 | 0.3− | 0.1− |            |     |      |      |

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|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 04 | 691 | 0.0  | 0.3+ | 2007 09 10 | 703 | 0.1+  | 0.8+  | 2007 11 12 | G96 | 0.8+ | 0.2- |
| 2003 07 04 | 691 | 0.3+ | 0.1+ | 2007 09 13 | 683 | 0.5-  | 0.3-  | 2007 11 12 | G96 | 0.8+ | 0.8- |
| 2004 12 11 | 691 | 0.1+ | 0.1- | 2007 09 13 | 683 | (1.8- | 1.9+) | 2007 11 12 | G96 | 0.7+ | 1.5+ |
| 2004 12 11 | 691 | 0.2- | 0.2- | 2007 09 13 | 683 | (0.5+ | 3.4+) | 2007 11 12 | G96 | 0.8+ | 0.0  |
| 2004 12 11 | 691 | 0.1+ | 0.0  | 2007 10 07 | 704 | 1.1+  | 0.1+  |            |     |      |      |
| 2004 12 11 | 691 | 0.1- | 0.1- | 2007 10 07 | 704 | 1.3+  | 0.1-  |            |     |      |      |

**2007 RJ<sub>241</sub> = 2007 TR<sub>356</sub>**

Id. Minor Planet Center (d, MPO 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           |             |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 32.76548  | <i>ω</i> | 197.91055 | +0.80121956 | +0.59634775 |          |   |
| <i>a</i> | 2.4528740 | <i>Ω</i> | 125.37987 | -0.54135495 | +0.75742437 |          |   |
| <i>e</i> | 0.2061980 | <i>i</i> | 3.45663   | -0.25491575 | +0.26585274 |          |   |
| <i>P</i> | 3.84      | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 10 | 291 | 0.2+ | 0.5+ | 2007 09 11 | D29 | 0.5-  | 0.1-  | 2007 10 12 | 703 | 1.3- | 0.3+ |
| 2002 03 10 | 291 | 0.2+ | 0.4+ | 2007 09 11 | D29 | 0.2-  | 0.5-  | 2007 10 15 | G96 | 0.1- | 0.1+ |
| 2002 03 10 | 291 | 0.3+ | 0.8+ | 2007 09 11 | D29 | 0.6-  | 0.0   | 2007 10 15 | G96 | 0.3- | 0.0  |
| 2003 07 24 | 644 | 0.4- | 0.5+ | 2007 09 12 | 703 | (2.0- | 0.3-) | 2007 10 15 | G96 | 0.2+ | 0.2+ |
| 2003 07 24 | 644 | 0.2- | 0.6+ | 2007 09 12 | 703 | 0.7-  | 0.3+  | 2007 10 15 | G96 | 0.5+ | 0.2+ |
| 2003 07 24 | 644 | 0.0  | 0.2+ | 2007 09 12 | 703 | (1.6- | 0.5-) | 2007 10 15 | 703 | 0.4+ | 0.1+ |
| 2003 08 25 | 807 | 0.1+ | 0.1- | 2007 09 12 | 703 | 0.1+  | 0.3+  | 2007 10 15 | 703 | 0.3- | 0.1+ |
| 2003 08 25 | 807 | 0.1+ | 0.0  | 2007 10 04 | 703 | 0.1-  | 0.3+  | 2007 10 15 | 703 | 0.9- | 0.7+ |
| 2007 09 08 | 699 | 0.4- | 0.8+ | 2007 10 04 | 703 | 1.5-  | 0.1+  | 2007 10 15 | 703 | 0.5+ | 0.7+ |
| 2007 09 08 | 699 | 0.2+ | 0.7- | 2007 10 04 | 703 | 0.1-  | 0.3+  | 2007 11 17 | G96 | 0.5+ | 0.3+ |
| 2007 09 08 | 699 | 0.1+ | 0.3+ | 2007 10 04 | 703 | 0.5+  | 0.7+  | 2007 11 17 | G96 | 0.3+ | 0.1- |
| 2007 09 08 | 699 | 1.2+ | 0.0  | 2007 10 12 | 703 | 0.1+  | 0.0   | 2007 11 17 | G96 | 0.5+ | 0.3+ |
| 2007 09 11 | D29 | 0.4- | 0.3+ | 2007 10 12 | 703 | (0.2+ | 1.6+) | 2007 11 17 | G96 | 0.8+ | 0.3+ |

**2007 RW<sub>241</sub> = 1996 RP<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           |             |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 7.22825   | <i>ω</i> | 212.13353 | +0.99974488 | -0.01668773 |          |   |
| <i>a</i> | 2.3693508 | <i>Ω</i> | 148.81179 | +0.02117546 | +0.92697107 |          |   |
| <i>e</i> | 0.2039652 | <i>i</i> | 1.68438   | -0.00785985 | +0.37476147 |          |   |
| <i>P</i> | 3.65      | <i>H</i> | 18.1      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 07 | 691 | 0.2- | 0.1- | 2007 07 18 | G96 | 0.3+ | 0.3- | 2007 09 14 | G96 | 0.3+ | 0.0  |
| 1996 09 07 | 691 | 0.2- | 0.1+ | 2007 09 13 | 704 | 0.0  | 0.1- | 2007 09 19 | 704 | 0.4- | 0.0  |
| 1996 09 07 | 691 | 0.3- | 0.0  | 2007 09 13 | 704 | 0.2+ | 0.4+ | 2007 09 19 | 704 | 0.7- | 0.0  |
| 1996 09 08 | 691 | 0.4+ | 0.5- | 2007 09 13 | 704 | 0.0  | 0.1+ | 2007 09 19 | 704 | 0.2+ | 0.1- |
| 1996 09 08 | 691 | 0.4+ | 0.0  | 2007 09 13 | 704 | 0.2- | 0.5+ | 2007 10 13 | G96 | 0.1+ | 0.0  |
| 2007 07 18 | G96 | 0.0  | 0.1- | 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 10 13 | G96 | 0.1+ | 0.3- |
| 2007 07 18 | G96 | 0.4- | 0.3+ | 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 10 13 | G96 | 0.1+ | 0.2- |
| 2007 07 18 | G96 | 0.2+ | 0.0  | 2007 09 14 | G96 | 0.1+ | 0.0  |            |     |      |      |

**2007 RD<sub>242</sub> = 2003 JR<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           |             |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 53.22904  | <i>ω</i> | 103.65775 | +0.50081246 | +0.86523819 |          |   |
| <i>a</i> | 2.2591344 | <i>Ω</i> | 196.45856 | -0.82268524 | +0.46741312 |          |   |
| <i>e</i> | 0.1643612 | <i>i</i> | 4.74708   | -0.26902765 | +0.18135008 |          |   |
| <i>P</i> | 3.40      | <i>H</i> | 17.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 06 24 | 691 | 0.1+ | 0.1- | 2004 11 10 | 691 | 0.0  | 0.2+ | 2007 09 19 | 704 | 1.1- | 0.7+ |
| 2000 06 24 | 691 | 0.1+ | 0.3- | 2006 03 29 | 691 | 0.3+ | 0.7+ | 2007 09 19 | 704 | 0.5+ | 0.8+ |
| 2000 06 24 | 691 | 0.1- | 0.1+ | 2006 03 29 | 691 | 0.0  | 0.4+ | 2007 09 19 | 704 | 0.2- | 0.5+ |
| 2003 05 03 | 691 | 0.6- | 0.5+ | 2006 03 29 | 691 | 0.2+ | 0.5+ | 2007 10 10 | G96 | 0.1+ | 0.3- |
| 2003 05 03 | 691 | 0.3- | 0.3+ | 2007 09 12 | 699 | 1.0+ | 0.8- | 2007 10 10 | G96 | 0.0  | 0.2- |
| 2003 05 03 | 691 | 0.2- | 0.3+ | 2007 09 12 | 699 | 0.4+ | 0.2+ | 2007 10 10 | G96 | 0.2+ | 0.2- |
| 2003 05 05 | 704 | 0.0  | 0.3- | 2007 09 12 | 699 | 1.1- | 0.7- | 2007 10 10 | G96 | 0.4- | 0.2- |

## M.P.O. 129813

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 05 05 | 704 | 0.5+ | 0.5- | 2007 09 12 | 699 | 0.4+ | 1.1+ | 2007 10 20 | G96 | 0.4+ | 0.1- |
| 2003 05 05 | 704 | 0.7+ | 0.1+ | 2007 09 14 | 704 | 0.6- | 0.3- | 2007 10 20 | G96 | 0.2+ | 0.4- |
| 2003 05 05 | 704 | 0.0  | 0.2+ | 2007 09 14 | 704 | 0.5- | 0.0  | 2007 10 20 | G96 | 0.7- | 0.4- |
| 2003 05 05 | 704 | 0.3+ | 0.8+ | 2007 09 14 | 704 | 0.2+ | 0.9+ | 2007 10 20 | G96 | 0.3+ | 0.2- |
| 2004 11 10 | 691 | 0.2- | 0.7+ | 2007 09 14 | 704 | 0.3- | 0.5+ |            |     |      |      |
| 2004 11 10 | 691 | 0.1+ | 0.3+ | 2007 09 19 | 704 | 0.4+ | 0.8+ |            |     |      |      |

**2007 RQ<sub>242</sub> = 2002 XZ<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           |             |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 339.20502 | <i>ω</i> | 335.31533 | +0.82847048 | -0.55913845 |          |   |
| <i>a</i> | 3.1481185 | <i>Ω</i> | 58.71769  | +0.51977370 | +0.74665511 |          |   |
| <i>e</i> | 0.1741028 | <i>i</i> | 2.12147   | +0.20849934 | +0.36037527 |          |   |
| <i>P</i> | 5.59      | <i>H</i> | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 22 | 608 | 0.7+ | 0.3- | 2005 04 02 | G96 | 0.3+  | 0.2+  | 2007 09 15 | 704 | 0.8+ | 0.2+ |
| 2001 08 22 | 608 | 0.4- | 0.1+ | 2005 04 02 | G96 | 0.4-  | 0.4+  | 2007 09 15 | 704 | 0.8+ | 1.1+ |
| 2001 08 22 | 608 | 0.5+ | 0.4- | 2005 04 02 | G96 | 0.1-  | 0.5+  | 2007 09 18 | 704 | 0.0  | 0.1- |
| 2002 11 26 | 291 | 0.5- | 0.4+ | 2005 05 08 | G96 | 0.0   | 0.7+  | 2007 09 18 | 704 | 0.7- | 0.4+ |
| 2002 11 26 | 291 | 0.2- | 0.1+ | 2005 05 08 | G96 | 0.0   | 0.0   | 2007 09 18 | 704 | 0.0  | 0.6+ |
| 2002 11 26 | 291 | 0.2- | 0.0  | 2005 05 08 | G96 | 0.1-  | 0.7+  | 2007 09 18 | 704 | 0.2- | 0.9+ |
| 2002 12 05 | 704 | 0.3+ | 0.1- | 2005 05 08 | G96 | 0.6-  | 0.2+  | 2007 09 18 | 704 | 1.1- | 0.5- |
| 2002 12 05 | 704 | 0.5- | 0.4- | 2007 09 05 | D35 | 0.0   | 0.2+  | 2007 10 13 | 703 | 0.3- | 0.7- |
| 2002 12 05 | 704 | 0.4+ | 0.2+ | 2007 09 05 | D35 | 0.2-  | 0.1-  | 2007 10 13 | 703 | 1.1- | 0.8- |
| 2002 12 05 | 704 | 0.2- | 0.1+ | 2007 09 05 | D35 | 0.5-  | 0.6+  | 2007 10 13 | 703 | 0.9- | 0.6+ |
| 2002 12 05 | 704 | 0.2+ | 0.2- | 2007 09 12 | 699 | (1.2- | 2.3+) | 2007 10 13 | 703 | 0.4- | 0.0  |
| 2002 12 10 | 704 | 1.0+ | 0.3+ | 2007 09 12 | 699 | (1.1- | 2.6+) | 2007 10 13 | G96 | 0.1+ | 0.1- |
| 2002 12 10 | 704 | 0.5+ | 1.4- | 2007 09 12 | 699 | (0.4- | 1.9+) | 2007 10 13 | G96 | 0.2+ | 0.3- |
| 2002 12 10 | 704 | 0.3+ | 0.0  | 2007 09 12 | 699 | 0.7+  | 0.2+  | 2007 10 13 | G96 | 0.1+ | 0.3- |
| 2002 12 10 | 704 | 0.0  | 0.3- | 2007 09 14 | 699 | 0.3-  | 1.1+  | 2007 10 13 | G96 | 0.2+ | 0.1- |
| 2002 12 10 | 704 | 0.1+ | 0.8+ | 2007 09 14 | 699 | 0.2-  | 0.4+  | 2007 11 17 | G96 | 0.4+ | 0.3- |
| 2004 02 17 | 691 | 0.2+ | 0.0  | 2007 09 14 | 699 | 0.3-  | 0.3+  | 2007 11 17 | G96 | 0.5+ | 0.5- |
| 2004 02 17 | 691 | 0.1+ | 0.3+ | 2007 09 14 | 699 | (1.9- | 2.2+) | 2007 11 17 | G96 | 0.1- | 0.2- |
| 2004 02 17 | 691 | 0.3+ | 0.1- | 2007 09 15 | 704 | 0.9+  | 0.1-  | 2007 11 17 | G96 | 0.4+ | 0.2- |
| 2005 04 02 | G96 | 0.1+ | 1.0+ | 2007 09 15 | 704 | 0.1-  | 0.8+  |            |     |      |      |

**2007 RD<sub>244</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |           |          |           |             |             |          |   |
|----------|-----------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |           | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 37.99316  | <i>ω</i> | 155.49351 | +0.78926230 | +0.61217780 |          |   |
| <i>a</i> | 2.5914452 | <i>Ω</i> | 166.43150 | -0.59173364 | +0.77912596 |          |   |
| <i>e</i> | 0.2791412 | <i>i</i> | 11.80424  | -0.16406193 | +0.13491136 |          |   |
| <i>P</i> | 4.17      | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 02 | 691 | 0.3- | 0.2+ | 2007 09 15 | 704 | 0.1+ | 0.2+ | 2007 09 21 | D29 | 0.1+ | 0.2- |
| 2006 04 02 | 691 | 0.0  | 0.1+ | 2007 09 15 | 704 | 0.4+ | 0.1- | 2007 10 10 | 703 | 0.9- | 0.1- |
| 2006 04 02 | 691 | 0.2+ | 0.2+ | 2007 09 15 | 704 | 0.1- | 0.2+ | 2007 10 10 | 703 | 0.9- | 0.3+ |
| 2006 04 09 | G96 | 0.4+ | 0.7- | 2007 09 15 | 704 | 0.7- | 0.2+ | 2007 10 10 | 703 | 0.2+ | 0.4- |
| 2006 04 09 | G96 | 0.4+ | 0.5- | 2007 09 15 | 704 | 0.6+ | 0.9+ | 2007 10 10 | 703 | 0.4- | 0.1- |
| 2006 04 09 | G96 | 0.7- | 0.4+ | 2007 09 21 | 704 | 0.6+ | 0.8+ | 2007 10 19 | 703 | 0.2- | 0.5- |
| 2006 04 09 | G96 | 0.1- | 0.1- | 2007 09 21 | 704 | 0.8+ | 0.3- | 2007 10 19 | 703 | 0.1+ | 1.0+ |
| 2007 09 11 | 703 | 0.7- | 0.7- | 2007 09 21 | 704 | 0.8+ | 0.4+ | 2007 10 19 | 703 | 0.3+ | 1.4- |
| 2007 09 11 | 703 | 0.0  | 0.7+ | 2007 09 21 | D29 | 0.5+ | 0.2- | 2007 10 19 | 703 | 0.0  | 0.8+ |
| 2007 09 11 | 703 | 0.3- | 0.4- | 2007 09 21 | D29 | 0.0  | 0.3- |            |     |      |      |
| 2007 09 11 | 703 | 0.2- | 0.7- | 2007 09 21 | D29 | 0.1- | 0.3- |            |     |      |      |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1990 11 21 | 809 | 0.4+ | 1.6- | 2007 10 15 | G96 | 0.2-  | 0.4-  | 2007 11 13 | 683 | 0.2+  | 1.0-  |
| 1990 11 21 | 809 | 0.5+ | 1.2- | 2007 10 20 | 704 | (0.5- | 1.7+) | 2007 11 13 | 683 | 0.0   | 0.6-  |
| 1990 11 21 | 809 | 0.0  | 0.5- | 2007 10 20 | 704 | 0.3-  | 0.7+  | 2007 11 14 | G96 | 0.1+  | 0.4-  |
| 1996 02 14 | 691 | 0.5+ | 0.1+ | 2007 10 20 | 704 | 0.1+  | 0.4+  | 2007 11 14 | G96 | 0.0   | 0.5-  |
| 1996 02 14 | 691 | 0.0  | 0.5- | 2007 10 20 | 704 | 0.6-  | 0.4+  | 2007 11 14 | G96 | 0.0   | 0.3-  |
| 1996 02 14 | 691 | 0.3- | 0.6+ | 2007 10 20 | G96 | 0.0   | 0.4-  | 2007 11 14 | G96 | 0.0   | 0.4-  |
| 2000 02 02 | 704 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.2-  | 0.4-  | 2007 11 14 | 683 | 0.2-  | 0.0   |
| 2000 02 02 | 704 | 0.0  | 0.4+ | 2007 10 20 | 704 | 0.7-  | 0.5+  | 2007 11 14 | 683 | 0.7-  | 1.2+  |
| 2000 02 02 | 704 | 0.9- | 1.0+ | 2007 10 20 | G96 | 0.2+  | 0.6-  | 2007 11 14 | 683 | 0.3+  | 1.4+  |
| 2007 08 14 | 704 | 0.1+ | 0.2+ | 2007 10 20 | G96 | 0.0   | 0.4-  | 2007 11 15 | 683 | 0.4-  | 0.2-  |
| 2007 08 14 | 704 | 0.7- | 0.3+ | 2007 10 30 | 703 | (1.5+ | 1.5+) | 2007 11 15 | 683 | 1.5-  | 0.6+  |
| 2007 08 14 | 704 | 1.0+ | 1.0+ | 2007 10 30 | 703 | 0.4+  | 0.8+  | 2007 11 15 | 683 | 0.3-  | 0.2-  |
| 2007 08 14 | 704 | 0.3- | 0.1- | 2007 10 30 | 703 | 1.4+  | 0.8+  | 2007 11 15 | 699 | 1.1+  | 0.1-  |
| 2007 09 11 | 703 | 0.2- | 0.4+ | 2007 10 30 | 703 | 0.2+  | 0.9+  | 2007 11 15 | 699 | 0.6-  | 0.5-  |
| 2007 09 11 | 703 | 0.9+ | 0.2+ | 2007 11 03 | 683 | 1.4+  | 0.3-  | 2007 11 15 | 699 | 0.6-  | 0.3-  |
| 2007 09 11 | 703 | 0.3- | 0.4+ | 2007 11 03 | 683 | 0.7+  | 0.2-  | 2007 11 20 | 703 | 0.8-  | 0.7+  |
| 2007 09 11 | 703 | 0.2- | 0.0  | 2007 11 03 | 683 | 0.6+  | 0.8+  | 2007 11 20 | 703 | 0.7-  | 0.7+  |
| 2007 09 15 | 704 | 0.7+ | 0.6- | 2007 11 05 | 683 | 0.2+  | 0.8-  | 2007 11 20 | 703 | 0.5-  | 0.1+  |
| 2007 09 15 | 704 | 0.5- | 0.1+ | 2007 11 05 | 683 | 0.4+  | 1.2-  | 2007 11 20 | 703 | 0.5-  | 0.5+  |
| 2007 09 15 | 704 | 0.3- | 0.8+ | 2007 11 05 | 683 | 0.4-  | 0.9-  | 2007 11 29 | 704 | 0.0   | 0.3+  |
| 2007 09 15 | 704 | 0.1- | 1.0- | 2007 11 05 | 703 | 0.7-  | 0.9+  | 2007 11 29 | 704 | 0.1+  | 0.6+  |
| 2007 09 15 | 704 | 0.4- | 0.1- | 2007 11 05 | 703 | 0.5-  | 1.1+  | 2007 11 29 | 704 | 0.3+  | 0.3-  |
| 2007 09 22 | 704 | 0.9- | 0.7+ | 2007 11 05 | 703 | 0.4-  | 0.3+  | 2007 11 29 | 704 | 0.5+  | 1.1+  |
| 2007 09 22 | 704 | 1.1- | 0.5+ | 2007 11 05 | 703 | 0.9-  | 0.4+  | 2007 11 29 | 704 | 0.3+  | 0.8+  |
| 2007 09 22 | 704 | 0.6- | 0.7+ | 2007 11 07 | 683 | 0.2-  | 0.1-  | 2007 12 03 | 683 | 0.5-  | 0.4-  |
| 2007 09 22 | 704 | 0.8- | 0.2+ | 2007 11 07 | 683 | 0.4+  | 0.4+  | 2007 12 03 | 683 | 0.6+  | 0.5+  |
| 2007 09 22 | 704 | 0.1- | 0.6+ | 2007 11 07 | 683 | 0.1+  | 0.2+  | 2007 12 03 | 683 | 0.5+  | 0.5+  |
| 2007 10 08 | D29 | 0.0  | 0.6- | 2007 11 09 | 683 | 0.6+  | 0.6-  | 2007 12 04 | 683 | 0.1+  | 0.1-  |
| 2007 10 08 | D29 | 0.3- | 0.2- | 2007 11 09 | 683 | 0.3+  | 1.0-  | 2007 12 04 | 683 | 0.1+  | 0.4+  |
| 2007 10 08 | D29 | 0.3+ | 0.2- | 2007 11 09 | 683 | 0.2-  | 0.6-  | 2007 12 04 | 683 | (1.0+ | 2.5-) |
| 2007 10 08 | D29 | 0.3+ | 0.6- | 2007 11 11 | 704 | 0.5+  | 0.5-  | 2007 12 06 | 703 | 0.2-  | 0.3+  |
| 2007 10 10 | 699 | 0.0  | 0.4- | 2007 11 11 | 683 | 0.4+  | 0.4+  | 2007 12 06 | 703 | 0.1+  | 0.3-  |
| 2007 10 10 | 699 | 0.1- | 0.5- | 2007 11 11 | 704 | 0.1-  | 0.2-  | 2007 12 06 | 703 | 0.1-  | 0.4+  |
| 2007 10 10 | 699 | 0.5+ | 0.3- | 2007 11 11 | 683 | 0.3+  | 0.9+  | 2007 12 06 | 703 | 0.9-  | 0.3+  |
| 2007 10 10 | 699 | 0.3+ | 0.6- | 2007 11 11 | 683 | 0.3-  | 0.3+  | 2007 12 06 | 683 | 0.2-  | 0.3+  |
| 2007 10 13 | 703 | 0.0  | 0.1+ | 2007 11 11 | 704 | 0.4+  | 0.1-  | 2007 12 06 | 683 | 0.8+  | 0.2-  |
| 2007 10 13 | 703 | 0.1- | 0.0  | 2007 11 11 | 704 | 0.3+  | 0.0   | 2007 12 06 | 683 | 0.1-  | 0.3-  |
| 2007 10 13 | 703 | 0.1- | 0.2- | 2007 11 12 | 683 | 0.2+  | 0.6-  | 2007 12 16 | 699 | 0.2+  | 0.7+  |
| 2007 10 13 | 703 | 0.3- | 0.1- | 2007 11 12 | 683 | 0.5+  | 0.1-  | 2007 12 16 | 699 | 0.0   | 0.4-  |
| 2007 10 15 | G96 | 0.0  | 0.4- | 2007 11 12 | 683 | 0.4-  | 0.5+  | 2007 12 16 | 699 | 1.7+  | 0.8-  |
| 2007 10 15 | G96 | 0.2+ | 0.3- | 2007 11 13 | 683 | 0.1+  | 0.3-  | 2007 12 16 | 699 | 0.1+  | 1.5-  |

2007 RN<sub>244</sub> = 2003 UV<sub>67</sub>

|          |                |          |               |             |             |
|----------|----------------|----------|---------------|-------------|-------------|
| Epoch    | 2007 Oct. 27.0 | TT =     | JDT 2454400.5 | MPC         |             |
| <i>M</i> | 96.24782       |          | (2000.0)      | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23977588     | $\omega$ | 88.55091      | -0.13123267 | +0.99126585 |
| <i>a</i> | 2.5660536      | $\Omega$ | 173.86215     | -0.95113494 | -0.12218996 |
| <i>e</i> | 0.1906854      | <i>i</i> | 7.00422       | -0.27950012 | -0.04961473 |
| <i>P</i> | 4.11           | <i>H</i> | 17.4          | <i>G</i>    | 0.15        |
|          |                |          |               | <i>U</i>    | 1           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 09 | 644 | 0.1+ | 0.0  | 2006 04 09 | G96 | 0.4- | 0.2+ | 2007 09 20 | 691 | 0.1- | 0.2- |
| 2002 05 09 | 644 | 0.2- | 0.2+ | 2006 05 08 | G96 | 0.2+ | 0.0  | 2007 09 20 | 691 | 0.2+ | 0.1- |
| 2002 05 09 | 644 | 0.1+ | 0.0  | 2006 05 08 | G96 | 0.1+ | 0.0  | 2007 10 13 | G96 | 0.9+ | 0.2- |
| 2003 10 16 | 291 | 0.1+ | 0.3+ | 2006 05 08 | G96 | 0.2- | 0.1+ | 2007 10 13 | G96 | 0.4+ | 0.1- |
| 2003 10 16 | 291 | 0.8+ | 0.0  | 2006 05 08 | G96 | 0.1+ | 0.1- | 2007 10 13 | G96 | 0.2+ | 0.3- |
| 2003 10 16 | 291 | 0.7+ | 0.2+ | 2007 09 11 | 691 | 0.4- | 0.2+ | 2007 10 13 | G96 | 0.4+ | 0.5- |
| 2003 10 20 | 691 | 0.2- | 0.0  | 2007 09 11 | 691 | 0.1- | 0.3- | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2003 10 20 | 691 | 0.8- | 0.0  | 2007 09 11 | 691 | 0.2+ | 0.1- | 2007 11 02 | G96 | 0.2+ | 0.4+ |
| 2003 10 20 | 691 | 0.7- | 0.2- | 2007 09 18 | 691 | 0.3- | 0.4+ | 2007 11 02 | G96 | 0.1- | 0.3+ |
| 2006 04 09 | G96 | 0.2+ | 0.1- | 2007 09 18 | 691 | 0.1+ | 0.2- | 2007 11 02 | G96 | 0.3+ | 0.3+ |
| 2006 04 09 | G96 | 0.1+ | 0.2+ | 2007 09 18 | 691 | 0.2- | 0.2+ |            |     |      |      |
| 2006 04 09 | G96 | 0.1+ | 0.3+ | 2007 09 20 | 691 | 0.1+ | 0.1- |            |     |      |      |

2007 RE<sub>245</sub>

|          |                |          |               |             |             |
|----------|----------------|----------|---------------|-------------|-------------|
| Epoch    | 2007 Oct. 27.0 | TT =     | JDT 2454400.5 | MPC         |             |
| <i>M</i> | 38.02730       |          | (2000.0)      | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22981206     | $\omega$ | 241.77366     | +0.92416880 | +0.37654677 |
| <i>a</i> | 2.6396976      | $\Omega$ | 96.04566      | -0.32391909 | +0.86164092 |
| <i>e</i> | 0.0936171      | <i>i</i> | 3.70284       | -0.20245603 | +0.34027555 |
| <i>P</i> | 4.29           | <i>H</i> | 17.2          | <i>G</i>    | 0.15        |
|          |                |          |               | <i>U</i>    | 4           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.1+ | 0.1- | 2007 09 11 | 691 | 0.3- | 0.1+ | 2007 10 13 | G96 | 0.0  | 0.4+ |
| 2003 11 18 | 691 | 0.0  | 0.5- | 2007 09 11 | 691 | 0.1- | 0.0  | 2007 10 13 | G96 | 0.0  | 0.3+ |
| 2003 11 18 | 691 | 0.1- | 0.4- | 2007 09 18 | 691 | 0.4- | 0.0  | 2007 11 05 | 691 | 0.2+ | 0.2- |
| 2003 12 18 | 691 | 0.5+ | 0.3+ | 2007 09 18 | 691 | 0.3- | 0.2- | 2007 11 05 | 691 | 0.6- | 0.2+ |
| 2003 12 18 | 691 | 0.1- | 0.0  | 2007 09 18 | 691 | 0.4- | 0.4- | 2007 11 05 | 691 | 0.1- | 0.1+ |
| 2003 12 18 | 691 | 0.2- | 0.3+ | 2007 09 20 | 691 | 0.3+ | 0.0  | 2007 11 07 | 691 | 0.1- | 0.1- |
| 2005 02 09 | 691 | 0.0  | 0.0  | 2007 09 20 | 691 | 0.1+ | 0.1- | 2007 11 07 | 691 | 0.1+ | 0.0  |
| 2005 02 09 | 691 | 0.2+ | 0.2+ | 2007 09 20 | 691 | 0.3- | 0.7+ | 2007 11 07 | 691 | 0.4+ | 0.3+ |
| 2005 02 09 | 691 | 0.0  | 0.3+ | 2007 10 13 | G96 | 1.1+ | 0.3- |            |     |      |      |
| 2007 09 11 | 691 | 0.4- | 0.1+ | 2007 10 13 | G96 | 0.1+ | 0.2- |            |     |      |      |

2007 RH<sub>245</sub> = 1995 UU<sub>64</sub> = 2006 KH<sub>54</sub>

|          |                |          |               |             |             |
|----------|----------------|----------|---------------|-------------|-------------|
| Epoch    | 2007 Oct. 27.0 | TT =     | JDT 2454400.5 | MPC         |             |
| <i>M</i> | 30.66112       |          | (2000.0)      | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.24459448     | $\omega$ | 233.91528     | +0.97448863 | +0.21613585 |
| <i>a</i> | 2.5322405      | $\Omega$ | 113.53352     | -0.17882046 | +0.91053996 |
| <i>e</i> | 0.0851416      | <i>i</i> | 3.78204       | -0.13562876 | +0.35242343 |
| <i>P</i> | 4.03           | <i>H</i> | 16.7          | <i>G</i>    | 0.15        |
|          |                |          |               | <i>U</i>    | 1           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 21 | 691 | 0.1- | 0.3+ | 2005 02 04 | G96 | 0.3- | 0.1+ | 2007 09 18 | 691 | 0.2- | 0.1+ |
| 1995 10 21 | 691 | 0.0  | 0.4+ | 2006 05 21 | 691 | 0.1+ | 0.3+ | 2007 09 20 | 691 | 0.4- | 0.3+ |
| 1995 10 21 | 691 | 0.1- | 0.2+ | 2006 05 21 | 691 | 0.2- | 0.4+ | 2007 09 20 | 691 | 0.3- | 0.2+ |
| 1995 10 26 | 691 | 0.1- | 0.3- | 2006 05 21 | 691 | 0.2- | 0.1+ | 2007 09 20 | 691 | 0.4- | 0.1- |
| 1995 10 26 | 691 | 0.4+ | 0.5- | 2006 05 25 | 691 | 0.0  | 0.1+ | 2007 10 13 | G96 | 0.2+ | 0.1- |
| 1995 10 26 | 691 | 0.2- | 0.7- | 2006 05 25 | 691 | 0.3+ | 0.0  | 2007 10 13 | G96 | 0.1- | 0.1+ |
| 2001 02 02 | 691 | 0.4+ | 0.4+ | 2006 05 25 | 691 | 0.1+ | 0.1- | 2007 10 13 | G96 | 0.1- | 0.5+ |
| 2001 02 02 | 691 | 0.1+ | 0.2+ | 2007 09 11 | 691 | 0.1- | 0.2+ | 2007 10 13 | G96 | 0.4+ | 0.4+ |
| 2001 02 02 | 691 | 0.7+ | 0.4+ | 2007 09 11 | 691 | 0.1+ | 0.1+ | 2007 10 21 | G96 | 0.3+ | 0.0  |
| 2005 02 04 | G96 | 0.1- | 0.1+ | 2007 09 11 | 691 | 0.2- | 0.3+ | 2007 10 21 | G96 | 0.1+ | 0.3- |
| 2005 02 04 | G96 | 0.2- | 0.4- | 2007 09 18 | 691 | 0.0  | 0.1- | 2007 10 21 | G96 | 0.5+ | 0.1- |
| 2005 02 04 | G96 | 0.2- | 0.2+ | 2007 09 18 | 691 | 0.1- | 0.2- | 2007 10 21 | G96 | 0.1- | 0.1+ |

2007 RN<sub>245</sub>

|          |                |          |               |             |             |
|----------|----------------|----------|---------------|-------------|-------------|
| Epoch    | 2007 Oct. 27.0 | TT =     | JDT 2454400.5 | MPC         |             |
| <i>M</i> | 284.80449      |          | (2000.0)      | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.26323954     | $\omega$ | 61.89181      | -0.26562575 | -0.96087604 |
| <i>a</i> | 2.4112115      | $\Omega$ | 43.74673      | +0.83991453 | -0.27061360 |
| <i>e</i> | 0.0771485      | <i>i</i> | 6.51752       | +0.47327216 | -0.05903817 |
| <i>P</i> | 3.74           | <i>H</i> | 17.0          | <i>G</i>    | 0.15        |
|          |                |          |               | <i>U</i>    | 3           |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 01 06 | 703 | 0.4- | 1.1+ | 2007 09 18 | 691 | 0.2-  | 0.0   | 2007 10 13 | G96 | 0.4+ | 0.6- |
| 2005 01 06 | 703 | 0.1- | 0.0  | 2007 09 18 | 691 | 0.2+  | 0.1+  | 2007 10 13 | G96 | 0.1+ | 0.1- |
| 2005 01 06 | 703 | 0.1+ | 0.9- | 2007 09 20 | 691 | 0.1-  | 0.2+  | 2007 11 01 | 691 | 0.2+ | 0.2+ |
| 2005 01 06 | 703 | 0.5- | 0.2- | 2007 09 20 | 691 | 0.1+  | 0.1+  | 2007 11 01 | 691 | 0.3- | 0.1+ |
| 2005 02 06 | 644 | 0.0  | 0.2- | 2007 09 20 | 691 | 0.3-  | 0.2+  | 2007 11 01 | 691 | 0.1- | 0.0  |
| 2005 02 06 | 644 | 0.2+ | 0.1+ | 2007 10 11 | 703 | 1.2+  | 0.6+  | 2007 12 06 | G96 | 0.1- | 0.1- |
| 2005 02 06 | 644 | 0.6+ | 0.2+ | 2007 10 11 | 703 | 0.0   | 0.2-  | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2007 09 11 | 691 | 0.1+ | 0.1- | 2007 10 11 | 703 | (0.1- | 1.9+) | 2007 12 06 | G96 | 0.1+ | 0.3- |
| 2007 09 11 | 691 | 0.3- | 0.1- | 2007 10 11 | 703 | 0.5-  | 0.6+  | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2007 09 11 | 691 | 0.0  | 0.3- | 2007 10 13 | G96 | 0.5+  | 0.3-  |            |     |      |      |
| 2007 09 18 | 691 | 0.1+ | 0.2- | 2007 10 13 | G96 | 0.2+  | 0.2-  |            |     |      |      |

2007 DEC. 24

M.P.O. 129815

**2007 RU<sub>246</sub> = 2007 TM<sub>280</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.45473   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22178904 | $\omega$ 0.27611   | +0.75605363   | +0.64942368 |
| <i>a</i> | 2.7029790  | $\Omega$ 318.84354 | -0.60073784   | +0.63915851 |
| <i>e</i> | 0.1205709  | <i>i</i> 7.10803   | -0.25980178   | +0.41197728 |
| <i>P</i> | 4.44       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 16 | 699 | 0.0  | 0.2- | 2005 01 19 | 691 | 0.4+ | 0.1+ | 2007 09 18 | 703 | 0.2- | 0.9- |
| 1998 09 16 | 699 | 0.1- | 0.5- | 2005 01 19 | 691 | 0.3+ | 0.0  | 2007 10 07 | 703 | 0.4- | 0.1+ |
| 1998 09 16 | 699 | 0.4+ | 1.4+ | 2005 03 11 | G96 | 0.2+ | 0.2+ | 2007 10 07 | 703 | 0.0  | 0.2+ |
| 2002 06 13 | 644 | 0.1- | 0.4+ | 2005 03 11 | G96 | 0.4+ | 0.2+ | 2007 10 07 | 703 | 0.0  | 0.5+ |
| 2002 06 13 | 644 | 0.1- | 0.6+ | 2005 03 11 | G96 | 0.5- | 0.1- | 2007 10 07 | 703 | 0.0  | 1.1+ |
| 2002 06 13 | 644 | 0.3- | 0.7+ | 2005 03 11 | G96 | 0.1+ | 0.1- | 2007 10 13 | 703 | 0.1- | 0.1- |
| 2002 07 14 | 644 | 0.3- | 0.2+ | 2007 09 12 | 703 | 0.2- | 0.5- | 2007 10 13 | 703 | 0.2- | 0.4+ |
| 2002 07 14 | 644 | 0.2- | 0.2- | 2007 09 12 | 703 | 0.0  | 0.2- | 2007 10 20 | 703 | 0.5- | 0.6- |
| 2002 07 14 | 644 | 0.3- | 0.3- | 2007 09 12 | 703 | 0.4- | 0.0  | 2007 10 20 | 703 | 0.2+ | 0.4- |
| 2003 11 20 | 691 | 0.5- | 0.2+ | 2007 09 12 | 703 | 0.7+ | 0.2+ | 2007 10 20 | 703 | 0.4- | 0.5+ |
| 2003 11 20 | 691 | 0.3- | 0.2+ | 2007 09 18 | 703 | 0.1+ | 0.7- | 2007 10 20 | 703 | 0.5+ | 0.0  |
| 2003 11 20 | 691 | 0.5- | 0.4+ | 2007 09 18 | 703 | 1.0+ | 0.1- |            |     |      |      |
| 2005 01 19 | 691 | 0.2+ | 0.5+ | 2007 09 18 | 703 | 0.5+ | 0.5+ |            |     |      |      |

**2007 RW<sub>250</sub> = 1995 QE<sub>5</sub> = 2006 JJ<sub>58</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 134.44184  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25650419 | $\omega$ 340.76584 | -0.67948787   | +0.72894348 |
| <i>a</i> | 2.4532383  | $\Omega$ 246.33281 | -0.66066609   | -0.65727921 |
| <i>e</i> | 0.1845359  | <i>i</i> 5.21776   | -0.31908706   | -0.19137774 |
| <i>P</i> | 3.84       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 22 | 691 | 0.0  | 0.2- | 2002 04 30 | 644 | 0.1+ | 0.4+ | 2007 09 13 | 691 | 0.6- | 0.3+ |
| 1995 08 22 | 691 | 0.1+ | 0.0  | 2003 09 30 | 691 | 0.6+ | 0.1+ | 2007 09 13 | 691 | 0.3- | 0.2- |
| 1995 08 22 | 691 | 0.2- | 0.2- | 2003 09 30 | 691 | 0.3+ | 0.1+ | 2007 09 13 | 691 | 0.7+ | 1.1- |
| 1995 08 28 | 691 | 0.4+ | 0.7- | 2003 09 30 | 691 | 0.4+ | 0.1+ | 2007 09 19 | 691 | 0.4- | 0.3+ |
| 1995 08 28 | 691 | 0.4- | 0.0  | 2006 05 05 | 699 | 0.8- | 1.5+ | 2007 09 19 | 691 | 0.2- | 0.1+ |
| 1995 08 28 | 691 | 0.2+ | 0.4- | 2006 05 05 | 699 | 0.1+ | 0.7+ | 2007 09 19 | 691 | 0.3- | 0.3- |
| 1998 03 22 | 691 | 0.2- | 0.6- | 2006 05 05 | 699 | 0.1+ | 0.3+ | 2007 10 15 | G96 | 0.3+ | 0.1- |
| 1998 03 22 | 691 | 0.2- | 0.3- | 2006 05 05 | 699 | 1.0- | 1.2- | 2007 10 15 | G96 | 0.4+ | 0.2- |
| 1998 03 22 | 691 | 0.5- | 0.5- | 2006 05 25 | 644 | 0.3+ | 0.3+ | 2007 10 15 | G96 | 0.5+ | 0.4- |
| 2002 04 05 | 644 | 1.0+ | 0.5+ | 2006 05 25 | 644 | 0.7+ | 0.1+ | 2007 10 15 | G96 | 0.5+ | 0.4- |
| 2002 04 05 | 644 | 1.1+ | 0.7+ | 2006 05 25 | 644 | 0.3+ | 0.1+ | 2007 11 12 | G96 | 0.8+ | 0.5- |
| 2002 04 05 | 644 | 0.8+ | 0.6+ | 2007 09 09 | 691 | 0.3- | 0.2+ | 2007 11 12 | G96 | 0.7+ | 0.3- |
| 2002 04 30 | 644 | 0.1+ | 0.2+ | 2007 09 09 | 691 | 0.4- | 1.3+ | 2007 11 12 | G96 | 0.7+ | 0.2+ |
| 2002 04 30 | 644 | 0.4- | 0.2- | 2007 09 09 | 691 | 0.7- | 0.4+ | 2007 11 12 | G96 | 1.3+ | 1.1+ |

**2007 RH<sub>253</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.84753    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24673630 | $\omega$ 237.21326 | +0.84270965   | -0.53828485 |
| <i>a</i> | 2.5175650  | $\Omega$ 155.34973 | +0.50123288   | +0.77803335 |
| <i>e</i> | 0.1720331  | <i>i</i> 1.30240   | +0.19648422   | +0.32390358 |
| <i>P</i> | 3.99       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 11 28 | 691 | 0.0  | 0.3- | 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.5+  | 0.2-  |
| 1999 11 28 | 691 | 0.2- | 0.1- | 2007 10 12 | 691 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.5+  | 0.2-  |
| 1999 11 28 | 691 | 0.2+ | 0.5- | 2007 10 12 | 691 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.4+  | 0.2-  |
| 2003 11 30 | 691 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.6+  | 0.2-  |
| 2003 11 30 | 691 | 0.1+ | 0.1+ | 2007 10 16 | 691 | 0.3- | 0.1+ | 2007 11 07 | 703 | (0.4+ | 1.6+) |
| 2003 11 30 | 691 | 0.1+ | 0.1+ | 2007 10 16 | 691 | 0.3- | 0.0  | 2007 11 07 | 703 | (1.9+ | 0.5+) |
| 2007 09 13 | G96 | 0.4+ | 0.0  | 2007 10 16 | 691 | 0.3- | 0.3- | 2007 11 07 | 703 | (2.4+ | 0.6+) |
| 2007 09 13 | G96 | 0.5+ | 0.2+ | 2007 10 20 | 691 | 0.1- | 0.2+ | 2007 11 07 | 703 | 1.4+  | 1.1+  |
| 2007 09 13 | G96 | 0.8+ | 0.5- | 2007 10 20 | 691 | 0.2- | 0.3+ | 2007 11 14 | 704 | 0.1-  | 0.4-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 13 | G96 | 0.1- | 0.4- | 2007 10 20 | 691 | 0.1- | 0.2+ | 2007 11 14 | 704 | 0.4+ | 0.7+ |
| 2007 09 18 | G96 | 0.2+ | 0.1- | 2007 10 20 | 691 | 0.4- | 0.0  | 2007 11 14 | 704 | 1.0+ | 0.7+ |
| 2007 09 18 | G96 | 0.3+ | 0.2- | 2007 10 20 | 691 | 0.1- | 0.2+ | 2007 11 14 | 704 | 0.9+ | 1.1+ |
| 2007 09 18 | G96 | 0.8+ | 0.4- | 2007 10 20 | 691 | 0.0  | 0.2+ | 2007 12 05 | 691 | 0.1+ | 0.0  |
| 2007 09 18 | G96 | 0.0  | 0.2- | 2007 11 03 | 691 | 0.3- | 0.2- | 2007 12 05 | 691 | 0.1+ | 0.5+ |
| 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 12 05 | 691 | 0.2- | 0.4- |
| 2007 10 08 | 691 | 0.1- | 0.1- | 2007 11 03 | 691 | 0.0  | 0.1- |            |     |      |      |

**2007 RK<sub>253</sub> = 2005 GS<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.65634  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22771683 | $\omega$ 236.91453 | +0.42590439   | -0.90469884 |
| <i>a</i> | 2.6558648  | $\Omega$ 187.90180 | +0.85489721   | +0.40645111 |
| <i>e</i> | 0.1398516  | <i>i</i> 4.67351   | +0.29623675   | +0.12773999 |
| <i>P</i> | 4.33       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 25 | 691 | 0.2+ | 0.2+ | 2007 09 18 | G96 | 0.0  | 0.3- | 2007 11 08 | G96 | 0.3+ | 0.6- |
| 1998 09 25 | 691 | 0.1+ | 0.0  | 2007 09 18 | G96 | 0.0  | 0.3- | 2007 11 08 | G96 | 0.3+ | 0.5- |
| 1998 09 25 | 691 | 0.4- | 0.0  | 2007 09 18 | G96 | 0.0  | 0.3- | 2007 11 12 | 704 | 0.5- | 0.3+ |
| 2001 05 24 | 691 | 0.0  | 0.1+ | 2007 09 18 | G96 | 0.3- | 0.2- | 2007 11 12 | 704 | 0.4+ | 1.3+ |
| 2001 05 24 | 691 | 0.3- | 0.1- | 2007 10 21 | 691 | 0.2- | 0.2- | 2007 11 12 | 704 | 0.3+ | 0.1+ |
| 2001 05 24 | 691 | 0.4+ | 0.5+ | 2007 10 21 | 691 | 0.5- | 0.0  | 2007 11 12 | 704 | 0.4+ | 0.8+ |
| 2005 04 04 | G96 | 0.1- | 0.3+ | 2007 10 21 | 691 | 0.5- | 0.3- | 2007 11 12 | 704 | 0.3+ | 0.1- |
| 2005 04 04 | G96 | 0.1- | 0.2+ | 2007 11 02 | D29 | 1.0+ | 0.5- | 2007 11 15 | 704 | 1.3- | 2.8+ |
| 2005 04 04 | G96 | 0.3+ | 0.1- | 2007 11 02 | D29 | 0.1+ | 0.0  | 2007 11 15 | 704 | 1.1+ | 1.4+ |
| 2005 04 04 | G96 | 0.0  | 0.1- | 2007 11 02 | D29 | 0.3+ | 0.3- | 2007 11 15 | 704 | 0.3+ | 0.3+ |
| 2005 04 17 | 691 | 0.3- | 0.0  | 2007 11 02 | D29 | 0.6+ | 0.4- | 2007 11 15 | 704 | 0.2+ | 0.0  |
| 2005 04 17 | 691 | 0.0  | 0.1+ | 2007 11 03 | 699 | 0.4+ | 0.1+ | 2007 11 15 | 704 | 0.4+ | 0.5+ |
| 2005 04 17 | 691 | 0.2+ | 0.0  | 2007 11 03 | 699 | 0.0  | 1.0- | 2007 11 15 | 704 | 1.4+ | 0.2- |
| 2007 09 13 | G96 | 0.3- | 0.2- | 2007 11 03 | 699 | 0.4- | 0.5- | 2007 11 15 | 704 | 0.9- | 1.1+ |
| 2007 09 13 | G96 | 0.1- | 0.1- | 2007 11 03 | 699 | 2.2- | 1.7+ | 2007 11 15 | 704 | 0.2+ | 0.3- |
| 2007 09 13 | G96 | 0.2+ | 0.2- | 2007 11 08 | G96 | 0.1+ | 0.4- | 2007 11 15 | 704 | 0.4+ | 0.1- |
| 2007 09 13 | G96 | 0.2- | 0.2- | 2007 11 08 | G96 | 0.3+ | 0.4- | 2007 11 15 | 704 | 1.0+ | 0.4- |

**2007 RP<sub>253</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.71682  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23441500 | $\omega$ 184.65422 | +0.99819861   | +0.04873754 |
| <i>a</i> | 2.6050283  | $\Omega$ 172.28685 | -0.04309636   | +0.98819622 |
| <i>e</i> | 0.2619963  | <i>i</i> 15.11113  | -0.04174016   | +0.14523391 |
| <i>P</i> | 4.20       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 599 | 0.2- | 0.3+ | 2007 09 05 | 703 | 0.2- | 0.6+ | 2007 09 19 | 691 | 0.1+ | 0.3+ |
| 2003 09 18 | 599 | 0.8+ | 0.6+ | 2007 09 05 | 703 | 0.6+ | 0.5- | 2007 09 19 | 691 | 0.3- | 0.0  |
| 2003 09 19 | 599 | 0.2- | 0.2- | 2007 09 05 | 703 | 1.3- | 0.9- | 2007 10 08 | G96 | 0.2- | 0.1- |
| 2003 09 19 | 599 | 0.2+ | 0.5+ | 2007 09 05 | 703 | 0.7+ | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.2+ |
| 2003 10 18 | 699 | 0.9+ | 0.6- | 2007 09 14 | 691 | 0.2- | 0.1- | 2007 10 08 | G96 | 0.1+ | 0.1+ |
| 2003 10 18 | 699 | 0.3+ | 1.0+ | 2007 09 14 | 691 | 0.1+ | 0.3- | 2007 10 08 | G96 | 0.1+ | 0.9+ |
| 2003 10 18 | 699 | 0.3- | 1.2- | 2007 09 14 | 691 | 0.1+ | 0.3- |            |     |      |      |
| 2003 10 18 | 699 | 1.3- | 0.3- | 2007 09 19 | 691 | 0.1+ | 0.2+ |            |     |      |      |

**2007 RP<sub>255</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.61088   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22357065 | $\omega$ 64.92917  | -0.15618795   | +0.98714793 |
| <i>a</i> | 2.6886000  | $\Omega$ 196.19331 | -0.94430189   | -0.15927678 |
| <i>e</i> | 0.0421005  | <i>i</i> 6.96701   | -0.28965369   | -0.01303367 |
| <i>P</i> | 4.41       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 04 | 691 | 0.1+ | 0.1- | 2007 08 23 | 691 | 0.2- | 0.3- | 2007 10 08 | G96 | 0.1- | 0.2- |
| 2006 05 04 | 691 | 0.1+ | 0.2- | 2007 08 23 | 691 | 0.1+ | 0.2- | 2007 10 08 | G96 | 0.8+ | 1.1+ |
| 2006 05 04 | 691 | 0.1+ | 0.4- | 2007 08 23 | 691 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.5+ | 0.4- |

## M.P.O. 129816

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 22 | 691 | 0.1+ | 0.1− | 2007 09 14 | 691 | 0.1− | 0.4− | 2007 10 08 | G96 | 0.8+ | 0.3− |
| 2006 05 22 | 691 | 0.0  | 0.4+ | 2007 09 14 | 691 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 0.4− | 0.0  |
| 2006 05 22 | 691 | 0.3+ | 0.0  | 2007 09 14 | 691 | 0.3− | 0.2+ | 2007 10 19 | G96 | 0.1− | 0.1+ |
| 2006 06 19 | 691 | 0.6− | 0.0  | 2007 09 19 | 691 | 0.3− | 0.2+ | 2007 10 19 | G96 | 0.4− | 0.1− |
| 2006 06 19 | 691 | 0.2− | 0.1− | 2007 09 19 | 691 | 0.5− | 0.2+ | 2007 10 19 | G96 | 0.0  | 0.1+ |
| 2006 06 19 | 691 | 0.1+ | 0.6+ | 2007 09 19 | 691 | 0.0  | 0.4− |            |     |      |      |

2007 RE<sub>256</sub>

|                                         |            |          |          |            |     |              |      |              |     |      |      |     |  |
|-----------------------------------------|------------|----------|----------|------------|-----|--------------|------|--------------|-----|------|------|-----|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |     |              |      |              |     |      |      | MPC |  |
| $M$                                     |            | 10.54963 |          | (2000.0)   |     | $\mathbf{P}$ |      | $\mathbf{Q}$ |     |      |      |     |  |
| $n$                                     | 0.23458374 |          | $\omega$ | 349.74613  |     | +0.98466255  |      | +0.17446930  |     |      |      |     |  |
| $a$                                     | 2.6037790  |          | $\Omega$ | 0.20713    |     | −0.15218353  |      | +0.85989360  |     |      |      |     |  |
| $e$                                     | 0.1545444  |          | $i$      | 5.72145    |     | −0.08532196  |      | +0.47973270  |     |      |      |     |  |
| $P$                                     | 4.20       |          | $H$      | 17.9       |     | $G$          | 0.15 |              | $U$ | 2    |      |     |  |
| Residuals in seconds of arc             |            |          |          |            |     |              |      |              |     |      |      |     |  |
| 2003 09 18                              | 691        | 0.3+     | 0.1−     | 2007 08 24 | 691 | 0.1+         | 0.1− | 2007 10 11   | G96 | 0.1+ | 0.1+ |     |  |
| 2003 09 18                              | 691        | 0.0      | 0.3−     | 2007 08 24 | 691 | 0.0          | 0.2+ | 2007 10 11   | G96 | 0.3+ | 0.2+ |     |  |
| 2003 09 18                              | 691        | 0.0      | 0.3−     | 2007 09 14 | 691 | 0.2−         | 0.3+ | 2007 10 19   | G96 | 0.3+ | 0.2− |     |  |
| 2003 09 28                              | 691        | 0.0      | 0.1+     | 2007 09 14 | 691 | 0.0          | 0.1+ | 2007 10 19   | G96 | 0.3− | 0.4− |     |  |
| 2003 09 28                              | 691        | 0.5+     | 0.1+     | 2007 09 14 | 691 | 0.1−         | 0.0  | 2007 10 19   | G96 | 0.3+ | 0.2− |     |  |
| 2003 09 28                              | 691        | 0.1+     | 0.0      | 2007 09 20 | 691 | 0.1−         | 0.4− | 2007 10 19   | G96 | 0.1− | 0.4− |     |  |
| 2003 10 18                              | 691        | 0.5−     | 0.2+     | 2007 09 20 | 691 | 0.1+         | 0.0  | 2007 12 06   | G96 | 0.1+ | 0.3− |     |  |
| 2003 10 18                              | 691        | 0.0      | 0.1+     | 2007 09 20 | 691 | 0.0          | 0.2− | 2007 12 06   | G96 | 0.3+ | 0.2− |     |  |
| 2003 10 18                              | 691        | 0.4−     | 0.2+     | 2007 10 11 | G96 | 0.0          | 0.2− | 2007 12 06   | G96 | 0.0  | 0.4− |     |  |
| 2007 08 24                              | 691        | 0.0      | 0.4+     | 2007 10 11 | G96 | 0.0          | 0.1+ | 2007 12 06   | G96 | 0.3+ | 0.3+ |     |  |

2007 RR<sub>257</sub>

|                                         |            |      |          |            |           |             |      |             |     |            |      |
|-----------------------------------------|------------|------|----------|------------|-----------|-------------|------|-------------|-----|------------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |           | MPC         |      |             |     |            |      |
| <i>M</i>                                | 63.35478   |      | (2000.0) |            |           | <b>P</b>    |      |             |     | <b>Q</b>   |      |
| <i>n</i>                                | 0.21845944 |      | $\omega$ |            | 105.95984 | −0.06058374 |      | +0.99648752 |     |            |      |
| <i>a</i>                                | 2.7303742  |      | $\Omega$ |            | 160.29128 | −0.96878716 |      | −0.04475418 |     |            |      |
| <i>e</i>                                | 0.2740234  |      | <i>i</i> |            | 9.87084   | −0.24037688 |      | −0.07077910 |     |            |      |
| <i>P</i>                                | 4.51       |      | <i>H</i> |            | 17.6      | <i>G</i>    |      | 0.15        |     | <i>U</i> 5 |      |
| Residuals in seconds of arc             |            |      |          |            |           |             |      |             |     |            |      |
| 2006 03 03                              | 691        | 0.2+ | 0.2+     | 2007 08 24 | 691       | 0.0         | 0.1− | 2007 09 20  | 691 | 0.3+       | 0.1+ |
| 2006 03 03                              | 691        | 0.0  | 0.0      | 2007 08 24 | 691       | 0.1−        | 0.2− | 2007 09 20  | 691 | 0.3−       | 0.6+ |
| 2006 03 03                              | 691        | 0.3+ | 0.1−     | 2007 08 24 | 691       | 0.1−        | 0.3+ | 2007 10 09  | G96 | 0.1+       | 0.1− |
| 2006 03 08                              | G96        | 1.4− | 0.1−     | 2007 09 14 | 691       | 0.0         | 0.2− | 2007 10 09  | G96 | 0.2−       | 0.1− |
| 2006 03 08                              | G96        | 0.0  | 0.3−     | 2007 09 14 | 691       | 0.0         | 0.0  | 2007 10 09  | G96 | 0.0        | 0.5− |
| 2006 03 08                              | G96        | 0.4+ | 0.2+     | 2007 09 14 | 691       | (0.6+ 2.4+) |      | 2007 10 09  | G96 | 0.3+       | 0.2+ |
| 2006 03 08                              | G96        | 0.7+ | 0.6+     | 2007 09 20 | 691       | 0.1− 0.6+   |      |             |     |            |      |

2007 RU<sub>257</sub>

|                                         |            |          |           |             |      |             |      |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      | MPC         |      |            |     |      |      |
| <i>M</i> 124.72558                      |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |      |            |     |      |      |
| <i>n</i>                                | 0.22619172 | <i>ω</i> | 77.62406  | −0.73311133 |      | +0.67733772 |      |            |     |      |      |
| <i>a</i>                                | 2.6677897  | <i>Ω</i> | 144.95708 | −0.65810192 |      | −0.68374529 |      |            |     |      |      |
| <i>e</i>                                | 0.1403773  | <i>i</i> | 6.13156   | −0.17160899 |      | −0.27148848 |      |            |     |      |      |
| <i>P</i>                                | 4.36       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 4    |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |             |      |            |     |      |      |
| 2003 10 19                              | 645        | 0.0      | 0.1+      | 2006 05 24  | 699  | 0.0         | 1.2+ | 2007 09 20 | 691 | 0.1− | 0.2− |
| 2003 10 19                              | 645        | 0.0      | 0.1−      | 2007 08 24  | 691  | 0.0         | 0.1+ | 2007 09 20 | 691 | 0.2+ | 0.2+ |
| 2003 10 22                              | 645        | 0.1−     | 0.1+      | 2007 08 24  | 691  | 0.1+        | 0.1+ | 2007 09 20 | 691 | 0.1+ | 0.2− |
| 2003 10 22                              | 645        | 0.0      | 0.1+      | 2007 08 24  | 691  | 0.9−        | 0.2+ | 2007 10 12 | 691 | 0.3+ | 0.3− |
| 2006 05 24                              | 699        | 0.3+     | 0.7−      | 2007 09 14  | 691  | 0.3+        | 0.1− | 2007 10 12 | 691 | 0.1+ | 0.0  |
| 2006 05 24                              | 699        | 0.3+     | 1.4−      | 2007 09 14  | 691  | 0.1+        | 0.1− | 2007 10 12 | 691 | 0.2− | 0.1+ |
| 2006 05 24                              | 699        | 0.6−     | 1.1+      | 2007 09 14  | 691  | 0.1+        | 0.1+ |            |     |      |      |

## 2007 DEC. 24

2007 RZ<sub>258</sub>

|                                         |            |      |      |            |           |             |      |            |             |      |      |
|-----------------------------------------|------------|------|------|------------|-----------|-------------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |            |           | MPC         |      |            |             |      |      |
| $M$                                     | 23.64348   |      |      | (2000.0)   |           | $P$         |      |            | $Q$         |      |      |
| $n$                                     | 0.26897919 |      |      | $\omega$   | 255.16210 | +0.90993046 |      |            | +0.39280141 |      |      |
| $a$                                     | 2.3767870  |      |      | $\Omega$   | 81.56522  | −0.30955511 |      |            | +0.85685824 |      |      |
| $e$                                     | 0.1457787  |      |      | $i$        | 7.73686   | −0.27604744 |      |            | +0.33391768 |      |      |
| $P$                                     | 3.66       |      |      | $H$        | 16.0      | $G$         | 0.15 |            | $U$         | 2    |      |
| Residuals in seconds of arc             |            |      |      |            |           |             |      |            |             |      |      |
| 2004 12 03                              | 691        | 0.1+ | 0.1+ | 2007 09 14 | 703       | 0.2+        | 0.2+ | 2007 10 11 | 699         | 0.4+ | 0.0  |
| 2004 12 03                              | 691        | 0.0  | 0.1− | 2007 09 14 | 703       | 0.0         | 0.1− | 2007 10 11 | 699         | 0.4+ | 0.1+ |
| 2004 12 03                              | 691        | 0.4+ | 0.1− | 2007 09 14 | 703       | 0.0         | 0.1+ | 2007 10 11 | 699         | 0.4+ | 0.4− |
| 2004 12 16                              | 691        | 0.1− | 0.2+ | 2007 09 14 | 703       | 0.5+        | 0.4− | 2007 10 11 | 699         | 0.7+ | 0.2− |
| 2004 12 16                              | 691        | 0.0  | 0.1− | 2007 09 21 | 691       | 0.5−        | 0.1− | 2007 10 18 | 703         | 1.0+ | 0.1+ |
| 2004 12 16                              | 691        | 0.3− | 0.2+ | 2007 09 21 | 691       | 0.8−        | 0.1− | 2007 10 18 | 703         | 0.6+ | 1.4− |
| 2006 04 09                              | G96        | 0.3+ | 0.2+ | 2007 09 21 | 691       | 0.4−        | 0.0  | 2007 10 18 | 703         | 0.5+ | 0.6+ |
| 2006 04 09                              | G96        | 0.2+ | 0.3+ | 2007 10 02 | E12       | 0.3+        | 0.0  | 2007 10 18 | 703         | 0.0  | 0.8− |
| 2006 04 09                              | G96        | 0.1+ | 0.0  | 2007 10 02 | E12       | 0.0         | 0.3+ | 2007 12 05 | 704         | 0.1− | 0.5− |
| 2006 04 09                              | G96        | 0.2− | 0.3+ | 2007 10 02 | E12       | 0.4+        | 0.4+ | 2007 12 05 | 704         | 0.6− | 0.1+ |
| 2007 09 05                              | 703        | 0.7+ | 1.2+ | 2007 10 11 | 703       | 0.5+        | 0.1− | 2007 12 05 | 704         | 0.6+ | 0.7+ |
| 2007 09 05                              | 703        | 0.0  | 0.4+ | 2007 10 11 | 703       | 0.1−        | 0.2+ | 2007 12 05 | 704         | 0.1− | 0.4+ |
| 2007 09 05                              | 703        | 0.7− | 0.0  | 2007 10 11 | 703       | 0.4+        | 0.6+ |            |             |      |      |
| 2007 09 05                              | 703        | 0.3+ | 0.5+ | 2007 10 11 | 703       | 0.4+        | 0.2− |            |             |      |      |

2007 RM<sub>262</sub>

|                                         |            |          |          |            |     |             |      |            |             |      |      |
|-----------------------------------------|------------|----------|----------|------------|-----|-------------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |     | MPC         |      |            |             |      |      |
| $M$                                     |            | 21.63011 |          | (2000.0)   |     | $P$         |      |            | $Q$         |      |      |
| $n$                                     | 0.26271951 |          | $\omega$ | 128.50440  |     | +0.77238429 |      |            | +0.63482648 |      |      |
| $a$                                     | 2.4143923  |          | $\Omega$ | 192.13446  |     | −0.60881683 |      |            | +0.73079965 |      |      |
| $e$                                     | 0.1429568  |          | $i$      | 5.58055    |     | −0.18100989 |      |            | +0.25085297 |      |      |
| $P$                                     | 3.75       |          | $H$      | 17.6       |     | $G$         | 0.15 |            | $U$         | 2    |      |
| Residuals in seconds of arc             |            |          |          |            |     |             |      |            |             |      |      |
| 2000 10 29                              | 691        | 0.0      | 0.0      | 2007 08 13 | D29 | 0.3+        | 0.2− | 2007 10 12 | G96         | 0.2+ | 0.2− |
| 2000 10 29                              | 691        | 0.2+     | 0.0      | 2007 08 13 | D29 | 0.3+        | 0.5− | 2007 10 12 | G96         | 0.1+ | 0.1− |
| 2000 10 29                              | 691        | 0.3−     | 0.1+     | 2007 08 13 | D29 | 0.0         | 0.3− | 2007 10 12 | G96         | 0.0  | 0.2− |
| 2002 03 05                              | 645        | 0.1−     | 0.0      | 2007 09 15 | 691 | 0.1−        | 0.2+ | 2007 10 12 | G96         | 0.1− | 0.1+ |
| 2002 03 05                              | 645        | 0.1+     | 0.0      | 2007 09 15 | 691 | 0.0         | 0.4+ | 2007 10 18 | G96         | 0.8+ | 0.3+ |
| 2006 02 25                              | 691        | 0.0      | 0.4−     | 2007 09 15 | 691 | 0.4−        | 0.0  | 2007 10 18 | G96         | 0.4+ | 0.1− |
| 2006 02 25                              | 691        | 0.1+     | 0.9+     | 2007 09 20 | 691 | 0.0         | 0.1+ | 2007 10 18 | G96         | 0.0  | 0.3+ |
| 2006 02 25                              | 691        | 0.1+     | 0.5+     | 2007 09 20 | 691 | 0.0         | 0.4+ | 2007 10 18 | G96         | 0.3− | 0.0  |
| 2007 08 13                              | D29        | 0.1+     | 0.3−     | 2007 09 20 | 691 | 0.1−        | 0.0  |            |             |      |      |

2007 DEC. 24

M.P.O. 129817

**2007 RG<sub>266</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 97.27154   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17906976 | $\omega$ 101.43635 | -0.05888163   | +0.99647048 |
| <i>a</i> | 3.1173667  | $\Omega$ 164.79883 | -0.98157021   | -0.04687775 |
| <i>e</i> | 0.0354001  | <i>i</i> 13.18960  | -0.18180451   | -0.06963523 |
| <i>P</i> | 5.50       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 31 | 645 | 0.2+ | 0.1- | 2005 04 04 | 703 | 0.4+  | 0.5+  | 2007 09 15 | 699 | 0.7- | 0.8+ |
| 2002 10 31 | 645 | 0.2+ | 0.1- | 2005 04 04 | 703 | (3.2- | 1.0-) | 2007 09 19 | 691 | 0.2- | 0.3- |
| 2002 11 02 | 608 | 0.5- | 0.2- | 2007 09 11 | D29 | 0.4+  | 0.7-  | 2007 09 19 | 691 | 0.1- | 0.2- |
| 2002 11 02 | 608 | 0.1+ | 0.5+ | 2007 09 11 | D29 | 0.0   | 0.4-  | 2007 09 19 | 691 | 0.1+ | 0.5- |
| 2002 11 02 | 608 | 0.3- | 0.0  | 2007 09 11 | D29 | 0.2+  | 0.3-  | 2007 10 09 | G96 | 0.6+ | 0.6- |
| 2002 11 07 | 645 | 0.2+ | 0.2- | 2007 09 11 | D29 | 0.3+  | 0.2+  | 2007 10 09 | G96 | 0.4+ | 0.4- |
| 2002 11 07 | 645 | 0.2+ | 0.2- | 2007 09 11 | D29 | 0.3+  | 0.2-  | 2007 10 09 | G96 | 0.3- | 0.8- |
| 2005 03 18 | 703 | 0.7- | 1.0+ | 2007 09 11 | D29 | 0.5+  | 0.4+  | 2007 10 13 | 703 | 0.0  | 1.3+ |
| 2005 03 18 | 703 | 0.2- | 0.7- | 2007 09 11 | D29 | 0.3-  | 0.5-  | 2007 10 13 | 703 | 0.5- | 0.3- |
| 2005 03 18 | 703 | 0.2+ | 0.5+ | 2007 09 11 | D29 | 0.0   | 0.3-  | 2007 10 15 | 703 | 0.6- | 1.9+ |
| 2005 03 18 | 703 | 0.4- | 0.3+ | 2007 09 15 | 699 | 0.8-  | 1.5+  | 2007 10 15 | 703 | 0.1+ | 0.1+ |
| 2005 04 04 | 703 | 1.0+ | 0.7- | 2007 09 15 | 699 | 0.7-  | 0.6-  | 2007 10 15 | 703 | 0.1+ | 0.4- |
| 2005 04 04 | 703 | 0.3- | 1.2- | 2007 09 15 | 699 | 0.7+  | 0.3+  | 2007 10 15 | 703 | 0.7+ | 0.0  |

**2007 RS<sub>267</sub> = 2007 TR<sub>289</sub> = 2004 FC<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.05438  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17787729 | $\omega$ 248.67742 | +0.53589031   | -0.84356933 |
| <i>a</i> | 3.1312834  | $\Omega$ 168.72055 | +0.82549348   | +0.51486225 |
| <i>e</i> | 0.2257710  | <i>i</i> 10.25423  | +0.17714993   | +0.15266841 |
| <i>P</i> | 5.54       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 17 | 691 | 0.1+ | 0.1- | 2007 09 15 | G96 | 0.2- | 0.3- | 2007 10 12 | 703 | 0.4+ | 0.3- |
| 2004 03 17 | 691 | 0.1- | 0.2+ | 2007 09 15 | 691 | 0.4- | 0.1- | 2007 10 12 | 703 | 0.0  | 0.5+ |
| 2004 03 17 | 691 | 0.1+ | 0.1- | 2007 09 15 | 691 | 0.2- | 0.1- | 2007 10 15 | 699 | 0.4- | 0.4- |
| 2004 03 23 | 691 | 0.2- | 0.1+ | 2007 09 19 | 691 | 0.8- | 0.1- | 2007 10 15 | 699 | 0.5- | 0.5+ |
| 2004 03 23 | 691 | 0.1- | 0.0  | 2007 09 19 | 691 | 0.4- | 0.1- | 2007 10 15 | 699 | 0.7- | 0.4- |
| 2004 03 23 | 691 | 0.1+ | 0.0  | 2007 09 19 | 691 | 0.0  | 0.1- | 2007 10 15 | 703 | 0.4- | 0.7- |
| 2007 09 15 | G96 | 0.5+ | 0.3- | 2007 10 04 | 703 | 1.0+ | 0.9+ | 2007 10 15 | 699 | 0.5+ | 1.0- |
| 2007 09 15 | G96 | 0.2+ | 0.1+ | 2007 10 04 | 703 | 0.3+ | 0.7+ | 2007 10 15 | 703 | 0.1- | 0.2+ |
| 2007 09 15 | G96 | 0.1+ | 0.1- | 2007 10 04 | 703 | 0.1+ | 0.4+ | 2007 10 15 | 703 | 0.4+ | 0.0  |
| 2007 09 15 | 691 | 0.3- | 0.2+ | 2007 10 04 | 703 | 1.1+ | 0.5+ | 2007 10 15 | 703 | 0.3- | 0.1+ |

**2007 RC<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.38765   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18066764 | $\omega$ 111.59476 | +0.94096570   | +0.28555234 |
| <i>a</i> | 3.0989589  | $\Omega$ 232.27864 | -0.32586799   | +0.90949366 |
| <i>e</i> | 0.2809055  | <i>i</i> 13.28587  | +0.09161659   | +0.30212770 |
| <i>P</i> | 5.46       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 06 04 | 691 | 0.0   | 0.3-  | 2007 09 18 | 291 | (2.0- | 0.0 ) | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2000 06 04 | 691 | 0.1-  | 0.8+  | 2007 09 18 | 291 | 0.6-  | 0.1-  | 2007 11 07 | 691 | 1.2- | 0.7+ |
| 2000 06 04 | 691 | 0.1+  | 0.2+  | 2007 09 18 | 291 | 0.5-  | 0.3-  | 2007 11 12 | 704 | 0.7+ | 1.0- |
| 2001 07 22 | 699 | (0.7+ | 2.2-) | 2007 09 18 | G96 | 0.0   | 0.3-  | 2007 11 12 | 704 | 0.5+ | 0.3- |
| 2001 07 22 | 699 | 0.2-  | 1.0-  | 2007 09 18 | G96 | 0.4+  | 0.0   | 2007 11 12 | 704 | 0.1+ | 0.7- |
| 2001 07 22 | 699 | 0.7+  | 0.1+  | 2007 09 18 | G96 | 0.7+  | 0.0   | 2007 11 12 | 704 | 0.7- | 0.1- |
| 2001 07 22 | 699 | 1.0-  | 0.1+  | 2007 09 18 | G96 | 0.4+  | 0.3-  | 2007 11 12 | 704 | 0.7+ | 1.0- |
| 2001 09 09 | 699 | 0.6-  | 0.6+  | 2007 10 20 | G96 | 0.4+  | 0.2-  | 2007 11 19 | 691 | 0.1- | 0.3+ |
| 2001 09 09 | 699 | 0.1-  | 0.7+  | 2007 10 20 | G96 | 0.1+  | 0.3-  | 2007 11 19 | 691 | 0.4+ | 0.4+ |
| 2001 09 09 | 699 | 0.3+  | 0.3+  | 2007 10 20 | G96 | 0.3+  | 0.2-  | 2007 11 19 | 691 | 0.2+ | 0.2+ |
| 2001 09 09 | 699 | 0.5+  | 0.4+  | 2007 10 20 | G96 | 0.6+  | 0.4-  | 2007 12 04 | 704 | 0.8+ | 0.3+ |
| 2001 09 29 | 644 | 0.1-  | 0.0   | 2007 10 30 | 691 | 0.1+  | 0.2+  | 2007 12 04 | 704 | 1.0+ | 0.0  |
| 2001 09 29 | 644 | 0.1+  | 0.1-  | 2007 10 30 | 691 | 0.2+  | 0.1+  | 2007 12 04 | 704 | 0.6- | 0.6- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 29 | 644 | 0.0  | 0.1- | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 12 04 | 704 | 0.5+ | 0.1- |
| 2007 09 15 | G96 | 0.3+ | 0.3- | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 12 05 | 699 | 0.7+ | 0.5+ |
| 2007 09 15 | G96 | 0.3+ | 0.3- | 2007 11 03 | 691 | 0.1- | 0.5+ | 2007 12 05 | 699 | 0.1+ | 0.1- |
| 2007 09 15 | G96 | 0.3+ | 0.3- | 2007 11 03 | 691 | 0.1- | 0.0  | 2007 12 05 | 699 | 0.4- | 1.0- |
| 2007 09 15 | G96 | 0.5+ | 0.4- | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 05 | 699 | 0.4- | 0.3+ |

**2007 RM<sub>270</sub> = 2004 BM<sub>78</sub> = 2005 GO<sub>169</sub> = 2006 PN<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.59651   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21384406 | $\omega$ 305.28827 | +0.99366686   | -0.11059914 |
| <i>a</i> | 2.7695205  | $\Omega$ 61.06908  | +0.10904908   | +0.90656253 |
| <i>e</i> | 0.0855216  | <i>i</i> 1.29957   | +0.02710105   | +0.40732323 |
| <i>P</i> | 4.61       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 10 | 644 | 0.7- | 0.7+ | 2005 05 11 | G96 | 0.0  | 0.1- | 2007 09 18 | G96 | 0.1-  | 0.2+  |
| 2002 10 10 | 644 | 0.7- | 0.9+ | 2005 05 11 | G96 | 0.4- | 0.4- | 2007 09 18 | G96 | 0.2+  | 0.4+  |
| 2002 10 10 | 644 | 0.3- | 0.8+ | 2006 08 14 | 644 | 0.1- | 0.1+ | 2007 12 03 | 703 | (1.0- | 2.0+) |
| 2004 01 22 | 704 | 0.5- | 0.3+ | 2006 08 14 | 644 | 0.3+ | 0.4+ | 2007 12 03 | 703 | 0.7-  | 0.2+  |
| 2004 01 22 | 704 | 0.5- | 0.3+ | 2006 08 14 | 644 | 0.0  | 0.0  | 2007 12 03 | 703 | (1.8- | 1.7+) |
| 2004 01 22 | 704 | 0.6- | 0.0  | 2006 08 20 | 644 | 0.3+ | 0.3+ | 2007 12 03 | 703 | 0.1+  | 0.1-  |
| 2004 01 22 | 704 | 0.8- | 0.6+ | 2006 08 20 | 644 | 0.2+ | 0.0  | 2007 12 04 | 703 | 0.6+  | 1.2-  |
| 2004 01 28 | 691 | 0.8+ | 0.2- | 2006 08 20 | 644 | 0.3+ | 0.3+ | 2007 12 04 | 703 | 0.8-  | 0.6-  |
| 2004 01 28 | 691 | 0.1+ | 0.3+ | 2007 09 15 | G96 | 0.1- | 0.2+ | 2007 12 04 | G96 | 0.0   | 0.1-  |
| 2004 01 28 | 691 | 0.2+ | 0.2+ | 2007 09 15 | G96 | 0.1+ | 0.2- | 2007 12 04 | 703 | 0.7-  | 0.0   |
| 2005 04 12 | 691 | 0.2- | 0.5+ | 2007 09 15 | G96 | 0.3- | 0.3- | 2007 12 04 | G96 | 0.2+  | 0.3+  |
| 2005 04 12 | 691 | 0.1- | 0.0  | 2007 09 15 | G96 | 0.1+ | 0.5+ | 2007 12 04 | 703 | 1.2-  | 0.8-  |
| 2005 04 12 | 691 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.1+ | 0.5+ | 2007 12 04 | G96 | 0.1-  | 0.1+  |
| 2005 04 17 | 691 | 0.3- | 0.0  | 2007 09 18 | G96 | 0.4+ | 0.5+ | 2007 12 04 | G96 | 0.5-  | 0.1+  |
| 2005 04 17 | 691 | 0.3+ | 0.2+ | 2007 09 18 | G96 | 0.5+ | 0.2- | 2007 12 14 | 704 | 0.8+  | 0.6-  |
| 2005 04 17 | 691 | 0.0  | 0.1+ | 2007 09 18 | G96 | 0.1- | 0.0  | 2007 12 14 | 704 | 0.7+  | 0.1+  |
| 2005 05 11 | G96 | 0.2+ | 0.3- | 2007 09 18 | G96 | 0.6- | 0.1- | 2007 12 14 | 704 | 0.8+  | 0.2+  |
| 2005 05 11 | G96 | 0.4+ | 0.5- | 2007 09 18 | G96 | 0.4+ | 0.6+ | 2007 12 14 | 704 | 0.3+  | 0.6-  |

**2007 RM<sub>271</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 131.73558  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21406380 | $\omega$ 51.24327  | +0.24861427   | +0.94322029 |
| <i>a</i> | 2.7676249  | $\Omega$ 234.55669 | -0.95123678   | +0.19488641 |
| <i>e</i> | 0.0814479  | <i>i</i> 15.68771  | -0.18259115   | +0.26898843 |
| <i>P</i> | 4.60       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 14 | 703 | 0.0  | 0.6+ | 2006 10 02 | G96 | 0.4- | 0.6- | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2005 04 14 | 703 | 0.4- | 1.7+ | 2006 10 02 | G96 | 0.0  | 0.6- | 2007 10 30 | 691 | 0.1+ | 0.0  |
| 2005 04 14 | 703 | 0.1+ | 0.5+ | 2006 10 02 | G96 | 0.0  | 0.6- | 2007 10 30 | 691 | 0.1- | 0.1+ |
| 2005 04 14 | 703 | 0.6+ | 0.6+ | 2006 10 02 | G96 | 0.2- | 0.5- | 2007 10 30 | 691 | 1.1- | 0.6- |
| 2006 08 13 | 644 | 0.1- | 0.0  | 2007 09 15 | G96 | 0.4+ | 0.2- | 2007 11 03 | 691 | 0.4+ | 0.0  |
| 2006 08 13 | 644 | 0.2+ | 0.0  | 2007 09 15 | G96 | 0.1- | 0.2- | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2006 08 13 | 644 | 0.2+ | 0.2+ | 2007 09 15 | G96 | 0.3+ | 0.2- | 2007 11 03 | 691 | 0.5+ | 0.1+ |
| 2006 08 28 | 691 | 0.0  | 0.2+ | 2007 09 15 | G96 | 0.5+ | 0.2- | 2007 11 07 | 691 | 0.1+ | 0.0  |
| 2006 08 28 | 691 | 0.1+ | 0.3+ | 2007 09 18 | 291 | 0.9- | 0.1- | 2007 11 07 | 691 | 0.4- | 0.2+ |
| 2006 08 28 | 691 | 0.1+ | 0.3+ | 2007 09 18 | 291 | 0.4- | 0.3+ | 2007 11 07 | 691 | 0.1+ | 0.0  |
| 2006 09 11 | 703 | 0.4- | 0.9+ | 2007 09 18 | 291 | 0.7- | 0.1- | 2007 11 12 | 704 | 0.6+ | 0.9- |
| 2006 09 11 | 703 | 1.1+ | 2.8+ | 2007 09 18 | G96 | 0.4+ | 0.2+ | 2007 11 12 | 704 | 1.0+ | 1.0+ |
| 2006 09 11 | 703 | 0.7- | 1.4- | 2007 09 18 | G96 | 0.3- | 0.1+ | 2007 11 12 | 704 | 0.9+ | 0.1+ |
| 2006 09 11 | 703 | 0.0  | 1.1+ | 2007 09 18 | G96 | 0.1- | 0.0  | 2007 12 04 | 704 | 0.6+ | 0.5+ |
| 2006 09 27 | 703 | 1.0- | 0.6- | 2007 09 18 | G96 | 0.2+ | 0.3- | 2007 12 04 | 704 | 0.1+ | 0.3+ |
| 2006 09 27 | 703 | 0.5- | 0.5- | 2007 10 20 | G96 | 0.2+ | 0.1+ | 2007 12 04 | 704 | 0.3+ | 0.4+ |
| 2006 09 27 | 703 | 0.1+ | 0.5- | 2007 10 20 | G96 | 0.4+ | 0.0  | 2007 12 04 | 704 | 0.8+ | 1.0+ |
| 2006 09 27 | 703 | 0.2+ | 1.0- | 2007 10 20 | G96 | 0.6+ | 0.1- | 2007 12 04 | 704 | 0.9+ | 0.7+ |

**2007 RQ<sub>271</sub> = 2005 GS<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.90082    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24172137 | $\omega$ | 9.76772  | +0.60858088   | -0.79178751 |
| <i>a</i> | 2.5522665  | $\Omega$ | 42.76972 | +0.72275130   | +0.52609730 |
| <i>e</i> | 0.1473612  | <i>i</i> | 4.39010  | +0.32750554   | +0.31031302 |
| <i>P</i> | 4.08       | <i>H</i> | 16.8     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 691 | 0.1+ | 0.0  | 2005 04 10 | 691 | 0.2+ | 0.1- | 2007 09 18 | G96 | 0.3+ | 0.0  |
| 2003 11 24 | 691 | 0.3+ | 0.5- | 2005 04 10 | 691 | 0.1+ | 0.2- | 2007 12 10 | J75 | 0.5- | 0.7+ |
| 2003 11 24 | 691 | 0.1- | 0.2+ | 2005 04 10 | 691 | 0.1- | 0.2+ | 2007 12 10 | J75 | 0.0  | 0.8+ |
| 2004 01 19 | 691 | 0.1- | 0.0  | 2005 04 11 | 691 | 0.2+ | 0.1- | 2007 12 10 | J75 | 0.5+ | 0.8+ |
| 2004 01 19 | 691 | 0.3- | 0.2- | 2005 04 11 | 691 | 0.2- | 0.1+ | 2007 12 11 | 620 | 0.1- | 0.4+ |
| 2004 01 19 | 691 | 0.1+ | 0.2- | 2005 04 11 | 691 | 0.6+ | 0.1+ | 2007 12 11 | 620 | 0.3+ | 0.5+ |
| 2005 04 05 | G96 | 0.2- | 1.3- | 2007 09 15 | G96 | 0.1- | 0.2+ | 2007 12 11 | 620 | 0.8- | 0.8+ |
| 2005 04 05 | G96 | 0.5- | 0.4- | 2007 09 15 | G96 | 0.0  | 0.2+ | 2007 12 11 | 620 | 0.3- | 0.1+ |
| 2005 04 05 | G96 | 0.3- | 0.2- | 2007 09 15 | G96 | 0.3- | 0.6- | 2007 12 15 | 704 | 0.3+ | 0.1- |
| 2005 04 05 | G96 | 0.4+ | 0.3+ | 2007 09 15 | G96 | 0.2+ | 0.1- | 2007 12 15 | 704 | 0.2+ | 0.3- |
| 2005 04 09 | 691 | 1.1- | 1.4+ | 2007 09 18 | G96 | 0.0  | 0.2- | 2007 12 15 | 704 | 0.0  | 0.7- |
| 2005 04 09 | 691 | 0.3+ | 0.3- | 2007 09 18 | G96 | 0.1- | 0.1+ | 2007 12 15 | 704 | 0.0  | 0.1- |
| 2005 04 09 | 691 | 0.3+ | 0.6- | 2007 09 18 | G96 | 0.1- | 0.0  |            |     |      |      |

**2007 RT<sub>271</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 338.88132  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24151833 | $\omega$ | 40.29260 | -0.03454008   | -0.99282633 |
| <i>a</i> | 2.5536967  | $\Omega$ | 51.99671 | +0.87550601   | -0.08529501 |
| <i>e</i> | 0.1524999  | <i>i</i> | 8.35280  | +0.48197118   | +0.08378922 |
| <i>P</i> | 4.08       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 691 | 0.1+ | 1.0- | 2007 09 18 | G96 | 0.1+ | 0.1+ | 2007 11 20 | 704 | 1.4+ | 0.3+ |
| 2003 11 24 | 691 | 0.1- | 0.0  | 2007 09 18 | G96 | 0.2- | 0.2+ | 2007 11 20 | 704 | 0.6+ | 0.1+ |
| 2003 11 24 | 691 | 0.0  | 0.2- | 2007 09 18 | G96 | 0.0  | 0.3+ | 2007 12 13 | 704 | 0.0  | 0.3+ |
| 2005 04 17 | 691 | 0.2+ | 0.3+ | 2007 09 18 | G96 | 0.5- | 0.3+ | 2007 12 13 | 704 | 0.4+ | 0.0  |
| 2005 04 17 | 691 | 0.1+ | 0.2+ | 2007 11 01 | 691 | 0.6- | 0.7+ | 2007 12 13 | 704 | 0.1+ | 0.3+ |
| 2005 04 17 | 691 | 0.3+ | 0.3+ | 2007 11 01 | 691 | 0.4- | 0.1+ | 2007 12 13 | 704 | 0.0  | 0.2+ |
| 2005 05 03 | 691 | 0.1- | 0.3+ | 2007 11 01 | 691 | 0.6- | 0.4+ | 2007 12 13 | 704 | 0.8+ | 0.2+ |
| 2005 05 03 | 691 | 0.1- | 0.1- | 2007 11 18 | 704 | 0.0  | 1.1+ | 2007 12 15 | 704 | 0.5- | 0.2+ |
| 2005 05 03 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.7+ | 0.1+ | 2007 12 15 | 704 | 0.4- | 0.3- |
| 2007 09 15 | G96 | 0.1+ | 0.1+ | 2007 11 18 | 704 | 0.8- | 0.6- | 2007 12 15 | 704 | 0.1+ | 0.1+ |
| 2007 09 15 | G96 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.9+ | 0.3+ | 2007 12 15 | 704 | 0.1+ | 0.1+ |
| 2007 09 15 | G96 | 0.0  | 0.1+ | 2007 11 20 | 704 | 0.5+ | 0.2+ | 2007 12 15 | 704 | 0.3- | 0.6- |
| 2007 09 15 | G96 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.9+ | 0.8+ |            |     |      |      |

**2007 RX<sub>277</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.07789   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22658121 | $\omega$ | 182.62157 | +0.71554281   | +0.66932597 |
| <i>a</i> | 2.6647315  | $\Omega$ | 133.17112 | -0.63583168   | +0.74260121 |
| <i>e</i> | 0.2970092  | <i>i</i> | 15.91641  | -0.28933816   | +0.02337063 |
| <i>P</i> | 4.35       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 09 | 291 | 0.2- | 0.2+ | 2006 04 02 | 703 | (3.1- | 0.3-) | 2007 10 05 | E12 | 0.2+ | 0.0  |
| 2002 03 09 | 291 | 0.3- | 0.3+ | 2006 04 02 | 703 | 1.2+  | 0.7-  | 2007 10 05 | E12 | 0.2+ | 0.0  |
| 2002 03 09 | 291 | 0.6- | 0.5+ | 2007 09 05 | 703 | 0.7-  | 0.2-  | 2007 10 06 | E12 | 0.0  | 0.3- |
| 2002 04 21 | 644 | 0.4+ | 0.4+ | 2007 09 05 | 703 | 0.6-  | 0.5-  | 2007 10 06 | E12 | 0.1- | 0.2- |
| 2002 04 21 | 644 | 0.5+ | 0.1+ | 2007 09 05 | 703 | 0.5-  | 0.5+  | 2007 10 06 | E12 | 0.6+ | 0.3- |
| 2002 04 21 | 644 | 0.3+ | 0.3+ | 2007 09 05 | 703 | 0.8-  | 0.3+  | 2007 10 06 | E12 | 0.1+ | 0.3- |
| 2005 03 04 | G96 | 0.0  | 0.5+ | 2007 09 14 | 703 | 0.9+  | 1.5+  | 2007 10 12 | 703 | 0.1- | 0.2- |
| 2005 03 04 | G96 | 0.1+ | 0.1+ | 2007 09 14 | 703 | 0.3-  | 1.0+  | 2007 10 12 | 703 | 0.6- | 0.2- |
| 2005 03 04 | G96 | 0.3+ | 0.2+ | 2007 09 14 | 703 | 1.5+  | 0.7+  | 2007 10 12 | 703 | 0.5- | 0.2- |
| 2005 03 04 | G96 | 0.1- | 1.1+ | 2007 09 14 | 703 | 1.4+  | 0.0   | 2007 10 12 | 703 | 0.6- | 0.0  |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2006 04 02 | 703 | 0.5- | 1.3+ | 2007 10 05 | E12 | 0.2- | 0.1- |
| 2006 04 02 | 703 | 0.7- | 0.5- | 2007 10 05 | E12 | 0.6- | 0.2+ |

**2007 RY<sub>277</sub> = 2007 TQ<sub>288</sub> = 2000 WQ<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.08132   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27003710 | $\omega$ | 244.06854 | +0.62961595   | +0.75707792 |
| <i>a</i> | 2.3705753  | $\Omega$ | 66.07595  | -0.62694252   | +0.62769386 |
| <i>e</i> | 0.2534578  | <i>i</i> | 10.99928  | -0.45883204   | +0.18120000 |
| <i>P</i> | 3.65       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.3- | 0.5- | 2007 09 05 | 703 | 0.0  | 0.6+ | 2007 10 11 | 703 | 0.3- | 0.3+ |
| 2000 11 21 | 704 | 0.2+ | 0.2- | 2007 09 14 | 703 | 0.0  | 0.7- | 2007 10 11 | 703 | 0.6- | 0.1+ |
| 2000 11 21 | 704 | 0.2- | 0.3+ | 2007 09 14 | 703 | 0.1- | 0.2- | 2007 10 15 | 699 | 0.7+ | 0.0  |
| 2000 11 27 | 704 | 0.1+ | 0.2- | 2007 09 14 | 703 | 0.4+ | 0.6+ | 2007 10 15 | 699 | 0.1+ | 0.3- |
| 2000 11 27 | 704 | 0.3- | 0.1- | 2007 09 14 | 703 | 0.7+ | 0.3+ | 2007 10 15 | 699 | 0.4- | 0.6- |
| 2000 11 27 | 704 | 0.0  | 0.7+ | 2007 10 02 | E12 | 0.2- | 0.2- | 2007 10 18 | 703 | 0.2- | 0.1+ |
| 2000 11 27 | 704 | 0.3+ | 0.2+ | 2007 10 02 | E12 | 0.9+ | 0.1- | 2007 10 18 | 703 | 0.3+ | 0.3+ |
| 2000 11 27 | 704 | 0.1+ | 0.1- | 2007 10 02 | E12 | 0.0  | 0.5- | 2007 10 18 | 703 | 0.2- | 0.4+ |
| 2007 09 05 | 703 | 0.0  | 0.4+ | 2007 10 02 | E12 | 0.3+ | 0.8- | 2007 10 18 | 703 | 0.7- | 0.2- |
| 2007 09 05 | 703 | 0.3+ | 0.1+ | 2007 10 11 | 703 | 0.1- | 0.4+ |            |     |      |      |
| 2007 09 05 | 703 | 1.0- | 0.5- | 2007 10 11 | 703 | 0.1+ | 0.6+ |            |     |      |      |

**2007 RA<sub>278</sub> = 2007 TR<sub>288</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.98016   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26289987 | $\omega$ | 298.90774 | +0.95960317   | +0.19822235 |
| <i>a</i> | 2.4132879  | $\Omega$ | 50.40204  | -0.06246971   | +0.84207390 |
| <i>e</i> | 0.1706779  | <i>i</i> | 15.01882  | -0.27433426   | +0.50161683 |
| <i>P</i> | 3.75       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 26 | 703 | 0.1+  | 0.1-  | 2007 09 14 | 703 | 0.9+ | 1.1+ | 2007 10 15 | G96 | 0.3+ | 0.3- |
| 2006 05 26 | 703 | 0.0   | 0.0   | 2007 09 14 | 703 | 1.0+ | 0.7+ | 2007 10 15 | G96 | 0.1+ | 0.7- |
| 2006 05 26 | 703 | (0.8- | 2.5-) | 2007 10 11 | 703 | 0.3- | 0.3+ | 2007 10 15 | G96 | 0.2+ | 0.3- |
| 2006 05 26 | 703 | 1.8+  | 0.8-  | 2007 10 11 | 703 | 0.5- | 0.1- | 2007 10 18 | 703 | 1.1- | 0.3- |
| 2006 05 30 | G96 | 0.2-  | 0.4+  | 2007 10 11 | 703 | 0.1- | 0.1+ | 2007 10 18 | 703 | 0.1- | 0.2- |
| 2006 05 30 | G96 | 0.4-  | 0.6+  | 2007 10 11 | 703 | 0.7- | 0.1+ | 2007 10 18 | 703 | 0.8+ | 0.3- |
| 2006 05 30 | G96 | 0.6-  | 0.4+  | 2007 10 14 | G96 | 0.2+ | 0.2- | 2007 10 18 | 703 | 0.2+ | 0.4+ |
| 2006 05 30 | G96 | 0.2-  | 0.2+  | 2007 10 14 | G96 | 0.1+ | 0.1- | 2007 11 07 | 703 | 1.1+ | 0.4+ |
| 2007 09 05 | 703 | 0.6+  | 1.0-  | 2007 10 14 | G96 | 0.2+ | 0.2- | 2007 11 07 | 703 | 0.7+ | 0.3+ |
| 2007 09 05 | 703 | 0.0   | 0.1+  | 2007 10 14 | G96 | 0.2+ | 0.2- | 2007 11 07 | 703 | 0.1- | 0.5- |
| 2007 09 05 | 703 | 0.2+  | 0.6-  | 2007 10 15 | 291 | 0.4- | 0.1+ | 2007 11 07 | 703 | 1.1- | 1.0+ |
| 2007 09 05 | 703 | 0.5-  | 0.8-  | 2007 10 15 | G96 | 0.3+ | 0.3- | 2007 11 11 | 703 | 0.1+ | 0.0  |
| 2007 09 14 | 703 | 0.2-  | 0.6+  | 2007 10 15 | 291 | 0.5- | 0.2+ | 2007 11 11 | 703 | 0.6+ | 0.6- |
| 2007 09 14 | 703 | 1.9+  | 0.2+  | 2007 10 15 | 291 | 0.4- | 0.2+ | 2007 11 11 | 703 | 0.7+ | 0.6- |

**2007 RF<sub>278</sub> = 2007 TR<sub>323</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.56737    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23026110 | $\omega$ | 252.99025 | +0.96342903   | -0.21270708 |
| <i>a</i> | 2.6362646  | $\Omega$ | 119.02809 | +0.25447940   | +0.91677817 |
| <i>e</i> | 0.2103350  | <i>i</i> | 10.74198  | -0.08393291   | +0.33804360 |
| <i>P</i> | 4.28       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 644 | 0.1+  | 0.1+  | 2006 04 24 | 691 | 0.4- | 0.4+ | 2007 10 02 | E12 | 0.6+ | 0.4- |
| 2003 11 18 | 644 | 0.3+  | 0.2-  | 2006 05 03 | 691 | 0.5+ | 0.1- | 2007 10 02 | E12 | 0.3- | 0.6- |
| 2003 11 18 | 644 | 0.4+  | 1.1+  | 2006 05 03 | 691 | 0.2+ | 0.2- | 2007 10 02 | E12 | 0.2- | 0.1+ |
| 2003 12 01 | 703 | 0.0   | 0.1-  | 2006 05 03 | 691 | 0.5+ | 0.0  | 2007 10 02 | E12 | 0.3- | 0.8+ |
| 2003 12 01 | 703 | 1.0-  | 0.2-  | 2007 09 05 | 703 | 0.1+ | 0.2- | 2007 10 11 | 703 | 1.0+ | 0.5- |
| 2003 12 01 | 703 | (0.3+ | 2.5-) | 2007 09 05 | 703 | 0.1- | 0.8+ | 2007 10 11 | 703 | 0.4- | 0.0  |
| 2003 12 01 | 703 | 1.4-  | 0.1-  | 2007 09 05 | 703 | 0.2+ | 0.3+ | 2007 10 11 | 703 | 0.5- | 0.8- |
| 2003 12 22 | 691 | 0.5+  | 0.2+  | 2007 09 05 | 703 | 0.5- | 0.9- | 2007 10 11 | 703 | 0.7+ | 0    |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 691 | 0.2+ | 0.1− | 2007 09 14 | 703 | 0.7− | 0.3− | 2007 10 15 | G96 | 0.2+ | 0.1+ |
| 2003 12 22 | 691 | 0.2+ | 0.0  | 2007 09 14 | 703 | 0.6+ | 0.4+ | 2007 10 15 | G96 | 0.4+ | 0.1+ |
| 2006 04 24 | 691 | 0.6− | 0.0  | 2007 09 14 | 703 | 0.6− | 0.3+ | 2007 10 15 | G96 | 0.1− | 0.0  |
| 2006 04 24 | 691 | 0.0  | 0.4+ | 2007 09 14 | 703 | 0.2− | 0.3+ | 2007 10 15 | G96 | 0.1+ | 0.0  |

2007 RM<sub>281</sub> = 2000 AP<sub>71</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.24481695 | <i>ω</i> | 279.76943 | +0.90159011 |      | −0.37837340 |   |
| <i>a</i> | 2.5307062  | <i>Ω</i> | 102.70324 | +0.43031506 |      | +0.83410227 |   |
| <i>e</i> | 0.3523688  | <i>i</i> | 12.41253  | −0.04431957 |      | +0.40138133 |   |
| <i>P</i> | 4.03       | <i>H</i> | 16.6      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 05 | 704 | 1.0− | 0.2+ | 2007 09 13 | 703 | 0.5− | 0.5+ | 2007 11 15 | 703 | 0.1+ | 0.2− |
| 2000 01 05 | 704 | 0.2− | 0.6+ | 2007 09 13 | 703 | 0.1+ | 0.0  | 2007 11 15 | 703 | 0.2+ | 0.3− |
| 2000 01 05 | 704 | 0.2− | 0.1− | 2007 09 20 | 703 | 0.5− | 0.5+ | 2007 11 15 | 703 | 0.4+ | 0.1− |
| 2000 01 05 | 704 | 0.1+ | 0.2+ | 2007 09 20 | 703 | 0.8+ | 0.3− | 2007 11 15 | 703 | 0.0  | 0.2+ |
| 2000 01 06 | 704 | 0.4− | 0.6+ | 2007 09 20 | 703 | 0.2− | 0.5+ | 2007 11 20 | 703 | 0.3− | 0.4− |
| 2000 01 06 | 704 | 0.6− | 0.6− | 2007 09 20 | 703 | 0.1+ | 0.0  | 2007 11 20 | 703 | 0.1− | 0.4− |
| 2000 01 06 | 704 | 0.4+ | 0.4− | 2007 11 09 | 703 | 0.4− | 0.4+ | 2007 11 20 | 703 | 0.0  | 0.0  |
| 2000 01 06 | 704 | 0.4+ | 0.2+ | 2007 11 09 | 703 | 0.2− | 0.1− | 2007 11 20 | 703 | 0.4− | 0.2− |
| 2000 01 06 | 704 | 0.2+ | 0.8+ | 2007 11 09 | 703 | 0.4− | 0.3− | 2007 12 15 | 699 | 0.0  | 0.2− |
| 2004 01 12 | 644 | 0.7+ | 0.0  | 2007 11 09 | 703 | 0.8− | 0.0  | 2007 12 15 | 699 | 0.6− | 0.3− |
| 2004 01 12 | 644 | 0.7+ | 0.3+ | 2007 11 09 | D29 | 0.5− | 0.9+ | 2007 12 15 | 699 | 0.5+ | 0.1− |
| 2004 01 12 | 644 | 0.6+ | 0.3+ | 2007 11 09 | D29 | 1.3+ | 0.1− | 2007 12 15 | 699 | 0.7+ | 0.4− |
| 2007 09 13 | 703 | 0.4+ | 0.1+ | 2007 11 09 | D29 | 0.1− | 0.5− |            |     |      |      |
| 2007 09 13 | 703 | 0.5+ | 0.3+ | 2007 11 09 | D29 | 0.2− | 0.4− |            |     |      |      |

2007 RH<sub>283</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.01550957 | <i>ω</i> | 329.44644 | −0.21106896 |      | +0.91289165 |   |
| <i>a</i> | 15.9246346 | <i>Ω</i> | 286.39751 | −0.80693164 |      | −0.36446207 |   |
| <i>e</i> | 0.3410162  | <i>i</i> | 21.35907  | −0.55164410 |      | +0.18383752 |   |
| <i>P</i> | 63.55      | <i>H</i> | 8.2       | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1983 05 08 | 260 | 0.1− | 0.6+ | 2002 08 22 | 644 | 0.7− | 0.4+ | 2002 10 03 | 644 | 0.7+ | 0.1+ |
| 1984 03 29 | 260 | 0.6+ | 0.4+ | 2002 08 22 | 644 | 0.1− | 0.2+ | 2004 09 07 | 644 | 0.2+ | 0.1+ |
| 1984 03 29 | 260 | 0.3+ | 0.2+ | 2002 08 22 | 644 | 0.1+ | 0.2+ | 2004 09 07 | 644 | 0.3+ | 0.5+ |
| 1991 04 13 | 260 | 0.1+ | 0.2+ | 2002 08 22 | 644 | 0.7− | 0.3− | 2004 09 07 | 644 | 0.1+ | 0.6+ |
| 1991 04 13 | 260 | 0.2− | 0.1+ | 2002 08 22 | 644 | 0.4− | 0.3+ | 2007 09 15 | 675 | 0.7− | 0.2+ |
| 2001 10 06 | 644 | 0.6+ | 0.8− | 2002 09 03 | 644 | 0.3− | 0.1− | 2007 09 15 | 675 | 0.4+ | 0.1− |
| 2001 10 06 | 644 | 0.3+ | 0.5− | 2002 09 03 | 644 | 0.1− | 0.3− | 2007 09 16 | 675 | 0.7− | 0.1+ |
| 2001 10 06 | 644 | 0.3+ | 0.0  | 2002 09 03 | 644 | 0.1− | 0.3− | 2007 09 16 | 675 | 0.1+ | 0.0  |
| 2002 08 14 | 644 | 0.1− | 0.1+ | 2002 09 11 | 644 | 0.3− | 0.5+ | 2007 10 04 | 688 | 0.6+ | 0.1+ |
| 2002 08 14 | 644 | 0.1− | 0.1+ | 2002 09 11 | 644 | 0.4+ | 0.7+ | 2007 10 04 | 688 | 0.4− | 0.2+ |
| 2002 08 14 | 644 | 0.2+ | 0.1+ | 2002 09 11 | 644 | 0.4+ | 0.3+ | 2007 10 04 | 688 | 0.0  | 0.0  |
| 2002 08 15 | 644 | 0.0  | 0.0  | 2002 10 03 | 644 | 0.2+ | 0.1+ | 2007 11 17 | 688 | 0.3− | 0.2− |
| 2002 08 15 | 644 | 0.1− | 0.3+ | 2002 10 03 | 644 | 0.2− | 0.1− | 2007 11 17 | 688 | 0.5− | 0.3− |
| 2002 08 15 | 644 | 0.5− | 0.0  | 2002 10 03 | 644 | 0.2− | 0.2+ | 2007 11 17 | 688 | 0.6+ | 0.3− |
| 2002 08 22 | 644 | 0.4− | 0.1− | 2002 10 03 | 644 | 0.1+ | 0.6− |            |     |      |      |

## 2007 SJ

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.34508702 | <i>ω</i> | 174.85731 | −0.52776653 |      | −0.84168569 |   |
| <i>a</i> | 2.0130302  | <i>Ω</i> | 306.94784 | +0.77411883 |      | −0.42133029 |   |
| <i>e</i> | 0.5361025  | <i>i</i> | 8.21103   | +0.34957478 |      | −0.33770695 |   |
| <i>P</i> | 2.86       | <i>H</i> | 16.5      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1990 10 14 | 261 | 0.3− | 0.3− | 2007 09 19 | H55 | 0.1− | 0.2− | 2007 09 30 | 291 | 0.2− | 0.0  |
| 1990 10 14 | 261 | 0.6+ | 0.0  | 2007 09 19 | 850 | 0.3− | 0.0  | 2007 10 06 | 448 | 0.7+ | 0.1+ |

## M.P.O. 129819

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 17 | 704 | 0.8+ | 0.2+ | 2007 09 19 | G96 | 0.0  | 0.1− | 2007 10 06 | 448 | 0.6− | 0.0  |
| 2007 09 17 | 704 | 0.3+ | 0.3− | 2007 09 19 | G96 | 0.2+ | 0.2+ | 2007 10 06 | 448 | 0.4+ | 0.4− |
| 2007 09 17 | 704 | 0.1− | 0.1− | 2007 09 19 | G96 | 0.3+ | 0.3− | 2007 10 12 | 448 | 0.5+ | 1.0− |
| 2007 09 17 | 704 | 0.1− | 0.4+ | 2007 09 19 | 701 | 0.5− | 0.1+ | 2007 10 12 | 448 | 0.4+ | 0.1+ |
| 2007 09 17 | J95 | 0.3+ | 0.1− | 2007 09 19 | 701 | 0.4− | 0.5− | 2007 10 12 | 448 | 0.4− | 0.5+ |
| 2007 09 17 | J95 | 0.4+ | 0.2+ | 2007 09 19 | 701 | 0.8− | 0.7− | 2007 10 16 | 448 | 0.1− | 0.5− |
| 2007 09 17 | J95 | 0.1− | 0.2− | 2007 09 19 | 701 | 0.2+ | 0.1− | 2007 10 16 | 448 | 0.4− | 0.0  |
| 2007 09 18 | A17 | 0.1+ | 0.6− | 2007 09 21 | H55 | 0.5− | 0.3+ | 2007 10 16 | 448 | 0.5− | 0.5− |
| 2007 09 18 | A17 | 0.6− | 0.2− | 2007 09 21 | H55 | 0.9+ | 0.5− | 2007 10 25 | G96 | 0.1− | 0.1− |
| 2007 09 18 | A17 | 0.6− | 0.0  | 2007 09 21 | H55 | 0.3− | 0.1− | 2007 10 25 | G96 | 0.0  | 0.3− |
| 2007 09 18 | B15 | 0.1+ | 0.3− | 2007 09 21 | E12 | 0.4+ | 0.0  | 2007 10 25 | G96 | 0.1+ | 0.0  |
| 2007 09 18 | B15 | 0.1+ | 0.3− | 2007 09 21 | E12 | 0.6− | 0.3+ | 2007 10 25 | G96 | 0.3− | 0.5− |
| 2007 09 18 | B15 | 0.4+ | 0.5− | 2007 09 22 | 448 | 0.5+ | 0.3− | 2007 11 07 | 711 | 0.2− | 0.7+ |
| 2007 09 18 | B04 | 0.2− | 0.6+ | 2007 09 22 | 448 | 0.1− | 0.4− | 2007 11 07 | 711 | 0.1+ | 0.0  |
| 2007 09 18 | B04 | 0.1− | 0.3+ | 2007 09 22 | 448 | 0.9− | 0.1− | 2007 11 07 | 711 | 0.4+ | 0.7+ |
| 2007 09 18 | B04 | 0.2+ | 0.3+ | 2007 09 22 | J95 | 0.3− | 0.2+ | 2007 11 19 | 689 | 0.5+ | 0.1+ |
| 2007 09 18 | B04 | 0.6− | 0.7+ | 2007 09 22 | J95 | 0.2+ | 0.4− | 2007 11 19 | 689 | 0.2+ | 0.2+ |
| 2007 09 18 | 473 | 0.5− | 0.7+ | 2007 09 23 | H55 | 0.2− | 0.8+ | 2007 12 04 | 448 | 0.4− | 0.7− |
| 2007 09 18 | 473 | 0.4− | 1.2+ | 2007 09 30 | H55 | 0.5− | 0.6+ | 2007 12 04 | 448 | 0.2− | 0.5− |
| 2007 09 18 | 473 | 0.0  | 1.1+ | 2007 09 30 | H55 | 1.1+ | 0.8+ | 2007 12 04 | 291 | 0.0  | 0.2+ |
| 2007 09 19 | H55 | 0.3− | 0.5+ | 2007 09 30 | H55 | 1.0+ | 1.0− | 2007 12 04 | 291 | 0.0  | 0.2+ |
| 2007 09 19 | 850 | 1.3+ | 0.3+ | 2007 09 30 | 291 | 0.1− | 0.1+ | 2007 12 04 | 291 | 0.1− | 0.1+ |
| 2007 09 19 | H55 | 0.2+ | 0.0  | 2007 09 30 | 291 | 0.2− | 0.0  |            |     |      |      |

2007 SS<sub>2</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.19743294 | <i>ω</i> | 281.07762 | +0.40952297 |      | +0.91124247 |   |
| <i>a</i> | 2.9209422  | <i>Ω</i> | 13.35708  | −0.74513902 |      | +0.36186836 |   |
| <i>e</i> | 0.0899384  | <i>i</i> | 10.95695  | −0.52636373 |      | +0.19669381 |   |
| <i>P</i> | 4.99       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 10 03 | 691 | 0.1+ | 0.0  | 2007 09 20 | D35 | 0.1+  | 0.1+  | 2007 10 12 | 704 | 0.4+ | 0.7+ |
| 1992 10 03 | 691 | 0.0  | 0.0  | 2007 09 20 | D35 | 0.0   | 0.0   | 2007 10 13 | 703 | 1.5+ | 0.8+ |
| 1992 10 03 | 691 | 0.2− | 0.2− | 2007 09 20 | B01 | 0.7+  | 1.2−  | 2007 10 13 | 703 | 0.6− | 1.6+ |
| 1995 03 29 | 691 | 0.3− | 0.0  | 2007 09 20 | B01 | 0.4−  | 0.4−  | 2007 10 13 | 703 | 1.0− | 0.2− |
| 1995 03 29 | 691 | 0.5− | 0.7− | 2007 09 20 | B01 | 0.4−  | 0.8−  | 2007 10 13 | 703 | 0.0  | 0.0  |
| 1995 03 29 | 691 | 0.5+ | 0.5− | 2007 09 20 | B01 | 0.1−  | 0.5−  | 2007 10 14 | 704 | 0.5− | 0.8+ |
| 2005 03 03 | 703 | 0.8+ | 1.5+ | 2007 10 06 | 704 | 1.0+  | 0.9+  | 2007 10 14 | 704 | 0.5+ | 0.8− |
| 2005 03 03 | 703 | 0.1− | 0.8+ | 2007 10 06 | 704 | (0.8− | 1.8+) | 2007 10 14 | 704 | 0.1− | 0.0  |
| 2005 03 03 | 703 | 0.4− | 0.8+ | 2007 10 06 | 704 | 0.1−  | 1.0+  | 2007 10 14 | 704 | 0.0  | 0.5+ |
| 2005 03 03 | 703 | 1.1+ | 0.8+ | 2007 10 06 | 704 | 0.2+  | 1.0+  | 2007 10 15 | 691 | 0.1− | 0.0  |
| 2007 09 11 | G96 | 0.3+ | 0.2+ | 2007 10 09 | 699 | 0.1+  | 1.2−  | 2007 10 15 | 691 | 0.5− | 0.0  |
| 2007 09 11 | G96 | 0.3+ | 0.0  | 2007 10 09 | 699 | 0.9−  | 0.3−  | 2007 10 15 | 691 | 0.5− | 1.0− |
| 2007 09 11 | G96 | 0.4+ | 0.1+ | 2007 10 09 | 699 | 0.1−  | 0.5+  | 2007 11 07 | G96 | 0.3+ | 0.5− |
| 2007 09 11 | G96 | 0.5+ | 0.2− | 2007 10 09 | 699 | 1.1+  | 0.8+  | 2007 11 07 | G96 | 0.0  | 0.3− |
| 2007 09 16 | B01 | 0.1− | 1.0+ | 2007 10 11 | 704 | 0.1−  | 0.8+  | 2007 11 07 | G96 | 0.2+ | 0.5− |
| 2007 09 16 | B01 | 0.9+ | 0.5− | 2007 10 11 | 704 | 0.5−  | 0.5+  | 2007 11 07 | G96 | 0.1− | 0.2− |
| 2007 09 16 | B01 | 0.3+ | 0.0  | 2007 10 11 | 704 | 0.1−  | 0.7+  | 2007 12 15 | G96 | 0.6+ | 0.4− |
| 2007 09 16 | B01 | 0.4+ | 0.0  | 2007 10 12 | 704 | 0.5−  | 0.2−  | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2007 09 16 | B01 | 0.5+ | 0.4− | 2007 10 12 | 704 | 0.4+  | 0.7+  | 2007 12 15 | G96 | 0.1− | 0.3− |
| 2007 09 20 | D35 | 0.3− | 0.1+ | 2007 10 12 | 704 | 0.2+  | 0.7+  | 2007 12 15 | G96 | 0.1+ | 0.5− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 09 19 | 704 | 0.2+ | 0.3+ | 2007 10 12 | G96 | 0.0  | 0.0  |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 09 19 | 704 | 0.2+ | 0.0  | 2007 10 12 | G96 | 0.3- | 0.1- |
| 2007 09 04 | 703 | 0.2- | 0.1- | 2007 10 04 | G96 | 0.3+ | 0.2- | 2007 10 12 | G96 | 0.1- | 0.1- |
| 2007 09 04 | 703 | 0.1- | 0.5- | 2007 10 04 | G96 | 0.0  | 0.1- | 2007 11 17 | G96 | 0.0  | 0.9+ |
| 2007 09 04 | 703 | 0.5+ | 0.0  | 2007 10 04 | G96 | 0.3+ | 0.1- | 2007 11 17 | G96 | 0.3- | 0.1- |
| 2007 09 04 | 703 | 0.4- | 0.1- | 2007 10 04 | G96 | 0.1- | 0.2- | 2007 11 17 | G96 | 0.5+ | 0.3- |
| 2007 09 16 | 704 | 0.0  | 0.8+ | 2007 10 08 | G96 | 0.3+ | 0.1+ | 2007 11 17 | G96 | 0.3- | 0.1+ |
| 2007 09 16 | 704 | 0.7+ | 0.2+ | 2007 10 08 | G96 | 0.3+ | 0.0  |            |     |      |      |

**2007 SG<sub>3</sub> = 2006 DL<sub>182</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 39.98829   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28322992 | $\omega$ | 131.08098 | +0.71065064 | +0.70350291 |
| $a$ | 2.2963776  | $\Omega$ | 184.23165 | -0.67273900 | +0.67628850 |
| $e$ | 0.1674576  | $i$      | 5.99175   | -0.20590754 | +0.21844341 |
| $P$ | 3.48       | $H$      | 17.5      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 02 27 | G96 | 0.1-  | 0.5+  | 2007 09 14 | A50 | (1.1+ | 1.6+) | 2007 10 04 | G96 | 0.1- | 0.1- |
| 2006 02 27 | G96 | 0.3+  | 0.7+  | 2007 09 14 | A50 | 0.4-  | 0.0   | 2007 10 04 | G96 | 0.2- | 0.2- |
| 2006 02 27 | G96 | 0.3-  | 0.6+  | 2007 09 16 | 704 | 0.1-  | 0.3+  | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2006 02 27 | G96 | 0.5-  | 0.6+  | 2007 09 16 | 704 | 0.1-  | 0.2+  | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2006 03 04 | 691 | 0.1+  | 0.0   | 2007 09 16 | 704 | 0.8+  | 0.8+  | 2007 11 05 | G96 | 0.2- | 0.1- |
| 2006 03 04 | 691 | 0.3+  | 0.2+  | 2007 09 16 | 704 | 0.2+  | 1.1+  | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2006 03 04 | 691 | 0.1+  | 0.2+  | 2007 09 19 | 704 | (1.6+ | 0.8+) | 2007 11 17 | G96 | 0.5- | 0.0  |
| 2007 09 12 | 699 | 0.4-  | 1.1-  | 2007 09 19 | 704 | 1.1-  | 0.1+  | 2007 11 17 | G96 | 0.4- | 0.3- |
| 2007 09 12 | 699 | (2.2- | 1.3+) | 2007 09 19 | 704 | 0.3-  | 0.5+  | 2007 11 17 | G96 | 0.4+ | 0.1- |
| 2007 09 12 | 699 | 0.1+  | 0.2+  | 2007 09 19 | 704 | 0.7+  | 0.2+  | 2007 11 17 | G96 | 0.2- | 0.1+ |
| 2007 09 14 | A50 | 0.3+  | 1.2+  | 2007 10 04 | G96 | 0.4-  | 0.2-  |            |     |      |      |
| 2007 09 14 | A50 | 0.5+  | 0.8+  | 2007 10 04 | G96 | 0.1+  | 0.2-  |            |     |      |      |

**2007 SW<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 20.07790   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18271605 | $\omega$ | 160.57578 | +0.99235448  | +0.07137539  |
| $a$ | 3.0757539  | $\Omega$ | 196.34015 | -0.07731151  | +0.99541409  |
| $e$ | 0.2743398  | $i$      | 20.97063  | +0.09620557  | +0.06368938  |
| $P$ | 5.39       | $H$      | 16.0      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 10 06 | 816 | 0.7+  | 0.9-  | 2007 10 07 | 703 | 0.7-  | 1.0-  | 2007 10 19 | 704 | 0.2-  | 0.3+  |
| 1996 10 06 | 816 | 0.9+  | 0.5-  | 2007 10 08 | 699 | 0.0   | 0.2+  | 2007 10 19 | 704 | 0.2+  | 0.5+  |
| 1996 10 06 | 816 | 0.8+  | 0.7-  | 2007 10 08 | 699 | 0.9-  | 1.1-  | 2007 10 19 | 699 | 0.5-  | 0.6+  |
| 1996 10 06 | 816 | 1.3+  | 0.4-  | 2007 10 08 | 699 | 0.3+  | 0.4-  | 2007 10 19 | 704 | 0.1-  | 0.1-  |
| 1996 10 12 | 691 | 1.9-  | 1.5+  | 2007 10 08 | 699 | 1.4-  | 0.9+  | 2007 10 19 | 703 | 1.0+  | 0.0   |
| 1996 10 12 | 691 | 0.3+  | 0.4-  | 2007 10 11 | 699 | (2.1+ | 0.4+) | 2007 10 19 | 699 | 0.5+  | 0.2-  |
| 1996 10 12 | 691 | 0.6+  | 0.7-  | 2007 10 11 | 699 | 1.3+  | 0.8-  | 2007 10 19 | 703 | 0.2+  | 0.5+  |
| 2006 05 21 | 691 | 0.1-  | 0.2+  | 2007 10 11 | 699 | 1.2+  | 0.3-  | 2007 10 19 | 703 | 0.2-  | 0.1-  |
| 2006 05 21 | 691 | 0.4+  | 0.2-  | 2007 10 11 | 699 | 0.7+  | 0.7-  | 2007 10 19 | 703 | 0.0   | 0.2-  |
| 2006 05 21 | 691 | 0.3-  | 0.3+  | 2007 10 12 | 704 | 0.3+  | 0.1-  | 2007 10 19 | 699 | 0.1+  | 0.6-  |
| 2007 09 08 | G96 | 0.0   | 0.3-  | 2007 10 12 | 704 | 0.6+  | 0.1+  | 2007 10 20 | G96 | 0.0   | 0.5-  |
| 2007 09 08 | G96 | 1.1-  | 0.5-  | 2007 10 12 | 704 | 0.7+  | 0.2-  | 2007 10 20 | G96 | 0.1+  | 0.8-  |
| 2007 09 08 | G96 | 0.1-  | 0.1-  | 2007 10 12 | 704 | 0.1+  | 0.1+  | 2007 10 20 | G96 | 0.8+  | 0.3-  |
| 2007 09 12 | 699 | 0.7-  | 1.1+  | 2007 10 12 | 704 | 0.1+  | 0.4-  | 2007 10 20 | G96 | 0.4+  | 0.6-  |
| 2007 09 12 | 699 | (0.1- | 1.7+) | 2007 10 13 | 704 | 0.6-  | 0.0   | 2007 10 31 | 703 | 0.5-  | 0.5-  |
| 2007 09 12 | 699 | (1.6- | 0.7+) | 2007 10 13 | 704 | 0.5-  | 0.5+  | 2007 10 31 | 703 | 0.2-  | 0.1-  |
| 2007 09 12 | 699 | (0.9- | 2.1-) | 2007 10 13 | 704 | 0.5-  | 0.4+  | 2007 10 31 | 703 | 0.6-  | 0.4+  |
| 2007 09 16 | 704 | (2.0+ | 0.1+) | 2007 10 13 | 704 | 0.4-  | 0.2-  | 2007 10 31 | 703 | 0.1+  | 0.1+  |
| 2007 09 16 | 704 | 0.1-  | 0.2+  | 2007 10 13 | 704 | 0.6-  | 0.6+  | 2007 11 11 | 704 | 0.6+  | 0.4+  |
| 2007 09 16 | 704 | 0.1+  | 0.5+  | 2007 10 15 | A77 | 0.1+  | 0.0   | 2007 11 11 | 704 | 0.2+  | 0.6+  |
| 2007 09 16 | 704 | 0.8-  | 1.3+  | 2007 10 15 | A77 | 0.7+  | 0.4+  | 2007 11 11 | 704 | 0.4+  | 1.3+  |
| 2007 09 19 | 704 | 0.1-  | 0.1-  | 2007 10 15 | A77 | 0.9+  | 0.9+  | 2007 11 11 | 704 | 0.2+  | 0.6+  |
| 2007 09 19 | 704 | 0.6-  | 0.3+  | 2007 10 15 | 683 | 0.4-  | 0.9-  | 2007 11 11 | 704 | 0.2+  | 1.1+  |
| 2007 09 19 | 704 | 0.2-  | 0.3-  | 2007 10 15 | 683 | 0.5+  | 1.2-  | 2007 11 14 | 699 | (1.6+ | 0.1+) |
| 2007 09 19 | 704 | 0.6-  | 0.2+  | 2007 10 15 | 683 | 1.1+  | 0.5-  | 2007 11 14 | 699 | 1.0+  | 0.6+  |
| 2007 10 07 | 703 | 0.4-  | 0.0   | 2007 10 19 | 704 | 0.2-  | 1.0+  | 2007 11 14 | 699 | 0.1-  | 0.2-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 07 | 703 | 1.3- | 0.1- | 2007 10 19 | 704 | 0.2- | 0.1+ | 2007 11 14 | 699 | 0.3- | 0.2+ |
| 2007 10 07 | 703 | 0.2- | 0.1- | 2007 10 19 | 699 | 0.3+ | 0.7- |            |     |      |      |

**2007 SM<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 20.44447   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21827095 | $\omega$ | 276.32437 | +0.99433152 | -0.00097245 |
| $a$ | 2.7319458  | $\Omega$ | 83.76733  | +0.04432045 | +0.91273153 |
| $e$ | 0.1725274  | $i$      | 6.13964   | -0.09664642 | +0.40855869 |
| $P$ | 4.52       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 24 | 645 | 0.1+ | 0.1+ | 2007 09 21 | 704 | 1.1-  | 0.5-  | 2007 10 19 | 699 | 0.4- | 0.5- |
| 2001 05 24 | 645 | 0.0  | 0.1+ | 2007 10 08 | 699 | 0.2-  | 1.3-  | 2007 10 31 | 703 | 0.4+ | 0.1+ |
| 2002 07 15 | 644 | 0.1+ | 0.3- | 2007 10 08 | 699 | 0.7-  | 0.3+  | 2007 10 31 | 703 | 0.1+ | 0.7+ |
| 2002 07 15 | 644 | 0.1+ | 0.1- | 2007 10 08 | 699 | 0.7+  | 0.3-  | 2007 10 31 | 703 | 0.1- | 0.9+ |
| 2002 07 15 | 644 | 0.4+ | 0.3- | 2007 10 08 | 699 | (1.7+ | 1.0-) | 2007 10 31 | 703 | 0.4- | 0.2+ |
| 2002 08 30 | 644 | 0.1- | 0.5- | 2007 10 13 | 704 | 0.4+  | 0.5+  | 2007 11 07 | 703 | 0.2- | 1.3- |
| 2002 08 30 | 644 | 0.3- | 0.5- | 2007 10 13 | 704 | 0.1+  | 0.3+  | 2007 11 07 | 703 | 0.6- | 0.5+ |
| 2002 08 30 | 644 | 0.0  | 0.5- | 2007 10 13 | 704 | 0.6+  | 0.0   | 2007 11 07 | 703 | 0.5+ | 0.5+ |
| 2006 05 26 | G96 | 0.5+ | 0.1+ | 2007 10 13 | 704 | 0.3+  | 0.2+  | 2007 11 07 | 703 | 0.1- | 0.4+ |
| 2006 05 26 | G96 | 0.1- | 0.0  | 2007 10 13 | 704 | 0.2+  | 0.9+  | 2007 11 12 | 704 | 0.1- | 0.2+ |
| 2006 05 26 | G96 | 0.1+ | 0.2+ | 2007 10 19 | 704 | 0.1-  | 0.1-  | 2007 11 12 | 704 | 0.9+ | 0.1- |
| 2006 05 28 | 703 | 0.7+ | 0.7- | 2007 10 19 | 704 | 0.3+  | 0.2+  | 2007 11 12 | 704 | 0.6+ | 0.3+ |
| 2006 05 28 | 703 | 1.1+ | 0.0  | 2007 10 19 | 704 | 0.1+  | 0.5-  | 2007 11 12 | 704 | 0.0  | 0.2+ |
| 2006 05 28 | 703 | 0.5- | 0.6+ | 2007 10 19 | 699 | 0.7-  | 0.2-  | 2007 11 12 | 704 | 0.2+ | 0.5+ |
| 2006 05 28 | 703 | 1.2- | 1.8+ | 2007 10 19 | 704 | 0.0   | 0.1+  | 2007 11 14 | 699 | 0.1+ | 0.1- |
| 2007 09 18 | 704 | 0.7+ | 0.3- | 2007 10 19 | 704 | 0.0   | 0.2-  | 2007 11 14 | 699 | 0.5+ | 0.7- |
| 2007 09 18 | 704 | 0.1- | 0.1+ | 2007 10 19 | 699 | 0.4-  | 0.1-  | 2007 11 14 | 699 | 0.7- | 0.5- |
| 2007 09 18 | 704 | 0.1- | 0.1- | 2007 10 19 | 703 | 0.1-  | 0.5+  | 2007 11 14 | 699 | 1.3+ | 1.0- |
| 2007 09 21 | 704 | 0.7- | 0.2+ | 2007 10 19 | 703 | 1.1-  | 0.5+  | 2007 11 17 | 703 | 0.4- | 0.4+ |
| 2007 09 21 | 704 | 0.8- | 0.9+ | 2007 10 19 | 703 | 0.1+  | 0.0   | 2007 11 17 | 703 | 1.2- | 0.9+ |
| 2007 09 21 | 704 | 0.3- | 0.8+ | 2007 10 19 | 699 | 0.2-  | 0.0   | 2007 11 17 | 703 | 0.6+ | 1.1+ |
| 2007 09 21 | 704 | 1.4- | 0.5+ | 2007 10 19 | 703 | 0.4-  | 0.5+  | 2007 11 17 | 703 | 1.3+ | 0.6+ |

**2007 SZ<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 59.68392   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.30177880 | $\omega$ | 343.93534 | +0.46112518 | +0.87976852 |
| $a$ | 2.2012882  | $\Omega$ | 313.35917 | -0.79560589 | +0.35222785 |
| $e$ | 0.2068002  | $i$      | 9.15121   | -0.39290564 | +0.31928497 |
| $P$ | 3.27       | $H$      | 17.1      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 02 | G96 | 0.0  | 0.4- | 2007 09 12 | 703 | 1.9+ | 1.0+ | 2007 09 20 | 703 | 1.7- | 1.4- |
| 2006 02 02 | G96 | 0.5+ | 0.4- | 2007 09 12 | 703 | 0.7+ | 0.3+ | 2007 09 20 | 703 | 0.9- | 0.3- |
| 2006 02 02 | G96 | 0.7+ | 0.3- | 2007 09 12 | 703 | 1.8+ | 0.6+ | 2007 09 20 | 703 | 1.7- | 1.2- |
| 2006 02 02 | G96 | 0.0  | 0.1- | 2007 09 12 | 703 | 0.4+ | 0.4+ | 2007 09 20 | 703 | 0.9- | 1.0- |
| 2006 02 22 | 703 | 0.0  | 0.4+ | 2007 09 18 | 703 | 0.2- | 0.2+ | 2007 10 08 | 703 | 0.8+ | 0.6- |
| 2006 02 22 | 703 | 0.3+ | 0.2+ | 2007 09 18 | 703 | 0.3- | 0.1- | 2007 10 08 | 703 | 0.0  | 0.3+ |
| 2006 02 22 | 703 | 0.1+ | 0.2- | 2007 09 18 | 703 | 0.1+ | 0.2+ | 2007 10 08 | 703 | 0.3- | 0.2+ |
| 2006 02 22 | 703 | 1.6- | 0.6+ | 2007 09 18 | 703 | 0.4- | 0.0  | 2007 10 08 | 703 | 1.0+ | 1.3+ |

**2007 SO<sub>9</sub> = 2005 EO<sub>317</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 63.38865   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18622610 | $\omega$ | 137.98907 | +0.62283271 | +0.78183314 |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 14 | G96 | 0.4− | 0.0  | 2007 10 04 | 703 | 0.1+ | 0.8+ | 2007 10 19 | 703 | 0.9− | 0.8+ |
| 2005 03 14 | G96 | 0.0  | 0.0  | 2007 10 04 | 703 | 0.1+ | 0.1+ | 2007 10 19 | 703 | 1.4− | 0.2+ |
| 2005 03 14 | G96 | 0.0  | 0.1− | 2007 10 11 | 703 | 0.8− | 0.0  | 2007 10 21 | G96 | 0.3− | 0.1− |
| 2007 09 18 | 691 | 0.0  | 0.0  | 2007 10 11 | 703 | 0.2+ | 1.0− | 2007 10 21 | G96 | 0.1− | 0.3− |
| 2007 09 18 | 691 | 0.3+ | 0.1+ | 2007 10 11 | 703 | 0.1+ | 0.6− | 2007 10 21 | G96 | 0.1− | 0.4− |
| 2007 09 18 | 691 | 0.1+ | 0.2− | 2007 10 17 | 699 | 0.0  | 1.0− | 2007 10 21 | G96 | 0.0  | 0.2− |
| 2007 09 20 | 691 | 0.5− | 0.6− | 2007 10 17 | 699 | 0.6− | 1.0− |            |     |      |      |
| 2007 09 20 | 691 | 0.7− | 0.3− | 2007 10 17 | 699 | 0.1− | 0.1+ |            |     |      |      |

2007 SC<sub>11</sub>

|                                         |  |            |          |           |  |               |  |             |  |  |  |
|-----------------------------------------|--|------------|----------|-----------|--|---------------|--|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |            |          |           |  |               |  |             |  |  |  |
| M                                       |  |            |          | P         |  |               |  | Q           |  |  |  |
| 54.16417                                |  |            |          | (2000.0)  |  |               |  |             |  |  |  |
| <i>n</i>                                |  | 0.20868089 | $\omega$ | 201.03207 |  | +0.84112554   |  | +0.53174894 |  |  |  |
| <i>a</i>                                |  | 2.8150164  | $\Omega$ | 126.45918 |  | −0.47703400   |  | +0.81545514 |  |  |  |
| <i>e</i>                                |  | 0.0413479  | <i>i</i> | 7.05236   |  | −0.25484580   |  | +0.22863939 |  |  |  |
| <i>P</i>                                |  | 4.72       | <i>H</i> | 15.2      |  | <i>G</i> 0.15 |  | <i>U</i> 1  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 01 31 | 691 | 0.2+ | 0.7− | 2007 09 22 | 106 | 0.4+  | 0.6+  | 2007 10 19 | 703 | 0.8+  | 0.7+  |
| 1995 01 31 | 691 | 0.4− | 0.5− | 2007 09 22 | 106 | 0.6+  | 0.6−  | 2007 10 19 | 703 | 0.3−  | 0.4+  |
| 1995 01 31 | 691 | 0.1+ | 0.2+ | 2007 09 23 | 106 | 0.0   | 0.5−  | 2007 10 21 | G96 | 0.3+  | 0.1+  |
| 2001 06 18 | 644 | 0.2+ | 0.2− | 2007 09 23 | 106 | 0.6−  | 0.0   | 2007 10 21 | G96 | 0.2+  | 0.3+  |
| 2001 06 18 | 644 | 0.2+ | 0.0  | 2007 09 23 | 106 | 0.1−  | 0.0   | 2007 10 21 | G96 | 0.1+  | 0.0   |
| 2001 06 18 | 644 | 0.3+ | 0.3− | 2007 09 23 | 106 | 0.6−  | 0.8−  | 2007 10 21 | G96 | 0.5+  | 0.0   |
| 2001 06 18 | 644 | 0.9− | 0.1− | 2007 09 23 | 106 | 0.3+  | 0.1+  | 2007 10 31 | 703 | 1.0−  | 0.5+  |
| 2001 06 18 | 644 | 0.2+ | 0.2− | 2007 09 23 | 106 | 0.5+  | 0.1+  | 2007 10 31 | 703 | 0.4+  | 0.0   |
| 2001 06 18 | 644 | 0.3+ | 0.3− | 2007 09 23 | 106 | 0.2+  | 0.0   | 2007 10 31 | 703 | 0.7−  | 0.5+  |
| 2002 09 28 | 608 | 0.2− | 0.8− | 2007 10 14 | G96 | 0.3+  | 0.1+  | 2007 10 31 | 703 | 0.6−  | 1.1+  |
| 2002 09 28 | 608 | 0.3+ | 0.9− | 2007 10 14 | G96 | 0.2+  | 0.0   | 2007 10 31 | 703 | 0.2−  | 0.3+  |
| 2002 09 28 | 608 | 0.1− | 1.5− | 2007 10 14 | G96 | 0.1−  | 0.0   | 2007 10 31 | 703 | 0.7−  | 0.1+  |
| 2005 03 10 | 703 | 1.1+ | 0.9+ | 2007 10 14 | G96 | 0.1−  | 0.1−  | 2007 10 31 | 703 | 0.0   | 0.7+  |
| 2005 03 10 | 703 | 0.5+ | 0.5+ | 2007 10 17 | 699 | 0.2+  | 0.3+  | 2007 10 31 | 703 | 1.3−  | 0.4−  |
| 2005 03 10 | 703 | 0.2− | 0.6+ | 2007 10 17 | 699 | 0.2−  | 0.6+  | 2007 11 17 | 703 | 1.2−  | 0.7−  |
| 2005 03 10 | 703 | 1.2− | 0.5+ | 2007 10 17 | 699 | (1.8+ | 0.2+) | 2007 11 17 | 703 | (1.6− | 0.1−) |
| 2007 09 22 | 106 | 0.3+ | 0.8− | 2007 10 17 | 699 | 0.6+  | 0.3−  | 2007 11 17 | 703 | 0.8+  | 0.1+  |
| 2007 09 22 | 106 | 0.7− | 0.4− | 2007 10 19 | 703 | 0.3+  | 0.1−  | 2007 11 17 | 703 | (0.4+ | 1.6−) |
| 2007 09 22 | 106 | 1.1+ | 0.7+ | 2007 10 19 | 703 | 0.2+  | 0.3+  |            |     |       |       |

2007 SD<sub>11</sub>

|                                         |  |            |          |           |  |               |  |             |  |  |  |
|-----------------------------------------|--|------------|----------|-----------|--|---------------|--|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |            |          |           |  |               |  |             |  |  |  |
| M                                       |  |            |          | P         |  |               |  | Q           |  |  |  |
| 346.57731                               |  |            |          | (2000.0)  |  |               |  |             |  |  |  |
| <i>n</i>                                |  | 0.22914899 | $\omega$ | 200.65345 |  | +0.89530545   |  | −0.44542148 |  |  |  |
| <i>a</i>                                |  | 2.6447873  | $\Omega$ | 185.80511 |  | +0.41566710   |  | +0.83964117 |  |  |  |
| <i>e</i>                                |  | 0.1136755  | <i>i</i> | 2.99116   |  | +0.16015308   |  | +0.31080929 |  |  |  |
| <i>P</i>                                |  | 4.30       | <i>H</i> | 16.8      |  | <i>G</i> 0.15 |  | <i>U</i> 1  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 20 | 691 | 0.0  | 0.0  | 2007 09 22 | H36 | (0.2− | 2.2−) | 2007 10 14 | 704 | 0.1+ | 0.2− |
| 2003 11 20 | 691 | 0.0  | 0.3+ | 2007 09 23 | 734 | 0.5−  | 0.0   | 2007 10 14 | 704 | 1.0− | 0.1+ |
| 2003 11 20 | 691 | 0.1− | 0.1+ | 2007 09 23 | 734 | 0.0   | 0.1+  | 2007 10 31 | G96 | 0.4+ | 0.0  |
| 2005 03 09 | G96 | 0.4− | 0.2− | 2007 09 23 | 734 | 0.2+  | 0.0   | 2007 10 31 | G96 | 0.2+ | 0.1+ |
| 2005 03 09 | G96 | 0.1− | 1.1− | 2007 09 23 | 734 | 0.4−  | 0.5+  | 2007 10 31 | G96 | 0.0  | 0.1+ |
| 2005 03 09 | G96 | 0.2− | 0.6− | 2007 10 01 | 734 | 0.2−  | 0.4−  | 2007 10 31 | G96 | 0.4+ | 0.0  |
| 2005 03 09 | G96 | 0.2− | 0.6− | 2007 10 01 | 734 | 0.5−  | 0.0   | 2007 11 01 | 734 | 0.0  | 0.1+ |
| 2006 05 21 | G96 | 0.0  | 0.2+ | 2007 10 01 | 734 | 0.2−  | 0.4+  | 2007 11 01 | 734 | 0.0  | 0.1− |
| 2006 05 21 | G96 | 0.0  | 0.3+ | 2007 10 01 | 734 | 0.0   | 0.4+  | 2007 11 01 | 734 | 0.0  | 0.2− |
| 2006 05 21 | G96 | 0.2+ | 0.0  | 2007 10 03 | 734 | 0.0   | 0.3−  | 2007 11 29 | 734 | 0.1− | 0.4+ |
| 2006 05 21 | G96 | 0.0  | 0.2+ | 2007 10 03 | 734 | 0.2+  | 0.0   | 2007 11 29 | 734 | 0.6+ | 0.5+ |
| 2007 09 11 | D29 | 0.6+ | 0.1+ | 2007 10 03 | 734 | 0.1+  | 0.4−  | 2007 12 05 | G96 | 0.3+ | 0.2− |
| 2007 09 11 | D29 | 0.3+ | 0.1− | 2007 10 03 | 734 | 0.0   | 0.1−  | 2007 12 05 | G96 | 0.3− | 0.3− |
| 2007 09 11 | D29 | 0.4+ | 0.3− | 2007 10 09 | 734 | 0.4−  | 0.1−  | 2007 12 05 | G96 | 0.2+ | 0.5− |
| 2007 09 11 | D29 | 0.1+ | 0.8− | 2007 10 09 | 734 | 0.1+  | 0.5−  | 2007 12 05 | G96 | 0.0  | 0.1+ |
| 2007 09 22 | H36 | 0.0  | 0.5− | 2007 10 14 | 704 | 0.7+  | 0.8−  |            |     |      |      |

## M.P.O. 129821

2007 SM<sub>11</sub>

|                                         |  |            |          |           |  |               |  |             |  |  |  |
|-----------------------------------------|--|------------|----------|-----------|--|---------------|--|-------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |            |          |           |  |               |  |             |  |  |  |
| M                                       |  |            |          | P         |  |               |  | Q           |  |  |  |
| 16.50942                                |  |            |          | (2000.0)  |  |               |  |             |  |  |  |
| <i>n</i>                                |  | 0.22409707 | $\omega$ | 109.17892 |  | +0.54553600   |  | −0.77184115 |  |  |  |
| <i>a</i>                                |  | 2.6843878  | $\Omega$ | 303.35212 |  | +0.54338442   |  | +0.62241316 |  |  |  |
| <i>e</i>                                |  | 0.2538086  | <i>i</i> | 23.01454  |  | +0.63806257   |  | +0.12985798 |  |  |  |
| <i>P</i>                                |  | 4.40       | <i>H</i> | 15.6      |  | <i>G</i> 0.15 |  | <i>U</i> 1  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 07 22 | 691 | 0.2+ | 0.1+ | 2007 09 27 | G96 | 0.4+ | 0.5− | 2007 12 05 | 699 | 0.0  | 0.2− |
| 1993 07 22 | 691 | 0.0  | 0.2+ | 2007 09 27 | G96 | 0.3+ | 0.3− | 2007 12 05 | 699 | 0.6+ | 0.0  |
| 1993 07 22 | 691 | 0.3− | 0.1+ | 2007 09 27 | G96 | 0.3+ | 0.5− | 2007 12 05 | 699 | 0.5+ | 0.4+ |
| 2002 08 22 | 644 | 0.3− | 0.4− | 2007 09 27 | D35 | 0.3+ | 1.4+ | 2007 12 11 | B40 | 0.2+ | 0.0  |
| 2002 08 22 | 644 | 0.0  | 0.7− | 2007 09 27 | D35 | 0.2+ | 0.1− | 2007 12 12 | B40 | 0.8− | 0.1− |
| 2002 08 22 | 644 | 0.0  | 0.4− | 2007 09 27 | D35 | 1.1− | 0.3+ | 2007 12 12 | B40 | 0.2− | 0.1+ |
| 2004 03 17 | 703 | 0.6+ | 1.1+ | 2007 09 28 | H55 | 0.0  | 0.9+ | 2007 12 12 | B40 | 0.0  | 0.0  |
| 2004 03 17 | 703 | 1.8− | 0.8− | 2007 09 28 | H55 | 0.4− | 0.6+ | 2007 12 12 | 147 | 0.3+ | 0.1− |
| 2004 03 17 | 703 | 0.5− | 0.9+ | 2007 09 28 | H55 | 0.5− | 0.2+ | 2007 12 12 | 147 | 0.3+ | 0.1− |
| 2004 03 17 | 703 | 1.4+ | 0.2+ | 2007 11 05 | 703 | 1.2− | 0.3+ | 2007 12 12 | 147 | 0.3+ | 0.0  |
| 2006 07 20 | 644 | 0.1+ | 0.2+ | 2007 11 05 | 703 | 0.1− | 0.1− | 2007 12 13 | 147 | 0.1+ | 0.7− |
| 2006 07 20 | 644 | 0.0  | 0.3+ | 2007 11 05 | 703 | 1.1− | 0.6− | 2007 12 13 | 147 | 0.3+ | 0.4− |
| 2006 07 20 | 644 | 0.1+ | 0.1+ | 2007 11 05 | 703 | 0.4− | 0.2+ | 2007 12 13 | 147 | 0.6+ | 0.3− |
| 2007 09 26 | G96 | 0.7+ | 0.0  | 2007 11 15 | 699 | 0.3+ | 0.1+ | 2007 12 14 | B40 | 0.1+ | 0.1+ |
| 2007 09 26 | G96 | 0.0  | 0.1+ | 2007 11 15 | 699 | 0.1− | 0.7− | 2007 12 14 | B40 | 0.1− | 0.1+ |
| 2007 09 26 | G96 | 0.3+ | 0.1+ | 2007 11 15 | 699 | 0.9+ | 0.7+ | 2007 12 14 | B40 | 0.1− | 0.1− |
| 2007 09 26 | G96 | 0.5+ | 0.0  | 2007 11 15 | 699 | 0.0  | 0.6+ | 2007 12 14 | B40 | 0.1− | 0.1+ |
| 2007 09 27 | G96 | 0.1+ | 0.6− | 2007 12 05 | 699 | 0.2+ | 0.1+ |            |     |      |      |

2007 ST<sub>12</sub> = 2001 SE<sub>298</sub>

|                                         |            |          |           |             |             |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |
| $M$                                     | 10.47967   | (2000.0) | $P$       | $Q$         |             |
| $n$                                     | 0.17095337 | $\omega$ | 13.63449  | +0.99445741 | −0.10108220 |
| $a$                                     | 3.2152711  | $\Omega$ | 351.99697 | +0.06587496 | +0.81346349 |
| $e$                                     | 0.1113957  | $i$      | 11.99226  | +0.08194475 | +0.57276482 |
| $P$                                     | 5.77       | $H$      | 16.1      | $G$ 0.15    | $U$ 5       |

**2007 SU<sub>13</sub> = 2007 VL<sub>271</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.29738  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.21608616 | $\omega$ | 58.76443  | −0.06471291 | +0.99650555 |          |          |
| <i>a</i> | 2.7503296  | $\Omega$ | 207.67307 | −0.94987789 | −0.07773214 |          |          |
| <i>e</i> | 0.0476699  | <i>i</i> | 6.52929   | −0.30585001 | +0.03056814 |          |          |
| <i>P</i> | 4.56       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 08 16 | 691 | 0.1+ | 0.2+ | 2007 09 19 | 691 | 0.1− | 0.0  | 2007 11 01 | G96 | 0.3+ | 0.3− |
| 1993 08 16 | 691 | 0.4− | 0.1+ | 2007 09 19 | 691 | 0.2+ | 0.0  | 2007 11 01 | G96 | 0.3+ | 0.1− |
| 1993 08 16 | 691 | 0.2+ | 0.0  | 2007 09 24 | 691 | 0.1+ | 0.1− | 2007 11 01 | G96 | 0.1− | 0.3− |
| 2005 03 03 | 703 | 0.1+ | 0.6+ | 2007 09 24 | 691 | 0.0  | 0.1− | 2007 11 01 | G96 | 0.0  | 0.4− |
| 2005 03 03 | 703 | 1.3+ | 0.4− | 2007 09 24 | 691 | 0.3− | 0.3− | 2007 12 06 | G96 | 0.4− | 0.2+ |
| 2005 03 03 | 703 | 0.2− | 1.2+ | 2007 10 15 | 691 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.1− | 0.0  |
| 2005 03 03 | 703 | 0.8− | 0.4− | 2007 10 15 | 691 | 0.1− | 1.1+ | 2007 12 06 | G96 | 0.4− | 0.3− |
| 2007 09 19 | 691 | 0.1+ | 0.1− | 2007 10 15 | 691 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.1− | 0.6− |

**2007 SX<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 87.94957   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.35337275 | $\omega$ | 93.17648  | −0.04634907 | +0.99805463 |          |          |
| <i>a</i> | 1.9814389  | $\Omega$ | 173.69581 | −0.99873012 | −0.04547447 |          |          |
| <i>e</i> | 0.0684156  | <i>i</i> | 22.31749  | −0.01974637 | −0.04265006 |          |          |
| <i>P</i> | 2.79       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        | <i>U</i> | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 04 | 644 | 0.2+ | 0.4− | 2007 09 10 | 703 | 0.4− | 0.3+ | 2007 09 30 | 691 | 0.0  | 0.1− |
| 2001 05 04 | 644 | 0.6+ | 0.7− | 2007 09 10 | 691 | 0.7− | 0.0  | 2007 10 05 | 691 | 0.0  | 0.3+ |
| 2001 05 04 | 644 | 0.4+ | 0.5− | 2007 09 10 | 703 | 1.4+ | 0.5− | 2007 10 05 | 691 | 0.3− | 0.0  |
| 2001 05 29 | 644 | 0.7− | 0.6+ | 2007 09 10 | 703 | 0.4+ | 0.2+ | 2007 10 05 | 691 | 0.1− | 0.2− |
| 2001 05 29 | 644 | 0.4− | 0.6+ | 2007 09 10 | 691 | 0.1− | 0.0  | 2007 10 09 | 691 | 0.0  | 0.0  |
| 2001 05 29 | 644 | 0.2− | 0.5+ | 2007 09 30 | 691 | 0.1− | 0.1+ | 2007 10 09 | 691 | 0.0  | 0.1− |
| 2007 09 10 | 691 | 0.1+ | 0.2− | 2007 09 30 | 691 | 0.1− | 0.2+ | 2007 10 09 | 691 | 0.2− | 0.2− |

**2007 SK<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 81.26061   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.19470750 | $\omega$ | 0.35471   | +0.01410550 | +0.99869827 |          |          |
| <i>a</i> | 2.9481365  | $\Omega$ | 270.45393 | −0.91751146 | −0.00655898 |          |          |
| <i>e</i> | 0.0794667  | <i>i</i> | 2.80976   | −0.39745913 | −0.05058402 |          |          |
| <i>P</i> | 5.06       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 31 | 645 | 0.1+ | 0.2− | 2007 09 14 | 699 | 0.5−  | 1.0+  | 2007 10 12 | 691 | 0.3− | 0.4+ |
| 2002 10 31 | 645 | 0.1+ | 0.1− | 2007 09 14 | 699 | (1.6+ | 3.8−) | 2007 10 12 | 691 | 0.0  | 0.7+ |
| 2003 12 25 | 691 | 0.3− | 0.0  | 2007 09 30 | 691 | 0.1−  | 0.1+  | 2007 10 12 | 691 | 0.0  | 0.1+ |
| 2003 12 25 | 691 | 0.1+ | 0.3+ | 2007 09 30 | 691 | 0.2−  | 0.4+  | 2007 10 15 | 691 | 0.0  | 0.2+ |
| 2003 12 25 | 691 | 0.1+ | 0.1− | 2007 09 30 | 691 | 0.1−  | 0.0   | 2007 10 15 | 691 | 0.2+ | 0.0  |
| 2005 03 13 | G96 | 0.1+ | 0.0  | 2007 10 05 | 691 | 0.1+  | 0.2+  | 2007 10 15 | 691 | 0.0  | 0.0  |
| 2005 03 13 | G96 | 0.1− | 0.0  | 2007 10 05 | 691 | 0.9−  | 0.8−  | 2007 11 12 | G96 | 0.4+ | 0.2− |
| 2005 03 13 | G96 | 0.2+ | 0.2+ | 2007 10 05 | 691 | 0.6−  | 0.1+  | 2007 11 12 | G96 | 0.9+ | 0.0  |
| 2005 03 13 | G96 | 0.2+ | 0.1+ | 2007 10 06 | 691 | 1.0−  | 0.1+  | 2007 11 12 | G96 | 1.5+ | 0.3− |
| 2007 08 23 | 691 | 0.5+ | 0.2− | 2007 10 06 | 691 | 0.2+  | 0.6+  | 2007 11 12 | G96 | 1.0+ | 0.3− |
| 2007 08 23 | 691 | 0.1+ | 0.1+ | 2007 10 06 | 691 | 0.2+  | 0.2−  | 2007 12 06 | G96 | 0.2+ | 0.1− |
| 2007 08 23 | 691 | 0.1+ | 0.2− | 2007 10 08 | 691 | 0.3−  | 0.1+  | 2007 12 06 | G96 | 0.4+ | 0.2− |
| 2007 09 14 | 699 | 1.1− | 0.4+ | 2007 10 08 | 691 | 0.4−  | 0.3+  | 2007 12 06 | G96 | 0.4+ | 0.2+ |
| 2007 09 14 | 699 | 2.1+ | 1.6+ | 2007 10 08 | 691 | 0.0   | 0.1+  | 2007 12 06 | G96 | 0.4+ | 0.1− |

**2007 ST<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 324.44369  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.21457404 | $\omega$ | 191.63016 | +0.63018598 | −0.77496816 |          |          |
| <i>a</i> | 2.7632357  | $\Omega$ | 219.33290 | +0.71829106 | +0.60528144 |          |          |
| <i>e</i> | 0.1540504  | <i>i</i> | 4.32996   | +0.29482805 | +0.18182059 |          |          |
| <i>P</i> | 4.59       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 24 | 644 | 0.0  | 0.0  | 2002 08 16 | 644 | 0.1+  | 0.2−  | 2007 10 09 | 704 | 0.9+ | 0.3+ |
| 2002 06 24 | 644 | 0.4+ | 0.1+ | 2002 08 26 | 644 | 0.2−  | 0.1−  | 2007 10 09 | 704 | 0.2+ | 0.5+ |
| 2002 06 24 | 644 | 0.0  | 0.3− | 2002 08 26 | 644 | 0.2−  | 0.2−  | 2007 10 12 | G96 | 0.3+ | 0.0  |
| 2002 07 03 | 644 | 0.5+ | 0.2+ | 2005 03 17 | 691 | 0.2+  | 0.3+  | 2007 10 12 | G96 | 0.5+ | 0.0  |
| 2002 07 03 | 644 | 0.8+ | 0.1− | 2005 03 17 | 691 | 0.1+  | 0.6+  | 2007 10 12 | G96 | 0.1− | 0.1− |
| 2002 07 12 | 644 | 0.1+ | 0.3+ | 2005 03 17 | 691 | 0.1+  | 0.3+  | 2007 10 12 | G96 | 0.1+ | 0.2+ |
| 2002 07 12 | 644 | 0.4+ | 0.3+ | 2007 08 23 | 691 | 0.4−  | 0.0   | 2007 11 07 | G96 | 0.1+ | 0.3− |
| 2002 07 12 | 644 | 0.0  | 0.1+ | 2007 08 23 | 691 | 0.3−  | 0.0   | 2007 11 07 | G96 | 0.1+ | 0.2− |
| 2002 07 14 | 644 | 0.0  | 0.2+ | 2007 08 23 | 691 | 0.2−  | 0.5−  | 2007 11 07 | G96 | 0.0  | 0.3− |
| 2002 07 14 | 644 | 0.1− | 0.3− | 2007 09 03 | 703 | 0.6+  | 0.3+  | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2002 07 14 | 644 | 0.2− | 0.1+ | 2007 09 03 | 703 | 1.4+  | 0.8+  | 2007 11 13 | 291 | 0.2− | 0.2+ |
| 2002 07 21 | 644 | 0.0  | 0.3− | 2007 09 03 | 703 | 1.0+  | 1.1−  | 2007 11 13 | 291 | 0.1− | 0.1+ |
| 2002 07 21 | 644 | 0.3+ | 0.3− | 2007 09 03 | 703 | 0.1+  | 0.1−  | 2007 11 13 | 291 | 0.3− | 0.5+ |
| 2002 07 21 | 644 | 0.3+ | 0.2− | 2007 09 30 | 691 | 0.2−  | 0.1+  | 2007 11 13 | G96 | 0.8+ | 0.3− |
| 2002 07 22 | 644 | 0.0  | 0.9+ | 2007 09 30 | 691 | 0.1−  | 0.0   | 2007 11 13 | G96 | 0.5+ | 0.0  |
| 2002 07 22 | 644 | 0.0  | 0.3+ | 2007 09 30 | 691 | 0.3−  | 0.2+  | 2007 11 13 | G96 | 0.5+ | 0.1− |
| 2002 07 22 | 644 | 0.1− | 0.7+ | 2007 10 06 | 691 | 0.2+  | 0.0   | 2007 11 13 | G96 | 0.2+ | 0.1− |
| 2002 08 07 | 644 | 0.3− | 0.5− | 2007 10 06 | 691 | 0.3−  | 0.4+  | 2007 12 06 | G96 | 0.1+ | 0.1− |
| 2002 08 07 | 644 | 0.4− | 0.5− | 2007 10 06 | 691 | 0.3+  | 0.1−  | 2007 12 06 | G96 | 0.7− | 0.1+ |
| 2002 08 16 | 644 | 0.8− | 0.0  | 2007 10 09 | 704 | (1.6+ | 1.6+) | 2007 12 06 | G96 | 0.6− | 0.0  |
| 2002 08 16 | 644 | 0.7− | 0.2+ | 2007 10 09 | 704 | 0.0   | 1.3+  | 2007 12 06 | G96 | 0.0  | 0.3+ |

**2007 TU<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 273.77290  |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.22950487 | $\omega$ | 109.45028 | −0.46147473 | −0.88712393 |          |          |
| <i>a</i> | 2.6420525  | $\Omega$ | 8.04340   | +0.79335052 | −0.41631240 |          |          |
| <i>e</i> | 0.1523929  | <i>i</i> | 2.96019   | +0.39703403 | −0.19923636 |          |          |
| <i>P</i> | 4.29       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 21 | 691 | 0.3+ | 0.0  | 2007 09 10 | G96 | 0.0  | 0.5+ | 2007 10 19 | G96 | 0.1+ | 0.1− |
| 2003 10 21 | 691 | 0.4− | 0.5+ | 2007 10 02 | 188 | 0.0  | 0.1+ | 2007 10 19 | G96 | 0.4− | 0.1+ |
| 2003 10 21 | 691 | 0.0  | 0.2+ | 2007 10 02 | 188 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.3+ | 0.3+ |
| 2005 04 05 | G96 | 0.0  | 0.5− | 2007 10 02 | 188 | 0.1− | 0.1+ | 2007 10 19 | G96 | 0.6+ | 0.4− |
| 2005 04 05 | G96 | 0.2+ | 0.2+ | 2007 10 03 | 188 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.2− | 0.4+ |
| 2005 04 05 | G96 | 0.1+ | 0.1+ | 2007 10 03 | 188 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.7− | 0.2− |
| 2005 04 05 | G96 | 0.2− | 0.1+ | 2007 10 03 | 188 | 0.1− | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.4+ |
| 2005 05 12 | G96 | 0.4+ | 0.2+ | 2007 10 05 | 188 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.1− | 1.8− |
| 2005 05 12 | G96 | 0.5+ | 0.0  | 2007 10 05 | 188 | 0.4+ | 0.2+ | 2007 11 01 | G96 | 0.4+ | 0.1− |
| 2005 05 12 | G96 | 0.2− | 0.1− | 2007 10 05 | 188 | 0.4+ | 0.2+ | 2007 11 01 | G96 | 0.3− | 0.2− |
| 2005 05 12 | G96 | 0.5− | 0.4+ | 2007 10 07 | G96 | 0.2− | 0.3− | 2007 11 01 | G96 | 0.2+ | 0.0  |
| 2007 09 10 | G96 | 0.2− | 0.2+ | 2007 10 07 | G96 | 0.1− | 0.1− | 2007 11 01 | G96 | 1.4− | 0.1− |
| 2007 09 10 | G96 | 0.4+ | 0.1+ | 2007 10 07 | G96 | 0.3− | 0.2− |            |     |      |      |
| 2007 09 10 | G96 | 0.5+ | 0.5+ | 2007 10 07 | G96 | 0.1− | 0.1− |            |     |      |      |

**2007 TO<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 64.36278   |          | (2000.0)  |             | <b>P</b>    |          | <b>Q</b> |
|----------|------------|----------|-----------|-------------|-------------|----------|----------|
| <i>n</i> | 0.22778238 | $\omega$ | 307.35744 | +0.22585672 | +0.96945220 |          |          |
| <i>a</i> | 2.6553552  | $\Omega$ | 335.17997 | −0.80613256 | +0.13086323 |          |          |
| <i>e</i> | 0.0680586  | <i>i</i> | 13.17295  | −0.54693605 | +0.20745421 |          |          |
| <i>P</i> | 4.33       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 2        |

2007 DEC. 24

M.P.O. 129823

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 03 02 691 0.2− 0.3+ | 2007 09 11 691 0.1− 0.0  | 2007 10 06 941 0.4+ 0.5+ |
| 2001 03 02 691 0.6− 0.0  | 2007 09 11 691 0.1− 0.0  | 2007 10 06 941 0.5+ 0.0  |
| 2001 03 02 691 0.4− 0.1+ | 2007 09 11 691 0.3− 0.0  | 2007 10 10 G96 0.0 0.1−  |
| 2001 03 16 691 0.8+ 0.8− | 2007 09 19 691 0.1− 0.0  | 2007 10 10 G96 0.4− 0.1− |
| 2001 03 16 691 0.4+ 0.3+ | 2007 09 19 691 0.1− 0.0  | 2007 10 10 G96 0.2+ 0.1+ |
| 2001 03 16 691 0.2+ 0.3+ | 2007 09 19 691 0.0 0.0   | 2007 10 10 G96 0.5+ 0.2+ |
| 2003 09 20 644 0.0 0.1+  | 2007 10 05 941 0.2− 0.2+ | 2007 10 12 941 0.2− 0.5− |
| 2003 09 20 644 0.0 0.0   | 2007 10 05 941 0.3− 0.0  | 2007 10 12 941 0.0 0.2−  |
| 2003 09 20 644 0.0 0.2−  | 2007 10 05 941 0.4− 0.0  | 2007 10 12 941 0.3+ 0.0  |
| 2007 08 10 691 0.1− 0.1+ | 2007 10 05 941 0.6− 0.1+ | 2007 10 12 941 0.1+ 0.0  |
| 2007 08 10 691 0.8+ 0.1+ | 2007 10 06 941 0.3+ 0.2− |                          |
| 2007 08 10 691 0.1− 0.2+ | 2007 10 06 941 0.1+ 0.0  |                          |

2007 TC<sub>4</sub> = 2003 SH<sub>368</sub> = 2003 SB<sub>341</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 140.60821  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26070244 | $\omega$ | 253.54378 | −0.54485453   | +0.83805439 |
| <i>a</i> | 2.4268298  | $\Omega$ | 343.34993 | −0.72680808   | −0.48879717 |
| <i>e</i> | 0.0830229  | <i>i</i> | 5.65939   | −0.41819080   | −0.24236783 |
| <i>P</i> | 3.78       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 1996 12 13 691 0.2− 0.1−   | 2003 09 28 645 0.0 0.2−  | 2007 10 14 691 0.7+ 0.2+ |
| 1996 12 13 691 0.3+ 0.3−   | 2007 10 06 941 0.2− 0.3− | 2007 10 14 691 0.1− 0.0  |
| 1996 12 13 691 (6.2+ 2.6+) | 2007 10 06 941 0.4− 0.1+ | 2007 10 14 691 0.6− 0.7+ |
| 2003 09 16 691 0.0 0.6+    | 2007 10 06 941 0.3− 0.6+ | 2007 11 07 G96 0.4+ 0.7+ |
| 2003 09 16 691 0.2+ 0.5+   | 2007 10 07 941 0.2− 0.1− | 2007 11 07 G96 0.3− 0.1− |
| 2003 09 16 691 0.3− 0.5+   | 2007 10 07 941 0.2− 0.1− | 2007 11 07 G96 0.2− 0.4− |
| 2003 09 26 645 0.0 0.0     | 2007 10 07 941 0.1+ 0.0  | 2007 11 07 G96 0.6− 0.1− |
| 2003 09 26 645 0.1+ 0.1−   | 2007 10 07 941 0.1+ 0.1− |                          |
| 2003 09 28 645 0.0 0.1−    | 2007 10 07 941 0.2+ 0.1− |                          |

2007 TG<sub>5</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.13694   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24239210 | $\omega$ | 136.47902 | +0.96099054   | +0.27337603 |
| <i>a</i> | 2.5475560  | $\Omega$ | 207.73767 | −0.27198481   | +0.90650900 |
| <i>e</i> | 0.2468082  | <i>i</i> | 5.17556   | −0.05021402   | +0.32172501 |
| <i>P</i> | 4.07       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 18 691 0.2+ 0.1− | 2007 10 06 734 0.6+ 0.0  | 2007 10 10 G96 0.5− 0.4− |
| 2003 09 18 691 0.2− 0.5− | 2007 10 06 734 0.8+ 0.5+ | 2007 11 01 G96 0.4+ 0.3+ |
| 2003 09 18 691 0.2+ 0.2− | 2007 10 06 734 0.2+ 0.1+ | 2007 11 01 G96 0.5+ 0.3+ |
| 2003 10 18 691 0.0 0.1+  | 2007 10 06 734 0.3+ 0.4− | 2007 11 01 G96 0.0 0.1−  |
| 2003 10 18 691 0.2− 0.2+ | 2007 10 06 734 0.3+ 0.3− | 2007 11 01 G96 0.7+ 0.3+ |
| 2003 10 18 691 0.0 0.1+  | 2007 10 06 300 0.4− 0.3+ | 2007 11 09 G96 0.5+ 0.0  |
| 2007 09 20 691 0.1− 0.1+ | 2007 10 06 300 0.4− 0.5− | 2007 11 09 G96 0.2+ 0.0  |
| 2007 09 20 691 0.3− 0.2− | 2007 10 06 300 0.3− 0.2+ | 2007 11 09 G96 0.0 0.3+  |
| 2007 09 20 691 0.2− 0.0  | 2007 10 06 300 0.0 0.4+  | 2007 11 09 G96 0.3+ 0.6− |
| 2007 10 04 703 0.4+ 0.4+ | 2007 10 06 300 0.3+ 0.4− | 2007 12 06 G96 0.3− 0.0  |
| 2007 10 04 703 0.3− 0.3+ | 2007 10 10 G96 0.3− 0.2− | 2007 12 06 G96 0.2− 0.0  |
| 2007 10 04 703 0.4+ 1.3+ | 2007 10 10 G96 0.7− 0.4− | 2007 12 06 G96 0.2− 0.1− |
| 2007 10 04 703 0.4− 1.2+ | 2007 10 10 G96 0.1− 0.2− | 2007 12 06 G96 0.0 0.4−  |

2007 TS<sub>5</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 307.67612  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.38116436 | $\omega$ | 252.92685 | +0.00686318   | −0.99430192 |
| <i>a</i> | 1.8839145  | $\Omega$ | 197.73064 | +0.99762236   | +0.01410347 |
| <i>e</i> | 0.1311492  | <i>i</i> | 20.44505  | +0.06857491   | −0.10566351 |
| <i>P</i> | 2.59       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1999 10 14 645 0.2+ 0.2− | 2007 10 07 704 1.1+ 1.6+ | 2007 10 15 691 0.2− 0.2+ |
| 1999 10 14 645 0.2− 0.0  | 2007 10 09 704 0.5− 0.2− | 2007 10 15 691 0.2− 0.1− |
| 2006 03 25 644 0.4+ 0.2+ | 2007 10 09 704 1.0+ 0.8− | 2007 10 19 704 1.1− 0.0  |
| 2006 03 25 644 0.2+ 0.8+ | 2007 10 09 704 0.0 0.8+  | 2007 10 19 704 1.6− 1.7− |
| 2006 03 25 644 0.2+ 0.6+ | 2007 10 09 704 1.2+ 1.2+ | 2007 10 19 704 1.0+ 0.1− |
| 2006 04 25 691 0.3− 0.5+ | 2007 10 09 704 0.1+ 0.5− | 2007 10 19 704 0.2− 0.0  |
| 2006 04 25 691 0.2− 0.6+ | 2007 10 11 703 0.3+ 0.4− | 2007 10 20 703 0.7+ 1.2− |
| 2006 04 25 691 0.3− 0.6+ | 2007 10 11 703 0.3− 0.0  | 2007 10 20 703 0.5+ 0.8− |
| 2007 09 20 703 0.0 0.1−  | 2007 10 11 703 0.2− 1.1− | 2007 10 20 703 1.1+ 0.2+ |
| 2007 09 20 703 0.3− 0.6+ | 2007 10 11 704 0.3+ 0.2+ | 2007 10 20 703 1.6+ 1.0− |
| 2007 09 20 703 0.1− 0.3− | 2007 10 11 703 0.1+ 0.7+ | 2007 10 31 703 0.1+ 0.1+ |
| 2007 09 20 703 1.0− 0.1+ | 2007 10 11 704 0.2+ 0.1+ | 2007 10 31 703 0.6+ 0.7+ |
| 2007 10 06 704 0.0 0.2+  | 2007 10 11 704 0.2+ 0.9+ | 2007 10 31 703 0.6− 0.4+ |
| 2007 10 06 704 0.3− 0.0  | 2007 10 11 704 0.2+ 1.8+ | 2007 10 31 703 0.7− 0.4+ |
| 2007 10 06 704 0.1− 0.9− | 2007 10 14 704 0.1− 0.4+ | 2007 11 11 704 0.5− 0.2+ |
| 2007 10 06 704 0.3− 0.1+ | 2007 10 14 704 0.2− 0.2+ | 2007 11 11 704 0.7− 0.1+ |
| 2007 10 06 704 0.0 0.1+  | 2007 10 14 704 0.3− 0.5+ | 2007 11 11 704 0.2− 0.1+ |
| 2007 10 07 704 0.1+ 0.3+ | 2007 10 14 704 0.7− 0.1− | 2007 11 11 704 0.2− 0.4− |
| 2007 10 07 704 0.6+ 0.4− | 2007 10 14 704 0.3− 0.7+ | 2007 11 11 704 0.6− 0.0  |
| 2007 10 07 704 0.3+ 0.8+ | 2007 10 15 691 0.1− 0.1− |                          |

2007 TH<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.60815  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17430447 | $\omega$ | 113.24792 | +0.60564788   | −0.78721778 |
| <i>a</i> | 3.1739277  | $\Omega$ | 298.96298 | +0.67295329   | +0.58457784 |
| <i>e</i> | 0.0851096  | <i>i</i> | 7.62529   | +0.42464634   | +0.19635916 |
| <i>P</i> | 5.65       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1995 07 02 691 0.0 0.2+  | 2007 10 08 703 1.4+ 0.5+ | 2007 10 14 703 0.3− 0.4+ |
| 1995 07 02 691 0.3− 0.3+ | 2007 10 08 703 1.4+ 1.4+ | 2007 10 14 703 0.4− 0.1+ |
| 2001 11 18 645 0.1+ 0.2− | 2007 10 08 703 1.0+ 0.8+ | 2007 10 14 703 1.6− 1.7− |
| 2001 11 18 645 0.1+ 0.2− | 2007 10 09 699 0.5+ 0.4− | 2007 11 01 703 0.6− 0.0  |
| 2007 09 12 703 0.6− 0.8+ | 2007 10 09 699 0.7− 0.1+ | 2007 11 01 703 0.4− 0.4+ |
| 2007 09 12 703 0.4+ 0.3− | 2007 10 09 699 0.4− 0.6− | 2007 11 01 703 0.3+ 0.0  |
| 2007 09 12 703 0.1+ 0.4+ | 2007 10 09 699 0.0 0.3−  | 2007 11 01 703 0.6− 0.3− |
| 2007 09 12 703 0.3+ 0.4+ | 2007 10 10 A77 0.2− 0.5+ | 2007 11 08 704 0.3− 0.1− |
| 2007 10 06 A77 0.1+ 0.1− | 2007 10 10 A77 0.4− 0.3+ | 2007 11 08 704 1.2− 1.0− |
| 2007 10 06 A77 0.2+ 0.1+ | 2007 10 10 A77 0.4− 0.3+ | 2007 11 08 704 0.5− 0.5− |
| 2007 10 06 A77 0.1+ 0.7+ | 2007 10 14 703 0.8− 0.3+ | 2007 11 11 699 0.8+ 0.1− |
| 2007 10 07 A77 0.2− 0.4− | 2007 10 14 703 0.3+ 1.3+ | 2007 11 11 699 0.6− 0.0  |
| 2007 10 07 A77 0.2− 0.7− | 2007 10 14 703 0.6+ 1.0+ | 2007 11 11 699 1.2− 0.2+ |
| 2007 10 07 A77 0.2− 0.1− | 2007 10 14 703 0.6+ 0.0  | 2007 11 11 699 1.0+ 0.2− |
| 2007 10 08 703 0.3− 1.5+ | 2007 10 14 703 0.2− 0.3+ |                          |

2007 TO<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.20499   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22804040 | $\omega$ | 16.18327  | +0.96130426   | +0.24728222 |
| <i>a</i> | 2.6533519  | $\Omega$ | 328.68166 | −0.27149488   | +0.77558369 |
| <i>e</i> | 0.0589558  | <i>i</i> | 13.51002  | −0.04674026   | +0.58079381 |
| <i>P</i> | 4.32       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2005 02 02 691 0.4+ 0.1+ | 2007 09 12 703 0.2− 0.5− | 2007 10 08 703 1.0− 0.1− |
| 2005 02 02 691 0.3+ 0.4− | 2007 09 18 703 0.3+ 0.4+ | 2007 10 10 699 0.2− 1.4− |
| 2005 02 02 691 0.4+ 0.4− | 2007 09 18 703 0.9+ 0.5+ | 2007 10 10 699 0.9+ 0.8− |
| 2005 03 17 G96 0.4+ 0.1+ | 2007 09 18 703 1.1+ 0.1+ | 2007 10 10 699 0.2− 1.6− |
| 2005 03 17 G96 0.3+ 0.0  | 2007 09 18 703 0.2+ 0.2− | 2007 10 10 699 0.1− 1.3− |
| 2005 03 17 G96 0.2+ 0.0  | 2007 10 06 A77 1.5− 1.6+ | 2007 10 21 703 0.3+ 0.5− |
| 2005 03 17 703 0.4+ 0.7− | 2007 10 06 A77 0.6− 1.1+ | 2007 10 21 703 0.1+ 0.6+ |
| 2005 03 17 G96 0.1− 0.1− | 2007 10 07 A77 0.7− 1.4+ | 2007 10 21 703 0.7− 0.3+ |
| 2005 03 17 703 1.7− 0.9+ | 2007 10 07 A77 0.2− 0.3+ | 2007 10 21 703 1.6+ 1.1+ |
| 2005 03 17 703 0.4− 0.9+ | 2007 10 07 A77 0.1− 0.1+ | 2007 11 07 699 0.2− 1.0− |

## M.P.O. 129824

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2005 03 17 | 703 | (2.4− 1.0−) | 2007 10 07 | A77 | 0.1+ 0.1+ | 2007 11 07 | 699 | 1.3+ 0.6− |
| 2007 09 12 | 703 | 0.9+ 0.5−   | 2007 10 08 | 703 | 0.8− 0.6− | 2007 11 07 | 699 | 0.6− 0.7− |
| 2007 09 12 | 703 | 0.0 0.5+    | 2007 10 08 | 703 | 0.1− 0.5+ | 2007 11 07 | 699 | 0.6+ 0.7+ |
| 2007 09 12 | 703 | 0.1+ 0.7+   | 2007 10 08 | 703 | 0.9− 0.2+ |            |     |           |

**2007 TT<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.64094  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17478144 | $\omega$ 250.65103 | +0.37078347   | −0.92871575 |
| <i>a</i> | 3.1681508  | $\Omega$ 177.58042 | +0.87340992   | +0.34775427 |
| <i>e</i> | 0.1580891  | <i>i</i> 3.50980   | +0.31571305   | +0.12866245 |
| <i>P</i> | 5.64       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2001 08 21 | 807 | 0.4− 0.0  | 2007 10 04 | 703 | 0.3− 0.8+ | 2007 10 18 | G96 | 0.2+ 0.1− |
| 2001 08 21 | 807 | 0.2− 0.2+ | 2007 10 06 | 704 | 0.7+ 0.5− | 2007 10 19 | 291 | 0.4− 0.2+ |
| 2001 09 17 | 291 | 0.0 0.3+  | 2007 10 06 | 704 | 0.7+ 0.1− | 2007 10 19 | 291 | 0.2− 0.2+ |
| 2001 09 17 | 291 | 0.4+ 0.5+ | 2007 10 06 | 704 | 0.0 0.3+  | 2007 10 19 | 291 | 0.4− 0.3+ |
| 2001 09 17 | 291 | 0.4− 0.5+ | 2007 10 06 | 704 | 0.1+ 1.0− | 2007 10 19 | 704 | 0.1− 0.9+ |
| 2003 01 03 | 291 | 0.2+ 0.0  | 2007 10 06 | 704 | 0.6− 0.4− | 2007 10 19 | G96 | 0.1− 0.2− |
| 2003 01 03 | 291 | 0.1+ 0.1− | 2007 10 08 | 704 | 0.3− 1.9− | 2007 10 19 | G96 | 0.2− 0.3− |
| 2003 01 03 | 291 | 0.3− 0.2+ | 2007 10 08 | 704 | 1.3+ 0.2+ | 2007 10 19 | 704 | 0.4− 0.4+ |
| 2004 03 17 | 691 | 0.0 0.5+  | 2007 10 08 | 704 | 0.2+ 0.2− | 2007 10 19 | G96 | 0.2− 0.1− |
| 2004 03 17 | 691 | 0.3+ 0.6+ | 2007 10 08 | 704 | 0.0 0.2−  | 2007 10 19 | 704 | 0.6− 1.6+ |
| 2004 03 17 | 691 | 0.2+ 0.4+ | 2007 10 08 | G96 | 0.1+ 0.0  | 2007 10 19 | G96 | 0.3+ 0.2− |
| 2007 09 09 | G96 | 0.4+ 0.1− | 2007 10 08 | G96 | 0.5+ 0.2− | 2007 11 05 | G96 | 0.2+ 0.2− |
| 2007 09 09 | G96 | 0.2− 0.2− | 2007 10 08 | G96 | 0.3+ 0.3− | 2007 11 05 | G96 | 0.3+ 0.2− |
| 2007 09 09 | G96 | 0.2+ 0.1− | 2007 10 08 | G96 | 0.1+ 0.3− | 2007 11 05 | 704 | 0.4+ 0.5+ |
| 2007 09 09 | G96 | 0.2+ 0.1+ | 2007 10 17 | 699 | 1.1− 0.0  | 2007 11 05 | G96 | 0.4− 0.2− |
| 2007 10 04 | 683 | 1.6− 1.5− | 2007 10 17 | 699 | 0.3+ 0.3− | 2007 11 05 | G96 | 0.1+ 0.2− |
| 2007 10 04 | 683 | 0.3− 1.2+ | 2007 10 17 | 699 | 0.1− 0.0  | 2007 11 05 | 704 | 0.2+ 0.0  |
| 2007 10 04 | 683 | 0.4+ 0.3− | 2007 10 17 | 699 | 1.2+ 0.3− | 2007 11 05 | 704 | 0.3− 0.1+ |
| 2007 10 04 | 703 | 0.7+ 1.3+ | 2007 10 18 | G96 | 0.2+ 0.5− | 2007 11 05 | 704 | 0.2+ 0.6+ |
| 2007 10 04 | 703 | 0.2− 1.2+ | 2007 10 18 | G96 | 0.2+ 0.3− | 2007 11 05 | 704 | 0.2− 0.9+ |
| 2007 10 04 | 703 | 1.6− 0.0  | 2007 10 18 | G96 | 0.2+ 0.3− |            |     |           |

**2007 TY<sub>11</sub> = 2005 GA<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 12.73348   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18735446 | $\omega$ 340.73437 | +0.98658954   | −0.14797240 |
| <i>a</i> | 3.0247769  | $\Omega$ 28.05258  | +0.16226144   | +0.84346690 |
| <i>e</i> | 0.2492289  | <i>i</i> 8.42286   | +0.01767213   | +0.51639884 |
| <i>P</i> | 5.26       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2005 04 10 | G96 | 0.3− 0.4− | 2007 10 11 | 704 | 0.8+ 0.5− | 2007 11 01 | G96 | 0.1+ 0.4− |
| 2005 04 10 | G96 | 0.5− 0.3− | 2007 10 11 | 704 | 0.2+ 0.0  | 2007 11 01 | G96 | 0.5+ 0.4− |
| 2005 04 10 | G96 | 0.3+ 0.2− | 2007 10 11 | 704 | 0.1− 0.4− | 2007 11 01 | G96 | 0.0 0.6−  |
| 2005 04 10 | G96 | 0.1− 0.1− | 2007 10 13 | 691 | 0.2− 0.1+ | 2007 11 03 | 699 | 0.1− 0.1+ |
| 2007 09 12 | G96 | 0.3+ 0.5− | 2007 10 13 | 691 | 0.3− 0.2− | 2007 11 03 | 699 | 0.1+ 0.4− |
| 2007 09 12 | G96 | 0.3+ 0.3− | 2007 10 13 | 691 | 0.3− 0.1− | 2007 11 03 | 699 | 0.8+ 0.4− |
| 2007 09 12 | G96 | 0.1+ 0.4− | 2007 10 14 | 704 | 0.2+ 0.5+ | 2007 11 03 | 699 | 0.4+ 0.1− |
| 2007 09 12 | G96 | 0.1+ 0.4− | 2007 10 14 | 704 | 0.1− 0.4+ | 2007 11 04 | G96 | 0.1+ 0.4− |
| 2007 09 25 | G96 | 0.0 0.4−  | 2007 10 14 | 704 | 0.0 0.3+  | 2007 11 04 | G96 | 0.5+ 0.5− |
| 2007 09 25 | G96 | 0.5+ 0.2− | 2007 10 14 | 704 | 0.3− 0.3+ | 2007 11 04 | G96 | 0.2+ 0.5− |
| 2007 09 25 | G96 | 0.2+ 0.2− | 2007 10 14 | 704 | 0.1+ 0.8+ | 2007 11 04 | G96 | 0.6+ 0.3− |
| 2007 09 25 | G96 | 0.1+ 0.4− | 2007 10 14 | 106 | 0.6− 0.1+ | 2007 11 06 | 704 | 0.6+ 0.8+ |
| 2007 10 06 | 704 | 0.1− 0.8+ | 2007 10 14 | 106 | 0.4− 0.8− | 2007 11 06 | 704 | 0.4− 0.4+ |
| 2007 10 06 | 704 | 0.4− 1.3+ | 2007 10 14 | 106 | 0.9+ 0.1+ | 2007 11 06 | 704 | 0.1+ 1.3+ |
| 2007 10 06 | 704 | 0.2+ 1.3+ | 2007 10 14 | 106 | 0.4− 0.9− | 2007 11 06 | 704 | 0.6− 1.1+ |
| 2007 10 06 | 704 | 0.5− 0.5+ | 2007 10 15 | 703 | 0.4− 0.5− | 2007 11 06 | 704 | 0.4− 1.5+ |
| 2007 10 06 | 704 | 0.3− 0.9+ | 2007 10 15 | 703 | 0.8− 0.0  | 2007 11 12 | 703 | 0.7− 0.3− |
| 2007 10 08 | 704 | 0.4− 0.5− | 2007 10 15 | 703 | 0.1− 0.3+ | 2007 11 12 | 703 | 0.6− 1.2− |
| 2007 10 08 | 704 | 0.3− 0.2− | 2007 10 15 | 703 | 0.6− 1.5− | 2007 11 12 | 703 | 0.4− 0.5− |
| 2007 10 08 | 704 | 0.5− 0.0  | 2007 10 20 | 703 | 0.7+ 0.4− | 2007 11 12 | 703 | 1.0− 0.0  |
| 2007 10 08 | 704 | 0.6+ 0.6+ | 2007 10 20 | 703 | 0.2− 0.7− | 2007 11 15 | 704 | 0.2+ 0.7+ |

## 2007 DEC. 24

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2007 10 08 | 704 | 1.3+ 0.3+ | 2007 10 20 | 703 | 0.6− 0.0  | 2007 11 15 | 704 | 0.1+ 0.9+ |
| 2007 10 08 | 704 | 0.8− 0.5+ | 2007 10 21 | 691 | 0.5− 0.1+ | 2007 11 15 | 704 | 0.4+ 0.2− |
| 2007 10 08 | 704 | 0.4+ 0.6+ | 2007 10 21 | 691 | 0.1− 0.2− | 2007 11 15 | 704 | 0.5− 0.3+ |
| 2007 10 08 | 704 | 0.5+ 0.8+ | 2007 10 21 | 691 | 0.2− 0.1− | 2007 11 18 | G96 | 0.0 0.2−  |
| 2007 10 09 | 691 | 0.3− 0.0  | 2007 10 30 | 703 | 0.4+ 0.5+ | 2007 11 18 | G96 | 0.5+ 0.2− |
| 2007 10 09 | 691 | 0.2− 0.1− | 2007 10 30 | 703 | 0.2− 0.1− | 2007 11 18 | G96 | 0.2− 0.3− |
| 2007 10 09 | 691 | 0.2− 0.1− | 2007 10 30 | 703 | 0.7+ 0.2− | 2007 11 18 | G96 | 0.2− 0.1− |
| 2007 10 11 | 704 | 0.4+ 0.9− | 2007 10 30 | 703 | 0.6+ 0.7− |            |     |           |
| 2007 10 11 | 704 | 0.7+ 0.1+ | 2007 11 01 | G96 | 0.5+ 0.4− |            |     |           |

**2007 TL<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 324.44783  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24026706 | $\omega$ 258.15564 | +0.18127740   | −0.98343053 |
| <i>a</i> | 2.5625552  | $\Omega$ 181.40357 | +0.92719723   | +0.17148879 |
| <i>e</i> | 0.1501993  | <i>i</i> 3.98877   | +0.32778622   | +0.05878771 |
| <i>P</i> | 4.10       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2003 10 29 | 699 | 0.7− 1.0−   | 2007 10 06 | 704 | 0.1− 0.4+ | 2007 10 20 | 703 | 0.3+ 0.6− |
| 2003 10 29 | 699 | (2.4− 0.8+) | 2007 10 06 | 691 | 0.3− 0.2− | 2007 10 20 | 704 | 0.4+ 0.1+ |
| 2003 10 29 | 691 | 0.3+ 0.2−   | 2007 10 06 | 691 | 0.2− 0.0  | 2007 10 20 | 703 | 0.3− 0.8− |
| 2003 10 29 | 699 | 0.9− 0.2+   | 2007 10 06 | 691 | 0.3− 0.0  | 2007 10 20 | 703 | 0.4− 0.1+ |
| 2003 10 29 | 691 | 0.3+ 0.3−   | 2007 10 08 | 704 | 1.0+ 1.1+ | 2007 10 23 | 691 | 0.3− 0.1+ |
| 2003 10 29 | 699 | 1.3+ 0.6−   | 2007 10 08 | 704 | 0.1+ 0.7+ | 2007 10 23 | 691 | 0.2− 0.1− |
| 2003 10 29 | 691 | 0.4+ 0.2−   | 2007 10 08 | 704 | 0.2− 0.6+ | 2007 10 23 | 691 | 0.0 0.2−  |
| 2003 11 19 | 699 | 0.2− 0.1−   | 2007 10 10 | 691 | 0.2− 0.3− | 2007 11 05 | 704 | 0.6− 0.7− |
| 2003 11 19 | 699 | 0.5− 0.7+   | 2007 10 10 | 691 | 0.5− 0.2− | 2007 11 05 | 704 | 0.3− 0.1+ |
| 2003 11 19 | 699 | 0.3− 0.8−   | 2007 10 10 | 691 | 0.1− 0.2− | 2007 11 05 | 704 | 0.7+ 0.2− |
| 2003 11 19 | 699 | 0.7+ 0.5−   | 2007 10 11 | 704 | 1.1− 0.1− | 2007 11 12 | 704 | 0.8− 0.1+ |
| 2005 03 08 | G96 | 0.2+ 0.4+   | 2007 10 11 | 704 | 0.0 0.7+  | 2007 11 12 | 704 | 0.0 0.1+  |
| 2005 03 08 | G96 | 0.0 0.4+    | 2007 10 11 | 704 | 1.7− 1.0+ | 2007 11 12 | 704 | 0.4+ 0.3+ |
| 2005 03 08 | G96 | 0.1− 0.3+   | 2007 10 11 | 704 | 0.6+ 1.5+ | 2007 11 13 | G96 | 0.4+ 0.6− |
| 2005 03 08 | G96 | 0.2+ 0.2+   | 2007 10 14 | 704 | 0.2+ 1.0+ | 2007 11 13 | G96 | 0.2+ 0.7− |
| 2005 04 02 | 691 | 0.4+ 0.8+   | 2007 10 14 | 691 | 0.1− 0.6− | 2007 11 13 | G96 | 0.5− 0.9− |
| 2005 04 02 | 691 | 0.3+ 0.8+   | 2007 10 14 | 704 | 0.6+ 1.1+ | 2007 11 14 | 704 | 0.4+ 0.6+ |
| 2005 04 02 | 691 | 0.0 0.4+    | 2007 10 14 | 691 | 0.3+ 0.2− | 2007 11 14 | 704 | 0.1+ 0.4+ |
| 2007 09 25 | G96 | 0.2− 0.8−   | 2007 10 14 | 704 | 0.8+ 1.6+ | 2007 11 14 | 704 | 0.0 0.3+  |
| 2007 09 25 | G96 | 0.2+ 1.0−   | 2007 10 14 | 704 | 0.2− 0.8+ | 2007 11 14 | 704 | 0.3+ 0.3+ |
| 2007 09 25 | G96 | 0.2− 0.6−   | 2007 10 14 | 691 | 0.2− 0.4− | 2007 11 14 | 704 | 0.4− 0.2+ |
| 2007 09 25 | G96 | 0.1− 0.8−   | 2007 10 14 | 704 | 0.7+ 1.0+ | 2007 11 17 | 291 | 0.0 0.1−  |
| 2007 10 06 | 704 | 0.7+ 0.8+   | 2007 10 20 | 704 | 0.1+ 0.7+ | 2007 11 17 | 291 | 0.1+ 0.1− |
| 2007 10 06 | 704 | 0.1+ 0.4+   | 2007 10 20 | 704 | 1.0− 0.2+ | 2007 11 17 | 291 | 0.1+ 0.1− |
| 2007 10 06 | 704 | 1.0+ 0.4−   | 2007 10 20 | 704 | 0.4− 0.3+ |            |     |           |
| 2007 10 06 | 704 | 0.9− 0.2+   | 2007 10 20 | 703 | 0.4+ 0.3− |            |     |           |

**2007 TN<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.08526   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25526396 | $\omega$ 333.61262 | +0.98659246   | −0.15467252 |
| <i>a</i> | 2.4611781  | $\Omega$ 35.40702  | +0.16107115   | +0.87139897 |
| <i>e</i> | 0.1722738  | <i>i</i> 5.15665   | +0.02629452   | +0.46555370 |
| <i>P</i> | 3.86       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 09 | G96 | 0.5+ | 0.1− | 2007 10 11 | 704 | 0.3− | 0.3− | 2007 10 30 | G96 | 0.0  | 0.4− |
| 2006 05 09 | G96 | 0.3− | 0.3+ | 2007 10 11 | 704 | 1.4− | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.3− |
| 2006 05 09 | G96 | 0.3+ | 0.2− | 2007 10 12 | 691 | 0.9− | 0.7− | 2007 10 30 | G96 | 0.5+ | 0.3− |
| 2006 05 09 | G96 | 0.3− | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.1− | 2007 11 06 | 704 | 1.1− | 0.3+ |
| 2006 06 01 | G96 | 0.4− | 0.0  | 2007 10 12 | 691 | 0.3+ | 0.2− | 2007 11 06 | 704 | 0.8− | 0.4− |
| 2006 06 01 | G96 | 0.1− | 0.1+ | 2007 10 14 | 704 | 0.5− | 0.9− | 2007 11 06 | 704 | 0.3− | 0.4− |
| 2006 06 01 | G96 | 0.2− | 0.2− | 2007 10 14 | 704 | 0.2+ | 0.1+ | 2007 11 06 | 704 | 0.5− | 0.4+ |
| 2006 06 01 | G96 | 0.6+ | 0.1+ | 2007 10 14 | 704 | 0.0  | 1.4− | 2007 11 06 | A50 | 0.5− | 0.7+ |
| 2007 10 06 | 704 | 0.7+ | 0.2+ | 2007 10 14 | 704 | 0.8+ | 1.2+ | 2007 11 06 | A50 | 0.3− | 0.2+ |
| 2007 10 06 | 704 | 0.1+ | 0.0  | 2007 10 14 | 704 | 1.2+ | 0.4+ | 2007 11 06 | A50 | 0.3− | 0.5− |
| 2007 10 06 | 704 | 0.7− | 0.2− | 2007 10 15 | 703 | 0.3− | 0.2+ | 2007 11 06 | A50 | 0.6− | 0.0  |

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M.P.O. 129825

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 06 | 704 | 0.6+ | 0.5+ | 2007 10 15 | 703 | 0.4− | 0.6+ | 2007 11 15 | 704 | 0.7+ | 1.0+ |
| 2007 10 06 | 704 | 0.2+ | 0.4+ | 2007 10 15 | 703 | 0.5− | 0.2+ | 2007 11 15 | 704 | 0.6− | 0.2+ |
| 2007 10 06 | 691 | 0.1− | 0.3− | 2007 10 15 | 703 | 0.6+ | 0.5+ | 2007 11 15 | 704 | 0.8+ | 0.6+ |
| 2007 10 06 | 691 | 0.2+ | 0.4− | 2007 10 16 | 691 | 0.3+ | 0.2− | 2007 11 15 | 704 | 0.9+ | 0.7+ |
| 2007 10 06 | 691 | 0.1+ | 0.3− | 2007 10 16 | 691 | 0.5+ | 0.5− | 2007 11 18 | G96 | 0.3+ | 0.3− |
| 2007 10 08 | 704 | 0.8+ | 1.1+ | 2007 10 16 | 691 | 0.3+ | 0.2− | 2007 11 18 | G96 | 0.1+ | 0.5− |
| 2007 10 08 | 704 | 0.1− | 0.3+ | 2007 10 20 | 691 | 0.1+ | 0.1− | 2007 11 18 | G96 | 0.3+ | 0.6− |
| 2007 10 08 | 704 | 0.1− | 0.1− | 2007 10 20 | 691 | 0.2+ | 0.2− | 2007 11 18 | G96 | 0.0  | 0.4− |
| 2007 10 11 | 704 | 1.0− | 0.1+ | 2007 10 20 | 691 | 0.0  | 0.4− |            |     |      |      |
| 2007 10 11 | 704 | 0.6− | 0.5+ | 2007 10 30 | G96 | 0.2+ | 0.2− |            |     |      |      |

**2007 TQ<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.26064  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.17543315 | $\omega$ | 17.99529 | +0.54840826   | −0.81130826 |
| <i>a</i> | 3.1602998  | $\Omega$ | 39.44582 | +0.72269061   | +0.33798724 |
| <i>e</i> | 0.2341705  | <i>i</i> | 18.59065 | +0.42067407   | +0.47701524 |
| <i>P</i> | 5.62       | <i>H</i> | 15.3     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 09 | 644 | 0.0  | 0.7+ | 2007 10 11 | 704 | 0.0   | 0.2−  | 2007 11 01 | 704 | 0.5+  | 0.1+  |
| 2001 09 09 | 644 | 0.1− | 0.3+ | 2007 10 11 | 704 | 0.2+  | 0.5−  | 2007 11 01 | 704 | 0.2−  | 0.1+  |
| 2001 09 09 | 644 | 0.6− | 0.0  | 2007 10 14 | 704 | 0.7−  | 0.9+  | 2007 11 02 | 691 | 0.4−  | 0.2+  |
| 2001 09 26 | 644 | 0.5− | 0.3− | 2007 10 14 | 704 | 0.9+  | 0.7+  | 2007 11 02 | 691 | (1.5− | 0.4−) |
| 2001 09 26 | 644 | 0.2− | 0.3− | 2007 10 14 | 704 | 0.0   | 0.5−  | 2007 11 02 | 691 | 0.3−  | 0.0   |
| 2001 09 26 | 644 | 0.4+ | 0.2− | 2007 10 14 | 704 | 0.3−  | 0.4+  | 2007 11 06 | 704 | 0.2+  | 0.7+  |
| 2001 10 07 | 644 | 0.2+ | 0.0  | 2007 10 14 | 704 | (1.7+ | 0.2−) | 2007 11 06 | 704 | 0.2+  | 1.1+  |
| 2001 10 07 | 644 | 0.2− | 0.1− | 2007 10 15 | 703 | 1.1+  | 0.3+  | 2007 11 06 | 704 | 0.0   | 0.4+  |
| 2001 10 14 | 644 | 0.0  | 0.7− | 2007 10 15 | 703 | 0.5+  | 0.6+  | 2007 11 06 | 704 | 0.2+  | 1.1−  |
| 2001 10 14 | 644 | 0.3+ | 0.5− | 2007 10 15 | 703 | (0.4− | 1.9+) | 2007 11 06 | 704 | 0.0   | 0.4+  |
| 2001 10 15 | 644 | 0.0  | 0.0  | 2007 10 15 | 703 | (1.6+ | 2.2+) | 2007 11 07 | 703 | 0.1+  | 0.0   |
| 2001 10 15 | 644 | 0.2− | 0.2+ | 2007 10 18 | 691 | 0.2−  | 0.1−  | 2007 11 07 | 703 | 0.3+  | 0.5−  |
| 2001 10 15 | 644 | 0.1+ | 0.5+ | 2007 10 18 | 691 | 0.1−  | 0.3−  | 2007 11 07 | 703 | 0.2+  | 0.1+  |
| 2001 10 23 | 644 | 0.0  | 0.0  | 2007 10 18 | 691 | 0.2−  | 0.2−  | 2007 11 07 | 703 | 0.1−  | 0.2+  |
| 2001 10 23 | 644 | 0.3+ | 0.2− | 2007 10 20 | 703 | 0.5−  | 0.1−  | 2007 11 11 | 699 | 0.0   | 0.2+  |
| 2001 10 23 | 644 | 0.4+ | 0.9+ | 2007 10 20 | 703 | 0.8−  | 0.1+  | 2007 11 11 | 699 | 0.0   | 0.2−  |
| 2007 09 08 | 703 | 0.4+ | 0.2− | 2007 10 20 | 703 | 0.2−  | 0.3+  | 2007 11 11 | 699 | 0.5−  | 0.4−  |
| 2007 09 08 | 703 | 0.2+ | 0.1− | 2007 10 20 | 703 | 0.5+  | 0.9−  | 2007 11 11 | 699 | 0.2+  | 0.1−  |
| 2007 10 06 | 704 | 1.1+ | 1.1+ | 2007 10 22 | 704 | 0.9+  | 1.4−  | 2007 11 18 | 704 | 0.2+  | 0.1+  |
| 2007 10 06 | 704 | 0.4+ | 0.5+ | 2007 10 22 | 704 | 0.1+  | 1.3−  | 2007 11 18 | 704 | 0.3−  | 0.2+  |
| 2007 10 06 | 704 | 0.2+ | 0.3+ | 2007 10 22 | 704 | 0.1+  | 0.4−  | 2007 11 18 | 704 | 0.2−  | 0.0   |
| 2007 10 06 | 704 | 0.6+ | 0.1+ | 2007 10 22 | 704 | 0.1−  | 0.2−  | 2007 11 18 | 704 | 0.1−  | 0.3+  |
| 2007 10 06 | 691 | 0.4− | 0.1− | 2007 10 30 | H51 | 0.9+  | 0.9−  | 2007 11 18 | 704 | 0.2+  | 0.0   |
| 2007 10 06 | 691 | 0.3− | 0.2+ | 2007 10 30 | H51 | 0.2+  | 0.5−  | 2007 11 19 | 691 | 0.2−  | 0.0   |
| 2007 10 06 | 691 | 0.2− | 0.1+ | 2007 10 30 | H51 | (1.7+ | 0.5−) | 2007 11 19 | 691 | 0.4−  | 0.1+  |
| 2007 10 08 | 704 | 0.6+ | 0.0  | 2007 10 30 | 703 | 0.4−  | 0.2−  | 2007 11 19 | 691 | 0.3−  | 0.1−  |
| 2007 10 08 | 704 | 1.1+ | 0.5+ | 2007 10 30 | 703 | 0.1+  | 0.3+  | 2007 11 20 | 704 | 0.0   | 0.3−  |
| 2007 10 08 | 704 | 0.9+ | 1.4− | 2007 10 30 | 703 | 0.3+  | 0.5+  | 2007 11 20 | 704 | 0.6−  | 0.0   |
| 2007 10 08 | 704 | 0.6+ | 0.5+ | 2007 10 30 | 703 | 0.2−  | 0.4+  | 2007 11 20 | 704 | 0.6+  | 0.3+  |
| 2007 10 10 | 691 | 0.2− | 0.1− | 2007 10 31 | G96 | 0.1+  | 0.2−  | 2007 11 20 | 704 | 0.2−  | 0.3+  |
| 2007 10 10 | 691 | 0.0  | 0.1− | 2007 10 31 | G96 | 0.3+  | 0.3−  | 2007 11 20 | 704 | 0.5+  | 0.0   |
| 2007 10 10 | 691 | 0.3− | 0.0  | 2007 10 31 | G96 | 0.4+  | 0.3−  | 2007 12 05 | 699 | 0.3+  | 0.3+  |
| 2007 10 11 | 704 | 0.5+ | 0.4+ | 2007 10 31 | G96 | 0.1+  | 0.3−  | 2007 12 05 | 699 | 0.4+  | 0.1−  |
| 2007 10 11 | 704 | 0.4+ | 0.2+ | 2007 11 01 | 704 | 0.1+  | 0.3+  | 2007 12 05 | 699 | 0.2+  | 0.2−  |
| 2007 10 11 | 704 | 0.4+ | 0.2− | 2007 11 01 | 704 | 0.4+  | 0.8+  | 2007 12 05 | 699 | 0.4+  | 0.2−  |

**2007 TS<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.22260   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22582591 | $\omega$ | 118.34495 | +0.98351391   | +0.01466853 |
| <i>a</i> | 2.6706699  | $\Omega$ | 241.32365 | −0.06896177   | +0.95180587 |
| <i>e</i> | 0.2853038  | <i>i</i> | 11.85492  | +0.16716660   | +0.30635017 |
| <i>P</i> | 4.36       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 08 25 | 327 | 0.5− | 0.5+ | 2007 10 11 | 704 | 0.2+ | 0.1− | 2007 11 11 | D29 | 0.2+  | 0.2−  |
| 1998 08 25 | 327 | 0.5− | 0.1− | 2007 10 19 | D29 | 0.1− | 0.3− | 2007 11 14 | 704 | 1.4+  | 0.8+  |
| 1998 08 25 | 327 | 0.1+ | 0.7+ | 2007 10 19 | D29 | 0.1+ | 0.1+ | 2007 11 14 | 704 | (1.2− | 2.2+) |
| 1998 08 25 | 327 | 0.5− | 0.1+ | 2007 10 19 | D29 | 0.2+ | 0.1− | 2007 11 14 | 704 | 1.3+  | 0.4+  |
| 1998 09 19 | 699 | 0.3− | 0.4+ | 2007 10 19 | D29 | 0.1+ | 0.1+ | 2007 11 14 | 704 | 0.6+  | 0.6+  |
| 1998 09 19 | 699 | 0.0  | 0.0  | 2007 10 23 | 704 | 0.6− | 0.0  | 2007 11 19 | 691 | 0.3−  | 0.0   |
| 1998 09 19 | 699 | 1.0+ | 0.3+ | 2007 10 23 | 704 | 0.6+ | 0.2+ | 2007 11 19 | 691 | 1.2−  | 0.1+  |
| 2000 03 04 | 645 | 0.0  | 0.1+ | 2007 10 23 | 704 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.5−  | 0.2+  |
| 2000 03 04 | 645 | 0.1+ | 0.0  | 2007 10 23 | 704 | 0.1+ | 0.4− | 2007 12 03 | 703 | 0.3−  | 0.6+  |
| 2003 11 21 | 691 | 0.1− | 0.0  | 2007 10 23 | 704 | 0.3+ | 0.1+ | 2007 12 03 | 703 | 0.0   | 0.1−  |
| 2003 11 21 | 691 | 0.4− | 0.1− | 2007 11 02 | 691 | 0.1− | 0.2− | 2007 12 03 | 703 | 0.3+  | 0.1+  |
| 2003 11 21 | 691 | 0.1− | 0.1− | 2007 11 02 | 691 | 0.4+ | 0.5+ | 2007 12 03 | 703 | 0.0   | 0.0   |
| 2007 10 06 | 704 | 0.2+ | 0.2− | 2007 11 02 | 691 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.7+  | 0.1+  |
| 2007 10 06 | 704 | 0.1− | 1.2− | 2007 11 05 | 704 | 0.1− | 0.4− | 2007 12 04 | 704 | 0.3+  | 0.3−  |
| 2007 10 06 | 704 | 0.2− | 0.7− | 2007 11 05 | 704 | 0.1+ | 0.2− | 2007 12 04 | 704 | 0.2+  | 0.1−  |
| 2007 10 06 | 704 | 0.2− | 0.9− | 2007 11 05 | 704 | 0.1− | 0.1− | 2007 12 04 | 704 | 0.4+  | 0.5−  |
| 2007 10 06 | 704 | 0.1− | 0.3− | 2007 11 05 | 704 | 0.2− | 0.1+ | 2007 12 04 | 704 | 0.2+  | 0.3−  |
| 2007 10 08 | 704 | 0.4− | 0.9− | 2007 11 05 | 704 | 0.2+ | 0.6+ | 2007 12 15 | 704 | 0.5+  | 0.1−  |
| 2007 10 08 | 704 | 0.7+ | 0.4− | 2007 11 06 | 691 | 0.2− | 0.7+ | 2007 12 15 | 704 | 0.1+  | 0.1+  |
| 2007 10 08 | 704 | 0.8+ | 0.3− | 2007 11 06 | 691 | 0.3+ | 0.6− | 2007 12 15 | 704 | 0.1+  | 0.0   |
| 2007 10 08 | 704 | 0.9+ | 0.0  | 2007 11 06 | 691 | 0.2− | 0.0  | 2007 12 15 | 704 | 0.1−  | 0.1+  |
| 2007 10 11 | 704 | 0.6− | 0.6− | 2007 11 11 | D29 | 0.1+ | 0.0  | 2007 12 15 | 704 | 0.0   | 0.5−  |
| 2007 10 11 | 704 | 0.1+ | 0.6+ | 2007 11 11 | D29 | 0.1+ | 0.2− |            |     |       |       |
| 2007 10 11 | 704 | 0.3− | 0.7+ | 2007 11 11 | D29 | 0.0  | 0.1− |            |     |       |       |

**2007 TA<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.85116   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.38345574 | $\omega$ | 135.75749 | +0.87790014   | +0.46915599 |
| <i>a</i> | 1.8764020  | $\Omega$ | 197.01067 | −0.47697045   | +0.87445942 |
| <i>e</i> | 0.1583540  | <i>i</i> | 19.12190  | +0.40231464   | +0.12334256 |
| <i>P</i> | 2.57       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 04 25 | 691 | 0.1− | 0.4− | 2007 10 09 | 704 | 0.2+  | 0.7+  | 2007 10 15 | 704 | 0.3+  | 1.0+  |
| 2004 04 25 | 691 | 0.1− | 1.0+ | 2007 10 09 | 704 | 0.6−  | 0.0   | 2007 10 15 | 704 | 0.3+  | 0.3+  |
| 2004 04 25 | 691 | 0.3− | 0.1+ | 2007 10 09 | 704 | 0.3−  | 0.3+  | 2007 10 15 | 704 | 0.8+  | 0.3+  |
| 2004 05 13 | 691 | 0.0  | 0.1+ | 2007 10 11 | 691 | 0.2−  | 0.1−  | 2007 10 15 | 704 | 0.9+  | 0.6+  |
| 2004 05 13 | 691 | 0.2+ | 0.1− | 2007 10 11 | 691 | 0.2−  | 0.0   | 2007 10 15 | 704 | 0.1−  | 0.4+  |
| 2004 05 13 | 691 | 0.2+ | 0.0  | 2007 10 11 | 691 | 0.2−  | 0.2−  | 2007 10 19 | 704 | 0.0   | 0.0   |
| 2007 09 12 | 291 | 0.6− | 0.1− | 2007 10 11 | G96 | 0.2+  | 0.3−  | 2007 10 19 | 704 | 1.1+  | 0.1+  |
| 2007 09 12 | 291 | 0.3− | 0.1− | 2007 10 11 | G96 | 0.2+  | 0.3−  | 2007 10 19 | 704 | (4.1+ | 0.6+) |
| 2007 09 12 | 291 | 0.3− | 0.2− | 2007 10 11 | G96 | 0.0   | 0.4−  | 2007 10 19 | 704 | 1.0+  | 0.2−  |
| 2007 10 07 | 704 | 0.9+ | 0.8− | 2007 10 11 | G96 | 0.1−  | 0.3−  | 2007 10 19 | 704 | 0.4+  | 0.3−  |
| 2007 10 07 | 704 | 0.2− | 0.3− | 2007 10 12 | H07 | 0.0   | 0.2+  | 2007 10 31 | 703 | (0.0  | 2.3+) |
| 2007 10 07 | 704 | 0.5+ | 0.6− | 2007 10 12 | H07 | (2.2+ | 0.2−) | 2007 10 31 | 703 | 0.2−  | 0.2+  |
| 2007 10 07 | 704 | 0.3− | 0.3− | 2007 10 12 | H07 | 0.2+  | 0.9−  | 2007 10 31 | 703 | 0.1−  | 1.1+  |
| 2007 10 08 | 704 | 0.1+ | 0.1− | 2007 10 13 | 704 | 0.1+  | 0.2−  | 2007 10 31 | 703 | 0.2+  | 0.4+  |
| 2007 10 08 | 704 | 0.5− | 0.5+ | 2007 10 13 | 704 | 0.2+  | 0.2+  | 2007 11 11 | 703 | 0.1−  | 0.3+  |
| 2007 10 08 | 704 | 0.0  | 0.4+ | 2007 10 13 | 704 | 0.4−  | 0.5−  | 2007 11 11 | 703 | 0.1−  | 0.3+  |
| 2007 10 08 | 704 | 0.4− | 1.2+ | 2007 10 13 | 704 | 0.1−  | 0.2+  | 2007 11 11 | 703 | 1.7+  | 0.0   |
| 2007 10 09 | 704 | 0.0  | 0.5+ | 2007 10 13 | 704 | 0.4+  | 0.1+  | 2007 11 11 | 703 | 0.5+  | 0.6+  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 06 21 | 608 | 0.0  | 0.6+ | 2007 10 15 | H82 | 0.1+  | 0.9−  | 2007 11 03 | A24 | 0.3−  | 0.1+  |
| 2000 06 21 | 608 | 0.0  | 0.7+ | 2007 10 15 | H82 | 0.0   | 0.8−  | 2007 11 03 | A24 | 0.0   | 0.2+  |
| 2000 06 21 | 608 | 0.4− | 0.2− | 2007 10 20 | 704 | 0.2+  | 0.6+  | 2007 11 04 | A24 | 0.5−  | 0.4+  |
| 2000 07 06 | 699 | 0.1− | 0.6+ | 2007 10 20 | H51 | 0.8+  | 0.4+  | 2007 11 04 | A24 | 0.5−  | 0.4+  |
| 2000 07 06 | 699 | 0.7− | 0.6+ | 2007 10 20 | 704 | 0.5+  | 0.2+  | 2007 11 05 | G96 | 0.2+  | 0.4−  |
| 2000 07 06 | 699 | 0.3− | 0.8+ | 2007 10 20 | 704 | 0.3+  | 0.2+  | 2007 11 05 | G96 | 0.4+  | 0.4−  |
| 2000 07 06 | 699 | 1.5− | 0.5+ | 2007 10 20 | H51 | 0.2+  | 0.0   | 2007 11 05 | G96 | 0.1+  | 0.3−  |
| 2000 07 09 | 608 | 0.0  | 0.1− | 2007 10 20 | H51 | 0.1+  | 0.3−  | 2007 11 06 | 704 | 0.4+  | 0.0   |
| 2000 07 09 | 608 | 0.1− | 0.4− | 2007 10 30 | 704 | 0.1+  | 0.1−  | 2007 11 06 | 704 | 0.2+  | 0.3+  |
| 2000 07 09 | 608 | 0.3− | 0.6− | 2007 10 30 | 704 | 0.2+  | 0.1+  | 2007 11 06 | 704 | 0.3−  | 0.1+  |
| 2003 03 23 | 644 | 0.3+ | 0.1+ | 2007 10 30 | 704 | 0.0   | 0.2+  | 2007 11 06 | 704 | 0.4−  | 0.0   |
| 2003 03 23 | 644 | 0.2+ | 0.5+ | 2007 10 30 | 704 | 0.3+  | 0.0   | 2007 11 06 | 704 | 0.2+  | 0.1+  |
| 2003 03 23 | 644 | 0.9+ | 0.1+ | 2007 10 30 | H51 | 0.0   | 0.1−  | 2007 11 07 | 691 | 0.0   | 0.2+  |
| 2003 04 25 | 608 | 0.3+ | 0.8+ | 2007 10 30 | H51 | 0.5+  | 0.3−  | 2007 11 07 | 691 | 0.2−  | 0.2+  |
| 2003 04 25 | 608 | 0.4+ | 0.1− | 2007 10 30 | H51 | 0.1−  | 0.1−  | 2007 11 07 | 691 | 0.5−  | 0.2−  |
| 2003 04 25 | 608 | 0.9+ | 0.0  | 2007 11 01 | 704 | 0.1−  | 0.3−  | 2007 11 07 | A24 | 0.7+  | 0.5+  |
| 2007 09 05 | G96 | 0.2+ | 0.5− | 2007 11 01 | 704 | 0.1−  | 0.4−  | 2007 11 07 | A24 | 0.0   | 0.4+  |
| 2007 09 05 | G96 | 0.1− | 0.5− | 2007 11 01 | 704 | 0.1+  | 1.3+  | 2007 11 07 | A24 | 0.2+  | 0.3+  |
| 2007 09 05 | G96 | 0.1+ | 0.5− | 2007 11 01 | 704 | 0.6−  | 0.2−  | 2007 11 07 | A24 | 0.3−  | 0.4+  |
| 2007 09 05 | G96 | 0.2+ | 0.6− | 2007 11 01 | 704 | 0.3−  | 0.4+  | 2007 11 07 | A24 | 0.1−  | 0.0   |
| 2007 10 08 | 703 | 0.0  | 0.3− | 2007 11 01 | 704 | 0.3−  | 0.3−  | 2007 11 07 | A24 | 0.9−  | 0.2+  |
| 2007 10 08 | 703 | 0.3+ | 0.2− | 2007 11 01 | 704 | 1.1+  | 0.1−  | 2007 11 09 | A24 | 0.1+  | 0.9+  |
| 2007 10 08 | 703 | 0.0  | 0.2− | 2007 11 01 | 704 | 0.4+  | 0.5−  | 2007 11 09 | A24 | 0.3+  | 0.0   |
| 2007 10 08 | 703 | 0.3+ | 0.2− | 2007 11 01 | 704 | 0.3+  | 0.5−  | 2007 11 09 | A24 | 0.1−  | 0.5+  |
| 2007 10 08 | 703 | 0.1+ | 0.1− | 2007 11 01 | 704 | 0.1+  | 0.3−  | 2007 11 09 | A24 | 0.4−  | 0.1+  |
| 2007 10 08 | 703 | 0.3− | 0.1− | 2007 11 01 | A24 | 0.6−  | 0.1−  | 2007 11 09 | A24 | (1.6− | 0.4−) |
| 2007 10 08 | 703 | 0.1+ | 0.0  | 2007 11 01 | A24 | 0.4−  | 0.2−  | 2007 11 09 | A24 | 0.8−  | 0.5−  |
| 2007 10 08 | 703 | 0.5− | 0.3− | 2007 11 01 | A24 | 0.3−  | 0.1+  | 2007 11 14 | 683 | 0.7+  | 1.0−  |
| 2007 10 09 | 703 | 0.2− | 0.2+ | 2007 11 01 | A24 | 0.3+  | 0.1+  | 2007 11 14 | 683 | 0.5+  | 1.0−  |
| 2007 10 09 | 703 | 0.1− | 0.0  | 2007 11 01 | A24 | 0.1−  | 0.2+  | 2007 11 14 | 683 | 0.9+  | 0.6−  |
| 2007 10 09 | 703 | 0.0  | 0.2+ | 2007 11 01 | A24 | 1.0+  | 0.3+  | 2007 11 14 | 704 | 0.5−  | 0.6+  |
| 2007 10 09 | 703 | 0.1+ | 0.1+ | 2007 11 02 | 704 | 0.1−  | 0.5+  | 2007 11 14 | 704 | 0.4−  | 0.6+  |
| 2007 10 10 | 699 | 0.5+ | 0.3− | 2007 11 02 | 704 | 0.1−  | 0.8+  | 2007 11 14 | 704 | 0.4−  | 0.4+  |
| 2007 10 10 | 699 | 0.2+ | 0.0  | 2007 11 02 | 704 | 0.0   | 0.3+  | 2007 11 14 | 704 | 0.3+  | 0.1+  |
| 2007 10 10 | 699 | 0.4+ | 0.2− | 2007 11 02 | 704 | 0.3−  | 0.3+  | 2007 11 14 | 704 | 0.1+  | 0.2+  |
| 2007 10 10 | 699 | 0.6+ | 0.2− | 2007 11 02 | 699 | (1.4+ | 3.0−) | 2007 11 15 | 691 | 0.3−  | 0.1−  |
| 2007 10 12 | 699 | 0.1− | 0.5+ | 2007 11 02 | 704 | 0.1−  | 0.1−  | 2007 11 15 | 691 | 0.2−  | 0.0   |
| 2007 10 12 | 699 | 1.1+ | 0.1− | 2007 11 02 | 699 | 0.3+  | 0.2−  | 2007 11 15 | 691 | 0.2−  | 0.1+  |
| 2007 10 12 | 699 | 0.1− | 0.2+ | 2007 11 02 | 699 | 0.3+  | 0.2−  | 2007 11 29 | 704 | 0.4−  | 0.5+  |
| 2007 10 12 | 699 | 0.6+ | 0.1− | 2007 11 02 | 699 | 0.1+  | 0.5−  | 2007 11 29 | 704 | 0.3−  | 0.3+  |
| 2007 10 14 | H82 | 0.1+ | 0.4− | 2007 11 02 | A24 | 0.2−  | 0.1+  | 2007 11 29 | 704 | 1.2−  | 0.6+  |
| 2007 10 14 | H82 | 0.0  | 0.3− | 2007 11 02 | A24 | 0.2−  | 0.0   | 2007 11 29 | 704 | 0.7−  | 1.0+  |
| 2007 10 14 | H82 | 0.1+ | 0.1− | 2007 11 02 | A24 | 0.2−  | 0.1+  | 2007 11 29 | 704 | 0.5+  | 0.6+  |
| 2007 10 14 | H82 | 0.1+ | 0.0  | 2007 11 02 | A24 | 0.2−  | 0.0   | 2007 12 04 | 704 | 0.3−  | 1.1+  |
| 2007 10 14 | H82 | 0.0  | 0.1− | 2007 11 03 | A24 | 0.0   | 0.1−  | 2007 12 04 | 704 | 0.0   | 0.7+  |
| 2007 10 14 | 703 | 0.3+ | 0.3+ | 2007 11 03 | A24 | 0.5−  | 0.1−  | 2007 12 04 | 704 | 0.0   | 0.2+  |
| 2007 10 14 | 703 | 0.3+ | 0.5+ | 2007 11 03 | A24 | 0.4−  | 0.2+  | 2007 12 04 | 704 | 0.6−  | 1.0+  |

**2007 TS<sub>15</sub>**

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
| <i>M</i>                                | 342.61929  |          |           |             |             |          |   |  |  |  |  |
|                                         |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |  |  |  |  |
| <i>n</i>                                | 0.22510283 | $\omega$ | 213.29526 | +0.34779472 | −0.93348527 |          |   |  |  |  |  |
| <i>a</i>                                | 2.6763860  | $\Omega$ | 216.56848 | +0.88906736 | +0.35797026 |          |   |  |  |  |  |
| <i>e</i>                                | 0.2497124  | <i>i</i> | 8.43856   | +0.29765425 | +0.02150674 |          |   |  |  |  |  |
| <i>P</i>                                | 4.38       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 24 | 807 | 0.2+ | 0.9+ | 2007 10 14 | 691 | 0.3− | 0.0  | 2007 10 31 | G96 | 0.1+ | 0.5− |
| 2001 05 24 | 807 | 0.1+ | 0.9+ | 2007 10 14 | 691 | 0.3− | 0.2− | 2007 10 31 | G96 | 0.1− | 0.4− |
| 2004 01 23 | 699 | 0.2+ | 0.6+ | 2007 10 14 | 691 | 0.2− | 0.1− | 2007 10 31 | G96 | 0.2+ | 0.4− |
| 2004 01 23 | 699 | 0.7− | 0.0  | 2007 10 15 | 703 | 0.5− | 0.2+ | 2007 10 31 | G96 | 0.2− | 0.4− |
| 2004 01 23 | 699 | 0.8+ | 0.6+ | 2007 10 15 | 703 | 0.9+ | 0.1− | 2007 11 05 | 704 | 0.3+ | 0.5+ |
| 2004 01 23 | 699 | 0.9− | 0.0  | 2007 10 15 | 703 | 0.9+ | 0.1− | 2007 11 05 | 704 | 0.2+ | 0.4+ |
| 2004 02 11 | 644 | 0.0  | 0.2+ | 2007 10 15 | 703 | 0.1+ | 0.3− | 2007 11 05 | 704 | 0.2+ | 0.5+ |
| 2004 02 11 | 644 | 0.4+ | 0.0  | 2007 10 18 | 699 | 0.9+ | 0.8+ | 2007 11 05 | 704 | 0.3+ | 0.6+ |
| 2004 02 11 | 644 | 0.4+ | 0.1− | 2007 10 18 | 699 | 0.2+ | 0.3+ | 2007 11 05 | 704 | 0.4+ | 0.9+ |
| 2005 05 10 | 691 | 0.0  | 0.3+ | 2007 10 18 | 699 | 0.0  | 0.8+ | 2007 11 09 | G96 | 0.1+ | 0.1+ |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 10 | 691 | 0.2+  | 0.3+  | 2007 10 18 | 699 | 0.6− | 0.6− | 2007 11 09 | G96 | 0.1+ | 0.1+ |
| 2005 05 10 | 691 | 0.3+  | 0.4+  | 2007 10 18 | 691 | 0.2− | 0.1− | 2007 11 09 | G96 | 0.1+ | 0.1− |
| 2005 05 10 | G96 | 0.5−  | 0.4+  | 2007 10 18 | 691 | 0.1− | 0.1− | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2005 05 10 | G96 | 0.1−  | 0.6+  | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 11 | 699 | 0.8+ | 0.8− |
| 2005 05 10 | G96 | 0.7−  | 0.5+  | 2007 10 20 | 703 | 0.4+ | 0.5+ | 2007 11 11 | 699 | 0.1+ | 0.3− |
| 2005 05 10 | G96 | 0.0   | 0.1+  | 2007 10 20 | 703 | 0.1− | 0.3+ | 2007 11 11 | 699 | 0.5+ | 0.7− |
| 2007 10 04 | 691 | 0.3−  | 0.0   | 2007 10 20 | 703 | 0.0  | 0.1+ | 2007 11 11 | 699 | 0.2+ | 0.4− |
| 2007 10 04 | 691 | 0.3−  | 0.1−  | 2007 10 20 | 703 | 0.4− | 0.2− | 2007 11 14 | 704 | 0.2− | 0.3+ |
| 2007 10 04 | 691 | 0.1−  | 0.1−  | 2007 10 22 | 704 | 0.1− | 0.9+ | 2007 11 14 | 704 | 0.0  | 0.1+ |
| 2007 10 08 | D29 | 0.5+  | 0.4+  | 2007 10 22 | 704 | 0.3− | 0.8+ | 2007 11 14 | 704 | 0.6− | 0.5+ |
| 2007 10 08 | D29 | 0.7+  | 0.5−  | 2007 10 22 | 704 | 0.4+ | 0.3+ | 2007 11 14 | 704 | 0.3+ | 0.2+ |
| 2007 10 10 | 691 | 0.3−  | 0.0   | 2007 10 30 | 703 | 0.4− | 0.3+ | 2007 11 14 | 704 | 0.3− | 0.2+ |
| 2007 10 10 | 691 | 0.3−  | 0.1−  | 2007 10 30 | 703 | 0.0  | 0.2+ | 2007 11 17 | 703 | 0.4− | 0.0  |
| 2007 10 10 | 691 | 0.2−  | 0.2−  | 2007 10 30 | G96 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.2− | 0.1+ |
| 2007 10 11 | 704 | (0.9+ | 1.6+) | 2007 10 30 | 703 | 0.4+ | 0.0  | 2007 11 17 | 703 | 0.5− | 0.0  |
| 2007 10 11 | 704 | 0.5+  | 1.4+  | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 11 17 | 703 | 0.2+ | 0.7− |
| 2007 10 11 | 704 | 0.5+  | 0.7+  | 2007 10 30 | 703 | 0.8− | 0.8− | 2007 11 29 | 704 | 0.6+ | 1.0+ |
| 2007 10 11 | 704 | 0.5+  | 1.2+  | 2007 10 30 | G96 | 0.0  | 0.0  | 2007 11 29 | 704 | 0.5− | 0.2+ |
| 2007 10 11 | 704 | 0.1+  | 0.6+  | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 11 29 | 704 | 1.3+ | 0.2− |
| 2007 10 14 | 704 | 0.6+  | 0.1+  | 2007 10 30 | G96 | 0.1+ | 0.1+ | 2007 12 05 | 699 | 0.5− | 0.3− |
| 2007 10 14 | 704 | 0.7+  | 0.6+  | 2007 10 30 | G96 | 0.2− | 0.0  | 2007 12 05 | 699 | 0.3+ | 0.2− |
| 2007 10 14 | 704 | 0.6+  | 1.1+  | 2007 10 30 | G96 | 0.0  | 0.0  | 2007 12 05 | 699 | 1.0+ | 0.6− |
| 2007 10 14 | 704 | 0.5−  | 0.6+  | 2007 10 30 | G96 | 0.2+ | 0.3+ | 2007 12 05 | 699 | 0.4− | 0.6+ |

**2007 TR<sub>16</sub>**

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
| <i>M</i>                                | 85.00380   |          |           |             |             |          |   |  |  |  |  |
|                                         |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |  |  |  |  |
| <i>n</i>                                | 0.17714377 | $\omega$ | 206.85977 | +0.21982784 | +0.97104602 |          |   |  |  |  |  |
| <i>a</i>                                | 3.1399216  | $\Omega$ | 75.95906  | −0.87682250 | +0.23869326 |          |   |  |  |  |  |
| <i>e</i>                                | 0.1072342  | <i>i</i> | 5.53171   | −0.42761902 | +0.00975479 |          |   |  |  |  |  |
| <i>P</i>                                | 5.56       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 01 | 644 | 0.1+ | 0.2+ | 2005 04 04 | 703 | 0.0   | 0.1−  | 2007 10 09 | D29 | 0.5+ | 0.1− |
| 2001 08 01 | 644 | 0.3+ | 0.7+ | 2005 04 04 | 703 | (1.4− | 2.5−) | 2007 10 09 | D29 | 0.3− | 0.4− |
| 2001 08 01 | 644 | 0.1+ | 0.8+ | 2007 10 04 | 703 | 0.2−  | 0.2+  | 2007 10 13 | 704 | 0.3− | 0.3− |
| 2001 08 14 | 608 | 0.5− | 0.8− | 2007 10 04 | 703 | 0.3+  | 0.3+  | 2007 10 13 | 704 | 0.1− | 0.8+ |
| 2001 08 14 | 608 | 0.4+ | 0.8− | 2007 10 04 | 703 | 0.4−  | 1.0−  | 2007 10 13 | 704 | 0.4− | 0.4+ |
| 2001 08 14 | 608 | 0.1− | 0.2− | 2007 10 04 | 703 | 0.9−  | 0.4−  | 2007 10 13 | 704 | 0.1+ | 0.0  |
| 2001 08 25 | 699 | 0.6− | 0.0  | 2007 10 09 | D29 | 0.2+  | 0.9+  | 2007 10 13 | 704 | 0.6+ | 1.3+ |
| 2001 08 25 | 699 | 0.3+ | 0.0  | 2007 10 09 | D29 | 0.3+  | 0.4+  | 2007 10 21 | G96 | 0.1+ | 0.3− |
| 2001 08 25 | 699 | 0.4− | 0.2− | 2007 10 09 | D29 | 0.1+  | 0.1−  | 2007 10 21 | G96 | 0.5+ | 0.3− |
| 2001 08 25 | 699 | 0.4+ | 0.1+ | 2007 10 09 | D29 | 0.3−  | 0.0   | 2007 10 21 | G96 | 0.3+ | 0.5− |
| 2005 04 04 | 703 | 0.2− | 0.5+ | 2007 10 09 | D29 | 0.3+  | 0.0   | 2007 10 21 | G96 | 0.5− | 0.3− |
| 2005 04 04 | 703 | 0.1+ | 0.6− | 2007 10 09 | D29 | 0.2+  | 0.5+  |            |     |      |      |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | G96 | 0.0  | 0.4+ | 2007 10 04 | 703 | 0.8- | 0.5+ | 2007 10 13 | 704 | 1.2- | 0.3- |
| 2005 03 04 | G96 | 0.1+ | 0.5+ | 2007 10 04 | 703 | 0.2+ | 0.0  |            |     |      |      |
| 2006 05 26 | 691 | 0.3+ | 0.7+ | 2007 10 09 | D29 | 0.6+ | 0.9- |            |     |      |      |

2007 TO<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 42.01816   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.28078618 | $\omega$ | 216.90278 | +0.92626787 | +0.36401108 |
| $a$ | 2.3096822  | $\Omega$ | 121.47466 | -0.31264245 | +0.88680105 |
| $e$ | 0.1939812  | $i$      | 6.57046   | -0.21043416 | +0.28474519 |
| $P$ | 3.51       | $H$      | 16.8      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|-------|------------|-----|------|------|
| 2000 09 25 | 699 | 0.6-  | 0.5-  | 2007 10 08 | 699 | 0.1- | 0.2-  | 2007 10 19 | 704 | 0.4- | 0.6+ |
| 2000 09 25 | 699 | 0.3+  | 0.6+  | 2007 10 08 | 699 | 0.1- | 0.2-  | 2007 10 19 | 699 | 1.2- | 0.9+ |
| 2000 09 25 | 699 | 0.6+  | 1.0-  | 2007 10 09 | 683 | 0.1- | 1.8-  | 2007 10 19 | 704 | 0.7- | 0.3+ |
| 2000 09 25 | 699 | 0.3-  | 0.8+  | 2007 10 09 | 683 | 1.0+ | 0.6-  | 2007 10 19 | 704 | 0.7+ | 0.6+ |
| 2005 01 16 | 691 | 0.0   | 0.3+  | 2007 10 09 | 683 | 0.0  | 1.7-  | 2007 10 19 | 699 | 0.2- | 0.7- |
| 2005 01 16 | 691 | 0.2+  | 0.3+  | 2007 10 10 | 703 | 0.2- | 1.2+  | 2007 10 19 | 704 | 0.4- | 0.7+ |
| 2005 01 16 | 691 | 0.1+  | 0.3+  | 2007 10 10 | 703 | 0.2+ | 0.1-  | 2007 10 24 | G96 | 0.1+ | 0.4- |
| 2005 03 10 | G96 | 0.3-  | 0.0   | 2007 10 10 | 703 | 0.3- | 0.2+  | 2007 10 24 | G96 | 0.2- | 0.3- |
| 2005 03 10 | G96 | 0.1-  | 0.3-  | 2007 10 10 | 703 | 0.9- | 0.9+  | 2007 10 24 | G96 | 0.0  | 0.4- |
| 2005 03 10 | G96 | 0.0   | 0.3-  | 2007 10 11 | 683 | 1.2+ | 0.2+  | 2007 10 24 | G96 | 0.1+ | 0.4- |
| 2005 03 10 | G96 | 0.2+  | 0.3-  | 2007 10 11 | 683 | 1.6- | 0.7+  | 2007 11 11 | 704 | 0.5- | 0.4+ |
| 2007 09 11 | 703 | 0.6+  | 0.8+  | 2007 10 11 | 683 | 0.4- | 0.3+  | 2007 11 11 | 704 | 0.2- | 0.1+ |
| 2007 09 11 | 703 | 0.3+  | 1.4+  | 2007 10 13 | 683 | 0.6- | 0.8+  | 2007 11 11 | 704 | 0.0  | 0.2+ |
| 2007 09 11 | 703 | 0.9-  | 0.6+  | 2007 10 13 | 683 | 0.4- | 0.8-  | 2007 11 11 | 704 | 0.5- | 0.1+ |
| 2007 09 11 | 703 | 0.9+  | 1.0-  | 2007 10 14 | 683 | 0.4+ | 0.3-  | 2007 11 11 | 704 | 0.2- | 0.3+ |
| 2007 10 08 | 683 | (0.4- | 2.8-) | 2007 10 14 | 683 | 0.6- | 0.3-  | 2007 11 18 | 699 | 0.5+ | 0.6- |
| 2007 10 08 | 683 | 0.2-  | 1.9-  | 2007 10 14 | 683 | 1.8+ | 0.9-  | 2007 11 18 | 699 | 0.3- | 0.3- |
| 2007 10 08 | 683 | 1.6+  | 0.2-  | 2007 10 19 | 699 | 0.2+ | 0.8+  | 2007 11 18 | 699 | 1.0+ | 0.2+ |
| 2007 10 08 | 699 | 0.2-  | 0.1-  | 2007 10 19 | 699 | 0.8+ | 1.1+  | 2007 11 18 | 699 | 0.6+ | 0.5- |
| 2007 10 08 | 699 | 0.0   | 0.5+  | 2007 10 19 | 704 | (0.0 | 2.6+) |            |     |      |      |

2007 TQ<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 346.85238  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.23478234 | $\omega$ | 156.91208 | +0.64761731 | -0.76182015 |
| $a$ | 2.6023104  | $\Omega$ | 252.72229 | +0.69663411 | +0.59989665 |
| $e$ | 0.1362268  | $i$      | 0.89382   | +0.30869523 | +0.24444644 |
| $P$ | 4.20       | $H$      | 17.3      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 09 | 691 | 0.1- | 0.1- | 2007 10 10 | 734 | 0.1+ | 0.3- | 2007 11 01 | G96 | 0.1- | 0.2- |
| 1994 09 09 | 691 | 0.3- | 0.8+ | 2007 10 12 | 734 | 0.2+ | 1.4- | 2007 11 01 | G96 | 0.1+ | 0.0  |
| 1994 09 09 | 691 | 0.0  | 0.2+ | 2007 10 12 | 734 | 0.8+ | 0.6- | 2007 11 02 | G96 | 0.1- | 0.4+ |
| 2003 12 01 | 691 | 0.0  | 0.2+ | 2007 10 12 | 734 | 0.1- | 0.4- | 2007 11 02 | G96 | 0.1+ | 0.1+ |
| 2003 12 01 | 691 | 0.0  | 0.3+ | 2007 10 12 | 734 | 0.1+ | 0.4- | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2003 12 01 | 691 | 0.2- | 0.3+ | 2007 10 12 | 734 | 1.1+ | 0.4- | 2007 11 02 | G96 | 0.1- | 0.5+ |
| 2005 04 05 | G96 | 0.1- | 0.5- | 2007 10 20 | 691 | 0.6- | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.9+ |
| 2005 04 05 | G96 | 0.2- | 0.3+ | 2007 10 20 | 691 | 0.4- | 0.1- | 2007 11 02 | G96 | 0.1- | 1.1+ |
| 2005 04 05 | G96 | 0.5+ | 0.2- | 2007 10 20 | 691 | 1.0- | 0.3+ | 2007 11 02 | G96 | 0.1+ | 0.5+ |
| 2005 04 05 | G96 | 0.3- | 0.1+ | 2007 10 20 | 734 | 0.2+ | 0.2+ | 2007 11 02 | G96 | 0.3- | 0.9+ |
| 2007 10 09 | 734 | 0.1- | 0.2- | 2007 10 20 | 734 | 0.3- | 0.0  | 2007 11 18 | G96 | 0.1- | 0.4- |
| 2007 10 09 | 734 | 0.2+ | 0.2- | 2007 10 20 | 734 | 0.2+ | 0.3- | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2007 10 09 | 734 | 0.1- | 0.6- | 2007 10 20 | 734 | 0.2+ | 0.7+ | 2007 11 18 | G96 | 0.7- | 0.4- |
| 2007 10 10 | 734 | 0.2- | 0.5- | 2007 11 01 | G96 | 0.1- | 0.2- | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2007 10 10 | 734 | 0.1+ | 0.3- | 2007 11 01 | G96 | 0.7+ | 0.1- |            |     |      |      |

## M.P.O. 129827

2007 TX<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 56.68967   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.31548130 | $\omega$ | 15.72191  | +0.49804545 | +0.85819074 |
| $a$ | 2.1370776  | $\Omega$ | 284.29237 | -0.80878528 | +0.40800877 |
| $e$ | 0.4161761  | $i$      | 7.37177   | -0.31275724 | +0.31150842 |
| $P$ | 3.12       | $H$      | 17.2      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1991 04 13 | 260 | 0.2-  | 0.1+  | 2007 10 21 | H45 | 0.2- | 0.4- | 2007 11 08 | 703 | 0.9- | 0.3+ |
| 1991 04 13 | 260 | 0.3+  | 0.1-  | 2007 10 21 | H45 | 0.9+ | 0.3- | 2007 11 08 | 703 | 1.1- | 0.2+ |
| 2007 10 09 | 703 | 0.8-  | 0.2+  | 2007 10 24 | 448 | 0.3+ | 0.4- | 2007 11 09 | 704 | 0.0  | 0.2+ |
| 2007 10 09 | 703 | 0.5-  | 0.9+  | 2007 10 24 | G96 | 0.1- | 0.1- | 2007 11 09 | 704 | 0.6+ | 0.6+ |
| 2007 10 09 | 703 | 0.3+  | 0.1+  | 2007 10 24 | 448 | 0.2+ | 0.1- | 2007 11 09 | 704 | 0.7+ | 0.1+ |
| 2007 10 09 | 703 | 0.3-  | 0.6+  | 2007 10 24 | G96 | 0.2- | 0.7- | 2007 11 09 | 704 | 0.6+ | 0.5+ |
| 2007 10 09 | 703 | 0.2+  | 0.4+  | 2007 10 24 | G96 | 0.1- | 0.3- | 2007 11 09 | 704 | 0.7+ | 0.4+ |
| 2007 10 09 | 703 | 0.1-  | 0.6+  | 2007 10 24 | 448 | 0.1+ | 0.3- | 2007 11 15 | G96 | 0.1+ | 0.0  |
| 2007 10 09 | 703 | 0.8+  | 1.1+  | 2007 10 30 | H45 | 0.0  | 0.3- | 2007 11 15 | G96 | 0.2+ | 0.2- |
| 2007 10 09 | 703 | 0.0   | 0.2-  | 2007 10 30 | H45 | 0.4- | 0.1+ | 2007 11 15 | G96 | 0.2+ | 0.1- |
| 2007 10 09 | 673 | 0.0   | 0.1+  | 2007 10 30 | H45 | 0.7- | 1.0+ | 2007 11 15 | G96 | 0.4- | 0.2- |
| 2007 10 09 | 673 | 0.1-  | 0.1-  | 2007 10 30 | H45 | 0.1- | 0.3+ | 2007 11 15 | G96 | 0.2+ | 0.2- |
| 2007 10 09 | 673 | 0.2-  | 0.2-  | 2007 10 30 | H45 | 0.2+ | 0.4- | 2007 11 15 | G96 | 0.3+ | 0.2- |
| 2007 10 09 | 673 | 0.4-  | 0.3-  | 2007 11 02 | H45 | 0.0  | 0.6- | 2007 11 15 | G96 | 0.3+ | 0.2- |
| 2007 10 10 | 118 | 0.3-  | 0.2-  | 2007 11 02 | H45 | 0.8- | 0.2+ | 2007 11 15 | G96 | 0.0  | 0.2- |
| 2007 10 10 | 118 | 0.0   | 0.6-  | 2007 11 02 | H45 | 0.2- | 0.3- | 2007 11 16 | J95 | 0.1+ | 0.3- |
| 2007 10 10 | 118 | 0.2-  | 0.1-  | 2007 11 02 | H45 | 0.6- | 0.1+ | 2007 11 16 | J95 | 0.1- | 0.0  |
| 2007 10 10 | H55 | 0.1-  | 0.3+  | 2007 11 02 | H45 | 0.4- | 0.2- | 2007 11 16 | J95 | 0.1+ | 0.1- |
| 2007 10 10 | H55 | 0.1-  | 0.2+  | 2007 11 02 | H45 | 0.9- | 0.2- | 2007 11 16 | G96 | 0.0  | 0.5- |
| 2007 10 10 | H55 | 0.1+  | 0.2+  | 2007 11 02 | 703 | 0.8- | 1.2+ | 2007 11 16 | G96 | 0.1+ | 0.3- |
| 2007 10 10 | H55 | 0.1-  | 0.0   | 2007 11 02 | 703 | 0.0  | 0.7+ | 2007 11 16 | G96 | 0.1+ | 0.3- |
| 2007 10 14 | G96 | 0.2+  | 0.4-  | 2007 11 02 | 703 | 0.0  | 0.1+ | 2007 11 16 | G96 | 0.4+ | 0.1- |
| 2007 10 14 | G96 | (0.2+ | 3.6+) | 2007 11 02 | 703 | 0.2- | 1.0+ | 2007 11 16 | G96 | 0.2- | 0.3- |
| 2007 10 14 | G96 | 0.1-  | 0.3-  | 2007 11 03 | G96 | 0.4- | 0.2- | 2007 11 16 | G96 | 0.1+ | 0.2- |
| 2007 10 14 | G96 | (0.1+ | 3.9+) | 2007 11 03 | G96 | 0.0  | 0.0  | 2007 11 16 | G96 | 0.2+ | 0.1- |
| 2007 10 14 | H45 | 0.1-  | 0.1+  | 2007 11 03 | G96 | 0.4- | 0.2- | 2007 11 16 | G96 | 0.3+ | 0.3- |
| 2007 10 14 | H45 | 0.5+  | 0.3-  | 2007 11 03 | G96 | 0.4- | 0.2- | 2007 11 16 | H55 | 0.2- | 0.3+ |
| 2007 10 14 | H45 | 1.1+  | 0.1+  | 2007 11 06 | H45 | 0.2- | 0.1- | 2007 11 16 | H55 | 0.1- | 0.2+ |
| 2007 10 14 | H45 | 0.2+  | 0.2+  | 2007 11 06 | H45 | 0.4- | 0.4- | 2007 11 16 | H55 | 0.2- | 0.2+ |
| 2007 10 14 | H45 | 1.0+  | 0.3+  | 2007 11 06 | H45 | 0.4- | 0.4- | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2007 10 14 | H45 | 0.6-  | 0.0   | 2007 11 06 | H45 | 0.2- | 0.2- | 2007 11 17 | G96 | 0.2- | 0.0  |
| 2007 10 14 | H45 | 0.0   | 0.1-  | 2007 11 06 | H45 | 0.2- | 0.4- | 2007 11 17 | 701 | 0.1- | 0.1+ |
| 2007 10 15 | G96 | (0.5+ | 5.1+) | 2007 11 07 | H45 | 0.2+ | 0.4- | 2007 11 17 | G96 | 0.1+ | 0.1+ |
| 2007 10 15 | G96 | (0.2- | 5.1+) | 2007 11 07 | H45 | 0.0  | 0.1- | 2007 11 17 | G96 | 0.1- | 0.0  |
| 2007 10 15 | G96 | (0.0  | 3.6+) | 2007 11 07 | H45 | 0.2- | 0.7- | 2007 11 17 | 701 | 0.5+ | 0.0  |
| 2007 10 15 | G96 | (0.2- | 3.4+) | 2007 11 07 | H45 | 0.3- | 0.2- | 2007 11 17 | 701 | 0.3+ | 0.0  |
| 2007 10 19 | 448 | 0.0   | 0.1-  | 2007 11 07 | H45 | 0.4- | 0.4- | 2007 11 17 | 701 | 0.2+ | 0.3- |
| 2007 10 19 | 448 | 0.1-  | 0.4-  | 2007 11 07 | H45 | 0.4+ | 0.1- | 2007 11 20 | G96 | 0.1- | 0.3+ |
| 2007 10 19 | 448 | 0.1+  | 0.5-  | 2007 11 08 | 704 | 0.3- | 0.4+ | 2007 11 20 | G96 | 0.1+ | 0.2+ |
| 2007 10 19 | H45 | 0.0   | 0.1-  | 2007 11 08 | 704 | 0.4- | 0.8+ | 2007 11 20 | G96 | 0.2+ | 0.3+ |
| 2007 10 19 | H45 | 0.1-  | 0.0   | 2007 11 08 | 704 | 0.4+ | 0.2+ | 2007 11 20 | G96 | 0.2+ | 0.2+ |
| 2007 10 19 | H45 | 0.45  | 0.6+  | 2007 11 08 | 704 | 0.4- | 1.1+ | 2007 12 05 | 448 | 0.0  | 0.1+ |
| 2007 10 19 | H45 | 0.9+  | 0.6+  | 2007 11 08 | 704 | 0.5+ | 0.2+ | 2007 12 05 | 448 | 0.1- | 0.1+ |
| 2007 10 19 | H45 | 0.2+  | 0.1+  | 2007 11 08 | 703 | 0.6+ | 0.2+ | 2007 12 05 | 448 | 0.1+ | 0.0  |
| 2007 10 19 | H45 | 0.3+  | 0.4-  | 2007 11 08 | 703 | 1.3+ | 0.3- | 2007 12 06 | H55 | 0.1+ | 0.3+ |
| 2007 10 21 | H45 | 0.1-  | 0.5-  | 2007 11 08 | 703 | 0.1+ | 0.2- | 2007 12 06 | H55 | 0.2- | 0.5+ |
| 2007 10 21 | H45 | 0.2+  | 0.4-  | 2007 11 08 | 703 | 0.7+ | 0.4+ | 2007 12 06 | H55 | 0.2- | 0.3+ |
| 2007 10 21 | H45 | 0.0   | 0.2-  | 2007 11 08 | 703 | 1.3- | 0.5+ |            |     |      |      |
| 2007 10 21 | H45 | 0.1+  | 0.4-  | 2007 11 08 | 703 | 0.4- | 0.9+ |            |     |      |      |

**2007 TN<sub>19</sub> = 2004 BC<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 340.02871  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.18930276 | $\omega$ | 117.79014 | +0.73525688 |      | −0.65687512 |   |
| <i>a</i> | 3.0039872  | $\Omega$ | 283.78681 | +0.54544510 |      | +0.71975955 |   |
| <i>e</i> | 0.1217522  | <i>i</i> | 9.90565   | +0.40235179 |      | +0.22463583 |   |
| <i>P</i> | 5.21       | <i>H</i> | 15.2      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 03 21 | 645 | 0.1− | 0.1− | 2007 09 12 | 703 | (2.2− | 0.9+) | 2007 10 14 | 703 | 0.4−  | 0.3+  |
| 1999 03 21 | 645 | 0.0  | 0.1− | 2007 10 07 | 106 | 0.0   | 0.8−  | 2007 10 14 | 703 | 1.0−  | 1.0−  |
| 1999 03 22 | 645 | 0.1− | 0.1− | 2007 10 07 | 106 | 0.4+  | 1.0−  | 2007 10 14 | 703 | 0.0   | 1.0−  |
| 1999 03 22 | 645 | 0.1− | 0.1− | 2007 10 07 | 106 | 0.7+  | 0.7−  | 2007 10 14 | 703 | 0.0   | 0.2+  |
| 2002 11 14 | 644 | 0.0  | 0.1− | 2007 10 07 | 106 | 0.6−  | 0.4+  | 2007 10 14 | 703 | 0.8−  | 0.2+  |
| 2002 11 14 | 644 | 0.0  | 0.1+ | 2007 10 08 | 703 | 0.9+  | 0.9+  | 2007 10 14 | 703 | 0.4−  | 0.5+  |
| 2002 11 14 | 644 | 0.1+ | 0.1− | 2007 10 08 | 703 | 0.3+  | 0.5+  | 2007 10 14 | 703 | 0.1+  | 0.3+  |
| 2004 01 23 | 704 | 0.4− | 0.1− | 2007 10 08 | 703 | 0.2−  | 0.2−  | 2007 10 14 | 703 | 0.5+  | 0.7−  |
| 2004 01 23 | 704 | 0.1+ | 0.8+ | 2007 10 08 | 703 | 1.4+  | 0.1+  | 2007 10 14 | 703 | 0.4−  | 0.4+  |
| 2004 01 23 | 704 | 1.0+ | 0.5− | 2007 10 08 | 106 | 1.1−  | 0.2−  | 2007 10 14 | 703 | 0.6−  | 0.4+  |
| 2004 01 23 | 704 | 0.4− | 0.6+ | 2007 10 08 | 106 | 0.1−  | 0.2+  | 2007 10 14 | 703 | 0.5−  | 0.5−  |
| 2004 01 29 | 704 | 0.0  | 0.3− | 2007 10 08 | 106 | 0.6−  | 0.1−  | 2007 10 14 | 703 | 0.5−  | 1.0−  |
| 2004 01 29 | 704 | 0.8+ | 0.3− | 2007 10 08 | 106 | 0.3+  | 0.3+  | 2007 11 03 | 699 | (1.5+ | 2.2+) |
| 2004 01 29 | 704 | 0.8− | 0.5+ | 2007 10 09 | 699 | 0.5+  | 0.8+  | 2007 11 03 | 699 | 0.1+  | 0.1−  |
| 2007 09 12 | 703 | 0.2+ | 0.5− | 2007 10 09 | 699 | 0.8+  | 0.7+  | 2007 11 03 | 699 | 0.4−  | 0.4−  |
| 2007 09 12 | 703 | 0.7+ | 0.6+ | 2007 10 09 | 699 | 0.1−  | 0.1−  | 2007 11 03 | 699 | 0.4+  | 0.7−  |
| 2007 09 12 | 703 | 0.0  | 1.3+ | 2007 10 09 | 699 | 0.3+  | 0.7+  |            |     |       |       |

**2007 TK<sub>20</sub> = 2007 TG<sub>144</sub>**Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 325.63060  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.27027803 | $\omega$ | 77.83651  | +0.33696910 |      | −0.94150343 |   |
| <i>a</i> | 2.3691663  | $\Omega$ | 352.46592 | +0.84893967 |      | +0.30604015 |   |
| <i>e</i> | 0.1643987  | <i>i</i> | 2.10134   | +0.40712808 |      | +0.14110532 |   |
| <i>P</i> | 3.65       | <i>H</i> | 17.3      | <i>G</i>    | 0.15 | <i>U</i>    | 5 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 20 | G96 | 0.1+  | 0.4−  | 2007 10 06 | 704 | 0.2+ | 0.2− | 2007 10 13 | 704 | 0.3− | 0.6+ |
| 2004 12 20 | G96 | 0.0   | 0.4−  | 2007 10 06 | 704 | 0.2+ | 0.1− | 2007 10 13 | 704 | 0.6− | 0.3− |
| 2004 12 20 | G96 | 1.5+  | 0.3+  | 2007 10 06 | 704 | 0.5− | 0.4+ | 2007 10 13 | 704 | 0.1− | 0.5+ |
| 2004 12 20 | G96 | 0.7−  | 1.1+  | 2007 10 08 | 704 | 1.4+ | 1.2− | 2007 10 13 | 704 | 0.4+ | 0.7+ |
| 2005 02 02 | 703 | 0.1−  | 0.6−  | 2007 10 08 | 704 | 0.5− | 0.4− | 2007 10 13 | 703 | 0.9+ | 0.6− |
| 2005 02 02 | 703 | 0.6−  | 0.5−  | 2007 10 08 | 704 | 0.4+ | 0.5− | 2007 10 13 | 703 | 0.3+ | 0.7+ |
| 2005 02 02 | 703 | (0.2− | 2.0+) | 2007 10 08 | 704 | 0.5− | 0.7− | 2007 10 13 | 703 | 0.3+ | 0.3+ |
| 2005 02 02 | 703 | 0.1−  | 0.5+  | 2007 10 09 | 704 | 0.4+ | 0.8− | 2007 10 13 | 703 | 0.4+ | 0.4− |
| 2007 09 13 | G96 | 0.3+  | 0.2−  | 2007 10 09 | 704 | 0.1+ | 0.9+ | 2007 10 14 | 704 | 0.3+ | 0.1+ |
| 2007 09 13 | G96 | 0.1+  | 0.5−  | 2007 10 09 | 704 | 0.1− | 0.3− | 2007 10 14 | 704 | 0.0  | 0.8+ |
| 2007 09 13 | G96 | 0.0   | 0.4−  | 2007 10 09 | 704 | 1.7− | 0.3− | 2007 10 14 | 704 | 0.6+ | 0.7− |
| 2007 09 13 | G96 | 0.4+  | 0.5−  | 2007 10 09 | 704 | 0.2− | 0.3+ | 2007 10 14 | 704 | 0.6+ | 0.1− |
| 2007 09 20 | 703 | 0.5−  | 0.7+  | 2007 10 11 | 699 | 0.5+ | 0.4− | 2007 10 14 | 704 | 0.0  | 1.0+ |
| 2007 09 20 | 703 | 0.0   | 0.9+  | 2007 10 11 | 699 | 1.1+ | 0.1− | 2007 10 31 | 703 | 0.8− | 0.6− |
| 2007 09 20 | 703 | 0.0   | 0.3+  | 2007 10 11 | 699 | 0.3+ | 0.6− | 2007 10 31 | 703 | 0.2+ | 0.3− |
| 2007 09 20 | 703 | 0.1−  | 0.1+  | 2007 10 11 | 699 | 0.3+ | 0.8− | 2007 10 31 | 703 | 0.1− | 0.3− |
| 2007 10 04 | 691 | 0.4−  | 0.3−  | 2007 10 12 | 704 | 0.4− | 0.0  | 2007 10 31 | 703 | 1.1− | 0.8+ |
| 2007 10 04 | 691 | 0.3−  | 0.2−  | 2007 10 12 | 704 | 0.2+ | 0.9+ | 2007 11 07 | G96 | 0.2− | 0.2− |
| 2007 10 04 | 691 | 0.3−  | 0.0   | 2007 10 12 | 704 | 0.5− | 0.8+ | 2007 11 07 | G96 | 0.1− | 0.3− |
| 2007 10 06 | 704 | 0.2+  | 0.2+  | 2007 10 12 | 704 | 0.4− | 0.6+ | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2007 10 06 | 704 | 0.4−  | 0.2−  | 2007 10 13 | 704 | 0.0  | 0.7+ | 2007 11 07 | G96 | 0.0  | 0.1− |

**2007 TV<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 14.56872   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.23361489 | $\omega$ | 157.44761 | +0.99312173 |      | −0.11577191 |   |
| <i>a</i> | 2.6109729  | $\Omega$ | 209.21725 | +0.10121369 |      | +0.92397353 |   |
| <i>e</i> | 0.0544812  | <i>i</i> | 2.05405   | +0.05886437 |      | +0.36451306 |   |
| <i>P</i> | 4.22       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 19 | 291 | 0.1− | 0.1+ | 2007 10 09 | A44 | 0.0  | 0.1+ | 2007 10 15 | A44 | 0.1− | 0.2+ |
| 2003 10 19 | 291 | 0.1+ | 0.3+ | 2007 10 09 | A44 | 0.1− | 0.1− | 2007 10 15 | A44 | 0.2+ | 0.2+ |
| 2003 10 19 | 291 | 0.2− | 0.2+ | 2007 10 10 | A44 | 0.1+ | 0.1− | 2007 10 15 | A44 | 0.1+ | 0.1+ |
| 2003 11 16 | 691 | 0.2+ | 0.0  | 2007 10 10 | A44 | 0.1+ | 0.1− | 2007 10 16 | A44 | 0.1+ | 0.3+ |
| 2003 11 16 | 691 | 0.0  | 0.0  | 2007 10 10 | A44 | 0.0  | 0.1+ | 2007 10 16 | A44 | 0.1+ | 0.0  |
| 2003 11 16 | 691 | 0.0  | 0.5− | 2007 10 13 | A44 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.2− |
| 2007 09 13 | G96 | 0.1+ | 0.0  | 2007 10 13 | A44 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.7+ | 0.1− |
| 2007 09 13 | G96 | 0.1− | 0.0  | 2007 10 13 | A44 | 0.1+ | 0.1− | 2007 10 30 | G96 | 0.7− | 0.3− |
| 2007 09 13 | G96 | 0.3+ | 0.2− | 2007 10 14 | A44 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.1+ |
| 2007 09 13 | G96 | 0.1+ | 0.1− | 2007 10 14 | A44 | 0.2− | 0.1− | 2007 11 01 | 691 | 0.4− | 0.0  |
| 2007 10 04 | 691 | 0.3− | 0.3+ | 2007 10 14 | A44 | 0.1+ | 0.1− | 2007 11 01 | 691 | 0.4+ | 0.4− |
| 2007 10 04 | 691 | 0.1− | 0.2+ | 2007 10 15 | 691 | 0.3− | 0.1− | 2007 11 01 | 691 | 0.0  | 0.2+ |
| 2007 10 04 | 691 | 0.1+ | 0.3− | 2007 10 15 | 691 | 0.1− | 0.0  |            |     |      |      |
| 2007 10 09 | A44 | 0.2− | 0.1− | 2007 10 15 | 691 | 0.2− | 0.1− |            |     |      |      |

**2007 TM<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 328.10963  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.27116651 | $\omega$ | 107.40751 | +0.22367900 |      | −0.97457686 |   |
| <i>a</i> | 2.3639884  | $\Omega$ | 329.65797 | +0.88422543 |      | +0.20849478 |   |
| <i>e</i> | 0.1770211  | <i>i</i> | 1.46874   | +0.41001598 |      | +0.08203581 |   |
| <i>P</i> | 3.63       | <i>H</i> | 17.3      | <i>G</i>    | 0.15 | <i>U</i>    | 5 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 17 | 809 | 0.1+  | 0.3+  | 2007 10 08 | 691 | 0.0   | 0.4−  | 2007 10 16 | 691 | 0.6− | 0.1− |
| 2005 02 17 | 809 | 0.0   | 0.3+  | 2007 10 08 | 691 | 0.6+  | 0.9−  | 2007 10 20 | 703 | 0.5+ | 0.4+ |
| 2005 02 17 | 809 | 0.0   | 0.2+  | 2007 10 08 | 691 | 0.1+  | 0.3−  | 2007 10 20 | 703 | 0.3+ | 0.2− |
| 2005 02 18 | 809 | 0.1+  | 0.0   | 2007 10 09 | A77 | 0.8−  | 0.3+  | 2007 10 20 | 703 | 0.5− | 0.3+ |
| 2005 02 18 | 809 | 0.1−  | 0.1+  | 2007 10 09 | A77 | (2.2− | 0.5−) | 2007 10 20 | 703 | 1.2− | 0.0  |
| 2005 02 18 | 809 | 0.2−  | 0.2+  | 2007 10 10 | A77 | (2.1− | 0.2+) | 2007 10 30 | 703 | 0.3− | 1.5+ |
| 2005 02 18 | 809 | 0.0   | 0.1+  | 2007 10 10 | A77 | 0.4+  | 0.2+  | 2007 10 30 | 703 | 0.3+ | 0.1− |
| 2005 02 18 | 809 | 0.1−  | 0.1+  | 2007 10 11 | A77 | 0.0   | 0.3+  | 2007 10 30 | 703 | 1.2− | 0.1+ |
| 2005 03 03 | 703 | 1.3+  | 0.3−  | 2007 10 11 | A77 | 0.3+  | 0.2+  | 2007 10 30 | 703 | 0.7− | 1.1+ |
| 2005 03 03 | 703 | 0.0   | 0.8+  | 2007 10 11 | 704 | 0.5−  | 0.1+  | 2007 11 06 | 704 | 0.5+ | 0.8+ |
| 2005 03 03 | 703 | 0.6−  | 0.3+  | 2007 10 11 | 704 | 0.3+  | 0.1+  | 2007 11 06 | 704 | 1.8+ | 0.4+ |
| 2005 03 03 | 703 | 0.1+  | 1.5−  | 2007 10 11 | 704 | 0.3−  | 0.2+  | 2007 11 06 | 704 | 0.0  | 0.7+ |
| 2005 03 08 | G96 | 0.5−  | 0.2−  | 2007 10 11 | 704 | 0.3−  | 0.4+  | 2007 11 06 | 704 | 0.1− | 0.3− |
| 2005 03 08 | G96 | 0.3−  | 0.2−  | 2007 10 12 | 691 | 0.1−  | 0.6−  | 2007 11 06 | 704 | 0.0  | 0.6− |
| 2005 03 08 | G96 | 0.3−  | 0.0   | 2007 10 12 | 691 | 0.1−  | 0.6−  | 2007 11 12 | 703 | 0.2− | 0.3− |
| 2005 03 08 | G96 | 0.3−  | 0.4−  | 2007 10 12 | 691 | 0.1+  | 0.4−  | 2007 11 12 | 703 | 1.0+ | 0.3+ |
| 2005 04 02 | 691 | 0.3+  | 0.5+  | 2007 10 15 | 704 | 1.3+  | 0.1−  | 2007 11 12 | 703 | 0.1+ | 1.6− |
| 2005 04 02 | 691 | 0.2+  | 0.1+  | 2007 10 15 | 704 | 1.0+  | 0.1+  | 2007 11 12 | 703 | 0.3− | 0.5− |
| 2005 04 02 | 691 | 0.4+  | 0.0   | 2007 10 15 | 704 | 0.4+  | 0.8+  | 2007 11 15 | 704 | 0.2+ | 0.6− |
| 2007 10 04 | 691 | (3.0+ | 3.3−) | 2007 10 15 | 704 | 0.2+  | 0.1−  | 2007 11 15 | 704 | 0.3− | 0.8− |
| 2007 10 04 | 691 | 0.2−  | 0.3−  | 2007 10 16 | 691 | 0.1−  | 0.3−  | 2007 11 15 | 704 | 0.6− | 0.4− |
| 2007 10 04 | 691 | 0.6−  | 0.2−  | 2007 10 16 | 691 | 0.9−  | 1.4+  | 2007 11 15 | 704 | 0.4+ | 0.2− |

**2007 TW<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 353.63824  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27596565 | $\omega$ | 229.99371 | +0.54913806 | −0.83550853 |
| $a$ | 2.3365013  | $\Omega$ | 186.78183 | +0.80793195 | +0.53663983 |
| $e$ | 0.1758657  | $i$      | 9.41156   | +0.21376005 | +0.11808131 |
| $P$ | 3.57       | $H$      | 17.1      | $G$ 0.15    | $U$ 3       |

2007 DEC. 24

M.P.O. 129829

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 26 | 947 | 0.4− | 0.3+ | 2007 10 10 | D29 | 0.1− | 0.2− | 2007 11 15 | 699 | 0.2+  | 0.0   |
| 2003 08 27 | 947 | 0.2− | 0.3− | 2007 10 10 | D29 | 0.4+ | 0.1− | 2007 11 15 | 699 | 0.2−  | 0.1+  |
| 2003 08 27 | 947 | 0.3+ | 1.1+ | 2007 11 05 | D29 | 0.1+ | 0.5− | 2007 11 20 | 703 | 0.2−  | 0.6−  |
| 2005 03 10 | 703 | 1.3− | 0.6+ | 2007 11 05 | D29 | 0.3+ | 0.4− | 2007 11 20 | 703 | (1.7− | 0.6+) |
| 2005 03 10 | 703 | 0.1+ | 0.6− | 2007 11 05 | D29 | 0.1− | 0.1− | 2007 11 20 | 703 | (2.6− | 0.7−) |
| 2005 03 10 | 703 | 0.0  | 0.4+ | 2007 11 05 | D29 | 0.3+ | 0.3− | 2007 11 20 | 703 | 0.8−  | 0.3−  |
| 2005 03 10 | 703 | 0.3− | 0.3− | 2007 11 06 | D29 | 0.1− | 0.0  | 2007 11 20 | 703 | 0.3+  | 0.7+  |
| 2005 04 02 | 691 | 0.2+ | 0.1+ | 2007 11 06 | D29 | 0.1− | 0.1− | 2007 11 20 | 703 | 0.1+  | 0.2+  |
| 2005 04 02 | 691 | 0.2+ | 0.1+ | 2007 11 06 | D29 | 0.6+ | 0.3+ | 2007 11 20 | 703 | 0.4+  | 0.1+  |
| 2005 04 02 | 691 | 0.1+ | 0.0  | 2007 11 06 | D29 | 0.2− | 0.2− | 2007 11 20 | 703 | 0.7+  | 1.3+  |
| 2007 10 07 | 703 | 0.1− | 0.2− | 2007 11 07 | 703 | 0.8− | 0.0  | 2007 12 05 | 703 | 0.8−  | 0.4−  |
| 2007 10 07 | 703 | 0.3+ | 1.0+ | 2007 11 07 | 703 | 0.4+ | 0.1− | 2007 12 05 | 703 | 1.1−  | 0.5+  |
| 2007 10 07 | 703 | 0.3− | 0.1− | 2007 11 07 | 703 | 0.3− | 0.2− | 2007 12 05 | 703 | 1.3+  | 1.2+  |
| 2007 10 07 | 703 | 0.1+ | 0.3− | 2007 11 07 | 703 | 0.3+ | 0.3+ | 2007 12 05 | 703 | 0.3+  | 0.8−  |
| 2007 10 10 | D29 | 0.1+ | 0.6− | 2007 11 15 | 699 | 0.6− | 0.0  |            |     |       |       |
| 2007 10 10 | D29 | 0.0  | 0.6− | 2007 11 15 | 699 | 0.0  | 0.4+ |            |     |       |       |

2007 TD<sub>22</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.27114   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22427455 | $\omega$ | 268.15853 | +0.98394180   | −0.05956501 |
| <i>a</i> | 2.6829715  | $\Omega$ | 95.22991  | +0.12019998   | +0.91799916 |
| <i>e</i> | 0.1657316  | <i>i</i> | 9.72740   | −0.13194884   | +0.39208360 |
| <i>P</i> | 4.39       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 13 | 608 | 1.2+ | 0.6− | 2007 10 10 | 703 | 0.5+ | 0.2− | 2007 10 21 | G96 | 0.1+ | 0.7− |
| 2002 07 13 | 608 | 0.1+ | 1.1− | 2007 10 10 | 683 | 0.1+ | 0.9− | 2007 10 21 | G96 | 0.2− | 0.5− |
| 2002 07 13 | 608 | 1.7− | 1.3− | 2007 10 10 | 699 | 0.3− | 0.3+ | 2007 10 21 | G96 | 0.0  | 0.5− |
| 2002 07 17 | 644 | 0.2− | 0.4+ | 2007 10 10 | 699 | 0.3− | 0.5+ | 2007 10 21 | G96 | 0.3− | 0.8− |
| 2002 07 17 | 644 | 0.0  | 0.6+ | 2007 10 10 | 699 | 0.1− | 0.0  | 2007 10 21 | G96 | 0.2− | 0.3− |
| 2002 07 17 | 644 | 0.5+ | 0.9+ | 2007 10 10 | 699 | 0.2− | 0.4− | 2007 10 21 | G96 | 0.2+ | 0.1− |
| 2002 08 30 | 644 | 0.2+ | 0.1+ | 2007 10 11 | 683 | 0.8− | 0.7+ | 2007 10 21 | G96 | 0.1+ | 0.2− |
| 2002 08 30 | 644 | 0.1− | 0.3+ | 2007 10 11 | 683 | 1.1+ | 1.3− | 2007 10 21 | G96 | 0.4+ | 0.2− |
| 2002 08 30 | 644 | 0.1+ | 0.0  | 2007 10 13 | 683 | 0.9− | 0.6+ | 2007 10 30 | 703 | 0.2− | 0.2+ |
| 2003 12 14 | 291 | 0.2− | 0.2− | 2007 10 13 | 683 | 0.8− | 0.6+ | 2007 10 30 | 703 | 0.7− | 0.7− |
| 2003 12 14 | 291 | 0.0  | 0.2− | 2007 10 13 | 683 | 0.2+ | 1.6+ | 2007 10 30 | 703 | 0.0  | 0.1+ |
| 2003 12 14 | 291 | 0.3+ | 0.2− | 2007 10 16 | 703 | 0.5+ | 0.8− | 2007 10 30 | 703 | 0.5− | 0.4+ |
| 2007 10 08 | 683 | 0.5+ | 0.0  | 2007 10 16 | 703 | 0.0  | 0.0  | 2007 11 18 | 703 | 0.4− | 0.2− |
| 2007 10 08 | 683 | 1.0+ | 0.8− | 2007 10 16 | 703 | 1.1− | 0.3+ | 2007 11 18 | 703 | 0.2+ | 0.1− |
| 2007 10 08 | 683 | 1.0+ | 1.7+ | 2007 10 16 | 703 | 0.6− | 0.9+ | 2007 11 18 | 703 | 0.3+ | 0.2− |
| 2007 10 10 | 703 | 0.4− | 0.5+ | 2007 10 19 | 704 | 0.1+ | 0.0  | 2007 11 18 | 703 | 0.1− | 1.2+ |
| 2007 10 10 | 703 | 0.2+ | 0.7+ | 2007 10 19 | 704 | 0.0  | 0.4+ | 2007 11 18 | 699 | 0.3+ | 0.7+ |
| 2007 10 10 | 683 | 0.1+ | 0.6− | 2007 10 19 | 704 | 0.0  | 0.2+ | 2007 11 18 | 699 | 0.4+ | 0.7− |
| 2007 10 10 | 703 | 0.2− | 0.4+ | 2007 10 19 | 704 | 0.1+ | 0.1− | 2007 11 18 | 699 | 0.6+ | 0.9− |
| 2007 10 10 | 683 | 0.3− | 0.7− | 2007 10 19 | 704 | 0.2+ | 0.2− | 2007 11 18 | 699 | 0.2+ | 0.2+ |

2007 TO<sub>22</sub> = 2007 RZ<sub>57</sub> = 2005 GY<sub>219</sub>Id. Minor Planet Center (d, *MPO* 128356; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 43.75534   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18430809 | $\omega$ | 146.62789 | +0.84815753   | +0.52972640 |
| <i>a</i> | 3.0580163  | $\Omega$ | 181.40683 | −0.51639552   | +0.82493502 |
| <i>e</i> | 0.1659099  | <i>i</i> | 10.15560  | −0.11817138   | +0.19716023 |
| <i>P</i> | 5.35       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 03 07 | 691 | 1.4− | 0.9− | 2007 09 09 | 699 | 0.3− | 0.3+ | 2007 10 13 | 704 | 0.2−  | 0.1+  |
| 1994 03 07 | 691 | 0.6+ | 0.3− | 2007 09 13 | G96 | 0.3+ | 0.2− | 2007 10 13 | 704 | 0.0   | 0.3−  |
| 1994 03 07 | 691 | 0.4+ | 0.3− | 2007 09 13 | G96 | 0.0  | 0.4− | 2007 10 20 | 703 | 0.4+  | 0.4+  |
| 2004 01 28 | 645 | 0.0  | 0.1+ | 2007 09 13 | G96 | 0.2+ | 0.0  | 2007 10 20 | 703 | 0.1−  | 0.4+  |
| 2004 01 28 | 645 | 0.0  | 0.1+ | 2007 09 13 | G96 | 0.4+ | 0.3− | 2007 10 20 | 703 | (1.7+ | 0.3−) |
| 2005 03 13 | 691 | 0.1+ | 0.1+ | 2007 10 08 | 699 | 0.6− | 0.8− | 2007 10 20 | 703 | 0.2+  | 0.2−  |
| 2005 03 13 | 691 | 0.2+ | 0.2+ | 2007 10 08 | 699 | 0.1− | 0.1− | 2007 11 07 | 703 | 0.7+  | 0.6−  |
| 2005 03 13 | 691 | 0.4+ | 0.1− | 2007 10 08 | 699 | 0.4+ | 0.2+ | 2007 11 07 | 703 | 1.3+  | 0.3+  |

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 04 04 | G96 | 0.2−  | 0.1+  | 2007 10 08 | 699 | 0.9+  | 0.1−  | 2007 11 07 | 703 | 1.1−  | 0.1+  |
| 2005 04 04 | G96 | 0.3−  | 0.2+  | 2007 10 09 | 683 | (1.0+ | 3.8−) | 2007 11 07 | 703 | 0.1+  | 0.2+  |
| 2005 04 04 | G96 | 0.1−  | 0.2+  | 2007 10 09 | 683 | 0.8+  | 1.3−  | 2007 11 12 | 704 | 0.1+  | 0.3+  |
| 2005 04 04 | G96 | 0.2−  | 0.1+  | 2007 10 09 | 683 | (2.1+ | 1.2−) | 2007 11 12 | 704 | 0.3+  | 0.1−  |
| 2005 04 04 | G96 | 0.6−  | 0.4+  | 2007 10 10 | 683 | 0.1+  | 0.5−  | 2007 11 12 | 704 | 0.1−  | 0.4+  |
| 2005 04 04 | G96 | 0.3−  | 0.5+  | 2007 10 10 | 683 | (0.0  | 1.9+) | 2007 11 12 | 704 | 0.2+  | 0.2+  |
| 2005 04 04 | G96 | 0.4−  | 0.0   | 2007 10 12 | 703 | 0.1+  | 0.7+  | 2007 11 12 | 704 | 0.3+  | 0.3+  |
| 2005 04 04 | G96 | 0.4+  | 0.1+  | 2007 10 12 | 703 | 0.8−  | 0.3+  | 2007 11 17 | 703 | 0.7−  | 1.3+  |
| 2005 04 12 | 695 | 0.1−  | 0.5+  | 2007 10 12 | 703 | 0.8−  | 0.3+  | 2007 11 17 | 703 | 1.2−  | 0.4+  |
| 2005 04 12 | 695 | 0.0   | 0.2+  | 2007 10 12 | 703 | 0.2−  | 0.4+  | 2007 11 17 | 703 | (0.4+ | 1.6−) |
| 2007 09 09 | 699 | 0.6−  | 0.7−  | 2007 10 13 | 704 | 0.5−  | 0.1−  | 2007 11 17 | 703 | 0.1−  | 1.5−  |
| 2007 09 09 | 699 | 0.5+  | 0.6+  | 2007 10 13 | 704 | 0.3+  | 0.2−  |            |     |       |       |
| 2007 09 09 | 699 | (0.7− | 1.5+) | 2007 10 13 | 704 | 0.2+  | 0.6−  |            |     |       |       |

2007 TT<sub>22</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.82466   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17063785 | $\omega$ | 309.74332 | +0.92775585   | −0.01410482 |
| <i>a</i> | 3.2192335  | $\Omega$ | 54.38649  | +0.25214707   | +0.76038091 |
| <i>e</i> | 0.1718967  | <i>i</i> | 27.30442  | −0.27511987   | +0.64932420 |
| <i>P</i> | 5.78       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 27 | 699 | 0.2−  | 0.2+  | 2007 10 10 | 703 | 0.9+ | 0.8+ | 2007 11 02 | H07 | 1.2+ | 0.4− |
| 2001 09 27 | 699 | 0.5−  | 0.6+  | 2007 10 10 | 683 | 0.6− | 1.0− | 2007 11 07 | 703 | 1.1− | 0.2− |
| 2001 09 27 | 699 | 0.8−  | 0.0   | 2007 10 10 | 703 | 0.2− | 0.9+ | 2007 11 07 | 703 | 0.9− | 0.4+ |
| 2001 09 27 | 699 | 0.2+  | 1.1+  | 2007 10 10 | 683 | 0.5− | 0.2+ | 2007 11 07 | 703 | 1.0− | 0.3− |
| 2001 10 19 | 699 | 1.5−  | 0.4−  | 2007 10 10 | 703 | 0.3− | 0.7+ | 2007 11 07 | 703 | 1.1− | 0.9+ |
| 2001 10 19 | 699 | 0.9+  | 0.6+  | 2007 10 10 | 683 | 0.7+ | 1.1− | 2007 11 11 | 699 | 0.3− | 0.4− |
| 2001 10 19 | 699 | 0.9−  | 0.6+  | 2007 10 11 | 683 | 0.8− | 0.2− | 2007 11 11 | 699 | 0.3− | 0.6− |
| 2001 10 19 | 699 | (1.6− | 0.0 ) | 2007 10 11 | 683 | 0.2+ | 0.9+ | 2007 11 11 | 699 | 0.1− | 0.7− |
| 2005 04 18 | 691 | 0.3+  | 0.4+  | 2007 10 11 | 683 | 1.0− | 0.6− | 2007 11 11 | 699 | 0.1− | 0.3− |
| 2005 04 18 | 691 | 0.2+  | 0.1+  | 2007 10 19 | 699 | 0.2+ | 0.6− | 2007 11 12 | 704 | 0.1+ | 0.1+ |
| 2005 04 18 | 691 | 0.4+  | 0.5+  | 2007 10 19 | 699 | 0.4+ | 0.4+ | 2007 11 12 | 704 | 0.0  | 0.1+ |
| 2005 04 30 | 691 | 0.1+  | 0.3+  | 2007 10 19 | 704 | 0.2− | 0.7+ | 2007 11 12 | 704 | 0.2− | 0.2+ |
| 2005 04 30 | 691 | 0.2+  | 0.3+  | 2007 10 19 | 704 | 0.1+ | 0.3+ | 2007 11 12 | 704 | 0.2− | 0.5+ |
| 2005 04 30 | 691 | 0.3+  | 0.3+  | 2007 10 19 | 699 | 0.7− | 0.5+ | 2007 11 12 | 704 | 0.3− | 0.2+ |
| 2005 05 11 | 691 | 0.6+  | 0.2+  | 2007 10 19 | 704 | 0.6− | 0.5+ | 2007 12 05 | 703 | 0.4+ | 0.6+ |
| 2005 05 11 | 691 | 0.5+  | 0.4+  | 2007 10 19 | 704 | 0.1− | 0.6+ | 2007 12 05 | 703 | 0.1− | 0.3− |
| 2005 05 11 | 691 | 0.4+  | 0.4+  | 2007 10 19 | 699 | 0.1− | 0.5+ | 2007 12 05 | 703 | 0.8− | 0.1+ |
| 2006 07 20 | E12 | 0.4−  | 0.4−  | 2007 10 19 | 704 | 0.0  | 0.6+ | 2007 12 05 | 703 | 0.2− | 0.5+ |
| 2006 07 20 | E12 | 0.1+  | 0.7−  | 2007 10 30 | 703 | 0.3+ | 0.1+ | 2007 12 14 | 703 | 0.5− | 0.2+ |
| 2006 07 20 | E12 | 1.0−  | 0.6−  | 2007 10 30 | 703 | 0.2− | 0.1− | 2007 12 14 | 703 | 0.8− | 1.2+ |
| 2006 07 20 | E12 | 0.1+  | 0.3+  | 2007 10 30 | 703 | 0.5− | 0.3− | 2007 12 14 | 703 | 0.5+ | 0.6+ |
| 2007 10 09 | 683 | (0.4+ | 1.7+) | 2007 10 30 | 703 | 0.6+ | 0.2− | 2007 12 14 | 703 | 0.2− | 0.1− |
| 2007 10 09 | 683 | 1.1+  | 0.6−  | 2007 11 02 | H07 | 0.2− | 1.3+ |            |     |      |      |
| 2007 10 10 | 703 | 0.0   | 1.4+  | 2007 11 02 | H07 | 0.1+ | 0.5+ |            |     |      |      |

2007 TJ<sub>24</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 51.06710   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22020529 | $\omega$ | 128.20847 | +0.58587734 | +0.81038277 |
| $a$ | 2.7159236  | $\Omega$ | 177.63791 | -0.77762060 | +0.56398995 |
| $e$ | 0.2785091  | $i$      | 7.31104   | -0.22815336 | +0.15872962 |
| $P$ | 4.48       | $H$      | 16.5      | $G$ 0.15    | $U$ 4       |

## M.P.O. 129830

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 23 | 691 | 0.4+ | 0.5+ | 2007 10 09 | G96 | 0.5+ | 0.4- | 2007 10 12 | 703 | 0.7- | 0.8- |
| 2006 03 26 | G96 | 1.5- | 1.0- | 2007 10 09 | G96 | 0.5+ | 0.3- | 2007 10 12 | 703 | 1.5- | 0.7+ |
| 2006 03 26 | G96 | 1.0- | 1.0- | 2007 10 09 | G96 | 0.3+ | 0.1- | 2007 10 20 | 703 | 0.7- | 0.1+ |
| 2006 03 26 | G96 | 0.5- | 0.7- | 2007 10 09 | G96 | 0.8+ | 0.1- | 2007 10 20 | 703 | 0.9+ | 0.5- |
| 2006 03 26 | G96 | 1.8- | 0.4+ | 2007 10 09 | G96 | 0.7+ | 0.4- | 2007 10 20 | 703 | 0.8- | 0.6+ |
| 2007 10 07 | 703 | 0.0  | 0.8- | 2007 10 09 | G96 | 0.6+ | 0.3- | 2007 10 20 | 703 | 0.4- | 0.1+ |
| 2007 10 07 | 703 | 0.3- | 0.4+ | 2007 10 09 | G96 | 0.5+ | 0.2- |            |     |      |      |
| 2007 10 07 | 703 | 0.2- | 0.2+ | 2007 10 09 | G96 | 0.4+ | 0.2- |            |     |      |      |

**2007 TM<sub>24</sub> = 2007 RQ<sub>199</sub>**Id. MInor Planet Center (d, *MPO* 126834)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.21730183 | $\omega$ | 122.00378 | -0.20165960 | -0.97914132 |          |   |
| <i>a</i> | 2.7400625  | $\Omega$ | 339.58641 | +0.87293031 | -0.16818003 |          |   |
| <i>e</i> | 0.0886238  | <i>i</i> | 4.07940   | +0.44421400 | -0.11400766 |          |   |
| <i>P</i> | 4.54       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |       |      |            |     |      |      |            |     |      |      |
|------------|-----|-------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 691 | 0.3+  | 0.1- | 2007 09 14 | G96 | 0.5+ | 0.4- | 2007 10 12 | 734 | 0.5+ | 0.2+ |
| 2003 12 25 | 691 | 0.1-  | 0.1+ | 2007 09 14 | G96 | 0.4+ | 0.5- | 2007 10 12 | 734 | 0.5+ | 0.1- |
| 2003 12 25 | 691 | 0.2-  | 0.1+ | 2007 09 14 | G96 | 0.4+ | 0.0  | 2007 10 12 | 734 | 0.6+ | 0.1+ |
| 2005 03 11 | G96 | 0.3+  | 0.1+ | 2007 09 14 | G96 | 0.5+ | 0.5- | 2007 10 14 | G96 | 0.1- | 0.2- |
| 2005 03 11 | G96 | 0.1+  | 0.6+ | 2007 10 06 | 300 | 0.5- | 1.2- | 2007 10 14 | G96 | 0.3+ | 0.5- |
| 2005 03 11 | G96 | 0.4+  | 0.5+ | 2007 10 06 | 300 | 0.3+ | 0.8- | 2007 10 14 | G96 | 0.3+ | 0.1- |
| 2005 03 11 | G96 | 0.1-  | 0.6+ | 2007 10 06 | 300 | 0.2- | 0.7+ | 2007 10 14 | G96 | 0.2+ | 0.4- |
| 2005 03 12 | G96 | 0.4+  | 0.2- | 2007 10 06 | 300 | 0.4+ | 0.2+ | 2007 10 18 | 734 | 0.1- | 0.3+ |
| 2005 03 12 | G96 | 0.1+  | 0.1+ | 2007 10 06 | 300 | 0.3- | 0.7+ | 2007 10 18 | 734 | 0.3- | 0.1- |
| 2005 03 12 | G96 | 0.1-  | 0.0  | 2007 10 11 | 734 | 0.4+ | 0.3- | 2007 10 18 | 734 | 0.5+ | 0.2+ |
| 2005 03 12 | G96 | 0.1-  | 0.3+ | 2007 10 11 | 734 | 0.4+ | 0.3- | 2007 12 03 | 734 | 0.0  | 0.8+ |
| 2007 09 13 | 691 | 1.1-  | 0.1+ | 2007 10 11 | 734 | 0.1+ | 0.1- | 2007 12 03 | 734 | 0.0  | 0.4+ |
| 2007 09 13 | 691 | 0.6-  | 1.0+ | 2007 10 12 | 734 | 0.5+ | 0.3- | 2007 12 03 | 734 | 0.0  | 0.0  |
| 2007 09 13 | 691 | (1.8- | 0.0) | 2007 10 12 | 734 | 0.3+ | 0.1+ |            |     |      |      |

**2007 TK<sub>25</sub> = 2005 GV<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.22239150 | $\omega$ | 63.83685 | +0.30307743 | -0.95228040 |          |   |
| <i>a</i> | 2.6980952  | $\Omega$ | 8.75534  | +0.76742135 | +0.22140804 |          |   |
| <i>e</i> | 0.1585764  | <i>i</i> | 13.73477 | +0.56498544 | +0.21009646 |          |   |
| <i>P</i> | 4.43       | <i>H</i> | 16.8     | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 06 | 691 | 0.1+ | 0.1+ | 2007 09 09 | G96 | 0.1- | 0.0  | 2007 10 13 | 703 | 0.8- | 1.5+ |
| 2005 04 06 | 691 | 0.0  | 0.2- | 2007 10 04 | 691 | 0.0  | 0.1+ | 2007 10 13 | 703 | 0.9+ | 0.2- |
| 2005 04 06 | 691 | 0.2+ | 0.0  | 2007 10 04 | 691 | 0.1+ | 0.1+ | 2007 10 13 | 703 | 0.3- | 0.9+ |
| 2005 04 10 | 691 | 0.1+ | 0.0  | 2007 10 04 | 691 | 0.0  | 0.1- | 2007 10 13 | 703 | 0.3- | 0.0  |
| 2005 04 10 | 691 | 0.1- | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.3- | 2007 11 12 | G96 | 0.1- | 0.2- |
| 2005 04 10 | 691 | 0.2- | 0.0  | 2007 10 07 | G96 | 0.1+ | 0.4- | 2007 11 12 | G96 | 0.0  | 0.3- |
| 2007 09 09 | G96 | 0.1+ | 0.3- | 2007 10 07 | G96 | 0.1+ | 0.6- | 2007 11 12 | G96 | 0.1+ | 0.2- |
| 2007 09 09 | G96 | 0.3- | 0.4- | 2007 10 07 | G96 | 0.2+ | 0.2- | 2007 11 12 | G96 | 0.2+ | 0.1- |

**2007 TU<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.27279401 | $\omega$ | 72.34653  | +0.66862963 | +0.74356124 |          |   |
| <i>a</i> | 2.3545766  | $\Omega$ | 239.61703 | -0.68533789 | +0.61248689 |          |   |
| <i>e</i> | 0.1984680  | <i>i</i> | 0.47475   | -0.28852451 | +0.26828434 |          |   |
| <i>P</i> | 3.61       | <i>H</i> | 17.9      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 06 | 691 | 0.1- | 0.2+ | 2007 09 14 | G96 | 0.1- | 0.2- | 2007 10 13 | 703 | 0.8+ | 0.1- |
| 1996 09 06 | 691 | 0.1+ | 0.3+ | 2007 09 14 | G96 | 0.2- | 0.2- | 2007 10 13 | 703 | 1.3+ | 0.9+ |
| 1996 09 06 | 691 | 0.3- | 0.2+ | 2007 10 04 | 691 | 0.3- | 0.5+ | 2007 10 18 | G96 | 0.1- | 0.1+ |
| 2000 11 27 | 691 | 0.2+ | 0.3+ | 2007 10 04 | 691 | 0.5- | 0.3+ | 2007 10 18 | G96 | 0.0  | 0.0  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 27 | 691 | 0.4- | 0.3+ | 2007 10 04 | 691 | 0.5- | 0.9+ | 2007 10 18 | G96 | 0.1- | 0.1+ |
| 2000 11 27 | 691 | 0.0  | 0.3+ | 2007 10 07 | G96 | 0.0  | 0.8- | 2007 10 18 | G96 | 0.2- | 0.1- |
| 2006 04 19 | G96 | 0.2+ | 0.1- | 2007 10 07 | G96 | 0.4- | 1.0- | 2007 10 19 | G96 | 0.1- | 0.1- |
| 2006 04 19 | G96 | 0.2+ | 0.2- | 2007 10 07 | G96 | 0.2+ | 0.7- | 2007 10 19 | G96 | 0.3+ | 0.1- |
| 2006 04 19 | G96 | 0.2+ | 0.3- | 2007 10 07 | G96 | 0.2- | 0.8- | 2007 10 19 | G96 | 0.2+ | 0.1- |
| 2006 04 19 | G96 | 0.3- | 0.8+ | 2007 10 10 | D29 | 0.3+ | 0.2+ | 2007 10 19 | G96 | 0.0  | 0.1- |
| 2006 05 03 | G96 | 0.1+ | 0.0  | 2007 10 10 | D29 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.4- |
| 2006 05 03 | G96 | 0.1- | 0.7- | 2007 10 10 | D29 | 0.2- | 0.6- | 2007 10 30 | G96 | 0.3+ | 0.1+ |
| 2006 05 03 | G96 | 0.5- | 0.1- | 2007 10 10 | D29 | 0.1- | 0.1- | 2007 10 30 | G96 | 0.3- | 0.1+ |
| 2007 09 14 | G96 | 0.2- | 0.1+ | 2007 10 13 | 703 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.2- | 0.0  |
| 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 10 13 | 703 | 0.3+ | 0.1- |            |     |      |      |

**2007 TW<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.21937739 | $\omega$ | 217.75189 | +0.46416479 | -0.88482656 |          |   |
| <i>a</i> | 2.7227524  | $\Omega$ | 204.66956 | +0.83441565 | +0.45211483 |          |   |
| <i>e</i> | 0.0232278  | <i>i</i> | 5.55598   | +0.29715580 | +0.11257950 |          |   |
| <i>P</i> | 4.49       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.3- | 0.7- | 2007 10 04 | 691 | 0.2+ | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.1+ |
| 2003 11 18 | 691 | 0.1- | 0.3- | 2007 10 04 | 691 | 0.1- | 0.3+ | 2007 10 18 | G96 | 0.1- | 0.2- |
| 2003 11 18 | 691 | 0.5- | 0.0  | 2007 10 04 | 691 | 0.4- | 0.1+ | 2007 10 18 | G96 | 0.1- | 0.2- |
| 2003 11 23 | 691 | 0.8+ | 0.9+ | 2007 10 07 | G96 | 0.8+ | 0.2- | 2007 10 18 | G96 | 0.1- | 0.1- |
| 2003 11 23 | 691 | 0.1+ | 0.1+ | 2007 10 07 | G96 | 0.5- | 0.5- | 2007 10 18 | G96 | 0.0  | 0.1- |
| 2003 11 23 | 691 | 0.2- | 0.7+ | 2007 10 07 | G96 | 0.2- | 0.1- | 2007 10 19 | G96 | 0.3- | 0.5- |
| 2003 12 17 | 691 | 0.3- | 0.1- | 2007 10 07 | G96 | 0.5+ | 0.1- | 2007 10 19 | G96 | 0.5+ | 0.1- |
| 2003 12 17 | 691 | 0.1- | 0.2- | 2007 10 13 | A77 | 0.3- | 0.0  | 2007 10 19 | G96 | 0.0  | 0.4- |
| 2003 12 17 | 691 | 0.5+ | 0.4- | 2007 10 13 | A77 | 1.1- | 0.4+ | 2007 10 19 | G96 | 0.1- | 0.3- |
| 2007 09 14 | G96 | 0.0  | 0.0  | 2007 10 13 | A77 | 0.2+ | 0.7+ | 2007 10 30 | G96 | 0.0  | 0.0  |
| 2007 09 14 | G96 | 0.1+ | 0.2- | 2007 10 18 | G96 | 0.4+ | 0.2- | 2007 10 30 | G96 | 0.2- | 0.0  |
| 2007 09 14 | G96 | 0.6+ | 0.2+ | 2007 10 18 | G96 | 0.3- | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.3+ |
| 2007 09 14 | G96 | 0.1+ | 0.3+ | 2007 10 18 | G96 | 0.1- | 0.1- | 2007 10 30 | G96 | 0.4+ | 0.2+ |

**2007 TY<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.22847824 | $\omega$ | 235.84871 | +0.22779122 | -0.97111829 |          |   |
| <i>a</i> | 2.6499610  | $\Omega$ | 201.32474 | +0.94524424 | +0.23804451 |          |   |
| <i>e</i> | 0.0476114  | <i>i</i> | 11.25813  | +0.23371880 | -0.01625022 |          |   |
| <i>P</i> | 4.31       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 15 | 691 | 0.0  | 0.1- | 2007 10 04 | 691 | 0.4- | 0.2+ | 2007 10 13 | A77 | 0.3+ | 0.3+ |
| 2001 04 15 | 691 | 0.3+ | 0.0  | 2007 10 04 | 691 | 0.1+ | 0.5+ | 2007 10 13 | A77 | 0.5- | 0.1+ |
| 2001 04 15 | 691 | 0.1- | 0.0  | 2007 10 07 | G96 | 0.4- | 0.2+ | 2007 10 13 | A77 | 0.0  | 0.7- |
| 2003 11 26 | 691 | 0.0  | 0.4- | 2007 10 07 | G96 | 0.2- | 0.0  | 2007 10 14 | 704 | 0.1+ | 1.3+ |
| 2003 11 26 | 691 | 0.0  | 0.2- | 2007 10 07 | G96 | 0.0  | 0.1+ | 2007 10 14 | 704 | 0.2+ | 0.3+ |
| 2003 11 26 | 691 | 0.2- | 0.4- | 2007 10 07 | G96 | 0.0  | 0.3+ | 2007 10 14 | 704 | 0.7+ | 0.2- |
| 2003 12 21 | 691 | 0.0  | 0.2- | 2007 10 11 | 704 | 0.1- | 0.2+ | 2007 10 14 | 704 | 1.5+ | 1.5+ |
| 2003 12 21 | 691 | 0.1+ | 0.6- | 2007 10 11 | 699 | 0.9+ | 1.1- | 2007 10 14 | 704 | 0.8+ | 0.3- |
| 2003 12 21 | 691 | 0.0  | 0.3- | 2007 10 11 | 704 | 0.1- | 0.7- | 2007 10 18 | G96 | 0.3+ | 0.1+ |
| 2005 03 13 | 703 | 1.3+ | 0.8+ | 2007 10 11 | 699 | 0.8- | 0.9+ | 2007 10 18 | G96 | 0.1- | 0.1+ |
| 2005 03 13 | 703 | 0.2- | 1.6+ | 2007 10 11 | 704 | 0.7- | 0.3- | 2007 10 18 | G96 | 0.2+ | 0.2- |
| 2005 03 13 | 703 | 0.3+ | 1.0+ | 2007 10 11 | 699 | 0.1+ | 0.2+ | 2007 10 18 | G96 | 0.1- | 0.2- |
| 2005 03 13 | 703 | 0.1- | 0.4- | 2007 10 11 | 699 | 0.4+ | 0.5+ | 2007 11 01 | 691 | 0.8- | 0.3- |
| 2005 05 12 | G96 | 0.4- | 0.2- | 2007 10 12 | 704 | 0.2- | 1.0+ | 2007 11 01 | 691 | 0.1- | 0.3- |
| 2005 05 12 | G96 | 0.0  | 0.3+ | 2007 10 12 | 704 | 0.1- | 0.1- | 2007 11 01 | 691 | 0.3- | 0.1+ |
| 2005 05 12 | G96 | 0.0  | 0.0  | 2007 10 12 | 704 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.7- | 0.2+ |
| 2005 05 12 | G96 | 0.4- | 0.2- | 2007 10 12 | 704 | 0.4+ | 0.2+ | 2007 11 09 | 691 | 0.5- | 0.3+ |
| 2007 10 04 | 691 | 0.1- | 0.0  | 2007 10 12 | 704 | 0.4- | 0.2+ | 2007 11 09 | 691 | 0.5- | 0.0  |

2007 DEC. 24

M.P.O. 129831

**2007 TL<sub>26</sub> = 2005 EV<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 115.33299  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18013607 | $\omega$ 233.94221 | -0.63730469   | +0.77040554 |
| <i>a</i> | 3.1050523  | $\Omega$ 356.31482 | -0.58718729   | -0.50046716 |
| <i>e</i> | 0.1661434  | <i>i</i> 16.10846  | -0.49905292   | -0.39497838 |
| <i>P</i> | 5.47       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | 703 | 1.1+ | 0.4+ | 2007 09 12 | G96 | 0.2- | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.0  |
| 2005 03 09 | 703 | 0.1- | 0.6- | 2007 09 12 | G96 | 0.0  | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.3- |
| 2005 03 09 | 703 | 0.1- | 0.4- | 2007 09 12 | G96 | 0.1- | 0.0  | 2007 10 07 | G96 | 0.6+ | 0.2- |
| 2005 03 09 | 703 | 0.4+ | 0.0  | 2007 09 12 | G96 | 0.1- | 0.1+ | 2007 10 07 | G96 | 0.0  | 0.2- |
| 2005 03 16 | 703 | 0.5+ | 0.8+ | 2007 10 04 | G96 | 0.2- | 0.1- | 2007 10 20 | G96 | 0.2+ | 0.2- |
| 2005 03 16 | 703 | 0.6- | 1.0- | 2007 10 04 | G96 | 0.1+ | 0.1+ | 2007 10 20 | G96 | 0.1+ | 0.1+ |
| 2005 03 16 | 703 | 0.6- | 0.9+ | 2007 10 04 | G96 | 0.3+ | 0.2- | 2007 10 20 | G96 | 0.4- | 0.6+ |
| 2005 03 16 | 703 | 0.7- | 0.0  | 2007 10 04 | G96 | 0.1+ | 0.1- | 2007 10 20 | G96 | 0.5- | 0.3+ |

**2007 TF<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.59008   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.31307247 | $\omega$ 305.50396 | +0.82382343   | +0.56655389 |
| <i>a</i> | 2.1480256  | $\Omega$ 20.00536  | -0.50131193   | +0.74319838 |
| <i>e</i> | 0.1729964  | <i>i</i> 3.05140   | -0.26457759   | +0.35591131 |
| <i>P</i> | 3.15       | <i>H</i> 18.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 11 | 691 | 0.1+ | 0.5- | 2007 10 11 | 704 | 0.2+ | 0.6+ | 2007 10 20 | 704 | 0.5- | 0.0  |
| 2004 10 11 | 691 | 0.2+ | 0.9- | 2007 10 12 | 704 | 0.1- | 0.1+ | 2007 10 20 | 704 | 0.2- | 0.0  |
| 2004 10 11 | 691 | 0.0  | 0.6- | 2007 10 12 | 704 | 0.2+ | 0.6- | 2007 10 21 | 691 | 0.0  | 0.0  |
| 2004 10 23 | 691 | 0.1- | 0.0  | 2007 10 12 | 704 | 0.2- | 0.0  | 2007 10 21 | 691 | 0.1+ | 0.2+ |
| 2004 10 23 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 704 | 0.2- | 0.4+ | 2007 10 21 | 691 | 0.0  | 0.1+ |
| 2004 10 23 | 691 | 0.0  | 0.2+ | 2007 10 13 | 703 | 1.0- | 0.0  | 2007 10 31 | 691 | 0.1+ | 0.2- |
| 2006 03 06 | 691 | 1.4+ | 0.9- | 2007 10 13 | 703 | 0.4- | 0.2+ | 2007 10 31 | 691 | 0.3- | 0.1- |
| 2006 03 06 | 691 | 0.5- | 0.6+ | 2007 10 13 | 703 | 0.6- | 1.4+ | 2007 10 31 | 691 | 0.6- | 0.0  |
| 2006 03 06 | 691 | 0.5- | 1.0+ | 2007 10 13 | 703 | 0.3- | 0.0  | 2007 11 02 | 691 | 0.6+ | 0.8- |
| 2007 10 04 | 691 | 0.2+ | 0.0  | 2007 10 15 | 703 | 1.5- | 0.1+ | 2007 11 02 | 691 | 0.3- | 0.3+ |
| 2007 10 04 | 691 | 0.1+ | 0.1- | 2007 10 15 | 703 | 0.2+ | 0.6+ | 2007 11 02 | 691 | 0.0  | 0.4+ |
| 2007 10 04 | 691 | 0.4+ | 0.1- | 2007 10 15 | 703 | 0.4+ | 0.2- | 2007 11 04 | 691 | 0.2+ | 0.4+ |
| 2007 10 07 | G96 | 0.6+ | 0.3- | 2007 10 15 | 703 | 0.4+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2007 10 07 | G96 | 0.1+ | 0.3- | 2007 10 18 | G96 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.2+ |
| 2007 10 07 | G96 | 0.1+ | 0.1- | 2007 10 18 | G96 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2007 10 07 | G96 | 0.7+ | 0.3- | 2007 10 18 | G96 | 0.3+ | 0.1+ | 2007 11 13 | 691 | 0.2+ | 0.1+ |
| 2007 10 11 | 704 | 0.7+ | 0.5+ | 2007 10 18 | G96 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2007 10 11 | 704 | 0.5+ | 0.5+ | 2007 10 20 | 704 | 0.2+ | 1.0- |            |     |      |      |
| 2007 10 11 | 704 | 0.4+ | 0.1+ | 2007 10 20 | 704 | 1.6- | 0.8- |            |     |      |      |

**2007 TP<sub>27</sub> = 2007 UR<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 79.11361   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21375912 | $\omega$ 90.62861  | +0.35601222   | +0.93432794 |
| <i>a</i> | 2.7702542  | $\Omega$ 200.25228 | -0.87564803   | +0.32721699 |
| <i>e</i> | 0.1458620  | <i>i</i> 2.80331   | -0.32633698   | +0.14128110 |
| <i>P</i> | 4.61       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 09 18 | 691 | 0.3+ | 0.5+ | 2007 09 05 | G96 | 0.1+ | 0.1- | 2007 10 18 | G96 | 0.3+ | 0.3- |
| 1993 09 18 | 691 | 0.2- | 0.2+ | 2007 09 05 | G96 | 0.0  | 0.5- | 2007 10 30 | 703 | 0.2- | 0.8+ |
| 1993 09 18 | 691 | 0.3- | 0.8- | 2007 10 04 | 691 | 0.0  | 0.2+ | 2007 10 30 | 703 | 0.0  | 0.1+ |
| 1998 10 18 | 691 | 0.3+ | 0.1+ | 2007 10 04 | 691 | 0.2- | 0.1- | 2007 10 30 | 703 | 0.2- | 0.2+ |
| 1998 10 18 | 691 | 0.2+ | 0.3- | 2007 10 04 | 691 | 0.1+ | 0.0  | 2007 10 30 | 703 | 0.0  | 1.4+ |
| 1998 10 18 | 691 | 0.2- | 0.2- | 2007 10 07 | G96 | 0.4+ | 0.4- | 2007 10 30 | G96 | 0.2+ | 0.3- |
| 2002 09 14 | 644 | 0.1- | 0.4+ | 2007 10 07 | G96 | 0.4+ | 0.5- | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 2002 09 14 | 644 | 0.1- | 0.3+ | 2007 10 07 | G96 | 0.2+ | 0.5- | 2007 10 30 | G96 | 0.6+ | 0.4- |
| 2002 09 14 | 644 | 0.2+ | 0.1+ | 2007 10 07 | G96 | 0.0  | 0.3- | 2007 10 30 | G96 | 1.0+ | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 29 | 691 | 0.0  | 0.2+ | 2007 10 18 | G96 | 0.3+ | 0.4- | 2007 11 04 | 691 | 0.1- | 0.0  |
| 2003 11 29 | 691 | 0.3- | 0.1- | 2007 10 18 | G96 | 0.0  | 0.3- | 2007 11 04 | 691 | 0.7- | 0.0  |
| 2003 11 29 | 691 | 0.2+ | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.5- | 2007 11 04 | 691 | 0.1- | 0.6+ |

**2007 TR<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 295.58012  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27428073 | $\omega$ 263.67248 | -0.06537603   | -0.99783776 |
| <i>a</i> | 2.3460604  | $\Omega$ 190.08343 | +0.93011948   | -0.05848076 |
| <i>e</i> | 0.0219482  | <i>i</i> 2.21478   | +0.36139138   | -0.02999678 |
| <i>P</i> | 3.59       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 29 | 691 | 0.3+ | 0.1+ | 2007 10 04 | 691 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.3+ | 0.4- |
| 2000 10 29 | 691 | 0.5+ | 0.3+ | 2007 10 04 | 691 | 0.5- | 0.3+ | 2007 10 18 | G96 | 0.8+ | 0.2- |
| 2000 10 29 | 691 | 0.2+ | 0.4+ | 2007 10 07 | G96 | 0.1- | 0.0  | 2007 10 18 | G96 | 0.6+ | 0.2- |
| 2000 11 18 | 691 | 0.3- | 0.5- | 2007 10 07 | G96 | 0.7+ | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.2- |
| 2000 11 18 | 691 | 0.1+ | 0.2+ | 2007 10 07 | G96 | 0.4+ | 0.4- | 2007 11 03 | 691 | 0.4- | 0.5- |
| 2000 11 18 | 691 | 0.8- | 0.3- | 2007 10 07 | G96 | 0.0  | 0.4+ | 2007 11 03 | 691 | 0.3- | 0.1- |
| 2003 09 29 | 291 | 0.2+ | 0.3- | 2007 10 15 | 703 | 0.1- | 0.7+ | 2007 11 03 | 691 | 0.0  | 0.4+ |
| 2003 09 29 | 291 | 0.3- | 0.0  | 2007 10 15 | 703 | 0.7+ | 0.4+ | 2007 11 09 | 691 | 0.1+ | 0.1- |
| 2003 09 29 | 291 | 0.1+ | 0.1+ | 2007 10 15 | 703 | 0.5+ | 0.0  | 2007 11 09 | 691 | 0.2- | 0.2+ |
| 2007 09 11 | G96 | 0.1+ | 0.3- | 2007 10 15 | 703 | 0.8+ | 0.2- | 2007 11 09 | 691 | 0.1+ | 0.4- |
| 2007 09 11 | G96 | 0.4+ | 0.3- | 2007 10 18 | G96 | 0.2+ | 0.3- | 2007 11 13 | 691 | 0.2- | 0.0  |
| 2007 09 11 | G96 | 0.3+ | 0.5- | 2007 10 18 | G96 | 0.1+ | 0.1- | 2007 11 13 | 691 | 0.2- | 0.2+ |
| 2007 09 11 | G96 | 0.0  | 0.7- | 2007 10 18 | G96 | 0.1- | 0.4+ | 2007 11 13 | 691 | 0.3- | 0.2+ |
| 2007 10 04 | 691 | 0.4+ | 0.4+ | 2007 10 18 | G96 | 0.3+ | 0.2- |            |     |      |      |

**2007 TG<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.59830  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26293771 | $\omega$ 260.04220 | -0.24260293   | -0.97003019 |
| <i>a</i> | 2.4130564  | $\Omega$ 204.01127 | +0.90266381   | -0.22056998 |
| <i>e</i> | 0.1434930  | <i>i</i> 1.91676   | +0.35544600   | -0.10193284 |
| <i>P</i> | 3.75       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 09 | G96 | 0.1+ | 0.1+ | 2007 10 07 | G96 | 0.2+ | 0.2- | 2007 10 20 | 691 | 0.2- | 0.2+ |
| 2005 03 09 | G96 | 0.1- | 0.3- | 2007 10 07 | G96 | 0.1+ | 0.0  | 2007 10 20 | 691 | 0.5+ | 0.0  |
| 2005 03 09 | G96 | 0.2+ | 0.0  | 2007 10 07 | G96 | 0.2- | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.3- |
| 2005 03 09 | G96 | 0.1- | 0.2- | 2007 10 07 | G96 | 0.8- | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.2- |
| 2005 04 09 | G96 | 0.2+ | 0.3- | 2007 10 08 | 691 | 0.3+ | 0.1- | 2007 10 30 | G96 | 0.2+ | 0.4- |
| 2005 04 09 | G96 | 0.1- | 0.1+ | 2007 10 08 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.3- |
| 2005 04 09 | G96 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.2- | 0.0  | 2007 11 17 | G96 | 0.2- | 0.5+ |
| 2005 04 09 | G96 | 0.6- | 0.4+ | 2007 10 12 | 691 | 0.1- | 0.3- | 2007 11 17 | G96 | 0.0  | 0.2- |
| 2007 10 04 | 691 | 0.1+ | 0.2- | 2007 10 12 | 691 | 0.1+ | 0.2- | 2007 11 17 | G96 | 0.2- | 0.6+ |
| 2007 10 04 | 691 | 0.0  | 0.2- | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 17 | G96 | 0.5- | 0.2+ |
| 2007 10 04 | 691 | 0.4- | 0.3+ | 2007 10 20 | 691 | 0.1+ | 0.7+ |            |     |      |      |

**2007 TJ<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 320.99492  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19087995 | $\omega$ 262.12051 | +0.01068674   | -0.99993961 |
| <i>a</i> | 2.9874170  | $\Omega$ 187.26864 | +0.92522605   | +0.01086026 |
| <i>e</i> | 0.1984604  | <i>i</i> 1.16063   | +0.37926579   | +0.00168193 |
| <i>P</i> | 5.16       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 02 | 291 | 0.3- | 0.1- | 2007 10 11 | 704 | 0.2- | 0.9+ | 2007 11 05 | 704 | 0.0  | 0.4+ |
| 2003 01 02 | 291 | 0.3+ | 0.1- | 2007 10 11 | 704 | 0.7- | 0.4- | 2007 11 05 | 704 | 0.0  | 0.0  |
| 2003 01 02 | 291 | 0.1+ | 0.2+ | 2007 10 11 | 704 | 0.1- | 0.0  | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2004 03 13 | 644 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 0.1+ | 1.0- | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2004 03 13 | 644 | 0.0  | 0.0  | 2007 10 15 | 703 | 0.4+ | 0.3- | 2007 11 07 | G96 | 0.0  | 0.0  |
| 2004 03 13 | 644 | 0.3+ | 1.2+ | 2007 10 15 | 703 | 0.9- | 0.1- | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2004 03 17 | 691 | 0.2- | 0.1- | 2007 10 15 | 703 | 0.1- | 0.9+ | 2007 11 17 | G96 | 0.4+ | 1.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 17 | 691 | 0.1− | 0.1+ | 2007 10 20 | 691 | 0.2− | 0.3+ | 2007 11 17 | G96 | 0.2+ | 0.1+ |
| 2004 03 17 | 691 | 0.3+ | 0.1+ | 2007 10 20 | 691 | 0.0  | 0.2+ | 2007 11 17 | G96 | 0.1+ | 0.1+ |
| 2007 10 04 | 691 | 0.4− | 0.3− | 2007 10 20 | 691 | 0.1+ | 0.1+ | 2007 11 17 | G96 | 0.4+ | 0.0  |
| 2007 10 04 | 691 | 0.2− | 0.2+ | 2007 10 30 | 703 | 1.0+ | 0.2+ | 2007 12 05 | G96 | 0.2+ | 0.6− |
| 2007 10 04 | 691 | 0.3− | 0.1+ | 2007 10 30 | 703 | 0.4+ | 0.6− | 2007 12 05 | G96 | 0.2+ | 0.8− |
| 2007 10 07 | G96 | 0.3+ | 0.3− | 2007 10 30 | 703 | 0.4+ | 0.8− | 2007 12 05 | G96 | 0.1− | 0.3− |
| 2007 10 07 | G96 | 0.3+ | 0.2− | 2007 10 30 | 703 | 0.2− | 0.0  | 2007 12 05 | G96 | 0.0  | 0.6− |
| 2007 10 07 | G96 | 0.7+ | 0.3− | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 12 05 | G96 | 0.4− | 0.3− |
| 2007 10 07 | G96 | 0.2+ | 0.2− | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 12 05 | G96 | 0.3− | 0.4− |
| 2007 10 08 | 691 | 0.3− | 0.3+ | 2007 10 30 | G96 | 0.1− | 0.0  | 2007 12 05 | G96 | 0.0  | 0.3− |
| 2007 10 08 | 691 | 0.0  | 0.1− | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 12 05 | G96 | 0.0  | 0.7− |
| 2007 10 08 | 691 | 0.2+ | 0.5+ | 2007 11 05 | 704 | 0.0  | 0.5+ |            |     |      |      |

**2007 TS<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 299.78152  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21514765 | $\omega$ | 254.11830 | -0.18513633 | -0.98217223 |
| $a$ | 2.7583221  | $\Omega$ | 206.61736 | +0.92716518 | -0.16358294 |
| $e$ | 0.0710657  | $i$      | 4.17170   | +0.32571347 | -0.09261931 |
| $P$ | 4.58       | $H$      | 16.4      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | G96 | 0.0  | 0.1+ | 2007 10 07 | G96 | 0.4+ | 0.1− | 2007 10 30 | G96 | 0.4+ | 0.2− |
| 2005 03 11 | G96 | 0.5− | 0.3− | 2007 10 08 | 691 | 0.2+ | 0.1+ | 2007 11 05 | 704 | 0.4− | 0.2− |
| 2005 03 11 | G96 | 0.2− | 0.2+ | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.2− | 0.4− |
| 2005 03 11 | G96 | 0.4− | 0.3+ | 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.3+ | 1.1+ |
| 2005 04 02 | G96 | 0.2− | 0.1+ | 2007 10 16 | 691 | 0.1+ | 0.5+ | 2007 11 05 | 704 | 0.2− | 0.6+ |
| 2005 04 02 | G96 | 0.3− | 0.4+ | 2007 10 16 | 691 | 0.1− | 0.0  | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2005 04 02 | G96 | 0.1− | 0.1+ | 2007 10 16 | 691 | 0.2+ | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.1− |
| 2005 04 02 | G96 | 0.3+ | 0.1− | 2007 10 20 | 691 | 0.1− | 0.2+ | 2007 11 07 | G96 | 0.5+ | 0.1− |
| 2005 04 17 | 691 | 0.1+ | 0.7+ | 2007 10 20 | 691 | 0.2− | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2005 04 17 | 691 | 0.5+ | 0.5+ | 2007 10 20 | 691 | 0.1− | 0.2+ | 2007 11 17 | G96 | 0.2− | 0.0  |
| 2005 04 17 | 691 | 0.3+ | 0.4+ | 2007 10 20 | 703 | 0.0  | 0.5+ | 2007 11 17 | G96 | 0.3− | 0.2− |
| 2007 10 04 | 691 | 0.1− | 0.0  | 2007 10 20 | 703 | 0.7+ | 0.2− | 2007 11 17 | G96 | 0.3− | 0.1+ |
| 2007 10 04 | 691 | 0.4− | 0.1− | 2007 10 20 | 703 | 0.1− | 0.4− | 2007 11 17 | G96 | 0.1+ | 0.2− |
| 2007 10 04 | 691 | 0.0  | 0.2+ | 2007 10 20 | 703 | 1.4− | 1.4+ | 2007 12 05 | G96 | 0.3− | 0.7− |
| 2007 10 07 | G96 | 0.1+ | 0.3− | 2007 10 30 | G96 | 0.3+ | 0.1+ | 2007 12 05 | G96 | 0.2+ | 0.7− |
| 2007 10 07 | G96 | 0.4− | 0.3+ | 2007 10 30 | G96 | 0.3+ | 0.1+ | 2007 12 05 | G96 | 0.0  | 0.0  |
| 2007 10 07 | G96 | 0.2+ | 0.1− | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 12 05 | G96 | 0.1− | 0.2+ |

**2007 TO<sub>30</sub> = 2007 TQ<sub>364</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 350.69896  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26320948 | $\omega$ | 355.51018 | +0.66637112 | −0.74504357 |
| $a$ | 2.4113951  | $\Omega$ | 52.69896  | +0.68523577 | +0.59642953 |
| $e$ | 0.1824636  | $i$      | 2.11228   | +0.29394126 | +0.29863339 |
| $P$ | 3.74       | $H$      | 17.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 691 | 0.2− | 0.1+ | 2007 10 15 | 703 | 1.2+ | 0.2+ | 2007 10 30 | 703 | 1.0− | 0.7− |
| 2001 01 04 | 691 | 0.0  | 0.0  | 2007 10 15 | 703 | 0.8+ | 1.0+ | 2007 10 30 | 703 | 1.2− | 0.8− |
| 2001 01 04 | 691 | 0.2+ | 0.2+ | 2007 10 15 | 703 | 1.0+ | 0.5− | 2007 10 30 | 703 | 0.8− | 0.1− |
| 2003 09 24 | 644 | 0.3− | 0.2+ | 2007 10 16 | 691 | 0.5− | 0.2+ | 2007 10 30 | 703 | 1.6− | 0.6− |
| 2003 09 24 | 644 | 0.4− | 0.6+ | 2007 10 16 | 691 | 0.0  | 0.1+ | 2007 11 02 | G96 | 0.3+ | 0.3− |
| 2003 09 24 | 644 | 0.0  | 0.7+ | 2007 10 16 | 691 | 0.1− | 0.0  | 2007 11 02 | G96 | 0.2− | 0.2− |
| 2005 03 16 | G96 | 0.4+ | 0.0  | 2007 10 20 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.1− | 0.2− |
| 2005 03 16 | G96 | 0.2+ | 0.0  | 2007 10 20 | 691 | 0.4+ | 0.1− | 2007 11 02 | G96 | 0.0  | 0.2− |
| 2005 03 16 | G96 | 0.5− | 0.3+ | 2007 10 20 | 691 | 0.3+ | 0.5− | 2007 11 05 | 704 | 0.1+ | 0.2+ |
| 2005 03 16 | G96 | 0.1+ | 0.1+ | 2007 10 20 | 703 | 0.1− | 0.2+ | 2007 11 05 | 704 | 0.0  | 0.7+ |
| 2007 09 08 | G96 | 0.4+ | 0.7− | 2007 10 20 | 703 | 0.8− | 0.1− | 2007 11 05 | 704 | 0.2+ | 0.4+ |
| 2007 09 08 | G96 | 0.4+ | 0.2− | 2007 10 20 | 703 | 1.1+ | 0.1− | 2007 11 05 | 704 | 0.3− | 0.4+ |
| 2007 09 08 | G96 | 0.4+ | 0.2− | 2007 10 20 | 703 | 0.2− | 0.8+ | 2007 11 05 | 704 | 0.5+ | 0.8+ |
| 2007 09 08 | G96 | 0.4+ | 0.0  | 2007 10 24 | G96 | 0.2+ | 0.1− | 2007 11 13 | 703 | 0.3+ | 0.7+ |
| 2007 10 04 | 691 | 0.5− | 0.3+ | 2007 10 24 | G96 | 0.3+ | 0.3− | 2007 11 13 | 703 | 0.8+ | 0.4+ |
| 2007 10 04 | 691 | 0.5− | 0.3− | 2007 10 24 | G96 | 0.5+ | 1.0− | 2007 11 13 | 703 | 1.4+ | 0.1+ |
| 2007 10 04 | 691 | 0.3− | 0.0  | 2007 10 24 | G96 | 0.7+ | 0.3− | 2007 11 13 | 703 | 0.8− | 1.6+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 07 | G96 | 0.2− | 0.2− | 2007 10 30 | 703 | 1.1− | 0.7− | 2007 11 15 | 704 | 0.4+ | 0.6+ |
| 2007 10 07 | G96 | 0.3− | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.2+ | 2007 11 15 | 704 | 0.4− | 0.1+ |
| 2007 10 07 | G96 | 0.5+ | 0.3+ | 2007 10 30 | 703 | 0.8+ | 0.0  | 2007 11 15 | 704 | 0.5− | 0.3− |
| 2007 10 07 | G96 | 0.3+ | 0.1− | 2007 10 30 | 703 | 0.5− | 0.3− | 2007 11 15 | 704 | 1.2− | 0.5− |
| 2007 10 08 | 691 | 0.2− | 0.1− | 2007 10 30 | G96 | 0.6+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.2− |
| 2007 10 08 | 691 | 0.3+ | 0.1+ | 2007 10 30 | 703 | 0.3+ | 0.1+ | 2007 11 17 | G96 | 0.5+ | 0.3− |
| 2007 10 08 | 691 | 0.1− | 0.1+ | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.3− |
| 2007 10 15 | 703 | 0.4− | 0.2+ | 2007 10 30 | G96 | 0.6+ | 0.1+ | 2007 11 17 | G96 | 0.3+ | 0.3− |

**2007 TD<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 64.05889   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17466183 | $\omega$ | 276.48194 | +0.68449900 | +0.71255149 |
| $a$ | 3.1695969  | $\Omega$ | 38.25438  | −0.53088729 | +0.63203484 |
| $e$ | 0.2002947  | $i$      | 14.40697  | −0.49961965 | +0.30463477 |
| $P$ | 5.64       | $H$      | 15.8      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 08 | 644 | 0.2− | 0.7+ | 2007 10 04 | 691 | 0.4+ | 0.3+ | 2007 10 16 | 691 | 0.7+ | 1.6+ |
| 2001 10 08 | 644 | 0.4− | 0.6+ | 2007 10 04 | 691 | 0.0  | 0.3− | 2007 10 16 | 691 | 0.2+ | 1.3+ |
| 2001 10 08 | 644 | 0.9− | 0.9+ | 2007 10 04 | 691 | 0.3− | 0.1− | 2007 10 21 | 691 | 0.1− | 0.0  |
| 2001 10 16 | 644 | 0.0  | 0.4− | 2007 10 07 | G96 | 0.2+ | 0.5− | 2007 10 21 | 691 | 0.5− | 0.2− |
| 2001 10 16 | 644 | 0.2+ | 0.1+ | 2007 10 07 | G96 | 0.2+ | 0.3− | 2007 10 21 | 691 | 1.0− | 0.2+ |
| 2001 10 16 | 644 | 0.2+ | 0.1− | 2007 10 07 | G96 | 0.3+ | 0.3− | 2007 10 31 | G96 | 0.1+ | 0.5− |
| 2001 10 24 | 644 | 0.2− | 0.3− | 2007 10 07 | G96 | 0.2+ | 0.5− | 2007 10 31 | G96 | 0.0  | 0.3− |
| 2001 10 24 | 644 | 0.1− | 0.1− | 2007 10 08 | 691 | 0.4− | 0.2− | 2007 10 31 | G96 | 0.4+ | 0.4− |
| 2001 10 24 | 644 | 0.4+ | 0.0  | 2007 10 08 | 691 | 0.2− | 0.2− | 2007 10 31 | G96 | 0.1− | 0.3− |
| 2004 01 31 | 645 | 0.1+ | 0.1+ | 2007 10 08 | 691 | 0.3− | 0.1− | 2007 11 15 | 704 | 1.3+ | 1.0+ |
| 2004 01 31 | 645 | 0.2+ | 0.3+ | 2007 10 12 | 691 | 0.1+ | 0.3− | 2007 11 15 | 704 | 0.3+ | 0.0  |
| 2005 05 04 | 691 | 0.4+ | 0.6+ | 2007 10 12 | 691 | 0.2− | 0.1− | 2007 11 15 | 704 | 0.5+ | 0.0  |
| 2005 05 04 | 691 | 0.3+ | 0.3+ | 2007 10 12 | 691 | 0.3− | 0.2− |            |     |      |      |
| 2005 05 04 | 691 | 0.3+ | 0.6+ | 2007 10 16 | 691 | 1.4− | 0.2+ |            |     |      |      |

**2007 TM<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 10.06195   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23967910 | $\omega$ | 344.58922 | +0.99045854 | +0.13767354 |
| $a$ | 2.5667443  | $\Omega$ | 7.50562   | −0.12093654 | +0.88972389 |
| $e$ | 0.1377758  | $i$      | 2.70024   | −0.06607743 | +0.43524407 |
| $P$ | 4.11       | $H$      | 16.9      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 291 | 0.3− | 0.4+ | 2007 08 10 | 691 | 0.3− | 0.0  | 2007 10 07 | G96 | 0.0  | 0.6− |
| 2003 09 20 | 291 | 0.2− | 0.3+ | 2007 08 24 | 691 | 0.1− | 0.1+ | 2007 10 07 | G96 | 1.2− | 0.6− |
| 2003 09 20 | 291 | 0.3− | 0.3+ | 2007 08 24 | 691 | 0.1+ | 0.0  | 2007 10 08 | 691 | 0.1+ | 0.2+ |
| 2003 10 01 | 699 | 1.5+ | 0.0  | 2007 08 24 | 691 | 0.0  | 0.1+ | 2007 10 08 | 691 | 0.1+ | 0.0  |
| 2003 10 01 | 699 | 1.1+ | 0.3+ | 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 10 08 | 691 | 0.2+ | 0.2+ |
| 2003 10 01 | 699 | 0.5− | 0.9− | 2007 09 14 | G96 | 0.6+ | 0.3− | 2007 10 10 | 691 | 0.4+ | 0.2+ |
| 2003 10 01 | 699 | 0.5− | 0.1− | 2007 09 14 | G96 | 0.3+ | 0.1− | 2007 10 10 | 691 | 0.1− | 1.0− |
| 2005 03 14 | G96 | 0.1− | 0.3+ | 2007 09 14 | G96 | 0.5+ | 0.0  | 2007 10 10 | 691 | 0.3+ | 0.4− |
| 2005 03 14 | G96 | 0.0  | 0.5+ | 2007 10 05 | 691 | 0.3− | 0.4+ | 2007 12 06 | G96 | 0.3+ | 0.3− |
| 2005 03 14 | G96 | 0.2+ | 0.3+ | 2007 10 05 | 691 | 0.1+ | 0.2− | 2007 12 06 | G96 | 0.1+ | 0.2− |
| 2005 03 14 | G96 | 0.1+ | 0.2− | 2007 10 05 | 691 | 0.1− | 0.2+ | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2007 08 10 | 691 | 0.1− | 0.0  | 2007 10 07 | G96 | 0.0  | 0.3− | 2007 12 06 | G96 | 0.1− | 0.3− |
| 2007 08 10 | 691 | 0.4− | 0.2+ | 2007 10 07 | G96 | 0.6+ | 0.7− |            |     |      |      |

2007 DEC. 24

M.P.O. 129833

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 12 01 703 0.4+ 0.1- | 2006 05 02 691 0.1+ 0.2+ | 2007 10 05 E12 0.8+ 0.1+ |
| 2003 12 01 703 1.1+ 0.1+ | 2006 05 02 691 0.3+ 0.1+ | 2007 10 05 E12 0.3- 0.1+ |
| 2003 12 01 703 1.2- 0.0  | 2006 05 02 691 0.4+ 0.4+ | 2007 10 05 E12 0.1+ 0.2+ |
| 2003 12 01 703 0.4- 0.2+ | 2007 08 21 E12 0.2- 0.2+ | 2007 10 06 E12 0.7+ 0.4+ |
| 2006 04 21 G96 0.3- 0.3+ | 2007 08 21 E12 0.5- 0.3- | 2007 10 06 E12 0.4+ 0.3+ |
| 2006 04 21 G96 0.4- 0.4+ | 2007 08 21 E12 0.2+ 0.6- | 2007 10 06 E12 0.3+ 0.2- |
| 2006 04 21 G96 0.4- 0.1- | 2007 09 14 703 0.4+ 0.4+ | 2007 10 06 E12 0.6+ 0.2+ |
| 2006 04 21 G96 0.3- 0.2- | 2007 09 14 703 0.9- 0.5- | 2007 10 12 703 0.3+ 0.5+ |
| 2006 04 24 691 0.0 0.3+  | 2007 09 14 703 0.4- 0.6- | 2007 10 12 703 0.4- 0.2- |
| 2006 04 24 691 0.2+ 0.3+ | 2007 09 14 703 0.3- 0.5+ | 2007 10 12 703 0.0 0.0   |
| 2006 04 24 691 0.6+ 1.3- | 2007 10 05 E12 0.5- 0.6- | 2007 10 12 703 0.5- 0.0  |

**2007 TX<sub>31</sub> = 1998 HY<sub>103</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 50.83677   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23987971 | $\omega$ 195.48010 | +0.41781549   | +0.87557354 |
| <i>a</i> | 2.5653131  | $\Omega$ 99.72763  | -0.80526143   | +0.48047850 |
| <i>e</i> | 0.2620351  | <i>i</i> 14.24253  | -0.42069497   | -0.05011379 |
| <i>P</i> | 4.11       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1998 04 23 704 1.5+ 1.7+   | 2003 10 25 699 1.1- 0.5- | 2007 10 05 E12 0.3- 0.3+   |
| 1998 04 23 704 0.2- 0.7-   | 2003 10 25 699 0.2- 0.8+ | 2007 10 05 E12 0.4- 0.4+   |
| 1998 04 23 704 1.6- 1.3+   | 2004 12 12 691 0.1- 0.1+ | 2007 10 06 E12 0.4+ 0.4+   |
| 1998 04 23 704 0.3+ 0.4-   | 2004 12 12 691 0.2- 0.3- | 2007 10 06 E12 0.2+ 0.4+   |
| 1998 04 24 704 0.9+ 0.6+   | 2004 12 12 691 0.1- 0.0  | 2007 10 06 E12 0.6- 0.5+   |
| 1998 04 24 704 0.8- 1.1+   | 2005 01 18 691 0.2+ 0.2+ | 2007 10 06 E12 0.2+ 0.3+   |
| 1998 04 24 704 0.2+ 0.1-   | 2005 01 18 691 0.1+ 0.3+ | 2007 10 12 703 1.1- 0.4+   |
| 1998 04 24 704 (0.3+ 2.1+) | 2005 01 18 691 0.1- 0.1+ | 2007 10 12 703 0.9- 0.3+   |
| 2002 05 05 644 0.1- 0.1-   | 2006 03 25 699 0.0 0.5+  | 2007 10 12 703 1.1- 0.4+   |
| 2002 05 05 644 0.3+ 0.2+   | 2006 03 25 699 1.9+ 1.0- | 2007 10 20 E12 0.1+ 0.2-   |
| 2002 05 05 644 0.5+ 0.3+   | 2006 03 25 699 0.4- 0.1+ | 2007 10 20 E12 0.3- 0.4+   |
| 2003 10 18 699 0.5+ 1.0-   | 2006 03 25 699 0.6- 0.5+ | 2007 10 20 E12 0.7- 0.2+   |
| 2003 10 18 699 0.3- 0.6+   | 2007 09 14 703 0.2+ 0.3- | 2007 10 20 E12 0.5- 1.1+   |
| 2003 10 18 699 0.0 2.1-    | 2007 09 14 703 0.0 0.2+  | 2007 11 15 703 (3.4+ 0.6-) |
| 2003 10 18 699 1.5+ 0.2+   | 2007 09 14 703 0.7- 0.2+ | 2007 11 15 703 0.1+ 0.0    |
| 2003 10 25 699 1.3+ 0.3-   | 2007 09 14 703 0.8- 0.6+ | 2007 11 15 703 1.2+ 0.5+   |
| 2003 10 25 699 0.5+ 1.0+   | 2007 10 05 E12 0.6- 0.3+ | 2007 11 15 703 0.7- 0.8-   |

**2007 TA<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.85446   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17689885 | $\omega$ 256.19940 | +0.85364079   | +0.44530250 |
| <i>a</i> | 3.1428190  | $\Omega$ 76.77258  | -0.30170003   | +0.84558265 |
| <i>e</i> | 0.2959739  | <i>i</i> 16.11430  | -0.42458745   | +0.29444127 |
| <i>P</i> | 5.57       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 11 04 291 0.2+ 0.1+ | 2007 08 21 E12 0.4- 0.2+ | 2007 10 06 E12 0.4+ 0.4+ |
| 2002 11 04 291 0.3- 0.0  | 2007 08 21 E12 0.4+ 0.2- | 2007 10 06 E12 1.1+ 0.4- |
| 2002 11 04 291 0.6- 0.2+ | 2007 08 21 E12 0.4- 1.5- | 2007 10 06 E12 0.2+ 0.4- |
| 2002 12 14 291 0.4+ 0.4- | 2007 09 14 703 0.1- 0.3- | 2007 10 12 703 1.3- 0.7+ |
| 2002 12 14 291 0.4+ 0.2+ | 2007 09 14 703 0.8- 0.5- | 2007 10 12 703 0.0 1.4+  |
| 2002 12 14 291 0.1- 0.0  | 2007 09 14 703 0.1- 0.4- | 2007 10 12 703 0.1+ 0.5+ |
| 2007 08 21 E12 1.1- 0.6+ | 2007 09 14 703 0.3- 0.4- | 2007 10 12 703 0.6- 0.9+ |
| 2007 08 21 E12 0.7+ 0.9- | 2007 10 05 E12 0.8+ 0.1+ | 2007 10 20 E12 0.6+ 1.2- |
| 2007 08 21 E12 0.3- 0.7+ | 2007 10 05 E12 0.4+ 0.1+ | 2007 10 20 E12 0.9+ 0.3- |
| 2007 08 21 E12 0.1- 0.3+ | 2007 10 05 E12 0.2+ 1.3+ | 2007 10 20 E12 0.2+ 0.4- |
| 2007 08 21 E12 1.0- 0.0  | 2007 10 05 E12 0.2- 0.3+ | 2007 10 20 E12 0.7+ 0.8- |

**2007 TE<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 244.82583  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.08573223 | $\omega$ 289.30530 | -0.41443715   | -0.91005992 |
| <i>a</i> | 5.0937774  | $\Omega$ 185.18936 | +0.85694849   | -0.38811635 |
| <i>e</i> | 0.0426837  | <i>i</i> 3.63029   | +0.30640028   | -0.14545324 |
| <i>P</i> | 11.50      | <i>H</i> 13.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 03 17 691 0.2+ 0.2+ | 2007 10 06 691 0.5- 0.1+ | 2007 10 10 691 0.1+ 0.1- |
| 2002 03 17 691 0.3+ 0.7+ | 2007 10 06 691 0.0 0.2-  | 2007 10 10 691 0.2- 0.1+ |
| 2002 03 17 691 0.2+ 0.9+ | 2007 10 06 691 0.1- 0.3+ | 2007 10 12 691 0.2+ 0.2+ |
| 2003 05 01 691 0.1+ 0.1- | 2007 10 07 G96 0.4+ 0.3- | 2007 10 12 691 0.2+ 0.2- |
| 2003 05 01 691 0.2- 0.1- | 2007 10 07 G96 0.3+ 0.3+ | 2007 10 12 691 0.0 0.2+  |
| 2003 05 01 691 0.1+ 0.4- | 2007 10 07 G96 0.1+ 0.2+ | 2007 10 14 691 0.1+ 0.2+ |
| 2003 06 01 807 0.5- 0.2- | 2007 10 07 G96 0.5+ 0.0  | 2007 10 14 691 0.1- 0.0  |
| 2003 06 01 807 0.2- 0.2- | 2007 10 07 G96 0.6+ 0.2- | 2007 10 14 691 0.1- 0.1+ |
| 2007 08 23 691 0.3- 0.5+ | 2007 10 07 G96 0.4+ 0.2- | 2007 10 16 691 0.3- 0.1+ |
| 2007 08 23 691 0.2- 0.3+ | 2007 10 07 G96 0.7+ 0.0  | 2007 10 16 691 0.3- 0.1- |
| 2007 08 23 691 0.2- 0.3+ | 2007 10 07 G96 0.5+ 0.2- | 2007 10 16 691 0.2+ 0.3+ |
| 2007 09 12 G96 0.4+ 0.1+ | 2007 10 08 691 0.0 0.2+  | 2007 10 30 G96 0.5+ 0.3- |
| 2007 09 12 G96 0.3+ 0.1+ | 2007 10 08 691 0.1- 0.0  | 2007 10 30 G96 0.3+ 0.4- |
| 2007 09 12 G96 0.4+ 0.1- | 2007 10 08 691 0.0 0.0   | 2007 10 30 G96 0.1+ 0.3- |
| 2007 09 12 G96 0.3- 0.1+ | 2007 10 10 691 0.2- 0.4- | 2007 10 30 G96 0.5+ 0.7- |

**2007 TF<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.94856   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21124885 | $\omega$ 267.51782 | -0.14851848   | +0.98882087 |
| <i>a</i> | 2.7921569  | $\Omega$ 353.89316 | -0.85060277   | -0.13456912 |
| <i>e</i> | 0.1945812  | <i>i</i> 7.15433   | -0.50439784   | -0.06422174 |
| <i>P</i> | 4.67       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 07 15 644 0.1+ 0.0  | 2007 09 11 G96 0.3+ 0.0  | 2007 10 08 691 0.3- 0.0  |
| 2002 07 15 644 0.0 0.2+  | 2007 09 11 G96 0.1+ 0.2+ | 2007 10 08 691 0.1- 0.5+ |
| 2002 07 15 644 0.0 0.1+  | 2007 10 06 691 0.3- 0.4+ | 2007 10 10 691 0.2- 0.0  |
| 2002 08 11 644 0.0 0.0   | 2007 10 06 691 0.6- 0.3- | 2007 10 10 691 0.0 0.2+  |
| 2002 08 11 644 0.2+ 0.2- | 2007 10 06 691 0.2+ 0.7+ | 2007 10 10 691 0.0 0.1-  |
| 2002 08 11 644 0.2- 0.0  | 2007 10 07 G96 0.1- 0.3- | 2007 10 12 691 0.4- 0.2- |
| 2002 08 11 644 0.1+ 0.2- | 2007 10 07 G96 0.3+ 0.0  | 2007 10 12 691 0.6+ 0.2- |
| 2002 08 11 644 0.1- 0.2- | 2007 10 07 G96 0.2- 0.1+ | 2007 10 12 691 0.1+ 0.5- |
| 2002 08 11 644 0.3+ 0.2- | 2007 10 07 G96 0.2+ 0.3+ | 2007 10 30 G96 0.6- 0.1+ |
| 2006 03 24 291 0.2+ 0.3+ | 2007 10 07 G96 0.3+ 0.0  | 2007 10 30 G96 0.1+ 0.5- |
| 2006 03 24 291 0.1+ 0.2+ | 2007 10 07 G96 0.1- 0.4- | 2007 10 30 G96 0.3- 0.3+ |
| 2006 03 24 291 0.1+ 0.3+ | 2007 10 07 G96 0.3+ 0.0  | 2007 10 30 G96 0.1- 0.4+ |
| 2007 09 11 G96 0.4- 0.4+ | 2007 10 07 G96 0.4+ 0.2- |                          |
| 2007 09 11 G96 0.5+ 0.0  | 2007 10 08 691 0.4- 0.2+ |                          |

**2007 TH<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.86826   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23371418 | $\omega$ 306.05851 | +0.57433020   | +0.81862281 |
| <i>a</i> | 2.6102334  | $\Omega$ 358.99178 | -0.72670984   | +0.50915046 |
| <i>e</i> | 0.2156655  | <i>i</i> 4.02264   | -0.37687880   | +0.26574895 |
| <i>P</i> | 4.22       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 09 18 691 0.4- 0.3+ | 2007 09 14 G96 0.4+ 0.0  | 2007 10 16 691 0.6- 0.2- |
| 2003 09 18 691 0.2- 0.4+ | 2007 09 14 G96 0.2- 0.3- | 2007 10 18 691 0.2- 0.3+ |
| 2003 09 18 691 0.1+ 0.2+ | 2007 09 14 G96 0.8+ 0.2- | 2007 10 18 691 0.3- 0.4+ |
| 2003 09 29 691 0.2+ 0.1- | 2007 09 14 G96 0.1+ 0.1+ | 2007 10 18 691 0.1- 0.0  |
| 2003 09 29 691 0.1- 0.1- | 2007 10 06 691 0.3- 0.1+ | 2007 10 30 G96 0.6+ 0.3- |
| 2003 09 29 691 0.3+ 0.1- | 2007 10 06 691 0.1- 0.5+ | 2007 10 30 G96 0.9+ 0.2- |
| 2003 10 18 691 0.2+ 0.0  | 2007 10 06 691 0.1- 0.5+ | 2007 10 30 G96 0.5+ 0.2- |

## M.P.O. 129834

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 18 | 691 | 0.1− | 0.1+ | 2007 10 07 | G96 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.4− |
| 2003 10 18 | 691 | 0.3− | 0.0  | 2007 10 07 | G96 | 0.5− | 0.1− | 2007 11 09 | G96 | 0.1− | 0.0  |
| 2006 03 02 | 691 | 0.8+ | 0.5+ | 2007 10 07 | G96 | 0.5− | 0.1+ | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2006 03 02 | 691 | 0.1+ | 0.6+ | 2007 10 07 | G96 | 0.1− | 0.1+ | 2007 11 09 | G96 | 0.1− | 0.1− |
| 2006 03 02 | 691 | 0.3+ | 0.4+ | 2007 10 07 | G96 | 0.3− | 0.0  | 2007 11 09 | G96 | 0.3+ | 0.3− |
| 2006 03 25 | G96 | 0.2− | 0.3+ | 2007 10 07 | G96 | 0.1− | 0.3− | 2007 11 17 | G96 | 0.6+ | 0.5− |
| 2006 03 25 | G96 | 0.3+ | 0.1− | 2007 10 07 | G96 | 0.0  | 0.2+ | 2007 11 17 | G96 | 0.7+ | 0.1− |
| 2006 03 25 | G96 | 0.1− | 0.1+ | 2007 10 07 | G96 | 0.2+ | 0.1− | 2007 11 17 | G96 | 0.9+ | 0.0  |
| 2006 03 25 | G96 | 0.2− | 0.3+ | 2007 10 14 | 691 | 0.3− | 0.1− | 2007 11 17 | G96 | 1.0+ | 0.3− |
| 2006 04 02 | G96 | 0.0  | 0.3+ | 2007 10 14 | 691 | 1.2+ | 0.4− | 2007 12 06 | G96 | 0.4− | 0.1− |
| 2006 04 02 | G96 | 0.1+ | 0.3+ | 2007 10 14 | 691 | 0.1+ | 0.9+ | 2007 12 06 | G96 | 0.7− | 0.3+ |
| 2006 04 02 | G96 | 0.3+ | 0.1+ | 2007 10 16 | 691 | 0.6− | 0.2− | 2007 12 06 | G96 | 0.6− | 0.3− |
| 2006 04 02 | G96 | 1.0− | 0.0  | 2007 10 16 | 691 | 0.1− | 0.0  | 2007 12 06 | G96 | 0.0  | 0.2− |

2007 TJ<sub>32</sub> = 2002 TU<sub>311</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.50040   | (2000.0) | P         |             | Q           |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.18778378 | <i>ω</i> | 165.67197 | +0.96775700 | +0.25188154 |            |
| <i>a</i> | 3.0201650  | <i>Ω</i> | 179.72632 | −0.25043174 | +0.96277023 |            |
| <i>e</i> | 0.1950475  | <i>i</i> | 17.59828  | −0.02702474 | +0.09812840 |            |
| <i>P</i> | 5.25       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 645 | 0.0  | 0.1− | 2007 10 06 | 691 | 0.3− | 0.4+ | 2007 10 07 | G96 | 0.2+ | 0.0  |
| 2002 10 04 | 645 | 0.0  | 0.0  | 2007 10 06 | 691 | 0.1− | 0.1+ | 2007 10 07 | G96 | 0.5+ | 0.1− |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2007 10 06 | 691 | 0.2+ | 0.3− | 2007 10 07 | G96 | 0.1− | 0.2− |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2007 10 07 | G96 | 0.4+ | 0.1− | 2007 10 07 | G96 | 0.2+ | 0.1− |
| 2007 09 19 | 691 | 0.2− | 0.0  | 2007 10 07 | G96 | 0.2− | 0.2− | 2007 10 10 | 691 | 0.3− | 0.1+ |
| 2007 09 19 | 691 | 0.2+ | 0.1+ | 2007 10 07 | G96 | 0.3− | 0.2+ | 2007 10 10 | 691 | 0.2− | 0.2+ |
| 2007 09 19 | 691 | 0.1− | 0.1− | 2007 10 07 | G96 | 0.1+ | 0.1+ | 2007 10 10 | 691 | 0.1− | 0.2− |

2007 TT<sub>32</sub> = 2003 PO<sub>10</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 31.05305   | (2000.0) | P         |             | Q           |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.25787806 | <i>ω</i> | 50.01237  | +0.79567829 | +0.60568954 |            |
| <i>a</i> | 2.4445173  | <i>Ω</i> | 272.70831 | −0.55755713 | +0.72849244 |            |
| <i>e</i> | 0.1989196  | <i>i</i> | 0.34527   | −0.23669834 | +0.32006084 |            |
| <i>P</i> | 3.82       | <i>H</i> | 17.8      | <i>G</i>    | 0.15        | <i>U</i> 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 21 | 291 | 0.4+  | 1.2+  | 2007 07 18 | G96 | 0.5+ | 0.0  | 2007 10 07 | G96 | 0.1− | 0.3+ |
| 2002 03 21 | 291 | 0.6+  | 1.1+  | 2007 07 18 | G96 | 0.3+ | 0.0  | 2007 10 07 | G96 | 0.1+ | 0.0  |
| 2002 03 21 | 291 | 0.2+  | 0.5+  | 2007 09 12 | 699 | 1.0+ | 0.4− | 2007 10 08 | 691 | 0.3− | 0.2+ |
| 2003 08 04 | 704 | (0.2+ | 2.7+) | 2007 09 12 | 699 | 1.8+ | 1.0− | 2007 10 08 | 691 | 0.3− | 0.2+ |
| 2003 08 04 | 704 | 0.3+  | 0.6+  | 2007 09 12 | 699 | 1.1+ | 0.7− | 2007 10 08 | 691 | 0.4− | 0.2− |
| 2003 08 04 | 704 | 0.6+  | 0.5−  | 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 10 30 | G96 | 0.1− | 0.0  |
| 2003 08 05 | 691 | 0.1+  | 0.1+  | 2007 09 12 | G96 | 0.3+ | 0.1+ | 2007 10 30 | G96 | 0.1− | 0.2− |
| 2003 08 05 | 691 | 0.1+  | 0.3+  | 2007 09 12 | 699 | 0.3− | 0.7− | 2007 10 30 | G96 | 0.0  | 0.2+ |
| 2003 08 05 | 691 | 0.2+  | 0.1+  | 2007 09 12 | G96 | 0.3+ | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.2+ |
| 2003 08 06 | 291 | 0.3−  | 0.0   | 2007 09 12 | G96 | 0.3− | 0.4+ | 2007 11 09 | G96 | 0.0  | 0.3+ |
| 2003 08 06 | 291 | 0.1−  | 0.2+  | 2007 09 30 | 691 | 0.1− | 0.1+ | 2007 11 09 | G96 | 0.2+ | 0.1+ |
| 2003 08 06 | 291 | 0.5−  | 0.0   | 2007 09 30 | 691 | 0.1+ | 0.3+ | 2007 11 09 | G96 | 0.1− | 0.3+ |
| 2006 03 25 | G96 | 0.3+  | 0.3+  | 2007 09 30 | 691 | 0.2− | 0.4+ | 2007 11 09 | G96 | 0.2+ | 0.1+ |
| 2006 03 25 | G96 | 0.8−  | 0.2+  | 2007 10 06 | 691 | 0.4− | 0.6+ | 2007 11 17 | G96 | 0.1+ | 0.4+ |
| 2006 03 25 | G96 | 1.0+  | 0.4−  | 2007 10 06 | 691 | 0.0  | 0.3+ | 2007 11 17 | G96 | 0.0  | 0.1+ |
| 2006 03 25 | G96 | 0.7−  | 0.1−  | 2007 10 06 | 691 | 0.3− | 0.1+ | 2007 11 17 | G96 | 0.1− | 0.1− |
| 2007 07 18 | G96 | 0.1−  | 0.1−  | 2007 10 07 | G96 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.3− | 0.2+ |
| 2007 07 18 | G96 | 0.2+  | 0.3−  | 2007 10 07 | G96 | 0.3+ | 0.1+ |            |     |      |      |

## 2007 DEC. 24

2007 TF<sub>34</sub> = 2007 TM<sub>417</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 20.33424   | (2000.0) | P         |             | Q           |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.24418802 | <i>ω</i> | 191.78596 | +0.99207118 | −0.12567226 |            |
| <i>a</i> | 2.5350497  | <i>Ω</i> | 175.43318 | +0.11641725 | +0.91558747 |            |
| <i>e</i> | 0.1955960  | <i>i</i> | 0.80441   | +0.04734756 | +0.38197653 |            |
| <i>P</i> | 4.04       | <i>H</i> | 18.0      | <i>G</i>    | 0.15        | <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 11 27 | 691 | 0.2− | 0.2− | 2007 09 09 | G96 | 0.5+ | 0.7− | 2007 10 15 | 703 | 0.6+  | 0.2−  |
| 1995 11 27 | 691 | 0.0  | 0.1+ | 2007 10 06 | 691 | 0.2− | 0.2− | 2007 10 18 | 691 | (1.8− | 3.3+) |
| 1995 11 27 | 691 | 0.5− | 0.7+ | 2007 10 06 | 691 | 0.0  | 0.3− | 2007 10 18 | 691 | 0.1+  | 0.1−  |
| 1999 12 03 | 691 | 0.3+ | 0.2+ | 2007 10 06 | 691 | 0.0  | 0.3+ | 2007 10 18 | 691 | 0.2+  | 0.1−  |
| 1999 12 03 | 691 | 0.1− | 0.4+ | 2007 10 07 | G96 | 0.5+ | 0.3− | 2007 10 30 | 691 | 0.2−  | 0.1−  |
| 1999 12 03 | 691 | 0.5+ | 0.1− | 2007 10 07 | G96 | 0.4+ | 0.5− | 2007 10 30 | 691 | 0.1−  | 0.1−  |
| 2002 04 07 | 807 | 0.0  | 0.2+ | 2007 10 07 | G96 | 0.9+ | 0.3− | 2007 10 30 | 691 | 0.0   | 0.3−  |
| 2002 04 07 | 807 | 0.1+ | 0.1+ | 2007 10 07 | G96 | 0.3− | 0.2− | 2007 11 09 | G96 | 0.0   | 0.2−  |
| 2003 10 23 | 691 | 0.1− | 0.1− | 2007 10 10 | 691 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.1−  | 0.3−  |
| 2003 10 23 | 691 | 0.1+ | 0.1+ | 2007 10 10 | 691 | 0.2+ | 0.0  | 2007 11 09 | G96 | 0.4+  | 0.2−  |
| 2003 10 23 | 691 | 0.1+ | 0.4− | 2007 10 10 | 691 | 0.1− | 0.2− | 2007 11 09 | G96 | 0.2+  | 0.4−  |
| 2003 11 24 | 291 | 0.3+ | 0.6− | 2007 10 14 | 691 | 0.3− | 0.3− | 2007 11 17 | G96 | 0.3+  | 0.4−  |
| 2003 11 24 | 291 | 0.0  | 0.4− | 2007 10 14 | 691 | 0.4− | 0.3− | 2007 11 17 | G96 | 0.2+  | 0.7−  |
| 2003 11 24 | 291 | 0.2+ | 0.4− | 2007 10 14 | 691 | 0.1− | 0.0  | 2007 11 17 | G96 | 0.0   | 0.2−  |
| 2007 09 09 | G96 | 0.8+ | 0.8− | 2007 10 15 | 703 | 1.2+ | 0.9+ | 2007 11 17 | G96 | 0.1+  | 0.1−  |
| 2007 09 09 | G96 | 0.8+ | 0.5− | 2007 10 15 | 703 | 0.1+ | 0.1− |            |     |       |       |
| 2007 09 09 | G96 | 0.7+ | 0.8− | 2007 10 15 | 703 | 1.6+ | 1.0+ |            |     |       |       |

2007 TW<sub>34</sub> = 2003 SB<sub>423</sub> = 2005 EL<sub>238</sub>Id. Minor Planet Center (*MPO* 128365; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 318.07582  | (2000.0) | P        |             | Q           |            |
|----------|------------|----------|----------|-------------|-------------|------------|
| <i>n</i> | 0.26272428 | <i>ω</i> | 38.66715 | −0.07754469 | −0.99640863 |            |
| <i>a</i> | 2.4143630  | <i>Ω</i> | 55.80541 | +0.90419680 | −0.08465756 |            |
| <i>e</i> | 0.1564198  | <i>i</i> | 2.35652  | +0.42001783 | −0.00171207 |            |
| <i>P</i> | 3.75       | <i>H</i> | 17.4     | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 17 | 608 | 0.4− | 0.8− | 2007 09 09 | G96 | 0.4− | 0.4− | 2007 10 30 | G96 | 0.0  | 0.1+ |
| 2001 01 17 | 608 | 0.2− | 0.8− | 2007 10 06 | 691 | 0.3− | 0.5+ | 2007 10 30 | G96 | 0.4+ | 0.0  |
| 2001 01 17 | 608 | 0.2− | 0.6− | 2007 10 06 | 691 | 0.1− | 0.2+ | 2007 11 05 | 704 | 0.1− | 0.9+ |
| 2003 09 22 | 691 | 0.0  | 0.4+ | 2007 10 06 | 691 | 0.3− | 0.2+ | 2007 11 05 | 704 | 0.0  | 0.4+ |
| 2003 09 22 | 691 | 0.3− | 0.5+ | 2007 10 07 | G96 | 0.1+ | 0.1− | 2007 11 05 | 704 | 0.2+ | 0.3+ |
| 2003 09 22 | 691 | 0.2− | 0.1+ | 2007 10 07 | G96 | 0.1− | 0.3− | 2007 11 05 | 704 | 0.8+ | 0.1− |
| 2005 03 11 | 691 | 0.5+ | 0.3+ | 2007 10 07 | G96 | 0.3+ | 0.3− | 2007 11 05 | 704 | 0.0  | 0.1+ |
| 2005 03 11 | 691 | 0.3+ | 0.7+ | 2007 10 07 | G96 | 0.6+ | 0.0  | 2007 11 07 | 703 | 0.6+ | 0.8+ |
| 2005 03 11 | 691 | 0.4+ | 0.2+ | 2007 10 10 | 691 | 0.2− | 0.1− | 2007 11 07 | 703 | 1.3− | 0.6+ |
| 2005 03 11 | 691 | 0.2+ | 0.6+ | 2007 10 10 | 691 | 0.3− | 0.0  | 2007 11 07 | 703 | 0.8− | 0.4− |
| 2005 03 11 | 691 | 1.8+ | 1.2+ | 2007 10 10 | 691 | 0.3− | 0.1+ | 2007 11 07 | 703 | 0.3+ | 1.1+ |
| 2005 03 11 | 691 | 0.3+ | 0.6+ | 2007 10 14 | 691 | 0.1− | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.2− |
| 2005 03 16 | G96 | 0.5− | 0.1+ | 2007 10 14 | 691 | 0.8− | 0.0  | 2007 11 09 | G96 | 0.2− | 0.3− |
| 2005 03 16 | G96 | 0.3− | 0.4+ | 2007 10 14 | 691 | 0.3+ | 0.1+ | 2007 11 09 | G96 | 0.96 | 0.2+ |
| 2005 03 16 | G96 | 0.3− | 0.5− | 2007 10 18 | 691 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.0  | 0.3− |
| 2005 03 16 | G96 | 0.5− | 0.4+ | 2007 10 18 | 691 | 0.1− | 0.1− | 2007 11 17 | G96 | 0.3+ | 0.1− |
| 2007 09 09 | G96 | 0.2− | 0.3− | 2007 10 18 | 691 | 0.1+ | 0.6+ | 2007 11 17 | G96 | 0.2+ | 0.2− |
| 2007 09 09 | G96 | 0.1− | 0.4− | 2007 10 30 | G96 | 0.4− | 0.1− | 2007 11 17 | G96 | 0.5+ | 0.3− |
| 2007 09 09 | G96 | 0.1+ | 0.4− | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 11 17 | G96 | 0.3+ | 0.2− |

2007 TY<sub>34</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 78.09354   | (2000.0) | P         |             | Q           |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.21033346 | <i>ω</i> | 275.96793 | +0.74165964 | +0.66533754 |            |
| <i>a</i> | 2.8002521  | <i>Ω</i> | 42.36703  | −0.55445600 | +0.67960141 |            |
| <i>e</i> | 0.0332086  | <i>i</i> | 7.26746   | −0.37751758 | +0.30897877 |            |
| <i>P</i> | 4.69       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> 1 |



## 2007 DEC. 24

M.P.O. 129835

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 05 | 645 | 0.1− | 0.2+ | 2007 10 07 | G96 | 0.4+ | 0.6− | 2007 11 11 | G96 | 0.1+ | 0.0  |
| 2002 09 05 | 645 | 0.2− | 0.1+ | 2007 11 09 | G96 | 0.4+ | 0.3− | 2007 11 12 | G96 | 0.2+ | 0.2+ |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.2+ | 0.2− | 2007 11 12 | G96 | 0.1+ | 0.1+ |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.2+ | 0.1− | 2007 11 12 | G96 | 0.2− | 0.2+ |
| 2003 12 28 | 691 | 0.6− | 0.1+ | 2007 11 09 | G96 | 0.5+ | 0.1− | 2007 11 12 | G96 | 0.3− | 0.1+ |
| 2003 12 28 | 691 | 0.2+ | 0.3− | 2007 11 11 | 701 | 0.1− | 0.0  | 2007 11 12 | G96 | 0.1+ | 0.1+ |
| 2003 12 28 | 691 | 0.4+ | 0.2+ | 2007 11 11 | 701 | 1.2− | 0.2− | 2007 11 12 | G96 | 0.2− | 0.0  |
| 2005 04 01 | 691 | 0.2+ | 0.2+ | 2007 11 11 | 701 | 0.4+ | 0.2− | 2007 11 12 | G96 | 0.2+ | 0.2+ |
| 2005 04 01 | 691 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.3+ | 0.4+ | 2007 11 12 | G96 | 0.0  | 0.3+ |
| 2005 04 01 | 691 | 0.2− | 0.2+ | 2007 11 11 | G96 | 0.2− | 0.2+ | 2007 11 14 | 701 | 0.1+ | 0.1+ |
| 2007 10 06 | 691 | 0.2− | 0.0  | 2007 11 11 | G96 | 0.1+ | 0.5+ | 2007 11 14 | 701 | 0.6+ | 0.1− |
| 2007 10 06 | 691 | 0.6− | 0.2+ | 2007 11 11 | G96 | 0.1− | 0.3+ | 2007 11 14 | 701 | 0.1− | 0.6− |
| 2007 10 06 | 691 | 0.5− | 0.3+ | 2007 11 11 | G96 | 0.0  | 0.2+ | 2007 11 17 | G96 | 0.2− | 0.1− |
| 2007 10 07 | G96 | 0.5+ | 0.4− | 2007 11 11 | G96 | 0.3+ | 0.2+ | 2007 11 17 | G96 | 0.1− | 0.0  |
| 2007 10 07 | G96 | 0.2− | 0.0  | 2007 11 11 | 701 | 0.2+ | 0.4− | 2007 11 17 | G96 | 0.2− | 0.3− |
| 2007 10 07 | G96 | 0.1+ | 0.3− | 2007 11 11 | G96 | 0.0  | 0.3+ | 2007 11 17 | G96 | 0.6− | 0.0  |

2007 TD<sub>35</sub> = 1998 YC<sub>22</sub> = 2005 GK<sub>95</sub>Id. Minor Planet Center (*MPO* 128365; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 31.89788   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19933394 | $\omega$ | 252.14424 | +0.99555107   | −0.07964388 |
| <i>a</i> | 2.9023418  | $\Omega$ | 112.39968 | +0.09281039   | +0.92108121 |
| <i>e</i> | 0.0673326  | <i>i</i> | 3.12170   | −0.01625753   | +0.38113811 |
| <i>P</i> | 4.94       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 26 | 691 | 0.2− | 0.1− | 2005 04 18 | 691 | 0.1+ | 0.2+ | 2007 11 02 | G96 | 0.2+ | 0.1− |
| 1998 12 26 | 691 | 0.0  | 0.2− | 2005 04 18 | 691 | 0.1− | 0.6+ | 2007 11 02 | G96 | 0.2+ | 0.1− |
| 1998 12 26 | 691 | 0.2− | 0.9− | 2005 04 18 | 691 | 0.1+ | 0.6+ | 2007 11 02 | G96 | 0.0  | 0.0  |
| 1998 12 28 | 691 | 0.3− | 0.5− | 2007 10 06 | 691 | 0.2+ | 0.1+ | 2007 11 02 | G96 | 0.4+ | 0.3− |
| 1998 12 28 | 691 | 0.2− | 0.2− | 2007 10 06 | 691 | 0.2− | 0.1+ | 2007 11 07 | 703 | 0.5− | 0.3+ |
| 1998 12 28 | 691 | 0.5− | 0.1− | 2007 10 06 | 691 | 0.4− | 0.2− | 2007 11 07 | 703 | 0.5− | 0.3+ |
| 2002 11 22 | 644 | 0.5+ | 0.6+ | 2007 10 07 | 703 | 1.2+ | 0.0  | 2007 11 07 | 703 | 0.7+ | 0.1+ |
| 2002 11 22 | 644 | 0.2− | 0.9+ | 2007 10 07 | 703 | 0.2− | 1.6+ | 2007 11 07 | 703 | 0.9− | 0.4− |
| 2002 11 22 | 644 | 0.4+ | 0.5+ | 2007 10 07 | 703 | 0.1− | 0.0  | 2007 11 14 | 704 | 0.6− | 0.8− |
| 2002 11 22 | 644 | 0.2+ | 0.7+ | 2007 10 07 | 703 | 0.1+ | 0.4− | 2007 11 14 | 704 | 0.6− | 1.3− |
| 2002 11 22 | 644 | 0.4+ | 0.5+ | 2007 10 09 | 691 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.6− | 0.0  |
| 2002 11 22 | 644 | 0.1− | 0.6+ | 2007 10 09 | 691 | 0.4− | 0.1+ | 2007 11 14 | 704 | 0.1+ | 0.4+ |
| 2004 01 28 | 691 | 0.6+ | 0.4+ | 2007 10 09 | 691 | 0.5− | 0.2− | 2007 11 19 | 703 | 0.9+ | 1.2+ |
| 2004 01 28 | 691 | 0.3+ | 0.5+ | 2007 10 13 | 704 | 0.3+ | 0.4+ | 2007 11 19 | 703 | 0.9− | 0.0  |
| 2004 01 28 | 691 | 0.4+ | 0.4+ | 2007 10 13 | 704 | 0.3+ | 0.6+ | 2007 11 19 | 703 | 0.4+ | 1.4+ |
| 2005 04 06 | 691 | 0.2+ | 0.4+ | 2007 10 13 | 704 | 0.2− | 1.2+ | 2007 11 19 | 703 | 0.6+ | 1.4+ |
| 2005 04 06 | 691 | 0.2+ | 0.6+ | 2007 10 13 | 704 | 0.9+ | 0.8+ |            |     |      |      |
| 2005 04 06 | 691 | 0.4+ | 0.2+ | 2007 10 13 | 704 | 0.1− | 1.0+ |            |     |      |      |

2007 TE<sub>35</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.61228   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21427752 | $\omega$ | 147.72792 | +0.92468425   | −0.35011867 |
| <i>a</i> | 2.7657843  | $\Omega$ | 233.49460 | +0.29768596   | +0.90978842 |
| <i>e</i> | 0.0915207  | <i>i</i> | 10.72517  | +0.23736491   | +0.22293935 |
| <i>P</i> | 4.60       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 12 | 644 | 0.0  | 0.4+ | 2007 10 15 | 703 | 1.0− | 1.3− | 2007 11 06 | 704 | 0.7+  | 0.3−  |
| 2002 09 12 | 644 | 0.1+ | 0.5+ | 2007 10 15 | 703 | 0.1+ | 1.4+ | 2007 11 07 | 703 | 0.5+  | 0.2+  |
| 2002 09 12 | 644 | 0.2+ | 0.7+ | 2007 10 15 | 703 | 0.2+ | 1.0+ | 2007 11 07 | 703 | 0.2+  | 0.3+  |
| 2002 10 04 | 644 | 0.1− | 0.1− | 2007 10 15 | 703 | 0.4+ | 1.2+ | 2007 11 07 | 703 | 0.3+  | 0.9−  |
| 2002 10 04 | 644 | 0.2− | 0.3− | 2007 10 15 | 691 | 0.0  | 0.2+ | 2007 11 07 | 703 | 0.0   | 0.1+  |
| 2002 10 04 | 644 | 0.4− | 0.1− | 2007 10 15 | 691 | 0.2− | 0.2+ | 2007 11 13 | 291 | 0.1+  | 0.2−  |
| 2003 11 21 | 691 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 13 | 291 | 0.6+  | 0.0   |
| 2003 11 21 | 691 | 0.1+ | 0.0  | 2007 10 18 | 699 | 0.6− | 0.8− | 2007 11 13 | 291 | 0.4+  | 0.1−  |
| 2003 11 21 | 691 | 0.1− | 0.1+ | 2007 10 18 | 699 | 1.4+ | 0.5− | 2007 11 15 | 704 | (0.7− | 2.0+) |
| 2007 10 06 | 691 | 0.8− | 1.3+ | 2007 10 18 | 699 | 0.4+ | 1.5− | 2007 11 15 | 704 | 0.7−  | 1.0+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2007 10 06 | 691 | 0.2+ | 0.2+ | 2007 10 18 | 699 | 0.2−  | 1.5−  | 2007 11 15 | 704 | 0.5− | 1.3+ |
| 2007 10 06 | 691 | 0.3− | 0.1− | 2007 10 19 | 691 | 0.4−  | 0.0   | 2007 11 15 | 704 | 0.3− | 1.4+ |
| 2007 10 07 | 691 | 0.5− | 0.2+ | 2007 10 19 | 691 | 0.1+  | 0.1−  | 2007 11 15 | 704 | 0.5+ | 0.7+ |
| 2007 10 07 | 691 | 0.0  | 0.1+ | 2007 10 19 | 691 | 0.2−  | 0.0   | 2007 11 20 | G96 | 0.1+ | 0.5− |
| 2007 10 07 | 691 | 0.6− | 0.6− | 2007 10 20 | 703 | 1.2+  | 0.3−  | 2007 11 20 | G96 | 0.1+ | 0.8− |
| 2007 10 07 | 691 | 0.1− | 0.0  | 2007 10 20 | 703 | 0.2−  | 0.7−  | 2007 11 20 | G96 | 0.1+ | 0.6− |
| 2007 10 07 | 691 | 0.0  | 0.0  | 2007 10 20 | 703 | 1.1−  | 0.0   | 2007 11 20 | G96 | 0.1+ | 0.4− |
| 2007 10 07 | 691 | 0.0  | 0.2− | 2007 10 20 | 703 | 0.6+  | 0.7+  | 2007 12 05 | 704 | 0.9+ | 0.4+ |
| 2007 10 07 | 291 | 1.0− | 0.2− | 2007 10 31 | G96 | 0.4+  | 0.1−  | 2007 12 05 | 704 | 0.4− | 0.5+ |
| 2007 10 07 | 291 | 0.3+ | 0.4− | 2007 10 31 | G96 | 0.3+  | 0.3−  | 2007 12 05 | 704 | 0.8+ | 0.4+ |
| 2007 10 07 | 291 | 0.0  | 0.7− | 2007 10 31 | G96 | 0.1+  | 0.3−  | 2007 12 05 | 704 | 0.2+ | 0.3− |
| 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 06 | 704 | 1.2+  | 0.1+  | 2007 12 05 | 704 | 0.4+ | 1.3+ |
| 2007 10 11 | 691 | 0.1+ | 0.0  | 2007 11 06 | 704 | 1.2+  | 0.6−  |            |     |      |      |
| 2007 10 11 | 691 | 0.2+ | 0.0  | 2007 11 06 | 704 | (0.1+ | 1.6+) |            |     |      |      |

2007 TZ<sub>35</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 340.22056  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.20406472 | $\omega$ | 29.47145 | +0.80442379   | −0.59376712 |
| <i>a</i> | 2.8573104  | $\Omega$ | 7.04062  | +0.51118248   | +0.67598420 |
| <i>e</i> | 0.2688181  | <i>i</i> | 8.69024  | +0.30264641   | +0.43644699 |
| <i>P</i> | 4.83       | <i>H</i> | 16.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 13 | 644 | 0.1− | 0.4+ | 2007 10 09 | 691 | 0.0   | 0.2−  | 2007 10 15 | 691 | 0.0  | 0.1− |
| 2002 08 13 | 644 | 0.1+ | 0.3− | 2007 10 09 | 691 | 0.0   | 0.0   | 2007 10 15 | 691 | 0.1− | 0.1− |
| 2002 08 13 | 644 | 0.3− | 0.6+ | 2007 10 09 | 691 | 0.2−  | 0.1+  | 2007 10 15 | 703 | 1.3− | 0.1+ |
| 2002 08 13 | 644 | 0.4+ | 0.1− | 2007 10 11 | 691 | (0.5+ | 3.7+) | 2007 10 15 | 703 | 1.0+ | 0.1− |
| 2002 08 13 | 644 | 0.2− | 0.2+ | 2007 10 11 | 691 | 0.2+  | 0.1+  | 2007 10 15 | 703 | 0.1+ | 0.8− |
| 2002 08 13 | 644 | 0.1+ | 0.5− | 2007 10 11 | 691 | 0.0   | 0.3+  | 2007 10 15 | 703 | 0.3− | 0.2− |
| 2002 08 30 | 644 | 0.5− | 0.2+ | 2007 10 11 | 691 | 0.1+  | 0.1+  | 2007 10 19 | 691 | 0.2+ | 0.3+ |
| 2002 08 30 | 644 | 0.1+ | 0.0  | 2007 10 11 | 691 | 0.2+  | 0.0   | 2007 10 19 | 691 | 0.5− | 0.0  |
| 2002 08 30 | 644 | 0.3+ | 0.1− | 2007 10 11 | 691 | 0.3+  | 0.1−  | 2007 10 19 | 691 | 0.0  | 0.1− |
| 2007 09 03 | 703 | 0.5+ | 0.1+ | 2007 10 11 | 688 | 0.2−  | 0.3+  | 2007 10 30 | G96 | 0.3+ | 0.4− |
| 2007 09 03 | 703 | 0.1− | 0.1+ | 2007 10 11 | 688 | 1.2+  | 0.2+  | 2007 10 30 | G96 | 0.0  | 0.5− |
| 2007 09 03 | 703 | 1.6+ | 0.2+ | 2007 10 13 | 691 | 0.2−  | 0.4+  | 2007 10 30 | G96 | 0.1+ | 0.4− |
| 2007 09 03 | 703 | 0.4− | 1.1− | 2007 10 13 | 691 | 0.3−  | 0.3+  | 2007 10 30 | G96 | 0.2− | 0.6− |
| 2007 09 12 | 703 | 0.7− | 0.3− | 2007 10 13 | 691 | 0.1−  | 0.1+  | 2007 11 02 | G96 | 0.3− | 0.3− |
| 2007 09 12 | 703 | 0.3− | 0.3− | 2007 10 13 | 704 | 1.4+  | 0.4+  | 2007 11 02 | G96 | 0.3− | 0.4− |
| 2007 09 12 | 703 | 0.3− | 0.4− | 2007 10 13 | 704 | 0.2+  | 0.9+  | 2007 11 02 | G96 | 0.2− | 0.3− |
| 2007 09 12 | 703 | 0.1+ | 0.4+ | 2007 10 13 | 704 | 0.5+  | 1.1−  | 2007 11 02 | 291 | 0.3+ | 0.1+ |
| 2007 10 09 | 691 | 0.5− | 0.5− | 2007 10 13 | 704 | 0.6+  | 0.0   | 2007 11 02 | 291 | 0.2+ | 0.0  |
| 2007 10 09 | 691 | 0.0  | 0.0  | 2007 10 13 | 704 | (0.1− | 2.2−) | 2007 11 02 | 291 | 0.1− | 0.1+ |
| 2007 10 09 | 691 | 0.0  | 0.4+ | 2007 10 15 | 691 | 0.4−  | 0.1−  |            |     |      |      |

2007 TC<sub>38</sub> = 2006 KN<sub>30</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 20.00768   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22662183 | $\omega$ | 318.02932 | +0.98561460   | +0.16847589 |
| <i>a</i> | 2.6644131  | $\Omega$ | 32.27874  | −0.14761719   | +0.89678079 |
| <i>e</i> | 0.1456733  | <i>i</i> | 1.43853   | −0.08229842   | +0.40914556 |
| <i>P</i> | 4.35       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 30 | 691 | 0.1+ | 0.0  | 2006 05 24 | 691 | 0.2− | 0.1+ | 2007 10 08 | G96 | 0.2− | 0.3− |
| 2003 11 30 | 691 | 0.1− | 0.1+ | 2006 05 24 | 691 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.5+ | 0.1− |
| 2003 11 30 | 691 | 0.0  | 0.1+ | 2007 10 04 | 703 | 0.1+ | 0.8+ | 2007 10 19 | G96 | 0.3+ | 0.3− |
| 2005 03 11 | 695 | 0.2+ | 0.1+ | 2007 10 04 | 703 | 0.3+ | 0.5+ | 2007 10 19 | G96 | 0.0  | 0.1+ |
| 2005 03 11 | 695 | 0.1+ | 0.2+ | 2007 10 04 | 703 | 0.5+ | 0.4+ | 2007 10 19 | G96 | 0.4+ | 0.1+ |
| 2006 05 20 | 691 | 0.1+ | 0.1+ | 2007 10 04 | 703 | 0.5− | 0.1+ | 2007 12 04 | G96 | 0.8− | 0.8− |
| 2006 05 20 | 691 | 0.2− | 0.1− | 2007 10 08 | G96 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.3− | 0.2+ |
| 2006 05 20 | 691 | 0.1− | 0.1− | 2007 10 08 | G96 | 0.1+ | 0.2− | 2007 12 04 | G96 | 0.9− | 0.2− |
| 2006 05 24 | 691 | 0.2+ | 0.3+ | 2007 10 08 | G96 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.4− | 0.1+ |

**2007 TA<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 223.68151  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17905763 | $\omega$ | 134.67448 | -0.99360942   | +0.08722821 |
| <i>a</i> | 3.1175074  | $\Omega$ | 50.46452  | -0.11024995   | -0.88604226 |
| <i>e</i> | 0.0950600  | <i>i</i> | 5.32954   | +0.02419230   | -0.45532444 |
| <i>P</i> | 5.50       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 15 | 691 | 0.2-  | 1.0+  | 2007 10 07 | G96 | 0.2+ | 0.1- | 2007 11 07 | 703 | 1.0- | 0.1- |
| 1996 10 15 | 691 | 0.2-  | 0.2+  | 2007 10 07 | G96 | 0.2+ | 0.1+ | 2007 11 07 | 703 | 0.5- | 0.6+ |
| 1999 04 14 | 691 | 1.7-  | 0.8+  | 2007 10 10 | 691 | 0.3+ | 0.2+ | 2007 11 09 | G96 | 0.3+ | 0.0  |
| 1999 04 14 | 691 | (3.8+ | 0.1-) | 2007 10 10 | 691 | 0.4- | 0.0  | 2007 11 09 | G96 | 0.1+ | 0.2- |
| 1999 04 14 | 691 | 1.6-  | 0.6+  | 2007 10 10 | 691 | 0.2- | 0.0  | 2007 11 09 | G96 | 0.5+ | 0.0  |
| 2004 02 15 | 703 | 0.4-  | 0.4+  | 2007 10 14 | 691 | 0.2- | 0.1+ | 2007 11 09 | G96 | 0.3+ | 0.0  |
| 2004 02 15 | 703 | 0.6-  | 0.9-  | 2007 10 14 | 691 | 0.3- | 0.3+ | 2007 11 17 | G96 | 0.4+ | 0.4- |
| 2004 02 15 | 703 | 0.7+  | 0.0   | 2007 10 14 | 691 | 0.7+ | 0.1+ | 2007 11 17 | G96 | 0.5+ | 0.3- |
| 2004 02 15 | 703 | 0.4+  | 0.2+  | 2007 10 30 | G96 | 0.8+ | 0.2- | 2007 11 17 | G96 | 0.1+ | 0.5- |
| 2007 10 06 | 691 | 0.4-  | 0.1-  | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 17 | G96 | 0.2+ | 0.1- |
| 2007 10 06 | 691 | 0.6-  | 0.5+  | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 12 06 | G96 | 0.3- | 0.2+ |
| 2007 10 06 | 691 | 0.0   | 0.3+  | 2007 10 30 | G96 | 0.0  | 0.4- | 2007 12 06 | G96 | 0.7+ | 0.6+ |
| 2007 10 07 | G96 | 0.4+  | 0.3-  | 2007 11 07 | 703 | 0.4+ | 1.4- | 2007 12 06 | G96 | 0.7+ | 0.2- |
| 2007 10 07 | G96 | 0.3+  | 0.4-  | 2007 11 07 | 703 | 0.7- | 0.8- | 2007 12 06 | G96 | 0.4- | 0.2+ |

**2007 TC<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 103.96136  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18089012 | $\omega$ | 244.71828 | +0.30943525   | +0.94228561 |
| <i>a</i> | 3.0964173  | $\Omega$ | 43.95525  | -0.79270884   | +0.32987510 |
| <i>e</i> | 0.0847281  | <i>i</i> | 10.61495  | -0.52522617   | +0.05727337 |
| <i>P</i> | 5.45       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 17 | 645 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 12 | G96 | 0.1+ | 0.3+ |
| 2004 03 17 | 645 | 0.0  | 0.1- | 2007 10 10 | 691 | 0.4- | 0.1- | 2007 11 12 | G96 | 0.4- | 0.3- |
| 2005 04 16 | 691 | 0.5+ | 0.0  | 2007 10 10 | 691 | 0.3- | 0.1+ | 2007 11 12 | G96 | 0.1+ | 0.2+ |
| 2005 04 16 | 691 | 0.4+ | 0.2+ | 2007 10 30 | 691 | 0.3- | 0.3+ | 2007 11 12 | G96 | 0.1+ | 0.2+ |
| 2005 04 16 | 691 | 0.2+ | 0.1+ | 2007 10 30 | 691 | 0.3- | 0.0  | 2007 11 12 | G96 | 0.2+ | 0.3+ |
| 2005 05 10 | G96 | 0.3- | 0.2+ | 2007 10 30 | 691 | 0.2- | 0.3+ | 2007 11 12 | G96 | 0.3+ | 0.5+ |
| 2005 05 10 | G96 | 0.4- | 0.2- | 2007 11 09 | G96 | 0.3+ | 0.2+ | 2007 11 13 | G96 | 0.2- | 0.0  |
| 2005 05 10 | G96 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.0  | 2007 11 13 | G96 | 0.0  | 0.5+ |
| 2005 05 10 | G96 | 0.3- | 0.1+ | 2007 11 09 | G96 | 0.1+ | 0.2- | 2007 11 13 | G96 | 0.3+ | 0.1- |
| 2007 10 06 | 691 | 0.2- | 0.2+ | 2007 11 09 | G96 | 0.2+ | 0.1- | 2007 11 13 | G96 | 0.0  | 0.4+ |
| 2007 10 06 | 691 | 0.1- | 0.1+ | 2007 11 11 | G96 | 0.4- | 0.1- | 2007 11 13 | G96 | 0.2- | 0.9- |
| 2007 10 06 | 691 | 0.5- | 0.3+ | 2007 11 11 | G96 | 0.1- | 0.0  | 2007 11 13 | G96 | 0.5- | 0.5- |
| 2007 10 07 | G96 | 0.7+ | 0.0  | 2007 11 11 | G96 | 0.7- | 0.2- | 2007 11 13 | G96 | 1.9+ | 0.8- |
| 2007 10 07 | G96 | 0.9+ | 0.1- | 2007 11 11 | G96 | 0.6- | 0.1- | 2007 11 13 | G96 | 0.1- | 0.6+ |
| 2007 10 07 | G96 | 0.1+ | 0.6- | 2007 11 12 | G96 | 0.2- | 0.2+ |            |     |      |      |
| 2007 10 07 | G96 | 0.2+ | 0.2- | 2007 11 12 | G96 | 0.2- | 0.1+ |            |     |      |      |

**2007 TK<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.84910  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29693654 | $\omega$ | 84.53369  | +0.03703573   | +0.99920661 |
| <i>a</i> | 2.2251551  | $\Omega$ | 187.63500 | -0.95495725   | +0.03107002 |
| <i>e</i> | 0.1023872  | <i>i</i> | 6.32878   | -0.29442316   | +0.02491585 |
| <i>P</i> | 3.32       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 25 | 691 | 0.1+ | 0.5+ | 2007 10 08 | G96 | 0.1- | 0.3- | 2007 11 03 | 291 | 0.4- | 0.1+ |
| 2006 03 25 | 691 | 0.3+ | 0.0  | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 11 03 | G96 | 0.6+ | 0.4- |
| 2006 03 25 | 691 | 0.2+ | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.3- | 2007 11 03 | 291 | 0.2+ | 0.4+ |
| 2006 04 30 | 691 | 0.1- | 0.0  | 2007 10 09 | 691 | 0.2- | 0.2+ | 2007 11 03 | G96 | 0.5+ | 0.0  |
| 2006 04 30 | 691 | 0.2+ | 0.2+ | 2007 10 09 | 691 | 0.1+ | 0.4+ | 2007 11 03 | 291 | 0.0  | 0.1+ |
| 2006 04 30 | 691 | 0.1+ | 0.1+ | 2007 10 09 | 691 | 0.1+ | 0.4- | 2007 11 03 | G96 | 0.6+ | 0.2- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 06 01 | 691 | 0.3- | 0.0  | 2007 10 13 | 691 | 0.2-  | 0.8+  | 2007 11 03 | G96 | 0.6+ | 0.0  |
| 2006 06 01 | 691 | 0.1- | 0.3+ | 2007 10 13 | 691 | 0.2-  | 0.2-  | 2007 11 03 | G96 | 0.0  | 0.0  |
| 2006 06 01 | 691 | 0.0  | 0.3+ | 2007 10 13 | 691 | (1.2- | 2.5-) | 2007 11 03 | G96 | 0.5+ | 0.1- |
| 2007 10 06 | 691 | 0.2- | 0.1- | 2007 11 02 | G96 | 0.2+  | 0.5+  | 2007 11 03 | G96 | 0.0  | 0.1- |
| 2007 10 06 | 691 | 0.3- | 0.2+ | 2007 11 02 | G96 | 0.7+  | 0.2+  | 2007 11 03 | G96 | 0.1+ | 0.0  |
| 2007 10 06 | 691 | 0.5- | 0.0  | 2007 11 02 | G96 | 0.5+  | 0.4+  |            |     |      |      |
| 2007 10 08 | G96 | 0.4+ | 0.2- | 2007 11 02 | G96 | 0.3+  | 0.2+  |            |     |      |      |

**2007 TM<sub>40</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.42814  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28564930 | $\omega$ | 205.95228 | +0.44586736   | -0.89237830 |
| <i>a</i> | 2.2833927  | $\Omega$ | 217.68062 | +0.83981871   | +0.44401496 |
| <i>e</i> | 0.0849952  | <i>i</i> | 6.55100   | +0.30968827   | +0.08069498 |
| <i>P</i> | 3.45       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 20 | 691 | 0.2+ | 0.0  | 2007 10 10 | 691 | 0.1+ | 0.1+ | 2007 11 02 | D29 | 0.3+ | 1.2- |
| 2000 09 20 | 691 | 0.1+ | 0.2- | 2007 10 10 | 691 | 0.2- | 0.4+ | 2007 11 04 | 691 | 0.1- | 0.1- |
| 2000 09 20 | 691 | 0.1+ | 0.2- | 2007 10 14 | 691 | 0.1+ | 0.1- | 2007 11 04 | 691 | 0.2- | 0.1- |
| 2000 10 02 | 688 | 1.2- | 0.8+ | 2007 10 14 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.2- | 0.4+ |
| 2000 10 02 | 688 | 0.1- | 0.4+ | 2007 10 14 | 691 | 0.2- | 0.2- | 2007 11 05 | 704 | 0.9+ | 0.2+ |
| 2007 09 15 | G96 | 0.0  | 0.1- | 2007 10 20 | 691 | 0.0  | 0.1- | 2007 11 05 | 704 | 0.5+ | 0.2+ |
| 2007 09 15 | G96 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 704 | 0.3+ | 0.1- |
| 2007 09 15 | G96 | 0.0  | 0.2+ | 2007 10 20 | 691 | 1.1+ | 0.2+ | 2007 11 05 | 704 | 0.9+ | 0.4+ |
| 2007 09 15 | G96 | 0.0  | 0.1- | 2007 10 30 | 691 | 0.6- | 0.1- | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2007 10 06 | 691 | 0.0  | 0.2- | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.1- |
| 2007 10 06 | 691 | 0.0  | 0.4+ | 2007 10 30 | 691 | 0.4- | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.1- |
| 2007 10 06 | 691 | 0.2- | 0.2+ | 2007 10 31 | 691 | 0.5- | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 10 31 | 691 | 0.1- | 0.0  | 2007 11 14 | 704 | 0.3+ | 0.2+ |
| 2007 10 07 | G96 | 0.4+ | 0.1- | 2007 10 31 | 691 | 0.6- | 0.6- | 2007 11 14 | 704 | 0.7+ | 0.5+ |
| 2007 10 07 | G96 | 0.4- | 0.5- | 2007 11 02 | D29 | 0.4+ | 0.6- | 2007 11 14 | 704 | 0.6+ | 0.4+ |
| 2007 10 07 | G96 | 0.2+ | 0.6- | 2007 11 02 | D29 | 0.8+ | 0.4- | 2007 11 14 | 704 | 0.1+ | 0.7+ |
| 2007 10 10 | 691 | 0.0  | 0.3+ | 2007 11 02 | D29 | 0.3+ | 0.3+ | 2007 11 14 | 704 | 0.0  | 0.3- |

**2007 TO<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 203.19742  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30714275 | $\omega$ | 359.85230 | -0.91787248   | +0.39560126 |
| <i>a</i> | 2.1755841  | $\Omega$ | 203.53022 | -0.36404442   | -0.87112629 |
| <i>e</i> | 0.0767702  | <i>i</i> | 4.56522   | -0.15805620   | -0.29092719 |
| <i>P</i> | 3.21       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 11 06 | 691 | 0.1+ | 0.4- | 2007 10 08 | G96 | 0.1+ | 0.3- | 2007 11 05 | 704 | 0.3+ | 0.6+ |
| 1991 11 06 | 691 | 0.0  | 0.4- | 2007 10 08 | G96 | 0.5+ | 0.2- | 2007 11 05 | 704 | 0.6+ | 0.2- |
| 1991 11 06 | 691 | 0.2+ | 0.7- | 2007 10 08 | G96 | 0.5+ | 0.4- | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2000 09 03 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.4- | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2000 09 03 | 645 | 0.0  | 0.1- | 2007 10 10 | 691 | 0.3- | 0.0  | 2007 11 07 | 703 | 0.4- | 0.0  |
| 2007 09 10 | G96 | 0.1+ | 0.3+ | 2007 10 10 | 691 | 0.2- | 0.1- | 2007 11 07 | 703 | 0.8+ | 0.0  |
| 2007 09 10 | G96 | 0.6+ | 0.3+ | 2007 10 10 | 691 | 0.2- | 0.1- | 2007 11 07 | 703 | 0.4+ | 0.2- |
| 2007 09 10 | G96 | 0.6+ | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.4+ | 1.1+ |
| 2007 09 10 | G96 | 0.5+ | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 17 | 703 | 0.2+ | 0.0  |
| 2007 10 06 | 691 | 0.2- | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 11 17 | 703 | 0.7- | 0.4+ |
| 2007 10 06 | 691 | 0.1+ | 1.0+ | 2007 11 05 | 704 | 0.9- | 0.2- | 2007 11 17 | 703 | 0.4+ | 0.4+ |
| 2007 10 06 | 691 | 0.4- | 0.4+ | 2007 11 05 | 704 | 0.7- | 1.3+ | 2007 11 17 | 703 | 0.6- | 0.0  |

**2007 TR<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.80971   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22313793 | $\omega$ | 168.02966 | +0.98695009   | -0.15807671 |
| <i>a</i> | 2.6920747  | $\Omega$ | 201.13983 | +0.13983093   | +0.93582635 |
| <i>e</i> | 0.0892756  | <i>i</i> | 4.88007   | +0.07985506   | +0.31502506 |
| <i>P</i> | 4.42       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i></i>     |

2007 DEC. 24

M.P.O. 129837

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 19 | 644 | 0.0  | 0.1+ | 2005 04 06 | G96 | 0.4+ | 0.9+ | 2007 10 07 | G96 | 0.8+ | 0.4- |
| 2002 08 19 | 644 | 0.4- | 0.4+ | 2005 04 06 | G96 | 0.8- | 0.3+ | 2007 10 08 | G96 | 0.0  | 0.2- |
| 2002 08 19 | 644 | 0.1- | 0.4+ | 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 10 08 | G96 | 0.5+ | 0.2- |
| 2002 08 27 | 644 | 0.1+ | 0.0  | 2007 09 10 | G96 | 0.2- | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.3- |
| 2002 08 27 | 644 | 0.2+ | 0.1+ | 2007 09 10 | G96 | 0.1+ | 0.6- | 2007 10 08 | G96 | 0.5+ | 0.0  |
| 2002 08 27 | 644 | 0.1- | 0.0  | 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 11 17 | 703 | 0.5+ | 0.3+ |
| 2005 03 11 | G96 | 0.4+ | 0.0  | 2007 10 06 | 691 | 0.3- | 0.1+ | 2007 11 17 | 703 | 1.4- | 0.2+ |
| 2005 03 11 | G96 | 0.2- | 0.1+ | 2007 10 06 | 691 | 0.6- | 0.4+ | 2007 11 17 | 703 | 0.5- | 0.0  |
| 2005 03 11 | G96 | 0.3- | 0.6- | 2007 10 06 | 691 | 0.2- | 0.0  | 2007 11 17 | 703 | 0.4+ | 0.6+ |
| 2005 03 11 | G96 | 0.5+ | 0.1+ | 2007 10 07 | G96 | 0.5+ | 0.1- | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2005 04 06 | G96 | 0.2+ | 0.3+ | 2007 10 07 | G96 | 0.3+ | 0.4- | 2007 11 18 | G96 | 0.9+ | 0.0  |
| 2005 04 06 | G96 | 0.4+ | 0.5+ | 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 11 18 | G96 | 0.2+ | 0.0  |

2007 TT<sub>43</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.16742   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22668343 | $\omega$ | 148.36429 | +0.96364187   | -0.21542347 |
| <i>a</i> | 2.6639303  | $\Omega$ | 224.97205 | +0.17359293   | +0.95448665 |
| <i>e</i> | 0.2678358  | <i>i</i> | 12.92398  | +0.20312517   | +0.20627156 |
| <i>P</i> | 4.35       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2006 05 25 | 691 | 0.1+ | 0.0  | 2007 10 14 | 703 | 0.5+  | 0.4-  | 2007 11 03 | 699 | 0.7-  | 0.4-  |
| 2006 05 25 | 691 | 0.2- | 0.3+ | 2007 10 14 | 703 | 0.6+  | 0.1-  | 2007 11 06 | 704 | 0.7+  | 0.9+  |
| 2006 05 25 | 691 | 0.5- | 0.6- | 2007 10 15 | 704 | 0.4+  | 0.3+  | 2007 11 06 | 704 | 0.9+  | 0.8+  |
| 2006 06 02 | 691 | 0.1+ | 0.5+ | 2007 10 15 | 691 | 0.3-  | 0.1-  | 2007 11 06 | 704 | 0.5+  | 0.3+  |
| 2006 06 02 | 691 | 0.6+ | 0.2- | 2007 10 15 | 704 | 0.4+  | 0.3+  | 2007 11 06 | 704 | 0.0   | 0.7+  |
| 2006 06 02 | 691 | 0.1- | 0.0  | 2007 10 15 | 704 | 0.1+  | 0.3-  | 2007 11 06 | 704 | (1.7+ | 0.4+) |
| 2007 09 25 | G96 | 0.1+ | 0.3- | 2007 10 15 | 691 | 0.4-  | 0.0   | 2007 11 06 | A50 | 0.4-  | 0.1+  |
| 2007 09 25 | G96 | 0.1+ | 0.1- | 2007 10 15 | 704 | 0.0   | 0.2+  | 2007 11 06 | A50 | 0.3+  | 0.2+  |
| 2007 09 25 | G96 | 0.5+ | 0.2- | 2007 10 15 | 691 | 0.2-  | 0.0   | 2007 11 06 | A50 | 0.5-  | 0.2+  |
| 2007 10 07 | 691 | 0.4- | 0.1- | 2007 10 15 | 704 | 0.6+  | 0.2-  | 2007 11 06 | A50 | 0.3-  | 0.3-  |
| 2007 10 07 | 691 | 0.5- | 0.0  | 2007 10 18 | 704 | 0.9+  | 0.3+  | 2007 11 13 | 703 | 0.2-  | 0.5+  |
| 2007 10 07 | 691 | 0.3- | 0.1- | 2007 10 18 | 704 | 0.3+  | 0.2+  | 2007 11 13 | 703 | 0.5+  | 0.3+  |
| 2007 10 08 | 703 | 0.8+ | 0.9+ | 2007 10 18 | 704 | 0.1-  | 0.3-  | 2007 11 13 | 703 | 0.1+  | 0.5+  |
| 2007 10 08 | 703 | 0.2+ | 0.6+ | 2007 10 18 | 704 | 0.3+  | 0.2-  | 2007 11 13 | 703 | 0.8+  | 0.5+  |
| 2007 10 08 | 703 | 0.2- | 0.3+ | 2007 10 18 | 704 | 0.6+  | 0.1-  | 2007 11 15 | 704 | 0.0   | 0.9+  |
| 2007 10 08 | 703 | 0.1- | 0.2- | 2007 10 22 | 704 | 0.2-  | 0.5-  | 2007 11 15 | 704 | 0.6-  | 0.4-  |
| 2007 10 10 | 699 | 0.5+ | 0.6- | 2007 10 22 | 704 | 0.7+  | 0.5+  | 2007 11 15 | 704 | 0.0   | 0.4-  |
| 2007 10 10 | 699 | 0.7- | 0.0  | 2007 10 22 | 704 | 0.0   | 0.0   | 2007 11 15 | 704 | 0.2-  | 0.3+  |
| 2007 10 10 | 699 | 0.9+ | 0.2- | 2007 10 22 | 704 | 0.2+  | 0.1+  | 2007 11 15 | 704 | 0.5+  | 0.2+  |
| 2007 10 10 | 699 | 0.5+ | 0.5- | 2007 10 22 | 704 | 0.2+  | 0.5+  | 2007 11 18 | G96 | 0.2-  | 0.2-  |
| 2007 10 11 | 691 | 0.5- | 0.0  | 2007 10 30 | 703 | 0.2-  | 0.8-  | 2007 11 18 | G96 | 0.0   | 0.3-  |
| 2007 10 11 | 691 | 0.2- | 0.1+ | 2007 10 30 | 703 | 0.5-  | 1.0-  | 2007 11 18 | G96 | 0.2+  | 0.3-  |
| 2007 10 11 | 691 | 0.4- | 0.0  | 2007 10 30 | 703 | 1.3-  | 0.7-  | 2007 12 05 | 704 | 0.2-  | 0.2-  |
| 2007 10 12 | 699 | 0.6+ | 0.1- | 2007 10 30 | 703 | (2.0- | 1.2-) | 2007 12 05 | 704 | 0.1-  | 0.2-  |
| 2007 10 12 | 699 | 1.4+ | 0.2- | 2007 11 01 | 704 | 0.1-  | 0.6+  | 2007 12 05 | 704 | 0.5-  | 0.4-  |
| 2007 10 12 | 699 | 0.4+ | 0.5- | 2007 11 01 | 704 | 0.1-  | 0.2-  | 2007 12 05 | G96 | 0.2+  | 0.4-  |
| 2007 10 12 | 699 | 1.4+ | 0.0  | 2007 11 01 | 704 | 0.1+  | 0.6+  | 2007 12 05 | 704 | 0.2-  | 0.3-  |
| 2007 10 14 | A77 | 0.2+ | 0.8+ | 2007 11 01 | 704 | 0.0   | 0.7+  | 2007 12 05 | G96 | 0.0   | 0.4-  |
| 2007 10 14 | A77 | 0.3+ | 0.5+ | 2007 11 01 | 704 | 0.4+  | 0.5+  | 2007 12 05 | 704 | 0.4+  | 0.5+  |
| 2007 10 14 | A77 | 0.4+ | 0.6+ | 2007 11 03 | 699 | 0.4+  | 1.0-  | 2007 12 05 | G96 | 0.0   | 0.0   |
| 2007 10 14 | 703 | 0.6+ | 0.2- | 2007 11 03 | 699 | 0.6-  | 0.8-  | 2007 12 05 | G96 | 0.2-  | 0.3-  |
| 2007 10 14 | 703 | 0.2+ | 0.4- | 2007 11 03 | 699 | 0.0   | 0.6-  |            |     |       |       |

2007 TW<sub>43</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 197.08446  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26329477 | $\omega$ | 148.01782 | -0.83889648   | +0.54229510 |
| <i>a</i> | 2.4108743  | $\Omega$ | 64.89153  | -0.50958684   | -0.75246554 |
| <i>e</i> | 0.1620547  | <i>i</i> | 2.94798   | -0.19124318   | -0.37378018 |
| <i>P</i> | 3.74       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 02 13 | 809 | 1.6+ | 0.5+ | 2006 08 20 | 644 | 0.2- | 0.8+ | 2007 10 16 | 691 | 0.3- | 0.3+ |
| 1994 02 13 | 809 | 0.5- | 0.0  | 2006 08 20 | 644 | 0.0  | 0.8+ | 2007 10 16 | 691 | 0.2- | 0.1- |
| 1994 02 13 | 809 | 0.9- | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.2- | 2007 10 30 | 691 | 0.7- | 0.3+ |
| 2003 09 29 | 691 | 0.1+ | 0.0  | 2007 10 07 | G96 | 0.5- | 0.9- | 2007 10 30 | 691 | 0.2- | 0.0  |
| 2003 09 29 | 691 | 0.0  | 0.2- | 2007 10 07 | G96 | 0.4+ | 0.0  | 2007 10 30 | 691 | 1.7+ | 0.7+ |
| 2003 09 29 | 691 | 0.1+ | 0.1- | 2007 10 07 | G96 | 0.2- | 0.2+ | 2007 10 31 | 691 | 0.9- | 0.5+ |
| 2003 10 18 | 691 | 0.4+ | 0.1- | 2007 10 08 | 691 | 0.2- | 0.0  | 2007 10 31 | 691 | 0.2- | 0.1- |
| 2003 10 18 | 691 | 0.1- | 0.0  | 2007 10 08 | 691 | 0.6- | 0.3+ | 2007 10 31 | 691 | 0.8- | 0.0  |
| 2003 10 18 | 691 | 0.2+ | 0.1- | 2007 10 08 | 691 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.4- | 0.5- |
| 2005 01 18 | 691 | 0.1+ | 0.1- | 2007 10 12 | 691 | 0.2- | 0.4+ | 2007 11 04 | 691 | 0.0  | 0.3+ |
| 2005 01 18 | 691 | 0.1+ | 0.1+ | 2007 10 12 | 691 | 0.2- | 0.1+ | 2007 11 04 | 691 | 0.2- | 0.0  |
| 2005 01 18 | 691 | 0.2+ | 0.2- | 2007 10 12 | 691 | 0.2+ | 0.4+ | 2007 11 05 | G96 | 0.7+ | 0.7- |
| 2005 02 01 | 703 | 1.0- | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.1+ | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2005 02 01 | 703 | 0.8+ | 0.8+ | 2007 10 16 | G96 | 0.5+ | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2005 02 01 | 703 | 0.4- | 0.9+ | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.1- | 0.0  |
| 2005 02 01 | 703 | 0.8+ | 0.3+ | 2007 10 16 | G96 | 0.2+ | 0.3- |            |     |      |      |
| 2006 08 20 | 644 | 0.5- | 1.0+ | 2007 10 16 | 691 | 0.1+ | 0.3+ |            |     |      |      |

2007 TY<sub>43</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 68.28531   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24237989 | $\omega$ | 112.87209 | +0.75723384   | +0.65225778 |
| <i>a</i> | 2.5476416  | $\Omega$ | 206.45405 | -0.62374304   | +0.70671922 |
| <i>e</i> | 0.1545613  | <i>i</i> | 4.37853   | -0.19375639   | +0.27405790 |
| <i>P</i> | 4.07       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 599 | 0.7- | 0.2- | 2007 09 10 | G96 | 0.2+ | 0.2- | 2007 10 12 | 691 | 0.1- | 0.1- |
| 2003 11 19 | 599 | 0.1+ | 0.4- | 2007 09 10 | G96 | 0.1+ | 0.5- | 2007 10 12 | 691 | 0.0  | 0.1+ |
| 2003 11 19 | 599 | 1.2+ | 0.7+ | 2007 09 10 | G96 | 0.2- | 0.0  | 2007 10 16 | 691 | 0.2- | 0.0  |
| 2003 11 20 | 695 | 0.4- | 0.1- | 2007 09 10 | G96 | 0.2- | 0.1- | 2007 10 16 | 691 | 0.2- | 0.3+ |
| 2003 11 20 | 695 | 0.2- | 0.0  | 2007 10 07 | G96 | 0.2+ | 0.0  | 2007 10 16 | 691 | 0.4- | 0.1+ |
| 2003 12 22 | 691 | 0.1- | 0.1+ | 2007 10 07 | G96 | 0.0  | 0.4- | 2007 10 20 | 691 | 0.3- | 0.5+ |
| 2003 12 22 | 691 | 0.0  | 0.2+ | 2007 10 07 | G96 | 0.3- | 0.0  | 2007 10 20 | 691 | 0.1- | 0.4+ |
| 2003 12 22 | 691 | 0.0  | 0.3- | 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 10 20 | 691 | 0.1- | 0.0  |
| 2005 03 17 | G96 | 0.5+ | 0.4+ | 2007 10 08 | 691 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2005 03 17 | G96 | 0.2- | 0.0  | 2007 10 08 | 691 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2005 03 17 | G96 | 0.2- | 0.1- | 2007 10 08 | 691 | 0.2+ | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2005 03 17 | G96 | 0.1- | 0.3- | 2007 10 12 | 691 | 0.1- | 0.2+ | 2007 11 05 | G96 | 0.5+ | 0.1- |

2007 TC<sub>44</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.67565    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21622253 | $\omega$ | 102.80923 | +0.89419119   | -0.43931725 |
| <i>a</i> | 2.7491731  | $\Omega$ | 283.30514 | +0.36869565   | +0.83181415 |
| <i>e</i> | 0.0350003  | <i>i</i> | 5.07905   | +0.25394023   | +0.33924265 |
| <i>P</i> | 4.56       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 28 | 644 | 0.1+ | 0.3- | 2007 10 18 | 704 | 0.1- | 0.2+ | 2007 11 07 | 704 | 0.7+  | 0.2+  |
| 2002 08 28 | 644 | 0.3+ | 0.3- | 2007 10 18 | 699 | 0.3+ | 0.8- | 2007 11 07 | 704 | 0.1-  | 0.6-  |
| 2002 08 28 | 644 | 0.0  | 0.1- | 2007 10 18 | 699 | 1.1- | 0.6- | 2007 11 07 | 704 | 0.3+  | 0.1+  |
| 2002 09 13 | 644 | 0.1- | 0.4+ | 2007 10 18 | 699 | 1.0+ | 0.2+ | 2007 11 07 | 704 | 0.1+  | 0.3+  |
| 2002 09 13 | 644 | 0.1- | 0.2- | 2007 10 18 | 699 | 0.5+ | 1.4- | 2007 11 08 | 704 | 0.1-  | 0.8-  |
| 2002 09 13 | 644 | 0.1- | 0.2+ | 2007 10 19 | 704 | 0.6- | 1.6+ | 2007 11 08 | 704 | 0.0   | 0.5-  |
| 2007 10 07 | 691 | 0.2+ | 0.1- | 2007 10 19 | 704 | 0.4- | 1.0- | 2007 11 08 | 704 | 1.5+  | 1.0+  |
| 2007 10 07 | 691 | 0.0  | 0.2- | 2007 10 19 | 704 | 0.1+ | 0.2+ | 2007 11 08 | 704 | 1.1+  | 1.0+  |
| 2007 10 07 | 691 | 0.0  | 0.0  | 2007 10 19 | 704 | 0.3- | 0.2+ | 2007 11 08 | 704 | 0.8+  | 0.8+  |
| 2007 10 08 | 703 | 1.4+ | 0.5+ | 2007 10 21 | 703 | 0.2+ | 0.5- | 2007 11 08 | 703 | 0.0   | 0.5+  |
| 2007 10 08 | 703 | 0.4- | 0.1- | 2007 10 21 | 703 | 1.5- | 1.0- | 2007 11 08 | 703 | 0.1-  | 1.0+  |
| 2007 10 08 | 703 | 0.8+ | 0.3+ | 2007 10 21 | 703 | 0.7- | 0.2+ | 2007 11 08 | 703 | 0.7+  | 0.5+  |
| 2007 10 08 | 703 | 1.1+ | 0.5+ | 2007 10 21 | 703 | 0.2+ | 0.7- | 2007 11 08 | 703 | 0.9+  | 0.8-  |
| 2007 10 11 | 691 | 0.0  | 0.3- | 2007 10 30 | 703 | 1.9- | 1.1+ | 2007 11 13 | 699 | (1.1+ | 2.3+) |
| 2007 10 11 | 691 | 0.1- | 0.4- | 2007 10 30 | 703 | 0.6- | 0.7+ | 2007 11 13 | 699 | 1.2+  | 0.0   |
| 2007 10 11 | 691 | 0.1- | 0.3- | 2007 10 30 | 703 | 0.9- | 0.7+ | 2007 11 13 | 699 | 1.3-  | 1.1-  |

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2007 10 14 703 0.2+ 0.4+ | 2007 10 30 703 0.5- 0.5- | 2007 11 13 699 0.1+ 0.6-   |
| 2007 10 14 703 0.1- 0.1+ | 2007 11 02 704 0.1- 1.1+ | 2007 11 17 704 (0.1- 3.1-) |
| 2007 10 14 703 0.3+ 1.1+ | 2007 11 02 704 0.2- 0.1+ | 2007 11 17 704 0.6- 1.6-   |
| 2007 10 14 703 0.0 0.5+  | 2007 11 02 704 1.0- 0.2- | 2007 11 17 704 0.6- 1.8-   |
| 2007 10 18 704 0.3+ 0.2- | 2007 11 02 704 0.3- 0.3+ | 2007 11 17 704 0.4- 1.8-   |
| 2007 10 18 704 0.4+ 0.4+ | 2007 11 02 704 0.4- 0.3- |                            |
| 2007 10 18 704 0.2+ 1.1+ | 2007 11 07 704 0.1- 0.2- |                            |

**2007 TV<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.27383   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22345360 | $\omega$ 180.35633 | +0.99998355   | -0.00573518 |
| <i>a</i> | 2.6895388  | $\Omega$ 179.97212 | +0.00548124   | +0.95310258 |
| <i>e</i> | 0.0601877  | <i>i</i> 5.82559   | +0.00168839   | +0.30259308 |
| <i>P</i> | 4.41       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1998 09 25 691 0.0 0.4+  | 2007 09 12 G96 0.4+ 0.2-   | 2007 10 19 704 0.6- 0.2+ |
| 1998 09 25 691 0.2- 0.2+ | 2007 10 07 703 0.6- 0.3+   | 2007 10 19 704 0.0 0.1+  |
| 1998 09 25 691 0.0 0.3+  | 2007 10 07 703 (2.2- 0.0 ) | 2007 10 19 704 0.6- 1.5+ |
| 2001 03 20 691 0.0 0.7+  | 2007 10 07 703 1.3- 0.0    | 2007 10 19 G96 0.2- 0.1- |
| 2001 03 20 691 0.1- 0.4+ | 2007 10 07 703 1.4- 0.4+   | 2007 10 19 G96 0.0 0.1-  |
| 2001 03 20 691 0.2+ 0.4+ | 2007 10 08 G96 0.3+ 0.1-   | 2007 10 19 G96 0.1+ 0.0  |
| 2002 08 05 644 0.3- 0.2+ | 2007 10 08 G96 0.0 0.1-    | 2007 10 19 G96 0.0 0.1-  |
| 2002 08 05 644 0.1- 0.6+ | 2007 10 08 G96 0.2- 0.2-   | 2007 11 18 G96 0.6+ 0.0  |
| 2002 08 05 644 0.6+ 0.4+ | 2007 10 08 G96 0.0 0.0     | 2007 11 18 G96 0.2+ 0.2- |
| 2005 03 09 G96 0.2+ 0.1+ | 2007 10 11 704 (1.6+ 0.1-) | 2007 11 18 G96 0.5+ 0.2- |
| 2005 03 09 G96 0.2+ 0.2- | 2007 10 11 704 0.1+ 0.4+   | 2007 11 18 G96 0.1+ 0.3- |
| 2005 03 09 G96 0.1- 0.2- | 2007 10 11 704 0.1+ 0.1-   | 2007 11 18 G96 0.0 0.1+  |
| 2005 03 09 G96 0.1- 0.3- | 2007 10 11 704 0.8+ 0.4-   | 2007 11 18 G96 0.3+ 0.1+ |
| 2005 04 11 691 0.4+ 0.9+ | 2007 10 16 A50 0.2+ 1.2+   | 2007 11 18 G96 0.1+ 0.2- |
| 2005 04 11 691 0.2+ 0.3+ | 2007 10 16 A50 1.4- 1.1+   | 2007 11 18 G96 0.2- 0.2+ |
| 2005 04 11 691 0.1- 0.2+ | 2007 10 16 A50 0.8+ 0.2+   | 2007 11 18 G96 0.5+ 0.9+ |
| 2007 09 12 G96 0.2+ 0.4- | 2007 10 16 A50 0.7- 0.8+   | 2007 11 18 G96 0.1+ 0.2+ |
| 2007 09 12 G96 0.2+ 0.0  | 2007 10 19 704 0.3- 0.1+   | 2007 11 18 G96 0.2+ 0.2- |
| 2007 09 12 G96 0.4+ 0.2- | 2007 10 19 704 0.1+ 0.6+   | 2007 11 18 G96 0.3- 0.2+ |

**2007 TR<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.91194   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29369954 | $\omega$ 278.47748 | +0.91499949   | +0.39348560 |
| <i>a</i> | 2.2414748  | $\Omega$ 58.39392  | -0.31659558   | +0.83721345 |
| <i>e</i> | 0.1794111  | <i>i</i> 6.00751   | -0.25008635   | +0.37979299 |
| <i>P</i> | 3.36       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2000 08 07 608 0.1+ 0.1- | 2007 10 13 691 0.0 0.1-    | 2007 11 09 G96 0.0 0.1-  |
| 2000 08 07 608 0.0 0.1-  | 2007 10 30 703 (1.5+ 0.6+) | 2007 11 09 G96 0.1+ 0.0  |
| 2000 08 07 608 0.0 0.1+  | 2007 10 30 703 0.4+ 0.2-   | 2007 11 09 G96 0.1- 0.1- |
| 2004 12 13 691 0.1+ 0.2- | 2007 10 30 703 0.2- 0.4+   | 2007 11 10 H55 0.4+ 0.5+ |
| 2004 12 13 691 0.3+ 0.2- | 2007 10 30 703 0.3- 0.2-   | 2007 11 10 H55 0.1+ 0.7+ |
| 2004 12 13 691 0.4- 0.1+ | 2007 11 05 704 0.4+ 0.6-   | 2007 11 10 H55 0.3+ 0.6+ |
| 2007 10 07 703 0.5+ 0.6+ | 2007 11 05 704 0.8+ 0.4+   | 2007 11 14 704 0.2- 0.6+ |
| 2007 10 07 703 0.7+ 0.4+ | 2007 11 05 704 0.5+ 0.6-   | 2007 11 14 704 0.4+ 0.1+ |
| 2007 10 07 703 0.7- 0.1- | 2007 11 05 704 0.3+ 0.5-   | 2007 11 14 704 0.6- 0.5- |
| 2007 10 07 703 0.9- 0.6+ | 2007 11 07 704 0.1+ 0.9+   | 2007 11 14 704 0.3- 0.2- |
| 2007 10 08 G96 0.1+ 0.1- | 2007 11 07 704 0.7+ 0.8+   | 2007 12 05 704 0.5- 0.9+ |
| 2007 10 08 G96 0.0 0.2-  | 2007 11 07 704 0.2+ 0.2-   | 2007 12 05 704 0.8- 0.2- |
| 2007 10 08 G96 0.1- 0.3- | 2007 11 07 704 0.1- 0.6+   | 2007 12 05 704 0.5+ 0.3+ |
| 2007 10 08 G96 0.1+ 0.2- | 2007 11 07 704 0.5+ 0.8+   | 2007 12 05 704 0.2- 0.3+ |
| 2007 10 09 691 0.1- 0.1+ | 2007 11 07 703 0.2+ 0.2+   | 2007 12 06 G96 0.0 0.3-  |
| 2007 10 09 691 0.5- 0.1- | 2007 11 07 703 0.8- 0.5+   | 2007 12 06 G96 0.2- 0.2- |
| 2007 10 09 691 0.0 0.0   | 2007 11 07 703 0.2- 0.1+   | 2007 12 06 G96 0.1+ 0.3- |
| 2007 10 13 691 0.6- 0.1+ | 2007 11 07 703 0.6- 0.4+   | 2007 12 06 G96 0.1- 0.2- |
| 2007 10 13 691 0.8+ 1.2- | 2007 11 09 G96 0.1+ 0.0    |                          |

**2007 TU<sub>45</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 308.14293  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21633024 | $\omega$ 276.26906 | -0.24307159   | -0.96978461 |
| <i>a</i> | 2.7482605  | $\Omega$ 187.89219 | +0.93913326   | -0.22990489 |
| <i>e</i> | 0.1165231  | <i>i</i> 8.72670   | +0.24278577   | -0.08161827 |
| <i>P</i> | 4.56       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1993 09 18 691 0.2- 0.1- | 2007 10 07 703 1.3- 0.2+ | 2007 11 07 704 0.4+ 0.6+ |
| 1993 09 18 691 0.1+ 0.1- | 2007 10 08 G96 0.4+ 0.4- | 2007 11 07 703 1.3- 0.3+ |
| 1993 09 18 691 0.1+ 0.4- | 2007 10 08 G96 0.4+ 0.5- | 2007 11 07 703 0.8- 0.3- |
| 2000 05 04 645 0.0 0.3+  | 2007 10 08 G96 0.4+ 0.2- | 2007 11 07 704 0.3+ 0.6+ |
| 2000 05 04 645 0.1- 0.3+ | 2007 10 08 G96 0.4+ 0.3- | 2007 11 11 699 0.3+ 0.1+ |
| 2002 09 14 644 0.0 0.3+  | 2007 10 09 691 0.2+ 0.3+ | 2007 11 11 699 0.9+ 1.3- |
| 2002 09 14 644 0.2+ 0.0  | 2007 10 09 691 0.2- 0.2- | 2007 11 11 699 0.3+ 0.8- |
| 2002 09 14 644 0.0 0.6+  | 2007 10 09 691 0.3+ 0.3- | 2007 11 11 699 0.2+ 0.5- |
| 2004 04 13 645 0.0 0.0   | 2007 10 13 704 1.1- 0.8+ | 2007 11 12 704 0.4- 0.1+ |
| 2004 04 13 645 0.2+ 0.0  | 2007 10 13 704 1.1- 1.1+ | 2007 11 12 704 0.1- 1.1+ |
| 2004 04 15 645 0.1+ 0.0  | 2007 10 13 704 0.7- 0.8- | 2007 11 12 704 0.7- 0.4+ |
| 2004 04 15 645 0.1+ 0.0  | 2007 11 04 704 0.4+ 1.3+ | 2007 11 12 704 0.8+ 0.0  |
| 2004 04 16 645 0.1+ 0.0  | 2007 11 04 704 0.9- 0.1- | 2007 11 12 704 0.1- 0.4+ |
| 2004 04 16 645 0.1+ 0.1- | 2007 11 04 704 0.9+ 0.1+ | 2007 11 18 703 0.1+ 0.1+ |
| 2005 05 14 691 0.1+ 0.7+ | 2007 11 04 704 0.2- 0.1- | 2007 11 18 703 1.3- 0.3- |
| 2005 05 14 691 0.1+ 0.6+ | 2007 11 07 704 0.0 0.1-  | 2007 11 18 703 0.7- 0.5+ |
| 2005 05 14 691 0.1+ 0.8+ | 2007 11 07 704 0.3+ 0.2+ | 2007 11 18 703 1.6- 0.3- |
| 2007 10 07 703 1.0+ 0.2- | 2007 11 07 704 0.0 0.1+  | 2007 11 18 H07 0.4- 0.3+ |
| 2007 10 07 703 1.5+ 0.4- | 2007 11 07 703 0.2- 0.3+ | 2007 11 18 H07 2.0+ 0.8+ |
| 2007 10 07 703 0.2- 0.4- | 2007 11 07 703 0.7+ 0.3- | 2007 11 18 H07 0.5+ 0.5+ |

**2007 TW<sub>45</sub> = 1996 JW<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.06797   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21321861 | $\omega$ 310.17473 | +0.96140002   | -0.24991569 |
| <i>a</i> | 2.7749339  | $\Omega$ 64.57918  | +0.27484663   | +0.85245139 |
| <i>e</i> | 0.0615900  | <i>i</i> 7.32276   | +0.01301284   | +0.45920450 |
| <i>P</i> | 4.62       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 1996 05 11 691 0.7+ 0.6+   | 2007 10 07 703 0.1+ 1.1+ | 2007 11 07 703 1.1- 0.6- |
| 1996 05 11 691 0.5+ 0.8+   | 2007 10 08 G96 0.1+ 0.3- | 2007 11 11 699 0.5+ 0.3+ |
| 1996 05 11 691 0.3+ 1.3+   | 2007 10 08 G96 0.1- 0.1+ | 2007 11 11 699 0.2+ 0.6- |
| 1996 05 23 691 0.0 0.5-    | 2007 10 08 G96 0.0 0.0   | 2007 11 11 699 0.2- 1.5- |
| 1996 05 23 691 0.4- 0.3+   | 2007 10 08 G96 0.0 0.0   | 2007 11 11 699 1.3- 0.6- |
| 1996 05 23 691 0.5+ 1.0+   | 2007 10 30 703 1.4+ 0.2- | 2007 11 14 704 0.6+ 1.4+ |
| 2003 12 28 691 0.1+ 0.3-   | 2007 10 30 703 0.3- 0.1- | 2007 11 14 704 0.1+ 0.3+ |
| 2003 12 28 691 0.1- 0.1-   | 2007 10 30 703 0.9- 0.9+ | 2007 11 14 704 0.0 1.0+  |
| 2003 12 28 691 0.1+ 0.1-   | 2007 10 30 703 0.4- 0.6+ | 2007 11 14 704 0.5+ 0.8+ |
| 2005 04 04 703 0.6- 0.2-   | 2007 11 02 G96 0.2- 0.1- | 2007 11 14 704 0.1- 0.2+ |
| 2005 04 04 703 1.3+ 1.2+   | 2007 11 02 G96 0.3- 0.1- | 2007 11 17 703 1.0- 0.5+ |
| 2005 04 04 703 (2.8+ 0.1+) | 2007 11 02 G96 0.3- 0.1- | 2007 11 17 703 0.5- 0.4+ |
| 2005 04 04 703 0.3- 0.2-   | 2007 11 02 G96 0.5- 0.1+ | 2007 11 17 703 0.1- 0.3+ |
| 2007 10 07 703 0.8- 0.7-   | 2007 11 07 703 0.2+ 0.2+ | 2007 11 17 703 0.9+ 0.2+ |
| 2007 10 07 703 0.7+ 1.6+   | 2007 11 07 703 0.3+ 0.3- |                          |
| 2007 10 07 703 0.6+ 0.6-   | 2007 11 07 703 0.2- 0.1+ |                          |

**2007 TE<sub>47</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.61995  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29230138 | $\omega$ 168.17731 | +0.86357987   | -0.50095411 |
| <i>a</i> | 2.2486169  | $\Omega$ 222.04467 | +0.45536269   | +0.82360882 |
| <i>e</i> | 0.1576731  | <i>i</i> 4.90182   | +0.21650547   | +0.26592010 |
| <i>P</i> | 3.37       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

2007 DEC. 24

M.P.O. 129839

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1997 11 30 691 | 0.3− | 0.1− | 2007 10 15 703 | 0.2+ | 0.0  | 2007 11 01 704 | 0.4− | 0.7− |
| 1997 11 30 691 | 0.1+ | 0.2− | 2007 10 15 704 | 0.1+ | 0.3− | 2007 11 01 704 | 0.4− | 1.1+ |
| 1997 11 30 691 | 0.1+ | 0.4− | 2007 10 15 703 | 0.1+ | 0.3− | 2007 11 01 704 | 0.7+ | 0.2+ |
| 1998 01 18 691 | 0.1− | 0.1+ | 2007 10 15 703 | 0.9+ | 0.0  | 2007 11 06 704 | 0.0  | 0.8+ |
| 1998 01 18 691 | 0.4+ | 0.1+ | 2007 10 15 704 | 0.2+ | 0.4+ | 2007 11 06 704 | 0.1+ | 1.2+ |
| 1998 01 18 691 | 0.1+ | 0.1+ | 2007 10 15 703 | 0.1+ | 1.1+ | 2007 11 06 704 | 0.7+ | 0.9− |
| 2006 04 30 691 | 0.1− | 0.3+ | 2007 10 16 691 | 0.5− | 0.0  | 2007 11 06 704 | 1.5− | 1.2− |
| 2006 04 30 691 | 0.2+ | 0.2+ | 2007 10 16 691 | 0.3− | 0.2− | 2007 11 06 704 | 0.3− | 0.1+ |
| 2006 04 30 691 | 0.1+ | 0.2+ | 2007 10 16 691 | 0.2− | 0.1− | 2007 11 12 703 | 0.1− | 0.2+ |
| 2007 10 04 691 | 0.0  | 0.1+ | 2007 10 18 691 | 0.1− | 0.3− | 2007 11 12 703 | 0.8− | 0.3+ |
| 2007 10 04 691 | 0.1− | 0.0  | 2007 10 18 691 | 0.0  | 0.3− | 2007 11 12 703 | 0.1+ | 0.3− |
| 2007 10 04 691 | 0.1− | 0.3− | 2007 10 18 691 | 0.0  | 0.2− | 2007 11 12 703 | 0.6− | 0.4+ |
| 2007 10 08 691 | 0.1− | 0.0  | 2007 10 19 704 | 0.9+ | 0.5+ | 2007 11 15 704 | 0.4+ | 0.9+ |
| 2007 10 08 691 | 0.0  | 0.2− | 2007 10 19 704 | 1.3+ | 0.0  | 2007 11 15 704 | 0.5− | 0.3+ |
| 2007 10 08 691 | 0.1− | 0.1− | 2007 10 19 704 | 1.3+ | 0.7+ | 2007 11 15 704 | 0.0  | 0.5+ |
| 2007 10 12 691 | 0.3− | 0.4− | 2007 10 19 704 | 1.4+ | 0.1+ | 2007 11 15 704 | 0.2− | 0.1+ |
| 2007 10 12 691 | 0.5− | 0.3− | 2007 10 20 703 | 0.1+ | 0.2+ | 2007 11 15 704 | 0.1− | 0.1+ |
| 2007 10 12 691 | 0.4− | 0.0  | 2007 10 20 703 | 0.3+ | 0.2+ | 2007 12 05 704 | 0.8− | 0.8+ |
| 2007 10 12 704 | 0.5+ | 1.2+ | 2007 10 20 703 | 0.5+ | 0.4+ | 2007 12 05 704 | 0.1− | 1.3+ |
| 2007 10 12 704 | 0.6+ | 0.9+ | 2007 10 20 703 | 0.3+ | 0.3+ | 2007 12 05 704 | 0.5− | 0.5+ |
| 2007 10 12 704 | 0.8+ | 0.6+ | 2007 10 30 703 | 0.1− | 0.7− | 2007 12 05 704 | 0.1− | 0.9+ |
| 2007 10 12 704 | 0.9+ | 1.1+ | 2007 10 30 703 | 1.2+ | 0.2− | 2007 12 05 704 | 0.2+ | 0.3+ |
| 2007 10 12 704 | 0.8+ | 1.0+ | 2007 10 30 703 | 0.2− | 0.2+ | 2007 12 06 G96 | 0.3− | 0.0  |
| 2007 10 15 704 | 0.4+ | 0.2− | 2007 10 30 703 | 0.1− | 0.4− | 2007 12 06 G96 | 0.2− | 0.1− |
| 2007 10 15 704 | 0.2+ | 0.1− | 2007 11 01 704 | 0.4+ | 0.1+ | 2007 12 06 G96 | 0.1− | 0.0  |
| 2007 10 15 704 | 0.4+ | 0.4− | 2007 11 01 704 | 0.3+ | 0.6+ | 2007 12 06 G96 | 0.0  | 0.0  |

2007 TC<sub>48</sub> = 2005 ED<sub>295</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 152.41797  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23173997 | $\omega$ | 223.43522 | −0.54755086 | +0.83595378 |
| $a$ | 2.6250370  | $\Omega$ | 13.50442  | −0.71785101 | −0.44654999 |
| $e$ | 0.0141188  | $i$      | 9.11772   | −0.42997439 | −0.31902097 |
| $P$ | 4.25       | $H$      | 16.5      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2001 03 29 691 | 0.3+ | 0.4+ | 2005 03 12 G96 | 0.0   | 0.5−  | 2007 10 08 691 | 0.1+ | 0.3+ |
| 2001 03 29 691 | 0.2+ | 0.4+ | 2005 03 16 703 | 0.6−  | 0.3−  | 2007 10 08 691 | 1.3− | 0.4+ |
| 2001 03 29 691 | 0.2+ | 0.3+ | 2005 03 16 703 | 0.7−  | 0.7+  | 2007 10 20 691 | 0.2− | 0.3+ |
| 2003 12 01 691 | 0.1+ | 0.1− | 2005 03 16 703 | (2.0− | 2.3+) | 2007 10 20 691 | 0.3− | 0.2+ |
| 2003 12 01 691 | 0.1+ | 0.1− | 2005 03 16 703 | 0.9+  | 1.2+  | 2007 10 20 691 | 0.1− | 0.3+ |
| 2003 12 01 691 | 0.0  | 0.3− | 2007 10 04 691 | 0.0   | 0.2+  | 2007 10 20 703 | 0.2+ | 0.4− |
| 2005 03 12 G96 | 0.3+ | 0.2− | 2007 10 04 691 | 0.1−  | 0.3+  | 2007 10 20 703 | 0.7+ | 0.4+ |
| 2005 03 12 G96 | 0.3+ | 0.7− | 2007 10 04 691 | 0.0   | 0.1+  | 2007 10 20 703 | 0.2+ | 0.1+ |
| 2005 03 12 G96 | 0.2− | 0.4− | 2007 10 08 691 | 0.6−  | 0.1+  | 2007 10 20 703 | 0.6+ | 0.9− |

2007 TS<sub>48</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 41.14491   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.30049153 | $\omega$ | 99.25018  | +0.90567918 | +0.42219082 |
| $a$ | 2.2075704  | $\Omega$ | 235.78606 | −0.40504828 | +0.83467002 |
| $e$ | 0.1645266  | $i$      | 2.68455   | −0.12522424 | +0.35366775 |
| $P$ | 3.28       | $H$      | 17.6      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1997 10 26 688 | 0.1+ | 0.1− | 2007 10 12 704 | 0.2+ | 0.2+ | 2007 10 20 703 | 0.4+ | 1.3+ |
| 1997 10 26 688 | 0.1− | 0.2+ | 2007 10 12 704 | 1.3+ | 0.5− | 2007 10 30 703 | 1.0− | 0.6− |
| 2001 12 25 291 | 0.1+ | 0.0  | 2007 10 12 704 | 0.4+ | 0.2+ | 2007 10 30 703 | 0.2+ | 0.7− |
| 2001 12 25 291 | 0.1− | 0.0  | 2007 10 14 704 | 0.3+ | 0.1− | 2007 10 30 703 | 1.2+ | 0.3+ |
| 2001 12 25 291 | 0.5+ | 0.6+ | 2007 10 14 704 | 0.2+ | 0.4− | 2007 10 30 703 | 1.2+ | 0.8+ |
| 2001 12 25 291 | 0.1− | 0.1+ | 2007 10 14 704 | 0.2− | 0.7+ | 2007 11 02 G96 | 0.7+ | 0.3+ |
| 2001 12 25 291 | 0.3− | 0.4+ | 2007 10 14 704 | 0.1− | 0.2+ | 2007 11 02 G96 | 0.7+ | 0.2+ |
| 2001 12 25 291 | 0.2+ | 0.2+ | 2007 10 15 300 | 0.4+ | 0.7+ | 2007 11 02 G96 | 0.3+ | 0.0  |
| 2003 05 10 291 | 0.4+ | 0.8+ | 2007 10 15 300 | 1.2+ | 0.6+ | 2007 11 02 G96 | 0.5+ | 0.0  |
| 2003 05 10 291 | 0.2+ | 0.9+ | 2007 10 15 300 | 0.3+ | 0.1− | 2007 11 03 699 | 0.1− | 1.1− |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 05 10 291 | 0.2+ | 1.1+ | 2007 10 15 300 | 0.5+ | 0.3− | 2007 11 03 699 | 1.3+ | 1.5+ |
| 2007 10 04 691 | 0.4− | 0.1+ | 2007 10 15 300 | 0.5+ | 0.5+ | 2007 11 03 699 | 1.0− | 0.6+ |
| 2007 10 04 691 | 0.2− | 0.1+ | 2007 10 15 300 | 0.1+ | 0.2+ | 2007 11 03 699 | 0.4+ | 0.7+ |
| 2007 10 04 691 | 0.5− | 0.2− | 2007 10 15 300 | 0.1+ | 0.2+ | 2007 11 04 G96 | 0.3+ | 0.2− |
| 2007 10 08 691 | 0.7− | 0.1− | 2007 10 16 300 | 0.2− | 0.2+ | 2007 11 04 G96 | 0.0  | 0.3− |
| 2007 10 08 691 | 0.3− | 0.7− | 2007 10 16 300 | 0.4+ | 0.3− | 2007 11 04 G96 | 0.3+ | 0.4− |
| 2007 10 08 691 | 0.3− | 0.3+ | 2007 10 16 300 | 0.2+ | 0.6+ | 2007 11 04 G96 | 0.1+ | 0.2− |
| 2007 10 11 704 | 0.8+ | 0.2− | 2007 10 16 300 | 0.3− | 0.6− | 2007 11 18 G96 | 0.3+ | 0.0  |
| 2007 10 11 704 | 0.9+ | 0.7+ | 2007 10 16 300 | 0.0  | 0.3+ | 2007 11 18 G96 | 0.1+ | 0.0  |
| 2007 10 11 704 | 0.1+ | 1.4+ | 2007 10 16 300 | 0.7− | 0.4+ | 2007 11 18 G96 | 0.1− | 0.3− |
| 2007 10 11 704 | 0.7+ | 1.0+ | 2007 10 20 691 | 0.3− | 0.0  | 2007 11 18 G96 | 0.3+ | 0.1+ |
| 2007 10 12 691 | 0.3− | 0.1+ | 2007 10 20 691 | 0.3− | 0.1− | 2007 12 15 G96 | 0.1+ | 0.1− |
| 2007 10 12 691 | 0.2− | 0.1+ | 2007 10 20 691 | 0.3− | 0.1+ | 2007 12 15 G96 | 0.5− | 0.0  |
| 2007 10 12 691 | 0.4− | 0.1− | 2007 10 20 703 | 0.2+ | 0.3+ | 2007 12 15 G96 | 0.2+ | 0.1− |
| 2007 10 12 704 | 0.1− | 0.4+ | 2007 10 20 703 | 0.1+ | 1.1+ | 2007 12 15 G96 | 0.2+ | 0.1− |
| 2007 10 12 704 | 1.5+ | 0.2+ | 2007 10 20 703 | 0.1− | 1.3+ |                |      |      |

2007 TN<sub>49</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 93.62626   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27000945 | $\omega$ | 6.95131   | +0.25371599 | +0.96702278 |
| $a$ | 2.3707372  | $\Omega$ | 277.74800 | −0.88853849 | +0.22390962 |
| $e$ | 0.1156456  | $i$      | 1.28677   | −0.38226632 | +0.12137304 |
| $P$ | 3.65       | $H$      | 17.0      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 04 30 699 | 0.1− | 0.0  | 2007 09 14 G96 | 0.8+ | 0.1− | 2007 10 12 691 | 0.1+ | 0.0  |
| 2006 04 30 699 | 1.5+ | 0.5+ | 2007 09 14 G96 | 1.1+ | 0.0  | 2007 10 20 691 | 0.4− | 0.2+ |
| 2006 04 30 699 | 0.3+ | 0.0  | 2007 10 04 691 | 0.4+ | 0.3+ | 2007 10 20 691 | 0.8− | 0.4+ |
| 2006 04 30 699 | 0.2+ | 0.4+ | 2007 10 04 691 | 0.0  | 1.3− | 2007 10 20 691 | 0.4− | 0.1+ |
| 2006 05 31 G96 | 0.6− | 0.1+ | 2007 10 04 691 | 0.5+ | 0.0  | 2007 11 18 G96 | 0.3+ | 0.0  |
| 2006 05 31 G96 | 0.2− | 0.1+ | 2007 10 08 691 | 0.1− | 0.3+ | 2007 11 18 G96 | 0.6+ | 0.1+ |
| 2006 05 31 G96 | 0.3− | 0.3+ | 2007 10 08 691 | 0.0  | 0.2+ | 2007 11 18 G96 | 1.2+ | 0.2− |
| 2006 05 31 G96 | 0.5− | 0.1+ | 2007 10 08 691 | 0.2− | 0.3+ | 2007 11 18 G96 | 0.1− | 0.1− |
| 2007 09 14 G96 | 1.0+ | 0.2− | 2007 10 12 691 | 0.0  | 0.1+ |                |      |      |
| 2007 09 14 G96 | 0.9+ | 0.1− | 2007 10 12 691 | 0.5− | 0.1− |                |      |      |

2007 TJ<sub>50</sub> = 2005 EY<sub>158</sub> = 2005 GL<sub>120</sub>

Id. Minor Planet Center (*MPO* 128378; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 89.37924   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20153056 | $\omega$ | 301.94714 | +0.36632255 | +0.93046749 |
| $a$ | 2.8812135  | $\Omega$ | 349.53639 | −0.84183434 | +0.32858979 |
| $e$ | 0.0765392  | $i$      | 1.94609   | −0.39638710 | +0.16204627 |
| $P$ | 4.89       | $H$      | 16.5      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 09 G96 | 0.5− | 0.1+ | 2007 10 04 691 | 0.1+ | 0.1− | 2007 10 20 691 | 0.5− | 0.5+ |
| 2005 03 09 G96 | 0.3− | 0.3− | 2007 10 04 691 | 0.2+ | 0.0  | 2007 11 02 G96 | 0.5+ | 0.2+ |
| 2005 03 09 G96 | 0.6− | 0.3− | 2007 10 04 691 | 0.2+ | 0.0  | 2007 11 02 G96 | 0.2+ | 0.3− |
| 2005 03 09 G96 | 0.3− | 0.0  | 2007 10 08 691 | 0.1− | 0.5− | 2007 11 02 G96 | 0.4+ | 0.0  |
| 2005 03 12 691 | 0.7+ | 0.2+ | 2007 10 08 691 | 0.3− | 0.0  | 2007 11 02 G96 | 0.5+ | 0.1− |
| 2005 03 12 691 | 0.5+ | 0.1+ | 2007 10 08 691 | 0.2+ | 0.1+ | 2007 11 04 G96 | 0.1− | 0.1− |
| 2005 03 12 691 | 0.6+ | 0.1+ | 2007 10 12 691 | 0.1− | 0.1+ | 2007 11 04 G96 | 0.5− | 0.1+ |
| 2005 04 05 G96 | 0.3+ | 0.3− | 2007 10 12 691 | 0.0  | 0.1− | 2007 11 04 G96 | 0.3− | 0.4− |
| 2005 04 05 G96 | 0.0  | 0.2+ | 2007 10 12 691 | 0.2+ | 0.9+ | 2007 11 04 G96 | 0.0  | 0.2− |
| 2005 04 05 G96 | 0.5− | 0.2− | 2007 10 20 691 | 0.3− | 0.0  |                |      |      |
| 2005 04 05 G96 | 0.1+ | 0.3+ | 2007 10 20 691 | 0.2− | 0.2− |                |      |      |

**2007 TT<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.91077   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21829045 | $\omega$ | 285.83400 | +0.54504938   | +0.83716574 |
| <i>a</i> | 2.7317831  | $\Omega$ | 17.42344  | -0.69919845   | +0.48385928 |
| <i>e</i> | 0.1317530  | <i>i</i> | 8.74966   | -0.46264749   | +0.25501709 |
| <i>P</i> | 4.52       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 30 | 608 | 0.3+ | 0.1- | 2007 10 08 | 691 | 0.3- | 0.3- | 2007 10 14 | 704 | 0.3+  | 0.2+  |
| 2002 07 30 | 608 | 0.1+ | 0.5+ | 2007 10 12 | 691 | 0.6- | 0.3- | 2007 10 14 | 704 | 0.4+  | 0.0   |
| 2002 07 30 | 608 | 0.4- | 0.0  | 2007 10 12 | 691 | 0.4- | 0.3- | 2007 10 14 | 704 | 0.2+  | 0.3-  |
| 2002 08 30 | 644 | 0.2+ | 0.2+ | 2007 10 12 | 691 | 0.3- | 0.3- | 2007 10 14 | 704 | 0.7-  | 0.6-  |
| 2002 08 30 | 644 | 0.2- | 0.1- | 2007 10 12 | 704 | 0.6+ | 0.6+ | 2007 10 15 | 703 | 0.5+  | 0.3-  |
| 2002 08 30 | 644 | 0.1- | 0.5- | 2007 10 12 | 704 | 0.5+ | 1.6+ | 2007 10 15 | 703 | 0.5+  | 0.6+  |
| 2007 09 05 | G96 | 0.4+ | 0.1- | 2007 10 12 | 704 | 0.6+ | 0.3+ | 2007 10 15 | 703 | (3.4+ | 0.4+) |
| 2007 09 05 | G96 | 0.4+ | 0.4- | 2007 10 12 | 704 | 0.0  | 0.5+ | 2007 10 15 | 703 | (2.3+ | 0.2+) |
| 2007 09 05 | G96 | 0.5+ | 0.1- | 2007 10 13 | 704 | 1.4+ | 1.0+ | 2007 10 16 | 691 | 0.5-  | 0.6-  |
| 2007 10 04 | 691 | 0.4- | 0.7- | 2007 10 13 | 704 | 0.2+ | 0.2+ | 2007 10 16 | 691 | 0.3-  | 0.0   |
| 2007 10 04 | 691 | 0.2- | 0.3- | 2007 10 13 | 704 | 0.1+ | 1.1+ | 2007 10 16 | 691 | 0.3-  | 0.7-  |
| 2007 10 04 | 691 | 0.2- | 0.2- | 2007 10 13 | 704 | 0.6- | 0.7+ | 2007 10 20 | 691 | 0.4-  | 0.3-  |
| 2007 10 08 | 691 | 0.3- | 0.4- | 2007 10 13 | 704 | 0.5+ | 0.1- | 2007 10 20 | 691 | 0.2-  | 0.3-  |
| 2007 10 08 | 691 | 0.4- | 0.4- | 2007 10 14 | 704 | 0.7- | 0.7+ | 2007 10 20 | 691 | 0.2-  | 0.5-  |

**2007 TH<sub>51</sub> = 2007 UQ<sub>66</sub>**Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.13045   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27410414 | $\omega$ | 130.94251 | +0.88515314   | +0.46458602 |
| <i>a</i> | 2.3470679  | $\Omega$ | 201.41264 | -0.44529711   | +0.82974208 |
| <i>e</i> | 0.1648216  | <i>i</i> | 4.04663   | -0.13496073   | +0.30933462 |
| <i>P</i> | 3.60       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 12 01 | 691 | 0.0  | 0.1- | 2007 10 08 | 691 | 0.2-  | 0.0   | 2007 10 30 | G96 | 0.1+  | 0.0   |
| 2000 12 01 | 691 | 0.0  | 0.1- | 2007 10 08 | 691 | 0.2-  | 0.2+  | 2007 10 30 | G96 | 0.1+  | 0.1+  |
| 2000 12 01 | 691 | 0.0  | 0.2- | 2007 10 09 | 691 | 0.0   | 0.0   | 2007 10 30 | G96 | 0.4+  | 0.0   |
| 2006 03 25 | 691 | 0.0  | 0.7+ | 2007 10 09 | 691 | 0.1+  | 0.1+  | 2007 10 30 | G96 | 0.1-  | 0.0   |
| 2006 03 25 | 691 | 0.2+ | 0.3+ | 2007 10 09 | 691 | 0.4-  | 0.3+  | 2007 11 05 | 704 | 1.3-  | 0.6+  |
| 2006 03 25 | 691 | 0.4+ | 0.8+ | 2007 10 13 | 691 | 0.1+  | 0.1-  | 2007 11 05 | G96 | 0.2-  | 0.1+  |
| 2006 04 19 | G96 | 0.1- | 0.1+ | 2007 10 13 | 691 | 0.3-  | 0.1-  | 2007 11 05 | 704 | 0.1+  | 0.5+  |
| 2006 04 19 | G96 | 0.1+ | 0.2- | 2007 10 13 | 691 | 0.1-  | 0.0   | 2007 11 05 | G96 | 0.4-  | 0.0   |
| 2006 04 19 | G96 | 0.3- | 0.3- | 2007 10 19 | 300 | 0.5+  | 1.0-  | 2007 11 05 | G96 | 0.0   | 0.1+  |
| 2006 04 19 | G96 | 0.2- | 0.1+ | 2007 10 19 | 300 | 1.3+  | 0.5-  | 2007 11 05 | 704 | 0.7-  | 0.2-  |
| 2007 09 25 | G96 | 1.1+ | 0.0  | 2007 10 19 | 300 | 0.5+  | 0.3+  | 2007 11 05 | G96 | 0.4+  | 0.2-  |
| 2007 09 25 | G96 | 0.1+ | 0.2- | 2007 10 19 | 300 | 0.2+  | 0.7+  | 2007 11 05 | 704 | 0.4+  | 1.1+  |
| 2007 09 25 | G96 | 0.5+ | 0.9- | 2007 10 20 | 703 | (0.4+ | 1.6+) | 2007 11 12 | 703 | 1.0-  | 0.8-  |
| 2007 09 25 | G96 | 0.0  | 0.4- | 2007 10 20 | 703 | 0.0   | 0.1+  | 2007 11 12 | 703 | 1.4-  | 0.7+  |
| 2007 10 04 | 691 | 0.3- | 0.2+ | 2007 10 20 | 703 | 1.1+  | 0.2-  | 2007 11 12 | 703 | (3.1- | 0.0 ) |
| 2007 10 04 | 691 | 0.4- | 0.2+ | 2007 10 20 | 703 | 1.0-  | 0.1-  | 2007 11 12 | 703 | (2.0- | 1.4-) |
| 2007 10 04 | 691 | 0.8+ | 0.5+ | 2007 10 20 | 300 | 1.1+  | 0.6+  |            |     |       |       |
| 2007 10 08 | 691 | 0.2- | 0.1+ | 2007 10 20 | 300 | 1.2+  | 0.9+  |            |     |       |       |

**2007 TT<sub>51</sub> = 2005 JC<sub>183</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.30156   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18194728 | $\omega$ | 164.40711 | +0.93377154   | -0.34194232 |
| <i>a</i> | 3.0844117  | $\Omega$ | 216.14851 | +0.30622186   | +0.91611839 |
| <i>e</i> | 0.0813641  | <i>i</i> | 10.31022  | +0.18519960   | +0.20929059 |
| <i>P</i> | 5.42       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 10 | G96 | 0.2+ | 0.4+ | 2007 10 04 | 691 | 0.1+ | 0.1+ | 2007 10 12 | 691 | (1.8- | 0.4+) |
| 2005 05 10 | G96 | 0.1+ | 0.2- | 2007 10 04 | 691 | 0.0  | 0.0  | 2007 10 20 | 691 | 1.0-  | 0.1-  |
| 2005 05 10 | G96 | 0.0  | 0.3- | 2007 10 04 | 691 | 0.4+ | 0.1+ | 2007 10 20 | 691 | 0.0   | 0.0   |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 10 | G96 | 0.1- | 0.1- | 2007 10 08 | 691 | 0.0  | 0.2+ | 2007 10 20 | 691 | 0.2+ | 0.4- |
| 2005 05 11 | G96 | 0.1- | 0.3- | 2007 10 08 | 691 | 0.0  | 0.1- | 2007 11 17 | G96 | 0.5+ | 0.1- |
| 2005 05 11 | G96 | 0.1- | 0.1+ | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.3+ | 0.3+ |
| 2005 05 11 | G96 | 0.2- | 0.3- | 2007 10 12 | 691 | 0.4+ | 0.0  | 2007 11 17 | G96 | 0.3- | 0.1- |
| 2005 05 11 | G96 | 0.2+ | 0.5+ | 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 17 | G96 | 0.2+ | 0.3+ |

**2007 TV<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.17970   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23435508 | $\omega$ | 6.07354  | +0.94495665   | -0.32683092 |
| <i>a</i> | 2.6054723  | $\Omega$ | 13.03491 | +0.29724081   | +0.83776075 |
| <i>e</i> | 0.0516111  | <i>i</i> | 3.92609  | +0.13676563   | +0.43742253 |
| <i>P</i> | 4.21       | <i>H</i> | 16.5     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 16 | G96 | 0.0  | 0.2- | 2007 10 04 | 691 | 1.4+ | 0.6- | 2007 10 14 | G96 | 0.0  | 0.3- |
| 2005 03 16 | G96 | 0.2+ | 0.1+ | 2007 10 04 | 691 | 0.2- | 0.0  | 2007 10 14 | G96 | 0.3- | 0.3- |
| 2005 03 16 | G96 | 0.1+ | 0.1+ | 2007 10 08 | 691 | 0.2- | 0.3+ | 2007 10 14 | G96 | 0.5- | 0.4- |
| 2005 03 16 | G96 | 0.0  | 0.2+ | 2007 10 08 | 691 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.1+ | 0.1+ |
| 2005 05 10 | G96 | 0.2- | 0.3- | 2007 10 08 | 691 | 0.0  | 0.3+ | 2007 11 11 | G96 | 0.2- | 0.0  |
| 2005 05 10 | G96 | 0.3- | 0.0  | 2007 10 12 | 691 | 0.3- | 0.2+ | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2005 05 10 | G96 | 0.1+ | 0.3- | 2007 10 12 | 691 | 0.4- | 0.4+ | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2005 05 10 | G96 | 0.1- | 0.1+ | 2007 10 12 | 691 | 1.2+ | 0.1+ |            |     |      |      |
| 2007 10 04 | 691 | 0.2- | 0.0  | 2007 10 14 | G96 | 0.2- | 0.3- |            |     |      |      |

**2007 TU<sub>52</sub> = 2007 TX<sub>299</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 271.74409  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27297437 | $\omega$ | 104.00964 | -0.67698354   | -0.73430485 |
| <i>a</i> | 2.3535394  | $\Omega$ | 28.79477  | +0.62895888   | -0.61240459 |
| <i>e</i> | 0.0847648  | <i>i</i> | 5.94594   | +0.38223554   | -0.29284298 |
| <i>P</i> | 3.61       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 01 | 703 | 1.3- | 0.1+ | 2007 10 04 | 691 | 0.2- | 0.4- | 2007 10 16 | 691 | 0.4- | 0.3+ |
| 2005 02 01 | 703 | 0.3+ | 0.7+ | 2007 10 04 | 691 | 0.3- | 0.1- | 2007 10 16 | 691 | 0.0  | 0.5- |
| 2005 02 01 | 703 | 0.6+ | 0.4- | 2007 10 08 | 691 | 0.0  | 0.2+ | 2007 10 20 | 691 | 0.0  | 0.0  |
| 2005 02 01 | 703 | 0.9+ | 0.4+ | 2007 10 08 | 691 | 0.1- | 0.2+ | 2007 10 20 | 691 | 0.2- | 0.2- |
| 2005 03 01 | 703 | 0.1- | 0.1+ | 2007 10 08 | 691 | 0.1+ | 0.1- | 2007 10 20 | 691 | 0.2+ | 0.0  |
| 2005 03 01 | 703 | 1.0- | 0.8- | 2007 10 12 | 691 | 0.0  | 0.1- | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2005 03 01 | 703 | 0.2- | 0.2- | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 07 | G96 | 0.2+ | 0.0  |
| 2005 03 01 | 703 | 0.7+ | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.1+ | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2007 10 04 | 691 | 0.4+ | 0.5+ | 2007 10 16 | 691 | 0.1+ | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.2+ |

**2007 TY<sub>52</sub> = 2007 TA<sub>300</sub>**Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 348.10562  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18106957 | $\omega$ | 193.85913 | +0.64452383   | -0.75979864 |
| <i>a</i> | 3.0943712  | $\Omega$ | 216.12245 | +0.71457410   | +0.63833383 |
| <i>e</i> | 0.0689932  | <i>i</i> | 8.33057   | +0.27197956   | +0.12343394 |
| <i>P</i> | 5.44       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 06 | 691 | 0.1-  | 0.1+  | 2007 10 04 | 691 | 0.4- | 0.3+ | 2007 10 20 | 703 | 0.4+ | 1.0+ |
| 1996 10 06 | 691 | 0.0   | 0.2+  | 2007 10 04 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.1- | 0.3- |
| 2004 03 16 | 691 | 0.0   | 0.1+  | 2007 10 08 | 691 | 0.2+ | 0.7+ | 2007 10 30 | G96 | 0.1+ | 0.1+ |
| 2004 03 16 | 691 | 0.0   | 0.1-  | 2007 10 08 | 691 | 0.2- | 0.4+ | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 2004 03 16 | 691 | 0.0   | 0.1-  | 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.3- |
| 2004 03 23 | 291 | 0.1+  | 0.4+  | 2007 10 12 | 691 | 0.2- | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.1+ |
| 2004 03 23 | 291 | 0.1-  | 0.4+  | 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 04 | G96 | 0.3+ | 0.4+ |
| 2004 03 23 | 291 | 0.2+  | 0.4+  | 2007 10 12 | 691 | 0.2- | 0.0  | 2007 11 04 | G96 | 0.5+ | 0.3+ |
| 2005 05 08 | G96 | 0.5-  | 0.3+  | 2007 10 16 | 691 | 0.1- | 0.1- | 2007 11 04 | G96 | 0.2+ | 0.3+ |
| 2005 05 08 | G96 | (1.8- | 2.2+) | 2007 10 16 | 691 | 0.9- | 0.5+ | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2005 05 08 | G96 | 1.4+  | 0.7+  | 2007 10 16 | 691 | 0.3+ | 0.4+ | 2007 11 18 | G96 | 0.2+ | 0.4- |

## 2007 DEC. 24

M.P.O. 129841

2005 05 08 G96 0.7− 0.3+ 2007 10 20 703 0.1− 0.2+ 2007 11 18 G96 0.2+ 0.5−  
 2007 10 04 691 0.3− 0.4+ 2007 10 20 703 0.6− 1.0− 2007 11 18 G96 0.3− 0.7−

2007 TH<sub>53</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|-------------|----------|
| <i>M</i> | 344.66107  |          | (2000.0)  |             | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.24590429 | $\omega$ | 347.00709 | +0.55317311 |             | −0.83296082 |          |
| <i>a</i> | 2.5232405  | $\Omega$ | 69.40649  | +0.76558452 | +0.50202451 |             |          |
| <i>e</i> | 0.1916554  | <i>i</i> | 0.81154   | +0.32845069 | +0.23269651 |             |          |
| <i>P</i> | 4.01       | <i>H</i> | 18.0      | <i>G</i>    | 0.15        | <i>U</i>    | 3        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1991 11 05 691 | 0.3− | 0.3− | 2007 09 08 G96 | 1.0+ | 0.8− | 2007 10 12 691 | 0.1+ | 0.2− |
| 1991 11 05 691 | 0.1− | 0.6− | 2007 09 08 G96 | 0.2+ | 0.6− | 2007 11 01 G96 | 0.2+ | 0.0  |
| 1991 11 05 691 | 0.5+ | 0.3− | 2007 09 08 G96 | 0.6+ | 0.2− | 2007 11 01 G96 | 0.5+ | 0.2− |
| 1995 12 19 691 | 0.6+ | 0.7− | 2007 09 08 G96 | 0.4+ | 0.3− | 2007 11 01 G96 | 0.2− | 0.4− |
| 1995 12 19 691 | 0.3− | 0.1+ | 2007 10 04 691 | 0.1+ | 0.0  | 2007 11 01 G96 | 1.3+ | 0.0  |
| 1995 12 19 691 | 0.1− | 0.1+ | 2007 10 04 691 | 0.4− | 0.2− | 2007 11 14 704 | 1.0− | 0.1+ |
| 1999 11 15 691 | 0.1+ | 0.4+ | 2007 10 04 691 | 0.3− | 0.1− | 2007 11 14 704 | 0.3− | 1.1+ |
| 1999 11 15 691 | 0.2− | 0.3+ | 2007 10 08 691 | 0.1− | 0.1+ | 2007 11 14 704 | 0.1− | 0.5+ |
| 1999 11 15 691 | 0.2+ | 0.4+ | 2007 10 08 691 | 0.2− | 0.2+ | 2007 11 17 G96 | 0.2− | 0.1+ |
| 2003 10 21 691 | 0.1− | 0.1+ | 2007 10 08 691 | 0.3− | 0.2+ | 2007 11 17 G96 | 0.2− | 0.2− |
| 2003 10 21 691 | 0.1+ | 0.4+ | 2007 10 12 691 | 0.2+ | 0.1+ | 2007 11 17 G96 | 0.3+ | 0.0  |
| 2003 10 21 691 | 0.1+ | 0.1+ | 2007 10 12 691 | 0.0  | 0.1− | 2007 11 17 G96 | 0.3− | 0.3+ |

2007 TW<sub>54</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|-------------|----------|
| <i>M</i> | 43.85472   |          | (2000.0)  |             | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.17724294 | $\omega$ | 121.93803 | +0.95350010 |             | +0.27376718 |          |
| <i>a</i> | 3.1387502  | $\Omega$ | 222.54659 | −0.29829552 | +0.91700635 |             |          |
| <i>e</i> | 0.1176901  | <i>i</i> | 10.74365  | +0.04309682 | +0.29008772 |             |          |
| <i>P</i> | 5.56       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i>    | 3        |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2005 03 17 G96 | 0.1− | 0.2− | 2007 10 18 699 | (1.8+ | 0.9+) | 2007 11 04 G96 | 0.3+  | 0.0   |
| 2005 03 17 G96 | 0.0  | 0.1− | 2007 10 18 699 | 0.3+  | 0.3−  | 2007 11 04 G96 | 0.0   | 0.2−  |
| 2005 03 17 G96 | 0.0  | 0.1+ | 2007 10 18 699 | 0.9+  | 0.0   | 2007 11 07 703 | 0.3−  | 0.4+  |
| 2005 03 17 G96 | 0.6− | 0.9+ | 2007 10 20 703 | 0.1+  | 0.2−  | 2007 11 07 703 | 0.2−  | 0.3−  |
| 2005 06 01 G96 | 0.1+ | 0.8+ | 2007 10 20 703 | 0.3−  | 0.0   | 2007 11 07 703 | 0.1−  | 0.0   |
| 2005 06 01 G96 | 0.3+ | 0.6+ | 2007 10 20 703 | 1.5+  | 1.0+  | 2007 11 07 703 | 0.2+  | 0.1+  |
| 2005 06 01 G96 | 0.2+ | 0.0  | 2007 10 20 703 | 0.5+  | 0.1−  | 2007 11 11 699 | 1.0+  | 0.6−  |
| 2005 06 01 G96 | 0.3+ | 0.1− | 2007 10 21 691 | 0.1−  | 0.3−  | 2007 11 11 699 | 0.5+  | 0.4+  |
| 2007 10 04 691 | 0.1− | 0.1− | 2007 10 21 691 | 0.1−  | 0.4+  | 2007 11 11 699 | 0.1+  | 0.5+  |
| 2007 10 04 691 | 0.1− | 0.2− | 2007 10 21 691 | 0.6−  | 0.2+  | 2007 11 11 699 | 0.9+  | 0.1−  |
| 2007 10 04 691 | 0.2− | 0.3− | 2007 10 30 691 | 0.0   | 0.0   | 2007 11 15 704 | (0.3+ | 2.3+) |
| 2007 10 08 691 | 0.2− | 0.3+ | 2007 10 30 691 | 0.2−  | 0.2+  | 2007 11 15 704 | 0.0   | 0.2+  |
| 2007 10 08 691 | 0.1− | 0.0  | 2007 10 30 691 | 0.2+  | 0.0   | 2007 11 15 704 | (0.0  | 2.0−) |
| 2007 10 08 691 | 0.3− | 0.2+ | 2007 10 30 703 | 0.6−  | 0.3−  | 2007 11 15 704 | 0.1−  | 0.8+  |
| 2007 10 11 704 | 0.7+ | 0.8− | 2007 10 30 703 | 0.0   | 0.1+  | 2007 11 15 704 | 0.1+  | 0.3+  |
| 2007 10 11 704 | 0.5+ | 0.9+ | 2007 10 30 703 | 0.9−  | 1.2+  | 2007 11 17 G96 | 0.3+  | 0.0   |
| 2007 10 11 704 | 0.9+ | 0.5+ | 2007 10 30 703 | 0.9−  | 0.1+  | 2007 11 17 G96 | 0.4−  | 0.0   |
| 2007 10 11 704 | 0.4− | 0.2+ | 2007 11 03 G96 | 1.1+  | 0.3−  | 2007 11 17 G96 | 0.2+  | 0.1−  |
| 2007 10 12 691 | 0.2− | 0.1− | 2007 11 03 G96 | 1.1+  | 0.2−  | 2007 11 17 G96 | 0.2+  | 0.1−  |
| 2007 10 12 691 | 0.1− | 0.2− | 2007 11 03 G96 | 0.6+  | 0.3−  | 2007 11 17 703 | 0.0   | 0.7+  |
| 2007 10 12 691 | 0.0  | 0.1− | 2007 11 03 G96 | 0.6+  | 0.2−  | 2007 11 17 703 | 0.9−  | 0.3−  |
| 2007 10 14 704 | 1.1+ | 0.9+ | 2007 11 03 G96 | 0.8+  | 0.2−  | 2007 11 17 703 | 0.2+  | 0.9−  |
| 2007 10 14 704 | 0.6+ | 0.6+ | 2007 11 03 G96 | 0.7+  | 0.2−  | 2007 11 17 703 | 1.2−  | 0.3+  |
| 2007 10 14 704 | 0.5− | 0.2+ | 2007 11 03 G96 | 0.9+  | 0.2−  | 2007 12 06 G96 | 0.8−  | 0.1+  |
| 2007 10 14 704 | 0.7+ | 1.2+ | 2007 11 03 G96 | 0.8+  | 0.3−  | 2007 12 06 G96 | 0.5−  | 0.1+  |
| 2007 10 16 691 | 0.4− | 0.1− | 2007 11 04 J95 | 0.1+  | 0.1−  | 2007 12 06 G96 | 0.7−  | 0.3−  |
| 2007 10 16 691 | 0.2− | 0.0  | 2007 11 04 J95 | 0.1−  | 0.1−  | 2007 12 06 G96 | 0.5−  | 0.1+  |
| 2007 10 16 691 | 0.2− | 0.3− | 2007 11 04 G96 | 0.4+  | 0.2+  |                |       |       |
| 2007 10 18 699 | 1.7+ | 0.4− | 2007 11 04 G96 | 0.1+  | 0.1−  |                |       |       |

2007 TF<sub>55</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|-------------|----------|
| <i>M</i> | 44.04498   |          | (2000.0)  |             | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.21714857 | $\omega$ | 313.36816 | +0.93466848 |             | +0.32262715 |          |
| <i>a</i> | 2.7413516  | $\Omega$ | 28.79397  | −0.16257243 | +0.76146453 |             |          |
| <i>e</i> | 0.1425412  | <i>i</i> | 18.06408  | −0.31617247 | +0.56221304 |             |          |
| <i>P</i> | 4.54       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i>    | 3        |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 2002 09 17 644 | 0.6−  | 0.4+  | 2007 10 12 J87 | (1.6+ | 0.5−) | 2007 11 02 691 | 0.3− | 0.0  |
| 2002 09 17 644 | 0.5−  | 0.5+  | 2007 10 12 J87 | 1.4+  | 0.6−  | 2007 11 02 704 | 0.1+ | 1.2+ |
| 2002 09 17 644 | 0.5−  | 0.5+  | 2007 10 12 704 | 0.5+  | 0.4+  | 2007 11 02 704 | 0.3+ | 0.4+ |
| 2002 10 09 644 | 0.1+  | 0.5+  | 2007 10 12 704 | 0.2−  | 0.5−  | 2007 11 02 704 | 0.5+ | 0.2+ |
| 2002 10 09 644 | 0.0   | 0.4+  | 2007 10 12 704 | 0.1+  | 0.2−  | 2007 11 02 704 | 0.6+ | 0.2− |
| 2002 10 09 644 | 0.0   | 0.3+  | 2007 10 12 704 | 0.3+  | 0.1−  | 2007 11 02 704 | 0.6+ | 0.8+ |
| 2005 03 04 703 | 0.4+  | 0.5−  | 2007 10 12 704 | 0.2−  | 0.3−  | 2007 11 07 704 | 0.2+ | 0.4− |
| 2005 03 04 703 | 1.9−  | 0.7+  | 2007 10 15 704 | 1.5+  | 0.3+  | 2007 11 07 704 | 0.2− | 0.1− |
| 2005 03 04 703 | (4.0+ | 0.5+) | 2007 10 15 704 | 0.7+  | 0.5−  | 2007 11 07 704 | 0.1+ | 0.3− |
| 2005 03 04 703 | 0.9−  | 1.5+  | 2007 10 15 704 | 0.6+  | 0.1−  | 2007 11 07 704 | 0.2+ | 0.2− |
| 2007 09 09 G96 | 0.4+  | 0.2−  | 2007 10 15 704 | 0.5+  | 0.1+  | 2007 11 07 704 | 0.2− | 0.2+ |
| 2007 09 09 G96 | 0.3+  | 0.2−  | 2007 10 15 691 | 0.1−  | 0.3−  | 2007 11 17 704 | 0.8+ | 0.5+ |
| 2007 09 09 G96 | 0.1+  | 0.0   | 2007 10 15 691 | 0.3−  | 0.1+  | 2007 11 17 704 | 1.0+ | 0.1− |
| 2007 10 04 691 | 0.4−  | 0.1−  | 2007 10 15 691 | 0.6−  | 0.1+  | 2007 11 17 704 | 0.2+ | 0.5+ |
| 2007 10 04 691 | 0.3−  | 0.0   | 2007 10 19 691 | 0.2−  | 0.2+  | 2007 11 17 704 | 0.2+ | 0.7+ |
| 2007 10 04 691 | 0.3−  | 0.0   | 2007 10 19 691 | 0.4+  | 0.6−  | 2007 11 17 704 | 0.4− | 0.4+ |
| 2007 10 08 691 | 0.2−  | 0.2−  | 2007 10 19 691 | 0.4−  | 0.8−  | 2007 11 20 704 | 0.5+ | 0.6+ |
| 2007 10 08 691 | 0.4−  | 0.0   | 2007 10 22 704 | 0.7+  | 1.0+  | 2007 11 20 704 | 0.2+ | 0.8+ |
| 2007 10 08 691 | 0.3−  | 0.0   | 2007 10 22 704 | 0.1−  | 1.1+  | 2007 11 20 704 | 0.3+ | 0.4+ |
| 2007 10 11 J87 | 1.4+  | 0.6−  | 2007 10 22 704 | 0.1+  | 1.0+  | 2007 12 02 704 | 0.9− | 0.2+ |
| 2007 10 11 J87 | 1.1+  | 0.4−  | 2007 10 22 704 | 0.7−  | 1.2+  | 2007 12 02 704 | 0.0  | 0.4− |
| 2007 10 12 J87 | 1.0+  | 0.6−  | 2007 11 02 691 | 0.4−  | 0.1+  | 2007 12 02 704 | 0.2− | 0.4+ |
| 2007 10 12 J87 | 1.4+  | 0.5−  | 2007 11 02 691 | 0.2−  | 0.0   |                |      |      |

2007 TH<sub>55</sub> = 2005 EH<sub>168</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |             |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|-------------|----------|
| <i>M</i> | 33.68689   |          | (2000.0)  |             | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.22386659 | $\omega$ | 49.04993  | +0.99983682 |             | +0.01119221 |          |
| <i>a</i> | 2.6862300  | $\Omega$ | 310.30384 | −0.01601146 | +0.91250913 |             |          |
| <i>e</i> | 0.0852287  | <i>i</i> | 1.06538   | +0.00836437 | +0.40890319 |             |          |
| <i>P</i> | 4.40       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i>    | 4        |

Residuals in seconds of arc

|                |      |      |                |      |       |                |      |      |
|----------------|------|------|----------------|------|-------|----------------|------|------|
| 2005 03 11 G96 | 0.2− | 0.0  | 2007 10 04 691 | (0.0 | 1.7+) | 2007 10 16 691 | 0.1+ | 0.2− |
| 2005 03 11 G96 | 0.0  | 0.0  | 2007 10 08 691 | 0.3+ | 0.1−  | 2007 10 31 G96 | 0.3+ | 0.4− |
| 2005 03 11 G96 | 0.2− | 0.1+ | 2007 10 08 691 | 0.6+ | 0.1−  | 2007 10 31 G96 | 0.0  | 0.3− |
| 2005 03 11 G96 | 0.3− | 0.4− | 2007 10 08 691 | 0.4+ | 0.1+  | 2007 10 31 G96 | 0.1− | 0.4− |
| 2005 03 12 691 | 0.0  | 0.1+ | 2007 10 12 691 | 0.1+ | 0.1+  | 2007 10 31 G96 | 0.2+ | 0.3− |
| 2005 03 12 691 | 0.2+ | 0.2+ | 2007 10 12 691 | 0.1+ | 0.1+  | 2007 11 07 G96 | 0.0  | 0.6− |
| 2005 03 12 691 | 0.0  | 0.1+ | 2007 10 12 691 | 1.1− | 0.1−  | 2007 11 07 G96 | 0.0  | 0.5− |
| 2007 10 04 691 | 1.0− | 0.7+ | 2007 10 16 691 | 0.4+ | 0.2−  | 2007 11 07 G96 | 0.4− | 0.7− |
| 2007 10 04 691 | 0.1− | 1.1+ | 2007 10 16 691 | 0.1+ | 0.3−  | 2007 11 07 G96 | 0.1− | 0.4− |

2007 TD<sub>56</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          |             |             |             |          |
|----------|------------|----------|----------|-------------|-------------|-------------|----------|
| <i>M</i> | 345.69419  |          | (2000.0) |             | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.21386799 | $\omega$ | 33.14702 | +0.50470504 |             | −0.86083779 |          |
| <i>a</i> | 2.7693140  | $\Omega$ | 26.71275 | +0.75724786 | +0.40526877 |             |          |
| <i>e</i> | 0.2164906  | <i>i</i> | 8.32016  | +0.41454614 | +0.30775887 |             |          |
| <i>P</i> | 4.61       | <i>H</i> | 17.1     | <i>G</i>    | 0.15        | <i>U</i>    | 4        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 02 16 691 | 0.0  | 0.2− | 2007 10 20 703 | 0.5+ | 0.0  | 2007 11 03 699 | 0.4+ | 0.1+ |
| 2004 02 16 691 | 0.0  | 0.1+ | 2007 10 21 691 | 0.5− | 0.1− | 2007 11 03 699 | 0.5+ | 0.8− |
| 2004 02 16 691 | 0.1− | 0.3+ | 2007 10 21 691 | 0.6− | 0.1− | 2007 11 07 G96 | 0.1− | 0.2− |
| 2004 03 18 645 | 0.1+ | 0.0  | 2007 10 21 691 | 0.5− | 0.1− | 2007 11 07 G96 | 0.2+ | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 18 | 645 | 0.2+ | 0.1+ | 2007 10 30 | 703 | 0.4− | 0.1− | 2007 11 07 | G96 | 0.1− | 0.3− |
| 2007 10 04 | 691 | 0.3− | 0.0  | 2007 10 30 | 703 | 0.5+ | 0.4+ | 2007 11 07 | G96 | 0.0  | 0.4− |
| 2007 10 04 | 691 | 0.2− | 0.1+ | 2007 10 30 | 703 | 0.4− | 0.1− | 2007 11 08 | 704 | 0.2+ | 0.5− |
| 2007 10 04 | 691 | 0.0  | 0.0  | 2007 10 30 | 703 | 1.7− | 0.1− | 2007 11 08 | 704 | 0.1− | 0.5− |
| 2007 10 08 | 691 | 0.4− | 0.1+ | 2007 11 01 | 704 | 0.9− | 0.5+ | 2007 11 08 | 704 | 0.3− | 0.5− |
| 2007 10 08 | 691 | 0.9− | 0.2− | 2007 11 01 | 704 | 0.3+ | 1.2+ | 2007 11 08 | 704 | 0.3+ | 0.1+ |
| 2007 10 08 | 691 | 0.4− | 0.2+ | 2007 11 01 | 704 | 0.4− | 0.2− | 2007 11 08 | 704 | 0.4+ | 0.7− |
| 2007 10 20 | 703 | 0.8+ | 0.4+ | 2007 11 01 | 704 | 0.2− | 0.8+ | 2007 11 18 | 704 | 0.2+ | 1.0+ |
| 2007 10 20 | 703 | 0.7+ | 0.5+ | 2007 11 03 | 699 | 1.3+ | 0.2− | 2007 11 18 | 704 | 0.7+ | 0.9+ |
| 2007 10 20 | 703 | 0.1+ | 0.1− | 2007 11 03 | 699 | 1.0+ | 0.1− | 2007 11 18 | 704 | 0.2+ | 0.5− |

**2007 TD<sub>57</sub>**

|                                         |            |          |           |             |             |   |   |   |  |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|---|---|---|--|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |   |   |   |  |   |  |
| M 335.88860                             |            |          |           | (2000.0)    |             |   |   | P |  | Q |  |
| n                                       | 0.28554941 | $\omega$ | 217.10322 | +0.30773583 | −0.95120244 |   |   |   |  |   |  |
| a                                       | 2.2839252  | $\Omega$ | 214.99018 | +0.88215889 | +0.29415275 |   |   |   |  |   |  |
| e                                       | 0.1753984  | i        | 2.26274   | +0.35650295 | +0.09320992 |   |   |   |  |   |  |
| P                                       | 3.45       | H        | 17.9      | G           | 0.15        | U | 3 |   |  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |             |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------------|------|
| 2005 02 14 | 691 | 0.1− | 0.1+ | 2007 10 16 | 691 | 0.1+ | 0.2+ | 2007 11 05 | 704 | 0.1+        | 0.2+ |
| 2005 02 14 | 691 | 0.1− | 0.1+ | 2007 10 16 | 691 | 0.1+ | 0.2+ | 2007 11 05 | 704 | 0.1+        | 1.1+ |
| 2005 02 14 | 691 | 0.2+ | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.2+ | 2007 11 05 | 704 | 0.2+        | 0.2+ |
| 2005 04 05 | G96 | 0.0  | 0.3+ | 2007 10 20 | 703 | 0.7− | 0.4− | 2007 11 07 | 703 | 0.6−        | 0.8− |
| 2005 04 05 | G96 | 0.2− | 0.4+ | 2007 10 20 | 703 | 0.2+ | 0.0  | 2007 11 07 | 703 | 1.5−        | 0.1+ |
| 2005 04 05 | G96 | 0.2+ | 0.1− | 2007 10 20 | 703 | 0.2+ | 1.0+ | 2007 11 07 | 703 | 0.3−        | 0.3− |
| 2005 04 05 | G96 | 0.4+ | 0.1+ | 2007 10 20 | 703 | 0.5− | 0.4+ | 2007 11 07 | 703 | 1.2−        | 1.3− |
| 2007 09 09 | G96 | 0.9+ | 0.6− | 2007 10 21 | 691 | 0.1+ | 0.3+ | 2007 11 09 | G96 | 0.5+        | 0.5− |
| 2007 09 09 | G96 | 0.3+ | 0.9− | 2007 10 21 | 691 | 0.3+ | 0.0  | 2007 11 09 | G96 | 0.6+        | 0.4− |
| 2007 09 09 | G96 | 0.8+ | 0.2− | 2007 10 21 | 691 | 0.2− | 0.2+ | 2007 11 09 | G96 | 0.6+        | 0.5− |
| 2007 10 04 | 691 | 0.2+ | 0.4− | 2007 10 30 | 691 | 0.2− | 0.0  | 2007 11 09 | G96 | 0.7+        | 0.4− |
| 2007 10 04 | 691 | 0.0  | 0.3+ | 2007 10 30 | 691 | 1.4− | 0.3− | 2007 11 15 | 704 | 1.2+        | 1.9− |
| 2007 10 04 | 691 | 0.6− | 0.1− | 2007 10 30 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | (1.4− 2.5−) |      |
| 2007 10 08 | 691 | 0.3− | 0.1− | 2007 10 30 | 703 | 0.7+ | 0.6− | 2007 11 15 | 704 | 1.2+        | 1.3− |
| 2007 10 08 | 691 | 0.1+ | 0.4+ | 2007 10 30 | 703 | 0.1− | 1.3+ | 2007 11 15 | 704 | 0.6−        | 0.8− |
| 2007 10 08 | 691 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.6+ | 0.3+ | 2007 11 17 | G96 | 0.3+        | 0.0  |
| 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 10 30 | 703 | 0.0  | 0.3− | 2007 11 17 | G96 | 0.0         | 0.2− |
| 2007 10 12 | 691 | 0.1+ | 0.2+ | 2007 10 30 | G96 | 0.7+ | 0.1+ | 2007 11 17 | G96 | 0.3+        | 0.0  |
| 2007 10 12 | 691 | 0.2− | 0.7− | 2007 10 30 | 703 | 0.6+ | 0.2+ | 2007 11 17 | G96 | 0.7+        | 0.2− |
| 2007 10 15 | 703 | 0.5+ | 0.7+ | 2007 10 30 | G96 | 0.9+ | 0.0  | 2007 11 17 | 703 | 0.4−        | 0.3+ |
| 2007 10 15 | 703 | 0.4+ | 1.8+ | 2007 10 30 | G96 | 1.1+ | 0.0  | 2007 11 17 | 703 | 0.0         | 1.5− |
| 2007 10 15 | 703 | 0.6− | 1.5+ | 2007 11 05 | 704 | 0.7+ | 0.4+ | 2007 11 17 | 703 | 0.2−        | 1.0+ |
| 2007 10 15 | 703 | 0.9+ | 1.4+ | 2007 11 05 | 704 | 0.2+ | 0.7+ | 2007 11 17 | 703 | 0.2+        | 1.1− |

**2007 TF<sub>57</sub> = 2005 GO<sub>206</sub>**

|                                         |            |          |           |             |             |   |   |   |  |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|---|---|---|--|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |   |   |   |  |   |  |
| M 129.28569                             |            |          |           | (2000.0)    |             |   |   | P |  | Q |  |
| n                                       | 0.18461000 | $\omega$ | 47.82130  | −0.11146564 | +0.98858933 |   |   |   |  |   |  |
| a                                       | 3.0546813  | $\Omega$ | 216.15331 | −0.95488350 | −0.13478821 |   |   |   |  |   |  |
| e                                       | 0.0784913  | i        | 9.88963   | −0.27526880 | +0.06725535 |   |   |   |  |   |  |
| P                                       | 5.34       | H        | 15.9      | G           | 0.15        | U | 3 |   |  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2005 04 12 | 695 | 0.3− | 0.3− | 2007 10 08 | 691 | 0.0         | 0.4+ | 2007 10 30 | G96 | 0.1+ | 0.2− |
| 2005 04 12 | 695 | 0.3− | 0.1− | 2007 10 12 | 691 | 0.2+        | 0.3+ | 2007 10 30 | G96 | 0.2+ | 0.4− |
| 2005 04 16 | 691 | 0.0  | 0.0  | 2007 10 12 | 691 | 0.4+        | 0.3+ | 2007 10 30 | G96 | 0.5+ | 0.0  |
| 2005 04 16 | 691 | 0.1+ | 0.1+ | 2007 10 12 | 691 | 0.2+        | 0.0  | 2007 10 30 | G96 | 0.0  | 0.2− |
| 2005 04 16 | 691 | 0.0  | 0.0  | 2007 10 21 | 691 | 0.5+        | 0.6+ | 2007 11 09 | G96 | 0.2+ | 0.2− |
| 2007 10 04 | 691 | 0.1− | 0.5− | 2007 10 21 | 691 | 0.2−        | 0.5+ | 2007 11 09 | G96 | 0.0  | 0.1− |
| 2007 10 04 | 691 | 0.2+ | 0.1− | 2007 10 21 | 691 | (2.1− 0.6−) |      | 2007 11 09 | G96 | 0.2− | 0.2− |
| 2007 10 04 | 691 | 0.2− | 0.5− | 2007 10 30 | 691 | 0.0         | 0.1− | 2007 11 09 | G96 | 0.1+ | 0.3− |
| 2007 10 08 | 691 | 0.3− | 0.1− | 2007 10 30 | 691 | 0.5−        | 0.2− |            |     |      |      |
| 2007 10 08 | 691 | 0.7− | 0.2− | 2007 10 30 | 691 | 0.1+        | 0.2− |            |     |      |      |

**2007 TS<sub>57</sub>**

|                                         |            |          |           |             |             |   |   |   |  |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|---|---|---|--|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |   |   |   |  |   |  |
| M 46.29628                              |            |          |           | (2000.0)    |             |   |   | P |  | Q |  |
| n                                       | 0.26493046 | $\omega$ | 303.25707 | +0.88955479 | +0.45362554 |   |   |   |  |   |  |
| a                                       | 2.4009408  | $\Omega$ | 29.86987  | −0.37472655 | +0.79217814 |   |   |   |  |   |  |
| e                                       | 0.1943350  | i        | 6.22480   | −0.26128968 | +0.40826176 |   |   |   |  |   |  |
| P                                       | 3.72       | H        | 17.3      | G           | 0.15        | U | 3 |   |  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 25 | 644 | 0.1+ | 0.0  | 2007 10 04 | 691 | 0.4− | 0.2+ | 2007 10 16 | 691 | 0.1− | 0.0  |
| 2003 09 25 | 644 | 0.1+ | 0.1+ | 2007 10 08 | 691 | 0.5− | 0.1+ | 2007 10 21 | 691 | 0.1− | 0.4+ |
| 2003 09 25 | 644 | 0.2− | 0.2− | 2007 10 08 | 691 | 0.2− | 0.2+ | 2007 10 21 | 691 | 0.3− | 0.2+ |
| 2006 05 03 | G96 | 0.2+ | 0.2− | 2007 10 08 | 691 | 0.3− | 0.2+ | 2007 10 21 | 691 | 0.7− | 0.1+ |
| 2006 05 03 | G96 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.2− | 0.1+ | 2007 10 31 | G96 | 0.2+ | 0.1− |
| 2006 05 03 | G96 | 0.2− | 0.2− | 2007 10 12 | 691 | 0.3− | 0.1+ | 2007 10 31 | G96 | 0.1+ | 0.0  |
| 2006 05 03 | G96 | 0.7+ | 0.3− | 2007 10 12 | 691 | 0.4− | 0.2+ | 2007 10 31 | G96 | 0.2+ | 0.1− |
| 2006 05 23 | G96 | 0.3− | 0.3− | 2007 10 14 | 704 | 1.1+ | 0.7+ | 2007 10 31 | G96 | 0.2+ | 0.1− |
| 2006 05 23 | G96 | 0.3− | 0.3+ | 2007 10 14 | 704 | 0.5+ | 0.7+ | 2007 11 01 | 704 | 0.6+ | 0.9− |
| 2006 05 23 | G96 | 0.0  | 0.1+ | 2007 10 14 | 704 | 0.3− | 1.4+ | 2007 11 01 | 704 | 1.3+ | 0.8− |
| 2006 05 23 | G96 | 0.2− | 0.0  | 2007 10 14 | 704 | 0.5− | 0.2+ | 2007 11 01 | 704 | 1.0− | 0.4− |
| 2007 09 09 | G96 | 0.1− | 0.5− | 2007 10 15 | 703 | 1.2+ | 0.9− | 2007 11 01 | 704 | 0.6− | 0.9+ |
| 2007 09 09 | G96 | 0.3+ | 0.3− | 2007 10 15 | 703 | 0.5+ | 0.9− | 2007 11 07 | G96 | 0.1+ | 0.1− |
| 2007 09 09 | G96 | 0.2+ | 0.3− | 2007 10 15 | 703 | 0.0  | 0.3+ | 2007 11 07 | G96 | 0.3+ | 0.2− |
| 2007 09 09 | G96 | 0.1+ | 0.4− | 2007 10 15 | 703 | 0.2− | 0.6− | 2007 11 07 | G96 | 0.1+ | 0.1− |
| 2007 10 04 | 691 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.2− | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.4− |
| 2007 10 04 | 691 | 0.1− | 0.8+ | 2007 10 16 | 691 | 0.4− | 0.1− |            |     |      |      |

**2007 TU<sub>57</sub> = 2007 TR<sub>303</sub>**Id. Minor Planet Center (d, *MPO* 129052)

|                                         |            |          |           |             |             |   |   |   |  |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|---|---|---|--|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |   |   |   |  |   |  |
| M 309.61155                             |            |          |           | (2000.0)    |             |   |   | P |  | Q |  |
| n                                       | 0.19885302 | $\omega$ | 250.13900 | −0.22239658 | −0.97480873 |   |   |   |  |   |  |
| a                                       | 2.9070194  | $\Omega$ | 212.72555 | +0.90583316 | −0.20016356 |   |   |   |  |   |  |
| e                                       | 0.1296745  | i        | 1.79797   | +0.36056353 | −0.09839969 |   |   |   |  |   |  |
| P                                       | 4.96       | H        | 16.6      | G           | 0.15        | U | 3 |   |  |   |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 10 10 | 691 | 0.2+ | 0.4− | 2007 10 12 | 691 | 0.1−  | 0.3+  | 2007 11 12 | G96 | 0.1− | 0.2− |
| 1997 10 10 | 691 | 0.0  | 0.5− | 2007 10 16 | 691 | 0.4−  | 0.2−  | 2007 11 12 | G96 | 0.2+ | 0.1+ |
| 1997 10 10 | 691 | 0.1+ | 0.1+ | 2007 10 16 | 691 | 0.2+  | 0.8+  | 2007 11 12 | G96 | 0.2− | 0.0  |
| 1997 10 21 | 691 | 0.1− | 0.1− | 2007 10 16 | 691 | 0.1−  | 0.5+  | 2007 11 12 | G96 | 0.1+ | 0.1+ |
| 1997 10 21 | 691 | 0.1− | 0.3− | 2007 10 21 | 691 | 0.1−  | 0.1−  | 2007 11 12 | G96 | 0.2+ | 0.2− |
| 1997 10 21 | 691 | 0.1+ | 0.0  | 2007 10 21 | 691 | 0.2+  | 0.6+  | 2007 11 12 | G96 | 0.2+ | 0.0  |
| 2002 10 31 | 644 | 0.2− | 0.7+ | 2007 10 21 | 691 | 0.1+  | 0.2+  | 2007 11 12 | G96 | 0.1− | 0.3− |
| 2002 10 31 | 644 | 0.3+ | 1.0+ | 2007 10 30 | 691 | 0.4−  | 0.0   | 2007 11 12 | G96 | 0.3+ | 0.3− |
| 2002 10 31 | 644 | 0.4+ | 0.6+ | 2007 10 30 | 691 | 0.0   | 0.3−  | 2007 11 15 | 704 | 0.8+ | 0.3+ |
| 2007 10 04 | 691 | 0.6− | 0.0  | 2007 10 30 | 691 | 0.1−  | 0.6−  | 2007 11 15 | 704 | 0.2+ | 0.3− |
| 2007 10 04 | 691 | 0.0  | 0.3+ | 2007 10 30 | G96 | 0.8+  | 0.0   | 2007 11 15 | 704 | 0.2− | 0.1+ |
| 2007 10 04 | 691 | 0.1− | 0.1− | 2007 10 30 | G96 | 0.3+  | 0.1−  | 2007 12 06 | G96 | 0.6− | 0.6− |
| 2007 10 08 | 691 | 0.3+ | 0.1− | 2007 10 30 | G96 | 0.3+  | 0.1+  | 2007 12 06 | G96 | 0.1− | 0.5− |
| 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.3+  | 0.3−  | 2007 12 06 | G96 | 0.2− | 0.2− |
| 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.0   | 0.1+  | 2007 12 06 | G96 | 0.3− | 0.5− |
| 2007 10 12 | 691 | 0.1− | 0.0  | 2007 11 09 | G96 | (1.9+ | 1.1+) |            |     |      |      |
| 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.3+  | 0.2+  |            |     |      |      |



## 2007 DEC. 24

M.P.O. 129843

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 08 | 691 | 0.0  | 0.1− | 2007 10 04 | 691 | 0.1− | 0.2− | 2007 11 09 | G96 | 0.4+ | 0.3+ |
| 1999 08 08 | 691 | 0.4− | 0.3+ | 2007 10 08 | 691 | 0.4− | 0.0  | 2007 11 09 | G96 | 0.3+ | 0.4+ |
| 1999 08 08 | 691 | 0.2+ | 0.3+ | 2007 10 08 | 691 | 0.0  | 0.6− | 2007 11 11 | G96 | 0.1− | 0.1+ |
| 2003 09 17 | 691 | 0.1− | 0.4+ | 2007 10 08 | 691 | 0.3− | 0.1+ | 2007 11 11 | G96 | 0.2+ | 0.3+ |
| 2003 09 17 | 691 | 0.2+ | 0.0  | 2007 10 16 | 691 | 0.4− | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.1+ |
| 2003 09 17 | 691 | 0.1+ | 0.2+ | 2007 10 16 | 691 | 0.4− | 0.2− | 2007 11 11 | G96 | 0.1+ | 0.1+ |
| 2003 09 29 | 691 | 0.1+ | 0.2+ | 2007 10 16 | 691 | 0.3− | 0.4+ | 2007 11 11 | G96 | 0.2+ | 0.2+ |
| 2003 09 29 | 691 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.0  | 0.2− | 2007 11 11 | G96 | 0.1− | 0.4+ |
| 2003 09 29 | 645 | 0.0  | 0.2− | 2007 10 30 | 691 | 0.4+ | 0.2+ | 2007 11 11 | G96 | 0.7+ | 0.1− |
| 2003 09 29 | 691 | 0.4+ | 0.1− | 2007 10 30 | 691 | 0.2− | 0.0  | 2007 11 11 | G96 | 0.1− | 0.6+ |
| 2003 09 29 | 645 | 0.1+ | 0.2− | 2007 10 30 | G96 | 0.3+ | 0.2− | 2007 11 12 | G96 | 0.3+ | 0.2− |
| 2003 10 24 | 691 | 0.1− | 0.2− | 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 11 12 | G96 | 0.1+ | 0.0  |
| 2003 10 24 | 691 | 0.5− | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.3− | 2007 11 12 | G96 | 0.3+ | 0.1− |
| 2003 10 24 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.1− | 0.6− | 2007 11 12 | G96 | 0.2+ | 0.0  |
| 2007 10 04 | 691 | 0.4+ | 0.2+ | 2007 11 09 | G96 | 0.5+ | 0.2+ |            |     |      |      |
| 2007 10 04 | 691 | 0.2− | 0.5+ | 2007 11 09 | G96 | 0.4+ | 0.2+ |            |     |      |      |

2007 TC<sub>58</sub> = 2007 TD<sub>315</sub>

Id. Minor Planet Center (d, MPO 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC           |             |  |  |
|----------|------------|----------|-----------|---------------|-------------|--|--|
| <i>M</i> | 247.12527  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |  |  |
| <i>n</i> | 0.26060465 | $\omega$ | 306.78975 | −0.93720174   | −0.34422799 |  |  |
| <i>a</i> | 2.4274368  | $\Omega$ | 213.18132 | +0.34369981   | −0.88402871 |  |  |
| <i>e</i> | 0.0744573  | <i>i</i> | 5.89540   | +0.05935768   | −0.31622828 |  |  |
| <i>P</i> | 3.78       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 17 | 608 | 0.0  | 0.0  | 2007 10 04 | 691 | 0.0  | 0.2− | 2007 10 30 | G96 | 0.1+ | 0.1− |
| 2001 02 17 | 608 | 0.1− | 0.0  | 2007 10 04 | 691 | 0.4− | 0.2− | 2007 10 30 | 703 | 0.7− | 0.4+ |
| 2001 02 17 | 608 | 0.0  | 0.1− | 2007 10 08 | 691 | 0.2− | 0.1− | 2007 10 30 | G96 | 0.2+ | 0.0  |
| 2003 09 30 | 691 | 0.0  | 0.1+ | 2007 10 08 | 691 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.2− |
| 2003 09 30 | 691 | 0.2+ | 0.0  | 2007 10 08 | 691 | 0.0  | 0.1− | 2007 11 07 | 703 | 0.0  | 0.3+ |
| 2003 09 30 | 691 | 0.0  | 0.0  | 2007 10 12 | 691 | 0.0  | 0.8+ | 2007 11 07 | 703 | 0.1+ | 0.2+ |
| 2003 10 19 | 691 | 0.0  | 0.2+ | 2007 10 12 | 691 | 0.1− | 0.1− | 2007 11 07 | 703 | 0.7+ | 0.2+ |
| 2003 10 19 | 691 | 0.2− | 0.2+ | 2007 10 12 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.8− | 0.4+ |
| 2003 10 19 | 691 | 0.1+ | 0.7− | 2007 10 16 | 691 | 0.2− | 0.1+ | 2007 11 09 | G96 | 0.6+ | 0.2− |
| 2005 02 14 | 703 | 0.3− | 0.2− | 2007 10 16 | 691 | 0.1− | 0.3+ | 2007 11 09 | G96 | 0.4+ | 0.3− |
| 2005 02 14 | 703 | 0.1+ | 0.4− | 2007 10 16 | 691 | 0.4− | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.1− |
| 2005 02 14 | 703 | 0.1− | 0.1+ | 2007 10 30 | 691 | 0.1+ | 0.2− | 2007 11 09 | G96 | 0.0  | 0.4− |
| 2005 02 14 | 703 | 0.7+ | 0.0  | 2007 10 30 | 691 | 0.2− | 0.2− | 2007 11 14 | 704 | 0.4+ | 0.4− |
| 2005 03 10 | 703 | 0.4− | 1.3+ | 2007 10 30 | 691 | 0.1− | 0.1− | 2007 11 14 | 704 | 0.7+ | 0.3+ |
| 2005 03 10 | 703 | 0.7+ | 0.2− | 2007 10 30 | 703 | 0.8+ | 0.5− | 2007 11 14 | 704 | 0.2+ | 0.6+ |
| 2005 03 10 | 703 | 0.0  | 0.4+ | 2007 10 30 | 703 | 1.3− | 0.1− | 2007 11 14 | 704 | 0.8+ | 0.2+ |
| 2005 03 10 | 703 | 0.7− | 0.8− | 2007 10 30 | G96 | 0.4+ | 0.1− | 2007 11 14 | 704 | 0.2+ | 0.5+ |
| 2007 10 04 | 691 | 0.2− | 0.4+ | 2007 10 30 | 703 | 1.2− | 1.1− |            |     |      |      |

2007 TV<sub>58</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC           |             |  |  |
|----------|------------|----------|-----------|---------------|-------------|--|--|
| <i>M</i> | 325.16387  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |  |  |
| <i>n</i> | 0.12411574 | $\omega$ | 97.11932  | +0.46449200   | −0.88383575 |  |  |
| <i>a</i> | 3.9803214  | $\Omega$ | 325.03020 | +0.76947281   | +0.43382920 |  |  |
| <i>e</i> | 0.2971407  | <i>i</i> | 5.55808   | +0.43835918   | +0.17500457 |  |  |
| <i>P</i> | 7.94       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 4  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 09 | 691 | 0.6+  | 0.2+  | 2007 09 12 | 699 | 0.9− | 0.1− | 2007 10 12 | 691 | 0.0  | 0.2− |
| 1994 03 09 | 691 | (9.2− | 1.9+) | 2007 09 12 | 699 | 0.8+ | 1.4+ | 2007 10 12 | 704 | 0.7+ | 0.8− |
| 1994 03 09 | 691 | 0.3−  | 0.6+  | 2007 09 12 | 699 | 0.6− | 0.3+ | 2007 10 12 | 704 | 0.7+ | 0.5+ |
| 2002 03 13 | 644 | 0.2+  | 0.1−  | 2007 09 12 | 699 | 0.4− | 0.2+ | 2007 10 12 | 704 | 0.4− | 0.6+ |
| 2002 03 13 | 644 | 0.1−  | 0.2+  | 2007 10 05 | 691 | 0.1+ | 0.2+ | 2007 10 12 | 704 | 0.2+ | 0.3− |
| 2002 03 13 | 644 | 0.7+  | 0.0   | 2007 10 05 | 691 | 0.1+ | 0.1+ | 2007 10 15 | 691 | 0.0  | 0.3− |
| 2002 04 04 | 644 | 0.1−  | 0.4+  | 2007 10 05 | 691 | 0.1+ | 0.1− | 2007 10 15 | 691 | 0.2+ | 1.0− |
| 2002 04 04 | 644 | 0.2−  | 0.1+  | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.0  | 0.5+ |
| 2002 04 04 | 644 | 0.1−  | 0.3+  | 2007 10 08 | 691 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.0  | 0.0  |
| 2007 08 23 | 691 | 0.3−  | 0.5+  | 2007 10 08 | 691 | 0.4− | 0.0  | 2007 10 19 | 691 | 0.2− | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-----|
| 2007 08 23 | 691 | 0.4− | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.1− | 2007 10 19 | 691 | 0.1− | 0.0 |
| 2007 08 23 | 691 | 0.3− | 0.2+ | 2007 10 12 | 691 | 0.1− | 0.1− |            |     |      |     |

2007 TS<sub>59</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC           |             |  |  |
|----------|------------|----------|-----------|---------------|-------------|--|--|
| <i>M</i> | 42.05869   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |  |  |
| <i>n</i> | 0.20863779 | $\omega$ | 145.75543 | +0.58930737   | +0.80764128 |  |  |
| <i>a</i> | 2.8154041  | $\Omega$ | 160.32679 | −0.75438142   | +0.55929347 |  |  |
| <i>e</i> | 0.1734506  | <i>i</i> | 3.54120   | −0.28918074   | +0.18683248 |  |  |
| <i>P</i> | 4.72       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 22 | 644 | 0.4+ | 0.2− | 2007 09 14 | G96 | 0.5+  | 0.2−  | 2007 10 08 | 691 | 0.1− | 0.3+ |
| 2002 07 22 | 644 | 0.1− | 0.1+ | 2007 09 14 | G96 | 0.1+  | 0.1+  | 2007 10 10 | 691 | 0.1+ | 0.3− |
| 2002 07 22 | 644 | 0.3− | 0.2+ | 2007 09 14 | G96 | 0.3+  | 0.1+  | 2007 10 10 | 691 | 0.1+ | 0.1− |
| 2006 04 20 | 691 | 0.2− | 0.1+ | 2007 09 30 | 691 | 0.2+  | 0.1−  | 2007 10 10 | 691 | 0.2+ | 0.4+ |
| 2006 04 20 | 691 | 0.0  | 0.3+ | 2007 09 30 | 691 | 0.2+  | 0.1−  | 2007 10 10 | 691 | 0.2− | 0.1− |
| 2006 04 20 | 691 | 0.4+ | 0.3+ | 2007 09 30 | 691 | (1.8− | 0.5−) | 2007 10 10 | 691 | 0.0  | 0.1− |
| 2006 05 01 | 691 | 0.1+ | 0.9− | 2007 10 05 | 691 | 0.1−  | 0.1−  | 2007 10 10 | 691 | 0.1+ | 0.1+ |
| 2006 05 01 | 691 | 0.2− | 0.1+ | 2007 10 05 | 691 | 0.8−  | 0.1−  | 2007 10 12 | 691 | 0.0  | 0.0  |
| 2006 05 01 | 691 | 0.0  | 0.5+ | 2007 10 05 | 691 | 0.5−  | 0.1+  | 2007 10 12 | 691 | 0.1− | 0.5− |
| 2007 07 18 | G96 | 0.2− | 0.6− | 2007 10 08 | 691 | 1.3−  | 0.0   | 2007 10 12 | 691 | 0.8+ | 0.2− |
| 2007 07 18 | G96 | 0.0  | 0.5− | 2007 10 08 | 691 | 0.1−  | 0.9+  | 2007 10 12 | 691 | 0.5+ | 0.1+ |
| 2007 07 18 | G96 | 0.1+ | 0.0  | 2007 10 08 | 691 | 0.1−  | 0.2−  | 2007 10 12 | 691 | 0.1+ | 0.3+ |
| 2007 07 18 | G96 | 0.3+ | 0.9− | 2007 10 08 | 691 | 0.0   | 0.2−  | 2007 10 12 | 691 | 0.2+ | 0.4+ |
| 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.4+  | 0.1−  |            |     |      |      |

2007 TR<sub>60</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC           |             |  |  |
|----------|------------|----------|-----------|---------------|-------------|--|--|
| <i>M</i> | 310.19300  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |  |  |
| <i>n</i> | 0.17626982 | $\omega$ | 261.62867 | +0.12217469   | −0.99245766 |  |  |
| <i>a</i> | 3.1502914  | $\Omega$ | 181.47090 | +0.99247787   | +0.12224439 |  |  |
| <i>e</i> | 0.2978602  | <i>i</i> | 23.06607  | +0.00781172   | −0.00917103 |  |  |
| <i>P</i> | 5.59       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 3  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 14 | 608 | 0.3+ | 0.4+ | 2007 09 14 | 699 | 0.2+ | 0.5+ | 2007 10 10 | 691 | 0.2− | 0.0  |
| 2002 12 14 | 608 | 0.3− | 0.1− | 2007 10 06 | 691 | 0.2− | 0.2− | 2007 10 14 | 704 | 0.8+ | 0.5− |
| 2002 12 14 | 608 | 0.1+ | 1.6− | 2007 10 06 | 691 | 0.0  | 0.2− | 2007 10 14 | 704 | 0.7− | 1.1+ |
| 2003 01 14 | 644 | 0.2− | 0.1+ | 2007 10 06 | 691 | 0.0  | 0.3− | 2007 10 14 | 704 | 1.3− | 0.1+ |
| 2003 01 14 | 644 | 0.1− | 0.5+ | 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 10 14 | 704 | 0.9+ | 0.7− |
| 2003 01 14 | 644 | 0.3− | 0.7+ | 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 13 | G96 | 0.0  | 0.1− |
| 2007 09 14 | 699 | 0.4+ | 0.1+ | 2007 10 08 | 691 | 0.3+ | 0.1− | 2007 11 13 | G96 | 0.0  | 0.1− |
| 2007 09 14 | 699 | 0.1+ | 0.7− | 2007 10 10 | 691 | 0.1+ | 0.5+ | 2007 11 13 | G96 | 0.5+ | 0.2+ |
| 2007 09 14 | 699 | 0.1− | 0.2− | 2007 10 10 | 691 | 0.2− | 0.3+ | 2007 11 13 | G96 | 0.1+ | 0.2− |

2007 TJ<sub>61</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           | MPC           |             |  |  |
|----------|------------|----------|-----------|---------------|-------------|--|--|
| <i>M</i> | 337.18381  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |  |  |
| <i>n</i> | 0.26744508 | $\omega$ | 229.40091 | +0.43038356   | −0.90258723 |  |  |
| <i>a</i> | 2.3858674  | $\Omega$ | 195.11701 | +0.83964312   | +0.40450969 |  |  |
| <i>e</i> | 0.1354727  | <i>i</i> | 2.26558   | +0.33131469   | +0.14733704 |  |  |
| <i>P</i> | 3.69       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 08 | 291 | 0.0  | 0.6+ | 2007 10 07 | G96 | 0.1− | 0.3− | 2007 10 24 | G96 | 1.0+ | 0.6− |
| 2002 05 08 | 291 | 0.0  | 0.9+ | 2007 10 08 | G91 | 0.1− | 0.3− | 2007 10 24 | G96 | 0.0  | 0.6− |
| 2002 05 08 | 291 | 0.3+ | 0.6+ | 2007 10 08 | 691 | 0.2− | 0.0  | 2007 10 30 | 703 | 0.3+ | 0.0  |
| 2003 08 23 | 644 | 0.1− | 0.1+ | 2007 10 08 | 691 | 0.3− | 0.2+ | 2007 10 30 | 703 | 0.2− | 0.2− |
| 2003 08 23 | 644 | 0.1+ | 0.0  | 2007 10 11 | 704 | 0.2+ | 1.0+ | 2007 10 30 | 703 | 0.5+ | 1.0− |
| 2003 08 23 | 644 | 0.0  | 0.2+ | 2007 10 11 | 704 | 0.1− | 0.8+ | 2007 10 30 | 703 | 0.0  | 0.8+ |
| 2005 03 03 | 703 | 0.5− | 0.8+ | 2007 10 11 | 704 | 0.0  | 0.4+ | 2007 11 02 | G96 | 0.1+ | 0.2− |
| 2005 03 03 | 703 | 1.1+ | 0.3− | 2007 10 11 | 704 | 1.4+ | 0.3+ | 2007 11 02 | G96 | 0.1− | 0.2− |
| 2005 03 03 | 703 | 1.1− | 1.0+ | 2007 10 14 | 704 | 0.3− | 0.7+ | 2007 11 02 | G96 | 0.3+ | 0.3− |
| 2005 03 03 | 703 | 0.5+ | 0.3+ | 2007 10 14 | 704 | 0.2+ | 1.2+ | 2007 11 02 | G96 | 0.0  | 0.2− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | G96 | 0.0  | 0.1+ | 2007 10 14 | 704 | 0.4− | 0.6+ | 2007 11 03 | 699 | 0.1− | 0.2− |
| 2005 03 11 | G96 | 0.2+ | 0.0  | 2007 10 14 | 704 | 0.1− | 0.7+ | 2007 11 03 | 699 | 0.2+ | 0.1− |
| 2005 03 11 | G96 | 0.1− | 0.1+ | 2007 10 15 | 703 | 0.4+ | 1.4+ | 2007 11 03 | 699 | 0.8+ | 0.4+ |
| 2005 03 11 | G96 | 0.2+ | 0.1+ | 2007 10 15 | 703 | 0.9+ | 0.9+ | 2007 11 03 | 699 | 0.3− | 0.3+ |
| 2005 05 04 | G96 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.3+ | 0.8+ |
| 2005 05 04 | G96 | 0.1+ | 0.3− | 2007 10 15 | 703 | 0.4+ | 0.4+ | 2007 11 05 | 704 | 0.0  | 0.5+ |
| 2005 05 04 | G96 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.2− | 0.1− | 2007 11 05 | 704 | 0.7− | 0.2+ |
| 2005 05 04 | G96 | 0.8+ | 0.2+ | 2007 10 20 | 691 | 0.1− | 0.3+ | 2007 11 05 | 704 | 0.0  | 0.2− |
| 2007 09 08 | G96 | 0.5+ | 0.4− | 2007 10 20 | 691 | 0.1− | 0.3− | 2007 11 05 | 704 | 0.2+ | 0.6+ |
| 2007 09 08 | G96 | 0.7+ | 0.5− | 2007 10 20 | 703 | 0.4− | 0.1+ | 2007 11 14 | 704 | 1.4− | 0.9+ |
| 2007 09 08 | G96 | 0.4+ | 0.5− | 2007 10 20 | 703 | 0.1+ | 0.7+ | 2007 11 14 | 704 | 1.1− | 0.4+ |
| 2007 09 08 | G96 | 0.7+ | 0.5− | 2007 10 20 | 703 | 0.3+ | 0.2− | 2007 11 14 | 704 | 0.8− | 0.3+ |
| 2007 10 07 | G96 | 0.1− | 0.2− | 2007 10 20 | 703 | 0.2− | 0.3+ | 2007 11 14 | 704 | 1.4− | 0.4+ |
| 2007 10 07 | G96 | 0.3+ | 0.2− | 2007 10 24 | G96 | 0.3+ | 0.2− | 2007 11 14 | 704 | 1.0− | 0.8+ |
| 2007 10 07 | G96 | 0.0  | 0.4− | 2007 10 24 | G96 | 0.4+ | 0.3− |            |     |      |      |

**2007 TH<sub>62</sub> = 2006 JQ<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 34.31685   |          | (2000.0)  |          | P           |          | Q           |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.30629434 | $\omega$ | 142.32106 |          | +0.99688626 |          | +0.07831223 |
| <i>a</i> | 2.1795997  | $\Omega$ | 213.19091 |          | −0.07582145 |          | +0.91988406 |
| <i>e</i> | 0.0578062  | <i>i</i> | 0.96488   |          | −0.02165394 |          | +0.38429223 |
| <i>P</i> | 3.22       | <i>H</i> | 17.5      | <i>G</i> | 0.15        | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2006 05 04 | G96 | 0.4+ | 0.4− | 2007 10 07 | G96 | 0.4−  | 0.6−  | 2007 10 30 | 703 | 0.6−  | 0.6+  |
| 2006 05 04 | G96 | 0.7− | 0.0  | 2007 10 08 | 691 | 0.6+  | 0.2−  | 2007 10 30 | 703 | 0.7−  | 0.7−  |
| 2006 05 04 | G96 | 0.2− | 0.3− | 2007 10 08 | 691 | 0.5+  | 0.5+  | 2007 10 30 | 703 | (1.9+ | 0.1+) |
| 2006 05 04 | G96 | 0.1− | 0.1+ | 2007 10 08 | 691 | 0.0   | 0.4−  | 2007 10 30 | 703 | 0.9+  | 1.2+  |
| 2006 05 07 | G96 | 0.5+ | 0.6− | 2007 10 12 | 691 | 0.2−  | 0.1−  | 2007 10 30 | G96 | 0.4+  | 0.0   |
| 2006 05 07 | G96 | 0.1− | 0.2− | 2007 10 12 | 691 | 0.5−  | 0.1−  | 2007 10 30 | G96 | 0.8+  | 0.1+  |
| 2006 05 07 | G96 | 0.2− | 0.1− | 2007 10 12 | 691 | 0.5−  | 0.4+  | 2007 10 30 | G96 | 0.6+  | 0.1+  |
| 2006 05 07 | G96 | 0.1− | 0.0  | 2007 10 15 | 703 | 0.9+  | 0.4+  | 2007 10 30 | G96 | 0.6+  | 0.2+  |
| 2006 05 07 | G96 | 0.0  | 0.0  | 2007 10 15 | 703 | 0.5+  | 0.2−  | 2007 11 18 | G96 | 0.4−  | 0.5−  |
| 2006 05 07 | G96 | 0.2− | 0.0  | 2007 10 15 | 703 | 0.1−  | 0.1−  | 2007 11 18 | G96 | 0.1+  | 0.3−  |
| 2006 05 07 | G96 | 0.1− | 0.1+ | 2007 10 15 | 703 | (1.6− | 0.3+) | 2007 11 18 | G96 | 0.0   | 0.5−  |
| 2006 05 07 | G96 | 0.5+ | 0.5+ | 2007 10 20 | 691 | 0.0   | 0.4+  | 2007 11 18 | G96 | 0.1−  | 0.4−  |
| 2007 10 07 | G96 | 0.5− | 0.5− | 2007 10 20 | 691 | 0.1−  | 0.1−  |            |     |       |       |
| 2007 10 07 | G96 | 0.4− | 0.1− | 2007 10 20 | 691 | 0.1−  | 0.1−  |            |     |       |       |

**2007 TO<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 1.88042    |          | (2000.0)  |          | P           |          | Q           |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.20092215 | $\omega$ | 336.35535 |          | +0.76937849 |          | −0.63707535 |
| <i>a</i> | 2.8870270  | $\Omega$ | 63.30236  |          | +0.59412399 |          | +0.68672914 |
| <i>e</i> | 0.0668259  | <i>i</i> | 3.00383   |          | +0.23467727 |          | +0.35005441 |
| <i>P</i> | 4.91       | <i>H</i> | 16.4      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 09 29 | 691 | 0.1− | 0.0  | 2007 10 07 | G96 | 0.3+ | 0.4− | 2007 11 09 | G96 | 0.4+ | 0.3− |
| 1992 09 29 | 691 | 0.1− | 0.1+ | 2007 10 08 | 691 | 0.2− | 0.2− | 2007 11 09 | G96 | 0.0  | 0.1− |
| 1992 09 29 | 691 | 0.0  | 0.8+ | 2007 10 08 | 691 | 0.1− | 0.0  | 2007 11 09 | 291 | 0.2− | 0.0  |
| 1994 01 04 | 691 | 0.0  | 0.2− | 2007 10 08 | 691 | 0.1− | 0.1− | 2007 11 09 | 291 | 0.3− | 0.0  |
| 1994 01 04 | 691 | 1.1− | 0.3− | 2007 10 20 | 691 | 0.2− | 0.1+ | 2007 11 09 | 291 | 0.2− | 0.1− |
| 1994 01 04 | 691 | 0.8+ | 0.2+ | 2007 10 20 | 691 | 0.0  | 0.1− | 2007 11 14 | 704 | 1.1+ | 0.9+ |
| 2004 01 31 | 691 | 0.0  | 0.3+ | 2007 10 20 | 691 | 0.2− | 0.1+ | 2007 11 14 | 704 | 0.4+ | 0.9+ |
| 2004 01 31 | 691 | 0.2+ | 0.0  | 2007 11 02 | G96 | 0.1+ | 0.1− | 2007 11 14 | 704 | 0.2+ | 0.4+ |
| 2004 01 31 | 691 | 0.3+ | 0.4+ | 2007 11 02 | G96 | 0.4+ | 0.4− | 2007 11 17 | 703 | 0.6+ | 0.3− |
| 2005 05 14 | G96 | 0.2− | 0.1− | 2007 11 02 | G96 | 0.1+ | 0.2− | 2007 11 17 | 703 | 1.2+ | 0.2+ |
| 2005 05 14 | G96 | 0.2+ | 0.1+ | 2007 11 02 | G96 | 0.1− | 0.3− | 2007 11 17 | 703 | 0.8− | 0.9− |
| 2005 05 14 | G96 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.1− | 0.1− | 2007 11 17 | 703 | 0.8+ | 0.0  |
| 2005 05 14 | G96 | 0.2− | 0.2+ | 2007 11 07 | 703 | 0.1− | 0.5− | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2007 10 07 | G96 | 0.3+ | 0.4− | 2007 11 07 | 703 | 0.3− | 0.8+ | 2007 12 06 | G96 | 0.7+ | 1.1+ |
| 2007 10 07 | G96 | 0.4+ | 0.2− | 2007 11 07 | 703 | 0.7− | 0.2− | 2007 12 06 | G96 | 0.0  | 0.4− |
| 2007 10 07 | G96 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.5+ | 0.3− | 2007 12 06 | G96 | 0.3+ | 0.0  |

**2007 TT<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 37.42397   |          | (2000.0)  |          | P           |          | Q           |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.23742715 | $\omega$ | 289.65877 |          | +0.96424667 |          | +0.25822658 |
| <i>a</i> | 2.5829488  | $\Omega$ | 55.41941  |          | −0.20786950 |          | +0.87640326 |
| <i>e</i> | 0.2089172  | <i>i</i> | 4.14843   |          | −0.16437344 |          | +0.40649275 |
| <i>P</i> | 4.15       | <i>H</i> | 17.3      | <i>G</i> | 0.15        | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 19 | 691 | 0.3− | 0.0  | 2007 10 12 | 691 | 0.2− | 0.5+ | 2007 11 09 | G96 | 0.6+  | 0.2−  |
| 2003 11 19 | 691 | 0.1− | 0.3− | 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 09 | G96 | 0.2+  | 0.1−  |
| 2003 11 19 | 691 | 0.1− | 0.2+ | 2007 10 20 | 691 | 0.0  | 0.2+ | 2007 11 09 | G96 | 0.4+  | 0.2−  |
| 2003 12 01 | 691 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.2− | 0.1+ | 2007 11 14 | 704 | 0.2+  | 0.0   |
| 2003 12 01 | 691 | 0.2+ | 0.3+ | 2007 10 20 | 691 | 0.2+ | 0.3− | 2007 11 14 | 704 | 0.2+  | 0.1−  |
| 2003 12 01 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 11 14 | 704 | 0.3+  | 0.5−  |
| 2006 04 28 | 807 | 0.1+ | 0.4+ | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 11 14 | 704 | (0.1− | 1.6+) |
| 2006 04 28 | 807 | 0.1+ | 0.4+ | 2007 10 30 | 691 | 0.4− | 0.1+ | 2007 11 17 | G96 | 0.1+  | 0.1−  |
| 2007 10 07 | G96 | 0.1+ | 0.2− | 2007 10 30 | 703 | 0.1− | 0.1+ | 2007 11 17 | G96 | 0.5−  | 0.4−  |
| 2007 10 07 | G96 | 0.0  | 0.0  | 2007 10 30 | 703 | 1.1+ | 0.5− | 2007 11 17 | G96 | 0.2+  | 0.1−  |
| 2007 10 07 | G96 | 0.1− | 0.6− | 2007 10 30 | 703 | 0.3− | 0.7− | 2007 11 17 | G96 | 0.0   | 0.3−  |
| 2007 10 07 | G96 | 0.4+ | 0.3− | 2007 10 30 | 703 | 0.1− | 0.1− | 2007 12 06 | G96 | 0.1−  | 0.5−  |
| 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.8+ | 0.6− | 2007 12 06 | G96 | 0.4+  | 0.1+  |
| 2007 10 08 | 691 | 0.1− | 0.3− | 2007 11 05 | 704 | 0.2+ | 0.3+ | 2007 12 06 | G96 | 0.2−  | 0.1−  |
| 2007 10 08 | 691 | 0.0  | 0.1− | 2007 11 05 | 704 | 0.6+ | 1.3+ | 2007 12 06 | G96 | 0.4+  | 0.3−  |
| 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.7+ | 1.0+ |            |     |       |       |

**2007 TP<sub>64</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 25.56828   |          | (2000.0)  |          | P           |          | Q           |
|----------|------------|----------|-----------|----------|-------------|----------|-------------|
| <i>n</i> | 0.21893387 | $\omega$ | 170.70885 |          | +0.99971439 |          | −0.01992969 |
| <i>a</i> | 2.7264283  | $\Omega$ | 190.46024 |          | +0.01443903 |          | +0.94345531 |
| <i>e</i> | 0.2281675  | <i>i</i> | 4.16581   |          | +0.01904325 |          | +0.33090013 |
| <i>P</i> | 4.50       | <i>H</i> | 17.2      | <i>G</i> | 0.15        | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|-------|
| 2002 08 05 | 644 | 0.1+ | 0.4+ | 2007 10 08 | 691 | (3.4+ | 2.6+) | 2007 11 04 | G96 | 0.4+ | 0.1−  |
| 2002 08 05 | 644 | 0.0  | 0.4+ | 2007 10 12 | 691 | 0.2−  | 0.2−  | 2007 11 05 | 291 | 0.5− | 0.1+  |
| 2002 08 05 | 644 | 0.5− | 0.6+ | 2007 10 12 | 691 | 0.0   | 0.1+  | 2007 11 05 | 291 | 0.3− | 0.2+  |
| 2006 05 26 | G96 | 0.1− | 0.1− | 2007 10 12 | 691 | 1.1−  | 0.5−  | 2007 11 05 | 291 | 0.4− | 0.3+  |
| 2006 05 26 | G96 | 0.4+ | 0.0  | 2007 10 16 | 691 | 0.2−  | 0.2+  | 2007 11 07 | 704 | (0.0 | 2.4+) |
| 2006 05 26 | G96 | 0.2− | 0.0  | 2007 10 16 | 691 | 0.3−  | 0.5+  | 2007 11 07 | 704 | 1.4+ | 1.7+  |
| 2006 05 26 | G96 | 0.1− | 0.1+ | 2007 10 16 | 691 | 0.2−  | 0.0   | 2007 11 07 | 704 | 0.6+ | 1.6+  |
| 2007 09 13 | G96 | 0.0  | 0.1+ | 2007 10 20 | 691 | 0.1−  | 0.3−  | 2007 11 07 | 704 | 0.9+ | 1.2+  |
| 2007 09 13 | G96 | 0.1− | 0.3− | 2007 10 20 | 691 | 0.2−  | 0.0   | 2007 11 07 | 703 | 0.0  | 1.0+  |
| 2007 09 13 | G96 | 0.6− | 0.5− | 2007 10 20 | 691 | 0.1−  | 0.2−  | 2007 11 07 | 703 | 0.8+ | 0.5−  |
| 2007 09 13 | G96 | 0.8− | 0.1+ | 2007 11 03 | G96 | 0.2+  | 0.3−  | 2007 11 07 | 703 | 0.6+ | 1.1+  |
| 2007 10 07 | G96 | 0.4+ | 0.1− | 2007 11 03 | G96 | 0.5+  | 0.3−  | 2007 11 07 | 703 | 0.1− | 0.2−  |
| 2007 10 07 | G96 | 0.6+ | 0.1− | 2007 11 03 | G96 | 0.2+  | 0.3−  | 2007 11 12 | 704 | 0.1+ | 1.0+  |
| 2007 10 07 | G96 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.1−  | 0.3−  | 2007 11 12 | 704 | 0.3− | 0.5+  |
| 2007 10 07 | G96 | 0.0  | 0.0  | 2007 11 04 | G96 | 0.2+  | 0.2−  | 2007 11 12 | 704 | 0.9+ | 0.0   |
| 2007 10 08 | 691 | 0.3+ | 0.9− | 2007 11 04 | G96 | 0.4+  | 0.1−  | 2007 11 12 | 704 | 0.5+ | 0.2+  |
| 2007 10 08 | 691 | 1.5+ | 0.8− | 2007 11 04 | G96 | 0.4+  | 0.1−  |            |     |      |       |

**2007 TR<sub>64</sub> = 2007 TF<sub>316</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 332.05782  |          | (2000.0)  |     | $P$         |     | $Q$         |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.26666752 | $\omega$ | 302.64613 |     | +0.18112244 |     | −0.98322561 |
| $a$ | 2.3905030  | $\Omega$ | 136.90213 |     | +0.91251740 |     | +0.15986588 |
| $e$ | 0.1559392  | $i$      | 1.80287   |     | +0.36675149 |     | +0.08780831 |
| $P$ | 3.70       | $H$      | 17.9      | $G$ | 0.15        | $U$ | 2           |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 25 | 695 | 0.1− | 0.5+ | 2007 10 12 | 691 | 0.2− | 0.2− | 2007 11 07 | 703 | 0.7− | 0.4+ |
| 2001 03 25 | 695 | 0.1+ | 0.5+ | 2007 10 12 | 691 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.8+ | 0.4+ |
| 2003 09 16 | 691 | 0.1− | 0.2− | 2007 10 12 | 691 | 0.2− | 0.3− | 2007 11 14 | 704 | 0.6+ | 0.2+ |
| 2003 09 16 | 691 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.3− | 0.1+ | 2007 11 14 | 704 | 0.6+ | 1.1+ |
| 2003 09 16 | 691 | 0.2+ | 0.0  | 2007 10 16 | 691 | 0.7− | 0.2− | 2007 11 14 | 704 | 0.2+ | 1.0+ |
| 2007 09 15 | G96 | 0.3+ | 0.4− | 2007 10 16 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 704 | 1.9+ | 1.9+ |
| 2007 09 15 | G96 | 0.3+ | 0.5− | 2007 10 20 | 691 | 0.2− | 0.6− | 2007 11 14 | 704 | 1.7+ | 0.4− |
| 2007 09 15 | G96 | 0.1+ | 0.3− | 2007 10 20 | 691 | 0.1− | 0.0  | 2007 11 14 | 704 | 0.1+ | 0.5+ |
| 2007 09 15 | G96 | 0.1+ | 0.4− | 2007 10 20 | 691 | 0.3− | 0.3− | 2007 11 14 | 704 | 0.8+ | 0.0  |
| 2007 10 07 | G96 | 0.2+ | 0.2− | 2007 11 03 | G96 | 0.9+ | 0.4− | 2007 11 14 | 704 | 0.1− | 0.2+ |
| 2007 10 07 | G96 | 0.1− | 0.1− | 2007 11 03 | G96 | 0.7+ | 0.4− | 2007 11 14 | 704 | 1.3+ | 0.3+ |
| 2007 10 07 | G96 | 0.3− | 0.6− | 2007 11 03 | G96 | 0.5+ | 0.5− |            |     |      |      |
| 2007 10 07 | G96 | 0.0  | 0.6− | 2007 11 03 | G96 | 0.3+ | 0.5− |            |     |      |      |

**2007 TK<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 350.86487  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.18006795 | $\omega$ | 72.39697  | +0.81704800 |          |          | −0.57486858 |
| <i>a</i> | 3.1058354  | $\Omega$ | 322.65923 | +0.49746512 |          |          | +0.74167542 |
| <i>e</i> | 0.1272278  | <i>i</i> | 4.18429   | +0.29148074 |          |          | +0.34560626 |
| <i>P</i> | 5.47       | <i>H</i> | 16.1      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 12 31 | 691 | 0.1−  | 0.0   | 2007 10 12 | 704 | 1.0−  | 0.1−  | 2007 10 15 | 704 | 0.2− | 0.0  |
| 1997 12 31 | 691 | (1.8+ | 4.7−) | 2007 10 12 | 704 | 0.8+  | 0.1−  | 2007 10 20 | 703 | 0.1+ | 0.9+ |
| 1997 12 31 | 691 | 0.3+  | 0.3+  | 2007 10 12 | 941 | 0.6+  | 0.3−  | 2007 10 20 | 703 | 0.3+ | 0.4− |
| 2001 08 20 | 807 | 0.3+  | 0.2+  | 2007 10 12 | 941 | 0.7+  | 0.2−  | 2007 10 20 | 703 | 0.7− | 0.8+ |
| 2001 08 20 | 807 | 0.0   | 0.3+  | 2007 10 12 | 941 | 0.5+  | 0.0   | 2007 10 20 | 703 | 0.5− | 0.2+ |
| 2001 08 28 | 691 | 0.3−  | 0.3+  | 2007 10 12 | 941 | 0.3+  | 0.3+  | 2007 11 01 | 941 | 0.4+ | 0.0  |
| 2001 08 28 | 691 | 0.1−  | 0.3−  | 2007 10 12 | 941 | 0.2+  | 0.3+  | 2007 11 01 | 941 | 0.3+ | 0.0  |
| 2001 08 28 | 691 | 0.1−  | 0.2−  | 2007 10 14 | 691 | 1.2−  | 0.2+  | 2007 11 01 | 941 | 0.2+ | 0.1+ |
| 2007 10 08 | 941 | 0.0   | 0.2−  | 2007 10 14 | 691 | 0.9−  | 0.2−  | 2007 11 01 | 941 | 0.0  | 0.0  |
| 2007 10 08 | 941 | 0.1−  | 0.1−  | 2007 10 14 | 691 | 0.9−  | 0.3−  | 2007 11 01 | 941 | 0.2− | 0.0  |
| 2007 10 08 | 941 | 0.0   | 0.3−  | 2007 10 15 | 704 | 1.0+  | 0.1+  | 2007 11 09 | 941 | 0.0  | 0.1+ |
| 2007 10 08 | 941 | 0.1−  | 0.2−  | 2007 10 15 | 704 | (0.4− | 2.7−) | 2007 11 09 | 941 | 0.0  | 0.7− |
| 2007 10 12 | 704 | 0.0   | 0.3−  | 2007 10 15 | 704 | 0.5+  | 0.7−  | 2007 11 09 | 941 | 0.4+ | 0.2− |
| 2007 10 12 | 704 | 0.3+  | 1.1+  | 2007 10 15 | 704 | 0.6−  | 0.2+  |            |     |      |      |

**2007 TM<sub>66</sub> = 2005 CF<sub>76</sub> = 2005 EK<sub>59</sub> = 2005 EE<sub>326</sub>**Id. Minor Planet Center (*MPO* 128388; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 347.23483  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27813781 | $\omega$ | 268.69678 | +0.57748835 |          |          | −0.81609910 |
| <i>a</i> | 2.3243206  | $\Omega$ | 145.99842 | +0.76388458 |          |          | +0.53058114 |
| <i>e</i> | 0.1708333  | <i>i</i> | 2.26732   | +0.28807560 |          |          | +0.22905438 |
| <i>P</i> | 3.54       | <i>H</i> | 18.1      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 01 | 691 | 0.3+ | 0.4− | 2007 10 08 | G96 | 0.6+ | 0.1− | 2007 10 14 | 850 | 0.6− | 0.3+ |
| 2000 12 01 | 691 | 0.1+ | 0.6− | 2007 10 08 | G96 | 0.4+ | 0.3− | 2007 10 15 | 850 | 0.3− | 0.0  |
| 2000 12 01 | 691 | 0.1− | 0.4− | 2007 10 08 | G96 | 0.1+ | 0.0  | 2007 10 15 | 850 | 0.2+ | 0.7− |
| 2005 02 02 | 691 | 0.4+ | 0.2− | 2007 10 09 | 691 | 0.4− | 0.4− | 2007 11 07 | 703 | 0.9− | 0.3+ |
| 2005 02 02 | 691 | 0.3+ | 0.4+ | 2007 10 09 | 691 | 0.7− | 0.7+ | 2007 11 07 | 703 | 0.5− | 0.6+ |
| 2005 02 02 | 691 | 0.5+ | 0.2− | 2007 10 09 | 691 | 0.0  | 0.1− | 2007 11 07 | 703 | 0.9+ | 0.0  |
| 2005 02 14 | 691 | 0.3+ | 0.1+ | 2007 10 10 | 850 | 0.7+ | 1.9− | 2007 11 07 | 703 | 1.0− | 0.8+ |
| 2005 02 14 | 691 | 0.3+ | 0.3+ | 2007 10 10 | 850 | 1.2+ | 0.9− | 2007 11 09 | G96 | 0.2+ | 0.3− |
| 2005 02 14 | 691 | 0.2+ | 0.0  | 2007 10 10 | 850 | 0.7− | 0.2+ | 2007 11 09 | G96 | 0.2− | 0.6− |
| 2005 03 04 | G96 | 0.3− | 0.0  | 2007 10 13 | 850 | 0.5+ | 0.2+ | 2007 11 09 | G96 | 0.0  | 0.4− |
| 2005 03 04 | G96 | 0.1− | 0.0  | 2007 10 13 | 850 | 0.5+ | 0.5+ | 2007 11 09 | G96 | 0.3+ | 0.4− |
| 2005 03 04 | G96 | 0.5− | 0.0  | 2007 10 13 | 850 | 0.2+ | 0.1− | 2007 11 14 | 704 | 0.8− | 1.1+ |
| 2005 03 04 | G96 | 0.4− | 1.0− | 2007 10 13 | 691 | 0.2− | 0.0  | 2007 11 14 | 704 | 0.0  | 0.6+ |
| 2005 03 08 | G96 | 0.7− | 0.1+ | 2007 10 13 | 850 | 0.2+ | 0.3− | 2007 11 14 | 704 | 0.3− | 0.2+ |
| 2005 03 08 | G96 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.3− | 0.2+ |
| 2005 03 08 | G96 | 0.1− | 0.2+ | 2007 10 13 | 691 | 0.1− | 0.1+ | 2007 11 14 | 704 | 1.0+ | 1.4+ |
| 2005 03 08 | G96 | 0.1− | 0.1+ | 2007 10 14 | 850 | 0.3− | 0.1+ |            |     |      |      |
| 2007 10 08 | G96 | 0.6+ | 0.1− | 2007 10 14 | 850 | 0.5− | 0.1− |            |     |      |      |

**2007 TD<sub>68</sub> = 2006 OU<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 34.53508   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17856983 | $\omega$ | 294.37156 | +0.92756124 |          |          | +0.03763067 |
| <i>a</i> | 3.1231822  | $\Omega$ | 65.35230  | +0.17427606 |          |          | +0.83651735 |
| <i>e</i> | 0.1283790  | <i>i</i> | 24.14451  | −0.33054199 |          |          | +0.54664674 |
| <i>P</i> | 5.52       | <i>H</i> | 14.8      | <i>G</i>    | 0.15     | <i>U</i> | 0           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 25 | 644 | 0.2+  | 0.9−  | 2006 08 22 | E12 | 1.5−  | 0.1−  | 2007 11 07 | 703 | 0.2− | 0.4− |
| 2001 08 25 | 644 | 0.3+  | 0.7−  | 2006 08 22 | E12 | 0.2+  | 0.4−  | 2007 11 07 | 703 | 0.4− | 0.3− |
| 2001 08 25 | 644 | 0.4+  | 0.4−  | 2007 10 10 | 703 | 0.5+  | 0.8+  | 2007 11 07 | 703 | 0.4+ | 0.1+ |
| 2004 03 16 | 645 | 0.1+  | 0.0   | 2007 10 10 | 703 | 0.2+  | 0.1−  | 2007 11 07 | 703 | 0.4− | 0.5− |
| 2004 03 16 | 645 | 0.1+  | 0.0   | 2007 10 10 | 703 | 0.2−  | 0.2+  | 2007 11 11 | 704 | 0.3+ | 0.0  |
| 2005 05 11 | 703 | (0.4− | 2.6+) | 2007 10 10 | 703 | 0.6−  | 0.8+  | 2007 11 11 | 704 | 0.1+ | 0.0  |
| 2005 05 11 | 703 | 0.1−  | 0.9+  | 2007 10 12 | 683 | 0.4−  | 1.5−  | 2007 11 11 | 704 | 0.2+ | 0.4− |
| 2005 05 11 | 703 | 1.4−  | 0.5−  | 2007 10 12 | 683 | (0.2+ | 2.3−) | 2007 11 11 | 704 | 0.0  | 0.0  |
| 2005 05 11 | 703 | 0.2−  | 0.9+  | 2007 10 12 | 683 | 1.2−  | 0.8−  | 2007 11 15 | 704 | 0.5+ | 0.4+ |
| 2005 05 11 | 703 | 0.6−  | 0.3−  | 2007 10 13 | 683 | 0.5+  | 0.2+  | 2007 11 15 | 704 | 0.7+ | 0.4+ |
| 2005 05 11 | 703 | 0.9−  | 0.8+  | 2007 10 13 | 683 | (0.6− | 1.5+) | 2007 11 15 | 704 | 1.0+ | 0.2+ |
| 2005 05 11 | 703 | 0.8−  | 0.4+  | 2007 10 13 | 683 | 0.4−  | 1.5+  | 2007 11 15 | 704 | 0.3+ | 0.5+ |
| 2005 05 11 | 703 | 0.1+  | 0.3−  | 2007 10 15 | 683 | 0.4−  | 0.6−  | 2007 11 15 | 704 | 0.6+ | 0.4+ |
| 2006 06 27 | E12 | 0.1+  | 0.1−  | 2007 10 15 | 683 | 0.4−  | 0.0   | 2007 11 17 | G96 | 0.3− | 0.5− |
| 2006 06 27 | E12 | 1.1+  | 0.5+  | 2007 10 15 | 683 | (1.7− | 0.4−) | 2007 11 17 | G96 | 0.2+ | 0.6− |
| 2006 06 27 | E12 | 0.4+  | 0.2−  | 2007 10 18 | 683 | (1.8+ | 0.5−) | 2007 11 17 | G96 | 0.5+ | 0.5− |
| 2006 06 27 | E12 | 0.2+  | 0.6+  | 2007 10 18 | 683 | 0.5+  | 1.0+  | 2007 11 17 | G96 | 0.5− | 0.5− |
| 2006 07 29 | E12 | 0.3+  | 0.2+  | 2007 10 18 | 683 | (2.8+ | 0.5+) | 2007 11 20 | 703 | 0.7− | 0.2+ |
| 2006 07 29 | E12 | (1.7+ | 0.3−) | 2007 10 19 | 704 | 0.2+  | 0.3+  | 2007 11 20 | 703 | 0.5− | 0.5+ |
| 2006 07 29 | E12 | 1.1+  | 0.5+  | 2007 10 19 | 704 | 0.9−  | 0.2+  | 2007 11 20 | 703 | 0.3+ | 0.3+ |
| 2006 07 31 | E12 | 0.8+  | 0.5+  | 2007 10 19 | 704 | 0.1−  | 0.7+  | 2007 11 20 | 703 | 0.0  | 0.2+ |
| 2006 07 31 | E12 | 0.0   | 0.6+  | 2007 10 19 | 704 | 0.4−  | 0.9+  | 2007 11 29 | 704 | 0.0  | 0.2− |
| 2006 07 31 | E12 | 0.2+  | 0.9+  | 2007 10 19 | 683 | 0.9−  | 1.4−  | 2007 11 29 | 704 | 0.1− | 0.4+ |
| 2006 07 31 | E12 | 0.2−  | 0.3+  | 2007 10 19 | 704 | 0.1−  | 0.3+  | 2007 11 29 | 704 | 0.2+ | 1.0− |
| 2006 08 22 | E12 | 0.9+  | 0.7−  | 2007 10 19 | 683 | 0.4+  | 0.7−  | 2007 11 29 | 704 | 0.3− | 0.9+ |
| 2006 08 22 | E12 | 0.8−  | 0.1+  | 2007 10 19 | 683 | 0.3−  | 0.7−  |            |     |      |      |

**2007 TG<sub>68</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 71.61332   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.28390719 | $\omega$ | 74.37033  | +0.57984786 |          |          | +0.81414612 |
| <i>a</i> | 2.2927240  | $\Omega$ | 231.11054 | −0.76179192 |          |          | +0.52842890 |
| <i>e</i> | 0.1895854  | <i>i</i> | 2.26051   | −0.28887632 |          |          | +0.24068442 |
| <i>P</i> | 3.47       | <i>H</i> | 17.7      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 09 16 | 691 | 0.1−  | 0.1+  | 2007 10 13 | G98 | 0.8+  | 0.4+  | 2007 10 30 | G96 | 0.3+ | 0.5− |
| 1993 09 16 | 691 | 0.3+  | 0.1+  | 2007 10 13 | G98 | 1.1+  | 0.1+  | 2007 10 30 | G96 | 0.5+ | 0.3− |
| 1993 09 16 | 691 | 0.3−  | 0.2−  | 2007 10 15 | G98 | 0.6+  | 0.6−  | 2007 10 30 | G96 | 0.7+ | 0.3− |
| 2000 10 07 | 699 | 1.2+  | 1.0+  | 2007 10 15 | G98 | 0.5+  | 0.1+  | 2007 10 30 | G96 | 0.5+ | 0.5− |
| 2000 10 07 | 699 | 1.0+  | 0.5+  | 2007 10 15 | G98 | 0.4+  | 0.7+  | 2007 11 05 | 704 | 0.2+ | 0.3+ |
| 2000 10 07 | 699 | 0.1+  | 0.2+  | 2007 10 15 | G98 | 0.2−  | 0.0   | 2007 11 05 | 704 | 0.5− | 0.5+ |
| 2000 10 07 | 699 | (1.8− | 2.2+) | 2007 10 16 | 691 | 0.2+  | 0.0   | 2007 11 05 | 704 | 0.2− | 0.5− |
| 2000 11 24 | 691 | 0.3−  | 0.2−  | 2007 10 16 | 691 | 0.1−  | 0.2−  | 2007 11 05 | 704 | 0.6+ | 0.5+ |
| 2000 11 24 | 691 | 0.2−  | 0.1−  | 2007 10 16 | 691 | 0.2−  | 0.1+  | 2007 11 05 | 704 | 0.0  | 1.2+ |
| 2000 11 24 | 691 | 0.1+  | 0.4−  | 2007 10 20 | 703 | 0.6−  | 0.1−  | 2007 12 03 | G98 | 0.6+ | 0.4− |
| 2007 10 08 | 691 | 0.2−  | 0.2−  | 2007 10 20 | 703 | 0.9+  | 0.3+  | 2007 12 03 | G98 | 0.0  | 0.3+ |
| 2007 10 08 | 691 | 0.9−  | 0.4−  | 2007 10 20 | 703 | 0.3−  | 0.0   | 2007 12 03 | G98 | 0.1+ | 0.6+ |
| 2007 10 08 | 691 | 0.0   | 0.1+  | 2007 10 20 | 703 | (1.2+ | 2.3−) | 2007 12 16 | G98 | 0.2+ | 0.6+ |
| 2007 10 11 | G98 | 0.5+  | 0.3+  | 2007 10 30 | 691 | 0.5−  | 0.0   | 2007 12 16 | G98 | 0.6+ | 0.2+ |
| 2007 10 11 | G98 | 0.4+  | 0.2−  | 2007 10 30 | 691 | 0.3−  | 0.1−  | 2007 12 16 | G98 | 0.0  | 0.5+ |
| 2007 10 11 | G98 | 0.9+  | 0.4+  | 2007 10 30 | 691 | 0.1−  | 0.1−  |            |     |      |      |

**2007 TJ<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.16864   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25591540 | $\omega$ 136.11883 | +0.92978696   | +0.36808333 |
| <i>a</i> | 2.4569997  | $\Omega$ 202.28435 | −0.34007522   | +0.85554142 |
| <i>e</i> | 0.1932312  | <i>i</i> 0.49812   | −0.14087247   | +0.36409276 |
| <i>P</i> | 3.85       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 08 21 | 691 | 0.0  | 0.2+ | 2007 10 14 | A44 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.1− | 0.1+ |
| 1999 08 21 | 691 | 0.0  | 0.2+ | 2007 10 14 | A44 | 0.2+ | 0.2− | 2007 10 30 | G96 | 0.3− | 0.1− |
| 1999 08 21 | 691 | 0.1+ | 0.7− | 2007 10 14 | A44 | 0.4− | 0.2+ | 2007 11 09 | G96 | 0.2+ | 0.3− |
| 2003 09 18 | 291 | 0.2+ | 0.4+ | 2007 10 14 | 691 | 0.3− | 0.1− | 2007 11 09 | G96 | 0.0  | 0.2− |
| 2003 09 18 | 291 | 0.2+ | 0.0  | 2007 10 14 | 691 | 0.4− | 0.2− | 2007 11 09 | G96 | 0.2+ | 0.2− |
| 2003 09 18 | 291 | 0.0  | 0.1+ | 2007 10 14 | 691 | 0.4− | 0.3+ | 2007 11 09 | G96 | 0.5+ | 0.3− |
| 2003 11 22 | 695 | 0.2− | 0.1− | 2007 10 15 | A44 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.1+ |
| 2003 11 22 | 695 | 0.3− | 0.1− | 2007 10 15 | A44 | 0.2− | 0.1− | 2007 11 09 | G96 | 0.3+ | 0.1+ |
| 2006 04 27 | 807 | 0.2− | 0.1+ | 2007 10 15 | A44 | 0.3− | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2006 04 27 | 807 | 0.3+ | 0.3+ | 2007 10 16 | A44 | 0.3+ | 0.1+ | 2007 11 09 | G96 | 0.4+ | 0.1+ |
| 2007 10 10 | 691 | 0.5− | 0.4− | 2007 10 16 | A44 | 0.2− | 0.2− | 2007 11 17 | G96 | 0.3+ | 0.5+ |
| 2007 10 10 | 691 | 0.1− | 0.0  | 2007 10 16 | A44 | 0.0  | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.0  |
| 2007 10 10 | 691 | 0.5− | 0.2− | 2007 10 30 | G96 | 0.3− | 0.0  | 2007 11 17 | G96 | 0.3+ | 0.2+ |
| 2007 10 14 | A44 | 0.4+ | 0.7+ | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 11 17 | G96 | 0.1+ | 0.1− |

**2007 TS<sub>70</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.64644   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29387864 | $\omega$ 120.68361 | +0.94446370   | +0.31626538 |
| <i>a</i> | 2.2405641  | $\Omega$ 221.06676 | −0.32827385   | +0.89563663 |
| <i>e</i> | 0.1434329  | <i>i</i> 7.80770   | −0.01498679   | +0.31274788 |
| <i>P</i> | 3.35       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.1− | 0.0  | 2007 10 13 | H55 | 0.1− | 0.1− | 2007 10 15 | 704 | 0.6+ | 1.8+ |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 10 13 | H55 | 0.0  | 0.0  | 2007 10 15 | 704 | 0.9+ | 0.7+ |
| 1999 03 22 | 645 | 0.1+ | 0.1+ | 2007 10 13 | H55 | 0.2− | 0.1− | 2007 10 15 | 704 | 0.5− | 0.0  |
| 1999 03 22 | 645 | 0.1+ | 0.0  | 2007 10 13 | 703 | 0.1+ | 0.2+ | 2007 10 15 | 704 | 1.2− | 0.4− |
| 2007 09 12 | 703 | 0.6+ | 0.9+ | 2007 10 13 | 703 | 0.5− | 0.3− | 2007 10 15 | 704 | 0.2+ | 0.9+ |
| 2007 09 12 | 703 | 0.4− | 0.4− | 2007 10 13 | 703 | 0.1− | 0.1− | 2007 10 15 | 704 | 0.3− | 0.2+ |
| 2007 09 12 | 703 | 0.5− | 0.1− | 2007 10 13 | 703 | 0.1− | 0.0  | 2007 10 15 | G96 | 0.0  | 0.5− |
| 2007 09 12 | 703 | 0.1+ | 0.1+ | 2007 10 13 | 104 | 0.3− | 0.4+ | 2007 10 15 | G96 | 0.4+ | 0.3− |
| 2007 10 07 | 703 | 0.4− | 0.1+ | 2007 10 13 | 104 | 0.3+ | 0.4− | 2007 10 15 | G96 | 0.3+ | 0.4− |
| 2007 10 07 | 703 | 0.5+ | 0.6+ | 2007 10 13 | 104 | 0.6− | 0.1+ | 2007 10 15 | G96 | 0.1− | 0.4− |
| 2007 10 07 | 703 | 0.3− | 0.8+ | 2007 10 14 | 704 | 0.4+ | 0.4+ | 2007 10 17 | 699 | 0.6+ | 0.1+ |
| 2007 10 07 | 703 | 1.0− | 0.7+ | 2007 10 14 | 704 | 0.2+ | 1.3+ | 2007 10 17 | 699 | 0.4+ | 0.1+ |
| 2007 10 11 | 704 | 1.3− | 0.6− | 2007 10 14 | 704 | 0.5− | 1.1+ | 2007 10 17 | 699 | 0.3− | 0.3+ |
| 2007 10 11 | 704 | 0.7+ | 1.1− | 2007 10 14 | G96 | 0.3+ | 0.5− | 2007 10 17 | 699 | 0.0  | 0.0  |
| 2007 10 11 | 704 | 0.5− | 0.6− | 2007 10 14 | 704 | 0.3+ | 0.0  | 2007 10 20 | 704 | 0.0  | 0.8+ |
| 2007 10 11 | 704 | 0.1+ | 1.6− | 2007 10 14 | G96 | 0.2+ | 0.3− | 2007 10 20 | 704 | 0.7− | 0.8− |
| 2007 10 12 | 704 | 1.1+ | 0.1+ | 2007 10 14 | G96 | 0.3+ | 0.4− | 2007 10 20 | 704 | 0.3− | 0.1+ |
| 2007 10 12 | 704 | 0.3− | 0.7− | 2007 10 14 | 704 | 0.6+ | 0.5+ | 2007 11 01 | 703 | 0.4− | 0.1+ |
| 2007 10 12 | 704 | 0.5+ | 1.1− | 2007 10 14 | G96 | 0.2+ | 0.4− | 2007 11 01 | 703 | 0.8− | 0.5− |
| 2007 10 12 | 704 | 0.2+ | 0.3− | 2007 10 15 | 704 | 0.8+ | 0.9+ | 2007 11 01 | 703 | 0.6− | 0.5− |
| 2007 10 12 | 704 | 0.8+ | 0.2− | 2007 10 15 | 704 | 0.2− | 0.4− | 2007 11 01 | 703 | 0.7+ | 0.5+ |

**2007 TQ<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 38.85435   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23705135 | $\omega$ 346.14505 | +0.79604104   | +0.60465172 |
| <i>a</i> | 2.5856779  | $\Omega$ 336.58824 | −0.54869231   | +0.70231283 |
| <i>e</i> | 0.2041591  | <i>i</i> 3.85864   | −0.25545137   | +0.37570333 |
| <i>P</i> | 4.16       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 691 | 0.1+ | 0.0  | 2007 10 07 | G96 | 0.4+ | 0.3− | 2007 10 15 | 704 | 0.1− | 1.1+ |
| 2003 10 22 | 691 | 0.0  | 0.0  | 2007 10 07 | G96 | 0.1+ | 0.1− | 2007 10 15 | 704 | 0.2− | 0.8+ |
| 2003 10 22 | 691 | 0.0  | 0.1+ | 2007 10 07 | G96 | 0.0  | 0.3− | 2007 10 15 | 704 | 0.8+ | 1.5+ |
| 2003 11 18 | 644 | 0.2+ | 0.4+ | 2007 10 12 | 704 | 0.2+ | 0.7+ | 2007 10 15 | 704 | 0.4− | 1.3+ |
| 2003 11 18 | 644 | 0.2− | 0.2− | 2007 10 12 | 704 | 0.2− | 0.0  | 2007 10 16 | G96 | 0.8− | 0.4+ |
| 2003 11 18 | 644 | 0.3− | 0.2+ | 2007 10 12 | 704 | 0.0  | 0.1+ | 2007 10 16 | G96 | 0.3− | 0.3− |
| 2007 09 15 | 699 | 0.1− | 1.2− | 2007 10 12 | 704 | 0.6+ | 0.2+ | 2007 10 16 | G96 | 0.0  | 0.4− |
| 2007 09 15 | 699 | 0.6− | 1.0+ | 2007 10 12 | 704 | 0.1− | 0.2+ | 2007 10 16 | G96 | 0.1+ | 0.3− |
| 2007 09 15 | 699 | 1.8+ | 1.0− | 2007 10 13 | 621 | 0.1− | 0.4− | 2007 11 11 | G96 | 0.7+ | 0.6− |
| 2007 09 15 | 699 | 0.6− | 1.6+ | 2007 10 13 | 621 | 0.1− | 0.4− | 2007 11 11 | G96 | 0.8+ | 0.7− |
| 2007 09 24 | 691 | 0.2− | 0.1− | 2007 10 13 | 621 | 0.1+ | 0.6− | 2007 11 11 | G96 | 0.3− | 0.3− |
| 2007 09 24 | 691 | 0.3− | 0.5− | 2007 10 14 | 621 | 0.2− | 0.5− | 2007 11 11 | G96 | 0.2− | 0.2− |
| 2007 09 24 | 691 | 0.6− | 0.3− | 2007 10 14 | 621 | 0.4− | 0.4− |            |     |      |      |
| 2007 10 07 | G96 | 0.5+ | 0.0  | 2007 10 14 | 621 | 0.1+ | 0.5− |            |     |      |      |

**2007 TP<sub>73</sub> = 2002 PA<sub>137</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.46252   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21240930 | $\omega$ 175.69265 | +0.99891360   | −0.04592325 |
| <i>a</i> | 2.7819780  | $\Omega$ 186.95430 | +0.04056381   | +0.94049385 |
| <i>e</i> | 0.1088879  | <i>i</i> 3.74876   | +0.02293881   | +0.33669329 |
| <i>P</i> | 4.64       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 15 | 644 | 0.3+ | 0.2− | 2007 09 11 | G96 | 0.3+ | 0.0  | 2007 10 08 | H55 | 0.4− | 0.2+ |
| 2002 08 15 | 644 | 0.1+ | 0.1− | 2007 09 11 | G96 | 0.2− | 0.3− | 2007 10 08 | H55 | 0.0  | 0.3+ |
| 2002 08 15 | 644 | 0.1− | 0.2− | 2007 09 11 | G96 | 0.0  | 0.0  | 2007 10 08 | H55 | 0.3− | 0.2+ |
| 2002 08 17 | 644 | 0.0  | 0.0  | 2007 10 07 | H55 | 0.3− | 0.3+ | 2007 10 19 | G96 | 0.3+ | 0.1− |
| 2002 08 17 | 644 | 0.1− | 0.1− | 2007 10 07 | H55 | 0.0  | 0.3+ | 2007 10 19 | G96 | 0.2+ | 0.1− |
| 2002 08 17 | 644 | 0.1− | 0.2+ | 2007 10 07 | H55 | 0.1− | 0.2+ | 2007 10 19 | G96 | 0.7+ | 0.2− |
| 2005 03 11 | G96 | 1.0− | 0.0  | 2007 10 07 | G96 | 0.1− | 0.3− | 2007 10 19 | G96 | 0.2+ | 0.0  |
| 2005 03 11 | G96 | 0.6+ | 0.4− | 2007 10 07 | G96 | 0.1+ | 0.2− | 2007 11 05 | G96 | 0.2+ | 0.1+ |
| 2005 03 11 | G96 | 0.1− | 0.3− | 2007 10 07 | G96 | 0.3+ | 0.3− | 2007 11 05 | G96 | 0.0  | 0.2− |
| 2005 03 11 | G96 | 0.2+ | 0.2− | 2007 10 07 | G96 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.2− | 0.0  |
| 2007 09 11 | G96 | 0.0  | 0.4− | 2007 10 08 | H55 | 0.5− | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.1− |

**2007 TX<sub>75</sub> = 2003 WZ<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.77570  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23837013 | $\omega$ 78.05698 | −0.10877251   | −0.99370779 |
| <i>a</i> | 2.5761323  | $\Omega$ 18.25192 | +0.87563258   | −0.10849758 |
| <i>e</i> | 0.2802130  | <i>i</i> 4.89206  | +0.47057000   | −0.02780474 |
| <i>P</i> | 4.13       | <i>H</i> 18.2     | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 704 | 0.2+ | 0.1+ | 2007 09 08 | G96 | 0.6+ | 0.0  | 2007 10 13 | 691 | 0.3+ | 0.1− |
| 2003 11 20 | 704 | 1.1+ | 1.5+ | 2007 09 08 | G96 | 0.5− | 0.2+ | 2007 10 13 | 691 | 0.9− | 0.5− |
| 2003 11 20 | 704 | 0.1− | 0.1− | 2007 10 04 | 691 | 0.4+ | 0.1+ | 2007 10 13 | 691 | 0.2− | 0.1− |
| 2003 11 21 | 704 | 1.3− | 0.7− | 2007 10 04 | 691 | 0.5+ | 0.1− | 2007 10 21 | 691 | 0.3+ | 0.5− |
| 2003 11 21 | 704 | 0.2− | 0.1+ | 2007 10 04 | 691 | 0.2+ | 0.3− | 2007 10 21 | 691 | 0.5+ | 1.5+ |
| 2003 11 21 | 704 | 0.2+ | 0.8− | 2007 10 09 | 691 | 0.1− | 0.3− | 2007 10 21 | 691 | 0.2− | 0.0  |
| 2007 09 08 | G96 | 0.4− | 0.1− | 2007 10 09 | 691 | 0.4− | 0.1+ |            |     |      |      |
| 2007 09 08 | G96 | 0.0  | 0.5+ | 2007 10 09 | 691 | 0.0  | 0.2− |            |     |      |      |

**2007 TA<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 299.75579  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.28338247 | $\omega$ 79.18717 | −0.26700990   | −0.96222101 |
| <i>a</i> | 2.2955534  | $\Omega$ 26.48571 | +0.83093850   | −0.25786690 |
| <i>e</i> | 0.0913716  | <i>i</i> 6.85862  | +0.48810544   | −0.08738072 |
| <i>P</i> | 3.48       | <i>H</i> 17.4     | <i>G</i> 0.15 | <i>U</i> 2  |

## 2007 DEC. 24

M.P.O. 129847

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2000 10 19 691 | 0.1+ | 0.1+ | 2007 10 04 691 | 0.4+  | 0.2+  | 2007 10 21 691 | 0.8- | 0.3- |
| 2000 10 19 691 | 0.1- | 0.0  | 2007 10 04 691 | 0.2-  | 0.2-  | 2007 10 21 691 | 0.4- | 0.2+ |
| 2000 10 19 691 | 0.1- | 0.1+ | 2007 10 07 G96 | 0.8+  | 0.8-  | 2007 10 21 691 | 0.4+ | 0.1+ |
| 2002 04 08 644 | 0.1- | 0.4+ | 2007 10 07 G96 | (1.9+ | 2.1-) | 2007 10 21 691 | 0.5+ | 0.2+ |
| 2002 04 08 291 | 0.1+ | 0.2+ | 2007 10 07 G96 | 0.4+  | 0.7-  | 2007 10 21 691 | 0.3+ | 0.0  |
| 2002 04 08 291 | 0.1+ | 0.3+ | 2007 10 07 G96 | 0.6+  | 1.2-  | 2007 11 11 G96 | 1.1+ | 0.5- |
| 2002 04 08 291 | 0.2+ | 0.0  | 2007 10 09 691 | 0.6-  | 0.2+  | 2007 11 11 G96 | 0.6+ | 0.3- |
| 2002 04 08 644 | 0.1+ | 0.4+ | 2007 10 09 691 | 0.4-  | 0.2+  | 2007 11 11 G96 | 1.2+ | 0.4- |
| 2002 04 08 644 | 0.3- | 0.5+ | 2007 10 09 691 | 0.2-  | 0.1+  | 2007 11 11 G96 | 0.7+ | 0.4- |
| 2007 09 15 291 | 0.3- | 0.1+ | 2007 10 12 691 | 0.1+  | 0.1+  | 2007 11 17 703 | 0.6- | 0.2+ |
| 2007 09 15 291 | 0.3- | 0.0  | 2007 10 12 691 | 0.2+  | 0.2+  | 2007 11 17 703 | 0.0  | 0.2- |
| 2007 09 15 291 | 0.4- | 0.2+ | 2007 10 12 691 | 0.2+  | 0.1-  | 2007 11 17 703 | 0.6+ | 1.0+ |
| 2007 10 04 691 | 0.2+ | 0.3+ | 2007 10 21 691 | 0.2-  | 0.0   | 2007 11 17 703 | 0.8- | 0.1- |

2007 TE<sub>76</sub> = 2003 UB<sub>291</sub> = 2005 ER<sub>326</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 66.26009   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21259490 | $\omega$ | 144.58997 | +0.27014516   | +0.96260434 |
| <i>a</i> | 2.7803586  | $\Omega$ | 141.07156 | -0.89066954   | +0.25787680 |
| <i>e</i> | 0.0329970  | <i>i</i> | 1.85675   | -0.36569026   | +0.08302078 |
| <i>P</i> | 4.64       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 1996 02 14 691 | 0.1-  | 0.3+  | 2005 03 09 691 | 0.1+ | 0.2+ | 2007 09 10 G96 | 0.2+ | 0.1+ |
| 1996 02 14 691 | 0.2+  | 0.2-  | 2005 03 09 691 | 0.0  | 0.4+ | 2007 09 20 691 | 0.1- | 0.4+ |
| 1996 02 14 691 | 0.4+  | 0.1+  | 2005 03 09 691 | 0.2+ | 0.3+ | 2007 09 20 691 | 0.2- | 0.2+ |
| 1998 09 12 691 | (3.2- | 4.8-) | 2006 06 01 691 | 0.4- | 0.3+ | 2007 09 20 691 | 1.4+ | 1.0- |
| 1998 09 12 691 | 0.4-  | 0.1+  | 2006 06 01 691 | 0.4+ | 0.6+ | 2007 10 05 691 | 0.5- | 0.0  |
| 1998 09 12 691 | 0.6-  | 0.0   | 2006 06 01 691 | 0.2- | 0.4+ | 2007 10 05 691 | 0.6- | 0.2+ |
| 1998 09 19 691 | (2.3+ | 0.1-) | 2007 08 23 691 | 0.2- | 0.3+ | 2007 10 05 691 | 0.5- | 0.7+ |
| 1998 09 19 691 | 0.5+  | 0.5-  | 2007 08 23 691 | 0.1- | 0.3- | 2007 10 09 691 | 0.5- | 0.4+ |
| 1998 10 01 691 | 0.2+  | 0.4-  | 2007 08 23 691 | 0.3- | 0.3- | 2007 10 09 691 | 0.5- | 0.1+ |
| 1998 10 01 691 | 0.0   | 0.1-  | 2007 09 10 G96 | 0.6+ | 0.1- | 2007 10 09 691 | 0.6- | 0.5+ |
| 1998 10 01 691 | 0.3+  | 0.1-  | 2007 09 10 G96 | 0.0  | 0.2- | 2007 10 19 G96 | 0.4+ | 0.1+ |
| 2003 10 23 691 | 0.2+  | 0.2+  | 2007 09 10 G96 | 0.9+ | 0.1+ | 2007 10 19 G96 | 0.1+ | 0.2- |
| 2003 10 23 691 | 0.4-  | 0.2+  | 2007 09 10 G96 | 0.1+ | 0.0  | 2007 10 19 G96 | 0.2- | 0.3+ |
| 2003 10 23 691 | 0.0   | 0.2+  | 2007 09 10 G96 | 0.0  | 0.1+ | 2007 10 19 G96 | 0.1- | 0.3+ |
| 2003 10 24 695 | 0.2-  | 0.3+  | 2007 09 10 G96 | 0.5+ | 0.2+ |                |      |      |
| 2003 10 24 695 | 0.3-  | 0.3+  | 2007 09 10 G96 | 0.3+ | 0.2+ |                |      |      |

2007 TF<sub>76</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 10.93817   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27616286 | $\omega$ | 320.60818 | +0.98176925   | +0.18866176 |
| <i>a</i> | 2.3353888  | $\Omega$ | 28.54242  | -0.15986519   | +0.88545742 |
| <i>e</i> | 0.2343889  | <i>i</i> | 2.77696   | -0.10282146   | +0.42470212 |
| <i>P</i> | 3.57       | <i>H</i> | 19.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2000 11 19 691 | 0.2+  | 0.0   | 2007 09 12 691 | 0.1+ | 0.2- | 2007 10 09 691 | 0.3- | 0.2+ |
| 2000 11 19 691 | 0.1-  | 0.1-  | 2007 09 12 G96 | 0.0  | 0.5- | 2007 10 09 691 | 0.1+ | 0.2- |
| 2000 11 19 691 | 0.2+  | 0.5-  | 2007 09 12 G96 | 0.2+ | 0.4- | 2007 10 09 691 | 0.0  | 0.2- |
| 2002 02 07 695 | 0.3+  | 1.1+  | 2007 09 12 G96 | 0.2- | 0.6- | 2007 10 13 691 | 0.0  | 0.1- |
| 2002 02 07 695 | 0.6+  | 0.8+  | 2007 09 12 G96 | 0.0  | 0.7- | 2007 10 13 691 | 0.1- | 0.1- |
| 2007 09 03 703 | (2.6+ | 1.2-) | 2007 09 20 691 | 0.4+ | 0.2- | 2007 10 13 691 | 0.1- | 0.2+ |
| 2007 09 03 703 | 0.1+  | 0.4-  | 2007 09 20 691 | 0.3- | 0.1+ | 2007 10 15 691 | 0.1- | 0.3+ |
| 2007 09 03 703 | 0.3-  | 0.3-  | 2007 09 20 691 | 0.4- | 0.9+ | 2007 10 15 691 | 0.2- | 0.3+ |
| 2007 09 03 703 | 0.4+  | 0.4+  | 2007 10 05 691 | 0.1+ | 0.0  | 2007 10 15 691 | 0.0  | 0.2+ |
| 2007 09 12 691 | 0.1+  | 0.3-  | 2007 10 05 691 | 0.2+ | 0.3+ |                |      |      |
| 2007 09 12 691 | 0.0   | 0.1-  | 2007 10 05 691 | 0.0  | 0.3+ |                |      |      |

2007 TG<sub>76</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 14.73418   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28113665 | $\omega$ | 330.24956 | +0.96195920   | +0.27240072 |
| <i>a</i> | 2.3077623  | $\Omega$ | 13.98957  | -0.23059476   | +0.85042028 |
| <i>e</i> | 0.1749770  | <i>i</i> | 4.93414   | -0.14649418   | +0.45009243 |
| <i>P</i> | 3.51       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |       |       |
|----------------|-------|-------|----------------|------|------|----------------|-------|-------|
| 2000 09 02 699 | 0.1+  | 1.4+  | 2007 09 09 699 | 0.4+ | 0.5- | 2007 10 09 691 | 0.4-  | 0.4+  |
| 2000 09 02 699 | 0.3-  | 0.2-  | 2007 09 12 691 | 0.2+ | 0.1- | 2007 10 09 691 | (1.6- | 2.2-) |
| 2000 09 02 699 | 1.7+  | 0.5+  | 2007 09 12 691 | 0.2+ | 0.3- | 2007 10 09 691 | 0.8-  | 0.5+  |
| 2000 09 02 699 | (3.3- | 2.3+) | 2007 09 12 691 | 0.0  | 0.1- | 2007 10 13 691 | 0.1+  | 0.0   |
| 2000 09 05 691 | 0.3+  | 0.7-  | 2007 09 12 G96 | 0.2+ | 0.7- | 2007 10 13 691 | 0.1-  | 0.0   |
| 2000 09 05 691 | 0.4+  | 0.8-  | 2007 09 12 G96 | 0.2+ | 0.6- | 2007 10 13 691 | 0.1-  | 0.2+  |
| 2000 09 05 691 | 0.4+  | 0.8-  | 2007 09 12 G96 | 0.3+ | 0.5- | 2007 10 15 691 | 0.5+  | 0.5+  |
| 2006 03 24 G96 | 0.1+  | 0.8+  | 2007 09 12 G96 | 0.1+ | 0.5- | 2007 10 15 691 | 0.3-  | 0.3-  |
| 2006 03 24 G96 | 0.4+  | 0.7+  | 2007 10 05 691 | 0.2- | 0.1- | 2007 10 15 691 | 0.6-  | 0.2+  |
| 2006 03 24 G96 | 0.4+  | 0.4+  | 2007 10 05 691 | 0.3- | 0.1- | 2007 12 06 G96 | 1.1+  | 0.8-  |
| 2006 03 24 G96 | 0.5+  | 0.7+  | 2007 10 05 691 | 0.0  | 0.1- | 2007 12 06 G96 | 0.3+  | 0.2-  |
| 2007 09 09 699 | (0.9- | 4.4+) | 2007 10 09 691 | 0.2+ | 0.2- | 2007 12 06 G96 | 0.2+  | 0.7-  |
| 2007 09 09 699 | 0.7+  | 1.0+  | 2007 10 09 691 | 0.2- | 0.6+ | 2007 12 06 G96 | 0.0   | 0.6-  |
| 2007 09 09 699 | 0.2-  | 1.4+  | 2007 10 09 691 | 0.3+ | 0.1+ |                |       |       |

2007 TL<sub>78</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 337.37179  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22146840 | $\omega$ | 62.25236 | +0.39616996   | -0.91815483 |
| <i>a</i> | 2.7055872  | $\Omega$ | 4.42341  | +0.81044987   | +0.34639913 |
| <i>e</i> | 0.1851937  | <i>i</i> | 4.76683  | +0.43153259   | +0.19235218 |
| <i>P</i> | 4.45       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2003 12 17 699 | 0.7-  | 1.1+  | 2007 10 08 703 | 0.5+ | 0.3+ | 2007 10 30 703 | 0.5+ | 0.8+ |
| 2003 12 17 699 | 0.4+  | 0.9-  | 2007 10 08 703 | 0.1- | 1.3- | 2007 10 30 703 | 0.4+ | 1.0- |
| 2003 12 17 699 | 0.2+  | 1.4+  | 2007 10 09 691 | 0.0  | 0.3+ | 2007 11 01 704 | 1.3- | 0.0  |
| 2003 12 17 699 | 0.5+  | 0.4+  | 2007 10 09 691 | 0.1- | 0.3+ | 2007 11 01 704 | 0.2+ | 0.2- |
| 2004 01 16 703 | 0.4-  | 1.4-  | 2007 10 09 691 | 0.6- | 0.7+ | 2007 11 01 704 | 0.5- | 1.1- |
| 2004 01 16 703 | 0.7+  | 0.6+  | 2007 10 13 691 | 0.0  | 0.1+ | 2007 11 06 704 | 0.6- | 0.5- |
| 2004 01 16 703 | 0.7+  | 0.0   | 2007 10 13 691 | 0.1- | 0.1+ | 2007 11 06 704 | 0.2+ | 1.1+ |
| 2004 01 16 691 | 0.2-  | 0.5-  | 2007 10 13 691 | 0.1+ | 0.1+ | 2007 11 06 704 | 0.1- | 0.4+ |
| 2004 01 16 703 | 0.5-  | 0.3+  | 2007 10 14 691 | 0.2- | 0.0  | 2007 11 07 704 | 0.3+ | 0.0  |
| 2004 01 16 691 | 0.2-  | 0.3-  | 2007 10 14 691 | 0.2- | 0.2- | 2007 11 07 704 | 0.4+ | 0.7- |
| 2004 01 16 691 | 0.3-  | 0.6-  | 2007 10 14 691 | 0.2- | 0.2+ | 2007 11 07 704 | 1.5+ | 0.1+ |
| 2007 10 05 691 | 0.1-  | 0.3+  | 2007 10 21 691 | 0.1- | 0.1- | 2007 11 07 704 | 0.3- | 0.3- |
| 2007 10 05 691 | 0.4+  | 0.1+  | 2007 10 21 691 | 0.1- | 0.2- | 2007 11 17 703 | 0.8- | 0.6+ |
| 2007 10 05 691 | 0.0   | 0.3+  | 2007 10 21 691 | 0.2- | 0.1- | 2007 11 17 703 | 0.6+ | 0.6+ |
| 2007 10 08 703 | (2.2+ | 0.3+) | 2007 10 30 703 | 0.8- | 0.2+ | 2007 11 17 703 | 0.9+ | 0.4+ |
| 2007 10 08 703 | 1.1+  | 1.2-  | 2007 10 30 703 | 0.1+ | 1.2+ | 2007 11 17 703 | 0.5- | 1.7- |

2007 TE<sub>79</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 57.50819   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23668316 | $\omega$ | 305.90102 | +0.81424536   | +0.57965998 |
| <i>a</i> | 2.5883588  | $\Omega$ | 18.73658  | -0.49587297   | +0.72279291 |
| <i>e</i> | 0.1263114  | <i>i</i> | 5.64630   | -0.30185176   | +0.37625087 |
| <i>P</i> | 4.16       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 11 18 691 | 0.0  | 0.5- | 2007 09 15 G96 | 0.2+ | 0.2- | 2007 10 09 691 | 0.2+ | 0.1- |
| 2003 11 18 691 | 0.0  | 0.1+ | 2007 09 15 G96 | 0.1- | 0.1+ | 2007 10 13 691 | 0.2+ | 0.3+ |
| 2003 11 18 691 | 0.0  | 0.3- | 2007 10 05 691 | 0.4- | 0.1+ | 2007 10 13 691 | 0.2- | 0.2- |
| 2003 12 01 691 | 0.3+ | 0.4+ | 2007 10 05 691 | 0.2- | 0.1+ | 2007 10 13 691 | 0.1+ | 0.1+ |
| 2003 12 01 691 | 0.1+ | 0.1- | 2007 10 05 691 | 0.1+ | 0.0  | 2007 10 21 691 | 0.1+ | 0.3- |

## M.P.O. 129848

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|            |     |      |      |            |     |      |     |            |     |      |      |
|------------|-----|------|------|------------|-----|------|-----|------------|-----|------|------|
| 2003 12 01 | 691 | 0.3− | 0.3+ | 2007 10 09 | 691 | 0.1− | 0.0 | 2007 10 21 | 691 | 0.2− | 0.2− |
| 2007 09 15 | G96 | 0.2+ | 0.1− | 2007 10 09 | 691 | 0.0  | 0.0 | 2007 10 21 | 691 | 0.1+ | 0.6+ |

**2007 TM<sub>80</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.76865    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18224401 | $\omega$ | 262.59913 | +0.91632117   | −0.39747346 |
| <i>a</i> | 3.0810628  | $\Omega$ | 120.81009 | +0.38612299   | +0.84477193 |
| <i>e</i> | 0.1412017  | <i>i</i> | 3.24964   | +0.10613459   | +0.35829490 |
| <i>P</i> | 5.41       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 14 | 608 | 0.2+ | 0.1− | 2007 10 08 | 699 | 0.3+ | 0.4− | 2007 10 09 | G96 | 0.4+ | 0.1− |
| 2001 08 14 | 608 | 0.2− | 0.3− | 2007 10 08 | 699 | 0.5+ | 0.5+ | 2007 10 14 | 683 | 0.5− | 0.5− |
| 2001 08 14 | 608 | 0.7− | 0.9− | 2007 10 08 | 699 | 0.1+ | 0.2− | 2007 10 14 | 683 | 0.6+ | 1.6+ |
| 2001 09 21 | 291 | 0.4+ | 0.4+ | 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 10 14 | 683 | 0.1− | 1.1− |
| 2001 09 21 | 291 | 0.2+ | 0.9+ | 2007 10 09 | G96 | 0.3+ | 0.1− | 2007 10 19 | 704 | 0.4− | 0.2+ |
| 2001 09 21 | 291 | 0.2+ | 0.5+ | 2007 10 09 | G96 | 0.0  | 0.1− | 2007 10 19 | 704 | 0.0  | 0.3− |
| 2004 02 29 | 691 | 0.0  | 0.3+ | 2007 10 09 | G96 | 0.3+ | 0.1− | 2007 10 19 | 704 | 0.1− | 0.7− |
| 2004 02 29 | 691 | 0.0  | 0.3− | 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 10 19 | 704 | 0.6+ | 0.3+ |
| 2004 02 29 | 691 | 0.0  | 0.1+ | 2007 10 09 | G96 | 0.3− | 0.2− | 2007 10 19 | 704 | 0.2− | 0.6+ |
| 2007 10 07 | 703 | 0.0  | 0.6− | 2007 10 09 | G96 | 0.1+ | 0.1− | 2007 11 12 | 704 | 0.4− | 0.2+ |
| 2007 10 07 | 703 | 0.4− | 1.0+ | 2007 10 09 | G96 | 0.2− | 0.1+ | 2007 11 12 | 704 | 0.7− | 0.6+ |
| 2007 10 07 | 703 | 1.3− | 0.6− | 2007 10 09 | G96 | 0.2+ | 0.1− | 2007 11 12 | 704 | 0.0  | 0.7− |
| 2007 10 07 | 703 | 0.1− | 0.3− | 2007 10 09 | G96 | 0.4+ | 0.2− |            |     |      |      |
| 2007 10 08 | 699 | 0.3+ | 1.3+ | 2007 10 09 | G96 | 0.3+ | 0.1− |            |     |      |      |

**2007 TA<sub>82</sub> = 2004 TJ<sub>159</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.20777   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30034745 | $\omega$ | 301.17315 | +0.59229147   | +0.80570737 |
| <i>a</i> | 2.2082763  | $\Omega$ | 5.15560   | −0.71839330   | +0.53097372 |
| <i>e</i> | 0.1747803  | <i>i</i> | 3.28079   | −0.36483131   | +0.26249294 |
| <i>P</i> | 3.28       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 06 | 691 | 0.3+ | 0.2+ | 2007 09 03 | 703 | 0.3+ | 0.0  | 2007 09 20 | 691 | 0.5− | 0.1+ |
| 2004 10 06 | 691 | 0.2+ | 0.1+ | 2007 09 03 | 703 | 1.0+ | 0.2+ | 2007 10 08 | G96 | 0.1− | 0.2− |
| 2004 10 06 | 691 | 0.0  | 0.1+ | 2007 09 03 | 703 | 0.8+ | 0.9− | 2007 10 08 | G96 | 0.1− | 0.4− |
| 2004 10 10 | 691 | 0.2− | 0.1− | 2007 09 03 | 703 | 0.1− | 0.3+ | 2007 10 08 | G96 | 0.5+ | 0.4− |
| 2004 10 10 | 691 | 0.1− | 0.0  | 2007 09 03 | 703 | 0.8− | 0.3+ | 2007 10 08 | G96 | 0.1+ | 0.3− |
| 2004 10 10 | 691 | 0.0  | 0.4− | 2007 09 03 | 703 | 0.7− | 0.1− | 2007 10 09 | 691 | 0.1− | 0.0  |
| 2006 02 27 | G96 | 0.2+ | 0.6+ | 2007 09 06 | 699 | 1.5+ | 1.0+ | 2007 10 09 | 691 | 0.3− | 0.0  |
| 2006 02 27 | G96 | 0.1+ | 0.2+ | 2007 09 06 | 699 | 1.5+ | 2.3+ | 2007 10 09 | 691 | 0.3− | 0.5+ |
| 2006 02 27 | G96 | 0.2+ | 0.3+ | 2007 09 06 | 699 | 2.4+ | 0.5− | 2007 10 19 | G96 | 0.0  | 0.2− |
| 2006 02 27 | G96 | 0.2+ | 0.5+ | 2007 09 06 | 699 | 0.6− | 0.5+ | 2007 10 19 | G96 | 0.1− | 0.6− |
| 2007 08 16 | D29 | 0.1+ | 0.7− | 2007 09 11 | G96 | 0.1+ | 0.1− | 2007 10 19 | G96 | 0.2+ | 0.3− |
| 2007 08 16 | D29 | 0.4+ | 0.1− | 2007 09 11 | G96 | 0.1− | 0.1− | 2007 10 19 | G96 | 0.5+ | 0.2+ |
| 2007 08 16 | D29 | 0.6− | 0.7+ | 2007 09 11 | G96 | 0.2+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.0  |
| 2007 08 16 | D29 | 0.4+ | 0.2+ | 2007 09 11 | G96 | 0.5+ | 0.2− | 2007 10 30 | G96 | 0.7+ | 0.1− |
| 2007 09 03 | 703 | 0.7− | 0.3+ | 2007 09 20 | 691 | 0.4− | 0.1− | 2007 10 30 | G96 | 0.6+ | 0.5+ |
| 2007 09 03 | 703 | 0.0  | 0.3− | 2007 09 20 | 691 | 0.8− | 0.5− | 2007 10 30 | G96 | 0.9+ | 0.2+ |

**2007 TE<sub>82</sub> = 2006 JQ<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.39547   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29917855 | $\omega$ | 341.16161 | +0.98859604   | −0.14700090 |
| <i>a</i> | 2.2140245  | $\Omega$ | 27.35539  | +0.14568570   | +0.87862793 |
| <i>e</i> | 0.1724759  | <i>i</i> | 4.07947   | +0.03812534   | +0.45431674 |
| <i>P</i> | 3.29       | <i>H</i> | 18.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 01 | 568 | 0.3+ | 0.7+ | 2007 10 16 | 300 | 0.6+ | 0.2− | 2007 11 01 | G96 | 0.0  | 0.1− |
| 2006 05 01 | 568 | 0.3+ | 0.7+ | 2007 10 16 | 300 | 0.6+ | 0.2+ | 2007 11 01 | G96 | 0.1− | 0.0  |
| 2006 05 01 | 568 | 0.4+ | 0.7+ | 2007 10 16 | 300 | 0.4+ | 0.4+ | 2007 11 01 | G96 | 0.3+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 25 | G96 | 0.6+ | 0.7− | 2007 10 16 | 300 | 0.4+ | 0.5− | 2007 11 01 | 291 | 0.5+ | 0.4+ |
| 2007 09 25 | G96 | 0.0  | 0.7− | 2007 10 16 | 300 | 0.1+ | 0.4+ | 2007 11 01 | 291 | 0.1+ | 0.1+ |
| 2007 09 25 | G96 | 0.2+ | 0.5− | 2007 10 17 | 300 | 0.0  | 0.7+ | 2007 11 01 | 291 | 0.0  | 0.0  |
| 2007 09 25 | G96 | 0.3+ | 0.6− | 2007 10 17 | 300 | 1.0− | 0.1− | 2007 11 07 | G96 | 0.1− | 0.1+ |
| 2007 10 08 | 691 | 0.4− | 0.0  | 2007 10 17 | 300 | 0.5+ | 0.6+ | 2007 11 07 | G96 | 0.0  | 0.2− |
| 2007 10 08 | 691 | 0.5− | 0.3+ | 2007 10 17 | 300 | 0.0  | 0.5+ | 2007 11 07 | G96 | 0.2− | 0.2− |
| 2007 10 08 | 691 | 0.5− | 0.4+ | 2007 10 17 | 300 | 0.3− | 1.6+ | 2007 11 07 | G96 | 0.0  | 0.3− |
| 2007 10 09 | 691 | 0.1− | 0.3+ | 2007 10 20 | 691 | 0.4− | 0.2+ | 2007 11 18 | G96 | 0.1+ | 0.3− |
| 2007 10 09 | 691 | 0.2− | 0.1− | 2007 10 20 | 691 | 0.3− | 0.1+ | 2007 11 18 | G96 | 0.3− | 0.2− |
| 2007 10 09 | 691 | 0.4− | 0.0  | 2007 10 20 | 691 | 1.0− | 0.8+ | 2007 11 18 | G96 | 0.3− | 0.1− |
| 2007 10 16 | 300 | 0.7+ | 0.9− | 2007 11 01 | G96 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.1− | 0.6− |

**2007 TR<sub>82</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 166.79120  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25462307 | $\omega$ | 233.28821 | −0.92141641   | +0.38820192 |
| <i>a</i> | 2.4653063  | $\Omega$ | 329.54378 | −0.34491849   | −0.83732277 |
| <i>e</i> | 0.1311747  | <i>i</i> | 1.92886   | −0.17894983   | −0.38495433 |
| <i>P</i> | 3.87       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 01 | 691 | 0.2− | 0.1− | 2007 09 14 | G96 | 0.7− | 0.2+ | 2007 10 14 | G96 | 0.5+ | 0.1− |
| 1995 08 01 | 691 | 0.2+ | 0.2− | 2007 10 08 | G96 | 0.2− | 0.2+ | 2007 10 14 | G96 | 0.3+ | 0.6− |
| 1995 08 01 | 691 | 0.1+ | 0.2− | 2007 10 08 | G96 | 0.6− | 0.4− | 2007 10 14 | G96 | 0.1+ | 0.2− |
| 1995 09 02 | 691 | 0.6− | 0.3+ | 2007 10 08 | G96 | 0.2+ | 0.1− | 2007 10 14 | G96 | 0.5+ | 0.3+ |
| 1995 09 02 | 691 | 0.7+ | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.2− | 2007 10 14 | G96 | 0.5− | 0.3− |
| 1995 09 02 | 691 | 0.1− | 0.1+ | 2007 10 09 | G96 | 0.2− | 0.3− | 2007 10 14 | G96 | 0.4+ | 0.2+ |
| 2007 09 14 | G96 | 0.0  | 0.2+ | 2007 10 09 | G96 | 0.5+ | 0.4+ | 2007 10 14 | G96 | 0.4− | 0.2− |
| 2007 09 14 | G96 | 0.2+ | 0.5+ | 2007 10 09 | G96 | 0.2− | 0.1+ | 2007 10 14 | G96 | 0.6− | 0.3+ |
| 2007 09 14 | G96 | 0.2− | 0.0  | 2007 10 09 | G96 | 0.4+ | 0.1− |            |     |      |      |

**2007 TN<sub>83</sub> = 2006 JS<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.94551   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25402739 | $\omega$ | 319.58468 | +0.96140613   | +0.27459378 |
| <i>a</i> | 2.4691588  | $\Omega$ | 24.49374  | −0.24050703   | +0.86915875 |
| <i>e</i> | 0.1931547  | <i>i</i> | 2.38035   | −0.13362117   | +0.41129227 |
| <i>P</i> | 3.88       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 25 | 644 | 0.4− | 0.2+ | 2007 09 12 | G96 | 0.1+ | 0.0  | 2007 10 19 | G96 | 0.1+ | 0.2+ |
| 2003 08 25 | 644 | 0.1− | 0.2+ | 2007 09 12 | G96 | 0.1− | 0.5− | 2007 10 19 | G96 | 0.2+ | 0.0  |
| 2003 08 25 | 644 | 0.4− | 0.2+ | 2007 10 08 | G96 | 0.2− | 0.4− | 2007 10 30 | G96 | 0.4+ | 0.3+ |
| 2003 09 19 | 691 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.3− | 0.0  |
| 2003 09 19 | 691 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.1+ | 0.1− | 2007 10 30 | G96 | 0.5− | 0.1+ |
| 2003 09 19 | 691 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.2+ |
| 2006 05 01 | 568 | 0.1+ | 0.1+ | 2007 10 09 | G96 | 0.0  | 0.0  | 2007 12 06 | G96 | 0.4− | 0.2+ |
| 2006 05 01 | 568 | 0.1− | 0.2+ | 2007 10 09 | G96 | 0.1+ | 0.1− | 2007 12 06 | G96 | 0.5− | 0.0  |
| 2006 05 01 | 568 | 0.0  | 0.2+ | 2007 10 09 | G96 | 0.3− | 0.1+ | 2007 12 06 | G96 | 0.2− | 0.1+ |
| 2006 05 02 | 568 | 0.1+ | 0.4− | 2007 10 09 | G96 | 0.2+ | 0.1− | 2007 12 06 | G96 | 0.1+ | 0.4+ |
| 2007 09 12 | G96 | 0.1+ | 0.2− | 2007 10 19 | G96 | 0.6+ | 0.2− |            |     |      |      |
| 2007 09 12 | G96 | 0.2− | 0.3− | 2007 10 19 | G96 | 0.1+ | 0.0  |            |     |      |      |

**2007 TX<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.38760   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22196608 | $\omega$ | 59.86620  | +0.99474284   | +0.02269747 |
| <i>a</i> | 2.7015415  | $\Omega$ | 298.66919 | −0.06507667   | +0.89301956 |
| <i>e</i> | 0.3194804  | <i>i</i> | 6.53499   | +0.07906770   | +0.44944509 |
| <i>P</i> | 4.44       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 30 | 699 | 0.2+ | 0.3+ | 2007 10 08 | 703 | 0.0  | 0.1+ | 2007 11 01 | 703 | 0.8− | 0.3− |
| 1998 08 30 | 699 | 0.1− | 0.1− | 2007 10 08 | 703 | 0.5+ | 0.2+ | 2007 11 01 | 703 | 0.6+ | 0.4− |
| 1998 08 30 | 699 | 0.3− | 0.0  | 2007 10 08 | 703 | 0.1+ | 0.2− | 2007 11 01 | 703 | 0.2− | 0.2− |

2007 DEC. 24

M.P.O. 129849

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 18 | 699 | 0.7+ | 0.6- | 2007 10 09 | 703 | 0.1+ | 0.1+ | 2007 11 01 | 703 | 0.7+ | 0.3- |
| 1998 09 18 | 699 | 1.1+ | 0.7- | 2007 10 09 | 703 | 0.0  | 0.1- | 2007 11 03 | 704 | 0.2+ | 0.6+ |
| 1998 09 18 | 699 | 0.7- | 0.6- | 2007 10 09 | 703 | 0.3+ | 0.4+ | 2007 11 03 | 704 | 0.3+ | 0.6- |
| 2007 09 05 | 703 | 0.8- | 0.4+ | 2007 10 09 | 703 | 0.4- | 0.1+ | 2007 11 03 | 704 | 0.3- | 0.0  |
| 2007 09 05 | 703 | 0.3- | 0.6+ | 2007 10 12 | 699 | 0.5- | 0.4+ | 2007 11 03 | 704 | 0.2- | 0.5+ |
| 2007 09 05 | 703 | 0.3+ | 0.2+ | 2007 10 12 | 699 | 0.6- | 0.3- | 2007 11 09 | 704 | 0.3+ | 0.3- |
| 2007 09 05 | 703 | 0.6+ | 0.4- | 2007 10 12 | 699 | 0.3- | 0.0  | 2007 11 09 | 704 | 1.5+ | 0.3- |
| 2007 10 08 | 703 | 0.2+ | 1.0+ | 2007 10 12 | 699 | 0.2- | 0.5- | 2007 11 09 | 704 | 0.5- | 0.8- |
| 2007 10 08 | 703 | 0.1- | 0.9+ | 2007 10 21 | 703 | 0.2- | 0.2+ | 2007 11 09 | 704 | 0.2+ | 0.5- |
| 2007 10 08 | 703 | 0.2+ | 1.1+ | 2007 10 21 | 703 | 0.0  | 0.6- | 2007 11 09 | 704 | 0.4+ | 0.4- |
| 2007 10 08 | 703 | 0.5+ | 0.5+ | 2007 10 21 | 703 | 0.8- | 0.0  |            |     |      |      |
| 2007 10 08 | 703 | 0.6- | 0.1- | 2007 10 21 | 703 | 0.7- | 0.3+ |            |     |      |      |

**2007 TY<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 61.94882   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.30334390 | $\omega$ | 13.07089  | +0.57375669  | +0.81164832  |
| $a$ | 2.1937099  | $\Omega$ | 292.04482 | -0.76168552  | +0.47955496  |
| $e$ | 0.1757667  | $i$      | 6.79596   | -0.30106216  | +0.33354766  |
| $P$ | 3.25       | $H$      | 17.0      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 08 12 | 691 | 0.1- | 0.0  | 2007 10 08 | 703 | 0.2+  | 0.3-  | 2007 10 30 | 703 | 0.1+ | 0.7- |
| 1997 08 12 | 691 | 0.1- | 0.2+ | 2007 10 08 | 703 | 0.7-  | 0.5-  | 2007 10 30 | 703 | 0.6+ | 0.1+ |
| 1997 08 12 | 691 | 0.2+ | 0.0  | 2007 10 09 | 703 | 0.5+  | 0.0   | 2007 11 08 | 704 | 1.1+ | 1.1+ |
| 1999 01 08 | 691 | 0.0  | 0.1- | 2007 10 09 | 703 | 0.1-  | 0.2-  | 2007 11 08 | 704 | 0.5+ | 1.7+ |
| 1999 01 08 | 691 | 0.4+ | 0.0  | 2007 10 09 | 703 | 0.3+  | 0.1-  | 2007 11 08 | 704 | 0.5- | 0.2+ |
| 1999 01 08 | 691 | 0.4- | 0.2+ | 2007 10 09 | 703 | 1.1+  | 0.4+  | 2007 11 08 | 704 | 0.1+ | 0.2- |
| 2007 09 13 | 703 | 0.1+ | 0.1+ | 2007 10 10 | 699 | 0.1-  | 1.3-  | 2007 11 09 | 704 | 0.4- | 0.1- |
| 2007 09 13 | 703 | 0.0  | 0.1+ | 2007 10 10 | 699 | 0.3+  | 0.1+  | 2007 11 09 | 704 | 0.0  | 0.1- |
| 2007 09 13 | 703 | 1.0+ | 0.3+ | 2007 10 10 | 699 | 0.5-  | 0.8-  | 2007 11 09 | 704 | 0.4- | 0.7- |
| 2007 09 13 | 703 | 0.3+ | 0.2- | 2007 10 10 | 699 | 0.2-  | 0.2+  | 2007 11 09 | 704 | 0.5- | 0.2+ |
| 2007 10 08 | 703 | 1.0- | 0.0  | 2007 10 30 | 703 | (0.5+ | 2.3+) |            |     |      |      |
| 2007 10 08 | 703 | 0.3- | 0.3- | 2007 10 30 | 703 | 1.1-  | 0.8+  |            |     |      |      |

**2007 TA<sub>84</sub> = 2003 WS<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 23.07315   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.24294580 | $\omega$ | 139.32815 | +0.98292901  | -0.16616110  |
| $a$ | 2.5436838  | $\Omega$ | 230.41550 | +0.13070797  | +0.93283727  |
| $e$ | 0.0930435  | $i$      | 5.88353   | +0.12948357  | +0.31969535  |
| $P$ | 4.06       | $H$      | 17.3      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 17 | 691 | 0.1+ | 0.1- | 2007 09 25 | G96 | 0.2+ | 0.3- | 2007 10 16 | 691 | 0.1- | 0.0  |
| 1999 11 17 | 691 | 0.3- | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.2- | 2007 11 07 | 703 | 1.3- | 0.5+ |
| 1999 11 17 | 691 | 0.0  | 0.2+ | 2007 09 25 | G96 | 1.1+ | 0.1- | 2007 11 07 | G96 | 0.5+ | 0.3- |
| 1999 12 17 | 691 | 0.1+ | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.6- | 2007 11 07 | G96 | 0.8+ | 0.3- |
| 1999 12 17 | 691 | 0.3- | 0.2- | 2007 10 08 | 691 | 0.0  | 0.1- | 2007 11 07 | G96 | 0.9+ | 0.2- |
| 1999 12 17 | 691 | 0.1+ | 0.4- | 2007 10 08 | 691 | 0.0  | 0.2- | 2007 11 07 | 703 | 1.0+ | 0.7+ |
| 2003 11 16 | 691 | 0.2+ | 0.7- | 2007 10 08 | 691 | 0.6- | 0.2+ | 2007 11 07 | G96 | 0.9+ | 0.3- |
| 2003 11 16 | 691 | 0.6+ | 0.3- | 2007 10 09 | 691 | 0.4- | 0.1- | 2007 11 07 | 703 | 0.5+ | 0.9+ |
| 2003 11 16 | 691 | 0.6+ | 0.1- | 2007 10 09 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.8- | 1.2+ |
| 2003 11 20 | 291 | 0.5- | 0.2+ | 2007 10 09 | 691 | 0.3+ | 0.5- | 2007 11 07 | 291 | 0.0  | 0.3+ |
| 2003 11 20 | 291 | 0.3- | 0.3+ | 2007 10 16 | 691 | 0.4- | 0.3+ | 2007 11 07 | 291 | 0.1- | 0.3+ |
| 2003 11 20 | 291 | 0.1- | 0.1+ | 2007 10 16 | 691 | 0.4- | 0.2- | 2007 11 07 | 291 | 0.0  | 0.0  |

**2007 TE<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> | 13.48011   |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |
| <i>n</i> | 0.27209811 | <i>ω</i> | 44.37925  | +0.97348031 | -0.22782992 |          |   |
| <i>a</i> | 2.3585895  | <i>Ω</i> | 328.77266 | +0.19719674 | +0.88160211 |          |   |
| <i>e</i> | 0.2010786  | <i>i</i> | 2.29128   | +0.11597208 | +0.41336575 |          |   |
| <i>P</i> | 3.62       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 03 02 | 691 | 0.3-  | 0.6-  | 2007 10 09 | 704 | 0.2+  | 0.1+  | 2007 10 30 | 703 | 0.8+  | 0.4+  |
| 1998 03 02 | 691 | 0.1+  | 0.1-  | 2007 10 09 | 704 | 0.1-  | 0.2+  | 2007 10 30 | 703 | 0.1+  | 0.1-  |
| 1998 03 02 | 691 | 0.1-  | 0.1-  | 2007 10 10 | 691 | 0.2-  | 0.2+  | 2007 11 01 | 704 | 0.4-  | 0.1-  |
| 2005 01 16 | 691 | 0.0   | 0.0   | 2007 10 10 | 691 | 0.1-  | 0.0   | 2007 11 01 | 704 | 0.6-  | 0.5+  |
| 2005 01 16 | 691 | 0.2+  | 0.1+  | 2007 10 10 | 691 | 0.9-  | 0.1-  | 2007 11 01 | 704 | 0.1-  | 0.3+  |
| 2005 01 16 | 691 | 0.3-  | 0.0   | 2007 10 12 | 704 | 0.5+  | 0.0   | 2007 11 01 | 704 | 0.1-  | 0.3+  |
| 2005 02 04 | 691 | 0.2+  | 0.1+  | 2007 10 12 | 704 | 0.4+  | 0.6+  | 2007 11 01 | 704 | 0.4-  | 0.5-  |
| 2005 02 04 | 691 | 0.1+  | 0.3+  | 2007 10 12 | 704 | 0.3+  | 0.0   | 2007 11 03 | 699 | 1.0+  | 0.0   |
| 2005 02 04 | 691 | 0.0   | 0.4+  | 2007 10 13 | 691 | 0.1+  | 0.3+  | 2007 11 03 | 699 | 0.4+  | 0.4-  |
| 2005 04 06 | G96 | 0.2+  | 0.2-  | 2007 10 13 | 691 | 0.2-  | 0.0   | 2007 11 03 | 699 | 0.4+  | 0.6-  |
| 2005 04 06 | G96 | 0.4-  | 0.5-  | 2007 10 13 | 691 | 0.2-  | 0.1-  | 2007 11 03 | 699 | 0.5+  | 0.9-  |
| 2005 04 06 | G96 | 0.3+  | 0.4-  | 2007 10 13 | 704 | 0.5+  | 0.4-  | 2007 11 06 | 704 | 0.5-  | 0.9+  |
| 2005 04 06 | G96 | 0.3-  | 0.0   | 2007 10 13 | 704 | 0.9+  | 0.2+  | 2007 11 06 | 704 | 0.3-  | 0.7+  |
| 2006 04 07 | 691 | 0.1+  | 0.3+  | 2007 10 13 | 704 | 0.6+  | 0.2+  | 2007 11 06 | 704 | 0.2-  | 0.7+  |
| 2006 04 07 | 691 | 0.4+  | 0.1+  | 2007 10 13 | 704 | 0.6+  | 0.2-  | 2007 11 06 | 704 | 0.4-  | 0.1+  |
| 2006 04 07 | 691 | 0.0   | 0.5-  | 2007 10 13 | 704 | 0.6+  | 0.1+  | 2007 11 06 | 704 | 0.1-  | 0.2+  |
| 2006 05 06 | G96 | 0.3+  | 0.9+  | 2007 10 15 | 704 | 0.5+  | 0.2+  | 2007 11 07 | 704 | 1.0-  | 0.2-  |
| 2006 05 06 | G96 | 0.3-  | 0.5+  | 2007 10 15 | 704 | 0.2+  | 0.1+  | 2007 11 07 | 704 | 0.7-  | 0.0   |
| 2006 05 06 | G96 | 0.4+  | 0.3+  | 2007 10 15 | 704 | 0.6+  | 0.4-  | 2007 11 07 | 704 | 0.5-  | 0.1+  |
| 2006 05 06 | G96 | 0.2+  | 0.4+  | 2007 10 15 | 704 | 0.3+  | 0.9-  | 2007 11 07 | 704 | 0.7-  | 0.4+  |
| 2006 05 06 | G96 | 0.3-  | 0.3+  | 2007 10 15 | 704 | 0.2+  | 0.7-  | 2007 11 13 | 699 | 0.6+  | 0.5-  |
| 2006 05 06 | G96 | 0.1-  | 0.3+  | 2007 10 18 | 691 | 0.2-  | 0.1+  | 2007 11 13 | 699 | 0.4+  | 0.9-  |
| 2006 05 06 | G96 | 0.3-  | 0.5+  | 2007 10 18 | 691 | 0.7-  | 0.2-  | 2007 11 13 | 699 | 1.6+  | 0.8-  |
| 2006 05 06 | G96 | 0.3-  | 0.6+  | 2007 10 18 | 691 | 0.6-  | 0.2-  | 2007 11 13 | 699 | 0.8+  | 0.6+  |
| 2007 10 06 | 699 | 1.2+  | 0.1+  | 2007 10 20 | 704 | (5.1+ | 1.1-) | 2007 11 17 | 703 | 1.2-  | 0.2+  |
| 2007 10 06 | 699 | 0.5+  | 0.7-  | 2007 10 20 | 704 | (4.7+ | 0.7-) | 2007 11 17 | 703 | 0.8-  | 0.1+  |
| 2007 10 06 | 699 | (0.1- | 2.5-) | 2007 10 20 | 704 | (4.1+ | 0.4-) | 2007 11 17 | 703 | 0.1-  | 0.8+  |
| 2007 10 06 | 699 | 0.5-  | 0.9-  | 2007 10 20 | 704 | (4.8+ | 1.3+) | 2007 11 17 | 703 | 0.3-  | 0.2-  |
| 2007 10 08 | 703 | 0.6+  | 0.5-  | 2007 10 21 | 691 | 0.1-  | 0.1-  | 2007 11 18 | 704 | 0.6+  | 0.8+  |
| 2007 10 08 | 703 | 0.5+  | 0.1-  | 2007 10 21 | 691 | 0.0   | 0.1-  | 2007 11 18 | 704 | 0.5+  | 0.6+  |
| 2007 10 08 | 703 | 0.9+  | 0.2-  | 2007 10 21 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 704 | (1.5- | 0.1+) |
| 2007 10 08 | 703 | 0.9+  | 0.1-  | 2007 10 22 | 704 | 0.7+  | 0.2+  | 2007 11 18 | 704 | 1.3+  | 1.0+  |
| 2007 10 09 | 691 | 0.1-  | 0.1-  | 2007 10 22 | 704 | 0.2+  | 0.4+  | 2007 11 18 | 704 | 0.3-  | 0.5+  |
| 2007 10 09 | 704 | 0.2-  | 0.3-  | 2007 10 22 | 704 | 0.3+  | 0.5-  | 2007 12 13 | 704 | 0.3-  | 0.2-  |
| 2007 10 09 | 704 | 0.2+  | 0.7+  | 2007 10 22 | 704 | 0.5+  | 0.2+  | 2007 12 13 | 704 | 0.5+  | 0.6-  |
| 2007 10 09 | 691 | 0.3-  | 0.0   | 2007 10 22 | 704 | 0.1+  | 1.1+  | 2007 12 13 | 704 | 1.7+  | 0.9+  |
| 2007 10 09 | 704 | 0.1+  | 0.0   | 2007 10 30 | 703 | 0.4-  | 0.1+  | 2007 12 13 | 704 | 0.9+  | 0.3+  |
| 2007 10 09 | 691 | 0.1-  | 0.1+  | 2007 10 30 | 703 | 1.1+  | 0.1+  |            |     |       |       |

**2007 TK<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 309.44150  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.21869218 | $\omega$ | 348.06071 | -0.06294387  | -0.99642673  |
| $a$ | 2.7284367  | $\Omega$ | 105.52853 | +0.92040564  | -0.07977449  |
| $e$ | 0.0468182  | $i$      | 3.35101   | +0.38586466  | +0.02774532  |
| $P$ | 4.51       | $H$      | 16.6      | $G$          | 0.15         |
|     |            |          |           | $U$          | 4            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | 691 | 0.2+ | 0.0  | 2007 10 08 | G96 | 0.2- | 0.3- | 2007 11 13 | G96 | 0.1+ | 0.2+ |
| 2005 03 11 | 691 | 0.1+ | 0.4+ | 2007 10 08 | G96 | 0.1+ | 0.0  | 2007 11 13 | G96 | 0.0  | 0.1- |
| 2005 03 11 | 691 | 0.3- | 0.5- | 2007 10 08 | G96 | 0.1- | 0.2+ | 2007 11 13 | G96 | 0.0  | 0.1- |
| 2005 04 18 | 691 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.0  | 2007 11 14 | G96 | 0.1- | 0.2- |
| 2005 04 18 | 691 | 0.2- | 0.3+ | 2007 10 09 | 691 | 0.3- | 0.2+ | 2007 11 14 | G96 | 0.1- | 0.0  |
| 2005 04 18 | 691 | 0.2+ | 0.3+ | 2007 10 09 | 691 | 0.3- | 0.1+ | 2007 11 14 | G96 | 0.0  | 0.0  |
| 2005 05 03 | 691 | 0.5- | 0.0  | 2007 10 09 | 691 | 0.2- | 0.0  | 2007 11 14 | 291 | 0.2- | 0.3+ |
| 2005 05 03 | 691 | 0.3- | 0.1+ | 2007 11 02 | G96 | 0.6+ | 0.2+ | 2007 11 14 | G96 | 0.0  | 0.2- |
| 2005 05 03 | 691 | 0.3+ | 0.3+ | 2007 11 02 | G96 | 0.2+ | 0.3- | 2007 11 14 | 291 | 0.0  | 0.1+ |
| 2005 05 14 | 691 | 0.0  | 0.5- | 2007 11 02 | G96 | 0.3+ | 0.0  | 2007 11 14 | 291 | 0.2- | 0.3+ |
| 2005 05 14 | 691 | 0.4- | 0.0  | 2007 11 02 | G96 | 0.1- | 0.2- |            |     |      |      |
| 2005 05 14 | 691 | 0.7+ | 0.4- | 2007 11 13 | G96 | 0.2+ | 0.3- |            |     |      |      |

**2007 TZ<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 51.91408   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27791016 | $\omega$ | 144.64801 | +0.88835510   | +0.45887193 |
| <i>a</i> | 2.3255897  | $\Omega$ | 188.08674 | -0.44329095   | +0.84794271 |
| <i>e</i> | 0.1380127  | <i>i</i> | 6.60433   | -0.11965927   | +0.26538596 |
| <i>P</i> | 3.55       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 06 01 | 691 | 0.5- | 1.3+ | 2007 10 09 | 691 | 0.4- | 0.2+ | 2007 11 03 | G96 | 0.7+ | 0.6- |
| 2003 06 01 | 691 | 0.3- | 0.6+ | 2007 10 09 | 691 | 0.2- | 0.5+ | 2007 11 03 | G96 | 0.6+ | 0.7- |
| 2003 06 01 | 691 | 0.5- | 0.8+ | 2007 10 13 | 691 | 0.5- | 0.2+ | 2007 11 04 | 704 | 0.5+ | 0.2+ |
| 2003 08 02 | 608 | 0.4+ | 1.0- | 2007 10 13 | 691 | 0.4- | 0.2+ | 2007 11 04 | 704 | 0.2+ | 0.4- |
| 2003 08 02 | 608 | 0.7+ | 0.6- | 2007 10 13 | 691 | 0.7- | 0.1+ | 2007 11 04 | 704 | 0.4+ | 0.1+ |
| 2003 08 02 | 608 | 0.2- | 0.5- | 2007 10 20 | 704 | 0.1+ | 1.2+ | 2007 11 04 | 704 | 0.1+ | 0.5+ |
| 2006 05 30 | G96 | 0.1- | 0.1+ | 2007 10 20 | 704 | 1.7- | 0.3- | 2007 11 12 | 704 | 0.9- | 0.9+ |
| 2006 05 30 | G96 | 0.2+ | 0.1+ | 2007 10 20 | 704 | 0.0  | 0.3+ | 2007 11 12 | 704 | 1.1- | 0.4+ |
| 2006 05 30 | G96 | 0.1+ | 0.0  | 2007 10 20 | 704 | 0.1- | 0.4- | 2007 11 12 | 704 | 0.4+ | 0.0  |
| 2006 05 30 | G96 | 0.2- | 0.1- | 2007 10 30 | 703 | 0.1+ | 0.6+ | 2007 11 12 | 704 | 0.1- | 0.0  |
| 2007 10 08 | G96 | 0.4+ | 0.0  | 2007 10 30 | 703 | 0.2+ | 1.4+ | 2007 11 12 | 704 | 0.3- | 0.5+ |
| 2007 10 08 | G96 | 0.3+ | 0.2- | 2007 10 30 | 703 | 0.6- | 0.9- | 2007 11 13 | G96 | 0.5+ | 0.3- |
| 2007 10 08 | G96 | 0.4+ | 0.1- | 2007 10 30 | 703 | 0.3- | 0.7- | 2007 11 13 | G96 | 0.1+ | 0.5- |
| 2007 10 08 | G96 | 0.1+ | 0.1- | 2007 11 03 | G96 | 1.2+ | 0.4- | 2007 11 13 | G96 | 0.2+ | 0.2- |
| 2007 10 09 | 691 | 0.2- | 0.1- | 2007 11 03 | G96 | 0.6+ | 0.7- | 2007 11 13 | G96 | 0.4+ | 0.1- |

**2007 TB<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.13442  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24203782 | $\omega$ | 244.04765 | +0.47172068   | -0.88174277 |
| <i>a</i> | 2.5500414  | $\Omega$ | 177.79923 | +0.83471810   | +0.44544413 |
| <i>e</i> | 0.2271246  | <i>i</i> | 4.55164   | +0.28412196   | +0.15527145 |
| <i>P</i> | 4.07       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 26 | 691 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.1- | 2007 11 02 | G96 | 0.1+ | 0.1- |
| 2003 11 26 | 691 | 0.1- | 0.0  | 2007 10 09 | 691 | 1.2- | 0.7+ | 2007 11 02 | G96 | 0.2+ | 0.2- |
| 2003 11 26 | 691 | 0.1+ | 0.1- | 2007 10 09 | 691 | 0.1+ | 0.2- | 2007 11 07 | 703 | 0.9+ | 0.5- |
| 2003 12 22 | 691 | 0.1+ | 0.1+ | 2007 10 09 | 691 | 0.0  | 0.1- | 2007 11 07 | 703 | 0.2- | 0.6- |
| 2003 12 22 | 691 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.6- | 0.1- | 2007 11 07 | 703 | 1.0- | 0.5+ |
| 2003 12 22 | 691 | 0.0  | 0.1+ | 2007 10 13 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.5+ | 0.4+ |
| 2007 09 12 | G96 | 1.3+ | 0.1- | 2007 10 13 | 691 | 0.0  | 0.4+ | 2007 11 12 | 704 | 0.4+ | 0.0  |
| 2007 09 12 | G96 | 0.4+ | 0.2- | 2007 10 30 | 703 | 0.3- | 0.3- | 2007 11 12 | 704 | 0.2+ | 0.2+ |
| 2007 09 12 | G96 | 0.2+ | 0.1- | 2007 10 30 | 703 | 0.8+ | 0.7- | 2007 11 12 | 704 | 1.1+ | 0.5+ |
| 2007 09 12 | G96 | 0.6+ | 0.2- | 2007 10 30 | 703 | 0.1- | 1.5- | 2007 11 12 | 704 | 0.5+ | 0.0  |
| 2007 10 08 | G96 | 0.1+ | 0.1- | 2007 10 30 | 703 | 0.2- | 0.4+ | 2007 11 12 | 704 | 0.6+ | 0.5+ |
| 2007 10 08 | G96 | 0.1+ | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.2- |            |     |      |      |
| 2007 10 08 | G96 | 0.2+ | 0.2- | 2007 11 02 | G96 | 0.1- | 0.2- |            |     |      |      |

**2007 TM<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.43012  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19243611 | $\omega$ | 259.06767 | +0.40078537   | -0.91602908 |
| <i>a</i> | 2.9712897  | $\Omega$ | 167.26852 | +0.86663971   | +0.37332972 |
| <i>e</i> | 0.3007365  | <i>i</i> | 4.21038   | +0.29716442   | +0.14668209 |
| <i>P</i> | 5.12       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 18 | 644 | 0.2+ | 0.2- | 2007 10 09 | 691 | 0.1- | 0.1+ | 2007 11 12 | 704 | 0.3- | 0.2+ |
| 2002 11 18 | 644 | 0.0  | 0.5+ | 2007 10 09 | 691 | 0.0  | 0.1+ | 2007 11 12 | 704 | 0.6+ | 0.6+ |
| 2002 11 18 | 644 | 0.2- | 0.0  | 2007 10 18 | 699 | 0.7+ | 1.4+ | 2007 11 12 | 704 | 0.8+ | 0.6- |
| 2002 11 18 | 644 | 0.1+ | 0.2+ | 2007 10 18 | 699 | 0.3- | 0.7- | 2007 11 12 | 704 | 0.2+ | 0.5+ |
| 2002 11 18 | 644 | 0.3+ | 0.4+ | 2007 10 18 | 699 | 0.1- | 1.1- | 2007 11 12 | 704 | 0.7+ | 0.0  |
| 2002 11 18 | 644 | 0.4- | 0.2+ | 2007 10 18 | 699 | 0.2+ | 0.1+ | 2007 11 14 | 704 | 0.2+ | 0.1+ |
| 2002 12 05 | 608 | 0.6+ | 0.1+ | 2007 11 04 | G96 | 0.2- | 0.4- | 2007 11 14 | 704 | 0.0  | 0.2- |
| 2002 12 05 | 608 | 0.4- | 0.2- | 2007 11 04 | G96 | 0.3- | 0.4- | 2007 11 14 | 704 | 0.8+ | 0.3- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 608 | 0.3- | 0.2- | 2007 11 04 | G96 | 0.4- | 0.3- | 2007 11 14 | 704 | 0.0  | 0.2- |
| 2007 10 08 | G96 | 0.2+ | 0.1- | 2007 11 04 | G96 | 0.2- | 0.4- | 2007 11 14 | 704 | 0.2+ | 0.2+ |
| 2007 10 08 | G96 | 0.5+ | 0.0  | 2007 11 07 | 703 | 0.3- | 0.3+ | 2007 12 04 | 704 | 0.2+ | 0.3- |
| 2007 10 08 | G96 | 0.2+ | 0.1+ | 2007 11 07 | 703 | 0.2- | 0.4+ | 2007 12 04 | 704 | 0.7- | 0.3+ |
| 2007 10 08 | G96 | 0.4+ | 0.1+ | 2007 11 07 | 703 | 0.3+ | 0.5- | 2007 12 04 | 704 | 0.1- | 0.6- |
| 2007 10 09 | 691 | 0.2- | 0.0  | 2007 11 07 | 703 | 1.3- | 0.2+ |            |     |      |      |

**2007 TR<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.95399  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23136268 | $\omega$ | 228.30649 | +0.03077856   | -0.96950284 |
| <i>a</i> | 2.6278900  | $\Omega$ | 221.89128 | +0.99062089   | +0.06198734 |
| <i>e</i> | 0.0558636  | <i>i</i> | 21.35433  | +0.13312754   | -0.23711138 |
| <i>P</i> | 4.26       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 16 | 691 | 0.1-  | 0.5+  | 2007 10 20 | 703 | 0.9+  | 0.2-  | 2007 11 12 | 704 | 0.4- | 0.7+ |
| 2001 05 16 | 691 | 0.1-  | 0.4+  | 2007 10 20 | 703 | 0.5-  | 0.2+  | 2007 11 12 | 704 | 0.2+ | 0.3+ |
| 2001 05 16 | 691 | 0.1+  | 0.0   | 2007 10 20 | 703 | 0.3-  | 0.5-  | 2007 11 12 | 704 | 0.2+ | 0.1+ |
| 2003 12 14 | 644 | 0.1+  | 0.2+  | 2007 10 20 | 703 | 0.3+  | 0.4-  | 2007 11 12 | 704 | 0.9+ | 0.1+ |
| 2003 12 14 | 644 | 0.3+  | 0.1+  | 2007 10 30 | 703 | 0.7+  | 0.6+  | 2007 11 15 | 699 | 0.3+ | 1.2- |
| 2003 12 14 | 644 | 0.3+  | 0.2+  | 2007 10 30 | 703 | 0.6+  | 0.3+  | 2007 11 15 | 699 | 0.5+ | 0.6- |
| 2003 12 27 | 703 | 0.1-  | 0.1-  | 2007 10 30 | 703 | (0.1- | 1.7+) | 2007 11 15 | 699 | 1.0+ | 0.2- |
| 2003 12 27 | 703 | 0.5-  | 0.0   | 2007 10 30 | 703 | 0.4+  | 0.1-  | 2007 11 15 | 699 | 0.7+ | 0.5- |
| 2003 12 27 | 703 | 0.4+  | 0.1-  | 2007 11 02 | 691 | 0.4-  | 0.0   | 2007 11 17 | 703 | 0.2+ | 0.1+ |
| 2003 12 27 | 703 | 0.2-  | 1.1-  | 2007 11 02 | 691 | 0.3-  | 0.2-  | 2007 11 17 | 703 | 0.0  | 0.0  |
| 2004 01 12 | 644 | 0.2-  | 0.0   | 2007 11 02 | 691 | 0.5-  | 0.4-  | 2007 11 17 | 703 | 0.3+ | 0.0  |
| 2004 01 12 | 644 | 0.1-  | 0.0   | 2007 11 04 | 704 | 0.0   | 0.3+  | 2007 11 17 | 703 | 0.3- | 0.1+ |
| 2004 01 12 | 644 | 0.2-  | 0.3+  | 2007 11 04 | 704 | 0.0   | 0.6+  | 2007 11 20 | 703 | 0.0  | 0.6- |
| 2005 04 02 | 644 | 0.0   | 0.0   | 2007 11 04 | 704 | 0.2-  | 0.3-  | 2007 11 20 | 703 | 0.1- | 0.2+ |
| 2005 04 02 | 644 | 0.1-  | 0.4+  | 2007 11 04 | 704 | 0.1-  | 0.0   | 2007 11 20 | 703 | 0.4+ | 0.4+ |
| 2005 04 02 | 644 | 0.3+  | 0.1+  | 2007 11 04 | 704 | 0.2+  | 0.1+  | 2007 11 20 | 703 | 0.2+ | 0.5+ |
| 2007 10 08 | 691 | 0.0   | 0.1-  | 2007 11 07 | 704 | 0.5-  | 0.4+  | 2007 11 20 | G96 | 0.1- | 0.3- |
| 2007 10 08 | 691 | 0.1+  | 0.0   | 2007 11 07 | 704 | 0.4-  | 0.4+  | 2007 11 20 | G96 | 0.0  | 0.4- |
| 2007 10 08 | 691 | 0.2+  | 0.2+  | 2007 11 07 | 704 | 0.5-  | 0.6+  | 2007 11 20 | G96 | 0.3+ | 0.2- |
| 2007 10 09 | D29 | 0.3+  | 0.2-  | 2007 11 07 | 704 | 0.0   | 0.2+  | 2007 11 20 | G96 | 0.1- | 0.2- |
| 2007 10 09 | D29 | 0.7+  | 0.1-  | 2007 11 07 | 704 | (1.5- | 0.2+) | 2007 11 29 | 704 | 0.1- | 0.8+ |
| 2007 10 09 | D29 | 0.4+  | 0.1+  | 2007 11 09 | 703 | 0.1-  | 0.4+  | 2007 11 29 | 704 | 1.0+ | 0.0  |
| 2007 10 09 | D29 | 0.0   | 0.2-  | 2007 11 09 | 703 | 0.2-  | 1.3+  | 2007 11 29 | 704 | 0.4+ | 0.1- |
| 2007 10 12 | 691 | 0.0   | 0.0   | 2007 11 09 | 703 | 0.5-  | 0.1+  | 2007 11 29 | 704 | 0.5+ | 0.4- |
| 2007 10 12 | 691 | 0.0   | 0.0   | 2007 11 09 | 703 | 0.2-  | 0.9+  | 2007 12 06 | 703 | 0.6- | 0.4+ |
| 2007 10 12 | 691 | 0.1-  | 0.0   | 2007 11 12 | G96 | 0.1+  | 0.2-  | 2007 12 06 | 703 | 0.7- | 0.5+ |
| 2007 10 15 | 703 | 0.1-  | 0.5+  | 2007 11 12 | G96 | 0.2+  | 0.1-  | 2007 12 06 | 703 | 0.8+ | 0.9+ |
| 2007 10 15 | 703 | (1.6+ | 0.1-) | 2007 11 12 | 704 | 0.1+  | 0.6+  | 2007 12 06 | 703 | 0.8- | 0.1+ |
| 2007 10 15 | 703 | 0.9-  | 0.1-  | 2007 11 12 | G96 | 0.3+  | 0.0   |            |     |      |      |
| 2007 10 15 | 703 | 0.3-  | 0.8+  | 2007 11 12 | G96 | 0.1+  | 0.1-  |            |     |      |      |

**2007 TL<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.07503    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.16992307 | $\omega$ | 234.56682 | +0.87422658   | -0.48436061 |
| <i>a</i> | 3.2282550  | $\Omega$ | 154.35446 | +0.46677018   | +0.81947261 |
| <i>e</i> | 0.1679135  | <i>i</i> | 4.44015   | +0.13361692   | +0.30636489 |
| <i>P</i> | 5.80       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 18 | 644 | 0.1- | 0.0  | 2007 10 09 | 691 | 0.8- | 0.8+ | 2007 11 07 | 703 | 1.1- | 0.3- |
| 2001 10 18 | 644 | 0.1+ | 0.1- | 2007 10 13 | 691 | 0.5- | 0.2+ | 2007 11 12 | 704 | 0.0  | 0.5- |
| 2001 10 18 | 644 | 0.0  | 0.4+ | 2007 10 13 | 691 | 0.5- | 0.6+ | 2007 11 12 | 704 | 0.7- | 0.8- |
| 2001 11 12 | 645 | 0.0  | 0.3- | 2007 10 13 | 691 | 0.4- | 0.5+ | 2007 11 12 | 704 | 0.6- | 0.4+ |
| 2001 11 12 | 645 | 0.1+ | 0.3- | 2007 11 03 | G96 | 1.5+ | 0.4+ | 2007 11 12 | 704 | 0.4+ | 1.3- |
| 2007 10 08 | G96 | 0.7+ | 0.4- | 2007 11 03 | G96 | 1.0+ | 0.0  | 2007 11 13 | G96 | 0.4+ | 0.3+ |
| 2007 10 08 | G96 | 0.5+ | 0.2- | 2007 11 03 | G96 | 0.6+ | 0.2- | 2007 11 13 | G96 | 0.6+ | 0.5+ |
| 2007 10 08 | G96 | 0.8+ | 0.4- | 2007 11 03 | G96 | 0.7+ | 0.1+ | 2007 11 13 | G96 | 0.3+ | 0.3+ |
| 2007 10 08 | G96 | 0.5+ | 0.3- | 2007 11 07 | 703 | 0.4- | 0.3- | 2007 11 13 | G96 | 0.4+ | 0.4+ |



## 2007 DEC. 24

M.P.O. 129851

2007 10 09 691 0.6− 0.5− 2007 11 07 703 1.5− 0.3+  
 2007 10 09 691 0.2− 0.5+ 2007 11 07 703 1.1− 0.3+

**2007 TT<sub>90</sub> = 2005 JA<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 30.58686   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17415817 | $\omega$ 308.54591 | +0.98873201   | −0.04095356 |
| <i>a</i> | 3.1757050  | $\Omega$ 54.26128  | +0.10676782   | +0.86711516 |
| <i>e</i> | 0.0730085  | <i>i</i> 10.21777  | −0.10492681   | +0.49642131 |
| <i>P</i> | 5.66       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2005 05 07 G96 | 0.7+ 0.2− | 2007 10 08 G96 | 0.4+ 0.1− | 2007 10 13 691 | 0.0 0.2−  |
| 2005 05 07 G96 | 0.2+ 0.2− | 2007 10 08 G96 | 0.1+ 0.0  | 2007 10 13 691 | 0.2− 0.7+ |
| 2005 05 07 G96 | 0.2− 0.0  | 2007 10 08 G96 | 0.2+ 0.1− | 2007 11 07 G96 | 0.1− 0.1− |
| 2005 05 07 G96 | 0.2− 0.1− | 2007 10 08 G96 | 0.4+ 0.1− | 2007 11 07 G96 | 0.1− 0.1− |
| 2005 05 13 G96 | 0.1+ 0.0  | 2007 10 09 691 | 0.1− 0.0  | 2007 11 07 G96 | 0.1+ 0.2− |
| 2005 05 13 G96 | 0.0 0.0   | 2007 10 09 691 | 0.1− 0.1− | 2007 11 07 G96 | 0.3+ 0.4+ |
| 2005 05 13 G96 | 0.5− 0.2+ | 2007 10 09 691 | 0.1+ 0.0  |                |           |
| 2005 05 13 G96 | 0.0 0.2+  | 2007 10 13 691 | 0.0 0.4−  |                |           |

**2007 TH<sub>92</sub> = 2006 MH<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 359.65551  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19645633 | $\omega$ 197.12674 | +0.99009645   | +0.11749633 |
| <i>a</i> | 2.9306145  | $\Omega$ 155.72604 | −0.09659890   | +0.96731688 |
| <i>e</i> | 0.0555975  | <i>i</i> 10.77199  | −0.10187082   | +0.22470575 |
| <i>P</i> | 5.02       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2002 08 30 644 | 0.1− 0.4+ | 2006 06 21 691 | 0.1− 0.0  | 2007 10 05 291 | 0.0 0.5+  |
| 2002 08 30 644 | 0.3− 0.3+ | 2006 06 21 691 | 0.2+ 0.1+ | 2007 10 05 291 | 0.1− 0.3+ |
| 2002 08 30 644 | 0.2+ 0.5+ | 2006 06 21 691 | 0.3+ 0.0  | 2007 10 09 G96 | 0.5+ 0.2− |
| 2005 03 16 G96 | 0.2− 0.1+ | 2006 06 21 691 | 0.0 0.2+  | 2007 10 09 G96 | 0.6+ 0.3+ |
| 2005 03 16 G96 | 0.2− 0.3− | 2007 08 10 691 | 0.1− 0.0  | 2007 10 09 G96 | 0.3+ 0.1− |
| 2005 03 16 G96 | 0.3− 0.0  | 2007 08 10 691 | 0.3− 0.0  | 2007 10 09 G96 | 0.2− 0.0  |
| 2005 03 16 G96 | 0.7+ 0.9+ | 2007 08 10 691 | 1.0− 0.6+ | 2007 10 14 G96 | 0.1− 0.1+ |
| 2006 06 17 691 | 0.2− 0.2+ | 2007 09 12 G96 | 0.2+ 0.2− | 2007 10 14 G96 | 0.4+ 0.2+ |
| 2006 06 17 691 | 0.0 0.1+  | 2007 09 12 G96 | 0.3− 1.0− | 2007 10 14 G96 | 0.2− 0.3− |
| 2006 06 17 691 | 0.6− 0.5− | 2007 09 12 G96 | 0.5+ 0.5− | 2007 10 14 G96 | 0.2− 0.3− |
| 2006 06 21 691 | 0.2+ 0.2− | 2007 09 12 G96 | 0.1+ 0.3− |                |           |
| 2006 06 21 691 | 0.3+ 0.2− | 2007 10 05 291 | 0.0 0.3+  |                |           |

**2007 TT<sub>92</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 299.95764  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22338172 | $\omega$ 274.37194 | −0.12316870   | −0.99234187 |
| <i>a</i> | 2.6901157  | $\Omega$ 182.75571 | +0.96999693   | −0.11839849 |
| <i>e</i> | 0.0924488  | <i>i</i> 11.19192  | +0.20960778   | −0.03520518 |
| <i>P</i> | 4.41       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2004 02 11 644 | 0.1− 0.0  | 2005 04 01 699 | 0.6− 0.1+ | 2007 10 08 699 | 0.7− 0.4− |
| 2004 02 11 644 | 0.0 0.1+  | 2007 09 13 G96 | 0.0 0.1+  | 2007 10 08 699 | 0.5+ 0.7− |
| 2004 02 11 644 | 0.1+ 0.0  | 2007 09 13 G96 | 0.5+ 0.1+ | 2007 10 12 703 | 0.7+ 0.0  |
| 2005 03 09 G96 | 0.1− 0.2− | 2007 09 13 G96 | 0.2+ 0.0  | 2007 10 12 703 | 1.1− 0.0  |
| 2005 03 09 G96 | 0.1− 0.2− | 2007 09 13 G96 | 0.1+ 0.1+ | 2007 10 12 703 | 0.3− 0.3+ |
| 2005 03 09 G96 | 0.1+ 0.0  | 2007 10 05 J87 | 0.0 1.5+  | 2007 10 12 703 | 0.9− 0.9− |
| 2005 03 09 G96 | 0.2− 0.1+ | 2007 10 05 J87 | 1.2+ 0.7+ | 2007 10 20 703 | 0.8+ 1.0− |
| 2005 04 01 699 | 0.9+ 0.4+ | 2007 10 06 J87 | 0.4− 1.5+ | 2007 10 20 703 | 0.3+ 0.0  |
| 2005 04 01 699 | 0.1+ 0.3+ | 2007 10 08 699 | 0.3+ 0.4+ | 2007 10 20 703 | 1.8− 0.1− |
| 2005 04 01 699 | 0.0 0.0   | 2007 10 08 699 | 1.3+ 0.9− | 2007 10 20 703 | 0.7− 0.2− |

**2007 TE<sub>93</sub> = 1997 GE<sub>5</sub> = 2005 GZ<sub>121</sub>**

Id. Minor Planet Center (MPO 128405; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.70979  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24358490 | $\omega$ 210.17247 | +0.76488122   | −0.64395375 |
| <i>a</i> | 2.5392325  | $\Omega$ 189.96737 | +0.60866773   | +0.73098958 |
| <i>e</i> | 0.1012218  | <i>i</i> 5.55055   | +0.21090355   | +0.22578266 |
| <i>P</i> | 4.05       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 1997 04 08 691 | 0.2− 0.1− | 2007 10 06 691 | 1.6− 1.2+ | 2007 11 07 704 | 0.2− 1.2+ |
| 1997 04 08 691 | 0.3− 0.1− | 2007 10 06 691 | 0.5− 0.4− | 2007 11 07 704 | 0.1− 0.2+ |
| 1997 04 08 691 | 0.0 0.3−  | 2007 10 09 G96 | 0.7+ 0.1+ | 2007 11 07 703 | 0.6− 0.3+ |
| 1997 04 09 691 | 0.1+ 0.6+ | 2007 10 09 G96 | 0.2+ 0.2− | 2007 11 07 703 | 0.2+ 0.5+ |
| 1997 04 09 691 | 0.3+ 0.1− | 2007 10 09 G96 | 0.2− 0.6+ | 2007 11 07 703 | 0.5− 0.7− |
| 1997 04 09 691 | 0.2+ 0.5+ | 2007 10 09 G96 | 0.3+ 0.1+ | 2007 11 07 703 | 0.3− 0.1− |
| 2003 10 29 691 | 0.1+ 0.2− | 2007 10 14 691 | 0.7− 0.2− | 2007 11 12 704 | 0.9+ 0.2− |
| 2003 10 29 691 | 0.0 0.2−  | 2007 10 14 691 | 0.3− 0.1− | 2007 11 12 704 | 1.0+ 0.1+ |
| 2003 10 29 691 | 0.1− 0.1+ | 2007 10 14 691 | 0.8− 0.0  | 2007 11 12 704 | 0.1+ 0.8+ |
| 2005 04 06 G96 | 0.3− 0.6+ | 2007 11 02 G96 | 0.2+ 0.4− | 2007 11 12 704 | 0.5+ 0.9+ |
| 2005 04 06 G96 | 0.1+ 0.1+ | 2007 11 02 G96 | 0.2+ 0.5− | 2007 11 13 G96 | 0.1+ 0.7− |
| 2005 04 06 G96 | 0.4− 0.0  | 2007 11 02 G96 | 0.4+ 0.3− | 2007 11 13 G96 | 0.6− 0.6− |
| 2005 04 06 G96 | 0.5− 0.6− | 2007 11 02 G96 | 0.4+ 0.4− | 2007 11 13 G96 | 0.3− 0.3− |
| 2005 04 12 G96 | 0.1+ 0.1+ | 2007 11 04 704 | 0.5− 0.2− | 2007 11 13 G96 | 0.0 0.4−  |
| 2005 04 12 G96 | 1.0+ 0.3− | 2007 11 04 704 | 0.2+ 0.2+ | 2007 11 13 G96 | 0.2− 0.4− |
| 2007 09 12 G96 | 0.1− 0.0  | 2007 11 04 704 | 0.1+ 1.0+ | 2007 11 13 G96 | 0.0 0.4−  |
| 2007 09 12 G96 | 0.1+ 0.2− | 2007 11 04 704 | 0.6+ 0.1+ | 2007 11 13 G96 | 0.1+ 0.4− |
| 2007 09 12 G96 | 0.2+ 0.1+ | 2007 11 04 704 | 0.6− 0.5+ | 2007 11 13 G96 | 0.2+ 0.4− |
| 2007 09 12 G96 | 0.4+ 0.1− | 2007 11 07 704 | 0.6+ 0.6+ |                |           |
| 2007 10 06 691 | 0.4− 0.1− | 2007 11 07 704 | 0.6+ 0.2− |                |           |

**2007 TL<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 126.64284  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23069851 | $\omega$ 201.54607 | −0.18604645   | +0.97735116 |
| <i>a</i> | 2.6329313  | $\Omega$ 57.86084  | −0.88317064   | −0.12136501 |
| <i>e</i> | 0.1635778  | <i>i</i> 6.84047   | −0.43057675   | −0.17336446 |
| <i>P</i> | 4.27       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2001 03 18 699 | 0.9+ 0.2+ | 2007 10 06 691 | 0.3− 0.2+ | 2007 11 01 G96 | 0.1− 0.1+ |
| 2001 03 18 699 | 0.0 0.8+  | 2007 10 09 G96 | 0.6+ 0.5+ | 2007 11 01 G96 | 0.0 0.0   |
| 2001 03 18 699 | 0.8− 0.3+ | 2007 10 09 G96 | 0.1+ 0.2+ | 2007 11 01 G96 | 0.5+ 0.0  |
| 2001 03 18 699 | 0.9+ 0.7+ | 2007 10 09 G96 | 0.3+ 0.5+ | 2007 11 07 703 | 0.2+ 0.6+ |
| 2002 08 13 644 | 0.1− 0.3+ | 2007 10 09 G96 | 0.4+ 0.6+ | 2007 11 07 703 | 0.7− 0.3+ |
| 2002 08 13 644 | 0.0 0.2+  | 2007 10 10 691 | 0.1+ 0.6− | 2007 11 07 703 | 0.4+ 0.5+ |
| 2002 08 13 644 | 0.2− 0.0  | 2007 10 10 691 | 0.2− 0.1+ | 2007 11 07 703 | 1.2− 0.2− |
| 2003 11 19 691 | 0.1+ 0.5− | 2007 10 10 691 | 0.4− 0.3+ | 2007 11 09 G96 | 0.1+ 0.2− |
| 2003 11 19 691 | 0.0 0.5−  | 2007 10 18 691 | 0.5− 0.1+ | 2007 11 09 G96 | 0.4+ 0.1− |
| 2003 11 19 691 | 0.1+ 0.6− | 2007 10 18 691 | 0.4− 0.0  | 2007 11 09 G96 | 0.2+ 0.2− |
| 2003 12 19 691 | 0.0 0.1−  | 2007 10 18 691 | 0.4− 0.0  | 2007 11 09 G96 | 0.5+ 0.3− |
| 2003 12 19 691 | 0.1+ 0.2+ | 2007 10 18 691 | 0.1− 0.0  | 2007 11 14 704 | 0.8+ 0.0  |
| 2003 12 19 691 | 0.1+ 0.2+ | 2007 10 18 691 | 0.6− 0.0  | 2007 11 14 704 | 0.7+ 0.5+ |
| 2007 10 06 691 | 0.5− 1.4+ | 2007 10 18 691 | 0.2− 0.4+ | 2007 11 14 704 | 1.3− 1.6− |
| 2007 10 06 691 | 0.4− 0.0  | 2007 11 01 G96 | 0.3+ 0.0  | 2007 11 14 704 | 0.1+ 0.3+ |

**2007 TB<sub>94</sub> = 2000 TL<sub>28</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.61129  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27862317 | $\omega$ 147.97668 | +0.93104318   | −0.36075848 |
| <i>a</i> | 2.3216205  | $\Omega$ 233.26812 | +0.31869203   | +0.87713259 |
| <i>e</i> | 0.1725896  | <i>i</i> 3.92655   | +0.17774695   | +0.31700432 |
| <i>P</i> | 3.54       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |           |                |           |                |           |
|----------------|-----------|----------------|-----------|----------------|-----------|
| 2000 10 03 704 | 1.0+ 0.5− | 2007 09 13 703 | 1.5− 0.2+ | 2007 10 13 703 | 0.9− 0.3− |
| 2000 10 03 704 | 0.2− 0.9+ | 2007 09 13 703 | 0.3+ 1.6+ | 2007 10 13 703 | 0.4− 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 03 | 704 | 0.1− | 0.1− | 2007 10 07 | 703 | 0.2− | 0.0  | 2007 10 20 | G96 | 0.6+ | 0.1− |
| 2000 10 03 | 704 | 0.6− | 0.6− | 2007 10 07 | 703 | 0.6− | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.3− |
| 2005 01 13 | 691 | 0.4+ | 1.1+ | 2007 10 07 | 703 | 0.6− | 0.4− | 2007 10 20 | G96 | 0.9+ | 0.3− |
| 2005 01 13 | 691 | 0.3+ | 0.4+ | 2007 10 07 | 703 | 0.6− | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.4− |
| 2005 01 13 | 691 | 0.5− | 0.4− | 2007 10 08 | 699 | 0.0  | 0.8+ | 2007 11 12 | G96 | 0.1− | 0.4− |
| 2007 09 09 | 691 | 1.0+ | 0.8+ | 2007 10 08 | 699 | 0.1+ | 0.4+ | 2007 11 12 | G96 | 0.3+ | 0.6− |
| 2007 09 09 | 691 | 0.1+ | 0.2− | 2007 10 08 | 699 | 0.7+ | 0.3+ | 2007 11 12 | G96 | 0.1− | 0.5− |
| 2007 09 09 | 691 | 0.2+ | 0.0  | 2007 10 08 | 699 | 0.5+ | 1.0− | 2007 11 12 | G96 | 0.3− | 0.0  |
| 2007 09 13 | 703 | 0.1− | 0.6+ | 2007 10 13 | 703 | 1.0− | 0.9− |            |     |      |      |
| 2007 09 13 | 703 | 0.6+ | 0.6+ | 2007 10 13 | 703 | 0.5+ | 0.2+ |            |     |      |      |

**2007 TX<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.22752287 | $\omega$ | 220.06822 | +0.67427997 |      | −0.73778573 |   |
| <i>a</i> | 2.6573740  | $\Omega$ | 187.72522 | +0.72366491 |      | +0.66875193 |   |
| <i>e</i> | 0.1276024  | <i>i</i> | 13.73569  | +0.14715847 |      | +0.09188621 |   |
| <i>P</i> | 4.33       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.0  | 0.2+ | 2005 05 12 | G96 | 0.4−  | 0.1−  | 2007 10 19 | 703 | 0.8− | 0.3+ |
| 1998 09 19 | 645 | 0.0  | 0.2+ | 2005 05 12 | G96 | 0.1+  | 0.2−  | 2007 10 20 | G96 | 0.1− | 0.3− |
| 2001 03 24 | 691 | 0.1− | 0.7+ | 2005 05 12 | G96 | 0.0   | 0.0   | 2007 10 20 | G96 | 0.0  | 0.3− |
| 2001 03 24 | 691 | 0.1+ | 1.0+ | 2007 10 07 | 703 | 0.2−  | 0.2−  | 2007 10 20 | G96 | 0.0  | 0.2− |
| 2001 03 24 | 691 | 0.4− | 1.0+ | 2007 10 07 | 703 | 0.1+  | 0.1−  | 2007 10 20 | G96 | 0.1+ | 0.3− |
| 2001 05 24 | 645 | 0.0  | 0.1+ | 2007 10 07 | 703 | 0.6−  | 0.5−  | 2007 10 31 | 703 | 0.2+ | 0.8+ |
| 2001 05 24 | 645 | 0.1− | 0.2+ | 2007 10 07 | 703 | 0.7−  | 0.3−  | 2007 10 31 | 703 | 0.3+ | 0.8+ |
| 2003 12 14 | 644 | 0.1+ | 0.0  | 2007 10 08 | 699 | 0.2−  | 0.3−  | 2007 10 31 | 703 | 1.1− | 0.2+ |
| 2003 12 14 | 644 | 0.0  | 0.1− | 2007 10 08 | 699 | 0.8+  | 1.1+  | 2007 10 31 | 703 | 1.4− | 1.0+ |
| 2003 12 14 | 644 | 0.1+ | 0.3− | 2007 10 08 | 699 | 0.2+  | 0.3+  | 2007 11 07 | 703 | 1.2− | 0.7− |
| 2005 03 12 | 691 | 0.1+ | 0.2+ | 2007 10 08 | 699 | 1.1+  | 1.4+  | 2007 11 07 | 703 | 0.2− | 0.5− |
| 2005 03 12 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 703 | 0.9+  | 0.3+  | 2007 11 07 | 703 | 0.9− | 0.2− |
| 2005 03 12 | 691 | 0.2− | 0.0  | 2007 10 12 | 703 | 0.1−  | 0.5+  | 2007 11 11 | 704 | 0.6+ | 0.1+ |
| 2005 04 06 | G96 | 0.0  | 0.1+ | 2007 10 12 | 703 | 0.5+  | 1.4+  | 2007 11 11 | 704 | 0.7+ | 0.3− |
| 2005 04 06 | G96 | 0.4− | 0.1− | 2007 10 12 | 703 | 0.1+  | 0.4+  | 2007 11 11 | 704 | 0.1+ | 0.1− |
| 2005 04 06 | G96 | 0.4+ | 0.2− | 2007 10 13 | 683 | (3.6+ | 0.9+) | 2007 11 11 | 704 | 0.3+ | 0.6+ |
| 2005 04 06 | G96 | 0.0  | 0.1+ | 2007 10 13 | 683 | 1.2+  | 0.5−  | 2007 11 14 | 699 | 0.3− | 0.3− |
| 2005 05 02 | 691 | 0.4+ | 0.3+ | 2007 10 13 | 683 | 0.8+  | 0.0   | 2007 11 14 | 699 | 0.7+ | 0.4− |
| 2005 05 02 | 691 | 0.2+ | 0.5+ | 2007 10 15 | 683 | 0.2−  | 0.9−  | 2007 11 14 | 699 | 0.2− | 0.1+ |
| 2005 05 02 | 691 | 0.1+ | 0.5+ | 2007 10 15 | 683 | 0.4+  | 1.1−  | 2007 11 14 | 699 | 0.1− | 0.4− |
| 2005 05 12 | 691 | 0.2+ | 0.2+ | 2007 10 15 | 683 | 0.7+  | 1.0−  | 2007 11 15 | 703 | 1.0− | 0.8+ |
| 2005 05 12 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 703 | 0.8−  | 0.3+  | 2007 11 15 | 703 | 0.5− | 0.7+ |
| 2005 05 12 | 691 | 0.3+ | 0.5+ | 2007 10 19 | 703 | 0.1+  | 1.4+  | 2007 11 15 | 703 | 0.1+ | 0.5+ |
| 2005 05 12 | G96 | 0.2− | 0.1− | 2007 10 19 | 703 | 0.1−  | 0.0   | 2007 11 15 | 703 | 0.2+ | 0.1+ |

**2007 TJ<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.17988315 | $\omega$ | 231.01902 | +0.43993552 |      | −0.89556489 |   |
| <i>a</i> | 3.1079622  | $\Omega$ | 193.36468 | +0.88691864 |      | +0.44490997 |   |
| <i>e</i> | 0.2201699  | <i>i</i> | 16.71610  | +0.14082639 |      | −0.00431833 |   |
| <i>P</i> | 5.48       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 04 | 691 | 0.1+ | 0.0  | 2007 10 08 | 699 | 0.0  | 0.2+ | 2007 10 22 | 683 | 0.2− | 1.2− |
| 2005 06 04 | 691 | 0.1− | 0.3− | 2007 10 08 | 699 | 0.9+ | 0.1− | 2007 10 22 | 683 | 0.2+ | 1.2− |
| 2005 06 04 | 691 | 0.2− | 0.1− | 2007 10 13 | 703 | 0.0  | 0.8+ | 2007 10 22 | 683 | 0.0  | 0.8− |
| 2005 07 05 | 691 | 0.0  | 0.4+ | 2007 10 13 | 703 | 0.1+ | 0.3− | 2007 11 07 | 703 | 0.2+ | 0.3+ |
| 2005 07 05 | 691 | 0.0  | 0.1+ | 2007 10 13 | 703 | 0.7+ | 0.7+ | 2007 11 07 | 703 | 0.5− | 0.0  |
| 2005 07 05 | 691 | 0.3+ | 0.0  | 2007 10 13 | 703 | 0.4− | 0.6+ | 2007 11 07 | 703 | 0.6+ | 0.5+ |
| 2007 09 10 | 703 | 1.2− | 1.1+ | 2007 10 19 | 699 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.1− | 0.3− |
| 2007 09 10 | 703 | 0.8+ | 0.4− | 2007 10 19 | 699 | 0.2+ | 0.0  | 2007 11 15 | 703 | 0.2+ | 0.3+ |
| 2007 09 10 | 703 | 0.2− | 0.0  | 2007 10 19 | 699 | 0.4+ | 0.9+ | 2007 11 15 | 703 | 0.3− | 0.0  |
| 2007 09 10 | 703 | 0.3+ | 0.9− | 2007 10 19 | 699 | 1.3− | 0.2+ | 2007 11 15 | 703 | 0.9− | 0.3+ |
| 2007 10 07 | 703 | 0.1− | 0.4+ | 2007 10 20 | 683 | 0.2− | 0.6− | 2007 11 15 | 703 | 0.8− | 0.6+ |
| 2007 10 07 | 703 | 0.8+ | 1.1+ | 2007 10 20 | 683 | 0.2− | 0.6− | 2007 11 18 | 699 | 0.2+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 07 | 703 | 0.5− | 0.4+ | 2007 10 20 | 683 | 0.1+ | 0.0  | 2007 11 18 | 699 | 0.3+ | 0.0  |
| 2007 10 07 | 703 | 0.1− | 0.6+ | 2007 10 21 | 683 | 0.2+ | 1.0− | 2007 11 18 | 699 | 0.5+ | 0.3− |
| 2007 10 08 | 699 | 0.1+ | 0.1+ | 2007 10 21 | 683 | 0.4− | 0.7− | 2007 11 18 | 699 | 0.8− | 0.1+ |
| 2007 10 08 | 699 | 0.2− | 0.8− | 2007 10 21 | 683 | 1.6+ | 0.1− |            |     |      |      |

**2007 TM<sub>97</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.27437484 | $\omega$ | 246.22072 | +0.98130876 |      | +0.18861782 |   |
| <i>a</i> | 2.3455239  | $\Omega$ | 102.88957 | −0.15922268 |      | +0.90717658 |   |
| <i>e</i> | 0.2049517  | <i>i</i> | 2.24369   | −0.10807984 |      | +0.37610367 |   |
| <i>P</i> | 3.59       | <i>H</i> | 17.8      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 05 | 645 | 0.0  | 0.0  | 2007 10 08 | 699 | 0.1− | 0.8− | 2007 10 13 | 704 | 0.9− | 0.3+ |
| 2002 03 05 | 645 | 0.0  | 0.1+ | 2007 10 08 | 699 | 0.5+ | 0.9+ | 2007 10 17 | 699 | 0.5+ | 0.1− |
| 2004 12 18 | G96 | 0.1+ | 0.3− | 2007 10 09 | G96 | 0.1− | 0.2− | 2007 10 17 | 699 | 1.1+ | 0.6− |
| 2004 12 18 | G96 | 0.1− | 0.2− | 2007 10 09 | G96 | 0.3+ | 0.2− | 2007 10 17 | 699 | 0.4− | 0.8− |
| 2004 12 18 | G96 | 0.1− | 0.5− | 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 10 17 | 699 | 0.3+ | 0.5− |
| 2004 12 18 | G96 | 0.1+ | 0.2− | 2007 10 09 | G96 | 0.2− | 0.2− | 2007 10 19 | G96 | 0.1− | 0.7− |
| 2007 09 20 | 691 | 0.1+ | 0.2+ | 2007 10 13 | 704 | 0.5− | 0.3+ | 2007 10 19 | G96 | 0.5+ | 0.7− |
| 2007 09 20 | 691 | 0.0  | 0.0  | 2007 10 13 | 703 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.1+ | 0.4− |
| 2007 09 20 | 691 | 0.1+ | 0.1− | 2007 10 13 | 703 | 0.3− | 1.1+ | 2007 10 19 | G96 | 0.2+ | 0.2− |
| 2007 10 07 | 704 | 0.5+ | 0.3− | 2007 10 13 | 704 | 0.2− | 0.2+ | 2007 11 15 | 691 | 0.1− | 0.0  |
| 2007 10 07 | 704 | 0.2+ | 0.9+ | 2007 10 13 | 703 | 0.2− | 0.7− | 2007 11 15 | 691 | 0.3− | 0.2+ |
| 2007 10 07 | 704 | 0.1− | 0.0  | 2007 10 13 | 703 | 0.0  | 0.4+ | 2007 11 15 | 691 | 0.3− | 0.1+ |
| 2007 10 08 | 699 | 0.3+ | 0.5+ | 2007 10 13 | 704 | 0.3+ | 0.9+ |            |     |      |      |
| 2007 10 08 | 699 | 0.5− | 0.8− | 2007 10 13 | 704 | 0.2− | 0.9+ |            |     |      |      |

**2007 TL<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.23026534 | $\omega$ | 182.36512 | −0.67111244 |      | +0.74022507 |   |
| <i>a</i> | 2.6362322  | $\Omega$ | 45.48564  | −0.67923484 |      | −0.59181928 |   |
| <i>e</i> | 0.0759753  | <i>i</i> | 3.29022   | −0.29706586 |      | −0.31908741 |   |
| <i>P</i> | 4.28       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.2−  | 0.1−  | 2007 09 12 | G96 | 0.3− | 0.1+ | 2007 11 05 | G96 | 0.9+ | 0.3− |
| 2005 02 01 | 691 | 0.1−  | 0.2−  | 2007 10 08 | G96 | 0.4− | 0.2− | 2007 11 05 | G96 | 0.9+ | 0.1+ |
| 2005 02 01 | 691 | 0.0   | 0.0   | 2007 10 08 | G96 | 0.2+ | 0.3− | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 2005 02 09 | 699 | (1.5+ | 1.2+) | 2007 10 08 | G96 | 0.2+ | 0.1− | 2007 11 07 | 691 | 0.5− | 0.1− |
| 2005 02 09 | 699 | 0.1−  | 1.3+  | 2007 10 08 | G96 | 0.3+ | 0.2+ | 2007 11 07 | 691 | 0.2− | 0.4+ |
| 2005 02 09 | G96 | 0.0   | 0.2−  | 2007 10 09 | G96 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.3− | 0.0  |
| 2005 02 09 | G96 | 0.1+  | 0.4−  | 2007 10 09 | G96 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.2+ | 0.4+ |
| 2005 02 09 | 699 | 0.8+  | 0.8+  | 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 11 09 | 691 | 0.3− | 0.1− |
| 2005 02 09 | G96 | 0.2−  | 0.2−  | 2007 10 09 | G96 | 0.2− | 0.0  | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2005 02 09 | G96 | (1.5− | 0.3+) | 2007 10 18 | G96 | 0.3+ | 0.3− | 2007 11 13 | 691 | 0.3+ | 0.1+ |
| 2005 02 09 | 699 | 0.8+  | 0.5−  | 2007 10 18 | G96 | 0.1+ | 0.1− | 2007 11 13 | 691 | 0.0  | 0.1− |
| 2007 09 12 | G96 | 0.0   | 0.2+  | 2007 10 18 | G96 | 0.4+ | 0.4− | 2007 11 13 | 691 | 0.0  | 0.1− |
| 2007 09 12 | G96 | 0.1−  | 0.2+  | 2007 10 18 | G96 | 0.3+ | 0.3− |            |     |      |      |
| 2007 09 12 | G96 | 0.2−  | 0.3+  | 2007 11 05 | G96 | 0.8+ | 0.2− |            |     |      |      |

## 2007 DEC. 24

M.P.O. 129853

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 01 16 | 691 | 0.9+ | 0.4+ | 2007 10 09 | G96 | 0.7+  | 0.7−  | 2007 11 07 | 691 | 0.1− | 0.1− |
| 1994 01 16 | 691 | 0.5− | 0.4− | 2007 10 09 | G96 | 0.5+  | 0.2−  | 2007 11 07 | 691 | 0.0  | 0.0  |
| 1994 01 16 | 691 | 0.3− | 0.2+ | 2007 10 09 | G96 | 0.9+  | 0.3−  | 2007 11 07 | 691 | 0.2− | 0.6− |
| 1998 04 03 | 691 | 0.3− | 0.9− | 2007 10 15 | 703 | (1.6− | 0.1+) | 2007 11 09 | 691 | 1.2− | 0.1− |
| 1998 04 03 | 691 | 0.3− | 0.8− | 2007 10 15 | 703 | 0.0   | 0.1−  | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 1998 04 03 | 691 | 0.4− | 0.7− | 2007 10 15 | 703 | 0.0   | 0.5+  | 2007 11 09 | 691 | 0.2− | 0.3+ |
| 2005 02 02 | 691 | 0.3− | 0.2− | 2007 10 15 | 703 | (1.5+ | 0.5+) | 2007 11 13 | 691 | 0.2+ | 0.0  |
| 2005 02 02 | 691 | 0.0  | 0.4+ | 2007 10 18 | G96 | 0.3+  | 0.1−  | 2007 11 13 | 691 | 0.2+ | 0.2+ |
| 2005 02 02 | 691 | 0.2− | 0.0  | 2007 10 18 | G96 | 0.3+  | 0.5−  | 2007 11 13 | 691 | 0.1− | 0.1+ |
| 2005 02 09 | 691 | 0.9+ | 0.5+ | 2007 10 18 | G96 | 0.6+  | 0.2−  | 2007 12 06 | G96 | 0.1− | 0.2− |
| 2005 02 09 | 691 | 0.1+ | 0.2+ | 2007 10 18 | G96 | 0.6+  | 0.2−  | 2007 12 06 | G96 | 0.4+ | 0.3− |
| 2005 02 09 | 691 | 0.0  | 0.3+ | 2007 10 30 | 691 | 0.0   | 0.2+  | 2007 12 06 | G96 | 0.4+ | 0.1− |
| 2007 10 08 | G96 | 0.3+ | 0.5− | 2007 10 30 | 691 | 0.1−  | 0.2−  | 2007 12 06 | G96 | 0.3+ | 0.2− |
| 2007 10 08 | G96 | 0.6+ | 0.3− | 2007 10 30 | 691 | 0.1−  | 0.3−  |            |     |      |      |
| 2007 10 08 | G96 | 0.8+ | 0.3− | 2007 11 05 | G96 | 0.6+  | 0.3−  |            |     |      |      |

2007 TX<sub>99</sub> = 2006 QR<sub>128</sub> = 2007 TM<sub>316</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 133.84541  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.18074495 | $\omega$ | 144.16101 | −0.17339356 |          | +0.98374674 |          |
| <i>a</i> | 3.0980750  | $\Omega$ | 115.81258 | −0.91522688 |          | −0.14345742 |          |
| <i>e</i> | 0.1669400  | <i>i</i> | 2.97098   | −0.36372302 |          | −0.10799224 |          |
| <i>P</i> | 5.45       | <i>H</i> | 15.7      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 645 | 0.1+ | 0.2− | 2006 08 28 | 703 | 0.2− | 0.1− | 2007 10 09 | G96 | 0.6+ | 0.1− |
| 2001 10 15 | 645 | 0.1+ | 0.2− | 2006 08 28 | 691 | 0.1+ | 0.4+ | 2007 10 09 | G96 | 0.9+ | 0.0  |
| 2001 11 12 | 645 | 0.1+ | 0.2− | 2006 08 28 | 703 | 1.0− | 0.6− | 2007 10 09 | G96 | 0.7+ | 0.0  |
| 2001 11 12 | 645 | 0.0  | 0.2− | 2006 08 28 | 703 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.2+ |
| 2004 04 14 | 645 | 0.0  | 0.1− | 2006 08 28 | 703 | 0.0  | 0.6− | 2007 10 12 | 691 | 0.1− | 0.2+ |
| 2004 04 14 | 645 | 0.0  | 0.2− | 2007 10 08 | 691 | 0.5− | 0.1+ | 2007 10 12 | 691 | 0.6− | 1.3+ |
| 2005 04 12 | 695 | 0.0  | 0.4+ | 2007 10 08 | 691 | 0.1− | 0.0  | 2007 10 16 | 691 | 0.1− | 0.4+ |
| 2005 04 12 | 695 | 0.1− | 0.4+ | 2007 10 08 | 691 | 0.2+ | 0.1+ | 2007 10 16 | 691 | 0.6− | 0.1+ |
| 2005 05 11 | 699 | 1.8+ | 0.2− | 2007 10 08 | G96 | 0.9+ | 0.2+ | 2007 10 16 | 691 | 0.1− | 0.2+ |
| 2005 05 11 | 699 | 0.3− | 1.5+ | 2007 10 08 | G96 | 0.1+ | 0.0  | 2007 10 20 | 691 | 0.5− | 0.2− |
| 2005 05 11 | 699 | 1.0− | 2.2+ | 2007 10 08 | G96 | 0.3+ | 0.0  | 2007 10 20 | 691 | 0.1− | 1.1+ |
| 2005 05 11 | 699 | 0.7+ | 0.3+ | 2007 10 08 | G96 | 0.4+ | 0.0  | 2007 10 20 | 691 | 0.4− | 0.3+ |
| 2006 08 17 | 644 | 0.1− | 0.2+ | 2007 10 08 | G96 | 0.7+ | 0.3+ | 2007 11 03 | 691 | 0.1+ | 0.1+ |
| 2006 08 17 | 644 | 0.3+ | 0.3+ | 2007 10 08 | G96 | 0.4+ | 0.1+ | 2007 11 03 | 691 | 0.2+ | 0.1+ |
| 2006 08 17 | 644 | 0.3− | 0.2+ | 2007 10 08 | G96 | 0.7+ | 0.2+ | 2007 11 03 | 691 | 0.2− | 0.1+ |
| 2006 08 28 | 691 | 0.0  | 0.3+ | 2007 10 08 | G96 | 0.0  | 0.2− |            |     |      |      |
| 2006 08 28 | 691 | 0.1+ | 0.2+ | 2007 10 09 | G96 | 0.4− | 0.1+ |            |     |      |      |

2007 TB<sub>103</sub> = 1999 FS<sub>88</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 276.68125  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.18801880 | $\omega$ | 322.01090 | −0.67903312 |          | −0.73407258 |          |
| <i>a</i> | 3.0176476  | $\Omega$ | 170.74954 | +0.68398539 |          | −0.63618995 |          |
| <i>e</i> | 0.0379777  | <i>i</i> | 2.55783   | +0.26660458 |          | −0.23748640 |          |
| <i>P</i> | 5.24       | <i>H</i> | 16.5      | <i>G</i>    | 0.15     | <i>U</i>    | 0        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.3− | 2007 10 10 | G96 | 0.1+ | 0.4+ |
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.1+ | 0.2− | 2007 10 11 | G96 | 0.1− | 0.0  |
| 1999 03 22 | 645 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.1− | 0.1− | 2007 10 11 | G96 | 0.7+ | 0.0  |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.2+ | 2007 10 11 | G96 | 0.3+ | 0.0  |
| 2002 11 25 | 644 | 0.3− | 0.3+ | 2007 10 08 | G96 | 0.2+ | 0.5− | 2007 10 11 | G96 | 0.1− | 0.1+ |
| 2002 11 25 | 644 | 0.1+ | 0.4+ | 2007 10 08 | G96 | 0.1+ | 0.2− | 2007 10 12 | 691 | 0.4+ | 0.6+ |
| 2002 11 25 | 644 | 0.7+ | 0.2+ | 2007 10 08 | G96 | 0.6+ | 0.0  | 2007 10 12 | 691 | 0.4− | 0.0  |
| 2004 03 14 | 691 | 0.1+ | 0.2+ | 2007 10 09 | G96 | 0.1− | 0.3− | 2007 10 12 | 691 | 0.4− | 0.2+ |
| 2004 03 14 | 691 | 0.0  | 0.1+ | 2007 10 09 | G96 | 0.5+ | 0.4− | 2007 10 16 | 691 | 0.1+ | 0.2+ |
| 2004 03 14 | 691 | 0.3+ | 0.4+ | 2007 10 09 | G96 | 0.5+ | 0.2− | 2007 10 16 | 691 | 0.0  | 0.1− |
| 2006 08 28 | 691 | 0.2− | 0.1+ | 2007 10 09 | G96 | 0.1− | 0.1+ | 2007 10 16 | 691 | 0.3− | 0.1+ |
| 2006 08 28 | 691 | 0.1− | 0.4+ | 2007 10 10 | G96 | 0.3+ | 0.1− | 2007 10 20 | 691 | 0.3− | 0.2− |
| 2006 08 28 | 691 | 0.1− | 0.8+ | 2007 10 10 | G96 | 0.0  | 0.2− | 2007 10 20 | 691 | 0.5− | 0.1− |
| 2007 10 08 | G96 | 0.4+ | 0.1− | 2007 10 10 | G96 | 0.3+ | 0.1− | 2007 10 20 | 691 | 0.1− | 0.2+ |

2007 TD<sub>103</sub> = 2000 YN<sub>24</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 341.52224  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.27080184 | $\omega$ | 323.94030 | +0.37063337 |          | −0.92808089 |          |
| <i>a</i> | 2.3661102  | $\Omega$ | 104.28071 | +0.86060244 |          | +0.32858831 |          |
| <i>e</i> | 0.1672990  | <i>i</i> | 2.12953   | +0.34927688 |          | +0.17520154 |          |
| <i>P</i> | 3.64       | <i>H</i> | 18.2      | <i>G</i>    | 0.15     | <i>U</i>    | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 28 | 691 | 0.1− | 0.1+ | 2007 10 08 | 691 | 0.0  | 0.5− | 2007 10 09 | G96 | 0.3+ | 0.1+ |
| 2000 12 28 | 691 | 1.0− | 0.9+ | 2007 10 08 | G96 | 0.3+ | 0.1− | 2007 10 16 | 691 | 0.0  | 0.2+ |
| 2000 12 28 | 691 | 0.2− | 0.3− | 2007 10 08 | G96 | 0.7+ | 0.2+ | 2007 10 16 | 691 | 0.3− | 0.2+ |
| 2000 12 30 | 691 | 0.5+ | 0.5− | 2007 10 08 | G96 | 0.5+ | 0.1− | 2007 10 16 | 691 | 0.2− | 0.2+ |
| 2000 12 30 | 691 | 0.2+ | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.1+ | 2007 11 07 | 703 | 1.1− | 0.1− |
| 2000 12 30 | 691 | 0.5+ | 0.3− | 2007 10 08 | G96 | 0.3+ | 0.1− | 2007 11 07 | 703 | 0.5− | 0.1− |
| 2007 09 15 | G96 | 0.1− | 0.2− | 2007 10 08 | G96 | 0.1+ | 0.1− | 2007 11 07 | 703 | 0.7+ | 0.1+ |
| 2007 09 15 | G96 | 0.1− | 0.2− | 2007 10 08 | G96 | 0.5+ | 0.0  | 2007 11 07 | 703 | 0.3+ | 0.8− |
| 2007 09 15 | G96 | 0.2− | 0.1+ | 2007 10 08 | G96 | 0.3+ | 0.4− | 2007 12 05 | 704 | 0.0  | 0.2− |
| 2007 09 15 | G96 | 0.3− | 0.1− | 2007 10 09 | G96 | 0.1+ | 1.0− | 2007 12 05 | 704 | 0.6+ | 0.0  |
| 2007 10 08 | 691 | 0.2− | 0.2+ | 2007 10 09 | G96 | 0.2+ | 0.2+ | 2007 12 05 | 704 | 0.3− | 0.7+ |
| 2007 10 08 | 691 | 0.1− | 0.0  | 2007 10 09 | G96 | 0.7+ | 0.0  | 2007 12 05 | 704 | 0.6− | 0.6+ |

2007 TQ<sub>103</sub> = 2005 MP<sub>11</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 33.29946   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.15538337 | $\omega$ | 153.36366 | +0.98753881 |          | −0.09033602 |          |
| <i>a</i> | 3.4266232  | $\Omega$ | 212.62349 | +0.06311351 |          | +0.97744516 |          |
| <i>e</i> | 0.0946431  | <i>i</i> | 13.82944  | +0.14416583 |          | +0.19089361 |          |
| <i>P</i> | 6.34       | <i>H</i> | 15.0      | <i>G</i>    | 0.15     | <i>U</i>    | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 27 | 691 | 0.6+ | 0.3− | 2007 10 08 | 691 | 0.5− | 0.1+ | 2007 10 09 | G96 | 0.1+ | 0.0  |
| 2005 06 27 | 691 | 0.1− | 0.0  | 2007 10 08 | 691 | 0.3− | 0.1− | 2007 10 09 | G96 | 0.4+ | 0.2− |
| 2005 06 27 | 691 | 0.2+ | 0.5+ | 2007 10 08 | 691 | 0.5− | 0.1+ | 2007 10 11 | G96 | 0.2+ | 0.1− |
| 2005 06 30 | 691 | 0.4− | 0.0  | 2007 10 08 | G96 | 0.5+ | 0.2− | 2007 10 11 | G96 | 0.3+ | 0.1− |
| 2005 06 30 | 691 | 0.1− | 0.1+ | 2007 10 08 | G96 | 0.5+ | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.1− |
| 2005 06 30 | 691 | 0.3− | 0.1− | 2007 10 08 | G96 | 0.6+ | 0.0  | 2007 10 11 | G96 | 0.4+ | 0.1− |
| 2006 08 23 | 644 | 0.1+ | 0.1− | 2007 10 08 | G96 | 0.6+ | 0.0  | 2007 10 16 | 691 | 0.0  | 0.1+ |
| 2006 08 23 | 644 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.0  | 2007 10 16 | 691 | 0.3− | 0.2+ |
| 2006 08 23 | 644 | 0.1+ | 0.4− | 2007 10 08 | G96 | 0.4+ | 0.1− | 2007 10 16 | 691 | 0.5− | 0.1+ |
| 2007 09 10 | G96 | 0.5+ | 0.1− | 2007 10 08 | G96 | 0.6+ | 0.1− | 2007 11 08 | G96 | 0.4+ | 0.0  |
| 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 10 08 | G96 | 0.6+ | 0.1+ | 2007 11 08 | G96 | 0.3+ | 0.1− |
| 2007 09 10 | G96 | 0.5+ | 0.2− | 2007 10 09 | G96 | 0.4+ | 0.3− | 2007 11 08 | G96 | 0.4+ | 0.2+ |
| 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 10 09 | G96 | 0.0  | 0.2− | 2007 11 08 | G96 | 0.2+ | 0.1+ |

2007 TE<sub>105</sub> = 1994 UA<sub>4</sub> = 2005 GL<sub>52</sub>Id. Minor Planet Center (*MPO* 128411; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |          |             |          |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>M</i> | 282.48126  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| <i>n</i> | 0.23113809 | $\omega$ | 105.67918 | −0.75331524 |          | −0.65549882 |          |
| <i>a</i> | 2.6295920  | $\Omega$ | 33.41626  | +0.56026799 |          | −0.68206597 |          |
| <i>e</i> | 0.0843509  | <i>i</i> | 5.55057   | +0.34440665 |          | −0.32420258 |          |
| <i>P</i> | 4.26       | <i>H</i> | 16.8      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 26 | 691 | 0.0  | 0.0  | 2005 05 14 | G96 | 0.0  | 0.3− | 2007 10 17 | G98 | 0.5+ | 0.3+ |
| 1994 10 26 | 691 | 0.1+ | 0.2− | 2005 05 14 | G96 | 0.3− | 0.2− | 2007 10 17 | G98 | 0.3+ | 0.1+ |
| 1994 10 26 | 691 | 0.3+ | 0.0  | 2005 05 14 | G96 | 0.4− | 0.2− | 2007 11 02 | 691 | 0.2− | 0.3+ |
| 1994 11 01 | 691 | 0.6− | 1.0− | 2005 05 14 | G96 | 0.0  | 0.4− | 2007 11 02 | 691 | 0.1− | 0.2+ |
| 1994 11 01 | 691 | 0.9+ | 1.2− | 2007 10 13 | G98 | 0.0  | 0.1+ | 2007 11 02 | 691 | 1.0− | 0.3− |
| 1994 11 01 | 691 | 0.0  | 0.6+ | 2007 10 13 | G98 | 0.1+ | 0.3− | 2007 11 07 | G98 | 0.2+ | 0.6+ |
| 1998 09 25 | 645 | 0.0  | 0.0  | 2007 10 13 | G98 | 0.3+ | 0.5− | 2007 11 07 | G98 | 0.1+ | 0.1+ |
| 1998 09 25 | 645 | 0.1− | 0.0  | 2007 10 13 | G98 | 0.5− | 0.1+ | 2007 11 07 | G98 | 0.2+ | 0.3− |
| 2005 04 02 | G96 | 0.1− | 0.2− | 2007 10 13 | G98 | 0.4− | 0.2+ | 2007 11 07 | G98 | 0.3− | 0.4+ |
| 2005 04 02 | G96 | 0.1− | 0.3− | 2007 10 14 | G96 | 0.2+ | 0.0  | 2007 11 18 | 704 | 0.5− | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.2+ | 0.2− | 2007 10 14 | G96 | 0.3+ | 0.4+ | 2007 11 18 | 704 | 0.8− | 1.2− |
| 2005 04 02 | G96 | 1.1− | 0.3− | 2007 10 14 | G96 | 1.3+ | 0.4+ | 2007 11 18 | 704 | 0.1− | 0.6− |
| 2005 04 07 | 691 | 0.4+ | 0.0  | 2007 10 14 | G96 | 0.2− | 0.2− | 2007 11 18 | 704 | 0.3− | 0.3+ |
| 2005 04 07 | 691 | 0.1+ | 0.1+ | 2007 10 16 | G98 | 0.3+ | 0.3+ |            |     |      |      |
| 2005 04 07 | 691 | 0.3+ | 0.0  | 2007 10 16 | G98 | 1.1+ | 0.4− |            |     |      |      |

**2007 TN<sub>106</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 175.60039  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24047936 | $\omega$ | 190.67697 | −0.90738630   | +0.41666512 |
| <i>a</i> | 2.5610468  | $\Omega$ | 14.33301  | −0.36733785   | −0.72244681 |
| <i>e</i> | 0.0679247  | <i>i</i> | 12.86950  | −0.20423763   | −0.55177965 |
| <i>P</i> | 4.10       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 29 | 691 | 0.0  | 0.0  | 2003 11 02 | 691 | 0.0  | 0.2+ | 2007 10 09 | 699 | 1.3+ | 0.7− |
| 2003 09 29 | 691 | 0.1+ | 0.1− | 2007 09 12 | G96 | 0.2− | 0.1− | 2007 10 09 | 699 | 0.1− | 0.7+ |
| 2003 09 29 | 691 | 0.3− | 0.2− | 2007 09 12 | G96 | 0.1+ | 0.2+ | 2007 10 09 | 699 | 0.9− | 0.3− |
| 2003 10 17 | 691 | 0.3+ | 0.1− | 2007 09 12 | G96 | 0.3+ | 0.1+ | 2007 10 09 | 699 | 0.6− | 1.1− |
| 2003 10 17 | 691 | 0.0  | 0.1− | 2007 09 12 | G96 | 0.3+ | 0.2+ | 2007 10 15 | 691 | 0.2+ | 0.0  |
| 2003 10 17 | 691 | 0.1− | 0.1− | 2007 10 04 | 691 | 0.5− | 0.5+ | 2007 10 15 | 691 | 0.2+ | 0.2− |
| 2003 11 02 | 691 | 0.0  | 0.1+ | 2007 10 04 | 691 | 0.0  | 0.5+ | 2007 10 15 | 691 | 0.3− | 0.1+ |
| 2003 11 02 | 691 | 0.0  | 0.3+ | 2007 10 04 | 691 | 0.3+ | 0.4+ |            |     |      |      |

**2007 TW<sub>106</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 98.05281   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22902707 | $\omega$ | 281.98007 | +0.06769222   | +0.99769678 |
| <i>a</i> | 2.6457258  | $\Omega$ | 351.89761 | −0.90295972   | +0.05941039 |
| <i>e</i> | 0.1087802  | <i>i</i> | 1.76715   | −0.42436011   | +0.03273428 |
| <i>P</i> | 4.30       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.0  | 0.0  | 2007 10 04 | 691 | 0.0  | 0.2− | 2007 10 13 | 691 | 0.1− | 0.2− |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2007 10 04 | 691 | 0.3− | 0.4+ | 2007 10 13 | 691 | 0.4− | 0.1+ |
| 2003 10 23 | 691 | 0.1+ | 0.4− | 2007 10 10 | G96 | 0.2− | 0.3− | 2007 10 14 | 704 | 0.3+ | 0.6+ |
| 2003 10 23 | 691 | 0.0  | 0.3− | 2007 10 10 | G96 | 0.1+ | 0.1− | 2007 10 14 | 704 | 0.4− | 0.4+ |
| 2003 10 23 | 691 | 0.2+ | 0.4− | 2007 10 10 | G96 | 0.1− | 0.2− | 2007 10 14 | 704 | 0.2− | 1.6+ |
| 2005 01 16 | 691 | 0.3+ | 0.0  | 2007 10 10 | G96 | 0.1+ | 0.1− | 2007 10 14 | 704 | 1.6+ | 0.3+ |
| 2005 01 16 | 691 | 0.1+ | 0.2+ | 2007 10 10 | D29 | 0.3+ | 0.0  | 2007 10 14 | 704 | 0.4− | 0.7+ |
| 2005 01 16 | 691 | 0.1+ | 0.3− | 2007 10 10 | D29 | 0.6+ | 0.0  | 2007 10 16 | 691 | 0.1− | 0.0  |
| 2005 03 13 | 691 | 0.1− | 0.2− | 2007 10 10 | D29 | 0.3+ | 0.5− | 2007 10 16 | 691 | 0.4− | 0.2+ |
| 2005 03 13 | 691 | 0.1− | 0.4+ | 2007 10 10 | D29 | 0.3− | 0.1− | 2007 10 16 | 691 | 0.2− | 0.0  |
| 2005 03 13 | 691 | 0.2− | 0.3+ | 2007 10 11 | 704 | 0.8+ | 0.6− | 2007 10 21 | 691 | 0.4− | 0.2− |
| 2007 09 14 | G96 | 0.1− | 0.0  | 2007 10 11 | 704 | 0.3+ | 1.0− | 2007 10 21 | 691 | 0.2− | 0.2− |
| 2007 09 14 | G96 | 0.5+ | 0.0  | 2007 10 11 | 704 | 0.3+ | 0.5− | 2007 10 21 | 691 | 0.2− | 0.1− |
| 2007 09 14 | G96 | 0.1− | 0.2+ | 2007 10 11 | 704 | 0.6+ | 0.0  | 2007 11 07 | 691 | 0.3− | 0.1+ |
| 2007 09 14 | G96 | 0.1− | 0.2− | 2007 10 11 | 704 | 0.3− | 0.6+ | 2007 11 07 | 691 | 0.6− | 0.1+ |
| 2007 10 04 | 691 | 0.2− | 0.0  | 2007 10 13 | 691 | 0.3− | 0.2+ | 2007 11 07 | 691 | 0.4− | 0.1+ |

**2007 TW<sub>107</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.28469   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23693069 | $\omega$ | 322.52156 | +0.90459477   | +0.42525405 |
| <i>a</i> | 2.5865557  | $\Omega$ | 12.41348  | −0.35038838   | +0.78113005 |
| <i>e</i> | 0.0818248  | <i>i</i> | 7.87423   | −0.24276799   | +0.45715952 |
| <i>P</i> | 4.16       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 04 17 | 691 | 0.2− | 0.5− | 2007 10 04 | 703 | 0.2−  | 0.3+  | 2007 10 17 | 699 | 1.3+ | 0.2− |
| 1993 04 17 | 691 | 0.6− | 0.5− | 2007 10 06 | 704 | (1.5+ | 0.4+) | 2007 10 17 | 699 | 0.6+ | 0.4− |
| 1993 04 17 | 691 | 0.2− | 0.6− | 2007 10 06 | 704 | 0.0   | 0.7+  | 2007 10 17 | 699 | 1.4− | 1.1− |
| 2003 10 02 | 691 | 0.1− | 0.3+ | 2007 10 06 | 704 | 0.9+  | 0.8+  | 2007 10 20 | 703 | 1.3+ | 0.7− |
| 2003 10 02 | 691 | 0.1+ | 0.2+ | 2007 10 06 | 704 | 0.0   | 0.6+  | 2007 10 20 | 703 | 0.2+ | 1.1+ |
| 2003 10 02 | 691 | 0.2− | 0.2+ | 2007 10 10 | G96 | 0.4+  | 0.5−  | 2007 10 20 | 703 | 0.7+ | 0.0  |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 02 09 | G96 | 0.1+ | 0.0  | 2007 10 10 | G96 | 0.4+  | 0.4−  | 2007 10 20 | 703 | (1.6− | 0.4−) |
| 2005 02 09 | G96 | 0.0  | 0.1+ | 2007 10 10 | G96 | 0.5+  | 0.4−  | 2007 10 31 | 703 | 1.4+  | 0.8−  |
| 2005 02 09 | G96 | 0.2+ | 0.1+ | 2007 10 10 | G96 | 0.5+  | 0.6−  | 2007 10 31 | 703 | 0.4−  | 0.1−  |
| 2005 02 09 | G96 | 0.1+ | 0.1+ | 2007 10 11 | 704 | 0.6+  | 0.2+  | 2007 10 31 | 703 | 0.6+  | 1.0+  |
| 2007 09 09 | G96 | 0.4+ | 0.9− | 2007 10 11 | 704 | 0.1+  | 0.1−  | 2007 10 31 | 703 | 1.0   | 0.2+  |
| 2007 09 09 | G96 | 0.5+ | 0.8− | 2007 10 11 | 704 | 0.6+  | 0.1−  | 2007 11 01 | G96 | 0.1+  | 0.0   |
| 2007 09 09 | G96 | 0.4+ | 0.6− | 2007 10 13 | 703 | 0.8+  | 0.6+  | 2007 11 01 | G96 | 0.1+  | 0.1−  |
| 2007 09 09 | G96 | 0.5+ | 0.4− | 2007 10 13 | 703 | 0.2−  | 0.1−  | 2007 11 01 | G96 | 0.3+  | 0.0   |
| 2007 10 04 | 691 | 0.2− | 0.1− | 2007 10 13 | 703 | 1.3+  | 0.7−  | 2007 11 01 | G96 | 0.1−  | 0.0   |
| 2007 10 04 | 691 | 0.2− | 0.1+ | 2007 10 13 | 703 | 0.3+  | 0.0   | 2007 12 15 | G96 | 0.3−  | 0.7−  |
| 2007 10 04 | 691 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.4−  | 0.4−  | 2007 12 15 | G96 | 0.1−  | 0.5−  |
| 2007 10 04 | 703 | 0.9− | 0.4− | 2007 10 15 | 691 | 0.4−  | 0.2−  | 2007 12 15 | G96 | 0.1+  | 1.0−  |
| 2007 10 04 | 703 | 0.0  | 0.4+ | 2007 10 15 | 691 | 0.3−  | 0.3−  | 2007 12 15 | G96 | 0.3+  | 0.7−  |
| 2007 10 04 | 703 | 0.5− | 1.0+ | 2007 10 17 | 699 | (0.7− | 2.2−) |            |     |       |       |

**2007 TG<sub>112</sub> = 2000 WK<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.52662  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27667727 | $\omega$ | 75.63797  | +0.80683892   | −0.58633144 |
| <i>a</i> | 2.3324932  | $\Omega$ | 320.18733 | +0.48914157   | +0.73164096 |
| <i>e</i> | 0.1171728  | <i>i</i> | 6.48308   | +0.33128760   | +0.34773115 |
| <i>P</i> | 3.56       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 19 | 704 | 0.1+ | 0.3+ | 2007 09 12 | 703 | 0.2+ | 1.1+ | 2007 10 14 | 703 | 0.4− | 0.0  |
| 2000 11 19 | 704 | 0.5− | 0.3− | 2007 09 12 | 703 | 0.1− | 0.2− | 2007 10 14 | 703 | 0.5− | 0.0  |
| 2000 11 19 | 704 | 0.4− | 0.0  | 2007 09 12 | 703 | 0.1+ | 0.3+ | 2007 10 14 | 703 | 0.8− | 0.3− |
| 2000 11 19 | 704 | 0.1+ | 0.3+ | 2007 10 08 | 703 | 1.0+ | 0.1− | 2007 10 14 | 703 | 0.5− | 0.4− |
| 2000 11 19 | 704 | 0.8+ | 0.3+ | 2007 10 08 | 703 | 0.7− | 0.4− | 2007 10 14 | 703 | 0.3− | 0.5− |
| 2000 11 20 | 704 | 0.8− | 0.8− | 2007 10 08 | 703 | 0.3− | 0.8+ | 2007 10 14 | 703 | 0.2− | 0.3− |
| 2000 11 20 | 704 | 0.3− | 0.4+ | 2007 10 08 | 703 | 0.3− | 0.5+ | 2007 10 14 | 703 | 0.8− | 0.2− |
| 2000 11 20 | 704 | 0.0  | 0.6+ | 2007 10 09 | 699 | 0.1− | 0.0  | 2007 10 14 | 703 | 0.3− | 0.0  |
| 2000 11 20 | 704 | 0.3+ | 0.6− | 2007 10 09 | 699 | 1.1+ | 0.2− | 2007 10 14 | 703 | 0.3− | 0.2+ |
| 2000 11 20 | 704 | 0.7+ | 0.2+ | 2007 10 09 | 699 | 1.2+ | 0.1+ | 2007 10 30 | 703 | 0.3+ | 0.5− |
| 2005 01 18 | 691 | 0.1− | 0.0  | 2007 10 09 | 699 | 0.2− | 0.6+ | 2007 10 30 | 703 | 1.4+ | 0.8+ |
| 2005 01 18 | 691 | 0.0  | 0.0  | 2007 10 14 | 703 | 0.8+ | 0.1+ | 2007 10 30 | 703 | 1.2+ | 0.7+ |
| 2005 01 18 | 691 | 0.2+ | 0.1+ | 2007 10 14 | 703 | 0.9+ | 0.3− | 2007 10 30 | 703 | 0.1− | 1.1− |
| 2007 09 12 | 703 | 1.0− | 0.0  | 2007 10 14 | 703 | 1.0− | 0.8− |            |     |      |      |

**2007 TK<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.18466  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26270337 | $\omega$ | 285.62370 | +0.40657545   | −0.91092683 |
| <i>a</i> | 2.4144911  | $\Omega$ | 140.15415 | +0.87452963   | +0.36584376 |
| <i>e</i> | 0.1621308  | <i>i</i> | 6.27776   | +0.26437538   | +0.19071092 |
| <i>P</i> | 3.75       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.0  | 0.2− | 2007 10 10 | 703 | 0.3− | 0.4+ | 2007 10 31 | 703 | 0.6− | 0.0  |
| 2005 02 01 | 691 | 0.3+ | 0.4− | 2007 10 10 | 703 | 0.5+ | 0.7+ | 2007 11 11 | 703 | 0.8+ | 1.2+ |
| 2005 02 01 | 691 | 0.3+ | 0.1− | 2007 10 10 | 703 | 0.2+ | 0.4+ | 2007 11 11 | 703 | 0.2+ | 1.0+ |
| 2005 03 04 | G96 | 0.1− | 0.6+ | 2007 10 10 | 703 | 0.3− | 0.6+ | 2007 11 11 | 703 | 0.0  | 0.6+ |
| 2005 03 04 | G96 | 0.2− | 0.2− | 2007 10 19 | 703 | 0.0  | 0.4+ | 2007 11 11 | 704 | 0.5− | 0.3+ |
| 2005 03 04 | G96 | 0.3− | 0.0  | 2007 10 19 | 703 | 0.6+ | 0.3− | 2007 11 11 | 703 | 0.9+ | 0.7+ |
| 2005 03 04 | G96 | 0.1− | 0.3− | 2007 10 19 | 703 | 0.0  | 0.0  | 2007 11 11 | 704 | 0.4− | 0.2+ |
| 2007 09 21 | D29 | 0.3+ | 0.3− | 2007 10 19 | 703 | 0.1− | 0.4− | 2007 11 11 | 704 | 0.5− | 0.3− |
| 2007 09 21 | D29 | 0.3+ | 0.2− | 2007 10 21 | G96 | 0.3+ | 0.4− | 2007 11 11 | 704 | 0.5− | 0.1− |
| 2007 09 21 | D29 | 0.4+ | 0.2− | 2007 10 21 | G96 | 0.2+ | 0.2− | 2007 11 11 | 704 | 0.2− | 0.2+ |
| 2007 09 21 | D29 | 0.2+ | 0.4− | 2007 10 21 | G96 | 0.2+ | 0.2− | 2007 11 14 | 699 | 1.0+ | 0.9− |
| 2007 09 22 | 106 | 0.4− | 1.2+ | 2007 10 21 | G96 | 0.1+ | 0.5− | 2007 11 14 | 699 | 0.3− | 0.3− |
| 2007 09 22 | 106 | 0.0  | 0.5+ | 2007 10 31 | 703 | 0.4+ | 1.2+ | 2007 11 14 | 699 | 0.8+ | 0.2− |
| 2007 09 22 | 106 | 0.3+ | 0.4− | 2007 10 31 | 703 | 0.3+ | 0.1+ | 2007 11 14 | 699 | 0.4− | 0.4− |
| 2007 09 22 | 106 | 0.7− | 0.2− | 2007 10 31 | 703 | 0.6+ | 0.8− | 2007 11 17 | 703 | 0.7− | 0.1+ |
| 2007 10 08 | 699 | 0.9− | 1.0− | 2007 10 31 | 703 | 0.5+ | 0.2− | 2007 11 17 | 703 | 0.4+ | 0.2− |
| 2007 10 08 | 699 | 0.2− | 0.2+ | 2007 10 31 | 703 | 0.1− | 0.5− | 2007 11 17 | 703 | 1.2− | 0.2+ |

## 2007 DEC. 24

M.P.O. 129855

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2007 10 08 699 0.1− 0.6− | 2007 10 31 703 0.2− 0.4− | 2007 11 17 703 0.5− 0.4+ |
| 2007 10 08 699 0.2+ 0.9− | 2007 10 31 703 0.5− 0.1− |                          |

2007 TW<sub>113</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 39.00756   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27195819 | $\omega$ 208.65408 | +0.82790268   | +0.55258618 |
| <i>a</i> | 2.3593984  | $\Omega$ 117.48612 | −0.49172836   | +0.79748932 |
| <i>e</i> | 0.2081102  | <i>i</i> 6.21570   | −0.26977837   | +0.24219683 |
| <i>P</i> | 3.62       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2002 02 07 695 0.0 0.2−  | 2007 10 10 703 0.9+ 1.1+   | 2007 10 19 703 0.9+ 0.1− |
| 2002 02 07 695 0.0 0.2−  | 2007 10 10 703 0.0 0.3+    | 2007 10 19 703 0.4+ 0.1− |
| 2006 03 05 291 0.3+ 0.2− | 2007 10 10 703 0.3+ 0.4+   | 2007 10 19 703 0.2− 0.0  |
| 2006 03 05 291 0.0 0.1+  | 2007 10 10 703 0.0 0.0     | 2007 10 19 703 0.5+ 0.1− |
| 2006 03 05 291 0.3+ 0.1+ | 2007 10 17 699 1.0+ 0.0    | 2007 10 19 703 0.4+ 0.3+ |
| 2006 04 08 G96 0.4− 0.2− | 2007 10 17 699 1.0− 0.0    | 2007 10 19 703 0.5− 0.1− |
| 2006 04 08 G96 0.2+ 0.2− | 2007 10 17 699 0.2+ 0.9−   | 2007 10 19 703 0.1− 0.5+ |
| 2006 04 08 G96 0.2− 0.1− | 2007 10 17 699 0.4− 0.8+   | 2007 10 19 703 0.3− 0.2+ |
| 2006 04 08 G96 0.3− 0.1+ | 2007 10 18 704 (0.9+ 2.3−) | 2007 11 11 704 0.1+ 0.2+ |
| 2007 10 08 699 0.9+ 0.8− | 2007 10 18 704 0.1− 0.1−   | 2007 11 11 704 0.3+ 0.5+ |
| 2007 10 08 699 0.7+ 0.2− | 2007 10 18 704 0.4− 1.0−   | 2007 11 11 704 0.3− 0.3+ |
| 2007 10 08 699 0.3− 0.0  | 2007 10 18 704 0.1+ 0.5−   | 2007 11 11 704 1.8− 0.0  |
| 2007 10 08 699 0.3+ 0.2+ | 2007 10 18 704 1.3− 1.1−   | 2007 11 11 704 0.2− 0.1− |

2007 TG<sub>114</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 342.42259  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26277205 | $\omega$ 68.31085  | +0.56897485   | −0.82211097 |
| <i>a</i> | 2.4140704  | $\Omega$ 346.95272 | +0.71790204   | +0.50843785 |
| <i>e</i> | 0.1309185  | <i>i</i> 5.09008   | +0.40110384   | +0.25617281 |
| <i>P</i> | 3.75       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2005 03 04 G96 0.1− 0.1−   | 2007 10 14 691 0.2− 0.0  | 2007 11 02 704 0.3+ 0.7+   |
| 2005 03 04 G96 0.1− 0.0    | 2007 10 14 691 0.4− 0.1− | 2007 11 03 704 0.4+ 0.3+   |
| 2005 03 04 G96 0.2− 0.1−   | 2007 10 14 691 0.1− 0.1− | 2007 11 03 704 0.3+ 0.4+   |
| 2005 03 04 G96 0.1− 0.3+   | 2007 10 18 A77 0.0 0.1+  | 2007 11 03 704 0.6− 0.0    |
| 2005 04 02 G96 0.0 0.1−    | 2007 10 18 A77 0.2+ 0.1+ | 2007 11 03 704 0.2+ 0.5+   |
| 2005 04 02 G96 0.1+ 0.1−   | 2007 10 18 A77 0.0 0.0   | 2007 11 03 704 0.1+ 1.1+   |
| 2005 04 02 G96 0.1+ 0.2−   | 2007 10 18 691 0.3− 0.5− | 2007 11 07 704 0.2+ 0.9−   |
| 2005 04 02 G96 0.1− 0.5−   | 2007 10 18 691 0.3− 0.1− | 2007 11 07 704 0.2− 1.4−   |
| 2007 10 08 703 (0.2+ 1.8+) | 2007 10 18 691 0.2− 0.2− | 2007 11 07 704 0.3+ 1.1−   |
| 2007 10 08 703 0.1+ 0.6+   | 2007 10 18 691 0.3− 0.3− | 2007 11 07 704 0.2+ 1.2−   |
| 2007 10 08 703 0.4+ 0.6−   | 2007 10 18 691 0.2− 0.4− | 2007 11 07 704 0.1+ 1.2−   |
| 2007 10 08 703 0.3+ 0.5+   | 2007 10 18 691 0.1− 0.2− | 2007 11 08 703 0.6− 0.1+   |
| 2007 10 09 704 0.3+ 0.7+   | 2007 10 20 A77 0.7+ 0.0  | 2007 11 08 703 0.6+ 0.5+   |
| 2007 10 09 704 0.6+ 0.9+   | 2007 10 20 A77 0.4+ 0.1− | 2007 11 08 703 0.8− 0.8−   |
| 2007 10 09 704 0.2+ 0.2+   | 2007 10 20 A77 0.4+ 0.3− | 2007 11 08 703 0.6− 1.1+   |
| 2007 10 09 704 0.2− 0.2+   | 2007 10 22 704 0.5+ 0.2− | 2007 11 17 704 0.2+ 1.1+   |
| 2007 10 09 704 0.1− 0.9+   | 2007 10 22 704 0.3+ 0.6− | 2007 11 17 704 0.1− 0.0    |
| 2007 10 09 704 0.5+ 0.5+   | 2007 10 22 704 0.1− 0.3− | 2007 11 17 704 0.3− 1.1+   |
| 2007 10 09 704 0.0 0.1−    | 2007 10 30 703 0.9− 1.0+ | 2007 11 17 704 0.1+ 0.6+   |
| 2007 10 09 704 0.7+ 0.5+   | 2007 10 30 703 0.0 0.1−  | 2007 11 17 704 (0.7+ 2.1+) |
| 2007 10 09 704 0.1+ 0.3+   | 2007 10 30 703 0.8+ 0.6− | 2007 11 18 704 (0.9+ 1.9+) |
| 2007 10 09 704 0.2+ 0.6+   | 2007 10 30 703 0.6+ 0.1− | 2007 11 18 704 0.8+ 0.3+   |
| 2007 10 10 691 0.2− 0.2−   | 2007 11 01 106 0.1− 0.0  | 2007 11 18 704 0.8+ 0.5+   |
| 2007 10 10 691 0.0 0.2−    | 2007 11 01 106 0.0 0.9−  | 2007 11 18 704 0.1− 0.5+   |
| 2007 10 10 691 0.0 0.1+    | 2007 11 01 106 0.6+ 0.3+ | 2007 11 18 704 0.3+ 0.7+   |
| 2007 10 12 704 0.4+ 0.6+   | 2007 11 01 106 0.6+ 1.1− | 2007 12 16 704 0.9− 0.0    |
| 2007 10 12 704 0.3+ 0.1−   | 2007 11 02 704 0.1+ 0.1+ | 2007 12 16 704 0.4− 0.3+   |
| 2007 10 12 704 0.2+ 0.4+   | 2007 11 02 704 0.3+ 0.5+ | 2007 12 16 704 0.2− 0.8+   |
| 2007 10 12 704 0.5+ 0.3−   | 2007 11 02 704 0.1− 0.4+ | 2007 12 16 704 0.2+ 0.5+   |
| 2007 10 12 704 0.3+ 0.0    | 2007 11 02 704 0.2+ 0.5+ |                            |

2007 TA<sub>115</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 23.16404   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23447995 | $\omega$ 211.41835 | +0.98999326   | −0.13591712 |
| <i>a</i> | 2.6045473  | $\Omega$ 156.30470 | +0.14091798   | +0.93800889 |
| <i>e</i> | 0.1007329  | <i>i</i> 5.41808   | +0.00744772   | +0.31885083 |
| <i>P</i> | 4.20       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 2003 11 24 699 0.2− 0.2−   | 2007 10 08 699 0.3− 0.4+ | 2007 11 11 699 0.1+ 1.5−   |
| 2003 11 24 699 1.0+ 1.2+   | 2007 10 08 699 0.1− 0.1+ | 2007 11 11 699 0.8− 0.2+   |
| 2003 11 24 699 0.0 1.2−    | 2007 10 08 699 0.8− 0.3− | 2007 11 11 699 0.5− 0.8+   |
| 2003 11 24 699 0.8− 0.4+   | 2007 10 10 G96 0.1− 0.1− | 2007 11 14 683 (0.4− 2.2+) |
| 2003 12 17 699 0.3+ 1.6−   | 2007 10 10 G96 0.1+ 0.1− | 2007 11 14 683 0.1+ 0.6−   |
| 2003 12 17 699 1.1+ 0.0    | 2007 10 10 G96 0.4− 0.3− | 2007 11 14 683 (2.6+ 1.2−) |
| 2003 12 17 699 0.1+ 0.4+   | 2007 10 10 G96 0.2− 0.2− | 2007 11 18 703 0.2− 1.3+   |
| 2003 12 17 699 1.3− 0.3−   | 2007 10 30 703 1.0− 0.7− | 2007 11 18 703 0.9+ 0.4+   |
| 2005 03 04 691 (1.4− 3.2+) | 2007 10 30 703 0.2+ 0.7+ | 2007 11 18 703 1.5+ 0.9+   |
| 2005 03 04 691 0.4− 1.2+   | 2007 10 30 703 0.4+ 0.4+ | 2007 11 18 703 0.9+ 0.3+   |
| 2005 03 04 691 0.6+ 0.6−   | 2007 10 30 703 0.0 0.2+  |                            |
| 2007 10 08 699 0.1+ 0.6−   | 2007 11 11 699 0.3− 0.0  |                            |

2007 TF<sub>115</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 359.52982  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22022612 | $\omega$ 242.33459 | +0.80306034   | −0.59278363 |
| <i>a</i> | 2.7157523  | $\Omega$ 153.88079 | +0.58375573   | +0.76208021 |
| <i>e</i> | 0.2643823  | <i>i</i> 7.94371   | +0.11968018   | +0.26046367 |
| <i>P</i> | 4.48       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1998 10 17 699 0.0 0.2+  | 2007 09 10 703 0.7+ 0.1− | 2007 10 19 704 0.0 0.1−  |
| 1998 10 17 699 0.2− 0.6+ | 2007 10 08 699 0.2+ 0.2+ | 2007 10 19 704 0.3− 0.1− |
| 1998 10 17 699 0.0 0.1−  | 2007 10 08 699 1.0+ 0.8− | 2007 10 19 703 0.3− 0.5+ |
| 2002 08 05 599 0.2− 0.5+ | 2007 10 08 699 0.8+ 0.4+ | 2007 10 19 703 0.0 0.5+  |
| 2002 08 05 599 0.1− 0.6+ | 2007 10 08 699 0.5+ 0.4− | 2007 10 19 703 0.7− 0.5+ |
| 2002 08 05 599 0.2+ 0.6+ | 2007 10 10 703 0.5+ 0.1− | 2007 10 19 703 0.8− 0.3− |
| 2004 03 17 645 0.0 0.0   | 2007 10 10 703 0.0 0.7−  | 2007 11 15 703 0.3+ 0.3+ |
| 2004 03 17 645 0.0 0.1+  | 2007 10 10 703 0.7+ 0.1− | 2007 11 15 703 0.5+ 0.1+ |
| 2007 09 10 703 1.2− 0.3+ | 2007 10 10 703 0.3+ 0.0  | 2007 11 15 703 0.4− 0.5− |
| 2007 09 10 703 0.3− 0.6− | 2007 10 19 704 0.2− 0.0  | 2007 11 15 703 0.6− 0.3+ |
| 2007 09 10 703 0.3− 0.1+ | 2007 10 19 704 0.2− 0.1+ |                          |

2007 TG<sub>115</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 357.10258  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28781515 | $\omega$ 250.62144 | +0.76333891   | −0.64251175 |
| <i>a</i> | 2.2719230  | $\Omega$ 149.24855 | +0.63091988   | +0.71921205 |
| <i>e</i> | 0.1135391  | <i>i</i> 7.53222   | +0.13875811   | +0.26441005 |
| <i>P</i> | 3.42       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2000 10 01 699 0.0 0.1+    | 2007 10 08 699 0.5− 0.1+ | 2007 10 19 699 0.2− 0.3+ |
| 2000 10 01 699 0.0 0.4+    | 2007 10 08 699 1.7− 0.3+ | 2007 10 19 703 0.6− 0.6+ |
| 2000 10 01 699 0.9− 0.2+   | 2007 10 10 703 0.5+ 0.4− | 2007 10 19 703 0.7− 0.0  |
| 2000 10 01 699 (1.5− 2.1+) | 2007 10 10 703 0.1− 0.4− | 2007 10 19 703 0.4+ 0.3− |
| 2005 03 13 G96 0.0 0.1+    | 2007 10 10 703 0.7− 0.1− | 2007 10 19 703 0.8− 0.2− |
| 2005 03 13 G96 0.1− 0.6+   | 2007 10 10 703 0.2+ 0.2+ | 2007 11 07 703 0.3+ 0.7+ |
| 2005 03 13 G96 0.2+ 0.2+   | 2007 10 16 703 0.4+ 0.3+ | 2007 11 07 703 0.0 0.0   |
| 2005 03 13 G96 0.0 0.3+    | 2007 10 16 703 0.1− 0.2+ | 2007 11 07 703 1.2+ 0.4− |
| 2006 05 23 691 0.1+ 0.1+   | 2007 10 16 703 0.7− 0.6− | 2007 11 07 703 0.2− 0.3− |
| 2006 05 23 691 0.1+ 0.7+   | 2007 10 16 703 1.2− 0.6+ | 2007 11 15 703 0.8+ 0.1− |
| 2006 05 23 691 0.1− 0.3+   | 2007 10 19 699 1.0+ 0.1− | 2007 11 15 703 1.6+ 0.2− |
| 2007 10 08 699 0.7+ 0.2+   | 2007 10 19 699 0.2+ 0.4+ | 2007 11 15 703 0.2− 0.1+ |
| 2007 10 08 699 0.9+ 0.0    | 2007 10 19 699 0.4+ 0.6− | 2007 11 15 703 1.0− 0.3+ |

**2007 TO<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.84821   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17590144 | $\omega$ | 272.11889 | +0.93861252   | +0.30234388 |
| <i>a</i> | 3.1546883  | $\Omega$ | 70.31549  | -0.20191912   | +0.87192770 |
| <i>e</i> | 0.2129354  | <i>i</i> | 10.16169  | -0.27970558   | +0.38513667 |
| <i>P</i> | 5.60       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 02 | 691 | 0.0  | 0.3+ | 2007 10 10 | 703 | 0.2- | 0.1+ | 2007 10 19 | 703 | 0.2+ | 0.3+ |
| 2000 05 02 | 691 | 0.2+ | 0.1+ | 2007 10 10 | 703 | 0.7- | 0.0  | 2007 10 19 | 703 | 0.1+ | 0.1- |
| 2000 05 02 | 691 | 0.2+ | 0.5+ | 2007 10 12 | 703 | 0.8+ | 0.9- | 2007 10 19 | 703 | 0.3- | 0.6+ |
| 2001 08 15 | 608 | 0.1- | 0.5+ | 2007 10 12 | 703 | 0.3- | 0.8- | 2007 10 19 | 699 | 0.2- | 0.3- |
| 2001 08 15 | 608 | 0.3+ | 0.8+ | 2007 10 12 | 703 | 0.1+ | 0.3- | 2007 10 20 | G96 | 0.2+ | 0.2- |
| 2001 08 15 | 608 | 0.1+ | 0.2+ | 2007 10 12 | 703 | 1.7+ | 1.2- | 2007 10 20 | G96 | 0.3- | 0.3- |
| 2001 08 26 | 644 | 0.4- | 0.5- | 2007 10 19 | 704 | 0.4- | 1.2+ | 2007 10 20 | G96 | 0.2- | 0.4- |
| 2001 08 26 | 644 | 0.1- | 0.4- | 2007 10 19 | 704 | 0.1- | 0.6+ | 2007 10 20 | G96 | 0.3- | 0.1- |
| 2001 08 26 | 644 | 0.1+ | 0.7- | 2007 10 19 | 699 | 0.7- | 1.0- | 2007 11 12 | 704 | 0.2- | 0.1- |
| 2007 10 08 | 699 | 0.6- | 1.4+ | 2007 10 19 | 704 | 0.1+ | 0.2+ | 2007 11 12 | 704 | 0.3- | 1.0+ |
| 2007 10 08 | 699 | 0.7+ | 0.1- | 2007 10 19 | 704 | 0.3+ | 0.3- | 2007 11 12 | 704 | 0.2+ | 0.5+ |
| 2007 10 08 | 699 | 0.2+ | 0.4- | 2007 10 19 | 699 | 0.5- | 0.3+ | 2007 11 12 | 704 | 0.2+ | 0.4- |
| 2007 10 08 | 699 | 0.3- | 0.0  | 2007 10 19 | 704 | 0.3+ | 1.3+ | 2007 11 12 | 704 | 0.6+ | 0.3+ |
| 2007 10 10 | 703 | 0.5- | 0.1- | 2007 10 19 | 703 | 0.0  | 0.3+ |            |     |      |      |
| 2007 10 10 | 703 | 0.1- | 0.2- | 2007 10 19 | 699 | 0.2+ | 0.1- |            |     |      |      |

**2007 TO<sub>116</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.54617   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25817510 | $\omega$ | 115.78367 | +0.35780292   | +0.93375288 |
| <i>a</i> | 2.4426419  | $\Omega$ | 175.15456 | -0.89066178   | +0.34418304 |
| <i>e</i> | 0.0981616  | <i>i</i> | 6.17784   | -0.28053283   | +0.09820182 |
| <i>P</i> | 3.82       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 16 | 291 | 0.3+ | 0.4+ | 2007 08 24 | 691 | 0.1- | 0.2+ | 2007 10 09 | 691 | 0.9- | 0.4+ |
| 2002 03 16 | 291 | 0.2+ | 0.5+ | 2007 08 24 | 691 | 0.1+ | 0.1+ | 2007 10 09 | 691 | 0.0  | 0.2+ |
| 2002 03 16 | 291 | 0.1- | 0.7+ | 2007 08 24 | 691 | 0.0  | 0.1+ | 2007 10 09 | 691 | 0.2- | 0.8+ |
| 2003 07 24 | 644 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 10 10 | G96 | 1.0+ | 0.0  |
| 2003 07 24 | 644 | 0.0  | 0.3- | 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 10 10 | G96 | 0.1+ | 0.2- |
| 2003 07 24 | 644 | 0.2+ | 0.1+ | 2007 09 10 | G96 | 0.0  | 0.1+ | 2007 10 10 | G96 | 0.0  | 0.2+ |
| 2006 03 02 | 691 | 0.2- | 0.3+ | 2007 09 19 | 691 | 0.4- | 0.5+ | 2007 10 10 | G96 | 0.1+ | 0.1+ |
| 2006 03 02 | 691 | 0.5+ | 0.1+ | 2007 09 19 | 691 | 0.4- | 0.1+ |            |     |      |      |
| 2006 03 02 | 691 | 0.0  | 0.5+ | 2007 09 19 | 691 | 0.3- | 0.1+ |            |     |      |      |

**2007 TR<sub>118</sub> = 2007 TV<sub>376</sub>**Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.96812   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27403750 | $\omega$ | 328.87983 | +0.94722870   | -0.30977842 |
| <i>a</i> | 2.3474484  | $\Omega$ | 49.39773  | +0.31188633   | +0.83119983 |
| <i>e</i> | 0.1802621  | <i>i</i> | 6.23298   | +0.07405884   | +0.46167540 |
| <i>P</i> | 3.60       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 644 | 0.2-  | 0.2+  | 2007 10 17 | G96 | 0.1- | 0.2- | 2007 11 14 | 691 | 0.4- | 0.1- |
| 2002 04 08 | 644 | 0.1-  | 0.2+  | 2007 10 17 | G96 | 0.1- | 0.0  | 2007 11 14 | 691 | 0.4- | 0.0  |
| 2002 04 08 | 644 | 0.0   | 0.1+  | 2007 10 17 | G96 | 0.1- | 0.1- | 2007 11 14 | 691 | 0.6- | 0.1- |
| 2003 07 08 | 644 | 0.4-  | 0.3+  | 2007 10 19 | 699 | 0.3+ | 0.1- | 2007 11 15 | 704 | 0.7- | 0.8+ |
| 2003 07 08 | 644 | 0.3-  | 0.3+  | 2007 10 19 | 699 | 0.6+ | 0.3+ | 2007 11 15 | 704 | 1.1- | 0.3+ |
| 2003 07 08 | 644 | 0.1-  | 0.0   | 2007 10 19 | 699 | 0.7- | 0.2- | 2007 11 15 | 704 | 0.8- | 0.6+ |
| 2003 09 19 | 644 | 0.1-  | 0.0   | 2007 10 19 | 699 | 1.2+ | 0.6+ | 2007 11 15 | 704 | 0.6- | 0.2- |
| 2003 09 19 | 644 | 0.1-  | 0.1+  | 2007 10 20 | 703 | 0.5+ | 0.5- | 2007 11 15 | 704 | 1.1- | 0.2+ |
| 2003 09 19 | 644 | 0.2+  | 0.0   | 2007 10 20 | 703 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2003 10 16 | 699 | (2.2+ | 0.1-) | 2007 10 20 | 703 | 0.8- | 0.2+ | 2007 11 18 | 691 | 0.3- | 0.1- |
| 2003 10 16 | 699 | (1.7+ | 0.4-) | 2007 10 20 | 703 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.4- | 0.1- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 16 | 699 | 0.6+ | 0.4+ | 2007 10 30 | 691 | 0.3-  | 0.1-  | 2007 12 03 | 703 | 0.3- | 0.2- |
| 2003 10 16 | 699 | 0.2+ | 0.4- | 2007 10 30 | 691 | 0.4-  | 0.1-  | 2007 12 03 | 703 | 0.1- | 0.1+ |
| 2006 05 23 | G96 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.4-  | 0.1-  | 2007 12 03 | 703 | 0.5- | 0.0  |
| 2006 05 23 | G96 | 0.2+ | 0.1- | 2007 11 03 | 699 | 0.9+  | 0.3-  | 2007 12 03 | 703 | 0.2- | 0.4+ |
| 2006 05 23 | G96 | 0.1+ | 0.2- | 2007 11 03 | 699 | 0.0   | 0.3+  | 2007 12 04 | 699 | 1.0+ | 0.3+ |
| 2006 05 23 | G96 | 0.1- | 0.2- | 2007 11 03 | 699 | 0.5+  | 0.2+  | 2007 12 04 | 699 | 0.7+ | 0.0  |
| 2007 09 14 | G96 | 0.5+ | 0.0  | 2007 11 03 | 699 | 0.2+  | 0.7+  | 2007 12 04 | 699 | 0.9- | 0.9+ |
| 2007 09 14 | G96 | 0.0  | 0.1+ | 2007 11 05 | D29 | 0.2+  | 0.3-  | 2007 12 04 | 699 | 0.9+ | 0.7- |
| 2007 09 14 | G96 | 0.5+ | 0.1- | 2007 11 05 | D29 | 0.1-  | 0.2-  | 2007 12 10 | 704 | 0.7- | 0.9+ |
| 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 11 05 | D29 | 0.0   | 0.4-  | 2007 12 10 | 704 | 0.1- | 0.7+ |
| 2007 10 09 | 699 | 0.8+ | 0.1- | 2007 11 05 | D29 | 0.0   | 0.3-  | 2007 12 10 | 704 | 0.1+ | 0.7+ |
| 2007 10 09 | 699 | 0.3+ | 0.1- | 2007 11 06 | 704 | 0.2+  | 0.2-  | 2007 12 10 | 704 | 0.5- | 0.2+ |
| 2007 10 09 | 699 | 0.2+ | 0.2- | 2007 11 06 | 704 | 0.2-  | 0.2-  | 2007 12 14 | 704 | 1.5+ | 1.2+ |
| 2007 10 09 | 699 | 0.3- | 0.1- | 2007 11 06 | 704 | 0.2+  | 0.8+  | 2007 12 14 | 704 | 1.3+ | 0.0  |
| 2007 10 10 | G96 | 0.1- | 0.0  | 2007 11 06 | 704 | 0.9+  | 0.8-  | 2007 12 14 | 704 | 2.3+ | 0.5+ |
| 2007 10 10 | G96 | 0.3- | 0.1- | 2007 11 06 | 704 | 0.1-  | 1.4+  | 2007 12 14 | 704 | 2.6+ | 0.5+ |
| 2007 10 10 | G96 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.3-  | 0.1-  | 2007 12 14 | 704 | 1.8+ | 1.0+ |
| 2007 10 10 | G96 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.2-  | 0.1-  | 2007 12 16 | 704 | 1.4+ | 0.5- |
| 2007 10 10 | D29 | 0.2+ | 0.2- | 2007 11 07 | 691 | 0.4-  | 0.2-  | 2007 12 16 | 704 | 1.2+ | 0.6- |
| 2007 10 10 | D29 | 0.2- | 0.3- | 2007 11 13 | 699 | 1.0+  | 0.6-  | 2007 12 16 | 704 | 0.9+ | 0.3- |
| 2007 10 10 | D29 | 0.3+ | 0.1- | 2007 11 13 | 699 | 0.6+  | 0.2+  | 2007 12 16 | 704 | 1.1+ | 0.4+ |
| 2007 10 10 | D29 | 0.5+ | 0.2- | 2007 11 13 | 699 | (2.4+ | 0.3-) | 2007 12 16 | 704 | 0.9+ | 0.0  |
| 2007 10 17 | G96 | 0.0  | 0.1- | 2007 11 13 | 699 | 1.1+  | 0.0   |            |     |      |      |

**2007 TT<sub>120</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 54.80244   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23659413 | $\omega$ | 109.80815 | +0.87454083   | +0.47505536 |
| <i>a</i> | 2.5890080  | $\Omega$ | 221.98631 | -0.48131750   | +0.82571252 |
| <i>e</i> | 0.1398924  | <i>i</i> | 8.37827   | -0.05926043   | +0.30417303 |
| <i>P</i> | 4.17       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 26 | 691 | 0.0  | 0.1- | 2007 10 18 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.4- | 0.5- |
| 2003 11 26 | 691 | 0.2- | 0.0  | 2007 10 18 | 691 | 0.1+ | 0.2- | 2007 11 07 | 703 | 0.3- | 0.7- |
| 2003 11 26 | 691 | 0.1- | 0.0  | 2007 10 18 | 691 | 0.1- | 0.1- | 2007 11 09 | G96 | 0.1+ | 0.1- |
| 2003 12 22 | 691 | 0.2+ | 0.1- | 2007 10 20 | 703 | 0.6+ | 0.4- | 2007 11 09 | G96 | 0.2+ | 0.0  |
| 2003 12 22 | 691 | 0.1+ | 0.2+ | 2007 10 20 | 703 | 0.9- | 0.5- | 2007 11 09 | G96 | 0.1- | 0.0  |
| 2003 12 22 | 691 | 0.0  | 0.1- | 2007 10 20 | 703 | 0.2- | 0.2- | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2007 10 04 | 691 | 1.1- | 0.2- | 2007 10 20 | 703 | 0.3+ | 0.6+ | 2007 11 14 | 704 | 0.3+ | 0.7+ |
| 2007 10 04 | 691 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.2- | 0.2- | 2007 11 14 | 704 | 0.3+ | 0.7+ |
| 2007 10 04 | 691 | 0.1- | 0.2- | 2007 10 30 | G96 | 0.2+ | 0.2- | 2007 11 14 | 704 | 0.1+ | 0.8+ |
| 2007 10 10 | 691 | 0.2- | 0.0  | 2007 10 30 | G96 | 0.0  | 0.1- | 2007 11 14 | 704 | 0.1- | 0.2- |
| 2007 10 10 | 691 | 0.4+ | 0.6+ | 2007 10 30 | G96 | 0.5+ | 0.1- | 2007 11 17 | G96 | 0.3- | 0.3+ |
| 2007 10 10 | 691 | 0.0  | 0.2+ | 2007 11 05 | 704 | 0.5+ | 0.5+ | 2007 11 17 | G96 | 0.1- | 0.0  |
| 2007 10 11 | 688 | 0.3+ | 0.4- | 2007 11 05 | 704 | 0.0  | 0.3+ | 2007 11 17 | G96 | 0.2- | 0.1- |
| 2007 10 11 | 688 | 0.1- | 0.2+ | 2007 11 05 | 704 | 0.5+ | 0.5+ | 2007 11 17 | 703 | 1.2- | 0.9- |
| 2007 10 14 | 691 | 0.1+ | 0.0  | 2007 11 05 | 704 | 0.4+ | 0.5+ | 2007 11 17 | 703 | 0.4- | 0.3+ |
| 2007 10 14 | 691 | 0.2+ | 0.1+ | 2007 11 07 | 703 | 0.4- | 0.1- | 2007 11 17 | 703 | 1.1- | 0.2- |
| 2007 10 14 | 691 | 0.2+ | 0.2+ | 2007 11 07 | 703 | 1.1+ | 0.0  | 2007 11 17 | 703 | 0.3+ | 1.1- |

**2007 TZ<sub>120</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.41079  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20407423 | $\omega$ | 88.85898  | +0.77598088   | -0.62840095 |
| <i>a</i> | 2.8572217  | $\Omega$ | 310.07042 | +0.54671119   | +0.71313487 |
| <i>e</i> | 0.1099979  | <i>i</i> | 4.08098   | +0.31457996   | +0.31072641 |
| <i>P</i> | 4.83       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |     |     |            |     |      |      |  |
|------------|-----|-----|-----|------------|-----|------|------|--|
| 1995 03 05 | 691 | 0.0 | 0.0 | 2005 03 17 | 691 | 0.1+ | 0.9+ |  |
|------------|-----|-----|-----|------------|-----|------|------|--|

2007 DEC. 24

M.P.O. 129857

|            |     |      |      |            |     |      |      |            |     |     |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-----|-----|
| 2002 08 15 | 291 | 0.2+ | 0.3- | 2007 10 05 | 691 | 0.0  | 0.0  | 2007 10 19 | 691 | 0.0 | 0.0 |
| 2002 08 15 | 291 | 0.1+ | 0.3- | 2007 10 05 | 691 | 0.0  | 0.3+ | 2007 10 19 | 691 | 0.0 | 0.0 |
| 2005 03 17 | 691 | 0.7+ | 0.6+ | 2007 10 10 | 691 | 0.5- | 0.1+ |            |     |     |     |

**2007 TC<sub>121</sub> = 2000 JD<sub>5</sub> = 2006 BX<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 78.77309   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.30434112 | $\omega$ | 110.22590 | +0.04410342 | +0.99879666 |
| $a$ | 2.1889153  | $\Omega$ | 162.26117 | -0.94086094 | +0.04874541 |
| $e$ | 0.1252202  | $i$      | 4.03712   | -0.33591007 | -0.00539522 |
| $P$ | 3.24       | $H$      | 18.3      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 03 | 691 | 0.0  | 0.4+ | 2006 01 30 | 691 | 0.2+ | 0.4+ | 2007 10 05 | 691 | 0.5- | 0.2+ |
| 2000 05 03 | 691 | 0.4+ | 0.1- | 2006 01 30 | 691 | 0.0  | 0.3+ | 2007 10 05 | 691 | 0.2- | 0.2+ |
| 2000 05 03 | 691 | 0.1+ | 0.5- | 2006 01 30 | 691 | 0.1- | 0.2+ | 2007 10 10 | 691 | 0.5- | 0.6+ |
| 2000 05 04 | 691 | 0.1- | 0.2+ | 2006 02 04 | G96 | 0.2- | 0.1+ | 2007 10 10 | 691 | 0.1- | 0.0  |
| 2000 05 04 | 691 | 0.3- | 0.2- | 2006 02 04 | G96 | 0.5+ | 0.6- | 2007 10 10 | 691 | 0.2+ | 0.3+ |
| 2000 05 04 | 691 | 0.0  | 0.2+ | 2006 02 04 | G96 | 0.0  | 0.4- | 2007 10 12 | 691 | 0.0  | 0.2+ |
| 2003 03 26 | 291 | 0.0  | 0.2+ | 2006 02 04 | G96 | 0.1+ | 0.3+ | 2007 10 12 | 691 | 0.2- | 0.5+ |
| 2003 03 26 | 691 | 0.5+ | 0.5+ | 2007 09 14 | G96 | 0.5+ | 0.2- | 2007 10 12 | 691 | 0.5- | 0.0  |
| 2003 03 26 | 291 | 0.4- | 0.3+ | 2007 09 14 | G96 | 0.4+ | 0.1+ | 2007 10 19 | 691 | 0.2- | 0.3+ |
| 2003 03 26 | 291 | 0.2- | 0.4+ | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 10 19 | 691 | 0.2- | 0.5+ |
| 2003 03 26 | 691 | 0.0  | 0.3+ | 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 10 19 | 691 | 0.1- | 0.2- |
| 2003 03 26 | 691 | 0.1+ | 0.2+ | 2007 10 05 | 691 | 0.1- | 0.2- |            |     |      |      |

**2007 TJ<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 143.28204  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18915904 | $\omega$ | 233.29940 | -0.39151691 | +0.91876448 |
| $a$ | 3.0055086  | $\Omega$ | 13.92279  | -0.76239223 | -0.29294219 |
| $e$ | 0.0648036  | $i$      | 12.20203  | -0.51524033 | -0.26468226 |
| $P$ | 5.21       | $H$      | 15.5      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 14 | 644 | 0.2- | 0.0  | 2005 05 01 | 644 | 0.5+ | 0.2- | 2007 10 10 | 691 | 0.0  | 0.0  |
| 2002 11 14 | 644 | 0.0  | 0.1+ | 2005 05 01 | 644 | 0.9+ | 0.2+ | 2007 10 10 | 691 | 0.0  | 0.1- |
| 2002 11 14 | 644 | 0.1+ | 0.1+ | 2007 10 05 | 691 | 0.1+ | 0.4- | 2007 10 10 | 691 | 0.2- | 0.1- |
| 2005 03 17 | G96 | 0.1+ | 0.1+ | 2007 10 05 | 691 | 0.2- | 0.8+ | 2007 10 18 | 691 | 0.2+ | 0.4- |
| 2005 03 17 | G96 | 0.4- | 0.4- | 2007 10 05 | 691 | 0.1+ | 0.1+ | 2007 10 18 | 691 | 0.3- | 0.1- |
| 2005 03 17 | G96 | 1.4- | 0.7+ | 2007 10 09 | 691 | 0.0  | 0.1- | 2007 10 18 | 691 | 0.0  | 0.2+ |
| 2005 03 17 | G96 | 0.5- | 0.7+ | 2007 10 09 | 691 | 0.2- | 0.8+ |            |     |      |      |
| 2005 05 01 | 644 | 1.1+ | 0.2- | 2007 10 09 | 691 | 0.2+ | 0.0  |            |     |      |      |

**2007 TV<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 258.81803  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.23261331 | $\omega$ | 299.34753 | -0.80566191 | -0.58472463 |
| $a$ | 2.6184624  | $\Omega$ | 205.23828 | +0.59069111 | -0.78092175 |
| $e$ | 0.0934701  | $i$      | 12.85998  | +0.04464190 | -0.21967777 |
| $P$ | 4.24       | $H$      | 17.0      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 07 07 | 691 | 0.3- | 0.2+ | 2007 10 06 | 691 | 0.2- | 0.3+ | 2007 11 13 | G96 | 0.3- | 1.1- |
| 1997 07 07 | 691 | 0.1+ | 0.2+ | 2007 10 06 | 691 | 0.3- | 0.2+ | 2007 11 13 | G96 | 0.4+ | 0.1- |
| 1997 07 07 | 691 | 0.2+ | 0.4+ | 2007 10 06 | 691 | 0.7- | 1.0+ | 2007 11 13 | G96 | 0.3+ | 0.2- |
| 2003 11 26 | 691 | 0.2- | 0.1+ | 2007 10 10 | 691 | 0.3+ | 0.0  | 2007 11 13 | G96 | 0.5+ | 0.1+ |
| 2003 11 26 | 691 | 0.1- | 0.2+ | 2007 10 10 | 691 | 0.3+ | 0.1- | 2007 11 18 | 291 | 0.1- | 0.3+ |
| 2003 11 26 | 691 | 0.3+ | 0.2+ | 2007 10 10 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 291 | 0.4- | 0.2+ |
| 2005 03 09 | 691 | 0.0  | 0.2+ | 2007 10 18 | 691 | 0.3+ | 0.1+ | 2007 11 18 | 291 | 0.7- | 0.4+ |
| 2005 03 09 | 691 | 0.2- | 0.2+ | 2007 10 18 | 691 | 0.2+ | 0.0  |            |     |      |      |
| 2005 03 09 | 691 | 0.4+ | 0.6+ | 2007 10 18 | 691 | 0.1- | 0.0  |            |     |      |      |

**2007 TN<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 146.68015  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.25500578 | $\omega$ | 129.40080 | -0.47950915 | +0.87726414 |
| $a$ | 2.4628390  | $\Omega$ | 111.93284 | -0.81219977 | -0.43422985 |
| $e$ | 0.1050234  | $i$      | 1.35139   | -0.33226874 | -0.20457776 |
| $P$ | 3.87       | $H$      | 16.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 03 | 691 | 0.1- | 0.2- | 2003 11 20 | 695 | 0.1+ | 0.1+ | 2007 10 23 | 691 | 0.0  | 0.3- |
| 1999 09 03 | 691 | 0.1- | 0.6- | 2005 01 18 | 691 | 0.1+ | 0.1+ | 2007 10 23 | 691 | 0.0  | 0.0  |
| 1999 09 03 | 691 | 0.3+ | 0.6- | 2005 01 18 | 691 | 0.1- | 0.2+ | 2007 10 23 | 691 | 0.1- | 0.4+ |
| 2002 05 12 | 644 | 0.3+ | 0.2+ | 2005 01 18 | 691 | 0.1+ | 0.1- | 2007 11 07 | G96 | 0.2+ | 0.6- |
| 2002 05 12 | 644 | 0.1- | 0.5+ | 2007 10 06 | 691 | 1.0- | 0.1- | 2007 11 07 | G96 | 0.5+ | 0.3- |
| 2002 05 12 | 644 | 0.2+ | 0.7+ | 2007 10 06 | 691 | 0.3- | 0.1- | 2007 11 07 | G96 | 0.3+ | 0.5- |
| 2003 09 16 | 691 | 0.2- | 0.5+ | 2007 10 06 | 691 | 0.2- | 0.3- | 2007 11 07 | G96 | 0.6+ | 0.5- |
| 2003 09 16 | 691 | 0.3- | 0.4+ | 2007 10 10 | 691 | 0.2+ | 0.2+ | 2007 12 05 | G96 | 1.0+ | 0.5- |
| 2003 09 16 | 691 | 0.2+ | 0.1+ | 2007 10 10 | 691 | 0.2+ | 0.1+ | 2007 12 05 | G96 | 0.6+ | 0.6- |
| 2003 10 18 | 691 | 0.3+ | 0.0  | 2007 10 10 | 691 | 0.3+ | 0.4+ | 2007 12 05 | G96 | 0.1+ | 0.3- |
| 2003 10 18 | 691 | 0.2- | 0.7+ | 2007 10 18 | 691 | 0.2- | 0.1+ | 2007 12 05 | G96 | 0.7+ | 0.1- |
| 2003 10 18 | 691 | 0.3+ | 0.1+ | 2007 10 18 | 691 | 0.1+ | 0.0  |            |     |      |      |
| 2003 11 20 | 695 | 0.0  | 0.1+ | 2007 10 18 | 691 | 0.3- | 0.1+ |            |     |      |      |

**2007 TO<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 83.53577   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.19099947 | $\omega$ | 191.32904 | +0.29919128 | +0.95318246 |
| $a$ | 2.9861706  | $\Omega$ | 96.09144  | -0.87196858 | +0.29180621 |
| $e$ | 0.2040972  | $i$      | 2.53076   | -0.38749887 | +0.07932420 |
| $P$ | 5.16       | $H$      | 15.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 18 | 644 | 0.1+ | 0.3+ | 2005 04 09 | 691 | 0.3+ | 0.5+ | 2007 10 06 | 291 | 0.3- | 0.1- |
| 2001 07 18 | 644 | 0.2- | 0.3+ | 2005 04 09 | 691 | 0.1- | 0.3+ | 2007 10 06 | 291 | 0.4- | 0.3- |
| 2001 07 18 | 644 | 0.1- | 0.4+ | 2007 09 15 | G96 | 0.4+ | 0.1- | 2007 10 10 | 691 | 0.2+ | 0.3+ |
| 2002 11 04 | 950 | 0.1- | 0.2+ | 2007 09 15 | G96 | 0.5+ | 0.1- | 2007 10 10 | 691 | 0.2+ | 0.2+ |
| 2002 11 04 | 950 | 0.1- | 0.2+ | 2007 09 15 | G96 | 0.2+ | 0.2- | 2007 10 10 | 691 | 0.0  | 0.4+ |
| 2002 11 04 | 950 | 0.0  | 0.3+ | 2007 09 15 | G96 | 0.4+ | 0.1- | 2007 10 18 | 691 | 0.0  | 0.2- |
| 2005 03 03 | 691 | 0.1+ | 0.2+ | 2007 10 06 | 691 | 0.7- | 0.0  | 2007 10 18 | 691 | 0.1- | 0.1+ |
| 2005 03 03 | 691 | 0.2+ | 0.3+ | 2007 10 06 | 691 | 0.4- | 0.5+ | 2007 10 18 | 691 | 0.4- | 0.1+ |
| 2005 03 03 | 691 | 0.2+ | 0.2+ | 2007 10 06 | 691 | 0.6+ | 0.1+ |            |     |      |      |
| 2005 04 09 | 691 | 0.3- | 0.2- | 2007 10 06 | 291 | 0.2- | 0.3- |            |     |      |      |

**2007 TS<sub>123</sub> = 1993 TA<sub>49</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 50.48207   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.21234216 | $\omega$ | 278.19958 | +0.89790152 | +0.42993161 |     |   |
| $a$ | 2.7825644  | $\Omega$ | 56.38588  | -0.34582313 | +0.82178796 |     |   |
| $e$ | 0.1156900  | $i$      | 6.51618   | -0.27235864 | +0.37392962 |     |   |
| $P$ | 4.64       | $H$      | 16.0      | $G$         | 0.15        | $U$ | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 10 11 | 809 | 0.5+ | 0.1+ | 2007 10 10 | 691 | 0.1-  | 0.1+  | 2007 11 05 | 704 | 0.2- | 0.2+ |
| 1993 10 11 | 809 | 0.6+ | 0.3- | 2007 10 14 | 691 | 0.1+  | 0.5-  | 2007 11 05 | 704 | 0.2- | 1.0+ |
| 1993 10 11 | 809 | 0.2+ | 0.2- | 2007 10 14 | 691 | 0.1+  | 0.5-  | 2007 11 07 | G96 | 0.4+ | 0.0  |
| 2001 05 24 | 291 | 0.1+ | 1.1+ | 2007 10 14 | 691 | 0.3-  | 0.4+  | 2007 11 07 | G96 | 0.2+ | 0.1- |
| 2001 05 24 | 291 | 0.7+ | 0.9+ | 2007 10 18 | 691 | 0.0   | 0.1-  | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2001 05 24 | 291 | 0.7+ | 1.0+ | 2007 10 18 | 691 | 0.0   | 0.0   | 2007 11 07 | G96 | 0.4+ | 0.2- |
| 2002 09 11 | 608 | 0.4- | 1.0- | 2007 10 18 | 691 | 0.9-  | 0.1+  | 2007 11 14 | 704 | 0.1+ | 0.5+ |
| 2002 09 11 | 608 | 0.4- | 0.7- | 2007 10 23 | 691 | 0.0   | 0.2+  | 2007 11 14 | 704 | 0.1- | 0.6+ |
| 2002 09 11 | 608 | 0.5- | 0.7- | 2007 10 23 | 691 | 0.0   | 0.1-  | 2007 11 14 | 704 | 0.6+ | 1.1+ |
| 2003 12 18 | 691 | 0.2- | 0.2+ | 2007 10 23 | 691 | 0.1-  | 0.0   | 2007 11 14 | 704 | 0.7+ | 0.8+ |
| 2003 12 18 | 691 | 0.1- | 0.2+ | 2007 10 30 | 703 | (1.2+ | 2.0+) | 2007 11 14 | 704 | 0.2+ | 0.9+ |
| 2003 12 18 | 691 | 0.1- | 0.1+ | 2007 10 30 | 703 | (0.3+ | 1.9+) | 2007 12 05 | 704 | 0.9+ | 1.0+ |
| 2007 10 06 | 691 | 0.1- | 0.1+ | 2007 10 30 | 703 | 0.9+  | 0.9+  | 2007 12 05 | 704 | 0.2+ | 0.9+ |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2007 10 06 691 | 0.7− | 0.3− | 2007 10 30 703 | 1.4+ | 1.2+ | 2007 12 05 704 | 1.9− | 1.1+ |
| 2007 10 06 691 | 0.2− | 0.0  | 2007 11 05 704 | 0.4+ | 0.8+ | 2007 12 05 704 | 0.1− | 2.4+ |
| 2007 10 10 691 | 0.0  | 0.7+ | 2007 11 05 704 | 0.8+ | 0.7+ |                |      |      |
| 2007 10 10 691 | 0.1− | 0.1− | 2007 11 05 704 | 0.0  | 0.2+ |                |      |      |

**2007 TL<sub>124</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 95.67211   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20849654 | $\omega$ | 110.55559 | +0.31861623   | +0.94788011 |
| <i>a</i> | 2.8166755  | $\Omega$ | 178.01793 | −0.89567108   | +0.30197817 |
| <i>e</i> | 0.0801023  | <i>i</i> | 4.38719   | −0.31025313   | +0.10164884 |
| <i>P</i> | 4.73       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 1996 05 22 691 | 0.1+ | 0.5+ | 2005 04 02 G96 | 0.1−  | 0.3−  | 2007 10 14 691 | 0.1+  | 0.3−  |
| 1996 05 22 691 | 0.2+ | 0.3+ | 2005 04 02 G96 | 0.2−  | 0.4−  | 2007 10 14 691 | 0.3−  | 0.3+  |
| 1996 05 22 691 | 0.1+ | 0.3+ | 2005 04 02 G96 | 0.2−  | 0.2−  | 2007 10 18 691 | 0.3−  | 0.1+  |
| 2000 03 30 691 | 0.1+ | 0.2− | 2005 04 04 703 | 0.4+  | 0.1−  | 2007 10 18 691 | 0.5−  | 1.0+  |
| 2000 03 30 691 | 0.2+ | 0.3− | 2005 04 04 703 | 0.0   | 0.8+  | 2007 10 18 691 | 0.0   | 0.4+  |
| 2000 03 30 691 | 0.4− | 0.2+ | 2005 04 04 703 | (0.5− | 3.8−) | 2007 11 13 G96 | 0.2+  | 0.1+  |
| 2002 10 10 645 | 0.1− | 0.1− | 2005 04 04 703 | (2.6− | 0.8+) | 2007 11 13 G96 | 0.4+  | 0.1−  |
| 2002 10 10 645 | 0.0  | 0.0  | 2007 10 06 691 | 0.3−  | 0.1+  | 2007 11 13 G96 | 0.6+  | 0.0   |
| 2002 10 31 645 | 0.1− | 0.1− | 2007 10 06 691 | 0.8−  | 0.3−  | 2007 11 13 G96 | 0.4+  | 0.1+  |
| 2002 10 31 645 | 0.1− | 0.1− | 2007 10 06 691 | 0.0   | 0.0   | 2007 11 14 704 | (2.1+ | 0.6−) |
| 2005 03 16 691 | 0.2+ | 0.4+ | 2007 10 10 691 | 0.1+  | 0.3−  | 2007 11 14 704 | 0.8+  | 0.9+  |
| 2005 03 16 691 | 0.2+ | 0.4+ | 2007 10 10 691 | 0.0   | 0.4−  | 2007 11 14 704 | 0.2−  | 1.0−  |
| 2005 03 16 691 | 0.1+ | 0.3+ | 2007 10 10 691 | 0.1−  | 0.4+  |                |       |       |
| 2005 04 02 G96 | 0.4− | 0.3− | 2007 10 14 691 | 0.1+  | 0.9+  |                |       |       |

**2007 TR<sub>124</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 280.32423  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22252149 | $\omega$ | 310.90878 | −0.56757433   | −0.82327104 |
| <i>a</i> | 2.6970442  | $\Omega$ | 173.65242 | +0.77813446   | −0.54003077 |
| <i>e</i> | 0.1010579  | <i>i</i> | 4.75990   | +0.26900956   | −0.17490442 |
| <i>P</i> | 4.43       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 14 G96 | 0.0  | 0.2− | 2007 10 06 691 | 0.4+ | 0.3+ | 2007 10 23 691 | 0.4+ | 0.1− |
| 2005 03 14 G96 | 0.1+ | 0.2+ | 2007 10 10 691 | 0.1+ | 0.4+ | 2007 11 13 G96 | 0.2+ | 0.3− |
| 2005 03 14 G96 | 0.3+ | 0.4+ | 2007 10 10 691 | 0.2+ | 0.2+ | 2007 11 13 G96 | 0.7+ | 0.1− |
| 2005 03 14 G96 | 0.2− | 0.5+ | 2007 10 10 691 | 0.3+ | 0.3+ | 2007 11 13 G96 | 0.2+ | 0.3− |
| 2005 04 14 691 | 0.2− | 0.0  | 2007 10 18 691 | 0.2+ | 0.1+ | 2007 11 13 G96 | 0.3+ | 0.1− |
| 2005 04 14 691 | 0.1+ | 0.0  | 2007 10 18 691 | 0.3− | 0.1+ | 2007 11 17 291 | 0.3− | 0.1+ |
| 2005 04 14 691 | 0.1+ | 0.1− | 2007 10 18 691 | 0.3+ | 0.1− | 2007 11 17 291 | 0.0  | 0.1+ |
| 2007 10 06 691 | 0.6− | 0.1− | 2007 10 23 691 | 1.0− | 0.8+ | 2007 11 17 291 | 0.2− | 0.1− |
| 2007 10 06 691 | 0.3+ | 0.4+ | 2007 10 23 691 | 1.5− | 0.9− |                |      |      |

**2007 TG<sub>125</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 5.60972    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27442261 | $\omega$ | 319.38871 | +0.90229531   | −0.42746820 |
| <i>a</i> | 2.3452517  | $\Omega$ | 66.00092  | +0.40971378   | +0.80982777 |
| <i>e</i> | 0.2001666  | <i>i</i> | 3.51334   | +0.13415589   | +0.40180831 |
| <i>P</i> | 3.59       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 1994 01 17 691 | 0.4−  | 0.2−  | 2007 10 10 691 | 0.3− | 0.0  | 2007 10 30 703 | 1.5+ | 0.6+ |
| 1994 01 17 691 | 0.3+  | 0.6−  | 2007 10 10 691 | 0.1− | 0.0  | 2007 11 05 704 | 0.2− | 0.4+ |
| 1994 01 17 691 | (6.0+ | 1.1−) | 2007 10 14 691 | 0.2− | 0.0  | 2007 11 05 704 | 0.3− | 0.5+ |
| 2000 11 24 691 | 0.1+  | 0.0   | 2007 10 14 691 | 0.3− | 0.0  | 2007 11 05 704 | 0.2− | 0.1+ |
| 2000 11 24 691 | 0.0   | 0.2−  | 2007 10 14 691 | 0.2− | 1.4− | 2007 11 05 704 | 0.2− | 0.4+ |
| 2000 11 24 691 | 0.1−  | 0.3−  | 2007 10 18 691 | 0.1− | 0.2− | 2007 11 05 704 | 0.3− | 0.2+ |
| 2000 12 05 691 | 0.2+  | 0.0   | 2007 10 18 691 | 0.1− | 0.1− | 2007 11 09 G96 | 0.2− | 0.2− |
| 2000 12 05 691 | 0.1+  | 0.6−  | 2007 10 18 691 | 0.1− | 0.3− | 2007 11 09 G96 | 0.3+ | 0.1− |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 12 05 691 | 0.1− | 0.5− | 2007 10 20 704 | 0.7+ | 0.5+ | 2007 11 09 G96 | 0.4+ | 0.1− |
| 2005 02 02 691 | 0.0  | 0.7+ | 2007 10 20 704 | 0.6+ | 0.5+ | 2007 11 09 G96 | 0.2+ | 0.2− |
| 2005 02 02 691 | 0.3+ | 0.6+ | 2007 10 20 704 | 0.0  | 0.2+ | 2007 11 13 699 | 0.2+ | 0.4+ |
| 2005 02 02 691 | 0.4+ | 0.9+ | 2007 10 20 704 | 0.0  | 1.4+ | 2007 11 13 699 | 0.8+ | 0.5+ |
| 2006 05 24 691 | 0.4− | 0.4+ | 2007 10 20 704 | 0.4+ | 0.5− | 2007 11 13 699 | 0.1+ | 0.0  |
| 2006 05 24 691 | 0.7+ | 0.7+ | 2007 10 23 691 | 0.2− | 0.1− | 2007 11 13 699 | 0.2− | 0.8− |
| 2006 05 24 691 | 0.2+ | 0.5+ | 2007 10 23 691 | 0.4− | 0.3+ | 2007 11 14 704 | 0.9− | 1.1+ |
| 2007 10 06 691 | 0.2− | 0.1+ | 2007 10 23 691 | 0.1− | 0.1+ | 2007 11 14 704 | 0.0  | 0.4+ |
| 2007 10 06 691 | 0.5− | 0.3− | 2007 10 30 703 | 0.1− | 0.7− | 2007 11 14 704 | 0.2− | 0.2− |
| 2007 10 06 691 | 0.0  | 0.3− | 2007 10 30 703 | 1.3+ | 0.0  | 2007 11 14 704 | 0.5− | 0.2− |
| 2007 10 10 691 | 0.3− | 0.1− | 2007 10 30 703 | 0.5− | 0.1− | 2007 11 14 704 | 1.0− | 1.0+ |

**2007 TT<sub>126</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 324.60563  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24438711 | $\omega$ | 30.37297 | +0.21352880   | −0.97395318 |
| <i>a</i> | 2.5336727  | $\Omega$ | 47.41531 | +0.87419128   | +0.15562621 |
| <i>e</i> | 0.0415425  | <i>i</i> | 5.94767  | +0.43611358   | +0.16491111 |
| <i>P</i> | 4.03       | <i>H</i> | 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1995 11 21 691 | 0.2+ | 0.0  | 2007 10 06 691 | 0.3− | 0.4+ | 2007 11 09 G96 | 0.3+ | 0.1+ |
| 1995 11 21 691 | 0.3− | 0.1+ | 2007 10 10 691 | 0.1− | 0.2− | 2007 11 09 G96 | 0.4+ | 0.2− |
| 1995 11 21 691 | 0.1+ | 0.2− | 2007 10 10 691 | 0.3+ | 0.2− | 2007 11 12 G96 | 0.1+ | 0.3− |
| 2003 10 20 291 | 0.0  | 0.1− | 2007 10 10 691 | 0.2+ | 0.0  | 2007 11 12 G96 | 0.0  | 0.1+ |
| 2003 10 20 291 | 0.1+ | 0.1− | 2007 10 18 691 | 0.0  | 0.1+ | 2007 11 12 G96 | 0.5+ | 0.1+ |
| 2003 10 20 291 | 0.2− | 0.1− | 2007 10 18 691 | 0.4− | 0.1+ | 2007 11 12 G96 | 0.3− | 0.1− |
| 2003 11 20 691 | 0.1+ | 0.3+ | 2007 10 18 691 | 0.5− | 0.1− | 2007 11 17 G96 | 1.1+ | 0.3+ |
| 2003 11 20 291 | 0.2+ | 0.2+ | 2007 10 30 691 | 0.7− | 0.1− | 2007 11 17 G96 | 1.0+ | 0.3+ |
| 2003 11 20 691 | 0.5− | 0.1− | 2007 10 30 691 | 0.2+ | 0.7− | 2007 11 17 G96 | 0.8+ | 0.3+ |
| 2003 11 20 291 | 0.1− | 0.2+ | 2007 10 30 691 | 0.0  | 0.2− | 2007 11 17 G96 | 1.3+ | 0.3− |
| 2003 11 20 691 | 0.3+ | 0.6+ | 2007 10 30 G96 | 0.4+ | 0.2− | 2007 12 06 G96 | 0.2+ | 0.7− |
| 2003 11 20 291 | 0.0  | 0.3+ | 2007 10 30 G96 | 0.8+ | 0.3− | 2007 12 06 G96 | 0.0  | 0.6− |
| 2007 10 06 691 | 0.3− | 0.5+ | 2007 10 30 G96 | 0.2+ | 0.2− | 2007 12 06 G96 | 0.3− | 0.1− |
| 2007 10 06 691 | 0.2+ | 0.0  | 2007 11 09 G96 | 0.5+ | 0.0  | 2007 12 06 G96 | 0.4− | 0.6− |

**2007 TW<sub>126</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 4.51865    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26572522 | $\omega$ | 209.47626 | +0.85272226   | −0.52236229 |
| <i>a</i> | 2.3961511  | $\Omega$ | 182.01657 | +0.48744943   | +0.79678627 |
| <i>e</i> | 0.2321074  | <i>i</i> | 2.51825   | +0.18777063   | +0.30375859 |
| <i>P</i> | 3.71       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2003 08 04 691 | 0.1+ | 0.3− | 2007 10 10 691 | 0.3+ | 0.4− | 2007 11 07 703 | 0.4−  | 0.5−  |
| 2003 08 04 691 | 0.1− | 0.0  | 2007 10 10 691 | 0.1+ | 0.1− | 2007 11 07 703 | 0.7+  | 0.3−  |
| 2003 08 04 691 | 0.1− | 0.3− | 2007 10 30 691 | 0.0  | 0.1+ | 2007 11 07 703 | 0.4+  | 0.1−  |
| 2003 09 29 291 | 0.1− | 0.3+ | 2007 10 30 691 | 0.2− | 0.4+ | 2007 11 09 G96 | 0.6+  | 0.1−  |
| 2003 09 29 291 | 0.1− | 0.4+ | 2007 10 30 691 | 0.0  | 0.2+ | 2007 11 09 G96 | 0.4+  | 0.1−  |
| 2003 09 29 291 | 0.1+ | 0.4+ | 2007 10 30 703 | 0.5+ | 0.4+ | 2007 11 09 G96 | 0.4+  | 0.0   |
| 2007 09 09 G96 | 0.3+ | 0.7− | 2007 10 30 703 | 0.5− | 0.9+ | 2007 11 09 G96 | 0.3+  | 0.2+  |
| 2007 09 09 G96 | 0.0  | 0.7− | 2007 10 30 703 | 0.2− | 0.0  | 2007 11 14 704 | 0.2−  | 0.5−  |
| 2007 09 09 G96 | 0.8+ | 0.1− | 2007 10 30 703 | 0.5− | 0.6+ | 2007 11 14 704 | (1.0− | 2.1+) |
| 2007 09 09 G96 | 0.8+ | 0.4− | 2007 11 07 G96 | 0.9+ | 0.1− | 2007 11 14 704 | 0.4−  | 0.8+  |
| 2007 10 06 691 | 0.1+ | 0.0  | 2007 11 07 G96 | 0.5+ | 0.3− | 2007 11 14 704 | 0.5+  | 1.1+  |
| 2007 10 06 691 | 0.0  | 0.2− | 2007 11 07 G96 | 0.8+ | 0.3− | 2007 11 14 704 | 0.5−  | 0.5+  |
| 2007 10 06 691 | 0.7− | 0.3− | 2007 11 07 G96 | 0.4+ | 0.3− |                |       |       |
| 2007 10 10 691 | 0.4− | 0.1− | 2007 11 07 703 | 1.1− | 0.4− |                |       |       |



## 2007 DEC. 24

## M.P.O. 129859

2007 TN<sub>127</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.92465   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26423286 | $\omega$ 152.45458 | +0.98088484   | +0.19225202 |
| <i>a</i> | 2.4051648  | $\Omega$ 196.54358 | -0.19224348   | +0.93350233 |
| <i>e</i> | 0.1313082  | <i>i</i> 6.06152   | -0.03012253   | +0.30267568 |
| <i>P</i> | 3.73       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 691 | 0.2+ | 0.3+ | 2006 05 30 | G96 | 0.0  | 0.3+ | 2007 10 06 | 691 | 0.5+ | 0.8+ |
| 2002 04 08 | 691 | 0.1- | 0.5+ | 2006 05 30 | G96 | 0.3+ | 0.2+ | 2007 10 06 | 691 | 0.3+ | 0.6+ |
| 2002 04 08 | 691 | 0.4+ | 0.7+ | 2006 05 30 | G96 | 0.0  | 0.8- | 2007 10 10 | 691 | 0.1+ | 0.2- |
| 2003 09 20 | 691 | 0.1- | 0.3+ | 2006 05 30 | G96 | 0.3- | 0.1+ | 2007 10 10 | 691 | 0.1- | 0.1+ |
| 2003 09 20 | 691 | 0.3- | 0.3+ | 2007 09 09 | G96 | 0.3+ | 0.0  | 2007 10 10 | 691 | 0.0  | 0.1+ |
| 2003 09 20 | 691 | 0.0  | 0.3+ | 2007 09 09 | G96 | 0.5+ | 0.1- | 2007 10 18 | 691 | 0.2- | 0.2+ |
| 2003 10 01 | 291 | 0.1+ | 0.2- | 2007 09 09 | G96 | 0.1+ | 0.0  | 2007 10 18 | 691 | 1.1- | 0.7- |
| 2003 10 01 | 291 | 0.0  | 0.3- | 2007 09 09 | G96 | 0.2+ | 0.1+ | 2007 10 18 | 691 | 0.1- | 0.2+ |
| 2003 10 01 | 291 | 0.1+ | 0.0  | 2007 10 06 | 691 | 0.3- | 0.1- |            |     |      |      |

2007 TF<sub>128</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.55072  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.27316940 | $\omega$ 25.21312 | +0.18356173   | -0.98059626 |
| <i>a</i> | 2.3524190  | $\Omega$ 54.28213 | +0.88692088   | +0.13502415 |
| <i>e</i> | 0.0764558  | <i>i</i> 4.86238  | +0.42388259   | +0.14212476 |
| <i>P</i> | 3.61       | <i>H</i> 16.7     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 01 17 | 703 | 0.5+  | 0.5+  | 2007 10 20 | 703 | 0.2+ | 0.3+ | 2007 11 11 | 699 | (0.2- | 1.9-) |
| 2005 01 17 | 703 | 1.3-  | 0.7+  | 2007 10 20 | 703 | 1.0+ | 0.3+ | 2007 11 14 | 704 | 0.5-  | 0.2-  |
| 2005 01 17 | 703 | (2.0- | 0.1+) | 2007 10 30 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 704 | 0.2-  | 0.9+  |
| 2005 01 17 | 703 | 0.2-  | 0.4+  | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.6-  | 0.3+  |
| 2005 02 09 | G96 | 0.2+  | 0.2-  | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.1+  | 0.4-  |
| 2005 02 09 | G96 | 0.2+  | 0.3-  | 2007 11 07 | 703 | 0.2+ | 0.7+ | 2007 11 14 | 704 | 0.2-  | 0.1+  |
| 2005 02 09 | G96 | 0.4+  | 0.4-  | 2007 11 07 | 703 | 0.3+ | 0.0  | 2007 11 17 | G96 | 0.7+  | 0.2-  |
| 2005 02 09 | G96 | 0.2+  | 0.2-  | 2007 11 07 | 703 | 0.1+ | 0.9+ | 2007 11 17 | G96 | 0.4+  | 0.2-  |
| 2007 10 06 | 691 | 0.2+  | 0.1+  | 2007 11 07 | 703 | 0.2- | 0.9+ | 2007 11 17 | G96 | 0.4+  | 0.2-  |
| 2007 10 06 | 691 | 0.2-  | 0.0   | 2007 11 09 | G96 | 0.3+ | 0.3- | 2007 11 17 | G96 | 0.2+  | 0.2-  |
| 2007 10 06 | 691 | 0.0   | 0.0   | 2007 11 09 | G96 | 0.4+ | 0.3- | 2007 12 06 | G96 | 0.3+  | 0.3-  |
| 2007 10 10 | 691 | 0.3-  | 0.1-  | 2007 11 09 | G96 | 0.4+ | 0.4- | 2007 12 06 | G96 | 0.2+  | 0.3-  |
| 2007 10 10 | 691 | 0.3-  | 0.0   | 2007 11 09 | G96 | 0.1+ | 0.3- | 2007 12 06 | G96 | 0.6+  | 0.4-  |
| 2007 10 10 | 691 | 0.4-  | 0.4-  | 2007 11 11 | 699 | 0.2+ | 0.9- | 2007 12 06 | G96 | 0.3-  | 0.4-  |
| 2007 10 20 | 703 | 0.6+  | 0.5-  | 2007 11 11 | 699 | 1.1+ | 1.1+ |            |     |       |       |
| 2007 10 20 | 703 | 0.6-  | 0.4-  | 2007 11 11 | 699 | 1.3- | 0.2+ |            |     |       |       |

2007 TG<sub>128</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.10238   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23275883 | $\omega$ 285.53696 | +0.86684573   | +0.48326823 |
| <i>a</i> | 2.6173709  | $\Omega$ 45.74909  | -0.36609590   | +0.78389153 |
| <i>e</i> | 0.1929144  | <i>i</i> 9.85509   | -0.33845571   | +0.38982803 |
| <i>P</i> | 4.23       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 691 | 0.1+ | 0.2+ | 2007 10 30 | 703 | 0.6- | 0.7+ | 2007 11 12 | G96 | 0.3+ | 0.0  |
| 2003 12 25 | 691 | 0.3- | 0.1+ | 2007 10 30 | 703 | 0.3- | 0.3+ | 2007 11 12 | G96 | 0.6+ | 0.2+ |
| 2003 12 25 | 691 | 0.0  | 0.2+ | 2007 10 30 | 703 | 1.0- | 0.7- | 2007 11 12 | G96 | 0.6+ | 0.0  |
| 2006 04 28 | 807 | 0.4+ | 0.1+ | 2007 11 05 | 704 | 0.9+ | 0.4+ | 2007 11 12 | G96 | 0.7+ | 0.1+ |
| 2006 04 28 | 807 | 0.3+ | 0.1+ | 2007 11 05 | 704 | 0.2+ | 0.1- | 2007 11 12 | G96 | 0.4+ | 0.0  |
| 2006 05 02 | 695 | 0.0  | 0.5+ | 2007 11 05 | 704 | 0.5+ | 0.1+ | 2007 11 12 | G96 | 0.5+ | 0.0  |
| 2006 05 02 | 695 | 0.0  | 0.2+ | 2007 11 05 | 704 | 1.1- | 0.2- | 2007 11 15 | 704 | 0.6+ | 0.6+ |
| 2006 06 01 | G96 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.4+ | 0.2+ | 2007 11 15 | 704 | 1.5+ | 1.1+ |
| 2006 06 01 | G96 | 0.1+ | 0.4+ | 2007 11 09 | G96 | 0.3+ | 0.1- | 2007 11 15 | 704 | 0.4+ | 0.1+ |
| 2006 06 01 | G96 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.1- | 0.1- | 2007 11 17 | G96 | 0.3+ | 0.4- |
| 2006 06 01 | G96 | 0.1+ | 0.3+ | 2007 11 09 | G96 | 0.1- | 0.1- | 2007 11 17 | G96 | 0.0  | 0.3- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 06 | 691 | 0.3- | 0.0  | 2007 11 09 | G96 | 0.1+ | 0.1- | 2007 11 17 | G96 | 0.0  | 0.5- |
| 2007 10 06 | 691 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.3+ | 0.3- | 2007 11 17 | G96 | 0.0  | 0.2- |
| 2007 10 06 | 691 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.4- | 2007 11 17 | G96 | 0.1- | 0.1- |
| 2007 10 10 | 691 | 0.4- | 0.1+ | 2007 11 11 | G96 | 0.7+ | 0.1- | 2007 11 17 | G96 | 0.4- | 0.3- |
| 2007 10 10 | 691 | 0.2- | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.4- | 2007 11 17 | G96 | 0.1- | 0.2- |
| 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 11 | 699 | 0.3+ | 0.2+ | 2007 11 17 | G96 | 0.5- | 0.3- |
| 2007 10 20 | 703 | 0.4+ | 0.5- | 2007 11 11 | 699 | 0.3+ | 0.1- | 2007 12 03 | 291 | 0.3- | 0.2+ |
| 2007 10 20 | 703 | 0.9- | 0.5+ | 2007 11 11 | 699 | 0.2+ | 0.1- | 2007 12 03 | 291 | 0.2- | 0.0  |
| 2007 10 20 | 703 | 0.1- | 0.3- | 2007 11 11 | 699 | 0.8+ | 1.2- | 2007 12 03 | 291 | 0.4- | 0.2+ |
| 2007 10 20 | 703 | 0.3+ | 0.7- | 2007 11 12 | G96 | 0.4+ | 0.2+ |            |     |      |      |
| 2007 10 30 | 703 | 0.0  | 0.4+ | 2007 11 12 | G96 | 0.6+ | 0.1+ |            |     |      |      |

2007 TP<sub>128</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 185.26926  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28812675 | $\omega$ 183.17703 | -0.80158055   | +0.59553673 |
| <i>a</i> | 2.2702848  | $\Omega$ 33.55517  | -0.54641658   | -0.69374150 |
| <i>e</i> | 0.0503700  | <i>i</i> 5.49801   | -0.24268814   | -0.40504164 |
| <i>P</i> | 3.42       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 17 | 691 | 0.0  | 0.1- | 2007 10 06 | 691 | 0.3- | 0.2- | 2007 11 07 | 703 | 0.3+ | 0.7+ |
| 2000 11 17 | 691 | 0.5+ | 0.5- | 2007 10 06 | 691 | 1.0- | 0.4+ | 2007 11 07 | 703 | 0.2+ | 0.1- |
| 2000 11 17 | 691 | 0.1- | 0.1- | 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 07 | 703 | 0.4- | 0.7+ |
| 2002 03 05 | 608 | 0.1- | 0.4- | 2007 10 10 | 691 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.4+ | 0.4- |
| 2002 03 05 | 608 | 0.4- | 0.3- | 2007 10 10 | 691 | 0.2- | 0.0  | 2007 11 11 | G96 | 0.2- | 0.6+ |
| 2002 03 05 | 608 | 1.2- | 1.2- | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 11 | G96 | 0.1+ | 0.2- |
| 2002 03 11 | 644 | 0.5+ | 0.7+ | 2007 10 30 | G96 | 0.2- | 0.5- | 2007 11 11 | G96 | 0.0  | 0.5- |
| 2002 03 11 | 644 | 0.8+ | 0.5+ | 2007 10 30 | G96 | 0.1+ | 0.3- | 2007 11 15 | 704 | 0.2+ | 0.5+ |
| 2002 03 11 | 644 | 0.5+ | 0.7+ | 2007 10 30 | G96 | 0.4- | 0.5- | 2007 11 15 | 704 | 0.9+ | 0.9+ |
| 2007 10 06 | 691 | 0.5- | 0.3+ | 2007 11 07 | 703 | 0.7- | 0.1- | 2007 11 15 | 704 | 1.2+ | 0.4- |

2007 TE<sub>129</sub> = 2007 VD<sub>187</sub>Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 88.77722   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28521565 | $\omega$ 76.09720  | +0.51621305   | +0.85545897 |
| <i>a</i> | 2.2857066  | $\Omega$ 225.06010 | -0.80664226   | +0.46937190 |
| <i>e</i> | 0.1118222  | <i>i</i> 3.35306   | -0.28784083   | +0.21881493 |
| <i>P</i> | 3.46       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 16 | 691 | 0.0  | 0.1- | 2007 10 06 | 691 | 0.0  | 0.0  | 2007 11 02 | 291 | 0.4- | 0.2+ |
| 1999 04 16 | 691 | 0.2- | 0.0  | 2007 10 06 | 691 | 0.5- | 0.3- | 2007 11 02 | 291 | 0.0  | 0.0  |
| 1999 04 16 | 691 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.1- | 0.3+ | 2007 11 02 | 291 | 0.2- | 0.1- |
| 2002 03 12 | 645 | 0.1+ | 0.1- | 2007 10 10 | 691 | 0.0  | 0.4+ | 2007 11 02 | 291 | 0.0  | 0.0  |
| 2002 03 12 | 645 | 0.1- | 0.0  | 2007 10 10 | 691 | 0.5- | 0.2+ | 2007 11 02 | 291 | 0.2- | 0.0  |
| 2006 04 07 | 691 | 0.2+ | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.6+ | 2007 11 04 | 691 | 0.2- | 0.3- |
| 2006 04 07 | 691 | 0.1+ | 0.4+ | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 04 | 691 | 0.3+ | 0.1- |
| 2006 04 07 | 691 | 0.1- | 0.3+ | 2007 10 30 | 691 | 0.3- | 0.7+ | 2007 11 04 | 691 | 0.2+ | 0.1+ |
| 2007 09 12 | G96 | 0.3+ | 0.4- | 2007 10 30 | G96 | 0.1+ | 0.4- | 2007 11 05 | G96 | 0.1+ | 0.1+ |
| 2007 09 12 | G96 | 0.3+ | 0.1- | 2007 10 30 | G96 | 0.6+ | 0.3- | 2007 11 05 | G96 | 0.7+ | 0.1- |
| 2007 09 12 | G96 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.4- | 0.2+ | 2007 11 05 | G96 | 0.6+ | 0.1- |
| 2007 09 12 | G96 | 0.7+ | 0.1+ | 2007 10 30 | G96 | 0.3- | 0.1+ | 2007 11 05 | G96 | 0.4- | 0.6- |
| 2007 10 06 | 691 | 0.1+ | 0.5+ | 2007 11 02 | 291 | 0.2- | 0.2+ |            |     |      |      |

2007 TY<sub>129</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 333.32061  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27773302 | $\omega$ 221.87008 | +0.29871226   | -0.95263621 |
| <i>a</i> | 2.3265785  | $\Omega$ 210.87709 | +0.90245830   | +0.30141088 |
| <i>e</i> | 0.0819168  | <i>i</i> 6.38304   | +0.31038684   | +0.04044427 |
| <i>P</i> | 3.55       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 05 04 | 291 | 0.1+ | 0.6+ | 2007 10 14 | 691 | 0.8-  | 0.1-  | 2007 11 05 | 704 | 0.6- | 0.2+ |
| 2002 05 04 | 291 | 0.2+ | 0.8+ | 2007 10 18 | 691 | 0.2-  | 0.3-  | 2007 11 05 | 704 | 0.6+ | 1.0+ |
| 2002 05 04 | 291 | 0.2+ | 0.8+ | 2007 10 18 | 691 | 0.3-  | 0.6-  | 2007 11 05 | 704 | 0.4+ | 0.4+ |
| 2003 09 29 | 691 | 0.1- | 0.1+ | 2007 10 18 | 691 | 0.1+  | 0.3-  | 2007 11 05 | G96 | 0.9+ | 0.0  |
| 2003 09 29 | 691 | 0.1- | 0.2+ | 2007 10 20 | 703 | 0.6-  | 0.0   | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2003 09 29 | 691 | 0.0  | 0.2+ | 2007 10 20 | 703 | 0.1+  | 0.6+  | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2007 09 12 | G96 | 0.0  | 0.3- | 2007 10 20 | 703 | 0.4+  | 0.0   | 2007 11 05 | 704 | 0.3- | 0.4+ |
| 2007 09 12 | G96 | 0.3+ | 0.4- | 2007 10 20 | 703 | 0.1+  | 1.1+  | 2007 11 05 | G96 | 0.8+ | 0.1+ |
| 2007 09 12 | G96 | 0.3+ | 0.3- | 2007 10 30 | 703 | (2.9+ | 1.3+) | 2007 11 05 | 704 | 0.8+ | 1.5+ |
| 2007 09 12 | G96 | 0.1+ | 0.3- | 2007 10 30 | 703 | 1.2+  | 0.4-  | 2007 11 07 | 703 | 1.0- | 0.2+ |
| 2007 10 06 | 691 | 0.2- | 0.0  | 2007 10 30 | 703 | 0.9+  | 0.3+  | 2007 11 07 | 703 | 0.3+ | 0.4+ |
| 2007 10 06 | 691 | 0.0  | 0.1+ | 2007 10 30 | 703 | 1.2+  | 0.7-  | 2007 11 07 | 703 | 0.4- | 0.1- |
| 2007 10 06 | 691 | 0.3- | 0.3+ | 2007 11 02 | H07 | 0.2+  | 0.9+  | 2007 11 07 | 703 | 1.0+ | 1.0+ |
| 2007 10 10 | 691 | 0.3- | 0.0  | 2007 11 02 | H07 | 0.4+  | 1.2+  | 2007 11 14 | 704 | 0.3+ | 0.3+ |
| 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 02 | H07 | 0.1+  | 1.8+  | 2007 11 14 | 704 | 0.8+ | 0.5+ |
| 2007 10 10 | 691 | 0.1+ | 0.2+ | 2007 11 02 | 291 | 0.5-  | 0.0   | 2007 11 14 | 704 | 0.4+ | 0.3+ |
| 2007 10 14 | 691 | 0.1- | 0.2- | 2007 11 02 | 291 | 0.4-  | 0.0   | 2007 11 14 | 704 | 1.0+ | 0.4+ |
| 2007 10 14 | 691 | 0.3- | 0.2- | 2007 11 02 | 291 | 0.2-  | 0.1-  | 2007 11 14 | 704 | 1.4+ | 1.0+ |

**2007 TE<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.62129   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.26042294 | $\omega$ | 162.05401 | +0.99928372 | +0.03648417 |
| <i>a</i> | 2.4285659  | $\Omega$ | 195.86521 | -0.03763329 | +0.93021836 |
| <i>e</i> | 0.1025881  | <i>i</i> | 2.10631   | -0.00397291 | +0.36518860 |
| <i>P</i> | 3.78       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 691 | 0.1+ | 0.1+ | 2007 10 06 | 691 | 0.5- | 0.2- | 2007 10 20 | 691 | 0.4- | 0.0  |
| 2003 09 21 | 691 | 0.1- | 0.0  | 2007 10 06 | 691 | 0.0  | 0.1+ | 2007 11 05 | H07 | 0.4+ | 0.1+ |
| 2003 09 21 | 691 | 0.0  | 0.1+ | 2007 10 10 | 691 | 0.3- | 0.1- | 2007 11 05 | H07 | 0.3+ | 0.4+ |
| 2003 10 19 | 691 | 0.1- | 0.0  | 2007 10 10 | 691 | 0.3- | 0.2- | 2007 11 05 | H07 | 0.0  | 1.4+ |
| 2003 10 19 | 691 | 0.1+ | 0.4- | 2007 10 10 | 691 | 0.3- | 0.0  | 2007 11 13 | 291 | 0.1- | 0.0  |
| 2003 10 19 | 691 | 0.2+ | 0.2- | 2007 10 16 | G96 | 0.4+ | 0.3- | 2007 11 13 | 291 | 0.1+ | 0.5+ |
| 2005 03 09 | G96 | 0.1+ | 0.1- | 2007 10 16 | G96 | 0.4+ | 0.4- | 2007 11 13 | 291 | 0.5- | 0.0  |
| 2005 03 09 | G96 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.4- | 2007 11 15 | G96 | 0.1+ | 0.3- |
| 2005 03 09 | G96 | 0.0  | 0.5- | 2007 10 16 | G96 | 0.7+ | 0.3- | 2007 11 15 | G96 | 0.0  | 0.1- |
| 2005 03 09 | G96 | 0.1- | 0.3+ | 2007 10 20 | 691 | 0.2- | 0.0  | 2007 11 15 | G96 | 0.1+ | 0.2- |
| 2007 10 06 | 691 | 0.4- | 0.1+ | 2007 10 20 | 691 | 0.3- | 0.0  | 2007 11 15 | G96 | 0.2+ | 0.1- |

**2007 TO<sub>131</sub> = 2007 TW<sub>33</sub> = 2001 SL<sub>198</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 28.16693   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17552891 | $\omega$ | 311.26128 | +0.99935849 | +0.02446718 |
| <i>a</i> | 3.1591502  | $\Omega$ | 47.35430  | -0.01123998 | +0.90762788 |
| <i>e</i> | 0.1733496  | <i>i</i> | 2.03758   | -0.03400394 | +0.41906203 |
| <i>P</i> | 5.62       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.2- | 0.7- | 2007 10 07 | G96 | 0.6+ | 0.6- | 2007 10 30 | G96 | 0.0  | 0.3+ |
| 2001 09 19 | 704 | 0.6- | 1.0- | 2007 10 07 | G96 | 0.7+ | 0.4- | 2007 11 09 | G96 | 0.1- | 0.2- |
| 2001 09 19 | 704 | 0.4+ | 1.0- | 2007 10 10 | 691 | 0.0  | 0.1- | 2007 11 09 | G96 | 0.2+ | 0.0  |
| 2001 09 20 | 291 | 0.3+ | 0.0  | 2007 10 10 | 691 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.1- | 0.1+ |
| 2001 09 20 | 291 | 0.2+ | 0.1+ | 2007 10 10 | 691 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2001 09 20 | 291 | 0.1+ | 0.5+ | 2007 10 18 | 691 | 0.1- | 0.3+ | 2007 11 17 | G96 | 0.3- | 0.0  |
| 2001 09 21 | 704 | 0.4- | 0.0  | 2007 10 18 | 691 | 0.2- | 0.0  | 2007 11 17 | G96 | 0.0  | 0.2- |
| 2001 09 21 | 704 | 0.2- | 0.4+ | 2007 10 18 | 691 | 0.3- | 0.1- | 2007 11 17 | G96 | 0.2+ | 0.1- |
| 2001 09 21 | 704 | 0.6- | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.1+ | 2007 11 17 | G96 | 0.0  | 0.1- |
| 2001 09 21 | 704 | 0.5- | 0.5- | 2007 10 30 | G96 | 0.1+ | 0.1+ | 2007 12 06 | G96 | 0.7+ | 0.1- |
| 2007 10 06 | 691 | 0.1- | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.1+ | 2007 12 06 | G96 | 0.6+ | 0.6- |
| 2007 10 06 | 691 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.1- | 0.3+ | 2007 12 06 | G96 | 0.4+ | 0.1- |
| 2007 10 06 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.1- | 0.4+ | 2007 12 06 | G96 | 0.3- | 0.9- |
| 2007 10 07 | G96 | 0.2- | 0.5- | 2007 10 30 | G96 | 0.3+ | 0.3+ |            |     |      |      |
| 2007 10 07 | G96 | 0.5+ | 0.7- | 2007 10 30 | G96 | 0.1+ | 0.4+ |            |     |      |      |

**2007 TQ<sub>131</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 69.32955   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.25819253 | $\omega$ | 100.61034 | +0.63460427 | +0.77157394 |
| <i>a</i> | 2.4425321  | $\Omega$ | 208.92772 | -0.73996908 | +0.59013111 |
| <i>e</i> | 0.1634507  | <i>i</i> | 5.23941   | -0.22298694 | +0.23752668 |
| <i>P</i> | 3.82       | <i>H</i> | 17.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 691 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.2- | 0.2+ | 2007 11 02 | G96 | 0.5- | 0.2- |
| 2003 09 21 | 691 | 0.2- | 0.2+ | 2007 10 10 | 691 | 0.1- | 0.0  | 2007 11 02 | G96 | 0.3- | 0.1+ |
| 2003 09 21 | 691 | 0.1- | 0.2- | 2007 10 18 | 691 | 0.8- | 0.1- | 2007 11 02 | G96 | 0.2+ | 0.3+ |
| 2003 09 27 | 691 | 0.2+ | 0.0  | 2007 10 18 | 691 | 0.7+ | 0.5+ | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2003 09 27 | 691 | 0.1+ | 0.0  | 2007 10 18 | 691 | 0.7- | 0.1+ | 2007 11 02 | G96 | 0.2- | 0.1+ |
| 2003 09 27 | 691 | 0.1- | 0.1- | 2007 10 30 | G96 | 0.2- | 0.2+ | 2007 11 02 | G96 | 0.3+ | 0.0  |
| 2003 10 20 | 691 | 0.1- | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.2+ | 2007 11 02 | G96 | 0.2- | 0.2- |
| 2003 10 20 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.3- | 0.1- | 2007 11 02 | 291 | 0.5+ | 0.6+ |
| 2003 10 20 | 691 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 11 02 | 291 | 0.6+ | 0.5+ |
| 2007 10 07 | G96 | 0.3+ | 0.7- | 2007 11 02 | G96 | 0.3- | 0.2+ | 2007 11 02 | 291 | 0.7+ | 0.4+ |
| 2007 10 07 | G96 | 0.3+ | 0.2- | 2007 11 02 | G96 | 0.2+ | 0.1+ | 2007 11 09 | G96 | 0.2- | 0.1- |
| 2007 10 07 | G96 | 0.9+ | 0.3- | 2007 11 02 | G96 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.2- | 0.6- |
| 2007 10 07 | G96 | 0.5+ | 0.7- | 2007 11 02 | G96 | 0.8- | 0.1- | 2007 11 09 | G96 | 0.1+ | 0.7- |
| 2007 10 10 | 691 | 1.4- | 1.1+ | 2007 11 02 | G96 | 0.1+ | 0.1- | 2007 11 09 | G96 | 0.0  | 0.6- |

**2007 TC<sub>132</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 28.55286   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23889324 | $\omega$ | 174.56055 | +0.98787929 | +0.15521169 |
| <i>a</i> | 2.5723702  | $\Omega$ | 176.50855 | -0.14360138 | +0.91863130 |
| <i>e</i> | 0.2392626  | <i>i</i> | 1.84439   | -0.05893348 | +0.36335364 |
| <i>P</i> | 4.13       | <i>H</i> | 17.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 11 19 | 691 | 0.1- | 0.2+ | 2007 10 15 | 703 | (2.3+ | 1.8+) | 2007 11 02 | G96 | 0.4-  | 0.3-  |
| 2003 11 19 | 691 | 0.0  | 0.1+ | 2007 10 15 | 703 | 1.4+  | 0.2+  | 2007 11 02 | G96 | 0.1-  | 0.1+  |
| 2003 11 19 | 691 | 0.1+ | 0.1- | 2007 10 15 | 703 | 0.0   | 0.8+  | 2007 11 05 | 704 | 0.0   | 0.8+  |
| 2003 12 19 | 691 | 0.1- | 0.1+ | 2007 10 15 | 703 | 0.4-  | 0.5+  | 2007 11 05 | 704 | 0.6-  | 0.9+  |
| 2003 12 19 | 691 | 0.1+ | 0.1- | 2007 10 18 | 691 | 0.2-  | 0.1+  | 2007 11 05 | 704 | (0.6+ | 2.2-) |
| 2003 12 19 | 691 | 0.0  | 0.2- | 2007 10 18 | 691 | 0.1-  | 0.1-  | 2007 11 07 | G96 | 0.1-  | 0.2-  |
| 2007 09 09 | G96 | 0.1+ | 0.1- | 2007 10 18 | 691 | 0.2-  | 0.2-  | 2007 11 07 | G96 | 0.1+  | 0.3-  |
| 2007 09 09 | G96 | 0.1+ | 0.2- | 2007 10 20 | 703 | (0.5+ | 2.0+) | 2007 11 07 | G96 | 0.2-  | 0.1-  |
| 2007 09 09 | G96 | 0.1+ | 0.3- | 2007 10 20 | 703 | 1.2-  | 0.0   | 2007 11 07 | G96 | 0.5-  | 0.2-  |
| 2007 09 09 | G96 | 0.1+ | 0.6- | 2007 10 20 | 703 | 0.7+  | 0.3+  | 2007 11 14 | 704 | 0.3+  | 0.4-  |
| 2007 10 07 | G96 | 0.8+ | 0.0  | 2007 10 20 | 703 | 0.4-  | 1.0-  | 2007 11 14 | 704 | 0.1-  | 0.4-  |
| 2007 10 07 | G96 | 0.2+ | 0.1+ | 2007 11 01 | G96 | 0.1-  | 0.1-  | 2007 11 14 | 704 | 0.9+  | 0.1-  |
| 2007 10 07 | G96 | 0.4+ | 0.1+ | 2007 11 01 | G96 | 0.1-  | 0.2-  | 2007 11 17 | G96 | 0.2+  | 0.2+  |
| 2007 10 07 | G96 | 1.0+ | 0.1+ | 2007 11 01 | G96 | 0.3+  | 0.0   | 2007 11 17 | G96 | 0.5+  | 0.2-  |
| 2007 10 10 | 691 | 0.1- | 0.1+ | 2007 11 01 | G96 | 0.1+  | 0.2+  | 2007 11 17 | G96 | 0.2+  | 0.2-  |
| 2007 10 10 | 691 | 0.3- | 0.0  | 2007 11 02 | G96 | 0.2+  | 0.1-  | 2007 11 17 | G96 | 0.4+  | 0.0   |
| 2007 10 10 | 691 | 0.1- | 0.1+ | 2007 11 02 | G96 | 0.5+  | 0.0   |            |     |       |       |

**2007 TZ<sub>132</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 136.57951  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22073982 | $\omega$ | 212.20502 | -0.19172128 | +0.97900965 |
| <i>a</i> | 2.7115374  | $\Omega$ | 46.84393  | -0.87916993 | -0.13999325 |
| <i>e</i> | 0.0648814  | <i>i</i> | 5.44010   | -0.43623753 | -0.14812832 |
| <i>P</i> | 4.47       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

## 2007 DEC. 24

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2005 05 11 G96 | 0.7− | 0.1− | 2007 11 09 G96 | 0.4−  | 0.1−  | 2007 11 17 G96 | 0.4− | 0.1− |
| 2005 05 11 G96 | 0.1− | 0.2+ | 2007 11 09 G96 | 0.1+  | 0.1−  | 2007 11 17 G96 | 0.3− | 0.1− |
| 2005 05 11 G96 | 0.0  | 0.2+ | 2007 11 11 G96 | 0.3+  | 0.3−  | 2007 11 17 G96 | 0.1− | 0.1− |
| 2007 10 07 G96 | 0.2+ | 0.5− | 2007 11 11 G96 | 0.3−  | 0.2−  | 2007 11 17 G96 | 0.0  | 0.1− |
| 2007 10 07 G96 | 0.1+ | 0.5− | 2007 11 11 G96 | 0.1+  | 0.2+  | 2007 11 17 G96 | 0.3+ | 0.4− |
| 2007 10 07 G96 | 0.1+ | 0.2+ | 2007 11 11 G96 | (0.5+ | 1.8−) | 2007 12 06 G96 | 0.9+ | 0.2+ |
| 2007 10 07 G96 | 0.4+ | 0.2− | 2007 11 12 G96 | 0.5+  | 0.2+  | 2007 12 06 G96 | 0.3− | 0.4− |
| 2007 10 07 G96 | 0.2− | 0.2− | 2007 11 12 G96 | 0.2+  | 0.2+  | 2007 12 06 G96 | 0.3− | 0.1− |
| 2007 10 07 G96 | 0.7+ | 0.2− | 2007 11 12 G96 | 0.1+  | 0.2+  | 2007 12 06 G96 | 0.1+ | 0.2+ |
| 2007 10 07 G96 | 0.1+ | 0.4− | 2007 11 12 G96 | 0.1−  | 0.2+  |                |      |      |
| 2007 10 07 G96 | 0.4+ | 0.6− | 2007 11 12 G96 | 0.1−  | 0.1−  |                |      |      |

2007 TH<sub>133</sub> = 2007 UR<sub>124</sub>Id. Minor Planet Center (d, *MPO* 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 291.00279  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28243803 | $\omega$ | 293.58932 | −0.55805028   | −0.82974773 |
| <i>a</i> | 2.3006679  | $\Omega$ | 190.34913 | +0.78006177   | −0.52047801 |
| <i>e</i> | 0.1332341  | <i>i</i> | 3.16840   | +0.28299033   | −0.20154738 |
| <i>P</i> | 3.49       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 01 13 691 | 0.2+ | 0.2− | 2007 10 07 G96 | 0.2− | 0.1+ | 2007 10 30 691 | 0.1+ | 0.0  |
| 2005 01 13 691 | 0.1− | 0.3− | 2007 10 07 G96 | 0.4+ | 0.1− | 2007 10 30 691 | 0.7− | 0.4− |
| 2005 01 13 691 | 0.3+ | 0.1− | 2007 10 07 G96 | 0.0  | 0.8− | 2007 11 07 G96 | 0.2+ | 0.1− |
| 2005 02 02 703 | 0.5− | 1.3+ | 2007 10 07 G96 | 0.8+ | 0.9− | 2007 11 07 G96 | 0.1+ | 0.2− |
| 2005 02 02 703 | 0.3− | 0.7+ | 2007 10 10 691 | 0.0  | 0.0  | 2007 11 07 G96 | 0.0  | 0.4− |
| 2005 02 02 703 | 1.1− | 1.0+ | 2007 10 10 691 | 0.6+ | 0.1+ | 2007 11 07 G96 | 0.0  | 0.0  |
| 2005 02 02 703 | 0.3− | 0.3+ | 2007 10 10 691 | 0.0  | 0.3+ | 2007 11 09 G96 | 0.2+ | 0.0  |
| 2005 03 13 G96 | 0.2+ | 0.1− | 2007 10 20 691 | 0.5− | 0.3+ | 2007 11 09 G96 | 0.4+ | 0.1− |
| 2005 03 13 G96 | 0.1− | 0.2− | 2007 10 20 691 | 0.2+ | 0.1− | 2007 11 09 G96 | 0.3+ | 0.1+ |
| 2005 03 13 G96 | 0.4+ | 0.6− | 2007 10 20 691 | 0.1+ | 0.3+ | 2007 11 09 G96 | 0.5+ | 0.2− |
| 2005 03 13 G96 | 0.6+ | 0.1− | 2007 10 30 691 | 0.4− | 0.2+ |                |      |      |

2007 TQ<sub>133</sub> = 2001 QN<sub>304</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 206.63742  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18888860 | $\omega$ | 54.91662  | −0.94618171   | +0.32328879 |
| <i>a</i> | 3.0083767  | $\Omega$ | 143.93868 | −0.30460048   | −0.87392979 |
| <i>e</i> | 0.0330456  | <i>i</i> | 1.45867   | −0.10935595   | −0.36294777 |
| <i>P</i> | 5.22       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 08 19 807 | 0.3− | 0.4+ | 2006 09 25 G96 | 0.2+ | 0.3+ | 2007 10 14 691 | 0.6− | 0.1+ |
| 2001 08 19 807 | 0.4− | 0.4+ | 2006 09 25 G96 | 0.2+ | 0.1− | 2007 10 14 691 | 0.2+ | 0.2+ |
| 2001 08 20 807 | 0.2− | 0.4+ | 2006 09 25 G96 | 1.1+ | 0.1− | 2007 10 16 691 | 0.1− | 0.5− |
| 2001 08 20 807 | 0.1− | 0.3+ | 2007 10 07 G96 | 0.9+ | 0.0  | 2007 10 16 691 | 0.4+ | 0.1+ |
| 2004 02 12 291 | 0.6+ | 0.2+ | 2007 10 07 G96 | 0.1− | 0.5− | 2007 10 16 691 | 0.1+ | 0.4+ |
| 2004 02 12 291 | 0.1+ | 0.1+ | 2007 10 07 G96 | 0.5+ | 0.6+ | 2007 11 03 691 | 0.1+ | 0.8+ |
| 2004 02 12 291 | 0.8+ | 0.5+ | 2007 10 07 G96 | 0.6+ | 0.3− | 2007 11 03 691 | 0.3− | 0.2− |
| 2004 03 20 691 | 0.7− | 0.0  | 2007 10 10 691 | 0.4− | 0.0  | 2007 11 03 691 | 0.4− | 0.6+ |
| 2004 03 20 691 | 0.0  | 0.3− | 2007 10 10 691 | 0.3− | 0.2− | 2007 11 05 G96 | 0.9+ | 0.3− |
| 2004 03 20 691 | 0.5− | 0.0  | 2007 10 10 691 | 0.3− | 0.3− | 2007 11 05 G96 | 0.6+ | 0.2− |
| 2005 06 01 691 | 0.1+ | 0.4+ | 2007 10 12 691 | 0.1+ | 0.4− | 2007 11 05 G96 | 0.6+ | 0.2− |
| 2005 06 01 691 | 0.1+ | 0.2+ | 2007 10 12 691 | 0.1+ | 0.2+ | 2007 11 05 G96 | 0.9+ | 0.0  |
| 2005 06 01 691 | 0.2− | 0.5+ | 2007 10 12 691 | 0.0  | 0.0  |                |      |      |
| 2006 09 25 G96 | 0.2− | 0.1+ | 2007 10 14 691 | 0.4− | 0.1+ |                |      |      |

## M.P.O. 129861

2007 TZ<sub>133</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 79.50055   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.16776525 | $\omega$ | 264.52731 | +0.73436668   | +0.67665103 |
| <i>a</i> | 3.2558775  | $\Omega$ | 52.87692  | −0.59322857   | +0.67805975 |
| <i>e</i> | 0.0567088  | <i>i</i> | 3.83837   | −0.32982638   | +0.28701631 |
| <i>P</i> | 5.88       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 07 30 807 | 0.1+ | 0.3− | 2007 10 07 G96 | 0.6+ | 0.1− | 2007 11 05 G96 | 0.1+ | 0.2− |
| 2000 07 30 807 | 0.0  | 0.2− | 2007 10 10 691 | 0.2− | 0.0  | 2007 11 05 G96 | 0.1+ | 0.0  |
| 2000 09 21 695 | 0.1+ | 0.3+ | 2007 10 10 691 | 0.0  | 0.1+ | 2007 11 05 G96 | 0.2+ | 0.0  |
| 2000 09 21 695 | 0.0  | 0.1− | 2007 10 10 691 | 0.3− | 0.1+ | 2007 11 05 G96 | 0.2+ | 0.2+ |
| 2004 03 17 691 | 0.2− | 0.0  | 2007 10 18 691 | 0.4− | 0.1− | 2007 11 17 G96 | 0.3+ | 0.5− |
| 2004 03 17 691 | 0.2− | 0.3− | 2007 10 18 691 | 0.3− | 0.0  | 2007 11 17 G96 | 0.1− | 0.5− |
| 2004 03 17 691 | 0.3+ | 0.0  | 2007 10 18 691 | 0.3− | 0.4+ | 2007 11 17 G96 | 0.5+ | 0.5− |
| 2007 10 07 G96 | 0.4+ | 0.2+ | 2007 11 03 691 | 0.5− | 0.7+ | 2007 11 17 G96 | 0.6+ | 0.9− |
| 2007 10 07 G96 | 0.3− | 0.2+ | 2007 11 03 691 | 0.5− | 0.4+ |                |      |      |
| 2007 10 07 G96 | 0.4+ | 0.1− | 2007 11 03 691 | 0.5− | 0.5+ |                |      |      |

2007 TC<sub>135</sub> = 2005 EB<sub>165</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 42.71108   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17008256 | $\omega$ | 139.25777 | +0.64645149   | +0.76210563 |
| <i>a</i> | 3.2262364  | $\Omega$ | 170.81562 | −0.74539341   | +0.64093188 |
| <i>e</i> | 0.0836910  | <i>i</i> | 13.03243  | −0.16275484   | +0.09165879 |
| <i>P</i> | 5.79       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2001 08 22 691 | 0.0  | 0.2+ | 2007 08 10 691 | 0.3−  | 0.2+  | 2007 10 08 691 | 0.2− | 0.1− |
| 2001 08 22 691 | 0.0  | 0.3− | 2007 08 10 691 | 0.5−  | 0.6−  | 2007 10 08 691 | 0.4− | 0.2+ |
| 2001 08 22 691 | 0.0  | 0.0  | 2007 08 10 691 | 1.3−  | 1.0+  | 2007 10 08 691 | 0.5− | 0.0  |
| 2004 01 28 645 | 0.0  | 0.2+ | 2007 09 11 G96 | 0.5+  | 0.1−  | 2007 10 10 691 | 0.2+ | 0.2− |
| 2004 01 28 645 | 0.0  | 0.1+ | 2007 09 11 G96 | 0.3+  | 0.1−  | 2007 10 10 691 | 0.0  | 0.2− |
| 2005 03 11 691 | 0.3− | 0.3+ | 2007 09 11 G96 | 0.0   | 0.2−  | 2007 10 10 691 | 0.1+ | 0.2− |
| 2005 03 11 691 | 0.1+ | 0.0  | 2007 09 11 G96 | 0.3+  | 0.1+  | 2007 10 16 691 | 0.3− | 0.1− |
| 2005 03 11 691 | 0.0  | 0.2− | 2007 09 14 699 | 0.2+  | 0.0   | 2007 10 16 691 | 0.3+ | 0.0  |
| 2005 03 12 691 | 0.1− | 0.4+ | 2007 09 14 699 | (2.2− | 0.1−) | 2007 10 16 691 | 0.6− | 0.5+ |
| 2005 03 12 691 | 0.5+ | 0.0  | 2007 09 14 699 | 1.0+  | 0.9+  |                |      |      |
| 2005 03 12 691 | 0.0  | 0.4+ | 2007 09 14 699 | 0.7+  | 0.1+  |                |      |      |

2007 TD<sub>135</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 322.84041  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22241826 | $\omega$ | 266.09157 | +0.67586004   | −0.73625085 |
| <i>a</i> | 2.6978788  | $\Omega$ | 141.31614 | +0.69590096   | +0.62232857 |
| <i>e</i> | 0.0932176  | <i>i</i> | 3.10733   | +0.24276544   | +0.26578531 |
| <i>P</i> | 4.43       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 03 15 691 | 0.7+ | 0.2+ | 2007 08 24 691 | 0.1+ | 0.1− | 2007 10 10 691 | 0.1+ | 0.0  |
| 2001 03 15 691 | 0.7− | 0.1− | 2007 08 24 691 | 0.1− | 0.1+ | 2007 10 10 691 | 0.1+ | 0.1+ |
| 2001 03 15 691 | 0.1+ | 0.3+ | 2007 09 10 691 | 0.0  | 0.1+ | 2007 10 10 691 | 0.1+ | 0.2− |
| 2003 10 29 691 | 0.0  | 0.2+ | 2007 09 10 691 | 0.2− | 0.0  | 2007 10 10 691 | 0.2+ | 0.0  |
| 2003 10 29 691 | 0.1+ | 0.1+ | 2007 09 10 691 | 0.3− | 0.2+ | 2007 10 10 691 | 0.1+ | 0.3+ |
| 2003 10 29 691 | 0.1+ | 0.1− | 2007 09 20 691 | 0.3− | 0.3− | 2007 10 10 691 | 0.2+ | 0.1+ |
| 2003 11 29 691 | 0.0  | 0.0  | 2007 09 20 691 | 0.2− | 0.0  | 2007 10 12 691 | 0.1− | 0.0  |
| 2003 11 29 691 | 0.2− | 0.1+ | 2007 09 20 691 | 0.1− | 0.0  | 2007 10 12 691 | 0.1+ | 0.0  |
| 2003 11 29 691 | 0.1− | 0.1− | 2007 10 08 691 | 0.4− | 0.5− | 2007 10 12 691 | 0.1− | 0.3+ |
| 2005 03 10 G96 | 0.1− | 0.2+ | 2007 10 08 691 | 0.1+ | 0.1+ | 2007 10 12 691 | 0.1+ | 0.5− |
| 2005 03 10 G96 | 0.0  | 0.2− | 2007 10 08 691 | 0.5+ | 0.1+ | 2007 10 12 691 | 0.2− | 0.3+ |
| 2005 03 10 G96 | 0.1− | 0.0  | 2007 10 08 691 | 0.2− | 0.0  | 2007 10 12 691 | 0.2− | 0.2+ |
| 2005 03 10 G96 | 0.2+ | 0.0  | 2007 10 08 691 | 0.0  | 0.2+ |                |      |      |
| 2007 08 24 691 | 0.0  | 0.2− | 2007 10 08 691 | 0.3+ | 0.0  |                |      |      |

**2007 TF<sub>135</sub> = 2007 RQ<sub>276</sub> = 2007 TX<sub>336</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 234.55110  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.22471685 | $\omega$ | 119.53723 | -0.69771334 | -0.71533275 |          |   |
| <i>a</i> | 2.6794498  | $\Omega$ | 14.91028  | +0.59421600 | -0.60803926 |          |   |
| <i>e</i> | 0.1012308  | <i>i</i> | 8.64295   | +0.40012928 | -0.34436509 |          |   |
| <i>P</i> | 4.39       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 29 | 691 | 0.4- | 0.5- | 2005 03 02 | 703 | 0.0  | 0.7+ | 2007 10 08 | 691 | 0.5+ | 0.0  |
| 1994 09 29 | 691 | 0.5+ | 0.3+ | 2005 03 02 | 703 | 0.3- | 0.4+ | 2007 10 08 | 691 | 0.1- | 0.2+ |
| 1994 09 29 | 691 | 0.1+ | 0.2- | 2007 09 14 | 691 | 0.1+ | 0.2- | 2007 10 08 | 691 | 0.7- | 0.5+ |
| 2003 09 29 | 691 | 0.1- | 0.0  | 2007 09 14 | 691 | 0.6- | 0.0  | 2007 10 10 | 691 | 0.1- | 0.1+ |
| 2003 09 29 | 691 | 0.2- | 0.1+ | 2007 09 14 | 691 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.1+ | 0.1- |
| 2003 09 29 | 691 | 0.2- | 0.4- | 2007 09 20 | 691 | 0.2+ | 0.2- | 2007 10 10 | 691 | 0.1+ | 0.2- |
| 2003 10 18 | 691 | 0.1+ | 0.0  | 2007 09 20 | 691 | 0.4+ | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.2+ |
| 2003 10 18 | 691 | 0.3+ | 0.0  | 2007 09 20 | 691 | 0.0  | 0.4- | 2007 10 12 | 691 | 1.0- | 1.4+ |
| 2003 10 18 | 691 | 0.3+ | 0.3+ | 2007 09 30 | 691 | 0.1+ | 0.2- | 2007 10 12 | 691 | 0.2+ | 0.2+ |
| 2003 11 02 | 691 | 0.1- | 0.2- | 2007 09 30 | 691 | 0.2- | 0.2+ | 2007 10 15 | 691 | 0.2+ | 0.2- |
| 2003 11 02 | 691 | 0.2+ | 0.1+ | 2007 09 30 | 691 | 0.1+ | 0.2- | 2007 10 15 | 691 | 0.1+ | 0.2- |
| 2003 11 02 | 691 | 0.4- | 0.0  | 2007 10 08 | 691 | 0.2+ | 0.1+ | 2007 10 15 | 691 | 0.2- | 0.1- |
| 2005 03 02 | 703 | 0.3- | 0.5- | 2007 10 08 | 691 | 0.2+ | 0.4- |            |     |      |      |
| 2005 03 02 | 703 | 0.9+ | 0.2- | 2007 10 08 | 691 | 0.0  | 0.3+ |            |     |      |      |

**2007 TB<sub>136</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 273.05594  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19951094 | $\omega$ | 227.34707 | -0.41385610 | -0.87454377 |          |   |
| <i>a</i> | 2.9006249  | $\Omega$ | 248.72827 | +0.89427679 | -0.33862906 |          |   |
| <i>e</i> | 0.1731978  | <i>i</i> | 15.73913  | +0.17027080 | -0.34713621 |          |   |
| <i>P</i> | 4.94       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 09 11 | 644 | 0.2+ | 0.9+ | 2007 09 05 | 699 | 0.1+  | 0.1+  | 2007 10 08 | 703 | 0.4-  | 0.6-  |
| 2002 09 11 | 644 | 0.1- | 1.3+ | 2007 09 05 | 699 | (0.4+ | 2.1-) | 2007 10 08 | 703 | 0.9-  | 1.0-  |
| 2002 09 11 | 644 | 0.5+ | 1.0+ | 2007 09 05 | 699 | 1.9-  | 0.2-  | 2007 10 10 | 699 | 0.8+  | 0.3-  |
| 2002 10 03 | 644 | 0.6- | 0.1- | 2007 09 05 | 699 | 0.4-  | 0.5+  | 2007 10 10 | 699 | 1.5+  | 0.1+  |
| 2002 10 03 | 644 | 0.8- | 0.2- | 2007 09 13 | 703 | 0.2+  | 0.4-  | 2007 10 10 | 699 | 0.6-  | 0.9+  |
| 2002 10 03 | 644 | 0.3- | 0.2+ | 2007 09 13 | 703 | 1.5+  | 0.1+  | 2007 10 10 | 699 | 1.3-  | 0.4+  |
| 2006 05 08 | G96 | 0.3- | 0.4- | 2007 09 13 | 703 | 0.8+  | 0.4-  | 2007 10 19 | 703 | (0.6- | 2.5+) |
| 2006 05 08 | G96 | 0.5+ | 0.0  | 2007 09 13 | 703 | 0.6+  | 0.6-  | 2007 10 19 | 703 | 0.3+  | 0.4-  |
| 2006 05 08 | G96 | 0.1+ | 0.0  | 2007 10 08 | 703 | 0.5-  | 1.0-  | 2007 10 19 | 703 | 0.2+  | 0.1+  |
| 2006 05 08 | G96 | 0.1- | 0.1- | 2007 10 08 | 703 | 0.1-  | 0.3-  | 2007 10 19 | 703 | 1.0+  | 0.1-  |

**2007 TS<sub>137</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 50.03760   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.36890665 | $\omega$ | 324.33433 | +0.94299320 | +0.31351504 |          |   |
| <i>a</i> | 1.9254181  | $\Omega$ | 18.39289  | -0.15747375 | +0.71593847 |          |   |
| <i>e</i> | 0.0654081  | <i>i</i> | 20.72842  | -0.29319933 | +0.62381122 |          |   |
| <i>P</i> | 2.67       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 07 18 | E12 | 0.9- | 0.7+ | 2007 10 08 | 703 | 0.1- | 0.3- | 2007 11 02 | 703 | 0.3+ | 0.5- |
| 2004 07 18 | E12 | 0.8- | 0.6+ | 2007 10 08 | 703 | 1.0+ | 0.1+ | 2007 11 02 | 703 | 0.9- | 1.4+ |
| 2004 07 18 | E12 | 0.2- | 0.9+ | 2007 10 08 | 703 | 0.0  | 1.3- | 2007 11 02 | 703 | 0.1- | 0.5+ |
| 2004 07 18 | E12 | 0.2+ | 0.1+ | 2007 10 08 | 703 | 0.6+ | 0.4- | 2007 11 02 | 703 | 0.2+ | 1.0+ |
| 2004 09 09 | E12 | 0.1+ | 0.2+ | 2007 10 10 | 699 | 0.0  | 1.0- | 2007 11 12 | 703 | 0.7- | 0.0  |
| 2004 09 09 | E12 | 0.2+ | 0.8- | 2007 10 10 | 699 | 0.8+ | 0.5- | 2007 11 12 | 703 | 0.8- | 0.5+ |
| 2004 09 09 | E12 | 0.4+ | 1.0- | 2007 10 10 | 699 | 0.7- | 0.5- | 2007 11 12 | 703 | 0.1+ | 0.2- |
| 2004 09 09 | E12 | 0.4- | 0.3+ | 2007 10 10 | 699 | 0.3- | 0.5- | 2007 11 12 | 703 | 0.3+ | 0.2+ |
| 2006 03 24 | 699 | 0.1+ | 0.5- | 2007 10 21 | 703 | 0.3+ | 0.9+ | 2007 11 19 | 703 | 1.1- | 0.0  |
| 2006 03 24 | 699 | 0.0  | 0.0  | 2007 10 21 | 703 | 0.4+ | 0.2+ | 2007 11 19 | 703 | 0.4+ | 0.0  |
| 2006 03 24 | 699 | 0.2- | 1.4+ | 2007 10 21 | 703 | 0.3- | 1.1+ | 2007 11 19 | 703 | 0.1+ | 0.1- |
| 2006 03 24 | 699 | 0.4+ | 0.0  | 2007 10 21 | 703 | 0.3+ | 0.4- | 2007 11 19 | 703 | 0.8- | 0.1+ |

**2007 TE<sub>138</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 72.24858   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23794995 | $\omega$ | 122.97067 | +0.70252731 | +0.71161815 |          |   |
| <i>a</i> | 2.5791640  | $\Omega$ | 191.66864 | -0.66455778 | +0.65226911 |          |   |
| <i>e</i> | 0.1466658  | <i>i</i> | 2.10122   | -0.25459445 | +0.26104523 |          |   |
| <i>P</i> | 4.14       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.2- | 2007 11 05 | G96 | 0.3+ | 0.5- |
| 2001 02 20 | 645 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.9+ | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.3- |
| 2003 11 19 | 691 | 0.0  | 0.3- | 2007 10 08 | G96 | 0.4+ | 0.5- | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 2003 11 19 | 691 | 0.5+ | 0.1- | 2007 10 10 | 691 | 0.1- | 0.4+ | 2007 11 09 | 291 | 0.1- | 0.1+ |
| 2003 11 19 | 691 | 0.3- | 0.2- | 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 09 | 291 | 0.3- | 0.1+ |
| 2007 09 10 | G96 | 0.3+ | 0.2- | 2007 10 10 | 691 | 0.5- | 0.5+ | 2007 11 09 | 291 | 0.2- | 0.3+ |
| 2007 09 10 | G96 | 0.2+ | 0.0  | 2007 10 18 | 691 | 0.4- | 0.2- | 2007 11 13 | 291 | 0.4+ | 0.1+ |
| 2007 09 10 | G96 | 0.4- | 0.2+ | 2007 10 18 | 691 | 0.2+ | 0.1- | 2007 11 13 | 291 | 0.3+ | 0.2- |
| 2007 09 10 | G96 | 0.1+ | 0.4- | 2007 10 18 | 691 | 0.1- | 0.4+ | 2007 11 13 | 291 | 0.1+ | 0.1+ |
| 2007 10 08 | G96 | 0.3+ | 0.5- | 2007 11 05 | G96 | 0.3+ | 0.2- |            |     |      |      |

**2007 TC<sub>139</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 324.69494  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21346369 | $\omega$ | 184.06901 | +0.24191469 | -0.96831466 |          |   |
| <i>a</i> | 2.7728096  | $\Omega$ | 251.93990 | +0.89206111 | +0.24709157 |          |   |
| <i>e</i> | 0.0939510  | <i>i</i> | 3.73908   | +0.38171226 | +0.03622824 |          |   |
| <i>P</i> | 4.62       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.2+ | 0.0  | 2007 10 10 | 691 | 0.4+ | 0.1+ | 2007 10 20 | 703 | 1.4+ | 0.5+ |
| 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 10 10 | 691 | 0.1- | 0.2+ | 2007 10 21 | 691 | 0.1+ | 0.3+ |
| 2002 10 11 | 645 | 0.1- | 0.0  | 2007 10 14 | 691 | 0.4+ | 0.1- | 2007 10 21 | 691 | 0.0  | 0.1+ |
| 2002 10 11 | 645 | 0.1- | 0.0  | 2007 10 14 | 691 | 0.8- | 0.1- | 2007 10 21 | 691 | 0.0  | 0.0  |
| 2007 10 09 | 691 | 0.4+ | 0.0  | 2007 10 14 | 691 | 0.6- | 0.0  | 2007 11 11 | G96 | 0.1- | 0.0  |
| 2007 10 09 | 691 | 0.1+ | 0.1+ | 2007 10 20 | 703 | 1.8- | 0.3- | 2007 11 11 | G96 | 0.1- | 0.0  |
| 2007 10 09 | 691 | 0.3+ | 0.2- | 2007 10 20 | 703 | 1.3- | 0.2- | 2007 11 11 | G96 | 0.2+ | 0.2- |
| 2007 10 10 | 691 | 0.0  | 0.0  | 2007 10 20 | 703 | 1.3+ | 0.0  | 2007 11 11 | G96 | 0.2+ | 0.1- |

**2007 TV<sub>139</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 330.70686  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    | MPC      |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17461480 | $\omega$ | 203.50977 | +0.15906695 | -0.93803512 |          |   |
| <i>a</i> | 3.1701661  | $\Omega$ | 238.66436 | +0.95333753 | +0.22699340 |          |   |
| <i>e</i> | 0.2199446  | <i>i</i> | 21.12806  | +0.25660331 | -0.26184752 |          |   |
| <i>P</i> | 5.64       | <i>H</i> | 14.8      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 25 | 644 | 0.1- | 0.0  | 2007 10 10 | 699 | 0.0  | 0.0  | 2007 11 17 | 704 | 0.5- | 0.6- |
| 2001 07 25 | 644 | 0.2- | 0.6- | 2007 10 10 | 699 | 0.6+ | 0.5- | 2007 11 17 | 704 | 0.3- | 0.8- |
| 2001 07 25 | 644 | 0.6- | 0.1+ | 2007 10 10 | 699 | 0.5- | 0.3+ | 2007 11 17 | 704 | 0.3- | 1.1- |
| 2001 08 12 | 644 | 0.5+ | 0.6+ | 2007 10 10 | 699 | 1.3+ | 0.1- | 2007 11 17 | 704 | 0.1+ | 1.0- |
| 2001 08 22 | 644 | 0.1+ | 0.3+ | 2007 10 16 | 703 | 0.4- | 0.5+ | 2007 11 20 | 704 | 0.3+ | 0.1+ |
| 2001 08 22 | 644 | 0.0  | 0.0  | 2007 10 16 | 703 | 0.5+ | 1.3+ | 2007 11 20 | 704 | 0.4+ | 0.5+ |
| 2001 08 22 | 644 | 0.0  | 0.2+ | 2007 10 16 | 703 | 0.0  | 0.3- | 2007 11 20 | 704 | 1.0+ | 0.4+ |
| 2001 09 26 | 644 | 0.1- | 0.0  | 2007 10 16 | 703 | 0.1- | 0.1+ | 2007 11 20 | 704 | 0.1+ | 0.2+ |
| 2001 09 26 | 644 | 0.0  | 0.3- | 2007 10 21 | 703 | 0.6- | 0.2+ | 2007 11 20 | 704 | 0.6- | 0.4- |
| 2001 09 26 | 644 | 0.2- | 0.7+ | 2007 10 21 | 703 | 0.5+ | 0.4+ | 2007 12 12 | 704 | 0.1- | 0.2+ |
| 2001 09 30 | 644 | 0.0  | 0.0  | 2007 10 21 | 703 | 0.2+ | 0.1+ | 2007 12 12 | 704 | 0.7- | 0.1+ |
| 2001 09 30 | 644 | 0.2+ | 0.2- | 2007 10 21 | 703 | 0.3+ | 0.1- | 2007 12 12 | 704 | 0.4- | 0.2+ |
| 2001 09 30 | 644 | 0.5+ | 1.0- | 2007 11 01 | 703 | 0.2+ | 0.5- | 2007 12 12 | 704 | 1.3- | 0.8+ |
| 2002 11 18 | 644 | 0.1- | 0.3+ | 2007 11 01 | 703 | 0.0  | 0.5- | 2007 12 13 | A77 | 0.1- | 0.1- |
| 2002 11 18 | 644 | 0.1- | 0.2- | 2007 11 01 | 703 | 0.0  | 0.5- | 2007 12 13 | A77 | 0.1+ | 0.2+ |
| 2002 11 18 | 644 | 0.1+ | 0.2+ | 2007 11 01 | 703 | 1.2- | 0.1+ | 2007 12 13 | A77 | 0.0  | 0.1- |
| 2002 12 06 | 644 | 0.3+ | 0.4- | 2007 11 08 | 704 | 0.5- | 0.5+ | 2007 12 16 | 699 | 1.1+ | 0.2+ |
| 2002 12 06 | 644 | 0.3- | 0.0  | 2007 11 08 | 704 | 0.1+ | 0.1+ | 2007 12 16 | 699 | 0.2- | 0.5+ |

## 2007 DEC. 24

M.P.O. 129863

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2007 10 09 703 0.1− 0.1− | 2007 11 08 704 0.2+ 0.4+ | 2007 12 16 699 0.8+ 0.6− |
| 2007 10 09 703 0.1− 0.0  | 2007 11 08 704 0.2+ 0.1− | 2007 12 16 699 0.0 0.5−  |
| 2007 10 09 703 0.4− 0.1+ | 2007 11 08 704 0.6+ 0.3+ |                          |
| 2007 10 09 703 0.2+ 0.6+ | 2007 11 17 704 0.1− 0.0  |                          |

2007 TX<sub>140</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 27.66683   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.27395543 | $\omega$ | 268.41682 | +0.98412240  | +0.16812516  |
| $a$ | 2.3479172  | $\Omega$ | 81.90173  | −0.13122907  | +0.90505270  |
| $e$ | 0.2291479  | $i$      | 3.29449   | −0.11950743  | +0.39065783  |
| $P$ | 3.60       | $H$      | 17.3      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1995 03 26 691 (0.3− 2.1−) | 2007 10 10 691 0.2− 0.4−   | 2007 11 04 704 0.0 0.0   |
| 1995 03 26 691 0.6− 1.4−   | 2007 10 14 691 0.4− 0.3−   | 2007 11 04 704 0.6+ 0.2− |
| 1995 03 26 691 0.3− 1.7−   | 2007 10 14 691 0.6− 0.1−   | 2007 11 04 704 0.5+ 0.0  |
| 2002 03 09 691 0.2− 0.5+   | 2007 10 14 691 0.4− 0.1−   | 2007 11 04 704 0.1− 0.5− |
| 2002 03 09 691 0.1− 0.4+   | 2007 10 19 704 0.0 1.5−    | 2007 11 04 704 0.6+ 0.3− |
| 2002 03 09 691 0.3− 0.9+   | 2007 10 19 704 0.8− 1.6+   | 2007 11 09 G96 0.6− 0.0  |
| 2005 01 07 691 0.2+ 0.2−   | 2007 10 19 704 1.4− 0.3+   | 2007 11 09 G96 0.1− 0.4− |
| 2005 01 07 691 0.0 0.0     | 2007 10 19 704 0.9− 0.2−   | 2007 11 09 G96 0.6− 0.5− |
| 2005 01 07 691 0.1+ 0.0    | 2007 10 19 704 0.0 0.1−    | 2007 11 09 G96 0.1− 0.5− |
| 2006 03 23 691 0.2+ 0.7+   | 2007 10 20 704 (0.4+ 2.2−) | 2007 11 10 703 0.2− 0.2− |
| 2006 03 23 691 0.1− 0.1+   | 2007 10 20 704 0.3+ 0.3+   | 2007 11 10 703 0.5+ 0.2− |
| 2006 03 23 691 0.3+ 0.2−   | 2007 10 20 704 0.1− 0.3−   | 2007 11 10 703 1.1− 0.2+ |
| 2006 04 07 691 0.4+ 0.3+   | 2007 10 20 704 0.2− 0.3−   | 2007 11 10 703 0.6+ 0.1− |
| 2006 04 07 691 0.9+ 0.0    | 2007 10 20 704 0.1− 0.4−   | 2007 11 12 704 0.3+ 1.0+ |
| 2006 04 07 691 0.4+ 0.5+   | 2007 10 23 691 0.3− 0.3−   | 2007 11 12 704 0.1+ 0.5+ |
| 2006 05 07 G96 0.3− 1.0+   | 2007 10 23 691 0.5− 0.0    | 2007 11 12 704 0.2+ 0.7+ |
| 2006 05 07 G96 0.0 0.1+    | 2007 10 23 691 0.2− 0.2−   | 2007 11 12 704 0.1− 0.2+ |
| 2006 05 07 G96 0.1− 0.6+   | 2007 10 30 703 1.1+ 1.9+   | 2007 11 12 704 0.1+ 0.7+ |
| 2006 05 07 G96 0.2+ 0.4+   | 2007 10 30 703 1.2+ 0.9+   | 2007 11 14 704 0.1+ 0.1− |
| 2007 10 09 G96 0.6− 0.0    | 2007 10 30 703 0.6+ 1.1+   | 2007 11 14 704 0.5+ 0.1+ |
| 2007 10 09 G96 0.2− 0.0    | 2007 10 30 703 1.0+ 1.2+   | 2007 11 14 704 1.3+ 0.6+ |
| 2007 10 09 G96 0.4− 0.2−   | 2007 11 03 699 0.3− 0.7−   | 2007 11 14 704 0.4+ 0.1− |
| 2007 10 09 G96 0.1− 0.3−   | 2007 11 03 699 0.2+ 0.0    | 2007 11 14 704 0.1− 0.3+ |
| 2007 10 10 691 0.2− 0.2−   | 2007 11 03 699 0.1− 1.1−   |                          |
| 2007 10 10 691 0.2− 0.2−   | 2007 11 03 699 0.1+ 0.0    |                          |

2007 TM<sub>142</sub> = 2007 RG<sub>259</sub>

Id. Minor Planet Center (d, MPO 129052)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 39.86158   |          | (2000.0)  |     | $\mathbf{P}$ | $\mathbf{Q}$ |   |
|-----|------------|----------|-----------|-----|--------------|--------------|---|
| $n$ | 0.18876783 | $\omega$ | 359.82720 |     | +0.86579654  | +0.50035870  |   |
| $a$ | 3.0096597  | $\Omega$ | 330.14657 |     | −0.45908977  | +0.78939765  |   |
| $e$ | 0.1645663  | $i$      | 0.70507   |     | −0.19908022  | +0.35565786  |   |
| $P$ | 5.22       | $H$      | 16.0      | $G$ | 0.15         | $U$          | 2 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1991 09 05 691 0.4+ 0.5− | 2007 09 20 703 1.3− 0.4+ | 2007 10 14 704 0.5− 0.2+ |
| 1991 09 05 691 0.0 0.0   | 2007 09 20 703 0.9− 0.6+ | 2007 10 14 704 0.4+ 0.0  |
| 1991 09 05 691 0.2− 0.1− | 2007 09 20 703 0.2+ 0.3+ | 2007 10 14 704 0.2+ 0.1+ |
| 2000 04 05 691 0.3+ 0.3+ | 2007 09 20 703 0.3− 1.0+ | 2007 10 17 A77 0.2− 0.1− |
| 2000 04 05 691 0.3+ 0.3+ | 2007 10 10 D29 1.0+ 0.2− | 2007 10 17 A77 0.2+ 0.0  |
| 2000 04 05 691 0.3+ 0.2+ | 2007 10 10 D29 0.6+ 0.2− | 2007 10 17 A77 0.7− 0.2+ |
| 2004 01 15 691 0.0 0.0   | 2007 10 10 D29 0.4+ 0.0  | 2007 10 19 A77 0.1+ 1.0+ |
| 2004 01 15 691 0.1− 0.3− | 2007 10 10 D29 0.5+ 0.0  | 2007 10 19 A77 0.2+ 0.2+ |
| 2004 01 15 691 0.0 0.3−  | 2007 10 11 704 1.1− 0.4− | 2007 10 19 A77 1.1− 0.9+ |
| 2005 03 11 G96 0.3+ 0.4+ | 2007 10 11 704 0.0 0.1−  | 2007 10 20 703 0.4+ 0.7− |
| 2005 03 11 G96 0.1− 0.0  | 2007 10 11 704 0.3− 0.8− | 2007 10 20 703 0.1− 0.2+ |
| 2005 03 11 G96 0.2− 0.1+ | 2007 10 11 704 0.3− 0.3− | 2007 10 20 703 0.1− 0.7− |
| 2005 03 11 G96 0.2− 0.1− | 2007 10 11 704 0.0 1.0+  | 2007 10 20 703 0.2− 0.8− |
| 2005 04 05 G96 0.0 0.3+  | 2007 10 13 703 1.1+ 0.0  | 2007 10 21 691 0.2− 0.2+ |
| 2005 04 05 G96 0.7− 0.1+ | 2007 10 13 703 1.0− 0.4− | 2007 10 21 691 0.6− 0.3− |
| 2005 04 05 G96 0.2+ 0.5− | 2007 10 13 703 1.0+ 0.4+ | 2007 10 21 691 0.0 0.1−  |

|                          |                          |                         |
|--------------------------|--------------------------|-------------------------|
| 2005 04 05 G96 0.2+ 0.1+ | 2007 10 13 703 0.5+ 0.5− | 2007 11 07 691 0.1− 0.0 |
| 2007 09 14 G96 0.3+ 0.2− | 2007 10 13 A77 0.1+ 0.0  | 2007 11 07 691 0.6− 0.0 |
| 2007 09 14 G96 0.3+ 0.5− | 2007 10 13 A77 0.2+ 0.2+ | 2007 11 07 691 0.0 0.3+ |
| 2007 09 14 G96 0.1− 0.5− | 2007 10 13 A77 0.5+ 0.2+ |                         |
| 2007 09 14 G96 0.6+ 0.3− | 2007 10 14 704 0.3+ 0.2+ |                         |

2007 TN<sub>143</sub> = 1996 BH<sub>9</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 308.71150  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.23121557 | $\omega$ | 256.26841 | +0.18339163  | −0.98303666  |
| $a$ | 2.6290045  | $\Omega$ | 183.16751 | +0.91873144  | +0.17231189  |
| $e$ | 0.1284188  | $i$      | 2.63114   | +0.34971424  | +0.06282943  |
| $P$ | 4.26       | $H$      | 16.2      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1996 01 20 691 0.0 0.0   | 2005 04 02 G96 0.1− 0.1+ | 2007 10 06 704 0.3+ 0.0  |
| 1996 01 20 691 0.1+ 0.1+ | 2005 04 02 G96 0.1+ 0.0  | 2007 10 07 G96 0.1− 0.3− |
| 1996 01 20 691 0.7− 0.4+ | 2005 04 02 G96 0.1+ 0.2+ | 2007 10 07 G96 0.2+ 0.3− |
| 1996 01 21 691 0.2+ 0.5− | 2005 04 02 G96 0.1+ 0.1− | 2007 10 07 G96 0.3+ 0.3− |
| 1996 01 21 691 0.3+ 0.1− | 2005 04 02 G96 0.4− 0.1+ | 2007 10 07 G96 0.2+ 0.2− |
| 1996 01 21 691 0.1+ 0.1− | 2005 04 02 G96 0.3+ 0.3− | 2007 10 07 699 0.3+ 0.2− |
| 2005 03 09 G96 0.1+ 0.2+ | 2005 05 06 G96 0.4− 0.2− | 2007 10 07 699 0.4+ 0.3− |
| 2005 03 09 G96 0.1+ 0.0  | 2005 05 06 G96 0.1− 0.6− | 2007 10 07 699 0.2− 1.4+ |
| 2005 03 09 G96 0.1− 0.2− | 2005 05 06 G96 0.2− 0.2− | 2007 10 07 699 0.5− 0.7+ |
| 2005 03 09 G96 0.0 0.3−  | 2005 05 06 G96 0.3− 0.3+ | 2007 10 11 704 0.1− 0.2− |
| 2005 04 02 G96 0.1− 0.1− | 2007 09 10 G96 0.7+ 0.4− | 2007 10 11 704 1.0− 0.7+ |
| 2005 04 02 G96 0.0 0.2−  | 2007 09 10 G96 0.2+ 0.2− | 2007 10 11 704 0.3− 0.2− |
| 2005 04 02 G96 0.1− 0.1− | 2007 09 10 G96 0.6+ 0.4− | 2007 10 19 G96 0.6− 0.4− |
| 2005 04 02 G96 0.5− 0.1− | 2007 09 10 G96 0.0 0.5−  | 2007 10 19 G96 0.3+ 0.3− |
| 2005 04 02 G96 0.2+ 0.7+ | 2007 10 06 704 0.4+ 0.6− | 2007 10 19 G96 0.1+ 0.2− |
| 2005 04 02 G96 0.5+ 0.3− | 2007 10 06 704 0.7− 1.4+ | 2007 10 19 G96 0.1+ 0.2− |

2007 TO<sub>143</sub> = 2005 GF<sub>46</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 327.44604  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.21884664 | $\omega$ | 55.14062 | +0.55572976  | −0.83136139  |
| $a$ | 2.7271528  | $\Omega$ | 1.10234  | +0.73225618  | +0.48854686  |
| $e$ | 0.1151163  | $i$      | 4.88657  | +0.39365635  | +0.26487773  |
| $P$ | 4.50       | $H$      | 16.6     | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1998 09 23 691 0.2+ 0.1+   | 2007 09 11 G96 0.2− 0.4− | 2007 10 11 704 0.0 0.0     |
| 1998 09 23 691 0.1+ 0.2+   | 2007 09 11 G96 0.4− 0.3− | 2007 10 11 704 0.0 0.1+    |
| 1998 09 23 691 0.2− 0.4−   | 2007 09 11 G96 0.1− 0.4− | 2007 10 11 704 0.9− 0.1−   |
| 2005 04 05 G96 0.2+ 0.1−   | 2007 10 06 704 0.5− 1.0+ | 2007 10 11 704 0.3+ 0.1−   |
| 2005 04 05 G96 0.2+ 0.0    | 2007 10 06 704 0.2− 0.6+ | 2007 10 20 703 (0.4+ 3.7+) |
| 2005 04 05 G96 0.3+ 0.8+   | 2007 10 06 704 0.0 0.7+  | 2007 10 20 703 0.4+ 0.5+   |
| 2005 04 05 G96 0.5+ 0.1+   | 2007 10 06 704 0.1− 0.3− | 2007 10 20 703 0.7+ 0.4−   |
| 2005 04 06 G96 0.3− 0.2+   | 2007 10 06 704 0.4− 0.0  | 2007 10 20 703 0.7+ 0.1−   |
| 2005 04 06 G96 (0.9− 1.8−) | 2007 10 10 G96 0.1+ 0.5+ | 2007 11 07 G96 0.3+ 0.3−   |
| 2005 04 06 G96 0.2+ 0.0    | 2007 10 10 G96 0.5+ 0.6+ | 2007 11 07 G96 0.7− 0.2−   |
| 2005 04 06 G96 0.4− 0.2+   | 2007 10 10 G96 0.3+ 0.7+ | 2007 11 07 G96 0.2− 0.2−   |
| 2007 09 11 G96 0.1+ 0.3−   | 2007 10 10 G96 0.0 0.7+  | 2007 11 07 G96 0.6− 0.9−   |

2007 TW<sub>145</sub> = 2001 RT<sub>145</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $M$ | 16.51901   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
| $n$ | 0.17490490 | $\omega$ | 168.98613 | +0.99832642  | −0.04428864  |     |   |
| $a$ | 3.1666598  | $\Omega$ | 193.71743 | +0.03346586  | +0.96686608  |     |   |
| $e$ | 0.0736975  | $i$      | 9.02229   | +0.04716348  | +0.25141302  |     |   |
| $P$ | 5.64       | $H$      | 15.6      | $G$          | 0.15         | $U$ | 2 |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 08 704 0.6+ 1.5− | 2005 04 10 G96 0.3+ 0.4+ | 2007 10 06 704 0.4− 0.1− |
| 2001 09 08 704 0.3+ 0.1+ | 2007 09 04 701 0.5− 0.5− | 2007 10 06 704 1.0+ 0.5+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 08 | 704 | 0.6+ | 0.2+ | 2007 09 04 | 701 | 0.3- | 0.6- | 2007 10 06 | 704 | 0.2+ | 0.1+ |
| 2001 09 11 | 699 | 1.7- | 0.9+ | 2007 09 04 | 701 | 0.0  | 0.6- | 2007 10 11 | 703 | 0.4+ | 0.2+ |
| 2001 09 11 | 699 | 1.2+ | 0.2+ | 2007 09 04 | 701 | 0.1+ | 0.5- | 2007 10 11 | 703 | 1.0- | 0.5+ |
| 2001 09 11 | 699 | 0.4- | 0.2+ | 2007 09 11 | G96 | 0.0  | 0.3- | 2007 10 11 | 703 | 1.3+ | 0.2- |
| 2001 09 11 | 699 | 0.9- | 0.1+ | 2007 09 11 | G96 | 0.0  | 0.5- | 2007 10 11 | 704 | 0.6+ | 0.1+ |
| 2002 12 12 | 644 | 0.2+ | 0.1+ | 2007 09 11 | G96 | 0.0  | 0.3- | 2007 10 11 | 703 | 0.0  | 0.1- |
| 2002 12 12 | 644 | 0.2- | 0.0  | 2007 09 11 | G96 | 1.4- | 0.1+ | 2007 10 11 | 704 | 0.3+ | 0.7+ |
| 2002 12 12 | 644 | 0.7+ | 0.3- | 2007 09 15 | 291 | 0.4- | 0.2- | 2007 10 11 | 704 | 0.2+ | 0.7+ |
| 2004 02 18 | 691 | 0.2- | 0.2+ | 2007 09 15 | 291 | 0.2- | 0.1- | 2007 10 11 | 704 | 0.0  | 0.7+ |
| 2004 02 18 | 691 | 0.1- | 0.4+ | 2007 09 15 | 291 | 0.5- | 0.1- | 2007 10 11 | 704 | 0.5- | 0.2+ |
| 2004 02 18 | 691 | 0.3- | 0.5+ | 2007 10 04 | 703 | 0.2+ | 0.8+ | 2007 10 15 | 691 | 0.5- | 0.1- |
| 2005 04 10 | G96 | 0.7+ | 1.6+ | 2007 10 04 | 703 | 0.1+ | 1.7+ | 2007 10 15 | 691 | 0.4- | 0.1- |
| 2005 04 10 | G96 | 0.1+ | 0.3+ | 2007 10 04 | 703 | 0.1+ | 1.3+ | 2007 10 15 | 691 | 0.3- | 0.1- |
| 2005 04 10 | G96 | 0.0  | 0.4+ | 2007 10 04 | 703 | 1.0+ | 0.6- |            |     |      |      |

**2007 TD<sub>147</sub>**

|                                         |            |          |           |          |             |          |             |          |            |          |           |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|----------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |          |             |          |            |          |           |
| MPC                                     |            |          |           | MPC      |             |          |             | MPC      |            |          |           |
| <i>M</i>                                | 40.02357   |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             | <i>M</i> | 24.43496   |          | (2000.0)  |
| <i>n</i>                                | 0.26804204 | $\omega$ | 294.46595 |          | +0.77192361 |          | +0.63330666 | <i>n</i> | 0.18388919 | $\omega$ | 72.76978  |
| <i>a</i>                                | 2.3823237  | $\Omega$ | 26.34547  |          | -0.52879803 |          | +0.68793702 | <i>a</i> | 3.0626586  | $\Omega$ | 266.24954 |
| <i>e</i>                                | 0.1356524  | <i>i</i> | 7.15654   |          | -0.35285492 |          | +0.35449306 | <i>e</i> | 0.0977359  | <i>i</i> | 5.27297   |
| <i>P</i>                                | 3.68       | <i>H</i> | 16.9      | <i>G</i> | 0.15        | <i>U</i> | 4           | <i>P</i> | 5.36       | <i>H</i> | 15.9      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 08 | 691 | 0.1+ | 0.4+ | 2007 09 19 | 691 | 0.4- | 0.5- | 2007 10 13 | 703 | 0.7+ | 0.5- |
| 2006 04 08 | 691 | 0.2+ | 0.5+ | 2007 10 04 | 703 | 0.2- | 0.6+ | 2007 10 13 | 703 | 0.4+ | 0.2- |
| 2006 04 08 | 691 | 0.6+ | 0.2+ | 2007 10 04 | 703 | 0.2- | 0.6- | 2007 10 13 | 704 | 0.7+ | 0.7- |
| 2006 04 26 | G96 | 0.1- | 0.4- | 2007 10 04 | 703 | 0.4+ | 0.3+ | 2007 10 13 | 703 | 0.9+ | 0.1+ |
| 2006 04 26 | G96 | 0.1- | 0.1- | 2007 10 04 | 703 | 0.1- | 0.1- | 2007 10 13 | 704 | 0.2- | 0.1- |
| 2006 04 26 | G96 | 0.5- | 0.0  | 2007 10 07 | 704 | 0.0  | 1.2+ | 2007 10 13 | 704 | 0.9+ | 0.2+ |
| 2006 04 26 | G96 | 0.2+ | 0.1- | 2007 10 07 | 704 | 0.4- | 0.1+ | 2007 10 13 | 704 | 0.2+ | 0.6- |
| 2007 09 08 | 699 | 0.9- | 0.9- | 2007 10 07 | 704 | 0.2+ | 0.0  | 2007 10 15 | 703 | 0.4+ | 0.3+ |
| 2007 09 08 | 699 | 0.1+ | 0.9+ | 2007 10 07 | 704 | 0.7- | 0.8+ | 2007 10 15 | 703 | 0.3- | 0.3+ |
| 2007 09 08 | 699 | 0.2+ | 0.7- | 2007 10 07 | 704 | 0.4- | 1.0+ | 2007 10 15 | 703 | 0.5+ | 0.2- |
| 2007 09 12 | 703 | 0.3- | 0.4+ | 2007 10 12 | 703 | 1.1- | 0.9- | 2007 10 15 | 703 | 0.7+ | 0.8+ |
| 2007 09 12 | 703 | 0.2- | 0.1+ | 2007 10 12 | 703 | 0.7- | 0.2+ | 2007 10 18 | 704 | 0.0  | 0.6+ |
| 2007 09 12 | 703 | 1.0+ | 0.2- | 2007 10 12 | 703 | 0.6+ | 0.3+ | 2007 10 18 | 704 | 0.3- | 0.3- |
| 2007 09 12 | 703 | 1.1+ | 0.6+ | 2007 10 12 | 703 | 0.3- | 0.3+ | 2007 10 18 | 704 | 0.4- | 0.3- |
| 2007 09 19 | 691 | 0.4- | 0.3- | 2007 10 13 | 703 | 0.9- | 1.3- | 2007 10 18 | 704 | 0.6- | 0.5+ |
| 2007 09 19 | 691 | 0.3- | 0.5- | 2007 10 13 | 704 | 0.1+ | 0.0  |            |     |      |      |

**2007 TX<sub>147</sub>**

|                                         |            |          |           |          |             |          |             |          |            |          |           |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|----------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |          |             |          |            |          |           |
| MPC                                     |            |          |           | MPC      |             |          |             | MPC      |            |          |           |
| <i>M</i>                                | 319.55138  |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             | <i>M</i> | 319.55138  |          | (2000.0)  |
| <i>n</i>                                | 0.22333828 | $\omega$ | 249.10137 |          | +0.22957252 |          | -0.97183424 | <i>n</i> | 0.22333828 | $\omega$ | 249.10137 |
| <i>a</i>                                | 2.6904645  | $\Omega$ | 188.19354 |          | +0.97241904 |          | +0.23133903 | <i>a</i> | 2.6904645  | $\Omega$ | 188.19354 |
| <i>e</i>                                | 0.1286251  | <i>i</i> | 21.93658  |          | +0.04120270 |          | -0.04494961 | <i>e</i> | 0.1286251  | <i>i</i> | 21.93658  |
| <i>P</i>                                | 4.41       | <i>H</i> | 16.2      | <i>G</i> | 0.15        | <i>U</i> | 2           | <i>P</i> | 4.41       | <i>H</i> | 16.2      |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 10 15 | 691 | 0.1- | 0.5- | 2007 10 07 | 704 | (3.7+ | 0.3+) | 2007 10 15 | G96 | 0.1- | 0.4- |
| 1998 10 15 | 691 | 0.1+ | 0.2- | 2007 10 07 | 704 | 0.3+  | 0.6-  | 2007 10 15 | 704 | 1.4- | 0.1+ |
| 1998 10 15 | 691 | 0.1+ | 0.7- | 2007 10 07 | 704 | 0.8-  | 1.0+  | 2007 10 15 | G96 | 0.2+ | 0.6- |
| 2002 10 05 | 645 | 0.1- | 0.2+ | 2007 10 07 | 704 | 0.2-  | 1.9+  | 2007 10 15 | G96 | 0.3+ | 0.4- |
| 2002 10 05 | 645 | 0.1- | 0.1+ | 2007 10 08 | 699 | 1.1-  | 0.2-  | 2007 10 18 | 704 | 0.2+ | 0.4- |
| 2005 04 04 | 703 | 0.1- | 0.4- | 2007 10 08 | 699 | 1.0+  | 0.4+  | 2007 10 18 | 704 | 0.0  | 0.1+ |
| 2005 04 04 | 703 | 0.5+ | 0.8- | 2007 10 08 | 699 | 0.9+  | 1.7-  | 2007 10 18 | 704 | 0.2- | 0.4+ |
| 2005 04 04 | 703 | 0.9- | 0.6+ | 2007 10 08 | 699 | 0.0   | 1.4-  | 2007 10 21 | G96 | 0.0  | 0.2- |
| 2005 04 04 | 703 | 0.2+ | 0.0  | 2007 10 11 | 703 | 0.4+  | 0.1+  | 2007 10 21 | G96 | 0.3- | 0.1- |
| 2005 05 07 | 691 | 0.2+ | 0.3+ | 2007 10 11 | 703 | 0.2+  | 0.6+  | 2007 10 21 | G96 | 0.1+ | 0.4- |
| 2005 05 07 | 691 | 0.0  | 0.4+ | 2007 10 11 | 703 | 0.5-  | 0.8+  | 2007 10 21 | G96 | 0.1- | 0.2- |
| 2005 05 07 | 691 | 0.1+ | 0.5+ | 2007 10 11 | 703 | 0.6-  | 0.4+  | 2007 10 21 | G96 | 0.2+ | 0.5- |
| 2007 09 12 | G96 | 0.2+ | 0.1- | 2007 10 13 | 704 | 0.4+  | 0.7+  | 2007 10 21 | G96 | 0.3- | 0.2- |
| 2007 09 12 | G96 | 0.2- | 0.1- | 2007 10 13 | 704 | 0.0   | 0.3+  | 2007 10 21 | G96 | 0.3+ | 0.1- |
| 2007 09 12 | G96 | 0.0  | 0.0  | 2007 10 13 | 704 | 0.8+  | 1.3+  | 2007 10 21 | G96 | 0.2- | 0.1- |
| 2007 09 12 | G96 | 0.2+ | 0.1+ | 2007 10 13 | 704 | 0.1+  | 0.8+  | 2007 10 21 | G96 | 0.1- | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 21 | D29 | 0.0  | 0.0  | 2007 10 13 | 704 | 0.2- | 0.6+ | 2007 10 21 | G96 | 0.2+ | 0.1- |
| 2007 09 21 | D29 | 0.3- | 0.1- | 2007 10 15 | 704 | 0.9- | 0.3- | 2007 10 21 | G96 | 0.0  | 0.0  |
| 2007 09 21 | D29 | 0.4+ | 0.5- | 2007 10 15 | 704 | 0.0  | 0.1+ | 2007 10 21 | G96 | 0.2+ | 0.2- |
| 2007 09 21 | D29 | 0.1- | 0.5- | 2007 10 15 | 704 | 0.3+ | 0.1+ |            |     |      |      |
| 2007 10 07 | 704 | 0.5+ | 1.7+ | 2007 10 15 | G96 | 0.2+ | 0.2- |            |     |      |      |

**2007 TJ<sub>151</sub>**

|                                         |            |          |           |          |             |          |             |          |            |          |           |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|----------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |          |             |          |            |          |           |
| MPC                                     |            |          |           | MPC      |             |          |             | MPC      |            |          |           |
| <i>M</i>                                | 24.43496   |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             | <i>M</i> | 24.43496   |          | (2000.0)  |
| <i>n</i>                                | 0.18388919 | $\omega$ | 72.76978  |          | +0.92966795 |          | +0.35680231 | <i>n</i> | 0.18388919 | $\omega$ | 72.76978  |
| <i>a</i>                                | 3.0626586  | $\Omega$ | 266.24954 |          | -0.36318023 |          | +0.84590101 | <i>a</i> | 3.0626586  | $\Omega$ | 266.24954 |
| <i>e</i>                                | 0.0977359  | <i>i</i> | 5.27297   |          | -0.06178688 |          | +0.39641341 | <i>e</i> | 0.0977359  | <i>i</i> | 5.27297   |
| <i>P</i>                                | 5.36       | <i>H</i> | 15.9      | <i>G</i> | 0.15        | <i>U</i> | 4           | <i>P</i> | 5.36       | <i>H</i> | 15.9      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 15 | 644 | 0.1+ | 0.0  | 2007 09 13 | 699 | 0.3- | 0.0  | 2007 10 09 | 704 | 0.6+ | 0.3+ |
| 2002 10 15 | 644 | 0.1- | 0.3+ | 2007 09 13 | 703 | 0.0  | 0.7- | 2007 10 09 | 704 | 0.0  | 0.8+ |
| 2002 10 15 | 644 | 0.5- | 0.0  | 2007 09 13 | 703 | 1.3- | 0.6- | 2007 10 09 | 704 | 0.2- | 0.1+ |
| 2002 11 01 | 644 | 0.5+ | 0.2+ | 2007 09 13 | 699 | 0.5+ | 0.1- | 2007 10 12 | 704 | 0.6+ | 0.8- |
| 2002 11 01 | 644 | 0.1- | 0.4+ | 2007 09 13 | 703 | 0.1+ | 0.3+ | 2007 10 12 | 704 | 0.1- | 0.1- |
| 2002 11 01 | 644 | 0.1- | 0.1+ | 2007 09 13 | 703 | 0.4+ | 0.0  | 2007 10 12 | 704 | 0.5+ | 0.5+ |
| 2003 12 22 | 691 | 0.2- | 0.3- | 2007 09 13 | 699 | 0.4+ | 0.2+ | 2007 10 12 | 704 | 0.4- | 0.1+ |
| 2003 12 22 | 691 | 0.1- | 0.3- | 2007 09 13 | 699 | 1.4- | 0.4+ | 2007 10 12 | 704 | 0.5+ | 0.1+ |
| 2003 12 22 | 691 | 0.2+ | 0.2- | 2007 10 08 | 699 | 0.7- | 0.2+ | 2007 10 21 | G96 | 0.6+ | 0.4- |
| 2004 01 15 | 691 | 0.1+ | 0.2+ | 2007 10 08 | 699 | 0.1+ | 0.5+ | 2007 10 21 | G96 | 0.2+ | 0.2- |
| 2004 01 15 | 691 | 0.3- | 0.1+ | 2007 10 08 | 699 | 0.7- | 0.8+ | 2007 10 21 | G96 | 0.2+ | 0.5- |
| 2004 01 15 | 691 | 0.2+ | 0.1- | 2007 10 08 | 699 | 0.5+ | 0.7- | 2007 10 21 | G96 | 0.8+ | 0.8- |

**2007 TP<sub>152</sub>**

|                                         |            |          |           |          |             |          |             |          |            |          |           |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|----------|------------|----------|-----------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |          |             |          |             |          |            |          |           |
| MPC                                     |            |          |           | MPC      |             |          |             | MPC      |            |          |           |
| <i>M</i>                                | 340.57432  |          | (2000.0)  | <i>P</i> |             | <i>Q</i> |             | <i>M</i> | 340.57432  |          | (2000.0)  |
| <i>n</i>                                | 0.18463045 | $\omega$ | 185.48991 |          | +0.71807893 |          | -0.68451597 | <i>n</i> | 0.18463045 | $\omega$ | 185.48991 |
| <i>a</i>                                | 3.0544556  | $\Omega$ | 218.71441 |          | +0.64593698 |          | +0.72274229 | <i>a</i> | 3.0544556  | $\Omega$ | 218.71441 |
| <i>e</i>                                | 0.1141650  | <i>i</i> | 11.59422  |          | +0.25909083 |          | +0.09529677 | <i>e</i> | 0.1141650  | <i>i</i> | 11.59422  |
| <i>P</i>                                | 5.34       | <i>H</i> | 16.0      | <i>G</i> | 0.15        | <i>U</i> | 4           | <i>P</i> | 5.34       | <i>H</i> | 16.0      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 06 15 | 645 | 0.0  | 0.2- | 2007 10 07 | 703 | 0.2- | 0.6+ | 2007 10 13 | 703 | 0.8- | 0.2- |
| 2001 06 15 | 645 | 0.1+ | 0.2- | 2007 10 07 | 703 | 1.4+ | 1.0- | 2007 10 13 | 703 | 0.7- | 0.9+ |
| 2005 04 11 | G96 | 0.1- | 0.0  | 2007 10 09 | 704 | 0.5+ | 0.6- | 2007 10 20 | 703 | 0.3+ | 0.1- |
| 2005 04 11 | G96 | 0.1+ | 0.1+ | 2007 10 09 | 704 | 0.4+ | 0.1+ | 2007 10 20 | 703 | 0.0  | 0.9+ |

## 2007 DEC. 24

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2007 09 20 703 | 0.2− | 0.0  | 2007 10 12 704 | 0.8− | 0.0  | 2007 10 16 G96 | 0.3+ | 0.5− |
| 2007 09 20 703 | 0.7− | 0.2+ | 2007 10 12 704 | 0.4+ | 0.6+ | 2007 10 16 G96 | 0.0  | 0.4− |
| 2007 09 20 703 | 1.1+ | 0.6+ | 2007 10 12 704 | 0.2− | 0.0  | 2007 11 01 691 | 0.2+ | 0.2+ |
| 2007 09 20 703 | 0.2+ | 0.1− | 2007 10 12 704 | 0.4− | 1.0+ | 2007 11 01 691 | 0.4+ | 0.1− |
| 2007 10 09 704 | 1.2+ | 0.7− | 2007 10 13 703 | 0.1+ | 0.8+ | 2007 11 01 691 | 0.3+ | 0.1+ |
| 2007 10 09 704 | 0.7− | 0.2− | 2007 10 13 703 | 0.5+ | 0.0  |                |      |      |
| 2007 10 09 704 | 0.2− | 0.6+ | 2007 10 13 703 | 0.7− | 1.0+ |                |      |      |

2007 TA<sub>154</sub>

|                                         |            |          |           |             |             |          |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |          |   |  |
| <i>M</i>                                | 95.58572   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |  |
| <i>n</i>                                | 0.18503610 | $\omega$ | 293.49188 | +0.20836011 | +0.97756096 |          |   |  |
| <i>a</i>                                | 3.0499899  | $\Omega$ | 348.40525 | −0.83165742 | +0.16040656 |          |   |  |
| <i>e</i>                                | 0.0615840  | <i>i</i> | 8.87094   | −0.51471546 | +0.13654418 |          |   |  |
| <i>P</i>                                | 5.33       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2001 08 15 608 | 0.1− | 0.7− | 2007 10 08 703 | 0.9+  | 0.1+  | 2007 10 15 704 | 0.2− | 0.6+ |
| 2001 08 15 608 | 0.4+ | 0.3− | 2007 10 08 703 | 0.3+  | 0.6−  | 2007 10 15 704 | 0.4− | 0.1+ |
| 2001 08 15 608 | 0.3+ | 0.3− | 2007 10 09 704 | 0.4+  | 1.3+  | 2007 10 15 704 | 0.3+ | 0.5+ |
| 2002 11 25 644 | 0.1+ | 0.2− | 2007 10 09 704 | 0.6+  | 1.5+  | 2007 10 30 703 | 0.8− | 1.8− |
| 2002 11 25 644 | 0.2+ | 0.2− | 2007 10 09 704 | (0.3− | 2.1+) | 2007 10 30 703 | 0.7+ | 0.6− |
| 2002 11 25 644 | 0.1+ | 0.1+ | 2007 10 09 704 | 0.1+  | 1.1+  | 2007 10 30 703 | 0.3− | 0.5− |
| 2005 03 09 691 | 0.4+ | 0.4+ | 2007 10 09 704 | 0.2−  | 1.5+  | 2007 10 30 703 | 0.3− | 0.2+ |
| 2005 03 09 691 | 0.4+ | 0.5+ | 2007 10 11 691 | 0.1−  | 0.1−  | 2007 11 02 704 | 0.3+ | 0.2− |
| 2005 03 09 691 | 0.3+ | 0.7+ | 2007 10 11 691 | 0.2−  | 0.1−  | 2007 11 02 704 | 0.5+ | 0.4+ |
| 2005 04 05 644 | 0.1+ | 0.4+ | 2007 10 11 691 | 0.1−  | 0.1−  | 2007 11 02 704 | 0.5− | 0.4+ |
| 2005 04 05 644 | 0.1+ | 0.6+ | 2007 10 12 704 | 0.5−  | 0.4−  | 2007 11 02 704 | 0.3− | 0.2+ |
| 2005 04 05 644 | 0.1+ | 1.1+ | 2007 10 12 704 | 0.3−  | 0.5+  | 2007 11 02 704 | 0.5− | 1.2+ |
| 2005 05 01 644 | 0.4+ | 0.7+ | 2007 10 12 704 | 0.1−  | 0.0   | 2007 11 07 704 | 0.3+ | 0.0  |
| 2005 05 01 644 | 0.5+ | 0.6+ | 2007 10 12 704 | 0.3−  | 0.2+  | 2007 11 07 704 | 0.3− | 0.1+ |
| 2005 05 01 644 | 0.6+ | 0.6+ | 2007 10 12 704 | 0.2−  | 0.3−  | 2007 11 07 704 | 0.1− | 0.8+ |
| 2006 07 20 E12 | 0.1+ | 0.3+ | 2007 10 13 704 | 0.7−  | 0.1−  | 2007 11 07 704 | 0.1+ | 1.3+ |
| 2006 07 20 E12 | 0.5+ | 0.3+ | 2007 10 13 704 | 0.1+  | 0.8−  | 2007 11 07 704 | 0.8− | 0.9+ |
| 2006 07 20 E12 | 0.0  | 0.6+ | 2007 10 13 704 | 0.2−  | 0.6+  | 2007 11 11 699 | 0.0  | 0.1− |
| 2006 07 20 E12 | 0.5− | 0.2+ | 2007 10 13 704 | 0.2+  | 0.3−  | 2007 11 11 699 | 0.0  | 0.3− |
| 2007 10 08 703 | 0.1− | 0.7+ | 2007 10 13 704 | 0.0   | 0.4+  | 2007 11 11 699 | 0.3+ | 1.3− |
| 2007 10 08 703 | 0.4+ | 0.6− | 2007 10 15 704 | 0.5−  | 0.7+  | 2007 11 11 699 | 1.4− | 1.0− |

2007 TP<sub>154</sub>

|                                         |            |          |           |             |             |          |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |          |   |  |
| <i>M</i>                                | 359.18617  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |  |
| <i>n</i>                                | 0.23450879 | $\omega$ | 171.88524 | +0.88082246 | −0.45567781 |          |   |  |
| <i>a</i>                                | 2.6043337  | $\Omega$ | 216.13000 | +0.42122518 | +0.87815830 |          |   |  |
| <i>e</i>                                | 0.1639828  | <i>i</i> | 12.58685  | +0.21615075 | +0.14558755 |          |   |  |
| <i>P</i>                                | 4.20       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 3 |  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 2003 11 19 699 | 0.2−  | 0.2+  | 2007 10 11 703 | 1.3+  | 0.0   | 2007 11 02 691 | 0.1− | 0.0  |
| 2003 11 19 699 | 0.4+  | 0.1−  | 2007 10 11 703 | 0.3−  | 0.6−  | 2007 11 02 691 | 0.0  | 0.0  |
| 2003 11 19 699 | 0.6+  | 0.5+  | 2007 10 11 703 | 0.7+  | 0.0   | 2007 11 02 691 | 0.2+ | 0.1+ |
| 2003 11 19 699 | 0.3+  | 0.4+  | 2007 10 12 704 | 0.4+  | 0.1+  | 2007 11 09 691 | 0.1− | 0.0  |
| 2003 12 21 691 | 0.1−  | 0.1−  | 2007 10 12 704 | 0.4+  | 0.5+  | 2007 11 09 691 | 0.0  | 0.1− |
| 2003 12 21 691 | 0.0   | 0.1+  | 2007 10 12 704 | 0.5+  | 0.1+  | 2007 11 09 691 | 0.2+ | 0.1− |
| 2003 12 21 691 | 0.2−  | 0.0   | 2007 10 12 704 | 0.6+  | 0.7+  | 2007 11 13 691 | 0.1+ | 0.1− |
| 2007 10 06 699 | 0.7−  | 0.8+  | 2007 10 18 691 | 0.7−  | 0.0   | 2007 11 13 691 | 0.2+ | 0.3+ |
| 2007 10 06 699 | 0.0   | 1.1−  | 2007 10 18 691 | 0.4−  | 0.0   | 2007 11 13 691 | 0.0  | 0.1− |
| 2007 10 06 699 | 1.0−  | 0.7+  | 2007 10 18 691 | 0.0   | 0.1+  | 2007 11 15 704 | 0.4+ | 0.1+ |
| 2007 10 06 699 | 1.1+  | 0.8−  | 2007 10 18 691 | 0.0   | 0.2−  | 2007 11 15 704 | 0.9− | 0.3+ |
| 2007 10 09 704 | 0.1+  | 0.0   | 2007 10 18 691 | 0.2+  | 0.2+  | 2007 11 15 704 | 0.7− | 0.2− |
| 2007 10 09 704 | 0.3+  | 0.2+  | 2007 10 18 691 | 0.1+  | 0.0   | 2007 11 15 704 | 0.1+ | 0.5− |
| 2007 10 09 704 | 0.1+  | 0.3+  | 2007 10 30 703 | 0.7−  | 0.2−  | 2007 12 06 G96 | 0.3− | 0.3− |
| 2007 10 09 704 | 0.0   | 0.2+  | 2007 10 30 703 | 0.1−  | 1.1−  | 2007 12 06 G96 | 0.1− | 0.5− |
| 2007 10 09 704 | 0.4−  | 0.0   | 2007 10 30 703 | 0.3+  | 0.2+  | 2007 12 06 G96 | 0.5− | 0.4− |
| 2007 10 11 703 | (1.8+ | 0.7+) | 2007 10 30 703 | (2.4+ | 1.7+) | 2007 12 06 G96 | 0.3+ | 0.3− |

## M.P.O. 129865

2007 TA<sub>156</sub>

|                                         |            |          |           |             |             |          |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |          |   |  |
| <i>M</i>                                | 331.14009  | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |  |
| <i>n</i>                                | 0.27555876 | $\omega$ | 190.81010 | +0.30812438 | −0.94927978 |          |   |  |
| <i>a</i>                                | 2.3388008  | $\Omega$ | 241.26899 | +0.87808807 | +0.30912830 |          |   |  |
| <i>e</i>                                | 0.1997884  | <i>i</i> | 4.09822   | +0.36608839 | +0.05751171 |          |   |  |
| <i>P</i>                                | 3.58       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 4 |  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |       |       |
|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| 2005 03 03 703 | (1.8− | 1.0−) | 2007 10 12 704 | 0.6+  | 0.1−  | 2007 11 01 704 | 0.8+  | 1.4+  |
| 2005 03 03 703 | 0.1−  | 0.3+  | 2007 10 12 704 | 0.1−  | 0.4−  | 2007 11 01 704 | 0.1+  | 1.4+  |
| 2005 03 03 703 | (2.9− | 0.7+) | 2007 10 12 704 | 0.3+  | 0.1−  | 2007 11 04 104 | (1.2+ | 1.6−) |
| 2005 03 03 703 | 0.3−  | 0.9+  | 2007 10 12 704 | 0.8+  | 0.2−  | 2007 11 04 104 | 0.5−  | 0.2−  |
| 2005 03 10 703 | 0.4+  | 0.8−  | 2007 10 18 691 | 1.0−  | 0.5−  | 2007 11 04 104 | 0.4−  | 0.5−  |
| 2005 03 10 703 | 0.2+  | 0.5−  | 2007 10 18 691 | 0.4−  | 0.3−  | 2007 11 06 704 | 0.4−  | 0.4+  |
| 2005 03 10 703 | 0.1−  | 0.1+  | 2007 10 18 691 | 0.4−  | 0.3−  | 2007 11 06 704 | 0.0   | 1.1+  |
| 2005 03 10 703 | (0.4+ | 2.2−) | 2007 10 18 704 | (1.6+ | 0.6−) | 2007 11 06 704 | 0.3−  | 0.3−  |
| 2007 10 09 704 | 0.1+  | 0.4−  | 2007 10 18 704 | 0.5+  | 0.1−  | 2007 11 06 704 | 0.9+  | 0.4+  |
| 2007 10 09 704 | 0.5−  | 0.7−  | 2007 10 18 704 | 0.2+  | 0.2+  | 2007 11 18 704 | 0.4−  | 0.3−  |
| 2007 10 09 704 | 0.2−  | 0.1−  | 2007 10 18 704 | 0.9+  | 0.5−  | 2007 11 18 704 | 0.2+  | 1.2+  |
| 2007 10 09 704 | 0.4−  | 0.2+  | 2007 10 18 704 | 0.8+  | 0.1+  | 2007 11 18 704 | 0.1+  | 0.5+  |
| 2007 10 09 704 | 0.7+  | 0.4−  | 2007 10 20 703 | 0.6+  | 0.1−  | 2007 11 18 704 | 0.5−  | 0.3−  |
| 2007 10 11 703 | 0.2+  | 0.8+  | 2007 10 20 703 | 0.1−  | 0.6−  | 2007 12 15 G96 | 0.1−  | 0.8−  |
| 2007 10 11 703 | 0.1−  | 0.8+  | 2007 10 20 703 | 0.3+  | 0.7−  | 2007 12 15 G96 | 0.1−  | 0.3−  |
| 2007 10 11 703 | 0.6+  | 0.7+  | 2007 11 01 704 | 0.5+  | 1.2+  | 2007 12 15 G96 | 0.1+  | 0.8−  |
| 2007 10 11 703 | 0.2+  | 1.4+  | 2007 11 01 704 | 0.2−  | 0.5+  | 2007 12 15 G96 | 0.8+  | 0.5−  |
| 2007 10 12 704 | 0.5+  | 0.3−  | 2007 11 01 704 | 0.5+  | 0.7+  |                |       |       |

2007 TC<sub>157</sub>

|                                         |            |          |           |             |             |          |   |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 | MPC        |          |           |             |             |          |   |  |
| <i>M</i>                                | 40.58925   | (2000.0) | <b>P</b>  | <b>Q</b>    |             |          |   |  |
| <i>n</i>                                | 0.29589582 | $\omega$ | 335.44117 | +0.79242937 | +0.60968894 |          |   |  |
| <i>a</i>                                | 2.2303695  | $\Omega$ | 346.94297 | −0.54538137 | +0.69476910 |          |   |  |
| <i>e</i>                                | 0.3137869  | <i>i</i> | 4.64754   | −0.27315719 | +0.38154331 |          |   |  |
| <i>P</i>                                | 3.33       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 4 |  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 04 08 691 | 0.2+ | 0.2+ | 2007 10 12 704 | 0.3− | 1.0− | 2007 10 22 704 | 0.1− | 0.0  |
| 2003 04 08 691 | 0.2− | 0.1+ | 2007 10 12 704 | 0.5− | 0.9− | 2007 10 22 704 | 0.3+ | 0.2+ |
| 2003 04 08 691 | 0.1+ | 0.2− | 2007 10 12 699 | 0.4+ | 0.3+ | 2007 10 30 H51 | 0.4+ | 0.4− |
| 2006 02 21 G96 | 0.0  | 0.6− | 2007 10 12 699 | 0.1− | 0.0  | 2007 10 30 H51 | 0.5+ | 0.3− |
| 2006 02 21 G96 | 0.3− | 0.1− | 2007 10 15 691 | 0.4− | 0.1− | 2007 10 30 H51 | 1.1+ | 0.4− |
| 2006 02 21 G96 | 0.3− | 0.4− | 2007 10 15 691 | 0.4− | 0.2− | 2007 11 01 703 | 0.2+ | 0.1− |
| 2006 02 21 G96 | 0.5− | 0.1− | 2007 10 15 691 | 0.3− | 0.1+ | 2007 11 01 703 | 0.3− | 0.9+ |
| 2006 03 03 691 | 0.6+ | 0.2− | 2007 10 18 699 | 0.6+ | 0.6+ | 2007 11 01 703 | 0.6+ | 0.2+ |
| 2006 03 03 691 | 0.2− | 0.1+ | 2007 10 18 699 | 0.3+ | 0.4− | 2007 11 01 703 | 0.7+ | 0.1− |
| 2006 03 03 691 | 0.0  | 0.1+ | 2007 10 18 699 | 0.1+ | 0.5− | 2007 11 02 704 | 0.4+ | 0.2− |
| 2007 10 07 691 | 0.6− | 0.1+ | 2007 10 18 699 | 0.2+ | 0.2− | 2007 11 02 704 | 0.4+ | 0.1− |
| 2007 10 07 691 | 0.4− | 0.2+ | 2007 10 18 699 | 0.7+ | 0.1+ | 2007 11 02 704 | 0.1+ | 0.2+ |
| 2007 10 07 691 | 0.5− | 0.1+ | 2007 10 18 699 | 0.1− | 1.3− | 2007 11 02 704 | 0.2+ | 0.1− |
| 2007 10 09 704 | 0.8+ | 0.5+ | 2007 10 18 699 | 0.1− | 0.3− | 2007 11 02 704 | 0.2+ | 0.2+ |
| 2007 10 09 704 | 1.0+ | 0.7+ | 2007 10 18 699 | 0.5− | 0.2+ | 2007 11 08 704 | 0.9− | 1.8+ |
| 2007 10 09 704 | 0.4+ | 0.8+ | 2007 10 19 691 | 0.5− | 0.0  | 2007 11 08 704 | 0.7− | 1.2+ |
| 2007 10 09 704 | 0.5+ | 0.5+ | 2007 10 19 691 | 0.3− | 0.1− | 2007 11 08 704 | 0.4− | 0.9+ |
| 2007 10 09 704 | 0.2+ | 0.6+ | 2007 10 19 691 | 0.3− | 0.1− | 2007 11 08 704 | 0.8− | 0.8+ |
| 2007 10 11 691 | 0.6− | 0.1+ | 2007 10 21 704 | 0.7+ | 0.1− | 2007 11 08 704 | 0.8− | 1.1+ |
| 2007 10 11 691 | 0.4− | 0.1− | 2007 10 21 704 | 0.5+ | 0.0  | 2007 11 12 703 | 0.6− | 0.6− |
| 2007 10 11 691 | 0.6− | 0.1− | 2007 10 21 704 | 0.7+ | 0.1+ | 2007 11 12 703 | 0.0  | 0.8− |
| 2007 10 11 691 | 0.5− | 0.1+ | 2007 10 21 704 | 0.7+ | 0.4− | 2007 11 12 703 | 0.3− | 0.4− |
| 2007 10 11 691 | 0.4− | 0.2− | 2007 10 21 703 | 0.3− | 0.6− | 2007 11 12 703 | 0.2− | 0.3− |
| 2007 10 11 691 | 0.3− | 0.1+ | 2007 10 21 703 | 0.2− | 0.4− | 2007 11 17 704 | 0.4+ | 0.4+ |
| 2007 10 12 704 | 0.2− | 1.1− | 2007 10 21 703 | 0.3+ | 0.1+ | 2007 11 17 704 | 0.5− | 0.6+ |
| 2007 10 12 704 | 0.4− | 0.8− | 2007 10 21 703 | 0.8+ | 0.6− | 2007 11 17 704 | 0.1+ | 0.4+ |
| 2007 10 12 704 | 0.1+ | 1.0− | 2007 10 22 704 | 0.5+ | 0.2− | 2007 11 17 704 | 0.1− | 0.7+ |
| 2007 10 12 699 | 0.3+ | 0.3− | 2007 10 22 704 | 0.5− | 0.2− | 2007 11 17 704 | 0.0  | 0.5− |

**2007 TP<sub>157</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 306.37710  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.18039468 | $\omega$ 245.19589 | -0.15342668   | -0.97518580 |          |  |
| <i>a</i> | 3.1020841  | $\Omega$ 214.82931 | +0.97714096   | -0.12567068 |          |  |
| <i>e</i> | 0.2265092  | <i>i</i> 16.22729  | +0.14715906   | -0.18226227 |          |  |
| <i>P</i> | 5.46       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 18 | 645 | 0.2+ | 0.2- | 2007 10 09 | 704 | 0.1- | 0.4+ | 2007 10 20 | 703 | 0.0  | 0.1- |
| 2001 11 18 | 645 | 0.0  | 0.2- | 2007 10 09 | 704 | 0.4+ | 0.2- | 2007 10 20 | 703 | 0.6+ | 0.1+ |
| 2003 01 18 | 644 | 0.3- | 0.1+ | 2007 10 09 | 704 | 0.0  | 0.4+ | 2007 10 31 | 703 | 1.1+ | 0.7+ |
| 2003 01 18 | 644 | 0.1- | 0.1+ | 2007 10 11 | 691 | 0.1- | 0.3- | 2007 10 31 | 703 | 0.2+ | 1.0+ |
| 2003 01 18 | 644 | 0.2+ | 0.2- | 2007 10 11 | 691 | 0.1- | 0.1- | 2007 10 31 | 703 | 1.0- | 0.5- |
| 2003 01 26 | 644 | 0.2+ | 0.1- | 2007 10 11 | 691 | 0.0  | 0.1- | 2007 10 31 | 703 | 0.2+ | 0.3+ |
| 2003 01 26 | 644 | 0.2- | 0.2- | 2007 10 12 | 704 | 0.5- | 0.4+ | 2007 11 01 | 691 | 0.3- | 0.0  |
| 2003 01 26 | 644 | 0.1+ | 0.2+ | 2007 10 12 | 704 | 0.3- | 0.6+ | 2007 11 01 | 691 | 0.4- | 0.1+ |
| 2007 10 08 | 703 | 0.3+ | 0.3- | 2007 10 12 | 704 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.1- | 0.4- |
| 2007 10 08 | 703 | 0.3+ | 0.3- | 2007 10 12 | 704 | 0.2+ | 0.4+ | 2007 11 07 | G96 | 0.5+ | 0.6- |
| 2007 10 08 | 703 | 0.8+ | 0.5- | 2007 10 12 | 704 | 0.5- | 0.7+ | 2007 11 07 | G96 | 0.2+ | 0.5- |
| 2007 10 08 | 703 | 0.3+ | 0.0  | 2007 10 20 | 703 | 0.4- | 0.8- | 2007 11 07 | G96 | 0.3+ | 0.5- |
| 2007 10 09 | 704 | 0.4- | 0.3+ | 2007 10 20 | 703 | 1.3- | 0.7+ | 2007 11 07 | G96 | 0.1+ | 0.7- |

**2007 TS<sub>159</sub> = 2005 EM<sub>235</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 348.05071  | (2000.0)          | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|-------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.26350304 | $\omega$ 43.86422 | +0.54623937   | -0.83748219 |          |  |
| <i>a</i> | 2.4096037  | $\Omega$ 13.05224 | +0.74809141   | +0.47933845 |          |  |
| <i>e</i> | 0.2108831  | <i>i</i> 3.98342  | +0.37680471   | +0.26240853 |          |  |
| <i>P</i> | 3.74       | <i>H</i> 17.3     | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 24 | 807 | 0.2- | 0.2+ | 2007 10 09 | 704 | 0.4+ | 0.2+ | 2007 11 06 | 704 | 0.2+ | 0.2+ |
| 2003 08 24 | 807 | 0.4- | 0.2+ | 2007 10 09 | 704 | 0.1- | 0.2- | 2007 11 06 | 704 | 0.9+ | 0.8+ |
| 2003 09 24 | 644 | 0.2- | 0.4+ | 2007 10 12 | 704 | 0.3+ | 0.1+ | 2007 11 06 | 704 | 0.6+ | 1.8+ |
| 2003 09 24 | 644 | 0.1+ | 0.6+ | 2007 10 12 | 704 | 0.3- | 0.6+ | 2007 11 11 | 699 | 0.7- | 0.4- |
| 2003 09 24 | 644 | 0.1- | 0.4+ | 2007 10 12 | 691 | 0.1- | 0.2- | 2007 11 11 | 699 | 1.3- | 1.0- |
| 2005 03 10 | G96 | 0.2- | 0.1+ | 2007 10 12 | 704 | 0.4- | 0.2+ | 2007 11 11 | 699 | 1.5- | 0.9+ |
| 2005 03 10 | G96 | 0.4+ | 0.2+ | 2007 10 12 | 691 | 0.3- | 0.2- | 2007 11 11 | 699 | 1.2- | 0.9+ |
| 2005 03 10 | G96 | 0.1- | 0.1+ | 2007 10 12 | 704 | 0.5+ | 0.3+ | 2007 11 16 | D35 | 0.1+ | 0.7+ |
| 2005 03 10 | G96 | 0.2+ | 0.3+ | 2007 10 12 | 704 | 0.5- | 0.3+ | 2007 11 16 | D35 | 0.7+ | 0.4- |
| 2007 09 09 | G96 | 0.3+ | 0.4- | 2007 10 12 | 691 | 0.1- | 0.3- | 2007 11 16 | D35 | 0.3+ | 0.0  |
| 2007 09 09 | G96 | 0.5+ | 0.1- | 2007 10 30 | 703 | 0.3- | 0.6+ | 2007 11 18 | 704 | 0.2- | 0.5- |
| 2007 09 09 | G96 | 0.3+ | 0.4- | 2007 10 30 | 703 | 0.5- | 1.8+ | 2007 11 18 | 704 | 0.9+ | 0.4- |
| 2007 09 09 | G96 | 0.6+ | 0.1- | 2007 10 30 | 703 | 0.5- | 0.7+ | 2007 11 18 | 704 | 0.5+ | 0.0  |
| 2007 09 09 | G96 | 0.3+ | 0.4- | 2007 10 30 | 703 | 0.2+ | 0.4+ | 2007 11 18 | 704 | 0.3+ | 0.1- |
| 2007 09 09 | G96 | 0.6+ | 0.1- | 2007 11 03 | 691 | 0.3- | 0.2- | 2007 11 18 | 704 | 0.3- | 0.0  |
| 2007 09 09 | G96 | 0.3+ | 0.0  | 2007 11 03 | 691 | 0.2- | 0.2- | 2007 11 20 | 704 | 0.6+ | 0.3- |
| 2007 10 08 | 691 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.2- | 0.1- | 2007 11 20 | 704 | 1.8+ | 0.5- |
| 2007 10 08 | 691 | 0.2- | 0.4- | 2007 11 04 | A77 | 0.4+ | 0.3+ | 2007 11 20 | 704 | 0.4+ | 0.0  |
| 2007 10 08 | 691 | 0.1+ | 0.4- | 2007 11 04 | A77 | 0.2+ | 0.2+ | 2007 11 20 | 704 | 0.1+ | 1.1- |
| 2007 10 09 | 704 | 0.1- | 0.2+ | 2007 11 05 | A77 | 0.4+ | 0.1+ |            |     |      |      |
| 2007 10 09 | 704 | 0.3+ | 1.0+ | 2007 11 06 | 704 | 0.3+ | 1.2+ |            |     |      |      |

**2007 TL<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.75367   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.23956150 | $\omega$ 315.88032 | +0.92673331   | +0.36863967 |          |  |
| <i>a</i> | 2.5675842  | $\Omega$ 22.79130  | -0.27137191   | +0.79037155 |          |  |
| <i>e</i> | 0.1463800  | <i>i</i> 10.80134  | -0.25985121   | +0.48930318 |          |  |
| <i>P</i> | 4.11       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 23 | 691 | 0.1+ | 0.1+ | 2007 10 12 | 704 | 0.2+ | 1.2+ | 2007 11 18 | 704 | 0.4+ | 0.5+ |
| 1993 03 23 | 691 | 0.1- | 0.1+ | 2007 10 12 | 704 | 1.3- | 0.5+ | 2007 11 18 | 704 | 0.1+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 23 | 691 | 0.1+ | 0.0  | 2007 10 12 | 704 | 0.7+ | 1.5+ | 2007 11 30 | A77 | 0.4+ | 0.0  |
| 2003 12 18 | 691 | 0.1+ | 0.2+ | 2007 11 02 | 703 | 0.8- | 0.1- | 2007 11 30 | A77 | 0.0  | 0.1- |
| 2003 12 18 | 691 | 0.0  | 0.1+ | 2007 11 02 | 703 | 0.6- | 0.1+ | 2007 11 30 | A77 | 0.9- | 0.8+ |
| 2003 12 18 | 691 | 0.1- | 0.0  | 2007 11 02 | 703 | 0.1- | 0.2+ | 2007 12 02 | 704 | 0.3+ | 0.4- |
| 2005 03 16 | 703 | 0.1- | 0.6+ | 2007 11 02 | 703 | 0.3- | 0.5+ | 2007 12 02 | 704 | 0.1+ | 0.6- |
| 2005 03 16 | 703 | 0.5+ | 0.1+ | 2007 11 17 | 704 | 0.3+ | 0.8- | 2007 12 02 | 704 | 0.3+ | 0.4- |
| 2005 03 16 | 703 | 1.0- | 0.8+ | 2007 11 17 | 704 | 0.0  | 0.6- | 2007 12 02 | 704 | 0.1+ | 0.6- |
| 2005 03 16 | 703 | 1.0+ | 1.2- | 2007 11 17 | 704 | 0.4+ | 0.4- | 2007 12 05 | 699 | 0.5+ | 0.3+ |
| 2007 10 09 | 704 | 0.0  | 0.3+ | 2007 11 17 | 704 | 0.4+ | 0.5- | 2007 12 05 | 699 | 0.5- | 0.7- |
| 2007 10 09 | 704 | 0.2- | 0.3- | 2007 11 18 | G96 | 0.3+ | 0.4- | 2007 12 05 | 699 | 0.1+ | 0.9+ |
| 2007 10 09 | 704 | 1.4- | 1.2+ | 2007 11 18 | G96 | 0.1+ | 0.5- | 2007 12 05 | 699 | 0.3- | 0.8- |
| 2007 10 09 | 704 | 0.5- | 0.5+ | 2007 11 18 | G96 | 0.3+ | 0.5- | 2007 12 16 | 704 | 0.3+ | 0.5+ |
| 2007 10 09 | 691 | 0.1- | 0.1- | 2007 11 18 | G96 | 0.2+ | 0.6- | 2007 12 16 | 704 | 0.3+ | 1.2+ |
| 2007 10 09 | 691 | 0.1- | 0.1- | 2007 11 18 | 704 | 0.6+ | 0.2- | 2007 12 16 | 704 | 0.7+ | 0.0  |
| 2007 10 09 | 691 | 0.2- | 0.2- | 2007 11 18 | 704 | 0.4- | 0.3- | 2007 12 16 | 704 | 1.2+ | 0.0  |
| 2007 10 12 | 704 | 0.1- | 0.2+ | 2007 11 18 | 704 | 0.5+ | 0.1- |            |     |      |      |

**2007 TO<sub>160</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.63332    | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.23347221 | $\omega$ 62.54108  | +0.82336798   | -0.56685486 |          |  |
| <i>a</i> | 2.6120366  | $\Omega$ 331.96482 | +0.49810094   | +0.74481969 |          |  |
| <i>e</i> | 0.3116175  | <i>i</i> 3.31963   | +0.27195703   | +0.35202159 |          |  |
| <i>P</i> | 4.22       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 691 | 0.5+ | 0.3- | 2007 10 09 | 691 | 0.1- | 0.1- | 2007 11 13 | 699 | 1.2+ | 1.0- |
| 2003 12 28 | 691 | 0.3- | 0.0  | 2007 10 09 | 691 | 0.0  | 0.1- | 2007 11 20 | G96 | 0.0  | 0.3- |
| 2003 12 28 | 691 | 0.2- | 0.0  | 2007 10 09 | 691 | 0.1+ | 0.1- | 2007 11 20 | G96 | 0.1- | 0.4- |
| 2004 01 21 | 691 | 0.0  | 0.1- | 2007 10 12 | 704 | 0.6- | 0.7- | 2007 11 20 | G96 | 0.2+ | 0.5- |
| 2004 01 21 | 691 | 0.1- | 0.3+ | 2007 10 12 | 704 | 0.4- | 0.2- | 2007 12 04 | 699 | 0.4- | 0.7+ |
| 2004 01 21 | 691 | 0.1+ | 0.2+ | 2007 10 12 | 704 | 0.1+ | 0.5+ | 2007 12 04 | 699 | 0.5+ | 0.4+ |
| 2007 09 27 | G96 | 0.3+ | 0.3- | 2007 10 12 | 704 | 0.1- | 0.9+ | 2007 12 04 | 699 | 0.4+ | 0.4+ |
| 2007 09 27 | G96 | 0.4+ | 0.3- | 2007 11 02 | 703 | 0.1- | 0.4+ | 2007 12 04 | 699 | 0.2- | 0.5- |
| 2007 09 27 | G96 | 0.5+ | 0.6- | 2007 11 02 | 703 | 1.0+ | 0.0  | 2007 12 12 | A77 | 0.4- | 0.1- |
| 2007 09 27 | G96 | 0.4+ | 0.4- | 2007 11 02 | 703 | 0.4+ | 0.2- | 2007 12 12 | A77 | 0.2- | 0.4- |
| 2007 10 09 | 704 | 1.0- | 0.6+ | 2007 11 02 | 703 | 0.5- | 0.1- | 2007 12 13 | A77 | 0.1- | 0.1+ |
| 2007 10 09 | 704 | 1.2- | 1.7+ | 2007 11 13 | 699 | 0.1- | 0.5- | 2007 12 13 | A77 | 0.3+ | 0.8+ |
| 2007 10 09 | 704 | 0.9- | 1.7+ | 2007 11 13 | 699 | 0.4- | 0.6- | 2007 12 13 | A77 | 0.1- | 0.1- |
| 2007 10 09 | 704 | 0.6+ | 0.1+ | 2007 11 13 | 699 | 0.4+ | 0.3+ | 2007 12 14 | A77 | 0.3- | 0.0  |

**2007 TF<sub>161</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 51.93255   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.17467814 | $\omega$ 114.71570 | +0.58034735   | +0.81227398 |          |  |
| <i>a</i> | 3.1693996  | $\Omega$ 191.32852 | -0.81230565   | +0.57228795 |          |  |
| <i>e</i> | 0.1063124  | <i>i</i> 17.28869  | -0.05793514   | +0.11268311 |          |  |
| <i>P</i> | 5.64       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 07 30 | 644 | 0.5+ | 0.1+ | 2007 09 20 | 691 | 0.1-  | 0.1+  | 2007 10 14 | 704 | 0.6- | 0.1+ |
| 2001 07 30 | 644 | 0.4+ | 0.3+ | 2007 09 20 | 691 | 0.2-  | 0.1+  | 2007 10 14 | 704 | 0.4- | 0.5+ |
| 2001 07 30 | 644 | 0.5+ | 0.4+ | 2007 10 07 | 703 | 1.3+  | 0.6+  | 2007 10 14 | 704 | 0.6- | 1.4- |
| 2001 08 14 | 644 | 0.5- | 0.0  | 2007 10 07 | 703 | 0.8+  | 0.5+  | 2007 10 14 | 704 | 0.9- | 0.9+ |
| 2001 08 14 | 644 | 0.6- | 0.0  | 2007 10 07 | 703 | 0.8+  | 0.0   | 2007 10 14 | 704 | 0.8- | 0.3+ |
| 2001 08 14 | 644 | 0.4- | 0.0  | 2007 10 07 | 703 | 0.2-  | 0.3+  | 2007 11 17 | G96 | 0.2+ | 0.1+ |
| 2005 03 08 | 691 | 0.0  | 0.5+ | 2007 10 07 | 699 | 0.5-  | 0.8+  | 2007 11 17 | G96 | 0.1+ | 0.2+ |
| 2005 03 08 | 691 | 0.1- | 0.2+ | 2007 10 07 | 699 | 0.2+  | 0.0   | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2005 03 08 | 691 | 0.2+ | 0.0  | 2007 10 07 | 699 | 0.9+  | 0.4+  | 2007 11 17 | G96 | 0.5- | 0.0  |
| 2007 09 09 | 691 | 0.0  | 0.1- | 2007 10 07 | 699 | (0.6- | 2.5+) | 2007 12 05 | G96 | 0.2- | 0.2+ |
| 2007 09 09 | 691 | 0.1- | 0.2- | 2007 10 11 | 704 | 1.3+  | 0.1-  | 2007 12 05 | G96 | 0.1- | 0.0  |
| 2007 09 09 | 691 | 0.1- | 0.2- | 2007 10 11 | 704 | 0.8+  | 0.1-  | 2007 12 05 | G96 | 0.0  | 0.1- |
| 2007 09 20 | 691 | 0.3- | 0.0  | 2007 10 11 | 704 | 0.6+  | 0.2-  | 2007 12 05 | G96 | 0.1+ | 0.5+ |



2007 DEC. 24

M.P.O. 129867

**2007 TJ<sub>161</sub> = 2000 KT<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.32981   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17839384 | $\omega$ | 173.20933 | +0.99802206   | +0.06223348 |
| <i>a</i> | 3.1252360  | $\Omega$ | 183.26243 | -0.06247760   | +0.96625951 |
| <i>e</i> | 0.0804535  | <i>i</i> | 8.98272   | -0.00696495   | +0.24993911 |
| <i>P</i> | 5.52       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |       |            |     |       |       |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|-------|-------|
| 2000 05 28 | 691 | 0.1+ | 0.1- | 2007 09 10 | G96 | 0.0  | 0.1-  | 2007 10 14 | 704 | 0.4-  | 0.9+  |
| 2000 05 28 | 691 | 0.1+ | 0.3+ | 2007 09 10 | G96 | 0.1+ | 0.4-  | 2007 10 14 | 704 | 0.6+  | 0.6+  |
| 2000 05 28 | 691 | 0.2- | 0.1+ | 2007 09 10 | G96 | 0.5+ | 0.2-  | 2007 10 14 | 704 | (1.2- | 1.7+) |
| 2000 06 05 | 691 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.4+ | 0.3-  | 2007 10 18 | G96 | 0.1-  | 0.1-  |
| 2000 06 05 | 691 | 0.2- | 0.0  | 2007 10 08 | G96 | 0.1+ | 0.2-  | 2007 10 18 | G96 | 0.2+  | 0.4-  |
| 2000 06 05 | 691 | 0.3+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.1-  | 2007 10 18 | G96 | 0.1-  | 0.3-  |
| 2002 11 16 | 644 | 0.1+ | 0.4+ | 2007 10 08 | G96 | 0.1+ | 0.2-  | 2007 10 18 | G96 | 0.1+  | 0.5-  |
| 2002 11 16 | 644 | 0.0  | 0.7+ | 2007 10 08 | G96 | 0.0  | 0.2-  | 2007 11 03 | G96 | 0.2-  | 0.0   |
| 2002 11 16 | 644 | 0.2- | 0.4+ | 2007 10 11 | 704 | 0.1- | 0.6+  | 2007 11 03 | G96 | 0.3-  | 0.3+  |
| 2005 04 12 | 691 | 0.1- | 0.3- | 2007 10 11 | 704 | 0.6- | 0.5-  | 2007 11 03 | G96 | 0.3+  | 0.1+  |
| 2005 04 12 | 691 | 0.0  | 0.2+ | 2007 10 11 | 704 | 0.3- | 0.3-  | 2007 11 03 | G96 | 0.4-  | 0.1+  |
| 2005 04 12 | 691 | 0.0  | 0.3- | 2007 10 14 | 704 | (0.0 | 1.6+) |            |     |       |       |

**2007 TQ<sub>161</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.25285   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21351436 | $\omega$ | 319.92992 | +0.92521273   | +0.37778469 |
| <i>a</i> | 2.7723709  | $\Omega$ | 17.97055  | -0.31197980   | +0.81061731 |
| <i>e</i> | 0.0484453  | <i>i</i> | 6.60691   | -0.21598614   | +0.44741290 |
| <i>P</i> | 4.62       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 19 | 644 | 0.2+  | 0.0   | 2007 10 11 | 703 | 1.0-  | 1.1+  | 2007 10 14 | 704 | 0.7+  | 0.0   |
| 2002 08 19 | 644 | 0.1+  | 0.4-  | 2007 10 11 | 703 | 0.3+  | 0.0   | 2007 10 14 | 704 | 0.1+  | 0.2+  |
| 2002 08 19 | 644 | 0.3+  | 0.5-  | 2007 10 11 | 703 | 0.1-  | 0.6+  | 2007 10 15 | 691 | (1.7+ | 2.1+) |
| 2002 08 30 | 644 | 0.5-  | 0.6+  | 2007 10 11 | 704 | 0.4+  | 0.9+  | 2007 10 15 | 691 | 0.2-  | 0.1-  |
| 2002 08 30 | 644 | 0.1-  | 0.5+  | 2007 10 11 | 703 | 1.1-  | 0.1-  | 2007 10 15 | 691 | 0.3-  | 0.3-  |
| 2002 08 30 | 644 | 0.0   | 0.1+  | 2007 10 11 | 704 | 0.4+  | 0.3+  | 2007 11 01 | G96 | 0.1-  | 0.6-  |
| 2005 05 10 | G96 | 0.0   | 0.2+  | 2007 10 11 | 704 | 1.0+  | 0.0   | 2007 11 01 | G96 | 0.2+  | 0.3-  |
| 2005 05 10 | G96 | 0.0   | 0.2+  | 2007 10 11 | 704 | 0.6+  | 0.4-  | 2007 11 01 | G96 | 0.3+  | 0.3-  |
| 2005 05 10 | G96 | 0.3+  | 0.2+  | 2007 10 13 | D35 | 0.2-  | 0.2+  | 2007 11 01 | G96 | 0.1+  | 0.2-  |
| 2005 05 10 | G96 | 0.0   | 0.2-  | 2007 10 13 | D35 | 0.1-  | 0.2+  | 2007 11 17 | G96 | 0.2+  | 0.3-  |
| 2007 09 12 | G96 | 0.3-  | 0.2-  | 2007 10 13 | D35 | 0.2-  | 0.3+  | 2007 11 17 | G96 | 0.1+  | 0.1-  |
| 2007 09 12 | G96 | 0.3+  | 0.3-  | 2007 10 14 | 704 | 0.3+  | 0.1-  | 2007 11 17 | G96 | 0.4-  | 0.2+  |
| 2007 09 12 | G96 | (1.6+ | 0.1-) | 2007 10 14 | 704 | (1.6- | 0.8-) |            |     |       |       |
| 2007 09 12 | G96 | 0.6+  | 0.5-  | 2007 10 14 | 704 | 0.1+  | 0.4+  |            |     |       |       |

**2007 TT<sub>161</sub> = 2006 GA<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 60.34406   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22979054 | $\omega$ | 163.65832 | +0.46108930   | +0.88676299 |
| <i>a</i> | 2.6398623  | $\Omega$ | 133.78591 | -0.81906772   | +0.43935787 |
| <i>e</i> | 0.2196827  | <i>i</i> | 2.57020   | -0.34135718   | +0.14358298 |
| <i>P</i> | 4.29       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 16 | 644 | 0.0  | 0.9+ | 2006 05 04 | 291 | 0.5+ | 0.4+ | 2007 10 13 | 704 | 0.0  | 0.1- |
| 2002 06 16 | 644 | 0.3+ | 1.4+ | 2006 05 04 | 291 | 0.6+ | 0.4+ | 2007 10 13 | 704 | 0.4- | 0.7+ |
| 2002 06 16 | 644 | 0.2+ | 1.1+ | 2007 09 20 | 691 | 0.1- | 0.1- | 2007 10 13 | 704 | 0.6- | 0.2+ |
| 2003 10 20 | 691 | 0.0  | 0.4+ | 2007 09 20 | 691 | 0.2- | 0.2- | 2007 10 13 | 704 | 0.7+ | 0.9+ |
| 2003 10 20 | 691 | 0.5- | 0.3+ | 2007 09 20 | 691 | 0.3+ | 0.3- | 2007 10 13 | 704 | 0.2- | 0.1+ |
| 2003 10 20 | 691 | 0.1+ | 1.3+ | 2007 10 04 | 703 | 0.5- | 0.4+ | 2007 10 13 | 703 | 0.4+ | 0.4+ |
| 2006 04 02 | 691 | 0.0  | 0.5+ | 2007 10 04 | 703 | 0.3- | 0.4+ | 2007 10 13 | 703 | 0.2- | 0.6+ |
| 2006 04 02 | 691 | 0.4+ | 0.4+ | 2007 10 04 | 703 | 0.1- | 1.4+ | 2007 10 13 | 703 | 0.4- | 0.0  |
| 2006 04 02 | 691 | 0.1+ | 0.6+ | 2007 10 04 | 703 | 0.6+ | 0.9+ | 2007 10 13 | 703 | 0.1+ | 0.9+ |
| 2006 04 07 | 691 | 0.4+ | 0.3+ | 2007 10 11 | 704 | 0.8+ | 1.1+ | 2007 11 01 | 691 | 0.4- | 0.1- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2006 04 07 | 691 | 0.0  | 0.4+ | 2007 10 11 | 704 | (1.2+ | 2.0+) | 2007 11 01 | 691 | 0.1- | 0.3+ |
| 2006 04 07 | 691 | 0.2+ | 0.3+ | 2007 10 11 | 704 | 0.1+  | 0.3+  | 2007 11 01 | 691 | 0.3- | 0.0  |
| 2006 05 04 | 291 | 1.2- | 0.5- | 2007 10 11 | 704 | (1.0+ | 2.0+) |            |     |      |      |

**2007 TF<sub>162</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 46.27037   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18634363 | $\omega$ | 159.70172 | +0.72858871   | +0.68480873 |
| <i>a</i> | 3.0357058  | $\Omega$ | 157.05921 | -0.63327702   | +0.68126020 |
| <i>e</i> | 0.2210544  | <i>i</i> | 2.05577   | -0.26099562   | +0.25869198 |
| <i>P</i> | 5.29       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.0  | 0.0  | 2007 10 11 | 704 | 0.6- | 0.2+ | 2007 10 19 | G96 | 0.1+ | 0.8- |
| 2000 03 03 | 645 | 0.0  | 0.0  | 2007 10 11 | 704 | 1.1- | 0.4- | 2007 10 19 | G96 | 0.4- | 0.9- |
| 2006 05 21 | G96 | 0.3+ | 0.0  | 2007 10 13 | 703 | 1.0+ | 0.5- | 2007 10 31 | 691 | 0.5- | 0.2- |
| 2006 05 21 | G96 | 0.0  | 0.5+ | 2007 10 13 | 703 | 0.2+ | 0.1+ | 2007 10 31 | 691 | 0.2- | 0.1+ |
| 2006 05 21 | G96 | 0.1+ | 0.1+ | 2007 10 13 | 703 | 0.1+ | 0.3+ | 2007 10 31 | 691 | 0.0  | 0.2+ |
| 2006 05 21 | G96 | 0.2- | 0.1+ | 2007 10 13 | 703 | 1.6+ | 1.8+ | 2007 11 07 | 691 | 0.1+ | 0.1- |
| 2007 09 12 | G96 | 0.4- | 0.1- | 2007 10 14 | 704 | 0.2- | 0.9+ | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2007 09 12 | G96 | 0.3- | 0.1- | 2007 10 14 | 704 | 0.5- | 1.7+ | 2007 11 07 | 691 | 0.1+ | 0.3- |
| 2007 09 12 | G96 | 0.1- | 0.2- | 2007 10 14 | 704 | 0.2+ | 1.2+ | 2007 11 09 | 691 | 0.0  | 0.4- |
| 2007 09 12 | G96 | 0.5- | 0.3- | 2007 10 15 | 703 | 0.5+ | 0.0  | 2007 11 09 | 691 | 0.3+ | 0.4- |
| 2007 10 08 | G96 | 0.5+ | 0.3- | 2007 10 15 | 703 | 1.2+ | 0.9+ | 2007 11 09 | 691 | 0.2+ | 0.2- |
| 2007 10 08 | G96 | 0.3+ | 0.5- | 2007 10 15 | 703 | 0.3- | 0.6+ | 2007 11 13 | 691 | 0.2- | 0.2+ |
| 2007 10 08 | G96 | 0.1+ | 0.3- | 2007 10 15 | 703 | 0.3- | 0.7+ | 2007 11 13 | 691 | 0.2+ | 0.5+ |
| 2007 10 08 | G96 | 0.1- | 0.2- | 2007 10 19 | G96 | 0.0  | 0.6- | 2007 11 13 | 691 | 0.3- | 0.3+ |
| 2007 10 11 | 704 | 0.9- | 0.1- | 2007 10 19 | G96 | 0.6+ | 0.6- |            |     |      |      |

**2007 TM<sub>162</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.06991   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23004341 | $\omega$ | 349.11665 | +0.99286935   | -0.11531875 |
| <i>a</i> | 2.6379275  | $\Omega$ | 17.59105  | +0.11549723   | +0.86786945 |
| <i>e</i> | 0.1229330  | <i>i</i> | 5.73496   | +0.02951008   | +0.48322273 |
| <i>P</i> | 4.28       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 03 24 | 691 | 0.2- | 0.2+ | 2007 10 14 | 704 | 0.9+ | 0.9- | 2007 10 30 | 691 | 0.1+  | 0.1+  |
| 2001 03 24 | 691 | 0.3+ | 0.5+ | 2007 10 14 | 704 | 0.4+ | 0.3- | 2007 10 30 | 691 | 0.0   | 0.1+  |
| 2001 03 24 | 691 | 0.5+ | 0.5+ | 2007 10 14 | 704 | 1.0- | 0.4+ | 2007 11 04 | 691 | 0.1-  | 0.1-  |
| 2003 11 21 | 691 | 0.2+ | 0.2- | 2007 10 14 | 704 | 0.1- | 0.1+ | 2007 11 04 | 691 | (1.7- | 1.1+) |
| 2003 11 21 | 691 | 0.1- | 0.1- | 2007 10 15 | 703 | 0.8- | 0.2- | 2007 11 04 | 691 | 0.2+  | 0.1+  |
| 2003 11 21 | 691 | 0.1- | 0.0  | 2007 10 15 | 703 | 0.9- | 1.0+ | 2007 11 09 | 691 | 0.2+  | 0.0   |
| 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 10 15 | 703 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1+  | 0.0   |
| 2007 09 11 | G96 | 0.6+ | 0.2+ | 2007 10 15 | 703 | 0.7- | 1.3- | 2007 11 09 | 691 | 0.2+  | 0.0   |
| 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.5- | 2007 11 13 | 691 | 0.1-  | 0.1+  |
| 2007 09 11 | G96 | 0.6+ | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.4- | 2007 11 13 | 691 | 0.2+  | 0.1+  |
| 2007 10 04 | 691 | 0.3- | 0.2+ | 2007 10 18 | G96 | 0.3+ | 0.3- | 2007 11 13 | 691 | 0.3-  | 0.1+  |
| 2007 10 04 | 691 | 0.9- | 1.0+ | 2007 10 18 | G96 | 0.5+ | 0.3- | 2007 12 15 | G96 | 1.4+  | 1.1-  |
| 2007 10 04 | 691 | 0.1- | 0.0  | 2007 10 21 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.1+  | 0.1-  |
| 2007 10 11 | 704 | 0.2+ | 1.3- | 2007 10 21 | 691 | 0.2+ | 0.1+ | 2007 12 15 | G96 | 1.0+  | 0.2-  |
| 2007 10 11 | 704 | 0.4+ | 0.5- | 2007 10 21 | 691 | 0.7- | 0.3+ | 2007 12 15 | G96 | 0.4+  | 0.6-  |
| 2007 10 11 | 704 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.1- | 0.4+ |            |     |       |       |

**2007 TB<sub>163</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.37894    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17842238 | $\omega$ | 191.20973 | +0.92012670   | -0.39123709 |
| <i>a</i> | 3.1249026  | $\Omega$ | 191.86646 | +0.36550818   | +0.87382285 |
| <i>e</i> | 0.1335610  | <i>i</i> | 4.83501   | +0.14060806   | +0.28873373 |
| <i>P</i> | 5.52       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 1999 04 11 | 691 | (0.5+ 3.9-) | 2007 10 13 | 691 | 0.3- 0.3- | 2007 10 20 | 704 | 0.8+ 0.1- |
| 1999 04 11 | 691 | 0.1- 0.2+   | 2007 10 14 | 704 | 0.6- 0.6+ | 2007 10 20 | 704 | 0.0 0.9+  |
| 1999 04 11 | 691 | 0.0 0.1-    | 2007 10 14 | 704 | 0.4+ 0.5+ | 2007 10 20 | 704 | 0.2+ 1.1+ |
| 2001 08 22 | 691 | 0.1+ 0.3-   | 2007 10 14 | 704 | 0.1- 1.1+ | 2007 10 21 | 691 | 0.4- 0.0  |
| 2001 08 22 | 691 | 0.3- 0.3-   | 2007 10 14 | 704 | 0.7- 1.1- | 2007 10 21 | 691 | 0.5- 0.2- |
| 2001 08 22 | 691 | 0.5+ 0.0    | 2007 10 14 | 704 | 0.4- 0.1+ | 2007 10 21 | 691 | 0.0 0.1-  |
| 2005 04 16 | 691 | 0.0 0.2+    | 2007 10 15 | 703 | 0.5+ 0.4+ | 2007 10 23 | 691 | 0.1- 0.1- |
| 2005 04 16 | 691 | 0.0 0.7+    | 2007 10 15 | 703 | 0.1+ 0.1+ | 2007 10 23 | 691 | 0.2- 0.3- |
| 2005 04 16 | 691 | 0.2+ 0.2+   | 2007 10 15 | 703 | 0.8+ 0.2- | 2007 10 23 | 691 | 0.4- 0.0  |
| 2007 10 09 | 691 | 0.0 0.1-    | 2007 10 15 | 703 | 0.0 0.2-  | 2007 11 07 | G96 | 0.3+ 0.5- |
| 2007 10 09 | 691 | 0.1- 0.2-   | 2007 10 19 | 691 | 0.5- 0.2- | 2007 11 07 | G96 | 0.3+ 0.4- |
| 2007 10 09 | 691 | 0.3- 0.4-   | 2007 10 19 | 691 | 0.2- 0.3+ | 2007 11 07 | G96 | 0.1+ 0.4- |
| 2007 10 11 | 704 | 0.1- 0.6+   | 2007 10 19 | 691 | 0.1- 0.1- | 2007 11 07 | G96 | 0.1+ 0.6- |
| 2007 10 11 | 704 | 0.0 0.3+    | 2007 10 20 | 703 | 0.3- 0.1+ | 2007 11 14 | 704 | 0.5+ 0.5- |
| 2007 10 11 | 704 | 0.3- 0.0    | 2007 10 20 | 703 | 0.0 0.7+  | 2007 11 14 | 704 | 0.7+ 0.0  |
| 2007 10 11 | 704 | 0.6- 0.3+   | 2007 10 20 | 703 | 0.8- 0.1+ | 2007 11 14 | 704 | 0.1- 0.6+ |
| 2007 10 13 | 691 | 0.1- 0.3+   | 2007 10 20 | 704 | 0.1- 0.9+ | 2007 11 14 | 704 | 1.3+ 0.5- |
| 2007 10 13 | 691 | 0.1- 0.0    | 2007 10 20 | 703 | 1.1+ 0.9- |            |     |           |

2007 TR<sub>163</sub>

|                                         |            |                    |               |             |     |  |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|-----|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    |               |             | MPC |  |  |
| <i>M</i>                                | 23.68682   | (2000.0)           | <i>P</i>      | <i>Q</i>    |     |  |  |
| <i>n</i>                                | 0.29709853 | $\omega$ 253.00368 | +0.99628757   | +0.08183769 |     |  |  |
| <i>a</i>                                | 2.2243462  | $\Omega$ 102.29598 | -0.06485150   | +0.91755428 |     |  |  |
| <i>e</i>                                | 0.2489178  | <i>i</i> 1.56677   | -0.05661592   | +0.38909734 |     |  |  |
| <i>P</i>                                | 3.32       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |     |  |  |

## Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2002 02 09 | 691 | 0.2+ 0.2+ | 2007 10 14 | 704 | 0.3- 0.0  | 2007 10 30 | 703 | 0.6- 0.1+ |
| 2002 02 09 | 691 | 0.4+ 0.3+ | 2007 10 14 | 704 | 0.1- 0.9- | 2007 10 30 | 703 | 0.3- 0.7+ |
| 2002 02 09 | 691 | 0.4- 0.4+ | 2007 10 14 | 691 | 0.3- 0.0  | 2007 10 30 | 703 | 0.0 0.5-  |
| 2004 12 19 | 691 | 0.0 0.6-  | 2007 10 14 | 704 | 0.6- 0.2- | 2007 10 30 | 703 | 0.2- 0.4+ |
| 2004 12 19 | 691 | 0.2- 0.2- | 2007 10 14 | 691 | 0.1+ 0.0  | 2007 11 03 | 699 | 0.5- 0.2+ |
| 2004 12 19 | 691 | 0.1+ 0.0  | 2007 10 14 | 704 | 0.3- 0.1+ | 2007 11 03 | 699 | 0.4+ 0.8- |
| 2007 09 15 | G96 | 0.3+ 0.2- | 2007 10 14 | 704 | 0.8- 0.1- | 2007 11 03 | 699 | 1.1+ 0.0  |
| 2007 09 15 | G96 | 0.4+ 0.1+ | 2007 10 15 | 703 | 0.6+ 0.1+ | 2007 11 03 | 699 | 0.1- 0.1- |
| 2007 09 15 | G96 | 0.4+ 0.0  | 2007 10 15 | 703 | 0.1+ 1.1+ | 2007 11 05 | 704 | 0.1- 1.0+ |
| 2007 09 15 | G96 | 0.3+ 0.1- | 2007 10 15 | 703 | 0.6- 0.5- | 2007 11 05 | 704 | 0.2- 0.7+ |
| 2007 10 06 | 691 | 0.2- 0.1- | 2007 10 15 | 703 | 0.2+ 0.3+ | 2007 11 05 | 704 | 0.3- 0.9+ |
| 2007 10 06 | 691 | 0.0 0.1-  | 2007 10 18 | 699 | 0.5- 1.2+ | 2007 11 05 | 704 | 0.6- 0.5+ |
| 2007 10 06 | 691 | 0.1- 0.2+ | 2007 10 18 | 699 | 1.5+ 0.4- | 2007 11 05 | 704 | 0.1+ 1.2+ |
| 2007 10 10 | 691 | 0.1- 0.1+ | 2007 10 18 | 691 | 0.4+ 0.0  | 2007 11 07 | G96 | 0.5+ 0.3- |
| 2007 10 10 | 691 | 0.2- 0.1- | 2007 10 18 | 691 | 0.2+ 0.1- | 2007 11 07 | G96 | 0.6+ 0.2- |
| 2007 10 10 | 691 | 0.1- 0.1+ | 2007 10 18 | 699 | 0.3+ 0.3- | 2007 11 07 | G96 | 0.3+ 0.3- |
| 2007 10 11 | 704 | 0.1- 0.4+ | 2007 10 18 | 691 | 0.1+ 0.1- | 2007 11 07 | G96 | 0.6+ 0.2- |
| 2007 10 11 | 704 | 0.2+ 0.4+ | 2007 10 18 | 699 | 0.5+ 0.3+ | 2007 11 14 | 704 | 0.9+ 0.8+ |
| 2007 10 11 | 704 | 0.1+ 0.0  | 2007 10 23 | 691 | 0.4- 0.0  | 2007 11 14 | 704 | 0.4+ 0.8- |
| 2007 10 11 | 704 | 1.0+ 0.5+ | 2007 10 23 | 691 | 0.4- 0.2- | 2007 11 14 | 704 | 0.1+ 0.2- |
| 2007 10 14 | 691 | 0.1+ 0.1+ | 2007 10 23 | 691 | 0.3- 0.3- | 2007 11 14 | 704 | 0.1- 0.8- |

2007 TB<sub>164</sub>

|                                         |            |                    |               |             |     |  |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|-----|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    |               |             | MPC |  |  |
| <i>M</i>                                | 77.49611   | (2000.0)           | <i>P</i>      | <i>Q</i>    |     |  |  |
| <i>n</i>                                | 0.27589108 | $\omega$ 80.05321  | +0.19329600   | +0.98107742 |     |  |  |
| <i>a</i>                                | 2.3369223  | $\Omega$ 201.10187 | -0.91185141   | +0.17544856 |     |  |  |
| <i>e</i>                                | 0.2027853  | <i>i</i> 1.77061   | -0.36216523   | +0.08188340 |     |  |  |
| <i>P</i>                                | 3.57       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |     |  |  |

## Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2006 02 24 | 691 | 0.3+ 0.3+ | 2007 09 13 | G96 | 0.2+ 0.1+ | 2007 10 30 | G96 | 0.0 0.3+  |
| 2006 02 24 | 691 | 0.1- 0.1- | 2007 09 13 | G96 | 0.2- 0.1+ | 2007 10 30 | G96 | 1.1- 0.1+ |
| 2006 02 24 | 691 | 0.5- 0.1+ | 2007 09 13 | G96 | 0.1- 0.0  | 2007 10 30 | G96 | 0.5+ 0.1- |
| 2006 02 24 | G96 | 0.3+ 0.5- | 2007 10 04 | 691 | 0.0 0.2+  | 2007 11 01 | 691 | 0.3- 0.0  |
| 2006 02 24 | G96 | 0.0 0.2-  | 2007 10 04 | 691 | 0.1- 0.2- | 2007 11 01 | 691 | 0.1- 0.0  |
| 2006 02 24 | G96 | 0.1+ 0.1- | 2007 10 04 | 691 | 0.0 0.2-  | 2007 11 01 | 691 | 0.2- 0.4+ |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2006 02 24 | G96 | 0.3+ 0.1+ | 2007 10 11 | 704 | 0.8+ 0.4+ | 2007 11 17 | G96 | 0.1- 0.2- |
| 2006 04 02 | 691 | 0.1- 0.3- | 2007 10 11 | 704 | 0.4+ 0.1- | 2007 11 17 | G96 | 0.8+ 0.5+ |
| 2006 04 02 | 691 | 0.0 0.0   | 2007 10 11 | 704 | 0.4+ 0.5- | 2007 11 17 | G96 | 0.5+ 0.3- |
| 2006 04 02 | 691 | 0.1+ 0.0  | 2007 10 12 | 704 | 0.1- 0.3- | 2007 11 17 | G96 | 0.2+ 0.6- |
| 2006 04 21 | G96 | 0.5+ 0.0  | 2007 10 12 | 704 | 0.4+ 0.0  | 2007 12 06 | G96 | 0.1- 0.1+ |
| 2006 04 21 | G96 | 0.1- 0.0  | 2007 10 12 | 704 | 0.4+ 0.7+ | 2007 12 06 | G96 | 0.3- 0.0  |
| 2006 04 21 | G96 | 0.4+ 0.3+ | 2007 10 12 | 704 | 0.1- 0.2- | 2007 12 06 | G96 | 0.2+ 0.1- |
| 2006 04 21 | G96 | 0.2+ 0.4+ | 2007 10 30 | G96 | 0.1+ 0.2- | 2007 12 06 | G96 | 0.4+ 0.3- |

2007 TB<sub>167</sub> = 2005 EW<sub>321</sub>

|                                         |            |                    |               |             |     |  |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|-----|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    |               |             | MPC |  |  |
| <i>M</i>                                | 8.29081    | (2000.0)           | <i>P</i>      | <i>Q</i>    |     |  |  |
| <i>n</i>                                | 0.22855709 | $\omega$ 23.76360  | +0.96431453   | -0.26460584 |     |  |  |
| <i>a</i>                                | 2.6493515  | $\Omega$ 351.56487 | +0.23199911   | +0.86090679 |     |  |  |
| <i>e</i>                                | 0.1008439  | <i>i</i> 3.52253   | +0.12756918   | +0.43453797 |     |  |  |
| <i>P</i>                                | 4.31       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |     |  |  |

## Residuals in seconds of arc

|            |     |           |            |     |             |            |     |           |
|------------|-----|-----------|------------|-----|-------------|------------|-----|-----------|
| 2003 11 21 | 691 | 0.0 0.0   | 2007 10 11 | 699 | 0.4+ 1.0-   | 2007 10 15 | 704 | 0.6+ 0.8+ |
| 2003 11 21 | 691 | 0.0 0.0   | 2007 10 11 | G96 | 0.0 0.2-    | 2007 10 15 | 704 | 0.8+ 0.7+ |
| 2003 11 21 | 691 | 0.1+ 0.0  | 2007 10 11 | G96 | 0.1+ 0.5-   | 2007 10 15 | 704 | 0.3+ 0.1+ |
| 2005 03 08 | G96 | 0.3- 0.4- | 2007 10 11 | 699 | (2.3+ 0.6+) | 2007 10 15 | 704 | 0.5- 0.3+ |
| 2005 03 08 | G96 | 0.4- 0.1- | 2007 10 11 | G96 | 0.1+ 0.3-   | 2007 10 16 | 691 | 0.3- 0.3- |
| 2005 03 08 | G96 | 0.1- 0.4- | 2007 10 11 | G96 | 0.3+ 0.4-   | 2007 10 16 | 691 | 0.1- 0.1- |
| 2005 03 08 | G96 | 0.3- 0.2+ | 2007 10 12 | 704 | 0.1+ 0.2-   | 2007 10 16 | 691 | 0.2+ 0.1+ |
| 2005 04 02 | G96 | 0.2- 0.1+ | 2007 10 12 | 704 | 0.1- 0.7+   | 2007 10 31 | 691 | 0.9+ 0.2+ |
| 2005 04 02 | G96 | 0.1- 0.2+ | 2007 10 12 | 704 | 0.1- 0.1-   | 2007 10 31 | 691 | 0.1- 0.4- |
| 2005 04 02 | G96 | 0.0 0.2+  | 2007 10 12 | 704 | 0.6- 0.9+   | 2007 10 31 | 691 | 0.2- 0.2- |
| 2005 04 02 | G96 | 1.3+ 0.2- | 2007 10 12 | 704 | 0.0 0.1-    | 2007 11 02 | 691 | 0.2- 0.5+ |
| 2007 09 14 | G96 | 0.6+ 0.3- | 2007 10 12 | 704 | 0.2- 0.9+   | 2007 11 02 | 691 | 0.1- 0.0  |
| 2007 09 14 | G96 | 0.2+ 0.4- | 2007 10 12 | 704 | 0.2- 0.2-   | 2007 11 02 | 691 | 0.5- 0.2+ |
| 2007 09 14 | G96 | 0.2+ 0.3- | 2007 10 12 | 704 | 0.2+ 0.7+   | 2007 11 05 | 691 | 0.1- 0.4- |
| 2007 09 14 | G96 | 0.3+ 0.3- | 2007 10 12 | 704 | 0.7+ 0.3+   | 2007 11 05 | 691 | 0.1- 0.1+ |
| 2007 10 04 | 691 | 0.5- 0.0  | 2007 10 12 | 704 | 0.0 0.3+    | 2007 11 05 | 691 | 0.3- 0.3- |
| 2007 10 04 | 691 | 0.1- 0.1- | 2007 10 13 | 691 | 0.9- 0.3-   | 2007 11 07 | 691 | 0.4- 0.1- |
| 2007 10 04 | 691 | 0.3- 0.0  | 2007 10 13 | 691 | 0.6- 0.2+   | 2007 11 07 | 691 | 0.3- 0.1- |
| 2007 10 11 | 699 | 0.7+ 0.0  | 2007 10 13 | 691 | 0.1- 0.1+   | 2007 11 07 | 691 | 0.2- 0.1- |
| 2007 10 11 | 699 | 0.2+ 1.9- | 2007 10 15 | 704 | 0.5+ 1.1+   |            |     |           |

2007 TQ<sub>168</sub>

|                                         |            |                    |               |             |     |  |  |
|-----------------------------------------|------------|--------------------|---------------|-------------|-----|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |                    |               |             | MPC |  |  |
| <i>M</i>                                | 50.98829   | (2000.0)           | <i>P</i>      | <i>Q</i>    |     |  |  |
| <i>n</i>                                | 0.20380463 | $\omega$ 101.81448 | +0.90067759   | +0.43000563 |     |  |  |
| <i>a</i>                                | 2.8597409  | $\Omega$ 232.74928 | -0.42284843   | +0.83456567 |     |  |  |
| <i>e</i>                                | 0.0408249  | <i>i</i> 4.48533   | -0.09989542   | +0.34437668 |     |  |  |
| <i>P</i>                                | 4.84       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |     |  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 02 | 599 | 0.4+ | 0.1- | 2005 05 14 | G96 | 0.1+ | 0.2- | 2007 10 12 | 704 | 0.3+ | 0.9+ |
| 2002 10 02 | 599 | 0.1+ | 0.3+ | 2007 10 08 | 691 | 0.2- | 0.4+ | 2007 10 15 | 704 | 1.0- | 0.0  |
| 2002 10 02 | 599 | 0.0  | 0.1- | 2007 10 08 | 691 | 0.0  | 0.3- | 2007 10 15 | 704 | 0.3- | 0.9+ |
| 2002 10 02 | 599 | 0.7- | 0.5+ | 2007 10 08 | 691 | 1.3- | 1.9- | 2007 10 15 | 704 | 0.5- | 0.1+ |
| 2004 01 16 | 644 | 0.1- | 0.0  | 2007 10 08 | 691 | 0.0  | 0.2- | 2007 10 16 | 691 | 0.1+ | 0.1- |
| 2004 01 16 | 644 | 0.1- | 0.0  | 2007 10 08 | 691 | 0.1- | 0.6- | 2007 10 16 | 691 | 0.4- | 0.4- |
| 2004 01 16 | 644 | 0.2+ | 0.1- | 2007 10 08 | 691 | 0.2- | 0.2- | 2007 10 16 | 691 | 0.4+ | 1.9- |
| 2005 03 14 | G96 | 0.9+ | 0.1- | 2007 10 12 | 691 | 0.4- | 0.2- | 2007 10 20 | 691 | 0.1- | 0.2- |
| 2005 03 14 | G96 | 0.4- | 0.3+ | 2007 10 12 | 691 | 0.1- | 0.2- | 2007 10 20 | 691 | 0.4- | 0.1- |
| 2005 03 14 | G96 | 0.4+ | 0.1- | 2007 10 12 | 691 | 0.0  | 0.5+ | 2007 10 20 | 691 | 0.5- | 0.1+ |
| 2005 03 14 | G96 | 0.8- | 0.5+ | 2007 10 12 | 704 | 0.6+ | 0.8+ | 2007 11 02 | G96 | 0.0  | 0.4- |
| 2005 05 14 | G96 | 0.2- | 0.1+ | 2007 10 12 | 704 | 1.6+ | 1.0+ | 2007 11 02 | G96 | 0.4+ | 0.2- |
| 2005 05 14 | G96 | 0.2- | 0.3+ | 2007 10 12 | 704 | 0.5+ | 0.4+ | 2007 11 02 | G96 | 0.3+ | 0.4- |
| 2005 05 14 | G96 | 0.4+ | 0.2+ | 2007 10 12 | 704 | 0.6+ | 0.9+ | 2007 11 02 | G96 | 0.7+ | 1.7+ |

2007 DEC. 24

M.P.O. 129869

**2007 TW<sub>168</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.04844    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30118205 | $\omega$ 85.18884  | +0.85825747   | -0.51058702 |
| <i>a</i> | 2.2041949  | $\Omega$ 305.50484 | +0.44196908   | +0.78673221 |
| <i>e</i> | 0.1638084  | <i>i</i> 3.65627   | +0.26087822   | +0.34691976 |
| <i>P</i> | 3.27       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 12 11 | 691 | 0.1- | 0.1- | 2007 10 14 | 703 | 0.4+  | 0.8-  | 2007 11 08 | 704 | 0.5-  | 0.1-  |
| 2004 12 11 | 691 | 0.1- | 0.3- | 2007 10 15 | 704 | 0.2-  | 0.7+  | 2007 11 08 | 704 | 0.3-  | 0.2+  |
| 2004 12 11 | 691 | 0.0  | 0.1- | 2007 10 15 | 704 | 0.2+  | 0.1+  | 2007 11 08 | 704 | 0.0   | 0.1-  |
| 2005 01 18 | 691 | 0.0  | 0.5+ | 2007 10 15 | 704 | 0.4-  | 0.9-  | 2007 11 08 | 704 | 0.1+  | 0.5+  |
| 2005 01 18 | 691 | 0.2+ | 0.2- | 2007 10 15 | 704 | 0.3+  | 0.4+  | 2007 11 08 | 704 | 0.3-  | 0.4+  |
| 2005 01 18 | 691 | 0.1- | 0.0  | 2007 10 15 | 704 | 0.7-  | 0.9-  | 2007 11 12 | 703 | (2.0- | 0.2+) |
| 2007 09 25 | G96 | 0.4+ | 0.5- | 2007 10 21 | 703 | 0.0   | 0.9-  | 2007 11 12 | 703 | 0.1-  | 0.3-  |
| 2007 09 25 | G96 | 0.5+ | 0.7- | 2007 10 21 | 703 | (1.9+ | 0.0 ) | 2007 11 12 | 703 | 0.0   | 0.6-  |
| 2007 09 25 | G96 | 0.8+ | 0.6- | 2007 10 21 | 703 | 0.7+  | 1.0-  | 2007 11 12 | 703 | 0.1-  | 0.7+  |
| 2007 09 25 | G96 | 0.5+ | 0.5- | 2007 10 21 | 703 | 0.4+  | 1.4-  | 2007 11 13 | 699 | 0.4+  | 0.6-  |
| 2007 10 07 | 691 | 0.0  | 0.1- | 2007 11 02 | 704 | 0.8+  | 0.8+  | 2007 11 13 | 699 | 0.3-  | 0.2-  |
| 2007 10 07 | 691 | 0.2+ | 0.2+ | 2007 11 02 | 704 | 0.7+  | 0.4+  | 2007 11 13 | 699 | 0.3-  | 0.1-  |
| 2007 10 07 | 691 | 0.1- | 0.2- | 2007 11 02 | 704 | 0.1+  | 0.1+  | 2007 11 13 | 699 | 0.2-  | 0.4-  |
| 2007 10 11 | 691 | 0.4- | 0.1- | 2007 11 02 | 704 | 0.3+  | 0.1-  | 2007 11 17 | 704 | 0.1+  | 0.6+  |
| 2007 10 11 | 691 | 0.1- | 1.0+ | 2007 11 02 | 704 | 0.5+  | 0.7+  | 2007 11 17 | 704 | (2.0- | 0.0 ) |
| 2007 10 11 | 691 | 0.3- | 0.1- | 2007 11 02 | 106 | 0.4+  | 0.7-  | 2007 11 17 | 704 | (1.6- | 0.4-) |
| 2007 10 12 | 704 | 0.2+ | 0.0  | 2007 11 02 | 106 | 0.2+  | 0.5-  | 2007 11 17 | 704 | 1.1+  | 0.7+  |
| 2007 10 12 | 704 | 0.9- | 0.0  | 2007 11 02 | 106 | 0.9+  | 0.4+  | 2007 11 17 | 704 | 0.1+  | 0.6+  |
| 2007 10 12 | 704 | 0.3+ | 0.1+ | 2007 11 02 | 106 | 0.2+  | 0.3-  | 2007 11 20 | 704 | 0.1+  | 0.4+  |
| 2007 10 12 | 704 | 0.5- | 0.0  | 2007 11 03 | 704 | 0.1-  | 0.2+  | 2007 11 20 | 704 | 1.1-  | 0.0   |
| 2007 10 12 | 704 | 0.2+ | 0.5- | 2007 11 03 | 704 | (1.8+ | 0.2-) | 2007 11 20 | 704 | 0.3-  | 0.7+  |
| 2007 10 14 | 703 | 1.2- | 0.4+ | 2007 11 03 | 704 | (0.1+ | 1.7-) | 2007 12 13 | A77 | 0.2-  | 0.2-  |
| 2007 10 14 | 703 | 1.1- | 0.1+ | 2007 11 03 | 704 | 0.8-  | 0.7+  | 2007 12 13 | A77 | 0.1-  | 0.7-  |
| 2007 10 14 | 703 | 0.5+ | 1.1+ | 2007 11 03 | 704 | 0.3+  | 0.4+  | 2007 12 13 | A77 | 0.4+  | 0.8-  |

**2007 TB<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.40605  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17776483 | $\omega$ 38.84584  | +0.10391510   | +0.96347409 |
| <i>a</i> | 3.1326040  | $\Omega$ 238.44047 | -0.96943019   | +0.04265761 |
| <i>e</i> | 0.1576767  | <i>i</i> 16.83761  | -0.22227633   | +0.26438231 |
| <i>P</i> | 5.54       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 29 | 644 | 0.3- | 0.4+ | 2006 05 25 | 703 | 0.5+  | 0.6+  | 2007 10 15 | 704 | 0.9+ | 0.1- |
| 2001 09 29 | 644 | 0.5- | 0.4+ | 2006 06 21 | 703 | 0.6-  | 0.3+  | 2007 11 02 | 691 | 0.6- | 0.0  |
| 2001 09 29 | 644 | 0.5+ | 0.0  | 2006 06 21 | 703 | 1.6-  | 1.1+  | 2007 11 02 | 691 | 0.2- | 0.3+ |
| 2001 10 26 | 644 | 0.1+ | 0.5- | 2006 06 21 | 703 | 0.1-  | 0.9-  | 2007 11 02 | 691 | 0.1- | 0.2- |
| 2001 10 26 | 644 | 0.3+ | 0.0  | 2006 06 21 | 703 | (1.4- | 2.4+) | 2007 11 04 | 691 | 0.2- | 0.1+ |
| 2001 10 26 | 644 | 0.3+ | 0.1- | 2006 09 14 | 644 | 0.4+  | 0.1+  | 2007 11 04 | 691 | 0.3- | 0.1- |
| 2002 12 10 | 644 | 0.1- | 0.5+ | 2006 09 14 | 644 | 0.6+  | 0.0   | 2007 11 04 | 691 | 0.5- | 0.1- |
| 2002 12 10 | 644 | 0.7- | 0.6+ | 2006 09 14 | 644 | 0.3+  | 0.1+  | 2007 11 18 | 691 | 0.4- | 0.1- |
| 2002 12 10 | 644 | 0.0  | 0.5+ | 2007 09 26 | G96 | 0.7+  | 0.3-  | 2007 11 18 | 691 | 0.2- | 1.2+ |
| 2005 04 15 | 703 | 0.5- | 1.1+ | 2007 09 26 | G96 | 0.6+  | 0.5-  | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2005 04 15 | 703 | 0.5- | 0.1- | 2007 09 26 | G96 | 0.4+  | 0.3-  | 2007 11 18 | 703 | 0.1+ | 0.3+ |
| 2005 04 15 | 703 | 0.4+ | 0.7+ | 2007 09 26 | G96 | 0.4+  | 0.4-  | 2007 11 18 | 703 | 0.1+ | 0.3- |
| 2005 04 15 | 703 | 0.1+ | 1.0+ | 2007 10 09 | 691 | 0.5-  | 0.5+  | 2007 11 18 | 704 | 0.3- | 0.4+ |
| 2005 05 10 | 699 | 0.2+ | 0.1+ | 2007 10 09 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 703 | 0.5+ | 0.3- |
| 2005 05 10 | 699 | 1.0+ | 0.8+ | 2007 10 09 | 691 | 0.1+  | 0.1-  | 2007 11 18 | 703 | 0.1+ | 0.8+ |
| 2005 05 10 | 699 | 0.5+ | 0.5+ | 2007 10 12 | 704 | 0.8+  | 0.7+  | 2007 11 18 | 704 | 0.0  | 0.5+ |
| 2005 05 10 | 699 | 0.1+ | 1.1+ | 2007 10 12 | 704 | 0.2+  | 0.4+  | 2007 11 18 | 704 | 0.4- | 1.0+ |
| 2006 05 25 | 703 | 1.0- | 0.5+ | 2007 10 12 | 704 | 0.5-  | 0.4-  | 2007 11 18 | 704 | 0.3- | 0.5+ |
| 2006 05 25 | 703 | 0.4- | 0.1+ | 2007 10 15 | 704 | 0.4-  | 0.8+  |            |     |      |      |
| 2006 05 25 | 703 | 0.5+ | 0.5+ | 2007 10 15 | 704 | 0.7+  | 0.1+  |            |     |      |      |

**2007 TD<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.28187  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.28427077 | $\omega$ 90.80352 | -0.41506339   | -0.90826408 |
| <i>a</i> | 2.2907687  | $\Omega$ 23.93653 | +0.77448839   | -0.38314369 |
| <i>e</i> | 0.1578939  | <i>i</i> 7.46526  | +0.47737838   | -0.16809900 |
| <i>P</i> | 3.47       | <i>H</i> 17.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 11 30 | 645 | 0.2+  | 0.4-  | 2007 10 15 | 703 | 0.5+  | 0.7+  | 2007 11 07 | 703 | 0.9+  | 0.4+  |
| 2000 11 30 | 645 | 0.3+  | 0.4-  | 2007 10 15 | 704 | 0.3+  | 0.7+  | 2007 11 07 | 703 | 0.2+  | 0.2-  |
| 2005 03 01 | 703 | 0.2-  | 0.5-  | 2007 10 15 | 703 | 0.6-  | 0.0   | 2007 11 07 | 703 | 0.0   | 1.2+  |
| 2005 03 01 | 703 | 0.5+  | 0.9-  | 2007 10 15 | 703 | 0.2-  | 1.0+  | 2007 11 18 | 704 | 0.2-  | 0.4+  |
| 2005 03 01 | 703 | 1.0+  | 0.6-  | 2007 10 15 | 691 | 0.6-  | 0.3+  | 2007 11 18 | 704 | 0.1+  | 0.3-  |
| 2005 03 01 | 703 | 1.4-  | 0.4+  | 2007 10 15 | 691 | 0.3-  | 0.0   | 2007 11 18 | 704 | 0.4-  | 0.1-  |
| 2005 03 16 | 703 | 0.1-  | 0.3-  | 2007 10 15 | 691 | 0.3-  | 0.4+  | 2007 11 18 | 704 | 0.9-  | 1.4+  |
| 2005 03 16 | 703 | 0.6-  | 0.8+  | 2007 10 20 | 703 | 0.2+  | 0.6-  | 2007 11 19 | 691 | 0.0   | 0.2-  |
| 2005 03 16 | 703 | 0.4-  | 0.0   | 2007 10 20 | 703 | 0.1+  | 0.5-  | 2007 11 19 | 691 | 0.2-  | 0.3-  |
| 2005 03 16 | 703 | 1.0+  | 0.3+  | 2007 10 20 | 703 | 1.0+  | 0.7-  | 2007 11 19 | 691 | 0.2-  | 0.1-  |
| 2007 09 12 | G96 | 0.2+  | 0.3-  | 2007 10 20 | 703 | (1.1- | 1.5-) | 2007 12 12 | 704 | 0.4-  | 0.5+  |
| 2007 09 12 | G96 | 0.8+  | 0.6+  | 2007 11 01 | D35 | 0.8+  | 0.1-  | 2007 12 12 | 704 | 0.4-  | 0.3+  |
| 2007 09 12 | G96 | 0.1-  | 0.1-  | 2007 11 01 | D35 | 0.5+  | 0.2+  | 2007 12 12 | 704 | 0.6+  | 0.9+  |
| 2007 09 12 | G96 | 0.5-  | 0.7-  | 2007 11 01 | D35 | 0.2+  | 1.1+  | 2007 12 12 | 704 | 0.4-  | 0.6+  |
| 2007 10 07 | 691 | 0.0   | 0.2-  | 2007 11 02 | 691 | 0.0   | 0.1-  | 2007 12 13 | 704 | (0.7+ | 1.6+) |
| 2007 10 07 | 691 | 0.1-  | 0.1+  | 2007 11 02 | 691 | 0.5-  | 0.3+  | 2007 12 13 | 704 | 0.6+  | 0.7+  |
| 2007 10 07 | 691 | 0.5-  | 0.1-  | 2007 11 02 | 691 | 0.0   | 0.1-  | 2007 12 13 | 704 | 0.3+  | 1.2+  |
| 2007 10 12 | 704 | (1.6+ | 0.3-) | 2007 11 06 | 691 | 0.1-  | 0.1-  | 2007 12 13 | 704 | (0.4- | 1.7+) |
| 2007 10 12 | 704 | 0.1+  | 0.2+  | 2007 11 06 | 691 | 0.1-  | 0.1-  | 2007 12 13 | 704 | 0.0   | 1.0+  |
| 2007 10 12 | 704 | 0.5+  | 0.3+  | 2007 11 06 | 691 | 0.3-  | 0.0   | 2007 12 16 | 704 | 0.0   | 1.3+  |
| 2007 10 15 | 704 | 0.3+  | 0.3+  | 2007 11 07 | 704 | (0.1- | 1.7+) | 2007 12 16 | 704 | 0.3+  | 0.0   |
| 2007 10 15 | 704 | 0.0   | 0.1+  | 2007 11 07 | 704 | 0.6+  | 0.4+  | 2007 12 16 | 704 | 0.2+  | 1.3+  |
| 2007 10 15 | 704 | 0.1-  | 0.1-  | 2007 11 07 | 704 | 0.6+  | 0.5+  | 2007 12 16 | 704 | 0.4-  | 0.4+  |
| 2007 10 15 | 704 | 0.6+  | 0.7-  | 2007 11 07 | 704 | 0.1-  | 0.8+  |            |     |       |       |
| 2007 10 15 | 703 | 0.7+  | 1.3+  | 2007 11 07 | 704 | 0.6-  | 1.4+  |            |     |       |       |

**2007 TK<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.04199   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18299992 | $\omega$ 326.37043 | +0.97630407   | +0.07441627 |
| <i>a</i> | 3.0725723  | $\Omega$ 31.33748  | +0.08388026   | +0.73547281 |
| <i>e</i> | 0.0587740  | <i>i</i> 22.99942  | -0.19948550   | +0.67345524 |
| <i>P</i> | 5.39       | <i>H</i> 15.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 10 16 | 121 | 1.0+ | 0.6- | 2007 10 18 | 699 | 1.5- | 0.5+ | 2007 11 03 | 704 | 0.9+  | 1.2-  |
| 1996 10 16 | 121 | 0.5+ | 1.0- | 2007 10 18 | 699 | 0.3- | 0.7- | 2007 11 03 | 704 | 0.5+  | 0.1+  |
| 2005 05 16 | 644 | 0.2+ | 0.4+ | 2007 10 18 | 699 | 1.0- | 0.4- | 2007 11 03 | 704 | 1.5+  | 0.5+  |
| 2005 05 16 | 644 | 0.3+ | 0.4+ | 2007 10 18 | 699 | 0.6- | 0.5+ | 2007 11 03 | 704 | (2.6+ | 0.5-) |
| 2005 05 16 | 644 | 0.7+ | 0.2+ | 2007 10 20 | 703 | 0.9+ | 1.3+ | 2007 11 04 | 691 | 0.3-  | 0.1+  |
| 2005 05 16 | 644 | 0.2+ | 0.4+ | 2007 10 20 | 703 | 0.4+ | 0.6- | 2007 11 04 | 691 | 0.2-  | 0.2-  |
| 2005 05 16 | 644 | 0.2+ | 0.6+ | 2007 10 20 | 703 | 0.5- | 0.2+ | 2007 11 04 | 691 | 0.4-  | 0.3+  |
| 2005 05 16 | 644 | 0.5+ | 0.4+ | 2007 10 20 | 703 | 0.9- | 0.3+ | 2007 11 08 | 704 | 0.3+  | 1.3-  |
| 2007 09 12 | G96 | 0.3+ | 0.5- | 2007 11 02 | 691 | 0.4- | 0.1+ | 2007 11 08 | 704 | 0.8+  | 1.0-  |
| 2007 09 12 | G96 | 0.5+ | 0.3- | 2007 11 02 | 691 | 0.3- | 0.0  | 2007 11 08 | 704 | 1.2+  | 0.6-  |
| 2007 09 12 | G96 | 0.5+ | 0.6- | 2007 11 02 | 691 | 0.4- | 0.0  | 2007 11 08 | 704 | 0.5+  | 0.9-  |
| 2007 10 07 | 691 | 0.3- | 0.2+ | 2007 11 02 | 704 | 0.4- | 0.3+ | 2007 11 08 | 704 | (2.1+ | 0.1-) |
| 2007 10 07 | 691 | 0.7- | 0.3- | 2007 11 02 | 704 | 0.1+ | 0.5+ | 2007 11 09 | G96 | 0.2-  | 0.0   |
| 2007 10 07 | 691 | 0.1- | 0.1- | 2007 11 02 | 704 | 0.0  | 0.6+ | 2007 11 09 | G96 | 0.2-  | 0.2-  |
| 2007 10 12 | 704 | 0.7+ | 0.4+ | 2007 11 02 | 704 | 0.2- | 0.9+ | 2007 11 09 | G96 | 0.0   | 0.1-  |
| 2007 10 12 | 704 | 0.1+ | 0.1+ | 2007 11 02 | 704 | 0.5+ | 0.2+ | 2007 11 09 | G96 | 0.0   | 0.0   |
| 2007 10 12 | 704 | 0.6+ | 0.6+ | 2007 11 02 | 703 | 0.1- | 0.5+ | 2007 11 15 | 699 | 1.5+  | 0.9+  |
| 2007 10 12 | 704 | 0.4+ | 0.4+ | 2007 11 02 | 703 | 0.6+ | 0.6- | 2007 11 15 | 699 | 1.7+  | 0.8-  |
| 2007 10 15 | 704 | 0.5+ | 1.3+ | 2007 11 02 | 703 | 0.8+ | 1.2- | 2007 11 15 | 699 | 1.1+  | 0.3+  |
| 2007 10 15 | 704 | 1.2+ | 1.2+ | 2007 11 02 | 703 | 0.4- | 0.2- | 2007 11 15 | 699 | 0.7+  | 0.4+  |
| 2007 10 15 | 691 | 0.4- | 0.0  | 2007 11 02 | A77 | 0.0  | 0.3+ | 2007 11 17 | 704 | 1.1-  | 0.4-  |
| 2007 10 15 | 704 | 0.0  | 0.6+ | 2007 11 02 | A77 | 0.3+ | 0.5+ | 2007 11 17 | 704 | 0.4+  | 0.3-  |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 15 | 691 | 0.3− | 0.0  | 2007 11 03 | A77 | 0.2− | 0.5+ | 2007 11 17 | 704 | 0.5− | 0.4+ |
| 2007 10 15 | 704 | 0.2− | 1.1+ | 2007 11 03 | 704 | 0.2+ | 1.2+ | 2007 11 17 | 704 | 0.6− | 0.1+ |
| 2007 10 15 | 704 | 1.0+ | 0.3+ | 2007 11 03 | 704 | 0.8+ | 0.6− |            |     |      |      |
| 2007 10 15 | 691 | 0.3− | 0.2− | 2007 11 03 | 704 | 0.5+ | 0.6+ |            |     |      |      |

**2007 TB<sub>171</sub>**

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 65.63206   |          | (2000.0)  | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.21343030 | <i>ω</i> | 297.48150 |          | +0.66479204 |          | +0.74696771 |
| <i>a</i>                                | 2.7730988  | <i>Ω</i> | 14.19748  |          | −0.67094650 |          | +0.60264484 |
| <i>e</i>                                | 0.0623629  | <i>i</i> | 2.22635   |          | −0.32845446 |          | +0.28081745 |
| <i>P</i>                                | 4.62       | <i>H</i> | 16.5      | <i>G</i> | 0.15        | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 18 | 691 | 0.1+ | 0.3− | 2007 09 11 | G96 | 0.0  | 0.1− | 2007 10 13 | A77 | 0.7+ | 0.3+ |
| 1998 11 18 | 691 | 0.2− | 0.1− | 2007 09 11 | G96 | 0.6− | 0.5− | 2007 10 18 | G96 | 0.2− | 0.1− |
| 1998 11 18 | 691 | 0.1− | 0.3− | 2007 10 07 | G96 | 0.2+ | 0.4− | 2007 10 18 | G96 | 0.2− | 0.1+ |
| 1998 11 25 | 691 | 0.4+ | 0.2− | 2007 10 07 | G96 | 0.2− | 0.2− | 2007 10 18 | G96 | 0.2− | 0.3− |
| 1998 11 25 | 691 | 0.0  | 0.2− | 2007 10 07 | G96 | 0.3+ | 0.4− | 2007 10 18 | G96 | 0.1− | 0.1− |
| 1998 11 25 | 691 | 0.2+ | 0.1− | 2007 10 07 | G96 | 0.3− | 0.2− | 2007 10 18 | G96 | 0.2+ | 0.3− |
| 2005 03 10 | G96 | 0.0  | 0.3+ | 2007 10 11 | 699 | 1.3− | 0.2+ | 2007 10 18 | G96 | 0.2− | 0.0  |
| 2005 03 10 | G96 | 0.1+ | 0.0  | 2007 10 11 | 699 | 0.8+ | 1.1− | 2007 10 18 | G96 | 0.0  | 0.0  |
| 2005 03 10 | G96 | 0.1− | 0.1− | 2007 10 11 | 699 | 0.4− | 1.4+ | 2007 10 18 | G96 | 0.2+ | 0.0  |
| 2005 03 10 | G96 | 0.1+ | 0.1− | 2007 10 11 | 699 | 0.4+ | 0.9+ | 2007 10 19 | G96 | 0.0  | 0.0  |
| 2005 04 10 | 691 | 0.3+ | 0.5+ | 2007 10 12 | A77 | 0.6+ | 0.0  | 2007 10 19 | G96 | 0.4+ | 0.3+ |
| 2005 04 10 | 691 | 0.0  | 0.2+ | 2007 10 12 | A77 | 0.0  | 0.7+ | 2007 10 19 | G96 | 0.2+ | 0.2− |
| 2005 04 10 | 691 | 0.2+ | 0.4+ | 2007 10 12 | A77 | 0.0  | 0.7+ | 2007 10 19 | G96 | 0.0  | 0.2− |
| 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 10 13 | A77 | 0.6− | 0.6+ |            |     |      |      |
| 2007 09 11 | G96 | 0.2+ | 0.1+ | 2007 10 13 | A77 | 0.6− | 0.6+ |            |     |      |      |

**2007 TQ<sub>172</sub>**

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 340.21614  |          | (2000.0)  | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.18080738 | <i>ω</i> | 270.15786 |          | +0.36753530 |          | −0.91188976 |
| <i>a</i>                                | 3.0973618  | <i>Ω</i> | 155.62637 |          | +0.92649205 |          | +0.37608014 |
| <i>e</i>                                | 0.2256222  | <i>i</i> | 26.27506  |          | −0.08081023 |          | +0.16438002 |
| <i>P</i>                                | 5.45       | <i>H</i> | 15.2      | <i>G</i> | 0.15        | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 23 | 691 | 0.0   | 0.1−  | 2007 10 12 | 703 | 0.3+ | 0.6− | 2007 10 18 | 704 | 0.0  | 0.0  |
| 2001 08 23 | 691 | 0.3+  | 0.1+  | 2007 10 12 | 703 | 0.3+ | 0.3− | 2007 10 18 | 704 | 0.3+ | 0.8− |
| 2001 08 23 | 691 | 0.2−  | 0.0   | 2007 10 12 | 703 | 0.2− | 0.1− | 2007 10 18 | 704 | 0.1− | 0.2− |
| 2007 08 21 | E12 | 0.8+  | 0.5−  | 2007 10 13 | 704 | 0.3+ | 0.7− | 2007 10 18 | 704 | 0.5+ | 1.0− |
| 2007 08 21 | E12 | 0.4+  | 0.3+  | 2007 10 13 | 704 | 0.3− | 0.2+ | 2007 10 18 | 704 | 0.2− | 0.4− |
| 2007 08 21 | E12 | 0.0   | 0.1−  | 2007 10 13 | 704 | 0.4+ | 0.2− | 2007 11 14 | 703 | 0.1− | 0.3+ |
| 2007 08 21 | E12 | 0.2+  | 0.6+  | 2007 10 13 | 704 | 0.3− | 0.2− | 2007 11 14 | 703 | 0.1− | 0.6− |
| 2007 09 15 | 703 | 0.6−  | 0.2+  | 2007 10 13 | 704 | 1.0− | 0.1− | 2007 11 14 | 703 | 0.5− | 0.9+ |
| 2007 09 15 | 703 | 0.3−  | 0.0   | 2007 10 13 | 703 | 0.7+ | 1.2+ | 2007 11 14 | 703 | 0.4− | 0.1− |
| 2007 09 15 | 703 | 1.0−  | 0.5+  | 2007 10 13 | 703 | 0.2− | 0.7+ | 2007 12 11 | E12 | 0.1+ | 0.3− |
| 2007 09 15 | 703 | (1.3− | 1.7+) | 2007 10 13 | 703 | 0.0  | 0.1+ | 2007 12 11 | E12 | 0.5+ | 0.5+ |
| 2007 10 12 | 703 | 0.1−  | 0.2+  | 2007 10 13 | 703 | 1.2+ | 0.7+ | 2007 12 11 | E12 | 0.5− | 0.0  |

**2007 TH<sub>173</sub>**

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 317.53068  |          | (2000.0)  | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.22664913 | <i>ω</i> | 232.30334 |          | +0.34046151 |          | −0.93982553 |
| <i>a</i>                                | 2.6641991  | <i>Ω</i> | 197.85579 |          | +0.88930702 |          | +0.33171670 |
| <i>e</i>                                | 0.0581575  | <i>i</i> | 5.33878   |          | +0.30531783 |          | +0.08180469 |
| <i>P</i>                                | 4.35       | <i>H</i> | 16.7      | <i>G</i> | 0.15        | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 11 01 | 691 | 0.2− | 0.4+ | 2005 04 12 | G96 | 0.3− | 0.2+ | 2007 10 13 | D35 | 0.2+ | 0.3+ |
| 1994 11 01 | 691 | 0.1− | 0.2+ | 2005 04 12 | G96 | 0.5− | 0.1− | 2007 10 13 | D35 | 0.0  | 0.2+ |
| 1994 11 01 | 691 | 0.0  | 0.1+ | 2005 04 12 | G96 | 0.0  | 0.2− | 2007 10 13 | D35 | 0.0  | 0.2+ |
| 2001 04 27 | 691 | 0.1− | 0.7+ | 2007 09 13 | G96 | 0.4+ | 0.4− | 2007 10 15 | 691 | 0.1− | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 27 | 691 | 0.2+ | 0.4+ | 2007 09 13 | G96 | 0.0  | 0.2− | 2007 10 15 | 691 | 0.3− | 0.2+ |
| 2001 04 27 | 691 | 0.2+ | 0.6+ | 2007 09 13 | G96 | 0.1+ | 0.3− | 2007 10 15 | 691 | 0.1− | 0.2+ |
| 2005 03 13 | 691 | 0.1+ | 0.3+ | 2007 09 13 | G96 | 0.3+ | 0.2− | 2007 10 30 | G96 | 0.1+ | 0.1− |
| 2005 03 13 | 691 | 0.6+ | 0.0  | 2007 10 04 | 691 | 0.2− | 0.3+ | 2007 10 30 | G96 | 0.2− | 0.1+ |
| 2005 03 13 | 691 | 0.2+ | 0.4+ | 2007 10 04 | 691 | 0.2− | 0.2− | 2007 10 30 | G96 | 0.4− | 0.5+ |
| 2005 04 12 | G96 | 0.0  | 0.5− | 2007 10 04 | 691 | 0.2− | 0.1− | 2007 10 30 | G96 | 0.3+ | 0.1− |

**2007 TA<sub>174</sub> = 2000 KC<sub>32</sub>**

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 42.24706   |          | (2000.0)  | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.30172026 | <i>ω</i> | 255.87624 |          | +0.75303795 |          | +0.64782296 |
| <i>a</i>                                | 2.2015729  | <i>Ω</i> | 63.60957  |          | −0.54316212 |          | +0.71081393 |
| <i>e</i>                                | 0.1664653  | <i>i</i> | 7.38553   |          | −0.37136069 |          | +0.27398719 |
| <i>P</i>                                | 3.27       | <i>H</i> | 17.5      | <i>G</i> | 0.15        | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 28 | 704 | 0.2−  | 0.3+  | 2004 11 17 | 599 | 0.2− | 0.3+ | 2007 10 07 | 703 | 0.3− | 0.3− |
| 2000 05 28 | 704 | 0.3+  | 0.3−  | 2007 09 05 | 703 | 0.1− | 0.3− | 2007 10 07 | 703 | 0.1− | 1.3− |
| 2000 05 28 | 704 | 0.1+  | 0.8−  | 2007 09 05 | 703 | 0.9+ | 0.6+ | 2007 10 07 | 703 | 0.3+ | 0.6− |
| 2000 05 28 | 704 | 0.7−  | 0.3+  | 2007 09 05 | 703 | 0.1+ | 0.1+ | 2007 10 07 | 703 | 0.0  | 1.0+ |
| 2000 05 29 | 704 | 0.1−  | 0.2+  | 2007 09 05 | 703 | 1.2+ | 0.2− | 2007 10 15 | 699 | 0.7− | 0.1− |
| 2000 05 29 | 704 | 0.4+  | 0.2−  | 2007 09 12 | 703 | 1.0− | 0.4− | 2007 10 15 | 699 | 0.9− | 0.3+ |
| 2000 05 29 | 704 | 0.2+  | 0.4−  | 2007 09 12 | 703 | 0.5− | 0.3− | 2007 10 15 | 699 | 0.4+ | 0.5− |
| 2000 05 29 | 704 | 0.1+  | 1.4+  | 2007 09 12 | 703 | 1.0− | 0.3− | 2007 10 15 | 703 | 0.1− | 0.5+ |
| 2003 04 10 | 691 | (0.7+ | 2.1+) | 2007 09 12 | 703 | 0.0  | 0.1− | 2007 10 15 | 699 | 1.3− | 0.6+ |
| 2003 04 10 | 691 | 1.0+  | 1.9+  | 2007 10 04 | 703 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 0.8+ | 1.2+ |
| 2003 04 10 | 691 | 0.9+  | 1.7+  | 2007 10 04 | 703 | 0.2+ | 0.5+ | 2007 10 15 | 703 | 0.1+ | 0.5+ |
| 2004 11 17 | 599 | 0.2−  | 0.3+  | 2007 10 04 | 703 | 0.2+ | 0.5+ | 2007 10 15 | 703 | 0.4+ | 0.9+ |
| 2004 11 17 | 599 | 0.2+  | 0.7+  | 2007 10 04 | 703 | 0.3− | 0.1+ |            |     |      |      |

**2007 TA<sub>176</sub>**

|                                         |            |          |           |          |             |          |             |
|-----------------------------------------|------------|----------|-----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC      |             |          |             |
| <i>M</i>                                | 72.90234   |          | (2000.0)  | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.18688444 | <i>ω</i> | 298.17309 |          | +0.59108093 |          | +0.80624207 |
| <i>a</i>                                | 3.0298465  | <i>Ω</i> | 8.19292   |          | −0.66681826 |          | +0.50546118 |
| <i>e</i>                                | 0.0559202  | <i>i</i> | 9.87303   |          | −0.45384661 |          | +0.30738043 |
| <i>P</i>                                | 5.27       | <i>H</i> | 15.8      | <i>G</i> | 0.15        | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 06 | 691 | 0.2+ | 0.1− | 2005 04 04 | 691 | 0.3− | 0.3+ | 2007 10 13 | 691 | 0.3− | 0.1+ |
| 1991 10 06 | 691 | 0.1− | 0.1− | 2007 10 05 | 691 | 0.9− | 0.0  | 2007 10 13 | 691 | 0.5− | 0.2+ |
| 1991 10 06 | 691 | 0.2+ | 0.4− | 2007 10 05 | 691 | 0.8− | 1.0+ | 2007 10 13 | 691 | 0.7− | 0.3+ |
| 2004 01 28 | 691 | 0.1− | 0.2− | 2007 10 05 | 691 | 0.6− | 0.1− | 2007 10 18 | 691 | 0.0  | 0.2+ |
| 2004 01 28 | 691 | 0.1− | 0.1+ | 2007 10 07 | 703 | 0.7+ | 1.5− | 2007 10 18 | 691 | 0.6− | 0.2+ |
| 2004 01 28 | 691 | 0.1+ | 0.0  | 2007 10 07 | 703 | 1.8+ | 0.5− | 2007 10 18 | 691 | 0.6− | 0.5+ |
| 2005 03 10 | G96 | 0.2+ | 0.1− | 2007 10 07 | 703 | 0.1− | 0.4+ | 2007 11 07 | G96 | 0.0  | 0.0  |
| 2005 03 10 | G96 | 0.1+ | 0.0  | 2007 10 07 | 703 | 0.2+ | 0.0  | 2007 11 07 | G96 | 0.8+ | 0.3− |
| 2005 03 10 | G96 | 0.2− | 0.1− | 2007 10 11 | G96 | 0.2+ | 0.1− | 2007 11 07 | G96 | 0.6+ | 0.0  |
| 2005 03 10 | G96 | 0.1− | 0.0  | 2007 10 11 | G96 | 0.1+ | 0.0  | 2007 11 07 | G96 | 0.2− | 0.2− |
| 2005 04 04 | 691 | 0.3+ | 0.3+ | 2007 10 11 | G96 | 0.0  | 0.1+ |            |     |      |      |
| 2005 04 04 | 691 | 0.3+ | 0.1+ | 2007 10 11 | G96 | 0.3+ | 0.5+ |            |     |      |      |

**2007 TU<sub>176</sub>**

|                                         |            |          |          |          |             |          |             |
|-----------------------------------------|------------|----------|----------|----------|-------------|----------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC      |             |          |             |
| <i>M</i>                                | 344.93122  |          | (2000.0) | <b>P</b> |             | <b>Q</b> |             |
| <i>n</i>                                | 0.26676391 | <i>ω</i> | 6.73741  |          | +0.57695754 |          | −0.81583333 |
| <i>a</i>                                | 2.3899272  | <i>Ω</i> | 48.03426 |          | +0.74689438 |          | +0.50756829 |
| <i>e</i>                                | 0.1689425  | <i>i</i> | 3.02141  |          | +0.33055830 |          | +0.27711083 |
| <i>P</i>                                | 3.69       | <i>H</i> | 17.6     | <i>G</i> | 0.15        | <i>U</i> | 2           |

Residuals in seconds of arc

|            |   |
|------------|---|
| 1996 11 08 | 6 |
|------------|---|

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 09 | 691 | 0.3+ | 0.3+ | 2007 10 14 | 691 | 0.4+ | 0.2+ | 2007 11 14 | 704 | 0.3- | 0.1- |
| 2005 02 09 | 691 | 0.0  | 0.1+ | 2007 10 14 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 0.7- | 0.6+ |
| 2007 09 08 | G96 | 0.4+ | 0.4- | 2007 10 15 | 703 | 0.9- | 0.0  | 2007 11 14 | 704 | 0.5- | 0.6- |
| 2007 09 08 | G96 | 0.2+ | 0.2- | 2007 10 15 | 703 | 0.5- | 0.4+ | 2007 11 17 | G96 | 0.5+ | 0.6- |
| 2007 09 08 | G96 | 0.1+ | 0.1- | 2007 10 15 | 703 | 0.5- | 0.3- | 2007 11 17 | G96 | 0.3+ | 0.6- |
| 2007 09 08 | G96 | 0.1- | 0.2+ | 2007 10 15 | 703 | 0.4- | 0.6+ | 2007 11 17 | G96 | 0.1+ | 0.6- |
| 2007 10 06 | 691 | 0.1+ | 0.1- | 2007 10 18 | 691 | 0.0  | 0.1+ | 2007 11 17 | G96 | 0.5+ | 0.5- |
| 2007 10 06 | 691 | 0.3- | 0.1+ | 2007 10 18 | 691 | 0.2- | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.0  |
| 2007 10 06 | 691 | 0.4- | 0.0  | 2007 10 18 | 691 | 0.2- | 0.1- | 2007 12 15 | G96 | 0.5+ | 0.2- |
| 2007 10 06 | 691 | 0.3- | 0.1+ | 2007 11 05 | 704 | 0.1+ | 1.1+ | 2007 12 15 | G96 | 0.5+ | 0.3- |
| 2007 10 06 | 691 | 0.1- | 0.3- | 2007 11 05 | 704 | 0.4+ | 1.0+ | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2007 10 06 | 691 | 0.1- | 0.4+ | 2007 11 05 | 704 | 0.6- | 0.8+ |            |     |      |      |

2007 TG<sub>177</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 356.68270  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.26824702 | $\omega$ | 234.11520 | +0.76277995 |      | -0.64651268 |   |  |  |  |  |
| <i>a</i>                                | 2.3811099  | $\Omega$ | 166.14668 | +0.61022792 |      | +0.71262759 |   |  |  |  |  |
| <i>e</i>                                | 0.2022789  | <i>i</i> | 3.28379   | +0.21398282 |      | +0.27236607 |   |  |  |  |  |
| <i>P</i>                                | 3.67       | <i>H</i> | 17.6      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 08 | G96 | 0.3- | 0.1- | 2007 10 07 | 703 | 0.8- | 0.7+ | 2007 11 10 | 703 | 0.6- | 0.5+ |
| 2005 03 08 | G96 | 0.2+ | 0.1+ | 2007 10 07 | 703 | 0.0  | 0.5+ | 2007 11 10 | 703 | 1.0+ | 0.3+ |
| 2005 03 08 | G96 | 0.8- | 0.2+ | 2007 10 07 | 703 | 1.2- | 0.7- | 2007 11 10 | 703 | 0.9+ | 0.6+ |
| 2005 03 08 | G96 | 0.1- | 0.0  | 2007 10 18 | 699 | 0.7+ | 0.3- | 2007 11 10 | 703 | 0.6+ | 0.2- |
| 2005 04 04 | G96 | 0.8+ | 0.1+ | 2007 10 18 | 699 | 0.7+ | 0.6- | 2007 11 12 | 704 | 0.7- | 0.1+ |
| 2005 04 04 | G96 | 0.5+ | 0.2+ | 2007 10 18 | 699 | 0.4- | 0.5- | 2007 11 12 | 704 | 0.9- | 0.1+ |
| 2005 04 04 | G96 | 0.1- | 0.1- | 2007 10 18 | 699 | 0.5- | 1.8+ | 2007 11 12 | 704 | 0.4- | 0.3- |
| 2005 04 04 | G96 | 0.1- | 0.5- | 2007 10 30 | 703 | 0.2- | 0.5- | 2007 11 12 | 704 | 0.3- | 0.1+ |
| 2007 09 15 | G96 | 0.3+ | 0.4- | 2007 10 30 | 703 | 0.2- | 0.8- | 2007 11 12 | 704 | 0.4- | 0.3+ |
| 2007 09 15 | G96 | 0.4+ | 0.6- | 2007 10 30 | 703 | 0.5+ | 0.3- | 2007 11 18 | 703 | 0.9+ | 0.4- |
| 2007 09 15 | G96 | 0.5+ | 0.4- | 2007 10 30 | 703 | 1.0- | 0.2+ | 2007 11 18 | 703 | 0.3+ | 0.2- |
| 2007 10 06 | 691 | 0.2- | 0.3- | 2007 11 09 | G96 | 0.3+ | 0.3- | 2007 11 18 | 703 | 0.7+ | 0.2+ |
| 2007 10 06 | 691 | 0.0  | 0.2- | 2007 11 09 | G96 | 0.0  | 0.2- | 2007 11 18 | 703 | 0.3- | 0.1+ |
| 2007 10 06 | 691 | 0.3+ | 0.7+ | 2007 11 09 | G96 | 0.2+ | 0.1- |            |     |      |      |
| 2007 10 07 | 703 | 0.6- | 0.6+ | 2007 11 09 | G96 | 0.4+ | 0.1- |            |     |      |      |

2007 TJ<sub>177</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 43.07041   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.18241052 | $\omega$ | 311.13793 | +0.96140038 |      | +0.25487229 |   |  |  |  |  |
| <i>a</i>                                | 3.0791875  | $\Omega$ | 34.46908  | -0.16353941 |      | +0.83232560 |   |  |  |  |  |
| <i>e</i>                                | 0.1031182  | <i>i</i> | 10.55572  | -0.22127848 |      | +0.49221358 |   |  |  |  |  |
| <i>P</i>                                | 5.40       | <i>H</i> | 15.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 07 26 | 644 | 0.5+ | 0.3- | 2006 07 29 | E12 | 0.4+  | 0.2+  | 2007 10 30 | 703 | 0.0   | 0.1-  |
| 2001 07 26 | 644 | 0.2+ | 0.6- | 2006 07 29 | E12 | 0.1-  | 1.0+  | 2007 10 30 | 703 | 1.0+  | 0.2-  |
| 2001 07 26 | 644 | 0.1- | 0.2- | 2006 07 29 | E12 | 0.2+  | 0.7-  | 2007 10 30 | 703 | 0.1-  | 0.1+  |
| 2005 03 14 | G96 | 0.1+ | 0.0  | 2006 07 29 | E12 | 0.8-  | 1.0+  | 2007 10 30 | 703 | 0.3-  | 0.9+  |
| 2005 03 14 | G96 | 0.5+ | 0.9+ | 2007 10 06 | 691 | 0.6-  | 0.1+  | 2007 10 31 | G96 | 0.2-  | 0.2+  |
| 2005 03 14 | G96 | 0.1- | 0.2+ | 2007 10 06 | 691 | 0.2-  | 0.1+  | 2007 10 31 | G96 | 0.1+  | 0.1-  |
| 2005 03 14 | G96 | 0.2- | 0.0  | 2007 10 06 | 691 | 0.3-  | 0.0   | 2007 10 31 | G96 | 0.2-  | 0.0   |
| 2005 04 02 | G96 | 0.2+ | 0.0  | 2007 10 10 | 691 | 0.4-  | 0.1-  | 2007 10 31 | G96 | 0.2+  | 0.1-  |
| 2005 04 02 | G96 | 0.2- | 0.5+ | 2007 10 10 | 691 | 0.5-  | 0.1+  | 2007 11 15 | 704 | 0.7+  | 0.1+  |
| 2005 04 02 | G96 | 0.3- | 0.4+ | 2007 10 10 | 691 | 0.6-  | 0.0   | 2007 11 15 | 704 | (2.6+ | 2.3+) |
| 2005 04 02 | G96 | 0.2+ | 0.1+ | 2007 10 15 | 703 | 0.2-  | 0.8+  | 2007 11 15 | 704 | 0.3-  | 0.3+  |
| 2005 04 16 | 691 | 0.5+ | 0.2+ | 2007 10 15 | 703 | (0.4+ | 2.4+) | 2007 11 15 | 704 | 0.4-  | 0.9+  |
| 2005 04 16 | 691 | 0.5+ | 0.2+ | 2007 10 15 | 703 | 0.4+  | 0.0   | 2007 11 15 | 704 | 0.0   | 0.3+  |
| 2005 04 16 | 691 | 0.6+ | 0.5+ | 2007 10 15 | 703 | 0.5+  | 1.3+  | 2007 11 17 | 703 | 0.1+  | 0.3-  |
| 2005 05 11 | G96 | 0.1- | 0.0  | 2007 10 20 | 703 | 0.6-  | 0.4+  | 2007 11 17 | 703 | 0.8+  | 0.3-  |
| 2005 05 11 | G96 | 0.3- | 0.1- | 2007 10 20 | 703 | 0.5+  | 0.6-  | 2007 11 17 | 703 | 0.2-  | 0.7-  |
| 2005 05 11 | G96 | 0.2+ | 0.3- | 2007 10 20 | 703 | 0.4-  | 0.4+  | 2007 11 17 | 703 | 0.1-  | 0.3-  |
| 2005 05 11 | G96 | 0.1+ | 0.4+ | 2007 10 20 | 703 | 0.9-  | 0.3+  |            |     |       |       |

## M.P.O. 129871

2007 TR<sub>177</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 43.16664   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.17859232 | $\omega$ | 307.02323 | +0.97133137 |      | +0.18185878 |   |  |  |  |  |
| <i>a</i>                                | 3.1229200  | $\Omega$ | 43.10767  | -0.07250411 |      | +0.83998729 |   |  |  |  |  |
| <i>e</i>                                | 0.0648508  | <i>i</i> | 12.94710  | -0.22640347 |      | +0.51122278 |   |  |  |  |  |
| <i>P</i>                                | 5.52       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 06 | 691 | 0.2- | 0.3+ | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 09 | G96 | 0.6+ | 0.0  |
| 1996 10 06 | 691 | 0.0  | 0.3- | 2007 10 10 | 691 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.1+ | 0.6- |
| 1996 10 06 | 691 | 0.3- | 0.1- | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 09 | G96 | 0.5+ | 0.8- |
| 1996 10 15 | 691 | 0.1- | 0.6+ | 2007 10 10 | 691 | 0.3+ | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.3- |
| 1996 10 15 | 691 | 0.3+ | 0.2- | 2007 10 10 | 691 | 0.0  | 0.1- | 2007 11 17 | G96 | 0.5+ | 0.1- |
| 2005 05 04 | G96 | 0.0  | 0.9- | 2007 10 10 | 691 | 0.3+ | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.3+ |
| 2005 05 04 | G96 | 0.1- | 0.3- | 2007 10 14 | 691 | 0.1- | 0.2+ | 2007 11 17 | G96 | 0.1+ | 0.1- |
| 2005 05 04 | G96 | 0.3- | 0.0  | 2007 10 14 | 691 | 0.2- | 0.3- | 2007 11 17 | G96 | 0.0  | 0.5+ |
| 2005 05 04 | G96 | 0.4- | 0.2- | 2007 10 14 | 691 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.7+ | 0.0  |
| 2007 10 06 | 691 | 0.2- | 0.5- | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 12 15 | G96 | 1.0+ | 0.4+ |
| 2007 10 06 | 691 | 0.2+ | 0.1+ | 2007 10 30 | 691 | 0.4- | 0.1+ | 2007 12 15 | G96 | 0.7+ | 0.1- |
| 2007 10 06 | 691 | 0.1- | 0.1+ | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.6+ | 0.1- |

2007 TU<sub>177</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 18.28435   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.18530676 | $\omega$ | 327.02527 | +0.96346767 |      | -0.24148861 |   |  |  |  |  |
| <i>a</i>                                | 3.0470194  | $\Omega$ | 47.40370  | +0.26688798 |      | +0.82955418 |   |  |  |  |  |
| <i>e</i>                                | 0.1577378  | <i>i</i> | 9.05186   | +0.02237971 |      | +0.50351079 |   |  |  |  |  |
| <i>P</i>                                | 5.32       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 10 | G96 | 0.9+ | 0.3+ | 2007 10 30 | G96 | 0.2+  | 1.2-  | 2007 11 14 | 704 | 0.5- | 0.1+ |
| 2005 04 10 | G96 | 0.3+ | 0.2- | 2007 10 30 | G96 | 0.2+  | 1.3-  | 2007 11 14 | 704 | 1.2- | 0.4+ |
| 2005 04 10 | G96 | 0.8+ | 0.3+ | 2007 10 30 | G96 | 0.2+  | 1.0-  | 2007 11 14 | 704 | 1.4- | 0.9+ |
| 2005 04 10 | G96 | 0.5- | 0.1+ | 2007 10 30 | G96 | 0.2+  | 0.9-  | 2007 11 14 | 704 | 0.2+ | 0.1+ |
| 2005 05 14 | G96 | 0.7- | 0.3- | 2007 11 07 | 703 | 0.2-  | 0.9+  | 2007 11 15 | 704 | 0.0  | 0.8+ |
| 2005 05 14 | G96 | 0.1- | 0.3+ | 2007 11 07 | 703 | 0.7+  | 0.8+  | 2007 11 15 | 704 | 0.7+ | 1.1- |
| 2005 05 14 | G96 | 0.3- | 0.1+ | 2007 11 07 | 703 | 0.1+  | 1.3+  | 2007 11 15 | 704 | 1.2+ | 1.8- |
| 2005 05 14 | G96 | 0.4- | 0.5- | 2007 11 07 | 703 | 0.1-  | 0.0   | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2007 10 06 | 691 | 0.3- | 0.3+ | 2007 11 09 | G96 | 0.3-  | 0.0   | 2007 11 17 | G96 | 0.3+ | 0.3- |
| 2007 10 06 | 691 | 0.5- | 0.0  | 2007 11 09 | G96 | 0.0   | 0.1-  | 2007 11 17 | G96 | 0.0  | 0.3- |
| 2007 10 06 | 691 | 0.4- | 0.3- | 2007 11 09 | G96 | 0.2+  | 0.2-  | 2007 11 17 | G96 | 0.2+ | 0.2- |
| 2007 10 10 | 691 | 1.5- | 1.0+ | 2007 11 09 | G96 | 0.1-  | 0.6-  | 2007 11 17 | G96 | 0.4+ | 0.3- |
| 2007 10 10 | 691 | 0.5+ | 0.2+ | 2007 11 12 | G96 | 0.1-  | 0.4-  | 2007 11 17 | 703 | 0.1+ | 1.3+ |
| 2007 10 10 | 691 | 0.4- | 0.0  | 2007 11 12 | G96 | 0.2-  | 0.3-  | 2007 11 17 | 703 | 0.7+ | 1.7+ |
| 2007 10 18 | 691 | 0.4+ | 0.4- | 2007 11 12 | G96 | 0.3-  | 0.3-  | 2007 11 17 | 703 | 1.3+ | 1.0+ |
| 2007 10 18 | 691 | 0.3- | 0.1+ | 2007 11 12 | G96 | 0.4-  | 0.3-  | 2007 11 17 | 703 | 0.3+ | 0.5+ |
| 2007 10 18 | 691 | 0.4- | 0.0  | 2007 11 14 | 704 | (0.2- | 2.4+) |            |     |      |      |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 01 06 | 703 | 0.6− | 0.2− | 2007 10 18 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.2+  | 0.6−  |
| 2005 01 15 | 703 | 0.5− | 0.4+ | 2007 10 18 | 691 | 0.1− | 0.0  | 2007 11 07 | 703 | 0.3+  | 0.4−  |
| 2005 01 15 | 703 | 0.5+ | 0.1+ | 2007 10 20 | 703 | 0.8− | 0.5− | 2007 11 07 | 703 | 0.8−  | 1.0−  |
| 2005 01 15 | 703 | 0.3+ | 0.4− | 2007 10 20 | 703 | 0.4− | 0.0  | 2007 11 11 | 699 | 0.4+  | 0.0   |
| 2005 01 15 | 703 | 0.8+ | 0.4+ | 2007 10 20 | 703 | 0.4+ | 1.1− | 2007 11 11 | 699 | 0.3−  | 0.2−  |
| 2007 09 08 | 703 | 0.7+ | 0.3+ | 2007 10 20 | 703 | 0.2+ | 0.0  | 2007 11 11 | 699 | 0.1−  | 0.6−  |
| 2007 09 08 | 703 | 0.2− | 0.2+ | 2007 10 30 | 703 | 0.0  | 0.1+ | 2007 11 11 | 699 | 0.9+  | 0.4−  |
| 2007 09 08 | 703 | 0.2+ | 0.0  | 2007 10 30 | 703 | 0.3+ | 0.4− | 2007 11 15 | 704 | 0.2−  | 0.6+  |
| 2007 09 08 | 703 | 0.9− | 0.9− | 2007 10 30 | 703 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2−  | 0.7+  |
| 2007 10 06 | 704 | 0.7+ | 0.3− | 2007 10 30 | 703 | 0.3− | 0.1− | 2007 11 15 | 704 | 0.1−  | 0.3+  |
| 2007 10 06 | 704 | 0.4+ | 1.0+ | 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 11 15 | 704 | 0.2−  | 0.3+  |
| 2007 10 06 | 704 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.5+ | 0.1− | 2007 11 15 | 704 | 0.3−  | 0.7+  |
| 2007 10 06 | 704 | 0.0  | 0.9+ | 2007 10 30 | G96 | 0.5+ | 0.3− | 2007 11 18 | G96 | (0.1− | 2.0−) |
| 2007 10 06 | 704 | 0.2+ | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.2− | 2007 11 18 | G96 | 0.5+  | 0.5−  |
| 2007 10 07 | G96 | 0.3+ | 0.2− | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.6+  | 0.5−  |
| 2007 10 07 | G96 | 0.3+ | 0.2− | 2007 10 31 | 691 | 0.2− | 0.1− | 2007 11 18 | G96 | 0.2+  | 0.4−  |
| 2007 10 07 | G96 | 0.3+ | 0.1− | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 11 20 | 704 | 1.5+  | 0.1−  |
| 2007 10 07 | G96 | 1.3− | 0.5− | 2007 11 04 | A77 | 0.1+ | 0.1+ | 2007 11 20 | 704 | 0.3−  | 0.6+  |
| 2007 10 10 | 691 | 0.2− | 0.2+ | 2007 11 04 | A77 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.5−  | 0.2+  |
| 2007 10 10 | 691 | 0.2− | 0.1+ | 2007 11 04 | A77 | 0.5+ | 0.2− | 2007 12 03 | 703 | 0.2+  | 0.5+  |
| 2007 10 10 | 691 | 0.3− | 0.1+ | 2007 11 04 | A77 | 0.2+ | 0.3+ | 2007 12 03 | 703 | 0.0   | 0.1−  |
| 2007 10 11 | 704 | 0.9+ | 0.1− | 2007 11 04 | A77 | 0.2+ | 0.2+ | 2007 12 03 | 703 | 0.3+  | 0.4+  |
| 2007 10 11 | 704 | 1.2+ | 1.0+ | 2007 11 04 | A77 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.3−  | 0.9+  |
| 2007 10 11 | 704 | 0.1+ | 0.6+ | 2007 11 04 | 691 | 0.1− | 0.0  | 2007 12 12 | A77 | 0.1−  | 0.2−  |
| 2007 10 11 | 704 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.1− | 0.1− | 2007 12 12 | A77 | 0.0   | 0.2+  |
| 2007 10 11 | 704 | 0.1− | 0.3+ | 2007 11 04 | 691 | 0.1− | 0.1− | 2007 12 12 | A77 | 0.5−  | 0.7+  |
| 2007 10 14 | 691 | 0.4− | 0.2− | 2007 11 05 | G96 | 0.1+ | 0.2− |            |     |       |       |
| 2007 10 14 | 691 | 0.1− | 0.2+ | 2007 11 05 | G96 | 0.2+ | 0.2− |            |     |       |       |

**2007 TF<sub>180</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 311.06990  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22936460 | $\omega$ | 341.52597 | +0.47193192   | −0.88134011 |
| <i>a</i> | 2.6431296  | $\Omega$ | 80.30882  | +0.81177188   | +0.42429977 |
| <i>e</i> | 0.1028889  | <i>i</i> | 1.32542   | +0.34395738   | +0.20786851 |
| <i>P</i> | 4.30       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 02 | 691 | 0.1+ | 0.2+ | 2005 03 10 | G96 | 0.1+ | 0.4+ | 2007 10 12 | 691 | 0.3− | 0.2− |
| 1999 12 02 | 691 | 0.2− | 0.1− | 2005 03 10 | G96 | 0.1+ | 0.3+ | 2007 10 12 | 691 | 0.5− | 0.1+ |
| 1999 12 02 | 691 | 0.0  | 0.1− | 2007 08 24 | 691 | 0.4+ | 0.4+ | 2007 10 12 | 691 | 0.2+ | 0.4+ |
| 2003 09 28 | 691 | 0.1+ | 0.3− | 2007 08 24 | 691 | 0.1− | 0.4+ | 2007 10 16 | 691 | 0.2+ | 0.1+ |
| 2003 09 28 | 691 | 0.2+ | 0.1− | 2007 08 24 | 691 | 0.1+ | 0.2+ | 2007 10 16 | 691 | 0.2− | 0.3− |
| 2003 09 28 | 691 | 0.2+ | 0.2+ | 2007 10 08 | 691 | 0.1+ | 0.1− | 2007 10 16 | 691 | 0.4− | 0.0  |
| 2003 10 23 | 695 | 0.0  | 0.0  | 2007 10 08 | 691 | 0.0  | 0.2+ | 2007 10 19 | 691 | 0.1− | 0.2+ |
| 2003 10 23 | 695 | 0.1− | 0.0  | 2007 10 08 | 691 | 0.2− | 0.2− | 2007 10 19 | 691 | 0.3+ | 0.2+ |
| 2005 03 10 | G96 | 0.3+ | 0.2− | 2007 10 08 | 691 | 0.1− | 0.1− | 2007 10 19 | 691 | 0.1+ | 0.1− |
| 2005 03 10 | G96 | 0.0  | 0.0  | 2007 10 08 | 691 | 0.6− | 0.2− | 2007 10 19 | 691 | 0.1− | 0.3+ |
| 2005 03 10 | G96 | 0.2− | 0.0  | 2007 10 08 | 691 | 1.0+ | 0.3+ | 2007 10 19 | 691 | 1.0− | 0.1− |
| 2005 03 10 | G96 | 0.3− | 0.0  | 2007 10 10 | 691 | 0.1− | 0.1+ | 2007 10 19 | 691 | 0.8− | 0.3− |
| 2005 03 10 | G96 | 0.7+ | 0.5+ | 2007 10 10 | 691 | 0.1− | 0.1+ |            |     |      |      |
| 2005 03 10 | G96 | 0.3− | 0.3+ | 2007 10 10 | 691 | 1.1+ | 0.4+ |            |     |      |      |

**2007 TH<sub>182</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.15421   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26811018 | $\omega$ | 128.98430 | +0.72115119   | +0.69232394 |
| <i>a</i> | 2.3819200  | $\Omega$ | 187.32555 | −0.68074508   | +0.70144625 |
| <i>e</i> | 0.2927053  | <i>i</i> | 11.33931  | −0.12855773   | +0.16929478 |
| <i>P</i> | 3.68       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 05 | 691 | 0.2+ | 0.0  | 2007 10 08 | 699 | 0.5− | 0.5− | 2007 10 15 | G96 | 0.1+ | 0.2− |
| 2006 03 05 | 691 | 0.1+ | 0.3+ | 2007 10 08 | 699 | 0.3+ | 0.9+ | 2007 10 15 | G96 | 0.3+ | 0.4− |
| 2006 03 05 | 691 | 0.5+ | 0.3+ | 2007 10 08 | 699 | 0.7+ | 0.0  | 2007 10 15 | G96 | 0.2+ | 0.4− |
| 2006 03 25 | G96 | 0.2+ | 0.6− | 2007 10 11 | D35 | 0.8+ | 0.1+ | 2007 10 30 | 703 | 0.0  | 0.4− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 25 | G96 | 0.3− | 0.1+ | 2007 10 11 | D35 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.8− | 0.4− |
| 2006 03 25 | G96 | 0.4+ | 0.3− | 2007 10 11 | D35 | 0.8+ | 0.2+ | 2007 10 30 | 703 | 0.0  | 0.2− |
| 2006 03 25 | G96 | 0.1+ | 0.1− | 2007 10 13 | 703 | 0.9− | 0.0  | 2007 11 11 | 704 | 0.0  | 0.1+ |
| 2006 04 03 | D35 | 0.3− | 0.3− | 2007 10 13 | 703 | 1.3− | 0.9+ | 2007 11 11 | 704 | 0.3− | 0.2+ |
| 2006 04 03 | D35 | 0.8− | 0.4+ | 2007 10 13 | 703 | 0.4− | 0.1+ | 2007 11 11 | 704 | 0.0  | 0.3+ |
| 2006 04 03 | D35 | 0.1− | 0.1+ | 2007 10 13 | 703 | 0.1− | 0.1+ | 2007 11 11 | 704 | 0.2− | 0.3− |
| 2007 10 08 | 699 | 0.8+ | 0.2− | 2007 10 15 | G96 | 0.5+ | 0.4− | 2007 11 11 | 704 | 0.0  | 0.3+ |

**2007 TW<sub>183</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.42072   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18144086 | $\omega$ | 285.50194 | +0.96166176   | +0.22844293 |
| <i>a</i> | 3.0901482  | $\Omega$ | 61.50013  | −0.13384502   | +0.87386271 |
| <i>e</i> | 0.2673662  | <i>i</i> | 9.94174   | −0.23935781   | +0.42915940 |
| <i>P</i> | 5.43       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 07 27 | 644 | 0.1− | 0.7+ | 2007 11 04 | 704 | 0.1+ | 1.3+ | 2007 11 20 | 691 | 0.1−  | 0.2−  |
| 2001 07 27 | 644 | 0.1+ | 0.2− | 2007 11 05 | 704 | 0.6+ | 0.0  | 2007 11 20 | 691 | 0.3−  | 0.3−  |
| 2001 07 27 | 644 | 0.2+ | 0.7+ | 2007 11 05 | 704 | 0.4+ | 0.7− | 2007 12 03 | 703 | 0.1−  | 0.6−  |
| 2001 07 27 | 644 | 0.1− | 0.2− | 2007 11 05 | 704 | 0.8+ | 0.3− | 2007 12 03 | 703 | 0.8−  | 0.2−  |
| 2001 07 27 | 644 | 0.0  | 0.9+ | 2007 11 05 | 704 | 1.2+ | 0.4− | 2007 12 03 | 703 | 0.6+  | 0.7+  |
| 2001 07 27 | 644 | 0.2+ | 0.2− | 2007 11 05 | 704 | 0.1+ | 0.3− | 2007 12 03 | 703 | 0.1−  | 0.5+  |
| 2001 08 09 | 644 | 0.1+ | 0.2− | 2007 11 14 | 704 | 0.4+ | 1.0+ | 2007 12 05 | 691 | 0.2−  | 0.2−  |
| 2001 08 09 | 644 | 0.3− | 0.2− | 2007 11 14 | 704 | 0.2+ | 0.9+ | 2007 12 05 | 691 | 0.3−  | 0.2−  |
| 2001 08 09 | 644 | 0.5− | 0.0  | 2007 11 14 | 704 | 0.6+ | 1.0+ | 2007 12 05 | 691 | 0.1−  | 0.0   |
| 2001 08 22 | 644 | 0.1− | 0.5− | 2007 11 14 | 704 | 0.5+ | 0.4+ | 2007 12 05 | 704 | 0.4+  | 1.0+  |
| 2001 08 22 | 644 | 0.1+ | 0.3− | 2007 11 14 | 704 | 0.3+ | 0.6+ | 2007 12 05 | 704 | 0.4−  | 0.8+  |
| 2001 08 22 | 644 | 0.4+ | 0.5− | 2007 11 15 | 704 | 0.5+ | 0.9+ | 2007 12 05 | 704 | 0.7+  | 0.3−  |
| 2007 10 09 | D29 | 0.2+ | 1.3− | 2007 11 15 | 704 | 0.2− | 0.3+ | 2007 12 05 | 704 | 0.2−  | 1.3+  |
| 2007 10 09 | D29 | 0.4+ | 0.5− | 2007 11 15 | 704 | 0.2+ | 1.1+ | 2007 12 05 | 704 | (0.7+ | 1.7+) |
| 2007 10 09 | D29 | 1.4+ | 0.2+ | 2007 11 15 | 704 | 0.4− | 0.6+ | 2007 12 13 | A77 | 0.0   | 0.3−  |
| 2007 10 09 | D29 | 1.0+ | 0.5+ | 2007 11 15 | 704 | 0.1− | 0.6+ | 2007 12 13 | A77 | 0.7−  | 0.6−  |
| 2007 10 10 | 691 | 0.2− | 0.0  | 2007 11 17 | 703 | 0.5+ | 0.2− | 2007 12 13 | A77 | 0.6+  | 0.2+  |
| 2007 10 10 | 691 | 1.1− | 0.0  | 2007 11 17 | 703 | 0.5+ | 0.2+ | 2007 12 15 | G96 | 0.1−  | 0.5−  |
| 2007 10 10 | 691 | 0.1− | 0.0  | 2007 11 17 | 703 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.1−  | 0.8−  |
| 2007 11 04 | 704 | 0.1+ | 0.6− | 2007 11 17 | 703 | 0.6+ | 0.2− | 2007 12 15 | G96 | 0.5+  | 0.7−  |
| 2007 11 04 | 704 | 1.4+ | 0.2+ | 2007 11 20 | 691 | 1.0− | 0.4− | 2007 12 15 | G96 | 0.6+  | 0.8−  |

**2007 TG<sub>184</sub> = 2007 RR<sub>19</sub> = 2005 HA<sub>10</sub>**Id. Minor Planet Center (d, *MPO* 129053; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.44191    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17394156 | $\omega$ | 174.58201 | +0.97493448   | −0.21438537 |
| <i>a</i> | 3.1783409  | $\Omega$ | 198.13305 | +0.19627745   | +0.95468777 |
| <i>e</i> | 0.0695507  | <i>i</i> | 11.02390  | +0.10477557   | +0.20642231 |
| <i>P</i> | 5.67       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 04 15 | 691 | 0.4− | 0.8− | 2007 09 13 | 586 | 0.3−  | 0.1+  | 2007 10 13 | 703 | 0.1+  | 0.2−  |
| 1999 04 15 | 691 | 0.1+ | 0.7− | 2007 09 14 | G96 | 0.2−  | 0.1−  | 2007 10 13 | 703 | 1.4+  | 1.1+  |
| 2004 02 18 | 691 | 0.3− | 0.4+ | 2007 09 14 | G96 | 0.3−  | 0.1−  | 2007 10 18 | 683 | (2.2+ | 1.1+) |
| 2004 02 18 | 691 | 0.1− | 0.4+ | 2007 09 14 | G96 | 0.1−  | 0.2−  | 2007 10 18 | 683 | 0.5−  | 0.5+  |
| 2004 02 18 | 691 | 0.4+ | 0.1+ | 2007 09 14 | G96 | 0.2−  | 0.0   | 2007 10 18 | 683 | 0.1+  | 0.5+  |
| 2005 04 10 | G96 | 0.3+ | 0.0  | 2007 09 15 | 586 | 1.3+  | 1.1+  | 2007 10 19 | G96 | 0.5−  | 1.7−  |
| 2005 04 10 | G96 | 0.2− | 0.2+ | 2007 09 15 | 586 | 0.3−  | 0.2+  | 2007 10 19 | G96 | 1.2+  | 0.3−  |
| 2005 04 10 | G96 | 0.1− | 0.1− | 2007 09 15 | 586 | 0.8−  | 0.8+  | 2007 10 19 | G96 | 0.1+  | 0.4−  |
| 2005 04 10 | G96 | 0.0  | 0.0  | 2007 10 10 | G96 | 0.0   | 0.3−  | 2007 10 19 | G96 | 0.1+  | 0.3−  |
| 2005 04 16 | 691 | 0.0  | 0.4+ | 2007 10 10 | G96 | 0.1+  | 0.4−  | 2007 10 30 | G96 | 0.0   | 0.3−  |
| 2005 04 16 | 691 | 0.1+ | 0.1+ | 2007 10 10 | G96 | 0.2−  | 0.2−  | 2007 10 30 | G96 | 0.1−  | 0.5−  |
| 2005 04 16 | 691 | 0.1+ | 0.2+ | 2007 10 10 | G96 | 0.1−  | 0.1−  | 2007 10 30 | G96 | 0.3−  | 0.3−  |
| 2007 09 13 | 586 | 0.2− | 0.5− | 2007 10 13 | 703 | (0.5− | 2.1−) | 2007 10 30 | G96 | 0.6+  | 0.2+  |
| 2007 09 13 | 586 | 0.8− | 0.9+ | 2007 10 13 | 703 | (0.1+ | 2.1−) |            |     |       |       |

2007 DEC. 24

M.P.O. 129873

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 26.91753   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23643187 | $\omega$ 214.00251 | +0.98246141   | +0.17085637 |
| <i>a</i> | 2.5901925  | $\Omega$ 135.96584 | -0.13805255   | +0.93572118 |
| <i>e</i> | 0.3428257  | <i>i</i> 6.16807   | -0.12534379   | +0.30860002 |
| <i>P</i> | 4.17       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 29 | 291 | 0.0   | 0.3+  | 2007 10 13 | 703 | 0.7-  | 0.7+  | 2007 11 11 | 704 | 0.2- | 0.2+ |
| 2003 09 29 | 291 | 0.1-  | 0.2+  | 2007 10 13 | 703 | 0.2-  | 0.4+  | 2007 11 11 | 704 | 0.2+ | 0.5+ |
| 2003 09 29 | 291 | 0.0   | 0.2+  | 2007 10 15 | 413 | 1.2+  | 0.2+  | 2007 11 11 | 704 | 0.2- | 0.6+ |
| 2005 02 09 | 691 | 0.1-  | 0.1-  | 2007 10 15 | E10 | 1.2+  | 0.2+  | 2007 11 14 | G96 | 0.3- | 0.6- |
| 2005 02 09 | 691 | 0.2+  | 0.5+  | 2007 10 15 | 413 | 0.2+  | 0.2+  | 2007 11 14 | G96 | 0.1- | 0.7- |
| 2005 02 09 | 691 | 0.1+  | 0.3+  | 2007 10 15 | E10 | 0.2+  | 0.2+  | 2007 11 14 | G96 | 0.4- | 0.7- |
| 2006 04 21 | 691 | 0.2+  | 0.1+  | 2007 10 20 | 704 | (0.4- | 1.6+) | 2007 11 14 | G96 | 0.1- | 0.7- |
| 2006 04 21 | 691 | 0.2+  | 0.2+  | 2007 10 20 | 704 | 0.3-  | 0.1+  | 2007 11 15 | 699 | 0.0  | 0.2- |
| 2006 04 21 | 691 | 0.1-  | 0.4+  | 2007 10 20 | 704 | 0.4-  | 0.2+  | 2007 11 15 | 699 | 0.3- | 0.5- |
| 2007 08 11 | 704 | 0.9-  | 1.0+  | 2007 10 20 | 704 | 0.4-  | 0.1+  | 2007 11 15 | 699 | 0.1- | 0.6- |
| 2007 08 11 | 704 | 0.6-  | 0.5+  | 2007 10 20 | 704 | 0.7-  | 0.2+  | 2007 11 15 | 699 | 0.6- | 0.1- |
| 2007 08 11 | 704 | 0.3-  | 0.2+  | 2007 10 22 | B40 | 0.5-  | 0.4+  | 2007 11 20 | 703 | 0.3- | 0.1- |
| 2007 08 14 | 704 | 0.4-  | 1.2+  | 2007 10 22 | B40 | 0.7+  | 0.1+  | 2007 11 20 | 703 | 0.0  | 0.5- |
| 2007 08 14 | 704 | 0.9+  | 0.7+  | 2007 10 22 | B40 | 0.1-  | 0.8-  | 2007 11 20 | 703 | 0.1- | 0.1- |
| 2007 08 14 | 704 | 0.1+  | 1.3+  | 2007 10 30 | H51 | 0.2+  | 0.2+  | 2007 11 20 | 703 | 0.3- | 0.3- |
| 2007 08 14 | 704 | 0.3-  | 1.0+  | 2007 10 30 | H51 | (1.8+ | 0.1+) | 2007 11 29 | 704 | 0.5+ | 0.4+ |
| 2007 10 07 | 703 | 0.1+  | 0.0   | 2007 10 30 | H51 | 0.8+  | 0.1-  | 2007 11 29 | 704 | 0.0  | 0.0  |
| 2007 10 07 | 703 | 0.3-  | 0.1-  | 2007 10 30 | 703 | 0.0   | 0.4-  | 2007 11 29 | 704 | 0.2+ | 0.2+ |
| 2007 10 07 | 703 | 0.0   | 0.6+  | 2007 10 30 | 703 | 0.1-  | 0.2+  | 2007 11 29 | 704 | 0.5+ | 0.1- |
| 2007 10 07 | 703 | 0.9-  | 0.0   | 2007 10 30 | 703 | 0.2+  | 0.4+  | 2007 11 29 | 704 | 0.7+ | 0.2- |
| 2007 10 10 | 699 | 0.4-  | 0.0   | 2007 10 30 | 703 | 0.1-  | 0.4+  | 2007 12 06 | 703 | 0.4- | 0.1- |
| 2007 10 10 | 699 | 0.2-  | 0.5-  | 2007 11 04 | D29 | 0.2+  | 0.1-  | 2007 12 06 | 703 | 0.1+ | 0.4- |
| 2007 10 10 | 699 | (1.7+ | 1.4-) | 2007 11 04 | D29 | 0.2+  | 0.7-  | 2007 12 06 | 703 | 0.8+ | 0.2+ |
| 2007 10 10 | 699 | 0.0   | 0.2-  | 2007 11 04 | D29 | 0.2+  | 0.3-  | 2007 12 06 | 703 | 0.3- | 0.5- |
| 2007 10 13 | B40 | 0.0   | 0.0   | 2007 11 04 | D29 | 0.1-  | 0.3-  | 2007 12 15 | 699 | 0.4+ | 0.1- |
| 2007 10 13 | B40 | 0.2-  | 0.1+  | 2007 11 07 | 703 | 0.4-  | 0.1-  | 2007 12 15 | 699 | 0.3+ | 0.5- |
| 2007 10 13 | B40 | 0.1-  | 0.4-  | 2007 11 07 | 703 | 0.1+  | 0.0   | 2007 12 15 | 699 | 1.1+ | 1.7+ |
| 2007 10 13 | B40 | 0.3-  | 0.4-  | 2007 11 07 | 703 | 0.5-  | 0.1-  | 2007 12 15 | 699 | 0.6+ | 0.7+ |
| 2007 10 13 | 703 | 0.3+  | 0.1+  | 2007 11 07 | 703 | 0.0   | 0.2+  |            |     |      |      |
| 2007 10 13 | 703 | 0.1+  | 0.2+  | 2007 11 11 | 704 | 0.2+  | 0.2+  |            |     |      |      |

2007 TS<sub>184</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 31.06565   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23369104 | $\omega$ 313.66214 | +0.99138124   | -0.01939300 |
| <i>a</i> | 2.6104057  | $\Omega$ 47.90014  | +0.08210005   | +0.86266041 |
| <i>e</i> | 0.0695068  | <i>i</i> 10.05664  | -0.10209225   | +0.50541164 |
| <i>P</i> | 4.22       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 21 | 691 | 0.1- | 0.0  | 2007 10 13 | 850 | 0.0  | 0.0  | 2007 11 07 | G96 | 0.2+  | 0.3-  |
| 2003 11 21 | 691 | 0.2- | 0.0  | 2007 10 13 | 691 | 0.2+ | 0.2+ | 2007 11 07 | G96 | 0.2+  | 0.5-  |
| 2003 11 21 | 691 | 0.3- | 0.1+ | 2007 10 13 | 691 | 0.6- | 0.7- | 2007 11 14 | 704 | 1.2+  | 1.0+  |
| 2003 12 18 | 691 | 0.1- | 0.2+ | 2007 10 13 | 691 | 0.3- | 0.5- | 2007 11 14 | 704 | (1.6+ | 1.2+) |
| 2003 12 18 | 691 | 0.1- | 0.2+ | 2007 10 14 | 850 | 0.8+ | 0.5- | 2007 11 14 | 704 | 0.0   | 0.1+  |
| 2003 12 18 | 691 | 0.0  | 0.0  | 2007 10 14 | 850 | 0.2+ | 0.2- | 2007 11 14 | 704 | 0.2-  | 0.1+  |
| 2003 12 18 | 691 | 0.2- | 0.8- | 2007 10 14 | 850 | 1.0- | 0.4+ | 2007 11 14 | 704 | 0.1-  | 0.8+  |
| 2003 12 18 | 691 | 0.6+ | 0.8+ | 2007 11 05 | 704 | 0.1- | 0.1+ | 2007 12 05 | G96 | 1.2+  | 1.3-  |
| 2003 12 18 | 691 | 0.3+ | 0.4- | 2007 11 05 | 704 | 0.5- | 0.9+ | 2007 12 05 | G96 | 0.6+  | 0.1-  |
| 2007 10 09 | 691 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.1- | 0.7+ | 2007 12 05 | G96 | 0.5+  | 0.1+  |
| 2007 10 09 | 691 | 0.2- | 0.1+ | 2007 11 05 | 704 | 0.2- | 0.6+ | 2007 12 05 | G96 | 0.6+  | 0.3-  |
| 2007 10 09 | 691 | 0.1+ | 0.1+ | 2007 11 07 | G96 | 0.4+ | 0.4- |            |     |       |       |
| 2007 10 13 | 850 | 0.4- | 0.5+ | 2007 11 07 | G96 | 0.3+ | 0.1+ |            |     |       |       |

2007 TW<sub>184</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 269.06462  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18497835 | $\omega$ 291.09371 | -0.48620862   | -0.87343609 |
| <i>a</i> | 3.0506247  | $\Omega$ 188.15273 | +0.85518318   | -0.46933461 |
| <i>e</i> | 0.0489974  | <i>i</i> 10.83438  | +0.17961879   | -0.12974750 |
| <i>P</i> | 5.33       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.0  | 2007 10 19 | G96 | 0.0  | 0.6- |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.1+ | 0.1- | 2007 10 19 | G96 | 0.6+ | 0.2- |
| 2002 11 05 | 644 | 0.5- | 0.6+ | 2007 10 08 | G96 | 0.6+ | 0.0  | 2007 10 19 | G96 | 0.6+ | 0.5- |
| 2002 11 05 | 644 | 0.3- | 0.2+ | 2007 10 08 | G96 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.0  | 0.2- |
| 2002 11 05 | 644 | 0.2- | 0.3+ | 2007 10 13 | B21 | 0.2- | 0.1- | 2007 11 01 | B21 | 0.2+ | 0.3+ |
| 2005 04 30 | 691 | 0.1+ | 0.1+ | 2007 10 13 | B21 | 0.0  | 0.3- | 2007 11 01 | B21 | 0.4+ | 0.6+ |
| 2005 04 30 | 691 | 0.0  | 0.3+ | 2007 10 13 | B21 | 0.6+ | 0.3+ | 2007 11 07 | 691 | 0.1- | 0.3+ |
| 2005 04 30 | 691 | 0.2- | 0.2+ | 2007 10 14 | B21 | 0.6+ | 0.2- | 2007 11 07 | 691 | 0.2+ | 0.2- |
| 2007 09 12 | G96 | 0.4+ | 0.2- | 2007 10 14 | B21 | 0.5+ | 0.5- | 2007 11 07 | 691 | 0.2- | 0.1+ |
| 2007 09 12 | G96 | 0.0  | 0.1- | 2007 10 16 | A44 | 0.0  | 0.3+ | 2007 11 15 | 691 | 0.5- | 0.0  |
| 2007 09 12 | G96 | 0.2+ | 0.1+ | 2007 10 16 | A44 | 0.3+ | 0.3+ | 2007 11 15 | 691 | 0.7- | 0.4+ |
| 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 10 16 | A44 | 0.1+ | 0.2+ | 2007 11 15 | 691 | 0.2+ | 0.0  |

2007 TP<sub>185</sub> = 2007 TZ<sub>405</sub> = 2007 TF<sub>105</sub> = 1994 SZ<sub>12</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.96343    | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.15306835 | $\omega$ 240.06399 | +0.95988378   | -0.27763787 |
| <i>a</i> | 3.4610864  | $\Omega$ 136.02225 | +0.27278819   | +0.89225170 |
| <i>e</i> | 0.0593361  | <i>i</i> 3.24016   | +0.06488246   | +0.35609566 |
| <i>P</i> | 6.44       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 09 29 | 691 | 0.1- | 0.4- | 2007 09 10 | 691 | 0.1+  | 0.0   | 2007 10 13 | G96 | 0.7+  | 0.5-  |
| 1994 09 29 | 691 | 0.4- | 0.3- | 2007 09 10 | 691 | 0.3+  | 0.1-  | 2007 10 13 | G96 | 0.0   | 0.4-  |
| 1994 09 29 | 691 | 0.5+ | 0.5+ | 2007 09 10 | 691 | 0.0   | 0.0   | 2007 10 13 | B01 | 0.3+  | 0.1-  |
| 1994 09 30 | 691 | 0.0  | 0.4+ | 2007 09 18 | 691 | 0.7-  | 0.8+  | 2007 10 13 | B01 | 1.2-  | 0.7+  |
| 1994 09 30 | 691 | 0.0  | 0.0  | 2007 09 18 | 691 | (1.4- | 1.5+) | 2007 10 13 | B01 | 1.2-  | 0.4-  |
| 1994 09 30 | 691 | 0.5- | 0.1- | 2007 09 18 | 691 | (1.9- | 0.6-) | 2007 10 13 | B01 | 1.2-  | 1.2-  |
| 2001 12 14 | 691 | 0.2+ | 0.0  | 2007 10 04 | 703 | 0.1+  | 0.2+  | 2007 10 19 | 704 | (0.9+ | 1.5+) |
| 2001 12 14 | 691 | 0.6+ | 0.2- | 2007 10 04 | 703 | 0.0   | 0.7-  | 2007 10 19 | 704 | 0.8+  | 0.9+  |
| 2001 12 14 | 691 | 0.4+ | 0.0  | 2007 10 04 | 703 | 0.6-  | 0.6-  | 2007 10 19 | 704 | 1.0+  | 0.6+  |
| 2003 02 01 | 645 | 0.0  | 0.0  | 2007 10 04 | 703 | 0.4+  | 0.4+  | 2007 10 19 | 704 | 0.1-  | 1.2+  |
| 2003 02 01 | 645 | 0.0  | 0.0  | 2007 10 13 | 704 | 0.2-  | 0.0   | 2007 11 01 | 691 | 0.1+  | 0.0   |
| 2006 06 19 | G96 | 0.4+ | 0.2- | 2007 10 13 | 704 | 0.5+  | 1.2-  | 2007 11 01 | 691 | 0.2-  | 0.1-  |
| 2006 06 19 | G96 | 0.3+ | 0.0  | 2007 10 13 | 704 | 0.9-  | 0.6-  | 2007 11 01 | 691 | 0.0   | 0.1-  |
| 2006 06 19 | G96 | 0.2+ | 0.3- | 2007 10 13 | G96 | 0.2+  | 0.4-  |            |     |       |       |
| 2006 06 19 | G96 | 0.7+ | 0.1+ | 2007 10 13 | G96 | 0.7+  | 0.4-  |            |     |       |       |

2007 TD<sub>186</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.79349   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21946804 | $\omega$ 158.24159 | +0.91482360   | +0.40379109 |
| <i>a</i> | 2.7220026  | $\Omega$ 177.90247 | -0.39323195   | +0.89463541 |
| <i>e</i> | 0.1938257  | <i>i</i> 11.19951  | -0.09201311   | +0.19125959 |
| <i>P</i> | 4.49       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 25 | 695 | 0.0  | 0.2+ | 2007 10 10 | 703 | 0.4- | 0.2- | 2007 10 24 | G96 | 0.9+ | 0.2- |
| 2001 03 25 | 695 | 0.3- | 0.3+ | 2007 10 13 | 704 | 0.2+ | 0.1+ | 2007 10 24 | G96 | 0.3+ | 0.1- |
| 2001 04 15 | 691 | 0.4+ | 0.5+ | 2007 10 13 | 704 | 0.0  | 0.3- | 2007 10 31 | 703 | 1.9+ | 0.0  |
| 2001 04 15 | 691 | 0.3+ | 0.6+ | 2007 10 13 | 704 | 0.1+ | 0.7+ | 2007 10 31 | 703 | 0.1- | 0.2+ |
| 2001 04 15 | 691 | 0.2+ | 1.1+ | 2007 10 13 | 704 | 0.7+ | 0.7+ | 2007 10 31 | 703 | 0.8+ | 0.0  |
| 2006 05 03 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 704 | 0.4+ | 0.2+ | 2007 10 31 | 703 | 0.2- | 1.2+ |
| 2006 05 03 | 691 | 0.4- | 0.2+ | 2007 10 19 | 704 | 0.5- | 0.6- | 2007 10 31 | 703 | 0.2- | 0.2+ |
| 2006 05 03 | 691 | 0.4+ | 0.2+ | 2007 10 19 | 704 | 0.1+ | 0.2+ | 2007 10 31 | 703 | 0.4+ | 0.7+ |
| 2007 09 18 | 699 | 1.4- | 0.8+ | 2007 10 19 | 704 | 0.3- | 0.5+ | 2007 10 31 | 703 | 0.4- | 0.5- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 18 | 699 | 1.0+ | 0.3+ | 2007 10 19 | 703 | 0.4− | 0.0  | 2007 10 31 | 703 | 0.7+ | 1.0+ |
| 2007 09 18 | 699 | 1.7− | 1.6− | 2007 10 19 | 703 | 1.3+ | 0.3+ | 2007 11 07 | 703 | 0.7+ | 0.0  |
| 2007 09 18 | 699 | 0.1+ | 1.7+ | 2007 10 19 | 703 | 0.7+ | 0.5+ | 2007 11 07 | 703 | 0.4− | 0.9+ |
| 2007 09 21 | D29 | 0.0  | 0.2− | 2007 10 19 | 703 | 0.8+ | 0.2+ | 2007 11 07 | 703 | 1.0− | 0.1+ |
| 2007 09 21 | D29 | 0.4− | 0.2+ | 2007 10 21 | G96 | 0.0  | 0.4− | 2007 11 07 | 703 | 0.7− | 0.3+ |
| 2007 09 21 | D29 | 0.4− | 0.0  | 2007 10 21 | G96 | 0.5+ | 0.3− | 2007 11 11 | 704 | 0.1+ | 0.2− |
| 2007 09 21 | D29 | 0.8− | 0.0  | 2007 10 21 | G96 | 0.2+ | 0.5− | 2007 11 11 | 704 | 0.2+ | 0.4− |
| 2007 10 10 | 703 | 1.3− | 0.3+ | 2007 10 21 | G96 | 0.1+ | 0.3− | 2007 11 11 | 704 | 0.1− | 0.1− |
| 2007 10 10 | 703 | 0.0  | 0.3− | 2007 10 24 | G96 | 0.3+ | 0.4− | 2007 11 11 | 704 | 0.6− | 0.6− |
| 2007 10 10 | 703 | 0.9− | 0.2− | 2007 10 24 | G96 | 0.5− | 0.1− | 2007 11 11 | 704 | 0.3− | 0.8− |

**2007 TK<sub>186</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 10.29233   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18334472 | $\omega$ | 193.05943 | +0.97118485   | −0.23831741 |
| <i>a</i> | 3.0687189  | $\Omega$ | 180.73862 | +0.23108729   | +0.94389161 |
| <i>e</i> | 0.1258848  | <i>i</i> | 9.79306   | +0.05829803   | +0.22863387 |
| <i>P</i> | 5.38       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 10 | 691 | 0.2+ | 0.2+  | 2007 09 13 | G96 | 0.1− | 0.3− | 2007 10 13 | 704 | 0.5− | 0.2+ |
| 1991 10 10 | 691 | 0.1− | 0.2−  | 2007 09 13 | G96 | 0.1− | 0.2− | 2007 10 19 | 704 | 0.3− | 0.0  |
| 1991 10 10 | 691 | (0.0 | 5.2−) | 2007 09 21 | D29 | 0.4+ | 0.4− | 2007 10 19 | 704 | 0.3− | 0.2+ |
| 1999 03 21 | 691 | 0.1− | 0.6−  | 2007 09 21 | D29 | 0.2+ | 0.2− | 2007 10 19 | 704 | 0.4+ | 1.1+ |
| 1999 03 21 | 691 | 0.2− | 0.2−  | 2007 09 21 | D29 | 0.9+ | 0.5− | 2007 10 19 | 704 | 0.0  | 0.7+ |
| 1999 03 21 | 691 | 0.2− | 0.6−  | 2007 09 21 | D29 | 0.4− | 1.2− | 2007 10 31 | 703 | 0.1+ | 0.2+ |
| 2000 05 29 | 691 | 0.2− | 0.1−  | 2007 10 12 | 703 | 0.1+ | 0.3− | 2007 10 31 | 703 | 0.2− | 0.6+ |
| 2000 05 29 | 691 | 0.1− | 0.6−  | 2007 10 12 | 703 | 1.0− | 0.1− | 2007 10 31 | 703 | 0.7+ | 0.2+ |
| 2000 05 29 | 691 | 0.2− | 0.2+  | 2007 10 12 | 703 | 0.1+ | 0.1+ | 2007 10 31 | 703 | 0.7− | 0.0  |
| 2005 04 02 | 691 | 0.3+ | 0.6+  | 2007 10 12 | 703 | 0.5− | 0.1+ | 2007 11 07 | 703 | 1.6+ | 0.1+ |
| 2005 04 02 | 691 | 0.3+ | 0.5+  | 2007 10 13 | 704 | 0.4− | 0.6− | 2007 11 07 | 703 | 0.3+ | 0.8+ |
| 2005 04 02 | 691 | 0.3+ | 0.0   | 2007 10 13 | 704 | 0.2− | 0.4− | 2007 11 07 | 703 | 0.9+ | 1.0+ |
| 2007 09 13 | G96 | 0.1− | 0.3−  | 2007 10 13 | 704 | 0.2+ | 0.2+ | 2007 11 07 | 703 | 1.0− | 1.0− |
| 2007 09 13 | G96 | 0.2− | 0.3−  | 2007 10 13 | 704 | 0.1+ | 0.3− |            |     |      |      |

**2007 TM<sub>187</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 312.52076  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28375486 | $\omega$ | 330.34920 | +0.00735869   | −0.99752130 |
| <i>a</i> | 2.2935445  | $\Omega$ | 119.14957 | +0.93250398   | −0.01842448 |
| <i>e</i> | 0.0962756  | <i>i</i> | 4.59589   | +0.36108471   | +0.06791023 |
| <i>P</i> | 3.47       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 04 08 | 691 | 0.4+ | 0.2+ | 2007 10 13 | 704 | 0.8− | 0.6+ | 2007 10 20 | G96 | 0.3−  | 0.0   |
| 1995 04 08 | 691 | 0.1+ | 0.9+ | 2007 10 15 | G96 | 0.3+ | 0.3− | 2007 10 20 | G96 | 0.1+  | 0.2−  |
| 2002 04 13 | 644 | 0.1+ | 0.5+ | 2007 10 15 | G96 | 0.4+ | 0.3− | 2007 10 20 | G96 | 0.1+  | 0.1−  |
| 2002 04 13 | 644 | 0.3+ | 0.8+ | 2007 10 15 | G96 | 0.4+ | 0.3− | 2007 10 21 | 683 | 0.7+  | 0.7−  |
| 2002 04 13 | 644 | 0.1+ | 0.4+ | 2007 10 15 | G96 | 0.1+ | 0.1− | 2007 10 21 | 683 | (1.0− | 2.7−) |
| 2004 12 20 | G96 | 0.1+ | 0.0  | 2007 10 19 | 704 | 1.8− | 1.1+ | 2007 10 21 | 683 | 0.1−  | 1.1−  |
| 2004 12 20 | G96 | 0.1+ | 0.1− | 2007 10 19 | 704 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.6+  | 0.7−  |
| 2004 12 20 | G96 | 0.2+ | 0.2− | 2007 10 19 | 703 | 1.2+ | 1.5+ | 2007 11 15 | 704 | 0.5+  | 0.2−  |
| 2004 12 20 | G96 | 0.1+ | 0.1− | 2007 10 19 | 703 | 1.0+ | 0.4+ | 2007 11 15 | 704 | 1.5−  | 0.1+  |
| 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 10 19 | 704 | 0.9− | 0.0  | 2007 11 15 | 704 | 0.3−  | 0.3−  |
| 2005 03 10 | G96 | 0.2− | 0.1+ | 2007 10 19 | 703 | 1.8+ | 1.2+ | 2007 11 18 | 703 | 0.0   | 0.1−  |
| 2005 03 10 | G96 | 0.1− | 0.2− | 2007 10 19 | 704 | 0.3− | 0.7+ | 2007 11 18 | 703 | 1.8−  | 1.5−  |
| 2005 03 10 | G96 | 0.1− | 0.2− | 2007 10 19 | 703 | 1.2+ | 0.1+ | 2007 11 18 | 703 | 0.6+  | 0.0   |
| 2007 10 13 | 704 | 0.4+ | 0.6+ | 2007 10 19 | 704 | 1.1− | 1.3+ | 2007 11 18 | 703 | 1.3−  | 0.1+  |
| 2007 10 13 | 704 | 0.7− | 0.6+ | 2007 10 20 | G96 | 0.2+ | 0.2− |            |     |       |       |

**2007 TO<sub>187</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 16.57167   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.20405757 | $\omega$ | 281.64779 | +0.96652349   | −0.16132219 |
| <i>a</i> | 2.8573772  | $\Omega$ | 87.87177  | +0.23019211   | +0.88867489 |
| <i>e</i> | 0.1692296  | <i>i</i> | 11.51684  | −0.11333107   | +0.42922265 |
| <i>P</i> | 4.83       | <i>H</i> | 15.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 05 | 644 | 0.1+ | 0.8+ | 2007 10 10 | 703 | 0.2− | 0.3+ | 2007 10 31 | 703 | 0.1− | 0.6− |
| 2002 11 05 | 644 | 0.2+ | 0.7+ | 2007 10 13 | 704 | 0.2− | 0.2+ | 2007 10 31 | 703 | 0.3− | 0.4− |
| 2002 11 05 | 644 | 0.3+ | 0.6+ | 2007 10 13 | 704 | 0.2− | 1.0+ | 2007 10 31 | 703 | 0.2+ | 0.1− |
| 2002 11 28 | 699 | 0.3− | 0.9+ | 2007 10 13 | 704 | 0.1+ | 0.6+ | 2007 10 31 | 703 | 0.3+ | 0.3− |
| 2002 11 28 | 699 | 0.5− | 0.4− | 2007 10 13 | 704 | 0.1+ | 0.8− | 2007 11 15 | 703 | 0.1− | 0.0  |
| 2002 11 28 | 699 | 0.8− | 0.4+ | 2007 10 18 | 704 | 0.4+ | 0.0  | 2007 11 15 | 703 | 0.1− | 0.6− |
| 2002 11 28 | 699 | 0.7− | 0.6+ | 2007 10 18 | 704 | 0.2+ | 0.2+ | 2007 11 15 | 703 | 0.2− | 0.6− |
| 2004 01 13 | 699 | 0.7+ | 0.3− | 2007 10 18 | 704 | 0.4+ | 0.2− | 2007 11 15 | 703 | 0.2− | 0.1+ |
| 2004 01 13 | 699 | 0.6− | 1.1− | 2007 10 18 | 704 | 0.7+ | 0.0  | 2007 11 15 | 703 | 0.4+ | 0.3− |
| 2004 01 13 | 699 | 0.4+ | 0.2+ | 2007 10 18 | 704 | 0.7+ | 0.1− | 2007 11 15 | 703 | 0.3+ | 0.4− |
| 2004 01 13 | 699 | 1.1− | 0.1+ | 2007 10 19 | 699 | 0.3− | 0.1− | 2007 11 15 | 703 | 0.1+ | 0.2− |
| 2004 01 26 | 699 | 0.1+ | 0.7+ | 2007 10 19 | 699 | 0.2− | 0.4− | 2007 11 15 | 703 | 0.1− | 0.1+ |
| 2004 01 26 | 699 | 0.1+ | 0.5+ | 2007 10 19 | 699 | 0.7− | 0.2+ | 2007 12 06 | 703 | 0.4+ | 0.7+ |
| 2004 01 26 | 699 | 0.2+ | 0.3− | 2007 10 19 | 703 | 0.3− | 0.3+ | 2007 12 06 | 703 | 0.3+ | 0.6− |
| 2004 01 26 | 699 | 0.1+ | 0.7+ | 2007 10 19 | 699 | 0.2+ | 0.8− | 2007 12 06 | 703 | 0.5− | 0.5+ |
| 2007 10 10 | 703 | 0.3− | 0.1− | 2007 10 19 | 703 | 0.2+ | 0.6− | 2007 12 06 | 703 | 0.2− | 1.6+ |
| 2007 10 10 | 703 | 0.1+ | 0.3− | 2007 10 19 | 703 | 0.2+ | 0.1− |            |     |      |      |
| 2007 10 10 | 703 | 0.0  | 0.2− | 2007 10 19 | 703 | 0.1+ | 0.5− |            |     |      |      |

**2007 TT<sub>187</sub> = 1998 FG<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 158.85253  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.36124703 | $\omega$ | 22.75088  | −0.86119651   | +0.50551065 |
| <i>a</i> | 1.9525396  | $\Omega$ | 188.23664 | −0.50435399   | −0.86281566 |
| <i>e</i> | 0.0423857  | <i>i</i> | 21.67429  | −0.06298912   | −0.00284946 |
| <i>P</i> | 2.73       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 03 29 | 704 | 1.5− | 0.2− | 2006 02 24 | 644 | 0.4−  | 0.1−  | 2007 10 14 | 704 | 1.5+  | 0.8−  |
| 1998 03 29 | 704 | 0.0  | 0.4− | 2006 02 24 | 644 | 0.3+  | 0.3+  | 2007 10 14 | 704 | (2.2+ | 0.1+) |
| 1998 03 29 | 704 | 1.4+ | 0.4− | 2006 02 24 | 644 | 0.1+  | 0.2−  | 2007 10 14 | 704 | 0.1+  | 0.2−  |
| 1998 03 29 | 704 | 1.0− | 0.2+ | 2007 09 20 | 691 | 0.4−  | 0.0   | 2007 10 14 | 704 | 0.2+  | 0.5+  |
| 1998 03 29 | 704 | 0.2− | 1.1− | 2007 09 20 | 691 | 0.4−  | 0.2−  | 2007 10 18 | 704 | 0.4−  | 0.4−  |
| 1998 04 01 | 704 | 1.6+ | 0.7+ | 2007 09 20 | 691 | 0.5−  | 0.3−  | 2007 10 18 | 704 | 1.0+  | 1.3+  |
| 1998 04 01 | 704 | 0.3− | 0.4+ | 2007 10 07 | 703 | 0.6−  | 0.3+  | 2007 10 18 | 704 | 0.8−  | 0.9−  |
| 1998 04 01 | 704 | 0.3+ | 0.1− | 2007 10 07 | 703 | 0.3−  | 0.8+  | 2007 10 18 | 704 | 1.0+  | 0.1−  |
| 1998 04 01 | 704 | 0.9+ | 1.8+ | 2007 10 07 | 703 | 0.1+  | 0.6−  | 2007 10 18 | 704 | 0.5−  | 0.5+  |
| 1998 04 01 | 704 | 1.1− | 0.9− | 2007 10 07 | 703 | (2.2− | 0.1+) |            |     |       |       |

**2007 TR<sub>189</sub> = 1995 TX<sub>5</sub> = 2006 KC<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 168.96711  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23901446 | $\omega$ | 23.11845  | −0.99030526   | +0.13886873 |
| <i>a</i> | 2.5715004  | $\Omega$ | 164.86282 | −0.12934514   | −0.91317025 |
| <i>e</i> | 0.0865675  | <i>i</i> | 0.72687   | −0.05064911   | −0.38319130 |
| <i>P</i> | 4.12       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 15 | 691 | 0.4+ | 0.3− | 2004 12 19 | 691 | 0.2+ | 0.2+ | 2007 09 10 | G96 | 0.1− | 0.1− |
| 1995 10 15 | 691 | 0.2− | 0.2− | 2006 05 19 | G96 | 0.1− | 0.0  | 2007 09 10 | G96 | 0.5+ | 0.1+ |
| 1995 10 15 | 691 | 0.2− | 0.4− | 2006 05 19 | G96 | 0.1+ | 0.2− | 2007 10 04 | G96 | 0.1+ | 0.1+ |
| 1995 10 21 | 691 | 0.1− | 0.0  | 2006 05 19 | G96 | 0.1− | 0.1− | 2007 10 04 | G96 | 0.0  | 0.1+ |
| 1995 10 21 | 691 | 0.2+ | 0.2− | 2006 05 19 | G96 | 0.4− | 0.1− | 2007 10 04 | G96 | 0.1+ | 0.2+ |
| 1995 10 21 | 691 | 0.2+ | 0.2+ | 2006 05 24 | 644 | 0.0  | 0.1− | 2007 10 04 | G96 | 0.0  | 0.4+ |
| 2000 12 21 | 691 | 0.1+ | 0.1+ | 2006 05 24 | 644 | 0.5+ | 0.2+ | 2007 10 11 | G96 | 0.1− | 0.0  |
| 2000 12 21 | 691 | 0.2− | 0.8+ | 2006 05 24 | 644 | 0.1+ | 0.2+ | 2007 10 11 | G96 | 0.1+ | 0.4+ |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 21 | 691 | 0.2+ | 0.0  | 2007 08 10 | 691 | 0.0  | 0.0  | 2007 10 11 | G96 | 0.2- | 0.0  |
| 2003 09 29 | 645 | 0.1+ | 0.2- | 2007 08 10 | 691 | 0.2- | 0.1+ | 2007 10 11 | G96 | 0.1- | 0.1+ |
| 2003 09 29 | 645 | 0.1+ | 0.1- | 2007 08 10 | 691 | 0.1- | 0.2+ | 2007 10 19 | G96 | 0.1+ | 0.3- |
| 2004 12 10 | 691 | 0.1- | 0.0  | 2007 08 23 | 691 | 0.4- | 0.6+ | 2007 10 19 | G96 | 0.1+ | 0.3- |
| 2004 12 10 | 691 | 0.9- | 0.4- | 2007 08 23 | 691 | 0.0  | 0.2- | 2007 10 19 | G96 | 0.0  | 0.0  |
| 2004 12 10 | 691 | 0.2+ | 0.4- | 2007 08 23 | 691 | 0.3- | 0.3- | 2007 10 19 | G96 | 0.2- | 0.2+ |
| 2004 12 19 | 691 | 0.2+ | 0.2+ | 2007 09 10 | G96 | 0.6- | 0.0  |            |     |      |      |
| 2004 12 19 | 691 | 0.5+ | 0.3+ | 2007 09 10 | G96 | 0.3+ | 0.3+ |            |     |      |      |

**2007 TD<sub>190</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 315.89872  |          | (2000.0)  | $\mathbf{P}$ |      | $\mathbf{Q}$ |   |
|-----|------------|----------|-----------|--------------|------|--------------|---|
| $n$ | 0.18971168 | $\omega$ | 207.70363 | +0.64693653  |      | -0.76253672  |   |
| $a$ | 2.9996690  | $\Omega$ | 201.98585 | +0.70123956  |      | +0.59662020  |   |
| $e$ | 0.0765414  | $i$      | 0.50483   | +0.29956001  |      | +0.25016412  |   |
| $P$ | 5.20       | $H$      | 16.2      | $G$          | 0.15 | $U$          | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 01 17 | 691 | 0.2+ | 0.2- | 2007 08 10 | 691 | 0.3- | 0.0  | 2007 10 11 | G96 | 0.1+ | 0.2+ |
| 1999 01 17 | 691 | 0.2- | 0.2+ | 2007 08 10 | 691 | 0.1- | 0.1+ | 2007 10 11 | G96 | 0.1- | 0.2+ |
| 2005 04 04 | G96 | 0.3+ | 0.3+ | 2007 08 10 | 691 | 0.4- | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.0  |
| 2005 04 04 | G96 | 0.0  | 0.2+ | 2007 09 10 | G96 | 0.9+ | 0.5+ | 2007 10 11 | G96 | 0.3- | 0.6- |
| 2005 04 04 | G96 | 0.3- | 0.0  | 2007 09 10 | G96 | 0.6+ | 0.2+ | 2007 10 19 | G96 | 0.0  | 0.1- |
| 2005 04 04 | G96 | 0.4- | 0.0  | 2007 09 10 | G96 | 0.2- | 0.1- | 2007 10 19 | G96 | 0.3- | 0.2- |
| 2005 05 13 | G96 | 0.4+ | 0.1- | 2007 10 04 | G96 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.1- | 0.0  |
| 2005 05 13 | G96 | 0.1- | 0.3- | 2007 10 04 | G96 | 0.3- | 0.3- | 2007 10 19 | G96 | 0.1+ | 0.0  |
| 2005 05 13 | G96 | 0.4+ | 0.0  | 2007 10 04 | G96 | 0.3+ | 0.1- |            |     |      |      |
| 2005 05 13 | G96 | 0.2- | 0.3- | 2007 10 04 | G96 | 0.1- | 0.1- |            |     |      |      |

**2007 TE<sub>190</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 80.34466   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18639305 | $\omega$ | 95.33451  | +0.00805734  | +0.99960915  |
| $a$ | 3.0351692  | $\Omega$ | 174.89212 | -0.99445566  | +0.01081699  |
| $e$ | 0.0666249  | $i$      | 17.49834  | -0.10484759  | -0.02577859  |
| $P$ | 5.29       | $H$      | 15.6      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 07 | 291 | 0.4- | 0.7+ | 2006 06 18 | 691 | 0.1+ | 0.3+ | 2007 10 04 | G96 | 0.3- | 0.1- |
| 2002 12 07 | 291 | 0.0  | 1.1+ | 2006 06 18 | 691 | 0.2- | 0.3+ | 2007 10 04 | G96 | 0.3- | 0.2- |
| 2002 12 07 | 291 | 0.2+ | 0.1+ | 2007 09 14 | 699 | 0.4- | 0.8+ | 2007 10 11 | G96 | 0.1- | 0.0  |
| 2005 04 09 | G96 | 0.2+ | 0.2+ | 2007 09 14 | 699 | 0.9- | 0.0  | 2007 10 11 | G96 | 0.3- | 0.1- |
| 2005 04 09 | G96 | 0.5+ | 1.4+ | 2007 09 14 | 699 | 1.4+ | 0.3+ | 2007 10 11 | G96 | 0.1+ | 0.1- |
| 2005 04 09 | G96 | 0.1+ | 0.4+ | 2007 09 14 | 699 | 1.4- | 1.4+ | 2007 10 11 | G96 | 0.0  | 0.7- |
| 2005 04 09 | G96 | 0.4- | 0.1- | 2007 09 15 | G96 | 0.2+ | 0.3+ | 2007 10 19 | G96 | 0.1+ | 0.3- |
| 2005 05 04 | G96 | 0.2+ | 0.0  | 2007 09 15 | G96 | 0.5+ | 0.1+ | 2007 10 19 | G96 | 0.4+ | 0.0  |
| 2005 05 04 | G96 | 0.1- | 0.3+ | 2007 09 15 | G96 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.1+ |
| 2005 05 04 | G96 | 0.2- | 0.2+ | 2007 09 15 | G96 | 0.4+ | 0.0  | 2007 10 19 | G96 | 0.1- | 0.0  |
| 2005 05 04 | G96 | 0.2- | 0.1- | 2007 10 04 | G96 | 0.1+ | 0.0  |            |     |      |      |
| 2006 06 18 | 691 | 0.0  | 0.1+ | 2007 10 04 | G96 | 0.2+ | 0.6- |            |     |      |      |

**2007 TF<sub>192</sub> = 2005 GD<sub>99</sub> = 2005 JN<sub>184</sub>**Id. Minor Planet Center (*MPO* 128470; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 328.46911  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.19094328 | $\omega$ | 204.80185 | +0.46239883  | -0.88122515  |
| $a$ | 2.9867563  | $\Omega$ | 217.86992 | +0.83784939  | +0.47047151  |
| $e$ | 0.0949604  | $i$      | 9.19848   | +0.29016498  | +0.04581258  |
| $P$ | 5.16       | $H$      | 16.3      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 12 29 | 688 | 0.6+ | 0.5- | 2007 09 20 | 703 | 0.1+ | 0.1- | 2007 10 18 | 691 | 0.2-  | 0.1+  |
| 1997 12 29 | 688 | 0.4- | 0.1+ | 2007 10 05 | 691 | 0.1+ | 0.1- | 2007 10 18 | 691 | 0.1-  | 0.0   |
| 1999 03 22 | 645 | 0.0  | 0.1+ | 2007 10 05 | 691 | 0.0  | 0.2- | 2007 10 18 | 691 | (2.6+ | 0.6-) |
| 1999 03 22 | 645 | 0.0  | 0.1+ | 2007 10 05 | 691 | 0.2- | 0.3+ | 2007 10 20 | 703 | 0.6+  | 0.1-  |

## M.P.O. 129875

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 07 | 691 | 0.3+ | 0.3+ | 2007 10 11 | 691 | 0.2- | 0.0  | 2007 10 20 | 703 | 0.9+ | 0.6- |
| 2005 04 07 | 691 | 0.4+ | 0.3+ | 2007 10 11 | 691 | 0.4- | 0.1+ | 2007 10 20 | 703 | 0.2- | 0.4- |
| 2005 04 07 | 691 | 0.4+ | 0.2+ | 2007 10 11 | 691 | 0.1- | 0.1+ | 2007 10 20 | 703 | 0.2+ | 0.8+ |
| 2005 04 11 | G96 | 0.0  | 0.1- | 2007 10 11 | G96 | 0.6+ | 0.4- | 2007 10 31 | 691 | 0.1+ | 0.2+ |
| 2005 04 11 | G96 | 0.5- | 0.2- | 2007 10 11 | G96 | 0.5+ | 0.1- | 2007 10 31 | 691 | 0.0  | 0.1+ |
| 2005 04 11 | G96 | 0.6- | 0.4+ | 2007 10 11 | G96 | 0.6+ | 0.1- | 2007 10 31 | 691 | 0.1- | 0.3+ |
| 2005 04 11 | G96 | 0.0  | 0.1+ | 2007 10 11 | G96 | 0.8+ | 0.2- | 2007 11 07 | 691 | 0.1+ | 0.1- |
| 2005 05 10 | G96 | 0.1- | 0.2+ | 2007 10 11 | G96 | 0.5+ | 0.3- | 2007 11 07 | 691 | 0.1+ | 0.2+ |
| 2005 05 10 | G96 | 0.2- | 0.1- | 2007 10 11 | G96 | 0.7+ | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2005 05 10 | G96 | 0.3- | 0.1- | 2007 10 11 | G96 | 0.2+ | 0.0  | 2007 11 13 | 691 | 0.2+ | 0.1- |
| 2005 05 10 | G96 | 1.6- | 1.4+ | 2007 10 11 | G96 | 0.4+ | 0.1- | 2007 11 13 | 691 | 0.1- | 0.3+ |
| 2007 09 20 | 703 | 1.0- | 0.7+ | 2007 10 16 | 691 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.3+ | 0.0  |
| 2007 09 20 | 703 | 0.9- | 0.1- | 2007 10 16 | 691 | 0.8- | 0.1+ |            |     |      |      |
| 2007 09 20 | 703 | 1.0- | 0.1- | 2007 10 16 | 691 | 0.0  | 0.6+ |            |     |      |      |

**2007 TQ<sub>192</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 25.37950   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.30869556 | $\omega$ | 136.93741 | +0.99741022 | +0.04216501 |     |   |
| $a$ | 2.1682821  | $\Omega$ | 220.75516 | -0.05928631 | +0.94065008 |     |   |
| $e$ | 0.0679518  | $i$      | 5.12059   | +0.04071841 | +0.33674848 |     |   |
| $P$ | 3.19       | $H$      | 18.0      | $G$         | 0.15        | $U$ | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 15 | G96 | 0.3+  | 0.7-  | 2007 10 11 | G96 | 0.6+ | 0.2- | 2007 10 21 | 691 | 0.4+ | 0.0  |
| 2004 10 15 | G96 | 0.4-  | 0.6-  | 2007 10 11 | G96 | 0.8+ | 0.4- | 2007 10 31 | 691 | 0.3- | 0.2+ |
| 2004 10 15 | G96 | (1.4+ | 1.8-) | 2007 10 11 | G96 | 0.6+ | 0.3- | 2007 10 31 | 691 | 0.0  | 0.2+ |
| 2004 10 15 | G96 | 0.3-  | 0.9-  | 2007 10 11 | G96 | 0.9+ | 0.4- | 2007 10 31 | 691 | 1.1+ | 0.0  |
| 2004 11 10 | 695 | 0.4+  | 0.0   | 2007 10 13 | 691 | 0.3- | 0.3- | 2007 11 02 | 691 | 0.2- | 0.2+ |
| 2004 11 10 | 695 | 0.4-  | 0.0   | 2007 10 13 | 691 | 0.1+ | 0.1- | 2007 11 02 | 691 | 0.1+ | 0.4+ |
| 2004 12 11 | 599 | 0.3-  | 0.1+  | 2007 10 13 | 691 | 0.0  | 0.1- | 2007 11 02 | 691 | 0.2- | 0.1+ |
| 2004 12 11 | 599 | 0.6+  | 0.4+  | 2007 10 16 | 691 | 0.2- | 0.2- | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2004 12 11 | 599 | 0.1+  | 0.1+  | 2007 10 16 | 691 | 0.0  | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2007 10 05 | 691 | 0.4-  | 0.1-  | 2007 10 16 | 691 | 0.4- | 0.2- | 2007 12 06 | G96 | 0.4+ | 0.1- |
| 2007 10 05 | 691 | 0.1-  | 0.3+  | 2007 10 21 | 691 | 0.3- | 0.2+ | 2007 12 06 | G96 | 0.5- | 0.3+ |
| 2007 10 05 | 691 | 0.3-  | 0.2-  | 2007 10 21 | 691 | 0.2+ | 0.1- |            |     |      |      |

**2007 TB<sub>193</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 32.49508   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.22023286 | $\omega$ | 270.94427 | +0.98469279 | +0.16279735 |     |   |
| $a$ | 2.7156970  | $\Omega$ | 79.68832  | -0.12383322 | +0.90482703 |     |   |
| $e$ | 0.0948614  | $i$      | 3.62860   | -0.12265984 | +0.39342732 |     |   |
| $P$ | 4.48       | $H$      | 16.9      | $G$         | 0.15        | $U$ | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 22 | 807 | 0.3+ | 0.6+ | 2007 10 11 | 691 | 0.1+ | 0.2- | 2007 10 20 | H07 | 0.1+ | 0.0  |
| 2001 05 22 | 807 | 0.2+ | 0.7+ | 2007 10 11 | 691 | 0.3+ | 0.3- | 2007 10 20 | H07 | 1.3+ | 0.6+ |
| 2003 12 25 | 691 | 0.2+ | 0.1- | 2007 10 11 | G96 | 0.7+ | 0.1+ | 2007 10 20 | H07 | 0.8- | 1.5+ |
| 2003 12 25 | 691 | 0.4- | 0.2+ | 2007 10 11 | G96 | 0.9+ | 0.0  | 2007 11 01 | 291 | 0.4- | 0.1+ |
| 2003 12 25 | 691 | 0.2+ | 0.1- | 2007 10 11 | G96 | 0.5+ | 0.1- | 2007 11 01 | 291 | 0.4- | 0.0  |
| 2007 09 14 | G96 | 0.4- | 1.0- | 2007 10 11 | G96 | 0.7+ | 0.0  | 2007 11 01 | 291 | 0.4- | 0.0  |
| 2007 09 14 | G96 | 0.0  | 0.5- | 2007 10 15 | 691 | 0.1- | 0.2+ | 2007 11 13 | G96 | 0.7+ | 0.6- |
| 2007 09 14 | G96 | 0.3- | 0.3- | 2007 10 15 | 691 | 0.2+ | 0.2- | 2007 11 13 | G96 | 0.2+ | 0.2- |
| 2007 10 06 | H07 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.2- | 0.1- | 2007 11 13 | G96 | 0.6+ | 0.2- |
| 2007 10 06 | H07 | 0.3+ | 0.2- | 2007 10 19 | 691 | 0.1- | 0.4- | 2007 11 13 | G96 | 0.6+ | 0.3- |
| 2007 10 06 | H07 | 0.1- | 0.4+ | 2007 10 19 | 691 | 0.2- | 0.4+ |            |     |      |      |
| 2007 10 11 | 691 | 0.2- | 0.4+ | 2007 10 19 | 691 | 0.1+ | 0.5+ |            |     |      |      |

**2007 TK<sub>193</sub> = 2007 TA<sub>415</sub>**Id. Minor Planet Center (d, *MPO* 129053)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.53642   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21300811 | $\omega$ | 183.27571 | +0.88569798   | -0.46325050 |
| <i>a</i> | 2.7767618  | $\Omega$ | 204.39477 | +0.42761971   | +0.83970482 |
| <i>e</i> | 0.0839892  | <i>i</i> | 4.25272   | +0.18077742   | +0.28336337 |
| <i>P</i> | 4.63       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 645 | 0.1+ | 0.1- | 2007 10 08 | G96 | 0.7+ | 0.3+ | 2007 11 03 | 691 | 0.5- | 0.4+ |
| 2002 10 30 | 645 | 0.1- | 0.0  | 2007 10 08 | G96 | 1.0- | 0.9+ | 2007 11 03 | 691 | 0.2+ | 0.5+ |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2007 10 12 | 691 | 0.8- | 0.1- | 2007 11 03 | 691 | 0.6- | 0.0  |
| 2002 10 31 | 645 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.2- | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.1+ |
| 2007 10 06 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 691 | 0.7- | 0.8- | 2007 11 05 | G96 | 0.0  | 0.4- |
| 2007 10 06 | 691 | 0.2+ | 0.4- | 2007 10 16 | G96 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2007 10 06 | 691 | 0.2- | 0.2- | 2007 10 16 | G96 | 0.2+ | 0.3+ | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2007 10 08 | G96 | 0.3+ | 0.1+ | 2007 10 16 | G96 | 0.5+ | 0.1+ |            |     |      |      |
| 2007 10 08 | G96 | 0.2+ | 0.3- | 2007 10 16 | G96 | 0.3+ | 0.3- |            |     |      |      |

**2007 TO<sub>193</sub> = 2003 SQ<sub>241</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.62847  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24201679 | $\omega$ | 193.09966 | +0.96698260   | -0.25477249 |
| <i>a</i> | 2.5501891  | $\Omega$ | 181.69556 | +0.24820741   | +0.94685840 |
| <i>e</i> | 0.1860597  | <i>i</i> | 11.63923  | +0.05777317   | +0.19634190 |
| <i>P</i> | 4.07       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 691 | 0.1+ | 0.0  | 2007 09 19 | 691 | 0.1- | 0.1+ | 2007 10 14 | 691 | 0.0  | 0.2+ |
| 2003 09 27 | 691 | 0.1+ | 0.0  | 2007 10 07 | G96 | 0.3- | 0.2- | 2007 10 14 | 691 | 0.6- | 0.5- |
| 2003 09 27 | 691 | 0.1+ | 0.0  | 2007 10 07 | G96 | 0.3- | 0.1+ | 2007 10 14 | 691 | 0.6+ | 0.6+ |
| 2003 09 29 | 691 | 0.1- | 0.1- | 2007 10 07 | G96 | 0.1+ | 0.1- | 2007 11 03 | G96 | 0.0  | 0.0  |
| 2003 09 29 | 691 | 0.3- | 0.1+ | 2007 10 07 | G96 | 0.5+ | 0.4- | 2007 11 03 | G96 | 0.1- | 0.4- |
| 2003 09 29 | 691 | 0.1+ | 0.0  | 2007 10 12 | 691 | 0.2- | 0.3- | 2007 11 03 | G96 | 0.3+ | 0.0  |
| 2007 09 19 | 691 | 0.1+ | 0.0  | 2007 10 12 | 691 | 0.0  | 0.1- | 2007 11 03 | G96 | 0.2+ | 0.0  |
| 2007 09 19 | 691 | 0.1+ | 0.2- | 2007 10 12 | 691 | 0.1+ | 0.5+ |            |     |      |      |

**2007 TJ<sub>194</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 74.34950   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21196500 | $\omega$ | 258.72236 | +0.65372484   | +0.74599554 |
| <i>a</i> | 2.7858643  | $\Omega$ | 52.86130  | -0.61716681   | +0.62272391 |
| <i>e</i> | 0.0358906  | <i>i</i> | 9.16855   | -0.43789149   | +0.23602031 |
| <i>P</i> | 4.65       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 10 | 703 | 0.9+  | 1.1-  | 2007 10 11 | G96 | 0.3+ | 0.2- | 2007 11 12 | 704 | 0.3+  | 0.2-  |
| 2005 03 10 | 703 | 0.3-  | 0.3+  | 2007 10 11 | G96 | 0.0  | 0.2- | 2007 11 12 | H07 | (1.1+ | 1.8+) |
| 2005 03 10 | 703 | 0.8+  | 0.6-  | 2007 10 11 | G96 | 0.3+ | 0.2- | 2007 11 12 | H07 | 0.5-  | 0.4+  |
| 2005 03 10 | 703 | 1.2-  | 0.9-  | 2007 10 15 | 691 | 0.0  | 0.3- | 2007 11 12 | 704 | 0.2-  | 0.2+  |
| 2005 03 16 | 703 | 0.1+  | 1.4+  | 2007 10 15 | 691 | 0.2+ | 0.0  | 2007 11 12 | H07 | (0.3- | 1.6+) |
| 2005 03 16 | 703 | (3.6+ | 1.8+) | 2007 10 15 | 691 | 0.1- | 0.3+ | 2007 11 12 | H07 | 0.5+  | 0.8+  |
| 2005 03 16 | 703 | (0.0  | 1.5-) | 2007 10 19 | 699 | 0.1- | 0.3- | 2007 11 12 | 704 | 0.5-  | 0.4+  |
| 2005 03 16 | 703 | 0.1-  | 0.4-  | 2007 10 19 | 699 | 0.0  | 0.8- | 2007 11 12 | H07 | 0.2+  | 1.2+  |
| 2005 04 06 | 703 | 0.4+  | 0.5+  | 2007 10 19 | 699 | 0.1+ | 0.4- | 2007 11 12 | H07 | 0.1+  | 1.4+  |
| 2005 04 06 | 703 | 0.3-  | 0.8-  | 2007 10 19 | 699 | 0.5+ | 0.3- | 2007 11 13 | G96 | 0.3+  | 0.5-  |
| 2005 04 06 | 703 | 0.0   | 0.8+  | 2007 10 23 | 691 | 0.5- | 0.0  | 2007 11 13 | G96 | 0.2+  | 0.6-  |
| 2005 04 06 | 703 | 0.2-  | 1.0+  | 2007 10 23 | 691 | 0.1+ | 0.1+ | 2007 11 13 | G96 | 0.3+  | 0.7-  |
| 2007 10 07 | 703 | 0.6-  | 0.6+  | 2007 10 23 | 691 | 0.4- | 0.0  | 2007 11 13 | G96 | 0.1+  | 0.7-  |
| 2007 10 07 | 703 | 1.1+  | 0.4-  | 2007 11 04 | 704 | 0.0  | 0.2+ | 2007 11 30 | 941 | 0.3+  | 0.5-  |
| 2007 10 07 | 703 | 0.3-  | 1.0+  | 2007 11 04 | 704 | 1.3- | 0.1+ | 2007 11 30 | 941 | 0.4+  | 0.4-  |
| 2007 10 07 | 703 | 0.8+  | 0.1+  | 2007 11 04 | 704 | 0.8- | 0.6+ | 2007 11 30 | 941 | 0.2+  | 0.2-  |
| 2007 10 11 | G96 | 0.5+  | 0.2-  | 2007 11 12 | 704 | 0.1+ | 0.1- | 2007 11 30 | 941 | 0.1+  | 0.3-  |

**2007 TD<sub>195</sub> = 2006 DH<sub>136</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 82.81537   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30709652 | $\omega$ | 262.33854 | +0.31332638   | +0.94919691 |
| <i>a</i> | 2.1758024  | $\Omega$ | 25.97948  | -0.84290794   | +0.29213403 |
| <i>e</i> | 0.2007907  | <i>i</i> | 3.82025   | -0.43741602   | +0.11697407 |
| <i>P</i> | 3.21       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 04 08 | 691 | 0.0  | 0.2+ | 2006 03 04 | 691 | 0.0   | 0.0   | 2007 10 20 | 691 | 0.1- | 0.7+ |
| 2003 04 08 | 691 | 0.4- | 0.1+ | 2006 03 04 | 691 | 0.1-  | 0.2-  | 2007 10 20 | 691 | 0.5- | 0.4+ |
| 2003 04 08 | 691 | 0.3+ | 0.2+ | 2007 10 07 | G96 | 0.0   | 0.6+  | 2007 11 07 | G96 | 0.7+ | 0.5- |
| 2003 04 26 | 691 | 0.9+ | 1.7+ | 2007 10 07 | G96 | 0.0   | 0.8+  | 2007 11 07 | G96 | 0.7+ | 0.2- |
| 2003 04 26 | 691 | 0.4+ | 0.7+ | 2007 10 07 | G96 | 0.4+  | 0.5+  | 2007 11 07 | G96 | 0.1+ | 0.3- |
| 2003 04 26 | 691 | 0.6+ | 0.7+ | 2007 10 07 | G96 | (0.4+ | 1.7+) | 2007 11 07 | G96 | 0.1+ | 0.3- |
| 2006 02 25 | 691 | 0.0  | 0.4- | 2007 10 12 | 691 | 0.3-  | 1.0+  | 2007 11 18 | G96 | 0.1- | 0.5- |
| 2006 02 25 | 691 | 0.1- | 0.4+ | 2007 10 12 | 691 | 0.2-  | 1.1+  | 2007 11 18 | G96 | 0.1- | 0.8- |
| 2006 02 25 | 691 | 0.1- | 0.1- | 2007 10 12 | 691 | 0.5-  | 0.6+  | 2007 11 18 | G96 | 0.3+ | 0.9- |
| 2006 03 04 | 691 | 0.1+ | 0.2- | 2007 10 20 | 691 | 0.4-  | 0.4+  | 2007 11 18 | G96 | 0.1+ | 1.0- |

**2007 TF<sub>195</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 86.63752   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22991469 | $\omega$ | 269.61828 | +0.53065542   | +0.84565809 |
| <i>a</i> | 2.6389120  | $\Omega$ | 32.63704  | -0.72938556   | +0.48996357 |
| <i>e</i> | 0.0523723  | <i>i</i> | 6.08394   | -0.43174243   | +0.21165560 |
| <i>P</i> | 4.29       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 09 | 691 | 0.1- | 0.3+ | 2007 10 07 | G96 | 0.2- | 0.4- | 2007 10 20 | 703 | 0.9- | 0.5+ |
| 1994 10 09 | 691 | 0.0  | 0.3- | 2007 10 12 | 691 | 0.1- | 0.3+ | 2007 10 20 | 703 | 0.2+ | 0.7- |
| 2001 03 18 | 691 | 0.2+ | 0.4+ | 2007 10 12 | 691 | 0.1- | 0.4+ | 2007 10 20 | 703 | 0.2- | 1.0- |
| 2001 03 18 | 691 | 0.3+ | 0.0  | 2007 10 12 | 691 | 0.2- | 0.3+ | 2007 11 07 | G96 | 0.3+ | 0.1+ |
| 2001 03 18 | 691 | 0.2- | 0.1+ | 2007 10 16 | 691 | 0.5- | 0.0  | 2007 11 07 | G96 | 0.2+ | 0.1- |
| 2003 12 18 | 691 | 0.0  | 0.2- | 2007 10 16 | 691 | 0.1- | 0.3+ | 2007 11 07 | G96 | 0.6+ | 0.0  |
| 2003 12 18 | 691 | 0.1- | 0.4- | 2007 10 16 | 691 | 0.1+ | 0.3+ | 2007 11 07 | G96 | 0.6+ | 0.0  |
| 2003 12 18 | 691 | 0.3+ | 0.0  | 2007 10 20 | 691 | 0.4- | 0.8- | 2007 11 18 | G96 | 0.5+ | 0.7+ |
| 2007 10 07 | G96 | 0.3+ | 0.5- | 2007 10 20 | 691 | 0.4- | 0.3+ | 2007 11 18 | G96 | 0.8+ | 0.5+ |
| 2007 10 07 | G96 | 0.1- | 0.4- | 2007 10 20 | 691 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.8+ |
| 2007 10 07 | G96 | 0.2- | 0.4- | 2007 10 20 | 703 | 0.5- | 0.6+ | 2007 11 18 | G96 | 0.3- | 0.1+ |

**2007 TW<sub>195</sub> = 2001 SJ<sub>269</sub> = 2006 QR<sub>102</sub>**Id. Minor Planet Center (*MPO* 128472; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.37681  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17584104 | $\omega$ | 297.76278 | -0.75329141   | -0.65730504 |
| <i>a</i> | 3.1554106  | $\Omega$ | 201.16720 | +0.62315242   | -0.70242690 |
| <i>e</i> | 0.1906395  | <i>i</i> | 3.55794   | +0.21031669   | -0.27303212 |
| <i>P</i> | 5.61       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 691 | 0.5- | 0.2+ | 2006 08 29 | 691 | 0.2+ | 0.0  | 2007 10 16 | 691 | 0.4- | 0.1+ |
| 2001 09 19 | 691 | 0.3- | 0.1+ | 2006 08 29 | 691 | 0.2+ | 0.5+ | 2007 10 20 | 691 | 0.4- | 0.1+ |
| 2001 09 19 | 691 | 0.8- | 0.2+ | 2006 08 29 | 691 | 0.3+ | 0.2+ | 2007 10 20 | 691 | 0.4- | 0.2+ |
| 2001 09 20 | 691 | 0.1+ | 0.4+ | 2006 09 28 | G96 | 0.4- | 0.4+ | 2007 10 20 | 691 | 0.4- | 0.1- |
| 2001 09 20 | 691 | 0.5+ | 0.0  | 2006 09 28 | G96 | 0.4- | 0.3- | 2007 11 05 | 704 | 0.2+ | 0.3+ |
| 2001 09 20 | 691 | 0.4+ | 0.2+ | 2006 09 28 | G96 | 0.3- | 0.5- | 2007 11 05 | 704 | 0.1- | 0.0  |
| 2001 10 16 | 691 | 0.0  | 0.2- | 2006 09 28 | G96 | 0.2+ | 0.3- | 2007 11 05 | 704 | 1.0- | 0.1- |
| 2001 10 16 | 691 | 0.0  | 0.3- | 2007 10 07 | G96 | 0.2+ | 0.5- | 2007 11 05 | 704 | 0.3+ | 1.2+ |
| 2001 10 16 | 691 | 0.1+ | 0.4- | 2007 10 07 | G96 | 0.2+ | 0.1- | 2007 11 07 | 703 | 0.0  | 0.9- |
| 2004 05 11 | 699 | 0.2- | 0.1- | 2007 10 07 | G96 | 0.3- | 0.2- | 2007 11 07 | 703 | 0.1- | 0.3+ |
| 2004 05 11 | 699 | 0.2+ | 0.5- | 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 11 07 | 703 | 0.7+ | 0.0  |
| 2004 05 11 | 699 | 1.1+ | 0.1- | 2007 10 12 | 691 | 0.3- | 0.1+ | 2007 11 07 | 703 | 1.2+ | 0.4+ |
| 2004 05 11 | 699 | 1.1- | 0.9+ | 2007 10 12 | 691 | 0.3- | 0.1+ | 2007 11 09 | G96 | 0.6+ | 0.1- |
| 2006 08 27 | 691 | 0.3+ | 0.0  | 2007 10 12 | 691 | 0.2- | 0.6- | 2007 11 09 | G96 | 0.2+ | 0.0  |

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2006 08 27 691 0.2- 0.0 2007 10 16 691 0.5- 0.2+ 2007 11 09 G96 0.3+ 0.1-  
 2006 08 27 691 0.1+ 0.1- 2007 10 16 691 0.3- 0.3+ 2007 11 09 G96 0.3+ 0.1-

**2007 TZ<sub>196</sub> = 2005 EE<sub>236</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 89.52798   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.17095797 | $\omega$ | 90.18502  | -0.15662761 +0.98714564  |
| <i>a</i> | 3.2152135  | $\Omega$ | 170.62197 | -0.96592099 -0.14638317  |
| <i>e</i> | 0.0636384  | <i>i</i> | 11.25394  | -0.20606898 -0.06415176  |
| <i>P</i> | 5.77       | <i>H</i> | 16.0      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 09 19 645 | 0.0  | 0.3- | 2005 03 16 691 | 0.2+ | 0.2+ | 2007 10 12 691 | 0.2- | 0.0  |
| 2001 09 19 645 | 0.1+ | 0.1- | 2007 09 10 G96 | 0.4- | 0.1+ | 2007 10 12 691 | 0.3- | 0.4- |
| 2005 03 10 G96 | 0.6- | 0.1- | 2007 09 10 G96 | 0.1+ | 0.4+ | 2007 10 12 691 | 0.0  | 0.6+ |
| 2005 03 10 G96 | 0.0  | 0.1- | 2007 09 10 G96 | 0.2- | 0.4+ | 2007 10 19 G96 | 0.7- | 0.2- |
| 2005 03 10 G96 | 0.1- | 0.1- | 2007 09 10 G96 | 0.2+ | 0.1+ | 2007 10 19 G96 | 0.1- | 0.1+ |
| 2005 03 10 G96 | 0.0  | 0.0  | 2007 10 08 691 | 0.3+ | 0.2- | 2007 10 19 G96 | 0.1- | 0.2- |
| 2005 03 16 691 | 0.1+ | 0.2+ | 2007 10 08 691 | 0.4+ | 0.1+ | 2007 10 19 G96 | 0.5+ | 0.1+ |
| 2005 03 16 691 | 0.5+ | 0.3+ | 2007 10 08 691 | 0.2+ | 0.1+ |                |      |      |

**2007 TV<sub>199</sub> = 2005 JM<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 267.22911  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.18678271 | $\omega$ | 275.82181 | -0.61919904 -0.78177117  |
| <i>a</i> | 3.0309465  | $\Omega$ | 212.80203 | +0.76347655 -0.57745661  |
| <i>e</i> | 0.0512223  | <i>i</i> | 7.81514   | +0.18356499 -0.23532469  |
| <i>P</i> | 5.28       | <i>H</i> | 16.3      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 05 08 G96 | 0.1+ | 0.3+ | 2007 10 08 691 | 0.4- | 0.5- | 2007 11 01 G96 | 0.1- | 0.3- |
| 2005 05 08 G96 | 0.1- | 0.6- | 2007 10 08 691 | 0.2+ | 0.2- | 2007 11 01 G96 | 0.2- | 0.4- |
| 2005 05 08 G96 | 0.2+ | 0.1- | 2007 10 08 691 | 0.2+ | 0.1+ | 2007 11 17 G96 | 0.1+ | 0.2+ |
| 2005 05 08 G96 | 0.5- | 0.2- | 2007 10 12 691 | 0.4- | 0.6+ | 2007 11 17 G96 | 0.4- | 0.2+ |
| 2005 05 10 G96 | 0.2+ | 0.4+ | 2007 10 12 691 | 0.1+ | 0.2+ | 2007 11 17 G96 | 0.3+ | 0.1- |
| 2005 05 10 G96 | 0.1+ | 0.2+ | 2007 10 12 691 | 0.3+ | 0.0  | 2007 11 17 G96 | 0.2- | 0.1+ |
| 2005 05 10 G96 | 0.1+ | 0.2+ | 2007 11 01 G96 | 0.5+ | 0.2- |                |      |      |
| 2005 05 10 G96 | 0.1- | 0.2- | 2007 11 01 G96 | 0.1- | 0.3- |                |      |      |

**2007 TE<sub>200</sub> = 2006 KJ<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 59.30735   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22990588 | $\omega$ | 289.57628 | +0.75919422 +0.65082543  |
| <i>a</i> | 2.6389794  | $\Omega$ | 29.82114  | -0.59167901 +0.69466127  |
| <i>e</i> | 0.1193378  | <i>i</i> | 0.81787   | -0.27118274 +0.30638534  |
| <i>P</i> | 4.29       | <i>H</i> | 17.4      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 12 19 691 | 0.1- | 0.4+ | 2006 05 26 568 | 0.0  | 0.7+ | 2007 10 20 691 | 0.1+ | 0.2- |
| 2003 12 19 691 | 0.1+ | 0.0  | 2007 09 25 G96 | 0.2- | 0.7- | 2007 10 20 691 | 0.1- | 0.1+ |
| 2003 12 19 691 | 0.2- | 0.0  | 2007 09 25 G96 | 0.4+ | 0.3- | 2007 11 01 G96 | 0.6+ | 0.2- |
| 2005 02 09 G96 | 0.3- | 0.4- | 2007 09 25 G96 | 0.8+ | 0.9- | 2007 11 01 G96 | 0.3- | 0.2+ |
| 2005 02 09 G96 | 0.1+ | 0.0  | 2007 09 25 G96 | 0.3+ | 0.8- | 2007 11 01 G96 | 0.6+ | 0.1- |
| 2005 02 09 G96 | 0.1- | 0.2- | 2007 10 08 691 | 0.5- | 0.0  | 2007 11 01 G96 | 0.3+ | 0.1- |
| 2005 02 09 G96 | 0.0  | 0.1+ | 2007 10 08 691 | 0.4- | 0.1+ | 2007 11 17 G96 | 0.1+ | 0.1- |
| 2005 03 12 695 | 0.3+ | 0.4+ | 2007 10 08 691 | 0.3- | 0.2+ | 2007 11 17 G96 | 0.2+ | 0.5- |
| 2005 03 12 695 | 0.2+ | 0.4+ | 2007 10 12 691 | 0.1- | 0.0  | 2007 11 17 G96 | 0.3+ | 0.2- |
| 2006 05 25 568 | 0.1+ | 0.3+ | 2007 10 12 691 | 0.3+ | 0.9+ | 2007 11 17 G96 | 0.5+ | 0.6- |
| 2006 05 25 568 | 0.2+ | 0.1+ | 2007 10 12 691 | 0.1- | 0.2- |                |      |      |
| 2006 05 25 568 | 0.1- | 0.4+ | 2007 10 20 691 | 0.0  | 0.1+ |                |      |      |

**2007 TR<sub>201</sub> = 2006 GE<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 94.60297   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.27083366 | $\omega$ | 205.60331 | +0.25238905 +0.96615447  |
| <i>a</i> | 2.3659249  | $\Omega$ | 79.05273  | -0.87817893 +0.25185865  |
| <i>e</i> | 0.1936982  | <i>i</i> | 3.11442   | -0.40632688 +0.05579215  |
| <i>P</i> | 3.64       | <i>H</i> | 17.7      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 08 31 807 | 0.0  | 0.1+ | 2006 04 09 G96 | 0.2- | 0.0  | 2007 10 12 691 | 0.4- | 0.2+ |
| 2003 08 31 807 | 0.3- | 0.1- | 2006 05 07 G96 | 0.2- | 0.1+ | 2007 10 12 691 | 0.2- | 0.2- |
| 2003 08 31 807 | 0.3+ | 0.2+ | 2006 05 07 G96 | 0.2- | 0.0  | 2007 11 07 G96 | 0.2- | 0.1+ |
| 2003 08 31 807 | 0.0  | 0.1- | 2006 05 07 G96 | 0.1- | 0.1+ | 2007 11 07 G96 | 0.1+ | 0.0  |
| 2006 04 02 691 | 0.7+ | 0.3- | 2006 05 07 G96 | 0.5- | 0.3- | 2007 11 07 G96 | 0.3- | 0.0  |
| 2006 04 02 691 | 0.7+ | 0.2- | 2007 10 08 G96 | 0.0  | 0.1+ | 2007 11 07 G96 | 0.4+ | 0.2+ |
| 2006 04 02 691 | 0.2- | 0.2+ | 2007 10 08 G96 | 0.6+ | 0.2- | 2007 11 09 G96 | 0.1- | 0.3- |
| 2006 04 09 G96 | 0.1- | 0.6+ | 2007 10 08 G96 | 0.5+ | 0.4+ | 2007 11 09 G96 | 0.3- | 0.0  |
| 2006 04 09 G96 | 0.0  | 0.0  | 2007 10 08 G96 | 0.3+ | 0.0  | 2007 11 09 G96 | 0.2+ | 0.2- |
| 2006 04 09 G96 | 0.2+ | 0.1- | 2007 10 12 691 | 0.7- | 0.2- | 2007 11 09 G96 | 0.2+ | 0.1+ |

**2007 TA<sub>202</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 345.96883  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22767995 | $\omega$ | 259.27057 | +0.27278811 -0.96206731  |
| <i>a</i> | 2.6561516  | $\Omega$ | 174.89487 | +0.89784419 +0.25322065  |
| <i>e</i> | 0.3945995  | <i>i</i> | 2.33497   | +0.34563342 +0.10151746  |
| <i>P</i> | 4.33       | <i>H</i> | 17.9      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|                |      |      |                |             |      |                |             |      |
|----------------|------|------|----------------|-------------|------|----------------|-------------|------|
| 2004 02 17 691 | 0.1- | 0.3+ | 2007 10 20 691 | 0.2-        | 0.0  | 2007 11 08 G96 | 0.4+        | 0.7- |
| 2004 02 17 691 | 0.1+ | 0.1+ | 2007 10 20 691 | 0.2-        | 0.0  | 2007 11 08 G96 | 0.1+        | 0.7- |
| 2004 02 17 691 | 0.1+ | 0.2+ | 2007 10 30 703 | 1.5+        | 0.2- | 2007 11 12 704 | 0.5+        | 0.9- |
| 2004 02 29 291 | 0.2+ | 0.1- | 2007 10 30 703 | 0.1-        | 1.1+ | 2007 11 12 704 | 0.2+        | 0.6- |
| 2004 02 29 291 | 0.8- | 0.2- | 2007 10 30 703 | (1.5+ 1.7+) |      | 2007 11 12 704 | 0.0         | 0.2+ |
| 2004 02 29 291 | 0.5+ | 0.2- | 2007 10 30 703 | 1.0+        | 0.6+ | 2007 11 12 704 | 0.2-        | 0.4- |
| 2007 09 12 G96 | 0.9+ | 0.1- | 2007 11 02 D29 | 0.2-        | 0.9- | 2007 11 12 704 | 0.4+        | 0.5- |
| 2007 09 12 G96 | 0.8+ | 0.4- | 2007 11 02 D29 | 0.1-        | 0.5- | 2007 11 15 704 | 0.2+        | 0.3+ |
| 2007 09 12 G96 | 1.1+ | 0.4- | 2007 11 02 D29 | 0.3+        | 0.3- | 2007 11 15 704 | (1.6+ 0.3-) |      |
| 2007 09 12 G96 | 0.9+ | 0.1- | 2007 11 02 D29 | 0.3+        | 0.2- | 2007 11 15 704 | 0.4+        | 1.2+ |
| 2007 10 08 691 | 0.3- | 0.4+ | 2007 11 03 691 | 0.1-        | 0.0  | 2007 11 15 704 | 0.5+        | 0.9+ |
| 2007 10 08 691 | 0.0  | 0.1+ | 2007 11 03 691 | 0.2-        | 0.0  | 2007 11 15 704 | 0.1-        | 0.3+ |
| 2007 10 08 691 | 0.2- | 0.1- | 2007 11 03 691 | 0.2-        | 0.2- | 2007 11 17 703 | 0.5-        | 1.3- |
| 2007 10 08 G96 | 0.7+ | 0.4- | 2007 11 04 704 | 0.5+        | 0.3+ | 2007 11 17 703 | 0.2-        | 0.3- |
| 2007 10 08 G96 | 0.5+ | 0.4- | 2007 11 04 704 | 0.5+        | 0.5+ | 2007 11 17 703 | 0.2+        | 0.1- |
| 2007 10 08 G96 | 0.1+ | 0.2- | 2007 11 04 704 | 0.5+        | 0.3+ | 2007 11 29 704 | 0.8+        | 0.9+ |
| 2007 10 08 G96 | 0.4+ | 0.4- | 2007 11 04 704 | 0.5+        | 0.6+ | 2007 11 29 704 | 0.1-        | 0.4+ |
| 2007 10 12 691 | 0.0  | 0.1- | 2007 11 04 704 | 0.3+        | 0.4+ | 2007 11 29 704 | 0.6+        | 0.3- |
| 2007 10 12 691 | 0.1+ | 0.1+ | 2007 11 07 703 | 0.5-        | 0.2+ | 2007 11 29 704 | 0.7+        | 1.0+ |
| 2007 10 12 691 | 0.9- | 0.3+ | 2007 11 07 703 | 0.6-        | 0.1+ | 2007 12 05 699 | 0.6-        | 0.8- |
| 2007 10 16 691 | 0.1- | 0.1+ | 2007 11 07 703 | 0.1-        | 0.2+ | 2007 12 05 699 | 0.7+        | 0.1+ |
| 2007 10 16 691 | 0.1- | 0.2+ | 2007 11 07 703 | 0.8-        | 0.3+ | 2007 12 05 699 | 0.1-        | 0.4- |
| 2007 10 16 691 | 0.3- | 0.0  | 2007 11 08 G96 | 0.0         | 0.7- | 2007 12 05 699 | 0.4-        | 0.4- |
| 2007 10 20 691 | 0.2- | 0.1+ | 2007 11 08 G96 | 0.1+        | 0.7- |                |             |      |

**2007 TY<sub>202</sub> = 2003 SL<sub>257</sub> = 2007 TL<sub>298</sub>**Id. Minor Planet Center (d, *MPO* 129053; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 26.36620   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.25938896 | $\omega$ | 259.79669 | +0.99685199 -0.06724883  |
| <i>a</i> | 2.4350155  | $\Omega$ | 104.05004 | +0.07829437 +0.91842851  |
| <i>e</i> | 0.1885970  | <i>i</i> | 2.48121   | -0.01249433 +0.38982901  |
| <i>P</i> | 3.80       | <i>H</i> | 17.4      | <i>G</i> 0.15 <i>U</i> 3 |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 28 | 704 | 0.5−  | 0.6+  | 2003 10 16 | 644 | 0.6+ | 0.8+ | 2007 10 12 | 691 | 0.3−  | 0.0   |
| 2003 09 28 | 704 | 0.1−  | 0.4+  | 2003 10 16 | 644 | 0.5+ | 0.6+ | 2007 10 12 | 691 | 0.2−  | 0.1−  |
| 2003 09 28 | 704 | 0.4−  | 0.0   | 2005 02 09 | 691 | 0.5+ | 0.3+ | 2007 10 16 | 691 | 0.1−  | 0.1−  |
| 2003 09 28 | 704 | 0.1−  | 0.2+  | 2005 02 09 | 691 | 0.3− | 0.4− | 2007 10 16 | 691 | 0.1−  | 0.0   |
| 2003 09 28 | 704 | 0.1−  | 0.8+  | 2005 02 09 | 691 | 0.0  | 0.5+ | 2007 10 16 | 691 | 0.4−  | 0.1+  |
| 2003 09 29 | 704 | 0.1−  | 0.1+  | 2007 10 08 | G96 | 0.3+ | 0.2− | 2007 11 03 | 691 | 0.2+  | 0.0   |
| 2003 09 29 | 704 | 0.6−  | 0.8+  | 2007 10 08 | G96 | 0.2+ | 0.0  | 2007 11 03 | 691 | 0.1−  | 0.1+  |
| 2003 09 29 | 704 | 0.5−  | 0.3+  | 2007 10 08 | G96 | 0.2+ | 0.2− | 2007 11 03 | 691 | 0.1+  | 0.2+  |
| 2003 09 29 | 704 | 0.3+  | 0.3−  | 2007 10 08 | G96 | 0.6+ | 0.2− | 2007 11 11 | 699 | (2.1+ | 0.1+) |
| 2003 09 30 | 704 | 0.3−  | 0.0   | 2007 10 11 | G96 | 0.8+ | 0.3− | 2007 11 11 | 699 | 0.0   | 0.9−  |
| 2003 09 30 | 704 | (1.6− | 0.9−) | 2007 10 11 | G96 | 0.5+ | 0.4− | 2007 11 11 | 699 | 1.1+  | 0.1−  |
| 2003 09 30 | 704 | 0.1−  | 1.4−  | 2007 10 11 | G96 | 0.5+ | 0.3− | 2007 11 11 | 699 | 0.1+  | 0.8−  |
| 2003 09 30 | 704 | 0.0   | 0.7−  | 2007 10 11 | G96 | 0.6+ | 0.2− |            |     |       |       |
| 2003 10 16 | 644 | 0.6+  | 0.4+  | 2007 10 12 | 691 | 0.2− | 0.2+ |            |     |       |       |

2007 TD<sub>203</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 15.99977   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17294540 | $\omega$ | 337.52254 | +0.89657343 | −0.41641588 |
| <i>a</i> | 3.1905340  | $\Omega$ | 47.99028  | +0.43093362 | +0.74158386 |
| <i>e</i> | 0.1142574  | <i>i</i> | 11.71312  | +0.10223651 | +0.52597642 |
| <i>P</i> | 5.70       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 18 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.3− |
| 2001 09 18 | 645 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.3− | 2007 10 30 | G96 | 0.5+ | 0.3− |
| 2001 10 25 | 645 | 0.0  | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.0  |
| 2001 10 25 | 645 | 0.1+ | 0.0  | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.2− | 0.1+ |
| 2001 11 12 | 645 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.2− |
| 2001 11 12 | 645 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.0  |
| 2001 11 21 | 645 | 0.0  | 0.1− | 2007 10 16 | G96 | 0.2+ | 0.1− | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 2001 11 21 | 645 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2007 09 15 | G96 | 0.1− | 0.7− | 2007 10 16 | G96 | 0.6+ | 0.3− | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2007 09 15 | G96 | 0.4+ | 0.4− | 2007 10 30 | 691 | 0.6− | 0.4+ | 2007 11 20 | G96 | 0.6+ | 0.1− |
| 2007 09 15 | G96 | 0.1+ | 0.2− | 2007 10 30 | 691 | 0.7− | 0.3+ | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2007 09 15 | G96 | 0.4+ | 0.0  | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.5− |
| 2007 10 08 | G96 | 0.2+ | 0.2− | 2007 10 30 | G96 | 0.7+ | 0.1− | 2007 11 20 | G96 | 0.6+ | 0.0  |
| 2007 10 08 | G96 | 0.1− | 0.2− | 2007 10 30 | G96 | 0.4+ | 0.0  |            |     |      |      |

2007 TX<sub>204</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 14.50898   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17015275 | $\omega$ | 333.33654 | +0.87922994 | −0.41932973 |
| <i>a</i> | 3.2253492  | $\Omega$ | 53.30488  | +0.47171923 | +0.69995889 |
| <i>e</i> | 0.0732948  | <i>i</i> | 16.37784  | +0.06660094 | +0.57811774 |
| <i>P</i> | 5.79       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 16 | 644 | 0.1− | 0.4+ | 2007 10 16 | 691 | 0.1− | 1.2+ | 2007 11 07 | 703 | 0.4+  | 1.0+  |
| 2001 10 16 | 644 | 0.1− | 0.5+ | 2007 10 16 | 691 | 0.4− | 0.1− | 2007 11 07 | 703 | 0.1−  | 1.3+  |
| 2001 10 16 | 644 | 0.0  | 0.3+ | 2007 10 16 | 691 | 0.2− | 0.1− | 2007 11 14 | 704 | 0.6−  | 0.2−  |
| 2001 10 24 | 644 | 0.8− | 0.3+ | 2007 10 20 | 691 | 0.2− | 0.0  | 2007 11 14 | 704 | 0.2+  | 0.6+  |
| 2001 10 24 | 644 | 0.0  | 0.1+ | 2007 10 20 | 691 | 0.1− | 0.2− | 2007 11 14 | 704 | 0.7+  | 0.4+  |
| 2001 10 24 | 644 | 0.4− | 0.3+ | 2007 10 20 | 691 | 0.1− | 0.2− | 2007 11 14 | 704 | 0.5+  | 0.2+  |
| 2004 02 29 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.4+  | 0.3+  |
| 2004 02 29 | 691 | 0.1+ | 0.1− | 2007 11 03 | 691 | 0.2− | 0.1− | 2007 11 17 | 703 | 0.3−  | 1.2−  |
| 2004 02 29 | 691 | 0.3+ | 0.3+ | 2007 11 03 | 691 | 0.3+ | 0.6− | 2007 11 17 | 703 | 0.3+  | 1.4−  |
| 2005 02 16 | 809 | 0.0  | 0.4+ | 2007 11 03 | G96 | 0.0  | 0.5− | 2007 11 17 | 703 | 0.1−  | 0.7+  |
| 2005 02 16 | 809 | 0.1+ | 0.4+ | 2007 11 03 | G96 | 0.4+ | 0.4− | 2007 11 17 | 703 | 0.5+  | 0.1−  |
| 2005 02 16 | 809 | 0.1+ | 0.4+ | 2007 11 03 | G96 | 0.1+ | 0.5− | 2007 12 03 | 703 | 0.6−  | 0.9−  |
| 2007 10 08 | G96 | 0.3+ | 0.3− | 2007 11 03 | G96 | 0.5+ | 0.5− | 2007 12 03 | 703 | 1.5−  | 0.4−  |
| 2007 10 08 | G96 | 0.5+ | 0.4− | 2007 11 05 | 704 | 0.2− | 0.2+ | 2007 12 03 | 703 | 0.8−  | 0.9+  |
| 2007 10 08 | G96 | 0.1+ | 0.3− | 2007 11 05 | 704 | 0.4+ | 0.1+ | 2007 12 03 | 703 | 0.8+  | 0.3+  |
| 2007 10 08 | G96 | 0.3+ | 0.5− | 2007 11 05 | 704 | 0.2+ | 0.3− | 2007 12 05 | 704 | 1.8+  | 0.3−  |
| 2007 10 12 | 691 | 0.4− | 0.0  | 2007 11 05 | 704 | 1.5+ | 0.0  | 2007 12 05 | 704 | (1.4+ | 3.0+) |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 12 | 691 | 0.6− | 0.2− | 2007 11 07 | 703 | 1.0+ | 1.0+ | 2007 12 05 | 704 | 1.6+ | 0.1− |
| 2007 10 12 | 691 | 0.6− | 0.0  | 2007 11 07 | 703 | 0.5+ | 0.5+ | 2007 12 05 | 704 | 0.7+ | 0.5− |

2007 TD<sub>205</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.51412   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21058318 | $\omega$ | 222.08352 | +0.89463406 | −0.44648021 |
| <i>a</i> | 2.7980379  | $\Omega$ | 164.40931 | +0.42486003 | +0.83839481 |
| <i>e</i> | 0.1023764  | <i>i</i> | 3.60333   | +0.13828902 | +0.31264926 |
| <i>P</i> | 4.68       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 04 | 644 | 0.2− | 0.3+ | 2007 10 08 | G96 | 0.3+ | 0.4− | 2007 11 04 | G96 | 0.2+  | 0.5−  |
| 2002 10 04 | 644 | 0.4− | 0.4+ | 2007 10 08 | G96 | 0.2+ | 0.7− | 2007 11 04 | G96 | 0.2+  | 0.3−  |
| 2002 10 04 | 644 | 0.0  | 0.7+ | 2007 10 12 | 691 | 0.3− | 0.3− | 2007 11 07 | 704 | 0.9+  | 1.0+  |
| 2002 10 05 | 645 | 0.1+ | 0.2− | 2007 10 12 | 691 | 0.3− | 0.1− | 2007 11 07 | 704 | 0.4+  | 0.1−  |
| 2002 10 05 | 645 | 0.1+ | 0.2− | 2007 10 12 | 691 | 0.3− | 0.1+ | 2007 11 07 | 704 | 1.0+  | 0.3+  |
| 2005 04 10 | 691 | 0.1+ | 0.5+ | 2007 10 16 | 691 | 0.5− | 0.1+ | 2007 11 12 | 704 | 0.0   | 1.5+  |
| 2005 04 10 | 691 | 0.2+ | 0.6+ | 2007 10 16 | 691 | 0.2− | 0.0  | 2007 11 12 | 704 | 0.1+  | 1.4+  |
| 2005 04 10 | 691 | 0.1+ | 0.4+ | 2007 10 16 | 691 | 0.3− | 0.0  | 2007 11 12 | 704 | 1.8−  | 1.5+  |
| 2007 10 08 | 691 | 0.5− | 0.3− | 2007 10 20 | 691 | 0.0  | 0.1− | 2007 11 18 | G96 | (4.2+ | 1.6−) |
| 2007 10 08 | 691 | 0.8− | 0.1+ | 2007 10 20 | 691 | 0.1− | 0.0  | 2007 11 18 | G96 | 1.6+  | 1.2−  |
| 2007 10 08 | 691 | 0.6− | 0.2+ | 2007 10 20 | 691 | 0.5− | 0.3+ | 2007 11 18 | G96 | (2.3+ | 1.5−) |
| 2007 10 08 | G96 | 0.2− | 0.4− | 2007 11 04 | G96 | 0.2+ | 0.3− | 2007 11 18 | G96 | 0.8+  | 0.7−  |
| 2007 10 08 | G96 | 0.2+ | 0.4− | 2007 11 04 | G96 | 0.1− | 0.2− |            |     |       |       |

2007 TR<sub>205</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 7.62051    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22531377 | $\omega$ | 193.38991 | +0.96614819 | +0.25261301 |
| <i>a</i> | 2.6747153  | $\Omega$ | 151.80998 | −0.22530832 | +0.92510305 |
| <i>e</i> | 0.0733874  | <i>i</i> | 6.36692   | −0.12567357 | +0.28349782 |
| <i>P</i> | 4.37       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 02 20 | 645 | 0.1− | 0.2− | 2005 03 09 | G96 | 0.4+  | 0.1+  | 2007 10 09 | G96 | 0.2+ | 0.1− |
| 2001 02 20 | 645 | 0.0  | 0.2− | 2005 03 09 | G96 | 0.4+  | 1.3−  | 2007 10 09 | G96 | 0.1+ | 0.1+ |
| 2003 10 20 | 691 | 0.0  | 0.3+ | 2007 08 09 | 691 | 0.3−  | 0.2+  | 2007 10 09 | G96 | 0.0  | 0.0  |
| 2003 10 20 | 691 | 0.1− | 0.0  | 2007 08 09 | 691 | 0.1−  | 0.0   | 2007 10 11 | G96 | 0.1− | 0.1− |
| 2003 10 20 | 691 | 0.0  | 0.1+ | 2007 08 09 | 691 | 0.1−  | 0.2+  | 2007 10 11 | G96 | 0.1− | 0.3− |
| 2005 01 17 | 691 | 0.3− | 0.0  | 2007 08 23 | 691 | (0.7− | 2.1+) | 2007 10 11 | G96 | 0.0  | 0.1− |
| 2005 01 17 | 691 | 0.2+ | 0.1− | 2007 08 23 | 691 | 0.0   | 0.4+  | 2007 10 11 | G96 | 0.1+ | 0.2+ |
| 2005 01 17 | 691 | 0.2− | 0.3+ | 2007 08 23 | 691 | 0.9−  | 0.4−  | 2007 10 14 | G96 | 0.4+ | 0.1− |
| 2005 02 04 | 691 | 0.3+ | 0.1+ | 2007 09 12 | G96 | 0.4+  | 0.2−  | 2007 10 14 | G96 | 0.1− | 0.2− |
| 2005 02 04 | 691 | 0.0  | 0.5+ | 2007 09 12 | G96 | 0.3+  | 0.2−  | 2007 10 14 | G96 | 0.6+ | 0.0  |
| 2005 02 04 | 691 | 0.1+ | 0.3+ | 2007 09 12 | G96 | 0.2+  | 0.1−  | 2007 10 14 | G96 | 0.2− | 0.1+ |
| 2005 03 09 | G96 | 0.4− | 0.3− | 2007 09 12 | G96 | 0.1+  | 0.3−  |            |     |      |      |
| 2005 03 09 | G96 | 0.6− | 0.0  | 2007 10 09 | G96 | 0.2−  | 0.3−  |            |     |      |      |

2007 TB<sub>207</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 345.39578  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.27995678 | $\omega$ | 27.81335 | +0.85211323 | −0.52333667 |
| <i>a</i> | 2.3142417  | $\Omega$ | 3.75289  | +0.46597072 | +0.75458919 |
| <i>e</i> | 0.1190975  | <i>i</i> | 4.08758  | +0.23827364 | +0.39587105 |
| <i>P</i> | 3.52       | <i>H</i> | 17.6     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 4           |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 20 | 691 | 0.1+ | 0.2+ | 2007 09 10 | G96 | 0.2+ | 0.1− | 2007 10 12 | 703 | 1.2− | 2.0+ |
| 2000 09 20 | 691 | 0.6− | 0.2− | 2007 09 10 | G96 | 0.1− | 0.1− | 2007 10 12 | 703 | 1.2− | 0    |

## 2007 DEC. 24

M.P.O. 129879

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 12 | 691 | 0.1− | 0.1+ | 2007 10 10 | G96 | 1.5+ | 0.4− | 2007 10 12 | G96 | 0.3+ | 0.3− |
| 2002 02 12 | 691 | 0.3+ | 0.3+ | 2007 10 11 | G96 | 0.3+ | 0.2− | 2007 10 20 | G96 | 0.1− | 0.2+ |
| 2002 03 05 | 691 | 0.2+ | 0.0  | 2007 10 11 | G96 | 0.1+ | 0.1− | 2007 10 20 | G96 | 0.2+ | 0.5− |
| 2002 03 05 | 691 | 0.1+ | 0.1− | 2007 10 11 | G96 | 0.2− | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.6− |
| 2002 03 05 | 691 | 0.1− | 0.1+ | 2007 10 11 | G96 | 0.1+ | 0.1− | 2007 10 20 | G96 | 0.1− | 0.1+ |

**2007 TM<sub>207</sub> = 1999 TU<sub>319</sub> = 2007 RW<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.16884   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24137038 | $\omega$ | 158.13444 | +0.88902673   | +0.45785504 |
| <i>a</i> | 2.5547401  | $\Omega$ | 174.61670 | −0.42084537   | +0.81758563 |
| <i>e</i> | 0.1917593  | <i>i</i> | 0.29979   | −0.18033484   | +0.34917404 |
| <i>P</i> | 4.08       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 09 | 691 | 0.7+ | 0.3+ | 2007 09 10 | G96 | 0.4+ | 0.5− | 2007 10 12 | G96 | 0.1+ | 0.1− |
| 1999 10 09 | 691 | 0.8+ | 0.1+ | 2007 09 10 | G96 | 0.5+ | 0.7− | 2007 10 12 | G96 | 0.2− | 0.0  |
| 1999 10 09 | 691 | 0.6+ | 0.4− | 2007 09 10 | G96 | 0.5+ | 0.5− | 2007 10 12 | G96 | 0.1+ | 0.0  |
| 1999 10 13 | 645 | 0.1− | 0.0  | 2007 09 11 | 691 | 0.5− | 0.2+ | 2007 10 12 | G96 | 0.5+ | 0.1− |
| 1999 10 13 | 645 | 0.1− | 0.0  | 2007 09 11 | 691 | 0.0  | 0.1+ | 2007 10 14 | G96 | 0.0  | 0.0  |
| 1999 10 20 | 691 | 0.6− | 0.2− | 2007 09 11 | 691 | 0.2+ | 0.3− | 2007 10 14 | G96 | 0.5+ | 0.4− |
| 1999 10 20 | 691 | 0.5− | 0.2− | 2007 10 10 | G96 | 0.1+ | 0.2+ | 2007 10 14 | G96 | 0.1− | 0.2− |
| 1999 10 20 | 691 | 0.0  | 0.1+ | 2007 10 10 | G96 | 0.4+ | 0.1− | 2007 10 14 | G96 | 0.5+ | 0.3− |
| 2002 04 06 | 807 | 0.2+ | 0.4+ | 2007 10 10 | G96 | 0.4− | 0.4− | 2007 10 15 | G96 | 0.6+ | 0.2+ |
| 2002 04 06 | 807 | 0.1+ | 0.5+ | 2007 10 10 | G96 | 0.3+ | 0.0  | 2007 10 15 | G96 | 0.3+ | 0.2+ |
| 2003 09 18 | 291 | 0.0  | 0.0  | 2007 10 11 | G96 | 0.1− | 0.1+ | 2007 10 15 | G96 | 0.3− | 0.0  |
| 2003 09 18 | 291 | 0.1− | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.1− | 2007 10 15 | G96 | 0.0  | 0.0  |
| 2003 09 18 | 291 | 0.1− | 0.2+ | 2007 10 11 | G96 | 1.0− | 0.4+ | 2007 10 20 | G96 | 0.2+ | 0.2− |
| 2003 09 30 | 691 | 0.3− | 0.1+ | 2007 10 11 | G96 | 0.1− | 0.9+ | 2007 10 20 | G96 | 0.7+ | 0.2− |
| 2003 09 30 | 691 | 0.2+ | 0.2− | 2007 10 12 | 291 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.2+ | 0.2− |
| 2003 09 30 | 691 | 0.3− | 0.2+ | 2007 10 12 | 291 | 0.2− | 0.2+ | 2007 10 20 | G96 | 0.3+ | 0.3− |
| 2007 09 10 | G96 | 0.4+ | 0.4− | 2007 10 12 | 291 | 0.2− | 0.1+ |            |     |      |      |

**2007 TS<sub>207</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 134.21414  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21241051 | $\omega$ | 217.26252 | −0.70217006   | +0.71190827 |
| <i>a</i> | 2.7819675  | $\Omega$ | 8.16084   | −0.63122117   | −0.61461746 |
| <i>e</i> | 0.1046084  | <i>i</i> | 4.84622   | −0.32941925   | −0.33975283 |
| <i>P</i> | 4.64       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 16 | 691 | 0.0  | 0.1− | 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 10 12 | G96 | 0.3− | 0.1+ |
| 2003 11 16 | 691 | 0.4+ | 0.7− | 2007 09 11 | G96 | 0.2+ | 0.4− | 2007 10 12 | G96 | 0.1+ | 0.0  |
| 2003 11 16 | 691 | 0.0  | 0.2− | 2007 09 11 | G96 | 0.2+ | 0.0  | 2007 10 12 | G96 | 0.3− | 0.0  |
| 2005 01 15 | 691 | 0.5− | 0.2+ | 2007 10 10 | G96 | 0.1− | 0.1+ | 2007 10 14 | G96 | 0.2+ | 0.1− |
| 2005 01 15 | 691 | 0.1+ | 0.2+ | 2007 10 10 | G96 | 0.2+ | 0.1+ | 2007 10 14 | G96 | 0.3+ | 0.2− |
| 2005 01 15 | 691 | 0.3+ | 0.2+ | 2007 10 10 | G96 | 0.4+ | 0.1− | 2007 10 14 | G96 | 0.1− | 0.0  |
| 2005 01 19 | 691 | 0.0  | 0.0  | 2007 10 10 | G96 | 0.6+ | 0.0  | 2007 10 14 | G96 | 0.1− | 0.1− |
| 2005 01 19 | 691 | 0.3+ | 0.1− | 2007 10 11 | G96 | 0.1− | 0.2+ | 2007 10 31 | G96 | 0.1− | 0.2+ |
| 2005 01 19 | 691 | 0.1− | 0.1+ | 2007 10 11 | G96 | 0.3− | 0.2+ | 2007 10 31 | G96 | 0.2− | 0.3+ |
| 2005 03 16 | 691 | 0.1+ | 0.1+ | 2007 10 11 | G96 | 0.5− | 0.3+ | 2007 10 31 | G96 | 0.2+ | 0.5+ |
| 2005 03 16 | 691 | 0.1− | 0.2+ | 2007 10 11 | G96 | 0.2− | 0.2+ | 2007 10 31 | G96 | 0.4− | 0.1+ |
| 2005 03 16 | 691 | 0.1+ | 0.1+ | 2007 10 12 | G96 | 0.5− | 0.1− |            |     |      |      |

**2007 TW<sub>207</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 322.75762  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18034340 | $\omega$ | 324.90073 | +0.23887471   | −0.95826827 |
| <i>a</i> | 3.1026721  | $\Omega$ | 110.82791 | +0.92492997   | +0.17528682 |
| <i>e</i> | 0.1694580  | <i>i</i> | 9.67254   | +0.29570833   | +0.22582393 |
| <i>P</i> | 5.47       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 07 | 910 | 0.0  | 0.1− | 2007 09 23 | 106 | 0.4+ | 0.3+ | 2007 10 17 | 699 | 0.6+ | 0.7− |
| 1997 12 07 | 910 | 0.0  | 0.1+ | 2007 09 23 | 106 | 0.1− | 0.5+ | 2007 10 17 | 699 | 1.2+ | 0.8− |
| 1997 12 07 | 910 | 0.4− | 0.1− | 2007 10 10 | 703 | 0.5+ | 0.1+ | 2007 10 17 | 699 | 0.3− | 0.2− |
| 2002 12 05 | 644 | 0.6+ | 0.3+ | 2007 10 10 | 703 | 0.6+ | 0.3+ | 2007 10 17 | 699 | 0.3+ | 0.6− |
| 2002 12 05 | 644 | 0.2+ | 0.2− | 2007 10 10 | 703 | 0.5+ | 0.1+ | 2007 11 11 | 703 | 0.3− | 0.9+ |
| 2002 12 05 | 644 | 0.3+ | 0.0  | 2007 10 10 | 703 | 0.2+ | 0.2− | 2007 11 11 | 703 | 1.9− | 0.8+ |
| 2002 12 13 | 644 | 0.2− | 0.3+ | 2007 10 11 | 703 | 0.1− | 0.9+ | 2007 11 11 | 703 | 0.7− | 0.7− |
| 2002 12 13 | 644 | 0.1+ | 0.2+ | 2007 10 11 | 703 | 0.2+ | 0.1+ | 2007 11 11 | 703 | 0.2− | 0.0  |
| 2002 12 13 | 644 | 0.6− | 0.4+ | 2007 10 11 | 703 | 0.5+ | 0.6+ | 2007 11 17 | 703 | 0.1− | 1.1+ |
| 2005 05 04 | 691 | 0.4+ | 0.6+ | 2007 10 11 | 703 | 0.4− | 0.4+ | 2007 11 17 | 703 | 0.4+ | 0.4− |
| 2005 05 04 | 691 | 0.0  | 0.7+ | 2007 10 15 | 703 | 0.3− | 0.7− | 2007 11 17 | 703 | 0.6+ | 0.4+ |
| 2005 05 04 | 691 | 0.2+ | 0.3+ | 2007 10 15 | 703 | 1.5− | 0.2+ | 2007 11 17 | 703 | 0.7− | 0.3− |
| 2007 09 22 | 106 | 0.6+ | 0.6− | 2007 10 15 | 703 | 0.6− | 0.6− |            |     |      |      |
| 2007 09 23 | 106 | 0.2+ | 0.1+ | 2007 10 15 | 703 | 0.2− | 0.5− |            |     |      |      |

**2007 TF<sub>209</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 49.74004   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23018134 | $\omega$ | 130.94972 | +0.74318032   | +0.66902287 |
| <i>a</i> | 2.6368735  | $\Omega$ | 187.07735 | −0.63483344   | +0.70054335 |
| <i>e</i> | 0.1510201  | <i>i</i> | 4.45069   | −0.21135164   | +0.24828898 |
| <i>P</i> | 4.28       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 01 | 691 | 0.1+ | 0.0  | 2006 04 24 | 691 | 0.3+ | 0.5+ | 2007 10 08 | 699 | 1.1− | 0.1− |
| 1994 09 01 | 691 | 0.2+ | 0.0  | 2006 04 24 | 691 | 0.4+ | 0.5+ | 2007 10 11 | 703 | 0.5− | 0.8− |
| 1994 09 01 | 691 | 0.2− | 0.1+ | 2006 05 24 | G96 | 0.2− | 0.1+ | 2007 10 11 | 703 | 0.2− | 1.0− |
| 1997 04 07 | 691 | 0.7− | 0.1+ | 2006 05 24 | G96 | 0.0  | 0.2− | 2007 10 11 | 703 | 0.4+ | 0.1− |
| 1997 04 07 | 691 | 0.5− | 0.1− | 2006 05 24 | G96 | 0.2− | 0.1− | 2007 10 11 | 703 | 0.6− | 0.1− |
| 1997 04 07 | 691 | 0.1− | 0.3− | 2006 05 24 | G96 | 0.6+ | 0.1− | 2007 10 13 | D35 | 0.3+ | 0.4+ |
| 2003 11 21 | 691 | 0.1+ | 0.3+ | 2007 09 11 | G96 | 1.1+ | 0.1+ | 2007 10 13 | D35 | 0.5+ | 0.2+ |
| 2003 11 21 | 691 | 0.4+ | 0.0  | 2007 09 11 | G96 | 0.2− | 0.3− | 2007 10 13 | D35 | 0.4+ | 0.0  |
| 2003 11 21 | 691 | 0.0  | 0.3+ | 2007 09 11 | G96 | 0.1+ | 0.2− | 2007 10 15 | 691 | 0.4− | 0.2+ |
| 2003 11 21 | 691 | 0.5+ | 0.2+ | 2007 09 11 | G96 | 0.2− | 0.1+ | 2007 10 15 | 691 | 0.4− | 0.1+ |
| 2003 11 21 | 691 | 0.0  | 0.3+ | 2007 10 08 | 699 | 1.3+ | 0.3+ | 2007 10 15 | 691 | 0.5− | 0.1− |
| 2003 11 21 | 691 | 0.1+ | 0.2+ | 2007 10 08 | 699 | 0.1+ | 0.5− |            |     |      |      |
| 2006 04 24 | 691 | 0.2+ | 0.4+ | 2007 10 08 | 699 | 1.3− | 1.1+ |            |     |      |      |

**2007 TC<sub>212</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 295.01830  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18378142 | $\omega$ | 232.12061 | −0.39082300   | −0.91233671 |
| <i>a</i> | 3.0638558  | $\Omega$ | 241.30506 | +0.88216626   | −0.33339900 |
| <i>e</i> | 0.1082016  | <i>i</i> | 7.99874   | +0.26275477   | −0.23766959 |
| <i>P</i> | 5.36       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 11 12 | 691 | 0.0  | 0.1+ | 2004 03 26 | 699 | 1.0− | 0.6+ | 2007 10 07 | 691 | 0.0  | 0.2+ |
| 1991 11 12 | 691 | 0.2− | 0.3− | 2004 03 26 | 699 | 1.5+ | 0.1− | 2007 10 07 | 691 | 0.1− | 0.2+ |
| 1991 11 12 | 691 | 0.4+ | 0.2− | 2004 03 26 | 699 | 0.5+ | 0.9− | 2007 10 11 | 691 | 0.2− | 0.1+ |
| 2002 11 28 | 608 | 0.2+ | 0.1+ | 2004 03 26 | 699 | 0.5− | 1.6+ | 2007 10 11 | 691 | 0.0  | 1.1+ |
| 2002 11 28 | 608 | 0.0  | 0.0  | 2007 09 25 | G96 | 0.2+ | 0.2+ | 2007 10 11 | 691 | 0.1− | 0.2+ |
| 2002 11 28 | 608 | 0.2− | 0.1− | 2007 09 25 | G96 | 0.1+ | 0.2+ | 2007 10 15 | 691 | 0.3+ | 0.3+ |
| 2002 12 05 | 608 | 0.0  | 0.1− | 2007 09 25 | G96 | 0.4+ | 0.0  | 2007 10 15 | 691 | 0.0  | 0.0  |
| 2002 12 05 | 608 | 0.1− | 0.5− | 2007 09 25 | G96 | 0.4+ | 0.1+ | 2007 10 15 | 691 | 0.9− | 0.4− |
| 2002 12 05 | 608 | 0.1− | 0.4− | 2007 10 07 | 691 | 0.3− | 0.3+ |            |     |      |      |

**2007 TF<sub>212</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 164.63543  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27832626 | $\omega$ | 334.82175 | -0.63942353   | +0.76147284 |
| <i>a</i> | 2.3232713  | $\Omega$ | 255.24341 | -0.68550451   | -0.62723131 |
| <i>e</i> | 0.0750024  | <i>i</i> | 6.31019   | -0.34816824   | -0.16352371 |
| <i>P</i> | 3.54       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 05 | 644 | 0.3+ | 0.9+ | 2007 09 25 | G96 | 0.2+ | 0.1- | 2007 10 23 | 691 | 0.4+  | 0.1+  |
| 2002 04 05 | 644 | 0.5+ | 0.5+ | 2007 10 07 | 691 | 0.1- | 0.1+ | 2007 11 02 | 704 | 0.2-  | 0.2-  |
| 2002 04 05 | 644 | 0.2+ | 0.6+ | 2007 10 07 | 691 | 0.1- | 0.1+ | 2007 11 02 | 704 | 0.9+  | 0.8+  |
| 2003 08 23 | 644 | 0.5+ | 0.7+ | 2007 10 07 | 691 | 0.3- | 0.2+ | 2007 11 02 | 704 | 0.2-  | 0.1+  |
| 2003 08 23 | 644 | 0.2- | 0.3+ | 2007 10 11 | 691 | 0.3- | 0.1+ | 2007 11 02 | 704 | 0.4-  | 0.4+  |
| 2003 08 23 | 644 | 0.0  | 0.4+ | 2007 10 11 | 691 | 0.2- | 0.4+ | 2007 11 02 | 704 | 0.6+  | 0.0   |
| 2003 09 27 | 691 | 0.2- | 0.0  | 2007 10 11 | 691 | 0.1- | 0.2+ | 2007 11 07 | 704 | (0.5- | 3.6+) |
| 2003 09 27 | 691 | 0.4- | 0.1+ | 2007 10 15 | 691 | 0.2- | 0.5+ | 2007 11 07 | 704 | (0.6+ | 3.3+) |
| 2003 09 27 | 691 | 0.3- | 0.1+ | 2007 10 15 | 691 | 0.1- | 0.2- | 2007 11 07 | 704 | (0.1+ | 4.2+) |
| 2004 12 15 | 691 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.2- | 0.3+ | 2007 11 07 | 704 | (0.3+ | 3.6+) |
| 2004 12 15 | 691 | 0.2- | 0.0  | 2007 10 19 | 691 | 0.1- | 0.2+ | 2007 11 07 | 704 | (0.6+ | 4.2+) |
| 2004 12 15 | 691 | 0.1- | 0.0  | 2007 10 19 | 691 | 0.2+ | 0.1- | 2007 11 08 | G96 | 0.0   | 0.2-  |
| 2007 09 25 | G96 | 0.4+ | 0.2- | 2007 10 19 | 691 | 0.2- | 0.4- | 2007 11 08 | G96 | 0.0   | 0.1+  |
| 2007 09 25 | G96 | 0.6+ | 0.5- | 2007 10 23 | 691 | 0.9- | 0.1- | 2007 11 08 | G96 | 0.4+  | 0.0   |
| 2007 09 25 | G96 | 0.2+ | 0.5- | 2007 10 23 | 691 | 0.5- | 0.1- | 2007 11 08 | G96 | 0.1+  | 0.1-  |

**2007 TZ<sub>212</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.85016    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.12651238 | $\omega$ | 97.33353  | +0.83807496   | -0.54248182 |
| <i>a</i> | 3.9298928  | $\Omega$ | 295.53537 | +0.47184486   | +0.77396427 |
| <i>e</i> | 0.1537252  | <i>i</i> | 3.67437   | +0.27384812   | +0.32663861 |
| <i>P</i> | 7.79       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 11 | 691 | 0.1+ | 0.4- | 2006 09 27 | G96 | 0.4- | 0.2+ | 2007 10 15 | 691 | 0.3- | 0.2+ |
| 1999 10 11 | 691 | 0.2+ | 0.4- | 2007 10 07 | 691 | 0.0  | 0.4+ | 2007 10 15 | 691 | 0.3+ | 0.2+ |
| 1999 10 11 | 691 | 0.0  | 0.5- | 2007 10 07 | 691 | 0.1+ | 0.7+ | 2007 10 19 | 691 | 0.4- | 0.0  |
| 1999 10 13 | 645 | 0.2+ | 0.3- | 2007 10 07 | 691 | 0.5+ | 0.1+ | 2007 10 19 | 691 | 0.1+ | 0.0  |
| 1999 10 13 | 645 | 0.2+ | 0.3- | 2007 10 07 | 691 | 0.1- | 0.3- | 2007 10 19 | 691 | 0.3- | 0.2+ |
| 2006 08 19 | 691 | 0.1+ | 0.3+ | 2007 10 07 | 691 | 0.2- | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 2006 08 19 | 691 | 0.2+ | 0.0  | 2007 10 07 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.3+ | 0.3- |
| 2006 08 19 | 691 | 0.2+ | 0.4+ | 2007 10 11 | 691 | 0.3- | 0.3+ | 2007 11 14 | 691 | 0.3- | 0.3- |
| 2006 09 27 | G96 | 0.2- | 0.2- | 2007 10 11 | 691 | 0.3- | 0.4- | 2007 11 18 | 691 | 0.3- | 0.2- |
| 2006 09 27 | G96 | 0.3- | 0.4- | 2007 10 11 | 691 | 0.7+ | 0.4+ | 2007 11 18 | 691 | 0.2- | 0.1- |
| 2006 09 27 | G96 | 0.2+ | 0.2+ | 2007 10 15 | 691 | 0.2+ | 0.4+ | 2007 11 18 | 691 | 0.2- | 0.0  |

**2007 TF<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 225.04711  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27686510 | $\omega$ | 171.91524 | -0.99979477   | -0.01321490 |
| <i>a</i> | 2.3314382  | $\Omega$ | 7.37984   | +0.00368222   | -0.86387167 |
| <i>e</i> | 0.0513638  | <i>i</i> | 6.86598   | +0.01992147   | -0.50353858 |
| <i>P</i> | 3.56       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 04 | 644 | 0.1+ | 0.8+ | 2007 10 11 | 691 | 0.1- | 0.2+ | 2007 11 02 | 704 | 0.1- | 0.5- |
| 2002 04 04 | 644 | 0.4+ | 0.8+ | 2007 10 11 | 691 | 0.2- | 0.1+ | 2007 11 02 | 704 | 0.5+ | 1.1+ |
| 2002 04 04 | 644 | 0.3+ | 0.7+ | 2007 10 11 | 691 | 0.0  | 0.2+ | 2007 11 02 | 704 | 1.8+ | 0.6+ |
| 2002 04 04 | 644 | 0.4+ | 0.8+ | 2007 10 15 | 691 | 0.2- | 0.2+ | 2007 11 04 | 691 | 0.3- | 0.3+ |
| 2002 04 04 | 644 | 0.2+ | 0.8+ | 2007 10 15 | 691 | 0.2- | 0.1- | 2007 11 04 | 691 | 0.1- | 0.0  |
| 2002 04 04 | 644 | 0.1+ | 0.7+ | 2007 10 15 | 691 | 0.1- | 0.0  | 2007 11 04 | 691 | 0.1- | 0.0  |
| 2002 05 17 | 644 | 0.3+ | 0.6+ | 2007 10 19 | 691 | 0.6- | 0.1+ | 2007 11 04 | G96 | 0.0  | 0.3- |
| 2002 05 17 | 644 | 1.0+ | 0.7+ | 2007 10 19 | 691 | 0.3- | 0.1+ | 2007 11 04 | G96 | 0.0  | 0.6+ |
| 2002 05 17 | 644 | 0.8+ | 0.4+ | 2007 10 19 | 691 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.1+ | 0.3- |
| 2003 10 22 | 695 | 0.1- | 0.3+ | 2007 10 20 | 703 | 0.2+ | 1.0+ | 2007 11 04 | G96 | 0.2+ | 0.4- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 695 | 0.2- | 0.3+ | 2007 10 20 | 703 | 0.6- | 0.5- | 2007 11 07 | 704 | 0.8- | 0.7+ |
| 2005 01 06 | 703 | 0.2+ | 0.6- | 2007 10 20 | 703 | 0.6- | 0.6- | 2007 11 07 | 704 | 0.5- | 0.5- |
| 2005 01 06 | 703 | 0.3- | 0.3- | 2007 10 20 | 703 | 1.6+ | 1.0+ | 2007 11 07 | 704 | 0.6- | 0.7+ |
| 2005 01 06 | 703 | 0.9- | 0.2+ | 2007 11 02 | 691 | 0.5- | 0.1+ | 2007 11 07 | 704 | 0.4- | 0.5+ |
| 2005 01 06 | 703 | 0.4+ | 0.4- | 2007 11 02 | 691 | 0.5- | 0.2+ | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2007 10 07 | 691 | 0.2- | 0.1+ | 2007 11 02 | 691 | 0.4- | 0.1+ | 2007 11 18 | 691 | 0.4- | 0.0  |
| 2007 10 07 | 691 | 0.4- | 0.4+ | 2007 11 02 | 704 | 1.5+ | 0.7+ | 2007 11 18 | 691 | 0.7- | 0.2- |
| 2007 10 07 | 691 | 0.5- | 0.1+ | 2007 11 02 | 704 | 0.5+ | 1.2+ |            |     |      |      |

**2007 TH<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.26204   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26585698 | $\omega$ | 82.85584  | +0.97108749   | -0.23416929 |
| <i>a</i> | 2.3953593  | $\Omega$ | 290.67838 | +0.19474037   | +0.88950032 |
| <i>e</i> | 0.2009951  | <i>i</i> | 2.84333   | +0.13807705   | +0.39236964 |
| <i>P</i> | 3.71       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1992 10 02 | 691 | 0.1+ | 0.3+ | 2007 10 15 | 691 | 0.1+  | 0.2+  | 2007 11 02 | 691 | 0.3-  | 0.0   |
| 1992 10 02 | 691 | 0.3- | 0.2- | 2007 10 15 | 691 | 0.5+  | 0.1+  | 2007 11 14 | 691 | 0.5-  | 0.3-  |
| 1992 10 02 | 691 | 0.1+ | 0.0  | 2007 10 15 | 691 | 0.5+  | 0.1-  | 2007 11 14 | 691 | 0.1+  | 0.3-  |
| 2001 01 15 | 691 | 0.1+ | 0.1- | 2007 10 19 | 691 | 0.3+  | 0.2+  | 2007 11 14 | 691 | 0.1+  | 0.3-  |
| 2001 01 15 | 691 | 0.1- | 0.1+ | 2007 10 19 | 691 | 0.2+  | 0.1+  | 2007 11 18 | 691 | 0.1-  | 0.1-  |
| 2001 01 15 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.7-  | 0.3+  | 2007 11 18 | 691 | 0.5-  | 0.8-  |
| 2007 10 07 | 691 | 0.1+ | 0.3+ | 2007 10 20 | 703 | 0.6+  | 0.3+  | 2007 11 18 | 691 | 0.5-  | 0.2-  |
| 2007 10 07 | 691 | 0.2- | 0.3- | 2007 10 20 | 703 | 0.2+  | 0.9+  | 2007 11 18 | 703 | (0.0  | 2.1-) |
| 2007 10 07 | 691 | 0.2- | 0.0  | 2007 10 20 | 703 | 1.3+  | 1.7+  | 2007 11 18 | 703 | 0.3+  | 0.9+  |
| 2007 10 11 | 691 | 0.1+ | 0.2- | 2007 10 20 | 703 | (2.4+ | 2.3+) | 2007 11 18 | 703 | 0.6+  | 0.0   |
| 2007 10 11 | 691 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.0   | 0.3+  | 2007 11 18 | 703 | (0.3+ | 2.6+) |
| 2007 10 11 | 691 | 0.5+ | 0.3- | 2007 11 02 | 691 | 0.2-  | 0.3+  |            |     |       |       |

**2007 TN<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.91700  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.26201446 | $\omega$ | 72.23253 | +0.10074417   | -0.99457588 |
| <i>a</i> | 2.4187215  | $\Omega$ | 12.07354 | +0.85953611   | +0.07390983 |
| <i>e</i> | 0.2211662  | <i>i</i> | 7.10558  | +0.50104720   | +0.07318582 |
| <i>P</i> | 3.76       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 23 | 807 | 0.0  | 0.3+ | 2007 10 11 | 691 | 0.4- | 0.2- | 2007 11 07 | 704 | 0.3+ | 0.2- |
| 2001 05 24 | 807 | 0.0  | 0.5+ | 2007 10 11 | 691 | 0.2- | 0.3- | 2007 11 07 | 704 | 0.4+ | 0.5- |
| 2003 09 22 | 699 | 0.5+ | 0.7- | 2007 10 11 | 691 | 0.5- | 0.2- | 2007 11 07 | 704 | 0.8+ | 0.0  |
| 2003 09 22 | 699 | 1.1- | 0.1- | 2007 10 11 | 691 | 0.3- | 0.2- | 2007 11 09 | 704 | 0.9+ | 0.3+ |
| 2003 09 22 | 699 | 0.0  | 0.2+ | 2007 10 19 | 691 | 0.6- | 0.2+ | 2007 11 09 | 704 | 0.3+ | 1.0+ |
| 2003 09 22 | 699 | 1.8+ | 0.2+ | 2007 10 19 | 691 | 0.6- | 0.2- | 2007 11 09 | 704 | 0.2+ | 0.1- |
| 2003 09 29 | 691 | 0.4- | 0.2+ | 2007 10 19 | 691 | 0.2- | 0.4- | 2007 11 09 | 704 | 0.1+ | 0.2+ |
| 2003 09 29 | 691 | 0.4- | 0.1- | 2007 10 21 | 703 | 0.2- | 0.9+ | 2007 11 09 | 704 | 0.1+ | 0.8+ |
| 2003 09 29 | 691 | 0.3- | 0.4+ | 2007 10 21 | 703 | 0.3+ | 0.7- | 2007 11 12 | 703 | 1.1- | 0.5+ |
| 2005 03 08 | G96 | 0.3- | 0.1- | 2007 10 21 | 703 | 1.4- | 0.2- | 2007 11 12 | 703 | 0.8+ | 0.2+ |
| 2005 03 08 | G96 | 0.0  | 0.1+ | 2007 10 21 | 703 | 0.9- | 0.1- | 2007 11 12 | 703 | 1.1+ | 0.0  |
| 2005 03 08 | G96 | 0.4+ | 0.1- | 2007 11 02 | 704 | 0.5+ | 0.0  | 2007 11 12 | 703 | 0.2- | 0.8- |
| 2005 03 08 | G96 | 0.1- | 0.2- | 2007 11 02 | 704 | 0.2- | 0.2+ | 2007 11 17 | 704 | 0.2+ | 0.5- |
| 2007 10 07 | 691 | 0.6- | 0.2- | 2007 11 02 | 704 | 0.2- | 0.3+ | 2007 11 17 | 704 | 0.9+ | 0.3- |
| 2007 10 07 | 691 | 0.3- | 0.0  | 2007 11 02 | 704 | 0.4+ | 0.1+ | 2007 11 17 | 704 | 0.2- | 0.2+ |
| 2007 10 07 | 691 | 0.6- | 0.4- | 2007 11 02 | 704 | 0.7+ | 0.0  | 2007 11 17 | 704 | 0.1+ | 0.7+ |
| 2007 10 11 | 691 | 0.4- | 0.2- | 2007 11 07 | 704 | 0.0  | 0.8+ |            |     |      |      |
| 2007 10 11 | 691 | 0.1- | 0.2- | 2007 11 07 | 704 | 0.3+ | 0.6- |            |     |      |      |

**2007 TZ<sub>213</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.56391  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21423048 | $\omega$ | 141.90521 | +0.65269366   | -0.75575870 |
| <i>a</i> | 2.7661892  | $\Omega$ | 267.28386 | +0.68140632   | +0.61622785 |
| <i>e</i> | 0.0990397  | <i>i</i> | 3.04735   | +0.33117428   | +0.22156721 |
| <i>P</i> | 4.60       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.0  | 0.3+ | 2005 04 11 | 691 | 0.1+ | 0.9+ | 2007 10 20 | 703 | 0.7- | 0.4+ |
| 2002 09 13 | 644 | 0.2- | 0.2+ | 2007 10 07 | 691 | 0.2- | 0.3+ | 2007 11 01 | 704 | 0.8+ | 0.0  |
| 2002 09 13 | 644 | 0.1- | 0.1+ | 2007 10 07 | 691 | 0.3- | 0.7+ | 2007 11 01 | 704 | 0.1+ | 1.0+ |
| 2002 10 10 | 645 | 0.2+ | 0.2- | 2007 10 07 | 691 | 0.1+ | 0.2- | 2007 11 01 | 704 | 1.0+ | 0.1+ |
| 2002 10 10 | 645 | 0.1+ | 0.1- | 2007 10 11 | 691 | 0.2- | 0.2- | 2007 11 15 | 704 | 0.1- | 0.4+ |
| 2003 12 22 | 691 | 0.0  | 0.1- | 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2- | 1.1- |
| 2003 12 22 | 691 | 0.0  | 0.3- | 2007 10 11 | 691 | 0.2- | 0.1- | 2007 11 15 | 704 | 0.8+ | 0.8- |
| 2003 12 22 | 691 | 0.3- | 0.0  | 2007 10 15 | 691 | 0.7- | 1.0+ | 2007 11 15 | 704 | 0.8- | 1.1- |
| 2004 01 15 | 691 | 0.2+ | 0.2+ | 2007 10 15 | 691 | 0.4- | 0.0  | 2007 11 15 | 704 | 0.9- | 0.6- |
| 2004 01 15 | 691 | 0.1+ | 0.4+ | 2007 10 15 | 691 | 0.5+ | 0.2- | 2007 11 18 | 704 | 0.4+ | 0.3+ |
| 2004 01 15 | 691 | 0.0  | 0.1+ | 2007 10 20 | 703 | 0.2+ | 1.2+ | 2007 11 18 | 704 | 1.1+ | 0.3- |
| 2005 04 11 | 691 | 0.1+ | 0.3+ | 2007 10 20 | 703 | 0.4- | 0.1+ | 2007 11 18 | 704 | 0.2+ | 0.4+ |
| 2005 04 11 | 691 | 0.4+ | 0.5+ | 2007 10 20 | 703 | 0.5- | 0.2+ |            |     |      |      |

**2007 TB<sub>214</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.68235   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26306458 | $\omega$ | 38.00629  | +0.92108812   | -0.38908803 |
| <i>a</i> | 2.4122804  | $\Omega$ | 344.87201 | +0.34235559   | +0.82695789 |
| <i>e</i> | 0.1994783  | <i>i</i> | 3.16160   | +0.18544357   | +0.40589549 |
| <i>P</i> | 3.75       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 05 | 413 | 0.2+ | 0.2- | 2007 10 07 | 691 | 0.3+ | 0.3+ | 2007 11 07 | 703 | 1.5+ | 0.2- |
| 2003 09 05 | 413 | 0.3+ | 0.2- | 2007 10 11 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 703 | 0.4- | 0.9- |
| 2003 09 05 | 413 | 0.0  | 0.2- | 2007 10 11 | 691 | 0.0  | 0.5+ | 2007 11 07 | 703 | 0.3+ | 0.5- |
| 2003 09 24 | 644 | 0.3- | 0.3+ | 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.2- | 0.3+ |
| 2003 09 24 | 644 | 0.2- | 0.0  | 2007 10 19 | 691 | 0.1- | 0.5+ | 2007 11 14 | 691 | 0.1- | 0.5+ |
| 2003 09 24 | 644 | 0.0  | 0.2+ | 2007 10 19 | 691 | 0.1- | 0.3+ | 2007 11 14 | 691 | 0.1+ | 0.1+ |
| 2007 10 07 | 691 | 0.5- | 0.1+ | 2007 10 19 | 691 | 0.0  | 0.1+ |            |     |      |      |
| 2007 10 07 | 691 | 0.2- | 0.6- | 2007 11 07 | 703 | 0.7- | 0.6- |            |     |      |      |

**2007 TD<sub>214</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 157.81771  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22786258 | $\omega$ | 12.51819  | -0.50970567   | +0.84619318 |
| <i>a</i> | 2.6547322  | $\Omega$ | 227.07812 | -0.80652498   | -0.53285107 |
| <i>e</i> | 0.0747949  | <i>i</i> | 12.25416  | -0.29952895   | -0.00518066 |
| <i>P</i> | 4.33       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 26 | 699 | 0.3+ | 0.4+ | 2003 12 16 | 691 | 0.2- | 0.0  | 2007 10 31 | G96 | 0.3- | 0.1+ |
| 2001 04 26 | 699 | 0.1+ | 1.0+ | 2003 12 16 | 691 | 0.0  | 0.3+ | 2007 10 31 | G96 | 0.7+ | 0.0  |
| 2001 04 26 | 699 | 0.1- | 0.6+ | 2005 03 13 | 699 | 0.3- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.0  |
| 2001 04 26 | 699 | 1.6- | 0.5+ | 2005 03 13 | 699 | 0.1- | 0.3- | 2007 11 03 | 691 | 0.3- | 0.1+ |
| 2002 08 04 | 644 | 0.5+ | 0.3+ | 2005 03 13 | 699 | 1.0+ | 0.3+ | 2007 11 03 | 691 | 0.1- | 0.4+ |
| 2002 08 04 | 644 | 0.7+ | 0.2- | 2005 03 13 | 699 | 0.2- | 0.4+ | 2007 11 09 | G96 | 0.2+ | 0.2- |
| 2002 08 04 | 644 | 0.3+ | 0.4+ | 2005 03 13 | 699 | 0.5+ | 1.8+ | 2007 11 09 | G96 | 0.0  | 0.2- |
| 2002 09 03 | 644 | 0.1- | 0.4+ | 2005 03 13 | 699 | 0.2+ | 0.8+ | 2007 11 09 | G96 | 0.4+ | 0.2- |
| 2002 09 03 | 644 | 0.1- | 0.4+ | 2005 03 13 | 699 | 1.8+ | 0.1- | 2007 11 09 | G96 | 0.8+ | 0.1- |
| 2002 09 03 | 644 | 0.1- | 0.3+ | 2005 03 13 | 699 | 0.0  | 0.1- | 2007 11 13 | G96 | 0.3+ | 0.5- |
| 2002 09 11 | 644 | 0.0  | 0.4+ | 2007 10 07 | 691 | 0.2+ | 0.5+ | 2007 11 13 | G96 | 0.0  | 0.6- |
| 2002 09 11 | 644 | 0.0  | 0.1+ | 2007 10 07 | 691 | 0.1- | 0.1+ | 2007 11 13 | G96 | 0.3+ | 0.7- |
| 2002 09 11 | 644 | 0.5- | 0.3+ | 2007 10 07 | 691 | 0.1- | 0.3+ | 2007 11 13 | G96 | 0.1- | 0.6- |
| 2002 09 11 | 644 | 0.3+ | 0.4+ | 2007 10 11 | 691 | 0.3+ | 0.1- | 2007 11 15 | 704 | 0.3+ | 0.6+ |
| 2002 09 11 | 644 | 0.3+ | 1.0+ | 2007 10 11 | 691 | 0.2- | 0.3- | 2007 11 15 | 704 | 0.2- | 0.9+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 11 | 644 | 0.3+ | 0.5+ | 2007 10 11 | 691 | 0.3- | 0.0  | 2007 11 15 | 704 | 0.7+ | 0.7- |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2007 10 15 | 691 | 1.0- | 0.6- | 2007 11 15 | 704 | 0.6+ | 0.6+ |
| 2002 10 30 | 645 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.5- | 0.7+ | 2007 11 15 | 704 | 0.9+ | 1.2+ |
| 2002 11 08 | 645 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2002 11 08 | 645 | 0.1- | 0.0  | 2007 10 19 | 691 | 0.2- | 0.4- | 2007 12 06 | G96 | 0.2+ | 0.5+ |
| 2003 11 24 | 691 | 0.0  | 0.3- | 2007 10 19 | 691 | 0.2- | 0.2+ | 2007 12 06 | G96 | 0.7+ | 0.5+ |
| 2003 11 24 | 691 | 0.0  | 0.1- | 2007 10 19 | 691 | 0.2- | 0.0  | 2007 12 06 | G96 | 0.6+ | 0.8+ |
| 2003 11 24 | 691 | 0.1+ | 0.1- | 2007 10 31 | G96 | 0.8+ | 0.2- |            |     |      |      |
| 2003 12 16 | 691 | 0.1+ | 0.1+ | 2007 10 31 | G96 | 0.7+ | 0.2- |            |     |      |      |

**2007 TJ<sub>214</sub> = 2000 GP<sub>28</sub> = 2004 BU<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 311.17139  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.20966975 | $\omega$ | 92.50685 | -0.11031663   | -0.99388471 |
| <i>a</i> | 2.8061585  | $\Omega$ | 3.83681  | +0.88072813   | -0.10001098 |
| <i>e</i> | 0.0725429  | <i>i</i> | 4.14747  | +0.46059548   | -0.04680794 |
| <i>P</i> | 4.70       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 12 13 | 691 | 0.1+ | 0.3- | 2004 01 28 | 691 | 0.1- | 0.0  | 2007 10 20 | 703 | 0.6+ | 1.1- |
| 1993 12 13 | 691 | 0.1+ | 0.6+ | 2004 01 30 | 704 | 0.2- | 0.0  | 2007 10 20 | 703 | 0.3- | 0.6+ |
| 1993 12 13 | 691 | 0.1- | 0.0  | 2004 01 30 | 704 | 0.4+ | 0.1+ | 2007 10 20 | 703 | 1.7- | 0.6- |
| 1995 03 01 | 691 | 0.4- | 0.6- | 2004 01 30 | 704 | 0.2- | 0.2- | 2007 10 20 | 703 | 0.1- | 0.1- |
| 1995 03 01 | 691 | 0.1- | 0.3- | 2004 01 30 | 704 | 1.0+ | 0.5+ | 2007 11 03 | 691 | 0.2- | 0.0  |
| 1995 03 01 | 691 | 0.4- | 0.2- | 2007 10 07 | 691 | 1.2+ | 0.3+ | 2007 11 03 | 691 | 0.2- | 0.1- |
| 2000 04 05 | 704 | 0.1- | 0.6+ | 2007 10 07 | 691 | 0.6+ | 0.0  | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2000 04 05 | 704 | 0.4+ | 0.6+ | 2007 10 07 | 691 | 0.1+ | 0.7+ | 2007 11 07 | 703 | 0.5- | 0.0  |
| 2000 04 05 | 704 | 0.5+ | 0.3- | 2007 10 11 | 691 | 0.1- | 0.0  | 2007 11 07 | 703 | 0.5- | 0.1- |
| 2000 04 05 | 704 | 0.8+ | 1.0+ | 2007 10 11 | 691 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.5+ | 0.2+ |
| 2000 04 05 | 704 | 0.2- | 0.1+ | 2007 10 11 | 691 | 0.1+ | 0.2+ | 2007 11 07 | 703 | 1.4+ | 0.1+ |
| 2000 04 06 | 704 | 0.7+ | 1.6+ | 2007 10 15 | 691 | 0.1+ | 0.1- | 2007 11 14 | 691 | 0.8- | 0.1+ |
| 2000 04 06 | 704 | 0.6- | 1.1+ | 2007 10 15 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.2- | 0.5- |
| 2000 04 06 | 704 | 1.2+ | 0.3+ | 2007 10 15 | 691 | 0.7- | 0.3+ | 2007 11 14 | 691 | 0.3+ | 0.0  |
| 2000 04 06 | 704 | 1.2+ | 0.6+ | 2007 10 19 | 691 | 0.4- | 0.0  | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2004 01 28 | 691 | 0.3+ | 0.1+ | 2007 10 19 | 691 | 0.2- | 0.2- | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2004 01 28 | 691 | 0.1- | 0.2+ | 2007 10 19 | 691 | 0.6+ | 0.8- | 2007 11 18 | 691 | 0.1- | 0.0  |

**2007 TO<sub>214</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.34747   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.16876107 | $\omega$ | 248.06579 | +0.99027947   | +0.09582362 |
| <i>a</i> | 3.2430566  | $\Omega$ | 106.32130 | -0.05229728   | +0.92815948 |
| <i>e</i> | 0.1480578  | <i>i</i> | 6.03017   | -0.12888583   | +0.35963567 |
| <i>P</i> | 5.84       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 10 | 644 | 0.4- | 0.4+ | 2007 10 07 | 703 | 0.3- | 0.1- | 2007 11 09 | 703 | 0.4- | 1.0- |
| 2001 10 10 | 644 | 0.3- | 1.0+ | 2007 10 07 | 703 | 0.9- | 0.9- | 2007 11 09 | 703 | 0.0  | 0.8+ |
| 2001 10 10 | 644 | 0.1- | 0.6+ | 2007 10 09 | D29 | 0.3+ | 0.2+ | 2007 11 12 | G96 | 0.1- | 0.0  |
| 2002 12 31 | 645 | 0.1+ | 0.2- | 2007 10 09 | D29 | 0.0  | 0.3+ | 2007 11 12 | G96 | 0.3- | 0.1- |
| 2002 12 31 | 645 | 0.1+ | 0.3- | 2007 10 09 | D29 | 0.5- | 0.7- | 2007 11 12 | G96 | 0.1+ | 0.0  |
| 2004 02 29 | 691 | 0.2- | 0.3+ | 2007 10 09 | D29 | 0.7+ | 0.3+ | 2007 11 12 | G96 | 0.1- | 0.2- |
| 2004 02 29 | 691 | 0.2+ | 0.1+ | 2007 10 12 | G96 | 0.3+ | 0.2- | 2007 11 15 | 699 | 0.8+ | 0.6+ |
| 2004 02 29 | 691 | 0.1+ | 0.2+ | 2007 10 12 | G96 | 0.4+ | 0.2- | 2007 11 15 | 699 | 0.3- | 0.2- |
| 2005 04 11 | 691 | 0.3+ | 0.1+ | 2007 10 12 | G96 | 0.5+ | 0.3- | 2007 11 15 | 699 | 0.3- | 0.2+ |
| 2005 04 11 | 691 | 0.1+ | 0.5+ | 2007 10 12 | G96 | 0.0  | 0.1- | 2007 11 15 | 699 | 0.2- | 0.1- |
| 2005 04 11 | 691 | 0.2+ | 0.6+ | 2007 10 12 | G96 | 0.5+ | 0.3- | 2007 11 19 | 703 | 0.5+ | 1.1+ |
| 2005 05 04 | 691 | 0.1- | 0.3+ | 2007 10 12 | G96 | 0.0  | 0.2- | 2007 11 19 | 703 | 0.8+ | 0.2+ |
| 2005 05 04 | 691 | 0.0  | 0.4+ | 2007 10 12 | G96 | 0.1+ | 0.4- | 2007 11 19 | 703 | 0.7+ | 0.3+ |
| 2005 05 04 | 691 | 0.2+ | 0.3+ | 2007 10 12 | G96 | 0.2+ | 0.3- | 2007 11 19 | 703 | 1.6- | 0.9+ |
| 2007 10 07 | 703 | 0.2- | 0.5- | 2007 11 09 | 703 | 1.0- | 0.5+ |            |     |      |      |
| 2007 10 07 | 703 | 0.2- | 0.2- | 2007 11 09 | 703 | 0.3+ | 0.8+ |            |     |      |      |

**2007 TP<sub>214</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 319.23934  | (2000.0)          | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|-------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.36548725 | $\omega$ 45.07378 | -0.00990334   | -0.96213458 |          |  |
| <i>a</i> | 1.9374086  | $\Omega$ 47.60688 | +0.78172521   | -0.17731625 |          |  |
| <i>e</i> | 0.1056055  | <i>i</i> 21.64353 | +0.62354440   | -0.20701691 |          |  |
| <i>P</i> | 2.70       | <i>H</i> 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 01 | 691 | 0.4+ | 0.4+ | 2007 10 20 | 703 | 0.3- | 1.2+ | 2007 11 07 | 704 | 0.2+ | 0.7+ |
| 2006 05 01 | 691 | 0.3+ | 0.2+ | 2007 10 21 | 691 | 0.5+ | 0.1- | 2007 11 07 | 704 | 0.2+ | 0.6+ |
| 2006 05 01 | 691 | 0.3+ | 0.2+ | 2007 10 21 | 691 | 0.8- | 0.0  | 2007 11 07 | 704 | 0.0  | 0.4+ |
| 2006 05 20 | G96 | 0.3- | 0.2+ | 2007 10 21 | 691 | 0.6- | 0.0  | 2007 11 07 | 704 | 0.1+ | 0.5+ |
| 2006 05 20 | G96 | 0.4- | 0.2+ | 2007 10 30 | 691 | 0.3- | 0.1- | 2007 11 07 | 704 | 0.0  | 0.4+ |
| 2006 05 20 | G96 | 0.4+ | 0.2- | 2007 10 30 | 691 | 0.3- | 0.1- | 2007 11 11 | 699 | 0.2+ | 0.1+ |
| 2006 05 20 | G96 | 0.2+ | 0.1- | 2007 10 30 | 691 | 0.3- | 0.2- | 2007 11 11 | 699 | 0.5+ | 0.5+ |
| 2006 06 01 | G96 | 0.1- | 0.3+ | 2007 11 03 | 699 | 0.2+ | 1.1- | 2007 11 11 | 699 | 0.4+ | 0.2- |
| 2006 06 01 | G96 | 0.4- | 0.2+ | 2007 11 03 | 699 | 0.2- | 0.6- | 2007 11 11 | 699 | 1.4- | 0.6+ |
| 2006 06 01 | G96 | 0.2- | 0.4+ | 2007 11 03 | 699 | 0.0  | 0.6- | 2007 11 19 | 691 | 0.0  | 0.1- |
| 2006 06 01 | G96 | 0.0  | 0.5+ | 2007 11 03 | 699 | 1.3+ | 0.8- | 2007 11 19 | 691 | 0.2- | 0.1+ |
| 2007 10 07 | 703 | 0.8- | 0.9+ | 2007 11 05 | 704 | 0.1- | 0.0  | 2007 11 19 | 691 | 0.3+ | 0.4- |
| 2007 10 07 | 703 | 0.3+ | 1.0+ | 2007 11 05 | 704 | 0.2+ | 0.1- | 2007 11 20 | 704 | 0.2+ | 0.2+ |
| 2007 10 07 | 703 | 0.4+ | 0.4+ | 2007 11 05 | 704 | 0.4+ | 0.2- | 2007 11 20 | 704 | 0.2- | 0.8+ |
| 2007 10 07 | 703 | 1.0+ | 0.6+ | 2007 11 05 | 704 | 0.1- | 0.2- | 2007 11 20 | 704 | 0.2+ | 1.3+ |
| 2007 10 10 | 699 | 0.4- | 0.2- | 2007 11 05 | 704 | 0.5+ | 0.1- | 2007 11 20 | 704 | 0.1+ | 1.2+ |
| 2007 10 10 | 699 | 0.6- | 0.2+ | 2007 11 05 | G96 | 0.1- | 0.4- | 2007 12 02 | 704 | 0.2+ | 1.4+ |
| 2007 10 10 | 699 | 0.7+ | 1.4- | 2007 11 05 | G96 | 0.0  | 0.3- | 2007 12 02 | 704 | 0.5- | 1.4+ |
| 2007 10 10 | 699 | 0.8- | 0.3+ | 2007 11 05 | G96 | 0.1- | 0.2- | 2007 12 02 | 704 | 0.9- | 1.1+ |
| 2007 10 12 | G96 | 0.2- | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.2- | 2007 12 02 | 704 | 0.8+ | 1.8+ |
| 2007 10 12 | G96 | 0.2- | 0.0  | 2007 11 06 | 704 | 0.4+ | 0.1- | 2007 12 05 | 699 | 0.9- | 1.1- |
| 2007 10 12 | G96 | 0.1- | 0.0  | 2007 11 06 | 704 | 0.0  | 0.4+ | 2007 12 05 | 699 | 0.6+ | 1.3- |
| 2007 10 20 | 703 | 0.5- | 0.4+ | 2007 11 06 | 704 | 0.7+ | 0.6+ | 2007 12 05 | 699 | 0.7+ | 1.0- |
| 2007 10 20 | 703 | 0.5- | 0.6- | 2007 11 06 | 704 | 0.7- | 0.5+ | 2007 12 05 | 699 | 0.4+ | 0.8- |
| 2007 10 20 | 703 | 0.9+ | 0.2- | 2007 11 06 | 704 | 0.5+ | 0.0  |            |     |      |      |

**2007 TL<sub>216</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 335.21827  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.28223321 | $\omega$ 194.80002 | +0.25275006   | -0.96702457 |          |  |
| <i>a</i> | 2.3017809  | $\Omega$ 240.56820 | +0.89130682   | +0.24530929 |          |  |
| <i>e</i> | 0.1396258  | <i>i</i> 2.06081   | +0.37641673   | +0.06846049 |          |  |
| <i>P</i> | 3.49       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |          |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 28 | 691 | 0.3+  | 0.4-  | 2007 10 11 | 691 | 0.6- | 0.1+ | 2007 11 07 | 703 | 0.4- | 0.2- |
| 2000 11 28 | 691 | 0.3+  | 0.3-  | 2007 10 11 | 691 | 0.2- | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.3- |
| 2000 11 28 | 691 | 0.1-  | 0.9-  | 2007 10 11 | 691 | 0.4- | 0.1- | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2002 04 10 | 695 | 0.4+  | 0.9+  | 2007 10 19 | 691 | 0.3- | 0.3- | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 2002 04 10 | 695 | 0.6+  | 0.6+  | 2007 10 19 | 691 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.3- |
| 2005 02 14 | 691 | 0.1+  | 0.3+  | 2007 10 19 | 691 | 0.1- | 0.3+ | 2007 11 15 | 704 | 0.8+ | 0.2+ |
| 2005 02 14 | 691 | 0.0   | 0.2+  | 2007 10 30 | 691 | 0.1- | 0.2+ | 2007 11 15 | 704 | 1.1+ | 0.4+ |
| 2005 02 14 | 691 | 0.2+  | 0.2+  | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 15 | 704 | 0.4+ | 0.4+ |
| 2005 03 03 | 703 | 0.1+  | 0.2-  | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 15 | 704 | 0.2+ | 0.5+ |
| 2005 03 03 | 703 | 0.2-  | 0.1+  | 2007 10 30 | G96 | 0.5+ | 0.4- | 2007 11 15 | 704 | 0.5+ | 0.6+ |
| 2005 03 03 | 703 | (0.6- | 1.8+) | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 20 | G96 | 0.5+ | 0.1- |
| 2005 03 03 | 703 | (3.7+ | 0.4-) | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 20 | G96 | 0.5+ | 0.2- |
| 2005 03 13 | G96 | 0.7-  | 0.0   | 2007 10 30 | G96 | 0.3+ | 0.2- | 2007 11 20 | G96 | 0.1+ | 0.2- |
| 2005 03 13 | G96 | 0.2-  | 0.1-  | 2007 10 31 | 691 | 0.2- | 0.2+ | 2007 11 20 | G96 | 0.5+ | 0.3- |
| 2005 03 13 | G96 | 0.2-  | 0.1+  | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.3- |
| 2005 03 13 | G96 | 1.0-  | 0.2-  | 2007 10 31 | 691 | 0.5- | 1.1+ | 2007 12 15 | G96 | 0.5+ | 0.1- |
| 2007 10 07 | 691 | 0.3-  | 0.3+  | 2007 11 07 | 703 | 0.2+ | 0.7+ | 2007 12 15 | G96 | 0.5+ | 0.3- |
| 2007 10 07 | 691 | 0.2-  | 0.2+  | 2007 11 07 | 703 | 0.4+ | 0.3+ | 2007 12 15 | G96 | 0.4+ | 0.2- |
| 2007 10 07 | 691 | 0.3-  | 0.4+  | 2007 11 07 | 703 | 0.8+ | 0.6+ |            |     |      |      |

**2007 TO<sub>217</sub> = 2006 KL<sub>106</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 78.81274   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.28478861 | $\omega$ 21.01168  | +0.60850077   | +0.79297502 |          |  |
| <i>a</i> | 2.2879910  | $\Omega$ 286.48189 | -0.73250189   | +0.54659555 |          |  |
| <i>e</i> | 0.1638013  | <i>i</i> 1.81011   | -0.30523400   | +0.26911693 |          |  |
| <i>P</i> | 3.46       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 11 06 | 691 | 0.3+ | 0.3- | 2006 06 01 | G96 | 0.0  | 0.5- | 2007 10 31 | G96 | 0.8+ | 0.0  |
| 1993 11 06 | 691 | 0.1- | 0.0  | 2007 10 07 | 691 | 0.1+ | 0.8+ | 2007 10 31 | G96 | 0.3+ | 0.5- |
| 2000 11 30 | 645 | 0.1+ | 0.1- | 2007 10 07 | 691 | 0.1+ | 0.0  | 2007 10 31 | G96 | 0.4+ | 0.1- |
| 2000 11 30 | 645 | 0.0  | 0.2- | 2007 10 07 | 691 | 0.1- | 0.1+ | 2007 11 12 | H07 | 1.0+ | 0.1+ |
| 2006 05 31 | G96 | 0.7- | 0.3- | 2007 10 11 | 691 | 0.3- | 0.3+ | 2007 11 12 | H07 | 1.1+ | 0.3+ |
| 2006 05 31 | G96 | 0.6- | 0.0  | 2007 10 11 | 691 | 0.1- | 0.1+ | 2007 11 12 | H07 | 0.9+ | 0.1- |
| 2006 05 31 | G96 | 0.5+ | 0.3- | 2007 10 11 | 691 | 0.2+ | 0.0  | 2007 11 19 | 691 | 0.1- | 0.3+ |
| 2006 05 31 | G96 | 0.4- | 0.2- | 2007 10 15 | 691 | 0.3+ | 0.2- | 2007 11 19 | 691 | 0.4- | 0.2+ |
| 2006 06 01 | G96 | 0.5+ | 0.2- | 2007 10 15 | 691 | 0.8- | 0.2- | 2007 11 19 | 691 | 0.2- | 0.3+ |
| 2006 06 01 | G96 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.3- | 0.2+ |            |     |      |      |
| 2006 06 01 | G96 | 0.2+ | 0.0  | 2007 10 31 | G96 | 0.7+ | 0.2- |            |     |      |      |

**2007 TA<sub>218</sub> = 2005 FF<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 161.42709  | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.24592853 | $\omega$ 214.67814 | -0.43100052   | +0.89982314 |          |  |
| <i>a</i> | 2.5230747  | $\Omega$ 29.95628  | -0.79428233   | -0.34281916 |          |  |
| <i>e</i> | 0.0728175  | <i>i</i> 7.76948   | -0.42819871   | -0.26980241 |          |  |
| <i>P</i> | 4.01       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 2  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 03 12 | 691 | 0.1- | 0.1+ | 2007 10 07 | 691 | 0.0  | 0.0  | 2007 11 15 | H06 | 0.6+ | 0.8- |
| 1997 03 12 | 691 | 0.0  | 0.1- | 2007 10 07 | 691 | 0.3- | 0.4+ | 2007 11 15 | H06 | 0.7+ | 1.2- |
| 1997 03 12 | 691 | 0.1- | 0.1- | 2007 10 07 | 691 | 0.3+ | 0.1- | 2007 11 17 | 691 | 0.4- | 0.3- |
| 1999 11 15 | 621 | 0.4+ | 0.1- | 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.1+ | 0.2+ |
| 1999 11 15 | 621 | 0.3+ | 0.2- | 2007 10 11 | 691 | 0.1+ | 0.1- | 2007 11 17 | 691 | 0.0  | 0.1+ |
| 1999 11 15 | 621 | 0.0  | 0.0  | 2007 10 11 | 691 | 0.1- | 0.6+ | 2007 11 17 | 691 | 0.2- | 0.2- |
| 2003 10 23 | 695 | 0.2+ | 0.0  | 2007 10 15 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.5+ | 0.3- |
| 2003 10 23 | 695 | 0.1+ | 0.0  | 2007 10 15 | 691 | 0.2- | 0.1- | 2007 11 17 | 691 | 0.0  | 0.0  |
| 2005 03 16 | 703 | 0.3+ | 0.4+ | 2007 10 15 | 691 | 0.2+ | 0.2+ | 2007 11 20 | 850 | 0.2+ | 0.1- |
| 2005 03 16 | 703 | 0.2+ | 0.7+ | 2007 11 04 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 850 | 1.1+ | 0.1+ |
| 2005 03 16 | 703 | 0.5+ | 0.4+ | 2007 11 04 | 691 | 0.2- | 0.6- | 2007 11 20 | 850 | 0.8+ | 1.1- |
| 2005 03 16 | 703 | 0.1- | 0.8- | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2007 09 09 | G96 | 0.3+ | 0.2- | 2007 11 13 | 691 | 0.0  | 0.1- | 2007 12 05 | 691 | 0.1+ | 0.4+ |
| 2007 09 09 | G96 | 0.1+ | 0.1- | 2007 11 13 | 691 | 0.3- | 0.0  | 2007 12 05 | 691 | 0.5- | 0.5+ |
| 2007 09 09 | G96 | 0.8+ | 0.1+ | 2007 11 13 | 691 | 0.3- | 0.1+ |            |     |      |      |
| 2007 09 09 | G96 | 0.4+ | 0.2- | 2007 11 15 | H06 | 0.6- | 0.3- |            |     |      |      |

**2007 TQ<sub>218</sub> = 2007 UV<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 61.80804   | (2000.0)           | <b>P</b>      |             | <b>Q</b> |  |
|----------|------------|--------------------|---------------|-------------|----------|--|
| <i>n</i> | 0.17998683 | $\omega$ 296.38087 | +0.93263606   | +0.33875186 |          |  |
| <i>a</i> | 3.1067685  | $\Omega$ 44.12042  | -0.23317019   | +0.82862070 |          |  |
| <i>e</i> | 0.0683233  | <i>i</i> 10.28075  | -0.27535730   | +0.44568477 |          |  |
| <i>P</i> | 5.48       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |          |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.0  | 0.1+ | 2007 09 18 | G96 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 1999 03 21 | 645 | 0.1+ | 0.1+ | 2007 09 18 | G96 | 0.7+ | 0.2- | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2001 09 27 | 644 | 1.1- | 0.7+ | 2007 09 18 | G96 | 0.1+ | 0.1- | 2007 11 08 | 691 | 0.5+ | 0.5+ |
| 2001 09 27 | 644 | 0.7- | 0.6+ | 2007 10 07 | 691 | 0.2- | 0.2- | 2007 11 08 | 691 | 0.3- | 0.2+ |
| 2001 09 27 | 644 | 0.1+ | 0.0  | 2007 10 07 | 691 | 0.3- | 0.2- | 2007 11 08 | 691 | 0.1- | 0.4+ |
| 2001 10 16 | 644 | 0.1+ | 0.4+ | 2007 10 07 | 691 | 0.3- | 0.1- | 2007 11 12 | A77 | 0.9+ | 0.8+ |
| 2001 10 16 | 644 | 0.0  | 0.3+ | 2007 10 11 | 691 | 0.1- | 0.6- | 2007 11 12 | A77 | 0.5+ | 0.7+ |
| 2001 10 16 | 644 | 0.3- | 0.3+ | 2007 10 11 | 691 | 0.1- | 0.4+ | 2007 11 13 | A77 | 0.3+ | 0.1- |
| 2001 10 24 | 644 | 0.2- | 0.4+ | 2007 10 11 | 691 | 0.3- | 0.8- | 2007 11 15 | 704 | 0.5+ | 0.2- |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 24 | 644 | 0.1+ | 0.6+ | 2007 10 15 | 691 | 0.1- | 0.1- | 2007 11 15 | 704 | 0.8- | 0.1- |
| 2001 10 24 | 644 | 0.0  | 0.4+ | 2007 10 15 | 691 | 0.0  | 0.2- | 2007 11 15 | 704 | 1.2+ | 0.5+ |
| 2005 05 12 | G96 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2+ | 1.1+ |
| 2005 05 12 | G96 | 0.1- | 0.4+ | 2007 10 19 | 691 | 0.2- | 0.3- | 2007 11 16 | 147 | 0.2+ | 0.2+ |
| 2005 05 12 | G96 | 0.4+ | 0.2+ | 2007 10 19 | 691 | 0.1- | 0.1+ | 2007 11 16 | 147 | 0.6+ | 0.4- |
| 2005 05 12 | G96 | 0.1- | 0.1+ | 2007 10 19 | 691 | 0.2+ | 0.0  | 2007 11 19 | 691 | 0.4- | 0.1+ |
| 2005 05 12 | 644 | 0.1+ | 0.3+ | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.2- | 0.1- |
| 2005 05 12 | 644 | 0.1+ | 0.0  | 2007 10 31 | G96 | 0.4+ | 0.2- | 2007 11 19 | 691 | 0.3- | 0.0  |
| 2005 05 12 | 644 | 0.1+ | 0.1- | 2007 10 31 | G96 | 1.0+ | 0.1- | 2007 12 04 | 691 | 0.4- | 0.2+ |
| 2007 09 10 | G96 | 0.0  | 0.1+ | 2007 10 31 | 691 | 0.2+ | 0.3- | 2007 12 04 | 691 | 0.2+ | 0.0  |
| 2007 09 10 | G96 | 0.2+ | 0.2- | 2007 10 31 | G96 | 0.4+ | 0.0  | 2007 12 04 | 691 | 0.0  | 0.1+ |
| 2007 09 10 | G96 | 0.1+ | 0.2+ | 2007 10 31 | G96 | 0.4+ | 0.1- | 2007 12 05 | 691 | 0.2+ | 0.1+ |
| 2007 09 10 | G96 | 0.4+ | 0.2- | 2007 10 31 | 691 | 0.1+ | 0.0  | 2007 12 05 | 691 | 0.0  | 0.1+ |
| 2007 09 18 | G96 | 0.1+ | 0.1- | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.1- | 0.1- |

2007 TF<sub>221</sub> = 2000 SP<sub>326</sub>

|                                         |            |          |          |             |      |             |   |
|-----------------------------------------|------------|----------|----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             |      | MPC         |   |
| <i>M</i>                                | 303.49878  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.27435339 | $\omega$ | 64.32325 | +0.18663432 |      | −0.98203523 |   |
| <i>a</i>                                | 2.3456461  | $\Omega$ | 14.99918 | +0.85841682 |      | +0.14923360 |   |
| <i>e</i>                                | 0.2018018  | <i>i</i> | 6.17283  | +0.47779514 |      | +0.11548222 |   |
| <i>P</i>                                | 3.59       | <i>H</i> | 17.7     | <i>G</i>    | 0.15 | <i>U</i>    | 3 |
| Residuals in seconds of arc             |            |          |          |             |      |             |   |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 29 | 691 | 0.5+ | 0.2- | 2005 01 06 | 703 | 0.6+ | 0.2+ | 2007 10 09 | G96 | 0.4+ | 0.3- |
| 2000 09 29 | 691 | 0.4+ | 0.1+ | 2005 01 06 | 703 | 0.3- | 0.1+ | 2007 10 09 | G96 | 0.5+ | 0.1- |
| 2000 09 29 | 691 | 0.4+ | 0.2- | 2005 01 06 | 703 | 0.2+ | 0.5+ | 2007 10 09 | G96 | 0.1+ | 0.0  |
| 2000 10 01 | 704 | 0.2- | 0.2+ | 2005 01 06 | 703 | 0.4+ | 0.3- | 2007 10 11 | 691 | 0.7- | 0.5+ |
| 2000 10 01 | 704 | 0.2- | 0.2- | 2007 09 12 | 691 | 0.3- | 0.4- | 2007 10 11 | 691 | 0.4- | 0.2+ |
| 2000 10 01 | 704 | 0.2- | 0.1- | 2007 09 12 | 691 | 0.5- | 0.1+ | 2007 10 11 | 691 | 0.5- | 0.0  |
| 2000 10 01 | 704 | 0.1- | 0.8- | 2007 09 12 | 691 | 0.5- | 0.0  | 2007 10 19 | 691 | 0.1+ | 0.5+ |
| 2004 12 21 | 703 | 0.0  | 0.5+ | 2007 10 09 | 691 | 0.1+ | 0.3+ | 2007 10 19 | 691 | 0.6+ | 0.2+ |
| 2004 12 21 | 703 | 1.3- | 0.2- | 2007 10 09 | 691 | 0.3- | 0.3+ | 2007 10 19 | 691 | 0.0  | 0.5+ |
| 2004 12 21 | 703 | 0.5+ | 0.3+ | 2007 10 09 | 691 | 0.1- | 0.1- |            |     |      |      |
| 2004 12 21 | 703 | 0.1+ | 0.6- | 2007 10 09 | G96 | 0.7+ | 0.1+ |            |     |      |      |

2007 TK<sub>221</sub>

|                                         |            |          |          |             |             |  |
|-----------------------------------------|------------|----------|----------|-------------|-------------|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |             | MPC         |  |
| $M$                                     | 326.37572  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |  |
| $n$                                     | 0.25506608 | $\omega$ | 21.38103 | +0.64861940 | -0.76102501 |  |
| $a$                                     | 2.4624509  | $\Omega$ | 28.18527 | +0.69470787 | +0.58575215 |  |
| $e$                                     | 0.1765985  | $i$      | 1.40334  | +0.31092418 | +0.27881061 |  |
| $P$                                     | 3.86       | $H$      | 16.9     | $G$ 0.15    | $U$ 1       |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 30 | 621 | 0.3- | 0.3+ | 2005 03 10 | G96 | 0.3- | 0.1- | 2007 10 11 | 691 | 0.3- | 0.3- |
| 2001 01 30 | 621 | 0.5+ | 0.1+ | 2005 03 10 | G96 | 0.0  | 0.3+ | 2007 10 11 | 691 | 0.1+ | 0.1- |
| 2001 01 30 | 621 | 0.1+ | 0.1- | 2005 03 10 | G96 | 0.3- | 0.0  | 2007 10 11 | 691 | 0.2- | 0.1- |
| 2003 08 22 | 644 | 0.0  | 0.3+ | 2007 08 21 | 699 | 1.2+ | 0.3- | 2007 10 11 | 691 | 0.1+ | 0.2+ |
| 2003 08 22 | 644 | 0.3- | 0.4+ | 2007 08 21 | 699 | 0.8+ | 0.0  | 2007 10 11 | 691 | 0.9+ | 0.2+ |
| 2003 08 22 | 644 | 0.2+ | 0.2+ | 2007 08 21 | 699 | 0.7- | 1.0+ | 2007 10 11 | 691 | 0.1+ | 0.1+ |
| 2003 08 22 | 644 | 0.4- | 0.2+ | 2007 08 21 | 699 | 0.8- | 0.7+ | 2007 10 13 | 691 | 0.1- | 0.1- |
| 2003 08 22 | 644 | 0.1- | 0.4+ | 2007 09 11 | G96 | 0.3+ | 0.3- | 2007 10 13 | 691 | 0.1- | 0.2- |
| 2003 08 22 | 644 | 0.1- | 0.1+ | 2007 09 11 | G96 | 0.7+ | 0.1- | 2007 10 13 | 691 | 0.0  | 0.0  |
| 2004 12 20 | G96 | 0.2- | 0.4- | 2007 09 11 | G96 | 0.5+ | 0.4- | 2007 10 16 | 691 | 0.0  | 0.2- |
| 2004 12 20 | G96 | 0.3- | 0.0  | 2007 09 11 | G96 | 0.4+ | 0.2- | 2007 10 16 | 691 | 0.6- | 0.2- |
| 2004 12 20 | G96 | 0.1- | 0.3+ | 2007 09 30 | 691 | 0.3+ | 0.0  | 2007 10 16 | 691 | 0.2- | 0.1- |
| 2004 12 20 | G96 | 0.1+ | 0.4- | 2007 09 30 | 691 | 0.1+ | 0.1- | 2007 10 19 | 691 | 0.2- | 0.0  |
| 2005 02 01 | 691 | 0.3+ | 0.7+ | 2007 09 30 | 691 | 1.0- | 1.1+ | 2007 10 19 | 691 | 0.3- | 0.1- |
| 2005 02 01 | 691 | 0.3+ | 0.4+ | 2007 10 09 | 691 | 0.6- | 0.2+ | 2007 10 19 | 691 | 0.1- | 0.4- |
| 2005 02 01 | 691 | 0.3+ | 0.6+ | 2007 10 09 | 691 | 0.1- | 0.2- |            |     |      |      |
| 2005 03 10 | G96 | 0.4+ | 0.2- | 2007 10 09 | 691 | 0.1- | 0.1- |            |     |      |      |

## M.P.O. 129883

2007 TE<sub>222</sub>

|                                         |            |      |          |            |     |             |      |             |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|-------------|------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC         |      |             |     |      |      |
| <i>M</i>                                | 313.47527  |      | (2000.0) |            |     | <b>P</b>    |      | <b>Q</b>    |     |      |      |
| <i>n</i>                                | 0.24027527 |      | $\omega$ | 286.76286  |     | −0.07010848 |      | −0.99749265 |     |      |      |
| <i>a</i>                                | 2.5624968  |      | $\Omega$ | 167.24574  |     | +0.93107382 |      | −0.06890781 |     |      |      |
| <i>e</i>                                | 0.1820090  |      | <i>i</i> | 2.50640    |     | +0.35803120 |      | −0.01612832 |     |      |      |
| <i>P</i>                                | 4.10       |      | <i>H</i> | 17.9       |     | <i>G</i>    | 0.15 | <i>U</i>    | 4   |      |      |
| Residuals in seconds of arc             |            |      |          |            |     |             |      |             |     |      |      |
| 2003 10 19                              | 691        | 0.1+ | 0.1−     | 2007 10 09 | 691 | 0.8+        | 0.5+ | 2007 10 23  | 691 | 0.6− | 0.2+ |
| 2003 10 19                              | 691        | 0.2+ | 0.2−     | 2007 10 09 | G96 | 0.4+        | 0.2− | 2007 10 23  | 691 | 0.5− | 0.3+ |
| 2003 10 19                              | 691        | 0.3+ | 0.1+     | 2007 10 09 | G96 | 0.4+        | 0.1− | 2007 10 23  | 691 | 0.1− | 1.2+ |
| 2003 11 20                              | 691        | 0.1+ | 0.1+     | 2007 10 09 | G96 | 0.1−        | 0.2− | 2007 11 07  | G96 | 0.5+ | 0.3− |
| 2003 11 20                              | 691        | 0.4− | 0.4+     | 2007 10 09 | G96 | 0.2−        | 0.2− | 2007 11 07  | G96 | 0.2+ | 0.4− |
| 2003 11 20                              | 691        | 0.4− | 0.4+     | 2007 10 11 | 691 | 0.4−        | 0.2+ | 2007 11 07  | G96 | 0.4+ | 0.4− |
| 2005 04 14                              | 691        | 0.1− | 0.2+     | 2007 10 11 | 691 | 0.3−        | 0.1− | 2007 11 07  | G96 | 0.8+ | 0.1− |
| 2005 04 14                              | 691        | 0.2+ | 0.4+     | 2007 10 11 | 691 | 0.7−        | 0.1+ | 2007 11 13  | G96 | 0.1+ | 0.4− |
| 2005 04 14                              | 691        | 0.1+ | 0.0      | 2007 10 19 | 691 | 0.1−        | 0.2+ | 2007 11 13  | G96 | 0.2+ | 0.4− |
| 2007 10 09                              | 691        | 0.3− | 0.4+     | 2007 10 19 | 691 | 0.2−        | 0.1− | 2007 11 13  | G96 | 0.2+ | 0.0  |
| 2007 10 09                              | 691        | 0.4− | 0.2+     | 2007 10 19 | 691 | 0.2−        | 0.1+ | 2007 11 13  | G96 | 0.3+ | 0.4− |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 19 | 691 | 0.1+ | 0.1- | 2007 10 09 | 691 | 0.8+ | 0.5+ | 2007 10 23 | 691 | 0.6- | 0.2+ |
| 2003 10 19 | 691 | 0.2+ | 0.2- | 2007 10 09 | G96 | 0.4+ | 0.2- | 2007 10 23 | 691 | 0.5- | 0.3+ |
| 2003 10 19 | 691 | 0.3+ | 0.1+ | 2007 10 09 | G96 | 0.4+ | 0.1- | 2007 10 23 | 691 | 0.1- | 1.2+ |
| 2003 11 20 | 691 | 0.1+ | 0.1+ | 2007 10 09 | G96 | 0.1- | 0.2- | 2007 11 07 | G96 | 0.5+ | 0.3- |
| 2003 11 20 | 691 | 0.4- | 0.4+ | 2007 10 09 | G96 | 0.2- | 0.2- | 2007 11 07 | G96 | 0.2+ | 0.4- |
| 2003 11 20 | 691 | 0.4- | 0.4+ | 2007 10 11 | 691 | 0.4- | 0.2+ | 2007 11 07 | G96 | 0.4+ | 0.4- |
| 2005 04 14 | 691 | 0.1- | 0.2+ | 2007 10 11 | 691 | 0.3- | 0.1- | 2007 11 07 | G96 | 0.8+ | 0.1- |
| 2005 04 14 | 691 | 0.2+ | 0.4+ | 2007 10 11 | 691 | 0.7- | 0.1+ | 2007 11 13 | G96 | 0.1+ | 0.4- |
| 2005 04 14 | 691 | 0.1+ | 0.0  | 2007 10 19 | 691 | 0.1- | 0.2+ | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 2007 10 09 | 691 | 0.3- | 0.4+ | 2007 10 19 | 691 | 0.2- | 0.1- | 2007 11 13 | G96 | 0.2+ | 0.0  |
| 2007 10 09 | 691 | 0.4- | 0.2+ | 2007 10 19 | 691 | 0.2- | 0.1+ | 2007 11 13 | G96 | 0.3+ | 0.4- |

2007 TG<sub>222</sub>

|                                         |            |      |          |            |             |      |             |            |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-------------|------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            | MPC         |      |             |            |     |      |      |
| $M$                                     | 49.70737   |      | (2000.0) |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| $n$                                     | 0.23618059 |      | $\omega$ | 171.48183  | +0.78498564 |      | +0.61927929 |            |     |      |      |
| $a$                                     | 2.5920294  |      | $\Omega$ | 150.23351  | −0.57039726 |      | +0.73321591 |            |     |      |      |
| $e$                                     | 0.1837531  |      | $i$      | 1.96808    | −0.24175300 |      | +0.28086935 |            |     |      |      |
| $P$                                     | 4.17       |      | $H$      | 17.3       | $G$         | 0.15 | $U$         | 4          |     |      |      |
| Residuals in seconds of arc             |            |      |          |            |             |      |             |            |     |      |      |
| 2006 04 08                              | 691        | 0.3+ | 0.1+     | 2007 09 11 | G96         | 0.5+ | 0.2−        | 2007 10 11 | 691 | 0.1+ | 0.4− |
| 2006 04 08                              | 691        | 0.1+ | 0.1−     | 2007 09 11 | G96         | 0.1− | 0.1−        | 2007 10 19 | 691 | 0.0  | 0.1+ |
| 2006 04 08                              | 691        | 0.8+ | 0.1+     | 2007 09 11 | G96         | 0.1  | 0.2−        | 2007 10 19 | 691 | 0.1− | 0.3+ |
| 2006 05 02                              | G96        | 0.1+ | 0.6+     | 2007 10 09 | G91         | 0.3− | 0.1+        | 2007 10 19 | 691 | 0.0  | 0.2+ |
| 2006 05 02                              | G96        | 0.4− | 0.4+     | 2007 10 09 | 691         | 0.0  | 0.0         | 2007 10 23 | 691 | 0.4+ | 0.7+ |
| 2006 05 02                              | G96        | 0.3+ | 0.1−     | 2007 10 09 | 691         | 0.4− | 0.3+        | 2007 10 23 | 691 | 0.3− | 0.1+ |
| 2006 05 02                              | G96        | 0.2− | 0.0      | 2007 10 09 | G96         | 0.1− | 0.1−        | 2007 10 23 | 691 | 0.0  | 0.2− |
| 2006 05 25                              | G96        | 0.0  | 0.3−     | 2007 10 09 | G96         | 0.3− | 0.5−        | 2007 11 07 | G96 | 0.4+ | 0.2+ |
| 2006 05 25                              | G96        | 0.2+ | 0.1+     | 2007 10 09 | G96         | 0.4− | 0.3−        | 2007 11 07 | G96 | 0.0  | 0.4+ |
| 2006 05 25                              | G96        | 0.3− | 0.1−     | 2007 10 09 | G96         | 0.0  | 0.4−        | 2007 11 07 | G96 | 0.5+ | 0.5+ |
| 2006 05 25                              | G96        | 0.5− | 0.4+     | 2007 10 11 | 691         | 0.2− | 0.4+        | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2007 09 11                              | G96        | 0.1− | 0.4−     | 2007 10 11 | 691         | 0.2+ | 0.5+        |            |     |      |      |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 08 | 691 | 0.3+ | 0.1+ | 2007 09 11 | G96 | 0.5+ | 0.2- | 2007 10 11 | 691 | 0.1+ | 0.4- |
| 2006 04 08 | 691 | 0.1+ | 0.1- | 2007 09 11 | G96 | 0.1- | 0.1- | 2007 10 19 | 691 | 0.0  | 0.1+ |
| 2006 04 08 | 691 | 0.8+ | 0.1+ | 2007 09 11 | G96 | 0.1- | 0.2- | 2007 10 19 | 691 | 0.1- | 0.3+ |
| 2006 05 02 | G96 | 0.1+ | 0.6+ | 2007 10 09 | 691 | 0.3- | 0.1+ | 2007 10 19 | 691 | 0.0  | 0.2+ |
| 2006 05 02 | G96 | 0.4- | 0.4+ | 2007 10 09 | 691 | 0.0  | 0.0  | 2007 10 23 | 691 | 0.4+ | 0.7+ |
| 2006 05 02 | G96 | 0.3+ | 0.1- | 2007 10 09 | 691 | 0.4- | 0.3+ | 2007 10 23 | 691 | 0.3- | 0.1+ |
| 2006 05 02 | G96 | 0.2- | 0.0  | 2007 10 09 | G96 | 0.1- | 0.1- | 2007 10 23 | 691 | 0.0  | 0.2- |
| 2006 05 25 | G96 | 0.0  | 0.3- | 2007 10 09 | G96 | 0.3- | 0.5- | 2007 11 07 | G96 | 0.4+ | 0.2+ |
| 2006 05 25 | G96 | 0.6+ | 0.1+ | 2007 10 09 | G96 | 0.4- | 0.3- | 2007 11 07 | G96 | 0.0  | 0.4+ |
| 2006 05 25 | G96 | 0.3- | 0.1- | 2007 10 09 | G96 | 0.0  | 0.4- | 2007 11 07 | G96 | 0.5+ | 0.5+ |
| 2006 05 25 | G96 | 0.5- | 0.4+ | 2007 10 11 | 691 | 0.2- | 0.4+ | 2007 11 07 | G96 | 0.0  | 0.1- |
| 2007 09 11 | G96 | 0.1- | 0.4- | 2007 10 11 | 691 | 0.2+ | 0.5+ |            |     |      |      |

2007 TS<sub>224</sub> = 1998 RF<sub>11</sub>

|                                         |            |          |           |                |             |      |                |      |      |
|-----------------------------------------|------------|----------|-----------|----------------|-------------|------|----------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |                | MPC         |      |                |      |      |
| <i>M</i>                                | 334.74254  |          | (2000.0)  |                | <b>P</b>    |      | <b>Q</b>       |      |      |
| <i>n</i>                                | 0.21797250 | $\omega$ | 227.16779 |                | +0.66590965 |      | -0.74603170    |      |      |
| <i>a</i>                                | 2.7344390  | $\Omega$ | 181.08160 |                | +0.69923940 |      | +0.62461720    |      |      |
| <i>e</i>                                | 0.1915626  | <i>i</i> | 3.09117   |                | +0.26005497 |      | +0.23084640    |      |      |
| <i>P</i>                                | 4.52       | <i>H</i> | 17.3      |                | <i>G</i>    | 0.15 | <i>U</i>       | 5    |      |
| Residuals in seconds of arc             |            |          |           |                |             |      |                |      |      |
| 1998 09 13                              | 691        | 0.1+     | 0.1+      | 2007 09 10 G96 | 0.2-        | 0.0  | 2007 10 12 G96 | 0.2+ | 0.2+ |
| 1998 09 13                              | 691        | 0.2+     | 0.2+      | 2007 09 10 G96 | 0.1-        | 0.0  | 2007 10 12 G96 | 0.0  | 0.1- |
| 1998 09 13                              | 691        | 0.1-     | 0.1+      | 2007 10 11 G96 | 0.2-        | 0.1+ | 2007 10 20 G96 | 0.4- | 0.0  |
| 1998 09 18                              | 691        | 0.0      | 0.0       | 2007 10 11 G96 | 0.3+        | 0.1- | 2007 10 20 G96 | 0.1- | 0.0  |
| 1998 09 18                              | 691        | 0.5+     | 0.1-      | 2007 10 11 G96 | 0.1+        | 0.0  | 2007 10 20 G96 | 0.1+ | 0.2- |
| 1998 09 18                              | 691        | 0.8-     | 0.2-      | 2007 10 11 G96 | 0.1+        | 0.0  | 2007 10 20 G96 | 0.5+ | 0.2- |
| 2007 09 10                              | G96        | 0.1+     | 0.2-      | 2007 10 12 G96 | 0.1-        | 0.5+ |                |      |      |
| 2007 09 10                              | G96        | 0.2+     | 0.0       | 2007 10 12 G96 | 0.4-        | 0.1- |                |      |      |

**2007 TA<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.98538   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17933146 | $\omega$ | 193.85866 | +0.74798561 |          |          | +0.63726325 |
| <i>a</i> | 3.1143331  | $\Omega$ | 124.99950 | -0.58533251 |          |          | +0.76512557 |
| <i>e</i> | 0.0823943  | <i>i</i> | 13.08884  | -0.31289516 |          |          | +0.09207834 |
| <i>P</i> | 5.50       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 01 23 | 691 | 0.6- | 0.6- | 2005 04 06 | 703 | 0.5+  | 1.1+  | 2007 10 11 | 703 | 1.4+ | 1.0+ |
| 1993 01 23 | 691 | 0.1+ | 0.1+ | 2005 04 06 | 703 | 0.5+  | 0.2+  | 2007 10 11 | 703 | 0.9- | 0.2+ |
| 1993 01 23 | 691 | 1.1+ | 0.8- | 2005 04 06 | 703 | 0.3-  | 0.8-  | 2007 10 12 | G96 | 0.1- | 0.1- |
| 2001 08 23 | 699 | 0.4- | 0.4- | 2005 04 06 | 703 | (0.7- | 4.2+) | 2007 10 12 | G96 | 0.1+ | 0.1- |
| 2001 08 23 | 699 | 0.7+ | 0.6- | 2007 09 15 | 699 | 0.8+  | 0.7+  | 2007 10 12 | G96 | 0.0  | 0.2- |
| 2001 08 23 | 699 | 0.4- | 0.9- | 2007 09 15 | 699 | 0.5-  | 0.6-  | 2007 10 12 | G96 | 0.3- | 0.2- |
| 2001 08 23 | 699 | 0.3- | 0.5- | 2007 09 15 | 699 | 0.4+  | 0.5+  | 2007 10 15 | G96 | 0.4- | 0.3- |
| 2003 12 22 | 691 | 0.3- | 0.2- | 2007 09 15 | 699 | 0.5-  | 0.3-  | 2007 10 15 | G96 | 0.3- | 0.3- |
| 2003 12 22 | 691 | 0.2- | 0.2- | 2007 10 11 | 703 | 0.1+  | 1.2+  | 2007 10 15 | G96 | 0.3- | 0.2- |
| 2003 12 22 | 691 | 0.6- | 0.1- | 2007 10 11 | 703 | 0.5+  | 1.1+  | 2007 10 15 | G96 | 0.2+ | 0.7- |

**2007 TN<sub>226</sub> = 1993 FK<sub>16</sub> = 2003 WK<sub>14</sub>**

Id. Minor Planet Center (MPO 128483; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 155.80682  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23826663 | $\omega$ | 185.71088 | -0.59200920 |          |          | +0.80252089 |
| <i>a</i> | 2.5768782  | $\Omega$ | 48.01557  | -0.73542760 |          |          | -0.50034460 |
| <i>e</i> | 0.1541653  | <i>i</i> | 5.71828   | -0.32965337 |          |          | -0.32498538 |
| <i>P</i> | 4.14       | <i>H</i> | 16.2      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 17 | 809 | 0.6- | 1.1+ | 2003 11 16 | 691 | 0.1+  | 0.0   | 2007 10 20 | 691 | 0.0  | 0.2+ |
| 1993 03 18 | 809 | 0.0  | 1.0+ | 2003 11 16 | 691 | 0.0   | 0.2+  | 2007 10 20 | 691 | 0.4- | 0.3- |
| 1993 03 23 | 809 | 0.9+ | 0.2+ | 2003 11 20 | 291 | 0.0   | 0.2+  | 2007 10 20 | 691 | 0.0  | 0.3+ |
| 2002 06 20 | 644 | 0.3+ | 0.9+ | 2003 11 20 | 291 | 0.0   | 0.3+  | 2007 11 01 | G96 | 0.6+ | 0.7- |
| 2002 06 20 | 644 | 0.4- | 1.2+ | 2003 11 20 | 291 | 0.1-  | 0.3+  | 2007 11 01 | G96 | 0.5+ | 0.9- |
| 2002 06 20 | 644 | 0.8- | 0.1- | 2005 02 11 | 809 | 0.4+  | 0.3+  | 2007 11 01 | G96 | 0.6+ | 0.7- |
| 2002 07 15 | 644 | 0.1- | 0.2+ | 2005 02 11 | 809 | 0.5+  | 0.2+  | 2007 11 01 | G96 | 0.5+ | 0.7- |
| 2002 07 15 | 644 | 0.0  | 0.2+ | 2005 02 11 | 809 | 0.8+  | 0.1+  | 2007 11 09 | G96 | 0.0  | 0.2+ |
| 2002 07 15 | 644 | 0.2+ | 0.3+ | 2005 02 11 | 809 | 0.4+  | 0.2+  | 2007 11 09 | G96 | 0.6+ | 0.5+ |
| 2002 08 30 | 644 | 0.1+ | 0.2+ | 2005 03 01 | 703 | 0.6-  | 0.4-  | 2007 11 09 | G96 | 0.2+ | 0.4+ |
| 2002 08 30 | 644 | 0.1- | 0.0  | 2005 03 01 | 703 | 0.6-  | 0.3+  | 2007 11 09 | G96 | 0.1- | 0.6+ |
| 2002 08 30 | 644 | 0.4+ | 0.3+ | 2005 03 01 | 703 | (0.6- | 1.7+) | 2007 11 17 | G96 | 0.4+ | 0.5+ |
| 2003 10 19 | 291 | 0.4- | 0.1+ | 2005 03 01 | 703 | 0.1-  | 0.0   | 2007 11 17 | G96 | 0.1- | 0.3+ |
| 2003 10 19 | 291 | 0.2- | 0.3+ | 2007 10 08 | 691 | 0.4-  | 0.1-  | 2007 11 17 | G96 | 0.5+ | 0.3+ |
| 2003 10 19 | 691 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.1-  | 0.2-  | 2007 11 17 | G96 | 0.0  | 0.4+ |
| 2003 10 19 | 291 | 0.4- | 0.1+ | 2007 10 08 | 691 | 0.3-  | 0.0   | 2007 12 05 | G96 | 0.1- | 0.3- |
| 2003 10 19 | 691 | 0.2+ | 0.1+ | 2007 10 12 | 691 | 0.1-  | 0.3-  | 2007 12 05 | G96 | 0.2+ | 0.5- |
| 2003 10 19 | 691 | 0.5+ | 0.2+ | 2007 10 12 | 691 | 0.3-  | 0.5-  | 2007 12 05 | G96 | 0.5+ | 0.0  |
| 2003 11 16 | 691 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.1+  | 0.0   | 2007 12 05 | G96 | 0.2+ | 0.1- |

**2007 TE<sub>227</sub> = 2006 HU<sub>138</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.17847   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.24010564 | $\omega$ | 319.39881 | +0.88089735 |          |          | +0.47314542 |
| <i>a</i> | 2.5637036  | $\Omega$ | 12.38019  | -0.41793156 |          |          | +0.78984578 |
| <i>e</i> | 0.2233909  | <i>i</i> | 3.31040   | -0.22215552 |          |          | +0.39022692 |
| <i>P</i> | 4.10       | <i>H</i> | 17.9      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 15 | 691 | 0.6+ | 0.9- | 2006 04 27 | 807 | 0.0  | 0.3+ | 2007 10 16 | 691 | 1.2- | 0.7- |
| 2003 11 15 | 691 | 0.4- | 0.1+ | 2007 10 08 | 691 | 0.3+ | 0.2- | 2007 10 16 | 691 | 0.1- | 0.1- |
| 2003 11 15 | 691 | 0.3+ | 0.3+ | 2007 10 08 | 691 | 0.0  | 0.3+ | 2007 11 07 | G96 | 0.2+ | 0.1- |
| 2003 12 01 | 691 | 0.3+ | 0.1+ | 2007 10 08 | 691 | 0.3+ | 0.0  | 2007 11 07 | G96 | 0.3+ | 0.0  |
| 2003 12 01 | 691 | 0.8- | 0.2+ | 2007 10 12 | 691 | 0.3- | 0.1+ | 2007 11 07 | G96 | 0.5+ | 0.1+ |
| 2003 12 01 | 691 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.2+ | 0.1+ | 2007 11 07 | G96 | 0.6+ | 0.0  |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2006 04 26 | 807 | 0.2+ | 0.1+ | 2007 10 12 | 691 | 0.0  | 0.2+ |
| 2006 04 26 | 807 | 0.1- | 0.0  | 2007 10 16 | 691 | 0.4+ | 0.5+ |

**2007 TS<sub>227</sub> = 2007 VN<sub>134</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.95092  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.21925826 | $\omega$ | 88.33621  | +0.71482881 |          |          | -0.69918201 |
| <i>a</i> | 2.7237385  | $\Omega$ | 316.02493 | +0.63403142 |          |          | +0.65573465 |
| <i>e</i> | 0.0822696  | <i>i</i> | 1.05775   | +0.29499819 |          |          | +0.28487995 |
| <i>P</i> | 4.50       | <i>H</i> | 17.5      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 24 | 691 | 0.3- | 0.4- | 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 10 16 | 691 | 0.2+ | 0.4+ |
| 1998 10 24 | 691 | 0.1+ | 0.3- | 2007 10 08 | 691 | 0.5- | 0.0  | 2007 10 16 | 691 | 0.5- | 0.1- |
| 1998 10 24 | 691 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.6+ | 0.2+ | 2007 10 16 | 691 | 0.0  | 0.0  |
| 1998 11 16 | 691 | 0.3- | 0.1+ | 2007 10 12 | 691 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.0  | 0.0  |
| 1998 11 16 | 691 | 0.3+ | 0.1- | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.1- | 0.1+ |
| 1998 11 16 | 691 | 0.1+ | 0.1+ | 2007 10 12 | 691 | 0.0  | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.1+ |

**2007 TB<sub>228</sub> = 2003 WR<sub>193</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 183.55240  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.23360606 | $\omega$ | 188.72470 | -0.83578449 |          |          | +0.54806963 |
| <i>a</i> | 2.6110387  | $\Omega$ | 24.59832  | -0.49885783 |          |          | -0.73295420 |
| <i>e</i> | 0.0257172  | <i>i</i> | 4.53657   | -0.22935815 |          |          | -0.40298614 |
| <i>P</i> | 4.22       | <i>H</i> | 16.7      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.1+ | 0.5- | 2007 10 08 | 691 | 0.6- | 0.1- | 2007 11 02 | G96 | 0.1+ | 0.2- |
| 2003 11 19 | 691 | 0.2+ | 0.4- | 2007 10 08 | 691 | 0.3- | 0.1- | 2007 11 02 | G96 | 0.2+ | 0.4- |
| 2003 11 19 | 691 | 0.0  | 0.2- | 2007 10 08 | 691 | 0.5+ | 0.1- | 2007 11 02 | G96 | 0.3- | 0.3- |
| 2005 04 13 | 691 | 0.0  | 0.3+ | 2007 10 12 | 691 | 0.0  | 0.1- | 2007 11 07 | G96 | 0.2+ | 0.4- |
| 2005 04 13 | 691 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.5+ | 0.3+ | 2007 11 07 | G96 | 0.1+ | 0.3- |
| 2005 04 13 | 691 | 0.5+ | 0.0  | 2007 10 12 | 691 | 0.2- | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 2005 05 10 | G96 | 0.2- | 0.0  | 2007 10 16 | 691 | 0.3- | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.1- |
| 2005 05 10 | G96 | 0.0  | 0.8+ | 2007 10 16 | 691 | 0.1- | 0.5+ | 2007 12 03 | 291 | 0.2+ | 0.2+ |
| 2005 05 10 | G96 | 0.2- | 0.7+ | 2007 10 16 | 691 | 0.1- | 0.8+ | 2007 12 03 | 291 | 0.2- | 0.0  |
| 2005 05 10 | G96 | 0.2- | 0.2- | 2007 11 02 | G96 | 0.1+ | 0.3- | 2007 12 03 | 291 | 0.2- | 0.3+ |

**2007 TS<sub>229</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 267.26163  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26437877 | $\omega$ | 302.26110 | -0.82599722 |          |          | -0.56353992 |
| <i>a</i> | 2.4042798  | $\Omega$ | 203.44498 | +0.52700502 |          |          | -0.76433561 |
| <i>e</i> | 0.1181535  | <i>i</i> | 1.77190   | +0.19998576 |          |          | -0.31339087 |
| <i>P</i> | 3.73       | <i>H</i> | 17.7      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 291 | 0.0  | 0.1+ | 2005 03 11 | G96 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.1- | 0.1+ |
| 2003 09 20 | 291 | 0.1- | 0.3+ | 2005 03 11 | G96 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.2+ |
| 2003 09 20 | 291 | 0.1- | 0.3+ | 2005 05 04 | G96 | 1.0+ | 0.5- | 2007 10 30 | G96 | 0.3+ | 0.1- |
| 2005 02 02 | 691 | 0.2- | 0.1+ | 2005 05 04 | G96 | 0.5+ | 0.5+ | 2007 10 30 | G96 | 0.4+ | 0.5- |
| 2005 02 02 | 691 | 0.4+ | 0.2+ | 2005 05 04 | G96 | 0.3- | 0.5+ | 2007 11 09 | G96 | 0.5+ | 0.1+ |
| 2005 02 02 | 691 | 0.3+ | 0.2+ | 2005 05 04 | G96 | 0.4+ | 0.9+ | 2007 11 09 | G96 | 0.1+ | 0.1+ |
| 2005 03 03 | 703 | 0.6- | 0.7+ | 2007 10 08 | 691 | 0.2- | 0.1- | 2007 11 09 | G96 | 0.3- | 0.2- |
| 2005 03 03 | 703 | 1.5- | 0.6- | 2007 10 08 | 691 | 0.2+ | 0.1- | 2007 11 09 | G96 | 0.1- | 0.1+ |
| 2005 03 03 | 703 | 0.2+ | 1.5- | 2007 10 08 | 691 | 0.5- | 0.1+ | 2007 12 06 | G96 | 0.8+ | 0.0  |
| 2005 03 03 | 703 | 0.4- | 0.1- | 2007 10 12 | 691 | 0.2+ | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.0  |
| 2005 03 11 | G96 | 0.0  | 0.1+ | 2007 10 12 | 691 | 0.2- | 0.1- | 2007 12 06 | G96 | 0.8+ | 0.3- |
| 2005 03 11 | G96 | 0.0  | 0.2+ | 2007 10 12 | 691 | 0.1- | 0.2- | 2007 12 06 | G96 | 0.5- | 0.3+ |

2007 DEC. 24

M.P.O. 129885

**2007 TA<sub>231</sub> = 2004 BT<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.44231   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21186023 | $\omega$ 247.39072 | +0.90821779   | -0.41661436 |
| <i>a</i> | 2.7867826  | $\Omega$ 137.20224 | +0.40220318   | +0.84274021 |
| <i>e</i> | 0.1115627  | <i>i</i> 3.34649   | +0.11564189   | +0.34091261 |
| <i>P</i> | 4.65       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 01 16 | 691 | 0.2+ | 0.1- | 2007 10 08 | 691 | 0.2- | 0.3- | 2007 11 12 | 704 | 1.3+  | 0.0   |
| 2004 01 16 | 691 | 0.1+ | 0.0  | 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 12 | 704 | 1.0+  | 0.1+  |
| 2004 01 16 | 691 | 0.0  | 0.2- | 2007 10 12 | 691 | 0.2- | 0.2- | 2007 11 15 | 704 | 0.1-  | 0.6+  |
| 2004 01 27 | 691 | 0.2- | 0.0  | 2007 10 12 | 691 | 0.2- | 0.1+ | 2007 11 15 | 704 | 0.0   | 0.2-  |
| 2004 01 27 | 691 | 0.1+ | 0.1+ | 2007 11 08 | G96 | 0.7+ | 0.2- | 2007 11 15 | 704 | 0.7-  | 1.2+  |
| 2004 01 27 | 691 | 0.2- | 0.0  | 2007 11 08 | G96 | 0.4+ | 0.3- | 2007 11 15 | 704 | 0.4+  | 0.5+  |
| 2005 04 14 | 691 | 0.0  | 0.4+ | 2007 11 08 | G96 | 0.3+ | 0.3- | 2007 11 15 | 704 | (1.6+ | 0.8+) |
| 2005 04 14 | 691 | 0.7+ | 0.1+ | 2007 11 08 | G96 | 0.5+ | 0.3- | 2007 11 15 | 704 | (0.1+ | 1.8+) |
| 2005 04 14 | 691 | 0.5- | 0.1+ | 2007 11 12 | 704 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.5-  | 0.2+  |
| 2007 10 08 | 691 | 0.2- | 0.2- | 2007 11 12 | 704 | 1.3+ | 1.5+ | 2007 11 15 | 704 | 0.6+  | 1.2+  |
| 2007 10 08 | 691 | 0.2- | 0.1+ | 2007 11 12 | 704 | 0.9- | 0.2+ |            |     |       |       |

**2007 TQ<sub>231</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 137.33422  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20669971 | $\omega$ 208.19188 | -0.02445002   | +0.99868814 |
| <i>a</i> | 2.8329754  | $\Omega$ 60.43863  | -0.90721374   | -0.00325986 |
| <i>e</i> | 0.0185895  | <i>i</i> 2.96490   | -0.41995883   | -0.05110158 |
| <i>P</i> | 4.77       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 23 | 691 | 0.5- | 0.0  | 2005 04 10 | G96 | 0.3- | 0.1- | 2007 10 30 | 691 | 0.1+ | 0.0  |
| 1995 03 23 | 691 | 0.1- | 0.3- | 2005 05 14 | G96 | 0.2- | 0.1- | 2007 10 30 | G96 | 0.3+ | 0.4- |
| 2000 03 03 | 645 | 0.2+ | 0.0  | 2005 05 14 | G96 | 0.1- | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.5- |
| 2000 03 03 | 645 | 0.0  | 0.1- | 2005 05 14 | G96 | 0.5- | 0.1- | 2007 10 30 | G96 | 0.3+ | 0.4- |
| 2003 12 28 | 691 | 0.5- | 0.2- | 2005 05 14 | G96 | 0.3- | 0.1+ | 2007 10 30 | G96 | 0.7+ | 0.2- |
| 2003 12 28 | 691 | 0.6+ | 0.4+ | 2007 10 08 | 691 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1- |
| 2003 12 28 | 691 | 0.1+ | 0.2- | 2007 10 08 | 691 | 0.3- | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2004 01 27 | 691 | 0.2- | 0.3+ | 2007 10 08 | 691 | 0.1- | 0.2+ | 2007 11 05 | G96 | 0.5+ | 0.1- |
| 2004 01 27 | 691 | 0.1- | 0.1+ | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2004 01 27 | 691 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.5- |
| 2005 04 10 | G96 | 0.3- | 0.1- | 2007 10 12 | 691 | 0.2- | 0.3+ | 2007 12 15 | G96 | 0.6+ | 0.0  |
| 2005 04 10 | G96 | 0.2- | 0.3+ | 2007 10 30 | 691 | 0.3- | 0.4- | 2007 12 15 | G96 | 0.0  | 0.5- |
| 2005 04 10 | G96 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.6- |

**2007 TT<sub>231</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.87696  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.29278447 | $\omega$ 59.22370 | -0.21978989   | -0.97208893 |
| <i>a</i> | 2.2461428  | $\Omega$ 43.71987 | +0.84955599   | -0.23207824 |
| <i>e</i> | 0.1542203  | <i>i</i> 6.81981  | +0.47952791   | -0.03439186 |
| <i>P</i> | 3.37       | <i>H</i> 17.5     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 03 01 | 703 | 0.2+  | 0.8-  | 2007 10 15 | 703 | (0.3+ | 2.2+) | 2007 11 08 | 691 | 0.1+  | 0.0   |
| 2005 03 01 | 703 | (1.9+ | 0.4-) | 2007 10 15 | 703 | 0.9-  | 1.1-  | 2007 11 08 | 691 | 0.3-  | 0.0   |
| 2005 03 01 | 703 | 0.3-  | 1.1+  | 2007 10 15 | 703 | 1.4-  | 0.3+  | 2007 11 13 | 699 | 0.1+  | 0.3-  |
| 2005 03 01 | 703 | 0.5+  | 0.3+  | 2007 10 30 | G96 | 0.3+  | 0.3-  | 2007 11 13 | 699 | 0.3+  | 0.0   |
| 2005 03 09 | 703 | 0.1-  | 1.1-  | 2007 10 30 | G96 | 0.6+  | 0.4-  | 2007 11 13 | 699 | (1.5+ | 0.3+) |
| 2005 03 09 | 703 | 0.7-  | 0.2-  | 2007 10 30 | G96 | 0.3+  | 0.0   | 2007 11 13 | 699 | 1.0+  | 0.2-  |
| 2005 03 09 | 703 | 0.3-  | 0.7+  | 2007 10 30 | G96 | 0.6+  | 0.1-  | 2007 11 19 | 691 | 0.1-  | 0.3+  |
| 2005 03 09 | 703 | 0.8+  | 0.3+  | 2007 11 03 | 691 | 0.2-  | 0.1+  | 2007 11 19 | 691 | 0.1+  | 0.1-  |
| 2007 09 14 | G96 | 0.3-  | 0.0   | 2007 11 03 | 691 | 0.1-  | 0.4+  | 2007 11 19 | 691 | 0.2-  | 0.1-  |
| 2007 09 14 | G96 | 0.7+  | 0.3-  | 2007 11 03 | G96 | 0.1+  | 0.2-  | 2007 11 20 | 704 | 1.0+  | 0.4-  |
| 2007 09 14 | G96 | 0.1-  | 0.1-  | 2007 11 03 | 691 | 0.1-  | 0.2+  | 2007 11 20 | 704 | 0.6-  | 1.2-  |
| 2007 09 14 | G96 | 0.3+  | 0.4-  | 2007 11 03 | G96 | 0.2+  | 0.3-  | 2007 11 20 | 704 | (2.6- | 0.8+) |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 11 03 | G96 | 0.3+ | 0.2- | 2007 11 20 | 704 | 0.9+  | 0.4+  |
| 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 03 | G96 | 0.5+ | 0.2- | 2007 11 20 | 704 | (0.8+ | 1.7+) |
| 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 11 06 | 704 | 0.2+ | 0.3+ | 2007 12 05 | 699 | 0.8-  | 0.2+  |
| 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 06 | 704 | 0.7- | 1.4+ | 2007 12 05 | 699 | 0.2+  | 0.6-  |
| 2007 10 12 | 691 | 0.0  | 0.2- | 2007 11 06 | 704 | 0.7- | 0.0  | 2007 12 05 | 699 | 1.3+  | 0.4-  |
| 2007 10 12 | 691 | 0.1- | 0.1- | 2007 11 06 | 704 | 1.1+ | 0.4+ | 2007 12 05 | 699 | 0.4-  | 0.5-  |
| 2007 10 15 | 703 | 0.4+ | 0.7+ | 2007 11 08 | 691 | 0.1- | 0.3+ |            |     |       |       |

**2007 TF<sub>232</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.27431    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.12384752 | $\omega$ 337.69666 | +0.83070187   | -0.55348949 |
| <i>a</i> | 3.9860662  | $\Omega$ 56.04786  | +0.52105455   | +0.73511134 |
| <i>e</i> | 0.2472615  | <i>i</i> 4.13860   | +0.19605244   | +0.39148527 |
| <i>P</i> | 7.96       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 12 | 691 | 0.2+ | 0.2- | 2007 09 18 | G96 | 0.2- | 0.4- | 2007 11 11 | G96 | 0.1+ | 0.1- |
| 1999 11 12 | 691 | 0.2- | 0.1+ | 2007 09 18 | G96 | 0.3+ | 0.3- | 2007 11 11 | G96 | 0.5+ | 0.3- |
| 1999 11 12 | 691 | 0.4- | 0.1- | 2007 09 18 | G96 | 0.2+ | 0.1- | 2007 11 11 | G96 | 0.9+ | 0.4- |
| 1999 12 16 | 691 | 0.3+ | 0.2+ | 2007 10 08 | 691 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.7+ | 0.3- |
| 1999 12 16 | 691 | 0.1- | 0.1- | 2007 10 08 | 691 | 0.5- | 0.3+ | 2007 11 18 | 691 | 0.0  | 0.0  |
| 1999 12 16 | 691 | 0.2+ | 0.2+ | 2007 10 08 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.3+ | 0.2+ |
| 2007 09 10 | G96 | 0.8+ | 0.4+ | 2007 10 12 | 691 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2007 09 10 | G96 | 0.0  | 0.4- | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 12 06 | 691 | 0.6- | 0.3- |
| 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 10 12 | 691 | 0.2- | 0.1+ | 2007 12 06 | 691 | 0.3+ | 0.3+ |
| 2007 09 10 | G96 | 0.5- | 0.3+ | 2007 10 20 | 691 | 0.4- | 0.1+ | 2007 12 06 | 691 | 0.7- | 0.1- |
| 2007 09 10 | G96 | 0.2+ | 0.3- | 2007 10 20 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2007 09 10 | G96 | 0.6+ | 0.0  | 2007 10 20 | 691 | 0.3- | 0.1- | 2007 12 15 | G96 | 0.7+ | 0.5- |
| 2007 09 10 | G96 | 0.2+ | 0.2- | 2007 10 30 | 691 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2007 09 10 | G96 | 0.0  | 0.3- | 2007 10 30 | 691 | 0.6+ | 0.1- | 2007 12 15 | G96 | 0.8+ | 0.1+ |
| 2007 09 18 | G96 | 0.3+ | 0.2- | 2007 10 30 | 691 | 0.1- | 0.2+ |            |     |      |      |

**2007 TP<sub>232</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.77259  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27388267 | $\omega$ 227.45898 | +0.17695923   | -0.98276091 |
| <i>a</i> | 2.3483330  | $\Omega$ 212.46312 | +0.92971496   | +0.18476321 |
| <i>e</i> | 0.0788650  | <i>i</i> 5.72451   | +0.32297915   | +0.00659948 |
| <i>P</i> | 3.60       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 10 | 691 | 0.2+ | 0.5- | 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.1- | 0.1- |
| 1996 10 10 | 691 | 0.1+ | 0.3- | 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.1+ |
| 1996 10 10 | 691 | 0.1+ | 0.4- | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 11 18 | G96 | 0.1- | 0.1- |
| 2003 09 20 | 691 | 0.1- | 0.0  | 2007 10 12 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 691 | 0.4- | 0.2- |
| 2003 09 20 | 691 | 0.3- | 0.5+ | 2007 10 12 | 691 | 0.1- | 0.3+ | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2003 09 20 | 691 | 0.2+ | 0.1- | 2007 10 12 | 691 | 0.1- | 0.0  | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2007 09 18 | G96 | 0.1- | 0.2+ | 2007 10 16 | 691 | 0.4+ | 0.3+ | 2007 11 20 | 703 | 0.2+ | 0.5- |
| 2007 09 18 | G96 | 0.5+ | 0.1- | 2007 10 16 | 691 | 0.0  | 0.2+ | 2007 11 20 | 703 | 0.9- | 0.4- |
| 2007 09 18 | G96 | 0.3+ | 0.3- | 2007 10 16 | 691 | 0.0  | 0.1+ | 2007 11 20 | 703 | 0.6+ | 0.5+ |
| 2007 09 18 | G96 | 0.1- | 0.3- | 2007 10 30 | 691 | 0.2- | 0.2- | 2007 11 20 | 703 | 0.6+ | 0.7- |
| 2007 10 08 | 691 | 0.2- | 0.2+ | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 12 06 | 691 | 0.2- | 0.3- |
| 2007 10 08 | 691 | 0.2+ | 0.4+ | 2007 10 30 | 691 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2007 10 08 | 691 | 0.2- | 0.1+ | 2007 11 18 | G96 | 0.8+ | 0.0  | 2007 12 06 | 691 | 0.1+ | 0.1- |

**2007 TS<sub>232</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 213.58628  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29392256 | $\omega$ 344.60044 | -0.95376533   | +0.29821098 |
| <i>a</i> | 2.2403409  | $\Omega$ 212.82469 | -0.26794130   | -0.90009176 |
| <i>e</i> | 0.0580027  | <i>i</i> 3.96072   | -0.13615859   | -0.31765554 |
| <i>P</i> | 3.35       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 1  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 18 | 691 | 0.1+ | 0.2- | 2007 10 12 | 691 | 0.1- | 0.0  | 2007 11 12 | 703 | 0.3+  | 1.0+  |
| 2000 11 18 | 691 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.1+ | 2007 11 12 | 703 | (0.5+ | 1.8+) |
| 2000 11 18 | 691 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.1- | 2007 11 12 | 703 | 1.2+  | 0.8+  |
| 2003 08 21 | 644 | 0.2- | 0.6+ | 2007 10 16 | 691 | 0.4+ | 0.1+ | 2007 11 12 | 703 | 0.1-  | 0.0   |
| 2003 08 21 | 644 | 0.1- | 0.8+ | 2007 10 20 | 691 | 0.7- | 0.7- | 2007 11 14 | 691 | 0.5-  | 0.1+  |
| 2003 08 21 | 644 | 0.3- | 0.6+ | 2007 10 20 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.3-  | 0.1+  |
| 2004 12 11 | 691 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.2- | 0.1+ | 2007 11 14 | 691 | 0.0   | 0.1-  |
| 2004 12 11 | 691 | 0.1- | 0.3+ | 2007 10 30 | 691 | 0.5- | 0.3- | 2007 11 14 | 704 | 0.1-  | 0.5+  |
| 2004 12 11 | 691 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.3+ | 0.0  | 2007 11 14 | 704 | 1.5+  | 0.2-  |
| 2007 10 08 | 691 | 0.1+ | 0.4- | 2007 10 30 | 691 | 0.1- | 0.3- | 2007 11 14 | 704 | 0.7+  | 0.0   |
| 2007 10 08 | 691 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.5+ | 0.0  | 2007 11 14 | 704 | 0.8+  | 0.1+  |
| 2007 10 08 | 691 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.1- | 2007 12 06 | 691 | 0.1-  | 0.1-  |
| 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.2+ | 0.1- | 2007 12 06 | 691 | 0.0   | 0.0   |
| 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.5+ | 0.2- | 2007 12 06 | 691 | 0.3+  | 0.0   |

2007 TT<sub>232</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.83463  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29433220 | $\omega$ 230.47268 | +0.23315441   | -0.97202435 |
| <i>a</i> | 2.2382617  | $\Omega$ 206.08625 | +0.91085256   | +0.22853010 |
| <i>e</i> | 0.1612210  | <i>i</i> 3.70566   | +0.34056811   | +0.05424623 |
| <i>P</i> | 3.35       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 20 | 291 | 0.4+ | 0.1+ | 2007 10 08 | 691 | 0.3- | 0.3+ | 2007 11 12 | 703 | 0.4- | 0.9+ |
| 2002 03 20 | 291 | 0.5- | 0.1+ | 2007 10 08 | 691 | 0.5- | 0.2+ | 2007 11 12 | 703 | 0.3+ | 0.1- |
| 2002 03 20 | 291 | 0.1+ | 0.2- | 2007 10 08 | 691 | 0.0  | 0.2- | 2007 11 12 | 703 | 0.5+ | 0.2- |
| 2005 02 02 | 703 | 0.5+ | 0.1+ | 2007 10 12 | 691 | 0.2+ | 0.1+ | 2007 11 12 | 703 | 1.4- | 0.1- |
| 2005 02 02 | 703 | 0.4+ | 0.2- | 2007 10 12 | 691 | 0.6+ | 0.2+ | 2007 11 14 | 704 | 0.1+ | 0.3- |
| 2005 02 02 | 703 | 0.0  | 0.8+ | 2007 10 12 | 691 | 0.0  | 0.3+ | 2007 11 14 | 704 | 0.4+ | 1.2+ |
| 2005 02 02 | 703 | 0.8- | 0.7- | 2007 10 16 | 691 | 0.2- | 0.0  | 2007 11 14 | 704 | 1.4+ | 1.0+ |
| 2007 09 10 | G96 | 0.0  | 0.1- | 2007 10 16 | 691 | 0.2- | 0.2- | 2007 11 14 | 704 | 0.3+ | 0.5- |
| 2007 09 10 | G96 | 0.7+ | 0.5- | 2007 10 16 | 691 | 0.0  | 0.2+ | 2007 11 14 | 704 | 1.0+ | 0.6+ |
| 2007 09 10 | G96 | 0.3+ | 0.2- | 2007 10 20 | 691 | 0.3- | 0.4- | 2007 11 20 | 703 | 0.5+ | 1.2- |
| 2007 09 10 | G96 | 1.0+ | 1.0- | 2007 10 20 | 691 | 0.2- | 0.0  | 2007 11 20 | 703 | 0.0  | 1.1- |
| 2007 09 18 | G96 | 0.2- | 0.2+ | 2007 10 20 | 691 | 0.2- | 0.2- | 2007 11 20 | 703 | 1.1+ | 0.1+ |
| 2007 09 18 | G96 | 0.5+ | 0.1- | 2007 10 30 | 691 | 0.4- | 0.4+ | 2007 11 20 | 703 | 1.0+ | 1.1- |
| 2007 09 18 | G96 | 0.1- | 0.2- | 2007 10 30 | 691 | 0.1- | 0.0  |            |     |      |      |
| 2007 09 18 | G96 | 0.5+ | 0.3- | 2007 10 30 | 691 | 0.1- | 0.1- |            |     |      |      |

2007 TA<sub>233</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 12.81970   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.31439995 | $\omega$ 332.62839 | +0.82711841   | -0.56020161 |
| <i>a</i> | 2.1419750  | $\Omega$ 61.51303  | +0.52461177   | +0.74064880 |
| <i>e</i> | 0.0103086  | <i>i</i> 2.95233   | +0.20163734   | +0.37096296 |
| <i>P</i> | 3.13       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 10 | 691 | 0.2+ | 0.5- | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.8- | 0.7- |
| 2004 12 10 | 691 | 0.0  | 0.0  | 2007 10 08 | 691 | 0.1- | 0.2- | 2007 11 14 | 704 | 0.3- | 0.8- |
| 2004 12 10 | 691 | 0.1- | 0.1+ | 2007 10 08 | 691 | 0.4- | 0.0  | 2007 11 14 | 704 | 0.6+ | 0.1- |
| 2006 05 20 | G96 | 0.2- | 0.0  | 2007 10 12 | 691 | 0.4- | 0.4- | 2007 11 14 | 704 | 0.1+ | 0.3+ |
| 2006 05 20 | G96 | 0.3- | 0.2+ | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | 0.6+ | 0.5- |
| 2006 05 20 | G96 | 0.4- | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.2- | 0.5+ |
| 2006 05 20 | G96 | 0.1- | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.3+ | 2007 11 18 | 691 | 0.1+ | 0.5+ |
| 2006 06 04 | G96 | 0.4+ | 0.2+ | 2007 10 30 | 691 | 0.2+ | 0.3- | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2006 06 04 | G96 | 0.3+ | 0.1+ | 2007 10 30 | 691 | 0.2+ | 0.3+ | 2007 12 05 | 691 | 0.0  | 0.3+ |
| 2006 06 04 | G96 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.2- | 2007 12 05 | 691 | 0.2- | 0.1+ |
| 2006 06 04 | G96 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.1- | 2007 12 05 | 691 | 0.4- | 0.2+ |
| 2007 09 14 | G96 | 0.1+ | 0.2- | 2007 10 30 | G96 | 0.8+ | 0.0  | 2007 12 15 | G96 | 0.8+ | 0.1+ |
| 2007 09 14 | G96 | 1.4+ | 0.0  | 2007 10 30 | G96 | 0.6+ | 0.1- | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2007 09 14 | G96 | 0.5+ | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.3+ |
| 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 12 15 | G96 | 0.4+ | 0.2+ |

2007 TD<sub>233</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.78728   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.16821685 | $\omega$ 305.66533 | +0.98573589   | +0.08840845 |
| <i>a</i> | 3.2500476  | $\Omega$ 49.71731  | -0.00462312   | +0.86481753 |
| <i>e</i> | 0.0650542  | <i>i</i> 10.82004  | -0.16823606   | +0.49424142 |
| <i>P</i> | 5.86       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 17 | 291 | 0.2- | 0.6+ | 2007 10 12 | 691 | 0.1- | 0.2- | 2007 11 04 | 691 | 0.2- | 0.2+ |
| 2001 10 17 | 291 | 0.0  | 0.5+ | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 11 04 | 691 | 0.3- | 0.0  |
| 2001 10 17 | 291 | 0.3- | 0.5+ | 2007 10 12 | 691 | 0.1- | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2001 10 25 | 644 | 0.3+ | 0.0  | 2007 10 16 | 691 | 0.2- | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2001 10 25 | 644 | 0.0  | 0.5+ | 2007 10 16 | 691 | 0.0  | 0.3- | 2007 11 05 | G96 | 0.7+ | 0.1- |
| 2001 10 25 | 644 | 0.3+ | 0.1- | 2007 10 16 | 691 | 0.0  | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2001 11 17 | 691 | 0.3- | 0.1- | 2007 10 30 | 691 | 0.3+ | 0.2+ | 2007 11 15 | 704 | 0.8+ | 1.3- |
| 2001 11 17 | 691 | 0.2- | 0.5+ | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 15 | 704 | 0.4+ | 0.2- |
| 2001 11 17 | 691 | 0.1- | 0.3- | 2007 10 30 | 691 | 0.1- | 0.1+ | 2007 11 15 | 704 | 0.3+ | 0.5+ |
| 2004 03 20 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.8+ | 0.1- | 2007 11 15 | 704 | 0.4+ | 1.4+ |
| 2004 03 20 | 691 | 0.3- | 0.2- | 2007 10 30 | G96 | 0.5+ | 0.4- | 2007 11 20 | G96 | 0.6+ | 0.0  |
| 2004 03 20 | 691 | 0.2+ | 0.5- | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 2004 03 30 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 20 | G96 | 0.5+ | 0.3- |
| 2004 03 30 | 691 | 0.1- | 0.3+ | 2007 11 03 | G96 | 0.1- | 0.2+ | 2007 11 20 | G96 | 0.7+ | 0.2- |
| 2004 03 30 | 691 | 0.0  | 0.4+ | 2007 11 03 | G96 | 0.3+ | 0.3- | 2007 12 06 | 691 | 0.1- | 0.1- |
| 2007 10 08 | 691 | 0.1+ | 0.2- | 2007 11 03 | G96 | 0.1+ | 0.1+ | 2007 12 06 | 691 | 0.4- | 0.1+ |
| 2007 10 08 | 691 | 0.0  | 0.4- | 2007 11 03 | G96 | 0.7+ | 0.3+ | 2007 12 06 | 691 | 0.4- | 0.3+ |
| 2007 10 08 | 691 | 0.1+ | 0.4- | 2007 11 04 | 691 | 0.1- | 0.2- |            |     |      |      |

2007 TR<sub>233</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.69338   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20504353 | $\omega$ 323.39802 | +0.82089489   | -0.56869650 |
| <i>a</i> | 2.8482100  | $\Omega$ 71.34160  | +0.53613608   | +0.73601932 |
| <i>e</i> | 0.0758681  | <i>i</i> 3.15314   | +0.19669692   | +0.36723269 |
| <i>P</i> | 4.81       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 02 11 | 691 | 0.1+ | 0.1- | 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.3+  | 0.3-  |
| 2004 02 11 | 691 | 0.3- | 0.0  | 2007 10 12 | 691 | 0.2+ | 0.1- | 2007 11 14 | 704 | (2.0+ | 0.0 ) |
| 2004 02 11 | 691 | 0.1+ | 0.0  | 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 14 | 704 | (2.2+ | 0.4+) |
| 2004 02 26 | 695 | 0.6+ | 0.2+ | 2007 10 20 | 703 | 0.2+ | 0.0  | 2007 11 14 | 704 | (2.5+ | 0.2-) |
| 2004 02 26 | 695 | 0.0  | 0.2- | 2007 10 20 | 703 | 0.5+ | 0.2- | 2007 11 14 | 704 | (1.9+ | 0.6-) |
| 2005 04 06 | G96 | 0.4- | 0.4+ | 2007 10 20 | 703 | 0.1- | 1.2+ | 2007 11 18 | 691 | 0.0   | 0.3+  |
| 2005 04 06 | G96 | 0.2- | 1.1+ | 2007 10 20 | 703 | 1.0- | 0.0  | 2007 11 18 | 691 | 0.1-  | 0.2+  |
| 2005 04 06 | G96 | 0.8+ | 0.2+ | 2007 10 20 | 691 | 0.3- | 0.2- | 2007 11 18 | 691 | 0.2-  | 0.0   |
| 2005 04 06 | G96 | 0.1+ | 0.7- | 2007 10 20 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.2+  | 0.0   |
| 2007 09 14 | G96 | 0.1+ | 0.3- | 2007 10 20 | 691 | 0.4- | 0.1- | 2007 12 15 | G96 | 0.3+  | 0.1+  |
| 2007 09 14 | G96 | 0.4+ | 0.2- | 2007 11 05 | 704 | 0.0  | 1.1+ | 2007 12 15 | G96 | 0.3+  | 0.2+  |
| 2007 09 14 | G96 | 0.1+ | 0.4- | 2007 11 05 | 704 | 0.9+ | 0.6+ | 2007 12 15 | G96 | 0.2+  | 0.3+  |
| 2007 09 14 | G96 | 0.1- | 0.3- | 2007 11 05 | 704 | 0.4+ | 1.1- | 2007 12 16 | 691 | 0.2-  | 0.1+  |
| 2007 10 08 | 691 | 0.1- | 0.3- | 2007 11 05 | G96 | 0.6+ | 0.3+ | 2007 12 16 | 691 | 0.1+  | 0.0   |
| 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1+ | 2007 12 16 | 691 | 0.1-  | 0.2-  |
| 2007 10 08 | 691 | 0.1- | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.2- |            |     |       |       |

2007 TN<sub>234</sub> = 2007 VG<sub>271</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 64.42001   |          | (2000.0)  |     | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-------------|
| $n$ | 0.17258341 | $\omega$ | 265.72211 |     | +0.70569082 | +0.65053468 |
| $a$ | 3.1949938  | $\Omega$ | 53.41020  |     | -0.42721777 | +0.70676917 |
| $e$ | 0.2350393  | $i$      | 20.46440  |     | -0.56523043 | +0.27799637 |
| $P$ | 5.71       | $H$      | 16.4      | $G$ | 0.15        | $U$ 3       |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 23 | 644 | 0.2− | 0.0  | 2007 10 16 | 691 | 0.3− | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.5− |
| 2001 11 12 | 645 | 0.1+ | 0.0  | 2007 10 16 | 691 | 0.2+ | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.2− |
| 2001 11 12 | 645 | 0.1+ | 0.0  | 2007 10 16 | 691 | 0.2− | 0.2− | 2007 11 11 | G96 | 0.4+ | 0.2− |
| 2001 11 18 | 645 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 11 11 | G96 | 0.4+ | 0.2− |
| 2001 11 18 | 645 | 0.1− | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.3− | 2007 12 05 | 691 | 0.1+ | 0.2+ |
| 2007 10 08 | 691 | 0.3+ | 0.2− | 2007 10 30 | G96 | 0.3+ | 0.1+ | 2007 12 05 | 691 | 0.1+ | 0.2− |
| 2007 10 08 | 691 | 0.1− | 0.2+ | 2007 10 30 | G96 | 0.3+ | 0.3− | 2007 12 05 | 691 | 0.6− | 0.2+ |
| 2007 10 08 | 691 | 0.4− | 0.1+ | 2007 11 09 | 300 | 1.0+ | 1.1+ |            |     |      |      |
| 2007 10 12 | 691 | 0.2+ | 0.3+ | 2007 11 09 | 300 | 0.5− | 0.1+ |            |     |      |      |

2007 TO<sub>234</sub> = 2000 WC<sub>105</sub>

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC  |             |            |             |       |       |
|-----------------------------------------|------------|------|----------|------------|-----|------|-------------|------------|-------------|-------|-------|
| $M$                                     | 342.70078  |      | (2000.0) |            |     | $P$  |             | $Q$        |             |       |       |
| $n$                                     | 0.28957894 |      | $\omega$ | 10.92855   |     |      | +0.38227238 |            | −0.91869831 |       |       |
| $a$                                     | 2.2626883  |      | $\Omega$ | 56.66654   |     |      | +0.83858357 |            | +0.29976750 |       |       |
| $e$                                     | 0.0812733  |      | $i$      | 6.82617    |     |      | +0.38813069 |            | +0.25716309 |       |       |
| $P$                                     | 3.40       |      | $H$      | 18.0       |     | $G$  | 0.15        | $U$        | 2           |       |       |
| Residuals in seconds of arc             |            |      |          |            |     |      |             |            |             |       |       |
| 2000 10 02                              | 645        | 0.1− | 0.0      | 2007 10 08 | 691 | 0.0  | 0.1+        | 2007 12 03 | 703         | 0.5−  | 0.8+  |
| 2000 10 02                              | 645        | 0.1− | 0.0      | 2007 10 12 | 691 | 0.0  | 0.2−        | 2007 12 03 | 703         | 0.1+  | 0.5−  |
| 2000 11 25                              | 691        | 0.0  | 0.1−     | 2007 10 12 | 691 | 0.2− | 0.1+        | 2007 12 03 | 703         | 0.2−  | 1.0+  |
| 2000 11 25                              | 691        | 0.4+ | 0.0      | 2007 10 12 | 691 | 0.2− | 0.0         | 2007 12 03 | 703         | (0.4+ | 1.5+) |
| 2000 11 25                              | 691        | 0.1+ | 0.1+     | 2007 11 14 | 691 | 0.3+ | 0.0         | 2007 12 04 | 691         | 0.3+  | 0.3−  |
| 2000 11 30                              | 691        | 0.4+ | 0.2−     | 2007 11 14 | 691 | 0.5− | 0.1−        | 2007 12 04 | 691         | 0.1+  | 0.1+  |
| 2000 11 30                              | 691        | 0.1+ | 0.3−     | 2007 11 14 | 691 | 0.4+ | 0.4+        | 2007 12 04 | 691         | 0.3+  | 0.1+  |
| 2000 11 30                              | 691        | 0.0  | 0.2−     | 2007 11 18 | 691 | 0.2+ | 0.3+        | 2007 12 15 | 691         | 0.6−  | 0.4+  |
| 2007 10 08                              | 691        | 0.1− | 0.1−     | 2007 11 18 | 691 | 0.0  | 0.0         | 2007 12 15 | 691         | 0.1−  | 0.4−  |
| 2007 10 08                              | 691        | 0.1+ | 0.0      | 2007 11 18 | 691 | 0.2− | 0.0         | 2007 12 15 | 691         | 0.1+  | 0.2−  |

2007 TP<sub>234</sub> = 2006 KA<sub>43</sub>

|                                         |            |      |          |            |           |      |             |            |             |      |      |   |
|-----------------------------------------|------------|------|----------|------------|-----------|------|-------------|------------|-------------|------|------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |           |      | MPC         |            |             |      |      |   |
| $M$                                     | 73.61448   |      | (2000.0) |            |           |      | $P$         |            | $Q$         |      |      |   |
| $n$                                     | 0.23112769 |      | $\omega$ |            | 245.80516 |      | +0.64445010 |            | +0.75980725 |      |      |   |
| $a$                                     | 2.6296709  |      | $\Omega$ |            | 64.59960  |      | −0.66252343 |            | +0.61092766 |      |      |   |
| $e$                                     | 0.2191596  |      | $i$      |            | 5.45597   |      | −0.38176796 |            | +0.22239681 |      |      |   |
| $P$                                     | 4.26       |      | $H$      |            | 16.6      |      | $G$         |            | 0.15        |      | $U$  | 1 |
| Residuals in seconds of arc             |            |      |          |            |           |      |             |            |             |      |      |   |
| 2002 07 17                              | 644        | 0.0  | 0.6−     | 2007 09 14 | G96       | 0.4+ | 0.7+        | 2007 11 14 | 691         | 0.5+ | 0.1+ |   |
| 2002 07 17                              | 644        | 0.2+ | 0.6−     | 2007 09 14 | G96       | 0.2+ | 0.4+        | 2007 12 04 | 691         | 0.2− | 0.6+ |   |
| 2002 07 17                              | 644        | 0.2− | 0.1−     | 2007 09 14 | G96       | 0.1+ | 0.9+        | 2007 12 04 | 691         | 0.2+ | 0.3− |   |
| 2003 11 29                              | 691        | 0.2+ | 0.4−     | 2007 10 08 | 691       | 0.0  | 0.4−        | 2007 12 04 | 691         | 0.2+ | 0.5− |   |
| 2003 11 29                              | 691        | 0.1− | 0.2−     | 2007 10 08 | 691       | 0.2− | 0.2−        | 2007 12 06 | 691         | 0.2− | 0.2+ |   |
| 2003 11 29                              | 691        | 0.2+ | 0.3−     | 2007 10 08 | 691       | 0.1− | 0.0         | 2007 12 06 | 691         | 0.0  | 0.1− |   |
| 2006 05 20                              | G96        | 0.4+ | 0.3+     | 2007 10 12 | 691       | 0.3− | 0.2−        | 2007 12 06 | 691         | 0.1− | 0.1+ |   |
| 2006 05 20                              | G96        | 0.1+ | 0.1+     | 2007 10 12 | 691       | 0.1+ | 0.0         | 2007 12 15 | G96         | 0.3+ | 0.6− |   |
| 2006 05 20                              | G96        | 0.1+ | 0.3+     | 2007 10 12 | 691       | 0.1− | 0.2−        | 2007 12 15 | G96         | 0.4+ | 0.2− |   |
| 2006 05 20                              | G96        | 0.1− | 0.1+     | 2007 11 03 | 691       | 0.0  | 0.2+        | 2007 12 15 | G96         | 0.3+ | 0.4+ |   |
| 2006 05 24                              | 644        | 0.2+ | 0.3+     | 2007 11 03 | 691       | 0.2− | 0.1+        | 2007 12 15 | G96         | 0.8+ | 0.2+ |   |
| 2006 05 24                              | 644        | 0.1+ | 0.2+     | 2007 11 03 | 691       | 0.0  | 0.1−        | 2007 12 16 | 691         | 0.0  | 0.1+ |   |
| 2006 05 24                              | 644        | 0.2− | 0.1+     | 2007 11 14 | 691       | 0.4− | 0.3+        | 2007 12 16 | 691         | 0.3− | 0.1+ |   |
| 2007 09 14                              | G96        | 0.5+ | 0.6+     | 2007 11 14 | 691       | 0.1+ | 0.0         | 2007 12 16 | 691         | 0.2− | 0.4+ |   |

2007 TE<sub>235</sub>

|                                         |            |      |      |            |          |      |              |             |      |      |              |             |   |  |  |
|-----------------------------------------|------------|------|------|------------|----------|------|--------------|-------------|------|------|--------------|-------------|---|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |            |          |      |              |             |      | MPC  |              |             |   |  |  |
| $M$                                     | 273.46190  |      |      | (2000.0)   |          |      | $\mathbf{P}$ |             |      |      | $\mathbf{Q}$ |             |   |  |  |
| $n$                                     | 0.17390071 |      |      | $\omega$   | 94.78603 |      |              | −0.56025875 |      |      |              | −0.81590667 |   |  |  |
| $a$                                     | 3.1788386  |      |      | $\Omega$   | 30.70509 |      |              | +0.60473526 |      |      |              | −0.52075581 |   |  |  |
| $e$                                     | 0.0612187  |      |      | $i$        | 16.24591 |      |              | +0.56604364 |      |      |              | −0.25121642 |   |  |  |
| $P$                                     | 5.67       |      |      | $H$        | 15.5     |      |              | $G$         | 0.15 |      |              | $U$         | 5 |  |  |
| Residuals in seconds of arc             |            |      |      |            |          |      |              |             |      |      |              |             |   |  |  |
| 2001 10 08                              | 644        | 0.5− | 0.7+ | 2007 10 09 | 691      | 0.3− | 0.1−         | 2007 11 01  | G96  | 0.5+ | 0.6−         |             |   |  |  |
| 2001 10 08                              | 644        | 0.2− | 0.5+ | 2007 10 09 | 691      | 0.3− | 0.1−         | 2007 11 02  | G96  | 0.1+ | 0.1+         |             |   |  |  |

## M.P.O. 129887

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 08 | 644 | 0.2− | 0.6− | 2007 10 12 | 691 | 0.4−  | 0.1−  | 2007 11 02 | G96 | 0.1− | 0.3− |
| 2001 10 16 | 644 | 0.3+ | 0.3− | 2007 10 12 | 691 | 0.2+  | 0.3−  | 2007 11 02 | G96 | 0.3+ | 0.2− |
| 2001 10 16 | 644 | 0.5+ | 0.1− | 2007 10 12 | 691 | 0.2−  | 0.0   | 2007 11 02 | G96 | 0.2+ | 0.8+ |
| 2001 10 16 | 644 | 0.2+ | 0.2− | 2007 10 20 | 691 | (2.7− | 3.1−) | 2007 11 02 | G96 | 0.1− | 0.8+ |
| 2007 09 25 | G96 | 0.5+ | 0.5− | 2007 10 20 | 691 | 0.3−  | 0.4−  | 2007 11 02 | G96 | 0.0  | 1.1+ |
| 2007 09 25 | G96 | 0.4− | 0.2+ | 2007 10 20 | 691 | 0.4−  | 0.3−  | 2007 11 02 | G96 | 0.2+ | 0.3+ |
| 2007 09 25 | G96 | 0.3− | 0.1− | 2007 11 01 | G96 | 0.0   | 0.6−  | 2007 11 02 | G96 | 0.1− | 0.7+ |
| 2007 09 25 | G96 | 0.2+ | 0.2− | 2007 11 01 | G96 | 0.3+  | 0.4−  |            |     |      |      |
| 2007 10 09 | 691 | 0.3+ | 0.7+ | 2007 11 01 | G96 | 0.2+  | 0.6−  |            |     |      |      |

2007 TF<sub>235</sub> = 2003 YF<sub>122</sub>

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |     | MPC         |      |            |             |          |      |
|-----------------------------------------|------------|----------|-----------|------------|-----|-------------|------|------------|-------------|----------|------|
| <i>M</i> 46.99404                       |            |          | (2000.0)  |            |     | <b>P</b>    |      |            | <b>Q</b>    |          |      |
| <i>n</i>                                | 0.19632353 | $\omega$ | 180.00570 |            |     | +0.53950535 |      |            | +0.84071558 |          |      |
| <i>a</i>                                | 2.9319360  | $\Omega$ | 122.64428 |            |     | −0.77250137 |      |            | +0.51605096 |          |      |
| <i>e</i>                                | 0.0727936  | <i>i</i> | 3.14291   |            |     | −0.33492628 |      |            | +0.16397780 |          |      |
| <i>P</i>                                | 5.02       | <i>H</i> | 16.3      |            |     | <i>G</i>    | 0.15 |            |             | <i>U</i> | 1    |
| Residuals in seconds of arc             |            |          |           |            |     |             |      |            |             |          |      |
| 2000 04 10                              | 695        | 0.3+     | 0.1+      | 2005 03 16 | G96 | 0.2−        | 0.6+ | 2007 09 12 | G96         | 0.2−     | 0.1− |
| 2000 04 10                              | 695        | 0.1−     | 0.6+      | 2005 03 16 | G96 | 0.5−        | 0.5+ | 2007 09 12 | G96         | 0.0      | 0.4− |
| 2001 05 22                              | 691        | 0.6−     | 0.2+      | 2005 03 16 | G96 | 0.2+        | 0.4− | 2007 09 20 | 691         | 0.4+     | 0.0  |
| 2001 05 22                              | 691        | 0.5−     | 0.1−      | 2005 03 16 | G96 | 0.2−        | 0.2+ | 2007 09 20 | 691         | 1.2+     | 0.4− |
| 2001 05 22                              | 691        | 0.2−     | 0.2+      | 2006 05 06 | G96 | 0.2−        | 0.1+ | 2007 09 20 | 691         | 0.3−     | 0.1+ |
| 2001 06 27                              | 691        | 0.3+     | 0.4+      | 2006 05 06 | G96 | 0.0         | 0.3− | 2007 09 30 | 691         | 0.2+     | 0.1+ |
| 2001 06 27                              | 691        | 0.2+     | 0.8+      | 2006 05 06 | G96 | 0.4−        | 0.1− | 2007 09 30 | 691         | 0.2−     | 0.2+ |
| 2001 06 27                              | 691        | 0.4+     | 0.4+      | 2006 05 06 | G96 | 0.3+        | 0.1+ | 2007 09 30 | 691         | 1.4−     | 1.2+ |
| 2002 08 20                              | 644        | 0.4+     | 0.4+      | 2006 05 21 | G96 | 0.2+        | 0.1− | 2007 10 09 | 691         | 0.3−     | 0.3+ |
| 2002 08 20                              | 644        | 0.6+     | 0.1+      | 2006 05 21 | G96 | 0.0         | 0.1− | 2007 10 09 | 691         | 0.1−     | 0.9− |
| 2002 08 20                              | 644        | 0.8−     | 0.3+      | 2006 05 21 | G96 | 0.2+        | 0.1+ | 2007 10 09 | 691         | 0.7−     | 0.5+ |
| 2002 09 12                              | 644        | 0.1−     | 0.4+      | 2006 05 21 | G96 | 0.6−        | 0.0  | 2007 10 09 | G96         | 0.0      | 0.3− |
| 2002 09 12                              | 644        | 0.0      | 0.5+      | 2006 05 21 | 691 | 0.4+        | 0.5+ | 2007 10 09 | G96         | 0.1+     | 0.1+ |
| 2002 09 12                              | 644        | 0.0      | 0.2+      | 2006 05 21 | 691 | 0.4+        | 0.2+ | 2007 10 09 | G96         | 0.2+     | 0.3− |
| 2003 12 25                              | 691        | 0.1−     | 0.6+      | 2006 05 21 | 691 | 0.5+        | 0.3+ | 2007 10 09 | G96         | 0.2+     | 0.6− |
| 2003 12 25                              | 691        | 0.2+     | 0.3+      | 2006 06 16 | 691 | 0.3+        | 0.5− | 2007 10 11 | 691         | 0.1−     | 0.4− |
| 2003 12 25                              | 691        | 0.5+     | 0.2+      | 2006 06 16 | 691 | 0.2+        | 0.0  | 2007 10 11 | 691         | 0.0      | 0.3+ |
| 2003 12 29                              | 691        | 0.1+     | 0.0       | 2006 06 16 | 691 | 0.4+        | 0.3− | 2007 10 11 | 691         | 0.5−     | 0.4+ |
| 2003 12 29                              | 691        | 0.1−     | 0.9+      | 2007 09 12 | G96 | 0.3+        | 0.2− |            |             |          |      |
| 2003 12 29                              | 691        | 0.1−     | 0.1+      | 2007 09 12 | G96 | 0.1−        | 0.1− |            |             |          |      |

**2007 TX<sub>236</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 96.35943   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29980804 | $\omega$ | 132.14543 | +0.26716863   | +0.96343517 |
| <i>a</i> | 2.2109242  | $\Omega$ | 153.33011 | -0.89695704   | +0.25633755 |
| <i>e</i> | 0.0853606  | <i>i</i> | 2.59692   | -0.35226269   | +0.07799827 |
| <i>P</i> | 3.29       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 04 08 G96 | 0.2- | 0.0  | 2007 10 09 G96 | 0.4+ | 0.1- | 2007 10 19 691 | 0.0  | 0.2+ |
| 2006 04 08 G96 | 0.1+ | 0.4+ | 2007 10 09 G96 | 0.6+ | 0.0  | 2007 10 19 691 | 0.1- | 0.2- |
| 2006 04 08 G96 | 0.1- | 0.3+ | 2007 10 09 G96 | 0.4+ | 0.2+ | 2007 10 23 691 | 0.2- | 0.5+ |
| 2006 04 08 G96 | 0.3+ | 0.5- | 2007 10 09 G96 | 0.5+ | 0.3+ | 2007 10 23 691 | 0.4- | 0.0  |
| 2006 05 04 291 | 0.2+ | 0.1- | 2007 10 11 691 | 0.1- | 0.1- | 2007 10 23 691 | 0.4- | 0.6- |
| 2006 05 04 291 | 0.1- | 0.1+ | 2007 10 11 691 | 0.1- | 0.1- | 2007 11 13 G96 | 0.2+ | 0.4- |
| 2006 05 04 291 | 0.1- | 0.2- | 2007 10 11 691 | 0.5- | 0.0  | 2007 11 13 G96 | 0.3+ | 0.3- |
| 2007 09 25 G96 | 0.1+ | 0.3- | 2007 10 15 691 | 0.3- | 0.3+ | 2007 11 13 G96 | 0.0  | 0.3+ |
| 2007 09 25 G96 | 0.4- | 0.1+ | 2007 10 15 691 | 0.1- | 0.3+ | 2007 11 13 G96 | 0.1+ | 0.1- |
| 2007 09 25 G96 | 0.2- | 0.1- | 2007 10 15 691 | 0.3- | 0.0  |                |      |      |
| 2007 09 25 G96 | 0.6+ | 0.0  | 2007 10 19 691 | 0.4- | 0.2+ |                |      |      |

**2007 TS<sub>237</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 50.64013   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19272816 | $\omega$ | 313.31866 | +0.98380569   | +0.14142686 |
| <i>a</i> | 2.9682873  | $\Omega$ | 38.93675  | -0.06489954   | +0.85372547 |
| <i>e</i> | 0.0816485  | <i>i</i> | 10.09086  | -0.16707606   | +0.50114994 |
| <i>P</i> | 5.11       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2001 07 27 644 | 0.4- | 0.7+ | 2007 11 07 691 | 0.2- | 0.1+ | 2007 11 17 691 | 0.6-  | 0.1+  |
| 2001 07 27 644 | 0.0  | 0.2+ | 2007 11 09 691 | 0.1- | 0.0  | 2007 11 17 691 | 0.3-  | 0.1+  |
| 2001 07 27 644 | 0.2- | 0.5+ | 2007 11 09 691 | 0.3- | 0.1+ | 2007 11 17 691 | 0.1-  | 0.1-  |
| 2005 04 16 691 | 0.3+ | 0.1+ | 2007 11 09 691 | 0.1- | 0.1- | 2007 11 18 704 | 0.4+  | 0.7+  |
| 2005 04 16 691 | 0.4+ | 0.4+ | 2007 11 09 300 | 0.3- | 0.6- | 2007 11 18 704 | 0.1+  | 1.1+  |
| 2005 04 16 691 | 0.4+ | 0.5+ | 2007 11 09 300 | 0.1+ | 0.6- | 2007 11 18 704 | 0.1+  | 0.5+  |
| 2005 05 07 G96 | 0.6- | 0.0  | 2007 11 09 300 | 0.1- | 0.5+ | 2007 11 18 704 | 0.6+  | 0.2+  |
| 2005 05 07 G96 | 0.6- | 0.4- | 2007 11 09 300 | 0.7+ | 0.7- | 2007 11 20 704 | (2.2+ | 1.3+) |
| 2005 05 07 G96 | 0.7- | 0.2- | 2007 11 09 300 | 0.2- | 0.1- | 2007 11 20 704 | 0.6-  | 0.4-  |
| 2005 05 07 G96 | 0.9- | 0.1+ | 2007 11 12 300 | 0.1- | 0.4- | 2007 11 20 704 | 0.8+  | 0.2+  |
| 2007 10 09 G96 | 0.6+ | 0.1+ | 2007 11 12 300 | 0.8+ | 0.8- | 2007 11 20 704 | (1.6+ | 0.1+) |
| 2007 10 09 G96 | 0.6+ | 0.1- | 2007 11 12 300 | 0.1+ | 0.2- | 2007 12 04 691 | 0.7-  | 0.5+  |
| 2007 10 09 G96 | 0.7+ | 0.1+ | 2007 11 12 300 | 0.2+ | 0.5- | 2007 12 04 691 | 0.0   | 0.1+  |
| 2007 10 09 G96 | 0.3+ | 0.2+ | 2007 11 12 300 | 0.2+ | 0.5- | 2007 12 04 691 | 0.0   | 0.1-  |
| 2007 10 11 691 | 0.1- | 0.2- | 2007 11 12 300 | 0.3- | 0.2+ | 2007 12 13 704 | 0.3+  | 0.1+  |
| 2007 10 11 691 | 0.1+ | 0.3+ | 2007 11 13 691 | 0.2- | 0.1- | 2007 12 13 704 | 0.0   | 0.4+  |
| 2007 10 11 691 | 0.3- | 0.2+ | 2007 11 13 691 | 0.1- | 0.2- | 2007 12 13 704 | 0.2-  | 0.3+  |
| 2007 11 04 691 | 0.1+ | 0.1- | 2007 11 13 691 | 0.2- | 0.0  | 2007 12 13 704 | 0.1+  | 0.7+  |
| 2007 11 04 691 | 0.0  | 0.0  | 2007 11 13 699 | 0.9+ | 0.4- | 2007 12 13 704 | 0.0   | 0.3+  |
| 2007 11 04 691 | 0.1+ | 0.4- | 2007 11 13 699 | 0.9+ | 0.6- | 2007 12 16 691 | 0.1+  | 0.4+  |
| 2007 11 07 691 | 0.7+ | 0.9+ | 2007 11 13 699 | 0.1- | 0.6- | 2007 12 16 691 | 0.2+  | 0.0   |
| 2007 11 07 691 | 0.3- | 0.0  | 2007 11 13 699 | 0.3+ | 0.3- | 2007 12 16 691 | 0.0   | 0.2-  |

**2007 TT<sub>237</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.15605   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26615114 | $\omega$ | 300.91063 | +0.98513063   | -0.13390048 |
| <i>a</i> | 2.3935941  | $\Omega$ | 66.97209  | +0.16786211   | +0.88364565 |
| <i>e</i> | 0.1246375  | <i>i</i> | 6.71725   | -0.03660543   | +0.44859895 |
| <i>P</i> | 3.70       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |     |                |      |      |                |      |      |
|----------------|------|-----|----------------|------|------|----------------|------|------|
| 2003 08 23 644 | 0.1+ | 0.0 | 2007 10 16 691 | 0.3+ | 0.2- | 2007 11 11 699 | 0.4- | 0.5+ |
| 2003 08 23 644 | 0.4+ | 0.0 | 2007 10 16 691 | 0.1- | 0.0  | 2007 11 14 704 | 0.4+ | 0.2+ |
| 2003 08 23 644 | 0.1+ | 0.0 | 2007 10 16 691 | 0.1+ | 0.1+ | 2007 11 14 704 | 0.3+ | 0.2- |

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2003 09 27 699 | 0.8- | 0.9+ | 2007 10 30 703 | 0.5-  | 0.1+  | 2007 11 14 704 | 0.1- | 0.5+ |
| 2003 09 27 699 | 0.5+ | 0.2- | 2007 10 30 703 | 0.7-  | 0.5-  | 2007 11 14 704 | 0.2+ | 0.0  |
| 2003 09 27 699 | 0.2+ | 0.1+ | 2007 10 30 703 | (1.7+ | 0.5+) | 2007 11 14 704 | 0.0  | 0.6+ |
| 2003 09 27 699 | 0.5- | 0.6- | 2007 10 30 703 | 0.3+  | 0.1-  | 2007 11 17 703 | 0.3+ | 0.2+ |
| 2007 10 09 D29 | 0.3+ | 0.1+ | 2007 11 07 703 | 1.0-  | 0.5-  | 2007 11 17 703 | 0.1- | 0.4+ |
| 2007 10 09 D29 | 0.1+ | 0.5- | 2007 11 07 703 | 0.3+  | 0.2-  | 2007 11 17 703 | 0.5- | 0.2- |
| 2007 10 09 D29 | 0.9+ | 0.5- | 2007 11 07 703 | 0.2+  | 0.2-  | 2007 11 17 703 | 0.3+ | 0.0  |
| 2007 10 09 D29 | 0.1+ | 0.1+ | 2007 11 07 703 | 0.5-  | 0.3+  | 2007 12 05 704 | 1.0+ | 0.3+ |
| 2007 10 12 691 | 0.1- | 0.1+ | 2007 11 11 699 | 0.0   | 0.8-  | 2007 12 05 704 | 0.5- | 0.3+ |
| 2007 10 12 691 | 0.1- | 0.2+ | 2007 11 11 699 | 0.7-  | 0.0   | 2007 12 05 704 | 0.4+ | 0.5- |
| 2007 10 12 691 | 0.2- | 0.0  | 2007 11 11 699 | 0.4+  | 0.4-  |                |      |      |

**2007 TX<sub>237</sub> = 2000 QM<sub>239</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 148.06701  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28324088 | $\omega$ | 228.33420 | -0.82496735   | +0.56430753 |
| <i>a</i> | 2.2963183  | $\Omega$ | 345.92615 | -0.47256645   | -0.71919121 |
| <i>e</i> | 0.0579076  | <i>i</i> | 7.41879   | -0.31001583   | -0.40536529 |
| <i>P</i> | 3.48       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 08 25 807 | 0.4+ | 0.2- | 2006 04 30 703 | 0.4+ | 0.4+ | 2007 10 12 691 | 0.1- | 0.3+ |
| 2000 08 25 807 | 0.3+ | 0.4- | 2006 04 30 703 | 0.1+ | 0.7+ | 2007 10 12 691 | 0.2- | 0.3+ |
| 2000 08 26 807 | 0.2+ | 0.6- | 2006 04 30 703 | 0.1- | 0.2- | 2007 10 15 691 | 0.2+ | 0.0  |
| 2000 08 26 807 | 0.7+ | 0.7- | 2007 09 14 699 | 0.2+ | 0.4+ | 2007 10 15 691 | 0.1- | 0.4+ |
| 2005 12 01 695 | 0.2+ | 0.9+ | 2007 09 14 699 | 0.4- | 1.7+ | 2007 10 15 691 | 0.1- | 0.1- |
| 2005 12 01 695 | 0.1+ | 0.7+ | 2007 09 14 699 | 2.1+ | 0.3- | 2007 11 12 G96 | 0.2- | 0.2- |
| 2006 03 02 G96 | 0.6+ | 0.2+ | 2007 09 14 699 | 0.7+ | 0.3- | 2007 11 12 G96 | 0.5+ | 0.1- |
| 2006 03 02 G96 | 0.5+ | 0.7- | 2007 10 10 691 | 0.4- | 0.2- | 2007 11 12 G96 | 0.2+ | 0.9- |
| 2006 03 02 G96 | 0.1- | 0.2+ | 2007 10 10 691 | 0.2- | 0.1- | 2007 11 12 G96 | 0.3- | 0.8- |
| 2006 03 02 G96 | 0.1- | 0.0  | 2007 10 10 691 | 0.4- | 0.3+ |                |      |      |
| 2006 04 30 703 | 0.0  | 0.7+ | 2007 10 12 691 | 0.1- | 0.0  |                |      |      |

**2007 TC<sub>238</sub> = 1995 ST<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.38084   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24457655 | $\omega$ | 130.68793 | +0.62721504   | +0.77880182 |
| <i>a</i> | 2.5323643  | $\Omega$ | 178.09811 | -0.76853531   | +0.62060635 |
| <i>e</i> | 0.0944061  | <i>i</i> | 14.49692  | -0.12631219   | +0.09118932 |
| <i>P</i> | 4.03       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 1995 09 19 691 | 0.1+ | 0.3- | 2003 09 22 699 | (2.3+ | 3.7-) | 2007 10 10 691 | 0.0  | 0.1+ |
| 1995 09 19 691 | 0.2+ | 0.1+ | 2003 09 22 699 | 0.2-  | 0.5-  | 2007 10 12 691 | 0.2- | 0.2+ |
| 1995 09 19 691 | 0.2+ | 0.1- | 2003 09 22 699 | 0.3+  | 1.1+  | 2007 10 12 691 | 0.1+ | 0.0  |
| 1995 09 24 691 | 0.4- | 0.2+ | 2003 09 22 699 | 0.5-  | 0.3+  | 2007 10 12 691 | 0.2- | 0.1+ |
| 1995 09 24 691 | 0.0  | 0.1- | 2007 08 23 691 | 0.3-  | 0.1+  | 2007 10 19 691 | 0.0  | 0.1+ |
| 1995 09 24 691 | 0.2- | 0.3- | 2007 08 23 691 | 0.1+  | 0.0   | 2007 10 19 691 | 0.5- | 0.2+ |
| 1999 09 16 691 | 0.1+ | 0.0  | 2007 08 23 691 | 0.1-  | 0.2-  | 2007 10 19 691 | 0.2+ | 0.0  |
| 1999 09 16 691 | 0.0  | 0.0  | 2007 10 10 691 | 0.2+  | 0.1-  | 2007 11 03 G96 | 0.4+ | 0.2+ |
| 1999 09 16 691 | 0.1+ | 0.3- | 2007 10 10 691 | 0.4-  | 0.5-  | 2007 11 03 G96 | 1.0+ | 0.1- |
| 2003 09 17 691 | 0.3+ | 0.0  | 2007 10 10 691 | 0.1+  | 0.2-  | 2007 11 03 G96 | 0.8+ | 0.4+ |
| 2003 09 17 691 | 0.2+ | 0.1+ | 2007 10 10 691 | 0.2+  | 0.3+  | 2007 11 03 G96 | 0.4+ | 0.4+ |
| 2003 09 17 691 | 0.3- | 0.0  | 2007 10 10 691 | 0.0   | 0.3+  |                |      |      |

**2007 TV<sub>238</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.11047  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19230997 | $\omega$ | 269.55536 | +0.78410216   | -0.61973682 |
| <i>a</i> | 2.9725889  | $\Omega$ | 128.74115 | +0.58505930   | +0.72018062 |
| <i>e</i> | 0.1021752  | <i>i</i> | 2.44820   | +0.20709761   | +0.31187521 |
| <i>P</i> | 5.13       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

2007 DEC. 24

M.P.O. 129889

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 14 | 291 | 0.1+ | 0.3+ | 2007 09 12 | G96 | 0.5+ | 0.3- | 2007 10 15 | 691 | 0.2- | 0.2+ |
| 2002 11 14 | 291 | 0.2- | 0.5+ | 2007 10 10 | G96 | 0.5+ | 0.3- | 2007 10 15 | 691 | 0.1+ | 0.1+ |
| 2002 11 14 | 291 | 0.3- | 0.3+ | 2007 10 10 | G96 | 0.7+ | 0.2- | 2007 10 19 | 691 | 0.0  | 0.4+ |
| 2004 01 30 | 691 | 0.7+ | 0.1- | 2007 10 10 | G96 | 0.4+ | 0.2- | 2007 10 19 | 691 | 0.3- | 0.4- |
| 2004 01 30 | 691 | 0.1- | 0.0  | 2007 10 10 | G96 | 0.5+ | 0.2- | 2007 10 19 | 691 | 0.6+ | 0.6- |
| 2004 01 30 | 691 | 0.6- | 0.3- | 2007 10 11 | 691 | 0.9- | 0.1- | 2007 11 13 | G96 | 0.6+ | 0.3- |
| 2007 09 12 | G96 | 0.4+ | 0.3- | 2007 10 11 | 691 | 0.1+ | 0.1+ | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 2007 09 12 | G96 | 0.5+ | 0.0  | 2007 10 11 | 691 | 0.2- | 0.0  | 2007 11 13 | G96 | 0.5+ | 0.3- |
| 2007 09 12 | G96 | 0.0  | 0.2+ | 2007 10 15 | 691 | 0.0  | 0.1- | 2007 11 13 | G96 | 0.1+ | 0.4- |

2007 TR<sub>239</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.21015   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.21686791 | $\omega$ | 309.16186 | +0.97370100 | +0.21462354 |
| <i>a</i> | 2.7437162  | $\Omega$ | 38.61871  | -0.15223280 | +0.86252208 |
| <i>e</i> | 0.0346230  | <i>i</i> | 7.03490   | -0.16950383 | +0.45824928 |
| <i>P</i> | 4.54       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 04 01 | 691 | 0.3+ | 0.1- | 2007 10 10 | G96 | 0.5+ | 0.2- | 2007 11 08 | 691 | 0.2-  | 0.2+  |
| 2005 04 01 | 691 | 0.0  | 0.3- | 2007 10 10 | G96 | 0.5+ | 0.3- | 2007 11 15 | 704 | 0.7-  | 0.7-  |
| 2005 04 01 | 691 | 0.0  | 0.3+ | 2007 10 11 | 691 | 0.3- | 0.0  | 2007 11 15 | 704 | (1.5- | 0.1-) |
| 2005 05 10 | G96 | 0.5- | 0.2+ | 2007 10 11 | 691 | 0.2- | 0.1- | 2007 11 15 | 704 | 0.2-  | 0.8-  |
| 2005 05 10 | G96 | 0.3- | 0.3+ | 2007 10 11 | 691 | 0.1- | 0.1- | 2007 11 15 | 704 | (2.5- | 1.7-) |
| 2005 05 10 | G96 | 0.3- | 0.2+ | 2007 10 15 | 691 | 0.3+ | 0.4+ | 2007 11 15 | 704 | 0.6-  | 0.8-  |
| 2005 05 10 | G96 | 0.1- | 0.3- | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 19 | 691 | 0.0   | 0.1+  |
| 2007 09 09 | G96 | 0.2+ | 0.1+ | 2007 10 15 | 691 | 0.1- | 0.0  | 2007 11 19 | 691 | 0.2-  | 0.0   |
| 2007 09 09 | G96 | 0.1- | 0.4- | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 11 19 | 691 | 0.1+  | 0.3+  |
| 2007 09 09 | G96 | 0.1+ | 0.3- | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 15 | 691 | 0.0   | 0.2-  |
| 2007 09 09 | G96 | 0.4+ | 0.2- | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 12 15 | 691 | 0.3+  | 0.4+  |
| 2007 10 10 | G96 | 0.6+ | 0.3- | 2007 11 08 | 691 | 0.0  | 0.2+ | 2007 12 15 | 691 | 0.1+  | 0.3-  |
| 2007 10 10 | G96 | 0.5+ | 0.4- | 2007 11 08 | 691 | 0.3+ | 0.0  |            |     |       |       |

2007 TY<sub>239</sub> = 1997 WU<sub>25</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.91808   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.29368390 | $\omega$ | 286.19065 | +0.82957688 | +0.55260556 |
| <i>a</i> | 2.2415544  | $\Omega$ | 40.35887  | -0.45326460 | +0.75027911 |
| <i>e</i> | 0.1803704  | <i>i</i> | 7.11265   | -0.32611869 | +0.36291645 |
| <i>P</i> | 3.36       | <i>H</i> | 17.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 22 | 691 | 0.5+ | 0.1- | 2007 10 13 | 704 | 0.8- | 0.7+ | 2007 10 20 | 703 | 0.6+ | 0.7+ |
| 1997 11 22 | 691 | 0.6+ | 0.4- | 2007 10 13 | 704 | 0.6- | 0.4- | 2007 10 20 | 704 | 0.3+ | 0.6+ |
| 1997 11 22 | 691 | 0.5+ | 0.2- | 2007 10 13 | 704 | 0.7- | 0.1+ | 2007 10 20 | 704 | 0.1+ | 0.1- |
| 1997 12 05 | 691 | 0.5- | 0.5+ | 2007 10 19 | G96 | 0.2- | 0.5- | 2007 11 05 | G96 | 0.1+ | 0.4- |
| 1997 12 05 | 691 | 0.7- | 0.0  | 2007 10 19 | G96 | 0.2- | 0.6- | 2007 11 05 | G96 | 0.1- | 0.1- |
| 1997 12 05 | 691 | 0.5- | 0.1+ | 2007 10 19 | G96 | 0.3- | 0.5- | 2007 11 05 | G96 | 0.1+ | 0.2- |
| 2007 10 08 | 699 | 0.4+ | 0.3- | 2007 10 19 | G96 | 0.2+ | 0.6- | 2007 11 05 | G96 | 0.3+ | 0.4- |
| 2007 10 08 | 699 | 0.1+ | 0.4- | 2007 10 20 | 703 | 0.6- | 0.1- | 2007 11 07 | G96 | 0.2+ | 0.3- |
| 2007 10 08 | 699 | 0.8+ | 1.2+ | 2007 10 20 | 703 | 1.0- | 0.3- | 2007 11 07 | G96 | 0.2+ | 0.1- |
| 2007 10 08 | 699 | 0.3+ | 1.1+ | 2007 10 20 | 703 | 0.6+ | 0.1- | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 2007 10 13 | 704 | 0.6- | 0.4+ | 2007 10 20 | 704 | 0.1+ | 0.2- | 2007 11 13 | G96 | 0.1+ | 0.1+ |

2007 TH<sub>240</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.86717   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17721007 | $\omega$ | 141.90062 | +0.91403473 | +0.40372275 |
| <i>a</i> | 3.1391383  | $\Omega$ | 194.44213 | -0.40001131 | +0.88101038 |
| <i>e</i> | 0.1342182  | <i>i</i> | 9.07801   | -0.06731614 | +0.24663465 |
| <i>P</i> | 5.56       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 20 | 645 | 0.0  | 0.0  | 2007 10 08 | G96 | 0.2- | 0.1- | 2007 10 20 | 703 | (2.1+ | 0.2+) |
| 1999 03 20 | 645 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.1- | 0.1- | 2007 10 20 | 703 | 1.6+  | 1.0+  |
| 1999 03 21 | 645 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.2- | 0.3- | 2007 10 20 | 704 | 0.3+  | 1.0+  |
| 1999 03 21 | 645 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.3+ | 0.2- | 2007 10 20 | 703 | 0.4-  | 0.6+  |
| 2005 04 02 | G96 | 0.9+ | 0.2+ | 2007 10 08 | G96 | 0.2+ | 0.0  | 2007 10 20 | 704 | 0.9-  | 0.2+  |
| 2005 04 02 | G96 | 0.6- | 0.7- | 2007 10 08 | G96 | 0.5+ | 0.2+ | 2007 10 20 | 704 | 0.5+  | 0.6+  |
| 2005 04 02 | G96 | 0.3- | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.2+ | 2007 10 20 | 704 | 0.0   | 0.3+  |
| 2005 04 02 | G96 | 0.1+ | 0.1- | 2007 10 14 | 704 | 0.2- | 1.3- | 2007 10 30 | 703 | 1.1-  | 0.3-  |
| 2005 04 09 | G96 | 0.2+ | 0.3+ | 2007 10 14 | 704 | 1.1- | 0.5- | 2007 10 30 | 703 | 1.3-  | 0.8-  |
| 2005 04 09 | G96 | 0.3+ | 0.9- | 2007 10 14 | 704 | 0.1- | 0.7+ | 2007 10 30 | 703 | 0.6-  | 0.4-  |
| 2005 04 09 | G96 | 0.5- | 0.3+ | 2007 10 14 | 704 | 0.4+ | 0.9- | 2007 10 30 | 703 | 0.4-  | 0.9-  |
| 2005 04 09 | G96 | 0.2- | 0.2+ | 2007 10 19 | G96 | 0.4+ | 0.4- | 2007 11 05 | 704 | (2.1- | 1.3+) |
| 2007 09 11 | G96 | 0.0  | 0.2+ | 2007 10 19 | G96 | 0.3+ | 0.3- | 2007 11 05 | 704 | 0.5-  | 0.2+  |
| 2007 09 11 | G96 | 0.0  | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.4- | 2007 11 05 | 704 | 0.6-  | 0.1+  |
| 2007 09 11 | G96 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 1.0+ | 0.5- | 2007 11 05 | 704 | 0.9+  | 1.1+  |
| 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 10 20 | 703 | 0.5+ | 0.2+ |            |     |       |       |

2007 TK<sub>240</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.56091   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27634342 | $\omega$ | 147.68867 | +0.94613752 | +0.32306106 |
| <i>a</i> | 2.3343715  | $\Omega$ | 193.51313 | -0.31306972 | +0.89609314 |
| <i>e</i> | 0.1427000  | <i>i</i> | 5.23957   | -0.08252963 | +0.30438238 |
| <i>P</i> | 3.57       | <i>H</i> | 17.8      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 29 | 691 | 0.2+ | 0.2+ | 2007 09 25 | G96 | 0.3- | 0.4- | 2007 10 15 | 703 | 0.9- | 0.8+ |
| 2000 10 29 | 691 | 0.1+ | 0.1+ | 2007 10 09 | 691 | 0.1+ | 0.3- | 2007 10 20 | 704 | 0.0  | 0.8+ |
| 2000 10 29 | 691 | 0.3- | 0.2- | 2007 10 09 | 691 | 1.1+ | 0.7- | 2007 10 20 | 704 | 1.1- | 0.3+ |
| 2006 04 02 | 691 | 0.2+ | 0.2+ | 2007 10 09 | 691 | 0.1- | 0.3+ | 2007 10 20 | 704 | 0.3+ | 0.4+ |
| 2006 04 02 | 691 | 0.0  | 0.4+ | 2007 10 13 | 691 | 0.2- | 0.1+ | 2007 10 20 | 704 | 0.2- | 0.1+ |
| 2006 04 02 | 691 | 0.1+ | 0.6+ | 2007 10 13 | 691 | 0.2+ | 0.4+ | 2007 11 07 | G96 | 0.0  | 0.4- |
| 2007 09 05 | G96 | 0.4- | 0.0  | 2007 10 13 | 691 | 0.2- | 0.2+ | 2007 11 07 | G96 | 0.5+ | 0.2- |
| 2007 09 05 | G96 | 0.3+ | 0.4- | 2007 10 14 | 704 | 0.3+ | 0.7- | 2007 11 07 | G96 | 0.2+ | 0.3- |
| 2007 09 05 | G96 | 0.2- | 0.1- | 2007 10 14 | 704 | 0.2- | 0.4+ | 2007 11 07 | G96 | 0.2+ | 0.1- |
| 2007 09 05 | G96 | 0.6+ | 0.1+ | 2007 10 14 | 704 | 0.8- | 0.3+ | 2007 11 13 | G96 | 0.2+ | 0.4- |
| 2007 09 25 | G96 | 0.1- | 0.3- | 2007 10 15 | 703 | 0.8- | 1.6+ | 2007 11 13 | G96 | 0.1+ | 0.1+ |
| 2007 09 25 | G96 | 0.1+ | 0.0  | 2007 10 15 | 703 | 0.2+ | 1.3+ | 2007 11 13 | G96 | 0.1+ | 0.2- |
| 2007 09 25 | G96 | 0.7- | 0.2- | 2007 10 15 | 703 | 1.4- | 0.8+ | 2007 11 13 | G96 | 0.1+ | 0.0  |

2007 TB<sub>241</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 324.94298  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.23475044 | $\omega$ | 254.00430 | +0.19074650 | -0.98144559 |
| <i>a</i> | 2.6025461  | $\Omega$ | 185.12034 | +0.96333073 | +0.19097106 |
| <i>e</i> | 0.1518980  | <i>i</i> | 12.62199  | +0.18870530 | +0.01716442 |
| <i>P</i> | 4.20       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 703 | 0.5- | 0.8+ | 2007 10 07 | 703 | 0.1- | 1.0+ | 2007 10 20 | G96 | 0.5- | 0.3- |
| 2003 11 20 | 703 | 1.3+ | 0.2- | 2007 10 07 | 703 | 0.2- | 0.5+ | 2007 11 07 | 703 | 0.4- | 0.3- |
| 2003 11 20 | 703 | 0.2+ | 1.2+ | 2007 10 12 | 703 | 0.3+ | 0.9+ | 2007 11 07 | 703 | 0.0  | 0.6- |
| 2003 11 20 | 703 | 1.2- | 0.5- | 2007 10 12 | 703 | 0.0  | 0.5+ | 2007 11 07 | 703 | 0.6- | 0.6+ |
| 2003 11 24 | 683 | 0.2+ | 1.2- | 2007 10 12 | 703 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.3+ | 0.2+ |
| 2003 11 24 | 683 | 1.1+ | 0.1+ | 2007 10 12 | 703 | 0.7- | 0.2+ | 2007 11 11 | 704 | 0.1+ | 0.7+ |
| 2003 11 24 | 683 | 1.2- | 0.3- | 2007 10 13 | 683 | 0.2+ | 0.4- | 2007 11 11 | 704 | 0.3+ | 0.5+ |
| 2005 04 01 | 691 | 0.1- | 0.3+ | 2007 10 13 | 683 | 1.2+ | 0.1- | 2007 11 11 | 704 | 0.4+ | 0.8+ |
| 2005 04 01 | 691 | 0.3+ | 0.1+ | 2007 10 19 | 699 | 0.6+ | 0.7- | 2007 11 11 | 704 | 0.1- | 0.8+ |
| 2005 04 01 | 691 | 0.1- | 0.2+ | 2007 10 19 | 699 | 0.3- | 1.5- | 2007 11 15 | 703 | 0.3+ | 1.8- |
| 2005 04 12 | 691 | 0.0  | 0.3- | 2007 10 19 | 699 | 0.6+ | 0.8+ | 2007 11 15 | 703 | 0.4+ | 1.0- |
| 2005 04 12 | 691 | 0.1- | 0.0  | 2007 10 19 | 699 | 0.1- | 0.3+ | 2007 11 15 | 703 | 1.1- | 0.3- |
| 2005 04 12 | 691 | 0.1+ | 0.3+ | 2007 10 20 | G96 | 0.4- | 0.2- | 2007 11 15 | 703 | 0.4- | 0.8+ |
| 2007 10 07 | 703 | 0.2+ | 0.2+ | 2007 10 20 | G96 | 0.2- | 0.3- |            |     |      |      |
| 2007 10 07 | 703 | 0.0  | 0.5- | 2007 10 20 | G96 | 0.0  | 0.4- |            |     |      |      |

**2007 TH<sub>241</sub> = 1998 DT<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 307.00617  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.28113230 | $\omega$ | 263.36922 | -0.20263671   | -0.97884618 |  |
| <i>a</i> | 2.3077861  | $\Omega$ | 198.39565 | +0.93011465   | -0.18336180 |  |
| <i>e</i> | 0.1118569  | <i>i</i> | 5.13740   | +0.30630882   | -0.09076679 |  |
| <i>P</i> | 3.51       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 23 | 691 | 0.5+ | 0.2+ | 2005 02 02 | 703 | 0.3+ | 1.1+ | 2007 10 14 | 691 | 0.3- | 0.8+ |
| 1998 02 23 | 691 | 0.7+ | 0.1+ | 2005 02 02 | 703 | 0.1+ | 0.5+ | 2007 10 14 | 691 | 0.3- | 0.2- |
| 1998 02 23 | 691 | 0.2+ | 1.1- | 2005 02 02 | 703 | 0.1+ | 0.7+ | 2007 10 18 | 691 | 0.4- | 0.3- |
| 1998 03 02 | 691 | 0.5- | 0.2+ | 2005 02 02 | 703 | 0.1+ | 0.1- | 2007 10 18 | 691 | 0.0  | 0.1+ |
| 1998 03 02 | 691 | 0.5- | 0.0  | 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 10 18 | 691 | 0.1- | 0.4+ |
| 1998 03 02 | 691 | 0.6- | 0.0  | 2007 10 07 | G96 | 0.3+ | 0.0  | 2007 11 07 | G96 | 0.4+ | 0.5- |
| 2002 04 09 | 807 | 0.1+ | 0.3+ | 2007 10 07 | G96 | 0.7+ | 0.1+ | 2007 11 07 | G96 | 0.6+ | 0.6- |
| 2002 04 09 | 807 | 0.0  | 0.2+ | 2007 10 07 | G96 | 0.5+ | 0.2- | 2007 11 07 | G96 | 0.7+ | 0.6- |
| 2002 04 09 | 807 | 0.1+ | 0.2+ | 2007 10 14 | 691 | 0.1+ | 0.1- | 2007 11 07 | G96 | 0.3+ | 0.2- |

**2007 TQ<sub>241</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 80.79208   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.30705374 | $\omega$ | 254.70226 | +0.64055883   | +0.76711389 |  |
| <i>a</i> | 2.1760045  | $\Omega$ | 55.18479  | -0.68720771   | +0.59295072 |  |
| <i>e</i> | 0.0912131  | <i>i</i> | 2.43899   | -0.34268052   | +0.24483815 |  |
| <i>P</i> | 3.21       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 24 | G96 | 0.5+ | 0.3+ | 2007 10 07 | G96 | 0.2+ | 0.4- | 2007 11 09 | G96 | 0.5+ | 0.1+ |
| 2006 03 24 | G96 | 0.4+ | 0.2+ | 2007 10 07 | G96 | 0.9+ | 0.5- | 2007 11 09 | G96 | 0.1- | 0.0  |
| 2006 03 24 | G96 | 0.1+ | 0.0  | 2007 10 14 | 691 | 1.2- | 0.7- | 2007 11 17 | G96 | 0.0  | 0.1+ |
| 2006 03 24 | G96 | 0.3+ | 0.4+ | 2007 10 14 | 691 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.5- | 0.4+ |
| 2006 05 22 | G96 | 0.1+ | 0.0  | 2007 10 14 | 691 | 0.4+ | 0.4+ | 2007 11 17 | G96 | 0.4+ | 0.1- |
| 2006 05 22 | G96 | 0.6- | 0.1- | 2007 10 18 | 691 | 0.6- | 0.8+ | 2007 11 17 | G96 | 0.5+ | 0.2+ |
| 2006 05 22 | G96 | 0.0  | 0.0  | 2007 10 18 | 691 | 0.2+ | 0.7+ | 2007 12 06 | G96 | 0.0  | 0.1+ |
| 2006 05 22 | G96 | 0.5- | 0.0  | 2007 10 18 | 691 | 0.1- | 0.0  | 2007 12 06 | G96 | 0.0  | 0.2- |
| 2007 09 13 | G96 | 0.1+ | 0.5- | 2007 10 30 | G96 | 0.6+ | 0.2+ | 2007 12 06 | G96 | 1.0- | 0.0  |
| 2007 09 13 | G96 | 0.3+ | 0.2- | 2007 10 30 | G96 | 0.4+ | 0.1- | 2007 12 06 | G96 | 0.2+ | 0.4- |
| 2007 09 13 | G96 | 0.1- | 0.4- | 2007 10 30 | G96 | 0.7+ | 0.1- | 2007 12 15 | G96 | 0.5+ | 0.6- |
| 2007 09 13 | G96 | 0.1+ | 0.7- | 2007 10 30 | G96 | 0.9+ | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.5- |
| 2007 10 07 | G96 | 0.1+ | 0.2- | 2007 11 09 | G96 | 0.2+ | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.6- |
| 2007 10 07 | G96 | 0.2+ | 0.3- | 2007 11 09 | G96 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.6- |

**2007 TB<sub>242</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 338.85571  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.29389281 | $\omega$ | 172.81653 | +0.77373264   | -0.62310144 |  |
| <i>a</i> | 2.2404920  | $\Omega$ | 226.39027 | +0.57309600   | +0.76538877 |  |
| <i>e</i> | 0.1354368  | <i>i</i> | 9.08904   | +0.26999773   | +0.16101127 |  |
| <i>P</i> | 3.35       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 21 | 691 | 0.0  | 0.0  | 2006 05 04 | G96 | 0.5- | 0.8+ | 2007 10 08 | 703 | 0.2- | 0.7- |
| 1997 10 21 | 691 | 0.3- | 0.0  | 2006 05 04 | G96 | 0.1+ | 0.2+ | 2007 10 14 | 703 | 0.8- | 0.5+ |
| 1997 10 21 | 691 | 0.3+ | 0.3- | 2006 05 04 | G96 | 0.2+ | 0.1+ | 2007 10 14 | 703 | 0.0  | 0.6+ |
| 2002 02 08 | 644 | 0.5+ | 0.1+ | 2006 05 25 | G96 | 0.1+ | 0.4+ | 2007 10 14 | 703 | 0.3- | 0.1+ |
| 2002 02 08 | 644 | 0.9+ | 0.0  | 2006 05 25 | G96 | 0.3+ | 0.3+ | 2007 10 14 | 703 | 0.1- | 0.7+ |
| 2002 02 08 | 644 | 0.4+ | 0.2- | 2006 05 25 | G96 | 0.3- | 0.2+ | 2007 10 19 | 703 | 0.1- | 0.3- |
| 2004 09 16 | 691 | 0.0  | 0.1- | 2007 09 05 | 699 | 0.2- | 0.2- | 2007 10 19 | 703 | 0.6+ | 0.7+ |
| 2004 09 16 | 691 | 0.0  | 0.3+ | 2007 09 05 | 699 | 0.3+ | 1.0+ | 2007 10 19 | 703 | 0.0  | 0.2- |
| 2004 09 16 | 691 | 0.1- | 0.0  | 2007 09 05 | 699 | 0.0  | 0.9+ | 2007 10 19 | 703 | 0.1- | 0.1- |
| 2005 02 04 | 691 | 0.0  | 0.1+ | 2007 09 05 | 699 | 0.0  | 0.4+ | 2007 12 04 | 703 | 0.1- | 0.2+ |
| 2005 02 04 | 691 | 0.4- | 0.0  | 2007 10 08 | 703 | 0.0  | 0.1+ | 2007 12 04 | 703 | 0.9+ | 0.1- |
| 2005 02 04 | 691 | 0.0  | 0.3+ | 2007 10 08 | 703 | 0.3+ | 0.1+ | 2007 12 04 | 703 | 0.1- | 0.9- |
| 2006 05 04 | G96 | 0.4- | 0.3+ | 2007 10 08 | 703 | 0.0  | 0.7- | 2007 12 04 | 703 | 0.5+ | 0.3+ |

**2007 TG<sub>243</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.24928   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.22973312 | $\omega$ | 308.61733 | +0.04175728   | +0.99137773 |  |
| <i>a</i> | 2.6403022  | $\Omega$ | 323.19282 | -0.84012469   | -0.03244497 |  |
| <i>e</i> | 0.2874719  | <i>i</i> | 11.96468  | -0.54078354   | +0.12695479 |  |
| <i>P</i> | 4.29       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 22 | 645 | 0.2- | 0.1- | 2006 03 25 | 644 | 0.7+ | 0.2+ | 2007 10 08 | 703 | 0.8+  | 0.3+  |
| 2001 02 22 | 645 | 0.2- | 0.0  | 2006 03 25 | 644 | 0.5+ | 0.1+ | 2007 10 08 | 703 | 0.3+  | 1.2-  |
| 2003 10 03 | 691 | 0.2+ | 0.2- | 2006 03 25 | 644 | 0.3+ | 0.0  | 2007 10 08 | 703 | 0.3-  | 0.3-  |
| 2003 10 03 | 691 | 0.2+ | 0.3+ | 2007 09 12 | 703 | 0.3+ | 1.2+ | 2007 10 14 | 703 | 0.5-  | 0.7+  |
| 2003 10 03 | 691 | 0.3+ | 0.1+ | 2007 09 12 | 703 | 0.4- | 0.4+ | 2007 10 14 | 703 | 0.3+  | 0.1+  |
| 2003 11 21 | 644 | 0.2+ | 0.0  | 2007 09 12 | 703 | 0.8- | 0.5+ | 2007 10 14 | 703 | 0.4-  | 0.6+  |
| 2003 11 21 | 644 | 0.5- | 0.2+ | 2007 09 12 | 703 | 0.7- | 0.3+ | 2007 10 14 | 703 | 0.1-  | 0.2+  |
| 2003 11 21 | 644 | 0.2- | 0.0  | 2007 09 18 | 703 | 0.2+ | 0.5- | 2007 10 14 | 703 | 0.4-  | 0.8-  |
| 2006 02 24 | 703 | 0.6- | 0.1+ | 2007 09 18 | 703 | 0.7+ | 0.3+ | 2007 10 14 | 703 | 0.2-  | 0.3-  |
| 2006 02 24 | 703 | 0.7- | 0.2- | 2007 09 18 | 703 | 0.4+ | 0.2- | 2007 10 14 | 703 | 0.6-  | 0.4-  |
| 2006 02 24 | 703 | 0.3- | 0.1+ | 2007 09 18 | 703 | 1.0+ | 0.1+ | 2007 10 14 | 703 | (0.7+ | 2.2-) |
| 2006 02 24 | 703 | 0.7+ | 0.2+ | 2007 10 08 | 703 | 0.2- | 0.5- |            |     |       |       |

**2007 TU<sub>244</sub> = 2003 QL<sub>117</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.94917   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.26844336 | $\omega$ | 101.03259 | +0.97539234   | -0.19186188 |  |
| <i>a</i> | 2.3799488  | $\Omega$ | 270.09499 | +0.13465089   | +0.90850353 |  |
| <i>e</i> | 0.1213381  | <i>i</i> | 6.23591   | +0.17458211   | +0.37122816 |  |
| <i>P</i> | 3.67       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 04 | 691 | 0.7- | 0.6+ | 2007 10 12 | 699 | 0.1- | 0.5+ | 2007 11 02 | 704 | 0.1+ | 0.5- |
| 2001 01 04 | 691 | 0.4+ | 0.1+ | 2007 10 12 | 699 | 0.0  | 0.3- | 2007 11 02 | 704 | 0.2+ | 0.0  |
| 2001 01 04 | 691 | 0.3+ | 0.3- | 2007 10 12 | 699 | 0.5- | 0.5- | 2007 11 02 | 704 | 0.1- | 0.3+ |
| 2003 07 25 | 599 | 0.1+ | 0.5+ | 2007 10 12 | 699 | 0.5- | 0.7- | 2007 11 08 | 704 | 0.3+ | 0.3+ |
| 2003 07 25 | 599 | 0.0  | 0.6+ | 2007 10 14 | 703 | 0.1+ | 0.3+ | 2007 11 08 | 704 | 0.8+ | 0.5+ |
| 2003 07 25 | 599 | 0.3- | 0.1+ | 2007 10 14 | 703 | 1.0- | 0.5+ | 2007 11 08 | 704 | 0.5+ | 0.2+ |
| 2003 07 26 | 599 | 0.1+ | 0.4- | 2007 10 14 | 703 | 0.6- | 0.4- | 2007 11 08 | 704 | 0.3+ | 0.6- |
| 2003 08 20 | 599 | 0.2- | 0.0  | 2007 10 14 | 703 | 0.4+ | 0.1+ | 2007 11 08 | 704 | 0.6- | 0.4+ |
| 2003 08 20 | 599 | 0.1+ | 0.1- | 2007 10 21 | 703 | 0.5+ | 0.5+ | 2007 11 17 | 704 | 0.5+ | 0.1+ |
| 2003 08 20 | 599 | 0.0  | 0.1- | 2007 10 21 | 703 | 0.4- | 0.6+ | 2007 11 17 | 704 | 0.4+ | 0.7+ |
| 2007 10 08 | 703 | 0.8- | 0.6- | 2007 10 21 | 703 | 1.5+ | 0.6+ | 2007 11 17 | 704 | 0.5+ | 0.5+ |
| 2007 10 08 | 703 | 0.5- | 0.3- | 2007 10 21 | 703 | 0.8+ | 0.8+ | 2007 11 17 | 704 | 0.1- | 0.1+ |
| 2007 10 08 | 703 | 1.0- | 0.1- | 2007 11 01 | 703 | 0.1- | 0.9- | 2007 11 17 | 704 | 0.4+ | 0.4+ |
| 2007 10 08 | 703 | 0.9- | 0.2- | 2007 11 01 | 703 | 0.0  | 0.7- | 2007 12 13 | 704 | 0.3+ | 1.0- |
| 2007 10 08 | 703 | 0.1+ | 0.3- | 2007 11 01 | 703 | 0.2+ | 0.8- | 2007 12 13 | 704 | 0.3+ | 0.5- |
| 2007 10 08 | 703 | 0.2- | 0.2- | 2007 11 01 | 703 | 0.2- | 0.1- | 2007 12 13 | 704 | 0.3+ | 1.1- |
| 2007 10 08 | 703 | 0.1+ | 0.1+ | 2007 11 02 | 704 | 0.1+ | 0.4+ |            |     |      |      |
| 2007 10 08 | 703 | 0.1- | 0.8+ | 2007 11 02 | 704 | 0.4- | 0.1+ |            |     |      |      |

**2007 TH<sub>245</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 15.87964   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.22023790 | $\omega$ | 59.92362  | +0.97941927   | -0.16953184 |  |
| <i>a</i> | 2.7156555  | $\Omega$ | 309.60905 | +0.09786450   | +0.87349376 |  |
| <i>e</i> | 0.1740215  | <i>i</i> | 8.17348   | +0.17652317   | +0.45636346 |  |
| <i>P</i> | 4.48       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 07 04 | 644 | 0.4- | 0.2+ | 2002 08 17 | 644 | 0.0  | 0.0  | 2007 11 01 | 703 | 0.0   | 0.5+  |
| 2002 07 04 | 644 | 0.2+ | 0.2+ | 2002 08 27 | 644 | 0.3- | 0.6+ | 2007 11 01 | 703 | 0.9-  | 0.7+  |
| 2002 07 04 | 644 | 0.1+ | 0.2+ | 2002 08 27 | 644 | 0.4+ | 0.0  | 2007 11 01 | 703 | (1.7- | 0.8+) |
| 2002 07 05 | 644 | 0.1- | 0.3+ | 2002 08 27 | 644 | 0.2+ | 0.3+ | 2007 11 01 | 703 | (1.9- | 0.0 ) |
| 2002 07 05 | 644 | 0.1- | 0.5+ | 2002 08 27 | 644 | 0.0  | 0.3+ | 2007 11 03 | 704 | 0.4-  | 0.3+  |
| 2002 07 13 | 608 | 0.1+ | 0.3- | 2002 08 27 | 644 | 0.0  | 0.2+ | 2007 11 03 | 704 | 0.8-  | 0.1+  |



## 2007 DEC. 24

## M.P.O. 129891

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2002 07 13 | 608 | 0.1+ | 0.6− | 2002 08 27 | 644 | 0.0         | 0.1+ | 2007 11 03 | 704 | 0.4− | 0.2− |
| 2002 07 13 | 608 | 0.6+ | 0.3− | 2004 02 26 | 695 | 0.0         | 0.0  | 2007 11 03 | 704 | 0.1− | 0.2− |
| 2002 07 14 | 644 | 0.2− | 0.1− | 2004 02 26 | 695 | 0.1−        | 0.0  | 2007 11 03 | 704 | 0.9− | 0.1+ |
| 2002 07 14 | 644 | 0.3− | 0.1− | 2007 10 08 | 703 | 0.4−        | 0.5− | 2007 11 09 | 704 | 0.1− | 0.3− |
| 2002 07 14 | 644 | 0.1− | 0.4+ | 2007 10 08 | 703 | 0.5−        | 0.1− | 2007 11 09 | 704 | 0.4− | 0.4− |
| 2002 07 17 | 644 | 0.0  | 0.1+ | 2007 10 08 | 703 | 1.2−        | 0.3− | 2007 11 09 | 704 | 0.3− | 0.3+ |
| 2002 07 17 | 644 | 0.2− | 0.0  | 2007 10 08 | 703 | 0.3−        | 0.1+ | 2007 11 09 | 704 | 0.5− | 0.5− |
| 2002 08 08 | 644 | 0.1− | 0.5+ | 2007 10 12 | 699 | 0.6+        | 0.1− | 2007 11 09 | 704 | 0.5− | 0.6− |
| 2002 08 08 | 644 | 0.5+ | 0.4+ | 2007 10 12 | 699 | (1.7+ 0.6−) |      | 2007 11 09 | 703 | 0.8+ | 0.1+ |
| 2002 08 08 | 644 | 0.2+ | 0.1+ | 2007 10 12 | 699 | 1.4+        | 0.7− | 2007 11 09 | 703 | 0.3+ | 1.2− |
| 2002 08 15 | 291 | 0.2− | 0.2− | 2007 10 12 | 699 | 0.3+        | 0.4+ | 2007 11 09 | 703 | 0.7+ | 0.3+ |
| 2002 08 15 | 291 | 0.2− | 0.4− | 2007 10 14 | 703 | 0.6+        | 0.2+ | 2007 11 09 | 703 | 0.2+ | 0.4− |
| 2002 08 15 | 291 | 0.1− | 0.4− | 2007 10 14 | 703 | 0.0         | 0.4− | 2007 12 02 | 704 | 0.6+ | 1.3+ |
| 2002 08 17 | 644 | 0.5+ | 1.0+ | 2007 10 14 | 703 | 0.1+        | 0.2+ | 2007 12 02 | 704 | 1.1+ | 0.8+ |
| 2002 08 17 | 644 | 0.6+ | 0.4+ | 2007 10 14 | 703 | 0.2+        | 0.5+ | 2007 12 02 | 704 | 0.9+ | 0.0  |

2007 TN<sub>246</sub> = 1994 RU<sub>19</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 32.33965   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.23469948 | $\omega$ | 19.84267  | +0.99737389 |      | −0.04860603 |   |  |  |  |  |
| <i>a</i>                                | 2.6029229  | $\Omega$ | 342.67998 | +0.01115623 |      | +0.83560382 |   |  |  |  |  |
| <i>e</i>                                | 0.1642890  | <i>i</i> | 10.39012  | +0.07156026 |      | +0.54717795 |   |  |  |  |  |
| <i>P</i>                                | 4.20       | <i>H</i> | 16.0      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |             |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|-------------|------|
| 1994 09 05 | 809 | 0.4− | 0.5− | 2007 10 09 | 703 | 0.2+        | 1.0+ | 2007 11 17 | G96 | 0.0         | 0.9− |
| 1994 09 05 | 809 | 0.1− | 1.5+ | 2007 10 09 | 703 | (0.8+ 1.7+) |      | 2007 11 18 | 703 | (0.1− 1.7+) |      |
| 1994 09 05 | 809 | 0.2+ | 0.8+ | 2007 10 09 | 703 | 0.6+        | 0.1− | 2007 11 18 | 703 | 0.1+        | 1.2− |
| 1994 09 06 | 809 | 0.1+ | 0.6+ | 2007 10 12 | 699 | 0.3+        | 1.1+ | 2007 11 18 | 703 | 0.4−        | 0.9− |
| 1994 09 06 | 809 | 1.4− | 0.7+ | 2007 10 12 | 699 | 0.2+        | 0.9+ | 2007 11 18 | 703 | (2.6− 1.5−) |      |
| 1994 09 06 | 809 | 1.1− | 1.1+ | 2007 10 12 | 699 | 1.2+        | 0.1− | 2007 12 03 | 704 | 1.0−        | 1.1+ |
| 2005 03 13 | 691 | 0.4+ | 0.5+ | 2007 10 12 | 699 | 0.5+        | 0.7+ | 2007 12 03 | 704 | 0.8−        | 0.2+ |
| 2005 03 13 | 691 | 0.1+ | 0.2+ | 2007 11 17 | G96 | 0.0         | 0.9− | 2007 12 03 | 704 | 1.5−        | 0.4+ |
| 2005 03 13 | 691 | 0.6+ | 0.8+ | 2007 11 17 | G96 | 0.0         | 0.9− | 2007 12 03 | 704 | 0.2+        | 1.4+ |
| 2007 10 09 | 703 | 0.4+ | 0.6+ | 2007 11 17 | G96 | 0.0         | 1.0− |            |     |             |      |

2007 TV<sub>246</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 359.13610  |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.20071909 | $\omega$ | 97.85366  | +0.75815438 |      | −0.62894113 |   |  |  |  |  |
| <i>a</i>                                | 2.8889737  | $\Omega$ | 301.29504 | +0.49017440 |      | +0.72380190 |   |  |  |  |  |
| <i>e</i>                                | 0.2003332  | <i>i</i> | 11.62234  | +0.43003604 |      | +0.28380251 |   |  |  |  |  |
| <i>P</i>                                | 4.91       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 02 11 | 691 | 0.4− | 0.2+ | 2007 10 09 | 703 | 0.4− | 0.0  | 2007 11 03 | 703 | 0.2− | 0.0  |
| 1994 02 11 | 691 | 0.1− | 0.3− | 2007 10 09 | 703 | 0.9+ | 0.4− | 2007 11 03 | 703 | 0.8− | 0.3− |
| 1994 02 11 | 691 | 0.2+ | 0.2− | 2007 10 12 | 699 | 0.9+ | 0.6− | 2007 11 12 | 703 | 0.8+ | 0.8+ |
| 2002 10 06 | 699 | 0.3− | 0.7− | 2007 10 12 | 699 | 0.9− | 0.0  | 2007 11 12 | 703 | 0.7+ | 1.3+ |
| 2002 10 06 | 699 | 1.0− | 1.4− | 2007 10 12 | 699 | 1.0− | 0.2− | 2007 11 12 | 703 | 0.5+ | 0.8+ |
| 2002 10 06 | 699 | 0.6+ | 1.3+ | 2007 10 12 | 699 | 0.7− | 0.9− | 2007 11 12 | 703 | 0.3+ | 0.4+ |
| 2002 10 06 | 699 | 0.8+ | 0.8+ | 2007 10 16 | 703 | 0.6− | 0.5+ | 2007 11 14 | G96 | 0.7+ | 0.7− |
| 2003 12 19 | 291 | 0.2− | 0.2+ | 2007 10 16 | 703 | 0.6− | 1.1+ | 2007 11 14 | G96 | 0.5+ | 0.3− |
| 2003 12 19 | 291 | 0.0  | 0.0  | 2007 10 16 | 703 | 0.6− | 0.1+ | 2007 11 14 | G96 | 0.6+ | 0.2− |
| 2003 12 19 | 291 | 0.7+ | 0.1+ | 2007 10 16 | 703 | 1.0− | 0.4− | 2007 11 14 | G96 | 0.8+ | 0.6− |
| 2007 10 09 | 703 | 0.4+ | 0.4+ | 2007 11 03 | 703 | 0.2− | 0.3− |            |     |      |      |
| 2007 10 09 | 703 | 0.4− | 0.4− | 2007 11 03 | 703 | 0.0  | 0.1− |            |     |      |      |

2007 TJ<sub>247</sub> = 2003 YO<sub>169</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 15.45571   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.22798153 | $\omega$ | 318.74672 | +0.88620038 |      | −0.43117442 |   |  |  |  |  |
| <i>a</i>                                | 2.6538087  | $\Omega$ | 67.54637  | +0.45844208 |      | +0.76323560 |   |  |  |  |  |
| <i>e</i>                                | 0.1020645  | <i>i</i> | 10.56945  | +0.06693092 |      | +0.48120685 |   |  |  |  |  |
| <i>P</i>                                | 4.32       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 18 | 704 | 0.1− | 0.4+ | 2007 10 12 | G96 | 0.1− | 0.1− | 2007 11 17 | 703 | 0.3− | 0.3+ |
| 2003 12 18 | 704 | 0.4− | 0.8− | 2007 10 12 | G96 | 0.1+ | 0.2+ | 2007 11 17 | 703 | 0.1− | 0.6− |
| 2003 12 18 | 704 | 0.5+ | 0.1− | 2007 11 08 | G96 | 0.1+ | 0.3− | 2007 11 20 | 691 | 0.2− | 0.2− |
| 2003 12 28 | 704 | 0.2+ | 0.4+ | 2007 11 08 | G96 | 0.1+ | 0.2− | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2003 12 28 | 704 | 0.1+ | 0.2+ | 2007 11 08 | G96 | 0.2− | 0.2− | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2003 12 28 | 704 | 0.3− | 0.3− | 2007 11 08 | G96 | 0.1+ | 0.2− | 2007 12 04 | 704 | 0.7+ | 1.2+ |
| 2007 10 09 | D29 | 0.8+ | 0.4+ | 2007 11 15 | 699 | 0.1− | 0.0  | 2007 12 04 | 704 | 0.7+ | 1.0+ |
| 2007 10 09 | D29 | 0.4+ | 0.6− | 2007 11 15 | 699 | 0.5+ | 1.2+ | 2007 12 04 | 704 | 0.5+ | 1.0+ |
| 2007 10 09 | D29 | 0.2+ | 0.3+ | 2007 11 15 | 699 | 0.9+ | 0.2+ | 2007 12 05 | 691 | 0.2− | 0.1− |
| 2007 10 09 | D29 | 1.1− | 0.3− | 2007 11 15 | 699 | 1.2+ | 0.8+ | 2007 12 05 | 691 | 0.2− | 0.3− |
| 2007 10 12 | G96 | 0.1− | 0.1+ | 2007 11 17 | 703 | 1.0− | 0.1− | 2007 12 05 | 691 | 0.2− | 0.3− |
| 2007 10 12 | G96 | 0.2+ | 0.1+ | 2007 11 17 | 703 | 0.6+ | 0.3+ |            |     |      |      |

2007 TJ<sub>248</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 15.28254   |          | (2000.0)  | <i>P</i>    |      | <i>Q</i>    |   |  |  |  |  |
| <i>n</i>                                | 0.21642362 | $\omega$ | 112.22464 | +0.97635925 |      | −0.17609720 |   |  |  |  |  |
| <i>a</i>                                | 2.7474699  | $\Omega$ | 258.09542 | +0.11863605 |      | +0.92132348 |   |  |  |  |  |
| <i>e</i>                                | 0.1937195  | <i>i</i> | 7.36006   | +0.18068786 |      | +0.34663066 |   |  |  |  |  |
| <i>P</i>                                | 4.55       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

## Residuals in seconds of arc

|            |     |            |      |            |     |      |      |            |     |      |      |
|------------|-----|------------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 23 | 807 | 0.2+       | 0.8+ | 2007 10 10 | 699 | 0.2− | 0.4− | 2007 11 02 | 704 | 0.1− | 0.4+ |
| 2001 05 24 | 807 | 0.2+       | 0.8+ | 2007 10 10 | 699 | 0.1− | 0.8− | 2007 11 02 | 704 | 0.0  | 0.1+ |
| 2002 08 15 | 644 | 0.3−       | 0.1+ | 2007 10 12 | 699 | 0.5+ | 0.5− | 2007 11 03 | 704 | 0.2− | 1.3+ |
| 2002 08 15 | 644 | 0.1−       | 0.2+ | 2007 10 12 | 699 | 0.4− | 0.4+ | 2007 11 03 | 704 | 0.1− | 1.1+ |
| 2002 08 15 | 644 | 0.1−       | 0.3+ | 2007 10 12 | 699 | 0.7+ | 0.1− | 2007 11 03 | 704 | 1.0+ | 0.3+ |
| 2002 09 04 | 644 | 0.0        | 0.3+ | 2007 10 12 | 699 | 0.6+ | 0.1− | 2007 11 03 | 704 | 1.0− | 0.9+ |
| 2002 09 04 | 644 | 0.1+       | 0.2+ | 2007 10 21 | 703 | 0.6+ | 0.0  | 2007 11 03 | 704 | 0.1− | 0.2+ |
| 2002 09 04 | 644 | 0.2−       | 0.3+ | 2007 10 21 | 703 | 1.1+ | 0.3+ | 2007 11 08 | 704 | 0.2+ | 1.0+ |
| 2003 12 17 | 691 | 0.1−       | 0.2+ | 2007 10 21 | 703 | 0.9− | 1.1+ | 2007 11 08 | 704 | 0.6+ | 0.2+ |
| 2003 12 17 | 691 | 0.6+       | 0.0  | 2007 10 21 | 703 | 0.1+ | 0.1+ | 2007 11 08 | 704 | 0.2− | 0.1+ |
| 2003 12 17 | 691 | 0.3−       | 0.3+ | 2007 11 01 | 703 | 0.3− | 0.9− | 2007 11 08 | 704 | 1.1− | 0.9+ |
| 2007 09 25 | G96 | 0.0        | 0.5− | 2007 11 01 | 703 | 0.2− | 0.3− | 2007 11 17 | 704 | 0.8− | 0.5+ |
| 2007 09 25 | G96 | 0.2+       | 1.2− | 2007 11 01 | 703 | 0.2+ | 0.5− | 2007 11 17 | 704 | 0.5− | 0.5− |
| 2007 09 25 | G96 | 0.2+       | 0.6− | 2007 11 01 | 703 | 0.2+ | 1.3− | 2007 11 17 | 704 | 0.7− | 0.1− |
| 2007 09 25 | G96 | 0.4+       | 1.1− | 2007 11 02 | 704 | 0.4+ | 0.6+ | 2007 11 17 | 704 | 0.9− | 0.2− |
| 2007 10 10 | 699 | 0.4+       | 0.8− | 2007 11 02 | 704 | 0.2+ | 0.4+ | 2007 11 17 | 704 | 0.4− | 0.0  |
| 2007 10 10 | 699 | (0.0 2.0−) |      | 2007 11 02 | 704 | 0.0  | 0.3+ |            |     |      |      |

2007 TS<sub>248</sub> = 2004 YD<sub>34</sub>

|       |                                   |          |           |             |             |  |
|-------|-----------------------------------|----------|-----------|-------------|-------------|--|
| Epoch | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |             | MPC         |  |
| $M$   | 11.77239                          |          | (2000.0)  | $P$         | $Q$         |  |
| $n$   | 0.26450872                        | $\omega$ | 253.41502 | +0.98597831 | +0.07865103 |  |
| $a$   | 2.4034922                         | $\Omega$ | 101.89131 | -0.01979888 | +0.93086828 |  |
| $e$   | 0.1555690                         | $i$      | 8.65032   | -0.16569481 | +0.35678883 |  |
| $P$   | 3.73                              | $H$      | 16.8      | $G$ 0.15    | $U$ 3       |  |

**2007 TU<sub>248</sub> = 2003 YT<sub>167</sub> = 2006 HF<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 17.23525   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.21798325 | $\omega$ | 274.06333 | +0.94232496   | +0.29587735 |  |
| <i>a</i> | 2.7343491  | $\Omega$ | 68.78272  | -0.19930952   | +0.87160402 |  |
| <i>e</i> | 0.2361909  | <i>i</i> | 9.66218   | -0.26888543   | +0.39084911 |  |
| <i>P</i> | 4.52       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 27 | 699 | 0.7+ | 0.1- | 2006 04 27 | 691 | 0.4+ | 0.4+ | 2007 10 02 | E12 | 0.3- | 0.5- |
| 1998 09 27 | 699 | 0.7+ | 0.5+ | 2006 05 01 | 691 | 0.3+ | 0.3+ | 2007 10 02 | E12 | 0.2+ | 0.1+ |
| 1998 09 27 | 699 | 1.4- | 0.4- | 2006 05 01 | 691 | 0.1+ | 0.4+ | 2007 10 02 | E12 | 0.6- | 1.0+ |
| 2003 12 18 | 704 | 0.1- | 0.3+ | 2006 05 01 | 691 | 0.1- | 0.4+ | 2007 10 02 | E12 | 0.5- | 0.3- |
| 2003 12 18 | 704 | 0.4- | 1.1+ | 2007 09 05 | 703 | 0.4+ | 0.3+ | 2007 10 11 | 703 | 0.4+ | 0.3- |
| 2003 12 18 | 704 | 0.4+ | 0.5- | 2007 09 05 | 703 | 0.4- | 0.2- | 2007 10 11 | 703 | 0.6- | 0.4- |
| 2003 12 18 | 704 | 0.2+ | 0.2- | 2007 09 05 | 703 | 0.6- | 0.5+ | 2007 10 11 | 703 | 0.0  | 0.7- |
| 2003 12 29 | 691 | 0.2- | 0.2+ | 2007 09 05 | 703 | 1.2- | 0.3+ | 2007 10 11 | 703 | 0.1+ | 0.8- |
| 2003 12 29 | 691 | 0.2- | 0.1+ | 2007 09 14 | 703 | 0.2- | 0.7+ | 2007 10 12 | 703 | 0.1- | 0.2+ |
| 2003 12 29 | 691 | 0.0  | 0.5+ | 2007 09 14 | 703 | 0.6+ | 0.0  | 2007 10 12 | 703 | 0.1+ | 0.1+ |
| 2006 04 27 | 691 | 0.4+ | 0.2+ | 2007 09 14 | 703 | 0.2+ | 0.4+ | 2007 10 12 | 703 | 0.3+ | 0.3+ |
| 2006 04 27 | 691 | 0.3- | 0.2+ | 2007 09 14 | 703 | 1.5+ | 0.1- | 2007 10 12 | 703 | 0.1- | 0.4+ |

**2007 TD<sub>253</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 323.61832  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.24458908 | $\omega$ | 242.86857 | +0.22047364   | -0.97499670 |  |
| <i>a</i> | 2.5322777  | $\Omega$ | 194.47562 | +0.92965641   | +0.21867529 |  |
| <i>e</i> | 0.1818389  | <i>i</i> | 6.38523   | +0.29517847   | +0.03952925 |  |
| <i>P</i> | 4.03       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 22 | 807 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.3+ | 0.1- | 2007 10 18 | G96 | 0.0  | 0.1- |
| 2001 05 22 | 807 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.2- | 0.1- | 2007 10 18 | G96 | 0.0  | 0.0  |
| 2003 09 27 | 691 | 0.5- | 0.1- | 2007 10 14 | 291 | 0.1- | 0.1+ | 2007 10 18 | G96 | 0.5+ | 0.1+ |
| 2003 09 27 | 691 | 0.1- | 0.5+ | 2007 10 14 | 291 | 0.2- | 0.5+ | 2007 11 04 | 691 | 0.6- | 0.5- |
| 2003 09 27 | 691 | 0.1- | 0.1+ | 2007 10 14 | 291 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.5- | 0.0  |
| 2003 10 16 | 691 | 0.4+ | 0.4+ | 2007 10 14 | G96 | 0.0  | 0.1- | 2007 11 04 | 691 | 0.1- | 0.2- |
| 2003 10 16 | 691 | 0.2+ | 0.5- | 2007 10 14 | G96 | 0.2+ | 0.0  | 2007 11 13 | 691 | 0.0  | 0.3+ |
| 2003 10 16 | 691 | 0.0  | 0.1- | 2007 10 14 | G96 | 0.1+ | 0.2- | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2007 10 08 | G96 | 0.1+ | 0.1+ | 2007 10 14 | G96 | 0.1- | 0.3- | 2007 11 13 | 691 | 0.1+ | 0.2+ |
| 2007 10 08 | G96 | 0.2+ | 0.1- | 2007 10 18 | G96 | 0.2+ | 0.0  |            |     |      |      |

**2007 TT<sub>253</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 40.78692   | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.26209200 | $\omega$ | 183.52771 | +0.92862177   | +0.37087268 |  |
| <i>a</i> | 2.4182445  | $\Omega$ | 154.69455 | -0.33979414   | +0.86170441 |  |
| <i>e</i> | 0.0888443  | <i>i</i> | 1.43805   | -0.14900187   | +0.34629317 |  |
| <i>P</i> | 3.76       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 4  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 21 | 691 | 0.1+ | 0.3+ | 2007 09 11 | G96 | 0.5+ | 1.0- | 2007 10 14 | 291 | 0.2- | 0.3+ |
| 2003 09 21 | 691 | 0.1+ | 0.0  | 2007 09 11 | G96 | 0.1- | 0.5- | 2007 10 14 | 291 | 0.3- | 0.3+ |
| 2003 09 21 | 691 | 0.5- | 0.1+ | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 10 18 | G96 | 0.1+ | 0.1- |
| 2003 10 24 | 695 | 0.2+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.7+ | 2007 10 18 | G96 | 0.1+ | 0.1- |
| 2003 10 24 | 695 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.2+ | 2007 10 18 | G96 | 0.0  | 0.0  |
| 2007 09 11 | G96 | 0.1+ | 0.5- | 2007 10 08 | G96 | 0.0  | 0.1+ | 2007 10 18 | G96 | 0.1- | 0.1- |
| 2007 09 11 | G96 | 0.0  | 0.2- | 2007 10 14 | 291 | 0.4- | 0.4+ |            |     |      |      |

**2007 TG<sub>254</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 140.19360  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.25189053 | $\omega$ | 193.13868 | -0.31599745   | +0.94102240 |  |
| <i>a</i> | 2.4831035  | $\Omega$ | 58.55847  | -0.85715299   | -0.22851824 |  |
| <i>e</i> | 0.1079509  | <i>i</i> | 8.14818   | -0.40673622   | -0.24951204 |  |
| <i>P</i> | 3.91       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|------|
| 1994 05 01 | 691 | 0.7- | 0.0  | 2007 10 08 | G96 | 0.6+ | 0.0  | 2007 11 07 | G96 | 0.4+  | 0.4- |
| 1994 05 01 | 691 | 0.8+ | 0.2+ | 2007 10 13 | 691 | 1.0- | 0.1+ | 2007 11 14 | 704 | (2.0+ | 0.0) |
| 1994 05 01 | 691 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.2- | 0.2- | 2007 11 14 | 704 | 0.8+  | 0.3- |
| 2001 02 21 | 645 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.1- | 0.1- | 2007 11 14 | 704 | 1.2+  | 0.1+ |
| 2001 02 21 | 645 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.1+ | 2007 11 14 | 704 | 0.4-  | 0.1+ |
| 2003 10 21 | 691 | 0.1- | 0.2+ | 2007 11 02 | G96 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.2+  | 0.6+ |
| 2003 10 21 | 691 | 0.1- | 0.1+ | 2007 11 02 | G96 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.4+  | 0.3- |
| 2003 10 21 | 691 | 0.0  | 0.1+ | 2007 11 02 | G96 | 0.5+ | 0.1+ | 2007 12 05 | 704 | 0.1+  | 0.2+ |
| 2007 10 08 | G96 | 0.4+ | 0.3+ | 2007 11 07 | G96 | 0.6+ | 0.1+ | 2007 12 05 | 704 | 0.6-  | 0.9- |
| 2007 10 08 | G96 | 0.5+ | 0.2+ | 2007 11 07 | G96 | 0.0  | 0.2- |            |     |       |      |
| 2007 10 08 | G96 | 0.0  | 0.5+ | 2007 11 07 | G96 | 0.5+ | 0.2- |            |     |       |      |

**2007 TQ<sub>254</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 3.13743    | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.18377618 | $\omega$ | 270.54077 | +0.82095537   | -0.56866136 |  |
| <i>a</i> | 3.0639140  | $\Omega$ | 124.11721 | +0.54551538   | +0.75446089 |  |
| <i>e</i> | 0.1279033  | <i>i</i> | 3.56934   | +0.16865718   | +0.32773926 |  |
| <i>P</i> | 5.36       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 5  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 29 | 691 | 0.4+ | 0.1+ | 2007 11 03 | G96 | 0.2+ | 0.4- | 2007 11 12 | 704 | 0.5+ | 0.5+ |
| 1998 02 03 | 691 | 0.3- | 0.5- | 2007 11 03 | G96 | 0.3+ | 0.1- | 2007 11 12 | 704 | 1.0+ | 1.4+ |
| 1998 02 03 | 691 | 0.3- | 0.4+ | 2007 11 03 | G96 | 0.3+ | 0.3- | 2007 11 12 | 704 | 0.6- | 0.4+ |
| 1998 02 03 | 691 | 0.2+ | 0.1- | 2007 11 03 | G96 | 0.5+ | 0.2- | 2007 11 13 | G96 | 0.3- | 0.4- |
| 2007 10 08 | G96 | 0.3+ | 0.4- | 2007 11 07 | 704 | 0.2- | 0.8+ | 2007 11 13 | G96 | 0.3- | 0.3- |
| 2007 10 08 | G96 | 0.4+ | 0.2- | 2007 11 07 | 704 | 0.4- | 0.5+ | 2007 11 13 | G96 | 0.4- | 0.3- |
| 2007 10 08 | G96 | 0.4+ | 0.4- | 2007 11 07 | 704 | 0.5+ | 0.0  | 2007 11 13 | G96 | 0.0  | 0.6- |
| 2007 10 08 | G96 | 0.9+ | 0.0  | 2007 11 07 | 703 | 1.4+ | 1.1+ | 2007 11 13 | G96 | 0.4- | 0.1- |
| 2007 10 13 | 691 | 0.2- | 0.1- | 2007 11 07 | 703 | 0.3+ | 0.4+ | 2007 11 13 | G96 | 0.2- | 0.1- |
| 2007 10 13 | 691 | 0.6- | 0.1- | 2007 11 07 | 703 | 0.7+ | 0.0  | 2007 11 13 | G96 | 0.1+ | 0.0  |
| 2007 10 13 | 691 | 0.3- | 0.3- | 2007 11 07 | 703 | 0.4- | 0.6+ | 2007 11 13 | G96 | 0.3- | 0.2- |

**2007 TH<sub>257</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 260.75020  | (2000.0) | <b>P</b>  |               | <b>Q</b>    |  |
|----------|------------|----------|-----------|---------------|-------------|--|
| <i>n</i> | 0.28193144 | $\omega$ | 4.13859   | -0.78771057   | -0.61502612 |  |
| <i>a</i> | 2.3034231  | $\Omega$ | 137.83976 | +0.56368478   | -0.74276611 |  |
| <i>e</i> | 0.0813714  | <i>i</i> | 3.02538   | +0.24853881   | -0.26465334 |  |
| <i>P</i> | 3.50       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 2  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 27 | 691 | 0.2+ | 0.0  | 2004 12 18 | 691 | 0.1+ | 0.5+ | 2007 10 14 | 691 | 0.3- | 0.4+ |
| 2000 09 27 | 691 | 0.0  | 0.1- | 2004 12 18 | 691 | 0.1+ | 0.6+ | 2007 10 23 | 691 | 0.4- | 0.2+ |
| 2000 09 27 | 691 | 0.2- | 0.2+ | 2005 02 01 | 703 | 0.1- | 0.1+ | 2007 10 23 | 691 | 1.2- | 0.1+ |
| 2002 04 05 | 699 | 1.3+ | 0.8+ | 2005 02 01 | 703 | 0.8+ | 1.5- | 2007 10 23 | 691 | 0.0  | 0.1+ |
| 2002 04 05 | 699 | 0.0  | 0.6- | 2005 02 01 | 703 | 0.4+ | 0.4- | 2007 11 13 | G96 | 0.1- | 0.1+ |
| 2002 04 05 | 699 | 1.8+ | 0.2- | 2005 02 01 | 703 | 0.9- | 1.0- | 2007 11 13 | G96 | 0.2+ | 0.2+ |
| 2002 04 05 | 699 | 0.3- | 0.5+ | 2007 10 10 | 691 | 0.1- | 0.5+ | 2007 11 13 | G96 | 0.5+ | 0.6+ |
| 2002 04 14 | 644 | 0.0  | 1.8+ | 2007 10 10 | 691 | 0.4- | 0.3+ | 2007 11 13 | G96 | 0.8+ | 0.4+ |
| 2002 04 14 | 644 | 0.4- | 1.3+ | 2007 10 10 | 691 | 0.2+ | 0.4+ | 2007 11 17 | 291 | 0.3- | 0.1+ |
| 2002 04 14 | 644 | 0.6- | 1.3+ | 2007 10 14 | 691 | 0.3- | 0.6+ | 2007 11 17 | 291 | 0.0  | 0.3+ |
| 2004 12 18 | 691 | 0.0  | 0.6+ | 2007 10 14 | 691 | 0.4- | 0.5+ | 2007 11 17 | 291 | 0.0  | 0.2+ |

2007 DEC. 24

M.P.O. 129893

**2007 TQ<sub>257</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.83082   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23999072 | $\omega$ 314.92196 | +0.98306935   | +0.16226293 |
| <i>a</i> | 2.5645219  | $\Omega$ 35.99377  | -0.09852260   | +0.85976437 |
| <i>e</i> | 0.2611389  | <i>i</i> 8.32780   | -0.15449256   | +0.48422718 |
| <i>P</i> | 4.11       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 20 | 691 | 0.2+ | 0.2- | 2007 10 30 | 691 | 0.5- | 0.2- | 2007 11 07 | 703 | 0.3+  | 0.7+  |
| 2003 11 20 | 691 | 0.1+ | 0.0  | 2007 10 30 | 691 | 1.5- | 0.0  | 2007 11 07 | G96 | 0.0   | 0.2+  |
| 2003 11 20 | 691 | 0.1+ | 0.1- | 2007 10 30 | 691 | 0.2- | 0.1- | 2007 11 07 | G96 | 0.4-  | 0.1+  |
| 2003 12 28 | 691 | 0.4- | 0.2- | 2007 10 30 | 703 | 0.4+ | 0.6+ | 2007 11 07 | G96 | 0.3+  | 0.2+  |
| 2003 12 28 | 691 | 0.3+ | 0.2+ | 2007 10 30 | 703 | 1.0- | 0.1- | 2007 11 07 | 703 | 1.0+  | 0.5-  |
| 2003 12 28 | 691 | 0.2- | 0.0  | 2007 10 30 | 703 | 0.3- | 0.2- | 2007 11 07 | G96 | 0.3-  | 0.1+  |
| 2006 06 01 | G96 | 0.1+ | 0.2- | 2007 10 30 | 703 | 0.2- | 0.4- | 2007 11 07 | 703 | 0.3-  | 0.5+  |
| 2006 06 01 | G96 | 0.4- | 0.5- | 2007 10 31 | G96 | 0.6+ | 0.5- | 2007 11 07 | 703 | (0.2- | 2.4+) |
| 2006 06 01 | G96 | 0.1+ | 0.3- | 2007 10 31 | G96 | 0.5+ | 0.6- | 2007 11 15 | 704 | 0.7+  | 0.4-  |
| 2006 06 01 | G96 | 0.3- | 0.0  | 2007 10 31 | G96 | 0.4+ | 0.6- | 2007 11 15 | 704 | 0.7-  | 0.5+  |
| 2007 10 10 | 691 | 0.1- | 0.0  | 2007 10 31 | G96 | 0.8+ | 0.5- | 2007 11 15 | 704 | 0.4-  | 0.4+  |
| 2007 10 10 | 691 | 0.2- | 0.1+ | 2007 11 02 | J87 | 0.1+ | 0.3- | 2007 11 15 | 704 | 0.4-  | 0.2+  |
| 2007 10 10 | 691 | 0.2- | 0.1- | 2007 11 02 | J87 | 0.1+ | 0.2- | 2007 11 15 | 704 | 0.9-  | 0.4-  |
| 2007 10 14 | 691 | 0.0  | 0.0  | 2007 11 02 | J87 | 0.0  | 0.4- | 2007 11 17 | 703 | 0.9+  | 0.3+  |
| 2007 10 14 | 691 | 0.4+ | 0.1+ | 2007 11 06 | 704 | 1.0+ | 0.1+ | 2007 11 17 | 703 | 0.2-  | 0.1-  |
| 2007 10 14 | 691 | 0.2- | 0.1- | 2007 11 06 | 704 | 0.3- | 0.1- | 2007 11 17 | 703 | 1.2+  | 0.5+  |
| 2007 10 16 | 691 | 0.2- | 0.1+ | 2007 11 06 | 704 | 0.1- | 0.6+ | 2007 11 17 | 703 | 0.6+  | 0.1+  |
| 2007 10 16 | 691 | 0.1+ | 0.5+ | 2007 11 06 | 704 | 0.3- | 0.6+ |            |     |       |       |
| 2007 10 16 | 691 | 0.1- | 0.0  | 2007 11 06 | 704 | 0.2- | 1.1- |            |     |       |       |

**2007 TS<sub>259</sub> = 2000 KU<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.49517   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30267409 | $\omega$ 58.52302  | +0.60185565   | +0.79844087 |
| <i>a</i> | 2.1969452  | $\Omega$ 248.48851 | -0.73848106   | +0.54871512 |
| <i>e</i> | 0.2336267  | <i>i</i> 0.99683   | -0.30399920   | +0.24779811 |
| <i>P</i> | 3.26       | <i>H</i> 19.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 24 | 691 | 0.2- | 0.0  | 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 10 13 | 691 | 0.4- | 0.2+ |
| 2000 05 24 | 691 | 0.3- | 0.2+ | 2007 09 14 | G96 | 0.2+ | 0.3+ | 2007 10 16 | 691 | 0.1- | 0.0  |
| 2000 05 24 | 691 | 0.0  | 0.2+ | 2007 10 10 | G96 | 0.1+ | 0.2- | 2007 10 16 | 691 | 0.2+ | 0.0  |
| 2000 05 31 | 691 | 0.1+ | 0.2- | 2007 10 10 | G96 | 0.2- | 0.3- | 2007 10 16 | 691 | 0.4+ | 0.3+ |
| 2000 05 31 | 691 | 0.1+ | 0.3- | 2007 10 10 | G96 | 0.1+ | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2000 05 31 | 691 | 0.3+ | 0.1+ | 2007 10 10 | G96 | 0.2- | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2007 09 14 | G96 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.4- | 0.0  | 2007 11 05 | G96 | 0.0  | 0.3- |
| 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 10 13 | 691 | 0.1+ | 0.2- | 2007 11 05 | G96 | 0.4+ | 0.4- |

**2007 TG<sub>261</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.43957   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23250002 | $\omega$ 138.17157 | +0.91905269   | -0.39252606 |
| <i>a</i> | 2.6193129  | $\Omega$ 244.97263 | +0.35039809   | +0.85505535 |
| <i>e</i> | 0.0571265  | <i>i</i> 2.24997   | +0.18045312   | +0.33882687 |
| <i>P</i> | 4.24       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 27 | 691 | 0.3- | 0.2- | 2007 10 10 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.5- | 0.6- |
| 1998 08 27 | 691 | 0.4- | 0.1+ | 2007 10 10 | 691 | 0.1- | 0.1- | 2007 11 07 | 703 | 0.1+ | 1.0- |
| 1998 08 27 | 691 | 0.2- | 0.1- | 2007 10 14 | 691 | 0.0  | 0.1- | 2007 11 07 | 703 | 0.3- | 0.5- |
| 2002 07 17 | 644 | 0.2+ | 0.4+ | 2007 10 14 | 691 | 0.2- | 0.3- | 2007 11 07 | 703 | 1.2- | 0.9- |
| 2002 07 17 | 644 | 0.1- | 1.6+ | 2007 10 14 | 691 | 0.1+ | 0.4- | 2007 11 07 | 703 | 0.5+ | 0.2+ |
| 2002 07 17 | 644 | 0.9+ | 0.2+ | 2007 10 18 | 691 | 0.0  | 0.2- | 2007 11 11 | G96 | 0.0  | 0.1- |
| 2002 08 06 | 644 | 0.2- | 0.2+ | 2007 10 18 | 691 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.5+ | 0.3- |
| 2002 08 06 | 644 | 0.4- | 0.2- | 2007 10 18 | 691 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.6+ | 0.0  |
| 2002 08 06 | 644 | 0.1- | 0.1+ | 2007 10 20 | 703 | 1.2- | 1.5+ | 2007 11 11 | G96 | 0.4+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 291 | 0.4+ | 0.2+ | 2007 10 20 | 703 | 1.2- | 0.1+ | 2007 11 11 | G96 | 0.5+ | 0.0  |
| 2003 11 19 | 291 | 0.4+ | 0.3+ | 2007 10 20 | 703 | 0.9+ | 1.2+ | 2007 11 11 | G96 | 0.5+ | 0.1- |
| 2003 11 19 | 291 | 0.4+ | 0.1- | 2007 10 20 | 703 | 0.4+ | 0.5- | 2007 11 11 | G96 | 0.4+ | 0.1- |
| 2003 11 26 | 691 | 0.4- | 0.3+ | 2007 10 30 | G96 | 0.4+ | 0.5- | 2007 11 11 | G96 | 0.4+ | 0.1- |
| 2003 11 26 | 691 | 0.3- | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 11 15 | 704 | 0.8- | 0.1+ |
| 2003 11 26 | 691 | 0.1- | 0.5+ | 2007 10 30 | G96 | 0.4+ | 0.2- | 2007 11 15 | 704 | 0.2+ | 0.4+ |
| 2003 12 17 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 11 15 | 704 | 1.3- | 0.9+ |
| 2003 12 17 | 691 | 0.1+ | 0.1- | 2007 11 03 | 691 | 0.3- | 0.0  | 2007 11 15 | 704 | 0.1- | 0.9+ |
| 2003 12 17 | 691 | 0.4+ | 0.3- | 2007 11 03 | 691 | 0.0  | 0.2- | 2007 11 15 | 704 | 0.3+ | 1.1+ |
| 2005 03 13 | 691 | 0.1+ | 0.9+ | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 11 17 | 703 | 0.4+ | 0.6+ |
| 2005 03 13 | 691 | 0.3+ | 0.7+ | 2007 11 07 | 703 | 0.2+ | 0.1- | 2007 11 17 | 703 | 0.1+ | 0.7+ |
| 2005 03 13 | 691 | 0.1+ | 0.7+ | 2007 11 07 | 703 | 0.3- | 0.2+ | 2007 11 17 | 703 | 0.7- | 0.1+ |
| 2007 10 10 | 691 | 0.1+ | 0.2- | 2007 11 07 | 703 | 1.4- | 0.7- | 2007 11 17 | 703 | 1.1+ | 0.8+ |

**2007 TV<sub>262</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.03827    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24681985 | $\omega$ 350.88726 | +0.86354293   | -0.50107212 |
| <i>a</i> | 2.5169968  | $\Omega$ 39.35018  | +0.46811913   | +0.75469205 |
| <i>e</i> | 0.2259956  | <i>i</i> 5.13482   | +0.18750488   | +0.42351698 |
| <i>P</i> | 3.99       | <i>H</i> 18.4      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 23 | 691 | 0.4- | 0.0  | 2007 10 10 | 691 | 0.2+ | 0.0  | 2007 10 31 | 691 | 0.0  | 0.0  |
| 2003 10 23 | 691 | 0.2+ | 0.3+ | 2007 10 10 | 691 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.3- | 0.1+ |
| 2003 10 23 | 691 | 0.2+ | 0.0  | 2007 10 14 | 691 | 0.2- | 0.1- | 2007 11 07 | 703 | 1.3- | 0.4+ |
| 2003 11 16 | 691 | 0.0  | 0.1- | 2007 10 14 | 691 | 0.3+ | 0.0  | 2007 11 07 | 703 | 0.3- | 0.5+ |
| 2003 11 16 | 691 | 0.6- | 0.1- | 2007 10 14 | 691 | 0.1- | 0.0  | 2007 11 07 | 703 | 0.2- | 0.4+ |
| 2003 11 16 | 691 | 0.2+ | 0.3+ | 2007 10 30 | 691 | 0.3- | 0.2+ | 2007 11 07 | 703 | 1.0- | 0.1+ |
| 2003 11 16 | 691 | 0.2+ | 0.3- | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 11 15 | 704 | 0.2+ | 0.9- |
| 2003 11 16 | 691 | 0.3+ | 0.5- | 2007 10 30 | 691 | 0.2- | 0.1- | 2007 11 15 | 704 | 0.8+ | 0.6+ |
| 2003 11 16 | 691 | 0.1+ | 0.2+ | 2007 10 30 | G96 | 0.6+ | 0.1- | 2007 11 15 | 704 | 0.4- | 1.1- |
| 2003 11 30 | 691 | 0.4- | 0.3+ | 2007 10 30 | G96 | 0.7+ | 0.0  | 2007 11 15 | 704 | 1.7+ | 0.2- |
| 2003 11 30 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.4+ | 0.2- |
| 2003 11 30 | 691 | 0.1- | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.2- | 2007 11 19 | 691 | 0.2- | 0.3+ |
| 2007 10 10 | 691 | 0.1- | 0.0  | 2007 10 31 | 691 | 0.6- | 0.2- | 2007 11 19 | 691 | 0.1- | 0.1+ |

**2007 TF<sub>266</sub> = 2006 GZ<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 133.61090  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27447520 | $\omega$ 47.33691  | -0.75393724   | +0.65661193 |
| <i>a</i> | 2.3449521  | $\Omega$ 173.60273 | -0.64425060   | -0.73274769 |
| <i>e</i> | 0.1017226  | <i>i</i> 10.84392  | -0.12852939   | -0.17872211 |
| <i>P</i> | 3.59       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 02 | 691 | 0.2- | 0.3+ | 2007 09 12 | G96 | 0.2- | 0.0  | 2007 10 14 | 691 | 0.9+ | 0.3+ |
| 2006 04 02 | 691 | 1.0+ | 1.0- | 2007 09 12 | G96 | 0.1- | 0.0  | 2007 10 14 | 691 | 0.7- | 0.1+ |
| 2006 04 02 | 691 | 0.1- | 0.2+ | 2007 09 12 | G96 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.6- | 0.6- |
| 2006 04 07 | 691 | 0.1- | 0.3+ | 2007 10 12 | 691 | 0.6+ | 0.2+ | 2007 10 15 | 691 | 0.1+ | 0.0  |
| 2006 04 07 | 691 | 0.2- | 0.3+ | 2007 10 12 | 691 | 0.2- | 0.3+ | 2007 10 15 | 691 | 0.3+ | 0.1+ |
| 2006 04 07 | 691 | 0.5- | 0.0  | 2007 10 12 | 691 | 0.5- | 0.2+ |            |     |      |      |
| 2007 09 12 | G96 | 0.4+ | 0.2- | 2007 10 14 | 691 | 0.3+ | 0.5- |            |     |      |      |

**2007 TR<sub>266</sub> = 1993 FR<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.39316   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17190277 | $\omega$ 305.59833 | +0.86860945   | +0.48918656 |
| <i>a</i> | 3.2034218  | $\Omega$ 25.39360  | -0.37397692   | +0.75160017 |
| <i>e</i> | 0.0598972  | <i>i</i> 10.59254  | -0.32505213   | +0.44248582 |
| <i>P</i> | 5.73       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 20 | 691 | 0.2- | 0.0  | 2007 10 09 | 691 | 0.0  | 0.3+ | 2007 10 15 | 703 | 0.5+ | 0.4- |
| 1993 03 20 | 691 | 0.1+ | 0.2+ | 2007 10 09 | 691 | 0.2- | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 20 | 691 | 0.3+ | 0.1+ | 2007 10 09 | 691 | 0.1- | 0.1+ | 2007 10 18 | G96 | 0.3+ | 0.3- |
| 2001 12 10 | 645 | 0.1- | 0.0  | 2007 10 11 | 703 | 1.3+ | 0.3- | 2007 10 18 | G96 | 0.0  | 0.4- |
| 2001 12 10 | 645 | 0.0  | 0.1+ | 2007 10 11 | 703 | 0.3+ | 0.8+ | 2007 10 18 | G96 | 0.9+ | 0.0  |
| 2006 07 20 | E12 | 0.5+ | 0.2- | 2007 10 11 | 703 | 1.1+ | 1.0+ | 2007 10 20 | 703 | 0.3- | 0.5+ |
| 2006 07 20 | E12 | 0.2- | 0.4- | 2007 10 11 | 703 | 0.1+ | 0.9+ | 2007 10 20 | 703 | 1.2- | 0.8- |
| 2006 07 20 | E12 | 0.0  | 1.1+ | 2007 10 13 | 691 | 0.3- | 0.3+ | 2007 10 20 | 703 | 0.1- | 1.1- |
| 2006 07 20 | E12 | 0.0  | 0.1- | 2007 10 13 | 691 | 0.3- | 0.0  | 2007 10 20 | 703 | 0.5- | 0.3+ |
| 2006 07 20 | E12 | 0.6+ | 0.4- | 2007 10 13 | 691 | 0.0  | 0.1- | 2007 11 01 | G96 | 0.0  | 0.1- |
| 2007 09 11 | G96 | 0.5- | 0.6+ | 2007 10 15 | 703 | 0.8- | 0.0  | 2007 11 01 | G96 | 0.4+ | 0.0  |
| 2007 09 11 | G96 | 0.2+ | 0.3+ | 2007 10 15 | 703 | 0.0  | 0.6- | 2007 11 01 | G96 | 0.3+ | 0.1- |
| 2007 09 11 | G96 | 0.1+ | 0.2- | 2007 10 15 | 703 | 1.4- | 0.5- | 2007 11 01 | G96 | 0.1+ | 0.1- |

**2007 TS<sub>266</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.24075867 | $\omega$ | 208.40360 | -0.60497342 | +0.79431652 |          |   |
| <i>a</i> | 2.5590656  | $\Omega$ | 24.49658  | -0.70293282 | -0.50010358 |          |   |
| <i>e</i> | 0.2112192  | <i>i</i> | 7.67734   | -0.37402220 | -0.34490241 |          |   |
| <i>P</i> | 4.09       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 21 | 645 | 0.1+ | 0.2+ | 2004 12 14 | 703 | 0.3- | 0.3+ | 2007 10 09 | 691 | 0.4- | 0.2+ |
| 2001 02 21 | 645 | 0.1+ | 0.2+ | 2007 09 05 | G96 | 0.5+ | 0.0  | 2007 10 11 | 699 | 1.1+ | 0.7- |
| 2003 09 28 | 691 | 0.1- | 0.1- | 2007 09 05 | G96 | 0.2+ | 0.2+ | 2007 10 11 | 699 | 0.2+ | 1.9- |
| 2003 09 28 | 691 | 0.2- | 0.2- | 2007 09 05 | G96 | 0.0  | 0.3- | 2007 10 11 | 699 | 0.2+ | 0.4+ |
| 2003 09 28 | 691 | 0.1+ | 0.2- | 2007 09 05 | G96 | 0.1+ | 0.0  | 2007 10 11 | 699 | 0.8+ | 0.3- |
| 2003 10 19 | 691 | 0.1+ | 0.7+ | 2007 09 25 | G96 | 0.1+ | 0.0  | 2007 10 13 | 691 | 0.0  | 0.0  |
| 2003 10 19 | 691 | 0.1- | 0.0  | 2007 09 25 | G96 | 0.1+ | 0.4+ | 2007 10 13 | 691 | 0.4- | 0.2+ |
| 2003 10 19 | 691 | 0.4- | 0.4+ | 2007 09 25 | G96 | 0.4+ | 0.4- | 2007 10 13 | 691 | 0.2- | 0.2+ |
| 2004 12 14 | 703 | 0.2+ | 0.7- | 2007 09 25 | G96 | 0.3+ | 0.3- | 2007 10 21 | 691 | 0.7- | 1.1+ |
| 2004 12 14 | 703 | 0.2+ | 0.5- | 2007 10 09 | 691 | 0.4- | 0.3+ | 2007 10 21 | 691 | 0.2- | 0.2+ |
| 2004 12 14 | 703 | 0.4- | 0.2+ | 2007 10 09 | 691 | 0.4- | 0.4+ | 2007 10 21 | 691 | 0.4- | 0.2- |

**2007 TW<sub>266</sub> = 2007 UX<sub>116</sub> = 1996 TZ<sub>47</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.17721816 | $\omega$ | 133.21205 | +0.91599448 | +0.40117387 |          |   |
| <i>a</i> | 3.1390428  | $\Omega$ | 203.13711 | -0.37075644 | +0.84295431 |          |   |
| <i>e</i> | 0.1522546  | <i>i</i> | 0.53849   | -0.15327679 | +0.35845162 |          |   |
| <i>P</i> | 5.56       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 12 | 691 | 0.3- | 0.3- | 2007 10 13 | 691 | 0.2+ | 0.6- | 2007 10 30 | G96 | 0.0  | 0.1- |
| 1996 10 12 | 691 | 0.5- | 0.3+ | 2007 10 13 | 691 | 0.8- | 0.9+ | 2007 10 30 | G96 | 0.0  | 0.3- |
| 1996 10 12 | 691 | 0.3- | 0.1+ | 2007 10 13 | 691 | 0.2- | 0.1+ | 2007 11 04 | 291 | 0.1+ | 0.1- |
| 1996 10 15 | 691 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.5- | 2007 11 04 | 291 | 0.0  | 0.1- |
| 1996 10 15 | 691 | 0.6+ | 0.2+ | 2007 10 18 | G96 | 0.2+ | 0.5- | 2007 11 04 | 291 | 0.2+ | 0.0  |
| 1996 10 15 | 691 | 0.3+ | 0.2+ | 2007 10 18 | G96 | 0.5+ | 0.4- | 2007 11 17 | G96 | 0.2- | 0.4- |
| 2007 10 09 | 691 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.3+ | 0.4- | 2007 11 17 | G96 | 0.4- | 0.1- |
| 2007 10 09 | 691 | 0.1+ | 0.2+ | 2007 10 30 | G96 | 0.1- | 0.2- | 2007 11 17 | G96 | 0.0  | 0.4- |
| 2007 10 09 | 691 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.3- | 0.1- | 2007 11 17 | G96 | 0.2- | 0.2- |

**2007 TQ<sub>269</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.24192290 | $\omega$ | 33.45453  | -0.94094407 | +0.33834715 |          |   |
| <i>a</i> | 2.5508489  | $\Omega$ | 166.30606 | -0.32072574 | -0.87939685 |          |   |
| <i>e</i> | 0.0996591  | <i>i</i> | 2.92028   | -0.10844011 | -0.33493639 |          |   |
| <i>P</i> | 4.07       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 19 | 691 | 0.4+ | 0.3- | 2005 03 08 | G96 | 0.4+ | 0.0  | 2007 10 09 | 691 | 0.2- | 0.2+ |
| 2005 01 19 | 691 | 0.5+ | 0.5- | 2005 03 08 | G96 | 0.6+ | 0.0  | 2007 10 09 | 691 | 0.3+ | 0.1+ |
| 2005 01 19 | 691 | 0.5+ | 0.2- | 2005 03 08 | G96 | 0.5+ | 0.2+ | 2007 10 13 | 691 | 0.2+ | 0.0  |
| 2005 02 02 | 703 | 0.9- | 1.0+ | 2007 09 14 | G96 | 0.0  | 0.2- | 2007 10 13 | 691 | 0.3+ | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 02 | 703 | 1.5- | 0.5+ | 2007 09 14 | G96 | 0.2- | 0.2- | 2007 10 13 | 691 | 0.2- | 0.3- |
| 2005 02 02 | 703 | 1.1- | 0.0  | 2007 09 14 | G96 | 0.2+ | 0.3- | 2007 10 21 | 691 | 0.0  | 0.4+ |
| 2005 02 02 | 703 | 0.5+ | 0.7- | 2007 09 14 | G96 | 0.0  | 0.0  | 2007 10 21 | 691 | 0.2+ | 0.2+ |
| 2005 03 08 | G96 | 0.2+ | 0.0  | 2007 10 09 | 691 | 0.0  | 0.4+ | 2007 10 21 | 691 | 0.7- | 0.0  |

**2007 TR<sub>269</sub> = 2002 TC<sub>247</sub> = 2003 YE<sub>167</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.19762290 | $\omega$ | 222.13305 | +0.99954893 | -0.02411038 |          |   |
| <i>a</i> | 2.9190702  | $\Omega$ | 139.23807 | +0.02909675 | +0.92511552 |          |   |
| <i>e</i> | 0.1099444  | <i>i</i> | 1.57153   | -0.00743786 | +0.37891946 |          |   |
| <i>P</i> | 4.99       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 28 | 691 | 0.1+ | 0.2- | 2002 10 11 | 644 | 0.2- | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.3- |
| 1998 12 28 | 691 | 0.0  | 0.3- | 2003 12 17 | 291 | 0.1- | 0.6+ | 2007 10 09 | 691 | 0.0  | 0.4+ |
| 1998 12 28 | 691 | 0.0  | 0.3- | 2003 12 17 | 291 | 0.0  | 0.9+ | 2007 10 09 | 691 | 0.2- | 0.0  |
| 1999 01 17 | 691 | 2.9- | 0.2- | 2003 12 17 | 291 | 0.6+ | 0.9+ | 2007 10 09 | 691 | 0.0  | 0.1- |
| 1999 01 17 | 691 | 0.4+ | 0.4- | 2004 01 28 | 691 | 0.1+ | 0.4+ | 2007 10 13 | 691 | 0.3- | 0.7+ |
| 1999 01 17 | 691 | 0.1+ | 0.4- | 2004 01 28 | 691 | 0.2+ | 0.4+ | 2007 10 13 | 691 | 0.2- | 0.3+ |
| 1999 02 12 | 691 | 0.6+ | 1.2- | 2004 01 28 | 691 | 0.2+ | 0.4+ | 2007 10 13 | 691 | 0.1- | 0.2- |
| 1999 02 12 | 691 | 0.4+ | 0.1- | 2005 03 12 | 691 | 0.3+ | 0.3+ | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 1999 02 12 | 691 | 0.4+ | 0.6- | 2005 03 12 | 691 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.8- |
| 2000 04 12 | 691 | 0.3- | 0.3- | 2005 03 12 | 691 | 0.4+ | 0.2+ | 2007 11 05 | G96 | 0.7+ | 0.6- |
| 2000 04 12 | 691 | 0.1+ | 0.1+ | 2005 04 10 | G96 | 0.4- | 0.6+ | 2007 11 05 | G96 | 0.3+ | 0.8- |
| 2000 04 12 | 691 | 0.0  | 0.2+ | 2005 04 10 | G96 | 0.3- | 0.4+ | 2007 11 07 | G96 | 0.3+ | 0.0  |
| 2002 10 09 | 291 | 0.1- | 0.2+ | 2005 04 10 | G96 | 0.4- | 0.3+ | 2007 11 07 | G96 | 0.3+ | 0.1+ |
| 2002 10 09 | 291 | 0.1- | 0.1+ | 2005 04 10 | G96 | 0.2+ | 0.3+ | 2007 11 07 | G96 | 0.1+ | 0.2+ |
| 2002 10 09 | 291 | 0.3+ | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.5- | 2007 11 07 | G96 | 0.2- | 0.1+ |
| 2002 10 11 | 644 | 0.2- | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.6- |            |     |      |      |
| 2002 10 11 | 644 | 0.1- | 0.1- | 2007 09 25 | G96 | 0.1- | 0.4- |            |     |      |      |

**2007 TJ<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i> | 0.23396450 | $\omega$ | 287.97515 | -0.85266875 | -0.50253526 |          |   |
| <i>a</i> | 2.6083712  | $\Omega$ | 222.17103 | +0.52241913 | -0.81704850 |          |   |
| <i>e</i> | 0.1221969  | <i>i</i> | 12.28791  | +0.00585303 | -0.28264830 |          |   |
| <i>P</i> | 4.21       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 24 | 291 | 0.2+ | 0.5+ | 2007 10 09 | 691 | 0.2- | 0.0  | 2007 11 14 | G96 | 0.6+ | 0.3+ |
| 2001 04 24 | 291 | 0.1- | 0.4+ | 2007 10 09 | 691 | 0.6- | 0.4+ | 2007 11 14 | G96 | 0.0  | 0.3- |
| 2001 04 24 | 291 | 0.1- | 0.3+ | 2007 10 13 | 691 | 0.0  | 0.2+ | 2007 11 14 | G96 | 0.5+ | 0.1+ |
| 2002 10 05 | 645 | 0.1+ | 0.1- | 2007 10 13 | 691 | 0.3+ | 0.9+ | 2007 11 14 | G96 | 0.5+ | 0.1+ |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2007 10 13 | 691 | 0.7- | 0.5+ | 2007 12 05 | G96 | 0.2- | 0.8- |
| 2005 04 15 | 691 | 0.2+ | 0.4+ | 2007 11 07 | G96 | 0.6+ | 0.4+ | 2007 12 05 | G96 | 0.4+ | 0.5- |
| 2005 04 15 | 691 | 0.0  | 0.1+ | 2007 11 07 | G96 | 0.5+ | 0.0  | 2007 12 05 | G96 | 0.2- | 0.6+ |
| 2005 04 15 | 691 | 0.1+ | 0.3+ | 2007 11 07 | G96 | 0.5+ | 0.4+ | 2007 12 05 | G96 | 0.4- | 0.2+ |
| 2007 10 09 | 691 | 0.1- | 0.2+ | 2007 11 07 | G96 | 0.4+ | 0.2- |            |     |      |      |

**2007 TL<sub>271</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 3.15526    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23024117 | $\omega$ | 143.67817 | +0.86020131 | -0.50936322 |
| $a$ | 2.6364167  | $\Omega$ | 246.96083 | +0.46136330 | +0.79784509 |
| $e$ | 0.1216511  | $i$      | 1.52885   | +0.21725009 | +0.32247842 |
| $P$ | 4.28       | $H$      | 17.0      | $G$ 0.15    | $U$ 2       |

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|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 29 | 691 | 0.3− | 0.3− | 2007 10 18 | 699 | 1.6+  | 1.0+  | 2007 11 13 | 703 | 0.5− | 0.7+ |
| 2005 04 05 | G96 | 0.0  | 0.4+ | 2007 10 18 | 699 | (2.4+ | 1.4+) | 2007 11 13 | 703 | 0.3+ | 0.5+ |
| 2005 04 05 | G96 | 0.0  | 0.1− | 2007 10 18 | 699 | 0.8+  | 0.7−  | 2007 11 13 | 703 | 0.1− | 1.0+ |
| 2005 04 05 | G96 | 0.1+ | 0.5+ | 2007 10 18 | 699 | (3.2− | 0.3+) | 2007 11 13 | 703 | 0.5+ | 0.0  |
| 2005 04 05 | G96 | 0.2+ | 0.3− | 2007 10 21 | 691 | 0.2−  | 0.3−  | 2007 11 18 | G96 | 0.9+ | 0.1+ |
| 2007 10 09 | 691 | 0.4− | 0.2− | 2007 10 21 | 691 | 0.7−  | 0.0   | 2007 11 18 | G96 | 0.7+ | 0.2+ |
| 2007 10 09 | 691 | 0.5− | 0.0  | 2007 10 21 | 691 | 0.2−  | 1.3+  | 2007 11 18 | G96 | 0.7+ | 0.0  |
| 2007 10 09 | 691 | 0.2− | 0.2− | 2007 10 30 | 703 | 1.2−  | 0.5+  | 2007 11 18 | G96 | 0.9+ | 0.1+ |
| 2007 10 13 | 691 | 0.3− | 0.1− | 2007 10 30 | 703 | 0.6+  | 0.1−  |            |     |      |      |
| 2007 10 13 | 691 | 0.5− | 0.2− | 2007 10 30 | 703 | 0.3−  | 0.5+  |            |     |      |      |

2007 TN<sub>271</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 322.48905  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20218676 | $\omega$ | 118.73098 | +0.24325777   | −0.96986741 |
| <i>a</i> | 2.8749761  | $\Omega$ | 317.18316 | +0.88283858   | −0.22716128 |
| <i>e</i> | 0.0454241  | <i>i</i> | 1.14004   | +0.40177319   | +0.08806224 |
| <i>P</i> | 4.87       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 691 | 0.0  | 0.0  | 2007 10 09 | 691 | 0.1+ | 0.5+ | 2007 11 11 | G96 | 0.3+ | 0.4− |
| 2003 12 29 | 691 | 0.2+ | 0.2+ | 2007 10 13 | 691 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.2− | 0.4− |
| 2003 12 29 | 691 | 0.2− | 0.1− | 2007 10 13 | 691 | 0.1− | 0.2+ | 2007 11 11 | G96 | 0.2− | 0.6− |
| 2004 01 19 | 691 | 0.1+ | 0.0  | 2007 10 13 | 691 | 0.3− | 0.0  | 2007 11 14 | G96 | 0.2+ | 0.1− |
| 2004 01 19 | 691 | 0.1− | 0.2+ | 2007 10 21 | 691 | 0.1− | 0.2+ | 2007 11 14 | G96 | 0.2+ | 0.1− |
| 2004 01 19 | 691 | 0.0  | 0.1− | 2007 10 21 | 691 | 0.0  | 0.3+ | 2007 11 14 | G96 | 0.1+ | 0.0  |
| 2007 10 09 | 691 | 0.2+ | 0.1+ | 2007 10 21 | 691 | 0.3− | 0.2+ | 2007 11 14 | G96 | 0.5+ | 0.0  |
| 2007 10 09 | 691 | 0.0  | 0.3+ | 2007 11 11 | G96 | 0.4− | 0.4− |            |     |      |      |

2007 TU<sub>272</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.95429  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25459577 | $\omega$ | 343.49324 | +0.65110356   | −0.75047302 |
| <i>a</i> | 2.4654825  | $\Omega$ | 65.72992  | +0.70965976   | +0.54898126 |
| <i>e</i> | 0.1196054  | <i>i</i> | 7.14433   | +0.26916013   | +0.36798074 |
| <i>P</i> | 3.87       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 05 15 | 691 | 0.4− | 0.4+ | 2007 10 13 | 691 | 0.4−  | 0.2+  | 2007 11 07 | 703 | 0.3+ | 0.5− |
| 1994 05 15 | 691 | 0.7+ | 0.3+ | 2007 10 30 | 703 | 0.0   | 0.2−  | 2007 11 07 | 703 | 0.1+ | 0.3− |
| 1994 05 15 | 691 | 0.3+ | 0.9+ | 2007 10 30 | 703 | 0.4−  | 0.1+  | 2007 11 07 | 703 | 0.2+ | 0.3− |
| 2003 09 30 | 645 | 0.0  | 0.0  | 2007 10 30 | 703 | 0.3+  | 0.3+  | 2007 11 07 | 703 | 0.2− | 0.0  |
| 2003 09 30 | 645 | 0.1− | 0.0  | 2007 10 30 | 703 | 0.1−  | 0.3−  | 2007 11 12 | 704 | 0.2+ | 0.2− |
| 2003 10 18 | 699 | 1.1+ | 0.3+ | 2007 11 03 | G96 | 0.3+  | 0.6−  | 2007 11 12 | 704 | 0.1− | 0.2+ |
| 2003 10 18 | 699 | 0.7+ | 0.6+ | 2007 11 03 | G96 | 0.1−  | 0.6−  | 2007 11 12 | 704 | 0.5− | 0.2+ |
| 2003 10 18 | 699 | 0.1+ | 1.4+ | 2007 11 03 | G96 | 0.2+  | 0.7−  | 2007 11 12 | 704 | 0.4+ | 0.3− |
| 2003 10 18 | 699 | 0.4+ | 0.4− | 2007 11 03 | G96 | 0.1+  | 0.8−  | 2007 11 12 | 704 | 0.6+ | 0.1− |
| 2005 03 16 | 703 | 0.6− | 1.0+ | 2007 11 04 | 704 | 0.2−  | 0.4+  | 2007 11 13 | G96 | 0.3+ | 0.9− |
| 2005 03 16 | 703 | 0.4− | 0.1+ | 2007 11 04 | 704 | 1.0+  | 0.1+  | 2007 11 13 | G96 | 0.0  | 0.7− |
| 2005 03 16 | 703 | 1.1+ | 0.6+ | 2007 11 04 | 704 | 0.2−  | 0.2−  | 2007 11 13 | G96 | 0.3+ | 0.8− |
| 2005 03 16 | 703 | 1.3+ | 0.4+ | 2007 11 04 | 704 | 0.1−  | 0.0   | 2007 11 13 | G96 | 0.0  | 0.7− |
| 2007 10 09 | 691 | 0.3− | 0.4+ | 2007 11 04 | 704 | 0.4−  | 0.8+  | 2007 12 05 | 704 | 0.5+ | 1.0+ |
| 2007 10 09 | 691 | 0.2− | 0.4+ | 2007 11 07 | 704 | (0.4− | 1.6+) | 2007 12 05 | 704 | 0.4+ | 1.7+ |
| 2007 10 09 | 691 | 0.6− | 0.6+ | 2007 11 07 | 704 | 0.6−  | 1.2+  | 2007 12 05 | 704 | 0.0  | 0.4+ |
| 2007 10 13 | 691 | 0.1− | 0.1− | 2007 11 07 | 704 | 0.1+  | 1.1−  | 2007 12 05 | 704 | 0.5+ | 1.9+ |
| 2007 10 13 | 691 | 0.2− | 0.1− | 2007 11 07 | 704 | 0.2+  | 1.3+  | 2007 12 05 | 704 | 0.1− | 1.0+ |

2007 TQ<sub>274</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.65286    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.08277356 | $\omega$ | 352.30301 | +0.97277076   | +0.23101068 |
| <i>a</i> | 5.2144474  | $\Omega$ | 354.23744 | −0.20146172   | +0.80282629 |
| <i>e</i> | 0.1847376  | <i>i</i> | 10.75561  | −0.11458717   | +0.54963989 |
| <i>P</i> | 11.91      | <i>H</i> | 13.9      | <i>G</i> 0.15 | <i>U</i> 4  |

## M.P.O. 129895

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 10 | 691 | 0.1+ | 0.1+ | 2007 09 10 | G96 | 0.1+ | 0.4− | 2007 10 11 | 691 | 0.1− | 0.1+ |
| 1996 11 10 | 691 | 0.3− | 0.1− | 2007 09 10 | G96 | 0.2+ | 0.3− | 2007 10 11 | 691 | 0.2− | 0.1+ |
| 1996 11 10 | 691 | 0.2− | 0.2− | 2007 09 10 | G96 | 0.1+ | 0.3− | 2007 10 13 | 691 | 0.1− | 0.2+ |
| 1996 11 17 | 691 | 0.1− | 0.0  | 2007 10 05 | 691 | 0.0  | 0.3+ | 2007 10 13 | 691 | 0.0  | 0.1− |
| 1996 11 17 | 691 | 0.2+ | 0.2− | 2007 10 05 | 691 | 0.0  | 0.2− | 2007 10 13 | 691 | 0.0  | 0.3+ |
| 1996 11 17 | 691 | 0.4+ | 0.3+ | 2007 10 05 | 691 | 0.9+ | 0.0  | 2007 10 13 | 691 | 0.1− | 0.2+ |
| 2007 08 23 | 691 | 0.0  | 0.3− | 2007 10 05 | 691 | 0.2+ | 0.4− | 2007 10 13 | 691 | 0.1− | 0.1+ |
| 2007 08 23 | 691 | 0.3− | 0.7+ | 2007 10 05 | 691 | 0.7+ | 0.4+ | 2007 10 13 | 691 | 0.8− | 0.1− |
| 2007 08 23 | 691 | 0.3− | 0.1+ | 2007 10 05 | 691 | 0.1− | 0.2− |            |     |      |      |
| 2007 09 10 | G96 | 0.1+ | 0.2− | 2007 10 11 | 691 | 0.2− | 0.0  |            |     |      |      |

2007 TG<sub>275</sub> = 2005 EZ<sub>102</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.81224  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25598562 | $\omega$ | 273.81640 | +0.32417417   | −0.94549830 |
| <i>a</i> | 2.4565503  | $\Omega$ | 157.19432 | +0.89635877   | −0.29661899 |
| <i>e</i> | 0.1617761  | <i>i</i> | 4.54665   | +0.30241043   | +0.13435083 |
| <i>P</i> | 3.85       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 16 | 691 | 0.2+ | 0.3+ | 2005 03 04 | G96 | 0.2− | 0.1− | 2007 10 11 | 703 | 0.9− | 0.5− |
| 2003 09 16 | 691 | 0.3+ | 0.7+ | 2005 03 04 | G96 | 0.2− | 0.1− | 2007 10 11 | 703 | 0.5+ | 1.2+ |
| 2003 09 16 | 691 | 0.3+ | 0.6+ | 2005 03 10 | G96 | 0.1− | 0.2+ | 2007 10 13 | G96 | 0.2+ | 0.1− |
| 2003 09 28 | 691 | 0.1− | 0.1− | 2005 03 10 | G96 | 0.0  | 0.3+ | 2007 10 13 | G96 | 0.0  | 0.4− |
| 2003 09 28 | 691 | 1.5− | 0.2+ | 2005 03 10 | G96 | 0.3+ | 0.1− | 2007 10 13 | G96 | 0.3− | 0.4− |
| 2003 09 28 | 691 | 0.0  | 0.3+ | 2005 03 10 | G96 | 0.1− | 0.2+ | 2007 10 13 | G96 | 0.2+ | 0.3− |
| 2005 03 04 | 691 | 0.3+ | 0.7+ | 2007 09 11 | 691 | 0.2− | 0.4+ | 2007 10 21 | G96 | 0.6+ | 0.3− |
| 2005 03 04 | 691 | 0.2+ | 0.6+ | 2007 09 11 | 691 | 0.1− | 0.1+ | 2007 10 21 | G96 | 0.4+ | 0.5− |
| 2005 03 04 | 691 | 0.7+ | 0.3+ | 2007 09 11 | 691 | 0.4− | 0.1+ | 2007 10 21 | G96 | 0.7+ | 0.5− |
| 2005 03 04 | G96 | 0.1+ | 0.2− | 2007 10 11 | 703 | 0.7− | 0.8+ | 2007 10 21 | G96 | 0.3+ | 0.4− |
| 2005 03 04 | G96 | 0.2− | 0.1+ | 2007 10 11 | 703 | 0.4− | 0.7+ |            |     |      |      |

2007 TH<sub>277</sub> = 2003 TN<sub>49</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 86.54329   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23615417 | $\omega$ | 17.43301  | +0.13146343   | +0.98910151 |
| <i>a</i> | 2.5922227  | $\Omega$ | 260.15982 | −0.91735003   | +0.09603158 |
| <i>e</i> | 0.1611702  | <i>i</i> | 3.85830   | −0.37574763   | +0.11160712 |
| <i>P</i> | 4.17       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 03 | 691 | 0.0  | 0.0  | 2007 10 11 | 699 | 0.4+ | 0.9+ | 2007 10 20 | 703 | 0.6+ | 0.1− |
| 2003 10 03 | 691 | 0.0  | 0.1+ | 2007 10 11 | G96 | 0.4+ | 0.5− | 2007 11 01 | 691 | 0.3− | 0.1− |
| 2003 10 03 | 691 | 0.3− | 0.3− | 2007 10 11 | 699 | 0.7− | 2.8+ | 2007 11 01 | 691 | 0.1− | 0.2+ |
| 2003 10 22 | 691 | 0.0  | 0.1+ | 2007 10 11 | G96 | 0.5+ | 0.3− | 2007 11 01 | 691 | 0.1+ | 0.3− |
| 2003 10 22 | 691 | 0.3+ | 0.0  | 2007 10 11 | G96 | 0.4+ | 0.9− | 2007 11 07 | G96 | 0.1+ | 0.2− |
| 2003 10 22 | 691 | 0.0  | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.5− | 2007 11 07 | G96 | 0.1+ | 0.4− |
| 2006 05 06 | G96 | 0.2− | 0.1− | 2007 10 11 | 699 | 0.2+ | 1.3+ | 2007 11 07 | G96 | 0.0  | 0.5− |
| 2006 05 06 | G96 | 0.2− | 0.2+ | 2007 10 11 | 699 | 1.5− | 0.9+ | 2007 11 07 | G96 | 0.6+ | 0.3− |
| 2006 05 06 | G96 | 0.1− | 0.2− | 2007 10 13 | 691 | 0.1+ | 0.2− | 2007 11 12 | G96 | 0.5+ | 0.1− |
| 2006 05 06 | G96 | 0.0  | 0.2− | 2007 10 13 | 691 | 0.3− | 0.4− | 2007 11 12 | G96 | 0.3+ | 0.4− |
| 2006 06 01 | G96 | 0.2+ | 0.3− | 2007 10 13 | 691 | 0.1− | 0.3+ | 2007 11 12 | G96 | 0.7+ | 0.3− |
| 2006 06 01 | G96 | 0.1− | 0.0  | 2007 10 20 | 703 | 0.3− | 0.4− | 2007 11 12 | G96 | 0.6+ | 0.7− |
| 2006 06 01 | G96 | 0.2+ | 0.2− | 2007 10 20 | 703 | 0.7+ | 0.3− |            |     |      |      |
| 2006 06 01 | G96 | 0.1− | 0.3− | 2007 10 20 | 703 | 0.8− | 0.9+ |            |     |      |      |

2007 TO<sub>279</sub> = 2007 TX<sub>416</sub> = 1998 EA<sub>5</sub> = 2001 SW<sub>95</sub>Id. Minor Planet Center (*MPO* 128508; d, *ibid.*; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.41900    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17616537 | $\omega$ 65.16957  | +0.83283931   | -0.55328225 |
| <i>a</i> | 3.1515366  | $\Omega$ 328.41581 | +0.49613996   | +0.75904868 |
| <i>e</i> | 0.0933534  | <i>i</i> 1.75547   | +0.24540541   | +0.34310909 |
| <i>P</i> | 5.59       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 01 | 691 | 0.1- | 0.3+ | 2004 02 26 | 695 | 0.2+ | 0.4+ | 2007 10 19 | 291 | 0.4- | 0.0  |
| 1998 03 01 | 691 | 0.0  | 0.0  | 2004 02 26 | 695 | 0.3+ | 0.3+ | 2007 10 20 | 703 | 1.5+ | 0.5- |
| 1998 03 01 | 691 | 0.1- | 0.2+ | 2004 03 31 | 291 | 0.8+ | 0.6+ | 2007 10 20 | 703 | 0.0  | 0.1- |
| 1998 03 04 | 691 | 0.2- | 0.1- | 2004 03 31 | 291 | 1.0+ | 0.5+ | 2007 10 20 | 703 | 1.0- | 0.8+ |
| 1998 03 04 | 691 | 0.3- | 0.2- | 2004 03 31 | 291 | 0.9+ | 0.9+ | 2007 10 20 | 703 | 0.5- | 0.3+ |
| 1998 03 04 | 691 | 0.2- | 0.5+ | 2005 05 12 | G96 | 0.1+ | 0.1- | 2007 10 21 | 691 | 0.2- | 0.0  |
| 2001 08 25 | 691 | 0.4- | 0.3- | 2005 05 12 | G96 | 0.3- | 0.1+ | 2007 10 21 | 691 | 0.3- | 0.1+ |
| 2001 08 25 | 691 | 0.2- | 0.6- | 2005 05 12 | G96 | 0.0  | 0.4+ | 2007 10 21 | 691 | 0.5- | 0.1+ |
| 2001 08 25 | 691 | 0.2- | 0.3- | 2005 05 12 | G96 | 0.5- | 0.0  | 2007 10 30 | 703 | 0.0  | 0.6+ |
| 2001 09 19 | 644 | 0.2+ | 0.9+ | 2007 10 12 | 699 | 0.2+ | 0.7- | 2007 10 30 | 703 | 0.9+ | 0.9- |
| 2001 09 19 | 644 | 1.0+ | 0.8+ | 2007 10 12 | 699 | 0.7- | 0.4+ | 2007 10 30 | 703 | 0.3- | 0.6+ |
| 2001 09 19 | 644 | 0.3+ | 0.8+ | 2007 10 12 | 699 | 1.1+ | 0.8- | 2007 10 30 | 703 | 0.1- | 1.0- |
| 2001 09 20 | 704 | 0.5+ | 0.1+ | 2007 10 12 | 699 | 0.9+ | 0.7- | 2007 11 03 | 699 | 0.1- | 0.2+ |
| 2001 09 20 | 704 | 0.2+ | 0.1+ | 2007 10 13 | 691 | 0.6- | 0.1+ | 2007 11 03 | 699 | 0.2- | 0.5+ |
| 2001 09 20 | 704 | 0.2+ | 0.6+ | 2007 10 13 | 691 | 0.5- | 0.3+ | 2007 11 03 | 699 | 0.9+ | 0.3- |
| 2001 09 20 | 704 | 0.3+ | 0.1- | 2007 10 13 | 691 | 0.5- | 0.1+ | 2007 11 03 | 699 | 1.6- | 0.7- |
| 2001 09 20 | 704 | 0.7+ | 0.3+ | 2007 10 14 | G96 | 0.1+ | 0.5- | 2007 11 06 | 704 | 0.9+ | 1.1- |
| 2001 09 21 | 691 | 0.4+ | 0.2+ | 2007 10 14 | G96 | 0.3+ | 0.4- | 2007 11 06 | 704 | 0.9+ | 1.0+ |
| 2001 09 21 | 691 | 0.2- | 0.5- | 2007 10 14 | G96 | 0.1+ | 0.4- | 2007 11 06 | 704 | 1.1+ | 0.0  |
| 2001 09 21 | 691 | 0.3- | 0.2- | 2007 10 14 | G96 | 0.0  | 0.4- | 2007 11 06 | 704 | 0.4+ | 1.0+ |
| 2001 09 22 | 704 | 0.7+ | 0.3- | 2007 10 15 | 703 | 0.2+ | 0.1+ | 2007 11 06 | A50 | 1.2- | 0.9- |
| 2001 09 22 | 704 | 0.2- | 0.1- | 2007 10 15 | 703 | 0.5- | 1.2+ | 2007 11 06 | A50 | 1.1- | 0.9- |
| 2001 09 22 | 704 | 0.8+ | 0.3+ | 2007 10 15 | 703 | 0.8+ | 0.1+ | 2007 11 06 | A50 | 0.5- | 0.0  |
| 2001 09 22 | 704 | 0.0  | 0.2+ | 2007 10 15 | 703 | 0.5- | 1.1+ | 2007 11 11 | G96 | 0.2+ | 0.1- |
| 2001 09 23 | 704 | 0.1+ | 0.1- | 2007 10 15 | 291 | 0.4- | 0.1- | 2007 11 11 | G96 | 0.5+ | 0.1- |
| 2001 09 23 | 704 | 0.8- | 0.8+ | 2007 10 15 | 291 | 0.4- | 0.0  | 2007 11 11 | G96 | 0.1+ | 0.4- |
| 2001 09 23 | 704 | 0.7- | 0.0  | 2007 10 15 | 291 | 0.5- | 0.1- | 2007 11 11 | G96 | 0.4+ | 0.1- |
| 2001 09 23 | 704 | 0.7- | 0.2+ | 2007 10 16 | 291 | 0.4- | 0.1+ | 2007 11 15 | 704 | 1.0+ | 1.4+ |
| 2001 09 23 | 704 | 1.7- | 0.6+ | 2007 10 16 | 291 | 0.4- | 0.1+ | 2007 11 15 | 704 | 0.5- | 0.4- |
| 2001 09 24 | 644 | 0.3- | 0.1- | 2007 10 16 | 291 | 0.5- | 0.1+ | 2007 11 15 | 704 | 1.3+ | 0.1- |
| 2001 09 24 | 644 | 0.4- | 0.2+ | 2007 10 19 | 291 | 0.6- | 0.0  | 2007 11 15 | 704 | 1.4+ | 0.6+ |
| 2001 09 24 | 644 | 0.5- | 0.4+ | 2007 10 19 | 291 | 0.5- | 0.1- |            |     |      |      |

**2007 TN<sub>280</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 83.74161   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21693488 | $\omega$ 284.16829 | +0.10238567   | +0.99408629 |
| <i>a</i> | 2.7431515  | $\Omega$ 351.45835 | -0.79258090   | +0.05953984 |
| <i>e</i> | 0.1567226  | <i>i</i> 14.10196  | -0.60110955   | +0.09081548 |
| <i>P</i> | 4.54       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 29 | 644 | 0.1+ | 0.3- | 2002 08 30 | 644 | 0.4- | 0.1- | 2007 10 07 | 703 | 0.1+ | 0.3+ |
| 2002 07 29 | 644 | 0.4+ | 0.3+ | 2007 09 09 | 691 | 0.0  | 0.2+ | 2007 10 07 | 703 | 0.7+ | 0.2+ |
| 2002 07 29 | 644 | 0.4- | 0.3- | 2007 09 09 | 691 | 0.1- | 0.1- | 2007 10 07 | 703 | 0.0  | 0.4- |
| 2002 08 13 | 644 | 0.2+ | 0.2+ | 2007 09 09 | 691 | 0.1+ | 0.1- | 2007 10 13 | 703 | 0.1- | 0.1- |
| 2002 08 13 | 644 | 0.1+ | 0.1- | 2007 09 19 | 691 | 0.0  | 0.0  | 2007 10 13 | 703 | 0.0  | 0.1+ |
| 2002 08 13 | 644 | 0.0  | 0.1+ | 2007 09 19 | 691 | 0.2- | 0.0  | 2007 10 13 | 703 | 0.4- | 0.2- |
| 2002 08 30 | 644 | 0.1- | 0.1- | 2007 09 19 | 691 | 0.5- | 0.0  | 2007 10 13 | 703 | 0.7- | 0.5+ |
| 2002 08 30 | 644 | 0.0  | 0.2+ | 2007 10 07 | 703 | 1.0+ | 0.4- |            |     |      |      |

**2007 TG<sub>281</sub> = 2007 SO<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 168.07560  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.31229876 | $\omega$ 224.76848 | -0.87082763   | +0.49118339 |
| <i>a</i> | 2.1515720  | $\Omega$ 344.61483 | -0.42733050   | -0.77643690 |
| <i>e</i> | 0.0802224  | <i>i</i> 4.31309   | -0.24299770   | -0.39482227 |
| <i>P</i> | 3.16       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 10 08 | 691 | 0.5- | 0.1+ | 2007 09 19 | 691 | 0.0  | 0.0  | 2007 10 13 | 703 | 0.2- | 1.2- |
| 2004 10 08 | 691 | 0.0  | 0.5+ | 2007 09 19 | 691 | 0.1- | 0.7+ | 2007 10 13 | 703 | 0.0  | 0.0  |
| 2004 10 08 | 691 | 0.2+ | 0.3+ | 2007 09 24 | 691 | 0.2- | 0.2+ | 2007 10 16 | G96 | 0.2+ | 0.0  |
| 2006 03 25 | 691 | 0.3+ | 0.3+ | 2007 09 24 | 691 | 0.1- | 0.5+ | 2007 10 16 | G96 | 0.2+ | 0.0  |
| 2006 03 25 | 691 | 0.0  | 0.4+ | 2007 09 24 | 691 | 0.4+ | 0.2+ | 2007 10 16 | G96 | 0.3+ | 0.4- |
| 2006 03 25 | 691 | 0.1+ | 0.4+ | 2007 10 07 | G96 | 0.1- | 0.2- | 2007 10 16 | G96 | 0.0  | 0.3- |
| 2006 04 18 | 699 | 0.6- | 0.3- | 2007 10 07 | G96 | 0.0  | 0.2- | 2007 11 11 | G96 | 0.3- | 0.8- |
| 2006 04 18 | 699 | 0.9+ | 0.1- | 2007 10 07 | G96 | 0.1+ | 0.0  | 2007 11 11 | G96 | 0.0  | 1.0- |
| 2006 04 18 | 699 | 0.4- | 0.6+ | 2007 10 07 | G96 | 0.1+ | 0.1- | 2007 11 11 | G96 | 0.2- | 0.8- |
| 2006 04 18 | 699 | 0.1+ | 0.5- | 2007 10 13 | 703 | 0.7+ | 0.1- | 2007 11 11 | G96 | 0.2+ | 1.6- |
| 2007 09 19 | 691 | 0.4- | 0.2+ | 2007 10 13 | 703 | 0.1- | 0.0  |            |     |      |      |

**2007 TO<sub>281</sub> = 1997 TL<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.05226  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19612341 | $\omega$ 53.65346  | +0.63076288   | -0.77591995 |
| <i>a</i> | 2.9339301  | $\Omega$ 357.18725 | +0.63734797   | +0.52487406 |
| <i>e</i> | 0.1273915  | <i>i</i> 10.92035  | +0.44263502   | +0.34993635 |
| <i>P</i> | 5.03       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 03 | 691 | 0.4+ | 0.2+ | 2007 09 15 | 691 | 0.1+ | 0.2- | 2007 10 07 | G96 | 0.5+ | 0.0  |
| 1997 10 03 | 691 | 0.0  | 0.0  | 2007 09 15 | 691 | 0.4+ | 0.5+ | 2007 10 07 | G96 | 0.3+ | 0.0  |
| 1997 10 03 | 691 | 0.0  | 0.2+ | 2007 09 24 | 691 | 0.1+ | 0.2- | 2007 10 13 | 703 | 0.3- | 0.3+ |
| 1997 10 08 | 691 | 0.4- | 0.4+ | 2007 09 24 | 691 | 0.6- | 0.2- | 2007 10 13 | 703 | 0.7+ | 0.2- |
| 1997 10 08 | 691 | 0.1- | 0.6- | 2007 09 24 | 691 | 0.2- | 0.0  | 2007 10 13 | 703 | 1.0- | 0.3+ |
| 1997 10 08 | 691 | 0.1+ | 0.2- | 2007 10 07 | G96 | 0.2+ | 0.1- | 2007 10 13 | 703 | 0.1- | 0.0  |
| 2007 09 15 | 691 | 0.1- | 0.1+ | 2007 10 07 | G96 | 0.1+ | 0.2- |            |     |      |      |

**2007 TQ<sub>281</sub> = 2002 TV<sub>229</sub> = 2005 EJ<sub>87</sub>**Id. Minor Planet Center (*MPO* 128508; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.37748   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19608093 | $\omega$ 191.43870 | +0.88645856   | +0.46278759 |
| <i>a</i> | 2.9343538  | $\Omega$ 140.99321 | -0.42407166   | +0.81598697 |
| <i>e</i> | 0.1308277  | <i>i</i> 0.39548   | -0.18534955   | +0.34639993 |
| <i>P</i> | 5.03       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1992 10 23 | 691 | 0.4+ | 0.5- | 2007 09 11 | G96 | 0.1-  | 0.2+  | 2007 10 18 | G96 | 0.2- | 0.2- |
| 1992 10 23 | 691 | 0.6- | 0.3+ | 2007 09 11 | G96 | 0.2-  | 0.1-  | 2007 10 18 | G96 | 0.2- | 0.2- |
| 1992 10 23 | 691 | 0.1+ | 0.3+ | 2007 09 11 | G96 | 0.3+  | 0.1-  | 2007 10 30 | G96 | 0.5+ | 0.1- |
| 2000 03 03 | 645 | 0.0  | 0.1- | 2007 09 11 | G96 | 0.1+  | 0.4-  | 2007 10 30 | G96 | 0.1- | 0.1- |
| 2000 03 03 | 645 | 0.0  | 0.1- | 2007 10 07 | G96 | 0.3+  | 0.2-  | 2007 10 30 | G96 | 0.2+ | 0.4+ |
| 2002 10 09 | 291 | 0.3+ | 0.1+ | 2007 10 07 | G96 | 0.2+  | 0.1-  | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 2002 10 09 | 291 | 0.1+ | 0.1- | 2007 10 07 | G96 | 0.1-  | 0.3-  | 2007 10 31 | 691 | 0.8- | 0.0  |
| 2002 10 09 | 291 | 1.2+ | 0.3+ | 2007 10 07 | G96 | 0.2+  | 0.1-  | 2007 10 31 | 691 | 0.2- | 0.0  |
| 2002 10 10 | 644 | 0.1- | 0.8- | 2007 10 13 | 703 | 0.9-  | 0.3-  | 2007 10 31 | 691 | 0.4- | 0.4+ |
| 2002 10 10 | 644 | 0.3- | 1.1- | 2007 10 13 | 703 | 0.4-  | 0.1+  | 2007 11 04 | 691 | 0.6- | 0.3+ |
| 2002 10 10 | 644 | 0.1- | 0.5- | 2007 10 13 | 703 | (2.0- | 0.1-) | 2007 11 04 | 691 | 0.8- | 0.5+ |
| 2002 10 10 | 291 | 0.2- | 0.3+ | 2007 10 13 | 703 | 0.0   | 0.6+  | 2007 11 04 | 691 | 0.7- | 0.2- |
| 2002 10 10 | 291 | 0.0  | 0.1+ | 2007 10 15 | 703 | 0.9-  | 0.2-  | 2007 11 05 | 704 | 0.8+ | 0.8+ |
| 2002 10 10 | 291 | 0.4- | 0.3+ | 2007 10 15 | 703 | 0.8+  | 0.1+  | 2007 11 05 | 704 | 1.4+ | 0.7- |
| 2005 03 04 | G96 | 0.1+ | 0.3- | 2007 10 15 | 703 | 1.2-  | 0.5+  | 2007 11 05 | 704 | 0.8+ | 0.3- |
| 2005 03 04 | G96 | 0.5- | 0.1- | 2007 10 15 | 703 | 1.6+  | 0.5+  | 2007 11 05 | 704 | 0.1- | 0.6+ |

## 2007 DEC. 24

|            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|-----|
| 2005 03 04 | G96 | 0.3+ | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.0 |
| 2005 03 04 | G96 | 0.1- | 0.1+ | 2007 10 18 | G96 | 0.0  | 0.0 |

**2007 TR<sub>283</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 67.75996   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17897738 | $\omega$ | 227.41958 | +0.46017504   | +0.88719138 |
| <i>a</i> | 3.1184392  | $\Omega$ | 70.00741  | -0.80372883   | +0.43237396 |
| <i>e</i> | 0.1651072  | <i>i</i> | 2.05032   | -0.37717223   | +0.16107207 |
| <i>P</i> | 5.51       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 27 | 691 | 0.1- | 0.2- | 2007 10 08 | G96 | 0.1+  | 0.1-  | 2007 10 15 | 703 | 0.5+ | 0.3- |
| 2004 01 27 | 691 | 0.2- | 0.2- | 2007 10 08 | G96 | 0.2-  | 0.1+  | 2007 10 15 | 703 | 0.5+ | 1.6+ |
| 2004 01 27 | 691 | 0.3+ | 0.0  | 2007 10 08 | G96 | 0.4-  | 0.2-  | 2007 10 18 | G96 | 0.3- | 0.1- |
| 2005 03 03 | 691 | 0.6+ | 0.2- | 2007 10 08 | G96 | 0.0   | 0.2+  | 2007 10 18 | G96 | 0.1- | 0.1- |
| 2005 03 03 | 691 | 0.2+ | 0.3+ | 2007 10 13 | 703 | 0.1-  | 0.5+  | 2007 10 18 | G96 | 0.2+ | 0.2- |
| 2005 03 03 | 691 | 0.2+ | 0.1+ | 2007 10 13 | 703 | 0.7-  | 0.1+  | 2007 10 18 | G96 | 0.2- | 0.3- |
| 2005 04 11 | G96 | 0.1+ | 0.1+ | 2007 10 13 | 703 | 1.8+  | 0.3+  | 2007 11 04 | 691 | 0.2- | 0.3+ |
| 2005 04 11 | G96 | 0.0  | 0.1+ | 2007 10 13 | 703 | 1.6+  | 0.6-  | 2007 11 04 | 691 | 0.3- | 0.3- |
| 2005 04 11 | G96 | 0.1- | 0.3+ | 2007 10 14 | G96 | 0.3+  | 0.4-  | 2007 11 04 | 691 | 0.4- | 0.4+ |
| 2005 04 11 | G96 | 0.6- | 0.1+ | 2007 10 14 | G96 | 0.2+  | 0.2-  | 2007 11 09 | 691 | 1.0- | 0.4- |
| 2007 09 12 | G96 | 0.0  | 0.4- | 2007 10 14 | G96 | 0.6+  | 0.3-  | 2007 11 09 | 691 | 0.3- | 0.0  |
| 2007 09 12 | G96 | 0.9- | 0.2- | 2007 10 14 | G96 | 0.4+  | 0.4-  | 2007 11 09 | 691 | 0.2+ | 0.5+ |
| 2007 09 12 | G96 | 0.7- | 0.2+ | 2007 10 15 | 703 | (0.4+ | 2.1+) |            |     |      |      |
| 2007 09 12 | G96 | 1.2- | 0.0  | 2007 10 15 | 703 | 0.1-  | 1.1+  |            |     |      |      |

**2007 TU<sub>283</sub> = 2000 FP<sub>14</sub> = 2005 GF<sub>201</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 125.08114  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19338786 | $\omega$ | 67.00329  | -0.32062857   | +0.94717003 |
| <i>a</i> | 2.9615330  | $\Omega$ | 184.32033 | -0.90380508   | -0.30849796 |
| <i>e</i> | 0.0838325  | <i>i</i> | 6.20331   | -0.28343199   | -0.08773794 |
| <i>P</i> | 5.10       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 30 | 691 | 0.0  | 0.1- | 2005 04 04 | G96 | 0.1+ | 0.2- | 2007 10 08 | G96 | 0.3+ | 0.0  |
| 2000 03 30 | 691 | 0.1+ | 0.0  | 2005 04 04 | G96 | 0.2+ | 0.0  | 2007 10 14 | G96 | 0.5- | 0.0  |
| 2000 03 30 | 691 | 0.2+ | 0.0  | 2005 04 04 | G96 | 0.1+ | 0.3+ | 2007 10 14 | G96 | 0.3+ | 0.1- |
| 2000 03 30 | 691 | 0.4- | 0.5- | 2005 04 04 | G96 | 0.6- | 0.4- | 2007 10 14 | G96 | 0.7- | 0.9- |
| 2000 03 30 | 691 | 0.3- | 0.0  | 2005 04 11 | 695 | 0.2+ | 0.5+ | 2007 10 14 | G96 | 0.1+ | 0.1+ |
| 2000 03 30 | 691 | 0.0  | 0.2- | 2005 04 11 | 695 | 0.2+ | 0.6+ | 2007 10 18 | G96 | 0.3- | 0.0  |
| 2000 04 03 | 691 | 0.2- | 0.2- | 2007 10 08 | G96 | 0.1- | 0.2+ | 2007 10 18 | G96 | 0.4- | 0.1+ |
| 2000 04 03 | 691 | 0.2+ | 0.2- | 2007 10 08 | G96 | 0.6+ | 0.2+ | 2007 10 18 | G96 | 0.3+ | 0.2- |
| 2000 04 03 | 691 | 0.1+ | 0.2+ | 2007 10 08 | G96 | 0.2+ | 0.4+ | 2007 10 18 | G96 | 0.3+ | 0.1- |

**2007 TQ<sub>287</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 49.61853   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17082553 | $\omega$ | 266.76881 | +0.68465375   | +0.69912899 |
| <i>a</i> | 3.2168751  | $\Omega$ | 48.74381  | -0.51092235   | +0.66198846 |
| <i>e</i> | 0.0980333  | <i>i</i> | 15.90978  | -0.51981496   | +0.27016649 |
| <i>P</i> | 5.77       | <i>H</i> | 14.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |       |            |     |      |      |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|------|------|
| 2001 10 14 | 644 | 0.2- | 0.2- | 2005 04 04 | 703 | 0.6+ | 0.4+  | 2007 10 11 | 703 | 0.2- | 0.4+ |
| 2001 10 14 | 644 | 0.1+ | 0.5- | 2005 04 04 | 703 | 0.8+ | 0.1+  | 2007 10 11 | 703 | 0.3- | 0.2+ |
| 2001 10 14 | 644 | 0.3+ | 0.1+ | 2007 09 12 | 703 | 1.4- | 0.2-  | 2007 10 15 | 699 | 0.7+ | 0.2- |
| 2004 01 22 | 644 | 0.0  | 0.2+ | 2007 09 12 | 703 | 0.4- | 0.3-  | 2007 10 15 | 699 | 0.1- | 0.0  |
| 2004 01 22 | 644 | 0.0  | 0.3- | 2007 09 12 | 703 | 0.5- | 0.7-  | 2007 10 15 | 699 | 0.1- | 0.1- |
| 2004 01 22 | 644 | 0.1+ | 0.1- | 2007 09 12 | 703 | 0.6- | 0.5-  | 2007 10 15 | 699 | 0.1- | 1.2- |
| 2005 03 10 | 703 | 0.1- | 1.5+ | 2007 09 15 | 699 | 0.4- | 0.0   | 2007 10 19 | 703 | 0.7+ | 0.2+ |
| 2005 03 10 | 703 | 0.2- | 1.0+ | 2007 09 15 | 699 | 0.5- | 1.0+  | 2007 10 19 | 703 | 0.1- | 0.3+ |
| 2005 03 10 | 703 | 1.4+ | 0.2+ | 2007 09 15 | 699 | (0.0 | 2.1+) | 2007 10 19 | 703 | 0.7+ | 0.7+ |
| 2005 03 10 | 703 | 0.7+ | 0.9- | 2007 09 15 | 699 | 1.5+ | 0.1-  | 2007 10 19 | 703 | 0.3+ | 1.4+ |

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|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2005 04 04 | 703 | 1.7- | 0.3- | 2007 10 11 | 703 | 0.1- | 0.0  |
| 2005 04 04 | 703 | 0.5- | 0.3- | 2007 10 11 | 703 | 0.4- | 0.8+ |

**2007 TS<sub>288</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 357.27716  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22609312 | $\omega$ | 294.29531 | +0.92285332   | -0.32927931 |
| <i>a</i> | 2.6685652  | $\Omega$ | 85.43551  | +0.38375861   | +0.83020402 |
| <i>e</i> | 0.0738343  | <i>i</i> | 11.56198  | -0.03272751   | +0.44981822 |
| <i>P</i> | 4.36       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 29 | 699 | 0.2+ | 0.4- | 2005 03 09 | 703 | 1.1- | 0.2+ | 2007 10 11 | 703 | 0.4- | 0.1+ |
| 2003 10 29 | 699 | 0.4- | 0.7+ | 2005 03 09 | 703 | 1.2+ | 0.4- | 2007 10 15 | 699 | 0.3- | 0.1+ |
| 2003 10 29 | 699 | 0.3- | 0.3+ | 2007 09 14 | 703 | 0.6- | 0.4- | 2007 10 15 | 699 | 0.6+ | 0.9- |
| 2003 10 29 | 699 | 0.3- | 0.3+ | 2007 09 14 | 703 | 0.1+ | 0.7- | 2007 10 15 | 699 | 0.3+ | 0.9- |
| 2003 12 22 | 691 | 0.1+ | 0.1+ | 2007 09 14 | 703 | 0.1- | 0.9+ | 2007 10 15 | 699 | 0.2+ | 0.5- |
| 2003 12 22 | 691 | 0.4+ | 0.3- | 2007 09 14 | 703 | 0.0  | 0.6+ | 2007 10 19 | 703 | 0.1- | 0.2- |
| 2003 12 22 | 691 | 0.2+ | 0.2- | 2007 10 11 | 703 | 0.0  | 0.7+ | 2007 10 19 | 703 | 0.4+ | 0.5+ |
| 2005 03 09 | 703 | 0.5- | 0.1- | 2007 10 11 | 703 | 0.4- | 0.5+ | 2007 10 19 | 703 | 0.4+ | 0.1- |
| 2005 03 09 | 703 | 0.2+ | 0.0  | 2007 10 11 | 703 | 0.4- | 0.5+ | 2007 10 19 | 703 | 0.5+ | 0.7- |

**2007 TB<sub>289</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 345.87415  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18014319 | $\omega$ | 276.32419 | +0.76988037   | -0.61427818 |
| <i>a</i> | 3.1049706  | $\Omega$ | 121.71772 | +0.63579060   | +0.71476972 |
| <i>e</i> | 0.1030846  | <i>i</i> | 11.73783  | +0.05526778   | +0.33431507 |
| <i>P</i> | 5.47       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 11 | 608 | 0.3- | 0.5+ | 2007 09 12 | 703 | 0.0  | 0.3+ | 2007 10 19 | 703 | 0.3-  | 0.4+  |
| 2001 08 11 | 608 | 0.0  | 0.7+ | 2007 10 11 | 703 | 0.7+ | 0.5+ | 2007 10 19 | 703 | 0.1-  | 0.2+  |
| 2001 08 11 | 608 | 0.1- | 0.3+ | 2007 10 11 | 703 | 0.2- | 0.3- | 2007 10 19 | 703 | 0.2+  | 0.1-  |
| 2001 08 23 | 608 | 0.0  | 0.7- | 2007 10 11 | 703 | 0.3+ | 0.1+ | 2007 10 19 | 703 | 0.6-  | 0.0   |
| 2001 08 23 | 608 | 0.3+ | 0.6- | 2007 10 11 | 703 | 0.3+ | 0.6- | 2007 11 11 | 703 | (1.0+ | 2.5-) |
| 2001 08 23 | 608 | 0.1+ | 0.8- | 2007 10 15 | 699 | 0.7- | 0.0  | 2007 11 11 | 703 | 0.2+  | 0.0   |
| 2007 09 12 | 703 | 0.4+ | 1.3+ | 2007 10 15 | 699 | 0.3+ | 0.1- | 2007 11 11 | 703 | 0.5-  | 1.0-  |
| 2007 09 12 | 703 | 0.3- | 0.1+ | 2007 10 15 | 699 | 0.1+ | 0.1+ | 2007 11 11 | 703 | 0.4+  | 1.2-  |
| 2007 09 12 | 703 | 0.1+ | 0.2+ | 2007 10 15 | 699 | 0.1- | 0.4+ |            |     |       |       |

**2007 TC<sub>289</sub> = 2005 EX<sub>294</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 326.74193  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26977131 | $\omega$ | 289.24970 | +0.28275514   | -0.95326159 |
| <i>a</i> | 2.3721321  | $\Omega$ | 143.77913 | +0.93376758   | +0.24816464 |
| <i>e</i> | 0.2006391  | <i>i</i> | 10.38320  | +0.21938011   | +0.17235617 |
| <i>P</i> | 3.65       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 12 | 704 | 0.7+ | 0.3- | 2007 09 12 | 703 | 0.5+ | 0.6+ | 2007 10 15 | 699 | 0.3+ | 0.2- |
| 2005 03 12 | 704 | 1.2- | 0.6- | 2007 09 12 | 703 | 0.3+ | 1.1+ | 2007 10 15 | 699 | 0.9+ | 0.8- |
| 2005 03 12 | 704 | 1.4+ | 1.3+ | 2007 09 12 | 703 | 0.9- | 0.9- | 2007 10 15 | 699 | 0.9+ | 0.4- |
| 2005 03 12 | 704 | 0.2- | 0.1+ | 2007 09 12 | 703 | 0.4+ | 0.6- | 2007 10 15 | 699 | 0.6- | 0.2- |
| 2005 03 16 | 703 | 0.7- | 0.1- | 2007 10 11 | 703 | 0.4- | 0.7+ | 2007 10 19 | 703 | 0.5- | 0.5+ |
| 2005 03 16 | 703 | 1.1- | 0.4+ | 2007 10 11 | 703 | 0.4- | 0.2- | 2007 10 19 | 703 | 0.5+ | 0.4+ |
| 2005 03 16 | 703 | 0.3- | 0.6- | 2007 10 11 | 703 | 0.1+ | 0.1+ | 2007 10 19 | 703 | 0.1- | 0.1- |
| 2005 03 16 | 703 | 1.6+ | 0.1- | 2007 10 11 | 703 | 0.9- | 0.2- | 2007 10 19 | 703 | 0.1- | 0.2+ |

**2007 TY<sub>289</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.81546  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.21174521 | $\omega$ 7.62694  | +0.59151434   | -0.79576587 |
| <i>a</i> | 2.7877917  | $\Omega$ 46.21951 | +0.72993961   | +0.46008601 |
| <i>e</i> | 0.2823770  | <i>i</i> 10.36295 | +0.34248935   | +0.39379888 |
| <i>P</i> | 4.65       | <i>H</i> 16.3     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 05 | 645 | 0.0  | 0.1+ | 2007 09 12 | 703 | 0.4- | 0.2+ | 2007 10 15 | 699 | 0.3+ | 0.1+ |
| 2000 05 05 | 645 | 0.1+ | 0.1+ | 2007 09 21 | D29 | 0.4+ | 0.2- | 2007 10 19 | 703 | 0.4- | 0.2+ |
| 2004 02 17 | 645 | 0.0  | 0.0  | 2007 09 21 | D29 | 0.2- | 0.5- | 2007 10 19 | 703 | 0.6- | 0.2- |
| 2004 02 17 | 645 | 0.0  | 0.0  | 2007 09 21 | D29 | 0.5+ | 0.2+ | 2007 10 19 | 703 | 0.8- | 0.0  |
| 2005 04 10 | G96 | 0.0  | 0.2+ | 2007 09 21 | D29 | 0.1+ | 0.3- | 2007 10 19 | 703 | 0.0  | 0.2+ |
| 2005 04 10 | G96 | 0.2+ | 0.1+ | 2007 10 12 | 703 | 0.8+ | 0.6+ | 2007 12 05 | 704 | 0.3+ | 0.8+ |
| 2005 04 10 | G96 | 0.4+ | 0.0  | 2007 10 12 | 703 | 0.6- | 0.2- | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2005 04 10 | G96 | 0.3- | 0.0  | 2007 10 12 | 703 | 0.4- | 0.3- | 2007 12 05 | 704 | 0.6+ | 0.1- |
| 2007 09 12 | 703 | 0.8- | 0.8+ | 2007 10 15 | 699 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.6- | 0.7+ |
| 2007 09 12 | 703 | 1.0- | 0.2+ | 2007 10 15 | 699 | 0.5+ | 0.2+ | 2007 12 05 | 704 | 0.3- | 0.7+ |
| 2007 09 12 | 703 | 0.9+ | 0.3+ | 2007 10 15 | 699 | 1.3- | 0.8+ |            |     |      |      |

**2007 TN<sub>292</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.97446  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24047865 | $\omega$ 337.23268 | +0.88874033   | -0.45772658 |
| <i>a</i> | 2.5610518  | $\Omega$ 50.03214  | +0.42545321   | +0.80327492 |
| <i>e</i> | 0.0878242  | <i>i</i> 1.87230   | +0.17067567   | +0.38109812 |
| <i>P</i> | 4.10       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 05 | 691 | 0.5+ | 0.6- | 2007 09 12 | G96 | 0.1+ | 0.2+ | 2007 10 30 | G96 | 0.1- | 0.2- |
| 1999 12 05 | 691 | 0.2+ | 0.4- | 2007 09 12 | G96 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.0  |
| 1999 12 05 | 691 | 0.1- | 0.2- | 2007 09 12 | G96 | 0.3- | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.0  |
| 2001 02 20 | 645 | 0.1- | 0.1- | 2007 09 12 | G96 | 0.4- | 0.1+ | 2007 11 02 | 691 | 0.2- | 0.2- |
| 2001 02 20 | 645 | 0.0  | 0.1- | 2007 10 08 | G96 | 0.3+ | 0.3- | 2007 11 02 | 691 | 0.1- | 1.0- |
| 2001 02 27 | 691 | 0.2+ | 0.7+ | 2007 10 08 | G96 | 0.4+ | 0.3- | 2007 11 02 | 691 | 0.6- | 0.4+ |
| 2001 02 27 | 691 | 0.0  | 1.3+ | 2007 10 08 | G96 | 0.1- | 0.2- | 2007 11 04 | 691 | 0.2- | 0.4+ |
| 2001 02 27 | 691 | 0.6+ | 0.4+ | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 11 04 | 691 | 0.6- | 0.1- |
| 2003 10 02 | 691 | 0.2+ | 0.1+ | 2007 10 14 | G96 | 0.2+ | 0.2- | 2007 11 04 | 691 | 0.1- | 0.0  |
| 2003 10 02 | 691 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.3- | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2003 10 02 | 691 | 0.3+ | 0.4+ | 2007 10 14 | G96 | 0.1+ | 0.3- | 2007 11 05 | G96 | 0.5+ | 0.4- |
| 2003 10 21 | 691 | 0.0  | 0.3- | 2007 10 14 | G96 | 0.1+ | 0.2- | 2007 11 05 | G96 | 0.4+ | 0.3- |
| 2003 10 21 | 691 | 0.3+ | 0.3- | 2007 10 15 | 703 | 0.3- | 1.3+ | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2003 10 21 | 691 | 0.1- | 0.0  | 2007 10 15 | 703 | 0.2- | 1.3+ | 2007 11 09 | 691 | 0.1+ | 0.3- |
| 2003 11 19 | 691 | 0.6- | 0.2+ | 2007 10 15 | 703 | 1.5+ | 1.4+ | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2003 11 19 | 691 | 0.2- | 0.0  | 2007 10 15 | 703 | 0.7+ | 1.8+ | 2007 11 09 | 691 | 0.4- | 0.3+ |
| 2003 11 19 | 691 | 0.3- | 0.3+ | 2007 10 18 | G96 | 0.7+ | 0.7+ | 2007 11 13 | 691 | 0.1- | 0.0  |
| 2005 04 11 | G96 | 0.3+ | 0.1+ | 2007 10 18 | G96 | 1.0+ | 0.5+ | 2007 11 13 | 691 | 0.3+ | 0.1+ |
| 2005 04 11 | G96 | 0.3- | 0.2- | 2007 10 18 | G96 | 0.3+ | 0.3+ | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2005 04 11 | G96 | 0.2+ | 0.6- | 2007 10 18 | G96 | 0.6+ | 0.4+ |            |     |      |      |
| 2005 04 11 | G96 | 0.2+ | 0.3- | 2007 10 30 | G96 | 0.0  | 0.1- |            |     |      |      |

**2007 TX<sub>292</sub> = 2005 GS<sub>203</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 243.99844  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.20925653 | $\omega$ 55.90533 | -0.78147213   | -0.62324223 |
| <i>a</i> | 2.8098515  | $\Omega$ 85.52345 | +0.56226396   | -0.72393470 |
| <i>e</i> | 0.0153373  | <i>i</i> 1.69583  | +0.27048207   | -0.29578315 |
| <i>P</i> | 4.71       | <i>H</i> 16.8     | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 09 | G96 | 0.3+ | 0.1+ | 2007 09 12 | G96 | 0.5- | 0.1+ | 2007 10 14 | G96 | 0.1- | 0.6- |
| 2005 04 09 | G96 | 0.1- | 0.3- | 2007 09 12 | G96 | 0.4- | 0.2+ | 2007 10 14 | G96 | 0.0  | 0.1- |
| 2005 04 09 | G96 | 0.4- | 0.1- | 2007 10 08 | G96 | 0.4+ | 0.6+ | 2007 10 18 | G96 | 0.3+ | 0.2+ |
| 2005 04 09 | G96 | 0.6- | 0.4+ | 2007 10 08 | G96 | 0.3+ | 0.2+ | 2007 10 18 | G96 | 0.3- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 12 | 695 | 0.6+ | 0.2+ | 2007 10 08 | G96 | 0.3+ | 0.1- | 2007 10 18 | G96 | 0.2+ | 0.1+ |
| 2005 04 12 | 695 | 0.2+ | 0.1- | 2007 10 08 | G96 | 0.2+ | 0.5+ | 2007 10 18 | G96 | 0.0  | 0.1+ |
| 2007 09 12 | G96 | 0.4+ | 0.2- | 2007 10 14 | G96 | 0.6- | 0.7- |            |     |      |      |
| 2007 09 12 | G96 | 0.1- | 0.1- | 2007 10 14 | G96 | 0.1- | 0.1- |            |     |      |      |

**2007 TV<sub>293</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.44627  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21484829 | $\omega$ 196.47776 | +0.47868059   | -0.86801694 |
| <i>a</i> | 2.7608837  | $\Omega$ 225.15202 | +0.82508071   | +0.49610851 |
| <i>e</i> | 0.1345738  | <i>i</i> 10.72620  | +0.30017780   | +0.02056549 |
| <i>P</i> | 4.59       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 644 | 0.1- | 0.3+ | 2007 10 15 | G96 | 0.0  | 0.3- | 2007 11 14 | 704 | 0.7- | 0.3+ |
| 2002 10 04 | 644 | 0.1- | 0.1- | 2007 10 31 | G96 | 0.3+ | 0.4- | 2007 11 14 | 704 | 0.8- | 0.0  |
| 2002 10 04 | 644 | 0.1- | 0.3+ | 2007 10 31 | G96 | 0.5+ | 0.5- | 2007 11 14 | 704 | 0.1- | 0.1+ |
| 2006 06 02 | 691 | 0.1+ | 0.2+ | 2007 10 31 | G96 | 0.6+ | 0.4- | 2007 11 20 | 703 | 0.6- | 0.3+ |
| 2006 06 02 | 691 | 0.3- | 0.3- | 2007 10 31 | G96 | 0.1+ | 0.2- | 2007 11 20 | 703 | 0.3- | 0.0  |
| 2006 06 02 | 691 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 11 20 | 703 | 0.4- | 0.8+ |
| 2007 08 24 | 691 | 0.4- | 0.1+ | 2007 11 04 | 691 | 0.2+ | 0.0  | 2007 11 20 | 703 | 0.5- | 0.9- |
| 2007 08 24 | 691 | 0.8- | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.1- | 0.3+ |
| 2007 08 24 | 691 | 0.9+ | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.2- | 2007 12 04 | 704 | 1.5- | 0.1- |
| 2007 09 14 | G96 | 0.2- | 0.1- | 2007 11 08 | 691 | 0.1+ | 0.1- | 2007 12 04 | 704 | 0.0  | 0.2+ |
| 2007 09 14 | G96 | 0.2+ | 0.2- | 2007 11 08 | 691 | 0.2+ | 0.3+ | 2007 12 04 | 704 | 0.8+ | 0.6+ |
| 2007 09 14 | G96 | 0.6- | 0.3- | 2007 11 12 | 704 | 0.2- | 0.3+ | 2007 12 04 | 704 | 0.1- | 0.5+ |
| 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 11 12 | 704 | 0.3+ | 0.1- | 2007 12 05 | 699 | 0.4+ | 0.5+ |
| 2007 10 09 | G96 | 0.1- | 0.1- | 2007 11 12 | 704 | 0.3- | 0.1+ | 2007 12 05 | 699 | 0.5- | 0.1- |
| 2007 10 09 | G96 | 0.4+ | 0.4- | 2007 11 12 | 704 | 0.5- | 1.1+ | 2007 12 05 | 699 | 1.5- | 0.1+ |
| 2007 10 09 | G96 | 0.1- | 0.2- | 2007 11 12 | 704 | 0.1+ | 1.2+ | 2007 12 05 | 699 | 0.4- | 0.5- |
| 2007 10 09 | G96 | 0.1- | 0.4- | 2007 11 13 | 699 | 0.9+ | 0.7- | 2007 12 06 | G96 | 0.1- | 0.1- |
| 2007 10 14 | G96 | 0.3+ | 0.5- | 2007 11 13 | 699 | 0.4+ | 0.6- | 2007 12 06 | G96 | 0.2- | 0.0  |
| 2007 10 14 | G96 | 0.5+ | 0.3- | 2007 11 13 | 699 | 0.2- | 0.2- | 2007 12 06 | G96 | 0.8+ | 0.0  |
| 2007 10 14 | G96 | 0.0  | 0.4- | 2007 11 13 | 699 | 0.9+ | 0.1+ | 2007 12 06 | G96 | 0.3+ | 0.1- |
| 2007 10 15 | G96 | 0.0  | 0.1- | 2007 11 14 | 704 | 0.2+ | 0.1- |            |     |      |      |
| 2007 10 15 | G96 | 0.2- | 0.1- | 2007 11 14 | 704 | 0.2+ | 0.1+ |            |     |      |      |

**2007 TA<sub>294</sub> = 2006 JN<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.36038   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28117580 | $\omega$ 116.29314 | +0.90205969   | +0.42753629 |
| <i>a</i> | 2.3075481  | $\Omega$ 218.47470 | -0.42210763   | +0.84525813 |
| <i>e</i> | 0.2101934  | <i>i</i> 5.45719   | -0.09007479   | +0.32054861 |
| <i>P</i> | 3.51       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 30 | 691 | 0.2- | 0.0  | 2007 10 09 | G96 | 0.5+ | 0.4+ | 2007 11 08 | 691 | 0.4+ | 0.3- |
| 2000 12 30 | 691 | 0.1- | 0.3+ | 2007 10 09 | G96 | 0.7+ | 0.3- | 2007 11 20 | G96 | 0.3+ | 0.1- |
| 2000 12 30 | 691 | 0.3+ | 0.1- | 2007 10 09 | G96 | 0.3+ | 0.2- | 2007 11 20 | G96 | 0.1+ | 0.1- |
| 2006 05 01 | 568 | 0.3- | 0.5- | 2007 10 14 | G96 | 0.0  | 0.3+ | 2007 11 20 | G96 | 0.5+ | 0.3+ |
| 2006 05 01 | 568 | 0.3- | 0.6- | 2007 10 14 | G96 | 0.2+ | 0.0  | 2007 11 20 | G96 | 0.4+ | 0.2- |
| 2006 05 01 | 568 | 0.4- | 0.6- | 2007 10 14 | G96 | 0.1+ | 0.2- | 2007 11 20 | G96 | 0.3- | 0.1- |
| 2006 05 26 | 291 | 0.0  | 0.4+ | 2007 10 14 | G96 | 0.1- | 0.4- | 2007 11 20 | G96 | 0.3+ | 0.0  |
| 2006 05 26 | 291 | 0.2+ | 0.0  | 2007 10 15 | G96 | 0.1+ | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.2+ |
| 2006 05 26 | 291 | 0.2+ | 0.7+ | 2007 10 15 | G96 | 0.2- | 0.0  | 2007 11 20 | G96 | 0.0  | 0.0  |
| 2007 08 22 | 691 | 0.6+ | 0.3+ | 2007 10 15 | G96 | 0.2+ | 0.3- | 2007 11 21 | G96 | 0.1- | 0.2- |
| 2007 08 22 | 691 | 0.9- | 0.1+ | 2007 10 15 | G96 | 0.5+ | 0.1- | 2007 11 21 | G96 | 0.2+ | 0.0  |
| 2007 08 22 | 691 | 0.1+ | 0.2+ | 2007 11 08 | 691 | 0.3- | 0.3+ | 2007 11 21 | G96 | 0.0  | 0.1- |
| 2007 10 09 | G96 | 0.1- | 0.2- | 2007 11 08 | 691 | 0.9- | 0.4+ | 2007 11 21 | G96 | 0.3+ | 0.1- |



2007 DEC. 24

M.P.O. 129899

**2007 TC<sub>294</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.30547    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22362520 | $\omega$ | 184.14404 | +0.62961565   | -0.75796732 |
| <i>a</i> | 2.6881627  | $\Omega$ | 226.94160 | +0.71933773   | +0.65165398 |
| <i>e</i> | 0.2420069  | <i>i</i> | 13.49432  | +0.29349167   | +0.02885529 |
| <i>P</i> | 4.41       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.0  | 0.0  | 2007 10 15 | G96 | 0.3+ | 0.0  | 2007 11 07 | 691 | 0.2+ | 0.1+ |
| 2002 10 05 | 645 | 0.1- | 0.1- | 2007 10 15 | G96 | 0.1- | 0.2- | 2007 11 08 | 691 | 0.2- | 0.2- |
| 2002 10 10 | 645 | 0.0  | 0.1+ | 2007 10 15 | G96 | 0.0  | 0.2- | 2007 11 08 | 691 | 0.2- | 0.1+ |
| 2002 10 10 | 645 | 0.1+ | 0.0  | 2007 10 15 | G96 | 0.0  | 0.0  | 2007 11 08 | 691 | 0.1- | 0.2+ |
| 2007 10 09 | G96 | 0.4- | 0.3- | 2007 11 03 | 691 | 0.3- | 0.1- | 2007 11 12 | 704 | 0.9- | 0.9- |
| 2007 10 09 | G96 | 0.1- | 0.4- | 2007 11 03 | 691 | 0.2+ | 0.1- | 2007 11 12 | 704 | 0.6- | 0.2+ |
| 2007 10 09 | G96 | 1.2+ | 0.5- | 2007 11 03 | 691 | 0.3- | 0.2- | 2007 11 12 | 704 | 0.2+ | 0.1+ |
| 2007 10 09 | G96 | 0.1+ | 0.8+ | 2007 11 04 | 691 | 0.1- | 0.5+ | 2007 11 12 | 704 | 0.3+ | 1.1- |
| 2007 10 14 | G96 | 0.3- | 0.2- | 2007 11 04 | 691 | 0.1- | 0.2- | 2007 11 20 | A50 | 0.5- | 1.0- |
| 2007 10 14 | G96 | 0.0  | 0.1- | 2007 11 04 | 691 | 0.4- | 0.0  | 2007 11 20 | A50 | 0.4+ | 0.7- |
| 2007 10 14 | G96 | 0.2- | 0.1- | 2007 11 07 | 691 | 1.2+ | 1.2+ | 2007 11 20 | A50 | 0.7+ | 0.0  |
| 2007 10 14 | G96 | 0.0  | 0.3- | 2007 11 07 | 691 | 0.1- | 0.1+ | 2007 11 20 | A50 | 0.7+ | 0.6- |

**2007 TA<sub>298</sub> = 2002 GE<sub>159</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 254.09330  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27510082 | $\omega$ | 128.17985 | -0.76129943   | -0.64803569 |
| <i>a</i> | 2.3413956  | $\Omega$ | 11.48187  | +0.55549482   | -0.66914932 |
| <i>e</i> | 0.0762652  | <i>i</i> | 6.27201   | +0.33443785   | -0.36371545 |
| <i>P</i> | 3.58       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 14 | 704 | 0.7+  | 0.6+  | 2005 01 07 | 599 | 0.7+ | 0.2- | 2007 10 16 | 691 | 0.6- | 0.5+ |
| 2002 04 14 | 704 | 1.0+  | 1.4+  | 2005 01 07 | 599 | 0.1+ | 0.1- | 2007 10 16 | 691 | 0.2+ | 0.3+ |
| 2002 04 14 | 704 | 0.0   | 1.4+  | 2007 09 14 | G96 | 0.1+ | 0.2+ | 2007 10 21 | 691 | 0.0  | 0.2+ |
| 2002 04 14 | 704 | 0.5+  | 1.4+  | 2007 09 14 | G96 | 0.6+ | 0.1- | 2007 10 21 | 691 | 0.5- | 0.0  |
| 2002 04 14 | 704 | 0.8+  | 0.7+  | 2007 09 14 | G96 | 0.9+ | 0.2+ | 2007 10 21 | 691 | 0.7- | 0.3+ |
| 2002 04 16 | 704 | (2.0+ | 0.3+) | 2007 09 14 | G96 | 0.4+ | 0.6- | 2007 11 07 | 691 | 0.1+ | 0.4+ |
| 2002 04 16 | 704 | (1.5+ | 1.6+) | 2007 10 11 | G96 | 0.2+ | 0.3- | 2007 11 07 | 691 | 0.0  | 0.4+ |
| 2002 04 16 | 704 | (2.4+ | 0.6+) | 2007 10 11 | G96 | 0.5+ | 0.2- | 2007 11 07 | 691 | 0.0  | 0.6+ |
| 2005 01 07 | 599 | 0.6-  | 0.0   | 2007 10 11 | G96 | 0.4+ | 0.2- |            |     |      |      |
| 2005 01 07 | 599 | 0.5-  | 0.0   | 2007 10 16 | 691 | 0.0  | 0.7- |            |     |      |      |

**2007 TF<sub>298</sub> = 2002 QY<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 14.54652   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21844817 | $\omega$ | 6.21268  | +0.87458327   | -0.48409875 |
| <i>a</i> | 2.7304681  | $\Omega$ | 22.80405 | +0.44176217   | +0.77222131 |
| <i>e</i> | 0.1885065  | <i>i</i> | 4.05861  | +0.19987566   | +0.41148834 |
| <i>P</i> | 4.51       | <i>H</i> | 16.7     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 26 | 644 | 0.2- | 0.5+ | 2007 09 09 | G96 | 0.4+ | 0.1- | 2007 11 18 | 704 | 0.6- | 0.4+ |
| 2002 08 26 | 644 | 0.4- | 0.8+ | 2007 10 11 | 688 | 0.5+ | 0.1+ | 2007 11 18 | 704 | 0.3- | 0.4+ |
| 2002 08 26 | 644 | 0.0  | 0.7+ | 2007 10 11 | 688 | 0.4+ | 0.2+ | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2002 08 29 | 644 | 0.2+ | 0.1- | 2007 10 14 | G96 | 0.5+ | 0.5- | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2002 08 29 | 644 | 0.1- | 0.2- | 2007 10 14 | G96 | 0.9+ | 0.3- | 2007 11 18 | 691 | 0.3- | 0.1- |
| 2002 08 29 | 644 | 0.3- | 0.3- | 2007 10 14 | G96 | 0.7+ | 0.3- | 2007 11 20 | 704 | 0.1+ | 0.4+ |
| 2004 02 17 | 691 | 0.2- | 0.0  | 2007 10 14 | G96 | 0.5+ | 0.4- | 2007 11 20 | 704 | 0.3- | 0.3- |
| 2004 02 17 | 691 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.3- | 0.2+ | 2007 11 20 | 704 | 0.2- | 0.5+ |
| 2004 02 17 | 691 | 0.2+ | 0.1+ | 2007 11 02 | 691 | 0.1- | 0.2- | 2007 11 20 | 704 | 0.4- | 0.9+ |
| 2007 09 09 | G96 | 0.2+ | 0.2- | 2007 11 02 | 691 | 0.1- | 0.2- | 2007 11 20 | 704 | 0.9+ | 0.1+ |
| 2007 09 09 | G96 | 0.4+ | 0.6- | 2007 11 18 | 704 | 0.6+ | 0.2+ |            |     |      |      |
| 2007 09 09 | G96 | 0.5+ | 0.0  | 2007 11 18 | 704 | 0.1+ | 0.3+ |            |     |      |      |

**2007 TG<sub>298</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 59.16744   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21322911 | $\omega$ | 88.52944  | +0.96367064   | +0.26039098 |
| <i>a</i> | 2.7748428  | $\Omega$ | 256.37452 | -0.26287068   | +0.88520619 |
| <i>e</i> | 0.0796467  | <i>i</i> | 3.50762   | -0.04730638   | +0.38549518 |
| <i>P</i> | 4.62       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 12 | 645 | 0.0  | 0.0  | 2006 07 23 | G96 | 0.5- | 0.4+ | 2007 11 07 | 691 | 0.1+  | 0.0   |
| 2000 02 12 | 645 | 0.0  | 0.1- | 2006 07 23 | G96 | 0.2- | 0.3+ | 2007 11 07 | 691 | 0.1+  | 0.1-  |
| 2002 10 04 | 644 | 0.1- | 0.5+ | 2006 07 23 | G96 | 0.2+ | 0.3+ | 2007 11 14 | 691 | 0.1+  | 0.1-  |
| 2002 10 04 | 644 | 0.2+ | 0.2- | 2007 10 11 | 688 | 0.1- | 0.1+ | 2007 11 14 | 691 | 0.2-  | 0.1+  |
| 2002 10 04 | 644 | 0.3- | 0.6+ | 2007 10 11 | 688 | 0.0  | 0.2+ | 2007 11 14 | 691 | 0.0   | 0.0   |
| 2004 01 15 | 691 | 0.2- | 0.1+ | 2007 10 14 | G96 | 0.1- | 0.2- | 2007 11 15 | 704 | (1.6- | 1.5+) |
| 2004 01 15 | 691 | 0.0  | 0.1+ | 2007 10 14 | G96 | 0.3+ | 0.3- | 2007 11 15 | 704 | 0.7-  | 1.3+  |
| 2004 01 15 | 691 | 0.1+ | 0.1+ | 2007 10 14 | G96 | 0.3+ | 0.4- | 2007 11 15 | 704 | (2.2- | 1.1+) |
| 2005 03 17 | G96 | 0.2- | 0.4- | 2007 10 14 | G96 | 0.6+ | 0.3- | 2007 11 15 | 704 | 0.9-  | 1.2+  |
| 2005 03 17 | G96 | 0.4- | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 18 | 691 | 0.2-  | 0.1+  |
| 2005 03 17 | G96 | 0.3- | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.6+  | 0.6+  |
| 2005 03 17 | G96 | 0.6- | 0.1+ | 2007 10 30 | 691 | 0.4- | 0.4- | 2007 11 18 | 691 | 0.2+  | 0.0   |
| 2005 04 10 | 691 | 0.4+ | 0.5+ | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 12 03 | 703 | (3.0+ | 0.8-) |
| 2005 04 10 | 691 | 0.4+ | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.0  | 2007 12 03 | 703 | 0.7+  | 0.3+  |
| 2005 04 10 | 691 | 0.0  | 0.4+ | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 12 03 | 703 | 0.7+  | 0.2+  |
| 2006 07 23 | G96 | 0.0  | 0.4+ | 2007 11 07 | 691 | 0.5- | 0.3+ | 2007 12 03 | 703 | 0.2-  | 0.9-  |

**2007 TY<sub>298</sub> = 1995 DX<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 298.75065  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28325555 | $\omega$ | 80.88787 | -0.13824290   | -0.98977276 |
| <i>a</i> | 2.2962391  | $\Omega$ | 17.17855 | +0.85543271   | -0.13723821 |
| <i>e</i> | 0.0470277  | <i>i</i> | 6.84413  | +0.49912301   | -0.03893028 |
| <i>P</i> | 3.48       | <i>H</i> | 17.1     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 12 | 809 | 1.0- | 1.3+ | 2005 02 04 | G96 | 0.2+ | 0.5- | 2007 10 16 | 691 | 0.4- | 0.0  |
| 1993 10 12 | 809 | 0.5+ | 0.3+ | 2005 02 04 | G96 | 0.2+ | 0.6- | 2007 10 16 | 691 | 0.7- | 0.2+ |
| 1993 10 12 | 809 | 0.7+ | 1.2+ | 2005 02 04 | G96 | 0.1+ | 0.5- | 2007 10 20 | 691 | 1.4+ | 0.3- |
| 1995 02 25 | 691 | 0.0  | 0.5- | 2005 02 04 | G96 | 0.3+ | 0.6- | 2007 10 20 | 691 | 0.2- | 0.2+ |
| 1995 02 25 | 691 | 0.2- | 0.5- | 2007 09 08 | G96 | 0.5- | 0.1- | 2007 10 20 | 691 | 0.1- | 0.1+ |
| 1995 02 25 | 691 | 0.1- | 0.5- | 2007 09 08 | G96 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.1+ |
| 1995 03 04 | 691 | 0.4+ | 1.7+ | 2007 09 08 | G96 | 0.1+ | 0.1+ | 2007 11 11 | G96 | 0.1+ | 0.1- |
| 1995 03 04 | 691 | 0.7- | 0.4+ | 2007 10 12 | 691 | 0.5- | 0.5+ | 2007 11 11 | G96 | 0.1- | 0.0  |
| 2002 04 19 | 691 | 0.3+ | 0.0  | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 11 11 | G96 | 0.2+ | 0.1+ |
| 2002 04 19 | 691 | 0.6+ | 0.8+ | 2007 10 12 | 691 | 0.2- | 0.0  |            |     |      |      |
| 2002 04 19 | 691 | 0.7+ | 0.4+ | 2007 10 16 | 691 | 0.4- | 0.3+ |            |     |      |      |

**2007 TD<sub>299</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.75197  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27283476 | $\omega$ | 221.93760 | +0.26722892   | -0.96192263 |
| <i>a</i> | 2.3543422  | $\Omega$ | 212.68445 | +0.90996356   | +0.27149565 |
| <i>e</i> | 0.0982707  | <i>i</i> | 6.10059   | +0.31710411   | +0.03154296 |
| <i>P</i> | 3.61       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 22 | 644 | 0.0  | 0.1- | 2007 10 15 | 703 | 0.3+ | 0.4+ | 2007 11 04 | 104 | 0.4+ | 0.0  |
| 2003 08 22 | 644 | 0.1+ | 0.1+ | 2007 10 15 | 703 | 0.7+ | 1.1+ | 2007 11 04 | 104 | 0.3+ | 0.5- |
| 2003 08 22 | 644 | 0.2+ | 0.2+ | 2007 10 15 | 703 | 0.5- | 0.7+ | 2007 11 04 | 104 | 0.2- | 0.2- |
| 2003 09 18 | 644 | 0.1+ | 0.2- | 2007 10 16 | 691 | 0.2- | 0.3- | 2007 11 05 | 704 | 0.3- | 0.0  |
| 2003 09 18 | 644 | 0.0  | 0.1+ | 2007 10 16 | 691 | 0.1- | 0.1+ | 2007 11 05 | 704 | 0.3+ | 0.0  |
| 2003 09 18 | 644 | 0.4- | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.4- | 2007 11 05 | 704 | 0.0  | 0.1- |
| 2005 02 04 | 644 | 0.1- | 0.4- | 2007 10 20 | 703 | 0.3- | 0.3+ | 2007 11 05 | 704 | 0.2+ | 0.3- |
| 2005 02 04 | 644 | 0.0  | 0.3- | 2007 10 20 | 703 | 1.5- | 0.4- | 2007 11 05 | 704 | 0.2- | 0.1+ |
| 2005 02 04 | 644 | 0.0  | 0.8- | 2007 10 20 | 703 | 0.5+ | 0.1- | 2007 11 12 | 703 | 1.1- | 0.2+ |

## M.P.O. 129900

2007 DEC. 24

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 04 | 703 | 0.3−  | 0.3+  | 2007 10 20 | 703 | 0.2+  | 1.6+  | 2007 11 12 | 703 | 0.1+ | 1.0+ |
| 2005 02 04 | 703 | 0.1−  | 0.4−  | 2007 10 30 | 703 | 1.0+  | 0.9+  | 2007 11 12 | 703 | 0.5− | 0.3+ |
| 2005 02 04 | 703 | (1.9− | 2.4+) | 2007 10 30 | 703 | 1.4+  | 1.0+  | 2007 11 12 | 703 | 0.9− | 0.7− |
| 2005 02 04 | 703 | 0.7+  | 1.8+  | 2007 10 30 | 703 | 0.8−  | 0.4+  | 2007 11 15 | 704 | 1.5+ | 0.0  |
| 2007 10 04 | 691 | 0.0   | 0.2+  | 2007 10 30 | 703 | 0.3−  | 0.5−  | 2007 11 15 | 704 | 0.1+ | 1.1+ |
| 2007 10 04 | 691 | 0.1+  | 0.3−  | 2007 10 31 | 143 | 0.4+  | 0.5−  | 2007 11 15 | 704 | 0.0  | 0.5+ |
| 2007 10 04 | 691 | 0.1−  | 0.1−  | 2007 10 31 | 143 | 0.1−  | 0.3−  | 2007 11 15 | 704 | 0.1− | 0.5+ |
| 2007 10 12 | 691 | 0.0   | 0.4−  | 2007 11 03 | 699 | (2.4+ | 1.2−) | 2007 11 17 | G96 | 0.2− | 0.4− |
| 2007 10 12 | 691 | 0.2+  | 0.2+  | 2007 11 03 | 699 | 0.4+  | 1.2−  | 2007 11 17 | G96 | 0.6− | 0.6− |
| 2007 10 12 | 691 | 0.0   | 0.3−  | 2007 11 03 | 699 | 0.6+  | 1.7−  | 2007 11 17 | G96 | 0.3− | 0.5− |
| 2007 10 15 | 703 | 0.6−  | 0.2−  | 2007 11 03 | 699 | (1.9+ | 2.5−) | 2007 11 17 | G96 | 0.0  | 0.5− |

2007 TH<sub>299</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 82.18656   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28609312 | $\omega$ | 330.54903 | +0.26855292   | +0.96319654 |
| <i>a</i> | 2.2810306  | $\Omega$ | 315.02642 | −0.88057176   | +0.24065082 |
| <i>e</i> | 0.2015937  | <i>i</i> | 0.93052   | −0.39047753   | +0.11974807 |
| <i>P</i> | 3.45       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 25 | 691 | 0.1− | 0.2− | 2007 09 14 | G96 | 0.3− | 0.7− | 2007 10 16 | 291 | 0.1+ | 0.0  |
| 2006 02 25 | 691 | 0.3− | 0.4+ | 2007 09 14 | G96 | 0.3− | 0.9− | 2007 10 16 | 291 | 0.1+ | 0.1+ |
| 2006 02 25 | 691 | 0.0  | 0.3− | 2007 10 04 | 691 | 0.1+ | 0.1+ | 2007 10 16 | 291 | 0.0  | 0.1+ |
| 2006 04 21 | G96 | 0.0  | 0.2− | 2007 10 04 | 691 | 0.4− | 0.6+ | 2007 10 16 | 291 | 0.4+ | 0.3+ |
| 2006 04 21 | G96 | 0.1− | 0.0  | 2007 10 04 | 691 | 0.5− | 0.1− | 2007 10 16 | 291 | 0.1+ | 0.1+ |
| 2006 04 21 | G96 | 0.4+ | 0.2− | 2007 10 12 | 691 | 0.4+ | 0.2+ | 2007 10 16 | 291 | 0.2− | 0.2+ |
| 2006 04 21 | G96 | 0.1− | 0.1− | 2007 10 12 | 691 | 0.1− | 0.1− | 2007 10 16 | 291 | 0.0  | 0.0  |
| 2007 09 14 | G96 | 0.4+ | 0.4− | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 10 16 | 291 | 0.0  | 0.2+ |
| 2007 09 14 | G96 | 0.6+ | 0.0  | 2007 10 16 | 291 | 0.2− | 0.1− |            |     |      |      |

2007 TQ<sub>299</sub> = 2007 TW<sub>160</sub>Id. Minor Planet Center (d, *MPO* 129053)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.70539  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28202200 | $\omega$ | 75.13455 | +0.11945856   | −0.99282920 |
| <i>a</i> | 2.3029299  | $\Omega$ | 8.00857  | +0.89818293   | +0.10615718 |
| <i>e</i> | 0.1626753  | <i>i</i> | 1.83159  | +0.42308047   | +0.05496207 |
| <i>P</i> | 3.49       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 02 | 703 | 0.4+ | 0.1− | 2007 10 04 | 691 | 0.4− | 0.0  | 2007 10 20 | 691 | 0.1− | 0.1− |
| 2005 02 02 | 703 | 0.5− | 0.6+ | 2007 10 09 | 704 | 0.8+ | 0.3− | 2007 10 20 | 691 | 0.3− | 0.2− |
| 2005 02 02 | 703 | 0.2+ | 0.9− | 2007 10 09 | 704 | 0.1+ | 0.8+ | 2007 10 30 | 703 | 0.6− | 0.2+ |
| 2005 02 02 | 703 | 1.6− | 1.6− | 2007 10 09 | 704 | 0.5+ | 0.2− | 2007 10 30 | 703 | 0.4+ | 0.0  |
| 2005 02 09 | 699 | 0.5− | 1.5+ | 2007 10 12 | 691 | 0.3− | 0.2− | 2007 10 30 | 703 | 0.4+ | 0.4+ |
| 2005 02 09 | 699 | 1.7+ | 0.6− | 2007 10 12 | 691 | 0.2− | 0.1− | 2007 10 30 | 703 | 0.4+ | 0.6+ |
| 2005 02 09 | 699 | 0.2− | 0.3+ | 2007 10 12 | 691 | 0.4− | 0.3− | 2007 11 07 | G96 | 0.0  | 0.9− |
| 2005 02 09 | 699 | 0.3+ | 0.9+ | 2007 10 12 | 704 | 0.1+ | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.5− |
| 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 10 12 | 704 | 0.3+ | 0.6+ | 2007 11 07 | G96 | 0.3+ | 0.8− |
| 2005 03 10 | G96 | 0.1− | 0.1− | 2007 10 12 | 704 | 0.4+ | 0.2+ | 2007 11 07 | G96 | 0.3+ | 0.5− |
| 2005 03 10 | G96 | 0.0  | 0.2+ | 2007 10 16 | 691 | 0.0  | 0.3− | 2007 11 13 | 703 | 0.6+ | 0.1+ |
| 2005 03 10 | G96 | 0.3+ | 0.2− | 2007 10 16 | 691 | 0.0  | 0.0  | 2007 11 13 | 703 | 0.5+ | 0.0  |
| 2007 10 04 | 691 | 0.2− | 0.1− | 2007 10 16 | 691 | 0.8− | 0.2− | 2007 11 13 | 703 | 0.3− | 0.9+ |
| 2007 10 04 | 691 | 0.2− | 0.2− | 2007 10 20 | 691 | 0.0  | 0.3+ | 2007 11 13 | 703 | 1.5− | 0.6+ |

2007 TJ<sub>300</sub> = 2007 TV<sub>30</sub> = 2007 VS<sub>271</sub> = 2005 HD<sub>1</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 108.72167  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17784439 | $\omega$ | 72.71490  | +0.12887358   | +0.99008505 |
| <i>a</i> | 3.1316696  | $\Omega$ | 204.89522 | −0.95279019   | +0.10800159 |
| <i>e</i> | 0.0910008  | <i>i</i> | 7.62895   | −0.27492263   | +0.08981783 |
| <i>P</i> | 5.54       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 16 | 691 | 0.1+ | 0.3− | 2007 10 07 | G96 | 0.3+ | 0.1− | 2007 10 20 | 691 | 1.5− | 1.2+ |
| 2005 04 16 | 691 | 0.1+ | 0.0  | 2007 10 07 | G96 | 0.5+ | 0.4− | 2007 10 20 | 691 | 0.0  | 0.1− |
| 2005 04 16 | 691 | 0.0  | 0.4+ | 2007 10 08 | 691 | 0.2+ | 0.1+ | 2007 10 20 | 691 | 0.2+ | 0.0  |
| 2005 04 17 | 691 | 0.1− | 0.3+ | 2007 10 08 | 691 | 0.1+ | 0.2− | 2007 11 01 | G96 | 0.8+ | 0.5− |
| 2005 04 17 | 691 | 0.0  | 0.1+ | 2007 10 08 | 691 | 0.2+ | 0.3− | 2007 11 01 | G96 | 0.5+ | 0.4− |
| 2005 04 17 | 691 | 0.1+ | 0.5+ | 2007 10 12 | 691 | 1.0− | 0.2+ | 2007 11 01 | G96 | 1.1+ | 0.6− |
| 2007 10 04 | 691 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.3+ | 0.1+ | 2007 11 01 | G96 | 1.1+ | 0.3− |
| 2007 10 04 | 691 | 0.5+ | 0.3+ | 2007 10 12 | 691 | 0.1+ | 0.1+ | 2007 11 07 | G96 | 0.1+ | 0.0  |
| 2007 10 04 | 691 | 0.2− | 0.1+ | 2007 10 16 | 691 | 0.2+ | 0.2− | 2007 11 07 | G96 | 0.3+ | 0.1− |
| 2007 10 07 | G96 | 1.0+ | 0.3− | 2007 10 16 | 691 | 0.4− | 0.6+ | 2007 11 07 | G96 | 0.3+ | 0.2− |
| 2007 10 07 | G96 | 0.7+ | 0.4− | 2007 10 16 | 691 | 0.7− | 0.3− | 2007 11 07 | G96 | 0.1+ | 0.1− |

2007 TM<sub>302</sub> = 1994 GV<sub>4</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 301.18763  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26449626 | $\omega$ | 102.40300 | −0.35808841   | −0.93366675 |
| <i>a</i> | 2.4035677  | $\Omega$ | 8.58769   | +0.83955267   | −0.32490873 |
| <i>e</i> | 0.1434167  | <i>i</i> | 2.39979   | +0.40856334   | −0.15066757 |
| <i>P</i> | 3.73       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 04 06 | 691 | 0.1+ | 0.7+ | 2005 03 01 | 691 | 0.1− | 0.4− | 2007 10 04 | 691 | 0.2− | 0.1+ |
| 1994 04 06 | 691 | 0.6+ | 0.5+ | 2005 04 04 | G96 | 0.4+ | 0.3− | 2007 10 04 | 691 | 0.2− | 0.1+ |
| 1994 04 06 | 691 | 0.1− | 0.0  | 2005 04 04 | G96 | 0.1+ | 0.2− | 2007 10 12 | 691 | 0.0  | 0.1+ |
| 1994 04 11 | 691 | 0.1− | 0.3+ | 2005 04 04 | G96 | 0.0  | 0.3− | 2007 10 12 | 691 | 0.2+ | 0.2+ |
| 1994 04 11 | 691 | 0.0  | 0.0  | 2005 04 04 | G96 | 1.0− | 1.8+ | 2007 10 12 | 691 | 0.1− | 0.1+ |
| 1994 04 11 | 691 | 0.2− | 0.4− | 2005 05 04 | G96 | 0.0  | 0.2− | 2007 10 16 | 691 | 0.0  | 0.2+ |
| 2003 09 26 | 645 | 0.2− | 0.2+ | 2005 05 04 | G96 | 0.2− | 0.5− | 2007 10 16 | 691 | 0.2− | 0.1+ |
| 2003 09 26 | 645 | 0.1− | 0.3+ | 2005 05 04 | G96 | 0.1+ | 1.2+ | 2007 10 16 | 691 | 0.2+ | 0.1− |
| 2005 03 01 | 691 | 0.1+ | 0.4− | 2005 05 04 | G96 | 0.8+ | 0.3− |            |     |      |      |
| 2005 03 01 | 691 | 0.0  | 0.1− | 2007 10 04 | 691 | 0.1− | 0.1+ |            |     |      |      |

2007 TT<sub>302</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.10616   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23551667 | $\omega$ | 311.57428 | +0.92312591   | +0.38407464 |
| <i>a</i> | 2.5968983  | $\Omega$ | 25.85478  | −0.33932037   | +0.83582315 |
| <i>e</i> | 0.0799818  | <i>i</i> | 2.37005   | −0.18083207   | +0.39228348 |
| <i>P</i> | 4.18       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 04 25 | 691 | 0.2+ | 0.3+ | 2005 03 10 | G96 | 0.8+ | 1.7+ | 2007 10 16 | 691 | 0.3− | 0.3+ |
| 1993 04 25 | 691 | 0.0  | 0.7+ | 2005 03 10 | G96 | 0.8− | 0.1− | 2007 10 16 | 291 | 0.2− | 0.2+ |
| 1993 04 25 | 691 | 0.2+ | 0.6+ | 2005 03 10 | G96 | 0.4+ | 0.2− | 2007 10 16 | 291 | 0.2− | 0.3+ |
| 2001 03 02 | 691 | 0.1− | 0.0  | 2005 03 16 | G96 | 0.3− | 0.2− | 2007 10 16 | 291 | 0.4− | 0.0  |
| 2001 03 02 | 691 | 0.0  | 0.2+ | 2005 03 16 | G96 | 0.5− | 0.1− | 2007 10 16 | 291 | 0.3− | 0.3+ |
| 2001 03 02 | 691 | 0.4+ | 0.8− | 2005 03 16 | G96 | 0.0  | 0.0  | 2007 10 16 | 291 | 0.2− | 0.2+ |
| 2001 04 16 | 645 | 0.3+ | 0.1+ | 2005 03 16 | G96 | 0.3− | 0.0  | 2007 10 16 | 291 | 0.1− | 0.1+ |
| 2001 04 16 | 645 | 0.3+ | 0.0  | 2007 10 04 | 691 | 0.0  | 0.1− | 2007 10 31 | G96 | 0.2+ | 0.1+ |
| 2003 11 19 | 291 | 0.4+ | 0.1+ | 2007 10 04 | 691 | 0.5− | 0.4+ | 2007 10 31 | G96 | 0.8+ | 0.0  |
| 2003 11 19 | 291 | 0.3+ | 0.1+ | 2007 10 04 | 691 | 0.0  | 0.3+ | 2007 10 31 | G96 | 0.1+ | 0.0  |
| 2003 11 19 | 291 | 0.1− | 0.0  | 2007 10 12 | 691 | 0.1− | 0.2+ | 2007 10 31 | G96 | 0.3+ | 0.0  |
| 2003 12 21 | 691 | 0.5− | 0.1− | 2007 10 12 | 691 | 0.2− | 0.2+ | 2007 11 04 | G96 | 0.4+ | 0.2− |
| 2003 12 21 | 691 | 0.2− | 0.2− | 2007 10 12 | 691 | 0.1− | 0.4+ | 2007 11 04 | G96 | 0.1− | 0.3− |
| 2003 12 21 | 691 | 0.2+ | 0.2− | 2007 10 16 | 691 | 0.2− | 0.2+ | 2007 11 04 | G96 | 0.5+ | 0.3− |
| 2005 03 10 | G96 | 0.1+ | 0.3− | 2007 10 16 | 691 | 0.3− | 0.0  | 2007 11 04 | G96 | 0.2+ | 0.2− |

## 2007 DEC. 24

## M.P.O. 129901

2007 TE<sub>303</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.07126  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22839706 | $\omega$ 74.82176 | +0.08897942   | -0.99602954 |
| <i>a</i> | 2.6505889  | $\Omega$ 10.07458 | +0.90759701   | +0.07992235 |
| <i>e</i> | 0.0569168  | <i>i</i> 0.91585  | +0.41030517   | +0.03921191 |
| <i>P</i> | 4.32       | <i>H</i> 16.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 03 12 | 691 | 0.6- | 0.0  | 2005 04 09 | G96 | 0.4+  | 0.0   | 2007 10 30 | 703 | 1.0- | 0.3+ |
| 1996 03 12 | 691 | 0.6- | 0.0  | 2005 05 13 | G96 | 0.3+  | 0.1+  | 2007 10 30 | 703 | 0.5- | 1.1+ |
| 1996 03 12 | 691 | 0.3- | 0.4- | 2005 05 13 | G96 | 0.2+  | 0.4-  | 2007 10 31 | G96 | 0.1+ | 0.7- |
| 1998 09 13 | 691 | 0.8+ | 0.9- | 2005 05 13 | G96 | 0.3-  | 0.2-  | 2007 10 31 | G96 | 0.6- | 0.2- |
| 1998 09 13 | 691 | 0.8+ | 0.2- | 2005 05 13 | G96 | 0.4-  | 0.3+  | 2007 10 31 | G96 | 0.2+ | 0.3+ |
| 1998 09 13 | 691 | 0.9+ | 0.2- | 2007 10 04 | 691 | 0.7+  | 0.8+  | 2007 10 31 | G96 | 0.1+ | 0.4- |
| 1998 09 28 | 691 | 0.7- | 0.1+ | 2007 10 04 | 691 | 0.2-  | 0.3+  | 2007 11 03 | G96 | 0.6+ | 0.4- |
| 1998 09 28 | 691 | 0.8- | 0.0  | 2007 10 04 | 691 | 0.4-  | 0.1-  | 2007 11 03 | G96 | 0.7+ | 0.3- |
| 1998 09 28 | 691 | 0.4- | 0.9+ | 2007 10 12 | 691 | 0.4+  | 0.0   | 2007 11 03 | G96 | 0.9+ | 0.2- |
| 2000 01 10 | 691 | 0.3+ | 0.1+ | 2007 10 12 | 691 | 0.5-  | 0.2+  | 2007 11 03 | G96 | 0.6+ | 0.2- |
| 2000 01 10 | 691 | 0.3+ | 0.1- | 2007 10 12 | 691 | 0.4-  | 0.1+  | 2007 11 03 | G96 | 0.2+ | 0.1- |
| 2000 01 10 | 691 | 0.5+ | 0.1+ | 2007 10 16 | 691 | 0.2+  | 0.1-  | 2007 11 03 | G96 | 0.5+ | 0.2- |
| 2003 12 25 | 691 | 0.1+ | 0.0  | 2007 10 16 | 691 | 0.3+  | 0.8-  | 2007 11 03 | G96 | 0.4+ | 0.3- |
| 2003 12 25 | 691 | 0.1- | 0.1+ | 2007 10 16 | 691 | 0.1-  | 0.1+  | 2007 11 03 | G96 | 0.2+ | 0.1- |
| 2003 12 25 | 691 | 0.0  | 0.1+ | 2007 10 21 | 691 | 0.4-  | 0.1-  | 2007 11 04 | G96 | 0.2+ | 0.2- |
| 2005 03 08 | G96 | 0.5- | 0.1+ | 2007 10 21 | 691 | 0.3-  | 0.3+  | 2007 11 04 | G96 | 0.2+ | 0.3- |
| 2005 03 08 | G96 | 0.3- | 0.2+ | 2007 10 21 | 691 | 0.2-  | 0.0   | 2007 11 04 | G96 | 0.2+ | 0.2- |
| 2005 03 08 | G96 | 0.1+ | 0.1- | 2007 10 30 | 691 | 0.1+  | 0.2-  | 2007 11 04 | G96 | 0.2+ | 0.3- |
| 2005 03 08 | G96 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.1+  | 0.1-  | 2007 11 07 | 703 | 1.0- | 1.3+ |
| 2005 04 09 | G96 | 0.4+ | 0.2- | 2007 10 30 | 691 | 0.1-  | 0.3+  | 2007 11 07 | 703 | 0.7- | 0.8- |
| 2005 04 09 | G96 | 0.1+ | 0.0  | 2007 10 30 | 703 | (2.1- | 0.4-) | 2007 11 07 | 703 | 0.9- | 0.3+ |
| 2005 04 09 | G96 | 0.2+ | 0.2+ | 2007 10 30 | 703 | 0.6-  | 0.3+  | 2007 11 07 | 703 | 0.4+ | 0.2+ |

2007 TZ<sub>306</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.82224  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23286529 | $\omega$ 11.97056 | +0.84710358   | -0.52588251 |
| <i>a</i> | 2.6165731  | $\Omega$ 20.32202 | +0.46757705   | +0.66907066 |
| <i>e</i> | 0.0926669  | <i>i</i> 12.73708 | +0.25256134   | +0.52515905 |
| <i>P</i> | 4.23       | <i>H</i> 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 25 | 691 | 0.3- | 0.1+ | 2007 09 11 | 691 | 0.0  | 0.1- | 2007 10 15 | 691 | 0.4- | 0.2+ |
| 2003 10 25 | 691 | 0.5- | 0.1- | 2007 09 11 | 691 | 0.4+ | 0.0  | 2007 10 15 | 691 | 0.4- | 0.3+ |
| 2003 10 25 | 691 | 0.3- | 0.2+ | 2007 09 20 | 691 | 0.1- | 0.1- | 2007 10 19 | G96 | 0.3+ | 0.3- |
| 2003 11 21 | 691 | 0.2+ | 0.3- | 2007 09 20 | 691 | 0.3- | 0.1- | 2007 10 19 | G96 | 0.0  | 0.1- |
| 2003 11 21 | 691 | 0.1+ | 0.3- | 2007 09 20 | 691 | 0.5- | 0.6- | 2007 10 19 | G96 | 0.5+ | 0.1+ |
| 2003 11 21 | 691 | 0.0  | 0.2- | 2007 10 08 | G96 | 0.3+ | 0.3+ | 2007 10 19 | G96 | 0.3- | 0.2- |
| 2003 12 01 | 691 | 0.7+ | 0.5+ | 2007 10 08 | G96 | 0.0  | 0.2+ | 2007 11 01 | G96 | 0.0  | 0.3- |
| 2003 12 01 | 691 | 0.2+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.3+ | 2007 11 01 | G96 | 0.1- | 0.2- |
| 2003 12 01 | 691 | 0.2- | 0.3+ | 2007 10 08 | G96 | 0.4+ | 0.3+ | 2007 11 01 | G96 | 0.1+ | 0.1+ |
| 2007 09 11 | 691 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.1- | 0.2+ | 2007 11 01 | G96 | 0.0  | 0.1- |

2007 TP<sub>307</sub> = 1996 TE<sub>27</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.78237    | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.18215730 | $\omega$ 16.32830 | +0.80229401   | -0.59333746 |
| <i>a</i> | 3.0820404  | $\Omega$ 20.48791 | +0.52465735   | +0.64867309 |
| <i>e</i> | 0.1387270  | <i>i</i> 10.76635 | +0.28470861   | +0.47662762 |
| <i>P</i> | 5.41       | <i>H</i> 16.0     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 10 07 | 691 | 0.2- | 0.3- | 2007 10 09 | 691 | 0.1+ | 0.2- | 2007 10 20 | 703 | 0.1-  | 1.1+  |
| 1996 10 07 | 691 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.2+ | 0.1+ | 2007 10 20 | 703 | 0.2+  | 1.4+  |
| 1996 10 07 | 691 | 0.2- | 0.2- | 2007 10 15 | 691 | 0.0  | 0.5- | 2007 10 20 | 703 | (2.2+ | 0.4+) |
| 1996 10 16 | 691 | 0.3+ | 0.1+ | 2007 10 15 | 691 | 0.2- | 0.2- | 2007 11 08 | G96 | 0.4+  | 0.3-  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 16 | 691 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.0   | 0.3+  | 2007 11 08 | G96 | 0.2+ | 0.2- |
| 1996 10 16 | 691 | 0.2+ | 0.2+ | 2007 10 19 | 691 | 0.2-  | 0.1+  | 2007 11 08 | G96 | 0.2+ | 0.3- |
| 2007 10 09 | 691 | 0.1- | 0.0  | 2007 10 19 | 691 | 0.1-  | 0.1+  | 2007 11 08 | G96 | 0.7+ | 0.3- |
| 2007 10 09 | 691 | 0.1- | 0.1+ | 2007 10 20 | 703 | (1.0+ | 2.1+) |            |     |      |      |

2007 TR<sub>311</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.74136   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22871629 | $\omega$ 205.69024 | +0.88757894   | +0.45878543 |
| <i>a</i> | 2.6481219  | $\Omega$ 126.93843 | -0.41319297   | +0.83269388 |
| <i>e</i> | 0.0900433  | <i>i</i> 2.97390   | -0.20365462   | +0.31005939 |
| <i>P</i> | 4.31       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.1+ | 0.1- | 2007 10 11 | G96 | 0.0  | 0.0  | 2007 10 19 | 691 | 0.2- | 0.2+ |
| 2005 02 01 | 691 | 0.3- | 0.1- | 2007 10 11 | G96 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.4+ | 0.0  |
| 2005 02 01 | 691 | 0.2+ | 0.2+ | 2007 10 11 | G96 | 0.2- | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.4- |
| 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.2- | 0.2+ | 2007 10 19 | G96 | 0.2+ | 0.4- |
| 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.2- | 0.2+ | 2007 10 19 | G96 | 0.1+ | 0.3- |
| 2005 03 10 | G96 | 0.1+ | 0.3- | 2007 10 15 | 691 | 0.2- | 0.1+ | 2007 10 23 | 691 | 0.0  | 0.3+ |
| 2005 03 10 | G96 | 0.1- | 0.1+ | 2007 10 19 | 691 | 0.1- | 0.2+ | 2007 10 23 | 691 | 0.4- | 0.1- |
| 2007 10 11 | G96 | 0.3+ | 0.2- | 2007 10 19 | 691 | 0.4- | 0.2+ | 2007 10 23 | 691 | 0.1+ | 0.2- |

2007 TU<sub>314</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.54554  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26195249 | $\omega$ 159.74795 | +0.98574809   | +0.16751895 |
| <i>a</i> | 2.4191030  | $\Omega$ 190.64366 | -0.16355183   | +0.93283103 |
| <i>e</i> | 0.2255914  | <i>i</i> 4.79225   | -0.03938903   | +0.31900418 |
| <i>P</i> | 3.76       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 13 | 566 | 0.4- | 0.1- | 2006 03 25 | G96 | 0.4- | 0.0  | 2007 09 15 | G96 | 0.1+ | 0.1- |
| 1996 10 13 | 566 | 0.1- | 0.3+ | 2006 03 25 | G96 | 0.1- | 0.2- | 2007 09 15 | G96 | 0.3+ | 0.2- |
| 1996 10 13 | 566 | 0.2+ | 0.0  | 2006 03 25 | G96 | 0.0  | 0.0  | 2007 10 06 | 291 | 0.1- | 0.2+ |
| 2002 03 21 | 291 | 0.3+ | 0.2+ | 2006 03 25 | G96 | 0.2- | 0.1+ | 2007 10 06 | 291 | 0.6- | 0.8+ |
| 2002 03 21 | 291 | 0.3+ | 0.2+ | 2006 04 07 | G96 | 0.4- | 0.0  | 2007 10 06 | 291 | 0.2- | 0.9+ |
| 2002 03 21 | 291 | 0.3+ | 0.4+ | 2006 04 07 | G96 | 0.2+ | 0.1+ | 2007 10 12 | G96 | 0.0  | 0.3+ |
| 2006 02 25 | G96 | 0.2- | 0.1- | 2006 04 07 | G96 | 0.1- | 0.1- | 2007 10 12 | G96 | 0.3- | 0.1+ |
| 2006 02 25 | G96 | 0.7- | 0.4+ | 2006 04 07 | G96 | 0.1+ | 0.1- | 2007 10 12 | G96 | 0.3- | 0.1+ |
| 2006 02 25 | G96 | 0.1+ | 0.4+ | 2007 06 14 | 691 | 0.1- | 0.1- | 2007 10 12 | G96 | 0.1+ | 0.3- |
| 2006 02 25 | G96 | 0.3+ | 0.4+ | 2007 06 14 | 691 | 0.0  | 0.2- | 2007 10 15 | 291 | 0.3+ | 0.3+ |
| 2006 03 04 | 691 | 0.3+ | 0.3+ | 2007 06 14 | 691 | 0.1+ | 0.3- | 2007 10 15 | 291 | 0.3- | 0.4+ |
| 2006 03 04 | 691 | 0.4+ | 0.2+ | 2007 09 15 | G96 | 0.1- | 0.2- | 2007 10 15 | 291 | 0.3+ | 0.4+ |
| 2006 03 04 | 691 | 0.6+ | 0.3+ | 2007 09 15 | G96 | 0.3+ | 0.0  |            |     |      |      |

2007 TV<sub>314</sub> = 2000 UR<sub>73</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 357.50144  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26649141 | $\omega$ 144.89178 | +0.96931851   | +0.24478307 |
| <i>a</i> | 2.3915561  | $\Omega$ 200.97319 | -0.23742108   | +0.90871372 |
| <i>e</i> | 0.2021769  | <i>i</i> 3.59198   | -0.06366200   | +0.33811333 |
| <i>P</i> | 3.70       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 05 | 691 | 0.2- | 0.3+ | 2002 03 05 | 645 | 0.2+ | 0.2+ | 2007 10 12 | G96 | 0.1- | 0.7+ |
| 1995 04 05 | 691 | 0.6- | 0.7+ | 2002 03 05 | 645 | 0.3+ | 0.2+ | 2007 10 12 | G96 | 0.3- | 0.2- |
| 2000 10 26 | 704 | 0.4+ | 0.0  | 2003 07 08 | 691 | 0.4+ | 0.2+ | 2007 10 15 | G96 | 0.2+ | 1.1+ |
| 2000 10 26 | 704 | 0.2- | 0.4- | 2003 07 08 | 691 | 0.8+ | 0.2+ | 2007 10 15 | G96 | 0.4- | 0.2- |
| 2000 10 26 | 704 | 0.7+ | 0.2+ | 2003 07 08 | 691 | 0.1+ | 0.2+ | 2007 10 15 | 291 | 0.2+ | 0.1+ |
| 2000 11 01 | 704 | 0.5- | 0.1- | 2004 12 12 | 691 | 0.1+ | 0.2- | 2007 10 15 | G96 | 0.3- | 0.2- |
| 2000 11 01 | 704 | 0.6- | 0.2+ | 2004 12 12 | 691 | 0.0  | 0.2- | 2007 10 15 | 291 | 0.1+ | 0.1+ |
| 2000 11 01 | 704 | 0.7- | 0.1+ | 2004 12 12 | 691 | 0.0  | 0.0  | 2007 10 15 | 291 | 0.1+ | 0.2+ |
| 2000 11 01 | 704 | 0.5+ | 1.2- | 2007 09 15 | G96 | 0.2- | 0.1- | 2007 10 16 | G96 | 0.1- | 0.3- |
| 2000 11 01 | 704 | 0.2+ | 0.6+ | 2007 09 15 | G96 | 0.0  | 0.2- | 2007 10 16 | G96 | 0.3- | 0.0  |

## M.P.O. 129902

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 01 | 704 | 0.8+ | 0.9− | 2007 09 15 | G96 | 0.1+ | 0.2− | 2007 10 16 | G96 | 0.1+ | 0.1− |
| 2000 11 01 | 704 | 0.8− | 1.7+ | 2007 09 15 | G96 | 0.2− | 0.2− | 2007 10 16 | G96 | 0.1− | 0.0  |
| 2000 11 01 | 704 | 0.2+ | 0.0  | 2007 10 12 | G96 | 0.0  | 0.2− |            |     |      |      |
| 2000 11 01 | 704 | 0.2− | 0.8+ | 2007 10 12 | G96 | 0.1+ | 0.3− |            |     |      |      |

**2007 TT<sub>316</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 201.21158  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26946265 | $\omega$ | 143.79047 | −0.91516564 |          |          | +0.39031150 |
| <i>a</i> | 2.3739433  | $\Omega$ | 59.47995  | −0.39180828 |          |          | −0.80277473 |
| <i>e</i> | 0.0997821  | <i>i</i> | 6.70909   | −0.09464737 |          |          | −0.45078783 |
| <i>P</i> | 3.66       | <i>H</i> | 17.0      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 17 | 644 | 0.3+ | 0.4+ | 2007 10 12 | 691 | 0.1− | 0.1− | 2007 11 07 | G96 | 0.5+ | 0.1− |
| 2002 05 17 | 644 | 0.1− | 0.5+ | 2007 10 12 | 691 | 0.9− | 0.2+ | 2007 11 09 | G96 | 0.4+ | 0.0  |
| 2002 05 17 | 644 | 0.4+ | 0.5+ | 2007 10 12 | 691 | 0.2− | 0.2+ | 2007 11 09 | G96 | 0.3+ | 0.1+ |
| 2003 09 19 | 644 | 0.5+ | 0.0  | 2007 10 16 | 691 | 0.2− | 0.0  | 2007 11 09 | G96 | 0.1− | 0.4+ |
| 2003 09 19 | 644 | 0.0  | 0.1− | 2007 10 16 | 691 | 0.1− | 0.1+ | 2007 11 09 | G96 | 0.4+ | 0.0  |
| 2003 09 19 | 644 | 0.3− | 0.0  | 2007 10 16 | 691 | 0.4+ | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.1− |
| 2003 09 30 | 691 | 0.2+ | 0.1+ | 2007 11 07 | G96 | 0.3+ | 0.1+ | 2007 12 06 | G96 | 0.5+ | 0.5+ |
| 2003 09 30 | 691 | 0.1+ | 0.1− | 2007 11 07 | G96 | 0.7+ | 0.2− | 2007 12 06 | G96 | 0.5− | 0.1+ |
| 2003 09 30 | 691 | 0.1− | 0.2− | 2007 11 07 | G96 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.5+ | 0.0  |

**2007 TZ<sub>317</sub> = 2007 VU<sub>301</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 310.81750  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.24125990 | $\omega$ | 253.28463 | −0.28819388 |          |          | −0.95729568 |
| <i>a</i> | 2.5555200  | $\Omega$ | 213.49272 | +0.89367362 |          |          | −0.26025599 |
| <i>e</i> | 0.1121361  | <i>i</i> | 2.38934   | +0.34393568 |          |          | −0.12590390 |
| <i>P</i> | 4.09       | <i>H</i> | 17.8      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 01 | 691 | 0.0  | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 11 | G96 | 0.3+ | 0.6− |
| 2003 12 01 | 691 | 0.1+ | 0.4+ | 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 11 | G96 | 0.2− | 0.4− |
| 2003 12 01 | 691 | 0.1− | 0.2+ | 2007 10 16 | 691 | 0.2− | 0.0  | 2007 11 14 | 691 | 0.7− | 0.6+ |
| 2003 12 19 | 691 | 0.1− | 0.0  | 2007 10 16 | 691 | 0.1− | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.6+ |
| 2003 12 19 | 691 | 0.1− | 0.2+ | 2007 10 16 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.6− | 0.3− |
| 2003 12 19 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.0  | 0.2− | 2007 11 14 | G96 | 0.5+ | 0.1− |
| 2005 04 05 | G96 | 0.1− | 0.1− | 2007 11 05 | G96 | 0.4+ | 0.1+ | 2007 11 14 | G96 | 0.2+ | 0.3− |
| 2005 04 05 | G96 | 0.2− | 0.3− | 2007 11 05 | G96 | 0.2+ | 0.1− | 2007 11 14 | G96 | 0.3+ | 0.2− |
| 2005 04 05 | G96 | 0.4− | 0.3− | 2007 11 05 | G96 | 0.1+ | 0.2− | 2007 11 14 | G96 | 0.0  | 0.2− |
| 2005 04 05 | G96 | 0.6+ | 0.3+ | 2007 11 11 | G96 | 0.2− | 0.2− |            |     |      |      |
| 2007 10 12 | 691 | 0.2− | 0.3− | 2007 11 11 | G96 | 0.1+ | 0.4− |            |     |      |      |

**2007 TC<sub>318</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 126.19423  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.24039800 | $\omega$ | 86.39403  | −0.00155220 |          |          | +0.99999767 |
| <i>a</i> | 2.5616246  | $\Omega$ | 183.51808 | −0.92690326 |          |          | −0.00200114 |
| <i>e</i> | 0.1475782  | <i>i</i> | 1.39935   | −0.37529714 |          |          | +0.00080648 |
| <i>P</i> | 4.10       | <i>H</i> | 16.8      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 21 | 691 | 0.2+ | 0.3+ | 2007 10 12 | 691 | 0.5− | 1.1+ | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2001 02 21 | 691 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.3− | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2001 02 21 | 691 | 0.2− | 0.5+ | 2007 10 12 | 691 | 0.3+ | 0.1− | 2007 11 14 | 691 | 0.4− | 0.1+ |
| 2002 07 22 | 644 | 0.4+ | 0.3+ | 2007 10 16 | 691 | 0.3− | 0.2− | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2002 07 22 | 644 | 0.3+ | 0.2+ | 2007 10 16 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.5+ |
| 2002 07 22 | 644 | 0.1− | 0.4+ | 2007 10 16 | 691 | 0.1+ | 0.1+ | 2007 11 14 | G96 | 0.2− | 0.0  |
| 2002 08 07 | 644 | 0.3+ | 0.3+ | 2007 11 03 | 691 | 0.8− | 0.8− | 2007 11 14 | G96 | 0.5+ | 0.0  |
| 2002 08 07 | 644 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 14 | G96 | 0.2+ | 0.1− |
| 2002 08 07 | 644 | 0.5+ | 0.0  | 2007 11 03 | 691 | 0.8+ | 0.8− | 2007 11 14 | G96 | 0.3+ | 0.1+ |
| 2002 08 15 | 291 | 0.1− | 0.2+ | 2007 11 05 | G96 | 0.8+ | 0.1− | 2007 11 14 | 704 | 1.2+ | 0.2− |
| 2002 08 15 | 291 | 0.2− | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 11 14 | 704 | 0.7+ | 0.2− |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 15 | 291 | 0.2− | 0.2+ | 2007 11 05 | G96 | 0.8+ | 0.0  | 2007 11 14 | 704 | 0.1− | 1.3+ |
| 2002 08 28 | 644 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.1+ | 2007 12 05 | 691 | 0.3− | 0.1+ |
| 2002 08 28 | 644 | 0.0  | 0.1− | 2007 11 05 | G96 | 0.8+ | 0.2− | 2007 12 05 | 691 | 0.3− | 0.0  |
| 2002 08 28 | 644 | 0.1− | 0.4− | 2007 11 05 | G96 | 0.2+ | 0.8− | 2007 12 05 | 691 | 0.0  | 0.3+ |

**2007 TQ<sub>318</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 63.93016   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27782204 | $\omega$ | 115.41952 | +0.83880894 |          |          | +0.54304845 |
| <i>a</i> | 2.3260815  | $\Omega$ | 211.73084 | −0.52220318 |          |          | +0.78243063 |
| <i>e</i> | 0.1502276  | <i>i</i> | 4.22022   | −0.15395907 |          |          | +0.30479614 |
| <i>P</i> | 3.55       | <i>H</i> | 17.5      | <i>G</i>    | 0.15     | <i>U</i> | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 02 | 291 | 0.1+ | 0.2+ | 2007 09 09 | G96 | 0.3− | 0.0  | 2007 10 30 | 691 | 0.2+ | 0.1+ |
| 2003 10 02 | 291 | 0.1− | 0.0  | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.2− | 0.3+ |
| 2003 10 02 | 291 | 0.1− | 0.2+ | 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 14 | 691 | 0.0  | 0.2− |
| 2006 04 24 | 691 | 0.1+ | 0.6+ | 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.3+ | 0.2− |
| 2006 04 24 | 691 | 0.7+ | 0.9+ | 2007 10 16 | 691 | 0.2− | 0.1+ | 2007 11 18 | 691 | 0.1− | 0.5+ |
| 2006 04 24 | 691 | 0.3− | 0.4+ | 2007 10 16 | 691 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.2− | 0.2+ |
| 2007 09 09 | G96 | 0.1− | 0.1− | 2007 10 16 | 691 | 0.1− | 0.4+ | 2007 11 18 | 691 | 0.3− | 0.1+ |
| 2007 09 09 | G96 | 0.5+ | 0.3− | 2007 10 30 | 691 | 0.1+ | 0.2+ |            |     |      |      |
| 2007 09 09 | G96 | 0.4− | 0.1+ | 2007 10 30 | 691 | 0.4+ | 0.0  |            |     |      |      |

**2007 TH<sub>319</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 322.63579  |          | (2000.0) |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.20956324 | $\omega$ | 29.67443 | −0.18155838 |          |          | −0.98224177 |
| <i>a</i> | 2.8071093  | $\Omega$ | 70.82030 | +0.89208388 |          |          | −0.18475315 |
| <i>e</i> | 0.1952345  | <i>i</i> | 2.87080  | +0.41379090 |          |          | −0.03267090 |
| <i>P</i> | 4.70       | <i>H</i> | 17.2     | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 31 | 645 | 0.1− | 0.0  | 2007 11 05 | 704 | 1.3+ | 1.2+ | 2007 11 14 | 704 | 0.6+  | 0.8−  |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.2+ | 0.9+ | 2007 11 14 | 704 | 0.5+  | 0.8−  |
| 2002 11 08 | 645 | 0.1+ | 0.0  | 2007 11 05 | 704 | 0.2− | 0.1+ | 2007 11 14 | 704 | 0.9+  | 0.6+  |
| 2002 11 08 | 645 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.2− | 2007 11 14 | 704 | 0.1+  | 0.1+  |
| 2007 09 14 | G96 | 0.8+ | 0.2+ | 2007 11 05 | G96 | 0.5+ | 0.1− | 2007 11 14 | 704 | 0.3+  | 0.9−  |
| 2007 09 14 | G96 | 0.2+ | 0.6− | 2007 11 05 | G96 | 0.2+ | 0.2− | 2007 11 17 | 703 | 0.9+  | 1.2+  |
| 2007 09 14 | G96 | 0.5− | 0.0  | 2007 11 05 | G96 | 0.0  | 0.3− | 2007 11 17 | 703 | (0.3− | 1.7+) |
| 2007 09 14 | G96 | 0.5+ | 0.4− | 2007 11 12 | 703 | 1.0− | 0.3+ | 2007 11 17 | 703 | 0.2+  | 0.3+  |
| 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 12 | 703 | 0.6− | 0.7+ | 2007 11 17 | 703 | 1.4−  | 0.4+  |
| 2007 10 12 | 691 | 0.0  | 0.1+ | 2007 11 12 | 703 | 1.4+ | 0.6− | 2007 12 05 | 691 | 0.2−  | 0.0   |
| 2007 10 12 | 691 | 0.1− | 0.0  | 2007 11 12 | 703 | 0.2− | 0.3− | 2007 12 05 | 691 | 0.0   | 0.0   |
| 2007 10 16 | 691 | 0.3− | 0.0  | 2007 11 14 | 691 | 0.7− | 0.1− | 2007 12 05 | 691 | 0.2−  | 0.1+  |
| 2007 10 16 | 691 | 0.2− | 0.3− | 2007 11 14 | 691 | 0.3− | 0.1+ | 2007 12 05 | 704 | 0.5−  | 1.2+  |
| 2007 10 16 | 691 | 0.1− | 0.1− | 2007 11 14 | 691 | 0.3− | 0.3+ | 2007 12 05 | 704 | 0.5+  | 0.4+  |
| 2007 10 30 | 691 | 1.2+ | 0.6− | 2007 11 14 | G96 | 0.1+ | 0.2− | 2007 12 05 | 704 | 0.2−  | 0.3−  |
| 2007 10 30 | 691 | 0.1− | 0.0  | 2007 11 14 | G96 | 0.3+ | 0.2− | 2007 12 05 | 704 | 0.6+  | 1.0−  |
| 2007 10 30 | 691 | 0.4− | 0.1− | 2007 11 14 | G96 | 0.2+ | 0.4− | 2007 12 05 | 704 | 0.1+  | 0.5+  |
| 2007 11 05 | 704 | 0.4+ | 0.5+ | 2007 11 14 | G96 | 0.4+ | 0.2− |            |     |       |       |

**2007 TN<sub>319</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 44.77709   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.17956568 | $\omega$ | 294.43895 | +0.97178439 |          |          | +0.16351693 |
| <i>a</i> | 3.1116244  | $\Omega$ | 56.57011  | −0.05997131 |          |          | +0.86830362 |
| <i>e</i> | 0.1379406  | <i>i</i> | 11.75285  | −0.22811957 |          |          | +0.46830657 |
| <i>P</i> | 5.49       | <i>H</i> | 15.7      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 15 | 691 | 0.0  | 0.3− | 2007 11 05 | 704 | (0.7− | 1.6−) | 2007 11 14 | 704 | 0.9+ | 1.3+ |
| 2005 04 15 | 691 | 0.7+ | 0.0  | 2007 11 05 | 704 | 0.0   | 1.2+  | 2007 11 16 | 704 | 0.1− | 0.2+ |
| 2005 04 15 | 691 | 0.1− | 0.0  | 2007 11 05 | 704 | 0.4+  | 0.4−  | 2007 11 16 | 704 | 0.0  | 0.1− |
| 2005 04 30 | 691 | 0.1− | 0.2+ | 2007 11 05 | 704 | 0.6+  | 0.4+  | 2007 11 16 | 704 | 1.3+ | 0.2− |

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M.P.O. 129903

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 04 30 | 691 | 0.1− | 0.2+ | 2007 11 05 | G96 | 0.4+  | 0.2−  | 2007 11 18 | 691 | 0.2−  | 1.0+  |
| 2005 04 30 | 691 | 0.3− | 0.0  | 2007 11 05 | G96 | 0.1−  | 0.4−  | 2007 11 18 | 691 | 0.2−  | 0.1−  |
| 2007 10 12 | 691 | 0.3− | 0.1− | 2007 11 05 | G96 | 0.3+  | 0.4−  | 2007 11 18 | 691 | 0.1−  | 0.1+  |
| 2007 10 12 | 691 | 0.2− | 0.0  | 2007 11 13 | 699 | 0.1−  | 0.8−  | 2007 11 18 | 704 | 0.8+  | 0.2−  |
| 2007 10 12 | 691 | 0.4− | 0.3+ | 2007 11 13 | 699 | 0.7+  | 0.2−  | 2007 11 18 | 704 | 0.8+  | 1.0−  |
| 2007 10 16 | 691 | 0.3− | 0.2+ | 2007 11 13 | 699 | 0.1−  | 0.2−  | 2007 11 18 | 704 | (1.6+ | 1.1−) |
| 2007 10 16 | 691 | 0.1− | 0.1− | 2007 11 13 | 699 | 0.5+  | 0.9−  | 2007 11 18 | 704 | (1.6+ | 0.1+) |
| 2007 10 16 | 691 | 0.0  | 0.2− | 2007 11 14 | 691 | 0.2+  | 0.2+  | 2007 11 18 | 704 | 1.0+  | 0.4−  |
| 2007 10 20 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.0   | 0.0   | 2007 11 19 | A50 | 0.4+  | 0.6+  |
| 2007 10 20 | 691 | 0.3− | 0.0  | 2007 11 14 | 691 | 0.0   | 0.3+  | 2007 11 19 | A50 | 0.3+  | 0.1−  |
| 2007 10 20 | 691 | 0.2+ | 0.2− | 2007 11 14 | 704 | (0.1+ | 1.7+) | 2007 12 05 | 691 | 0.2−  | 0.1−  |
| 2007 11 03 | 691 | 0.1− | 0.4− | 2007 11 14 | 704 | 0.8+  | 0.1+  | 2007 12 05 | 691 | 0.2−  | 0.1+  |
| 2007 11 03 | 691 | 0.3− | 0.3− | 2007 11 14 | 704 | 0.3+  | 0.1+  | 2007 12 05 | 691 | 0.1−  | 0.1−  |
| 2007 11 03 | 691 | 0.1− | 0.1− | 2007 11 14 | 704 | 0.3+  | 0.0   |            |     |       |       |

2007 TW<sub>321</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 65.00563   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.21610677 | $\omega$ | 35.51473  | +0.81468987 |      | +0.57470024 |   |
| <i>a</i>                                | 2.7501547  | $\Omega$ | 289.22506 | −0.54920153 |      | +0.72176972 |   |
| <i>e</i>                                | 0.0406194  | <i>i</i> | 4.70554   | −0.18616685 |      | +0.38570470 |   |
| <i>P</i>                                | 4.56       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 28 | 644 | 0.2+ | 0.3+ | 2007 10 14 | 703 | 0.5+ | 0.2− | 2007 10 21 | 703 | 0.9− | 0.8− |
| 2002 08 28 | 644 | 0.0  | 0.1− | 2007 10 14 | 703 | 1.4+ | 0.0  | 2007 11 07 | 704 | 0.2+ | 1.0+ |
| 2002 08 28 | 644 | 0.6+ | 0.2+ | 2007 10 14 | 703 | 0.2+ | 0.6− | 2007 11 07 | 704 | 0.3− | 0.2− |
| 2002 09 13 | 644 | 0.4− | 0.1− | 2007 10 15 | 691 | 1.2− | 0.2+ | 2007 11 07 | 704 | 1.1+ | 0.0  |
| 2002 09 13 | 644 | 0.5− | 0.1+ | 2007 10 15 | 691 | 0.3− | 0.4− | 2007 11 07 | 704 | 0.0  | 0.2+ |
| 2002 09 13 | 644 | 0.2− | 0.1− | 2007 10 15 | 691 | 0.1− | 0.3− | 2007 11 07 | 704 | 0.0  | 0.5+ |
| 2002 10 05 | 645 | 0.2+ | 0.1− | 2007 10 19 | 691 | 0.4− | 0.1+ | 2007 11 08 | 704 | 0.7− | 0.4− |
| 2002 10 05 | 645 | 0.0  | 0.1− | 2007 10 19 | 691 | 0.3− | 0.4− | 2007 11 08 | 704 | 0.4+ | 0.9+ |
| 2007 10 07 | 691 | 0.2+ | 0.0  | 2007 10 19 | 691 | 0.4− | 0.2− | 2007 11 08 | 704 | 1.5+ | 0.7− |
| 2007 10 07 | 691 | 0.1− | 0.0  | 2007 10 21 | 703 | 0.9− | 0.3− | 2007 11 08 | 704 | 0.8+ | 1.6+ |
| 2007 10 07 | 691 | 0.4− | 0.3− | 2007 10 21 | 703 | 0.6− | 0.8− |            |     |      |      |
| 2007 10 14 | 703 | 0.2+ | 0.4+ | 2007 10 21 | 703 | 0.2+ | 0.6+ |            |     |      |      |

2007 TQ<sub>324</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 90.57904   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.27595918 | $\omega$ | 330.01736 | +0.15356021 |      | +0.98592657 |   |
| <i>a</i>                                | 2.3365378  | $\Omega$ | 308.73468 | −0.88892506 |      | +0.10862244 |   |
| <i>e</i>                                | 0.2424065  | <i>i</i> | 4.86031   | −0.43154549 |      | +0.12708249 |   |
| <i>P</i>                                | 3.57       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 14 | 691 | 0.0  | 0.1− | 2006 04 19 | 644 | 0.3+ | 0.4+ | 2007 10 11 | 691 | 0.2− | 0.1+ |
| 2002 02 14 | 691 | 0.1+ | 0.1+ | 2006 04 19 | 644 | 0.4+ | 0.4+ | 2007 10 15 | 691 | 0.2− | 0.1+ |
| 2002 02 14 | 691 | 0.3− | 0.3− | 2006 04 19 | 644 | 0.2+ | 0.0  | 2007 10 15 | 691 | 0.3− | 0.1+ |
| 2003 08 20 | 608 | 0.1+ | 0.6+ | 2007 09 25 | G96 | 0.4+ | 0.2− | 2007 10 15 | 691 | 0.6− | 0.2+ |
| 2003 08 20 | 608 | 0.1− | 0.0  | 2007 09 25 | G96 | 0.8+ | 0.0  | 2007 10 19 | 691 | 0.5− | 0.3+ |
| 2003 08 20 | 608 | 0.2− | 0.1− | 2007 09 25 | G96 | 0.1+ | 0.3− | 2007 10 19 | 691 | 0.2− | 0.2+ |
| 2006 03 09 | 691 | 0.0  | 0.2+ | 2007 09 25 | G96 | 0.7+ | 0.3− | 2007 10 19 | 691 | 0.1− | 0.4+ |
| 2006 03 09 | 691 | 0.0  | 0.3+ | 2007 10 11 | 691 | 0.1− | 0.3+ |            |     |      |      |
| 2006 03 09 | 691 | 0.1+ | 0.2+ | 2007 10 11 | 691 | 0.1− | 0.1+ |            |     |      |      |

2007 TP<sub>329</sub> = 2005 JN<sub>118</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 137.97536  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.18062443 | $\omega$ | 21.50795  | −0.18235935 |      | +0.97405221 |   |
| <i>a</i>                                | 3.0994530  | $\Omega$ | 238.21197 | −0.92353472 |      | −0.21646770 |   |
| <i>e</i>                                | 0.0169704  | <i>i</i> | 9.07321   | −0.33738506 |      | +0.06606075 |   |
| <i>P</i>                                | 5.46       | <i>H</i> | 15.4      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 10 | G96 | 0.2− | 0.1+ | 2007 09 25 | G96 | 0.4+ | 0.5− | 2007 11 04 | G96 | 0.6+  | 0.1−  |
| 2005 05 10 | G96 | 0.0  | 0.1+ | 2007 09 25 | G96 | 0.6+ | 0.8− | 2007 11 04 | G96 | 0.4+  | 0.2−  |
| 2005 05 10 | G96 | 0.1− | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.4− | 2007 11 07 | 703 | 0.4−  | 0.1+  |
| 2005 05 10 | G96 | 0.1− | 0.0  | 2007 10 11 | 691 | 0.0  | 0.2+ | 2007 11 07 | G96 | 0.3+  | 0.1−  |
| 2005 05 16 | 644 | 0.2+ | 0.1+ | 2007 10 11 | 691 | 0.2+ | 0.0  | 2007 11 07 | G96 | 0.4+  | 0.2−  |
| 2005 05 16 | 644 | 0.2+ | 0.3+ | 2007 10 11 | 691 | 0.0  | 0.2+ | 2007 11 07 | G96 | 0.6+  | 0.2−  |
| 2005 05 16 | 644 | 0.1+ | 0.1− | 2007 10 15 | 691 | 0.4− | 0.0  | 2007 11 07 | 703 | 1.5−  | 1.1+  |
| 2005 06 11 | 691 | 0.4− | 0.2+ | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 07 | G96 | 0.5+  | 0.2−  |
| 2005 06 11 | 691 | 0.7+ | 0.1− | 2007 10 15 | 691 | 0.5− | 0.4+ | 2007 11 07 | 703 | 0.6−  | 1.1−  |
| 2005 06 11 | 691 | 0.3− | 0.2− | 2007 11 04 | G96 | 0.1− | 0.1− | 2007 11 07 | 703 | (1.8− | 1.7−) |
| 2007 09 25 | G96 | 0.8+ | 0.0  | 2007 11 04 | G96 | 0.2+ | 0.0  |            |     |       |       |

2007 TQ<sub>329</sub> = 1999 TQ<sub>316</sub> = 2003 TO<sub>42</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 19.04628   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.25270921 | $\omega$ | 50.63715  | +0.98613637 |      | −0.16373358 |   |
| <i>a</i>                                | 2.4777377  | $\Omega$ | 318.76622 | +0.13688078 |      | +0.89447194 |   |
| <i>e</i>                                | 0.1916952  | <i>i</i> | 2.34342   | +0.09380142 |      | +0.41606641 |   |
| <i>P</i>                                | 3.90       | <i>H</i> | 18.7      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 11 | 691 | 0.0  | 0.0  | 2003 10 16 | 691 | 0.3+ | 0.2+ | 2007 10 19 | 691 | 0.4− | 0.2+ |
| 1999 10 11 | 691 | 0.2− | 0.1− | 2003 10 16 | 691 | 0.2− | 0.1+ | 2007 10 19 | 691 | 0.2− | 0.1− |
| 1999 10 11 | 691 | 0.3+ | 0.1+ | 2003 10 16 | 691 | 0.1− | 0.0  | 2007 10 19 | 691 | 0.1+ | 0.1+ |
| 1999 10 19 | 691 | 0.1+ | 0.3− | 2007 10 11 | 691 | 0.1+ | 0.1+ | 2007 11 08 | G96 | 0.3+ | 0.4− |
| 1999 10 19 | 691 | 0.2− | 0.5− | 2007 10 11 | 691 | 0.0  | 0.1− | 2007 11 08 | G96 | 0.2+ | 0.3− |
| 1999 10 19 | 691 | 0.2+ | 0.1+ | 2007 10 11 | 691 | 0.3+ | 0.0  | 2007 11 08 | G96 | 0.5+ | 0.2− |
| 2003 10 02 | 691 | 0.0  | 0.1− | 2007 10 15 | 691 | 0.1− | 0.5− | 2007 11 08 | G96 | 0.5+ | 0.2− |
| 2003 10 02 | 691 | 0.1− | 0.2+ | 2007 10 15 | 691 | 0.1− | 0.1+ |            |     |      |      |
| 2003 10 02 | 691 | 0.3− | 0.5+ | 2007 10 15 | 691 | 0.1− | 0.2+ |            |     |      |      |

2007 TV<sub>329</sub> = 1996 TC<sub>27</sub>

|                                         |            |          |          |             |      |             |   |
|-----------------------------------------|------------|----------|----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |      |             |   |
| <i>M</i>                                | 314.24560  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.18320166 | $\omega$ | 85.51977 | −0.10974159 |      | −0.99380162 |   |
| <i>a</i>                                | 3.0703163  | $\Omega$ | 10.82895 | +0.87036623 |      | −0.10470563 |   |
| <i>e</i>                                | 0.1217582  | <i>i</i> | 5.42179  | +0.48002023 |      | −0.03735077 |   |
| <i>P</i>                                | 5.38       | <i>H</i> | 16.2     | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 07 | 691 | 0.7+ | 0.2+ | 2007 09 25 | G96 | 0.1+ | 0.4− | 2007 10 15 | 691 | 0.2− | 0.1+ |
| 1996 10 07 | 691 | 0.5+ | 0.3− | 2007 09 25 | G96 | 0.5+ | 0.4− | 2007 11 04 | G96 | 0.5+ | 0.2− |
| 1996 10 07 | 691 | 0.4+ | 0.1+ | 2007 09 25 | G96 | 0.1+ | 0.3− | 2007 11 04 | G96 | 0.4+ | 0.3− |
| 1996 10 16 | 691 | 1.0− | 0.0  | 2007 09 25 | G96 | 0.8+ | 0.1− | 2007 11 04 | G96 | 0.3+ | 0.3− |
| 1996 10 16 | 691 | 0.4− | 0.1+ | 2007 10 11 | 691 | 0.5− | 0.1+ | 2007 11 04 | G96 | 0.7+ | 0.3− |
| 1996 10 16 | 691 | 0.4− | 0.4+ | 2007 10 11 | 691 | 0.2+ | 0.5− | 2007 11 08 | G96 | 0.5+ | 0.1+ |
| 2004 03 17 | 691 | 0.9+ | 0.1+ | 2007 10 11 | 691 | 0.0  | 0.4+ | 2007 11 08 | G96 | 0.1+ | 0.1− |
| 2004 03 17 | 691 | 0.3− | 0.1+ | 2007 10 15 | 691 | 0.7− | 0.0  | 2007 11 08 | G96 | 0.3+ | 0.3− |
| 2004 03 17 | 691 | 0.1− | 0.1+ | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 08 | G96 | 0.4+ | 0.1− |

2007 TT<sub>330</sub>

|                                         |            |          |           |             |      |             |   |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |      |             |   |
| <i>M</i>                                | 34.25889   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i>                                | 0.27153224 | $\omega$ | 55.34689  | +0.98035916 |      | +0.19502762 |   |
| <i>a</i>                                | 2.3618653  | $\Omega$ | 293.39120 | −0.18978783 |      | +0.89248252 |   |
| <i>e</i>                                | 0.2033521  | <i>i</i> | 1.83116   | −0.05363297 |      | +0.40674214 |   |
| <i>P</i>                                | 3.63       | <i>H</i> | 17.5      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 25 | 644 | 0.2− | 0.0  | 2007 10 11 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 703 | 0.4− | 0.4− |
| 2003 07 25 | 644 | 0.1− | 0.2+ | 2007 10 11 | 691 | 0.6+ | 1.2− | 2007 11 07 | 703 | 0.0  | 0.4− |
| 2003 07 25 | 644 | 0.3− | 0.1− | 2007 10 11 | 691 | 0.0  | 0.2− | 2007 11 07 | 703 | 0.7− | 0.0  |
| 2003 08 05 | 691 | 0.4+ | 0.1− | 2007 10 15 | 691 | 0.1+ | 0.1− | 2007 11 15 | 704 | 0.3+ | 0.2− |
| 2003 08 05 | 691 | 0.1+ | 0.2+ | 2007 10 15 | 691 | 0.2− | 0.1+ | 2007 11 15 | 704 | 0.8+ | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 05 | 691 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.0  | 0.3− | 2007 11 15 | 704 | 1.1+  | 0.8−  |
| 2003 10 24 | 291 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.7+  | 0.2−  |
| 2003 10 24 | 291 | 0.1− | 0.2− | 2007 10 19 | 691 | 0.3− | 0.1− | 2007 11 15 | 704 | 0.1+  | 0.0   |
| 2003 10 24 | 291 | 0.0  | 0.0  | 2007 10 19 | 691 | 0.1− | 0.0  | 2007 11 16 | D35 | 0.1+  | 0.8+  |
| 2004 12 19 | G96 | 0.4− | 0.2+ | 2007 11 03 | 691 | 0.4− | 0.1− | 2007 11 16 | D35 | 0.1+  | 0.6+  |
| 2004 12 19 | G96 | 0.2− | 0.1− | 2007 11 03 | 691 | 0.2− | 0.1+ | 2007 11 16 | D35 | 0.0   | 0.2+  |
| 2004 12 19 | G96 | 0.7+ | 1.2+ | 2007 11 03 | 691 | 0.4− | 0.1− | 2007 11 18 | 704 | (2.1− | 0.6+) |
| 2004 12 19 | G96 | 0.2− | 1.4− | 2007 11 06 | 704 | 0.5− | 0.2− | 2007 11 18 | 704 | 1.3−  | 0.6−  |
| 2007 10 07 | 691 | 0.0  | 0.1− | 2007 11 06 | 704 | 0.0  | 1.1+ | 2007 11 18 | 704 | 0.4+  | 0.4+  |
| 2007 10 07 | 691 | 0.0  | 0.2− | 2007 11 06 | 704 | 0.8− | 0.8+ | 2007 11 18 | 704 | 0.5−  | 0.7+  |
| 2007 10 07 | 691 | 0.0  | 0.1− | 2007 11 07 | 703 | 1.3+ | 0.1+ |            |     |       |       |

**2007 TW<sub>330</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.30033289 | <i>ω</i> | 219.21283 | −0.52379110 |      | +0.85049525 |   |
| <i>a</i> | 2.2083477  | <i>Ω</i> | 19.34858  | −0.74062253 |      | −0.42685890 |   |
| <i>e</i> | 0.0572888  | <i>i</i> | 8.32420   | −0.42085765 |      | −0.30732607 |   |
| <i>P</i> | 3.28       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 14 | 644 | 0.2+ | 0.2− | 2007 10 19 | 691 | 0.6+ | 0.1+ | 2007 11 14 | 691 | 0.1+ | 0.2+ |
| 2002 01 14 | 644 | 0.2+ | 0.1+ | 2007 10 19 | 691 | 0.0  | 0.1− | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2002 01 14 | 644 | 0.2− | 0.5− | 2007 11 02 | 691 | 0.2− | 0.1− | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2002 02 03 | 644 | 0.1− | 0.4+ | 2007 11 02 | 691 | 0.2− | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.1− |
| 2002 02 03 | 644 | 0.2− | 0.3+ | 2007 11 02 | 691 | 0.2− | 0.1− | 2007 11 18 | 691 | 0.1+ | 0.2− |
| 2002 02 03 | 644 | 0.0  | 0.1− | 2007 11 04 | 691 | 0.2− | 0.2− | 2007 11 18 | 704 | 0.8+ | 0.2− |
| 2007 10 11 | 691 | 0.2− | 0.1− | 2007 11 04 | 691 | 0.1+ | 0.3− | 2007 11 18 | 704 | 0.1− | 0.4− |
| 2007 10 11 | 691 | 0.2− | 0.2− | 2007 11 04 | 691 | 0.1− | 0.1+ | 2007 11 18 | 704 | 0.3+ | 0.7+ |
| 2007 10 11 | 691 | 0.2− | 0.2− | 2007 11 07 | 704 | 0.2+ | 0.9+ | 2007 11 18 | 704 | 0.0  | 0.1+ |
| 2007 10 15 | 691 | 0.2− | 0.1− | 2007 11 07 | 704 | 0.1+ | 0.1− | 2007 11 19 | 291 | 0.0  | 0.1+ |
| 2007 10 15 | 691 | 0.2+ | 0.0  | 2007 11 07 | 704 | 0.3+ | 0.9+ | 2007 11 19 | 291 | 0.0  | 0.0  |
| 2007 10 15 | 691 | 0.1+ | 0.0  | 2007 11 07 | 704 | 0.0  | 0.2+ | 2007 11 19 | 291 | 1.2− | 1.3− |
| 2007 10 19 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.2− |            |     |      |      |

**2007 TQ<sub>332</sub> = 2005 FM<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.25765276 | <i>ω</i> | 156.88386 | +0.30442460 |      | −0.95185605 |   |
| <i>a</i> | 2.4459421  | <i>Ω</i> | 275.37722 | +0.86819185 |      | +0.29281730 |   |
| <i>e</i> | 0.0615636  | <i>i</i> | 2.07199   | +0.39187828 |      | +0.09070877 |   |
| <i>P</i> | 3.83       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 19 | 691 | 0.7+ | 0.6− | 2007 10 15 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.1+ | 0.5+ |
| 1999 10 19 | 691 | 0.1+ | 0.8− | 2007 10 15 | 691 | 0.4− | 0.2+ | 2007 11 15 | 704 | 0.7− | 0.2+ |
| 1999 10 19 | 691 | 0.2− | 0.3+ | 2007 10 15 | 691 | 0.9− | 0.3+ | 2007 11 15 | 704 | 0.6− | 0.9+ |
| 2003 10 18 | 691 | 0.2+ | 0.2− | 2007 11 02 | G96 | 0.3+ | 0.4− | 2007 11 15 | 704 | 0.2− | 0.3+ |
| 2003 10 18 | 691 | 0.3− | 0.1− | 2007 11 02 | G96 | 0.4+ | 0.2− | 2007 11 18 | G96 | 0.3+ | 0.6− |
| 2003 10 18 | 691 | 0.2+ | 0.1− | 2007 11 02 | G96 | 0.2+ | 0.0  | 2007 11 18 | G96 | 1.1+ | 0.8− |
| 2005 03 17 | G96 | 0.0  | 0.3− | 2007 11 02 | G96 | 0.2+ | 0.1− | 2007 11 18 | G96 | 0.8+ | 0.7− |
| 2005 03 17 | G96 | 0.1+ | 0.2− | 2007 11 03 | 691 | 1.0− | 0.2+ | 2007 11 18 | G96 | 0.6+ | 0.5− |
| 2005 03 17 | G96 | 0.3− | 0.0  | 2007 11 03 | 691 | 0.6− | 0.1− | 2007 11 18 | 704 | 0.6− | 0.7− |
| 2005 03 17 | G96 | 0.1− | 0.4− | 2007 11 03 | 691 | 0.6− | 0.3− | 2007 11 18 | 704 | 0.6+ | 0.4+ |
| 2007 10 11 | 691 | 0.2− | 0.2− | 2007 11 07 | 703 | 0.2+ | 1.2+ | 2007 11 18 | 704 | 0.6+ | 0.4+ |
| 2007 10 11 | 691 | 0.3− | 0.3+ | 2007 11 07 | 703 | 0.5+ | 0.3+ |            |     |      |      |
| 2007 10 11 | 691 | 0.2− | 0.1− | 2007 11 07 | 703 | 0.3+ | 0.1+ |            |     |      |      |

**2007 TV<sub>332</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.28648769 | <i>ω</i> | 223.25009 | −0.12969569 |      | −0.98988993 |   |
| <i>a</i> | 2.2789357  | <i>Ω</i> | 234.28242 | +0.92792103 |      | −0.10075826 |   |
| <i>e</i> | 0.1401127  | <i>i</i> | 4.05542   | +0.34948760 |      | −0.09982831 |   |
| <i>P</i> | 3.44       | <i>H</i> | 17.5      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 24 | 691 | 0.1−  | 1.0+  | 2007 10 15 | 691 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.4+ | 0.1+ |
| 1998 01 24 | 691 | 0.3−  | 1.0+  | 2007 10 15 | 691 | 0.1− | 0.1+ | 2007 11 07 | 703 | 0.5− | 0.8+ |
| 1998 01 24 | 691 | (0.2− | 4.4−) | 2007 10 31 | G96 | 0.3+ | 0.1− | 2007 11 07 | 703 | 0.3+ | 0.6+ |
| 2000 11 19 | 691 | 0.2+  | 0.5−  | 2007 10 31 | G96 | 0.2+ | 0.0  | 2007 11 07 | 703 | 0.5+ | 0.4− |
| 2000 11 19 | 691 | 0.4+  | 0.4−  | 2007 10 31 | G96 | 0.5+ | 0.2− | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2000 11 19 | 691 | 0.1+  | 0.8−  | 2007 10 31 | G96 | 0.2+ | 0.1− | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2005 01 13 | 703 | 0.5−  | 2.3+  | 2007 11 03 | 691 | 0.2− | 0.3+ | 2007 11 11 | G96 | 0.5+ | 0.1+ |
| 2005 01 13 | 703 | 1.3−  | 0.6+  | 2007 11 03 | 691 | 0.0  | 0.3+ | 2007 11 11 | G96 | 0.5+ | 0.0  |
| 2005 01 13 | 703 | 0.9+  | 1.6+  | 2007 11 03 | 691 | 0.4− | 0.4+ | 2007 11 11 | 699 | 0.4− | 0.8+ |
| 2005 01 13 | 703 | 1.5+  | 0.4+  | 2007 11 04 | G96 | 0.3+ | 0.2− | 2007 11 11 | 699 | 0.8+ | 1.0− |
| 2005 03 04 | G92 | 0.6+  | 1.3+  | 2007 11 04 | G96 | 0.4+ | 0.4− | 2007 11 11 | 699 | 0.7− | 0.1+ |
| 2005 03 04 | G92 | 0.9+  | 1.6+  | 2007 11 04 | G96 | 0.6+ | 0.1− | 2007 11 11 | 699 | 0.4− | 0.6+ |
| 2005 03 04 | G92 | 0.9+  | 1.4+  | 2007 11 04 | G96 | 0.2+ | 0.1− | 2007 11 15 | 704 | 0.7− | 0.5+ |
| 2007 10 11 | 691 | 0.0   | 0.0   | 2007 11 04 | G96 | 0.3+ | 0.1− | 2007 11 15 | 704 | 0.2+ | 0.5+ |
| 2007 10 11 | 691 | 0.3−  | 0.2+  | 2007 11 04 | G96 | 0.3+ | 0.0  | 2007 11 15 | 704 | 0.8+ | 0.5+ |
| 2007 10 11 | 691 | 0.1−  | 0.2+  | 2007 11 04 | G96 | 0.1+ | 0.1− | 2007 12 06 | G96 | 0.0  | 0.0  |
| 2007 10 15 | 703 | 0.6−  | 0.1+  | 2007 11 04 | G96 | 0.3+ | 0.0  | 2007 12 06 | G96 | 0.2− | 0.1− |
| 2007 10 15 | 703 | 0.9+  | 0.3+  | 2007 11 07 | 703 | 0.7− | 0.6− | 2007 12 06 | G96 | 0.5− | 0.2+ |
| 2007 10 15 | 703 | 1.3−  | 0.2+  | 2007 11 07 | 703 | 0.2− | 0.9+ | 2007 12 06 | G96 | 0.2− | 0.0  |
| 2007 10 15 | 703 | 0.8−  | 0.4−  | 2007 11 07 | 703 | 0.3− | 0.6+ |            |     |      |      |
| 2007 10 15 | 691 | 0.0   | 0.1+  | 2007 11 07 | 703 | 0.3− | 0.2+ |            |     |      |      |

**2007 TU<sub>333</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.22475975 | <i>ω</i> | 349.70499 | +0.99904173 |      | +0.04332023 |   |
| <i>a</i> | 2.6791088  | <i>Ω</i> | 7.82025   | −0.03618357 |      | +0.89772851 |   |
| <i>e</i> | 0.0626956  | <i>i</i> | 2.62964   | −0.02462443 |      | +0.43841406 |   |
| <i>P</i> | 4.39       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 6 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.0  | 0.2+ | 2007 10 15 | 691 | 0.4+ | 0.7+ | 2007 11 12 | H07 | 0.5− | 0.2− |
| 2002 08 18 | 644 | 0.2− | 0.3− | 2007 10 15 | 691 | 0.3− | 0.1− | 2007 11 12 | H07 | 0.2+ | 0.1− |
| 2002 08 18 | 644 | 0.1− | 0.1− | 2007 11 02 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 1.6+ | 1.0+ |
| 2002 08 29 | 644 | 0.1+ | 0.1− | 2007 11 02 | 691 | 0.3− | 0.1− | 2007 11 15 | 704 | 0.5− | 0.5+ |
| 2002 08 29 | 644 | 0.1− | 0.2+ | 2007 11 02 | 691 | 0.5− | 0.1− | 2007 11 15 | 704 | 0.2+ | 1.2− |
| 2002 08 29 | 644 | 0.4+ | 0.1− | 2007 11 07 | 703 | 0.6+ | 0.9+ | 2007 11 15 | 704 | 0.1+ | 0.3− |
| 2007 10 11 | 691 | 0.4− | 0.3− | 2007 11 07 | 703 | 0.6+ | 0.7+ | 2007 11 15 | 704 | 0.2+ | 0.8− |
| 2007 10 11 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.3− | 0.1− |
| 2007 10 11 | 691 | 0.1− | 0.3+ | 2007 11 07 | 703 | 0.9+ | 0.4+ | 2007 11 19 | 691 | 0.5− | 0.1− |
| 2007 10 15 | 691 | 0.2− | 0.2− | 2007 11 12 | H07 | 0.9− | 0.4− | 2007 11 19 | 691 | 0.3− | 0.3− |

**2007 TQ<sub>334</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.19903679 | <i>ω</i> | 333.82382 | +0.99192953 |      | −0.09679072 |   |
| <i>a</i> | 2.9052297  | <i>Ω</i> | 32.05905  | +0.12521952 |      | +0.84921326 |   |
| <i>e</i> | 0.0653625  | <i>i</i> | 8.87589   | −0.01989681 |      | +0.51910345 |   |
| <i>P</i> | 4.95       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.9+ | 0.2+ | 2007 10 11 | 691 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2005 04 02 | G96 | 0.2− | 0.3+ | 2007 10 15 | 691 | 0.2− | 0.1− | 2007 11 09 | 691 | 0.6− | 0.0  |
| 2005 04 02 | G96 | 0.2− | 0.8− | 2007 10 15 | 691 | 0.3+ | 0.0  | 2007 11 09 | 691 | 0.1− | 0.2+ |
| 2005 04 02 | G96 | 0.4− | 0.1− | 2007 10 15 | 691 | 0.2+ | 0.1− | 2007 11 17 | 691 | 0.3− | 0.4− |
| 2005 05 14 | G96 | 0.7+ | 0.4+ | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.2− | 0.1− |
| 2005 05 14 | G96 | 0.5− | 0.8+ | 2007 10 31 | 691 | 0.3+ | 0.0  | 2007 11 17 | 691 | 0.4− | 0.2+ |
| 2005 05 14 | G96 | 0.1+ | 0.2− | 2007 10 31 | 691 | 0.1− | 0.1− | 2007 12 06 | 691 | 0.0  | 0.2− |
| 2005 05 14 | G96 | 0.0  | 0.1− | 2007 11 05 | 691 | 0.2+ | 0.4+ | 2007 12 06 | 691 | 0.2+ | 0.2+ |
| 2007 10 11 | 691 | 0.1− | 0.1+ | 2007 11 05 | 691 | 0.1− | 0.4+ | 2007 12 06 | 691 | 0.1+ | 0.1+ |
| 2007 10 11 | 691 | 0.1− | 0.1+ | 2007 11 05 | 691 | 1.0+ | 0.8− |            |     |      |      |

2007 DEC. 24

M.P.O. 129905

**2007 TU<sub>334</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.20042   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24625087 | $\omega$ | 144.07118 | +0.96263392   | -0.17353152 |
| <i>a</i> | 2.5208724  | $\Omega$ | 227.33857 | +0.13039578   | +0.96987355 |
| <i>e</i> | 0.1741297  | <i>i</i> | 16.42234  | +0.23734546   | +0.17097402 |
| <i>P</i> | 4.00       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 11 23 | 691 | 0.1- | 0.0  | 2007 10 15 | 691 | 0.2- | 0.1+ | 2007 11 14 | 704 | 0.2- | 0.5- |
| 1995 11 23 | 691 | 0.1+ | 0.4- | 2007 10 15 | 691 | 0.1- | 0.3+ | 2007 11 14 | 704 | 0.5- | 0.5- |
| 1995 11 23 | 691 | 0.2- | 0.2- | 2007 10 15 | 691 | 0.1- | 0.5+ | 2007 11 14 | 704 | 0.1- | 0.0  |
| 1999 11 14 | 691 | 0.3+ | 0.1- | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 18 | G96 | 0.5+ | 0.3+ |
| 1999 11 14 | 691 | 0.1+ | 0.1- | 2007 10 30 | G96 | 0.4- | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.1+ |
| 1999 11 14 | 691 | 0.1- | 0.2- | 2007 10 30 | G96 | 0.2+ | 0.2- | 2007 11 18 | G96 | 0.4+ | 0.0  |
| 2003 10 18 | 691 | 0.1+ | 0.2- | 2007 10 30 | G96 | 0.8+ | 0.2+ | 2007 11 18 | G96 | 0.7+ | 0.0  |
| 2003 10 18 | 691 | 0.0  | 0.1+ | 2007 11 12 | 703 | 0.7+ | 0.5+ | 2007 11 20 | 691 | 0.3- | 0.6+ |
| 2003 10 18 | 691 | 0.0  | 0.2- | 2007 11 12 | 703 | 0.7- | 0.2+ | 2007 11 20 | 691 | 0.7- | 0.3+ |
| 2007 10 11 | 691 | 0.5+ | 0.1- | 2007 11 12 | 703 | 0.2+ | 0.3+ | 2007 11 20 | 691 | 0.5- | 0.7+ |
| 2007 10 11 | 691 | 0.7- | 0.3- | 2007 11 12 | 703 | 0.6+ | 0.9- |            |     |      |      |
| 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 1.0- | 0.6- |            |     |      |      |

**2007 TD<sub>336</sub> = 2006 KO<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 38.54075   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19079714 | $\omega$ | 38.56727  | +0.72694868   | +0.68550856 |
| <i>a</i> | 2.9882813  | $\Omega$ | 278.10661 | -0.63969046   | +0.65468926 |
| <i>e</i> | 0.0911981  | <i>i</i> | 2.33264   | -0.24968326   | +0.31852784 |
| <i>P</i> | 5.17       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 17 | G96 | 0.5- | 0.5- | 2006 05 25 | 568 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.7+ | 0.0  |
| 2005 03 17 | G96 | 0.3- | 0.7+ | 2006 05 25 | 568 | 0.0  | 0.2+ | 2007 10 15 | 691 | 0.0  | 0.1- |
| 2005 03 17 | G96 | 1.1+ | 0.7+ | 2006 05 26 | 568 | 0.3+ | 0.1- | 2007 10 15 | 691 | 0.0  | 0.2- |
| 2005 03 17 | G96 | 0.4+ | 0.4+ | 2007 09 30 | 691 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.2+ | 0.7+ |
| 2005 04 12 | G96 | 0.3- | 0.5+ | 2007 09 30 | 691 | 0.4- | 0.1- | 2007 11 11 | G96 | 0.1+ | 0.6+ |
| 2005 04 12 | G96 | 0.4- | 0.1+ | 2007 09 30 | 691 | 0.3- | 0.1+ | 2007 11 11 | G96 | 0.0  | 0.5+ |
| 2005 04 12 | G96 | 0.6+ | 0.0  | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.5+ | 0.7+ |
| 2005 04 12 | G96 | 0.2+ | 0.1- | 2007 10 12 | 691 | 0.3- | 0.1+ |            |     |      |      |
| 2006 05 25 | 568 | 0.0  | 0.2+ | 2007 10 12 | 691 | 0.1+ | 0.0  |            |     |      |      |

**2007 TE<sub>336</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.26480  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23395153 | $\omega$ | 90.38467  | +0.57148722   | -0.81981348 |
| <i>a</i> | 2.6084677  | $\Omega$ | 324.68222 | +0.72581834   | +0.52554529 |
| <i>e</i> | 0.0725246  | <i>i</i> | 3.58703   | +0.38287086   | +0.22739395 |
| <i>P</i> | 4.21       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 22 | 644 | 0.1- | 0.1+ | 2004 12 20 | G96 | 0.2+ | 0.3+ | 2007 09 30 | 691 | 0.1- | 0.1- |
| 2003 09 22 | 644 | 0.3+ | 0.4- | 2005 02 02 | 691 | 0.2+ | 0.6+ | 2007 09 30 | 691 | 0.2- | 0.7+ |
| 2003 09 22 | 644 | 0.7+ | 0.3+ | 2005 02 02 | 691 | 1.0+ | 0.7+ | 2007 10 12 | 691 | 0.1- | 0.0  |
| 2003 10 20 | 644 | 0.3- | 0.0  | 2005 02 02 | 691 | 1.5+ | 1.1- | 2007 10 12 | 691 | 0.0  | 0.0  |
| 2003 10 20 | 644 | 0.2- | 0.0  | 2005 03 08 | G96 | 0.7- | 0.1+ | 2007 10 12 | 691 | 0.2- | 0.1- |
| 2003 10 20 | 644 | 0.2- | 0.0  | 2005 03 08 | G96 | 0.3- | 0.2+ | 2007 10 15 | 691 | 0.2- | 0.3- |
| 2003 10 27 | 691 | 0.2+ | 0.1- | 2005 03 08 | G96 | 0.7- | 0.0  | 2007 10 15 | 691 | 0.1- | 0.2+ |
| 2003 10 27 | 691 | 0.1+ | 0.3- | 2005 03 08 | G96 | 0.6- | 0.0  | 2007 10 15 | 691 | 0.2+ | 0.0  |
| 2003 10 27 | 691 | 0.0  | 0.3- | 2007 08 23 | 691 | 0.3- | 0.2+ | 2007 10 19 | 691 | 0.1+ | 0.1- |
| 2004 12 20 | G96 | 0.2+ | 0.4- | 2007 08 23 | 691 | 0.1- | 0.1- | 2007 10 19 | 691 | 0.1+ | 0.0  |
| 2004 12 20 | G96 | 0.5- | 0.1+ | 2007 08 23 | 691 | 0.1+ | 0.2- | 2007 10 19 | 691 | 0.2+ | 0.0  |
| 2004 12 20 | G96 | 0.2- | 0.1+ | 2007 09 30 | 691 | 0.1- | 0.9+ |            |     |      |      |

**2007 TC<sub>337</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.33803  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.26923288 | $\omega$ | 25.10647 | +0.38629055   | -0.92191707 |
| <i>a</i> | 2.3752937  | $\Omega$ | 42.18631 | +0.83877498   | +0.33796505 |
| <i>e</i> | 0.1677728  | <i>i</i> | 2.48609  | +0.38371364   | +0.18933709 |
| <i>P</i> | 3.66       | <i>H</i> | 18.1     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.2- | 0.1+ | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 11 11 | G96 | 0.2+ | 0.3- |
| 2003 09 19 | 691 | 0.1- | 0.0  | 2007 10 12 | 691 | 0.0  | 0.1- | 2007 11 11 | G96 | 0.9+ | 0.2- |
| 2003 09 19 | 691 | 0.2+ | 0.0  | 2007 10 12 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.1- | 0.7- |
| 2005 03 16 | G96 | 1.1- | 0.3+ | 2007 10 15 | 691 | 0.3+ | 0.2- | 2007 11 15 | 704 | 0.9+ | 0.4- |
| 2005 03 16 | G96 | 1.5- | 0.2+ | 2007 10 15 | 691 | 0.6- | 0.4- | 2007 11 15 | 704 | 0.1- | 0.5- |
| 2005 03 16 | G96 | 1.4+ | 0.7- | 2007 10 15 | 691 | 0.5- | 0.0  | 2007 11 15 | 704 | 0.2- | 0.0  |
| 2005 03 16 | G96 | 0.8+ | 0.7- | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 0.4- | 1.1- |
| 2007 09 10 | G96 | 0.3+ | 0.3+ | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 18 | 704 | 0.2+ | 1.2+ |
| 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 10 30 | 691 | 0.1- | 0.3- | 2007 11 18 | 704 | 0.2+ | 0.3+ |
| 2007 09 10 | G96 | 0.2- | 0.3- | 2007 10 30 | G96 | 0.8+ | 0.1- | 2007 11 18 | 704 | 0.5+ | 0.1+ |
| 2007 09 10 | G96 | 0.7+ | 0.1+ | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 18 | 704 | 0.4+ | 0.2+ |
| 2007 09 18 | G96 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.9+ | 0.1- | 2007 12 05 | 691 | 0.3- | 0.3+ |
| 2007 09 18 | G96 | 0.5+ | 0.1- | 2007 10 30 | G96 | 0.4+ | 0.0  | 2007 12 05 | 691 | 0.2- | 0.7+ |
| 2007 09 18 | G96 | 0.2- | 0.1+ | 2007 11 11 | G96 | 0.3+ | 0.4- | 2007 12 05 | 691 | 0.1- | 0.2+ |
| 2007 09 18 | G96 | 0.4+ | 0.1- | 2007 11 11 | G96 | 0.5+ | 0.2- |            |     |      |      |

**2007 TG<sub>337</sub> = 2001 FK<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.80226  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.37587212 | $\omega$ | 14.92332 | +0.90231868   | -0.42615344 |
| <i>a</i> | 1.9015568  | $\Omega$ | 10.99906 | +0.35238723   | +0.64246930 |
| <i>e</i> | 0.0696641  | <i>i</i> | 19.89210 | +0.24828259   | +0.63688810 |
| <i>P</i> | 2.62       | <i>H</i> | 18.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 03 18 | 691 | 0.0  | 0.1- | 2006 03 04 | 703 | 1.4+  | 0.0   | 2007 10 13 | 703 | 0.5- | 0.3- |
| 2001 03 18 | 691 | 0.1+ | 0.1+ | 2006 03 04 | 703 | 0.4+  | 1.3+  | 2007 10 13 | 703 | 0.2- | 0.7+ |
| 2001 03 18 | 691 | 0.2- | 0.1- | 2007 09 09 | 699 | 0.3-  | 0.2-  | 2007 10 15 | G96 | 0.2- | 0.2+ |
| 2001 03 22 | 691 | 0.6+ | 0.1+ | 2007 09 09 | 699 | 1.3-  | 0.2+  | 2007 10 15 | G96 | 0.3- | 0.2+ |
| 2001 03 22 | 691 | 0.0  | 0.4+ | 2007 09 09 | 699 | 1.1+  | 0.2-  | 2007 10 15 | G96 | 0.2- | 0.3+ |
| 2001 03 22 | 691 | 0.3+ | 0.4+ | 2007 09 09 | 699 | 0.8-  | 0.0   | 2007 10 15 | G96 | 0.2- | 0.3+ |
| 2006 02 04 | 703 | 0.6- | 1.1- | 2007 10 02 | E12 | 0.3+  | 0.6-  | 2007 10 30 | G96 | 0.5- | 0.3+ |
| 2006 02 04 | 703 | 0.4- | 1.2+ | 2007 10 02 | E12 | 0.7+  | 0.3+  | 2007 10 30 | G96 | 0.4- | 0.5+ |
| 2006 02 04 | 703 | 0.1+ | 0.2- | 2007 10 02 | E12 | 0.0   | 0.3+  | 2007 10 30 | G96 | 0.6- | 0.5+ |
| 2006 02 04 | 703 | 0.6- | 0.9+ | 2007 10 02 | E12 | 0.2-  | 0.5+  | 2007 10 30 | G96 | 0.3- | 0.4+ |
| 2006 03 04 | 703 | 0.4+ | 0.8- | 2007 10 13 | 703 | 0.1+  | 0.5+  |            |     |      |      |
| 2006 03 04 | 703 | 0.3- | 0.5- | 2007 10 13 | 703 | (1.8- | 0.7+) |            |     |      |      |

**2007 TH<sub>337</sub> = 2000 SE<sub>257</sub> = 2002 CW<sub>228</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.42194   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27594721 | $\omega$ | 309.20561 | +0.98369649   | +0.16334868 |
| <i>a</i> | 2.3366054  | $\Omega$ | 41.55013  | -0.10899838   | +0.87425039 |
| <i>e</i> | 0.1391184  | <i>i</i> | 6.51196   | -0.14304044   | +0.45716896 |
| <i>P</i> | 3.57       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 24 | 704 | 0.0  | 0.8+ | 2002 02 13 | 291 | 0.1+  | 0.1+  | 2007 10 04 | 703 | 0.5+ | 0.6- |
| 2000 09 24 | 704 | 0.2- | 0.3+ | 2002 02 13 | 291 | 0.3-  | 0.1+  | 2007 10 04 | 703 | 1.4- | 0.1- |
| 2000 09 24 | 704 | 0.4+ | 0.6- | 2007 09 05 | 703 | (2.2+ | 1.2+) | 2007 10 04 | 703 | 0.5- | 0.1- |
| 2000 10 02 | 704 | 0.2- | 0.5+ | 2007 09 05 | 703 | 0.2+  | 0.0   | 2007 10 13 | 703 | 0.4- | 0.8- |
| 2000 10 02 | 704 | 0.7+ | 0.5+ | 2007 09 05 | 703 | 1.1+  | 1.1+  | 2007 10 13 | 703 | 0.2+ | 0.8+ |
| 2000 10 02 | 704 | 1.1- | 0.7- | 2007 09 05 | 703 | 0.2-  | 1.0-  | 2007 10 13 | 703 | 0.2+ | 0.2+ |
| 2000 10 02 | 704 | 0.1+ | 0.3+ | 2007 09 12 | 703 | 0.9-  | 0.1+  | 2007 10 13 | 703 | 1.2- | 0.5- |
| 2002 02 06 | 291 | 0.4- | 0.4- | 2007 09 12 | 703 | 0.7+  | 0.1+  | 2007 10 15 | G96 | 0.3+ | 0.1- |
| 2002 02 06 | 291 | 0.3+ | 0.2- | 2007 09 12 | 703 | 0.8+  | 0.1+  | 2007 10 15 | G96 | 0.5+ | 0.2- |

2002 02 06 291 0.1− 0.3− 2007 09 12 703 0.3− 0.2− 2007 10 15 G96 0.6+ 0.4−  
 2002 02 13 291 0.0 0.2− 2007 10 04 703 0.2+ 0.0 2007 10 15 G96 0.2+ 0.1−

**2007 TZ<sub>337</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 16.48540   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22928649 | $\omega$ | 280.07553 | +0.97749569   | −0.18824685 |
| <i>a</i> | 2.6437298  | $\Omega$ | 90.82134  | +0.21067638   | +0.89432302 |
| <i>e</i> | 0.2052587  | <i>i</i> | 5.46407   | −0.01084582   | +0.40589341 |
| <i>P</i> | 4.30       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 19 | 291 | 0.1− | 0.0  | 2007 10 13 | 703 | 0.8− | 1.2+ | 2007 11 10 | 703 | 0.2+ | 0.1+ |
| 2003 12 19 | 291 | 0.1− | 0.1+ | 2007 10 15 | G96 | 0.0  | 0.2− | 2007 11 10 | 703 | 0.0  | 0.3− |
| 2003 12 19 | 291 | 0.2− | 0.1+ | 2007 10 15 | G96 | 0.3+ | 0.3− | 2007 11 10 | 703 | 0.3− | 0.4− |
| 2004 01 28 | 691 | 0.2+ | 0.1+ | 2007 10 15 | G96 | 0.1− | 0.2− | 2007 11 10 | 703 | 0.4+ | 0.2+ |
| 2004 01 28 | 691 | 0.3+ | 0.3− | 2007 10 15 | G96 | 0.2+ | 0.2− | 2007 11 18 | 703 | 0.2+ | 0.4+ |
| 2004 01 28 | 691 | 0.1+ | 0.0  | 2007 10 30 | 703 | 0.0  | 0.1− | 2007 11 18 | 703 | 0.5+ | 0.7− |
| 2007 10 13 | 703 | 1.5+ | 0.5− | 2007 10 30 | 703 | 0.0  | 0.1+ | 2007 11 18 | 703 | 0.3− | 0.5+ |
| 2007 10 13 | 703 | 0.9+ | 0.4− | 2007 10 30 | 703 | 0.5+ | 0.2+ | 2007 11 18 | 703 | 0.6− | 0.2+ |
| 2007 10 13 | 703 | 1.3− | 0.4+ | 2007 10 30 | 703 | 1.2− | 0.2− |            |     |      |      |

**2007 TW<sub>338</sub> = 2005 BZ<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 314.32158  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.27934199 | $\omega$ | 314.91788 | +0.15759190   | −0.98596507 |
| <i>a</i> | 2.3176360  | $\Omega$ | 125.93780 | +0.92411163   | +0.12757056 |
| <i>e</i> | 0.1473140  | <i>i</i> | 3.90327   | +0.34811274   | +0.10769691 |
| <i>P</i> | 3.53       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 03 | 691 | 0.1+ | 0.1− | 2005 01 19 | 691 | 0.2+ | 0.1− | 2007 10 16 | 291 | 0.1− | 0.0  |
| 1998 02 03 | 691 | 0.2− | 0.1− | 2005 01 19 | 691 | 0.0  | 0.2+ | 2007 10 16 | 291 | 0.0  | 0.0  |
| 1998 02 03 | 691 | 0.0  | 0.2− | 2005 01 19 | 691 | 0.3+ | 0.1− | 2007 10 16 | 291 | 0.1+ | 0.0  |
| 2005 01 16 | 691 | 0.3− | 0.2+ | 2007 09 10 | 691 | 0.0  | 0.1+ | 2007 10 21 | G96 | 0.7+ | 0.0  |
| 2005 01 16 | 691 | 0.0  | 0.4− | 2007 09 10 | 691 | 0.2− | 0.1+ | 2007 10 21 | G96 | 0.2+ | 0.4− |
| 2005 01 16 | 691 | 0.2− | 0.1+ | 2007 09 10 | 691 | 0.4+ | 0.2+ | 2007 10 21 | G96 | 0.5− | 0.3− |
| 2005 01 16 | 691 | 0.0  | 0.0  | 2007 10 15 | 291 | 0.1− | 0.3+ | 2007 10 21 | G96 | 0.1+ | 0.3− |
| 2005 01 16 | 691 | 0.0  | 0.2+ | 2007 10 15 | 291 | 0.1− | 0.2+ |            |     |      |      |
| 2005 01 16 | 691 | 0.1+ | 0.3+ | 2007 10 15 | 291 | 0.3− | 0.1+ |            |     |      |      |

**2007 TB<sub>339</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 280.27785  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.24538554 | $\omega$ | 268.17818 | −0.68023088   | −0.71787053 |
| <i>a</i> | 2.5267954  | $\Omega$ | 225.90245 | +0.72737399   | −0.63609251 |
| <i>e</i> | 0.0950903  | <i>i</i> | 11.90500  | +0.09062574   | −0.28292794 |
| <i>P</i> | 4.02       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 23 | 691 | 0.3+ | 0.2− | 2007 10 11 | 691 | 0.3− | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.3− |
| 2003 10 23 | 691 | 0.2− | 0.3+ | 2007 10 11 | 691 | 0.2− | 0.1− | 2007 10 30 | G96 | 0.1+ | 0.3− |
| 2003 10 23 | 691 | 0.3+ | 0.8+ | 2007 10 11 | 691 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.2− |
| 2003 11 16 | 691 | 0.1+ | 0.1+ | 2007 10 15 | 691 | 0.7− | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.1− |
| 2003 11 16 | 691 | 0.0  | 0.1− | 2007 10 15 | 691 | 0.4− | 0.5− | 2007 11 04 | 691 | 0.1− | 0.3− |
| 2003 11 16 | 691 | 0.2− | 0.3− | 2007 10 15 | 691 | 0.5− | 0.3+ | 2007 11 04 | 691 | 0.3− | 0.1+ |
| 2003 11 30 | 691 | 0.6− | 0.0  | 2007 10 20 | 621 | 0.4+ | 0.0  | 2007 11 04 | 691 | 0.5− | 0.2− |
| 2003 11 30 | 691 | 0.1+ | 0.5+ | 2007 10 20 | 621 | 0.6+ | 0.1+ | 2007 11 05 | G96 | 0.6+ | 0.4− |
| 2003 11 30 | 691 | 0.0  | 0.4+ | 2007 10 20 | 621 | 0.1− | 0.1− | 2007 11 05 | G96 | 0.6+ | 0.1− |
| 2005 03 13 | 691 | 0.1− | 0.1− | 2007 10 30 | 691 | 0.1+ | 0.7+ | 2007 11 05 | G96 | 0.5+ | 0.3− |
| 2005 03 13 | 691 | 0.1+ | 0.1− | 2007 10 30 | 691 | 0.4− | 0.3+ | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 2005 03 13 | 691 | 0.1− | 0.1+ | 2007 10 30 | 691 | 0.5− | 0.0  |            |     |      |      |

**2007 TF<sub>340</sub> = 2005 GZ<sub>156</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 324.26315  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17148876 | $\omega$ | 210.99076 | +0.66621281   | −0.74441160 |
| <i>a</i> | 3.2085757  | $\Omega$ | 197.36773 | +0.71130673   | +0.65235298 |
| <i>e</i> | 0.0198404  | <i>i</i> | 8.64210   | +0.22406076   | +0.14243226 |
| <i>P</i> | 5.75       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 09 | 691 | 0.2− | 0.0  | 2005 04 16 | 691 | 0.0  | 0.4+ | 2007 10 14 | G96 | 0.3− | 0.4+ |
| 1999 04 09 | 691 | 0.1− | 0.1+ | 2005 04 16 | 691 | 0.2+ | 0.1+ | 2007 10 14 | G96 | 0.3− | 0.3+ |
| 1999 04 09 | 691 | 0.3+ | 0.1− | 2007 09 12 | 691 | 0.2− | 0.4+ | 2007 10 15 | G96 | 0.0  | 0.2+ |
| 2004 02 17 | 691 | 0.2+ | 0.2+ | 2007 09 12 | 691 | 0.3− | 0.5+ | 2007 10 15 | G96 | 0.2+ | 0.1+ |
| 2004 02 17 | 691 | 0.0  | 0.2+ | 2007 09 12 | 691 | 0.5− | 0.3+ | 2007 10 15 | G96 | 0.1+ | 0.1+ |
| 2004 02 17 | 691 | 0.1− | 0.3+ | 2007 10 09 | G96 | 0.6+ | 0.1− | 2007 10 15 | G96 | 0.3+ | 0.2− |
| 2005 04 10 | G96 | 0.4− | 0.1+ | 2007 10 09 | G96 | 0.1+ | 0.1+ | 2007 11 01 | G96 | 0.0  | 0.6− |
| 2005 04 10 | G96 | 0.8− | 0.2+ | 2007 10 09 | G96 | 0.6+ | 0.0  | 2007 11 01 | G96 | 0.4+ | 0.2+ |
| 2005 04 10 | G96 | 0.6− | 0.1− | 2007 10 09 | G96 | 0.5+ | 0.2+ | 2007 11 01 | G96 | 0.3+ | 0.2− |
| 2005 04 10 | G96 | 0.2− | 0.0  | 2007 10 14 | G96 | 0.1− | 0.3+ | 2007 11 01 | G96 | 0.3+ | 0.1+ |
| 2005 04 16 | 691 | 0.5+ | 0.4+ | 2007 10 14 | G96 | 0.2− | 0.1+ |            |     |      |      |

**2007 TH<sub>342</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 342.80351  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22594126 | $\omega$ | 213.75420 | +0.24173470   | −0.96746245 |
| <i>a</i> | 2.6697608  | $\Omega$ | 222.39301 | +0.91296730   | +0.25284688 |
| <i>e</i> | 0.0584039  | <i>i</i> | 6.36158   | +0.32871728   | +0.00921252 |
| <i>P</i> | 4.36       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 21 | 910 | 0.2+ | 0.5− | 2007 10 09 | G96 | 0.0  | 0.3− | 2007 11 21 | G96 | 0.2− | 0.0  |
| 1998 10 21 | 910 | 0.1+ | 0.0  | 2007 10 09 | G96 | 0.1+ | 0.7− | 2007 11 21 | G96 | 0.1+ | 0.2+ |
| 1998 10 22 | 910 | 0.1− | 0.1− | 2007 10 15 | G96 | 0.1− | 0.2− | 2007 11 21 | G96 | 0.2− | 0.2− |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2007 10 15 | G96 | 0.2+ | 0.3− | 2007 11 21 | G96 | 0.3− | 0.3− |
| 2002 10 05 | 645 | 0.0  | 0.1+ | 2007 10 15 | G96 | 0.0  | 0.2− | 2007 11 21 | G96 | 0.1− | 0.4− |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2007 10 15 | G96 | 0.3− | 0.4− | 2007 11 21 | G96 | 0.0  | 0.1− |
| 2002 10 30 | 645 | 0.1− | 0.0  | 2007 11 08 | 691 | 0.7− | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.2− |
| 2005 04 14 | 691 | 0.3+ | 0.7+ | 2007 11 08 | 691 | 0.2− | 0.0  | 2007 12 04 | 704 | 0.3− | 0.2+ |
| 2005 04 14 | 691 | 0.2+ | 0.4+ | 2007 11 08 | 691 | 0.2− | 0.2+ | 2007 12 04 | 703 | 0.2− | 0.4− |
| 2005 04 14 | 691 | 0.0  | 0.7+ | 2007 11 12 | H07 | 0.5+ | 0.8+ | 2007 12 04 | 704 | 0.9+ | 1.9+ |
| 2005 05 07 | G96 | 0.0  | 0.2+ | 2007 11 12 | H07 | 0.7+ | 0.0  | 2007 12 04 | 703 | 0.9− | 1.5+ |
| 2005 05 07 | G96 | 0.2+ | 0.3+ | 2007 11 12 | H07 | 0.7+ | 0.3+ | 2007 12 04 | 703 | 0.4− | 0.7+ |
| 2005 05 07 | G96 | 0.1+ | 0.4+ | 2007 11 14 | 704 | 0.7+ | 0.2+ | 2007 12 04 | 704 | 0.6+ | 0.1+ |
| 2005 05 07 | G96 | 0.2− | 0.3+ | 2007 11 14 | 704 | 0.3+ | 0.1+ | 2007 12 04 | 703 | 0.1+ | 1.4+ |
| 2007 10 09 | G96 | 0.4+ | 0.1− | 2007 11 14 | 704 | 0.5+ | 0.2− | 2007 12 04 | 704 | 0.7+ | 0.9+ |
| 2007 10 09 | G96 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.2+ | 0.1+ |            |     |      |      |

**2007 TB<sub>350</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 49.55542   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.26798716 | $\omega$ | 208.23486 | +0.30721088   | +0.95070556 |
| <i>a</i> | 2.3826489  | $\Omega$ | 79.68215  | −0.86484460   | +0.29741680 |
| <i>e</i> | 0.1785112  | <i>i</i> | 2.45808   | −0.39707088   | +0.08776211 |
| <i>P</i> | 3.68       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 25 | 691 | 0.2+ | 0.4− | 2006 03 08 | 691 | 0.2+ | 0.5+ | 2007 09 20 | 691 | 0.5− | 0.0  |
| 1995 02 25 | 691 | 0.1− | 0.5− | 2006 03 08 | 691 | 0.7+ | 0.2+ | 2007 09 20 | 691 | 0.2− | 0.1+ |
| 1995 02 25 | 691 | 0.0  | 0.0  | 2006 03 08 | 691 | 0.1+ | 0.0  | 2007 09 20 | 691 | 0.4− | 0.0  |
| 2000 10 02 | 691 | 0.4− | 0.1+ | 2006 05 30 | G96 | 0.7− | 0.1− | 2007 10 02 | E12 | 0.8+ | 0.1− |
| 2000 10 02 | 691 | 0.4− | 0.2+ | 2006 05 30 | G96 | 1.4− | 0.3+ | 2007 10 02 | E12 | 0.4+ | 0.3+ |
| 2000 10 02 | 691 | 0.0  | 0.2+ | 2006 05 30 | G96 | 0.5+ | 0.2+ | 2007 10 02 | E12 | 0.7+ | 0.6− |
| 2002 01 12 | 691 | 0.1− | 0.3− | 2006 05 30 | G96 | 0.2− | 0.0  | 2007 10 02 | E12 | 0.6− | 0.4− |
| 2002 01 12 | 691 | 0.8+ | 0.0  | 2006 05 30 | G96 | 0.2− | 0.4+ | 2007 10 14 | G96 | 0.1− | 0.0  |
| 2002 01 12 | 691 | 0.6− | 0.4+ | 2006 05 30 | G96 | 0.1+ | 0.3+ | 2007 10 14 | G96 | 0.2+ | 0.1− |



## 2007 DEC. 24

M.P.O. 129907

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 11 10 | 691 | 0.1− | 0.1− | 2006 05 30 | G96 | 0.0  | 0.1− | 2007 10 14 | G96 | 0.4+ | 0.0  |
| 2004 11 10 | 691 | 0.3+ | 0.1− | 2006 05 30 | G96 | 0.2− | 0.2+ | 2007 10 14 | G96 | 0.2+ | 0.2+ |
| 2004 11 10 | 691 | 0.0  | 0.0  | 2007 09 03 | 703 | 0.3− | 0.2+ | 2007 10 15 | G96 | 0.1− | 0.2− |
| 2006 02 04 | 691 | 0.5+ | 0.3+ | 2007 09 03 | 703 | 0.8− | 0.7+ | 2007 10 15 | G96 | 0.0  | 0.1− |
| 2006 02 04 | 691 | 0.2+ | 0.8+ | 2007 09 03 | 703 | 0.4− | 0.7+ | 2007 10 15 | G96 | 0.3+ | 0.2− |
| 2006 02 04 | 691 | 0.4+ | 0.5+ | 2007 09 03 | 703 | 0.2+ | 0.8+ | 2007 10 15 | G96 | 0.3+ | 0.1− |

**2007 TJ<sub>353</sub> = 1997 WE<sub>4</sub> = 2005 GB<sub>20</sub>**Id. Minor Planet Center (*MPO* 128522; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| (2000.0) |            |          |          | (2000.0)    |      |             |   |
| <i>M</i> | 344.96281  |          |          | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.19494641 | <i>ω</i> | 0.75527  | +0.70725667 |      | −0.70606286 |   |
| <i>a</i> | 2.9457274  | <i>Ω</i> | 44.23355 | +0.64835280 |      | +0.62776548 |   |
| <i>e</i> | 0.0908522  | <i>i</i> | 2.92051  | +0.28182735 |      | +0.32769764 |   |
| <i>P</i> | 5.06       | <i>H</i> | 16.5     | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 20 | 691 | 0.3+ | 0.1+ | 2007 09 12 | G96 | 0.4− | 0.1+ | 2007 10 15 | 703 | 0.2− | 0.8+ |
| 1997 11 20 | 691 | 0.3+ | 0.1+ | 2007 09 12 | G96 | 0.2− | 0.2+ | 2007 10 18 | G96 | 0.1+ | 0.2+ |
| 1997 11 20 | 691 | 0.0  | 0.3− | 2007 09 12 | G96 | 0.4− | 0.2− | 2007 10 18 | G96 | 0.2+ | 0.1+ |
| 1997 11 25 | 691 | 0.0  | 0.1− | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 10 18 | G96 | 0.1− | 0.0  |
| 1997 11 25 | 691 | 0.3− | 0.1+ | 2007 10 08 | G96 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.1+ | 0.2+ |
| 1997 11 25 | 691 | 0.2− | 0.0  | 2007 10 08 | G96 | 0.1+ | 0.1− | 2007 10 30 | G96 | 0.2− | 0.2+ |
| 2004 02 11 | 691 | 0.1− | 0.3− | 2007 10 08 | G96 | 0.4− | 0.2+ | 2007 10 30 | G96 | 0.1− | 0.4+ |
| 2004 02 11 | 691 | 0.3+ | 0.5+ | 2007 10 13 | 703 | 0.4+ | 0.5− | 2007 10 30 | G96 | 0.1− | 0.1+ |
| 2004 02 11 | 691 | 0.2− | 0.1+ | 2007 10 13 | 703 | 1.2− | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.3+ |
| 2005 04 02 | G96 | 0.4+ | 0.3+ | 2007 10 13 | 703 | 0.4+ | 0.4+ | 2007 11 05 | G96 | 0.0  | 0.1+ |
| 2005 04 02 | G96 | 0.6− | 0.8+ | 2007 10 13 | 703 | 1.5+ | 0.9− | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2005 04 02 | G96 | 0.6+ | 0.2+ | 2007 10 15 | 703 | 0.3− | 0.1− | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2005 04 02 | G96 | 0.2+ | 0.4+ | 2007 10 15 | 703 | 0.1− | 0.3− | 2007 11 05 | G96 | 0.1− | 0.0  |
| 2007 09 12 | G96 | 0.2− | 0.0  | 2007 10 15 | 703 | 0.1+ | 0.6+ |            |     |      |      |

**2007 TN<sub>353</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| (2000.0) |            |          |           | (2000.0)    |      |             |   |
| <i>M</i> | 343.97363  |          |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.16929083 | <i>ω</i> | 299.11792 | +0.57839262 |      | −0.81110710 |   |
| <i>a</i> | 3.2362874  | <i>Ω</i> | 115.28674 | +0.77789364 |      | +0.51628906 |   |
| <i>e</i> | 0.1275724  | <i>i</i> | 5.52088   | +0.24564908 |      | +0.27486520 |   |
| <i>P</i> | 5.82       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 24 | 644 | 0.2− | 0.4+ | 2007 10 08 | 699 | 0.4+ | 0.3− | 2007 11 05 | 703 | 0.5− | 0.7+ |
| 2001 10 24 | 644 | 0.1− | 0.1+ | 2007 10 15 | G96 | 0.2+ | 0.4− | 2007 11 05 | 703 | 0.1− | 0.3− |
| 2001 10 24 | 644 | 0.1+ | 0.1+ | 2007 10 15 | G96 | 0.0  | 0.9− | 2007 11 12 | 704 | 0.7− | 0.3+ |
| 2003 01 04 | 291 | 0.3+ | 0.7+ | 2007 10 15 | G96 | 0.5+ | 0.7− | 2007 11 12 | 704 | 0.4− | 0.0  |
| 2003 01 04 | 291 | 0.0  | 0.4+ | 2007 10 15 | G96 | 0.4+ | 0.4− | 2007 11 12 | 704 | 0.3− | 1.9+ |
| 2003 01 04 | 291 | 0.1− | 0.3+ | 2007 10 20 | G96 | 0.9+ | 0.5− | 2007 11 12 | 704 | 0.2+ | 0.6+ |
| 2005 06 01 | 691 | 0.1− | 0.9+ | 2007 10 20 | G96 | 0.9+ | 0.6− | 2007 11 15 | 704 | 1.8− | 0.9+ |
| 2005 06 01 | 691 | 0.3+ | 0.7+ | 2007 10 20 | G96 | 0.9+ | 0.5− | 2007 11 15 | 704 | 1.1+ | 0.7+ |
| 2005 06 01 | 691 | 0.4+ | 1.1+ | 2007 10 20 | G96 | 0.9+ | 0.6− | 2007 11 15 | 704 | 0.6− | 0.4− |
| 2005 06 27 | 691 | 0.4+ | 0.3+ | 2007 10 30 | 703 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.8− | 0.8+ |
| 2005 06 27 | 691 | 0.1+ | 0.3+ | 2007 10 30 | 703 | 0.8− | 0.5− | 2007 11 15 | 704 | 0.0  | 0.1+ |
| 2005 06 27 | 691 | 0.3− | 0.4+ | 2007 10 30 | 703 | 0.3− | 0.5− | 2007 11 18 | 703 | 0.2− | 0.3− |
| 2007 10 08 | 699 | 0.4+ | 0.2+ | 2007 10 30 | 703 | 0.9− | 1.1+ | 2007 11 18 | 703 | 0.3− | 0.3− |
| 2007 10 08 | 699 | 1.2+ | 0.1− | 2007 11 05 | 703 | 0.5+ | 1.2+ | 2007 11 18 | 703 | 0.5− | 1.0− |
| 2007 10 08 | 699 | 0.7− | 0.5+ | 2007 11 05 | 703 | 0.1− | 0.8+ | 2007 11 18 | 703 | 0.0  | 0.5+ |

**2007 TF<sub>354</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| (2000.0) |            |          |           | (2000.0)    |      |             |   |
| <i>M</i> | 31.39840   |          |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.21865784 | <i>ω</i> | 267.58146 | +0.91526425 |      | +0.33882127 |   |
| <i>a</i> | 2.7287223  | <i>Ω</i> | 72.54863  | −0.21378271 |      | +0.86700293 |   |
| <i>e</i> | 0.2179624  | <i>i</i> | 13.20525  | −0.34145031 |      | +0.36538483 |   |
| <i>P</i> | 4.51       | <i>H</i> | 16.1      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 18 | 644 | 0.2− | 0.4− | 2007 10 10 | 703 | 0.0  | 0.1− | 2007 11 02 | 703 | 0.3+ | 0.8+ |
| 2002 06 18 | 644 | 0.2+ | 0.0  | 2007 10 10 | 703 | 0.9− | 0.0  | 2007 11 02 | 703 | 0.6+ | 0.5− |
| 2002 06 18 | 644 | 0.1+ | 0.0  | 2007 10 10 | 703 | 0.8− | 0.1+ | 2007 11 02 | 703 | 0.8− | 0.6− |
| 2006 05 03 | 691 | 0.1− | 0.1+ | 2007 10 10 | 703 | 0.7− | 0.0  | 2007 11 02 | 703 | 1.0− | 1.6+ |
| 2006 05 03 | 691 | 0.6+ | 0.0  | 2007 10 15 | 703 | 0.1+ | 0.0  | 2007 11 11 | 703 | 0.4− | 0.6+ |
| 2006 05 03 | 691 | 0.3+ | 0.2− | 2007 10 15 | 703 | 0.3+ | 0.5− | 2007 11 11 | 703 | 0.7− | 0.4+ |
| 2006 05 07 | 691 | 1.8− | 0.7+ | 2007 10 15 | 703 | 0.6+ | 0.1+ | 2007 11 11 | 703 | 0.0  | 0.4+ |
| 2006 05 07 | 691 | 0.0  | 0.2+ | 2007 10 15 | 703 | 0.1− | 0.4− | 2007 11 11 | 703 | 0.4− | 0.6+ |
| 2006 05 07 | 691 | 0.2+ | 0.1+ | 2007 10 17 | 699 | 0.1− | 0.3− | 2007 11 14 | 699 | 0.6− | 1.7+ |
| 2006 05 22 | 691 | 0.3+ | 0.2+ | 2007 10 17 | 699 | 0.6+ | 0.2+ | 2007 11 14 | 699 | 0.7+ | 0.8− |
| 2006 05 22 | 691 | 0.2+ | 0.3+ | 2007 10 17 | 699 | 0.3+ | 0.7− | 2007 11 14 | 699 | 0.2+ | 0.0  |
| 2006 05 22 | 691 | 1.2+ | 0.4+ | 2007 10 17 | 699 | 1.1+ | 0.7− | 2007 11 14 | 699 | 0.9+ | 0.1− |

**2007 TP<sub>355</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| (2000.0) |            |          |           | (2000.0)    |      |             |   |
| <i>M</i> | 42.40241   |          |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.23938226 | <i>ω</i> | 197.44740 | +0.86309654 |      | +0.47182569 |   |
| <i>a</i> | 2.5688658  | <i>Ω</i> | 132.99387 | −0.42901433 |      | +0.87314205 |   |
| <i>e</i> | 0.2176555  | <i>i</i> | 14.25659  | −0.26647901 |      | +0.12248869 |   |
| <i>P</i> | 4.12       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 05 24 | 691 | 0.8−  | 0.3−  | 2006 05 24 | 691 | 0.2+ | 0.6+ | 2007 11 02 | 703 | 0.7− | 0.8− |
| 1998 05 24 | 691 | 0.7−  | 0.4−  | 2006 05 24 | 691 | 0.2+ | 0.6+ | 2007 11 02 | 703 | 0.6− | 0.3+ |
| 1998 05 24 | 691 | 0.2+  | 0.2+  | 2006 05 24 | 691 | 0.1+ | 0.6+ | 2007 11 02 | 703 | 0.5+ | 0.5− |
| 2002 05 13 | 644 | 0.4+  | 0.5+  | 2006 06 01 | 691 | 0.1− | 0.6+ | 2007 11 02 | 703 | 0.5− | 0.1− |
| 2002 05 13 | 644 | 0.6+  | 0.9+  | 2006 06 01 | 691 | 0.3+ | 0.7+ | 2007 11 02 | 703 | 0.6− | 0.3− |
| 2002 05 13 | 644 | 0.8+  | 0.6+  | 2006 06 01 | 691 | 0.1+ | 0.9+ | 2007 11 02 | 703 | 0.1− | 0.4− |
| 2003 10 21 | 699 | 0.9+  | 1.2−  | 2007 09 12 | 703 | 0.8− | 0.3− | 2007 11 02 | 703 | 0.2− | 0.6+ |
| 2003 10 21 | 699 | 0.4+  | 0.9+  | 2007 09 12 | 703 | 0.1− | 1.6− | 2007 11 02 | 703 | 0.3+ | 0.8− |
| 2003 10 21 | 699 | 1.6−  | 1.5+  | 2007 09 12 | 703 | 0.5− | 1.3− | 2007 11 11 | 703 | 0.1− | 0.9+ |
| 2003 10 21 | 699 | 1.1−  | 0.5+  | 2007 09 12 | 703 | 0.4+ | 1.4+ | 2007 11 11 | 703 | 0.2− | 0.6+ |
| 2003 12 19 | 703 | (2.5− | 0.5−) | 2007 10 11 | 703 | 0.9+ | 1.4+ | 2007 11 11 | 703 | 0.2+ | 0.0  |
| 2003 12 19 | 703 | (2.3− | 2.1+) | 2007 10 11 | 703 | 0.6+ | 0.8+ | 2007 11 11 | 703 | 0.0  | 0.3+ |
| 2003 12 19 | 703 | 0.6+  | 1.8+  | 2007 10 11 | 703 | 0.2+ | 0.1+ | 2007 11 18 | 703 | 0.2− | 0.4− |
| 2003 12 19 | 703 | 0.4+  | 1.9+  | 2007 10 11 | 703 | 0.9+ | 0.3+ | 2007 11 18 | 703 | 0.5+ | 0.5+ |
| 2005 02 04 | G96 | 0.7+  | 0.2+  | 2007 10 15 | 703 | 0.7+ | 0.2+ | 2007 11 18 | 703 | 0.5− | 1.1− |
| 2005 02 04 | G96 | 0.1+  | 0.3+  | 2007 10 15 | 703 | 0.2+ | 0.5+ | 2007 11 18 | 703 | 1.0− | 1.5− |
| 2005 02 04 | G96 | 0.2−  | 0.0   | 2007 10 15 | 703 | 0.5− | 0.6+ |            |     |      |      |
| 2005 02 04 | G96 | 0.4−  | 1.4−  | 2007 10 15 | 703 | 0.0  | 0.2+ |            |     |      |      |

**2007 TB<sub>356</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| (2000.0) |            |          |           | (2000.0)    |      |             |   |
| <i>M</i> | 21.37096   |          |           | <i>P</i>    |      | <i>Q</i>    |   |
| <i>n</i> | 0.26161317 | <i>ω</i> | 298.65683 | +0.98574814 |      | −0.09921037 |   |
| <i>a</i> | 2.4211943  | <i>Ω</i> | 67.31466  | +0.15023234 |      | +0.88256421 |   |
| <i>e</i> | 0.1742728  | <i>i</i> | 8.46769   | −0.07570234 |      | +0.45960604 |   |
| <i>P</i> | 3.77       | <i>H</i> | 17.7      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |     |      |            |     |  |
|------------|-----|------|------|------------|-----|-----|------|------------|-----|--|
| 2003 08 23 | 644 | 0.3− | 0.3+ | 2007 10 15 | G96 | 0.0 | 0.2− | 2007 11 07 | 704 |  |
|------------|-----|------|------|------------|-----|-----|------|------------|-----|--|

**2007 TM<sub>356</sub> = 2002 GZ<sub>146</sub> = 2004 XV<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>                    |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |      |
|-----------------------------|------------|----------|-----------|-------------|-------------|----------|------|
| <i>n</i>                    | 0.25958922 | $\omega$ | 192.19713 | +0.59315030 | +0.80024247 |          |      |
| <i>a</i>                    | 2.4337630  | $\Omega$ | 114.24812 | −0.73028655 | +0.58092911 |          |      |
| <i>e</i>                    | 0.0721105  | <i>i</i> | 5.55311   | −0.33890157 | +0.14877283 |          |      |
| <i>P</i>                    | 3.80       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        | <i>U</i> | 1    |
| Residuals in seconds of arc |            |          |           |             |             |          |      |
| 2002 04 13                  | 644        | 0.3+     | 0.7+      | 2004 12 14  | 691         | 0.1−     | 0.5+ |
| 2002 04 13                  | 644        | 0.3+     | 0.9+      | 2004 12 14  | 691         | 0.1+     | 0.6+ |
| 2002 04 13                  | 644        | 0.3+     | 0.6+      | 2004 12 14  | 691         | 0.5+     | 0.2+ |
| 2002 04 15                  | 644        | 0.4+     | 0.9+      | 2006 04 21  | 691         | 0.3+     | 0.2+ |
| 2002 04 15                  | 644        | 0.0      | 1.1+      | 2006 04 21  | 691         | 0.2+     | 0.3+ |
| 2002 04 15                  | 644        | 0.2+     | 0.7+      | 2006 04 21  | 691         | 0.4+     | 0.6+ |
| 2003 07 24                  | 644        | 0.1−     | 0.3+      | 2006 04 30  | 699         | 0.1+     | 0.2+ |
| 2003 07 24                  | 644        | 0.2−     | 0.3+      | 2006 04 30  | 699         | 1.1−     | 0.4− |
| 2003 07 24                  | 644        | 0.1+     | 0.2+      | 2006 04 30  | 699         | 0.2+     | 1.6+ |
| 2004 12 03                  | 691        | 0.3+     | 0.6+      | 2006 04 30  | 699         | 0.9+     | 0.3+ |
| 2004 12 03                  | 691        | 0.2+     | 0.3+      | 2007 10 04  | 703         | 0.7−     | 1.1+ |
| 2004 12 03                  | 691        | 0.3−     | 0.3+      | 2007 10 04  | 703         | 0.3+     | 0.4+ |

**2007 TX<sub>356</sub> = 2000 WL<sub>189</sub> = 2007 UM<sub>2</sub>**Id. Minor Planet Center (d, *MPO* 129053; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.27596625 | $\omega$ | 187.67726 | −0.14321864 | −0.98916470 |          |   |
| <i>a</i> | 2.3364979  | $\Omega$ | 270.56091 | +0.90973032 | −0.11873634 |          |   |
| <i>e</i> | 0.1636577  | <i>i</i> | 1.84958   | +0.38971678 | −0.08634161 |          |   |
| <i>P</i> | 3.57       | <i>H</i> | 17.3      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 18 | 699 | 0.2−  | 1.0+  | 2005 01 17 | 703 | (0.3+ | 1.7−) | 2007 10 15 | G96 | 0.5+ | 0.0  |
| 2000 11 18 | 699 | 0.8+  | 0.4+  | 2005 03 11 | G96 | 0.4−  | 0.6−  | 2007 10 15 | G96 | 0.2− | 0.3− |
| 2000 11 18 | 699 | 1.2−  | 0.6+  | 2005 03 11 | G96 | 0.2−  | 0.6−  | 2007 10 15 | G96 | 0.5+ | 0.2− |
| 2000 11 18 | 699 | (0.2− | 2.2+) | 2005 03 11 | G96 | 0.4−  | 0.6−  | 2007 10 15 | G96 | 0.3+ | 0.0  |
| 2000 11 21 | 704 | 0.3+  | 1.3−  | 2005 03 11 | G96 | 0.4−  | 0.6−  | 2007 10 16 | 300 | 0.2+ | 1.1− |
| 2000 11 21 | 704 | 0.2+  | 0.8−  | 2007 10 04 | 691 | 0.1−  | 0.1−  | 2007 10 16 | 300 | 1.2+ | 0.2+ |
| 2000 11 21 | 704 | 0.1−  | 0.2+  | 2007 10 04 | 691 | 0.2−  | 0.1−  | 2007 10 16 | 300 | 1.0+ | 0.4+ |
| 2000 11 21 | 704 | 0.1+  | 0.2+  | 2007 10 04 | 691 | 0.0   | 0.3+  | 2007 10 20 | 691 | 0.0  | 0.0  |
| 2005 01 17 | 703 | 0.0   | 0.5+  | 2007 10 12 | 691 | 0.0   | 0.1−  | 2007 10 20 | 691 | 0.0  | 0.2− |
| 2005 01 17 | 703 | 1.2+  | 0.9+  | 2007 10 12 | 691 | 0.4−  | 0.4+  | 2007 10 20 | 691 | 0.0  | 0.1− |
| 2005 01 17 | 703 | 0.1+  | 0.7+  | 2007 10 12 | 691 | 0.1−  | 0.0   |            |     |      |      |

**2007 TR<sub>357</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.24052430 | $\omega$ | 358.76546 | +0.38767402 | +0.89401766 |          |   |
| <i>a</i> | 2.5607278  | $\Omega$ | 294.00685 | −0.84361077 | +0.24590060 |          |   |
| <i>e</i> | 0.1138735  | <i>i</i> | 14.23260  | −0.37152352 | +0.37452012 |          |   |
| <i>P</i> | 4.10       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 13 | 691 | 0.0  | 0.3+ | 2007 10 13 | 699 | 0.4+ | 1.4− | 2007 10 21 | 703 | 0.7− | 0.5+ |
| 2005 01 13 | 691 | 0.2− | 0.0  | 2007 10 15 | G96 | 0.0  | 0.2− | 2007 10 21 | 703 | 0.0  | 0.7− |
| 2005 01 13 | 691 | 0.1− | 0.0  | 2007 10 15 | G96 | 0.4+ | 0.3− | 2007 11 13 | 703 | 0.8+ | 0.9+ |
| 2005 02 09 | 699 | 0.5− | 0.5− | 2007 10 15 | G96 | 0.4+ | 0.3− | 2007 11 13 | 703 | 0.5− | 0.7− |
| 2005 02 09 | 699 | 0.3+ | 0.8+ | 2007 10 16 | 703 | 0.3− | 1.1+ | 2007 11 13 | 703 | 0.5− | 0.3+ |
| 2005 02 09 | 699 | 0.0  | 0.6− | 2007 10 16 | 703 | 0.4+ | 0.6+ | 2007 11 13 | 703 | 0.4− | 0.2+ |
| 2005 02 09 | 699 | 0.5+ | 0.1+ | 2007 10 16 | 703 | 0.9− | 0.6+ | 2007 11 19 | 703 | 0.1− | 0.7− |
| 2007 10 13 | 699 | 0.3− | 0.2+ | 2007 10 16 | 703 | 0.4− | 1.0+ | 2007 11 19 | 703 | 0.3+ | 0.2− |
| 2007 10 13 | 699 | 0.9+ | 0.8− | 2007 10 21 | 703 | 0.1+ | 0.2− | 2007 11 19 | 703 | 0.4+ | 0.4+ |
| 2007 10 13 | 699 | 0.2− | 0.2− | 2007 10 21 | 703 | 0.0  | 0.1− | 2007 11 19 | 703 | 0.0  | 0.1− |

**2007 TU<sub>357</sub> = 2007 RD<sub>191</sub> = 2007 TV<sub>280</sub> = 1998 TG<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.21758541 | $\omega$ | 131.79030 | +0.90823047 | +0.41800513 |          |   |
| <i>a</i> | 2.7376812  | $\Omega$ | 203.52149 | −0.39710655 | +0.84603605 |          |   |
| <i>e</i> | 0.1996174  | <i>i</i> | 2.83317   | −0.13199927 | +0.33089986 |          |   |
| <i>P</i> | 4.53       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 14 | 691 | 0.5+ | 0.1− | 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 10 15 | G96 | 0.1− | 0.2+ |
| 1998 10 14 | 691 | 0.1− | 1.0− | 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 10 15 | G96 | 0.1+ | 0.2+ |
| 1998 10 14 | 691 | 0.2+ | 0.3+ | 2007 10 07 | G96 | 0.1+ | 0.0  | 2007 10 15 | G96 | 0.3− | 0.0  |
| 1998 10 18 | 691 | 0.0  | 0.3+ | 2007 10 07 | G96 | 0.1+ | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.1+ |
| 1998 10 18 | 691 | 0.0  | 0.6+ | 2007 10 07 | G96 | 0.1+ | 0.1− | 2007 10 19 | G96 | 0.2+ | 0.0  |
| 1998 10 18 | 691 | 0.6− | 0.1− | 2007 10 07 | G96 | 0.0  | 0.2− | 2007 10 19 | G96 | 0.8− | 0.2+ |
| 2007 09 11 | 691 | 0.2− | 0.0  | 2007 10 14 | G96 | 0.1− | 0.2− | 2007 10 19 | G96 | 0.3+ | 0.1+ |
| 2007 09 11 | 691 | 0.2− | 0.2+ | 2007 10 14 | G96 | 0.1+ | 0.0  | 2007 11 01 | G96 | 0.2+ | 0.1− |
| 2007 09 11 | 691 | 0.0  | 0.1− | 2007 10 14 | G96 | 0.0  | 0.0  | 2007 11 01 | G96 | 0.1− | 0.0  |
| 2007 09 14 | G96 | 0.6+ | 0.2− | 2007 10 14 | G96 | 0.3− | 0.1+ | 2007 11 01 | G96 | 0.2+ | 0.0  |
| 2007 09 14 | G96 | 0.4+ | 0.2− | 2007 10 15 | G96 | 0.1+ | 0.0  | 2007 11 01 | G96 | 0.1− | 0.0  |

**2007 TV<sub>358</sub> = 2004 BZ<sub>125</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19999321 | $\omega$ | 340.86980 | +0.77158759 | −0.63478672 |          |   |
| <i>a</i> | 2.8959599  | $\Omega$ | 58.60414  | +0.58974473 | +0.68954610 |          |   |
| <i>e</i> | 0.0922766  | <i>i</i> | 2.76735   | +0.23844024 | +0.34867177 |          |   |
| <i>P</i> | 4.93       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 16 | 691 | 0.6+ | 0.1− | 2007 10 08 | G96 | 0.0  | 0.8+ | 2007 10 15 | 703 | 0.2+ | 0.5− |
| 2004 01 16 | 691 | 0.1− | 0.2− | 2007 10 08 | G96 | 0.0  | 0.4+ | 2007 10 15 | 703 | 0.4+ | 0.8− |
| 2004 01 16 | 691 | 0.2− | 0.4+ | 2007 10 08 | G96 | 0.5+ | 0.6+ | 2007 10 18 | G96 | 0.2− | 0.2− |
| 2004 01 27 | 691 | 0.1− | 0.1− | 2007 10 08 | G96 | 0.0  | 0.5+ | 2007 10 18 | G96 | 0.3− | 0.2+ |
| 2004 01 27 | 691 | 0.1− | 0.0  | 2007 10 14 | G96 | 0.8− | 0.4− | 2007 10 18 | G96 | 0.2+ | 0.2+ |
| 2004 01 27 | 691 | 0.2− | 0.2− | 2007 10 14 | G96 | 0.3+ | 0.2− | 2007 10 18 | G96 | 0.4− | 0.3− |
| 2005 04 07 | G96 | 0.2+ | 0.6+ | 2007 10 14 | G96 | 0.3+ | 0.2− | 2007 11 09 | 691 | 0.8− | 0.3+ |
| 2005 04 07 | G96 | 0.0  | 1.0+ | 2007 10 14 | G96 | 0.4+ | 0.6− | 2007 11 09 | 691 | 0.0  | 0.6+ |
| 2005 04 07 | G96 | 0.3+ | 0.7+ | 2007 10 15 | 703 | 0.3+ | 0.2− | 2007 11 09 | 691 | 0.5+ | 0.0  |
| 2005 04 07 | G96 | 0.4+ | 0.1− | 2007 10 15 | 703 | 1.2− | 0.8− |            |     |      |      |

**2007 TD<sub>361</sub> = 1999 VR<sub>225</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.12542375 | $\omega$ | 248.36962 | +0.98733739 | −0.08937799 |          |   |
| <i>a</i> | 3.9526001  | $\Omega$ | 116.55354 | +0.12879947 | +0.93394861 |          |   |
| <i>e</i> | 0.3249100  | <i>i</i> | 8.42494   | −0.09260434 | +0.34605138 |          |   |
| <i>P</i> | 7.86       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 05 | 704 | 0.4− | 0.3− | 2006 08 14 | 644 | 0.1− | 0.2+ | 2007 11 14 | 699 | 0.5− | 0.2+ |
| 1999 11 05 | 704 | 0.7+ | 1.0− | 2007 10 14 | G96 | 0.2− | 0.1+ | 2007 11 14 | 699 | 0.4+ | 0.1+ |
| 1999 11 05 | 704 | 1.6+ | 0.8+ | 2007 10 14 | G96 | 0.2− | 0.0  | 2007 11 17 | 703 | 0.1− | 0.9+ |
| 1999 11 17 | 703 | 0.1+ | 0.7+ | 2007 10 14 | G96 | 0.1+ | 0.1+ | 2007 11 17 | 703 | 1.1− | 0.6− |
| 1999 11 17 | 703 | 1.0− | 0.6− | 2007 10 14 | G96 | 0.2+ | 0.0  | 2007 11 17 | 703 | 0.1+ | 0.5+ |
| 1999 11 17 | 703 | 1.2− | 0.2+ | 2007 10 14 | G96 | 0.2− | 0.1− | 2007 11 17 | 703 | 0.6+ | 0.8+ |
| 1999 11 17 | 703 | 0.1+ | 0.6+ | 2007 10 14 | G96 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.1− | 0.0  |
| 2005 06 04 | 691 | 0.5+ | 1.1+ | 2007 10 14 | G96 | 0.2− | 0.0  | 2007 11 18 | G96 | 0.3− | 0.1− |
| 2005 06 04 | 691 | 0.2+ | 0.3+ | 2007 10 14 | G96 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.1+ | 0.1− |
| 2005 06 04 | 691 | 0.2− | 0.3+ | 2007 10 15 | G96 | 0.4+ | 0.2− | 2007 11 18 | G96 | 0.1− | 0.3− |
| 2006 06 19 | G96 | 0.0  | 0.1− | 2007 10 15 | G96 | 0.1+ | 0.1− | 2007 12 05 | 699 | 0.1− | 0.1− |
| 2006 06 19 | G96 | 0.3+ | 0.0  | 2007 10 15 | G96 | 0.1− | 0.2− | 2007 12 05 | 703 | 0.3+ | 1.4+ |
| 2006 06 19 | G96 | 0.1− | 0.1− | 2007 10 15 | G96 | 0.2− | 0.0  | 2007 12 05 | 703 | 0.2+ | 0.7+ |
| 2006 06 19 | G96 | 0.2− | 0.1− | 2007 11 02 | 703 | 0.7− | 0.3+ | 2007 12 05 | 703 | 0.8− | 0.6+ |
| 2006 07 20 | D35 | 0.2− | 0.0  | 2007 11 02 | 703 | 0.9+ | 0.4+ | 2007 12 05 | 699 | 0.8− | 0.0  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 07 20 | D35 | 0.1+ | 0.1− | 2007 11 02 | 703 | 0.2− | 0.3+ | 2007 12 05 | 703 | 0.8+ | 0.8+ |
| 2006 07 20 | D35 | 0.1− | 0.1− | 2007 11 02 | 703 | 0.8+ | 0.2+ | 2007 12 05 | 699 | 0.8− | 0.6+ |
| 2006 08 14 | 644 | 0.0  | 0.2− | 2007 11 14 | 699 | 0.1+ | 0.1− | 2007 12 05 | 699 | 0.1− | 0.2+ |
| 2006 08 14 | 644 | 0.0  | 0.1+ | 2007 11 14 | 699 | 0.2+ | 0.9− |            |     |      |      |

2007 TJ<sub>361</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 35.67885   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19902338 | $\omega$ 268.07057 | +0.99776693   | −0.05979137 |
| <i>a</i> | 2.9053602  | $\Omega$ 95.35640  | +0.06669175   | +0.91624054 |
| <i>e</i> | 0.1734222  | <i>i</i> 1.71332   | −0.00365485   | +0.39614171 |
| <i>P</i> | 4.95       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 18 | 691 | 0.0  | 0.4− | 2007 10 15 | G96 | 0.1− | 0.1− | 2007 11 17 | 300 | 0.4+ | 0.4− |
| 1992 11 18 | 691 | 0.1− | 0.6+ | 2007 10 15 | G96 | 0.4− | 0.2− | 2007 11 17 | 300 | 0.8− | 0.0  |
| 1992 11 18 | 691 | 0.5− | 0.4+ | 2007 10 15 | G96 | 0.2− | 0.1− | 2007 11 17 | 300 | 0.5− | 0.1+ |
| 1997 12 07 | 910 | 0.9+ | 0.4− | 2007 10 15 | G96 | 0.1− | 0.3− | 2007 11 17 | 300 | 0.5− | 0.4− |
| 1997 12 07 | 910 | 0.3+ | 0.2− | 2007 10 20 | G96 | 0.3+ | 0.0  | 2007 11 17 | 300 | 0.4+ | 0.5+ |
| 1997 12 07 | 910 | 1.0+ | 0.3− | 2007 10 20 | G96 | 0.4− | 0.1+ | 2007 11 17 | 300 | 0.3+ | 0.4− |
| 2002 12 10 | 644 | 0.3+ | 0.8+ | 2007 10 20 | G96 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.0  | 0.1− |
| 2002 12 10 | 644 | 0.4+ | 0.9+ | 2007 10 20 | G96 | 0.1− | 0.0  | 2007 11 19 | 691 | 0.1− | 0.2− |
| 2002 12 10 | 644 | 0.7+ | 1.1+ | 2007 11 08 | 691 | 0.6− | 0.0  | 2007 11 19 | 691 | 0.3− | 0.0  |
| 2004 01 30 | 691 | 0.2− | 0.1− | 2007 11 08 | 691 | 0.4+ | 1.1− | 2007 12 03 | 703 | 0.7+ | 0.7+ |
| 2004 01 30 | 691 | 0.2+ | 0.2− | 2007 11 08 | 691 | 0.4− | 0.1+ | 2007 12 03 | 703 | 0.6− | 0.6+ |
| 2004 01 30 | 691 | 0.2− | 0.1− | 2007 11 14 | 704 | 0.2+ | 0.7+ | 2007 12 03 | 703 | 1.7+ | 1.3+ |
| 2005 04 06 | G96 | 0.1− | 0.6− | 2007 11 14 | 704 | 0.3+ | 0.8+ | 2007 12 03 | 703 | 0.5+ | 0.0  |
| 2005 04 06 | G96 | 0.4− | 0.3+ | 2007 11 14 | 704 | 0.3+ | 0.0  | 2007 12 04 | G96 | 0.1+ | 0.5− |
| 2005 04 06 | G96 | 0.3− | 0.0  | 2007 11 14 | 704 | 0.5+ | 1.3+ | 2007 12 04 | G96 | 0.1− | 0.2− |
| 2005 04 06 | G96 | 0.6+ | 0.3− | 2007 11 14 | 300 | 0.1+ | 0.5+ | 2007 12 04 | G96 | 0.2− | 0.3− |
| 2005 04 14 | 691 | 0.1+ | 0.6+ | 2007 11 14 | 300 | 0.2− | 0.1+ | 2007 12 04 | G96 | 0.0  | 0.5− |
| 2005 04 14 | 691 | 0.3+ | 0.1+ | 2007 11 14 | 300 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.9− | 1.1+ |
| 2005 04 14 | 691 | 0.0  | 0.0  | 2007 11 14 | 300 | 0.2− | 0.0  | 2007 12 05 | 704 | 1.3+ | 0.6− |
| 2007 10 14 | G96 | 0.3+ | 0.4− | 2007 11 14 | 300 | 0.5+ | 0.1− | 2007 12 05 | 704 | 0.5+ | 1.4+ |
| 2007 10 14 | G96 | 0.3+ | 0.4− | 2007 11 14 | 300 | 0.4− | 0.2− | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2007 10 14 | G96 | 0.2− | 0.4− | 2007 11 14 | 300 | 0.1− | 0.5− | 2007 12 05 | 704 | 0.5− | 1.0+ |
| 2007 10 14 | G96 | 0.0  | 0.4− | 2007 11 17 | 300 | 0.0  | 0.3− |            |     |      |      |

2007 TT<sub>361</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 309.30226  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25798656 | $\omega$ 253.36348 | −0.34689313   | −0.93582795 |
| <i>a</i> | 2.4438319  | $\Omega$ 217.12324 | +0.89509275   | −0.31046072 |
| <i>e</i> | 0.0781262  | <i>i</i> 5.93255   | +0.28013235   | −0.16685380 |
| <i>P</i> | 3.82       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 691 | 0.1+ | 0.2− | 2007 10 14 | G96 | 0.0  | 0.3− | 2007 10 24 | G96 | 0.2+ | 0.6− |
| 2003 09 28 | 691 | 0.2+ | 0.0  | 2007 10 15 | G96 | 0.1− | 0.0  | 2007 11 08 | 691 | 0.2− | 0.6+ |
| 2003 09 28 | 691 | 0.1− | 0.1+ | 2007 10 15 | G96 | 0.1− | 0.1− | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2003 10 19 | 691 | 0.4− | 0.2− | 2007 10 15 | G96 | 0.0  | 0.1− | 2007 11 08 | 691 | 0.2+ | 0.0  |
| 2003 10 19 | 691 | 0.0  | 0.3+ | 2007 10 15 | G96 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2003 10 19 | 691 | 0.1− | 0.3− | 2007 10 20 | G96 | 0.4− | 0.1+ | 2007 11 19 | 691 | 0.1+ | 0.2+ |
| 2003 11 28 | 691 | 0.5+ | 0.4+ | 2007 10 20 | G96 | 0.0  | 0.2+ | 2007 11 19 | 691 | 0.3− | 0.4− |
| 2003 11 28 | 691 | 0.2− | 0.3− | 2007 10 20 | G96 | 0.1+ | 0.1− | 2007 12 04 | 703 | 0.6+ | 0.5+ |
| 2003 11 28 | 691 | 0.1− | 0.4+ | 2007 10 20 | G96 | 0.0  | 0.1− | 2007 12 04 | 703 | 1.1+ | 0.6− |
| 2007 10 14 | G96 | 0.0  | 0.0  | 2007 10 24 | G96 | 0.1+ | 0.3− | 2007 12 04 | 703 | 0.1− | 0.1− |
| 2007 10 14 | G96 | 0.0  | 0.2− | 2007 10 24 | G96 | 0.1+ | 0.1+ | 2007 12 04 | 703 | 0.1− | 0.5− |
| 2007 10 14 | G96 | 0.5− | 0.2− | 2007 10 24 | G96 | 0.1+ | 0.1+ |            |     |      |      |

## M.P.O. 129909

2007 TO<sub>362</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 58.53205   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.12654463 | $\omega$ 278.51492 | +0.98409266   | +0.16515925 |
| <i>a</i> | 3.9292250  | $\Omega$ 71.99799  | −0.12348542   | +0.90078045 |
| <i>e</i> | 0.0935773  | <i>i</i> 3.94632   | −0.12772231   | +0.40164287 |
| <i>P</i> | 7.79       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 06 | 691 | 0.1− | 0.0  | 2007 09 15 | G96 | 0.1+ | 0.4− | 2007 10 30 | 691 | 0.5+ | 0.4+ |
| 1999 12 06 | 691 | 0.2+ | 0.0  | 2007 09 15 | G96 | 0.2− | 0.0  | 2007 10 30 | 691 | 0.4− | 0.2+ |
| 1999 12 06 | 691 | 0.4+ | 0.4− | 2007 10 14 | G96 | 0.4+ | 0.2− | 2007 11 03 | 691 | 0.4− | 0.0  |
| 1999 12 13 | 691 | 0.1+ | 0.5− | 2007 10 14 | G96 | 0.5+ | 0.2− | 2007 11 03 | 691 | 0.3− | 0.0  |
| 1999 12 13 | 691 | 0.1+ | 0.3− | 2007 10 14 | G96 | 0.2+ | 0.1− | 2007 11 03 | 691 | 0.4− | 0.4+ |
| 1999 12 13 | 691 | 0.3− | 0.0  | 2007 10 14 | G96 | 0.7+ | 0.3− | 2007 11 07 | 691 | 0.0  | 0.4+ |
| 2006 08 18 | 691 | 0.2− | 0.1+ | 2007 10 15 | G96 | 0.0  | 0.2− | 2007 11 07 | 691 | 0.5+ | 0.1+ |
| 2006 08 18 | 691 | 0.0  | 0.2+ | 2007 10 15 | G96 | 0.8+ | 0.7− | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2006 08 18 | 691 | 0.1+ | 0.1− | 2007 10 15 | G96 | 0.0  | 0.9− | 2007 11 14 | 691 | 0.4− | 0.3− |
| 2007 09 15 | G96 | 0.3− | 0.6− | 2007 10 15 | G96 | 0.2+ | 0.1+ | 2007 11 14 | 691 | 0.3+ | 0.6+ |
| 2007 09 15 | G96 | 0.1− | 0.3− | 2007 10 30 | 691 | 0.3− | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.1− |

2007 TN<sub>363</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 92.49734   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17909243 | $\omega$ 107.38099 | +0.80886748   | +0.58579699 |
| <i>a</i> | 3.1171035  | $\Omega$ 216.80516 | −0.56650426   | +0.75328332 |
| <i>e</i> | 0.0257099  | <i>i</i> 4.85915   | −0.15750025   | +0.29900858 |
| <i>P</i> | 5.50       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 19 | 691 | 0.8− | 0.1− | 2007 09 14 | G96 | 0.0  | 0.1− | 2007 11 19 | 691 | 0.0  | 0.0  |
| 1999 04 19 | 691 | 0.5− | 0.3− | 2007 09 14 | G96 | 0.1+ | 0.3− | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 1999 04 19 | 691 | 0.7− | 0.3+ | 2007 09 14 | G96 | 0.3+ | 0.1− | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2000 06 25 | 691 | 0.8+ | 0.4− | 2007 09 14 | G96 | 0.4+ | 0.5− | 2007 11 21 | G96 | 0.3+ | 0.2− |
| 2000 06 25 | 691 | 0.5+ | 0.0  | 2007 10 14 | G96 | 0.1+ | 0.4− | 2007 11 21 | G96 | 0.7+ | 0.2− |
| 2000 06 25 | 691 | 0.5+ | 0.2− | 2007 10 14 | G96 | 0.2+ | 0.4− | 2007 11 21 | G96 | 0.4+ | 0.3− |
| 2004 03 31 | 691 | 0.1− | 0.2+ | 2007 10 14 | G96 | 0.3+ | 0.2− | 2007 11 21 | G96 | 0.3+ | 0.2− |
| 2004 03 31 | 691 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.6+ | 1.8+ |
| 2004 03 31 | 691 | 0.2+ | 0.1+ | 2007 10 15 | G96 | 0.2+ | 0.3− | 2007 12 03 | 703 | 0.6+ | 0.9+ |
| 2004 04 21 | 691 | 0.4+ | 0.1+ | 2007 10 15 | G96 | 0.2+ | 0.0  | 2007 12 03 | 703 | 0.4+ | 0.8− |
| 2004 04 21 | 691 | 0.3+ | 0.1− | 2007 10 15 | G96 | 0.2+ | 0.3− | 2007 12 03 | 703 | 0.0  | 0.7− |
| 2004 04 21 | 691 | 0.8+ | 0.2− | 2007 10 15 | G96 | 0.2+ | 0.2− | 2007 12 03 | 703 | 0.5− | 0.7− |
| 2006 08 29 | 691 | 0.5− | 0.2+ | 2007 11 08 | 691 | 0.3− | 0.1− | 2007 12 03 | 703 | 0.5− | 0.7+ |
| 2006 08 29 | 691 | 0.4− | 0.3+ | 2007 11 08 | 691 | 0.1− | 0.2− | 2007 12 03 | 703 | 0.1+ | 1.0− |
| 2006 08 29 | 691 | 0.4− | 0.2+ | 2007 11 08 | 691 | 0.4− | 0.0  | 2007 12 03 | 703 | 0.9− | 0.2− |

2007 TN<sub>364</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 29.47687   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18247711 | $\omega$ 140.27539 | +0.99004353   | −0.05592221 |
| <i>a</i> | 3.0784383  | $\Omega$ 223.47059 | +0.01977796   | +0.96385746 |
| <i>e</i> | 0.1203693  | <i>i</i> 10.82216  | +0.13936515   | +0.26048320 |
| <i>P</i> | 5.40       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 645 | 0.0  | 0.1+ | 2007 10 21 | 691 | 0.3− | 0.1− | 2007 11 09 | G96 | 0.0  | 0.1− |
| 2001 10 15 | 645 | 0.0  | 0.1+ | 2007 10 21 | 691 | 0.4− | 0.3− | 2007 11 13 | G96 | 0.0  | 0.0  |
| 2005 05 07 | G96 | 0.3+ | 0.3+ | 2007 10 30 | G96 | 0.2− | 0.1− | 2007 11 13 | G96 | 0.4+ | 0.0  |
| 2005 05 07 | G96 | 0.2− | 0.4+ | 2007 10 30 | G96 | 0.1− | 0.4− | 2007 11 13 | G96 | 0.1+ | 0.1− |
| 2005 05 07 | G96 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.2− | 2007 11 13 | G96 | 0.3+ | 0.1+ |
| 2005 05 07 | G96 | 0.2− | 0.5+ | 2007 11 06 | 704 | 0.1+ | 1.0+ | 2007 11 13 | 291 | 0.1+ | 0.0  |
| 2005 06 01 | G96 | 0.1− | 0.1− | 2007 11 06 | 704 | 0.4− | 0.2− | 2007 11 13 | 291 | 0.5+ | 0.2+ |
| 2005 06 01 | G96 | 0.2+ | 0.1− | 2007 11 06 | 704 | 0.0  | 0.2− | 2007 11 13 | 291 | 0.2+ | 0.0  |
| 2005 06 01 | G96 | 0.3− | 0.3+ | 2007 11 06 | 704 | 0.1+ | 0.5+ | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2005 06 01 | G96 | 0.2+ | 0.1+ | 2007 11 07 | 704 | 0.6+ | 0.7+ | 2007 11 15 | 704 | 0.1+ | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 04 | 691 | 0.0  | 0.1− | 2007 11 07 | 704 | 0.8+ | 0.7+ | 2007 11 15 | 704 | 0.3+ | 0.8+ |
| 2007 10 04 | 691 | 0.2+ | 0.3− | 2007 11 07 | 704 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.4− | 0.2+ |
| 2007 10 04 | 691 | 0.0  | 0.3− | 2007 11 07 | 704 | 0.1+ | 0.5+ | 2007 11 15 | 704 | 0.5+ | 0.4+ |
| 2007 10 15 | 703 | 0.3− | 0.4+ | 2007 11 07 | 704 | 0.2+ | 0.3− | 2007 11 17 | G96 | 0.2+ | 0.4− |
| 2007 10 15 | 703 | 0.2− | 0.1+ | 2007 11 07 | 703 | 0.0  | 0.2+ | 2007 11 17 | G96 | 0.4+ | 0.3− |
| 2007 10 15 | 703 | 0.5+ | 0.4+ | 2007 11 07 | 703 | 0.1+ | 0.0  | 2007 11 17 | G96 | 0.7+ | 0.4− |
| 2007 10 15 | 703 | 0.4− | 0.2− | 2007 11 07 | 703 | 0.3− | 1.0+ | 2007 11 17 | G96 | 0.4+ | 0.4− |
| 2007 10 16 | 691 | 0.5− | 0.1+ | 2007 11 07 | 703 | 0.4− | 0.5+ | 2007 11 17 | 703 | 0.5+ | 0.3− |
| 2007 10 16 | 691 | 0.3− | 0.1− | 2007 11 09 | G96 | 0.1− | 0.1− | 2007 11 17 | 703 | 0.6− | 0.3+ |
| 2007 10 16 | 691 | 0.4− | 0.3− | 2007 11 09 | G96 | 0.0  | 0.3− | 2007 11 17 | 703 | 1.6− | 1.1− |
| 2007 10 21 | 691 | 0.4− | 0.2− | 2007 11 09 | G96 | 0.0  | 0.3− | 2007 11 17 | 703 | 1.1− | 1.1− |

**2007 TO<sub>366</sub>**

|                                         |            |      |                    |            |     |             |      |             |     |      |       |
|-----------------------------------------|------------|------|--------------------|------------|-----|-------------|------|-------------|-----|------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |                    |            |     | MPC         |      |             |     |      |       |
| $M$                                     | 83.06031   |      | (2000.0)           |            |     | $P$         |      | $Q$         |     |      |       |
| $n$                                     | 0.27683434 |      | $\omega$ 39.53335  |            |     | +0.48909394 |      | +0.86764827 |     |      |       |
| $a$                                     | 2.3316109  |      | $\Omega$ 259.91750 |            |     | −0.82146540 |      | +0.42379090 |     |      |       |
| $e$                                     | 0.1574661  |      | $i$ 5.20363        |            |     | −0.29322638 |      | +0.25997644 |     |      |       |
| $P$                                     | 3.56       |      | $H$ 17.0           |            |     | $G$ 0.15    |      | $U$         |     | 1    |       |
| Residuals in seconds of arc             |            |      |                    |            |     |             |      |             |     |      |       |
| 2000 11 30                              | 691        | 0.2+ | 0.3−               | 2006 04 30 | 699 | 0.4−        | 0.9+ | 2007 11 11  | 699 | 1.8+ | 1.0+  |
| 2000 11 30                              | 691        | 0.3+ | 0.6−               | 2007 10 09 | 691 | 0.3−        | 0.1+ | 2007 11 11  | 699 | 0.1+ | 0.3−  |
| 2000 11 30                              | 691        | 0.5+ | 0.5−               | 2007 10 09 | 691 | 0.1−        | 0.3+ | 2007 11 11  | 699 | 0.5− | 0.6−  |
| 2002 03 06                              | 644        | 0.1− | 0.9+               | 2007 10 09 | 691 | 0.4−        | 0.1+ | 2007 11 11  | 699 | 0.7+ | 1.4+  |
| 2002 03 06                              | 644        | 0.2− | 0.7+               | 2007 10 16 | G96 | 0.6+        | 0.3− | 2007 11 14  | 691 | 0.3− | 0.3+  |
| 2002 03 06                              | 644        | 0.1− | 0.1+               | 2007 10 16 | G96 | 0.2+        | 0.3− | 2007 11 14  | 691 | 0.1− | 0.2+  |
| 2003 07 23                              | 644        | 0.4− | 0.5+               | 2007 10 16 | G96 | 0.3−        | 0.9− | 2007 11 14  | 691 | 0.5− | 0.2+  |
| 2003 07 23                              | 644        | 0.3− | 0.4+               | 2007 10 16 | G96 | 0.8+        | 0.2− | 2007 11 18  | 703 | 0.7− | 1.5+  |
| 2003 07 23                              | 644        | 0.4− | 0.6+               | 2007 11 04 | 691 | 0.1−        | 0.2+ | 2007 11 18  | 703 | 0.9− | 1.0−  |
| 2003 08 28                              | 608        | 0.4+ | 0.2+               | 2007 11 04 | 691 | 0.2−        | 0.5− | 2007 11 18  | 704 | (0.0 | 2.6+) |
| 2003 08 28                              | 608        | 0.2− | 0.4−               | 2007 11 04 | 691 | 0.0         | 0.1− | 2007 11 18  | 703 | 0.5− | 0.1−  |
| 2003 08 28                              | 608        | 0.1+ | 0.2−               | 2007 11 07 | 703 | 0.6+        | 0.1− | 2007 11 18  | 704 | 0.1+ | 1.0+  |
| 2006 04 30                              | 699        | 0.1+ | 0.9−               | 2007 11 07 | 703 | 0.6−        | 0.2− | 2007 11 18  | 703 | 1.1− | 0.2+  |
| 2006 04 30                              | 699        | 1.2+ | 0.8+               | 2007 11 07 | 703 | 0.4−        | 0.3+ | 2007 11 18  | 704 | 0.5+ | 1.3+  |
| 2006 04 30                              | 699        | 0.4+ | 0.9+               | 2007 11 07 | 703 | 0.2+        | 0.5+ |             |     |      |       |

**2007 TS<sub>367</sub>**

|                                         |            |      |          |            |     |              |      |              |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|--------------|------|--------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC          |      |              |     |      |      |
| $M$                                     | 310.26832  |      | (2000.0) |            |     | $\mathbf{P}$ |      | $\mathbf{Q}$ |     |      |      |
| $n$                                     | 0.16902390 |      | $\omega$ | 46.26012   |     | −0.37582918  |      | −0.92650205  |     |      |      |
| $a$                                     | 3.2396938  |      | $\Omega$ | 65.82393   |     | +0.84425001  |      | −0.35060700  |     |      |      |
| $e$                                     | 0.0970448  |      | $i$      | 1.16896    |     | +0.38209206  |      | −0.13663339  |     |      |      |
| $P$                                     | 5.83       |      | $H$      | 16.2       |     | $G$          | 0.15 |              | $U$ | 1    |      |
| Residuals in seconds of arc             |            |      |          |            |     |              |      |              |     |      |      |
| 1995 11 15                              | 691        | 0.1− | 0.1−     | 2007 09 18 | G96 | 0.4+         | 1.1− | 2007 11 07   | 691 | 0.2+ | 0.2+ |
| 1995 11 15                              | 691        | 0.1− | 0.2−     | 2007 09 18 | G96 | 0.2+         | 0.4− | 2007 11 07   | 691 | 0.1− | 0.2− |
| 1995 11 15                              | 691        | 0.5+ | 0.2−     | 2007 10 10 | G96 | 0.3+         | 0.1+ | 2007 11 07   | 691 | 0.2− | 0.4− |
| 2000 08 01                              | 807        | 0.0  | 0.6+     | 2007 10 10 | G96 | 0.1+         | 0.0  | 2007 11 14   | 691 | 0.1+ | 0.2+ |
| 2000 08 01                              | 807        | 0.5− | 0.5+     | 2007 10 10 | G96 | 0.5+         | 0.0  | 2007 11 14   | 691 | 0.7− | 0.3+ |
| 2001 10 23                              | 291        | 0.2+ | 0.6+     | 2007 10 10 | G96 | 0.2+         | 0.0  | 2007 11 14   | 691 | 0.1+ | 0.2+ |
| 2001 10 23                              | 291        | 0.0  | 0.5+     | 2007 10 17 | G96 | 0.9+         | 0.0  | 2007 11 18   | 691 | 0.0  | 0.1+ |
| 2001 10 23                              | 291        | 0.8− | 0.8+     | 2007 10 17 | G96 | 0.0          | 0.6− | 2007 11 18   | 691 | 0.2− | 0.4+ |
| 2004 04 24                              | 691        | 0.2+ | 0.6+     | 2007 10 17 | G96 | 0.3+         | 0.4− | 2007 11 18   | 691 | 0.2− | 0.1+ |
| 2004 04 24                              | 691        | 0.0  | 0.5+     | 2007 10 17 | G96 | 0.1−         | 0.1+ | 2007 12 04   | G96 | 0.0  | 0.1+ |
| 2004 04 24                              | 691        | 0.3+ | 0.2+     | 2007 11 03 | 691 | 0.0          | 0.1+ | 2007 12 04   | G96 | 0.6+ | 0.4− |
| 2007 09 18                              | G96        | 0.0  | 0.5−     | 2007 11 03 | 691 | 0.1−         | 0.3− | 2007 12 04   | G96 | 0.4+ | 0.0  |
| 2007 09 18                              | G96        | 0.7+ | 0.1−     | 2007 11 03 | 691 | 0.1−         | 0.0  | 2007 12 04   | G96 | 0.4+ | 0.4− |

**2007 TG<sub>368</sub>**

|                                         |            |          |           |             |     |             |      |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|-----|-------------|------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |     | MPC         |      |            |     |      |      |
| $M$ 11.23333                            |            | (2000.0) |           | $P$         |     | $Q$         |      |            |     |      |      |
| $n$                                     | 0.23805573 | $\omega$ | 356.76394 | +0.79499240 |     | −0.60388772 |      |            |     |      |      |
| $a$                                     | 2.5784000  | $\Omega$ | 40.56794  | +0.55852900 |     | +0.69168231 |      |            |     |      |      |
| $e$                                     | 0.1373320  | $i$      | 5.07273   | +0.23671173 |     | +0.39610000 |      |            |     |      |      |
| $P$                                     | 4.14       | $H$      | 16.5      | $G$ 0.15    |     | $U$ 3       |      |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |     |             |      |            |     |      |      |
| 2001 03 19                              | 691        | 0.2+     | 0.1+      | 2007 10 16  | G96 | 0.0         | 0.1− | 2007 11 20 | 704 | 0.2− | 0.4− |
| 2001 03 19                              | 691        | 0.1−     | 0.0       | 2007 10 30  | 691 | 0.2−        | 0.2+ | 2007 11 20 | 704 | 0.6− | 0.2− |
| 2001 03 19                              | 691        | 0.0      | 0.1+      | 2007 10 30  | 691 | 0.3−        | 0.0  | 2007 12 12 | 704 | 0.1+ | 0.3− |
| 2005 04 01                              | 691        | 0.1+     | 0.1+      | 2007 10 30  | 691 | 0.3−        | 0.4+ | 2007 12 12 | 704 | 0.1+ | 0.4+ |
| 2005 04 01                              | 691        | 0.1−     | 0.3−      | 2007 11 13  | 703 | 0.5+        | 0.2+ | 2007 12 12 | 704 | 0.7+ | 0.8+ |
| 2005 04 01                              | 691        | 0.0      | 0.1+      | 2007 11 13  | 703 | 1.4−        | 1.0− | 2007 12 13 | 704 | 0.4+ | 0.4+ |
| 2007 09 10                              | G96        | 0.4+     | 0.1−      | 2007 11 13  | 703 | 0.3−        | 1.0+ | 2007 12 13 | 704 | 0.3+ | 0.7+ |
| 2007 09 10                              | G96        | 0.2−     | 0.2+      | 2007 11 13  | 703 | 0.8−        | 1.0+ | 2007 12 13 | 704 | 0.3+ | 0.2+ |
| 2007 09 10                              | G96        | 0.2−     | 0.0       | 2007 11 15  | 704 | 0.1−        | 0.9− | 2007 12 13 | 704 | 0.3+ | 0.8+ |
| 2007 09 10                              | G96        | 0.3+     | 0.0       | 2007 11 15  | 704 | 0.2+        | 0.6− | 2007 12 13 | 704 | 0.5− | 0.1− |
| 2007 10 10                              | G96        | 0.1−     | 0.1−      | 2007 11 15  | 704 | 0.4−        | 0.4− | 2007 12 15 | 704 | 0.1+ | 0.6− |
| 2007 10 10                              | G96        | 0.3+     | 0.1+      | 2007 11 15  | 704 | 0.3+        | 0.8− | 2007 12 15 | 704 | 0.4+ | 0.3− |
| 2007 10 10                              | G96        | 0.1−     | 0.1+      | 2007 11 15  | 704 | 0.6+        | 0.0  | 2007 12 15 | 704 | 0.4+ | 0.5− |
| 2007 10 16                              | G96        | 0.1+     | 0.2−      | 2007 11 20  | 704 | 0.3+        | 0.4− | 2007 12 15 | 704 | 0.1+ | 0.1+ |
| 2007 10 16                              | G96        | 0.3+     | 0.0       | 2007 11 20  | 704 | 0.0         | 0.2− | 2007 12 15 | 704 | 0.3+ | 0.3− |
| 2007 10 16                              | G96        | 0.1−     | 0.0       | 2007 11 20  | 704 | 1.1+        | 0.3+ |            |     |      |      |

**2007 TV<sub>369</sub>**

|                                         |            |      |      |            |           |             |      |             |      |             |      |   |  |
|-----------------------------------------|------------|------|------|------------|-----------|-------------|------|-------------|------|-------------|------|---|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |      |            |           |             |      |             |      | MPC         |      |   |  |
| $M$                                     | 42.13547   |      |      | (2000.0)   |           |             | $P$  |             | $Q$  |             |      |   |  |
| $n$                                     | 0.24204124 |      |      | $\omega$   | 176.76468 |             |      | +0.77117524 |      | +0.63576565 |      |   |  |
| $a$                                     | 2.5500173  |      |      | $\Omega$   | 143.69018 |             |      | −0.58533508 |      | +0.72849327 |      |   |  |
| $e$                                     | 0.1651002  |      |      | $i$        | 3.19732   |             |      | −0.25034295 |      | +0.25514623 |      |   |  |
| $P$                                     | 4.07       |      |      | $H$        | 17.1      |             |      | $G$         | 0.15 |             | $U$  | 2 |  |
| Residuals in seconds of arc             |            |      |      |            |           |             |      |             |      |             |      |   |  |
| 2003 10 05                              | 691        | 0.1+ | 0.1+ | 2007 09 08 | 699       | 1.0−        | 0.1− | 2007 10 16  | G96  | 0.1+        | 0.1+ |   |  |
| 2003 10 05                              | 691        | 0.2− | 0.0  | 2007 09 08 | 699       | 0.5+        | 0.3+ | 2007 10 16  | G96  | 0.3+        | 0.3− |   |  |
| 2003 10 05                              | 691        | 0.2− | 0.0  | 2007 09 08 | 699       | (1.8+ 0.6−) |      | 2007 10 16  | G96  | 0.4+        | 0.9− |   |  |
| 2003 10 23                              | 691        | 0.1− | 0.3+ | 2007 09 08 | 699       | (1.6+ 1.2+) |      | 2007 10 16  | G96  | 0.4+        | 0.1+ |   |  |
| 2003 10 23                              | 691        | 0.0  | 0.5+ | 2007 09 13 | G96       | 0.3+        | 0.4+ | 2007 10 16  | G96  | 0.1−        | 0.3+ |   |  |
| 2003 10 23                              | 691        | 0.0  | 0.5+ | 2007 09 13 | G96       | 0.5+        | 0.1− | 2007 10 16  | G96  | 0.1+        | 0.6− |   |  |
| 2006 04 02                              | 691        | 0.0  | 0.4+ | 2007 09 13 | G96       | 0.5+        | 0.4+ | 2007 10 20  | G96  | 0.1−        | 0.2+ |   |  |
| 2006 04 02                              | 691        | 0.2+ | 0.1+ | 2007 09 13 | G96       | 0.6+        | 0.3+ | 2007 10 20  | G96  | 0.5+        | 0.1+ |   |  |
| 2006 04 02                              | 691        | 0.2+ | 0.2+ | 2007 09 21 | 691       | 0.1−        | 0.2− | 2007 10 20  | G96  | 0.2+        | 0.0  |   |  |
| 2006 04 02                              | G96        | 0.0  | 0.3+ | 2007 09 21 | 691       | 0.3−        | 0.7− | 2007 10 20  | G96  | 0.1+        | 0.0  |   |  |
| 2006 04 02                              | G96        | 0.3− | 0.1+ | 2007 09 21 | 691       | 0.1−        | 0.1− | 2007 11 03  | G96  | 0.2+        | 0.0  |   |  |
| 2006 04 02                              | G96        | 0.5− | 0.1+ | 2007 10 12 | 703       | 0.3+        | 1.0+ | 2007 11 03  | G96  | 0.3+        | 0.3− |   |  |
| 2006 04 02                              | G96        | 0.1− | 0.0  | 2007 10 12 | 703       | 0.6−        | 0.0  | 2007 11 03  | G96  | 0.4+        | 0.2− |   |  |
| 2007 08 10                              | 291        | 0.1+ | 0.1+ | 2007 10 12 | 703       | (0.0 2.4+)  |      | 2007 11 03  | G96  | 0.5+        | 0.4− |   |  |
| 2007 08 10                              | 291        | 0.1− | 0.0  | 2007 10 12 | 703       | 0.3−        | 0.5+ |             |      |             |      |   |  |
| 2007 08 10                              | 291        | 0.2− | 0.2+ | 2007 10 16 | G96       | 0.0         | 0.1− |             |      |             |      |   |  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 06 21 | 703 | 0.2− | 0.0  | 2007 10 12 | 703 | 0.2− | 0.1− | 2007 11 13 | 703 | 0.6− | 0.2− |
| 2006 06 21 | 703 | 0.1+ | 0.1− | 2007 10 12 | 703 | 0.4− | 0.8− | 2007 11 13 | 703 | 0.3+ | 0.3+ |
| 2006 06 21 | 703 | 0.0  | 0.5− | 2007 10 12 | 703 | 0.8− | 0.5+ | 2007 11 18 | 703 | 0.2+ | 0.2+ |
| 2006 06 21 | 703 | 0.2− | 0.7+ | 2007 10 17 | 703 | 0.7− | 0.5+ | 2007 11 18 | 703 | 0.4− | 0.4− |
| 2007 10 12 | 703 | 0.2+ | 0.6+ | 2007 10 17 | 703 | 0.0  | 0.6− | 2007 11 18 | 703 | 0.3− | 0.3+ |

**2007 TF<sub>372</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 309.18695  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.19019095 | $\omega$ | 9.64049  | +0.22889878   | −0.97186714 |
| <i>a</i> | 2.9946275  | $\Omega$ | 67.14375 | +0.88906352   | +0.18549894 |
| <i>e</i> | 0.0846033  | <i>i</i> | 3.45260  | +0.39644849   | +0.14513580 |
| <i>P</i> | 5.18       | <i>H</i> | 16.2     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 18 | 691 | 0.0  | 0.2− | 2005 05 14 | G96 | 0.1− | 0.2− | 2007 10 04 | 703 | 1.1− | 0.7− |
| 2004 02 18 | 691 | 0.0  | 0.0  | 2005 05 14 | G96 | 0.3− | 0.3− | 2007 10 04 | 703 | 0.4− | 0.7− |
| 2004 02 18 | 691 | 0.0  | 0.1− | 2005 05 14 | G96 | 0.3− | 0.1− | 2007 10 13 | G96 | 0.0  | 0.0  |
| 2005 04 06 | G96 | 0.5− | 0.4+ | 2005 05 14 | G96 | 0.7− | 0.4− | 2007 10 13 | G96 | 0.1− | 0.1+ |
| 2005 04 06 | G96 | 0.4+ | 0.1− | 2007 09 13 | G96 | 0.6+ | 0.1− | 2007 10 13 | G96 | 0.5+ | 0.2+ |
| 2005 04 06 | G96 | 0.5− | 0.4+ | 2007 09 13 | G96 | 0.6+ | 0.4− | 2007 10 13 | G96 | 0.4+ | 0.1+ |
| 2005 04 06 | G96 | 0.1+ | 0.1− | 2007 09 13 | G96 | 0.7+ | 0.0  | 2007 10 16 | G96 | 0.3+ | 0.1− |
| 2005 04 16 | 691 | 0.5+ | 0.2− | 2007 09 13 | G96 | 0.3− | 0.0  | 2007 10 16 | G96 | 0.1+ | 0.2+ |
| 2005 04 16 | 691 | 0.5+ | 0.1+ | 2007 10 04 | 703 | 1.5− | 1.0+ | 2007 10 16 | G96 | 0.4+ | 0.2+ |
| 2005 04 16 | 691 | 0.7+ | 0.4+ | 2007 10 04 | 703 | 0.1− | 0.0  |            |     |      |      |

**2007 TO<sub>372</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.11968   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23065902 | $\omega$ | 1.41583   | +0.96863669   | +0.24180541 |
| <i>a</i> | 2.6332318  | $\Omega$ | 344.23125 | −0.22999633   | +0.78534646 |
| <i>e</i> | 0.1860490  | <i>i</i> | 12.15308  | −0.09404605   | +0.56987812 |
| <i>P</i> | 4.27       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.2+ | 0.1+ | 2007 10 08 | 703 | 0.4+ | 1.2+ | 2007 10 21 | 703 | 0.8+ | 0.1+ |
| 2005 02 01 | 691 | 0.4+ | 0.3+ | 2007 10 08 | 703 | 1.1+ | 1.5+ | 2007 10 30 | H06 | 0.6− | 0.6− |
| 2005 02 01 | 691 | 0.3− | 0.2+ | 2007 10 08 | 703 | 0.4+ | 0.6+ | 2007 10 30 | H06 | 0.3− | 0.7− |
| 2005 04 02 | G96 | 0.0  | 0.1− | 2007 10 08 | 703 | 0.2− | 0.8+ | 2007 10 30 | H06 | 0.6− | 0.7− |
| 2005 04 02 | G96 | 0.2− | 0.2+ | 2007 10 13 | 699 | 0.4− | 0.0  | 2007 10 31 | H06 | 0.2+ | 0.9− |
| 2005 04 02 | G96 | 0.2+ | 0.0  | 2007 10 13 | 699 | 0.2− | 0.6− | 2007 10 31 | H06 | 0.1+ | 1.1− |
| 2005 04 02 | G96 | 0.0  | 0.1− | 2007 10 13 | 699 | 0.2− | 0.4− | 2007 10 31 | H06 | 0.3− | 0.3− |
| 2007 09 10 | 703 | 0.1− | 0.1+ | 2007 10 13 | 699 | 0.2− | 0.1− | 2007 11 01 | 703 | 0.3+ | 0.9+ |
| 2007 09 10 | 703 | 0.7− | 0.0  | 2007 10 16 | 703 | 0.1− | 0.0  | 2007 11 01 | 703 | 1.6+ | 0.3+ |
| 2007 09 10 | 703 | 0.8+ | 0.2− | 2007 10 16 | 703 | 0.8− | 0.7− | 2007 11 01 | 703 | 0.5+ | 0.9+ |
| 2007 09 10 | 703 | 0.2− | 0.4+ | 2007 10 16 | 703 | 0.1− | 0.3− | 2007 11 01 | 703 | 0.8+ | 1.0+ |
| 2007 09 19 | 703 | 0.9− | 0.6− | 2007 10 16 | 703 | 0.7− | 0.4− | 2007 11 13 | 703 | 0.6+ | 0.5+ |
| 2007 09 19 | 703 | 1.0− | 0.3− | 2007 10 21 | 703 | 0.4+ | 1.0− | 2007 11 13 | 703 | 1.0+ | 0.5+ |
| 2007 09 19 | 703 | 0.2− | 0.3+ | 2007 10 21 | 703 | 0.0  | 0.5− | 2007 11 13 | 703 | 0.3+ | 0.9+ |
| 2007 09 19 | 703 | 1.2− | 0.0  | 2007 10 21 | 703 | 1.1− | 0.3+ | 2007 11 13 | 703 | 0.6+ | 0.2− |

**2007 TX<sub>372</sub> = 2003 UX<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.38122    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23213106 | $\omega$ | 195.59856 | +0.98248823   | +0.17026873 |
| <i>a</i> | 2.6220877  | $\Omega$ | 154.22625 | −0.14685775   | +0.95758155 |
| <i>e</i> | 0.1003565  | <i>i</i> | 10.02156  | −0.11467200   | +0.23247825 |
| <i>P</i> | 4.25       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 16 | 291 | 0.1+ | 0.1− | 2007 08 22 | 699 | 0.5− | 1.5− | 2007 10 02 | E12 | 0.1− | 0.4− |
| 2003 10 16 | 291 | 0.5− | 0.2+ | 2007 08 22 | 699 | 0.5− | 0.7− | 2007 10 02 | E12 | 0.4− | 0.4+ |
| 2003 10 16 | 291 | 0.0  | 0.6+ | 2007 08 22 | 699 | 0.3+ | 0.4+ | 2007 10 02 | E12 | 0.1+ | 0.8+ |
| 2003 10 17 | 291 | 0.1+ | 0.0  | 2007 08 23 | 691 | 0.2+ | 0.3+ | 2007 10 02 | E12 | 0.1− | 0.4+ |
| 2003 10 17 | 291 | 0.1+ | 0.2− | 2007 08 23 | 691 | 0.1− | 0.2− | 2007 10 14 | G96 | 0.3+ | 0.3− |

## M.P.O. 129911

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 17 | 291 | 0.2+ | 0.2− | 2007 08 23 | 691 | 0.2− | 0.1− | 2007 10 14 | G96 | 0.1− | 0.2− |
| 2005 03 13 | G96 | 0.1+ | 0.1− | 2007 09 03 | 703 | 0.1+ | 0.1+ | 2007 10 14 | G96 | 0.1+ | 0.3− |
| 2005 03 13 | G96 | 0.1− | 0.0  | 2007 09 03 | 703 | 1.0− | 0.3+ | 2007 10 14 | G96 | 0.7+ | 0.3− |
| 2005 03 13 | G96 | 0.1− | 0.1− | 2007 09 03 | 703 | 0.5− | 1.5− | 2007 10 16 | G96 | 0.0  | 0.5− |
| 2005 03 13 | G96 | 0.1+ | 0.0  | 2007 09 03 | 703 | 1.0− | 0.3+ | 2007 10 16 | G96 | 0.1+ | 0.2+ |
| 2007 08 09 | 691 | 0.1+ | 0.2+ | 2007 09 13 | G96 | 0.5+ | 0.3+ | 2007 10 16 | G96 | 0.3− | 0.0  |
| 2007 08 09 | 691 | 0.2+ | 0.3− | 2007 09 13 | G96 | 0.4+ | 0.1+ | 2007 10 16 | G96 | 0.0  | 0.0  |
| 2007 08 09 | 691 | 0.1+ | 0.1− | 2007 09 13 | G96 | 0.2+ | 0.1+ |            |     |      |      |
| 2007 08 22 | 699 | 1.7+ | 1.9+ | 2007 09 13 | G96 | 0.1− | 0.1+ |            |     |      |      |

**2007 TB<sub>376</sub> = 1990 RW<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.05425   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23496138 | $\omega$ | 179.59587 | +0.67491420   | +0.73425951 |
| <i>a</i> | 2.6009883  | $\Omega$ | 132.84961 | −0.67728625   | +0.65578111 |
| <i>e</i> | 0.2174647  | <i>i</i> | 5.72782   | −0.29287227   | +0.17553947 |
| <i>P</i> | 4.19       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1990 09 14 | 809 | 0.1−  | 1.8−  | 2006 05 26 | 703 | 0.5−  | 0.3+  | 2007 10 18 | 683 | (1.4− | 3.9+) |
| 1990 09 14 | 809 | 0.9+  | 1.7−  | 2006 05 26 | 703 | 0.7−  | 0.9+  | 2007 10 20 | G96 | 0.2−  | 0.1−  |
| 1990 09 14 | 809 | (3.2− | 3.4−) | 2006 05 26 | 703 | 0.2−  | 0.2−  | 2007 10 20 | G96 | 0.4−  | 0.0   |
| 2001 02 21 | 691 | 0.1+  | 0.1−  | 2006 05 26 | 703 | 0.9−  | 0.4+  | 2007 10 20 | G96 | 0.1−  | 0.1+  |
| 2001 02 21 | 691 | 0.5+  | 0.2−  | 2007 10 07 | 703 | (2.9− | 1.3+) | 2007 10 20 | G96 | 0.5−  | 0.0   |
| 2001 02 21 | 691 | 0.2+  | 0.1−  | 2007 10 07 | 703 | (1.2− | 2.1+) | 2007 11 05 | 703 | 1.5−  | 1.3−  |
| 2002 05 12 | 644 | 0.3+  | 0.1+  | 2007 10 07 | 703 | 1.1−  | 0.0   | 2007 11 05 | 703 | 1.1−  | 0.6−  |
| 2002 05 12 | 644 | 0.6+  | 0.5+  | 2007 10 07 | 703 | 0.6−  | 1.0+  | 2007 11 05 | 703 | 1.6−  | 0.1+  |
| 2002 05 12 | 644 | 0.7+  | 0.4+  | 2007 10 15 | 683 | 0.4−  | 0.7+  | 2007 11 05 | 703 | 0.6−  | 0.6+  |
| 2002 06 02 | 644 | 0.1+  | 0.6+  | 2007 10 15 | 683 | 0.2−  | 2.0+  | 2007 11 11 | 704 | 0.9−  | 0.4+  |
| 2002 06 02 | 644 | 0.5+  | 0.6+  | 2007 10 16 | 703 | 1.0+  | 0.8+  | 2007 11 11 | 704 | 0.7−  | 0.3+  |
| 2002 06 02 | 644 | 0.4+  | 0.6+  | 2007 10 16 | 703 | 0.5+  | 1.7+  | 2007 11 11 | 704 | 0.6−  | 0.2+  |
| 2003 12 21 | 691 | 0.2+  | 0.3−  | 2007 10 16 | 703 | 1.0+  | 1.6+  | 2007 11 11 | 704 | 0.4−  | 0.2+  |
| 2003 12 21 | 691 | 0.3+  | 0.2−  | 2007 10 16 | 703 | 1.1+  | 1.8+  | 2007 11 15 | 704 | 0.6+  | 0.5−  |
| 2003 12 21 | 691 | 0.1+  | 0.0   | 2007 10 17 | 683 | 0.6+  | 0.2−  | 2007 11 15 | 704 | 1.5+  | 0.1−  |
| 2006 02 07 | 691 | 0.2+  | 0.1−  | 2007 10 17 | 683 | 0.2+  | 0.9−  | 2007 11 15 | 704 | 1.1+  | 0.2+  |
| 2006 02 07 | 691 | 0.0   | 0.1+  | 2007 10 17 | 683 | (3.0− | 1.6−) | 2007 11 15 | 704 | 1.1+  | 0.5−  |
| 2006 02 07 | 691 | 0.0   | 0.4+  | 2007 10 18 | 683 | 0.4−  | 0.4−  |            |     |       |       |

**2007 TM<sub>376</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.76194  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28477780 | $\omega$ | 278.88955 | +0.59412104   | −0.79886892 |
| <i>a</i> | 2.2880489  | $\Omega$ | 134.22384 | +0.77989571   | +0.54349746 |
| <i>e</i> | 0.1031359  | <i>i</i> | 7.53412   | +0.19693366   | +0.25771877 |
| <i>P</i> | 3.46       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 6  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 03 11 | 644 | 0.5+ | 0.1− | 2007 10 17 | 699 | 0.9+  | 0.7−  | 2007 10 19 | 703 | 0.4+ | 0.2+ |
| 2002 03 11 | 644 | 0.3+ | 0.2+ | 2007 10 17 | 699 | 0.8−  | 0.8−  | 2007 11 02 | 703 | 0.7− | 0.6− |
| 2002 03 11 | 644 | 0.2− | 0.4+ | 2007 10 17 | 699 | 0.2+  | 1.0−  | 2007 11 02 | 703 | 0.7+ | 0.1− |
| 2002 03 12 | 645 | 0.3− | 0.2− | 2007 10 19 | 703 | 0.1−  | 0.5−  | 2007 11 02 | 703 | 0.5− | 1.0+ |
| 2002 03 12 | 645 | 0.3− | 0.2− | 2007 10 19 | 703 | 0.3+  | 0.6+  | 2007 11 02 | 703 | 1.5+ | 0.6+ |
| 2007 10 10 | 703 | 0.3− | 0.8+ | 2007 10 19 | 703 | 0.3−  | 0.9−  | 2007 11 11 | 704 | 0.7+ | 0.9− |
| 2007 10 10 | 703 | 0.3+ | 0.5+ | 2007 10 19 | 703 | 1.0−  | 0.7+  | 2007 11 11 | 704 | 0.7− | 0.2+ |
| 2007 10 10 | 703 | 0.4+ | 0.2− | 2007 10 19 | 703 | 0.5−  | 0.6−  | 2007 11 11 | 704 | 0.1− | 0.2+ |
| 2007 10 10 | 703 | 0.1− | 0.6+ | 2007 10 19 | 703 | (2.1+ | 0.3−) |            |     |      |      |
| 2007 10 17 | 699 | 0.2− | 0.8− | 2007 10 19 | 703 | 0.1−  | 1.6+  |            |     |      |      |

**2007 TS<sub>376</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 345.95990  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23579817 | $\omega$ | 334.59564 | +0.66553193 | -0.71926472 |
| $a$ | 2.5948311  | $\Omega$ | 72.98575  | +0.71541733 | +0.53866036 |
| $e$ | 0.1244828  | $i$      | 12.03068  | +0.21270943 | +0.43875195 |
| $P$ | 4.18       | $H$      | 16.7      | $G$ 0.15    | $U$ 3       |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 19 | 645 | 0.1+ | 0.2+ | 2003 12 18 | 691 | 0.3+ | 0.2+ | 2007 10 19 | 703 | 0.8+ | 1.1+ |
| 2001 03 19 | 645 | 0.1+ | 0.2+ | 2007 10 10 | 703 | 0.6- | 0.8+ | 2007 10 19 | 703 | 1.7+ | 0.7+ |
| 2003 10 29 | 608 | 0.1+ | 0.6- | 2007 10 10 | 703 | 0.2+ | 0.5- | 2007 10 19 | 703 | 0.4+ | 0.3+ |
| 2003 10 29 | 608 | 0.8- | 0.1+ | 2007 10 10 | 703 | 0.5- | 0.2+ | 2007 10 19 | 699 | 0.9- | 0.3- |
| 2003 10 29 | 608 | 0.9+ | 0.1- | 2007 10 10 | 703 | 0.4- | 0.1+ | 2007 10 19 | 703 | 0.4- | 0.1+ |
| 2003 11 19 | 699 | 0.1- | 0.0  | 2007 10 17 | 699 | 0.1+ | 0.2- | 2007 10 19 | 699 | 0.0  | 0.4- |
| 2003 11 19 | 699 | 0.2- | 0.6+ | 2007 10 17 | 699 | 0.3- | 0.1+ | 2007 11 14 | 699 | 1.2- | 1.6- |
| 2003 11 19 | 699 | 0.3- | 0.6- | 2007 10 17 | 699 | 0.1+ | 1.0- | 2007 11 14 | 699 | 0.5+ | 1.1+ |
| 2003 11 19 | 699 | 0.3- | 0.3- | 2007 10 17 | 699 | 0.7+ | 0.4+ | 2007 11 14 | 699 | 0.2- | 0.7+ |
| 2003 12 18 | 691 | 0.3+ | 0.2+ | 2007 10 19 | 699 | 0.4- | 0.7- | 2007 11 14 | 699 | 0.1- | 0.3- |
| 2003 12 18 | 691 | 0.3+ | 0.2+ | 2007 10 19 | 699 | 0.2+ | 0.2- |            |     |      |      |

**2007 TT**<sub>376</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.33852   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25363736 | $\omega$ | 285.79450 | +0.98076705   | -0.00672009 |
| <i>a</i> | 2.4716895  | $\Omega$ | 74.90107  | +0.09321357   | +0.89419789 |
| <i>e</i> | 0.1829088  | <i>i</i> | 11.65635  | -0.17148537   | +0.44762146 |
| <i>P</i> | 3.89       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 10 24 | 699 | 0.2-  | 0.4+  | 2007 10 10 | 703 | 0.4-  | 0.1+  | 2007 11 11 | 703 | 0.1- | 0.2- |
| 2003 10 24 | 699 | 0.3-  | 0.6+  | 2007 10 10 | 703 | 0.2-  | 0.2-  | 2007 11 11 | 703 | 0.7- | 0.0  |
| 2003 10 24 | 699 | 0.1+  | 0.3+  | 2007 10 10 | 703 | 0.7-  | 0.0   | 2007 11 17 | 703 | 0.8+ | 0.5+ |
| 2003 10 24 | 699 | 0.2+  | 0.2-  | 2007 10 15 | 703 | 0.6+  | 0.3+  | 2007 11 17 | 703 | 0.5+ | 0.3+ |
| 2003 11 22 | 703 | 0.3+  | 0.0   | 2007 10 15 | 703 | 0.0   | 0.5-  | 2007 11 17 | 703 | 0.4+ | 0.6+ |
| 2003 11 22 | 703 | 0.1+  | 0.1-  | 2007 10 15 | 703 | 0.5+  | 0.2+  | 2007 11 17 | 703 | 0.3+ | 0.4+ |
| 2003 11 22 | 703 | 0.4-  | 0.2+  | 2007 10 15 | 703 | (0.4+ | 2.2-) | 2007 11 29 | 704 | 0.8- | 0.2+ |
| 2003 11 22 | 703 | 0.4-  | 0.3-  | 2007 10 17 | 699 | 0.7+  | 0.4-  | 2007 11 29 | 704 | 0.2- | 0.2+ |
| 2006 05 24 | 699 | 0.8+  | 0.6+  | 2007 10 17 | 699 | 0.3+  | 0.1-  | 2007 11 29 | 704 | 0.4+ | 0.7+ |
| 2006 05 24 | 699 | (2.3+ | 1.9+) | 2007 10 17 | 699 | 0.3+  | 0.4-  | 2007 11 29 | 704 | 0.6- | 0.6+ |
| 2006 05 24 | 699 | 0.7-  | 0.2-  | 2007 10 17 | 699 | 0.2+  | 0.2-  | 2007 11 29 | 704 | 1.2- | 0.5- |
| 2006 05 24 | 699 | (1.5+ | 2.7+) | 2007 11 02 | 703 | 0.2+  | 0.6-  | 2007 12 16 | 699 | 0.4- | 0.3- |
| 2007 10 09 | A50 | 0.1+  | 0.1+  | 2007 11 02 | 703 | 0.2+  | 0.1+  | 2007 12 16 | 699 | 0.1+ | 0.6+ |
| 2007 10 09 | A50 | 0.2+  | 0.2+  | 2007 11 02 | 703 | 0.2+  | 0.5-  | 2007 12 16 | 699 | 0.2+ | 0.1+ |
| 2007 10 09 | A50 | 0.3+  | 0.1+  | 2007 11 02 | 703 | 0.4-  | 0.2-  | 2007 12 16 | 699 | 0.1- | 1.2- |
| 2007 10 09 | A50 | 0.5-  | 0.0   | 2007 11 11 | 703 | 0.2-  | 0.0   |            |     |      |      |
| 2007 10 10 | 703 | 0.5-  | 0.6-  | 2007 11 11 | 703 | 0.1+  | 0.1+  |            |     |      |      |

**2007 TB**<sub>377</sub> = **2006 KK**<sub>137</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 344.81637  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27439149 | $\omega$ | 161.09683 | +0.65246635   | -0.75685133 |
| <i>a</i> | 2.3454290  | $\Omega$ | 248.15603 | +0.68986451   | +0.61409753 |
| <i>e</i> | 0.1697755  | <i>i</i> | 2.36229   | +0.31364729   | +0.22374156 |
| <i>P</i> | 3.59       | <i>H</i> | 18.7      | <i>G</i> 0.15 | <i>U</i> 5  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 25 | 568 | 0.0  | 0.2+ | 2007 10 11 | 703 | 0.1+ | 0.8+ | 2007 11 04 | 691 | 0.2- | 0.3- |
| 2006 05 25 | 568 | 0.1- | 0.3+ | 2007 10 11 | 703 | 1.6+ | 1.6+ | 2007 11 04 | 691 | 0.2- | 0.1- |
| 2006 05 25 | 568 | 0.0  | 0.2+ | 2007 10 11 | 703 | 0.1- | 0.3- | 2007 11 04 | 691 | 0.2+ | 0.2+ |
| 2006 05 26 | 568 | 0.2+ | 0.3+ | 2007 10 11 | 703 | 1.3+ | 0.3+ | 2007 11 09 | 691 | 0.4- | 0.4+ |
| 2007 10 05 | 691 | 0.0  | 0.4- | 2007 10 18 | 691 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.4+ |
| 2007 10 05 | 691 | 0.4- | 0.7- | 2007 10 18 | 691 | 0.2+ | 0.1+ | 2007 11 09 | 691 | 0.1- | 0.0  |
| 2007 10 05 | 691 | 0.6- | 0.2+ | 2007 10 18 | 691 | 0.3+ | 0.1- |            |     |      |      |

**2007 TM**<sub>377</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 39.37267   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21594990 | $\omega$ | 218.73465 | +0.88732724   | +0.38700334 |
| <i>a</i> | 2.7514865  | $\Omega$ | 116.74419 | -0.32128717   | +0.90890217 |
| <i>e</i> | 0.2786348  | <i>i</i> | 16.30763  | -0.33079437   | +0.15532309 |
| <i>P</i> | 4.56       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 2  |

## Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 07 14 | 644 | 0.1+ | 0.3+ | 2007 10 11 | 703 | 0.8+  | 1.1-  | 2007 11 02 | 703 | 0.5- | 0.0  |
| 2002 07 14 | 644 | 0.1+ | 0.4+ | 2007 10 11 | 703 | 0.5+  | 0.6-  | 2007 11 02 | 703 | 0.5+ | 0.1+ |
| 2002 07 14 | 644 | 0.0  | 0.1+ | 2007 10 11 | 703 | (1.9- | 0.4-) | 2007 11 11 | 703 | 0.0  | 1.2+ |
| 2002 08 30 | 644 | 0.1- | 0.2- | 2007 10 11 | 703 | 0.1+  | 0.9-  | 2007 11 11 | 703 | 0.2+ | 0.9+ |
| 2002 08 30 | 644 | 0.1- | 0.1- | 2007 10 17 | 703 | (2.3+ | 0.4-) | 2007 11 11 | 703 | 0.3+ | 0.5+ |
| 2002 08 30 | 644 | 0.2- | 0.1- | 2007 10 17 | 703 | 0.2+  | 0.1-  | 2007 11 11 | 703 | 0.9+ | 1.4+ |
| 2006 05 01 | 703 | 2.1- | 1.6- | 2007 10 17 | 703 | 0.5-  | 0.3-  | 2007 11 18 | 703 | 0.4- | 0.2+ |
| 2006 05 01 | 703 | 0.3+ | 0.1+ | 2007 10 17 | 703 | 0.9-  | 0.1-  | 2007 11 18 | 703 | 0.7+ | 1.3- |
| 2006 05 01 | 703 | 0.1+ | 0.3+ | 2007 11 02 | 703 | 0.2-  | 0.3-  | 2007 11 18 | 703 | 0.3- | 0.1+ |
| 2006 05 01 | 703 | 1.9+ | 1.4+ | 2007 11 02 | 703 | 0.3-  | 0.9+  | 2007 11 18 | 703 | 0.9- | 0.2- |

**2007 TT**<sub>377</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 312.55634  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18444975 | $\omega$ | 229.40916 | -0.22564028   | -0.97309859 |
| <i>a</i> | 3.0564503  | $\Omega$ | 233.69143 | +0.91035845   | -0.19360160 |
| <i>e</i> | 0.0567690  | <i>i</i> | 3.31058   | +0.34689184   | -0.12489016 |
| <i>P</i> | 5.34       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 19 | 691 | 0.0  | 0.4- | 2007 10 11 | 691 | 0.1- | 0.1- | 2007 11 03 | 691 | 0.1- | 0.0  |
| 1996 11 19 | 691 | 0.4- | 0.4- | 2007 10 11 | 691 | 0.2- | 0.0  | 2007 11 03 | 691 | 0.1- | 0.1- |
| 1996 11 19 | 691 | 0.5+ | 0.7+ | 2007 10 11 | 691 | 0.1- | 0.0  | 2007 11 14 | 691 | 0.0  | 0.2- |
| 2001 10 15 | 645 | 0.1- | 0.1+ | 2007 10 17 | G96 | 1.1+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.1- |
| 2001 10 15 | 645 | 0.0  | 0.1+ | 2007 10 17 | G96 | 0.2+ | 0.3- | 2007 11 14 | 691 | 0.1- | 0.2+ |
| 2004 03 16 | 691 | 0.0  | 0.2+ | 2007 10 17 | G96 | 0.2+ | 0.4+ | 2007 11 18 | 691 | 0.4+ | 0.3+ |
| 2004 03 16 | 691 | 0.2+ | 0.4+ | 2007 10 17 | G96 | 0.3+ | 0.5+ | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2004 03 16 | 691 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.5+ | 0.2- | 2007 11 18 | 691 | 0.4- | 0.4- |
| 2007 09 09 | G96 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.7+ | 0.2- | 2007 12 04 | 691 | 0.3+ | 0.8+ |
| 2007 09 09 | G96 | 0.7+ | 0.1- | 2007 10 30 | G96 | 1.0+ | 0.3- | 2007 12 04 | 691 | 0.3- | 0.0  |
| 2007 09 09 | G96 | 0.3+ | 0.1- | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 12 04 | 691 | 0.0  | 0.2- |
| 2007 09 09 | G96 | 0.3+ | 0.1- | 2007 11 03 | 691 | 0.4- | 0.2- |            |     |      |      |

**2007 TQ**<sub>379</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 317.54113  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28164428 | $\omega$ | 42.01825 | +0.16859943   | -0.97940670 |
| <i>a</i> | 2.3049885  | $\Omega$ | 38.66239 | +0.85039418   | +0.08755426 |
| <i>e</i> | 0.1505187  | <i>i</i> | 10.24107 | +0.49840141   | +0.18192519 |
| <i>P</i> | 3.50       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 3  |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 28 | 691 | 0.1+ | 0.1- | 2007 10 13 | G96 | 1.3- | 0.8+ | 2007 11 02 | 691 | 0.6- | 1.0+ |
| 2000 11 28 | 691 | 0.1+ | 0.1- | 2007 10 13 | G96 | 0.2+ | 0.4+ | 2007 11 02 | 691 | 0.0  | 0.9+ |
| 2000 11 28 | 691 | 0.1+ | 0.2- | 2007 10 17 | 699 | 0.1+ | 0.2- | 2007 11 07 | 691 | 0.3- | 0.0  |
| 2002 04 08 | 644 | 0.6+ | 1.1+ | 2007 10 17 | 699 | 0.4+ | 0.3- | 2007 11 07 | 691 | 0.2- | 0.1- |
| 2002 04 08 | 644 | 0.4+ | 1.3+ | 2007 10 17 | 699 | 0.5- | 0.1- | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2002 04 08 | 644 | 0.5+ | 1.2+ | 2007 10 17 | 699 | 0.7+ | 0.3- | 2007 12 06 | G96 | 0.7+ | 0.7+ |
| 2002 04 14 | 691 | 0.2+ | 0.4+ | 2007 10 19 | 703 | 0.8- | 0.0  | 2007 12 06 | G96 | 1.1+ | 0.4+ |
| 2002 04 14 | 691 | 0.3+ | 0.2+ | 2007 10 19 | 703 | 0.5+ | 0.2+ | 2007 12 06 | G96 | 1.3+ | 1.0+ |
| 2002 04 14 | 691 | 0.2+ | 0.3+ | 2007 10 19 | 703 | 0.5- | 0.2+ | 2007 12 06 | G96 | 0.2+ | 0.7- |
| 2007 10 13 | G96 | 0.4+ | 0.5- | 2007 10 19 | 703 | 0.1+ | 0.1+ |            |     |      |      |
| 2007 10 13 | G96 | 0.2- | 0.2- | 2007 11 02 | 691 | 0.5- | 0.3- |            |     |      |      |

**2007 TW**<sub>379</sub> = **2003 SW**<sub>344</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 202.64917  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27351115 | $\omega$ | 276.27002 | -0.98900682   | +0.12839327 |
| <i>a</i> | 2.3504590  | $\Omega$ | 271.12373 | -0.08901108   | -0.91304596 |
| <i>e</i> | 0.1073842  | <i>i</i> | 4.20741   | -0.11807852   | -0.38712046 |
| <i>P</i> | 3.60       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

## 2007 DEC. 24

M.P.O. 129913

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 30 | 644 | 0.1− | 0.3− | 2007 10 05 | 691 | 0.4+ | 0.3+ | 2007 11 03 | G96 | 0.1+ | 0.5− |
| 2002 04 30 | 644 | 0.2− | 0.1+ | 2007 10 05 | 691 | 0.1+ | 0.1− | 2007 11 03 | G96 | 0.3+ | 0.3− |
| 2002 04 30 | 644 | 0.2+ | 0.1− | 2007 10 05 | 691 | 0.1− | 0.1− | 2007 11 03 | G96 | 0.6+ | 0.2− |
| 2003 09 18 | 691 | 0.1− | 0.0  | 2007 10 14 | 691 | 0.2− | 0.3+ | 2007 11 03 | G96 | 0.4+ | 0.2− |
| 2003 09 18 | 691 | 0.1− | 0.3+ | 2007 10 14 | 691 | 0.7− | 0.4+ | 2007 11 07 | G96 | 0.7+ | 0.1− |
| 2003 09 18 | 691 | 0.2+ | 0.0  | 2007 10 14 | 691 | 0.2− | 0.1− | 2007 11 07 | G96 | 0.6+ | 0.4− |
| 2003 09 27 | 691 | 0.1+ | 0.2− | 2007 10 18 | 691 | 0.1− | 0.3− | 2007 11 07 | G96 | 0.1− | 0.2+ |
| 2003 09 27 | 691 | 0.1− | 0.3− | 2007 10 18 | 691 | 0.0  | 0.2− | 2007 11 07 | G96 | 0.0  | 0.2− |
| 2003 09 27 | 691 | 0.0  | 0.0  | 2007 10 18 | 691 | 0.2+ | 0.2+ |            |     |      |      |

2007 TQ<sub>382</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 312.80408  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.25793408 | $\omega$ 89.38180 | −0.21998929   | −0.97547381 |
| <i>a</i> | 2.4441634  | $\Omega$ 13.33368 | +0.88165972   | −0.20209049 |
| <i>e</i> | 0.1549340  | <i>i</i> 1.85204  | +0.41746957   | −0.08723689 |
| <i>P</i> | 3.82       | <i>H</i> 17.3     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 18 | 291 | 0.2− | 0.3+ | 2005 05 04 | G96 | 0.0  | 0.2+ | 2007 10 31 | G96 | 0.6+  | 0.2−  |
| 2003 09 18 | 291 | 0.1− | 0.3+ | 2005 05 04 | G96 | 0.2+ | 0.0  | 2007 11 07 | 703 | 0.5+  | 0.3−  |
| 2003 09 18 | 291 | 0.2− | 0.5+ | 2007 09 12 | G96 | 0.4+ | 0.0  | 2007 11 07 | 703 | 0.9−  | 0.4−  |
| 2003 09 30 | 691 | 0.2+ | 0.3+ | 2007 09 12 | G96 | 0.3+ | 0.1− | 2007 11 07 | 703 | 0.1−  | 0.7−  |
| 2003 09 30 | 691 | 0.1− | 0.2+ | 2007 09 12 | G96 | 0.3+ | 0.1− | 2007 11 07 | 703 | 0.1+  | 0.2+  |
| 2003 09 30 | 691 | 0.0  | 0.3+ | 2007 09 12 | G96 | 0.7+ | 0.1+ | 2007 11 11 | 699 | 0.1+  | 0.8−  |
| 2003 10 19 | 691 | 0.3− | 0.1+ | 2007 10 04 | 691 | 0.3− | 0.0  | 2007 11 11 | 699 | 1.4−  | 0.5+  |
| 2003 10 19 | 691 | 0.2− | 0.0  | 2007 10 04 | 691 | 0.0  | 0.3− | 2007 11 11 | 699 | 0.7+  | 0.1−  |
| 2003 10 19 | 691 | 0.0  | 0.1+ | 2007 10 04 | 691 | 0.4− | 0.1− | 2007 11 11 | 699 | 1.2+  | 0.6+  |
| 2005 03 17 | 691 | 0.0  | 0.4+ | 2007 10 14 | 691 | 0.1+ | 0.4− | 2007 11 15 | 704 | 0.1+  | 0.9+  |
| 2005 03 17 | 691 | 0.3+ | 0.2+ | 2007 10 14 | 691 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.2−  | 0.2−  |
| 2005 03 17 | 691 | 0.3+ | 0.2+ | 2007 10 14 | 691 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.7+  | 1.1+  |
| 2005 04 05 | G96 | 0.2+ | 0.2+ | 2007 10 18 | 691 | 0.2− | 0.4− | 2007 11 15 | 704 | (1.7− | 0.8−) |
| 2005 04 05 | G96 | 0.2− | 0.2+ | 2007 10 18 | 691 | 0.6+ | 0.5− | 2007 11 15 | 704 | 0.6−  | 0.5+  |
| 2005 04 05 | G96 | 0.4− | 0.2+ | 2007 10 18 | 691 | 0.1− | 0.0  | 2007 12 03 | 703 | 0.0   | 0.3−  |
| 2005 04 05 | G96 | 0.3− | 0.2+ | 2007 10 31 | G96 | 0.4+ | 0.3− | 2007 12 03 | 703 | 0.1−  | 0.4+  |
| 2005 05 04 | G96 | 0.2+ | 0.2+ | 2007 10 31 | G96 | 0.1+ | 0.4− | 2007 12 03 | 703 | 0.7+  | 1.5+  |
| 2005 05 04 | G96 | 0.1+ | 0.1+ | 2007 10 31 | G96 | 0.3+ | 0.4− | 2007 12 03 | 703 | 1.6−  | 2.3+  |

2007 TD<sub>383</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.16464  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26368551 | $\omega$ 51.64849 | +0.02505401   | −0.99726481 |
| <i>a</i> | 2.4084920  | $\Omega$ 37.09662 | +0.87747293   | −0.01138863 |
| <i>e</i> | 0.0953650  | <i>i</i> 6.62008  | +0.47897136   | +0.07302879 |
| <i>P</i> | 3.74       | <i>H</i> 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 04 03 | 691 | 0.2+ | 0.1+ | 2007 10 18 | 691 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.3− | 0.3+ |
| 1994 04 03 | 691 | 0.4− | 0.0  | 2007 10 18 | 691 | 0.5− | 0.1− | 2007 11 07 | 703 | 0.8+ | 0.4+ |
| 1994 04 03 | 691 | 0.2+ | 0.2− | 2007 10 30 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 1.4+ | 0.7+ |
| 2003 09 30 | 691 | 0.0  | 0.1− | 2007 10 30 | 691 | 0.1+ | 0.1− | 2007 11 07 | 703 | 0.4− | 0.4+ |
| 2003 09 30 | 691 | 0.1− | 0.1+ | 2007 10 30 | 691 | 0.1− | 0.0  | 2007 11 07 | 703 | 1.2+ | 0.2− |
| 2003 09 30 | 691 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.9+ | 0.3− | 2007 11 07 | 703 | 0.6+ | 1.8+ |
| 2007 09 13 | G96 | 0.6+ | 0.1+ | 2007 10 30 | G96 | 0.8+ | 0.4− | 2007 11 07 | 703 | 0.4− | 0.3− |
| 2007 09 13 | G96 | 0.1+ | 0.1+ | 2007 10 30 | G96 | 0.3+ | 0.0  | 2007 11 07 | 703 | 1.5+ | 1.7+ |
| 2007 09 13 | G96 | 0.1+ | 0.2− | 2007 10 30 | G96 | 0.6+ | 0.3− | 2007 11 07 | 703 | 0.9+ | 1.0− |
| 2007 09 13 | G96 | 0.7+ | 0.1− | 2007 10 31 | 691 | 0.3− | 0.1− | 2007 11 15 | 704 | 0.1− | 0.2− |
| 2007 10 14 | 691 | 0.2− | 0.1+ | 2007 10 31 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 0.3− | 0.9+ |
| 2007 10 14 | 691 | 0.1− | 0.0  | 2007 10 31 | 691 | 0.9− | 0.9− | 2007 11 15 | 704 | 0.3− | 0.4− |
| 2007 10 14 | 691 | 0.2− | 0.1+ | 2007 11 03 | 691 | 0.1− | 0.1+ | 2007 11 15 | 704 | 0.0  | 0.3− |
| 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.9+ | 0.2− |

2007 TN<sub>383</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 170.03148  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28791227 | $\omega$ 13.02477  | −0.64323195   | +0.76300867 |
| <i>a</i> | 2.2714121  | $\Omega$ 216.99916 | −0.71165163   | −0.62651468 |
| <i>e</i> | 0.0454517  | <i>i</i> 6.08562   | −0.28249710   | −0.15905070 |
| <i>P</i> | 3.42       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 06 | 644 | 0.1+ | 0.2− | 2007 10 18 | 691 | 0.2− | 0.1+ | 2007 11 07 | 703 | 0.4− | 0.5− |
| 2002 03 06 | 644 | 0.0  | 0.1− | 2007 10 18 | 691 | 0.2− | 0.1+ | 2007 11 09 | G96 | 0.5+ | 0.5− |
| 2002 03 06 | 644 | 0.0  | 0.4− | 2007 10 18 | 691 | 0.2− | 0.2− | 2007 11 09 | G96 | 0.1+ | 0.2− |
| 2002 04 14 | 291 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.1− | 0.3+ | 2007 11 09 | G96 | 0.4+ | 0.4− |
| 2002 04 14 | 291 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.2− | 0.2+ | 2007 11 09 | G96 | 0.2+ | 0.5− |
| 2002 04 14 | 291 | 0.1− | 0.0  | 2007 10 30 | 691 | 0.0  | 0.4+ | 2007 11 11 | 699 | 0.3+ | 0.5+ |
| 2007 09 12 | G96 | 0.4− | 0.6− | 2007 10 30 | G96 | 0.5+ | 0.3− | 2007 11 11 | 699 | 0.2+ | 0.1+ |
| 2007 09 12 | G96 | 0.1− | 0.3− | 2007 10 30 | G96 | 0.4+ | 0.4− | 2007 11 11 | 699 | 1.6+ | 0.4+ |
| 2007 09 12 | G96 | 0.3+ | 0.2− | 2007 10 30 | G96 | 0.6+ | 0.4− | 2007 11 11 | 699 | 1.1+ | 0.1+ |
| 2007 09 12 | G96 | 0.2+ | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.4− | 2007 11 14 | 704 | 0.7− | 0.3+ |
| 2007 10 14 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 1.0− | 0.3− | 2007 11 14 | 704 | 0.1+ | 0.1− |
| 2007 10 14 | 691 | 0.1− | 0.1− | 2007 11 07 | 703 | 1.6− | 0.6− | 2007 11 14 | 704 | 0.9+ | 0.5− |
| 2007 10 14 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.3− | 0.4+ | 2007 11 14 | 704 | 0.2+ | 0.5+ |

2007 TS<sub>385</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.89536  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18769459 | $\omega$ 182.63436 | +0.64633386   | −0.76116630 |
| <i>a</i> | 3.0211216  | $\Omega$ 227.10667 | +0.70142109   | +0.62034075 |
| <i>e</i> | 0.0935759  | <i>i</i> 4.19960   | +0.30043467   | +0.18921741 |
| <i>P</i> | 5.25       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 22 | 645 | 0.0  | 0.2+ | 2005 06 12 | G96 | 0.2− | 0.6+ | 2007 10 20 | 691 | 0.2− | 0.1− |
| 1999 03 22 | 645 | 0.1+ | 0.2+ | 2005 06 12 | G96 | 0.4− | 0.2+ | 2007 10 20 | 691 | 0.2− | 0.2− |
| 2002 12 10 | 644 | 0.3− | 0.6+ | 2005 06 12 | G96 | 0.4+ | 0.1+ | 2007 10 20 | 691 | 0.2− | 0.2− |
| 2002 12 10 | 644 | 0.5− | 0.4+ | 2007 10 05 | 691 | 0.1+ | 0.1− | 2007 10 20 | 703 | 1.6+ | 1.3− |
| 2002 12 10 | 644 | 0.4− | 0.4+ | 2007 10 05 | 691 | 0.3− | 0.3− | 2007 10 20 | 703 | 0.2+ | 0.8+ |
| 2003 01 02 | 291 | 0.4+ | 0.0  | 2007 10 05 | 691 | 0.2− | 0.3+ | 2007 10 20 | 703 | 0.4+ | 1.1+ |
| 2003 01 02 | 291 | 0.5+ | 0.2+ | 2007 10 15 | 703 | 1.2− | 1.0+ | 2007 10 20 | 703 | 1.6+ | 1.6+ |
| 2003 01 02 | 291 | 0.1+ | 0.1− | 2007 10 15 | 703 | 0.3− | 0.9+ | 2007 11 01 | G96 | 0.1+ | 0.5− |
| 2005 06 01 | G96 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 2.0− | 0.1+ | 2007 11 01 | G96 | 0.1+ | 0.5− |
| 2005 06 01 | G96 | 0.0  | 0.1+ | 2007 10 15 | 703 | 0.1− | 0.5+ | 2007 11 01 | G96 | 0.2+ | 0.1− |
| 2005 06 01 | G96 | 0.2− | 0.2+ | 2007 10 18 | 691 | 0.1+ | 0.7− | 2007 11 01 | G96 | 0.2+ | 0.5− |
| 2005 06 01 | G96 | 0.1+ | 0.6+ | 2007 10 18 | 691 | 0.1− | 0.3− |            |     |      |      |
| 2005 06 12 | G96 | 0.6+ | 0.7+ | 2007 10 18 | 691 | 0.2− | 0.4− |            |     |      |      |

2007 TE<sub>386</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.10948   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18840002 | $\omega$ 176.99185 | +0.69012501   | +0.71264448 |
| <i>a</i> | 3.0135756  | $\Omega$ 136.59979 | −0.66774081   | +0.69415543 |
| <i>e</i> | 0.1075707  | <i>i</i> 10.56322  | −0.27901555   | +0.10142039 |
| <i>P</i> | 5.23       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 07 25 | 691 | 0.0  | 0.7+ | 2007 09 21 | D29 | 0.1+ | 0.3− | 2007 10 19 | 703 | 0.1+  | 1.2+  |
| 2001 07 25 | 691 | 0.1− | 0.3+ | 2007 09 21 | D29 | 0.3+ | 0.1+ | 2007 11 02 | 703 | 1.0−  | 0.5−  |
| 2001 07 25 | 691 | 0.0  | 0.6+ | 2007 09 21 | D29 | 0.3+ | 0.5− | 2007 11 02 | 703 | 0.4−  | 0.4+  |
| 2003 12 22 | 691 | 0.2+ | 0.0  | 2007 10 15 | 703 | 0.5+ | 0.1− | 2007 11 02 | 703 | 0.3−  | 0.4+  |
| 2003 12 22 | 691 | 0.2− | 0.1− | 2007 10 15 | 703 | 0.3+ | 0.3+ | 2007 11 02 | 703 | (2.5− | 0.2+) |
| 2003 12 22 | 691 | 0.2− | 0.1+ | 2007 10 15 | 703 | 0.0  | 0.7+ | 2007 11 11 | 703 | 0.7−  | 0.4+  |
| 2004 01 18 | 691 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 0.2− | 1.0+ | 2007 11 11 | 703 | 0.6−  | 0.1+  |
| 2004 01 18 | 691 | 0.0  | 0.3+ | 2007 10 17 | 699 | 0.8+ | 1.4− | 2007 11 11 | 703 | 0.6−  | 1.2+  |
| 2004 01 18 | 691 | 0.1+ | 0.2+ | 2007 10 17 | 699 | 0.1+ | 0.6− | 2007 11 11 | 703 | 1.7−  | 0.1+  |
| 2005 03 10 | 703 | 0.3− | 0.3+ | 2007 10 17 | 699 | 1.3+ | 0.6− | 2007 11 17 | 703 | 0.6−  | 0.9−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | 703 | 0.6− | 0.3+ | 2007 10 17 | 699 | 1.7+ | 0.2+ | 2007 11 17 | 703 | 1.2− | 1.9− |
| 2005 03 10 | 703 | 1.7+ | 0.4+ | 2007 10 19 | 703 | 0.5+ | 0.2+ | 2007 11 17 | 703 | 1.1− | 0.3− |
| 2005 03 10 | 703 | 0.2− | 1.2+ | 2007 10 19 | 703 | 0.4+ | 1.6+ | 2007 11 17 | 703 | 0.1− | 0.3+ |
| 2007 09 21 | D29 | 0.5+ | 0.4− | 2007 10 19 | 703 | 0.2+ | 1.1+ |            |     |      |      |

**2007 TH<sub>386</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 8.75574    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24186067 | $\omega$ | 343.48025 | +0.91346723 | −0.40517325 |
| $a$ | 2.5512864  | $\Omega$ | 40.48715  | +0.37957582 | +0.81517931 |
| $e$ | 0.1517799  | $i$      | 3.31813   | +0.14662815 | +0.41390498 |
| $P$ | 4.08       | $H$      | 17.0      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 15 | 691 | 0.3− | 0.1− | 2007 10 20 | 703 | 0.5− | 1.1− | 2007 10 31 | A17 | 0.7+ | 0.5− |
| 1999 12 15 | 691 | 0.5+ | 0.1+ | 2007 10 20 | 703 | 0.6− | 0.2+ | 2007 10 31 | A17 | 0.1+ | 0.2+ |
| 1999 12 15 | 691 | 0.1− | 0.3− | 2007 10 30 | 703 | 0.6+ | 0.6+ | 2007 11 01 | A17 | 0.0  | 1.3− |
| 2003 10 20 | 691 | 0.3− | 0.2− | 2007 10 30 | 703 | 0.1− | 0.8+ | 2007 11 01 | A17 | 0.1− | 0.3− |
| 2003 10 20 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 11 01 | A17 | 0.3− | 0.6− |
| 2003 10 20 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 703 | 0.7− | 0.8+ | 2007 11 01 | A17 | 0.0  | 0.3− |
| 2007 09 08 | G96 | 0.5+ | 0.9− | 2007 10 30 | G96 | 0.3− | 0.0  | 2007 11 04 | G96 | 0.5+ | 0.2− |
| 2007 09 08 | G96 | 0.8+ | 0.4− | 2007 10 30 | 703 | 0.8− | 0.9+ | 2007 11 04 | G96 | 0.1− | 0.2− |
| 2007 09 08 | G96 | 0.5+ | 0.6− | 2007 10 30 | G96 | 0.1− | 0.1+ | 2007 11 04 | G96 | 0.0  | 0.1− |
| 2007 09 08 | G96 | 0.3+ | 1.1− | 2007 10 30 | G96 | 0.4+ | 0.1− | 2007 11 04 | G96 | 0.3+ | 0.1− |
| 2007 10 15 | 703 | 0.4− | 0.3+ | 2007 10 30 | 703 | 0.3+ | 0.0  | 2007 11 06 | 704 | 0.5− | 0.1− |
| 2007 10 15 | 703 | 0.9− | 0.5+ | 2007 10 30 | 703 | 0.2+ | 0.7+ | 2007 11 06 | 704 | 1.3+ | 0.4− |
| 2007 10 15 | 703 | 0.2− | 0.3+ | 2007 10 30 | 703 | 0.7+ | 1.2+ | 2007 11 06 | 704 | 0.5+ | 0.9− |
| 2007 10 15 | 703 | 0.4+ | 0.4− | 2007 10 30 | 703 | 0.2+ | 0.1− | 2007 11 15 | 704 | 0.3− | 0.4+ |
| 2007 10 18 | 691 | 0.4− | 0.1− | 2007 10 30 | A17 | 0.2+ | 0.2− | 2007 11 15 | 704 | 0.6+ | 0.6+ |
| 2007 10 18 | 691 | 0.2− | 0.1+ | 2007 10 30 | A17 | 0.4− | 0.8− | 2007 11 15 | 704 | 0.4− | 0.2− |
| 2007 10 18 | 691 | 0.1− | 0.3+ | 2007 10 30 | A17 | 0.0  | 0.4− | 2007 11 15 | 704 | 1.0+ | 1.6+ |
| 2007 10 20 | 703 | 0.6− | 0.1− | 2007 10 31 | A17 | 0.2+ | 0.2− |            |     |      |      |
| 2007 10 20 | 703 | 0.3− | 1.4+ | 2007 10 31 | A17 | 0.5+ | 0.1+ |            |     |      |      |

**2007 TN<sub>386</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 9.71776    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26387430 | $\omega$ | 331.90262 | +0.92478398 | −0.37845135 |
| $a$ | 2.4073431  | $\Omega$ | 50.39011  | +0.35796757 | +0.83030635 |
| $e$ | 0.2401900  | $i$      | 2.92849   | +0.12897214 | +0.40910382 |
| $P$ | 3.74       | $H$      | 18.0      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 24 | 103 | 0.4−  | 0.1+  | 2007 10 18 | 691 | 0.3− | 0.0  | 2007 11 09 | G96 | 0.4+ | 0.1− |
| 2000 11 24 | 103 | 0.0   | 0.3+  | 2007 10 18 | 691 | 0.1− | 0.4− | 2007 11 09 | G96 | 0.3+ | 0.1− |
| 2000 11 24 | 103 | 0.6+  | 0.2+  | 2007 10 18 | 691 | 0.3+ | 0.2− | 2007 11 11 | 699 | 0.2− | 0.1+ |
| 2003 10 24 | 695 | 0.1+  | 0.3+  | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 11 11 | 699 | 0.2+ | 0.3− |
| 2003 10 24 | 695 | 0.3−  | 0.1+  | 2007 10 30 | 691 | 0.1− | 0.0  | 2007 11 11 | 699 | 0.7+ | 0.5+ |
| 2007 09 12 | G96 | 0.2−  | 0.6−  | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 11 11 | 699 | 0.0  | 0.6+ |
| 2007 09 12 | G96 | 0.0   | 0.1+  | 2007 10 30 | 703 | 0.4− | 0.1+ | 2007 11 17 | G96 | 0.2− | 0.4− |
| 2007 09 12 | G96 | 0.1+  | 0.2−  | 2007 10 30 | 703 | 0.8+ | 0.7+ | 2007 11 17 | G96 | 0.2− | 0.3− |
| 2007 09 12 | G96 | 0.4+  | 0.1+  | 2007 10 30 | 703 | 1.1− | 1.2+ | 2007 11 17 | G96 | 0.1+ | 0.3− |
| 2007 10 10 | 691 | 0.1−  | 0.0   | 2007 10 30 | 703 | 0.8− | 1.0+ | 2007 11 17 | G96 | 0.0  | 0.3− |
| 2007 10 10 | 691 | 0.0   | 0.1−  | 2007 11 07 | 703 | 1.1+ | 0.5− | 2007 11 17 | G96 | 0.2+ | 0.3− |
| 2007 10 10 | 691 | 0.2+  | 0.0   | 2007 11 07 | 703 | 0.4+ | 0.2− | 2007 11 17 | G96 | 0.1− | 0.6− |
| 2007 10 15 | 703 | 0.6+  | 0.7+  | 2007 11 07 | 703 | 0.2+ | 0.0  | 2007 11 17 | G96 | 0.0  | 0.4− |
| 2007 10 15 | 703 | (2.1+ | 0.7−) | 2007 11 07 | 703 | 0.4− | 0.1+ | 2007 11 17 | G96 | 0.2+ | 0.3− |
| 2007 10 15 | 703 | 0.4+  | 1.7+  | 2007 11 09 | G96 | 0.3+ | 0.1− |            |     |      |      |
| 2007 10 15 | 703 | 0.3−  | 0.2−  | 2007 11 09 | G96 | 0.3+ | 0.1− |            |     |      |      |

**2007 TH<sub>390</sub> = 2002 CP<sub>273</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 265.46175  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.28572867 | $\omega$ | 327.52723 | −0.51838456 | −0.85495389 |     |   |
| $a$ | 2.2829698  | $\Omega$ | 153.68328 | +0.79309006 | −0.48861712 |     |   |
| $e$ | 0.0174934  | $i$      | 2.35299   | +0.31982120 | −0.17408951 |     |   |
| $P$ | 3.45       | $H$      | 18.3      | $G$         | 0.15        | $U$ | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 08 | 695 | 0.2+ | 0.2− | 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 10 14 | G96 | 0.2− | 0.1− |
| 2002 02 08 | 695 | 0.1− | 0.8− | 2007 10 08 | G96 | 0.2+ | 0.3− | 2007 10 19 | G96 | 0.9+ | 0.1+ |
| 2002 02 10 | 704 | 0.5− | 0.1+ | 2007 10 08 | G96 | 0.3− | 0.1+ | 2007 10 19 | G96 | 0.8+ | 0.4− |
| 2002 02 10 | 704 | 0.0  | 0.6+ | 2007 10 08 | G96 | 0.3+ | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.8− |
| 2002 02 10 | 704 | 0.4+ | 0.2+ | 2007 10 08 | G96 | 0.2− | 0.5− | 2007 10 19 | G96 | 0.7+ | 0.0  |
| 2007 09 12 | G96 | 0.0  | 0.2+ | 2007 10 14 | G96 | 0.9− | 0.0  | 2007 11 07 | 691 | 0.1− | 0.1+ |
| 2007 09 12 | G96 | 0.2− | 0.3+ | 2007 10 14 | G96 | 0.4− | 0.1+ | 2007 11 07 | 691 | 0.2+ | 0.4+ |
| 2007 09 12 | G96 | 0.3− | 0.4+ | 2007 10 14 | G96 | 0.1+ | 0.3− | 2007 11 07 | 691 | 0.3− | 0.2− |

**2007 TE<sub>391</sub> = 1998 ON<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 25.15455   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23821748 | $\omega$ | 153.75583 | +0.78126469 | −0.62250217 |
| $a$ | 2.5772327  | $\Omega$ | 244.82013 | +0.56337876 | +0.73495546 |
| $e$ | 0.2573876  | $i$      | 2.91397   | +0.26875614 | +0.26894519 |
| $P$ | 4.14       | $H$      | 16.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 07 27 | 910 | 0.0  | 0.1− | 2007 10 14 | G96 | 0.1+ | 0.2− | 2007 12 04 | 691 | 0.1− | 0.1+ |
| 1998 07 27 | 910 | 0.2+ | 0.0  | 2007 10 14 | G96 | 0.2+ | 0.1− | 2007 12 04 | G96 | 0.0  | 0.2− |
| 1998 07 27 | 910 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.2− | 0.1+ | 2007 12 04 | G96 | 0.4+ | 0.3− |
| 1998 08 01 | 910 | 0.2− | 0.1+ | 2007 10 19 | G96 | 0.3− | 0.1− | 2007 12 04 | 691 | 0.0  | 0.1+ |
| 1998 08 02 | 910 | 0.1+ | 0.3+ | 2007 10 19 | G96 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.4− |
| 1998 08 02 | 910 | 0.5− | 0.1+ | 2007 10 19 | G96 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2003 10 24 | 691 | 0.4− | 0.4+ | 2007 11 05 | G96 | 0.1− | 0.4+ | 2007 12 04 | G96 | 0.0  | 0.3− |
| 2003 10 24 | 691 | 0.2+ | 0.1− | 2007 11 05 | G96 | 0.1+ | 0.4− | 2007 12 05 | 704 | 0.6+ | 0.3+ |
| 2003 10 24 | 691 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2003 12 30 | 691 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.1− | 2007 12 05 | 704 | 0.6+ | 0.2+ |
| 2003 12 30 | 691 | 0.0  | 0.2+ | 2007 11 19 | G96 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.5+ | 0.5+ |
| 2003 12 30 | 691 | 0.0  | 0.0  | 2007 11 19 | G96 | 0.1+ | 0.2− | 2007 12 05 | 704 | 0.7− | 0.3+ |
| 2004 02 17 | 644 | 0.2+ | 0.1− | 2007 11 19 | G96 | 0.2− | 0.1− | 2007 12 16 | 691 | 0.2− | 0.1− |
| 2004 02 17 | 644 | 0.1+ | 0.2− | 2007 11 19 | G96 | 0.0  | 0.2− | 2007 12 16 | 691 | 0.2− | 0.0  |
| 2004 02 17 | 644 | 0.2+ | 0.5− | 2007 11 30 | D35 | 0.9+ | 0.1+ | 2007 12 16 | 691 | 0.3− | 0.2− |
| 2007 10 14 | G96 | 0.3+ | 0.1− | 2007 11 30 | D35 | 0.5+ | 0.2+ |            |     |      |      |
| 2007 10 14 | G96 | 0.0  | 0.4− | 2007 11 30 | D35 | 1.1+ | 0.2− |            |     |      |      |

**2007 TX<sub>391</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 13.52408   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18727504 | $\omega$ | 54.20777  | +0.97458620 | −0.22354319 |
| $a$ | 3.0256321  | $\Omega$ | 318.70398 | +0.19778857 | +0.88907609 |
| $e$ | 0.0129081  | $i$      | 1.25875   | +0.10517326 | +0.39946483 |
| $P$ | 5.26       | $H$      | 15.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 291 | 0.5−  | 0.2+  | 2006 06 22 | G96 | 0.7+ | 0.8+ | 2007 10 18 | G96 | 0.1+ | 0.2− |
| 2003 12 22 | 291 | 0.2−  | 0.2+  | 2006 06 22 | G96 | 0.2+ | 0.1− | 2007 10 21 | 691 | 0.2+ | 0.1+ |
| 2003 12 22 | 291 | 0.6−  | 0.4+  | 2006 06 22 | G96 | 0.4− | 0.3+ | 2007 10 21 | 691 | 0.2+ | 0.0  |
| 2004 01 28 | 691 | 0.6+  | 0.0   | 2006 06 22 | G96 | 0.9− | 0.4+ | 2007 10 21 | 691 | 0.3+ | 0.2+ |
| 2004 01 28 | 691 | 0.6+  | 0.3+  | 2007 10 04 | 691 | 0.1+ | 0.3+ | 2007 11 02 | 691 | 0.5− | 0.0  |
| 2004 01 28 | 691 | 0.3+  | 0.3+  | 2007 10 04 | 691 | 0.1− | 0.0  | 2007 11 02 | 691 | 0.2+ | 0.4+ |
| 2005 03 15 | G96 | 0.1+  | 0.3−  | 2007 10 04 | 691 | 0.3+ | 0.0  | 2007 11 02 | 691 | 0.0  | 0.0  |
| 2005 03 15 | G96 | 0.3−  | 0.4−  | 2007 10 15 | 703 | 0.7− | 0.1− | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 2005 03 15 | G96 | 0.5−  | 0.1+  | 2007 10 15 | 703 | 0.1− | 0.9− | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2005 03 15 | G96 | (2.3− | 1.2+) | 2007 10 15 | 703 | 0.6− | 0.0  | 2007 11 09 | 691 | 0.1− | 0.0  |
| 2005 04 12 | G96 | 0.2+  | 0.1+  | 2007 10 15 | 703 | 0.6− | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.0  |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 12 | G96 | 0.0  | 0.1+ | 2007 10 18 | G96 | 0.6+ | 0.2− | 2007 11 13 | 691 | 0.0  | 0.3+ |
| 2005 04 12 | G96 | 0.3+ | 0.1− | 2007 10 18 | G96 | 0.5+ | 0.3− | 2007 11 13 | 691 | 0.4+ | 0.4+ |
| 2005 04 12 | G96 | 0.0  | 0.1− | 2007 10 18 | G96 | 0.3+ | 0.4− |            |     |      |      |

2007 TC<sub>392</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.96545   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27377455 | $\omega$ | 233.63977 | +0.36216313   | +0.93093298 |
| <i>a</i> | 2.3489512  | $\Omega$ | 57.65790  | −0.83642312   | +0.34678791 |
| <i>e</i> | 0.1617390  | <i>i</i> | 3.18370   | −0.41138088   | +0.11446371 |
| <i>P</i> | 3.60       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 05 21 | 691 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.6+  | 0.2−  | 2007 10 19 | G96 | 0.3+ | 0.2+ |
| 1999 05 21 | 691 | 0.1− | 0.2+ | 2007 09 12 | G96 | 0.2+  | 0.2−  | 2007 10 19 | G96 | 0.1− | 0.3+ |
| 1999 05 21 | 691 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.1+  | 0.0   | 2007 10 19 | G96 | 0.3+ | 0.1+ |
| 2000 11 01 | 691 | 0.3− | 1.4− | 2007 10 08 | G96 | 0.4+  | 0.1−  | 2007 11 04 | 691 | 0.4− | 0.3+ |
| 2000 11 01 | 691 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.3+  | 0.2−  | 2007 11 04 | 691 | 0.4− | 0.4+ |
| 2000 11 01 | 691 | 0.7+ | 0.2+ | 2007 10 08 | G96 | 0.2+  | 0.1−  | 2007 11 04 | 691 | 0.4− | 0.2+ |
| 2004 12 11 | 691 | 0.1− | 0.0  | 2007 10 15 | 703 | 0.3−  | 0.4−  | 2007 11 09 | 691 | 0.2− | 0.5+ |
| 2004 12 11 | 691 | 0.2+ | 0.1+ | 2007 10 15 | 703 | 0.7−  | 0.3+  | 2007 11 09 | 691 | 0.2− | 0.1− |
| 2004 12 11 | 691 | 0.1− | 0.1+ | 2007 10 15 | 703 | (1.1− | 2.2−) | 2007 11 09 | 691 | 0.4− | 0.0  |
| 2007 09 12 | G96 | 0.4− | 0.4− | 2007 10 15 | 703 | 0.3−  | 0.2+  |            |     |      |      |
| 2007 09 12 | G96 | 0.4+ | 0.2− | 2007 10 19 | G96 | 0.4+  | 0.3+  |            |     |      |      |

2007 TD<sub>392</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.79624   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29213434 | $\omega$ | 328.32705 | +0.99709158   | −0.07027342 |
| <i>a</i> | 2.2494740  | $\Omega$ | 35.73907  | +0.07610275   | +0.89726838 |
| <i>e</i> | 0.0706813  | <i>i</i> | 2.89463   | +0.00409411   | +0.43585675 |
| <i>P</i> | 3.37       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 09 | 691 | 0.7+ | 1.0+ | 2007 10 07 | G96 | 0.3+ | 0.2+ | 2007 10 31 | 691 | 0.6− | 0.1+ |
| 2002 01 09 | 691 | 0.1+ | 1.1+ | 2007 10 07 | G96 | 0.5+ | 0.0  | 2007 10 31 | 691 | 0.2− | 0.1+ |
| 2002 01 09 | 691 | 0.2+ | 0.8+ | 2007 10 07 | G96 | 0.1+ | 0.2+ | 2007 11 02 | 691 | 0.1− | 0.4+ |
| 2004 12 21 | 691 | 0.0  | 1.2− | 2007 10 07 | G96 | 0.3+ | 0.1+ | 2007 11 02 | 691 | 0.1+ | 0.1− |
| 2004 12 21 | 691 | 0.2+ | 0.6− | 2007 10 15 | 703 | 0.5+ | 1.3+ | 2007 11 02 | 691 | 0.5− | 0.1+ |
| 2004 12 21 | 691 | 0.1+ | 1.0− | 2007 10 15 | 703 | 0.2+ | 0.8+ | 2007 11 04 | 691 | 0.3− | 0.1+ |
| 2006 04 02 | 691 | 0.1+ | 0.6+ | 2007 10 15 | 703 | 0.1− | 0.9− | 2007 11 04 | 691 | 0.4− | 0.2+ |
| 2006 04 02 | 691 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.7− | 0.7+ |
| 2006 04 02 | 691 | 0.0  | 0.2− | 2007 10 18 | G96 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.3+ | 0.8+ |
| 2006 05 25 | G96 | 0.2− | 0.4+ | 2007 10 18 | G96 | 0.3+ | 0.1+ | 2007 11 05 | 704 | 0.2+ | 0.2+ |
| 2006 05 25 | G96 | 0.2+ | 0.1+ | 2007 10 18 | G96 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.6+ | 1.1+ |
| 2006 05 25 | G96 | 0.1− | 0.5+ | 2007 10 18 | G96 | 0.4+ | 0.1+ | 2007 12 06 | G96 | 0.1− | 0.6− |
| 2006 05 25 | G96 | 0.2+ | 0.5+ | 2007 10 30 | G96 | 0.8+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.2− |
| 2007 09 12 | G96 | 0.4+ | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.1− | 2007 12 06 | G96 | 0.4+ | 0.0  |
| 2007 09 12 | G96 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.4+ | 0.1− | 2007 12 06 | G96 | 0.1+ | 0.4− |
| 2007 09 12 | G96 | 0.5+ | 0.4+ | 2007 10 30 | G96 | 0.1+ | 0.3− |            |     |      |      |
| 2007 09 12 | G96 | 0.2+ | 0.2+ | 2007 10 31 | 691 | 0.4− | 0.1+ |            |     |      |      |

2007 TF<sub>392</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 61.35632   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26906749 | $\omega$ | 137.02148 | +0.55555088   | +0.83146941 |
| <i>a</i> | 2.3762669  | $\Omega$ | 166.72495 | −0.76828338   | +0.51546605 |
| <i>e</i> | 0.1952243  | <i>i</i> | 1.16624   | −0.31796833   | +0.20725195 |
| <i>P</i> | 3.66       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 27 | 691 | 0.2+ | 0.2− | 2006 04 08 | G96 | 0.3− | 0.6+ | 2007 10 18 | G96 | 0.5+ | 0.0  |
| 1995 03 27 | 691 | 0.2+ | 0.3+ | 2006 04 08 | G96 | 0.4− | 0.5+ | 2007 10 18 | G96 | 0.5+ | 0.2− |
| 1995 03 27 | 691 | 0.3− | 0.3+ | 2007 09 11 | G96 | 0.5+ | 0.1+ | 2007 11 05 | G96 | 0.5+ | 0.2− |
| 2003 07 25 | 644 | 0.0  | 0.9+ | 2007 09 11 | G96 | 0.2+ | 0.1− | 2007 11 05 | G96 | 0.3+ | 0.1− |

## M.P.O. 129915

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 25 | 644 | 0.4− | 0.6+ | 2007 09 11 | G96 | 0.4+  | 0.1−  | 2007 11 05 | G96 | 0.2+ | 0.1− |
| 2003 07 25 | 644 | 0.3− | 0.8+ | 2007 09 11 | G96 | 0.6+  | 0.1−  | 2007 11 05 | G96 | 0.6+ | 0.2− |
| 2006 03 02 | 691 | 0.4+ | 0.3+ | 2007 10 04 | 691 | 0.6−  | 0.4+  | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 2006 03 02 | 691 | 0.3+ | 0.3+ | 2007 10 04 | 691 | 0.1−  | 0.1+  | 2007 11 09 | 691 | 0.1− | 0.1+ |
| 2006 03 02 | 691 | 0.3+ | 0.6+ | 2007 10 04 | 691 | 0.6−  | 0.6+  | 2007 11 09 | 691 | 0.3− | 0.1+ |
| 2006 03 23 | G96 | 0.3− | 0.5+ | 2007 10 15 | 703 | (1.6− | 1.3+) | 2007 12 06 | G96 | 0.6+ | 0.5+ |
| 2006 03 23 | G96 | 0.1+ | 0.1− | 2007 10 15 | 703 | 0.6−  | 1.4+  | 2007 12 06 | G96 | 0.2− | 0.2− |
| 2006 03 23 | G96 | 0.1− | 0.4+ | 2007 10 15 | 703 | 0.6−  | 1.2+  | 2007 12 06 | G96 | 0.9+ | 0.1+ |
| 2006 03 23 | G96 | 0.1− | 0.5+ | 2007 10 15 | 703 | 0.7−  | 0.2−  | 2007 12 06 | G96 | 0.2+ | 0.3+ |
| 2006 04 08 | G96 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.4+  | 0.1−  |            |     |      |      |
| 2006 04 08 | G96 | 0.3+ | 0.3+ | 2007 10 18 | G96 | 0.4+  | 0.4−  |            |     |      |      |

2007 TL<sub>392</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 65.62104   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18392434 | $\omega$ | 273.89807 | +0.51438225   | +0.85230022 |
| <i>a</i> | 3.0622683  | $\Omega$ | 27.71190  | −0.68338727   | +0.47420783 |
| <i>e</i> | 0.1432648  | <i>i</i> | 11.76819  | −0.51806635   | +0.22070630 |
| <i>P</i> | 5.36       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 11 | 691 | 0.5+ | 0.5− | 2001 07 24 | 644 | 0.3− | 0.5− | 2007 10 18 | G96 | 0.1− | 0.0  |
| 1991 10 11 | 691 | 0.2+ | 0.2+ | 2001 07 24 | 644 | 0.1− | 0.2+ | 2007 10 18 | G96 | 0.3+ | 0.1− |
| 1991 10 11 | 691 | 0.4− | 0.1− | 2001 07 24 | 644 | 0.5+ | 0.3+ | 2007 10 18 | G96 | 0.1− | 0.0  |
| 2000 04 26 | 691 | 0.1− | 0.5+ | 2007 10 13 | 703 | 0.2+ | 0.1− | 2007 11 01 | 691 | 0.3− | 0.2+ |
| 2000 04 26 | 691 | 0.1− | 0.6+ | 2007 10 13 | 703 | 0.1+ | 0.8− | 2007 11 01 | 691 | 0.3− | 0.0  |
| 2000 04 26 | 691 | 0.1− | 0.3+ | 2007 10 13 | 703 | 0.4− | 0.1+ | 2007 11 01 | 691 | 0.1+ | 0.3+ |
| 2000 05 01 | 691 | 0.4+ | 0.4+ | 2007 10 13 | 703 | 0.1+ | 1.4+ | 2007 11 17 | G96 | 0.2+ | 0.3− |
| 2000 05 01 | 691 | 0.0  | 0.2− | 2007 10 15 | 703 | 1.1+ | 0.3+ | 2007 11 17 | G96 | 0.2− | 0.2− |
| 2000 05 01 | 691 | 0.2− | 0.1+ | 2007 10 15 | 703 | 1.0− | 0.2+ | 2007 11 17 | G96 | 0.4+ | 0.0  |
| 2000 05 07 | 691 | 0.3+ | 0.5− | 2007 10 15 | 703 | 0.4− | 0.1− | 2007 11 17 | G96 | 0.6− | 0.0  |
| 2000 05 07 | 691 | 0.3+ | 0.2− | 2007 10 15 | 703 | 0.3− | 0.2+ |            |     |      |      |
| 2000 05 07 | 691 | 0.4+ | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.1+ |            |     |      |      |

2007 TO<sub>393</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 339.95490  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22254322 | $\omega$ | 318.15336 | +0.67476558   | −0.72663090 |
| <i>a</i> | 2.6968687  | $\Omega$ | 88.97485  | +0.70679228   | +0.58581815 |
| <i>e</i> | 0.0390799  | <i>i</i> | 7.42597   | +0.21245253   | +0.35892147 |
| <i>P</i> | 4.43       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 22 | 691 | 0.2− | 0.1+ | 2004 01 12 | 644 | 0.2− | 0.2+ | 2007 10 14 | G96 | 0.4− | 0.3− |
| 2001 03 22 | 691 | 0.0  | 0.0  | 2004 01 12 | 644 | 0.2+ | 0.5+ | 2007 10 14 | G96 | 0.4− | 0.0  |
| 2001 03 22 | 691 | 0.1− | 0.2+ | 2004 01 12 | 644 | 0.2− | 0.5+ | 2007 10 14 | G96 | 0.1− | 0.3− |
| 2002 08 11 | 644 | 0.2− | 0.3+ | 2005 03 16 | 703 | 0.5− | 0.8+ | 2007 10 19 | 703 | 1.1+ | 1.0+ |
| 2002 08 11 | 644 | 0.3+ | 0.6+ | 2005 03 16 | 703 | 0.4+ | 0.4+ | 2007 10 19 | 703 | 0.0  | 0.4− |
| 2002 08 11 | 644 | 0.6− | 0.4+ | 2005 03 16 | 703 | 0.1+ | 0.3+ | 2007 10 19 | 703 | 1.1+ | 0.9+ |
| 2002 08 16 | 644 | 0.0  | 0.0  | 2005 03 16 | 703 | 1.2+ | 0.4+ | 2007 10 19 | 703 | 0.1+ | 0.4+ |
| 2002 08 16 | 644 | 0.0  | 0.2+ | 2007 09 23 | 106 | 0.1− | 0.3+ | 2007 10 21 | G96 | 0.4− | 0.3− |
| 2002 08 16 | 644 | 0.0  | 0.2− | 2007 09 23 | 106 | 0.5− | 0.1− | 2007 10 21 | G96 | 0.2− | 0.0  |
| 2002 08 16 | 644 | 0.2+ | 0.4+ | 2007 09 23 | 106 | 0.1+ | 0.3− | 2007 10 21 | G96 | 0.0  | 0.2− |
| 2002 08 16 | 644 | 0.2− | 0.1− | 2007 09 23 | 106 | 0.4− | 0.2+ | 2007 10 21 | G96 | 0.3− | 0.0  |
| 2002 08 16 | 644 | 0.0  | 0.5+ | 2007 10 14 | G96 | 0.2− | 0.2− |            |     |      |      |

2007 TQ<sub>393</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 181.01485  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19013991 | $\omega$ | 334.02276 | −0.81915578   | +0.53779604 |
| <i>a</i> | 2.9951634  | $\Omega$ | 239.94490 | −0.47789542   | −0.83218434 |
| <i>e</i> | 0.0391628  | <i>i</i> | 13.31898  | −0.31717468   | −0.13507275 |
| <i>P</i> | 5.18       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 2  |

## M.P.O. 129916

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 30 | 644 | 0.2+ | 0.0  | 2006 05 08 | G96 | 0.0  | 0.1+ | 2007 10 14 | 703 | 0.6+ | 0.2− |
| 2001 07 30 | 644 | 0.2− | 0.5+ | 2006 05 08 | G96 | 0.0  | 0.1+ | 2007 10 14 | 703 | 0.9− | 0.7− |
| 2001 07 30 | 644 | 0.4− | 0.2+ | 2006 05 08 | G96 | 0.1+ | 0.0  | 2007 10 19 | 691 | 0.2+ | 0.2+ |
| 2002 11 28 | 699 | 0.2+ | 0.3+ | 2006 05 08 | G96 | 0.0  | 0.1− | 2007 10 19 | 691 | 0.1+ | 0.2− |
| 2002 11 28 | 699 | 0.0  | 0.5+ | 2007 09 25 | G96 | 0.3+ | 0.5− | 2007 10 19 | 691 | 0.3+ | 0.4− |
| 2002 11 28 | 699 | 0.3+ | 0.7+ | 2007 09 25 | G96 | 0.2+ | 0.0  | 2007 11 02 | 704 | 0.3+ | 0.4+ |
| 2002 11 28 | 699 | 0.6− | 0.8+ | 2007 09 25 | G96 | 0.1+ | 0.6− | 2007 11 02 | 704 | 1.1+ | 0.1+ |
| 2005 05 19 | 644 | 0.2+ | 0.5+ | 2007 09 25 | G96 | 0.1+ | 0.7− | 2007 11 02 | 704 | 0.0  | 0.2− |
| 2005 05 19 | 644 | 0.1+ | 0.4+ | 2007 10 14 | 703 | 0.1+ | 0.0  | 2007 11 02 | 704 | 1.4− | 1.6+ |
| 2005 05 19 | 644 | 0.1− | 0.4+ | 2007 10 14 | 703 | 0.5− | 0.2− | 2007 11 02 | 704 | 0.5− | 0.2+ |

**2007 TW<sub>397</sub> = 2003 TU<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 184.70572  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26449498 | $\omega$ | 302.68355 | −0.82708132   | +0.55448185 |
| <i>a</i> | 2.4035755  | $\Omega$ | 271.14975 | −0.47992033   | −0.78195045 |
| <i>e</i> | 0.1373555  | <i>i</i> | 5.28673   | −0.29259694   | −0.28478654 |
| <i>P</i> | 3.73       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 06 04 | 691 | 0.3+ | 0.0  | 2003 10 16 | 691 | 0.6+ | 0.2− | 2007 10 19 | 691 | 0.1+ | 0.3+ |
| 1995 06 04 | 691 | 0.3− | 0.3+ | 2003 10 16 | 691 | 0.2− | 0.2− | 2007 10 23 | 691 | 0.5− | 0.4+ |
| 1995 06 04 | 691 | 0.3− | 0.0  | 2007 10 07 | 691 | 1.1− | 0.5− | 2007 10 23 | 691 | 0.5+ | 0.2− |
| 1995 07 02 | 691 | 0.1+ | 0.4+ | 2007 10 07 | 691 | 0.4− | 0.3+ | 2007 10 23 | 691 | 0.0  | 0.9+ |
| 1995 07 02 | 691 | 0.1+ | 0.3− | 2007 10 07 | 691 | 0.1− | 0.1+ | 2007 11 08 | G96 | 1.2+ | 0.2− |
| 1995 07 02 | 691 | 0.2− | 0.0  | 2007 10 15 | 691 | 0.2+ | 0.3+ | 2007 11 08 | G96 | 0.6+ | 0.5− |
| 2003 10 01 | 691 | 0.2+ | 0.3− | 2007 10 15 | 691 | 0.2+ | 0.0  | 2007 11 08 | G96 | 0.7+ | 0.3− |
| 2003 10 01 | 691 | 0.3+ | 0.4− | 2007 10 15 | 691 | 0.2− | 0.2+ | 2007 11 08 | G96 | 0.8+ | 0.2− |
| 2003 10 01 | 691 | 0.4− | 0.0  | 2007 10 19 | 691 | 0.0  | 0.3− |            |     |      |      |
| 2003 10 16 | 691 | 0.1+ | 0.1− | 2007 10 19 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2007 TY<sub>397</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 216.25571  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17452880 | $\omega$ | 291.40520 | −0.97777406   | +0.18305749 |
| <i>a</i> | 3.1712074  | $\Omega$ | 259.25612 | −0.13207182   | −0.91640925 |
| <i>e</i> | 0.1204122  | <i>i</i> | 5.97177   | −0.16283403   | −0.35592702 |
| <i>P</i> | 5.65       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 31 | 691 | 0.1+ | 0.6− | 2007 09 25 | G96 | 0.4+ | 0.3+ | 2007 11 04 | 691 | 0.2− | 0.1+ |
| 1996 12 31 | 691 | 0.1+ | 0.6− | 2007 09 25 | G96 | 0.8+ | 0.2− | 2007 11 08 | G96 | 0.2− | 0.0  |
| 1996 12 31 | 691 | 0.3+ | 0.6− | 2007 09 25 | G96 | 0.2+ | 0.4− | 2007 11 08 | G96 | 0.4+ | 0.1− |
| 1998 03 03 | 691 | 0.2− | 0.3+ | 2007 10 15 | 691 | 0.0  | 0.3+ | 2007 11 08 | G96 | 0.1+ | 0.1− |
| 1998 03 03 | 691 | 0.0  | 0.2+ | 2007 10 15 | 691 | 0.2− | 0.4+ | 2007 11 08 | G96 | 0.6+ | 0.2− |
| 1998 03 03 | 691 | 0.3+ | 0.3+ | 2007 10 15 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.5− | 0.2+ |
| 2004 04 12 | 703 | 1.5− | 0.9− | 2007 10 19 | 691 | 0.5− | 0.4+ | 2007 11 14 | 691 | 0.1− | 0.2− |
| 2004 04 12 | 703 | 0.9+ | 0.5+ | 2007 10 19 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 691 | 0.5− | 0.1− |
| 2004 04 12 | 703 | 0.3− | 1.0− | 2007 10 19 | 691 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.3− | 0.3+ |
| 2004 04 12 | 703 | 0.9+ | 1.2+ | 2007 11 04 | 691 | 0.4− | 0.0  | 2007 11 18 | 691 | 0.7− | 0.1− |
| 2007 09 25 | G96 | 1.0+ | 0.3− | 2007 11 04 | 691 | 0.2− | 0.5+ | 2007 11 18 | 691 | 0.1− | 0.0  |

**2007 TF<sub>399</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 60.37665   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17521926 | $\omega$ | 289.48049 | +0.74351865   | +0.62608430 |
| <i>a</i> | 3.1628710  | $\Omega$ | 33.04977  | −0.32586496   | +0.64601734 |
| <i>e</i> | 0.1628014  | <i>i</i> | 25.51826  | −0.58394525   | +0.43666927 |
| <i>P</i> | 5.63       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 15 | 644 | 0.2− | 0.2− | 2007 10 15 | 691 | 0.7− | 0.2− | 2007 11 07 | 704 | (0.3+ | 2.2+) |
| 2001 10 15 | 644 | 0.2− | 0.3− | 2007 10 19 | 691 | 0.2− | 0.3− | 2007 11 07 | 703 | 0.5+  | 0.0   |
| 2001 10 15 | 644 | 0.6− | 0.1− | 2007 10 19 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.5+  | 0.3−  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |       |            |     |      |      |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|------|------|
| 2001 10 23 | 644 | 0.4+ | 0.3+ | 2007 10 19 | 691 | 0.6− | 0.5+  | 2007 11 07 | 703 | 1.2− | 0.5+ |
| 2001 10 23 | 644 | 0.3+ | 0.4+ | 2007 11 02 | 691 | 1.5− | 0.3+  | 2007 11 07 | 703 | 0.2− | 1.0+ |
| 2001 10 23 | 644 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.2+ | 0.1−  | 2007 11 14 | 691 | 0.3+ | 0.1− |
| 2002 02 07 | 695 | 0.4+ | 0.3− | 2007 11 02 | 691 | 0.1+ | 0.2−  | 2007 11 14 | 691 | 0.3+ | 0.3− |
| 2002 02 07 | 695 | 1.1+ | 0.7− | 2007 11 04 | 691 | 0.5+ | 0.1+  | 2007 11 14 | 691 | 0.2− | 0.1+ |
| 2007 10 04 | 691 | 0.1− | 0.3− | 2007 11 04 | 691 | 0.2+ | 0.1−  | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2007 10 04 | 691 | 0.0  | 0.2− | 2007 11 04 | 691 | 0.4+ | 0.2−  | 2007 11 18 | 691 | 0.3− | 0.0  |
| 2007 10 04 | 691 | 0.1+ | 0.2+ | 2007 11 07 | 704 | (0.0 | 2.3+) | 2007 11 18 | 691 | 0.2+ | 0.1− |
| 2007 10 15 | 691 | 0.1+ | 0.3− | 2007 11 07 | 704 | 0.3− | 1.0+  |            |     |      |      |
| 2007 10 15 | 691 | 0.0  | 0.1− | 2007 11 07 | 704 | 1.3+ | 0.5−  |            |     |      |      |

**2007 TW<sub>399</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 50.73506   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18488855 | $\omega$ | 103.65689 | +0.94225800   | +0.31024261 |
| <i>a</i> | 3.0516124  | $\Omega$ | 238.40276 | −0.33468377   | +0.88552493 |
| <i>e</i> | 0.1018183  | <i>i</i> | 8.51331   | +0.01168870   | +0.34582527 |
| <i>P</i> | 5.33       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 645 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.9− | 0.3− |
| 2001 10 15 | 645 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.1− | 1.3+ | 2007 11 07 | 703 | 0.5+ | 0.5+ |
| 2004 02 18 | 691 | 0.1+ | 0.1− | 2007 10 19 | 691 | 0.1+ | 0.3+ | 2007 11 07 | 703 | 0.5− | 0.1+ |
| 2004 02 18 | 691 | 0.1− | 0.4+ | 2007 10 19 | 691 | 0.2− | 0.2+ | 2007 11 07 | 703 | 1.0− | 0.8− |
| 2004 02 18 | 691 | 0.2+ | 0.3+ | 2007 10 19 | 691 | 0.2− | 0.3+ | 2007 11 18 | G96 | 0.1− | 0.4− |
| 2006 05 30 | 691 | 0.3+ | 0.4+ | 2007 11 02 | G96 | 0.4+ | 0.0  | 2007 11 18 | G96 | 0.8+ | 0.2− |
| 2006 05 30 | 691 | 0.3− | 0.1− | 2007 11 02 | G96 | 0.6+ | 0.0  | 2007 11 18 | G96 | 0.4− | 0.2− |
| 2006 05 30 | 691 | 0.1− | 0.2+ | 2007 11 02 | G96 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.2+ | 0.5− |
| 2007 10 15 | 691 | 0.1+ | 0.2+ | 2007 11 02 | G96 | 0.6+ | 0.1− |            |     |      |      |

**2007 TB<sub>401</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 51.50221   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23290031 | $\omega$ | 127.48374 | +0.90344692   | +0.42717943 |
| <i>a</i> | 2.6163108  | $\Omega$ | 207.28238 | −0.41397049   | +0.84744295 |
| <i>e</i> | 0.2852751  | <i>i</i> | 4.51393   | −0.11140960   | +0.31521132 |
| <i>P</i> | 4.23       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 02 | G96 | 0.1+ | 0.6− | 2007 10 14 | G96 | 0.2− | 0.0  | 2007 11 03 | 691 | 0.1− | 0.4+ |
| 2006 04 02 | G96 | 0.9+ | 0.3+ | 2007 10 20 | G96 | 0.3+ | 0.3+ | 2007 11 03 | 691 | 0.2− | 0.2+ |
| 2006 04 02 | G96 | 0.3− | 0.2+ | 2007 10 20 | G96 | 0.1− | 0.1+ | 2007 11 12 | 704 | 0.3+ | 0.5+ |
| 2006 04 02 | G96 | 0.9− | 0.4+ | 2007 10 20 | G96 | 0.3+ | 0.1− | 2007 11 12 | 704 | 0.5+ | 0.5− |
| 2006 05 05 | 691 | 0.0  | 0.1− | 2007 10 20 | G96 | 0.5+ | 0.1+ | 2007 11 12 | 704 | 0.5− | 0.1+ |
| 2006 05 05 | 691 | 0.3− | 0.2− | 2007 10 24 | G96 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.1− | 0.3− |
| 2006 05 05 | 691 | 0.2− | 0.3− | 2007 10 24 | G96 | 0.3− | 0.6− | 2007 11 18 | G96 | 0.1− | 0.4− |
| 2006 05 21 | 691 | 0.1+ | 0.2+ | 2007 10 24 | G96 | 0.7+ | 0.2− | 2007 11 18 | G96 | 0.4+ | 0.2− |
| 2006 05 21 | 691 | 0.2+ | 0.1+ | 2007 10 24 | G96 | 0.2+ | 0.4+ | 2007 11 18 | G96 | 0.2+ | 0.3− |
| 2006 05 21 | 691 | 0.3+ | 0.1+ | 2007 10 30 | 691 | 0.1− | 0.2+ | 2007 11 20 | A50 | 0.3+ | 0.3+ |
| 2007 10 14 | G96 | 0.1− | 0.2− | 2007 10 30 | 691 | 0.0  | 0.4+ | 2007 11 20 | A50 | 0.7− | 0.6+ |
| 2007 10 14 | G96 | 0.5− | 0.3− | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 11 20 | A50 | 0.1+ | 0.3− |
| 2007 10 14 | G96 | 0.4− | 0.4− | 2007 11 03 | 691 | 0.6+ | 0.7+ | 2007 11 20 | A50 | 1.1− | 0.7− |

**2007 TQ<sub>403</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 357.24945  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21578489 | $\omega$ | 138.73546 | +0.71790161   | −0.69393401 |
| <i>a</i> | 2.7528890  | $\Omega$ | 265.29923 | +0.62322078   | +0.67613839 |
| <i>e</i> | 0.1051332  | <i>i</i> | 3.18847   | +0.31018243   | +0.24757316 |
| <i>P</i> | 4.57       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.6+ | 0.0  | 2003 12 19 | 691 | 0.2+ | 0.2+ | 2007 10 20 | 703 | 0.4+ | 0.2+ |
| 2002 09 13 | 644 | 0.5+ | 0.1+ | 2007 10 11 | 691 | 0.0  | 0.0  | 2007 10 20 | 703 | 1.2+ | 0.6− |
| 2002 09 13 | 644 | 0.5+ | 0.2− | 2007 10 11 | 691 | 0.3+ | 0.1+ | 2007 10 20 | 703 | 0.6+ | 0.3− |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 01 | 246 | 0.1+ | 0.8+ | 2007 10 11 | 691 | 0.4- | 0.0  | 2007 11 03 | 691 | 0.7- | 0.1- |
| 2002 10 01 | 246 | 0.3- | 0.2+ | 2007 10 15 | 691 | 1.0- | 0.5- | 2007 11 03 | 691 | 0.3- | 0.3- |
| 2002 10 01 | 246 | 0.8- | 0.5+ | 2007 10 15 | 691 | 0.4- | 0.2+ | 2007 11 03 | 691 | 0.3- | 0.1- |
| 2002 10 01 | 246 | 0.4- | 0.1- | 2007 10 15 | 691 | 0.7- | 0.4- | 2007 11 07 | 703 | 0.2- | 0.2+ |
| 2002 10 01 | 246 | 0.1+ | 0.4+ | 2007 10 19 | 691 | 0.9+ | 0.0  | 2007 11 07 | 703 | 0.7+ | 0.4+ |
| 2002 10 01 | 246 | 0.8- | 0.4- | 2007 10 19 | 691 | 0.2- | 0.2- | 2007 11 07 | 703 | 0.2+ | 0.8- |
| 2003 12 19 | 691 | 0.0  | 0.3+ | 2007 10 19 | 691 | 0.1- | 0.0  | 2007 11 07 | 703 | 0.7+ | 1.2+ |
| 2003 12 19 | 691 | 0.1+ | 0.4+ | 2007 10 20 | 703 | 0.5- | 0.5- |            |     |      |      |

2007 TM<sub>404</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 39.08770   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23253344 | $\omega$ | 131.47975 | +0.98112732   | +0.05593027 |
| <i>a</i> | 2.6190620  | $\Omega$ | 226.23062 | -0.09715521   | +0.97023828 |
| <i>e</i> | 0.0767303  | <i>i</i> | 14.85189  | +0.16718267   | +0.23560451 |
| <i>P</i> | 4.24       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 18 | 691 | 0.1+  | 0.0   | 2007 10 20 | 703 | 0.9- | 0.4- | 2007 11 06 | 704 | 0.3+  | 0.4-  |
| 2003 11 18 | 691 | 0.0   | 0.1-  | 2007 10 30 | 691 | 0.2- | 0.2- | 2007 11 06 | 704 | 0.7+  | 0.6+  |
| 2003 11 18 | 691 | 0.0   | 0.1-  | 2007 10 30 | 691 | 0.3- | 0.1- | 2007 11 06 | 704 | 0.7+  | 0.2-  |
| 2003 12 28 | 691 | 0.0   | 0.2-  | 2007 10 30 | 691 | 0.4- | 0.2- | 2007 11 14 | 704 | 0.4+  | 0.4+  |
| 2003 12 28 | 691 | 0.2-  | 0.3-  | 2007 10 30 | 703 | 0.2- | 0.3+ | 2007 11 14 | 704 | 0.2+  | 0.9+  |
| 2003 12 28 | 691 | 0.2+  | 0.1-  | 2007 10 30 | 703 | 0.4- | 0.6+ | 2007 11 14 | 704 | 0.8+  | 0.9+  |
| 2004 01 13 | 644 | 0.4-  | 1.0+  | 2007 10 30 | 703 | 1.0+ | 1.4+ | 2007 11 14 | 704 | 0.3+  | 0.8+  |
| 2004 01 13 | 644 | 0.3-  | 0.9+  | 2007 10 30 | 703 | 0.8+ | 0.2- | 2007 11 14 | 704 | 0.6+  | 0.2+  |
| 2004 01 13 | 644 | 0.1+  | 0.7+  | 2007 10 30 | G96 | 0.3- | 0.4- | 2007 11 17 | 703 | 0.2-  | 0.1-  |
| 2007 10 15 | 703 | 0.1-  | 0.3+  | 2007 10 30 | G96 | 0.1- | 0.4- | 2007 11 17 | 703 | 0.3-  | 0.8-  |
| 2007 10 15 | 703 | 0.3-  | 0.5-  | 2007 10 30 | G96 | 0.5+ | 0.4- | 2007 11 17 | 703 | 0.1+  | 0.3+  |
| 2007 10 15 | 703 | 0.4-  | 0.3-  | 2007 10 30 | G96 | 0.2+ | 0.5- | 2007 11 17 | 703 | 0.5-  | 0.3-  |
| 2007 10 15 | 703 | 0.2-  | 0.0   | 2007 11 04 | G96 | 0.1+ | 0.2- | 2007 12 05 | 704 | 1.0+  | 0.1+  |
| 2007 10 15 | 691 | 0.1-  | 0.1-  | 2007 11 04 | G96 | 0.2+ | 0.3- | 2007 12 05 | 703 | 1.0-  | 0.6-  |
| 2007 10 15 | 691 | 0.1-  | 0.2-  | 2007 11 04 | G96 | 0.1- | 0.2- | 2007 12 05 | 704 | (1.7+ | 0.0 ) |
| 2007 10 15 | 691 | 0.1+  | 0.0   | 2007 11 04 | G96 | 0.1+ | 0.3- | 2007 12 05 | 703 | 0.8+  | 0.3+  |
| 2007 10 19 | 691 | 0.2+  | 0.0   | 2007 11 04 | G96 | 0.3+ | 0.2- | 2007 12 05 | 703 | 0.7-  | 0.0   |
| 2007 10 19 | 691 | 0.3-  | 0.1-  | 2007 11 04 | G96 | 0.1+ | 0.1- | 2007 12 05 | 704 | (1.5+ | 0.1-) |
| 2007 10 19 | 691 | 0.3-  | 0.8+  | 2007 11 04 | G96 | 0.1- | 0.2- | 2007 12 05 | 703 | 0.0   | 0.1-  |
| 2007 10 20 | 703 | 0.4-  | 0.3-  | 2007 11 04 | G96 | 0.1- | 0.2- | 2007 12 05 | 704 | 1.0+  | 0.2-  |
| 2007 10 20 | 703 | (0.9- | 1.8-) | 2007 11 06 | 704 | 0.2+ | 0.1- | 2007 12 05 | 704 | 1.0+  | 0.8+  |
| 2007 10 20 | 703 | 0.1+  | 0.2+  | 2007 11 06 | 704 | 0.3+ | 1.0+ |            |     |       |       |

2007 TS<sub>404</sub> = 2003 WO<sub>114</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 2.36760    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.24354360 | $\omega$ | 29.20532 | +0.77062976   | -0.63714888 |
| <i>a</i> | 2.5395196  | $\Omega$ | 10.40501 | +0.56973950   | +0.67961215 |
| <i>e</i> | 0.1799768  | <i>i</i> | 4.15317  | +0.28552878   | +0.36355004 |
| <i>P</i> | 4.05       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 20 | 691 | 0.1+  | 0.1-  | 2007 10 07 | 691 | 0.1- | 0.0  | 2007 11 07 | 704 | 0.1+ | 0.7+ |
| 2003 11 20 | 691 | 0.0   | 0.1-  | 2007 10 15 | 691 | 0.1- | 0.2- | 2007 11 07 | 703 | 0.9- | 0.7+ |
| 2003 11 20 | 704 | (1.4- | 2.6+) | 2007 10 15 | 691 | 0.0  | 0.0  | 2007 11 07 | 704 | 0.1- | 0.7+ |
| 2003 11 20 | 704 | (1.7- | 1.7+) | 2007 10 15 | 691 | 0.3+ | 0.4+ | 2007 11 07 | 703 | 0.9- | 0.1+ |
| 2003 11 20 | 691 | 0.0   | 0.1-  | 2007 10 19 | 691 | 0.2+ | 0.4- | 2007 11 07 | 704 | 0.7+ | 0.0  |
| 2003 11 20 | 704 | (1.4- | 1.9+) | 2007 10 19 | 691 | 0.1- | 0.3- | 2007 11 07 | 703 | 1.2+ | 0.2+ |
| 2003 11 24 | 704 | (1.6+ | 0.0 ) | 2007 10 19 | 691 | 0.1- | 0.3- | 2007 11 14 | 704 | 0.7+ | 0.6- |
| 2003 11 24 | 704 | 1.1+  | 0.1-  | 2007 11 01 | D35 | 0.2- | 0.3+ | 2007 11 14 | 704 | 0.0  | 1.3+ |
| 2003 11 24 | 704 | (2.4+ | 0.5-) | 2007 11 01 | D35 | 0.3+ | 0.2+ | 2007 11 14 | 704 | 0.3+ | 0.9+ |
| 2003 11 24 | 704 | 1.3+  | 0.8+  | 2007 11 01 | D35 | 0.2+ | 0.7- | 2007 11 14 | 704 | 2.0+ | 0.4+ |
| 2003 12 01 | 691 | 0.2-  | 0.0   | 2007 11 02 | 691 | 0.2- | 0.0  | 2007 11 14 | 704 | 0.1+ | 0.7+ |
| 2003 12 01 | 691 | 0.2-  | 0.2-  | 2007 11 02 | 691 | 0.6- | 0.3+ | 2007 11 19 | 691 | 0.1- | 0.1- |
| 2003 12 01 | 691 | 0.2-  | 0.1+  | 2007 11 02 | 691 | 0.4+ | 0.0  | 2007 11 19 | 691 | 0.3- | 0.3- |
| 2007 10 07 | 691 | 0.0   | 0.1+  | 2007 11 07 | 703 | 0.5- | 1.1- | 2007 11 19 | 691 | 0.2- | 0.2- |
| 2007 10 07 | 691 | 0.1-  | 0.0   | 2007 11 07 | 704 | 0.3+ | 0.4+ |            |     |      |      |

## M.P.O. 129917

2007 TO<sub>405</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 50.82745   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17849320 | $\omega$ | 311.97071 | +0.97622731   | +0.18188123 |
| <i>a</i> | 3.1240760  | $\Omega$ | 37.99366  | -0.09328845   | +0.84354561 |
| <i>e</i> | 0.0719770  | <i>i</i> | 11.04162  | -0.19564639   | +0.50532170 |
| <i>P</i> | 5.52       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 08 | 644 | 0.2- | 0.1+ | 2007 10 15 | 691 | 0.3- | 0.1- | 2007 11 07 | 703 | 0.6- | 0.1- |
| 2001 10 08 | 644 | 0.1- | 0.4+ | 2007 10 19 | 691 | 0.1+ | 0.4+ | 2007 11 07 | 703 | 0.3- | 0.4+ |
| 2001 10 08 | 644 | 0.1- | 0.2+ | 2007 10 19 | 691 | 0.1- | 0.1- | 2007 11 07 | 703 | 0.1+ | 1.1+ |
| 2002 02 07 | 695 | 0.7- | 0.3- | 2007 10 19 | 691 | 0.4- | 0.1- | 2007 11 07 | 703 | 0.4+ | 0.3- |
| 2002 02 07 | 695 | 1.0+ | 0.3- | 2007 10 31 | G96 | 0.3+ | 0.7- | 2007 11 19 | 691 | 0.2+ | 0.1- |
| 2007 09 14 | G96 | 0.7+ | 0.2- | 2007 10 31 | G96 | 0.5+ | 0.2- | 2007 11 19 | 691 | 0.2+ | 0.1+ |
| 2007 09 14 | G96 | 0.5+ | 0.1- | 2007 10 31 | G96 | 0.8+ | 0.6- | 2007 11 19 | 691 | 0.2- | 0.1+ |
| 2007 09 14 | G96 | 0.3+ | 0.2- | 2007 10 31 | G96 | 0.5+ | 0.3- | 2007 12 05 | 691 | 0.0  | 0.1+ |
| 2007 09 14 | G96 | 0.6+ | 0.4- | 2007 11 02 | 691 | 0.6- | 0.1- | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2007 10 15 | 691 | 0.2+ | 0.3+ | 2007 11 02 | 691 | 0.3- | 0.4- | 2007 12 05 | 691 | 0.2+ | 0.4+ |
| 2007 10 15 | 691 | 0.4+ | 0.1+ | 2007 11 02 | 691 | 0.1- | 0.3- |            |     |      |      |

2007 TT<sub>405</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 96.33289   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22960008 | $\omega$ | 241.28403 | +0.22187085   | +0.96211700 |
| <i>a</i> | 2.6413221  | $\Omega$ | 42.50769  | -0.79268772   | +0.27259788 |
| <i>e</i> | 0.2593047  | <i>i</i> | 13.56163  | -0.56781995   | -0.00461287 |
| <i>P</i> | 4.29       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 05 | G96 | 0.1+ | 0.2+ | 2007 10 15 | 691 | 0.0  | 0.2- | 2007 10 31 | G96 | 0.5+ | 0.4- |
| 2006 03 05 | G96 | 0.0  | 0.1- | 2007 10 15 | 691 | 0.5- | 0.2+ | 2007 10 31 | 691 | 0.0  | 0.2+ |
| 2006 03 05 | G96 | 0.3+ | 0.1+ | 2007 10 15 | 691 | 0.3+ | 0.1+ | 2007 11 04 | 691 | 0.2+ | 0.0  |
| 2006 03 05 | G96 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.2- | 0.1- | 2007 11 04 | 691 | 0.3+ | 0.2- |
| 2006 06 21 | 644 | 0.1- | 0.1+ | 2007 10 19 | 691 | 0.4+ | 0.4+ | 2007 11 04 | 691 | 0.1+ | 0.2- |
| 2006 06 21 | 644 | 0.0  | 0.1- | 2007 10 19 | 691 | 0.8- | 0.9+ | 2007 11 08 | 691 | 0.1- | 0.4- |
| 2006 06 21 | 644 | 0.0  | 0.1+ | 2007 10 31 | 691 | 0.1- | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.7+ |
| 2007 09 10 | G96 | 0.1+ | 0.6- | 2007 10 31 | G96 | 0.6+ | 0.4- | 2007 11 08 | 691 | 0.1+ | 0.1- |
| 2007 09 10 | G96 | 0.7+ | 0.3- | 2007 10 31 | G96 | 0.6+ | 0.6- | 2007 11 19 | 691 | 0.1- | 0.4- |
| 2007 09 10 | G96 | 0.4+ | 0.2- | 2007 10 31 | 691 | 0.1- | 0.1+ | 2007 11 19 | 691 | 0.5- | 0.2- |
| 2007 09 10 | G96 | 0.5+ | 0.5- | 2007 10 31 | G96 | 0.5+ | 0.5- | 2007 11 19 | 691 | 0.0  | 0.0  |

2007 TU<sub>405</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 45.62691   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21123243 | $\omega$ | 105.28464 | +0.90123314   | +0.41978367 |
| <i>a</i> | 2.7923016  | $\Omega$ | 230.02052 | -0.43152466   | +0.84675049 |
| <i>e</i> | 0.2514325  | <i>i</i> | 8.06607   | -0.03956371   | +0.32679547 |
| <i>P</i> | 4.67       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 12 | 644 | 0.3- | 0.9- | 2007 10 19 | 691 | 0.1- | 0.2+ | 2007 11 14 | 691 | 0.3- | 0.0  |
| 2002 09 12 | 644 | 0.1- | 0.5- | 2007 10 30 | 691 | 0.3- | 0.0  | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 2002 09 12 | 644 | 0.2- | 0.3- | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2002 10 05 | 644 | 0.1+ | 0.7+ | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 1.0+ | 0.3+ |
| 2002 10 05 | 644 | 0.5+ | 0.5+ | 2007 10 30 | G96 | 0.0  | 0.1- | 2007 11 15 | 704 | 0.2+ | 1.0- |
| 2002 10 05 | 644 | 0.0  | 0.6+ | 2007 10 30 | G96 | 0.5+ | 0.3- | 2007 11 15 | 704 | 0.5+ | 0.5+ |
| 2006 06 16 | 691 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.4- | 2007 11 15 | 704 | 0.1+ | 0.2+ |
| 2006 06 16 | 691 | 0.2- | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.3- | 2007 11 15 | 704 | 0.2+ | 1.0- |
| 2006 06 16 | 691 | 0.2+ | 0.3+ | 2007 11 05 | 704 | 0.4+ | 0.3+ | 2007 12 03 | 703 | 0.5+ | 0.3- |
| 2007 10 06 | 691 | 0.6- | 0.0  | 2007 11 05 | 704 | 0.2+ | 1.4+ | 2007 12 03 | 703 | 0.8- | 1.3- |
| 2007 10 06 | 691 | 0.4- | 0.3- | 2007 11 05 | 704 | 1.5+ | 0.1- | 2007 12 03 | 703 | 0.2- | 0.6- |
| 2007 10 06 | 691 | 0.1+ | 0.4+ | 2007 11 05 | 704 | 0.7+ | 0.4- | 2007 12 03 | 703 | 1.5- | 1.2+ |
| 2007 10 15 | 691 | 0.1+ | 0.1- | 2007 11 07 | 704 | 0.2+ | 0.7+ | 2007 12 05 | 691 | 0.1+ | 0.2+ |
| 2007 10 15 | 691 | 0.2+ | 0.2- | 2007 11 07 | 704 | 0.2+ | 0.2+ | 2007 12 05 | 691 | 0.0  | 0.1+ |

## M.P.O. 129918

|            |     |      |      |            |     |      |      |            |     |     |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-----|-----|
| 2007 10 15 | 691 | 0.0  | 0.1− | 2007 11 07 | 704 | 0.6− | 1.0+ | 2007 12 05 | 691 | 0.0 | 0.0 |
| 2007 10 19 | 691 | 0.2− | 0.2− | 2007 11 07 | 704 | 1.0+ | 0.4+ |            |     |     |     |
| 2007 10 19 | 691 | 0.2− | 0.2− | 2007 11 07 | 704 | 0.0  | 0.2+ |            |     |     |     |

**2007 TS<sub>407</sub>**

|          |                |                    |           |             |             |          |     |
|----------|----------------|--------------------|-----------|-------------|-------------|----------|-----|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             |             |          | MPC |
| <i>M</i> | 29.76425       | (2000.0)           |           | <b>P</b>    |             | <b>Q</b> |     |
| <i>n</i> | 0.26483002     | $\omega$           | 327.51391 | +0.99837163 | +0.03502229 |          |     |
| <i>a</i> | 2.4015478      | $\Omega$           | 30.57562  | −0.01000964 | +0.88465490 |          |     |
| <i>e</i> | 0.2017842      | <i>i</i>           | 5.07848   | −0.05615949 | +0.46492918 |          |     |
| <i>P</i> | 3.72           | <i>H</i>           | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 2   |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 09 | G96 | 0.3−  | 0.3−  | 2007 10 15 | 703 | 0.7+  | 0.1+  | 2007 11 07 | 300 | 0.2− | 0.9− |
| 2005 02 09 | G96 | 0.6+  | 0.4+  | 2007 10 15 | 703 | 0.5−  | 0.2−  | 2007 11 07 | 300 | 0.6+ | 0.1− |
| 2005 02 09 | G96 | 0.2−  | 0.0   | 2007 10 15 | 703 | 0.4+  | 0.3+  | 2007 11 07 | 300 | 0.5+ | 0.5− |
| 2005 02 09 | G96 | 0.6+  | 0.1+  | 2007 10 15 | 703 | 0.3−  | 1.1+  | 2007 11 07 | 300 | 0.4− | 0.8− |
| 2005 02 09 | G96 | 0.3+  | 0.2−  | 2007 10 15 | 703 | 0.6+  | 0.3+  | 2007 11 07 | 300 | 0.2− | 0.5+ |
| 2005 02 09 | G96 | 0.1−  | 0.6−  | 2007 10 15 | 703 | 1.0+  | 1.0+  | 2007 11 09 | 300 | 0.1+ | 0.2− |
| 2005 02 09 | G96 | 0.1−  | 0.1−  | 2007 10 15 | 691 | 0.0   | 0.4+  | 2007 11 09 | 300 | 0.7+ | 0.5− |
| 2005 02 09 | G96 | 0.7−  | 0.9+  | 2007 10 15 | 691 | 0.1−  | 0.3+  | 2007 11 09 | 300 | 0.2+ | 0.7− |
| 2006 04 30 | 691 | 0.2+  | 0.1−  | 2007 10 15 | 691 | 0.2−  | 0.2+  | 2007 11 09 | 300 | 0.1+ | 0.3+ |
| 2006 04 30 | 691 | 0.2−  | 0.0   | 2007 10 20 | 703 | 0.3+  | 0.2+  | 2007 11 09 | 300 | 0.5+ | 0.1− |
| 2006 04 30 | 691 | 0.3+  | 0.0   | 2007 10 20 | 703 | 1.0+  | 0.7+  | 2007 11 09 | 300 | 0.0  | 0.1+ |
| 2006 05 31 | G96 | 0.2−  | 0.7+  | 2007 10 20 | 703 | 0.8+  | 0.2−  | 2007 11 11 | 699 | 0.2− | 0.4− |
| 2006 05 31 | G96 | 0.3−  | 0.1+  | 2007 10 20 | 703 | 0.9+  | 0.3−  | 2007 11 11 | 699 | 0.3+ | 0.5+ |
| 2006 05 31 | G96 | 0.2−  | 0.1−  | 2007 10 31 | G96 | 0.4+  | 0.0   | 2007 11 11 | 699 | 0.6+ | 0.4+ |
| 2006 05 31 | G96 | 0.1−  | 0.1+  | 2007 10 31 | G96 | 0.4+  | 0.1+  | 2007 11 11 | 699 | 0.1− | 0.3− |
| 2007 09 18 | G96 | 0.3+  | 0.1−  | 2007 10 31 | G96 | 0.6+  | 0.2+  | 2007 11 18 | 704 | 0.0  | 0.4− |
| 2007 09 18 | G96 | 0.2+  | 0.0   | 2007 10 31 | G96 | 0.6+  | 0.3+  | 2007 11 18 | 704 | 0.4− | 0.3+ |
| 2007 09 18 | G96 | 0.1+  | 0.2+  | 2007 10 31 | G96 | 0.2+  | 0.1−  | 2007 11 18 | 704 | 0.2+ | 0.2− |
| 2007 09 18 | G96 | 0.3+  | 0.0   | 2007 10 31 | G96 | 0.3+  | 0.0   | 2007 11 18 | 704 | 0.2+ | 0.1− |
| 2007 10 10 | 691 | 0.1+  | 0.3+  | 2007 11 07 | 703 | 1.0−  | 0.9−  | 2007 11 18 | 704 | 0.8+ | 0.4− |
| 2007 10 10 | 691 | 0.2−  | 0.4+  | 2007 11 07 | 703 | (0.2+ | 1.6−) | 2007 11 19 | 691 | 0.2− | 0.2+ |
| 2007 10 10 | 691 | 1.2−  | 1.9−  | 2007 11 07 | 703 | 0.6−  | 0.4+  | 2007 11 19 | 691 | 0.3− | 0.2+ |
| 2007 10 15 | 703 | (0.5+ | 2.3+) | 2007 11 07 | 703 | 1.4−  | 0.7−  | 2007 11 19 | 691 | 0.2− | 0.2+ |
| 2007 10 15 | 703 | 0.2−  | 0.9+  | 2007 11 07 | 300 | 0.7+  | 0.8−  |            |     |      |      |

**2007 TW<sub>408</sub> = 2004 BB<sub>158</sub>**

|          |                |                    |           |             |             |          |     |
|----------|----------------|--------------------|-----------|-------------|-------------|----------|-----|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             |             |          | MPC |
| <i>M</i> | 118.02082      | (2000.0)           |           | <b>P</b>    |             | <b>Q</b> |     |
| <i>n</i> | 0.18412119     | $\omega$           | 329.64124 | +0.02752261 | +0.99080220 |          |     |
| <i>a</i> | 3.0600853      | $\Omega$           | 301.63545 | −0.88300663 | −0.03802809 |          |     |
| <i>e</i> | 0.0640233      | <i>i</i>           | 8.95237   | −0.46855287 | +0.12986478 |          |     |
| <i>P</i> | 5.35           | <i>H</i>           | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 1   |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 24 | 699 | 0.9− | 1.1+ | 2002 11 24 | 644 | 0.2+ | 0.1− | 2007 10 14 | 703 | 0.3+ | 0.1+ |
| 2001 08 24 | 699 | 1.0− | 2.0+ | 2004 01 28 | 691 | 0.0  | 0.1+ | 2007 10 14 | 703 | 0.8+ | 0.6− |
| 2001 08 24 | 699 | 0.2− | 0.4+ | 2004 01 28 | 691 | 0.2− | 0.0  | 2007 10 14 | 703 | 0.8+ | 0.6+ |
| 2001 08 24 | 699 | 1.9+ | 1.6+ | 2004 01 28 | 691 | 0.3+ | 0.4+ | 2007 10 21 | 703 | 0.3+ | 0.3+ |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2004 02 11 | 691 | 0.1+ | 0.1− | 2007 10 21 | 703 | 1.0+ | 0.5− |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2004 02 11 | 691 | 0.0  | 0.3+ | 2007 10 21 | 703 | 0.1+ | 0.0  |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2004 02 11 | 691 | 0.0  | 0.1− | 2007 10 21 | 703 | 0.8+ | 0.5− |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2007 10 08 | 703 | 0.9− | 0.3− | 2007 11 01 | 703 | 1.1− | 1.0− |
| 2001 11 18 | 645 | 0.0  | 0.1− | 2007 10 08 | 703 | 0.7+ | 0.5+ | 2007 11 01 | 703 | 1.9− | 0.8− |
| 2001 11 18 | 645 | 0.1− | 0.1− | 2007 10 08 | 703 | 0.3+ | 1.1+ | 2007 11 01 | 703 | 1.1− | 0.2+ |
| 2002 11 24 | 644 | 0.2+ | 0.0  | 2007 10 08 | 703 | 0.4+ | 0.2+ | 2007 11 01 | 703 | 0.1− | 0.8+ |
| 2002 11 24 | 644 | 0.2− | 0.1− | 2007 10 14 | 703 | 0.1− | 0.6− |            |     |      |      |

## 2007 DEC. 24

**2007 TL<sub>410</sub>**

|          |                |                    |           |             |             |          |     |
|----------|----------------|--------------------|-----------|-------------|-------------|----------|-----|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             |             |          | MPC |
| <i>M</i> | 18.44401       | (2000.0)           |           | <b>P</b>    |             | <b>Q</b> |     |
| <i>n</i> | 0.28129958     | $\omega$           | 297.03507 | +0.96961424 | −0.21452392 |          |     |
| <i>a</i> | 2.3068711      | $\Omega$           | 75.54369  | +0.24434654 | +0.87273367 |          |     |
| <i>e</i> | 0.1481193      | <i>i</i>           | 6.97499   | −0.01195793 | +0.43853783 |          |     |
| <i>P</i> | 3.50           | <i>H</i>           | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 4   |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2006 05 02 | G96 | 0.3+ | 0.3− | 2007 10 13 | G96 | 0.2−  | 0.0   | 2007 11 12 | 704 | 1.3−  | 0.2+  |
| 2006 05 02 | G96 | 0.4− | 0.3− | 2007 10 13 | G96 | 0.4−  | 0.2−  | 2007 11 12 | 704 | 1.0−  | 0.3+  |
| 2006 05 02 | G96 | 0.1− | 0.4− | 2007 10 13 | G96 | 0.1+  | 0.2−  | 2007 11 12 | 704 | 0.1−  | 0.5−  |
| 2006 05 02 | G96 | 0.1+ | 0.3− | 2007 10 18 | 699 | 1.1+  | 0.2−  | 2007 11 12 | 704 | 0.3−  | 0.3+  |
| 2006 05 24 | G96 | 0.3− | 0.0  | 2007 10 18 | 699 | 0.3−  | 0.1−  | 2007 11 12 | 704 | 0.8−  | 0.6+  |
| 2006 05 24 | G96 | 0.6+ | 0.0  | 2007 10 18 | 699 | 0.2−  | 0.1−  | 2007 12 04 | 704 | 0.2−  | 0.1−  |
| 2006 05 24 | G96 | 0.2− | 0.2+ | 2007 10 18 | 699 | 0.2+  | 0.3+  | 2007 12 04 | 704 | 0.9+  | 0.4−  |
| 2006 05 24 | G96 | 0.3− | 0.1+ | 2007 10 30 | 703 | 0.5−  | 0.5−  | 2007 12 04 | 704 | 0.2+  | 0.7−  |
| 2007 10 08 | D29 | 0.3+ | 1.1− | 2007 10 30 | 703 | 0.7+  | 0.2+  | 2007 12 04 | 704 | 1.2+  | 0.2−  |
| 2007 10 08 | D29 | 0.4+ | 0.4− | 2007 10 30 | 703 | 0.6+  | 0.6+  | 2007 12 05 | 703 | (2.3+ | 1.3−) |
| 2007 10 13 | 703 | 0.6+ | 0.3+ | 2007 10 30 | 703 | 1.0+  | 1.1+  | 2007 12 05 | 703 | 0.1−  | 0.3−  |
| 2007 10 13 | 703 | 0.7− | 0.2+ | 2007 11 04 | 704 | (0.9− | 3.2+) | 2007 12 05 | 703 | 0.9−  | 0.3−  |
| 2007 10 13 | 703 | 0.7− | 0.0  | 2007 11 04 | 704 | (1.8− | 0.2+) | 2007 12 05 | 703 | (2.8− | 0.6−) |
| 2007 10 13 | 703 | 0.5+ | 0.4+ | 2007 11 04 | 704 | 0.5+  | 0.3−  |            |     |       |       |
| 2007 10 13 | G96 | 0.1− | 0.0  | 2007 11 04 | 704 | (0.7− | 2.4+) |            |     |       |       |

**2007 TT<sub>410</sub> = 2005 GB<sub>11</sub>**

|          |                |                    |           |             |             |          |     |
|----------|----------------|--------------------|-----------|-------------|-------------|----------|-----|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             |             |          | MPC |
| <i>M</i> | 324.78090      | (2000.0)           |           | <b>P</b>    |             | <b>Q</b> |     |
| <i>n</i> | 0.20958329     | $\omega$           | 295.77633 | +0.49325320 | −0.85804537 |          |     |
| <i>a</i> | 2.8069302      | $\Omega$           | 123.92954 | +0.84704301 | +0.43632845 |          |     |
| <i>e</i> | 0.1208519      | <i>i</i>           | 9.92682   | +0.19803894 | +0.27087938 |          |     |
| <i>P</i> | 4.70           | <i>H</i>           | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 3   |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 30 | 644 | 0.1+  | 0.2+  | 2005 04 04 | 703 | 0.6− | 0.1− | 2007 10 11 | 703 | 0.2+ | 0.1− |
| 2002 08 30 | 644 | 0.1+  | 0.0   | 2007 09 05 | 703 | 0.1− | 0.2+ | 2007 10 11 | 703 | 0.5+ | 0.1+ |
| 2002 08 30 | 644 | 0.2−  | 0.0   | 2007 09 05 | 703 | 0.3+ | 0.0  | 2007 10 15 | 699 | 1.5− | 0.2+ |
| 2005 04 01 | 699 | 0.2+  | 0.8−  | 2007 09 05 | 703 | 1.3+ | 0.7− | 2007 10 15 | 699 | 0.5− | 0.3− |
| 2005 04 01 | 699 | (2.7+ | 1.4−) | 2007 09 05 | 703 | 0.2+ | 0.9+ | 2007 10 15 | 699 | 0.3+ | 1.0− |
| 2005 04 01 | 699 | 1.3+  | 0.6+  | 2007 09 12 | 703 | 0.7− | 0.5− | 2007 10 15 | 699 | 0.5− | 0.6− |
| 2005 04 01 | 699 | 0.9+  | 0.5+  | 2007 09 12 | 703 | 0.5− | 0.2+ | 2007 10 18 | 703 | 0.4+ | 1.1+ |
| 2005 04 04 | 703 | 1.1−  | 0.1−  | 2007 09 12 | 703 | 0.2− | 0.0  | 2007 10 18 | 703 | 0.6+ | 0.6+ |
| 2005 04 04 | 703 | 0.3−  | 0.1−  | 2007 09 12 | 703 | 0.6− | 0.6− | 2007 10 18 | 703 | 0.9+ | 0.5+ |
| 2005 04 04 | 703 | 0.4−  | 0.1+  | 2007 10 11 | 703 | 0.0  | 0.7− | 2007 10 18 | 703 | 0.1+ | 0.6+ |

**2007 TO<sub>411</sub>**

|          |                |                    |           |             |             |          |     |
|----------|----------------|--------------------|-----------|-------------|-------------|----------|-----|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             |             |          | MPC |
| <i>M</i> | 52.32204       | (2000.0)           |           | <b>P</b>    |             | <b>Q</b> |     |
| <i>n</i> | 0.24208243     | $\omega$           | 343.82879 | +0.86876095 | +0.49128865 |          |     |
| <i>a</i> | 2.5497281      | $\Omega$           | 346.21950 | −0.42040661 | +0.66506342 |          |     |
| <i>e</i> | 0.1166751      | <i>i</i>           | 15.17873  | −0.26174929 | +0.56242876 |          |     |
| <i>P</i> | 4.07           | <i>H</i>           | 15.9      | <i>G</i>    | 0.15        | <i>U</i> | 4   |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 16 | 644 | 0.1−  | 0.3−  | 2007 09 10 | 703 | 0.8+ | 0.4+ | 2007 10 09 | 703 | 1.4+ | 0.4− |
| 2003 10 16 | 644 | 0.3+  | 0.1−  | 2007 09 10 | 703 | 0.2− | 0.3− | 2007 10 09 | 703 | 0.7+ | 1.1+ |
| 2003 10 16 | 644 | 0.4+  | 0.2+  | 2007 09 10 | 703 | 0.9+ | 1.2− | 2007 10 13 | 699 | 0.3− | 1.0− |
| 2003 10 22 | 699 | (2.8+ | 0.8−) | 2007 09 10 | 703 | 1.0− | 0.7− | 2007 10 13 | 699 | 0.9− | 0.6+ |
| 2003 10 22 | 699 | 0.6−  | 0.1−  | 2007 09 19 | 703 | 0.2+ | 0.2+ | 2007 10 13 | 699 | 0.1+ | 0.0  |
| 2003 10 22 | 699 | 0.2+  | 0.1+  | 2007 09 19 | 703 | 0.6− | 0.2− | 2007 10 13 | 699 | 0.0  | 1.3− |
| 2003 10 22 | 699 | 0.0   | 0.4+  | 2007 09 19 | 703 | 0.3− | 1.5+ | 2007 10 21 | 703 | 0.9− | 0.2+ |
| 2003 11 21 | 644 | 0.3−  | 0.3−  | 2007 09 19 | 703 | 0.6− | 1.0+ | 2007 10 21 | 703 | 0.2+ | 0.4+ |
| 2003 11 21 | 644 | 0.2−  | 0.0   | 2007 10 09 | 703 | 0.1− | 0.4− | 2007 10 21 | 703 | 0.3+ | 0.2− |
| 2003 11 21 | 644 | 0.3+  | 0.2+  | 2007 10 09 | 703 | 0.2+ | 0.2+ | 2007 10 21 | 703 | 0.4+ | 0.2− |

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**2007 TZ<sub>411</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 35.30038   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.22293968 | $\omega$ | 58.27754  | +0.80800265 |          | +0.54203183 |          |
| <i>a</i> | 2.6936705  | $\Omega$ | 267.92526 | -0.58777924 |          | +0.71457755 |          |
| <i>e</i> | 0.1756494  | <i>i</i> | 13.36133  | -0.04058682 |          | +0.44224476 |          |
| <i>P</i> | 4.42       | <i>H</i> | 16.1      | <i>G</i>    | 0.15     | <i>U</i>    | 5        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 18 | 691 | 0.1- | 0.1- | 2007 09 15 | 703 | 0.2- | 0.4- | 2007 10 14 | 703 | 1.3- | 0.4+ |
| 2003 12 18 | 691 | 0.1- | 0.0  | 2007 09 15 | 703 | 0.4+ | 0.6+ | 2007 10 14 | 703 | 0.2- | 0.2+ |
| 2003 12 18 | 691 | 0.0  | 0.2- | 2007 10 09 | 703 | 1.0+ | 0.3- | 2007 10 18 | 703 | 0.8- | 0.1- |
| 2003 12 28 | 691 | 0.1+ | 0.3+ | 2007 10 09 | 703 | 0.1+ | 0.2- | 2007 10 18 | 703 | 0.8- | 0.3+ |
| 2003 12 28 | 691 | 0.1- | 0.1+ | 2007 10 09 | 703 | 0.6+ | 0.0  | 2007 10 18 | 703 | 1.2+ | 0.6- |
| 2003 12 28 | 691 | 0.2+ | 0.1- | 2007 10 09 | 703 | 0.1+ | 0.1- | 2007 10 18 | 703 | 0.3+ | 0.2- |
| 2007 09 15 | 703 | 0.4- | 0.2+ | 2007 10 14 | 703 | 0.2+ | 0.6+ |            |     |      |      |
| 2007 09 15 | 703 | 0.3- | 0.3- | 2007 10 14 | 703 | 0.2+ | 0.1- |            |     |      |      |

**2007 TQ<sub>412</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.42663   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.23429259 | $\omega$ | 24.09967  | +0.99493959 |          | +0.03512052 |          |
| <i>a</i> | 2.6059356  | $\Omega$ | 333.36449 | -0.08216457 |          | +0.82364835 |          |
| <i>e</i> | 0.1095144  | <i>i</i> | 12.12120  | +0.05782898 |          | +0.56601232 |          |
| <i>P</i> | 4.21       | <i>H</i> | 16.1      | <i>G</i>    | 0.15     | <i>U</i>    | 3        |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.2+  | 0.1+  | 2007 09 05 | 703 | (1.6- | 0.9-) | 2007 10 10 | 699 | 0.3+ | 0.7- |
| 2005 02 01 | 691 | 0.3+  | 0.1-  | 2007 09 05 | 703 | (2.4- | 1.3-) | 2007 10 14 | 703 | 0.1- | 0.5- |
| 2005 02 01 | 691 | 0.1-  | 0.1-  | 2007 09 12 | 703 | 0.6-  | 0.4+  | 2007 10 14 | 703 | 0.6- | 1.0- |
| 2005 03 10 | 104 | 0.1+  | 0.1-  | 2007 09 12 | 703 | 0.3+  | 0.0   | 2007 10 14 | 703 | 0.5- | 0.9+ |
| 2005 03 10 | 104 | 0.2-  | 2.1+  | 2007 09 12 | 703 | 1.0-  | 0.7-  | 2007 10 14 | 703 | 0.8- | 0.4- |
| 2005 03 10 | 104 | 0.3-  | 1.2-  | 2007 09 12 | 703 | 0.1-  | 0.3-  | 2007 10 21 | 703 | 0.3+ | 1.1+ |
| 2005 03 10 | 104 | 0.7+  | 0.7-  | 2007 09 18 | 703 | 1.2+  | 0.9+  | 2007 10 21 | 703 | 0.6- | 0.2- |
| 2005 03 11 | G96 | 0.3-  | 0.2+  | 2007 09 18 | 703 | 0.2+  | 0.3+  | 2007 10 21 | 703 | 0.0  | 0.3+ |
| 2005 03 11 | G96 | 0.5-  | 0.1+  | 2007 09 18 | 703 | 0.8+  | 0.8+  | 2007 10 21 | 703 | 0.0  | 0.1+ |
| 2005 03 11 | G96 | 0.4-  | 0.2+  | 2007 09 18 | 703 | (2.6- | 0.3-) | 2007 11 11 | 699 | 1.0+ | 0.3+ |
| 2005 03 11 | G96 | 0.4-  | 0.1-  | 2007 10 10 | 699 | 0.2-  | 0.0   | 2007 11 11 | 699 | 0.6+ | 0.4+ |
| 2007 09 05 | 703 | (0.4- | 0.6+) | 2007 10 10 | 699 | (0.9+ | 1.8-) | 2007 11 11 | 699 | 0.0  | 0.3+ |
| 2007 09 05 | 703 | 1.4-  | 0.3+  | 2007 10 10 | 699 | (1.6+ | 0.5+) | 2007 11 11 | 699 | 1.0+ | 1.7- |

**2007 TC<sub>413</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.38083   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.18484216 | $\omega$ | 281.16548 | +0.85641143 |          | +0.48647145 |          |
| <i>a</i> | 3.0521230  | $\Omega$ | 49.97650  | -0.33973456 |          | +0.78320178 |          |
| <i>e</i> | 0.1680430  | <i>i</i> | 13.05125  | -0.38876714 |          | +0.38722151 |          |
| <i>P</i> | 5.33       | <i>H</i> | 15.6      | <i>G</i>    | 0.15     | <i>U</i>    | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 16 | 644 | 0.0  | 0.1- | 2004 01 16 | 644 | 0.2+ | 0.2- | 2007 10 11 | 703 | 0.8- | 0.3- |
| 2002 10 16 | 644 | 0.1+ | 0.0  | 2007 09 14 | 703 | 0.2+ | 0.7- | 2007 10 15 | 699 | 1.0+ | 0.8- |
| 2002 10 16 | 644 | 0.2+ | 0.0  | 2007 09 14 | 703 | 1.0+ | 0.6+ | 2007 10 15 | 699 | 0.2- | 1.6+ |
| 2002 10 30 | 644 | 0.2+ | 0.5+ | 2007 09 14 | 703 | 0.3- | 0.1- | 2007 10 15 | 699 | 0.5+ | 1.8+ |
| 2002 10 30 | 644 | 0.2- | 0.4+ | 2007 09 14 | 703 | 1.1- | 0.2+ | 2007 10 15 | 699 | 1.0+ | 0.8+ |
| 2002 10 30 | 644 | 0.0  | 0.3+ | 2007 10 04 | 703 | 1.1- | 0.1- | 2007 10 18 | 703 | 0.3- | 0.3- |
| 2002 11 22 | 644 | 0.2- | 0.3- | 2007 10 04 | 703 | 0.5- | 0.0  | 2007 10 18 | 703 | 1.5+ | 0.3- |
| 2002 11 22 | 644 | 0.2- | 0.5- | 2007 10 04 | 703 | 0.1- | 0.6- | 2007 10 18 | 703 | 0.1- | 0.3+ |
| 2002 11 22 | 644 | 0.0  | 0.2- | 2007 10 04 | 703 | 0.5- | 0.2+ | 2007 10 18 | 703 | 0.7+ | 1.0- |
| 2004 01 16 | 644 | 0.2- | 0.1+ | 2007 10 11 | 703 | 0.3- | 1.4- |            |     |      |      |
| 2004 01 16 | 644 | 0.1+ | 0.1+ | 2007 10 11 | 703 | 0.3- | 0.1- |            |     |      |      |

**2007 TJ<sub>413</sub> = 2003 YE<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.18134  |          | (2000.0) |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.21841006 | $\omega$ | 13.25793 | +0.39894407 |          | -0.89324834 |          |
| <i>a</i> | 2.7307857  | $\Omega$ | 53.61811 | +0.81607974 |          | +0.24279540 |          |
| <i>e</i> | 0.2318704  | <i>i</i> | 14.91720 | +0.41815964 |          | +0.37836200 |          |
| <i>P</i> | 4.51       | <i>H</i> | 16.9     | <i>G</i>    | 0.15     | <i>U</i>    | 5        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 703 | 0.1-  | 0.8-  | 2007 09 12 | 703 | 0.6+ | 0.4+ | 2007 10 11 | 703 | 0.3+ | 1.4+ |
| 2003 12 29 | 703 | 0.5+  | 0.5+  | 2007 09 12 | 703 | 1.5+ | 1.0- | 2007 10 15 | 699 | 1.5- | 0.1- |
| 2003 12 29 | 703 | (0.7+ | 2.3+) | 2007 09 12 | 703 | 1.4- | 0.2+ | 2007 10 15 | 699 | 1.1- | 0.5- |
| 2003 12 29 | 703 | 0.3-  | 1.5+  | 2007 09 12 | 703 | 0.4- | 0.4- | 2007 10 15 | 699 | 0.8+ | 0.5+ |
| 2003 12 30 | 704 | 0.5+  | 1.0-  | 2007 09 12 | 703 | 0.4- | 0.3+ | 2007 10 15 | 699 | 1.4+ | 0.2+ |
| 2003 12 30 | 704 | 0.4-  | 0.3-  | 2007 09 12 | 703 | 1.1- | 0.3- | 2007 10 19 | 703 | 0.5+ | 0.9- |
| 2003 12 30 | 704 | 0.1+  | 0.3+  | 2007 09 12 | 703 | 0.1+ | 0.7+ | 2007 10 19 | 703 | 0.5- | 0.1+ |
| 2003 12 30 | 704 | 0.1-  | 0.2+  | 2007 09 12 | 703 | 0.6+ | 0.3- | 2007 10 19 | 703 | 0.6+ | 1.0- |
| 2003 12 30 | 704 | 0.1-  | 0.4-  | 2007 10 11 | 703 | 0.5+ | 0.2+ | 2007 10 19 | 703 | 0.4- | 0.5+ |

**2007 TK<sub>413</sub> = 2004 BP<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 95.54653   |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|-----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.18619749 | $\omega$ | 198.81721 | +0.14335541 |          | +0.96467243 |          |
| <i>a</i> | 3.0372941  | $\Omega$ | 79.89447  | -0.87676513 |          | +0.22738899 |          |
| <i>e</i> | 0.0439432  | <i>i</i> | 12.97453  | -0.45905570 |          | -0.13304645 |          |
| <i>P</i> | 5.29       | <i>H</i> | 15.0      | <i>G</i>    | 0.15     | <i>U</i>    | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 11 28 | 910 | 0.4+ | 0.8- | 2005 03 10 | 703 | (0.1+ | 2.3+) | 2007 10 11 | 703 | 0.2- | 0.7+ |
| 1997 11 28 | 910 | 0.4+ | 1.0- | 2005 03 10 | 703 | (0.3- | 2.2+) | 2007 10 11 | 703 | 1.0+ | 1.1+ |
| 1997 11 28 | 910 | 0.5+ | 1.3- | 2005 03 30 | 703 | 0.1+  | 0.2-  | 2007 10 15 | 699 | 0.7- | 1.4- |
| 2004 01 21 | 704 | 0.4- | 0.1+ | 2005 03 30 | 703 | (2.3- | 0.6+) | 2007 10 15 | 699 | 1.3- | 0.7+ |
| 2004 01 21 | 704 | 0.1+ | 0.8+ | 2005 03 30 | 703 | 1.4+  | 1.5+  | 2007 10 15 | 699 | 0.1- | 0.3- |
| 2004 01 21 | 704 | 0.1+ | 0.9- | 2005 03 30 | 703 | 1.5+  | 0.3-  | 2007 10 15 | 699 | 0.8+ | 0.7+ |
| 2004 01 22 | 704 | 0.2- | 0.3+ | 2005 04 06 | 703 | 0.4+  | 0.6+  | 2007 10 19 | 703 | 1.1- | 1.3+ |
| 2004 01 22 | 704 | 0.6+ | 0.0  | 2005 04 06 | 703 | 0.0   | 0.0   | 2007 10 19 | 703 | 0.9+ | 0.1- |
| 2004 01 22 | 704 | 0.5+ | 1.1+ | 2005 04 06 | 703 | 0.0   | 0.4-  | 2007 10 19 | 703 | 1.6- | 0.7+ |
| 2004 01 22 | 704 | 0.4- | 1.0+ | 2005 04 06 | 703 | 0.3-  | 0.3+  | 2007 10 19 | 703 | 0.8+ | 0.1+ |
| 2005 03 10 | 703 | 1.7- | 0.1- | 2007 10 11 | 703 | 1.3-  | 0.1+  |            |     |      |      |
| 2005 03 10 | 703 | 0.8- | 0.7+ | 2007 10 11 | 703 | 0.4+  | 0.5+  |            |     |      |      |

**2007 TQ<sub>414</sub> = 2000 AB<sub>249</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 214.78322  |          | (2000.0) |             | <b>P</b> |             | <b>Q</b> |
|----------|------------|----------|----------|-------------|----------|-------------|----------|
| <i>n</i> | 0.23348254 | $\omega$ | 91.34525 | -0.96107585 |          | +0.02197174 |          |
| <i>a</i> | 2.6119595  | $\Omega$ | 89.96577 | -0.13053435 |          | -0.91466945 |          |
| <i>e</i> | 0.0249227  | <i>i</i> | 15.98643 | +0.24350358 |          | -0.40360504 |          |
| <i>P</i> | 4.22       | <i>H</i> | 15.9     | <i>G</i>    | 0.15     | <i>U</i>    | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 02 | 691 | 0.1- | 0.1- | 2005 04 01 | 703 | 0.6+ | 1.0+ | 2007 10 15 | 703 | 0.5+ | 0.1- |
| 2000 01 02 | 691 | 0.2+ | 0.1- | 2005 04 01 | 703 | 0.4- | 0.3- | 2007 10 19 | 703 | 0.7+ | 0.3+ |
| 2000 01 02 | 691 | 0.1- | 0.3- | 2005 04 01 | 703 | 0.8- | 0.3+ | 2007 10 19 | 703 | 0.2- | 0.2+ |
| 2000 01 12 | 691 | 0.0  | 0.2- | 2005 04 30 | 703 | 0.3- | 0.1+ | 2007 10 19 | 703 | 0.2- | 0.1- |
| 2000 01 12 | 691 | 0.2+ | 0.1- | 2005 04 30 | 703 | 0.1+ | 0.2- | 2007 10 19 | 703 | 0.7- | 0.5- |
| 2000 01 12 | 691 | 0.1+ | 0.0  | 2005 04 30 | 703 | 0.5- | 0.6- | 2007 11 02 | 703 | 0.9- | 1.7+ |
| 2003 12 21 | 691 | 0.2- | 0.3+ | 2005 04 30 | 703 | 1.2+ | 0.9+ | 2007 11 02 | 703 | 0.1+ | 0.4- |
| 2003 12 21 | 691 | 0.1- | 0.3+ | 2007 10 10 | 703 | 0.6+ | 0.4+ | 2007 11 02 | 703 | 0.6+ | 0.0  |
| 2003 12 21 | 691 | 0.0  | 0.3+ | 2007 10 10 | 703 | 0.5- | 0.8- | 2007 11 02 | 703 | 0.1+ | 0.8+ |
| 2005 03 09 | 703 | 1.1+ | 0.3+ | 2007 10 10 | 703 | 0.0  | 0.5- | 2007 11 11 | 703 | 0.2- | 0.6+ |
| 2005 03 09 | 703 | 0.3- | 0.4- | 2007 10 10 | 703 | 0.2- | 1.7- | 2007 11 11 | 703 | 0.6- | 1.1- |
| 2005 03 09 | 703 | 0.1- | 0.0  | 2007 10 15 | 703 | 0.6- | 0.2+ | 2007 11 11 | 703 | 0.4- | 0.8+ |
| 2005 03 09 | 703 | 0.2- | 1.4- | 2007 10 15 | 703 | 0.1+ | 0.2+ | 2007 11 11 | 703 | 1.0+ | 0.1- |
| 2005 04 01 | 703 | 0.2- | 1.1+ | 2007 10 15 | 703 | 0.9+ | 0.5- |            |     |      |      |

**2007 UJ<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 331.42922  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22487390 | $\omega$ 29.01804 | +0.49462683   | -0.85839524 |
| <i>a</i> | 2.6782021  | $\Omega$ 31.90457 | +0.73945761   | +0.33341870 |
| <i>e</i> | 0.0231822  | <i>i</i> 14.91408 | +0.45666919   | +0.38985841 |
| <i>P</i> | 4.38       | <i>H</i> 16.3     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 16 | 703 | 0.6- | 0.6- | 2007 10 13 | 691 | 0.1- | 0.2+ | 2007 10 21 | 691 | 0.3- | 0.1+ |
| 2005 03 16 | 703 | 0.1- | 0.1+ | 2007 10 16 | 300 | 0.2+ | 0.2+ | 2007 10 21 | 691 | 0.3- | 0.4+ |
| 2005 03 16 | 703 | 1.8+ | 1.4+ | 2007 10 16 | 300 | 0.3- | 0.1+ | 2007 10 21 | 691 | 0.9- | 0.0  |
| 2005 03 16 | 703 | 0.6- | 0.2- | 2007 10 16 | 300 | 0.2+ | 0.3- | 2007 11 01 | G96 | 0.1- | 0.1+ |
| 2005 04 06 | 703 | 0.5- | 0.4- | 2007 10 16 | 300 | 0.9+ | 0.9- | 2007 11 01 | G96 | 0.1- | 0.1+ |
| 2005 04 06 | 703 | 0.2+ | 0.9+ | 2007 10 16 | 300 | 0.0  | 0.2- | 2007 11 01 | G96 | 0.1- | 0.1+ |
| 2005 04 06 | 703 | 0.3- | 0.6- | 2007 10 16 | 300 | 0.0  | 0.5- | 2007 11 01 | G96 | 0.1- | 0.0  |
| 2005 04 06 | 703 | 0.1- | 0.7- | 2007 10 16 | 300 | 0.5- | 0.1+ | 2007 11 06 | 704 | 1.4+ | 0.5+ |
| 2007 10 09 | 691 | 0.1- | 0.4+ | 2007 10 17 | 300 | 0.0  | 0.3- | 2007 11 06 | 704 | 0.5+ | 1.3+ |
| 2007 10 09 | 691 | 0.0  | 0.2+ | 2007 10 17 | 300 | 0.6- | 0.0  | 2007 11 06 | 704 | 0.4+ | 0.2+ |
| 2007 10 09 | 691 | 0.4- | 0.4+ | 2007 10 17 | 300 | 0.6+ | 0.9- | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2007 10 09 | 691 | 0.1- | 0.1+ | 2007 10 17 | 300 | 0.4- | 0.7- | 2007 11 18 | G96 | 0.4- | 0.1- |
| 2007 10 09 | 691 | 0.1- | 0.1+ | 2007 10 18 | 699 | 0.2- | 0.4- | 2007 11 18 | G96 | 0.0  | 0.3+ |
| 2007 10 09 | 691 | 0.2- | 0.2+ | 2007 10 18 | 699 | 0.3- | 0.2- | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2007 10 13 | 691 | 0.1- | 0.2+ | 2007 10 18 | 699 | 0.6- | 0.6- |            |     |      |      |
| 2007 10 13 | 691 | 0.3+ | 0.3+ | 2007 10 18 | 699 | 1.2+ | 0.3- |            |     |      |      |

**2007 UN<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.36338    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22561682 | $\omega$ 55.62730  | +0.92026731   | -0.39126056 |
| <i>a</i> | 2.6723196  | $\Omega$ 327.40490 | +0.35599967   | +0.84231787 |
| <i>e</i> | 0.1612488  | <i>i</i> 0.51275   | +0.16239553   | +0.37069634 |
| <i>P</i> | 4.37       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 01 | 691 | 0.1+ | 0.0  | 2007 10 16 | 300 | 0.2+ | 0.6- | 2007 11 01 | 704 | 0.2- | 0.5+ |
| 1998 09 01 | 691 | 0.3- | 0.3+ | 2007 10 16 | 300 | 0.7+ | 0.5+ | 2007 11 01 | 704 | 0.7- | 0.0  |
| 1998 09 01 | 691 | 0.1- | 0.4+ | 2007 10 16 | 300 | 1.2+ | 0.2- | 2007 11 01 | 704 | 0.1- | 0.7+ |
| 2005 03 13 | 691 | 0.3+ | 0.3+ | 2007 10 17 | 300 | 0.0  | 0.2+ | 2007 11 03 | 734 | 0.6- | 0.0  |
| 2005 03 13 | 691 | 0.5+ | 0.6+ | 2007 10 17 | 300 | 0.6- | 0.4+ | 2007 11 03 | 734 | 0.1+ | 0.1+ |
| 2005 03 13 | 691 | 0.6+ | 0.4+ | 2007 10 17 | 300 | 0.6+ | 0.1- | 2007 11 03 | 734 | 0.1+ | 0.3- |
| 2005 04 05 | G96 | 0.2- | 0.5+ | 2007 10 17 | 300 | 0.4- | 0.5+ | 2007 11 03 | 734 | 0.0  | 0.1+ |
| 2005 04 05 | G96 | 0.3+ | 0.5- | 2007 10 17 | 300 | 0.7+ | 1.6+ | 2007 11 03 | 734 | 0.1- | 0.2- |
| 2005 04 05 | G96 | 0.5- | 0.9+ | 2007 10 20 | 691 | 0.4- | 0.3- | 2007 11 06 | 704 | 0.4+ | 0.5+ |
| 2005 04 05 | G96 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.4- | 0.3- | 2007 11 06 | 704 | 0.6- | 0.7+ |
| 2007 10 04 | 691 | 0.2- | 0.2- | 2007 10 20 | 691 | 0.4- | 0.3- | 2007 11 06 | 704 | 0.2- | 0.2+ |
| 2007 10 04 | 691 | 0.3- | 0.1- | 2007 10 20 | 703 | 0.9- | 0.5+ | 2007 11 06 | 704 | 1.0+ | 0.3+ |
| 2007 10 04 | 691 | 0.5- | 0.2- | 2007 10 20 | 703 | 0.1- | 0.7+ | 2007 11 12 | 703 | 1.4+ | 0.6+ |
| 2007 10 11 | 699 | 0.7+ | 0.2+ | 2007 10 20 | 703 | 0.7+ | 0.9+ | 2007 11 12 | 703 | 1.6+ | 1.6+ |
| 2007 10 11 | 699 | 0.0  | 1.2+ | 2007 10 20 | 703 | 0.4+ | 0.2+ | 2007 11 12 | 703 | 0.0  | 0.8+ |
| 2007 10 11 | 699 | 0.3- | 0.9+ | 2007 11 01 | 734 | 0.1+ | 0.3- | 2007 11 12 | 703 | 0.6+ | 0.4- |
| 2007 10 11 | 699 | 1.0+ | 0.4+ | 2007 11 01 | 734 | 0.1- | 0.4- | 2007 11 15 | 704 | 0.0  | 0.0  |
| 2007 10 12 | 691 | 0.4- | 0.4- | 2007 11 01 | 734 | 0.0  | 0.4- | 2007 11 15 | 704 | 0.9- | 0.0  |
| 2007 10 12 | 691 | 0.2- | 0.4- | 2007 11 01 | 734 | 0.2- | 0.5- | 2007 11 15 | 704 | 0.1- | 1.7- |
| 2007 10 12 | 691 | 0.2- | 0.3- | 2007 11 01 | 734 | 0.2- | 0.4- | 2007 11 15 | 704 | 1.0- | 0.0  |
| 2007 10 16 | 691 | 0.7- | 0.3- | 2007 11 01 | 734 | 0.1- | 0.6- | 2007 11 18 | G96 | 0.4+ | 0.5- |
| 2007 10 16 | 691 | 0.2- | 0.0  | 2007 11 01 | G96 | 0.0  | 0.5- | 2007 11 18 | G96 | 0.2- | 0.4- |
| 2007 10 16 | 691 | 0.4- | 0.1- | 2007 11 01 | G96 | 0.2+ | 0.5- | 2007 11 18 | G96 | 0.2- | 0.7- |
| 2007 10 16 | 300 | 0.3- | 0.0  | 2007 11 01 | G96 | 0.3+ | 0.7- | 2007 11 18 | G96 | 0.2- | 0.5- |
| 2007 10 16 | 300 | 0.1- | 0.0  | 2007 11 01 | G96 | 0.3+ | 0.6- |            |     |      |      |
| 2007 10 16 | 300 | 0.0  | 0.3- | 2007 11 01 | 704 | 0.3- | 0.4+ |            |     |      |      |

**2007 UC<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 317.88494  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21072671 | $\omega$ 280.93446 | -0.10582733   | -0.99431936 |
| <i>a</i> | 2.7967673  | $\Omega$ 175.09729 | +0.95642768   | -0.10491396 |
| <i>e</i> | 0.1546481  | <i>i</i> 7.65470   | +0.27211519   | -0.01794662 |
| <i>P</i> | 4.68       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 644 | 0.1- | 0.5+ | 2007 10 18 | H07 | 0.5- | 1.2- | 2007 11 07 | 703 | 0.1- | 0.4- |
| 2002 10 04 | 644 | 0.3- | 0.3+ | 2007 10 18 | H07 | 0.8- | 0.7- | 2007 11 07 | 703 | 1.0+ | 0.6+ |
| 2002 10 04 | 644 | 0.3- | 0.6+ | 2007 10 18 | H07 | 0.4- | 0.5- | 2007 11 07 | 703 | 0.5- | 0.1- |
| 2004 02 18 | 608 | 0.1+ | 1.0+ | 2007 10 18 | H07 | 0.4+ | 0.7- | 2007 11 07 | 703 | 0.5+ | 0.7+ |
| 2004 02 18 | 608 | 0.2+ | 1.1+ | 2007 10 18 | H07 | 0.5- | 0.4+ | 2007 11 11 | 704 | 1.1+ | 1.2+ |
| 2004 02 18 | 608 | 0.6+ | 0.7+ | 2007 10 18 | H07 | 0.2- | 0.3- | 2007 11 11 | 704 | 0.6+ | 1.2+ |
| 2005 05 03 | 691 | 0.3- | 0.6+ | 2007 10 18 | H07 | 0.5- | 0.6- | 2007 11 11 | 704 | 1.3+ | 1.5+ |
| 2005 05 03 | 691 | 0.2+ | 0.5+ | 2007 10 18 | H07 | 0.0  | 0.6- | 2007 11 11 | 704 | 0.4- | 0.5+ |
| 2005 05 03 | 691 | 0.1+ | 0.8+ | 2007 10 19 | H07 | 0.1+ | 0.5+ | 2007 11 11 | 704 | 0.4+ | 1.0+ |
| 2005 06 05 | 691 | 0.3+ | 0.5+ | 2007 10 19 | H07 | 0.2- | 0.7+ | 2007 11 11 | 699 | 0.1+ | 0.4+ |
| 2005 06 05 | 691 | 0.0  | 0.4+ | 2007 10 19 | H07 | 0.4- | 0.3+ | 2007 11 11 | 699 | 0.1+ | 0.6+ |
| 2005 06 05 | 691 | 0.1+ | 0.1+ | 2007 10 19 | H07 | 0.1+ | 0.1- | 2007 11 11 | 699 | 0.7+ | 0.8- |
| 2007 10 09 | 691 | 0.3- | 0.0  | 2007 10 19 | H07 | 0.2- | 0.0  | 2007 11 11 | 699 | 0.5+ | 0.7- |
| 2007 10 09 | 691 | 0.2- | 0.1+ | 2007 10 20 | H07 | 0.1+ | 0.5+ | 2007 12 06 | 703 | 1.2+ | 0.3+ |
| 2007 10 09 | 691 | 0.2- | 0.1- | 2007 10 20 | H07 | 0.1+ | 0.5+ | 2007 12 06 | 703 | 0.4- | 1.7+ |
| 2007 10 16 | H07 | 0.1- | 0.5+ | 2007 10 20 | H07 | 0.4+ | 0.2+ | 2007 12 06 | 703 | 0.1+ | 0.9+ |
| 2007 10 16 | H07 | 0.2- | 0.2+ | 2007 10 20 | H07 | 0.2- | 0.2- | 2007 12 06 | 703 | 1.2- | 1.4+ |
| 2007 10 16 | H07 | 0.2- | 0.3+ | 2007 10 20 | H07 | 0.9- | 0.4- |            |     |      |      |
| 2007 10 18 | H07 | 0.2- | 0.3+ | 2007 10 20 | H07 | 0.1+ | 0.5+ |            |     |      |      |

**2007 UF<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 87.38291   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18092826 | $\omega$ 237.95059 | +0.59509388   | +0.78374001 |
| <i>a</i> | 3.0959821  | $\Omega$ 69.60416  | -0.65847523   | +0.60234548 |
| <i>e</i> | 0.0474965  | <i>i</i> 10.93518  | -0.46073165   | +0.15143155 |
| <i>P</i> | 5.45       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 644 | 0.0  | 1.0+ | 2007 10 17 | H07 | 0.6- | 0.2+ | 2007 11 04 | G96 | 0.1+ | 0.4- |
| 2001 10 15 | 644 | 0.6- | 0.2+ | 2007 10 17 | H07 | 0.4- | 0.2+ | 2007 11 04 | G96 | 0.8+ | 0.7- |
| 2001 10 15 | 644 | 0.2- | 0.4+ | 2007 10 18 | H07 | 0.5- | 0.1- | 2007 11 04 | 704 | 0.1- | 1.0+ |
| 2005 04 11 | 691 | 0.1+ | 0.6+ | 2007 10 18 | H07 | 0.2+ | 0.7+ | 2007 11 04 | 704 | 1.2+ | 0.2+ |
| 2005 04 11 | 691 | 0.2+ | 0.6+ | 2007 10 18 | H07 | 0.5- | 0.3+ | 2007 11 04 | 704 | 0.2+ | 0.1+ |
| 2005 04 11 | 691 | 0.4+ | 0.7+ | 2007 10 18 | H07 | 0.3- | 0.6+ | 2007 11 04 | 704 | 0.0  | 0.0  |
| 2005 05 10 | 691 | 0.3+ | 0.5+ | 2007 10 18 | H07 | 0.8+ | 0.2+ | 2007 11 07 | 704 | 0.1- | 1.0+ |
| 2005 05 10 | 691 | 0.2+ | 0.3+ | 2007 10 18 | H07 | 0.3- | 0.3- | 2007 11 07 | 704 | 0.7+ | 0.3+ |
| 2005 05 10 | 691 | 0.4+ | 0.6+ | 2007 10 18 | H07 | 0.5- | 0.4- | 2007 11 07 | 704 | 0.8+ | 1.0+ |
| 2006 08 14 | 644 | 0.5+ | 0.6- | 2007 10 18 | H07 | 0.6+ | 0.0  | 2007 11 07 | 704 | 0.7- | 0.1- |
| 2006 08 14 | 644 | 0.3- | 0.5- | 2007 10 18 | H07 | 0.4+ | 1.2+ | 2007 11 07 | 704 | 0.3+ | 0.2- |
| 2006 08 14 | 644 | 0.1- | 0.2- | 2007 10 19 | H07 | 0.5- | 0.7- | 2007 11 12 | 704 | 0.1+ | 0.2+ |
| 2007 10 16 | H07 | 0.7- | 0.4- | 2007 10 19 | H07 | 0.2- | 0.9- | 2007 11 12 | 704 | 0.8- | 0.7+ |
| 2007 10 16 | H07 | 0.1- | 1.9- | 2007 10 19 | H07 | 0.1- | 0.1- | 2007 11 12 | 704 | 0.1- | 0.1- |
| 2007 10 16 | H07 | 0.8- | 0.8+ | 2007 11 04 | G96 | 0.4+ | 0.2- | 2007 11 12 | 704 | 0.1+ | 0.4+ |
| 2007 10 17 | H07 | 0.4- | 0.0  | 2007 11 04 | G96 | 0.1+ | 0.4- |            |     |      |      |

**2007 UM<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 59.60660   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22652897 | $\omega$ 64.68668  | +0.59016516   | +0.76788362 |
| <i>a</i> | 2.6651412  | $\Omega$ 243.78006 | -0.80380178   | +0.53031682 |
| <i>e</i> | 0.2092600  | <i>i</i> 16.12246  | -0.07488512   | +0.35933108 |
| <i>P</i> | 4.35       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 5  |

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M.P.O. 129921

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 11 19 691 0.4+ 0.0  | 2003 12 27 691 0.2- 0.4+ | 2007 10 17 A50 0.3+ 0.2- |
| 2003 11 19 691 0.3+ 0.3+ | 2003 12 27 691 0.3- 0.1- | 2007 10 17 A50 0.5- 0.3+ |
| 2003 11 19 691 0.3+ 0.3+ | 2007 10 09 703 0.2+ 0.5- | 2007 10 17 A50 0.5- 0.2+ |
| 2003 11 30 291 0.2- 0.2- | 2007 10 09 703 1.2+ 0.1- | 2007 10 17 A50 0.1+ 0.5- |
| 2003 11 30 291 0.4- 0.1- | 2007 10 09 703 0.2- 0.0  | 2007 10 21 703 0.8+ 1.0+ |
| 2003 11 30 291 0.8- 0.1- | 2007 10 09 703 0.8+ 0.5+ | 2007 10 21 703 1.0- 0.2- |
| 2003 12 14 691 0.1+ 0.1- | 2007 10 16 A50 0.3- 0.7- | 2007 10 21 703 0.9- 0.2- |
| 2003 12 14 691 0.1+ 0.1- | 2007 10 16 A50 0.2- 0.3- | 2007 10 21 703 0.2- 0.6+ |
| 2003 12 14 691 0.1+ 0.1- | 2007 10 16 A50 0.0 0.2-  |                          |
| 2003 12 27 691 0.6+ 0.3- | 2007 10 16 A50 0.4+ 0.1+ |                          |

2007 UU<sub>5</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.98852   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26783582 | <i>ω</i> 174.89409 | +0.42542474   | +0.90438148 |
| <i>a</i> | 2.3835464  | <i>Ω</i> 120.27985 | -0.83167411   | +0.40519584 |
| <i>e</i> | 0.1852517  | <i>i</i> 2.20895   | -0.35683604   | +0.13383000 |
| <i>P</i> | 3.68       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2002 02 13 291 0.2- 0.3+ | 2007 10 11 G96 0.4- 0.4+   | 2007 10 19 H07 0.9+ 0.5- |
| 2002 02 13 291 0.3- 0.3+ | 2007 10 11 G96 0.1- 0.4+   | 2007 10 19 H07 1.4- 0.7- |
| 2002 02 13 291 0.3- 0.2+ | 2007 10 11 G96 0.2+ 0.4+   | 2007 10 19 H07 0.4- 1.4- |
| 2002 03 20 291 0.2+ 0.6- | 2007 10 11 G96 0.1- 0.5+   | 2007 10 19 H07 0.7+ 0.7- |
| 2002 03 20 291 0.5+ 0.4+ | 2007 10 17 H07 0.1- 0.5-   | 2007 10 19 G96 0.6+ 0.3+ |
| 2002 03 20 291 0.2+ 0.1- | 2007 10 17 H07 0.1- 1.2-   | 2007 10 19 G96 0.1- 0.2+ |
| 2003 11 24 695 0.4+ 0.4+ | 2007 10 17 H07 (3.1- 0.3+) | 2007 10 19 G96 0.0 0.1+  |
| 2003 11 24 695 0.5- 0.0  | 2007 10 18 H07 1.5- 0.1-   | 2007 10 19 G96 0.7+ 0.0  |
| 2007 09 14 G96 0.1+ 0.3+ | 2007 10 18 H07 0.1+ 0.9+   | 2007 10 20 H07 0.3+ 0.7- |
| 2007 09 14 G96 0.2- 0.2+ | 2007 10 18 H07 1.6+ 0.6+   | 2007 10 20 H07 0.1- 0.5+ |
| 2007 09 14 G96 0.0 0.1-  | 2007 10 19 H07 0.0 1.2+    | 2007 10 20 H07 0.4- 0.4- |
| 2007 09 14 G96 0.2- 0.3+ | 2007 10 19 H07 (2.1- 0.6+) |                          |

2007 US<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 338.70992  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29776558 | <i>ω</i> 224.92660 | -0.00013663   | -0.98804273 |
| <i>a</i> | 2.2210230  | <i>Ω</i> 225.76049 | +0.96727806   | +0.03898782 |
| <i>e</i> | 0.4478722  | <i>i</i> 12.42764  | +0.25371862   | -0.14916943 |
| <i>P</i> | 3.31       | <i>H</i> 18.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 1997 10 29 566 0.3- 0.4+   | 2007 11 03 A56 0.5+ 0.1- | 2007 11 12 H45 0.2- 0.2- |
| 1997 10 29 566 0.2- 0.5+   | 2007 11 03 A56 0.5+ 0.2+ | 2007 11 12 H45 0.1- 0.3- |
| 1997 10 29 566 0.1- 0.7+   | 2007 11 03 A53 0.1+ 0.1+ | 2007 11 14 H45 0.4+ 0.1- |
| 2002 04 07 807 0.1+ 0.1+   | 2007 11 03 A56 0.1+ 0.0  | 2007 11 14 H45 0.5+ 0.2- |
| 2002 04 07 807 0.2+ 0.1+   | 2007 11 03 A56 0.6+ 0.4+ | 2007 11 14 H45 0.4+ 0.2- |
| 2007 09 10 703 (1.4- 1.8+) | 2007 11 03 A53 0.3- 0.4+ | 2007 11 14 H45 0.3+ 0.1- |
| 2007 09 10 703 0.9+ 0.1-   | 2007 11 03 A53 0.1+ 0.3+ | 2007 11 14 H45 0.1+ 0.4- |
| 2007 09 10 703 0.7+ 0.1-   | 2007 11 03 A53 0.1- 0.1+ | 2007 11 14 H45 0.3+ 0.3- |
| 2007 09 10 703 1.0- 0.0    | 2007 11 03 203 0.1- 0.4- | 2007 11 15 H45 0.3- 0.3- |
| 2007 09 20 703 1.1+ 0.6+   | 2007 11 03 203 0.1- 0.5- | 2007 11 15 H45 0.1- 0.0  |
| 2007 09 20 703 0.5+ 0.2+   | 2007 11 03 A24 0.1+ 0.0  | 2007 11 15 H45 0.1+ 0.2+ |
| 2007 09 20 703 1.2+ 0.3-   | 2007 11 04 A24 0.1- 0.0  | 2007 11 15 H45 0.0 0.1-  |
| 2007 10 14 703 0.4- 0.3-   | 2007 11 04 A24 0.0 0.0   | 2007 11 15 H45 0.3+ 0.2- |
| 2007 10 14 703 0.8- 0.7-   | 2007 11 04 A24 0.0 0.1+  | 2007 11 15 H45 0.0 0.2-  |
| 2007 10 14 703 0.3- 0.2-   | 2007 11 04 A24 0.1- 0.2+ | 2007 11 15 B04 0.1- 0.1+ |
| 2007 10 14 703 0.2+ 1.1-   | 2007 11 04 A24 0.1- 0.0  | 2007 11 15 A24 0.4+ 0.2+ |
| 2007 10 21 704 (3.0- 0.6+) | 2007 11 04 H45 0.1- 0.3- | 2007 11 15 A24 0.2+ 0.1+ |
| 2007 10 21 704 (2.5- 0.8+) | 2007 11 04 H45 0.0 0.2-  | 2007 11 15 A24 0.5- 0.0  |
| 2007 10 21 704 (2.3- 0.0)  | 2007 11 04 H45 0.1- 0.2- | 2007 11 15 A24 0.4- 0.2- |
| 2007 10 21 704 (2.0- 0.2+) | 2007 11 04 H45 0.2+ 0.2- | 2007 11 15 B04 0.0 0.1-  |
| 2007 10 21 704 (2.0- 0.6+) | 2007 11 04 H45 0.2+ 0.0  | 2007 11 16 B04 0.1+ 0.1- |
| 2007 10 21 703 0.4+ 0.7-   | 2007 11 04 H45 0.1- 0.2- | 2007 11 17 A24 0.4- 0.1+ |
| 2007 10 21 703 0.1- 0.2-   | 2007 11 04 J51 0.1+ 0.3- | 2007 11 17 A24 0.2- 0.3+ |

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2007 10 21 703 0.0 0.1+  | 2007 11 04 J51 0.2+ 0.2-   | 2007 11 17 H53 0.2- 0.3- |
| 2007 10 21 703 0.1+ 0.3- | 2007 11 04 J51 0.3+ 0.0    | 2007 11 17 H53 0.5- 0.1+ |
| 2007 10 22 704 0.2+ 0.4+ | 2007 11 04 A53 0.1+ 0.1-   | 2007 11 17 H53 0.4+ 0.3+ |
| 2007 10 22 704 0.1+ 0.4+ | 2007 11 04 A53 0.0 0.0     | 2007 11 17 H53 0.2+ 0.5+ |
| 2007 10 22 704 0.5+ 0.0  | 2007 11 04 A53 0.4- 0.3-   | 2007 11 17 H53 0.6- 0.4+ |
| 2007 10 22 704 0.2+ 0.1- | 2007 11 05 H45 0.1- 0.2-   | 2007 11 17 H53 0.2+ 0.1+ |
| 2007 10 22 704 0.4+ 0.2+ | 2007 11 05 H45 0.3- 0.3-   | 2007 11 18 H45 0.4+ 0.2- |
| 2007 10 23 704 0.5- 1.1+ | 2007 11 05 H45 0.1- 0.3-   | 2007 11 18 H45 0.3+ 0.1+ |
| 2007 10 23 704 0.8- 0.8+ | 2007 11 05 H45 0.0 0.5-    | 2007 11 18 H45 0.5+ 0.0  |
| 2007 10 23 704 0.4- 1.0+ | 2007 11 05 H45 0.1- 0.2-   | 2007 11 18 H45 0.3+ 0.1+ |
| 2007 10 23 704 0.3- 0.7+ | 2007 11 05 H45 0.0 0.2-    | 2007 11 18 H45 0.3+ 0.2- |
| 2007 10 23 704 0.5+ 0.7+ | 2007 11 05 639 0.6- 0.6-   | 2007 11 18 H45 0.4+ 0.2- |
| 2007 10 29 H51 0.4- 0.0  | 2007 11 05 639 0.2+ 0.5+   | 2007 11 18 A24 0.2- 0.1+ |
| 2007 10 29 H51 0.1+ 0.3- | 2007 11 06 704 0.0 0.4+    | 2007 11 18 A24 0.3- 0.2+ |
| 2007 10 29 H51 0.1- 0.3- | 2007 11 06 704 0.1- 0.4+   | 2007 11 18 233 0.0 0.8-  |
| 2007 10 29 H51 0.9+ 0.2- | 2007 11 06 704 0.6+ 0.8+   | 2007 11 18 233 0.3- 0.0  |
| 2007 10 29 H51 0.1- 0.3- | 2007 11 06 704 0.1- 0.7+   | 2007 11 18 233 0.2- 0.2- |
| 2007 10 29 H51 0.0 0.8-  | 2007 11 06 704 0.1- 0.4+   | 2007 11 18 233 0.2- 0.2- |
| 2007 10 29 H51 0.5+ 0.2- | 2007 11 07 G96 0.2+ 0.4-   | 2007 11 26 A78 0.2+ 0.5- |
| 2007 10 29 H51 0.2- 0.1+ | 2007 11 07 G96 0.1- 0.5-   | 2007 11 26 A78 0.8- 0.3+ |
| 2007 10 29 H51 0.1- 0.4- | 2007 11 07 H45 0.3+ 0.3-   | 2007 11 26 A78 0.3- 0.2+ |
| 2007 10 29 926 0.8- 0.5+ | 2007 11 07 H45 0.3+ 0.5-   | 2007 11 26 A78 0.4+ 0.4+ |
| 2007 10 29 926 0.1- 0.4+ | 2007 11 07 G96 0.2- 0.5-   | 2007 11 27 H51 0.4+ 0.1+ |
| 2007 10 29 926 0.2+ 0.1+ | 2007 11 07 H45 0.4+ 0.3-   | 2007 11 27 H51 0.1+ 0.2- |
| 2007 10 30 704 0.2+ 0.1- | 2007 11 07 H45 0.4+ 0.8-   | 2007 11 27 H51 0.4+ 0.0  |
| 2007 10 30 704 0.3- 0.6+ | 2007 11 07 H45 0.3+ 0.3-   | 2007 11 27 H51 0.1- 0.1- |
| 2007 10 30 704 0.4- 0.2+ | 2007 11 07 H45 0.3+ 0.1-   | 2007 11 27 H51 1.0- 0.4+ |
| 2007 10 31 A24 0.4+ 0.3+ | 2007 11 08 A24 0.1- 0.0    | 2007 11 28 H45 0.4+ 0.1- |
| 2007 10 31 A24 0.1+ 0.1+ | 2007 11 08 A24 0.3- 0.2+   | 2007 11 28 H45 0.1+ 0.1- |
| 2007 10 31 A24 0.8+ 0.1+ | 2007 11 08 A24 0.3- 0.1+   | 2007 11 28 H45 0.1+ 0.2- |
| 2007 10 31 A24 0.9- 1.1+ | 2007 11 08 A24 0.3- 0.0    | 2007 11 28 H45 0.4+ 0.0  |
| 2007 11 01 203 0.3+ 0.3- | 2007 11 08 A24 0.4- 0.2-   | 2007 11 28 H45 0.0 0.6-  |
| 2007 11 01 A24 0.2- 0.3- | 2007 11 08 A24 0.2- 0.1-   | 2007 11 28 H45 0.4+ 0.2+ |
| 2007 11 01 A24 0.9- 1.0+ | 2007 11 08 B09 (1.0- 1.9-) | 2007 11 29 704 0.6- 0.0  |
| 2007 11 01 203 0.3+ 0.2- | 2007 11 08 B09 (0.6+ 1.7-) | 2007 11 29 704 0.1- 0.1+ |
| 2007 11 01 704 0.9+ 0.4+ | 2007 11 08 B04 (0.0 2.7-)  | 2007 11 29 704 0.6- 0.0  |
| 2007 11 01 704 0.5+ 0.4+ | 2007 11 08 B04 0.1+ 0.9-   | 2007 11 29 704 0.2- 0.4- |
| 2007 11 01 704 0.7+ 0.4+ | 2007 11 08 B04 (0.1+ 2.0-) | 2007 11 29 A82 0.1+ 0.5+ |
| 2007 11 01 704 0.1- 0.2+ | 2007 11 08 B04 0.1+ 0.1-   | 2007 11 29 A82 0.2- 0.5+ |
| 2007 11 01 151 0.5- 0.1- | 2007 11 10 H45 0.1+ 0.3-   | 2007 11 29 A82 0.1- 0.6+ |
| 2007 11 01 151 0.4- 0.1- | 2007 11 10 H45 0.1+ 0.2-   | 2007 11 30 379 0.0 0.6-  |
| 2007 11 01 151 0.5- 0.1- | 2007 11 10 H45 0.1+ 0.4-   | 2007 11 30 379 0.4- 0.0  |
| 2007 11 01 151 0.4- 0.1+ | 2007 11 10 H45 0.3+ 0.3-   | 2007 11 30 379 0.9- 0.3+ |
| 2007 11 01 151 0.4- 0.2+ | 2007 11 10 H45 0.2+ 0.3-   | 2007 12 01 379 0.9+ 0.4- |
| 2007 11 01 151 0.3- 0.1+ | 2007 11 10 H45 0.1+ 0.3-   | 2007 12 01 379 0.7+ 1.0- |
| 2007 11 01 151 0.2- 0.0  | 2007 11 10 A24 0.1- 0.3+   | 2007 12 01 379 0.2+ 0.7- |
| 2007 11 01 106 0.2- 0.3- | 2007 11 10 A24 0.1- 0.1+   | 2007 12 01 379 0.6+ 1.0- |
| 2007 11 01 106 0.1+ 0.1- | 2007 11 10 A24 0.2- 0.4+   | 2007 12 03 704 0.2- 0.7+ |
| 2007 11 01 106 0.0 0.4-  | 2007 11 10 A24 0.2- 0.2+   | 2007 12 03 704 0.2+ 0.7+ |
| 2007 11 01 106 0.1- 0.2- | 2007 11 10 A24 0.1- 0.1+   | 2007 12 03 704 0.0 0.4+  |
| 2007 11 02 A24 0.2- 0.2+ | 2007 11 10 A24 0.2- 0.2+   | 2007 12 03 704 0.4+ 0.7+ |
| 2007 11 02 A24 0.1- 0.4+ | 2007 11 11 560 0.1+ 0.4+   | 2007 12 03 704 0.4- 0.7+ |
| 2007 11 02 A24 0.1+ 0.4+ | 2007 11 11 560 0.0 0.3+    | 2007 12 06 H45 0.4+ 0.1+ |
| 2007 11 02 A24 0.0 0.4+  | 2007 11 11 560 0.2- 0.5+   | 2007 12 06 H45 0.3+ 0.2- |
| 2007 11 02 A24 0.4- 0.3- | 2007 11 11 A53 0.8- 0.2+   | 2007 12 06 H45 0.0 0.2-  |
| 2007 11 02 J51 0.0 0.1-  | 2007 11 11 A24 0.3+ 0.3+   | 2007 12 06 H45 0.4+ 0.4- |
| 2007 11 02 J51 0.1- 0.2- | 2007 11 11 J51 0.0 0.2-    | 2007 12 06 H45 0.1+ 0.0  |
| 2007 11 02 J51 0.1- 0.4- | 2007 11 11 A24 0.3+ 0.3+   | 2007 12 06 H45 0.1+ 0.2- |
| 2007 11 03 A24 0.5- 0.2+ | 2007 11 11 A53 0.1- 1.3+   | 2007 12 06 703 0.1+ 0.8+ |
| 2007 11 03 A24 0.2- 0.0  | 2007 11 11 A53 0.1+ 1.0+   | 2007 12 06 703 0.0 0.2+  |
| 2007 11 03 A24 0.3- 0.2+ | 2007 11 11 J51 0.0 0.2-    | 2007 12 06 703 0.1- 0.7+ |
| 2007 11 03 A24 0.1- 0.2+ | 2007 11 11 A53 0.8+ 0.4+   | 2007 12 06 703 0.4+ 0.5+ |
| 2007 11 03 A24 0.2- 0.1+ | 2007 11 11 J51 0.2+ 0.2-   | 2007 12 07 379 0.5+ 0.0  |
| 2007 11 03 A24 0.1+ 0.2+ | 2007 11 11 A24 0.4+ 0.3+   | 2007 12 07 379 0.2+ 0.8- |
| 2007 11 03 699 0.4- 0.4- | 2007 11 11 A24 0.7+ 0.5+   | 2007 12 07 B34 0.6- 0.5+ |
| 2007 11 03 699 0.5- 0.2- | 2007 11 11 130 0.2+ 0.3-   | 2007 12 07 B34 0.2+ 0.1+ |
| 2007 11 03 699 0.1- 0.4- | 2007 11 11 130 0.3- 0.2+   | 2007 12 11 B34 0.2- 0.1+ |
| 2007 11 03 379 0.1+ 0.5- | 2007 11 11 130 0.2- 0.3-   | 2007 12 11 B34 0.4+ 0.3+ |

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2007 11 03 379 0.2− 0.2− | 2007 11 11 130 0.1− 0.1− | 2007 12 11 B34 (8.2− 1.1−) |
| 2007 11 03 379 0.6− 0.1+ | 2007 11 11 A24 0.2− 0.2+ | 2007 12 17 H45 0.2− 0.0    |
| 2007 11 03 A78 0.1+ 0.4− | 2007 11 11 A24 0.2− 0.2+ | 2007 12 17 H45 0.0 0.0     |
| 2007 11 03 A78 0.3− 0.6− | 2007 11 12 H45 0.2+ 0.5− | 2007 12 17 H45 0.1− 0.0    |
| 2007 11 03 A78 0.6− 0.1− | 2007 11 12 H45 0.0 0.6−  | 2007 12 17 H45 0.2+ 0.2+   |
| 2007 11 03 A78 0.3− 0.1− | 2007 11 12 H45 0.2− 0.3− | 2007 12 17 H45 0.1+ 0.1−   |
| 2007 11 03 A78 0.5− 0.3− | 2007 11 12 H45 0.2− 0.2− | 2007 12 17 H45 0.1+ 0.4−   |

**2007 UP<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 76.54051   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23623581 | $\omega$ 358.26816 | +0.51500940   | +0.81950923 |
| <i>a</i> | 2.5916254  | $\Omega$ 302.65241 | −0.78281928   | +0.33019987 |
| <i>e</i> | 0.1213472  | <i>i</i> 17.36835  | −0.34922670   | +0.46837236 |
| <i>P</i> | 4.17       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2000 12 23 645 0.3− 0.1+ | 2007 09 19 703 0.6+ 0.3− | 2007 10 16 703 0.6+ 0.4−   |
| 2000 12 23 645 0.3− 0.0  | 2007 09 19 703 0.6− 0.3− | 2007 10 16 703 0.3− 0.6−   |
| 2001 02 18 608 0.4+ 0.1+ | 2007 09 19 703 1.0− 1.6+ | 2007 10 16 703 0.6+ 0.9−   |
| 2001 02 18 608 0.3− 0.1+ | 2007 09 19 703 1.3− 0.6+ | 2007 10 16 703 0.3− 0.2+   |
| 2001 02 18 608 0.4+ 0.0  | 2007 10 09 703 1.3+ 0.8+ | 2007 10 21 703 0.1− 0.9+   |
| 2005 01 13 691 0.0 0.0   | 2007 10 09 703 0.4− 0.5− | 2007 10 21 703 0.4+ 0.0    |
| 2005 01 13 691 0.1− 0.1− | 2007 10 09 703 0.4+ 0.1+ | 2007 10 21 703 (0.4+ 2.4−) |
| 2005 01 13 691 0.2+ 0.1+ | 2007 10 09 703 0.2+ 0.0  | 2007 10 21 703 0.2− 1.0−   |

**2007 US<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.14673   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.16764537 | $\omega$ 30.76437  | +0.98708647   | −0.06898417 |
| <i>a</i> | 3.2574293  | $\Omega$ 332.06355 | −0.03775840   | +0.77689382 |
| <i>e</i> | 0.0600472  | <i>i</i> 17.97447  | +0.15567465   | +0.62584117 |
| <i>P</i> | 5.88       | <i>H</i> 14.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2006 07 18 E12 0.3+ 0.7− | 2007 10 09 703 0.0 0.1+  | 2007 10 21 703 0.1+ 0.4− |
| 2006 07 18 E12 0.2− 0.4+ | 2007 10 12 699 0.0 0.1+  | 2007 10 21 703 1.1− 0.2− |
| 2006 07 18 E12 0.3+ 0.4+ | 2007 10 12 699 0.8+ 0.4+ | 2007 10 21 703 1.4− 0.3− |
| 2006 08 20 644 0.1+ 0.1− | 2007 10 12 699 0.1+ 0.4− | 2007 10 21 703 0.4− 0.2+ |
| 2006 08 20 644 0.0 0.1−  | 2007 10 12 699 0.1− 0.2− | 2007 11 13 703 1.1+ 0.5− |
| 2006 08 20 644 0.4− 0.2+ | 2007 10 16 703 0.1+ 0.7+ | 2007 11 13 703 0.7− 0.8+ |
| 2007 10 09 703 0.3+ 0.4− | 2007 10 16 703 1.2+ 0.1− | 2007 11 13 703 0.3− 0.1− |
| 2007 10 09 703 0.2− 0.3− | 2007 10 16 703 0.1+ 1.0− | 2007 11 13 703 0.6+ 0.3+ |
| 2007 10 09 703 1.0− 0.5+ | 2007 10 16 703 0.8+ 0.6+ |                          |

**2007 UG<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.54173  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17461454 | $\omega$ 86.91768  | +0.30057572   | −0.95218976 |
| <i>a</i> | 3.1701692  | $\Omega$ 345.23391 | +0.76750322   | +0.27550965 |
| <i>e</i> | 0.2985584  | <i>i</i> 12.38631  | +0.56620936   | +0.13201932 |
| <i>P</i> | 5.64       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 05 24 807 0.1+ 0.0  | 2007 10 13 699 1.6+ 0.6− | 2007 10 21 703 0.0 0.7−  |
| 2001 05 24 807 0.0 0.0   | 2007 10 13 699 1.3+ 1.0+ | 2007 10 21 703 0.0 1.7−  |
| 2001 08 27 691 0.2− 0.1− | 2007 10 13 699 0.8+ 1.4+ | 2007 10 21 703 0.4− 0.4− |
| 2001 08 27 691 0.1+ 0.1− | 2007 10 13 699 0.3+ 0.7− | 2007 11 13 703 0.6− 0.1− |
| 2001 08 27 691 0.1+ 0.1+ | 2007 10 16 703 0.9+ 0.8+ | 2007 11 13 703 1.4+ 1.0+ |
| 2007 10 09 703 0.6− 0.0  | 2007 10 16 703 0.3− 0.2− | 2007 11 13 703 0.1− 0.3+ |
| 2007 10 09 703 1.7− 0.4+ | 2007 10 16 703 0.7− 0.5+ | 2007 11 13 703 0.3+ 0.5− |
| 2007 10 09 703 0.8− 0.0  | 2007 10 16 703 0.1− 0.4+ |                          |
| 2007 10 09 703 0.1+ 0.9− | 2007 10 21 703 1.4− 0.2+ |                          |

**2007 UW<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.59019   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18309645 | $\omega$ 154.00631 | +0.76364785   | +0.64344347 |
| <i>a</i> | 3.0714923  | $\Omega$ 165.55841 | −0.62326811   | +0.75616523 |
| <i>e</i> | 0.1218518  | <i>i</i> 12.29964  | −0.16846016   | +0.11914127 |
| <i>P</i> | 5.38       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2001 08 17 644 0.2+ 0.2+ | 2005 04 04 703 0.4− 0.5− | 2007 10 10 703 0.7+ 0.3+   |
| 2001 08 17 644 0.2− 0.2+ | 2007 09 11 703 0.1+ 0.3− | 2007 10 10 703 0.4− 1.3+   |
| 2001 08 17 644 0.1− 0.4+ | 2007 09 11 703 0.7+ 0.9− | 2007 10 17 699 0.9+ 0.9−   |
| 2004 01 16 644 0.3− 0.3+ | 2007 09 11 703 0.4− 1.6+ | 2007 10 17 699 0.5+ 0.0    |
| 2004 01 16 644 0.1− 0.0  | 2007 09 11 703 0.2+ 0.2+ | 2007 10 17 699 0.1− 0.2+   |
| 2004 01 16 644 0.4+ 0.5+ | 2007 09 21 D29 0.4− 0.9+ | 2007 10 17 699 (1.5− 2.3+) |
| 2004 01 28 645 0.0 0.1+  | 2007 09 21 D29 0.3+ 0.0  | 2007 10 19 703 0.0 0.4−    |
| 2004 01 28 645 0.0 0.1+  | 2007 09 21 D29 0.2− 0.0  | 2007 10 19 703 0.3− 0.4−   |
| 2005 04 04 703 0.3+ 0.1+ | 2007 09 21 D29 0.2+ 0.1+ | 2007 10 19 703 0.8− 0.7−   |
| 2005 04 04 703 0.7+ 0.1+ | 2007 10 10 703 0.5+ 0.9− | 2007 10 19 703 1.1− 0.7−   |
| 2005 04 04 703 0.6− 0.1+ | 2007 10 10 703 0.5− 0.2+ |                            |

**2007 UC<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.61822  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21318863 | $\omega$ 300.73006 | +0.85288480   | −0.50534139 |
| <i>a</i> | 2.7751941  | $\Omega$ 89.91775  | +0.51257079   | +0.76264834 |
| <i>e</i> | 0.0844029  | <i>i</i> 7.53987   | +0.09929103   | +0.40372961 |
| <i>P</i> | 4.62       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 2002 08 13 644 0.2+ 0.1+ | 2007 09 12 703 0.8− 0.8−   | 2007 10 17 699 0.9+ 0.2+ |
| 2002 08 13 644 0.1+ 0.0  | 2007 09 12 703 0.4+ 0.3+   | 2007 10 17 699 0.2+ 0.5+ |
| 2002 08 13 644 0.1− 0.4+ | 2007 09 12 703 0.4− 1.0−   | 2007 10 17 699 1.5+ 0.4+ |
| 2002 08 19 644 0.1− 0.1− | 2007 09 12 703 0.2+ 0.4+   | 2007 10 19 703 0.7− 0.2+ |
| 2002 08 19 644 0.0 0.0   | 2007 10 10 703 (2.2+ 0.7−) | 2007 10 19 703 1.0− 0.1− |
| 2002 08 19 644 0.2− 0.1− | 2007 10 10 703 0.7− 0.3+   | 2007 10 19 703 0.1− 0.2+ |
| 2003 12 17 291 0.2+ 0.1− | 2007 10 10 703 0.8+ 0.8+   | 2007 10 19 703 0.1+ 0.1+ |
| 2003 12 17 291 0.0 0.1+  | 2007 10 10 703 1.5− 0.0    |                          |
| 2003 12 17 291 0.2− 0.1+ | 2007 10 17 699 1.2+ 1.7−   |                          |

**2007 UE<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.62086   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28878698 | $\omega$ 270.49687 | +0.93645217   | +0.32830630 |
| <i>a</i> | 2.2668232  | $\Omega$ 70.34140  | −0.24628281   | +0.86617393 |
| <i>e</i> | 0.1578611  | <i>i</i> 7.54068   | −0.24980416   | +0.37677274 |
| <i>P</i> | 3.41       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                            |                           |
|--------------------------|----------------------------|---------------------------|
| 1996 05 11 691 0.5+ 0.3+ | 2006 04 09 G96 0.2− 0.6+   | 2007 10 11 703 0.5+ 0.1+  |
| 1996 05 11 691 0.5+ 0.1+ | 2006 04 09 G96 0.2− 0.7+   | 2007 10 11 703 0.3+ 1.0+  |
| 1996 05 11 691 0.6+ 0.3+ | 2006 04 09 G96 0.1− 0.4+   | 2007 10 11 703 0.7+ 1.2+  |
| 2000 08 21 699 0.5− 0.0  | 2006 04 09 G96 0.5+ 0.4+   | 2007 10 17 699 (0.0 2.3+) |
| 2000 08 21 699 0.9+ 1.4− | 2007 09 12 703 (1.4+ 2.1−) | 2007 10 17 699 0.3− 0.3+  |
| 2000 08 21 699 0.7− 0.7− | 2007 09 12 703 0.1+ 0.0    | 2007 10 17 699 0.1+ 0.4−  |
| 2000 08 21 699 0.2+ 0.3− | 2007 09 12 703 0.2− 0.5−   | 2007 10 17 699 0.1− 0.0   |
| 2004 12 12 691 0.1− 0.7− | 2007 09 12 703 0.6+ 0.0    | 2007 10 19 703 0.1+ 0.8+  |
| 2004 12 12 691 0.3− 0.0  | 2007 10 09 A50 0.5− 0.2+   | 2007 10 19 703 0.0 0.0    |
| 2004 12 12 691 0.0 0.0   | 2007 10 09 A50 0.3− 0.6+   | 2007 10 19 703 0.3+ 0.2+  |
| 2004 12 21 691 0.2+ 0.4− | 2007 10 09 A50 0.5− 0.2+   | 2007 10 19 703 0.5− 1.0+  |
| 2004 12 21 691 0.1+ 0.2− | 2007 10 09 A50 1.3− 1.0−   |                           |
| 2004 12 21 691 0.2+ 0.3− | 2007 10 11 703 0.3− 0.3+   |                           |



**2007 UA<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.43322  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27335997 | $\omega$ 359.12589 | +0.41601057   | -0.90490783 |
| <i>a</i> | 2.3513256  | $\Omega$ 66.28689  | +0.83491582   | +0.34092124 |
| <i>e</i> | 0.1315768  | <i>i</i> 5.63322   | +0.36034814   | +0.25478331 |
| <i>P</i> | 3.61       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 17 | 644 | 0.0  | 0.6+ | 2007 11 03 | 691 | 0.2- | 0.1+ | 2007 11 14 | 704 | 0.7+ | 0.6+ |
| 2002 05 17 | 644 | 0.1+ | 0.6+ | 2007 11 03 | 691 | 0.2- | 0.0  | 2007 11 19 | 691 | 0.4- | 0.2+ |
| 2002 05 17 | 644 | 0.2+ | 0.5+ | 2007 11 03 | 691 | 0.6- | 0.4+ | 2007 11 19 | 691 | 0.3- | 0.2+ |
| 2002 05 19 | 291 | 0.2+ | 0.7+ | 2007 11 03 | 699 | 0.4- | 0.6+ | 2007 11 19 | 691 | 0.4- | 0.0  |
| 2002 05 19 | 291 | 0.1+ | 0.6+ | 2007 11 03 | 699 | 0.5+ | 0.6+ | 2007 12 03 | 703 | 0.1+ | 0.3+ |
| 2002 05 19 | 291 | 0.5+ | 0.6+ | 2007 11 03 | 699 | 0.1+ | 0.4+ | 2007 12 03 | 703 | 0.0  | 0.3- |
| 2003 09 22 | 644 | 0.2- | 0.0  | 2007 11 03 | 699 | 0.1+ | 0.2- | 2007 12 03 | 703 | 0.6- | 0.2- |
| 2003 09 22 | 644 | 0.1- | 0.1+ | 2007 11 05 | 704 | 0.1- | 0.6+ | 2007 12 03 | 703 | 0.2- | 0.4+ |
| 2003 09 22 | 644 | 0.1+ | 0.4+ | 2007 11 05 | 704 | 0.3- | 0.1- | 2007 12 05 | 704 | 0.2+ | 0.2- |
| 2007 10 19 | 699 | 0.6+ | 0.5+ | 2007 11 05 | 704 | 0.0  | 0.6+ | 2007 12 05 | 704 | 0.4+ | 0.3- |
| 2007 10 19 | 699 | 0.2- | 0.1- | 2007 11 05 | 704 | 0.0  | 0.3+ | 2007 12 05 | 704 | 1.2+ | 0.2- |
| 2007 10 19 | 699 | 0.7+ | 0.2- | 2007 11 05 | 704 | 0.1+ | 0.0  | 2007 12 05 | 704 | 1.0+ | 0.0  |
| 2007 10 19 | 699 | 0.2+ | 0.9- | 2007 11 13 | 699 | 1.2+ | 0.8- | 2007 12 05 | 704 | 0.3- | 0.2+ |
| 2007 10 20 | 703 | 0.7+ | 0.8+ | 2007 11 13 | 699 | 0.6+ | 0.3+ | 2007 12 14 | 704 | 0.1- | 1.0+ |
| 2007 10 20 | 703 | 0.1- | 0.0  | 2007 11 13 | 699 | 0.6+ | 0.2+ | 2007 12 14 | 704 | 0.0  | 1.3+ |
| 2007 10 20 | 703 | 0.1+ | 0.1- | 2007 11 13 | 699 | 1.2+ | 0.5- | 2007 12 14 | 704 | 0.4+ | 0.5+ |
| 2007 10 20 | 703 | 0.3+ | 0.2- | 2007 11 14 | 704 | 0.8+ | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2007 10 30 | 691 | 1.1- | 0.2- | 2007 11 14 | 704 | 0.2+ | 0.8+ | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2007 10 30 | 691 | 0.1- | 0.1- | 2007 11 14 | 704 | 0.5+ | 0.6+ | 2007 12 15 | G96 | 0.3+ | 0.0  |
| 2007 10 30 | 691 | 0.1- | 0.2- | 2007 11 14 | 704 | 0.2- | 0.4+ | 2007 12 15 | G96 | 0.2- | 0.1+ |

**2007 UG<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.51202  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17356498 | $\omega$ 299.31505 | +0.66389813   | -0.71887892 |
| <i>a</i> | 3.1829366  | $\Omega$ 107.56380 | +0.73893113   | +0.58825245 |
| <i>e</i> | 0.2269171  | <i>i</i> 12.48093  | +0.11497852   | +0.37036759 |
| <i>P</i> | 5.68       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 08 14 | 608 | 0.4+ | 0.0  | 2007 10 19 | 703 | 0.5-  | 0.1+  | 2007 10 31 | 703 | 0.2- | 0.8- |
| 2001 08 14 | 608 | 0.4- | 0.1+ | 2007 10 19 | 703 | 0.3-  | 0.1+  | 2007 10 31 | 703 | 1.0+ | 0.1+ |
| 2001 08 14 | 608 | 0.1+ | 0.4- | 2007 10 19 | 703 | 0.1-  | 0.2-  | 2007 11 07 | 703 | 0.4- | 0.9- |
| 2001 10 09 | 608 | 0.2+ | 0.3- | 2007 10 19 | 703 | 0.3-  | 0.6+  | 2007 11 07 | 703 | 0.5- | 1.3- |
| 2001 10 09 | 608 | 0.3+ | 0.8- | 2007 10 20 | 704 | 1.3-  | 0.3+  | 2007 11 07 | 703 | 0.7- | 0.1- |
| 2001 10 09 | 608 | 0.1+ | 1.5- | 2007 10 20 | 704 | 0.4+  | 0.2+  | 2007 11 07 | 703 | 0.3- | 0.0  |
| 2003 01 30 | 644 | 0.0  | 0.2- | 2007 10 20 | 704 | 0.8-  | 0.3-  | 2007 11 15 | 703 | 0.6- | 0.4- |
| 2003 01 30 | 644 | 0.2+ | 0.2- | 2007 10 20 | 704 | (1.9- | 0.0 ) | 2007 11 15 | 703 | 0.4- | 0.1- |
| 2003 01 30 | 644 | 0.1- | 0.4- | 2007 10 20 | 704 | 0.4-  | 0.1+  | 2007 11 15 | 703 | 0.1- | 0.7- |
| 2007 10 10 | 703 | 1.2+ | 0.4+ | 2007 10 20 | 704 | 0.0   | 0.9+  | 2007 11 15 | 703 | 0.1+ | 0.0  |
| 2007 10 10 | 703 | 0.0  | 0.2+ | 2007 10 20 | 704 | (1.6- | 0.1+) | 2007 12 06 | 703 | 0.4- | 0.4+ |
| 2007 10 10 | 703 | 0.1- | 0.8+ | 2007 10 20 | 704 | 0.4-  | 0.1+  | 2007 12 06 | 703 | 1.4- | 0.0  |
| 2007 10 10 | 703 | 0.4+ | 0.2+ | 2007 10 20 | 703 | 0.9+  | 1.3+  | 2007 12 06 | 703 | 0.3+ | 0.2- |
| 2007 10 18 | 704 | 0.6+ | 0.7+ | 2007 10 20 | 703 | (0.6+ | 1.9+) | 2007 12 06 | 703 | 0.1- | 0.1+ |
| 2007 10 18 | 704 | 0.0  | 0.3+ | 2007 10 20 | 703 | 0.2-  | 0.8+  | 2007 12 16 | 699 | 0.4+ | 0.2- |
| 2007 10 18 | 704 | 0.7+ | 0.0  | 2007 10 20 | 703 | 0.1+  | 1.5+  | 2007 12 16 | 699 | 1.4+ | 0.5- |
| 2007 10 18 | 704 | 0.6+ | 0.2+ | 2007 10 31 | 703 | 0.9-  | 0.8-  | 2007 12 16 | 699 | 0.1- | 1.0- |
| 2007 10 18 | 704 | 1.4+ | 1.0+ | 2007 10 31 | 703 | 0.1-  | 0.7-  | 2007 12 16 | 699 | 0.6+ | 0.3- |

**2007 UL<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.86408   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23497493 | $\omega$ 220.81982 | +0.98312497   | -0.13358508 |
| <i>a</i> | 2.6008883  | $\Omega$ 146.23464 | +0.15838006   | +0.96344528 |
| <i>e</i> | 0.1746198  | <i>i</i> 12.99524  | -0.09154804   | +0.23222448 |
| <i>P</i> | 4.19       | <i>H</i> 15.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 01 13 | 644 | 0.1- | 0.3+ | 2007 10 10 | 703 | 0.3+  | 0.1+  | 2007 11 03 | 703 | 0.2-  | 0.1+  |
| 2004 01 13 | 644 | 0.1- | 0.3+ | 2007 10 10 | 703 | 0.0   | 0.6-  | 2007 11 03 | 703 | 0.2-  | 0.3+  |
| 2004 01 13 | 644 | 0.0  | 0.4+ | 2007 10 19 | 704 | 0.4+  | 0.1+  | 2007 11 03 | 703 | 0.6-  | 0.4-  |
| 2005 03 17 | 703 | 0.8+ | 0.8+ | 2007 10 19 | 704 | 0.7+  | 0.2-  | 2007 11 03 | 703 | 1.0-  | 0.3-  |
| 2005 03 17 | 703 | 1.0- | 0.5- | 2007 10 19 | 704 | 1.2+  | 0.1-  | 2007 11 11 | 703 | 0.1-  | 0.1+  |
| 2005 03 17 | 703 | 0.1+ | 0.8- | 2007 10 19 | 704 | 0.5+  | 0.3+  | 2007 11 11 | 703 | 0.0   | 0.5+  |
| 2005 03 17 | 703 | 0.2+ | 0.1+ | 2007 10 19 | 704 | 0.3-  | 0.1-  | 2007 11 11 | 703 | 0.4-  | 0.1-  |
| 2006 07 26 | 644 | 0.2+ | 0.0  | 2007 10 20 | 703 | 0.5+  | 0.0   | 2007 11 11 | 703 | 0.1-  | 0.4+  |
| 2006 07 26 | 644 | 0.0  | 0.3+ | 2007 10 20 | 704 | 1.2+  | 0.2+  | 2007 11 19 | 703 | (0.8- | 1.9-) |
| 2006 07 26 | 644 | 0.2- | 0.0  | 2007 10 20 | 703 | 0.1-  | 0.0   | 2007 11 19 | 703 | 0.5-  | 0.3-  |
| 2007 09 13 | 703 | 0.6- | 1.1+ | 2007 10 20 | 703 | 0.4+  | 0.4-  | 2007 11 19 | 703 | 1.1-  | 0.3-  |
| 2007 09 13 | 703 | 0.1- | 0.4+ | 2007 10 20 | 704 | 1.5+  | 0.0   | 2007 11 19 | 703 | 1.3-  | 0.4-  |
| 2007 09 13 | 703 | 0.4+ | 0.0  | 2007 10 20 | 703 | 0.8+  | 0.0   | 2007 12 05 | 703 | 0.2-  | 0.2-  |
| 2007 09 13 | 703 | 0.3- | 0.2+ | 2007 10 20 | 704 | 0.8+  | 0.2-  | 2007 12 05 | 703 | 0.4-  | 0.2-  |
| 2007 10 10 | 703 | 0.3- | 0.2- | 2007 10 20 | 704 | (1.7+ | 0.0 ) | 2007 12 05 | 703 | 1.0-  | 0.1-  |
| 2007 10 10 | 703 | 0.1- | 0.4+ | 2007 10 20 | 704 | 1.3+  | 0.5-  | 2007 12 05 | 703 | 0.5-  | 0.3-  |

**2007 US<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.06540   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27552048 | $\omega$ 280.66663 | +0.98889526   | +0.10381949 |
| <i>a</i> | 2.3390174  | $\Omega$ 73.43730  | -0.04929400   | +0.90416148 |
| <i>e</i> | 0.2728423  | <i>i</i> 6.36954   | -0.14020079   | +0.41438331 |
| <i>P</i> | 3.58       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 28 | 691 | 0.2-  | 0.1-  | 2007 10 31 | 703 | 0.7-  | 0.4-  | 2007 11 15 | 699 | 0.1+ | 0.3- |
| 2000 12 28 | 691 | 0.2+  | 0.6-  | 2007 10 31 | 703 | 0.4-  | 0.5+  | 2007 11 18 | G96 | 0.6+ | 0.2- |
| 2000 12 28 | 691 | 0.1+  | 0.1-  | 2007 11 01 | 691 | 0.1-  | 0.1-  | 2007 11 18 | G96 | 0.2+ | 0.4- |
| 2002 03 05 | 645 | 0.1+  | 0.0   | 2007 11 01 | 691 | 0.3-  | 0.0   | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2002 03 05 | 645 | 0.0   | 0.1+  | 2007 11 01 | 691 | 0.0   | 0.1-  | 2007 11 18 | G96 | 0.5+ | 0.4- |
| 2005 02 01 | 703 | 0.1-  | 0.5+  | 2007 11 03 | 699 | 0.7+  | 0.6-  | 2007 11 20 | 691 | 0.3- | 0.0  |
| 2005 02 01 | 703 | 0.3-  | 0.3+  | 2007 11 03 | 699 | 0.2+  | 0.2-  | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2005 02 01 | 703 | (2.2+ | 0.7-) | 2007 11 03 | 699 | 0.5+  | 0.3-  | 2007 11 20 | 691 | 0.4- | 0.0  |
| 2005 02 01 | 703 | 0.7+  | 1.2-  | 2007 11 03 | 699 | 0.0   | 0.3+  | 2007 11 20 | 703 | 0.3+ | 0.4- |
| 2007 09 11 | 703 | 0.1-  | 0.3+  | 2007 11 04 | 704 | 0.3+  | 0.4+  | 2007 11 20 | 703 | 0.1+ | 0.5+ |
| 2007 09 11 | 703 | 0.2-  | 0.5+  | 2007 11 04 | 704 | 0.4+  | 0.0   | 2007 11 20 | 703 | 0.2- | 0.4+ |
| 2007 09 11 | 703 | 0.3+  | 0.0   | 2007 11 04 | 704 | 0.2+  | 0.5+  | 2007 11 20 | 703 | 0.8- | 0.2+ |
| 2007 09 11 | 703 | 1.4-  | 0.4+  | 2007 11 04 | 704 | 0.3+  | 0.3+  | 2007 12 03 | 703 | 0.4+ | 0.2+ |
| 2007 10 15 | D29 | 0.4+  | 0.0   | 2007 11 04 | 704 | 0.3+  | 0.3+  | 2007 12 03 | 703 | 0.8+ | 0.6+ |
| 2007 10 15 | D29 | 0.5+  | 0.1-  | 2007 11 05 | 691 | 0.1-  | 0.1-  | 2007 12 03 | 703 | 0.6+ | 0.0  |
| 2007 10 15 | D29 | 0.2-  | 0.1+  | 2007 11 05 | 691 | 0.1-  | 0.1-  | 2007 12 03 | 703 | 1.0+ | 0.2+ |
| 2007 10 15 | D29 | 0.2+  | 0.4-  | 2007 11 05 | 691 | 0.1+  | 0.0   | 2007 12 04 | 691 | 0.7- | 0.3- |
| 2007 10 19 | 704 | 0.2-  | 0.1+  | 2007 11 12 | 703 | 0.1-  | 0.0   | 2007 12 04 | 691 | 0.0  | 0.1+ |
| 2007 10 19 | 704 | 0.3+  | 0.9+  | 2007 11 12 | 703 | 0.3+  | 0.1-  | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2007 10 19 | 704 | 0.4+  | 0.8+  | 2007 11 12 | 703 | 0.2+  | 0.0   | 2007 12 05 | 704 | 0.0  | 1.0+ |
| 2007 10 19 | 704 | 0.4+  | 0.9+  | 2007 11 12 | 703 | 0.5+  | 0.2-  | 2007 12 05 | 704 | 0.0  | 1.2+ |
| 2007 10 19 | 704 | 0.1+  | 0.5+  | 2007 11 14 | 704 | 0.3+  | 0.3-  | 2007 12 05 | 704 | 0.2+ | 1.1+ |
| 2007 10 21 | 704 | 0.1-  | 0.2-  | 2007 11 14 | 704 | 0.4+  | 0.2-  | 2007 12 05 | 704 | 0.2- | 0.9+ |
| 2007 10 21 | 704 | 0.1+  | 0.2-  | 2007 11 14 | 704 | 0.0   | 0.2-  | 2007 12 05 | 704 | 0.3- | 0.3+ |
| 2007 10 21 | 704 | 0.3+  | 0.2+  | 2007 11 14 | 704 | 0.2+  | 0.5-  | 2007 12 06 | 691 | 0.1+ | 0.0  |
| 2007 10 21 | 704 | 0.1+  | 0.7+  | 2007 11 14 | 704 | (0.9- | 4.1-) | 2007 12 06 | 691 | 0.2- | 0.0  |
| 2007 10 21 | 704 | 0.0   | 0.0   | 2007 11 15 | 699 | 0.3+  | 0.1-  | 2007 12 06 | 691 | 0.0  |      |

**2007 UH<sub>12</sub> = 2004 XN<sub>116</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.80413  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28990472 | $\omega$ 26.63107  | +0.99862937   | −0.04835927 |
| <i>a</i> | 2.2609929  | $\Omega$ 336.11541 | +0.03468716   | +0.89793055 |
| <i>e</i> | 0.2350387  | <i>i</i> 2.83398   | +0.03919407   | +0.43747240 |
| <i>P</i> | 3.40       | <i>H</i> 18.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 06 | 695 | 0.7+  | 0.7+  | 2007 08 21 | 699 | 0.4− | 0.3− | 2007 10 08 | G96 | 0.4− | 0.1− |
| 2002 02 06 | 695 | 0.1+  | 0.7+  | 2007 08 21 | 699 | 0.9+ | 1.0+ | 2007 10 08 | G96 | 0.3+ | 0.2− |
| 2002 04 05 | 807 | 0.0   | 0.8+  | 2007 08 21 | 699 | 0.1+ | 0.5+ | 2007 10 08 | G96 | 0.2+ | 0.4− |
| 2002 04 06 | 807 | 0.2−  | 0.7+  | 2007 08 22 | 699 | 1.0− | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.4− |
| 2004 12 12 | 691 | 0.1−  | 0.3+  | 2007 08 22 | 699 | 0.1+ | 0.1− | 2007 10 08 | G96 | 0.2+ | 0.4− |
| 2004 12 12 | 691 | 0.4+  | 0.3+  | 2007 08 22 | 699 | 0.4+ | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.3− |
| 2004 12 12 | 691 | 0.0   | 0.2+  | 2007 09 03 | 703 | 0.0  | 0.4+ | 2007 10 08 | G96 | 0.1+ | 0.1− |
| 2004 12 16 | 691 | 0.0   | 0.0   | 2007 09 03 | 703 | 0.1− | 0.9+ | 2007 10 19 | G96 | 0.4− | 0.2− |
| 2004 12 16 | 691 | 0.3−  | 0.1−  | 2007 09 03 | 703 | 0.4+ | 1.8+ | 2007 10 19 | G96 | 0.5+ | 0.1− |
| 2004 12 16 | 691 | 0.2+  | 0.3+  | 2007 09 03 | 703 | 0.3− | 0.6+ | 2007 10 19 | G96 | 0.1− | 0.3− |
| 2007 08 11 | 699 | 0.1+  | 0.1−  | 2007 09 11 | G96 | 0.4− | 0.3− | 2007 10 19 | G96 | 0.2− | 0.0  |
| 2007 08 11 | 699 | 0.6−  | 0.8−  | 2007 09 11 | G96 | 0.1− | 0.3− | 2007 10 26 | G96 | 0.1− | 0.5− |
| 2007 08 11 | 699 | (3.1− | 0.2+) | 2007 09 11 | G96 | 0.3− | 0.4− | 2007 10 26 | G96 | 0.1+ | 0.2+ |
| 2007 08 11 | 699 | 0.7−  | 0.7+  | 2007 09 11 | G96 | 0.1+ | 0.2− | 2007 10 26 | G96 | 0.4+ | 0.4− |
| 2007 08 21 | 699 | 0.3+  | 0.9+  | 2007 10 08 | G96 | 0.3− | 0.1− | 2007 10 26 | G96 | 0.0  | 0.3− |

**2007 UJ<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.68902  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17681742 | $\omega$ 202.48121 | +0.96921557   | −0.24154423 |
| <i>a</i> | 3.1437838  | $\Omega$ 171.08592 | +0.24522498   | +0.96436931 |
| <i>e</i> | 0.2102595  | <i>i</i> 17.93806  | −0.02204287   | +0.10792687 |
| <i>P</i> | 5.57       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 16 | 644 | 0.1+ | 0.1− | 2006 05 31 | G96 | 0.1+ | 0.4+ | 2007 10 26 | G96 | 0.0  | 0.3− |
| 2002 11 16 | 644 | 0.4− | 0.6+ | 2007 09 10 | 703 | 0.8− | 0.7+ | 2007 10 26 | G96 | 0.1− | 0.1− |
| 2002 11 16 | 644 | 0.1+ | 0.6+ | 2007 09 10 | 703 | 1.2− | 0.2− | 2007 10 26 | G96 | 0.1− | 0.2− |
| 2006 05 06 | 691 | 0.3+ | 0.7+ | 2007 09 10 | 703 | 0.2+ | 0.2− | 2007 10 26 | G96 | 0.1− | 0.3+ |
| 2006 05 06 | 691 | 0.8+ | 0.6+ | 2007 09 10 | 703 | 0.4+ | 1.1+ | 2007 11 01 | G96 | 0.3+ | 0.1− |
| 2006 05 06 | 691 | 0.3+ | 0.2+ | 2007 10 19 | G96 | 0.6+ | 0.1− | 2007 11 01 | G96 | 0.4− | 0.1− |
| 2006 05 31 | G96 | 0.2+ | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.2− | 2007 11 01 | G96 | 0.1− | 0.5− |
| 2006 05 31 | G96 | 0.2+ | 0.2+ | 2007 10 19 | G96 | 0.6+ | 0.3− | 2007 11 01 | G96 | 0.1+ | 0.4− |
| 2006 05 31 | G96 | 1.6− | 1.3− | 2007 10 19 | G96 | 0.4+ | 0.2+ |            |     |      |      |

**2007 UH<sub>13</sub> = 2002 VZ<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 73.94184   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19992965 | $\omega$ 211.75313 | +0.87953156   | +0.47569059 |
| <i>a</i> | 2.8965737  | $\Omega$ 119.83799 | −0.43364176   | +0.81161529 |
| <i>e</i> | 0.0038590  | <i>i</i> 0.78905   | −0.19590574   | +0.33911516 |
| <i>P</i> | 4.93       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 04 | 291 | 0.0  | 0.0  | 2004 01 30 | 691 | 0.1− | 0.1+ | 2007 10 18 | 691 | 0.1+ | 0.2− |
| 2002 11 04 | 291 | 0.2+ | 0.0  | 2006 07 21 | G96 | 0.3− | 0.3+ | 2007 11 04 | 691 | 0.1− | 0.0  |
| 2002 11 04 | 291 | 0.3− | 0.4+ | 2006 07 21 | G96 | 0.2+ | 0.1+ | 2007 11 04 | 691 | 0.3− | 0.4+ |
| 2002 11 11 | 291 | 1.4+ | 0.7− | 2006 07 21 | G96 | 0.1− | 0.3+ | 2007 11 04 | 691 | 0.0  | 0.4+ |
| 2002 11 11 | 291 | 0.2− | 0.4− | 2006 07 21 | G96 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2002 11 11 | 291 | 0.1− | 0.1− | 2007 10 16 | G96 | 0.5+ | 0.2− | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2002 11 13 | 291 | 0.4− | 0.2+ | 2007 10 16 | G96 | 0.5+ | 0.4− | 2007 11 05 | G96 | 0.2+ | 0.3− |
| 2002 11 13 | 291 | 0.3− | 0.3+ | 2007 10 16 | G96 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.1− |
| 2002 11 13 | 291 | 0.2− | 0.1+ | 2007 10 16 | G96 | 0.3+ | 0.4− | 2007 12 05 | 691 | 0.2+ | 0.0  |
| 2004 01 30 | 691 | 0.0  | 0.1+ | 2007 10 18 | 691 | 0.6+ | 0.2+ | 2007 12 05 | 691 | 0.1− | 0.1+ |
| 2004 01 30 | 691 | 0.2+ | 0.0  | 2007 10 18 | 691 | 1.0− | 0.2− | 2007 12 05 | 691 | 0.2− | 0.1− |

**2007 UN<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.94252  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25498066 | $\omega$ 359.03676 | +0.55100086   | −0.83389334 |
| <i>a</i> | 2.4630008  | $\Omega$ 57.52684  | +0.76589599   | +0.49013368 |
| <i>e</i> | 0.1777533  | <i>i</i> 2.16949   | +0.33136293   | +0.25375357 |
| <i>P</i> | 3.87       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 10 16 | 691 | 0.1+  | 0.1+  | 2007 10 30 | G96 | 0.3+ | 0.4− | 2007 11 11 | 699 | 0.5+  | 0.6+  |
| 2003 10 16 | 691 | 0.0   | 0.3+  | 2007 10 30 | G96 | 0.6+ | 0.3− | 2007 11 11 | 699 | 0.1−  | 1.1+  |
| 2003 10 16 | 691 | 0.2−  | 0.0   | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.5+  | 1.3−  |
| 2003 10 21 | 699 | (2.7− | 0.8−) | 2007 10 31 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 704 | 0.1+  | 0.8−  |
| 2003 10 21 | 699 | (3.4− | 0.7−) | 2007 10 31 | 691 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.7−  | 0.8−  |
| 2003 10 21 | 699 | (0.8− | 1.8−) | 2007 11 02 | D29 | 0.3+ | 0.7− | 2007 11 14 | 704 | 0.9−  | 1.2−  |
| 2003 10 21 | 699 | 0.5−  | 0.6+  | 2007 11 02 | D29 | 0.2− | 0.2− | 2007 11 14 | 704 | 0.6−  | 0.3−  |
| 2007 09 10 | G96 | 0.7+  | 0.4−  | 2007 11 02 | D29 | 0.3+ | 0.4− | 2007 11 17 | 703 | 0.4+  | 0.7+  |
| 2007 09 10 | G96 | 0.3+  | 0.0   | 2007 11 02 | D29 | 0.1− | 0.1− | 2007 11 17 | 703 | (1.4− | 1.5+) |
| 2007 09 10 | G96 | 0.3+  | 0.3+  | 2007 11 03 | G96 | 0.1− | 0.4+ | 2007 11 17 | 703 | 1.3+  | 0.7+  |
| 2007 09 10 | G96 | 0.5+  | 0.3+  | 2007 11 03 | G96 | 0.2+ | 0.2+ | 2007 11 17 | 703 | 0.4+  | 1.1+  |
| 2007 10 16 | G96 | 1.0+  | 0.0   | 2007 11 03 | G96 | 0.4+ | 0.0  | 2007 11 20 | G96 | 0.5+  | 0.5−  |
| 2007 10 16 | G96 | 0.6+  | 0.1−  | 2007 11 03 | G96 | 0.1+ | 0.5+ | 2007 11 20 | G96 | 0.1−  | 0.6−  |
| 2007 10 16 | G96 | 0.3+  | 0.0   | 2007 11 04 | 691 | 0.1− | 0.2− | 2007 11 20 | G96 | 0.5+  | 0.4−  |
| 2007 10 16 | G96 | 0.5+  | 0.1−  | 2007 11 04 | 691 | 0.1− | 0.1+ | 2007 11 20 | G96 | 0.2+  | 0.4−  |
| 2007 10 16 | 691 | 0.5−  | 0.1−  | 2007 11 04 | 691 | 0.1− | 0.1− | 2007 12 03 | 703 | 0.3−  | 0.2−  |
| 2007 10 16 | 691 | 0.0   | 0.3−  | 2007 11 05 | G96 | 0.4− | 0.2+ | 2007 12 03 | 703 | 0.4−  | 1.2+  |
| 2007 10 16 | 691 | 0.3−  | 0.4−  | 2007 11 05 | G96 | 0.8+ | 0.6+ | 2007 12 03 | 703 | (0.6− | 1.9+) |
| 2007 10 18 | 691 | 0.2−  | 0.2+  | 2007 11 05 | G96 | 0.5+ | 0.4− | 2007 12 03 | 703 | 0.7−  | 1.1+  |
| 2007 10 18 | 691 | 0.0   | 0.1+  | 2007 11 05 | G96 | 0.2+ | 0.4− | 2007 12 05 | 704 | 0.2−  | 0.3+  |
| 2007 10 18 | 691 | 0.3−  | 0.1−  | 2007 11 07 | 703 | 1.3− | 0.4+ | 2007 12 05 | 704 | 0.7+  | 0.9+  |
| 2007 10 30 | 691 | 0.3−  | 0.2+  | 2007 11 07 | 703 | 0.2− | 0.6− | 2007 12 05 | 704 | (0.4+ | 1.8+) |
| 2007 10 30 | 691 | 0.2−  | 0.1+  | 2007 11 07 | 703 | 0.7− | 1.4− | 2007 12 05 | 704 | 0.4+  | 1.0+  |
| 2007 10 30 | 691 | 0.0   | 0.1−  | 2007 11 07 | 703 | 0.4+ | 0.1− | 2007 12 05 | 704 | 0.2+  | 1.3+  |
| 2007 10 30 | G96 | 0.1+  | 0.7−  | 2007 11 11 | 699 | 0.6+ | 0.9− |            |     |       |       |
| 2007 10 30 | G96 | 0.0   | 0.4−  | 2007 11 11 | 699 | 0.6+ | 0.4− |            |     |       |       |

**2007 UH<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.41365   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29622713 | $\omega$ 326.39575 | +0.97494783   | −0.19734417 |
| <i>a</i> | 2.2287063  | $\Omega$ 45.34841  | +0.22223789   | +0.84486476 |
| <i>e</i> | 0.1277005  | <i>i</i> 8.29442   | +0.00932992   | +0.49725125 |
| <i>P</i> | 3.33       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 05 | 691 | 0.0   | 0.3+  | 2007 10 18 | 699 | 1.1− | 0.4− | 2007 11 07 | 703 | 0.4− | 0.3− |
| 1997 12 05 | 691 | (0.4+ | 7.5+) | 2007 10 18 | 699 | 0.4− | 0.7+ | 2007 11 07 | 703 | 0.2− | 0.5− |
| 1997 12 05 | 691 | 0.1−  | 0.1−  | 2007 10 18 | 699 | 0.3+ | 0.9− | 2007 11 07 | 703 | 0.3+ | 0.1− |
| 2006 04 02 | 691 | 0.1+  | 0.7+  | 2007 10 20 | 691 | 0.2− | 0.1+ | 2007 11 07 | 703 | 0.7+ | 0.2+ |
| 2006 04 02 | 691 | 0.3−  | 0.3+  | 2007 10 20 | 691 | 0.2− | 0.0  | 2007 11 07 | 703 | 0.1+ | 0.4− |
| 2006 04 02 | 691 | 0.6+  | 0.6+  | 2007 10 20 | 703 | 0.8+ | 0.8− | 2007 11 09 | G96 | 0.1− | 0.2− |
| 2006 05 06 | 691 | 0.2+  | 0.1+  | 2007 10 20 | 703 | 0.7+ | 0.6− | 2007 11 09 | G96 | 0.3− | 0.3− |
| 2006 05 06 | 691 | 0.4+  | 0.4+  | 2007 10 20 | 691 | 0.5− | 0.1+ | 2007 11 09 | G96 | 0.1− | 0.3− |
| 2006 05 06 | 691 | 0.1+  | 0.4+  | 2007 10 20 | 703 | 0.4− | 0.5+ | 2007 11 09 | G96 | 0.2+ | 0.2− |
| 2007 10 08 | 691 | 0.4−  | 0.1+  | 2007 10 20 | 703 | 0.5+ | 0.9+ | 2007 11 11 | 699 | 0.5+ | 0.2− |
| 2007 10 08 | 691 | 0.4−  | 0.3+  | 2007 10 30 | 691 | 0.3− | 0.1+ | 2007 11 11 | 699 | 0.1− | 0.1+ |
| 2007 10 08 | 691 | 0.3−  | 0.0   | 2007 10 30 | 691 | 0.2− | 0.2+ | 2007 11 11 | 699 | 0.0  | 1.6+ |
| 2007 10 08 | G96 | 0.3−  | 0.1−  | 2007 10 30 | 691 | 0.2− | 0.3+ | 2007 11 11 | 699 | 0.3+ | 0.6+ |
| 2007 10 08 | G96 | 0.2−  | 0.0   | 2007 10 30 | 703 | 1.2+ | 0.1− | 2007 11 15 | 704 | 0.1− | 0.3+ |
| 2007 10 08 | G96 | 0.2+  | 0.0   | 2007 10 30 | 703 | 0.3+ | 0.1− | 2007 11 15 | 704 | 0.3− | 0.1− |
| 2007 10 08 | G96 | 0.1+  | 0.0   | 2007 10 30 | 703 | 0.5+ | 0.5− | 2007 11 15 | 704 | 0.4+ | 0.2− |
| 2007 10 16 | 691 | 0.3−  | 0.6+  | 2007 10 30 | 703 | 0.6− | 0.5+ | 2007 11 15 | 704 | 0.2− | 0.2+ |
| 2007 10 16 | 691 | 0.3−  | 0.3−  | 2007 11 07 | 703 | 0.3+ | 0.3− | 2007 11 15 | 704 | 0.1− | 0.4+ |
| 2007 10 16 | 691 | 0.1+  | 0.5−  | 2007 11 07 | 703 | 0.1− | 0.3+ |            |     |      |      |
| 2007 10 18 | 699 | 0.2−  | 0.5+  | 2007 11 07 | 703 | 0.0  | 0.4+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129925

**2007 UV<sub>15</sub> = 2003 TR<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 279.93421  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.24454949 | $\omega$ 93.21875 | -0.41240522   | -0.90607288 |
| <i>a</i> | 2.5325510  | $\Omega$ 21.90567 | +0.70215634   | -0.38232186 |
| <i>e</i> | 0.1340505  | <i>i</i> 14.69254 | +0.58042951   | -0.18127863 |
| <i>P</i> | 4.03       | <i>H</i> 16.5     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 19 | 691 | 0.3- | 0.0  | 2005 03 16 | 703 | 0.1- | 0.1- | 2007 10 18 | G96 | 0.3+ | 0.1- |
| 1993 03 19 | 691 | 0.3+ | 0.5+ | 2005 03 16 | 703 | 0.5- | 0.1+ | 2007 10 19 | 291 | 0.3- | 0.1+ |
| 1993 03 19 | 691 | 0.3+ | 0.0  | 2005 03 16 | 703 | 0.0  | 0.2- | 2007 10 19 | 291 | 0.3- | 0.3+ |
| 2003 10 01 | 691 | 0.2+ | 0.0  | 2005 05 11 | G96 | 0.0  | 0.3- | 2007 10 19 | 291 | 0.4- | 0.3+ |
| 2003 10 01 | 691 | 0.1+ | 0.2+ | 2005 05 11 | G96 | 0.1- | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.0  |
| 2003 10 01 | 691 | 0.1+ | 0.2+ | 2005 05 11 | G96 | 0.1- | 0.3- | 2007 10 19 | G96 | 0.2+ | 0.3- |
| 2003 10 18 | 691 | 0.1- | 0.0  | 2005 05 11 | G96 | 0.5+ | 0.1+ | 2007 10 19 | G96 | 0.3+ | 0.0  |
| 2003 10 18 | 691 | 0.1+ | 0.2- | 2007 10 09 | G96 | 0.1+ | 0.1- | 2007 10 19 | G96 | 0.3+ | 0.3- |
| 2003 10 18 | 691 | 0.2- | 0.0  | 2007 10 09 | G96 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.2+ | 0.3- |
| 2005 03 16 | 703 | 0.7- | 0.6+ | 2007 10 09 | G96 | 0.0  | 0.1- | 2007 10 30 | G96 | 0.0  | 0.0  |
| 2005 03 16 | 703 | 0.6- | 0.7- | 2007 10 09 | G96 | 0.4+ | 0.0  | 2007 10 30 | G96 | 0.2- | 0.5- |
| 2005 03 16 | 703 | 1.1+ | 0.2- | 2007 10 18 | G96 | 0.3+ | 0.3- | 2007 10 30 | G96 | 0.3+ | 0.2- |
| 2005 03 16 | 703 | 0.4+ | 0.2+ | 2007 10 18 | G96 | 0.2+ | 0.0  |            |     |      |      |
| 2005 03 16 | 703 | 0.5- | 0.4- | 2007 10 18 | G96 | 0.2- | 0.2- |            |     |      |      |

**2007 UA<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.81316   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21677586 | $\omega$ 170.52100 | +0.94752985   | +0.31957437 |
| <i>a</i> | 2.7444928  | $\Omega$ 170.83069 | -0.29636651   | +0.88724511 |
| <i>e</i> | 0.0399003  | <i>i</i> 2.77241   | -0.11980850   | +0.33266852 |
| <i>P</i> | 4.55       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 08 | G96 | 0.5- | 0.0  | 2007 09 12 | G96 | 0.2+ | 0.3+ | 2007 10 19 | G96 | 0.7+ | 0.8- |
| 2005 03 08 | G96 | 0.2- | 0.5+ | 2007 10 08 | G96 | 0.4+ | 0.4- | 2007 10 19 | G96 | 0.8+ | 0.7- |
| 2005 03 08 | G96 | 0.0  | 0.2- | 2007 10 08 | G96 | 0.4- | 0.4- | 2007 11 05 | 691 | 0.2- | 0.6+ |
| 2005 03 08 | G96 | 0.3- | 0.3+ | 2007 10 08 | G96 | 0.1+ | 0.2- | 2007 11 05 | 691 | 0.6- | 0.7- |
| 2005 04 04 | G96 | 0.6+ | 0.8- | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 11 05 | 691 | 0.6+ | 0.7- |
| 2005 04 04 | G96 | 0.5+ | 0.2+ | 2007 10 18 | G96 | 0.7+ | 0.2- | 2007 11 09 | 691 | 0.2+ | 0.0  |
| 2005 04 04 | G96 | 0.8- | 0.7- | 2007 10 18 | G96 | 0.7+ | 0.0  | 2007 11 09 | 691 | 0.3- | 0.6+ |
| 2005 04 04 | G96 | 0.5+ | 0.0  | 2007 10 18 | G96 | 0.6+ | 1.0- | 2007 11 09 | 691 | 0.1+ | 0.1- |
| 2007 09 12 | G96 | 0.4- | 0.4+ | 2007 10 18 | G96 | 0.5+ | 0.3- | 2007 11 13 | 691 | 0.2- | 0.6+ |
| 2007 09 12 | G96 | 1.0- | 0.2+ | 2007 10 19 | G96 | 1.3+ | 0.6- | 2007 11 13 | 691 | 0.2- | 0.2+ |
| 2007 09 12 | G96 | 0.3- | 0.7+ | 2007 10 19 | G96 | 0.4+ | 0.9- | 2007 11 13 | 691 | 0.6- | 0.5+ |

**2007 UF<sub>17</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 36.44436   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19435448 | $\omega$ 131.05286 | +0.94446754   | +0.32840384 |
| <i>a</i> | 2.9517055  | $\Omega$ 209.78051 | -0.30800212   | +0.87252659 |
| <i>e</i> | 0.1032433  | <i>i</i> 1.32537   | -0.11452404   | +0.36172955 |
| <i>P</i> | 5.07       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 02 | 691 | 0.2+ | 0.5- | 2007 09 14 | G96 | 0.0  | 0.3- | 2007 10 19 | G96 | 0.2+ | 0.1+ |
| 1997 11 02 | 691 | 0.2+ | 0.9- | 2007 09 14 | G96 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.1+ |
| 1997 11 02 | 691 | 0.4+ | 0.4- | 2007 10 04 | 691 | 0.2- | 0.5+ | 2007 10 19 | G96 | 0.0  | 0.1+ |
| 2000 04 05 | 691 | 0.2- | 0.1- | 2007 10 04 | 691 | 0.0  | 0.4+ | 2007 10 20 | 703 | 0.4- | 0.4- |
| 2000 04 05 | 691 | 0.3- | 0.0  | 2007 10 04 | 691 | 0.0  | 0.4+ | 2007 10 20 | 703 | 0.3- | 1.5- |
| 2000 04 05 | 691 | 0.3- | 0.1- | 2007 10 18 | G96 | 0.1+ | 0.1+ | 2007 10 20 | 703 | 0.3+ | 0.6+ |
| 2004 01 15 | 691 | 0.2- | 0.0  | 2007 10 18 | G96 | 0.3+ | 0.1+ | 2007 10 20 | 703 | 0.2- | 0.1+ |
| 2004 01 15 | 691 | 0.0  | 0.1- | 2007 10 18 | G96 | 0.1+ | 0.1+ | 2007 10 31 | 691 | 0.3- | 0.2+ |
| 2004 01 15 | 691 | 0.0  | 0.1+ | 2007 10 18 | G96 | 0.3+ | 0.1- | 2007 10 31 | 691 | 0.0  | 0.1+ |
| 2005 03 17 | 691 | 0.3+ | 0.3+ | 2007 10 19 | G96 | 0.2- | 0.1- | 2007 10 31 | 691 | 0.1- | 0.1+ |
| 2005 03 17 | 691 | 0.7+ | 0.5+ | 2007 10 19 | G96 | 0.0  | 0.1+ | 2007 11 15 | 691 | 0.1- | 0.7+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 17 | 691 | 0.3+ | 0.4+ | 2007 10 19 | G96 | 0.0  | 0.1- | 2007 11 15 | 691 | 0.5- | 0.4+ |
| 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.5+ | 0.0  | 2007 11 15 | 691 | 0.5- | 0.2+ |
| 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.3+ | 0.2+ |            |     |      |      |

**2007 UU<sub>17</sub> = 2002 CR<sub>268</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 115.64973  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28242684 | $\omega$ 261.06993 | -0.13165972   | +0.99129492 |
| <i>a</i> | 2.3007287  | $\Omega$ 1.36468   | -0.90415730   | -0.11995468 |
| <i>e</i> | 0.0779543  | <i>i</i> 0.76656   | -0.40640533   | -0.05427025 |
| <i>P</i> | 3.49       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 07 | 691 | 0.2+ | 0.3- | 2006 05 25 | G96 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.2- | 0.3- |
| 2002 02 07 | 691 | 0.1- | 0.2- | 2006 05 25 | G96 | 0.2+ | 0.3+ | 2007 10 18 | G96 | 0.5+ | 0.6- |
| 2002 02 07 | 691 | 0.3- | 0.2+ | 2006 05 25 | G96 | 0.3+ | 0.1+ | 2007 10 18 | 291 | 0.0  | 0.2+ |
| 2002 02 07 | 691 | 0.1- | 0.1+ | 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 10 18 | 291 | 0.3- | 0.2+ |
| 2002 02 07 | 691 | 0.6- | 0.3+ | 2007 09 14 | G96 | 0.6+ | 0.1- | 2007 10 18 | 291 | 0.2- | 0.3+ |
| 2002 02 10 | 704 | 0.4+ | 0.9+ | 2007 09 14 | G96 | 0.3+ | 0.5+ | 2007 10 19 | 291 | 0.3- | 0.1+ |
| 2002 02 10 | 704 | 0.7+ | 0.7+ | 2007 09 14 | G96 | 0.7+ | 0.1+ | 2007 10 19 | 291 | 0.3- | 0.5+ |
| 2002 02 10 | 704 | 0.3+ | 1.2+ | 2007 10 04 | 691 | 0.1+ | 0.4+ | 2007 10 19 | 291 | 0.3- | 0.3+ |
| 2006 04 09 | 691 | 0.8+ | 0.8+ | 2007 10 04 | 691 | 0.5- | 0.2+ | 2007 10 19 | G96 | 0.3+ | 0.2- |
| 2006 04 09 | 691 | 0.2+ | 0.5+ | 2007 10 04 | 691 | 0.1- | 0.4+ | 2007 10 19 | G96 | 0.7+ | 0.3- |
| 2006 04 09 | 691 | 0.3- | 0.7+ | 2007 10 18 | G96 | 0.5+ | 0.6- | 2007 10 19 | G96 | 0.3+ | 0.5- |
| 2006 05 03 | G96 | 0.3- | 0.1+ | 2007 10 18 | G96 | 0.2+ | 0.8- | 2007 10 19 | G96 | 0.5+ | 0.4- |
| 2006 05 03 | G96 | 0.3- | 0.2- | 2007 10 18 | G96 | 0.3+ | 0.7- | 2007 10 31 | 691 | 0.5- | 0.1- |
| 2006 05 03 | G96 | 0.3+ | 0.1+ | 2007 10 18 | G96 | 0.7+ | 0.7- | 2007 10 31 | 691 | 0.0  | 0.3+ |
| 2006 05 03 | G96 | 0.2- | 0.1- | 2007 10 18 | G96 | 0.0  | 0.5- | 2007 10 31 | 691 | 0.0  | 1.0+ |
| 2006 05 25 | G96 | 0.1+ | 0.0  | 2007 10 18 | G96 | 0.2+ | 0.5- |            |     |      |      |

**2007 UK<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.57656   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27764366 | $\omega$ 233.23382 | +0.86555301   | +0.48276753 |
| <i>a</i> | 2.3270777  | $\Omega$ 97.54702  | -0.40591712   | +0.83208700 |
| <i>e</i> | 0.1533814  | <i>i</i> 7.72431   | -0.29334159   | +0.27306911 |
| <i>P</i> | 3.55       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 01 08 | 691 | 0.4+ | 1.1+ | 2007 10 08 | 699 | 0.5+ | 0.4- | 2007 10 31 | 703 | 0.7- | 0.0  |
| 1994 01 08 | 691 | 0.6- | 0.8+ | 2007 10 08 | 699 | 0.3+ | 0.2+ | 2007 10 31 | 703 | 1.1- | 0.3- |
| 1994 01 08 | 691 | 0.5- | 0.2+ | 2007 10 17 | 699 | 0.5+ | 0.3- | 2007 10 31 | 703 | 0.7- | 0.8- |
| 2002 03 11 | 644 | 0.1- | 0.9+ | 2007 10 17 | 699 | 0.3+ | 0.5- | 2007 10 31 | 703 | 0.3- | 0.1- |
| 2002 03 11 | 644 | 0.1+ | 0.2+ | 2007 10 17 | 699 | 0.5- | 0.3+ | 2007 11 07 | 703 | 0.3+ | 0.3+ |
| 2002 03 11 | 644 | 0.2+ | 0.1- | 2007 10 17 | 699 | 0.1+ | 0.2+ | 2007 11 07 | 703 | 0.4- | 0.2+ |
| 2004 12 19 | 691 | 1.0+ | 1.7- | 2007 10 19 | 699 | 0.4- | 1.2+ | 2007 11 07 | 703 | 0.2- | 0.4- |
| 2004 12 19 | 691 | 0.3- | 0.1- | 2007 10 19 | 699 | 0.4- | 0.6+ | 2007 11 07 | 703 | 0.1+ | 0.3- |
| 2004 12 19 | 691 | 0.4- | 0.0  | 2007 10 19 | 703 | 0.0  | 0.0  | 2007 11 14 | 699 | 1.3- | 1.2- |
| 2005 01 18 | 691 | 0.1+ | 0.1- | 2007 10 19 | 703 | 0.5- | 0.3+ | 2007 11 14 | 699 | 0.3- | 0.0  |
| 2005 01 18 | 691 | 0.1+ | 0.0  | 2007 10 19 | 703 | 0.3- | 0.5+ | 2007 11 14 | 699 | 0.3+ | 0.0  |
| 2005 01 18 | 691 | 0.4- | 0.1- | 2007 10 19 | 699 | 0.8+ | 1.1- | 2007 11 14 | 699 | 0.9+ | 0.2+ |
| 2007 10 08 | 699 | 0.2+ | 0.7+ | 2007 10 19 | 703 | 0.3- | 0.6+ |            |     |      |      |
| 2007 10 08 | 699 | 0.9+ | 0.2- | 2007 10 19 | 699 | 0.2- | 0.2- |            |     |      |      |

**2007 UQ<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.08974   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27042496 | $\omega$ 142.41154 | +0.99484080   | -0.09641466 |
| <i>a</i> | 2.3683081  | $\Omega$ 223.15444 | +0.07822747   | +0.92713539 |
| <i>e</i> | 0.2505700  | <i>i</i> 2.64466   | +0.06459289   | +0.36211072 |
| <i>P</i> | 3.64       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 26 | 644 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.1- | 0.1- | 2007 11 14 | 704 | 1.2+ | 0.1+ |
| 2003 07 26 | 644 | 0.1- | 0.3+ | 2007 10 30 | G96 | 0.1+ | 0.1- | 2007 11 14 | 704 | 0.5+ | 0.2+ |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 26 | 644 | 0.0  | 0.6+ | 2007 10 30 | G96 | 0.5+  | 0.2-  | 2007 11 14 | 704 | 0.9+ | 0.8+ |
| 2003 07 30 | 599 | 1.0- | 0.2+ | 2007 10 30 | G96 | 0.2+  | 0.3-  | 2007 11 14 | 704 | 0.3+ | 0.5+ |
| 2003 07 30 | 599 | 0.1+ | 0.3+ | 2007 11 03 | 691 | 0.2-  | 0.1-  | 2007 11 14 | 704 | 0.1+ | 0.4- |
| 2003 07 30 | 599 | 0.2+ | 0.6+ | 2007 11 03 | 691 | 0.6+  | 0.4-  | 2007 12 03 | 703 | 0.6- | 1.2+ |
| 2007 10 11 | 691 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.2-  | 0.2-  | 2007 12 03 | 703 | 1.6+ | 0.0  |
| 2007 10 11 | 691 | 0.2- | 0.2- | 2007 11 05 | 704 | 0.7+  | 0.1-  | 2007 12 03 | 703 | 1.4+ | 1.1+ |
| 2007 10 11 | 691 | 0.2- | 0.1- | 2007 11 05 | 704 | 0.6+  | 0.1+  | 2007 12 03 | 703 | 1.1+ | 1.4+ |
| 2007 10 17 | G96 | 0.2+ | 0.1+ | 2007 11 05 | 704 | 0.9+  | 0.1-  | 2007 12 04 | 691 | 0.2- | 0.1+ |
| 2007 10 17 | G96 | 0.3+ | 0.2- | 2007 11 05 | 704 | 0.8+  | 0.2-  | 2007 12 04 | 691 | 0.3- | 0.2+ |
| 2007 10 17 | G96 | 0.2+ | 0.1- | 2007 11 07 | 704 | (0.4- | 2.1+) | 2007 12 04 | 691 | 0.5- | 0.1- |
| 2007 10 19 | 699 | 0.7+ | 0.8- | 2007 11 07 | 704 | 0.6-  | 0.3+  | 2007 12 05 | 704 | 0.6+ | 0.9+ |
| 2007 10 19 | 699 | 1.1- | 0.5+ | 2007 11 07 | 704 | 0.2-  | 0.6+  | 2007 12 05 | 704 | 1.0+ | 0.5- |
| 2007 10 19 | 699 | 0.4- | 0.9- | 2007 11 07 | 704 | 0.3-  | 0.2+  | 2007 12 05 | 704 | 0.4+ | 0.9+ |
| 2007 10 19 | 699 | 0.1- | 0.7- | 2007 11 07 | 704 | 0.8-  | 0.8+  | 2007 12 05 | 704 | 0.1+ | 0.7+ |
| 2007 10 20 | 703 | 0.4- | 0.4+ | 2007 11 11 | G96 | 0.3+  | 0.2-  | 2007 12 06 | 691 | 0.2- | 0.1+ |
| 2007 10 20 | 703 | 1.2- | 0.6- | 2007 11 11 | G96 | 0.3+  | 0.4-  | 2007 12 06 | 691 | 0.2- | 0.3- |
| 2007 10 20 | 703 | 0.0  | 0.1- | 2007 11 11 | G96 | 0.2+  | 0.1-  | 2007 12 06 | 691 | 0.0  | 0.1+ |
| 2007 10 20 | 703 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.0   | 0.3-  | 2007 12 06 | 691 | 0.1+ | 0.4+ |
| 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.2-  | 0.1-  | 2007 12 06 | 691 | 0.4- | 0.4+ |
| 2007 10 30 | 691 | 0.3- | 0.2- | 2007 11 14 | 691 | 0.1-  | 0.1-  | 2007 12 06 | 691 | 0.1- | 0.1- |
| 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.3-  | 0.2-  |            |     |      |      |

**2007 UE<sub>19</sub>**

|                                         |            |          |           |             |             |            |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |            |
| <i>M</i>                                | 326.80564  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i>                                | 0.17841184 | $\omega$ | 73.18218  | +0.41212309 | -0.91112643 |            |
| <i>a</i>                                | 3.1250258  | $\Omega$ | 352.47881 | +0.83066444 | +0.37653198 |            |
| <i>e</i>                                | 0.1002746  | <i>i</i> | 0.78152   | +0.37436766 | +0.16754788 |            |
| <i>P</i>                                | 5.52       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 19 | 691 | 0.1- | 0.7- | 2007 10 18 | G96 | 0.3+ | 0.1- | 2007 11 04 | 691 | 0.2- | 0.4+ |
| 1996 11 19 | 691 | 0.5+ | 0.0  | 2007 10 18 | G96 | 0.2+ | 0.7- | 2007 11 04 | 691 | 0.2- | 0.4+ |
| 1996 11 19 | 691 | 0.2- | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.6- | 2007 11 04 | 691 | 0.1- | 0.3+ |
| 2004 02 26 | 695 | 0.0  | 0.1- | 2007 10 18 | G96 | 0.0  | 0.4- | 2007 11 05 | G96 | 0.2- | 0.1+ |
| 2004 02 26 | 695 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.0  | 0.6- | 2007 11 05 | G96 | 0.1- | 0.1- |
| 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 10 19 | G96 | 0.3+ | 0.5- | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 10 19 | G96 | 0.2+ | 0.5- | 2007 11 05 | G96 | 0.1- | 0.0  |
| 2007 09 14 | G96 | 0.4+ | 0.0  | 2007 10 19 | G96 | 0.2+ | 0.5- | 2007 11 15 | 691 | 0.1+ | 0.5+ |
| 2007 09 14 | G96 | 0.7+ | 0.0  | 2007 10 19 | G96 | 0.1+ | 0.1- | 2007 11 15 | 691 | 0.1- | 0.5- |
| 2007 10 18 | G96 | 0.1+ | 0.3- | 2007 10 31 | 691 | 0.1- | 0.1+ | 2007 11 15 | 691 | 0.2+ | 0.2+ |
| 2007 10 18 | G96 | 0.2- | 0.5- | 2007 10 31 | 691 | 0.6- | 0.0  |            |     |      |      |
| 2007 10 18 | G96 | 0.6+ | 0.3- | 2007 10 31 | 691 | 0.1- | 0.4+ |            |     |      |      |

**2007 UC<sub>20</sub>**

|                                         |            |          |           |             |             |            |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |            |
| <i>M</i>                                | 273.27208  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i>                                | 0.26795004 | $\omega$ | 105.61048 | -0.63607707 | -0.77141244 |            |
| <i>a</i>                                | 2.3828690  | $\Omega$ | 23.91846  | +0.68971437 | -0.57893462 |            |
| <i>e</i>                                | 0.1663063  | <i>i</i> | 2.56339   | +0.34597693 | -0.26411657 |            |
| <i>P</i>                                | 3.68       | <i>H</i> | 17.8      | <i>G</i>    | 0.15        | <i>U</i> 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 13 | 691 | 0.1+ | 0.0  | 2007 10 18 | G96 | 0.3+ | 0.0  | 2007 11 01 | G96 | 0.0  | 0.3- |
| 2005 01 13 | 691 | 0.4- | 0.1- | 2007 10 18 | G96 | 0.1- | 0.1+ | 2007 11 01 | G96 | 0.3- | 0.1- |
| 2005 01 13 | 691 | 0.0  | 0.1+ | 2007 10 19 | G96 | 0.4- | 0.0  | 2007 11 17 | G96 | 0.1- | 0.0  |
| 2005 02 02 | 691 | 0.3+ | 0.0  | 2007 10 19 | G96 | 0.1- | 0.1- | 2007 11 17 | G96 | 0.3- | 0.3- |
| 2005 02 02 | 691 | 0.0  | 0.1- | 2007 10 19 | G96 | 0.2+ | 0.1- | 2007 11 17 | G96 | 0.3+ | 0.3- |
| 2005 02 02 | 691 | 0.0  | 0.0  | 2007 10 19 | G96 | 0.2- | 0.2- | 2007 11 17 | G96 | 0.0  | 1.2+ |
| 2007 10 18 | G96 | 0.0  | 0.0  | 2007 11 01 | G96 | 0.1+ | 0.1+ |            |     |      |      |
| 2007 10 18 | G96 | 0.2+ | 0.1- | 2007 11 01 | G96 | 0.4+ | 0.1+ |            |     |      |      |

**2007 UJ<sub>20</sub> = 2007 VO<sub>187</sub> = 2002 SK<sub>71</sub>**Id. Minor Planet Center (*MPO* 128554; d, unpublished)

|                                         |            |          |           |             |             |            |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |            |
| <i>M</i>                                | 42.20886   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i>                                | 0.20241567 | $\omega$ | 176.40143 | +0.92233781 | +0.38614554 |            |
| <i>a</i>                                | 2.8728082  | $\Omega$ | 160.86624 | -0.35552762 | +0.86192361 |            |
| <i>e</i>                                | 0.0728392  | <i>i</i> | 2.37552   | -0.15130455 | +0.32860206 |            |
| <i>P</i>                                | 4.87       | <i>H</i> | 17.4      | <i>G</i>    | 0.15        | <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 26 | 644 | 0.8- | 0.7+ | 2007 09 12 | G96 | 0.4- | 0.3- | 2007 11 03 | 691 | 0.1- | 0.3+ |
| 2002 09 26 | 644 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2002 09 26 | 644 | 0.2- | 0.2+ | 2007 10 08 | G96 | 0.3+ | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.0  |
| 2002 10 06 | 644 | 0.0  | 0.4+ | 2007 10 08 | G96 | 0.7+ | 0.1+ | 2007 11 05 | 691 | 0.2+ | 0.1+ |
| 2002 10 06 | 644 | 0.3- | 0.1+ | 2007 10 08 | G96 | 0.4+ | 0.4+ | 2007 11 05 | 691 | 0.1+ | 0.1+ |
| 2002 10 06 | 644 | 0.1- | 0.3+ | 2007 10 18 | G96 | 1.1+ | 0.7- | 2007 11 05 | 691 | 0.7- | 0.0  |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.6+ | 0.1+ | 2007 11 07 | 691 | 0.4- | 0.2- |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.6+ | 0.2+ | 2007 11 07 | 691 | 0.1+ | 0.2+ |
| 2002 11 08 | 645 | 0.1+ | 0.0  | 2007 10 18 | G96 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.4- | 0.0  |
| 2002 11 08 | 645 | 0.0  | 0.1- | 2007 10 19 | G96 | 0.8+ | 0.1+ | 2007 11 13 | 691 | 0.1+ | 0.1- |
| 2007 09 12 | G96 | 0.3- | 0.3- | 2007 10 19 | G96 | 0.4+ | 0.5- | 2007 11 13 | 691 | 0.1+ | 0.1- |
| 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 10 19 | G96 | 0.4+ | 0.2- | 2007 11 13 | 691 | 0.3- | 0.1+ |
| 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 10 19 | G96 | 0.0  | 0.1- |            |     |      |      |

**2007 UL<sub>20</sub> = 2007 UC<sub>81</sub>**

|                                         |            |          |           |             |             |            |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |            |
| <i>M</i>                                | 3.70220    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i>                                | 0.22740099 | $\omega$ | 227.21103 | +0.92937576 | -0.36882314 |            |
| <i>a</i>                                | 2.6583234  | $\Omega$ | 154.42086 | +0.34810521 | +0.86201316 |            |
| <i>e</i>                                | 0.0820938  | <i>i</i> | 2.01380   | +0.12281474 | +0.34771081 |            |
| <i>P</i>                                | 4.33       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 02 16 | 691 | 0.1- | 0.7- | 2007 10 08 | G96 | 0.5+ | 0.3- | 2007 10 30 | 691 | 0.4- | 0.1+ |
| 1996 02 16 | 691 | 0.3- | 0.5- | 2007 10 08 | G96 | 0.4+ | 0.3- | 2007 11 03 | 691 | 0.4- | 0.0  |
| 1996 02 16 | 691 | 0.1+ | 0.2- | 2007 10 08 | G96 | 0.1- | 0.3- | 2007 11 03 | 691 | 0.8- | 1.6+ |
| 1998 09 12 | 691 | 0.3+ | 0.4- | 2007 10 08 | G96 | 0.4+ | 0.3- | 2007 11 03 | 691 | 0.3- | 0.0  |
| 1998 09 12 | 691 | 0.2- | 0.3- | 2007 10 18 | G96 | 0.6+ | 0.3- | 2007 11 05 | 691 | 0.5- | 0.0  |
| 1998 09 12 | 691 | 0.1+ | 0.0  | 2007 10 18 | G96 | 0.2+ | 0.1- | 2007 11 05 | 691 | 0.4- | 0.3+ |
| 2005 04 04 | G96 | 0.0  | 0.3+ | 2007 10 18 | G96 | 0.4+ | 0.2- | 2007 11 05 | 691 | 0.1- | 0.3+ |
| 2005 04 04 | G96 | 0.3+ | 0.3- | 2007 10 18 | G96 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.2- | 0.1+ |
| 2005 04 04 | G96 | 0.0  | 0.4- | 2007 10 19 | G96 | 0.3+ | 0.2- | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2005 04 04 | G96 | 0.5- | 0.2+ | 2007 10 19 | G96 | 0.2+ | 0.3+ | 2007 11 09 | 691 | 0.3- | 0.1+ |
| 2007 09 12 | G96 | 0.3+ | 0.5- | 2007 10 19 | G96 | 0.1+ | 0.1- | 2007 11 13 | 691 | 0.4- | 0.1+ |
| 2007 09 12 | G96 | 0.9+ | 0.2- | 2007 10 19 | G96 | 0.0  | 0.3- | 2007 11 13 | 691 | 0.3- | 0.1+ |
| 2007 09 12 | G96 | 0.6+ | 0.5- | 2007 10 30 | 691 | 0.6- | 0.3- | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 2007 09 12 | G96 | 0.4+ | 0.0  | 2007 10 30 | 691 | 0.1- | 0.1+ |            |     |      |      |

**2007 UX<sub>20</sub> = 1998 TD<sub>23</sub> = 2005 EH<sub>93</sub>**

|                                         |            |          |           |             |             |            |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |            |
| <i>M</i>                                | 109.15088  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i>                                | 0.22171870 | $\omega$ | 250.49345 | -0.03392165 | +0.99485705 |            |
| <i>a</i>                                | 2.7035506  | $\Omega$ | 18.36249  | -0.76513302 | +0.03558561 |            |
| <i>e</i>                                | 0.1044878  | <i>i</i> | 17.63530  | -0.64297805 | -0.09483204 |            |
| <i>P</i>                                | 4.45       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 14 | 691 | 0.7- | 1.7+ | 2005 03 09 | 703 | 1.1- | 0.6- | 2007 10 16 | 691 | 0.1+ | 0.3- |
| 1998 10 14 | 691 | 0.1+ | 0.2- | 2005 03 09 | 703 | 0.4- | 1.4- | 2007 10 16 | 691 | 0.1- | 0.5+ |
| 1998 10 14 | 691 | 0.1+ | 0.2- | 2007 09 05 | G96 | 0.4+ | 0.6- | 2007 10 20 | 691 | 0.6- | 0.3- |
| 1998 10 19 | 691 | 0.2- | 0.0  | 2007 09 05 | G96 | 0.3+ | 0.4- | 2007 10 20 | 691 | 0.2- | 0.3- |
| 1998 10 19 | 691 | 0.3- | 0.2- | 2007 09 05 | G96 | 0.3+ | 0.3- | 2007 10 20 | 691 | 0.0  | 0.1+ |
| 1998 10 19 | 691 | 0.0  | 0.1+ | 2007 09 05 | G96 | 0.3+ | 0.3- | 2007 10 20 | 703 | 1.0- | 0.8+ |
| 2001 03 15 | 691 | 0.1+ | 0.3+ | 2007 09 20 | 703 | 0.2- | 0.2- | 2007 10 20 | 703 | 0.6- | 0.0  |
| 2001 03 15 | 691 | 0.3+ | 0.2+ | 2007 09 20 | 703 | 0.4+ | 0.7+ | 2007 10 20 | 703 | 0.6+ | 0.1- |
| 2001 03 15 | 691 | 0.4+ | 0.5+ | 2007 09 20 | 703 | 1.8+ | 0.4- | 2007 10 20 | 703 | 0.6- | 0.4- |
| 2005 03 08 | 704 | 1.2+ | 0.6+ | 2007 09 20 | 703 | 2.6+ | 2.1+ | 2007 11 03 | G96 | 0.8+ | 0.3- |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 08 | 704 | 0.7+ | 0.6+ | 2007 10 05 | 691 | 0.2− | 0.0  | 2007 11 03 | G96 | 0.0  | 0.4− |
| 2005 03 08 | 704 | 0.1+ | 0.5− | 2007 10 05 | 691 | 0.6− | 0.1− | 2007 11 03 | G96 | 0.8+ | 0.4− |
| 2005 03 09 | 703 | 0.3− | 0.1+ | 2007 10 05 | 691 | 0.5+ | 0.0  | 2007 11 03 | G96 | 0.7+ | 0.3− |
| 2005 03 09 | 703 | 0.6− | 0.3+ | 2007 10 16 | 691 | 0.1− | 0.1+ |            |     |      |      |

2007 UH<sub>22</sub> = 2003 UP<sub>381</sub>

|                                         |            |          |          |            |             |      |      |            |             |      |      |
|-----------------------------------------|------------|----------|----------|------------|-------------|------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |             |      |      |            |             |      |      |
|                                         |            |          |          | MPC        |             |      |      |            |             |      |      |
| <i>M</i>                                | 260.34192  |          | (2000.0) |            | <b>P</b>    |      |      |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.26385657 | <i>ω</i> | 83.67306 |            | −0.90051437 |      |      |            | −0.43198959 |      |      |
| <i>a</i>                                | 2.4074509  | <i>Ω</i> | 70.72393 |            | +0.37529012 |      |      |            | −0.82974316 |      |      |
| <i>e</i>                                | 0.1160083  | <i>i</i> | 3.01124  |            | +0.21961601 |      |      |            | −0.35342791 |      |      |
| <i>P</i>                                | 3.74       | <i>H</i> | 17.7     | <i>G</i>   | 0.15        |      |      | <i>U</i>   | 3           |      |      |
| Residuals in seconds of arc             |            |          |          |            |             |      |      |            |             |      |      |
| 2003 10 22                              | 645        | 0.1+     | 0.1−     | 2007 10 16 | 691         | 0.1− | 0.5+ | 2007 11 09 | G96         | 0.4+ | 0.0  |
| 2003 10 22                              | 645        | 0.1+     | 0.0      | 2007 10 16 | 691         | 0.2− | 0.1− | 2007 11 09 | G96         | 0.4+ | 0.1+ |
| 2003 10 24                              | 645        | 0.1−     | 0.0      | 2007 10 16 | 691         | 0.0  | 0.7+ | 2007 11 09 | G96         | 0.3+ | 0.2− |
| 2003 10 24                              | 645        | 0.1−     | 0.1+     | 2007 10 20 | 691         | 0.0  | 0.0  | 2007 11 09 | G96         | 0.2+ | 0.0  |
| 2005 02 09                              | 691        | 0.3+     | 0.0      | 2007 10 20 | 691         | 0.4− | 0.0  | 2007 12 06 | G96         | 0.2− | 0.2− |
| 2005 02 09                              | 691        | 0.2−     | 0.0      | 2007 10 20 | 691         | 0.2+ | 0.3− | 2007 12 06 | G96         | 0.1− | 0.5− |
| 2005 02 09                              | 691        | 0.1−     | 0.0      | 2007 11 05 | G96         | 0.5+ | 0.2− | 2007 12 06 | G96         | 0.2− | 0.5+ |
| 2007 10 08                              | 691        | 0.3−     | 0.2−     | 2007 11 05 | G96         | 0.4+ | 0.2− | 2007 12 06 | G96         | 0.1− | 0.2+ |
| 2007 10 08                              | 691        | 0.0      | 0.2−     | 2007 11 05 | G96         | 0.2+ | 0.0  |            |             |      |      |
| 2007 10 08                              | 691        | 0.2+     | 0.2−     | 2007 11 05 | G96         | 0.7+ | 0.3− |            |             |      |      |

2007 UN<sub>22</sub> = 1996 KL<sub>3</sub> = 2003 KJ<sub>19</sub>

|                                         |            |          |           |            |             |      |      |            |             |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |      |      |            |             |      |      |
|                                         |            |          |           | MPC        |             |      |      |            |             |      |      |
| <i>M</i>                                | 149.31561  |          | (2000.0)  |            | <b>P</b>    |      |      |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.29854599 | <i>ω</i> | 44.60172  |            | −0.37528207 |      |      |            | +0.92576010 |      |      |
| <i>a</i>                                | 2.2171508  | <i>Ω</i> | 203.47302 |            | −0.87951405 |      |      |            | −0.37137433 |      |      |
| <i>e</i>                                | 0.0899363  | <i>i</i> | 6.65616   |            | −0.29260624 |      |      |            | −0.07105874 |      |      |
| <i>P</i>                                | 3.30       | <i>H</i> | 17.6      | <i>G</i>   | 0.15        |      |      | <i>U</i>   | 1           |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |      |            |             |      |      |
| 1996 05 16                              | 691        | 0.4−     | 1.5−      | 2003 06 02 | 291         | 0.3− | 0.1+ | 2007 10 16 | 691         | 0.3− | 0.2+ |
| 1996 05 16                              | 691        | 0.4−     | 0.1−      | 2006 05 26 | 691         | 0.2+ | 0.3+ | 2007 10 16 | 691         | 0.1− | 0.3+ |
| 1996 05 21                              | 691        | 0.8+     | 0.4+      | 2006 05 26 | 691         | 0.0  | 0.4+ | 2007 10 20 | 691         | 0.1− | 0.1− |
| 1996 05 21                              | 691        | 0.3−     | 0.2+      | 2006 05 26 | 691         | 0.1+ | 0.4+ | 2007 10 20 | 691         | 0.3− | 0.2+ |
| 1996 05 21                              | 691        | 0.1+     | 0.4+      | 2007 09 13 | G96         | 0.5− | 0.0  | 2007 10 20 | 691         | 0.4− | 0.5+ |
| 2000 09 04                              | 691        | 0.1−     | 0.2−      | 2007 09 13 | G96         | 0.1− | 0.2− | 2007 11 04 | G96         | 0.8+ | 0.2+ |
| 2000 09 04                              | 691        | 0.4+     | 0.1−      | 2007 09 13 | G96         | 0.9+ | 0.1− | 2007 11 04 | G96         | 0.7+ | 0.2− |
| 2000 09 04                              | 691        | 0.1+     | 0.2−      | 2007 09 13 | G96         | 0.2+ | 0.7− | 2007 11 04 | G96         | 0.2+ | 0.1− |
| 2003 05 29                              | 691        | 0.1+     | 0.5−      | 2007 10 07 | G96         | 0.1+ | 0.3− | 2007 11 04 | G96         | 0.1+ | 0.2− |
| 2003 05 29                              | 691        | 0.6+     | 0.1+      | 2007 10 07 | G96         | 0.5+ | 0.1− | 2007 11 09 | G96         | 0.4+ | 0.1− |
| 2003 05 29                              | 691        | 0.0      | 0.4−      | 2007 10 07 | G96         | 0.3+ | 0.2− | 2007 11 09 | G96         | 0.7+ | 0.0  |
| 2003 06 02                              | 291        | 0.5−     | 0.3+      | 2007 10 07 | G96         | 0.6+ | 0.6− | 2007 11 09 | G96         | 0.1+ | 0.1− |
| 2003 06 02                              | 291        | 0.2−     | 0.4+      | 2007 10 16 | 691         | 0.4− | 0.4+ | 2007 11 09 | G96         | 0.5+ | 0.0  |

2007 UY<sub>23</sub> = 2005 EF<sub>239</sub>

|                                         |            |          |           |            |             |       |       |            |             |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|-------|-------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |       |       |            |             |      |      |
|                                         |            |          |           | MPC        |             |       |       |            |             |      |      |
| <i>M</i>                                | 311.46213  |          | (2000.0)  |            | <b>P</b>    |       |       |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.26880285 | <i>ω</i> | 334.38205 |            | −0.28537870 |       |       |            | −0.95779041 |      |      |
| <i>a</i>                                | 2.3778263  | <i>Ω</i> | 132.17856 |            | +0.88716141 |       |       |            | −0.27764614 |      |      |
| <i>e</i>                                | 0.1661296  | <i>i</i> | 2.67542   |            | +0.36263429 |       |       |            | −0.07449940 |      |      |
| <i>P</i>                                | 3.67       | <i>H</i> | 17.3      | <i>G</i>   | 0.15        |       |       | <i>U</i>   | 5           |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |       |       |            |             |      |      |
| 2005 03 11                              | 691        | 0.4+     | 0.1+      | 2007 10 08 | 691         | 0.3−  | 0.2+  | 2007 10 12 | 691         | 0.0  | 0.3+ |
| 2005 03 11                              | 691        | 0.2+     | 0.0       | 2007 10 08 | 691         | 0.2−  | 0.1+  | 2007 10 16 | 691         | 0.2− | 0.1+ |
| 2005 03 11                              | 691        | 0.2+     | 0.3+      | 2007 10 08 | G96         | 0.2+  | 0.2−  | 2007 10 16 | 691         | 0.1− | 0.1− |
| 2005 03 16                              | G96        | 0.1−     | 0.2−      | 2007 10 08 | G96         | 0.2+  | 0.1+  | 2007 10 16 | 691         | 0.1− | 0.2− |
| 2005 03 16                              | G96        | 0.6+     | 0.2−      | 2007 10 08 | G96         | 0.3+  | 0.1−  | 2007 10 20 | 691         | 0.0  | 0.1− |
| 2005 03 16                              | G96        | 1.4−     | 0.1−      | 2007 10 08 | G96         | 0.3+  | 0.3−  | 2007 10 20 | 691         | 0.2+ | 0.3− |
| 2005 03 16                              | G96        | (2.3−    | 1.8−)     | 2007 10 12 | 691         | (2.3+ | 1.1−) | 2007 10 20 | 691         | 0.0  | 0.0  |
| 2007 10 08                              | 691        | 0.1−     | 0.1+      | 2007 10 12 | 691         | 0.0   | 0.6+  |            |             |      |      |

## M.P.O. 129927

2007 US<sub>25</sub>

|                                         |            |          |           |            |             |      |      |            |             |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |      |      |            |             |      |      |
|                                         |            |          |           | MPC        |             |      |      |            |             |      |      |
| <i>M</i>                                | 166.36245  |          | (2000.0)  |            | <b>P</b>    |      |      |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.31227076 | <i>ω</i> | 35.50475  |            | −0.50745490 |      |      |            | +0.86164039 |      |      |
| <i>a</i>                                | 2.1517006  | <i>Ω</i> | 204.00390 |            | −0.79509458 |      |      |            | −0.47183858 |      |      |
| <i>e</i>                                | 0.0580725  | <i>i</i> | 1.13874   |            | −0.33213570 |      |      |            | −0.18693366 |      |      |
| <i>P</i>                                | 3.16       | <i>H</i> | 17.3      | <i>G</i>   | 0.15        |      |      | <i>U</i>   | 0           |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |      |            |             |      |      |
| 1994 10 08                              | 691        | 0.2−     | 0.0       | 2007 09 18 | G96         | 0.2+ | 0.1− | 2007 11 05 | G96         | 0.2+ | 0.4− |
| 1994 10 08                              | 691        | 0.3−     | 0.0       | 2007 09 18 | G96         | 0.1+ | 0.3− | 2007 11 11 | G96         | 0.2+ | 0.4− |
| 1994 10 08                              | 691        | 0.2+     | 0.6+      | 2007 10 08 | 691         | 0.0  | 0.1− | 2007 11 11 | G96         | 0.6+ | 0.3− |
| 1998 12 13                              | 691        | 0.1+     | 0.2−      | 2007 10 08 | 691         | 0.2− | 0.4+ | 2007 11 11 | G96         | 0.3+ | 0.3− |
| 1998 12 13                              | 691        | 0.2−     | 0.1+      | 2007 10 08 | 691         | 0.0  | 0.1− | 2007 11 11 | G96         | 0.0  | 0.3− |
| 1998 12 13                              | 691        | 0.0      | 0.0       | 2007 10 16 | 691         | 0.4− | 0.2+ | 2007 11 14 | 704         | 0.1+ | 0.1− |
| 1999 01 13                              | 691        | 0.2+     | 0.5+      | 2007 10 16 | 691         | 0.1− | 0.0  | 2007 11 14 | 704         | 0.4+ | 0.5− |
| 1999 01 13                              | 691        | 0.1−     | 0.2+      | 2007 10 16 | 691         | 0.1+ | 0.1− | 2007 11 14 | 704         | 0.0  | 0.2+ |
| 1999 01 13                              | 691        | 0.1+     | 0.1−      | 2007 10 20 | 691         | 0.5− | 0.1+ | 2007 11 14 | 704         | 0.3− | 1.1+ |
| 2006 05 19                              | G96        | 0.4−     | 0.3−      | 2007 10 20 | 691         | 0.1− | 0.2− | 2007 11 18 | 691         | 0.2− | 0.1+ |
| 2006 05 19                              | G96        | 0.4−     | 0.3+      | 2007 10 20 | 691         | 0.1− | 0.2− | 2007 11 18 | 691         | 0.2− | 0.2+ |
| 2006 05 19                              | G96        | 0.1−     | 0.3+      | 2007 10 30 | G96         | 0.2+ | 0.0  | 2007 11 18 | 691         | 0.3− | 0.1+ |
| 2006 05 19                              | 644        | 0.5+     | 0.3+      | 2007 10 30 | G96         | 0.3+ | 0.3− | 2007 11 19 | A50         | 0.2− | 0.2+ |
| 2006 05 19                              | G96        | 0.3−     | 0.4+      | 2007 10 30 | G96         | 0.2+ | 0.1− | 2007 11 19 | A50         | 0.5− | 0.2+ |
| 2006 05 19                              | 644        | 0.0      | 0.3+      | 2007 10 30 | G96         | 0.1+ | 0.2− | 2007 12 04 | 691         | 0.0  | 0.1+ |
| 2006 05 19                              | 644        | 0.3+     | 0.5+      | 2007 11 03 | 691         | 0.3+ | 0.1+ | 2007 12 04 | 691         | 1.4+ | 0.3+ |
| 2006 06 20                              | 691        | 0.1+     | 0.0       | 2007 11 03 | 691         | 0.0  | 0.1− | 2007 12 04 | 691         | 0.0  | 0.2− |
| 2006 06 20                              | 691        | 0.0      | 0.0       | 2007 11 03 | 691         | 0.3− | 0.0  | 2007 12 05 | 691         | 0.1− | 0.1+ |
| 2006 06 20                              | 691        | 0.2+     | 0.2+      | 2007 11 05 | G96         | 0.0  | 0.4− | 2007 12 05 | 691         | 0.1− | 0.1+ |
| 2007 09 18                              | G96        | 0.0      | 0.1−      | 2007 11 05 | G96         | 0.6+ | 0.3− | 2007 12 05 | 691         | 0.1+ | 0.1+ |
| 2007 09 18                              | G96        | 0.3+     | 0.5−      | 2007 11 05 | G96         | 0.1+ | 0.3− |            |             |      |      |

2007 UX<sub>25</sub> = 2001 TE<sub>258</sub>

|                                         |            |          |           |            |             |      |      |             |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |      |      |             |     |      |      |
| <i>M</i>                                | 334.40059  |          | (2000.0)  |            | <b>P</b>    |      |      | <b>Q</b>    |     |      |      |
| <i>n</i>                                | 0.17106397 | <i>ω</i> | 222.68983 |            | +0.23297779 |      |      | −0.96799451 |     |      |      |
| <i>a</i>                                | 3.2138852  | <i>Ω</i> | 214.14953 |            | +0.93105606 |      |      | +0.24973255 |     |      |      |
| <i>e</i>                                | 0.0759492  | <i>i</i> | 9.56896   |            | +0.28081302 |      |      | −0.02490549 |     |      |      |
| <i>P</i>                                | 5.76       | <i>H</i> | 15.9      | <i>G</i>   | 0.15        |      |      | <i>U</i>    | 2   |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |      |             |     |      |      |
| 2000 09 03                              | 645        | 0.0      | 0.0       | 2001 11 15 | 691         | 0.0  | 0.2− | 2007 10 16  | 691 | 0.5+ | 0.6+ |
| 2000 09 03                              | 645        | 0.0      | 0.0       | 2001 11 15 | 691         | 0.2+ | 0.4− | 2007 10 16  | 691 | 0.3− | 0.1− |
| 2001 10 11                              | 644        | 0.0      | 0.1−      | 2001 11 15 | 691         | 0.1+ | 0.0  | 2007 10 16  | 691 | 0.4− | 0.3− |
| 2001 10 11                              | 644        | 0.4+     | 0.5−      | 2007 09 10 | G96         | 0.6+ | 0.4− | 2007 10 20  | 691 | 0.0  | 0.1+ |
| 2001 10 11                              | 644        | 0.1+     | 0.2−      | 2007 09 10 | G96         | 0.5+ | 0.3− | 2007 10 20  | 691 | 0.1− | 0.0  |
| 2001 10 15                              | 691        | 0.0      | 0.6+      | 2007 09 10 | G96         | 0.2+ | 0.3− | 2007 10 20  | 691 | 0.1− | 0.3+ |
| 2001 10 15                              | 691        | 0.3−     | 0.1+      | 2007 09 10 | G96         | 0.1+ | 0.2+ | 2007 11 18  | G96 | 0.2+ | 0.1− |
| 2001 10 15                              | 691        | 0.3−     | 0.1+      | 2007 10 08 | 691         | 0.2− | 0.0  | 2007 11 18  | G96 | 0.0  | 0.1− |
| 2001 10 19                              | 644        | 0.5+     | 0.5−      | 2007 10 08 | 691         | 0.1− | 0.4+ | 2007 11 18  | G96 | 0.4+ | 0.1− |
| 2001 10 19                              | 644        | 0.1−     | 0.1+      | 2007 10 08 | G96         | 0.1− | 0.2− | 2007 11 18  | G96 | 0.2+ | 0.0  |
| 2001 10 19                              | 644        | 0.6−     | 0.7−      | 2007 10 08 | G96         | 0.2+ | 0.2− | 2007 11 20  | 691 | 0.1− | 0.3− |
| 2001 10 26                              | 644        | 0.7+     | 0.3+      | 2007 10 08 | G96         | 0.1− | 0.3− | 2007 11 20  | 691 | 0.1− | 0.0  |
| 2001 10 26                              | 644        | 0.5+     | 0.2+      | 2007 10 08 | G96         | 0.3+ | 0.2− | 2007 11 20  | 691 | 0.0  | 0.1+ |
| 2001 10 26                              | 644        | 0.4+     | 0.2+      | 2007 10 08 | 691         | 0.2+ | 0.0  |             |     |      |      |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 25 | 704 | 0.1−  | 0.4−  | 2007 10 20 | 691 | 0.3+  | 0.4−  | 2007 11 14 | G96 | 0.4+ | 0.3− |
| 2004 03 25 | 704 | 0.0   | 0.4−  | 2007 10 20 | 691 | 0.0   | 0.0   | 2007 11 14 | G96 | 0.2+ | 0.3− |
| 2004 03 25 | 704 | 0.2+  | 0.7+  | 2007 10 30 | 691 | 0.2−  | 0.1−  | 2007 11 18 | 691 | 0.8− | 0.2+ |
| 2004 03 26 | 703 | (2.5+ | 0.2+) | 2007 10 30 | 691 | 0.1−  | 0.5+  | 2007 11 18 | 691 | 0.1+ | 0.2− |
| 2004 03 26 | 703 | 0.5−  | 1.0+  | 2007 10 30 | 691 | 0.2+  | 0.1−  | 2007 11 18 | 691 | 0.2− | 0.2− |
| 2004 03 26 | 703 | (2.3+ | 0.2−) | 2007 11 05 | G96 | 0.4+  | 0.6−  | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2004 03 26 | 703 | 0.4+  | 0.8−  | 2007 11 05 | G96 | (1.7+ | 0.4−) | 2007 12 05 | 691 | 0.3− | 0.0  |
| 2007 10 08 | 691 | 0.4−  | 0.0   | 2007 11 05 | G96 | 0.3+  | 0.2−  | 2007 12 05 | 691 | 0.1+ | 0.1− |
| 2007 10 08 | 691 | 0.2−  | 0.2+  | 2007 11 05 | G96 | 0.4+  | 0.2−  | 2007 12 15 | G96 | 0.2+ | 0.0  |
| 2007 10 08 | 691 | 0.1+  | 0.3−  | 2007 11 14 | 691 | 0.1+  | 0.1+  | 2007 12 15 | G96 | 0.0  | 0.2− |
| 2007 10 16 | 691 | 0.1−  | 0.5+  | 2007 11 14 | 691 | 0.1+  | 0.6+  | 2007 12 15 | G96 | 1.0+ | 0.2− |
| 2007 10 16 | 691 | 0.1+  | 0.0   | 2007 11 14 | 691 | 0.1−  | 0.1+  | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2007 10 16 | 691 | 0.2+  | 0.1+  | 2007 11 14 | G96 | 0.4+  | 0.2−  |            |     |      |      |
| 2007 10 20 | 691 | 0.2+  | 0.0   | 2007 11 14 | G96 | 0.2+  | 0.1−  |            |     |      |      |

2007 UJ<sub>26</sub> = 2005 JU<sub>154</sub>

|          |                |                    |           |             |             |            |
|----------|----------------|--------------------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             | MPC         |            |
| <i>M</i> | 32.47034       | (2000.0)           | <b>P</b>  |             | <b>Q</b>    |            |
| <i>n</i> | 0.17523319     | $\omega$           | 313.19313 | +0.99009407 | +0.04357512 |            |
| <i>a</i> | 3.1627034      | $\Omega$           | 44.80999  | +0.03154070 | +0.85729885 |            |
| <i>e</i> | 0.0877995      | <i>i</i>           | 10.91706  | −0.13681707 | +0.51297163 |            |
| <i>P</i> | 5.62           | <i>H</i>           | 16.3      | <i>G</i>    | 0.15        | <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 04 | G96 | 0.1+ | 0.2− | 2007 10 06 | 691 | 0.4− | 0.1+ | 2007 11 01 | G96 | 0.1− | 0.1− |
| 2005 05 04 | G96 | 0.1+ | 0.0  | 2007 10 10 | 691 | 0.1− | 0.2+ | 2007 11 01 | G96 | 0.1+ | 0.1− |
| 2005 05 04 | G96 | 0.0  | 0.1+ | 2007 10 10 | 691 | 0.1− | 0.1+ | 2007 11 01 | G96 | 0.1− | 0.1+ |
| 2005 05 04 | G96 | 0.3+ | 0.0  | 2007 10 10 | 691 | 0.2− | 0.2+ | 2007 11 01 | G96 | 0.1+ | 0.1+ |
| 2005 05 13 | G96 | 0.0  | 0.0  | 2007 10 18 | 691 | 0.4− | 0.9− | 2007 12 05 | G96 | 0.3+ | 0.5− |
| 2005 05 13 | G96 | 0.1− | 0.0  | 2007 10 18 | 691 | 0.2− | 0.2+ | 2007 12 05 | G96 | 0.1− | 0.5+ |
| 2005 05 13 | G96 | 0.4− | 0.6+ | 2007 10 18 | 691 | 0.0  | 0.4+ | 2007 12 05 | G96 | 0.7+ | 0.1+ |
| 2005 05 13 | G96 | 0.1+ | 0.1− | 2007 10 20 | 691 | 0.5− | 0.2+ | 2007 12 05 | G96 | 0.2− | 0.4− |
| 2007 10 06 | 691 | 1.2+ | 0.9− | 2007 10 20 | 691 | 0.4− | 0.1− |            |     |      |      |
| 2007 10 06 | 691 | 0.5+ | 0.1+ | 2007 10 20 | 691 | 0.5+ | 0.5+ |            |     |      |      |

2007 UN<sub>26</sub>

|          |                |                    |           |             |             |            |
|----------|----------------|--------------------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             | MPC         |            |
| <i>M</i> | 32.78819       | (2000.0)           | <b>P</b>  |             | <b>Q</b>    |            |
| <i>n</i> | 0.20049937     | $\omega$           | 233.86104 | +0.84237282 | +0.53563693 |            |
| <i>a</i> | 2.8910840      | $\Omega$           | 93.68157  | −0.47342381 | +0.78801100 |            |
| <i>e</i> | 0.0706714      | <i>i</i>           | 3.39920   | −0.25744499 | +0.30353211 |            |
| <i>P</i> | 4.92           | <i>H</i>           | 16.1      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 23 | 291 | 0.1+ | 1.7+ | 2005 04 09 | 691 | 0.0  | 0.6+ | 2007 10 04 | 703 | 0.1− | 0.9+ |
| 2001 05 23 | 291 | 0.8+ | 1.2+ | 2005 04 09 | 691 | 0.6+ | 0.1− | 2007 10 04 | 703 | 1.0+ | 0.2+ |
| 2001 05 23 | 291 | 0.4+ | 0.2− | 2005 04 09 | 691 | 0.2+ | 0.1+ | 2007 10 04 | 703 | 1.3− | 1.7+ |
| 2002 09 14 | 608 | 0.3− | 0.2− | 2006 06 04 | G96 | 0.1− | 0.0  | 2007 10 16 | G96 | 0.0  | 0.2− |
| 2002 09 14 | 608 | 0.0  | 1.1− | 2006 06 04 | G96 | 0.3− | 0.1+ | 2007 10 16 | G96 | 0.1− | 0.0  |
| 2002 09 14 | 608 | 0.7+ | 0.4− | 2006 06 04 | G96 | 0.3− | 0.2− | 2007 10 16 | G96 | 0.4+ | 0.2+ |
| 2003 12 19 | 291 | 0.2+ | 0.5+ | 2006 06 04 | G96 | 0.2− | 0.1+ | 2007 10 16 | G96 | 0.2− | 0.1− |
| 2003 12 19 | 291 | 0.3− | 0.5+ | 2007 09 12 | 703 | 0.4− | 0.3− | 2007 10 20 | G96 | 0.0  | 0.0  |
| 2003 12 19 | 291 | 0.3− | 0.4+ | 2007 09 12 | 703 | 0.8− | 0.2+ | 2007 10 20 | G96 | 0.0  | 0.2− |
| 2004 01 28 | 691 | 0.2− | 0.1− | 2007 09 12 | 703 | 0.5− | 0.7− | 2007 10 20 | G96 | 0.0  | 0.1− |
| 2004 01 28 | 691 | 0.0  | 0.1+ | 2007 09 12 | 703 | 0.1+ | 0.8+ |            |     |      |      |
| 2004 01 28 | 691 | 0.1− | 0.7+ | 2007 10 04 | 703 | 1.0+ | 1.1+ |            |     |      |      |

2007 US<sub>26</sub>

|          |                |                    |           |             |             |            |
|----------|----------------|--------------------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             | MPC         |            |
| <i>M</i> | 73.34865       | (2000.0)           | <b>P</b>  |             | <b>Q</b>    |            |
| <i>n</i> | 0.27651544     | $\omega$           | 151.33437 | +0.19989628 | +0.97832026 |            |
| <i>a</i> | 2.3334032      | $\Omega$           | 130.14268 | −0.91193752 | +0.20597133 |            |
| <i>e</i> | 0.1167749      | <i>i</i>           | 4.06112   | −0.35834542 | +0.02157026 |            |
| <i>P</i> | 3.56           | <i>H</i>           | 16.7      | <i>G</i>    | 0.15        | <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 02 06 | 691 | 0.2+ | 1.0− | 2007 09 11 | D29 | 0.4+  | 1.2−  | 2007 10 11 | 699 | 0.0   | 0.5−  |
| 1995 02 06 | 691 | 0.3− | 0.1− | 2007 09 12 | 703 | 0.4−  | 0.3−  | 2007 10 11 | 699 | (2.2+ | 0.7+) |
| 1995 02 06 | 691 | 0.4− | 0.2− | 2007 09 12 | 703 | 1.0+  | 0.1+  | 2007 10 16 | G96 | 0.0   | 0.1−  |
| 2002 01 22 | 291 | 0.1+ | 0.3+ | 2007 09 12 | 703 | 0.9−  | 0.4+  | 2007 10 16 | G96 | 0.0   | 0.0   |
| 2002 01 22 | 291 | 0.0  | 0.2+ | 2007 09 12 | 703 | 0.7−  | 1.4+  | 2007 10 16 | G96 | 0.2+  | 0.1−  |
| 2002 01 22 | 291 | 0.2+ | 0.2+ | 2007 09 15 | 699 | 0.4+  | 0.5+  | 2007 10 16 | G96 | 0.4−  | 0.2−  |
| 2005 12 02 | 695 | 0.3+ | 0.3+ | 2007 09 15 | 699 | (2.2− | 0.4+) | 2007 10 20 | G96 | 0.2−  | 0.3−  |
| 2005 12 02 | 695 | 0.0  | 0.2+ | 2007 09 15 | 699 | 0.5−  | 0.4+  | 2007 10 20 | G96 | 0.4−  | 0.2−  |
| 2006 03 24 | 699 | 0.4− | 0.6− | 2007 09 15 | 699 | 1.8+  | 0.7+  | 2007 10 20 | G96 | 0.2−  | 0.0   |
| 2006 03 24 | 699 | 0.1+ | 1.1+ | 2007 10 04 | 703 | 0.9+  | 0.1+  | 2007 10 20 | G96 | 0.5−  | 0.3−  |
| 2006 03 24 | 699 | 0.5+ | 0.3− | 2007 10 04 | 703 | 0.7−  | 0.2+  | 2007 10 20 | G96 | 0.4−  | 0.2+  |
| 2006 03 24 | 699 | 0.2+ | 0.9+ | 2007 10 04 | 703 | 0.6+  | 0.2−  | 2007 10 20 | G96 | 0.4−  | 0.1+  |
| 2007 09 11 | D29 | 0.0  | 0.0  | 2007 10 04 | 703 | 0.6+  | 0.5+  | 2007 10 20 | G96 | 0.4−  | 0.2+  |
| 2007 09 11 | D29 | 0.7− | 0.7− | 2007 10 11 | 699 | 0.7+  | 0.5+  | 2007 10 20 | G96 | 0.4−  | 0.2+  |
| 2007 09 11 | D29 | 0.9+ | 1.4− | 2007 10 11 | 699 | 0.9−  | 0.7+  |            |     |       |       |

2007 UU<sub>28</sub>

|          |                |                    |           |             |             |            |
|----------|----------------|--------------------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             | MPC         |            |
| <i>M</i> | 0.62863        | (2000.0)           | <b>P</b>  |             | <b>Q</b>    |            |
| <i>n</i> | 0.17434623     | $\omega$           | 350.56164 | +0.97735879 | −0.18449976 |            |
| <i>a</i> | 3.1734209      | $\Omega$           | 20.95327  | +0.20806837 | +0.74912135 |            |
| <i>e</i> | 0.0980940      | <i>i</i>           | 16.83755  | +0.03843635 | +0.63622090 |            |
| <i>P</i> | 5.65           | <i>H</i>           | 15.5      | <i>G</i>    | 0.15        | <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 01 29 | 645 | 0.0   | 0.0   | 2007 09 21 | D29 | 0.3−  | 0.3−  | 2007 11 02 | 704 | 0.4+ | 0.4+ |
| 2003 01 29 | 645 | 0.0   | 0.1−  | 2007 09 21 | D29 | 0.1+  | 0.5+  | 2007 11 03 | G96 | 0.3− | 0.0  |
| 2004 04 15 | 645 | 0.0   | 0.1+  | 2007 09 21 | D29 | 0.1−  | 0.1−  | 2007 11 03 | G96 | 0.0  | 0.0  |
| 2004 04 15 | 645 | 0.1+  | 0.1+  | 2007 09 21 | D29 | 0.6+  | 0.4−  | 2007 11 03 | G96 | 0.3− | 0.1− |
| 2004 04 16 | 645 | 0.0   | 0.0   | 2007 09 21 | D29 | 0.1+  | 0.5−  | 2007 11 03 | G96 | 0.0  | 0.1− |
| 2004 04 16 | 645 | 0.0   | 0.0   | 2007 10 07 | 699 | 0.3−  | 0.1−  | 2007 11 05 | 704 | 0.3+ | 0.0  |
| 2005 04 15 | 691 | 0.7+  | 0.1+  | 2007 10 07 | 699 | 0.5−  | 0.2+  | 2007 11 05 | 704 | 0.5+ | 0.1+ |
| 2005 04 15 | 691 | 0.6+  | 0.2+  | 2007 10 07 | 699 | 0.3+  | 0.4+  | 2007 11 05 | 704 | 0.2− | 0.9− |
| 2005 04 15 | 691 | 0.8−  | 0.3+  | 2007 10 07 | 699 | 1.0−  | 0.3+  | 2007 11 05 | 704 | 0.7− | 1.3− |
| 2007 09 08 | 699 | 1.2+  | 0.1−  | 2007 10 17 | 699 | 0.7+  | 0.1−  | 2007 11 14 | 704 | 0.2− | 0.4− |
| 2007 09 08 | 699 | 0.5+  | 0.0   | 2007 10 17 | 699 | 0.2−  | 0.3+  | 2007 11 14 | 704 | 0.4+ | 1.0+ |
| 2007 09 08 | 699 | 1.1+  | 0.2−  | 2007 10 17 | 699 | 1.1+  | 0.2−  | 2007 11 14 | 704 | 0.9− | 0.0  |
| 2007 09 08 | 699 | 2.0−  | 0.7+  | 2007 10 17 | 699 | 1.0−  | 0.2−  | 2007 11 14 | 704 | 0.3+ | 0.5+ |
| 2007 09 15 | 699 | 0.8+  | 0.2+  | 2007 10 20 | G96 | 0.3+  | 0.3−  | 2007 11 14 | 704 | 1.5− | 1.0+ |
| 2007 09 15 | 699 | 0.6−  | 0.5+  | 2007 10 20 | G96 | 0.2−  | 0.1−  | 2007 12 05 | 701 | 0.9− | 0.6− |
| 2007 09 15 | 699 | (1.7− | 0.7+) | 2007 10 20 | G96 | 0.1+  | 0.1−  | 2007 12 05 | 701 | 0.3− | 0.2+ |
| 2007 09 15 | 699 | 0.3−  | 1.6+  | 2007 10 20 | G96 | 0.4−  | 0.1−  | 2007 12 05 | 704 | 1.3− | 0.8+ |
| 2007 09 21 | D29 | 0.1+  | 0.2+  | 2007 11 02 | 704 | 0.3+  | 1.4+  | 2007 12 05 | 704 | 0.9− | 1.0+ |
| 2007 09 21 | D29 | 0.2+  | 0.0   | 2007 11 02 | 704 | (0.1+ | 1.7+) | 2007 12 05 | 701 | 0.8+ | 0.2− |
| 2007 09 21 | D29 | 0.4−  | 0.1−  | 2007 11 02 | 704 | 0.1−  | 0.3+  | 2007 12 05 | 704 | 0.3− | 0.3− |

2007 UA<sub>29</sub>

|          |                |                    |           |             |             |            |
|----------|----------------|--------------------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 | TT = JDT 2454400.5 |           |             | MPC         |            |
| <i>M</i> | 299.64500      | (2000.0)           | <b>P</b>  |             | <b>Q</b>    |            |
| <i>n</i> | 0.23372735     | $\omega$           | 248.54921 | −0.23543521 | −0.96648303 |            |
| <i>a</i> | 2.6101353      | $\Omega$           | 215.56684 | +0.94409621 | −0.20241878 |            |
| <i>e</i> | 0.1562543      | <i>i</i>           | 10.13736  | +0.23076526 | −0.15791513 |            |
| <i>P</i> | 4.22           | <i>H</i>           | 17.1      | <i>G</i>    | 0.15        | <i>U</i> 3 |

## 2007 DEC. 24

M.P.O. 129929

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 15 | 691 | 0.2+ | 0.6+ | 2007 10 18 | 691 | 0.2− | 0.1+ | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 2005 04 15 | 691 | 0.2+ | 0.4+ | 2007 10 18 | 691 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1+ | 0.2+ |
| 2005 04 15 | 691 | 0.3+ | 0.5+ | 2007 10 18 | 691 | 0.3+ | 0.0  | 2007 11 09 | 691 | 0.3+ | 0.3+ |
| 2005 05 12 | G96 | 0.7− | 0.5+ | 2007 10 20 | 703 | 0.2+ | 0.2− | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2005 05 12 | G96 | 0.1+ | 0.2+ | 2007 10 20 | 703 | 0.1+ | 1.1− | 2007 11 13 | 691 | 0.1+ | 0.6+ |
| 2005 05 12 | G96 | 0.3− | 0.4+ | 2007 10 20 | 703 | 0.5+ | 0.6+ | 2007 11 13 | 691 | 0.3− | 0.1− |
| 2005 05 12 | G96 | 0.1− | 0.5+ | 2007 10 20 | 703 | 0.5+ | 0.2+ | 2007 12 06 | G96 | 0.1− | 0.8− |
| 2007 10 05 | 691 | 0.3− | 0.6+ | 2007 11 02 | 691 | 0.1+ | 0.2+ | 2007 12 06 | G96 | 0.5− | 0.4− |
| 2007 10 05 | 691 | 0.3− | 0.2− | 2007 11 02 | 691 | 0.1− | 0.0  | 2007 12 06 | G96 | 0.8− | 0.2− |
| 2007 10 05 | 691 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.1+ | 0.1+ | 2007 12 06 | G96 | 0.6− | 0.2− |

2007 UB<sub>29</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.97835   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26668615 | $\omega$ 262.27124 | +0.92845801   | +0.35660160 |
| <i>a</i> | 2.3903917  | $\Omega$ 76.79123  | −0.28459706   | +0.86277307 |
| <i>e</i> | 0.2544052  | <i>i</i> 6.12813   | −0.23868439   | +0.35841028 |
| <i>P</i> | 3.70       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 16 | 691 | 0.2+ | 0.4− | 2007 09 14 | 703 | 0.1+ | 0.5− | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2000 11 16 | 691 | 0.6+ | 0.0  | 2007 09 14 | 703 | 0.7− | 0.2− | 2007 10 20 | G96 | 0.6+ | 0.3− |
| 2000 11 16 | 691 | 0.3+ | 0.2− | 2007 09 14 | 703 | 0.4− | 0.9− | 2007 11 01 | 699 | 0.1+ | 0.9+ |
| 2000 12 27 | 691 | 0.3− | 0.0  | 2007 09 14 | 703 | 0.1− | 0.7− | 2007 11 01 | 699 | 0.5+ | 1.0+ |
| 2000 12 27 | 691 | 0.0  | 0.1+ | 2007 10 18 | 703 | 0.6− | 0.2+ | 2007 11 01 | 699 | 0.0  | 0.5+ |
| 2000 12 27 | 691 | 0.6− | 0.1+ | 2007 10 18 | 703 | 1.1− | 0.1+ | 2007 11 01 | 699 | 0.5− | 0.3− |
| 2007 09 05 | 703 | 0.8+ | 0.8+ | 2007 10 18 | 703 | 0.7− | 0.6− | 2007 11 11 | 703 | 0.2− | 0.1+ |
| 2007 09 05 | 703 | 1.6+ | 0.2+ | 2007 10 18 | 703 | 0.8− | 0.8− | 2007 11 11 | 703 | 0.8− | 0.2− |
| 2007 09 05 | 703 | 0.8+ | 0.4+ | 2007 10 20 | G96 | 0.2+ | 0.2− | 2007 11 11 | 703 | 0.4− | 0.5+ |
| 2007 09 05 | 703 | 0.2+ | 0.1+ | 2007 10 20 | G96 | 0.5+ | 0.1− | 2007 11 11 | 703 | 0.1− | 1.3+ |

2007 UJ<sub>29</sub> = 2002 RB<sub>164</sub> = 2005 EX<sub>244</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.92564   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20966654 | $\omega$ 4.76138   | +0.96106113   | +0.27618262 |
| <i>a</i> | 2.8061872  | $\Omega$ 339.19903 | −0.25438108   | +0.87120690 |
| <i>e</i> | 0.0783443  | <i>i</i> 1.48480   | −0.10794341   | +0.40585921 |
| <i>P</i> | 4.70       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 03 | 691 | 0.1− | 0.2+ | 2005 03 11 | G96 | 0.2− | 0.0  | 2007 10 04 | 691 | 0.1− | 0.1− |
| 2000 02 03 | 691 | 0.1+ | 0.0  | 2005 03 11 | G96 | 0.3− | 0.3+ | 2007 10 18 | G96 | 0.1+ | 0.0  |
| 2000 02 03 | 691 | 0.2+ | 0.3+ | 2005 03 11 | G96 | 0.1+ | 0.0  | 2007 10 18 | G96 | 0.5+ | 0.1− |
| 2002 09 12 | 644 | 0.1− | 0.8+ | 2005 03 11 | G96 | 0.0  | 0.1+ | 2007 10 18 | G96 | 0.2+ | 0.1+ |
| 2002 09 12 | 644 | 0.1− | 0.9+ | 2005 03 16 | 691 | 0.3+ | 0.8+ | 2007 10 18 | G96 | 0.1+ | 0.0  |
| 2002 09 12 | 644 | 0.1+ | 0.7+ | 2005 03 16 | 691 | 0.5+ | 0.5+ | 2007 10 20 | 703 | 0.4− | 0.2− |
| 2002 09 14 | 644 | 0.2− | 0.1+ | 2005 03 16 | 691 | 0.6+ | 0.5+ | 2007 10 20 | 703 | 0.2+ | 0.1− |
| 2002 09 14 | 644 | 0.4− | 0.1− | 2007 10 04 | 691 | 0.2− | 0.2+ | 2007 10 20 | 703 | 0.3+ | 0.4− |
| 2002 09 14 | 644 | 0.3− | 0.2− | 2007 10 04 | 691 | 0.1− | 0.2+ | 2007 10 20 | 703 | 0.6− | 0.6+ |

2007 UO<sub>29</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.04510  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26941436 | $\omega$ 291.75085 | −0.03118920   | −0.99948422 |
| <i>a</i> | 2.3742269  | $\Omega$ 160.03188 | +0.92511364   | −0.03176450 |
| <i>e</i> | 0.1867854  | <i>i</i> 1.28366   | +0.37840716   | −0.00472333 |
| <i>P</i> | 3.66       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 26 | 807 | 0.1− | 0.0  | 2005 04 04 | G96 | 0.5− | 0.2− | 2007 10 20 | 703 | 1.1+ | 0.5− |
| 2003 08 26 | 807 | 0.1− | 0.1+ | 2007 09 11 | G96 | 0.5− | 0.1− | 2007 10 20 | 703 | 0.3− | 0.4+ |
| 2003 09 20 | 291 | 0.1− | 0.2+ | 2007 09 11 | G96 | 0.0  | 0.1− | 2007 10 31 | 691 | 0.6− | 0.2+ |
| 2003 09 20 | 291 | 0.3− | 0.6+ | 2007 09 11 | G96 | 0.4+ | 0.1− | 2007 10 31 | 691 | 0.5− | 0.1+ |
| 2003 09 20 | 291 | 0.1+ | 0.5+ | 2007 09 11 | G96 | 0.2− | 0.1− | 2007 10 31 | 691 | 0.2− | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | G96 | 0.3+ | 0.1− | 2007 10 08 | G96 | 0.3+ | 0.2− | 2007 11 04 | 691 | 0.5− | 0.8+ |
| 2005 03 04 | G96 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 11 04 | 691 | 0.3− | 0.0  |
| 2005 03 04 | G96 | 0.3+ | 0.2− | 2007 10 08 | G96 | 0.0  | 0.3− | 2007 11 04 | 691 | 0.8− | 0.0  |
| 2005 03 04 | G96 | 0.0  | 0.1− | 2007 10 08 | G96 | 0.1+ | 0.3− | 2007 11 05 | G96 | 0.2+ | 0.2− |
| 2005 04 04 | 691 | 0.1+ | 0.2+ | 2007 10 18 | G96 | 0.1− | 0.3− | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 2005 04 04 | 691 | 0.1− | 0.3+ | 2007 10 18 | G96 | 0.4+ | 0.4− | 2007 11 05 | G96 | 0.1− | 0.3− |
| 2005 04 04 | 691 | 0.1+ | 0.2+ | 2007 10 18 | G96 | 0.2− | 0.3− | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2005 04 04 | G96 | 0.2+ | 0.3+ | 2007 10 18 | G96 | 0.1− | 0.3− | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2005 04 04 | G96 | 0.3− | 0.1− | 2007 10 20 | 703 | 1.1+ | 0.7+ | 2007 11 13 | 691 | 0.4− | 1.0+ |
| 2005 04 04 | G96 | 0.1+ | 0.5+ | 2007 10 20 | 703 | 0.8+ | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.1+ |

2007 UN<sub>30</sub> = 2005 JT<sub>135</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.77719  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20984287 | $\omega$ 260.49856 | +0.77371339   | −0.62963856 |
| <i>a</i> | 2.8046149  | $\Omega$ 138.47959 | +0.61483742   | +0.71955071 |
| <i>e</i> | 0.0418895  | <i>i</i> 6.07585   | +0.15278264   | +0.29291989 |
| <i>P</i> | 4.70       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 08 | 691 | 0.1+  | 0.1−  | 2007 10 12 | 703 | 0.7+  | 0.1+  | 2007 10 20 | G96 | 0.0  | 0.5− |
| 2005 05 08 | 691 | 0.1−  | 0.1−  | 2007 10 19 | 699 | (1.6+ | 0.3+) | 2007 10 20 | G96 | 0.2− | 0.4− |
| 2005 05 08 | 691 | 0.0   | 0.0   | 2007 10 19 | 699 | 0.1−  | 0.3−  | 2007 10 30 | 703 | 0.9− | 0.6+ |
| 2005 05 15 | 644 | 0.0   | 0.3+  | 2007 10 19 | 703 | 0.1−  | 0.1+  | 2007 10 30 | 703 | 0.5+ | 0.9− |
| 2005 05 15 | 644 | 0.2−  | 0.2+  | 2007 10 19 | 703 | 0.2−  | 0.4+  | 2007 10 30 | 703 | 0.7− | 0.3− |
| 2005 05 15 | 644 | 0.1−  | 0.5+  | 2007 10 19 | 699 | 0.9+  | 0.0   | 2007 10 30 | 703 | 0.5− | 0.7− |
| 2007 10 11 | 683 | (0.8− | 1.9+) | 2007 10 19 | 703 | 1.0−  | 0.2−  | 2007 11 07 | 703 | 0.3− | 0.1− |
| 2007 10 11 | 683 | (3.1− | 0.1+) | 2007 10 19 | 703 | 0.0   | 0.6+  | 2007 11 07 | 703 | 0.9+ | 0.8+ |
| 2007 10 12 | 703 | 0.4+  | 0.1+  | 2007 10 19 | 699 | 0.2+  | 0.9+  | 2007 11 07 | 703 | 0.6+ | 0.4+ |
| 2007 10 12 | 703 | 0.6+  | 0.5+  | 2007 10 20 | G96 | 0.4+  | 0.4−  | 2007 11 07 | 703 | 0.3− | 0.1+ |
| 2007 10 12 | 703 | 1.1−  | 0.2−  | 2007 10 20 | G96 | 0.2+  | 0.5−  |            |     |      |      |

2007 UC<sub>31</sub> = 2004 GG<sub>81</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 334.23123  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18424864 | $\omega$ 237.91608 | +0.39832476   | −0.91617675 |
| <i>a</i> | 3.0586739  | $\Omega$ 188.94999 | +0.90784630   | +0.40067188 |
| <i>e</i> | 0.1568193  | <i>i</i> 16.52273  | +0.13096746   | +0.00906639 |
| <i>P</i> | 5.35       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 27 | 699 | 0.4+ | 0.1− | 2007 10 08 | 683 | 1.5− | 1.7+ | 2007 10 19 | 703 | 0.2+ | 0.3+ |
| 2002 11 27 | 699 | 0.1+ | 0.6+ | 2007 10 08 | 699 | 0.3+ | 0.3− | 2007 10 20 | G96 | 0.1− | 0.1− |
| 2002 11 27 | 699 | 1.0+ | 1.3− | 2007 10 08 | 683 | 0.4+ | 0.4+ | 2007 10 20 | G96 | 0.1− | 0.1− |
| 2002 11 27 | 699 | 1.3− | 0.9− | 2007 10 08 | 699 | 1.6+ | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.1− |
| 2004 04 13 | 691 | 0.2+ | 0.4+ | 2007 10 08 | 683 | 0.2− | 0.3+ | 2007 10 20 | G96 | 0.3+ | 0.0  |
| 2004 04 13 | 691 | 0.1+ | 0.1+ | 2007 10 08 | 699 | 1.0+ | 0.2+ | 2007 11 07 | 703 | 1.3− | 0.5+ |
| 2004 04 13 | 691 | 0.1− | 0.2+ | 2007 10 08 | 699 | 0.6+ | 0.5+ | 2007 11 07 | 703 | 1.0− | 0.8+ |
| 2004 04 21 | 691 | 0.2+ | 0.1+ | 2007 10 19 | 703 | 0.1− | 0.2+ | 2007 11 07 | 703 | 0.8− | 0.2− |
| 2004 04 21 | 691 | 0.3− | 0.3+ | 2007 10 19 | 703 | 0.7− | 1.1+ | 2007 11 07 | 703 | 0.2+ | 0.9− |
| 2004 04 21 | 691 | 0.1− | 0.4− | 2007 10 19 | 703 | 0.8+ | 0.6− |            |     |      |      |

2007 UE<sub>31</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.57020  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23948931 | $\omega$ 318.42618 | +0.78483337   | −0.61075589 |
| <i>a</i> | 2.5681001  | $\Omega$ 79.52265  | +0.59301612   | +0.69101767 |
| <i>e</i> | 0.2031275  | <i>i</i> 6.12663   | +0.17991238   | +0.38661586 |
| <i>P</i> | 4.12       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 11 19 | 699 | 0.3+ | 0.7+ | 2007 10 19 | 703 | 0.3+ | 0.9+ | 2007 10 30 | 703 | 1.8+  | 0.4+  |
| 2003 11 19 | 699 | 0.6+ | 0.1+ | 2007 10 19 | 703 | 0.5+ | 0.4+ | 2007 11 14 | 699 | (2.7+ | 0.9+) |
| 2003 11 19 | 699 | 0.0  | 1.4+ | 2007 10 19 | 703 | 0.1+ | 0.2− | 2007 11 14 | 699 | 0.3+  | 0.2−  |
| 2003 11 19 | 699 | 0.8− | 0.4− | 2007 10 19 | 703 | 0.8+ | 0.4+ | 2007 11 14 | 699 | 0.0   | 0.8+  |

## M.P.O. 129930

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 28 | 691 | 0.3+ | 0.2- | 2007 10 20 | G96 | 0.0  | 0.0  | 2007 11 14 | 699 | 0.0  | 0.0  |
| 2003 11 28 | 691 | 0.1+ | 0.1- | 2007 10 20 | G96 | 0.3+ | 0.1- | 2007 11 18 | 703 | 0.4+ | 1.0+ |
| 2003 11 28 | 691 | 0.4- | 0.1- | 2007 10 20 | G96 | 0.1+ | 0.2- | 2007 11 18 | 703 | 1.0- | 0.1- |
| 2007 10 12 | 703 | 1.3- | 0.5- | 2007 10 20 | G96 | 0.5+ | 0.2- | 2007 11 18 | 703 | 0.4- | 0.6+ |
| 2007 10 12 | 703 | 0.2- | 0.2- | 2007 10 30 | 703 | 0.3- | 1.0- | 2007 11 18 | 703 | 0.2- | 1.0- |
| 2007 10 12 | 703 | 1.2- | 0.2+ | 2007 10 30 | 703 | 0.1- | 0.7- |            |     |      |      |
| 2007 10 12 | 703 | 0.1- | 0.1- | 2007 10 30 | 703 | 0.4- | 0.3- |            |     |      |      |

**2007 UN<sub>31</sub> = 2002 RY<sub>170</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 338.96766  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21433499 | $\omega$ | 248.31202 | +0.40066637   | -0.91618847 |
| <i>a</i> | 2.7652899  | $\Omega$ | 178.01277 | +0.90289675   | +0.39332584 |
| <i>e</i> | 0.1936784  | <i>i</i> | 13.46042  | +0.15570461   | +0.07676899 |
| <i>P</i> | 4.60       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.2- | 0.1- | 2007 10 08 | 699 | (0.3- | 2.4+) | 2007 10 20 | G96 | 0.8+ | 0.4- |
| 2002 09 13 | 644 | 0.0  | 0.2- | 2007 10 10 | 703 | 0.2-  | 0.7+  | 2007 10 20 | G96 | 0.8+ | 0.4- |
| 2002 09 13 | 644 | 0.0  | 0.1- | 2007 10 10 | 703 | 0.2+  | 0.0   | 2007 10 20 | G96 | 0.8+ | 0.3- |
| 2002 09 14 | 644 | 0.0  | 0.2- | 2007 10 10 | 703 | 1.0-  | 0.3-  | 2007 10 31 | 703 | 0.0  | 0.6+ |
| 2002 09 14 | 644 | 0.1- | 0.5+ | 2007 10 10 | 703 | 0.6-  | 0.3-  | 2007 10 31 | 703 | 0.5- | 0.7+ |
| 2002 09 14 | 644 | 0.2+ | 0.1+ | 2007 10 19 | 699 | 1.2-  | 0.0   | 2007 10 31 | 703 | 0.3+ | 0.5+ |
| 2007 09 10 | 703 | 1.3+ | 0.4- | 2007 10 19 | 699 | 0.7-  | 0.9-  | 2007 10 31 | 703 | 0.5+ | 0.3- |
| 2007 09 10 | 703 | 0.0  | 0.1+ | 2007 10 19 | 699 | 0.5-  | 0.4-  | 2007 11 07 | 703 | 0.2- | 0.5- |
| 2007 09 10 | 703 | 0.4- | 0.1+ | 2007 10 19 | 703 | (2.0+ | 0.8+) | 2007 11 07 | 703 | 0.4+ | 0.5- |
| 2007 09 10 | 703 | 0.7- | 0.2- | 2007 10 19 | 699 | 0.9+  | 1.0+  | 2007 11 07 | 703 | 0.5- | 0.7+ |
| 2007 10 08 | 699 | 0.9+ | 0.3- | 2007 10 19 | 703 | 0.3+  | 0.4+  | 2007 11 07 | 703 | 0.7+ | 0.6- |
| 2007 10 08 | 699 | 0.0  | 0.1+ | 2007 10 19 | 703 | 0.5-  | 0.8+  |            |     |      |      |
| 2007 10 08 | 699 | 1.0- | 0.3- | 2007 10 19 | 703 | 0.1+  | 0.4+  |            |     |      |      |

**2007 UZ<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 9.93793    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27098444 | $\omega$ | 324.28586 | +0.86002720   | -0.50773346 |
| <i>a</i> | 2.3650472  | $\Omega$ | 66.30269  | +0.48003741   | +0.77150565 |
| <i>e</i> | 0.2083490  | <i>i</i> | 3.16748   | +0.17296618   | +0.38338723 |
| <i>P</i> | 3.64       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 08 | 644 | 0.0  | 0.4+ | 2007 10 19 | 699 | 0.9+ | 0.7+ | 2007 12 04 | 620 | 0.6- | 0.1- |
| 2003 07 08 | 644 | 0.1- | 0.2+ | 2007 10 19 | 699 | 1.3+ | 0.1- | 2007 12 04 | 620 | 0.2- | 0.3+ |
| 2003 07 08 | 644 | 0.2- | 0.2+ | 2007 10 19 | 699 | 1.0+ | 0.2- | 2007 12 05 | 704 | 0.6+ | 0.2+ |
| 2003 08 23 | 644 | 0.0  | 0.5+ | 2007 10 20 | 703 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.2+ | 0.7+ |
| 2003 08 23 | 644 | 0.3+ | 0.3+ | 2007 10 20 | 703 | 0.4- | 0.4- | 2007 12 05 | 704 | 0.3+ | 0.3+ |
| 2003 08 23 | 644 | 0.1+ | 0.3+ | 2007 10 20 | 703 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2003 08 28 | 608 | 0.9- | 0.6- | 2007 10 20 | 703 | 0.5- | 0.1- | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2003 08 28 | 608 | 0.2- | 0.6- | 2007 11 13 | 699 | 0.3+ | 0.1- | 2007 12 06 | 691 | 0.5- | 0.1- |
| 2003 08 28 | 608 | 0.5+ | 0.4- | 2007 11 13 | 699 | 0.4+ | 0.3- | 2007 12 06 | 691 | 0.3- | 0.1- |
| 2003 09 25 | 644 | 0.2+ | 0.0  | 2007 11 13 | 699 | 0.5- | 0.1- | 2007 12 06 | 691 | 0.4- | 0.0  |
| 2003 09 25 | 644 | 0.1- | 0.2+ | 2007 11 13 | 699 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.0  |
| 2003 09 25 | 644 | 0.2+ | 0.2+ | 2007 12 02 | J75 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 0.3- | 0.6+ |
| 2005 02 09 | 691 | 0.2+ | 0.1- | 2007 12 02 | J75 | 0.0  | 0.1- | 2007 12 14 | 704 | 0.2- | 0.3+ |
| 2005 02 09 | 691 | 0.1- | 0.0  | 2007 12 02 | J75 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.4- | 0.4+ |
| 2005 02 09 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.2+ | 0.3+ | 2007 12 14 | 704 | 0.2- | 0.5+ |
| 2007 09 14 | G96 | 0.3+ | 0.3- | 2007 12 03 | 703 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.0  | 0.3- |
| 2007 09 14 | G96 | 0.1- | 0.2- | 2007 12 03 | 703 | 0.5+ | 0.2+ | 2007 12 15 | G96 | 0.0  | 0.3- |
| 2007 09 14 | G96 | 0.3- | 0.0  | 2007 12 03 | 703 | 0.1- | 0.6- | 2007 12 15 | G96 | 0.4+ | 0.5- |
| 2007 09 14 | G96 | 0.4- | 0.3- | 2007 12 04 | 620 | 0.2+ | 0.2+ | 2007 12 15 | G96 | 0.3+ | 0.4- |
| 2007 10 19 | 699 | 0.7+ | 0.6- | 2007 12 04 | 620 | 0.1+ | 0.3+ |            |     |      |      |

## 2007 DEC. 24

**2007 UH<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 19.90176   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23403829 | $\omega$ | 66.59704  | +0.96151548   | -0.19364611 |
| <i>a</i> | 2.6078230  | $\Omega$ | 304.02987 | +0.07012375   | +0.85886786 |
| <i>e</i> | 0.1367693  | <i>i</i> | 13.60249  | +0.26565134   | +0.47418054 |
| <i>P</i> | 4.21       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 06 26 | 691 | 0.7+ | 0.3+ | 2007 10 12 | 699 | 0.3+ | 0.8+ | 2007 10 21 | 703 | 0.2- | 0.1- |
| 1998 06 26 | 691 | 0.5+ | 0.2+ | 2007 10 12 | 699 | 0.0  | 0.1+ | 2007 10 21 | 703 | 1.2- | 0.5- |
| 1998 06 26 | 691 | 0.7+ | 0.2+ | 2007 10 12 | 699 | 0.4+ | 0.1+ | 2007 11 13 | 703 | 0.4+ | 1.0- |
| 1998 07 25 | 691 | 0.4- | 0.6- | 2007 10 12 | 699 | 0.6+ | 0.7- | 2007 11 13 | 703 | 0.3- | 0.5+ |
| 1998 07 25 | 691 | 0.3- | 0.2- | 2007 10 16 | 703 | 0.1- | 0.5- | 2007 11 13 | 703 | 0.6- | 0.1- |
| 1998 07 25 | 691 | 0.8- | 0.4- | 2007 10 16 | 703 | 1.0+ | 0.2+ | 2007 11 13 | 703 | 0.2+ | 0.2- |
| 2007 09 15 | 703 | 0.3+ | 0.3+ | 2007 10 16 | 703 | 0.1- | 0.3+ | 2007 11 19 | 703 | 0.4+ | 0.4+ |
| 2007 09 15 | 703 | 0.5+ | 0.7+ | 2007 10 16 | 703 | 0.5+ | 0.9+ | 2007 11 19 | 703 | 0.1+ | 0.3- |
| 2007 09 15 | 703 | 0.3- | 0.2+ | 2007 10 21 | 703 | 0.0  | 0.1+ | 2007 11 19 | 703 | 0.2- | 0.1- |
| 2007 09 15 | 703 | 2.0- | 0.5+ | 2007 10 21 | 703 | 0.9- | 0.1+ | 2007 11 19 | 703 | 1.6+ | 1.5- |

**2007 UQ<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 11.30113   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18332810 | $\omega$ | 131.19595 | +0.87825556   | -0.40533808 |
| <i>a</i> | 3.0689044  | $\Omega$ | 254.13035 | +0.32021202   | +0.89255095 |
| <i>e</i> | 0.1557998  | <i>i</i> | 15.29340  | +0.35514988   | +0.19762047 |
| <i>P</i> | 5.38       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 30 | 644 | 0.2-  | 0.5+  | 2007 10 16 | 703 | 0.3- | 0.1- | 2007 11 09 | 703 | 0.0  | 0.5+ |
| 2001 07 30 | 644 | 0.1-  | 0.7+  | 2007 10 16 | 703 | 0.2+ | 0.7+ | 2007 11 09 | 703 | 0.5- | 0.2- |
| 2001 07 30 | 644 | 0.2-  | 0.4+  | 2007 10 21 | 703 | 0.9- | 0.2+ | 2007 11 16 | G96 | 0.3+ | 0.1- |
| 2001 08 03 | 644 | 0.0   | 0.2-  | 2007 10 21 | 703 | 0.7- | 0.5+ | 2007 11 16 | G96 | 0.1- | 0.2- |
| 2001 08 03 | 644 | 0.4+  | 0.1-  | 2007 10 21 | 703 | 0.9- | 0.9- | 2007 11 16 | G96 | 0.1+ | 0.1+ |
| 2001 08 14 | 644 | 0.7+  | 0.5-  | 2007 10 21 | 703 | 0.2+ | 0.7+ | 2007 11 16 | G96 | 0.3+ | 0.2- |
| 2001 08 14 | 644 | 0.1+  | 0.4-  | 2007 11 02 | 703 | 0.6- | 0.4- | 2007 11 16 | 704 | 0.1+ | 0.5+ |
| 2001 08 14 | 644 | 0.0   | 0.6-  | 2007 11 02 | 703 | 0.4- | 0.2+ | 2007 11 16 | 704 | 0.7+ | 0.9- |
| 2001 09 30 | 644 | 0.3-  | 0.5+  | 2007 11 02 | 703 | 0.3- | 0.3+ | 2007 11 16 | 704 | 0.3+ | 0.1- |
| 2001 09 30 | 644 | 0.1+  | 0.5-  | 2007 11 02 | 703 | 0.6- | 0.4- | 2007 12 02 | 704 | 0.8- | 0.0  |
| 2001 09 30 | 644 | 0.5-  | 0.4+  | 2007 11 04 | G96 | 0.1+ | 0.0  | 2007 12 02 | 704 | 0.2+ | 0.3- |
| 2003 01 27 | 644 | 0.5-  | 0.2-  | 2007 11 04 | G96 | 0.1+ | 0.1- | 2007 12 02 | 704 | 0.1+ | 0.3+ |
| 2003 01 27 | 644 | 0.3+  | 0.2-  | 2007 11 04 | G96 | 0.2+ | 0.1- | 2007 12 02 | 704 | 0.6- | 0.1- |
| 2003 01 27 | 644 | 0.2+  | 0.4+  | 2007 11 04 | G96 | 0.2+ | 0.1- | 2007 12 16 | 704 | 0.1+ | 0.8+ |
| 2007 10 09 | 703 | (0.7+ | 1.6-) | 2007 11 09 | 704 | 0.3+ | 0.4+ | 2007 12 16 | 704 | 0.1- | 0.1+ |
| 2007 10 09 | 703 | 0.9+  | 1.1-  | 2007 11 09 | 704 | 0.6+ | 0.2+ | 2007 12 16 | 704 | 0.0  | 0.0  |
| 2007 10 09 | 703 | 0.3+  | 0.5-  | 2007 11 09 | 704 | 0.3- | 0.1- | 2007 12 16 | 704 | 0.6+ | 0.4+ |
| 2007 10 09 | 703 | 0.0   | 0.1-  | 2007 11 09 | 704 | 0.6+ | 0.0  | 2007 12 16 | 704 | 0.3+ | 0.3+ |
| 2007 10 16 | 703 | 0.5-  | 0.0   | 2007 11 09 | 704 | 0.1+ | 0.9- |            |     |      |      |
| 2007 10 16 | 703 | 0.0   | 0.7+  | 2007 11 09 | 703 | 0.5+ | 0.4+ |            |     |      |      |

**2007 UR<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.37012   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22926545 | $\omega$ | 5.74830  | +0.92071661   | -0.37874557 |
| <i>a</i> | 2.6438916  | $\Omega$ | 17.44191 | +0.34437749   | +0.67533949 |
| <i>e</i> | 0.1844698  | <i>i</i> | 18.27320 | +0.18353493   | +0.63282570 |
| <i>P</i> | 4.30       | <i>H</i> | 15.6     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 21 | 644 | 0.0  | 0.1- | 2007 10 08 | 703 | 0.9- | 0.0  | 2007 11 09 | 703 | 0.2+ | 0.1- |
| 2003 11 21 | 644 | 0.2- | 0.2+ | 2007 10 16 | 703 | 0.4+ | 0.5+ | 2007 11 09 | 703 | 0.4+ | 0.2+ |
| 2003 11 21 | 644 | 0.2+ | 0.3- | 2007 10 16 | 703 | 0.7+ | 0.5+ | 2007 11 13 | 703 | 0.5- | 0.3+ |
| 2003 11 21 | 644 | 0.2- | 0.1+ | 2007 10 16 | 703 | 0.2+ | 0.3+ | 2007 11 13 | 703 | 0.2- | 0.1+ |
| 2003 11 21 | 644 | 0.0  | 0.0  | 2007 10 16 | 703 | 1.0+ | 0.3+ | 2007 11 13 | 703 | 0.3- | 0.2+ |
| 2003 11 21 | 644 | 0.0  | 0.0  | 2007 10 21 | 703 | 0.2- | 0.3+ | 2007 11 13 | 703 | 0.3+ | 0.4+ |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 09 | G96 | 0.2+ | 0.0  | 2007 10 21 | 703 | 0.3− | 0.3− | 2007 11 19 | 703 | 0.5− | 0.4+ |
| 2005 05 09 | G96 | 0.3− | 0.2− | 2007 10 21 | 703 | 0.1+ | 0.1− | 2007 11 19 | 703 | 0.1+ | 0.5− |
| 2005 05 09 | G96 | 0.3− | 0.1+ | 2007 10 21 | 703 | 0.5− | 0.7− | 2007 11 19 | 703 | 0.6− | 0.2− |
| 2005 05 09 | G96 | 0.1+ | 0.3− | 2007 11 03 | 704 | 0.1− | 0.3+ | 2007 11 19 | 703 | 0.8− | 1.1− |
| 2007 09 10 | 703 | 0.2− | 0.3+ | 2007 11 03 | 704 | 0.3− | 0.0  | 2007 12 03 | 704 | 0.6+ | 0.1− |
| 2007 09 10 | 703 | 1.0+ | 0.1− | 2007 11 03 | 704 | 0.3− | 0.9+ | 2007 12 03 | 704 | 0.1− | 0.5− |
| 2007 09 10 | 703 | 0.3− | 0.4− | 2007 11 04 | G96 | 0.2+ | 0.4− | 2007 12 03 | 704 | 0.0  | 0.1+ |
| 2007 09 10 | 703 | 0.4+ | 0.4+ | 2007 11 04 | G96 | 0.4+ | 0.4− | 2007 12 03 | 704 | 0.6+ | 0.8+ |
| 2007 09 26 | G96 | 0.4+ | 0.3− | 2007 11 04 | G96 | 0.0  | 0.4− | 2007 12 03 | 704 | 0.2+ | 0.0  |
| 2007 09 26 | G96 | 0.1− | 0.2− | 2007 11 04 | G96 | 0.1+ | 0.6− | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 2007 09 26 | G96 | 0.1+ | 0.1− | 2007 11 05 | 704 | 0.4− | 0.2− | 2007 12 04 | G96 | 0.2− | 0.0  |
| 2007 09 26 | G96 | 0.2+ | 0.2− | 2007 11 05 | 704 | 0.0  | 0.6+ | 2007 12 04 | G96 | 0.1− | 0.2+ |
| 2007 10 08 | 703 | 0.5+ | 0.3− | 2007 11 05 | 704 | 0.7− | 0.9− | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 2007 10 08 | 703 | 0.4+ | 0.0  | 2007 11 09 | 703 | 0.2− | 0.4+ |            |     |      |      |
| 2007 10 08 | 703 | 0.3− | 0.0  | 2007 11 09 | 703 | 0.0  | 0.1+ |            |     |      |      |

2007 UO<sub>34</sub>

|                                         |            |          |           |            |             |          |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|----------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |          |             |            |     |      |      |
| MPC                                     |            |          |           |            |             |          |             |            |     |      |      |
| <i>M</i>                                | 15.57028   |          | (2000.0)  |            | <b>P</b>    |          | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.27121594 | $\omega$ | 100.55988 |            | +0.94438111 |          | −0.30712882 |            |     |      |      |
| <i>a</i>                                | 2.3637012  | $\Omega$ | 277.40356 |            | +0.23579109 |          | +0.88155141 |            |     |      |      |
| <i>e</i>                                | 0.1167614  | <i>i</i> | 6.80730   |            | +0.22923105 |          | +0.35852336 |            |     |      |      |
| <i>P</i>                                | 3.63       | <i>H</i> | 16.6      | <i>G</i>   | 0.15        | <i>U</i> | 1           |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |          |             |            |     |      |      |
| 1994 01 11                              | 691        | 0.1+     | 0.4−      | 2007 10 18 | 699         | 0.6−     | 0.7−        | 2007 11 02 | 704 | 0.0  | 0.5− |
| 1994 01 11                              | 691        | 0.4−     | 0.0       | 2007 10 18 | 699         | 0.1+     | 0.2+        | 2007 11 02 | 704 | 0.2− | 0.4+ |
| 1994 01 11                              | 691        | 0.2+     | 0.1−      | 2007 10 18 | 699         | 0.6+     | 0.5−        | 2007 11 02 | 704 | 0.0  | 0.2+ |
| 2003 09 23                              | 644        | 0.0      | 0.2+      | 2007 10 18 | 699         | 0.1−     | 0.4+        | 2007 11 02 | 704 | 0.1+ | 0.6+ |
| 2003 09 23                              | 644        | 0.1+     | 0.1+      | 2007 10 21 | 703         | 0.3−     | 0.7−        | 2007 11 08 | 704 | 0.2− | 0.1+ |
| 2003 09 23                              | 644        | 0.2−     | 0.0       | 2007 10 21 | 703         | 1.4−     | 0.1+        | 2007 11 08 | 704 | 0.5+ | 0.1+ |
| 2005 01 13                              | 691        | 0.2+     | 0.1+      | 2007 10 21 | 703         | 0.1+     | 0.0         | 2007 11 08 | 704 | 0.1+ | 0.4− |
| 2005 01 13                              | 691        | 0.3+     | 0.2+      | 2007 10 21 | 703         | 0.8−     | 0.0         | 2007 11 08 | 704 | 0.1+ | 0.2+ |
| 2005 01 13                              | 691        | 0.3−     | 0.0       | 2007 11 01 | 703         | 0.1+     | 0.4+        | 2007 11 08 | 704 | 0.2+ | 0.0  |
| 2007 10 08                              | 703        | 0.7+     | 0.6−      | 2007 11 01 | 703         | 1.1−     | 0.4−        | 2007 12 13 | 704 | 0.3+ | 0.1− |
| 2007 10 08                              | 703        | 0.2−     | 0.6−      | 2007 11 01 | 703         | 0.8−     | 0.4+        | 2007 12 13 | 704 | 0.9+ | 0.7+ |
| 2007 10 08                              | 703        | 0.6+     | 0.8−      | 2007 11 01 | 703         | (1.6+    | 0.3+)       | 2007 12 13 | 704 | 0.3+ | 1.7+ |
| 2007 10 08                              | 703        | 1.5+     | 0.4−      | 2007 11 02 | 704         | 0.2−     | 0.4+        | 2007 12 13 | 704 | 0.2− | 0.3+ |

2007 UP<sub>34</sub>

|                                         |            |          |           |            |             |          |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|----------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |          |             |            |     |      |      |
| MPC                                     |            |          |           |            |             |          |             |            |     |      |      |
| <i>M</i>                                | 7.96876    |          | (2000.0)  |            | <b>P</b>    |          | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.19797193 | $\omega$ | 59.67571  |            | +0.90230765 |          | −0.42687822 |            |     |      |      |
| <i>a</i>                                | 2.9156383  | $\Omega$ | 325.49156 |            | +0.35003989 |          | +0.80691225 |            |     |      |      |
| <i>e</i>                                | 0.2423932  | <i>i</i> | 6.09295   |            | +0.25162069 |          | +0.40824945 |            |     |      |      |
| <i>P</i>                                | 4.98       | <i>H</i> | 17.2      | <i>G</i>   | 0.15        | <i>U</i> | 4           |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |          |             |            |     |      |      |
| 2002 11 01                              | 644        | 0.0      | 0.9−      | 2007 10 18 | 699         | 0.2+     | 0.9+        | 2007 11 02 | 704 | 0.2− | 0.7+ |
| 2002 11 01                              | 644        | 0.3+     | 0.9−      | 2007 10 18 | 699         | 0.2+     | 0.8−        | 2007 11 02 | 704 | 0.1+ | 0.3+ |
| 2002 11 01                              | 644        | 0.5+     | 0.6−      | 2007 10 18 | 699         | 1.3+     | 0.5−        | 2007 11 08 | 704 | 0.1+ | 0.8+ |
| 2002 11 14                              | 644        | 0.1+     | 0.2−      | 2007 10 21 | 703         | 0.9−     | 0.3−        | 2007 11 08 | 704 | 0.2+ | 0.0  |
| 2002 11 14                              | 644        | 0.0      | 0.1−      | 2007 10 21 | 703         | 1.3−     | 0.4−        | 2007 11 08 | 704 | 0.3− | 0.2+ |
| 2002 11 14                              | 644        | 0.0      | 0.2+      | 2007 10 21 | 703         | 0.0      | 0.4−        | 2007 11 08 | 704 | 0.0  | 0.2+ |
| 2004 02 22                              | 691        | 0.0      | 0.2−      | 2007 10 21 | 703         | 0.4−     | 0.6−        | 2007 11 12 | 703 | 1.6+ | 0.3+ |
| 2004 02 22                              | 691        | 0.0      | 0.2+      | 2007 11 01 | 703         | 0.1−     | 0.2−        | 2007 11 12 | 703 | 1.3+ | 0.4− |
| 2004 02 22                              | 691        | 0.2−     | 0.5−      | 2007 11 01 | 703         | 0.3−     | 0.6−        | 2007 11 12 | 703 | 0.5− | 0.3− |
| 2007 09 25                              | G96        | 0.0      | 0.5−      | 2007 11 01 | 703         | 1.2−     | 0.2+        | 2007 11 12 | 703 | 0.2+ | 0.3+ |
| 2007 09 25                              | G96        | 0.1+     | 0.0       | 2007 11 01 | 703         | 0.8−     | 0.1−        | 2007 11 12 | 703 | 0.2− | 0.2+ |
| 2007 09 25                              | G96        | 0.1+     | 0.1−      | 2007 11 02 | 704         | 0.4+     | 0.8+        | 2007 11 12 | 703 | 0.7− | 0.7+ |
| 2007 09 25                              | G96        | 0.3+     | 0.4−      | 2007 11 02 | 704         | 0.6+     | 0.1−        | 2007 11 12 | 703 | 1.4− | 0.2− |
| 2007 10 18                              | 699        | 0.8+     | 1.2+      | 2007 11 02 | 704         | 0.1+     | 0.6+        | 2007 11 12 | 703 | 0.3− | 0.6+ |

## M.P.O. 129931

2007 UH<sub>35</sub> = 2003 YF<sub>97</sub>

|                                         |            |          |           |            |             |          |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|----------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |          |             |            |     |      |      |
| MPC                                     |            |          |           |            |             |          |             |            |     |      |      |
| <i>M</i>                                | 336.12747  |          | (2000.0)  |            | <b>P</b>    |          | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.22221983 | $\omega$ | 300.92479 |            | +0.58256310 |          | −0.80720371 |            |     |      |      |
| <i>a</i>                                | 2.6994845  | $\Omega$ | 113.14549 |            | +0.77654929 |          | +0.51822476 |            |     |      |      |
| <i>e</i>                                | 0.1176853  | <i>i</i> | 5.93588   |            | +0.23998217 |          | +0.28260443 |            |     |      |      |
| <i>P</i>                                | 4.44       | <i>H</i> | 16.7      | <i>G</i>   | 0.15        | <i>U</i> | 5           |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |          |             |            |     |      |      |
| 2003 12 19                              | 704        | 0.9+     | 0.7−      | 2007 09 21 | D29         | 0.2−     | 0.9−        | 2007 10 19 | 703 | 0.2+ | 0.6+ |
| 2003 12 19                              | 704        | 0.2−     | 0.4−      | 2007 09 21 | D29         | 0.4−     | 0.0         | 2007 10 21 | G96 | 0.1+ | 0.2+ |
| 2003 12 19                              | 704        | 1.4−     | 0.5+      | 2007 09 21 | D29         | (0.2+    | 1.9−)       | 2007 10 21 | G96 | 0.2− | 0.4− |
| 2003 12 19                              | 704        | 0.5−     | 0.1−      | 2007 10 10 | 703         | 0.4−     | 1.3+        | 2007 10 21 | G96 | 0.5+ | 0.0  |
| 2003 12 23                              | 704        | 1.0−     | 1.0−      | 2007 10 10 | 703         | 0.3+     | 0.6+        | 2007 10 21 | G96 | 0.4+ | 0.2+ |
| 2003 12 23                              | 704        | 0.5+     | 0.0       | 2007 10 10 | 703         | 0.6−     | 0.5+        | 2007 10 22 | G96 | 0.2− | 1.4− |
| 2003 12 23                              | 704        | 0.3−     | 0.1−      | 2007 10 10 | 703         | 0.2−     | 0.1−        | 2007 10 22 | G96 | 0.2− | 0.1+ |
| 2003 12 23                              | 704        | 1.1+     | 0.6+      | 2007 10 19 | 703         | 0.4+     | 0.0         | 2007 10 22 | G96 | 0.1+ | 0.5− |
| 2003 12 23                              | 704        | 0.8+     | 1.0+      | 2007 10 19 | 703         | 0.2+     | 0.8+        | 2007 10 22 | G96 | 0.2+ | 0.3− |
| 2007 09 21                              | D29        | 0.2+     | 0.8−      | 2007 10 19 | 703         | (0.4+    | 1.9+)       |            |     |      |      |

2007 UX<sub>35</sub> = 1995 UD<sub>25</sub> = 2006 HK<sub>39</sub>

|                                         |            |          |           |            |             |          |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|----------|-------------|------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |          |             |            |     |      |      |
| MPC                                     |            |          |           |            |             |          |             |            |     |      |      |
| <i>M</i>                                | 52.69167   |          | (2000.0)  |            | <b>P</b>    |          | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.24065432 | $\omega$ | 236.00554 |            | +0.71780322 |          | +0.69035981 |            |     |      |      |
| <i>a</i>                                | 2.5598054  | $\Omega$ | 80.15179  |            | −0.60477367 |          | +0.68249156 |            |     |      |      |
| <i>e</i>                                | 0.1147991  | <i>i</i> | 5.26108   |            | −0.34504453 |          | +0.24001792 |            |     |      |      |
| <i>P</i>                                | 4.10       | <i>H</i> | 16.7      | <i>G</i>   | 0.15        | <i>U</i> | 1           |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |          |             |            |     |      |      |
| 1995 10 19                              | 691        | 0.0      | 0.2−      | 2003 10 20 | 691         | 0.1+     | 0.3+        | 2007 09 11 | 703 | 0.4− | 0.6− |
| 1995 10 19                              | 691        | 1.2−     | 0.0       | 2006 04 21 | 691         | 0.3+     | 0.1+        | 2007 10 11 | 703 | 0.1+ | 0.4+ |
| 1995 10 19                              | 691        | 0.2−     | 0.0       | 2006 04 21 | 691         | 0.3+     | 0.2−        | 2007 10 11 | 703 | 1.2− | 0.2+ |
| 1995 10 25                              | 691        | 0.2+     | 0.6+      | 2006 04 21 | 691         | 0.1+     | 0.0         | 2007 10 11 | 703 | 0.3− | 0.5+ |
| 1995 10 25                              | 691        | 0.3+     | 0.2+      | 2006 05 05 | 691         | 0.1+     | 0.1+        | 2007 10 11 | 703 | 0.3− | 1.1+ |
| 1995 10 25                              | 691        | 0.4+     | 0.3+      | 2006 05 05 | 691         | 0.1+     | 0.1−        | 2007 10 19 | 703 | 0.5+ | 0.2− |
| 2002 05 18                              | 644        | 0.4+     | 0.6+      | 2006 05 05 | 691         | 0.1+     | 0.0         | 2007 10 19 | 703 | 0.4+ | 0.9− |
| 2002 05 18                              | 644        | 0.4−     | 0.6+      | 2006 05 24 | G96         | 0.2−     | 0.2−        | 2007 10 19 | 703 | 0.3− | 0.1− |
| 2002 05 18                              | 644        | 0.5+     | 0.8+      | 2006 05 24 | G96         | 0.1−     | 0.3−        | 2007 10 19 | 703 | 0.8+ | 0.2+ |
| 2003 10 20                              | 644        | 0.3−     | 0.5+      | 2006 05 24 | G96         | 0.5−     | 0.4−        | 2007 10 21 | G96 | 0.1− | 0.3− |
| 2003 10 20                              | 644        | 0.0      | 0.1+      | 2006 05 24 | G96         | 0.5−     | 0.2−        | 2007 10 21 | G96 | 0.3+ | 0.7− |
| 2003 10 20                              | 691        | 0.1+     | 0.1+      | 2007 09 11 | 703         | 0.5+     | 0.8−        | 2007 10 21 | G96 | 0.1+ | 0.4− |
| 2003 10 20                              | 644        | 0.1+     | 0.3+      | 2007 09 11 | 703         | 0.3+     | 0.8+        | 2007 10 21 | G96 | 0.0  | 0.6− |
| 2003 10 20                              | 691        | 0.1+     | 0.1+      | 2007 09 11 | 703         | 0.1−     | 0.2−        |            |     |      |      |

2007 UE<sub>36</sub>

|                                         |            |          |           |            |             |      |             |            |               |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|---------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            | MPC         |      |             |            |               |
| <i>M</i>                                | 26.98200   |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |               |
| <i>n</i>                                | 0.24285094 | <i>ω</i> | 210.45674 |            | +0.95491592 |      | +0.29306042 |            |               |
| <i>a</i>                                | 2.5443461  | <i>Ω</i> | 132.42312 |            | −0.25777397 |      | +0.89776398 |            |               |
| <i>e</i>                                | 0.1630525  | <i>i</i> | 3.68521   |            | −0.14726904 |      | +0.32883951 |            |               |
| <i>P</i>                                | 4.06       | <i>H</i> | 17.4      |            | <i>G</i>    | 0.15 | <i>U</i>    | 2          |               |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |               |
| 1998 05 16                              | 691        | 0.3−     | 0.4+      | 2007 09 13 | G96         | 0.4− | 0.1−        | 2007 10 11 | 703 0.6+ 0.0  |
| 1998 05 16                              | 691        | 0.2−     | 0.3+      | 2007 09 13 | G96         | 0.2− | 0.2−        | 2007 10 19 | 703 0.4+ 0.9+ |
| 2003 10 20                              | 691        | 0.3+     | 0.1+      | 2007 09 13 | G96         | 0.2+ | 0.3−        | 2007 10 19 | 703 0.3− 0.7+ |
| 2003 10 20                              | 691        | 0.2+     | 0.1+      | 2007 09 13 | G96         | 0.2− | 0.1−        | 2007 10 19 | 703 0.4− 1.4+ |
| 2003 10 20                              | 691        | 0.3+     | 0.2+      | 2007 10 04 | 703         | 0.6+ | 0.1+        | 2007 10 19 | 703 0.5+ 1.6+ |
| 2005 02 04                              | 691        | 0.2+     | 0.1+      | 2007 10 04 | 703         | 0.1+ | 0.3−        | 2007 10 21 | G96 0.2+ 0.3− |
| 2005 02 04                              | 691        | 0.1−     | 0.3+      | 2007 10 04 | 703         | 0.0  | 1.2−        | 2007 10 21 | G96 0.2+ 0.6− |
| 2005 02 04                              | 691        | 0.3−     | 0.1+      | 2007 10 04 | 703         | 0.5− | 0.0         | 2007 10 21 | G96 0.2+ 0.2− |
| 2006 04 08                              | 691        | 0.6+     | 0.2+      | 2007 10 11 | 703         | 0.8− | 0.9−        | 2007 10 21 | G96 0.1+ 0.5− |
| 2006 04 08                              | 691        | 0.3+     | 0.0       | 2007 10 11 | 703         | 1.7− | 0.4+        |            |               |
| 2006 04 08                              | 691        | 0.2+     | 0.2+      | 2007 10 11 | 703         | 0.5+ | 0.3+        |            |               |

**2007 UF<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.73942  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27345807 | $\omega$ 288.37649 | +0.06154687   | -0.99743357 |
| <i>a</i> | 2.3507632  | $\Omega$ 157.99737 | +0.94864747   | +0.04706361 |
| <i>e</i> | 0.1100010  | <i>i</i> 5.60352   | +0.31029012   | +0.05395641 |
| <i>P</i> | 3.60       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 03 20 | 691 | 0.2-  | 0.4-  | 2007 09 13 | 699 | 0.3+  | 0.4+  | 2007 10 07 | 699 | 0.8+ | 0.8- |
| 1998 03 20 | 691 | 0.0   | 0.1-  | 2007 09 13 | 699 | 0.5+  | 0.0   | 2007 10 11 | 703 | 0.5+ | 1.3+ |
| 1998 03 20 | 691 | 0.0   | 0.2-  | 2007 09 13 | G96 | 0.3-  | 0.5-  | 2007 10 11 | 703 | 0.0  | 0.3- |
| 2005 01 13 | 703 | 0.5+  | 0.2+  | 2007 09 13 | G96 | 0.2-  | 0.2-  | 2007 10 11 | 703 | 0.8- | 0.2+ |
| 2005 01 13 | 703 | 0.5-  | 0.1+  | 2007 09 13 | G96 | 0.0   | 0.2-  | 2007 10 11 | 703 | 0.7- | 1.3+ |
| 2005 01 13 | 703 | 0.2-  | 0.0   | 2007 09 13 | G96 | 0.5-  | 0.4-  | 2007 10 19 | 703 | 0.8- | 0.3+ |
| 2005 01 13 | 703 | 0.1-  | 0.1-  | 2007 09 14 | 699 | 0.8+  | 0.6-  | 2007 10 19 | 703 | 0.0  | 0.9+ |
| 2005 03 13 | G96 | 0.0   | 0.1-  | 2007 09 14 | 699 | 1.0-  | 1.7+  | 2007 10 19 | 703 | 1.4+ | 1.0+ |
| 2005 03 13 | G96 | 0.2+  | 0.2+  | 2007 09 14 | 699 | 0.1-  | 0.2+  | 2007 10 19 | 703 | 0.0  | 0.4+ |
| 2005 03 13 | G96 | 0.1+  | 0.1-  | 2007 09 14 | 699 | 1.0+  | 0.5-  | 2007 10 21 | G96 | 0.3- | 0.4- |
| 2005 03 13 | G96 | 0.2+  | 0.1+  | 2007 10 04 | 703 | (0.9+ | 2.2-) | 2007 10 21 | G96 | 0.0  | 0.2- |
| 2007 09 08 | 699 | (1.5+ | 2.6+) | 2007 10 04 | 703 | 0.0   | 0.7-  | 2007 10 21 | G96 | 0.2- | 0.4- |
| 2007 09 08 | 699 | 0.0   | 0.3+  | 2007 10 04 | 703 | 0.3+  | 0.3+  | 2007 10 21 | G96 | 0.1+ | 0.8- |
| 2007 09 08 | 699 | 0.8-  | 1.0-  | 2007 10 04 | 703 | 1.2-  | 0.7-  | 2007 10 31 | 703 | 0.6+ | 0.0  |
| 2007 09 08 | 699 | 1.1+  | 0.5+  | 2007 10 07 | 699 | 0.1-  | 0.4-  | 2007 10 31 | 703 | 0.3+ | 0.3+ |
| 2007 09 13 | 699 | 0.4-  | 1.3-  | 2007 10 07 | 699 | 0.2+  | 0.2+  | 2007 10 31 | 703 | 0.3- | 1.7- |
| 2007 09 13 | 699 | 0.0   | 0.9+  | 2007 10 07 | 699 | 0.5-  | 0.0   | 2007 10 31 | 703 | 0.7+ | 0.3+ |

**2007 UJ<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.54774  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23633242 | $\omega$ 132.47023 | +0.74889583   | -0.66080394 |
| <i>a</i> | 2.5909191  | $\Omega$ 268.95532 | +0.59241099   | +0.70134174 |
| <i>e</i> | 0.2245682  | <i>i</i> 2.86255   | +0.29699201   | +0.26731614 |
| <i>P</i> | 4.17       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 12 26 | 691 | 0.2- | 0.5- | 2007 11 03 | 699 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.1- | 0.3- |
| 1995 12 26 | 691 | 0.2+ | 0.5- | 2007 11 03 | 699 | 0.3- | 0.5+ | 2007 11 11 | G96 | 0.0  | 0.3- |
| 1995 12 26 | 691 | 0.1- | 0.9+ | 2007 11 03 | 699 | 0.2+ | 0.6+ | 2007 11 11 | G96 | 0.1- | 0.2- |
| 2003 12 17 | 644 | 0.3+ | 0.0  | 2007 11 03 | 699 | 0.1- | 0.3+ | 2007 11 11 | G96 | 0.3- | 0.3- |
| 2003 12 17 | 691 | 0.1- | 0.1- | 2007 11 06 | 704 | 0.1- | 0.6+ | 2007 11 13 | H51 | 1.4- | 0.8+ |
| 2003 12 17 | 644 | 0.0  | 0.3+ | 2007 11 06 | 704 | 1.0+ | 0.5+ | 2007 11 13 | H51 | 0.5+ | 0.1- |
| 2003 12 17 | 691 | 0.1+ | 0.2- | 2007 11 06 | 704 | 0.2- | 0.7+ | 2007 11 13 | H51 | 1.3+ | 0.9- |
| 2003 12 17 | 644 | 0.4+ | 0.3+ | 2007 11 07 | 106 | 0.5+ | 0.7- | 2007 11 17 | 703 | 0.2- | 0.2+ |
| 2003 12 17 | 691 | 0.1- | 0.1+ | 2007 11 07 | 106 | 0.0  | 1.5- | 2007 11 17 | 703 | 0.1- | 0.3- |
| 2007 10 10 | 699 | 0.6- | 0.4- | 2007 11 07 | 106 | 0.3- | 0.2+ | 2007 11 17 | 703 | 1.3- | 0.5+ |
| 2007 10 10 | 699 | 0.3+ | 0.4- | 2007 11 07 | 106 | 0.5+ | 1.2- | 2007 11 17 | 703 | 1.6- | 1.5+ |
| 2007 10 10 | 699 | 0.1- | 1.5- | 2007 11 07 | 704 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.7+ | 0.3- |
| 2007 10 10 | 699 | 1.0- | 0.7- | 2007 11 07 | 704 | 0.7+ | 0.1+ | 2007 11 18 | 704 | 0.3+ | 0.2- |
| 2007 10 19 | 691 | 0.1- | 0.0  | 2007 11 07 | 704 | 1.7+ | 0.3+ | 2007 11 18 | 704 | 0.4- | 0.2- |
| 2007 10 19 | 691 | 0.2- | 0.1+ | 2007 11 07 | 704 | 0.4+ | 0.6+ | 2007 11 18 | 704 | 0.4- | 0.3+ |
| 2007 10 19 | 691 | 0.1- | 0.0  | 2007 11 07 | 704 | 0.4+ | 0.1- | 2007 11 18 | 704 | 0.2+ | 0.7+ |
| 2007 10 20 | 703 | 0.4+ | 0.3- | 2007 11 08 | G96 | 0.2+ | 0.2- | 2007 12 13 | A77 | 0.2- | 0.2- |
| 2007 10 20 | 703 | 0.6+ | 0.0  | 2007 11 08 | G96 | 0.4+ | 0.2- | 2007 12 13 | A77 | 0.6- | 0.6+ |
| 2007 10 20 | 703 | 0.2- | 0.2+ | 2007 11 08 | G96 | 0.2+ | 0.2- | 2007 12 13 | A77 | 0.3- | 0.5+ |
| 2007 10 20 | 703 | 0.0  | 0.7+ | 2007 11 08 | G96 | 0.5+ | 0.1- |            |     |      |      |

**2007 UL<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.59206   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21990238 | $\omega$ 261.01599 | +0.79451086   | +0.60046206 |
| <i>a</i> | 2.7184171  | $\Omega$ 62.02893  | -0.50906163   | +0.73988848 |
| <i>e</i> | 0.1101336  | <i>i</i> 5.88415   | -0.33107212   | +0.30333208 |
| <i>P</i> | 4.48       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.1+ | 0.1- | 2007 09 10 | 691 | 0.3- | 0.3+ | 2007 10 11 | 703 | 0.2- | 0.3+ |
| 1998 09 19 | 645 | 0.0  | 0.1- | 2007 09 10 | 691 | 0.6- | 0.0  | 2007 10 19 | 703 | 0.5+ | 0.2- |
| 2003 11 24 | 691 | 0.4+ | 0.3+ | 2007 09 10 | 691 | 0.1+ | 0.1+ | 2007 10 19 | 703 | 0.0  | 0.1- |
| 2003 11 24 | 691 | 0.5+ | 0.5+ | 2007 10 04 | 703 | 0.2+ | 0.5+ | 2007 10 19 | 703 | 1.5+ | 0.1- |
| 2003 11 24 | 691 | 0.1+ | 0.4+ | 2007 10 04 | 703 | 0.3+ | 1.0+ | 2007 10 19 | 703 | 0.1- | 0.0  |
| 2003 12 14 | 291 | 0.4- | 0.2- | 2007 10 04 | 703 | 0.5+ | 1.7+ | 2007 10 21 | G96 | 0.1+ | 0.2- |
| 2003 12 14 | 291 | 0.2- | 0.2- | 2007 10 04 | 703 | 0.4- | 0.8- | 2007 10 21 | G96 | 0.2- | 0.3- |
| 2003 12 14 | 291 | 0.5- | 0.0  | 2007 10 11 | 703 | 1.1- | 0.2- | 2007 10 21 | G96 | 0.2+ | 0.5- |
| 2006 05 23 | G96 | 0.3- | 0.1+ | 2007 10 11 | 703 | 0.9- | 1.8- | 2007 10 21 | G96 | 0.0  | 0.0  |
| 2006 05 23 | G96 | 0.4+ | 0.5+ | 2007 10 11 | 703 | 0.3+ | 0.6+ |            |     |      |      |

**2007 UZ<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.02062   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24306224 | $\omega$ 202.34541 | +0.96022642   | +0.27152769 |
| <i>a</i> | 2.5428713  | $\Omega$ 141.71049 | -0.23765850   | +0.91715333 |
| <i>e</i> | 0.2180744  | <i>i</i> 6.03068   | -0.14657305   | +0.29172331 |
| <i>P</i> | 4.06       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 13 | 691 | 0.8+ | 0.1- | 2005 03 04 | G96 | 0.0  | 0.2+ | 2007 10 19 | 703 | 0.1-  | 0.3+  |
| 2001 02 13 | 691 | 0.6+ | 0.0  | 2005 03 04 | G96 | 0.6- | 0.0  | 2007 10 19 | 703 | 0.8+  | 0.4+  |
| 2001 02 13 | 691 | 0.1+ | 0.0  | 2005 03 04 | G96 | 0.1+ | 0.3- | 2007 10 19 | 703 | 0.1+  | 0.8+  |
| 2003 10 16 | 699 | 0.4+ | 0.7- | 2006 05 07 | G96 | 0.3+ | 0.0  | 2007 10 19 | 703 | (0.6- | 2.1+) |
| 2003 10 16 | 699 | 0.8- | 0.4+ | 2006 05 07 | G96 | 0.2- | 0.1+ | 2007 10 21 | G96 | 0.2-  | 0.3-  |
| 2003 10 16 | 699 | 0.6+ | 0.2- | 2006 05 07 | G96 | 0.1- | 0.2+ | 2007 10 21 | G96 | 0.4-  | 0.5-  |
| 2003 10 16 | 699 | 0.5- | 0.7- | 2006 05 07 | G96 | 0.1- | 0.1+ | 2007 10 21 | G96 | 0.6-  | 0.3-  |
| 2003 10 24 | 691 | 0.1- | 0.1+ | 2006 06 01 | 691 | 0.6- | 0.5+ | 2007 10 21 | G96 | 0.3-  | 0.5-  |
| 2003 10 24 | 691 | 0.0  | 0.1+ | 2006 06 01 | 691 | 0.5+ | 0.1+ | 2007 11 14 | 699 | 0.9+  | 0.2-  |
| 2003 10 24 | 691 | 0.2+ | 0.3+ | 2006 06 01 | 691 | 0.3+ | 0.0  | 2007 11 14 | 699 | 1.1+  | 1.0+  |
| 2003 11 19 | 644 | 0.0  | 0.5+ | 2007 10 08 | 699 | 0.1+ | 0.9+ | 2007 11 14 | 699 | 0.3+  | 0.5-  |
| 2003 11 19 | 644 | 0.4- | 0.1+ | 2007 10 08 | 699 | 0.7- | 0.5- | 2007 11 14 | 699 | 1.0+  | 0.4+  |
| 2003 11 19 | 644 | 0.2- | 0.2+ | 2007 10 08 | 699 | 0.9- | 0.6- |            |     |       |       |
| 2005 03 04 | G96 | 0.7- | 0.2+ | 2007 10 08 | 699 | 0.4- | 0.3+ |            |     |       |       |

**2007 UY<sub>37</sub> = 2005 AK<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.28521   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28609921 | $\omega$ 112.37140 | +0.99481611   | +0.06178044 |
| <i>a</i> | 2.2809982  | $\Omega$ 244.16593 | -0.08693258   | +0.92877957 |
| <i>e</i> | 0.1316397  | <i>i</i> 5.14867   | +0.05276008   | +0.36544725 |
| <i>P</i> | 3.44       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 22 | 691 | 0.1+ | 0.2- | 2006 06 01 | G96 | 0.4- | 0.5+ | 2007 11 03 | 691 | 0.4- | 0.3- |
| 2000 09 22 | 691 | 0.0  | 0.1- | 2006 06 01 | G96 | 0.4- | 0.5+ | 2007 11 15 | 704 | 0.9+ | 0.1- |
| 2000 09 22 | 691 | 0.0  | 0.0  | 2006 06 01 | G96 | 0.3- | 0.4+ | 2007 11 15 | 704 | 1.1+ | 0.1+ |
| 2005 01 13 | 691 | 0.0  | 0.2+ | 2006 06 01 | G96 | 0.3- | 0.5+ | 2007 11 15 | 704 | 1.3+ | 0.4+ |
| 2005 01 13 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.2- | 0.0  | 2007 11 15 | 704 | 1.1+ | 0.2- |
| 2005 01 13 | 691 | 0.2+ | 0.0  | 2007 10 19 | 691 | 0.1- | 0.1+ | 2007 11 15 | 704 | 1.4+ | 0.2- |
| 2005 01 19 | 691 | 0.1- | 0.0  | 2007 10 19 | 691 | 0.0  | 0.1- | 2007 11 18 | 704 | 0.0  | 0.7+ |
| 2005 01 19 | 691 | 0.2- | 0.0  | 2007 10 20 | 703 | 0.1- | 0.4+ | 2007 11 18 | 704 | 0.1+ | 0.1- |
| 2005 01 19 | 691 | 0.0  | 0.4- | 2007 10 20 | 703 | 0.3+ | 0.4+ | 2007 11 18 | 704 | 0.4- | 1.0+ |
| 2006 04 07 | 691 | 0.2+ | 0.1- | 2007 10 20 | 703 | 0.4- | 0.8+ | 2007 11 18 | 704 | 0.5+ | 0.1+ |
| 2006 04 07 | 691 | 0.1- | 0.4- | 2007 11 03 | 691 | 0.4- | 0.3- |            |     |      |      |
| 2006 04 07 | 691 | 0.3+ | 0.1- | 2007 11 03 | 691 | 0.4- | 0.1- |            |     |      |      |

2007 DEC. 24

M.P.O. 129933

**2007 UZ<sub>37</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.62784    | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.17589075 | $\omega$ 3.82735  | +0.86035963   | -0.50010182 |
| <i>a</i> | 3.1548161  | $\Omega$ 26.89681 | +0.46166495   | +0.68284534 |
| <i>e</i> | 0.1253355  | <i>i</i> 12.56102 | +0.21597867   | +0.53256024 |
| <i>P</i> | 5.60       | <i>H</i> 15.5     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 08 | 644 | 0.8- | 1.1+ | 2007 10 20 | 703 | 0.5+ | 0.5+ | 2007 11 18 | 703 | 0.4- | 0.7- |
| 2001 10 08 | 644 | 0.5- | 0.5+ | 2007 10 20 | 703 | 1.2+ | 0.4- | 2007 11 18 | 704 | 0.3- | 0.6+ |
| 2001 10 08 | 644 | 0.3- | 0.5+ | 2007 10 20 | 703 | 1.0+ | 0.3- | 2007 11 18 | 703 | 0.1- | 0.9- |
| 2001 10 24 | 644 | 0.2- | 0.5+ | 2007 10 22 | 204 | 0.2+ | 0.2- | 2007 11 18 | 704 | 0.3+ | 0.2- |
| 2001 10 24 | 644 | 0.5+ | 0.1- | 2007 10 22 | 204 | 0.6+ | 0.0  | 2007 11 18 | 703 | 0.3- | 0.2+ |
| 2001 10 24 | 644 | 0.6- | 0.2+ | 2007 11 07 | 703 | 0.5+ | 0.4+ | 2007 11 18 | 704 | 0.4+ | 0.1+ |
| 2004 03 18 | 691 | 0.1+ | 0.2- | 2007 11 07 | 703 | 0.1- | 0.1+ | 2007 11 18 | 704 | 0.2- | 0.7+ |
| 2004 03 18 | 691 | 0.2+ | 0.4+ | 2007 11 07 | 703 | 0.8- | 0.7- | 2007 11 18 | 704 | 0.7- | 0.3+ |
| 2004 03 18 | 691 | 0.1+ | 0.3+ | 2007 11 07 | 703 | 0.4- | 0.5- | 2007 11 19 | 291 | 0.1- | 0.1- |
| 2007 10 07 | 691 | 0.1+ | 0.3- | 2007 11 14 | 691 | 0.2- | 0.3+ | 2007 11 19 | 291 | 0.1- | 0.1- |
| 2007 10 07 | 691 | 0.0  | 0.2+ | 2007 11 14 | 691 | 0.1- | 0.1+ | 2007 11 19 | 291 | 0.1- | 0.0  |
| 2007 10 07 | 691 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.1- | 0.1+ | 2007 12 03 | 704 | 1.4+ | 0.3+ |
| 2007 10 19 | 691 | 0.1- | 0.4- | 2007 11 18 | 691 | 0.1+ | 0.1+ | 2007 12 03 | 704 | 0.8+ | 1.5+ |
| 2007 10 19 | 691 | 0.5- | 0.1- | 2007 11 18 | 691 | 0.1- | 0.1- | 2007 12 03 | 704 | 3.0+ | 0.6+ |
| 2007 10 19 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.1- | 0.1+ | 2007 12 03 | 704 | 0.6- | 0.7- |
| 2007 10 20 | 703 | 0.2+ | 0.2- | 2007 11 18 | 703 | 0.4+ | 0.3- |            |     |      |      |

**2007 UO<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.58856   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23021210 | $\omega$ 300.93851 | +0.94938300   | +0.31046219 |
| <i>a</i> | 2.6366387  | $\Omega$ 41.02840  | -0.25759938   | +0.85657606 |
| <i>e</i> | 0.2237548  | <i>i</i> 4.17614   | -0.17976231   | +0.41217798 |
| <i>P</i> | 4.28       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 30 | 691 | 0.3- | 0.0  | 2007 10 09 | G96 | 0.7+ | 0.3- | 2007 10 21 | 691 | 0.5- | 0.4+ |
| 2003 11 30 | 691 | 0.2+ | 0.0  | 2007 10 09 | G96 | 0.4+ | 0.3- | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2003 11 30 | 691 | 0.0  | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.2- | 2007 11 05 | G96 | 0.5+ | 0.2- |
| 2006 05 03 | G96 | 0.2- | 0.3+ | 2007 10 09 | G96 | 0.2+ | 0.1- | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 2006 05 03 | G96 | 0.8+ | 0.7+ | 2007 10 15 | 703 | 0.6- | 0.2+ | 2007 11 05 | 704 | 0.6+ | 0.6- |
| 2006 05 03 | G96 | 0.0  | 0.7+ | 2007 10 15 | 703 | 0.6+ | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.5- |
| 2006 05 03 | G96 | 0.1- | 0.2- | 2007 10 15 | 703 | 1.6+ | 0.8- | 2007 11 05 | 704 | 0.1- | 0.2+ |
| 2007 09 12 | G96 | 0.0  | 0.4- | 2007 10 15 | 703 | 0.2+ | 0.2+ | 2007 11 05 | 704 | 1.1+ | 0.1- |
| 2007 09 12 | G96 | 0.6+ | 0.4- | 2007 10 20 | 703 | 1.1- | 0.4+ | 2007 11 17 | G96 | 0.6+ | 0.6- |
| 2007 09 12 | G96 | 0.3+ | 0.2- | 2007 10 20 | 703 | 0.1+ | 0.1- | 2007 11 17 | G96 | 0.4+ | 0.2- |
| 2007 09 12 | G96 | 0.2+ | 0.4- | 2007 10 20 | 703 | 0.1- | 0.3- | 2007 11 17 | G96 | 0.2+ | 0.1- |
| 2007 10 09 | 691 | 0.1- | 0.1+ | 2007 10 20 | 703 | 0.7+ | 0.9- | 2007 11 17 | G96 | 0.5+ | 0.1- |
| 2007 10 09 | 691 | 0.1- | 0.3+ | 2007 10 21 | 691 | 0.3- | 0.1+ |            |     |      |      |
| 2007 10 09 | 691 | 0.5- | 0.4+ | 2007 10 21 | 691 | 0.5- | 0.4+ |            |     |      |      |

**2007 UK<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.18008    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18085436 | $\omega$ 160.45005 | +0.86681331   | -0.48359140 |
| <i>a</i> | 3.0968255  | $\Omega$ 229.07898 | +0.43340135   | +0.85122955 |
| <i>e</i> | 0.0672623  | <i>i</i> 9.25686   | +0.24657241   | +0.20383232 |
| <i>P</i> | 5.45       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 09 | G96 | 0.3+ | 0.0  | 2007 09 25 | G96 | 1.0+ | 0.4+ | 2007 10 21 | 691 | 0.7- | 0.4+ |
| 2005 05 09 | G96 | 0.1+ | 0.3+ | 2007 09 25 | G96 | 0.2- | 0.2- | 2007 10 21 | 691 | 0.5- | 0.0  |
| 2005 05 09 | G96 | 0.2+ | 0.1+ | 2007 10 05 | 691 | 0.0  | 0.1+ | 2007 11 07 | G96 | 0.3+ | 0.1- |
| 2005 05 09 | G96 | 0.1+ | 0.1- | 2007 10 05 | 691 | 0.2- | 0.0  | 2007 11 07 | G96 | 0.4+ | 0.0  |
| 2005 05 13 | G96 | 0.2- | 1.1+ | 2007 10 05 | 691 | 0.1- | 0.3+ | 2007 11 07 | G96 | 0.1- | 0.0  |
| 2005 05 13 | G96 | 0.1- | 0.6- | 2007 10 20 | 703 | 0.5+ | 0.8- | 2007 11 07 | G96 | 0.0  | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 13 | G96 | 0.5- | 0.8- | 2007 10 20 | 703 | 0.3- | 0.6- | 2007 11 11 | G96 | 0.1+ | 0.2- |
| 2005 05 13 | G96 | 0.1- | 0.5- | 2007 10 20 | 703 | 0.1+ | 0.7+ | 2007 11 11 | G96 | 0.3+ | 0.3- |
| 2007 09 25 | G96 | 0.0  | 0.5- | 2007 10 20 | 703 | 1.1- | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.3- |
| 2007 09 25 | G96 | 0.4+ | 0.2+ | 2007 10 21 | 691 | 0.2- | 0.3+ | 2007 11 11 | G96 | 0.2+ | 0.2- |

**2007 UB<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 308.71550  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.18127812 | $\omega$ 63.16006 | -0.06319976   | -0.99337240 |
| <i>a</i> | 3.0919975  | $\Omega$ 30.92698 | +0.83648723   | -0.10519427 |
| <i>e</i> | 0.0597892  | <i>i</i> 10.76616 | +0.54432978   | +0.04631892 |
| <i>P</i> | 5.44       | <i>H</i> 15.7     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 06 | 691 | 0.1+ | 0.1- | 2007 10 21 | 691 | 1.1- | 0.5- | 2007 11 07 | G96 | 0.4+ | 0.5- |
| 1996 11 06 | 691 | 0.2+ | 0.6- | 2007 10 21 | 691 | 0.0  | 0.5- | 2007 11 08 | 704 | 0.0  | 0.2- |
| 1996 11 06 | 691 | 0.3+ | 0.3- | 2007 11 02 | G96 | 0.1+ | 0.2- | 2007 11 08 | 704 | 0.8+ | 0.7+ |
| 2004 02 13 | 691 | 0.1- | 0.3+ | 2007 11 02 | G96 | 0.3- | 0.1- | 2007 11 08 | 704 | 0.1- | 0.5+ |
| 2004 02 13 | 691 | 0.2- | 0.0  | 2007 11 02 | G96 | 0.0  | 0.0  | 2007 11 08 | 704 | 0.6- | 0.7+ |
| 2004 02 13 | 691 | 0.2- | 0.4+ | 2007 11 02 | G96 | 0.1+ | 0.3- | 2007 11 08 | 704 | 0.9+ | 0.0  |
| 2004 03 17 | 691 | 0.1+ | 0.3- | 2007 11 03 | 699 | 0.1- | 0.1+ | 2007 11 11 | G96 | 0.3- | 0.1- |
| 2004 03 17 | 691 | 0.3+ | 0.0  | 2007 11 03 | 699 | 0.8+ | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.2- |
| 2004 03 17 | 691 | 0.0  | 0.4- | 2007 11 03 | 699 | 0.4+ | 0.3+ | 2007 11 11 | G96 | 0.2+ | 0.1- |
| 2005 01 18 | 809 | 0.4+ | 0.5+ | 2007 11 03 | 699 | 0.9- | 1.4- | 2007 11 11 | G96 | 0.2+ | 0.3- |
| 2005 01 18 | 809 | 0.3+ | 0.2- | 2007 11 06 | 704 | 0.1- | 1.1+ | 2007 11 17 | 703 | 0.2- | 0.5- |
| 2005 01 18 | 809 | 0.4- | 0.4+ | 2007 11 06 | 704 | 1.1- | 0.7+ | 2007 11 17 | 703 | 0.3+ | 1.3+ |
| 2007 10 16 | 691 | 0.3- | 0.2+ | 2007 11 06 | 704 | 0.2- | 0.6+ | 2007 11 17 | 703 | 0.2- | 0.6- |
| 2007 10 16 | 691 | 0.6- | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.2- | 2007 11 17 | 703 | 0.9+ | 1.1+ |
| 2007 10 16 | 691 | 0.4- | 0.1+ | 2007 11 07 | G96 | 0.3+ | 0.2- |            |     |      |      |
| 2007 10 21 | 691 | 0.3- | 0.0  | 2007 11 07 | G96 | 0.1+ | 0.4- |            |     |      |      |

**2007 UE<sub>41</sub> = 2003 UM<sub>290</sub> = 2005 EL<sub>54</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.73707    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24153116 | $\omega$ 47.46860  | +0.88429209   | -0.46690593 |
| <i>a</i> | 2.5536063  | $\Omega$ 340.36332 | +0.42380103   | +0.80717248 |
| <i>e</i> | 0.0787686  | <i>i</i> 0.87536   | +0.19601071   | +0.36120830 |
| <i>P</i> | 4.08       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 04 18 | 691 | 0.5+ | 0.1- | 2005 03 04 | 691 | 0.4+ | 0.1- | 2007 10 16 | 691 | 0.5- | 0.2+ |
| 1993 04 18 | 691 | 0.4- | 0.2- | 2005 03 04 | 691 | 0.1+ | 0.4+ | 2007 10 16 | 691 | 0.1- | 0.0  |
| 1993 04 18 | 691 | 0.4- | 0.3- | 2005 04 02 | G96 | 1.2- | 0.2+ | 2007 10 16 | 691 | 0.1- | 0.1- |
| 2003 10 23 | 691 | 0.0  | 0.2- | 2005 04 02 | G96 | 0.3- | 0.1+ | 2007 10 21 | 691 | 0.0  | 0.0  |
| 2003 10 23 | 691 | 0.0  | 0.1- | 2005 04 02 | G96 | 0.0  | 0.0  | 2007 10 21 | 691 | 0.1- | 0.4+ |
| 2003 10 23 | 691 | 0.1+ | 0.2- | 2005 04 02 | G96 | 0.1- | 0.2+ | 2007 10 21 | 691 | 1.0+ | 0.5+ |
| 2003 10 24 | 695 | 0.3- | 0.1- | 2007 10 12 | 691 | 0.6- | 0.4- | 2007 10 31 | G96 | 0.2+ | 0.4- |
| 2003 10 24 | 695 | 0.4+ | 0.5+ | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 10 31 | G96 | 0.7+ | 1.2- |
| 2005 03 04 | 691 | 0.0  | 0.0  | 2007 10 12 | 691 | 0.1- | 0.1+ | 2007 10 31 | G96 | 0.8+ | 0.5- |

**2007 UO<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 89.96553   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29695258 | $\omega$ 254.29094 | +0.43434483   | +0.90051043 |
| <i>a</i> | 2.2250750  | $\Omega$ 41.47235  | -0.81403353   | +0.40223239 |
| <i>e</i> | 0.1198349  | <i>i</i> 1.78496   | -0.38560858   | +0.16519705 |
| <i>P</i> | 3.32       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 23 | G96 | 1.1+ | 0.1- | 2007 09 13 | G96 | 0.5+ | 0.0  | 2007 11 11 | G96 | 0.1+ | 0.3- |
| 2006 03 23 | G96 | 0.0  | 0.3+ | 2007 10 16 | 691 | 0.2- | 0.0  | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2006 03 23 | G96 | 0.7+ | 0.0  | 2007 10 16 | 691 | 0.5+ | 1.2+ | 2007 11 11 | G96 | 0.5+ | 0.1+ |
| 2006 03 23 | G96 | 0.3+ | 0.3- | 2007 10 16 | 691 | 0.1- | 0.3+ | 2007 11 12 | G96 | 0.1- | 0.1- |
| 2006 04 19 | G96 | 0.0  | 0.6+ | 2007 10 21 | 691 | 0.2+ | 0.6- | 2007 11 12 | G96 | 0.2- | 0.0  |
| 2006 04 19 | G96 | 0.0  | 0.5+ | 2007 10 21 | 691 | 0.7- | 0.7+ | 2007 11 12 | G96 | 0.1+ | 0.1+ |

## M.P.O. 129934

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 19 | G96 | 0.2+ | 0.4+ | 2007 10 21 | 691 | 0.4− | 0.2− | 2007 11 12 | G96 | 0.1− | 0.2− |
| 2006 04 19 | G96 | 0.1− | 0.5+ | 2007 10 30 | G96 | 0.3+ | 0.1+ | 2007 11 12 | G96 | 0.1− | 0.3− |
| 2006 05 22 | G96 | 0.2− | 0.3− | 2007 10 30 | G96 | 0.7+ | 0.1+ | 2007 11 12 | G96 | 0.1− | 0.0  |
| 2006 05 22 | G96 | 0.4+ | 0.5+ | 2007 10 30 | G96 | 0.8+ | 0.0  | 2007 11 12 | G96 | 0.5− | 0.2− |
| 2006 05 22 | G96 | 0.5− | 0.2+ | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 12 | G96 | 0.4− | 0.1− |
| 2006 05 22 | G96 | 0.5− | 0.4+ | 2007 11 09 | G96 | 0.2− | 0.3+ | 2007 12 06 | G96 | 0.7+ | 0.6− |
| 2007 09 13 | G96 | 0.1− | 0.4− | 2007 11 09 | G96 | 0.5− | 0.2+ | 2007 12 06 | G96 | 0.1+ | 0.2− |
| 2007 09 13 | G96 | 0.2+ | 0.0  | 2007 11 09 | G96 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.2+ | 0.1− |
| 2007 09 13 | G96 | 0.1+ | 0.2− | 2007 11 09 | G96 | 0.2− | 0.5− | 2007 12 06 | G96 | 0.2+ | 0.9− |

**2007 UM<sub>42</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 61.55845   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.22351445 | <i>ω</i> | 315.73242 | +0.83103660 |      | +0.55592406 |   |  |  |  |  |
| <i>a</i>                                | 2.6890506  | <i>Ω</i> | 10.53737  | −0.47894230 |      | +0.73172408 |   |  |  |  |  |
| <i>e</i>                                | 0.1493621  | <i>i</i> | 5.67132   | −0.28282934 |      | +0.39437078 |   |  |  |  |  |
| <i>P</i>                                | 4.41       | <i>H</i> | 16.8      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 30 | 691 | 0.3+ | 0.8− | 2005 03 16 | G96 | 0.1+ | 0.0  | 2007 11 04 | 291 | 0.3− | 0.1+ |
| 2001 04 30 | 691 | 0.4+ | 0.5+ | 2007 09 26 | G96 | 0.4+ | 0.5− | 2007 11 04 | 291 | 0.2− | 0.1+ |
| 2001 04 30 | 691 | 0.3+ | 0.9+ | 2007 09 26 | G96 | 0.3+ | 0.6− | 2007 11 04 | 291 | 0.2− | 0.0  |
| 2002 08 30 | 644 | 0.1− | 0.1+ | 2007 09 26 | G96 | 0.8+ | 0.1− | 2007 11 05 | 291 | 0.3− | 0.2+ |
| 2002 08 30 | 644 | 0.2+ | 0.4− | 2007 09 26 | G96 | 0.2− | 0.3+ | 2007 11 05 | 291 | 0.4− | 0.2+ |
| 2002 08 30 | 644 | 0.2− | 0.0  | 2007 10 16 | G96 | 0.4+ | 0.3− | 2007 11 05 | 291 | 0.1− | 0.2+ |
| 2004 01 19 | 691 | 0.2+ | 0.4− | 2007 10 16 | G96 | 0.5+ | 0.3− | 2007 11 07 | 704 | 0.5+ | 0.3+ |
| 2004 01 19 | 691 | 0.0  | 0.2− | 2007 10 16 | G96 | 0.5+ | 0.1− | 2007 11 07 | 704 | 0.5− | 0.5+ |
| 2004 01 19 | 691 | 0.2− | 0.5− | 2007 10 16 | G96 | 0.0  | 0.3− | 2007 11 07 | 704 | 0.8+ | 0.8+ |
| 2005 03 16 | G96 | 0.5− | 0.0  | 2007 10 21 | 691 | 0.9− | 0.2− | 2007 11 07 | 704 | 0.7− | 0.5+ |
| 2005 03 16 | G96 | 0.1+ | 0.2− | 2007 10 21 | 691 | 0.5− | 0.3+ |            |     |      |      |
| 2005 03 16 | G96 | 0.3− | 0.3+ | 2007 10 21 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2007 UM<sub>44</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 324.18595  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.21171136 | <i>ω</i> | 204.93019 | +0.40510907 |      | −0.91331925 |   |  |  |  |  |
| <i>a</i>                                | 2.7880888  | <i>Ω</i> | 221.20666 | +0.84906856 |      | +0.39272306 |   |  |  |  |  |
| <i>e</i>                                | 0.0543536  | <i>i</i> | 3.62470   | +0.33907111 |      | +0.10778005 |   |  |  |  |  |
| <i>P</i>                                | 4.66       | <i>H</i> | 16.4      | <i>G</i>    | 0.15 | <i>U</i>    | 5 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 13 | 691 | 0.8+ | 0.2− | 2007 10 04 | 691 | 0.1+ | 0.2+ | 2007 10 30 | 691 | 0.3− | 0.6+ |
| 1998 12 13 | 691 | 0.4+ | 0.5− | 2007 10 04 | 691 | 0.5− | 0.5+ | 2007 10 30 | 691 | 1.0− | 0.6− |
| 1998 12 13 | 691 | 0.6+ | 0.1+ | 2007 10 04 | 691 | 0.1− | 0.0  | 2007 10 30 | 691 | 0.0  | 0.2+ |
| 1998 12 22 | 691 | 0.8− | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.3− |
| 1998 12 22 | 691 | 0.9− | 0.1+ | 2007 10 18 | G96 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.4− |
| 1998 12 22 | 691 | 0.1− | 0.2+ | 2007 10 18 | G96 | 0.3− | 0.1+ | 2007 11 05 | G96 | 0.6+ | 0.4− |
| 2005 05 08 | G96 | 0.1+ | 0.4+ | 2007 10 18 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.4− |
| 2005 05 08 | G96 | 0.1− | 0.4+ | 2007 10 21 | 691 | 0.3+ | 0.3+ | 2007 11 13 | 691 | 0.1− | 0.5+ |
| 2005 05 08 | G96 | 0.5+ | 0.5+ | 2007 10 21 | 691 | 0.5− | 0.4+ | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2005 05 08 | G96 | 0.2+ | 0.6+ | 2007 10 21 | 691 | 0.0  | 0.5+ | 2007 11 13 | 691 | 0.4− | 0.5+ |

**2007 UM<sub>46</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 358.07125  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.24384373 | <i>ω</i> | 318.41489 | +0.65544171 |      | −0.75114558 |   |  |  |  |  |
| <i>a</i>                                | 2.5374353  | <i>Ω</i> | 90.47603  | +0.71201962 |      | +0.57987371 |   |  |  |  |  |
| <i>e</i>                                | 0.1724864  | <i>i</i> | 4.50772   | +0.25184167 |      | +0.31547869 |   |  |  |  |  |
| <i>P</i>                                | 4.04       | <i>H</i> | 17.3      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 699 | 0.3+ | 0.4− | 2003 11 19 | 703 | 0.1+ | 0.9− | 2007 11 02 | 691 | 0.1− | 0.1+ |
| 2003 11 19 | 699 | 0.5− | 0.4− | 2003 11 19 | 703 | 0.4− | 0.3− | 2007 11 02 | 691 | 0.1+ | 0.0  |
| 2003 11 19 | 699 | 0.8− | 0.2+ | 2003 12 19 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.7+ | 0.2− |
| 2003 11 19 | 691 | 0.0  | 0.0  | 2003 12 19 | 691 | 0.1− | 0.1+ | 2007 11 18 | G96 | 0.7+ | 0.1− |

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|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 11 19 | 699 | 0.3+  | 1.2+  | 2003 12 19 | 691 | 0.0   | 0.1+  | 2007 11 18 | G96 | 0.4+ | 0.0  |
| 2003 11 19 | 691 | 0.3+  | 0.1−  | 2007 10 20 | 703 | 1.5+  | 1.4+  | 2007 11 18 | G96 | 0.6+ | 0.1− |
| 2003 11 19 | 691 | 0.2+  | 0.0   | 2007 10 20 | 703 | (1.6+ | 0.5+) | 2007 11 20 | 691 | 0.4− | 0.3+ |
| 2003 11 19 | 703 | 0.6−  | 0.3−  | 2007 10 20 | 703 | 0.3+  | 0.1+  | 2007 11 20 | 691 | 0.4− | 0.0  |
| 2003 11 19 | 703 | 0.6−  | 0.0   | 2007 10 20 | 703 | 0.1−  | 0.4−  | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2003 11 19 | 703 | 0.9+  | 0.2+  | 2007 10 21 | 691 | 0.1−  | 0.0   | 2007 11 20 | G96 | 0.3+ | 0.2− |
| 2003 11 19 | 703 | 0.9−  | 0.1+  | 2007 10 21 | 691 | 0.1−  | 0.0   | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2003 11 19 | 703 | 0.2+  | 0.1−  | 2007 10 21 | 691 | 0.2−  | 0.0   | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2003 11 19 | 703 | (3.2+ | 0.9+) | 2007 11 02 | 691 | 0.1+  | 0.1−  | 2007 11 20 | G96 | 0.0  | 0.1− |

**2007 US<sub>46</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 25.17845   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.32025677 | <i>ω</i> | 307.51256 | +0.98326171 |      | −0.15659972 |   |  |  |  |  |
| <i>a</i>                                | 2.1157800  | <i>Ω</i> | 61.67159  | +0.18175788 |      | +0.87860580 |   |  |  |  |  |
| <i>e</i>                                | 0.1418123  | <i>i</i> | 6.07319   | −0.01266792 |      | +0.45114119 |   |  |  |  |  |
| <i>P</i>                                | 3.08       | <i>H</i> | 18.0      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 11 10 | 691 | 0.0  | 0.0  | 2006 05 26 | G96 | 0.1+ | 0.5+ | 2007 11 07 | 704 | (0.6− | 1.9+) |
| 2004 11 10 | 691 | 0.1+ | 0.0  | 2006 05 26 | G96 | 0.8+ | 0.4+ | 2007 11 07 | 704 | 0.5−  | 0.4+  |
| 2004 11 10 | 691 | 0.0  | 0.2+ | 2007 10 08 | 691 | 0.0  | 0.2− | 2007 11 07 | 703 | 0.2+  | 0.1−  |
| 2004 11 20 | 691 | 0.1+ | 0.2− | 2007 10 08 | 691 | 0.0  | 0.2− | 2007 11 07 | 703 | 0.4+  | 0.3−  |
| 2004 11 20 | 691 | 0.1− | 0.4− | 2007 10 08 | 691 | 0.3− | 0.2− | 2007 11 07 | 703 | 0.1+  | 0.5+  |
| 2004 11 20 | 691 | 0.0  | 0.3− | 2007 10 20 | 703 | 0.9+ | 0.1+ | 2007 11 07 | 703 | 0.8+  | 0.2−  |
| 2006 04 02 | 691 | 0.1− | 0.5+ | 2007 10 20 | 703 | 0.7− | 0.9+ | 2007 11 14 | 704 | 0.3+  | 1.5+  |
| 2006 04 02 | 691 | 0.5+ | 0.5− | 2007 10 20 | 703 | 0.2− | 0.1+ | 2007 11 14 | 704 | 0.3+  | 0.1+  |
| 2006 04 02 | 691 | 0.1+ | 0.2+ | 2007 10 20 | 703 | 0.5− | 0.6+ | 2007 11 14 | 704 | 0.3+  | 0.9+  |
| 2006 04 02 | G96 | 0.2− | 0.4+ | 2007 10 21 | 691 | 0.2− | 0.0  | 2007 11 14 | 704 | 0.5−  | 0.7+  |
| 2006 04 02 | G96 | 0.5− | 0.6+ | 2007 10 21 | 691 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.5−  | 0.2+  |
| 2006 04 02 | G96 | 0.4− | 0.4+ | 2007 10 21 | 691 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.8+  | 0.2−  |
| 2006 04 02 | G96 | 0.6− | 0.8+ | 2007 11 07 | 704 | 0.3− | 1.0+ | 2007 12 15 | G96 | 0.9+  | 0.2−  |
| 2006 05 26 | G96 | 0.7+ | 0.3+ | 2007 11 07 | 704 | 0.1− | 0.7+ | 2007 12 15 | G96 | 0.5+  | 0.3−  |
| 2006 05 26 | G96 | 0.4+ | 0.6+ | 2007 11 07 | 704 | 0.1− | 0.5+ | 2007 12 15 | G96 | 0.2+  | 0.1+  |

**2007 UT<sub>46</sub>**

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
| MPC                                     |            |          |           |             |      |             |   |  |  |  |  |
| <i>M</i>                                | 25.95128   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.22643881 | <i>ω</i> | 298.18783 | +0.96748792 |      | −0.24610501 |   |  |  |  |  |
| <i>a</i>                                | 2.6658485  | <i>Ω</i> | 76.10825  | +0.24796466 |      | +0.87759690 |   |  |  |  |  |
| <i>e</i>                                | 0.0760575  | <i>i</i> | 3.44334   | +0.04980613 |      | +0.41140736 |   |  |  |  |  |
| <i>P</i>                                | 4.35       | <i>H</i> | 16.6      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 18 | 644 | 0.8− | 1.1+ | 2007 10 08 | 691 | 0.0  | 0.1− | 2007 11 17 | 703 | 0.9− | 0.9− |
| 2002 08 18 | 644 | 0.7− | 1.1+ | 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.1+ | 0.2− |
| 2002 08 18 | 644 | 1.4+ | 0.3+ | 2007 10 20 | 703 | 0.9+ | 0.3+ | 2007 11 17 | 703 | 0.1− | 0.3+ |
| 2002 08 29 | 644 | 0.5− | 0.2+ | 2007 10 20 | 703 | 1.0+ | 0.2− | 2007 11 17 | 703 | 0.2+ | 0.4+ |

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M.P.O. 129935

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 19 | 691 | 0.2− | 0.4− | 2006 06 19 | G96 | 0.4+ | 0.4− | 2007 10 21 | 691 | 0.1+ | 0.3+ |
| 1992 11 19 | 691 | 0.1+ | 0.2− | 2006 06 19 | G96 | 0.0  | 0.2− | 2007 10 21 | 691 | 0.3− | 0.0  |
| 1992 11 19 | 691 | 0.2+ | 0.1+ | 2006 06 19 | G96 | 0.4− | 0.2− | 2007 11 02 | 691 | 0.4− | 0.2+ |
| 1995 04 23 | 691 | 0.4− | 0.1− | 2006 06 19 | G96 | 0.3− | 0.1+ | 2007 11 02 | 691 | 0.2− | 0.1− |
| 1995 04 23 | 691 | 0.0  | 0.3− | 2007 10 10 | 691 | 0.1− | 0.2+ | 2007 11 02 | 691 | 0.1− | 0.1− |
| 1995 04 23 | 691 | 0.0  | 0.5− | 2007 10 10 | G96 | 0.4+ | 0.1− | 2007 11 12 | 703 | 0.6+ | 1.1+ |
| 1997 11 20 | 691 | 0.6− | 0.8+ | 2007 10 10 | G96 | 0.4+ | 0.5− | 2007 11 12 | 703 | 0.8+ | 0.4+ |
| 1997 11 20 | 691 | 0.2+ | 0.4− | 2007 10 10 | G96 | 0.3+ | 0.3− | 2007 11 12 | 703 | 0.2+ | 0.7+ |
| 1997 11 20 | 691 | 0.7+ | 0.6− | 2007 10 10 | 691 | 0.2− | 0.2+ | 2007 11 18 | G96 | 0.1− | 0.1− |
| 2001 07 18 | 608 | 0.0  | 0.8− | 2007 10 10 | G96 | 0.4+ | 0.0  | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2001 07 18 | 608 | 0.1− | 0.7− | 2007 10 10 | 691 | 0.1− | 0.1− | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2001 07 18 | 608 | 0.2+ | 0.7− | 2007 10 20 | 703 | 0.4− | 0.3− | 2007 11 18 | G96 | 0.2+ | 0.1+ |
| 2006 05 31 | G96 | 0.1+ | 0.4+ | 2007 10 20 | 703 | 0.7− | 0.5+ | 2007 11 20 | 691 | 0.5− | 0.2+ |
| 2006 05 31 | G96 | 0.5+ | 0.2+ | 2007 10 20 | 703 | 1.1+ | 0.8− | 2007 11 20 | 691 | 0.1− | 0.1+ |
| 2006 05 31 | G96 | 0.0  | 0.1+ | 2007 10 20 | 703 | 0.3+ | 0.2− | 2007 11 20 | 691 | 0.8+ | 1.2− |
| 2006 05 31 | G96 | 0.1+ | 0.3+ | 2007 10 21 | 691 | 0.1+ | 0.2− |            |     |      |      |

2007 UB<sub>47</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
| MPC                                     |            |          |           |             |             |          |   |  |  |  |  |
| <i>M</i>                                | 15.45060   |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.23696237 | <i>ω</i> | 189.29309 | +0.87513728 | −0.48166066 |          |   |  |  |  |  |
| <i>a</i>                                | 2.5863252  | <i>Ω</i> | 199.70652 | +0.45228896 | +0.84822563 |          |   |  |  |  |  |
| <i>e</i>                                | 0.1017615  | <i>i</i> | 7.88100   | +0.17195765 | +0.22026415 |          |   |  |  |  |  |
| <i>P</i>                                | 4.16       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 04 12 | 691 | 0.4+ | 0.6+ | 2007 07 19 | G96 | 1.2− | 0.3+ | 2007 10 20 | 703 | 0.5− | 0.2− |
| 1997 04 12 | 691 | 0.9− | 0.2− | 2007 07 19 | G96 | 0.8+ | 0.3− | 2007 10 20 | 703 | 0.7− | 0.1+ |
| 1997 04 12 | 691 | 0.5+ | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.4+ | 2007 10 21 | 691 | 0.1+ | 0.3+ |
| 2003 11 18 | 691 | 0.0  | 0.1− | 2007 09 14 | G96 | 0.1+ | 0.1− | 2007 10 21 | 691 | 0.1− | 0.2+ |
| 2003 11 18 | 691 | 0.0  | 0.3− | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 10 21 | 691 | 0.1− | 0.2+ |
| 2003 11 18 | 691 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 11 09 | 703 | 0.1− | 0.2− |
| 2005 03 17 | 691 | 0.2+ | 0.2+ | 2007 10 10 | 691 | 0.2+ | 0.0  | 2007 11 09 | 703 | 0.2+ | 0.4− |
| 2005 03 17 | 691 | 0.0  | 0.2− | 2007 10 10 | G96 | 0.3+ | 0.1− | 2007 11 09 | 703 | 0.7− | 0.2+ |
| 2005 03 17 | 691 | 0.1+ | 0.1+ | 2007 10 10 | G96 | 0.4+ | 0.1− | 2007 11 09 | 703 | 0.4− | 0.2− |
| 2005 05 14 | G96 | 0.3− | 0.1+ | 2007 10 10 | G96 | 0.5+ | 0.1+ | 2007 12 06 | 703 | 0.5+ | 0.2− |
| 2005 05 14 | G96 | 0.3− | 0.2+ | 2007 10 10 | 691 | 0.1− | 0.0  | 2007 12 06 | 703 | 0.1− | 0.3− |
| 2005 05 14 | G96 | 0.4− | 0.3− | 2007 10 10 | G96 | 0.3+ | 0.1− | 2007 12 06 | 703 | 0.6+ | 0.8− |
| 2005 05 14 | G96 | 0.2− | 0.2+ | 2007 10 10 | 691 | 0.1− | 0.6+ | 2007 12 06 | 703 | 1.4− | 0.3+ |
| 2007 07 19 | G96 | 0.8+ | 0.2+ | 2007 10 20 | 703 | 0.0  | 0.8+ |            |     |      |      |
| 2007 07 19 | G96 | 0.6+ | 0.2− | 2007 10 20 | 703 | 0.3− | 0.8− |            |     |      |      |

2007 UP<sub>47</sub> = 2005 HY<sub>9</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
| MPC                                     |            |          |           |             |             |          |   |  |  |  |  |
| <i>M</i>                                | 8.96190    |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.21959758 | <i>ω</i> | 193.70740 | +0.77545891 | −0.62963586 |          |   |  |  |  |  |
| <i>a</i>                                | 2.7209320  | <i>Ω</i> | 205.50157 | +0.58912755 | +0.74838252 |          |   |  |  |  |  |
| <i>e</i>                                | 0.1977813  | <i>i</i> | 6.28597   | +0.22713918 | +0.20852406 |          |   |  |  |  |  |
| <i>P</i>                                | 4.49       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 09 16 | 691 | 0.1+ | 0.2− | 2005 04 17 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 699 | 1.1+  | 0.0   |
| 1993 09 16 | 691 | 0.1+ | 0.1− | 2007 07 19 | G96 | 0.2+ | 0.3− | 2007 11 18 | 699 | 0.3−  | 0.5+  |
| 1993 09 16 | 691 | 0.0  | 0.1− | 2007 07 19 | G96 | 0.2+ | 0.1− | 2007 11 18 | 699 | 0.4+  | 0.3−  |
| 2001 05 21 | 691 | 0.5− | 0.4+ | 2007 07 19 | G96 | 0.1+ | 0.2− | 2007 11 20 | 703 | 0.4−  | 0.2−  |
| 2001 05 21 | 691 | 0.2− | 0.1+ | 2007 07 19 | G96 | 0.3− | 0.0  | 2007 11 20 | 703 | 1.1−  | 0.2+  |
| 2001 05 21 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 699 | 0.3− | 0.7− | 2007 11 20 | 703 | 0.2−  | 0.0   |
| 2002 08 16 | 644 | 0.2+ | 0.3+ | 2007 10 19 | 699 | 0.2− | 0.8− | 2007 11 20 | 703 | 0.3+  | 0.6+  |
| 2002 08 16 | 644 | 0.1+ | 0.2+ | 2007 10 19 | 699 | 0.2+ | 0.3+ | 2007 11 29 | 704 | (1.7+ | 1.2+) |
| 2002 08 16 | 644 | 0.2+ | 0.3+ | 2007 10 19 | 699 | 0.1+ | 0.2+ | 2007 11 29 | 704 | 0.4+  | 0.3+  |
| 2002 08 26 | 644 | 0.0  | 0.0  | 2007 10 24 | G96 | 0.1+ | 0.1− | 2007 11 29 | 704 | 0.7+  | 0.6+  |
| 2002 08 26 | 644 | 0.2− | 0.9+ | 2007 10 24 | G96 | 0.1+ | 0.1− | 2007 11 29 | 704 | 0.1+  | 0.4+  |
| 2002 08 26 | 644 | 0.1+ | 0.5+ | 2007 10 24 | G96 | 0.2+ | 0.1− | 2007 12 04 | 704 | 0.2−  | 0.4+  |
| 2002 09 13 | 644 | 0.4− | 0.6+ | 2007 10 24 | G96 | 0.2+ | 0.3− | 2007 12 04 | 704 | 0.0   | 0.2+  |
| 2002 09 13 | 644 | 0.4− | 0.5+ | 2007 10 25 | G96 | 0.1+ | 0.2− | 2007 12 04 | 704 | 0.1+  | 1.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.4− | 0.3+ | 2007 10 25 | G96 | 0.2+ | 0.2− | 2007 12 04 | 704 | 0.3+ | 0.8+ |
| 2005 04 02 | G96 | 0.7− | 0.5+ | 2007 10 25 | G96 | 0.1+ | 0.1− | 2007 12 04 | 704 | 0.1+ | 1.0+ |
| 2005 04 02 | G96 | 0.8− | 0.4+ | 2007 10 25 | G96 | 0.2+ | 0.2− | 2007 12 05 | 699 | 0.1+ | 0.3+ |
| 2005 04 02 | G96 | 0.2− | 0.1− | 2007 11 03 | D35 | 0.0  | 0.0  | 2007 12 05 | 699 | 1.1− | 0.1+ |
| 2005 04 02 | G96 | 0.3− | 0.0  | 2007 11 03 | D35 | 0.3+ | 0.1+ | 2007 12 05 | 699 | 1.3− | 0.6+ |
| 2005 04 17 | 691 | 0.4+ | 0.1+ | 2007 11 03 | D35 | 0.1+ | 0.2+ | 2007 12 05 | 699 | 1.0− | 0.6− |
| 2005 04 17 | 691 | 0.7+ | 0.0  | 2007 11 18 | 699 | 0.2− | 0.0  |            |     |      |      |

2007 UR<sub>47</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
| MPC                                     |            |          |           |             |             |          |   |  |  |  |  |
| <i>M</i>                                | 25.07236   |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.27990076 | <i>ω</i> | 190.87514 | +0.97994189 | −0.19927904 |          |   |  |  |  |  |
| <i>a</i>                                | 2.3145505  | <i>Ω</i> | 180.62430 | +0.19074491 | +0.93985850 |          |   |  |  |  |  |
| <i>e</i>                                | 0.2286529  | <i>i</i> | 6.97995   | +0.05770848 | +0.27740561 |          |   |  |  |  |  |
| <i>P</i>                                | 3.52       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 14 | 691 | 0.1− | 0.1− | 2007 10 25 | G96 | 0.2− | 0.0  | 2007 11 17 | 703 | 0.0  | 0.0  |
| 2005 02 14 | 691 | 0.2+ | 0.1− | 2007 10 25 | G96 | 0.0  | 0.2− | 2007 11 28 | D35 | 0.2+ | 0.1+ |
| 2005 02 14 | 691 | 0.1− | 0.2− | 2007 10 25 | G96 | 0.1+ | 0.3− | 2007 11 28 | D35 | 0.5+ | 0.0  |
| 2006 04 25 | 691 | 0.0  | 0.0  | 2007 11 04 | G96 | 0.2− | 0.3− | 2007 11 28 | D35 | 0.6+ | 0.1+ |
| 2006 04 25 | 691 | 0.2− | 0.5− | 2007 11 04 | G96 | 0.3− | 0.4− | 2007 12 02 | 704 | 0.1+ | 0.7+ |
| 2006 04 25 | 691 | 0.8+ | 0.4+ | 2007 11 04 | G96 | 0.1− | 0.4− | 2007 12 02 | 704 | 1.4+ | 1.1+ |
| 2006 05 03 | 691 | 0.1− | 0.0  | 2007 11 04 | G96 | 0.0  | 0.5− | 2007 12 02 | 704 | 0.1+ | 0.1+ |
| 2006 05 03 | 691 | 0.3− | 0.3+ | 2007 11 09 | 703 | 0.5+ | 0.9+ | 2007 12 02 | 704 | 0.0  | 0.3+ |
| 2006 05 03 | 691 | 0.1− | 0.0  | 2007 11 09 | 703 | 0.2− | 0.6− | 2007 12 03 | 704 | 0.0  | 0.1+ |
| 2007 10 19 | 703 | 0.4− | 0.7− | 2007 11 09 | 703 | 0.6+ | 0.0  | 2007 12 03 | 704 | 0.5− | 1.2+ |
| 2007 10 19 | 703 | 0.3− | 0.3+ | 2007 11 09 | 703 | 0.2+ | 0.2− | 2007 12 03 | 704 | 0.1− | 0.3+ |
| 2007 10 19 | 703 | 0.8− | 0.2− | 2007 11 14 | 699 | 0.1− | 0.5− | 2007 12 03 | 704 | 0.3− | 0.4+ |
| 2007 10 19 | 703 | 0.8− | 1.0+ | 2007 11 14 | 699 | 0.2− | 0.6− | 2007 12 03 | 704 | 0.4− | 0.6+ |
| 2007 10 24 | G96 | 0.3+ | 0.2− | 2007 11 14 | 699 | 0.2− | 0.1− | 2007 12 05 | 703 | 0.4+ | 0.8+ |
| 2007 10 24 | G96 | 0.2− | 0.1− | 2007 11 14 | 699 | 0.8− | 1.0− | 2007 12 05 | 703 | 0.1+ | 0.3+ |
| 2007 10 24 | G96 | 0.2− | 0.1+ | 2007 11 17 | 703 | 0.2− | 0.9− | 2007 12 05 | 703 | 0.2+ | 0.2+ |
| 2007 10 24 | G96 | 0.5+ | 0.4− | 2007 11 17 | 703 | 0.4+ | 0.1+ | 2007 12 05 | 703 | 0.4+ | 0.2+ |
| 2007 10 25 | G96 | 0.2− | 0.3− | 2007 11 17 | 703 | 0.5− | 0.2+ |            |     |      |      |

2007 UF<sub>48</sub> = 2003 AC<sub>48</sub> = 2006 QC<sub>37</sub>

|                                         |            |          |           |             |             |          |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |             |          |   |  |  |  |  |
| MPC                                     |            |          |           |             |             |          |   |  |  |  |  |
| <i>M</i>                                | 11.47996   |          | (2000.0)  | <i>P</i>    |             | <i>Q</i> |   |  |  |  |  |
| <i>n</i>                                | 0.17851280 | <i>ω</i> | 334.87527 | +0.73723467 | −0.66536124 |          |   |  |  |  |  |
| <i>a</i>                                | 3.1238474  | <i>Ω</i> | 67.35776  | +0.63938254 | +0.63091631 |          |   |  |  |  |  |
| <i>e</i>                                | 0.0757441  | <i>i</i> | 7.30718   | +0.21834609 | +0.39904765 |          |   |  |  |  |  |
| <i>P</i>                                | 5.52       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |  |  |  |  |

Residuals in seconds of arc</

**2007 UC<sub>49</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.62040  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17954057 | $\omega$ | 220.68163 | +0.36047276   | -0.92652467 |
| <i>a</i> | 3.1119145  | $\Omega$ | 208.67900 | +0.90341904   | +0.37554415 |
| <i>e</i> | 0.0747803  | <i>i</i> | 12.97572  | +0.23214956   | -0.02277338 |
| <i>P</i> | 5.49       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 11 | 691 | 0.2- | 0.3- | 2007 10 10 | 691 | 0.4- | 0.1+ | 2007 11 12 | G96 | 0.2- | 0.0  |
| 2005 06 11 | 691 | 0.4- | 0.2- | 2007 10 21 | 691 | 0.3+ | 0.2- | 2007 11 12 | 704 | 0.2+ | 0.2+ |
| 2005 06 11 | 691 | 0.2+ | 0.3- | 2007 10 21 | 691 | 0.1- | 0.2- | 2007 11 12 | 704 | 0.8+ | 0.6+ |
| 2005 06 27 | 691 | 0.0  | 0.5+ | 2007 10 21 | 691 | 0.0  | 0.1- | 2007 11 15 | 704 | 0.7- | 0.5+ |
| 2005 06 27 | 691 | 0.1+ | 0.3+ | 2007 10 24 | G96 | 0.7+ | 0.1- | 2007 11 15 | 704 | 0.0  | 1.3- |
| 2005 06 27 | 691 | 0.2+ | 0.2+ | 2007 10 24 | G96 | 0.5+ | 0.4- | 2007 11 15 | 704 | 0.1- | 0.1- |
| 2007 09 14 | G96 | 0.7- | 0.3- | 2007 10 24 | G96 | 0.4+ | 0.2- | 2007 11 15 | 704 | 0.3- | 0.2+ |
| 2007 09 14 | G96 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.2+ | 0.0  | 2007 11 15 | 704 | 0.3- | 0.3+ |
| 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 11 12 | G96 | 0.1- | 0.2- | 2007 11 15 | 704 | 0.6+ | 0.8+ |
| 2007 09 14 | G96 | 0.1+ | 0.1- | 2007 11 12 | G96 | 0.4- | 0.1- | 2007 11 15 | 704 | 0.3+ | 0.5+ |
| 2007 10 10 | 691 | 0.4- | 0.2+ | 2007 11 12 | G96 | 0.1- | 0.0  | 2007 11 15 | 704 | 0.4- | 0.1+ |
| 2007 10 10 | 691 | 0.1- | 0.0  | 2007 11 12 | 704 | 0.5- | 0.5- | 2007 11 15 | 704 | 0.4+ | 0.2+ |

**2007 UO<sub>49</sub> = 2005 EM<sub>290</sub> = 2006 KY<sub>118</sub>**Id. Minor Planet Center (*MPO* 128564; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 167.54173  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25759754 | $\omega$ | 47.59162  | -0.42447099   | +0.90497884 |
| <i>a</i> | 2.4462917  | $\Omega$ | 197.35694 | -0.85661682   | -0.41173173 |
| <i>e</i> | 0.0848200  | <i>i</i> | 5.56749   | -0.29331212   | -0.10719275 |
| <i>P</i> | 3.83       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 22 | 691 | 0.2-  | 0.6+  | 2006 05 30 | 691 | 0.2- | 0.8+ | 2007 10 25 | G96 | 0.5+ | 0.0  |
| 2003 10 22 | 691 | 0.1+  | 0.2+  | 2006 06 04 | 691 | 0.3- | 0.4+ | 2007 10 25 | G96 | 0.5+ | 0.4- |
| 2003 10 22 | 691 | 0.0   | 0.3+  | 2006 06 04 | 691 | 0.0  | 0.3+ | 2007 11 01 | 691 | 0.3- | 0.4+ |
| 2003 11 21 | 691 | 0.0   | 0.1-  | 2006 06 04 | 691 | 0.0  | 0.5+ | 2007 11 01 | 691 | 0.2- | 1.1+ |
| 2003 11 21 | 691 | 0.1+  | 0.1-  | 2006 06 20 | 691 | 0.2+ | 0.7+ | 2007 11 01 | 691 | 0.0  | 0.1- |
| 2003 11 21 | 691 | 0.3-  | 0.1+  | 2006 06 20 | 691 | 0.3- | 0.3+ | 2007 11 05 | 691 | 0.2- | 0.2+ |
| 2005 02 14 | 703 | (1.2- | 2.2+) | 2006 06 20 | 691 | 0.2- | 0.0  | 2007 11 05 | 691 | 0.2- | 0.2+ |
| 2005 02 14 | 703 | 1.1+  | 0.2+  | 2006 07 26 | 644 | 0.4- | 0.0  | 2007 11 05 | 691 | 0.2- | 0.0  |
| 2005 02 14 | 703 | 1.5+  | 0.5-  | 2006 07 26 | 644 | 0.0  | 0.5+ | 2007 11 09 | 691 | 0.8- | 0.4+ |
| 2005 02 14 | 703 | 0.4-  | 0.7+  | 2006 07 26 | 644 | 0.5+ | 0.3+ | 2007 11 09 | 691 | 0.3- | 0.4+ |
| 2005 03 10 | 703 | 0.4-  | 0.9+  | 2007 10 24 | G96 | 0.3+ | 0.2- | 2007 11 09 | 691 | 0.2- | 0.3+ |
| 2005 03 10 | 703 | 0.1-  | 1.6+  | 2007 10 24 | G96 | 0.2+ | 0.6+ | 2007 11 13 | 691 | 0.6- | 0.1+ |
| 2005 03 10 | 703 | (0.0  | 2.0+) | 2007 10 24 | G96 | 1.0+ | 0.2+ | 2007 11 13 | 691 | 0.5- | 0.0  |
| 2005 03 10 | 703 | 0.6-  | 0.7+  | 2007 10 24 | G96 | 0.9+ | 0.5- | 2007 11 13 | 691 | 0.4- | 0.0  |
| 2006 05 30 | 691 | 0.0   | 0.4+  | 2007 10 25 | G96 | 0.0  | 0.1+ |            |     |      |      |
| 2006 05 30 | 691 | 0.2-  | 0.3+  | 2007 10 25 | G96 | 0.5+ | 0.5- |            |     |      |      |

**2007 UT<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.90183   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22603287 | $\omega$ | 188.45549 | +0.97752001   | -0.21072719 |
| <i>a</i> | 2.6690394  | $\Omega$ | 183.73123 | +0.19917369   | +0.93376995 |
| <i>e</i> | 0.3322050  | <i>i</i> | 6.15466   | +0.06916985   | +0.28925376 |
| <i>P</i> | 4.36       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 26 | 699 | 0.3- | 1.5+ | 2007 10 25 | G96 | 0.1- | 0.2- | 2007 11 18 | G96 | 0.0  | 0.0  |
| 1998 08 26 | 699 | 0.8- | 0.0  | 2007 10 25 | G96 | 0.4+ | 0.0  | 2007 11 18 | G96 | 0.3+ | 0.1+ |
| 1998 08 26 | 699 | 0.8- | 1.9+ | 2007 11 02 | 703 | 0.1+ | 0.4+ | 2007 11 18 | G96 | 0.0  | 0.1+ |
| 1998 10 12 | 691 | 0.3+ | 0.2- | 2007 11 02 | 703 | 0.3- | 0.4+ | 2007 11 18 | 699 | 0.3- | 0.1- |
| 1998 10 12 | 691 | 0.1+ | 0.5- | 2007 11 02 | 703 | 0.5+ | 0.5+ | 2007 11 18 | 699 | 0.6- | 0.6- |
| 1998 10 12 | 691 | 0.2+ | 0.3- | 2007 11 02 | 703 | 0.3+ | 0.2- | 2007 11 18 | 699 | 1.0- | 0.1- |
| 2004 01 18 | 691 | 0.2- | 0.1+ | 2007 11 09 | 703 | 0.4- | 0.0  | 2007 11 18 | 699 | 1.2- | 0.0  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 01 18 | 691 | 0.2+ | 0.0  | 2007 11 09 | 703 | (1.6- | 0.1+) | 2007 11 28 | D35 | 0.2+ | 0.1+ |
| 2004 01 18 | 691 | 0.0  | 0.1- | 2007 11 09 | 703 | 1.1-  | 0.3-  | 2007 11 28 | D35 | 0.1- | 0.3+ |
| 2005 04 02 | G96 | 0.2+ | 0.2- | 2007 11 09 | 703 | 1.1-  | 0.7-  | 2007 11 28 | D35 | 0.1+ | 0.2+ |
| 2005 04 02 | G96 | 0.3+ | 0.2+ | 2007 11 14 | 699 | 0.2+  | 0.3-  | 2007 11 28 | D35 | 0.1+ | 0.1+ |
| 2005 04 02 | G96 | 0.0  | 0.6- | 2007 11 14 | 699 | 0.3+  | 0.9-  | 2007 11 28 | D35 | 0.1- | 0.6+ |
| 2005 04 02 | G96 | 0.2- | 0.1+ | 2007 11 14 | 699 | 0.1+  | 0.5+  | 2007 11 28 | D35 | 0.0  | 0.3+ |
| 2007 10 24 | G96 | 0.3+ | 0.1- | 2007 11 14 | 699 | 0.5+  | 0.7-  | 2007 12 05 | 703 | 0.3- | 0.4+ |
| 2007 10 24 | G96 | 0.3+ | 0.1- | 2007 11 17 | 703 | (1.3- | 2.4+) | 2007 12 05 | 703 | 0.2- | 0.3+ |
| 2007 10 24 | G96 | 0.4+ | 0.1+ | 2007 11 17 | 703 | (0.5+ | 3.2+) | 2007 12 05 | 703 | 0.3- | 0.0  |
| 2007 10 24 | G96 | 0.0  | 0.1- | 2007 11 17 | 703 | 0.7+  | 0.6+  | 2007 12 05 | 703 | 0.4+ | 0.7+ |
| 2007 10 25 | G96 | 0.2+ | 0.2- | 2007 11 17 | 703 | 0.9+  | 0.5+  |            |     |      |      |
| 2007 10 25 | G96 | 0.3+ | 0.1+ | 2007 11 18 | G96 | 0.3+  | 0.0   |            |     |      |      |

**2007 UY<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.54896    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26193250 | $\omega$ | 322.56664 | +0.64624897   | -0.74065818 |
| <i>a</i> | 2.4192261  | $\Omega$ | 86.39024  | +0.73711169   | +0.54348380 |
| <i>e</i> | 0.1052772  | <i>i</i> | 10.61332  | +0.19755662   | +0.39503269 |
| <i>P</i> | 3.76       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 28 | 699 | (0.1+ | 2.3+) | 2007 10 25 | G96 | 0.2+  | 0.1-  | 2007 11 29 | 704 | 0.8-  | 1.0-  |
| 2003 09 28 | 699 | 0.1+  | 0.4+  | 2007 10 25 | G96 | 0.4+  | 0.2-  | 2007 11 29 | 704 | 0.1+  | 1.0-  |
| 2003 09 28 | 699 | 0.6-  | 0.8+  | 2007 11 02 | 703 | 0.5+  | 0.1+  | 2007 11 29 | 704 | 0.5+  | 0.2+  |
| 2003 09 28 | 699 | (1.7- | 1.9+) | 2007 11 02 | 703 | 0.1-  | 0.2-  | 2007 12 03 | 704 | 0.0   | 0.6+  |
| 2003 10 18 | 699 | 0.4+  | 1.0+  | 2007 11 02 | 703 | (2.1+ | 0.4+) | 2007 12 03 | 704 | 0.4-  | 0.1+  |
| 2003 10 18 | 699 | 0.5-  | 0.5-  | 2007 11 02 | 703 | 0.3+  | 0.3+  | 2007 12 03 | 704 | 0.6-  | 0.3+  |
| 2003 10 18 | 699 | (1.9- | 0.7+) | 2007 11 08 | G96 | 0.5+  | 0.2-  | 2007 12 03 | 704 | 0.8-  | 0.1-  |
| 2003 10 18 | 699 | (0.8- | 1.7-) | 2007 11 08 | G96 | 0.6+  | 0.3-  | 2007 12 03 | 704 | 0.6-  | 0.7+  |
| 2003 10 25 | 699 | 0.0   | 1.2-  | 2007 11 08 | G96 | 0.2+  | 0.3-  | 2007 12 04 | 703 | 0.8-  | 1.0+  |
| 2003 10 25 | 699 | 0.6+  | 0.1+  | 2007 11 08 | G96 | 0.3+  | 0.4-  | 2007 12 04 | 703 | (0.8- | 1.7+) |
| 2003 10 25 | 699 | 0.6-  | 0.4-  | 2007 11 09 | 703 | 0.9-  | 0.9+  | 2007 12 04 | 703 | 0.3-  | 0.1+  |
| 2003 10 25 | 699 | 0.3+  | 0.7+  | 2007 11 09 | 703 | 0.1-  | 0.4-  | 2007 12 04 | 703 | 1.4-  | 1.1+  |
| 2007 10 24 | G96 | 0.3+  | 0.0   | 2007 11 09 | 703 | 0.8-  | 0.4-  | 2007 12 05 | 699 | 0.7-  | 0.3+  |
| 2007 10 24 | G96 | 0.7+  | 0.2-  | 2007 11 09 | 703 | 0.0   | 0.6+  | 2007 12 05 | 699 | 0.7+  | 0.2-  |
| 2007 10 24 | G96 | 0.1-  | 0.8-  | 2007 11 12 | 704 | 0.8+  | 0.2-  | 2007 12 05 | 699 | 0.3+  | 0.2-  |
| 2007 10 24 | G96 | 0.7+  | 0.1+  | 2007 11 12 | 704 | 0.6+  | 0.2+  | 2007 12 05 | 699 | (1.8+ | 1.1-) |
| 2007 10 25 | G96 | 0.3+  | 0.5-  | 2007 11 12 | 704 | 0.6+  | 0.2-  |            |     |       |       |
| 2007 10 25 | G96 | 1.0+  | 0.1-  | 2007 11 12 | 704 | 0.3-  | 0.6-  |            |     |       |       |

**2007 UC<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.55015   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27590328 | $\omega$ | 256.00180 | +0.98167521   | -0.15543756 |
| <i>a</i> | 2.3368535  | $\Omega$ | 112.84754 | +0.18483176   | +0.91745209 |
| <i>e</i> | 0.1951206  | <i>i</i> | 6.87052   | -0.04637881   | +0.36622511 |
| <i>P</i> | 3.57       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 01 07 | 691 | 0.1+ | 0.2- | 2007 10 24 | G96 | 0.0  | 0.1- | 2007 11 14 | 699 | 0.4-  | 0.4+  |
| 1994 01 07 | 691 | 0.0  | 0.3+ | 2007 10 24 | G96 | 0.2+ | 0.0  | 2007 11 14 | 699 | 0.7-  | 0.6-  |
| 2003 07 08 | 644 | 0.2- | 0.7+ | 2007 10 24 | G96 | 0.0  | 0.4- | 2007 11 14 | 699 | 0.2-  | 0.0   |
| 2003 07 08 | 644 | 0.0  | 0.6+ | 2007 10 24 | G96 | 0.7+ | 0.3- | 2007 11 17 | 703 | 0.0   | 0.0   |
| 2003 07 08 | 644 | 0.4- | 0.7+ | 2007 10 24 | G96 | 0.3+ | 0.2- | 2007 11 17 | 703 | 1.0+  | 0.2-  |
| 2003 07 08 | 644 | 0.4- | 0.5+ | 2007 10 24 | G96 | 0.6+ | 0.2+ | 2007 11 17 | 703 | 0.0   | 0.1+  |
| 2003 07 08 | 644 | 0.1- | 0.5+ | 2007 10 24 | G96 | 0.1+ | 0.0  | 2007 11 17 | 703 | 1.1-  | 0.2-  |
| 2003 07 08 | 644 | 0.4- | 0.7+ | 2007 10 25 | G96 | 0.1+ | 0.4- | 2007 11 28 | D35 | 1.0-  | 0.3+  |
| 2003 07 30 | 608 | 0.3- | 0.0  | 2007 10 25 | G96 | 0.5+ | 0.2- | 2007 11 28 | D35 | 0.4-  | 1.0-  |
| 2003 07 30 | 608 | 0.1+ | 0.7+ | 2007 10 25 | G96 | 0.3+ | 0.1- | 2007 11 28 | D35 | 0.3+  | 0.6-  |
| 2003 07 30 | 608 | 0.6- | 1.3+ | 2007 10 25 | G96 | 0.2+ | 0.3- | 2007 11 29 | 704 | (0.2+ | 1.5+) |
| 2005 02 02 | 691 | 0.1+ | 0.8+ | 2007 11 02 | 703 | 1.0- | 0.4+ | 2007 11 29 | 704 | (0.3+ | 3.2+) |
| 2005 02 02 | 691 | 0.3+ | 0.2+ | 2007 11 02 | 703 | 0.6- | 0.5+ | 2007 11 29 | 704 | 0.7+  | 1.4+  |
| 2005 02 02 | 691 | 0.0  | 0.1+ | 2007 11 02 | 703 | 0.8+ | 0.4+ | 2007 12 02 | 704 | 0.4+  | 0.1+  |
| 2005 02 09 | G96 | 0.1+ | 0.0  | 2007 11 02 | 703 | 0.5- | 0.7+ | 2007 12 02 | 704 | 0.1-  | 0.6+  |
| 2005 02 09 | G96 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.3+ | 0.2- | 2007 12 02 | 704 | 0.3-  | 0.6+  |

2007 DEC. 24

M.P.O. 129937

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 02 09 G96 | 0.1− | 0.0  | 2007 11 04 G96 | 0.4+ | 0.0  | 2007 12 02 704 | 0.2+ | 0.6− |
| 2005 02 09 G96 | 0.7− | 0.7+ | 2007 11 04 G96 | 0.1+ | 0.1+ | 2007 12 05 699 | 0.1− | 0.7+ |
| 2006 05 05 691 | 0.6− | 0.5+ | 2007 11 04 G96 | 0.4+ | 0.2− | 2007 12 05 703 | 0.1− | 0.5+ |
| 2006 05 05 691 | 0.4+ | 0.0  | 2007 11 11 704 | 0.3− | 0.2+ | 2007 12 05 703 | 0.4− | 0.3+ |
| 2006 05 05 691 | 0.4+ | 0.3+ | 2007 11 11 704 | 0.4− | 0.8+ | 2007 12 05 703 | 0.3+ | 0.3+ |
| 2006 06 16 691 | 0.2− | 0.3+ | 2007 11 11 704 | 0.3+ | 0.0  | 2007 12 05 699 | 0.4+ | 0.5+ |
| 2006 06 16 691 | 0.1+ | 0.1− | 2007 11 11 704 | 0.5+ | 0.2+ | 2007 12 05 703 | 1.0− | 0.1+ |
| 2006 06 16 691 | 0.4+ | 0.0  | 2007 11 11 704 | 0.9− | 1.0+ | 2007 12 05 699 | 0.3− | 0.1+ |
| 2007 10 24 G96 | 0.4+ | 0.3− | 2007 11 14 699 | 0.3− | 1.1+ | 2007 12 05 699 | 0.0  | 0.4− |

**2007 UF<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.90460    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17018368 | $\omega$ 314.23557 | +0.62131290   | −0.75168911 |
| <i>a</i> | 3.2249583  | $\Omega$ 96.03490  | +0.76727248   | +0.52638126 |
| <i>e</i> | 0.0744825  | <i>i</i> 12.85254  | +0.15894410   | +0.39734902 |
| <i>P</i> | 5.79       | <i>H</i> 14.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 1993 05 18 691 | 0.1+ | 0.3+ | 2007 10 24 G96 | 0.0   | 0.3−  | 2007 11 18 703 | 0.1− | 0.2+ |
| 1993 05 18 691 | 0.6− | 0.0  | 2007 10 25 G96 | 0.7+  | 0.3−  | 2007 12 03 704 | 0.0  | 1.0+ |
| 1993 05 18 691 | 0.6+ | 0.1− | 2007 10 25 G96 | 0.1+  | 0.5−  | 2007 12 03 704 | 0.2+ | 0.5+ |
| 2001 10 23 644 | 0.2− | 0.3+ | 2007 10 25 G96 | 0.2+  | 0.4−  | 2007 12 03 704 | 0.0  | 0.2+ |
| 2001 10 23 644 | 0.2− | 0.3+ | 2007 10 25 G96 | 0.3+  | 0.6−  | 2007 12 03 704 | 0.1− | 1.1+ |
| 2001 10 23 644 | 0.0  | 0.3+ | 2007 11 09 703 | (1.8− | 0.6−) | 2007 12 03 704 | 0.6− | 0.5+ |
| 2006 08 16 644 | 0.0  | 0.2+ | 2007 11 09 703 | 0.8−  | 0.2+  | 2007 12 04 703 | 0.8− | 0.6− |
| 2006 08 16 644 | 0.1− | 0.1+ | 2007 11 09 703 | 0.2−  | 0.2−  | 2007 12 04 703 | 0.6− | 0.3+ |
| 2006 08 16 644 | 0.1+ | 0.0  | 2007 11 09 703 | 0.2−  | 0.1+  | 2007 12 04 703 | 0.5− | 0.5+ |
| 2007 09 27 G96 | 0.1+ | 0.4− | 2007 11 17 703 | 0.3−  | 0.6+  | 2007 12 04 703 | 0.3− | 0.2− |
| 2007 09 27 G96 | 0.2− | 0.5− | 2007 11 17 703 | 0.5+  | 0.2+  | 2007 12 05 699 | 0.9+ | 0.0  |
| 2007 09 27 G96 | 0.1+ | 0.1+ | 2007 11 17 703 | 0.3−  | 0.8+  | 2007 12 05 699 | 0.9+ | 0.2− |
| 2007 09 27 G96 | 0.5+ | 0.5− | 2007 11 17 703 | (0.6+ | 1.7+) | 2007 12 05 699 | 0.4+ | 1.0− |
| 2007 10 24 G96 | 0.5+ | 0.4− | 2007 11 18 703 | 0.2−  | 0.1+  | 2007 12 05 699 | 0.6+ | 0.4+ |
| 2007 10 24 G96 | 0.2+ | 0.3− | 2007 11 18 703 | 1.4−  | 0.6−  |                |      |      |
| 2007 10 24 G96 | 0.4+ | 0.4− | 2007 11 18 703 | 0.2+  | 0.1+  |                |      |      |

**2007 UO<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.74396  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.21521697 | $\omega$ 39.87696 | +0.11959393   | −0.98903629 |
| <i>a</i> | 2.7577298  | $\Omega$ 43.45699 | +0.87575850   | +0.06398604 |
| <i>e</i> | 0.1895134  | <i>i</i> 7.23553  | +0.46770112   | +0.13309018 |
| <i>P</i> | 4.58       | <i>H</i> 16.6     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 09 03 599 | 0.4− | 0.0  | 2007 10 31 701 | 0.1+ | 0.1+ | 2007 11 04 701 | 0.1− | 0.1− |
| 2002 09 03 599 | 0.4+ | 0.0  | 2007 10 31 701 | 0.7− | 0.3− | 2007 11 05 701 | 0.9− | 0.1− |
| 2002 09 03 599 | 0.5− | 1.1+ | 2007 10 31 701 | 0.0  | 0.4+ | 2007 11 05 701 | 0.0  | 0.1− |
| 2004 02 13 691 | 0.1+ | 0.0  | 2007 10 31 701 | 0.2− | 0.1+ | 2007 11 05 701 | 0.2+ | 0.1− |
| 2004 02 13 691 | 0.2− | 0.2+ | 2007 10 31 701 | 0.1− | 0.4+ | 2007 11 07 703 | 1.1+ | 0.3+ |
| 2004 02 13 691 | 0.1+ | 0.1+ | 2007 10 31 701 | 0.2− | 0.2− | 2007 11 07 703 | 0.9+ | 0.1− |
| 2007 09 13 G96 | 0.5+ | 0.3− | 2007 10 31 701 | 0.6+ | 0.1− | 2007 11 07 703 | 0.7+ | 0.5+ |
| 2007 09 13 G96 | 0.1+ | 0.7− | 2007 11 03 701 | 0.1− | 0.2− | 2007 11 07 703 | 0.0  | 0.3+ |
| 2007 09 13 G96 | 0.1− | 0.4− | 2007 11 03 701 | 0.3+ | 0.2− | 2007 11 11 G96 | 0.2+ | 0.2− |
| 2007 09 13 G96 | 0.4− | 0.4− | 2007 11 03 701 | 0.3− | 0.2− | 2007 11 11 G96 | 0.3− | 0.5− |
| 2007 10 06 691 | 0.3− | 0.2+ | 2007 11 03 701 | 0.3+ | 0.4− | 2007 11 11 G96 | 0.3+ | 0.4− |
| 2007 10 06 691 | 0.2− | 0.3+ | 2007 11 03 701 | 0.1+ | 0.3− | 2007 11 11 G96 | 0.1− | 0.3− |
| 2007 10 06 691 | 0.3− | 0.2+ | 2007 11 03 701 | 0.3+ | 0.2− | 2007 11 15 704 | 0.5− | 0.2+ |
| 2007 10 20 703 | 0.9− | 0.0  | 2007 11 03 701 | 0.3− | 0.2− | 2007 11 15 704 | 0.5− | 0.8+ |
| 2007 10 20 703 | 0.6+ | 0.5+ | 2007 11 03 701 | 0.1+ | 0.1− | 2007 11 15 704 | 0.2+ | 0.4+ |
| 2007 10 20 703 | 0.2+ | 0.4− | 2007 11 03 701 | 1.0+ | 0.0  | 2007 11 15 704 | 0.1− | 0.4+ |
| 2007 10 20 703 | 0.3+ | 0.0  | 2007 11 03 701 | 0.1+ | 0.3− | 2007 11 15 704 | 0.3+ | 0.8+ |
| 2007 10 30 G96 | 0.3+ | 0.1− | 2007 11 04 691 | 0.2− | 0.0  | 2007 12 03 703 | 0.4+ | 0.0  |
| 2007 10 30 G96 | 0.2+ | 0.2− | 2007 11 04 691 | 0.2− | 0.0  | 2007 12 03 703 | 0.3− | 1.2+ |
| 2007 10 30 G96 | 0.6+ | 0.6− | 2007 11 04 691 | 0.3− | 0.1− | 2007 12 03 703 | 0.9+ | 0.7+ |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2007 10 30 G96 | 0.0  | 0.2− | 2007 11 04 701 | 0.3− | 0.3− | 2007 12 03 703 | 1.7+ | 0.4− |
| 2007 10 31 701 | 0.5− | 0.2− | 2007 11 04 701 | 0.1+ | 0.1− |                |      |      |

**2007 UL<sub>52</sub> = 2007 VM<sub>271</sub> = 2006 JJ<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.81354   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29024866 | $\omega$ 268.30510 | +0.77020771   | +0.62813450 |
| <i>a</i> | 2.2592063  | $\Omega$ 52.76547  | −0.51591200   | +0.71552124 |
| <i>e</i> | 0.1514236  | <i>i</i> 7.98340   | −0.37498653   | +0.30573910 |
| <i>P</i> | 3.40       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1999 03 21 645 | 0.0  | 0.1+ | 2006 05 16 644 | 0.0  | 0.1+ | 2007 10 24 G96 | 0.4+ | 0.1− |
| 1999 03 21 645 | 0.0  | 0.0  | 2007 09 15 G96 | 0.0  | 0.1− | 2007 10 30 691 | 0.2+ | 0.1− |
| 2000 10 06 699 | 0.4− | 0.6+ | 2007 09 15 G96 | 0.1+ | 0.1− | 2007 10 30 691 | 0.4− | 0.0  |
| 2000 10 06 699 | 0.4+ | 0.1+ | 2007 09 15 G96 | 0.2+ | 0.2− | 2007 10 30 691 | 0.0  | 0.1− |
| 2000 10 06 699 | 0.5− | 0.0  | 2007 09 15 G96 | 0.1− | 0.1+ | 2007 11 03 691 | 0.3+ | 0.2+ |
| 2000 10 06 699 | 0.4− | 0.7+ | 2007 10 16 G96 | 0.2+ | 0.1− | 2007 11 03 691 | 0.2− | 0.0  |
| 2006 05 02 G96 | 0.2+ | 0.1− | 2007 10 16 G96 | 0.3+ | 0.2+ | 2007 11 03 691 | 0.1+ | 0.1+ |
| 2006 05 02 G96 | 0.1+ | 0.1+ | 2007 10 16 G96 | 0.3+ | 0.5+ | 2007 11 07 691 | 0.1− | 0.0  |
| 2006 05 02 G96 | 0.0  | 0.1+ | 2007 10 16 G96 | 0.4+ | 0.2+ | 2007 11 07 691 | 0.3− | 0.1− |
| 2006 05 02 G96 | 0.1− | 0.1− | 2007 10 24 G96 | 0.7+ | 0.0  | 2007 11 07 691 | 0.1− | 0.1+ |
| 2006 05 16 644 | 0.1− | 0.2+ | 2007 10 24 G96 | 0.4+ | 0.3− |                |      |      |
| 2006 05 16 644 | 0.1− | 0.2+ | 2007 10 24 G96 | 0.0  | 0.6− |                |      |      |

**2007 UO<sub>52</sub> = 2004 EW<sub>97</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 22.81630   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18909342 | $\omega$ 276.40822 | +0.85210360   | −0.52084609 |
| <i>a</i> | 3.0062040  | $\Omega$ 114.99172 | +0.49980048   | +0.78067140 |
| <i>e</i> | 0.1108808  | <i>i</i> 3.24903   | +0.15530271   | +0.34535708 |
| <i>P</i> | 5.21       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1998 01 01 691 | 0.3+ | 1.1− | 2007 10 24 G96 | 0.6+ | 0.3− | 2007 11 18 G96 | 0.1− | 0.4− |
| 1998 01 01 691 | 0.4− | 0.4− | 2007 10 24 G96 | 0.2+ | 0.0  | 2007 11 19 691 | 0.3− | 0.1+ |
| 1998 01 01 691 | 0.0  | 0.4+ | 2007 10 24 G96 | 0.3+ | 0.3− | 2007 11 19 691 | 0.1− | 0.1− |
| 1999 03 22 645 | 0.0  | 0.1− | 2007 10 30 691 | 0.3− | 0.0  | 2007 11 19 691 | 0.2− | 0.0  |
| 1999 03 22 645 | 0.1− | 0.1− | 2007 10 30 691 | 0.3− | 0.4+ | 2007 11 30 D35 | 0.5+ | 0.6+ |
| 2004 03 15 691 | 0.3+ | 0.5+ | 2007 10 30 691 | 0.0  | 0.2+ | 2007 11 30 D35 | 0.0  | 0.3+ |
| 2004 03 15 691 | 0.1− | 0.1+ | 2007 11 03 691 | 0.2− | 0.1+ | 2007 11 30 D35 | 0.1+ | 0.1− |
| 2004 03 15 691 | 0.1− | 0.4+ | 2007 11 03 691 | 0.0  | 0.0  | 2007 12 04 704 | 0.8+ | 0.3+ |
| 2004 03 23 691 | 0.2+ | 0.4+ | 2007 11 03 691 | 0.0  | 0.2+ | 2007 12 04 704 | 0.2+ | 0.4+ |
| 2004 03 23 691 | 0.3+ | 0.3+ | 2007 11 18 G96 | 0.4+ | 0.3− | 2007 12 04 704 | 0.3+ | 0.3+ |
| 2004 03 23 691 | 0.2+ | 0.2+ | 2007 11 18 G96 | 0.2+ | 0.3− | 2007 12 04 704 | 0.6+ | 0.2+ |
| 2007 10 24 G96 | 0.1+ | 0.4− | 2007 11 18 G96 | 0.1+ | 0.2− |                |      |      |

**2007 US<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.57169   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27389810 | $\omega$ 250.81272 | +0.87441400   | +0.45992162 |
| <i>a</i> | 2.3482448  | $\Omega$ 81.54744  | −0.36538506   | +0.83374502 |
| <i>e</i> | 0.2572912  | <i>i</i> 8.98659   | −0.31920827   | +0.30551817 |
| <i>P</i> | 3.60       | <i>H</i> 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 08 25 644 | 0.2− | 0.1− | 2007 10 30 691 | 0.1− | 0.4+ | 2007 11 30 D35 | 0.2+ | 0.1+ |
| 2003 08 25 644 | 0.2− | 0.1+ | 2007 11 07 691 | 0.5− | 0.4− | 2007 11 30 D35 | 0.1− | 0.3− |
| 2003 08 25 644 | 0.1− | 0.2+ | 2007 11 07 691 | 0.0  | 0.1+ | 2007 11 30 D35 | 0.7+ | 0.5+ |
| 2003 09 19 644 | 0.2+ | 0.3− | 2007 11 07 691 | 0.0  | 0.1+ | 2007 11 30 D35 | 0.3+ | 0.1− |
| 2003 09 19 644 | 0.1+ | 0.2− | 2007 11 18 G96 | 0.1+ | 0.2− | 2007 11 30 D35 | 0.2+ | 0.6+ |
| 2003 09 19 644 | 0.3+ | 0.1+ | 2007 11 18 G96 | 0.3+ | 0.1− | 2007 12 04 704 | 0.2+ | 0.3+ |
| 2007 10 24 G96 | 0.3+ | 0.1− | 2007 11 18 G96 | 0.1+ | 0.2− | 2007 12 04 704 | 0.0  | 0.0  |
| 2007 10 24 G96 | 0.6+ | 0.2+ | 2007 11 18 G96 | 0.3+ | 0.4− | 2007 12 04 704 | 0.8+ | 0.2+ |
| 2007 10 24 G96 | 0.5+ | 0.8+ | 2007 11 19 691 | 0.2− | 0.1− | 2007 12 04 704 | 0.5+ | 0.4+ |

## M.P.O. 129938

2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 24 | G96 | 0.1− | 0.1− | 2007 11 19 | 691 | 0.2− | 0.1+ | 2007 12 04 | 704 | 0.5+ | 0.5+ |
| 2007 10 30 | 691 | 0.1− | 0.3− | 2007 11 19 | 691 | 0.3− | 0.5− |            |     |      |      |
| 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 11 30 | D35 | 0.1+ | 0.2− |            |     |      |      |

2007 UQ<sub>53</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.29824  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.17746371 | $\omega$ | 78.34636 | −0.47400986   | −0.85785549 |
| <i>a</i> | 3.1361465  | $\Omega$ | 41.89030 | +0.64661047   | −0.49214150 |
| <i>e</i> | 0.1860747  | <i>i</i> | 17.29386 | +0.59767010   | −0.14792126 |
| <i>P</i> | 5.55       | <i>H</i> | 16.0     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 20 | 333 | 0.8− | 0.2− | 2007 10 30 | 691 | 0.2− | 0.2+ | 2007 11 04 | 691 | 0.2+ | 0.1+ |
| 2004 04 20 | 333 | 0.8+ | 0.1+ | 2007 10 30 | 691 | 0.3− | 0.1− | 2007 11 04 | 691 | 0.2− | 0.2+ |
| 2004 04 20 | 333 | 0.1+ | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.1− | 2007 11 04 | 691 | 0.1− | 0.1+ |
| 2004 05 14 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.6+ | 0.2− | 2007 11 07 | 703 | 0.5− | 0.2− |
| 2004 05 14 | 691 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.7+ | 0.4− | 2007 11 07 | 703 | 0.5+ | 0.5+ |
| 2004 05 14 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 11 07 | 703 | 0.5− | 0.1+ |
| 2007 09 13 | G96 | 0.1− | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 11 07 | 703 | 1.0+ | 0.5+ |
| 2007 09 13 | G96 | 0.6− | 0.0  | 2007 10 31 | 691 | 0.0  | 0.1− | 2007 11 18 | 704 | 0.1− | 0.9− |
| 2007 09 13 | G96 | 0.5− | 0.4+ | 2007 10 31 | 691 | 0.2− | 0.2+ | 2007 11 18 | 704 | 0.3− | 0.0  |
| 2007 09 13 | G96 | 0.3− | 0.1+ | 2007 10 31 | 691 | 0.0  | 0.3+ | 2007 11 18 | 704 | 0.7+ | 0.8− |
| 2007 10 20 | 703 | 0.9+ | 0.3+ | 2007 11 03 | G96 | 0.1+ | 0.1− | 2007 11 18 | 704 | 0.9+ | 0.1+ |
| 2007 10 20 | 703 | 1.0+ | 0.6+ | 2007 11 03 | G96 | 0.1+ | 0.4− | 2007 11 19 | 691 | 0.4− | 0.1− |
| 2007 10 20 | 703 | 0.0  | 0.7− | 2007 11 03 | G96 | 0.5+ | 0.4− | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2007 10 20 | 703 | 0.8+ | 0.8+ | 2007 11 03 | G96 | 0.0  | 0.2− | 2007 11 19 | 691 | 0.4− | 0.0  |

2007 UV<sub>53</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.15405   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27801042 | $\omega$ | 297.55599 | +0.91844983   | +0.39313655 |
| <i>a</i> | 2.3250306  | $\Omega$ | 39.33730  | −0.33436785   | +0.83047064 |
| <i>e</i> | 0.1898772  | <i>i</i> | 3.93636   | −0.21130086   | +0.39466716 |
| <i>P</i> | 3.55       | <i>H</i> | 18.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 21 | G96 | 0.4+ | 0.4+ | 2007 09 10 | G96 | 0.3+ | 0.1− | 2007 10 18 | 691 | 0.1− | 0.2+ |
| 2006 04 21 | G96 | 0.0  | 0.0  | 2007 09 10 | G96 | 0.4− | 0.2+ | 2007 10 18 | 691 | 0.6− | 0.1+ |
| 2006 04 21 | G96 | 0.6− | 0.0  | 2007 09 10 | G96 | 0.0  | 0.2− | 2007 10 18 | 691 | 0.2− | 0.1+ |
| 2006 04 21 | G96 | 0.3+ | 0.3− | 2007 09 10 | G96 | 0.1− | 0.3+ | 2007 10 30 | 691 | 0.1− | 0.3− |
| 2006 05 01 | 568 | 0.4+ | 0.6+ | 2007 09 18 | G96 | 0.2+ | 0.1− | 2007 10 30 | 691 | 0.3− | 0.3− |
| 2006 05 01 | 568 | 0.2+ | 0.6+ | 2007 09 18 | G96 | 0.0  | 0.2− | 2007 10 30 | 691 | 0.4+ | 0.3− |
| 2006 05 01 | 568 | 0.3+ | 0.8+ | 2007 09 18 | G96 | 0.2− | 0.2− | 2007 10 31 | 691 | 0.2+ | 1.0+ |
| 2007 09 10 | G96 | 0.1− | 0.4+ | 2007 09 18 | G96 | 0.1+ | 0.5+ | 2007 10 31 | 691 | 0.0  | 0.1+ |
| 2007 09 10 | G96 | 0.3− | 0.1− | 2007 10 10 | 691 | 0.6+ | 1.3+ | 2007 10 31 | 691 | 0.2+ | 0.3− |
| 2007 09 10 | G96 | 0.6− | 0.1+ | 2007 10 10 | 691 | 0.1− | 0.1+ |            |     |      |      |
| 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 10 10 | 691 | 0.1− | 0.1− |            |     |      |      |

2007 UV<sub>54</sub> = 2002 JS<sub>140</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 246.00959  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27760398 | $\omega$ | 122.66694 | −0.98117589   | −0.18515900 |
| <i>a</i> | 2.3272994  | $\Omega$ | 46.72779  | +0.14211790   | −0.88466691 |
| <i>e</i> | 0.1005298  | <i>i</i> | 4.32141   | +0.13075312   | −0.42787920 |
| <i>P</i> | 3.55       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 10 | 291 | 0.3+ | 0.3+ | 2007 10 30 | 691 | 0.5− | 0.1+ | 2007 11 05 | G96 | 0.6+ | 0.5− |
| 2002 05 10 | 291 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.1− | 0.5− | 2007 11 05 | G96 | 0.8+ | 0.3− |
| 2002 05 10 | 291 | 0.0  | 0.7+ | 2007 10 30 | G96 | 0.2− | 0.1− | 2007 11 05 | G96 | 0.8+ | 0.3− |
| 2002 05 11 | 704 | 0.4− | 0.4− | 2007 10 30 | G96 | 0.4+ | 0.5− | 2007 11 05 | G96 | 0.5+ | 0.2− |
| 2002 05 11 | 704 | 0.3+ | 0.7+ | 2007 10 30 | G96 | 0.1+ | 0.5− | 2007 11 08 | 291 | 0.2− | 0.1− |
| 2002 05 11 | 704 | 0.3− | 1.0+ | 2007 10 31 | 691 | 0.2− | 0.6+ | 2007 11 08 | 291 | 0.2+ | 0.1+ |
| 2002 05 11 | 704 | 0.3− | 1.4− | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 08 | 291 | 0.2+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 18 | 691 | 0.2+ | 0.3− | 2007 10 31 | 691 | 0.1− | 0.8+ | 2007 11 08 | 291 | 0.1+ | 0.0  |
| 2005 01 18 | 691 | 0.0  | 0.1+ | 2007 11 03 | G96 | 0.5+ | 0.1+ | 2007 11 08 | 291 | 0.1− | 0.1− |
| 2005 01 18 | 691 | 0.1− | 0.4+ | 2007 11 03 | G96 | 0.2+ | 0.3− | 2007 11 08 | 291 | 0.2− | 0.1+ |
| 2007 10 10 | 691 | 0.1+ | 0.3− | 2007 11 03 | G96 | 0.5+ | 0.3− | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2007 10 10 | 691 | 1.0− | 0.2+ | 2007 11 03 | G96 | 0.5+ | 0.2− | 2007 11 20 | G96 | 1.0+ | 0.2− |
| 2007 10 10 | 691 | 0.2− | 0.1− | 2007 11 04 | 691 | 0.4− | 0.3+ | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2007 10 30 | 691 | 0.3− | 0.1− | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.8+ | 0.2− |
| 2007 10 30 | 691 | 0.2+ | 0.5+ | 2007 11 04 | 691 | 0.1− | 0.3+ |            |     |      |      |

2007 UX<sub>54</sub> = 2007 VL<sub>187</sub> = 2001 RT<sub>56</sub>Id. Minor Planet Center (d, *MPO* 129053; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 38.39367   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17950512 | $\omega$ | 306.03666 | +0.99290501   | +0.11794785 |
| <i>a</i> | 3.1123242  | $\Omega$ | 47.19493  | −0.10140507   | +0.90619442 |
| <i>e</i> | 0.1745449  | <i>i</i> | 1.17916   | −0.06210199   | +0.40607878 |
| <i>P</i> | 5.49       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 12 | 704 | 0.3−  | 0.1+  | 2007 09 10 | G96 | 0.3+  | 0.4−  | 2007 11 05 | G96 | 0.6+  | 0.2−  |
| 2001 09 12 | 704 | 0.2−  | 0.0   | 2007 09 10 | G96 | 0.2−  | 0.4−  | 2007 11 05 | G96 | 0.3+  | 0.2−  |
| 2001 09 12 | 704 | 0.6−  | 0.3+  | 2007 09 10 | G96 | 0.1+  | 0.4−  | 2007 11 07 | 703 | (0.7+ | 2.2−) |
| 2001 09 12 | 704 | 0.3+  | 0.1−  | 2007 10 20 | 691 | 0.2−  | 0.3+  | 2007 11 07 | 703 | 1.3+  | 0.6−  |
| 2001 09 16 | 704 | 0.1+  | 1.2−  | 2007 10 20 | 691 | (0.7− | 1.8+) | 2007 11 07 | 703 | 0.3+  | 0.1+  |
| 2001 09 16 | 704 | 0.6+  | 0.1+  | 2007 10 20 | 691 | 0.2−  | 0.2−  | 2007 11 07 | 703 | 0.4+  | 0.2+  |
| 2001 09 16 | 704 | 0.5+  | 0.7−  | 2007 10 30 | 691 | 0.4−  | 0.2−  | 2007 11 15 | 704 | 0.0   | 0.1+  |
| 2001 09 19 | 704 | 0.1+  | 1.0−  | 2007 10 30 | 691 | 0.1−  | 0.7+  | 2007 11 15 | 704 | 0.3+  | 0.0   |
| 2001 09 19 | 704 | 0.5+  | 0.6−  | 2007 10 30 | 691 | 0.1+  | 0.3−  | 2007 11 15 | 704 | 0.1−  | 0.3+  |
| 2001 09 19 | 704 | 0.2−  | 1.0−  | 2007 10 30 | G96 | 0.3+  | 0.1−  | 2007 11 15 | 704 | 0.5+  | 0.3+  |
| 2001 09 19 | 704 | 0.1+  | 0.5−  | 2007 10 30 | G96 | 0.6+  | 0.4−  | 2007 11 20 | G96 | 0.5−  | 0.2−  |
| 2001 09 19 | 704 | 0.4−  | 0.8−  | 2007 10 30 | G96 | 0.4+  | 0.0   | 2007 11 20 | G96 | 0.2+  | 0.3−  |
| 2001 09 21 | 691 | 0.1+  | 0.3+  | 2007 10 30 | G96 | 0.7+  | 0.2−  | 2007 11 20 | G96 | 0.3+  | 0.5−  |
| 2001 09 21 | 691 | 0.1−  | 0.2+  | 2007 10 31 | 691 | 0.3+  | 0.0   | 2007 11 20 | G96 | 0.2−  | 0.4−  |
| 2001 09 21 | 691 | 0.0   | 0.3+  | 2007 10 31 | 691 | 0.1−  | 0.4+  | 2007 12 05 | 704 | 0.2+  | 1.4−  |
| 2001 09 21 | 704 | 0.0   | 0.5+  | 2007 10 31 | 691 | 0.2−  | 0.1+  | 2007 12 05 | 704 | 0.3+  | 0.7−  |
| 2001 09 21 | 704 | 0.2−  | 0.4+  | 2007 11 04 | 691 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.8+  | 0.2+  |
| 2001 09 21 | 704 | 0.1−  | 0.7+  | 2007 11 04 | 691 | 0.1−  | 0.0   | 2007 12 06 | 691 | 0.2−  | 0.7+  |
| 2001 09 21 | 704 | 0.3−  | 0.7+  | 2007 11 04 | 691 | 0.1−  | 0.0   | 2007 12 06 | 691 | 0.1−  | 0.3−  |
| 2001 09 21 | 704 | (1.6− | 1.5+) | 2007 11 05 | G96 | 0.2+  | 0.2−  | 2007 12 06 | 691 | 0.7−  | 0.1+  |
| 2007 09 10 | G96 | 0.1+  | 0.5−  | 2007 11 05 | G96 | 0.4+  | 0.4−  |            |     |       |       |

2007 UC<sub>55</sub> = 2000 CB<sub>123</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 287.57068  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22890548 | $\omega$ | 84.07725 | −0.67710593   | −0.73469445 |
| <i>a</i> | 2.6466627  | $\Omega$ | 48.63117 | +0.65117604   | −0.62468479 |
| <i>e</i> | 0.1527384  | <i>i</i> | 3.19694  | +0.34277883   | −0.26456186 |
| <i>P</i> | 4.31       | <i>H</i> | 16.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 25 | 645 | 0.0  | 0.0  | 2007 10 18 | 691 | 0.1− | 0.2+ | 2007 11 05 | G96 | 0.2+ | 0.0  |
| 1998 09 25 | 645 | 0.1+ | 0.1− | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2000 02 03 | 704 | 0.2− | 0.1+ | 2007 10 18 | 691 | 0.1− | 0.2+ | 2007 11 05 | 704 | 0.2+ | 0.5+ |
| 2000 02 03 | 704 | 0.5− | 0.7+ | 2007 10 30 | 691 | 0.2− | 0.3+ | 2007 11 07 | 703 | 0.2− | 0.8+ |
| 2000 02 03 | 704 | 0.2− | 0.2+ | 2007 10 30 | 691 | 0.1− | 0.2+ | 2007 11 07 | 703 | 0.1− | 1.0+ |
| 2000 02 03 | 704 | 0.6+ | 0.3+ | 2007 10 30 | 691 | 0.6− | 0.9− | 2007 11 07 | 703 | 0.6− | 0.0  |
| 2000 02 03 | 704 | 0.3− | 0.5+ | 2007 10 30 | G96 | 0.2+ | 0.1− | 2007 11 07 | 703 | 0.6− | 2.0− |
| 2000 02 11 | 704 | 1.1− | 0.5− | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 11 11 | G96 | 0.9+ | 0.5− |
| 2000 02 11 | 704 | 0.3− | 0.9− | 2007 10 30 | G96 | 1.8+ | 0.7− | 2007 11 11 | G96 | 0.9+ | 0.6− |
| 2000 02 11 | 704 | 0.1+ | 0.7− | 2007 10 30 | G96 | 0.3+ | 0.3− | 2007 11 11 | G96 | 0.3+ | 0.5− |
| 2000 02 11 | 704 | 0.0  | 0.3− | 2007 10 31 | 691 | 0.2− | 0.2+ | 2007 11 11 | G96 | 0.9+ | 0.6− |
| 2000 02 11 | 704 | 0.3+ | 0.7− | 2007 10 31 | 691 | 0.2− | 0.0  | 2007 11 11 | 699 | 0.9+ | 0.2+ |
| 2000 03 27 | 651 | 0.5+ | 0.1− | 2007 10 31 | 691 | 0.1+ | 0.1+ | 2007 11 11 | 699 | 0.4+ | 1.6− |
| 2000 03 27 | 651 | 0.6+ | 0.3+ | 2007 11 01 | 291 | 0.1− | 0.1+ | 2007 11 11 | 699 | 0.4− | 0.4− |
| 2000 03 27 | 651 | 0.2+ | 0.1− | 2007 11 01 | 291 | 0.2− | 0.1+ | 2007 11 11 | 699 | 0.2+ | 0.1− |
| 2005 03 10 | G96 | 0.1+ | 0.2− | 2007 11 01 | 291 | 0.0  | 0.1+ | 2007 11 15 | 704 | 2.7+ | 1.6+ |



## 2007 DEC. 24

## M.P.O. 129939

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | G96 | 0.1− | 0.5− | 2007 11 03 | G96 | 0.3− | 0.9+ | 2007 11 15 | 704 | 0.2+ | 0.8+ |
| 2005 03 10 | G96 | 0.2+ | 0.1− | 2007 11 03 | G96 | 0.1+ | 0.1− | 2007 11 15 | 704 | 0.5+ | 1.3+ |
| 2005 03 10 | G96 | 0.4− | 0.1+ | 2007 11 03 | G96 | 0.6+ | 0.3− | 2007 11 15 | 704 | 0.8+ | 0.6+ |
| 2007 09 13 | G96 | 0.6+ | 0.1− | 2007 11 03 | G96 | 0.7+ | 0.2− | 2007 11 15 | 704 | 1.2+ | 1.4+ |
| 2007 09 13 | G96 | 0.6+ | 0.3− | 2007 11 04 | 691 | 0.2− | 0.2+ | 2007 11 17 | G96 | 0.6+ | 0.4− |
| 2007 09 13 | G96 | 0.2+ | 0.2− | 2007 11 04 | 691 | 0.2− | 0.3+ | 2007 11 17 | G96 | 0.7+ | 0.4− |
| 2007 09 13 | G96 | 0.3+ | 0.3− | 2007 11 04 | 691 | 0.2− | 0.1+ | 2007 11 17 | G96 | 0.7+ | 0.2− |
| 2007 10 10 | 691 | 0.1− | 0.2+ | 2007 11 05 | 704 | 0.7+ | 0.8+ | 2007 11 17 | G96 | 0.7+ | 0.4− |
| 2007 10 10 | 691 | 0.1− | 0.4+ | 2007 11 05 | 704 | 0.1+ | 0.6+ | 2007 11 28 | 104 | 0.0  | 0.1+ |
| 2007 10 10 | 691 | 0.2− | 0.2+ | 2007 11 05 | 704 | 0.3− | 0.8+ | 2007 11 28 | 104 | 0.6− | 0.0  |
| 2007 10 14 | 691 | 0.4− | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.1− | 2007 11 28 | 104 | 0.6+ | 0.3+ |
| 2007 10 14 | 691 | 0.3− | 0.0  | 2007 11 05 | G96 | 0.0  | 0.0  |            |     |      |      |
| 2007 10 14 | 691 | 1.3− | 2.6− | 2007 11 05 | 704 | 0.1− | 0.6+ |            |     |      |      |

2007 UR<sub>55</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 59.01559   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18569410 | $\omega$ | 285.43080 | +0.90222080   | +0.42931133 |
| <i>a</i> | 3.0427806  | $\Omega$ | 49.16420  | −0.37192794   | +0.82277403 |
| <i>e</i> | 0.1070692  | <i>i</i> | 3.11419   | −0.21832827   | +0.37247105 |
| <i>P</i> | 5.31       | <i>H</i> | 15.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 02 13 | 691 | 0.3− | 0.0  | 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 11 05 | G96 | 0.3+  | 0.1+  |
| 2004 02 13 | 691 | 0.3+ | 0.4− | 2007 09 10 | G96 | 0.5+ | 0.0  | 2007 11 11 | 699 | 0.5−  | 0.6+  |
| 2004 02 13 | 691 | 0.1− | 0.2+ | 2007 10 10 | 691 | 0.2− | 0.1+ | 2007 11 11 | 699 | 0.8+  | 0.9+  |
| 2005 03 14 | G96 | 1.1− | 0.5+ | 2007 10 10 | 691 | 0.1− | 0.2+ | 2007 11 11 | 699 | 0.3−  | 0.0   |
| 2005 03 14 | G96 | 0.4− | 0.0  | 2007 10 10 | 691 | 0.3− | 0.2+ | 2007 11 11 | 699 | 0.1−  | 0.8−  |
| 2005 03 14 | G96 | 0.5− | 0.2+ | 2007 10 15 | 703 | 1.3− | 1.4− | 2007 11 15 | 704 | 0.8−  | 0.1−  |
| 2005 03 14 | G96 | 0.9− | 0.7+ | 2007 10 15 | 703 | 0.2− | 0.3+ | 2007 11 15 | 704 | 0.6−  | 0.6+  |
| 2005 04 16 | 691 | 0.2+ | 0.4+ | 2007 10 15 | 703 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.5+  | 0.1+  |
| 2005 04 16 | 691 | 0.1+ | 0.5+ | 2007 10 15 | 703 | 0.4− | 0.3+ | 2007 11 15 | 704 | (2.5+ | 0.8−) |
| 2005 04 16 | 691 | 0.2+ | 0.2+ | 2007 10 30 | 691 | 0.3− | 0.0  | 2007 11 15 | 704 | 0.2−  | 0.6+  |
| 2005 05 08 | G96 | 0.4− | 0.0  | 2007 10 30 | 691 | 0.0  | 0.3+ | 2007 11 17 | 703 | 0.0   | 0.2−  |
| 2005 05 08 | G96 | 0.5− | 0.0  | 2007 10 30 | 691 | 0.0  | 0.2+ | 2007 11 17 | 703 | 0.5−  | 0.2+  |
| 2005 05 08 | G96 | 0.3− | 0.0  | 2007 10 30 | G96 | 0.1− | 0.1− | 2007 11 17 | 703 | 0.2+  | 0.7+  |
| 2005 05 08 | G96 | 0.3− | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.0  | 2007 11 17 | 703 | 0.2−  | 0.5+  |
| 2005 07 05 | 291 | 0.5+ | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 11 20 | G96 | 0.3+  | 0.0   |
| 2005 07 05 | 291 | 0.7+ | 0.4+ | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 20 | G96 | 0.1+  | 0.3+  |
| 2005 07 05 | 291 | 0.6+ | 0.3+ | 2007 10 31 | 691 | 0.2− | 0.3+ | 2007 11 20 | G96 | 0.2+  | 0.1+  |
| 2006 06 22 | 644 | 0.6− | 0.2+ | 2007 10 31 | 691 | 0.2+ | 0.2+ | 2007 11 20 | G96 | 0.8+  | 0.4+  |
| 2006 06 22 | 644 | 0.2+ | 0.1+ | 2007 10 31 | 691 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.4+  | 0.0   |
| 2006 06 22 | 644 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 12 15 | G96 | 0.1−  | 0.0   |
| 2007 09 10 | G96 | 0.1− | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.2− | 2007 12 15 | G96 | 0.6+  | 0.2−  |
| 2007 09 10 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.6+  | 0.1−  |

2007 UZ<sub>55</sub> = 2007 TA<sub>263</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 65.44427   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23190174 | $\omega$ | 282.13527 | +0.88740044   | +0.45727406 |
| <i>a</i> | 2.6238160  | $\Omega$ | 50.68336  | −0.38808728   | +0.80948845 |
| <i>e</i> | 0.0675389  | <i>i</i> | 4.33570   | −0.24881465   | +0.36827827 |
| <i>P</i> | 4.25       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 16 | 691 | 0.2+ | 0.2+ | 2007 09 18 | G96 | 0.2+ | 0.0  | 2007 11 03 | G96 | 0.3+ | 0.3+ |
| 2001 04 16 | 691 | 0.0  | 0.6+ | 2007 09 18 | G96 | 0.4+ | 0.5− | 2007 11 05 | G96 | 0.2+ | 0.3− |
| 2001 04 16 | 691 | 0.3+ | 0.3+ | 2007 10 10 | 691 | 0.0  | 0.1− | 2007 11 05 | G96 | 0.2− | 0.2− |
| 2002 08 13 | 644 | 0.2+ | 0.2+ | 2007 10 10 | 691 | 0.1− | 0.3+ | 2007 11 05 | G96 | 0.0  | 0.2− |
| 2002 08 13 | 644 | 0.1− | 1.3+ | 2007 10 10 | 691 | 0.1− | 0.2− | 2007 11 05 | G96 | 0.3+ | 0.3− |
| 2002 08 13 | 644 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.3− | 0.0  | 2007 11 07 | 703 | 0.4− | 0.6+ |
| 2002 08 13 | 644 | 0.4− | 0.0  | 2007 10 30 | 691 | 0.1− | 0.1+ | 2007 11 07 | 703 | 0.8+ | 0.6− |
| 2002 08 13 | 644 | 0.1− | 0.2+ | 2007 10 30 | 691 | 0.3− | 0.1− | 2007 11 07 | 703 | 1.0+ | 0.4− |
| 2002 08 13 | 644 | 0.3− | 0.4+ | 2007 10 30 | G96 | 0.0  | 0.1− | 2007 11 07 | 703 | 0.5− | 0.9+ |
| 2003 12 29 | 691 | 0.4− | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.4− | 2007 11 15 | 704 | 0.6+ | 0.2+ |
| 2003 12 29 | 691 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.2− | 0.2− | 2007 11 15 | 704 | 0.2+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 691 | 0.3+ | 0.2− | 2007 10 30 | G96 | 0.3+ | 0.3− | 2007 11 15 | 704 | 0.6+ | 1.5+ |
| 2007 09 10 | G96 | 0.1+ | 0.1− | 2007 10 31 | 691 | 0.8− | 0.4+ | 2007 11 20 | G96 | 0.2+ | 0.2− |
| 2007 09 10 | G96 | 0.2+ | 0.0  | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 11 20 | G96 | 0.2+ | 0.1− |
| 2007 09 10 | G96 | 0.2− | 0.2+ | 2007 10 31 | 691 | 0.2− | 0.5+ | 2007 11 20 | G96 | 0.3+ | 0.2+ |
| 2007 09 10 | G96 | 0.1− | 0.3− | 2007 11 03 | G96 | 0.3+ | 0.3+ | 2007 11 20 | G96 | 0.5+ | 0.0  |
| 2007 09 18 | G96 | 0.0  | 0.3− | 2007 11 03 | G96 | 0.2+ | 0.1+ |            |     |      |      |
| 2007 09 18 | G96 | 0.9+ | 0.1− | 2007 11 03 | G96 | 0.2+ | 0.1+ |            |     |      |      |

2007 UE<sub>56</sub> = 2007 VV<sub>186</sub> = 2002 VJ<sub>91</sub> = 2004 BK<sub>153</sub>Id. Minor Planet Center (d, *MPO* 129053; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 58.18037   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18772801 | $\omega$ | 126.88453 | +0.77610750   | +0.63053237 |
| <i>a</i> | 3.0207631  | $\Omega$ | 194.03392 | −0.59005588   | +0.72093828 |
| <i>e</i> | 0.0478105  | <i>i</i> | 2.19266   | −0.22246621   | +0.28753595 |
| <i>P</i> | 5.25       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 04 | 291 | 0.9− | 0.6+ | 2005 03 17 | 691 | 0.4+ | 0.2+ | 2007 10 18 | G96 | 0.2+ | 0.1− |
| 2002 11 04 | 291 | 0.3− | 0.2+ | 2005 03 17 | 691 | 0.4+ | 0.0  | 2007 10 18 | G96 | 0.2− | 0.1− |
| 2002 11 04 | 291 | 0.1− | 0.3+ | 2005 04 09 | G96 | 0.1− | 0.3+ | 2007 10 30 | G96 | 0.5+ | 0.4− |
| 2002 11 11 | 291 | 0.0  | 0.5+ | 2005 04 09 | G96 | 0.1+ | 0.3− | 2007 10 30 | G96 | 0.2+ | 0.4− |
| 2002 11 11 | 291 | 0.0  | 0.1+ | 2005 04 09 | G96 | 0.1+ | 0.3+ | 2007 10 30 | G96 | 0.3+ | 0.9− |
| 2002 11 11 | 291 | 0.5+ | 0.8+ | 2005 04 09 | G96 | 0.3+ | 0.1+ | 2007 10 30 | G96 | 0.0  | 0.3− |
| 2002 11 13 | 291 | 0.1− | 0.3+ | 2005 05 13 | G96 | 0.2− | 0.0  | 2007 10 31 | 691 | 0.3− | 0.2+ |
| 2002 11 13 | 291 | 0.1+ | 0.2+ | 2005 05 13 | G96 | 0.1+ | 0.1+ | 2007 10 31 | 691 | 0.3− | 0.4+ |
| 2002 11 13 | 291 | 0.1− | 0.1+ | 2005 05 13 | G96 | 0.2+ | 0.1+ | 2007 10 31 | 691 | 0.9− | 0.4+ |
| 2004 01 27 | 691 | 0.0  | 0.4− | 2005 05 13 | G96 | 0.4− | 0.2+ | 2007 11 02 | 691 | 0.1+ | 0.8+ |
| 2004 01 27 | 691 | 0.1− | 0.3− | 2007 09 11 | G96 | 0.3+ | 0.3− | 2007 11 02 | 691 | 0.2− | 0.4+ |
| 2004 01 27 | 691 | 0.1+ | 0.4− | 2007 09 11 | G96 | 0.0  | 0.2− | 2007 11 02 | 691 | 0.6− | 0.2+ |
| 2004 02 11 | 691 | 0.2− | 0.3− | 2007 09 11 | G96 | 0.5+ | 0.1− | 2007 11 04 | 691 | 0.3− | 0.0  |
| 2004 02 11 | 691 | 0.0  | 0.1− | 2007 09 11 | G96 | 0.1+ | 0.4− | 2007 11 04 | 691 | 0.1+ | 0.3+ |
| 2004 02 11 | 691 | 0.1− | 0.1− | 2007 10 07 | G96 | 0.5+ | 0.3+ | 2007 11 04 | 691 | 0.2− | 0.1+ |
| 2005 03 08 | G96 | 0.2− | 0.1− | 2007 10 07 | G96 | 0.0  | 0.1− | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2005 03 08 | G96 | 0.4− | 0.2+ | 2007 10 07 | G96 | 0.1+ | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.3− |
| 2005 03 08 | G96 | 0.3+ | 0.2− | 2007 10 07 | G96 | 0.2+ | 0.1− | 2007 11 05 | G96 | 0.0  | 0.2− |
| 2005 03 08 | G96 | 0.7− | 0.6+ | 2007 10 18 | G96 | 0.1− | 0.2− | 2007 11 05 | G96 | 0.2− | 0.1− |
| 2005 03 17 | 691 | 0.6+ | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.2− |            |     |      |      |

2007 UE<sub>57</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 338.42183  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.26020994 | $\omega$ | 43.21880 | +0.23132797   | −0.97255444 |
| <i>a</i> | 2.4298910  | $\Omega$ | 33.42883 | +0.87977686   | +0.19815022 |
| <i>e</i> | 0.1519593  | <i>i</i> | 2.60149  | +0.41530717   | +0.12196049 |
| <i>P</i> | 3.79       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 30 | 691 | 0.2− | 0.0  | 2007 10 30 | 691 | 0.2+ | 0.1+ | 2007 11 09 | 300 | 0.1− | 0.2− |
| 2003 09 30 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.4− | 0.7− |
| 2003 09 30 | 691 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.1− | 0.0  | 2007 11 15 | 704 | 0.0  | 0.3− |
| 2005 03 10 | G96 | 0.5− | 0.1+ | 2007 10 31 | G96 | 0.3+ | 0.3− | 2007 11 15 | 704 | 0.8+ | 0.4+ |
| 2005 03 10 | G96 | 0.2+ | 0.4− | 2007 10 31 | G96 | 0.0  | 0.2− | 2007 11 15 | 704 | 0.6+ | 0.4− |
| 2005 03 10 | G96 | 0.1+ | 0.1− | 2007 10 31 | G96 | 0.1− | 0.3− | 2007 11 15 | 704 | 0.8− | 0.0  |
| 2005 03 10 | G96 | 0.2+ | 0.2− | 2007 10 31 | G96 | 0.3+ | 0.1+ | 2007 12 03 | 703 | 0.5− | 0.1+ |
| 2005 03 10 | G96 | 0.5+ | 0.0  | 2007 11 03 | 691 | 0.1+ | 0.3− | 2007 12 03 | 703 | 0.1− | 0.7− |
| 2005 03 10 | G96 | 0.0  | 0.4− | 2007 11 03 | 691 | 0.0  | 0.2− | 2007 12 03 | 703 | 0.7+ | 1.3− |
| 2005 03 10 | G96 | 0.3− | 0.6− | 2007 11 03 | 691 | 0.0  | 0.2− | 2007 12 03 | 703 | 0.6+ | 0.0  |
| 2005 03 10 | G96 | 0.9− | 0.5+ | 2007 11 07 | 691 | 0.2− | 0.1− | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2005 04 04 | G96 | 0.6+ | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.1− | 2007 12 04 | 691 | 0.1− | 0.2+ |
| 2005 04 04 | G96 | 0.2− | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.2− | 2007 12 04 | 691 | 0.7− | 0.1− |
| 2005 04 04 | G96 | 0.1− | 0.2− | 2007 11 07 | 300 | 0.4+ | 0.3+ | 2007 12 06 | 691 | 0.5− | 0.5− |
| 2005 04 04 | G96 | 0.0  | 0.2+ | 2007 11 07 | 300 | 0.2+ | 0.6+ | 2007 12 06 | 691 | 0.0  | 0.3+ |
| 2007 09 18 | G96 | 0.5− | 0.4+ | 2007 11 07 | 300 | 0.1+ | 0.0  | 2007 12 06 | 691 | 0.5− | 0.5+ |
| 2007 09 18 | G96 | 0.3+ | 0.2+ | 2007 11 07 | 300 | 0.9+ | 0.6+ | 2007 12 06 | 691 | 0.2− | 0.2− |
| 2007 09 18 | G96 | 0.1+ | 0.4− | 2007 11 07 | 300 | 0.5+ | 0.2+ | 2007 12 06 | 691 | 0.5+ | 0.2+ |

## M.P.O. 129940

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 18 | G96 | 0.1− | 0.4− | 2007 11 07 | 300 | 0.3− | 0.1+ | 2007 12 06 | 691 | 0.1+ | 0.8+ |
| 2007 10 17 | G96 | 0.2+ | 0.3− | 2007 11 09 | 300 | 0.7+ | 0.2− | 2007 12 16 | 691 | 0.0  | 0.1+ |
| 2007 10 17 | G96 | 0.3+ | 0.2− | 2007 11 09 | 300 | 0.4+ | 0.6+ | 2007 12 16 | 691 | 0.3+ | 0.1− |
| 2007 10 17 | G96 | 0.1− | 0.2− | 2007 11 09 | 300 | 0.1− | 0.2+ | 2007 12 16 | 691 | 0.2− | 0.2+ |
| 2007 10 17 | G96 | 0.2+ | 0.2− | 2007 11 09 | 300 | 1.1+ | 0.1− |            |     |      |      |

**2007 UG<sub>57</sub> = 2007 UB<sub>125</sub> = 2005 JM<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 112.29837  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18356051 | $\omega$ | 58.82844  | +0.22861490   | +0.96939442 |
| <i>a</i> | 3.0663134  | $\Omega$ | 224.67528 | −0.93090019   | +0.19077885 |
| <i>e</i> | 0.0703772  | <i>i</i> | 7.31308   | −0.28488607   | +0.15452471 |
| <i>P</i> | 5.37       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 07 | G96 | 0.0  | 0.4+ | 2007 10 19 | A55 | 0.7+  | 1.1−  | 2007 11 04 | 691 | 0.0  | 0.2+ |
| 2005 05 07 | G96 | 0.2+ | 0.5+ | 2007 10 19 | A55 | 0.7−  | 1.3+  | 2007 11 04 | 691 | 0.4− | 0.3+ |
| 2005 05 07 | G96 | 0.3+ | 0.4+ | 2007 10 19 | A55 | (1.0− | 2.6+) | 2007 11 09 | G96 | 0.3+ | 0.2− |
| 2005 05 07 | G96 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.8+  | 0.3−  | 2007 11 09 | G96 | 0.5+ | 0.3− |
| 2005 05 13 | G96 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.6+  | 0.1−  | 2007 11 09 | G96 | 0.1+ | 0.3− |
| 2005 05 13 | G96 | 0.1− | 0.2+ | 2007 10 30 | G96 | 0.2+  | 0.4−  | 2007 11 09 | G96 | 0.2+ | 0.4− |
| 2005 05 13 | G96 | 0.2− | 0.3+ | 2007 10 30 | G96 | 0.0   | 0.2−  | 2007 11 17 | G96 | 0.2+ | 0.5− |
| 2005 05 13 | G96 | 0.0  | 0.3+ | 2007 10 31 | 691 | 0.4−  | 0.7+  | 2007 11 17 | G96 | 0.1+ | 0.7− |
| 2007 10 18 | 691 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.2−  | 0.3+  | 2007 11 17 | G96 | 0.6+ | 0.2− |
| 2007 10 18 | 691 | 0.2+ | 0.3− | 2007 10 31 | 691 | 0.0   | 0.2+  | 2007 11 17 | G96 | 0.5+ | 0.3− |
| 2007 10 18 | 691 | 0.1− | 0.2− | 2007 11 04 | 691 | 0.2−  | 0.4+  |            |     |      |      |

**2007 UR<sub>57</sub> = 1999 HW<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 225.24053  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29274817 | $\omega$ | 136.62308 | −0.99586074   | −0.00258197 |
| <i>a</i> | 2.2463284  | $\Omega$ | 43.47988  | −0.04172362   | −0.87506836 |
| <i>e</i> | 0.0412611  | <i>i</i> | 7.58739   | +0.08074981   | −0.48399246 |
| <i>P</i> | 3.37       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 04 16 | 691 | 0.1− | 0.4− | 2007 10 10 | 691 | 0.4+ | 0.2+ | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 1999 04 16 | 691 | 0.4+ | 0.5+ | 2007 10 18 | 691 | 0.3+ | 0.3+ | 2007 11 04 | 691 | 0.2− | 0.1− |
| 1999 04 16 | 691 | 0.2− | 0.7− | 2007 10 18 | 691 | 0.0  | 0.1− | 2007 11 05 | G96 | 0.6+ | 0.1− |
| 1999 04 19 | 691 | 0.0  | 0.0  | 2007 10 18 | 691 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.7+ | 0.2− |
| 1999 04 19 | 691 | 0.0  | 0.5+ | 2007 10 30 | G96 | 0.1− | 0.4− | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 1999 04 19 | 691 | 0.1− | 0.3+ | 2007 10 30 | G96 | 0.8+ | 0.4− | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2007 09 15 | G96 | 0.3+ | 0.7− | 2007 10 30 | G96 | 0.6+ | 0.6− | 2007 11 11 | G96 | 0.5+ | 0.1+ |
| 2007 09 15 | G96 | 0.4+ | 0.2− | 2007 10 30 | G96 | 0.4+ | 0.5− | 2007 11 11 | G96 | 0.6+ | 0.3− |
| 2007 09 15 | G96 | 0.0  | 0.2− | 2007 10 31 | 691 | 0.1+ | 0.2+ | 2007 11 11 | G96 | 0.4+ | 0.2− |
| 2007 09 15 | G96 | 0.2− | 0.0  | 2007 10 31 | 691 | 0.1− | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.2− |
| 2007 10 10 | 691 | 0.5− | 0.2− | 2007 10 31 | 691 | 1.1− | 0.2+ |            |     |      |      |
| 2007 10 10 | 691 | 0.7− | 0.2+ | 2007 11 04 | 691 | 0.1− | 0.1+ |            |     |      |      |

**2007 UG<sub>58</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 166.30540  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29105823 | $\omega$ | 190.50174 | −0.55070234   | +0.83153813 |
| <i>a</i> | 2.2550151  | $\Omega$ | 46.12889  | −0.75833688   | −0.46207779 |
| <i>e</i> | 0.0461930  | <i>i</i> | 5.78019   | −0.34878662   | −0.30826687 |
| <i>P</i> | 3.39       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 11 | 644 | 0.1− | 0.1+ | 2007 10 18 | 691 | 0.2− | 0.2+ | 2007 11 05 | 704 | 0.7+ | 0.1− |
| 2002 03 11 | 644 | 0.3+ | 0.4+ | 2007 10 30 | G96 | 0.3+ | 0.4− | 2007 11 05 | 704 | 0.3+ | 0.4+ |
| 2002 03 11 | 644 | 0.4+ | 0.3+ | 2007 10 30 | G96 | 0.1+ | 0.4− | 2007 11 11 | G96 | 0.4+ | 0.1− |
| 2002 04 09 | 291 | 0.3− | 0.3− | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2002 04 09 | 291 | 0.0  | 0.5− | 2007 10 30 | G96 | 0.4+ | 0.4− | 2007 11 11 | G96 | 0.0  | 0.0  |
| 2002 04 09 | 291 | 0.5− | 0.4− | 2007 10 31 | 691 | 0.5− | 0.3+ | 2007 11 11 | G96 | 0.0  | 0.1− |
| 2007 10 07 | G96 | 0.4+ | 0.7− | 2007 10 31 | 691 | 0.6− | 0.2− | 2007 11 20 | G96 | 0.1− | 0.1+ |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 07 | G96 | 0.2+ | 0.6− | 2007 10 31 | 691 | 0.5− | 0.2− | 2007 11 20 | G96 | 0.0  | 0.2− |
| 2007 10 07 | G96 | 0.5− | 0.0  | 2007 11 04 | 691 | 1.4− | 1.1+ | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2007 10 07 | G96 | 0.4+ | 0.4+ | 2007 11 04 | 691 | 0.4− | 0.0  | 2007 11 20 | G96 | 0.3+ | 0.1− |
| 2007 10 18 | 691 | 0.4+ | 0.5+ | 2007 11 04 | 691 | 0.2− | 0.0  |            |     |      |      |
| 2007 10 18 | 691 | 0.1− | 0.0  | 2007 11 05 | 704 | 0.0  | 0.4+ |            |     |      |      |

**2007 UR<sub>58</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 257.98290  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28989805 | $\omega$ | 280.66563 | −0.88299845   | −0.46816791 |
| <i>a</i> | 2.2610275  | $\Omega$ | 231.42763 | +0.44571797   | −0.81385939 |
| <i>e</i> | 0.0786336  | <i>i</i> | 2.46704   | +0.14713676   | −0.34416812 |
| <i>P</i> | 3.40       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 13 | 691 | 0.0  | 0.1− | 2007 10 31 | 691 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.4+ | 0.2− |
| 2004 12 13 | 691 | 0.1+ | 0.1+ | 2007 10 31 | 691 | 0.6− | 0.1− | 2007 11 09 | G96 | 0.3+ | 0.4− |
| 2004 12 13 | 691 | 0.1− | 0.1+ | 2007 11 03 | A55 | 0.5+ | 0.1+ | 2007 11 09 | G96 | 0.3+ | 0.6− |
| 2005 03 23 | G96 | 0.0  | 0.1− | 2007 11 03 | A55 | 0.9+ | 0.2+ | 2007 11 09 | G96 | 0.3+ | 0.3− |
| 2005 03 23 | G96 | 0.2+ | 0.1− | 2007 11 03 | A55 | 0.1+ | 0.0  | 2007 11 09 | G96 | 0.3+ | 0.3− |
| 2005 03 23 | G96 | 0.1− | 0.4− | 2007 11 03 | 691 | 0.6− | 1.2+ | 2007 11 09 | G96 | 0.1+ | 0.2− |
| 2005 03 23 | G96 | 0.3+ | 0.0  | 2007 11 03 | 691 | 0.3− | 0.1− | 2007 11 11 | G96 | 0.6+ | 0.0  |
| 2007 09 12 | G96 | 0.7+ | 0.6− | 2007 11 03 | 691 | 0.3− | 0.1− | 2007 11 11 | G96 | 0.4+ | 0.1+ |
| 2007 09 12 | G96 | 0.3+ | 0.2− | 2007 11 03 | A55 | 0.7− | 0.0  | 2007 11 11 | G96 | 0.5+ | 0.2+ |
| 2007 09 12 | G96 | 0.4+ | 0.0  | 2007 11 03 | A55 | 0.6− | 0.5− | 2007 11 11 | G96 | 0.2+ | 0.1− |
| 2007 09 12 | G96 | 0.0  | 0.1− | 2007 11 03 | A55 | 0.2+ | 0.3+ | 2007 12 06 | G96 | 0.9+ | 0.5− |
| 2007 10 30 | G96 | 0.3+ | 0.4− | 2007 11 05 | 704 | 0.1+ | 0.6+ | 2007 12 06 | G96 | 0.6+ | 0.1− |
| 2007 10 30 | G96 | 0.1− | 0.5− | 2007 11 05 | 704 | 0.1− | 0.1− | 2007 12 06 | G96 | 1.2+ | 0.3− |
| 2007 10 30 | G96 | 0.0  | 0.2− | 2007 11 05 | 704 | 0.1+ | 0.7+ | 2007 12 06 | G96 | 0.3+ | 0.2− |
| 2007 10 30 | G96 | 0.1+ | 0.3− | 2007 11 09 | G96 | 0.4+ | 0.3− |            |     |      |      |
| 2007 10 31 | 691 | 0.2− | 0.0  | 2007 11 09 | G96 | 0.1− | 0.2− |            |     |      |      |

**2007 US<sub>58</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 51.46352   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24014414 | $\omega$ | 89.58310  | +0.76089033   | +0.64599274 |
| <i>a</i> | 2.5634295  | $\Omega$ | 230.17542 | −0.62250820   | +0.70012337 |
| <i>e</i> | 0.2787078  | <i>i</i> | 4.56678   | −0.18311048   | +0.30417207 |
| <i>P</i> | 4.10       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 04 22 | 691 | 0.3− | 0.2− | 2007 10 30 | G96 | 0.2+ | 0.3− | 2007 11 15 | 704 | 0.3+  | 1.3+  |
| 2002 04 22 | 691 | 0.1+ | 0.4+ | 2007 10 30 | G96 | 0.1+ | 0.3− | 2007 11 15 | 704 | 0.6−  | 0.3−  |
| 2002 04 22 | 691 | 0.3+ | 0.1+ | 2007 10 30 | G96 | 0.1+ | 0.4− | 2007 11 15 | 704 | (1.4− | 1.8+) |
| 2003 11 19 | 691 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.1− | 0.4+ | 2007 11 15 | 704 | 0.6−  | 0.5+  |
| 2003 11 19 | 691 | 0.1+ | 0.0  | 2007 10 31 | 691 | 0.4− | 0.2− | 2007 11 17 | 703 | 0.2+  | 0.3+  |
| 2003 11 19 | 691 | 0.3+ | 0.2− | 2007 10 31 | 691 | 0.2+ | 0.3− | 2007 11 17 | 703 | 0.5+  | 0.2−  |
| 2003 12 01 | 291 | 0.3− | 0.1− | 2007 11 03 | 691 | 0.2+ | 0.1+ | 2007 11 17 | 703 | 0.4+  | 0.3+  |
| 2003 12 01 | 291 | 0.2− | 0.0  | 2007 11 03 | 691 | 0.1− | 0.1− | 2007 11 17 | 703 | 0.1+  | 0.5+  |
| 2003 12 01 | 291 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.2+  | 0.4+  |
| 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.5−  | 0.3+  |
| 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.2+ | 0.0  | 2007 12 06 | G96 | 0.6−  | 0.5−  |
| 2007 10 11 | 691 | 0.1− | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.3+ | 2007 12 06 | G96 | 0.2−  | 0.3−  |
| 2007 10 30 | G96 | 0.4+ | 0.1− | 2007 11 11 | G96 | 1.1− | 0.1− |            |     |       |       |

**2007 UT<sub>58</sub> = 2005 GK<sub>152</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 231.49055  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21129194 | $\omega$ | 303.02370 | −0.98947550   | −0.13377710 |
| <i>a</i> | 2.7917773  | $\Omega$ | 229.35163 | +0.14465276   | −0.92426698 |
| <i>e</i> | 0.0137682  | <i>i</i> | 4.16867   | −0.00371598   | −0.35753914 |
| <i>P</i> | 4.66       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

2007 DEC. 24

M.P.O. 129941

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 644 | 0.3− | 0.1+ | 2007 10 06 | 691 | 0.4+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2002 10 06 | 644 | 0.1+ | 0.2+ | 2007 10 06 | 691 | 0.0  | 0.1+ | 2007 11 10 | H55 | 0.1− | 0.5+ |
| 2002 10 06 | 644 | 0.1− | 0.5+ | 2007 10 14 | 691 | 0.1− | 0.1+ | 2007 11 10 | H55 | 0.0  | 0.3+ |
| 2005 04 12 | 691 | 0.3+ | 0.0  | 2007 10 14 | 691 | 0.1− | 0.2− | 2007 11 10 | H55 | 0.0  | 0.1+ |
| 2005 04 12 | 691 | 0.2+ | 0.1− | 2007 10 14 | 691 | 0.4− | 0.1− | 2007 11 17 | G96 | 0.3+ | 0.1+ |
| 2005 04 12 | 691 | 0.1+ | 0.2+ | 2007 10 30 | G96 | 0.3+ | 0.0  | 2007 11 17 | G96 | 0.6+ | 0.1− |
| 2005 04 15 | 691 | 0.2− | 0.2− | 2007 10 30 | G96 | 0.7+ | 0.1− | 2007 11 17 | G96 | 0.5+ | 0.0  |
| 2005 04 15 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.5+ | 0.0  | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2005 04 15 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 12 06 | G96 | 0.1− | 0.4+ |
| 2005 05 14 | G96 | 0.4− | 0.1+ | 2007 10 31 | 691 | 0.4− | 0.2+ | 2007 12 06 | G96 | 0.1− | 0.2+ |
| 2005 05 14 | G96 | 0.4− | 0.2+ | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 12 06 | G96 | 0.3+ | 0.4− |
| 2005 05 14 | G96 | 0.5− | 0.2+ | 2007 10 31 | 691 | 0.1− | 0.2− | 2007 12 06 | G96 | 0.4− | 0.0  |
| 2005 05 14 | G96 | 0.1− | 0.2+ | 2007 11 04 | 691 | 0.1+ | 0.1+ |            |     |      |      |
| 2007 10 06 | 691 | 0.2+ | 0.2− | 2007 11 04 | 691 | 0.1− | 0.0  |            |     |      |      |

2007 UA<sub>59</sub> = 1998 XV<sub>61</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 335.52523  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.21730272 | $\omega$ | 206.42245 | +0.22408081  | −0.97394914  |
| $a$ | 2.7400550  | $\Omega$ | 230.64921 | +0.90192746  | +0.22077259  |
| $e$ | 0.1767839  | $i$      | 2.57917   | +0.36920814  | +0.05179313  |
| $P$ | 4.54       | $H$      | 17.2      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 11 24 | 691 | 0.1+  | 0.1−  | 2007 10 30 | G96 | 0.7+ | 0.1+ | 2007 11 07 | 703 | 0.5−  | 0.7+  |
| 1998 11 24 | 691 | 0.4+  | 0.3−  | 2007 10 30 | G96 | 0.2+ | 0.1− | 2007 11 07 | 703 | 0.5+  | 0.7+  |
| 1998 11 24 | 691 | 0.6−  | 0.3−  | 2007 10 31 | 691 | 0.2− | 0.3− | 2007 11 07 | 703 | 1.1−  | 0.0   |
| 1998 12 15 | 691 | (3.4+ | 4.6−) | 2007 10 31 | 691 | 0.1− | 0.2+ | 2007 11 07 | 703 | 0.1−  | 0.0   |
| 1998 12 15 | 691 | 0.1+  | 0.5−  | 2007 10 31 | 691 | 0.5− | 0.6+ | 2007 11 07 | 703 | 0.6−  | 1.1+  |
| 1998 12 15 | 691 | 0.2+  | 0.1+  | 2007 11 04 | G96 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.1−  | 0.6−  |
| 2004 01 28 | 691 | 0.1+  | 0.1+  | 2007 11 04 | G96 | 0.2+ | 0.2+ | 2007 11 07 | 703 | (2.2− | 0.5−) |
| 2004 01 28 | 691 | 0.0   | 0.3+  | 2007 11 04 | G96 | 0.3+ | 0.2− | 2007 11 07 | 703 | 0.8−  | 0.3−  |
| 2004 01 28 | 691 | 0.0   | 0.1−  | 2007 11 04 | G96 | 0.0  | 0.2− | 2007 11 11 | G96 | 1.7+  | 0.6−  |
| 2007 09 12 | G96 | 0.2+  | 0.5−  | 2007 11 04 | G96 | 0.5+ | 0.0  | 2007 11 11 | G96 | 0.3+  | 0.2−  |
| 2007 09 12 | G96 | 0.4+  | 0.1−  | 2007 11 04 | G96 | 0.3+ | 0.3+ | 2007 11 11 | G96 | 0.2−  | 0.1−  |
| 2007 09 12 | G96 | 0.4+  | 0.1−  | 2007 11 04 | G96 | 0.2+ | 0.2+ | 2007 11 11 | G96 | 0.0   | 0.3−  |
| 2007 09 12 | G96 | 0.4+  | 0.0   | 2007 11 04 | G96 | 0.7+ | 0.1− | 2007 11 11 | G96 | 0.2+  | 0.1−  |
| 2007 10 10 | 691 | (0.3+ | 2.4+) | 2007 11 05 | G96 | 0.3+ | 0.2− | 2007 11 11 | G96 | 0.3+  | 0.1−  |
| 2007 10 10 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.2+ | 0.2− | 2007 11 15 | 704 | 1.0−  | 1.7+  |
| 2007 10 10 | 691 | 0.1−  | 0.1−  | 2007 11 05 | G96 | 0.1− | 0.3− | 2007 11 15 | 704 | 0.3−  | 1.2+  |
| 2007 10 14 | 691 | 0.2−  | 0.1−  | 2007 11 05 | G96 | 0.4+ | 0.1− | 2007 11 15 | 704 | (0.9− | 2.3+) |
| 2007 10 14 | 691 | 0.1−  | 0.1+  | 2007 11 05 | G96 | 0.0  | 0.1+ | 2007 11 17 | 703 | 0.3+  | 0.4+  |
| 2007 10 14 | 691 | 0.4−  | 0.3−  | 2007 11 05 | G96 | 0.4+ | 0.1− | 2007 11 17 | 703 | 0.6−  | 0.2+  |
| 2007 10 30 | G96 | 0.3+  | 0.2−  | 2007 11 05 | G96 | 0.3+ | 0.0  | 2007 11 17 | 703 | 1.1+  | 0.1+  |
| 2007 10 30 | G96 | 0.5+  | 0.0   | 2007 11 05 | G96 | 0.3+ | 0.1+ | 2007 11 17 | 703 | 1.4−  | 0.7+  |

2007 UD<sub>59</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 144.82709  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |     |   |
|-----|------------|----------|-----------|--------------|--------------|-----|---|
| $n$ | 0.18208487 | $\omega$ | 217.20891 | −0.25142059  | +0.96746655  |     |   |
| $a$ | 3.0828577  | $\Omega$ | 38.25252  | −0.87668782  | −0.21528250  |     |   |
| $e$ | 0.0612485  | $i$      | 2.61214   | −0.41012943  | −0.13289819  |     |   |
| $P$ | 5.41       | $H$      | 16.0      | $G$          | 0.15         | $U$ | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 02 16 | 691 | 0.1+ | 0.0  | 2007 10 31 | 691 | 0.3−  | 0.0   | 2007 11 04 | G96 | 0.2+ | 0.2+ |
| 2004 02 16 | 691 | 0.2− | 0.2+ | 2007 10 31 | 691 | 0.2+  | 0.1−  | 2007 11 05 | G96 | 0.1− | 0.2+ |
| 2004 02 16 | 691 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.4−  | 0.2−  | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2004 03 18 | 691 | 0.0  | 0.2− | 2007 11 04 | G96 | 0.4−  | 0.3+  | 2007 11 05 | G96 | 0.6+ | 0.1− |
| 2004 03 18 | 691 | 0.2− | 0.1+ | 2007 11 04 | G96 | 0.8+  | 0.3+  | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2004 03 18 | 691 | 0.3+ | 0.1− | 2007 11 04 | G96 | 0.2+  | 0.4−  | 2007 11 11 | G96 | 0.0  | 0.2− |
| 2007 10 10 | 691 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.8+  | 0.0   | 2007 11 11 | G96 | 0.4− | 0.3− |
| 2007 10 10 | 691 | 0.3− | 0.0  | 2007 11 04 | 691 | (0.5− | 1.7+) | 2007 11 11 | G96 | 0.4− | 0.2− |
| 2007 10 10 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.3−  | 0.0   | 2007 11 11 | G96 | 0.3− | 0.2− |
| 2007 10 30 | G96 | 0.2+ | 0.4− | 2007 11 04 | 691 | 0.1−  | 0.3+  | 2007 12 15 | G96 | 0.3− | 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 30 | G96 | 0.6+ | 0.2+ | 2007 11 04 | G96 | 0.2+ | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2007 10 30 | G96 | 0.9+ | 0.6− | 2007 11 04 | G96 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.1− | 0.0  |
| 2007 10 30 | G96 | 1.3+ | 0.0  | 2007 11 04 | G96 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.1− | 0.3− |

2007 UM<sub>59</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 52.32621   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.17467946 | $\omega$ | 315.10857 | +0.97819033  | +0.20704767  |
| $a$ | 3.1693837  | $\Omega$ | 32.95252  | −0.18098783  | +0.88879193  |
| $e$ | 0.0595179  | $i$      | 1.74685   | −0.10191704  | +0.40887672  |
| $P$ | 5.64       | $H$      | 16.1      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 691 | 0.7− | 0.3+ | 2005 05 10 | G96 | 0.1− | 0.1− | 2007 10 30 | G96 | 0.1+ | 0.3− |
| 2001 09 19 | 691 | 0.5− | 0.5+ | 2005 05 10 | G96 | 0.2− | 0.1+ | 2007 10 31 | 691 | 0.7− | 0.4− |
| 2001 09 19 | 691 | 0.4− | 0.4+ | 2005 05 10 | G96 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.4− | 0.3+ |
| 2001 10 15 | 291 | 0.0  | 0.2+ | 2007 09 10 | G96 | 0.2+ | 0.2− | 2007 10 31 | 691 | 0.5− | 0.0  |
| 2001 10 15 | 291 | 0.6+ | 0.4+ | 2007 09 10 | G96 | 0.4+ | 0.2− | 2007 11 15 | 704 | 0.1+ | 0.5+ |
| 2001 10 15 | 291 | 0.2+ | 0.3+ | 2007 09 10 | G96 | 0.2− | 0.2− | 2007 11 15 | 704 | 0.2+ | 0.8− |
| 2004 03 21 | 291 | 0.1+ | 0.9+ | 2007 09 10 | G96 | 0.6+ | 0.0  | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 2004 03 21 | 291 | 0.0  | 0.6+ | 2007 10 14 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.3− | 0.6+ |
| 2004 03 21 | 291 | 0.3+ | 0.7+ | 2007 10 14 | 691 | 0.5− | 0.1− | 2007 11 15 | 704 | 0.8− | 0.0  |
| 2004 03 21 | 691 | 0.2+ | 0.3− | 2007 10 14 | 691 | 0.3− | 0.2+ | 2007 11 20 | G96 | 0.3+ | 0.1− |
| 2004 03 21 | 691 | 0.0  | 0.3− | 2007 10 30 | G96 | 0.3+ | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.0  |
| 2004 03 21 | 691 | 0.1+ | 0.4− | 2007 10 30 | G96 | 0.2− | 0.1− | 2007 11 20 | G96 | 0.2+ | 0.4− |
| 2005 05 10 | G96 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.6+ | 0.3− | 2007 11 20 | G96 | 0.2+ | 0.1− |

2007 UT<sub>59</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 93.77668   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.21449189 | $\omega$ | 73.09736  | +0.59246557  | +0.80441056  |
| $a$ | 2.7639412  | $\Omega$ | 233.31587 | −0.75830273  | +0.53855857  |
| $e$ | 0.0543055  | $i$      | 3.12253   | −0.27195868  | +0.25075549  |
| $P$ | 4.60       | $H$      | 16.2      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 04 | 644 | 0.3− | 0.1+ | 2006 06 19 | 691 | 0.4+ | 0.3+ | 2007 11 04 | 691 | 0.1+  | 0.0   |
| 2002 10 04 | 644 | 0.1+ | 0.3+ | 2006 06 19 | 691 | 0.0  | 0.2+ | 2007 11 04 | 691 | 0.1−  | 0.2−  |
| 2002 10 04 | 644 | 0.1− | 0.2+ | 2006 06 19 | 691 | 0.1+ | 0.5+ | 2007 11 07 | 703 | 0.6+  | 0.4+  |
| 2005 03 14 | G96 | 0.7− | 0.0  | 2006 07 23 | G96 | 0.3− | 0.5− | 2007 11 07 | 703 | (1.6+ | 0.4−) |
| 2005 03 14 | G96 | 0.1− | 0.1+ | 2006 07 23 | G96 | 0.1− | 0.3− | 2007 11 07 | 703 | 0.6+  | 0.9+  |
| 2005 03 14 | G96 | 0.2+ | 0.4+ | 2006 07 23 | G96 | 0.2− | 0.3− | 2007 11 07 | 703 | 0.1+  | 0.4+  |
| 2005 03 14 | G96 | 0.1+ | 0.3+ | 2006 07 23 | G96 | 0.3− | 0.7− | 2007 11 15 | 704 | 0.7−  | 1.3+  |
| 2005 05 14 | G96 | 0.3+ | 0.5+ | 2007 10 30 | G96 | 0.2+ | 0.4− | 2007 11 15 | 704 | 0.6+  | 0.3+  |
| 2005 05 14 | G96 | 0.3+ | 0.3− | 2007 10 30 | G96 | 0.3+ | 0.6− | 2007 11 15 | 704 | 0.6+  | 0.0   |
| 2005 05 14 | G96 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.4− | 2007 11 15 | 704 | 0.2+  | 0.5+  |
| 2005 05 14 | G96 | 0.4+ | 0.7+ | 2007 10 30 | G96 | 0.2+ | 0.3− | 2007 11 15 | 704 | 0.7+  | 0.2+  |
| 2006 05 07 | G96 | 0.3+ | 0.4− | 2007 10 31 | 691 | 0.2− | 0.2+ | 2007 11 20 | G96 | 0.9+  | 0.1+  |
| 2006 05 07 | G96 | 0.4− | 1.3− | 2007 10 31 | 691 | 0.2− | 0.1− | 2007 11 20 | G96 | 1.1+  | 0.0   |
| 2006 05 07 | G96 | 0.6− | 0.6− | 2007 10 31 | 691 | 1.3− | 0.1+ | 2007 11 20 | G96 | 0.8+  | 0.2−  |
| 2006 05 07 | G96 | 0.3− | 0.6+ | 2007 11 02 | D29 | 0.3+ | 0.6− | 2007 11 20 | G96 | 0.4+  | 0.3−  |
| 2006 05 30 | G96 | 0.2− | 0.3− | 2007 11 02 | D29 | 0.7+ | 0.2+ | 2007 12 05 | 691 | 0.1+  | 0.1+  |
| 2006 05 30 | G96 | 0.2− | 0.2+ | 2007 11 02 | D29 | 0.0  | 0.4− | 2007 12 05 | 691 | 0.0   | 0.3−  |
| 2006 05 30 | G96 | 0.2− | 0.1+ | 2007 11 02 | D29 | 0.0  | 0.2+ | 2007 12 05 | 691 | 0.1−  | 0.0   |
| 2006 05 30 | G96 | 0.1− | 0.3− | 2007 11 04 | 691 | 0.2− | 0.3+ |            |     |       |       |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 20 | 291 | 0.4− | 0.2+ | 2007 10 30 | G96 | 0.5+ | 0.3− | 2007 11 08 | 691 | 0.2− | 0.0  |
| 2003 09 20 | 291 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.5+ | 0.3− | 2007 11 11 | G96 | 0.3+ | 0.4− |
| 2003 09 20 | 291 | 0.0  | 0.1+ | 2007 10 31 | 691 | 0.0  | 0.1− | 2007 11 11 | G96 | 0.2+ | 0.3− |
| 2005 03 09 | G96 | 0.1+ | 0.1− | 2007 10 31 | 691 | 0.4− | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.4− |
| 2005 03 09 | G96 | 0.0  | 1.0+ | 2007 10 31 | 691 | 0.1− | 0.2+ | 2007 11 11 | G96 | 0.2+ | 0.2− |
| 2005 03 09 | G96 | 0.3+ | 0.1+ | 2007 11 02 | D29 | 0.5+ | 0.3− | 2007 11 15 | 704 | 0.6+ | 1.2+ |
| 2005 03 09 | G96 | 0.3+ | 0.7+ | 2007 11 02 | D29 | 1.1+ | 1.0− | 2007 11 15 | 704 | 0.1+ | 0.7+ |
| 2007 09 12 | G96 | 0.6+ | 0.1+ | 2007 11 02 | D29 | 0.8+ | 0.5− | 2007 11 15 | 704 | 0.2− | 0.2− |
| 2007 09 12 | G96 | 0.0  | 0.2− | 2007 11 02 | D29 | 0.7+ | 0.3− | 2007 11 15 | 704 | 0.2+ | 0.3+ |
| 2007 09 12 | G96 | 0.3− | 0.6− | 2007 11 04 | 691 | 0.1+ | 0.7− | 2007 11 15 | 704 | 0.3+ | 0.2+ |
| 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.2− | 0.1+ | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2007 09 26 | G96 | 0.0  | 0.1− | 2007 11 04 | 691 | 0.1− | 0.2+ | 2007 11 19 | 691 | 0.0  | 0.2− |
| 2007 09 26 | G96 | 0.1+ | 0.2− | 2007 11 06 | 704 | 0.3− | 0.6+ | 2007 11 19 | 691 | 0.4− | 0.2− |
| 2007 09 26 | G96 | 0.0  | 0.4− | 2007 11 06 | 704 | 0.0  | 1.3+ | 2007 12 06 | 691 | 0.2− | 0.1+ |
| 2007 09 26 | G96 | 0.0  | 0.4− | 2007 11 06 | 704 | 0.7+ | 1.3+ | 2007 12 06 | 691 | 0.3− | 0.1− |
| 2007 10 15 | 691 | 0.1− | 0.0  | 2007 11 06 | 704 | 0.2+ | 0.8+ | 2007 12 06 | 691 | 0.1− | 0.2+ |
| 2007 10 15 | 691 | 0.0  | 0.1− | 2007 11 06 | 704 | 0.5− | 0.3− | 2007 12 13 | A77 | 0.6+ | 0.4− |
| 2007 10 15 | 691 | 0.2− | 0.2+ | 2007 11 07 | 704 | 0.2+ | 0.4+ | 2007 12 13 | A77 | 0.1+ | 0.4+ |
| 2007 10 20 | 703 | 0.7+ | 0.2− | 2007 11 07 | 704 | 0.2+ | 0.2+ | 2007 12 13 | A77 | 0.5− | 0.3+ |
| 2007 10 20 | 703 | 0.4+ | 0.0  | 2007 11 07 | 704 | 0.1+ | 0.7+ | 2007 12 15 | G96 | 0.4+ | 0.3− |
| 2007 10 20 | 703 | 0.6+ | 0.4− | 2007 11 07 | 704 | 0.3+ | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.2− |
| 2007 10 20 | 703 | 0.9− | 0.0  | 2007 11 07 | 704 | 0.4+ | 0.4+ | 2007 12 15 | G96 | 0.4+ | 0.5− |
| 2007 10 30 | G96 | 0.1+ | 0.2− | 2007 11 08 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2007 10 30 | G96 | 0.3+ | 0.3− | 2007 11 08 | 691 | 0.0  | 0.2+ |            |     |      |      |

2007 UC<sub>60</sub>

|          |                                   |          |           |             |             |            |
|----------|-----------------------------------|----------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           | MPC         |             |            |
| <i>M</i> | 28.14946                          |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i> | 0.19836411                        | $\omega$ | 75.29725  | +0.97657927 | −0.21464796 |            |
| <i>a</i> | 2.9117940                         | $\Omega$ | 297.09579 | +0.19045273 | +0.89440964 |            |
| <i>e</i> | 0.1117640                         | <i>i</i> | 0.95286   | +0.10010335 | +0.39237437 |            |
| <i>P</i> | 4.97                              | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> 4 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 04 | 644 | 0.1− | 0.2+ | 2007 10 30 | G96 | 0.7+ | 0.4− | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2002 11 04 | 644 | 0.2− | 0.4+ | 2007 10 30 | G96 | 0.6+ | 0.6− | 2007 11 04 | 291 | 0.2+ | 0.2+ |
| 2002 11 04 | 644 | 0.0  | 0.5+ | 2007 10 30 | G96 | 0.3+ | 0.4− | 2007 11 04 | 291 | 0.4+ | 0.1+ |
| 2004 02 13 | 691 | 0.6+ | 0.1− | 2007 10 31 | 691 | 0.1+ | 0.1+ | 2007 11 04 | 291 | 0.3+ | 0.1+ |
| 2004 02 13 | 691 | 0.3− | 0.4+ | 2007 10 31 | 691 | 0.4− | 0.2− | 2007 11 15 | 704 | 0.2− | 0.2− |
| 2004 02 13 | 691 | 0.4− | 0.3− | 2007 10 31 | 691 | 0.1+ | 0.1− | 2007 11 15 | 704 | 0.5+ | 0.1+ |
| 2007 10 11 | 691 | 0.5+ | 0.1− | 2007 11 03 | G96 | 0.6+ | 0.6− | 2007 11 15 | 704 | 0.5+ | 0.3− |
| 2007 10 11 | 691 | 0.1+ | 0.0  | 2007 11 03 | G96 | 0.4+ | 0.2− | 2007 11 15 | 704 | 0.8− | 0.5− |
| 2007 10 11 | 691 | 0.1+ | 0.2− | 2007 11 03 | G96 | 0.4+ | 0.3− | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2007 10 24 | G96 | 0.6+ | 0.8+ | 2007 11 03 | 291 | 0.8− | 0.2+ | 2007 11 19 | 691 | 0.5− | 0.5− |
| 2007 10 24 | G96 | 0.5+ | 1.1− | 2007 11 03 | 291 | 0.8− | 0.3+ | 2007 11 19 | 691 | 0.3+ | 0.2+ |
| 2007 10 24 | G96 | 0.5+ | 0.2+ | 2007 11 03 | 291 | 0.7− | 0.4+ | 2007 12 05 | 691 | 0.1− | 0.0  |
| 2007 10 24 | G96 | 0.1− | 0.5− | 2007 11 04 | 691 | 0.0  | 0.2+ | 2007 12 05 | 691 | 0.3− | 0.1− |
| 2007 10 30 | G96 | 0.4+ | 0.3− | 2007 11 04 | 691 | 0.3+ | 0.1+ | 2007 12 05 | 691 | 0.3+ | 0.2− |

2007 UY<sub>60</sub>

|          |                                   |          |           |             |             |            |
|----------|-----------------------------------|----------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           | MPC         |             |            |
| <i>M</i> | 7.70653                           |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i> | 0.22822026                        | $\omega$ | 196.66281 | +0.77554941 | −0.63118071 |            |
| <i>a</i> | 2.6519577                         | $\Omega$ | 202.48688 | +0.58259196 | +0.72266885 |            |
| <i>e</i> | 0.1452132                         | <i>i</i> | 1.73450   | +0.24312491 | +0.28171021 |            |
| <i>P</i> | 4.32                              | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> 1 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 25 | 691 | 0.2− | 0.2+ | 2007 09 18 | G96 | 0.1+ | 0.2− | 2007 11 08 | 691 | 0.1− | 0.1+ |
| 1998 09 25 | 691 | 0.0  | 0.3+ | 2007 09 18 | G96 | 0.4+ | 0.2− | 2007 11 08 | 691 | 0.1− | 0.1+ |
| 1998 09 25 | 691 | 0.2− | 0.4+ | 2007 10 17 | G96 | 0.0  | 0.3− | 2007 11 14 | 704 | 0.4+ | 0.4− |
| 2000 02 05 | 695 | 0.3+ | 0.8+ | 2007 10 17 | G96 | 0.2− | 0.5− | 2007 11 14 | 704 | 0.5+ | 0.3+ |
| 2000 02 05 | 695 | 0.2+ | 0.6+ | 2007 10 17 | G96 | 0.3− | 0.3− | 2007 11 14 | 704 | 0.0  | 0.0  |
| 2005 04 11 | 691 | 0.1+ | 0.1+ | 2007 10 17 | G96 | 0.1+ | 0.4− | 2007 11 14 | 704 | 0.5+ | 0.4+ |
| 2005 04 11 | 691 | 0.1− | 0.3+ | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 11 14 | 704 | 0.6+ | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 11 | 691 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.1+ |
| 2007 09 09 | G96 | 0.2+ | 0.3− | 2007 10 30 | G96 | 0.7+ | 0.0  | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2007 09 09 | G96 | 0.3+ | 0.2− | 2007 10 30 | G96 | 0.4+ | 0.4− | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2007 09 09 | G96 | 0.1+ | 0.0  | 2007 10 31 | 691 | 0.3− | 0.1− | 2007 12 05 | 704 | 0.7+ | 0.6+ |
| 2007 09 09 | G96 | 0.5+ | 0.3− | 2007 10 31 | 691 | 0.3− | 0.0  | 2007 12 05 | 704 | 0.8+ | 0.2+ |
| 2007 09 18 | G96 | 0.3+ | 0.1− | 2007 10 31 | 691 | 0.4− | 0.2+ | 2007 12 05 | 704 | 0.3− | 0.7− |
| 2007 09 18 | G96 | 0.2+ | 0.3− | 2007 11 08 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.1− | 0.0  |

2007 UE<sub>61</sub>

|          |                                   |          |           |             |             |            |
|----------|-----------------------------------|----------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           | MPC         |             |            |
| <i>M</i> | 18.07857                          |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i> | 0.26608634                        | $\omega$ | 176.76036 | +0.94220597 | −0.33498793 |            |
| <i>a</i> | 2.3939826                         | $\Omega$ | 202.81387 | +0.30706418 | +0.87007477 |            |
| <i>e</i> | 0.1988985                         | <i>i</i> | 0.82276   | +0.13401308 | +0.36159780 |            |
| <i>P</i> | 3.70                              | <i>H</i> | 17.6      | <i>G</i>    | 0.15        | <i>U</i> 3 |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 06 | 807 | 0.1− | 0.5+ | 2007 10 30 | G96 | 0.3+ | 0.7− | 2007 11 11 | G96 | 0.0  | 0.2− |
| 2002 04 06 | 807 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.3− | 2007 11 11 | G96 | 0.4+ | 0.2− |
| 2003 09 21 | 691 | 0.0  | 0.1+ | 2007 10 31 | 691 | 0.0  | 0.3− | 2007 11 14 | 704 | 0.1+ | 0.6+ |
| 2003 09 21 | 691 | 0.1+ | 0.2+ | 2007 10 31 | 691 | 0.4− | 0.1− | 2007 11 14 | 704 | 0.2− | 1.4+ |
| 2003 09 21 | 691 | 0.1− | 0.2− | 2007 10 31 | 691 | 0.1− | 0.1− | 2007 11 14 | 704 | 0.1− | 1.2+ |
| 2007 09 18 | G96 | 0.0  | 0.3− | 2007 11 05 | 704 | 0.3+ | 0.0  | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2007 09 18 | G96 | 0.1+ | 0.4− | 2007 11 05 | 704 | 0.1− | 1.0+ | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2007 09 18 | G96 | 0.2− | 0.2− | 2007 11 05 | 704 | 0.3− | 1.0− | 2007 11 19 | 691 | 0.5− | 0.3+ |
| 2007 09 18 | G96 | 0.4+ | 0.1− | 2007 11 05 | 704 | 0.2+ | 0.4+ | 2007 12 05 | 704 | 0.1− | 1.0− |
| 2007 10 17 | G96 | 0.1+ | 0.5− | 2007 11 05 | 704 | 0.0  | 0.1− | 2007 12 05 | 704 | 0.5+ | 1.1− |
| 2007 10 17 | G96 | 0.0  | 0.3− | 2007 11 08 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.4+ | 1.6− |
| 2007 10 17 | G96 | 0.0  | 0.4− | 2007 11 08 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 1.0+ | 0.2+ |
| 2007 10 17 | G96 | 0.4+ | 0.3− | 2007 11 08 | 691 | 0.3+ | 1.3+ | 2007 12 05 | 704 | 0.8+ | 1.6− |
| 2007 10 30 | G96 | 0.2− | 0.3− | 2007 11 11 | G96 | 0.2+ | 0.1− |            |     |      |      |
| 2007 10 30 | G96 | 0.4+ | 0.5− | 2007 11 11 | G96 | 0.1+ | 0.1− |            |     |      |      |

2007 UF<sub>61</sub> = 2002 TJ<sub>253</sub> = 2005 FK<sub>12</sub>Id. Minor Planet Center (*MPO* 128569; unpublisjed)

|          |                                   |          |           |             |             |            |
|----------|-----------------------------------|----------|-----------|-------------|-------------|------------|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           | MPC         |             |            |
| <i>M</i> | 77.35932                          |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |            |
| <i>n</i> | 0.21177648                        | $\omega$ | 136.19609 | +0.82654126 | +0.56285846 |            |
| <i>a</i> | 2.7875173                         | $\Omega$ | 189.55319 | −0.52354675 | +0.76585472 |            |
| <i>e</i> | 0.0670084                         | <i>i</i> | 1.54010   | −0.20670836 | +0.31089694 |            |
| <i>P</i> | 4.65                              | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> 0 |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 01 | 691 | 0.4−  | 0.1+  | 2005 04 09 | G96 | 0.4− | 0.4+ | 2007 10 30 | G96 | 0.1− | 0.2− |
| 1995 03 01 | 691 | 0.1−  | 0.4−  | 2005 04 09 | G96 | 0.8− | 0.3+ | 2007 10 30 | G96 | 0.2+ | 0.1− |
| 1995 03 01 | 691 | 0.2+  | 0.1+  | 2005 04 09 | G96 | 0.5− | 0.5+ | 2007 10 30 | G96 | 0.4− | 0.2− |
| 2000 03 10 | 691 | 0.0   | 0.1+  | 2005 04 09 | G96 | 0.2+ | 0.7+ | 2007 10 30 | G96 | 0.0  | 0.1+ |
| 2000 03 10 | 691 | 0.1+  | 0.0   | 2006 05 25 | G96 | 0.5− | 0.1− | 2007 10 31 | 691 | 0.2− | 0.2+ |
| 2000 03 10 | 691 | 0.1+  | 0.4+  | 2006 05 25 | G96 | 0.2− | 0.2+ | 2007 10 31 | 691 | 0.2− | 0.1+ |
| 2002 10 08 | 291 | 0.3−  | 0.3+  | 2006 05 25 | G96 | 0.4− | 0.2− | 2007 10 31 | 691 | 0.3+ | 0.2− |
| 2002 10 08 | 291 | 0.1−  | 0.1+  | 2006 05 25 | G96 | 0.1− | 0.2+ | 2007 11 05 | 704 | 0.2+ | 0.2− |
| 2002 10 08 | 291 | 0.0   | 0.2+  | 2007 09 10 | G96 | 0.1− | 0.2− | 2007 11 05 | 704 | 0.2− | 0.2+ |
| 2002 10 11 | 704 | (1.9+ | 1.4−) | 2007 09 10 | G96 | 0.1− | 0.1− | 2007 11 05 | 704 | 0.8− | 0.5− |
| 2002 10 11 | 704 | 1.2+  | 0.6+  | 2007 09 10 | G96 | 0.3− | 0.2+ | 2007 11 14 | 704 | 0.2+ | 0.3− |
| 2002 10 11 | 704 | 0.5+  | 0.3+  | 2007 09 10 | G96 | 0.4− | 0.1− | 2007 11 14 | 704 | 0.5+ | 0.2− |
| 2005 03 08 | G96 | 0.3−  | 0.0   | 2007 09 18 | G96 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.3+ | 0.2− |
| 2005 03 08 | G96 | 0.1+  | 0.1−  | 2007 09 18 | G96 | 0.0  | 0.2+ | 2007 11 14 | 704 | 0.4+ | 0.5+ |
| 2005 03 08 | G96 | 0.1−  | 0.1−  | 2007 09 18 | G96 | 0.3+ | 0.0  | 2007 12 05 | 704 | 0.4− | 0.3+ |
| 2005 03 08 | G96 | 0.4+  | 0.5−  | 2007 09 18 | G96 | 0.0  | 0.2− | 2007 12 05 | 704 | 1.3+ | 0.3− |
| 2005 03 17 | 691 | 0.4+  | 0.0   | 2007 10 08 | 691 | 0.1− | 0.1− | 2007 12 05 | 704 | 2.0+ | 1.9+ |
| 2005 03 17 | 691 | 0.4+  | 0.1−  | 2007 10 08 | 691 | 0.4− | 0.0  |            |     |      |      |
| 2005 03 17 | 691 | 0.1+  | 0.2+  | 2007 10 08 | 691 | 0.3− | 0.1− |            |     |      |      |

2007 DEC. 24

M.P.O. 129943

**2007 UN<sub>63</sub> = 2000 TJ<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.99378   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28473302 | $\omega$ | 152.01760 | +0.99920981   | -0.03600415 |
| <i>a</i> | 2.2882888  | $\Omega$ | 210.06006 | +0.02719986   | +0.92828948 |
| <i>e</i> | 0.2177344  | <i>i</i> | 1.92615   | +0.02898142   | +0.37011127 |
| <i>P</i> | 3.46       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 01 | 704 | 0.3+ | 0.7- | 2007 09 05 | G96 | 0.2+ | 0.2- | 2007 11 01 | G96 | 0.4+ | 0.1- |
| 2000 10 01 | 704 | 0.2+ | 0.5+ | 2007 09 05 | G96 | 0.4+ | 0.4- | 2007 11 01 | G96 | 0.2- | 0.0  |
| 2000 10 01 | 704 | 0.2- | 0.3+ | 2007 10 04 | G91 | 0.0  | 0.0  | 2007 11 01 | G96 | 0.3+ | 0.0  |
| 2000 10 01 | 704 | 0.3- | 0.4+ | 2007 10 04 | G91 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.5+ | 0.4- |
| 2000 10 02 | 704 | 0.3- | 0.3+ | 2007 10 04 | G91 | 0.2- | 0.4- | 2007 11 05 | 704 | 0.4- | 0.4+ |
| 2000 10 02 | 704 | 0.3- | 0.0  | 2007 10 30 | G96 | 0.0  | 0.1+ | 2007 11 05 | 704 | 0.4- | 0.6+ |
| 2000 10 02 | 704 | 0.2- | 0.2+ | 2007 10 30 | G96 | 0.0  | 0.0  | 2007 12 05 | G96 | 0.1+ | 0.3+ |
| 2000 10 02 | 704 | 0.1+ | 0.5+ | 2007 10 30 | G96 | 0.1+ | 0.1+ | 2007 12 05 | G96 | 0.3+ | 0.0  |
| 2007 09 05 | G96 | 0.2+ | 0.6- | 2007 10 30 | G96 | 0.4- | 0.2+ | 2007 12 05 | G96 | 0.1- | 0.2- |
| 2007 09 05 | G96 | 0.2+ | 0.2- | 2007 11 01 | G96 | 0.1- | 0.1- | 2007 12 05 | G96 | 0.1+ | 0.1- |

**2007 UC<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 267.98163  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27458354 | $\omega$ | 322.91551 | -0.84262569   | -0.53849796 |
| <i>a</i> | 2.3443353  | $\Omega$ | 184.50370 | +0.49816453   | -0.77853952 |
| <i>e</i> | 0.1255058  | <i>i</i> | 1.00225   | +0.20448482   | -0.32232928 |
| <i>P</i> | 3.59       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 19 | 691 | 0.2+ | 0.1- | 2007 10 30 | G96 | 0.1+ | 0.3- | 2007 11 02 | G96 | 0.3+ | 0.2- |
| 2005 01 19 | 691 | 0.1+ | 0.1- | 2007 10 30 | G96 | 0.5+ | 0.2+ | 2007 11 02 | G96 | 0.4+ | 0.1- |
| 2005 01 19 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.3- | 0.2- | 2007 11 02 | G96 | 0.0  | 0.3- |
| 2005 03 08 | G96 | 0.4- | 0.4+ | 2007 10 30 | G96 | 0.1- | 0.5- | 2007 11 02 | 291 | 0.2- | 0.1+ |
| 2005 03 08 | G96 | 1.0+ | 0.1+ | 2007 10 30 | G96 | 1.0+ | 0.3+ | 2007 11 02 | 291 | 0.2- | 0.3+ |
| 2005 03 08 | G96 | 0.6- | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.0  | 2007 11 02 | 291 | 0.4- | 0.1+ |
| 2005 03 08 | G96 | 0.2- | 0.1- | 2007 10 30 | G96 | 0.6+ | 0.1- | 2007 11 09 | G96 | 0.3+ | 0.4- |
| 2005 04 02 | G96 | 0.2- | 0.2- | 2007 10 30 | G96 | 0.3+ | 0.2+ | 2007 11 09 | G96 | 0.1+ | 0.5- |
| 2005 04 02 | G96 | 0.2+ | 0.1+ | 2007 11 01 | 291 | 0.4- | 0.3+ | 2007 11 09 | G96 | 0.2+ | 0.4- |
| 2005 04 02 | G96 | 0.0  | 0.3+ | 2007 11 01 | 291 | 0.7- | 0.0  | 2007 11 09 | G96 | 0.0  | 0.4- |
| 2005 04 02 | G96 | 0.0  | 0.3- | 2007 11 01 | 291 | 0.5- | 0.2+ | 2007 11 17 | G96 | 0.3+ | 0.1- |
| 2007 10 07 | G96 | 0.3- | 0.1+ | 2007 11 02 | H55 | 0.3+ | 0.7+ | 2007 11 17 | G96 | 0.1- | 0.3- |
| 2007 10 07 | G96 | 0.5- | 0.0  | 2007 11 02 | H55 | 0.8- | 0.3+ | 2007 11 17 | G96 | 0.6- | 0.0  |
| 2007 10 07 | G96 | 0.9+ | 0.5+ | 2007 11 02 | H55 | 0.4- | 0.4+ | 2007 11 17 | G96 | 0.4- | 0.1+ |
| 2007 10 07 | G96 | 0.6+ | 0.1- | 2007 11 02 | G96 | 0.0  | 0.1- |            |     |      |      |

**2007 UQ<sub>65</sub> = 2005 GR<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 301.80120  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23381964 | $\omega$ | 287.50332 | -0.12583693   | -0.99203564 |
| <i>a</i> | 2.6094485  | $\Omega$ | 169.72108 | +0.92150124   | -0.11894318 |
| <i>e</i> | 0.0707367  | <i>i</i> | 1.76938   | +0.36742418   | -0.04144646 |
| <i>P</i> | 4.22       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.0  | 0.0  | 2007 09 25 | G96 | 0.5+ | 0.1+ | 2007 11 02 | 850 | 0.7- | 0.6+ |
| 2003 11 19 | 691 | 0.0  | 0.0  | 2007 09 25 | G96 | 0.0  | 0.1+ | 2007 11 02 | 850 | 0.3+ | 0.8- |
| 2003 11 19 | 691 | 0.0  | 0.2+ | 2007 09 25 | G96 | 0.2+ | 0.2- | 2007 11 02 | 850 | 0.0  | 0.0  |
| 2005 04 02 | G96 | 0.0  | 0.4+ | 2007 09 25 | G96 | 0.2+ | 0.0  | 2007 11 03 | 850 | 0.5+ | 0.2- |
| 2005 04 02 | G96 | 0.4+ | 0.0  | 2007 09 25 | G96 | 1.0+ | 0.4+ | 2007 11 03 | 850 | 0.3+ | 0.1+ |
| 2005 04 02 | G96 | 0.1- | 0.4+ | 2007 10 09 | G91 | 0.1- | 0.4+ | 2007 11 03 | 850 | 0.0  | 0.1+ |
| 2005 04 02 | G96 | 0.8+ | 0.2- | 2007 10 09 | G91 | 0.3+ | 0.1+ | 2007 11 03 | 850 | 0.2+ | 0.1+ |
| 2005 04 04 | G96 | 0.3- | 0.2- | 2007 10 09 | G91 | 0.8- | 0.1+ | 2007 11 04 | 850 | 0.1- | 0.2- |
| 2005 04 04 | G96 | 0.3- | 0.3- | 2007 10 20 | 300 | 0.4- | 0.2- | 2007 11 04 | 850 | 0.7+ | 0.1+ |
| 2005 04 04 | G96 | 0.4- | 0.2- | 2007 10 20 | 300 | 0.2- | 0.3- | 2007 11 05 | G96 | 0.0  | 0.2- |
| 2005 04 04 | G96 | 0.1- | 0.3- | 2007 10 20 | 300 | 0.4+ | 0.2- | 2007 11 05 | G96 | 0.0  | 0.2- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2007 09 25 | G96 | 0.2+ | 0.1- | 2007 10 20 | 300 | 0.6+  | 0.3-  | 2007 11 05 | G96 | 0.5+ | 0.2- |
| 2007 09 25 | G96 | 0.2- | 0.6- | 2007 10 31 | 850 | 0.9-  | 1.2-  | 2007 11 05 | G96 | 0.4+ | 0.1+ |
| 2007 09 25 | G96 | 0.3- | 0.1+ | 2007 10 31 | 850 | (2.1- | 1.6-) |            |     |      |      |

**2007 UW<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.11147   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21918156 | $\omega$ | 29.85535  | +0.98536714   | -0.16956360 |
| <i>a</i> | 2.7243739  | $\Omega$ | 339.88511 | +0.14471107   | +0.88593940 |
| <i>e</i> | 0.2010073  | <i>i</i> | 2.88587   | +0.09005726   | +0.43169382 |
| <i>P</i> | 4.50       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 02 05 | 695 | 0.4- | 0.5+ | 2007 10 15 | 691 | 1.1- | 0.3+ | 2007 11 06 | 704 | 0.7-  | 0.9+  |
| 2000 02 05 | 695 | 0.2- | 0.5+ | 2007 10 20 | 703 | 0.4+ | 1.5+ | 2007 11 06 | 704 | 0.5+  | 0.3+  |
| 2002 08 08 | 644 | 0.1+ | 0.4+ | 2007 10 20 | 703 | 0.1+ | 1.5+ | 2007 11 06 | 704 | 0.1-  | 0.4+  |
| 2002 08 08 | 644 | 0.1- | 0.7+ | 2007 10 20 | 703 | 1.2+ | 1.3+ | 2007 11 07 | 704 | 0.4+  | 0.0   |
| 2002 08 08 | 644 | 0.1- | 0.1- | 2007 10 20 | 703 | 1.5+ | 0.1- | 2007 11 07 | 704 | (0.1- | 2.2+) |
| 2003 12 18 | 691 | 0.2- | 0.1- | 2007 10 30 | 703 | 0.3+ | 0.4- | 2007 11 07 | 704 | 0.2-  | 1.2+  |
| 2003 12 18 | 691 | 0.4+ | 0.1- | 2007 10 30 | 703 | 0.7- | 1.0+ | 2007 11 07 | 704 | 0.2+  | 0.6+  |
| 2003 12 18 | 691 | 0.5+ | 0.3- | 2007 10 30 | 703 | 0.4+ | 1.1- | 2007 11 07 | 704 | 0.8+  | 0.6+  |
| 2005 03 11 | G96 | 0.5+ | 0.1+ | 2007 10 30 | 703 | 1.2- | 0.1- | 2007 11 08 | G96 | 0.1-  | 0.5-  |
| 2005 03 11 | G96 | 0.3+ | 0.5+ | 2007 11 01 | 106 | 0.9- | 1.0+ | 2007 11 08 | G96 | 0.1-  | 0.6-  |
| 2005 03 11 | G96 | 0.2+ | 0.3- | 2007 11 01 | 106 | 0.4+ | 0.7- | 2007 11 08 | G96 | 0.1+  | 0.5-  |
| 2005 03 11 | G96 | 0.3- | 0.5+ | 2007 11 01 | 106 | 0.9+ | 0.9+ | 2007 11 08 | G96 | 0.2-  | 0.7-  |
| 2007 09 25 | G96 | 0.1- | 0.8- | 2007 11 01 | 106 | 0.3+ | 0.5- | 2007 11 18 | 704 | (0.3+ | 2.4+) |
| 2007 09 25 | G96 | 0.2+ | 0.7- | 2007 11 02 | 106 | 1.1- | 0.2- | 2007 11 18 | 704 | 0.1-  | 0.0   |
| 2007 09 25 | G96 | 0.1- | 0.2- | 2007 11 02 | 106 | 0.1- | 0.1- | 2007 11 18 | 704 | 0.8+  | 0.7+  |
| 2007 09 25 | G96 | 0.2+ | 0.5- | 2007 11 02 | 106 | 0.3- | 0.8- | 2007 11 18 | 704 | 0.2+  | 0.2+  |
| 2007 10 15 | 691 | 1.1- | 0.5- | 2007 11 02 | 106 | 1.7- | 1.3- | 2007 11 18 | 704 | 0.0   | 0.6-  |
| 2007 10 15 | 691 | 0.7- | 0.2- | 2007 11 06 | 704 | 1.4+ | 0.5- |            |     |       |       |

**2007 UO<sub>67</sub> = 1999 TW<sub>335</sub> = 1999 UX<sub>64</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 305.22482  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24513268 | $\omega$ | 66.72795 | -0.12630626   | -0.99153182 |
| <i>a</i> | 2.5285327  | $\Omega$ | 30.57582 | +0.88707203   | -0.12651672 |
| <i>e</i> | 0.1534261  | <i>i</i> | 3.40239  | +0.44401570   | -0.02929452 |
| <i>P</i> | 4.02       | <i>H</i> | 17.7     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 09 29 | 691 | 0.3- | 0.2- | 2005 04 06 | G96 | 0.2+ | 0.4- | 2007 10 18 | G96 | 0.2- | 0.2- |
| 1995 09 29 | 691 | 0.2+ | 0.1- | 2005 04 06 | G96 | 0.1- | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.4- |
| 1995 09 29 | 691 | 0.2- | 0.2- | 2005 05 06 | G96 | 0.0  | 0.2- | 2007 10 30 | G96 | 0.1+ | 0.0  |
| 1999 10 12 | 691 | 0.4+ | 0.5- | 2005 05 06 | G96 | 0.5+ | 0.3- | 2007 10 30 | G96 | 0.2- | 0.1- |
| 1999 10 12 | 691 | 0.6+ | 0.3- | 2005 05 06 | G96 | 0.2+ | 0.4+ | 2007 10 30 | G96 | 0.1+ | 0.0  |
| 1999 10 12 | 691 | 0.1- | 0.3- | 2005 05 06 | G96 | 0.2- | 0.2+ | 2007 11 02 | G96 | 0.3+ | 0.2+ |
| 1999 10 19 | 691 | 0.1+ | 0.0  | 2007 09 12 | G96 | 0.7+ | 0.0  | 2007 11 02 | G96 | 0.1- | 0.3+ |
| 1999 10 19 | 691 | 0.2+ | 0.2+ | 2007 09 12 | G96 | 0.4+ | 0.2- | 2007 11 02 | G96 | 0.2+ | 0.5+ |
| 1999 10 19 | 691 | 0.3+ | 0.2- | 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 11 02 | G96 | 0.4- | 0.4+ |
| 2003 09 29 | 691 | 0.0  | 0.3+ | 2007 09 12 | G96 | 0.5+ | 0.1+ | 2007 11 04 | 691 | 0.2- | 0.7+ |
| 2003 09 29 | 691 | 0.5- | 0.2+ | 2007 10 07 | G96 | 0.4+ | 0.3- | 2007 11 04 | 691 | 0.4- | 0.0  |
| 2003 09 29 | 691 | 0.3- | 0.0  | 2007 10 07 | G96 | 0.2+ | 0.5- | 2007 11 04 | 691 | 0.3- | 0.0  |
| 2003 10 18 | 691 | 0.2- | 0.2+ | 2007 10 07 | G96 | 0.1- | 0.5- | 2007 11 05 | G96 | 0.2+ | 0.4- |
| 2003 10 18 | 691 | 0.0  | 0.0  | 2007 10 07 | G96 | 0.2+ | 0.2+ | 2007 11 05 | G96 | 0.6+ | 0.4- |
| 2003 10 18 | 691 | 0.3- | 0.3+ | 2007 10 18 | G96 | 0.3+ | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.1- |
| 2005 04 06 | G96 | 0.2- | 0.1- | 2007 10 18 | G96 | 0.2- | 0.1+ |            |     |      |      |
| 2005 04 06 | G96 | 0.4- | 0.3+ | 2007 10 18 | G96 | 0.2- | 0.1- |            |     |      |      |

**2007 UW<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 274.55234  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27499748 | $\omega$ | 283.14114 | -0.60198775   | -0.79848594 |
| <i>a</i> | 2.3419821  | $\Omega$ | 203.87392 | +0.73783677   | -0.55357241 |
| <i>e</i> | 0.1275429  | <i>i</i> | 0.78773   | +0.30529928   | -0.23659627 |
| <i>P</i> | 3.58       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 26 | 807 | 0.1+ | 0.4+ | 2005 02 01 | 703 | 0.7+ | 1.7- | 2007 10 18 | G96 | 0.5- | 0.2+ |
| 2003 08 26 | 807 | 0.3- | 0.3+ | 2005 02 01 | 703 | 0.5- | 1.0+ | 2007 10 30 | G96 | 0.3- | 0.1+ |
| 2004 12 19 | G96 | 0.1+ | 0.3- | 2005 02 01 | 703 | 0.4+ | 1.0+ | 2007 10 30 | G96 | 0.1+ | 0.4+ |
| 2004 12 19 | G96 | 0.3+ | 0.2- | 2007 10 07 | G96 | 0.3+ | 0.5- | 2007 10 30 | G96 | 0.1- | 0.1+ |
| 2004 12 19 | G96 | 0.1- | 0.2- | 2007 10 07 | G96 | 0.2+ | 0.2- | 2007 10 30 | G96 | 0.4- | 0.4- |
| 2004 12 19 | G96 | 0.7- | 0.4+ | 2007 10 07 | G96 | 0.4+ | 0.1+ | 2007 11 02 | G96 | 0.1+ | 0.1- |
| 2005 01 19 | 691 | 0.3+ | 0.2+ | 2007 10 07 | G96 | 0.9- | 0.6- | 2007 11 02 | G96 | 0.4+ | 0.1+ |
| 2005 01 19 | 691 | 0.3+ | 0.3+ | 2007 10 18 | G96 | 0.3+ | 0.0  | 2007 11 02 | G96 | 0.0  | 0.2+ |
| 2005 01 19 | 691 | 0.5+ | 0.1+ | 2007 10 18 | G96 | 0.4+ | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2005 02 01 | 703 | 1.2- | 0.3- | 2007 10 18 | G96 | 0.0  | 0.3+ |            |     |      |      |

**2007 UE<sub>68</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.18309   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25820111 | $\omega$ | 125.76529 | +0.93917551   | -0.34335314 |
| <i>a</i> | 2.4424779  | $\Omega$ | 254.31708 | +0.31249017   | +0.86353322 |
| <i>e</i> | 0.1783341  | <i>i</i> | 0.45314   | +0.14247543   | +0.36934942 |
| <i>P</i> | 3.82       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 09 21 | 691 | 0.1- | 0.2+ | 2007 10 30 | G96 | 0.4+  | 0.3-  | 2007 11 15 | 704 | (1.9+ | 1.3+) |
| 2003 09 21 | 691 | 0.0  | 0.3+ | 2007 10 30 | G96 | 0.1+  | 0.1-  | 2007 11 15 | 704 | (1.8+ | 0.2-) |
| 2003 09 21 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.3+  | 0.3-  | 2007 11 15 | 704 | (0.7- | 1.6+) |
| 2003 10 19 | 691 | 0.1- | 0.2- | 2007 10 30 | G96 | 0.5+  | 0.3-  | 2007 11 15 | 704 | (0.1+ | 1.6+) |
| 2003 10 19 | 691 | 0.1+ | 0.1- | 2007 11 02 | 291 | 0.0   | 0.1+  | 2007 11 18 | 691 | 0.2-  | 0.0   |
| 2003 10 19 | 691 | 0.1+ | 0.3- | 2007 11 02 | 291 | 0.1+  | 0.3+  | 2007 11 18 | 691 | 0.1-  | 0.1+  |
| 2006 05 25 | 568 | 0.0  | 0.2+ | 2007 11 02 | 291 | 0.1-  | 0.1+  | 2007 11 18 | 691 | 0.3-  | 0.1+  |
| 2006 05 25 | 568 | 0.0  | 0.3+ | 2007 11 03 | 691 | 0.2-  | 0.0   | 2007 12 05 | 691 | 0.4-  | 0.3+  |
| 2006 05 25 | 568 | 0.1+ | 0.3+ | 2007 11 03 | 691 | 0.1+  | 0.1+  | 2007 12 05 | 691 | 0.1-  | 0.3+  |
| 2007 09 15 | G96 | 0.2- | 0.4- | 2007 11 03 | 691 | 0.1+  | 0.0   | 2007 12 05 | 691 | 0.2+  | 0.1-  |
| 2007 09 15 | G96 | 0.4+ | 0.0  | 2007 11 05 | 704 | 0.4+  | 0.0   | 2007 12 13 | 701 | 0.0   | 0.6+  |
| 2007 09 15 | G96 | 0.3+ | 0.4- | 2007 11 05 | 704 | 0.5-  | 0.4-  | 2007 12 13 | 701 | 1.3-  | 0.5-  |
| 2007 09 15 | G96 | 0.2- | 0.3- | 2007 11 05 | 704 | 0.9+  | 0.3-  | 2007 12 13 | 701 | 0.1-  | 0.6-  |
| 2007 10 11 | 691 | 0.3+ | 0.1- | 2007 11 05 | 704 | 1.2+  | 0.2-  | 2007 12 13 | 701 | 0.1+  | 0.2-  |
| 2007 10 11 | 691 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.3+  | 0.3-  | 2007 12 15 | G96 | 0.7+  | 0.1-  |
| 2007 10 11 | 691 | 0.3- | 0.0  | 2007 11 11 | G96 | 0.2+  | 0.3-  | 2007 12 15 | G96 | 0.9+  | 0.1-  |
| 2007 10 30 | 691 | 0.3- | 0.0  | 2007 11 11 | G96 | 0.1+  | 0.2-  | 2007 12 15 | G96 | 0.5+  | 0.2+  |
| 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.0   | 0.0   | 2007 12 15 | G96 | 0.6+  | 0.2+  |
| 2007 10 30 | 691 | 0.2- | 0.3+ | 2007 11 15 | 704 | (1.8+ | 1.9-) |            |     |       |       |

**2007 UH<sub>68</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 307.99730  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17578158 | $\omega$ | 346.97683 | -0.45774824   | -0.88856425 |
| <i>a</i> | 3.1561222  | $\Omega$ | 130.25631 | +0.81923810   | -0.43479859 |
| <i>e</i> | 0.1514485  | <i>i</i> | 2.27796   | +0.34542073   | -0.14630026 |
| <i>P</i> | 5.61       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 18 | 691 | 0.6+ | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.1- |
| 1998 03 18 | 691 | 0.8- | 0.5- | 2007 10 08 | 691 | 0.2- | 0.4+ | 2007 11 14 | 691 | 0.2- | 0.2+ |
| 1998 03 18 | 691 | 0.3- | 0.6- | 2007 10 08 | 691 | 0.4- | 0.0  | 2007 11 14 | 691 | 0.2+ | 0.4+ |
| 2003 01 04 | 291 | 0.3+ | 0.0  | 2007 10 08 | 691 | 0.3- | 0.3+ | 2007 11 14 | 691 | 0.3- | 0.2- |
| 2003 01 04 | 291 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2003 01 04 | 291 | 0.2- | 0.4+ | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.3- | 0.1- |
| 2004 05 23 | 691 | 0.1+ | 0.8+ | 2007 10 30 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 05 23 | 691 | 0.7+ | 0.8+ | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.5+ |
| 2004 05 23 | 691 | 0.1+ | 0.9+ | 2007 11 02 | 691 | 0.3- | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.1+ |
| 2007 09 14 | G96 | 1.0+ | 0.3- | 2007 11 02 | 691 | 0.5+ | 0.1- | 2007 11 20 | 691 | 0.2+ | 0.2- |
| 2007 09 14 | G96 | 1.0+ | 0.4+ | 2007 11 03 | 691 | 0.4+ | 0.0  |            |     |      |      |
| 2007 09 14 | G96 | 0.4+ | 0.3- | 2007 11 03 | 691 | 0.0  | 0.1- |            |     |      |      |

**2007 UL<sub>68</sub> = 2002 UV<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 72.00739   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20161608 | $\omega$ | 91.26826  | +0.68146374   | +0.69927268 |
| <i>a</i> | 2.8803987  | $\Omega$ | 224.42359 | -0.73160624   | +0.65855275 |
| <i>e</i> | 0.2009884  | <i>i</i> | 17.96809  | +0.01896006   | +0.27807554 |
| <i>P</i> | 4.89       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 21 | 691 | 0.1- | 0.0  | 2007 10 08 | 691 | 0.2+ | 0.2+ | 2007 11 15 | 699 | 0.2+ | 0.6- |
| 1997 11 21 | 691 | 0.3+ | 0.0  | 2007 10 08 | 691 | 0.1- | 0.3- | 2007 11 15 | 699 | 0.1+ | 0.3- |
| 1997 11 21 | 691 | 0.2- | 0.1- | 2007 10 08 | 691 | 0.1+ | 0.3- | 2007 11 15 | 699 | 0.5- | 0.2- |
| 2002 10 31 | 644 | 0.7+ | 1.0+ | 2007 10 30 | 691 | 0.1+ | 0.0  | 2007 11 15 | 699 | 0.6- | 0.5+ |
| 2002 10 31 | 644 | 0.5+ | 1.1+ | 2007 10 30 | 691 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.3+ | 0.2- |
| 2002 10 31 | 644 | 0.5+ | 0.6+ | 2007 10 30 | 691 | 0.3- | 0.4+ | 2007 11 18 | G96 | 0.3+ | 0.4- |
| 2002 11 02 | 608 | 0.6- | 0.4- | 2007 11 02 | 691 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.7+ | 0.2- |
| 2002 11 02 | 608 | 0.6- | 0.9- | 2007 11 02 | 691 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2002 11 02 | 608 | 0.6- | 0.3- | 2007 11 02 | 691 | 0.0  | 0.1- |            |     |      |      |

**2007 UM<sub>68</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 18.65128   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23829506 | $\omega$ | 291.27663 | +0.98479827   | -0.08179762 |
| <i>a</i> | 2.5766733  | $\Omega$ | 73.67218  | +0.14141760   | +0.88981290 |
| <i>e</i> | 0.2631737  | <i>i</i> | 9.18813   | -0.10086339   | +0.44893447 |
| <i>P</i> | 4.14       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 01 | 291 | 0.6+ | 0.0  | 2007 10 19 | 683 | 0.4- | 0.1- | 2007 11 02 | G96 | 0.4- | 0.3- |
| 2003 12 01 | 291 | 0.2+ | 0.1+ | 2007 10 19 | 683 | 0.2- | 0.3- | 2007 11 11 | 699 | 1.2- | 0.1+ |
| 2003 12 01 | 291 | 0.2+ | 0.0  | 2007 10 19 | 683 | 1.7+ | 0.0  | 2007 11 11 | 699 | 0.8+ | 0.5+ |
| 2003 12 17 | 291 | 0.3- | 0.1- | 2007 10 30 | 703 | 0.3- | 0.5+ | 2007 11 11 | 699 | 0.2+ | 0.2- |
| 2003 12 17 | 291 | 0.5- | 0.1+ | 2007 10 30 | 703 | 0.5+ | 0.0  | 2007 11 11 | 699 | 1.3+ | 0.3+ |
| 2003 12 17 | 291 | 0.3- | 0.0  | 2007 10 30 | 703 | 0.7- | 0.9+ | 2007 11 14 | G96 | 0.0  | 0.2- |
| 2007 10 10 | 703 | 0.2+ | 0.2- | 2007 10 30 | 703 | 0.4- | 0.2+ | 2007 11 14 | G96 | 0.1+ | 0.3- |
| 2007 10 10 | 703 | 0.0  | 1.1- | 2007 11 02 | G96 | 0.2- | 0.2- | 2007 11 14 | G96 | 0.1+ | 0.3- |
| 2007 10 10 | 703 | 0.8- | 1.0+ | 2007 11 02 | G96 | 0.4- | 0.2- | 2007 11 14 | G96 | 0.1+ | 0.2- |
| 2007 10 10 | 703 | 0.0  | 0.2+ | 2007 11 02 | G96 | 0.1- | 0.3- |            |     |      |      |

**2007 UT<sub>69</sub> = 2004 AQ<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 317.01160  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.20866713 | $\omega$ | 12.02368 | +0.10230704   | -0.99436765 |
| <i>a</i> | 2.8151401  | $\Omega$ | 72.10912 | +0.91024069   | +0.08235472 |
| <i>e</i> | 0.0455057  | <i>i</i> | 1.66683  | +0.40124202   | +0.06671333 |
| <i>P</i> | 4.72       | <i>H</i> | 16.7     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.0  | 0.1- | 2005 04 04 | G96 | 0.6- | 0.2+ | 2007 11 02 | 291 | 0.1- | 0.1+ |
| 2000 03 03 | 645 | 0.1+ | 0.2- | 2005 04 04 | G96 | 0.1- | 0.2+ | 2007 11 02 | 291 | 0.1+ | 0.2+ |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2005 04 17 | 691 | 0.2- | 0.6+ | 2007 11 02 | G96 | 0.3- | 0.0  |
| 2002 10 30 | 645 | 0.0  | 0.0  | 2005 04 17 | 691 | 0.2+ | 0.7+ | 2007 11 02 | G96 | 0.5- | 0.2- |
| 2002 10 31 | 645 | 0.0  | 0.0  | 2005 04 17 | 691 | 0.3+ | 0.2+ | 2007 11 02 | G96 | 0.6- | 0.1+ |
| 2002 10 31 | 645 | 0.1- | 0.0  | 2007 10 07 | G96 | 0.1- | 0.3- | 2007 11 02 | G96 | 0.1- | 0.1+ |
| 2004 01 15 | 691 | 0.2- | 0.1+ | 2007 10 07 | G96 | 0.2+ | 0.3- | 2007 11 02 | G96 | 0.1- | 0.2- |
| 2004 01 15 | 691 | 0.1- | 0.1- | 2007 10 07 | G96 | 0.0  | 0.4- | 2007 11 02 | G96 | 0.2- | 0.2- |
| 2004 01 15 | 691 | 0.2+ | 0.0  | 2007 10 07 | G96 | 0.2+ | 0.3- | 2007 11 02 | G96 | 0.1- | 0.1+ |
| 2004 01 27 | 691 | 0.2- | 0.2+ | 2007 10 30 | G96 | 0.5- | 0.2+ | 2007 11 02 | G96 | 0.2- | 0.4- |
| 2004 01 27 | 691 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.4- | 0.3+ | 2007 11 02 | 291 | 0.3+ | 0.2+ |

2007 DEC. 24

M.P.O. 129945

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 27 | 691 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.5− | 0.2+ | 2007 11 02 | 291 | 0.6+ | 0.3+ |
| 2005 04 04 | G96 | 0.3− | 0.1+ | 2007 10 30 | G96 | 0.5− | 0.1+ | 2007 11 02 | 291 | 0.4+ | 0.3+ |
| 2005 04 04 | G96 | 0.2− | 0.1− | 2007 11 02 | 291 | 0.1− | 0.3+ |            |     |      |      |

**2007 UO<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 320.25827  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.22812288 | $\omega$ | 19.04978 | −0.04299057  | −0.96967883  |
| $a$ | 2.6527123  | $\Omega$ | 73.98692 | +0.88107025  | −0.15032300  |
| $e$ | 0.0669904  | $i$      | 14.49426 | +0.47102762  | +0.19268100  |
| $P$ | 4.32       | $H$      | 16.0     | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 22 | 691 | 0.1+ | 0.3+ | 2007 10 30 | 703 | 0.1− | 0.1+ | 2007 11 15 | 699 | 0.5+ | 0.6− |
| 2001 05 22 | 691 | 0.2+ | 0.2+ | 2007 10 30 | 703 | 0.1+ | 0.5+ | 2007 11 15 | 699 | 0.2− | 0.1− |
| 2001 05 22 | 691 | 0.0  | 0.2+ | 2007 10 30 | 703 | 0.2− | 1.1− | 2007 11 17 | 703 | 0.2− | 0.0  |
| 2005 04 13 | 703 | 0.1− | 0.1− | 2007 10 30 | 703 | 0.5− | 0.6+ | 2007 11 17 | 703 | 1.1− | 0.2+ |
| 2005 04 13 | 703 | 0.4− | 0.5+ | 2007 11 02 | G96 | 0.3− | 0.2− | 2007 11 17 | 703 | 0.5+ | 0.7+ |
| 2005 04 13 | 703 | 0.9− | 0.3+ | 2007 11 02 | G96 | 0.1+ | 0.3− | 2007 11 17 | 703 | 0.9− | 0.0  |
| 2005 04 13 | 703 | 0.1− | 0.0  | 2007 11 02 | G96 | 0.2− | 0.2− | 2007 12 04 | 704 | 0.5− | 1.2+ |
| 2005 05 15 | 644 | 0.4+ | 0.2− | 2007 11 02 | G96 | 0.0  | 0.5− | 2007 12 04 | 704 | 0.0  | 1.9+ |
| 2005 05 15 | 644 | 0.6+ | 0.3− | 2007 11 15 | 699 | 0.5+ | 0.3− | 2007 12 04 | 704 | 0.6+ | 1.5+ |
| 2005 05 15 | 644 | 0.7+ | 0.1− | 2007 11 15 | 699 | 0.4+ | 0.5− |            |     |      |      |

**2007 UU<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 103.68821  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.31684120 | $\omega$ | 55.32228  | +0.40962498 | +0.91190990 |
| $a$ | 2.1309583  | $\Omega$ | 238.87794 | −0.84625904 | +0.36959219 |
| $e$ | 0.0722050  | $i$      | 1.67710   | −0.34066554 | +0.17838709 |
| $P$ | 3.11       | $H$      | 18.0      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 12 19 | 691 | 0.1− | 0.2+ | 2007 10 07 | 691 | 0.2− | 0.1+ | 2007 11 02 | 291 | 0.0  | 0.1+ |
| 2001 12 19 | 691 | 0.2+ | 0.1− | 2007 10 19 | 691 | 0.3+ | 0.2− | 2007 11 02 | 291 | 0.3− | 0.1− |
| 2001 12 19 | 691 | 0.1− | 0.1+ | 2007 10 19 | 691 | 0.4− | 0.1− | 2007 11 11 | G96 | 0.0  | 0.2− |
| 2006 05 23 | G96 | 0.3+ | 0.2− | 2007 10 19 | 691 | 0.5− | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 2006 05 23 | G96 | 0.1− | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.0  | 2007 11 11 | G96 | 0.3+ | 0.1− |
| 2006 05 23 | G96 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.5− | 2007 11 11 | G96 | 0.6+ | 0.3− |
| 2006 05 23 | G96 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.0  | 0.2− | 2007 11 18 | 691 | 0.1− | 0.6− |
| 2007 10 07 | 691 | 0.3+ | 0.3+ | 2007 10 30 | G96 | 0.6+ | 0.3− | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2007 10 07 | 691 | 0.1+ | 0.5+ | 2007 11 02 | 291 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1+ | 0.1+ |

**2007 UX<sub>71</sub> = 2005 CV<sub>75</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 230.94005  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.25918324 | $\omega$ | 295.27447 | −0.96844333 | −0.24154678 |
| $a$ | 2.4363038  | $\Omega$ | 230.80912 | +0.24751705 | −0.90323246 |
| $e$ | 0.1594317  | $i$      | 4.54543   | +0.02920313 | −0.35471999 |
| $P$ | 3.80       | $H$      | 16.5      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 20 | 691 | 0.1−  | 0.3+  | 2005 02 09 | 704 | 0.1−  | 0.6−  | 2007 10 31 | 691 | 0.0  | 0.1− |
| 2003 09 20 | 691 | 0.0   | 0.1−  | 2005 02 09 | 704 | 0.5+  | 0.5+  | 2007 10 31 | 691 | 1.0− | 0.7− |
| 2003 09 20 | 691 | 0.1+  | 0.1−  | 2007 10 11 | G96 | 0.8+  | 0.1−  | 2007 11 02 | 691 | 0.1− | 0.4+ |
| 2005 01 15 | 699 | (2.0+ | 0.3−) | 2007 10 11 | G96 | 0.9+  | 0.2+  | 2007 11 02 | 691 | 0.1+ | 0.2+ |
| 2005 01 15 | 699 | 1.1−  | 0.2+  | 2007 10 11 | G96 | 0.9+  | 0.1−  | 2007 11 02 | 691 | 0.2+ | 0.1+ |
| 2005 01 15 | 699 | 0.0   | 0.6+  | 2007 10 11 | G96 | 0.5+  | 0.1−  | 2007 11 05 | 691 | 0.1− | 0.2− |
| 2005 01 15 | 699 | 0.3−  | 1.4−  | 2007 10 13 | 691 | 0.2+  | 0.1+  | 2007 11 05 | 691 | 0.3+ | 0.3+ |
| 2005 02 02 | 704 | 1.0−  | 0.4−  | 2007 10 13 | 691 | 0.1−  | 0.2+  | 2007 11 05 | 691 | 0.1− | 0.0  |
| 2005 02 02 | 704 | 0.7+  | 0.3+  | 2007 10 13 | 691 | (1.5+ | 2.3+) | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2005 02 02 | 704 | 0.1−  | 0.1−  | 2007 10 16 | 691 | 0.4−  | 0.3−  | 2007 11 07 | 691 | 0.0  | 0.1+ |
| 2005 02 09 | 704 | 0.7+  | 0.4+  | 2007 10 16 | 691 | (0.8+ | 2.4−) | 2007 11 07 | 691 | 0.1+ | 0.0  |
| 2005 02 09 | 704 | 0.9+  | 0.9+  | 2007 10 16 | 691 | (0.7+ | 5.2−) |            |     |      |      |
| 2005 02 09 | 704 | 0.2−  | 0.1−  | 2007 10 31 | 691 | 0.0   | 0.1−  |            |     |      |      |

**2007 UY<sub>71</sub> = 2004 XT<sub>152</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 5.19461    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.29430270 | $\omega$ | 43.06082  | +0.93892377 | −0.34386405 |
| $a$ | 2.2384113  | $\Omega$ | 337.04137 | +0.30566111 | +0.85123846 |
| $e$ | 0.0690217  | $i$      | 1.96928   | +0.15809314 | +0.39642224 |
| $P$ | 3.35       | $H$      | 17.7      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 09 | 691 | 0.1+ | 0.2+ | 2007 09 14 | G96 | 0.4+ | 0.3− | 2007 10 31 | 691 | 0.0  | 0.3+ |
| 2002 02 09 | 691 | 0.0  | 0.1+ | 2007 09 14 | G96 | 0.5+ | 0.7− | 2007 10 31 | 691 | 0.1+ | 0.1− |
| 2002 02 09 | 691 | 0.1+ | 0.3+ | 2007 09 14 | G96 | 0.4+ | 0.5− | 2007 11 02 | 691 | 0.2− | 0.0  |
| 2004 12 15 | 691 | 0.2+ | 0.2− | 2007 09 14 | G96 | 0.1− | 0.6− | 2007 11 02 | 691 | 0.2− | 0.3+ |
| 2004 12 15 | 691 | 0.1+ | 0.1− | 2007 10 04 | 691 | 0.4− | 0.0  | 2007 11 02 | 691 | 0.1− | 0.0  |
| 2004 12 15 | 691 | 0.4+ | 0.2− | 2007 10 04 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.1+ | 0.3+ |
| 2004 12 20 | 691 | 0.1+ | 0.0  | 2007 10 04 | 691 | 0.3− | 0.0  | 2007 11 05 | 691 | 0.1+ | 0.2+ |
| 2004 12 20 | 691 | 0.3+ | 0.0  | 2007 10 11 | G96 | 0.2+ | 0.2− | 2007 11 05 | 691 | 0.3− | 0.1+ |
| 2004 12 20 | 691 | 0.1+ | 0.1− | 2007 10 11 | G96 | 0.1− | 0.2− | 2007 11 07 | 691 | 0.2+ | 0.2− |
| 2004 12 21 | 291 | 0.3− | 0.3− | 2007 10 11 | G96 | 0.2+ | 0.2− | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2004 12 21 | 291 | 0.5− | 0.0  | 2007 10 11 | G96 | 0.3+ | 0.2− | 2007 11 07 | 691 | 0.2+ | 0.2+ |
| 2004 12 21 | 291 | 0.3− | 0.1+ | 2007 10 31 | 691 | 0.0  | 0.0  |            |     |      |      |

**2007 UX<sub>74</sub> = 2005 GJ<sub>135</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 142.48652  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18624073 | $\omega$ | 30.72646  | −0.33832561 | +0.93879033 |
| $a$ | 3.0368239  | $\Omega$ | 219.60158 | −0.88274203 | −0.34049996 |
| $e$ | 0.0771775  | $i$      | 5.84112   | −0.32604032 | −0.05227324 |
| $P$ | 5.29       | $H$      | 17.1      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 20 | 645 | 0.0   | 0.2+  | 2007 10 16 | 691 | 0.5+ | 0.1+ | 2007 11 02 | G96 | 0.7− | 0.7+ |
| 2001 09 20 | 645 | 0.0   | 0.1−  | 2007 10 16 | 691 | 0.1+ | 0.2− | 2007 11 02 | G96 | 0.6− | 0.8+ |
| 2005 04 10 | G96 | (1.5+ | 0.5+) | 2007 10 16 | 691 | 0.1+ | 0.6− | 2007 11 03 | G96 | 0.9− | 1.1+ |
| 2005 04 10 | G96 | 0.3+  | 0.3+  | 2007 10 16 | 691 | 0.9+ | 0.0  | 2007 11 03 | G96 | 0.4− | 0.2+ |
| 2005 04 10 | G96 | 0.4+  | 0.1+  | 2007 10 16 | 291 | 0.1+ | 0.3− | 2007 11 03 | G96 | 1.0− | 0.6+ |
| 2005 04 10 | G96 | 0.2+  | 0.2+  | 2007 10 16 | 291 | 0.9+ | 0.2− | 2007 11 03 | G96 | 0.5− | 0.3+ |
| 2005 04 14 | 691 | 0.3+  | 0.6+  | 2007 10 16 | 291 | 0.5+ | 0.3− | 2007 11 04 | G96 | 0.0  | 0.4+ |
| 2005 04 14 | 691 | 0.0   | 0.7+  | 2007 10 31 | G96 | 0.7− | 0.2+ | 2007 11 04 | G96 | 0.2− | 0.5+ |
| 2005 04 14 | 691 | 0.0   | 0.7+  | 2007 10 31 | G96 | 0.7− | 0.5+ | 2007 11 04 | G96 | 0.0  | 0.1− |
| 2005 05 14 | 644 | (1.9− | 0.4−) | 2007 10 31 | G96 | 0.8− | 0.7+ | 2007 11 04 | G96 | 0.7− | 0.2+ |
| 2005 05 14 | 644 | (2.0− | 0.4−) | 2007 10 31 | G96 | 0.2− | 0.2+ | 2007 11 04 | G96 | 0.8− | 0.6+ |
| 2005 05 14 | 644 | (1.9− | 0.6−) | 2007 10 31 | 291 | 0.9− | 0.9+ | 2007 11 04 | G96 | 0.4− | 0.3+ |
| 2007 10 04 | 691 | 0.2−  | 0.2+  | 2007 10 31 | 291 | 0.7− | 0.6+ | 2007 11 04 | G96 | 0.6− | 0.9+ |
| 2007 10 04 | 691 | 1.0+  | 0.9−  | 2007 10 31 | 291 | 0.8− | 0.8+ | 2007 11 04 | G96 | 0.6− | 0.1+ |
| 2007 10 04 | 691 | 0.3+  | 0.5+  | 2007 11 02 | G96 | 0.5− | 0.1+ | 2007 11 04 | G96 | 0.8− | 0.5+ |
| 2007 10 12 | 691 | 0.2+  | 0.3−  | 2007 11 02 | G96 | 0.6− | 0.4+ | 2007 11 04 | G96 | 0.4− | 0.4+ |
| 2007 10 12 | 691 | 0.1+  | 0.5−  | 2007 11 02 | G96 | 0.6− | 0.3+ | 2007 11 04 | G96 | 0.5− | 0.4+ |
| 2007 10 12 | 691 | 0.4+  | 0.4−  | 2007 11 02 | G96 | 0.5− | 0.6+ | 2007 11 04 | G96 | 0.6− | 0.6+ |
| 2007 10 16 | 691 | 0.5+  | 0.6−  | 2007 11 02 | G96 | 0.8− | 0.7+ |            |     |      |      |
| 2007 10 16 | 691 | 0.4+  | 0.2−  | 2007 11 02 | G96 | 0.7− | 0.6+ |            |     |      |      |

**2007 UQ<sub>76</sub> = 2000 BV<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 348.12929  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22698430 | $\omega$ | 137.02031 | +0.51829207 | −0.85488317 |
| $a$ | 2.6615757  | $\Omega$ | 281.74914 | +0.77800686 | +0.48269669 |
| $e$ | 0.0675933  | $i$      | 1.37022   | +0.35507556 | +0.19020691 |
| $P$ | 4.34       | $H$      | 17.2      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 26 | 691 | 0.3+ | 0.1+ | 2007 10 11 | 691 | 0.1+ | 0.1− | 2007 10 31 | G96 | 0.6+ | 0.2− |
| 2000 01 26 | 691 | 0.1− | 0.1+ | 2007 10 11 | 691 | 0.2+ | 0.1− | 2007 10 31 | G96 | 0.4+ | 0.0  |
| 2000 01 26 | 691 | 0.0  | 0.2+ | 2007 10 19 | 691 | 0.1− | 0.1− | 2007 11 02 | 691 | 0.4− | 0.1+ |
| 2000 02 01 | 691 | 0.3+ | 0.4+ | 2007 10 19 | 691 | 0.2− | 0.2+ | 2007 11 02 | 691 | 0.3− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-----|
| 2000 02 01 | 691 | 0.3+ | 0.7- | 2007 10 19 | 691 | 0.2- | 0.2- | 2007 11 02 | 691 | 0.3- | 0.0 |
| 2000 02 01 | 691 | 0.8- | 0.1- | 2007 10 31 | G96 | 0.1+ | 0.2- |            |     |      |     |
| 2007 10 11 | 691 | 0.2- | 0.8+ | 2007 10 31 | G96 | 0.3+ | 0.3- |            |     |      |     |

**2007 UX<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 50.43689   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.19277346 | $\omega$ | 301.03196 | +0.97731763 |      | +0.21021894 |   |
| <i>a</i> | 2.9678222  | $\Omega$ | 46.84649  | -0.18033902 |      | +0.88961444 |   |
| <i>e</i> | 0.0816467  | <i>i</i> | 2.01541   | -0.11103188 |      | +0.40545548 |   |
| <i>P</i> | 5.11       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 02 16 | 691 | 0.4+ | 0.1- | 2007 09 10 | G96 | 0.2+ | 0.0  | 2007 11 05 | 704 | 0.1+ | 0.5+ |
| 1994 02 16 | 691 | 0.0  | 0.5- | 2007 09 10 | G96 | 0.2+ | 0.3- | 2007 11 05 | 704 | 0.3- | 0.2+ |
| 1994 02 16 | 691 | 0.6- | 0.1- | 2007 09 10 | G96 | 0.4- | 0.4+ | 2007 11 05 | 704 | 0.2+ | 0.9+ |
| 2000 05 11 | 691 | 0.3- | 0.4- | 2007 09 10 | G96 | 0.1+ | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2000 05 11 | 691 | 0.1+ | 0.2- | 2007 10 18 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.6+ | 0.1- |
| 2000 05 11 | 691 | 0.1+ | 0.4- | 2007 10 18 | 691 | 0.3- | 0.1+ | 2007 11 05 | G96 | 0.5+ | 0.3- |
| 2000 06 02 | 691 | 0.1+ | 0.5- | 2007 10 18 | 691 | 0.2- | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.4- |
| 2000 06 02 | 691 | 0.5- | 0.1- | 2007 10 30 | G96 | 0.9+ | 0.3- | 2007 11 20 | G96 | 0.1- | 1.3- |
| 2000 06 02 | 691 | 0.3- | 0.2- | 2007 10 30 | G96 | 1.1+ | 0.2- | 2007 11 20 | G96 | 0.6+ | 0.6- |
| 2005 04 02 | G96 | 0.3- | 0.4+ | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 20 | G96 | 0.2+ | 0.5- |
| 2005 04 02 | G96 | 0.3- | 0.3+ | 2007 10 30 | G96 | 0.7+ | 0.3- | 2007 11 20 | G96 | 0.2- | 0.5- |
| 2005 04 02 | G96 | 0.5- | 0.2+ | 2007 11 03 | G96 | 0.3+ | 0.2- | 2007 12 06 | 691 | 0.8- | 0.3+ |
| 2005 04 02 | G96 | 0.1- | 0.4+ | 2007 11 03 | G96 | 0.7+ | 0.2+ | 2007 12 06 | 691 | 0.3+ | 0.6+ |
| 2005 04 17 | 691 | 0.4+ | 0.8+ | 2007 11 03 | G96 | 0.6+ | 0.2- | 2007 12 06 | 691 | 0.5- | 0.1+ |
| 2005 04 17 | 691 | 0.2+ | 0.4+ | 2007 11 03 | G96 | 0.1+ | 0.1- |            |     |      |      |
| 2005 04 17 | 691 | 0.6+ | 0.8+ | 2007 11 05 | 704 | 1.2- | 0.0  |            |     |      |      |

**2007 UE<sub>79</sub> = 1998 MC<sub>15</sub> = 2005 CS<sub>43</sub>**Id. Minor Planet Center (*MPO* 128572; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 209.80322  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.26189022 | $\omega$ | 28.53697  | -0.91561223 |      | +0.40206172 |   |
| <i>a</i> | 2.4194864  | $\Omega$ | 175.16996 | -0.37063504 |      | -0.84328413 |   |
| <i>e</i> | 0.1476677  | <i>i</i> | 0.53446   | -0.15583296 |      | -0.35667668 |   |
| <i>P</i> | 3.76       | <i>H</i> | 16.8      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 02 | 691 | 0.3-  | 0.0   | 2005 02 02 | 703 | 0.2- | 1.1+ | 2007 10 30 | G96 | 0.6+ | 0.2+ |
| 1995 10 02 | 691 | 0.0   | 0.2+  | 2005 02 02 | 703 | 1.3- | 0.3+ | 2007 10 30 | G96 | 0.4+ | 0.2- |
| 1995 10 02 | 691 | 0.6-  | 0.3+  | 2005 02 09 | 704 | 0.5+ | 0.6+ | 2007 10 30 | G96 | 0.0  | 0.3+ |
| 1998 06 20 | 691 | 0.4+  | 0.5+  | 2005 02 09 | 704 | 0.9- | 1.0+ | 2007 11 03 | G96 | 0.1+ | 0.4+ |
| 1998 06 20 | 691 | 0.3+  | 0.5+  | 2005 02 09 | 704 | 0.1- | 0.8+ | 2007 11 03 | G96 | 0.2+ | 0.2+ |
| 1998 06 26 | 691 | 0.1+  | 0.5+  | 2005 02 09 | 704 | 0.6- | 0.8+ | 2007 11 03 | G96 | 0.1+ | 0.2+ |
| 1998 06 26 | 691 | 0.0   | 0.3+  | 2005 03 08 | G96 | 0.0  | 0.1- | 2007 11 03 | G96 | 0.3+ | 0.3+ |
| 1998 06 26 | 691 | 0.1-  | 0.2+  | 2005 03 08 | G96 | 0.0  | 0.1- | 2007 11 04 | 691 | 0.4- | 0.1+ |
| 2000 12 06 | 691 | 0.0   | 0.1+  | 2005 03 08 | G96 | 0.0  | 0.2- | 2007 11 04 | 691 | 0.3- | 0.3+ |
| 2000 12 06 | 691 | 0.0   | 0.1+  | 2005 03 08 | G96 | 0.1- | 0.0  | 2007 11 04 | 691 | 0.2- | 0.1+ |
| 2000 12 06 | 691 | 0.2+  | 0.1+  | 2005 04 02 | G96 | 0.4+ | 0.2- | 2007 11 05 | G96 | 0.5+ | 0.2+ |
| 2003 10 16 | 691 | 0.2+  | 0.2+  | 2005 04 02 | G96 | 0.2+ | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.1- |
| 2003 10 16 | 691 | 0.5+  | 0.0   | 2005 04 02 | G96 | 0.2- | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2003 10 16 | 691 | 0.0   | 0.4+  | 2005 04 02 | G96 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.2+ | 0.1+ |
| 2005 01 17 | 691 | 0.6+  | 0.2+  | 2006 07 21 | G96 | 0.2- | 0.0  | 2007 11 14 | 704 | 0.4+ | 1.0+ |
| 2005 01 17 | 691 | 0.5+  | 0.2-  | 2006 07 21 | G96 | 0.0  | 0.2+ | 2007 11 14 | 704 | 0.2- | 0.1- |
| 2005 01 17 | 691 | 0.3+  | 0.2-  | 2006 07 21 | G96 | 0.1- | 0.0  | 2007 11 14 | 704 | 0.4- | 0.8+ |
| 2005 02 02 | 704 | 0.4-  | 1.0+  | 2006 07 21 | G96 | 0.0  | 0.1- | 2007 11 14 | 704 | 0.8- | 0.3- |
| 2005 02 02 | 704 | 1.0+  | 0.2+  | 2007 09 10 | G96 | 0.6+ | 0.3- | 2007 11 14 | 704 | 0.3- | 0.8+ |
| 2005 02 02 | 703 | 1.0-  | 1.0-  | 2007 09 10 | G96 | 0.5+ | 0.3+ | 2007 11 20 | G96 | 0.4+ | 0.1+ |
| 2005 02 02 | 703 | 0.7+  | 0.5-  | 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2005 02 02 | 704 | (1.6+ | 0.1+) | 2007 09 10 | G96 | 0.1+ | 0.2- | 2007 11 20 | G96 | 0.2- | 0.1+ |
| 2005 02 02 | 703 | 0.6-  | 0.4+  | 2007 10 16 | 691 | 0.5- | 0.6- | 2007 11 20 | G96 | 0.5+ | 0.1- |
| 2005 02 02 | 703 | 1.0-  | 0.2+  | 2007 10 16 | 691 | 0.4+ | 0.8- | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2005 02 02 | 703 | 0.1-  | 0.5+  | 2007 10 16 | 691 | 0.2- | 0.1+ | 2007 12 05 | 691 | 0.1+ | 0.3+ |
| 2005 02 02 | 703 | 0.6-  | 0.4+  | 2007 10 30 | G96 | 0.0  | 0.3+ | 2007 12 05 | 691 | 0.4- | 0.5+ |

**2007 UH<sub>79</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 8.82142    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.20946877 | $\omega$ | 267.69193 | +0.86098241 |      | -0.50402918 |   |
| <i>a</i> | 2.8079532  | $\Omega$ | 122.56759 | +0.49292006 |      | +0.79370946 |   |
| <i>e</i> | 0.1030619  | <i>i</i> | 4.64805   | +0.12545563 |      | +0.34055818 |   |
| <i>P</i> | 4.71       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 01 | 699 | 0.9- | 1.0+ | 2005 04 02 | 691 | 0.1+ | 0.5+ | 2007 11 03 | G96 | 0.1- | 0.1- |
| 2002 10 01 | 699 | 0.2+ | 0.3+ | 2005 04 02 | 691 | 0.2+ | 0.4+ | 2007 11 07 | 703 | 0.4- | 0.2- |
| 2002 10 01 | 699 | 0.1- | 0.4+ | 2007 10 10 | G96 | 0.2- | 0.7- | 2007 11 07 | 703 | 0.0  | 0.2- |
| 2002 10 01 | 699 | 0.1- | 0.7+ | 2007 10 10 | G96 | 0.2- | 0.4- | 2007 11 07 | 703 | 0.2- | 0.1+ |
| 2004 01 16 | 691 | 0.0  | 0.0  | 2007 10 10 | G96 | 0.2- | 0.6- | 2007 11 07 | 703 | 0.6- | 0.8- |
| 2004 01 16 | 691 | 0.2+ | 0.1+ | 2007 10 10 | G96 | 0.3- | 0.6- | 2007 11 12 | 704 | 0.9+ | 0.6+ |
| 2004 01 16 | 691 | 0.1+ | 0.1- | 2007 10 30 | 703 | 0.4+ | 0.5- | 2007 11 12 | 704 | 0.1- | 0.8- |
| 2004 02 11 | 691 | 0.2- | 0.4+ | 2007 10 30 | 703 | 0.3+ | 1.1+ | 2007 11 12 | 704 | 0.2+ | 0.4- |
| 2004 02 11 | 691 | 0.1- | 0.2+ | 2007 10 30 | 703 | 0.1- | 0.4- | 2007 11 12 | 704 | 0.5+ | 0.8+ |
| 2004 02 11 | 691 | 0.3+ | 0.6+ | 2007 10 30 | 703 | 0.2+ | 0.4+ | 2007 11 18 | 703 | 0.3+ | 0.9+ |
| 2004 02 17 | 645 | 0.1- | 0.3- | 2007 11 03 | G96 | 0.2- | 0.1- | 2007 11 18 | 703 | 1.0- | 0.2+ |
| 2004 02 17 | 645 | 0.1- | 0.2- | 2007 11 03 | G96 | 0.1- | 0.3- | 2007 11 18 | 703 | 0.5+ | 0.2+ |
| 2005 04 02 | 691 | 0.3+ | 0.7+ | 2007 11 03 | G96 | 0.0  | 0.2- | 2007 11 18 | 703 | 0.4+ | 1.4+ |

**2007 UR<sub>80</sub> = 2002 RY<sub>221</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 94.38080   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.21618335 | $\omega$ | 253.39803 | +0.31712288 |      | +0.94678000 |   |
| <i>a</i> | 2.7495052  | $\Omega$ | 35.24394  | -0.82963368 |      | +0.30511656 |   |
| <i>e</i> | 0.1390737  | <i>i</i> | 5.48344   | -0.45950086 |      | +0.10252565 |   |
| <i>P</i> | 4.56       | <i>H</i> | 15.9      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 15 | 644 | 0.4+ | 0.2- | 2007 10 12 | 691 | 1.2- | 0.7- | 2007 10 31 | G96 | 0.8+ | 0.1+ |
| 2002 09 15 | 644 | 0.2+ | 0.2+ | 2007 10 12 | 691 | 0.1+ | 0.4+ | 2007 11 03 | G96 | 0.4+ | 0.0  |
| 2002 09 15 | 644 | 0.0  | 0.1- | 2007 10 12 | 691 | 0.2+ | 0.3- | 2007 11 03 | G96 | 0.2+ | 0.2- |
| 2002 09 16 | 644 | 0.3- | 0.2+ | 2007 10 16 | 691 | 0.1- | 0.3+ | 2007 11 03 | G96 | 0.5+ | 0.1- |
| 2002 09 16 | 644 | 0.2- | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.0  | 2007 11 03 | G96 | 0.3+ | 0.3- |
| 2002 09 16 | 644 | 0.1- | 0.1+ | 2007 10 16 | 691 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.2+ | 0.0  |
| 2005 02 09 | 691 | 0.1+ | 0.1+ | 2007 10 23 | 291 | 0.7- | 0.0  | 2007 11 03 | G96 | 0.6+ | 0.0  |
| 2005 02 09 | 691 | 0.2- | 0.0  | 2007 10 23 | 291 | 0.0  | 0.9+ | 2007 11 03 | G96 | 0.5+ | 0.0  |
| 2005 02 09 | 691 | 0.0  | 0.1- | 2007 10 23 | 291 | 0.2- | 0.4- | 2007 11 03 | G96 | 0.2+ | 0.0  |
| 2007 10 06 | 691 | 0.1+ | 0.2+ | 2007 10 31 | G96 | 0.5+ | 0.0  | 2007 11 03 | 291 | 0.0  | 0.1+ |
| 2007 10 06 | 691 | 0.0  | 0.2- | 2007 10 31 | G96 | 0.5+ | 0.0  | 2007 11 03 | 291 | 0.6- | 0.7+ |
| 2007 10 06 | 691 | 0.5+ | 0.4- | 2007 10 31 | G96 | 0.3+ | 0.2+ | 2007 11 03 | 291 | 0.5+ | 0.5- |

**2007 UB<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 89.75939   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.15617554 | $\omega$ | 249.38849 | +0.25067972 |      | +0.96205383 |   |
| <i>a</i> | 3.4150261  | $\Omega$ | 35.68611  | -0.80512892 |      | +0.26899755 |   |
| <i>e</i> | 0.0803417  | <i>i</i> | 10.64522  | -0.53751940 |      | +0.04574658 |   |
| <i>P</i> | 6.31       | <i>H</i> | 15.4      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 18 | 691 | 0.1+ | 0.4- | 2007 10 09 | G96 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.8- | 0.1- |
| 2001 10 18 | 691 | 0.8- | 0.0  | 2007 10 09 | G96 | 0.3+ | 0.1+ | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 2001 10 18 | 691 | 1.1- | 0.6+ | 2007 10 19 | G96 | 0.6+ | 0.0  | 2007 11 07 | 691 | 0.3+ | 0.2+ |
| 2001 10 23 | 291 | 0.5+ | 0.5+ | 2007 10 19 | G96 | 0.4+ | 0.1- | 2007 11 07 | 691 | 0.1+ | 0.1- |
| 2001 10 23 | 291 | 0.4+ | 0.2- | 2007 10 19 | G96 | 0.3- | 0.2- | 2007 11 09 | 691 | 0.2+ | 0.1+ |
| 2001 10 23 | 291 | 0.6+ | 0.1- | 2007 10 19 | G96 | 0.1+ | 0.1- | 2007 11 09 | 691 | 0.4+ | 0.1- |



2007 DEC. 24

M.P.O. 129947

**2007 UA<sub>82</sub> = 1999 SP**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 131.51899  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25133276 | $\omega$ | 67.25271  | -0.38814528   | +0.92159819 |
| <i>a</i> | 2.4867759  | $\Omega$ | 179.90761 | -0.88030333   | -0.37069720 |
| <i>e</i> | 0.0922520  | <i>i</i> | 6.21838   | -0.27278066   | -0.11506681 |
| <i>P</i> | 3.92       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 16 | 691 | 0.4- | 0.3+ | 2003 10 19 | 691 | 0.1+ | 0.3+ | 2007 09 12 | G96 | 0.8+ | 0.1+ |
| 1999 09 16 | 691 | 0.8- | 0.2- | 2003 11 20 | 645 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.5+ | 0.1- |
| 1999 09 16 | 691 | 0.4- | 0.0  | 2003 11 20 | 645 | 0.0  | 0.0  | 2007 09 12 | G96 | 0.8+ | 0.2- |
| 1999 09 18 | 691 | 0.5+ | 0.5- | 2006 05 19 | 644 | 0.1- | 0.0  | 2007 10 08 | G96 | 0.2- | 0.1- |
| 1999 09 18 | 691 | 0.4+ | 0.7- | 2006 05 19 | 644 | 0.4- | 0.3+ | 2007 10 08 | G96 | 0.1- | 0.2- |
| 1999 09 18 | 691 | 0.4+ | 0.5- | 2006 05 19 | 644 | 0.4- | 0.2- | 2007 10 08 | G96 | 0.0  | 0.3- |
| 2002 05 21 | 291 | 0.1- | 0.3+ | 2006 06 15 | 691 | 0.1- | 0.1- | 2007 10 08 | G96 | 0.0  | 0.1- |
| 2002 05 21 | 291 | 0.2+ | 0.1+ | 2006 06 15 | 691 | 0.3+ | 0.2+ | 2007 10 30 | 691 | 0.6- | 0.1+ |
| 2002 05 21 | 291 | 0.3+ | 0.2+ | 2006 06 15 | 691 | 0.3+ | 0.0  | 2007 10 30 | 691 | 0.5- | 0.0  |
| 2003 09 30 | 691 | 0.5+ | 0.2+ | 2007 09 12 | G96 | 0.2+ | 0.3+ | 2007 10 30 | 691 | 0.4- | 0.2+ |
| 2003 09 30 | 691 | 0.4+ | 0.1+ | 2007 09 12 | G96 | 0.2+ | 0.1+ | 2007 11 03 | 691 | 0.7- | 0.3- |
| 2003 09 30 | 691 | 0.1- | 0.2+ | 2007 09 12 | G96 | 0.3+ | 0.1- | 2007 11 03 | 691 | 0.5- | 0.9+ |
| 2003 10 19 | 691 | 0.3- | 0.0  | 2007 09 12 | G96 | 0.2- | 0.2+ | 2007 11 03 | 691 | 0.6- | 0.5+ |
| 2003 10 19 | 691 | 0.1+ | 0.4+ | 2007 09 12 | G96 | 0.7+ | 0.1- |            |     |      |      |

**2007 UB<sub>82</sub> = 2007 UZ<sub>80</sub>**Id. Minor Planet Center (d, *MPO* 129053)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 43.73588   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23883834 | $\omega$ | 105.23157 | +0.90172911   | +0.43138121 |
| <i>a</i> | 2.5727644  | $\Omega$ | 229.22195 | -0.40954671   | +0.83156677 |
| <i>e</i> | 0.2076837  | <i>i</i> | 2.13370   | -0.13840559   | +0.34986707 |
| <i>P</i> | 4.13       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 06 | 291 | 0.0  | 0.4+ | 2007 10 16 | 691 | 0.2+ | 0.1+ | 2007 11 03 | G96 | 0.9+ | 0.0  |
| 2002 06 06 | 291 | 0.1+ | 0.2+ | 2007 10 16 | 691 | 1.1- | 0.8+ | 2007 11 03 | G96 | 0.8+ | 0.1- |
| 2002 06 06 | 291 | 0.0  | 0.0  | 2007 10 21 | 691 | 0.1+ | 0.1- | 2007 11 03 | G96 | 0.5+ | 0.1- |
| 2003 11 30 | 691 | 0.2- | 0.7+ | 2007 10 21 | 691 | 0.1+ | 0.3+ | 2007 11 03 | G96 | 0.4+ | 0.0  |
| 2003 11 30 | 691 | 0.0  | 0.3+ | 2007 10 21 | 691 | 0.5- | 0.0  | 2007 11 03 | 291 | 0.2- | 0.0  |
| 2003 11 30 | 691 | 0.1- | 0.4+ | 2007 10 30 | 691 | 0.3- | 0.2+ | 2007 11 03 | 291 | 0.0  | 0.0  |
| 2006 05 04 | 691 | 0.8+ | 0.5+ | 2007 10 30 | 691 | 0.0  | 0.2- | 2007 11 03 | 291 | 0.2- | 0.2+ |
| 2006 05 04 | 691 | 0.2- | 0.3+ | 2007 10 30 | 691 | 0.1- | 0.3- | 2007 11 04 | G96 | 0.1+ | 0.2- |
| 2006 05 04 | 691 | 0.2- | 0.8+ | 2007 10 31 | G96 | 1.0+ | 0.4+ | 2007 11 04 | G96 | 0.6+ | 0.1- |
| 2007 10 08 | 691 | 0.3- | 0.0  | 2007 10 31 | G96 | 0.5+ | 0.3+ | 2007 11 04 | G96 | 0.5+ | 0.1- |
| 2007 10 08 | 691 | 0.0  | 0.1- | 2007 11 03 | G96 | 0.9+ | 0.2+ | 2007 11 04 | G96 | 0.5+ | 0.1- |
| 2007 10 08 | 691 | 0.2- | 0.1+ | 2007 11 03 | G96 | 0.9+ | 0.3- |            |     |      |      |
| 2007 10 16 | 691 | 0.1+ | 0.3- | 2007 11 03 | G96 | 0.7+ | 0.1- |            |     |      |      |

**2007 UL<sub>82</sub> = 2007 TW<sub>414</sub>**Id. Minor Planet Center (d, *MPO* 129053)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 72.88182   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26103492 | $\omega$ | 337.42698 | +0.62784643   | +0.77830935 |
| <i>a</i> | 2.4247686  | $\Omega$ | 331.46315 | -0.71198780   | +0.57088464 |
| <i>e</i> | 0.1842673  | <i>i</i> | 0.79033   | -0.31445546   | +0.26139106 |
| <i>P</i> | 3.78       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 09 03 | 691 | 0.2+  | 0.0   | 2006 06 01 | G96 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.4- | 0.1- |
| 1999 09 03 | 691 | 0.1+  | 0.3-  | 2006 06 01 | G96 | 0.0  | 0.0  | 2007 11 04 | G96 | 0.3+ | 0.2+ |
| 1999 09 03 | 691 | 0.1-  | 0.2-  | 2006 06 01 | G96 | 0.0  | 0.2+ | 2007 11 04 | G96 | 0.4- | 0.0  |
| 2003 09 19 | 699 | (0.6+ | 1.8-) | 2007 10 08 | 621 | 0.4+ | 0.5- | 2007 11 04 | G96 | 0.7+ | 0.0  |
| 2003 09 19 | 699 | (1.7- | 0.5+) | 2007 10 08 | 621 | 1.4+ | 0.7+ | 2007 11 04 | G96 | 0.6+ | 0.8- |
| 2003 09 19 | 699 | (1.8- | 0.7+) | 2007 10 08 | 621 | 0.0  | 0.3- | 2007 11 04 | G96 | 0.3+ | 0.4- |
| 2003 09 19 | 699 | 0.3-  | 0.6+  | 2007 10 14 | 621 | 1.1+ | 0.3+ | 2007 11 04 | G96 | 0.5+ | 0.2- |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 21 | 691 | 0.1- | 0.1+ | 2007 10 14 | 621 | 0.3+ | 0.3- | 2007 11 04 | G96 | 0.1+  | 0.2-  |
| 2003 09 21 | 691 | 0.5- | 0.2+ | 2007 10 14 | 621 | 0.0  | 0.4+ | 2007 11 04 | G96 | 0.6+  | 0.1-  |
| 2003 09 21 | 691 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.5- | 0.0  | 2007 11 18 | G96 | 0.4-  | 0.3-  |
| 2003 10 19 | 691 | 0.0  | 0.2+ | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.3-  | 0.6-  |
| 2003 10 19 | 691 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.2+ | 0.4+ | 2007 11 18 | G96 | 0.5-  | 0.0   |
| 2003 10 19 | 691 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.5- | 2007 11 18 | G96 | 0.1+  | 0.2+  |
| 2006 05 02 | G96 | 0.2- | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.2+ | 2007 12 15 | G96 | (1.1+ | 1.6-) |
| 2006 05 02 | G96 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.6+ | 0.1- | 2007 12 15 | G96 | (1.0+ | 1.8-) |
| 2006 05 02 | G96 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 12 15 | G96 | 0.5-  | 0.9+  |
| 2006 05 02 | G96 | 0.5+ | 0.6+ | 2007 11 03 | 691 | 0.3- | 0.1- | 2007 12 15 | G96 | 0.0   | 0.4-  |
| 2006 06 01 | G96 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.4- | 0.0  |            |     |       |       |

**2007 UX<sub>82</sub> = 2002 GG<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 155.15840  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27284059 | $\omega$ | 15.94693  | -0.42451254   | +0.90503529 |
| <i>a</i> | 2.3543087  | $\Omega$ | 228.94134 | -0.83449671   | -0.40243088 |
| <i>e</i> | 0.1425136  | <i>i</i> | 2.01113   | -0.35128955   | -0.13769718 |
| <i>P</i> | 3.61       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 12 | 704 | 0.2+ | 0.9- | 2007 10 30 | 691 | 0.1- | 0.4+ | 2007 11 05 | G96 | 0.1- | 0.2- |
| 2002 04 12 | 704 | 0.3+ | 0.1+ | 2007 10 30 | 691 | 0.3- | 0.2- | 2007 11 05 | G96 | 0.3+ | 0.6- |
| 2002 04 12 | 704 | 0.5- | 0.1- | 2007 11 03 | G96 | 0.3+ | 0.3- | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2002 04 12 | 704 | 0.5+ | 0.4+ | 2007 11 03 | G96 | 0.1+ | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.2- |
| 2002 04 15 | 644 | 0.4- | 0.2+ | 2007 11 03 | G96 | 0.3+ | 0.2- | 2007 11 05 | G96 | 0.6+ | 0.3- |
| 2002 04 15 | 644 | 0.1- | 0.4+ | 2007 11 03 | G96 | 0.2- | 0.3+ | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2002 04 15 | 644 | 0.1- | 0.3- | 2007 11 04 | 691 | 0.2- | 0.3+ | 2007 11 20 | G96 | 1.2+ | 0.4+ |
| 2003 09 18 | 291 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.2- | 0.1- | 2007 11 20 | G96 | 0.8+ | 0.0  |
| 2003 09 18 | 291 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.1- | 0.4- | 2007 11 20 | G96 | 0.0  | 0.1- |
| 2003 09 18 | 291 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.5+ | 0.1- | 2007 11 20 | G96 | 0.3- | 0.0  |
| 2007 10 30 | 691 | 0.2- | 0.4+ | 2007 11 05 | G96 | 0.0  | 0.1- |            |     |      |      |

**2007 UY<sub>82</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.44449  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18466795 | $\omega$ | 39.04008 | +0.17226068   | -0.98491462 |
| <i>a</i> | 3.0540422  | $\Omega$ | 41.04816 | +0.89738893   | +0.15003696 |
| <i>e</i> | 0.1786293  | <i>i</i> | 1.43231  | +0.40622576   | +0.08620959 |
| <i>P</i> | 5.34       | <i>H</i> | 16.5     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 11 11 | 691 | 0.1+ | 0.6- | 2007 10 30 | 691 | 0.3-  | 0.2+  | 2007 11 11 | G96 | 0.1+  | 0.0   |
| 1991 11 11 | 691 | 0.0  | 0.3- | 2007 10 30 | G96 | 0.2+  | 0.2-  | 2007 11 11 | G96 | 0.4+  | 0.2-  |
| 1991 11 11 | 691 | 0.1+ | 0.3+ | 2007 10 30 | G96 | 0.4+  | 0.2-  | 2007 11 14 | 691 | 0.2-  | 0.0   |
| 2001 09 19 | 291 | 0.3- | 0.4+ | 2007 10 30 | G96 | 0.1-  | 0.2-  | 2007 11 14 | 691 | 0.1-  | 0.0   |
| 2001 09 19 | 291 | 0.5- | 0.2- | 2007 10 30 | G96 | 0.5+  | 0.2-  | 2007 11 14 | 691 | 0.0   | 0.1-  |
| 2001 09 19 | 291 | 0.8+ | 0.1- | 2007 11 02 | D29 | 0.1+  | 0.2-  | 2007 11 15 | 704 | 0.0   | 0.8+  |
| 2007 09 10 | G96 | 0.3- | 0.2- | 2007 11 02 | D29 | 0.8+  | 0.1-  | 2007 11 15 | 704 | (1.6- | 0.1-) |
| 2007 09 10 | G96 | 0.3+ | 0.3- | 2007 11 02 | D29 | 0.1-  | 0.1-  | 2007 11 15 | 704 | 1.3+  | 1.0+  |
| 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 11 02 | D29 | 0.5+  | 0.3+  | 2007 11 15 | 704 | 1.0-  | 0.9+  |
| 2007 09 10 | G96 | 0.3+ | 0.4- | 2007 11 03 | 691 | 0.2-  | 0.0   | 2007 11 18 | 691 | 0.2-  | 0.0   |
| 2007 09 18 | G96 | 0.3+ | 0.1- | 2007 11 03 | 691 | 0.2-  | 0.2+  | 2007 11 18 | 691 | 0.1-  | 0.0   |
| 2007 09 18 | G96 | 0.2+ | 0.7- | 2007 11 03 | 691 | 0.0   | 0.2+  | 2007 11 18 | 691 | 0.4-  | 0.1-  |
| 2007 09 18 | G96 | 0.3+ | 0.6- | 2007 11 07 | 704 | (0.3- | 1.5+) | 2007 12 05 | 691 | 0.4-  | 0.2+  |
| 2007 09 18 | G96 | 0.3- | 0.4- | 2007 11 07 | 704 | 1.2-  | 1.1+  | 2007 12 05 | 691 | 0.2-  | 0.4+  |
| 2007 10 06 | 691 | 0.1+ | 0.5- | 2007 11 07 | 704 | 0.5+  | 1.2+  | 2007 12 05 | 691 | 0.9+  | 0.8-  |
| 2007 10 06 | 691 | 0.1- | 0.2- | 2007 11 07 | 704 | 0.7+  | 1.0+  | 2007 12 15 | G96 | 0.3+  | 0.3+  |
| 2007 10 06 | 691 | 0.1+ | 0.1- | 2007 11 07 | 704 | (0.6+ | 1.6+) | 2007 12 15 | G96 | 0.7+  | 0.2-  |
| 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 11 11 | G96 | 0.4+  | 0.2-  | 2007 12 15 | G96 | 0.1-  | 0.2-  |
| 2007 10 30 | 691 | 0.1- | 0.4+ | 2007 11 11 | G96 | 0.7+  | 0.1-  | 2007 12 15 | G96 | 0.2+  | 0.1-  |

**2007 UA<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 242.57708  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22931735 | $\omega$ | 311.06394 | -0.98027303   | -0.12503950 |
| <i>a</i> | 2.6434926  | $\Omega$ | 222.42008 | +0.15885050   | -0.95924237 |
| <i>e</i> | 0.1042805  | <i>i</i> | 13.11554  | -0.11760658   | -0.25341506 |
| <i>P</i> | 4.30       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 04 14 | 703 | 0.1+  | 1.2+  | 2005 06 13 | G96 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.0   | 0.1+  |
| 2005 04 14 | 703 | 1.2+  | 0.1+  | 2005 06 13 | G96 | 0.2+ | 0.2+ | 2007 11 03 | 691 | 0.1+  | 0.1-  |
| 2005 04 14 | 703 | 0.8+  | 0.1-  | 2005 06 13 | G96 | 0.3+ | 0.0  | 2007 11 03 | 691 | 0.1-  | 0.0   |
| 2005 04 14 | 703 | 0.3+  | 0.3-  | 2007 10 07 | G96 | 0.3- | 0.4- | 2007 11 03 | 691 | 0.1-  | 0.1-  |
| 2005 05 01 | 644 | 0.8+  | 0.5+  | 2007 10 07 | G96 | 0.6+ | 0.3- | 2007 11 05 | G96 | 0.7+  | 0.5-  |
| 2005 05 01 | 644 | 0.9+  | 0.5+  | 2007 10 07 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.6+  | 0.5-  |
| 2005 05 01 | 644 | 0.8+  | 0.7+  | 2007 10 07 | G96 | 0.1- | 0.6- | 2007 11 05 | G96 | 0.3+  | 0.4-  |
| 2005 05 06 | 703 | 0.1+  | 0.2+  | 2007 10 18 | 691 | 0.5- | 0.9+ | 2007 11 05 | G96 | 0.2+  | 0.4-  |
| 2005 05 06 | 703 | 0.7-  | 1.1-  | 2007 10 18 | 691 | 0.2+ | 0.3- | 2007 11 14 | 704 | 0.3+  | 0.0   |
| 2005 05 06 | 703 | 0.8+  | 1.6-  | 2007 10 18 | 691 | 0.1- | 0.1- | 2007 11 14 | 704 | 0.5+  | 0.1-  |
| 2005 05 06 | 703 | (6.2- | 0.8-) | 2007 10 30 | 691 | 0.2- | 0.2- | 2007 11 14 | 704 | 0.0   | 1.1+  |
| 2005 06 13 | G96 | 0.6+  | 0.3+  | 2007 10 30 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | (1.5- | 0.3-) |

**2007 UN<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 203.13485  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26625550 | $\omega$ | 342.86841 | -0.86484097   | +0.49871363 |
| <i>a</i> | 2.3929686  | $\Omega$ | 227.19042 | -0.45090319   | -0.82216486 |
| <i>e</i> | 0.1485635  | <i>i</i> | 4.51480   | -0.22076325   | -0.27446247 |
| <i>P</i> | 3.70       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 28 | 691 | (0.9- | 4.0-) | 2003 10 16 | 691 | 0.3- | 0.1+ | 2007 11 03 | 691 | 0.2+ | 0.2- |
| 1995 08 28 | 691 | 0.1+  | 0.0   | 2003 10 21 | 644 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.7+ |
| 1995 08 28 | 691 | 0.1-  | 0.4+  | 2003 10 21 | 644 | 0.1- | 0.2+ | 2007 11 15 | 704 | 1.2- | 0.7- |
| 1995 09 02 | 691 | 0.3-  | 0.5+  | 2003 10 21 | 644 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 0.7+ | 0.4+ |
| 1995 09 02 | 691 | 0.5+  | 0.5+  | 2005 02 02 | 703 | 0.2+ | 0.2- | 2007 11 15 | 704 | 0.1- | 0.5+ |
| 1995 09 02 | 691 | 0.1+  | 0.4+  | 2005 02 02 | 703 | 0.3+ | 0.2+ | 2007 11 15 | 704 | 0.3+ | 0.0  |
| 1999 10 13 | 645 | 0.2+  | 0.2+  | 2005 02 02 | 703 | 0.5- | 1.1- | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 1999 10 13 | 645 | 0.2+  | 0.3+  | 2005 02 02 | 703 | 0.7+ | 0.2- | 2007 11 18 | 691 | 0.3- | 0.2- |
| 1999 10 16 | 645 | 0.0   | 0.0   | 2007 10 07 | 691 | 0.3- | 0.3- | 2007 11 18 | 691 | 0.5- | 0.4- |
| 1999 10 16 | 645 | 0.0   | 0.1+  | 2007 10 07 | 691 | 0.4+ | 0.3- | 2007 12 05 | 691 | 0.1+ | 0.2+ |
| 2003 09 28 | 691 | 0.1+  | 0.0   | 2007 10 07 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.2+ | 0.1- |
| 2003 09 28 | 691 | 0.1+  | 0.1+  | 2007 10 30 | 691 | 0.1- | 0.4- | 2007 12 05 | 691 | 0.0  | 0.3+ |
| 2003 09 28 | 691 | 0.2-  | 0.1-  | 2007 10 30 | 691 | 0.4- | 0.0  | 2007 12 05 | 704 | 0.6+ | 0.3- |
| 2003 10 16 | 691 | 0.2-  | 0.1+  | 2007 10 30 | 691 | 0.2+ | 0.0  | 2007 12 05 | 704 | 0.1+ | 1.2- |
| 2003 10 16 | 691 | 0.3-  | 0.2-  | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.2+ | 2.0- |

**2007 UR<sub>83</sub> = 2005 JS<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.98371  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18686616 | $\omega$ | 234.12550 | +0.23311620   | +0.96085698 |
| <i>a</i> | 3.0300440  | $\Omega$ | 50.06067  | -0.81738480   | +0.27700649 |
| <i>e</i> | 0.0690246  | <i>i</i> | 11.25926  | -0.52681964   | -0.00461176 |
| <i>P</i> | 5.27       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 17 | 645 | 0.0  | 0.0  | 2007 10 08 | 691 | 0.2- | 0.1- | 2007 11 11 | G96 | 0.1+ | 0.2- |
| 2004 03 17 | 645 | 0.0  | 0.0  | 2007 10 08 | 691 | 0.1- | 0.0  | 2007 11 11 | G96 | 0.6+ | 0.4- |
| 2005 05 07 | G96 | 0.2+ | 0.2+ | 2007 10 16 | 691 | 0.2+ | 0.2- | 2007 11 11 | G96 | 0.5+ | 0.3- |
| 2005 05 07 | G96 | 0.3+ | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.4- |
| 2005 05 07 | G96 | 0.4+ | 0.5+ | 2007 10 16 | 691 | 0.1- | 0.5+ | 2007 11 14 | 691 | 0.1+ | 0.2+ |
| 2005 05 07 | G96 | 0.2+ | 0.1+ | 2007 10 30 | 691 | 0.5+ | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.2- |
| 2005 05 13 | G96 | 0.0  | 0.3+ | 2007 10 30 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.2- | 0.4- |
| 2005 05 13 | G96 | 0.0  | 0.4+ | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.1- | 0.5- |
| 2005 05 13 | G96 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.2- | 0.6+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 13 | G96 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.7- | 0.3+ |
| 2007 10 08 | 691 | 0.1- | 0.2+ | 2007 11 03 | 691 | 0.4+ | 0.2- |            |     |      |      |

**2007 UT<sub>83</sub> = 2006 KZ<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.29168   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23082876 | $\omega$ | 114.91440 | +0.84168925   | +0.53982313 |
| <i>a</i> | 2.6319407  | $\Omega$ | 212.41802 | -0.50328773   | +0.77609695 |
| <i>e</i> | 0.2136703  | <i>i</i> | 1.30997   | -0.19560336   | +0.32598239 |
| <i>P</i> | 4.27       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 02 | 695 | 0.2+ | 0.2+ | 2006 05 20 | 691 | 0.1- | 0.3+ | 2007 11 14 | G96 | 0.2+ | 0.2- |
| 2006 05 02 | 695 | 0.5+ | 0.1+ | 2006 05 20 | 691 | 0.2+ | 0.0  | 2007 11 14 | G96 | 0.4+ | 0.0  |
| 2006 05 19 | G96 | 0.3+ | 0.1- | 2006 05 20 | 691 | 0.5- | 0.1- | 2007 11 14 | G96 | 0.2+ | 0.1+ |
| 2006 05 19 | G96 | 0.2+ | 0.1+ | 2007 10 30 | 691 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.5- | 0.4+ |
| 2006 05 19 | G96 | 0.1+ | 0.1- | 2007 10 30 | 691 | 0.1+ | 0.2- | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2006 05 19 | G96 | 0.4+ | 0.2+ | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.3- | 0.2+ |
| 2006 05 19 | G96 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.1+ | 0.4- | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2006 05 19 | G96 | 0.2- | 0.3- | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 12 05 | 691 | 0.0  | 0.1+ |
| 2006 05 19 | G96 | 0.2+ | 0.4+ | 2007 11 03 | 691 | 0.2+ | 0.1- | 2007 12 05 | 691 | 0.4+ | 0.1- |
| 2006 05 19 | G96 | 0.4+ | 0.4+ | 2007 11 14 | G96 | 0.4+ | 0.0  |            |     |      |      |

**2007 UC<sub>84</sub> = 2001 UV<sub>190</sub> = 2005 GN<sub>146</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 104.33155  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17867583 | $\omega$ | 59.00704  | +0.30643936   | +0.95129915 |
| <i>a</i> | 3.1219469  | $\Omega$ | 228.87629 | -0.88782159   | +0.27292868 |
| <i>e</i> | 0.1730756  | <i>i</i> | 2.55182   | -0.34331871   | +0.14331735 |
| <i>P</i> | 5.52       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 09 02 | 691 | 0.1-  | 0.5+  | 2005 04 15 | 691 | 0.1+  | 0.4+  | 2007 11 03 | 691 | 0.5- | 0.1- |
| 1995 09 02 | 691 | 0.1-  | 0.7+  | 2005 04 15 | 691 | 0.1+  | 0.6+  | 2007 11 03 | 691 | 0.1+ | 0.2+ |
| 1995 09 02 | 691 | 0.8-  | 0.3-  | 2005 04 15 | 691 | 0.2+  | 0.3+  | 2007 11 03 | 691 | 0.2- | 0.2+ |
| 2001 10 18 | 291 | 0.2+  | 0.1+  | 2005 04 17 | 691 | 0.3+  | 0.5+  | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2001 10 18 | 291 | 0.8+  | 0.5+  | 2005 04 17 | 691 | 0.5+  | 0.4+  | 2007 11 11 | G96 | 0.2+ | 0.3+ |
| 2001 10 18 | 291 | 0.6+  | 0.2+  | 2005 04 17 | 691 | 0.0   | 0.1+  | 2007 11 11 | G96 | 0.5+ | 0.2- |
| 2001 10 21 | 704 | 0.1-  | 0.6+  | 2006 08 28 | 703 | 0.1+  | 0.0   | 2007 11 11 | G96 | 0.7+ | 0.0  |
| 2001 10 21 | 704 | 0.3+  | 0.2-  | 2006 08 28 | 703 | 0.5+  | 0.8-  | 2007 11 14 | 691 | 0.4- | 0.3+ |
| 2001 10 21 | 704 | (2.1+ | 1.4-) | 2006 08 28 | 703 | 0.1-  | 0.1+  | 2007 11 14 | 691 | 0.1- | 0.0  |
| 2001 10 21 | 704 | 0.8-  | 1.0-  | 2006 08 28 | 703 | (3.4- | 0.1+) | 2007 11 14 | 691 | 0.4- | 0.3+ |
| 2004 01 31 | 691 | 0.3+  | 0.1-  | 2007 10 11 | 691 | 0.3-  | 0.1+  | 2007 12 05 | 691 | 0.0  | 0.2+ |
| 2004 01 31 | 691 | 0.1+  | 0.2-  | 2007 10 11 | 691 | 0.2+  | 0.2+  | 2007 12 05 | 691 | 0.4- | 0.2+ |
| 2004 01 31 | 691 | 0.3-  | 0.1-  | 2007 10 11 | 691 | 0.1-  | 0.1+  | 2007 12 05 | 691 | 0.2- | 0.4+ |
| 2005 03 15 | G96 | 0.9-  | 0.2-  | 2007 10 30 | 691 | 0.3-  | 0.4+  | 2007 12 15 | G96 | 0.5+ | 0.3- |
| 2005 03 15 | G96 | 0.6-  | 0.4+  | 2007 10 30 | 691 | 0.1+  | 0.2-  | 2007 12 15 | G96 | 0.0  | 0.4+ |
| 2005 03 15 | G96 | 0.7-  | 0.3+  | 2007 10 30 | 691 | 0.3+  | 0.3+  | 2007 12 15 | G96 | 0.1- | 0.4- |
| 2005 03 15 | G96 | 0.6-  | 0.0   | 2007 10 30 | G96 | 0.1+  | 0.1-  | 2007 12 15 | G96 | 0.1- | 1.7+ |
| 2005 04 11 | 691 | 0.4+  | 0.2+  | 2007 10 30 | G96 | 0.4+  | 0.4-  | 2007 12 16 | 691 | 0.3- | 0.0  |
| 2005 04 11 | 691 | 0.1-  | 0.2+  | 2007 10 30 | G96 | 0.8+  | 0.4-  | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2005 04 11 | 691 | 0.3+  | 0.2+  | 2007 10 30 | G96 | 0.0   | 0.0   | 2007 12 16 | 691 | 0.4- | 0.1+ |

**2007 UE<sub>84</sub> = 2004 FU<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 192.46010  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18444266 | $\omega$ | 166.33371 | -0.77930585   | +0.61847871 |
| <i>a</i> | 3.0565286  | $\Omega$ | 52.32972  | -0.58624258   | -0.66272307 |
| <i>e</i> | 0.0543006  | <i>i</i> | 7.31840   | -0.22136403   | -0.42223479 |
| <i>P</i> | 5.34       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 645 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.4- | 0.2- | 2007 11 03 | 691 | 0.1- | 0.1+ |
| 2003 12 25 | 645 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.6+ | 0.0  | 2007 11 05 | 704 | 0.4+ | 0.0  |
| 2004 03 19 | 644 | 0.5+ | 0.2+ | 2007 09 10 | G96 | 0.2+ | 0.1- | 2007 11 05 | 704 | 0.5- | 0.0  |

**M.P.O. 129949**

| 2007 UG <sub>85</sub> = 2004 EY <sub>100</sub> |            |          |           |             |      |             |          |            |          |      |      |
|------------------------------------------------|------------|----------|-----------|-------------|------|-------------|----------|------------|----------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5        |            |          |           | MPC         |      |             |          |            |          |      |      |
| <i>M</i>                                       | 288.31154  |          |           | (2000.0)    |      |             | <b>P</b> |            | <b>Q</b> |      |      |
| <i>n</i>                                       | 0.18160524 | $\omega$ | 313.60761 | −0.54480596 |      | −0.83854579 |          |            |          |      |      |
| <i>a</i>                                       | 3.0882833  | $\Omega$ | 169.40011 | +0.77733289 |      | −0.50735856 |          |            |          |      |      |
| <i>e</i>                                       | 0.0353946  | <i>i</i> | 1.63136   | +0.31454736 |      | −0.19856547 |          |            |          |      |      |
| <i>P</i>                                       | 5.43       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 3        |            |          |      |      |
| Residuals in seconds of arc                    |            |          |           |             |      |             |          |            |          |      |      |
| 2001 09 20                                     | 691        | 0.2−     | 0.5+      | 2004 03 23  | 691  | 0.3−        | 0.0      | 2007 11 03 | 691      | 0.0  | 0.1− |
| 2001 09 20                                     | 691        | 0.1+     | 0.1+      | 2004 03 23  | 691  | 0.1−        | 0.0      | 2007 11 03 | 691      | 0.1− | 0.4+ |
| 2001 09 20                                     | 691        | 0.6+     | 0.5+      | 2007 10 20  | 691  | (2.5+ 1.2+) |          | 2007 11 05 | G96      | 0.7+ | 0.5− |
| 2001 10 15                                     | 645        | 0.0      | 0.1−      | 2007 10 20  | 691  | 0.2−        | 0.1+     | 2007 11 05 | G96      | 0.1+ | 0.3− |
| 2001 10 15                                     | 645        | 0.1−     | 0.0       | 2007 10 20  | 691  | 0.1+        | 0.2−     | 2007 11 05 | G96      | 1.0+ | 0.4− |
| 2004 03 15                                     | 691        | 0.2+     | 0.0       | 2007 10 30  | 691  | 0.4−        | 0.2−     | 2007 11 05 | G96      | 0.6+ | 0.5− |
| 2004 03 15                                     | 691        | 0.2+     | 0.1+      | 2007 10 30  | 691  | 0.3−        | 0.3+     | 2007 11 14 | 691      | 0.1+ | 0.1+ |
| 2004 03 15                                     | 691        | 0.1+     | 0.3+      | 2007 10 30  | 691  | 0.1−        | 0.1−     | 2007 11 14 | 691      | 0.0  | 0.3+ |
| 2004 03 23                                     | 691        | 0.1−     | 0.0       | 2007 11 03  | 691  | 0.3+        | 0.4−     | 2007 11 14 | 691      | 0.0  | 0.0  |

**2007 UH<sub>85</sub> = 2002 TU<sub>335</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 138.31970  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21499842 | $\omega$ | 203.74638 | -0.11334501   | +0.99017349 |
| <i>a</i> | 2.7595983  | $\Omega$ | 59.83574  | -0.89572185   | -0.06616252 |
| <i>e</i> | 0.0744924  | <i>i</i> | 5.43633   | -0.42992474   | -0.12320297 |
| <i>P</i> | 4.58       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 10 16 | 691 | 0.1- | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.2- |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.1+ | 0.2- | 2007 11 05 | G96 | 0.3+ | 0.4- |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.1+ | 0.5+ | 2007 11 05 | G96 | 0.3+ | 0.4- |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.0  | 0.5+ | 2007 11 20 | G96 | 0.5+ | 0.2- |
| 2007 10 08 | 691 | 0.1+ | 0.2- | 2007 11 03 | 691 | 0.3- | 0.6- | 2007 11 20 | G96 | 0.2- | 0.0  |
| 2007 10 08 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.2+ | 2007 11 20 | G96 | 0.3+ | 0.3- |
| 2007 10 16 | 691 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.2- | 0.4+ | 2007 11 20 | G96 | 0.8+ | 0.2- |

**2007 UM<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 308.38795  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21852677 | $\omega$ | 43.84415 | -0.24011457   | -0.96940923 |
| <i>a</i> | 2.7298133  | $\Omega$ | 60.11030 | +0.87368237   | -0.23866262 |
| <i>e</i> | 0.0574074  | <i>i</i> | 3.36567  | +0.42311240   | -0.05732274 |
| <i>P</i> | 4.51       | <i>H</i> | 16.5     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 23 | 691 | 0.3+ | 0.6- | 2007 10 12 | 691 | 0.3-  | 1.3+  | 2007 11 05 | 704 | 0.4+ | 1.0- |
| 1998 11 23 | 691 | 0.5+ | 0.1- | 2007 10 12 | 691 | 0.2+  | 0.2-  | 2007 11 14 | 691 | 0.6- | 0.2+ |
| 1998 11 23 | 691 | 0.4- | 0.5- | 2007 10 12 | 691 | 0.0   | 0.2-  | 2007 11 14 | 691 | 0.2- | 0.2+ |
| 2003 12 28 | 691 | 0.1- | 0.2+ | 2007 10 16 | 691 | 0.0   | 0.2-  | 2007 11 14 | 691 | 0.2- | 0.1+ |
| 2003 12 28 | 691 | 0.1+ | 0.3+ | 2007 10 16 | 691 | 0.1-  | 0.1-  | 2007 11 18 | 691 | 0.2+ | 0.3- |
| 2003 12 28 | 691 | 0.1+ | 0.2- | 2007 10 16 | 691 | (2.0- | 1.4-) | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2005 05 14 | G96 | 0.1- | 0.4- | 2007 10 20 | 691 | 0.3-  | 0.1+  | 2007 11 18 | 691 | 0.1+ | 0.2- |
| 2005 05 14 | G96 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.6-  | 0.2+  | 2007 12 05 | 704 | 1.0+ | 0.4- |
| 2005 05 14 | G96 | 0.2- | 0.1- | 2007 10 20 | 691 | 0.1-  | 0.1-  | 2007 12 05 | 704 | 0.3+ | 0.7- |
| 2005 05 14 | G96 | 0.1- | 0.1- | 2007 10 30 | 691 | 0.0   | 0.3+  | 2007 12 05 | 704 | 0.1- | 0.5- |
| 2007 09 10 | G96 | 0.6+ | 0.3- | 2007 10 30 | 691 | 0.4-  | 0.5+  | 2007 12 05 | 704 | 0.9+ | 0.8+ |
| 2007 09 10 | G96 | 0.6+ | 0.3- | 2007 10 30 | 691 | 0.1+  | 0.3+  | 2007 12 05 | 704 | 0.7+ | 0.1+ |
| 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.1-  | 0.0   | 2007 12 15 | G96 | 0.3- | 0.2- |
| 2007 09 10 | G96 | 0.0  | 0.2- | 2007 11 03 | 691 | 0.1+  | 0.2+  | 2007 12 15 | G96 | 0.3- | 0.0  |
| 2007 09 18 | G96 | 0.6+ | 0.2- | 2007 11 03 | 691 | 0.2+  | 0.1+  | 2007 12 15 | G96 | 0.6+ | 0.3- |
| 2007 09 18 | G96 | 0.6+ | 0.3- | 2007 11 05 | 704 | 0.2+  | 0.9-  | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2007 09 18 | G96 | 0.3+ | 0.2- | 2007 11 05 | 704 | 0.4-  | 1.0-  |            |     |      |      |
| 2007 09 18 | G96 | 0.3+ | 0.2- | 2007 11 05 | 704 | 1.0+  | 0.5-  |            |     |      |      |

**2007 UR<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.07928  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20240136 | $\omega$ | 248.63940 | +0.00674330   | -0.99993318 |
| <i>a</i> | 2.8729436  | $\Omega$ | 200.98080 | +0.92690227   | +0.00977380 |
| <i>e</i> | 0.0382672  | <i>i</i> | 1.50270   | +0.37524219   | -0.00617335 |
| <i>P</i> | 4.87       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 04 27 | 691 | 0.1- | 0.1- | 2007 09 10 | G96 | 0.2+ | 0.5- | 2007 11 14 | G96 | 0.2+  | 0.4-  |
| 2000 04 27 | 691 | 0.1- | 0.0  | 2007 09 10 | G96 | 0.4+ | 0.2- | 2007 11 14 | G96 | 0.2-  | 0.1-  |
| 2000 04 27 | 691 | 0.2- | 0.1- | 2007 09 10 | G96 | 0.4+ | 0.2+ | 2007 11 14 | G96 | 0.6+  | 0.1-  |
| 2002 10 31 | 644 | 0.1+ | 0.5+ | 2007 09 10 | G96 | 0.1- | 0.1- | 2007 11 14 | G96 | 0.2+  | 0.4-  |
| 2002 10 31 | 644 | 0.1+ | 0.8+ | 2007 10 08 | 691 | 0.3- | 0.1- | 2007 11 15 | 704 | (2.1+ | 0.1-) |
| 2002 10 31 | 644 | 0.4+ | 0.8+ | 2007 10 08 | 691 | 0.1+ | 0.1- | 2007 11 15 | 704 | 0.2+  | 0.9-  |
| 2004 01 31 | 691 | 0.0  | 0.4+ | 2007 10 08 | 691 | 0.1- | 0.1+ | 2007 11 15 | 704 | 1.0+  | 0.9-  |
| 2004 01 31 | 691 | 0.3- | 0.2+ | 2007 10 30 | 691 | 0.2+ | 0.4+ | 2007 11 15 | 704 | (2.0+ | 0.3-) |
| 2004 01 31 | 691 | 0.5+ | 0.4- | 2007 10 30 | 691 | 0.2+ | 0.3+ | 2007 11 18 | 691 | 0.1+  | 0.6+  |
| 2005 05 04 | G96 | 1.1- | 0.4+ | 2007 10 30 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.1-  | 0.4+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 04 | G96 | 0.2+ | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2005 05 04 | G96 | 0.1- | 0.4+ | 2007 11 03 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 691 | 0.1- | 0.1- |
| 2005 05 04 | G96 | 0.5+ | 0.1+ | 2007 11 03 | 691 | 0.3- | 0.3- | 2007 12 04 | 691 | 0.4- | 0.7- |
| 2005 06 10 | 691 | 0.3+ | 0.3+ | 2007 11 14 | 691 | 0.1- | 0.3+ | 2007 12 04 | 691 | 0.6- | 0.1+ |
| 2005 06 10 | 691 | 0.2+ | 0.5+ | 2007 11 14 | 691 | 0.1+ | 0.2+ |            |     |      |      |
| 2005 06 10 | 691 | 0.5+ | 0.6+ | 2007 11 14 | 691 | 0.3- | 0.2- |            |     |      |      |

**2007 UT<sub>85</sub> = 2007 VE<sub>194</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 303.09077  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21973727 | $\omega$ | 43.97012 | -0.31211547   | -0.94894704 |
| <i>a</i> | 2.7197787  | $\Omega$ | 64.26511 | +0.85705696   | -0.30197182 |
| <i>e</i> | 0.0329225  | <i>i</i> | 2.90446  | +0.40992353   | -0.09117311 |
| <i>P</i> | 4.49       | <i>H</i> | 16.6     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 11 14 | 691 | 0.0  | 0.0  | 2007 10 20 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.1+  | 0.1+  |
| 1998 11 14 | 691 | 0.0  | 0.1- | 2007 10 20 | 691 | 0.3+ | 0.2+ | 2007 11 14 | 691 | 0.6-  | 0.3+  |
| 1998 11 14 | 691 | 0.0  | 0.1- | 2007 10 20 | 691 | 0.3- | 0.4- | 2007 11 14 | 691 | 0.2-  | 0.1+  |
| 2004 01 27 | 691 | 0.0  | 0.2- | 2007 10 30 | 691 | 0.2- | 0.4- | 2007 11 14 | 704 | 0.4-  | 0.1-  |
| 2004 01 27 | 691 | 0.1- | 0.0  | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.0   | 0.8-  |
| 2004 01 27 | 691 | 0.0  | 0.2+ | 2007 10 30 | 691 | 0.3+ | 0.2- | 2007 11 14 | 704 | 0.2+  | 0.5+  |
| 2005 05 14 | G96 | 0.2- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.0  | 2007 11 14 | 704 | 0.5+  | 0.6+  |
| 2005 05 14 | G96 | 0.1- | 0.2+ | 2007 11 03 | 691 | 0.2+ | 0.0  | 2007 11 18 | 704 | 1.1+  | 0.7+  |
| 2005 05 14 | G96 | 0.2+ | 0.1- | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 11 18 | 704 | (1.5+ | 0.7-) |
| 2005 05 14 | G96 | 0.0  | 0.6- | 2007 11 05 | G96 | 0.1+ | 0.2- | 2007 11 18 | 704 | (1.7+ | 0.2-) |
| 2007 09 14 | G96 | 0.3+ | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.0  | 2007 12 05 | 691 | 0.0   | 0.1-  |
| 2007 09 14 | G96 | 0.1+ | 0.1- | 2007 11 05 | G96 | 0.4+ | 0.1- | 2007 12 05 | 691 | 0.9-  | 0.3+  |
| 2007 09 14 | G96 | 0.6+ | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.3- | 2007 12 05 | 691 | 0.1+  | 0.1+  |
| 2007 09 14 | G96 | 0.4- | 0.2- | 2007 11 11 | G96 | 0.3+ | 0.2- | 2007 12 15 | G96 | 0.9+  | 0.1+  |
| 2007 10 08 | 691 | 0.2- | 0.3+ | 2007 11 11 | G96 | 0.9+ | 0.5- | 2007 12 15 | G96 | 0.4+  | 0.1-  |
| 2007 10 08 | 691 | 0.3- | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.4- | 2007 12 15 | G96 | 0.0   | 0.1-  |
| 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 11 | G96 | 1.1+ | 0.6- | 2007 12 15 | G96 | 0.8+  | 0.4+  |

**2007 UV<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.12897   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19246948 | $\omega$ | 320.17694 | +0.94305605   | -0.28223024 |
| <i>a</i> | 2.9709463  | $\Omega$ | 57.07465  | +0.33262669   | +0.80361426 |
| <i>e</i> | 0.0714022  | <i>i</i> | 12.10657  | -0.00218448   | +0.52397540 |
| <i>P</i> | 5.12       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 19 | 691 | 0.2- | 0.2+ | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.3- | 0.3+ |
| 2004 01 19 | 691 | 0.1- | 0.2- | 2007 10 30 | 691 | 0.2- | 0.3- | 2007 11 14 | 704 | 0.9+ | 0.2+ |
| 2004 01 19 | 691 | 0.1+ | 0.4- | 2007 10 30 | 691 | 0.1+ | 0.0  | 2007 11 14 | 704 | 1.3+ | 0.2+ |
| 2005 04 16 | 691 | 0.1- | 0.0  | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 1.4+ | 0.2- |
| 2005 04 16 | 691 | 0.5+ | 0.2+ | 2007 11 03 | 691 | 0.3- | 0.0  | 2007 11 14 | 704 | 1.2+ | 0.3- |
| 2005 04 16 | 691 | 0.2+ | 0.3+ | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.1+ | 0.1- |
| 2005 05 12 | 691 | 0.2- | 0.6+ | 2007 11 05 | G96 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2005 05 12 | 691 | 0.3+ | 0.4+ | 2007 11 05 | G96 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.9- | 0.6+ |
| 2005 05 12 | 691 | 0.3+ | 0.4+ | 2007 11 05 | G96 | 0.2+ | 0.0  | 2007 12 05 | 691 | 0.2- | 0.4+ |
| 2007 10 12 | 691 | 0.3- | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.0  | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 14 | 691 | 0.1+ | 0.3+ | 2007 12 05 | 691 | 0.1- | 0.3+ |
| 2007 10 12 | 691 | 0.2- | 0.1- | 2007 11 14 | 691 | 0.2+ | 0.3+ |            |     |      |      |

**2007 UZ<sub>85</sub> = 2004 EO<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.11324   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18233200 | $\omega$ | 327.68012 | +0.79823136   | -0.59951963 |
| <i>a</i> | 3.0800714  | $\Omega$ | 69.26563  | +0.56506375   | +0.71175446 |
| <i>e</i> | 0.0965447  | <i>i</i> | 3.57611   | +0.20863762   | +0.36603524 |
| <i>P</i> | 5.41       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 2  |

2007 DEC. 24

M.P.O. 129951

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 15 | 691 | 0.2+ | 0.3- | 2007 10 12 | 691 | 0.3- | 0.2- | 2007 11 14 | 704 | 0.3+ | 0.4+ |
| 2004 03 15 | 691 | 0.3+ | 0.3- | 2007 10 12 | 691 | 0.3- | 0.2+ | 2007 11 14 | 704 | 0.5+ | 0.5+ |
| 2004 03 15 | 691 | 0.1+ | 0.3- | 2007 10 12 | 691 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.4- | 0.8+ |
| 2004 03 23 | 691 | 0.6- | 0.6+ | 2007 10 30 | 691 | 0.2+ | 0.2- | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2004 03 23 | 691 | 0.2+ | 0.2+ | 2007 10 30 | 691 | 0.2+ | 0.2- | 2007 11 18 | 691 | 0.2- | 0.4+ |
| 2004 03 23 | 691 | 0.2- | 0.1+ | 2007 10 30 | 691 | 0.2+ | 0.2- | 2007 12 04 | 691 | 0.6- | 0.1+ |
| 2005 06 13 | G96 | 0.4+ | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.3- | 0.1+ |
| 2005 06 13 | G96 | 0.5- | 0.6+ | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.1- | 0.2+ |
| 2005 06 13 | G96 | 0.4+ | 0.8+ | 2007 11 03 | 691 | 0.0  | 0.3+ | 2007 12 06 | 691 | 0.5+ | 0.2- |
| 2005 06 13 | G96 | 0.1+ | 0.3+ | 2007 11 05 | G96 | 0.1+ | 0.4- | 2007 12 06 | 691 | 0.1+ | 0.0  |
| 2007 09 14 | G96 | 0.2+ | 0.1- | 2007 11 05 | G96 | 0.2+ | 0.1- | 2007 12 06 | 691 | 0.0  | 0.1- |
| 2007 09 14 | G96 | 0.7+ | 0.1- | 2007 11 05 | G96 | 0.2+ | 0.2- | 2007 12 14 | 691 | 0.1- | 0.1- |
| 2007 09 14 | G96 | 0.5+ | 0.4- | 2007 11 05 | G96 | 0.3+ | 0.0  | 2007 12 14 | 691 | 0.3+ | 0.3- |
| 2007 09 14 | G96 | 0.4+ | 0.5- | 2007 11 14 | 704 | 0.0  | 0.7+ | 2007 12 14 | 691 | 0.3- | 0.2- |

2007 UF<sub>86</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 268.76411  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.21794453 | $\omega$ | 301.82997 | -0.95498883  | -0.28491877  |
| $a$ | 2.7346730  | $\Omega$ | 221.77789 | +0.29632486  | -0.90340640  |
| $e$ | 0.2016400  | $i$      | 7.11907   | +0.01370784  | -0.32043434  |
| $P$ | 4.52       | $H$      | 16.0      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 11 26 | 691 | 0.4+ | 0.1- | 2007 10 20 | 691 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.2+  | 1.2+  |
| 1998 11 26 | 691 | 0.0  | 0.0  | 2007 10 20 | 691 | 1.0+ | 0.5- | 2007 11 18 | 691 | 0.5-  | 0.0   |
| 1998 11 26 | 691 | 0.4- | 0.2- | 2007 10 20 | 691 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.2-  | 0.2+  |
| 2000 04 26 | 699 | 0.6+ | 0.1+ | 2007 10 30 | 691 | 0.1+ | 0.3- | 2007 11 18 | 691 | 0.0   | 0.2+  |
| 2000 04 26 | 699 | 1.2- | 0.3+ | 2007 10 30 | 691 | 0.2+ | 0.1- | 2007 12 03 | 703 | 0.4-  | 0.1-  |
| 2000 04 26 | 699 | 0.5- | 1.1+ | 2007 10 30 | 691 | 0.0  | 0.2- | 2007 12 03 | 703 | 1.0+  | 0.0   |
| 2000 04 26 | 699 | 1.6+ | 0.9+ | 2007 11 03 | 691 | 0.1- | 0.2- | 2007 12 03 | 703 | (2.0+ | 0.4+) |
| 2003 12 22 | 691 | 0.1- | 0.2- | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 12 03 | 703 | (0.3+ | 2.2+) |
| 2003 12 22 | 691 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.1+ | 0.1  | 2007 12 14 | 691 | 0.5-  | 0.4+  |
| 2003 12 22 | 691 | 0.1+ | 0.1- | 2007 11 14 | 691 | 0.7- | 0.1+ | 2007 12 14 | 691 | 0.3-  | 0.3+  |
| 2007 09 18 | G96 | 0.1+ | 0.3- | 2007 11 14 | 691 | 0.6+ | 0.2+ | 2007 12 14 | 691 | 0.6+  | 0.1-  |
| 2007 09 18 | G96 | 1.0+ | 0.5- | 2007 11 14 | 691 | 0.1- | 0.3+ | 2007 12 16 | 691 | 0.3-  | 0.2+  |
| 2007 09 18 | G96 | 0.5+ | 0.3- | 2007 11 14 | 704 | 0.8- | 0.4+ | 2007 12 16 | 691 | 0.4-  | 0.1+  |
| 2007 09 18 | G96 | 0.4+ | 0.1- | 2007 11 14 | 704 | 0.2- | 1.0+ | 2007 12 16 | 691 | 0.1-  | 0.1-  |

2007 UG<sub>86</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 13.73148   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.19784377 | $\omega$ | 238.86835 | +0.87121155  | -0.49073357  |
| $a$ | 2.9168973  | $\Omega$ | 150.51455 | +0.45896178  | +0.80477554  |
| $e$ | 0.1594078  | $i$      | 1.52244   | +0.17419681  | +0.33394146  |
| $P$ | 4.98       | $H$      | 16.3      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1997 12 07 | 910 | 0.0  | 0.6- | 2007 10 30 | 691 | 0.7-  | 0.5+  | 2007 11 14 | 704 | 0.0  | 0.0  |
| 1997 12 07 | 910 | 0.1+ | 0.5- | 2007 11 03 | 691 | 0.1+  | 0.1-  | 2007 11 18 | 691 | 0.5- | 0.1+ |
| 1997 12 07 | 910 | 0.2+ | 0.5- | 2007 11 03 | 691 | 0.1+  | 0.0   | 2007 11 18 | 691 | 0.2- | 0.3- |
| 2002 10 31 | 699 | 0.7+ | 0.4- | 2007 11 03 | 691 | 0.3-  | 0.3+  | 2007 11 18 | 691 | 0.4- | 0.2+ |
| 2002 10 31 | 699 | 0.4- | 1.5+ | 2007 11 05 | 704 | 0.9-  | 0.2-  | 2007 11 20 | 703 | 1.2+ | 0.7+ |
| 2002 10 31 | 699 | 0.0  | 1.1+ | 2007 11 05 | 704 | 0.5+  | 0.5-  | 2007 11 20 | 703 | 1.1+ | 0.2+ |
| 2002 10 31 | 699 | 0.7- | 0.8+ | 2007 11 05 | 704 | 0.0   | 0.2+  | 2007 11 20 | 703 | 1.4+ | 1.1- |
| 2007 09 14 | G96 | 0.1- | 0.4- | 2007 11 05 | 704 | 0.3+  | 0.0   | 2007 11 20 | 703 | 0.3+ | 0.3+ |
| 2007 09 14 | G96 | 0.1+ | 0.4- | 2007 11 12 | 703 | (0.2- | 2.0+) | 2007 12 03 | 703 | 1.0+ | 0.5+ |
| 2007 09 14 | G96 | 0.2+ | 0.2- | 2007 11 12 | 703 | 0.1-  | 0.4+  | 2007 12 03 | 703 | 1.3+ | 0.6+ |
| 2007 09 14 | G96 | 0.4+ | 0.1- | 2007 11 12 | 703 | 0.0   | 0.5+  | 2007 12 03 | 703 | 0.5+ | 0.5+ |
| 2007 10 08 | 691 | 0.0  | 0.1- | 2007 11 12 | 703 | 0.6+  | 0.7+  | 2007 12 03 | 703 | 2.4+ | 0.3+ |
| 2007 10 08 | 691 | 0.1- | 0.1- | 2007 11 14 | 691 | 0.3-  | 0.3-  | 2007 12 04 | 691 | 0.1- | 0.3- |
| 2007 10 08 | 691 | 0.0  | 0.2- | 2007 11 14 | 691 | 0.1-  | 0.1-  | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2007 10 20 | 691 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.3-  | 0.2-  | 2007 12 04 | 691 | 0.1+ | 0.1- |
| 2007 10 20 | 691 | 0.1+ | 0.1- | 2007 11 14 | 704 | 0.6+  | 0.2+  | 2007 12 06 | 691 | 0.0  | 0.2- |
| 2007 10 20 | 691 | 0.0  | 0.2- | 2007 11 14 | 704 | 0.3+  | 0.6+  | 2007 12 06 | 691 | 0.2- | 0.1+ |

|            |     |     |     |            |     |      |      |            |     |     |      |
|------------|-----|-----|-----|------------|-----|------|------|------------|-----|-----|------|
| 2007 10 30 | 691 | 0.0 | 0.0 | 2007 11 14 | 704 | 0.4+ | 0.4+ | 2007 12 06 | 691 | 0.0 | 0.1- |
| 2007 10 30 | 691 | 0.0 | 0.0 | 2007 11 14 | 704 | 0.1+ | 0.9+ |            |     |     |      |

2007 UR<sub>86</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 45.83872   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.30742063 | $\omega$ | 174.45812 | +0.96550546  | +0.26035263  |
| $a$ | 2.1742729  | $\Omega$ | 170.44810 | -0.23980467  | +0.89502895  |
| $e$ | 0.1689271  | $i$      | 1.36858   | -0.10145405  | +0.36213215  |
| $P$ | 3.21       | $H$      | 17.6      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 18 | 691 | 0.0  | 0.0  | 2007 09 18 | G96 | 0.1- | 0.0  | 2007 11 14 | 704 | 0.5+ | 1.0+ |
| 2004 12 18 | 691 | 0.0  | 0.3- | 2007 09 18 | G96 | 0.0  | 0.1- | 2007 11 14 | 704 | 0.8+ | 1.3+ |
| 2004 12 18 | 691 | 0.1- | 0.0  | 2007 09 18 | G96 | 0.1+ | 0.1+ | 2007 11 14 | 704 | 0.3+ | 0.2+ |
| 2006 03 24 | 691 | 0.5- | 0.5+ | 2007 09 18 | G96 | 0.5- | 0.1- | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2006 03 24 | 691 | 0.3+ | 0.3+ | 2007 10 30 | 691 | 0.2- | 0.1- | 2007 11 18 | 691 | 0.4- | 0.2- |
| 2006 03 24 | 691 | 0.5+ | 0.2- | 2007 10 30 | 691 | 0.1- | 0.5+ | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2006 03 24 | G96 | 0.2+ | 0.2- | 2007 10 30 | 691 | 0.1+ | 0.5- | 2007 12 04 | 691 | 0.1+ | 0.1- |
| 2006 03 24 | G96 | 0.5- | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.1+ | 0.3- |
| 2006 03 24 | G96 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.1- | 0.0  |
| 2006 03 24 | G96 | 0.4+ | 0.7- | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 05 | 704 | 0.1+ | 1.5+ |
| 2006 04 19 | G96 | 0.1- | 0.1+ | 2007 11 05 | 704 | 0.5+ | 1.3+ | 2007 12 05 | 704 | 0.6+ | 0.0  |
| 2006 04 19 | G96 | 0.1- | 0.1- | 2007 11 05 | 704 | 0.5+ | 0.5+ | 2007 12 05 | 704 | 0.4- | 0.5+ |
| 2006 04 19 | G96 | 0.6- | 0.0  | 2007 11 05 | 704 | 0.2+ | 0.1- | 2007 12 05 | 704 | 1.3+ | 1.1+ |
| 2006 04 19 | G96 | 0.5- | 0.1+ | 2007 11 14 | 691 | 0.1- | 0.2- | 2007 12 14 | 691 | 0.3- | 0.1- |
| 2007 09 10 | G96 | 0.0  | 0.3- | 2007 11 14 | 691 | 0.1- | 0.1+ | 2007 12 14 | 691 | 0.0  | 0.5- |
| 2007 09 10 | G96 | 0.0  | 0.2- | 2007 11 14 | 691 | 0.1- | 0.1- | 2007 12 14 | 691 | 0.3- | 0.1- |
| 2007 09 10 | G96 | 0.1+ | 0.2- | 2007 11 14 | 704 | 0.1+ | 0.3+ |            |     |      |      |
| 2007 09 10 | G96 | 0.1+ | 0.2- | 2007 11 14 | 704 | 0.7+ | 0.7+ |            |     |      |      |

2007 UU<sub>86</sub> = 2005 JT<sub>41</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 95.34386   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.17731413 | $\omega$ | 83.69170  | +0.58328381  | +0.80141434  |
| $a$ | 3.1379101  | $\Omega$ | 222.90600 | -0.80070810  | +0.53990826  |
| $e$ | 0.0917615  | $i$      | 11.20945  | -0.13655233  | +0.25735990  |
| $P$ | 5.56       | $H$      | 15.3      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 07 | G96 | 0.0  | 0.0  | 2005 05 08 | G96 | 0.2- | 0.5- | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2005 05 07 | G96 | 0.1- | 0.0  | 2007 10 30 | 691 | 0.2+ | 0.1- | 2007 11 14 | 691 | 0.6- | 0.4- |
| 2005 05 07 | G96 | 0.2- | 0.3+ | 2007 10 30 | 691 | 0.0  | 0.4+ | 2007 11 14 | 691 | 0.1- | 0.5+ |
| 2005 05 07 | G96 | 0.1+ | 0.2- | 2007 10 30 | 691 | 0.2+ | 0.1- | 2007 11 20 | 691 | 0.9+ | 0.4- |
| 2005 05 08 | G96 | 0.2- | 0.1- | 2007 11 03 | 691 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.4+ | 0.1+ |
| 2005 05 08 | G96 | 0.9+ | 0.5+ | 2007 11 03 | 691 | 0.2+ | 0.1- | 2007 11 20 | 691 | 0.6- | 0.4+ |
| 2005 05 08 | G96 | 0.3- | 0.1- | 2007 11 03 | 691 | 0.1- | 0.1+ |            |     |      |      |

2007 UP<sub>88</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 206.85908  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.17774057 | $\omega$ | 11.00712  | -0.93016926  | +0.36711685  |
| $a$ | 3.1328890  | $\Omega$ | 190.53251 | -0.33815932  | -0.86014703  |
| $e$ | 0.0983544  | $i$      | 1.00898   | -0.14294549  | -0.35407953  |
| $P$ | 5.55       | $H$      | 16.2      | $G$          | 0.15         |
|     |            |          |           | $U$          | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 17 | 691 | 0.5+ | 0.1+ | 2006 08 27 | 691 | 0.1+ | 0.4+ | 2007 10 18 | 691 | 0.2- | 0.2- |
| 1996 11 17 | 691 | 0.0  | 0.5- | 2006 08 27 | 691 | 0.1+ | 0.5+ | 2007 10 18 | 691 | 0.3- | 0.1+ |
| 1996 11 17 | 691 | 0.0  | 0.2- | 2006 08 27 | 691 | 0.0  | 0.8+ | 2007 10 30 | G96 | 0.0  | 0.2- |
| 1999 04 19 | 691 | 0.4- | 0.3+ | 2006 09 25 | G96 | 0.0  | 0.2- | 2007 10 30 | G96 | 0.3- | 0.1- |
| 1999 04 19 | 691 | 0.5- | 0.0  | 2006 09 25 | G96 | 0.1- | 0.3- | 2007 10 30 | G96 | 0.3+ | 0.1+ |
| 1999 04 19 | 691 | 0.2+ | 0.3+ | 2006 09 25 | G96 | 0.4+ | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.3+ |
| 2001 10 16 | 691 | 0.1- | 0.3- | 2006 09 25 | G96 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.0  | 0.3+ |
| 2001 10 16 | 691 | 0.2+ | 0.0  | 2007 10 10 | 691 | 0.3- | 0.2+ | 2007 11 03 | 691 | 0.3- | 0.1+ |

## M.P.O. 129952

|            |     |      |      |            |     |      |      |            |     |     |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-----|------|
| 2001 10 16 | 691 | 0.1+ | 0.0  | 2007 10 10 | 691 | 0.5− | 0.1− | 2007 11 03 | 691 | 0.0 | 0.1− |
| 2004 02 22 | 695 | 0.6+ | 0.3+ | 2007 10 10 | 691 | 0.9− | 1.1+ |            |     |     |      |
| 2004 02 22 | 695 | 0.6+ | 0.1+ | 2007 10 18 | 691 | 0.2+ | 0.4− |            |     |     |      |

**2007 UV<sub>88</sub> = 2003 SU<sub>412</sub>**

|                                         |            |          |           |            |     |             |      |            |             |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-----|-------------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |     |             |      |            |             |      |      |
| <i>M</i>                                | 35.10197   |          | (2000.0)  |            |     | <b>P</b>    |      |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.26152259 | $\omega$ | 122.76420 |            |     | +0.99420649 |      |            | +0.10713094 |      |      |
| <i>a</i>                                | 2.4217533  | $\Omega$ | 231.08738 |            |     | −0.10199383 |      |            | +0.91460342 |      |      |
| <i>e</i>                                | 0.1952995  | <i>i</i> | 0.64374   |            |     | −0.03392230 |      |            | +0.38990197 |      |      |
| <i>P</i>                                | 3.77       | <i>H</i> | 19.2      |            |     | <i>G</i>    | 0.15 |            | <i>U</i>    | 3    |      |
| Residuals in seconds of arc             |            |          |           |            |     |             |      |            |             |      |      |
| 2003 09 18                              | 691        | 0.0      | 0.2+      | 2003 09 30 | 333 | 0.1+        | 0.4− | 2007 11 03 | 691         | 0.3+ | 0.2+ |
| 2003 09 18                              | 691        | 0.2−     | 0.1+      | 2003 09 30 | 333 | 0.3+        | 0.2− | 2007 11 14 | 691         | 0.0  | 0.2− |
| 2003 09 18                              | 691        | 0.2−     | 0.5+      | 2007 10 30 | G96 | 0.5−        | 0.3− | 2007 11 14 | 691         | 0.1+ | 0.2− |
| 2003 09 28                              | 645        | 0.0      | 0.0       | 2007 10 30 | G96 | 0.5+        | 0.2− | 2007 11 14 | 691         | 0.3− | 0.5+ |
| 2003 09 28                              | 645        | 0.0      | 0.0       | 2007 10 30 | G96 | 0.6−        | 0.6− | 2007 11 18 | 691         | 0.0  | 0.0  |
| 2003 09 29                              | 645        | 0.1+     | 0.0       | 2007 10 30 | G96 | 0.1+        | 0.6− | 2007 11 18 | 691         | 0.2+ | 0.1+ |
| 2003 09 29                              | 645        | 0.1+     | 0.1−      | 2007 11 03 | 691 | 0.3+        | 0.1+ | 2007 11 18 | 691         | 0.3− | 0.4+ |
| 2003 09 30                              | 333        | 0.5−     | 1.2−      | 2007 11 03 | 691 | 0.4−        | 0.3− |            |             |      |      |

**2007 UZ<sub>88</sub>**

|                                         |            |          |          |            |     |             |      |            |             |      |      |
|-----------------------------------------|------------|----------|----------|------------|-----|-------------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |     |             |      |            |             |      |      |
| <i>M</i>                                | 297.69597  |          | (2000.0) |            |     | <b>P</b>    |      |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.21412799 | $\omega$ | 22.26044 |            |     | −0.37721319 |      |            | −0.92607864 |      |      |
| <i>a</i>                                | 2.7670717  | $\Omega$ | 89.90177 |            |     | +0.84828001 |      |            | −0.34956630 |      |      |
| <i>e</i>                                | 0.0227854  | <i>i</i> | 0.53922  |            |     | +0.37166010 |      |            | −0.14206253 |      |      |
| <i>P</i>                                | 4.60       | <i>H</i> | 16.9     |            |     | <i>G</i>    | 0.15 |            | <i>U</i>    | 3    |      |
| Residuals in seconds of arc             |            |          |          |            |     |             |      |            |             |      |      |
| 2003 12 21                              | 691        | 0.3+     | 0.5−     | 2007 10 12 | 691 | 0.3+        | 0.1− | 2007 11 03 | 691         | 0.1− | 0.1+ |
| 2003 12 21                              | 691        | 0.2−     | 0.2+     | 2007 10 12 | 691 | 0.4+        | 0.2− | 2007 11 03 | 691         | 0.1+ | 0.5+ |
| 2003 12 21                              | 691        | 0.1−     | 0.0      | 2007 10 20 | 691 | 0.2−        | 0.3− | 2007 11 03 | 691         | 0.4− | 0.2+ |
| 2005 05 11                              | G96        | (1.6+    | 2.5−)    | 2007 10 20 | 691 | 0.3+        | 0.2− | 2007 11 14 | 691         | 0.1− | 0.5− |
| 2005 05 11                              | G96        | 0.4−     | 0.0      | 2007 10 20 | 691 | 0.4+        | 0.1− | 2007 11 14 | 691         | 0.2+ | 0.4+ |
| 2005 05 11                              | G96        | 0.0      | 0.1+     | 2007 10 20 | 691 | 0.0         | 0.1− | 2007 11 14 | 691         | 0.2+ | 0.1− |
| 2005 05 11                              | G96        | 0.2+     | 0.6−     | 2007 10 20 | 691 | 0.4+        | 0.2− | 2007 11 18 | 691         | 0.3− | 0.0  |
| 2007 09 10                              | G96        | 0.3+     | 0.9−     | 2007 10 20 | 691 | 0.3−        | 0.1+ | 2007 11 18 | 691         | 0.6− | 0.1− |
| 2007 09 10                              | G96        | 0.1−     | 0.1+     | 2007 10 30 | G96 | 0.6+        | 0.4− | 2007 11 18 | 691         | 0.1− | 0.1+ |
| 2007 09 10                              | G96        | 0.1−     | 0.6+     | 2007 10 30 | G96 | 0.3+        | 0.4− | 2007 12 05 | 691         | 1.1− | 0.0  |
| 2007 09 10                              | G96        | 0.1+     | 0.1−     | 2007 10 30 | G96 | 0.4+        | 0.3− | 2007 12 05 | 691         | 0.2+ | 0.4+ |
| 2007 10 12                              | 691        | 0.2+     | 0.1−     | 2007 10 30 | G96 | 0.1+        | 0.2− | 2007 12 05 | 691         | 0.4+ | 0.3+ |

**2007 UB<sub>89</sub> = 2004 GK<sub>61</sub>**

|                                         |            |          |          |            |     |             |       |            |             |      |      |
|-----------------------------------------|------------|----------|----------|------------|-----|-------------|-------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |     |             |       |            |             |      |      |
| <i>M</i>                                | 293.41266  |          | (2000.0) |            |     | <b>P</b>    |       |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.17771234 | $\omega$ | 78.65944 |            |     | −0.57658157 |       |            | −0.81427898 |      |      |
| <i>a</i>                                | 3.1332207  | $\Omega$ | 46.76427 |            |     | +0.70910062 |       |            | −0.53951983 |      |      |
| <i>e</i>                                | 0.0930738  | <i>i</i> | 5.28514  |            |     | +0.40586944 |       |            | −0.21416839 |      |      |
| <i>P</i>                                | 5.55       | <i>H</i> | 16.2     |            |     | <i>G</i>    | 0.15  |            | <i>U</i>    | 4    |      |
| Residuals in seconds of arc             |            |          |          |            |     |             |       |            |             |      |      |
| 2004 04 13                              | 691        | 0.2+     | 0.1−     | 2007 10 30 | G96 | 1.0+        | 0.3−  | 2007 11 03 | 691         | 0.5− | 0.1− |
| 2004 04 13                              | 691        | 0.1+     | 0.1−     | 2007 10 30 | G96 | 0.5+        | 0.5−  | 2007 11 11 | G96         | 0.3+ | 0.4− |
| 2004 04 13                              | 691        | 0.0      | 0.4−     | 2007 10 30 | G96 | 0.7+        | 0.3−  | 2007 11 11 | G96         | 0.1− | 0.3− |
| 2004 04 20                              | 691        | 0.1+     | 0.3+     | 2007 10 30 | G96 | 0.3+        | 0.1+  | 2007 11 11 | G96         | 0.5+ | 0.2− |
| 2004 04 20                              | 691        | 0.2−     | 0.1+     | 2007 11 02 | 291 | (1.3−       | 2.3+) | 2007 11 11 | G96         | 0.1+ | 0.5− |
| 2004 04 20                              | 691        | 0.2−     | 0.2+     | 2007 11 02 | 291 | 0.0         | 0.3+  | 2007 11 14 | 691         | 0.1− | 0.1− |
| 2007 10 08                              | 691        | 0.2−     | 0.5−     | 2007 11 02 | 291 | 0.3−        | 0.5+  | 2007 11 14 | 691         | 0.1− | 0.5− |
| 2007 10 08                              | 691        | 0.2+     | 0.2+     | 2007 11 03 | 691 | 0.2−        | 0.2+  | 2007 11 14 | 691         | 0.5+ | 0.3+ |
| 2007 10 08                              | 691        | 0.0      | 0.1+     | 2007 11 03 | 691 | 0.1−        | 0.4+  |            |             |      |      |

## 2007 DEC. 24

**2007 UO<sub>89</sub>**

|                                         |            |          |          |            |     |             |      |            |             |      |      |
|-----------------------------------------|------------|----------|----------|------------|-----|-------------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          |            |     |             |      |            |             |      |      |
| <i>M</i>                                | 321.62274  |          | (2000.0) |            |     | <b>P</b>    |      |            | <b>Q</b>    |      |      |
| <i>n</i>                                | 0.30218594 | $\omega$ | 15.39364 |            |     | −0.09592180 |      |            | −0.99514935 |      |      |
| <i>a</i>                                | 2.1993105  | $\Omega$ | 80.11443 |            |     | +0.91089515 |      |            | −0.09660299 |      |      |
| <i>e</i>                                | 0.1594253  | <i>i</i> | 1.27003  |            |     | +0.40133407 |      |            | −0.01859130 |      |      |
| <i>P</i>                                | 3.26       | <i>H</i> | 19.2     |            |     | <i>G</i>    | 0.15 |            | <i>U</i>    | 4    |      |
| Residuals in seconds of arc             |            |          |          |            |     |             |      |            |             |      |      |
| 2004 12 19                              | G96        | 0.3−     | 0.7−     | 2007 10 30 | G96 | 0.2+        | 0.3− | 2007 11 05 | G96         | 0.1− | 0.2− |
| 2004 12 19                              | G96        | 0.4+     | 1.1−     | 2007 10 30 | G96 | 0.3+        | 0.0  | 2007 11 14 | 691         | 0.3− | 0.1+ |
| 2004 12 19                              | G96        | 0.0      | 0.1+     | 2007 11 03 | 691 | 0.2−        | 0.2+ | 2007 11 14 | 691         | 0.1+ | 0.1− |
| 2004 12 19                              | G96        | 0.2−     | 0.2+     | 2007 11 03 | 691 | 0.2−        | 0.1+ | 2007 11 14 | 691         | 0.3+ | 0.3− |
| 2005 01 18                              | 691        | 0.0      | 0.0      | 2007 11 03 | 691 | 0.2−        | 0.4+ | 2007 11 20 | G96         | 0.3+ | 0.2− |
| 2005 01 18                              | 691        | 0.0      | 0.2+     | 2007 11 05 | G96 | 0.7+        | 0.2− | 2007 11 20 | G96         | 0.1− | 0.0  |
| 2005 01 18                              | 691        | 0.0      | 0.2+     | 2007 11 05 | G96 | 0.1+        | 0.2− | 2007 11 20 | G96         | 0.1− | 0.2− |
| 2007 10 30                              | G96        | 0.2+     | 0.4−     | 2007 11 05 | G96 | 0.1−        | 0.2− | 2007 11 20 | G96         | 0.0  | 0.2+ |

**2007 UQ<sub>89</sub>**

|                                         |            |          |           |            |     |             |       |            |             |       |       |
|-----------------------------------------|------------|----------|-----------|------------|-----|-------------|-------|------------|-------------|-------|-------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |     |             |       |            |             |       |       |
| <i>M</i>                                | 50.53889   |          | (2000.0)  |            |     | <b>P</b>    |       |            | <b>Q</b>    |       |       |
| <i>n</i>                                | 0.28754252 | $\omega$ | 278.23486 |            |     | +0.93019762 |       |            | +0.35372987 |       |       |
| <i>a</i>                                | 2.2733589  | $\Omega$ | 61.09781  |            |     | −0.27698061 |       |            | +0.85165950 |       |       |
| <i>e</i>                                | 0.1397975  | <i>i</i> | 6.42853   |            |     | −0.24086122 |       |            | +0.38671860 |       |       |
| <i>P</i>                                | 3.43       | <i>H</i> | 17.0      |            |     | <i>G</i>    | 0.15  |            | <i>U</i>    | 3     |       |
| Residuals in seconds of arc             |            |          |           |            |     |             |       |            |             |       |       |
| 2005 02 04                              | G96        | 0.2−     | 0.3+      | 2007 11 02 | D29 | 0.4+        | 0.6−  | 2007 11 17 | 703         | 0.0   | 0.1+  |
| 2005 02 04                              | G96        | 0.0      | 0.1−      | 2007 11 02 | D29 | 0.1+        | 0.3−  | 2007 11 17 | 703         | 0.2+  | 0.0   |
| 2005 02 04                              | G96        | 0.2+     | 0.1+      | 2007 11 03 | 691 | 0.3−        | 0.3+  | 2007 11 17 | 703         | 0.1+  | 0.5−  |
| 2005 02 04                              | G96        | 0.0      | 0.2−      | 2007 11 03 | 691 | 0.2−        | 0.2−  | 2007 11 29 | 104         | 0.8+  | 0.5+  |
| 2006 05 24                              | G96        | 0.3+     | 0.5+      | 2007 11 03 | 691 | 0.2−        | 0.2−  | 2007 11 29 | 104         | 0.3+  | 0.3+  |
| 2006 05 24                              | G96        | 0.5+     | 0.4+      | 2007 11 05 | 704 | 0.5+        | 0.6+  | 2007 11 29 | 104         | 0.4+  | 0.0   |
| 2006 05 24                              | G96        | 0.1+     | 0.4+      | 2007 11 05 | 704 | 0.1−        | 0.4+  | 2007 12 03 | 703         | 0.9−  | 0.2−  |
| 2006 05 24                              | G96        | 0.1−     | 0.4+      | 2007 11 05 | 704 | 0.6+        | 0.8+  | 2007 12 03 | 703         | 0.3−  | 0.1+  |
| 2007 10 15                              | 703        | 0.4−     | 0.1−      | 2007 11 05 | 704 | 0.3+        | 0.9+  | 2007 12 03 | 703         | 0.2−  | 0.2−  |
| 2007 10 15                              | 703        | 0.6+     | 0.6−      | 2007 11 05 | 704 | 0.4+        | 0.6+  | 2007 12 03 | 703         | (0.5− | 2.7−) |
| 2007 10 15                              | 703        | 1.5−     | 0.6−      | 2007 11 07 | 704 | 0.6+        | 0.7+  | 2007 12 05 | 704         | 0.4+  | 0.1−  |
| 2007 10 15                              | 703        | 0.1+     | 0.6+      | 2007 11 07 | 704 | 0.1−        | 1.2+  | 2007 12 05 | 704         | 0.7−  | 1.1−  |
| 2007 10 21                              | 691        | 0.3−     | 0.2−      | 2007 11 07 | 704 | 0.7−        | 0.1−  | 2007 12 05 | 704         | 0.3+  | 0.2−  |
| 2007 10 21                              | 691        | 0.4−     | 0.4−      | 2007 11 07 | 704 | 0.4+        | 1.2+  | 2007 12 05 | 704         | 0.5−  | 0.0   |
| 2007 10 21                              | 691        | 0.3−     | 0.1−      | 2007 11 07 | 704 | 1.1+        | 0.7+  | 2007 12 05 | 704         | (1.0− | 1.6+) |
| 2007 10 30                              | 703        | 0.3+     | 0.6−      | 2007 11 14 | 704 | (1.5+       | 0.4+) | 2007 12 15 | G96         | 0.3+  | 0.3−  |
| 2007 10 30                              | 703        | 1.1+     | 0.0       | 2007 11 14 | 704 | 0.5+        | 0.4+  | 2007 12 15 | G96         | 0.5+  | 0.2−  |
| 2007 10 30                              | 703        | 0.2−     | 0.3−      | 2007 11 14 | 704 | 0.0         | 1.1+  | 2007 12 15 | G96         | 0.1+  | 0.4−  |
| 2007 10 30                              | 703        | 0.0      | 0.1−      | 2007 11 14 | 704 | 0.6+        | 0.6+  | 2007 12 15 | G96         | 0.4−  | 0.3−  |
| 2007 11 02                              | D29        | 0.7+     | 0.4−      | 2007 11 14 | 704 | 0.1+        | 0.7+  |            |             |       |       |
| 2007 11 02                              | D29        | 0.5+     | 0.4−      | 2007 11 17 | 703 | 0.9−        | 0.0   |            |             |       |       |

**2007 UA<sub>90</sub>**

|                                         |            |      |                    |            |     |             |      |             |            |      |      |
|-----------------------------------------|------------|------|--------------------|------------|-----|-------------|------|-------------|------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |                    |            |     | MPC         |      |             |            |      |      |
| <i>M</i>                                | 101.98924  |      | (2000.0)           |            |     | <b>P</b>    |      | <b>Q</b>    |            |      |      |
| <i>n</i>                                | 0.26649586 |      | $\omega$ 41.27451  |            |     | +0.27184989 |      | +0.96193396 |            |      |      |
| <i>a</i>                                | 2.3915295  |      | $\Omega$ 244.51686 |            |     | −0.89085253 |      | +0.24056806 |            |      |      |
| <i>e</i>                                | 0.1167097  |      | <i>i</i> 1.77372   |            |     | −0.36397721 |      | +0.12965367 |            |      |      |
| <i>P</i>                                | 3.70       |      | <i>H</i> 16.9      |            |     | <i>G</i>    | 0.15 |             | <i>U</i> 2 |      |      |
| Residuals in seconds of arc             |            |      |                    |            |     |             |      |             |            |      |      |
| 2003 10 24                              | 645        | 0.0  | 0.0                | 2007 10 04 | 691 | 0.3−        | 0.5+ | 2007 11 07  | 704        | 0.7+ | 0.7+ |
| 2003 10 24                              | 645        | 0.0  | 0.1+               | 2007 10 04 | 691 | 0.4+        | 0.4+ | 2007 11 07  | 704        | 1.0+ | 0.3+ |
| 2005 01 16                              | 691        | 0.3− | 0.3+               | 2007 10 12 | 691 | 0.4−        | 0.1− | 2007 11 09  | G96        | 0.5+ | 0.4− |
| 2005 01 16                              | 691        | 0.2+ | 0.1+               | 2007 10 12 | 691 | 0.3−        | 0.1− | 2007 11 09  | G96        | 0.3+ | 0.3− |
| 2005 01 16                              | 691        | 0.2+ | 0.1+               | 2007 10 12 | 691 | 0.3−        | 0.2− | 2007 11 09  | G96        | 0.6+ | 0.1− |
| 2006 05 07                              | G96        | 0.1− | 0.6+               | 2007 10 30 | G96 | 0.0         | 0.4− | 2007 11 09  | G96        | 0.1+ | 0.3− |
| 2006 05 07                              | G96        | 0.1+ | 0.6+               | 2007 10 30 | G96 | 0.4−        | 0.4− | 2007 11 09  | 291        | 0.6− | 0.1+ |

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M.P.O. 129953

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2006 05 07 G96 0.3+ 0.0  | 2007 10 30 G96 0.1+ 0.1− | 2007 11 09 291 0.4− 0.1+ |
| 2006 05 07 G96 0.4+ 0.3+ | 2007 10 30 G96 0.2− 0.3− | 2007 11 09 291 0.6− 0.1− |
| 2006 05 16 E12 0.1+ 0.5+ | 2007 11 03 691 0.3− 0.1+ | 2007 11 13 G96 0.1+ 0.4− |
| 2006 05 16 E12 0.0 0.6−  | 2007 11 03 691 0.5− 0.1+ | 2007 11 13 G96 0.3+ 0.3− |
| 2006 05 16 E12 0.0 0.1+  | 2007 11 03 691 0.3− 0.2+ | 2007 11 13 G96 0.2− 0.3− |
| 2006 05 16 E12 0.5− 0.0  | 2007 11 07 704 0.1− 1.5+ | 2007 11 13 G96 0.1− 0.5− |
| 2007 10 04 691 0.4− 0.0  | 2007 11 07 704 1.0+ 1.8+ |                          |

**2007 UR<sub>90</sub> = 2005 HZ<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 142.59073  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.19562268 | $\omega$ | 6.86100   | −0.24773443 | +0.96868730 |
| $a$ | 2.9389345  | $\Omega$ | 248.79655 | −0.88972165 | −0.23421769 |
| $e$ | 0.0604375  | $i$      | 1.01466   | −0.38343584 | −0.08238314 |
| $P$ | 5.04       | $H$      | 16.4      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1999 01 17 691 0.2+ 0.2− | 2005 04 17 691 0.4+ 0.6+ | 2007 11 09 G96 0.4+ 0.2− |
| 1999 01 17 691 0.5− 0.6− | 2005 04 17 691 0.4+ 0.2+ | 2007 11 09 G96 0.4+ 0.4− |
| 2000 04 25 691 0.0 0.1−  | 2005 04 17 691 0.4+ 0.3+ | 2007 11 09 G96 0.3+ 0.1− |
| 2000 04 25 691 0.4− 0.2− | 2005 05 01 644 0.7+ 0.1+ | 2007 11 09 G96 0.3+ 0.1− |
| 2000 04 25 691 0.2− 0.2− | 2005 05 01 644 0.7+ 0.5+ | 2007 11 11 G96 0.3+ 0.3− |
| 2000 05 01 691 0.5− 0.7− | 2005 05 01 644 0.8+ 0.5+ | 2007 11 11 G96 0.1+ 0.1+ |
| 2000 05 01 691 0.8− 0.8− | 2005 06 01 G96 0.1− 0.4+ | 2007 11 11 G96 0.4+ 0.4− |
| 2000 05 01 691 0.5− 0.9− | 2005 06 01 G96 0.2− 0.7+ | 2007 11 11 G96 0.2+ 0.2− |
| 2001 08 22 691 0.2+ 0.4+ | 2005 06 01 G96 0.5− 0.1+ | 2007 11 12 G96 0.0 0.4−  |
| 2001 08 22 691 0.2− 0.0  | 2005 06 01 G96 0.3− 0.5+ | 2007 11 12 G96 0.1+ 0.3− |
| 2001 08 22 691 0.1+ 0.1− | 2007 10 14 691 0.4− 0.0  | 2007 11 12 G96 0.2− 0.4− |
| 2001 09 22 691 0.1+ 0.7+ | 2007 10 14 691 0.2− 0.4+ | 2007 11 12 G96 0.1− 0.0  |
| 2001 09 22 691 0.2+ 0.2− | 2007 10 14 691 0.6− 0.0  | 2007 11 12 G96 0.4+ 0.6− |
| 2001 09 22 691 0.2+ 0.3+ | 2007 10 18 691 0.3− 0.1− | 2007 11 12 G96 0.2+ 0.4− |
| 2002 11 05 291 0.0 0.2+  | 2007 10 18 691 0.3− 0.0  | 2007 11 12 G96 0.7+ 0.5− |
| 2002 11 05 291 0.1+ 0.2+ | 2007 10 18 691 0.0 0.1−  | 2007 11 12 G96 0.1− 0.5− |
| 2002 11 05 291 0.2+ 0.0  | 2007 10 30 G96 0.2+ 0.3− | 2007 11 13 291 0.1+ 0.0  |
| 2003 12 17 291 0.3− 0.5+ | 2007 10 30 G96 1.4+ 0.6− | 2007 11 13 291 0.3+ 0.1− |
| 2003 12 17 291 0.1− 0.2+ | 2007 10 30 G96 0.5+ 0.2+ | 2007 11 13 291 0.0 0.0   |
| 2003 12 17 291 0.2− 0.4+ | 2007 10 30 G96 0.1+ 0.4− | 2007 12 06 G96 0.2+ 0.4− |
| 2004 01 28 691 0.6+ 0.1+ | 2007 11 03 691 0.4− 0.3+ | 2007 12 06 G96 0.5+ 0.6− |
| 2004 01 28 691 0.7+ 0.5+ | 2007 11 03 691 0.4− 0.4+ | 2007 12 06 G96 0.1− 0.3− |
| 2004 01 28 691 0.7+ 0.1+ | 2007 11 03 691 0.3− 0.3− | 2007 12 06 G96 0.2+ 1.1− |
| 2005 04 10 G96 0.2− 0.2+ | 2007 11 09 G96 0.3+ 0.2− | 2007 12 15 G96 0.3− 0.4− |
| 2005 04 10 G96 0.1− 0.3+ | 2007 11 09 G96 0.1+ 0.2− | 2007 12 15 G96 0.3+ 0.7− |
| 2005 04 10 G96 0.1− 0.1+ | 2007 11 09 G96 0.0 0.2−  | 2007 12 15 G96 0.1− 1.3− |
| 2005 04 10 G96 0.2− 0.1+ | 2007 11 09 G96 0.3+ 0.1− | 2007 12 15 G96 0.5+ 0.5− |

**2007 UZ<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 50.16929   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26629368 | $\omega$ | 65.95878  | +0.86661106 | +0.49885190 |
| $a$ | 2.3927398  | $\Omega$ | 264.11536 | −0.46190328 | +0.79328624 |
| $e$ | 0.2012308  | $i$      | 0.66190   | −0.18876077 | +0.34906119 |
| $P$ | 3.70       | $H$      | 18.8      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 08 28 644 0.3− 0.3+ | 2007 09 12 G96 0.4+ 0.2− | 2007 11 11 G96 0.7+ 0.0  |
| 2003 08 28 644 0.5− 0.3+ | 2007 10 14 691 0.1− 0.1− | 2007 11 11 G96 0.6+ 0.1− |
| 2003 08 28 644 0.4− 0.2+ | 2007 10 14 691 0.6− 0.1+ | 2007 11 11 G96 0.5+ 0.2− |
| 2003 09 04 691 0.0 0.0   | 2007 10 14 691 0.1− 0.1− | 2007 11 12 G96 0.9+ 0.3− |
| 2003 09 04 691 0.1− 0.2− | 2007 10 30 G96 0.5+ 0.2− | 2007 11 12 G96 0.2+ 0.4− |
| 2003 09 04 691 0.3+ 0.0  | 2007 10 30 G96 0.2+ 0.2+ | 2007 11 12 G96 0.1+ 0.2− |
| 2006 05 01 568 0.5+ 0.7+ | 2007 10 30 G96 0.8− 0.8+ | 2007 11 12 G96 0.5− 0.4− |
| 2006 05 01 568 0.0 0.7+  | 2007 10 30 G96 0.1+ 0.4+ | 2007 12 06 G96 0.0 0.7−  |
| 2006 05 01 568 0.3+ 0.8+ | 2007 11 03 691 0.1− 0.6+ | 2007 12 06 G96 0.5− 0.1+ |
| 2007 09 12 G96 0.5+ 0.0  | 2007 11 03 691 0.0 0.1+  | 2007 12 06 G96 0.6− 0.2+ |
| 2007 09 12 G96 0.3+ 0.1− | 2007 11 03 691 0.1+ 0.2+ | 2007 12 06 G96 0.3+ 0.1+ |
| 2007 09 12 G96 0.4− 0.2− | 2007 11 11 G96 0.1+ 0.4− |                          |

**2007 UF<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 154.06050  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23220607 | $\omega$ | 317.35416 | −0.45801016 | +0.88887523 |
| $a$ | 2.6215230  | $\Omega$ | 285.38417 | −0.81240419 | −0.42369633 |
| $e$ | 0.1503641  | $i$      | 0.67108   | −0.36086857 | −0.17430503 |
| $P$ | 4.24       | $H$      | 16.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 03 26 691 0.4+ 0.4+ | 2006 07 21 G96 0.0 0.2+  | 2007 11 03 691 0.4− 0.5+ |
| 2001 03 26 691 0.2+ 0.4+ | 2006 07 21 G96 0.5− 0.1+ | 2007 11 03 691 0.1− 0.1− |
| 2001 03 26 691 0.1+ 0.6+ | 2007 10 10 691 0.4− 0.4+ | 2007 11 04 691 0.4− 0.2+ |
| 2005 02 09 G96 0.1+ 0.1− | 2007 10 10 691 0.2+ 0.1+ | 2007 11 04 691 0.1− 0.0  |
| 2005 02 09 G96 0.1− 0.1− | 2007 10 10 691 0.0 0.3+  | 2007 11 04 691 0.2− 0.0  |
| 2005 02 09 G96 0.1− 0.1− | 2007 10 18 691 0.1− 0.0  | 2007 11 05 G96 0.1− 0.1+ |
| 2005 02 09 G96 0.0 0.1+  | 2007 10 18 691 0.2+ 0.5− | 2007 11 05 G96 0.6+ 0.0  |
| 2006 05 31 G96 0.2+ 0.2− | 2007 10 18 691 0.6− 0.2− | 2007 11 05 G96 0.0 0.2+  |
| 2006 05 31 G96 0.2− 0.2+ | 2007 10 30 G96 0.1+ 0.0  | 2007 11 05 G96 0.5+ 0.1− |
| 2006 05 31 G96 0.1− 0.4− | 2007 10 30 G96 0.0 0.6+  | 2007 11 11 G96 0.3+ 0.2− |
| 2006 05 31 G96 0.4+ 0.2− | 2007 10 30 G96 0.9− 0.4− | 2007 11 11 G96 0.1+ 0.1− |
| 2006 07 21 G96 0.0 0.4+  | 2007 10 30 G96 0.6+ 0.4+ | 2007 11 11 G96 0.3+ 0.0  |
| 2006 07 21 G96 0.0 0.5+  | 2007 11 03 691 0.2− 0.1+ | 2007 11 11 G96 0.2+ 0.0  |

**2007 UM<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 60.77124   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22728462 | $\omega$ | 303.90500 | +0.97232915 | +0.23019359 |
| $a$ | 2.6592307  | $\Omega$ | 42.82490  | −0.19029335 | +0.87933571 |
| $e$ | 0.0202042  | $i$      | 3.35965   | −0.13551552 | +0.41686883 |
| $P$ | 4.34       | $H$      | 17.3      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1998 10 12 691 0.1− 0.0  | 2007 10 17 G96 0.1+ 0.1+ | 2007 11 07 691 0.1− 0.1+ |
| 1998 10 12 691 0.3+ 0.0  | 2007 10 17 G96 0.7+ 0.1+ | 2007 11 07 691 0.2+ 0.1+ |
| 1998 10 12 691 0.2− 0.1− | 2007 10 30 G96 0.3+ 0.1− | 2007 11 14 691 0.1− 0.4− |
| 2001 04 24 691 0.6− 0.8− | 2007 10 30 G96 0.5+ 0.2− | 2007 11 14 691 0.1+ 0.2− |
| 2001 04 24 691 0.2+ 0.1+ | 2007 10 30 G96 0.7+ 0.2+ | 2007 11 14 691 0.0 0.0   |
| 2001 04 24 691 0.3+ 0.4+ | 2007 10 30 G96 0.3+ 0.1− | 2007 11 18 691 0.2+ 0.2+ |
| 2004 01 19 691 0.0 0.0   | 2007 11 03 691 0.2− 0.1− | 2007 11 18 691 0.0 0.3+  |
| 2004 01 19 691 0.4+ 0.3− | 2007 11 03 691 0.3− 0.2− | 2007 11 18 691 0.1− 0.5+ |
| 2004 01 19 691 0.4− 0.1− | 2007 11 03 691 0.2− 0.1− | 2007 12 05 691 0.1− 0.0  |
| 2005 03 12 695 0.1+ 0.3+ | 2007 11 04 691 0.3+ 0.0  | 2007 12 05 691 0.0 0.2−  |
| 2005 03 12 695 0.2+ 0.4+ | 2007 11 04 691 0.7− 0.2+ | 2007 12 05 691 0.1− 0.1− |
| 2007 10 17 G96 0.5+ 0.1+ | 2007 11 04 691 0.4+ 0.5− |                          |
| 2007 10 17 G96 0.0 0.4−  | 2007 11 07 691 0.1− 0.1+ |                          |

**2007 UX<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 273.00895  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21727117 | $\omega$ | 269.94454 | −0.78142864 | −0.62162184 |
| $a$ | 2.7403202  | $\Omega$ | 231.62066 | +0.59654320 | −0.71865304 |
| $e$ | 0.1035042  | $i$      | 3.97669   | +0.18304508 | −0.31164739 |
| $P$ | 4.54       | $H$      | 16.1      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1998 11 26 691 0.1− 0.4+ | 2007 10 14 691 0.1− 0.1− | 2007 11 05 291 0.2+ 0.3+ |
| 1998 11 26 691 0.2− 0.1− | 2007 10 14 691 0.1− 0.0  | 2007 11 05 G96 0.1+ 0.2− |
| 1998 11 26 691 0.2+ 0.2+ | 2007 10 14 691 0.0 0.0   | 2007 11 05 G96 0.1+ 0.2− |
| 2005 04 11 G96 0.3− 0.2+ | 2007 10 15 703 1.3− 0.9+ | 2007 11 05 G96 0.5+ 0.3− |
| 2005 04 11 G96 0.3− 0.4+ | 2007 10 15 703 0.0 0.3+  | 2007 11 05 G96 0.4+ 0.2− |
| 2005 04 11 G96 0.1+ 0.4+ | 2007 10 15 703 0.8+ 0.6+ | 2007 11 11 G96 0.3+ 0.3− |
| 2005 04 11 G96 0.3− 0.4+ | 2007 10 15 703 0.1+ 0.2+ | 2007 11 11 G96 0.6+ 0.1− |
| 2005 05 11 691 0.0 0.3+  | 2007 10 30 G96 0.1+ 0.2− | 2007 11 11 G96 0.4+ 0.2− |
| 2005 05 11 691 0.3+ 0.3+ | 2007 10 30 G96 0.7+ 0.1− | 2007 11 11 G96 0.1+ 0.3− |
| 2005 05 11 691 0.0 0.2+  | 2007 10 30 G96 0.5+ 0.2− | 2007 11 15 704 1.4+ 0.6+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 06 12 | G96 | 0.5+ | 0.4+ | 2007 11 03 | 691 | 0.4- | 0.1+ | 2007 11 15 | 704 | 0.9- | 0.6+ |
| 2005 06 12 | G96 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.2- | 0.0  | 2007 11 15 | 704 | 0.1+ | 0.7+ |
| 2005 06 12 | G96 | 0.3+ | 0.5+ | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 15 | 704 | 1.1+ | 1.0+ |
| 2005 06 12 | G96 | 0.2- | 0.2+ | 2007 11 04 | 691 | 0.4- | 0.2+ | 2007 12 06 | G96 | 0.2+ | 0.1+ |
| 2007 07 19 | G96 | 0.0  | 1.0- | 2007 11 04 | 691 | 0.4- | 0.1- | 2007 12 06 | G96 | 0.3+ | 0.4- |
| 2007 07 19 | G96 | 0.5- | 0.2+ | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 06 | G96 | 0.2- | 0.6- |
| 2007 07 19 | G96 | 0.7+ | 0.4- | 2007 11 05 | 291 | 0.1- | 0.2+ | 2007 12 06 | G96 | 0.3+ | 0.4- |
| 2007 07 19 | G96 | 0.3+ | 0.8- | 2007 11 05 | 291 | 0.2- | 0.1+ |            |     |      |      |

**2007 UQ<sub>93</sub> = 2005 EE<sub>150</sub> = 2005 JD<sub>105</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |             |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.22349673 | $\omega$ | 74.38628 | -0.32998539 | -0.93949493 |          |   |
| <i>a</i> | 2.6891928  | $\Omega$ | 35.31264 | +0.79364715 | -0.32886438 |          |   |
| <i>e</i> | 0.0117092  | <i>i</i> | 9.15532  | +0.51111041 | -0.09590359 |          |   |
| <i>P</i> | 4.41       | <i>H</i> | 16.4     | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | 703 | 1.1- | 1.3+ | 2005 05 11 | G96 | 0.1- | 0.1- | 2007 10 31 | G96 | 0.8+ | 0.3- |
| 2005 03 10 | 703 | 0.4- | 1.0+ | 2005 05 11 | G96 | 0.5- | 0.4- | 2007 10 31 | G96 | 0.4+ | 0.4- |
| 2005 03 10 | 703 | 1.1+ | 1.2+ | 2005 05 11 | G96 | 0.0  | 0.3- | 2007 11 03 | 691 | 0.1+ | 0.0  |
| 2005 03 10 | 703 | 0.8+ | 1.1- | 2005 05 13 | 691 | 0.2+ | 0.1- | 2007 11 03 | 691 | 0.2- | 0.1- |
| 2005 03 10 | 691 | 0.1- | 0.1- | 2005 05 13 | 691 | 0.2+ | 0.3+ | 2007 11 03 | 691 | 0.2+ | 0.6+ |
| 2005 03 10 | 691 | 0.1+ | 0.1- | 2005 05 13 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.4+ | 0.0  |
| 2005 03 10 | 691 | 0.0  | 0.2- | 2007 10 04 | 691 | 0.2- | 0.0  | 2007 11 07 | 703 | 0.4+ | 0.0  |
| 2005 03 11 | 691 | 0.1- | 0.1- | 2007 10 04 | 691 | 0.2- | 0.0  | 2007 11 07 | 703 | 1.3+ | 0.2- |
| 2005 03 11 | 691 | 0.1+ | 0.0  | 2007 10 04 | 691 | 0.5- | 0.1- | 2007 11 07 | 703 | 0.8- | 0.1- |
| 2005 03 11 | 691 | 0.4+ | 0.0  | 2007 10 18 | 691 | 0.0  | 0.2- | 2007 11 15 | 704 | 0.1- | 1.2+ |
| 2005 04 01 | 691 | 0.4- | 0.0  | 2007 10 18 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.1- | 0.2- |
| 2005 04 01 | 691 | 0.1- | 0.1+ | 2007 10 18 | 691 | 0.1- | 0.1+ | 2007 11 15 | 704 | 0.3+ | 0.4- |
| 2005 04 01 | 691 | 0.2- | 0.1+ | 2007 10 31 | G96 | 0.3+ | 0.4- |            |     |      |      |
| 2005 05 11 | G96 | 0.1+ | 0.6- | 2007 10 31 | G96 | 0.5+ | 0.3- |            |     |      |      |

**2007 US<sub>93</sub> = 2005 FQ<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.19598513 | $\omega$ | 336.81069 | +0.83528811 | +0.54979588 |          |   |
| <i>a</i> | 2.9353100  | $\Omega$ | 349.83303 | -0.50057510 | +0.75724750 |          |   |
| <i>e</i> | 0.0975177  | <i>i</i> | 1.38730   | -0.22741668 | +0.35256305 |          |   |
| <i>P</i> | 5.03       | <i>H</i> | 15.7      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 01 12 | 691 | 0.1+  | 0.2-  | 2005 03 17 | 691 | 0.5+ | 0.0  | 2007 11 03 | 691 | 0.1+  | 0.0   |
| 1994 01 12 | 691 | 0.9-  | 0.2-  | 2005 03 17 | 691 | 0.3+ | 0.0  | 2007 11 03 | 691 | 0.2-  | 0.2-  |
| 1994 01 12 | 691 | (1.9+ | 3.8+) | 2005 03 17 | 691 | 0.3+ | 0.2+ | 2007 11 07 | 703 | 0.6+  | 0.8+  |
| 1997 11 03 | 327 | 0.5+  | 1.3-  | 2005 05 08 | G96 | 0.2- | 0.2- | 2007 11 07 | 703 | 1.3-  | 0.5+  |
| 1997 11 03 | 327 | 1.1+  | 0.3-  | 2005 05 08 | G96 | 0.2- | 0.3- | 2007 11 07 | 703 | 0.5+  | 0.0   |
| 1997 11 03 | 327 | 0.4+  | 0.7+  | 2005 05 08 | G96 | 0.4- | 0.2- | 2007 11 07 | 703 | 0.8-  | 0.9-  |
| 2001 07 19 | 644 | 0.6-  | 0.4+  | 2005 05 08 | G96 | 0.2- | 0.1- | 2007 11 11 | 699 | 0.8-  | 1.0-  |
| 2001 07 19 | 644 | 0.7-  | 0.8+  | 2007 10 04 | 691 | 0.1- | 0.0  | 2007 11 11 | 699 | 0.8-  | 0.4+  |
| 2001 07 19 | 644 | 0.8-  | 0.4+  | 2007 10 04 | 691 | 0.1+ | 0.3+ | 2007 11 11 | 699 | 0.2+  | 0.5-  |
| 2004 01 19 | 691 | 0.3-  | 0.4-  | 2007 10 04 | 691 | 0.1+ | 0.0  | 2007 11 11 | 699 | 1.2-  | 0.1-  |
| 2004 01 19 | 691 | 0.3-  | 0.6-  | 2007 10 20 | 703 | 0.6+ | 0.6+ | 2007 11 15 | 704 | 1.4-  | 1.0+  |
| 2004 01 19 | 691 | 0.3-  | 0.5-  | 2007 10 20 | 703 | 1.2+ | 0.3- | 2007 11 15 | 704 | 1.0+  | 0.2+  |
| 2004 02 12 | 291 | 0.6-  | 0.3-  | 2007 10 20 | 703 | 0.3- | 0.2- | 2007 11 15 | 704 | (0.5+ | 2.1-) |
| 2004 02 12 | 291 | 0.4-  | 0.6-  | 2007 10 20 | 703 | 1.3+ | 1.3- | 2007 11 15 | 704 | 1.0-  | 1.1+  |
| 2004 02 12 | 291 | 0.2+  | 0.3-  | 2007 10 31 | G96 | 0.5+ | 0.1- | 2007 12 03 | 703 | 0.0   | 0.3-  |
| 2005 03 10 | G96 | 0.1-  | 0.0   | 2007 10 31 | G96 | 0.4+ | 0.4- | 2007 12 03 | 703 | 0.7-  | 0.1-  |
| 2005 03 10 | G96 | 0.1+  | 0.1-  | 2007 10 31 | G96 | 0.4+ | 0.3- | 2007 12 03 | 703 | 1.1+  | 2.1+  |
| 2005 03 10 | G96 | 0.1+  | 0.4-  | 2007 10 31 | G96 | 0.4+ | 0.3- | 2007 12 03 | 703 | 0.5+  | 1.9+  |
| 2005 03 10 | G96 | 0.3-  | 0.1+  | 2007 11 03 | 691 | 0.2- | 0.0  |            |     |       |       |

**2007 UV<sub>95</sub> = 1999 GU<sub>21</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |             |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.17944364 | $\omega$ | 79.40489 | -0.26231979 | -0.96447119 |          |   |
| <i>a</i> | 3.1130350  | $\Omega$ | 25.86875 | +0.85487036 | -0.24734166 |          |   |
| <i>e</i> | 0.0497792  | <i>i</i> | 4.12214  | +0.44764382 | -0.09283011 |          |   |
| <i>P</i> | 5.49       | <i>H</i> | 15.8     | <i>G</i>    | 0.15        | <i>U</i> | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 16 | 691 | 0.3- | 0.1- | 2007 09 11 | G96 | 0.2+ | 0.3+ | 2007 10 18 | G96 | 0.4+ | 0.1+ |
| 1996 10 16 | 691 | 0.4+ | 0.2+ | 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.1+ | 0.6- |
| 1999 04 09 | 696 | 0.2+ | 0.5+ | 2007 09 11 | G96 | 0.4- | 0.5+ | 2007 10 30 | G96 | 0.0  | 0.1- |
| 1999 04 09 | 696 | 0.9+ | 0.8+ | 2007 09 11 | G96 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.6+ | 0.1+ |
| 1999 04 10 | 696 | 1.9+ | 0.2- | 2007 10 07 | G96 | 0.7+ | 0.3- | 2007 10 30 | G96 | 0.1+ | 0.0  |
| 1999 04 10 | 696 | 1.4+ | 0.1+ | 2007 10 07 | G96 | 0.3- | 0.2- | 2007 11 04 | 691 | 0.4+ | 0.7+ |
| 2001 09 19 | 645 | 0.1- | 0.1+ | 2007 10 07 | G96 | 0.2- | 0.4- | 2007 11 04 | 691 | 0.7+ | 0.2- |
| 2001 09 19 | 645 | 0.2- | 0.1+ | 2007 10 07 | G96 | 0.5+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2004 03 01 | 291 | 0.3- | 0.4+ | 2007 10 18 | G96 | 0.2+ | 0.1- | 2007 11 15 | 691 | 0.3- | 0.3+ |
| 2004 03 01 | 291 | 0.1- | 0.4+ | 2007 10 18 | G96 | 0.2+ | 0.0  | 2007 11 15 | 691 | 0.2- | 0.4+ |
| 2004 03 01 | 291 | 0.1- | 0.5+ | 2007 10 18 | G96 | 0.0  | 0.1- | 2007 11 15 | 691 | 0.6- | 0.4- |

**2007 UX<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.29510446 | $\omega$ | 36.75900  | -0.42320879 | +0.90453699 |          |   |
| <i>a</i> | 2.2343551  | $\Omega$ | 208.31195 | -0.85519843 | -0.41777009 |          |   |
| <i>e</i> | 0.1158904  | <i>i</i> | 6.29836   | -0.29921558 | -0.08532869 |          |   |
| <i>P</i> | 3.34       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 24 | 691 | 0.2+ | 0.1- | 2006 05 19 | G96 | 0.0  | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.1- |
| 2000 09 24 | 691 | 0.0  | 0.0  | 2006 05 19 | G96 | 0.3+ | 0.5+ | 2007 10 30 | G96 | 0.4+ | 0.3- |
| 2000 09 24 | 691 | 0.1- | 0.0  | 2007 10 04 | 691 | 0.1- | 0.2+ | 2007 10 30 | G96 | 0.1- | 0.2+ |
| 2006 04 19 | G96 | 0.0  | 0.1+ | 2007 10 04 | 691 | 0.1- | 0.5+ | 2007 10 30 | G96 | 0.1+ | 0.0  |
| 2006 04 19 | G96 | 0.4+ | 0.1- | 2007 10 04 | 691 | 0.7- | 0.6- | 2007 10 30 | G96 | 0.2+ | 0.0  |
| 2006 04 19 | G96 | 0.2- | 0.0  | 2007 10 18 | G96 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.2- | 0.3+ |
| 2006 04 19 | G96 | 0.1+ | 0.1+ | 2007 10 18 | G96 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.4- | 0.2+ |
| 2006 05 19 | G96 | 0.5- | 0.2- | 2007 10 18 | G96 | 0.2+ | 0.1+ | 2007 11 04 | 691 | 0.1- | 0.2+ |

**2007 UA<sub>96</sub> = 1997 WT<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |             | <b>Q</b> |   |
| <i>n</i> | 0.29153009 | $\omega$ | 158.67464 | +0.98209501 | -0.18329282 |          |   |
| <i>a</i> | 2.2525812  | $\Omega$ | 211.98418 | +0.15877156 | +0.92963948 |          |   |
| <i>e</i> | 0.1071550  | <i>i</i> | 4.71178   | +0.10139515 | +0.31964695 |          |   |
| <i>P</i> | 3.38       | <i>H</i> | 18.6      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 21 | 691 | 0.2+ | 0.2- | 2007 10 04 | 691 | 0.4- | 0.2- | 2007 10 30 | G96 | 0.1+ | 0.2- |
| 1997 11 21 | 691 | 0.4+ | 0.0  | 2007 10 04 | 691 | 0.2- | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.7- |
| 1997 11 21 | 691 | 0.4+ | 0.2+ | 2007 10 18 | G96 | 0.0  | 0.0  | 2007 10 30 | G96 | 0.1- | 0.7- |
| 1997 11 28 | 691 | 0.3- | 0.1+ | 2007 10 18 | G96 | 0.2+ | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.6+ |
| 1997 11 28 | 691 | 0.6- | 0.1+ | 2007 10 18 | G96 | 0.2+ | 0.1+ | 2007 11 04 | 691 | 0.4- | 0.5+ |
| 1997 11 28 | 691 | 0.2- | 0.2- | 2007 10 18 | G96 | 0.4+ | 0.1+ | 2007 11 04 | 691 | 0.5- | 0.6+ |
| 2007 10 04 | 691 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.6- |            |     |      |      |

**2007 UG<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 359.20356  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|----------|-------------|-------------|
| $n$ | 0.30423795 | $\omega$ | 11.77949 | +0.68304326 | -0.73023068 |
| $a$ | 2.1894101  | $\Omega$ | 35.14158 | +0.66802274 | +0.61648548 |
| $e$ | 0.1327522  | $i$      | 1.45993  | +0.29529227 | +0.29446360 |
| $P$ | 3.24       | $H$      | 18.2     | $G$ 0.15    | $U$ 2       |



2007 DEC. 24

M.P.O. 129955

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1999 03 20 | 645 | 0.1- | 0.0  | 2007 11 03 | 691 | 0.1+ | 0.2- | 2007 11 14 | 300 | 0.0   | 0.3-  |
| 1999 03 20 | 645 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.2- | 0.1- | 2007 11 14 | 300 | 0.3+  | 0.4-  |
| 1999 03 21 | 645 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.0  | 0.2- | 2007 11 14 | 300 | 0.6+  | 0.6+  |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.1- | 0.3- | 2007 11 14 | 300 | 0.2+  | 0.0   |
| 2004 12 11 | 691 | 0.1- | 0.3+ | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2+  | 0.5-  |
| 2004 12 11 | 691 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.3- | 0.6- | 2007 11 15 | 704 | 0.3+  | 0.7+  |
| 2004 12 11 | 691 | 0.0  | 0.0  | 2007 11 11 | 300 | 0.4+ | 0.4- | 2007 11 15 | 704 | 0.1-  | 0.8+  |
| 2007 09 10 | G96 | 0.1- | 0.1- | 2007 11 11 | 300 | 1.3+ | 0.1- | 2007 11 15 | 704 | (0.3+ | 1.8+) |
| 2007 09 10 | G96 | 0.1+ | 0.1- | 2007 11 11 | 300 | 0.2+ | 0.0  | 2007 11 15 | 704 | 0.4+  | 0.8+  |
| 2007 09 10 | G96 | 0.0  | 0.2- | 2007 11 11 | 300 | 1.0+ | 0.2- | 2007 11 19 | 691 | 0.0   | 0.0   |
| 2007 09 10 | G96 | 0.3+ | 0.5- | 2007 11 11 | 300 | 0.4- | 0.1+ | 2007 11 19 | 691 | 0.2+  | 0.0   |
| 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 11 11 | 300 | 0.8+ | 0.2- | 2007 11 19 | 691 | 0.2-  | 0.1+  |
| 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 14 | 691 | 0.1- | 0.0  | 2007 12 05 | 691 | 0.0   | 0.1+  |
| 2007 10 30 | 691 | 0.3- | 0.2+ | 2007 11 14 | 691 | 0.1- | 0.3+ | 2007 12 05 | 691 | 0.1-  | 0.0   |
| 2007 10 30 | G96 | 0.6+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.1-  | 0.2-  |
| 2007 10 30 | G96 | 0.3+ | 0.5- | 2007 11 14 | 300 | 0.2+ | 0.5+ | 2007 12 06 | 691 | 0.4-  | 0.2-  |
| 2007 10 30 | G96 | 0.8+ | 0.2+ | 2007 11 14 | 300 | 0.7+ | 0.9+ | 2007 12 06 | 691 | 0.1+  | 0.0   |
| 2007 10 30 | G96 | 0.4+ | 0.1- | 2007 11 14 | 300 | 0.2+ | 0.3+ | 2007 12 06 | 691 | 0.0   | 0.0   |

2007 UL<sub>96</sub> = 2005 JL<sub>79</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 125.76920  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18953012 | $\omega$ | 45.35796  | +0.17682615 | +0.97897981 |
| $a$ | 3.0015844  | $\Omega$ | 235.08901 | -0.93447203 | +0.13456369 |
| $e$ | 0.0588031  | $i$      | 7.11995   | -0.30902191 | +0.15326819 |
| $P$ | 5.20       | $H$      | 16.5      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.1+ | 0.1- | 2005 05 11 | 691 | 0.2+ | 0.0  | 2007 10 30 | 691 | 0.0  | 0.1+ |
| 1999 03 21 | 645 | 0.1- | 0.2+ | 2005 05 11 | 691 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.2- | 0.4+ |
| 2001 11 18 | 645 | 0.0  | 0.1+ | 2005 05 11 | 691 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2001 11 18 | 645 | 0.0  | 0.0  | 2007 10 17 | G96 | 0.4- | 0.2+ | 2007 11 03 | 691 | 0.2- | 0.3+ |
| 2005 05 10 | G96 | 0.1- | 0.2+ | 2007 10 17 | G96 | 0.2+ | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2005 05 10 | G96 | 0.3- | 0.3+ | 2007 10 17 | G96 | 0.4+ | 0.2- | 2007 11 07 | 691 | 0.3+ | 0.0  |
| 2005 05 10 | G96 | 0.3- | 0.4+ | 2007 10 17 | G96 | 0.7+ | 0.1- | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2005 05 10 | G96 | 0.2- | 0.3+ | 2007 10 30 | 691 | 0.3+ | 0.8- | 2007 11 07 | 691 | 0.3- | 0.4+ |

2007 UM<sub>96</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 36.76067   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.18219545 | $\omega$ | 309.13060 | +0.98208538 | +0.18567569 |
| $a$ | 3.0816102  | $\Omega$ | 40.19833  | -0.15385228 | +0.88856734 |
| $e$ | 0.2626685  | $i$      | 2.85408   | -0.10880156 | +0.41949091 |
| $P$ | 5.41       | $H$      | 16.6      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 15 | 608 | 0.3+ | 0.8- | 2007 09 18 | G96 | 0.3+ | 0.8- | 2007 11 14 | 691 | 0.2- | 0.4- |
| 2001 08 15 | 608 | 0.1- | 0.5- | 2007 09 18 | G96 | 0.2+ | 0.6- | 2007 11 14 | 691 | 0.1+ | 0.0  |
| 2001 08 15 | 608 | 0.4+ | 0.1- | 2007 09 18 | G96 | 0.5+ | 0.5- | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2001 08 24 | 699 | 0.1- | 0.6- | 2007 10 30 | 691 | 0.4- | 0.0  | 2007 11 18 | 691 | 0.3+ | 0.1+ |
| 2001 08 24 | 699 | 0.7- | 1.4+ | 2007 10 30 | 691 | 0.3- | 0.0  | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2001 08 24 | 699 | 0.1- | 1.5+ | 2007 10 30 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.4+ | 0.0  |
| 2001 08 24 | 699 | 0.2- | 0.1+ | 2007 11 03 | 691 | 0.1+ | 0.1- | 2007 12 04 | 691 | 0.3- | 0.5+ |
| 2007 09 09 | G96 | 0.1+ | 0.2- | 2007 11 03 | 691 | 0.1+ | 0.1- | 2007 12 04 | 691 | 0.2+ | 0.2- |
| 2007 09 09 | G96 | 0.2+ | 0.4- | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 04 | 691 | 0.1- | 0.4+ |
| 2007 09 09 | G96 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.0  | 0.3+ | 2007 12 06 | 691 | 0.9- | 0.3+ |
| 2007 09 09 | G96 | 0.0  | 0.1- | 2007 11 07 | 691 | 0.1+ | 0.2- | 2007 12 06 | 691 | 0.3- | 0.0  |
| 2007 09 18 | G96 | 0.4+ | 0.5- | 2007 11 07 | 691 | 0.1+ | 0.1- | 2007 12 06 | 691 | 0.6+ | 0.1+ |

2007 UT<sub>96</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 66.99435   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.27174826 | $\omega$ | 48.15535  | +0.76867012 | +0.63950298 |     |   |
| $a$ | 2.3606134  | $\Omega$ | 272.08534 | -0.59079289 | +0.70171722 |     |   |
| $e$ | 0.1903495  | $i$      | 0.77388   | -0.24517343 | +0.31405234 |     |   |
| $P$ | 3.63       | $H$      | 17.7      | $G$         | 0.15        | $U$ | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 26 | 691 | 0.3+  | 0.2+  | 2007 10 17 | G96 | 1.0+ | 0.5- | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2006 03 26 | 691 | 0.3+  | 0.1+  | 2007 10 30 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2006 03 26 | 691 | 0.3-  | 0.2-  | 2007 10 30 | 691 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.2+ | 0.2- |
| 2006 05 03 | G96 | (0.1+ | 1.9-) | 2007 10 30 | 691 | 0.1+ | 0.1- | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2006 05 03 | G96 | 0.5-  | 0.5-  | 2007 11 03 | 691 | 0.1- | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2006 05 03 | G96 | 0.4-  | 0.3-  | 2007 11 03 | 691 | 0.1- | 0.3+ | 2007 11 18 | 691 | 0.2- | 0.2+ |
| 2006 05 03 | G96 | 0.3-  | 0.1-  | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.4+ | 0.3- |
| 2007 10 17 | G96 | 0.8+  | 0.2-  | 2007 11 07 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2007 10 17 | G96 | 0.4+  | 0.6-  | 2007 11 07 | 691 | 0.0  | 0.1- | 2007 12 15 | G96 | 0.6+ | 0.2- |
| 2007 10 17 | G96 | 0.8+  | 0.3-  | 2007 11 07 | 691 | 0.8- | 0.1+ | 2007 12 15 | G96 | 0.1- | 0.4- |

2007 UH<sub>97</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 98.63823   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.19324082 | $\omega$ | 242.27451 | +0.42071856 | +0.90535254 |
| $a$ | 2.9630351  | $\Omega$ | 52.72273  | -0.80469802 | +0.40181219 |
| $e$ | 0.0966422  | $i$      | 4.16048   | -0.41887587 | +0.13741815 |
| $P$ | 5.10       | $H$      | 16.8      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 01 | 691 | 0.3- | 0.1- | 2007 10 10 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.5- | 0.2+ |
| 2005 04 01 | 691 | 0.1- | 0.1- | 2007 10 10 | 691 | 0.1- | 0.9+ | 2007 11 04 | 691 | 0.4- | 0.1+ |
| 2005 04 01 | 691 | 0.5+ | 0.4- | 2007 10 10 | 691 | 0.7- | 0.1+ | 2007 11 04 | 691 | 0.5- | 0.6+ |
| 2005 04 11 | 691 | 0.1+ | 0.3+ | 2007 10 18 | 691 | 0.2- | 0.5+ | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2005 04 11 | 691 | 0.0  | 0.4+ | 2007 10 18 | 691 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2005 04 11 | 691 | 0.3- | 0.1- | 2007 10 18 | 691 | 0.1- | 0.3+ | 2007 11 05 | G96 | 0.8+ | 0.1- |
| 2007 09 10 | G96 | 0.2- | 0.2- | 2007 10 30 | G96 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.3- | 0.1+ |
| 2007 09 10 | G96 | 0.2+ | 0.4- | 2007 10 30 | G96 | 0.0  | 0.1- | 2007 11 12 | 947 | 0.5+ | 0.7- |
| 2007 09 10 | G96 | 0.1- | 0.1- | 2007 10 30 | G96 | 0.6+ | 0.1- | 2007 11 12 | 947 | 0.3- | 0.3- |
| 2007 09 10 | G96 | 0.2+ | 0.3- | 2007 10 30 | G96 | 0.6+ | 0.2- | 2007 11 12 | 947 | 0.2- | 0.3- |

2007 UL<sub>97</sub> = 2006 JG<sub>79</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 44.90050   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.26994089 | $\omega$ | 294.49618 | +0.92080236 | +0.38824439 |     |   |
| $a$ | 2.3711386  | $\Omega$ | 42.68495  | -0.33498831 | +0.83618516 |     |   |
| $e$ | 0.2114509  | $i$      | 3.15161   | -0.19976447 | +0.38737666 |     |   |
| $P$ | 3.65       | $H$      | 18.3      | $G$         | 0.15        | $U$ | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 23 | 644 | 0.1- | 0.2+ | 2007 09 10 | G96 | 0.3+ | 0.4- | 2007 10 18 | 691 | 0.5- | 0.2+ |
| 2003 08 23 | 644 | 0.1- | 0.1+ | 2007 09 10 | G96 | 0.0  | 0.6- | 2007 10 30 | G96 | 0.6+ | 0.0  |
| 2003 08 23 | 644 | 0.0  | 0.3+ | 2007 09 10 | G96 | 0.3+ | 0.1- | 2007 10 30 | G96 | 0.4+ | 0.2- |
| 2003 11 24 | 695 | 0.2+ | 0.5+ | 2007 09 10 | G96 | 0.1+ | 0.3- | 2007 10 30 | G96 | 0.6+ | 0.1- |
| 2003 11 24 | 695 | 0.3- | 0.0  | 2007 09 18 | G96 | 0.4+ | 0.2+ | 2007 10 30 | G96 | 0.8+ | 0.4- |
| 2006 05 01 | 568 | 0.6+ | 1.1+ | 2007 09 18 | G96 | 0.3+ | 0.3- | 2007 11 04 | 691 | 0.1+ | 0.0  |
| 2006 05 01 | 568 | 0.5+ | 1.1+ | 2007 09 18 | G96 | 0.5+ | 0.2- | 2007 11 04 | 691 | 0.0  | 0.2+ |
| 2006 05 01 | 568 | 0.6+ | 1.1+ | 2007 09 18 | G96 | 0.3+ | 0.3+ | 2007 11 04 | 691 | 0.2- | 0.0  |
| 2006 05 02 | 568 | 0.2+ | 1.2+ | 2007 10 10 | 691 | 0.0  | 0.2+ | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2007 09 10 | G96 | 0.1+ | 0.5- | 2007 10 10 | 691 | 0.5- | 0.5+ | 2007 11 11 | G96 | 0.1+ | 0.0  |
| 2007 09 10 | G96 | 0.2- | 0.1+ | 2007 10 10 | 691 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.1- | 0.2+ |
| 2007 09 10 | G96 | 0.5+ | 0.9- | 2007 10 18 | 691 | 0.1- | 0.2+ | 2007 11 11 | G96 | 0.2+ | 0.1+ |
| 2007 09 10 | G96 | 0.7- | 0.8- | 2007 10 18 | 691 | 0.1- | 0.1+ |            |     |      |      |

**2007 UD<sub>98</sub> = 2005 JB<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 124.64823  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18704316 | $\omega$ 222.10485 | +0.11338035   | +0.99214397 |
| <i>a</i> | 3.0281321  | $\Omega$ 54.47184  | -0.89336303   | +0.12508976 |
| <i>e</i> | 0.0734630  | <i>i</i> 3.72481   | -0.43479580   | +0.00169978 |
| <i>P</i> | 5.27       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 13 | 691 | 0.0  | 0.0  | 2007 10 16 | 691 | 0.2+ | 0.0  | 2007 11 14 | 691 | 0.3- | 0.1- |
| 2004 02 13 | 691 | 0.3- | 0.0  | 2007 10 20 | 691 | 0.2- | 0.3- | 2007 11 14 | 691 | 0.1+ | 0.1- |
| 2004 02 13 | 691 | 0.2+ | 0.3- | 2007 10 20 | 691 | 0.1- | 0.4+ | 2007 11 14 | 691 | 0.1- | 0.2+ |
| 2005 04 17 | 691 | 0.4+ | 0.2+ | 2007 10 20 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.4+ | 0.3+ |
| 2005 04 17 | 691 | 0.3+ | 0.3+ | 2007 10 30 | G96 | 0.2+ | 0.9- | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 2005 04 17 | 691 | 0.1- | 0.2+ | 2007 10 30 | G96 | 0.6+ | 0.6- | 2007 11 18 | 691 | 0.1- | 0.3+ |
| 2005 05 03 | 691 | 0.2+ | 0.4+ | 2007 10 30 | G96 | 0.0  | 0.2- | 2007 12 05 | 691 | 0.2- | 0.3+ |
| 2005 05 03 | 691 | 0.0  | 0.4+ | 2007 10 30 | G96 | 0.0  | 0.2+ | 2007 12 05 | 691 | 0.2- | 0.4+ |
| 2005 05 03 | 691 | 0.2+ | 0.4+ | 2007 11 04 | 691 | 0.2- | 0.3+ | 2007 12 05 | 691 | 0.3- | 0.2+ |
| 2005 05 04 | G96 | 0.4- | 0.1- | 2007 11 04 | 691 | 0.4- | 0.1+ | 2007 12 15 | G96 | 0.2- | 0.1- |
| 2005 05 04 | G96 | 0.4- | 0.4+ | 2007 11 04 | 691 | 0.2- | 0.1+ | 2007 12 15 | G96 | 0.4- | 0.4+ |
| 2005 05 04 | G96 | 0.1- | 0.0  | 2007 11 05 | G96 | 0.8+ | 0.1- | 2007 12 15 | G96 | 0.0  | 0.2- |
| 2005 05 04 | G96 | 0.5- | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.1- | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2007 10 16 | 691 | 0.2+ | 0.3+ | 2007 11 05 | G96 | 0.0  | 0.0  |            |     |      |      |
| 2007 10 16 | 691 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.1- |            |     |      |      |

**2007 UJ<sub>98</sub> = 2005 AN<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.85006  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.29797547 | $\omega$ 8.39563  | +0.55398554   | -0.82990849 |
| <i>a</i> | 2.2199799  | $\Omega$ 47.99298 | +0.75857914   | +0.47054405 |
| <i>e</i> | 0.0113853  | <i>i</i> 5.09342  | +0.34301268   | +0.29973353 |
| <i>P</i> | 3.31       | <i>H</i> 17.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 09 | 291 | 0.3- | 0.0  | 2007 09 10 | G96 | 0.6- | 0.1- | 2007 10 30 | 691 | 0.0  | 0.1+ |
| 2002 04 09 | 291 | 0.2+ | 0.1+ | 2007 09 18 | G96 | 0.2- | 0.3- | 2007 10 30 | 691 | 0.3+ | 0.1+ |
| 2002 04 09 | 291 | 0.2+ | 0.1+ | 2007 09 18 | G96 | 0.1- | 0.3- | 2007 11 03 | 691 | 0.1+ | 0.0  |
| 2005 01 06 | 703 | 0.1- | 0.6- | 2007 09 18 | G96 | 0.3+ | 0.0  | 2007 11 03 | 691 | 0.1+ | 0.3- |
| 2005 01 06 | 703 | 0.3+ | 0.5- | 2007 09 18 | G96 | 0.0  | 0.4+ | 2007 11 03 | 691 | 0.1+ | 0.2- |
| 2005 01 06 | 703 | 0.6- | 1.4- | 2007 10 09 | G96 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2005 01 06 | 703 | 0.3- | 0.5- | 2007 10 09 | G96 | 0.4+ | 0.2- | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2005 01 07 | 704 | 0.7+ | 1.0+ | 2007 10 09 | G96 | 0.3+ | 0.1- | 2007 11 18 | 691 | 0.3- | 0.1+ |
| 2005 01 07 | 704 | 0.1- | 0.1+ | 2007 10 17 | G96 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.0  | 0.3+ |
| 2005 01 07 | 704 | 0.0  | 0.3+ | 2007 10 17 | G96 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.4- | 0.0  |
| 2007 09 10 | G96 | 0.4- | 0.1+ | 2007 10 17 | G96 | 0.2+ | 0.0  | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2007 09 10 | G96 | 0.1- | 0.2+ | 2007 10 17 | G96 | 0.2+ | 0.1- |            |     |      |      |
| 2007 09 10 | G96 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2007 UM<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.11984   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27679036 | $\omega$ 110.72546 | +0.98200203   | +0.18215298 |
| <i>a</i> | 2.3318579  | $\Omega$ 238.80942 | -0.18760287   | +0.91014890 |
| <i>e</i> | 0.1604486  | <i>i</i> 3.34562   | -0.02184444   | +0.37208772 |
| <i>P</i> | 3.56       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 24 | 644 | 0.1- | 0.4+ | 2007 10 30 | 691 | 0.1- | 0.1- | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2003 07 24 | 644 | 0.4- | 0.5+ | 2007 11 03 | 691 | 0.1+ | 0.1- | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2003 07 24 | 644 | 0.1- | 0.6+ | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.2- | 0.3+ |
| 2003 07 24 | 644 | 0.2- | 0.5+ | 2007 11 03 | 691 | 0.2- | 0.3+ | 2007 12 05 | 704 | 0.6- | 0.2+ |
| 2003 07 24 | 644 | 0.0  | 0.6+ | 2007 11 14 | 691 | 0.3+ | 0.1- | 2007 12 05 | 704 | 0.6+ | 0.3- |
| 2003 07 24 | 644 | 0.5- | 0.6+ | 2007 11 14 | 691 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.2- | 0.5+ |
| 2005 01 17 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.0  | 0.8- |
| 2005 01 17 | 691 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.2+ | 0.5- | 2007 12 06 | G96 | 0.7+ | 0.0  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 01 17 | 691 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.2-  | 0.0   | 2007 12 06 | G96 | 0.3+ | 0.2- |
| 2006 05 05 | 691 | 0.2+ | 0.1+ | 2007 11 15 | 704 | 0.2+  | 0.7-  | 2007 12 06 | G96 | 0.7+ | 0.2- |
| 2006 05 05 | 691 | 0.2- | 0.5- | 2007 11 15 | 704 | 0.2+  | 0.8-  | 2007 12 06 | G96 | 0.3+ | 0.2- |
| 2006 05 05 | 691 | 0.2+ | 0.4- | 2007 11 15 | 704 | 0.5-  | 0.6-  | 2007 12 15 | G96 | 0.5+ | 0.2+ |
| 2006 06 02 | 691 | 0.1+ | 0.5+ | 2007 11 17 | 704 | 0.4-  | 0.4+  | 2007 12 15 | G96 | 0.4+ | 0.1+ |
| 2006 06 02 | 691 | 0.3- | 0.1+ | 2007 11 17 | 704 | 0.6+  | 0.3+  | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2006 06 02 | 691 | 0.1+ | 0.2+ | 2007 11 17 | 704 | 0.3-  | 1.4-  | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2007 10 30 | 691 | 0.1- | 0.1- | 2007 11 17 | 704 | 0.8-  | 0.3+  |            |     |      |      |
| 2007 10 30 | 691 | 0.3- | 0.0  | 2007 11 17 | 704 | (2.0- | 1.4+) |            |     |      |      |

**2007 UO<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.63416   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24372623 | $\omega$ 278.84386 | +0.88141548   | +0.46222084 |
| <i>a</i> | 2.5382508  | $\Omega$ 53.68414  | -0.37188227   | +0.80603126 |
| <i>e</i> | 0.2379362  | <i>i</i> 6.93249   | -0.29122214   | +0.36968296 |
| <i>P</i> | 4.04       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 05 07 | 291 | 0.0  | 0.2- | 2007 10 17 | G96 | 0.2- | 0.2- | 2007 11 14 | 691 | 0.2+ | 0.0  |
| 2002 05 07 | 291 | 0.1- | 0.2- | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 15 | 704 | 0.9+ | 0.0  |
| 2002 05 07 | 291 | 0.2- | 0.4- | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 2003 11 19 | 691 | 0.3+ | 0.2- | 2007 10 30 | 691 | 0.6- | 0.2+ | 2007 11 15 | 704 | 0.4+ | 0.4+ |
| 2003 11 19 | 691 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.0  | 0.1+ | 2007 11 15 | 704 | 0.2+ | 0.1- |
| 2003 11 19 | 691 | 0.1- | 0.3- | 2007 11 03 | 691 | 0.3- | 0.2+ | 2007 11 17 | 704 | 0.6- | 1.1+ |
| 2006 05 01 | 691 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 11 17 | 704 | 0.3- | 0.2+ |
| 2006 05 01 | 691 | 0.2+ | 0.4+ | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 11 17 | 704 | 1.9- | 0.3+ |
| 2006 05 01 | 691 | 0.2+ | 0.3+ | 2007 11 07 | 691 | 0.2+ | 0.1- | 2007 11 17 | 704 | 0.7+ | 0.7- |
| 2007 10 17 | G96 | 0.0  | 0.2- | 2007 11 07 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.2+ | 0.5- |
| 2007 10 17 | G96 | 0.4+ | 0.1+ | 2007 11 14 | 691 | 0.1+ | 0.1- | 2007 11 18 | 691 | 0.2+ | 0.1- |
| 2007 10 17 | G96 | 0.2- | 0.1- | 2007 11 14 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 691 | 0.3+ | 0.1- |

**2007 UP<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 316.11663  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.17681202 | $\omega$ 52.58294 | -0.34559390   | -0.93801163 |
| <i>a</i> | 3.1438479  | $\Omega$ 57.65518 | +0.85076154   | -0.32508770 |
| <i>e</i> | 0.1454515  | <i>i</i> 1.79337  | +0.39594148   | -0.12021720 |
| <i>P</i> | 5.57       | <i>H</i> 16.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 16 | 691 | 0.2-  | 0.1+  | 2007 10 30 | 691 | 0.2+ | 0.3- | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2001 10 16 | 691 | 0.1-  | 0.3+  | 2007 10 30 | 691 | 0.5- | 0.0  | 2007 11 18 | 691 | 0.3- | 0.2+ |
| 2001 10 16 | 691 | 0.1-  | 0.4+  | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 12 03 | 703 | 0.2+ | 0.0  |
| 2003 01 29 | 645 | 0.0   | 0.1+  | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 1.2+ | 0.8+ |
| 2003 01 29 | 645 | 0.0   | 0.1+  | 2007 11 03 | 691 | 0.1- | 0.2- | 2007 12 03 | 703 | 0.8- | 0.6+ |
| 2006 08 28 | 691 | 0.0   | 0.1+  | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 12 03 | 703 | 0.8+ | 0.8+ |
| 2006 08 28 | 691 | 0.0   | 0.4+  | 2007 11 05 | 704 | 0.3+ | 0.2- | 2007 12 04 | G96 | 0.4+ | 0.1+ |
| 2006 08 28 | 691 | 0.2-  | 0.0   | 2007 11 05 | 704 | 1.1+ | 0.9+ | 2007 12 04 | G96 | 0.0  | 0.1- |
| 2007 09 10 | G96 | (0.6- | 1.7-) | 2007 11 05 | 704 | 0.0  | 1.1+ | 2007 12 04 | G96 | 0.3+ | 0.1- |
| 2007 09 10 | G96 | 0.1-  | 0.2-  | 2007 11 07 | 691 | 0.3+ | 0.2- | 2007 12 04 | G96 | 0.0  | 0.2+ |
| 2007 09 10 | G96 | 0.4+  | 0.3-  | 2007 11 07 | 691 | 0.2+ | 0.1- | 2007 12 15 | G96 | 0.1- | 0.1- |
| 2007 09 10 | G96 | 0.4+  | 0.1-  | 2007 11 07 | 691 | 1.3- | 0.4- | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2007 10 17 | G96 | 0.7+  | 0.5-  | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.2+ | 0.4- |
| 2007 10 17 | G96 | 0.1+  | 0.1-  | 2007 11 14 | 691 | 0.2- | 0.2+ | 2007 12 15 | G96 | 0.0  | 0.0  |
| 2007 10 17 | G96 | 0.0   | 0.1-  | 2007 11 14 | 691 | 0.0  | 0.1- |            |     |      |      |
| 2007 10 17 | G96 | 0.0   | 0.3-  | 2007 11 18 | 691 | 1.2+ | 0.9- |            |     |      |      |

**2007 UD<sub>99</sub> = 2006 SW<sub>219</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 79.20306   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17256372 | $\omega$ | 302.73197 | +0.82507889 | +0.56500782 |
| $a$ | 3.1952369  | $\Omega$ | 22.86573  | -0.51549589 | +0.75515375 |
| $e$ | 0.0952783  | $i$      | 0.48899   | -0.23131974 | +0.33242890 |
| $P$ | 5.71       | $H$      | 15.7      | $G$ 0.15    | $U$ 4       |

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M.P.O. 129957

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2006 09 25 G96 | 0.4+ | 0.2+ | 2006 09 30 G96 | 0.1+ | 0.3- | 2007 12 11 947 | 0.5+ | 0.7- |
| 2006 09 25 G96 | 0.4- | 0.0  | 2007 10 30 691 | 0.0  | 0.2- | 2007 12 11 947 | 0.3- | 0.8- |
| 2006 09 25 G96 | 0.0  | 0.1- | 2007 10 30 691 | 0.1+ | 0.1+ | 2007 12 11 947 | 0.0  | 0.7- |
| 2006 09 25 G96 | 0.1- | 0.0  | 2007 10 30 691 | 0.5- | 0.2+ | 2007 12 15 947 | 0.1- | 0.0  |
| 2006 09 30 G96 | 0.2- | 0.1- | 2007 11 03 691 | 0.1+ | 0.4+ | 2007 12 15 947 | 0.3+ | 0.4- |
| 2006 09 30 G96 | 0.2- | 0.0  | 2007 11 03 691 | 0.0  | 0.0  | 2007 12 15 947 | 0.2+ | 0.2- |
| 2006 09 30 G96 | 0.5+ | 0.1- | 2007 11 03 691 | 0.1+ | 0.3+ |                |      |      |

**2007 UT<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.60015   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22740548 | $\omega$ | 139.28959 | +0.82399725   | -0.56533775 |
| <i>a</i> | 2.6582884  | $\Omega$ | 255.17490 | +0.50919578   | +0.76806829 |
| <i>e</i> | 0.0547092  | <i>i</i> | 2.23538   | +0.24849184   | +0.30077290 |
| <i>P</i> | 4.33       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 11 24 695 | 0.1- | 0.1- | 2006 07 23 G96 | 0.1- | 0.3+ | 2007 10 16 G96 | 0.1+ | 0.3- |
| 2003 11 24 695 | 0.1- | 0.2- | 2006 07 23 G96 | 0.2- | 0.4+ | 2007 10 30 691 | 0.1- | 0.1+ |
| 2005 03 14 G96 | 1.6- | 0.2+ | 2006 07 23 G96 | 0.1- | 0.6+ | 2007 10 30 691 | 0.1- | 0.0  |
| 2005 03 14 G96 | 0.2+ | 0.3- | 2007 09 15 G96 | 0.5+ | 0.1+ | 2007 10 30 691 | 0.1+ | 0.1+ |
| 2005 03 14 G96 | 0.8- | 0.4+ | 2007 09 15 G96 | 1.3+ | 0.1+ | 2007 11 03 691 | 0.1- | 0.2+ |
| 2005 03 14 G96 | 0.9- | 0.0  | 2007 09 15 G96 | 0.9+ | 0.0  | 2007 11 03 691 | 0.0  | 0.0  |
| 2005 04 09 691 | 0.2+ | 0.1+ | 2007 09 15 G96 | 0.5- | 0.1- | 2007 11 03 691 | 0.2- | 0.1+ |
| 2005 04 09 691 | 0.6+ | 0.1+ | 2007 10 16 G96 | 0.3+ | 0.0  | 2007 12 05 704 | 0.8- | 0.4- |
| 2005 04 09 691 | 0.3+ | 0.3+ | 2007 10 16 G96 | 0.0  | 0.3- | 2007 12 05 704 | 0.1- | 0.9+ |
| 2006 07 23 G96 | 0.2- | 0.5+ | 2007 10 16 G96 | 0.3+ | 0.5- | 2007 12 05 704 | 0.5- | 1.5+ |

**2007 UU<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.68046   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17442557 | $\omega$ | 287.25734 | +0.94639556   | +0.28560117 |
| <i>a</i> | 3.1724585  | $\Omega$ | 56.39217  | -0.18143495   | +0.85650426 |
| <i>e</i> | 0.0502607  | <i>i</i> | 10.43807  | -0.26723924   | +0.42992141 |
| <i>P</i> | 5.65       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1993 04 19 691 | 1.2- | 0.6- | 2007 09 15 G96 | 0.4+ | 0.2- | 2007 11 07 704 | 0.1- | 0.9+ |
| 1993 04 19 691 | 0.1+ | 1.0- | 2007 09 15 G96 | 0.7+ | 0.6- | 2007 11 07 704 | 0.6- | 1.0+ |
| 1993 04 19 691 | 0.1- | 0.4- | 2007 10 30 691 | 0.1- | 0.3- | 2007 11 07 704 | 0.3+ | 0.6+ |
| 1999 05 18 691 | 0.5+ | 0.2+ | 2007 10 30 691 | 0.5- | 0.2- | 2007 11 14 691 | 0.2+ | 0.2- |
| 1999 05 18 691 | 0.1+ | 0.5+ | 2007 10 30 691 | 0.1- | 0.3- | 2007 11 14 691 | 0.2+ | 0.2- |
| 1999 05 18 691 | 0.1+ | 0.8+ | 2007 11 03 691 | 0.2- | 0.3+ | 2007 11 14 691 | 0.1- | 0.2- |
| 2004 03 20 691 | 0.2+ | 0.2+ | 2007 11 03 691 | 0.1- | 0.1+ | 2007 11 18 691 | 0.9+ | 0.4+ |
| 2004 03 20 691 | 0.1+ | 0.7+ | 2007 11 03 691 | 0.2- | 0.6+ | 2007 11 18 691 | 0.0  | 0.1- |
| 2004 03 20 691 | 0.3+ | 0.2+ | 2007 11 07 691 | 0.1- | 0.2- | 2007 11 18 691 | 0.1- | 0.0  |
| 2007 09 15 G96 | 0.4+ | 0.0  | 2007 11 07 691 | 0.1- | 0.1+ | 2007 12 03 703 | 0.9- | 0.6+ |
| 2007 09 15 G96 | 0.6+ | 0.3- | 2007 11 07 691 | 0.1- | 0.1- | 2007 12 03 703 | 0.7+ | 0.2- |

**2007 UA<sub>100</sub> = 2007 VY<sub>244</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.00528   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.29861135 | $\omega$ | 19.61169 | +0.88344550   | -0.46852564 |
| <i>a</i> | 2.2168272  | $\Omega$ | 8.32859  | +0.42726158   | +0.80316874 |
| <i>e</i> | 0.1606371  | <i>i</i> | 1.10256  | +0.19227996   | +0.36797242 |
| <i>P</i> | 3.30       | <i>H</i> | 17.6     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1997 11 03 691 | 0.1+ | 0.4- | 2007 09 09 G96 | 0.3+ | 0.1- | 2007 11 15 704 | 0.4- | 0.1+ |
| 1997 11 03 691 | 0.4+ | 0.3- | 2007 09 09 G96 | 0.7- | 0.5- | 2007 11 15 704 | 0.1+ | 0.1+ |
| 1997 11 03 691 | 0.0  | 0.2- | 2007 09 09 G96 | 0.3+ | 0.2+ | 2007 11 15 704 | 0.2- | 1.4+ |
| 1997 11 21 691 | 0.0  | 0.3- | 2007 09 09 G96 | 0.4+ | 0.1+ | 2007 11 15 704 | 0.8+ | 1.2+ |
| 1997 11 21 691 | 0.1+ | 0.5- | 2007 10 30 691 | 0.1- | 0.0  | 2007 11 18 691 | 0.1- | 0.0  |
| 1997 11 21 691 | 0.0  | 0.1- | 2007 10 30 691 | 0.3- | 0.3+ | 2007 11 18 691 | 0.1+ | 0.1+ |

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 02 13 291 | 0.4+ | 0.7+ | 2007 10 30 691 | 0.0  | 0.1+ | 2007 11 18 691 | 0.2+ | 0.0  |
| 2002 02 13 291 | 0.2+ | 0.7+ | 2007 11 03 691 | 0.2- | 0.1+ | 2007 12 03 703 | 0.5- | 1.1+ |
| 2002 02 13 291 | 0.0  | 0.8+ | 2007 11 03 691 | 0.2- | 0.0  | 2007 12 03 703 | 0.5- | 0.4+ |
| 2002 03 05 645 | 0.0  | 0.2- | 2007 11 03 691 | 0.1- | 0.1+ | 2007 12 03 703 | 0.5+ | 0.2- |
| 2002 03 05 645 | 0.0  | 0.2- | 2007 11 07 691 | 0.0  | 0.1- | 2007 12 03 703 | 1.1+ | 0.5- |
| 2002 03 12 645 | 0.0  | 0.1- | 2007 11 07 691 | 0.2+ | 0.0  | 2007 12 10 704 | 0.1+ | 0.7- |
| 2002 03 12 645 | 0.0  | 0.1- | 2007 11 07 691 | 0.0  | 0.0  | 2007 12 10 704 | 0.6+ | 0.9+ |
| 2005 01 18 691 | 0.2+ | 0.1+ | 2007 11 13 699 | 0.1- | 0.3- | 2007 12 10 704 | 0.5- | 1.5+ |
| 2005 01 18 691 | 1.5- | 0.1- | 2007 11 13 699 | 0.8+ | 0.6- | 2007 12 10 704 | 0.3- | 1.1+ |
| 2005 01 18 691 | 0.3+ | 0.0  | 2007 11 13 699 | 0.0  | 0.3- | 2007 12 10 704 | 0.2- | 1.1+ |
| 2006 05 07 G96 | 0.1+ | 0.1+ | 2007 11 13 699 | 0.7+ | 1.2- | 2007 12 14 704 | 0.5- | 0.0  |
| 2006 05 07 G96 | 0.4- | 0.1- | 2007 11 14 691 | 0.0  | 0.2+ | 2007 12 14 704 | 0.5+ | 0.5- |
| 2006 05 07 G96 | 0.2- | 0.2- | 2007 11 14 691 | 0.0  | 0.1+ | 2007 12 14 704 | 0.5- | 0.8- |
| 2006 05 07 G96 | 0.3- | 0.3+ | 2007 11 14 691 | 0.0  | 0.1+ | 2007 12 14 704 | 0.4- | 0.5+ |
| 2006 05 26 G96 | 0.1+ | 0.3+ | 2007 11 14 300 | 0.3+ | 0.4- | 2007 12 15 G96 | 0.2+ | 0.2+ |
| 2006 05 26 G96 | 0.2+ | 0.2+ | 2007 11 14 300 | 0.3+ | 0.5- | 2007 12 15 G96 | 0.4+ | 0.1- |
| 2006 05 26 G96 | 0.1- | 0.2- | 2007 11 14 300 | 0.2+ | 0.0  | 2007 12 15 G96 | 0.1+ | 0.1- |
| 2006 05 26 G96 | 0.5- | 0.0  | 2007 11 15 704 | 1.3- | 0.4+ | 2007 12 15 G96 | 0.4+ | 0.4- |

**2007 UD<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.34489   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17516171 | $\omega$ | 161.62945 | +0.75197456   | -0.64310524 |
| <i>a</i> | 3.1635638  | $\Omega$ | 239.27149 | +0.58172493   | +0.75068470 |
| <i>e</i> | 0.0550207  | <i>i</i> | 9.69376   | +0.31004898   | +0.15128826 |
| <i>P</i> | 5.63       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1999 06 07 691 | 0.1- | 0.1- | 2007 11 03 691 | 0.2- | 0.1- | 2007 11 14 691 | 0.2- | 0.1+ |
| 1999 06 07 691 | 0.2+ | 0.7+ | 2007 11 03 691 | 0.7- | 0.1+ | 2007 11 14 691 | 0.1- | 0.2- |
| 1999 06 07 691 | 0.0  | 1.0+ | 2007 11 03 691 | 0.4- | 0.3+ | 2007 11 30 D35 | 0.1- | 0.0  |
| 2006 09 27 691 | 0.2- | 0.4+ | 2007 11 05 691 | 0.3+ | 0.1+ | 2007 11 30 D35 | 0.1+ | 0.1+ |
| 2006 09 27 691 | 0.2- | 0.2+ | 2007 11 05 691 | 0.1- | 0.1- | 2007 11 30 D35 | 0.3+ | 0.4+ |
| 2006 09 27 691 | 0.3+ | 0.4- | 2007 11 05 691 | 0.0  | 0.2+ | 2007 12 03 703 | 0.4- | 0.2+ |
| 2007 09 15 G96 | 0.7- | 0.1- | 2007 11 09 691 | 0.1- | 0.1- | 2007 12 03 703 | 0.9+ | 0.2+ |
| 2007 09 15 G96 | 0.2+ | 0.4- | 2007 11 09 691 | 0.1- | 0.0  | 2007 12 03 703 | 1.7+ | 0.8+ |
| 2007 09 15 G96 | 0.0  | 0.2- | 2007 11 09 691 | 0.2- | 0.1+ | 2007 12 03 703 | 0.4+ | 0.9+ |
| 2007 09 15 G96 | 0.1- | 0.2- | 2007 11 14 704 | 0.6+ | 0.2+ | 2007 12 05 704 | 2.4+ | 0.4+ |
| 2007 10 30 691 | 0.6- | 0.2+ | 2007 11 14 704 | 0.3+ | 0.7+ | 2007 12 05 704 | 2.8+ | 0.2+ |
| 2007 10 30 691 | 0.3- | 0.0  | 2007 11 14 704 | 0.3+ | 0.8+ | 2007 12 05 704 | 2.2+ | 0.5+ |
| 2007 10 30 691 | 0.1- | 0.1+ | 2007 11 14 691 | 0.1- | 0.2- |                |      |      |

**2007 UE<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 55.39204   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22345566 | $\omega$ | 101.66891 | +0.92556675   | +0.33389491 |
| <i>a</i> | 2.6895223  | $\Omega$ | 239.05630 | -0.37379738   | +0.88070408 |
| <i>e</i> | 0.2019093  | <i>i</i> | 12.00809  | +0.06001420   | +0.33596803 |
| <i>P</i> | 4.41       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 1998 11 15 699 | 0.0  | 1.0+ | 2007 09 10 291 | 0.2- | 0.1- | 2007 11 05 G96 | 0.5+  | 0.2-  |
| 1998 11 15 699 | 0.0  | 1.0+ | 2007 09 10 291 | 0.3- | 0.0  | 2007 11 09 691 | 0.2-  | 0.1-  |
| 1998 11 15 699 | 0.2+ | 1.3+ | 2007 10 16 G96 | 0.4+ | 0.5- | 2007 11 09 691 | 0.1-  | 0.1-  |
| 1998 11 25 691 | 0.2- | 0.5- | 2007 10 16 G96 | 0.2+ | 0.5- | 2007 11 09 691 | (2.1+ | 1.1-) |
| 1998 11 25 691 | 0.1+ | 0.5- | 2007 10 16 G96 | 0.0  | 0.2- | 2007 11 14 704 | (1.1- | 2.4-) |
| 1998 11 25 691 | 0.0  | 0.6- | 2007 10 16 G96 | 0.3+ | 0.4- | 2007 11 14 704 | 0.2+  | 0.0   |
| 2002 08 03 644 | 0.0  | 0.5+ | 2007 10 30 691 | 0.2- | 0.2+ | 2007 11 14 704 | 0.3+  | 0.3-  |
| 2002 08 03 644 | 0.2+ | 0.3+ | 2007 10 30 691 | 0.1+ | 0.1+ | 2007 11 14 704 | 0.7+  | 0.5-  |
| 2002 08 03 644 | 0.0  | 0.6+ | 2007 10 30 691 | 0.2- | 0.0  | 2007 11 14 691 | 0.0   | 0.7+  |
| 2002 09 02 644 | 0.3- | 0.5- | 2007 11 03 691 | 0.0  | 0.0  | 2007 11 14 691 | 0.3-  | 0.0   |
| 2002 09 02 644 | 0.2- | 0.6- | 2007 11 03 691 | 0.5- | 0.2+ | 2007 11 14 691 | 0.1-  | 0.1+  |
| 2002 09 02 644 | 0.2- | 0.6- | 2007 11 03 691 | 0.1- | 0.0  | 2007 12 03 703 | 0.3-  | 0.6-  |
| 2002 09 11 644 | 0.2+ | 0.3+ | 2007 11 05 704 | 1.1+ | 0.9+ | 2007 12 03 703 | 0.1+  | 1.2-  |
| 2002 09 11 644 | 0.3+ | 0.5+ | 2007 11 05 704 | 1.2+ | 0.4+ | 2007 12 03 703 | 0.6+  | 0.6+  |
| 2002 09 11 644 | 0.3+ | 0.2+ | 2007 11 05 704 | 0.8+ | 0.2+ | 2007 12 03 703 | 0.0   | 0.6-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 22 | 644 | 0.1− | 0.1+ | 2007 11 05 | 704 | 0.6+ | 0.8+ | 2007 12 04 | 699 | 0.4− | 0.9+ |
| 2006 08 22 | 644 | 0.2− | 0.1− | 2007 11 05 | G96 | 0.6+ | 0.1− | 2007 12 04 | 699 | 0.8− | 0.5+ |
| 2006 08 22 | 644 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.3− | 2007 12 04 | 699 | 0.6+ | 0.0  |
| 2007 09 10 | 291 | 0.2− | 0.1− | 2007 11 05 | G96 | 0.3+ | 0.2− | 2007 12 04 | 699 | 0.9+ | 0.1− |

**2007 UX<sub>102</sub> = 1993 FJ<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 242.88812  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.17630682 | $\omega$ | 124.68176 | -0.96206153  | -0.22570433  |
| $a$ | 3.1498507  | $\Omega$ | 42.85878  | +0.11000777  | -0.83502467  |
| $e$ | 0.0246498  | $i$      | 13.02343  | +0.24967158  | -0.50178816  |
| $P$ | 5.59       | $H$      | 15.5      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 19 | 691 | 0.3- | 0.0  | 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 1993 03 19 | 691 | 0.0  | 0.5- | 2007 09 10 | G96 | 0.0  | 0.3+ | 2007 11 04 | 691 | 0.0  | 0.1- |
| 1993 03 19 | 691 | 0.2+ | 0.1+ | 2007 10 19 | 691 | 0.4- | 0.0  | 2007 11 04 | 691 | 0.1- | 0.0  |
| 1993 03 23 | 809 | 0.6- | 0.2- | 2007 10 19 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.3- | 0.3+ |
| 2004 03 30 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.3+ | 0.0  |
| 2004 03 30 | 691 | 0.2+ | 0.2+ | 2007 10 30 | G96 | 0.8- | 0.2- | 2007 11 19 | 691 | 0.2+ | 0.4- |
| 2004 03 30 | 691 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.9+ | 0.2- | 2007 12 05 | 691 | 0.0  | 0.2- |
| 2007 09 10 | G96 | 0.8+ | 0.1- | 2007 10 30 | G96 | 0.3+ | 0.2- | 2007 12 05 | 691 | 0.2- | 0.3+ |
| 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 12 05 | 691 | 0.1- | 0.1  |

2007 UZ<sub>102</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |              |              |
|-----|------------|----------|----------|--------------|--------------|
| $M$ | 329.16340  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.17258055 | $\omega$ | 51.39346 | -0.01004452  | -0.99791887  |
| $a$ | 3.1950290  | $\Omega$ | 39.32575 | +0.88335911  | -0.03870511  |
| $e$ | 0.1822535  | $i$      | 5.76844  | +0.46858915  | +0.05157374  |
| $P$ | 5.71       | $H$      | 16.2     | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 18 | 644 | 0.4− | 0.5+ | 2007 09 18 | G96 | 0.1− | 0.4− | 2007 11 07 | 704 | 1.0+ | 0.4+ |
| 2001 10 18 | 644 | 0.2− | 0.6+ | 2007 10 20 | 703 | 0.8+ | 0.3+ | 2007 11 07 | 703 | 0.9+ | 0.4− |
| 2001 10 18 | 644 | 0.2− | 0.5+ | 2007 10 20 | 703 | 0.7+ | 0.8+ | 2007 11 07 | 704 | 0.1+ | 0.7+ |
| 2004 04 24 | 691 | 0.1− | 0.7+ | 2007 10 20 | 703 | 0.7+ | 1.1+ | 2007 11 07 | 703 | 0.5− | 0.2+ |
| 2004 04 24 | 691 | 0.3+ | 0.1− | 2007 10 20 | 703 | 1.0+ | 0.1− | 2007 11 07 | 704 | 0.7+ | 0.3− |
| 2004 04 24 | 691 | 0.3+ | 0.3+ | 2007 10 30 | G96 | 0.8+ | 0.2− | 2007 11 07 | 703 | 0.3+ | 0.4− |
| 2007 09 10 | G96 | 0.3− | 0.1− | 2007 10 30 | G96 | 0.4+ | 0.4− | 2007 11 07 | 703 | 0.5− | 0.0  |
| 2007 09 10 | G96 | 0.1− | 0.1− | 2007 10 30 | G96 | 0.1+ | 0.1− | 2007 11 08 | 691 | 0.3− | 0.2+ |
| 2007 09 10 | G96 | 0.1− | 0.3+ | 2007 10 30 | G96 | 0.3+ | 0.2− | 2007 11 08 | 691 | 0.4− | 0.2− |
| 2007 09 10 | G96 | 0.0  | 0.2− | 2007 11 04 | 691 | 0.4− | 0.1+ | 2007 11 08 | 691 | 0.1− | 0.2+ |
| 2007 09 18 | G96 | 0.5+ | 0.2− | 2007 11 04 | 691 | 0.3− | 0.0  | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2007 09 18 | G96 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.1+ | 2007 11 19 | 691 | 0.2− | 0.0  |
| 2007 09 18 | G96 | 0.3− | 0.3− | 2007 11 07 | 704 | 0.5+ | 0.4+ | 2007 11 19 | 691 | 0.1+ | 0.1  |

$$\mathbf{2007\ UV_{103} = 2003\ QO_{102} = 2006\ HW_{65}}$$

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 88.02043   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.28279345 | $\omega$ | 123.08343 | +0.64140415  | +0.76719135  |
| $a$ | 2.2987398  | $\Omega$ | 186.81796 | -0.71531780  | +0.59600928  |
| $e$ | 0.1723892  | $i$      | 2.05714   | -0.27734664  | +0.23704510  |
| $P$ | 3.49       | $H$      | 17.5      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 31 | 691 | 0.1- | 0.5- | 2006 04 24 | 691 | 0.2- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.1- |
| 2003 08 31 | 691 | 0.3- | 0.3- | 2006 04 24 | 691 | 0.6+ | 0.4+ | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2003 08 31 | 691 | 0.4- | 0.4- | 2006 04 24 | 691 | 0.2+ | 0.3+ | 2007 11 07 | 691 | 0.1+ | 0.1  |
| 2003 09 01 | 704 | 0.3+ | 0.7+ | 2006 05 01 | 691 | 0.2- | 0.1+ | 2007 11 07 | 691 | 0.3+ | 0.3+ |
| 2003 09 01 | 704 | 0.4+ | 0.7- | 2006 05 01 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2003 09 01 | 704 | 0.2+ | 1.1+ | 2006 05 01 | 691 | 0.1- | 0.3- | 2007 11 18 | G96 | 0.1+ | 0.3- |
| 2003 09 01 | 704 | 0.8+ | 0.3+ | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.6+ | 0.7+ |
| 2003 09 01 | 704 | 0.4+ | 0.7+ | 2007 10 30 | 691 | 0.0  | 0.3+ | 2007 11 18 | G96 | 0.9+ | 0.2+ |
| 2003 10 01 | 291 | 0.2+ | 0.2+ | 2007 10 30 | 691 | 0.1- | 0.4- | 2007 11 19 | 691 | 0.2- | 0.2- |

|          |     |      |      |          |     |      |      |          |     |      |      |
|----------|-----|------|------|----------|-----|------|------|----------|-----|------|------|
| 20031001 | 291 | 0.0  | 0.4+ | 20071103 | 691 | 0.0  | 0.2+ | 20071119 | 691 | 0.2+ | 0.1- |
| 20031001 | 291 | 0.2+ | 0.4+ | 20071103 | 691 | 0.4- | 0.3+ | 20071119 | 691 | 0.4- | 0.1+ |

**2007 UW<sub>104</sub> = 1999 XF<sub>219</sub> = 2005 JC<sub>152</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 191.26108  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.23448681 | $\omega$ | 136.28760 | -0.60996476  | +0.78885005  |
| $a$ | 2.6044965  | $\Omega$ | 95.98297  | -0.74624642  | -0.53988921  |
| $e$ | 0.0483346  | $i$      | 4.33774   | -0.26656945  | -0.29365837  |
| $P$ | 4.20       | $H$      | 17.0      | $G$ 0.15     | $U$ 0        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.0  | 0.0  | 2005 05 04 | 691 | 0.3+ | 0.3+ | 2007 11 07 | G91 | 0.3- | 0.2+ |
| 1998 09 19 | 645 | 0.1- | 0.0  | 2005 05 15 | 644 | 0.0  | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 1998 09 25 | 645 | 0.0  | 0.0  | 2005 05 15 | 644 | 0.3- | 0.4+ | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 1998 09 25 | 645 | 0.1+ | 0.1+ | 2005 05 15 | 644 | 0.3+ | 0.1- | 2007 11 18 | G96 | 0.7+ | 0.2+ |
| 1999 12 15 | 691 | 0.6+ | 0.2- | 2006 08 17 | 644 | 0.1- | 0.3+ | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 1999 12 15 | 691 | 0.6- | 0.3- | 2006 08 17 | 644 | 0.4- | 0.6+ | 2007 11 19 | 691 | 0.1- | 0.2+ |
| 1999 12 15 | 691 | 0.2- | 0.2- | 2006 08 17 | 644 | 0.4- | 0.0  | 2007 11 19 | 691 | 0.2+ | 0.0  |
| 1999 12 16 | 691 | 0.0  | 0.2- | 2007 10 30 | 691 | 0.7- | 0.0  | 2007 11 19 | 691 | 0.0  | 0.4+ |
| 1999 12 16 | 691 | 0.1- | 0.1- | 2007 10 30 | 691 | 0.3- | 0.2+ | 2007 12 04 | 704 | 0.3- | 0.9+ |
| 1999 12 16 | 691 | 0.1+ | 0.0  | 2007 10 30 | 691 | 0.4- | 0.7+ | 2007 12 04 | 704 | 0.0  | 1.7+ |
| 2001 05 17 | 691 | 0.0  | 0.7+ | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 12 04 | 704 | 0.2+ | 2.0+ |
| 2001 05 17 | 691 | 0.2+ | 0.5+ | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 12 05 | 704 | 0.9+ | 1.1- |
| 2001 05 17 | 691 | 0.0  | 0.8+ | 2007 11 03 | 691 | 0.3- | 0.6+ | 2007 12 05 | 704 | 0.5+ | 0.3+ |
| 2005 05 04 | 691 | 0.3+ | 0.1+ | 2007 11 07 | 691 | 0.1- | 0.1- | 2007 12 05 | 704 | 0.7+ | 0.8+ |
| 2005 05 04 | 691 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2007 UX<sub>104</sub> = 1999 YA<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 63.79003   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24724612 | $\omega$ | 201.42071 | +0.95456627 | +0.29641220 |
| $a$ | 2.5141030  | $\Omega$ | 141.29491 | -0.26577845 | +0.89343144 |
| $e$ | 0.1293422  | $i$      | 2.81493   | -0.13477779 | +0.33752047 |
| $P$ | 3.99       | $H$      | 16.3      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 31 | 691 | 0.2- | 0.2- | 2005 03 10 | G96 | 0.2+ | 0.1- | 2007 11 07 | 691 | 0.1+ | 0.1+ |
| 1999 12 31 | 691 | 0.0  | 0.0  | 2005 04 11 | G96 | 0.0  | 0.1+ | 2007 11 07 | 691 | 0.3+ | 0.1- |
| 1999 12 31 | 691 | 0.7+ | 0.1- | 2005 04 11 | G96 | 0.3- | 0.0  | 2007 11 12 | 704 | 1.2+ | 0.3+ |
| 2000 01 05 | 691 | 0.0  | 0.3- | 2005 04 11 | G96 | 0.3- | 0.0  | 2007 11 12 | 704 | 0.2- | 0.4- |
| 2000 01 05 | 691 | 0.2- | 0.3+ | 2005 04 11 | G96 | 0.1+ | 0.2+ | 2007 11 12 | 704 | 1.0+ | 0.2- |
| 2000 01 05 | 691 | 0.3- | 0.3+ | 2007 10 30 | 691 | 1.0- | 0.2+ | 2007 11 12 | 704 | 1.2+ | 0.2+ |
| 2003 12 14 | 691 | 0.1- | 0.0  | 2007 10 30 | 691 | 0.5- | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.4- |
| 2003 12 14 | 691 | 0.0  | 0.1+ | 2007 10 30 | 691 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.3- |
| 2003 12 14 | 691 | 0.0  | 0.0  | 2007 11 03 | 691 | 0.3- | 0.2- | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2005 03 10 | G96 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.2- | 0.3- | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 2005 03 10 | G96 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.2- | 0.3+ |            |     |      |      |
| 2005 03 10 | G96 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.7+ | 0.0  |            |     |      |      |

**2007 UY<sub>104</sub> = 2005 CX<sub>72</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 20.25199   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.27936096 | $\omega$ | 291.76448 | +0.83238453  | -0.55131963  |
| $a$ | 2.3175311  | $\Omega$ | 101.73454 | +0.52737716  | +0.75670044  |
| $e$ | 0.1007230  | $i$      | 3.30317   | +0.17032125  | +0.35135609  |
| $P$ | 3.53       | $H$      | 17.0      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 26 | 691 | 0.0  | 0.1+ | 2005 03 14 | G96 | 0.3- | 0.6- | 2007 11 14 | 704 | 0.4- | 0.5- |
| 1995 04 26 | 691 | 0.3+ | 0.1- | 2005 03 14 | G96 | 0.2- | 0.1+ | 2007 11 14 | 704 | 1.0+ | 0.3+ |
| 1995 04 26 | 691 | 0.6- | 0.8- | 2005 03 14 | G96 | 0.1- | 0.3- | 2007 11 14 | 704 | 0.6+ | 0.4- |
| 2000 12 18 | 691 | 0.2+ | 0.8- | 2007 10 30 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 704 | 0.9+ | 0.2- |
| 2000 12 18 | 691 | 0.3+ | 0.9- | 2007 10 30 | 691 | 0.1- | 0.3+ | 2007 11 18 | G96 | 0.8+ | 0.3- |
| 2000 12 18 | 691 | 0.2- | 0.6- | 2007 10 30 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.2- |

## 2007 DEC. 24

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 01 | 691 | 0.2+ | 0.4+ | 2007 11 03 | 691 | 0.2−  | 0.1−  | 2007 11 18 | G96 | 0.1− | 0.3+ |
| 2005 02 01 | 691 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.4−  | 0.1+  | 2007 11 18 | G96 | 0.6+ | 0.0  |
| 2005 02 01 | 691 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.1−  | 0.1+  | 2007 12 03 | 703 | 0.5+ | 0.4− |
| 2005 02 09 | 691 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.8−  | 0.7+  | 2007 12 03 | 703 | 1.4+ | 0.7+ |
| 2005 02 09 | 691 | 0.0  | 0.3+ | 2007 11 07 | 691 | 0.1−  | 0.4−  | 2007 12 03 | 703 | 0.2+ | 0.5+ |
| 2005 02 09 | 691 | 0.1+ | 0.4+ | 2007 11 07 | 691 | 0.3−  | 0.3+  | 2007 12 03 | 703 | 0.1+ | 1.3+ |
| 2005 03 14 | G96 | 0.0  | 0.2− | 2007 11 14 | 704 | (1.6+ | 1.2−) |            |     |      |      |

2007 UZ<sub>104</sub> = 2005 FL<sub>12</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 355.79930  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28087411 | $\omega$ | 237.57918 | +0.45935143   | −0.88824556 |
| <i>a</i> | 2.3092001  | $\Omega$ | 185.08051 | +0.82941524   | +0.43053555 |
| <i>e</i> | 0.1490241  | <i>i</i> | 2.59684   | +0.31790977   | +0.16018418 |
| <i>P</i> | 3.51       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 291 | 0.0  | 0.7+ | 2005 03 08 | 699 | 0.4+ | 0.4+ | 2007 11 03 | 691 | 0.3− | 0.0  |
| 2002 04 08 | 291 | 0.2+ | 0.4+ | 2005 03 17 | 703 | 1.6− | 0.8+ | 2007 11 03 | 691 | 0.3− | 0.1− |
| 2002 04 08 | 291 | 0.1+ | 0.6+ | 2005 03 17 | 703 | 0.2+ | 0.7− | 2007 11 03 | 691 | 0.3− | 0.1+ |
| 2003 08 20 | 599 | 0.0  | 0.4+ | 2005 03 17 | 703 | 1.5+ | 0.3− | 2007 11 14 | 704 | 0.6+ | 0.0  |
| 2003 08 20 | 599 | 0.2− | 0.3+ | 2005 03 17 | 703 | 0.8− | 0.8− | 2007 11 14 | 704 | 0.6+ | 0.2+ |
| 2003 08 20 | 599 | 0.1− | 0.3+ | 2005 04 02 | G96 | 0.0  | 0.1− | 2007 11 14 | 704 | 0.9+ | 0.3+ |
| 2003 08 20 | 599 | 0.0  | 0.5+ | 2005 04 02 | G96 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.4+ | 0.0  |
| 2003 08 22 | 599 | 0.0  | 0.6+ | 2005 04 02 | G96 | 0.3+ | 0.1− | 2007 11 14 | 704 | 0.3+ | 0.1− |
| 2003 08 22 | 599 | 0.2+ | 0.5+ | 2005 04 02 | G96 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.6+ | 0.1− |
| 2003 08 22 | 599 | 1.3+ | 2.6− | 2005 05 04 | G96 | 0.0  | 0.3− | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2003 10 01 | 691 | 0.2− | 0.3+ | 2005 05 04 | G96 | 0.2− | 0.0  | 2007 11 18 | G96 | 0.4+ | 0.1+ |
| 2003 10 01 | 691 | 0.4− | 0.6+ | 2005 05 04 | G96 | 0.2− | 0.0  | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2003 10 01 | 691 | 0.0  | 0.1− | 2005 05 04 | G96 | 0.1− | 0.0  | 2007 12 03 | 703 | 0.3− | 0.1− |
| 2005 03 03 | 703 | 0.0  | 0.1+ | 2007 10 20 | G96 | 0.0  | 0.3− | 2007 12 03 | 703 | 0.5− | 0.3− |
| 2005 03 03 | 703 | 2.3− | 0.1+ | 2007 10 20 | G96 | 0.5+ | 0.2− | 2007 12 03 | 703 | 0.1− | 0.4− |
| 2005 03 03 | 703 | 2.1+ | 1.0− | 2007 10 20 | G96 | 0.4+ | 0.1− | 2007 12 03 | 703 | 0.2− | 0.1− |
| 2005 03 03 | 703 | 0.5− | 0.4− | 2007 10 20 | G96 | 0.4+ | 0.2− | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2005 03 08 | 699 | 2.0+ | 1.2+ | 2007 10 30 | 691 | 0.2− | 0.2+ | 2007 12 04 | 704 | 0.1− | 0.8+ |
| 2005 03 08 | 699 | 0.3+ | 0.1+ | 2007 10 30 | 691 | 0.2− | 0.2+ | 2007 12 04 | 704 | 0.2− | 0.9+ |
| 2005 03 08 | 699 | 1.3− | 1.4+ | 2007 10 30 | 691 | 0.1− | 0.2+ | 2007 12 04 | 704 | 0.2+ | 0.9+ |

2007 UZ<sub>106</sub> = 2001 HY<sub>25</sub> = 2002 RU<sub>123</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 73.17184   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22567144 | $\omega$ | 281.85642 | +0.82423633   | +0.55050705 |
| <i>a</i> | 2.6718884  | $\Omega$ | 44.91867  | −0.41831292   | +0.74977890 |
| <i>e</i> | 0.0837515  | <i>i</i> | 10.82196  | −0.38163959   | +0.36711522 |
| <i>P</i> | 4.37       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 27 | 691 | 0.0  | 0.5+ | 2007 09 10 | G96 | 0.1− | 0.4− | 2007 11 04 | 691 | 0.0  | 0.2+ |
| 2001 04 27 | 691 | 0.0  | 0.1+ | 2007 09 10 | G96 | 0.2− | 0.3− | 2007 11 04 | 691 | 0.2+ | 0.2− |
| 2001 04 27 | 691 | 0.2− | 0.3+ | 2007 09 18 | G96 | 0.3+ | 0.4− | 2007 11 04 | 691 | 0.1− | 0.3+ |
| 2001 04 29 | 691 | 0.2− | 0.3+ | 2007 09 18 | G96 | 0.3+ | 0.3− | 2007 11 08 | 691 | 0.5− | 0.1+ |
| 2001 04 29 | 691 | 0.2+ | 0.0  | 2007 09 18 | G96 | 0.3+ | 0.5− | 2007 11 08 | 691 | 0.1+ | 0.1− |
| 2001 04 29 | 691 | 1.0+ | 0.4+ | 2007 09 18 | G96 | 0.4+ | 0.6− | 2007 11 08 | 691 | 0.4− | 1.2+ |
| 2002 09 09 | 644 | 0.1− | 0.2+ | 2007 10 17 | G96 | 0.4+ | 0.1− | 2007 11 19 | 691 | 0.3− | 0.0  |
| 2002 09 09 | 644 | 0.1− | 0.3+ | 2007 10 17 | G96 | 0.1− | 0.3− | 2007 11 19 | 691 | 0.5− | 0.3+ |
| 2002 09 09 | 644 | 0.4− | 0.1+ | 2007 10 17 | G96 | 0.3+ | 0.4− | 2007 11 19 | 691 | 0.4− | 0.1− |
| 2002 09 10 | 644 | 0.5− | 0.7+ | 2007 10 17 | G96 | 0.1− | 0.5− | 2007 12 15 | 691 | 0.3+ | 0.4+ |
| 2002 09 10 | 644 | 0.1− | 0.8+ | 2007 10 31 | G96 | 0.3+ | 0.0  | 2007 12 15 | 691 | 0.0  | 0.2+ |
| 2002 09 10 | 644 | 0.0  | 0.9+ | 2007 10 31 | G96 | 0.5+ | 0.5− | 2007 12 15 | 691 | 0.0  | 0.3+ |
| 2007 09 10 | G96 | 0.4+ | 0.6− | 2007 10 31 | G96 | 0.8+ | 0.4− |            |     |      |      |
| 2007 09 10 | G96 | 0.3− | 0.3− | 2007 10 31 | G96 | 1.0+ | 0.5− |            |     |      |      |

## M.P.O. 129959

2007 UA<sub>107</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 126.64524  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22747268 | $\omega$ | 224.45371 | −0.00675558   | +0.98771897 |
| <i>a</i> | 2.6577648  | $\Omega$ | 45.84880  | −0.84614448   | +0.07754215 |
| <i>e</i> | 0.1688111  | <i>i</i> | 12.56532  | −0.53291077   | −0.13564086 |
| <i>P</i> | 4.33       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 21 | 699 | 0.5+  | 0.4+  | 2006 07 29 | E12 | 0.5− | 0.0  | 2007 11 04 | 691 | 0.5− | 0.2+ |
| 2001 03 21 | 699 | 0.0   | 0.4+  | 2006 07 29 | E12 | 0.0  | 0.7− | 2007 11 04 | 691 | 0.5− | 0.2+ |
| 2001 03 21 | 699 | 0.1−  | 0.6+  | 2006 07 29 | E12 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.6− | 0.4+ |
| 2001 03 21 | 699 | 0.2+  | 0.5−  | 2006 08 26 | E12 | 0.5− | 0.3+ | 2007 11 08 | 691 | 0.5− | 0.2+ |
| 2002 09 01 | 644 | 0.4+  | 0.2+  | 2006 08 26 | E12 | 0.2+ | 0.4+ | 2007 11 08 | 691 | 0.8− | 0.1+ |
| 2002 09 01 | 644 | 0.1+  | 0.0   | 2006 08 26 | E12 | 0.0  | 0.4+ | 2007 11 08 | 691 | 0.5− | 0.3+ |
| 2002 09 01 | 644 | 0.1+  | 0.1+  | 2006 08 26 | E12 | 0.7+ | 0.0  | 2007 11 15 | 704 | 0.5+ | 0.3− |
| 2002 09 10 | 644 | 0.1+  | 0.6−  | 2007 10 17 | G96 | 0.2− | 0.1+ | 2007 11 15 | 704 | 1.0+ | 0.1+ |
| 2002 09 10 | 644 | 0.3+  | 0.4−  | 2007 10 17 | G96 | 0.5+ | 0.0  | 2007 11 15 | 704 | 0.7+ | 0.5− |
| 2002 09 10 | 644 | 0.0   | 0.7−  | 2007 10 17 | G96 | 0.4+ | 0.1− | 2007 11 15 | 704 | 1.4+ | 0.1− |
| 2006 07 26 | E12 | 0.7+  | 1.0+  | 2007 10 17 | G96 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.7+ | 0.5+ |
| 2006 07 26 | E12 | 0.4−  | 0.5+  | 2007 10 31 | G96 | 0.1− | 0.2− | 2007 11 19 | 691 | 0.8− | 0.4+ |
| 2006 07 26 | E12 | 0.2−  | 0.1+  | 2007 10 31 | G96 | 0.3+ | 0.1− | 2007 11 19 | 691 | 1.0− | 0.5+ |
| 2006 07 26 | E12 | (4.1− | 0.9−) | 2007 10 31 | G96 | 0.1− | 0.1+ | 2007 11 19 | 691 | 0.6− | 0.5+ |
| 2006 07 29 | E12 | 0.6−  | 0.2+  | 2007 10 31 | G96 | 0.3− | 0.2+ |            |     |      |      |

2007 UL<sub>107</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 1.65805    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18081605 | $\omega$ | 336.16678 | +0.68639544   | −0.70598287 |
| <i>a</i> | 3.0972629  | $\Omega$ | 69.96507  | +0.69351041   | +0.56323103 |
| <i>e</i> | 0.1562336  | <i>i</i> | 10.70416  | +0.21887121   | +0.42937046 |
| <i>P</i> | 5.45       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 644 | 0.1−  | 0.1−  | 2007 11 06 | 704 | 0.6−  | 0.4+  | 2007 11 20 | 691 | 0.5− | 0.1+ |
| 2001 10 15 | 644 | 0.0   | 0.2−  | 2007 11 06 | 704 | (0.8− | 1.9−) | 2007 11 20 | 691 | 0.4− | 0.1+ |
| 2001 10 15 | 644 | 0.3+  | 0.0   | 2007 11 07 | 704 | 0.0   | 1.1+  | 2007 11 20 | 691 | 0.4− | 0.1− |
| 2005 05 19 | G96 | 0.3+  | 0.2+  | 2007 11 07 | 704 | 0.3−  | 0.7+  | 2007 11 20 | 703 | 0.4+ | 0.9− |
| 2005 05 19 | G96 | 0.4−  | 0.2−  | 2007 11 07 | 704 | 0.1+  | 1.1+  | 2007 11 20 | 703 | 0.0  | 0.5− |
| 2005 05 19 | G96 | 0.1−  | 0.0   | 2007 11 07 | 704 | 0.1−  | 1.3+  | 2007 11 20 | 703 | 0.3− | 0.6− |
| 2005 05 19 | G96 | 0.4+  | 0.8−  | 2007 11 07 | 704 | 0.1+  | 0.5+  | 2007 11 20 | 703 | 0.7− | 0.0  |
| 2005 06 13 | G96 | 0.3+  | 0.9+  | 2007 11 09 | 703 | 0.7−  | 0.1−  | 2007 12 03 | 703 | 0.2+ | 0.2− |
| 2005 06 13 | G96 | 0.1−  | 0.4+  | 2007 11 09 | 703 | 0.3+  | 0.9+  | 2007 12 03 | 703 | 0.7+ | 0.3+ |
| 2005 06 13 | G96 | 0.5+  | 0.7+  | 2007 11 09 | 703 | 0.3−  | 0.0   | 2007 12 03 | 703 | 0.5+ | 0.3+ |
| 2005 06 13 | G96 | 0.1−  | 0.2+  | 2007 11 09 | 703 | 0.2+  | 0.6+  | 2007 12 03 | 703 | 0.4+ | 0.1− |
| 2006 07 31 | E12 | 0.2+  | 0.0   | 2007 11 12 | 704 | 0.2+  | 0.1+  | 2007 12 04 | 704 | 0.7+ | 0.3− |
| 2006 07 31 | E12 | 0.7+  | 0.2+  | 2007 11 12 | 704 | 0.3−  | 0.0   | 2007 12 04 | 704 | 1.2+ | 0.5+ |
| 2006 07 31 | E12 | 0.2−  | 0.4−  | 2007 11 12 | 704 | 0.3+  | 0.2+  | 2007 12 04 | 704 | 0.1− | 0.5− |
| 2006 07 31 | E12 | 0.7−  | 0.0   | 2007 11 12 | 704 | 0.1+  | 0.5+  | 2007 12 04 | 704 | 0.1+ | 0.3− |
| 2007 10 31 | 703 | 1.4+  | 0.4+  | 2007 11 12 | 704 | 0.0   | 0.3+  | 2007 12 04 | 704 | 0.8+ | 0.2+ |
| 2007 10 31 | 703 | 0.4+  | 0.0   | 2007 11 15 | 699 | 0.2+  | 0.5−  | 2007 12 14 | 691 | 0.2+ | 0.1− |
| 2007 10 31 | 703 | 0.5+  | 0.6+  | 2007 11 15 | 699 | 0.3+  | 0.0   | 2007 12 14 | 691 | 0.4− | 0.2− |
| 2007 10 31 | 703 | (2.2+ | 0.8−) | 2007 11 15 | 699 | 1.0+  | 0.8−  | 2007 12 14 | 691 | 0.2− | 0.0  |
| 2007 11 03 | 699 | 0.5+  | 0.1−  | 2007 11 15 | 699 | 0.0   | 0.2−  | 2007 12 16 | 691 | 0.1− | 0.0  |
| 2007 11 03 | 699 | 0.3+  | 1.2−  | 2007 11 18 | G96 | 0.1−  | 0.4−  | 2007 12 16 | 691 | 0.3− | 0.1+ |
| 2007 11 03 | 699 | 0.9+  | 0.2+  | 2007 11 18 | G96 | 0.3+  | 1.0−  | 2007 12 16 | 691 | 0.3− | 0.1− |
| 2007 11 03 | 699 | 1.2+  | 0.3−  | 2007 11 18 | G96 | 0.2+  | 0.4−  |            |     |      |      |
| 2007 11 06 | 704 | 0.7−  | 0.9+  | 2007 11 18 | G96 | 0.1+  | 0.1+  |            |     |      |      |

**2007 UU<sub>107</sub> = 2003 SC<sub>356</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 177.74880  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26318261 | $\omega$ | 208.60575 | -0.87037761   | +0.49238444 |
| <i>a</i> | 2.4115592  | $\Omega$ | 0.89240   | -0.44375534   | -0.78386486 |
| <i>e</i> | 0.0362027  | <i>i</i> | 2.30326   | -0.21336359   | -0.37830339 |
| <i>P</i> | 3.75       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 291 | 0.4- | 0.1+ | 2007 10 04 | 691 | 0.1- | 0.1+ | 2007 10 30 | 691 | 0.2- | 0.0  |
| 2003 09 17 | 291 | 0.1- | 0.2+ | 2007 10 04 | 691 | 0.4+ | 0.2+ | 2007 10 30 | 691 | 0.1- | 0.1+ |
| 2003 09 17 | 291 | 0.1+ | 0.1+ | 2007 10 18 | G96 | 0.2- | 0.2- | 2007 11 04 | 691 | 0.2- | 0.3+ |
| 2003 09 27 | 691 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.0  | 0.5- | 2007 11 04 | 691 | 0.2+ | 0.1- |
| 2003 09 27 | 691 | 0.1- | 0.2- | 2007 10 18 | G96 | 0.1+ | 0.3- | 2007 11 04 | 691 | 0.1- | 0.0  |
| 2003 09 27 | 691 | 0.2+ | 0.1- | 2007 10 18 | G96 | 0.2+ | 0.6- |            |     |      |      |
| 2007 10 04 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.2- | 0.8+ |            |     |      |      |

**2007 UH<sub>108</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.66507  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18178601 | $\omega$ | 53.06229 | -0.06558026   | -0.99226201 |
| <i>a</i> | 3.0862356  | $\Omega$ | 41.08860 | +0.85691513   | -0.11013824 |
| <i>e</i> | 0.0882585  | <i>i</i> | 9.23103  | +0.51126871   | +0.05732079 |
| <i>P</i> | 5.42       | <i>H</i> | 16.1     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 12 | 691 | 0.4- | 0.7+ | 2007 10 10 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.2- | 0.1- |
| 2001 10 12 | 691 | 0.2+ | 0.2+ | 2007 10 10 | 691 | 0.3- | 0.2+ | 2007 11 15 | 704 | 0.1- | 0.2- |
| 2001 10 12 | 691 | 0.4- | 0.3+ | 2007 10 30 | 691 | 0.9- | 0.3+ | 2007 11 15 | 704 | 0.2- | 0.2+ |
| 2004 04 16 | 691 | 0.3+ | 0.3+ | 2007 10 30 | 691 | 0.2- | 0.1- | 2007 11 18 | G96 | 0.4+ | 0.0  |
| 2004 04 16 | 691 | 0.0  | 0.2+ | 2007 10 30 | 691 | 0.5- | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2004 04 16 | 691 | 0.2+ | 0.3+ | 2007 10 30 | G96 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.3+ | 0.1- |
| 2004 04 21 | 691 | 0.1- | 0.2+ | 2007 10 30 | G96 | 0.5+ | 0.5- | 2007 11 18 | G96 | 0.5+ | 0.2- |
| 2004 04 21 | 691 | 0.5+ | 0.2+ | 2007 10 30 | G96 | 0.5+ | 0.2- | 2007 11 18 | H07 | 0.7+ | 0.7- |
| 2004 04 21 | 691 | 0.2- | 0.1+ | 2007 10 30 | G96 | 0.3+ | 0.4- | 2007 11 18 | H07 | 0.0  | 0.9+ |
| 2007 09 10 | G96 | 0.3+ | 0.2- | 2007 11 04 | 691 | 0.2- | 0.2- | 2007 11 18 | H07 | 0.3+ | 0.5+ |
| 2007 09 10 | G96 | 0.0  | 0.3- | 2007 11 04 | 691 | 0.3- | 0.1- | 2007 11 19 | 691 | 0.4- | 0.2+ |
| 2007 09 10 | G96 | 0.2- | 0.1- | 2007 11 04 | 691 | 0.4- | 0.0  | 2007 11 19 | 691 | 0.7- | 0.1- |
| 2007 09 10 | G96 | 0.1+ | 0.5- | 2007 11 15 | 704 | 0.8+ | 1.4+ | 2007 11 19 | 691 | 0.3- | 0.0  |
| 2007 10 10 | 691 | 0.5- | 0.1+ | 2007 11 15 | 704 | 0.7+ | 0.2+ |            |     |      |      |

**2007 UL<sub>108</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.38870  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22120596 | $\omega$ | 49.59970 | +0.28239392   | -0.95927370 |
| <i>a</i> | 2.7077267  | $\Omega$ | 23.99983 | +0.87491868   | +0.25459713 |
| <i>e</i> | 0.0955497  | <i>i</i> | 0.97237  | +0.39340942   | +0.12236940 |
| <i>P</i> | 4.46       | <i>H</i> | 16.8     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 15 | 691 | 0.0  | 0.6- | 2007 09 18 | G96 | 1.0+ | 0.0  | 2007 11 08 | 291 | 0.1- | 0.0  |
| 1998 11 15 | 691 | 0.4+ | 0.6- | 2007 09 18 | G96 | 0.4+ | 0.1- | 2007 11 08 | 291 | 0.3- | 0.1+ |
| 1998 11 15 | 691 | 0.3+ | 0.6- | 2007 10 30 | 691 | 0.4- | 0.2+ | 2007 11 15 | 704 | 0.4+ | 0.5+ |
| 2002 08 29 | 291 | 0.5- | 0.1+ | 2007 10 30 | 691 | 0.1- | 0.0  | 2007 11 15 | 704 | 0.6+ | 1.1+ |
| 2002 08 29 | 291 | 0.4- | 0.1+ | 2007 10 30 | 691 | 0.4- | 0.2- | 2007 11 15 | 704 | 0.6+ | 1.3+ |
| 2002 08 29 | 291 | 0.7+ | 0.2+ | 2007 10 30 | G96 | 0.4+ | 0.4- | 2007 11 20 | G96 | 0.1+ | 0.2+ |
| 2005 04 10 | G96 | 0.3+ | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 11 20 | G96 | 0.0  | 0.2- |
| 2005 04 10 | G96 | 0.2+ | 0.4- | 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2005 04 10 | G96 | 0.1- | 0.2- | 2007 10 30 | G96 | 0.6+ | 0.0  | 2007 11 20 | G96 | 0.3+ | 0.1- |
| 2005 04 10 | G96 | 0.3- | 0.3- | 2007 11 04 | 691 | 0.3- | 0.0  | 2007 12 05 | 704 | 0.1- | 0.3+ |
| 2007 09 10 | G96 | 0.1+ | 0.1+ | 2007 11 04 | 691 | 0.2- | 0.1+ | 2007 12 05 | 704 | 0.4+ | 0.9+ |
| 2007 09 10 | G96 | 0.4+ | 0.2- | 2007 11 04 | 691 | 0.4- | 0.1- | 2007 12 05 | 704 | 0.4+ | 0.3+ |
| 2007 09 10 | G96 | 0.7+ | 0.2- | 2007 11 08 | 291 | 0.4+ | 0.3+ | 2007 12 05 | 704 | 0.2+ | 0.1+ |
| 2007 09 10 | G96 | 0.4+ | 0.1- | 2007 11 08 | 291 | 0.4- | 0.2+ | 2007 12 05 | 704 | 0.3+ | 0.8+ |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2007 09 18 | G96 | 0.6+ | 0.1- | 2007 11 08 | 291 | 0.3- | 0.0  |
| 2007 09 18 | G96 | 0.6+ | 0.1- | 2007 11 08 | 291 | 0.2- | 0.1+ |

**2007 UO<sub>108</sub> = 2000 FG<sub>65</sub> = 2004 BG<sub>150</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.47694  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21059668 | $\omega$ | 63.48737 | -0.04814573   | -0.99869961 |
| <i>a</i> | 2.7979183  | $\Omega$ | 29.28700 | +0.90378688   | -0.05070426 |
| <i>e</i> | 0.0623669  | <i>i</i> | 1.96405  | +0.42526611   | -0.00530792 |
| <i>P</i> | 4.68       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 04 | 691 | 0.9+ | 0.4+ | 2004 01 17 | 644 | 0.5+ | 0.3+ | 2007 10 19 | 691 | 0.0  | 0.9- |
| 1995 02 04 | 691 | 0.1+ | 0.7+ | 2004 01 17 | 644 | 0.5+ | 0.1- | 2007 10 30 | 691 | 0.2- | 0.1+ |
| 1995 02 04 | 691 | 0.1+ | 0.3- | 2004 01 17 | 644 | 0.8+ | 0.4+ | 2007 10 30 | 691 | 0.1- | 0.8+ |
| 1995 03 23 | 691 | 0.9- | 0.6- | 2004 01 22 | 704 | 1.0+ | 0.1- | 2007 10 30 | 691 | 0.1- | 0.1+ |
| 1995 03 23 | 691 | 0.0  | 0.3- | 2004 01 22 | 704 | 1.6+ | 0.7- | 2007 10 30 | G96 | 0.2+ | 0.2- |
| 1995 03 23 | 691 | 0.7- | 0.0  | 2004 01 22 | 704 | 0.3+ | 0.3- | 2007 10 30 | G96 | 0.8+ | 0.4- |
| 2000 03 27 | 691 | 0.2- | 0.3+ | 2005 04 17 | 691 | 0.1+ | 0.2+ | 2007 10 30 | G96 | 0.1+ | 0.3- |
| 2000 03 27 | 691 | 0.4- | 0.2+ | 2005 04 17 | 691 | 0.2+ | 0.1+ | 2007 10 30 | G96 | 0.4+ | 0.3- |
| 2000 03 27 | 691 | 0.2- | 0.3+ | 2005 04 17 | 691 | 0.3+ | 0.1+ | 2007 11 04 | 691 | 0.3- | 0.3+ |
| 2000 04 06 | 691 | 0.3+ | 0.5- | 2005 05 10 | G96 | 0.3+ | 0.7+ | 2007 11 04 | 691 | 0.4- | 0.1- |
| 2000 04 06 | 691 | 0.3+ | 0.0  | 2005 05 10 | G96 | 0.1- | 0.3+ | 2007 11 04 | 691 | 0.1+ | 0.1+ |
| 2000 04 06 | 691 | 0.3- | 0.1- | 2005 05 10 | G96 | 0.2+ | 0.6+ | 2007 11 07 | 703 | 0.5- | 0.4- |
| 2002 10 09 | 291 | 0.2+ | 0.1+ | 2005 05 10 | G96 | 0.1+ | 0.7+ | 2007 11 07 | 703 | 0.7+ | 1.2+ |
| 2002 10 09 | 291 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.3- | 0.1- | 2007 11 07 | 703 | 0.5- | 0.4- |
| 2002 10 09 | 291 | 0.4+ | 0.2+ | 2007 10 19 | 691 | 0.3- | 0.2- | 2007 11 07 | 703 | 0.8- | 1.2+ |

**2007 UV<sub>108</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 68.10042   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27826511 | $\omega$ | 93.38048  | +0.79388853   | +0.60625588 |
| <i>a</i> | 2.3236117  | $\Omega$ | 229.30640 | -0.57954489   | +0.73108726 |
| <i>e</i> | 0.1061066  | <i>i</i> | 3.54249   | -0.18403457   | +0.31299397 |
| <i>P</i> | 3.54       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 24 | 691 | 0.1- | 0.2- | 2007 10 08 | 621 | 0.3- | 0.1- | 2007 10 30 | G96 | 0.6+ | 0.0  |
| 2000 11 24 | 691 | 0.1+ | 0.5- | 2007 10 08 | 621 | 0.3+ | 0.1+ | 2007 11 04 | G96 | 0.3- | 0.4- |
| 2000 11 24 | 691 | 0.1+ | 0.2- | 2007 10 08 | 621 | 0.4+ | 0.1+ | 2007 11 04 | G96 | 0.1+ | 0.2- |
| 2005 01 13 | 691 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.2- | 0.1+ | 2007 11 04 | G96 | 0.1- | 0.1- |
| 2005 01 13 | 691 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.3- | 0.6+ | 2007 11 04 | G96 | 0.6+ | 0.3- |
| 2005 01 13 | 691 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.3- | 0.2+ | 2007 11 04 | 691 | 0.8- | 1.3+ |
| 2006 05 08 | 691 | 0.4+ | 0.1+ | 2007 10 30 | G96 | 0.3+ | 0.2- | 2007 11 04 | 691 | 0.3- | 0.5+ |
| 2006 05 08 | 691 | 0.2+ | 0.1- | 2007 10 30 | G96 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.6- | 0.5+ |
| 2006 05 08 | 691 | 0.5- | 0.7+ | 2007 10 30 | G96 | 0.2- | 0.0  | 2007 11 04 | G96 | 0.0  | 0.0  |
| 2007 09 12 | G96 | 0.1+ | 0.1- | 2007 10 30 | G96 | 0.1+ | 0.0  | 2007 11 04 | G96 | 0.0  | 0.2- |
| 2007 09 12 | G96 | 0.3+ | 0.2- | 2007 10 30 | G96 | 0.2- | 0.0  | 2007 11 04 | G96 | 0.4+ | 0.1- |
| 2007 09 12 | G96 | 0.0  | 0.1- | 2007 10 30 | G96 | 0.3+ | 0.2- |            |     |      |      |
| 2007 09 12 | G96 | 0.3+ | 0.5+ | 2007 10 30 | G96 | 0.3- | 0.0  |            |     |      |      |

**2007 UK<sub>109</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 290.26836  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.19136180 | $\omega$ | 61.67754 | -0.58137728   | -0.81323145 |
| <i>a</i> | 2.9824000  | $\Omega$ | 63.89255 | +0.73615930   | -0.53915462 |
| <i>e</i> | 0.0821285  | <i>i</i> | 1.63329  | +0.34651111   | -0.21901347 |
| <i>P</i> | 5.15       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.0  | 0.1- | 2007 10 07 | G96 | 0.0  | 0.5- | 2007 11 05 | G96 | 0.2- | 0.0  |
| 1999 03 21 | 645 | 0.0  | 0.1- | 2007 10 20 | 691 | 0.2- | 0.3+ | 2007 11 05 | G96 | 0.0  | 0.0  |
| 2002 11 07 | 291 | 0.5- | 0.3- | 2007 10 20 | 691 | 0.2- | 0.4+ | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2002 11 07 | 291 | 0.2+ | 0.6+ | 2007 10 20 | 691 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.1- |
| 2002 11 07 | 291 | 0.1+ | 0.3+ | 2007 10 30 | 691 | 0.3- | 0.0  | 2007 11 07 | 703 | 1.0+ | 0.1+ |

**M.P.O. 129961**

|                                         |            |          |           |            |             |      |             |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|------------|-------------|------|-------------|------------|-----|------|------|
| 2007 UA <sub>113</sub>                  |            |          |           |            |             |      |             |            |     |      |      |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |            |             |      |             |            |     |      |      |
| MPC                                     |            |          |           |            |             |      |             |            |     |      |      |
| <i>M</i>                                | 94.84324   |          | (2000.0)  |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.23360780 | $\omega$ | 249.74391 |            | +0.41228730 |      | +0.90598262 |            |     |      |      |
| <i>a</i>                                | 2.6110257  | $\Omega$ | 44.99156  |            | −0.77699753 |      | +0.40468028 |            |     |      |      |
| <i>e</i>                                | 0.1961379  | <i>i</i> | 7.80343   |            | −0.47570371 |      | +0.12421503 |            |     |      |      |
| <i>P</i>                                | 4.22       | <i>H</i> | 15.8      | <i>G</i>   | 0.15        |      | <i>U</i>    | 1          |     |      |      |
| Residuals in seconds of arc             |            |          |           |            |             |      |             |            |     |      |      |
| 1998 09 22                              | 699        | 0.5+     | 0.1+      | 2007 10 09 | G96         | 0.7+ | 0.2−        | 2007 11 12 | 300 | 0.5+ | 0.8+ |
| 1998 09 22                              | 699        | 0.6−     | 1.1+      | 2007 10 09 | G96         | 0.0  | 0.5−        | 2007 11 12 | 300 | 0.7+ | 0.6+ |
| 1998 09 22                              | 699        | 0.5−     | 0.2+      | 2007 10 09 | G96         | 0.4+ | 0.0         | 2007 11 12 | 300 | 0.8+ | 0.2+ |

|                                         |            |       |       |            |           |      |             |            |     |             |       |  |
|-----------------------------------------|------------|-------|-------|------------|-----------|------|-------------|------------|-----|-------------|-------|--|
| 2007 UM <sub>113</sub>                  |            |       |       |            |           |      |             |            |     |             |       |  |
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |       |       |            |           | MPC  |             |            |     |             |       |  |
| <i>M</i>                                | 282.52301  |       |       | (2000.0)   |           |      | <b>P</b>    |            |     | <b>Q</b>    |       |  |
| <i>n</i>                                | 0.17219939 |       |       | $\omega$   | 191.15646 |      | −0.63814555 |            |     | −0.76985757 |       |  |
| <i>a</i>                                | 3.1997421  |       |       | $\Omega$   | 298.49795 |      | +0.70721016 |            |     | −0.58126845 |       |  |
| <i>e</i>                                | 0.0733301  |       |       | <i>i</i>   | 0.61704   |      | +0.30434200 |            |     | −0.26352668 |       |  |
| <i>P</i>                                | 5.72       |       |       | <i>H</i>   | 16.1      |      | <i>G</i>    | 0.15       |     | <i>U</i>    | 0     |  |
| Residuals in seconds of arc             |            |       |       |            |           |      |             |            |     |             |       |  |
| 2001 10 17                              | 291        | 0.5−  | 0.1+  | 2006 09 26 | G96       | 0.6+ | 0.3−        | 2007 11 04 | 691 | 0.2−        | 0.1+  |  |
| 2001 10 17                              | 291        | 0.1+  | 0.3+  | 2006 09 26 | G96       | 0.7− | 0.6−        | 2007 11 04 | 691 | 0.0         | 0.2+  |  |
| 2001 10 17                              | 291        | 0.1−  | 0.2+  | 2006 09 26 | G96       | 0.5− | 0.2−        | 2007 11 04 | G96 | 0.2+        | 0.1−  |  |
| 2003 01 07                              | 621        | (0.0  | 1.7+) | 2007 10 10 | 691       | 0.1− | 0.1+        | 2007 11 04 | G96 | 0.3+        | 0.2−  |  |
| 2003 01 07                              | 621        | 0.5+  | 0.9+  | 2007 10 10 | 691       | 0.4− | 0.4+        | 2007 11 04 | G96 | (0.2−       | 1.6−) |  |
| 2003 01 07                              | 621        | (1.6+ | 0.6+) | 2007 10 10 | 691       | 0.5− | 0.3+        | 2007 11 04 | G96 | 0.3+        | 0.4−  |  |
| 2003 01 08                              | 621        | 0.9+  | 1.6+  | 2007 10 14 | 691       | 0.2− | 0.2−        | 2007 11 05 | G96 | 0.1−        | 0.5−  |  |
| 2004 03 27                              | 291        | 0.4+  | 0.5+  | 2007 10 14 | 691       | 0.1+ | 0.0         | 2007 11 11 | G96 | 0.3+        | 0.2−  |  |
| 2004 03 27                              | 291        | 0.1+  | 0.1−  | 2007 10 14 | 691       | 0.5+ | 0.1−        | 2007 11 11 | G96 | 0.3+        | 0.1−  |  |
| 2004 03 27                              | 291        | 0.3−  | 0.3+  | 2007 10 31 | 691       | 0.0  | 0.5−        | 2007 11 11 | G96 | 0.2−        | 0.3−  |  |
| 2006 08 19                              | 691        | 0.2−  | 0.3+  | 2007 10 31 | 691       | 0.1− | 0.1−        | 2007 11 11 | G96 | 0.3+        | 0.1−  |  |
| 2006 08 19                              | 691        | 0.1−  | 0.3+  | 2007 10 31 | 691       | 0.2− | 0.0         | 2007 12 15 | G96 | 0.5+        | 0.3−  |  |
| 2006 08 19                              | 691        | 0.2+  | 0.1+  | 2007 11 04 | G96       | 0.2+ | 0.2−        | 2007 12 15 | G96 | 0.8+        | 0.7−  |  |
| 2006 08 27                              | 691        | 0.1+  | 0.7+  | 2007 11 04 | G96       | 0.1+ | 0.5−        | 2007 12 15 | G96 | 0.2+        | 0.1+  |  |
| 2006 08 27                              | 691        | 0.1−  | 0.0   | 2007 11 04 | G96       | 0.4+ | 0.4−        | 2007 12 15 | G96 | 0.6+        | 0.4−  |  |
| 2006 08 27                              | 691        | 0.4+  | 0.1−  | 2007 11 04 | G96       | 0.4+ | 0.3−        |            |     |             |       |  |
| 2006 09 26                              | G96        | 0.4−  | 1.0−  | 2007 11 04 | 691       | 0.1+ | 0.3+        |            |     |             |       |  |

**2007 UR<sub>113</sub> = 2005 GL<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 157.75024  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21390094 | $\omega$ | 331.85723 | -0.38643679   | +0.91996707 |
| <i>a</i> | 2.7690296  | $\Omega$ | 275.34604 | -0.83332934   | -0.37882854 |
| <i>e</i> | 0.0592823  | <i>i</i> | 3.78822   | -0.39525791   | -0.10074481 |
| <i>P</i> | 4.61       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 09 05 | 608 | 0.2+ | 0.3+ | 2005 04 10 | 691 | 0.1+ | 0.1- | 2007 11 04 | 691 | 0.1- | 0.1- |
| 1997 09 05 | 608 | 0.3- | 0.0  | 2007 10 16 | G96 | 0.7+ | 0.3- | 2007 11 04 | 691 | 0.3- | 0.1- |
| 1997 09 06 | 608 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.9+ | 0.4- | 2007 11 04 | 691 | 0.2+ | 0.2+ |
| 2005 04 06 | 691 | 0.0  | 0.1+ | 2007 10 16 | G96 | 0.7+ | 0.2- | 2007 11 19 | 691 | 0.2- | 0.1+ |
| 2005 04 06 | 691 | 0.1- | 0.1+ | 2007 10 16 | G96 | 0.0  | 0.4- | 2007 11 19 | 691 | 0.5- | 0.0  |
| 2005 04 06 | 691 | 0.1+ | 0.1+ | 2007 10 31 | 691 | 0.2+ | 0.3- | 2007 11 19 | 691 | 0.2+ | 0.3+ |
| 2005 04 10 | 691 | 0.1- | 0.2+ | 2007 10 31 | 691 | 0.0  | 0.2- |            |     |      |      |
| 2005 04 10 | 691 | 0.0  | 0.3- | 2007 10 31 | 691 | 0.1- | 0.4+ |            |     |      |      |

**2007 UT<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 169.78010  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18217261 | $\omega$ | 196.77468 | -0.54805510   | +0.80904012 |
| <i>a</i> | 3.0818677  | $\Omega$ | 40.69161  | -0.72517031   | -0.33306515 |
| <i>e</i> | 0.0956179  | <i>i</i> | 19.00716  | -0.41684965   | -0.48427439 |
| <i>P</i> | 5.41       | <i>H</i> | 15.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 01 | 807 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 10 19 | 691 | 0.2- | 0.1+ |
| 2000 08 01 | 807 | 0.0  | 0.0  | 2007 09 26 | G96 | 0.9+ | 0.4+ | 2007 10 19 | 691 | 0.1- | 0.1- |
| 2004 04 15 | 645 | 0.0  | 0.1+ | 2007 09 26 | G96 | 0.1+ | 0.5- | 2007 10 31 | 691 | 0.0  | 0.0  |
| 2004 04 15 | 645 | 0.0  | 0.0  | 2007 09 26 | G96 | 0.1+ | 0.5- | 2007 10 31 | 691 | 0.1+ | 0.2+ |
| 2004 04 16 | 645 | 0.0  | 0.0  | 2007 09 26 | G96 | 0.2- | 0.1- | 2007 10 31 | 691 | 0.0  | 0.1+ |
| 2004 04 16 | 645 | 0.0  | 0.0  | 2007 10 11 | 691 | 0.0  | 0.1- | 2007 11 04 | 691 | 0.1+ | 0.0  |
| 2007 09 14 | G96 | 0.4- | 0.1+ | 2007 10 11 | 691 | 0.5- | 0.1+ | 2007 11 04 | 691 | 0.1+ | 0.0  |
| 2007 09 14 | G96 | 0.0  | 0.0  | 2007 10 11 | 691 | 0.0  | 0.2- | 2007 11 04 | 691 | 0.1- | 0.1+ |
| 2007 09 14 | G96 | 0.1- | 0.4+ | 2007 10 19 | 691 | 0.1- | 0.0  |            |     |      |      |

**2007 UV<sub>113</sub> = 2003 WW<sub>155</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.82382  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24616375 | $\omega$ | 188.97859 | +0.32557564   | -0.94027782 |
| <i>a</i> | 2.5214671  | $\Omega$ | 242.07398 | +0.87432757   | +0.33940982 |
| <i>e</i> | 0.1526843  | <i>i</i> | 6.45873   | +0.35993305   | +0.02604980 |
| <i>P</i> | 4.00       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 20 | 691 | 0.2+ | 0.1+ | 2007 10 16 | G96 | 0.4+ | 0.2- | 2007 11 15 | 704 | 1.0+ | 0.2- |
| 2003 10 20 | 691 | 0.1+ | 0.0  | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 15 | 704 | 0.7+ | 0.6+ |
| 2003 10 20 | 691 | 0.2- | 0.3- | 2007 10 16 | G96 | 0.1+ | 0.3- | 2007 11 19 | 691 | 0.1- | 0.0  |
| 2003 11 29 | 691 | 0.1- | 0.4+ | 2007 10 31 | 691 | 0.2- | 0.1- | 2007 11 19 | 691 | 0.1+ | 0.2+ |
| 2003 11 29 | 691 | 0.3+ | 0.2- | 2007 10 31 | 691 | 0.2- | 0.0  | 2007 11 19 | 691 | 0.3+ | 0.4- |
| 2003 11 29 | 691 | 0.2- | 0.0  | 2007 10 31 | 691 | 0.2- | 0.3+ | 2007 12 06 | 691 | 0.1- | 0.1- |
| 2003 11 30 | 691 | 0.1+ | 0.1- | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 06 | 691 | 0.2- | 0.2+ |
| 2003 11 30 | 691 | 0.1- | 0.1- | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 06 | 691 | 0.3+ | 0.0  |
| 2003 11 30 | 691 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.2- | 0.1+ |            |     |      |      |
| 2007 10 16 | G96 | 0.1+ | 0.3- | 2007 11 15 | 704 | 0.1- | 0.3+ |            |     |      |      |

**2007 UK<sub>114</sub> = 2003 RQ<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.47745    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.26856622 | $\omega$ | 19.66052 | +0.84006548   | -0.54239654 |
| <i>a</i> | 2.3792228  | $\Omega$ | 13.19991 | +0.49180227   | +0.75383458 |
| <i>e</i> | 0.1762086  | <i>i</i> | 2.45893  | +0.22895525   | +0.37086308 |
| <i>P</i> | 3.67       | <i>H</i> | 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 08 20 | 599 | 0.5- | 0.4+ | 2007 10 31 | 691 | 0.2- | 0.1- | 2007 11 13 | 699 | 0.3+  | 1.0+  |
| 2003 08 21 | 599 | 0.1- | 0.3+ | 2007 10 31 | 691 | 0.3- | 0.1- | 2007 11 13 | 699 | (3.1- | 1.3-) |
| 2003 08 21 | 599 | 0.2- | 0.4+ | 2007 10 31 | 691 | 0.4- | 0.0  | 2007 11 15 | 704 | (1.8+ | 0.7+) |
| 2003 08 21 | 599 | 0.2+ | 0.2+ | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 11 15 | 704 | (1.7+ | 0.2-) |
| 2003 09 01 | 704 | 1.3+ | 1.2- | 2007 11 04 | 691 | 0.2- | 0.1- | 2007 11 15 | 704 | 0.9+  | 0.3-  |
| 2003 09 01 | 704 | 0.3+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 11 15 | 704 | 1.5+  | 1.1+  |
| 2003 09 01 | 704 | 0.6- | 0.6- | 2007 11 05 | A55 | 0.3+ | 0.2+ | 2007 11 15 | 704 | (1.6+ | 0.5+) |
| 2005 02 01 | 691 | 0.0  | 0.1+ | 2007 11 05 | A55 | 0.0  | 0.4+ | 2007 12 05 | 691 | 0.1+  | 0.0   |
| 2005 02 01 | 691 | 0.2- | 0.1+ | 2007 11 05 | A55 | 0.3+ | 0.5+ | 2007 12 05 | 691 | 0.9-  | 0.0   |
| 2005 02 01 | 691 | 0.1+ | 0.0  | 2007 11 07 | A55 | 0.5+ | 0.2- | 2007 12 05 | 691 | 0.1+  | 0.2+  |
| 2005 03 10 | G96 | 0.1+ | 0.4- | 2007 11 07 | A55 | 0.7+ | 0.6- | 2007 12 15 | 691 | 0.2-  | 0.0   |
| 2005 03 10 | G96 | 0.0  | 0.3- | 2007 11 07 | A55 | 0.1+ | 0.2+ | 2007 12 15 | 691 | 0.2+  | 0.2-  |
| 2005 03 10 | G96 | 0.0  | 0.4- | 2007 11 13 | 699 | 0.9+ | 1.1- | 2007 12 15 | 691 | 0.2+  | 0.0   |
| 2005 03 10 | G96 | 0.2- | 0.4- | 2007 11 13 | 699 | 1.0+ | 0.2+ |            |     |       |       |

**2007 UX<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.68511   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26953670 | $\omega$ | 338.78825 | +0.98424148   | -0.17046236 |
| <i>a</i> | 2.3735084  | $\Omega$ | 31.14260  | +0.17249177   | +0.86698457 |
| <i>e</i> | 0.2023751  | <i>i</i> | 5.21691   | +0.03892684   | +0.46827379 |
| <i>P</i> | 3.66       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 291 | 0.0  | 0.1- | 2007 10 31 | 691 | 0.1+ | 0.5+ | 2007 11 18 | 704 | 1.1+ | 0.9+ |
| 2002 04 08 | 291 | 0.2+ | 0.1+ | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.4- | 0.4- |
| 2002 04 08 | 291 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.3- | 0.3+ | 2007 11 20 | 704 | 1.1+ | 0.6- |
| 2002 04 13 | 291 | 0.0  | 0.1- | 2007 11 04 | 691 | 0.2- | 0.2+ | 2007 11 20 | 704 | 0.1- | 0.2+ |
| 2002 04 13 | 291 | 0.1- | 0.3+ | 2007 11 04 | 691 | 0.1+ | 0.3+ | 2007 11 20 | 704 | 0.2- | 0.6+ |
| 2002 04 13 | 291 | 0.0  | 0.4+ | 2007 11 14 | J75 | 0.2- | 0.1- | 2007 11 20 | 704 | 1.0+ | 1.4+ |
| 2007 09 10 | G96 | 0.6+ | 0.7- | 2007 11 14 | J75 | 0.3+ | 0.4+ | 2007 11 20 | 704 | 0.3+ | 0.0  |
| 2007 09 10 | G96 | 0.4+ | 0.6- | 2007 11 14 | J75 | 0.6- | 0.9+ | 2007 11 20 | 704 | 0.8+ | 0.4+ |
| 2007 09 10 | G96 | 0.2+ | 0.6- | 2007 11 14 | J75 | 0.1+ | 0.4- | 2007 11 20 | 704 | 0.2- | 0.3+ |
| 2007 09 10 | G96 | 0.4+ | 0.5- | 2007 11 14 | J75 | 0.5- | 0.1+ | 2007 11 20 | 704 | 1.1- | 0.0  |
| 2007 10 07 | 691 | 0.2+ | 0.2- | 2007 11 15 | J75 | 0.4+ | 0.2- | 2007 12 06 | 691 | 0.2- | 0.3+ |
| 2007 10 07 | 691 | 0.3+ | 0.1- | 2007 11 15 | J75 | 0.6+ | 0.2- | 2007 12 06 | 691 | 0.2- | 0.4+ |
| 2007 10 07 | 691 | 1.2- | 0.2+ | 2007 11 15 | J75 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.2- | 0.6+ |
| 2007 10 19 | 691 | 0.3- | 0.5- | 2007 11 18 | 704 | 0.4+ | 1.0+ | 2007 12 15 | 691 | 0.0  | 0.4- |
| 2007 10 19 | 691 | 0.0  | 0.5- | 2007 11 18 | 704 | 0.1+ | 0.3+ | 2007 12 15 | 691 | 0.5- | 1.2- |
| 2007 10 19 | 691 | 0.1- | 0.4+ | 2007 11 18 | 704 | 0.2+ | 0.7+ | 2007 12 15 | 691 | 1.2+ | 1.5- |
| 2007 10 31 | 691 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.3+ | 0.7+ |            |     |      |      |

**2007 UQ<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.09479  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27493571 | $\omega$ | 79.97926  | +0.30151504   | -0.95345768 |
| <i>a</i> | 2.3423329  | $\Omega$ | 352.47051 | +0.86661133   | +0.27521651 |
| <i>e</i> | 0.0969320  | <i>i</i> | 1.16715   | +0.39758456   | +0.12318408 |
| <i>P</i> | 3.58       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 04 | G96 | 0.2- | 0.5- | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.2+  | 0.1-  |
| 2005 03 04 | G96 | 0.2+ | 0.4- | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | (1.6+ | 0.4-) |
| 2005 03 04 | G96 | 0.1- | 0.6- | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 12 04 | 691 | 0.1+  | 0.3+  |
| 2005 03 04 | G96 | 0.1- | 0.0  | 2007 11 04 | 691 | 1.0- | 0.3- | 2007 12 04 | 691 | 0.0   | 0.1+  |
| 2005 04 02 | G96 | 0.2+ | 0.3+ | 2007 11 09 | 300 | 0.1+ | 0.1- | 2007 12 04 | 691 | (3.1- | 0.2+) |



## 2007 DEC. 24

M.P.O. 129963

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.2− | 0.1+ | 2007 11 09 | 300 | 0.6+  | 0.7+  | 2007 12 06 | 691 | 0.1+ | 0.3− |
| 2005 04 02 | G96 | 0.0  | 0.2+ | 2007 11 09 | 300 | 0.5+  | 0.7−  | 2007 12 06 | 691 | 0.3− | 0.5− |
| 2005 04 02 | G96 | 0.2− | 0.0  | 2007 11 09 | 300 | 0.3+  | 1.1+  | 2007 12 06 | 691 | 0.0  | 0.1+ |
| 2007 09 09 | G96 | 0.2− | 0.2− | 2007 11 12 | 300 | (1.6+ | 0.5+) | 2007 12 14 | 691 | 0.3− | 0.5+ |
| 2007 09 09 | G96 | 0.1− | 0.0  | 2007 11 12 | 300 | (1.8+ | 0.8−) | 2007 12 14 | 691 | 0.2+ | 0.4− |
| 2007 09 09 | G96 | 0.3+ | 0.5− | 2007 11 12 | 300 | 1.3+  | 0.3−  | 2007 12 14 | 691 | 0.2− | 0.5+ |
| 2007 09 09 | G96 | 0.2+ | 0.2− | 2007 11 15 | 704 | 0.6+  | 0.6−  | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2007 10 31 | 691 | 0.2− | 0.3− | 2007 11 15 | 704 | 1.2+  | 0.4−  | 2007 12 16 | 691 | 0.1− | 0.2+ |
| 2007 10 31 | 691 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 0.4+  | 0.2−  | 2007 12 16 | 691 | 0.1− | 0.3+ |

2007 UZ<sub>115</sub> = 2004 FQ<sub>96</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 298.19941  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.18462814 | $\omega$ | 53.17711 | −0.47097169 | −0.86495976 |
| <i>a</i> | 3.0544812  | $\Omega$ | 65.78765 | +0.73673254 | −0.49371756 |
| <i>e</i> | 0.0390182  | <i>i</i> | 10.95320 | +0.48519154 | −0.08993100 |
| <i>P</i> | 5.34       | <i>H</i> | 14.9     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 23 | 704 | 0.2+ | 0.2+ | 2007 10 31 | 691 | 1.1−  | 0.2−  | 2007 11 14 | 704 | 0.0  | 0.1− |
| 2004 03 23 | 704 | 0.3− | 0.4+ | 2007 10 31 | 691 | 0.2−  | 0.1+  | 2007 11 14 | 704 | 0.1+ | 0.4− |
| 2004 03 23 | 704 | 0.3+ | 0.6− | 2007 11 04 | 691 | 0.1−  | 0.0   | 2007 11 14 | 704 | 0.2− | 0.1− |
| 2004 03 23 | 704 | 0.6+ | 0.9+ | 2007 11 04 | 691 | 0.0   | 0.1−  | 2007 12 03 | 703 | 0.4− | 0.1− |
| 2004 03 23 | 704 | 0.4+ | 0.2− | 2007 11 04 | 691 | 0.0   | 0.2+  | 2007 12 03 | 703 | 0.4+ | 0.0  |
| 2004 03 25 | 704 | 0.6− | 0.1+ | 2007 11 05 | 704 | 0.9+  | 0.2+  | 2007 12 03 | 703 | 0.8− | 0.5− |
| 2004 03 25 | 704 | 0.3− | 0.9+ | 2007 11 05 | 704 | 1.1+  | 0.5+  | 2007 12 03 | 703 | 0.4− | 0.4− |
| 2004 03 25 | 704 | 0.2− | 0.7− | 2007 11 05 | 704 | (2.5+ | 0.6+) | 2007 12 04 | G96 | 0.5+ | 0.2− |
| 2004 03 26 | 703 | 0.1+ | 0.7+ | 2007 11 05 | 704 | 0.3+  | 0.2+  | 2007 12 04 | G96 | 0.2− | 0.2− |
| 2004 03 26 | 703 | 0.1+ | 0.0  | 2007 11 05 | D29 | 0.3−  | 0.3−  | 2007 12 04 | G96 | 0.4+ | 0.3− |
| 2004 03 26 | 703 | 0.1+ | 1.3− | 2007 11 05 | D29 | 0.1+  | 0.2−  | 2007 12 04 | G96 | 0.3+ | 0.4− |
| 2004 03 26 | 703 | 0.3− | 0.5− | 2007 11 05 | D29 | 0.3+  | 0.8−  | 2007 12 05 | 704 | 0.5− | 0.5+ |
| 2007 10 15 | 703 | 1.3+ | 0.5+ | 2007 11 05 | D29 | 0.0   | 0.5−  | 2007 12 05 | 704 | 0.5− | 0.2+ |
| 2007 10 15 | 703 | 0.6+ | 0.4+ | 2007 11 08 | 691 | 0.2−  | 0.0   | 2007 12 05 | 704 | 0.2− | 1.1+ |
| 2007 10 15 | 703 | 0.4+ | 0.6+ | 2007 11 08 | 691 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.2− | 0.9+ |
| 2007 10 15 | 703 | 0.2+ | 0.4+ | 2007 11 08 | 691 | 0.0   | 0.0   | 2007 12 15 | G96 | 0.2− | 0.0  |
| 2007 10 20 | G96 | 0.8+ | 0.3− | 2007 11 11 | D35 | 0.3+  | 0.2+  | 2007 12 15 | G96 | 0.6+ | 0.0  |
| 2007 10 20 | G96 | 0.1+ | 0.0  | 2007 11 11 | D35 | 0.4+  | 0.3+  | 2007 12 15 | G96 | 0.3+ | 0.1− |
| 2007 10 20 | G96 | 0.5+ | 0.4− | 2007 11 11 | D35 | 0.3+  | 0.5+  | 2007 12 15 | G96 | 0.0  | 0.1+ |
| 2007 10 20 | G96 | 0.3+ | 0.2− | 2007 11 14 | 704 | 0.0   | 0.3+  |            |     |      |      |
| 2007 10 31 | 691 | 0.2− | 0.0  | 2007 11 14 | 704 | 0.5+  | 0.0   |            |     |      |      |

2007 UD<sub>116</sub> = 2005 GR<sub>154</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 138.06267  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22972922 | $\omega$ | 213.17804 | +0.02510148 | +0.94207343 |
| <i>a</i> | 2.6403321  | $\Omega$ | 60.36102  | −0.81284483 | +0.21399545 |
| <i>e</i> | 0.0156166  | <i>i</i> | 22.63231  | −0.58193916 | −0.25827039 |
| <i>P</i> | 4.29       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 04 06 | 645 | 0.0   | 0.0   | 2007 10 31 | 691 | 0.3− | 0.5− | 2007 11 14 | 704 | 0.2+  | 0.5+  |
| 2000 04 06 | 645 | 0.0   | 0.1+  | 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | (3.4− | 1.2−) |
| 2005 03 13 | 703 | 0.5−  | 1.5−  | 2007 10 31 | 691 | 0.3+ | 0.1− | 2007 11 19 | 691 | 0.1−  | 0.1−  |
| 2005 03 13 | 703 | 0.1−  | 0.2−  | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 11 19 | 691 | 0.0   | 0.1−  |
| 2005 03 13 | 703 | 1.0+  | 0.4+  | 2007 11 04 | 691 | 0.2+ | 0.1+ | 2007 12 04 | G96 | 0.3+  | 0.2−  |
| 2005 03 13 | 703 | 0.4−  | 0.2−  | 2007 11 04 | 691 | 0.1− | 0.3+ | 2007 12 04 | G96 | 0.2+  | 0.2−  |
| 2005 04 09 | 703 | 0.1+  | 0.2+  | 2007 11 05 | 704 | 0.8− | 0.6+ | 2007 12 04 | G96 | 0.1+  | 0.0   |
| 2005 04 09 | 703 | 0.5+  | 0.3+  | 2007 11 05 | 704 | 0.8+ | 0.1− | 2007 12 04 | G96 | 0.1+  | 0.1−  |
| 2005 04 09 | 703 | 0.1+  | 0.2+  | 2007 11 05 | 704 | 1.3− | 0.6+ | 2007 12 06 | G96 | 0.1+  | 0.0   |
| 2005 04 09 | 703 | (1.7+ | 0.4+) | 2007 11 05 | 704 | 0.1− | 0.7+ | 2007 12 06 | G96 | 0.1−  | 0.2−  |
| 2005 04 16 | 703 | 1.4−  | 0.4+  | 2007 11 05 | 704 | 0.9− | 0.4+ | 2007 12 06 | G96 | 0.2−  | 0.3−  |
| 2005 04 16 | 703 | 0.0   | 0.2−  | 2007 11 08 | 691 | 0.0  | 0.1− | 2007 12 06 | G96 | 0.1+  | 0.2−  |
| 2005 04 16 | 703 | 0.7−  | 0.2+  | 2007 11 08 | 691 | 0.0  | 0.0  | 2007 12 14 | 704 | 2.4+  | 0.2+  |
| 2005 04 16 | 703 | 1.2−  | 0.2+  | 2007 11 08 | 691 | 0.1+ | 0.1− | 2007 12 14 | 704 | 0.7−  | 0.8−  |
| 2005 05 02 | 703 | 0.1+  | 0.7+  | 2007 11 14 | 704 | 0.2+ | 0.4+ | 2007 12 14 | 704 | 0.3−  | 0.0   |
| 2005 05 02 | 703 | 0.2+  | 0.2−  | 2007 11 14 | 704 | 0.6+ | 0.3− | 2007 12 14 | 704 | 0.5+  | 0.0   |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2005 05 02 | 703 | 0.7+ | 1.3− | 2007 11 14 | 704 | 0.3− | 0.1+ |
| 2005 05 02 | 703 | 0.1+ | 0.8− | 2007 11 14 | 704 | 0.4+ | 0.2+ |

2007 UJ<sub>116</sub> = 2004 BN<sub>63</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 175.88355  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.21099916 | $\omega$ | 148.12076 | −0.51608280 | +0.85232231 |
| <i>a</i> | 2.7943592  | $\Omega$ | 90.68179  | −0.80261512 | −0.44660530 |
| <i>e</i> | 0.0449103  | <i>i</i> | 4.86967   | −0.29911122 | −0.27219547 |
| <i>P</i> | 4.67       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 15 | 691 | 0.1+ | 0.2− | 2005 04 15 | 691 | 0.4+ | 0.1− | 2007 10 31 | 691 | 0.2− | 0.2+ |
| 2004 01 15 | 691 | 0.1+ | 0.1− | 2005 04 15 | 691 | 0.5+ | 0.1− | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2004 01 15 | 691 | 0.1− | 0.1+ | 2005 04 15 | 691 | 0.6+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2004 01 22 | 704 | 0.1+ | 0.4+ | 2005 04 30 | 691 | 0.3− | 0.2+ | 2007 11 04 | 691 | 0.4− | 0.5+ |
| 2004 01 22 | 704 | 0.2+ | 0.1− | 2005 04 30 | 691 | 0.1+ | 0.1+ | 2007 11 12 | 704 | 1.4+ | 0.6+ |
| 2004 01 22 | 704 | 0.2− | 0.2− | 2005 04 30 | 691 | 0.2− | 0.1+ | 2007 11 12 | 704 | 1.0+ | 0.3+ |
| 2004 01 22 | 704 | 0.5− | 0.2− | 2005 05 11 | 691 | 0.4− | 0.3+ | 2007 11 12 | 704 | 0.1+ | 1.2− |
| 2004 01 22 | 704 | 0.4− | 0.6+ | 2005 05 11 | 691 | 0.2− | 0.1− | 2007 11 19 | 691 | 0.2− | 0.2+ |
| 2004 01 27 | 691 | 0.1− | 0.1− | 2005 05 11 | 691 | 0.3− | 0.0  | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2004 01 27 | 691 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.5+ | 0.1+ | 2007 11 19 | 691 | 0.3− | 0.1+ |
| 2004 01 27 | 691 | 0.3+ | 0.0  | 2007 10 31 | 691 | 0.1− | 0.7− |            |     |      |      |

2007 UP<sub>116</sub> = 2003 WB<sub>152</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 83.34910   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.22560272 | $\omega$ | 239.15922 | +0.54410108 | +0.83411305 |
| <i>a</i> | 2.6724310  | $\Omega$ | 64.07273  | −0.73127586 | +0.52439814 |
| <i>e</i> | 0.1383215  | <i>i</i> | 5.78213   | −0.41132668 | +0.17106139 |
| <i>P</i> | 4.37       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.0  | 0.1− | 2003 11 29 | 691 | 1.0+ | 0.2+ | 2007 10 30 | 691 | 0.0  | 0.1− |
| 1998 09 19 | 645 | 0.0  | 0.1− | 2007 10 08 | G96 | 0.3+ | 0.1− | 2007 11 04 | G96 | 0.4+ | 0.1− |
| 2002 08 13 | 644 | 0.1− | 1.0+ | 2007 10 08 | G96 | 0.1+ | 0.1− | 2007 11 04 | G96 | 0.6+ | 0.1+ |
| 2002 08 13 | 644 | 0.5− | 0.3+ | 2007 10 08 | G96 | 0.5+ | 0.2+ | 2007 11 04 | G96 | 0.4+ | 0.1+ |
| 2002 08 13 | 644 | 0.3− | 1.0+ | 2007 10 08 | G96 | 0.6+ | 0.1− | 2007 11 04 | G96 | 0.4+ | 0.0  |
| 2003 11 26 | 291 | 0.9− | 0.3+ | 2007 10 16 | 691 | 0.4− | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.0  |
| 2003 11 26 | 291 | 0.7− | 0.3+ | 2007 10 16 | 691 | 0.4− | 0.3+ | 2007 11 05 | G96 | 0.6+ | 0.3− |
| 2003 11 26 | 291 | 0.8− | 0.3− | 2007 10 16 | 691 | 0.4− | 0.1+ | 2007 11 05 | G96 | 0.8+ | 0.4− |
| 2003 11 29 | 691 | 0.6+ | 0.1+ | 2007 10 30 | 691 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.5+ | 0.0  |
| 2003 11 29 | 691 | 0.7+ | 0.1− | 2007 10 30 | 691 | 0.2− | 0.2− |            |     |      |      |

2007 UY<sub>116</sub> = 2004 BS<sub>124</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |             |             |
|----------|------------|----------|----------|-------------|-------------|
| <i>M</i> | 345.04785  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.20703293 | $\omega$ | 12.62123 | +0.68517835 | −0.72797227 |
| <i>a</i> | 2.8299348  | $\Omega$ | 34.13813 | +0.66446285 | +0.61108492 |
| <i>e</i> | 0.0656674  | <i>i</i> | 2.47438  | +0.29836177 | +0.31085623 |
| <i>P</i> | 4.76       | <i>H</i> | 16.7     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 644 | 0.2− | 0.3+ | 2005 04 11 | 691 | 0.1+ | 0.6+ | 2007 10 30 | G96 | 0.0  | 0.1+ |
| 2002 10 04 | 644 | 0.5− | 0.2+ | 2005 04 11 | 691 | 0.4+ | 0.1− | 2007 10 30 | G96 | 0.1+ | 0.1− |
| 2002 10 04 | 644 | 0.1+ | 0.5+ | 2007 09 25 | G96 | 0.3+ | 0.1− | 2007 11 04 | G96 | 0.3+ | 0.1− |
| 2004 01 16 | 691 | 0.2+ | 0.2+ | 2007 09 25 | G96 | 0.5+ | 0.4− | 2007 11 04 | G96 | 0.6+ | 0.5− |
| 2004 01 16 | 691 | 0.3− | 0.2+ | 2007 09 25 | G96 | 0.3+ | 0.3− | 2007 11 04 | G96 | 0.3+ | 0.6− |
| 2004 01 16 | 691 | 0.1− | 0.2+ | 2007 09 25 | G96 | 0.5+ | 0.1− | 2007 11 04 | G96 | 0.6+ | 0.3− |
| 2004 01 31 | 691 | 0.1+ | 0.1− | 2007 10 13 | 691 | 0.5− | 0.4+ | 2007 11 04 | 291 | 0.4+ | 0.0  |
| 2004 01 31 | 691 | 0.1+ | 0.1− | 2007 10 13 | 691 | 0.1− | 0.1+ | 2007 11 04 | 291 | 0.2+ | 0.0  |
| 2004 01 31 | 691 | 0.1+ | 0.2− | 2007 10 13 | 691 | 0.4− | 0.1+ | 2007 11 04 | 291 | 0.2+ | 0.0  |
| 2005 03 08 | G96 | 0.5− | 0.1+ | 2007 10 21 | 691 | 0.3− | 0.0  | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2005 03 08 | G96 | 0.6− | 0.0  | 2007 10 21 | 691 | 0.4− | 0.4+ | 2007 11 17 | G96 | 0.5+ | 0.1− |
| 2005 03 08 | G96 | 0.8− | 0.0  | 2007 10 21 | 691 | 0.5− | 0.0  | 2007 11 17 | G96 | 0.1− | 0.0  |

2005 03 08 G96 1.1− 0.0 2007 10 30 G96 0.2+ 0.1− 2007 11 17 G96 0.2+ 0.1−  
 2005 04 11 691 0.5+ 0.3+ 2007 10 30 G96 0.1+ 0.0

**2007 UP<sub>118</sub> = 2005 GN<sub>106</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 57.91474   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19858058 | $\omega$ | 317.12885 | +0.91116439   | +0.41187995 |
| <i>a</i> | 2.9096775  | $\Omega$ | 18.55790  | −0.36750145   | +0.82506837 |
| <i>e</i> | 0.0941390  | <i>i</i> | 2.08720   | −0.18633876   | +0.38680368 |
| <i>P</i> | 4.96       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 01 30 691 | 0.1− | 0.1+ | 2005 04 11 G96 | 0.0  | 0.2+ | 2007 10 31 G96 | 0.4+ | 0.1− |
| 2004 01 30 691 | 0.3+ | 0.0  | 2007 10 06 691 | 0.3− | 0.3+ | 2007 11 04 G96 | 0.4+ | 0.2+ |
| 2004 01 30 691 | 0.2− | 0.0  | 2007 10 06 691 | 0.4− | 0.1+ | 2007 11 04 G96 | 0.8+ | 0.1+ |
| 2005 04 10 G96 | 0.0  | 0.4+ | 2007 10 06 691 | 0.2− | 0.1+ | 2007 11 04 G96 | 0.4+ | 0.3− |
| 2005 04 10 G96 | 0.3− | 0.0  | 2007 10 18 691 | 0.4+ | 0.2+ | 2007 11 04 G96 | 0.3− | 0.2− |
| 2005 04 10 G96 | 0.1+ | 0.1− | 2007 10 18 691 | 0.0  | 0.3+ | 2007 11 18 G96 | 0.1+ | 0.3+ |
| 2005 04 10 G96 | 0.3− | 0.3− | 2007 10 18 691 | 0.2− | 0.0  | 2007 11 18 G96 | 0.5− | 0.1+ |
| 2005 04 11 G96 | 0.0  | 0.1+ | 2007 10 31 G96 | 0.0  | 1.2− | 2007 11 18 G96 | 0.1− | 0.2− |
| 2005 04 11 G96 | 0.0  | 0.1− | 2007 10 31 G96 | 0.4+ | 0.5− | 2007 11 18 G96 | 0.2− | 1.3− |
| 2005 04 11 G96 | 0.6+ | 0.3+ | 2007 10 31 G96 | 0.7+ | 0.3+ |                |      |      |

**2007 UX<sub>118</sub> = 2004 FQ<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 199.44837  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18610241 | $\omega$ | 177.24441 | −0.80365636   | +0.58137753 |
| <i>a</i> | 3.0383284  | $\Omega$ | 39.21518  | −0.54975814   | −0.64359976 |
| <i>e</i> | 0.1261122  | <i>i</i> | 11.59090  | −0.22782109   | −0.49777456 |
| <i>P</i> | 5.30       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 03 23 704 | 0.2+ | 0.1+ | 2007 09 09 G96 | 0.4+ | 0.0  | 2007 11 13 691 | 0.0  | 0.4+ |
| 2004 03 23 704 | 0.1+ | 0.2+ | 2007 09 09 G96 | 0.5+ | 0.2+ | 2007 11 13 691 | 0.1+ | 0.2+ |
| 2004 03 23 704 | 0.9− | 0.0  | 2007 10 11 691 | 0.1+ | 0.0  | 2007 11 13 691 | 0.0  | 0.0  |
| 2004 03 23 704 | 0.7− | 0.0  | 2007 10 11 691 | 0.1+ | 0.0  | 2007 11 17 691 | 0.1− | 0.1− |
| 2004 03 23 704 | 0.9− | 0.7+ | 2007 10 11 691 | 0.0  | 0.2+ | 2007 11 17 691 | 0.0  | 0.1− |
| 2004 03 25 704 | 0.7+ | 0.3− | 2007 10 31 691 | 0.1− | 0.5− | 2007 11 17 691 | 0.6− | 0.1− |
| 2004 03 25 704 | 0.4+ | 0.1+ | 2007 10 31 691 | 0.5− | 0.1+ | 2007 12 15 691 | 0.1− | 0.4+ |
| 2004 03 25 704 | 0.4+ | 0.8− | 2007 10 31 691 | 0.1+ | 0.4− | 2007 12 15 691 | 0.1+ | 0.5+ |
| 2004 03 25 704 | 0.6+ | 0.1− | 2007 11 05 691 | 0.2+ | 0.2− | 2007 12 15 691 | 0.1− | 0.4− |
| 2007 09 09 G96 | 0.7+ | 0.3+ | 2007 11 05 691 | 0.1− | 0.0  |                |      |      |
| 2007 09 09 G96 | 0.3+ | 0.1+ | 2007 11 05 691 | 0.3+ | 0.1− |                |      |      |

**2007 UF<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.82039  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28255709 | $\omega$ | 332.92741 | +0.58881036   | −0.80805567 |
| <i>a</i> | 2.3000215  | $\Omega$ | 80.99427  | +0.74495359   | +0.53358019 |
| <i>e</i> | 0.2009032  | <i>i</i> | 1.08285   | +0.31360246   | +0.24967622 |
| <i>P</i> | 3.49       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 10 07 699 | 0.6+ | 0.8+ | 2007 09 25 G96 | 0.4+ | 0.4− | 2007 11 05 G96 | 0.3+ | 0.4− |
| 2000 10 07 699 | 0.1+ | 0.3− | 2007 09 25 G96 | 0.8+ | 0.3− | 2007 11 12 703 | 0.7− | 0.0  |
| 2000 10 07 699 | 2.1− | 0.5− | 2007 09 25 G96 | 0.4+ | 0.2− | 2007 11 12 703 | 0.2− | 0.1− |
| 2000 10 07 699 | 1.6− | 0.6− | 2007 09 25 G96 | 0.4+ | 0.2+ | 2007 11 12 703 | 0.4− | 0.1− |
| 2000 11 17 691 | 0.1+ | 0.1− | 2007 10 20 703 | 0.1+ | 0.2+ | 2007 11 12 703 | 1.1− | 0.3− |
| 2000 11 17 691 | 0.2+ | 0.7+ | 2007 10 20 703 | 0.5− | 0.1− | 2007 11 14 704 | 0.2− | 0.8− |
| 2000 11 17 691 | 0.3+ | 0.1− | 2007 10 20 703 | 0.3+ | 0.6+ | 2007 11 14 704 | 0.1− | 0.3+ |
| 2005 03 10 G96 | 0.1− | 0.1+ | 2007 10 20 703 | 0.9− | 0.0  | 2007 11 14 704 | 0.6+ | 0.0  |
| 2005 03 10 G96 | 0.0  | 0.1− | 2007 10 30 703 | 0.3+ | 0.3− | 2007 11 14 704 | 0.2+ | 0.5− |
| 2005 03 10 G96 | 0.1+ | 0.2− | 2007 10 30 703 | 0.5+ | 0.5+ | 2007 11 14 704 | 0.5− | 0.3− |
| 2005 03 10 G96 | 0.1− | 0.1− | 2007 10 30 703 | 0.7+ | 1.1+ | 2007 12 05 G96 | 0.5− | 0.7− |
| 2007 09 08 G96 | 0.3− | 0.1− | 2007 10 30 703 | 0.3+ | 0.5+ | 2007 12 05 G96 | 0.4− | 0.4− |

2007 09 08 G96 0.4+ 0.2− 2007 11 05 G96 0.5+ 0.4+ 2007 12 05 G96 0.0 0.3−  
 2007 09 08 G96 0.1− 0.5− 2007 11 05 G96 0.1+ 0.5+ 2007 12 05 G96 0.1+ 0.4−  
 2007 09 08 G96 0.5+ 0.6− 2007 11 05 G96 0.3− 0.3+

**2007 UT<sub>119</sub> = 2002 KG<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 208.40834  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26437800 | $\omega$ | 333.11389 | −0.99821088   | +0.04605487 |
| <i>a</i> | 2.4042844  | $\Omega$ | 209.60120 | −0.03065115   | −0.94171626 |
| <i>e</i> | 0.1140927  | <i>i</i> | 4.42735   | −0.05133761   | −0.33324079 |
| <i>P</i> | 3.73       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 05 17 644 | 0.0  | 0.5+ | 2003 10 18 645 | 0.1+ | 0.2− | 2007 10 30 G96 | 0.3+ | 0.6+ |
| 2002 05 17 644 | 0.0  | 0.8+ | 2007 09 14 G96 | 0.4− | 0.6+ | 2007 10 30 G96 | 0.4− | 0.0  |
| 2002 05 17 644 | 0.5+ | 0.7+ | 2007 09 14 G96 | 0.3+ | 0.0  | 2007 10 30 G96 | 0.0  | 0.1− |
| 2002 05 19 291 | 0.1− | 0.5− | 2007 09 14 G96 | 0.4+ | 0.0  | 2007 10 30 G96 | 0.1− | 0.3− |
| 2002 05 19 291 | 0.2− | 0.5− | 2007 09 14 G96 | 0.6− | 0.4+ | 2007 11 05 G96 | 0.4− | 0.2+ |
| 2002 05 19 291 | 0.1− | 0.6− | 2007 10 18 G96 | 0.1+ | 0.3+ | 2007 11 05 G96 | 0.3− | 0.3− |
| 2003 09 29 645 | 0.1+ | 0.2− | 2007 10 18 G96 | 0.0  | 0.3− | 2007 11 05 G96 | 0.1+ | 0.1− |
| 2003 09 29 645 | 0.1+ | 0.1− | 2007 10 18 G96 | 0.3− | 0.0  | 2007 11 05 G96 | 0.2+ | 0.1− |
| 2003 10 18 645 | 0.1+ | 0.3− | 2007 10 18 G96 | 0.6+ | 0.4+ |                |      |      |

**2007 UA<sub>121</sub> = 2007 VA<sub>271</sub> = 2000 VF<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.27043    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28275072 | $\omega$ | 343.78220 | +0.87197240   | −0.48584007 |
| <i>a</i> | 2.2989714  | $\Omega$ | 45.44577  | +0.45802087   | +0.76619716 |
| <i>e</i> | 0.2148252  | <i>i</i> | 4.84586   | +0.17286129   | +0.42059642 |
| <i>P</i> | 3.49       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 11 02 704 | 0.7− | 0.4− | 2007 10 08 G96 | 0.2− | 0.3+ | 2007 11 05 704 | 0.2+ | 1.1− |
| 2000 11 02 704 | 0.4− | 0.1− | 2007 10 08 G96 | 0.2+ | 0.1+ | 2007 11 05 G96 | 0.2+ | 0.1+ |
| 2000 11 02 704 | 0.2+ | 1.2− | 2007 10 08 G96 | 0.4+ | 0.1+ | 2007 11 05 G96 | 0.4+ | 0.2+ |
| 2000 11 03 691 | 0.3+ | 0.4− | 2007 10 30 G96 | 0.3− | 0.1+ | 2007 11 05 G96 | 0.3+ | 0.3+ |
| 2000 11 03 691 | 0.5+ | 0.6− | 2007 10 30 G96 | 0.5+ | 0.0  | 2007 11 05 G96 | 0.2− | 0.3+ |
| 2000 11 03 691 | 0.3+ | 0.5− | 2007 10 30 G96 | 0.1− | 0.0  | 2007 11 08 291 | 0.4− | 0.3+ |
| 2005 03 13 G96 | 0.0  | 0.8− | 2007 10 30 G96 | 0.6+ | 0.1+ | 2007 11 08 291 | 0.1− | 0.3+ |
| 2005 03 13 G96 | 0.6− | 0.1− | 2007 11 03 G96 | 0.2+ | 0.3+ | 2007 11 08 291 | 0.3− | 0.6+ |
| 2005 03 13 G96 | 0.4+ | 0.1+ | 2007 11 03 G96 | 0.3+ | 0.1+ | 2007 11 19 H07 | 1.4− | 0.2− |
| 2005 03 13 G96 | 0.2− | 0.6− | 2007 11 03 G96 | 1.8− | 0.4+ | 2007 11 19 H07 | 1.2− | 2.8+ |
| 2007 09 15 G96 | 0.6+ | 0.0  | 2007 11 03 G96 | 0.0  | 0.3+ | 2007 11 20 G96 | 0.6+ | 0.2+ |
| 2007 09 15 G96 | 0.2+ | 0.2+ | 2007 11 05 704 | 0.4− | 0.5+ | 2007 11 20 G96 | 0.5+ | 0.9− |
| 2007 09 15 G96 | 0.3+ | 0.0  | 2007 11 05 704 | 0.1− | 0.1− | 2007 11 20 G96 | 0.8+ | 0.4+ |
| 2007 09 15 G96 | 0.0  | 0.1+ | 2007 11 05 704 | 0.6+ | 0.7− | 2007 11 20 G96 | 0.1+ | 0.3+ |
| 2007 10 08 G96 | 0.2+ | 0.1− | 2007 11 05 704 | 0.0  | 0.8− |                |      |      |

**2007 UN<sub>121</sub> = 1993 FE<sub>62</sub> = 2001 EB<sub>12</sub> = 2005 EX<sub>70</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 173.35952  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24140821 | $\omega$ | 181.50244 | −0.61379151   | +0.78853252 |
| <i>a</i> | 2.5544733  | $\Omega$ | 50.63521  | −0.72380354   | −0.54263794 |
| <i>e</i> | 0.1500843  | <i>i</i> | 2.84879   | −0.31522757   | −0.28941411 |
| <i>P</i> | 4.08       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1993 03 19 809 | 1.4− | 0.5+ | 2003 11 18 291 | 0.2+ | 0.4+ | 2007 10 30 G96 | 0.2− | 0.0  |
| 1993 03 20 809 | 0.4− | 0.2+ | 2003 11 18 291 | 0.3+ | 0.1− | 2007 10 30 G96 | 0.2− | 0.1− |
| 2001 03 03 704 | 1.3+ | 0.8− | 2005 02 09 691 | 0.2− | 0.0  | 2007 10 30 G96 | 0.2+ | 0.2− |
| 2001 03 03 704 | 0.1+ | 0.9+ | 2005 02 09 691 | 0.1+ | 0.2− | 2007 11 05 G96 | 0.2+ | 0.2− |
| 2001 03 03 704 | 1.0+ | 0.2+ | 2005 02 09 691 | 0.2− | 0.0  | 2007 11 05 G96 | 0.2− | 0.1+ |
| 2001 03 03 704 | 0.7+ | 0.7+ | 2005 03 02 703 | 0.7+ | 0.2+ | 2007 11 05 G96 | 0.1− | 0.1− |
| 2001 03 04 691 | 0.3+ | 0.1+ | 2005 03 02 703 | 1.4− | 0.3+ | 2007 11 05 G96 | 0.0  | 0.2− |
| 2001 03 04 691 | 0.1+ | 0.1+ | 2005 03 02 703 | 1.2− | 0.3− | 2007 11 20 G96 | 0.6+ | 0.2− |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 04 | 691 | 0.4+ | 0.2+ | 2005 03 02 | 703 | 0.4− | 0.7− | 2007 11 20 | G96 | 0.6+ | 0.3− |
| 2002 08 18 | 644 | 0.1− | 0.6+ | 2007 10 20 | 691 | 0.4− | 0.2+ | 2007 11 20 | G96 | 0.3− | 0.0  |
| 2002 08 18 | 644 | 0.0  | 0.8+ | 2007 10 20 | 691 | 0.3− | 0.1− | 2007 11 20 | G96 | 0.3+ | 0.1− |
| 2002 08 18 | 644 | 0.1+ | 0.4+ | 2007 10 20 | 691 | 0.2− | 0.3+ |            |     |      |      |
| 2003 11 18 | 291 | 0.0  | 0.1+ | 2007 10 30 | G96 | 0.1− | 0.4− |            |     |      |      |

2007 UU<sub>121</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 269.17587  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24041437 | $\omega$ | 124.00201 | −0.79524086   | −0.60564535 |
| <i>a</i> | 2.5615083  | $\Omega$ | 18.77193  | +0.52358038   | −0.70932732 |
| <i>e</i> | 0.2238851  | <i>i</i> | 4.99701   | +0.30570502   | −0.36062233 |
| <i>P</i> | 4.10       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 21 | 691 | 0.3− | 0.3+ | 2005 05 12 | 699 | 1.0− | 0.9+ | 2007 10 30 | 691 | 0.0  | 0.2+ |
| 2003 10 21 | 691 | 0.1− | 0.5+ | 2007 10 04 | 691 | 0.2− | 0.3− | 2007 11 05 | G96 | 0.1+ | 0.2+ |
| 2003 10 21 | 691 | 0.2− | 0.5+ | 2007 10 04 | 691 | 0.2− | 0.6+ | 2007 11 05 | G96 | 0.2+ | 0.2+ |
| 2005 03 11 | G96 | 0.1+ | 0.4+ | 2007 10 04 | 691 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.1− | 0.4+ |
| 2005 03 11 | G96 | 0.3− | 0.4+ | 2007 10 18 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.6+ | 0.6+ |
| 2005 03 11 | G96 | 0.1− | 0.3+ | 2007 10 18 | G96 | 0.1+ | 0.4− | 2007 11 09 | 691 | 0.1− | 0.2+ |
| 2005 03 11 | G96 | 0.1+ | 0.6+ | 2007 10 18 | G96 | 0.3+ | 0.1− | 2007 11 09 | 691 | 0.5− | 0.2− |
| 2005 05 01 | 644 | 0.4+ | 0.3+ | 2007 10 18 | G96 | 0.1− | 0.2+ | 2007 11 09 | 691 | 0.4− | 0.1− |
| 2005 05 01 | 644 | 0.6+ | 0.2+ | 2007 10 18 | G96 | 0.3+ | 0.3− | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2005 05 01 | 644 | 0.3+ | 0.2+ | 2007 10 18 | G96 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.4− | 0.1+ |
| 2005 05 12 | 699 | 0.5+ | 0.4+ | 2007 10 18 | G96 | 0.4+ | 0.1− | 2007 11 13 | 691 | 0.6− | 0.3+ |
| 2005 05 12 | 699 | 0.8+ | 0.5− | 2007 10 30 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2005 05 12 | 699 | 0.0  | 0.0  | 2007 10 30 | 691 | 0.7− | 0.1+ |            |     |      |      |

2007 UB<sub>122</sub> = 2005 JG<sub>110</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 264.15617  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22998368 | $\omega$ | 98.86887 | −0.87823067   | −0.47716465 |
| <i>a</i> | 2.6383842  | $\Omega$ | 52.63723 | +0.42142270   | −0.80380583 |
| <i>e</i> | 0.0773146  | <i>i</i> | 2.30832  | +0.22608363   | −0.35526060 |
| <i>P</i> | 4.29       | <i>H</i> | 17.5     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 25 | 691 | 0.5+ | 0.1− | 2005 05 14 | G96 | 0.1− | 0.1+ | 2007 10 30 | 691 | 0.4− | 0.2+ |
| 2003 12 25 | 691 | 0.2− | 0.2+ | 2005 05 14 | G96 | 0.1+ | 0.1− | 2007 10 30 | G96 | 0.2+ | 0.3+ |
| 2003 12 25 | 691 | 0.3− | 0.0  | 2005 05 14 | G96 | 0.2− | 0.3− | 2007 10 30 | G96 | 0.5+ | 0.1− |
| 2003 12 25 | 691 | 0.3− | 0.1− | 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.4− | 0.6− |
| 2003 12 25 | 691 | 0.4+ | 0.2− | 2007 10 12 | 691 | 0.0  | 0.2− | 2007 10 30 | G96 | 0.2− | 0.1− |
| 2003 12 25 | 691 | 0.0  | 0.2+ | 2007 10 12 | 691 | 0.2+ | 0.3− | 2007 11 05 | G96 | 0.7+ | 0.1− |
| 2005 05 08 | G96 | 0.0  | 0.2+ | 2007 10 20 | 691 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2005 05 08 | G96 | 0.0  | 0.1− | 2007 10 20 | 691 | 0.3+ | 0.3+ | 2007 11 05 | G96 | 0.2+ | 0.1− |
| 2005 05 08 | G96 | 0.0  | 0.1+ | 2007 10 20 | 691 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.3− |
| 2005 05 08 | G96 | 0.2− | 0.0  | 2007 10 30 | 691 | 0.1+ | 0.1− |            |     |      |      |
| 2005 05 14 | G96 | 0.2+ | 0.4− | 2007 10 30 | 691 | 0.3− | 0.0  |            |     |      |      |

2007 UN<sub>122</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 54.22936   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20360155 | $\omega$ | 155.35807 | +0.97131581   | +0.23773112 |
| <i>a</i> | 2.8616421  | $\Omega$ | 190.89345 | −0.22266146   | +0.90124996 |
| <i>e</i> | 0.0769924  | <i>i</i> | 1.64733   | −0.08347140   | +0.36226017 |
| <i>P</i> | 4.84       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 04 05 | 691 | 0.0  | 0.1+ | 2005 05 08 | G96 | 0.0  | 0.2− | 2007 11 14 | G96 | 0.4+ | 0.1− |
| 2000 04 05 | 691 | 0.1− | 0.2− | 2005 05 08 | G96 | 0.4− | 0.7+ | 2007 11 14 | G96 | 0.1+ | 0.2− |
| 2000 04 05 | 691 | 0.1+ | 0.1+ | 2007 10 30 | 691 | 0.0  | 0.0  | 2007 11 14 | G96 | 0.3+ | 0.0  |
| 2002 10 29 | 291 | 0.0  | 0.2+ | 2007 10 30 | 691 | 0.2− | 0.0  | 2007 11 14 | G96 | 0.5+ | 0.2− |
| 2002 10 29 | 291 | 0.1− | 0.3+ | 2007 10 30 | 691 | 0.1− | 0.2+ | 2007 11 14 | 704 | 1.0+ | 0.5− |
| 2002 10 29 | 291 | 0.1− | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 11 14 | 704 | 1.0+ | 0.2− |

## M.P.O. 129965

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 02 | G96 | 0.4+ | 0.4+ | 2007 11 05 | G96 | 0.5+ | 0.2− | 2007 11 14 | 704 | 1.2+ | 1.4+ |
| 2005 04 02 | G96 | 0.5+ | 0.2+ | 2007 11 05 | G96 | 0.7+ | 0.2− | 2007 11 18 | 691 | 0.6− | 1.0− |
| 2005 04 02 | G96 | 0.8+ | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.0  | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2005 04 02 | G96 | 0.5+ | 0.0  | 2007 11 14 | 691 | 0.6− | 0.1+ | 2007 11 18 | 691 | 0.1+ | 0.1− |
| 2005 05 08 | G96 | 1.3− | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.3+ |            |     |      |      |
| 2005 05 08 | G96 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.3− | 0.2+ |            |     |      |      |

2007 UG<sub>123</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 337.66531  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21727349 | $\omega$ | 38.92920 | +0.20503922   | −0.97279521 |
| <i>a</i> | 2.7403007  | $\Omega$ | 39.57692 | +0.85036684   | +0.12250893 |
| <i>e</i> | 0.1375516  | <i>i</i> | 9.74454  | +0.48459793   | +0.19662411 |
| <i>P</i> | 4.54       | <i>H</i> | 17.1     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 05 05 | 645 | 0.1− | 0.0  | 2007 10 10 | G96 | 0.3+ | 0.0  | 2007 11 13 | 691 | 0.3− | 0.0  |
| 2000 05 05 | 645 | 0.1+ | 0.1− | 2007 10 10 | G96 | 0.2+ | 0.3− | 2007 11 17 | 691 | 0.2− | 0.4− |
| 2004 01 17 | 644 | 0.1− | 0.3− | 2007 10 10 | G96 | 0.1+ | 0.1− | 2007 11 17 | 691 | 0.1− | 0.1+ |
| 2004 01 17 | 644 | 0.2− | 0.2− | 2007 10 31 | 691 | 0.1+ | 0.1− | 2007 11 17 | 691 | 0.0  | 0.2− |
| 2004 01 17 | 644 | 0.4− | 0.4− | 2007 10 31 | 691 | 0.1− | 0.0  | 2007 11 18 | 704 | 0.2+ | 0.2+ |
| 2007 09 10 | G96 | 0.3+ | 0.5− | 2007 10 31 | 691 | 0.1+ | 0.1− | 2007 11 18 | 704 | 0.2+ | 1.1+ |
| 2007 09 10 | G96 | 0.1− | 0.3− | 2007 11 07 | 691 | 0.1− | 0.0  | 2007 11 18 | 704 | 0.5+ | 0.5+ |
| 2007 09 10 | G96 | 0.1+ | 0.2− | 2007 11 07 | 691 | 0.4− | 0.1− | 2007 11 18 | 704 | 0.7+ | 0.7+ |
| 2007 09 10 | G96 | 0.6+ | 0.3− | 2007 11 07 | 691 | 0.1+ | 0.1− | 2007 11 20 | 704 | 0.2− | 0.7+ |
| 2007 09 18 | G96 | 0.3+ | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.2− | 2007 11 20 | 704 | 0.8+ | 0.9+ |
| 2007 09 18 | G96 | 0.1+ | 0.2− | 2007 11 09 | 691 | 0.3− | 0.0  | 2007 11 20 | 704 | 0.3− | 0.4− |
| 2007 09 18 | G96 | 0.3+ | 0.2− | 2007 11 09 | 691 | 0.2− | 0.2− | 2007 12 16 | 691 | 0.9+ | 0.9+ |
| 2007 09 18 | G96 | 0.5+ | 0.2− | 2007 11 13 | 691 | 0.4+ | 0.0  | 2007 12 16 | 691 | 0.3− | 0.1+ |
| 2007 10 10 | G96 | 0.5+ | 0.0  | 2007 11 13 | 691 | 0.6− | 0.3− | 2007 12 16 | 691 | 0.1− | 0.3+ |

2007 UP<sub>123</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 231.41265  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30223265 | $\omega$ | 147.98235 | −0.99667429   | +0.06499690 |
| <i>a</i> | 2.1990839  | $\Omega$ | 35.84492  | −0.08033310   | −0.88490293 |
| <i>e</i> | 0.0983633  | <i>i</i> | 4.81465   | +0.01367305   | −0.46121818 |
| <i>P</i> | 3.26       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.1− | 0.1− | 2004 12 10 | 691 | 0.0   | 0.1−  | 2007 10 19 | 691 | 0.1− | 0.0  |
| 1999 03 21 | 645 | 0.1− | 0.1− | 2004 12 10 | 691 | 0.2−  | 0.2−  | 2007 10 19 | 691 | 0.1+ | 0.2− |
| 2002 02 03 | 699 | 0.1+ | 0.2+ | 2007 09 09 | G96 | 0.3+  | 0.6−  | 2007 10 19 | 691 | 0.1− | 0.1− |
| 2002 02 03 | 699 | 0.2− | 0.1+ | 2007 09 09 | G96 | 0.1+  | 0.0   | 2007 10 31 | 691 | 0.1+ | 0.1+ |
| 2002 02 03 | 699 | 1.3+ | 0.8− | 2007 09 09 | G96 | 0.0   | 0.0   | 2007 10 31 | G96 | 0.1+ | 0.1− |
| 2002 02 03 | 699 | 0.1− | 1.7− | 2007 09 09 | G96 | 0.0   | 0.1+  | 2007 10 31 | G96 | 0.5+ | 0.0  |
| 2002 02 23 | 644 | 0.3− | 0.5+ | 2007 09 18 | G96 | 0.3−  | 0.5−  | 2007 10 31 | 691 | 0.3− | 0.3+ |
| 2002 02 23 | 644 | 0.0  | 0.6+ | 2007 09 18 | G96 | 0.0   | 0.3−  | 2007 10 31 | G96 | 0.3+ | 0.2− |
| 2002 02 23 | 644 | 0.2− | 0.6+ | 2007 09 18 | G96 | 0.2+  | 0.3−  | 2007 10 31 | G96 | 0.3+ | 0.1+ |
| 2002 03 11 | 644 | 0.0  | 0.5+ | 2007 09 18 | G96 | 0.5+  | 0.1−  | 2007 10 31 | 691 | 0.6− | 0.0  |
| 2002 03 11 | 644 | 0.1+ | 0.3+ | 2007 10 07 | 691 | 0.1+  | 0.2+  | 2007 11 07 | 291 | 0.3− | 0.0  |
| 2002 03 11 | 644 | 0.8− | 0.1+ | 2007 10 07 | 691 | 0.3−  | 1.0−  | 2007 11 07 | 291 | 0.3− | 0.2+ |
| 2004 12 02 | 691 | 0.1− | 0.4− | 2007 10 07 | 691 | (2.0− | 1.5−) | 2007 11 07 | 291 | 0.4− | 0.2+ |
| 2004 12 02 | 691 | 0.2− | 0.2− | 2007 10 11 | 691 | 0.1−  | 0.1+  | 2007 11 15 | 704 | 0.1+ | 1.3+ |
| 2004 12 02 | 691 | 0.2+ | 0.4− | 2007 10 11 | 691 | 0.2−  | 0.2+  | 2007 11 15 | 704 | 0.2− | 0.4+ |
| 2004 12 10 | 691 | 0.0  | 0.0  | 2007 10 11 | 691 | 0.4−  | 0.4−  | 2007 11 15 | 704 | 0.8+ | 1.3+ |

2007 UX<sub>123</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 26.71560   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22024728 | $\omega$ | 219.98004 | +0.98977104   | +0.07396365 |
| <i>a</i> | 2.7155784  | $\Omega$ | 135.30876 | −0.03737515   | +0.95967787 |
| <i>e</i> | 0.2561235  | <i>i</i> | 9.98926   | −0.13768217   | +0.27119690 |
| <i>P</i> | 4.48       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 04 16 | 645 | 0.1− | 0.0  | 2007 10 10 | 703 | 0.9+ | 0.4− | 2007 10 31 | 703 | 1.0− | 0.4− |
| 2001 04 16 | 645 | 0.0  | 0.1− | 2007 10 10 | 703 | 0.2+ | 0.2+ | 2007 10 31 | 703 | 1.2− | 0.1+ |
| 2006 04 24 | 691 | 0.1+ | 0.3+ | 2007 10 10 | 703 | 0.2+ | 0.3− | 2007 10 31 | 703 | 0.2+ | 0.1− |
| 2006 04 24 | 691 | 0.2+ | 0.1− | 2007 10 10 | 703 | 0.8− | 0.3+ | 2007 11 07 | 703 | 0.5+ | 0.2+ |
| 2006 04 24 | 691 | 0.2+ | 0.4+ | 2007 10 19 | 703 | 0.1+ | 0.5− | 2007 11 07 | 703 | 0.1− | 0.3+ |
| 2006 05 30 | G96 | 0.8− | 0.0  | 2007 10 19 | 703 | 0.7+ | 0.1+ | 2007 11 07 | 703 | 0.8+ | 0.3− |
| 2006 05 30 | G96 | 0.1+ | 0.2+ | 2007 10 19 | 703 | 0.8− | 0.2+ | 2007 11 07 | 703 | 0.7+ | 0.2− |
| 2006 05 30 | G96 | 0.0  | 0.1− | 2007 10 19 | 703 | 0.4+ | 0.7+ |            |     |      |      |
| 2006 05 30 | G96 | 0.3+ | 0.5− | 2007 10 31 | 703 | 0.8− | 0.1+ |            |     |      |      |

**2007 UK<sub>125</sub> = 2000 QA<sub>188</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.95018   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29118703 | $\omega$ | 203.29568 | +0.83268388   | +0.54678481 |
| <i>a</i> | 2.2543501  | $\Omega$ | 123.26827 | −0.49016095   | +0.80135254 |
| <i>e</i> | 0.1485614  | <i>i</i> | 6.01009   | −0.25764277   | +0.24261180 |
| <i>P</i> | 3.38       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 08 26 | 704 | 0.5+ | 0.2+ | 2006 04 09 | G96 | 0.7+  | 0.8+  | 2007 10 31 | 703 | 0.3− | 0.7+ |
| 2000 08 26 | 704 | 1.3− | 0.3− | 2006 04 09 | G96 | 0.3+  | 0.7+  | 2007 10 31 | 703 | 0.1+ | 0.3− |
| 2000 08 26 | 704 | 0.4+ | 0.2− | 2007 10 10 | 703 | 0.6+  | 0.5−  | 2007 10 31 | 703 | 0.8+ | 0.6− |
| 2000 08 26 | 704 | 0.7− | 0.4+ | 2007 10 10 | 703 | 0.0   | 1.0+  | 2007 10 31 | 703 | 1.0+ | 0.3+ |
| 2000 08 26 | 704 | 0.6− | 0.6+ | 2007 10 10 | 703 | 0.5+  | 0.4−  | 2007 11 07 | 703 | 0.4− | 1.0+ |
| 2000 09 04 | 704 | 0.3− | 0.4+ | 2007 10 10 | 703 | 0.5+  | 0.4−  | 2007 11 07 | 703 | 0.3+ | 0.1+ |
| 2000 09 04 | 704 | 0.7+ | 0.9+ | 2007 10 17 | 699 | 0.8+  | 1.1−  | 2007 11 07 | 703 | 0.2+ | 0.4− |
| 2000 09 04 | 704 | 0.0  | 0.1+ | 2007 10 17 | 699 | 0.7+  | 0.8+  | 2007 11 07 | 703 | 0.7− | 0.2− |
| 2000 09 04 | 704 | 0.3+ | 1.0+ | 2007 10 17 | 699 | 1.5+  | 0.3−  | 2007 11 17 | 703 | 0.8+ | 0.5+ |
| 2002 01 14 | 691 | 0.2+ | 0.1+ | 2007 10 17 | 699 | 0.8−  | 0.6+  | 2007 11 17 | 703 | 0.3+ | 1.7+ |
| 2002 01 14 | 691 | 0.2− | 0.3+ | 2007 10 19 | 703 | 0.4+  | 1.1−  | 2007 11 17 | 703 | 0.3+ | 1.0+ |
| 2002 01 14 | 691 | 0.1+ | 0.0  | 2007 10 19 | 703 | 0.9−  | 0.1−  | 2007 11 17 | 703 | 0.9− | 0.1− |
| 2006 04 09 | G96 | 0.2+ | 0.6+ | 2007 10 19 | 703 | 1.0−  | 0.9−  |            |     |      |      |
| 2006 04 09 | G96 | 0.2− | 0.8+ | 2007 10 19 | 703 | (3.9− | 0.6−) |            |     |      |      |

**2007 VA = 2001 SJ<sub>191</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.39885   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17634834 | $\omega$ | 324.03586 | +0.95364402   | +0.30031079 |
| <i>a</i> | 3.1493563  | $\Omega$ | 18.51671  | −0.25986167   | +0.85428451 |
| <i>e</i> | 0.2496444  | <i>i</i> | 3.50286   | −0.15177283   | +0.42427751 |
| <i>P</i> | 5.59       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.6− | 0.3− | 2007 09 12 | G96 | 0.2− | 0.3− | 2007 11 02 | G96 | 0.5+ | 0.1− |
| 2001 09 19 | 704 | 1.0+ | 0.8− | 2007 09 12 | G96 | 0.4+ | 0.3+ | 2007 11 02 | G96 | 0.3+ | 0.1− |
| 2001 09 19 | 704 | 0.4− | 0.5− | 2007 10 31 | G96 | 0.2+ | 0.1+ | 2007 11 03 | 691 | 0.2− | 0.1+ |
| 2001 09 19 | 704 | 0.1− | 0.6+ | 2007 10 31 | G96 | 0.1+ | 0.2− | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2001 09 21 | 704 | 0.2+ | 0.2+ | 2007 10 31 | G96 | 0.5+ | 0.5− | 2007 11 03 | 691 | 0.2− | 0.3+ |
| 2001 09 21 | 704 | 0.2− | 0.4− | 2007 10 31 | G96 | 0.3− | 0.7− | 2007 11 18 | G96 | 0.7+ | 0.1− |
| 2001 09 21 | 704 | 0.1+ | 0.2+ | 2007 11 01 | H55 | 0.5− | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.6− |
| 2001 09 21 | 704 | 0.5+ | 0.6+ | 2007 11 01 | H55 | 0.1− | 0.1+ | 2007 11 18 | G96 | 0.1+ | 0.8− |
| 2001 09 21 | 704 | 0.5− | 0.3+ | 2007 11 01 | H55 | 1.2− | 1.0+ | 2007 11 18 | G96 | 0.4+ | 0.3− |
| 2007 09 12 | G96 | 0.3− | 0.1− | 2007 11 02 | G96 | 0.3+ | 0.0  |            |     |      |      |
| 2007 09 12 | G96 | 0.3+ | 0.3− | 2007 11 02 | G96 | 0.6+ | 0.1+ |            |     |      |      |

**2007 VE = 2007 US<sub>5</sub> = 2007 UM<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.59505   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21302571 | $\omega$ | 221.17738 | +0.88710047   | −0.46076881 |
| <i>a</i> | 2.7766089  | $\Omega$ | 166.18335 | +0.44775314   | +0.84466600 |
| <i>e</i> | 0.0550273  | <i>i</i> | 6.56218   | +0.11211550   | +0.27245448 |
| <i>P</i> | 4.63       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 03 03 | 691 | 0.3+ | 0.3− | 2007 10 17 | H07 | 0.0   | 0.2+  | 2007 11 01 | H07 | (0.4+ | 1.9+) |
| 2000 03 03 | 691 | 0.2− | 0.2− | 2007 10 19 | H07 | 0.9−  | 0.2−  | 2007 11 01 | H07 | 0.3+  | 1.3+  |
| 2000 03 03 | 691 | 0.2− | 0.1+ | 2007 10 19 | H07 | 0.6−  | 0.5−  | 2007 11 01 | H07 | (0.4− | 1.8+) |
| 2002 08 31 | 291 | 0.1− | 0.9+ | 2007 10 19 | H07 | 0.2−  | 0.1+  | 2007 11 02 | H07 | 1.1+  | 1.0+  |
| 2002 08 31 | 291 | 0.3− | 0.2+ | 2007 10 19 | H07 | 0.7+  | 0.8−  | 2007 11 02 | H07 | (0.6+ | 2.0+) |
| 2002 08 31 | 291 | 0.0  | 0.3+ | 2007 10 19 | H07 | 0.7+  | 0.8−  | 2007 11 02 | H07 | 1.4+  | 1.1+  |
| 2002 09 05 | 645 | 0.0  | 0.2− | 2007 10 19 | H07 | 0.0   | 0.5−  | 2007 11 07 | 703 | 0.6−  | 1.3−  |
| 2002 09 05 | 645 | 0.0  | 0.1− | 2007 10 19 | H07 | 0.0   | 0.5−  | 2007 11 07 | 703 | 0.6+  | 0.3−  |
| 2005 04 12 | 691 | 0.4+ | 0.4+ | 2007 10 19 | H07 | 0.1−  | 1.0−  | 2007 11 07 | 703 | 0.5−  | 0.2−  |
| 2005 04 12 | 691 | 0.5− | 0.2+ | 2007 10 19 | H07 | 0.1−  | 1.0−  | 2007 11 07 | 703 | (1.2+ | 1.6−) |
| 2005 04 12 | 691 | 0.2+ | 0.1− | 2007 10 19 | H07 | 0.3−  | 0.2−  | 2007 11 14 | 291 | 0.6+  | 0.2+  |
| 2007 10 09 | 691 | 0.6− | 0.1− | 2007 10 19 | H07 | 0.3−  | 0.2−  | 2007 11 14 | 291 | 0.4+  | 0.0   |
| 2007 10 09 | 691 | 0.7− | 0.1− | 2007 10 19 | H07 | 0.5+  | 0.2+  | 2007 11 14 | 291 | 0.6+  | 0.3+  |
| 2007 10 09 | 691 | 1.0− | 0.1+ | 2007 10 19 | H07 | 0.5+  | 0.2+  | 2007 11 14 | H07 | 0.5+  | 1.4+  |
| 2007 10 17 | H07 | 0.1+ | 0.6+ | 2007 10 19 | H07 | (0.4− | 1.7+) | 2007 11 14 | H07 | 0.2−  | 1.1+  |
| 2007 10 17 | H07 | 0.2− | 0.0  | 2007 10 19 | H07 | (0.4− | 1.7+) | 2007 11 14 | H07 | 0.3−  | 0.5+  |

**2007 VJ**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.96635  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21612141 | $\omega$ | 19.27201 | +0.50214610   | −0.85853392 |
| <i>a</i> | 2.7500306  | $\Omega$ | 40.76720 | +0.77109767   | +0.39018873 |
| <i>e</i> | 0.1259263  | <i>i</i> | 9.14422  | +0.39148140   | +0.33267440 |
| <i>P</i> | 4.56       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 17 | 691 | 0.0  | 0.1− | 2007 11 01 | 734 | 0.7+ | 0.1+ | 2007 11 07 | 691 | 0.6− | 0.2+ |
| 1998 10 17 | 691 | 0.0  | 0.0  | 2007 11 01 | 734 | 0.8− | 0.1− | 2007 11 07 | 734 | 0.1− | 0.0  |
| 1998 10 17 | 691 | 0.0  | 0.1− | 2007 11 02 | 734 | 0.1+ | 0.2− | 2007 11 07 | 734 | 0.3+ | 0.0  |
| 2005 05 11 | G96 | 0.0  | 0.0  | 2007 11 02 | 734 | 0.3− | 0.1− | 2007 11 07 | 734 | 1.2+ | 0.0  |
| 2005 05 11 | G96 | 0.2− | 0.3+ | 2007 11 02 | 734 | 0.1+ | 0.3− | 2007 11 09 | 691 | 0.2− | 0.2+ |
| 2005 05 11 | G96 | 0.4− | 0.0  | 2007 11 02 | 734 | 0.4+ | 0.3− | 2007 11 09 | 691 | 0.1− | 0.1+ |
| 2005 05 11 | G96 | 0.4+ | 0.6− | 2007 11 03 | 734 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.2− | 0.0  |
| 2007 10 19 | G96 | 0.3− | 0.2− | 2007 11 03 | 734 | 0.0  | 0.2+ | 2007 11 07 | 734 | 0.6+ | 0.2+ |
| 2007 10 19 | G96 | 0.3+ | 0.1+ | 2007 11 03 | 734 | 0.2+ | 0.6− | 2007 11 17 | 734 | 0.1− | 0.0  |
| 2007 10 19 | G96 | 0.2− | 0.5− | 2007 11 05 | 691 | 0.1+ | 0.2− | 2007 11 17 | 734 | 0.5+ | 0.1− |
| 2007 10 19 | G96 | 0.1− | 0.1− | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 12 03 | 734 | 0.1+ | 0.7− |
| 2007 11 01 | 734 | 0.2+ | 0.1− | 2007 11 05 | 691 | 0.1− | 0.3+ | 2007 12 03 | 734 | 0.3− | 0.1− |
| 2007 11 01 | 734 | 0.4− | 0.0  | 2007 11 07 | 691 | 1.0+ | 0.1+ | 2007 12 03 | 734 | 0.8− | 0.3+ |
| 2007 11 01 | 734 | 0.5+ | 0.2+ | 2007 11 07 | 691 | 0.3− | 0.0  |            |     |      |      |

**2007 VQ = 2005 GR<sub>47</sub> = 2006 ON<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.42658  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20788793 | $\omega$ | 204.63493 | +0.12728869   | +0.97464853 |
| <i>a</i> | 2.8221702  | $\Omega$ | 73.10825  | −0.87515733   | +0.19766879 |
| <i>e</i> | 0.0677289  | <i>i</i> | 11.08714  | −0.46679464   | −0.10482031 |
| <i>P</i> | 4.74       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 15 | 644 | 0.2− | 0.4+ | 2006 07 20 | E12 | 0.4− | 0.5− | 2007 11 01 | 291 | 0.3− | 0.2− |
| 2002 10 15 | 644 | 0.1− | 0.0  | 2006 07 20 | E12 | 0.6− | 0.1+ | 2007 11 02 | H55 | 0.0  | 0.2− |
| 2002 10 15 | 644 | 0.2− | 0.1+ | 2006 07 20 | E12 | 0.0  | 0.1+ | 2007 11 02 | H55 | 0.0  | 0.1− |
| 2003 12 14 | 691 | 0.1+ | 0.2− | 2006 07 20 | E12 | 0.5+ | 0.0  | 2007 11 02 | H55 | 0.2− | 0.1− |
| 2003 12 14 | 691 | 0.0  | 0.3+ | 2006 07 29 | E12 | 0.1− | 0.4+ | 2007 11 03 | G96 | 0.3+ | 0.3+ |
| 2003 12 14 | 691 | 0.0  | 0.0  | 2006 07 29 | E12 | 0.3+ | 0.3+ | 2007 11 03 | G96 | 0.3+ | 0.2+ |
| 2005 04 05 | 644 | 0.1− | 0.5+ | 2006 07 29 | E12 | 0.5+ | 0.5+ | 2007 11 03 | G96 | 0.4+ | 0.2+ |
| 2005 04 05 | 644 | 0.5+ | 1.0+ | 2006 07 29 | E12 | 0.5− | 0.8+ | 2007 11 03 | G96 | 0.4+ | 0.2+ |
| 2005 04 05 | 644 | 1.2+ | 0.0  | 2007 10 12 | G96 | 0.6+ | 0.4− | 2007 11 12 | 704 | 0.1+ | 0.6+ |
| 2005 04 06 | 703 | 0.2− | 0.7+ | 2007 10 12 | G96 | 0.4+ | 0.3− | 2007 11 12 | 704 | 0.4+ | 1.1+ |
| 2005 04 06 | 703 | 0.7− | 0.3+ | 2007 10 12 | G96 | 0.6+ | 0.4− | 2007 11 12 | 704 | 0.3− | 0.4+ |
| 2005 04 06 | 703 | 0.4+ | 0.1− | 2007 10 12 | G96 | 0.3+ | 0.3− | 2007 11 12 | 704 | 0.1− | 1.0+ |
| 2005 04 06 | 703 | 0.0  | 0.6+ | 2007 11 01 | 291 | 0.3− | 0.0  |            |     |      |      |
| 2006 07 20 | E12 | 0.2+ | 0.2+ | 2007 11 01 | 291 | 0.5− | 0.1+ |            |     |      |      |

2007 DEC. 24

M.P.O. 129967

**2007 VU**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.75951   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24058495 | $\omega$ | 85.36742  | +0.99551825   | -0.08335680 |
| <i>a</i> | 2.5602974  | $\Omega$ | 279.40942 | +0.05829950   | +0.91282831 |
| <i>e</i> | 0.3205656  | <i>i</i> | 2.59496   | +0.07446192   | +0.39974507 |
| <i>P</i> | 4.10       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 29 | 691 | 0.0  | 0.1- | 2007 11 06 | 704 | 0.5+  | 0.2+  | 2007 11 18 | 704 | 0.1+ | 1.2+ |
| 2003 12 29 | 691 | 0.1- | 0.1+ | 2007 11 06 | 704 | (1.5+ | 1.0-) | 2007 11 20 | 704 | 0.4+ | 0.6+ |
| 2003 12 29 | 691 | 0.1+ | 0.1+ | 2007 11 06 | A13 | 0.0   | 0.4-  | 2007 11 20 | 704 | 0.2+ | 0.2+ |
| 2005 03 17 | G96 | 0.2- | 0.2+ | 2007 11 06 | A13 | 0.2-  | 0.1-  | 2007 11 20 | 704 | 0.7+ | 0.9+ |
| 2005 03 17 | G96 | 0.1+ | 0.3- | 2007 11 06 | A13 | 0.0   | 0.4-  | 2007 11 20 | 704 | 0.4+ | 0.0  |
| 2005 03 17 | G96 | 0.3+ | 0.7- | 2007 11 07 | A13 | 0.1+  | 0.3-  | 2007 11 20 | 704 | 0.3+ | 0.3+ |
| 2005 03 17 | G96 | 0.6- | 0.7- | 2007 11 07 | 691 | 0.2-  | 0.2-  | 2007 12 03 | 703 | 0.1- | 0.0  |
| 2006 05 03 | G96 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.3- | 0.2- |
| 2006 05 03 | G96 | 0.6- | 0.2- | 2007 11 07 | 691 | 0.0   | 0.1-  | 2007 12 03 | 703 | 0.5+ | 0.1- |
| 2006 05 03 | G96 | 0.2+ | 0.3- | 2007 11 09 | 691 | 0.3-  | 0.2+  | 2007 12 03 | 703 | 0.1- | 0.2+ |
| 2006 05 03 | G96 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.1+  | 0.3-  | 2007 12 05 | 699 | 0.6+ | 0.4- |
| 2007 11 01 | 691 | 0.0  | 0.1- | 2007 11 09 | 691 | 0.2-  | 0.0   | 2007 12 05 | 699 | 1.3+ | 0.1+ |
| 2007 11 01 | 691 | 0.3- | 0.0  | 2007 11 12 | A13 | 0.1+  | 0.2-  | 2007 12 05 | 699 | 1.3+ | 0.4- |
| 2007 11 01 | 691 | 0.1- | 0.2- | 2007 11 13 | A13 | 0.0   | 0.2-  | 2007 12 05 | 699 | 0.6+ | 0.1+ |
| 2007 11 01 | A13 | 0.1+ | 0.2- | 2007 11 13 | 691 | 0.3-  | 0.1-  | 2007 12 06 | 691 | 0.2- | 0.3- |
| 2007 11 01 | A13 | 0.2+ | 0.3- | 2007 11 13 | 691 | 0.0   | 0.2-  | 2007 12 06 | 691 | 0.1- | 0.0  |
| 2007 11 01 | A13 | 0.2- | 0.1- | 2007 11 13 | 691 | 0.1-  | 0.0   | 2007 12 06 | 691 | 0.0  | 0.1- |
| 2007 11 02 | A13 | 0.1+ | 0.2- | 2007 11 13 | 699 | 0.4+  | 0.3-  | 2007 12 10 | 704 | 0.6+ | 1.0- |
| 2007 11 02 | A13 | 0.1+ | 0.4- | 2007 11 13 | 699 | 0.8+  | 0.5-  | 2007 12 10 | 704 | 0.4+ | 0.2- |
| 2007 11 02 | A13 | 0.1+ | 0.4- | 2007 11 13 | 699 | 0.2-  | 0.2-  | 2007 12 10 | 704 | 0.3- | 0.5+ |
| 2007 11 03 | A13 | 0.2- | 0.6- | 2007 11 13 | 699 | 0.2+  | 0.0   | 2007 12 14 | 691 | 0.1- | 0.3+ |
| 2007 11 03 | A13 | 0.0  | 0.2- | 2007 11 17 | 691 | 0.2-  | 0.1-  | 2007 12 14 | 691 | 0.2- | 0.1+ |
| 2007 11 03 | A13 | 0.9+ | 0.4- | 2007 11 17 | 691 | 0.1-  | 0.1+  | 2007 12 14 | 691 | 0.2- | 0.1+ |
| 2007 11 05 | 691 | 0.0  | 0.1- | 2007 11 17 | 691 | 0.2-  | 0.1+  | 2007 12 16 | 691 | 0.1- | 0.1+ |
| 2007 11 05 | 691 | 0.1- | 0.2- | 2007 11 18 | 704 | 0.0   | 1.4+  | 2007 12 16 | 691 | 0.1- | 0.0  |
| 2007 11 05 | 691 | 0.1- | 0.0  | 2007 11 18 | 704 | 0.2+  | 1.1+  | 2007 12 16 | 691 | 0.2- | 0.1+ |
| 2007 11 06 | 704 | 0.8+ | 0.3+ | 2007 11 18 | 704 | 0.2+  | 1.1+  |            |     |      |      |
| 2007 11 06 | 704 | 0.8+ | 1.5+ | 2007 11 18 | 704 | 0.3+  | 0.9+  |            |     |      |      |

**2007 VA<sub>1</sub> = 2006 VC<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 172.04268  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22661433 | $\omega$ | 0.32268   | +0.11577544   | +0.87110549 |
| <i>a</i> | 2.6644719  | $\Omega$ | 276.36534 | -0.91238477   | -0.09665841 |
| <i>e</i> | 0.0592671  | <i>i</i> | 28.69940  | -0.39261952   | +0.48148976 |
| <i>P</i> | 4.35       | <i>H</i> | 14.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 01 22 | 644 | 0.2+ | 0.0  | 2006 11 21 | 703 | 0.6- | 0.7- | 2007 11 11 | G96 | 0.1+ | 0.6- |
| 2003 01 22 | 644 | 0.1- | 0.3+ | 2006 11 21 | 703 | 0.0  | 0.1- | 2007 11 11 | G96 | 0.2+ | 0.3- |
| 2003 01 22 | 644 | 0.2- | 0.1+ | 2006 11 21 | 703 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.2+ | 0.0  |
| 2003 12 22 | 644 | 0.4+ | 0.7+ | 2006 11 21 | 703 | 0.6- | 0.3- | 2007 12 04 | G96 | 0.4- | 0.5- |
| 2003 12 22 | 644 | 0.4+ | 0.6+ | 2006 11 21 | 703 | 0.1+ | 1.0+ | 2007 12 04 | G96 | 0.0  | 0.2- |
| 2003 12 22 | 644 | 0.7+ | 0.6+ | 2006 11 21 | 703 | 0.7- | 1.3+ | 2007 12 04 | G96 | 0.2+ | 0.5+ |
| 2006 10 02 | 703 | 0.6- | 0.0  | 2007 11 02 | G96 | 0.3+ | 0.3+ | 2007 12 04 | 691 | 0.2- | 0.1- |
| 2006 10 02 | 703 | 0.4+ | 0.1- | 2007 11 02 | G96 | 0.0  | 0.7+ | 2007 12 04 | 691 | 0.0  | 0.2+ |
| 2006 10 02 | 703 | 0.4+ | 0.3+ | 2007 11 02 | G96 | 0.2- | 0.2+ | 2007 12 04 | 691 | 0.3- | 0.4+ |
| 2006 10 02 | 703 | 0.4+ | 0.2+ | 2007 11 02 | G96 | 0.4- | 0.2+ | 2007 12 10 | D29 | 0.4+ | 0.8- |
| 2006 11 01 | 703 | 0.8- | 0.3- | 2007 11 03 | G96 | 0.2+ | 0.2- | 2007 12 10 | D29 | 0.2+ | 0.6+ |
| 2006 11 01 | 703 | 0.4+ | 0.3- | 2007 11 03 | G96 | 0.3+ | 0.2- | 2007 12 10 | D29 | 0.2- | 0.6- |
| 2006 11 01 | 703 | 0.6+ | 0.7+ | 2007 11 03 | G96 | 0.1- | 0.2- | 2007 12 10 | D29 | 0.6+ | 0.2+ |
| 2006 11 01 | 703 | 0.1+ | 0.3- | 2007 11 03 | G96 | 0.2+ | 0.2- | 2007 12 16 | 691 | 0.1- | 0.1- |
| 2006 11 21 | 703 | 0.7+ | 0.2+ | 2007 11 11 | G96 | 0.1- | 0.3- | 2007 12 16 | 691 | 0.1- | 0.0  |
| 2006 11 21 | 703 | 0.6- | 0.6- | 2007 11 11 | G96 | 0.0  | 0.4- | 2007 12 16 | 691 | 0.1- | 0.1- |

**2007 VU<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.53553   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26920057 | $\omega$ | 90.25673  | +0.95577467   | -0.29089999 |
| <i>a</i> | 2.3754838  | $\Omega$ | 286.65538 | +0.24866739   | +0.87788461 |
| <i>e</i> | 0.1981352  | <i>i</i> | 2.58842   | +0.15703285   | +0.38038901 |
| <i>P</i> | 3.66       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 06 | 691 | 0.5+ | 0.1+ | 2007 11 03 | 704 | 0.5- | 0.5- | 2007 11 07 | 704 | 1.6+ | 0.4+ |
| 2003 07 06 | 691 | 0.1+ | 0.0  | 2007 11 03 | 704 | 0.3- | 0.1- | 2007 11 07 | 704 | 1.5+ | 1.0+ |
| 2003 07 06 | 691 | 0.1+ | 0.2- | 2007 11 03 | 704 | 0.0  | 0.5- | 2007 11 07 | 704 | 0.9+ | 0.8+ |
| 2003 07 24 | 644 | 0.4- | 0.0  | 2007 11 03 | 704 | 0.0  | 0.9- | 2007 11 07 | 704 | 0.1+ | 0.3- |
| 2003 07 24 | 644 | 0.4- | 0.2+ | 2007 11 03 | 704 | 0.3- | 0.7+ | 2007 11 07 | 703 | 0.8- | 0.4+ |
| 2003 07 24 | 644 | 0.2- | 0.2+ | 2007 11 04 | 704 | 0.3+ | 0.8+ | 2007 11 07 | 703 | 0.7- | 0.9+ |
| 2003 08 23 | 644 | 0.1+ | 0.1+ | 2007 11 04 | 704 | 0.6- | 0.5- | 2007 11 07 | 703 | 0.4- | 0.1- |
| 2003 08 23 | 644 | 0.1+ | 0.3- | 2007 11 04 | 704 | 0.3- | 0.2+ | 2007 11 07 | 703 | 0.2- | 0.3- |
| 2003 08 23 | 644 | 0.0  | 0.2+ | 2007 11 04 | 704 | 0.4+ | 1.1+ | 2007 11 08 | G96 | 0.1- | 0.3- |
| 2005 01 19 | 691 | 0.2+ | 0.0  | 2007 11 06 | 704 | 0.7+ | 1.2- | 2007 11 08 | G96 | 0.2+ | 0.4- |
| 2005 01 19 | 691 | 0.1- | 0.1+ | 2007 11 06 | 704 | 0.3+ | 1.4+ | 2007 11 08 | G96 | 0.0  | 0.4- |
| 2005 01 19 | 691 | 0.2+ | 0.5+ | 2007 11 06 | 704 | 0.0  | 0.5+ | 2007 11 08 | G96 | 0.1- | 0.4- |
| 2007 10 07 | 691 | 0.5- | 0.1- | 2007 11 06 | 704 | 0.7+ | 0.9- | 2007 11 18 | 704 | 0.1- | 0.6- |
| 2007 10 07 | 691 | 0.6- | 0.1- | 2007 11 07 | 704 | 0.7+ | 0.2+ | 2007 11 18 | 704 | 0.2- | 0.1+ |
| 2007 10 07 | 691 | 0.6- | 0.1- | 2007 11 07 | 704 | 0.5- | 0.7- | 2007 11 18 | 704 | 0.4+ | 0.7- |
| 2007 11 01 | 704 | 0.1- | 0.1+ | 2007 11 07 | 704 | 0.6+ | 0.5+ | 2007 11 18 | 704 | 0.8- | 0.1- |
| 2007 11 01 | 704 | 0.5- | 0.6- | 2007 11 07 | 704 | 0.0  | 0.1- | 2007 11 18 | 704 | 0.5- | 0.0  |
| 2007 11 01 | 704 | 0.2- | 0.0  | 2007 11 07 | 704 | 0.3+ | 1.2+ |            |     |      |      |
| 2007 11 01 | 704 | 0.3+ | 0.2- | 2007 11 07 | 704 | 0.3- | 0.1- |            |     |      |      |

**2007 VS<sub>2</sub> = 2003 UJ<sub>342</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 134.41333  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28070296 | $\omega$ | 20.90537  | -0.02488220   | +0.99527062 |
| <i>a</i> | 2.3101387  | $\Omega$ | 247.76649 | -0.93099502   | -0.05728799 |
| <i>e</i> | 0.0561765  | <i>i</i> | 5.82225   | -0.36418286   | +0.07845045 |
| <i>P</i> | 3.51       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 19 | 691 | 0.1+ | 0.2- | 2003 10 23 | 645 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2000 11 19 | 691 | 0.1- | 0.6- | 2007 10 31 | 691 | 0.5- | 0.3- | 2007 11 04 | 691 | 0.7- | 0.4+ |
| 2000 11 19 | 691 | 0.2+ | 0.9- | 2007 10 31 | 691 | 0.1- | 0.0  | 2007 11 04 | A55 | 0.7+ | 0.1+ |
| 2003 09 18 | 691 | 0.1+ | 0.6+ | 2007 10 31 | 691 | 0.1- | 0.4+ | 2007 11 05 | A55 | 0.1+ | 0.2+ |
| 2003 09 18 | 691 | 0.4- | 0.3+ | 2007 11 03 | A55 | 0.1- | 0.2+ | 2007 11 05 | A55 | 0.6+ | 0.3- |
| 2003 09 18 | 691 | 0.0  | 0.2+ | 2007 11 03 | A55 | 0.4+ | 0.5+ | 2007 11 18 | A55 | 1.0+ | 0.5+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 03 | A55 | 0.4- | 1.1+ | 2007 11 18 | A55 | 0.4+ | 0.4+ |
| 2003 10 19 | 645 | 0.0  | 0.1- | 2007 11 04 | A55 | 0.0  | 0.8+ | 2007 11 18 | A55 | 0.5+ | 0.1- |
| 2003 10 22 | 645 | 0.1- | 0.0  | 2007 11 04 | A55 | 1.2+ | 0.7+ | 2007 11 30 | A55 | 0.4+ | 0.3+ |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2007 11 04 | A55 | 0.2- | 0.2- | 2007 11 30 | A55 | 0.1+ | 0.9+ |
| 2003 10 23 | 645 | 0.1+ | 0.1- | 2007 11 04 | 691 | 0.2- | 0.0  | 2007 11 30 | A55 | 0.6+ | 1.0+ |

**2007 VT<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.36135   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18337638 | $\omega$ | 322.71410 | +0.95886272   | -0.27889125 |
| <i>a</i> | 3.0683657  | $\Omega$ | 53.56271  | +0.27372052   | +0.85894561 |
| <i>e</i> | 0.1493626  | <i>i</i> | 3.77256   | +0.07522869   | +0.42945561 |
| <i>P</i> | 5.37       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 10 17 | G96 | 0.0  | 0.1- | 2007 11 05 | 704 | 0.4- | 0.0  |
| 1999 03 21 | 645 | 0.0  | 0.1+ | 2007 10 20 | 703 | 0.2- | 0.0  | 2007 11 13 | 699 | 0.0  | 0.5+ |
| 2001 09 22 | 291 | 0.0  | 0.3+ | 2007 10 20 | 703 | 0.9+ | 0.1+ | 2007 11 13 | 699 | 0.2- | 0.2- |
| 2001 09 22 | 291 | 0.1- | 0.5+ | 2007 10 20 | 703 | 0.8+ | 0.1+ | 2007 11 13 | 699 | 0.1+ | 0.5- |
| 2001 09 22 | 291 | 0.3- | 0.2+ | 2007 10 20 | 703 | 1.3+ | 0.3- | 2007 11 13 | 699 | 0.8- | 0.5+ |
| 2002 12 04 | 695 | 0.3+ | 0.8+ | 2007 10 30 | G96 | 0.1+ | 0.1- | 2007 11 14 | 691 | 0.4- | 0.0  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 04 | 695 | 0.5+ | 1.1+ | 2007 10 30 | G96 | 0.2+  | 0.0   | 2007 11 14 | 691 | 0.6- | 0.1- |
| 2005 05 04 | G96 | 0.0  | 0.1- | 2007 10 30 | G96 | 0.1-  | 0.1+  | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2005 05 04 | G96 | 0.6+ | 0.7+ | 2007 10 30 | G96 | 0.0   | 0.1-  | 2007 11 15 | 704 | 1.2+ | 0.1+ |
| 2005 05 04 | G96 | 0.0  | 0.4- | 2007 11 03 | J87 | 0.1+  | 0.0   | 2007 11 15 | 704 | 1.5+ | 0.4- |
| 2005 05 04 | G96 | 0.2+ | 0.5+ | 2007 11 03 | J87 | 0.5+  | 0.2+  | 2007 11 15 | 704 | 0.9+ | 0.9- |
| 2007 09 18 | G96 | 0.3+ | 0.4- | 2007 11 03 | J87 | 0.1+  | 0.0   | 2007 11 15 | 704 | 1.5+ | 0.2- |
| 2007 09 18 | G96 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.4-  | 0.2+  | 2007 11 15 | 704 | 0.7+ | 0.4- |
| 2007 09 18 | G96 | 0.7+ | 0.0  | 2007 11 03 | 691 | 0.7-  | 0.1+  | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2007 09 18 | G96 | 0.1+ | 0.1- | 2007 11 03 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2007 10 08 | 691 | 0.9+ | 0.5- | 2007 11 03 | J87 | 0.1+  | 0.1+  | 2007 11 18 | 691 | 0.3- | 0.1+ |
| 2007 10 08 | 691 | 0.4- | 0.0  | 2007 11 03 | J87 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.0  | 0.2+ |
| 2007 10 08 | 691 | 0.2- | 0.0  | 2007 11 04 | J87 | 0.5+  | 0.1-  | 2007 12 03 | 703 | 1.3- | 0.4- |
| 2007 10 17 | G96 | 0.4+ | 0.3- | 2007 11 05 | 704 | 1.3+  | 0.2+  | 2007 12 03 | 703 | 0.6- | 0.6+ |
| 2007 10 17 | G96 | 0.0  | 0.3- | 2007 11 05 | 704 | 0.5+  | 0.8+  | 2007 12 03 | 703 | 1.0- | 0.1+ |
| 2007 10 17 | G96 | 0.0  | 0.2- | 2007 11 05 | 704 | (1.8+ | 1.5+) |            |     |      |      |

**2007 VU<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.34050  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.26775807 | $\omega$ | 359.57685 | +0.64023661 |          |          | -0.76187934 |
| <i>a</i> | 2.3840078  | $\Omega$ | 50.61024  | +0.70516195 |          |          | +0.53220733 |
| <i>e</i> | 0.0794682  | <i>i</i> | 7.29750   | +0.30470266 |          |          | +0.36918184 |
| <i>P</i> | 3.68       | <i>H</i> | 16.9      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 05 04 | 291 | 0.2+ | 0.4+ | 2007 11 03 | J87 | 0.5+  | 0.3-  | 2007 11 15 | 704 | 0.2+  | 0.4+  |
| 2002 05 04 | 291 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.1-  | 0.1-  | 2007 11 15 | 704 | 0.1-  | 0.5+  |
| 2002 05 04 | 291 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.1+  | 0.0   | 2007 11 15 | 704 | 0.2+  | 0.9+  |
| 2003 09 20 | 644 | 0.1- | 0.3+ | 2007 11 03 | 691 | 0.1-  | 0.0   | 2007 11 15 | 704 | (1.9+ | 0.5+) |
| 2003 09 20 | 644 | 0.2+ | 0.2+ | 2007 11 03 | J87 | 0.5+  | 0.4-  | 2007 11 18 | 691 | 0.0   | 0.2+  |
| 2003 09 20 | 644 | 0.1- | 0.2- | 2007 11 03 | J87 | 0.4+  | 0.1-  | 2007 11 18 | 691 | 0.1+  | 0.0   |
| 2003 09 22 | 691 | 0.1- | 0.1+ | 2007 11 03 | J87 | 0.3+  | 0.2-  | 2007 11 18 | 691 | 0.0   | 0.0   |
| 2003 09 22 | 691 | 0.0  | 0.1+ | 2007 11 03 | J87 | 0.4+  | 0.2-  | 2007 12 04 | 691 | 0.1-  | 0.0   |
| 2003 09 22 | 691 | 0.1- | 0.1+ | 2007 11 03 | J87 | 0.5+  | 0.3-  | 2007 12 04 | 691 | 0.1-  | 0.1+  |
| 2005 03 16 | 703 | 0.1- | 1.0+ | 2007 11 04 | J87 | 0.3+  | 0.1-  | 2007 12 04 | 691 | 0.7-  | 0.1-  |
| 2005 03 16 | 703 | 0.2- | 0.2- | 2007 11 04 | J87 | 0.6+  | 0.3-  | 2007 12 06 | 691 | 0.5-  | 0.9+  |
| 2005 03 16 | 703 | 0.9- | 0.5- | 2007 11 04 | J87 | 0.7+  | 0.6-  | 2007 12 06 | 691 | 0.5-  | 0.1-  |
| 2005 03 16 | 703 | 0.8+ | 0.5- | 2007 11 04 | J87 | 0.7+  | 0.6-  | 2007 12 06 | 691 | 0.8-  | 0.6-  |
| 2007 10 08 | 691 | 0.1- | 0.1- | 2007 11 05 | 704 | (0.6+ | 2.0+) | 2007 12 06 | 691 | 0.2+  | 0.5+  |
| 2007 10 08 | 691 | 0.3- | 0.1- | 2007 11 05 | 704 | (0.2+ | 2.7+) | 2007 12 06 | 691 | 0.1-  | 0.1+  |
| 2007 10 08 | 691 | 0.3- | 0.3- | 2007 11 05 | 704 | 0.6+  | 0.5+  | 2007 12 06 | 691 | 0.0   | 0.4+  |
| 2007 10 30 | G96 | 0.3+ | 0.3- | 2007 11 07 | 691 | 0.0   | 0.3-  | 2007 12 14 | 691 | 0.1+  | 0.1+  |
| 2007 10 30 | G96 | 0.7+ | 0.2- | 2007 11 07 | 691 | 0.1+  | 0.1-  | 2007 12 14 | 691 | 0.3+  | 0.1+  |
| 2007 10 30 | G96 | 0.6+ | 0.2- | 2007 11 07 | 691 | 0.1-  | 0.2-  | 2007 12 14 | 691 | 0.5+  | 0.1-  |
| 2007 10 30 | G96 | 0.4+ | 0.3- | 2007 11 14 | 691 | 0.0   | 0.0   | 2007 12 16 | 691 | 0.1-  | 0.2+  |
| 2007 11 03 | J87 | 0.1+ | 0.3- | 2007 11 14 | 691 | 0.1-  | 0.1+  | 2007 12 16 | 691 | 0.0   | 0.2+  |
| 2007 11 03 | J87 | 0.4+ | 0.2- | 2007 11 14 | 691 | 0.2+  | 0.1+  | 2007 12 16 | 691 | 0.2+  | 0.1+  |

**2007 VO<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.85272   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.20490885 | $\omega$ | 276.89302 | +0.96654091 |          |          | -0.17427701 |
| <i>a</i> | 2.8494579  | $\Omega$ | 93.26861  | +0.23538502 |          |          | +0.89420289 |
| <i>e</i> | 0.1676564  | <i>i</i> | 10.86673  | -0.10194392 |          |          | +0.41234539 |
| <i>P</i> | 4.81       | <i>H</i> | 15.2      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 24 | 644 | 0.1- | 0.7+ | 2007 10 10 | 703 | 0.7+ | 0.1+ | 2007 11 03 | H06 | 1.1+ | 0.0  |
| 2002 08 24 | 644 | 0.1- | 0.7+ | 2007 10 10 | 703 | 0.4- | 0.1+ | 2007 11 03 | B46 | 0.3- | 0.6+ |
| 2002 08 24 | 644 | 0.1- | 0.5+ | 2007 10 10 | 703 | 0.7- | 0.0  | 2007 11 03 | B46 | 0.5- | 0.4+ |
| 2002 09 16 | 608 | 0.7- | 0.6- | 2007 10 10 | 703 | 0.1- | 0.2+ | 2007 11 03 | B46 | 0.2- | 0.4+ |
| 2002 09 16 | 608 | 0.7- | 0.4- | 2007 10 19 | 699 | 0.4+ | 0.3+ | 2007 11 04 | H06 | 0.3+ | 0.8- |
| 2002 09 16 | 608 | 0.5- | 0.5- | 2007 10 19 | 699 | 0.7+ | 0.2+ | 2007 11 04 | H06 | 0.4- | 0.4- |
| 2002 10 02 | 608 | 0.4+ | 1.4- | 2007 10 19 | 699 | 0.4+ | 0.1+ | 2007 11 04 | H06 | 0.4+ | 0.3- |
| 2002 10 02 | 608 | 0.2+ | 1.3- | 2007 10 19 | 699 | 0.7+ | 0.2- | 2007 11 11 | B40 | 0.3+ | 0.1- |
| 2002 10 02 | 608 | 0.3+ | 1.3- | 2007 10 19 | 703 | 0.8- | 0.3+ | 2007 11 12 | B40 | 0.2+ | 0.8- |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 16 | 644 | 0.5+ | 0.8+ | 2007 10 19 | 703 | 0.3+ | 0.5+ | 2007 11 12 | B40 | (2.5+ | 1.8-) |
| 2002 10 16 | 644 | 0.7+ | 0.9+ | 2007 10 19 | 703 | 0.2- | 0.5+ | 2007 11 15 | 703 | 0.7-  | 0.9-  |
| 2002 10 16 | 644 | 0.4+ | 1.0+ | 2007 10 19 | 703 | 0.5- | 0.3+ | 2007 11 15 | 703 | 0.5+  | 0.0   |
| 2002 11 05 | 644 | 0.2- | 0.8+ | 2007 10 31 | 703 | 0.3- | 0.4+ | 2007 11 15 | 703 | 0.4-  | 0.4-  |
| 2002 11 05 | 644 | 0.4- | 0.7+ | 2007 10 31 | 703 | 0.4+ | 0.6+ | 2007 11 15 | 703 | 0.4-  | 0.1+  |
| 2002 11 05 | 644 | 0.2- | 0.5+ | 2007 10 31 | 703 | 1.3- | 1.0+ | 2007 11 29 | 704 | 0.2-  | 0.2-  |
| 2004 01 17 | 644 | 0.1- | 0.3+ | 2007 10 31 | 703 | 0.5+ | 0.0  | 2007 11 29 | 704 | 0.1-  | 0.4+  |
| 2004 01 17 | 644 | 0.1+ | 0.0  | 2007 11 01 | B40 | 0.0  | 0.6- | 2007 11 29 | 704 | 0.3+  | 0.3-  |
| 2004 01 17 | 644 | 0.1- | 0.2+ | 2007 11 01 | B40 | 0.1- | 0.2- | 2007 12 16 | 699 | 0.2+  | 0.0   |
| 2004 01 17 | 644 | 0.1- | 0.0  | 2007 11 02 | B40 | 0.6- | 0.9- | 2007 12 16 | 699 | 0.5-  | 0.7-  |
| 2004 01 17 | 644 | 0.2+ | 0.2+ | 2007 11 03 | H06 | 0.5+ | 0.2- | 2007 12 16 | 699 | 0.1-  | 0.5+  |
| 2004 01 17 | 644 | 0.1+ | 0.0  | 2007 11 03 | H06 | 0.0  | 0.3- | 2007 12 16 | 699 | 1.2+  | 0.6-  |

**2007 VQ<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.24943   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27822401 | $\omega$ | 152.76883 | +0.86080360 |          |          | +0.50884971 |
| <i>a</i> | 2.3238405  | $\Omega$ | 176.59917 | -0.49110452 |          |          | +0.83536647 |
| <i>e</i> | 0.3174435  | <i>i</i> | 9.15800   | -0.13354219 |          |          | +0.20792989 |
| <i>P</i> | 3.54       | <i>H</i> | 16.7      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 09 | 691 | 0.0  | 0.1+ | 2007 11 04 | F84 | 1.1- | 0.8- | 2007 11 19 | F85 | 0.4- | 0.4- |
| 2002 03 09 | 691 | 0.1+ | 0.1- | 2007 11 04 | F84 | 0.6- | 0.6- | 2007 11 19 | F85 | 0.2- | 0.4- |
| 2002 03 09 | 691 | 0.0  | 0.1- | 2007 11 04 | F84 | 0.8+ | 0.7- | 2007 11 19 | F85 | 0.1- | 0.1- |
| 2005 12 02 | 695 | 0.2- | 0.4+ | 2007 11 04 | F84 | 0.2+ | 0.2- | 2007 11 20 | 703 | 0.7+ | 0.0  |
| 2005 12 02 | 695 | 0.2+ | 0.0  | 2007 11 06 | F85 | 0.1- | 0.1- | 2007 11 20 | 703 | 0.0  | 0.2+ |
| 2007 11 02 | F85 | 0.1+ | 0.1+ | 2007 11 06 | F85 | 0.1+ | 0.2- | 2007 11 20 | 703 | 0.4+ | 0.4+ |
| 2007 11 02 | F85 | 0.3- | 0.1+ | 2007 11 06 | F85 | 0.2+ | 0.4- | 2007 11 20 | 703 | 0.3+ | 0.1- |
| 2007 11 02 | F85 | 0.4- | 0.2- | 2007 11 08 | 703 | 0.1+ | 0.3+ | 2007 12 02 | F84 | 0.3- | 0.5- |
| 2007 11 03 | F85 | 0.0  | 0.8+ | 2007 11 08 | 703 | 0.1+ | 1.6+ | 2007 12 02 | F84 | 0.1- | 0.1- |
| 2007 11 03 | F85 | 0.0  | 0.2+ | 2007 11 08 | 703 | 0.4- | 0.7+ | 2007 12 02 | F84 | 0.3+ | 0.2- |
| 2007 11 03 | F85 | 0.0  | 0.2- | 2007 11 08 | 703 | 0.6+ | 0.9+ |            |     |      |      |

**2007 VA<sub>4</sub> = 1996 TF<sub>26</sub> = 2004 XY<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 101.50665  |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27554204 | $\omega$ | 28.10208  | +0.27155139 |          |          | +0.95744324 |
| <i>a</i> | 2.3388954  | $\Omega$ | 257.79210 | -0.90069371 |          |          | +0.21701600 |
| <i>e</i> | 0.1157496  | <i>i</i> | 5.74201   | -0.33913224 |          |          | +0.19028004 |
| <i>P</i> | 3.58       | <i>H</i> | 16.7      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 07 | 691 | 0.6- | 0.0  | 2004 12 13 | 691 | 0.2- | 0.1+ | 2007 11 02 | A77 | 0.6- | 0.4+ |
| 1996 10 07 | 691 | 0.2- | 0.2- | 2006 05 10 | 644 | 0.4+ | 0.5+ | 2007 11 03 | A77 | 0.6+ | 0.2- |
| 1996 10 07 | 691 | 0.5- | 0.1- | 2006 05 10 | 644 | 0.5+ | 0.4+ | 2007 11 03 | A77 | 0.2- | 0.9+ |
| 1996 10 08 | 691 | 0.1+ | 0.0  | 2006 05 10 | 644 | 0.9+ | 0.7+ | 2007 11 03 | A77 | 0.6+ | 0.5+ |
| 1996 10 08 | 691 | 0.5+ | 0.1+ | 2006 06 02 | G96 | 0.0  | 0.2+ | 2007 11 04 | A77 | 0.1- | 0.7+ |
| 1996 10 08 | 691 | 0.4+ | 0.3+ | 2006 06 02 | G96 | 0.5- | 0.2+ | 2007 11 07 | 703 | 0.1- | 0.4+ |
| 2000 12 16 | 691 | 0.2+ | 0.4- | 2006 06 02 | G96 | 0.3- | 0.1- | 2007 11 07 | 703 | 1.7- | 0.7- |
| 2000 12 16 | 691 | 0.3+ | 0.5- | 2006 06 02 | G96 | 0.1- | 0.2+ | 2007 11 07 | 703 | 1.8+ | 0.1- |
| 2000 12 16 | 691 | 0.5+ | 0.6- | 2007 09 26 | G96 | 0.6- | 0.2- | 2007 11 07 | 703 | 0.1+ | 0.4- |
| 2003 08 23 | 644 | 0.2- | 0.3+ | 2007 09 26 | G96 | 0.3+ | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.1- |
| 2003 08 23 | 644 | 0.2- | 0.3+ | 2007 09 26 | G96 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2003 08 23 | 644 | 0.1+ | 0.4+ | 2007 09 26 | G96 | 0.2- | 0.3+ | 2007 11 14 | 691 | 0.3- | 0.1+ |
| 2004 12 03 | 691 | 0.1- | 0.3+ | 2007 10 16 | G96 | 0.1+ | 0.1- | 2007 11 17 | A77 | 0.3- | 0.3+ |
| 2004 12 03 | 691 | 0.4+ | 0.5+ | 2007 10 16 | G96 | 0.2+ | 0.3- | 2007 11 17 | A77 | 0.9+ | 1.0+ |
| 2004 12 03 | 691 | 0.1+ | 0.4+ | 2007 10 16 | G96 | 0.3- | 0.0  | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 2004 12 13 | 691 | 0.3- | 0.0  | 2007 10 16 | G96 | 0.4+ | 0.3- | 2007 11 18 | 691 | 0.2- | 0.1- |
| 2004 12 13 | 691 | 0.1- | 0.2+ | 2007 11 02 | A77 | 0.6+ | 0.7+ | 2007 11 18 | 691 | 0.0  | 0.1+ |

2007 DEC. 24

M.P.O. 129969

**2007 VM<sub>4</sub> = 2005 GV<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 349.09999  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23059654 | $\omega$ 224.53018 | +0.53834522   | -0.84097536 |
| <i>a</i> | 2.6337074  | $\Omega$ 193.20990 | +0.82418091   | +0.53884087 |
| <i>e</i> | 0.1365416  | <i>i</i> 13.73734  | +0.17581311   | +0.04910160 |
| <i>P</i> | 4.27       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 10 09 | 691 | 0.2-  | 0.0   | 2007 10 12 | G96 | 0.2+  | 0.4+  | 2007 11 05 | 620 | 0.1- | 0.2+ |
| 1994 10 09 | 691 | (3.6+ | 2.7-) | 2007 10 12 | G96 | 0.1-  | 0.4+  | 2007 11 05 | 620 | 0.2+ | 0.5- |
| 1994 10 09 | 691 | 0.1+  | 0.7+  | 2007 11 03 | 620 | 1.2-  | 0.5+  | 2007 11 05 | 703 | 0.3+ | 1.0+ |
| 2005 04 11 | 691 | 0.1+  | 0.2-  | 2007 11 03 | 620 | 0.2-  | 0.4+  | 2007 11 05 | 703 | 0.4- | 0.6+ |
| 2005 04 11 | 691 | 0.1-  | 0.2+  | 2007 11 03 | 620 | 0.2-  | 0.4+  | 2007 11 05 | 703 | 0.4+ | 0.3+ |
| 2005 04 11 | 691 | 0.0   | 0.1+  | 2007 11 03 | 683 | (1.7- | 0.0 ) | 2007 11 05 | 703 | 1.3- | 0.2+ |
| 2005 04 12 | 691 | 0.0   | 0.2+  | 2007 11 03 | 683 | 0.5-  | 0.2+  | 2007 11 14 | G96 | 0.3+ | 0.9- |
| 2005 04 12 | 691 | 0.7+  | 0.1-  | 2007 11 03 | 620 | 0.2+  | 0.5+  | 2007 11 14 | G96 | 0.0  | 1.0- |
| 2005 04 12 | 691 | 0.5-  | 1.0+  | 2007 11 04 | 620 | 0.5+  | 0.1+  | 2007 11 14 | G96 | 0.5+ | 0.8- |
| 2007 10 12 | G96 | 0.4-  | 0.3+  | 2007 11 04 | 620 | 0.8+  | 0.1+  | 2007 11 14 | G96 | 0.3+ | 1.0- |
| 2007 10 12 | G96 | 0.0   | 0.3+  | 2007 11 05 | 620 | 0.7+  | 0.2-  |            |     |      |      |

**2007 VW<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.04433    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28689256 | $\omega$ 349.58484 | +0.80409734   | -0.57772137 |
| <i>a</i> | 2.2767911  | $\Omega$ 46.65351  | +0.55836922   | +0.65294129 |
| <i>e</i> | 0.2222320  | <i>i</i> 11.11836  | +0.20408649   | +0.48980168 |
| <i>P</i> | 3.44       | <i>H</i> 18.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 01 23 | 568 | 0.1-  | 0.2+  | 2007 11 04 | 143 | 0.6+ | 0.1+ | 2007 11 09 | G96 | 0.1+  | 0.3-  |
| 2001 01 23 | 568 | 0.2-  | 0.2+  | 2007 11 04 | 143 | 0.3+ | 0.0  | 2007 11 09 | G96 | 0.2-  | 0.2-  |
| 2006 04 27 | 807 | 0.0   | 0.5+  | 2007 11 04 | 143 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.6-  | 0.6+  |
| 2006 04 28 | 807 | 0.4+  | 0.2+  | 2007 11 04 | 143 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.5-  | 0.2+  |
| 2006 04 28 | 807 | 0.1+  | 0.5+  | 2007 11 05 | 704 | 0.4+ | 0.9+ | 2007 11 14 | 704 | 0.4-  | 1.0+  |
| 2007 10 10 | G96 | 0.0   | 0.3-  | 2007 11 05 | 704 | 0.0  | 1.7+ | 2007 11 14 | 704 | 0.4-  | 0.6+  |
| 2007 10 10 | G96 | 0.0   | 0.7-  | 2007 11 05 | 704 | 0.0  | 0.5+ | 2007 11 14 | 704 | (0.1- | 2.0+) |
| 2007 10 10 | G96 | 0.4-  | 0.4-  | 2007 11 05 | 704 | 0.2- | 0.6+ | 2007 11 15 | 704 | 1.2-  | 1.1-  |
| 2007 10 10 | G96 | 0.0   | 0.5-  | 2007 11 05 | 704 | 0.5+ | 0.1+ | 2007 11 15 | 704 | 0.1-  | 0.6-  |
| 2007 10 30 | 703 | 0.7+  | 0.5+  | 2007 11 07 | 703 | 1.1- | 0.3- | 2007 11 15 | 704 | 1.0-  | 0.7-  |
| 2007 10 30 | 703 | 0.3-  | 0.8+  | 2007 11 07 | 703 | 0.2- | 0.4+ | 2007 11 15 | 704 | 0.7+  | 1.4-  |
| 2007 10 30 | 703 | 0.2+  | 0.8+  | 2007 11 07 | 703 | 0.0  | 0.4- | 2007 11 15 | 704 | 0.2-  | 0.1+  |
| 2007 10 30 | 703 | (0.3- | 2.1+) | 2007 11 07 | 703 | 0.8+ | 0.5+ | 2007 11 15 | 143 | 0.0   | 0.4-  |
| 2007 11 03 | 143 | 0.1+  | 0.2-  | 2007 11 07 | 143 | 0.2+ | 0.5- | 2007 11 15 | 143 | 0.6+  | 0.7-  |
| 2007 11 03 | 143 | 0.2+  | 0.1-  | 2007 11 07 | 143 | 0.1+ | 0.2+ | 2007 11 15 | 143 | 0.4+  | 0.3-  |
| 2007 11 03 | 143 | 0.2+  | 0.2-  | 2007 11 09 | G96 | 0.2+ | 0.3- |            |     |       |       |
| 2007 11 03 | 143 | 0.1+  | 0.1-  | 2007 11 09 | G96 | 0.0  | 0.1- |            |     |       |       |

**2007 VV<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.07599   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27387698 | $\omega$ 122.29852 | +0.91147534   | -0.41055276 |
| <i>a</i> | 2.3483655  | $\Omega$ 261.95222 | +0.36815638   | +0.84200842 |
| <i>e</i> | 0.2282020  | <i>i</i> 1.48578   | +0.18350362   | +0.34995464 |
| <i>P</i> | 3.60       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 09 12 | 691 | 0.2- | 0.4- | 2007 10 20 | 703 | 0.8- | 0.7- | 2007 11 07 | 703 | 0.5+  | 0.5-  |
| 1996 09 12 | 691 | 0.3+ | 0.2- | 2007 10 20 | 703 | 0.1+ | 0.4- | 2007 11 07 | 703 | 0.7+  | 0.7+  |
| 1996 09 12 | 691 | 0.3+ | 0.3- | 2007 10 20 | 703 | 0.5- | 0.1- | 2007 11 07 | 703 | (2.1- | 1.4-) |
| 2000 11 24 | 691 | 0.1- | 0.4- | 2007 10 31 | G96 | 0.1+ | 0.3- | 2007 11 11 | 699 | 0.4+  | 0.1-  |
| 2000 11 24 | 691 | 0.1- | 0.2- | 2007 10 31 | G96 | 0.3+ | 0.5- | 2007 11 11 | 699 | 0.7+  | 0.1+  |
| 2000 11 24 | 691 | 0.0  | 0.4- | 2007 10 31 | G96 | 0.6+ | 0.4- | 2007 11 11 | 699 | 0.0   | 0.7-  |
| 2000 12 03 | 691 | 1.0- | 0.2+ | 2007 11 02 | 691 | 0.2- | 0.1- | 2007 11 11 | 699 | 0.0   | 0.3+  |
| 2000 12 03 | 691 | 0.8- | 0.2- | 2007 11 02 | 691 | 1.3- | 0.0  | 2007 11 15 | 704 | 0.0   | 0.7+  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 03 | 691 | 1.9+ | 0.9- | 2007 11 02 | 691 | 0.4-  | 0.0   | 2007 11 15 | 704 | 0.2+ | 1.2+ |
| 2005 03 09 | G96 | 1.4+ | 1.1+ | 2007 11 03 | 699 | 0.4-  | 1.0+  | 2007 11 15 | 704 | 0.4+ | 0.6+ |
| 2005 03 09 | G96 | 0.8- | 0.4+ | 2007 11 03 | 699 | 1.0-  | 0.1+  | 2007 11 15 | 704 | 0.6+ | 0.2+ |
| 2005 03 09 | G96 | 0.5- | 0.1+ | 2007 11 03 | 699 | 0.8-  | 0.8+  | 2007 11 15 | 704 | 0.3+ | 1.0+ |
| 2005 03 09 | G96 | 0.5- | 0.7+ | 2007 11 03 | 699 | (1.5+ | 0.9-) | 2007 12 03 | 703 | 1.2+ | 1.0+ |
| 2006 04 28 | 807 | 0.4+ | 0.4+ | 2007 11 04 | H07 | 0.6+  | 0.5-  | 2007 12 03 | 703 | 1.1+ | 0.0  |
| 2006 04 28 | 807 | 0.4+ | 0.3+ | 2007 11 04 | H07 | 1.2+  | 0.2+  | 2007 12 03 | 703 | 0.3- | 0.6- |
| 2007 10 11 | 691 | 0.1+ | 0.2+ | 2007 11 04 | H07 | 0.6+  | 0.2-  | 2007 12 03 | 703 | 0.4+ | 0.5- |
| 2007 10 11 | 691 | 0.4- | 0.8+ | 2007 11 05 | H07 | 0.6+  | 0.0   | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2007 10 11 | 691 | 0.1- | 0.2+ | 2007 11 05 | H07 | 0.7+  | 0.1-  | 2007 12 06 | 691 | 0.1- | 0.1+ |
| 2007 10 20 | 703 | 0.0  | 0.0  | 2007 11 05 | H07 | 0.2+  | 0.4+  | 2007 12 06 | 691 | 0.0  | 0.2+ |

**2007 VL<sub>6</sub> = 1998 XF<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.34331  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.08118371 | $\omega$ 203.18559 | +0.83696802   | -0.54724963 |
| <i>a</i> | 5.2823049  | $\Omega$ 189.99337 | +0.50347504   | +0.77111695 |
| <i>e</i> | 0.0666523  | <i>i</i> 0.50912   | +0.21447009   | +0.32541740 |
| <i>P</i> | 12.14      | <i>H</i> 13.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 11 16 | 691 | 0.8-  | 0.1+  | 2003 04 07 | 691 | 0.9+ | 1.2+ | 2007 11 03 | G96 | 0.4- | 0.4+ |
| 1998 11 16 | 691 | (3.8- | 2.7-) | 2004 03 23 | 291 | 0.0  | 0.5+ | 2007 11 03 | G96 | 0.5+ | 0.4+ |
| 1998 11 16 | 691 | 0.0   | 0.3+  | 2004 03 23 | 291 | 0.6+ | 0.5+ | 2007 11 03 | G96 | 0.2- | 0.7+ |
| 1998 12 10 | 691 | 0.8+  | 0.3+  | 2004 03 23 | 291 | 0.3+ | 0.2+ | 2007 11 03 | G96 | 0.4- | 0.4+ |
| 1998 12 10 | 691 | 0.1-  | 0.4+  | 2005 02 16 | 809 | 0.2+ | 0.0  | 2007 11 03 | G96 | 0.7+ | 0.1+ |
| 1998 12 10 | 691 | 0.3+  | 0.1-  | 2005 02 16 | 809 | 0.0  | 0.1- | 2007 11 03 | G96 | 0.6- | 0.3+ |
| 1998 12 14 | 691 | 0.0   | 0.1+  | 2005 02 16 | 809 | 0.3+ | 0.1- | 2007 11 04 | G96 | 0.4+ | 0.2- |
| 1998 12 14 | 691 | 0.0   | 0.1-  | 2005 05 04 | G96 | 0.9- | 0.3- | 2007 11 04 | G96 | 0.1+ | 0.3- |
| 1998 12 14 | 691 | 0.4-  | 0.0   | 2005 05 04 | G96 | 0.4- | 0.5- | 2007 11 04 | G96 | 1.3+ | 0.0  |
| 2002 02 11 | 691 | 0.8-  | 0.2+  | 2005 05 04 | G96 | 0.1+ | 0.5- | 2007 11 04 | G96 | 0.0  | 0.5- |
| 2002 02 11 | 691 | 0.6-  | 0.2+  | 2005 05 04 | G96 | 0.2- | 0.4+ | 2007 11 04 | 291 | 0.4+ | 0.6- |
| 2002 02 11 | 691 | 0.7+  | 0.2+  | 2007 06 22 | 691 | 0.3- | 0.3- | 2007 11 04 | 291 | 0.3- | 0.5+ |
| 2003 03 11 | 291 | 0.6-  | 0.4+  | 2007 06 22 | 691 | 0.7- | 0.1+ | 2007 11 04 | 291 | 0.5- | 0.0  |
| 2003 03 11 | 291 | 1.1-  | 0.0   | 2007 06 22 | 691 | 0.7- | 0.1+ | 2007 11 05 | 291 | 0.3+ | 0.2+ |
| 2003 03 11 | 291 | 1.1-  | 0.2-  | 2007 09 05 | G96 | 0.1- | 0.1- | 2007 11 05 | 291 | 0.3+ | 0.2- |
| 2003 03 24 | 691 | 0.7+  | 1.3-  | 2007 09 05 | G96 | 0.1- | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.5- |
| 2003 03 24 | 691 | 0.1+  | 1.0-  | 2007 09 05 | G96 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.2+ |
| 2003 03 24 | 691 | 0.9+  | 1.2-  | 2007 09 05 | G96 | 0.0  | 0.2- | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2003 04 07 | 691 | 0.6+  | 1.1+  | 2007 11 03 | G96 | 0.1- | 0.2+ | 2007 11 05 | G96 | 0.0  | 0.3+ |
| 2003 04 07 | 691 | 0.7+  | 1.1+  | 2007 11 03 | G96 | 0.2+ | 0.5+ |            |     |      |      |

**2007 VO<sub>6</sub> = 1996 RY<sub>32</sub> = 2005 JE<sub>71</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.08987  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.08212368 | $\omega$ 193.76026 | +0.97008611   | +0.21267463 |
| <i>a</i> | 5.2419206  | $\Omega$ 153.08226 | -0.19099771   | +0.96627535 |
| <i>e</i> | 0.0611700  | <i>i</i> 14.98523  | -0.14984263   | +0.14519455 |
| <i>P</i> | 12.00      | <i>H</i> 13.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 15 | 809 | 0.0   | 0.7+  | 2005 05 11 | 691 | 0.2- | 0.1- | 2007 11 04 | G96 | 0.5+ | 0.0  |
| 1996 09 16 | 809 | 0.0   | 0.2-  | 2005 05 11 | 691 | 0.1+ | 0.1- | 2007 11 04 | G96 | 0.3+ | 0.1- |
| 2002 03 17 | 691 | 0.1-  | 0.4+  | 2005 06 30 | 644 | 0.4- | 0.0  | 2007 11 05 | G96 | 0.1+ | 0.2+ |
| 2002 03 17 | 691 | 0.1+  | 0.5+  | 2005 06 30 | 644 | 0.5- | 0.0  | 2007 11 05 | G96 | 0.1- | 0.0  |
| 2002 03 17 | 691 | 0.1-  | 0.2+  | 2005 06 30 | 644 | 0.2- | 0.2+ | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2003 04 01 | 645 | 0.2-  | 0.3-  | 2007 06 20 | 691 | 0.2- | 0.0  | 2007 11 14 | G96 | 0.3- | 0.1- |
| 2003 04 01 | 645 | 0.2-  | 0.2-  | 2007 06 20 | 691 | 0.1+ | 0.2+ | 2007 11 14 | G96 | 0.1- | 0.0  |
| 2003 04 10 | 691 | 1.2+  | 1.2+  | 2007 06 20 | 691 | 0.2- | 0.2+ | 2007 11 14 | G96 | 0.6+ | 0.4+ |
| 2003 04 10 | 691 | 1.1+  | 1.0+  | 2007 10 13 | G96 | 0.6- | 0.2+ | 2007 11 14 | G96 | 0.9+ | 0.4+ |
| 2003 04 10 | 691 | (2.1+ | 1.5-) | 2007 10 13 | G96 | 0.1+ | 0.0  | 2007 11 14 | G96 | 0.1+ | 0.6+ |
| 2005 05 07 | 691 | 0.0   | 0.1-  | 2007 10 13 | G96 | 0.2+ | 0.1+ | 2007 11 14 | G96 | 0.4+ | 0.0  |
| 2005 05 07 | 691 | 0.1-  | 0.3+  | 2007 10 13 | G96 | 0.3- | 0.1- | 2007 11 14 | G96 | 0.1+ | 0.2+ |
| 2005 05 07 | 691 | 0.0   | 0.1-  | 2007 11 04 | G96 | 0.2- | 0.1- | 2007 11 14 | G96 | 0.2- | 0.2+ |
| 2005 05 11 | 691 | 0.1+  | 0.1-  | 2007 11 04 | G96 | 0.1+ | 0.0  |            |     |      |      |

**2007 VH<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.28656  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18207963 | $\omega$ 178.75785 | +0.61856786   | -0.72355766 |
| <i>a</i> | 3.0829168  | $\Omega$ 232.93380 | +0.71754364   | +0.67904807 |
| <i>e</i> | 0.0900818  | <i>i</i> 22.57555  | +0.32016390   | -0.12392748 |
| <i>P</i> | 5.41       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 15 | G96 | 0.5-  | 0.1+  | 2007 10 21 | 703 | 0.4- | 0.4+ | 2007 11 11 | 699 | 0.4+ | 0.1- |
| 2005 05 15 | G96 | 0.4-  | 0.1-  | 2007 11 01 | D35 | 0.0  | 0.5+ | 2007 11 15 | 704 | 0.4+ | 0.3+ |
| 2005 05 15 | G96 | 0.3-  | 0.2-  | 2007 11 01 | D35 | 0.2+ | 0.2- | 2007 11 15 | 704 | 0.0  | 1.2- |
| 2005 05 15 | G96 | 1.3-  | 0.1-  | 2007 11 01 | D35 | 0.2- | 0.4+ | 2007 11 15 | 704 | 0.0  | 0.3+ |
| 2005 05 19 | G96 | (1.3+ | 2.0+) | 2007 11 01 | 106 | 0.1+ | 0.2- | 2007 11 15 | 704 | 0.5+ | 0.4- |
| 2005 05 19 | G96 | 0.3+  | 0.0   | 2007 11 02 | 106 | 0.8+ | 0.4- | 2007 11 15 | 704 | 0.1+ | 0.2- |
| 2005 05 19 | G96 | 0.1-  | 0.3-  | 2007 11 02 | 106 | 0.0  | 0.4- | 2007 11 18 | G96 | 0.5+ | 0.2- |
| 2005 05 19 | G96 | 0.1-  | 0.2+  | 2007 11 02 | 106 | 0.6+ | 0.4- | 2007 11 18 | G96 | 0.0  | 0.2- |
| 2005 06 14 | 691 | 0.2+  | 0.0   | 2007 11 02 | 691 | 0.2- | 0.3+ | 2007 11 18 | G96 | 0.1+ | 0.3- |
| 2005 06 14 | 691 | 0.1+  | 0.1-  | 2007 11 02 | 691 | 0.4- | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2005 06 14 | 691 | 0.3+  | 0.1+  | 2007 11 02 | 691 | 0.4- | 0.1+ | 2007 12 03 | 703 | 0.7+ | 0.9+ |
| 2007 10 09 | 699 | 0.2+  | 0.5-  | 2007 11 02 | 106 | 0.1+ | 0.3- | 2007 12 03 | 703 | 1.3- | 0.3- |
| 2007 10 09 | 699 | 0.5-  | 0.3-  | 2007 11 02 | 106 | 0.1- | 0.1+ | 2007 12 03 | 703 | 0.7- | 0.6- |
| 2007 10 09 | 699 | 0.0   | 0.1+  | 2007 11 02 | 106 | 0.1+ | 0.1+ | 2007 12 03 | 703 | 0.7- | 0.1+ |
| 2007 10 09 | 699 | (1.6- | 1.4+) | 2007 11 02 | 106 | 0.4+ | 0.3- | 2007 12 05 | 704 | 0.2- | 0.5+ |
| 2007 10 21 | 703 | 1.2+  | 0.6+  | 2007 11 11 | 699 | 0.8+ | 0.2+ | 2007 12 05 | 704 | 0.6- | 0.2+ |
| 2007 10 21 | 703 | 0.0   | 0.0   | 2007 11 11 | 699 | 1.4+ | 0.6- | 2007 12 05 | 704 | 0.7- | 0.1- |
| 2007 10 21 | 703 | 0.3-  | 0.0   | 2007 11 11 | 699 | 0.4+ | 0.6+ |            |     |      |      |

**2007 VJ<sub>7</sub> = 2006 GT<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 77.60613   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22446718 | $\omega$ 152.33488 | +0.22801943   | +0.97317393 |
| <i>a</i> | 2.6814363  | $\Omega$ 130.82864 | -0.90062772   | +0.22277517 |
| <i>e</i> | 0.2122931  | <i>i</i> 2.32176   | -0.36996872   | +0.05747802 |
| <i>P</i> | 4.39       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 10 31 | 691 | 0.0  | 0.0  | 2006 05 26 | G96 | 0.5-  | 0.1+  | 2007 11 05 | 734 | 0.8+  | 0.2-  |
| 1994 10 31 | 691 | 0.1- | 0.2+ | 2006 05 26 | G96 | 0.2+  | 0.2+  | 2007 11 06 | 734 | 0.5-  | 1.3+  |
| 1994 10 31 | 691 | 0.0  | 0.2- | 2007 09 12 | G96 | 0.0   | 0.2-  | 2007 11 06 | 734 | 0.1-  | 0.2-  |
| 2003 11 18 | 691 | 0.3+ | 0.0  | 2007 09 12 | G96 | 0.2+  | 0.1-  | 2007 11 06 | 734 | (1.2- | 2.7-) |
| 2003 11 18 | 691 | 0.2+ | 0.4+ | 2007 09 12 | G96 | 0.4+  | 0.1+  | 2007 11 07 | 691 | 0.3-  | 0.3+  |
| 2003 11 18 | 691 | 0.5- | 0.3+ | 2007 09 12 | G96 | 0.0   | 0.0   | 2007 11 07 | 691 | 0.5-  | 0.2+  |
| 2006 04 02 | 691 | 0.1- | 0.4+ | 2007 10 09 | G96 | 0.1-  | 0.1+  | 2007 11 07 | 691 | 0.8-  | 0.3+  |
| 2006 04 02 | 691 | 0.2+ | 0.5+ | 2007 10 09 | G96 | 0.0   | 0.1+  | 2007 11 07 | 734 | 0.2+  | 0.2+  |
| 2006 04 02 | 691 | 0.2+ | 0.3+ | 2007 10 09 | G96 | 0.2+  | 0.1+  | 2007 11 07 | 734 | 0.2-  | 0.1-  |
| 2006 04 07 | 691 | 0.2+ | 0.3+ | 2007 10 09 | G96 | 0.1-  | 0.4+  | 2007 11 09 | 691 | 0.2+  | 0.0   |
| 2006 04 07 | 691 | 0.2+ | 0.7+ | 2007 11 02 | 734 | 0.1-  | 0.2-  | 2007 11 09 | 691 | 0.1-  | 0.3+  |
| 2006 04 07 | 691 | 0.3+ | 0.3+ | 2007 11 02 | 734 | 0.5-  | 0.1+  | 2007 11 09 | 691 | 0.3-  | 0.2+  |
| 2006 04 30 | 699 | 1.0+ | 0.1+ | 2007 11 02 | 734 | 0.1-  | 0.4+  | 2007 11 09 | 734 | 1.2+  | 0.8+  |
| 2006 04 30 | 699 | 0.0  | 1.0+ | 2007 11 02 | 734 | 0.3-  | 0.0   | 2007 11 09 | 734 | 0.8+  | 0.4+  |
| 2006 04 30 | 699 | 0.4+ | 1.1+ | 2007 11 02 | 734 | 0.0   | 0.3+  | 2007 11 09 | 734 | 0.0   | 0.2+  |
| 2006 04 30 | 699 | 0.6+ | 0.4+ | 2007 11 03 | 734 | (1.6+ | 0.2+) | 2007 11 17 | 734 | (0.2- | 1.5+) |
| 2006 05 07 | G96 | 0.3- | 0.1+ | 2007 11 03 | 734 | 0.4+  | 0.0   | 2007 11 17 | 734 | 0.6-  | 1.3+  |
| 2006 05 07 | G96 | 0.2- | 0.2+ | 2007 11 03 | 734 | 0.8+  | 0.8+  | 2007 11 17 | 734 | 0.1-  | 0.2+  |
| 2006 05 07 | G96 | 0.5- | 0.2+ | 2007 11 05 | 734 | 0.4-  | 0.4+  |            |     |       |       |
| 2006 05 07 | G96 | 0.6- | 0.2+ | 2007 11 05 | 734 | 0.5+  | 0.3+  |            |     |       |       |

**2007 VS<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.70964   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27140559 | $\omega$ 180.80739 | +0.99940096   | +0.03417143 |
| <i>a</i> | 2.3625999  | $\Omega$ 177.21657 | -0.03108620   | +0.95596806 |
| <i>e</i> | 0.2362349  | <i>i</i> 6.47968   | -0.01521074   | +0.29147449 |
| <i>P</i> | 3.63       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 05 | 691 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.5-  | 0.7-  | 2007 11 07 | 703 | 0.3+ | 0.2+ |
| 2003 07 05 | 691 | 0.1- | 0.0  | 2007 10 24 | G96 | 0.4-  | 0.5-  | 2007 11 07 | 703 | 0.8+ | 0.7- |
| 2003 07 05 | 691 | 0.1+ | 0.0  | 2007 10 24 | G96 | 0.4+  | 0.5-  | 2007 11 11 | 699 | 0.1- | 0.1- |
| 2006 04 24 | 691 | 0.5+ | 0.6+ | 2007 10 30 | 703 | 0.7+  | 1.5+  | 2007 11 11 | 699 | 0.2+ | 0.0  |
| 2006 04 24 | 691 | 0.3- | 0.2- | 2007 10 30 | 703 | 0.1-  | 0.4+  | 2007 11 11 | 699 | 0.3+ | 0.1- |
| 2006 04 24 | 691 | 0.1- | 0.2+ | 2007 10 30 | 703 | 0.4-  | 0.8+  | 2007 11 11 | 699 | 0.2+ | 0.7- |
| 2007 10 10 | G96 | 0.6- | 0.5- | 2007 10 30 | 703 | 0.1-  | 0.2-  | 2007 11 18 | 703 | 0.5- | 0.3+ |
| 2007 10 10 | G96 | 0.6- | 0.3- | 2007 11 02 | H07 | (0.4+ | 1.6+) | 2007 11 18 | 703 | 1.1+ | 1.3+ |
| 2007 10 10 | G96 | 0.6- | 0.5- | 2007 11 02 | H07 | 0.7-  | 0.9+  | 2007 11 18 | 703 | 0.7+ | 0.1- |
| 2007 10 10 | G96 | 0.5- | 0.3- | 2007 11 02 | H07 | (0.8- | 1.8+) | 2007 11 18 | 703 | 0.3+ | 1.1+ |
| 2007 10 18 | 699 | 0.3+ | 0.1- | 2007 11 03 | H07 | 0.7-  | 0.5+  | 2007 12 04 | H07 | 0.5+ | 0.3+ |
| 2007 10 18 | 699 | 0.8+ | 0.5- | 2007 11 03 | H07 | 0.8-  | 1.5+  | 2007 12 04 | H07 | 0.7+ | 0.2+ |
| 2007 10 18 | 699 | 0.6+ | 0.7+ | 2007 11 03 | H07 | (1.2- | 2.4+) | 2007 12 04 | H07 | 0.1- | 0.0  |
| 2007 10 18 | 699 | 1.0- | 0.9- | 2007 11 07 | 703 | 0.2-  | 0.3-  |            |     |      |      |
| 2007 10 24 | G96 | 0.0  | 0.4- | 2007 11 07 | 703 | 0.3-  | 0.2-  |            |     |      |      |

**2007 VY<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 328.26570  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.40315760 | $\omega$ 9.37297   | -0.46129501   | -0.88097399 |
| <i>a</i> | 1.8147612  | $\Omega$ 108.15932 | +0.80668423   | -0.46586652 |
| <i>e</i> | 0.5043542  | <i>i</i> 6.36361   | +0.36941504   | -0.08278421 |
| <i>P</i> | 2.44       | <i>H</i> 19.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 17 | 644 | 0.2+  | 0.4-  | 2007 11 04 | H06 | 0.0  | 0.1- | 2007 11 13 | H51 | 1.1+ | 0.2- |
| 2002 09 17 | 644 | 0.2+  | 0.4-  | 2007 11 04 | D21 | 0.5- | 0.4+ | 2007 11 13 | H51 | 0.7+ | 0.7+ |
| 2002 09 17 | 644 | 0.1-  | 0.2-  | 2007 11 04 | D21 | 0.7- | 0.1+ | 2007 11 13 | H51 | 0.4+ | 0.0  |
| 2007 10 11 | 703 | (0.4+ | 2.2+) | 2007 11 04 | D21 | 0.2- | 0.1- | 2007 11 13 | H51 | 0.4+ | 0.1+ |
| 2007 10 11 | 703 | 0.5+  | 0.1-  | 2007 11 04 | B40 | 1.6- | 0.2- | 2007 11 13 | H51 | 0.2+ | 0.1+ |
| 2007 10 11 | 703 | 1.2+  | 0.5+  | 2007 11 04 | B40 | 0.7- | 0.7- | 2007 11 17 | I09 | 0.2- | 0.1- |
| 2007 10 11 | 703 | 0.7+  | 1.0+  | 2007 11 05 | 703 | 0.4- | 0.4- | 2007 11 17 | I09 | 0.3- | 0.0  |
| 2007 10 15 | 703 | 0.0   | 0.1-  | 2007 11 05 | 703 | 0.4- | 0.4+ | 2007 11 17 | I09 | 0.2- | 0.1- |
| 2007 10 15 | 703 | 0.3+  | 0.3-  | 2007 11 05 | 703 | 0.1+ | 0.2+ | 2007 11 17 | I09 | 0.5- | 0.2- |
| 2007 10 15 | 703 | 0.1+  | 0.6+  | 2007 11 05 | 703 | 0.4- | 0.6+ | 2007 11 17 | I09 | 0.3- | 0.1- |
| 2007 10 15 | 703 | 1.2-  | 0.7-  | 2007 11 05 | 701 | 0.5- | 0.1+ | 2007 11 17 | I09 | 0.2- | 0.2- |
| 2007 11 04 | 703 | 0.1-  | 0.3+  | 2007 11 05 | 701 | 0.1+ | 0.1- | 2007 11 17 | I09 | 0.3- | 0.1- |
| 2007 11 04 | 703 | 0.6-  | 0.4+  | 2007 11 05 | 701 | 0.1+ | 0.1- | 2007 11 17 | I09 | 0.1- | 0.0  |
| 2007 11 04 | 703 | 0.2-  | 0.1-  | 2007 11 05 | 701 | 0.3+ | 0.0  | 2007 11 17 | I09 | 0.3- | 0.0  |
| 2007 11 04 | 703 | 0.4+  | 0.0   | 2007 11 11 | 704 | 0.8- | 0.0  | 2007 11 17 | I09 | 0.1- | 0.0  |
| 2007 11 04 | 703 | 0.3-  | 0.2-  | 2007 11 11 | 704 | 0.6- | 0.2+ | 2007 11 20 | 448 | 0.4+ | 0.1+ |
| 2007 11 04 | 703 | 0.0   | 0.0   | 2007 11 11 | 704 | 0.2+ | 0.1+ | 2007 11 20 | 448 | 0.1+ | 0.2- |
| 2007 11 04 | 703 | 0.2-  | 0.0   | 2007 11 11 | 704 | 0.5- | 0.0  | 2007 11 20 | 448 | 0.7+ | 0.1- |
| 2007 11 04 | 703 | 0.4-  | 0.1+  | 2007 11 13 | H51 | 2.0+ | 0.0  |            |     |      |      |
| 2007 11 04 | H06 | 1.4+  | 0.5-  | 2007 11 13 | H51 | 1.7+ | 0.5- |            |     |      |      |

**2007 VG<sub>8</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 95.15566   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.36611112 | $\omega$ 235.04973 | +0.40008837   | +0.84924126 |
| <i>a</i> | 1.9352070  | $\Omega$ 62.16781  | -0.66111466   | +0.52780732 |
| <i>e</i> | 0.0782921  | <i>i</i> 22.93137  | -0.63470993   | -0.01444691 |
| <i>P</i> | 2.69       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |



## 2007 DEC. 24

M.P.O. 129971

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 1999 11 14 049 | 1.7+ | 2.5- | 2007 10 10 703 | 1.0+ | 0.9+ | 2007 11 11 704 | 0.6- | 0.4+ |
| 1999 11 14 049 | 0.6+ | 0.7- | 2007 10 10 703 | 0.8+ | 0.5+ | 2007 11 11 704 | 1.0- | 0.4- |
| 1999 11 14 049 | 0.1+ | 0.4- | 2007 10 10 703 | 0.1- | 0.7+ | 2007 11 11 704 | 0.3- | 0.3+ |
| 2004 08 24 E12 | 0.4- | 0.7+ | 2007 10 10 703 | 0.7+ | 0.5+ | 2007 11 11 704 | 0.6- | 0.1- |
| 2004 08 24 E12 | 0.3+ | 0.5- | 2007 10 10 703 | 0.8+ | 0.1+ | 2007 11 14 G96 | 0.0  | 0.3- |
| 2004 08 24 E12 | 0.0  | 0.2+ | 2007 10 10 703 | 0.3- | 0.6+ | 2007 11 14 G96 | 0.3- | 0.4- |
| 2004 08 24 E12 | 0.1- | 0.3- | 2007 10 10 703 | 0.3+ | 1.2+ | 2007 11 14 G96 | 0.2- | 0.4- |
| 2004 09 13 E12 | 0.1+ | 0.3- | 2007 10 10 703 | 0.4- | 0.4+ | 2007 11 14 G96 | 0.6- | 0.4- |
| 2004 09 13 E12 | 0.0  | 0.2- | 2007 11 05 703 | 0.0  | 1.0+ | 2007 11 29 704 | 0.4+ | 1.3+ |
| 2004 09 13 E12 | 0.7+ | 0.1- | 2007 11 05 703 | 0.3- | 0.1+ | 2007 11 29 704 | 0.6+ | 0.3+ |
| 2004 09 13 E12 | 0.0  | 0.7- | 2007 11 05 703 | 0.4- | 0.2+ | 2007 11 29 704 | 0.5- | 1.3+ |
| 2006 02 04 703 | 0.3+ | 0.9+ | 2007 11 05 703 | 0.4+ | 0.1- | 2007 12 04 704 | 0.0  | 0.2+ |
| 2006 02 04 703 | 0.0  | 0.6- | 2007 11 05 J95 | 0.5- | 0.3+ | 2007 12 04 704 | 0.7+ | 0.5- |
| 2006 02 04 703 | 0.5+ | 1.4+ | 2007 11 05 J95 | 0.1- | 0.7- | 2007 12 04 704 | 0.4- | 0.4+ |
| 2006 02 04 703 | 0.6- | 1.9- | 2007 11 05 J95 | 0.3+ | 0.3- | 2007 12 04 704 | 0.9- | 0.3- |

2007 VO<sub>9</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 282.36811  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29169292 | $\omega$ 245.46214 | -0.76959530   | -0.62629126 |
| <i>a</i> | 2.2517428  | $\Omega$ 255.51537 | +0.62244176   | -0.69235134 |
| <i>e</i> | 0.1046008  | <i>i</i> 7.38366   | +0.14244059   | -0.35834184 |
| <i>P</i> | 3.38       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |       |       |                |       |       |                |      |      |
|----------------|-------|-------|----------------|-------|-------|----------------|------|------|
| 2000 09 26 608 | 0.4+  | 0.6-  | 2007 11 05 D29 | 1.3-  | 0.2+  | 2007 12 03 703 | 0.3+ | 0.5- |
| 2000 09 26 608 | 0.2-  | 0.5-  | 2007 11 05 D29 | 0.1-  | 0.5-  | 2007 12 03 703 | 0.7+ | 0.0  |
| 2000 09 26 608 | 0.1+  | 0.0   | 2007 11 05 D29 | 0.3+  | 0.2+  | 2007 12 03 703 | 0.6+ | 0.7+ |
| 2002 05 17 644 | 0.2-  | 0.4+  | 2007 11 05 D29 | 0.2-  | 0.4-  | 2007 12 03 703 | 0.1+ | 0.7+ |
| 2002 05 17 644 | 0.1-  | 0.5+  | 2007 11 13 699 | 0.1-  | 0.2+  | 2007 12 04 699 | 0.3- | 0.3- |
| 2002 05 17 644 | 0.1-  | 0.5+  | 2007 11 13 699 | 0.5-  | 0.7-  | 2007 12 04 699 | 1.0- | 1.4- |
| 2002 06 09 608 | 0.3+  | 0.3-  | 2007 11 13 699 | 0.6+  | 0.3+  | 2007 12 04 699 | 0.2- | 0.1- |
| 2002 06 09 608 | 0.3+  | 0.6-  | 2007 11 13 699 | 0.4+  | 0.2+  | 2007 12 04 699 | 0.4+ | 0.4+ |
| 2002 06 09 608 | 0.0   | 0.3-  | 2007 11 13 703 | 0.1+  | 0.1+  | 2007 12 10 704 | 0.8+ | 0.2+ |
| 2005 01 18 703 | 0.5-  | 0.6+  | 2007 11 13 703 | 0.6-  | 0.1+  | 2007 12 10 704 | 0.0  | 0.6+ |
| 2005 01 18 703 | 0.5+  | 0.5-  | 2007 11 13 703 | 0.8-  | 0.3-  | 2007 12 10 704 | 0.0  | 0.4+ |
| 2005 01 18 703 | 0.1-  | 0.7-  | 2007 11 13 703 | 1.4-  | 0.0   | 2007 12 12 A77 | 0.3- | 0.3+ |
| 2005 01 18 703 | 0.4-  | 0.9-  | 2007 11 14 300 | 0.5-  | 0.2-  | 2007 12 12 A77 | 0.2- | 0.5+ |
| 2005 02 02 703 | (2.0- | 0.6-) | 2007 11 14 300 | (1.6- | 0.3+) | 2007 12 12 A77 | 1.0+ | 0.2+ |
| 2005 02 02 703 | (1.8- | 2.0-) | 2007 11 14 300 | 0.5-  | 0.4+  | 2007 12 14 704 | 0.4+ | 0.1- |
| 2005 02 02 703 | (0.5- | 2.2-) | 2007 11 14 300 | 0.4-  | 0.4-  | 2007 12 14 704 | 1.2+ | 1.5+ |
| 2005 02 02 703 | (0.8+ | 2.6-) | 2007 11 14 300 | 0.2-  | 0.4-  | 2007 12 14 704 | 1.5+ | 1.8+ |
| 2007 10 21 G96 | 0.0   | 0.1-  | 2007 11 18 704 | 0.1-  | 1.0+  | 2007 12 14 704 | 0.8+ | 1.0+ |
| 2007 10 21 G96 | 0.3+  | 0.1-  | 2007 11 18 704 | 0.3+  | 0.3-  | 2007 12 14 704 | 1.1+ | 0.2+ |
| 2007 10 21 G96 | 0.0   | 0.0   | 2007 11 18 704 | 0.2+  | 0.7-  | 2007 12 15 G96 | 0.3- | 0.1- |
| 2007 10 21 G96 | 0.6-  | 0.4+  | 2007 11 18 704 | 0.4+  | 0.2+  | 2007 12 15 G96 | 0.1+ | 0.4- |
| 2007 11 02 703 | 0.7-  | 0.0   | 2007 11 18 300 | 0.2-  | 0.2-  | 2007 12 15 G96 | 0.0  | 0.1- |
| 2007 11 02 703 | 0.4+  | 0.1+  | 2007 11 18 300 | 0.6-  | 0.4+  | 2007 12 15 G96 | 0.1- | 0.3- |
| 2007 11 02 703 | 0.0   | 0.1+  | 2007 11 18 300 | 1.2-  | 1.2-  |                |      |      |
| 2007 11 02 703 | 1.2+  | 1.0-  | 2007 11 18 300 | 0.8-  | 0.2-  |                |      |      |

2007 VT<sub>0</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.85549  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26803429 | $\omega$ 3.26666  | +0.28927373   | -0.95147033 |
| <i>a</i> | 2.3823697  | $\Omega$ 69.93893 | +0.87570327   | +0.21873452 |
| <i>e</i> | 0.0863062  | <i>i</i> 6.41803  | +0.38660639   | +0.21647038 |
| <i>P</i> | 3.68       | <i>H</i> 17.1     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2001 02 22 645 | 0.0  | 0.0  | 2007 11 04 691 | 0.2-  | 0.1+  | 2007 11 19 691 | 0.0  | 0.0  |
| 2001 02 22 645 | 0.0  | 0.0  | 2007 11 04 691 | 0.2-  | 0.1+  | 2007 11 19 691 | 0.0  | 0.2- |
| 2003 09 22 699 | 0.6- | 0.6- | 2007 11 05 704 | 0.2+  | 1.0+  | 2007 11 19 691 | 0.1- | 0.0  |
| 2003 09 22 699 | 0.4- | 0.6- | 2007 11 05 704 | 1.3+  | 0.7+  | 2007 12 03 703 | 0.5+ | 0.3- |
| 2003 09 22 699 | 0.2+ | 0.4- | 2007 11 05 704 | (0.2- | 1.8+) | 2007 12 03 703 | 1.1- | 0.3- |

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2003 09 22 699 | 0.0  | 0.4+ | 2007 11 05 D29 | 0.5+  | 0.2-  | 2007 12 03 703 | 0.5+ | 0.8+ |
| 2003 09 30 691 | 0.2+ | 0.2+ | 2007 11 05 D29 | (1.5- | 1.6-) | 2007 12 03 703 | 0.1- | 0.4- |
| 2003 09 30 691 | 0.1- | 0.1+ | 2007 11 05 D29 | 0.2-  | 0.1+  | 2007 12 04 G96 | 0.3+ | 0.2- |
| 2003 09 30 691 | 0.0  | 0.2+ | 2007 11 05 D29 | 1.0+  | 0.3-  | 2007 12 04 G96 | 0.0  | 0.2- |
| 2007 10 20 G96 | 0.5+ | 0.8- | 2007 11 08 691 | 0.4-  | 0.0   | 2007 12 04 G96 | 0.0  | 0.3- |
| 2007 10 20 G96 | 0.5+ | 0.6- | 2007 11 08 691 | 0.1-  | 0.1-  | 2007 12 04 G96 | 0.1+ | 0.3- |
| 2007 10 20 G96 | 0.4+ | 0.6- | 2007 11 08 691 | 0.2-  | 0.1-  | 2007 12 05 704 | 0.2- | 0.7+ |
| 2007 10 20 G96 | 0.3+ | 0.4- | 2007 11 11 D35 | 0.5+  | 0.6+  | 2007 12 05 704 | 1.0- | 0.2- |
| 2007 10 31 691 | 0.1- | 0.1+ | 2007 11 11 D35 | 0.0   | 0.0   | 2007 12 05 704 | 0.1- | 0.1+ |
| 2007 10 31 691 | 0.0  | 0.0  | 2007 11 11 D35 | 0.1-  | 0.3+  | 2007 12 05 704 | 0.1+ | 0.2+ |
| 2007 10 31 691 | 0.2- | 0.0  | 2007 11 14 704 | 0.1+  | 0.8+  | 2007 12 15 G96 | 0.1+ | 0.1+ |
| 2007 11 03 H07 | 0.5+ | 0.1+ | 2007 11 14 704 | 0.6-  | 0.3+  | 2007 12 15 G96 | 0.2+ | 0.0  |
| 2007 11 03 H07 | 0.1- | 0.1+ | 2007 11 14 704 | 0.1+  | 0.1+  | 2007 12 15 G96 | 0.2+ | 1.6- |
| 2007 11 03 H07 | 0.5+ | 0.3+ | 2007 11 14 704 | 0.6+  | 0.0   | 2007 12 15 G96 | 0.3+ | 0.0  |
| 2007 11 04 691 | 0.2- | 0.1+ | 2007 11 14 704 | 1.2+  | 0.3+  |                |      |      |

2007 VL<sub>10</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 169.93685  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21068108 | $\omega$ 231.56752 | -0.53141413   | +0.84707145 |
| <i>a</i> | 2.7971711  | $\Omega$ 6.34797   | -0.75192764   | -0.46716465 |
| <i>e</i> | 0.0191072  | <i>i</i> 4.30782   | -0.39013311   | -0.25343073 |
| <i>P</i> | 4.68       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2004 01 18 691 | 0.1- | 0.0  | 2007 10 31 691 | 0.1- | 0.0  | 2007 11 09 735 | 0.8+ | 0.1- |
| 2004 01 18 691 | 0.1+ | 0.1- | 2007 11 03 735 | 0.3- | 0.1- | 2007 11 09 735 | 0.5+ | 0.6- |
| 2004 01 18 691 | 0.1+ | 0.3+ | 2007 11 03 735 | 0.2+ | 0.7- | 2007 11 09 735 | 0.8+ | 0.6- |
| 2005 05 01 644 | 0.0  | 0.7+ | 2007 11 05 691 | 0.2- | 0.2- | 2007 11 09 735 | 0.4+ | 0.4- |
| 2005 05 01 644 | 0.3+ | 0.6+ | 2007 11 05 691 | 0.3- | 0.3- | 2007 11 13 691 | 0.0  | 0.3+ |
| 2005 05 01 644 | 0.4+ | 0.6+ | 2007 11 05 691 | 0.5- | 0.1- | 2007 11 13 691 | 0.1+ | 0.1+ |
| 2006 08 14 644 | 0.2- | 0.5+ | 2007 11 06 735 | 0.7+ | 0.2- | 2007 11 13 691 | 0.1+ | 0.2+ |
| 2006 08 14 644 | 0.2- | 0.7+ | 2007 11 06 735 | 0.0  | 0.4- | 2007 11 15 H06 | 0.7+ | 0.1- |
| 2006 08 14 644 | 0.0  | 0.3+ | 2007 11 06 735 | 0.9+ | 0.1- | 2007 11 15 H06 | 0.5+ | 0.6- |
| 2007 10 16 G96 | 0.6+ | 0.2- | 2007 11 07 691 | 0.5- | 0.2- | 2007 11 15 H06 | 0.0  | 0.1+ |
| 2007 10 16 G96 | 0.7+ | 0.0  | 2007 11 07 691 | 0.1- | 0.1+ | 2007 12 05 691 | 0.3- | 0.7+ |
| 2007 10 16 G96 | 0.3+ | 0.2- | 2007 11 07 691 | 0.2- | 0.2+ | 2007 12 05 691 | 0.0  | 0.3- |
| 2007 10 16 G96 | 0.5+ | 0.3- | 2007 11 09 691 | 0.4- | 0.0  | 2007 12 05 691 | 0.1+ | 0.3+ |
| 2007 10 31 691 | 0.2+ | 0.1+ | 2007 11 09 691 | 0.1- | 0.1+ |                |      |      |
| 2007 10 31 691 | 0.7+ | 0.2+ | 2007 11 09 691 | 0.3- | 0.2+ |                |      |      |

2007 VT<sub>10</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.72506    | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21193470 | $\omega$ 225.37045 | +0.98891214   | +0.06580303 |
| <i>a</i> | 2.7861298  | $\Omega$ 130.38354 | -0.02496579   | +0.95737557 |
| <i>e</i> | 0.3013791  | <i>i</i> 10.06529  | -0.14638815   | +0.28125074 |
| <i>P</i> | 4.65       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 04 16 645 | 0.2- | 0.1- | 2007 09 14 703 | 0.2- | 0.3- | 2007 11 06 620 | 0.4- | 0.2+ |
| 2001 04 16 645 | 0.2- | 0.1- | 2007 09 14 703 | 0.4- | 0.4- | 2007 11 06 620 | 0.1+ | 0.0  |
| 2004 02 16 460 | 0.3- | 0.2+ | 2007 09 14 703 | 0.4- | 0.3- | 2007 11 06 620 | 0.0  | 0.1- |
| 2004 02 16 460 | 0.6+ | 0.5+ | 2007 10 02 E12 | 0.5- | 0.1+ | 2007 11 07 620 | 0.3+ | 0.2- |
| 2006 05 21 691 | 0.5+ | 0.4+ | 2007 10 02 E12 | 1.3- | 0.1+ | 2007 11 07 620 | 0.3+ | 0.3+ |
| 2006 05 21 691 | 0.1+ | 0.1+ | 2007 10 02 E12 | 0.0  | 0.2- | 2007 11 07 620 | 0.7- | 0.2+ |
| 2006 05 21 691 | 0.0  | 0.4+ | 2007 10 02 E12 | 0.4- | 0.1- | 2007 11 15 703 | 0.8- | 0.5+ |
| 2006 05 29 691 | 0.2+ | 0.3+ | 2007 10 02 E12 | 0.0  | 0.1- | 2007 11 15 703 | 0.4+ | 1.0+ |
| 2006 05 29 691 | 0.2+ | 0.3+ | 2007 10 02 E12 | 0.4- | 0.4+ | 2007 11 15 703 | 0.0  | 0.5+ |
| 2006 05 29 691 | 0.3- | 0.1+ | 2007 10 02 E12 | 0.6+ | 0.9- | 2007 11 15 703 | 0.6- | 0.1+ |
| 2007 09 05 703 | 0.7+ | 0.9+ | 2007 10 02 E12 | 0.4- | 0.2+ | 2007 11 17 620 | 0.3- | 0.1+ |
| 2007 09 05 703 | 0.0  | 0.1+ | 2007 11 05 J75 | 0.1+ | 0.9- | 2007 11 17 620 | 0.3+ | 0.6+ |
| 2007 09 05 703 | 1.6+ | 0.5+ | 2007 11 05 J75 | 0.2+ | 1.1- | 2007 11 17 620 | 0.3- | 0.1+ |
| 2007 09 05 703 | 0.6+ | 0.4+ | 2007 11 05 J75 | 0.2+ | 0.3- |                |      |      |
| 2007 09 14 703 | 0.3+ | 0.3- | 2007 11 06 620 | 0.8+ | 0.1- |                |      |      |

**2007 VW<sub>10</sub> = 4888 P-L**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.36707   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21165839 | $\omega$ 187.16110 | +0.97081209   | -0.23961914 |
| <i>a</i> | 2.7885540  | $\Omega$ 186.72964 | +0.22418753   | +0.92190315 |
| <i>e</i> | 0.0880910  | <i>i</i> 5.05377   | +0.08522819   | +0.30442940 |
| <i>P</i> | 4.66       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1960 09 24 | 675 | 0.1- | 0.2+ | 2007 11 05 | 691 | 0.8+ | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.1+ |
| 1960 09 24 | 675 | 1.2+ | 0.0  | 2007 11 05 | 691 | 0.1- | 0.3+ | 2007 11 13 | 691 | 0.2- | 0.0  |
| 1960 09 26 | 675 | 0.1+ | 1.6- | 2007 11 06 | D29 | 0.2+ | 0.4- | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 1960 09 26 | 675 | 0.3- | 0.7- | 2007 11 06 | D29 | 0.1- | 0.2+ | 2007 11 20 | 691 | 0.2+ | 0.1- |
| 1960 09 28 | 675 | 0.3- | 0.1- | 2007 11 06 | D29 | 0.6- | 0.6+ | 2007 11 20 | 691 | 0.1- | 0.2- |
| 1960 09 28 | 675 | 0.1- | 0.6+ | 2007 11 06 | D29 | 0.8+ | 0.3+ | 2007 12 04 | 704 | 0.4- | 1.3- |
| 2000 03 03 | 645 | 0.0  | 0.1- | 2007 11 12 | 704 | 0.4+ | 0.2- | 2007 12 04 | 704 | 0.4+ | 0.3- |
| 2000 03 03 | 645 | 0.0  | 0.0  | 2007 11 12 | 704 | 0.1- | 0.5+ | 2007 12 04 | 704 | 0.3- | 0.2- |
| 2007 11 01 | 691 | 0.1- | 0.0  | 2007 11 12 | 704 | 1.1+ | 0.7+ | 2007 12 04 | 704 | 0.0  | 0.1- |
| 2007 11 01 | 691 | 0.7- | 0.2- | 2007 11 12 | 704 | 0.6- | 0.3- | 2007 12 04 | 704 | 0.6- | 0.4- |
| 2007 11 01 | 691 | 0.2+ | 0.2+ | 2007 11 12 | 704 | 0.5+ | 1.0- |            |     |      |      |
| 2007 11 05 | 691 | 0.3- | 0.4+ | 2007 11 13 | 691 | 0.1+ | 0.1- |            |     |      |      |

**2007 VZ<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.45524   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23263213 | $\omega$ 295.90115 | +0.86726946   | -0.48837591 |
| <i>a</i> | 2.6183212  | $\Omega$ 93.46722  | +0.48435065   | +0.78286861 |
| <i>e</i> | 0.2883633  | <i>i</i> 5.55394   | +0.11510056   | +0.38549411 |
| <i>P</i> | 4.24       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 28 | 691 | 0.5+ | 0.1+ | 2007 11 09 | 703 | 0.5+ | 0.3+ | 2007 11 29 | 704 | 0.3+ | 0.6+ |
| 2003 12 28 | 691 | 0.1+ | 0.2- | 2007 11 09 | 703 | 0.6- | 0.4+ | 2007 11 29 | 704 | 0.3- | 0.3- |
| 2003 12 28 | 691 | 0.3- | 0.3+ | 2007 11 09 | 703 | 1.4+ | 0.4+ | 2007 12 04 | 704 | 0.9+ | 0.5- |
| 2004 01 21 | 691 | 0.3- | 0.1- | 2007 11 09 | 703 | 0.3+ | 0.1- | 2007 12 04 | 704 | 1.2- | 0.2+ |
| 2004 01 21 | 691 | 0.1- | 0.1- | 2007 11 12 | 704 | 0.1- | 0.5+ | 2007 12 04 | 703 | 0.2- | 0.3- |
| 2004 01 21 | 691 | 0.1+ | 0.0  | 2007 11 12 | 704 | 0.2+ | 0.1- | 2007 12 04 | 704 | 0.2+ | 0.2- |
| 2007 11 01 | 691 | 0.2- | 0.0  | 2007 11 12 | 704 | 0.2+ | 0.5- | 2007 12 04 | 703 | 0.1- | 0.5+ |
| 2007 11 01 | 691 | 0.3- | 0.2- | 2007 11 12 | 704 | 0.6- | 1.1+ | 2007 12 04 | 703 | 0.4- | 0.3+ |
| 2007 11 01 | 691 | 0.2- | 0.1- | 2007 11 15 | 699 | 0.6+ | 0.5+ | 2007 12 04 | 704 | 0.6- | 0.3- |
| 2007 11 02 | 703 | 1.4+ | 0.4- | 2007 11 15 | 699 | 0.8+ | 0.5+ | 2007 12 04 | 703 | 0.9- | 0.1+ |
| 2007 11 02 | 703 | 0.1- | 0.6- | 2007 11 15 | 699 | 0.1- | 0.2- | 2007 12 04 | 704 | 0.1- | 0.2+ |
| 2007 11 02 | 703 | 0.5- | 1.0+ | 2007 11 15 | 699 | 0.4+ | 0.2- | 2007 12 05 | 699 | 0.1+ | 0.5- |
| 2007 11 02 | 703 | 0.4- | 1.5+ | 2007 11 20 | 703 | 0.8+ | 0.4- | 2007 12 05 | 699 | 0.5- | 0.4- |
| 2007 11 06 | D29 | 0.5- | 0.4- | 2007 11 20 | 703 | 0.8+ | 0.6- | 2007 12 05 | 699 | 0.3- | 0.7- |
| 2007 11 06 | D29 | 0.4- | 0.4- | 2007 11 20 | 703 | 0.2+ | 0.1- | 2007 12 05 | 699 | 0.2+ | 1.1+ |
| 2007 11 06 | D29 | 0.5- | 0.7- | 2007 11 20 | 703 | 0.5+ | 0.7- |            |     |      |      |
| 2007 11 06 | D29 | 0.3+ | 0.0  | 2007 11 29 | 704 | 0.9+ | 0.0  |            |     |      |      |

**2007 VH<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 355.66423  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22564753 | $\omega$ 216.42168 | +0.53669741   | -0.84183375 |
| <i>a</i> | 2.6720771  | $\Omega$ 201.30172 | +0.80656815   | +0.53175986 |
| <i>e</i> | 0.1700882  | <i>i</i> 9.05918   | +0.24779773   | +0.09245213 |
| <i>P</i> | 4.37       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 10 19 | 691 | 0.2- | 0.1+ | 2007 11 02 | 703 | 0.1- | 0.1- | 2007 11 17 | 703 | 0.1- | 0.5+ |
| 1998 10 19 | 691 | 0.0  | 0.3- | 2007 11 02 | 703 | 1.4- | 0.4+ | 2007 11 17 | 703 | 0.4+ | 0.9+ |
| 1998 10 19 | 691 | 0.3+ | 0.0  | 2007 11 02 | 703 | 0.2+ | 0.4+ | 2007 11 17 | 703 | 0.6- | 0.6+ |
| 2000 03 04 | 645 | 0.0  | 0.0  | 2007 11 02 | 703 | 0.5- | 0.5- | 2007 11 18 | G96 | 0.4+ | 0.3- |
| 2000 03 04 | 645 | 0.0  | 0.0  | 2007 11 06 | D29 | 0.8+ | 0.3+ | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 2005 04 10 | G96 | 0.1+ | 0.1+ | 2007 11 06 | D29 | 0.6- | 0.2+ | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 2005 04 10 | G96 | 0.4+ | 0.1+ | 2007 11 06 | D29 | 0.1- | 0.4+ | 2007 11 18 | G96 | 0.4+ | 0.5- |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 10 | G96 | 0.6+ | 0.1+ | 2007 11 06 | D29 | 0.4+  | 0.2-  | 2007 11 20 | 703 | 0.9+ | 0.4+ |
| 2005 04 10 | G96 | 0.1- | 0.4- | 2007 11 09 | 703 | 0.8+  | 0.7-  | 2007 11 20 | 703 | 0.2+ | 0.3+ |
| 2005 05 11 | G96 | 0.8- | 0.1+ | 2007 11 09 | 703 | 0.6+  | 0.0   | 2007 11 20 | 703 | 0.5+ | 0.1- |
| 2005 05 11 | G96 | 0.0  | 0.1+ | 2007 11 09 | 703 | (1.6+ | 0.6+) | 2007 11 20 | 703 | 0.2- | 0.1- |
| 2005 05 11 | G96 | 0.4- | 0.5- | 2007 11 09 | 703 | 1.4+  | 0.5-  | 2007 12 05 | 703 | 1.0- | 0.3+ |
| 2005 05 11 | G96 | 0.1- | 0.3- | 2007 11 11 | 704 | 0.6-  | 0.6-  | 2007 12 05 | 703 | 1.0- | 0.0  |
| 2007 11 02 | G96 | 0.3+ | 0.2- | 2007 11 11 | 704 | 0.4-  | 0.0   | 2007 12 05 | 703 | 0.7- | 0.6+ |
| 2007 11 02 | G96 | 0.1+ | 0.2- | 2007 11 11 | 704 | 0.8-  | 0.0   | 2007 12 05 | 703 | 0.3+ | 0.7- |
| 2007 11 02 | G96 | 0.5+ | 0.2- | 2007 11 11 | 704 | 0.4-  | 1.0+  |            |     |      |      |
| 2007 11 02 | G96 | 0.2+ | 0.2- | 2007 11 17 | 703 | 0.6-  | 0.5-  |            |     |      |      |

**2007 VM<sub>15</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 16.30922   | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22926408 | $\omega$ 349.55595 | +0.78274849   | -0.61550203 |
| <i>a</i> | 2.6439021  | $\Omega$ 48.83689  | +0.57943312   | +0.66684663 |
| <i>e</i> | 0.1531895  | <i>i</i> 7.01851   | +0.22707280   | +0.42008668 |
| <i>P</i> | 4.30       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 09 24 | 910 | 0.0  | 0.1- | 2007 11 02 | 691 | 0.0   | 0.1-  | 2007 11 20 | 691 | 0.2- | 0.1- |
| 1998 09 24 | 910 | 0.1+ | 0.1+ | 2007 11 09 | 691 | 0.2-  | 0.0   | 2007 12 06 | D35 | 0.5+ | 0.5- |
| 1998 09 24 | 910 | 0.1- | 0.0  | 2007 11 09 | 691 | 0.2-  | 0.2-  | 2007 12 06 | D35 | 0.1+ | 0.2- |
| 2002 04 08 | 807 | 0.5- | 0.3+ | 2007 11 09 | 691 | 0.0   | 0.0   | 2007 12 06 | D35 | 0.1+ | 0.2- |
| 2002 04 08 | 807 | 0.2+ | 0.7+ | 2007 11 13 | 691 | 0.1-  | 0.1-  | 2007 12 13 | 704 | 0.0  | 1.0+ |
| 2007 09 15 | G96 | 0.4+ | 0.1+ | 2007 11 13 | 691 | 0.3-  | 0.3-  | 2007 12 13 | 704 | 0.0  | 0.1+ |
| 2007 09 15 | G96 | 0.5+ | 0.1+ | 2007 11 13 | 691 | 0.1-  | 0.0   | 2007 12 13 | 704 | 0.8+ | 1.3+ |
| 2007 09 15 | G96 | 0.2+ | 0.5- | 2007 11 20 | 704 | (1.6+ | 0.8+) | 2007 12 13 | 704 | 0.3+ | 1.4+ |
| 2007 09 15 | G96 | 0.1- | 0.1+ | 2007 11 20 | 704 | 0.9+  | 0.1-  | 2007 12 15 | 704 | 0.4- | 0.2- |
| 2007 11 01 | 691 | 0.1+ | 0.1- | 2007 11 20 | 704 | 1.1+  | 0.5+  | 2007 12 15 | 704 | 0.1+ | 0.4- |
| 2007 11 01 | 691 | 0.1- | 0.2+ | 2007 11 20 | 704 | (2.0+ | 0.4+) | 2007 12 15 | 704 | 0.4+ | 0.6- |
| 2007 11 01 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 704 | 0.4+  | 0.4+  | 2007 12 15 | 704 | 1.2- | 0.6+ |
| 2007 11 02 | 691 | 0.2- | 0.0  | 2007 11 20 | 691 | 0.1-  | 0.1-  |            |     |      |      |
| 2007 11 02 | 691 | 0.2- | 0.2+ | 2007 11 20 | 691 | 0.3+  | 0.2-  |            |     |      |      |

**2007 VD<sub>19</sub> = 2007 TN<sub>416</sub> = 2007 VY<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 272.30251  | (2000.0)          | <i>P</i>      | <i>Q</i>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22696504 | $\omega$ 51.32995 | -0.73347203   | -0.67836359 |
| <i>a</i> | 2.6617264  | $\Omega$ 85.90913 | +0.60950681   | -0.68434023 |
| <i>e</i> | 0.0997158  | <i>i</i> 2.46584  | +0.30086581   | -0.26739726 |
| <i>P</i> | 4.34       | <i>H</i> 17.6     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 09 19 | 645 | 0.1- | 0.0  | 2005 04 16 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.1- | 0.2+ |
| 1998 09 19 | 645 | 0.0  | 0.1+ | 2005 04 16 | 691 | 0.1+ | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.4+ |
| 1998 09 25 | 645 | 0.0  | 0.0  | 2005 04 16 | 691 | 0.3+ | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.1+ |
| 1998 09 25 | 645 | 0.2+ | 0.2- | 2007 10 10 | 691 | 0.1- | 0.5+ | 2007 11 07 | G96 | 0.5+ | 0.4+ |
| 2001 05 22 | 807 | 0.8- | 0.2+ | 2007 10 10 | 691 | 0.8- | 0.0  | 2007 11 07 | G96 | 0.5+ | 0.5+ |
| 2001 05 22 | 807 | 0.4- | 0.2+ | 2007 10 10 | 691 | 0.2- | 0.2- | 2007 11 07 | G96 | 0.4+ | 0.1+ |
| 2003 11 29 | 691 | 0.0  | 0.2+ | 2007 11 01 | G96 | 0.7+ | 0.1+ | 2007 11 17 | G96 | 0.1- | 0.2+ |
| 2003 11 29 | 691 | 0.0  | 0.2- | 2007 11 01 | G96 | 0.2+ | 0.4+ | 2007 11 17 | G96 | 0.3+ | 0.0  |
| 2003 11 29 | 691 | 0.0  | 0.5+ | 2007 11 01 | G96 | 0.1+ | 0.2+ | 2007 11 17 | G96 | 0.4- | 0.2- |
| 2003 12 29 | 691 | 0.4- | 0.9- | 2007 11 01 | G96 | 0.1- | 0.1+ | 2007 11 17 | G96 | 0.1- | 0.2+ |
| 2003 12 29 | 691 | 0.3+ | 0.1- | 2007 11 02 | G96 | 0.3+ | 0.2+ |            |     |      |      |
| 2003 12 29 | 691 | 0.1+ | 0.3+ | 2007 11 02 | G96 | 0.1+ | 0.1+ |            |     |      |      |

**2007 VB<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 346.23437  | (2000.0)           | <i>P</i>      | <i>Q</i>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21015302 | $\omega$ 149.57991 | +0.52082837   | -0.85249361 |
| <i>a</i> | 2.8018548  | $\Omega$ 268.99838 | +0.77395274   | +0.49361361 |
| <i>e</i> | 0.0857012  | <i>i</i> 2.55875   | +0.36018741   | +0.17204725 |
| <i>P</i> | 4.69       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 19 | 691 | 0.2− | 0.1+ | 2007 10 07 | 691 | 0.2− | 0.7+ | 2007 11 01 | 291 | 0.2− | 0.2− |
| 2004 01 19 | 691 | 0.0  | 0.3− | 2007 10 11 | 691 | 0.1− | 0.1− | 2007 11 01 | 291 | 0.3− | 0.0  |
| 2004 01 19 | 691 | 0.0  | 0.1− | 2007 10 11 | 691 | 0.2− | 0.3− | 2007 11 02 | G96 | 0.5− | 1.1+ |
| 2004 02 11 | 691 | 0.2− | 0.1− | 2007 10 11 | 691 | 0.5+ | 1.6− | 2007 11 02 | G96 | 0.3+ | 0.1− |
| 2004 02 11 | 691 | 0.1+ | 0.1+ | 2007 10 19 | 691 | 0.0  | 0.1+ | 2007 11 02 | G96 | 0.6+ | 0.4− |
| 2004 02 11 | 691 | 0.2+ | 0.3+ | 2007 10 19 | 691 | 0.2+ | 0.1− | 2007 11 02 | G96 | 0.2+ | 0.1+ |
| 2007 10 07 | 691 | 0.1− | 0.3+ | 2007 10 19 | 691 | 0.1+ | 0.2+ |            |     |      |      |
| 2007 10 07 | 691 | 0.1− | 0.1+ | 2007 11 01 | 291 | 0.2− | 0.1+ |            |     |      |      |

**2007 VF<sub>25</sub> = 2000 FF<sub>53</sub> = 2005 HP<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.09724   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19603437 | $\omega$ | 307.00529 | +0.76564367   | +0.64146721 |
| <i>a</i> | 2.9348184  | $\Omega$ | 13.32084  | −0.50379628   | +0.64441948 |
| <i>e</i> | 0.1669885  | <i>i</i> | 12.03932  | −0.39997386   | +0.41622513 |
| <i>P</i> | 5.03       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 30 | 691 | 0.2−  | 0.1+  | 2005 04 30 | 691 | 0.3+ | 0.3+ | 2007 11 03 | G96 | 0.1− | 0.1− |
| 2000 03 30 | 691 | 0.5+  | 0.2−  | 2005 04 30 | 691 | 0.0  | 0.2+ | 2007 11 08 | 703 | 0.3− | 0.7+ |
| 2000 03 30 | 691 | 0.3−  | 0.2+  | 2005 04 30 | 691 | 0.5+ | 0.0  | 2007 11 08 | 703 | 1.4+ | 0.5+ |
| 2000 04 05 | 704 | 0.5+  | 0.7+  | 2005 05 08 | G96 | 0.2− | 0.1− | 2007 11 08 | 703 | 0.0  | 0.4+ |
| 2000 04 05 | 704 | 0.4−  | 0.9+  | 2005 05 08 | G96 | 0.1− | 0.2+ | 2007 11 08 | 703 | 0.4+ | 0.6+ |
| 2000 04 05 | 704 | 0.0   | 0.1+  | 2005 05 08 | G96 | 0.1− | 0.2+ | 2007 11 20 | G96 | 0.0  | 0.3− |
| 2000 04 05 | 691 | 0.1+  | 0.0   | 2005 05 08 | G96 | 0.5− | 0.1− | 2007 11 20 | G96 | 0.2+ | 0.4− |
| 2000 04 05 | 704 | 0.2+  | 0.5+  | 2006 04 25 | E12 | 0.1+ | 0.3+ | 2007 11 20 | G96 | 0.3− | 0.3− |
| 2000 04 05 | 704 | 0.5−  | 0.5+  | 2006 04 25 | E12 | 0.2+ | 1.3+ | 2007 11 20 | G96 | 0.2− | 0.2− |
| 2000 04 05 | 691 | 0.1+  | 0.1−  | 2006 04 25 | E12 | 0.7− | 0.5+ | 2007 11 20 | G96 | 0.3+ | 0.2− |
| 2000 04 05 | 691 | 0.1+  | 0.2−  | 2006 04 25 | E12 | 0.4+ | 0.8+ | 2007 11 20 | G96 | 0.2− | 0.1− |
| 2000 04 06 | 704 | 0.8−  | 0.2−  | 2006 07 18 | E12 | 0.0  | 0.4+ | 2007 11 20 | G96 | 0.3+ | 0.3− |
| 2000 04 06 | 704 | 0.7+  | 1.1−  | 2006 07 18 | E12 | 0.2− | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.3− |
| 2000 04 06 | 704 | 0.4−  | 1.7+  | 2006 07 18 | E12 | 0.1− | 0.5+ | 2007 11 21 | G96 | 0.0  | 0.0  |
| 2000 04 06 | 704 | 0.4+  | 0.7+  | 2006 07 18 | E12 | 0.3− | 0.4+ | 2007 11 21 | G96 | 0.4− | 0.3− |
| 2000 04 06 | 704 | (2.0+ | 1.4+) | 2006 08 12 | E12 | 0.2− | 0.8+ | 2007 11 21 | G96 | 0.3− | 0.3− |
| 2002 11 15 | 644 | 0.3−  | 1.1+  | 2006 08 12 | E12 | 0.3+ | 0.4− | 2007 11 21 | G96 | 0.2− | 0.1+ |
| 2002 11 15 | 644 | 0.4−  | 0.9+  | 2006 08 12 | E12 | 0.1+ | 0.2− | 2007 11 21 | G96 | 0.1+ | 0.2− |
| 2002 11 15 | 644 | 0.6−  | 1.2+  | 2006 08 12 | E12 | 0.5− | 0.3+ | 2007 11 21 | G96 | 0.2− | 0.2− |
| 2002 11 15 | 644 | 0.4−  | 0.4+  | 2007 11 02 | 703 | 0.0  | 0.7+ | 2007 11 21 | G96 | 0.2+ | 0.3− |
| 2002 11 15 | 644 | 0.0   | 1.2+  | 2007 11 02 | 703 | 0.5+ | 0.7+ | 2007 11 21 | G96 | 0.2− | 0.3− |
| 2002 11 15 | 644 | 0.2−  | 0.9+  | 2007 11 02 | 703 | 1.2− | 0.2− | 2007 12 02 | 704 | 0.1− | 0.2+ |
| 2005 04 04 | G96 | 0.2−  | 0.0   | 2007 11 02 | 703 | 1.1− | 0.5− | 2007 12 02 | 704 | 0.9+ | 0.9− |
| 2005 04 04 | G96 | 0.0   | 0.1+  | 2007 11 03 | G96 | 0.1+ | 0.0  | 2007 12 02 | 704 | 0.2+ | 0.8+ |
| 2005 04 04 | G96 | 0.2−  | 0.1−  | 2007 11 03 | G96 | 0.1− | 0.1− | 2007 12 02 | 704 | 0.2− | 0.4+ |
| 2005 04 04 | G96 | 0.3−  | 0.1+  | 2007 11 03 | G96 | 0.2+ | 0.0  | 2007 12 02 | 704 | 0.6− | 0.8+ |

**2007 VQ<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 112.97217  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24422783 | $\omega$ | 216.54013 | +0.12109789   | +0.96250514 |
| <i>a</i> | 2.5347742  | $\Omega$ | 61.59070  | −0.83280945   | +0.23157852 |
| <i>e</i> | 0.0997293  | <i>i</i> | 16.01965  | −0.54015158   | −0.14126301 |
| <i>P</i> | 4.04       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 12 | 691 | 0.5+  | 0.3−  | 2007 10 13 | G96 | 0.5+ | 0.1− | 2007 11 03 | G96 | 0.0  | 0.1+ |
| 1999 12 12 | 691 | 0.5+  | 0.2+  | 2007 11 01 | 291 | 0.1− | 0.1+ | 2007 11 03 | 291 | 0.1+ | 0.1− |
| 1999 12 12 | 691 | 0.1+  | 0.0   | 2007 11 01 | 291 | 0.5− | 0.2+ | 2007 11 03 | 291 | 0.1+ | 0.0  |
| 2003 10 18 | 699 | 0.8+  | 0.0   | 2007 11 01 | 291 | 0.3− | 0.2+ | 2007 11 03 | 291 | 0.8+ | 0.2+ |
| 2003 10 18 | 699 | 1.1−  | 0.8−  | 2007 11 01 | 291 | 0.1− | 0.2+ | 2007 11 12 | 108 | 0.3+ | 0.0  |
| 2003 10 18 | 699 | 0.9−  | 0.1−  | 2007 11 01 | 291 | 0.3− | 0.1+ | 2007 11 12 | 108 | 0.4− | 1.0− |
| 2003 10 18 | 699 | (3.3− | 0.7+) | 2007 11 01 | 291 | 0.4− | 0.1+ | 2007 11 12 | 108 | 0.4− | 0.2− |
| 2003 11 29 | 691 | 0.1−  | 0.1+  | 2007 11 01 | 291 | 0.2− | 0.1− | 2007 11 13 | 108 | 0.0  | 0.2− |
| 2003 11 29 | 691 | 0.2−  | 0.1+  | 2007 11 01 | 291 | 0.3− | 0.2+ | 2007 11 13 | 108 | 0.4+ | 1.1− |
| 2003 11 29 | 691 | 0.3−  | 0.4+  | 2007 11 01 | 291 | 0.4− | 0.2+ | 2007 11 13 | 108 | 0.0  | 0.2− |
| 2007 10 13 | G96 | 0.3+  | 0.1+  | 2007 11 03 | G96 | 0.1+ | 0.3+ | 2007 11 14 | 704 | 1.3− | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 13 | G96 | 0.4+ | 0.0  | 2007 11 03 | G96 | 0.3− | 0.4+ | 2007 11 14 | 704 | 0.2+ | 1.0+ |
| 2007 10 13 | G96 | 0.6+ | 0.4− | 2007 11 03 | G96 | 0.4+ | 0.3+ | 2007 11 14 | 704 | 1.4+ | 0.3− |

**2007 VW<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 111.44534  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28745849 | $\omega$ | 34.16383  | −0.01484864   | +0.99772379 |
| <i>a</i> | 2.2738019  | $\Omega$ | 235.07042 | −0.93437087   | −0.03726727 |
| <i>e</i> | 0.0705162  | <i>i</i> | 4.60186   | −0.35599242   | +0.05619953 |
| <i>P</i> | 3.43       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 02 | 691 | 0.3− | 0.2− | 2007 10 11 | 703 | 0.5+ | 0.8+ | 2007 11 03 | 691 | 0.0  | 0.4+ |
| 2000 11 02 | 691 | 0.2+ | 0.2− | 2007 11 02 | G96 | 0.4+ | 0.4− | 2007 11 03 | 691 | 0.3− | 0.4+ |
| 2000 11 02 | 691 | 0.3+ | 0.0  | 2007 11 02 | G96 | 0.5+ | 0.3− | 2007 11 05 | 691 | 0.2− | 0.0  |
| 2006 04 30 | 699 | 0.9+ | 0.9+ | 2007 11 02 | G96 | 0.9+ | 0.3− | 2007 11 05 | 691 | 0.1− | 0.3+ |
| 2006 04 30 | 699 | 0.7− | 1.0+ | 2007 11 02 | G96 | 0.8+ | 0.5− | 2007 11 05 | 691 | 0.0  | 0.1+ |
| 2006 04 30 | 699 | 0.0  | 1.2+ | 2007 11 02 | G96 | 0.1+ | 0.3− | 2007 11 09 | 691 | 0.6− | 0.5+ |
| 2006 04 30 | 699 | 0.8+ | 0.7+ | 2007 11 02 | G96 | 0.7+ | 0.5− | 2007 11 09 | 691 | 0.5− | 0.3− |
| 2007 10 05 | 691 | 0.0  | 0.5− | 2007 11 02 | G96 | 0.1− | 0.1+ | 2007 11 09 | 691 | 0.2− | 0.0  |
| 2007 10 05 | 691 | 0.5+ | 0.3− | 2007 11 02 | G96 | 0.7+ | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 2007 10 05 | 691 | 0.1+ | 0.1− | 2007 11 02 | G96 | 1.4+ | 0.3+ | 2007 11 13 | 691 | 0.4− | 0.0  |
| 2007 10 11 | 703 | 1.2− | 0.7+ | 2007 11 02 | G96 | 0.3+ | 0.1− | 2007 11 13 | 691 | 0.1− | 0.1− |
| 2007 10 11 | 703 | 0.3− | 0.9+ | 2007 11 02 | G96 | 0.5+ | 0.4− |            |     |      |      |
| 2007 10 11 | 703 | 0.7+ | 1.7+ | 2007 11 03 | 691 | 0.2− | 0.3+ |            |     |      |      |

**2007 VG<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 140.34905  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29067777 | $\omega$ | 14.44005  | −0.24009738   | +0.96685888 |
| <i>a</i> | 2.2569824  | $\Omega$ | 241.73079 | −0.90013678   | −0.25522583 |
| <i>e</i> | 0.0738851  | <i>i</i> | 5.65703   | −0.36346531   | −0.00660895 |
| <i>P</i> | 3.39       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 25 | 691 | 0.2− | 0.1+ | 2006 05 20 | G96 | 0.2+ | 0.4+ | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 2000 11 25 | 691 | 0.1− | 0.2+ | 2006 05 20 | G96 | 0.1+ | 0.3+ | 2007 11 11 | G96 | 0.7+ | 0.5− |
| 2000 11 25 | 691 | 0.1+ | 0.3+ | 2006 05 20 | G96 | 0.2− | 0.1+ | 2007 11 11 | G96 | 0.1+ | 0.3− |
| 2002 02 13 | 645 | 0.0  | 0.1+ | 2007 11 02 | G96 | 0.2+ | 0.2− | 2007 11 11 | G96 | 0.0  | 0.1+ |
| 2002 02 13 | 645 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.0  | 2007 11 11 | G96 | 0.0  | 0.6+ |
| 2003 07 24 | 644 | 0.2− | 0.4+ | 2007 11 02 | G96 | 0.0  | 0.2− | 2007 11 18 | G96 | 0.1+ | 0.1− |
| 2003 07 24 | 644 | 0.0  | 0.4+ | 2007 11 02 | G96 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.0  | 0.2− |
| 2003 07 24 | 644 | 0.1+ | 0.2+ | 2007 11 03 | 691 | 0.3− | 0.1− | 2007 11 18 | G96 | 0.3+ | 0.1+ |
| 2006 05 20 | G96 | 0.1− | 0.1+ | 2007 11 03 | 691 | 0.2− | 0.0  | 2007 11 18 | G96 | 0.6+ | 0.2− |

**2007 VE<sub>27</sub> = 2004 DX<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 209.58856  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.16825345 | $\omega$ | 193.84078 | −0.95902535   | −0.26923411 |
| <i>a</i> | 3.2495762  | $\Omega$ | 330.08566 | +0.27385896   | −0.80111080 |
| <i>e</i> | 0.0361529  | <i>i</i> | 10.18954  | +0.07260611   | −0.53454137 |
| <i>P</i> | 5.86       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 23 | 704 | 0.1+  | 0.6+  | 2007 09 12 | 703 | 0.6− | 0.1+ | 2007 11 08 | G98 | 0.8+ | 0.4− |
| 2004 02 23 | 704 | 0.2+  | 0.3−  | 2007 09 12 | 703 | 0.6− | 0.3+ | 2007 11 11 | G98 | 0.1− | 0.3− |
| 2004 02 23 | 704 | 1.0+  | 0.4+  | 2007 11 02 | G98 | 0.1+ | 0.6+ | 2007 11 11 | G98 | 0.8− | 0.0  |
| 2004 02 26 | 704 | 0.5+  | 0.1+  | 2007 11 02 | G98 | 0.8− | 0.1+ | 2007 11 11 | G98 | 0.1− | 0.0  |
| 2004 02 26 | 704 | 1.0−  | 0.9−  | 2007 11 02 | G98 | 0.6+ | 0.2− | 2007 11 11 | G98 | 0.4− | 0.2+ |
| 2004 02 26 | 704 | 0.9−  | 0.1−  | 2007 11 07 | G98 | 0.8+ | 0.1+ | 2007 11 11 | G98 | 0.1− | 0.4− |
| 2007 09 09 | 691 | 0.0   | 0.0   | 2007 11 07 | G98 | 0.0  | 0.0  | 2007 12 04 | G98 | 0.2+ | 0.4+ |
| 2007 09 09 | 691 | 0.1+  | 0.0   | 2007 11 07 | G98 | 0.4− | 0.4+ | 2007 12 04 | G98 | 0.0  | 0.5+ |
| 2007 09 09 | 691 | 0.1+  | 0.1−  | 2007 11 08 | G98 | 0.3+ | 0.1+ | 2007 12 04 | G98 | 0.5− | 0.1− |
| 2007 09 12 | 703 | 0.1−  | 0.9−  | 2007 11 08 | G98 | 0.0  | 0.5− |            |     |      |      |
| 2007 09 12 | 703 | (1.6− | 0.7+) | 2007 11 08 | G98 | 0.8+ | 0.3+ |            |     |      |      |

**2007 VJ<sub>27</sub> = 1998 XQ<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 80.75363   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22136628 | $\omega$ | 256.29654 | +0.60581908   | +0.77886993 |
| <i>a</i> | 2.7064192  | $\Omega$ | 52.18001  | -0.62719471   | +0.59305793 |
| <i>e</i> | 0.1641648  | <i>i</i> | 11.85715  | -0.48949979   | +0.20406845 |
| <i>P</i> | 4.45       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 09 | 691 | 0.5- | 0.4- | 2007 10 08 | 691 | 0.0  | 0.4- | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 1998 12 09 | 691 | 0.3- | 0.1- | 2007 10 08 | 691 | 0.1+ | 0.2- | 2007 11 14 | 691 | 0.0  | 0.0  |
| 1998 12 09 | 691 | 0.0  | 0.2+ | 2007 10 08 | 691 | 0.3- | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.8- |
| 1998 12 13 | 691 | 0.8+ | 0.2- | 2007 11 01 | 291 | 0.4+ | 0.2+ | 2007 11 14 | 691 | 0.3- | 0.3+ |
| 1998 12 13 | 691 | 0.1- | 0.7+ | 2007 11 01 | 291 | 0.7+ | 0.2+ | 2007 11 18 | 691 | 0.3- | 0.2- |
| 2002 09 10 | 644 | 0.2- | 0.1+ | 2007 11 01 | 291 | 0.4+ | 0.4+ | 2007 11 18 | 691 | 0.3- | 0.1- |
| 2002 09 10 | 644 | 0.4+ | 0.0  | 2007 11 03 | 691 | 0.1- | 0.4+ | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2002 09 10 | 644 | 0.3- | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 12 05 | 691 | 0.1- | 0.2- |
| 2007 09 14 | G96 | 0.6+ | 0.2- | 2007 11 03 | 691 | 0.0  | 0.3+ | 2007 12 05 | 691 | 0.5- | 0.0  |
| 2007 09 14 | G96 | 0.1- | 0.3- | 2007 11 05 | G96 | 0.4+ | 0.1- | 2007 12 05 | 691 | 0.1+ | 0.0  |
| 2007 09 14 | G96 | 0.2- | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.3- |            |     |      |      |
| 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.2- |            |     |      |      |

**2007 VZ<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 336.80321  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24228719 | $\omega$ | 343.56791 | +0.26917453   | -0.96120572 |
| <i>a</i> | 2.5482914  | $\Omega$ | 90.78637  | +0.89025956   | +0.22447122 |
| <i>e</i> | 0.1182809  | <i>i</i> | 3.45381   | +0.36740031   | +0.16030047 |
| <i>P</i> | 4.07       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.1+ | 0.2+ | 2007 10 21 | 691 | 0.1+ | 0.4- | 2007 11 17 | 703 | 0.7- | 1.3+ |
| 2003 11 19 | 691 | 0.1+ | 0.1+ | 2007 10 21 | 691 | 0.1+ | 0.4- | 2007 11 17 | 703 | 0.5- | 0.4+ |
| 2003 11 19 | 691 | 0.1+ | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.2+ | 2007 11 17 | 703 | 1.3+ | 1.4+ |
| 2003 11 24 | 699 | 0.5+ | 1.1- | 2007 11 02 | 691 | 0.2+ | 0.2+ | 2007 11 17 | 703 | 0.1- | 0.9- |
| 2003 11 24 | 699 | 0.5- | 0.5- | 2007 11 02 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.3- |
| 2003 11 24 | 699 | 0.5- | 0.3- | 2007 11 03 | 691 | 1.3- | 0.8+ | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2003 11 24 | 699 | 0.4- | 0.8- | 2007 11 03 | 691 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.4- |
| 2007 10 20 | 703 | 0.2+ | 1.1- | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.3- |
| 2007 10 20 | 703 | 0.7+ | 0.2+ | 2007 11 15 | 699 | 1.3+ | 0.9+ | 2007 12 05 | 691 | 0.1+ | 0.0  |
| 2007 10 20 | 703 | 0.3- | 0.4+ | 2007 11 15 | 699 | 0.1+ | 0.2- | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2007 10 20 | 703 | 0.7+ | 1.1+ | 2007 11 15 | 699 | 0.5- | 0.7- | 2007 12 05 | 691 | 0.2- | 0.0  |
| 2007 10 21 | 691 | 0.1- | 0.3- | 2007 11 15 | 699 | 0.4+ | 0.1+ |            |     |      |      |

**2007 VQ<sub>28</sub> = 2004 GQ<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 257.21738  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18026441 | $\omega$ | 261.38357 | -0.94945151   | -0.31378363 |
| <i>a</i> | 3.1035784  | $\Omega$ | 260.32865 | +0.29149557   | -0.87059695 |
| <i>e</i> | 0.0940771  | <i>i</i> | 0.52526   | +0.11649967   | -0.37894694 |
| <i>P</i> | 5.47       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 25 | 691 | 0.7- | 0.5- | 2001 09 20 | 691 | 0.3+ | 0.5+ | 2007 11 02 | 291 | 0.0  | 0.2+ |
| 1993 03 25 | 691 | 0.6- | 0.3- | 2004 03 30 | 291 | 0.6+ | 0.1+ | 2007 11 02 | 291 | 0.3- | 0.2+ |
| 1993 03 25 | 691 | 1.0- | 0.5- | 2004 03 30 | 291 | 0.7+ | 0.0  | 2007 11 02 | 291 | 0.7- | 0.0  |
| 1995 09 26 | 691 | 0.2- | 0.9- | 2004 03 30 | 291 | 0.7+ | 0.6+ | 2007 11 03 | 691 | 0.1- | 0.3+ |
| 1995 09 26 | 691 | 0.3- | 1.0- | 2004 04 12 | 691 | 0.1+ | 0.6+ | 2007 11 03 | 691 | 0.1+ | 0.4+ |
| 1995 09 26 | 691 | 0.5+ | 0.4+ | 2004 04 12 | 691 | 0.1+ | 0.3+ | 2007 11 03 | 691 | 0.0  | 0.1+ |
| 1996 11 05 | 691 | 1.5+ | 0.7+ | 2004 04 12 | 691 | 0.1- | 0.5+ | 2007 11 11 | G96 | 0.4+ | 0.3- |
| 1996 11 05 | 691 | 0.4+ | 0.2- | 2004 04 19 | 691 | 0.1+ | 0.3+ | 2007 11 11 | G96 | 0.2+ | 0.4- |
| 1996 11 05 | 691 | 0.3+ | 0.1- | 2004 04 19 | 691 | 0.3+ | 0.1+ | 2007 11 11 | G96 | 0.1+ | 0.4- |
| 1998 01 31 | 691 | 0.1- | 0.5- | 2004 04 19 | 691 | 0.3+ | 0.4+ | 2007 11 11 | G96 | 0.1- | 0.3- |
| 1998 01 31 | 691 | 0.1+ | 0.4- | 2006 08 27 | 691 | 0.2- | 0.3+ | 2007 11 14 | 691 | 0.2- | 0.2+ |
| 1998 01 31 | 691 | 0.2+ | 0.4- | 2006 08 27 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 691 | 0.4- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 12 | 695 | 0.2- | 0.1+ | 2006 08 27 | 691 | 0.0  | 0.4+ | 2007 11 14 | 691 | 0.1- | 0.1+ |
| 2001 09 12 | 695 | 0.1- | 0.1- | 2007 10 11 | 691 | 0.0  | 0.4- | 2007 12 05 | 691 | 0.1+ | 0.1+ |
| 2001 09 20 | 691 | 0.5- | 0.1- | 2007 10 11 | 691 | 0.1- | 0.0  | 2007 12 05 | 691 | 0.6- | 0.1+ |
| 2001 09 20 | 691 | 0.1+ | 0.1- | 2007 10 11 | 691 | 0.1- | 0.1- | 2007 12 05 | 691 | 0.6- | 0.3+ |

**2007 VB<sub>29</sub> = 2001 ST<sub>308</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 53.88798   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18001067 | $\omega$ | 311.96376 | +0.91810603   | +0.39618468 |
| <i>a</i> | 3.1064942  | $\Omega$ | 24.70230  | -0.35547234   | +0.83530948 |
| <i>e</i> | 0.1701177  | <i>i</i> | 1.49592   | -0.17527334   | +0.38117681 |
| <i>P</i> | 5.48       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 22 | 704 | 0.2+ | 0.0  | 2007 09 18 | G96 | 0.3- | 0.5- | 2007 11 04 | 691 | 0.3- | 0.0  |
| 2001 09 22 | 704 | 1.1+ | 0.1- | 2007 09 18 | G96 | 0.0  | 0.4- | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2001 09 22 | 704 | 0.0  | 0.1+ | 2007 09 18 | G96 | 0.2+ | 0.6- | 2007 11 04 | 691 | 0.2- | 0.2+ |
| 2001 09 23 | 704 | 0.2- | 1.0+ | 2007 09 18 | G96 | 0.0  | 0.5- | 2007 11 15 | 704 | 0.7- | 1.0+ |
| 2001 09 23 | 704 | 0.7- | 1.5+ | 2007 10 07 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.5- | 0.5- |
| 2001 09 23 | 704 | 0.4- | 0.3+ | 2007 10 07 | 691 | 0.3+ | 0.2- | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2001 09 23 | 704 | 0.1- | 0.2+ | 2007 10 07 | 691 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.3+ | 1.4+ |
| 2001 09 23 | 704 | 0.5- | 0.2- | 2007 11 03 | G96 | 0.7+ | 0.3- | 2007 11 15 | 704 | 0.4+ | 0.9+ |
| 2001 10 17 | 644 | 0.1+ | 1.1- | 2007 11 03 | G96 | 0.4+ | 0.4- | 2007 11 17 | A77 | 0.7- | 0.2+ |
| 2001 10 17 | 644 | 0.0  | 0.7- | 2007 11 03 | G96 | 0.1+ | 0.5- | 2007 11 18 | A77 | 0.8- | 0.2- |
| 2001 10 17 | 644 | 0.4+ | 0.9- | 2007 11 03 | G96 | 0.4+ | 0.5- | 2007 11 18 | A77 | 0.9+ | 1.0- |

**2007 VK<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 317.62685  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20195732 | $\omega$ | 132.26807 | +0.08198478   | -0.99475095 |
| <i>a</i> | 2.8771531  | $\Omega$ | 312.92017 | +0.88801775   | +0.10080203 |
| <i>e</i> | 0.0417994  | <i>i</i> | 4.79622   | +0.45244113   | -0.01759246 |
| <i>P</i> | 4.88       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 19 | 691 | 0.0  | 0.2- | 2007 11 02 | 691 | 0.0  | 0.6- | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2004 01 19 | 691 | 0.2+ | 0.1+ | 2007 11 02 | 691 | 0.0  | 0.7+ | 2007 11 14 | 691 | 0.1- | 0.2- |
| 2004 01 19 | 691 | 0.4- | 0.1+ | 2007 11 02 | 691 | 0.2+ | 0.2+ | 2007 11 14 | 691 | 0.1- | 0.4+ |
| 2004 02 14 | 691 | 0.1+ | 0.2- | 2007 11 04 | 691 | 0.2+ | 0.4+ | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2004 02 14 | 691 | 0.3- | 0.1+ | 2007 11 04 | 691 | 0.2- | 0.1- | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2004 02 14 | 691 | 0.3+ | 0.1+ | 2007 11 04 | 691 | 0.0  | 0.4- | 2007 11 18 | 691 | 0.3+ | 0.3- |

**2007 VW<sub>30</sub> = 2006 KX<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 181.46688  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30930561 | $\omega$ | 285.33292 | -0.78525158   | +0.61500080 |
| <i>a</i> | 2.1654302  | $\Omega$ | 292.67282 | -0.53404993   | -0.73139626 |
| <i>e</i> | 0.0727165  | <i>i</i> | 4.46234   | -0.31332192   | -0.29467529 |
| <i>P</i> | 3.19       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 04 17 | 413 | 2.5- | 1.3+ | 2006 05 22 | E12 | 1.5+ | 0.2+ | 2007 11 02 | 691 | 0.1-  | 0.1-  |
| 1999 01 07 | 691 | 0.2+ | 0.1+ | 2006 05 22 | E12 | 0.5+ | 0.5+ | 2007 11 02 | 691 | 0.0   | 0.1-  |
| 1999 01 07 | 691 | 0.6+ | 0.1- | 2006 05 22 | E12 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.0   | 0.1+  |
| 1999 01 07 | 691 | 0.6+ | 0.0  | 2006 05 22 | E12 | 0.0  | 0.3+ | 2007 11 04 | 691 | 0.4-  | 0.6+  |
| 2000 08 01 | 807 | 0.9+ | 0.4+ | 2006 05 30 | E12 | 0.1- | 1.1+ | 2007 11 04 | 691 | 0.1-  | 0.1+  |
| 2000 08 01 | 807 | 0.8+ | 0.4+ | 2006 05 30 | E12 | 0.3- | 0.6+ | 2007 11 08 | 704 | 0.6+  | 0.9+  |
| 2004 11 11 | 691 | 0.1- | 0.1- | 2006 05 30 | E12 | 0.3- | 0.3+ | 2007 11 08 | 704 | 0.7+  | 0.7+  |
| 2004 11 11 | 691 | 0.1- | 0.1- | 2006 05 30 | E12 | 0.5- | 0.8+ | 2007 11 08 | 704 | 0.1-  | 1.2+  |
| 2004 11 11 | 691 | 0.2- | 0.2- | 2007 10 21 | 703 | 0.6- | 0.7+ | 2007 11 08 | 704 | 0.6+  | 0.6+  |
| 2004 12 14 | 703 | 1.5- | 0.5- | 2007 10 21 | 703 | 0.1+ | 1.2- | 2007 11 08 | 704 | 0.0   | 0.8+  |
| 2004 12 14 | 703 | 0.7- | 0.2- | 2007 10 21 | 703 | 0.9+ | 0.5- | 2007 11 12 | 703 | 1.0+  | 0.2+  |
| 2004 12 14 | 703 | 0.5- | 0.7- | 2007 10 21 | 703 | 1.7- | 0.1- | 2007 11 12 | 703 | (1.2+ | 1.6+) |
| 2004 12 14 | 703 | 0.6- | 0.3+ | 2007 10 21 | 703 | 0.1- | 0.4- | 2007 11 12 | 703 | (1.9+ | 0.3+) |
| 2006 05 22 | E12 | 0.0  | 0.3+ | 2007 10 21 | 703 | 0.3+ | 0.1+ | 2007 11 12 | 703 | 0.6+  | 1.4+  |

## 2007 DEC. 24

## M.P.O. 129975

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 22 | E12 | 0.3− | 0.1+ | 2007 10 21 | 703 | 0.3− | 1.0− | 2007 11 18 | 691 | 0.1− | 0.2+ |
| 2006 05 22 | E12 | 0.3+ | 0.5+ | 2007 10 21 | 703 | 1.2+ | 0.1− | 2007 11 18 | 691 | 0.4− | 0.3− |
| 2006 05 22 | E12 | 0.4− | 0.9− | 2007 11 02 | 691 | 0.1+ | 0.1− | 2007 11 18 | 691 | 0.2− | 0.1+ |

**2007 VZ<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 327.18666  |          | (2000.0)  | $\mathbf{P}$ |      | $\mathbf{Q}$ |   |
|-----|------------|----------|-----------|--------------|------|--------------|---|
| $n$ | 0.48487393 | $\omega$ | 99.13724  | +0.10609648  |      | −0.99429209  |   |
| $a$ | 1.6046617  | $\Omega$ | 344.75869 | +0.89465809  |      | +0.10039449  |   |
| $e$ | 0.1948503  | $i$      | 2.45468   | +0.43397055  |      | +0.03611338  |   |
| $P$ | 2.03       | $H$      | 21.1      | $G$          | 0.15 | $U$          | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 27 | 691 | 0.0  | 0.3+ | 2007 10 19 | 691 | 0.5− | 0.0  | 2007 11 07 | 704 | 1.3+ | 0.2+ |
| 2000 02 27 | 691 | 0.2+ | 0.2+ | 2007 10 19 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 689 | 0.2+ | 1.2+ |
| 2000 02 27 | 691 | 0.5+ | 0.4+ | 2007 10 19 | 691 | 0.1− | 0.1+ | 2007 11 18 | 689 | 0.1+ | 0.2− |
| 2002 01 11 | 644 | 0.1+ | 0.2− | 2007 11 02 | 691 | 0.1+ | 0.1− | 2007 11 18 | 689 | 0.6+ | 0.4− |
| 2002 01 11 | 644 | 0.0  | 0.7− | 2007 11 02 | 691 | 0.2− | 0.1+ | 2007 11 19 | 448 | 0.6+ | 0.0  |
| 2002 01 11 | 644 | 0.4− | 0.1− | 2007 11 02 | 691 | 0.2+ | 0.1+ | 2007 11 19 | 448 | 0.1− | 0.2− |
| 2002 02 04 | 644 | 0.8− | 0.1+ | 2007 11 04 | 691 | 0.4− | 0.1− | 2007 11 19 | 448 | 0.7+ | 0.0  |
| 2002 02 04 | 644 | 0.7− | 0.3− | 2007 11 04 | 691 | 0.0  | 0.2− | 2007 11 19 | 689 | 0.7+ | 0.0  |
| 2002 02 04 | 644 | 0.7− | 0.4− | 2007 11 04 | 691 | 0.0  | 0.2+ | 2007 11 19 | 689 | 0.5+ | 0.3+ |
| 2002 02 13 | 644 | 0.1+ | 0.3− | 2007 11 07 | 704 | 1.3− | 0.6− |            |     |      |      |
| 2002 02 13 | 644 | 0.4+ | 0.4− | 2007 11 07 | 704 | 0.2+ | 0.1+ |            |     |      |      |

**2007 VN<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 123.54672  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.21158763 | $\omega$ | 313.86377 | +0.09231468  | +0.99480124  |
| $a$ | 2.7891756  | $\Omega$ | 321.37152 | −0.89267589  | +0.06355373  |
| $e$ | 0.0250377  | $i$      | 3.94915   | −0.44114369  | +0.07957016  |
| $P$ | 4.66       | $H$      | 16.7      | $G$ 0.15     | $U$ 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 16 | 691 | 0.1+ | 0.0  | 2007 10 11 | 691 | 0.3+ | 0.2+ | 2007 11 07 | 704 | 0.3+ | 0.6− |
| 1993 10 16 | 691 | 0.6− | 0.1− | 2007 10 15 | 691 | 1.1− | 0.0  | 2007 11 07 | 704 | 0.6− | 0.1+ |
| 1993 10 16 | 691 | 0.5+ | 0.1− | 2007 10 15 | 691 | 0.4− | 0.5+ | 2007 11 07 | 704 | 0.4+ | 0.3+ |
| 2005 03 09 | 691 | 0.1− | 0.1+ | 2007 10 15 | 691 | 0.2+ | 0.1− | 2007 11 14 | 691 | 0.3− | 0.1+ |
| 2005 03 09 | 691 | 0.2− | 0.2− | 2007 11 02 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.1− | 0.5− |
| 2005 03 09 | 691 | 0.0  | 0.4+ | 2007 11 02 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.3+ | 0.2+ |
| 2005 04 06 | 691 | 0.1+ | 0.2− | 2007 11 02 | 691 | 0.0  | 0.2+ | 2007 11 18 | 691 | 0.2− | 0.1− |
| 2005 04 06 | 691 | 0.3+ | 0.0  | 2007 11 04 | 691 | 0.1+ | 0.5− | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2005 04 06 | 691 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.3+ | 0.2− | 2007 11 18 | 691 | 0.2− | 0.3− |
| 2007 10 11 | 691 | 0.3+ | 0.0  | 2007 11 04 | 691 | 0.2− | 0.4+ |            |     |      |      |
| 2007 10 11 | 691 | 1.1+ | 0.6+ | 2007 11 07 | 704 | 0.4− | 0.3− |            |     |      |      |

**2007 VD<sub>32</sub> = 2000 EA<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 198.97979  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20914273 | $\omega$ | 205.82503 | −0.91622289 | +0.40065218 |
| $a$ | 2.8108707  | $\Omega$ | 357.78413 | −0.34921757 | −0.80301964 |
| $e$ | 0.0089352  | $i$      | 5.44090   | −0.19642479 | −0.44117716 |
| $P$ | 4.71       | $H$      | 16.4      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1997 10 06 | 691 | 0.3− | 1.0+ | 2002 10 04 | 644 | 0.2− | 0.6+ | 2007 11 02 | 691 | 0.0   | 0.1+  |
| 1997 10 06 | 691 | 0.6− | 0.5+ | 2002 10 04 | 644 | 0.6+ | 0.7+ | 2007 11 02 | 691 | 0.1−  | 0.1+  |
| 1997 10 06 | 691 | 0.6− | 0.8+ | 2002 10 04 | 644 | 0.6+ | 0.8+ | 2007 11 02 | 691 | 0.2−  | 0.2+  |
| 1997 10 23 | 691 | 0.2− | 0.1− | 2004 01 16 | 691 | 0.3− | 0.2− | 2007 11 04 | 691 | 0.1−  | 0.0   |
| 1997 10 23 | 691 | 0.5− | 0.3+ | 2004 01 16 | 691 | 0.4− | 0.2− | 2007 11 04 | 691 | 0.2−  | 0.0   |
| 1997 10 23 | 691 | 0.8− | 0.4+ | 2004 01 16 | 691 | 0.1− | 0.3− | 2007 11 04 | 691 | 0.2+  | 0.1+  |
| 2000 03 10 | 704 | 1.0+ | 0.1+ | 2005 04 16 | 691 | 0.2+ | 0.3+ | 2007 11 07 | 704 | (0.5− | 2.2+) |
| 2000 03 10 | 704 | 0.8+ | 0.3+ | 2005 04 16 | 691 | 0.4+ | 0.3+ | 2007 11 07 | 704 | (0.2+ | 2.5+) |
| 2000 03 10 | 704 | 0.5+ | 0.5+ | 2005 04 16 | 691 | 0.2+ | 0.0  | 2007 11 07 | 704 | (1.5− | 2.2+) |
| 2000 03 10 | 704 | 0.5− | 0.4− | 2005 05 01 | 644 | 0.1− | 0.5+ | 2007 11 14 | 691 | 0.2+  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 10 | 704 | 0.2+ | 0.4+ | 2005 05 01 | 644 | 0.0  | 0.5+ | 2007 11 14 | 691 | 0.2− | 0.3+ |
| 2000 03 11 | 704 | 0.3− | 0.4+ | 2005 05 01 | 644 | 0.3+ | 0.9+ | 2007 11 14 | 691 | 0.2− | 0.2+ |
| 2000 03 11 | 704 | 0.2− | 0.4+ | 2007 10 15 | 691 | 0.0  | 0.4+ | 2007 11 18 | 691 | 0.2− | 0.1+ |
| 2000 03 11 | 704 | 0.5+ | 1.6+ | 2007 10 15 | 691 | 0.3+ | 0.2+ | 2007 11 18 | 691 | 0.4− | 0.1− |
| 2000 03 11 | 704 | 1.2+ | 0.7+ | 2007 10 15 | 691 | 0.1− | 0.3+ | 2007 11 18 | 691 | 0.4− | 0.4+ |

**2007 VF<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 53.23206   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26578492 | $\omega$ | 290.42151 | +0.76330469 | +0.63294297 |
| $a$ | 2.3957922  | $\Omega$ | 30.73969  | −0.45691506 | +0.67053105 |
| $e$ | 0.2485476  | $i$      | 14.66675  | −0.45672156 | +0.38700298 |
| $P$ | 3.71       | $H$      | 17.6      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 30 | 691 | 0.2+ | 0.1− | 2007 10 19 | 691 | 0.4− | 0.1− | 2007 11 04 | 691 | 0.3− | 0.1− |
| 2006 04 30 | 691 | 0.1+ | 0.2+ | 2007 10 19 | 691 | 0.6− | 0.2− | 2007 11 07 | 704 | 1.1+ | 0.7− |
| 2006 04 30 | 691 | 0.5− | 0.2+ | 2007 10 20 | 703 | 0.6+ | 1.0+ | 2007 11 07 | 704 | 0.1+ | 0.1− |
| 2006 05 19 | G96 | 0.6− | 0.1− | 2007 10 20 | 703 | 0.3+ | 0.7+ | 2007 11 07 | 704 | 0.6+ | 1.1− |
| 2006 05 19 | G96 | 0.0  | 0.0  | 2007 10 20 | 703 | 1.1+ | 0.8+ | 2007 11 07 | 704 | 1.2+ | 0.6− |
| 2006 05 19 | G96 | 0.1+ | 0.2− | 2007 10 20 | 703 | 0.6− | 0.4− | 2007 11 07 | 704 | 0.5− | 0.5+ |
| 2006 05 19 | G96 | 0.6+ | 0.0  | 2007 11 02 | 691 | 0.2− | 0.3− | 2007 11 07 | 703 | 0.1− | 0.4+ |
| 2007 10 11 | 691 | 0.0  | 0.4− | 2007 11 02 | 691 | 0.4− | 0.5− | 2007 11 07 | 703 | 0.2− | 1.5+ |
| 2007 10 11 | 691 | 0.1− | 0.3− | 2007 11 02 | 691 | 0.3− | 0.1− | 2007 11 07 | 703 | 0.3− | 0.5+ |
| 2007 10 11 | 691 | 0.2− | 0.4− | 2007 11 04 | 691 | 0.4− | 0.0  | 2007 11 07 | 703 | 0.5+ | 0.4+ |
| 2007 10 19 | 691 | 0.6− | 0.3− | 2007 11 04 | 691 | 0.5− | 0.0  |            |     |      |      |

**2007 VV<sub>32</sub> = 2002 GY<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 140.37803  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26882897 | $\omega$ | 5.73670   | −0.25328978 | +0.96155576 |
| $a$ | 2.3776723  | $\Omega$ | 249.62668 | −0.89200234 | −0.27458508 |
| $e$ | 0.0740571  | $i$      | 6.49797   | −0.37440101 | +0.00368129 |
| $P$ | 3.67       | $H$      | 16.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |             |            |     |           |            |     |             |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-------------|
| 2002 04 09 | 704 | (2.5+ 1.2+) | 2003 10 29 | 691 | 0.1+ 0.2+ | 2007 11 02 | 691 | 0.1+ 0.1+   |
| 2002 04 09 | 704 | (2.3+ 2.6+) | 2004 12 14 | 599 | 0.7− 0.4+ | 2007 11 02 | 691 | 0.1− 0.1+   |
| 2002 04 09 | 704 | (2.0+ 2.2+) | 2004 12 14 | 599 | 0.2+ 0.1− | 2007 11 04 | 691 | 0.0 0.1+    |
| 2002 04 09 | 704 | (3.2+ 2.3+) | 2004 12 14 | 599 | 0.4+ 0.4− | 2007 11 04 | 691 | 0.3+ 0.1−   |
| 2002 04 12 | 608 | 0.3− 0.4+   | 2004 12 14 | 599 | 0.1− 0.2+ | 2007 11 04 | 691 | 0.3− 0.4+   |
| 2002 04 12 | 608 | 1.0− 1.2+   | 2007 10 07 | 691 | 0.0 0.8−  | 2007 11 07 | 704 | 0.3+ 0.4+   |
| 2002 04 12 | 608 | 0.9− 0.7+   | 2007 10 07 | 691 | 0.0 0.3−  | 2007 11 07 | 704 | 0.3+ 1.4+   |
| 2002 04 18 | 644 | 1.3+ 0.2+   | 2007 10 07 | 691 | 0.1+ 0.1+ | 2007 11 07 | 704 | (0.6+ 2.1+) |
| 2002 04 18 | 644 | 1.3+ 0.7+   | 2007 10 19 | 691 | 0.1+ 0.1+ | 2007 11 14 | 691 | 0.1− 0.1−   |
| 2002 04 18 | 644 | 0.5+ 0.5−   | 2007 10 19 | 691 | 0.0 0.1+  | 2007 11 14 | 691 | 0.2+ 0.1−   |
| 2003 10 29 | 691 | 0.3− 0.2+   | 2007 10 19 | 691 | 0.0 0.0   | 2007 11 14 | 691 | 0.3− 0.1+   |
| 2003 10 29 | 691 | 0.0 0.3+    | 2007 11 02 | 691 | 0.3− 0.1+ |            |     |             |

**2007 VV<sub>34</sub> = 2007 UU<sub>48</sub> = 2003 BE<sub>1</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $\dot{M}$ | 78.30204   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----------|------------|----------|-----------|-------------|-------------|
| $n$       | 0.17318663 | $\omega$ | 264.85292 | +0.89121975 | +0.41005220 |
| $a$       | 3.1875706  | $\Omega$ | 70.82558  | −0.29016447 | +0.84395465 |
| $e$       | 0.0592671  | $i$      | 11.84438  | −0.34861432 | +0.34582906 |
| $P$       | 5.69       | $H$      | 15.5      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 19 | 644 | 0.6− | 1.0+ | 2006 09 26 | 703 | 0.4−  | 0.0   | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2001 10 19 | 644 | 0.4− | 1.1+ | 2006 09 26 | 703 | (1.3− | 2.5+) | 2007 11 18 | 691 | 0.0  | 0.3− |
| 2001 10 19 | 644 | 0.3− | 0.5+ | 2007 10 20 | G96 | 0.5+  | 0.1−  | 2007 11 18 | 691 | 0.1− | 0.3− |
| 2002 12 06 | 645 | 0.0  | 0.0  | 2007 10 20 | G96 | 0.5+  | 0.3−  | 2007 11 29 | D35 | 0.0  | 0.1− |
| 2002 12 06 | 645 | 0.1− | 0.0  | 2007 10 20 | G96 | 0.3+  | 0.1−  | 2007 11 29 | D35 | 0.3− | 0.3+ |
| 2002 12 13 | 645 | 0.1− | 0.0  | 2007 10 20 | G96 | 0.3+  | 0.3−  | 2007 11 29 | D35 | 0.8− | 0.4− |
| 2002 12 13 | 645 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.4+  | 0.1−  | 2007 12 03 | 703 | 0.2− | 0.7− |

|            |     |             |            |     |           |            |     |           |
|------------|-----|-------------|------------|-----|-----------|------------|-----|-----------|
| 2003 01 24 | 941 | (1.9– 0.2+) | 2007 10 24 | G96 | 0.3+ 0.3– | 2007 12 03 | 703 | 0.1+ 0.4– |
| 2003 01 24 | 941 | (1.7– 0.4+) | 2007 10 24 | G96 | 0.1+ 0.2– | 2007 12 03 | 703 | 0.7– 0.0  |
| 2003 01 24 | 941 | (1.5– 0.8+) | 2007 10 24 | G96 | 1.1+ 0.5+ | 2007 12 03 | 703 | 0.1– 0.3+ |
| 2003 01 24 | 941 | (1.7– 1.2+) | 2007 11 03 | 691 | 0.2– 0.1+ | 2007 12 04 | G96 | 0.4+ 0.3– |
| 2003 01 24 | 941 | 1.1– 1.3+   | 2007 11 03 | 691 | 0.1+ 0.2– | 2007 12 04 | G96 | 0.6+ 0.4– |
| 2003 01 25 | 941 | 1.4+ 0.8–   | 2007 11 03 | 691 | 0.1+ 0.2– | 2007 12 04 | G96 | 0.3+ 0.1– |
| 2003 01 25 | 941 | 1.1+ 0.3–   | 2007 11 04 | 691 | 0.1– 0.0  | 2007 12 04 | G96 | 0.1+ 0.3– |
| 2003 01 25 | 941 | 1.0+ 0.1–   | 2007 11 04 | 691 | 0.1– 0.1– | 2007 12 05 | 704 | 0.1– 1.2+ |
| 2003 01 26 | 941 | 1.3+ 0.8+   | 2007 11 04 | 691 | 0.1– 0.2+ | 2007 12 05 | 704 | 0.1+ 0.0  |
| 2006 09 26 | 703 | (2.4+ 0.8–) | 2007 11 14 | 704 | 0.4+ 0.5+ | 2007 12 05 | 704 | 0.2+ 0.5+ |
| 2006 09 26 | 703 | 0.8– 0.2–   | 2007 11 14 | 691 | 0.3– 0.2– | 2007 12 15 | G96 | 0.4+ 0.2– |
| 2006 09 26 | 703 | 0.1+ 0.4+   | 2007 11 14 | 704 | 0.4+ 0.7+ | 2007 12 15 | G96 | 0.2+ 0.8– |
| 2006 09 26 | 703 | (0.9+ 1.7–) | 2007 11 14 | 691 | 0.1– 0.1+ | 2007 12 15 | G96 | 0.2+ 0.2– |
| 2006 09 26 | 703 | (0.5– 1.6+) | 2007 11 14 | 704 | 0.3+ 0.8+ | 2007 12 15 | G96 | 0.4+ 0.6– |
| 2006 09 26 | 703 | 0.5+ 0.9+   | 2007 11 14 | 691 | 0.1– 0.0  |            |     |           |

**2007 VW<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 280.55030  | (2000.0) | <b>P</b>  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.18172741 | $\omega$ | 306.80928 | –0.81759181 |
| <i>a</i> | 3.0868991  | $\Omega$ | 198.10306 | +0.54904339 |
| <i>e</i> | 0.0969876  | <i>i</i> | 4.24276   | –0.76695165 |
| <i>P</i> | 5.42       | <i>H</i> | 16.4      | +0.17347909 |
|          |            |          |           | –0.28420062 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 0           |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2001 09 20 | 691 | 0.1– 0.2+ | 2006 09 28 | G96 | 0.1– 0.4+ | 2007 11 08 | 691 | 0.1+ 0.4– |
| 2001 09 20 | 691 | 0.2– 0.2+ | 2006 09 28 | G96 | 0.2– 0.1+ | 2007 11 08 | 691 | 0.7– 0.1+ |
| 2001 09 20 | 691 | 0.0 0.4+  | 2006 09 28 | G96 | 0.2+ 0.1– | 2007 11 19 | 291 | 0.3+ 0.2– |
| 2001 10 16 | 691 | 0.2+ 0.1– | 2007 10 20 | G96 | 0.7+ 0.2– | 2007 11 19 | 291 | 0.0 0.0   |
| 2001 10 16 | 691 | 0.2+ 0.3– | 2007 10 20 | G96 | 0.5+ 0.4+ | 2007 11 19 | 291 | 0.3+ 0.2+ |
| 2001 10 16 | 691 | 0.2– 0.1– | 2007 10 20 | G96 | 0.4+ 0.2+ | 2007 11 19 | 291 | 0.2+ 0.1+ |
| 2004 04 13 | 691 | 0.2+ 0.5+ | 2007 10 20 | G96 | 0.4– 0.0  | 2007 11 19 | 291 | 0.2+ 0.0  |
| 2004 04 13 | 691 | 0.3+ 0.1+ | 2007 11 03 | H07 | 0.5+ 0.1– | 2007 11 19 | 291 | 0.3+ 0.1– |
| 2004 04 13 | 691 | 0.1– 0.5+ | 2007 11 03 | H07 | 1.1+ 0.1+ | 2007 11 20 | G96 | 0.2+ 0.3+ |
| 2006 08 29 | 691 | 0.3+ 0.1+ | 2007 11 04 | 691 | 0.4– 0.1– | 2007 11 20 | G96 | 0.4– 0.4+ |
| 2006 08 29 | 691 | 0.1– 0.4+ | 2007 11 04 | 691 | 0.0 0.2+  | 2007 11 20 | G96 | 0.1+ 0.1+ |
| 2006 08 29 | 691 | 0.2– 0.1+ | 2007 11 04 | 691 | 0.0 0.2+  | 2007 11 20 | G96 | 0.2– 0.1+ |
| 2006 09 28 | G96 | 0.5– 0.5– | 2007 11 08 | 691 | 0.8– 0.4+ |            |     |           |

**2007 VQ<sub>38</sub> = 1995 MH<sub>2</sub> = 2003 AC<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.71586   | (2000.0) | <b>P</b>  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.18268523 | $\omega$ | 120.64540 | +0.84073018 |
| <i>a</i> | 3.0760998  | $\Omega$ | 270.22560 | +0.40184550 |
| <i>e</i> | 0.0498751  | <i>i</i> | 11.60747  | +0.36289524 |
| <i>P</i> | 5.40       | <i>H</i> | 15.0      | +0.24734213 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |             |            |     |             |            |     |             |
|------------|-----|-------------|------------|-----|-------------|------------|-----|-------------|
| 1995 06 24 | 691 | 0.6+ 0.1+   | 2007 11 02 | 704 | 0.8– 0.0    | 2007 11 18 | D35 | 0.2+ 0.3+   |
| 1995 06 24 | 691 | 0.4+ 0.1–   | 2007 11 02 | 704 | 0.0 0.5–    | 2007 11 18 | D35 | 0.1+ 0.1+   |
| 1995 06 24 | 691 | 0.3+ 0.1–   | 2007 11 02 | 703 | 0.6+ 0.2+   | 2007 11 20 | 704 | 0.8+ 1.3–   |
| 1995 06 30 | 691 | 0.3– 0.0    | 2007 11 02 | 703 | 0.6– 0.3–   | 2007 11 20 | 704 | 0.4+ 0.3+   |
| 1995 06 30 | 691 | 0.6– 0.1–   | 2007 11 02 | 703 | 0.4– 0.3–   | 2007 11 20 | 704 | 0.3+ 0.5+   |
| 1995 06 30 | 691 | 0.2– 0.2–   | 2007 11 02 | 703 | 0.5– 0.4+   | 2007 11 20 | 704 | 0.1– 0.5+   |
| 2001 08 26 | 699 | 1.1– 0.3+   | 2007 11 03 | 291 | 0.2– 0.1–   | 2007 11 20 | 704 | 1.3+ 0.3–   |
| 2001 08 26 | 699 | (1.9+ 1.3–) | 2007 11 03 | 291 | 0.3– 0.1–   | 2007 11 20 | G96 | 0.2+ 0.4–   |
| 2001 08 26 | 699 | 1.0+ 1.0–   | 2007 11 03 | 291 | 0.3– 0.2–   | 2007 11 20 | G96 | 0.2+ 0.5–   |
| 2001 08 26 | 699 | 0.6– 0.6+   | 2007 11 08 | 704 | 0.0 0.9+    | 2007 11 20 | G96 | 0.2+ 0.5–   |
| 2001 09 21 | 699 | 1.1– 0.8+   | 2007 11 08 | 704 | 0.3– 1.0+   | 2007 11 20 | G96 | 0.2+ 0.4–   |
| 2001 09 21 | 699 | 0.9– 1.2+   | 2007 11 08 | 704 | 0.0 0.2+    | 2007 12 12 | 704 | 0.7– 0.5+   |
| 2001 09 21 | 699 | 0.1– 0.3+   | 2007 11 08 | 704 | 0.4– 0.5+   | 2007 12 12 | 704 | 0.3+ 0.6–   |
| 2001 09 21 | 699 | 1.0+ 0.6+   | 2007 11 15 | G96 | 0.2– 0.3–   | 2007 12 12 | 704 | (0.1+ 1.7–) |
| 2003 01 04 | 704 | 0.4– 0.9+   | 2007 11 15 | G96 | 0.2+ 0.3–   | 2007 12 12 | 704 | 0.5– 1.2–   |
| 2003 01 04 | 704 | 0.5– 0.1–   | 2007 11 15 | G96 | 0.2+ 0.4–   | 2007 12 13 | 704 | 0.3+ 0.0    |
| 2003 01 04 | 704 | 0.4– 0.8+   | 2007 11 15 | G96 | (1.0– 1.7–) | 2007 12 13 | 704 | 0.2+ 0.1–   |
| 2003 01 08 | 704 | 1.1+ 0.5–   | 2007 11 17 | 704 | 0.4+ 0.3–   | 2007 12 13 | 704 | 0.3– 0.3+   |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2003 01 08 | 704 | 1.0+ 0.2+ | 2007 11 17 | 704 | 0.4+ 0.8– | 2007 12 13 | 704 | 0.4+ 0.2– |
| 2003 01 08 | 704 | 0.4– 0.8+ | 2007 11 17 | 704 | 0.5+ 0.1+ | 2007 12 13 | 704 | 0.7– 0.1– |
| 2007 11 02 | 704 | 0.2+ 0.2– | 2007 11 17 | 704 | 0.2+ 0.5– | 2007 12 16 | 704 | 0.3+ 0.8+ |
| 2007 11 02 | 704 | 0.3+ 0.4– | 2007 11 17 | 704 | 1.3+ 0.5+ | 2007 12 16 | 704 | 0.1– 0.5+ |
| 2007 11 02 | 704 | 0.4– 1.0– | 2007 11 18 | D35 | 0.5+ 0.4+ | 2007 12 16 | 704 | 1.3– 0.4+ |

**2007 VS<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.24290   | (2000.0) | <b>P</b>  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.26827296 | $\omega$ | 209.29992 | +0.91462014 |
| <i>a</i> | 2.3809565  | $\Omega$ | 174.51902 | +0.38681165 |
| <i>e</i> | 0.2930509  | <i>i</i> | 5.38211   | +0.11767223 |
| <i>P</i> | 3.67       | <i>H</i> | 17.3      | +0.28732656 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 2           |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |             |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-------------|
| 2003 07 22 | 599 | 0.2– 0.7– | 2007 11 02 | 703 | 0.5+ 0.1– | 2007 11 17 | 703 | 0.0 0.2+    |
| 2003 07 22 | 599 | 0.1– 0.0  | 2007 11 02 | 703 | 0.2+ 0.2+ | 2007 11 17 | 703 | 0.1+ 0.5–   |
| 2003 07 22 | 599 | 0.7– 0.8+ | 2007 11 04 | G96 | 0.3+ 0.6– | 2007 11 18 | G96 | 0.4+ 0.3–   |
| 2003 07 22 | 599 | 1.1+ 0.3+ | 2007 11 04 | G96 | 0.3+ 0.4– | 2007 11 18 | G96 | 0.1+ 0.4–   |
| 2003 08 23 | 644 | 0.3– 0.6+ | 2007 11 04 | G96 | 0.4+ 0.5– | 2007 11 18 | G96 | 0.2+ 0.4–   |
| 2003 08 23 | 644 | 0.5– 0.2– | 2007 11 09 | 703 | 0.2– 0.3+ | 2007 11 18 | G96 | 0.1– 0.4–   |
| 2003 08 23 | 644 | 0.3+ 0.7+ | 2007 11 09 | 703 | 0.1– 0.4+ | 2007 11 18 | 699 | (0.1+ 2.0–) |
| 2003 10 24 | 291 | 0.1– 0.0  | 2007 11 09 | 703 | 0.6– 0.1+ | 2007 11 18 | 699 | (0.2– 1.7–) |
| 2003 10 24 | 291 | 0.2+ 0.0  | 2007 11 09 | 703 | 0.4– 0.1+ | 2007 11 18 | 699 | 1.0– 0.9–   |
| 2003 10 24 | 291 | 0.1– 0.2+ | 2007 11 11 | 704 | 0.5– 0.6+ | 2007 11 18 | 699 | (1.7– 0.0 ) |
| 2005 03 08 | G96 | 0.2+ 0.9+ | 2007 11 11 | 704 | 0.8– 0.8+ | 2007 11 29 | 704 | 0.5+ 0.2–   |
| 2005 03 08 | G96 | 0.3+ 0.6+ | 2007 11 11 | 704 | 0.7– 0.4+ | 2007 11 29 | 704 | 0.3– 0.2+   |
| 2005 03 08 | G96 | 0.0 0.7+  | 2007 11 11 | 704 | 1.4– 0.4+ | 2007 11 29 | 704 | 0.6+ 0.3–   |
| 2005 03 08 | G96 | 0.3+ 0.1+ | 2007 11 11 | 704 | 1.1– 0.4+ | 2007 11 29 | 704 | 0.4– 0.2+   |
| 2007 10 13 | 703 | 0.8+ 0.4+ | 2007 11 14 | 699 | 0.6+ 0.5+ | 2007 12 05 | 703 | 0.5– 0.2–   |
| 2007 10 13 | 703 | 0.3– 0.4– | 2007 11 14 | 699 | 0.1+ 0.4+ | 2007 12 05 | 703 | 0.6+ 0.5+   |
| 2007 10 13 | 703 | 0.4– 0.3+ | 2007 11 14 | 699 | 0.7+ 0.4– | 2007 12 05 | 703 | 0.5– 0.0    |
| 2007 10 13 | 703 | 0.4+ 0.6– | 2007 11 14 | 699 | 0.5+ 0.0  | 2007 12 05 | 703 | 0.4– 0.3+   |
| 2007 11 02 | 703 | 0.5+ 0.7– | 2007 11 17 | 703 | 0.2+ 0.2+ |            |     |             |
| 2007 11 02 | 703 | 0.8+ 0.2+ | 2007 11 17 | 703 | 0.9+ 0.5+ |            |     |             |

**2007 VT<sub>38</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 19.36022   | (2000.0) | <b>P</b>  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|
| <i>n</i> | 0.27807854 | $\omega$ | 253.32781 | +0.92749636 |
| <i>a</i> | 2.3246508  | $\Omega$ | 127.93305 | +0.37077781 |
| <i>e</i> | 0.1875586  | <i>i</i> | 6.21643   | +0.04768979 |
| <i>P</i> | 3.54       | <i>H</i> | 17.2      | +0.34178878 |
|          |            |          | <i>G</i>  | 0.15        |
|          |            |          | <i>U</i>  | 1           |

Residuals in seconds of arc

|            |     |           |            |     |             |            |     |           |
|------------|-----|-----------|------------|-----|-------------|------------|-----|-----------|
| 2003 07 08 | 644 | 0.0 0.6+  | 2006 05 22 | 691 | 0.3– 0.6+   | 2007 11 13 | G96 | 0.4+ 0.1– |
| 2003 07 08 | 644 | 0.4– 0.5+ | 2007 11 02 | 703 | 1.0– 0.3+   | 2007 11 13 | G96 | 0.1+ 0.2– |
| 2003 07 08 | 644 | 0.2– 0.9+ | 2007 11 02 | 703 | 0.1+ 0.8+   | 2007 11 14 | 699 | 1.3+ 1.4– |
| 2003 07 08 | 644 | 0.1– 0.5+ | 2007 11 02 | 703 | 0.6– 0.6+   | 2007 11 14 | 699 | 1.6+ 0.2+ |
| 2003 07 08 | 644 | 0.1+ 0.4+ | 2007 11 02 | 703 | 0.7– 0.7–   | 2007 11 14 | 699 | 0.4– 1.9+ |
| 2003 07 08 | 644 | 0.1– 0.5+ | 2007 11 04 | G96 | 0.3– 0.1+   | 2007 11 14 | 699 | 0.8– 0.5+ |
| 2005 02 04 | G96 | 0.3– 0.2+ | 2007 11 04 | G96 | 0.2– 0.1–   | 2007 11 18 | G96 | 0.3+ 0.0  |
| 2005 02 04 | G96 | 0.2– 0.3+ | 2007 11 04 | G96 | 0.0 0.1–    | 2007 11 18 | G96 | 0.1– 0.1+ |
| 2005 02 04 | G96 | 0.4– 0.1– | 2007 11 04 | G96 | 0.0 0.1–    | 2007 11 18 | G96 | 0.1– 0.1– |
| 2005 02 04 | G96 | 0.6– 0.3+ | 2007 11 11 | 704 | (0.4– 2.0+) | 2007 11 18 | G96 | 0.1+ 0.1+ |
| 2005 03 01 | 691 | 0.1+ 0.4+ | 2007 11 11 | 704 | 0.1+ 1.3+   | 2007 12 05 | 703 | 0.8– 0.4+ |
| 2005 03 01 | 691 | 0.6+ 0.3+ | 2007 11 11 | 704 | 0.1+ 0.4–   | 2007 12 05 | 703 | 0.1– 0.1+ |
| 2005 03 01 | 691 | 0.0 0.1+  | 2007 11 11 | 704 | 1.2– 0.1–   | 2007 12 05 | 703 | 0.5+ 0.0  |
| 2006 05 22 | 691 | 0.0 0.3–  | 2007 11 13 | G96 | 0.1+ 0.0    | 2007 12 05 | 703 | 0.2+ 0.2+ |
| 2006 05 22 | 691 | 0.4+ 0.2+ | 2007 11 13 | G96 | 0.3+ 0.0    |            |     |           |

2007 DEC. 24

M.P.O. 129977

**2007 VG<sub>39</sub> = 2000 EZ<sub>188</sub> = 2005 GV<sub>164</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 284.58620  |          | (2000.0) | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.21767431 | $\omega$ | 98.10899 | -0.56372926 |      | -0.82581346 |   |
| <i>a</i> | 2.7369358  | $\Omega$ | 26.22387 | +0.74328177 |      | -0.51541484 |   |
| <i>e</i> | 0.0468365  | <i>i</i> | 2.01522  | +0.36019652 |      | -0.22886605 |   |
| <i>P</i> | 4.53       | <i>H</i> | 16.1     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 11 17 | 691 | 0.0   | 0.6-  | 2005 06 01 | G96 | 0.6-  | 0.4+  | 2007 11 07 | 703 | 0.1-  | 1.1-  |
| 1998 11 17 | 691 | 0.0   | 0.2-  | 2005 06 01 | G96 | 0.3-  | 0.3+  | 2007 11 07 | 703 | 1.1-  | 0.1+  |
| 1998 11 17 | 691 | 0.2-  | 0.3-  | 2005 06 01 | G96 | 0.0   | 0.2+  | 2007 11 07 | 703 | 0.6-  | 0.1-  |
| 2000 03 03 | 704 | 0.6+  | 0.4+  | 2005 06 01 | G96 | 0.2-  | 0.0   | 2007 11 07 | 300 | 0.1+  | 0.4-  |
| 2000 03 03 | 704 | 0.3-  | 0.1-  | 2007 09 10 | G96 | 0.5+  | 0.4-  | 2007 11 07 | 300 | 0.1+  | 0.3+  |
| 2000 03 03 | 704 | 0.5+  | 0.8+  | 2007 09 10 | G96 | 0.2+  | 0.0   | 2007 11 07 | 300 | 0.5-  | 0.0   |
| 2000 03 03 | 704 | 1.6+  | 0.2+  | 2007 09 10 | G96 | 0.4+  | 0.2-  | 2007 11 09 | 300 | 0.7-  | 0.0   |
| 2000 03 03 | 704 | 0.5+  | 0.1-  | 2007 09 10 | G96 | 0.1+  | 0.5-  | 2007 11 09 | 300 | 0.4-  | 0.6+  |
| 2000 03 11 | 704 | 0.2+  | 0.1-  | 2007 10 06 | 691 | 0.3-  | 0.1+  | 2007 11 09 | 300 | 0.9+  | 0.1-  |
| 2000 03 11 | 704 | 0.4-  | 0.8+  | 2007 10 06 | 691 | 0.3-  | 0.3+  | 2007 11 09 | 300 | 0.7+  | 0.3+  |
| 2000 03 11 | 704 | 0.8-  | 1.1+  | 2007 10 06 | 691 | 0.3-  | 0.3+  | 2007 11 09 | 300 | 0.3+  | 0.0   |
| 2000 03 11 | 704 | (2.1- | 0.1+) | 2007 10 18 | 691 | 0.4-  | 0.0   | 2007 11 15 | 704 | (1.5- | 2.6+) |
| 2002 08 31 | 291 | 0.3-  | 0.5+  | 2007 10 18 | 691 | 0.2-  | 0.1+  | 2007 11 15 | 704 | (0.7- | 1.5+) |
| 2002 08 31 | 291 | 0.2-  | 0.4+  | 2007 10 18 | 691 | 0.3-  | 0.1+  | 2007 11 15 | 704 | 0.9-  | 1.1+  |
| 2002 08 31 | 291 | 0.1-  | 0.5+  | 2007 11 03 | 691 | 0.1+  | 0.3+  | 2007 11 15 | 704 | 0.3+  | 0.4+  |
| 2002 10 08 | 291 | 0.0   | 0.4+  | 2007 11 03 | 691 | 0.2-  | 0.2+  | 2007 11 15 | 704 | 0.7+  | 0.6+  |
| 2002 10 08 | 291 | 0.1+  | 0.3+  | 2007 11 03 | 691 | 0.1+  | 0.1+  | 2007 11 18 | G96 | 0.2+  | 0.4-  |
| 2002 10 08 | 291 | 0.1+  | 0.6+  | 2007 11 04 | G96 | 0.2-  | 0.1-  | 2007 11 18 | G96 | 0.1-  | 0.5-  |
| 2004 01 31 | 691 | 0.4+  | 0.4+  | 2007 11 04 | G96 | 0.4+  | 0.1-  | 2007 11 18 | G96 | 0.6+  | 0.3-  |
| 2004 01 31 | 691 | 0.1+  | 0.4+  | 2007 11 04 | G96 | (1.6+ | 0.1+) | 2007 11 18 | G96 | 0.1+  | 0.5-  |
| 2004 01 31 | 691 | 0.1+  | 0.0   | 2007 11 04 | G96 | 0.0   | 0.2-  | 2007 12 03 | 703 | 0.2-  | 0.8+  |
| 2005 04 10 | G96 | 0.5-  | 0.0   | 2007 11 04 | G96 | 0.0   | 0.1-  | 2007 12 03 | 703 | 1.5-  | 0.6-  |
| 2005 04 10 | G96 | 0.0   | 0.2+  | 2007 11 04 | G96 | 0.1+  | 0.1-  | 2007 12 03 | 703 | 0.2+  | 0.2+  |
| 2005 04 10 | G96 | 0.3-  | 0.1-  | 2007 11 04 | G96 | 0.3+  | 0.3-  | 2007 12 03 | 703 | 1.5-  | 1.1+  |
| 2005 04 10 | G96 | 0.3-  | 0.4+  | 2007 11 04 | 291 | 0.4+  | 0.0   | 2007 12 15 | G96 | 0.8+  | 0.2-  |
| 2005 04 17 | 691 | 0.2+  | 0.6+  | 2007 11 04 | 291 | 0.2+  | 0.0   | 2007 12 15 | G96 | 0.2+  | 0.2+  |
| 2005 04 17 | 691 | 0.6+  | 0.7+  | 2007 11 04 | 291 | 0.4+  | 0.0   | 2007 12 15 | G96 | 0.7+  | 0.2+  |
| 2005 04 17 | 691 | 0.3+  | 0.7+  | 2007 11 07 | 703 | 0.6-  | 0.1-  | 2007 12 15 | G96 | 0.4-  | 0.1+  |

**2007 VS<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 75.87106   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.27857575 | $\omega$ | 19.59083  | +0.58198141 |      | +0.80727050 |   |
| <i>a</i> | 2.3218840  | $\Omega$ | 286.11777 | -0.75904871 |      | +0.49600368 |   |
| <i>e</i> | 0.1920851  | <i>i</i> | 5.85735   | -0.29179221 |      | +0.31983540 |   |
| <i>P</i> | 3.54       | <i>H</i> | 17.8      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 07 05 | 691 | 0.1- | 0.3+ | 2007 11 01 | 691 | 0.1- | 0.3- | 2007 11 17 | 691 | 0.1+ | 0.1- |
| 2003 07 05 | 691 | 0.2- | 0.1- | 2007 11 01 | 691 | 0.2- | 0.3+ | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2003 07 05 | 691 | 0.3+ | 0.1- | 2007 11 01 | 691 | 0.6+ | 0.4+ | 2007 11 17 | 691 | 0.3- | 0.4+ |
| 2003 07 24 | 644 | 0.0  | 0.2- | 2007 11 05 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 691 | 0.2+ | 0.5- |
| 2003 07 24 | 644 | 0.3- | 0.0  | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2003 07 24 | 644 | 0.3+ | 0.3- | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.5- | 0.4- |

**2007 VY<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 5.09305    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22970142 | $\omega$ | 101.19114 | +0.77907577 |      | -0.62190791 |   |
| <i>a</i> | 2.6405452  | $\Omega$ | 297.31469 | +0.53479517 |      | +0.72517711 |   |
| <i>e</i> | 0.0665728  | <i>i</i> | 5.11361   | +0.32716216 |      | +0.29554815 |   |
| <i>P</i> | 4.29       | <i>H</i> | 16.6      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |     |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-----|------|
| 2000 02 02 | 691 | 0.4- | 0.1- | 2007 10 09 | 691 | 0.0  | 0.3- | 2007 11 07 | 704 | 0.0 | 0.7+ |
| 2000 02 02 | 691 | 0.2+ | 0.4- | 2007 10 18 | 691 | 0.4- | 0.1- | 2007 11 07 | 704 | 0.0 | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 02 | 691 | 0.1- | 0.3- | 2007 10 18 | 691 | 0.3- | 0.0  | 2007 11 07 | 704 | 0.2+ | 0.1+ |
| 2002 07 29 | 644 | 0.2+ | 0.3- | 2007 10 18 | 691 | 0.1- | 0.3- | 2007 11 07 | 704 | 0.3- | 0.4- |
| 2002 07 29 | 644 | 0.2- | 0.1+ | 2007 11 01 | 691 | 0.3- | 0.1+ | 2007 11 13 | G96 | 0.2+ | 0.1- |
| 2002 07 29 | 644 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.2+ | 0.3+ | 2007 11 13 | G96 | 0.8+ | 0.1- |
| 2004 01 13 | 691 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.1- | 0.2- | 2007 11 13 | G96 | 0.7+ | 0.5- |
| 2004 01 13 | 691 | 0.0  | 0.3+ | 2007 11 01 | 691 | 0.1- | 0.1+ | 2007 11 13 | G96 | 0.4+ | 0.5- |
| 2004 01 13 | 691 | 0.1- | 0.2+ | 2007 11 01 | 691 | 0.6- | 0.1+ | 2007 11 17 | 691 | 0.1- | 0.0  |
| 2004 01 28 | 691 | 0.1- | 0.0  | 2007 11 01 | 691 | 0.0  | 0.1- | 2007 11 17 | 691 | 0.1+ | 0.1- |
| 2004 01 28 | 691 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.1- | 0.3- | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2004 01 28 | 691 | 0.2+ | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.2- | 2007 11 17 | 704 | 0.2- | 0.8+ |
| 2007 10 09 | 691 | 0.2- | 0.2- | 2007 11 05 | 691 | 0.1- | 0.4- | 2007 11 17 | 704 | 0.4- | 0.4+ |
| 2007 10 09 | 691 | 0.1+ | 0.3- | 2007 11 07 | 704 | 0.2- | 0.5+ | 2007 11 17 | 704 | 0.6+ | 0.9+ |

**2007 VZ<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 4.18708    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.29758438 | $\omega$ | 75.65349  | +0.79147276 |      | -0.60947699 |   |
| <i>a</i> | 2.2219245  | $\Omega$ | 321.86760 | +0.52820049 |      | +0.71985686 |   |
| <i>e</i> | 0.1054010  | <i>i</i> | 4.26485   | +0.30753066 |      | +0.33218051 |   |
| <i>P</i> | 3.31       | <i>H</i> | 18.3      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 02 14 | 291 | 0.7+ | 0.5+ | 2007 10 18 | 691 | 0.4- | 0.2+ | 2007 11 08 | 704 | 0.2+ | 0.4+ |
| 2002 02 14 | 291 | 0.1- | 0.0  | 2007 10 18 | 691 | 0.1- | 0.0  | 2007 11 08 | 704 | 0.2- | 0.6+ |
| 2002 02 14 | 291 | 0.1- | 0.5+ | 2007 10 18 | 691 | 0.1- | 0.1- | 2007 11 08 | 704 | 0.8+ | 0.4- |
| 2002 03 05 | 645 | 0.1- | 0.1- | 2007 11 01 | 691 | 0.3- | 0.0  | 2007 11 08 | 703 | 1.2+ | 0.6+ |
| 2002 03 05 | 645 | 0.0  | 0.2- | 2007 11 01 | 691 | 0.1- | 0.0  | 2007 11 08 | 703 | 0.0  | 1.0- |
| 2002 03 12 | 645 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.9- | 0.1- | 2007 11 08 | 703 | 0.8+ | 0.8- |
| 2002 03 12 | 645 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.1+ | 0.2- | 2007 11 08 | 703 | 0.4- | 1.3+ |
| 2005 01 18 | 691 | 0.0  | 0.1- | 2007 11 01 | 691 | 0.0  | 0.4- | 2007 11 17 | 691 | 0.0  | 0.3- |
| 2005 01 18 | 691 | 0.3- | 0.5- | 2007 11 01 | 691 | 0.1- | 0.1+ | 2007 11 17 | 691 | 0.2- | 0.2- |
| 2005 01 18 | 691 | 0.1+ | 0.2- | 2007 11 05 | 691 | 0.2- | 0.0  | 2007 11 17 | 691 | 0.3- | 0.0  |
| 2007 10 09 | 691 | 0.3+ | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.3+ | 2007 11 20 | 691 | 0.3- | 0.1+ |
| 2007 10 09 | 691 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.4- | 0.2+ | 2007 11 20 | 691 | 0.5- | 0.2- |
| 2007 10 09 | 691 | 0.0  | 0.1+ | 2007 11 08 | 704 | 1.0+ | 0.3+ | 2007 11 20 | 691 | 0.2- | 0.2- |

**2007 VC<sub>44</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 34.27909   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.17733356 | $\omega$ | 342.02850 | +0.98007563 |      | -0.15427352 |   |
| <i>a</i> | 3.1376808  | $\Omega$ | 27.79058  | +0.19858146 |      | +0.77420155 |   |
| <i>e</i> | 0.0363583  | <i>i</i> | 15.56481  | -0.00414165 |      | +0.61384985 |   |
| <i>P</i> | 5.56       | <i>H</i> | 15.5      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 14 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.4- | 0.0  | 2007 11 17 | 704 | 0.6+ | 0.7+ |
| 2001 10 14 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.2- |
| 2001 10 15 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.1- | 0.2+ | 2007 11 17 | 704 | 0.4+ | 0.3+ |
| 2001 10 15 | 645 | 0.1- | 0.0  | 2007 11 07 | 704 | 1.6+ | 0.1- | 2007 11 17 | G96 | 0.1+ | 0.1- |
| 2001 11 18 | 645 | 0.1+ | 0.0  | 2007 11 07 | 704 | 0.4- | 0.3- | 2007 11 17 | G96 | 0.3+ | 0.2- |
| 2001 11 18 | 645 | 0.1+ | 0.0  | 2007 11 07 | 704 | 0.7+ | 0.2+ | 2007 11 17 | 704 | 0.4- | 0.4+ |
| 2007 09 26 | G96 | 0.1+ | 0.3- | 2007 11 07 | 704 | 0.0  | 0.6- | 2007 11 17 | G96 | 0.0  | 0.2- |
| 2007 09 26 | G96 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.0  | 0.1+ | 2007 11 17 | 704 | 1.0+ | 1.0+ |
| 2007 09 26 | G96 | 0.2- | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.1- | 2007 11 17 | 704 | 0.9+ | 0.4+ |
| 2007 09 26 | G96 | 0.6+ | 0.1- | 2007 11 17 | 691 | 0.1- | 0.3- | 2007 12 02 | 704 | 0.2- | 0.3+ |
| 2007 11 01 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.1- | 0.2- | 2007 12 02 | 704 | 0.8- | 0.9+ |
| 2007 11 01 | 691 | 0.4- | 0.1+ | 2007 11 17 | 691 | 0.1- | 0.1- | 2007 12 02 | 704 | 1.6+ | 0.2- |
| 2007 11 01 | 691 | 0.0  | 0.1- | 2007 11 17 | 691 | 0.3- | 0.2- | 2007 12 02 | 704 | 0.1- | 1.0+ |

**2007 VR<sub>45</sub>**

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      | MPC         |      |            |     |      |      |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|------|------------|-----|------|------|
| <i>M</i>                                | 35.79805   | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |      |            |     |      |      |
| <i>n</i>                                | 0.26391576 | $\omega$ | 70.26020  | +0.99438318 |      | +0.06882927 |      |            |     |      |      |
| <i>a</i>                                | 2.4070909  | $\Omega$ | 285.72779 | −0.09628402 |      | +0.90371795 |      |            |     |      |      |
| <i>e</i>                                | 0.1351793  | <i>i</i> | 4.79152   | +0.04394868 |      | +0.42255935 |      |            |     |      |      |
| <i>P</i>                                | 3.73       | <i>H</i> | 18.4      | <i>G</i>    | 0.15 | <i>U</i>    | 4    |            |     |      |      |
| Residuals in seconds of arc             |            |          |           |             |      |             |      |            |     |      |      |
| 2003 09 18                              | 691        | 0.0      | 0.1+      | 2007 10 09  | 691  | 0.1−        | 0.0  | 2007 11 05 | 691 | 0.0  | 0.1− |
| 2003 09 18                              | 691        | 0.0      | 0.1−      | 2007 10 09  | 691  | 0.1+        | 0.1− | 2007 11 17 | 691 | 0.4+ | 0.0  |
| 2003 09 18                              | 691        | 0.1−     | 0.2+      | 2007 11 01  | 691  | 1.3−        | 0.0  | 2007 11 17 | 691 | 0.3+ | 0.1− |
| 2003 09 30                              | 691        | 0.0      | 0.1+      | 2007 11 01  | 691  | 0.6+        | 0.8+ | 2007 11 17 | 691 | 0.1+ | 0.1− |
| 2003 09 30                              | 691        | 0.0      | 0.0       | 2007 11 01  | 691  | 0.1−        | 0.2− | 2007 11 20 | 691 | 0.1− | 0.2+ |
| 2003 09 30                              | 691        | 0.2+     | 0.3−      | 2007 11 05  | 691  | 0.0         | 0.4− | 2007 11 20 | 691 | 0.3− | 0.3+ |
| 2007 10 09                              | 691        | 0.2+     | 0.2−      | 2007 11 05  | 691  | 0.1+        | 0.2− | 2007 11 20 | 691 | 0.1+ | 0.1+ |

**2007 VF<sub>46</sub> = 2004 DD<sub>20</sub>**

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             | MPC         |             |      |            |     |             |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|-------------|------|------------|-----|-------------|
| <i>M</i>                                | 322.02414  | (2000.0) |           | <b>P</b>    |             | <b>Q</b>    |      |            |     |             |
| <i>n</i>                                | 0.21031515 | $\omega$ | 205.34072 | -0.12590118 | -0.98177488 |             |      |            |     |             |
| <i>a</i>                                | 2.8004147  | $\Omega$ | 252.15680 | +0.93374654 | -0.06880784 |             |      |            |     |             |
| <i>e</i>                                | 0.1890557  | <i>i</i> | 8.60120   | +0.33506162 | -0.17715410 |             |      |            |     |             |
| <i>P</i>                                | 4.69       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        | <i>U</i>    | 4    |            |     |             |
| Residuals in seconds of arc             |            |          |           |             |             |             |      |            |     |             |
| 2004 02 17                              | 703        | 0.7-     | 0.1-      | 2007 10 09  | 691         | 0.1+        | 0.0  | 2007 11 07 | 704 | 1.2+ 0.7+   |
| 2004 02 17                              | 703        | 0.0      | 0.0       | 2007 10 18  | 691         | 0.2+        | 0.1+ | 2007 11 07 | 704 | (1.1- 1.6+) |
| 2004 02 17                              | 703        | 0.2-     | 0.6+      | 2007 10 18  | 691         | 0.3+        | 0.1+ | 2007 11 07 | 704 | 0.1- 0.8+   |
| 2004 02 17                              | 703        | 0.1+     | 0.9-      | 2007 10 18  | 691         | 0.4+        | 0.1- | 2007 11 12 | 703 | 0.1- 0.4-   |
| 2004 02 19                              | 704        | 0.0      | 0.3-      | 2007 11 01  | 691         | 0.1-        | 0.0  | 2007 11 12 | 703 | 0.1- 0.9-   |
| 2004 02 19                              | 704        | 0.0      | 0.0       | 2007 11 01  | 691         | 0.1-        | 0.1- | 2007 11 12 | 703 | 0.2+ 1.3-   |
| 2004 02 19                              | 704        | 0.6+     | 0.3+      | 2007 11 01  | 691         | 0.1+        | 0.1- | 2007 11 12 | 703 | 0.6- 1.4-   |
| 2004 02 19                              | 704        | 0.6+     | 0.9+      | 2007 11 05  | 691         | 0.0         | 0.2+ | 2007 11 19 | 691 | 0.1- 0.0    |
| 2004 02 19                              | 704        | 0.5-     | 0.4-      | 2007 11 05  | 691         | 0.4-        | 0.0  | 2007 11 19 | 691 | 0.0 0.2+    |
| 2007 10 09                              | 691        | 0.4-     | 0.3+      | 2007 11 05  | 691         | 0.1-        | 0.0  | 2007 11 19 | 691 | 0.0 0.0     |
| 2007 10 09                              | 691        | 0.2+     | 0.0       | 2007 11 07  | 704         | (0.1- 2.0+) |      |            |     |             |

**2007 VQ<sub>46</sub>**

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |           | MPC         |      |             |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-----------|-------------|------|-------------|-----|------|------|
| <i>M</i>                                | 281.46735  |      | (2000.0) |            |           | <b>P</b>    |      | <b>Q</b>    |     |      |      |
| <i>n</i>                                | 0.26814499 |      | $\omega$ |            | 216.61503 | −0.68897849 |      | −0.71977343 |     |      |      |
| <i>a</i>                                | 2.3817139  |      | $\Omega$ |            | 277.10671 | +0.68365401 |      | −0.60642105 |     |      |      |
| <i>e</i>                                | 0.0945023  |      | <i>i</i> |            | 4.91722   | +0.24067786 |      | −0.33790491 |     |      |      |
| <i>P</i>                                | 3.68       |      | <i>H</i> |            | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 4   |      |      |
| Residuals in seconds of arc             |            |      |          |            |           |             |      |             |     |      |      |
| 2003 09 19                              | 691        | 0.1− | 0.0      | 2007 10 09 | 691       | 0.1+        | 0.2− | 2007 11 07  | 704 | 0.1− | 0.0  |
| 2003 09 19                              | 691        | 0.2+ | 0.1−     | 2007 10 09 | 691       | 0.3+        | 0.1− | 2007 11 07  | 704 | 0.1− | 0.5− |
| 2003 09 19                              | 691        | 0.2− | 0.2+     | 2007 10 18 | 691       | 0.2+        | 0.1+ | 2007 11 17  | 691 | 0.1− | 0.0  |
| 2005 03 03                              | 703        | 0.1+ | 0.3+     | 2007 10 18 | 691       | 0.1−        | 0.0  | 2007 11 17  | 691 | 0.2− | 0.3− |
| 2005 03 03                              | 703        | 0.2− | 1.6−     | 2007 10 18 | 691       | 0.0         | 0.3− | 2007 11 17  | 691 | 0.3− | 0.4− |
| 2005 03 03                              | 703        | 0.3− | 0.3−     | 2007 11 01 | 691       | 0.0         | 0.1− | 2007 11 18  | 704 | 0.2− | 0.7+ |
| 2005 03 03                              | 703        | 0.6+ | 0.2−     | 2007 11 01 | 691       | 0.1+        | 0.1− | 2007 11 18  | 704 | 1.2− | 0.5+ |
| 2005 03 17                              | 703        | 0.7+ | 1.0+     | 2007 11 01 | 691       | 0.2+        | 0.1− | 2007 11 18  | 704 | 0.3+ | 0.3+ |
| 2005 03 17                              | 703        | 0.6− | 0.3+     | 2007 11 05 | 691       | 0.1−        | 0.0  | 2007 11 20  | 691 | 0.1+ | 0.1− |
| 2005 03 17                              | 703        | 0.6− | 0.7+     | 2007 11 05 | 691       | 0.7+        | 0.0  | 2007 11 20  | 691 | 0.1− | 0.0  |
| 2005 03 17                              | 703        | 0.3+ | 0.1−     | 2007 11 05 | 691       | 0.0         | 0.2+ | 2007 11 20  | 691 | 0.2+ | 0.1− |
| 2007 10 09                              | 691        | 0.0  | 0.3−     | 2007 11 07 | 704       | 0.4+        | 0.9+ |             |     |      |      |

**2007 VD<sub>47</sub>**

|                                         |            |      |          |            |     |             |      |             |     |      |      |
|-----------------------------------------|------------|------|----------|------------|-----|-------------|------|-------------|-----|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |     | MPC         |      |             |     |      |      |
| $M$                                     | 80.70396   |      | (2000.0) |            |     | <b>P</b>    |      | <b>Q</b>    |     |      |      |
| $n$                                     | 0.26793726 |      | $\omega$ | 292.94451  |     | +0.64715726 |      | +0.76151063 |     |      |      |
| $a$                                     | 2.3829448  |      | $\Omega$ | 17.53188   |     | −0.64850322 |      | +0.57465626 |     |      |      |
| $e$                                     | 0.1237309  |      | $i$      | 6.84511    |     | −0.40078804 |      | +0.29978616 |     |      |      |
| $P$                                     | 3.68       |      | $H$      | 17.9       |     | $G$         | 0.15 |             | $U$ | 2    |      |
| Residuals in seconds of arc             |            |      |          |            |     |             |      |             |     |      |      |
| 1992 10 02                              | 691        | 0.4− | 0.8+     | 2003 11 20 | 645 | 0.0         | 0.1− | 2007 11 01  | 691 | 0.6− | 0.1+ |
| 1992 10 02                              | 691        | 0.4− | 0.7+     | 2003 11 20 | 645 | 0.0         | 0.0  | 2007 11 01  | 691 | 0.5− | 0.7− |
| 1992 10 02                              | 691        | 0.3− | 0.3+     | 2007 10 16 | G96 | 0.3−        | 0.1+ | 2007 11 01  | 691 | 0.1− | 0.0  |
| 2002 04 06                              | 291        | 0.6+ | 0.5+     | 2007 10 16 | G96 | 0.3+        | 0.3− | 2007 11 05  | 691 | 0.2+ | 0.1+ |
| 2002 04 06                              | 291        | 0.3+ | 0.9+     | 2007 10 16 | G96 | 0.7+        | 0.3− | 2007 11 05  | 691 | 0.2− | 0.6+ |
| 2002 04 06                              | 291        | 0.3+ | 0.7+     | 2007 10 16 | G96 | 0.9+        | 0.2− | 2007 11 05  | 691 | 0.5− | 0.7+ |

**2007 VV<sub>49</sub> = 2006 RG<sub>15</sub>**

|                                         |            |      |          |            |          |             |      |            |             |      |      |
|-----------------------------------------|------------|------|----------|------------|----------|-------------|------|------------|-------------|------|------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |          |            |          |             |      |            |             | MPC  |      |
| <i>M</i>                                | 267.66899  |      | (2000.0) |            | <b>P</b> |             |      | <b>Q</b>   |             |      |      |
| <i>n</i>                                | 0.19798892 |      | $\omega$ | 265.20062  |          | −0.89071134 |      |            | −0.42435568 |      |      |
| <i>a</i>                                | 2.9154714  |      | $\Omega$ | 249.61391  |          | +0.45449488 |      |            | −0.82488298 |      |      |
| <i>e</i>                                | 0.1336968  |      | <i>i</i> | 10.01159   |          | +0.00822882 |      |            | −0.37348405 |      |      |
| <i>P</i>                                | 4.98       |      | <i>H</i> | 16.3       |          | <i>G</i>    | 0.15 |            | <i>U</i>    | 3    |      |
| Residuals in seconds of arc             |            |      |          |            |          |             |      |            |             |      |      |
| 2004 03 13                              | 644        | 0.3− | 0.1+     | 2007 10 09 | 691      | 0.2−        | 0.1+ | 2007 11 07 | 691         | 1.1+ | 1.2− |
| 2004 03 13                              | 644        | 0.1+ | 0.1−     | 2007 10 09 | 691      | 0.0         | 0.1+ | 2007 11 07 | 691         | 0.3− | 0.1+ |
| 2004 03 13                              | 644        | 0.2+ | 0.0      | 2007 10 09 | 691      | 0.2−        | 0.1− | 2007 11 07 | 691         | 0.1+ | 0.5+ |
| 2006 09 14                              | 691        | 0.1− | 0.1+     | 2007 11 01 | 691      | 0.1+        | 0.0  | 2007 11 09 | 691         | 0.4− | 0.2+ |
| 2006 09 14                              | 691        | 0.0  | 0.1−     | 2007 11 01 | 691      | 0.1−        | 0.0  | 2007 11 09 | 691         | 0.2− | 0.3− |
| 2006 09 14                              | 691        | 0.1+ | 0.0      | 2007 11 01 | 691      | 0.2+        | 0.0  | 2007 11 09 | 691         | 0.0  | 0.1+ |
| 2006 09 16                              | 691        | 0.1− | 0.1−     | 2007 11 05 | 691      | 0.0         | 0.1+ | 2007 12 05 | 691         | 0.3− | 0.3+ |
| 2006 09 16                              | 691        | 0.1+ | 0.1+     | 2007 11 05 | 691      | 0.1−        | 0.2+ | 2007 12 05 | 691         | 0.3− | 0.1+ |
| 2006 09 16                              | 691        | 0.1+ | 0.0      | 2007 11 05 | 691      | 0.1+        | 0.1+ | 2007 12 05 | 691         | 0.7+ | 0.2− |

**2007 VD<sub>50</sub>**

| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |      |                    |            |             | MPC  |             |            |     |      |      |
|-----------------------------------------|------------|------|--------------------|------------|-------------|------|-------------|------------|-----|------|------|
| <i>M</i>                                | 187.52758  |      | (2000.0)           |            | <b>P</b>    |      | <b>Q</b>    |            |     |      |      |
| <i>n</i>                                | 0.27299586 |      | $\omega$ 197.37296 |            | −0.76358677 |      | +0.64367281 |            |     |      |      |
| <i>a</i>                                | 2.3534158  |      | $\Omega$ 22.93500  |            | −0.57572626 |      | −0.64279317 |            |     |      |      |
| <i>e</i>                                | 0.0590043  |      | <i>i</i> 7.54852   |            | −0.29236026 |      | −0.41533392 |            |     |      |      |
| <i>P</i>                                | 3.61       |      | <i>H</i>           | 17.4       | <i>G</i>    | 0.15 | <i>U</i>    | 4          |     |      |      |
| Residuals in seconds of arc             |            |      |                    |            |             |      |             |            |     |      |      |
| 2003 09 28                              | 645        | 0.0  | 0.1+               | 2007 10 16 | G96         | 0.1+ | 0.0         | 2007 11 07 | 691 | 0.5− | 0.2+ |
| 2003 09 28                              | 645        | 0.0  | 0.1+               | 2007 11 01 | 691         | 0.2− | 0.1+        | 2007 11 07 | 691 | 0.1+ | 0.2− |
| 2003 10 24                              | 691        | 0.1+ | 0.2+               | 2007 11 01 | 691         | 0.1− | 0.1+        | 2007 11 13 | 691 | 0.3+ | 0.0  |
| 2003 10 24                              | 691        | 0.1− | 0.2−               | 2007 11 01 | 691         | 0.2− | 0.1+        | 2007 11 13 | 691 | 0.3+ | 0.1+ |
| 2003 10 24                              | 691        | 0.1− | 0.2−               | 2007 11 05 | 691         | 0.2+ | 0.2−        | 2007 11 13 | 691 | 0.3+ | 0.2+ |
| 2007 10 16                              | G96        | 0.7+ | 0.3−               | 2007 11 05 | 691         | 0.3− | 0.1+        | 2007 11 20 | 691 | 0.4− | 0.1− |
| 2007 10 16                              | G96        | 0.3+ | 0.1−               | 2007 11 05 | 691         | 0.3− | 0.3+        | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2007 10 16                              | G96        | 0.4+ | 0.4−               | 2007 11 07 | 691         | 0.1− | 0.1−        | 2007 11 20 | 691 | 0.1− | 0.1+ |



## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.6+ | 0.1- | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 11 09 | 691 | 0.1+ | 0.2+ |
| 2007 11 01 | 691 | 0.2+ | 0.1+ | 2007 11 05 | 691 | 0.2- | 0.1- | 2007 11 17 | 691 | 0.2+ | 0.2+ |
| 2007 11 01 | 691 | 0.2+ | 0.1- | 2007 11 05 | 691 | 0.4- | 0.1+ | 2007 11 17 | 691 | 0.2- | 0.3- |
| 2007 11 01 | 691 | 0.4+ | 0.1- | 2007 11 05 | 691 | 0.2- | 0.1- | 2007 11 17 | 691 | 0.1- | 0.1+ |
| 2007 11 01 | 691 | 0.7- | 0.8+ | 2007 11 07 | 691 | 0.1+ | 0.1- |            |     |      |      |
| 2007 11 01 | 691 | 0.2+ | 0.1- | 2007 11 07 | 691 | 0.2+ | 0.2- |            |     |      |      |

2007 VC<sub>52</sub> = 2003 OB<sub>1</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 53.76435   |          | (2000.0)  |     | $P$         |     | $Q$         |
| $n$ | 0.28363125 | $\omega$ | 318.81174 |     | +0.91637506 |     | +0.39971329 |
| $a$ | 2.2942108  | $\Omega$ | 17.66571  |     | -0.34562470 |     | +0.81775675 |
| $e$ | 0.1697959  | $i$      | 4.16610   |     | -0.20199086 |     | +0.41412943 |
| $P$ | 3.47       | $H$      | 17.0      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 10 25 | 691 | 0.2- | 0.3- | 2007 10 10 | D29 | 0.9+ | 0.3- | 2007 11 13 | 691 | 0.4-  | 0.8+  |
| 2000 10 25 | 691 | 0.3+ | 0.2- | 2007 10 10 | D29 | 0.1- | 0.2- | 2007 11 13 | 691 | 0.0   | 0.2+  |
| 2000 10 25 | 691 | 0.1+ | 0.2- | 2007 10 10 | D29 | 0.5+ | 0.2- | 2007 11 13 | 699 | 0.3-  | 0.1-  |
| 2003 07 20 | 428 | 0.9- | 1.3+ | 2007 11 01 | 691 | 0.2+ | 0.1+ | 2007 11 13 | 699 | 0.5+  | 0.3+  |
| 2003 07 20 | 428 | 0.2+ | 1.3+ | 2007 11 01 | 691 | 1.0- | 0.8+ | 2007 11 13 | 699 | 0.8+  | 0.1-  |
| 2003 07 21 | 428 | 0.6+ | 0.3+ | 2007 11 01 | 691 | 0.2- | 0.2+ | 2007 11 13 | 699 | 0.6-  | 0.6-  |
| 2003 07 21 | 428 | 0.8- | 1.1+ | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 11 16 | A77 | 0.5+  | 0.0   |
| 2003 08 02 | 428 | 0.3+ | 0.7+ | 2007 11 05 | 691 | 0.1+ | 0.1- | 2007 11 16 | A77 | 0.6+  | 0.6+  |
| 2003 08 04 | 428 | 0.6+ | 0.0  | 2007 11 05 | 691 | 0.2- | 0.2+ | 2007 11 17 | A77 | 0.3+  | 1.0+  |
| 2006 04 09 | 691 | 0.5+ | 0.1- | 2007 11 07 | 691 | 0.3- | 0.0  | 2007 11 17 | 691 | (0.1- | 2.6+) |
| 2006 04 09 | 691 | 0.6+ | 0.5+ | 2007 11 07 | 691 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.2-  | 0.1-  |
| 2006 04 09 | 691 | 0.3+ | 0.8+ | 2007 11 07 | 691 | 0.2+ | 0.2- | 2007 11 17 | 691 | 0.0   | 0.1-  |
| 2006 05 04 | G96 | 0.4+ | 0.4+ | 2007 11 07 | 300 | 0.1- | 0.2- | 2007 11 18 | 704 | 0.0   | 0.8+  |
| 2006 05 04 | G96 | 0.0  | 0.5+ | 2007 11 07 | 300 | 0.3- | 0.3+ | 2007 11 18 | 704 | 0.5+  | 0.1-  |
| 2006 05 04 | G96 | 0.5- | 0.4+ | 2007 11 07 | 300 | 0.1+ | 0.4- | 2007 11 18 | 704 | 0.3+  | 0.5+  |
| 2006 05 31 | G96 | 0.2- | 0.5+ | 2007 11 07 | 300 | 0.2- | 1.0- | 2007 11 18 | 704 | 0.2-  | 1.3+  |
| 2006 05 31 | G96 | 0.2+ | 0.6+ | 2007 11 07 | 300 | 0.1+ | 0.5- | 2007 11 18 | 704 | 0.2-  | 0.8+  |
| 2006 05 31 | G96 | 0.6- | 0.2+ | 2007 11 07 | 300 | 0.5- | 0.5- | 2007 11 20 | 704 | (1.8+ | 2.0+) |
| 2006 05 31 | G96 | 0.3- | 0.4+ | 2007 11 07 | 300 | 0.1- | 0.1- | 2007 11 20 | 704 | 0.2-  | 1.4+  |
| 2006 05 31 | G96 | 0.5- | 0.4+ | 2007 11 09 | 691 | 0.2- | 0.1+ | 2007 11 20 | 704 | 0.6+  | 0.4+  |
| 2006 05 31 | G96 | 0.3+ | 0.5+ | 2007 11 09 | 691 | 0.0  | 0.1- | 2007 11 20 | 704 | (1.8+ | 1.2-) |
| 2006 05 31 | G96 | 0.2+ | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.1- | 2007 12 04 | 691 | 0.1-  | 0.6+  |
| 2006 05 31 | G96 | 0.6- | 0.4+ | 2007 11 09 | 300 | 0.2- | 0.6- | 2007 12 04 | 691 | 0.1-  | 0.3+  |
| 2007 09 09 | G96 | 0.4+ | 0.2- | 2007 11 09 | 300 | 0.3+ | 0.6- | 2007 12 04 | 691 | 0.2+  | 0.3+  |
| 2007 09 09 | G96 | 0.7+ | 0.1+ | 2007 11 09 | 300 | 1.0+ | 0.3- | 2007 12 06 | 691 | 0.6-  | 0.4+  |
| 2007 09 09 | G96 | 0.2+ | 0.4- | 2007 11 09 | 300 | 0.3+ | 0.9- | 2007 12 06 | 691 | 0.1+  | 0.4+  |
| 2007 09 09 | G96 | 0.5+ | 0.0  | 2007 11 09 | 300 | 0.0  | 0.2+ | 2007 12 06 | 691 | 0.1-  | 0.1-  |
| 2007 10 10 | D29 | 0.3+ | 1.0- | 2007 11 13 | 691 | 0.2+ | 0.1+ |            |     |       |       |

2007 VF<sub>52</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 73.50687   |          | (2000.0)  |     | $P$         |     | $Q$         |
| $n$ | 0.23123251 | $\omega$ | 296.77583 |     | +0.61642926 |     | +0.78726417 |
| $a$ | 2.6288761  | $\Omega$ | 11.31817  |     | -0.69220795 |     | +0.55098107 |
| $e$ | 0.2502397  | $i$      | 4.43280   |     | -0.37531735 |     | +0.27683025 |
| $P$ | 4.26       | $H$      | 16.6      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 30 | 699 | 0.0  | 1.0+ | 2007 10 14 | G96 | 0.3+ | 0.0  | 2007 11 09 | 300 | 0.3+ | 0.5- |
| 1998 08 30 | 699 | 0.0  | 0.2- | 2007 11 01 | 691 | 0.5- | 0.3+ | 2007 11 09 | 300 | 0.2+ | 0.6- |
| 1998 08 30 | 699 | 0.3- | 0.4- | 2007 11 01 | 691 | 0.3- | 0.1+ | 2007 11 12 | 704 | 0.4+ | 0.1- |
| 2005 02 09 | G96 | 0.3+ | 0.0  | 2007 11 01 | 691 | 0.5+ | 0.0  | 2007 11 12 | 704 | 0.3+ | 0.6- |
| 2005 02 09 | G96 | 0.3- | 0.7+ | 2007 11 05 | 691 | 0.2+ | 0.3- | 2007 11 12 | 704 | 1.3+ | 0.2+ |
| 2005 02 09 | G96 | 0.3+ | 0.3+ | 2007 11 05 | 691 | 0.2+ | 0.1- | 2007 11 12 | 704 | 0.2- | 0.5- |
| 2005 02 09 | G96 | 0.0  | 0.2+ | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 11 17 | 691 | 0.3- | 0.0  |
| 2006 05 18 | 644 | 0.2+ | 0.1+ | 2007 11 07 | 691 | 0.1+ | 0.0  | 2007 11 17 | 691 | 0.1+ | 0.2+ |
| 2006 05 18 | 644 | 0.3+ | 0.4+ | 2007 11 07 | 691 | 0.2+ | 0.2- | 2007 11 17 | 691 | 0.6- | 0.1- |
| 2006 05 18 | 644 | 0.3- | 0.2+ | 2007 11 07 | 691 | 0.4- | 0.1+ | 2007 11 18 | 704 | 0.4+ | 0.6- |
| 2007 08 24 | 691 | 0.0  | 0.2+ | 2007 11 07 | 300 | 0.6+ | 0.1- | 2007 11 18 | 704 | 0.9- | 0.3+ |

## M.P.O. 129979

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 08 24 | 691 | 0.3- | 0.2+ | 2007 11 07 | 300 | 0.6+ | 0.1- | 2007 11 18 | 704 | 0.6- | 1.1+ |
| 2007 08 24 | 691 | 0.5- | 0.4+ | 2007 11 07 | 300 | 0.5+ | 0.8+ | 2007 11 18 | 704 | 0.5+ | 1.2+ |
| 2007 10 14 | G96 | 0.2+ | 0.2- | 2007 11 07 | 300 | 0.5+ | 0.5- | 2007 12 04 | 691 | 0.3+ | 0.1- |
| 2007 10 14 | G96 | 0.2+ | 0.3- | 2007 11 07 | 300 | 0.8+ | 0.8- | 2007 12 04 | 691 | 0.1+ | 0.1+ |
| 2007 10 14 | G96 | 0.3- | 0.0  | 2007 11 09 | 300 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.2- | 0.4+ |

2007 VJ<sub>52</sub> = 2005 CE<sub>66</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |              |     |              |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $M$ | 314.75195  |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
| $n$ | 0.28429744 | $\omega$ | 178.17774 |     | -0.24187679  |     | -0.96957068  |
| $a$ | 2.2906254  | $\Omega$ | 285.81821 |     | +0.88974164  |     | -0.20608601  |
| $e$ | 0.1176678  | $i$      | 2.25119   |     | +0.38711164  |     | -0.13214105  |
| $P$ | 3.47       | $H$      | 17.8      | $G$ | 0.15         | $U$ | 2            |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 10 12 | 691 | 0.1- | 0.5+ | 2007 11 01 | 691 | 0.2+  | 0.2+  | 2007 11 13 | 300 | 1.2+ | 0.6+ |
| 1993 10 12 | 691 | 0.4- | 0.0  | 2007 11 01 | 691 | 0.2+  | 0.1+  | 2007 11 13 | 300 | 1.4+ | 0.1- |
| 1993 10 12 | 691 | 0.4+ | 0.2- | 2007 11 05 | 691 | 0.1+  | 0.3-  | 2007 12 04 | 691 | 0.0  | 0.1- |
| 2005 01 19 | 691 | 0.3- | 0.1- | 2007 11 05 | 691 | 0.1+  | 0.3-  | 2007 12 04 | 691 | 0.1+ | 0.2+ |
| 2005 01 19 | 691 | 0.1+ | 0.1- | 2007 11 05 | 691 | 1.3-  | 0.1+  | 2007 12 04 | 691 | 1.2- | 1.3- |
| 2005 01 19 | 691 | 0.1+ | 0.1- | 2007 11 09 | 691 | 0.2+  | 0.1-  | 2007 12 06 | 691 | 0.2+ | 0.0  |
| 2005 02 09 | 704 | 0.1- | 0.6+ | 2007 11 09 | 691 | 0.2+  | 0.0   | 2007 12 06 | 691 | 0.1- | 0.0  |
| 2005 02 09 | 704 | 0.5+ | 0.5+ | 2007 11 09 | 691 | 0.2+  | 0.1-  | 2007 12 06 | 691 | 0.1+ | 0.1- |
| 2005 02 09 | 704 | 0.1- | 0.2- | 2007 11 09 | 300 | 0.3+  | 0.9-  | 2007 12 14 | 691 | 0.2+ | 0.7+ |
| 2005 02 09 | 704 | 0.5+ | 0.5- | 2007 11 09 | 300 | 0.4+  | 1.1-  | 2007 12 14 | 691 | 0.6- | 0.1- |
| 2005 02 14 | 691 | 0.0  | 0.0  | 2007 11 09 | 300 | 0.1+  | 0.1-  | 2007 12 14 | 691 | 0.1+ | 0.8+ |
| 2005 02 14 | 691 | 0.0  | 0.0  | 2007 11 13 | 300 | 0.6+  | 0.2-  | 2007 12 16 | 691 | 0.2+ | 0.2+ |
| 2005 02 14 | 691 | 0.1- | 0.2+ | 2007 11 13 | 300 | 0.2+  | 1.0+  | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2007 11 01 | 691 | 0.1- | 0.1+ | 2007 11 13 | 300 | (1.9+ | 0.2+) | 2007 12 16 | 691 | 0.1+ | 0.0  |

2007 VU<sub>52</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |              |     |              |
|-----|------------|----------|-----------|-----|--------------|-----|--------------|
| $M$ | 85.43297   |          | (2000.0)  |     | $\mathbf{P}$ |     | $\mathbf{Q}$ |
| $n$ | 0.19170370 | $\omega$ | 102.92342 |     | +0.69279559  |     | +0.71679787  |
| $a$ | 2.9788529  | $\Omega$ | 211.39635 |     | -0.70635982  |     | +0.65247059  |
| $e$ | 0.1138870  | $i$      | 8.71807   |     | -0.14522423  |     | +0.24593280  |
| $P$ | 5.14       | $H$      | 15.5      | $G$ | 0.15         | $U$ | 4            |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 15 | G96 | 0.5- | 0.9- | 2006 07 21 | 703 | (1.0- | 3.7-) | 2007 11 12 | 703 | 0.5+ | 0.1- |
| 2005 03 15 | G96 | 0.2- | 0.6- | 2006 07 21 | 703 | (0.2+ | 3.2-) | 2007 11 12 | 704 | 0.9- | 0.9- |
| 2005 03 15 | G96 | 0.0  | 0.1- | 2006 08 16 | 644 | 0.3+  | 0.7+  | 2007 11 12 | 703 | 1.3+ | 0.9- |
| 2005 03 15 | G96 | 0.3- | 0.1- | 2006 08 16 | 644 | 0.2+  | 0.7+  | 2007 11 12 | 704 | 0.0  | 0.2- |
| 2005 04 11 | 691 | 0.3+ | 0.5+ | 2006 08 16 | 644 | 0.0   | 0.6+  | 2007 11 12 | 704 | 0.3- | 0.3+ |
| 2005 04 11 | 691 | 0.4+ | 0.5+ | 2007 11 01 | 691 | 0.2-  | 0.3+  | 2007 11 12 | 704 | 0.3+ | 0.8+ |
| 2005 04 11 | 691 | 0.1+ | 0.4+ | 2007 11 01 | 691 | 0.3+  | 0.2+  | 2007 11 13 | 691 | 0.1- | 0.2+ |
| 2005 05 08 | G96 | 0.0  | 0.2+ | 2007 11 01 | 691 | 0.2-  | 0.1-  | 2007 11 13 | 691 | 0.3- | 0.1- |
| 2005 05 08 | G96 | 0.3+ | 0.2+ | 2007 11 05 | 691 | 0.4-  | 0.0   | 2007 11 13 | 691 | 0.2- | 0.3+ |
| 2005 05 08 | G96 | 0.1- | 0.1+ | 2007 11 05 | 691 | 0.0   | 0.1-  | 2007 11 20 | 691 | 0.0  | 0.1- |
| 2005 05 08 | G96 | 0.1+ | 0.3+ | 2007 11 05 | 691 | 0.1-  | 0.0   | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2006 07 21 | 703 | 0.6- | 0.7- | 2007 11 12 | 703 | 0.3-  | 0.4+  | 2007 11 20 | 691 | 0.2- | 0.1- |
| 2006 07 21 | 703 | 0.1- | 1.2- | 2007 11 12 | 703 | 0.9+  | 0.8+  |            |     |      |      |

2007 VW<sub>52</sub> = 2000 QO<sub>168</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 82.53338   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.29716205 | $\omega$ | 103.72742 |     | +0.55055768 |     | +0.83424970 |
| $a$ | 2.2240292  | $\Omega$ | 199.76815 |     | -0.79629280 |     | +0.51394935 |
| $e$ | 0.2095367  | $i$      | 5.12749   |     | -0.25060728 |     | +0.19970854 |
| $P$ | 3.32       | $H$      | 17.2      | $G$ | 0.15        | $U$ | 2           |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 31 | 704 | 0.1− | 0.4+ | 2007 09 11 | 291 | 0.3− | 0.2− | 2007 11 05 | 691 | 0.4− | 0.2+ |
| 2000 08 31 | 704 | 0.4+ | 0.3− | 2007 09 11 | 291 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.3+ |
| 2000 09 03 | 704 | 0.5+ | 0.4− | 2007 10 20 | G96 | 0.5+ | 0.1− | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 2000 09 03 | 704 | 0.0  | 0.9− | 2007 10 20 | G96 | 0.2+ | 0.2− | 2007 11 09 | 691 | 0.4+ | 0.0  |
| 2000 09 03 | 704 | 0.0  | 0.6+ | 2007 10 20 | G96 | 0.3+ | 0.3− | 2007 11 18 | G96 | 1.5+ | 0.1+ |
| 2000 09 03 | 704 | 0.5+ | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.1− | 2007 11 18 | G96 | 0.9+ | 0.2− |
| 2000 09 03 | 704 | 0.0  | 0.4− | 2007 11 01 | 691 | 0.0  | 0.2− | 2007 11 18 | G96 | 0.7+ | 0.1− |
| 2003 07 08 | 691 | 0.1− | 0.0  | 2007 11 01 | 691 | 0.0  | 0.0  |            |     |      |      |

**2007 VA<sub>53</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 60.95565   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24622458 | $\omega$ | 186.66887 | +0.95301033 | +0.30218548 |
| $a$ | 2.5210519  | $\Omega$ | 155.70916 | −0.27548910 | +0.89380267 |
| $e$ | 0.0718350  | $i$      | 2.97307   | −0.12600420 | +0.33136191 |
| $P$ | 4.00       | $H$      | 16.9      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | G96 | 0.1− | 0.1− | 2005 04 04 | G96 | 0.1− | 0.2+ | 2007 11 02 | H07 | 0.9+ | 1.0+ |
| 2005 03 04 | G96 | 0.1− | 0.0  | 2005 04 04 | G96 | 0.4− | 0.1+ | 2007 11 05 | 691 | 0.1+ | 0.1− |
| 2005 03 04 | G96 | 0.0  | 0.2− | 2007 10 20 | G96 | 0.1− | 0.3− | 2007 11 05 | 691 | 0.4+ | 0.1− |
| 2005 03 04 | G96 | 0.1+ | 0.3+ | 2007 10 20 | G96 | 0.3+ | 0.4− | 2007 11 05 | 691 | 0.1− | 0.0  |
| 2005 04 04 | G96 | 0.1− | 0.1− | 2007 10 20 | G96 | 0.3+ | 0.2− | 2007 11 13 | 691 | 0.2− | 0.0  |
| 2005 04 04 | G96 | 0.0  | 0.2− | 2007 10 20 | G96 | 0.6+ | 0.5− | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2005 04 04 | G96 | 0.2+ | 0.0  | 2007 11 01 | 691 | 0.2− | 0.3+ | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2005 04 04 | G96 | 0.4+ | 0.1− | 2007 11 01 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2005 04 04 | G96 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.2+ | 0.1− | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2005 04 04 | G96 | 0.2+ | 0.1− | 2007 11 02 | H07 | 0.3− | 1.1+ | 2007 11 20 | 691 | 0.4− | 0.1− |

**2007 VC<sub>54</sub> = 2005 GV<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 150.19421  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22011106 | $\omega$ | 195.37187 | −0.22166660 | +0.89322105 |
| $a$ | 2.7166987  | $\Omega$ | 63.22333  | −0.84208664 | +0.02692851 |
| $e$ | 0.0747642  | $i$      | 25.98668  | −0.49168487 | −0.44881065 |
| $P$ | 4.48       | $H$      | 15.4      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 04 | 644 | 0.2+ | 0.3+ | 2005 05 02 | 703 | 0.6− | 0.2− | 2007 11 09 | 691 | 0.2− | 0.1− |
| 2002 11 04 | 644 | 0.1+ | 0.3+ | 2005 05 02 | 703 | 0.9− | 0.3+ | 2007 11 09 | 691 | 0.1+ | 0.1− |
| 2002 11 04 | 644 | 0.0  | 0.4+ | 2005 05 02 | 703 | 1.3− | 0.1− | 2007 11 09 | 691 | 0.2+ | 0.2− |
| 2002 11 11 | 291 | 0.0  | 0.3− | 2005 05 02 | 703 | 0.2+ | 0.1+ | 2007 11 11 | D35 | 0.5+ | 0.5+ |
| 2002 11 11 | 291 | 0.2− | 0.1+ | 2005 05 10 | 703 | 0.3− | 1.0− | 2007 11 11 | D35 | 0.5+ | 0.5+ |
| 2002 11 11 | 291 | 0.2+ | 0.1− | 2005 05 10 | 703 | 1.4+ | 0.1− | 2007 11 11 | D35 | 0.9+ | 0.8+ |
| 2005 04 02 | 703 | 1.1− | 0.0  | 2005 05 10 | 703 | 1.3+ | 1.2− | 2007 11 13 | 691 | 0.0  | 0.1− |
| 2005 04 02 | 703 | 0.1+ | 0.6+ | 2005 05 10 | 703 | 0.9+ | 0.2+ | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2005 04 02 | 703 | 0.5+ | 0.4+ | 2007 11 01 | 691 | 0.1− | 0.4− | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2005 04 02 | 703 | 0.1+ | 0.6+ | 2007 11 01 | 691 | 0.8− | 0.0  | 2007 12 05 | 704 | 0.5− | 0.5− |
| 2005 04 09 | 703 | 0.1− | 0.1+ | 2007 11 01 | 691 | 0.3− | 0.3− | 2007 12 05 | 704 | 0.1+ | 1.8+ |
| 2005 04 09 | 703 | 0.0  | 0.4+ | 2007 11 05 | 691 | 0.3− | 0.0  | 2007 12 05 | 704 | 0.4− | 0.2+ |
| 2005 04 09 | 703 | 0.0  | 0.9− | 2007 11 05 | 691 | 0.4+ | 0.3+ | 2007 12 05 | 704 | 3.0+ | 1.0+ |
| 2005 04 09 | 703 | 0.4− | 0.4+ | 2007 11 05 | 691 | 0.2+ | 0.2− |            |     |      |      |

**2007 VM<sub>54</sub> = 2005 JH<sub>97</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 66.34119   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18161825 | $\omega$ | 258.28567 | +0.91408889  | +0.37977430  |
| $a$ | 3.0881358  | $\Omega$ | 79.26453  | −0.29223957  | +0.86000201  |
| $e$ | 0.0934142  | $i$      | 8.32020   | −0.28113616  | +0.34083431  |
| $P$ | 5.43       | $H$      | 16.2      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 08 | 691 | 0.4+ | 0.9+ | 2007 11 01 | 691 | 0.3− | 0.3− | 2007 11 19 | 291 | 0.3− | 0.2+ |
| 2005 05 08 | 691 | 0.2− | 0.2+ | 2007 11 05 | 691 | 0.2+ | 0.1− | 2007 11 19 | 291 | 0.1− | 0.0  |
| 2005 05 08 | 691 | 0.2+ | 0.1− | 2007 11 05 | 691 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.1+ | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 13 | 691 | 0.1+ | 0.4− | 2007 11 05 | 691 | 0.1+ | 0.1− | 2007 11 20 | G96 | 0.5+ | 0.1− |
| 2005 05 13 | 691 | 0.2− | 0.1+ | 2007 11 13 | 691 | 0.6+ | 0.5+ | 2007 11 20 | G96 | 0.2+ | 0.2− |
| 2005 05 13 | 691 | 0.3− | 0.9− | 2007 11 13 | 691 | 0.4+ | 0.1+ | 2007 11 20 | G96 | 0.6+ | 0.6− |
| 2007 11 01 | 691 | 0.1− | 0.0  | 2007 11 13 | 691 | 0.3− | 0.2− |            |     |      |      |
| 2007 11 01 | 691 | 0.4− | 0.2+ | 2007 11 19 | 291 | 0.1− | 0.1− |            |     |      |      |

**2007 VX<sub>54</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 126.47395  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28218318 | $\omega$ | 153.83665 | +0.15829139 | +0.98618844 |
| $a$ | 2.3020529  | $\Omega$ | 125.23384 | −0.91606039 | +0.16510054 |
| $e$ | 0.0804041  | $i$      | 3.42141   | −0.36847957 | +0.01319767 |
| $P$ | 3.49       | $H$      | 17.1      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 25 | 691 | 0.3+ | 0.5+ | 2004 12 20 | G96 | 0.3− | 0.4+ | 2007 11 05 | 691 | 0.1− | 0.0  |
| 1995 02 25 | 691 | 0.2+ | 0.6+ | 2004 12 20 | G96 | 0.1+ | 0.1− | 2007 11 09 | 691 | 0.2− | 0.2+ |
| 1995 02 25 | 691 | 0.6− | 0.1− | 2005 01 16 | 691 | 0.4+ | 0.3+ | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 1996 09 17 | 691 | 0.1+ | 0.9+ | 2005 01 16 | 691 | 0.5+ | 0.4+ | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 1996 09 17 | 691 | 0.4− | 0.6+ | 2005 01 16 | 691 | 0.2+ | 0.5+ | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2000 11 25 | 691 | 0.1− | 0.5− | 2007 11 01 | 691 | 0.1− | 0.1+ | 2007 11 13 | 691 | 0.1− | 0.1+ |
| 2000 11 25 | 691 | 0.3+ | 0.5− | 2007 11 01 | 691 | 0.2− | 0.0  | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 2000 11 25 | 691 | 0.1+ | 0.4− | 2007 11 01 | 691 | 0.0  | 0.2− | 2007 11 20 | 691 | 0.3− | 0.2+ |
| 2004 12 20 | G96 | 0.1− | 0.1− | 2007 11 05 | 691 | 0.3− | 0.1+ | 2007 11 20 | 691 | 0.3+ | 0.1− |
| 2004 12 20 | G96 | 0.2− | 0.8− | 2007 11 05 | 691 | 0.3− | 0.2− | 2007 11 20 | 691 | 0.5+ | 0.1+ |

**2007 VO<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 331.98562  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18563074 | $\omega$ | 264.66153 | −0.03462252 | −0.99934081 |
| $a$ | 3.0434729  | $\Omega$ | 187.34924 | +0.94741864 | −0.02934187 |
| $e$ | 0.2085695  | $i$      | 4.89696   | +0.31811822 | −0.02137777 |
| $P$ | 5.31       | $H$      | 16.2      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1991 11 04 | 691 | 0.2+ | 0.8− | 2007 10 10 | 691 | 0.3−  | 0.1−  | 2007 11 13 | 691 | 0.1−  | 0.0   |
| 1991 11 04 | 691 | 0.4− | 0.6− | 2007 11 01 | 691 | 0.0   | 0.1+  | 2007 11 13 | 691 | 0.0   | 0.0   |
| 1991 11 04 | 691 | 0.6+ | 0.4− | 2007 11 01 | 691 | 0.1−  | 0.0   | 2007 11 13 | 691 | 0.2−  | 0.0   |
| 2001 09 21 | 291 | 0.0  | 0.1− | 2007 11 01 | 691 | 0.0   | 0.1+  | 2007 11 20 | 691 | 0.0   | 0.0   |
| 2001 09 21 | 291 | 0.7− | 0.7+ | 2007 11 05 | 691 | 0.0   | 0.2+  | 2007 11 20 | 703 | (2.0+ | 1.0+) |
| 2001 09 21 | 291 | 0.6+ | 0.2− | 2007 11 05 | 691 | 0.1−  | 0.1+  | 2007 11 20 | 703 | 0.0   | 0.5−  |
| 2007 09 14 | G96 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.2−  | 0.4−  | 2007 11 20 | 703 | (2.2+ | 0.3−) |
| 2007 09 14 | G96 | 0.4− | 0.2− | 2007 11 09 | 703 | 0.5+  | 0.9+  | 2007 11 20 | 691 | 0.1−  | 0.2+  |
| 2007 09 14 | G96 | 0.0  | 0.1− | 2007 11 09 | 703 | 0.4+  | 1.2+  | 2007 11 20 | 703 | 0.8+  | 0.7+  |
| 2007 09 14 | G96 | 0.0  | 0.3− | 2007 11 09 | 703 | 0.0   | 1.3+  | 2007 11 20 | 691 | 0.3−  | 0.1+  |
| 2007 10 10 | 691 | 0.2− | 0.1− | 2007 11 09 | 703 | 0.5+  | 0.8+  | 2007 12 04 | 704 | 1.5−  | 0.3+  |
| 2007 10 10 | G96 | 0.5+ | 0.2− | 2007 11 12 | 704 | 0.5+  | 0.9−  | 2007 12 04 | 704 | 0.8+  | 0.8−  |
| 2007 10 10 | G96 | 0.2+ | 0.2− | 2007 11 12 | 704 | 0.0   | 0.2+  | 2007 12 04 | 704 | 0.1+  | 0.7+  |
| 2007 10 10 | G96 | 0.4+ | 0.2− | 2007 11 12 | 704 | 0.3+  | 1.0+  | 2007 12 04 | 704 | 0.6+  | 0.9+  |
| 2007 10 10 | 691 | 0.0  | 0.2+ | 2007 11 12 | 704 | 0.8+  | 0.2+  |            |     |       |       |
| 2007 10 10 | G96 | 0.1+ | 0.3− | 2007 11 12 | 704 | (2.1− | 1.0+) |            |     |       |       |

**2007 VB<sub>56</sub> = 2003 WE<sub>97</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 324.57857  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24698981 | $\omega$ | 334.46442 | −0.01921164 | −0.99807337 |
| $a$ | 2.5158420  | $\Omega$ | 116.58827 | +0.92825385 | −0.03972745 |
| $e$ | 0.0898987  | $i$      | 3.78267   | +0.37145080 | +0.04765782 |
| $P$ | 3.99       | $H$      | 17.3      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 24 | 691 | 0.1− | 0.4+ | 2003 11 21 | 691 | 0.2+ | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.1− |
| 1993 03 24 | 691 | 0.4− | 0.9− | 2003 11 21 | 691 | 0.3+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 1993 03 24 | 691 | 0.5− | 1.1− | 2005 03 11 | 691 | 0.4+ | 0.9+ | 2007 11 09 | 691 | 0.1− | 0.0  |
| 1995 10 17 | 691 | 0.1+ | 0.3− | 2005 03 11 | 691 | 0.2+ | 0.1− | 2007 11 20 | 691 | 0.0  | 0.3+ |

## 2007 DEC. 24

## M.P.O. 129981

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 10 17 | 691 | 0.1− | 0.1− | 2005 03 11 | 691 | 0.4+ | 0.7+ | 2007 11 20 | 703 | 0.2+  | 0.7+  |
| 1995 10 17 | 691 | 0.1+ | 0.2− | 2007 11 01 | 691 | 0.3− | 0.0  | 2007 11 20 | 703 | (1.3+ | 1.8+) |
| 2003 11 19 | 699 | 1.3− | 0.4+ | 2007 11 01 | 691 | 0.1+ | 0.1− | 2007 11 20 | 703 | (1.8+ | 0.7+) |
| 2003 11 19 | 699 | 1.2+ | 0.6− | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.0   | 0.0   |
| 2003 11 19 | 699 | 0.1+ | 1.0− | 2007 11 05 | 691 | 0.3− | 0.1+ | 2007 11 20 | 703 | (1.3+ | 2.4+) |
| 2003 11 19 | 699 | 0.3− | 0.7+ | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.1+  | 0.1−  |
| 2003 11 21 | 691 | 0.3+ | 0.1+ | 2007 11 05 | 691 | 0.1− | 0.0  |            |     |       |       |

2007 VK<sub>56</sub> = 2006 HB<sub>107</sub> = 2006 KG<sub>85</sub>

Id. Minor Planet Center (MPO 128593; d, unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 101.30687  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27407957 | $\omega$ | 195.10575 | +0.31376242   | +0.94391999 |
| <i>a</i> | 2.3472082  | $\Omega$ | 93.26384  | −0.86012879   | +0.32841552 |
| <i>e</i> | 0.1957170  | <i>i</i> | 5.91015   | −0.40215869   | +0.03403377 |
| <i>P</i> | 3.60       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 12 25 | 691 | 0.1−  | 0.3+  | 2006 05 05 | 691 | 0.4+  | 0.2+  | 2007 11 05 | 691 | 0.1+ | 0.0  |
| 2000 12 25 | 691 | 0.1−  | 0.1+  | 2006 05 05 | 691 | 0.1+  | 0.2+  | 2007 11 05 | 691 | 0.2− | 0.1+ |
| 2000 12 25 | 691 | 0.2+  | 0.1−  | 2006 05 05 | 691 | 0.5−  | 0.3+  | 2007 11 05 | 691 | 0.1− | 0.1− |
| 2003 09 19 | 699 | 0.8+  | 0.1−  | 2006 05 19 | 703 | 0.4+  | 0.8+  | 2007 11 09 | 691 | 0.1− | 0.3+ |
| 2003 09 19 | 699 | 0.4−  | 1.2+  | 2006 05 19 | 703 | 0.3+  | 0.3−  | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 2003 09 19 | 699 | 0.6−  | 0.7+  | 2006 05 19 | 703 | 0.6+  | 0.6−  | 2007 11 09 | 691 | 0.2+ | 0.2+ |
| 2003 09 19 | 699 | 1.5−  | 0.6+  | 2006 05 19 | 703 | (1.6− | 0.6+) | 2007 11 13 | 691 | 0.1+ | 0.4+ |
| 2006 04 30 | 691 | 0.2+  | 0.4+  | 2007 10 20 | G96 | 0.2+  | 0.0   | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2006 04 30 | 691 | 0.0   | 0.3+  | 2007 10 20 | G96 | 0.6+  | 0.1−  | 2007 11 13 | 691 | 0.3− | 0.1+ |
| 2006 04 30 | 691 | 0.2−  | 0.4+  | 2007 10 20 | G96 | 0.4+  | 0.0   | 2007 11 20 | 691 | 0.6− | 0.3+ |
| 2006 04 30 | 704 | 0.8+  | 0.9+  | 2007 10 20 | G96 | 0.2+  | 0.0   | 2007 11 20 | 691 | 0.1+ | 0.1− |
| 2006 04 30 | 704 | 0.7+  | 0.6+  | 2007 11 01 | 691 | 0.2+  | 0.1+  | 2007 11 20 | 691 | 0.0  | 0.1− |
| 2006 04 30 | 704 | (1.9+ | 1.3+) | 2007 11 01 | 691 | 0.0   | 0.1+  |            |     |      |      |
| 2006 04 30 | 704 | 0.4+  | 0.0   | 2007 11 01 | 691 | 0.3−  | 0.1+  |            |     |      |      |

2007 VQ<sub>57</sub> = 1999 FN<sub>85</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 166.89025  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19001483 | $\omega$ | 42.52737  | −0.39795212   | +0.91514589 |
| <i>a</i> | 2.9964777  | $\Omega$ | 204.23655 | −0.87822339   | −0.40030036 |
| <i>e</i> | 0.0559513  | <i>i</i> | 9.02008   | −0.26525043   | −0.04761958 |
| <i>P</i> | 5.19       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.0  | 0.0  | 2005 06 11 | 691 | 0.0  | 0.3+ | 2007 11 05 | 691 | 0.1− | 0.1+ |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2005 06 27 | 691 | 0.0  | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.0  |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2005 06 27 | 691 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2005 06 27 | 691 | 0.0  | 0.3+ | 2007 11 13 | 691 | 0.4− | 0.2− |
| 2004 03 21 | 691 | 0.4− | 0.5+ | 2007 11 01 | 691 | 0.0  | 0.2+ | 2007 11 20 | 691 | 0.2− | 0.2+ |
| 2004 03 21 | 691 | 0.4+ | 0.1− | 2007 11 01 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 691 | 0.3+ | 0.2+ |
| 2004 03 21 | 691 | 0.2+ | 0.1− | 2007 11 01 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.0  | 0.2+ |
| 2005 06 11 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.3+ | 0.0  |            |     |      |      |
| 2005 06 11 | 691 | 0.0  | 0.4+ | 2007 11 05 | 691 | 0.3− | 0.3+ |            |     |      |      |

2007 VG<sub>58</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 189.74988  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26437649 | $\omega$ | 124.03797 | −0.69391491   | +0.70932426 |
| <i>a</i> | 2.4042936  | $\Omega$ | 101.50071 | −0.69527638   | −0.61530830 |
| <i>e</i> | 0.0892604  | <i>i</i> | 7.26146   | −0.18727751   | −0.34388195 |
| <i>P</i> | 3.73       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 29 | 691 | 0.3− | 0.1+ | 2005 03 09 | 703 | 0.0  | 1.7− | 2007 11 05 | 691 | 0.4− | 0.4+ |
| 2000 12 29 | 691 | 0.6− | 0.0  | 2006 06 03 | G96 | 0.4− | 0.0  | 2007 11 13 | 691 | 0.5− | 0.2− |
| 2000 12 29 | 691 | 0.1− | 0.2+ | 2006 06 03 | G96 | 0.4− | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2003 10 21 | 691 | 0.5+ | 0.2+ | 2006 06 03 | G96 | 0.4− | 0.2+ | 2007 11 13 | 691 | 0.2+ | 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 21 | 691 | 0.8+ | 0.0  | 2006 06 03 | G96 | 0.4− | 0.3− | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2003 10 21 | 691 | 0.0  | 0.1+ | 2006 06 21 | 691 | 0.4− | 0.4+ | 2007 11 20 | 691 | 0.0  | 0.2+ |
| 2005 01 17 | 703 | 0.2+ | 0.2− | 2006 06 21 | 691 | 0.1− | 0.1+ | 2007 11 20 | 691 | 0.0  | 0.1− |
| 2005 01 17 | 703 | 0.4+ | 0.3− | 2006 06 21 | 691 | 0.1− | 0.2+ | 2007 11 20 | 703 | 0.5+ | 0.5+ |
| 2005 01 17 | 703 | 0.6− | 0.6− | 2006 08 19 | 644 | 0.3+ | 1.0+ | 2007 11 20 | 703 | 1.0+ | 0.7+ |
| 2005 01 17 | 703 | 0.2− | 0.3+ | 2006 08 19 | 644 | 0.5+ | 0.3+ | 2007 11 20 | 703 | 0.9+ | 0.8− |
| 2005 02 04 | 691 | 0.4+ | 0.5+ | 2006 08 19 | 644 | 0.6+ | 0.7+ | 2007 11 20 | 703 | 0.8+ | 0.5− |
| 2005 02 04 | 691 | 0.2+ | 0.5+ | 2007 11 01 | 691 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.2+ | 0.3− |
| 2005 02 04 | 691 | 0.3+ | 0.4+ | 2007 11 01 | 691 | 0.2− | 0.4+ | 2007 11 21 | G96 | 0.5+ | 0.0  |
| 2005 03 09 | 703 | 1.7+ | 0.4− | 2007 11 01 | 691 | 0.4− | 0.7− | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2005 03 09 | 703 | 0.3− | 0.1− | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.2+ | 0.0  |
| 2005 03 09 | 703 | 0.4− | 0.3− | 2007 11 05 | 691 | 0.5− | 0.2+ |            |     |      |      |

2007 VN<sub>58</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 268.48931  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27895147 | $\omega$ | 245.86548 | −0.95549953   | −0.28489275 |
| <i>a</i> | 2.3197986  | $\Omega$ | 277.50978 | +0.29084129   | −0.86642948 |
| <i>e</i> | 0.1589379  | <i>i</i> | 4.42716   | +0.04931525   | −0.41004399 |
| <i>P</i> | 3.53       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.4− | 0.0  | 2007 11 01 | 691 | 0.3− | 0.2+ | 2007 11 17 | 691 | 0.0  | 0.4+ |
| 2003 09 19 | 691 | 0.1− | 0.3+ | 2007 11 01 | 691 | 0.1+ | 0.1− | 2007 11 17 | 691 | 0.2+ | 0.0  |
| 2003 09 19 | 691 | 0.3+ | 0.1− | 2007 11 01 | 691 | 0.1− | 0.2− | 2007 11 17 | G96 | 0.2+ | 0.4− |
| 2003 10 18 | 691 | 0.3− | 0.3+ | 2007 11 05 | 691 | 0.0  | 0.2− | 2007 11 17 | G96 | 0.6+ | 0.4− |
| 2003 10 18 | 691 | 0.4+ | 0.1− | 2007 11 05 | 691 | 0.1− | 0.0  | 2007 11 17 | G96 | 0.5+ | 0.1− |
| 2003 10 18 | 691 | 0.2+ | 0.3− | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 11 17 | G96 | 0.4+ | 0.2− |
| 2007 10 21 | G96 | 0.2− | 0.0  | 2007 11 13 | 691 | 0.0  | 0.0  | 2007 12 13 | 704 | 0.2− | 0.3+ |
| 2007 10 21 | G96 | 0.5+ | 0.7+ | 2007 11 13 | 691 | 0.4− | 0.3+ | 2007 12 13 | 704 | 0.1− | 0.0  |
| 2007 10 21 | G96 | 0.1+ | 0.5− | 2007 11 13 | 691 | 0.2+ | 0.1+ | 2007 12 13 | 704 | 0.6− | 0.7+ |
| 2007 10 21 | G96 | 0.6− | 0.4− | 2007 11 17 | 691 | 0.1+ | 0.5− |            |     |      |      |

2007 VZ<sub>58</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 9.23336    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.25870977 | $\omega$ | 6.34126  | +0.78499751   | −0.61717214 |
| <i>a</i> | 2.4392753  | $\Omega$ | 31.96611 | +0.56383483   | +0.67590652 |
| <i>e</i> | 0.1782705  | <i>i</i> | 5.81535  | +0.25664995   | +0.40280135 |
| <i>P</i> | 3.81       | <i>H</i> | 17.4     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 09 28 | 691 | 0.1− | 0.0  | 2007 11 05 | 691 | 0.3−  | 0.1−  | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2003 09 28 | 691 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.2−  | 0.1−  | 2007 11 20 | 704 | 0.8+ | 0.4+ |
| 2003 09 28 | 691 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.2−  | 0.0   | 2007 11 20 | 704 | 0.4+ | 0.7− |
| 2003 10 16 | 691 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.1−  | 0.0   | 2007 11 20 | 704 | 0.3− | 1.4+ |
| 2003 10 16 | 691 | 0.2− | 0.0  | 2007 11 09 | 691 | 0.3−  | 0.0   | 2007 11 20 | 704 | 0.6− | 0.1+ |
| 2003 10 16 | 691 | 0.0  | 0.1− | 2007 11 13 | 691 | 0.1−  | 0.1−  | 2007 11 20 | 691 | 0.2− | 0.3− |
| 2007 09 10 | G96 | 0.1+ | 0.1− | 2007 11 13 | 691 | 0.1−  | 0.1−  | 2007 11 20 | 691 | 0.2− | 0.2− |
| 2007 09 10 | G96 | 0.4+ | 0.2− | 2007 11 13 | 691 | 0.1−  | 0.1−  | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2007 09 10 | G96 | 0.8+ | 0.1− | 2007 11 17 | 691 | 1.0+  | 0.1−  | 2007 12 13 | 704 | 0.3+ | 0.1+ |
| 2007 09 10 | G96 | 0.2+ | 0.2− | 2007 11 17 | 691 | 1.0+  | 0.2−  | 2007 12 13 | 704 | 0.6+ | 0.4+ |
| 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 17 | 691 | 0.4−  | 0.4+  | 2007 12 13 | 704 | 0.5− | 0.3− |
| 2007 10 16 | G96 | 0.2+ | 0.4− | 2007 11 18 | 704 | 0.5+  | 0.9+  | 2007 12 13 | 704 | 1.2+ | 0.5− |
| 2007 10 16 | G96 | 0.5+ | 0.2− | 2007 11 18 | 704 | 0.1−  | 1.4+  | 2007 12 13 | 704 | 0.1+ | 0.3+ |
| 2007 10 16 | G96 | 0.3+ | 0.4− | 2007 11 18 | 704 | (1.6+ | 0.3+) | 2007 12 15 | 704 | 1.1+ | 0.9− |
| 2007 11 01 | 691 | 0.6− | 0.1+ | 2007 11 18 | 704 | 0.9+  | 0.6+  | 2007 12 15 | 704 | 1.5+ | 0.1− |
| 2007 11 01 | 691 | 0.2− | 0.0  | 2007 11 18 | 704 | 0.0   | 1.5+  | 2007 12 15 | 704 | 0.6+ | 0.2+ |
| 2007 11 01 | 691 | 0.1− | 0.0  | 2007 11 19 | 691 | 0.2−  | 0.2−  | 2007 12 15 | 704 | 0.6+ | 0.8− |
| 2007 11 05 | 691 | 0.2− | 0.2+ | 2007 11 19 | 691 | 0.4−  | 0.2+  |            |     |      |      |

**2007 VD<sub>60</sub> = 2004 AD<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 328.69665  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.22490522 | $\omega$ | 204.61195 | -0.01189736 | -0.97866494 |
| $a$ | 2.6779535  | $\Omega$ | 246.62369 | +0.95045394 | +0.05265818 |
| $e$ | 0.2127544  | $i$      | 12.91233  | +0.31063765 | -0.19860021 |
| $P$ | 4.38       | $H$      | 16.3      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 02 14 | 809 | 0.0  | 0.1+ | 2007 10 21 | 703 | (1.8+ | 0.1+) | 2007 11 12 | 703 | 0.0   | 0.1+  |
| 2000 02 14 | 809 | 0.0  | 0.0  | 2007 10 21 | 703 | 0.8+  | 0.0   | 2007 11 12 | 703 | 0.2+  | 0.4+  |
| 2000 02 14 | 809 | 0.0  | 0.0  | 2007 10 21 | 703 | 0.0   | 0.5+  | 2007 11 17 | 691 | 0.1-  | 0.1+  |
| 2000 02 14 | 809 | 0.1+ | 0.0  | 2007 11 02 | 703 | 0.6-  | 0.2-  | 2007 11 17 | 691 | 0.1-  | 0.1-  |
| 2003 12 28 | 699 | 0.5- | 0.1- | 2007 11 02 | 703 | 0.5-  | 0.3-  | 2007 11 17 | 691 | 0.2-  | 0.1-  |
| 2003 12 28 | 699 | 0.5- | 0.4- | 2007 11 02 | 703 | 0.3-  | 0.5+  | 2007 11 18 | 704 | (1.8- | 1.0+) |
| 2003 12 28 | 699 | 0.7- | 0.1- | 2007 11 02 | 703 | 0.1-  | 0.7-  | 2007 11 18 | 704 | (0.4- | 2.1+) |
| 2003 12 28 | 699 | 0.4- | 0.7- | 2007 11 05 | 691 | 0.1+  | 0.2+  | 2007 11 18 | 704 | (1.9- | 2.6+) |
| 2004 01 12 | 644 | 0.2+ | 0.4+ | 2007 11 05 | 691 | 0.0   | 0.1+  | 2007 11 18 | 704 | 0.4+  | 0.2-  |
| 2004 01 12 | 644 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.0   | 0.0   | 2007 11 18 | 704 | (0.1- | 1.7+) |
| 2004 01 12 | 644 | 0.0  | 0.1+ | 2007 11 07 | 704 | 0.1+  | 0.1-  | 2007 11 20 | 691 | 0.6-  | 0.2-  |
| 2004 01 29 | 704 | 0.0  | 0.2- | 2007 11 07 | 704 | 0.4+  | 0.2+  | 2007 11 20 | 691 | 0.3-  | 0.7-  |
| 2004 01 29 | 704 | 0.2+ | 0.4+ | 2007 11 07 | 704 | 0.0   | 0.0   | 2007 11 20 | 691 | 0.0   | 0.1+  |
| 2004 01 29 | 704 | 0.6+ | 0.8+ | 2007 11 07 | 704 | 0.2+  | 0.8+  | 2007 12 05 | 699 | 1.2+  | 0.4-  |
| 2004 01 29 | 704 | 0.5+ | 0.1+ | 2007 11 07 | 704 | 0.5+  | 0.4+  | 2007 12 05 | 699 | 0.7+  | 0.4-  |
| 2004 01 29 | 704 | 0.3+ | 0.0  | 2007 11 12 | 703 | 0.0   | 0.2+  | 2007 12 05 | 699 | 0.6+  | 0.4-  |
| 2007 10 21 | 703 | 0.8+ | 0.4+ | 2007 11 12 | 703 | 0.7+  | 0.9+  | 2007 12 05 | 699 | 0.1+  | 0.6+  |

**2007 VF<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 49.77078   |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.28575622 | $\omega$ | 103.48821 | +0.97396068  | +0.20233045  |
| $a$ | 2.2828231  | $\Omega$ | 244.91758 | -0.22566009  | +0.90865939  |
| $e$ | 0.1445275  | $i$      | 6.48476   | +0.02186575  | +0.36524035  |
| $P$ | 3.45       | $H$      | 17.2      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 19 | 691 | 0.1+ | 0.2+ | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2006 04 19 | 691 | 0.1- | 0.3+ | 2007 11 05 | 691 | 0.1+ | 0.5- | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2006 04 19 | 691 | 0.2+ | 0.1- | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 12 04 | G96 | 0.6+ | 0.3- |
| 2006 05 01 | 691 | 0.1- | 0.0  | 2007 11 14 | 691 | 0.2- | 0.0  | 2007 12 04 | G96 | 0.7+ | 0.4- |
| 2006 05 01 | 691 | 0.0  | 0.2- | 2007 11 14 | 691 | 0.1+ | 0.2- | 2007 12 05 | 704 | 1.1- | 0.7+ |
| 2006 05 01 | 691 | 0.1- | 0.1- | 2007 11 14 | 691 | 0.1- | 0.2- | 2007 12 05 | 704 | 0.4+ | 1.0+ |
| 2007 10 16 | G96 | 0.4+ | 0.1+ | 2007 11 15 | 704 | 0.7+ | 0.3+ | 2007 12 05 | 704 | 0.3- | 0.7+ |
| 2007 10 16 | G96 | 0.7+ | 0.1- | 2007 11 15 | 704 | 0.8+ | 0.3+ | 2007 12 05 | 704 | 0.6- | 0.5+ |
| 2007 10 16 | G96 | 0.8+ | 0.6- | 2007 11 15 | 704 | 0.3+ | 0.1+ | 2007 12 15 | G96 | 0.6+ | 0.1- |
| 2007 10 16 | G96 | 0.3+ | 0.5- | 2007 12 03 | 703 | 1.2- | 0.2- | 2007 12 15 | G96 | 0.4+ | 0.2- |
| 2007 11 01 | 691 | 0.3- | 1.1+ | 2007 12 03 | 703 | 0.8- | 0.0  | 2007 12 15 | G96 | 0.8+ | 0.0  |
| 2007 11 01 | 691 | 0.1+ | 0.1+ | 2007 12 03 | 703 | 0.9- | 1.0- | 2007 12 15 | G96 | 0.1+ | 0.1- |
| 2007 11 01 | 691 | 0.2- | 0.1+ | 2007 12 03 | 703 | 1.1- | 1.0- |            |     |      |      |

**2007 VS<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 82.67636   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.24255759 | $\omega$ | 301.19660 | +0.73192097 | +0.68132325 |
| $a$ | 2.5463971  | $\Omega$ | 15.86297  | -0.61273628 | +0.66421377 |
| $e$ | 0.1420221  | $i$      | 1.99255   | -0.29807037 | +0.30760152 |
| $P$ | 4.06       | $H$      | 16.4      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 691 | 0.2- | 0.1+ | 2007 08 24 | 691 | 0.2- | 0.1- | 2007 11 05 | 691 | 0.1- | 0.0  |
| 2003 11 24 | 691 | 0.1- | 0.1+ | 2007 09 15 | G96 | 0.8+ | 0.0  | 2007 11 05 | 691 | 0.0  | 0.1+ |
| 2003 11 24 | 691 | 0.1+ | 0.7+ | 2007 09 15 | G96 | 0.9+ | 0.0  | 2007 11 05 | 691 | 0.0  | 0.1- |
| 2003 12 14 | 691 | 0.0  | 0.2- | 2007 09 15 | G96 | 0.6+ | 0.2- | 2007 11 09 | 691 | 0.3- | 0.1- |
| 2003 12 14 | 691 | 0.2+ | 0.1- | 2007 09 15 | G96 | 0.9+ | 0.2- | 2007 11 09 | 691 | 0.2- | 0.0  |
| 2003 12 14 | 691 | 0.1- | 0.1- | 2007 10 16 | G96 | 0.5+ | 0.6- | 2007 11 09 | 691 | 0.1+ | 0.1- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 04 | G96 | 0.2+ | 0.0  | 2007 10 16 | G96 | 0.5+ | 0.4- | 2007 11 13 | 691 | 0.1+ | 0.2- |
| 2005 04 04 | G96 | 0.2- | 0.1+ | 2007 10 16 | G96 | 0.5+ | 0.5- | 2007 11 13 | 691 | 0.7- | 0.3+ |
| 2005 04 04 | G96 | 0.0  | 0.1- | 2007 10 16 | G96 | 0.5+ | 0.5- | 2007 11 13 | 691 | 0.2+ | 0.0  |
| 2005 04 04 | G96 | 0.1- | 0.3- | 2007 11 01 | 691 | 0.4- | 0.3+ | 2007 11 17 | 691 | 0.0  | 0.2+ |
| 2007 08 24 | 691 | 0.3+ | 0.4- | 2007 11 01 | 691 | 0.1+ | 0.0  | 2007 11 17 | 691 | 0.2+ | 0.1- |
| 2007 08 24 | 691 | 0.6- | 0.7+ | 2007 11 01 | 691 | 0.2+ | 0.1- | 2007 11 17 | 691 | 0.3+ | 0.2- |

**2007 VT<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 176.20596  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.29045795 | $\omega$ | 191.18711 | -0.52192703 | +0.84673338 |
| $a$ | 2.2581210  | $\Omega$ | 47.44578  | -0.77140237 | -0.41694483 |
| $e$ | 0.0639214  | $i$      | 8.04751   | -0.36404747 | -0.33045362 |
| $P$ | 3.39       | $H$      | 16.5      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 06 | 691 | 0.2- | 0.2+ | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 15 | 704 | 0.9+ | 0.7- |
| 2000 10 06 | 691 | 0.0  | 0.2+ | 2007 10 16 | G96 | 0.3+ | 0.3- | 2007 11 15 | 704 | 0.6+ | 0.1+ |
| 2000 10 06 | 691 | 0.2- | 0.5+ | 2007 10 24 | G96 | 0.6+ | 0.2- | 2007 11 15 | 704 | 0.9+ | 0.6- |
| 2002 03 09 | 699 | 1.0- | 0.4+ | 2007 10 24 | G96 | 0.5+ | 0.4- | 2007 11 15 | 704 | 0.3+ | 0.9- |
| 2002 03 09 | 699 | 0.4- | 0.1+ | 2007 10 24 | G96 | 0.0  | 0.1- | 2007 11 17 | 691 | 0.3+ | 0.1- |
| 2002 03 09 | 699 | 0.2- | 0.4- | 2007 10 24 | G96 | 0.0  | 0.8- | 2007 11 17 | 691 | 0.2+ | 0.2- |
| 2002 03 09 | 699 | 0.7+ | 0.4+ | 2007 11 01 | 691 | 0.4- | 0.3- | 2007 11 17 | 691 | 0.3+ | 0.3- |
| 2002 04 01 | 644 | 0.3+ | 0.1+ | 2007 11 01 | 691 | 0.4- | 0.0  | 2007 11 20 | 704 | 0.6+ | 0.0  |
| 2002 04 01 | 644 | 0.6+ | 0.2+ | 2007 11 01 | 691 | 0.3- | 0.0  | 2007 11 20 | 704 | 0.6- | 0.9+ |
| 2002 04 01 | 644 | 0.5+ | 0.2+ | 2007 11 05 | 691 | 0.3- | 0.1- | 2007 11 20 | 704 | 1.1+ | 0.4- |
| 2007 09 14 | G96 | 0.0  | 0.6- | 2007 11 05 | 691 | 0.5- | 0.3+ | 2007 11 20 | 704 | 1.1+ | 0.3+ |
| 2007 09 14 | G96 | 0.1+ | 0.4- | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 15 | 704 | 1.5+ | 2.0+ |
| 2007 09 14 | G96 | 0.1- | 0.3- | 2007 11 13 | 691 | 0.2- | 0.2- | 2007 12 15 | 704 | 0.0  | 0.9+ |
| 2007 09 14 | G96 | 0.0  | 0.2- | 2007 11 13 | 691 | 0.4- | 0.1+ | 2007 12 15 | 704 | 0.6+ | 0.1- |
| 2007 10 16 | G96 | 0.1- | 0.2- | 2007 11 13 | 691 | 0.3- | 0.0  | 2007 12 15 | 704 | 0.0  | 1.6+ |
| 2007 10 16 | G96 | 0.4+ | 0.1- | 2007 11 15 | 704 | 0.5- | 0.8- | 2007 12 15 | 704 | 0.0  | 1.3+ |

**2007 VZ<sub>61</sub> = 1994 SK = 2003 YB<sub>99</sub>**

Id. Minor Planet Center (MPO 128595; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 359.06629  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23424858 | $\omega$ | 158.94781 | +0.57651847 | -0.81540099 |
| $a$ | 2.6062620  | $\Omega$ | 255.81042 | +0.74172250 | +0.54917719 |
| $e$ | 0.1935758  | $i$      | 3.09938   | +0.34274507 | +0.18310007 |
| $P$ | 4.21       | $H$      | 16.2      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1994 09 27 | 691 | 0.5+ | 0.0  | 2007 11 05 | 691 | 0.3-  | 0.1+  | 2007 12 03 | 703 | 0.7+  | 1.1-  |
| 1994 09 27 | 691 | 0.3- | 0.6- | 2007 11 05 | 691 | 0.2-  | 0.3+  | 2007 12 03 | 703 | 0.0   | 0.4+  |
| 2003 12 19 | 704 | 0.4- | 0.2- | 2007 11 05 | 691 | 0.5-  | 0.1+  | 2007 12 03 | 703 | 0.6-  | 0.4-  |
| 2003 12 19 | 704 | 0.6- | 0.6- | 2007 11 05 | 691 | 0.2-  | 0.1+  | 2007 12 04 | 699 | 0.0   | 0.6+  |
| 2003 12 19 | 704 | 0.1- | 0.3- | 2007 11 08 | D29 | 0.4+  | 0.2-  | 2007 12 04 | 699 | 0.5+  | 0.0   |
| 2003 12 19 | 704 | 0.3- | 0.5- | 2007 11 08 | D29 | 0.5-  | 0.4+  | 2007 12 04 | 699 | (1.7+ | 0.1-) |
| 2003 12 23 | 704 | 0.0  | 0.2- | 2007 11 08 | D29 | 0.1+  | 0.0   | 2007 12 04 | 699 | 0.2-  | 0.2-  |
| 2003 12 23 | 704 | 0.1- | 0.2- | 2007 11 08 | D29 | 0.1-  | 0.3+  | 2007 12 05 | 704 | 0.8+  | 0.1-  |
| 2003 12 23 | 704 | 0.0  | 0.9- | 2007 11 13 | 699 | 0.5-  | 0.6-  | 2007 12 05 | 704 | 0.4+  | 0.5-  |
| 2003 12 23 | 704 | 0.4- | 0.5- | 2007 11 13 | 699 | 0.3+  | 0.6-  | 2007 12 05 | 704 | 0.3+  | 0.2-  |
| 2003 12 23 | 704 | 0.6+ | 0.8- | 2007 11 13 | 699 | 0.2+  | 0.1+  | 2007 12 05 | 704 | 0.8+  | 0.3+  |
| 2005 04 15 | 691 | 0.2- | 0.1+ | 2007 11 13 | 699 | 0.4+  | 0.5-  | 2007 12 05 | 704 | 0.8+  | 0.1-  |
| 2005 04 15 | 691 | 0.1+ | 0.6+ | 2007 11 14 | A77 | 0.6+  | 1.1-  | 2007 12 10 | 704 | 1.7+  | 0.9+  |
| 2005 04 15 | 691 | 0.3+ | 0.1- | 2007 11 14 | A77 | (2.8+ | 1.7-) | 2007 12 10 | 704 | 0.6+  | 0.5+  |
| 2007 08 24 | 691 | 0.1+ | 0.2+ | 2007 11 14 | A77 | 0.8+  | 0.9-  | 2007 12 10 | 704 | 0.1+  | 0.1+  |
| 2007 08 24 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.3+  | 0.6+  | 2007 12 10 | 704 | 0.4+  | 0.0   |
| 2007 08 24 | 691 | 0.7- | 0.3+ | 2007 11 15 | 704 | 0.0   | 0.1+  | 2007 12 14 | 704 | 0.3+  | 1.1+  |
| 2007 09 27 | G96 | 0.5+ | 0.4- | 2007 11 15 | 704 | 0.6+  | 0.1-  | 2007 12 14 | 704 | 0.1-  | 1.1+  |
| 2007 09 27 | G96 | 0.0  | 0.2- | 2007 11 15 | 704 | 0.0   | 0.1+  | 2007 12 14 | 704 | 0.9+  | 0.4-  |
| 2007 09 27 | G96 | 0.3+ | 0.4- | 2007 11 17 | A77 | 0.4-  | 0.6+  | 2007 12 14 | 704 | 0.8-  | 0.5-  |
| 2007 09 27 | G96 | 0.1+ | 0.2- | 2007 11 17 | A77 | 0.7+  | 0.6+  | 2007 12 14 | 704 | 0.5-  | 1.1+  |
| 2007 11 01 | 691 | 0.3- | 0.0  | 2007 11 17 | A77 | 0.1-  | 1.2+  | 2007 12 15 | G96 | 0.4+  | 0.2-  |
| 2007 11 01 | 691 | 0.3- | 0.1+ | 2007 11 18 | A77 | 0.5+  | 0.3+  | 2007 12 15 | G96 | 0.2+  | 0.2-  |

2007 DEC. 24

M.P.O. 129983

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 11 01 | 691 | 0.2- | 0.1+ | 2007 11 18 | A77 | 0.0  | 0.3+ | 2007 12 15 | G96 | 0.0  | 0.3- |
| 2007 11 05 | 691 | 0.5- | 0.3+ | 2007 11 18 | A77 | 0.1+ | 0.2+ | 2007 12 15 | G96 | 0.2- | 0.2- |
| 2007 11 05 | 691 | 0.2- | 0.2+ | 2007 12 03 | 703 | 0.3+ | 0.6- |            |     |      |      |

**2007 VL<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.93572   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18696856 | $\omega$ | 344.40812 | +0.79875498 | -0.58626743 |          |   |
| <i>a</i> | 3.0289376  | $\Omega$ | 52.28150  | +0.56867206 | +0.66226926 |          |   |
| <i>e</i> | 0.0963471  | <i>i</i> | 9.84168   | +0.19647536 | +0.46657253 |          |   |
| <i>P</i> | 5.27       | <i>H</i> | 16.0      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 18 | 691 | 0.1+ | 0.1- | 2007 11 01 | 691 | 0.1+ | 0.0  | 2007 11 17 | 691 | 0.2- | 0.2- |
| 2004 03 18 | 691 | 0.0  | 0.3+ | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 13 | 704 | 0.5+ | 0.0  |
| 2004 03 18 | 691 | 0.1- | 0.2- | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 13 | 704 | 0.3+ | 0.4- |
| 2005 02 16 | 809 | 0.1+ | 0.3+ | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 12 13 | 704 | 0.2- | 0.2- |
| 2005 02 16 | 809 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1- | 0.2+ | 2007 12 13 | 704 | 0.9+ | 0.6+ |
| 2005 02 16 | 809 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.1- | 0.1+ | 2007 12 13 | 704 | 0.7+ | 0.1+ |
| 2007 10 16 | G96 | 0.2+ | 0.6- | 2007 11 09 | 691 | 0.2- | 0.0  | 2007 12 13 | 941 | 0.1- | 0.4+ |
| 2007 10 16 | G96 | 0.3+ | 0.3- | 2007 11 13 | 691 | 0.2- | 0.0  | 2007 12 13 | 941 | 0.0  | 0.3+ |
| 2007 10 16 | G96 | 0.3+ | 0.3- | 2007 11 13 | 691 | 0.1- | 0.0  | 2007 12 13 | 941 | 0.0  | 0.2+ |
| 2007 10 16 | G96 | 0.3+ | 0.5- | 2007 11 13 | 691 | 0.0  | 0.3+ | 2007 12 13 | 941 | 0.5+ | 0.3- |
| 2007 11 01 | 691 | 0.1- | 0.2- | 2007 11 17 | 691 | 0.1+ | 0.0  |            |     |      |      |
| 2007 11 01 | 691 | 0.2- | 0.0  | 2007 11 17 | 691 | 0.1+ | 0.0  |            |     |      |      |

**2007 VM<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.65847   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.28146580 | $\omega$ | 290.93225 | +0.72991715 | +0.68332268 |          |   |
| <i>a</i> | 2.3059628  | $\Omega$ | 25.97324  | -0.61176946 | +0.66421101 |          |   |
| <i>e</i> | 0.2355772  | <i>i</i> | 2.23257   | -0.30489192 | +0.30313998 |          |   |
| <i>P</i> | 3.50       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 24 | 691 | 0.7+ | 0.0  | 2006 05 06 | G96 | 0.1- | 0.0  | 2007 11 05 | 691 | 0.2+ | 0.2+ |
| 2006 03 24 | 691 | 0.2+ | 0.0  | 2007 10 16 | G96 | 0.3+ | 0.1- | 2007 11 05 | 691 | 0.5- | 0.1+ |
| 2006 03 24 | 691 | 0.0  | 0.3- | 2007 10 16 | G96 | 0.0  | 0.4- | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 2006 04 09 | 691 | 0.0  | 0.5- | 2007 10 16 | G96 | 0.1+ | 0.2- | 2007 11 09 | 691 | 0.2+ | 0.3+ |
| 2006 04 09 | 691 | 0.4- | 0.1+ | 2007 10 16 | G96 | 0.7+ | 0.1- | 2007 11 09 | 691 | 0.2+ | 0.1+ |
| 2006 04 09 | 691 | 0.1- | 0.0  | 2007 10 16 | G96 | 0.4+ | 0.1- | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2006 04 19 | G96 | 0.2- | 0.1- | 2007 10 16 | G96 | 0.1+ | 0.5- | 2007 11 13 | 691 | 0.1- | 0.0  |
| 2006 04 19 | G96 | 0.1+ | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.4- | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2006 04 19 | G96 | 0.3- | 0.1+ | 2007 10 16 | G96 | 0.2+ | 0.2- | 2007 11 17 | 691 | 0.3- | 0.3+ |
| 2006 04 19 | G96 | 0.2- | 0.3- | 2007 11 01 | 691 | 0.3- | 0.2+ | 2007 11 17 | 691 | 0.2- | 0.1+ |
| 2006 05 06 | G96 | 0.1- | 0.0  | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 11 17 | 691 | 0.0  | 0.1- |
| 2006 05 06 | G96 | 0.1- | 0.2+ | 2007 11 01 | 691 | 0.5- | 0.0  |            |     |      |      |
| 2006 05 06 | G96 | 0.5+ | 0.4+ | 2007 11 05 | 691 | 0.3- | 0.0  |            |     |      |      |

**2007 VO<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 47.88282   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18536406 | $\omega$ | 99.63553  | +0.93755561 | +0.26063652 |          |   |
| <i>a</i> | 3.0463914  | $\Omega$ | 245.55071 | -0.32162779 | +0.90176536 |          |   |
| <i>e</i> | 0.2419364  | <i>i</i> | 14.65709  | +0.13245769 | +0.34480117 |          |   |
| <i>P</i> | 5.32       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 07 13 | 644 | 0.6- | 0.5- | 2007 10 24 | G96 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.2+  | 0.2-  |
| 2001 07 13 | 644 | 0.8- | 0.0  | 2007 10 24 | G96 | 0.2+ | 0.2- | 2007 11 18 | 691 | 0.0   | 0.2-  |
| 2001 07 13 | 644 | 0.6- | 0.1- | 2007 11 01 | 691 | 0.1- | 0.2- | 2007 11 29 | D35 | 0.8+  | 0.4+  |
| 2001 08 03 | 644 | 0.1- | 0.8- | 2007 11 01 | 691 | 0.1- | 0.0  | 2007 11 29 | D35 | 0.1+  | 0.3+  |
| 2001 08 03 | 644 | 0.3- | 1.0- | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 11 29 | D35 | 0.0   | 0.4+  |
| 2001 08 03 | 644 | 0.7- | 0.6- | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 12 03 | 703 | (1.6+ | 0.7-) |
| 2001 08 20 | 644 | 0.8+ | 0.4- | 2007 11 05 | 691 | 0.2- | 0.0  | 2007 12 03 | 703 | 0.6+  | 0.4-  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 20 | 644 | 1.1+  | 0.4-  | 2007 11 05 | 691 | 0.2- | 0.1- | 2007 12 03 | 703 | 0.2+ | 0.3- |
| 2001 08 20 | 644 | 1.2+  | 0.4-  | 2007 11 09 | 691 | 0.3- | 0.0  | 2007 12 03 | 703 | 0.3+ | 0.8+ |
| 2001 08 29 | 644 | 0.3+  | 0.3+  | 2007 11 09 | 691 | 0.5- | 0.3- | 2007 12 04 | 699 | 0.5+ | 0.3- |
| 2001 08 29 | 644 | 0.1+  | 0.3+  | 2007 11 09 | 691 | 0.4- | 0.1+ | 2007 12 04 | 699 | 0.2- | 0.1- |
| 2001 08 29 | 644 | 0.3+  | 0.4+  | 2007 11 13 | 699 | 0.2+ | 0.5- | 2007 12 04 | 699 | 0.5+ | 0.6+ |
| 2001 09 14 | 644 | 0.1-  | 0.2-  | 2007 11 13 | 691 | 0.1- | 0.0  | 2007 12 04 | 699 | 0.8+ | 0.1- |
| 2001 09 14 | 644 | 0.3-  | 0.5-  | 2007 11 13 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2001 09 14 | 644 | 0.0   | 0.4-  | 2007 11 13 | 699 | 1.0+ | 0.4+ | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2001 10 15 | 608 | 0.0   | 0.9-  | 2007 11 13 | 691 | 0.3- | 0.1- | 2007 12 05 | 704 | 0.1+ | 0.0  |
| 2001 10 15 | 608 | (0.2+ | 1.6-) | 2007 11 13 | 699 | 0.3- | 0.8- | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2001 10 15 | 608 | (0.8- | 1.7-) | 2007 11 13 | 699 | 0.7+ | 0.3- | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2001 12 17 | 291 | 0.4-  | 1.2+  | 2007 11 15 | 704 | 0.1- | 0.4- | 2007 12 15 | G96 | 0.2+ | 0.4- |
| 2001 12 17 | 291 | 0.1+  | 1.3+  | 2007 11 15 | 704 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.5- |
| 2001 12 17 | 291 | (1.0+ | 1.9+) | 2007 11 15 | 704 | 0.5+ | 0.4+ | 2007 12 15 | G96 | 0.1+ | 0.5- |
| 2007 10 24 | G96 | 0.1+  | 0.0   | 2007 11 15 | 704 | 0.8+ | 0.2+ | 2007 12 15 | G96 | 0.6+ | 0.7- |
| 2007 10 24 | G96 | 0.3+  | 0.1-  | 2007 11 18 | 691 | 0.0  | 0.5+ |            |     |      |      |

**2007 VS<sub>62</sub> = 2005 CM<sub>79</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 338.08299  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.30546562 | $\omega$ | 42.46214 | +0.18455657 | -0.98214982 |          |   |
| <i>a</i> | 2.1835400  | $\Omega$ | 36.94585 | +0.88470751 | +0.14991471 |          |   |
| <i>e</i> | 0.0759529  | <i>i</i> | 3.46622  | +0.42805547 | +0.11361036 |          |   |
| <i>P</i> | 3.23       | <i>H</i> | 17.7     | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 15 | 691 | 0.3- | 0.3+ | 2007 11 05 | 691 | 0.1- | 0.1- | 2007 11 13 | 691 | 0.1- | 0.4+ |
| 2004 12 15 | 691 | 0.2- | 0.3+ | 2007 11 05 | 691 | 0.1- | 0.2+ | 2007 11 13 | 691 | 0.2- | 0.1+ |
| 2004 12 15 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 11 13 | 691 | 0.0  | 0.1- |
| 2005 02 04 | G96 | 0.5+ | 0.2- | 2007 11 09 | 691 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.1- |
| 2005 02 04 | G96 | 0.3- | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.2- | 2007 11 13 | 691 | 0.2- | 0.6- |
| 2005 02 04 | G96 | 0.5- | 0.2+ | 2007 11 09 | 691 | 0.6+ | 0.6+ | 2007 11 17 | 691 | 0.0  | 0.2- |
| 2005 02 04 | G96 | 0.4+ | 0.6- | 2007 11 09 | 691 | 0.1- | 0.0  | 2007 11 17 | 691 | 0.1+ | 0.1+ |
| 2007 11 01 | 691 | 0.4- | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.2- | 0.2- |
| 2007 11 01 | 691 | 0.1- | 0.3+ | 2007 11 09 | 691 | 0.3+ | 0.1+ |            |     |      |      |
| 2007 11 01 | 691 | 0.4+ | 0.5- | 2007 11 13 | 691 | 0.1+ | 0.0  |            |     |      |      |

**2007 VV<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 116.77421  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.28369185 | $\omega$ | 244.94759 | +0.32344740 | +0.94212884 |          |   |
| <i>a</i> | 2.2938841  | $\Omega$ | 44.23117  | -0.81623137 | +0.32493277 |          |   |
| <i>e</i> | 0.1207873  | <i>i</i> | 7.26204   | -0.47869420 | +0.08253453 |          |   |
| <i>P</i> | 3.47       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 03 11 | 644 | 0.1-  | 0.6+  | 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 11 17 | 691 | 0.2-  | 0.2+  |
| 2002 03 11 | 644 | 0.2-  | 0.7+  | 2007 09 14 | G96 | 0.2+ | 0.4- | 2007 11 17 | 691 | 0.3-  | 0.2+  |
| 2002 03 11 | 644 | 0.4-  | 0.6+  | 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.3-  | 0.1+  |
| 2002 04 02 | 644 | 0.5+  | 0.3+  | 2007 10 16 | G96 | 0.0  | 0.0  | 2007 11 20 | 704 | (2.9- | 0.9-) |
| 2002 04 02 | 644 | 0.7+  | 0.0   | 2007 10 16 | G96 | 0.0  | 0.1- | 2007 11 20 | 704 | 0.2+  | 0.3+  |
| 2002 04 02 | 644 | 0.4+  | 0.4+  | 2007 10 16 | G96 | 0.2+ | 0.2- | 2007 11 20 | 704 | 0.3+  | 0.4+  |
| 2003 08 23 | 644 | 0.4-  | 0.3+  | 2007 10 16 | G96 | 0.2+ | 0.3- | 2007 12 04 | 703 | (0.8- | 2.2-) |
| 2003 08 23 | 644 | 0.2-  | 0.4+  | 2007 11 01 | 691 | 0.1+ | 0.1- | 2007 12 04 | 703 | (0.2- | 1.9-) |
| 2003 08 23 | 644 | 0.4-  | 0.3+  | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 12 04 | 703 | 0.8+  | 0.2+  |
| 2003 09 27 | 699 | (1.7- | 0.3+) | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 12 04 | 703 | 0.4+  | 0.7-  |
| 2003 09 27 | 699 | 0.2-  | 0.2+  | 2007 11 05 | 691 | 0.3- | 0.1+ | 2007 12 12 | 704 | 0.2+  | 0.8+  |
| 2003 09 27 | 699 | (1.7+ | 0.2+) | 2007 11 05 | 691 | 0.5- | 0.0  | 2007 12 12 | 704 | 1.0+  | 0.1+  |
| 2003 09 27 | 699 | 0.6+  | 0.9+  | 2007 11 05 | 691 | 0.4- | 0.1+ | 2007 12 12 | 704 | 0.5+  | 1.2+  |
| 2003 10 17 | 644 | 0.4-  | 0.5-  | 2007 11 09 | 691 | 0.2- | 0.1- | 2007 12 13 | 704 | 0.1+  | 0.4-  |
| 2003 10 17 | 644 | 0.3-  | 0.2+  | 2007 11 09 | 691 |      |      |            |     |       |       |

2005 01 06 703 1.0+ 0.1− 2007 11 15 704 0.2+ 0.2−  
 2007 09 14 G96 0.3+ 0.0 2007 11 15 704 0.6+ 0.1+

**2007 VD<sub>63</sub> = 2004 CY<sub>34</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 29.56228   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21498201 | $\omega$ | 332.92704 | +0.91051596   | −0.41173735 |
| <i>a</i> | 2.7597387  | $\Omega$ | 51.43832  | +0.38758040   | +0.81802049 |
| <i>e</i> | 0.0927790  | <i>i</i> | 2.77491   | +0.14402126   | +0.40164018 |
| <i>P</i> | 4.58       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 28 | 691 | 0.2+ | 0.1+ | 2005 04 02 | G96 | 0.5− | 0.1− | 2007 11 05 | 691 | 0.1− | 0.0  |
| 2004 01 28 | 691 | 0.1+ | 0.3− | 2005 04 17 | 691 | 0.4+ | 0.2− | 2007 11 05 | G96 | 0.5+ | 0.4− |
| 2004 01 28 | 691 | 0.1+ | 0.1− | 2005 04 17 | 691 | 0.0  | 0.3+ | 2007 11 05 | G96 | 0.2+ | 0.0  |
| 2004 02 13 | 691 | 0.0  | 0.1+ | 2005 04 17 | 691 | 0.4+ | 0.3+ | 2007 11 09 | 701 | 0.1+ | 0.3+ |
| 2004 02 13 | 691 | 0.0  | 0.1− | 2005 05 11 | G96 | 0.5− | 0.1− | 2007 11 09 | 701 | 0.2+ | 0.0  |
| 2004 02 13 | 691 | 0.1+ | 0.3+ | 2005 05 11 | G96 | 0.4− | 0.1+ | 2007 11 09 | 701 | 0.2+ | 0.0  |
| 2004 02 13 | 691 | 0.1− | 0.0  | 2005 05 11 | G96 | 0.2− | 0.2+ | 2007 11 09 | 701 | 0.6+ | 0.0  |
| 2004 02 13 | 691 | 0.0  | 0.3+ | 2005 05 11 | G96 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.0  | 0.1− |
| 2004 02 13 | 691 | 0.0  | 0.1− | 2007 11 01 | 691 | 0.2− | 0.4+ | 2007 12 15 | G96 | 0.1− | 0.1+ |
| 2004 02 14 | 691 | 0.1+ | 0.4− | 2007 11 01 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.1+ |
| 2004 02 14 | 691 | 0.1− | 0.0  | 2007 11 01 | 691 | 0.2− | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2004 02 14 | 691 | 0.3− | 0.0  | 2007 11 05 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.0  | 0.2+ |
| 2005 04 02 | G96 | 0.2− | 0.5− | 2007 11 05 | 691 | 0.1− | 0.2− | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2005 04 02 | G96 | 0.2+ | 0.4− | 2007 11 05 | G96 | 0.2+ | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2005 04 02 | G96 | 1.1− | 0.5+ | 2007 11 05 | G96 | 0.3+ | 0.2− | 2007 12 15 | G96 | 0.0  | 0.1− |

**2007 VM<sub>63</sub> = 2005 JM<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 311.29747  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.22413108 | $\omega$ | 39.59057 | −0.36748920   | −0.92543275 |
| <i>a</i> | 2.6841163  | $\Omega$ | 72.14665 | +0.82680493   | −0.37054801 |
| <i>e</i> | 0.0568258  | <i>i</i> | 5.56686  | +0.42584656   | −0.07917316 |
| <i>P</i> | 4.40       | <i>H</i> | 16.3     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 17 | 691 | 0.3−  | 0.3−  | 2005 05 14 | G96 | 0.5− | 0.3+ | 2007 12 03 | 703 | 0.8−  | 1.3+  |
| 2003 12 17 | 691 | 1.0+  | 0.1−  | 2007 11 01 | 691 | 0.1− | 0.0  | 2007 12 04 | G96 | 0.0   | 0.1−  |
| 2003 12 17 | 691 | 0.1−  | 0.0   | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 12 04 | G96 | 0.3+  | 0.1−  |
| 2004 01 13 | 699 | (1.9− | 0.4+) | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.1+  | 0.1−  |
| 2004 01 13 | 699 | 0.0   | 1.0+  | 2007 11 05 | 691 | 0.1+ | 0.1− | 2007 12 04 | G96 | 0.2−  | 0.0   |
| 2004 01 13 | 699 | 0.8−  | 0.0   | 2007 11 05 | 691 | 0.2+ | 0.9+ | 2007 12 05 | 704 | 0.7+  | 0.6+  |
| 2004 01 13 | 699 | 1.4−  | 0.2+  | 2007 11 05 | 691 | 0.4− | 0.4− | 2007 12 05 | 704 | 0.8+  | 0.7+  |
| 2005 04 16 | 691 | 0.1+  | 0.1+  | 2007 11 09 | 691 | 0.4+ | 0.1− | 2007 12 05 | 704 | (0.5+ | 1.7+) |
| 2005 04 16 | 691 | 0.0   | 0.4+  | 2007 11 09 | 691 | 0.1− | 0.4− | 2007 12 05 | 704 | 0.1−  | 1.0+  |
| 2005 04 16 | 691 | 1.2−  | 1.1−  | 2007 11 09 | 691 | 0.1− | 0.2+ | 2007 12 05 | 704 | 0.1−  | 0.9+  |
| 2005 05 03 | 691 | 0.6+  | 0.5+  | 2007 11 18 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.5+  | 0.1+  |
| 2005 05 03 | 691 | 0.4+  | 0.1+  | 2007 11 18 | 691 | 0.3− | 0.1+ | 2007 12 15 | G96 | 0.2+  | 0.2−  |
| 2005 05 03 | 691 | 0.7+  | 0.1+  | 2007 11 18 | 691 | 0.0  | 0.2− | 2007 12 15 | G96 | 0.3+  | 0.1−  |
| 2005 05 14 | G96 | 0.7−  | 0.2−  | 2007 12 03 | 703 | 0.9− | 0.6− | 2007 12 15 | G96 | 0.8+  | 0.2−  |
| 2005 05 14 | G96 | 0.1−  | 0.1+  | 2007 12 03 | 703 | 0.8− | 0.9− |            |     |       |       |
| 2005 05 14 | G96 | 0.5−  | 0.0   | 2007 12 03 | 703 | 0.2+ | 0.8− |            |     |       |       |

**2007 VX<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.32784  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27834730 | $\omega$ | 31.58201 | +0.51667880   | −0.85594082 |
| <i>a</i> | 2.3231542  | $\Omega$ | 27.32385 | +0.77607342   | +0.45823896 |
| <i>e</i> | 0.2029352  | <i>i</i> | 2.52311  | +0.36159794   | +0.23954616 |
| <i>P</i> | 3.54       | <i>H</i> | 17.2     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 11 | 691 | 0.3− | 0.4+ | 2007 09 14 | G96 | 0.2+ | 0.2− | 2007 11 17 | 691 | 0.2+ | 0.2− |
| 1996 09 11 | 691 | 0.1− | 0.5+ | 2007 09 14 | G96 | 0.0  | 0.3− | 2007 11 20 | 704 | 0.4+ | 0.2+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 09 11 | 691 | 0.0  | 0.0  | 2007 09 14 | G96 | 0.1− | 0.5− | 2007 11 20 | 704 | 0.2+ | 0.5+ |
| 2003 07 24 | 644 | 0.2− | 0.6+ | 2007 11 01 | 691 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.1+ | 0.5+ |
| 2003 07 24 | 644 | 0.1− | 0.7+ | 2007 11 01 | 691 | 0.1+ | 0.1− | 2007 11 20 | 704 | 0.7+ | 1.1+ |
| 2003 07 24 | 644 | 0.1− | 0.6+ | 2007 11 01 | 691 | 0.1+ | 0.1− | 2007 11 20 | 704 | 0.1+ | 0.8+ |
| 2005 03 01 | 691 | 0.4+ | 0.0  | 2007 11 05 | 691 | 0.7− | 0.3+ | 2007 12 06 | D35 | 0.2+ | 0.2+ |
| 2005 03 01 | 691 | 0.1+ | 0.6+ | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 12 06 | D35 | 0.5+ | 0.2+ |
| 2005 03 01 | 691 | 0.0  | 0.6+ | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 12 06 | D35 | 0.0  | 0.3− |
| 2005 04 09 | G96 | 0.5+ | 0.6+ | 2007 11 09 | 691 | 0.1+ | 0.2− | 2007 12 10 | 704 | 0.1+ | 0.1+ |
| 2005 04 09 | G96 | 0.3− | 0.1+ | 2007 11 09 | 691 | 0.1− | 0.2− | 2007 12 10 | 704 | 0.2− | 0.4+ |
| 2005 04 09 | G96 | 0.2− | 0.2− | 2007 11 09 | 691 | 0.0  | 0.1− | 2007 12 10 | 704 | 0.1+ | 0.0  |
| 2005 04 09 | G96 | 0.6− | 0.2− | 2007 11 13 | 691 | 0.1− | 0.1+ | 2007 12 15 | 704 | 0.7+ | 0.0  |
| 2007 08 22 | 691 | 0.2− | 0.0  | 2007 11 13 | 691 | 0.3− | 0.1+ | 2007 12 15 | 704 | 0.2+ | 0.5+ |
| 2007 08 22 | 691 | 0.2− | 0.1− | 2007 11 13 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.6+ | 0.3+ |
| 2007 08 22 | 691 | 0.2− | 0.0  | 2007 11 17 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.3− | 0.3− |
| 2007 09 14 | G96 | 0.2− | 0.4− | 2007 11 17 | 691 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.1+ | 0.3+ |

**2007 VC<sub>64</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.61359  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28446082 | $\omega$ | 67.35041 | −0.43595765   | −0.89626292 |
| <i>a</i> | 2.2897483  | $\Omega$ | 48.75685 | +0.78075465   | −0.42173297 |
| <i>e</i> | 0.1033663  | <i>i</i> | 6.22787  | +0.44761937   | −0.13731017 |
| <i>P</i> | 3.46       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 05 27 | 691 | 0.5+ | 0.2+ | 2007 09 15 | G96 | 0.3+  | 0.0   | 2007 11 15 | 704 | 0.4− | 0.7+ |
| 1995 05 27 | 691 | 0.1+ | 0.5− | 2007 09 15 | G96 | 0.1+  | 0.2−  | 2007 11 15 | 704 | 0.4+ | 0.1− |
| 1995 05 27 | 691 | 0.5− | 0.4+ | 2007 11 01 | 691 | 0.2+  | 0.2−  | 2007 12 06 | D35 | 0.1− | 0.0  |
| 2002 05 04 | 291 | 0.1+ | 0.1− | 2007 11 01 | 691 | 0.1+  | 0.2+  | 2007 12 06 | D35 | 0.2− | 0.2+ |
| 2002 05 04 | 291 | 0.1− | 0.2− | 2007 11 01 | 691 | 0.5−  | 0.1+  | 2007 12 06 | D35 | 0.2+ | 0.1+ |
| 2002 05 04 | 291 | 0.1+ | 0.4+ | 2007 11 05 | 691 | 0.3−  | 0.3+  | 2007 12 13 | 704 | 0.4+ | 0.1− |
| 2005 03 11 | 703 | 0.1− | 0.1− | 2007 11 05 | 691 | 0.0   | 0.1−  | 2007 12 13 | 704 | 0.6− | 0.2+ |
| 2005 03 11 | 703 | 0.4− | 0.5− | 2007 11 05 | 691 | 0.2−  | 0.6−  | 2007 12 13 | 704 | 0.1+ | 0.1+ |
| 2005 03 11 | 703 | 0.3+ | 0.2− | 2007 11 05 | 691 | 0.1+  | 0.5−  | 2007 12 13 | 704 | 0.5+ | 0.3− |
| 2005 03 11 | 703 | 0.2− | 0.4− | 2007 11 05 | 691 | 0.0   | 0.0   | 2007 12 13 | 704 | 0.4− | 0.1− |
| 2005 03 11 | 699 | 0.2− | 0.4+ | 2007 11 05 | 691 | 0.0   | 0.0   | 2007 12 15 | 704 | 1.1+ | 0.3+ |
| 2005 03 11 | 699 | 0.8+ | 0.5− | 2007 11 15 | 704 | 0.1+  | 0.5+  | 2007 12 15 | 704 | 0.2+ | 0.9+ |
| 2005 03 11 | 699 | 0.2+ | 0.2+ | 2007 11 15 | 704 | 0.4+  | 0.9+  | 2007 12 15 | 704 | 0.3+ | 0.3+ |
| 2005 03 11 | 699 | 0.7− | 0.6+ | 2007 11 15 | 704 | (1.2+ | 2.1+) |            |     |      |      |

**2007 VJ<sub>64</sub> = 2000 WW<sub>79</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.79476    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28364513 | $\omega$ | 149.02866 | +0.67873947   | −0.72992130 |
| <i>a</i> | 2.2941360  | $\Omega$ | 258.09182 | +0.65574869   | +0.65191645 |
| <i>e</i> | 0.1708229  | <i>i</i> | 4.73634   | +0.33061517   | +0.20547466 |
| <i>P</i> | 3.47       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 20 | 704 | (2.3+ | 0.0 ) | 2007 11 01 | 691 | 0.6− | 0.3+ | 2007 11 17 | 691 | 0.2+ | 0.6− |
| 2000 11 20 | 704 | 0.4+  | 0.1−  | 2007 11 01 | 691 | 1.1− | 1.0+ | 2007 11 17 | 691 | 0.1+ | 1.2− |
| 2000 11 20 | 704 | 0.3−  | 0.8+  | 2007 11 01 | 691 | 0.4+ | 0.1− | 2007 12 14 | 704 | 0.4− | 0.4+ |
| 2000 11 20 | 704 | 0.6−  | 0.4+  | 2007 11 05 | 691 | 0.3+ | 0.0  | 2007 12 14 | 704 | 0.5− | 0.4+ |
| 2000 11 20 | 704 | 0.6+  | 0.6−  | 2007 11 05 | 691 | 0.0  | 0.2− | 2007 12 14 | 704 | 0.2+ | 0.1+ |
| 2000 11 29 | 704 | 0.3+  | 0.2−  | 2007 11 05 | 691 | 0.4+ | 0.1+ | 2007 12 14 | 704 | 0.3− | 0.9+ |
| 2000 11 29 | 704 | 0.0   | 0.1−  | 2007 11 15 | 704 | 1.0+ | 0.0  | 2007 12 14 | 704 | 0.6− | 0.6+ |
| 2000 11 29 | 704 | 0.6+  | 0.3+  | 2007 11 15 | 704 | 1.3+ | 0.1+ | 2007 12 16 | 691 | 0.1− | 0.1− |
| 2000 11 29 | 704 | 0.7−  | 0.1+  | 2007 11 15 | 704 | 0.5+ | 0.2− | 2007 12 16 | 691 | 0.1− | 0.1− |
| 2000 11 29 | 704 | 0.4−  | 0.4+  | 2007 11 17 | 691 | 0.3+ | 0.0  | 2007 12 16 | 691 | 0.0  | 0.2+ |

2007 DEC. 24

M.P.O. 129985

**2007 VT<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.61626  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22652954 | $\omega$ 264.03656 | +0.34470611   | -0.93865465 |
| <i>a</i> | 2.6651367  | $\Omega$ 165.78658 | +0.87692897   | +0.31810244 |
| <i>e</i> | 0.0719702  | <i>i</i> 2.39352   | +0.33492279   | +0.13318517 |
| <i>P</i> | 4.35       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.1+ | 0.5+ | 2007 09 12 | G96 | 0.1+ | 0.4- | 2007 10 18 | G96 | 0.2- | 0.1- |
| 2003 11 18 | 691 | 0.1+ | 0.1+ | 2007 09 12 | G96 | 0.0  | 0.1+ | 2007 11 02 | G96 | 0.2+ | 0.2+ |
| 2003 11 18 | 691 | 0.3- | 0.2- | 2007 09 12 | G96 | 0.1- | 0.0  | 2007 11 02 | G96 | 0.1+ | 0.1- |
| 2005 03 08 | G96 | 0.2+ | 0.0  | 2007 09 12 | G96 | 0.4+ | 0.1- | 2007 11 02 | G96 | 0.1+ | 0.0  |
| 2005 03 08 | G96 | 0.3- | 0.1- | 2007 10 08 | G96 | 0.1- | 0.0  | 2007 11 02 | G96 | 0.5- | 0.1+ |
| 2005 03 08 | G96 | 0.0  | 0.1+ | 2007 10 08 | G96 | 0.2- | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.4- |
| 2005 03 08 | G96 | 0.5- | 0.5- | 2007 10 08 | G96 | 0.3+ | 0.1- | 2007 11 05 | G96 | 0.5+ | 0.4- |
| 2005 04 04 | G96 | 0.1- | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.0  | 2007 11 05 | G96 | 0.3- | 0.5- |
| 2005 04 04 | G96 | 0.4+ | 0.0  | 2007 10 18 | G96 | 0.2- | 0.4+ | 2007 11 05 | G96 | 0.1- | 0.0  |
| 2005 04 04 | G96 | 0.4- | 0.3+ | 2007 10 18 | G96 | 0.3- | 0.3+ |            |     |      |      |
| 2005 04 04 | G96 | 0.4+ | 0.5- | 2007 10 18 | G96 | 0.0  | 0.2- |            |     |      |      |

**2007 VU<sub>65</sub> = 2003 UK<sub>299</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.65480   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23823582 | $\omega$ 273.60066 | +0.54850999   | +0.83354876 |
| <i>a</i> | 2.5771004  | $\Omega$ 29.96268  | -0.70526922   | +0.50350969 |
| <i>e</i> | 0.1947643  | <i>i</i> 7.57383   | -0.44914599   | +0.22732017 |
| <i>P</i> | 4.14       | <i>H</i> 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 16 | 691 | 0.1- | 0.1+ | 2007 09 18 | 691 | 0.1- | 0.2- | 2007 10 18 | G96 | 0.3+ | 0.3- |
| 2003 10 16 | 691 | 0.8- | 0.3+ | 2007 09 18 | 691 | 0.2- | 0.0  | 2007 10 18 | G96 | 0.1+ | 0.4- |
| 2003 10 16 | 691 | 0.2- | 0.1+ | 2007 10 09 | G96 | 0.3+ | 0.4- | 2007 11 02 | G96 | 0.2- | 0.0  |
| 2003 10 24 | 291 | 0.3+ | 0.3+ | 2007 10 09 | G96 | 0.4- | 0.7- | 2007 11 02 | G96 | 0.7- | 0.0  |
| 2003 10 24 | 291 | 0.2- | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.5- | 2007 11 02 | G96 | 0.7+ | 0.0  |
| 2003 10 24 | 291 | 0.2+ | 0.3+ | 2007 10 09 | G96 | 0.2- | 0.4- | 2007 11 02 | G96 | 0.0  | 0.0  |
| 2006 03 26 | G96 | 0.5+ | 0.7+ | 2007 10 18 | 291 | 0.2- | 0.4+ | 2007 11 05 | G96 | 0.3+ | 0.3- |
| 2006 03 26 | G96 | 0.4+ | 0.6+ | 2007 10 18 | 291 | 0.3- | 0.4+ | 2007 11 05 | G96 | 0.8+ | 0.0  |
| 2006 03 26 | G96 | 0.5- | 0.3+ | 2007 10 18 | 291 | 0.1- | 0.5+ | 2007 11 05 | G96 | 0.7+ | 0.2- |
| 2006 03 26 | G96 | 0.6- | 0.3+ | 2007 10 18 | 291 | 0.1- | 0.2+ | 2007 11 05 | G96 | 0.7+ | 0.1- |
| 2006 04 30 | 691 | 0.3+ | 0.6+ | 2007 10 18 | 291 | 0.2+ | 0.3+ | 2007 12 04 | G96 | 0.1+ | 0.6- |
| 2006 04 30 | 691 | 0.2+ | 0.3+ | 2007 10 18 | 291 | 0.1- | 0.2+ | 2007 12 04 | G96 | 0.3- | 0.1+ |
| 2006 04 30 | 691 | 0.6+ | 0.6+ | 2007 10 18 | G96 | 0.3+ | 0.3- | 2007 12 04 | G96 | 0.5+ | 0.5- |
| 2007 09 18 | 691 | 0.1- | 0.0  | 2007 10 18 | G96 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.2+ | 0.1+ |

**2007 VG<sub>66</sub> = 1999 FO<sub>76</sub> = 2004 EW<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 277.26143  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.19232887 | $\omega$ 5.69374   | -0.82894414   | -0.55771360 |
| <i>a</i> | 2.9723941  | $\Omega$ 140.31109 | +0.51051378   | -0.78546007 |
| <i>e</i> | 0.1116862  | <i>i</i> 3.81680   | +0.22853291   | -0.26834309 |
| <i>P</i> | 5.12       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 20 | 645 | 0.0  | 0.0  | 2006 08 21 | 691 | 0.1- | 0.5+ | 2007 11 07 | 704 | 0.4+ | 1.0+ |
| 1999 03 20 | 645 | 0.0  | 0.0  | 2006 08 21 | 691 | 0.3- | 0.5+ | 2007 11 07 | 704 | 0.1- | 0.2- |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 10 10 | 691 | 0.4- | 0.0  | 2007 11 07 | 704 | 0.6+ | 0.9+ |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 10 10 | G96 | 0.7+ | 0.2- | 2007 11 07 | 704 | 0.5+ | 0.6+ |
| 2004 03 15 | 691 | 0.2- | 0.3+ | 2007 10 10 | G96 | 0.4+ | 0.1- | 2007 11 13 | 691 | 0.2- | 0.2+ |
| 2004 03 15 | 691 | 0.2- | 0.3+ | 2007 10 10 | G96 | 0.5+ | 0.0  | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2004 03 15 | 704 | 0.1+ | 0.3+ | 2007 10 10 | 691 | 0.2- | 0.4+ | 2007 11 13 | 691 | 0.0  | 0.2- |
| 2004 03 15 | 704 | 1.2+ | 0.8+ | 2007 10 10 | G96 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2004 03 15 | 691 | 0.2- | 0.3+ | 2007 10 10 | 691 | 0.3- | 0.3- | 2007 11 18 | G96 | 0.4+ | 0.2+ |
| 2004 03 15 | 704 | 0.1+ | 0.4+ | 2007 11 02 | 691 | 0.1+ | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.0  |
| 2004 03 22 | 704 | 0.3+ | 0.3- | 2007 11 02 | 691 | 0.1- | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 22 | 704 | 0.9+ | 0.7+ | 2007 11 02 | 691 | 0.1+ | 0.3- | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2004 03 22 | 704 | 0.5+ | 0.5+ | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2004 03 22 | 704 | 1.1+ | 0.4- | 2007 11 05 | 691 | 0.0  | 0.0  | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2006 08 21 | 691 | 0.2- | 0.5+ | 2007 11 05 | 691 | 0.1- | 0.2+ |            |     |      |      |

**2007 VX<sub>66</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.72790  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26783501 | $\omega$ 59.28595 | +0.08710541   | -0.99601801 |
| <i>a</i> | 2.3835512  | $\Omega$ 25.73749 | +0.89838514   | +0.07029932 |
| <i>e</i> | 0.2143202  | <i>i</i> 2.50693  | +0.43048437   | +0.05482822 |
| <i>P</i> | 3.68       | <i>H</i> 18.3     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 09 30 | 691 | 0.6- | 0.6+ | 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 11 09 | 691 | 0.1- | 0.1- |
| 1992 09 30 | 691 | 0.2- | 0.2+ | 2007 09 14 | G96 | 0.4+ | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.0  |
| 1992 09 30 | 691 | 0.0  | 0.7+ | 2007 09 14 | G96 | 0.1- | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.0  |
| 2003 09 26 | 645 | 0.1+ | 0.0  | 2007 09 14 | G96 | 0.1- | 0.3+ | 2007 11 13 | 691 | 0.0  | 0.0  |
| 2003 09 26 | 645 | 0.1+ | 0.0  | 2007 11 02 | 691 | 0.2- | 0.1+ | 2007 11 17 | 691 | 0.4- | 0.7+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.2- | 2007 11 17 | 691 | 0.2- | 0.4- |
| 2003 10 19 | 645 | 0.1- | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.1- | 2007 11 17 | 691 | 0.2+ | 0.2- |
| 2003 11 20 | 645 | 0.0  | 0.1- | 2007 11 05 | 691 | 0.1+ | 0.3- | 2007 12 15 | 704 | 1.2+ | 1.3+ |
| 2003 11 20 | 645 | 0.0  | 0.1- | 2007 11 05 | 691 | 0.2- | 0.0  | 2007 12 15 | 704 | 0.3+ | 1.2+ |
| 2005 04 11 | 691 | 0.2+ | 0.3+ | 2007 11 05 | 691 | 0.2- | 0.1+ | 2007 12 15 | 704 | 0.0  | 0.0  |
| 2005 04 11 | 691 | 0.1- | 0.2+ | 2007 11 09 | 691 | 0.1- | 0.1- | 2007 12 15 | 704 | 0.8+ | 0.6+ |
| 2005 04 11 | 691 | 0.3+ | 0.4+ | 2007 11 09 | 691 | 0.0  | 0.1- | 2007 12 15 | 704 | 0.1+ | 0.2+ |

**2007 VA<sub>67</sub> = 2004 HR<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 292.66456  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18042343 | $\omega$ 216.32630 | -0.85948143   | -0.51083732 |
| <i>a</i> | 3.1017545  | $\Omega$ 292.94426 | +0.47355807   | -0.78221338 |
| <i>e</i> | 0.1511838  | <i>i</i> 1.14209   | +0.19244331   | -0.35663351 |
| <i>P</i> | 5.46       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 22 | 327 | 0.3- | 1.0+ | 2006 09 28 | 691 | 0.1- | 0.2+ | 2007 11 09 | 691 | 0.3+ | 0.2- |
| 1998 03 22 | 327 | 0.3+ | 1.2+ | 2006 09 28 | G96 | 0.3+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 1998 03 22 | 327 | 0.2+ | 0.1+ | 2006 09 28 | G96 | 0.2- | 0.3- | 2007 11 09 | 691 | 0.0  | 0.0  |
| 2001 10 15 | 691 | 0.4- | 0.2+ | 2006 09 28 | G96 | 0.4+ | 0.4- | 2007 11 17 | 691 | 0.1- | 0.2- |
| 2001 10 15 | 691 | 0.4- | 0.2+ | 2006 09 28 | G96 | 0.1+ | 0.2+ | 2007 11 17 | 691 | 0.2- | 0.2+ |
| 2001 10 15 | 691 | 0.3- | 0.0  | 2006 10 20 | G96 | 0.8+ | 0.1- | 2007 11 17 | 691 | 0.6- | 0.1- |
| 2003 01 29 | 645 | 0.1+ | 0.0  | 2006 10 20 | G96 | 1.0+ | 0.5- | 2007 12 04 | 703 | 0.6- | 0.2+ |
| 2003 01 29 | 645 | 0.1+ | 0.0  | 2006 10 20 | G96 | 0.4- | 0.1- | 2007 12 04 | 703 | 0.5+ | 1.4- |
| 2004 04 28 | 691 | 0.1- | 0.1- | 2006 10 20 | G96 | 0.2- | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2004 04 28 | 691 | 0.2- | 0.1- | 2007 09 15 | G96 | 0.7+ | 0.1- | 2007 12 04 | 703 | 0.1+ | 0.2+ |
| 2004 04 28 | 691 | 0.1+ | 0.2+ | 2007 09 15 | G96 | 0.0  | 0.6+ | 2007 12 04 | G96 | 0.5+ | 0.2+ |
| 2004 05 13 | 691 | 0.2- | 0.0  | 2007 09 15 | G96 | 0.8+ | 0.1+ | 2007 12 04 | 703 | 0.2+ | 0.8+ |
| 2004 05 13 | 691 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.2+ | 2007 12 04 | G96 | 0.3+ | 0.3- |
| 2004 05 13 | 691 | 0.1- | 0.1- | 2007 11 02 | 691 | 0.2- | 0.2- | 2007 12 04 | G96 | 0.5+ | 0.1+ |
| 2006 09 16 | 691 | 0.1- | 0.5+ | 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 12 05 | 291 | 0.0  | 0.1- |
| 2006 09 16 | 691 | 0.6+ | 0.2- | 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 12 05 | 291 | 0.4- | 0.1+ |
| 2006 09 16 | 691 | 0.3+ | 0.0  | 2007 11 05 | 691 | 0.0  | 0.0  | 2007 12 05 | 291 | 0.5- | 0.1- |
| 2006 09 28 | 691 | 0.2- | 0.4+ | 2007 11 05 | 691 | 0.1+ | 0.1- |            |     |      |      |
| 2006 09 28 | 691 | 0.1+ | 0.3- | 2007 11 05 | 691 | 0.1+ | 0.1- |            |     |      |      |

**2007 VC<sub>67</sub> = 2004 CP<sub>115</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 317.90161  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22879289 | $\omega$ 242.60203 | -0.63315413   | -0.76717533 |
| <i>a</i> | 2.6475309  | $\Omega$ 247.06012 | +0.74371881   | -0.56619574 |
| <i>e</i> | 0.2785662  | <i>i</i> 6.40614   | +0.21447188   | -0.30143722 |
| <i>P</i> | 4.31       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 04 | 608 | 0.0   | 0.5−  | 2007 11 05 | 691 | 0.1+ | 0.2− | 2007 12 04 | G96 | 0.1+ | 0.0  |
| 2004 02 04 | 608 | 0.2+  | 0.4−  | 2007 11 05 | 691 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.4+ | 0.1− |
| 2004 02 04 | 608 | 0.2−  | 0.4−  | 2007 11 05 | 691 | 0.1− | 0.1− | 2007 12 05 | 704 | 0.2+ | 0.5+ |
| 2004 02 12 | 333 | 0.2−  | 0.3+  | 2007 11 09 | 691 | 0.2− | 0.0  | 2007 12 05 | 704 | 0.2− | 0.7+ |
| 2004 02 12 | 333 | 0.1−  | 0.0   | 2007 11 09 | 691 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.2− | 0.7+ |
| 2004 02 12 | 333 | 0.1−  | 0.3+  | 2007 11 09 | 691 | 0.2− | 0.2− | 2007 12 05 | 704 | 0.4− | 0.4+ |
| 2004 02 29 | 683 | (0.6− | 2.1−) | 2007 11 14 | 704 | 0.2+ | 0.2− | 2007 12 05 | 704 | 0.5− | 0.5+ |
| 2004 02 29 | 683 | 1.0+  | 0.0   | 2007 11 14 | 704 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.5+ | 0.0  |
| 2004 02 29 | 683 | 0.6−  | 0.4+  | 2007 11 14 | 704 | 0.2+ | 0.1+ | 2007 12 15 | G96 | 0.4+ | 0.0  |
| 2007 11 02 | 691 | 0.0   | 0.1−  | 2007 11 14 | 704 | 0.7+ | 0.5− | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2007 11 02 | 691 | 0.1+  | 0.1+  | 2007 12 04 | G96 | 0.1+ | 0.2− | 2007 12 15 | G96 | 0.1− | 0.0  |
| 2007 11 02 | 691 | 0.1−  | 0.3+  | 2007 12 04 | G96 | 0.3+ | 0.1− |            |     |      |      |

**2007 VG<sub>67</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.04572    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26857441 | $\omega$ | 86.61031  | +0.88275761   | −0.46776082 |
| <i>a</i> | 2.3791745  | $\Omega$ | 301.27438 | +0.40801240   | +0.80970471 |
| <i>e</i> | 0.2622288  | <i>i</i> | 2.95307   | +0.23294822   | +0.35437001 |
| <i>P</i> | 3.67       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 22 | 691 | 0.1+ | 0.5+ | 2007 11 01 | D35 | 0.1+ | 0.0  | 2007 11 15 | 699 | 0.2+ | 0.2− |
| 2000 12 22 | 691 | 0.0  | 0.2+ | 2007 11 01 | D35 | 0.0  | 0.0  | 2007 11 15 | 699 | 0.2+ | 0.5− |
| 2000 12 22 | 691 | 0.3+ | 0.3+ | 2007 11 01 | D35 | 0.1− | 0.3+ | 2007 11 15 | 699 | 0.1− | 0.2− |
| 2003 07 26 | 644 | 0.1− | 0.5+ | 2007 11 02 | D29 | 0.3+ | 0.5− | 2007 11 18 | 704 | 0.2− | 0.1+ |
| 2003 07 26 | 644 | 0.4− | 0.8+ | 2007 11 02 | D29 | 0.4+ | 0.7− | 2007 11 18 | 704 | 0.2− | 0.2+ |
| 2003 07 26 | 644 | 0.0  | 0.7+ | 2007 11 02 | D29 | 0.2+ | 0.4− | 2007 11 18 | 704 | 0.5− | 0.0  |
| 2003 08 25 | 807 | 0.0  | 0.4+ | 2007 11 02 | D29 | 0.5+ | 0.4− | 2007 11 18 | 704 | 0.0  | 0.3+ |
| 2003 08 25 | 807 | 0.0  | 0.3+ | 2007 11 05 | 691 | 0.2− | 0.1− | 2007 11 18 | 704 | 0.0  | 0.3+ |
| 2003 08 25 | 807 | 0.6− | 0.0  | 2007 11 05 | 691 | 0.1− | 0.2+ | 2007 11 20 | 704 | 0.1− | 0.8+ |
| 2003 08 25 | 807 | 0.1− | 0.4+ | 2007 11 05 | 691 | 0.1− | 0.3− | 2007 11 20 | 704 | 0.6− | 0.8+ |
| 2007 09 20 | 703 | 0.6− | 0.2+ | 2007 11 07 | 704 | 0.3+ | 0.3+ | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2007 09 20 | 703 | 0.4+ | 0.4+ | 2007 11 07 | 704 | 0.6+ | 0.2+ | 2007 11 20 | 704 | 0.8− | 0.0  |
| 2007 09 20 | 703 | 0.4− | 0.8+ | 2007 11 07 | 704 | 0.6+ | 0.0  | 2007 11 20 | 704 | 0.3− | 1.4+ |
| 2007 09 20 | 703 | 0.7+ | 0.2− | 2007 11 07 | 704 | 0.2+ | 0.5+ | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2007 10 18 | 699 | 0.1− | 1.1− | 2007 11 07 | 704 | 0.1− | 0.3+ | 2007 11 20 | 691 | 0.3− | 0.2− |
| 2007 10 18 | 699 | 0.3− | 0.1+ | 2007 11 12 | 703 | 0.1+ | 0.2+ | 2007 12 05 | 699 | 1.1+ | 0.1+ |
| 2007 10 18 | 699 | 0.5+ | 0.8− | 2007 11 12 | 703 | 0.5+ | 0.3+ | 2007 12 05 | 699 | 0.1+ | 1.0− |
| 2007 11 01 | D35 | 0.3+ | 0.3+ | 2007 11 12 | 703 | 0.7− | 0.3− | 2007 12 05 | 699 | 0.7+ | 0.6− |
| 2007 11 01 | D35 | 0.4+ | 0.1− | 2007 11 12 | 703 | 0.2+ | 0.5+ | 2007 12 05 | 699 | 0.6+ | 0.1+ |
| 2007 11 01 | D35 | 0.2+ | 0.2+ | 2007 11 15 | 699 | 0.2+ | 0.3− |            |     |      |      |

**2007 VK<sub>67</sub> = 2007 TY<sub>416</sub> = 2006 DL<sub>173</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.88568   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27631647 | $\omega$ | 262.45087 | +0.57503890   | +0.81749061 |
| <i>a</i> | 2.3345233  | $\Omega$ | 42.70473  | −0.73062536   | +0.53086943 |
| <i>e</i> | 0.2310904  | <i>i</i> | 2.72459   | −0.36812614   | +0.22335342 |
| <i>P</i> | 3.57       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 02 27 | 691 | 0.2+ | 0.2+ | 2007 10 08 | G96 | 0.1− | 0.3− | 2007 11 03 | 691 | 0.1− | 0.1+ |
| 2006 02 27 | 691 | 0.1+ | 0.1− | 2007 10 08 | G96 | 0.3+ | 0.3− | 2007 11 03 | 691 | 0.1− | 0.3− |
| 2006 02 27 | 691 | 0.1− | 0.3− | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 11 05 | 691 | 0.1− | 0.4− |
| 2006 03 03 | 691 | 0.5− | 0.1− | 2007 10 08 | G96 | 1.3+ | 0.6− | 2007 11 05 | 691 | 0.1+ | 0.3+ |
| 2006 03 03 | 691 | 0.0  | 0.3− | 2007 10 08 | G96 | 0.1− | 0.0  | 2007 11 05 | 691 | 0.3− | 0.1+ |
| 2006 03 03 | 691 | 0.2− | 0.4+ | 2007 10 08 | G96 | 0.2− | 0.1− | 2007 11 07 | 691 | 0.2+ | 0.1+ |
| 2006 03 26 | G96 | 0.5+ | 0.2+ | 2007 10 08 | G96 | 0.2+ | 0.1− | 2007 11 07 | 691 | 0.0  | 0.0  |
| 2006 03 26 | G96 | 0.6+ | 0.3+ | 2007 10 13 | 703 | 0.1− | 0.5+ | 2007 11 07 | 691 | 0.3− | 0.3− |
| 2006 03 26 | G96 | 1.0+ | 0.1− | 2007 10 13 | 703 | 1.5+ | 0.9+ | 2007 11 09 | 691 | 0.2− | 0.2+ |
| 2006 03 26 | G96 | 0.0  | 0.1− | 2007 10 13 | 703 | 1.0+ | 0.1+ | 2007 11 09 | 691 | 0.1− | 0.5+ |
| 2007 09 12 | G96 | 0.4+ | 0.1− | 2007 10 18 | G96 | 0.7− | 0.5+ | 2007 11 09 | 691 | 0.4− | 0.3+ |
| 2007 09 12 | G96 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.2+ | 0.7+ | 2007 12 06 | G96 | 0.7+ | 0.7− |
| 2007 09 12 | G96 | 0.6+ | 0.1− | 2007 10 18 | G96 | 0.2− | 0.4− | 2007 12 06 | G96 | 0.2+ | 0.3− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 10 18 | G96 | 0.3− | 0.4− | 2007 12 06 | G96 | 0.1+ | 0.6− |
| 2007 10 08 | G96 | 0.1− | 0.3− | 2007 11 03 | 691 | 0.1− | 0.1+ | 2007 12 06 | G96 | 0.7+ | 0.2− |

**2007 VY<sub>67</sub> = 2004 BU<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.77452  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21170023 | $\omega$ | 222.28525 | +0.24089241   | −0.96989398 |
| <i>a</i> | 2.7881866  | $\Omega$ | 213.82112 | +0.90676122   | +0.23803263 |
| <i>e</i> | 0.0512446  | <i>i</i> | 3.68035   | +0.34605625   | +0.05144062 |
| <i>P</i> | 4.66       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 18 | 691 | 0.2+ | 0.2+ | 2007 10 06 | 691 | 0.3+ | 0.2+ | 2007 11 03 | 691 | 0.6− | 0.5+ |
| 2004 01 18 | 691 | 0.0  | 0.1+ | 2007 10 06 | 691 | 0.2− | 0.3+ | 2007 11 03 | H07 | 1.0+ | 0.9− |
| 2004 01 18 | 691 | 0.1− | 0.2+ | 2007 10 06 | 691 | 0.8− | 1.5− | 2007 11 03 | 691 | 0.1− | 0.2+ |
| 2004 01 19 | 649 | 0.1+ | 0.8− | 2007 10 18 | 691 | 0.2− | 0.4− | 2007 11 03 | G96 | 0.5+ | 0.1− |
| 2004 01 19 | 649 | 0.5− | 0.6− | 2007 10 18 | 691 | 0.0  | 0.5+ | 2007 11 03 | G96 | 0.3+ | 0.2− |
| 2004 01 19 | 649 | 0.5− | 0.3− | 2007 10 18 | 691 | 0.2− | 0.3− | 2007 11 03 | G96 | 0.3+ | 0.1+ |
| 2004 01 19 | 649 | 0.2+ | 0.7− | 2007 11 03 | H07 | 0.1+ | 1.4+ | 2007 11 03 | G96 | 0.5+ | 0.3− |
| 2005 05 11 | G96 | 2.2+ | 0.6− | 2007 11 03 | H07 | 0.6+ | 1.0+ | 2007 11 05 | G96 | 0.6+ | 0.0  |
| 2005 05 11 | G96 | 0.8− | 0.0  | 2007 11 03 | 691 | 0.4− | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.1− |
| 2005 05 11 | G96 | 0.5− | 0.7+ | 2007 11 03 | H07 | 1.4+ | 0.2− | 2007 11 05 | G96 | 0.6+ | 0.3− |
| 2005 05 11 | G96 | 0.8− | 0.2+ | 2007 11 03 | H07 | 1.7+ | 0.5+ | 2007 11 05 | G96 | 0.5+ | 0.1− |

**2007 VM<sub>68</sub> = 2003 UJ<sub>345</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.77544  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26043964 | $\omega$ | 194.02650 | +0.54474639   | −0.83835601 |
| <i>a</i> | 2.4284621  | $\Omega$ | 222.97116 | +0.77223876   | +0.51091222 |
| <i>e</i> | 0.2014865  | <i>i</i> | 1.70346   | +0.32695363   | +0.19007343 |
| <i>P</i> | 3.78       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-------|
| 2003 09 18 | 691 | 0.1− | 0.0  | 2007 10 10 | 691 | 0.4− | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.1−  |
| 2003 09 18 | 691 | 0.1− | 0.2+ | 2007 10 18 | 691 | 0.1+ | 0.6− | 2007 11 07 | 703 | 0.1− | 0.0   |
| 2003 09 18 | 691 | 0.2− | 0.1+ | 2007 10 18 | 691 | 0.3− | 0.2+ | 2007 11 07 | 703 | 0.2+ | 0.3+  |
| 2003 09 29 | 333 | 0.4− | 0.1+ | 2007 10 18 | 691 | 0.3− | 0.3+ | 2007 11 07 | 703 | 0.5− | 0.2−  |
| 2003 09 29 | 333 | 0.0  | 0.2− | 2007 10 30 | G96 | 0.7+ | 0.0  | 2007 11 07 | 703 | 1.4− | 0.9−  |
| 2003 09 29 | 333 | 0.2− | 0.3+ | 2007 10 30 | G96 | 0.2+ | 0.2− | 2007 11 11 | 699 | 1.3+ | 0.8+  |
| 2003 10 19 | 645 | 0.1+ | 0.1− | 2007 10 30 | G96 | 0.1+ | 0.3− | 2007 11 11 | 699 | 0.2− | 0.5−  |
| 2003 10 19 | 645 | 0.1+ | 0.0  | 2007 10 30 | G96 | 0.3+ | 0.3− | 2007 11 11 | 699 | 0.9+ | 0.0   |
| 2003 10 22 | 645 | 0.0  | 0.1+ | 2007 11 03 | G96 | 0.4+ | 0.2+ | 2007 11 11 | 699 | 1.1+ | 1.0+  |
| 2003 10 22 | 645 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.1− | 0.1+ | 2007 11 14 | 704 | 0.7− | 0.4−  |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2007 11 03 | G96 | 0.4+ | 0.3− | 2007 11 14 | 704 | 0.3+ | 0.8+  |
| 2003 10 23 | 645 | 0.1− | 0.0  | 2007 11 03 | G96 | 0.1+ | 0.2+ | 2007 11 14 | 704 | 0.3+ | 1.0+  |
| 2003 11 20 | 645 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.1− | 0.1+ | 2007 11 14 | 704 | 0.4+ | 0.0   |
| 2003 11 20 | 645 | 0.0  | 0.0  | 2007 11 05 | 704 | 0.4− | 0.5+ | 2007 11 14 | 704 | (0.0 | 1.7+) |
| 2007 09 12 | G96 | 0.5+ | 0.1− | 2007 11 05 | 704 | 0.5+ | 0.0  | 2007 11 20 | G96 | 0.1− | 0.5−  |
| 2007 09 12 | G96 | 1.0+ | 0.3− | 2007 11 05 | 704 | 0.5− | 1.1+ | 2007 11 20 | G96 | 0.2+ | 0.5−  |
| 2007 09 12 | G96 | 0.5+ | 0.3− | 2007 11 05 | 704 | 0.3− | 0.1+ | 2007 11 20 | G96 | 0.1− | 0.3−  |
| 2007 09 12 | G96 | 0.0  | 0.5− | 2007 11 05 | G96 | 0.0  | 0.2− | 2007 11 20 | G96 | 0.2+ | 0.4−  |
| 2007 10 10 | 691 | 0.1− | 0.3+ | 2007 11 05 | G96 | 0.0  | 0.2− |            |     |      |       |
| 2007 10 10 | 691 | 0.3− | 0.2− | 2007 11 05 | G96 | 0.0  | 0.1− |            |     |      |       |

**2007 VM<sub>70</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5



## 2007 DEC. 24

M.P.O. 129987

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 29 | 691 | 0.2− | 0.3− | 2005 05 11 | G96 | 0.0  | 0.2+ | 2007 11 04 | G96 | 0.3+ | 0.2+ |
| 1999 03 20 | 645 | 0.3+ | 0.2− | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 11 04 | G96 | 0.0  | 0.3+ |
| 1999 03 20 | 645 | 0.2+ | 0.1− | 2007 10 08 | G96 | 0.1+ | 0.1− | 2007 11 04 | G96 | 0.2+ | 0.3+ |
| 2004 02 18 | 291 | 0.1+ | 0.1+ | 2007 10 08 | G96 | 0.2+ | 0.2− | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2004 02 18 | 291 | 0.0  | 0.3+ | 2007 10 08 | G96 | 0.4− | 0.2− | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2004 02 18 | 291 | 0.1+ | 0.3+ | 2007 10 20 | 691 | 0.6− | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.1+ |
| 2005 05 11 | G96 | 0.2− | 0.1+ | 2007 10 20 | 691 | 0.4− | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.1− |

2007 VD<sub>72</sub> = 2003 SY<sub>410</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 321.94624  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25658454 | $\omega$ | 238.15892 | +0.23619340   | −0.97138792 |
| <i>a</i> | 2.4527261  | $\Omega$ | 198.22867 | +0.91622698   | +0.23115732 |
| <i>e</i> | 0.1593862  | <i>i</i> | 4.55893   | +0.32363684   | +0.05451433 |
| <i>P</i> | 3.84       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 10 07 | G96 | 0.0  | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2003 09 28 | 645 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.3− | 2007 11 05 | G96 | 0.5+ | 0.1− |
| 2003 09 29 | 645 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.4+ | 0.4− | 2007 11 05 | G96 | 0.4+ | 0.1− |
| 2003 09 29 | 645 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.5+ | 0.6− | 2007 11 05 | G96 | 0.4+ | 0.2− |
| 2007 10 07 | G96 | 0.2+ | 0.3+ | 2007 11 01 | 691 | 0.9− | 0.0  | 2007 11 15 | 691 | 0.5+ | 0.1− |
| 2007 10 07 | G96 | 0.3+ | 0.1+ | 2007 11 01 | 691 | 0.1− | 0.4+ | 2007 11 15 | 691 | 0.2− | 0.1+ |
| 2007 10 07 | G96 | 0.1+ | 0.1− | 2007 11 01 | 691 | 0.2− | 0.0  | 2007 11 15 | 691 | 0.1+ | 0.0  |

2007 VG<sub>72</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.79641    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21862158 | $\omega$ | 344.79843 | +0.64376007   | −0.76359970 |
| <i>a</i> | 2.7290241  | $\Omega$ | 65.10184  | +0.70769399   | +0.56929379 |
| <i>e</i> | 0.0789065  | <i>i</i> | 3.15263   | +0.29110510   | +0.30466388 |
| <i>P</i> | 4.51       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 09 15 | 691 | 0.4+ | 0.2+ | 2005 06 13 | G96 | 0.5− | 0.1+ | 2007 11 15 | 704 | 0.8+ | 0.8− |
| 1993 09 15 | 691 | 0.4− | 0.1− | 2007 11 01 | 691 | 0.3− | 0.1+ | 2007 12 02 | D35 | 0.0  | 0.5+ |
| 1993 09 15 | 691 | 0.2+ | 0.3− | 2007 11 01 | 691 | 0.4− | 0.1− | 2007 12 02 | D35 | 1.5+ | 1.0+ |
| 2002 10 06 | 644 | 0.4− | 0.3+ | 2007 11 01 | 691 | 0.2− | 0.1− | 2007 12 02 | D35 | 0.0  | 1.2+ |
| 2002 10 06 | 644 | 0.0  | 0.4+ | 2007 11 05 | G96 | 0.3+ | 0.3− | 2007 12 03 | 703 | 0.4+ | 0.6+ |
| 2002 10 06 | 644 | 0.1− | 0.3+ | 2007 11 05 | G96 | 0.1− | 0.1− | 2007 12 03 | 703 | 0.9+ | 0.7+ |
| 2003 12 29 | 691 | 0.3+ | 0.2+ | 2007 11 05 | G96 | 0.1+ | 0.2− | 2007 12 03 | 703 | 0.7− | 0.7− |
| 2003 12 29 | 691 | 0.3+ | 0.5+ | 2007 11 05 | G96 | 0.3− | 0.1+ | 2007 12 03 | 703 | 1.1+ | 1.1+ |
| 2003 12 29 | 691 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.3− | 0.2− | 2007 12 05 | 704 | 0.9+ | 0.7+ |
| 2004 02 17 | 645 | 0.1− | 0.2− | 2007 11 09 | 691 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.1+ | 0.4+ |
| 2004 02 17 | 645 | 0.0  | 0.1− | 2007 11 09 | 691 | 0.1− | 0.1− | 2007 12 05 | 704 | 0.4+ | 0.9+ |
| 2005 04 16 | 691 | 0.2+ | 0.3+ | 2007 11 13 | 691 | 0.1− | 0.0  | 2007 12 15 | G96 | 0.0  | 0.5− |
| 2005 04 16 | 691 | 0.0  | 0.5+ | 2007 11 13 | 691 | 0.3− | 0.3+ | 2007 12 15 | G96 | 0.4− | 0.1− |
| 2005 04 16 | 691 | 0.4+ | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2005 06 13 | G96 | 0.2− | 0.2+ | 2007 11 15 | 704 | 0.3− | 0.5+ | 2007 12 15 | G96 | 0.2− | 0.1− |
| 2005 06 13 | G96 | 0.2+ | 0.2+ | 2007 11 15 | 704 | 0.4+ | 1.1+ |            |     |      |      |
| 2005 06 13 | G96 | 0.3− | 0.3+ | 2007 11 15 | 704 | 1.5+ | 0.4− |            |     |      |      |

2007 VP<sub>72</sub> = 2000 WO<sub>176</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.79111   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28090422 | $\omega$ | 47.61768  | +0.92946919   | −0.36889359 |
| <i>a</i> | 2.3090351  | $\Omega$ | 334.02950 | +0.33701338   | +0.85146378 |
| <i>e</i> | 0.2257636  | <i>i</i> | 0.27875   | +0.15003000   | +0.37272906 |
| <i>P</i> | 3.51       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 26 | 691 | 0.0  | 0.3− | 2007 11 05 | G96 | 0.1+ | 0.1− | 2007 12 04 | G96 | 0.1− | 0.2− |
| 2000 11 26 | 691 | 0.2− | 0.5− | 2007 11 05 | G96 | 0.4+ | 0.1+ | 2007 12 04 | G96 | 0.4− | 0.1− |
| 2000 11 26 | 691 | 0.2− | 0.2− | 2007 11 05 | G96 | 0.6+ | 0.0  | 2007 12 05 | 704 | 0.6+ | 0.6+ |
| 2000 11 29 | 704 | 0.1− | 0.1+ | 2007 11 10 | D29 | 0.3− | 0.0  | 2007 12 05 | 704 | 0.1− | 0.9− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 29 | 704 | 1.4+ | 0.4+ | 2007 11 10 | D29 | 0.0  | 0.1− | 2007 12 05 | 704 | 0.4− | 0.3+ |
| 2000 11 29 | 704 | 0.3+ | 0.1− | 2007 11 10 | D29 | 0.0  | 0.4+ | 2007 12 05 | 704 | 0.1− | 0.5+ |
| 2000 11 29 | 704 | 0.4− | 1.0+ | 2007 11 10 | D29 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.3+ |
| 2000 11 29 | 704 | 0.4+ | 0.2− | 2007 11 11 | 701 | 1.3+ | 0.5+ | 2007 12 14 | 704 | 0.1− | 1.2+ |
| 2007 09 14 | G96 | 0.4+ | 0.1− | 2007 11 11 | 701 | 0.3− | 0.5+ | 2007 12 14 | 704 | 0.1− | 0.2+ |
| 2007 09 14 | G96 | 0.0  | 0.3− | 2007 11 13 | 701 | 0.3− | 0.1− | 2007 12 14 | 704 | 0.1− | 0.4+ |
| 2007 09 14 | G96 | 0.1+ | 0.1− | 2007 11 13 | 701 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.1− | 0.1− |
| 2007 09 14 | G96 | 0.4− | 0.1− | 2007 11 14 | 701 | 0.0  | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.1− |
| 2007 10 16 | G96 | 0.4+ | 0.0  | 2007 11 14 | 701 | 0.5+ | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.1− |
| 2007 10 16 | G96 | 0.2+ | 0.1− | 2007 11 15 | 704 | 0.4− | 0.7− | 2007 12 15 | G96 | 0.1− | 0.4− |
| 2007 10 16 | G96 | 0.5+ | 0.1+ | 2007 11 15 | 704 | 0.4+ | 0.4+ | 2007 12 15 | G96 | 0.1+ | 0.2− |
| 2007 10 16 | G96 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.6+ | 0.2− | 2007 12 15 | G96 | 0.4− | 0.1+ |
| 2007 11 01 | 691 | 0.3− | 0.0  | 2007 11 15 | 704 | 0.2+ | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.2− |
| 2007 11 01 | 691 | 0.3− | 0.2− | 2007 11 15 | 704 | 0.1+ | 1.0+ | 2007 12 15 | G96 | 0.1+ | 0.0  |
| 2007 11 01 | 691 | 0.3− | 0.3+ | 2007 12 04 | G96 | 0.1− | 0.1− |            |     |      |      |
| 2007 11 05 | G96 | 0.5+ | 0.0  | 2007 12 04 | G96 | 0.3− | 0.1− |            |     |      |      |

2007 VR<sub>72</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 69.22477   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23670271 | $\omega$ | 96.44187  | +0.91572764   | +0.35340473 |
| <i>a</i> | 2.5882163  | $\Omega$ | 243.00494 | −0.39727447   | +0.86756838 |
| <i>e</i> | 0.1113057  | <i>i</i> | 12.38922  | +0.06013226   | +0.34990027 |
| <i>P</i> | 4.16       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 09 | 644 | 0.4+ | 0.1+ | 2007 11 05 | 704 | 0.5+ | 0.1− | 2007 11 14 | 691 | 0.5− | 0.2+ |
| 2002 07 09 | 644 | 0.1− | 0.2+ | 2007 11 05 | 704 | 1.3+ | 0.1− | 2007 11 14 | 704 | 0.7+ | 0.5− |
| 2002 07 09 | 644 | 0.1+ | 0.0  | 2007 11 05 | 704 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 0.4− | 0.2+ |
| 2002 07 19 | 644 | 0.3− | 0.2− | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 11 14 | 704 | 0.1+ | 0.2+ |
| 2002 07 19 | 644 | 0.4− | 0.1− | 2007 11 05 | G96 | 0.2− | 0.0  | 2007 11 30 | D35 | 0.1+ | 0.2+ |
| 2002 07 19 | 644 | 0.6− | 0.1− | 2007 11 05 | G96 | 0.0  | 0.0  | 2007 11 30 | D35 | 0.0  | 0.3+ |
| 2002 08 16 | 644 | 0.5+ | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.1− | 2007 11 30 | D35 | 0.1− | 0.0  |
| 2002 08 16 | 644 | 0.0  | 0.3+ | 2007 11 09 | 691 | 0.5− | 0.1+ | 2007 12 04 | 699 | 1.7+ | 0.1+ |
| 2002 08 16 | 644 | 0.1− | 0.1+ | 2007 11 09 | 691 | 0.5− | 0.2+ | 2007 12 04 | 699 | 2.0+ | 0.6− |
| 2002 08 24 | 644 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.8+ | 0.8− | 2007 12 04 | 699 | 0.6+ | 0.5− |
| 2002 08 24 | 644 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.3− | 0.0  | 2007 12 04 | 699 | 1.0+ | 0.1+ |
| 2002 08 24 | 644 | 0.3+ | 0.2− | 2007 11 13 | 691 | 0.2− | 0.5− | 2007 12 05 | 704 | 0.2+ | 0.3+ |
| 2007 11 01 | 691 | 0.3+ | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.4+ | 2007 12 05 | 704 | 0.3+ | 0.9+ |
| 2007 11 01 | 691 | 0.3− | 0.0  | 2007 11 14 | 704 | 0.2− | 0.4+ | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2007 11 01 | 691 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.8− | 0.1− | 2007 12 05 | 704 | 0.1+ | 0.1− |
| 2007 11 05 | 704 | 0.4+ | 0.3− | 2007 11 14 | 704 | 0.3+ | 0.3− | 2007 12 05 | 704 | 0.7+ | 0.2+ |
| 2007 11 05 | 704 | 0.8+ | 0.2− | 2007 11 14 | 704 | 0.4− | 0.1− |            |     |      |      |

2007 VU<sub>72</sub> = 1994 TX<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 48.24790   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23643068 | $\omega$ | 288.18159 | +0.98139313   | −0.19042211 |
| <i>a</i> | 2.5902012  | $\Omega$ | 82.80140  | +0.18421454   | +0.89758411 |
| <i>e</i> | 0.0277506  | <i>i</i> | 1.42291   | +0.05415278   | +0.39759552 |
| <i>P</i> | 4.17       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 10 04 | 691 | 0.2− | 0.1− | 2005 05 10 | G96 | 0.2+ | 0.0  | 2007 12 03 | 703 | 1.1− | 0.8− |
| 1994 10 04 | 691 | 0.1+ | 0.1− | 2005 05 10 | G96 | 0.7+ | 0.0  | 2007 12 03 | 703 | 0.1+ | 0.9+ |
| 1994 10 11 | 691 | 0.1+ | 0.3+ | 2005 05 10 | G96 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.2− | 0.3+ |
| 1994 10 11 | 691 | 0.0  | 0.1+ | 2007 11 01 | 691 | 0.1− | 0.1− | 2007 12 03 | 703 | 0.5+ | 0.6+ |
| 1994 10 11 | 691 | 0.4− | 0.8+ | 2007 11 01 | 691 | 0.1− | 0.2+ | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 1995 12 27 | 691 | 0.1− | 0.2− | 2007 11 01 | 691 | 0.1− | 0.2+ | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 1995 12 27 | 691 | 0.1+ | 0.4− | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 12 04 | G96 | 0.0  | 0.1+ |
| 1995 12 27 | 691 | 0.1− | 0.1+ | 2007 11 05 | G96 | 0.4+ | 0.0  | 2007 12 04 | G96 | 0.9+ | 0.0  |
| 2001 05 01 | 691 | 0.4+ | 0.2+ | 2007 11 05 | G96 | 0.2+ | 0.0  | 2007 12 05 | 704 | 0.1− | 1.3+ |
| 2001 05 01 | 691 | 0.1− | 0.8+ | 2007 11 05 | G96 | 0.2+ | 0.1+ | 2007 12 05 | 704 | 0.9− | 0.7+ |
| 2001 05 01 | 691 | 0.2+ | 0.9+ | 2007 11 14 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.3+ | 0.6+ |
| 2005 04 10 | G96 | 0.2+ | 0.2+ | 2007 11 14 | 691 | 0.3− | 0.2− | 2007 12 15 | G96 | 0.3+ | 0.3+ |
| 2005 04 10 | G96 | 0.1+ | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.9+ | 1.5+ |

## M.P.O. 129988

2007 DEC. 24

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2005 04 10 G96 (0.7– 2.3+) | 2007 11 18 691 0.1– 0.1+ | 2007 12 15 G96 0.4+ 0.2+ |
| 2005 04 10 G96 0.4+ 0.3+   | 2007 11 18 691 0.0 0.0   | 2007 12 15 G96 0.1+ 0.1+ |
| 2005 05 10 G96 0.3– 0.0    | 2007 11 18 691 0.2– 0.3– |                          |

**2007 VY<sub>73</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 93.38351   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26170337 | $\omega$ 247.72079 | +0.25146689   | +0.96519187 |
| <i>a</i> | 2.4206380  | $\Omega$ 37.07933  | –0.83831719   | +0.25433185 |
| <i>e</i> | 0.0714181  | <i>i</i> 6.84862   | –0.48372378   | +0.06099150 |
| <i>P</i> | 3.77       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2006 05 05 691 0.3+ 0.1+ | 2007 10 08 G96 0.2+ 0.1– | 2007 11 05 G96 0.5+ 0.1– |
| 2006 05 05 691 0.1– 0.5+ | 2007 10 08 G96 0.6– 0.1– | 2007 11 05 G96 0.4+ 0.1– |
| 2006 05 05 691 0.1– 0.0  | 2007 10 08 G96 0.4+ 0.2– | 2007 11 07 691 0.5– 0.1+ |
| 2006 05 31 G96 0.0 0.0   | 2007 10 18 G96 0.1– 0.3– | 2007 11 07 691 0.6– 0.4+ |
| 2006 05 31 G96 0.3+ 0.1– | 2007 10 18 G96 0.1+ 0.1– | 2007 11 07 691 0.1– 0.2– |
| 2006 05 31 G96 0.4– 0.2– | 2007 10 18 G96 0.1– 0.3– | 2007 11 09 691 0.0 0.4+  |
| 2006 05 31 G96 0.0 0.2–  | 2007 10 18 G96 0.0 0.0   | 2007 11 09 691 0.4– 0.0  |
| 2007 09 13 G96 0.2– 0.1+ | 2007 11 03 691 1.3+ 0.3– | 2007 11 09 691 0.5– 0.1+ |
| 2007 09 13 G96 0.1– 0.0  | 2007 11 03 691 0.3+ 0.2+ | 2007 11 13 691 1.1– 0.2+ |
| 2007 09 13 G96 0.1– 0.3+ | 2007 11 03 691 0.1– 0.1+ | 2007 11 13 691 0.7– 0.7+ |
| 2007 09 13 G96 0.1+ 0.0  | 2007 11 05 G96 0.5+ 0.2– | 2007 11 13 691 0.9+ 0.1+ |
| 2007 10 08 G96 0.2– 0.2+ | 2007 11 05 G96 0.4+ 0.4– |                          |

**2007 VT<sub>74</sub> = 2002 TP<sub>363</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.86367   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20993899 | $\omega$ 301.31431 | +0.99106269   | +0.10795694 |
| <i>a</i> | 2.8037588  | $\Omega$ 52.60415  | –0.06136216   | +0.89051575 |
| <i>e</i> | 0.0481840  | <i>i</i> 5.66036   | –0.11844589   | +0.44195814 |
| <i>P</i> | 4.69       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 10 10 645 0.1– 0.0  | 2007 10 18 691 0.0 0.4+  | 2007 11 15 947 1.0+ 1.0– |
| 2002 10 10 645 0.0 0.1–  | 2007 11 03 691 0.2– 0.1+ | 2007 11 15 947 0.6+ 0.1– |
| 2002 10 11 645 0.1– 0.0  | 2007 11 03 691 0.1+ 0.1– | 2007 11 15 947 1.3+ 0.6+ |
| 2002 10 11 645 0.0 0.0   | 2007 11 03 691 0.2– 0.1– | 2007 11 16 947 0.6+ 0.2+ |
| 2002 10 31 645 0.1+ 0.1+ | 2007 11 05 G96 0.2+ 0.1+ | 2007 11 16 947 0.2– 0.5– |
| 2002 10 31 645 0.1+ 0.0  | 2007 11 05 G96 0.3+ 0.1– | 2007 11 16 947 0.5+ 0.2+ |
| 2007 10 18 691 0.7– 0.5+ | 2007 11 05 G96 0.3+ 0.2+ |                          |
| 2007 10 18 691 0.4– 0.5– | 2007 11 05 G96 0.9+ 0.2+ |                          |

**2007 VH<sub>75</sub> = 2004 AP<sub>11</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 274.89476  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22822832 | $\omega$ 323.19554 | –0.77704845   | –0.62943995 |
| <i>a</i> | 2.6518952  | $\Omega$ 177.79483 | +0.58368801   | –0.72117745 |
| <i>e</i> | 0.0963895  | <i>i</i> 1.53284   | +0.23559290   | –0.28932410 |
| <i>P</i> | 4.32       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1994 11 28 691 1.2+ 0.5– | 2004 01 28 691 0.1+ 0.1+ | 2007 11 05 G96 0.3+ 0.2– |
| 1994 11 28 691 0.5+ 0.3– | 2007 10 06 691 0.3– 0.6+ | 2007 11 07 703 0.6– 0.5– |
| 1994 11 28 691 0.3+ 0.2+ | 2007 10 06 691 0.3– 0.6+ | 2007 11 07 703 0.2+ 0.6+ |
| 1998 09 26 691 1.3– 0.2– | 2007 10 06 691 0.2– 0.1+ | 2007 11 07 703 0.2+ 0.5+ |
| 1998 09 26 691 1.0– 0.5– | 2007 10 20 691 0.2– 0.1– | 2007 11 07 703 0.5+ 0.2– |
| 1998 09 26 691 0.9– 0.2– | 2007 10 20 691 0.0 0.1–  | 2007 11 14 704 0.2+ 0.3– |
| 2000 03 04 691 0.0 0.6–  | 2007 10 20 691 0.2– 0.4– | 2007 11 14 704 0.1+ 0.5+ |
| 2000 03 04 691 0.1– 0.1– | 2007 11 03 691 0.1+ 0.1– | 2007 11 14 704 0.3+ 0.0  |
| 2000 03 04 691 0.0 0.1+  | 2007 11 03 691 0.1+ 0.1– | 2007 11 15 G96 0.5+ 0.2– |
| 2002 08 31 291 0.6+ 0.2+ | 2007 11 03 691 0.1+ 0.1+ | 2007 11 15 G96 0.2+ 0.2– |
| 2002 08 31 291 0.1– 0.6+ | 2007 11 05 704 0.6– 0.5– | 2007 11 15 G96 0.6+ 0.1– |
| 2002 08 31 291 0.6+ 0.1+ | 2007 11 05 704 0.2– 0.1+ | 2007 11 15 G96 0.6+ 0.3– |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2004 01 13 691 0.4– 0.6+ | 2007 11 05 704 0.4+ 0.3– | 2007 11 20 291 0.3+ 0.1– |
| 2004 01 13 691 0.0 0.4+  | 2007 11 05 704 0.2+ 1.2– | 2007 11 20 291 0.3+ 0.1– |
| 2004 01 13 691 0.1– 0.3+ | 2007 11 05 G96 0.1+ 0.2– | 2007 11 20 291 0.0 0.1+  |
| 2004 01 28 691 0.6– 0.7+ | 2007 11 05 G96 0.8+ 0.3– |                          |
| 2004 01 28 691 0.2+ 0.0  | 2007 11 05 G96 0.4+ 0.1– |                          |

**2007 VB<sub>76</sub> = 2005 GS<sub>224</sub> = 2005 JR<sub>58</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.63067  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25880015 | $\omega$ 299.80999 | –0.47640514   | –0.87922547 |
| <i>a</i> | 2.4387074  | $\Omega$ 178.64004 | +0.81844807   | –0.44382334 |
| <i>e</i> | 0.1761595  | <i>i</i> 2.03745   | +0.32121784   | –0.17315720 |
| <i>P</i> | 3.81       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 1997 01 11 691 0.1– 0.5– | 2005 05 10 G96 0.2+ 0.6+ | 2007 10 20 691 0.2– 0.0    |
| 1997 01 11 691 0.1– 0.1– | 2005 05 10 G96 0.0 0.0   | 2007 10 20 691 0.1– 0.1–   |
| 1997 01 11 691 0.0 0.4–  | 2007 09 10 G96 0.7+ 0.1– | 2007 11 03 691 0.1+ 0.5+   |
| 2003 09 28 691 0.1+ 0.1– | 2007 09 10 G96 0.4+ 0.1+ | 2007 11 03 691 0.2– 0.3+   |
| 2003 09 28 691 0.0 0.2–  | 2007 09 10 G96 0.1+ 0.3– | 2007 11 03 691 0.0 0.3+    |
| 2003 09 28 691 0.1+ 0.2– | 2007 09 10 G96 0.4+ 0.4+ | 2007 11 05 704 0.3– 0.5+   |
| 2003 10 16 691 0.1– 0.0  | 2007 09 18 G96 0.1– 0.1– | 2007 11 05 704 0.5– 0.4+   |
| 2003 10 16 691 0.1+ 0.1+ | 2007 09 18 G96 0.3+ 0.3– | 2007 11 05 704 0.6– 0.0    |
| 2003 10 16 691 0.1– 0.0  | 2007 09 18 G96 0.4+ 0.4– | 2007 11 05 G96 0.4+ 0.3–   |
| 2005 04 05 G96 0.3– 0.0  | 2007 09 18 G96 0.3– 0.1– | 2007 11 05 G96 0.5+ 0.2–   |
| 2005 04 05 G96 0.1– 0.0  | 2007 10 08 691 0.2– 0.0  | 2007 11 05 G96 0.6+ 0.3–   |
| 2005 04 05 G96 0.2+ 0.6+ | 2007 10 08 G96 0.3+ 0.3– | 2007 11 05 G96 0.3+ 0.4–   |
| 2005 04 05 G96 0.6– 0.5+ | 2007 10 08 691 0.0 0.2–  | 2007 11 14 704 (1.6+ 1.0+) |
| 2005 04 11 691 0.4+ 0.0  | 2007 10 08 G96 0.8+ 0.1– | 2007 11 14 704 0.2+ 0.8+   |
| 2005 04 11 691 0.2+ 0.3+ | 2007 10 08 G96 0.4+ 0.3– | 2007 11 14 704 0.6– 1.0–   |
| 2005 04 11 691 0.0 0.0   | 2007 10 08 G96 0.5+ 0.1+ | 2007 11 14 704 0.6+ 0.9+   |
| 2005 05 08 691 0.1+ 0.7+ | 2007 10 08 691 0.0 0.2+  | 2007 11 14 704 1.4+ 1.3+   |
| 2005 05 08 691 0.4+ 0.5+ | 2007 10 20 691 0.6– 0.5+ | 2007 12 05 691 0.1– 0.0    |
| 2005 05 08 691 0.0 0.6+  | 2007 10 20 691 0.0 0.3+  | 2007 12 05 691 0.3– 0.4+   |
| 2005 05 10 G96 0.0 0.1+  | 2007 10 20 691 0.4– 0.2+ | 2007 12 05 691 0.1+ 0.3+   |
| 2005 05 10 G96 0.0 0.2+  | 2007 10 20 691 0.2– 0.3+ |                            |

**2007 VP<sub>78</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.91710   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26058650 | $\omega$ 314.78049 | +0.98129195   | –0.11844799 |
| <i>a</i> | 2.4275496  | $\Omega$ 52.61707  | +0.17934036   | +0.84910135 |
| <i>e</i> | 0.2507876  | <i>i</i> 11.01181  | –0.07002251   | +0.51477857 |
| <i>P</i> | 3.78       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 2003 08 27 644 0.0 0.2–    | 2007 11 03 691 0.3– 0.1–   | 2007 11 15 704 0.4+ 0.6+ |
| 2003 08 27 644 0.2+ 0.0    | 2007 11 03 691 0.2– 0.0    | 2007 11 15 704 0.2+ 0.2+ |
| 2003 08 27 644 0.2– 0.2+   | 2007 11 05 704 (1.9+ 0.1–) | 2007 11 15 704 0.1– 0.2– |
| 2003 09 25 644 0.0 0.5+    | 2007 11 05 704 0.1– 0.3–   | 2007 11 15 704 0.2+ 0.4+ |
| 2003 09 25 644 0.0 0.4–    | 2007 11 05 704 (1.0– 2.2+) | 2007 11 18 691 0.3– 0.0  |
| 2003 09 25 644 0.0 0.1–    | 2007 11 05 704 0.8+ 0.6+   | 2007 11 18 691 0.3– 0.0  |
| 2007 10 20 703 0.0 0.3–    | 2007 11 05 704 0.1– 0.4+   | 2007 11 18 691 1.0+ 0.6+ |
| 2007 10 20 703 0.2+ 0.3–   | 2007 11 05 G96 0.5+ 0.5–   | 2007 12 05 691 0.0 0.1+  |
| 2007 10 20 703 0.4– 0.3+   | 2007 11 05 G96 0.0 0.3–    | 2007 12 05 691 0.2+ 0.2– |
| 2007 10 20 703 0.5+ 0.0    | 2007 11 05 G96 0.1+ 0.3–   | 2007 12 05 691 0.1– 0.2+ |
| 2007 10 30 703 0.8– 0.8+   | 2007 11 05 G96 0.2+ 0.4–   | 2007 12 10 704 0.5– 0.9– |
| 2007 10 30 703 0.4+ 0.9+   | 2007 11 14 691 0.3– 0.0    | 2007 12 10 704 0.7– 0.1+ |
| 2007 10 30 703 0.5+ 0.1–   | 2007 11 14 691 0.2+ 0.6–   | 2007 12 10 704 0.4+ 0.1+ |
| 2007 10 30 703 (1.9– 0.7–) | 2007 11 14 691 0.3– 0.0    |                          |
| 2007 11 03 691 0.1– 0.1–   | 2007 11 15 704 0.1– 0.1+   |                          |

2007 DEC. 24

M.P.O. 129989

**2007 VM<sub>80</sub> = 2003 YB<sub>164</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 56.17970   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24206942 | $\omega$ 291.94203 | +0.97632975   | +0.21270264 |
| <i>a</i> | 2.5498195  | $\Omega$ 55.79757  | -0.17679954   | +0.88929231 |
| <i>e</i> | 0.1319620  | <i>i</i> 2.71770   | -0.12458788   | +0.40486637 |
| <i>P</i> | 4.07       | <i>H</i> 16.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 17 | 691 | 0.2+ | 0.1+ | 2007 11 07 | 701 | 1.3+  | 1.3+  | 2007 11 08 | 701 | 0.6+ | 0.2- |
| 2003 12 17 | 691 | 0.0  | 0.4- | 2007 11 07 | 701 | 0.3+  | 0.2+  | 2007 11 15 | 704 | 0.9+ | 0.7- |
| 2003 12 17 | 691 | 0.2+ | 0.6- | 2007 11 07 | 701 | 0.4+  | 0.1+  | 2007 11 15 | 704 | 0.8+ | 1.4- |
| 2003 12 29 | 691 | 0.0  | 0.2+ | 2007 11 07 | 701 | (0.1+ | 1.8-) | 2007 11 15 | 704 | 0.9+ | 1.4- |
| 2003 12 29 | 691 | 0.1+ | 0.4+ | 2007 11 07 | 701 | 0.3+  | 0.0   | 2007 11 15 | 704 | 0.5- | 0.1- |
| 2003 12 29 | 691 | 0.5- | 0.2+ | 2007 11 07 | 701 | 0.0   | 0.5-  | 2007 12 02 | D35 | 0.5+ | 0.3+ |
| 2007 11 03 | 691 | 0.3- | 0.0  | 2007 11 07 | 701 | 1.1-  | 0.9-  | 2007 12 02 | D35 | 0.5- | 0.3+ |
| 2007 11 03 | 691 | 0.3- | 0.2+ | 2007 11 07 | 701 | 0.6-  | 0.2-  | 2007 12 02 | D35 | 0.7+ | 0.4+ |
| 2007 11 03 | 691 | 0.4- | 0.3+ | 2007 11 07 | 701 | 0.2+  | 0.1+  | 2007 12 03 | 703 | 1.0- | 0.3- |
| 2007 11 05 | G96 | 0.2- | 0.1- | 2007 11 08 | 701 | 0.3+  | 0.2-  | 2007 12 03 | 703 | 0.6- | 1.1+ |
| 2007 11 05 | G96 | 0.0  | 0.1- | 2007 11 08 | 701 | 1.2+  | 0.1+  | 2007 12 03 | 703 | 0.9- | 0.9+ |
| 2007 11 05 | G96 | 0.3+ | 0.2- | 2007 11 08 | 701 | 0.5+  | 0.1-  | 2007 12 03 | 703 | 0.1- | 0.9- |
| 2007 11 05 | G96 | 0.1- | 0.2- | 2007 11 08 | 701 | 0.1-  | 0.4-  | 2007 12 15 | G96 | 0.1+ | 0.3- |
| 2007 11 07 | 701 | 1.2+ | 1.4+ | 2007 11 08 | 701 | 0.5+  | 0.2+  | 2007 12 15 | G96 | 0.1+ | 0.3- |
| 2007 11 07 | 701 | 0.8- | 0.3+ | 2007 11 08 | 701 | 0.4-  | 0.5+  | 2007 12 15 | G96 | 0.0  | 0.3- |
| 2007 11 07 | 701 | 0.4- | 0.3- | 2007 11 08 | 701 | 0.1+  | 0.2+  | 2007 12 15 | G96 | 0.1- | 0.3- |

**2007 VS<sub>80</sub> = 2007 TL<sub>416</sub> = 2002 SZ<sub>1</sub> = 2005 GM<sub>217</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 354.15514  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20379695 | $\omega$ 339.19131 | +0.85278797   | -0.52106470 |
| <i>a</i> | 2.8598127  | $\Omega$ 52.26179  | +0.48524416   | +0.76556640 |
| <i>e</i> | 0.0733864  | <i>i</i> 2.55650   | +0.19310821   | +0.37735880 |
| <i>P</i> | 4.84       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 07 | 691 | 0.2+ | 0.8- | 2005 04 10 | G96 | 0.2- | 0.1+ | 2007 10 18 | G96 | 0.3+ | 0.1- |
| 1995 03 07 | 691 | 0.1- | 0.6- | 2005 04 10 | G96 | 0.4- | 0.3+ | 2007 10 18 | G96 | 1.3+ | 0.0  |
| 1995 03 07 | 691 | 0.2- | 1.7- | 2005 04 10 | G96 | 0.3+ | 0.4- | 2007 10 18 | G96 | 0.1+ | 0.2- |
| 2000 05 04 | 645 | 0.0  | 0.1- | 2005 04 10 | G96 | 0.0  | 0.3+ | 2007 10 18 | G96 | 1.2+ | 0.0  |
| 2000 05 04 | 645 | 0.1+ | 0.1- | 2005 05 10 | G96 | 0.2- | 0.1- | 2007 10 18 | G96 | 0.3- | 0.1- |
| 2002 09 26 | 644 | 0.5- | 0.3+ | 2005 05 10 | G96 | 0.1+ | 0.3+ | 2007 10 18 | G96 | 0.5+ | 0.0  |
| 2002 09 26 | 644 | 0.3- | 0.2+ | 2005 05 10 | G96 | 0.1- | 0.3- | 2007 10 18 | G96 | 0.4- | 0.0  |
| 2002 09 26 | 644 | 0.2- | 0.3+ | 2005 05 10 | G96 | 0.2- | 0.1+ | 2007 10 18 | G96 | 0.6+ | 0.1+ |
| 2002 09 27 | 644 | 0.6- | 0.2- | 2007 09 12 | G96 | 0.1+ | 0.1- | 2007 10 20 | 703 | 0.2- | 1.2- |
| 2002 09 27 | 644 | 0.6- | 0.7+ | 2007 09 12 | G96 | 0.5+ | 0.1- | 2007 10 20 | 703 | 1.3+ | 1.0- |
| 2002 09 27 | 644 | 0.3- | 0.3+ | 2007 09 12 | G96 | 0.4+ | 0.3- | 2007 10 20 | 703 | 0.4- | 0.1+ |
| 2003 12 27 | 691 | 0.1+ | 0.1+ | 2007 09 12 | G96 | 0.2+ | 0.1+ | 2007 10 20 | 703 | 0.6- | 1.2+ |
| 2003 12 27 | 691 | 0.4- | 0.5+ | 2007 10 08 | G96 | 0.4+ | 0.3- | 2007 11 04 | 691 | 0.1+ | 0.4+ |
| 2003 12 27 | 691 | 0.7- | 0.2+ | 2007 10 08 | G96 | 0.4+ | 0.3- | 2007 11 04 | 691 | 0.0  | 0.1+ |
| 2004 01 13 | 691 | 0.2+ | 0.3+ | 2007 10 08 | G96 | 0.1- | 0.3- | 2007 11 04 | 691 | 1.1- | 0.2- |
| 2004 01 13 | 691 | 0.1+ | 0.5+ | 2007 10 08 | G96 | 0.1- | 0.1- | 2007 11 05 | G96 | 0.1+ | 0.2- |
| 2004 01 13 | 691 | 0.1- | 0.6+ | 2007 10 15 | 703 | 0.5+ | 0.0  | 2007 11 05 | G96 | 0.2- | 0.9- |
| 2005 04 02 | 691 | 0.3+ | 0.2+ | 2007 10 15 | 703 | 0.2- | 0.8+ | 2007 11 05 | G96 | 0.2- | 0.4- |
| 2005 04 02 | 691 | 0.2+ | 0.6+ | 2007 10 15 | 703 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.1- | 0.7- |
| 2005 04 02 | 691 | 0.1- | 0.4+ | 2007 10 15 | 703 | 0.8- | 0.7+ |            |     |      |      |

**2007 VG<sub>83</sub> = 2005 EF<sub>284</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 183.66067  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23979204 | $\omega$ 145.24337 | -0.76638929   | +0.63797069 |
| <i>a</i> | 2.5659383  | $\Omega$ 74.57666  | -0.60562622   | -0.67860979 |
| <i>e</i> | 0.1330456  | <i>i</i> 4.46852   | -0.21415961   | -0.36398098 |
| <i>P</i> | 4.11       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 13 | 691 | 0.3+ | 0.2- | 2003 11 15 | 691 | 0.1-  | 0.0   | 2007 11 04 | G96 | 0.2+ | 0.4- |
| 1999 12 13 | 691 | 0.0  | 0.3+ | 2005 03 11 | 699 | (1.9+ | 0.2+) | 2007 11 04 | G96 | 0.3- | 0.5- |
| 1999 12 13 | 691 | 0.2- | 0.2+ | 2005 03 11 | 699 | 1.2+  | 0.6+  | 2007 11 04 | G96 | 0.0  | 0.9+ |
| 2001 03 02 | 699 | 1.1- | 0.0  | 2005 03 11 | 699 | 0.2-  | 0.9+  | 2007 11 04 | G96 | 0.0  | 0.4- |
| 2001 03 02 | 699 | 0.2+ | 0.6+ | 2005 03 11 | 699 | 0.6+  | 0.9-  | 2007 11 05 | G96 | 0.4+ | 0.1+ |
| 2001 03 02 | 699 | 0.1- | 0.4+ | 2005 03 16 | 703 | 0.3-  | 0.6-  | 2007 11 05 | G96 | 0.0  | 0.3- |
| 2001 03 02 | 699 | 0.1+ | 1.1- | 2005 03 16 | 703 | 0.8+  | 0.7-  | 2007 11 05 | G96 | 0.1+ | 0.3- |
| 2002 08 17 | 644 | 0.1+ | 0.1- | 2005 03 16 | 703 | 0.5-  | 0.7-  | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 2002 08 17 | 644 | 0.3+ | 0.2- | 2005 03 16 | 703 | 1.2-  | 0.3+  | 2007 11 09 | G96 | 0.3+ | 0.3- |
| 2002 08 17 | 644 | 0.1+ | 0.2- | 2007 10 20 | 691 | 0.2-  | 0.0   | 2007 11 09 | G96 | 0.8+ | 0.2- |
| 2003 11 15 | 691 | 0.3- | 0.2+ | 2007 10 20 | 691 | 0.3-  | 0.3+  | 2007 11 09 | G96 | 0.8+ | 0.5- |
| 2003 11 15 | 691 | 0.0  | 0.1+ | 2007 10 20 | 691 | 0.0   | 0.4-  | 2007 11 09 | G96 | 0.6+ | 0.3- |

**2007 VB<sub>84</sub> = 2000 AX<sub>147</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 305.96799  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24105925 | $\omega$ 353.93564 | -0.76064191   | -0.64621521 |
| <i>a</i> | 2.5569379  | $\Omega$ 145.55353 | +0.60010667   | -0.73630620 |
| <i>e</i> | 0.1925207  | <i>i</i> 6.28121   | +0.24758002   | -0.20064668 |
| <i>P</i> | 4.09       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 01 29 | 691 | 0.3- | 0.2+ | 2006 08 28 | 691 | 0.1- | 0.3+ | 2007 11 08 | G96 | 0.1+  | 0.8-  |
| 1996 01 29 | 691 | 0.4+ | 0.3+ | 2006 08 28 | 691 | 0.1- | 0.1- | 2007 11 08 | G96 | 0.4+  | 0.8-  |
| 1996 01 29 | 691 | 0.0  | 0.0  | 2006 08 28 | 691 | 0.1+ | 0.2+ | 2007 11 11 | 620 | 0.3-  | 0.1-  |
| 2000 01 05 | 704 | 0.1- | 0.4- | 2007 11 07 | J75 | 0.3+ | 0.0  | 2007 11 11 | 620 | 0.4-  | 0.4-  |
| 2000 01 05 | 704 | 0.4+ | 0.3- | 2007 11 07 | J75 | 0.5+ | 0.3+ | 2007 11 11 | 620 | 0.5-  | 0.3-  |
| 2000 01 05 | 704 | 0.0  | 0.5- | 2007 11 07 | J75 | 0.3+ | 0.5+ | 2007 11 11 | 704 | (0.2+ | 1.7+) |
| 2000 01 05 | 704 | 0.5+ | 0.4+ | 2007 11 08 | 620 | 0.1- | 0.4+ | 2007 11 11 | 704 | 0.5+  | 1.4+  |
| 2000 01 05 | 704 | 0.1- | 0.1- | 2007 11 08 | 620 | 0.4+ | 0.0  | 2007 11 11 | 704 | 0.8+  | 0.1+  |
| 2000 01 09 | 704 | 0.2+ | 0.2+ | 2007 11 08 | 620 | 0.1- | 0.2+ | 2007 11 11 | 704 | 0.1+  | 0.9+  |
| 2000 01 09 | 704 | 0.1- | 0.3- | 2007 11 08 | 620 | 0.2- | 0.4- | 2007 11 19 | 620 | 0.0   | 0.1-  |
| 2000 01 09 | 704 | 1.2- | 0.2- | 2007 11 08 | G96 | 0.2+ | 0.6- | 2007 11 19 | 620 | 0.4-  | 0.2-  |
| 2000 01 09 | 704 | 0.1- | 0.2+ | 2007 11 08 | G96 | 0.1+ | 0.5- | 2007 11 19 | 620 | 1.3-  | 0.1+  |

**2007 VG<sub>84</sub> = 2005 GF<sub>131</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.93362    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22910421 | $\omega$ 208.25995 | +0.74670381   | -0.66260393 |
| <i>a</i> | 2.6451319  | $\Omega$ 193.72929 | +0.64709354   | +0.74389743 |
| <i>e</i> | 0.2547852  | <i>i</i> 14.19976  | +0.15395901   | +0.08702097 |
| <i>P</i> | 4.30       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 10 | 691 | 0.1+ | 0.0  | 2007 10 13 | 703 | 0.2+ | 0.6+ | 2007 11 12 | 703 | 0.1+ | 0.1- |
| 2005 04 10 | 691 | 0.1- | 0.5+ | 2007 11 03 | 703 | 0.2- | 0.6- | 2007 11 13 | 703 | 0.3+ | 0.3- |
| 2005 04 10 | 691 | 0.2- | 0.1- | 2007 11 03 | 703 | 0.2- | 0.0  | 2007 11 13 | 703 | 0.0  | 0.0  |
| 2005 04 14 | 691 | 0.1+ | 0.5- | 2007 11 03 | 703 | 0.4+ | 0.4- | 2007 11 13 | 703 | 0.3+ | 0.6- |
| 2005 04 14 | 691 | 0.2+ | 0.0  | 2007 11 03 | 703 | 0.6- | 0.7- | 2007 11 13 | 703 | 0.7+ | 0.5- |
| 2005 04 14 | 691 | 0.1- | 0.1+ | 2007 11 06 | D29 | 0.0  | 0.1- | 2007 11 19 | 703 | 0.3- | 0.1+ |
| 2007 10 07 | 703 | 0.4- | 0.7+ | 2007 11 06 | D29 | 0.2+ | 0.1- | 2007 11 19 | 703 | 0.2- | 0.4- |
| 2007 10 07 | 703 | 0.5- | 0.1+ | 2007 11 12 | 703 | 1.0+ | 0.8+ | 2007 11 19 | 703 | 1.2- | 0.3- |
| 2007 10 07 | 703 | 0.1+ | 0.3- | 2007 11 12 | 703 | 0.5+ | 0.1+ | 2007 11 19 | 703 | 0.4- | 0.3- |
| 2007 10 07 | 703 | 0.2+ | 0.6+ | 2007 11 12 | 703 | 1.1+ | 1.0+ | 2007 12 05 | 703 | 0.5- | 0.0  |
| 2007 10 13 | 703 | 0.4- | 0.2- | 2007 11 12 | 703 | 0.6+ | 0.8+ | 2007 12 05 | 703 | 0.2- | 0.1+ |
| 2007 10 13 | 703 | 0.4- | 0.1+ | 2007 11 12 | 703 | 0.2+ | 0.2+ | 2007 12 05 | 703 | 1.1- | 0.5+ |
| 2007 10 13 | 703 | 1.0+ | 0.3- | 2007 11 12 | 703 | 0.1- | 0.0  | 2007 12 05 | 703 | 0.2- | 0.4+ |

**2007 VK<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 293.16332  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22745547 | $\omega$ | 305.89465 | -0.70160585   | -0.71172312 |
| <i>a</i> | 2.6578989  | $\Omega$ | 188.91715 | +0.70432059   | -0.68529628 |
| <i>e</i> | 0.1800262  | <i>i</i> | 12.91053  | +0.10808208   | -0.15433474 |
| <i>P</i> | 4.33       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 21 | G96 | 0.4- | 0.0  | 2007 10 13 | 703 | (0.8+ | 1.9-) | 2007 11 12 | 703 | 0.5+ | 1.0+ |
| 2005 05 21 | G96 | 0.1- | 0.3+ | 2007 10 13 | 703 | 0.9-  | 0.9-  | 2007 11 12 | 703 | 1.0+ | 0.5- |
| 2005 05 21 | G96 | 0.6- | 0.2- | 2007 10 13 | 703 | (1.0- | 2.4-) | 2007 11 12 | 703 | 1.1+ | 1.2+ |
| 2005 05 21 | G96 | 0.1- | 0.3+ | 2007 10 30 | 703 | 0.4+  | 0.2-  | 2007 11 12 | 703 | 0.6+ | 1.3+ |
| 2005 06 04 | 691 | 0.2+ | 0.2+ | 2007 10 30 | 703 | 1.2+  | 1.1+  | 2007 11 14 | G96 | 0.1+ | 0.0  |
| 2005 06 04 | 691 | 0.4+ | 0.2+ | 2007 10 30 | 703 | 0.6-  | 0.4-  | 2007 11 14 | G96 | 0.5+ | 0.1+ |
| 2005 06 04 | 691 | 0.3+ | 0.2+ | 2007 10 30 | 703 | 0.7-  | 0.7+  | 2007 11 14 | G96 | 0.3+ | 0.2- |
| 2005 06 14 | 691 | 0.2- | 0.1- | 2007 11 05 | 703 | (1.9- | 0.2+) | 2007 11 14 | G96 | 0.6+ | 0.0  |
| 2005 06 14 | 691 | 0.2- | 0.1+ | 2007 11 05 | 703 | 0.1+  | 0.3+  | 2007 11 20 | 703 | 0.3- | 1.2- |
| 2005 06 14 | 691 | 0.2- | 0.0  | 2007 11 05 | 703 | (0.0  | 1.5+) | 2007 11 20 | 703 | 0.9- | 0.3- |
| 2006 09 19 | 691 | 0.0  | 0.0  | 2007 11 05 | 703 | 1.3-  | 1.1+  | 2007 11 20 | 703 | 1.2- | 0.2+ |
| 2006 09 19 | 691 | 0.2- | 0.1- | 2007 11 07 | 683 | 0.9+  | 0.0   | 2007 11 20 | 703 | 0.6- | 0.5+ |
| 2006 09 19 | 691 | 0.1+ | 0.1- | 2007 11 07 | 683 | 0.7+  | 0.5+  |            |     |      |      |
| 2007 10 13 | 703 | 0.8- | 1.5- | 2007 11 07 | 683 | 0.9-  | 0.2-  |            |     |      |      |

**2007 VQ<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.82195  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27306863 | $\omega$ | 36.32682 | -0.24299878   | -0.88168324 |
| <i>a</i> | 2.3529977  | $\Omega$ | 70.94180 | +0.75822294   | -0.43270345 |
| <i>e</i> | 0.2452086  | <i>i</i> | 25.33519 | +0.60502030   | +0.18815522 |
| <i>P</i> | 3.61       | <i>H</i> | 16.7     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 01 02 | 699 | 0.1- | 0.2+ | 2007 11 08 | H07 | 0.2+ | 0.5+ | 2007 12 04 | 703 | 0.2+ | 0.1- |
| 2001 01 02 | 699 | 1.0- | 1.0- | 2007 11 08 | H07 | 0.8- | 0.2+ | 2007 12 04 | 703 | 0.0  | 0.1+ |
| 2001 01 02 | 699 | 0.7+ | 0.5+ | 2007 11 08 | H07 | 0.7+ | 1.6+ | 2007 12 04 | 703 | 0.2- | 0.2- |
| 2001 01 02 | 699 | 0.4+ | 0.3+ | 2007 11 08 | H07 | 0.2+ | 0.9+ | 2007 12 04 | 703 | 0.2+ | 0.1- |
| 2007 10 19 | 703 | 0.2- | 0.2- | 2007 11 08 | H07 | 0.7+ | 0.7+ | 2007 12 13 | 704 | 0.4- | 0.3- |
| 2007 10 19 | 703 | 0.5+ | 0.8- | 2007 11 09 | H07 | 0.2- | 1.7- | 2007 12 13 | 704 | 0.9- | 0.2- |
| 2007 10 19 | 703 | 0.5- | 0.9- | 2007 11 09 | H07 | 0.7+ | 0.5+ | 2007 12 13 | 704 | 0.2- | 0.9- |
| 2007 10 19 | 703 | 0.1+ | 0.0  | 2007 11 09 | H07 | 0.2- | 0.3- | 2007 12 13 | 704 | 0.2- | 1.0- |
| 2007 11 06 | H07 | 0.5- | 0.1+ | 2007 11 12 | 704 | 0.6+ | 0.3+ | 2007 12 13 | 704 | 0.5- | 0.1+ |
| 2007 11 06 | H07 | 0.4- | 0.1- | 2007 11 12 | 704 | 0.1- | 0.4+ | 2007 12 15 | 704 | 0.1+ | 0.6+ |
| 2007 11 06 | H07 | 0.4- | 0.3- | 2007 11 12 | 704 | 0.4- | 0.6- | 2007 12 15 | 704 | 0.0  | 0.7+ |
| 2007 11 08 | H07 | 0.4- | 0.1+ | 2007 11 12 | 704 | 0.6+ | 0.1+ | 2007 12 15 | 704 | 0.1+ | 0.5+ |
| 2007 11 08 | H07 | 0.1+ | 0.0  | 2007 12 04 | H07 | 1.6+ | 1.3- | 2007 12 15 | 704 | 0.3+ | 0.6+ |
| 2007 11 08 | H07 | 0.5- | 0.4+ | 2007 12 04 | H07 | 0.4+ | 0.2- | 2007 12 15 | 704 | 0.8- | 0.3+ |
| 2007 11 08 | H07 | 0.1- | 0.4+ | 2007 12 04 | H07 | 0.3+ | 0.0  |            |     |      |      |

**2007 VR<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 10.24555   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17309615 | $\omega$ | 305.49502 | +0.92387470   | -0.11396073 |
| <i>a</i> | 3.1886812  | $\Omega$ | 63.66310  | +0.30683052   | +0.79110719 |
| <i>e</i> | 0.1133794  | <i>i</i> | 24.05709  | -0.22871506   | +0.60096786 |
| <i>P</i> | 5.69       | <i>H</i> | 14.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 02 09 | 644 | 0.0  | 0.4+ | 2007 10 12 | 703 | 0.1+ | 0.6+ | 2007 11 11 | 703 | 0.1-  | 0.0   |
| 2004 02 09 | 644 | 0.1+ | 0.2- | 2007 10 12 | 703 | 0.5+ | 0.3+ | 2007 11 11 | 703 | 0.3-  | 0.4-  |
| 2004 02 09 | 644 | 0.0  | 0.5+ | 2007 10 12 | 703 | 0.2+ | 0.3+ | 2007 11 15 | 703 | 0.8-  | 0.4+  |
| 2004 02 17 | 645 | 0.0  | 0.0  | 2007 10 12 | 703 | 0.0  | 0.3+ | 2007 11 15 | 703 | 0.2+  | 0.4-  |
| 2004 02 17 | 645 | 0.0  | 0.0  | 2007 11 07 | J75 | 0.2- | 1.0+ | 2007 11 15 | 703 | (1.5- | 0.4-) |
| 2005 05 15 | 644 | 0.7+ | 0.8+ | 2007 11 08 | J75 | 0.4- | 0.5+ | 2007 11 15 | 703 | 0.6+  | 0.2+  |
| 2005 05 15 | 644 | 0.4+ | 0.4+ | 2007 11 08 | J75 | 0.5- | 0.5- | 2007 11 16 | 620 | 0.4-  | 0.1+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 15 | 644 | 0.3+ | 0.6+ | 2007 11 08 | 620 | 0.1+ | 0.3- | 2007 11 16 | 620 | 0.0  | 0.0  |
| 2007 09 14 | 703 | 0.0  | 0.1+ | 2007 11 08 | 620 | 0.1+ | 0.2+ | 2007 11 16 | 620 | 0.3- | 0.1+ |
| 2007 09 14 | 703 | 0.8+ | 0.4- | 2007 11 08 | 620 | 0.6- | 0.7- | 2007 12 05 | 620 | 0.4- | 0.5- |
| 2007 09 14 | 703 | 1.1+ | 0.4- | 2007 11 11 | 703 | 0.5- | 0.9+ | 2007 12 05 | 620 | 0.4- | 0.3+ |
| 2007 09 14 | 703 | 0.4- | 0.2- | 2007 11 11 | 703 | 0.2+ | 0.2+ |            |     |      |      |

**2007 VB<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.90261  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18994281 | $\omega$ | 43.95188 | +0.58741359   | -0.80883659 |
| <i>a</i> | 2.9972351  | $\Omega$ | 10.17630 | +0.69392427   | +0.48623527 |
| <i>e</i> | 0.0912437  | <i>i</i> | 8.78830  | +0.41643053   | +0.33069417 |
| <i>P</i> | 5.19       | <i>H</i> | 15.8     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 15 | 644 | 0.3- | 0.3+ | 2007 10 05 | 691 | 0.5- | 0.7- | 2007 11 01 | 704 | 0.7+ | 0.7+ |
| 2002 11 15 | 644 | 0.0  | 0.2+ | 2007 10 05 | 691 | 1.2- | 0.9- | 2007 11 07 | 704 | 1.1+ | 0.3- |
| 2002 11 15 | 644 | 0.2+ | 0.4+ | 2007 10 05 | 691 | 0.7+ | 1.0- | 2007 11 07 | 704 | 0.9+ | 0.1+ |
| 2002 12 13 | 644 | 0.2+ | 0.6- | 2007 10 11 | 691 | 0.8- | 0.2- | 2007 11 07 | 704 | 0.3+ | 0.8- |
| 2002 12 13 | 644 | 0.0  | 1.0- | 2007 10 11 | 691 | 0.6- | 0.1- | 2007 11 07 | 704 | 0.1+ | 0.1+ |
| 2002 12 13 | 644 | 0.3+ | 0.1- | 2007 10 11 | 691 | 1.1- | 1.6+ | 2007 11 13 | 699 | 1.1- | 0.4+ |
| 2003 12 25 | 645 | 0.0  | 0.3- | 2007 10 15 | 691 | 0.2- | 0.1- | 2007 11 13 | 699 | 1.2- | 1.0+ |
| 2003 12 25 | 645 | 0.0  | 0.3- | 2007 10 15 | 691 | 0.4- | 0.0  | 2007 11 13 | 699 | 1.2+ | 0.4- |
| 2004 02 17 | 691 | 0.0  | 0.1+ | 2007 10 15 | 691 | 0.4- | 0.0  | 2007 11 13 | 699 | 0.6+ | 0.1+ |
| 2004 02 17 | 691 | 0.2+ | 0.2+ | 2007 11 01 | 704 | 0.9+ | 0.9+ |            |     |      |      |
| 2004 02 17 | 691 | 0.1+ | 0.6+ | 2007 11 01 | 704 | 0.3+ | 0.8+ |            |     |      |      |

**2007 VD<sub>85</sub> = 2005 AN<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 342.30191  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28661156 | $\omega$ | 162.74418 | +0.62893042   | -0.77349195 |
| <i>a</i> | 2.2782791  | $\Omega$ | 248.21193 | +0.70296540   | +0.60887286 |
| <i>e</i> | 0.2021624  | <i>i</i> | 4.84735   | +0.33209362   | +0.17602284 |
| <i>P</i> | 3.44       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 07 | 703 | 0.2-  | 0.7+  | 2007 10 09 | 699 | 0.2- | 0.1+ | 2007 11 02 | 704 | 0.7- | 0.0  |
| 2005 01 07 | 703 | 1.2+  | 0.5+  | 2007 10 09 | 699 | 1.2- | 0.1+ | 2007 11 02 | 704 | 0.0  | 0.1+ |
| 2005 01 07 | 703 | (2.1- | 0.6+) | 2007 10 20 | 703 | 0.4+ | 0.3+ | 2007 11 07 | 704 | 0.2- | 0.5+ |
| 2005 01 07 | 703 | 0.1-  | 0.6-  | 2007 10 20 | 703 | 0.6+ | 0.9+ | 2007 11 07 | 704 | 0.4+ | 0.9+ |
| 2005 01 07 | 599 | 0.8-  | 0.4+  | 2007 10 20 | 703 | 1.2+ | 0.1+ | 2007 11 07 | 704 | 0.4+ | 0.4- |
| 2005 01 07 | 599 | 0.1+  | 0.1-  | 2007 10 20 | 703 | 0.3+ | 0.5+ | 2007 11 07 | 704 | 0.6+ | 0.8+ |
| 2005 01 07 | 599 | 0.0   | 0.1+  | 2007 10 30 | 703 | 0.5- | 0.7- | 2007 11 07 | 704 | 0.6- | 1.1+ |
| 2006 05 26 | G96 | 0.1+  | 0.6+  | 2007 10 30 | 703 | 0.7+ | 1.0- | 2007 11 07 | 704 | 0.2+ | 0.9+ |
| 2006 05 26 | G96 | 0.1+  | 0.6+  | 2007 10 30 | 703 | 1.4- | 0.6- | 2007 11 07 | 704 | 0.0  | 0.5- |
| 2006 05 26 | G96 | 0.2+  | 0.1-  | 2007 10 30 | 703 | 1.3- | 0.5- | 2007 12 15 | G96 | 0.5- | 0.5- |
| 2006 05 26 | G96 | 0.3-  | 0.1+  | 2007 11 02 | 704 | 0.3+ | 0.2- | 2007 12 15 | G96 | 1.4+ | 0.2- |
| 2007 10 09 | 699 | 0.7+  | 0.6+  | 2007 11 02 | 704 | 0.7- | 0.6- | 2007 12 15 | G96 | 0.5- | 0.2- |
| 2007 10 09 | 699 | 0.8+  | 0.1+  | 2007 11 02 | 704 | 0.1- | 0.6- | 2007 12 15 | G96 | 0.2- | 0.6- |

**2007 VH<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.91948   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22006042 | $\omega$ | 339.07885 | +0.89171936   | +0.45225983 |
| <i>a</i> | 2.7171154  | $\Omega$ | 353.94709 | -0.38852925   | +0.74539869 |
| <i>e</i> | 0.1926208  | <i>i</i> | 9.41639   | -0.23212412   | +0.48973650 |
| <i>P</i> | 4.48       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 02 09 | 691 | 0.1+ | 0.2- | 2007 10 08 | 703 | (2.1+ | 0.9+) | 2007 11 08 | 704 | 0.5- | 0.1- |
| 2005 02 09 | 691 | 0.1+ | 0.2- | 2007 10 08 | 703 | 0.0   | 0.8+  | 2007 11 08 | 703 | 0.1+ | 0.2- |
| 2005 02 09 | 691 | 0.4- | 0.2+ | 2007 10 30 | 703 | 0.2-  | 0.1-  | 2007 11 08 | 703 | 0.3- | 0.5+ |
| 2005 03 16 | G96 | 0.1+ | 0.3+ | 2007 10 30 | 703 | 0.5+  | 0.0   | 2007 11 08 | 703 | 0.4+ | 0.2- |
| 2005 03 16 | G96 | 0.1- | 0.1+ | 2007 10 30 | 703 | (2.8- | 1.1+) | 2007 11 08 | 703 | 0.1+ | 0.0  |
| 2005 03 16 | G96 | 0.2+ | 0.1+ | 2007 11 02 | 704 | 0.2+  | 0.2+  | 2007 11 13 | 699 | 0.4+ | 0.6- |

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M.P.O. 129991

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 03 16 | G96 | 0.3+  | 0.1−  | 2007 11 02 | 704 | 1.2+ | 0.2− | 2007 11 13 | 699 | 0.8−  | 0.3+  |
| 2007 09 10 | 703 | (2.4+ | 0.6−) | 2007 11 02 | 704 | 0.4+ | 0.6− | 2007 11 13 | 699 | 0.5−  | 0.9−  |
| 2007 09 10 | 703 | 1.4+  | 0.5−  | 2007 11 02 | 704 | 0.8+ | 0.5− | 2007 11 13 | 699 | (1.8− | 0.2−) |
| 2007 09 10 | 703 | 0.1+  | 0.4−  | 2007 11 02 | 704 | 0.3− | 0.2+ | 2007 11 17 | 704 | 0.0   | 0.6−  |
| 2007 09 10 | 703 | 0.3+  | 0.2−  | 2007 11 08 | 704 | 0.1− | 0.2− | 2007 11 17 | 704 | 1.1−  | 0.5+  |
| 2007 10 08 | 703 | 0.9−  | 0.3+  | 2007 11 08 | 704 | 0.7− | 0.4+ | 2007 11 17 | 704 | 0.6−  | 1.1+  |
| 2007 10 08 | 703 | (1.9+ | 1.7+) | 2007 11 08 | 704 | 0.6− | 0.4− | 2007 11 17 | 704 | 0.9−  | 0.1−  |
| 2007 10 08 | 703 | 1.4+  | 1.1+  | 2007 11 08 | 704 | 0.3+ | 0.2+ |            |     |       |       |

**2007 VK<sub>85</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 2.56432    | (2000.0) |           | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22531380 | $\omega$ | 152.93849 | +0.89538977   | −0.42116224 |
| <i>a</i> | 2.6747150  | $\Omega$ | 232.71682 | +0.36855707   | +0.88315579 |
| <i>e</i> | 0.0569476  | <i>i</i> | 10.46856  | +0.24988565   | +0.20653865 |
| <i>P</i> | 4.37       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |       |            |     |      |      |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|------|------|
| 2003 11 23 | 691 | 0.1− | 0.1− | 2007 10 17 | G96 | 0.2− | 0.4−  | 2007 11 26 | B15 | 0.0  | 0.1− |
| 2003 11 23 | 691 | 0.1+ | 0.1− | 2007 11 02 | 704 | 0.2− | 0.1+  | 2007 11 26 | B15 | 0.3+ | 0.2− |
| 2003 11 23 | 691 | 0.0  | 0.3− | 2007 11 02 | 704 | 0.3− | 0.1+  | 2007 11 26 | B15 | 0.4− | 0.1+ |
| 2005 05 13 | 291 | 0.0  | 0.1+ | 2007 11 02 | 704 | 0.2+ | 0.7+  | 2007 11 26 | B15 | 0.3− | 0.1− |
| 2005 05 13 | 291 | 0.1− | 0.1+ | 2007 11 02 | 704 | (0.0 | 1.6+) | 2007 11 26 | B15 | 0.5− | 0.1− |
| 2005 05 13 | 291 | 0.1− | 0.1+ | 2007 11 02 | 704 | 0.5− | 0.8+  | 2007 11 26 | B15 | 0.3− | 0.1− |
| 2005 05 14 | 291 | 0.3+ | 0.1− | 2007 11 07 | 704 | 0.9+ | 0.4+  | 2007 11 27 | B15 | 0.3− | 0.3+ |
| 2005 05 14 | 291 | 0.3+ | 0.7+ | 2007 11 07 | 704 | 0.4+ | 0.1+  | 2007 11 27 | B15 | 0.1− | 0.0  |
| 2005 05 14 | 291 | 0.1− | 0.2+ | 2007 11 07 | 704 | 0.2+ | 0.3+  | 2007 11 27 | B15 | 0.1− | 0.2+ |
| 2007 10 08 | 703 | 1.0+ | 0.0  | 2007 11 07 | 704 | 0.5+ | 0.1−  | 2007 11 27 | B15 | 0.1− | 0.3− |
| 2007 10 08 | 703 | 0.4+ | 0.7+ | 2007 11 07 | 704 | 0.1+ | 0.4+  | 2007 11 27 | B15 | 0.3− | 0.0  |
| 2007 10 08 | 703 | 0.4+ | 0.1+ | 2007 11 26 | B15 | 0.3+ | 0.3+  | 2007 11 27 | B15 | 0.2− | 0.0  |
| 2007 10 08 | 703 | 1.2− | 1.1+ | 2007 11 26 | B15 | 0.1− | 1.2+  | 2007 12 01 | B15 | 0.0  | 0.0  |
| 2007 10 17 | G96 | 0.2+ | 0.3− | 2007 11 26 | B15 | 0.1− | 0.0   | 2007 12 01 | B15 | 0.7− | 0.0  |
| 2007 10 17 | G96 | 0.0  | 0.4− | 2007 11 26 | B15 | 0.3− | 0.0   |            |     |      |      |
| 2007 10 17 | G96 | 0.0  | 0.4− | 2007 11 26 | B15 | 0.0  | 0.3−  |            |     |      |      |

**2007 VM<sub>85</sub> = 2000 WV<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 35.56087   | (2000.0) |           | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27887015 | $\omega$ | 12.99680  | +0.96598425   | +0.25365270 |
| <i>a</i> | 2.3202496  | $\Omega$ | 332.15233 | −0.24585896   | +0.84045622 |
| <i>e</i> | 0.1388178  | <i>i</i> | 6.18733   | −0.08017359   | +0.47884617 |
| <i>P</i> | 3.53       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 19 | 704 | 0.1+ | 0.4− | 2005 01 07 | 599 | 0.1− | 0.2− | 2007 11 01 | 703 | 0.2+ | 0.1− |
| 2000 11 19 | 704 | 0.1+ | 0.4+ | 2005 02 04 | G96 | 0.1− | 0.4− | 2007 11 01 | 703 | 0.5+ | 0.4− |
| 2000 11 19 | 704 | 0.7− | 0.7+ | 2005 02 04 | G96 | 0.3− | 0.2+ | 2007 11 01 | 703 | 0.7+ | 0.1+ |
| 2000 11 19 | 704 | 0.0  | 0.1− | 2005 02 04 | G96 | 0.2− | 0.3− | 2007 11 01 | 703 | 1.0− | 0.4− |
| 2000 11 24 | 699 | 0.1+ | 1.2+ | 2005 02 04 | G96 | 0.1+ | 0.3− | 2007 11 02 | 704 | 0.3+ | 0.3− |
| 2000 11 24 | 699 | 0.4− | 0.3+ | 2007 10 08 | 703 | 0.1+ | 0.1− | 2007 11 02 | 704 | 0.7+ | 0.1+ |
| 2000 11 24 | 699 | 0.2− | 0.1− | 2007 10 08 | 703 | 0.0  | 0.2− | 2007 11 02 | 704 | 0.3+ | 0.1− |
| 2000 11 24 | 699 | 0.0  | 0.0  | 2007 10 08 | 703 | 0.2+ | 0.4− | 2007 11 02 | 704 | 0.4+ | 0.2− |
| 2002 01 12 | 291 | 0.0  | 0.3+ | 2007 10 08 | 703 | 0.5− | 0.2+ | 2007 11 02 | 704 | 0.0  | 0.5+ |
| 2002 01 12 | 291 | 0.5+ | 0.5+ | 2007 10 12 | 699 | 1.9+ | 0.7+ | 2007 11 08 | 704 | 0.3+ | 1.1+ |
| 2002 01 12 | 291 | 0.0  | 0.0  | 2007 10 12 | 699 | 0.3− | 0.5+ | 2007 11 08 | 704 | 0.2− | 0.9+ |
| 2004 12 19 | 691 | 0.2+ | 0.4− | 2007 10 12 | 699 | 0.8+ | 0.0  | 2007 11 08 | 704 | 0.3− | 0.1+ |
| 2004 12 19 | 691 | 0.1+ | 0.0  | 2007 10 12 | 699 | 0.3− | 0.5+ | 2007 11 08 | 704 | 0.3+ | 0.8+ |
| 2004 12 19 | 691 | 0.3− | 0.3− | 2007 10 21 | 703 | 0.7− | 0.1+ | 2007 11 08 | 703 | 0.9− | 2.3− |
| 2005 01 07 | 599 | 0.1+ | 0.2+ | 2007 10 21 | 703 | 0.2+ | 0.5+ | 2007 11 08 | 703 | 1.6− | 1.0− |
| 2005 01 07 | 599 | 0.1+ | 0.1+ | 2007 10 21 | 703 | 1.1− | 1.2+ | 2007 11 08 | 703 | 0.3+ | 1.7− |
| 2005 01 07 | 599 | 0.3− | 0.4+ | 2007 10 21 | 703 | 0.1− | 1.0+ | 2007 11 08 | 703 | 0.2− | 1.3− |

**2007 VB<sub>86</sub> = 2004 YK<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 11.65835   | (2000.0) |           | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29354101 | $\omega$ | 91.66240  | +0.94837969   | −0.30885308 |
| <i>a</i> | 2.2422818  | $\Omega$ | 286.33245 | +0.25287530   | +0.87348979 |
| <i>e</i> | 0.2034339  | <i>i</i> | 4.30354   | +0.19138979   | +0.37633144 |
| <i>P</i> | 3.36       | <i>H</i> | 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 21 | 691 | 0.0  | 0.1+ | 2007 09 25 | G96 | 0.5+ | 0.0  | 2007 11 01 | 703 | 0.1− | 0.3+ |
| 1997 12 21 | 691 | 0.0  | 0.0  | 2007 09 25 | G96 | 0.5+ | 0.5− | 2007 11 01 | 703 | 0.4+ | 0.2− |
| 1997 12 21 | 691 | 0.1+ | 0.3− | 2007 10 08 | 703 | 0.2− | 0.9+ | 2007 11 02 | 704 | 0.1+ | 0.1+ |
| 2004 12 18 | G96 | 0.3− | 0.0  | 2007 10 08 | 703 | 0.2− | 0.3+ | 2007 11 02 | 704 | 0.7+ | 0.1+ |
| 2004 12 18 | G96 | 0.1− | 0.5− | 2007 10 08 | 703 | 0.2− | 0.5+ | 2007 11 02 | 704 | 0.2+ | 0.3+ |
| 2004 12 18 | G96 | 0.1− | 0.2− | 2007 10 08 | 703 | 0.7− | 0.2+ | 2007 11 02 | 704 | 0.2− | 0.2+ |
| 2004 12 18 | G96 | 0.2− | 0.1+ | 2007 10 14 | 703 | 0.0  | 0.5+ | 2007 11 02 | 704 | 0.4+ | 0.3+ |
| 2004 12 19 | G96 | 0.4− | 0.1− | 2007 10 14 | 703 | 0.6− | 0.1+ | 2007 11 08 | 704 | 0.0  | 0.3+ |
| 2004 12 19 | G96 | 0.3− | 0.3− | 2007 10 14 | 703 | 0.2− | 0.2+ | 2007 11 08 | 704 | 0.3+ | 0.7+ |
| 2004 12 19 | G96 | 0.4+ | 0.6+ | 2007 10 14 | 703 | 1.4− | 1.0− | 2007 11 08 | 704 | 0.2+ | 0.7+ |
| 2004 12 19 | G96 | 0.4− | 0.4− | 2007 10 21 | 703 | 0.2+ | 0.2− | 2007 11 08 | 704 | 0.2− | 0.2− |
| 2005 01 16 | 691 | 0.1+ | 0.2+ | 2007 10 21 | 703 | 0.8− | 1.2− | 2007 11 08 | 704 | 0.1+ | 0.3+ |
| 2005 01 16 | 691 | 0.1+ | 0.1+ | 2007 10 21 | 703 | 0.2+ | 0.1− | 2007 11 12 | 703 | 0.3+ | 0.6+ |
| 2005 01 16 | 691 | 0.2+ | 0.1+ | 2007 10 21 | 703 | 0.2+ | 0.8− | 2007 11 12 | 703 | 0.4− | 0.8− |
| 2007 09 25 | G96 | 0.5+ | 0.4− | 2007 11 01 | 703 | 0.2+ | 0.1+ | 2007 11 12 | 703 | 1.2− | 0.1− |
| 2007 09 25 | G96 | 0.5+ | 0.2− | 2007 11 01 | 703 | 0.0  | 0.4+ | 2007 11 12 | 703 | 0.7+ | 0.9− |

**2007 VN<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.07000   | (2000.0) |           | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24631095 | $\omega$ | 42.79416  | +0.94940283   | −0.31306214 |
| <i>a</i> | 2.5204625  | $\Omega$ | 335.41636 | +0.26943809   | +0.85286138 |
| <i>e</i> | 0.2279834  | <i>i</i> | 3.44890   | +0.16136101   | +0.41787505 |
| <i>P</i> | 4.00       | <i>H</i> | 18.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 10 23 | 691 | 0.0  | 0.1+ | 2007 10 11 | 691 | 0.1+  | 0.2+  | 2007 11 07 | 704 | 0.5−  | 0.5+  |
| 2003 10 23 | 691 | 0.2+ | 0.3+ | 2007 10 11 | 691 | 0.2+  | 0.1+  | 2007 11 07 | 704 | (0.1− | 1.7+) |
| 2003 10 23 | 691 | 0.1+ | 0.5− | 2007 11 02 | 704 | 0.1−  | 0.6+  | 2007 11 14 | 691 | 0.0   | 0.1+  |
| 2003 11 02 | 291 | 0.0  | 0.1+ | 2007 11 02 | 704 | 0.2+  | 0.2+  | 2007 11 14 | 691 | 0.2+  | 0.1−  |
| 2003 11 02 | 291 | 0.2− | 0.3− | 2007 11 02 | 704 | 1.1+  | 0.1+  | 2007 11 14 | 691 | 0.2+  | 0.0   |
| 2003 11 02 | 291 | 0.1+ | 0.3− | 2007 11 04 | 691 | 0.1+  | 0.0   | 2007 11 18 | 691 | 0.1−  | 0.1+  |
| 2005 04 12 | 695 | 0.2+ | 0.5+ | 2007 11 04 | 691 | 0.1+  | 0.2−  | 2007 11 18 | 691 | 0.1−  | 0.1+  |
| 2005 04 12 | 695 | 0.1+ | 0.2+ | 2007 11 04 | 691 | 0.4−  | 0.3−  | 2007 11 18 | 691 | 0.0   | 0.1−  |
| 2007 10 11 | 691 | 0.6− | 0.4+ | 2007 11 07 | 704 | (0.3− | 1.8+) |            |     |       |       |

**2007 VO<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 50.76314   | (2000.0) |           | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21447957 | $\omega$ | 6.20192   | +0.96247286   | +0.26897997 |
| <i>a</i> | 2.7640470  | $\Omega$ | 338.09155 | −0.25294646   | +0.84112644 |
| <i>e</i> | 0.0461937  | <i>i</i> | 5.53614   | −0.09830604   | +0.46920793 |
| <i>P</i> | 4.60       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 01 10 | 691 | 0.0  | 0.2− | 2007 09 25 | G96 | 0.5+ | 0.9− | 2007 11 09 | 704 | 0.3− | 0.2+ |
| 2000 01 10 | 691 | 0.1+ | 0.3− | 2007 09 25 | G96 | 0.1− | 1.1− | 2007 11 09 | 704 | 0.6+ | 0.3− |
| 2000 01 10 | 691 | 0.3− | 0.0  | 2007 09 25 | G96 | 0.3+ | 0.8− | 2007 11 09 | 704 | 0.2− | 0.1− |
| 2002 09 14 | 644 | 0.4− | 0.3+ | 2007 11 02 | 691 | 0.1− | 0.6− | 2007 11 09 | 704 | 0.0  | 0.4− |
| 2002 09 14 | 644 | 0.2+ | 0.4+ | 2007 11 02 | 691 | 0.1− | 0.3− | 2007 11 12 | 703 | 0.2− | 0.2+ |
| 2002 09 14 | 644 | 0.1− | 0.6+ | 2007 11 02 | 691 | 0.3− | 0.4− | 2007 11 12 | 703 | 0.5− | 1.7+ |
| 2002 10 05 | 645 | 0.1+ | 0.2− | 2007 11 02 | 704 | 0.2+ | 0.1− | 2007 11 12 | 703 | 0.5− | 0.9+ |
| 2002 10 05 | 645 | 0.0  | 0.2− | 2007 11 02 | 704 | 0.7− | 0.4+ | 2007 11 14 | 691 | 0.5− | 0.1− |
| 2002 10 10 | 645 | 0.0  | 0.2− | 2007 11 02 | 704 | 0.2− | 0.2− | 2007 11 14 | 691 | 0.2− | 0.5− |
| 2002 10 10 | 645 | 0.0  | 0.2− | 2007 11 02 | 704 | 1.0+ | 0.2− | 2007 11 14 | 691 | 0.3− | 0.4− |
| 2005 03 14 | G96 | 0.2− | 0.1− | 2007 11 02 | 704 | 0.6− | 1.0+ | 2007 11 18 | 691 | 0.1− | 0.5− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 14 | G96 | 0.4+ | 0.0  | 2007 11 08 | 704 | 0.8+ | 1.1+ | 2007 11 18 | 691 | 0.2- | 0.4- |
| 2005 03 14 | G96 | 0.2+ | 0.0  | 2007 11 08 | 704 | 0.4+ | 0.6+ | 2007 11 18 | 691 | 0.2- | 0.3- |
| 2005 03 14 | G96 | 0.2- | 0.5+ | 2007 11 08 | 704 | 0.8+ | 0.4+ |            |     |      |      |
| 2007 09 25 | G96 | 0.2+ | 0.8- | 2007 11 08 | 704 | 0.4+ | 1.5+ |            |     |      |      |

**2007 VQ<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 313.47569  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23433746 | $\omega$ 213.52655 | +0.05106215   | -0.95348207 |
| <i>a</i> | 2.6056030  | $\Omega$ 235.30573 | +0.97718981   | +0.10910293 |
| <i>e</i> | 0.0406519  | <i>i</i> 21.18247  | +0.20613766   | -0.28101332 |
| <i>P</i> | 4.21       | <i>H</i> 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 10 16 | 691 | 0.2+ | 0.2+ | 2007 11 02 | 704 | 0.6- | 0.8+ | 2007 11 08 | 704 | 1.1+ | 0.0  |
| 2003 10 16 | 691 | 0.3+ | 0.0  | 2007 11 02 | 704 | 0.5- | 0.1- | 2007 11 08 | 704 | 0.8+ | 0.4+ |
| 2003 10 16 | 691 | 0.0  | 0.1+ | 2007 11 02 | 704 | 0.7- | 1.1+ | 2007 11 14 | 691 | 0.2+ | 0.0  |
| 2003 12 16 | 691 | 0.1- | 0.1- | 2007 11 02 | 704 | 0.5- | 1.0+ | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2003 12 16 | 691 | 0.3- | 0.0  | 2007 11 02 | 703 | 0.0  | 0.9- | 2007 11 14 | 691 | 0.1+ | 0.1+ |
| 2003 12 16 | 691 | 0.0  | 0.1- | 2007 11 02 | 703 | 0.5- | 0.3- | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2007 10 21 | 703 | 0.9+ | 0.9- | 2007 11 02 | 703 | 0.4- | 0.6- | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2007 10 21 | 703 | 0.1- | 0.4+ | 2007 11 02 | 703 | 0.4- | 0.8- | 2007 11 18 | 691 | 0.2- | 0.2+ |
| 2007 10 21 | 703 | 0.5- | 0.3- | 2007 11 08 | 704 | 1.2+ | 0.4+ | 2007 12 15 | G96 | 0.2- | 0.1- |
| 2007 10 21 | 703 | 0.5+ | 0.1- | 2007 11 08 | 704 | 0.6+ | 0.2- | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2007 11 02 | 704 | 0.8- | 0.4- | 2007 11 08 | 704 | 0.4+ | 0.7- | 2007 12 15 | G96 | 0.0  | 0.1- |

**2007 VT<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 29.75455   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21993232 | $\omega$ 25.29192  | +0.98571380   | -0.16620822 |
| <i>a</i> | 2.7181704  | $\Omega$ 344.20363 | +0.13244371   | +0.86488313 |
| <i>e</i> | 0.0329940  | <i>i</i> 5.74731   | +0.10405270   | +0.47365809 |
| <i>P</i> | 4.48       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 03 | 691 | 0.0  | 0.3- | 2007 10 21 | 703 | 0.8-  | 0.5-  | 2007 10 21 | 703 | 0.3+ | 0.3- |
| 2005 03 03 | 691 | 0.6+ | 0.3+ | 2007 10 21 | 691 | 0.2-  | 0.1-  | 2007 11 02 | 704 | 1.0- | 0.3+ |
| 2005 03 03 | 691 | 0.9+ | 0.4+ | 2007 10 21 | 703 | 0.5+  | 0.1+  | 2007 11 02 | 704 | 1.3- | 0.1+ |
| 2005 03 14 | G96 | 0.1+ | 0.1+ | 2007 10 21 | 703 | 0.3-  | 0.8+  | 2007 11 02 | 704 | 1.1- | 0.7+ |
| 2005 03 14 | G96 | 0.3- | 0.3- | 2007 10 21 | 691 | 0.2-  | 0.2-  | 2007 11 02 | 704 | 0.6- | 0.2- |
| 2005 03 14 | G96 | 0.4- | 0.0  | 2007 10 21 | 703 | 0.9+  | 0.2+  | 2007 11 02 | 704 | 0.6+ | 0.4+ |
| 2005 03 14 | G96 | 0.8- | 0.1- | 2007 10 21 | 691 | 0.2-  | 0.4-  | 2007 11 08 | 704 | 0.8+ | 0.8- |
| 2007 10 09 | 691 | 0.2- | 0.0  | 2007 10 21 | 703 | (2.2- | 0.4+) | 2007 11 08 | 704 | 1.0+ | 0.6+ |
| 2007 10 09 | 691 | 0.3- | 0.1+ | 2007 10 21 | 703 | 0.5+  | 0.1+  | 2007 11 08 | 704 | 0.1+ | 0.2- |
| 2007 10 09 | 691 | 0.0  | 0.1- | 2007 10 21 | 703 | 0.6+  | 0.3+  | 2007 11 08 | 704 | 1.1+ | 1.0- |

**2007 VB<sub>87</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 332.49916  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21947842 | $\omega$ 123.03356 | +0.29408742   | -0.95315775 |
| <i>a</i> | 2.7219167  | $\Omega$ 309.69981 | +0.84339759   | +0.29361290 |
| <i>e</i> | 0.0355801  | <i>i</i> 5.27465   | +0.44965886   | +0.07267575 |
| <i>P</i> | 4.49       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 14 | 644 | 0.1+ | 0.1+ | 2006 06 21 | 691 | 0.0  | 0.4- | 2007 11 02 | 704 | 0.3+ | 0.3+ |
| 2002 09 14 | 644 | 0.5- | 0.3+ | 2006 06 21 | 691 | 0.4+ | 0.3- | 2007 11 08 | 704 | 0.5- | 0.2+ |
| 2002 09 14 | 644 | 0.3+ | 0.2+ | 2007 10 09 | 691 | 0.1- | 0.1- | 2007 11 08 | 704 | 0.4+ | 0.3+ |
| 2002 10 05 | 645 | 0.1+ | 0.3- | 2007 10 09 | 691 | 0.4- | 0.2+ | 2007 11 08 | 704 | 0.0  | 0.6- |
| 2002 10 05 | 645 | 0.0  | 0.3- | 2007 10 09 | 691 | 0.2- | 0.2- | 2007 11 08 | 704 | 0.9+ | 0.6+ |
| 2003 12 18 | 691 | 0.0  | 0.2- | 2007 10 21 | 691 | 0.2- | 0.3- | 2007 11 08 | 704 | 1.0- | 0.9- |
| 2003 12 18 | 691 | 0.2- | 0.3- | 2007 10 21 | 691 | 0.4+ | 0.6- | 2007 11 17 | 704 | 0.6+ | 0.3+ |
| 2003 12 18 | 691 | 0.0  | 0.2- | 2007 10 21 | 691 | 0.1+ | 0.4- | 2007 11 17 | 704 | 0.1- | 1.0- |
| 2004 01 30 | 691 | 0.1+ | 0.1- | 2007 11 02 | 704 | 0.3- | 0.8+ | 2007 11 17 | 704 | 0.6+ | 0.2+ |
| 2004 01 30 | 691 | 0.1- | 0.1- | 2007 11 02 | 704 | 0.6- | 0.5+ | 2007 11 17 | 704 | 0.0  | 0.5+ |

|            |     |      |      |            |     |      |      |            |     |      |     |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|-----|
| 2004 01 30 | 691 | 0.1+ | 0.0  | 2007 11 02 | 704 | 0.2- | 0.0  | 2007 11 17 | 704 | 0.2+ | 0.0 |
| 2006 06 21 | 691 | 0.1- | 0.1- | 2007 11 02 | 704 | 0.2- | 0.4+ |            |     |      |     |

**2007 VQ<sub>87</sub> = 1996 TE<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 313.70302  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27674143 | $\omega$ 175.57596 | -0.13613968   | -0.98789035 |
| <i>a</i> | 2.3321327  | $\Omega$ 282.23591 | +0.90658740   | -0.09394063 |
| <i>e</i> | 0.0880797  | <i>i</i> 4.36742   | +0.39945623   | -0.12348207 |
| <i>P</i> | 3.56       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 11 | 691 | 0.1+ | 0.0  | 2007 11 01 | 691 | 0.0  | 0.0  | 2007 11 15 | 699 | 0.2- | 0.9- |
| 1996 10 11 | 691 | 0.5- | 0.3- | 2007 11 01 | 691 | 0.0  | 0.2+ | 2007 11 15 | 699 | 1.5- | 0.3+ |
| 1996 10 12 | 691 | 0.2+ | 0.0  | 2007 11 01 | 691 | 0.2- | 0.1+ | 2007 11 15 | 699 | 0.7+ | 1.1- |
| 1996 10 12 | 691 | 0.4+ | 0.3- | 2007 11 01 | H55 | 0.4+ | 0.3+ | 2007 11 17 | 691 | 0.1- | 0.1- |
| 2003 09 18 | 691 | 0.0  | 0.3+ | 2007 11 01 | H55 | 0.2+ | 0.1+ | 2007 11 17 | 691 | 0.1- | 0.1+ |
| 2003 09 18 | 691 | 0.4- | 0.1+ | 2007 11 01 | H55 | 0.3+ | 0.4+ | 2007 11 17 | 691 | 0.4- | 0.3- |
| 2003 09 18 | 691 | 0.0  | 0.0  | 2007 11 02 | 704 | 0.4- | 0.0  | 2007 11 18 | 704 | 0.4+ | 0.5+ |
| 2003 09 30 | 691 | 0.0  | 0.3+ | 2007 11 02 | 704 | 0.7+ | 0.2+ | 2007 11 18 | 704 | 0.7+ | 1.0+ |
| 2003 09 30 | 691 | 0.2- | 0.4+ | 2007 11 02 | 704 | 0.1- | 0.1+ | 2007 11 18 | 704 | 0.2+ | 0.4+ |
| 2003 09 30 | 691 | 0.1+ | 0.1+ | 2007 11 02 | 704 | 0.5- | 0.0  | 2007 11 18 | 704 | 0.5+ | 0.2+ |
| 2005 02 14 | 691 | 0.1+ | 0.4+ | 2007 11 07 | 704 | 0.8+ | 0.1- | 2007 11 20 | 691 | 0.2- | 0.2- |
| 2005 02 14 | 691 | 0.0  | 0.2+ | 2007 11 07 | 704 | 0.3+ | 0.2- | 2007 11 20 | 691 | 0.0  | 0.0  |
| 2005 02 14 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 704 | 0.9+ | 0.2- | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2007 10 18 | 691 | 0.4- | 0.3+ | 2007 11 07 | 704 | 0.6+ | 0.4+ | 2007 12 13 | 704 | 1.0+ | 0.1- |
| 2007 10 18 | 691 | 0.3- | 0.0  | 2007 11 07 | 704 | 0.3+ | 0.1- | 2007 12 13 | 704 | 1.7+ | 0.6- |
| 2007 10 18 | 691 | 0.2+ | 0.2- | 2007 11 15 | 699 | 1.4- | 0.2- | 2007 12 13 | 704 | 1.2+ | 0.1- |

**2007 VY<sub>87</sub> = 2004 FZ<sub>81</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 247.88386  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18242778 | $\omega$ 263.69087 | -0.97204521   | -0.17671069 |
| <i>a</i> | 3.0789932  | $\Omega$ 266.05379 | +0.22385538   | -0.89613422 |
| <i>e</i> | 0.0569869  | <i>i</i> 8.91496   | -0.07082994   | -0.40708327 |
| <i>P</i> | 5.40       | <i>H</i> 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 29 | 644 | 0.3- | 1.0+ | 2006 09 18 | 703 | 0.1-  | 1.0-  | 2007 11 07 | 691 | 0.1+ | 0.3- |
| 2001 09 29 | 644 | 0.7- | 1.2+ | 2006 09 18 | 703 | 0.4-  | 0.0   | 2007 11 07 | 704 | 0.3+ | 0.3+ |
| 2001 09 29 | 644 | 0.5- | 1.5+ | 2006 09 18 | 703 | 0.3+  | 0.8+  | 2007 11 07 | 704 | 0.5+ | 0.4+ |
| 2004 03 17 | 704 | 0.0  | 0.5- | 2007 10 10 | D29 | 0.8+  | 0.6-  | 2007 11 07 | 704 | 0.0  | 0.5+ |
| 2004 03 17 | 704 | 0.4- | 0.2- | 2007 10 10 | D29 | 0.5+  | 0.1+  | 2007 11 13 | 699 | 1.4+ | 0.2+ |
| 2004 03 17 | 704 | 0.8+ | 0.2+ | 2007 10 10 | D29 | 0.6+  | 0.5+  | 2007 11 13 | 699 | 0.7+ | 0.5- |
| 2004 03 17 | 704 | 0.1- | 0.2- | 2007 10 10 | D29 | 0.6+  | 0.1+  | 2007 11 13 | 699 | 0.1+ | 1.3- |
| 2004 03 17 | 704 | 0.2- | 0.3+ | 2007 11 02 | 704 | (1.6- | 0.9-) | 2007 11 13 | 699 | 0.1+ | 0.2+ |
| 2004 03 23 | 704 | 0.4+ | 0.8+ | 2007 11 02 | 704 | (1.9- | 1.2-) | 2007 12 14 | 691 | 0.5- | 0.3- |
| 2004 03 23 | 704 | 0.1- | 0.5+ | 2007 11 02 | 704 | (1.6- | 0.5-) | 2007 12 14 | 691 | 0.4- | 0.2- |
| 2004 03 23 | 704 | 0.4+ | 0.6+ | 2007 11 02 | 704 | 1.3-  | 0.4+  | 2007 12 14 | 691 | 0.1- | 0.0  |
| 2004 03 23 | 704 | 0.0  | 0.2+ | 2007 11 02 | 704 | (1.8- | 0.1-) | 2007 12 16 | 691 | 0.1+ | 0.4+ |
| 2004 03 23 | 704 | 0.5+ | 1.0+ | 2007 11 07 | 691 | 0.3-  | 0.3-  | 2007 12 16 | 691 | 0.2- | 0.2+ |
| 2006 09 18 | 703 | 0.3+ | 0.3+ | 2007 11 07 | 691 | 0.3+  | 0.2-  | 2007 12 16 | 691 | 0.1- | 0.1+ |

**2007 VU<sub>88</sub> = 2002 XW<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 358.97345  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18130252 | $\omega$ 132.04705 | +0.81825557   | -0.54624876 |
| <i>a</i> | 3.0917200  | $\Omega$ 261.81456 | +0.45936887   | +0.80861989 |
| <i>e</i> | 0.0759542  | <i>i</i> 10.42361  | +0.34559812   | +0.21850895 |
| <i>P</i> | 5.44       | <i>H</i> 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 29 | 691 | 0.0  | 0.9- | 2006 05 30 | G96 | 0.0  | 0.0  | 2007 11 03 | 704 | 0.5+ | 1.2- |
| 1997 12 29 | 691 | 0.1- | 0.8- | 2006 05 30 | G96 | 0.4- | 0.4+ | 2007 11 03 | 704 | 0.1- | 0.4+ |
| 1997 12 29 | 691 | 0.3- | 0.7- | 2007 10 08 | 703 | 0.3- | 0.5- | 2007 11 03 | 704 | 0.4+ | 0.2+ |

2007 DEC. 24

M.P.O. 129993

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 704 | 0.2− | 0.1+ | 2007 10 08 | 703 | 0.5+ | 0.3− | 2007 11 03 | 704 | 0.0  | 0.2− |
| 2002 12 05 | 704 | 0.3− | 0.3− | 2007 10 08 | 703 | 0.4+ | 0.5− | 2007 11 08 | 704 | 0.4− | 0.1+ |
| 2002 12 05 | 704 | 0.4− | 0.0  | 2007 10 08 | 703 | 0.1− | 1.3− | 2007 11 08 | 704 | 0.6+ | 0.8− |
| 2002 12 05 | 704 | 0.8− | 0.2+ | 2007 10 14 | 703 | 0.0  | 0.2− | 2007 11 08 | 704 | 0.3+ | 1.2+ |
| 2002 12 05 | 704 | 0.6− | 0.5+ | 2007 10 14 | 703 | 0.2+ | 0.9− | 2007 11 08 | 704 | 0.4− | 0.6+ |
| 2002 12 10 | 704 | 0.2+ | 0.6+ | 2007 10 14 | 703 | 0.0  | 0.2+ | 2007 11 08 | 704 | 0.5− | 1.2+ |
| 2002 12 10 | 704 | 0.6+ | 1.4+ | 2007 10 14 | 703 | 1.7− | 0.8+ | 2007 11 09 | 704 | 0.3+ | 0.7+ |
| 2002 12 10 | 704 | 0.3+ | 0.7+ | 2007 11 01 | 703 | 0.1− | 0.7− | 2007 11 09 | 704 | 1.6+ | 0.6+ |
| 2002 12 10 | 704 | 0.9+ | 0.7+ | 2007 11 01 | 703 | 0.3− | 0.1− | 2007 11 09 | 704 | 0.2− | 0.1− |
| 2006 05 30 | G96 | 0.1+ | 0.2+ | 2007 11 01 | 703 | 0.1− | 0.9− | 2007 11 09 | 704 | 0.3− | 0.4− |
| 2006 05 30 | G96 | 0.2− | 0.1− | 2007 11 01 | 703 | 0.7− | 0.5− | 2007 11 09 | 704 | 1.4+ | 0.7+ |

**2007 VX<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 24.68529   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18483895 | $\omega$ | 101.45861 | +0.93967618 | −0.28625403 |
| $a$ | 3.0521583  | $\Omega$ | 275.38643 | +0.19103727 | +0.89328372 |
| $e$ | 0.1481291  | $i$      | 10.84153  | +0.28374892 | +0.34655854 |
| $P$ | 5.33       | $H$      | 15.2      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 02 | 691 | 0.2+ | 0.0  | 2007 10 12 | 699 | 0.2+ | 0.3− | 2007 11 08 | 703 | 0.4− | 0.6+ |
| 1998 02 02 | 691 | 0.2− | 0.0  | 2007 10 12 | 699 | 0.5− | 0.4+ | 2007 11 08 | 703 | 0.1+ | 0.6+ |
| 1998 02 02 | 691 | 0.0  | 0.1+ | 2007 10 12 | 699 | 0.3− | 0.1− | 2007 11 08 | 703 | 0.2− | 0.6+ |
| 2001 08 24 | 699 | 0.2− | 0.8+ | 2007 10 16 | 703 | 0.2− | 1.0− | 2007 11 15 | G96 | 0.1− | 0.4− |
| 2001 08 24 | 699 | 0.2− | 0.2+ | 2007 10 16 | 703 | 0.4+ | 1.3− | 2007 11 15 | G96 | 0.2− | 0.5− |
| 2001 08 24 | 699 | 0.2+ | 0.7+ | 2007 10 16 | 703 | 0.1+ | 0.7+ | 2007 11 15 | G96 | 0.1+ | 0.2− |
| 2001 08 24 | 699 | 0.6− | 0.0  | 2007 10 16 | 703 | 0.1− | 0.3− | 2007 11 15 | G96 | 0.1+ | 0.3− |
| 2006 05 07 | G96 | 0.6+ | 0.0  | 2007 11 03 | 704 | 0.2+ | 0.5− | 2007 11 17 | 704 | 0.4− | 0.9− |
| 2006 05 07 | G96 | 0.1− | 0.2− | 2007 11 03 | 704 | 0.0  | 0.4+ | 2007 11 17 | 704 | 0.6+ | 0.1+ |
| 2006 05 07 | G96 | 0.2+ | 0.0  | 2007 11 03 | 704 | 0.2+ | 0.4+ | 2007 11 17 | 704 | 0.4+ | 0.4+ |
| 2006 05 07 | G96 | 0.3− | 0.0  | 2007 11 03 | 704 | 0.6− | 0.0  | 2007 11 17 | 704 | 0.5+ | 0.3+ |
| 2006 05 30 | G96 | 0.2+ | 1.4− | 2007 11 03 | 704 | 0.5+ | 0.3− | 2007 11 17 | 704 | 0.9+ | 0.1− |
| 2006 05 30 | G96 | 0.2− | 0.0  | 2007 11 08 | 704 | 0.0  | 0.7+ | 2007 12 04 | G96 | 0.0  | 0.3− |
| 2006 05 30 | G96 | 0.2+ | 0.0  | 2007 11 08 | 704 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.3− | 0.3− |
| 2006 07 26 | 644 | 0.6+ | 0.1− | 2007 11 08 | 704 | 0.1− | 0.2+ | 2007 12 04 | G96 | 0.1+ | 0.2− |
| 2006 07 26 | 644 | 0.1+ | 0.3− | 2007 11 08 | 704 | 0.4− | 0.1− | 2007 12 04 | G96 | 0.1− | 0.2− |
| 2006 07 26 | 644 | 0.4− | 0.0  | 2007 11 08 | 704 | 0.2− | 0.1+ |            |     |      |      |
| 2007 10 12 | 699 | 0.8− | 0.4− | 2007 11 08 | 703 | 0.3+ | 0.5+ |            |     |      |      |

**2007 VC<sub>89</sub> = 2006 KU<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 53.62610   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23321425 | $\omega$ | 321.40643 | +0.90868596 | +0.41388138 |
| $a$ | 2.6139623  | $\Omega$ | 14.44302  | −0.30746490 | +0.75208959 |
| $e$ | 0.2799283  | $i$      | 12.66845  | −0.28240955 | +0.51289712 |
| $P$ | 4.23       | $H$      | 15.4      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1994 10 02 | 691 | 0.1+ | 0.2+ | 2006 05 30 | E12 | 0.3+  | 0.2+  | 2007 11 21 | 703 | 0.1− | 0.5− |
| 1994 10 02 | 691 | 0.1+ | 0.3− | 2007 11 03 | 704 | 0.2−  | 0.6−  | 2007 11 21 | 703 | 0.7− | 0.0  |
| 1994 10 02 | 691 | 0.0  | 0.3− | 2007 11 03 | 704 | 0.3+  | 0.4−  | 2007 11 21 | 703 | 0.2+ | 0.1− |
| 1997 04 16 | 691 | 0.2− | 0.7− | 2007 11 03 | 704 | 0.1+  | 0.5−  | 2007 11 21 | 703 | 0.7− | 0.0  |
| 1997 04 16 | 691 | 0.4− | 0.1− | 2007 11 03 | 704 | 0.7+  | 0.1−  | 2007 12 03 | 704 | 0.3− | 0.2+ |
| 1997 04 16 | 691 | 0.3− | 0.4− | 2007 11 03 | 704 | 0.3−  | 0.1+  | 2007 12 03 | 704 | 0.3+ | 0.3− |
| 2000 04 06 | 645 | 0.0  | 0.1+ | 2007 11 07 | 704 | 0.2−  | 0.4+  | 2007 12 03 | 704 | 0.3+ | 0.3+ |
| 2000 04 06 | 645 | 0.0  | 0.1+ | 2007 11 07 | 704 | 0.2+  | 0.7+  | 2007 12 03 | 704 | 1.3+ | 0.3+ |
| 2006 05 22 | E12 | 0.0  | 0.6+ | 2007 11 07 | 704 | 0.2−  | 0.4−  | 2007 12 03 | 704 | 0.3+ | 0.8+ |
| 2006 05 22 | E12 | 0.3+ | 0.2+ | 2007 11 07 | 704 | 0.4−  | 0.2−  | 2007 12 04 | 106 | 0.3+ | 0.4− |
| 2006 05 22 | E12 | 0.2− | 0.5+ | 2007 11 07 | 704 | 0.5−  | 0.1+  | 2007 12 04 | 106 | 0.1− | 0.4− |
| 2006 05 22 | E12 | 0.1+ | 0.9+ | 2007 11 09 | 704 | 0.0   | 0.3+  | 2007 12 04 | 106 | 0.0  | 0.2+ |
| 2006 05 30 | E12 | 0.7+ | 0.2+ | 2007 11 09 | 704 | (0.6+ | 1.7+) | 2007 12 04 | 106 | 0.2− | 0.2+ |
| 2006 05 30 | E12 | 0.4+ | 0.0  | 2007 11 09 | 704 | 1.1−  | 1.1+  |            |     |      |      |
| 2006 05 30 | E12 | 0.2+ | 0.6+ | 2007 11 09 | 704 | 0.9+  | 0.5−  |            |     |      |      |

**2007 VF<sub>89</sub> = 2000 WK<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 14.47018   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26932019 | $\omega$ | 270.79106 | +0.95285628 | −0.30128993 |
| $a$ | 2.3747803  | $\Omega$ | 106.74459 | +0.29116462 | +0.87464298 |
| $e$ | 0.1883628  | $i$      | 2.14890   | +0.08537023 | +0.37976839 |
| $P$ | 3.66       | $H$      | 17.2      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 27 | 691 | 0.9− | 0.5− | 2005 03 10 | G96 | 0.1− | 0.3− | 2007 11 04 | 704 | 0.5+ | 0.1+ |
| 2000 11 27 | 691 | 1.1− | 0.2− | 2005 03 10 | G96 | 0.2− | 0.0  | 2007 11 07 | 704 | 0.1− | 0.3+ |
| 2000 11 27 | 691 | 0.9− | 0.0  | 2007 10 07 | 703 | 0.4+ | 0.6+ | 2007 11 07 | 704 | 0.6− | 0.4+ |
| 2000 12 04 | 691 | 1.0+ | 0.7− | 2007 10 07 | 703 | 0.2+ | 0.7+ | 2007 11 07 | 704 | 0.4− | 0.4+ |
| 2000 12 04 | 691 | 0.9+ | 0.1− | 2007 10 07 | 703 | 0.7+ | 1.1+ | 2007 11 07 | 704 | 0.4− | 0.1+ |
| 2000 12 04 | 691 | 0.6+ | 0.8− | 2007 10 07 | 703 | 0.4− | 0.0  | 2007 11 07 | 704 | 0.8− | 0.1+ |
| 2002 04 09 | 807 | 0.0  | 0.6+ | 2007 10 20 | 691 | 0.2− | 0.1− | 2007 11 07 | 703 | 0.1+ | 0.4− |
| 2002 04 09 | 807 | 0.2+ | 0.6+ | 2007 10 20 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.1− | 0.0  |
| 2004 12 20 | G96 | 0.0  | 0.5+ | 2007 10 20 | 691 | 0.1− | 0.0  | 2007 11 07 | 703 | 0.1− | 0.2− |
| 2004 12 20 | G96 | 0.1− | 0.4+ | 2007 10 30 | 703 | 0.8− | 0.2− | 2007 11 07 | 703 | 0.3+ | 0.4+ |
| 2004 12 20 | G96 | 0.1+ | 0.3+ | 2007 10 30 | 703 | 0.1− | 0.3− | 2007 11 14 | 704 | 0.2− | 1.0− |
| 2004 12 20 | G96 | 0.3+ | 0.9+ | 2007 10 30 | 703 | 0.1+ | 1.0+ | 2007 11 14 | 704 | 0.5+ | 0.4+ |
| 2005 02 01 | 691 | 0.2+ | 0.5+ | 2007 10 30 | 703 | 0.3− | 0.0  | 2007 11 14 | 704 | 0.4− | 0.7+ |
| 2005 02 01 | 691 | 0.3+ | 0.7+ | 2007 11 04 | 704 | 0.2+ | 0.6+ | 2007 11 14 | 704 | 0.2+ | 0.0  |
| 2005 02 01 | 691 | 0.3+ | 0.2+ | 2007 11 04 | 704 | 0.3+ | 0.4+ | 2007 11 14 | 704 | 0.1− | 0.2+ |
| 2005 03 10 | G96 | 0.1− | 0.0  | 2007 11 04 | 704 | 0.2+ | 0.4+ |            |     |      |      |
| 2005 03 10 | G96 | 0.5− | 0.0  | 2007 11 04 | 704 | 0.2+ | 0.4+ |            |     |      |      |

**2007 VJ<sub>89</sub> = 1996 HU<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 317.10607  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21927514 | $\omega$ | 262.49975 | −0.03510793 | −0.99908112 |
| $a$ | 2.7235987  | $\Omega$ | 189.61559 | +0.96513236 | −0.02750966 |
| $e$ | 0.0769248  | $i$      | 8.46322   | +0.25939729 | −0.03286546 |
| $P$ | 4.49       | $H$      | 16.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 04 17 | 691 | 0.0  | 0.7+ | 2007 10 09 | G96 | 0.3+ | 0.0  | 2007 11 11 | 699 | 0.1+  | 0.5−  |
| 1996 04 17 | 691 | 0.0  | 0.2+ | 2007 10 09 | G96 | 0.2+ | 0.2+ | 2007 11 11 | 699 | 0.3+  | 0.2+  |
| 1996 04 17 | 691 | 0.1+ | 0.3+ | 2007 10 09 | G96 | 0.0  | 0.0  | 2007 11 11 | 699 | 1.3−  | 1.4+  |
| 1996 04 21 | 691 | 0.1− | 0.0  | 2007 11 04 | 704 | 0.4+ | 0.3+ | 2007 11 11 | 699 | (1.6− | 0.5−) |
| 1996 04 21 | 691 | 0.0  | 0.1− | 2007 11 04 | 704 | 0.3+ | 1.2+ | 2007 11 12 | 704 | 0.0   | 0.3+  |
| 1996 04 21 | 691 | 0.3+ | 0.1+ | 2007 11 04 | 704 | 0.3− | 1.3+ | 2007 11 12 | 704 | 0.2−  | 0.2−  |
| 2000 02 12 | 645 | 0.0  | 0.0  | 2007 11 04 | 704 | 0.9+ | 0.4+ | 2007 11 12 | 704 | 1.2−  | 0.8+  |
| 2000 02 12 | 645 | 0.0  | 0.0  | 2007 11 07 | 704 | 0.0  | 0.1+ | 2007 11 12 | 704 | 0.8+  | 0.0   |
| 2002 09 11 | 644 | 0.2− | 0.6+ | 2007 11 07 | 704 | 0.4+ | 0.1+ | 2007 12 06 | 703 | 0.3−  | 0.7−  |
| 2002 09 11 | 644 | 0.0  | 0.5+ | 2007 11 07 | 704 | 0.2− | 0.0  | 2007 12 06 | 703 | 0.3−  | 0.1−  |
| 2002 09 11 | 644 | 0.3− | 0.5+ | 2007 11 07 | 704 | 0.4− | 0.5− | 2007 12 06 | 703 | 0.1−  | 1.0−  |
| 2007 10 09 | G96 | 0.5+ | 0.1− | 2007 11 07 | 704 | 0.1+ | 0.0  | 2007 12 06 | 703 | 0.6−  | 0.4−  |

**2007 VL<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 14.85823   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18608138 | $\omega$ | 321.57291 | +0.93535393 | −0.30313000 |
| $a$ | 3.0385573  | $\Omega$ | 57.01939  | +0.35366003 | +0.79253848 |
| $e$ | 0.0756005  | $i$      | 12.55013  | +0.00613188 | +0.52914549 |
| $P$ | 5.30       | $H$      | 15.6      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |     |            |     |      |      |            |   |
|------------|-----|------|-----|------------|-----|------|------|------------|---|
| 2002 11 24 | 644 | 0.1+ | 0.0 | 2007 10 13 | 703 | 0.3+ | 0.7+ | 2007 11 09 | G |
|------------|-----|------|-----|------------|-----|------|------|------------|---|

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 04 30 | 691 | 0.8+  | 0.2+  | 2007 11 04 | 704 | 0.3- | 0.1- | 2007 11 12 | 704 | 1.4-  | 0.5+  |
| 2005 04 30 | 691 | 0.4+  | 0.9+  | 2007 11 04 | 704 | 0.1+ | 0.0  | 2007 11 12 | 704 | 0.1-  | 0.7+  |
| 2005 05 11 | 807 | 0.4+  | 0.7+  | 2007 11 04 | 704 | 0.1- | 0.3- | 2007 11 12 | 704 | 0.8-  | 0.1+  |
| 2005 05 11 | 807 | 0.3+  | 0.6+  | 2007 11 07 | 704 | 0.4+ | 1.2+ | 2007 11 12 | 704 | 0.5-  | 1.1+  |
| 2007 10 10 | G96 | 0.1-  | 0.1-  | 2007 11 07 | 704 | 0.7+ | 0.7+ | 2007 11 13 | 699 | 1.7+  | 1.6-  |
| 2007 10 10 | G96 | 0.5+  | 0.1-  | 2007 11 07 | 704 | 0.1- | 0.6+ | 2007 11 13 | 699 | 0.5+  | 0.4-  |
| 2007 10 10 | G96 | 0.1+  | 0.3-  | 2007 11 07 | 704 | 0.5+ | 0.9+ | 2007 11 13 | 699 | 1.4-  | 0.5-  |
| 2007 10 10 | G96 | 0.7+  | 0.3-  | 2007 11 07 | 704 | 0.4- | 0.7+ | 2007 11 13 | 699 | (1.0- | 2.1+) |
| 2007 10 13 | 703 | (2.2- | 0.5-) | 2007 11 09 | G96 | 0.1+ | 0.5- |            |     |       |       |
| 2007 10 13 | 703 | 0.1-  | 0.4+  | 2007 11 09 | G96 | 0.1+ | 0.6- |            |     |       |       |

**2007 VV<sub>89</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 341.01170  | (2000.0) | <b>P</b>  |             | <b>Q</b>    |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.27196228 | $\omega$ | 342.99367 | +0.33141822 | -0.94265331 |            |
| <i>a</i> | 2.3593748  | $\Omega$ | 87.63752  | +0.87017318 | +0.28918342 |            |
| <i>e</i> | 0.1634339  | <i>i</i> | 2.27037   | +0.36463763 | +0.16666637 |            |
| <i>P</i> | 3.62       | <i>H</i> | 17.5      | <i>G</i>    | 0.15        | <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 08 24 | 807 | 0.3- | 1.1+ | 2007 11 04 | 704 | 0.9+  | 0.9+  | 2007 11 15 | 704 | 0.1- | 0.1- |
| 2003 08 24 | 807 | 0.5- | 0.9+ | 2007 11 05 | 704 | 0.2-  | 0.2-  | 2007 11 15 | 704 | 0.4- | 0.6+ |
| 2005 03 03 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 704 | 0.6+  | 0.5-  | 2007 11 17 | 703 | 0.3- | 0.3- |
| 2005 03 03 | 691 | 0.4+ | 0.4+ | 2007 11 05 | 704 | 0.2+  | 0.6-  | 2007 11 17 | 703 | 0.3+ | 0.4+ |
| 2005 03 03 | 691 | 0.1- | 0.2+ | 2007 11 05 | 704 | 0.0   | 0.7-  | 2007 11 17 | 703 | 0.4- | 0.3- |
| 2005 04 11 | 695 | 0.5- | 0.2- | 2007 11 05 | 704 | 0.8+  | 0.3-  | 2007 11 17 | 703 | 0.1+ | 0.1+ |
| 2005 04 11 | 695 | 0.3- | 0.3- | 2007 11 12 | 703 | 0.1+  | 0.0   | 2007 12 03 | 703 | 0.6+ | 1.4- |
| 2007 10 16 | 691 | 0.3- | 0.1- | 2007 11 12 | 703 | 0.1+  | 0.8-  | 2007 12 03 | 703 | 0.1- | 0.2- |
| 2007 10 16 | 691 | 0.4- | 0.2- | 2007 11 12 | 703 | 0.4-  | 0.1-  | 2007 12 03 | 703 | 0.7- | 0.3- |
| 2007 10 16 | 691 | 0.2- | 0.3- | 2007 11 12 | 703 | 1.0-  | 0.8+  | 2007 12 03 | 703 | 0.3+ | 0.8- |
| 2007 11 02 | 691 | 0.3- | 0.2+ | 2007 11 14 | 704 | 0.3+  | 1.0+  | 2007 12 05 | 704 | 0.1+ | 0.4- |
| 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | 0.4-  | 1.0+  | 2007 12 05 | 704 | 1.1+ | 0.8- |
| 2007 11 02 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | (0.0  | 1.6+) | 2007 12 05 | 704 | 0.6+ | 0.5- |
| 2007 11 04 | 704 | 0.8+ | 0.2+ | 2007 11 14 | 704 | 0.8-  | 0.9+  | 2007 12 05 | 704 | 0.2+ | 0.6+ |
| 2007 11 04 | 704 | 1.0+ | 1.0+ | 2007 11 15 | 704 | 0.2+  | 0.5+  | 2007 12 05 | 704 | 0.6+ | 0.1+ |
| 2007 11 04 | 704 | 0.8+ | 0.6- | 2007 11 15 | 704 | (1.7+ | 1.0+) |            |     |      |      |
| 2007 11 04 | 704 | 0.4+ | 0.8+ | 2007 11 15 | 704 | 0.4+  | 0.7+  |            |     |      |      |

**2007 VA<sub>90</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 67.16815   | (2000.0) | <b>P</b>  |             | <b>Q</b>    |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.27796233 | $\omega$ | 232.14263 | +0.84885686 | +0.51717985 |            |
| <i>a</i> | 2.3252987  | $\Omega$ | 96.46563  | -0.44382373 | +0.80967660 |            |
| <i>e</i> | 0.1250670  | <i>i</i> | 6.32074   | -0.28716288 | +0.27739647 |            |
| <i>P</i> | 3.55       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 07 25 | 644 | 0.3- | 0.3+ | 2007 10 20 | G96 | 0.3+  | 0.3-  | 2007 11 12 | 704 | 0.6+ | 0.2- |
| 2003 07 25 | 644 | 0.7- | 0.7+ | 2007 11 04 | 704 | 0.3-  | 0.0   | 2007 11 12 | 704 | 0.4+ | 0.9+ |
| 2003 07 25 | 644 | 0.6- | 0.4+ | 2007 11 04 | 704 | 0.1+  | 0.4-  | 2007 11 12 | 704 | 0.3- | 0.4+ |
| 2003 08 31 | 608 | 0.4- | 0.4- | 2007 11 04 | 704 | 0.5-  | 0.8-  | 2007 11 13 | 691 | 0.3- | 0.0  |
| 2003 08 31 | 608 | 0.2- | 0.4- | 2007 11 04 | 704 | 0.5+  | 0.6+  | 2007 11 13 | 691 | 0.2- | 0.2- |
| 2003 08 31 | 608 | 0.5- | 0.7- | 2007 11 07 | 704 | 1.6-  | 1.1+  | 2007 11 13 | 691 | 0.2- | 0.0  |
| 2003 09 19 | 699 | 0.8+ | 0.1- | 2007 11 07 | 704 | 0.3+  | 0.2+  | 2007 11 20 | 691 | 0.5- | 0.2- |
| 2003 09 19 | 699 | 0.7+ | 0.8- | 2007 11 07 | 704 | 0.4-  | 0.0   | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2003 09 19 | 699 | 1.0+ | 0.6+ | 2007 11 07 | 704 | (2.6+ | 0.5-) | 2007 11 20 | 691 | 0.5- | 0.2- |
| 2003 09 19 | 699 | 0.0  | 0.5+ | 2007 11 07 | 704 | 0.3-  | 0.1-  | 2007 11 20 | 703 | 0.0  | 0.4+ |
| 2006 05 05 | 691 | 0.2- | 0.1+ | 2007 11 09 | 691 | 0.1-  | 0.1-  | 2007 11 20 | 703 | 0.1+ | 0.8+ |
| 2006 05 05 | 691 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.1-  | 0.3-  | 2007 11 20 | 703 | 0.1+ | 0.4+ |
| 2006 05 05 | 691 | 0.3+ | 0.1- | 2007 11 09 | 691 | 0.3-  | 0.2-  | 2007 11 20 | 703 | 1.6- | 0.1- |
| 2006 06 19 | 691 | 0.0  | 0.5+ | 2007 11 12 | G96 | 0.4+  | 0.7-  | 2007 11 21 | 703 | 0.7+ | 0.4+ |
| 2006 06 19 | 691 | 0.2+ | 0.4+ | 2007 11 12 | G96 | 0.0   | 0.4-  | 2007 11 21 | 703 | 0.8+ | 0.6+ |
| 2006 06 19 | 691 | 0.3+ | 0.6+ | 2007 11 12 | 704 | 0.1+  | 0.2-  | 2007 11 21 | 703 | 1.0+ | 1.9+ |
| 2007 10 20 | G96 | 0.4+ | 0.3- | 2007 11 12 | G96 | 0.1-  | 0.5-  | 2007 11 21 | 703 | 0.1+ | 0.3+ |
| 2007 10 20 | G96 | 0.1+ | 0.4- | 2007 11 12 | G96 | 0.1+  | 0.5-  |            |     |      |      |
| 2007 10 20 | G96 | 0.2+ | 0.4- | 2007 11 12 | 704 | 0.6+  | 0.5+  |            |     |      |      |

**2007 VO<sub>90</sub> = 2003 AM<sub>18</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 304.79541  | (2000.0) | <b>P</b> |             | <b>Q</b>    |            |
|----------|------------|----------|----------|-------------|-------------|------------|
| <i>n</i> | 0.18057164 | $\omega$ | 46.13395 | -0.40496727 | -0.90942962 |            |
| <i>a</i> | 3.1000571  | $\Omega$ | 67.97371 | +0.80691577 | -0.40410531 |            |
| <i>e</i> | 0.1123804  | <i>i</i> | 5.85389  | +0.42998657 | -0.09816652 |            |
| <i>P</i> | 5.46       | <i>H</i> | 15.7     | <i>G</i>    | 0.15        | <i>U</i> 0 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1993 03 23 | 809 | 0.4+  | 0.2-  | 2007 10 08 | G96 | 0.4+  | 0.4-  | 2007 11 14 | 704 | 0.0  | 0.6+ |
| 2001 10 16 | 644 | 0.9-  | 0.8+  | 2007 10 08 | G96 | 0.1+  | 0.1-  | 2007 11 14 | 704 | 0.0  | 0.2+ |
| 2001 10 16 | 644 | 0.5-  | 0.8+  | 2007 10 08 | G96 | 0.3+  | 0.3-  | 2007 11 14 | 704 | 0.3+ | 0.1+ |
| 2001 10 16 | 644 | 0.5-  | 1.2+  | 2007 10 08 | G96 | 0.0   | 0.1-  | 2007 11 14 | 704 | 1.0+ | 1.1+ |
| 2003 01 05 | 704 | 0.1-  | 0.2-  | 2007 10 08 | G96 | 0.3+  | 0.2-  | 2007 11 17 | 703 | 0.7+ | 1.2- |
| 2003 01 05 | 704 | 0.5-  | 0.5+  | 2007 10 08 | G96 | 0.1-  | 0.0   | 2007 11 17 | 703 | 0.0  | 0.3- |
| 2003 01 05 | 704 | 0.8+  | 0.0   | 2007 10 08 | G96 | 0.2+  | 0.1-  | 2007 11 17 | 703 | 1.2- | 0.7+ |
| 2003 01 05 | 704 | 0.2+  | 0.4+  | 2007 10 08 | G96 | 0.3+  | 0.0   | 2007 11 17 | 703 | 0.7- | 0.5- |
| 2003 01 05 | 704 | (1.2+ | 1.6+) | 2007 11 05 | 704 | 0.0   | 0.2-  | 2007 11 18 | 691 | 0.4- | 0.0  |
| 2003 01 08 | 460 | (0.8+ | 1.9-) | 2007 11 05 | 704 | 0.7-  | 1.1+  | 2007 11 18 | 691 | 0.3- | 0.0  |
| 2003 01 08 | 460 | 0.9-  | 0.6-  | 2007 11 05 | 704 | 0.4+  | 0.3+  | 2007 11 18 | 691 | 0.2- | 0.2+ |
| 2004 03 26 | 691 | 0.2+  | 0.1-  | 2007 11 05 | 704 | 0.3+  | 0.5+  | 2007 11 20 | 691 | 0.4+ | 0.3+ |
| 2004 03 26 | 691 | 0.1-  | 0.1+  | 2007 11 07 | 704 | 0.9+  | 0.4-  | 2007 11 20 | 691 | 0.1- | 0.1- |
| 2004 03 26 | 691 | 0.2+  | 0.1-  | 2007 11 07 | 704 | (2.1+ | 0.2-) | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2004 04 26 | 691 | 0.0   | 0.2+  | 2007 11 07 | 704 | 1.4+  | 0.9-  | 2007 12 05 | 691 | 0.2- | 0.1+ |
| 2004 04 26 | 691 | 0.0   | 0.4+  | 2007 11 07 | 704 | 0.6+  | 0.6-  | 2007 12 05 | 691 | 0.1- | 0.1+ |
| 2004 04 26 | 691 | 0.0   | 0.4+  | 2007 11 07 | 704 | 1.1+  | 1.0-  | 2007 12 05 | 691 | 0.1- | 0.1- |

**2007 VQ<sub>90</sub> = 2003 WU<sub>173</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 20.28421   | (2000.0) | <b>P</b>  |             | <b>Q</b>    |            |
|----------|------------|----------|-----------|-------------|-------------|------------|
| <i>n</i> | 0.24351252 | $\omega$ | 311.41946 | +0.93010493 | -0.35836829 |            |
| <i>a</i> | 2.5397357  | $\Omega$ | 69.72106  | +0.35736765 | +0.83238037 |            |
| <i>e</i> | 0.0872054  | <i>i</i> | 4.92190   | +0.08481263 | +0.42274708 |            |
| <i>P</i> | 4.05       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> 4 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 691 | 0.3+  | 0.3-  | 2007 10 21 | 691 | 0.2+ | 0.4- | 2007 11 14 | 704 | 0.3- | 0.2+ |
| 2003 11 18 | 691 | 0.2+  | 0.0   | 2007 10 21 | 691 | 0.2+ | 0.3- | 2007 11 14 | 704 | 0.3+ | 0.9+ |
| 2003 11 18 | 691 | 0.3-  | 0.2-  | 2007 10 21 | 691 | 0.3- | 0.4- | 2007 11 15 | 704 | 0.8+ | 0.8+ |
| 2003 11 19 | 699 | (1.9- | 1.8-) | 2007 11 03 | 691 | 0.2- | 0.3- | 2007 11 15 | 704 | 0.3- | 1.2+ |
| 2003 11 19 | 699 | 0.1-  | 1.0+  | 2007 11 03 | 691 | 0.2- | 0.1- | 2007 11 15 | 704 | 0.4- | 0.5+ |
| 2003 11 19 | 699 | 0.4+  | 0.2-  | 2007 11 03 | 691 | 0.2- | 0.2- | 2007 11 15 | 704 | 0.7+ | 1.2+ |
| 2003 11 19 | 699 | 0.5+  | 0.5+  | 2007 11 05 | 704 | 0.3+ | 0.2+ | 2007 11 17 | 703 | 0.1+ | 0.3+ |
| 2003 11 21 | 695 | 0.3-  | 0.3-  | 2007 11 05 | 704 | 0.8+ | 0.5- | 2007 11 17 | 703 | 0.1+ | 1.2- |
| 2003 11 21 | 695 | 0.3+  | 0.2-  | 2007 11 05 | 704 | 0.1+ | 0.2- | 2007 11 17 | 703 | 0.1- | 0.6- |
| 2003 12 18 | 691 | 0.2-  | 0.2-  | 2007 11 05 | 704 | 0.3+ | 0.1+ | 2007 11 17 | 703 | 0.1- | 0.6- |
| 2003 12 18 | 691 | 0.0   | 0.1-  | 2007 11 05 | 704 | 0.2- | 0.7+ | 2007 12 05 | 704 | 1.0- | 0.5+ |
| 2003 12 18 | 691 | 0.0   | 0.2-  | 2007 11 07 | 704 | 0.2+ | 0.5+ | 2007 12 05 | 704 | 0.7- | 1.2+ |
| 2007 10 15 | 703 | (1.7+ | 0.5+) | 2007 11 07 | 704 | 0.1- | 1.1+ | 2007 12 05 | 704 | 0.5+ | 0.9+ |
| 2007 10 15 | 703 | 0.9+  | 1.0+  | 2007 11 07 | 704 | 0.0  | 0.4- | 2007 12 05 | 704 | 0.7- | 0.2- |
| 2007 10 15 | 703 | 0.4-  | 1.3+  | 2007 11 14 | 704 | 0.9+ | 0.2+ |            |     |      |      |
| 2007 10 15 | 703 | (3.2- | 1.0+) | 2007 11 14 | 704 | 0.2- | 0.3+ |            |     |      |      |

**2007 VS<sub>90</sub> = 2000 UP<sub>105</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 45.21946   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28694571 | $\omega$ | 250.56559 | +0.94676541 | +0.30546798 |
| $a$ | 2.2765100  | $\Omega$ | 91.54440  | -0.24383370 | +0.88653044 |
| $e$ | 0.2147175  | $i$      | 5.83401   | -0.21019131 | +0.34749546 |
| $P$ | 3.43       | $H$      | 17.1      | $G$ 0.15    | $U$ 3       |



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|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 22 | 699 | 0.4−  | 0.5+  | 2007 11 05 | 704 | 0.0  | 0.3+ | 2007 11 20 | 691 | 0.1− | 0.2− |
| 2000 10 29 | 704 | 0.9−  | 0.6+  | 2007 11 07 | 704 | 0.1+ | 0.3+ | 2007 11 20 | 703 | 0.5− | 0.3− |
| 2000 10 29 | 704 | 0.8−  | 0.0   | 2007 11 07 | 704 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.0  | 0.2− |
| 2000 10 29 | 704 | 0.1+  | 0.2−  | 2007 11 07 | 704 | 0.5− | 1.2− | 2007 12 04 | 704 | 0.5+ | 0.1− |
| 2000 11 03 | 704 | 0.4−  | 0.7+  | 2007 11 07 | 704 | 0.3+ | 0.0  | 2007 12 04 | 704 | 0.3+ | 0.3− |
| 2000 11 03 | 704 | 0.2+  | 0.3+  | 2007 11 07 | 704 | 0.1− | 0.4− | 2007 12 04 | 704 | 0.9+ | 0.0  |
| 2000 11 03 | 704 | 0.4+  | 0.3−  | 2007 11 12 | 704 | 0.8+ | 0.1− | 2007 12 05 | 704 | 0.5− | 0.2− |
| 2000 11 03 | 704 | 0.7+  | 0.4+  | 2007 11 12 | 704 | 0.5+ | 0.3+ | 2007 12 05 | 704 | 0.2− | 0.1+ |
| 2000 11 03 | 704 | 0.6+  | 0.9+  | 2007 11 12 | 704 | 0.3− | 0.1− | 2007 12 05 | 704 | 1.0+ | 1.0+ |
| 2005 01 17 | 691 | 0.1+  | 0.3+  | 2007 11 12 | 704 | 0.1+ | 0.6+ | 2007 12 05 | 699 | 0.8+ | 0.7+ |
| 2005 01 17 | 691 | 0.1−  | 0.1+  | 2007 11 12 | 704 | 0.2+ | 0.9+ | 2007 12 05 | 704 | 0.4− | 0.5+ |
| 2005 01 17 | 691 | 0.1−  | 0.1−  | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 12 05 | 704 | 0.1− | 1.5+ |
| 2007 10 20 | G96 | 0.2+  | 0.4−  | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 12 05 | 704 | 0.5+ | 0.4+ |
| 2007 10 20 | G96 | 0.3+  | 0.2−  | 2007 11 13 | 691 | 0.0  | 0.3− | 2007 12 05 | 704 | 0.3+ | 1.2+ |
| 2007 10 20 | G96 | 0.0   | 0.2−  | 2007 11 15 | 699 | 0.7+ | 0.3+ | 2007 12 05 | 699 | 0.5+ | 0.7− |
| 2007 10 20 | G96 | 0.7+  | 0.3−  | 2007 11 15 | 699 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.1− | 0.5+ |
| 2007 11 05 | 691 | 0.2−  | 0.4−  | 2007 11 15 | 699 | 0.3− | 0.3− | 2007 12 05 | 704 | 0.5− | 0.2+ |
| 2007 11 05 | 691 | 0.0   | 0.3−  | 2007 11 15 | 699 | 0.6− | 1.2− | 2007 12 05 | 699 | 1.6+ | 0.6+ |
| 2007 11 05 | 691 | (1.8+ | 3.2−) | 2007 11 20 | 703 | 0.7− | 0.3+ | 2007 12 05 | 699 | 0.3+ | 0.9− |

2007 VT<sub>90</sub> = 2001 DS<sub>102</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |             |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.26596094 | $\omega$ | 14.48294 | −0.18180918 |      | −0.97697066 |   |
| <i>a</i> | 2.3947351  | $\Omega$ | 86.08361 | +0.89068879 |      | −0.21174203 |   |
| <i>e</i> | 0.1813047  | <i>i</i> | 6.42758  | +0.41667601 |      | +0.02633706 |   |
| <i>P</i> | 3.71       | <i>H</i> | 16.5     | <i>G</i>    | 0.15 | <i>U</i>    | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 02 16 | 704 | 0.0  | 0.5− | 2007 11 05 | 704 | 0.9+ | 0.8− | 2007 11 13 | 699 | 1.3− | 0.9+ |
| 2001 02 16 | 704 | 0.2− | 0.5+ | 2007 11 07 | 704 | 0.7− | 0.4− | 2007 11 13 | 699 | 0.6+ | 0.9− |
| 2001 02 16 | 704 | 0.5+ | 1.0− | 2007 11 07 | 704 | 0.3− | 0.7+ | 2007 11 13 | 699 | 0.4− | 1.1− |
| 2001 02 16 | 704 | 0.0  | 0.2− | 2007 11 07 | 704 | 1.1+ | 0.6+ | 2007 12 13 | A77 | 0.4− | 0.1− |
| 2001 02 19 | 699 | 0.1− | 0.1− | 2007 11 07 | 704 | 0.3+ | 0.5+ | 2007 12 13 | A77 | 0.7+ | 0.6− |
| 2001 02 19 | 699 | 1.0+ | 0.5+ | 2007 11 07 | 704 | 0.9− | 0.5− | 2007 12 13 | A77 | 0.3+ | 0.2− |
| 2001 02 19 | 699 | 0.3− | 0.1− | 2007 11 12 | 704 | 0.7+ | 0.8− | 2007 12 14 | A77 | 0.2+ | 0.2+ |
| 2001 02 19 | 699 | 0.8− | 0.9+ | 2007 11 12 | 704 | 0.6− | 0.3− | 2007 12 14 | A77 | 0.3+ | 0.0  |
| 2007 11 05 | 704 | 0.0  | 0.4− | 2007 11 12 | 704 | 0.1− | 0.3+ | 2007 12 14 | A77 | 0.1+ | 0.2− |
| 2007 11 05 | 704 | 0.2+ | 0.5+ | 2007 11 12 | 704 | 0.3+ | 1.2+ | 2007 12 15 | A77 | 0.8− | 0.1+ |
| 2007 11 05 | 704 | 0.6− | 0.4+ | 2007 11 12 | 704 | 0.1− | 0.6+ | 2007 12 15 | A77 | 0.1+ | 0.4+ |
| 2007 11 05 | 704 | 0.0  | 0.2+ | 2007 11 13 | 699 | 0.3+ | 0.6− | 2007 12 15 | A77 | 0.0  | 0.3+ |

2007 VX<sub>90</sub> = 2005 GW<sub>83</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           |             |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.21494579 | $\omega$ | 199.82510 | +0.40652005 |      | −0.91077958 |   |
| <i>a</i> | 2.7600487  | $\Omega$ | 226.26551 | +0.85116434 |      | +0.40628055 |   |
| <i>e</i> | 0.0308851  | <i>i</i> | 5.73984   | +0.33205530 |      | +0.07359812 |   |
| <i>P</i> | 4.59       | <i>H</i> | 15.6      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1998 12 20 | 691 | 0.5+ | 0.1+ | 2007 10 20 | 703 | 0.6−  | 0.6+  | 2007 11 09 | G96 | 0.0  | 0.2− |
| 1998 12 20 | 691 | 0.1− | 0.7− | 2007 10 30 | G96 | 0.3+  | 0.2+  | 2007 11 09 | G96 | 0.1− | 0.1− |
| 1998 12 20 | 691 | 0.3− | 0.2− | 2007 10 30 | G96 | 0.2+  | 0.1−  | 2007 11 09 | G96 | 0.0  | 0.2− |
| 2002 09 13 | 644 | 0.0  | 0.6+ | 2007 10 30 | G96 | 0.2+  | 0.0   | 2007 11 12 | G96 | 0.5− | 0.8− |
| 2002 09 13 | 644 | 0.1− | 0.9+ | 2007 10 30 | G96 | 0.5+  | 0.2−  | 2007 11 12 | G96 | 0.2− | 0.7− |
| 2002 09 13 | 644 | 0.3− | 0.8+ | 2007 11 03 | 691 | (0.8− | 1.8+) | 2007 11 12 | G96 | 0.5− | 0.7− |
| 2005 04 04 | 691 | 0.1+ | 0.8− | 2007 11 03 | 691 | 0.3−  | 0.2+  | 2007 11 12 | G96 | 0.1− | 0.9− |
| 2005 04 04 | 691 | 0.3− | 0.1+ | 2007 11 03 | 691 | 0.0   | 0.1+  | 2007 11 12 | G96 | 0.0  | 0.1+ |
| 2005 04 04 | 691 | 0.2+ | 0.3+ | 2007 11 06 | 704 | 0.2−  | 0.7+  | 2007 11 12 | G96 | 0.1− | 0.2− |
| 2005 04 04 | 691 | 0.2+ | 0.5+ | 2007 11 06 | 704 | 0.9+  | 1.2+  | 2007 11 12 | G96 | 0.1− | 0.0  |
| 2005 04 04 | 691 | 0.1+ | 0.4+ | 2007 11 06 | 704 | 0.5−  | 0.9+  | 2007 11 12 | G96 | 0.2− | 0.1+ |
| 2005 04 04 | 691 | 0.2+ | 0.2+ | 2007 11 06 | 704 | 0.1+  | 1.5+  | 2007 11 13 | G96 | 0.2− | 0.5+ |
| 2005 04 11 | 691 | 0.1+ | 0.3+ | 2007 11 06 | 704 | 0.6+  | 0.4+  | 2007 11 13 | G96 | 0.3− | 0.2+ |
| 2005 04 11 | 691 | 0.0  | 0.2+ | 2007 11 07 | 704 | 0.0   | 0.7+  | 2007 11 15 | 704 | 0.2+ | 1.0+ |
| 2005 04 11 | 691 | 0.2+ | 0.4+ | 2007 11 07 | 704 | 0.0   | 0.8+  | 2007 11 15 | 704 | 0.5+ | 0.5+ |

## M.P.O. 129995

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 15 | 691 | 0.0   | 0.4+  | 2007 11 07 | 704 | 0.3+ | 0.9+ | 2007 11 15 | 704 | 0.3+ | 0.4+ |
| 2005 04 15 | 691 | 0.1−  | 0.2+  | 2007 11 07 | 704 | 0.0  | 1.1+ | 2007 11 15 | 704 | 0.0  | 0.6+ |
| 2005 04 15 | 691 | 0.0   | 0.4+  | 2007 11 07 | 704 | 0.0  | 0.3+ | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2007 10 12 | 691 | 0.2−  | 0.2+  | 2007 11 07 | 703 | 0.4+ | 1.0+ | 2007 11 17 | 703 | 0.2+ | 0.3− |
| 2007 10 12 | 691 | 0.2−  | 0.1+  | 2007 11 07 | 703 | 0.2− | 0.3+ | 2007 11 17 | 703 | 0.7− | 0.5+ |
| 2007 10 12 | 691 | 0.2−  | 0.1+  | 2007 11 07 | 703 | 1.0+ | 0.7+ | 2007 11 17 | 703 | 0.1+ | 0.1+ |
| 2007 10 16 | 691 | 0.3−  | 0.5−  | 2007 11 07 | 703 | 0.6− | 0.6+ | 2007 11 17 | 703 | 0.9− | 0.3− |
| 2007 10 16 | 691 | 0.2−  | 0.0   | 2007 11 07 | 703 | 0.6+ | 1.0+ | 2007 12 05 | 704 | 0.3+ | 0.4− |
| 2007 10 16 | 691 | 0.2−  | 0.2−  | 2007 11 07 | 703 | 0.0  | 0.5+ | 2007 12 05 | 704 | 0.3+ | 1.0− |
| 2007 10 20 | 703 | 0.0   | 1.3+  | 2007 11 07 | 703 | 1.2+ | 0.8+ | 2007 12 05 | 704 | 0.2+ | 0.9− |
| 2007 10 20 | 703 | 0.3+  | 0.2−  | 2007 11 07 | 703 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.4+ | 1.3− |
| 2007 10 20 | 703 | (1.8− | 0.3+) | 2007 11 09 | G96 | 0.0  | 0.2− | 2007 12 05 | 704 | 0.2− | 0.5− |

2007 VY<sub>90</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          |             |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.29845578 | $\omega$ | 15.45271 | +0.70182316 |      | −0.70909614 |   |
| <i>a</i> | 2.2175975  | $\Omega$ | 30.07315 | +0.63833982 |      | +0.58364948 |   |
| <i>e</i> | 0.1184691  | <i>i</i> | 7.80158  | +0.31617483 |      | +0.39564625 |   |
| <i>P</i> | 3.30       | <i>H</i> | 17.5     | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1997 10 31 | 910 | 0.9+  | 0.1−  | 2007 11 06 | 704 | 0.3+  | 0.0   | 2007 11 20 | 704 | (1.7+ | 0.7−) |
| 1997 10 31 | 910 | 1.4+  | 0.1−  | 2007 11 07 | 704 | 0.6−  | 0.1−  | 2007 11 20 | 704 | 0.9−  | 0.5−  |
| 1997 10 31 | 910 | 1.3+  | 0.3−  | 2007 11 07 | 704 | 0.8−  | 0.2+  | 2007 11 20 | 704 | (1.6+ | 1.7−) |
| 1997 11 21 | 691 | 0.5−  | 0.2+  | 2007 11 07 | 704 | 0.1−  | 0.2−  | 2007 11 20 | 704 | (0.3− | 1.8+) |
| 1997 11 21 | 691 | 0.3−  | 0.2−  | 2007 11 07 | 704 | 0.7−  | 0.5+  | 2007 11 20 | 704 | (1.9+ | 1.1−) |
| 1997 11 21 | 691 | 0.6−  | 0.0   | 2007 11 07 | 704 | 0.2−  | 0.3+  | 2007 11 20 | 704 | 0.2+  | 1.1+  |
| 1997 12 06 | 691 | 0.0   | 0.2−  | 2007 11 09 | 691 | 0.1−  | 0.3−  | 2007 11 20 | 704 | (1.6+ | 1.1−) |
| 1997 12 06 | 691 | 0.2+  | 0.7+  | 2007 11 09 | 691 | 0.2−  | 0.0   | 2007 11 20 | 704 | (0.6− | 2.6+) |
| 1997 12 06 | 691 | 0.1+  | 0.2−  | 2007 11 09 | 691 | 0.2−  | 0.1−  | 2007 12 02 | 704 | (1.9+ | 0.2+) |
| 2007 09 26 | G96 | 0.1+  | 0.0   | 2007 11 13 | 691 | 0.2−  | 0.1−  | 2007 12 02 | 704 | (3.0+ | 0.3+) |
| 2007 09 26 | G96 | 0.7+  | 0.4−  | 2007 11 13 | 691 | 0.0   | 0.1−  | 2007 12 02 | 704 | (2.0+ | 0.4−) |
| 2007 09 26 | G96 | 0.2+  | 0.1−  | 2007 11 13 | 691 | 0.1−  | 0.1−  | 2007 12 02 | 704 | (2.6+ | 0.4−) |
| 2007 09 26 | G96 | 1.2−  | 0.3−  | 2007 11 13 | 699 | 0.5−  | 0.5+  | 2007 12 03 | 704 | (3.3+ | 0.3+) |
| 2007 10 11 | 691 | 0.1+  | 0.0   | 2007 11 13 | 699 | 0.9+  | 1.0−  | 2007 12 03 | 704 | 0.9+  | 0.4−  |
| 2007 10 11 | 691 | 0.0   | 0.2+  | 2007 11 13 | 699 | (1.8+ | 0.3−) | 2007 12 03 | 704 | (3.7+ | 0.2−) |
| 2007 10 11 | 691 | 0.2+  | 0.1+  | 2007 11 13 | 699 | (2.8+ | 0.2−) | 2007 12 03 | 704 | (2.6+ | 0.1+) |
| 2007 11 01 | 691 | 0.2+  | 0.0   | 2007 11 17 | 691 | 0.2+  | 0.1−  | 2007 12 04 | 703 | 0.2−  | 0.7−  |
| 2007 11 01 | 691 | 0.1−  | 0.0   | 2007 11 17 | 691 | 0.1−  | 0.0   | 2007 12 04 | 703 | 0.2+  | 0.2+  |
| 2007 11 01 | 691 | 0.1−  | 0.2+  | 2007 11 17 | 691 | 0.1+  | 0.2−  | 2007 12 04 | 703 | 0.1+  | 0.2−  |
| 2007 11 05 | 691 | (1.6+ | 0.3−) | 2007 11 18 | 704 | (1.5+ | 0.2+) | 2007 12 04 | 703 | 0.9−  | 0.3+  |
| 2007 11 05 | 691 | 0.2−  | 0.0   | 2007 11 18 | 704 | 1.5+  | 0.1+  | 2007 12 12 | 704 | (0.6+ | 2.8+) |
| 2007 11 05 | 691 | 0.1+  | 0.1+  | 2007 11 18 | 704 | 0.9+  | 0.6+  | 2007 12 12 | 704 | (0.5+ | 3.0+) |
| 2007 11 06 | 704 | 0.3+  | 0.5+  | 2007 11 18 | 704 | 1.3+  | 0.8−  | 2007 12 12 | 704 | (2.8+ | 0.4+) |
| 2007 11 06 | 704 | 0.8+  | 0.6+  | 2007 11 18 | 704 | (1.8+ | 0.8−) |            |     |       |       |
| 2007 11 06 | 704 | 0.6−  | 0.0   | 2007 11 20 | 704 | 0.5+  | 0.9+  |            |     |       |       |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 21 | 703 | 1.2− | 0.1− | 2007 11 08 | 704 | 1.1+ | 0.1− | 2007 11 17 | 704 | 0.6− | 0.1+ |
| 2007 10 21 | 691 | 0.3− | 0.4− | 2007 11 08 | 704 | 0.6− | 0.3+ | 2007 11 18 | 704 | 1.6+ | 0.5+ |
| 2007 10 21 | 703 | 0.6+ | 0.9− | 2007 11 08 | 704 | 1.1+ | 1.1+ | 2007 11 18 | 704 | 0.4+ | 0.5+ |
| 2007 10 21 | 703 | 1.0+ | 1.1− | 2007 11 09 | G96 | 0.0  | 0.8− | 2007 11 18 | 704 | 0.8+ | 0.4− |
| 2007 10 21 | 703 | 1.2− | 1.0+ | 2007 11 09 | G96 | 0.0  | 0.6− |            |     |      |      |

**2007 VY<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.75347  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25831332 | $\omega$ | 52.70127  | +0.63985502   | −0.76849459 |
| <i>a</i> | 2.4417705  | $\Omega$ | 357.51661 | +0.69544480   | +0.57973741 |
| <i>e</i> | 0.2017051  | <i>i</i> | 1.68587   | +0.32702002   | +0.27077778 |
| <i>P</i> | 3.82       | <i>H</i> | 18.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 291 | 0.0  | 0.1+ | 2007 11 07 | 734 | 0.5+ | 0.1+ | 2007 11 17 | 734 | 0.1− | 0.1− |
| 2003 09 18 | 291 | 0.2+ | 0.1− | 2007 11 07 | 734 | 0.2+ | 0.2− | 2007 11 17 | 734 | 0.0  | 0.3+ |
| 2003 09 18 | 291 | 0.1− | 0.2− | 2007 11 07 | 734 | 0.3+ | 0.6− | 2007 11 18 | 734 | 0.2+ | 0.2− |
| 2003 10 19 | 691 | 0.1− | 0.2+ | 2007 11 09 | 734 | 0.1+ | 0.2− | 2007 11 18 | 734 | 0.2− | 0.5− |
| 2003 10 19 | 691 | 0.2− | 0.2+ | 2007 11 09 | 734 | 0.1+ | 0.2− | 2007 11 18 | 734 | 0.2− | 0.6− |
| 2003 10 19 | 691 | 0.0  | 0.0  | 2007 11 09 | 734 | 0.3− | 0.2− | 2007 11 29 | 734 | 0.1+ | 0.2− |
| 2007 10 14 | G96 | 0.3+ | 0.2+ | 2007 11 10 | 734 | 1.0+ | 0.6+ | 2007 11 29 | 734 | 0.2− | 0.1− |
| 2007 10 14 | G96 | 0.1+ | 0.5− | 2007 11 10 | 734 | 0.7+ | 0.7+ | 2007 11 29 | 734 | 0.1− | 1.0+ |
| 2007 10 14 | G96 | 0.2− | 0.0  | 2007 11 10 | 734 | 1.8− | 0.6+ |            |     |      |      |
| 2007 10 14 | G96 | 0.4− | 0.0  | 2007 11 17 | 734 | 0.1+ | 0.3− |            |     |      |      |

**2007 VE<sub>92</sub> = 2002 XP<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 28.50571   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.38247625 | $\omega$ | 117.94809 | +0.93873671   | −0.15301904 |
| <i>a</i> | 1.8796042  | $\Omega$ | 252.25469 | +0.06193132   | +0.95633890 |
| <i>e</i> | 0.1178694  | <i>i</i> | 18.91883  | +0.33902493   | +0.24900017 |
| <i>P</i> | 2.58       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 14 | 704 | 0.1− | 0.2− | 2007 11 09 | 704 | 0.4+ | 0.1+ | 2007 12 04 | 699 | 0.7+ | 0.5− |
| 2002 12 14 | 704 | 0.0  | 0.6− | 2007 11 09 | 704 | 0.6+ | 0.5− | 2007 12 04 | 703 | 0.5− | 0.1+ |
| 2002 12 14 | 704 | 0.1+ | 0.3− | 2007 11 09 | 704 | 0.6+ | 0.1+ | 2007 12 04 | 703 | 0.2+ | 0.5+ |
| 2002 12 14 | 704 | 0.2+ | 0.4+ | 2007 11 09 | 704 | 0.4+ | 0.3+ | 2007 12 04 | 699 | 0.6+ | 0.3+ |
| 2002 12 15 | 704 | 0.2− | 0.1− | 2007 11 11 | 704 | 0.8+ | 0.7+ | 2007 12 04 | 699 | 1.1+ | 0.1− |
| 2002 12 15 | 704 | 0.0  | 0.5− | 2007 11 11 | 704 | 0.0  | 0.4− | 2007 12 04 | 699 | 0.1− | 0.3− |
| 2002 12 15 | 704 | 0.1− | 0.4+ | 2007 11 11 | 704 | 0.5+ | 0.1+ | 2007 12 10 | 704 | 0.2+ | 0.2− |
| 2002 12 15 | 704 | 0.3+ | 0.5+ | 2007 11 11 | 704 | 0.3− | 0.6+ | 2007 12 10 | 704 | 0.2+ | 0.2+ |
| 2002 12 15 | 704 | 0.4− | 0.2+ | 2007 11 13 | H51 | 0.3+ | 0.0  | 2007 12 10 | 704 | 0.3+ | 0.3+ |
| 2007 11 08 | 704 | 0.3− | 0.6+ | 2007 11 13 | H51 | 0.5− | 0.0  | 2007 12 10 | 704 | 0.0  | 0.1− |
| 2007 11 08 | 704 | 0.2− | 0.2+ | 2007 11 13 | H51 | 0.5− | 1.2− | 2007 12 10 | 704 | 0.1+ | 0.1− |
| 2007 11 08 | 703 | 0.6− | 0.7− | 2007 11 18 | 703 | 0.1− | 0.3− | 2007 12 14 | 704 | 0.5− | 0.4− |
| 2007 11 08 | 704 | 0.1+ | 0.7+ | 2007 11 18 | 703 | 0.3+ | 0.1+ | 2007 12 14 | 704 | 0.1+ | 0.3− |
| 2007 11 08 | 703 | 1.3− | 0.5+ | 2007 11 18 | 703 | 0.6− | 1.0− | 2007 12 14 | 704 | 0.1+ | 0.9+ |
| 2007 11 08 | 703 | 0.9− | 0.7− | 2007 11 18 | 703 | 0.3+ | 0.3+ | 2007 12 14 | 704 | 0.4− | 0.4+ |
| 2007 11 08 | 704 | 0.4− | 0.1− | 2007 12 04 | 703 | 0.2− | 0.0  |            |     |      |      |
| 2007 11 09 | 704 | 0.4+ | 0.2+ | 2007 12 04 | 703 | 0.6− | 0.1+ |            |     |      |      |

**2007 VF<sub>92</sub> = 2004 QG<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 27.67515   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.36241070 | $\omega$ | 118.66298 | +0.92361033   | −0.23386168 |
| <i>a</i> | 1.9483578  | $\Omega$ | 256.24253 | +0.13645797   | +0.94102415 |
| <i>e</i> | 0.0872022  | <i>i</i> | 18.22216  | +0.35822224   | +0.24450412 |
| <i>P</i> | 2.72       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 08 25 | 704 | 0.1+ | 0.8+ | 2007 11 16 | 704 | 0.6+ | 0.5− | 2007 12 03 | 704 | 0.5−  | 0.2−  |
| 2004 08 25 | 704 | 0.2+ | 1.0+ | 2007 11 16 | 704 | 0.2+ | 0.7− | 2007 12 12 | 704 | 0.5−  | 0.1+  |
| 2004 08 25 | 704 | 0.2+ | 0.6+ | 2007 11 17 | 704 | 0.7+ | 0.8+ | 2007 12 12 | 704 | (2.3− | 0.8−) |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 08 27 | 704 | 0.3+ | 0.9− | 2007 11 17 | 704 | 0.0  | 0.8+ | 2007 12 12 | 704 | 0.0  | 0.7+ |
| 2004 08 27 | 704 | 0.6− | 0.2+ | 2007 11 17 | 704 | 1.1+ | 0.6+ | 2007 12 12 | 704 | 0.7+ | 0.8+ |
| 2004 08 27 | 704 | 0.0  | 0.2− | 2007 11 17 | 704 | 1.3+ | 0.1+ | 2007 12 12 | 704 | 0.2− | 0.7+ |
| 2004 08 27 | 704 | 0.4− | 0.9− | 2007 11 17 | 704 | 0.7+ | 0.7+ | 2007 12 13 | 704 | 0.0  | 0.7+ |
| 2007 06 21 | G96 | 0.4+ | 0.7− | 2007 11 18 | 703 | 1.3− | 0.3− | 2007 12 13 | 704 | 0.2− | 0.7+ |
| 2007 06 21 | G96 | 0.1+ | 0.8− | 2007 11 18 | 703 | 0.2− | 0.0  | 2007 12 13 | 704 | 0.0  | 0.5+ |
| 2007 06 21 | G96 | 0.3+ | 0.6− | 2007 11 18 | 703 | 0.6+ | 0.8+ | 2007 12 13 | 704 | 0.2+ | 1.0+ |
| 2007 06 21 | G96 | 0.1+ | 0.1− | 2007 11 18 | 703 | 0.3+ | 0.3+ | 2007 12 13 | 704 | 0.1+ | 1.2+ |
| 2007 11 08 | 704 | 0.3− | 0.1− | 2007 11 18 | 703 | 0.7− | 0.9− | 2007 12 15 | 704 | 0.3− | 1.2− |
| 2007 11 08 | 704 | 0.2− | 0.5+ | 2007 11 18 | 703 | 0.2− | 0.0  | 2007 12 15 | 704 | 0.8+ | 1.0− |
| 2007 11 08 | 704 | 0.4− | 0.1− | 2007 11 18 | 703 | 0.5− | 0.2+ | 2007 12 15 | 704 | 0.0  | 0.5− |
| 2007 11 08 | 704 | 0.4+ | 0.6+ | 2007 11 18 | 703 | 0.4+ | 0.4− | 2007 12 15 | 704 | 0.1− | 0.3− |
| 2007 11 09 | 704 | 0.3− | 0.4− | 2007 12 02 | 704 | 0.3+ | 0.4− | 2007 12 15 | 704 | 0.2− | 0.5− |
| 2007 11 09 | 704 | 0.2+ | 0.0  | 2007 12 02 | 704 | 0.7− | 0.5− | 2007 12 15 | 704 | 0.5+ | 0.2− |
| 2007 11 09 | 704 | 0.2+ | 0.0  | 2007 12 02 | 704 | 0.6− | 0.5− | 2007 12 15 | 704 | 1.2− | 0.7− |
| 2007 11 09 | 704 | 0.6− | 1.0+ | 2007 12 03 | 704 | 0.6− | 0.7− | 2007 12 15 | 704 | 0.6+ | 0.7− |
| 2007 11 09 | 704 | 0.1+ | 0.1− | 2007 12 03 | 704 | 0.8− | 0.0  | 2007 12 15 | 704 | 1.1+ | 0.7− |
| 2007 11 16 | 704 | 0.2+ | 0.0  | 2007 12 03 | 704 | 0.7− | 0.0  | 2007 12 15 | 704 | 0.5− | 0.4− |
| 2007 11 16 | 704 | 0.8+ | 0.4− | 2007 12 03 | 704 | 0.7− | 0.0  |            |     |      |      |

**2007 VS<sub>92</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.96221  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18100738 | $\omega$ | 45.60595 | +0.53971981   | −0.83908265 |
| <i>a</i> | 3.0950799  | $\Omega$ | 12.27330 | +0.65213562   | +0.36553746 |
| <i>e</i> | 0.1773963  | <i>i</i> | 18.69543 | +0.53237361   | +0.40289287 |
| <i>P</i> | 5.45       | <i>H</i> | 15.9     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 11 09 | 691 | 0.4+ | 0.3+ | 2007 09 25 | G96 | 0.6−  | 0.4+  | 2007 11 09 | 704 | 0.1+  | 0.3−  |
| 1996 11 09 | 691 | 0.6+ | 0.1+ | 2007 09 25 | G96 | 0.3−  | 0.2+  | 2007 11 09 | 704 | 0.2+  | 0.1−  |
| 1996 11 09 | 691 | 0.1+ | 0.3+ | 2007 09 25 | G96 | 0.3−  | 0.3+  | 2007 11 13 | 703 | 0.3−  | 0.4−  |
| 1996 11 14 | 691 | 2.4− | 1.4− | 2007 10 10 | 699 | (2.4+ | 0.3−) | 2007 11 13 | 703 | 0.2−  | 0.2−  |
| 1996 11 14 | 691 | 0.6+ | 0.4+ | 2007 10 10 | 699 | 0.3+  | 0.5−  | 2007 11 13 | 703 | 1.0+  | 0.1+  |
| 1996 11 14 | 691 | 0.5+ | 0.5+ | 2007 10 10 | 699 | 0.8−  | 0.8−  | 2007 11 13 | 703 | 0.1+  | 0.2−  |
| 2004 03 26 | 691 | 0.2+ | 0.0  | 2007 10 10 | 699 | 0.2+  | 0.1+  | 2007 11 19 | 703 | 0.2−  | 0.8+  |
| 2004 03 26 | 691 | 0.0  | 0.1− | 2007 11 03 | 704 | 0.6+  | 0.3+  | 2007 11 19 | 703 | 0.4+  | 0.0   |
| 2004 03 26 | 691 | 0.2− | 0.0  | 2007 11 03 | 704 | 0.1+  | 0.0   | 2007 11 19 | 703 | (0.3− | 1.8−) |
| 2004 04 22 | 691 | 0.0  | 0.2+ | 2007 11 03 | 704 | 0.4+  | 0.6+  | 2007 11 19 | 703 | 0.2+  | 0.5−  |
| 2004 04 22 | 691 | 0.3− | 0.2+ | 2007 11 03 | 704 | 0.5−  | 0.2+  | 2007 12 03 | 704 | 0.5+  | 1.2+  |
| 2004 04 22 | 691 | 0.4+ | 0.2− | 2007 11 09 | 704 | 0.1+  | 0.5−  | 2007 12 03 | 704 | 0.1+  | 0.4−  |
| 2007 09 25 | G96 | 0.4− | 0.1+ | 2007 11 09 | 704 | 0.1−  | 0.4−  | 2007 12 03 | 704 | 0.4−  | 0.0   |

**2007 VV<sub>92</sub> = 2004 FJ<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 301.74719  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18437965 | $\omega$ | 149.70961 | −0.17505919   | −0.97668162 |
| <i>a</i> | 3.0572250  | $\Omega$ | 310.07439 | +0.86759457   | −0.09335145 |
| <i>e</i> | 0.0606981  | <i>i</i> | 9.34753   | +0.46543951   | −0.19333527 |
| <i>P</i> | 5.35       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 05 24 | 807 | 0.5− | 0.9+ | 2006 07 21 | G96 | 0.5−  | 1.0+  | 2007 10 21 | 703 | 0.3+ | 1.1+ |
| 2001 05 24 | 807 | 0.6− | 0.7+ | 2006 07 21 | G96 | 0.6−  | 0.9+  | 2007 10 21 | 703 | 0.2+ | 0.9+ |
| 2004 03 19 | 704 | 1.1+ | 1.1+ | 2006 07 21 | G96 | 0.1−  | 0.8+  | 2007 11 03 | 704 | 0.7− | 0.1− |
| 2004 03 19 | 704 | 0.0  | 1.4+ | 2006 07 21 | G96 | 0.4−  | 0.8+  | 2007 11 03 | 704 | 0.4+ | 0.1+ |
| 2004 03 19 | 704 | 0.7+ | 0.4− | 2007 10 14 | 703 | 0.6+  | 1.3+  | 2007 11 03 | 704 | 0.3+ | 0.2+ |
| 2004 03 19 | 704 | 0.6+ | 1.0+ | 2007 10 14 | 703 | 0.2−  | 0.8+  | 2007 11 09 | 704 | 0.1+ | 0.2+ |
| 2004 03 20 | 704 | 0.2+ | 0.2+ | 2007 10 14 | 703 | 0.6−  | 1.3−  | 2007 11 09 | 704 | 1.2− | 0.9− |
| 2004 03 20 | 704 | 0.5+ | 0.7+ | 2007 10 14 | 703 | 0.4+  | 0.2+  | 2007 11 09 | 704 | 0.7+ | 0.1+ |
| 2004 03 20 | 704 | 0.4+ | 0.8+ | 2007 10 21 | 703 | (2.2− | 0.2+) | 2007 11 09 | 704 | 1.2− | 0.1− |
| 2004 03 20 | 704 | 0.1− | 1.2+ | 2007 10 21 | 703 | 0.0   | 0.8+  | 2007 11 09 | 704 | 0.4− | 0.3− |

## 2007 DEC. 24

M.P.O. 129997

2007 VA<sub>93</sub> = 2002 XS<sub>71</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.19645  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18103964 | $\omega$ 157.66410 | +0.62794617   | -0.73007470 |
| <i>a</i> | 3.0947122  | $\Omega$ 252.33940 | +0.66442142   | +0.68327862 |
| <i>e</i> | 0.2315094  | <i>i</i> 16.43431  | +0.40525027   | +0.01101211 |
| <i>P</i> | 5.44       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 07 30 | 644 | 0.3- | 0.1- | 2007 10 09 | 703 | 0.4+ | 1.2- | 2007 11 09 | 704 | 0.0   | 0.4+  |
| 2001 07 30 | 644 | 0.5+ | 0.3- | 2007 10 09 | 703 | 0.0  | 0.7+ | 2007 11 09 | 704 | 0.2+  | 0.3+  |
| 2001 07 30 | 644 | 0.3- | 0.4+ | 2007 10 09 | 703 | 0.9- | 0.3+ | 2007 11 09 | 704 | 0.2+  | 0.5+  |
| 2001 07 30 | 644 | 0.5+ | 0.0  | 2007 10 16 | 703 | 1.4+ | 0.1- | 2007 11 09 | 704 | 0.4-  | 0.8+  |
| 2001 07 30 | 644 | 0.5- | 0.2+ | 2007 10 16 | 703 | 0.4+ | 0.2- | 2007 11 13 | 703 | 0.2+  | 0.1-  |
| 2001 07 30 | 644 | 0.2+ | 0.1- | 2007 10 16 | 703 | 0.1- | 0.4- | 2007 11 13 | 703 | 0.4-  | 0.1+  |
| 2002 12 11 | 735 | 0.5- | 0.7+ | 2007 10 16 | 703 | 1.1+ | 0.5+ | 2007 11 13 | 703 | 0.2+  | 0.3+  |
| 2002 12 11 | 735 | 0.6+ | 0.9+ | 2007 11 02 | 703 | 0.9- | 0.4- | 2007 11 13 | 703 | 0.7+  | 0.1-  |
| 2002 12 11 | 735 | 1.4+ | 0.8+ | 2007 11 02 | 703 | 0.7- | 0.3- | 2007 11 19 | 703 | 0.3+  | 1.1-  |
| 2002 12 14 | 704 | 0.2+ | 0.5- | 2007 11 02 | 703 | 0.3- | 0.6+ | 2007 11 19 | 703 | 0.1-  | 1.5-  |
| 2002 12 14 | 704 | 0.1+ | 0.0  | 2007 11 02 | 703 | 0.6- | 0.7+ | 2007 11 19 | 703 | (1.4- | 1.7-) |
| 2002 12 14 | 704 | 0.2- | 0.3- | 2007 11 03 | 704 | 0.6- | 0.5+ | 2007 11 19 | 703 | 0.1+  | 1.3-  |
| 2002 12 14 | 704 | 0.7- | 0.2- | 2007 11 03 | 704 | 0.2- | 0.3- | 2007 12 02 | 704 | 0.1-  | 0.7-  |
| 2002 12 14 | 704 | 0.6- | 0.8- | 2007 11 03 | 704 | 0.1+ | 0.6+ | 2007 12 02 | 704 | 0.2+  | 0.2-  |
| 2007 10 09 | 703 | 0.0  | 0.7+ | 2007 11 09 | 704 | 0.0  | 1.0+ | 2007 12 02 | 704 | 0.1+  | 0.6-  |

2007 VC<sub>93</sub> = 2003 WS<sub>4</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.39652  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.24443913 | $\omega$ 111.90884 | +0.71532528   | -0.69254464 |
| <i>a</i> | 2.5333132  | $\Omega$ 292.06252 | +0.59826018   | +0.67588274 |
| <i>e</i> | 0.2705751  | <i>i</i> 5.77345   | +0.36110179   | +0.25211991 |
| <i>P</i> | 4.03       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 16 | 691 | 0.1- | 0.0  | 2003 12 19 | 691 | 0.3- | 0.1+ | 2007 11 09 | 704 | 0.5- | 0.1- |
| 2003 11 16 | 691 | 0.4+ | 0.0  | 2007 10 08 | 703 | 1.0+ | 0.0  | 2007 11 09 | 704 | 0.6- | 0.5+ |
| 2003 11 16 | 691 | 0.1- | 0.1- | 2007 10 08 | 703 | 1.1- | 0.2- | 2007 11 09 | 704 | 0.1- | 0.7- |
| 2003 11 19 | 704 | 0.0  | 0.2+ | 2007 10 08 | 703 | 0.3- | 0.4+ | 2007 11 09 | 704 | 0.2+ | 0.3- |
| 2003 11 19 | 704 | 0.0  | 0.3+ | 2007 10 08 | 703 | 1.3- | 0.3- | 2007 11 12 | 703 | 0.3+ | 0.2+ |
| 2003 11 19 | 704 | 0.5+ | 0.7- | 2007 11 01 | 703 | 0.5+ | 0.1+ | 2007 11 12 | 703 | 1.4+ | 0.5+ |
| 2003 11 19 | 704 | 0.3+ | 0.2+ | 2007 11 01 | 703 | 0.6- | 0.9- | 2007 11 12 | 703 | 0.7+ | 0.4+ |
| 2003 11 19 | 704 | 0.2- | 0.3- | 2007 11 01 | 703 | 0.0  | 0.6- | 2007 11 12 | 703 | 0.9+ | 0.4+ |
| 2003 11 19 | 691 | 0.1- | 0.0  | 2007 11 01 | 703 | 0.2- | 0.4+ | 2007 11 12 | 703 | 0.1- | 0.4+ |
| 2003 11 19 | 691 | 0.1+ | 0.1+ | 2007 11 03 | 704 | 0.1+ | 0.4+ | 2007 11 12 | 703 | 0.1- | 0.1+ |
| 2003 11 19 | 691 | 0.0  | 0.1+ | 2007 11 03 | 704 | 0.9+ | 0.2+ | 2007 11 12 | 703 | 1.0- | 0.4+ |
| 2003 12 19 | 691 | 0.0  | 0.1- | 2007 11 03 | 704 | 0.5- | 0.4- | 2007 11 12 | 703 | 0.8+ | 0.7- |
| 2003 12 19 | 691 | 0.1- | 0.1- | 2007 11 09 | 704 | 0.5- | 0.0  |            |     |      |      |

2007 VG<sub>93</sub> = 1995 QU<sub>7</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 353.80338  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17294969 | $\omega$ 138.33355 | +0.58703050   | -0.78904778 |
| <i>a</i> | 3.1904813  | $\Omega$ 274.93500 | +0.68637015   | +0.60371189 |
| <i>e</i> | 0.1921803  | <i>i</i> 10.47336  | +0.42929153   | +0.11373457 |
| <i>P</i> | 5.70       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 08 25 | 691 | 0.2- | 0.7- | 2007 10 21 | 703 | 0.4+ | 0.1+ | 2007 11 08 | 703 | 0.5- | 0.7- |
| 1995 08 25 | 691 | 0.2- | 0.1+ | 2007 10 21 | 703 | 0.0  | 1.1+ | 2007 11 09 | 704 | 0.7+ | 0.1+ |
| 1995 08 25 | 691 | 0.2- | 0.2+ | 2007 11 02 | 703 | 0.6- | 0.5+ | 2007 11 09 | 704 | 0.7+ | 0.5+ |
| 1995 08 31 | 691 | 0.1+ | 0.4+ | 2007 11 02 | 703 | 0.6- | 0.2- | 2007 11 09 | 704 | 0.1+ | 0.1- |
| 1995 08 31 | 691 | 0.1+ | 0.0  | 2007 11 02 | 703 | 0.3- | 1.4- | 2007 11 09 | 704 | 1.2+ | 0.5+ |
| 1995 08 31 | 691 | 0.4+ | 0.1+ | 2007 11 02 | 703 | 0.1- | 0.6- | 2007 11 09 | 704 | 0.9+ | 1.3+ |
| 2007 10 12 | 699 | 0.5- | 0.1+ | 2007 11 03 | 704 | 0.1+ | 0.1- | 2007 12 02 | 704 | 0.1+ | 0.2+ |
| 2007 10 12 | 699 | 0.3- | 1.1- | 2007 11 03 | 704 | 0.3+ | 0.1- | 2007 12 02 | 704 | 0.8- | 0.2- |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 12 | 699 | 0.5-  | 0.0   | 2007 11 03 | 704 | 0.1- | 0.2- | 2007 12 02 | 704 | 0.4- | 0.3- |
| 2007 10 12 | 699 | 0.6+  | 0.1+  | 2007 11 08 | 703 | 0.6- | 0.1+ | 2007 12 02 | 704 | 0.2+ | 0.0  |
| 2007 10 21 | 703 | 0.6+  | 0.7+  | 2007 11 08 | 703 | 0.2- | 0.0  |            |     |      |      |
| 2007 10 21 | 703 | (1.6+ | 1.3+) | 2007 11 08 | 703 | 0.6- | 0.5- |            |     |      |      |

2007 VQ<sub>94</sub> = 2006 QW<sub>95</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 200.08130  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18739093 | $\omega$ 164.58756 | -0.82521780   | +0.54745913 |
| <i>a</i> | 3.0243845  | $\Omega$ 49.45498  | -0.53561496   | -0.68043979 |
| <i>e</i> | 0.0387360  | <i>i</i> 10.53522  | -0.17925459   | -0.48712442 |
| <i>P</i> | 5.26       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 10 | 809 | 0.0  | 0.3+ | 2007 10 09 | G96 | 0.1- | 0.4- | 2007 11 09 | 300 | 0.2+ | 0.5- |
| 2005 02 10 | 809 | 0.4+ | 0.1+ | 2007 10 09 | G96 | 0.1- | 0.1- | 2007 11 09 | 300 | 0.3+ | 0.4+ |
| 2005 02 10 | 809 | 0.0  | 0.3+ | 2007 10 09 | G96 | 0.2+ | 0.2- | 2007 11 09 | 300 | 0.2+ | 0.3+ |
| 2006 08 16 | 644 | 0.2- | 0.1- | 2007 10 09 | G96 | 0.4- | 0.2+ | 2007 11 09 | 300 | 0.9+ | 0.5+ |
| 2006 08 16 | 644 | 0.3+ | 0.1+ | 2007 10 17 | G96 | 0.2- | 0.2- | 2007 11 09 | 300 | 0.5+ | 0.3- |
| 2006 08 16 | 644 | 0.1+ | 0.2- | 2007 10 17 | G96 | 0.1+ | 0.3- | 2007 11 09 | 300 | 0.3- | 0.6+ |
| 2006 08 20 | 644 | 0.2+ | 0.0  | 2007 10 17 | G96 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.3- |
| 2006 08 20 | 644 | 0.3- | 0.2+ | 2007 10 17 | G96 | 0.2- | 0.0  | 2007 11 14 | 691 | 0.4- | 0.2- |
| 2006 08 20 | 644 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.3- | 0.2+ | 2007 11 14 | 691 | 0.4- | 0.3- |
| 2007 09 10 | G96 | 0.4+ | 0.0  | 2007 11 07 | 691 | 0.4- | 0.1- | 2007 11 15 | 704 | 0.6+ | 0.0  |
| 2007 09 10 | G96 | 0.7- | 0.3+ | 2007 11 07 | 691 | 0.7- | 0.4- | 2007 11 15 | 704 | 0.4+ | 0.4+ |
| 2007 09 10 | G96 | 0.2+ | 0.1+ | 2007 11 07 | 300 | 0.3- | 0.1- | 2007 11 15 | 704 | 0.1- | 0.5+ |
| 2007 09 10 | G96 | 0.1+ | 0.1- | 2007 11 07 | 300 | 0.6- | 0.8+ | 2007 11 18 | 691 | 0.3+ | 0.1- |
| 2007 09 18 | G96 | 0.3- | 0.2+ | 2007 11 07 | 300 | 0.9- | 0.5+ | 2007 11 18 | 691 | 0.0  | 0.2- |
| 2007 09 18 | G96 | 0.1- | 0.1- | 2007 11 07 | 300 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2007 09 18 | G96 | 0.1+ | 0.0  | 2007 11 07 | 300 | 0.8+ | 0.4- |            |     |      |      |
| 2007 09 18 | G96 | 0.9+ | 0.0  | 2007 11 09 | 300 | 0.3+ | 0.3- |            |     |      |      |

2007 VT<sub>94</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.83425  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26337985 | $\omega$ 32.06236 | +0.12284345   | -0.99166035 |
| <i>a</i> | 2.4103550  | $\Omega$ 50.91141 | +0.89960083   | +0.09468267 |
| <i>e</i> | 0.1833887  | <i>i</i> 2.87845  | +0.41907974   | +0.08743532 |
| <i>P</i> | 3.74       | <i>H</i> 17.6     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 11 27 | 691 | 0.4- | 0.4- | 2007 09 18 | G96 | 0.1- | 0.2- | 2007 11 14 | 691 | 0.2- | 0.0  |
| 1992 11 27 | 691 | 0.4+ | 0.1+ | 2007 10 17 | G96 | 0.2+ | 0.1- | 2007 11 14 | 691 | 0.2- | 0.0  |
| 1992 11 27 | 691 | 0.2+ | 0.4- | 2007 10 17 | G96 | 0.3- | 0.0  | 2007 11 14 | 691 | 0.4- | 0.1+ |
| 2003 09 30 | 691 | 0.1- | 0.2+ | 2007 10 17 | G96 | 0.2+ | 0.2- | 2007 11 15 | 704 | 0.4+ | 0.9+ |
| 2003 09 30 | 691 | 0.2+ | 0.3+ | 2007 10 17 | G96 | 0.2+ | 0.6- | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2003 09 30 | 691 | 0.1- | 0.3+ | 2007 11 07 | 691 | 0.1- | 0.1- | 2007 11 15 | 704 | 0.5- | 0.5+ |
| 2003 10 19 | 645 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.1- | 0.2- | 2007 11 15 | 704 | 0.5+ | 0.1+ |
| 2003 10 19 | 645 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.3- | 0.1+ | 2007 11 15 | 704 | 0.1+ | 0.6+ |
| 2005 03 12 | 695 | 0.5+ | 0.1- | 2007 11 07 | 300 | 0.3+ | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1- |
| 2005 03 12 | 695 | 0.1+ | 0.0  | 2007 11 07 | 300 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.2- | 0.1- |
| 2005 04 01 | 691 | 0.2+ | 0.1+ | 2007 11 07 | 300 | 1.4+ | 0.1- | 2007 11 18 | 691 | 0.0  | 0.2- |
| 2005 04 01 | 691 | 0.0  | 0.5+ | 2007 11 07 | 300 | 0.1+ | 1.0+ | 2007 12 03 | 703 | 0.4- | 0.3+ |
| 2005 04 01 | 691 | 0.0  | 0.3+ | 2007 11 07 | 300 | 0.6+ | 1.0- | 2007 12 03 | 703 | 0.1- | 0.3+ |
| 2007 09 10 | G96 | 0.1- | 0.0  | 2007 11 07 | 300 | 0.8+ | 0.4+ | 2007 12 03 | 703 | 0.5+ | 0.6+ |
| 2007 09 10 | G96 | 0.2- | 1.1- | 2007 11 09 | 300 | 0.3+ | 0.3+ | 2007 12 03 | 703 | 0.3- | 1.0+ |
| 2007 09 10 | G96 | 0.3- | 0.2- | 2007 11 09 | 300 | 0.2- | 0.0  | 2007 12 04 | 699 | 0.0  | 0.3- |
| 2007 09 10 | G96 | 0.2- | 0.3+ | 2007 11 09 | 300 | 0.1+ | 0.2+ | 2007 12 04 | 699 | 0.4+ | 0.2- |
| 2007 09 18 | G96 | 0.0  | 0.2- | 2007 11 09 | 300 | 0.3+ | 0.0  | 2007 12 04 | 699 | 0.4- | 0.7+ |
| 2007 09 18 | G96 | 0.2- | 0.1- | 2007 11 09 | 300 | 0.5+ | 0.2+ | 2007 12 04 | 699 | 0.5+ | 0.4+ |
| 2007 09 18 | G96 | 0.1+ | 0.1- | 2007 11 09 | 300 | 0.3+ | 0.2+ |            |     |      |      |

**2007 VX<sub>94</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.81109   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21887170 | $\omega$ 89.36528  | +0.95164536   | -0.27829681 |
| <i>a</i> | 2.7269446  | $\Omega$ 286.78743 | +0.19874001   | +0.88063724 |
| <i>e</i> | 0.1560439  | <i>i</i> 7.80923   | +0.23425095   | +0.38344354 |
| <i>P</i> | 4.50       | <i>H</i> 15.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 08 | 699 | 0.2-  | 0.3-  | 2007 10 12 | 699 | (1.5- | 0.7+) | 2007 11 15 | G96 | 0.2- | 0.2- |
| 2002 08 08 | 699 | 0.6-  | 0.1+  | 2007 10 12 | 699 | 0.2+  | 0.0   | 2007 11 15 | G96 | 0.0  | 0.3- |
| 2002 08 08 | 699 | 0.6+  | 0.2+  | 2007 10 12 | 699 | 0.8-  | 0.9-  | 2007 11 17 | 704 | 1.4- | 1.4+ |
| 2002 08 08 | 699 | 0.8-  | 0.7-  | 2007 10 12 | 699 | (0.4- | 2.1-) | 2007 11 17 | 704 | 0.6+ | 0.8+ |
| 2002 08 16 | 644 | 0.2-  | 0.3+  | 2007 11 08 | 704 | 1.0+  | 0.7-  | 2007 11 17 | 704 | 0.2- | 0.2+ |
| 2002 08 16 | 644 | 0.3-  | 0.2+  | 2007 11 08 | 704 | 1.1+  | 0.9-  | 2007 11 17 | 704 | 1.2- | 0.5- |
| 2002 08 16 | 644 | 0.0   | 0.4+  | 2007 11 08 | 704 | 0.9+  | 1.1-  | 2007 11 18 | 704 | 0.2- | 0.0  |
| 2002 08 26 | 644 | 0.2-  | 0.3+  | 2007 11 08 | 704 | 1.0+  | 0.4-  | 2007 11 18 | 704 | 0.1+ | 0.2+ |
| 2002 08 26 | 644 | 0.1+  | 0.2+  | 2007 11 08 | 704 | 1.3+  | 0.6-  | 2007 11 18 | 704 | 0.2- | 0.1- |
| 2002 08 26 | 644 | 0.2-  | 0.6+  | 2007 11 08 | 703 | 0.0   | 0.0   | 2007 11 18 | 704 | 0.3+ | 0.0  |
| 2002 09 05 | 699 | 0.3-  | 1.4+  | 2007 11 08 | 703 | 0.2+  | 0.0   | 2007 11 18 | 704 | 0.2+ | 0.3+ |
| 2002 09 05 | 699 | 1.3+  | 0.4-  | 2007 11 08 | 703 | 0.6-  | 0.2+  | 2007 12 02 | 704 | 0.2+ | 0.9+ |
| 2002 09 05 | 699 | (2.2- | 1.8+) | 2007 11 08 | 703 | 0.1-  | 0.9-  | 2007 12 02 | 704 | 0.2- | 0.1+ |
| 2002 09 05 | 699 | 0.2-  | 0.1-  | 2007 11 08 | 703 | 0.0   | 0.1+  | 2007 12 02 | 704 | 0.2- | 0.4+ |
| 2002 09 13 | 644 | 0.2+  | 0.5-  | 2007 11 08 | 703 | 0.9-  | 0.1+  | 2007 12 02 | 704 | 0.6+ | 1.2+ |
| 2002 09 13 | 644 | 0.2+  | 0.6-  | 2007 11 08 | 703 | (1.8- | 0.2+) | 2007 12 02 | 704 | 0.1- | 1.0- |
| 2002 09 13 | 644 | 0.0   | 0.5-  | 2007 11 08 | 703 | 1.1-  | 0.5+  | 2007 12 05 | 699 | 0.1+ | 0.2- |
| 2004 01 31 | 691 | 0.1-  | 0.0   | 2007 11 09 | 704 | 0.2+  | 0.2+  | 2007 12 05 | 699 | 0.1+ | 0.1- |
| 2004 01 31 | 691 | 0.1+  | 0.2+  | 2007 11 09 | 704 | 0.2+  | 0.3+  | 2007 12 05 | 699 | 0.5+ | 0.8- |
| 2004 01 31 | 691 | 0.0   | 0.1-  | 2007 11 09 | 704 | 0.3+  | 0.1+  | 2007 12 05 | 699 | 0.5- | 0.2+ |
| 2007 10 09 | D29 | 0.5+  | 0.8-  | 2007 11 09 | 704 | 0.1+  | 0.0   | 2007 12 16 | 704 | 0.3- | 0.7+ |
| 2007 10 09 | D29 | 0.5-  | 0.0   | 2007 11 09 | 704 | 0.2+  | 0.0   | 2007 12 16 | 704 | 0.5- | 1.2+ |
| 2007 10 09 | D29 | 0.2-  | 0.2-  | 2007 11 15 | G96 | 0.3-  | 0.2-  | 2007 12 16 | 704 | 0.2- | 0.8+ |
| 2007 10 09 | D29 | 0.6-  | 0.1-  | 2007 11 15 | G96 | 0.2-  | 0.3-  | 2007 12 16 | 704 | 0.0  | 0.2+ |

**2007 VU<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 315.00103  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.26353451 | $\omega$ 194.34762 | -0.35140113   | -0.93539253 |
| <i>a</i> | 2.4094119  | $\Omega$ 276.23731 | +0.86283619   | -0.30720428 |
| <i>e</i> | 0.1786902  | <i>i</i> 2.27566   | +0.36336064   | -0.17511810 |
| <i>P</i> | 3.74       | <i>H</i> 17.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 02 20 | 645 | 0.0  | 0.1- | 2007 11 07 | 300 | 0.7+ | 0.3+ | 2007 11 19 | 691 | 0.7-  | 0.3-  |
| 2001 02 20 | 645 | 0.0  | 0.1- | 2007 11 07 | 300 | 1.2+ | 0.6- | 2007 11 19 | 691 | 0.2+  | 0.1-  |
| 2003 10 19 | 691 | 0.1- | 0.1- | 2007 11 07 | 300 | 0.3- | 0.5+ | 2007 11 20 | 704 | (0.3- | 2.1+) |
| 2003 10 19 | 691 | 0.0  | 0.1- | 2007 11 07 | 300 | 0.3- | 0.8- | 2007 11 20 | 704 | 0.1+  | 0.7+  |
| 2003 10 19 | 691 | 0.0  | 0.3+ | 2007 11 09 | 300 | 0.3+ | 0.1- | 2007 11 20 | 704 | 0.3-  | 0.4+  |
| 2005 03 17 | G96 | 0.6- | 0.1+ | 2007 11 09 | 300 | 0.6+ | 0.2- | 2007 11 20 | 704 | 0.3+  | 0.9+  |
| 2005 03 17 | G96 | 0.5- | 0.2+ | 2007 11 09 | 300 | 0.3+ | 0.2- | 2007 11 20 | 704 | 0.6+  | 0.8+  |
| 2005 03 17 | G96 | 0.0  | 0.0  | 2007 11 09 | 300 | 0.3+ | 0.0  | 2007 12 03 | 703 | 0.4+  | 0.2+  |
| 2005 03 17 | G96 | 0.6- | 0.0  | 2007 11 09 | 300 | 1.1+ | 0.1+ | 2007 12 03 | 703 | 0.6+  | 0.7-  |
| 2005 04 06 | 691 | 0.5+ | 0.4+ | 2007 11 09 | 300 | 0.5+ | 0.0  | 2007 12 03 | 703 | 1.3+  | 0.8-  |
| 2005 04 06 | 691 | 0.0  | 0.4+ | 2007 11 09 | 300 | 0.2+ | 0.2- | 2007 12 03 | 703 | 0.1-  | 0.3+  |
| 2005 04 06 | 691 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 1.1- | 0.3+ | 2007 12 04 | 691 | 0.1-  | 0.1-  |
| 2007 10 14 | G96 | 0.3+ | 0.2- | 2007 11 14 | 691 | 0.2- | 0.1+ | 2007 12 04 | 691 | 0.4-  | 0.4+  |
| 2007 10 14 | G96 | 0.5+ | 0.3- | 2007 11 14 | 691 | 0.3+ | 0.5- | 2007 12 04 | 691 | 1.0-  | 0.2+  |
| 2007 10 14 | G96 | 0.6+ | 0.0  | 2007 11 15 | 704 | 1.3+ | 0.8+ | 2007 12 06 | 691 | 0.1-  | 0.0   |
| 2007 10 14 | G96 | 0.3+ | 0.1- | 2007 11 15 | 704 | 0.5+ | 0.1+ | 2007 12 06 | 691 | 0.1-  | 0.0   |
| 2007 10 31 | 691 | 0.9+ | 0.0  | 2007 11 15 | 704 | 0.5+ | 0.5+ | 2007 12 06 | 691 | 0.3-  | 0.2-  |
| 2007 10 31 | 691 | 0.1- | 0.3+ | 2007 11 15 | 704 | 0.1- | 0.6+ |            |     |       |       |
| 2007 10 31 | 691 | 0.2- | 0.1+ | 2007 11 19 | 691 | 0.1- | 0.0  |            |     |       |       |

**2007 VD<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.51172   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.25508518 | $\omega$ 175.64969 | +0.96337441   | -0.26457494 |
| <i>a</i> | 2.4623279  | $\Omega$ 199.85929 | +0.24198739   | +0.92794991 |
| <i>e</i> | 0.1071390  | <i>i</i> 7.39124   | +0.11555021   | +0.26250537 |
| <i>P</i> | 3.86       | <i>H</i> 17.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 10 16 | 645 | 0.0   | 0.0   | 2007 11 08 | G96 | 0.2+ | 0.4- | 2007 11 12 | G98 | 0.2+ | 0.1+ |
| 1999 10 16 | 645 | 0.0   | 0.0   | 2007 11 08 | G96 | 0.0  | 0.0  | 2007 11 12 | G98 | 0.1- | 0.5+ |
| 2003 09 28 | 691 | 0.0   | 0.1+  | 2007 11 08 | G96 | 0.1- | 0.4- | 2007 11 12 | G98 | 0.2+ | 0.2- |
| 2003 09 28 | 691 | 0.1-  | 0.1+  | 2007 11 08 | G96 | 0.3- | 0.1+ | 2007 11 12 | 704 | 0.0  | 0.7+ |
| 2003 09 28 | 691 | 0.1+  | 0.1-  | 2007 11 08 | G96 | 0.0  | 0.4- | 2007 11 12 | 704 | 0.4+ | 0.2+ |
| 2003 10 21 | 644 | 0.2+  | 0.1+  | 2007 11 08 | G96 | 0.0  | 0.1+ | 2007 11 12 | 704 | 0.8+ | 0.3+ |
| 2003 10 21 | 644 | 0.3+  | 0.3+  | 2007 11 09 | G98 | 0.2- | 0.3- | 2007 11 12 | 704 | 0.3- | 0.2- |
| 2003 10 21 | 644 | 0.2+  | 0.2+  | 2007 11 09 | G98 | 0.0  | 0.8- | 2007 11 18 | G98 | 0.3+ | 0.6+ |
| 2003 10 26 | 691 | 0.5+  | 0.2+  | 2007 11 09 | G98 | 0.7+ | 0.1+ | 2007 11 18 | G98 | 0.7+ | 0.9+ |
| 2003 10 26 | 691 | 0.2+  | 0.4-  | 2007 11 09 | G98 | 0.5+ | 1.2- | 2007 11 18 | G98 | 0.1- | 0.3+ |
| 2003 10 26 | 691 | 0.8-  | 0.0   | 2007 11 09 | G98 | 0.6+ | 0.3+ | 2007 11 18 | G98 | 0.1- | 0.5+ |
| 2005 02 15 | 809 | 0.1-  | 0.1-  | 2007 11 09 | G98 | 0.0  | 0.3- | 2007 12 03 | G98 | 0.2+ | 0.3+ |
| 2005 02 15 | 809 | 0.0   | 0.1-  | 2007 11 09 | G98 | 0.6+ | 0.7+ | 2007 12 03 | G98 | 0.2+ | 0.4- |
| 2005 02 15 | 809 | 0.0   | 0.0   | 2007 11 09 | G98 | 0.5+ | 0.1- | 2007 12 03 | G98 | 0.2- | 0.5- |
| 2007 10 12 | 691 | 0.6-  | 0.2-  | 2007 11 11 | G98 | 0.6+ | 0.5- | 2007 12 03 | G98 | 0.6- | 0.0  |
| 2007 10 12 | 691 | 0.6-  | 0.3-  | 2007 11 11 | G98 | 0.2- | 0.6+ | 2007 12 16 | G98 | 1.1- | 0.8+ |
| 2007 10 12 | 691 | (0.7- | 2.3-) | 2007 11 11 | G98 | 0.6+ | 0.3+ | 2007 12 16 | G98 | 0.2+ | 0.1+ |
| 2007 11 08 | G96 | 0.2-  | 0.4-  | 2007 11 11 | G98 | 0.1- | 0.6+ |            |     |      |      |
| 2007 11 08 | G96 | 0.2+  | 0.2-  | 2007 11 12 | G98 | 0.3+ | 0.1+ |            |     |      |      |

**2007 VG<sub>96</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.89697   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18737343 | $\omega$ 277.53577 | +0.99075723   | +0.05946177 |
| <i>a</i> | 3.0245728  | $\Omega$ 79.11250  | -0.00335243   | +0.90926010 |
| <i>e</i> | 0.0813865  | <i>i</i> 7.13193   | -0.13560555   | +0.41195918 |
| <i>P</i> | 5.26       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 16 | 691 | 0.1- | 0.0  | 2007 11 09 | G98 | 0.3- | 0.3+ | 2007 11 12 | 704 | 0.3+ | 0.4- |
| 2004 02 16 | 691 | 0.0  | 0.0  | 2007 11 09 | G98 | 0.3+ | 0.1- | 2007 11 12 | 704 | 0.1- | 0.2- |
| 2004 02 16 | 691 | 0.0  | 0.3- | 2007 11 09 | G98 | 0.7- | 0.1- | 2007 11 18 | G98 | 0.3- | 0.4+ |
| 2005 04 02 | 691 | 0.1- | 0.1+ | 2007 11 11 | G98 | 0.1+ | 0.1- | 2007 11 18 | G98 | 0.1+ | 0.0  |
| 2005 04 02 | 691 | 0.1+ | 0.2+ | 2007 11 11 | G98 | 0.4+ | 0.1+ | 2007 11 18 | G98 | 0.4+ | 0.8+ |
| 2005 04 02 | 691 | 0.2+ | 0.2+ | 2007 11 11 | G98 | 0.6+ | 0.1+ | 2007 11 18 | G98 | 0.5+ | 1.1+ |
| 2007 11 08 | G96 | 0.1+ | 0.3- | 2007 11 11 | G98 | 0.5+ | 0.6- | 2007 12 03 | G98 | 0.7- | 0.5+ |
| 2007 11 08 | G96 | 0.0  | 0.3- | 2007 11 12 | G98 | 0.4- | 0.0  | 2007 12 03 | G98 | 0.5+ | 0.3+ |
| 2007 11 08 | G96 | 0.3+ | 0.5- | 2007 11 12 | G98 | 0.1+ | 0.1+ | 2007 12 03 | G98 | 0.3- | 0.0  |
| 2007 11 08 | G96 | 0.1+ | 0.1- | 2007 11 12 | G98 | 0.3- | 0.0  | 2007 12 03 | G98 | 0.1+ | 0.2+ |
| 2007 11 08 | G96 | 0.2+ | 0.5- | 2007 11 12 | G98 | 0.4- | 0.0  | 2007 12 16 | G98 | 1.6- | 0.3+ |
| 2007 11 08 | G96 | 0.2+ | 0.1+ | 2007 11 12 | 704 | 0.7+ | 0.5- | 2007 12 16 | G98 | 0.5- | 0.0  |
| 2007 11 08 | G96 | 0.2+ | 0.7- | 2007 11 12 | 704 | 0.2+ | 0.5+ | 2007 12 16 | G98 | 0.5- | 0.1+ |
| 2007 11 08 | G96 | 0.1+ | 0.2- | 2007 11 12 | 704 | 0.1- | 0.7+ | 2007 12 16 | G98 | 0.6- | 0.4+ |

**2007 VK<sub>96</sub> = 2007 UZ<sub>100</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.06589    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18369350 | $\omega$ 347.28751 | +0.68129114   | -0.72765542 |
| <i>a</i> | 3.0648333  | $\Omega$ 59.70427  | +0.67943441   | +0.58804828 |
| <i>e</i> | 0.1470445  | <i>i</i> 5.29958   | +0.27241747   | +0.35315268 |
| <i>P</i> | 5.37       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 10 | 644 | 0.5- | 1.0+ | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2001 10 10 | 644 | 0.3- | 0.8+ | 2007 11 05 | G96 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.4- | 0.1+ |
| 2001 10 10 | 644 | 0.3- | 0.6+ | 2007 11 05 | G96 | 0.2+ | 0.1- | 2007 11 18 | 691 | 0.3- | 0.0  |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 21 | 691 | 0.2+ | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 12 03 | 703 | 0.2+ | 0.8+ |
| 2004 04 21 | 691 | 0.2− | 0.6+ | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 12 03 | 703 | 0.6+ | 0.9− |
| 2004 04 21 | 691 | 0.4+ | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.1+ | 2007 12 03 | 703 | 1.0− | 0.4− |
| 2005 06 14 | G96 | 0.2− | 0.8+ | 2007 11 07 | 691 | 0.1− | 0.0  | 2007 12 03 | 703 | 0.1− | 0.3− |
| 2005 06 14 | G96 | 0.3+ | 0.9+ | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 12 10 | 704 | 0.0  | 0.8+ |
| 2005 06 14 | G96 | 0.4+ | 0.3+ | 2007 11 13 | 699 | 0.9− | 0.8− | 2007 12 10 | 704 | 0.9+ | 0.3− |
| 2005 06 14 | G96 | 0.1+ | 0.6+ | 2007 11 13 | 699 | 1.0+ | 0.2+ | 2007 12 10 | 704 | 0.8+ | 0.4+ |
| 2007 10 15 | G96 | 0.2+ | 0.1− | 2007 11 13 | 699 | 0.5− | 1.1− | 2007 12 14 | 704 | 1.1+ | 0.4+ |
| 2007 10 15 | G96 | 0.3+ | 0.2− | 2007 11 13 | 699 | 0.7+ | 0.1− | 2007 12 14 | 704 | 1.5+ | 0.4− |
| 2007 10 15 | G96 | 0.1+ | 0.1− | 2007 11 14 | 691 | 0.1+ | 0.2+ | 2007 12 14 | 704 | 1.1+ | 1.0+ |
| 2007 10 15 | G96 | 0.4+ | 0.2− | 2007 11 14 | 691 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2007 10 30 | 691 | 0.1− | 0.1+ | 2007 11 14 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.1− |
| 2007 10 30 | 691 | 0.1− | 0.2+ | 2007 11 15 | 704 | 0.8+ | 0.1− | 2007 12 15 | G96 | 0.0  | 0.2− |
| 2007 10 30 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 0.1− | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.3− |
| 2007 11 03 | 691 | 0.1− | 0.2+ | 2007 11 15 | 704 | 0.1+ | 0.0  |            |     |      |      |
| 2007 11 03 | 691 | 0.3− | 0.0  | 2007 11 15 | 704 | 0.1+ | 0.6+ |            |     |      |      |

2007 VP<sub>96</sub>

|          |                                   |          |           |          |      |          |   |  |  |  |  |
|----------|-----------------------------------|----------|-----------|----------|------|----------|---|--|--|--|--|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |          |      |          |   |  |  |  |  |
| <i>M</i> | 204.52102                         |          |           | (2000.0) |      |          |   |  |  |  |  |
| <i>n</i> | 0.27611656                        | $\omega$ | 192.83530 |          |      |          |   |  |  |  |  |
| <i>a</i> | 2.3356499                         | $\Omega$ | 12.87755  |          |      |          |   |  |  |  |  |
| <i>e</i> | 0.0615570                         | <i>i</i> | 7.05221   |          |      |          |   |  |  |  |  |
| <i>P</i> | 3.57                              | <i>H</i> | 17.1      | <i>G</i> | 0.15 | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 05 07 | 644 | 0.2+ | 0.5+ | 2005 03 01 | 703 | 0.3− | 0.2− | 2007 11 07 | 691 | 0.7−  | 0.3−  |
| 2002 05 07 | 644 | 0.1+ | 0.6+ | 2005 03 01 | 703 | 0.6+ | 1.5− | 2007 11 07 | 691 | 0.6−  | 0.1+  |
| 2002 05 07 | 644 | 0.6+ | 0.5+ | 2007 10 09 | 691 | 0.2− | 0.2− | 2007 11 13 | 691 | 0.0   | 0.3+  |
| 2003 09 19 | 599 | 0.3+ | 0.2− | 2007 10 09 | 691 | 0.2− | 0.6+ | 2007 11 13 | 691 | 0.2−  | 0.3−  |
| 2003 09 19 | 599 | 0.1+ | 0.3+ | 2007 10 09 | 691 | 0.5− | 0.5− | 2007 11 13 | 691 | 0.1+  | 0.0   |
| 2003 09 19 | 599 | 0.4− | 0.0  | 2007 10 18 | 691 | 0.3+ | 0.3− | 2007 11 17 | 691 | 0.1+  | 0.2+  |
| 2003 09 19 | 599 | 0.1− | 0.3+ | 2007 10 18 | 691 | 0.3− | 0.3− | 2007 11 17 | 691 | 0.1+  | 0.1+  |
| 2003 10 24 | 691 | 0.1+ | 0.4− | 2007 10 18 | 691 | 0.4− | 0.9+ | 2007 11 17 | 691 | 0.2+  | 0.1+  |
| 2003 10 24 | 691 | 0.1+ | 0.2+ | 2007 11 01 | 691 | 0.0  | 0.2− | 2007 11 17 | 704 | 0.9+  | 0.7+  |
| 2003 10 24 | 691 | 0.2− | 0.2− | 2007 11 01 | 691 | 0.4− | 0.3− | 2007 11 17 | 704 | 0.9+  | 1.2+  |
| 2005 03 01 | 703 | 0.6− | 1.2+ | 2007 11 01 | 691 | 0.0  | 0.1− | 2007 11 17 | 704 | (2.6+ | 1.1+) |
| 2005 03 01 | 703 | 0.2+ | 0.3+ | 2007 11 07 | 691 | 0.1− | 0.0  |            |     |       |       |

2007 VD<sub>98</sub>

|          |                                   |          |          |          |      |          |   |  |  |  |  |
|----------|-----------------------------------|----------|----------|----------|------|----------|---|--|--|--|--|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |          |          |      |          |   |  |  |  |  |
| <i>M</i> | 343.32633                         |          |          | (2000.0) |      |          |   |  |  |  |  |
| <i>n</i> | 0.30214538                        | $\omega$ | 54.47573 |          |      |          |   |  |  |  |  |
| <i>a</i> | 2.1995073                         | $\Omega$ | 25.82964 |          |      |          |   |  |  |  |  |
| <i>e</i> | 0.1221644                         | <i>i</i> | 3.30210  |          |      |          |   |  |  |  |  |
| <i>P</i> | 3.26                              | <i>H</i> | 17.6     | <i>G</i> | 0.15 | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 15 | 691 | 0.1− | 0.1− | 2007 11 01 | 691 | 0.3− | 0.1− | 2007 11 18 | G96 | 0.4+ | 0.2− |
| 2005 01 15 | 691 | 0.1− | 0.2− | 2007 11 01 | 691 | 0.2− | 0.3+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2005 01 15 | 691 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.2− | 0.1+ | 2007 11 20 | 691 | 0.5+ | 0.7− |
| 2005 03 11 | 691 | 0.1− | 0.1+ | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2005 03 11 | 691 | 0.0  | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.1− | 2007 11 20 | 691 | 0.5− | 0.4+ |
| 2005 03 11 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 1.0+ | 0.5− | 2007 12 15 | 704 | 0.1− | 0.7− |
| 2007 09 15 | G96 | 0.2+ | 0.3+ | 2007 11 18 | 704 | 0.4+ | 0.2+ | 2007 12 15 | 704 | 0.7− | 0.2+ |
| 2007 09 15 | G96 | 0.4+ | 0.0  | 2007 11 18 | 704 | 0.4+ | 1.3+ | 2007 12 15 | 704 | 0.3− | 0.9+ |
| 2007 09 15 | G96 | 0.1− | 0.3+ | 2007 11 18 | G96 | 0.5+ | 0.2− | 2007 12 15 | 704 | 0.1− | 0.8+ |
| 2007 09 15 | G96 | 0.3− | 0.1+ | 2007 11 18 | 704 | 1.1+ | 0.0  | 2007 12 15 | 704 | 0.1− | 0.2+ |
| 2007 11 01 | 691 | 0.0  | 0.3− | 2007 11 18 | G96 | 0.7+ | 0.0  |            |     |      |      |

## M.P.O. 129999

2007 VH<sub>98</sub>

|          |                                   |          |           |          |      |          |   |  |  |  |  |
|----------|-----------------------------------|----------|-----------|----------|------|----------|---|--|--|--|--|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |          |      |          |   |  |  |  |  |
| <i>M</i> | 99.82221                          |          |           | (2000.0) |      |          |   |  |  |  |  |
| <i>n</i> | 0.26616473                        | $\omega$ | 40.41996  |          |      |          |   |  |  |  |  |
| <i>a</i> | 2.3935126                         | $\Omega$ | 222.30602 |          |      |          |   |  |  |  |  |
| <i>e</i> | 0.2344844                         | <i>i</i> | 10.28473  |          |      |          |   |  |  |  |  |
| <i>P</i> | 3.70                              | <i>H</i> | 16.6      | <i>G</i> | 0.15 | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 05 | 691 | 0.3−  | 0.5−  | 2006 07 22 | G96 | 0.4− | 0.0  | 2007 11 02 | G96 | 0.3+ | 0.0  |
| 1996 12 05 | 691 | 0.4−  | 0.9−  | 2006 07 22 | G96 | 0.3− | 0.4+ | 2007 11 02 | G96 | 0.3+ | 0.2− |
| 1996 12 05 | 691 | 0.5−  | 0.4−  | 2006 07 22 | G96 | 0.6− | 0.7− | 2007 11 02 | G96 | 0.4+ | 0.2− |
| 2000 12 03 | 691 | 0.2+  | 0.4−  | 2007 09 12 | 291 | 0.2− | 0.1− | 2007 11 02 | G96 | 0.1+ | 0.1+ |
| 2000 12 03 | 691 | 0.6+  | 0.1−  | 2007 09 12 | 291 | 0.6− | 0.1− | 2007 11 02 | G96 | 0.5+ | 0.1− |
| 2000 12 03 | 691 | 0.2+  | 0.1−  | 2007 09 12 | 291 | 0.2− | 0.1− | 2007 11 02 | G96 | 0.4+ | 0.1− |
| 2003 09 30 | 699 | 0.3−  | 1.3−  | 2007 10 18 | 691 | 0.5− | 0.1+ | 2007 11 02 | G96 | 0.7+ | 0.2− |
| 2003 09 30 | 699 | 1.4−  | 1.6+  | 2007 10 18 | 691 | 0.1− | 0.0  | 2007 11 07 | 691 | 0.3− | 0.6+ |
| 2003 09 30 | 699 | 1.9+  | 1.3+  | 2007 10 18 | 691 | 0.2− | 0.2+ | 2007 11 07 | 691 | 0.2− | 0.2+ |
| 2003 09 30 | 699 | 0.5+  | 0.2+  | 2007 10 20 | 703 | 0.0  | 1.1+ | 2007 11 07 | 691 | 0.1− | 0.2+ |
| 2006 03 04 | 703 | (0.8− | 3.0+) | 2007 10 20 | 703 | 0.4+ | 0.1− | 2007 11 09 | 691 | 0.1− | 0.2+ |
| 2006 03 04 | 703 | 1.2+  | 1.7+  | 2007 10 20 | 703 | 0.7− | 0.5+ | 2007 11 09 | 691 | 0.1+ | 0.6+ |
| 2006 03 04 | 703 | 1.2−  | 0.2−  | 2007 10 20 | 703 | 0.3+ | 0.9− | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 2006 03 04 | 703 | 0.4+  | 0.0   | 2007 11 02 | 691 | 0.1− | 0.1+ | 2007 11 13 | 691 | 0.1+ | 0.5+ |
| 2006 04 19 | 644 | 0.4+  | 0.7+  | 2007 11 02 | 691 | 0.1− | 0.2+ | 2007 11 13 | 691 | 0.2− | 0.4+ |
| 2006 04 19 | 644 | 0.0   | 0.4+  | 2007 11 02 | 691 | 0.1− | 0.1− | 2007 11 13 | 691 | 0.2− | 0.4+ |
| 2006 04 19 | 644 | 0.5+  | 0.6+  | 2007 11 02 | G96 | 0.3+ | 0.2− |            |     |      |      |

2007 VL<sub>98</sub> = 2007 UJ<sub>125</sub>

|          |                                   |          |           |          |      |          |   |  |  |  |  |
|----------|-----------------------------------|----------|-----------|----------|------|----------|---|--|--|--|--|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |          |      |          |   |  |  |  |  |
| <i>M</i> | 3.31535                           |          |           | (2000.0) |      |          |   |  |  |  |  |
| <i>n</i> | 0.19171443                        | $\omega$ | 81.38787  |          |      |          |   |  |  |  |  |
| <i>a</i> | 2.9787418                         | $\Omega$ | 316.43717 |          |      |          |   |  |  |  |  |
| <i>e</i> | 0.1652427                         | <i>i</i> | 3.43076   |          |      |          |   |  |  |  |  |
| <i>P</i> | 5.14                              | <i>H</i> | 16.1      | <i>G</i> | 0.15 | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 21 | 645 | 0.1− | 0.0  | 2007 10 16 | G96 | 0.3+ | 0.4− | 2007 11 07 | 703 | 0.3+ | 0.3+ |
| 1999 03 21 | 645 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.5+ | 0.3− | 2007 11 15 | 699 | 1.0− | 0.6+ |
| 1999 03 22 | 645 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.1+ | 0.4− | 2007 11 15 | 699 | 0.6+ | 1.1− |
| 1999 03 22 | 645 | 0.1+ | 0.0  | 2007 10 21 | 691 | 0.2− | 0.2− | 2007 11 15 | 699 | 0.4− | 1.4− |
| 2001 08 26 | 691 | 0.0  | 0.1+ | 2007 10 21 | 691 | 0.1− | 0.2+ | 2007 11 15 | 699 | 0.9− | 0.4+ |
| 2001 08 26 | 691 | 0.1+ | 0.5− | 2007 10 21 | 691 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.6+ | 0.7− |
| 2001 08 26 | 691 | 0.1− | 0.4+ | 2007 11 02 | 691 | 0.1− | 0.1− | 2007 11 18 | 704 | 0.1+ | 0.9− |
| 2007 09 26 | G96 | 0.2− | 0.7− | 2007 11 02 | 691 | 0.1+ | 0.0  | 2007 11 18 | 704 | 0.3− | 0.5− |
| 2007 09 26 | G96 | 0.3+ | 0.9− | 2007 11 02 | 691 | 0.1− | 0.0  | 2007 11 18 | 704 | 0.2+ | 0.2− |
| 2007 09 26 | G96 | 0.4− | 0.5− | 2007 11 06 | 691 | 0.2+ | 0.1− | 2007 11 18 | 704 | 0.3− | 0.0  |
| 2007 09 26 | G96 | 0.2+ | 0.6− | 2007 11 06 | 691 | 0.2+ | 0.1+ | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2007 10 07 | 691 | 0.0  | 0.2− | 2007 11 06 | 691 | 0.1+ | 0.3+ | 2007 11 19 | 691 | 0.2− | 0.0  |
| 2007 10 07 | 691 | 0.2− | 0.2+ | 2007 11 07 | 703 | 0.1+ | 0.6+ | 2007 11 19 | 691 | 0.3+ | 0.4+ |
| 2007 10 07 | 691 | 0.1− | 1.1+ | 2007 11 07 | 703 | 0.1+ | 0.1− |            |     |      |      |
| 2007 10 16 | G96 | 0.4+ | 0.4− | 2007 11 07 | 703 | 0.9+ | 0.5− |            |     |      |      |

2007 VT<sub>98</sub> = 2004 XS<sub>90</sub>

|          |                                   |          |           |          |      |          |   |  |  |  |  |
|----------|-----------------------------------|----------|-----------|----------|------|----------|---|--|--|--|--|
| Epoch    | 2007 Oct. 27.0 TT = JDT 2454400.5 |          |           |          |      |          |   |  |  |  |  |
| <i>M</i> | 35.98310                          |          |           | (2000.0) |      |          |   |  |  |  |  |
| <i>n</i> | 0.30776641                        | $\omega$ | 17.40076  |          |      |          |   |  |  |  |  |
| <i>a</i> | 2.1726440                         | $\Omega$ | 331.14240 |          |      |          |   |  |  |  |  |
| <i>e</i> | 0.1974251                         | <i>i</i> | 1.74504   |          |      |          |   |  |  |  |  |
| <i>P</i> | 3.20                              | <i>H</i> | 18.6      | <i>G</i> | 0.15 | <i>U</i> | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 11 | 691 | 0.3− | 0.1+ | 2004 12 15 | 691 | 0.1+ | 0.1+ | 2007 11 02 | G96 | 0.6+ | 0.4− |
| 1994 09 11 | 691 | 0.1+ | 0.4+ | 2007 10 07 | 691 | 0.3− | 0.2+ | 2007 11 02 | G96 | 0.7+ | 0.3− |
| 1994 09 11 | 691 | 0.0  | 0.1− | 2007 10 07 | 691 | 0.1− | 0.1+ | 2007 11 02 | G96 | 0.5+ | 0.6− |
| 2002 01 14 | 645 | 0.0  | 0.0  | 2007 10 07 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.4+ | 0.5− |

## M.P.O. 130000

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 01 14 | 645 | 0.0  | 0.1+ | 2007 10 19 | 691 | 0.5− | 0.2+ | 2007 11 06 | 691 | 0.1+ | 0.2+ |
| 2004 12 11 | 691 | 0.2− | 0.4− | 2007 10 19 | 691 | 0.2+ | 0.1− | 2007 11 06 | 691 | 0.0  | 0.6− |
| 2004 12 11 | 691 | 0.5− | 0.3+ | 2007 10 19 | 691 | 0.2+ | 0.2+ | 2007 11 06 | 691 | 0.6− | 0.5− |
| 2004 12 11 | 691 | 0.2+ | 0.1− | 2007 11 02 | 691 | 0.2+ | 0.0  | 2007 11 14 | 691 | 0.1− | 0.3− |
| 2004 12 15 | 691 | 0.3+ | 0.2+ | 2007 11 02 | 691 | 0.3+ | 0.0  | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 2004 12 15 | 691 | 0.2+ | 0.1− | 2007 11 02 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.0  |

**2007 VU<sub>98</sub> = 2005 JJ<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 294.94264  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23125524 | <i>ω</i> | 245.58111 | −0.55844085   | −0.81426954 |
| <i>a</i> | 2.6287039  | <i>Ω</i> | 239.29826 | +0.81210631   | −0.49767459 |
| <i>e</i> | 0.1482602  | <i>i</i> | 10.61965  | +0.16919562   | −0.29880616 |
| <i>P</i> | 4.26       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 11 | 691 | 0.2+ | 0.1+ | 2007 10 16 | G96 | 0.2+ | 0.7− | 2007 11 07 | 703 | 0.7+ | 1.0+ |
| 2005 05 11 | 691 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.5+ | 0.7− | 2007 11 07 | 703 | 0.4+ | 0.3+ |
| 2005 05 11 | 691 | 0.3− | 0.1+ | 2007 10 16 | G96 | 0.3+ | 0.6− | 2007 11 19 | 691 | 0.4− | 0.4+ |
| 2005 05 16 | 691 | 0.4+ | 0.4+ | 2007 10 16 | G96 | 0.6+ | 0.4− | 2007 11 19 | 691 | 0.5− | 0.1+ |
| 2005 05 16 | 691 | 0.0  | 0.2+ | 2007 11 02 | 691 | 0.3− | 0.0  | 2007 11 19 | 691 | 0.1+ | 0.4+ |
| 2005 05 16 | 691 | 0.2− | 0.2+ | 2007 11 02 | 691 | 0.2+ | 0.4− | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2007 10 09 | 691 | 0.7+ | 0.8+ | 2007 11 02 | 691 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.2+ | 0.1+ |
| 2007 10 09 | 691 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.4− | 0.9+ | 2007 12 15 | G96 | 0.0  | 0.3− |
| 2007 10 09 | 691 | 0.4− | 0.3− | 2007 11 07 | 703 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.6+ | 0.3+ |

**2007 VV<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 32.10212   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24114777 | <i>ω</i> | 7.29715   | +0.99236536   | +0.12302170 |
| <i>a</i> | 2.5563121  | <i>Ω</i> | 345.62748 | −0.11486299   | +0.89603076 |
| <i>e</i> | 0.2236315  | <i>i</i> | 2.02127   | −0.04491640   | +0.42660818 |
| <i>P</i> | 4.09       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 19 | 691 | 0.1+ | 0.0  | 2007 10 11 | 691 | 0.1− | 0.1+ | 2007 11 07 | 703 | 0.2+ | 0.4− |
| 2003 11 19 | 691 | 0.0  | 0.1+ | 2007 10 11 | 691 | 0.1− | 0.3− | 2007 11 07 | 703 | 1.2+ | 0.5− |
| 2003 11 19 | 691 | 0.2+ | 0.1− | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2003 12 19 | 691 | 0.0  | 0.0  | 2007 11 02 | 691 | 0.1+ | 0.1+ | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2003 12 19 | 691 | 0.3− | 0.2− | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.3− | 0.1− |
| 2003 12 19 | 691 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.2+ | 0.0  |            |     |      |      |
| 2007 10 11 | 691 | 0.0  | 0.0  | 2007 11 07 | 703 | 0.3− | 0.2+ |            |     |      |      |

**2007 VM<sub>99</sub> = 2001 KM<sub>50</sub> = 2006 MR<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.76639  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23185393 | <i>ω</i> | 35.25360  | +0.43594347   | +0.87326075 |
| <i>a</i> | 2.6241767  | <i>Ω</i> | 261.48610 | −0.86797122   | +0.34404488 |
| <i>e</i> | 0.0301570  | <i>i</i> | 12.71310  | −0.23786395   | +0.34503447 |
| <i>P</i> | 4.25       | <i>H</i> | 15.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 24 | 644 | 0.2+ | 1.2− | 2006 06 20 | 644 | 0.1− | 0.0  | 2007 11 20 | 704 | 0.4+ | 0.1− |
| 2001 05 24 | 644 | 0.2+ | 0.8− | 2006 06 20 | 644 | 0.1+ | 0.1− | 2007 11 20 | 704 | 0.4+ | 0.5+ |
| 2001 05 24 | 644 | 0.1+ | 1.0− | 2006 06 23 | 644 | 0.2− | 0.0  | 2007 11 20 | 704 | 0.5+ | 0.4+ |
| 2001 05 26 | 644 | 0.1+ | 1.0+ | 2006 06 23 | 644 | 0.1+ | 0.0  | 2007 11 20 | 704 | 0.5+ | 0.7+ |
| 2001 05 26 | 644 | 0.3− | 0.9+ | 2006 06 23 | 644 | 0.0  | 0.1+ | 2007 11 20 | 704 | 0.4+ | 0.6+ |
| 2001 05 26 | 644 | 0.1+ | 1.1+ | 2007 11 02 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 691 | 0.3− | 0.0  |
| 2002 09 10 | 644 | 0.4− | 0.0  | 2007 11 02 | 691 | 0.5− | 0.0  | 2007 11 20 | 691 | 0.3− | 0.2+ |
| 2002 09 10 | 644 | 0.4− | 0.1+ | 2007 11 02 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.2− | 0.1+ |
| 2002 09 10 | 644 | 0.4− | 0.2+ | 2007 11 06 | 691 | 0.1− | 0.3− | 2007 12 04 | 699 | 0.5+ | 0.1− |
| 2002 10 04 | 699 | 0.4+ | 0.7+ | 2007 11 06 | 691 | 0.1+ | 0.1− | 2007 12 04 | 699 | 0.3+ | 0.5+ |
| 2002 10 04 | 699 | 1.0+ | 0.3+ | 2007 11 06 | 691 | 0.5− | 0.2− | 2007 12 04 | 699 | 0.1− | 0.6− |
| 2002 10 04 | 699 | 0.6− | 0.7− | 2007 11 13 | 703 | 0.2+ | 1.1− | 2007 12 04 | 699 | 0.0  | 0.1+ |
| 2002 10 04 | 699 | 0.1− | 0.1+ | 2007 11 13 | 703 | 0.2+ | 0.9− | 2007 12 12 | 704 | 0.2+ | 0.6− |

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 19 | E12 | 1.0+  | 0.1−  | 2007 11 18 | 704 | (0.1+ | 1.8+) | 2007 12 12 | 704 | 0.4− | 0.3− |
| 2005 03 19 | E12 | 0.0   | 0.0   | 2007 11 18 | 704 | (0.4− | 1.6+) | 2007 12 12 | 704 | 0.3+ | 0.1− |
| 2005 03 19 | E12 | 0.4+  | 0.2+  | 2007 11 18 | 704 | (0.2− | 2.7+) | 2007 12 12 | 704 | 0.3+ | 0.8− |
| 2005 03 19 | E12 | 0.2+  | 0.2−  | 2007 11 18 | 704 | (0.2− | 2.3+) | 2007 12 12 | 704 | 0.0  | 0.0  |
| 2005 04 06 | 699 | 0.8−  | 0.1+  | 2007 11 18 | 704 | (0.4+ | 2.9+) | 2007 12 13 | 704 | 0.4+ | 1.0+ |
| 2005 04 06 | 699 | 0.5−  | 0.6+  | 2007 11 19 | G96 | 0.1+  | 0.0   | 2007 12 13 | 704 | 0.7+ | 0.4+ |
| 2005 04 06 | 699 | 0.5−  | 0.1−  | 2007 11 19 | G96 | 0.0   | 0.1−  | 2007 12 13 | 704 | 0.2+ | 0.7+ |
| 2005 04 06 | 699 | (0.8+ | 1.7+) | 2007 11 19 | G96 | 0.2+  | 0.0   | 2007 12 13 | 704 | 0.7+ | 0.2+ |
| 2006 06 20 | 644 | 0.4+  | 0.2−  | 2007 11 19 | G96 | 0.1+  | 0.1−  | 2007 12 13 | 704 | 0.4+ | 0.2+ |

**2007 VO<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.65792   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20972555 | <i>ω</i> | 333.10093 | +0.99719051   | +0.05815142 |
| <i>a</i> | 2.8056608  | <i>Ω</i> | 23.70775  | −0.02731270   | +0.86921634 |
| <i>e</i> | 0.0614938  | <i>i</i> | 6.74413   | −0.06975025   | +0.49100037 |
| <i>P</i> | 4.70       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | G96 | 0.4− | 0.4− | 2007 11 12 | G96 | 0.1− | 0.1− | 2007 12 04 | 703 | 1.5− | 0.3− |
| 2005 03 11 | G96 | 0.3− | 0.1− | 2007 11 12 | G96 | 0.4+ | 0.0  | 2007 12 04 | 703 | 0.2− | 0.6+ |
| 2005 03 11 | G96 | 0.1− | 0.4+ | 2007 11 12 | G96 | 0.2+ | 0.1− | 2007 12 04 | 703 | 0.1+ | 0.1+ |
| 2005 03 11 | G96 | 0.0  | 0.4− | 2007 11 12 | G96 | 0.0  | 0.2− | 2007 12 04 | 703 | 1.0+ | 0.8+ |
| 2005 04 10 | G96 | 0.1+ | 0.1+ | 2007 11 18 | 704 | 0.8+ | 0.1+ | 2007 12 12 | 704 | 0.8− | 0.7+ |
| 2005 04 10 | G96 | 0.1− | 0.1+ | 2007 11 18 | 704 | 0.1− | 0.9− | 2007 12 12 | 704 | 0.6− | 0.4− |
| 2005 04 10 | G96 | 0.0  | 0.5+ | 2007 11 18 | 704 | 0.2+ | 0.5+ | 2007 12 12 | 704 | 1.0− | 0.6− |
| 2005 04 10 | G96 | 0.7+ | 0.0  | 2007 11 19 | 691 | 0.3− | 0.1+ | 2007 12 13 | 704 | 0.6+ | 0.1− |
| 2007 11 02 | 691 | 0.3− | 0.2+ | 2007 11 19 | 691 | 0.3+ | 0.1+ | 2007 12 13 | 704 | 0.3+ | 1.1+ |
| 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.5+ | 0.1− | 2007 12 13 | 704 | 0.4+ | 0.7− |
| 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 20 | 704 | 0.0  | 0.5− | 2007 12 13 | 704 | 0.7− | 0.4− |
| 2007 11 06 | 691 | 0.0  | 0.2− | 2007 11 20 | 704 | 0.1− | 0.6+ | 2007 12 13 | 704 | 0.9+ | 0.3+ |
| 2007 11 06 | 691 | 0.1− | 0.1− | 2007 11 20 | 704 | 0.2+ | 0.7− |            |     |      |      |
| 2007 11 06 | 691 | 0.0  | 0.3+ | 2007 11 20 | 704 | 0.5− | 0.6− |            |     |      |      |

**2007 VP<sub>99</sub> = 2005 EV<sub>252</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 69.67781   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21336957 | <i>ω</i> | 322.67873 | +0.91764585   | +0.39646088 |
| <i>a</i> | 2.7736249  | <i>Ω</i> | 14.04056  | −0.33206693   | +0.80270168 |
| <i>e</i> | 0.0932200  | <i>i</i> | 6.45912   | −0.21830631   | +0.44552080 |
| <i>P</i> | 4.62       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | G96 | 0.4− | 0.2− | 2005 04 04 | 691 | 0.1− | 0.3− | 2007 11 12 | G96 | 0.2+ | 0.2− |
| 2005 03 10 | G96 | 0.8− | 0.2− | 2005 04 04 | 691 | 0.2− | 0.3− | 2007 11 12 | G96 | 0.5+ | 0.1− |
| 2005 03 10 | G96 | 1.0− | 0.5− | 2007 11 02 | 691 | 0.1+ | 0.2− | 2007 11 12 | G96 | 0.5+ | 0.1− |
| 2005 03 10 | G96 | 0.9− | 1.0− | 2007 11 02 | 691 | 0.3+ | 0.0  | 2007 11 12 | G96 | 0.9+ | 0.2+ |
| 2005 03 17 | 691 | 0.1+ | 0.1+ | 2007 11 02 | 691 | 0.2+ | 0.3− | 2007 11 19 | 691 | 0.2− | 0.2+ |
| 2005 03 17 | 691 | 0.3+ | 0.5+ | 2007 11 06 | 691 | 0.2− | 0.1+ | 2007 11 19 | 691 | 0.4+ | 0.0  |
| 2005 03 17 | 691 | 0.4+ | 0.1+ | 2007 11 06 | 691 | 0.7− | 0.3+ | 2007 11 19 | 691 | 0.0  | 0.2+ |
| 2005 04 04 | 691 | 0.1+ | 0.3+ | 2007 11 06 | 691 | 0.4− | 0.4− |            |     |      |      |

**2007 VQ<sub>99</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.57198   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23859179 | <i>ω</i> | 358.46284 | +0.89250798   | −0.44791963 |
| <i>a</i> | 2.5745365  | <i>Ω</i> | 28.33697  | +0.41499334   | +0.76959659 |
| <i>e</i> | 0.2779792  | <i>i</i> | 6.39782   | +0.17666362   | +0.45507043 |
| <i>P</i> | 4.13       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 26 | 695 | 0.3+ | 0.1+ | 2007 09 15 | G96 | 0.1+ | 0.1+ | 2007 11 13 | 703 | 0.0  | 0.0  |
| 2001 03 26 | 695 | 0.1− | 0.3+ | 2007 11 02 | 691 | 0.1+ | 0.1− | 2007 11 13 | 703 | 0.0  | 0.8+ |
| 2003 11 24 | 691 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.0  | 0.0  | 2007 11 13 | 703 | 0.0  | 0.6− |
| 2003 11 24 | 691 | 0.0  | 0.2− | 2007 11 02 | 691 | 0.0  | 0.1+ | 2007 11 20 | 691 | 0.2− | 0.0  |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 691 | 0.1− | 0.2− | 2007 11 06 | 691 | 0.4− | 0.0  | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2007 09 15 | G96 | 0.3+ | 0.5− | 2007 11 06 | 691 | 0.5− | 0.1− | 2007 11 20 | 691 | 1.2+ | 0.4+ |
| 2007 09 15 | G96 | 0.0  | 0.2+ | 2007 11 06 | 691 | 0.3− | 0.2− |            |     |      |      |
| 2007 09 15 | G96 | 0.3+ | 0.1+ | 2007 11 13 | 703 | 0.5+ | 0.4+ |            |     |      |      |

**2007 VG<sub>100</sub> = 2004 JM<sub>53</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 283.95421  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17916805 | $\omega$ | 167.88951 | −0.90385990 | −0.42769356 |
| <i>a</i> | 3.1162264  | $\Omega$ | 346.77356 | +0.38850102 | −0.80999452 |
| <i>e</i> | 0.1355007  | <i>i</i> | 2.69224   | +0.17917655 | −0.40123198 |
| <i>P</i> | 5.50       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 0           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 11 17 | 691 | 0.2− | 0.5+ | 2006 09 28 | 691 | 0.1− | 0.3+ | 2007 11 02 | 691 | 0.4− | 0.3+ |
| 2001 11 17 | 691 | 0.3− | 0.4+ | 2006 09 28 | 691 | 0.2+ | 0.2+ | 2007 11 06 | 691 | 0.3+ | 0.0  |
| 2001 11 17 | 691 | 0.0  | 0.4+ | 2006 09 28 | 691 | 0.0  | 0.2− | 2007 11 06 | 691 | 0.1− | 0.0  |
| 2004 05 09 | 691 | 0.1+ | 0.5+ | 2006 09 28 | G96 | 0.2+ | 0.5− | 2007 11 06 | 691 | 0.2+ | 0.2− |
| 2004 05 09 | 691 | 0.2+ | 0.3+ | 2006 09 28 | G96 | 0.7− | 0.5− | 2007 11 29 | 143 | 0.4+ | 0.0  |
| 2004 05 09 | 691 | 0.0  | 0.4+ | 2006 09 28 | G96 | 0.1+ | 0.3− | 2007 11 29 | 143 | 0.1− | 0.4+ |
| 2004 05 19 | 691 | 0.1+ | 0.1+ | 2006 09 28 | G96 | 0.3+ | 0.3− | 2007 11 29 | 143 | 0.1+ | 0.4+ |
| 2004 05 19 | 691 | 0.1+ | 0.1− | 2007 11 02 | 691 | 0.0  | 0.1− |            |     |      |      |
| 2004 05 19 | 691 | 0.0  | 0.1+ | 2007 11 02 | 691 | 0.2− | 0.2+ |            |     |      |      |

**2007 VM<sub>100</sub> = 2000 PO**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 322.53950  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.17930486 | $\omega$ | 205.01365 | −0.25805644 | −0.95524378 |
| <i>a</i> | 3.1146411  | $\Omega$ | 260.20886 | +0.90926085 | −0.18952960 |
| <i>e</i> | 0.0667220  | <i>i</i> | 8.43933   | +0.32657553 | −0.22712959 |
| <i>P</i> | 5.50       | <i>H</i> | 15.3      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 08 01 | 691 | 0.2− | 0.3+ | 2007 11 02 | 691 | 0.2−  | 0.2−  | 2007 12 04 | 703 | 0.4− | 0.2− |
| 2000 08 01 | 691 | 0.0  | 0.1− | 2007 11 02 | 691 | 0.2−  | 0.2−  | 2007 12 04 | 703 | 0.0  | 0.0  |
| 2000 08 01 | 691 | 0.0  | 0.3+ | 2007 11 02 | 691 | 0.2−  | 0.1−  | 2007 12 10 | 704 | 0.2+ | 0.0  |
| 2000 08 03 | 691 | 0.3+ | 0.0  | 2007 11 06 | 691 | 0.2−  | 0.1−  | 2007 12 10 | 704 | 0.5+ | 0.3+ |
| 2000 08 03 | 691 | 0.1+ | 0.0  | 2007 11 06 | 691 | 0.1−  | 0.1−  | 2007 12 10 | 704 | 0.8+ | 0.6− |
| 2000 08 03 | 691 | 0.3− | 0.4+ | 2007 11 06 | 691 | 0.1+  | 0.2−  | 2007 12 10 | 704 | 0.1− | 0.6+ |
| 2001 10 20 | 644 | 0.0  | 0.1− | 2007 11 15 | 704 | (1.7+ | 1.4+) | 2007 12 14 | 704 | 0.8+ | 0.1+ |
| 2001 10 20 | 644 | 0.1+ | 0.1+ | 2007 11 15 | 704 | 1.4+  | 1.3+  | 2007 12 14 | 704 | 0.7+ | 0.1+ |
| 2001 10 20 | 644 | 0.2− | 0.1− | 2007 11 15 | 704 | 0.7+  | 1.4+  | 2007 12 14 | 704 | 1.0+ | 0.4+ |
| 2002 12 10 | 644 | 0.2+ | 0.8+ | 2007 11 15 | 704 | 1.0+  | 1.0+  | 2007 12 14 | 704 | 0.3+ | 0.6− |
| 2002 12 10 | 644 | 0.1+ | 1.2+ | 2007 11 15 | 704 | (1.8+ | 1.6+) | 2007 12 14 | 704 | 0.2+ | 0.6+ |
| 2002 12 10 | 644 | 0.1− | 0.6+ | 2007 11 17 | 691 | 0.3−  | 0.0   | 2007 12 15 | G96 | 0.5+ | 0.3− |
| 2006 09 18 | 703 | 0.6− | 0.2+ | 2007 11 17 | 691 | 0.1−  | 0.0   | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2006 09 18 | 703 | 0.6− | 0.1− | 2007 11 17 | 691 | 0.2−  | 0.0   | 2007 12 15 | G96 | 1.1− | 0.5+ |
| 2006 09 18 | 703 | 0.4+ | 0.7− | 2007 12 04 | 703 | 0.2−  | 0.2−  | 2007 12 15 | G96 | 0.6+ | 0.3− |
| 2006 09 18 | 703 | 0.4+ | 1.4− | 2007 12 04 | 703 | 0.7−  | 0.2−  |            |     |      |      |

**2007 VE<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 13.29801   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.18346780 | $\omega$ | 150.09782 | +0.80883544 | −0.52537336 |
| <i>a</i> | 3.0673464  | $\Omega$ | 243.94383 | +0.46417843 | +0.84619713 |
| <i>e</i> | 0.2644492  | <i>i</i> | 17.09875  | +0.36100362 | +0.08906873 |
| <i>P</i> | 5.37       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 08 | 691 | 0.2− | 0.1− | 2007 11 06 | 691 | 0.1− | 0.0  | 2007 11 15 | 704 | 0.6+ | 0.6+ |
| 1996 12 08 | 691 | 0.2+ | 0.1− | 2007 11 09 | D29 | 0.5+ | 0.4+ | 2007 11 15 | 704 | 0.8+ | 0.4+ |
| 1996 12 08 | 691 | 0.0  | 0.0  | 2007 11 09 | D29 | 1.0+ | 0.8− | 2007 11 15 | 704 | 0.4− | 0.8+ |
| 2001 09 18 | 645 | 0.0  | 0.0  | 2007 11 09 | D29 | 0.7+ | 1.1+ | 2007 11 18 | 691 | 0.4− | 0.1+ |
| 2001 09 18 | 645 | 0.0  | 0.0  | 2007 11 09 | D29 | 0.2− | 0.2+ | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2007 10 24 | G96 | 0.4+ | 0.0  | 2007 11 13 | 691 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.2+ | 0.5− |

## M.P.O. 130001

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 24 | G96 | 0.5+ | 0.1− | 2007 11 13 | 691 | 0.0  | 0.1+ | 2007 11 29 | D35 | 0.1− | 1.0+ |
| 2007 10 24 | G96 | 0.3+ | 0.0  | 2007 11 13 | 691 | 0.0  | 0.4− | 2007 11 29 | D35 | 0.2− | 0.7+ |
| 2007 10 24 | G96 | 0.5+ | 0.4− | 2007 11 13 | 703 | 0.5− | 0.8− | 2007 11 29 | D35 | 0.0  | 0.4+ |
| 2007 11 02 | 691 | 0.1− | 0.1+ | 2007 11 13 | 703 | 0.1− | 0.1− | 2007 12 05 | 704 | 0.0  | 0.3− |
| 2007 11 02 | 691 | 0.0  | 0.1− | 2007 11 13 | 703 | 0.2− | 0.7− | 2007 12 05 | 704 | 0.0  | 0.4− |
| 2007 11 02 | 691 | 0.0  | 0.0  | 2007 11 13 | 703 | 0.7− | 1.0− | 2007 12 05 | 704 | 0.3+ | 0.5− |
| 2007 11 06 | 691 | 0.2− | 0.1+ | 2007 11 15 | 704 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.2+ | 0.0  |
| 2007 11 06 | 691 | 0.2− | 0.2+ | 2007 11 15 | 704 | 0.3+ | 0.4+ | 2007 12 05 | 704 | 0.6+ | 0.3− |

**2007 VZ<sub>101</sub> = 2004 TF<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 67.91094   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.36260108 | $\omega$ | 283.07072 | +0.92240726 | +0.04022559 |
| <i>a</i> | 1.9476757  | $\Omega$ | 75.65328  | +0.15134451 | +0.87737365 |
| <i>e</i> | 0.0961765  | <i>i</i> | 23.35849  | −0.35533038 | +0.47811859 |
| <i>P</i> | 2.72       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 10 13 | 704 | 0.2−  | 0.2−  | 2006 04 20 | 703 | 0.6− | 0.1− | 2007 12 16 | 703 | 0.4−  | 0.1−  |
| 2004 10 13 | 704 | 1.0+  | 0.6+  | 2006 05 20 | 644 | 0.7+ | 0.6+ | 2007 12 16 | 703 | 0.2+  | 0.2+  |
| 2004 10 13 | 704 | 0.9−  | 0.0   | 2006 05 20 | 644 | 0.4+ | 0.0  | 2007 12 16 | 703 | 0.7+  | 0.3+  |
| 2004 10 13 | 704 | 0.7+  | 0.2+  | 2006 05 20 | 644 | 0.7+ | 0.0  | 2007 12 16 | 703 | 1.0−  | 0.7−  |
| 2004 10 15 | 704 | 1.0−  | 0.2+  | 2007 11 02 | G96 | 0.2+ | 0.4− | 2007 12 16 | 595 | (1.9− | 0.5+) |
| 2004 10 15 | 704 | 0.1−  | 0.3−  | 2007 11 02 | G96 | 0.1+ | 0.2− | 2007 12 16 | 595 | 0.5−  | 0.1+  |
| 2004 10 15 | 704 | 0.3−  | 0.3+  | 2007 11 02 | G96 | 0.1− | 0.3− | 2007 12 16 | 595 | 0.1−  | 0.4+  |
| 2004 10 15 | 704 | 0.1−  | 0.2−  | 2007 11 02 | G96 | 0.2+ | 0.5− | 2007 12 17 | J95 | 0.1+  | 0.6+  |
| 2004 10 15 | 704 | 0.1+  | 0.3+  | 2007 11 06 | G96 | 0.0  | 0.1− | 2007 12 17 | J95 | 0.3−  | 0.2−  |
| 2006 04 20 | 703 | (0.9+ | 2.0+) | 2007 11 06 | G96 | 0.1− | 0.4− | 2007 12 17 | J95 | 0.4+  | 0.1−  |
| 2006 04 20 | 703 | 1.1−  | 0.7−  | 2007 11 06 | G96 | 0.2+ | 0.2− |            |     |       |       |
| 2006 04 20 | 703 | 0.2+  | 0.9+  | 2007 11 06 | G96 | 0.1+ | 0.3− |            |     |       |       |

**2007 VO<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 328.92682  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.18928352 | $\omega$ | 52.42903 | +0.05050639 | −0.99137209 |
| <i>a</i> | 3.0041908  | $\Omega$ | 35.25847 | +0.83749225 | −0.02394101 |
| <i>e</i> | 0.1434242  | <i>i</i> | 12.09502 | +0.54411014 | +0.12887286 |
| <i>P</i> | 5.21       | <i>H</i> | 15.7     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 12 | 644 | 0.6+  | 0.4+  | 2007 11 02 | D29 | 0.1+  | 0.0   | 2007 11 20 | 691 | 0.2− | 0.1− |
| 2004 03 12 | 644 | 0.3+  | 0.2+  | 2007 11 02 | D29 | 0.6+  | 0.7−  | 2007 11 20 | 704 | 0.7− | 0.4− |
| 2004 03 12 | 644 | 0.3+  | 0.1+  | 2007 11 02 | D29 | 0.2+  | 0.1−  | 2007 11 20 | 704 | 0.2− | 0.0  |
| 2004 04 21 | 691 | 0.0   | 0.1−  | 2007 11 06 | 691 | 0.2+  | 0.2−  | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2004 04 21 | 691 | 0.1−  | 0.1−  | 2007 11 06 | 691 | 0.5−  | 0.1+  | 2007 11 20 | 691 | 0.2− | 0.2− |
| 2004 04 21 | 691 | 0.2−  | 0.1+  | 2007 11 06 | 691 | 0.1−  | 0.4+  | 2007 12 04 | 703 | 0.0  | 1.5− |
| 2007 09 10 | G96 | 0.1−  | 0.2−  | 2007 11 13 | 699 | 0.3−  | 1.1−  | 2007 12 04 | 703 | 0.1− | 0.0  |
| 2007 09 10 | G96 | 0.3+  | 0.0   | 2007 11 13 | 699 | 0.4+  | 0.2+  | 2007 12 04 | 703 | 0.2− | 0.3+ |
| 2007 09 10 | G96 | (0.1− | 1.6+) | 2007 11 13 | 699 | 0.1+  | 0.2−  | 2007 12 04 | 703 | 0.6+ | 0.6+ |
| 2007 09 10 | G96 | 1.3−  | 0.2+  | 2007 11 13 | 699 | 0.3+  | 0.4−  | 2007 12 13 | 704 | 0.3− | 0.3+ |
| 2007 09 26 | G96 | (2.6+ | 0.2−) | 2007 11 15 | 699 | 0.9+  | 0.1−  | 2007 12 13 | 704 | 0.1− | 0.0  |
| 2007 09 26 | G96 | 0.4+  | 0.2−  | 2007 11 15 | 699 | (1.9+ | 0.0 ) | 2007 12 13 | 704 | 0.2− | 0.5− |
| 2007 09 26 | G96 | 0.1+  | 0.2−  | 2007 11 15 | 699 | 1.3+  | 0.7+  | 2007 12 13 | 704 | 0.3− | 0.2+ |
| 2007 09 26 | G96 | 0.5−  | 0.4−  | 2007 11 15 | 699 | 0.5+  | 0.5+  | 2007 12 13 | 704 | 1.0+ | 0.8+ |
| 2007 10 15 | 691 | 0.1−  | 0.0   | 2007 11 18 | 704 | 0.2+  | 0.4−  | 2007 12 15 | 704 | 0.4+ | 1.2+ |
| 2007 10 15 | 691 | 0.1−  | 0.1+  | 2007 11 18 | 704 | 0.0   | 1.2−  | 2007 12 15 | 704 | 0.6+ | 0.4− |
| 2007 10 15 | 691 | 0.2−  | 0.3+  | 2007 11 18 | 704 | 0.1+  | 0.1+  | 2007 12 15 | 704 | 0.4− | 0.4+ |
| 2007 11 02 | 691 | 0.1−  | 0.1−  | 2007 11 18 | 704 | 0.0   | 0.4+  | 2007 12 15 | A77 | 0.3+ | 0.6− |
| 2007 11 02 | 691 | 0.0   | 0.1−  | 2007 11 18 | 704 | 0.2+  | 0.3+  | 2007 12 15 | A77 | 0.2+ | 0.1+ |
| 2007 11 02 | 691 | 0.2−  | 0.7+  | 2007 11 20 | 704 | 0.7−  | 0.4+  | 2007 12 15 | A77 | 0.9+ | 0.2− |
| 2007 11 02 | D29 | 0.5+  | 0.4−  | 2007 11 20 | 704 | 1.2+  | 0.4−  |            |     |      |      |

**2007 VR<sub>102</sub> = 2004 CR<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 261.15795  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20960305 | $\omega$ | 102.10861 | -0.90070319   | -0.42961521 |
| <i>a</i> | 2.8067538  | $\Omega$ | 52.48324  | +0.36020368   | -0.82156066 |
| <i>e</i> | 0.0444852  | <i>i</i> | 4.66677   | +0.24287254   | -0.37479174 |
| <i>P</i> | 4.70       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |             |            |     |             |      |            |     |      |      |
|------------|-----|-------------|------------|-----|-------------|------|------------|-----|------|------|
| 2002 10 11 | 644 | (1.7+ 0.8+) | 2005 04 07 | G96 | 0.1-        | 0.0  | 2007 11 03 | 691 | 0.0  | 0.3- |
| 2002 10 11 | 644 | 0.6- 0.1-   | 2005 04 07 | G96 | 0.1+        | 0.4+ | 2007 11 03 | 691 | 0.3+ | 0.0  |
| 2002 10 11 | 644 | 0.6- 0.2+   | 2005 06 11 | 691 | 0.1-        | 0.2+ | 2007 11 03 | 691 | 0.0  | 0.2+ |
| 2002 10 30 | 644 | 1.3- 0.4+   | 2005 06 11 | 691 | 0.2+        | 0.0  | 2007 11 07 | 691 | 0.2- | 0.0  |
| 2002 10 30 | 644 | (1.8- 1.5+) | 2005 06 11 | 691 | 0.4+        | 0.1- | 2007 11 07 | 691 | 0.2- | 0.1- |
| 2002 10 30 | 644 | 0.6+ 1.5+   | 2006 08 16 | E12 | 1.1+        | 0.8+ | 2007 11 07 | 691 | 0.4- | 0.1+ |
| 2004 02 15 | 704 | 1.0+ 0.1-   | 2006 08 16 | E12 | 0.3-        | 0.7+ | 2007 11 14 | 691 | 0.6- | 0.7+ |
| 2004 02 15 | 704 | 0.4- 0.0    | 2006 08 16 | E12 | 0.3-        | 1.0+ | 2007 11 14 | 691 | 0.1- | 0.3+ |
| 2004 02 15 | 704 | 0.2+ 0.3+   | 2006 08 16 | E12 | (0.3- 1.7+) |      | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2004 02 15 | 704 | 0.2- 0.5+   | 2007 09 10 | G96 | 0.9+        | 0.2- | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2004 02 15 | 704 | 0.1+ 0.4-   | 2007 09 10 | G96 | 0.2+        | 0.0  | 2007 11 18 | 691 | 0.2- | 0.3+ |
| 2004 02 17 | 691 | 0.1+ 0.0    | 2007 09 10 | G96 | 0.4+        | 0.2- | 2007 11 18 | 691 | 0.0  | 0.3+ |
| 2004 02 17 | 691 | 0.1+ 0.2+   | 2007 09 10 | G96 | 0.8+        | 0.2- | 2007 12 04 | 691 | 0.8+ | 1.4- |
| 2004 02 17 | 691 | 0.1+ 0.5+   | 2007 10 17 | G96 | 0.5+        | 0.3- | 2007 12 04 | 691 | 0.2- | 0.2- |
| 2005 03 10 | G96 | 0.6- 0.0    | 2007 10 17 | G96 | 0.2+        | 0.2- | 2007 12 04 | 691 | 0.2- | 0.2- |
| 2005 03 10 | G96 | 0.9- 0.4+   | 2007 10 17 | G96 | 0.5+        | 0.0  | 2007 12 06 | 691 | 0.1- | 0.4+ |
| 2005 03 10 | G96 | 1.0- 0.4-   | 2007 10 17 | G96 | 0.8+        | 0.5- | 2007 12 06 | 691 | 0.2- | 0.1+ |
| 2005 03 10 | G96 | 0.4- 0.6+   | 2007 11 03 | J87 | 0.2+        | 0.1+ | 2007 12 06 | 691 | 0.2+ | 0.3- |
| 2005 04 07 | G96 | 0.3- 0.1+   | 2007 11 03 | J87 | 0.3+        | 0.1- |            |     |      |      |
| 2005 04 07 | G96 | 0.3- 0.0    | 2007 11 03 | J87 | 0.5+        | 0.2- |            |     |      |      |

**2007 VS<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 105.68963  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20284130 | $\omega$ | 95.64843  | +0.11677156   | +0.99315861 |
| <i>a</i> | 2.8687881  | $\Omega$ | 181.05799 | -0.92398306   | +0.10840919 |
| <i>e</i> | 0.0275771  | <i>i</i> | 1.92453   | -0.36416989   | +0.04339847 |
| <i>P</i> | 4.86       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |           |            |     |      |      |            |     |      |      |
|------------|-----|-----------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 25 | 691 | 0.1- 0.0  | 2005 04 04 | G96 | 0.5- | 0.1- | 2007 10 18 | G96 | 0.0  | 0.0  |
| 2000 03 25 | 691 | 0.1- 0.3- | 2005 04 04 | G96 | 0.3+ | 0.1+ | 2007 10 18 | G96 | 0.0  | 0.0  |
| 2000 03 25 | 691 | 0.2- 0.3- | 2007 09 11 | G96 | 0.5+ | 0.3+ | 2007 10 18 | G96 | 0.4+ | 0.1- |
| 2002 10 07 | 291 | 0.2+ 0.1- | 2007 09 11 | G96 | 0.2- | 0.1+ | 2007 10 18 | G96 | 0.5+ | 0.2- |
| 2002 10 07 | 291 | 0.1+ 0.1+ | 2007 09 11 | G96 | 0.4- | 0.1- | 2007 11 03 | 691 | 0.5- | 0.4+ |
| 2002 10 07 | 291 | 0.2- 0.3- | 2007 09 11 | G96 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.2- | 0.0  |
| 2005 03 12 | 695 | 0.2+ 0.1+ | 2007 10 07 | G96 | 0.6+ | 0.2- | 2007 11 03 | 691 | 0.2- | 0.1+ |
| 2005 03 12 | 695 | 0.2+ 0.1+ | 2007 10 07 | G96 | 0.3+ | 0.3- | 2007 11 07 | 691 | 0.5- | 0.0  |
| 2005 04 04 | G96 | 0.2- 0.1+ | 2007 10 07 | G96 | 0.5+ | 0.3- | 2007 11 07 | 691 | 0.3- | 0.5+ |
| 2005 04 04 | G96 | 0.1+ 0.1- | 2007 10 07 | G96 | 0.1+ | 0.3- | 2007 11 07 | 691 | 0.6- | 0.2+ |

**2007 VX<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.96848   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24301490 | $\omega$ | 140.35407 | +0.33763423   | +0.94101932 |
| <i>a</i> | 2.5432015  | $\Omega$ | 149.36021 | -0.87420988   | +0.32217152 |
| <i>e</i> | 0.2451454  | <i>i</i> | 2.47862   | -0.34894156   | +0.10338352 |
| <i>P</i> | 4.06       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |           |            |     |      |      |            |     |      |      |
|------------|-----|-----------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 28 | 691 | 0.0 0.0   | 2006 04 09 | 291 | 0.2+ | 0.3- | 2007 11 03 | 691 | 0.6- | 0.4+ |
| 2003 09 28 | 691 | 0.3+ 0.1+ | 2006 04 09 | 291 | 0.1+ | 0.3- | 2007 11 03 | 691 | 0.3- | 0.3+ |
| 2003 09 28 | 691 | 0.1+ 0.1+ | 2007 09 12 | G96 | 0.2+ | 0.3+ | 2007 11 03 | 691 | 0.9- | 0.4+ |
| 2003 10 25 | 691 | 0.2- 0.3- | 2007 09 12 | G96 | 0.1+ | 0.4+ | 2007 11 07 | 691 | 0.0  | 0.3+ |
| 2003 10 25 | 691 | 0.1- 0.1- | 2007 09 12 | G96 | 0.1- | 0.2+ | 2007 11 07 | 691 | 0.6- | 0.2+ |
| 2003 10 25 | 691 | 0.1+ 0.0  | 2007 09 12 | G96 | 0.2- | 0.5+ | 2007 11 07 | 691 | 0.1- | 0.1+ |

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2006 02 27 | 691 | 0.1+ 0.2+ | 2007 10 08 | G96 | 0.1+ 0.2- | 2007 11 09 | 691 | 0.3+ 0.0  |
| 2006 02 27 | 691 | 0.2+ 0.0  | 2007 10 08 | G96 | 0.1+ 0.1- | 2007 11 09 | 691 | 0.1- 0.3+ |
| 2006 02 27 | 691 | 0.1+ 0.4+ | 2007 10 08 | G96 | 0.1+ 1.0- | 2007 11 09 | 691 | 0.2- 0.1- |
| 2006 04 09 | G96 | 0.2- 0.1- | 2007 10 08 | G96 | 0.2+ 0.1- | 2007 11 13 | 691 | 0.1- 0.1- |
| 2006 04 09 | G96 | 0.1- 0.3- | 2007 10 19 | G96 | 0.7+ 0.2- | 2007 11 13 | 691 | 0.3- 1.0- |
| 2006 04 09 | G96 | 0.8- 0.3+ | 2007 10 19 | G96 | 0.5+ 0.2- | 2007 11 13 | 691 | 0.1+ 0.0  |
| 2006 04 09 | G96 | 0.0 0.2+  | 2007 10 19 | G96 | 0.3+ 0.1- |            |     |           |
| 2006 04 09 | 291 | 0.3+ 0.2- | 2007 10 19 | G96 | 0.7+ 0.2- |            |     |           |

**2007 VY<sub>102</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 167.75391  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.31674936 | $\omega$ | 170.25076 | -0.79782292   | +0.59890359 |
| <i>a</i> | 2.1313702  | $\Omega$ | 46.77346  | -0.55934541   | -0.69245011 |
| <i>e</i> | 0.0744193  | <i>i</i> | 5.45212   | -0.22496953   | -0.40227769 |
| <i>P</i> | 3.11       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2003 06 04 | 691 | 0.1+ 0.2- | 2006 05 22 | G96 | 0.3- 0.2- | 2007 10 19 | G96 | 0.0 0.1+  |
| 2003 06 04 | 691 | 0.1- 0.1+ | 2006 05 22 | G96 | 0.2- 0.3+ | 2007 11 03 | 691 | 0.4- 0.4+ |
| 2003 06 04 | 691 | 0.0 0.1-  | 2006 05 22 | G96 | 0.3+ 0.2+ | 2007 11 03 | 691 | 0.3+ 0.0  |
| 2006 04 08 | G96 | 0.2+ 0.2- | 2006 05 22 | G96 | 0.2- 0.2+ | 2007 11 03 | 691 | 0.5- 0.5- |
| 2006 04 08 | G96 | 0.1- 0.0  | 2007 09 13 | G96 | 0.4+ 0.1+ | 2007 11 07 | 691 | 0.0 0.6+  |
| 2006 04 08 | G96 | 0.1- 0.1+ | 2007 09 13 | G96 | 0.5- 0.1- | 2007 11 07 | 691 | 0.5+ 0.5+ |
| 2006 04 08 | G96 | 0.3+ 0.1+ | 2007 09 13 | G96 | 0.7+ 0.3+ | 2007 11 07 | 691 | 0.2- 0.1+ |
| 2006 05 06 | G96 | 0.2- 0.2+ | 2007 09 13 | G96 | 0.2+ 0.6+ | 2007 11 09 | 691 | 0.4- 0.1+ |
| 2006 05 06 | G96 | 0.4+ 0.0  | 2007 10 09 | G96 | 0.4- 0.1- | 2007 11 09 | 691 | 0.2- 0.1- |
| 2006 05 06 | G96 | 0.0 0.1+  | 2007 10 09 | G96 | 0.3+ 0.6- | 2007 11 09 | 691 | 0.0 0.2+  |
| 2006 05 06 | G96 | 0.2+ 0.2+ | 2007 10 09 | G96 | 0.0 0.2-  | 2007 11 13 | 691 | 0.8- 0.5+ |
| 2006 05 22 | G96 | 0.1+ 0.2+ | 2007 10 09 | G96 | 0.4+ 0.1- | 2007 11 13 | 691 | 0.5- 0.1- |
| 2006 05 22 | G96 | 0.2+ 0.0  | 2007 10 19 | G96 | 0.3+ 0.3- | 2007 11 13 | 691 | 0.1- 0.5+ |
| 2006 05 22 | G96 | 0.2+ 0.2+ | 2007 10 19 | G96 | 0.6+ 0.3- |            |     |           |
| 2006 05 22 | G96 | 0.1+ 0.2+ | 2007 10 19 | G96 | 0.2- 0.0  |            |     |           |

**2007 VC<sub>104</sub> = 2003 SB<sub>302</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 44.68133   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26318634 | $\omega$ | 89.71212  | +0.96943401   | +0.23833790 |
| <i>a</i> | 2.4115364  | $\Omega$ | 256.49890 | -0.24212177   | +0.89092257 |
| <i>e</i> | 0.1882678  | <i>i</i> | 3.43423   | -0.03968315   | +0.38659025 |
| <i>P</i> | 3.74       | <i>H</i> | 18.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2003 09 17 | 644 | 0.0 0.2-  | 2007 10 14 | G96 | 0.2+ 0.3- | 2007 11 07 | 691 | 0.1+ 0.0  |
| 2003 09 17 | 644 | 0.1- 0.1- | 2007 10 14 | G96 | 0.2+ 0.1+ | 2007 11 07 | 691 | 0.0 0.1-  |
| 2003 09 17 | 644 | 0.0 0.0   | 2007 10 14 | G96 | 0.8- 0.1- | 2007 11 18 | 691 | 0.2- 0.2+ |
| 2003 09 20 | 691 | 0.2+ 0.1- | 2007 11 03 | 691 | 0.1- 0.5+ | 2007 11 18 | 691 | 0.4+ 0.5- |
| 2003 09 20 | 691 | 0.0 0.2+  | 2007 11 03 | 691 | 0.1- 0.2- | 2007 11 18 | 691 | 0.2- 0.2+ |
| 2003 09 20 | 691 | 0.2- 0.0  | 2007 11 03 | 691 | 0.1- 0.1- |            |     |           |
| 2007 10 14 | G96 | 0.7+ 0.1- | 2007 11 07 | 691 | 0.2+ 0.1+ |            |     |           |

**2007 VS<sub>104</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 24.87242   |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21122480 | $\omega$ | 5.23439  | +0.93186172   | -0.36266084 |
| <i>a</i> | 2.7923688  | $\Omega$ | 16.04160 | +0.33147709   | +0.83921980 |
| <i>e</i> | 0.1011085  | <i>i</i> | 2.18352  | +0.14750143   | +0.40520025 |
| <i>P</i> | 4.67       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |           |            |     |           |            |     |           |
|------------|-----|-----------|------------|-----|-----------|------------|-----|-----------|
| 2002 08 12 | 807 | 0.5- 0.2+ | 2007 11 03 | 691 | 0.0 0.1+  | 2007 11 14 | 691 | 0.2- 0.1- |
| 2002 08 12 | 807 | 0.4+ 0.1- | 2007 11 03 | 691 | 0.0 0.1+  | 2007 11 14 | 691 | 0.1- 0.1- |
| 2002 10 10 | 291 | 0.4- 0.0  | 2007 11 07 | 691 | 0.0 0.2+  | 2007 11 18 | 691 | 0.5- 0.2+ |
| 2002 10 10 | 291 | 0.1+ 0.0  | 2007 11 07 | 691 | 0.1- 0.2+ | 2007 11 18 | 691 | 0.4+ 0.1- |



## 2007 DEC. 24

2002 10 10 291 0.4+ 0.1- 2007 11 07 691 0.8+ 0.3- 2007 11 18 691 0.0 0.0  
 2007 11 03 691 0.3- 0.1- 2007 11 14 691 0.1- 0.0

2007 VX<sub>104</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

*M* 18.50683 (2000.0) **P** **Q**  
*n* 0.26709385  $\omega$  138.56061 +0.92949483 -0.36233644  
*a* 2.3879586  $\Omega$  242.80648 +0.31470947 +0.87658358  
*e* 0.1870702 *i* 4.44479 +0.19234685 +0.31672312  
*P* 3.69 *H* 17.7 *G* 0.15 *U* 4

Residuals in seconds of arc

2003 09 22 691 0.1+ 0.1- 2007 11 07 691 0.1- 0.2- 2007 12 05 H07 0.3+ 0.1-  
 2003 09 22 691 0.0 0.0 2007 11 07 691 0.1+ 0.0 2007 12 05 704 0.3- 0.2-  
 2003 09 22 691 0.0 0.1- 2007 11 14 691 0.1- 0.2- 2007 12 05 704 (0.1- 1.8+)  
 2003 09 23 644 0.3- 0.3+ 2007 11 14 691 0.3- 0.2+ 2007 12 05 704 0.2+ 0.2+  
 2003 09 23 644 0.2- 0.5+ 2007 11 14 691 0.1- 0.4+ 2007 12 05 704 0.9+ 1.5+  
 2003 09 23 644 0.2- 0.2+ 2007 11 18 691 0.2+ 0.1+ 2007 12 06 G96 0.5+ 0.2-  
 2007 10 14 G96 0.0 0.3- 2007 11 18 691 0.0 0.0 2007 12 06 G96 0.2+ 0.2-  
 2007 10 14 G96 0.4+ 0.3+ 2007 11 18 691 0.0 0.1+ 2007 12 06 G96 0.4+ 0.3+  
 2007 10 14 G96 0.2+ 0.4- 2007 12 04 G96 0.0 0.0 2007 12 06 G96 0.0 0.2-  
 2007 10 14 G96 0.5+ 0.5- 2007 12 04 G96 0.6+ 0.2- 2007 12 15 G96 0.0 0.0  
 2007 11 03 691 0.3- 0.2- 2007 12 04 G96 0.7+ 0.4- 2007 12 15 G96 0.2- 0.0  
 2007 11 03 691 0.2- 0.1+ 2007 12 04 G96 0.4+ 0.2- 2007 12 15 G96 0.3- 0.3-  
 2007 11 03 691 0.0 0.0 2007 12 05 H07 0.9- 0.9+ 2007 12 15 G96 0.0 0.2-  
 2007 11 07 691 0.0 0.2- 2007 12 05 H07 0.4- 0.4-

2007 VJ<sub>105</sub> = 1998 QN<sub>28</sub> = 2005 GR<sub>147</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

*M* 358.15599 (2000.0) **P** **Q**  
*n* 0.22661942  $\omega$  172.40544 +0.57960863 -0.81131010  
*a* 2.6644320  $\Omega$  242.14084 +0.74303802 +0.56464488  
*e* 0.0630648 *i* 4.95437 +0.33458681 +0.15149948  
*P* 4.35 *H* 16.3 *G* 0.15 *U* 1

Residuals in seconds of arc

1998 08 26 684 0.6+ 0.2+ 2007 10 14 G96 0.3+ 0.4- 2007 11 18 300 0.1+ 0.1+  
 1998 08 26 684 0.1+ 0.3+ 2007 10 14 G96 0.2+ 0.1- 2007 11 18 300 0.1+ 0.0  
 1998 08 27 684 0.2- 0.1- 2007 10 14 G96 0.1+ 0.0 2007 12 03 703 0.2- 1.1+  
 1998 08 27 684 0.6- 0.1+ 2007 10 14 G96 0.0 0.2- 2007 12 03 703 0.1+ 0.7+  
 1998 08 27 684 0.0 0.1+ 2007 10 30 691 0.0 0.1+ 2007 12 03 703 1.0+ 0.2+  
 2001 05 23 807 0.9- 0.2+ 2007 10 30 691 0.1- 0.2- 2007 12 03 703 (1.9+ 0.5+)  
 2001 05 23 807 0.6- 0.0 2007 10 30 691 0.0 0.1+ 2007 12 04 699 0.1- 0.4+  
 2002 08 28 644 0.1- 0.5+ 2007 11 03 691 0.2- 0.2- 2007 12 04 G96 0.4+ 0.3-  
 2002 08 28 644 0.3- 0.7+ 2007 11 03 691 0.2- 0.0 2007 12 04 699 0.4+ 0.4-  
 2002 08 28 644 0.2+ 0.8+ 2007 11 03 691 0.1- 0.0 2007 12 04 G96 0.3+ 0.3-  
 2002 09 13 644 0.4- 0.6+ 2007 11 07 691 0.0 0.0 2007 12 04 G96 0.2+ 0.2-  
 2002 09 13 644 0.0 0.6+ 2007 11 07 691 0.0 0.5+ 2007 12 04 G96 0.2+ 0.1-  
 2002 09 13 644 0.0 0.7+ 2007 11 07 691 0.4- 0.0 2007 12 04 699 0.5+ 0.8+  
 2005 04 11 691 0.2+ 0.0 2007 11 15 704 (0.4- 2.2+) 2007 12 04 699 0.9+ 0.7+  
 2005 04 11 691 0.0 0.2+ 2007 11 15 704 0.3- 0.3+ 2007 12 05 704 0.2+ 0.5-  
 2005 04 11 691 0.2+ 0.1+ 2007 11 15 704 0.4- 0.4- 2007 12 05 704 0.3+ 0.3-  
 2005 04 15 691 0.2+ 0.6+ 2007 11 15 704 0.9- 0.3+ 2007 12 05 704 0.0 0.1-  
 2005 04 15 691 0.3+ 0.4+ 2007 11 15 704 0.7- 1.1+ 2007 12 05 704 1.0- 1.4+  
 2005 04 15 691 0.1+ 0.5+ 2007 11 18 300 0.5+ 0.1+ 2007 12 15 G96 0.1+ 0.0  
 2007 08 24 691 0.1- 0.1+ 2007 11 18 300 0.1- 0.2- 2007 12 15 G96 0.5+ 0.1-  
 2007 08 24 691 0.1+ 0.2- 2007 11 18 300 0.0 0.8+ 2007 12 15 G96 0.4+ 0.2-  
 2007 08 24 691 0.1- 0.3+ 2007 11 18 300 0.0 0.0 2007 12 15 G96 0.2+ 0.1-

## M.P.O. 130003

2007 VQ<sub>105</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

*M* 354.39461 (2000.0) **P** **Q**  
*n* 0.24211239  $\omega$  154.61608 +0.51863131 -0.85480320  
*a* 2.5495178  $\Omega$  264.13862 +0.78128381 +0.48247953  
*e* 0.0917833 *i* 1.05120 +0.34729983 +0.19111513  
*P* 4.07 *H* 17.8 *G* 0.15 *U* 3

Residuals in seconds of arc

2000 01 12 691 0.3+ 0.2- 2007 09 15 G96 0.5+ 0.3- 2007 11 14 691 0.2- 0.2-  
 2000 01 12 691 0.1- 0.0 2007 09 15 G96 0.2+ 0.0 2007 11 14 691 0.1- 0.2-  
 2000 01 12 691 0.1- 0.5- 2007 09 15 G96 0.1+ 0.4- 2007 11 18 691 0.3+ 0.3-  
 2003 11 24 691 0.3- 0.2+ 2007 11 03 691 0.1- 0.0 2007 11 18 691 0.3+ 0.1-  
 2003 11 24 691 0.0 0.4+ 2007 11 03 691 0.0 0.1+ 2007 11 18 691 0.3+ 0.1-  
 2003 11 24 691 0.4+ 0.0 2007 11 03 691 0.2- 0.2- 2007 12 04 G96 0.7+ 0.4-  
 2003 12 14 691 0.1+ 0.3+ 2007 11 07 691 0.7- 0.9+ 2007 12 04 G96 0.4+ 0.0  
 2003 12 14 691 0.2- 0.3+ 2007 11 07 691 0.1+ 0.2- 2007 12 04 G96 0.1+ 0.1-  
 2003 12 14 691 0.2- 0.4+ 2007 11 07 691 0.2- 0.1- 2007 12 04 G96 0.4+ 0.0  
 2007 09 15 G96 0.3- 0.0 2007 11 14 691 0.1+ 0.2-

2007 VT<sub>105</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

*M* 317.81809 (2000.0) **P** **Q**  
*n* 0.17492420  $\omega$  52.39151 -0.25962775 -0.95261580  
*a* 3.1664268  $\Omega$  53.40032 +0.81211926 -0.30417563  
*e* 0.1033552 *i* 11.38534 +0.52254736 -0.00057144  
*P* 5.63 *H* 15.7 *G* 0.15 *U* 2

Residuals in seconds of arc

2001 10 24 644 0.7- 0.9+ 2007 10 17 G96 0.4+ 0.3- 2007 11 15 704 0.9+ 0.2-  
 2001 10 24 644 0.4- 0.2+ 2007 10 17 G96 0.0 0.2- 2007 11 15 704 (0.8- 2.1+)  
 2001 10 24 644 0.2+ 0.3+ 2007 10 17 G96 0.8+ 0.0 2007 11 15 704 1.1+ 0.4+  
 2004 03 31 691 0.3+ 0.0 2007 10 30 691 0.2+ 0.6+ 2007 11 17 300 1.0+ 0.4-  
 2004 03 31 691 0.2- 0.1+ 2007 10 30 691 1.2- 0.7+ 2007 11 17 300 0.4- 0.2-  
 2004 03 31 691 0.0 0.4- 2007 10 30 691 0.3- 1.2- 2007 11 17 300 0.1- 0.5-  
 2004 04 21 599 0.1+ 0.1- 2007 11 03 691 0.7- 0.4- 2007 11 17 300 0.5+ 0.3-  
 2004 04 21 599 0.6+ 0.3+ 2007 11 03 691 0.0 0.1+ 2007 11 17 300 0.7+ 0.6+  
 2004 04 21 599 0.0 0.0 2007 11 03 691 0.1- 0.1+ 2007 11 18 691 0.1+ 0.0  
 2004 05 24 291 0.0 0.2+ 2007 11 07 691 0.1- 0.0 2007 11 18 691 0.8- 1.1+  
 2004 05 24 291 0.1- 0.3+ 2007 11 07 691 0.0 0.2- 2007 11 18 691 0.4- 0.0  
 2004 05 24 291 0.1+ 0.2+ 2007 11 07 691 0.1+ 0.1- 2007 12 15 G96 1.0+ 0.2-  
 2007 10 09 G96 1.1+ 0.1+ 2007 11 14 691 0.2+ 0.0 2007 12 15 G96 0.3+ 0.2-  
 2007 10 09 G96 0.6+ 0.1- 2007 11 14 691 0.1+ 0.1+ 2007 12 15 G96 0.7+ 0.1-  
 2007 10 09 G96 0.7+ 0.2- 2007 11 14 691 0.1+ 0.0 2007 12 15 G96 1.0+ 0.2-  
 2007 10 09 G96 0.7+ 0.6- 2007 11 15 704 (0.4+ 1.9+)  
 2007 10 17 G96 0.3+ 0.2- 2007 11 15 704 (0.6+ 1.9+)

2007 VW<sub>106</sub> = 2001 TQ<sub>245</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

*M* 74.10370 (2000.0) **P** **Q**  
*n* 0.18197833  $\omega$  332.92804 +0.82670680 +0.56262795  
*a* 3.0840608  $\Omega$  352.83282 -0.51268993 +0.75157325  
*e* 0.1039115 *i* 1.09332 -0.23174319 +0.34436527  
*P* 5.42 *H* 17.1 *G* 0.15 *U* 0

Residuals in seconds of arc

1999 03 22 645 0.0 0.1+ 2005 05 07 G96 0.9+ 0.4+ 2007 11 14 691 0.3- 0.2+  
 1999 03 22 645 0.0 0.0 2005 05 07 G96 0.1- 0.9+ 2007 11 14 691 0.1+ 0.3+  
 2001 10 14 645 0.0 0.0 2007 11 03 691 0.1- 0.3+ 2007 11 14 691 0.6+ 0.3-  
 2001 10 14 645 0.0 0.0 2007 11 03 691 0.0 0.2+ 2007 11 18 691 0.0 0.1-  
 2001 10 15 645 0.0 0.0 2007 11 03 691 0.1- 0.1- 2007 11 18 691 0.0 0.1+  
 2001 10 15 645 0.1+ 0.0 2007 11 07 691 0.0 0.1- 2007 11 18 691 0.5- 0.3-  
 2005 05 07 G96 0.2- 0.2- 2007 11 07 691 0.1+ 0.0  
 2005 05 07 G96 0.0 0.4+ 2007 11 07 691 0.2+ 0.3+

**2007 VM<sub>107</sub> = 2005 JQ<sub>155</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.18230   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.20201945 | $\omega$ | 173.30394 | +0.77848994 |          |          | -0.62745663 |
| <i>a</i> | 2.8765632  | $\Omega$ | 225.57166 | +0.57482902 |          |          | +0.72288689 |
| <i>e</i> | 0.0512983  | <i>i</i> | 1.27271   | +0.25204169 |          |          | +0.28936608 |
| <i>P</i> | 4.88       | <i>H</i> | 16.8      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 09 29 | 691 | 0.1+ | 0.1- | 2005 05 13 | G96 | 0.0  | 0.2- | 2007 11 14 | 691 | 0.3- | 0.6+ |
| 1997 09 29 | 691 | 0.1- | 0.1- | 2005 05 13 | G96 | 0.1- | 0.2- | 2007 11 18 | 691 | 0.3+ | 0.2+ |
| 1997 09 29 | 691 | 0.1- | 0.0  | 2007 10 17 | G96 | 0.2- | 0.7+ | 2007 11 18 | 691 | 0.3+ | 0.0  |
| 2002 11 09 | 695 | 1.0+ | 0.6+ | 2007 10 17 | G96 | 0.3+ | 0.4- | 2007 11 18 | 691 | 0.2- | 0.3- |
| 2002 11 09 | 695 | 0.3+ | 1.0+ | 2007 10 17 | G96 | 0.2+ | 0.1- | 2007 12 06 | G96 | 0.8+ | 0.6- |
| 2004 02 13 | 691 | 0.0  | 0.5+ | 2007 10 17 | G96 | 0.6+ | 0.5- | 2007 12 06 | G96 | 0.1- | 0.2- |
| 2004 02 13 | 691 | 0.0  | 0.5- | 2007 11 03 | 691 | 0.2- | 0.0  | 2007 12 06 | G96 | 0.1+ | 0.1+ |
| 2004 02 13 | 691 | 0.0  | 0.1- | 2007 11 03 | 691 | 0.1- | 0.1- | 2007 12 06 | G96 | 0.7+ | 0.4+ |
| 2005 05 04 | G96 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.4- | 0.2+ | 2007 12 15 | G96 | 0.1- | 0.1+ |
| 2005 05 04 | G96 | 0.6+ | 0.4- | 2007 11 07 | 691 | 0.1+ | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.4- |
| 2005 05 04 | G96 | 0.0  | 0.4+ | 2007 11 07 | 691 | 0.1+ | 0.1- | 2007 12 15 | G96 | 0.9+ | 0.0  |
| 2005 05 04 | G96 | 0.3- | 0.0  | 2007 11 07 | 691 | 0.1- | 0.4- | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2005 05 13 | G96 | 0.1- | 0.2+ | 2007 11 14 | 691 | 0.2- | 0.0  |            |     |      |      |
| 2005 05 13 | G96 | 0.2+ | 0.8+ | 2007 11 14 | 691 | 0.5- | 0.1+ |            |     |      |      |

**2007 VK<sub>108</sub> = 2000 KV<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 64.18116   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.31215720 | $\omega$ | 39.96890  | +0.79849930 |          |          | +0.60196715 |
| <i>a</i> | 2.1522224  | $\Omega$ | 283.01922 | -0.55384756 |          |          | +0.73078059 |
| <i>e</i> | 0.1964563  | <i>i</i> | 0.34502   | -0.23590624 |          |          | +0.32186221 |
| <i>P</i> | 3.16       | <i>H</i> | 18.5      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 07 | 691 | 0.1- | 0.4- | 2007 10 10 | G96 | 0.7+ | 0.2+ | 2007 11 07 | 691 | 0.2+ | 0.0  |
| 1991 10 07 | 691 | 0.3- | 0.3+ | 2007 10 10 | G96 | 0.7+ | 0.6- | 2007 11 07 | 691 | 0.1- | 0.1- |
| 1991 10 07 | 691 | 0.3+ | 0.2+ | 2007 10 10 | G96 | 0.5+ | 0.2+ | 2007 11 07 | 691 | 0.3- | 0.2- |
| 2000 05 24 | 568 | 0.1+ | 0.0  | 2007 10 10 | G96 | 0.4+ | 0.2+ | 2007 11 14 | 691 | 0.5+ | 1.0- |
| 2000 05 24 | 568 | 0.6- | 0.2+ | 2007 10 17 | G96 | 0.7+ | 0.1- | 2007 11 14 | 691 | 0.2+ | 0.2+ |
| 2000 05 24 | 568 | 0.5+ | 0.1- | 2007 10 17 | G96 | 0.6+ | 0.1+ | 2007 11 14 | 691 | 0.5- | 1.3+ |
| 2000 05 25 | 568 | 0.0  | 0.1+ | 2007 10 17 | G96 | 0.6+ | 0.3- | 2007 11 18 | 691 | 0.3- | 0.1- |
| 2000 05 25 | 568 | 0.5- | 0.2+ | 2007 10 17 | G96 | 0.5- | 0.5- | 2007 11 18 | 691 | 0.3- | 0.2- |
| 2000 05 25 | 568 | 0.5+ | 0.0  | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2003 04 01 | 695 | 0.4+ | 0.4+ | 2007 11 03 | 691 | 0.1+ | 0.2+ |            |     |      |      |
| 2003 04 01 | 695 | 0.2+ | 0.4+ | 2007 11 03 | 691 | 0.1- | 0.2- |            |     |      |      |

**2007 VT<sub>108</sub> = 2003 XY<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 46.78280   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.24312276 | $\omega$ | 126.56640 | +0.96568581 |          |          | +0.25946612 |
| <i>a</i> | 2.5424493  | $\Omega$ | 218.39887 | -0.24372803 |          |          | +0.89032498 |
| <i>e</i> | 0.1948126  | <i>i</i> | 1.04470   | -0.08970821 |          |          | +0.37416409 |
| <i>P</i> | 4.05       | <i>H</i> | 17.8      | <i>G</i>    | 0.15     | <i>U</i> | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 01 | 691 | 0.0  | 0.4- | 2007 11 03 | 691 | 0.2- | 0.2+ | 2007 11 18 | 691 | 0.2- | 0.2- |
| 2003 12 01 | 691 | 0.2+ | 0.1- | 2007 11 03 | 691 | 0.5- | 0.2+ | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2003 12 01 | 691 | 0.2+ | 0.1- | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 12 04 | G96 | 0.5+ | 0.4- |
| 2003 12 14 | 691 | 0.3- | 0.1- | 2007 11 07 | 691 | 0.0  | 0.2- | 2007 12 04 | G96 | 0.1- | 0.1- |
| 2003 12 14 | 691 | 0.1- | 0.3+ | 2007 11 07 | 691 | 0.2- | 0.1- | 2007 12 04 | G96 | 0.6+ | 0.1- |
| 2003 12 14 | 691 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.3- | 0.2- | 2007 12 04 | G96 | 0.6+ | 0.0  |
| 2007 10 17 | G96 | 0.6+ | 0.1+ | 2007 11 14 | 691 | 0.4- | 0.4- | 2007 12 15 | G96 | 0.7+ | 1.4+ |
| 2007 10 17 | G96 | 0.4+ | 0.3+ | 2007 11 14 | 691 | 0.1- | 0.4+ | 2007 12 15 | G96 | 1.0+ | 0.1+ |
| 2007 10 17 | G96 | 0.2+ | 0.1- | 2007 11 14 | 691 | 0.1+ | 0.1- | 2007 12 15 | G96 | 0.5- | 0.1- |
| 2007 10 17 | G96 | 1.1+ | 0.1- | 2007 11 18 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.6+ | 0.0  |

**2007 VF<sub>111</sub> = 1994 PZ<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.28878   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.31289814 | $\omega$ | 54.27682  | +0.75158816 |          |          | +0.65920159 |
| <i>a</i> | 2.1488234  | $\Omega$ | 264.47146 | -0.61267391 |          |          | +0.68423268 |
| <i>e</i> | 0.1840697  | <i>i</i> | 1.37265   | -0.24442979 |          |          | +0.31189567 |
| <i>P</i> | 3.15       | <i>H</i> | 17.5      | <i>G</i>    | 0.15     | <i>U</i> | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1991 10 10 | 691 | 0.1+  | 0.4-  | 2006 04 19 | 691 | 0.1+ | 0.8+ | 2007 11 18 | 691 | 0.1- | 0.2+ |
| 1991 10 10 | 691 | 0.0   | 0.3-  | 2006 04 19 | 691 | 0.1+ | 0.7+ | 2007 11 18 | 691 | 0.2- | 0.4+ |
| 1991 10 10 | 691 | 0.4+  | 0.8-  | 2007 10 16 | G96 | 0.3+ | 0.1- | 2007 12 03 | 703 | 1.4+ | 0.5+ |
| 1994 08 10 | 809 | (1.6+ | 2.5+) | 2007 10 16 | G96 | 0.3+ | 0.2+ | 2007 12 03 | 703 | 0.3- | 0.4+ |
| 1994 08 10 | 809 | (1.9+ | 3.1+) | 2007 10 16 | G96 | 0.4+ | 0.1+ | 2007 12 03 | 703 | 1.3+ | 0.5+ |
| 1994 08 10 | 809 | 1.9+  | 1.6+  | 2007 10 16 | G96 | 0.4+ | 0.3+ | 2007 12 03 | 703 | 1.0- | 1.0+ |
| 1994 08 11 | 809 | 1.2-  | 1.9+  | 2007 11 03 | 691 | 0.4- | 0.1- | 2007 12 05 | 704 | 1.1+ | 0.4+ |
| 1994 08 11 | 809 | 1.4-  | 1.5+  | 2007 11 03 | 691 | 0.2- | 0.2+ | 2007 12 05 | 704 | 0.4+ | 0.0  |
| 1994 08 11 | 809 | 1.2-  | 0.9+  | 2007 11 03 | 691 | 0.1- | 0.2+ | 2007 12 05 | 704 | 0.3+ | 0.4- |
| 1999 01 07 | 691 | 0.2+  | 0.2-  | 2007 11 07 | 691 | 0.4- | 0.3+ | 2007 12 05 | 704 | 0.3- | 0.1- |
| 1999 01 07 | 691 | 0.3-  | 0.3-  | 2007 11 07 | 691 | 0.2- | 0.2+ | 2007 12 05 | 704 | 1.1+ | 0.1+ |
| 1999 01 07 | 691 | 0.0   | 0.2-  | 2007 11 07 | 691 | 0.0  | 0.2+ | 2007 12 15 | G96 | 0.1+ | 0.1+ |
| 2006 03 25 | 691 | 0.2+  | 0.2-  | 2007 11 14 | 691 | 0.1+ | 0.1+ | 2007 12 15 | G96 | 0.1- | 0.2+ |
| 2006 03 25 | 691 | 0.1+  | 0.3-  | 2007 11 14 | 691 | 0.4- | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2006 03 25 | 691 | 0.1+  | 0.5+  | 2007 11 14 | 691 | 0.3- | 1.4+ | 2007 12 15 | G96 | 0.0  | 2.7- |
| 2006 04 19 | 691 | 0.2+  | 0.4+  | 2007 11 18 | 691 | 0.4+ | 0.3- |            |     |      |      |

**2007 VW<sub>111</sub> = 2005 EV<sub>263</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.57036    |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.27956363 | $\omega$ | 170.38877 | +0.75421649 |          |          | -0.65542679 |
| <i>a</i> | 2.3164109  | $\Omega$ | 230.63944 | +0.59898415 |          |          | +0.71150018 |
| <i>e</i> | 0.1594742  | <i>i</i> | 2.94056   | +0.26902690 |          |          | +0.25334406 |
| <i>P</i> | 3.53       | <i>H</i> | 18.0      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 15 | 012 | 0.5+ | 0.3+ | 2005 03 17 | G96 | 1.2- | 0.2- | 2007 11 14 | 691 | 0.2- | 0.2- |
| 2000 12 15 | 012 | 0.1+ | 0.3+ | 2005 03 17 | G96 | 0.0  | 0.3+ | 2007 11 14 | 691 | 0.1- | 0.2- |
| 2000 12 15 | 012 | 0.7- | 0.2- | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2005 03 13 | G96 | 0.6- | 0.0  | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2005 03 13 | G96 | 0.2+ | 0.2- | 2007 11 03 | 691 | 0.1- | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2005 03 13 | G96 | 0.0  | 0.4- | 2007 11 07 | 691 | 0.3+ | 0.1+ | 2007 12 04 | G96 | 0.5+ | 0.3- |
| 2005 03 13 | G96 | 0.0  | 0.3- | 2007 11 07 | 691 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.3+ |
| 2005 03 17 | G96 | 0.6+ | 0.2+ | 2007 11 07 | 691 | 0.2+ | 0.2- | 2007 12 04 | G96 | 0.1+ | 0.5+ |
| 2005 03 17 | G96 | 1.0+ | 0.4+ | 2007 11 14 | 691 | 0.0  | 0.1+ | 2007 12 04 | G96 | 0.3+ | 0.2- |

**2007 VU<sub>112</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 86.43744   |          | (2000.0)  |             | <b>P</b> |          | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|----------|-------------|
| <i>n</i> | 0.24250311 | $\omega$ | 73.04740  | +0.62603029 |          |          | +0.77913873 |
| <i>a</i> | 2.5467785  | $\Omega$ | 235.75421 | -0.72940509 |          |          | +0.57053068 |
| <i>e</i> | 0.1822367  | <i>i</i> | 2.22388   | -0.27577942 |          |          | +0.25968749 |
| <i>P</i> | 4.06       | <i>H</i> | 16.8      | <i>G</i>    | 0.15     | <i>U</i> | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 16 | 291 | 0.0  | 0.2+ | 2007 11 03 | 691 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.4- | 0.1- |
| 2003 11 16 | 291 | 0.5- | 0.2- | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.2- | 0.1+ |
| 2003 11 16 | 291 | 0.1+ | 0.4+ | 2007 11 03 | 691 | 0.2+ | 0.1- | 2007 12 06 | G96 | 0.2+ | 0.7- |
| 2003 11 30 | 691 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.1- | 0.1+ | 2007 12 06 | G96 | 0.8+ | 0.6- |
| 2003 11 30 | 691 | 0.2+ | 0.1- | 2007 11 07 | 691 | 0.3+ | 0.1+ | 2007 12 06 | G96 | 0.2- | 0.3+ |
| 2003 11 30 | 691 | 0.1+ | 0.1+ | 2007 11 07 | 691 | 0.2+ | 0.2+ | 2007 12 06 | G96 | 0.1- | 0.7- |
| 2007 09 14 | G96 | 0.3+ | 0.1- | 2007 11 14 | 691 | 0.4- | 0.0  | 2007 12 15 | G96 | 0.4+ | 0.2+ |
| 2007 09 14 | G96 | 0.1- | 0.1- | 2007 11 14 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.4+ | 0.2- |
| 2007 09 14 | G96 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.2- | 0.1+ | 2007 12 15 | G96 | 0.7+ | 0.6- |
| 2007 09 14 | G96 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.1- | 0.3- | 2007 12 15 | G96 | 0.0  | 0.1+ |

2007 DEC. 24

M.P.O. 130005

**2007 VO<sub>113</sub> = 2004 HX<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 301.47098  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17732827 | $\omega$ 26.23295  | -0.60168319   | -0.79676661 |
| <i>a</i> | 3.1377432  | $\Omega$ 100.80833 | +0.72242859   | -0.57278703 |
| <i>e</i> | 0.0859954  | <i>i</i> 3.27053   | +0.34069673   | -0.19255645 |
| <i>P</i> | 5.56       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 04 23 | 691 | 0.1- | 0.2- | 2007 11 03 | 691 | 0.3- | 0.1- | 2007 12 03 | 703 | 0.6+  | 0.4-  |
| 2004 04 23 | 691 | 0.1+ | 0.1- | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 1.1-  | 0.1+  |
| 2004 04 23 | 691 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.3+ | 0.1- | 2007 12 03 | 703 | 0.0   | 0.4-  |
| 2004 05 13 | 691 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.5+  | 0.1-  |
| 2004 05 13 | 691 | 0.1- | 0.0  | 2007 11 08 | 691 | 0.1- | 0.1+ | 2007 12 03 | 703 | 1.0-  | 1.3+  |
| 2004 05 13 | 691 | 0.2+ | 0.2+ | 2007 11 08 | 691 | 0.1+ | 0.1- | 2007 12 03 | 703 | 0.1-  | 0.4+  |
| 2007 10 20 | G96 | 0.1- | 0.0  | 2007 11 08 | 691 | 0.0  | 0.0  | 2007 12 04 | 699 | (3.1+ | 0.1+) |
| 2007 10 20 | G96 | 0.1- | 0.2- | 2007 11 19 | 691 | 0.2- | 0.2- | 2007 12 04 | 699 | 0.8+  | 0.1-  |
| 2007 10 20 | G96 | 0.0  | 0.3- | 2007 11 19 | 691 | 0.2- | 0.1- | 2007 12 04 | 699 | 0.6+  | 0.1+  |
| 2007 10 20 | G96 | 0.1+ | 0.2- | 2007 11 19 | 691 | 0.1- | 0.2- | 2007 12 04 | 699 | 0.0   | 0.5-  |
| 2007 11 03 | 691 | 0.4+ | 0.5+ | 2007 12 03 | 703 | 1.1+ | 0.4+ |            |     |       |       |
| 2007 11 03 | 691 | 0.1+ | 0.2+ | 2007 12 03 | 703 | 0.9- | 0.0  |            |     |       |       |

**2007 VB<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 222.50433  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28187159 | $\omega$ 347.15583 | -0.91843177   | +0.39251436 |
| <i>a</i> | 2.3037491  | $\Omega$ 216.08005 | -0.35515801   | -0.87290780 |
| <i>e</i> | 0.1030074  | <i>i</i> 4.78723   | -0.17420064   | -0.28976621 |
| <i>P</i> | 3.50       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 27 | 691 | 0.3- | 0.5- | 2007 11 03 | 691 | 0.7- | 0.3- | 2007 11 18 | G96 | 0.4+ | 0.4- |
| 2003 09 27 | 691 | 0.2+ | 0.0  | 2007 11 03 | 691 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.4- |
| 2003 09 27 | 691 | 0.2- | 0.1- | 2007 11 07 | 691 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.2+ | 1.7+ |
| 2003 10 24 | 691 | 0.1- | 0.5+ | 2007 11 07 | 691 | 0.1+ | 0.1+ | 2007 11 19 | 691 | 1.1- | 0.8- |
| 2003 10 24 | 691 | 0.3+ | 0.2+ | 2007 11 07 | 691 | 0.0  | 0.2- | 2007 11 19 | 691 | 0.3+ | 0.1- |
| 2003 10 24 | 691 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.9+ | 0.7- |            |     |      |      |
| 2007 11 03 | 691 | 0.5+ | 0.3+ | 2007 11 18 | G96 | 0.2+ | 0.6- |            |     |      |      |

**2007 VG<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.27196   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.20135648 | $\omega$ 176.98638 | +0.64739045   | -0.74624598 |
| <i>a</i> | 2.8828739  | $\Omega$ 232.60817 | +0.69512558   | +0.66148327 |
| <i>e</i> | 0.0230654  | <i>i</i> 11.24471  | +0.31254764   | +0.07454409 |
| <i>P</i> | 4.89       | <i>H</i> 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 03 22 | 645 | 0.1+ | 0.0  | 2005 05 19 | G96 | 0.1+ | 0.1+ | 2007 11 03 | 691 | 0.2- | 1.1+ |
| 1999 03 22 | 645 | 0.1+ | 0.0  | 2005 05 19 | G96 | 0.1+ | 0.1- | 2007 11 03 | 691 | 0.0  | 0.3- |
| 2000 05 26 | 691 | 0.1- | 0.1+ | 2005 05 19 | G96 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.3- | 0.2+ |
| 2000 05 26 | 691 | 0.0  | 0.2- | 2005 05 19 | G96 | 0.1- | 0.0  | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2000 05 26 | 691 | 0.3- | 0.2- | 2005 06 08 | 691 | 0.1+ | 0.2+ | 2007 11 07 | 691 | 0.1- | 0.0  |
| 2000 05 26 | 691 | 2.1- | 1.9+ | 2005 06 08 | 691 | 0.2+ | 0.2+ | 2007 11 07 | 691 | 0.3- | 0.2- |
| 2000 05 26 | 691 | 0.1+ | 0.3- | 2005 06 08 | 691 | 0.4+ | 0.2+ | 2007 11 18 | G96 | 0.4+ | 0.0  |
| 2000 05 26 | 691 | 0.1+ | 0.8- | 2005 06 13 | 691 | 0.6+ | 0.8+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2002 11 04 | 291 | 0.3+ | 0.3+ | 2005 06 13 | 691 | 0.4+ | 0.1+ | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 2002 11 04 | 291 | 0.1+ | 0.4+ | 2005 06 13 | 691 | 0.4+ | 0.6+ | 2007 11 19 | 691 | 0.4- | 0.1+ |
| 2002 11 04 | 291 | 0.1+ | 0.2+ | 2007 09 15 | G96 | 0.4+ | 0.2- | 2007 11 19 | 691 | 0.1- | 0.2+ |
| 2002 11 23 | 644 | 0.5+ | 0.2+ | 2007 09 15 | G96 | 0.2+ | 0.2- | 2007 11 19 | 691 | 0.2- | 0.1+ |
| 2002 11 23 | 644 | 0.1+ | 0.4+ | 2007 09 15 | G96 | 0.1+ | 0.2- | 2007 12 04 | 704 | 0.4+ | 0.1- |
| 2002 11 23 | 644 | 0.5+ | 0.7+ | 2007 09 15 | G96 | 0.4+ | 0.1- | 2007 12 04 | 704 | 0.2+ | 0.0  |
| 2002 12 03 | 644 | 0.0  | 0.4+ | 2007 10 30 | 691 | 0.3- | 0.0  | 2007 12 04 | 704 | 0.4+ | 0.3+ |
| 2002 12 03 | 644 | 0.5+ | 0.1+ | 2007 10 30 | 691 | 0.1- | 0.1+ |            |     |      |      |
| 2002 12 03 | 644 | 0.6+ | 0.3+ | 2007 10 30 | 691 | 0.1- | 0.0  |            |     |      |      |

**2007 VH<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.82374  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27450226 | $\omega$ 317.70784 | +0.37441441   | -0.92659876 |
| <i>a</i> | 2.3447980  | $\Omega$ 110.27680 | +0.86043491   | +0.33309216 |
| <i>e</i> | 0.1670754  | <i>i</i> 2.14147   | +0.34563799   | +0.17454042 |
| <i>P</i> | 3.59       | <i>H</i> 18.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 22 | 691 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.4- | 0.1+ | 2007 11 30 | D35 | 0.1-  | 1.1-  |
| 2000 11 22 | 691 | 0.0  | 0.4- | 2007 11 07 | 691 | 0.1- | 0.1+ | 2007 12 03 | 703 | 1.3+  | 0.5-  |
| 2000 11 22 | 691 | 0.3+ | 0.4- | 2007 11 14 | 704 | 0.1- | 0.5- | 2007 12 03 | 703 | 0.1+  | 0.4+  |
| 2000 12 31 | 691 | 0.2- | 0.1+ | 2007 11 14 | 704 | 0.5- | 0.3+ | 2007 12 03 | 703 | 0.5+  | 0.8+  |
| 2000 12 31 | 691 | 0.1- | 0.1+ | 2007 11 14 | 704 | 0.3- | 0.4- | 2007 12 03 | 703 | 0.9+  | 0.0   |
| 2000 12 31 | 691 | 0.2- | 0.1+ | 2007 11 14 | 704 | 0.6+ | 0.2- | 2007 12 05 | 704 | (1.7+ | 0.3-) |
| 2003 09 19 | 691 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.5+ | 0.2- | 2007 12 05 | 704 | 0.1-  | 0.8+  |
| 2003 09 19 | 691 | 0.1- | 0.0  | 2007 11 18 | G96 | 0.4+ | 0.1- | 2007 12 05 | 704 | 0.2+  | 0.5+  |
| 2003 09 19 | 691 | 0.3+ | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.1- | 2007 12 05 | 704 | 0.1-  | 1.2+  |
| 2005 03 11 | 695 | 0.2+ | 0.3+ | 2007 11 18 | G96 | 0.1+ | 0.1- | 2007 12 05 | 704 | 0.6+  | 0.3+  |
| 2005 03 11 | 695 | 0.1+ | 0.2+ | 2007 11 19 | 691 | 0.1- | 0.2+ | 2007 12 15 | G96 | 0.2+  | 0.0   |
| 2007 11 03 | 691 | 0.2- | 0.0  | 2007 11 19 | 691 | 0.2- | 0.1+ | 2007 12 15 | G96 | 0.1-  | 0.3-  |
| 2007 11 03 | 691 | 0.3- | 0.1+ | 2007 11 19 | 691 | 0.2- | 0.2- | 2007 12 15 | G96 | 0.3-  | 0.0   |
| 2007 11 03 | 691 | 0.1- | 0.2- | 2007 11 30 | D35 | 0.3+ | 0.0  | 2007 12 15 | G96 | 0.5+  | 0.0   |
| 2007 11 07 | 691 | 0.0  | 0.0  | 2007 11 30 | D35 | 0.6+ | 0.2+ |            |     |       |       |

**2007 VN<sub>114</sub> = 1996 XS<sub>7</sub> = 2005 FW**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 113.47443  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27066002 | $\omega$ 173.38039 | +0.46739245   | +0.88283683 |
| <i>a</i> | 2.3669367  | $\Omega$ 124.47505 | -0.81365343   | +0.45006282 |
| <i>e</i> | 0.0832003  | <i>i</i> 3.21945   | -0.34570565   | +0.13432271 |
| <i>P</i> | 3.64       | <i>H</i> 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 01 | 691 | 0.9+ | 0.0  | 2005 03 17 | G96 | 0.2- | 0.1- | 2007 11 18 | G96 | 0.3+ | 0.1+ |
| 1996 12 01 | 691 | 0.4+ | 0.3- | 2005 03 17 | G96 | 0.3+ | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.2- |
| 1996 12 01 | 691 | 0.3+ | 0.3- | 2005 03 17 | G96 | 0.6+ | 0.0  | 2007 11 18 | G96 | 0.9+ | 0.1- |
| 1996 12 08 | 691 | 0.7- | 0.0  | 2005 04 09 | G96 | 0.2- | 0.1- | 2007 11 19 | 691 | 0.1+ | 0.3+ |
| 1996 12 08 | 691 | 0.5- | 0.2- | 2005 04 09 | G96 | 0.1- | 0.4+ | 2007 11 19 | 691 | 0.1- | 0.2- |
| 1996 12 08 | 691 | 0.3- | 0.1- | 2005 04 09 | G96 | 0.0  | 0.1+ | 2007 11 19 | 691 | 0.1- | 0.1+ |
| 2003 10 23 | 691 | 0.3- | 0.3+ | 2005 04 09 | G96 | 0.6+ | 0.1- | 2007 11 19 | 691 | 0.2+ | 0.1+ |
| 2003 10 23 | 691 | 0.1+ | 0.0  | 2007 11 03 | 691 | 0.4- | 0.1+ | 2007 11 19 | 691 | 0.1+ | 0.3+ |
| 2003 10 23 | 691 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.5- | 0.0  | 2007 11 19 | 691 | 0.1+ | 0.1- |
| 2005 03 16 | G96 | 0.4+ | 0.2+ | 2007 11 03 | 691 | 0.7- | 0.2+ | 2007 12 04 | 704 | 0.2- | 1.4- |
| 2005 03 16 | G96 | 0.2- | 0.1+ | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.0  | 0.1+ |
| 2005 03 16 | G96 | 0.2- | 0.3+ | 2007 11 07 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.9+ | 0.4+ |
| 2005 03 16 | G96 | 0.3- | 0.3+ | 2007 11 07 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2005 03 17 | G96 | 0.4- | 0.2+ | 2007 11 18 | G96 | 0.6+ | 0.1- |            |     |      |      |

**2007 VJ<sub>117</sub> = 2004 BX<sub>62</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 11.43716   | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22691325 | $\omega$ 44.66390 | +0.62607806   | -0.77973934 |
| <i>a</i> | 2.6621313  | $\Omega$ 6.58214  | +0.70071309   | +0.55937132 |
| <i>e</i> | 0.0895954  | <i>i</i> 2.86508  | +0.34209271   | +0.28126551 |
| <i>P</i> | 4.34       | <i>H</i> 16.8     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 691 | 0.5- | 0.1+ | 2004 01 22 | 704 | 0.2+ | 0.6- | 2007 11 18 | G96 | 0.0  | 0.0  |
| 2003 12 21 | 691 | 0.1- | 0.7- | 2004 01 22 | 704 | 0.7- | 0.0  | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2003 12 21 | 691 | 0.5+ | 0.6- | 2004 01 27 | 691 | 0.1+ | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.2- |
| 2003 12 28 | 691 | 0.1- | 0.0  | 2004 01 27 | 691 | 0.1+ | 0.1+ | 2007 12 12 | 704 | 0.1+ | 0.3- |
| 2003 12 28 | 691 | 0.2+ | 0.4+ | 2004 01 27 | 691 | 0.2+ | 0.0  | 2007 12 12 | 704 | 0.8+ | 0.5- |
| 2003 12 28 | 691 | 0.0  | 0.3+ | 2007 11 03 | 691 | 0.1+ | 0.2+ | 2007 12 12 | 704 | 0.6+ | 0.3+ |
| 2004 01 15 | 691 | 0.1- | 0.1+ | 2007 11 03 | 691 | 0.1- | 0.3+ | 2007 12 12 | 704 | 0.3- | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 15 | 691 | 0.1− | 0.3+ | 2007 11 03 | 691 | 0.1− | 0.0  | 2007 12 15 | 704 | 1.0− | 0.2+ |
| 2004 01 15 | 691 | 0.1− | 0.2− | 2007 11 07 | 691 | 0.0  | 0.1+ | 2007 12 15 | 704 | 0.7+ | 0.2− |
| 2004 01 22 | 704 | 0.2+ | 0.0  | 2007 11 07 | 691 | 0.1− | 0.1− | 2007 12 15 | 704 | 0.4− | 0.2+ |
| 2004 01 22 | 704 | 0.2− | 0.4+ | 2007 11 07 | 691 | 0.0  | 0.2− | 2007 12 15 | 704 | 0.4+ | 0.2+ |
| 2004 01 22 | 704 | 0.1+ | 0.3+ | 2007 11 18 | G96 | 0.7− | 0.6− |            |     |      |      |

**2007 VP<sub>117</sub> = 2006 KR<sub>117</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.98136   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23400095 | $\omega$ | 93.96560  | +0.89991389   | +0.39812981 |
| <i>a</i> | 2.6081004  | $\Omega$ | 242.65080 | −0.43509292   | +0.84704673 |
| <i>e</i> | 0.2279213  | <i>i</i> | 11.55363  | +0.02914013   | +0.35214271 |
| <i>P</i> | 4.21       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 31 | G96 | 0.3−  | 0.1+  | 2007 10 21 | 691 | 0.2− | 0.1− | 2007 11 07 | 703 | 0.3− | 0.5+ |
| 2006 05 31 | G96 | 0.0   | 0.0   | 2007 10 21 | 691 | 0.1− | 0.2− | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2006 05 31 | G96 | 0.5−  | 0.3+  | 2007 10 21 | 703 | 0.1− | 0.6+ | 2007 11 11 | G96 | 0.3+ | 0.2− |
| 2006 05 31 | G96 | 0.1−  | 0.1+  | 2007 10 21 | 703 | 0.7+ | 0.5+ | 2007 11 11 | G96 | 0.2+ | 0.0  |
| 2006 06 02 | 691 | 0.1+  | 0.1−  | 2007 10 21 | 703 | 0.7+ | 0.7+ | 2007 11 11 | G96 | 0.5+ | 0.1− |
| 2006 06 02 | 691 | 0.2+  | 0.1+  | 2007 10 21 | 703 | 0.1+ | 0.3− | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2006 06 02 | 691 | 0.1−  | 0.2−  | 2007 11 04 | 691 | 0.5+ | 0.0  | 2007 11 18 | 691 | 0.2− | 0.1+ |
| 2007 10 08 | 703 | 0.8−  | 1.0+  | 2007 11 04 | 691 | 0.1− | 0.1+ | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 2007 10 08 | 703 | (0.6− | 2.0+) | 2007 11 04 | 691 | 0.2+ | 0.2− | 2007 11 18 | 703 | 1.1+ | 0.7− |
| 2007 10 08 | 703 | 0.1−  | 0.6−  | 2007 11 07 | 703 | 0.5− | 0.3− | 2007 11 18 | 703 | 0.1− | 0.2− |
| 2007 10 08 | 703 | (0.3− | 1.6−) | 2007 11 07 | 703 | 0.9− | 0.1− | 2007 11 18 | 703 | 0.3+ | 0.1+ |
| 2007 10 21 | 691 | 0.0   | 0.1−  | 2007 11 07 | 703 | 0.1+ | 0.5− | 2007 11 18 | 703 | 0.5+ | 0.1− |

**2007 VR<sub>117</sub> = 2004 CZ<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 215.88449  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19268554 | $\omega$ | 311.74466 | −0.96312398   | +0.20703067 |
| <i>a</i> | 2.9687250  | $\Omega$ | 240.87018 | −0.14850004   | −0.94162527 |
| <i>e</i> | 0.0814580  | <i>i</i> | 11.34561  | −0.22436565   | −0.26548099 |
| <i>P</i> | 5.12       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 02 13 | 699 | 0.4+  | 0.2−  | 2005 06 03 | 703 | 0.1+ | 0.7+ | 2007 11 07 | 703 | 0.9−  | 0.4+  |
| 2004 02 13 | 699 | 0.5+  | 0.0   | 2007 10 16 | G96 | 0.5+ | 0.0  | 2007 11 07 | 703 | 0.2−  | 0.3−  |
| 2004 02 13 | 699 | 0.6−  | 0.6+  | 2007 10 16 | G96 | 0.6+ | 0.0  | 2007 11 14 | 691 | 0.1−  | 0.2−  |
| 2004 02 13 | 699 | 0.3+  | 0.5−  | 2007 10 16 | G96 | 0.7+ | 0.1+ | 2007 11 14 | 691 | 0.6+  | 0.1−  |
| 2004 02 19 | 704 | 0.2−  | 0.5+  | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 14 | 691 | 0.4−  | 0.1−  |
| 2004 02 19 | 704 | 0.5−  | 0.4−  | 2007 11 04 | 691 | 0.1− | 0.2− | 2007 11 18 | 704 | 0.8+  | 0.1−  |
| 2004 02 19 | 704 | 0.2+  | 0.3+  | 2007 11 04 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 704 | (1.6+ | 0.6+) |
| 2005 06 03 | 703 | (2.8+ | 1.9+) | 2007 11 04 | 691 | 0.1− | 0.1+ | 2007 11 18 | 704 | 0.4−  | 1.2+  |
| 2005 06 03 | 703 | 0.4−  | 0.1+  | 2007 11 07 | 703 | 0.0  | 0.8+ | 2007 11 18 | 704 | 0.2−  | 0.9+  |
| 2005 06 03 | 703 | 0.3+  | 0.3+  | 2007 11 07 | 703 | 0.4− | 0.4− | 2007 11 18 | 704 | 0.6−  | 0.3+  |

**2007 VV<sub>117</sub> = 2005 LJ<sub>37</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 203.39926  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19852454 | $\omega$ | 320.90868 | −0.88243303   | +0.45074515 |
| <i>a</i> | 2.9102251  | $\Omega$ | 246.37979 | −0.38628532   | −0.85765991 |
| <i>e</i> | 0.0571358  | <i>i</i> | 8.45331   | −0.26850623   | −0.24748391 |
| <i>P</i> | 4.96       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 11 04 | 644 | 0.4− | 0.3+ | 2006 05 25 | G96 | 0.0  | 0.1− | 2007 11 04 | 691 | 0.2−  | 0.1+  |
| 2002 11 04 | 644 | 0.8− | 0.1+ | 2006 05 25 | G96 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.0   | 0.1+  |
| 2002 11 04 | 644 | 0.3− | 0.3+ | 2006 05 25 | G96 | 0.1+ | 0.3− | 2007 11 07 | 703 | 0.8+  | 0.7+  |
| 2004 02 14 | 699 | 1.0+ | 0.1+ | 2006 05 25 | G96 | 0.1+ | 0.3− | 2007 11 07 | 703 | 0.6+  | 0.1+  |
| 2004 02 14 | 699 | 1.1+ | 0.1− | 2006 09 18 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.4+  | 1.1−  |
| 2004 02 14 | 699 | 1.1+ | 0.1+ | 2006 09 18 | 691 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.8+  | 0.4−  |
| 2004 02 14 | 699 | 0.3− | 1.4+ | 2006 09 18 | 691 | 0.0  | 0.3+ | 2007 11 15 | 704 | (1.6− | 0.3+) |
| 2005 02 14 | 809 | 0.4+ | 0.3+ | 2006 11 11 | 291 | 0.1+ | 0.0  | 2007 11 15 | 704 | 0.6−  | 0.1−  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 14 | 809 | 0.4+ | 0.4+ | 2006 11 11 | 291 | 0.2+ | 0.4+ | 2007 11 15 | 704 | 0.5+ | 1.0+ |
| 2005 02 14 | 809 | 0.4+ | 0.4+ | 2006 11 11 | 291 | 0.1+ | 0.4+ | 2007 11 15 | 704 | 0.7+ | 0.4+ |
| 2005 06 06 | 691 | 0.1+ | 0.0  | 2007 10 16 | G96 | 0.0  | 0.2− | 2007 11 19 | 691 | 0.7− | 0.2+ |
| 2005 06 06 | 691 | 0.7+ | 0.6+ | 2007 10 16 | G96 | 0.2+ | 0.1− | 2007 11 19 | 691 | 0.2− | 0.1+ |
| 2005 06 06 | 691 | 0.3− | 0.1− | 2007 10 16 | G96 | 0.3+ | 0.3− | 2007 11 19 | 691 | 0.3− | 0.2+ |
| 2005 06 11 | 691 | 0.3− | 0.3+ | 2007 10 16 | G96 | 0.5+ | 0.2− | 2007 12 05 | 691 | 0.1+ | 0.2+ |
| 2005 06 11 | 691 | 0.1− | 0.4+ | 2007 10 16 | G96 | 0.1+ | 0.3− | 2007 12 05 | 691 | 0.0  | 0.0  |
| 2005 06 11 | 691 | 0.2− | 0.1+ | 2007 10 16 | G96 | 0.9+ | 0.2− | 2007 12 05 | 691 | 0.4− | 0.3+ |
| 2005 06 15 | 691 | 0.2− | 0.0  | 2007 10 16 | G96 | 0.5+ | 0.2− | 2007 12 13 | A77 | 0.4− | 1.1− |
| 2005 06 15 | 691 | 0.2− | 0.1− | 2007 10 16 | G96 | 0.7+ | 0.3− | 2007 12 13 | A77 | 0.0  | 0.2− |
| 2005 06 15 | 691 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.1− | 0.1+ | 2007 12 13 | A77 | 0.5− | 0.5+ |

**2007 VP<sub>118</sub> = 1995 UW<sub>80</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 339.58223  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24562232 | $\omega$ | 299.13340 | +0.43523553   | −0.89931244 |
| <i>a</i> | 2.5251712  | $\Omega$ | 125.00494 | +0.84300909   | +0.39050021 |
| <i>e</i> | 0.0470850  | <i>i</i> | 2.97494   | +0.31607863   | +0.19684185 |
| <i>P</i> | 4.01       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 10 25 | 691 | 0.1− | 0.4− | 2003 10 29 | 691 | 0.1+ | 0.2+ | 2007 10 16 | 691 | 0.3− | 0.2+ |
| 1995 10 25 | 691 | 0.1+ | 0.1− | 2003 10 29 | 691 | 0.2− | 0.1+ | 2007 10 16 | 691 | 0.2+ | 0.1− |
| 1995 10 25 | 691 | 0.0  | 0.2− | 2007 10 08 | 691 | 0.4− | 0.1+ | 2007 11 04 | G96 | 0.6+ | 0.2− |
| 1995 10 28 | 691 | 0.1+ | 0.2− | 2007 10 08 | 691 | 0.4+ | 1.1+ | 2007 11 04 | G96 | 0.4+ | 0.2− |
| 1995 10 28 | 691 | 0.2+ | 0.3− | 2007 10 08 | 691 | 0.5− | 0.1− | 2007 11 04 | G96 | 0.1+ | 0.3− |
| 1995 10 28 | 691 | 0.0  | 0.4− | 2007 10 08 | G96 | 0.2− | 0.1− | 2007 11 04 | G96 | 0.4+ | 0.2− |
| 2001 03 17 | 691 | 0.1− | 0.1+ | 2007 10 08 | G96 | 0.0  | 0.1+ | 2007 11 07 | 703 | 0.3− | 0.8− |
| 2001 03 17 | 691 | 0.3− | 0.1+ | 2007 10 08 | G96 | 0.3+ | 0.2− | 2007 11 07 | 703 | 0.5− | 1.0+ |
| 2001 03 17 | 691 | 0.4+ | 0.0  | 2007 10 08 | G96 | 0.1− | 0.4− | 2007 11 07 | 703 | 0.2− | 0.2− |
| 2003 10 29 | 691 | 0.1− | 0.3+ | 2007 10 16 | 691 | 0.5− | 0.4+ | 2007 11 07 | 703 | 0.0  | 1.0+ |

**2007 VJ<sub>119</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.08990  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28407727 | $\omega$ | 290.29431 | +0.65337262   | −0.74982875 |
| <i>a</i> | 2.2918088  | $\Omega$ | 118.46778 | +0.73126411   | +0.58950604 |
| <i>e</i> | 0.1252939  | <i>i</i> | 6.80849   | +0.19584948   | +0.30039886 |
| <i>P</i> | 3.47       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 01 06 | 703 | 0.2−  | 0.0   | 2007 10 30 | 703 | 1.0+  | 0.3+  | 2007 11 20 | 703 | 0.4−  | 0.2+  |
| 2005 01 06 | 703 | 0.2−  | 0.0   | 2007 10 30 | 703 | 0.7+  | 1.0+  | 2007 11 20 | 703 | 1.0−  | 0.2−  |
| 2005 01 06 | 703 | 0.1−  | 0.7−  | 2007 10 30 | 703 | 0.3−  | 0.8+  | 2007 11 20 | 703 | 0.2−  | 0.1+  |
| 2005 01 06 | 703 | (2.1− | 0.4−) | 2007 11 04 | D29 | (0.9+ | 1.9−) | 2007 11 29 | 704 | 0.5−  | 0.1+  |
| 2005 01 13 | 691 | 0.2−  | 0.1+  | 2007 11 04 | D29 | 0.5+  | 0.4−  | 2007 11 29 | 704 | 0.3+  | 0.1−  |
| 2005 01 13 | 691 | 0.1+  | 0.1+  | 2007 11 04 | D29 | 0.4+  | 1.4−  | 2007 11 29 | 704 | (0.2+ | 1.7+) |
| 2005 01 13 | 691 | 0.0   | 0.2+  | 2007 11 04 | D29 | 0.0   | 0.3−  | 2007 11 29 | 704 | 0.2−  | 1.3+  |
| 2005 02 01 | 703 | 0.5−  | 0.5−  | 2007 11 07 | 703 | 0.3−  | 0.8+  | 2007 12 06 | 703 | 0.3+  | 0.0   |
| 2005 02 01 | 703 | 0.2−  | 0.3−  | 2007 11 07 | 703 | 0.6−  | 0.9−  | 2007 12 06 | 703 | 0.1+  | 0.2+  |
| 2005 02 01 | 703 | 0.6+  | 0.8−  | 2007 11 07 | 703 | 0.2+  | 0.4+  | 2007 12 06 | 703 | 0.1−  | 0.4+  |
| 2005 02 01 | 703 | 0.7+  | 0.0   | 2007 11 07 | 703 | 0.2−  | 0.3+  | 2007 12 06 | 703 | 0.3−  | 0.1+  |
| 2005 03 09 | 703 | 0.3+  | 0.8+  | 2007 11 17 | 703 | 0.2−  | 0.8−  | 2007 12 15 | 699 | 1.2+  | 0.2+  |
| 2005 03 09 | 703 | 0.2+  | 0.2−  | 2007 11 17 | 703 | 0.2−  | 0.2−  | 2007 12 15 | 699 | 0.3−  | 0.4+  |
| 2005 03 09 | 703 | 0.5−  | 0.6+  | 2007 11 17 | 703 | 0.8−  | 0.5−  | 2007 12 15 | 699 | 0.6+  | 0.2+  |
| 2005 03 09 | 703 | 0.4+  | 0.5−  | 2007 11 17 | 703 | 0.3−  | 0.8−  | 2007 12 15 | 699 | 0.2+  | 0.8−  |
| 2007 10 30 | 703 | 0.8+  | 0.1+  | 2007 11 20 | 703 | 0.1−  | 0.3−  |            |     |       |       |

**2007 VB<sub>120</sub>**

## 2007 DEC. 24

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 03 09 G96 | 0.1+ | 0.1- | 2007 09 12 G96 | 0.1+ | 0.2+ | 2007 10 19 G96 | 0.7+ | 0.4- |
| 2005 03 09 G96 | 0.0  | 0.3- | 2007 09 12 G96 | 0.1+ | 0.2+ | 2007 10 19 G96 | 0.9+ | 0.5- |
| 2005 03 09 G96 | 0.0  | 0.2- | 2007 09 12 G96 | 0.1+ | 0.1- | 2007 11 05 G91 | 0.3- | 0.1- |
| 2005 03 09 G96 | 0.1- | 0.1- | 2007 09 12 G96 | 0.4- | 0.3+ | 2007 11 05 G91 | 0.8- | 0.9+ |
| 2005 04 12 G95 | 0.1+ | 0.2+ | 2007 10 08 G96 | 0.2- | 0.2- | 2007 11 05 G91 | 0.4+ | 0.2+ |
| 2005 04 12 G95 | 0.0  | 0.2+ | 2007 10 08 G96 | 0.2+ | 0.0  | 2007 11 07 G91 | 0.0  | 0.1+ |
| 2005 05 10 G96 | 0.7- | 1.7+ | 2007 10 08 G96 | 0.0  | 0.2- | 2007 11 07 G91 | 0.9- | 0.6+ |
| 2005 05 10 G96 | 0.1- | 0.3- | 2007 10 08 G96 | 0.2- | 0.4- | 2007 11 07 G91 | 0.3- | 0.1+ |
| 2005 05 10 G96 | 0.2+ | 0.2- | 2007 10 19 G96 | 0.5+ | 0.4- |                |      |      |
| 2005 05 10 G96 | 0.4+ | 0.7- | 2007 10 19 G96 | 0.1+ | 0.1- |                |      |      |

**2007 VH<sub>121</sub> = 2002 CO<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 180.45782  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.28816705 | $\omega$ | 330.83611 | -0.64290696  | +0.74999186  |
| $a$ | 2.2700730  | $\Omega$ | 258.70111 | -0.66841464  | -0.64850080  |
| $e$ | 0.1538280  | $i$      | 9.12460   | -0.37402207  | -0.13022644  |
| $P$ | 3.42       | $H$      | 16.6      | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2002 02 07 608 | 0.1+ | 0.0  | 2003 09 22 644 | 0.5- | 0.4+ | 2007 11 09 691 | 0.3+ | 0.0  |
| 2002 02 07 608 | 0.4- | 0.1- | 2003 09 22 644 | 0.1+ | 0.4+ | 2007 11 09 691 | 0.1- | 0.0  |
| 2002 02 07 608 | 0.5- | 0.1- | 2004 12 02 691 | 0.7- | 0.9- | 2007 11 09 691 | 0.4+ | 0.5+ |
| 2002 02 08 644 | 0.0  | 0.6+ | 2004 12 02 691 | 0.1+ | 0.5- | 2007 11 13 691 | 0.1+ | 0.0  |
| 2002 02 08 644 | 0.5+ | 0.8+ | 2004 12 02 691 | 0.2- | 0.3- | 2007 11 13 691 | 0.2+ | 0.0  |
| 2002 02 08 644 | 0.3+ | 0.6+ | 2007 11 05 691 | 0.1+ | 0.1- | 2007 11 13 691 | 0.4- | 0.0  |
| 2002 03 10 699 | 0.6+ | 0.9+ | 2007 11 05 691 | 0.0  | 0.0  | 2007 12 15 691 | 0.4- | 0.1+ |
| 2002 03 10 699 | 0.2+ | 0.8+ | 2007 11 05 691 | 0.1+ | 0.3- | 2007 12 15 691 | 1.1- | 1.2+ |
| 2002 03 10 699 | 0.9+ | 0.2+ | 2007 11 07 691 | 0.4+ | 0.1+ | 2007 12 15 691 | 0.1+ | 0.1+ |
| 2002 03 10 699 | 0.7+ | 0.5+ | 2007 11 07 691 | 0.4+ | 0.0  |                |      |      |
| 2003 09 22 644 | 0.4- | 0.6+ | 2007 11 07 691 | 0.1+ | 0.1- |                |      |      |

**2007 VT<sub>121</sub> = 2005 GQ<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 214.11150  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.22486895 | $\omega$ | 163.59962 | -0.92953582  | +0.33747071  |
| $a$ | 2.6782414  | $\Omega$ | 37.20938  | -0.35985846  | -0.74238925  |
| $e$ | 0.0988838  | $i$      | 14.22322  | -0.08040546  | -0.57876741  |
| $P$ | 4.38       | $H$      | 16.5      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2005 04 06 691 | 0.1+  | 0.1+  | 2005 05 08 G96 | 0.0  | 0.1+ | 2007 11 07 691 | 0.2+ | 0.0  |
| 2005 04 06 691 | 0.1-  | 0.0   | 2005 05 08 G96 | 0.5- | 0.7+ | 2007 11 07 691 | 0.4+ | 0.2- |
| 2005 04 06 691 | 0.1-  | 0.2+  | 2005 05 08 G96 | 0.1- | 0.3+ | 2007 11 07 691 | 0.3+ | 0.2- |
| 2005 04 10 691 | 0.0   | 0.1-  | 2005 05 08 G96 | 0.4- | 0.1+ | 2007 11 09 691 | 0.1- | 0.1- |
| 2005 04 10 691 | 0.0   | 0.1-  | 2007 09 09 G96 | 0.5+ | 0.5+ | 2007 11 09 691 | 0.3+ | 0.2- |
| 2005 04 10 691 | 0.0   | 0.1+  | 2007 09 09 G96 | 0.1- | 0.1+ | 2007 11 09 691 | 0.3- | 0.3- |
| 2005 04 11 G96 | 0.5-  | 0.2-  | 2007 09 09 G96 | 0.2+ | 0.1- | 2007 11 13 691 | 0.1- | 0.1+ |
| 2005 04 11 G96 | 0.4-  | 0.3-  | 2007 09 09 G96 | 0.3+ | 0.1- | 2007 11 13 691 | 0.0  | 0.1- |
| 2005 04 11 G96 | 0.4-  | 0.1-  | 2007 10 11 691 | 0.1+ | 0.2- | 2007 11 13 691 | 0.1+ | 0.1- |
| 2005 04 11 G96 | 0.3-  | 0.4-  | 2007 10 11 691 | 0.1- | 0.3+ | 2007 11 17 691 | 0.1+ | 0.4+ |
| 2005 04 15 699 | (1.8+ | 1.1+) | 2007 10 11 691 | 0.0  | 0.2+ | 2007 11 17 691 | 0.4- | 0.7+ |
| 2005 04 15 699 | 1.0+  | 0.9-  | 2007 11 05 691 | 0.1- | 0.1- | 2007 11 17 691 | 0.5- | 0.1- |
| 2005 04 15 699 | 0.8+  | 0.9+  | 2007 11 05 691 | 0.2- | 0.1+ |                |      |      |
| 2005 04 15 699 | 1.1+  | 1.1-  | 2007 11 05 691 | 0.1+ | 0.1- |                |      |      |

**2007 VU<sub>121</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 147.86029  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $n$ | 0.28600338 | $\omega$ | 335.62662 | -0.29531710 | +0.95175567 |     |   |
| $a$ | 2.2815077  | $\Omega$ | 277.11000 | -0.86219437 | -0.30307948 |     |   |
| $e$ | 0.1376756  | $i$      | 4.81889   | -0.41159286 | -0.04799963 |     |   |
| $P$ | 3.45       | $H$      | 17.4      | $G$         | 0.15        | $U$ | 3 |

## M.P.O. 130007

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 18 691 | 0.1+ | 0.0  | 2007 10 18 691 | 0.2+ | 0.2+ | 2007 11 13 691 | 0.4- | 0.1+ |
| 2003 09 18 691 | 0.1- | 0.2- | 2007 10 18 691 | 0.1+ | 0.2+ | 2007 11 13 691 | 0.1- | 0.0  |
| 2003 09 18 691 | 0.0  | 0.1+ | 2007 10 18 691 | 0.4- | 0.4- | 2007 11 13 691 | 0.2+ | 0.0  |
| 2003 09 23 644 | 0.1+ | 0.3+ | 2007 11 05 691 | 0.3- | 0.1- | 2007 11 17 691 | 0.5+ | 0.1+ |
| 2003 09 23 644 | 0.1- | 0.1+ | 2007 11 05 691 | 0.1- | 0.2- | 2007 11 17 691 | 0.2- | 0.3+ |
| 2003 09 23 644 | 0.2+ | 0.1+ | 2007 11 05 691 | 0.3+ | 0.0  | 2007 11 17 691 | 0.4+ | 0.2+ |
| 2004 12 19 691 | 0.3+ | 0.0  | 2007 11 07 691 | 0.2+ | 0.1+ | 2007 12 05 691 | 0.4- | 0.0  |
| 2004 12 19 691 | 0.3- | 0.1- | 2007 11 07 691 | 0.3- | 0.2- | 2007 12 05 691 | 0.5+ | 0.8- |
| 2004 12 19 691 | 0.0  | 0.1+ | 2007 11 07 691 | 0.2+ | 0.1- | 2007 12 05 691 | 0.3- | 0.6+ |

**2007 VE<sub>122</sub> = 2005 GN<sub>142</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 138.27687  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21105128 | $\omega$ | 310.84016 | -0.02659172 | +0.99900377 |
| $a$ | 2.7938991  | $\Omega$ | 317.59474 | -0.90042315 | -0.03950873 |
| $e$ | 0.0627734  | $i$      | 3.04629   | -0.43420160 | +0.02074925 |
| $P$ | 4.67       | $H$      | 16.6      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2004 01 13 691 | 0.0  | 0.2- | 2007 10 14 G96 | 0.1+  | 0.6-  | 2007 11 07 300 | 1.1+ | 0.2+ |
| 2004 01 13 691 | 0.1- | 0.1- | 2007 10 14 G96 | 0.6+  | 0.5-  | 2007 11 07 300 | 0.1- | 0.0  |
| 2004 01 13 691 | 0.1+ | 0.1+ | 2007 10 14 G96 | 0.8+  | 0.2-  | 2007 11 13 691 | 0.1+ | 0.1- |
| 2005 04 10 691 | 0.2+ | 0.3+ | 2007 10 14 G96 | 0.4+  | 0.4-  | 2007 11 13 691 | 0.1+ | 0.2+ |
| 2005 04 10 691 | 0.1- | 0.4+ | 2007 11 05 691 | 0.0   | 0.1-  | 2007 11 13 691 | 0.5- | 0.5- |
| 2005 04 10 691 | 0.1- | 0.2+ | 2007 11 05 691 | 1.0-  | 0.2-  | 2007 12 06 691 | 0.3- | 0.4+ |
| 2005 04 15 691 | 0.2+ | 0.3+ | 2007 11 05 691 | 0.3+  | 0.0   | 2007 12 06 691 | 0.1+ | 0.1+ |
| 2005 04 15 691 | 0.2+ | 0.0  | 2007 11 07 691 | 0.3-  | 0.5+  | 2007 12 06 691 | 0.0  | 0.4+ |
| 2005 04 15 691 | 0.1+ | 0.0  | 2007 11 07 691 | 0.2+  | 0.1+  | 2007 12 16 691 | 0.4+ | 0.3+ |
| 2006 07 21 G96 | 0.3- | 0.8+ | 2007 11 07 691 | 0.0   | 0.1-  | 2007 12 16 691 | 0.1- | 0.5+ |
| 2006 07 21 G96 | 0.1- | 0.7+ | 2007 11 07 300 | (1.7+ | 0.4-) | 2007 12 16 691 | 0.4- | 0.2+ |
| 2006 07 21 G96 | 0.1- | 0.5+ | 2007 11 07 300 | (1.9+ | 0.9-) |                |      |      |
| 2006 07 21 G96 | 0.5- | 0.7+ | 2007 11 07 300 | 1.0+  | 0.2-  |                |      |      |

**2007 VN<sub>122</sub> = 2001 RT<sub>39</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 33.72869   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17851147 | $\omega$ | 109.88361 | +0.98859493 | +0.01047487 |
| $a$ | 3.1238629  | $\Omega$ | 249.75214 | -0.06187833 | +0.93773363 |
| $e$ | 0.2122610  | $i$      | 9.21442   | +0.13729947 | +0.34719723 |
| $P$ | 5.52       | $H$      | 16.3      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2001 09 10 704 | 0.0  | 0.8+ | 2001 09 12 704 | 0.2- | 0.0  | 2007 11 07 691 | 0.1- | 0.3- |
| 2001 09 10 704 | 0.8- | 0.1- | 2001 10 21 291 | 0.2- | 0.0  | 2007 11 09 691 | 0.3+ | 0.1+ |
| 2001 09 10 704 | 0.4+ | 0.1+ | 2001 10 21 291 | 0.1- | 0.1- | 2007 11 09 691 | 0.2+ | 0.1- |
| 2001 09 10 704 | 0.5+ | 0.0  | 2001 10 21 291 | 0.3+ | 0.1- | 2007 11 09 691 | 0.1+ | 0.0  |
| 2001 09 10 704 | 0.0  | 0.7+ | 2007 11 05 691 | 0.1- | 0.3- | 2007 11 18 704 | 0.3+ | 1.3+ |
| 2001 09 12 704 | 0.0  | 0.0  | 2007 11 05 691 | 0.2- | 0.3+ | 2007 11 18 704 | 0.2+ | 0.8- |
| 2001 09 12 704 | 0.5- | 0.5- | 2007 11 05 691 | 0.2- | 0.1- | 2007 11 18 704 | 0.1+ | 0.6+ |
| 2001 09 12 704 | 0.4+ | 0.2- | 2007 11 07 691 | 0.1+ | 0.2- | 2007 11 18 704 | 0.5+ | 0.3- |
| 2001 09 12 704 | 0.2+ | 0.1- | 2007 11 07 691 | 0.4- | 0.5+ |                |      |      |

**2007 VZ<sub>122</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 270.88388  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21209118 | $\omega$ | 301.30327 | -0.60485750 | -0.79629948 |
| $a$ | 2.7847592  | $\Omega$ | 185.93156 | +0.75275782 | -0.56870926 |
| $e$ | 0.1069855  | $i$      | 4.09772   | +0.25981353 | -0.20609928 |
| $P$ | 4.65       | $H$      | 17.3      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 02 12 645 | 0.1- | 0.1- | 2005 04 10 G96 | 0.5- | 0.0  | 2007 11 05 G96 | 0.1+ | 0.3- |
| 2000 02 12 645 | 0.1- | 0.2+ | 2007 10 08 G96 | 0.2+ | 0.5- | 2007 11 05 G96 | 0.3+ | 0.5- |
| 2000 03 03 645 | 0.0  | 0.2- | 2007 10 08 G96 | 0.3+ | 0.3- | 2007 11 05 G96 | 0.1+ | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.3+ | 0.1− | 2007 11 05 | G96 | 0.3+ | 0.1− |
| 2002 09 05 | 645 | 0.1− | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.4− | 2007 11 07 | 691 | 0.3− | 0.1+ |
| 2002 09 05 | 645 | 0.0  | 0.1+ | 2007 10 18 | G96 | 0.4+ | 0.1+ | 2007 11 07 | 691 | 0.5− | 0.4+ |
| 2005 04 10 | G96 | 0.0  | 0.0  | 2007 10 18 | G96 | 0.1− | 0.1+ | 2007 11 07 | 691 | 0.9− | 0.1− |
| 2005 04 10 | G96 | 0.8+ | 0.5− | 2007 10 18 | G96 | 0.0  | 0.5+ |            |     |      |      |
| 2005 04 10 | G96 | 0.5− | 0.3− | 2007 10 18 | G96 | 0.0  | 0.0  |            |     |      |      |

**2007 VT<sub>124</sub> = 2004 FW<sub>86</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 334.38922  | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.21062608 | $\omega$ | 39.80596 | −0.09640435 |      | −0.98804817 |   |
| <i>a</i> | 2.7976580  | $\Omega$ | 56.04934 | +0.87230438 |      | −0.14206675 |   |
| <i>e</i> | 0.1891867  | <i>i</i> | 8.33719  | +0.47936548 |      | +0.05981512 |   |
| <i>P</i> | 4.68       | <i>H</i> | 16.0     | <i>G</i>    | 0.15 | <i>U</i>    | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 10 | 644 | 0.4− | 0.9+ | 2004 03 27 | 691 | 0.0  | 0.1− | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2002 10 10 | 644 | 0.3− | 0.7+ | 2004 03 27 | 691 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.2− | 0.2+ |
| 2002 10 10 | 644 | 0.3− | 0.6+ | 2007 10 15 | G96 | 0.3− | 0.2− | 2007 11 15 | 704 | 0.5+ | 0.6− |
| 2004 03 19 | 644 | 0.2+ | 0.2− | 2007 10 15 | G96 | 0.1+ | 0.4− | 2007 11 15 | 704 | 0.2− | 0.3− |
| 2004 03 19 | 644 | 0.1− | 0.2− | 2007 10 15 | G96 | 0.4+ | 0.3− | 2007 11 15 | 704 | 0.5+ | 0.4+ |
| 2004 03 19 | 644 | 0.1+ | 0.4− | 2007 10 15 | G96 | 0.0  | 0.2− | 2007 12 04 | 699 | 0.2+ | 0.6+ |
| 2004 03 23 | 704 | 0.1+ | 0.5+ | 2007 11 05 | G96 | 0.2− | 0.3− | 2007 12 04 | 699 | 0.9+ | 0.3+ |
| 2004 03 23 | 704 | 0.2+ | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.3− | 2007 12 04 | 699 | 0.1+ | 0.0  |
| 2004 03 23 | 704 | 1.4+ | 0.2+ | 2007 11 05 | G96 | 0.0  | 0.3− | 2007 12 04 | 699 | 0.9+ | 0.4+ |
| 2004 03 23 | 704 | 0.1− | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.4− | 2007 12 10 | 704 | 0.3+ | 0.6+ |
| 2004 03 23 | 704 | 0.1+ | 0.3+ | 2007 11 06 | 691 | 0.5− | 0.1+ | 2007 12 10 | 704 | 0.1+ | 0.1+ |
| 2004 03 23 | 704 | 0.2+ | 0.2+ | 2007 11 06 | 691 | 0.4− | 0.1− | 2007 12 10 | 704 | 0.5+ | 0.8+ |
| 2004 03 23 | 704 | 0.3+ | 0.1+ | 2007 11 06 | 691 | 0.3− | 0.2− | 2007 12 14 | 704 | 0.2+ | 0.1− |
| 2004 03 23 | 704 | 0.8− | 0.5+ | 2007 11 13 | 703 | 0.1+ | 0.9− | 2007 12 14 | 704 | 0.4+ | 0.3+ |
| 2004 03 23 | 704 | 0.4− | 0.5− | 2007 11 13 | 703 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.3+ |
| 2004 03 23 | 704 | 0.2+ | 1.1+ | 2007 11 13 | 703 | 0.4− | 0.3+ | 2007 12 14 | 704 | 0.1− | 0.1− |
| 2004 03 27 | 691 | 0.0  | 0.0  | 2007 11 13 | 703 | 0.3+ | 0.8− | 2007 12 14 | 704 | 0.1+ | 0.2+ |

**2007 VV<sub>124</sub> = 2005 JX<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 318.49014  | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>n</i> | 0.26974498 | $\omega$ | 68.42280 | −0.36305627 |      | −0.93145921 |   |
| <i>a</i> | 2.3722865  | $\Omega$ | 42.88933 | +0.84133195 |      | −0.33875965 |   |
| <i>e</i> | 0.1442134  | <i>i</i> | 2.01716  | +0.40043812 |      | −0.13276155 |   |
| <i>P</i> | 3.65       | <i>H</i> | 17.0     | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 09 28 | 691 | 0.4− | 0.2− | 2005 05 06 | G96 | 0.5− | 0.0  | 2007 11 05 | G96 | 0.5+  | 0.3−  |
| 1992 09 28 | 691 | 0.9+ | 0.4+ | 2005 05 12 | 691 | 0.2+ | 0.2+ | 2007 11 05 | G96 | 0.7+  | 0.3−  |
| 1992 09 28 | 691 | 0.5− | 0.3− | 2005 05 12 | 691 | 0.1+ | 0.2+ | 2007 11 06 | 691 | 0.2−  | 0.4+  |
| 2003 10 19 | 691 | 0.2− | 0.1+ | 2005 05 12 | 691 | 0.2− | 0.2+ | 2007 11 06 | 691 | 0.3−  | 0.0   |
| 2003 10 19 | 691 | 0.1+ | 0.1− | 2007 09 14 | G96 | 0.3+ | 0.4− | 2007 11 06 | 691 | 0.2−  | 0.1+  |
| 2003 10 19 | 691 | 0.1− | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 11 15 | 704 | (0.9+ | 1.8+) |
| 2003 10 21 | 644 | 0.1+ | 0.8+ | 2007 09 14 | G96 | 0.3+ | 0.3− | 2007 11 15 | 704 | 0.9+  | 0.1+  |
| 2003 10 21 | 644 | 0.4− | 0.9+ | 2007 09 14 | G96 | 0.3+ | 0.2− | 2007 11 15 | 704 | 0.0   | 0.4−  |
| 2003 10 21 | 644 | 0.0  | 0.5+ | 2007 09 14 | G96 | 0.7− | 0.7+ | 2007 11 15 | 704 | (0.7+ | 1.9−) |
| 2005 03 12 | 691 | 0.1+ | 0.2− | 2007 09 14 | G96 | 0.4+ | 0.1+ | 2007 11 17 | 691 | 0.1−  | 0.2−  |
| 2005 03 12 | 691 | 0.2+ | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.1− | 2007 11 17 | 691 | 0.2−  | 0.1−  |
| 2005 03 12 | 691 | 0.0  | 0.1− | 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 11 17 | 691 | 0.1+  | 0.1−  |
| 2005 05 02 | 691 | 0.3+ | 0.2+ | 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 12 10 | 704 | 1.0−  | 0.5+  |
| 2005 05 02 | 691 | 0.2+ | 0.2− | 2007 10 16 | G96 | 0.3+ | 0.1− | 2007 12 10 | 704 | 1.1+  | 0.1−  |
| 2005 05 02 | 691 | 0.1− | 0.2+ | 2007 10 16 | G96 | 0.2+ | 0.1+ | 2007 12 10 | 704 | 0.4+  | 0.8+  |
| 2005 05 06 | G96 | 0.7− | 0.1+ | 2007 10 16 | G96 | 0.6+ | 0.2− | 2007 12 14 | 704 | 0.9−  | 0.4+  |
| 2005 05 06 | G96 | 0.2− | 0.1+ | 2007 11 05 | G96 | 0.5+ | 0.2− | 2007 12 14 | 704 | 0.8−  | 0.6−  |
| 2005 05 06 | G96 | 0.5− | 0.0  | 2007 11 05 | G96 | 0.3+ | 0.4− | 2007 12 14 | 704 | 0.3−  | 0.1+  |

**2007 VH<sub>125</sub> = 1995 FH<sub>9</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 357.51397  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.28470299 | $\omega$ | 256.15743 | +0.61877190 |      | −0.78393720 |   |
| <i>a</i> | 2.2884496  | $\Omega$ | 155.39687 | +0.75952989 |      | +0.58055827 |   |
| <i>e</i> | 0.1267323  | <i>i</i> | 6.98559   | +0.20058833 |      | +0.21998764 |   |
| <i>P</i> | 3.46       | <i>H</i> | 17.1      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 03 26 | 691 | 0.4− | 0.0  | 2007 11 05 | D29 | 0.8+ | 0.6− | 2007 11 19 | G96 | 0.1+ | 0.3− |
| 1995 03 26 | 691 | 0.3− | 0.4+ | 2007 11 05 | D29 | 0.6+ | 0.2− | 2007 11 19 | G96 | 0.1+ | 0.3− |
| 1995 03 26 | 691 | 0.3− | 0.1+ | 2007 11 05 | D29 | 0.5+ | 0.0  | 2007 11 19 | G96 | 0.1+ | 0.3− |
| 1995 03 31 | 691 | 0.0  | 0.4− | 2007 11 06 | 291 | 0.3− | 0.2− | 2007 11 19 | G96 | 0.3+ | 0.4− |
| 1995 03 31 | 691 | 0.5+ | 0.2− | 2007 11 06 | 291 | 0.4+ | 0.1+ | 2007 12 05 | 703 | 1.4− | 0.4− |
| 1995 03 31 | 691 | 0.4+ | 0.5− | 2007 11 06 | 291 | 0.9+ | 0.3+ | 2007 12 05 | 703 | 1.3− | 0.3− |
| 2005 01 19 | 691 | 0.2+ | 0.2− | 2007 11 07 | 703 | 0.5+ | 1.0+ | 2007 12 05 | 703 | 1.0− | 0.9− |
| 2005 01 19 | 691 | 0.2− | 0.1+ | 2007 11 07 | 703 | 0.6− | 0.2+ | 2007 12 05 | 703 | 0.7− | 0.7− |
| 2005 01 19 | 691 | 0.2+ | 0.0  | 2007 11 07 | 703 | 0.0  | 0.4+ | 2007 12 05 | 703 | 0.9− | 0.7+ |
| 2005 03 08 | G96 | 0.0  | 0.7+ | 2007 11 07 | 703 | 0.5+ | 0.0  | 2007 12 05 | 703 | 0.7− | 0.0  |
| 2005 03 08 | G96 | 0.1− | 0.6+ | 2007 11 17 | 703 | 0.7− | 0.2+ | 2007 12 05 | 703 | 1.4− | 0.2− |
| 2005 03 08 | G96 | 0.1+ | 0.4+ | 2007 11 17 | 703 | 0.5+ | 0.2+ | 2007 12 05 | 703 | 0.2− | 0.0  |
| 2005 03 08 | G96 | 0.1− | 0.5+ | 2007 11 17 | 703 | 0.3+ | 0.1+ |            |     |      |      |
| 2007 11 05 | D29 | 0.5+ | 0.2− | 2007 11 17 | 703 | 0.1− | 0.3− |            |     |      |      |

**2007 VM<sub>125</sub> = 2004 AO<sub>25</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 337.44279  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.24127917 | $\omega$ | 306.95421 | +0.08701675 |      | −0.99282650 |   |
| <i>a</i> | 2.5553839  | $\Omega$ | 137.82275 | +0.94842536 |      | +0.05737649 |   |
| <i>e</i> | 0.2494572  | <i>i</i> | 7.01474   | +0.30482360 |      | +0.10489744 |   |
| <i>P</i> | 4.08       | <i>H</i> | 16.7      | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 12 | 644 | 0.1− | 0.1+ | 2007 11 07 | 703 | 0.1− | 0.0  | 2007 11 19 | G96 | 0.1− | 0.0  |
| 2004 01 12 | 644 | 0.1+ | 0.1− | 2007 11 07 | 703 | 0.3+ | 0.6− | 2007 11 19 | G96 | 0.0  | 0.1− |
| 2004 01 12 | 644 | 0.1+ | 0.1+ | 2007 11 07 | 703 | 0.2+ | 0.2− | 2007 12 05 | 703 | 0.7+ | 0.0  |
| 2004 01 18 | 644 | 0.1− | 0.0  | 2007 11 07 | 703 | 0.0  | 0.1+ | 2007 12 05 | 703 | 0.7− | 0.2+ |
| 2004 01 18 | 644 | 0.2+ | 0.0  | 2007 11 15 | 699 | 0.0  | 0.5− | 2007 12 05 | 703 | 0.9− | 0.4− |
| 2004 01 18 | 644 | 0.2− | 0.2− | 2007 11 15 | 699 | 1.5− | 1.3+ | 2007 12 05 | 703 | 0.9+ | 0.8− |
| 2007 10 30 | 703 | 0.0  | 0.1+ | 2007 11 15 | 699 | 0.2− | 0.1+ | 2007 12 05 | 703 | 0.1+ | 0.0  |
| 2007 10 30 | 703 | 0.3+ | 0.3+ | 2007 11 15 | 699 | 0.3+ | 0.3+ | 2007 12 05 | 703 | 0.2+ | 0.3+ |
| 2007 10 30 | 703 | 0.9− | 0.3− | 2007 11 17 | 703 | 0.0  | 1.1− | 2007 12 05 | 703 | 0.7− | 0.0  |
| 2007 10 30 | 703 | 0.7− | 0.2− | 2007 11 17 | 703 | 0.3− | 0.5− | 2007 12 15 | 699 | 0.1+ | 0.1+ |
| 2007 11 05 | D29 | 0.6+ | 0.2+ | 2007 11 17 | 703 | 0.5+ | 0.0  | 2007 12 15 | 699 | 0.2− | 0.1− |
| 2007 11 05 | D29 | 0.8+ | 0.1− | 2007 11 17 | 703 | 0.1− | 0.0  | 2007 12 15 | 699 | 0.1+ | 0.3+ |
| 2007 11 05 | D29 | 0.7+ | 0.8+ | 2007 11 19 | G96 | 0.0  | 0.0  | 2007 12 15 | 699 | 0.2+ | 0.5+ |
| 2007 11 05 | D29 | 0.2+ | 0.2+ | 2007 11 19 | G96 | 0.0  | 0.0  |            |     |      |      |

**2007 VP<sub>125</sub> = 2005 JA<sub>124</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 298.54408  | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>n</i> | 0.22936751 | $\omega$ | 259.25951 | −0.39051712 |      | −0.91287350 |   |
| <i>a</i> | 2.6431072  | $\Omega$ | 214.50224 | +0.90522627 |      | −0.35725696 |   |
| <i>e</i> | 0.1207454  | <i>i</i> | 12.12616  | +0.16751653 |      | −0.19755869 |   |
| <i>P</i> | 4.30       | <i>H</i> | 16.9      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 05 | 645 | 0.0  | 0.0  | 2005 05 14 | 644 | 0.4+ | 0.5+ | 2007 10 30 | 703 | 0.3− | 0.1+ |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2005 05 14 | G96 | 0.4− | 0.2+ | 2007 11 07 | 703 | 0.5− | 0.0  |
| 2004 01 18 | 644 | 0.2− | 0.2− | 2005 05 14 | G96 | 0.2− | 0.3+ | 2007 11 07 | 703 | 0.4− | 1.0+ |
| 2004 01 18 | 644 | 0.5+ | 0.2+ | 2005 05 14 | G96 | 0.5− | 0.0  | 2007 11 07 | 703 | 0.1+ | 0.9− |
| 2004 01 18 | 644 | 0.3− | 0.1− | 2005 05 14 | G96 | 0.2− | 0.2+ | 2007 11 07 | 703 | 0.6− | 0.2+ |
| 2005 04 10 | G96 | 0.1− | 0.1+ | 2007 10 12 | 691 | 0.4− | 0.1+ | 2007 11 09 | G96 | 0.1+ | 0.2− |
| 2005 04 10 | G96 | 0.7− | 0.1+ | 2007 10 12 | 691 | 0.4− | 0.0  | 2007 11 09 | G96 | 0.1− | 0.2− |
| 2005 04 10 | G96 | 0.3− | 0.1+ | 2007 10 12 | 691 | 0.2− | 0.0  | 2007 11 09 | G96 | 0.3+ | 0.3− |

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|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 04 10 | G96 | 0.0  | 0.1− | 2007 10 15 | 703 | 2.0+  | 0.2−  | 2007 11 09 | G96 | 0.5+  | 0.5−  |
| 2005 04 17 | 691 | 0.5+ | 0.1+ | 2007 10 15 | 703 | (3.6+ | 0.1+) | 2007 11 10 | 711 | 0.6+  | 0.8+  |
| 2005 04 17 | 691 | 0.2+ | 0.6+ | 2007 10 15 | 703 | 0.2−  | 0.9+  | 2007 11 10 | 711 | 0.5+  | 0.1+  |
| 2005 04 17 | 691 | 0.2+ | 0.3+ | 2007 10 15 | 703 | 0.8+  | 0.6+  | 2007 11 10 | 711 | 0.7−  | 0.6+  |
| 2005 05 11 | G96 | 0.0  | 0.6+ | 2007 10 30 | 691 | 0.2−  | 0.1+  | 2007 11 14 | 704 | (0.5+ | 1.5+) |
| 2005 05 11 | G96 | 0.4− | 0.5+ | 2007 10 30 | 691 | 0.2−  | 0.1+  | 2007 11 14 | 704 | (1.5− | 0.3+) |
| 2005 05 11 | G96 | 0.2− | 0.5+ | 2007 10 30 | 691 | 0.3−  | 0.2+  | 2007 11 14 | 704 | 0.5−  | 0.2+  |
| 2005 05 11 | G96 | 0.5− | 0.7+ | 2007 10 30 | 703 | 1.1+  | 1.5+  | 2007 11 14 | 704 | 0.3−  | 0.8+  |
| 2005 05 14 | 644 | 0.2+ | 0.4+ | 2007 10 30 | 703 | 0.2+  | 0.5+  |            |     |       |       |
| 2005 05 14 | 644 | 0.1+ | 0.6+ | 2007 10 30 | 703 | 0.0   | 1.3+  |            |     |       |       |

2007 VM<sub>126</sub> = 2006 FW<sub>48</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |  |           |  |             |      |             |   |  |  |
|----------|------------|----------|--|-----------|--|-------------|------|-------------|---|--|--|
| <i>M</i> | 172.66421  |          |  | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| <i>n</i> | 0.37705431 | $\omega$ |  | 35.80280  |  | −0.63178774 |      | +0.76815689 |   |  |  |
| <i>a</i> | 1.8975801  | $\Omega$ |  | 195.89361 |  | −0.76966728 |      | −0.63756349 |   |  |  |
| <i>e</i> | 0.0456114  | <i>i</i> |  | 22.27927  |  | −0.09195939 |      | +0.05871783 |   |  |  |
| <i>P</i> | 2.61       | <i>H</i> |  | 17.3      |  | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 03 25 | 644 | 0.1−  | 0.1−  | 2007 10 10 | 703 | 1.2+ | 0.5+ | 2007 11 12 | G96 | 0.1− | 0.3− |
| 2006 03 25 | 644 | 0.2−  | 0.2−  | 2007 10 17 | 703 | 1.3− | 0.4+ | 2007 11 12 | G96 | 0.1− | 0.4− |
| 2006 03 25 | 644 | 0.1−  | 0.2−  | 2007 10 17 | 703 | 0.6+ | 1.5− | 2007 11 12 | G96 | 0.1− | 0.2− |
| 2006 04 06 | 704 | (2.4+ | 0.0 ) | 2007 10 17 | 703 | 0.2+ | 0.1+ | 2007 11 13 | G96 | 0.3− | 0.3− |
| 2006 04 06 | 704 | 1.0+  | 0.6+  | 2007 11 07 | 703 | 0.9− | 0.4− | 2007 11 13 | G96 | 0.1+ | 0.0  |
| 2006 04 06 | 704 | 0.8+  | 0.5−  | 2007 11 07 | 703 | 0.7+ | 0.0  | 2007 11 13 | G96 | 0.1− | 0.2− |
| 2006 05 05 | G96 | 0.5−  | 0.2+  | 2007 11 07 | 703 | 1.2+ | 0.3+ | 2007 11 13 | G96 | 0.2+ | 0.3− |
| 2006 05 05 | G96 | 0.4−  | 0.3+  | 2007 11 07 | 703 | 0.6+ | 0.4+ | 2007 11 18 | 703 | 0.0  | 0.5+ |
| 2006 05 05 | G96 | 0.5−  | 0.2+  | 2007 11 11 | 703 | 0.4− | 0.2+ | 2007 11 18 | 703 | 0.5− | 0.6+ |
| 2006 05 05 | G96 | 0.4−  | 0.2+  | 2007 11 11 | 703 | 0.6− | 0.7+ | 2007 11 18 | 703 | 0.2+ | 1.5− |
| 2007 10 10 | 703 | 0.8−  | 0.5+  | 2007 11 11 | 703 | 0.7− | 0.7+ | 2007 11 18 | 703 | 0.0  | 0.3+ |
| 2007 10 10 | 703 | 0.2+  | 1.3+  | 2007 11 11 | 703 | 0.1+ | 0.1+ |            |     |      |      |
| 2007 10 10 | 703 | 0.2+  | 0.7−  | 2007 11 12 | G96 | 0.1+ | 0.3− |            |     |      |      |

2007 VZ<sub>126</sub> = 1997 HN<sub>16</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |  |           |  |             |      |             |   |  |  |
|----------|------------|----------|--|-----------|--|-------------|------|-------------|---|--|--|
| <i>M</i> | 81.12192   |          |  | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| <i>n</i> | 0.23277595 | $\omega$ |  | 292.94760 |  | +0.65393059 |      | +0.75536769 |   |  |  |
| <i>a</i> | 2.6172426  | $\Omega$ |  | 18.09374  |  | −0.63453140 |      | +0.57809067 |   |  |  |
| <i>e</i> | 0.1828970  | <i>i</i> |  | 7.83931   |  | −0.41200082 |      | +0.30859493 |   |  |  |
| <i>P</i> | 4.23       | <i>H</i> |  | 16.4      |  | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 04 30 | 691 | 0.1+ | 0.5− | 2007 11 11 | 300 | 0.5− | 0.4− | 2007 11 18 | D35 | 0.0  | 0.1− |
| 1997 04 30 | 691 | 0.8− | 0.2− | 2007 11 11 | 300 | 0.2− | 0.1+ | 2007 11 20 | 704 | 0.3+ | 0.1− |
| 1997 04 30 | 691 | 0.3− | 0.6+ | 2007 11 11 | 300 | 0.5+ | 0.7+ | 2007 11 20 | 704 | 0.6+ | 0.5+ |
| 1997 05 08 | 691 | 0.0  | 0.4− | 2007 11 12 | G96 | 0.0  | 0.4− | 2007 11 20 | 704 | 0.8+ | 0.2− |
| 1997 05 08 | 691 | 0.5+ | 0.1− | 2007 11 12 | G96 | 0.2+ | 0.7− | 2007 11 20 | 704 | 0.4+ | 0.6+ |
| 1997 05 08 | 691 | 0.2+ | 0.2− | 2007 11 12 | G96 | 0.0  | 0.3− | 2007 11 20 | G96 | 0.1+ | 0.4− |
| 2001 02 20 | 645 | 0.2− | 0.0  | 2007 11 12 | G96 | 0.2+ | 0.2− | 2007 11 20 | G96 | 0.2+ | 0.4− |
| 2001 02 20 | 645 | 0.1− | 0.0  | 2007 11 12 | 300 | 0.2+ | 0.5− | 2007 11 20 | G96 | 0.1− | 0.3− |
| 2001 03 04 | 691 | 1.3+ | 0.3+ | 2007 11 12 | 300 | 0.4+ | 0.4+ | 2007 11 20 | G96 | 0.1+ | 0.4− |
| 2001 03 04 | 691 | 0.3+ | 0.0  | 2007 11 12 | 300 | 1.3+ | 0.4− | 2007 12 02 | 704 | 0.2− | 0.2+ |
| 2001 03 04 | 691 | 0.4+ | 0.4+ | 2007 11 17 | 704 | 0.2− | 0.1− | 2007 12 02 | 704 | 1.1− | 1.1+ |
| 2002 07 16 | 644 | 0.3− | 1.0+ | 2007 11 17 | 704 | 1.3+ | 0.5+ | 2007 12 02 | 704 | 1.0− | 0.9+ |
| 2002 07 16 | 644 | 0.1− | 0.7+ | 2007 11 17 | 704 | 0.2− | 0.5+ | 2007 12 03 | 704 | 1.3− | 0.6+ |
| 2002 07 16 | 644 | 0.5− | 0.5+ | 2007 11 17 | 704 | 0.3+ | 0.3+ | 2007 12 03 | 704 | 0.1− | 0.6− |
| 2007 11 11 | 300 | 0.1− | 0.5+ | 2007 11 17 | 704 | 0.8+ | 0.5+ | 2007 12 03 | 704 | 1.1− | 0.6− |
| 2007 11 11 | 300 | 0.4− | 0.0  | 2007 11 18 | D35 | 0.2+ | 0.1+ | 2007 12 03 | 704 | 0.3− | 1.0− |
| 2007 11 11 | 300 | 0.7− | 0.2+ | 2007 11 18 | D35 | 0.0  | 0.3+ | 2007 12 03 | 704 | 0.6− | 0.4− |

## M.P.O. 130009

2007 VA<sub>129</sub> = 2005 JY<sub>107</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |  |           |  |             |      |             |   |  |  |
|----------|------------|----------|--|-----------|--|-------------|------|-------------|---|--|--|
| <i>M</i> | 120.20031  |          |  | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| <i>n</i> | 0.17057753 | $\omega$ |  | 62.06493  |  | −0.01999207 |      | +0.99782453 |   |  |  |
| <i>a</i> | 3.2199923  | $\Omega$ |  | 207.01057 |  | −0.95903192 |      | −0.03689889 |   |  |  |
| <i>e</i> | 0.0560559  | <i>i</i> |  | 7.95099   |  | −0.28259174 |      | +0.05463229 |   |  |  |
| <i>P</i> | 5.78       | <i>H</i> |  | 16.1      |  | <i>G</i>    | 0.15 | <i>U</i>    | 4 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 12 | G96 | 0.3− | 0.1− | 2007 10 12 | 691 | 0.3+ | 0.2− | 2007 11 01 | G96 | 0.0  | 0.2+ |
| 2005 05 12 | G96 | 0.4+ | 0.2− | 2007 10 12 | 691 | 0.3+ | 0.1− | 2007 11 01 | G96 | 0.2− | 0.6+ |
| 2005 05 12 | G96 | 1.0− | 0.1− | 2007 10 12 | 691 | 0.7− | 0.1− | 2007 11 01 | G96 | 0.2− | 0.1+ |
| 2005 05 12 | G96 | 0.1− | 0.0  | 2007 10 20 | 691 | 0.0  | 0.1+ | 2007 11 07 | G96 | 0.1+ | 0.1− |
| 2005 05 13 | 691 | 0.5+ | 0.2− | 2007 10 20 | 691 | 0.4+ | 0.3+ | 2007 11 07 | G96 | 0.3+ | 0.4− |
| 2005 05 13 | 691 | 0.2+ | 0.2+ | 2007 10 20 | 691 | 0.2+ | 0.2− | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2005 05 13 | 691 | 0.2+ | 0.3+ | 2007 11 01 | G96 | 0.6− | 0.0  | 2007 11 07 | G96 | 0.2+ | 0.3− |

2007 VQ<sub>129</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |  |           |  |             |      |             |   |  |  |
|----------|------------|----------|--|-----------|--|-------------|------|-------------|---|--|--|
| <i>M</i> | 163.02376  |          |  | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| <i>n</i> | 0.26642564 | $\omega$ |  | 79.95317  |  | −0.65794366 |      | +0.75291208 |   |  |  |
| <i>a</i> | 2.3919496  | $\Omega$ |  | 148.88666 |  | −0.70199235 |      | −0.60584801 |   |  |  |
| <i>e</i> | 0.1384099  | <i>i</i> |  | 1.69472   |  | −0.27261124 |      | −0.25704394 |   |  |  |
| <i>P</i> | 3.70       | <i>H</i> |  | 17.1      |  | <i>G</i>    | 0.15 | <i>U</i>    | 6 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 29 | 691 | 0.1+ | 0.1+ | 2007 10 08 | 691 | 0.2− | 0.0  | 2007 11 01 | G96 | 0.2− | 0.3− |
| 2003 09 29 | 691 | 0.2+ | 0.3+ | 2007 10 20 | 691 | 0.8− | 0.9+ | 2007 11 07 | G96 | 0.4+ | 0.1+ |
| 2003 09 29 | 691 | 0.1− | 0.1− | 2007 10 20 | 691 | 0.4+ | 0.7+ | 2007 11 07 | G96 | 0.1− | 0.0  |
| 2003 10 18 | 645 | 0.1− | 0.2− | 2007 10 20 | 691 | 0.6− | 0.5+ | 2007 11 07 | G96 | 0.1− | 0.2− |
| 2003 10 18 | 645 | 0.0  | 0.3− | 2007 11 01 | G96 | 0.3+ | 0.5− | 2007 11 07 | G96 | 0.0  | 0.1− |
| 2007 10 08 | 691 | 0.3+ | 0.0  | 2007 11 01 | G96 | 0.0  | 0.4− |            |     |      |      |
| 2007 10 08 | 691 | 0.0  | 0.0  | 2007 11 01 | G96 | 0.6+ | 0.3− |            |     |      |      |

2007 VK<sub>130</sub> = 2007 TE<sub>417</sub> = 2007 TN<sub>417</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |  |           |  |             |      |             |   |  |  |
|----------|------------|----------|--|-----------|--|-------------|------|-------------|---|--|--|
| <i>M</i> | 3.95069    |          |  | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| <i>n</i> | 0.18863770 | $\omega$ |  | 316.63877 |  | +0.82554877 |      | −0.56164233 |   |  |  |
| <i>a</i> | 3.0110436  | $\Omega$ |  | 77.60880  |  | +0.53193073 |      | +0.74188482 |   |  |  |
| <i>e</i> | 0.0637912  | <i>i</i> |  | 3.22927   |  | +0.18846464 |      | +0.36628516 |   |  |  |
| <i>P</i> | 5.22       | <i>H</i> |  | 16.4      |  | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 16 | 691 | 0.2+ | 0.2+ | 2007 10 06 | 691 | 0.0  | 0.1+ | 2007 10 18 | 691 | 0.0  | 0.3− |
| 2004 02 16 | 691 | 0.2+ | 0.1− | 2007 10 06 | 691 | 0.0  | 0.2− | 2007 11 01 | G96 | 0.2+ | 0.2+ |
| 2004 02 16 | 691 | 0.4− | 0.1− | 2007 10 06 | 691 | 0.3− | 0.8+ | 2007 11 01 | G96 | 0.3+ | 0.0  |
| 2005 05 09 | G96 | 0.5+ | 0.1− | 2007 10 10 | 691 | 0.0  | 0.3+ | 2007 11 01 | G96 | 0.4+ | 0.1− |
| 2005 05 09 | G96 | 0.9+ | 0.4− | 2007 10 10 | 691 | 0.1− | 0.1− | 2007 11 01 | G96 | 0.4+ | 0.1− |
| 2005 05 09 | G96 | 0.1+ | 0.0  | 2007 10 10 | 691 | 0.5− | 0.0  | 2007 11 07 | G96 | 0.3+ | 0.3− |
| 2005 05 09 | G96 | 0.2− | 0.1− | 2007 10 14 | 691 | 0.0  | 0.0  | 2007 11 07 | G96 | 0.2+ | 0.5− |
| 2005 06 13 | G96 | 0.5− | 0.1− | 2007 10 14 | 691 | 0.2+ | 0.5+ | 2007 11 07 | G96 | 0.3+ | 0.5− |
| 2005 06 13 | G96 | 0.9− | 0.1− | 2007 10 14 | 691 | 0.1+ | 0.3− | 2007 11 07 | G96 | 0.2+ | 0.4− |
| 2005 06 13 | G96 | 0.2− | 0.5+ | 2007 10 18 | 691 | 0.2+ | 0.0  |            |     |      |      |
| 2005 06 13 | G96 | 0.0  | 0.1+ | 2007 10 18 | 691 | 0.1− | 0.3− |            |     |      |      |

2007 VN<sub>133</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|          |            |          |  |           |  |             |      |             |   |  |  |
|----------|------------|----------|--|-----------|--|-------------|------|-------------|---|--|--|
| <i>M</i> | 344.79052  |          |  | (2000.0)  |  | <b>P</b>    |      | <b>Q</b>    |   |  |  |
| <i>n</i> | 0.18349475 | $\omega$ |  | 136.00558 |  | +0.40184290 |      | −0.90304347 |   |  |  |
| <i>a</i> | 3.0670460  | $\Omega$ |  | 289.76449 |  | +0.78927814 |      | +0.42560625 |   |  |  |
| <i>e</i> | 0.1788251  | <i>i</i> |  | 9.28077   |  | +0.46428687 |      | +0.05806734 |   |  |  |
| <i>P</i> | 5.37       | <i>H</i> |  | 15.2      |  | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 23 | 691 | 0.0  | 0.4+ | 2006 06 22 | 691 | 0.2− | 0.3+ | 2007 11 09 | 704 | 0.2+ | 0.5+ |
| 1998 02 23 | 691 | 0.0  | 0.0  | 2007 10 09 | 703 | 0.1− | 0.0  | 2007 11 09 | 704 | 0.3+ | 0.2+ |
| 1998 02 23 | 691 | 0.1+ | 0.1+ | 2007 10 09 | 703 | 0.2+ | 0.0  | 2007 11 09 | 704 | 0.1+ | 0.8+ |
| 2001 09 20 | 645 | 0.0  | 0.0  | 2007 10 09 | 703 | 0.6− | 0.3+ | 2007 11 09 | 704 | 0.1+ | 0.3+ |
| 2001 09 20 | 645 | 0.0  | 0.1− | 2007 10 09 | 703 | 0.5− | 0.4− | 2007 11 09 | 704 | 0.2+ | 0.6+ |
| 2001 09 20 | 645 | 0.1+ | 0.1− | 2007 11 02 | 703 | 0.3− | 0.3+ | 2007 11 16 | 704 | 0.1+ | 0.7+ |
| 2001 09 20 | 645 | 0.1+ | 0.1− | 2007 11 02 | 703 | 0.8− | 0.8+ | 2007 11 16 | 704 | 0.1+ | 0.2+ |
| 2006 05 26 | G96 | 0.4− | 0.3− | 2007 11 02 | 703 | 0.4− | 0.2− | 2007 11 16 | 704 | 0.0  | 0.2+ |
| 2006 05 26 | G96 | 0.1− | 0.1− | 2007 11 02 | 703 | 0.0  | 0.1− | 2007 12 02 | 704 | 0.4− | 0.1+ |
| 2006 05 26 | G96 | 0.4− | 0.1− | 2007 11 08 | 703 | 0.1+ | 0.5− | 2007 12 02 | 704 | 0.1− | 0.2+ |
| 2006 05 26 | G96 | 0.2− | 0.1− | 2007 11 08 | 703 | 0.0  | 0.2+ | 2007 12 02 | 704 | 0.1+ | 0.6+ |
| 2006 06 22 | 691 | 0.3− | 1.1+ | 2007 11 08 | 703 | 0.2+ | 0.3+ | 2007 12 02 | 704 | 0.1+ | 0.5+ |
| 2006 06 22 | 691 | 0.4− | 1.1+ | 2007 11 08 | 703 | 0.0  | 0.1+ |            |     |      |      |

**2007 VP<sub>133</sub> = 2004 HJ<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | (2000.0) |           | P           |             | Q        |   |
|-----------|------------|----------|-----------|-------------|-------------|----------|---|
| 261.13496 |            |          |           |             |             |          |   |
| <i>n</i>  | 0.17846527 | <i>ω</i> | 44.76894  | −0.90760498 | −0.41796622 |          |   |
| <i>a</i>  | 3.1244020  | <i>Ω</i> | 110.48756 | +0.37241718 | −0.84494366 |          |   |
| <i>e</i>  | 0.1304052  | <i>i</i> | 2.41454   | +0.19380053 | −0.33372811 |          |   |
| <i>P</i>  | 5.52       | <i>H</i> | 16.2      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 03 24 | 809 | 0.6− | 0.5+ | 2007 10 20 | 691 | 0.2− | 0.2− | 2007 11 07 | G96 | 0.7+ | 0.2− |
| 1993 04 14 | 691 | 0.5− | 1.2− | 2007 10 20 | 691 | 0.1+ | 0.1+ | 2007 11 09 | G96 | 1.2+ | 0.3− |
| 1993 04 14 | 691 | 0.3− | 0.8− | 2007 10 30 | 691 | 0.4− | 0.9+ | 2007 11 09 | G96 | 1.0+ | 0.2− |
| 1993 04 14 | 691 | 0.0  | 0.3− | 2007 10 30 | 691 | 0.5− | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.4− |
| 2004 04 20 | 691 | 0.4+ | 0.5+ | 2007 10 30 | 691 | 0.6− | 0.3+ | 2007 11 09 | G96 | 0.5− | 0.7− |
| 2004 04 20 | 691 | 0.4+ | 0.2+ | 2007 11 02 | 291 | 0.2− | 0.4− | 2007 11 09 | G96 | 0.8+ | 0.1− |
| 2004 04 20 | 691 | 0.1+ | 0.0  | 2007 11 02 | 291 | 0.3+ | 0.5− | 2007 11 09 | G96 | 0.7+ | 0.1+ |
| 2004 04 23 | 291 | 0.3− | 0.5+ | 2007 11 02 | 291 | 0.1− | 0.0  | 2007 11 09 | G96 | 0.3+ | 0.1− |
| 2004 04 23 | 291 | 0.3+ | 0.6+ | 2007 11 07 | G96 | 0.6+ | 0.2− | 2007 11 09 | G96 | 0.3+ | 0.1+ |
| 2004 04 23 | 291 | 0.0  | 0.4+ | 2007 11 07 | G96 | 1.1+ | 0.1− |            |     |      |      |
| 2007 10 20 | 691 | 0.0  | 0.0  | 2007 11 07 | G96 | 0.4+ | 0.4− |            |     |      |      |

**2007 VT<sub>133</sub> = 2001 SC<sub>182</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |           | P           |             | Q        |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| 19.86782 |            |          |           |             |             |          |   |
| <i>n</i> | 0.18358694 | <i>ω</i> | 39.16405  | +0.94722568 | −0.31404399 |          |   |
| <i>a</i> | 3.0660191  | <i>Ω</i> | 338.86843 | +0.23049977 | +0.80671949 |          |   |
| <i>e</i> | 0.1487247  | <i>i</i> | 10.28090  | +0.22278546 | +0.50057971 |          |   |
| <i>P</i> | 5.37       | <i>H</i> | 15.2      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.7+ | 0.1+ | 2007 10 09 | 703 | 0.0  | 0.0  | 2007 11 08 | 703 | 0.3+ | 0.2− |
| 2001 09 19 | 704 | 0.6− | 0.2− | 2007 10 12 | 699 | 0.8− | 0.7+ | 2007 11 08 | 703 | 0.0  | 0.3− |
| 2001 09 19 | 704 | 0.1− | 0.1+ | 2007 10 12 | 699 | 1.3+ | 0.6+ | 2007 11 18 | 703 | 0.7+ | 0.2− |
| 2001 09 19 | 704 | 0.0  | 0.1− | 2007 10 12 | 699 | 0.3+ | 1.0− | 2007 11 18 | 703 | 0.3− | 0.1+ |
| 2001 09 19 | 704 | 0.2− | 0.4− | 2007 10 12 | 699 | 0.9+ | 1.3− | 2007 11 18 | 703 | 0.3− | 0.1+ |
| 2001 09 21 | 704 | 0.2+ | 0.1− | 2007 11 02 | 703 | 0.0  | 0.7+ | 2007 11 18 | 703 | 1.4− | 1.0− |
| 2001 09 21 | 704 | 0.2+ | 0.4+ | 2007 11 02 | 703 | 0.4+ | 0.5− | 2007 12 03 | 704 | 0.3− | 0.4+ |
| 2001 09 21 | 704 | 0.4− | 0.6+ | 2007 11 02 | 703 | 1.0− | 0.1+ | 2007 12 03 | 704 | 0.8+ | 0.5+ |
| 2007 10 09 | 703 | 0.0  | 0.3+ | 2007 11 02 | 703 | 0.1− | 0.5− | 2007 12 03 | 704 | 1.2− | 1.0+ |
| 2007 10 09 | 703 | 0.4+ | 0.6− | 2007 11 08 | 703 | 0.1− | 0.5− | 2007 12 03 | 704 | 0.3− | 0.7+ |
| 2007 10 09 | 703 | 0.5− | 0.5+ | 2007 11 08 | 703 | 1.1+ | 0.3+ |            |     |      |      |

**2007 VW<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | P           |             | Q        |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| 2.33819  |            |          |          |             |             |          |   |
| <i>n</i> | 0.23458184 | <i>ω</i> | 37.89005 | +0.72290233 | −0.69054291 |          |   |
| <i>a</i> | 2.6037930  | <i>Ω</i> | 5.95511  | +0.56484806 | +0.57084721 |          |   |
| <i>e</i> | 0.1569934  | <i>i</i> | 13.21734 | +0.39794333 | +0.44416659 |          |   |
| <i>P</i> | 4.20       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 644 | 0.1− | 0.1+ | 2007 10 16 | 703 | 0.3+ | 0.4− | 2007 11 17 | G96 | 0.2− | 0.1− |
| 2003 12 22 | 644 | 0.2+ | 0.1+ | 2007 10 16 | 703 | 0.4− | 0.3− | 2007 11 17 | G96 | 0.1+ | 0.2− |
| 2003 12 22 | 644 | 0.1− | 0.3− | 2007 10 16 | 703 | 0.3− | 0.3+ | 2007 11 17 | G96 | 0.2+ | 0.0  |
| 2005 03 11 | G96 | 0.2− | 0.1− | 2007 11 02 | 703 | 0.2+ | 0.8+ | 2007 11 18 | G96 | 0.0  | 0.1− |
| 2005 03 11 | G96 | 0.0  | 0.0  | 2007 11 02 | 703 | 0.5− | 0.6− | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2005 03 11 | G96 | 0.1+ | 0.1+ | 2007 11 02 | 703 | 0.1+ | 0.2− | 2007 11 18 | G96 | 0.2+ | 0.3− |
| 2005 03 11 | G96 | 0.5+ | 0.5+ | 2007 11 02 | 703 | 0.5− | 0.1− | 2007 11 18 | G96 | 0.2+ | 0.2− |
| 2007 10 09 | 703 | 0.6− | 0.9+ | 2007 11 08 | 703 | 0.4+ | 0.1+ | 2007 12 03 | 704 | 0.1+ | 0.6+ |
| 2007 10 09 | 703 | 0.6− | 0.9+ | 2007 11 08 | 703 | 0.3− | 0.5− | 2007 12 03 | 704 | 0.0  | 0.1− |
| 2007 10 09 | 703 | 0.2+ | 0.1+ | 2007 11 08 | 703 | 1.2+ | 0.1+ | 2007 12 03 | 704 | 0.2− | 0.5+ |
| 2007 10 09 | 703 | 0.3− | 0.3− | 2007 11 08 | 703 | 0.3+ | 0.3+ | 2007 12 03 | 704 | 0.3+ | 0.0  |
| 2007 10 16 | 703 | 0.6− | 0.1− | 2007 11 17 | G96 | 0.1− | 0.1− | 2007 12 03 | 704 | 0.1+ | 0.2+ |

**2007 VR<sub>138</sub> = 2003 TG<sub>33</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i>  |            | (2000.0) |          | P           |             | Q        |   |
|-----------|------------|----------|----------|-------------|-------------|----------|---|
| 328.96382 |            |          |          |             |             |          |   |
| <i>n</i>  | 0.26720206 | <i>ω</i> | 58.08521 | −0.05664018 | −0.99612820 |          |   |
| <i>a</i>  | 2.3873138  | <i>Ω</i> | 35.35272 | +0.87229322 | −0.08213433 |          |   |
| <i>e</i>  | 0.0890519  | <i>i</i> | 6.67287  | +0.48569171 | +0.03134569 |          |   |
| <i>P</i>  | 3.69       | <i>H</i> | 17.2     | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 10 01 | 691 | 0.2− | 0.1+ | 2007 09 15 | G96 | 0.2+  | 0.1−  | 2007 11 08 | 691 | 0.1−  | 0.0   |
| 2003 10 01 | 691 | 0.5− | 0.1− | 2007 09 15 | G96 | 0.0   | 0.1−  | 2007 11 19 | G96 | 0.4+  | 0.2−  |
| 2003 10 01 | 691 | 0.4− | 0.0  | 2007 09 15 | G96 | 0.3+  | 0.3−  | 2007 11 19 | G96 | 0.2+  | 0.1+  |
| 2003 10 18 | 691 | 0.4+ | 0.4− | 2007 11 02 | 691 | 0.1+  | 0.2−  | 2007 11 19 | G96 | 0.2+  | 0.0   |
| 2003 10 18 | 691 | 0.2+ | 0.3+ | 2007 11 02 | 691 | 0.0   | 0.0   | 2007 11 19 | G96 | 0.5+  | 0.1−  |
| 2003 10 18 | 691 | 0.3+ | 0.4+ | 2007 11 02 | 691 | 0.0   | 0.1+  | 2007 11 20 | 691 | 0.2+  | 0.1+  |
| 2005 05 11 | G96 | 0.1− | 0.2+ | 2007 11 04 | 691 | 0.1+  | 0.0   | 2007 11 20 | 691 | 0.1+  | 0.3−  |
| 2005 05 11 | G96 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.5−  | 0.1+  | 2007 11 20 | 691 | 0.3−  | 0.3+  |
| 2005 05 11 | G96 | 0.1+ | 0.6+ | 2007 11 04 | 691 | (2.2− | 1.3−) | 2007 12 13 | 704 | 0.5+  | 1.4−  |
| 2005 05 11 | G96 | 0.9+ | 1.1+ | 2007 11 08 | 691 | 0.2−  | 0.2+  | 2007 12 13 | 704 | 1.2+  | 0.2−  |
| 2007 09 15 | G96 | 0.0  | 0.1+ | 2007 11 08 | 691 | 0.2−  | 0.2+  | 2007 12 13 | 704 | (2.1+ | 2.1−) |

**2007 VG<sub>141</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> |            | (2000.0) |          | P           |             | Q        |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| 2.81727  |            |          |          |             |             |          |   |
| <i>n</i> | 0.30361362 | <i>ω</i> | 22.96986 | +0.76196610 | −0.64742526 |          |   |
| <i>a</i> | 2.1924105  | <i>Ω</i> | 17.40663 | +0.58570259 | +0.67853564 |          |   |
| <i>e</i> | 0.1176555  | <i>i</i> | 3.01880  | +0.27633340 | +0.34703014 |          |   |
| <i>P</i> | 3.25       | <i>H</i> | 18.1     | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 10 05 | 691 | 0.0  | 0.8+ | 2007 09 15 | G96 | 0.1+ | 0.1− | 2007 10 19 | 691 | 1.5+ | 0.2− |
| 1997 10 05 | 691 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.2+ | 0.2+ | 2007 10 19 | 691 | 0.2− | 0.1− |
| 1997 10 05 | 691 | 0.5− | 0.1+ | 2007 09 15 | G96 | 0.3+ | 0.1− | 2007 11 04 | 691 | 0.4− | 0.3+ |
| 2002 03 18 | 695 | 0.5+ | 0.6+ | 2007 09 15 | G96 | 0.3+ | 0.1− | 2007 11 04 | 691 | 0.3− | 0.1+ |
| 2002 03 18 | 695 | 0.3− | 0.2+ | 2007 10 15 | 691 | 0.1− | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.3+ |
| 2004 12 18 | 691 | 0.0  | 0.0  | 2007 10 15 | 691 | 0.0  | 0.4+ | 2007 11 08 | 691 | 0.1+ | 0.1+ |
| 2004 12 18 | 691 | 0.2+ | 0.1+ | 2007 10 15 | 691 | 0.2− | 0.9+ | 2007 11 08 | 691 | 0.9− | 0.3− |
| 2004 12 18 | 691 | 0.0  | 0.2− | 2007 10 19 | 691 | 0.3+ | 1.5− | 2007 11 08 | 691 | 0.1− | 0.5− |

**2007 VH<sub>141</sub> = 2001 SM<sub>322</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 336.93552  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.17676304 | $\omega$ | 200.30931 | +0.18446736  | -0.97023838  |
| $a$ | 3.1444287  | $\Omega$ | 239.35231 | +0.92504033  | +0.22532191  |
| $e$ | 0.1509531  | $i$      | 10.50630  | +0.33207256  | -0.08869911  |
| $P$ | 5.58       | $H$      | 15.3      | $G$ 0.15     | $U$ 3        |



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|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 25 | 704 | 0.1+ | 1.1+ | 2007 11 13 | 699 | 0.0   | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.1− |
| 2001 09 25 | 704 | 0.1+ | 0.3+ | 2007 11 13 | 699 | 1.4+  | 0.3+  | 2007 12 05 | 704 | 0.7+ | 0.2+ |
| 2001 09 26 | 704 | 0.4+ | 0.2− | 2007 11 13 | 699 | (1.7+ | 0.9−) | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2001 09 26 | 704 | 0.9+ | 0.9− | 2007 11 15 | 704 | 0.0   | 0.3+  | 2007 12 05 | 704 | 0.3+ | 0.3+ |
| 2001 09 26 | 704 | 0.4− | 0.6− | 2007 11 15 | 704 | 0.0   | 0.1+  | 2007 12 14 | 691 | 0.2+ | 0.1+ |
| 2001 09 26 | 704 | 0.1− | 0.6− | 2007 11 15 | 704 | 0.5+  | 0.1+  | 2007 12 14 | 691 | 0.0  | 0.1+ |
| 2007 11 04 | 691 | 0.2− | 0.3+ | 2007 11 15 | 704 | 0.0   | 0.6+  | 2007 12 14 | 691 | 0.3− | 0.2− |
| 2007 11 04 | 691 | 0.3− | 0.7− | 2007 11 15 | 704 | 0.0   | 0.7+  | 2007 12 15 | G96 | 0.1+ | 0.4− |
| 2007 11 04 | 691 | 0.1+ | 0.1− | 2007 11 19 | 691 | 0.2−  | 0.1+  | 2007 12 15 | G96 | 0.1− | 0.5− |
| 2007 11 08 | 691 | 0.0  | 0.3− | 2007 11 19 | 691 | 0.0   | 0.2−  | 2007 12 15 | G96 | 0.2− | 0.5− |
| 2007 11 08 | 691 | 0.1− | 0.2+ | 2007 11 19 | 691 | 0.2−  | 0.0   | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2007 11 08 | 691 | 0.3− | 0.2− | 2007 12 03 | 703 | 0.5−  | 0.6−  |            |     |      |      |
| 2007 11 12 | A77 | 0.5+ | 0.4+ | 2007 12 03 | 703 | 0.3+  | 0.5+  |            |     |      |      |

2007 VR<sub>141</sub> = 2001 SR<sub>311</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 69.79659   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.18266121 | $\omega$ | 109.60031 | +0.87741888 |      | +0.46584091 |   |  |  |  |  |
| <i>a</i>                                | 3.0763695  | $\Omega$ | 222.84600 | −0.47848680 |      | +0.83267601 |   |  |  |  |  |
| <i>e</i>                                | 0.1027203  | <i>i</i> | 9.70010   | −0.03444549 |      | +0.29940424 |   |  |  |  |  |
| <i>P</i>                                | 5.40       | <i>H</i> | 15.8      | <i>G</i>    | 0.15 | <i>U</i>    | 0 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1996 10 11 | 691 | 0.0  | 0.1+ | 2005 05 03 | 691 | 0.2+  | 0.7+  | 2007 09 10 | G96 | 0.8+  | 0.0   |
| 1996 10 11 | 691 | 0.1− | 0.5− | 2005 05 03 | 691 | 0.2+  | 0.5+  | 2007 11 04 | 691 | 0.2−  | 0.2−  |
| 1996 10 11 | 691 | 0.1+ | 0.1− | 2005 05 03 | 691 | (2.7+ | 2.3−) | 2007 11 04 | 691 | 0.0   | 0.1+  |
| 2001 09 20 | 704 | 0.1+ | 0.7+ | 2005 05 04 | G96 | 0.3−  | 0.2−  | 2007 11 04 | 691 | 0.2+  | 0.0   |
| 2001 09 20 | 704 | 0.2+ | 0.0  | 2005 05 04 | G96 | 0.3−  | 0.2−  | 2007 11 08 | 691 | 0.1+  | 0.4+  |
| 2001 09 20 | 704 | 1.4− | 0.9+ | 2005 05 04 | G96 | 0.3−  | 0.2+  | 2007 11 08 | 691 | 0.0   | 0.2+  |
| 2001 09 20 | 704 | 0.5− | 0.2+ | 2005 05 04 | G96 | 0.2−  | 0.1−  | 2007 11 08 | 691 | 0.1−  | 0.3+  |
| 2001 09 25 | 704 | 0.5+ | 0.6− | 2007 09 10 | G96 | 0.6+  | 0.1−  | 2007 11 14 | 704 | 0.2−  | 1.1+  |
| 2001 09 25 | 704 | 0.3+ | 0.4− | 2007 09 10 | G96 | 0.0   | 0.7+  | 2007 11 14 | 704 | 0.8−  | 0.2−  |
| 2001 09 25 | 704 | 0.5+ | 0.6+ | 2007 09 10 | G96 | 0.2−  | 0.3+  | 2007 11 14 | 704 | (1.6− | 0.3−) |

2007 VU<sub>141</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 344.24777  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.21768745 | $\omega$ | 250.42604 | +0.32590606 |      | −0.94540202 |   |  |  |  |  |
| <i>a</i>                                | 2.7368256  | $\Omega$ | 180.55423 | +0.88569829 |      | +0.30551037 |   |  |  |  |  |
| <i>e</i>                                | 0.1020126  | <i>i</i> | 2.97817   | +0.33064147 |      | +0.11348315 |   |  |  |  |  |
| <i>P</i>                                | 4.53       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 03 03 | 645 | 0.0  | 0.1− | 2004 01 28 | 691 | 0.0  | 0.0  | 2007 11 04 | 691 | 0.4− | 0.3+ |
| 2000 03 03 | 645 | 0.1− | 0.1− | 2007 10 20 | G96 | 0.0  | 0.3− | 2007 11 04 | 691 | 0.3− | 0.2+ |
| 2002 10 05 | 645 | 0.1− | 0.0  | 2007 10 20 | G96 | 0.8+ | 0.1− | 2007 11 08 | 691 | 0.3− | 0.1+ |
| 2002 10 05 | 645 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.5+ | 0.1− | 2007 11 08 | 691 | 0.3− | 0.5+ |
| 2004 01 28 | 691 | 0.1+ | 0.0  | 2007 10 20 | G96 | 0.8+ | 0.7− | 2007 11 08 | 691 | 0.2− | 0.1− |
| 2004 01 28 | 691 | 0.1− | 0.0  | 2007 11 04 | 691 | 0.5− | 0.1+ |            |     |      |      |

2007 VV<sub>141</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 42.69739   |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.27795522 | $\omega$ | 158.15552 | +0.96536929 |      | +0.26084268 |   |  |  |  |  |
| <i>a</i>                                | 2.3253384  | $\Omega$ | 186.72987 | −0.24503434 |      | +0.90021204 |   |  |  |  |  |
| <i>e</i>                                | 0.2262108  | <i>i</i> | 2.35707   | −0.08955617 |      | +0.34868235 |   |  |  |  |  |
| <i>P</i>                                | 3.55       | <i>H</i> | 18.0      | <i>G</i>    | 0.15 | <i>U</i>    | 2 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 01 | 691 | 0.1+ | 0.4− | 2007 10 20 | G96 | 0.2+ | 0.1− | 2007 11 08 | 691 | 0.0  | 1.1+ |
| 2000 12 01 | 691 | 0.0  | 0.0  | 2007 10 20 | G96 | 0.8+ | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2000 12 01 | 691 | 0.0  | 0.3− | 2007 10 20 | G96 | 0.0  | 0.0  | 2007 11 08 | 691 | 0.0  | 0.0  |
| 2006 05 01 | 695 | 0.2+ | 0.4+ | 2007 10 20 | G96 | 0.6+ | 0.2+ | 2007 11 14 | 704 | 0.5− | 0.3− |
| 2006 05 01 | 695 | 0.1+ | 0.4+ | 2007 10 20 | G96 | 0.3+ | 0.1+ | 2007 11 14 | 704 | 0.7+ | 0.4+ |
| 2007 09 10 | G96 | 0.4− | 0.7− | 2007 10 20 | G96 | 0.9+ | 0.1+ | 2007 11 14 | 704 | 0.1+ | 0.2+ |

## M.P.O. 130011

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 10 | G96 | 0.0  | 0.4− | 2007 10 20 | G96 | 0.5+ | 0.0  | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2007 09 10 | G96 | 0.1− | 0.2− | 2007 11 04 | 691 | 0.3− | 0.3+ | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2007 09 10 | G96 | 0.0  | 0.4− | 2007 11 04 | 691 | 0.4− | 0.3− | 2007 11 19 | 691 | 0.1− | 0.0  |
| 2007 10 20 | G96 | 0.5+ | 0.2+ | 2007 11 04 | 691 | 0.3− | 0.5− |            |     |      |      |

2007 VF<sub>142</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 324.17883  |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.20311226 | $\omega$ | 296.20348 | −0.02477179 |      | −0.99952051 |   |  |  |  |  |
| <i>a</i>                                | 2.8662361  | $\Omega$ | 155.19482 | +0.93227937 |      | −0.02980569 |   |  |  |  |  |
| <i>e</i>                                | 0.0340782  | <i>i</i> | 2.53789   | +0.36088991 |      | +0.00838848 |   |  |  |  |  |
| <i>P</i>                                | 4.85       | <i>H</i> | 16.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 10 01 | 691 | 0.1− | 0.0  | 2004 01 30 | 691 | 0.0  | 0.0  | 2007 10 20 | G96 | 0.2+ | 0.3− |
| 1992 10 01 | 691 | 0.1+ | 0.1− | 2005 05 10 | G96 | 0.1− | 0.2+ | 2007 11 04 | 691 | 0.3− | 0.1− |
| 1992 10 01 | 691 | 0.2− | 0.3+ | 2005 05 10 | G96 | 0.2+ | 0.3+ | 2007 11 04 | 691 | 0.2− | 0.1+ |
| 2002 11 14 | 291 | 0.1+ | 0.3+ | 2005 05 10 | G96 | 0.1+ | 0.3+ | 2007 11 04 | 691 | 0.0  | 0.1− |
| 2002 11 14 | 291 | 0.2− | 1.2+ | 2005 05 10 | G96 | 0.1+ | 0.2+ | 2007 11 08 | 691 | 0.1− | 0.0  |
| 2002 11 14 | 291 | 0.1+ | 0.5+ | 2007 10 20 | G96 | 0.3+ | 0.3− | 2007 11 08 | 691 | 0.1− | 0.2− |
| 2004 01 30 | 691 | 0.1+ | 0.3+ | 2007 10 20 | G96 | 0.2+ | 0.1− | 2007 11 08 | 691 | 0.3− | 0.1− |
| 2004 01 30 | 691 | 0.1+ | 0.1+ | 2007 10 20 | G96 | 0.2+ | 0.1− |            |     |      |      |

2007 VY<sub>142</sub>

|                                         |            |          |           |             |      |             |   |  |  |  |  |
|-----------------------------------------|------------|----------|-----------|-------------|------|-------------|---|--|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           |             |      |             |   |  |  |  |  |
|                                         |            |          |           | MPC         |      |             |   |  |  |  |  |
| <i>M</i>                                | 1.22103    |          | (2000.0)  | <b>P</b>    |      | <b>Q</b>    |   |  |  |  |  |
| <i>n</i>                                | 0.18501890 | $\omega$ | 198.39864 | +0.56623155 |      | −0.82223235 |   |  |  |  |  |
| <i>a</i>                                | 3.0501790  | $\Omega$ | 217.17382 | +0.76769210 |      | +0.55152377 |   |  |  |  |  |
| <i>e</i>                                | 0.1458145  | <i>i</i> | 5.46852   | +0.30005111 |      | +0.14055423 |   |  |  |  |  |
| <i>P</i>                                | 5.33       | <i>H</i> | 16.3      | <i>G</i>    | 0.15 | <i>U</i>    | 3 |  |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 11 07 | 691 | 0.1+ | 0.4− | 2007 10 15 | G96 | 0.2− | 0.1− | 2007 11 14 | 704 | 0.1− | 0.1+ |
| 1996 11 07 | 691 | 0.0  | 0.0  | 2007 10 15 | G96 | 0.4+ | 0.7+ | 2007 11 14 | 704 | 0.6+ | 1.3− |
| 1996 11 07 | 691 | 0.2+ | 0.4− | 2007 10 15 | G96 | 0.3+ | 0.4+ | 2007 11 21 | G96 | 0.2+ | 0.1− |
| 1998 02 23 | 691 | 0.6− | 0.2− | 2007 11 04 | 691 | 0.1− | 0.2− | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 1998 02 23 | 691 | 1.3+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 1998 02 23 | 691 | 0.8− | 0.1− | 2007 11 04 | 691 | 0.4− | 0.2+ | 2007 11 21 | G96 | 0.4+ | 0.1− |
| 2007 09 14 | G96 | 0.1− | 0.0  | 2007 11 08 | 691 | 0.1− | 0.3+ | 2007 12 04 | 704 | 0.6− | 0.6− |
| 2007 09 14 | G96 | 0.0  | 0.5+ | 2007 11 08 | 691 | 0.0  | 0.1− | 2007 12 04 | 704 | 0.0  | 0.5+ |
| 2007 09 14 | G96 | 0.2− | 0.4+ | 2007 11 08 | 691 | 0.2− | 0.4+ | 2007 12 04 | 704 | 0.3+ | 0.2− |
| 2007 09 14 | G96 | 0.2− | 0.4+ | 2007 11 14 | 704 | 0.9+ | 0.2+ | 2007 12 04 | 704 | 0.1− | 0.3− |
| 2007 10 15 | G96 | 0.3− | 0.1− | 2007 11 14 | 704 | 0.8+ | 0.8+ |            |     |      |      |

2007 VB<sub>143</sub> = 2004 BE<sub>163</sub>

|                                         |            |          |           |               |             |
|-----------------------------------------|------------|----------|-----------|---------------|-------------|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC           |             |
| <i>M</i>                                | 7.95455    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i>                                | 0.22148579 | $\omega$ | 313.37751 | +0.65553169   | −0.75304213 |
| <i>a</i>                                | 2.7054456  | $\Omega$ | 95.57357  | +0.70826108   | +0.58707096 |
| <i>e</i>                                | 0.0302429  | <i>i</i> | 3.26122   | +0.26200086   | +0.29711150 |
| <i>P</i>                                | 4.45       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

2005 04 16 691 0.0 0.2+ 2007 11 08 691 0.2- 0.1+ 2007 12 05 704 1.1+ 0.3-  
 2005 05 11 G96 0.0 0.1- 2007 11 08 691 0.2+ 0.1-

**2007 VE<sub>143</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 37.40567   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28712936 | $\omega$ | 290.58594 | +0.99330467   | -0.04748629 |
| <i>a</i> | 2.2755391  | $\Omega$ | 72.25365  | +0.08823291   | +0.90028719 |
| <i>e</i> | 0.1603530  | <i>i</i> | 6.34846   | -0.07457063   | +0.43269853 |
| <i>P</i> | 3.43       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 01 13 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.2-  | 0.1-  | 2007 11 21 | G96 | 0.0   | 0.3-  |
| 2005 01 13 | 691 | 0.0  | 0.2- | 2007 11 08 | 691 | 0.4-  | 0.1-  | 2007 12 03 | 703 | 0.8+  | 1.3+  |
| 2005 01 13 | 691 | 0.2- | 0.0  | 2007 11 08 | 691 | 0.2-  | 0.0   | 2007 12 03 | 703 | 0.6-  | 1.3+  |
| 2006 04 24 | 691 | 0.3+ | 0.2+ | 2007 11 08 | 691 | 0.0   | 0.4+  | 2007 12 03 | 703 | 0.8+  | 0.5+  |
| 2006 04 24 | 691 | 0.7+ | 0.1+ | 2007 11 09 | H07 | 0.3-  | 1.0+  | 2007 12 03 | 703 | (0.3+ | 2.5+) |
| 2006 04 24 | 691 | 0.2+ | 0.2- | 2007 11 09 | H07 | 0.5-  | 0.0   | 2007 12 04 | 699 | 1.1+  | 0.5+  |
| 2006 05 06 | 691 | 0.2+ | 0.4- | 2007 11 09 | H07 | 0.9+  | 0.9+  | 2007 12 04 | 699 | 0.2-  | 0.6-  |
| 2006 05 06 | 691 | 0.3+ | 0.1+ | 2007 11 14 | 704 | 0.8+  | 0.6+  | 2007 12 04 | 699 | 1.3-  | 0.0   |
| 2006 05 06 | 691 | 0.2- | 0.0  | 2007 11 14 | 704 | 0.0   | 0.8+  | 2007 12 04 | 699 | (1.8- | 0.6+) |
| 2006 05 21 | 691 | 0.2- | 0.3+ | 2007 11 14 | 704 | (1.0+ | 1.6+) | 2007 12 05 | 704 | (1.6+ | 0.6-) |
| 2006 05 21 | 691 | 0.3- | 0.5+ | 2007 11 14 | 704 | 0.9+  | 0.9+  | 2007 12 05 | 704 | 0.3+  | 0.8-  |
| 2006 05 21 | 691 | 0.0  | 0.4+ | 2007 11 18 | G96 | 0.5+  | 0.4-  | 2007 12 05 | 704 | 0.0   | 0.5-  |
| 2007 10 20 | G96 | 0.2- | 0.3- | 2007 11 18 | G96 | 0.1+  | 0.2-  | 2007 12 05 | 704 | 0.5+  | 0.1-  |
| 2007 10 20 | G96 | 0.3+ | 0.2- | 2007 11 18 | G96 | 0.4+  | 0.3-  | 2007 12 15 | G96 | 0.4-  | 0.5+  |
| 2007 10 20 | G96 | 0.4- | 0.4- | 2007 11 18 | G96 | 0.0   | 0.2-  | 2007 12 15 | G96 | 1.0+  | 0.4+  |
| 2007 10 20 | G96 | 0.1+ | 0.3- | 2007 11 21 | G96 | 0.3+  | 0.3-  | 2007 12 15 | G96 | 0.1+  | 0.1-  |
| 2007 11 04 | 691 | 0.5- | 0.2+ | 2007 11 21 | G96 | 0.0   | 0.1-  | 2007 12 15 | G96 | 0.3+  | 0.1+  |
| 2007 11 04 | 691 | 0.4- | 0.2- | 2007 11 21 | G96 | 0.4+  | 0.2-  |            |     |       |       |

**2007 VQ<sub>143</sub> = 1998 RS<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 5.95688    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23095609 | $\omega$ | 256.43387 | +0.72341931   | -0.69006947 |
| <i>a</i> | 2.6309733  | $\Omega$ | 147.19371 | +0.64788458   | +0.66769374 |
| <i>e</i> | 0.1884205  | <i>i</i> | 2.28989   | +0.23855833   | +0.27926547 |
| <i>P</i> | 4.27       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 12 | 691 | 0.4+ | 0.2- | 2007 11 04 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 704 | 0.4-  | 0.2+  |
| 1998 09 12 | 691 | 0.2+ | 0.2- | 2007 11 04 | 691 | 0.1+ | 0.3- | 2007 11 20 | G96 | 0.4+  | 0.3-  |
| 1998 09 12 | 691 | 0.0  | 0.2- | 2007 11 04 | 691 | 0.0  | 0.2- | 2007 11 20 | G96 | 0.5+  | 0.2-  |
| 1998 09 18 | 691 | 0.1+ | 0.1- | 2007 11 08 | 691 | 0.2- | 0.0  | 2007 11 20 | G96 | 0.4+  | 0.2-  |
| 1998 09 18 | 691 | 0.0  | 0.1+ | 2007 11 08 | 691 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.1+  | 0.4-  |
| 1998 09 18 | 691 | 0.5- | 0.3+ | 2007 11 08 | 691 | 0.1- | 0.1- | 2007 12 04 | 704 | (1.1- | 1.9+) |
| 2000 02 03 | 691 | 0.2+ | 0.2- | 2007 11 14 | 704 | 0.1- | 0.6+ | 2007 12 04 | 704 | 0.1-  | 0.5+  |
| 2000 02 03 | 691 | 0.3- | 0.1- | 2007 11 14 | 704 | 0.4- | 0.6+ | 2007 12 04 | 704 | 0.5-  | 1.2+  |
| 2000 02 03 | 691 | 0.0  | 0.2- | 2007 11 14 | 704 | 0.4- | 0.3- | 2007 12 04 | 704 | 0.3+  | 0.6+  |

**2007 VS<sub>143</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 78.85525   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21588158 | $\omega$ | 121.80137 | +0.89677688   | +0.43968320 |
| <i>a</i> | 2.7520669  | $\Omega$ | 212.19303 | -0.43093628   | +0.84235776 |
| <i>e</i> | 0.0301076  | <i>i</i> | 5.35245   | -0.10042485   | +0.31162814 |
| <i>P</i> | 4.57       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 12 | 645 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.3+ | 0.3- | 2007 11 08 | 691 | 0.1- | 0.0  |
| 2000 02 12 | 645 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.8+ | 0.2- | 2007 11 14 | 704 | 0.1- | 1.5+ |
| 2005 05 08 | G96 | 0.1- | 0.4+ | 2007 10 20 | G96 | 0.3+ | 0.0  | 2007 11 14 | 704 | 0.5- | 0.2+ |
| 2005 05 08 | G96 | 0.0  | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.1- | 2007 11 14 | 704 | 0.3+ | 0.2- |
| 2005 05 08 | G96 | 0.1+ | 0.2+ | 2007 10 20 | G96 | 0.4+ | 0.3- | 2007 11 20 | G96 | 0.4+ | 0.2- |
| 2005 05 08 | G96 | 0.2+ | 0.2- | 2007 10 20 | G96 | 0.5+ | 0.2+ | 2007 11 20 | G96 | 0.3+ | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 14 | 644 | 0.1- | 0.3+ | 2007 11 04 | 691 | 0.0  | 0.1+ | 2007 11 20 | G96 | 0.1+ | 0.1- |
| 2006 08 14 | 644 | 0.3- | 0.5+ | 2007 11 04 | 691 | 0.2- | 0.0  | 2007 11 20 | G96 | 0.2+ | 0.0  |
| 2006 08 14 | 644 | 0.1- | 0.4+ | 2007 11 04 | 691 | 0.1- | 0.0  | 2007 12 04 | 704 | 0.1- | 0.9- |
| 2007 09 15 | G96 | 0.4+ | 0.5- | 2007 11 08 | 691 | 0.1- | 0.2+ | 2007 12 04 | 704 | 0.5- | 0.1- |
| 2007 09 15 | G96 | 0.3+ | 0.4+ | 2007 11 08 | 691 | 0.1- | 0.0  | 2007 12 04 | 704 | 0.1+ | 0.5+ |

**2007 VB<sub>144</sub> = 2004 CT<sub>123</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 7.23672    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.20252926 | $\omega$ | 258.90614 | +0.66618682   | -0.74541131 |
| <i>a</i> | 2.8717339  | $\Omega$ | 149.27928 | +0.70101379   | +0.61507992 |
| <i>e</i> | 0.0687163  | <i>i</i> | 2.64820   | +0.25450892   | +0.25697991 |
| <i>P</i> | 4.87       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1999 02 10 | 691 | (7.4- | 1.7+) | 2005 05 10 | G96 | 0.2- | 0.2- | 2007 11 20 | G96 | 0.5+ | 0.0  |
| 1999 02 10 | 691 | (7.8- | 1.8+) | 2007 11 04 | 691 | 0.9- | 0.2- | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 1999 02 10 | 691 | (7.7- | 4.0+) | 2007 11 04 | 691 | 0.2- | 0.0  | 2007 11 20 | G96 | 0.1+ | 0.1- |
| 2004 02 12 | 691 | 0.3-  | 0.3+  | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 11 21 | G96 | 1.1+ | 0.4- |
| 2004 02 12 | 691 | 0.1+  | 0.2+  | 2007 11 08 | 691 | 0.2- | 0.3+ | 2007 11 21 | G96 | 0.3+ | 0.1- |
| 2004 02 12 | 691 | 0.2+  | 0.0   | 2007 11 08 | 691 | 0.3+ | 0.0  | 2007 11 21 | G96 | 0.3+ | 0.1+ |
| 2004 02 22 | 691 | 0.2+  | 0.4-  | 2007 11 08 | 691 | 0.1- | 0.1+ | 2007 11 21 | G96 | 0.3+ | 0.1+ |
| 2004 02 22 | 691 | 0.0   | 0.0   | 2007 11 20 | G96 | 0.2+ | 0.2- | 2007 12 15 | A77 | 0.5- | 0.1+ |
| 2004 02 22 | 691 | 0.2-  | 0.1-  | 2007 11 20 | G96 | 0.4+ | 0.4- | 2007 12 15 | A77 | 0.1+ | 0.4+ |
| 2005 05 10 | G96 | (2.2+ | 0.1-) | 2007 11 20 | G96 | 0.3+ | 0.3- | 2007 12 15 | A77 | 0.8+ | 0.9+ |
| 2005 05 10 | G96 | 0.2+  | 0.0   | 2007 11 20 | G96 | 0.1+ | 0.2- |            |     |      |      |
| 2005 05 10 | G96 | 0.1-  | 0.1-  | 2007 11 20 | G96 | 0.2+ | 0.2- |            |     |      |      |

**2007 VP<sub>144</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 0.72517    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22311580 | $\omega$ | 272.56556 | +0.56688115   | -0.82336490 |
| <i>a</i> | 2.6922527  | $\Omega$ | 142.86019 | +0.77234042   | +0.51989008 |
| <i>e</i> | 0.0722273  | <i>i</i> | 2.54013   | +0.28659385   | +0.22756219 |
| <i>P</i> | 4.42       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.4- | 0.4+ | 2005 04 16 | 691 | 0.3- | 0.1+ | 2007 11 08 | 691 | 0.1+ | 0.1+ |
| 2002 09 13 | 644 | 0.7- | 0.3+ | 2005 04 16 | 691 | 0.2+ | 0.0  | 2007 11 08 | 691 | 0.3- | 0.3- |
| 2002 09 13 | 644 | 0.6- | 0.1+ | 2006 06 19 | G96 | 0.2- | 0.8- | 2007 11 20 | G96 | 0.4+ | 0.4- |
| 2002 10 09 | 291 | 0.0  | 0.7+ | 2006 06 19 | G96 | 0.1- | 0.1- | 2007 11 20 | G96 | 0.5+ | 0.1- |
| 2002 10 09 | 291 | 0.1+ | 0.3+ | 2006 06 19 | G96 | 0.1+ | 0.9- | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 2002 10 09 | 291 | 0.1- | 0.3+ | 2006 06 19 | G96 | 0.2+ | 0.1- | 2007 11 20 | G96 | 0.0  | 0.2- |
| 2004 01 27 | 691 | 0.0  | 0.1+ | 2007 11 04 | 691 | 0.1- | 0.1- | 2007 11 21 | G96 | 0.0  | 0.2- |
| 2004 01 27 | 691 | 0.0  | 0.4+ | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 11 21 | G96 | 0.3+ | 0.2- |
| 2004 01 27 | 691 | 0.1+ | 0.5+ | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 11 21 | G96 | 0.5+ | 0.2- |
| 2005 04 16 | 691 | 0.3+ | 0.2+ | 2007 11 08 | 691 | 0.1- | 0.2- | 2007 11 21 | G96 | 0.7+ | 0.5- |

**2007 VS<sub>144</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 30.13039   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22065232 | $\omega$ | 148.18841 | +0.98257200   | -0.15415367 |
| <i>a</i> | 2.7122541  | $\Omega$ | 221.08658 | +0.11931530   | +0.95152572 |
| <i>e</i> | 0.2146001  | <i>i</i> | 9.09368   | +0.14253465   | +0.26614931 |
| <i>P</i> | 4.47       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 24 | 807 | 0.1+ | 0.3+ | 2007 10 20 | G96 | 0.1+ | 0.1+ | 2007 11 29 | A13 | 0.2- | 0.1+ |
| 2001 05 24 | 807 | 0.1+ | 0.3+ | 2007 10 20 | G96 | 0.4+ | 0.2- | 2007 11 29 | A13 | 0.4- | 0.1+ |
| 2002 08 15 | 644 | 0.2+ | 0.0  | 2007 10 20 | G96 | 0.1+ | 0.3- | 2007 11 30 | A13 | 0.2+ | 0.2- |
| 2002 08 15 | 644 | 0.3+ | 0.4- | 2007 10 20 | G96 | 0.3+ | 0.1- | 2007 11 30 | A13 | 0.6- | 0.5- |
| 2002 08 15 | 644 | 0.2+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.7+ | 0.3- |
| 2002 08 25 | 644 | 0.0  | 0.2+ | 2007 11 04 | 691 | 0.3- | 0.1+ | 2007 12 04 | 703 | 0.1- | 0.3+ |
| 2002 08 25 | 644 | 0.3- | 0.3+ | 2007 11 04 | 691 | 0.0  | 0.2- | 2007 12 04 | 704 | 0.7+ | 0.4+ |
| 2002 08 25 | 644 | 0.5- | 0.1+ | 2007 11 08 | 691 | 0.0  | 0.0  | 2007 12 04 | 703 | 0.7+ | 0.3+ |

## 2007 DEC. 24

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2007 09 14 G96 | 0.1− | 0.0  | 2007 11 08 691 | 0.1+ | 0.1+ | 2007 12 04 703 | 0.0  | 1.0+ |
| 2007 09 14 G96 | 0.2− | 0.1+ | 2007 11 08 691 | 0.1+ | 0.0  | 2007 12 04 704 | 0.2− | 0.4+ |
| 2007 09 14 G96 | 0.1+ | 0.2+ | 2007 11 29 A13 | 1.0− | 1.0− | 2007 12 04 703 | 0.3+ | 0.7+ |
| 2007 09 14 G96 | 0.0  | 0.1+ | 2007 11 29 A13 | 0.8− | 0.4+ | 2007 12 04 704 | 0.4+ | 0.5− |

**2007 VJ<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 5.13002    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28476339 | $\omega$ | 41.00521 | +0.68167438   | −0.73160631 |
| <i>a</i> | 2.2881261  | $\Omega$ | 6.03783  | +0.64842604   | +0.59870836 |
| <i>e</i> | 0.1815682  | <i>i</i> | 4.63496  | +0.33891550   | +0.32603758 |
| <i>P</i> | 3.46       | <i>H</i> | 17.5     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |       |       |
|----------------|------|------|----------------|-------|-------|----------------|-------|-------|
| 2005 02 09 691 | 0.2+ | 0.1+ | 2007 11 04 691 | 0.2−  | 0.0   | 2007 11 20 704 | 0.8+  | 0.6+  |
| 2005 02 09 691 | 0.1− | 0.3− | 2007 11 04 691 | 0.3−  | 0.2+  | 2007 11 20 704 | (1.7+ | 0.5+) |
| 2005 02 09 691 | 0.1+ | 0.0  | 2007 11 08 691 | 0.1−  | 0.1+  | 2007 11 20 704 | 0.5+  | 0.8−  |
| 2005 03 16 G96 | 0.4− | 0.7+ | 2007 11 08 691 | 0.3−  | 0.2+  | 2007 12 13 704 | 0.3−  | 0.1+  |
| 2005 03 16 G96 | 0.1+ | 0.1+ | 2007 11 08 691 | 0.2−  | 0.1+  | 2007 12 13 704 | 0.3+  | 0.4−  |
| 2005 03 16 G96 | 0.4+ | 0.6+ | 2007 11 18 704 | 0.7+  | 0.6+  | 2007 12 13 704 | 0.8−  | 0.6−  |
| 2005 03 16 G96 | 0.4− | 0.1+ | 2007 11 18 704 | 0.3+  | 0.5+  | 2007 12 13 704 | 1.0+  | 1.2−  |
| 2007 08 24 691 | 0.5+ | 0.2− | 2007 11 18 704 | 1.1+  | 0.4−  | 2007 12 16 704 | 0.5+  | 0.2−  |
| 2007 08 24 691 | 0.3− | 0.1+ | 2007 11 18 704 | 1.0+  | 0.0   | 2007 12 16 704 | 0.2−  | 0.7−  |
| 2007 08 24 691 | 0.1− | 0.0  | 2007 11 18 704 | 0.5+  | 0.3+  | 2007 12 16 704 | 0.4+  | 0.4−  |
| 2007 11 04 691 | 0.4− | 0.1+ | 2007 11 20 704 | (1.8+ | 0.6+) |                |       |       |

**2007 VX<sub>145</sub> = 2003 YM<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 308.84779  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23271548 | $\omega$ | 213.09531 | −0.55713364   | −0.82270009 |
| <i>a</i> | 2.6176959  | $\Omega$ | 271.00413 | +0.78433686   | −0.47662369 |
| <i>e</i> | 0.1535998  | <i>i</i> | 6.48869   | +0.27279626   | −0.30982965 |
| <i>P</i> | 4.24       | <i>H</i> | 16.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 2002 10 05 645 | 0.0  | 0.1− | 2007 11 08 691 | 0.3−  | 0.2−  | 2007 12 10 704 | 0.6+ | 0.5− |
| 2002 10 05 645 | 0.0  | 0.1− | 2007 11 08 691 | 0.1−  | 0.2−  | 2007 12 10 704 | 0.7+ | 0.4+ |
| 2003 12 19 704 | 0.1+ | 0.3+ | 2007 11 08 691 | 0.0   | 0.2−  | 2007 12 10 704 | 0.6+ | 1.1− |
| 2003 12 19 704 | 0.0  | 0.5− | 2007 11 13 703 | 1.3−  | 0.4−  | 2007 12 15 704 | 0.5+ | 0.3+ |
| 2003 12 19 704 | 0.2+ | 0.7− | 2007 11 13 703 | 0.2−  | 1.0+  | 2007 12 15 704 | 0.1+ | 0.5+ |
| 2003 12 19 704 | 0.1+ | 0.1+ | 2007 11 13 703 | (0.7+ | 1.7+) | 2007 12 15 704 | 0.4+ | 0.5− |
| 2003 12 19 704 | 0.6+ | 0.6+ | 2007 11 13 703 | 0.8+  | 0.4+  | 2007 12 15 704 | 0.2+ | 0.7+ |
| 2003 12 21 704 | 0.9+ | 0.3+ | 2007 11 18 704 | 1.0+  | 1.0+  | 2007 12 15 704 | 0.1+ | 0.5+ |
| 2003 12 21 704 | 0.5− | 0.0  | 2007 11 18 704 | 0.5−  | 0.4−  | 2007 12 15 704 | 0.6− | 0.4+ |
| 2003 12 21 704 | 0.3− | 0.5+ | 2007 11 18 704 | 0.6+  | 0.2+  | 2007 12 15 704 | 0.5+ | 0.3+ |
| 2004 01 18 644 | 0.5− | 0.0  | 2007 11 18 704 | 0.0   | 0.4+  | 2007 12 15 704 | 0.1+ | 0.1+ |
| 2004 01 18 644 | 0.5− | 0.2− | 2007 11 20 704 | 0.7−  | 0.4+  | 2007 12 15 704 | 0.4+ | 0.1− |
| 2004 01 18 644 | 0.0  | 0.5− | 2007 11 20 704 | 0.8+  | 0.1+  | 2007 12 15 704 | 0.7+ | 0.4+ |
| 2006 09 16 691 | 0.3− | 0.4+ | 2007 11 20 704 | 0.5+  | 0.1+  | 2007 12 16 704 | 0.2− | 1.2+ |
| 2006 09 16 691 | 0.1+ | 0.5+ | 2007 11 20 704 | 0.1+  | 0.1−  | 2007 12 16 704 | 1.6− | 0.4+ |
| 2006 09 16 691 | 0.3− | 0.2+ | 2007 11 20 691 | 0.4+  | 0.1−  | 2007 12 16 704 | 0.8− | 0.6+ |
| 2007 11 04 691 | 0.2− | 0.5− | 2007 11 20 691 | 0.2−  | 0.2−  | 2007 12 16 704 | 1.0− | 0.1+ |
| 2007 11 04 691 | 0.1− | 0.1+ | 2007 11 20 691 | 0.1−  | 0.1−  |                |      |      |
| 2007 11 04 691 | 0.1− | 0.2− | 2007 12 10 704 | 0.2+  | 0.1+  |                |      |      |

**2007 VZ<sub>145</sub> = 1995 RZ = 2003 UU<sub>318</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 294.08069  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26485150 | $\omega$ | 214.96126 | −0.67051381   | −0.73582750 |
| <i>a</i> | 2.4014180  | $\Omega$ | 277.34636 | +0.70058877   | −0.58599878 |
| <i>e</i> | 0.0821007  | <i>i</i> | 5.47948   | +0.24410367   | −0.33935721 |
| <i>P</i> | 3.72       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

## M.P.O. 130013

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 1995 08 28 691 | 0.6+ | 0.1+ | 2003 10 24 704 | 0.0  | 0.8+ | 2007 11 08 691 | 0.2−  | 0.0   |
| 1995 08 28 691 | 0.0  | 0.4− | 2005 03 13 703 | 0.6+ | 0.2− | 2007 11 18 704 | 0.5+  | 0.9+  |
| 1995 08 28 691 | 0.0  | 0.2− | 2005 03 13 703 | 0.0  | 0.1− | 2007 11 18 704 | 0.3+  | 0.2+  |
| 1995 09 02 691 | 0.2− | 0.1+ | 2005 03 13 703 | 0.1− | 0.2+ | 2007 11 18 704 | 0.3−  | 0.1+  |
| 1995 09 02 691 | 0.4− | 0.1+ | 2005 03 13 703 | 0.4+ | 1.0− | 2007 11 18 704 | 0.2−  | 0.1+  |
| 1995 09 02 691 | 0.3− | 0.3− | 2006 05 26 G96 | 0.2− | 0.3− | 2007 11 18 704 | 0.3−  | 0.6+  |
| 2001 02 17 608 | 0.1− | 0.9− | 2006 05 26 G96 | 0.0  | 0.3− | 2007 11 20 691 | 0.4−  | 0.1+  |
| 2001 02 17 608 | 0.5− | 0.7− | 2006 05 26 G96 | 0.1+ | 0.1+ | 2007 11 20 691 | 0.2−  | 0.1+  |
| 2001 02 17 608 | 0.5− | 0.7− | 2006 05 26 G96 | 0.3− | 0.2+ | 2007 11 20 691 | 0.3−  | 0.1+  |
| 2003 09 30 691 | 0.3+ | 0.3− | 2007 10 24 G96 | 0.8+ | 1.5− | 2007 12 10 704 | 0.6+  | 0.9+  |
| 2003 09 30 691 | 0.3+ | 0.2− | 2007 10 24 G96 | 0.8+ | 0.1+ | 2007 12 10 704 | (1.7+ | 0.4+) |
| 2003 09 30 691 | 0.5+ | 0.3− | 2007 10 24 G96 | 0.3+ | 0.3− | 2007 12 10 704 | 0.2+  | 0.3+  |
| 2003 10 20 644 | 0.2− | 0.6+ | 2007 10 24 G96 | 0.1− | 0.0  | 2007 12 15 704 | 0.5+  | 0.7+  |
| 2003 10 20 644 | 0.2+ | 0.5+ | 2007 11 04 691 | 0.2− | 0.2+ | 2007 12 15 704 | 0.6+  | 0.9+  |
| 2003 10 20 644 | 0.3+ | 0.5+ | 2007 11 04 691 | 0.2− | 0.0  | 2007 12 15 704 | 0.2−  | 0.4+  |
| 2003 10 24 704 | 0.4− | 0.9+ | 2007 11 04 691 | 0.5− | 0.2− | 2007 12 15 704 | 0.6+  | 0.3+  |
| 2003 10 24 704 | 0.1− | 1.3+ | 2007 11 08 691 | 0.4+ | 1.1− |                |       |       |
| 2003 10 24 704 | 1.2+ | 0.5− | 2007 11 08 691 | 0.5− | 0.1− |                |       |       |

**2007 VL<sub>146</sub> = 2004 EF<sub>55</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 181.68063  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18261021 | $\omega$ | 332.69381 | −0.45193710   | +0.87522613 |
| <i>a</i> | 3.0769423  | $\Omega$ | 269.99596 | −0.78375088   | −0.48189320 |
| <i>e</i> | 0.1116607  | <i>i</i> | 9.92913   | −0.42601340   | −0.04193047 |
| <i>P</i> | 5.40       | <i>H</i> | 14.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 2004 03 14 644 | 0.0   | 0.3+  | 2006 10 17 703 | 0.8+ | 0.4− | 2007 11 19 G96 | 0.3+ | 0.1− |
| 2004 03 14 644 | 0.2+  | 0.0   | 2006 10 17 703 | 0.9− | 0.2− | 2007 11 19 G96 | 0.3+ | 0.4− |
| 2004 03 14 644 | 0.2−  | 0.1+  | 2006 10 17 703 | 0.2+ | 0.3+ | 2007 11 19 G96 | 0.4+ | 0.1− |
| 2004 03 17 704 | 0.4−  | 0.3−  | 2007 11 04 691 | 0.0  | 0.1+ | 2007 11 19 G96 | 0.5+ | 0.4− |
| 2004 03 17 704 | 0.7−  | 0.6+  | 2007 11 04 691 | 0.2− | 0.2− | 2007 12 13 704 | 0.5− | 1.0+ |
| 2004 03 17 704 | 0.9+  | 0.7−  | 2007 11 04 691 | 0.3− | 0.0  | 2007 12 13 704 | 0.2+ | 0.0  |
| 2004 03 17 704 | 0.2+  | 0.0   | 2007 11 08 691 | 0.0  | 0.2− | 2007 12 13 704 | 0.2+ | 0.5+ |
| 2004 03 17 704 | 0.2−  | 0.4−  | 2007 11 08 691 | 0.0  | 0.2− | 2007 12 13 704 | 0.3+ | 0.9+ |
| 2006 10 17 703 | (1.2+ | 3.6−) | 2007 11 08 691 | 0.0  | 0.1+ |                |      |      |

**2007 VB<sub>147</sub> = 2005 GV<sub>52</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 78.72534   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20906227 | $\omega$ | 122.41717 | +0.93534499   | +0.34883196 |
| <i>a</i> | 2.8115919  | $\Omega$ | 217.26040 | −0.34829756   | +0.87920278 |
| <i>e</i> | 0.0604940  | <i>i</i> | 5.56408   | −0.06179441   | +0.32452848 |
| <i>P</i> | 4.71       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2005 04 02 G96 | 0.0  | 0.2− | 2007 11 08 691 | 0.1− | 0.2− | 2007 11 19 198 | 0.4+ | 0.3+ |
| 2005 04 02 G96 | 0.5− | 0.4− | 2007 11 08 691 | 0.4− | 0.1+ | 2007 11 27 A74 | 0.1− | 0.4+ |
| 2005 04 02 G96 | 0.3− | 0.1− | 2007 11 18 G96 | 0.3+ | 0.3− | 2007 11 27 A74 | 0.1− | 0.5+ |
| 2005 04 02 G96 | 0.2− | 0.1+ | 2007 11 18 G96 | 0.2+ | 0.4− | 2007 11 27 A74 | 0.3+ | 0.6+ |
| 2005 04 07 691 | 0.3− | 0.1− | 2007 11 18 G96 | 0.3+ | 0.6− | 2007 11 27 A74 | 0.4+ | 0.5+ |
| 2005 04 07 691 | 0.3+ | 0.1+ | 2007 11 18 G96 | 0.4+ | 0.1− | 2007 11 28 A74 | 0.4+ | 0.5+ |
| 2005 04 07 691 | 0.3+ | 0.0  | 2007 11 18 198 | 0.0  | 0.2+ | 2007 12 04 704 | 1.0+ | 1.4− |
| 2005 06 13 G96 | 0.2− | 0.3+ | 2007 11 18 198 | 0.0  | 0.2+ | 2007 12 04 704 | 0.2+ | 0.2− |
| 2005 06 13 G96 | 0.2− | 0.4+ | 2007 11 18 198 | 0.0  | 0.2+ | 2007 12 04 704 | 0.4+ | 0.0  |
| 2005 06 13 G96 | 0.0  | 0.0  | 2007 11 18 198 | 0.1+ | 0.2+ | 2007 12 04 704 | 0.3− | 0.4− |
| 2005 06 13 G96 | 0.3+ | 0.2+ | 2007 11 19 198 | 0.1+ | 0.2+ | 2007 12 05 G96 | 0.0  | 0.3− |
| 2007 11 04 691 | 0.3− | 0.0  | 2007 11 19 198 | 0.0  | 0.2+ | 2007 12 05 G96 | 0.6+ | 0.2− |
| 2007 11 04 691 | 0.3− | 0.2+ | 2007 11 19 198 | 0.1− | 0.3+ | 2007 12 05 G96 | 0.0  | 0.0  |
| 2007 11 04 691 | 0.1+ | 0.1− | 2007 11 19 198 | 0.0  | 0.3+ | 2007 12 05 G96 | 0.6+ | 0.0  |
| 2007 11 08 691 | 0.4− | 0.1− | 2007 11 19 198 | 0.2+ | 0.2+ |                |      |      |

**2007 VE<sub>147</sub> = 2002 VQ<sub>139</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.61510  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.20820179 | $\omega$ | 336.71252 | +0.27667303   | -0.95627874 |
| <i>a</i> | 2.8193332  | $\Omega$ | 97.11877  | +0.89600698   | +0.22106718 |
| <i>e</i> | 0.0432070  | <i>i</i> | 5.48096   | +0.34730898   | +0.19146870 |
| <i>P</i> | 4.73       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |        |       |            |     |      |       |            |     |       |       |
|------------|-----|--------|-------|------------|-----|------|-------|------------|-----|-------|-------|
| 2002 11 11 | 644 | 0.7+   | 0.7+  | 2007 11 04 | 691 | 0.3- | 0.4+  | 2007 12 04 | 704 | 0.6+  | 0.1+  |
| 2002 11 11 | 644 | 0.2-   | 0.6-  | 2007 11 04 | 691 | 0.1- | 0.1+  | 2007 12 04 | 704 | 0.7+  | 0.2+  |
| 2002 11 14 | 644 | 0.1-   | 0.3-  | 2007 11 04 | 691 | 0.5- | 0.3-  | 2007 12 04 | 704 | 0.0   | 0.4-  |
| 2002 11 14 | 644 | 0.1+   | 0.1-  | 2007 11 08 | 691 | 0.1- | 0.1+  | 2007 12 04 | 704 | 0.7+  | 0.2+  |
| 2002 11 14 | 644 | 0.3-   | 0.1-  | 2007 11 08 | 691 | 0.1- | 0.2-  | 2007 12 15 | 704 | 1.0+  | 0.1+  |
| 2002 11 22 | 644 | (10.0+ | 2.5+) | 2007 11 08 | 691 | 0.1- | 0.1-  | 2007 12 15 | 704 | 0.9+  | 0.2-  |
| 2002 11 22 | 644 | (9.1+  | 2.1+) | 2007 12 03 | 703 | (0.0 | 1.7+) | 2007 12 15 | 704 | 0.2+  | 0.8+  |
| 2004 02 16 | 691 | 0.0    | 0.1+  | 2007 12 03 | 703 | 0.3- | 0.8+  | 2007 12 15 | 704 | (1.6+ | 0.4+) |
| 2004 02 16 | 691 | 0.0    | 0.1-  | 2007 12 03 | 703 | 0.6- | 0.4+  | 2007 12 15 | 704 | 1.0+  | 1.1-  |
| 2004 02 16 | 691 | 0.0    | 0.1+  | 2007 12 03 | 703 | 0.0  | 0.1-  |            |     |       |       |

**2007 VC<sub>148</sub> = 2005 CW<sub>32</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 13.00114   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29454527 | $\omega$ | 294.58144 | +0.74665174   | -0.66052823 |
| <i>a</i> | 2.2371822  | $\Omega$ | 106.86204 | +0.63623626   | +0.67449954 |
| <i>e</i> | 0.1358623  | <i>i</i> | 4.72469   | +0.19420246   | +0.32977694 |
| <i>P</i> | 3.35       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 02 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 12 05 | G96 | 0.9- | 0.1+ |
| 2005 02 02 | 691 | 0.2+ | 0.2+ | 2007 11 08 | 691 | 0.2+ | 0.1- | 2007 12 05 | 300 | 0.6- | 0.5- |
| 2005 02 02 | 691 | 0.0  | 0.3+ | 2007 11 08 | 691 | 0.0  | 0.0  | 2007 12 05 | 300 | 0.5- | 0.4- |
| 2005 02 04 | G96 | 0.4- | 0.3- | 2007 11 08 | 691 | 0.2- | 0.1+ | 2007 12 05 | 300 | 0.2- | 0.0  |
| 2005 02 04 | G96 | 0.3- | 0.4- | 2007 12 03 | 300 | 1.6+ | 0.2- | 2007 12 05 | 300 | 0.0  | 0.2+ |
| 2005 02 04 | G96 | 0.3- | 0.5- | 2007 12 03 | 300 | 0.4+ | 0.8+ | 2007 12 05 | 300 | 0.1- | 0.2- |
| 2005 02 04 | G96 | 0.0  | 0.6- | 2007 12 05 | G96 | 0.0  | 0.2+ | 2007 12 05 | 300 | 0.5+ | 0.3- |
| 2007 11 04 | 691 | 0.1+ | 0.0  | 2007 12 05 | G96 | 0.1+ | 0.2+ |            |     |      |      |
| 2007 11 04 | 691 | 0.1- | 0.0  | 2007 12 05 | G96 | 0.0  | 0.1+ |            |     |      |      |

**2007 VJ<sub>148</sub> = 2004 BQ<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.22363   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22361627 | $\omega$ | 267.33395 | +0.97825322   | -0.16214459 |
| <i>a</i> | 2.6882343  | $\Omega$ | 101.97426 | +0.19926621   | +0.90776985 |
| <i>e</i> | 0.0491435  | <i>i</i> | 7.59793   | -0.05756401   | +0.38686306 |
| <i>P</i> | 4.41       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 691 | 0.6+ | 0.7- | 2004 01 22 | 704 | 0.7- | 1.4- | 2007 11 08 | 691 | 0.2- | 0.1- |
| 2003 12 21 | 691 | 0.3+ | 0.4- | 2004 01 22 | 704 | 0.3- | 0.6- | 2007 11 08 | 691 | 0.1- | 0.1- |
| 2003 12 21 | 691 | 0.1- | 0.5- | 2004 01 27 | 691 | 0.1+ | 0.2+ | 2007 12 04 | 704 | 0.1- | 1.1+ |
| 2003 12 28 | 691 | 0.0  | 0.2+ | 2004 01 27 | 691 | 0.0  | 0.3+ | 2007 12 04 | 704 | 0.9+ | 1.5+ |
| 2003 12 28 | 691 | 0.1- | 0.2+ | 2004 01 27 | 691 | 0.2+ | 0.2+ | 2007 12 04 | 704 | 1.0- | 0.0  |
| 2003 12 28 | 691 | 0.4- | 0.3+ | 2005 04 07 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.2- | 0.1+ |
| 2004 01 15 | 691 | 0.3- | 0.2+ | 2005 04 07 | 691 | 0.2+ | 0.0  | 2007 12 04 | 704 | 1.0+ | 0.6+ |
| 2004 01 15 | 691 | 0.1- | 0.1+ | 2005 04 07 | 691 | 0.2- | 0.2+ | 2007 12 05 | G96 | 0.5- | 0.4+ |
| 2004 01 15 | 691 | 0.2- | 0.1+ | 2007 11 04 | 691 | 0.1- | 0.0  | 2007 12 05 | G96 | 0.3+ | 0.1- |
| 2004 01 22 | 704 | 0.8+ | 0.3- | 2007 11 04 | 691 | 0.1- | 0.1- | 2007 12 05 | G96 | 0.4+ | 0.4+ |
| 2004 01 22 | 704 | 0.1+ | 0.4- | 2007 11 04 | 691 | 0.0  | 0.1- | 2007 12 05 | G96 | 0.6+ | 0.2+ |
| 2004 01 22 | 704 | 0.3- | 0.1+ | 2007 11 08 | 691 | 0.1- | 0.1+ |            |     |      |      |

**2007 VO<sub>148</sub> = 2005 GD<sub>127</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 299.63974  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.25507379 | $\omega$ | 60.81316 | -0.56031871   | -0.81841570 |
| <i>a</i> | 2.4624013  | $\Omega$ | 63.81568 | +0.70205472   | -0.55091305 |
| <i>e</i> | 0.1287021  | <i>i</i> | 8.16380  | +0.43950212   | -0.16337243 |
| <i>P</i> | 3.86       | <i>H</i> | 16.7     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 03 21 | 608 | 0.2+ | 0.4+ | 2007 10 20 | G96 | 0.0  | 0.3- | 2007 12 03 | 703 | 0.8- | 0.0  |
| 2001 03 21 | 608 | 0.1+ | 0.3- | 2007 10 20 | G96 | 0.2+ | 0.3- | 2007 12 03 | 703 | 0.5+ | 0.3- |
| 2001 03 21 | 608 | 0.2- | 0.3+ | 2007 10 31 | 691 | 0.5- | 0.2+ | 2007 12 03 | 703 | 1.0+ | 0.7- |
| 2003 10 23 | 691 | 0.0  | 0.2+ | 2007 10 31 | 691 | 0.2- | 0.1- | 2007 12 05 | 704 | 1.1+ | 0.7+ |
| 2003 10 23 | 691 | 0.1- | 0.1+ | 2007 10 31 | 691 | 0.4- | 0.1+ | 2007 12 05 | 704 | 0.4+ | 0.6+ |
| 2003 10 23 | 691 | 0.1- | 0.2+ | 2007 11 05 | D29 | 0.4+ | 0.3- | 2007 12 05 | 704 | 0.9+ | 1.4+ |
| 2005 04 12 | 704 | 1.5+ | 0.0  | 2007 11 05 | D29 | 0.3- | 0.1- | 2007 12 05 | 704 | 0.8+ | 0.0  |
| 2005 04 12 | 704 | 0.3+ | 0.1- | 2007 11 05 | D29 | 0.1- | 0.3- | 2007 12 05 | 704 | 0.7- | 1.0+ |
| 2005 04 12 | 704 | 0.1- | 0.3+ | 2007 11 05 | D29 | 0.1+ | 0.2- | 2007 12 06 | G96 | 0.2+ | 0.3- |
| 2005 04 13 | 703 | 1.1- | 0.3- | 2007 11 08 | 691 | 0.3- | 0.3- | 2007 12 06 | G96 | 0.6+ | 0.8- |
| 2005 04 13 | 703 | 0.1+ | 0.1- | 2007 11 08 | 691 | 0.4- | 0.6- | 2007 12 06 | G96 | 0.4+ | 0.4- |
| 2005 04 13 | 703 | 0.3+ | 0.8- | 2007 11 08 | 691 | 0.3- | 0.3- | 2007 12 06 | G96 | 0.7+ | 0.3- |
| 2005 04 13 | 703 | 0.5- | 1.2- | 2007 11 14 | 704 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.1+ | 0.2+ |
| 2005 05 07 | 691 | 0.1+ | 0.5+ | 2007 11 14 | 704 | 0.2+ | 1.0+ | 2007 12 15 | G96 | 0.4+ | 0.3- |
| 2005 05 07 | 691 | 0.0  | 0.3+ | 2007 11 14 | 704 | 0.3+ | 0.7+ | 2007 12 15 | G96 | 0.2+ | 0.1- |
| 2005 05 07 | 691 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.6+ | 0.8+ | 2007 12 15 | G96 | 0.1- | 0.1+ |
| 2007 10 20 | G96 | 0.0  | 0.3- | 2007 11 14 | 704 | 0.6+ | 1.1+ |            |     |      |      |
| 2007 10 20 | G96 | 0.3+ | 0.2- | 2007 12 03 | 703 | 0.3+ | 0.5+ |            |     |      |      |

**2007 VH<sub>149</sub> = 2005 EL<sub>313</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 347.64830  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26944284 | $\omega$ | 267.61329 | +0.49012762   | -0.87136403 |
| <i>a</i> | 2.3740596  | $\Omega$ | 153.00157 | +0.81801821   | +0.45096242 |
| <i>e</i> | 0.2097324  | <i>i</i> | 2.82232   | +0.30103342   | +0.19328121 |
| <i>P</i> | 3.66       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 10 | G96 | 0.2- | 0.1- | 2007 10 16 | 691 | 0.6- | 0.1- | 2007 11 08 | G96 | 0.5+ | 0.5- |
| 2005 03 10 | G96 | 0.9- | 0.3+ | 2007 10 16 | 691 | 0.1- | 0.2+ | 2007 11 08 | G96 | 0.3+ | 0.4- |
| 2005 03 10 | G96 | 0.1+ | 0.5- | 2007 10 16 | 691 | 0.3- | 0.1+ | 2007 11 08 | G96 | 0.4+ | 0.4- |
| 2005 03 10 | G96 | 0.3+ | 0.2- | 2007 10 20 | 691 | 0.6- | 1.6+ | 2007 11 08 | G96 | 0.7+ | 0.4- |
| 2005 03 11 | 695 | 0.2+ | 0.3+ | 2007 10 20 | 691 | 0.1- | 0.1- | 2007 11 08 | G96 | 0.6+ | 0.3- |
| 2005 03 11 | 695 | 0.5+ | 0.3+ | 2007 10 20 | 691 | 0.0  | 0.2+ | 2007 11 08 | G96 | 0.7+ | 0.1- |
| 2007 10 08 | G96 | 0.0  | 0.5- | 2007 11 07 | 703 | 0.4+ | 0.6+ | 2007 11 08 | G96 | 0.1+ | 0.2- |
| 2007 10 08 | G96 | 0.2+ | 0.1- | 2007 11 07 | 703 | 1.1- | 0.6+ | 2007 11 08 | G96 | 0.1+ | 0.2- |
| 2007 10 08 | G96 | 0.6+ | 0.0  | 2007 11 07 | 703 | 0.9- | 0.4+ |            |     |      |      |
| 2007 10 08 | G96 | 0.2+ | 0.4- | 2007 11 07 | 703 | 1.3- | 0.3+ |            |     |      |      |

**2007 VU<sub>150</sub> = 2005 JO<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.99817   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18909270 | $\omega$ | 290.34153 | +0.98389276   | -0.05169243 |
| <i>a</i> | 3.0062115  | $\Omega$ | 72.92954  | +0.12319552   | +0.88972285 |
| <i>e</i> | 0.1023012  | <i>i</i> | 10.31204  | -0.12952956   | +0.45356493 |
| <i>P</i> | 5.21       | <i>H</i> | 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2005 05 08 | 691 | 0.0  | 0.2+ | 2007 11 07 | 691 | 0.0  | 0.1- | 2007 12 03 | 703 | 0.4-  | 0.9+  |
| 2005 05 08 | 691 | 0.3+ | 0.0  | 2007 11 08 | 691 | 0.1- | 0.2- | 2007 12 03 | 703 | 0.1-  | 0.8+  |
| 2005 05 08 | 691 | 0.0  | 0.1- | 2007 11 08 | 691 | 0.1- | 0.3+ | 2007 12 05 | 704 | 0.9+  | 0.1+  |
| 2005 05 14 | G96 | 0.5- | 0.3- | 2007 11 08 | 691 | 0.1- | 0.0  | 2007 12 05 | 704 | 1.3+  | 1.0+  |
| 2005 05 14 | G96 | 0.2+ | 0.2- | 2007 11 19 | 691 | 0.2- | 0.2- | 2007 12 05 | 704 | (2.0+ | 1.2+) |
| 2005 05 14 | G96 | 0.4- | 0.2- | 2007 11 19 | 691 | 0.2- | 0.2+ | 2007 12 15 | G96 | 0.3-  | 0.3-  |
| 2005 05 14 | G96 | 0.4- | 0.0  | 2007 11 19 | 691 | 0.0  | 0.3- | 2007 12 15 | G96 | 0.4-  | 0.4-  |
| 2007 10 20 | G96 | 0.3+ | 0.1- | 2007 11 21 | G96 | 0.1+ | 0.5- | 2007 12 15 | G96 | 0.2-  | 0.2-  |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 20 | G96 | 0.1+ | 0.2− | 2007 11 21 | G96 | 0.3+ | 0.4− | 2007 12 15 | G96 | 0.1− | 0.3− |
| 2007 10 20 | G96 | 0.5+ | 0.4− | 2007 11 21 | G96 | 0.6+ | 0.5− | 2007 12 15 | G96 | 0.3+ | 0.1+ |
| 2007 10 20 | G96 | 0.3+ | 0.5− | 2007 11 21 | G96 | 0.4− | 0.4− | 2007 12 15 | G96 | 0.2− | 0.1+ |
| 2007 11 07 | 691 | 0.0  | 0.4+ | 2007 12 03 | 703 | 0.2− | 0.2+ | 2007 12 15 | G96 | 0.0  | 0.3− |
| 2007 11 07 | 691 | 0.0  | 0.2+ | 2007 12 03 | 703 | 0.2+ | 0.1+ | 2007 12 15 | G96 | 0.1+ | 0.4− |

2007 VH<sub>152</sub> = 2004 CB<sub>102</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 165.17469  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19214192 | $\omega$ | 351.55938 | −0.35213924   | +0.91992876 |
| <i>a</i> | 2.9743218  | $\Omega$ | 257.68455 | −0.84808183   | −0.39154851 |
| <i>e</i> | 0.0910481  | <i>i</i> | 10.16493  | −0.39592318   | +0.02051448 |
| <i>P</i> | 5.13       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 12 | 644 | 0.2− | 0.2− | 2007 10 21 | G96 | 0.4+ | 0.3− | 2007 11 13 | 691 | 0.8+ | 0.1+ |
| 2004 02 12 | 644 | 0.2+ | 0.1− | 2007 10 21 | G96 | 0.4+ | 0.7− | 2007 11 13 | 691 | 0.7− | 0.0  |
| 2004 02 12 | 644 | 0.6− | 0.4− | 2007 10 21 | G96 | 0.3+ | 0.2− | 2007 11 17 | 691 | 0.0  | 0.0  |
| 2004 02 19 | 704 | 1.3+ | 0.6+ | 2007 11 02 | 691 | 0.1− | 0.1+ | 2007 11 17 | 691 | 0.1− | 0.0  |
| 2004 02 19 | 704 | 0.0  | 0.4− | 2007 11 02 | 691 | 0.3− | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.1+ |
| 2004 02 19 | 704 | 0.6− | 0.5+ | 2007 11 02 | 691 | 0.3− | 0.0  | 2007 11 17 | G96 | 0.4+ | 0.1− |
| 2005 05 11 | 644 | 0.2− | 0.1+ | 2007 11 09 | 691 | 0.2− | 0.0  | 2007 11 17 | G96 | 0.5+ | 0.2− |
| 2005 05 11 | 644 | 0.1− | 0.0  | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.2+ | 0.1− |
| 2005 05 11 | 644 | 0.3+ | 0.4+ | 2007 11 09 | 691 | 0.0  | 0.2+ | 2007 11 17 | G96 | 0.2+ | 0.1− |
| 2007 10 21 | G96 | 0.5+ | 0.5− | 2007 11 13 | 691 | 0.1+ | 0.2+ |            |     |      |      |

2007 VW<sub>152</sub> = 2005 LW<sub>44</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 333.44937  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21042072 | $\omega$ | 26.33080 | −0.08742595   | −0.99240451 |
| <i>a</i> | 2.7994779  | $\Omega$ | 68.78745 | +0.89680856   | −0.11623120 |
| <i>e</i> | 0.0293608  | <i>i</i> | 5.32671  | +0.43369471   | +0.04029385 |
| <i>P</i> | 4.68       | <i>H</i> | 15.5     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1995 03 31 | 691 | 0.9+ | 0.2+ | 2007 11 02 | 691 | 0.4− | 0.1− | 2007 12 06 | G96 | (2.5− | 1.1+) |
| 1995 03 31 | 691 | 0.5− | 0.3− | 2007 11 02 | 691 | 0.2− | 0.1− | 2007 12 14 | 704 | 0.8+  | 0.4−  |
| 1995 03 31 | 691 | 0.4− | 0.1+ | 2007 11 02 | 691 | 0.3− | 0.1− | 2007 12 14 | 704 | 0.4+  | 0.4+  |
| 2002 10 28 | 608 | 0.1− | 0.5− | 2007 11 09 | 691 | 0.5− | 0.5− | 2007 12 14 | 704 | 0.5+  | 0.2+  |
| 2002 10 28 | 608 | 0.1− | 0.6− | 2007 11 09 | 691 | 0.5− | 0.5− | 2007 12 15 | 704 | 0.6+  | 0.6+  |
| 2002 10 28 | 608 | 0.3+ | 1.1− | 2007 11 09 | 691 | 0.4− | 0.3− | 2007 12 15 | 704 | 0.9+  | 0.1−  |
| 2002 11 13 | 291 | 0.0  | 0.2+ | 2007 11 15 | 704 | 0.6+ | 0.6+ | 2007 12 15 | 704 | 1.0+  | 0.2−  |
| 2002 11 13 | 291 | 0.1− | 0.2+ | 2007 11 15 | 704 | 0.7+ | 0.4+ | 2007 12 15 | 704 | 0.8+  | 1.0+  |
| 2002 11 13 | 291 | 0.0  | 0.4+ | 2007 11 15 | 704 | 0.1+ | 0.5+ | 2007 12 15 | 704 | 0.9+  | 0.1−  |
| 2005 06 13 | G96 | 0.1− | 0.1+ | 2007 11 15 | 704 | 0.8− | 0.1+ | 2007 12 16 | 704 | 0.1+  | 0.3+  |
| 2005 06 13 | G96 | 0.1− | 0.2+ | 2007 11 15 | 704 | 0.9+ | 1.1+ | 2007 12 16 | 704 | 0.4+  | 0.1+  |
| 2005 06 13 | G96 | 0.4− | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.9+ | 2007 12 16 | 704 | 0.4+  | 0.0   |
| 2005 06 13 | G96 | 0.4− | 0.0  | 2007 11 17 | 691 | 0.2− | 0.0  | 2007 12 16 | 704 | 0.5+  | 0.2+  |
| 2005 06 17 | 691 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.2− | 0.1− | 2007 12 16 | 704 | 0.1+  | 0.3+  |
| 2005 06 17 | 691 | 0.3+ | 0.2+ | 2007 12 06 | G96 | 0.2− | 0.3− |            |     |       |       |
| 2005 06 17 | 691 | 0.1+ | 0.2+ | 2007 12 06 | G96 | 0.4− | 0.2− |            |     |       |       |

2007 VB<sub>153</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 54.30095   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21751200 | $\omega$ | 141.24474 | +0.62512862   | +0.78042588 |
| <i>a</i> | 2.7382971  | $\Omega$ | 167.43108 | −0.72938427   | +0.58967995 |
| <i>e</i> | 0.2135362  | <i>i</i> | 3.22254   | −0.27787192   | +0.20787736 |
| <i>P</i> | 4.53       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 06 | 291 | 0.2− | 0.0  | 2006 05 26 | G96 | 0.3+ | 0.3+ | 2007 10 19 | G96 | 0.4+ | 0.2− |
| 2002 06 06 | 291 | 0.1+ | 0.3+ | 2007 09 12 | G96 | 0.3+ | 0.4− | 2007 10 19 | G96 | 0.2+ | 0.3− |
| 2002 06 06 | 291 | 0.0  | 0.3+ | 2007 09 12 | G96 | 0.3− | 0.4− | 2007 10 19 | G96 | 0.5+ | 0.1− |
| 2006 05 02 | G96 | 0.1− | 0.3− | 2007 09 12 | G96 | 0.2− | 0.3− | 2007 11 03 | 691 | 0.1+ | 0.4+ |

## M.P.O. 130015

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 02 | G96 | 0.2− | 0.2+ | 2007 09 12 | G96 | 0.1− | 0.1− | 2007 11 03 | 691 | 0.3− | 0.0  |
| 2006 05 02 | G96 | 0.3− | 0.4− | 2007 10 08 | G96 | 0.2+ | 0.3− | 2007 11 03 | 691 | 0.1− | 0.7+ |
| 2006 05 02 | G96 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.2+ | 0.0  | 2007 11 09 | 691 | 0.4− | 0.1+ |
| 2006 05 26 | G96 | 0.2+ | 0.3− | 2007 10 08 | G96 | 0.3− | 0.2− | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 2006 05 26 | G96 | 0.2− | 0.0  | 2007 10 08 | G96 | 0.1− | 0.1− | 2007 11 09 | 691 | 0.2− | 0.5+ |
| 2006 05 26 | G96 | 0.1+ | 0.1− | 2007 10 19 | G96 | 0.5+ | 0.0  |            |     |      |      |

2007 VF<sub>153</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 341.33751  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29798388 | $\omega$ | 202.95265 | +0.21696391   | −0.97279474 |
| <i>a</i> | 2.2199381  | $\Omega$ | 234.60940 | +0.91037265   | +0.23166830 |
| <i>e</i> | 0.1246778  | <i>i</i> | 5.71798   | +0.35234686   | +0.00044521 |
| <i>P</i> | 3.31       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 12 07 | 910 | 0.1+ | 0.1− | 2007 10 16 | G96 | 0.3+ | 0.2+ | 2007 11 18 | 691 | 0.1− | 0.0  |
| 1997 12 07 | 910 | 0.1+ | 0.4− | 2007 11 03 | 691 | 0.5− | 0.2+ | 2007 11 18 | 691 | 0.2− | 0.0  |
| 1997 12 07 | 910 | 0.0  | 0.2− | 2007 11 03 | 691 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.4+ | 0.5+ |
| 2005 01 08 | 599 | 0.0  | 0.1+ | 2007 11 03 | 691 | 0.3− | 0.3+ | 2007 12 03 | 703 | 0.1+ | 0.1− |
| 2005 01 08 | 599 | 0.3+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.1− | 2007 12 03 | 703 | 0.4+ | 0.2− |
| 2005 01 08 | 599 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.3+ | 0.1+ |
| 2005 01 08 | 599 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.1− | 2007 12 03 | 703 | 0.6+ | 0.5− |
| 2005 02 02 | 703 | 0.2− | 0.2− | 2007 11 14 | 704 | 0.6+ | 0.0  | 2007 12 03 | 703 | 0.1+ | 0.2− |
| 2005 02 02 | 703 | 0.1− | 0.6+ | 2007 11 14 | 704 | 1.0− | 1.1− | 2007 12 03 | 703 | 0.0  | 0.1− |
| 2005 02 02 | 703 | 0.3− | 1.5− | 2007 11 14 | 704 | 0.2− | 0.5− | 2007 12 03 | 703 | 0.1− | 0.2+ |
| 2005 02 02 | 703 | 0.2+ | 0.1+ | 2007 11 14 | 704 | 0.5+ | 0.6+ | 2007 12 03 | 703 | 0.8+ | 0.5− |
| 2007 08 24 | 691 | 0.2− | 0.4+ | 2007 11 14 | 704 | 0.2+ | 0.5− | 2007 12 05 | 704 | 0.2+ | 0.1− |
| 2007 08 24 | 691 | 0.5+ | 0.6− | 2007 11 14 | 300 | 0.1+ | 0.1− | 2007 12 05 | 704 | 0.5+ | 0.7+ |
| 2007 08 24 | 691 | 0.3− | 0.1− | 2007 11 14 | 300 | 0.1− | 0.8+ | 2007 12 05 | 704 | 0.7− | 0.1− |
| 2007 10 16 | G96 | 0.3+ | 0.0  | 2007 11 14 | 300 | 0.4+ | 0.3− | 2007 12 05 | 704 | 0.4+ | 0.3+ |
| 2007 10 16 | G96 | 0.2+ | 0.2+ | 2007 11 14 | 300 | 0.4− | 0.2− |            |     |      |      |
| 2007 10 16 | G96 | 0.2+ | 0.0  | 2007 11 14 | 300 | 0.5− | 0.3+ |            |     |      |      |

2007 VM<sub>153</sub> = 2002 GO<sub>62</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 150.33629  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26330934 | $\omega$ | 187.47978 | −0.61795241   | +0.78259597 |
| <i>a</i> | 2.4107853  | $\Omega$ | 44.39206  | −0.71564618   | −0.52020928 |
| <i>e</i> | 0.0462384  | <i>i</i> | 6.18372   | −0.32555393   | −0.34194422 |
| <i>P</i> | 3.74       | <i>H</i> | 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 04 08 | 644 | 0.0  | 0.6+ | 2007 10 09 | G96 | 0.0  | 0.2− | 2007 10 19 | G96 | 0.1− | 0.2+ |
| 2002 04 08 | 644 | 0.2+ | 0.5+ | 2007 10 09 | G96 | 0.3+ | 0.0  | 2007 10 19 | G96 | 0.4− | 0.3+ |
| 2002 04 08 | 644 | 0.3− | 0.5+ | 2007 10 09 | G96 | 0.1− | 0.0  | 2007 10 19 | G96 | 0.3− | 0.0  |
| 2002 04 09 | 644 | 0.5+ | 0.3+ | 2007 10 09 | G96 | 0.3− | 0.2+ | 2007 11 04 | 691 | 0.1− | 0.0  |
| 2002 04 09 | 644 | 0.5+ | 0.5+ | 2007 10 09 | G96 | 0.2+ | 0.2− | 2007 11 04 | 691 | 0.0  | 0.7+ |
| 2002 04 09 | 644 | 0.4+ | 0.5+ | 2007 10 09 | G96 | 0.2− | 0.1+ | 2007 11 04 | 691 | 0.1+ | 1.0+ |
| 2004 12 19 | 691 | 0.4+ | 0.4+ | 2007 10 09 | G96 | 0.1+ | 0.1− | 2007 11 09 | 691 | 0.3+ | 0.4+ |
| 2004 12 19 | 691 | 0.0  | 0.2− | 2007 10 09 | G96 | 0.1− | 0.2+ | 2007 11 09 | 691 | 0.2− | 0.1+ |
| 2004 12 19 | 691 | 0.3− | 0.2− | 2007 10 19 | G96 | 0.5− | 0.1+ | 2007 11 09 | 691 | 0.3− | 0.1+ |

2007 VN<sub>153</sub> = 2000 TL<sub>30</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 29.99269   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27961575 | $\omega$ | 280.69838 | +0.93298431   | +0.35746724 |
| <i>a</i> | 2.3161230  | $\Omega$ | 58.36865  | −0.30797570   | +0.85318325 |
| <i>e</i> | 0.2356168  | <i>i</i> | 2.82219   | −0.18625586   | +0.37986249 |
| <i>P</i> | 3.52       | <i>H</i> | 18.8      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 06 | 691 | 0.2+ | 0.0  | 2007 10 09 | G96 | 0.1− | 0.1+ | 2007 10 20 | 683 | 0.1+ | 0.5− |
| 2000 10 06 | 691 | 0.2+ | 0.3+ | 2007 10 09 | G96 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.2+ | 0.2− |
| 2000 10 06 | 691 | 0.5− | 0.1− | 2007 10 19 | G96 | 0.2− | 0.1− | 2007 11 04 | 691 | 0.1+ | 0.0  |

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 07 | 691 | 0.3− | 0.5− | 2007 10 19 | G96 | 0.4+  | 0.1+  | 2007 11 04 | 691 | 0.6− | 0.0  |
| 2000 10 07 | 691 | 0.6+ | 0.2− | 2007 10 19 | G96 | 0.3+  | 0.0   | 2007 11 09 | 691 | 0.1− | 0.3+ |
| 2000 10 07 | 691 | 0.2+ | 0.5− | 2007 10 19 | G96 | 0.4+  | 0.2−  | 2007 11 09 | 691 | 0.0  | 0.2− |
| 2007 10 09 | G96 | 0.1+ | 0.1− | 2007 10 20 | 683 | (0.4+ | 2.4+) | 2007 11 09 | 691 | 0.1− | 0.4+ |
| 2007 10 09 | G96 | 0.3− | 0.1+ | 2007 10 20 | 683 | 1.0−  | 1.4+  |            |     |      |      |

**2007 VP<sub>153</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 106.63168  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22393182 | $\omega$ | 33.88083  | +0.06673208   | +0.99474596 |
| <i>a</i> | 2.6857083  | $\Omega$ | 240.05704 | −0.93415667   | +0.03494971 |
| <i>e</i> | 0.0546881  | <i>i</i> | 5.14028   | −0.35056833   | +0.09622364 |
| <i>P</i> | 4.40       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 01 27 | 691 | 0.0  | 0.1− | 2005 03 04 | G96 | 0.0  | 0.5+ | 2007 11 04 | 691 | 0.8− | 0.1− |
| 1996 01 27 | 691 | 0.5− | 0.4+ | 2005 03 04 | G96 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.4+ | 0.2+ |
| 1996 01 27 | 691 | 0.4− | 0.2+ | 2005 03 04 | G96 | 0.4+ | 0.3+ | 2007 11 09 | 691 | 0.1− | 0.6+ |
| 2002 08 05 | 644 | 0.0  | 0.5+ | 2005 03 04 | G96 | 0.4+ | 0.0  | 2007 11 09 | 691 | 0.1+ | 0.2+ |
| 2002 08 05 | 644 | 0.2+ | 0.3+ | 2007 10 05 | 691 | 0.4− | 0.1− | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 2002 08 05 | 644 | 0.2+ | 0.1+ | 2007 10 05 | 691 | 0.1− | 0.3− | 2007 11 13 | 691 | 0.3+ | 0.0  |
| 2003 11 30 | 291 | 0.6+ | 0.3− | 2007 10 05 | 691 | 0.4− | 0.4+ | 2007 11 13 | 691 | 0.1+ | 0.1− |
| 2003 11 30 | 291 | 0.0  | 0.2− | 2007 11 02 | 691 | 0.5− | 0.1+ | 2007 11 15 | 691 | 0.3− | 0.3+ |
| 2003 11 30 | 291 | 0.0  | 0.4− | 2007 11 02 | 691 | 0.5− | 0.6+ | 2007 11 15 | 691 | 0.7− | 0.4− |
| 2003 12 19 | 691 | 0.2+ | 0.1+ | 2007 11 02 | 691 | 0.2+ | 0.0  | 2007 11 15 | 691 | 0.2+ | 0.0  |
| 2003 12 19 | 691 | 0.8+ | 0.1− | 2007 11 04 | 691 | 0.1+ | 0.4− |            |     |      |      |
| 2003 12 19 | 691 | 0.3+ | 0.2+ | 2007 11 04 | 691 | 0.1+ | 0.0  |            |     |      |      |

**2007 VT<sub>153</sub> = 2005 EV<sub>130</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 59.71961   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23222003 | $\omega$ | 33.85198  | +0.73188989   | +0.68071020 |
| <i>a</i> | 2.6214179  | $\Omega$ | 283.21645 | −0.63207114   | +0.66108856 |
| <i>e</i> | 0.0944473  | <i>i</i> | 1.83410   | −0.25460414   | +0.31558761 |
| <i>P</i> | 4.24       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 08 28 | 691 | 0.0  | 0.3− | 2005 03 11 | G96 | 0.5− | 0.0  | 2007 11 04 | 691 | 0.6+ | 0.6+ |
| 2003 10 23 | 695 | 0.1− | 0.3− | 2005 03 11 | G96 | 0.3+ | 0.5+ | 2007 11 04 | 691 | 0.5+ | 0.4+ |
| 2003 10 23 | 695 | 0.1− | 0.3− | 2005 03 11 | G96 | 0.3− | 0.3+ | 2007 11 04 | 691 | 0.0  | 0.0  |
| 2003 11 15 | 691 | 0.0  | 0.2+ | 2005 03 11 | G96 | 0.1− | 0.7+ | 2007 11 09 | 691 | 1.0− | 0.6− |
| 2003 11 15 | 691 | 0.2+ | 0.0  | 2006 05 25 | 568 | 0.5+ | 1.0+ | 2007 11 09 | 691 | 0.2− | 0.2− |
| 2003 11 15 | 691 | 0.3+ | 0.2− | 2006 05 25 | 568 | 0.5+ | 0.8+ | 2007 11 09 | 691 | 0.2− | 0.4+ |
| 2005 03 09 | G96 | 0.1+ | 0.1+ | 2006 05 25 | 568 | 0.3+ | 1.0+ | 2007 12 15 | G96 | 0.9+ | 0.2− |
| 2005 03 09 | G96 | 0.0  | 0.1− | 2007 10 18 | 691 | 0.1− | 0.2− | 2007 12 15 | G96 | 0.9+ | 0.7− |
| 2005 03 09 | G96 | 0.2+ | 1.0+ | 2007 10 18 | 691 | 0.7− | 1.1+ | 2007 12 15 | G96 | 0.4+ | 1.0− |
| 2005 03 09 | G96 | 0.2+ | 0.6+ | 2007 10 18 | 691 | 0.1− | 0.2+ | 2007 12 15 | G96 | 0.2− | 1.2− |

**2007 VZ<sub>153</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.07008    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.27051219 | $\omega$ | 15.48827 | +0.75667456   | −0.65277845 |
| <i>a</i> | 2.3677989  | $\Omega$ | 25.37603 | +0.59046283   | +0.65842607 |
| <i>e</i> | 0.1326594  | <i>i</i> | 4.87040  | +0.28070848   | +0.37464037 |
| <i>P</i> | 3.64       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 17 | 691 | 0.2− | 0.1+ | 2007 10 31 | 691 | 0.1+ | 0.5− | 2007 11 18 | A77 | 0.8+ | 0.1+ |
| 1996 10 17 | 691 | 0.1+ | 0.2− | 2007 10 31 | 691 | 0.5− | 0.1− | 2007 11 18 | 704 | 0.4+ | 0.3+ |
| 1996 10 17 | 691 | 0.1+ | 0.2− | 2007 10 31 | 691 | 0.3− | 0.8+ | 2007 11 18 | 704 | 0.1− | 0.0  |
| 2003 09 24 | 644 | 0.0  | 0.1− | 2007 11 04 | 691 | 0.3− | 0.1− | 2007 11 18 | 704 | 0.8+ | 0.2− |
| 2003 09 24 | 644 | 0.0  | 0.4+ | 2007 11 04 | 691 | 0.0  | 0.2− | 2007 11 18 | 704 | 0.3+ | 0.5+ |
| 2003 09 24 | 644 | 0.2− | 0.2+ | 2007 11 04 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.6+ | 0.2+ |
| 2007 09 14 | G96 | 0.4+ | 0.2− | 2007 11 09 | 691 | 0.1+ | 0.0  | 2007 11 20 | 704 | 0.7− | 0.0  |
| 2007 09 14 | G96 | 0.4+ | 0.0  | 2007 11 09 | 691 | 0.2+ | 0.2− | 2007 11 20 | 704 | 0.1− | 0.8+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 14 | G96 | 0.4+ | 0.3− | 2007 11 09 | 691 | 0.1+ | 0.2− | 2007 11 20 | 704 | 0.4− | 0.4+ |
| 2007 10 11 | 691 | 0.3− | 0.1− | 2007 11 13 | 691 | 0.0  | 0.0  | 2007 11 20 | 704 | 0.2+ | 0.7+ |
| 2007 10 11 | 691 | 0.2+ | 0.1− | 2007 11 13 | 691 | 0.1− | 0.1− | 2007 11 20 | 704 | 0.9− | 0.8+ |
| 2007 10 11 | 691 | 0.2− | 0.3+ | 2007 11 13 | 691 | 0.1− | 0.0  | 2007 12 06 | 691 | 0.0  | 0.3− |
| 2007 10 11 | 691 | 0.2+ | 0.1+ | 2007 11 13 | 699 | 0.0  | 0.2+ | 2007 12 06 | 691 | 0.0  | 0.1− |
| 2007 10 11 | 691 | 0.3− | 0.1+ | 2007 11 13 | 699 | 0.1− | 0.2− | 2007 12 06 | 691 | 0.1− | 0.0  |
| 2007 10 11 | 691 | 0.1+ | 0.1+ | 2007 11 13 | 699 | 0.2+ | 0.3− | 2007 12 13 | 704 | 0.0  | 0.2+ |
| 2007 10 31 | 691 | 0.1+ | 0.3− | 2007 11 13 | 699 | 0.8+ | 0.2+ | 2007 12 13 | 704 | 0.1+ | 0.0  |
| 2007 10 31 | 691 | 0.2+ | 0.1− | 2007 11 18 | A77 | 0.8+ | 0.0  | 2007 12 13 | 704 | 0.3− | 1.1+ |
| 2007 10 31 | 691 | 0.0  | 0.0  | 2007 11 18 | A77 | 0.6+ | 0.5+ |            |     |      |      |

**2007 VG<sub>154</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 121.84943  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23603922 | $\omega$ | 102.31899 | −0.18243179   | +0.98303927 |
| <i>a</i> | 2.5930642  | $\Omega$ | 157.14373 | −0.91982708   | −0.16389379 |
| <i>e</i> | 0.0505560  | <i>i</i> | 2.77029   | −0.34732806   | −0.08229588 |
| <i>P</i> | 4.18       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 03 07 | 691 | 0.2− | 1.1− | 2005 01 19 | 691 | 0.3+ | 0.0  | 2007 10 15 | 703 | 0.0  | 0.5+ |
| 1997 03 07 | 691 | 0.1− | 0.7− | 2005 01 19 | 691 | 0.7+ | 0.1− | 2007 10 19 | G96 | 0.2+ | 0.4− |
| 1997 03 07 | 691 | 0.3− | 0.4− | 2005 03 08 | G96 | 0.4− | 0.0  | 2007 10 19 | G96 | 0.0  | 0.6− |
| 1999 11 15 | 691 | 0.0  | 0.2− | 2005 03 08 | G96 | 0.1− | 0.0  | 2007 10 19 | G96 | 0.1− | 0.3− |
| 1999 11 15 | 691 | 0.1− | 0.1+ | 2005 03 08 | G96 | 0.8− | 0.3− | 2007 10 19 | G96 | 0.3− | 0.7+ |
| 1999 11 15 | 691 | 0.0  | 0.0  | 2005 03 08 | G96 | 0.2− | 0.3− | 2007 11 05 | 691 | 0.6− | 0.3+ |
| 2001 02 19 | 691 | 0.1+ | 0.5+ | 2007 10 08 | G96 | 0.2+ | 0.1− | 2007 11 05 | 691 | 0.7− | 0.4− |
| 2001 02 19 | 691 | 0.2+ | 0.6+ | 2007 10 08 | G96 | 0.2− | 0.3− | 2007 11 05 | 691 | 0.5− | 0.0  |
| 2001 02 19 | 691 | 0.2− | 0.3+ | 2007 10 08 | G96 | 0.1− | 0.3− | 2007 11 09 | 691 | 0.3− | 0.2− |
| 2003 10 24 | 691 | 0.2+ | 0.1+ | 2007 10 08 | G96 | 0.1− | 0.2− | 2007 11 09 | 691 | 0.2+ | 0.0  |
| 2003 10 24 | 691 | 0.9+ | 0.1+ | 2007 10 15 | 703 | 0.9+ | 1.0+ | 2007 11 09 | 691 | 0.4− | 0.1+ |
| 2003 10 24 | 691 | 0.2− | 0.3+ | 2007 10 15 | 703 | 1.9+ | 0.6− |            |     |      |      |
| 2005 01 19 | 691 | 0.6+ | 0.2+ | 2007 10 15 | 703 | 0.2+ | 0.8− |            |     |      |      |

**2007 VT<sub>155</sub> = 1999 XX<sub>162</sub> = 2003 YQ<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 351.83473  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23705843 | $\omega$ | 152.86666 | +0.52923636   | −0.84568430 |
| <i>a</i> | 2.5856264  | $\Omega$ | 265.10629 | +0.76540627   | +0.51082016 |
| <i>e</i> | 0.1740792  | <i>i</i> | 3.95680   | +0.36614495   | +0.15453422 |
| <i>P</i> | 4.16       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 12 08 | 691 | 0.3+ | 0.3− | 2003 12 21 | 704 | 0.3−  | 0.1+  | 2007 11 15 | J75 | 0.5+  | 0.2−  |
| 1999 12 08 | 691 | 0.4− | 0.5− | 2003 12 21 | 704 | 0.9−  | 0.9−  | 2007 11 16 | J75 | (1.7+ | 1.3−) |
| 1999 12 08 | 691 | 0.1+ | 0.4− | 2003 12 21 | 704 | 0.0   | 0.2−  | 2007 11 16 | J75 | 1.2+  | 0.2+  |
| 1999 12 15 | 691 | 0.1− | 0.1− | 2003 12 21 | 704 | 0.3−  | 0.3−  | 2007 11 18 | 704 | 0.6+  | 0.5+  |
| 1999 12 15 | 691 | 0.2− | 0.0  | 2003 12 21 | 704 | 1.1−  | 0.7+  | 2007 11 18 | 704 | 0.3+  | 0.3−  |
| 1999 12 15 | 691 | 0.0  | 0.1+ | 2003 12 21 | 704 | 0.2−  | 0.1+  | 2007 11 18 | 704 | 1.1+  | 0.5+  |
| 2003 12 18 | 704 | 0.4− | 0.6+ | 2003 12 21 | 704 | (0.6− | 1.6−) | 2007 11 18 | 704 | 0.4+  | 1.1+  |
| 2003 12 18 | 704 | 0.3− | 0.1− | 2007 09 26 | G96 | 0.4−  | 0.9−  | 2007 11 18 | 704 | 1.0−  | 0.4−  |
| 2003 12 18 | 704 | 0.2− | 0.8− | 2007 09 26 | G96 | 0.8−  | 0.5−  | 2007 11 19 | J75 | 1.0+  | 0.3−  |
| 2003 12 18 | 704 | 0.1− | 0.1− | 2007 09 26 | G96 | 0.1−  | 0.2−  | 2007 11 19 | J75 | 0.4+  | 0.1−  |
| 2003 12 18 | 704 | 0.0  | 0.4+ | 2007 09 26 | G96 | 0.0   | 0.5−  | 2007 11 20 | 704 | 0.5−  | 0.0   |
| 2003 12 19 | 704 | 1.1+ | 1.0+ | 2007 11 05 | 691 | 0.4−  | 0.2−  | 2007 11 20 | 704 | 1.2−  | 0.2−  |
| 2003 12 19 | 704 | 0.6+ | 0.4+ | 2007 11 05 | 691 | 0.2−  | 0.2−  | 2007 11 20 | 704 | 0.2−  | 0.4+  |
| 2003 12 19 | 704 | 0.4− | 0.5+ | 2007 11 05 | 691 | 0.1−  | 0.0   | 2007 11 20 | 704 | 0.5+  | 1.3−  |
| 2003 12 21 | 704 | 0.1− | 0.1− | 2007 11 09 | 691 | 0.2−  | 0.1−  | 2007 11 20 | 704 | 0.6−  | 0.7+  |
| 2003 12 21 | 704 | 0.5+ | 0.3+ | 2007 11 09 | 691 | 0.0   | 0.1+  | 2007 12 05 | 691 | 0.0   | 0.0   |
| 2003 12 21 | 704 | 0.1− | 0.7+ | 2007 11 09 | 691 | 0.2−  | 0.1+  | 2007 12 05 | 691 | 0.0   | 0.1+  |
| 2003 12 21 | 704 | 1.3+ | 0.7+ | 2007 11 13 | 699 | 0.7+  | 0.1+  | 2007 12 05 | 691 | 0.1+  | 0.2+  |
| 2003 12 21 | 704 | 0.0  | 0.1+ | 2007 11 13 | 699 | 0.3+  | 0.1−  | 2007 12 15 | 691 | 0.2−  | 0.1+  |
| 2003 12 21 | 704 | 0.2− | 0.3+ | 2007 11 13 | 699 | 1.0+  | 0.1+  | 2007 12 15 | 691 | 0.2−  | 0.1−  |
| 2003 12 21 | 704 | 0.2+ | 0.9+ | 2007 11 13 | 699 | 0.9+  | 0.1+  | 2007 12 15 | 691 | 0.0   | 0.1−  |
| 2003 12 21 | 704 | 0.7+ | 1.2+ | 2007 11 15 | J75 | 0.2+  | 0.3−  |            |     |       |       |
| 2003 12 21 | 704 | 0.2+ | 0.1− | 2007 11 15 | J75 | 0.5+  | 0.2−  |            |     |       |       |

2007 DEC. 24

M.P.O. 130017

**2007 VP<sub>156</sub> = 2004 BF<sub>146</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 299.49686  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21083951 | $\omega$ | 47.27124 | -0.34367196   | -0.93835142 |
| <i>a</i> | 2.7957697  | $\Omega$ | 62.86443 | +0.84891199   | -0.32737842 |
| <i>e</i> | 0.2147011  | <i>i</i> | 2.39776  | +0.40154454   | -0.11099541 |
| <i>P</i> | 4.67       | <i>H</i> | 17.0     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 22 | 704 | 0.5+ | 0.4+ | 2004 02 14 | 691 | 0.2+ | 0.0  | 2007 10 18 | G96 | 0.3- | 0.3- |
| 2004 01 22 | 704 | 0.7- | 0.1+ | 2004 02 14 | 691 | 0.1+ | 0.1- | 2007 10 18 | G96 | 0.0  | 0.2- |
| 2004 01 22 | 704 | 0.1- | 0.2+ | 2004 02 14 | 691 | 0.0  | 0.2- | 2007 10 18 | G96 | 0.2- | 0.1- |
| 2004 01 22 | 704 | 0.5+ | 0.2- | 2007 09 12 | G96 | 0.3+ | 0.1+ | 2007 10 18 | G96 | 0.0  | 0.2- |
| 2004 01 22 | 704 | 0.2+ | 0.3- | 2007 09 12 | G96 | 0.0  | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.4- |
| 2004 01 30 | 691 | 0.0  | 0.1- | 2007 09 12 | G96 | 1.0+ | 0.2- | 2007 11 05 | G96 | 0.2+ | 0.2- |
| 2004 01 30 | 691 | 0.2- | 0.1- | 2007 09 12 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 1.0+ | 0.3- |
| 2004 01 30 | 691 | 0.1- | 0.1- | 2007 10 08 | G96 | 0.0  | 0.6- | 2007 11 05 | G96 | 0.5+ | 0.2- |
| 2004 01 30 | 704 | 1.0- | 0.8+ | 2007 10 08 | G96 | 0.0  | 0.3- | 2007 11 09 | 691 | 0.0  | 0.2+ |
| 2004 01 30 | 704 | 0.7+ | 0.5+ | 2007 10 08 | G96 | 0.4- | 0.3- | 2007 11 09 | 691 | 0.7- | 0.5+ |
| 2004 01 30 | 704 | 0.4- | 0.6+ | 2007 10 08 | G96 | 0.4- | 0.3- | 2007 11 09 | 691 | 0.3+ | 0.2+ |

**2007 VA<sub>157</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.29435  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28528502 | $\omega$ | 332.86698 | -0.17456364   | -0.98391481 |
| <i>a</i> | 2.2853361  | $\Omega$ | 127.16231 | +0.91181104   | -0.17607350 |
| <i>e</i> | 0.1161764  | <i>i</i> | 2.72851   | +0.37165597   | -0.03016226 |
| <i>P</i> | 3.45       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 08 24 | 807 | 0.1- | 0.5+ | 2005 03 10 | G96 | 0.5- | 0.2- | 2007 11 13 | 691 | 0.7- | 0.3+ |
| 2003 08 24 | 807 | 0.2- | 0.4+ | 2005 03 10 | G96 | 0.3- | 0.2- | 2007 11 13 | 691 | 0.2+ | 0.2- |
| 2004 12 20 | G96 | 0.1- | 0.3- | 2005 03 10 | G96 | 0.2- | 0.4- | 2007 11 18 | G96 | 0.9+ | 0.1+ |
| 2004 12 20 | G96 | 0.4- | 0.2- | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.9+ | 0.1- |
| 2004 12 20 | G96 | 0.0  | 0.4- | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 1.0+ | 0.3- |
| 2004 12 20 | G96 | 0.3+ | 0.4+ | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.2- |
| 2005 02 09 | 691 | 0.1+ | 0.4+ | 2007 11 09 | 691 | 0.1+ | 0.1+ | 2007 11 20 | 691 | 0.3- | 0.8- |
| 2005 02 09 | 691 | 0.2+ | 0.2+ | 2007 11 09 | 691 | 0.4- | 0.3+ | 2007 11 20 | 691 | 0.2- | 0.1+ |
| 2005 02 09 | 691 | 0.2+ | 0.1+ | 2007 11 09 | 691 | 0.4+ | 0.2+ | 2007 11 20 | 691 | 0.4- | 0.0  |
| 2005 03 10 | G96 | 0.4- | 0.3- | 2007 11 13 | 691 | 0.2+ | 0.1- |            |     |      |      |

**2007 VS<sub>157</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 270.18102  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.29669183 | $\omega$ | 58.57957 | -0.88536982   | -0.45957994 |
| <i>a</i> | 2.2263784  | $\Omega$ | 93.97759 | +0.39913334   | -0.82871730 |
| <i>e</i> | 0.1128884  | <i>i</i> | 4.02639  | +0.23835447   | -0.31939617 |
| <i>P</i> | 3.32       | <i>H</i> | 18.0     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 19 | G96 | 0.3+ | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.6- | 2007 11 09 | 691 | 0.1+ | 0.3+ |
| 2004 12 19 | G96 | 0.6+ | 0.3+ | 2007 10 20 | G96 | 0.8+ | 0.3- | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2004 12 19 | G96 | 0.7- | 0.4- | 2007 10 20 | G96 | 0.0  | 0.6- | 2007 11 13 | 691 | 0.2- | 0.4+ |
| 2004 12 19 | G96 | 0.5- | 0.3- | 2007 11 05 | 691 | 0.2- | 0.6- | 2007 11 13 | 691 | 0.2- | 0.3+ |
| 2005 01 17 | 691 | 0.2+ | 0.1- | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 11 20 | 691 | 0.6- | 0.4+ |
| 2005 01 17 | 691 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.1- | 0.1- | 2007 11 20 | 691 | 0.1- | 0.6+ |
| 2005 01 17 | 691 | 0.0  | 0.1- | 2007 11 09 | 691 | 0.1+ | 0.0  | 2007 11 20 | 691 | 0.0  | 0.2+ |
| 2007 10 20 | G96 | 0.1+ | 0.1- | 2007 11 09 | 691 | 0.1- | 0.2+ |            |     |      |      |

**2007 VY<sub>157</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 181.22787  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22543923 | $\omega$ | 153.14373 | -0.60712947   | +0.78373906 |
| <i>a</i> | 2.6737228  | $\Omega$ | 79.18790  | -0.75089292   | -0.51198456 |
| <i>e</i> | 0.1455875  | <i>i</i> | 7.66107   | -0.25991079   | -0.35160332 |
| <i>P</i> | 4.37       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 18 | 703 | 0.6- | 0.6+ | 2005 04 06 | 703 | (0.3+ | 2.0+) | 2007 11 09 | 691 | 0.2- | 0.1+ |
| 2005 03 18 | 703 | 0.3- | 0.4+ | 2005 04 06 | 703 | (1.7+ | 1.6+) | 2007 11 09 | 691 | 0.1- | 0.2+ |
| 2005 03 18 | 703 | 0.1+ | 0.3+ | 2007 10 20 | G96 | 0.4+  | 0.1-  | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2005 03 18 | 703 | 0.2+ | 0.6+ | 2007 10 20 | G96 | 0.1+  | 0.5-  | 2007 11 19 | 691 | 0.3+ | 0.0  |
| 2005 03 30 | 703 | 0.3- | 0.1+ | 2007 10 20 | G96 | 0.4+  | 0.1-  | 2007 11 19 | 691 | 0.2- | 0.3- |
| 2005 03 30 | 703 | 0.3- | 1.0- | 2007 10 20 | G96 | 0.5+  | 0.3-  | 2007 11 20 | 691 | 0.2+ | 0.1+ |
| 2005 03 30 | 703 | 1.1- | 0.2+ | 2007 11 05 | 691 | 0.3-  | 0.1+  | 2007 11 20 | 691 | 0.0  | 0.1- |
| 2005 03 30 | 703 | 1.0+ | 0.3- | 2007 11 05 | 691 | 0.1+  | 0.1+  | 2007 11 20 | 691 | 0.1- | 0.0  |
| 2005 04 06 | 703 | 1.3+ | 0.9- | 2007 11 05 | 691 | 0.1+  | 0.1+  |            |     |      |      |
| 2005 04 06 | 703 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.2-  | 0.1-  |            |     |      |      |

**2007 VF<sub>158</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 113.65621  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23873584 | $\omega$ | 180.27558 | +0.19341398   | +0.97694347 |
| <i>a</i> | 2.5735007  | $\Omega$ | 100.87768 | -0.89998125   | +0.21335436 |
| <i>e</i> | 0.1942873  | <i>i</i> | 5.28189   | -0.39067222   | -0.00783366 |
| <i>P</i> | 4.13       | <i>H</i> | 17.0      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 07 14 | 644 | 0.1- | 0.3- | 2007 10 20 | G96 | 0.4+ | 0.6- | 2007 11 09 | 691 | 0.5- | 0.1- |
| 2002 07 14 | 644 | 0.3+ | 0.2+ | 2007 11 01 | 691 | 1.5+ | 0.3- | 2007 11 13 | 691 | 0.1- | 0.1- |
| 2002 07 14 | 644 | 0.2+ | 0.0  | 2007 11 01 | 691 | 0.4- | 0.3+ | 2007 11 13 | 691 | 0.1+ | 0.1- |
| 2002 08 06 | 644 | 0.2- | 0.0  | 2007 11 01 | 691 | 0.9- | 0.4+ | 2007 11 13 | 691 | 0.3+ | 0.1- |
| 2002 08 06 | 644 | 0.0  | 0.2+ | 2007 11 05 | 691 | 0.1+ | 0.2+ | 2007 11 20 | 691 | 0.2- | 0.1- |
| 2002 08 06 | 644 | 0.2- | 0.1- | 2007 11 05 | 691 | 0.6- | 0.3+ | 2007 11 20 | 691 | 0.6- | 0.2+ |
| 2007 10 20 | G96 | 0.6+ | 0.1- | 2007 11 05 | 691 | 0.2- | 0.3- | 2007 11 20 | 691 | 0.0  | 0.3+ |
| 2007 10 20 | G96 | 0.4+ | 0.1+ | 2007 11 09 | 691 | 0.1- | 0.1- |            |     |      |      |
| 2007 10 20 | G96 | 0.6+ | 0.0  | 2007 11 09 | 691 | 0.3- | 0.2+ |            |     |      |      |

**2007 VJ<sub>158</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 20.26745   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24430969 | $\omega$ | 221.92727 | +0.97273687   | -0.23107113 |
| <i>a</i> | 2.5342080  | $\Omega$ | 151.41505 | +0.22222629   | +0.90440967 |
| <i>e</i> | 0.2638151  | <i>i</i> | 2.36288   | +0.06632092   | +0.35867712 |
| <i>P</i> | 4.03       | <i>H</i> | 17.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 23 | 691 | 0.2- | 0.5- | 2007 11 05 | D29 | 0.0  | 0.3- | 2007 11 20 | 691 | 0.0  | 0.2+ |
| 2003 11 23 | 691 | 0.3+ | 0.2- | 2007 11 05 | D29 | 0.4- | 0.3- | 2007 11 20 | 703 | 0.3+ | 0.4- |
| 2003 11 23 | 691 | 0.2+ | 0.1- | 2007 11 05 | D29 | 0.2+ | 0.3+ | 2007 11 20 | 703 | 0.3+ | 0.4- |
| 2003 12 27 | 691 | 0.2- | 0.2+ | 2007 11 05 | D29 | 0.7+ | 0.2- | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2003 12 27 | 691 | 0.3+ | 0.0  | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 11 20 | 703 | 0.7+ | 1.0+ |
| 2003 12 27 | 691 | 0.3- | 0.2+ | 2007 11 09 | 691 | 0.1+ | 0.1- | 2007 11 20 | 703 | 0.0  | 0.7+ |
| 2007 10 20 | G96 | 0.1- | 0.1+ | 2007 11 09 | 691 | 0.6- | 0.2- | 2007 11 20 | 691 | 0.2+ | 0.2+ |
| 2007 10 20 | G96 | 0.2+ | 0.2+ | 2007 11 11 | D35 | 0.7+ | 0.3+ | 2007 12 03 | 703 | 0.7+ | 0.9- |
| 2007 10 20 | G96 | 0.1+ | 0.0  | 2007 11 11 | D35 | 0.3+ | 0.6+ | 2007 12 03 | 703 | 1.4- | 0.5+ |
| 2007 10 20 | G96 | 0.4+ | 0.1+ | 2007 11 11 | D35 | 0.5+ | 0.7+ | 2007 12 03 | 703 | 0.7+ | 0.5- |
| 2007 11 05 | 691 | 0.1- | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.4- | 2007 12 03 | 703 | 0.4+ | 0.1+ |
| 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.2- | 0.3- |            |     |      |      |
| 2007 11 05 | 691 | 0.3- | 0.2+ | 2007 11 13 | 691 | 0.4- | 0.1+ |            |     |      |      |

**2007 VT<sub>158</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 37.75928   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.28373652 | $\omega$ 204.87271 | +0.99943322   | +0.02676096 |
| <i>a</i> | 2.2936433  | $\Omega$ 153.56944 | -0.01763035   | +0.93291617 |
| <i>e</i> | 0.1646982  | <i>i</i> 2.62981   | -0.02867786   | +0.35909786 |
| <i>P</i> | 3.47       | <i>H</i> 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 11 24 | 699 | 0.3- | 1.8+ | 2006 05 24 | G96 | 0.2- | 0.1+ | 2007 11 20 | 691 | 0.1-  | 0.0   |
| 2000 11 24 | 699 | 0.4- | 0.4+ | 2006 05 24 | G96 | 0.2- | 0.2- | 2007 11 20 | 703 | 1.1+  | 0.6+  |
| 2000 11 24 | 699 | 0.3- | 0.7+ | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 11 20 | 703 | 0.1+  | 1.3-  |
| 2000 11 24 | 699 | 0.3- | 2.1+ | 2007 11 05 | 691 | 0.1- | 0.0  | 2007 11 20 | 691 | 0.7-  | 0.5+  |
| 2002 04 06 | 691 | 0.2- | 0.5+ | 2007 11 05 | 691 | 0.0  | 0.0  | 2007 11 20 | 703 | (1.8- | 2.0+) |
| 2002 04 06 | 691 | 0.8- | 0.3- | 2007 11 09 | 691 | 0.2- | 0.1- | 2007 11 20 | 703 | 0.4-  | 0.2-  |
| 2002 04 06 | 691 | 1.2+ | 0.3+ | 2007 11 09 | 691 | 0.1- | 0.1- | 2007 11 20 | 703 | 0.9+  | 0.5+  |
| 2005 01 16 | 691 | 0.2- | 0.0  | 2007 11 09 | 691 | 0.1- | 0.1+ | 2007 11 20 | 703 | (1.7+ | 0.7+) |
| 2005 01 16 | 691 | 0.0  | 0.5- | 2007 11 13 | 691 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.4+  | 0.1-  |
| 2005 01 16 | 691 | 0.2+ | 0.1- | 2007 11 13 | 691 | 0.0  | 0.1- | 2007 11 20 | G96 | 0.1+  | 0.1-  |
| 2006 04 24 | 691 | 0.2- | 0.4+ | 2007 11 13 | 691 | 0.1- | 0.1- | 2007 11 20 | G96 | 0.2+  | 0.2-  |
| 2006 04 24 | 691 | 0.2+ | 0.0  | 2007 11 15 | 699 | 0.8- | 0.6+ | 2007 11 20 | G96 | 0.2+  | 0.2-  |
| 2006 04 24 | 691 | 0.1+ | 0.1+ | 2007 11 15 | 699 | 0.1+ | 0.1+ | 2007 12 04 | 704 | 0.5+  | 0.7-  |
| 2006 05 06 | 691 | 0.0  | 0.2+ | 2007 11 15 | 699 | 0.2+ | 0.6+ | 2007 12 04 | 704 | 0.3+  | 0.1-  |
| 2006 05 06 | 691 | 0.3+ | 0.1+ | 2007 11 15 | 699 | 1.2+ | 0.2- | 2007 12 04 | 704 | 0.1+  | 0.1+  |
| 2006 05 06 | 691 | 0.2+ | 0.3+ | 2007 11 20 | 691 | 0.4- | 0.2- | 2007 12 04 | 704 | 0.7+  | 0.0   |
| 2006 05 24 | G96 | 0.4- | 0.2+ | 2007 11 20 | 703 | 0.2+ | 0.6+ | 2007 12 04 | 704 | 1.4+  | 0.2+  |
| 2006 05 24 | G96 | 0.3- | 0.1+ | 2007 11 20 | 703 | 0.1+ | 0.1+ |            |     |       |       |

**2007 VJ<sub>159</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.11739   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21532786 | $\omega$ 230.33176 | +0.88271082   | -0.46932075 |
| <i>a</i> | 2.7567829  | $\Omega$ 157.62798 | +0.44793040   | +0.82512570 |
| <i>e</i> | 0.1050062  | <i>i</i> 3.56340   | +0.14205620   | +0.31449264 |
| <i>P</i> | 4.58       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 31 | 291 | 0.0  | 0.4+ | 2007 11 05 | 691 | 0.3- | 0.2+ | 2007 11 18 | G96 | 0.0  | 0.1- |
| 2002 08 31 | 291 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1+ | 0.2- | 2007 11 18 | G96 | 0.8+ | 0.0  |
| 2002 08 31 | 291 | 0.2- | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.2- | 2007 11 18 | G96 | 0.4+ | 0.2- |
| 2002 09 05 | 645 | 0.1+ | 0.2- | 2007 11 09 | 691 | 1.0+ | 0.6+ | 2007 11 18 | G96 | 0.1+ | 0.2- |
| 2002 09 05 | 645 | 0.0  | 0.3- | 2007 11 13 | 691 | 0.2- | 0.0  | 2007 11 20 | 691 | 0.4- | 0.2+ |
| 2007 11 05 | 691 | 0.1- | 0.0  | 2007 11 13 | 691 | 0.2- | 0.1- | 2007 11 20 | 691 | 0.3- | 0.3- |
| 2007 11 05 | 691 | 0.3- | 0.3- | 2007 11 13 | 691 | 0.5- | 0.8+ | 2007 11 20 | 691 | 0.3- | 0.2- |

**2007 VQ<sub>159</sub> = 2006 HH<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 101.96313  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.31068581 | $\omega$ 215.43683 | +0.48503211   | +0.86800779 |
| <i>a</i> | 2.1590123  | $\Omega$ 83.79462  | -0.77564668   | +0.48316957 |
| <i>e</i> | 0.0640377  | <i>i</i> 6.13998   | -0.40387632   | +0.11449735 |
| <i>P</i> | 3.17       | <i>H</i> 17.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 29 | 691 | 0.1- | 0.5+ | 2007 11 05 | 691 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.6+ | 0.0  |
| 2006 04 29 | 691 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.1- | 0.3+ | 2007 11 18 | G96 | 0.2+ | 0.0  |
| 2006 04 29 | 691 | 0.7+ | 0.5- | 2007 11 09 | 691 | 0.0  | 0.3- | 2007 11 18 | G96 | 0.7+ | 0.1+ |
| 2006 05 03 | 691 | 0.3- | 0.1- | 2007 11 09 | 691 | 0.1+ | 0.1- | 2007 11 20 | 691 | 0.2- | 0.6+ |
| 2006 05 03 | 691 | 0.1- | 0.1+ | 2007 11 13 | 691 | 0.1- | 0.2+ | 2007 11 20 | 691 | 0.5- | 0.4+ |
| 2006 05 03 | 691 | 0.3- | 0.0  | 2007 11 13 | 691 | 0.1- | 0.2- | 2007 11 20 | 691 | 0.5+ | 1.0- |
| 2007 11 05 | 691 | 0.0  | 0.0  | 2007 11 13 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.8+ | 0.0  |            |     |      |      |

**2007 VL<sub>161</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.81790   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22351984 | $\omega$ 103.10278 | +0.98923915   | -0.05685650 |
| <i>a</i> | 2.6890074  | $\Omega$ 260.27713 | +0.00252092   | +0.92788961 |
| <i>e</i> | 0.1186120  | <i>i</i> 7.86114   | +0.14628586   | +0.36849451 |
| <i>P</i> | 4.41       | <i>H</i> 16.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 08 13 | 699 | 0.0  | 1.3+ | 2002 10 31 | 645 | 0.1+  | 0.1-  | 2007 11 18 | 704 | 0.2+ | 1.2+ |
| 2002 08 13 | 699 | 0.8+ | 0.4+ | 2007 11 05 | 691 | 0.1-  | 0.0   | 2007 11 18 | 704 | 0.2- | 1.1+ |
| 2002 08 13 | 699 | 0.2- | 0.3+ | 2007 11 05 | 691 | 0.3-  | 0.1+  | 2007 11 18 | 704 | 0.1+ | 0.4+ |
| 2002 08 13 | 699 | 0.1- | 0.6- | 2007 11 05 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 704 | 0.2- | 0.1+ |
| 2002 08 27 | 644 | 0.0  | 0.8+ | 2007 11 09 | 691 | 0.1+  | 0.1-  | 2007 11 18 | 704 | 0.2+ | 0.8+ |
| 2002 08 27 | 644 | 0.0  | 0.5+ | 2007 11 09 | 691 | 0.0   | 0.0   | 2007 11 18 | 300 | 0.2- | 0.2+ |
| 2002 08 27 | 644 | 0.2+ | 0.7+ | 2007 11 09 | 691 | 0.1-  | 0.1+  | 2007 11 18 | 300 | 0.1+ | 0.8- |
| 2002 09 04 | 644 | 0.2- | 0.2+ | 2007 11 13 | 703 | 0.6+  | 0.0   | 2007 11 18 | 300 | 0.5- | 0.5+ |
| 2002 09 04 | 644 | 0.1+ | 0.3+ | 2007 11 13 | 703 | (1.1+ | 1.9-) | 2007 11 18 | 300 | 0.3- | 0.9- |
| 2002 09 04 | 644 | 0.2+ | 0.2+ | 2007 11 13 | 703 | 0.2-  | 0.1-  | 2007 11 18 | 300 | 0.4- | 0.2+ |
| 2002 09 12 | 644 | 0.0  | 0.2+ | 2007 11 13 | 703 | 1.4+  | 0.3-  | 2007 11 20 | 704 | 0.3- | 1.0+ |
| 2002 09 12 | 644 | 0.1- | 0.3+ | 2007 11 17 | 691 | 0.0   | 0.3-  | 2007 11 20 | 704 | 1.2+ | 0.1+ |
| 2002 09 12 | 644 | 0.2- | 0.3+ | 2007 11 17 | 691 | 0.0   | 0.0   | 2007 11 20 | 704 | 0.8+ | 0.5+ |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.1+  | 0.1-  | 2007 12 14 | 704 | 0.1+ | 0.2- |
| 2002 10 05 | 645 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.1+  | 0.3-  | 2007 12 14 | 704 | 1.2- | 0.5+ |
| 2002 10 11 | 645 | 0.0  | 0.0  | 2007 11 17 | G96 | 0.2+  | 0.3-  | 2007 12 14 | 704 | 0.1- | 0.2- |
| 2002 10 11 | 645 | 0.1- | 0.0  | 2007 11 17 | G96 | 0.0   | 0.3-  | 2007 12 14 | 704 | 0.1+ | 0.3- |
| 2002 10 31 | 645 | 0.1+ | 0.1- | 2007 11 17 | G96 | 0.0   | 0.4-  |            |     |      |      |

**2007 VM<sub>161</sub> = 2002 QU<sub>94</sub> = 2003 YV<sub>47</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 281.98392  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23719835 | $\omega$ 232.25506 | -0.78581732   | -0.60906399 |
| <i>a</i> | 2.5846095  | $\Omega$ 269.96691 | +0.59582851   | -0.69902176 |
| <i>e</i> | 0.0807748  | <i>i</i> 6.16477   | +0.16576949   | -0.37471274 |
| <i>P</i> | 4.16       | <i>H</i> 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 08 16 | 644 | 0.2+ | 0.4+ | 2003 12 21 | 704 | 0.0  | 1.2+ | 2007 11 17 | 691 | 0.0   | 0.0   |
| 2002 08 16 | 644 | 0.4- | 0.5+ | 2005 05 19 | 644 | 0.2+ | 0.3+ | 2007 11 18 | 704 | (1.7+ | 0.4+) |
| 2002 08 16 | 644 | 0.1+ | 0.6+ | 2005 05 19 | 644 | 0.2+ | 0.5+ | 2007 11 18 | 704 | 0.2+  | 0.7+  |
| 2002 08 17 | 608 | 0.7- | 0.1+ | 2005 05 19 | 644 | 0.2+ | 0.8+ | 2007 11 18 | 704 | 1.0+  | 0.1+  |
| 2002 08 17 | 608 | 0.4- | 0.6+ | 2007 11 05 | 691 | 0.3+ | 0.4- | 2007 11 18 | 704 | 0.6-  | 0.0   |
| 2002 08 17 | 608 | 0.1+ | 0.5+ | 2007 11 05 | 691 | 0.0  | 0.3- | 2007 11 20 | 704 | 0.1+  | 0.3-  |
| 2003 12 18 | 704 | 0.7+ | 0.0  | 2007 11 05 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 704 | (0.2+ | 2.0-) |
| 2003 12 18 | 704 | 0.2- | 1.0+ | 2007 11 09 | 691 | 0.2+ | 0.1- | 2007 11 20 | 704 | 0.8-  | 0.0   |
| 2003 12 18 | 704 | 0.7- | 0.4+ | 2007 11 09 | 691 | 0.6- | 1.4- | 2007 11 20 | 704 | (1.6- | 0.1-) |
| 2003 12 18 | 704 | 0.4+ | 0.7+ | 2007 11 09 | 691 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.4+  | 0.8-  |
| 2003 12 18 | 704 | 0.1- | 0.3+ | 2007 11 13 | 691 | 0.4+ | 0.0  | 2007 12 10 | 704 | 0.1+  | 0.1+  |
| 2003 12 21 | 704 | 0.5+ | 0.2+ | 2007 11 13 | 691 | 0.1+ | 0.0  | 2007 12 10 | 704 | 0.7+  | 0.5+  |
| 2003 12 21 | 704 | 0.5- | 0.2+ | 2007 11 13 | 691 | 0.2+ | 0.0  | 2007 12 10 | 704 | 0.3+  | 0.6+  |
| 2003 12 21 | 704 | 0.1- | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.1- |            |     |       |       |
| 2003 12 21 | 704 | 0.2+ | 0.4+ | 2007 11 17 | 691 | 1.5- | 1.3+ |            |     |       |       |

**2007 VZ<sub>161</sub> = 2000 QH<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.73029  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17454269 | $\omega$ 180.44581 | +0.19172396   | -0.96258254 |
| <i>a</i> | 3.1710392  | $\Omega$ 258.50936 | +0.90106553   | +0.24997907 |
| <i>e</i> | 0.0346309  | <i>i</i> 11.26977  | +0.38900237   | -0.10461989 |
| <i>P</i> | 5.65       | <i>H</i> 15.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 26 | 691 | 0.2+ | 0.1+ | 2007 10 24 | G96 | 0.1+ | 0.4- | 2007 11 13 | 703 | 1.6- | 0.8+ |
| 2000 08 26 | 691 | 0.1- | 0.0  | 2007 11 05 | 691 | 0.1- | 0.2+ | 2007 11 13 | 703 | 0.1+ | 1.5+ |
| 2000 08 26 | 691 | 0.2+ | 0.2- | 2007 11 05 | 691 | 0.0  | 0.1+ | 2007 11 18 | 704 | 0.9+ | 0.0  |



## 2007 DEC. 24

M.P.O. 130019

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 31 | 691 | 0.1− | 0.5− | 2007 11 05 | 691 | 0.1− | 0.2− | 2007 11 18 | 704 | 1.5+ | 0.4− |
| 2000 08 31 | 691 | 0.3+ | 0.6− | 2007 11 09 | 691 | 0.0  | 0.1− | 2007 11 18 | 704 | 0.9+ | 1.0+ |
| 2000 08 31 | 691 | 0.1− | 0.7− | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.5+ | 0.0  |
| 2000 09 27 | 645 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.2− | 2007 11 20 | 704 | 0.1+ | 0.9+ |
| 2000 09 27 | 645 | 0.1− | 0.2+ | 2007 11 13 | 691 | 0.9− | 0.3− | 2007 11 20 | 704 | 0.9+ | 0.4− |
| 2007 10 24 | G96 | 0.1+ | 0.4− | 2007 11 13 | 691 | 0.2− | 0.1− | 2007 11 20 | 704 | 1.1+ | 0.7+ |
| 2007 10 24 | G96 | 0.3+ | 0.3− | 2007 11 13 | 691 | 0.3+ | 0.3− |            |     |      |      |
| 2007 10 24 | G96 | 0.2− | 0.0  | 2007 11 13 | 703 | 0.8− | 0.4− |            |     |      |      |

2007 VJ<sub>164</sub> = 2007 TX<sub>203</sub> = 2005 EF<sub>106</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 200.38327  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.25745523 | $\omega$ | 73.82369  | −0.85889362   | +0.51165386 |
| <i>a</i> | 2.4471931  | $\Omega$ | 136.94340 | −0.48164624   | −0.79192059 |
| <i>e</i> | 0.1326847  | <i>i</i> | 1.89947   | −0.17412253   | −0.33327483 |
| <i>P</i> | 3.83       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 05 01 | 691 | 0.3− | 0.1+ | 2005 03 10 | G96 | 0.0  | 0.3− | 2007 10 08 | G96 | 0.3+ | 0.0  |
| 1994 05 01 | 691 | 0.2+ | 0.2− | 2006 05 24 | G96 | 0.1+ | 0.0  | 2007 10 08 | G96 | 1.0+ | 0.4− |
| 1995 07 26 | 691 | 0.8− | 0.1+ | 2006 05 24 | G96 | 0.4+ | 0.6+ | 2007 10 08 | G96 | 0.6+ | 0.2− |
| 1995 07 26 | 691 | 0.4− | 0.4− | 2006 05 24 | G96 | 0.2+ | 0.6+ | 2007 10 08 | G96 | 0.8+ | 0.3− |
| 1995 07 26 | 691 | 0.4− | 0.5− | 2006 05 24 | G96 | 0.0  | 0.2− | 2007 10 08 | 691 | 0.0  | 0.7− |
| 1999 11 01 | 691 | 0.7+ | 0.4− | 2007 09 14 | G96 | 0.9− | 0.0  | 2007 10 16 | 691 | 0.4− | 0.1− |
| 1999 11 01 | 691 | 0.9+ | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.5− | 2007 10 16 | 691 | 0.2− | 0.0  |
| 1999 11 01 | 691 | 0.5+ | 0.1− | 2007 09 14 | G96 | 0.3+ | 0.3− | 2007 10 16 | 691 | 0.1− | 0.1+ |
| 2000 12 22 | 691 | 0.2− | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 11 05 | G96 | 0.8+ | 0.2− |
| 2000 12 22 | 691 | 0.4+ | 0.0  | 2007 10 08 | 291 | 0.6− | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.1− |
| 2000 12 22 | 691 | 0.1+ | 0.0  | 2007 10 08 | 291 | 0.7− | 0.1+ | 2007 11 05 | G96 | 0.0  | 0.3+ |
| 2005 03 04 | G96 | 0.4− | 0.2− | 2007 10 08 | 291 | 0.3− | 0.3+ | 2007 11 05 | G96 | 0.1+ | 0.0  |
| 2005 03 04 | G96 | 0.2− | 0.3− | 2007 10 08 | 691 | 0.1+ | 0.0  | 2007 11 09 | 291 | 0.3− | 0.1+ |
| 2005 03 04 | G96 | 0.4− | 0.3− | 2007 10 08 | G96 | 0.2+ | 0.2− | 2007 11 09 | 291 | 0.1+ | 0.1− |
| 2005 03 04 | G96 | 0.3− | 0.3− | 2007 10 08 | G96 | 0.4+ | 0.0  | 2007 11 09 | 291 | 0.1− | 0.1+ |
| 2005 03 10 | G96 | 0.1− | 0.4− | 2007 10 08 | 691 | 0.2+ | 0.1− | 2007 12 05 | 691 | 0.2− | 0.5+ |
| 2005 03 10 | G96 | 0.0  | 0.2− | 2007 10 08 | G96 | 0.5+ | 0.0  | 2007 12 05 | 691 | 0.5− | 0.4+ |
| 2005 03 10 | G96 | 0.1+ | 0.4− | 2007 10 08 | G96 | 0.7+ | 0.2− | 2007 12 05 | 691 | 0.5+ | 0.2+ |

2007 VL<sub>164</sub> = 2005 JW<sub>2</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.71876   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21047114 | $\omega$ | 339.68265 | +0.77874740   | −0.62613165 |
| <i>a</i> | 2.7990308  | $\Omega$ | 59.14337  | +0.58164549   | +0.69741988 |
| <i>e</i> | 0.0684841  | <i>i</i> | 2.59584   | +0.23503405   | +0.34866124 |
| <i>P</i> | 4.68       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 04 05 | 691 | 0.8− | 1.0− | 2005 05 04 | G96 | 0.1− | 0.3+ | 2007 11 14 | 691 | 0.2+ | 0.0  |
| 1995 04 05 | 691 | 0.3+ | 0.0  | 2005 05 04 | G96 | 0.3− | 0.2− | 2007 11 14 | 691 | 0.1− | 0.0  |
| 2004 02 12 | 691 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.0  | 0.4+ | 2007 11 18 | 691 | 0.2− | 0.3+ |
| 2004 02 12 | 691 | 0.0  | 0.0  | 2007 11 05 | 691 | 0.1− | 0.0  | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2004 02 12 | 691 | 0.0  | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 11 18 | 691 | 0.0  | 0.1+ |
| 2005 04 17 | 691 | 0.1+ | 0.4+ | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 12 14 | 704 | 0.8+ | 0.8+ |
| 2005 04 17 | 691 | 0.3+ | 0.3+ | 2007 11 05 | 691 | 0.0  | 0.4+ | 2007 12 14 | 704 | 0.9+ | 0.2− |
| 2005 04 17 | 691 | 0.4+ | 0.3+ | 2007 11 05 | G96 | 0.2+ | 0.1− | 2007 12 14 | 704 | 1.1+ | 0.1+ |
| 2005 05 03 | 691 | 0.1− | 0.4+ | 2007 11 05 | G96 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.2− | 0.6+ |
| 2005 05 03 | 691 | 0.2+ | 0.8+ | 2007 11 09 | 691 | 0.2− | 0.2+ | 2007 12 15 | G96 | 0.4− | 0.2+ |
| 2005 05 03 | 691 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.3− | 0.1− | 2007 12 15 | G96 | 0.1− | 0.2+ |
| 2005 05 04 | G96 | 0.6− | 0.3− | 2007 11 09 | 691 | 0.2− | 0.1+ | 2007 12 15 | G96 | 0.1− | 0.1+ |
| 2005 05 04 | G96 | 0.0  | 0.1− | 2007 11 14 | 691 | 0.1− | 0.0  |            |     |      |      |

2007 VP<sub>164</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.79926   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18151838 | $\omega$ | 257.54156 | +0.74592917   | +0.61472736 |
| <i>a</i> | 3.0892685  | $\Omega$ | 63.93874  | −0.44420541   | +0.74593252 |
| <i>e</i> | 0.2775929  | <i>i</i> | 16.57864  | −0.49625722   | +0.25631026 |
| <i>P</i> | 5.43       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 05 | 608 | 0.3+ | 0.2+ | 2007 11 05 | 691 | 0.0  | 0.1− | 2007 11 15 | 704 | 0.4− | 0.1− |
| 2001 08 05 | 608 | 0.4− | 0.1+ | 2007 11 05 | 691 | 0.1+ | 0.1− | 2007 11 18 | 691 | 0.1− | 0.2− |
| 2001 08 05 | 608 | 0.2+ | 0.8+ | 2007 11 05 | G96 | 0.4+ | 0.3− | 2007 11 18 | 691 | 0.1− | 0.3− |
| 2001 09 25 | 699 | 0.2− | 0.1− | 2007 11 05 | G96 | 0.2+ | 0.4− | 2007 11 18 | 691 | 0.4− | 0.2− |
| 2001 09 25 | 699 | 0.4+ | 0.7− | 2007 11 05 | 691 | 0.3+ | 0.5− | 2007 12 02 | D35 | 0.6− | 0.1+ |
| 2001 09 25 | 699 | 0.2− | 0.1+ | 2007 11 05 | G96 | 0.1+ | 0.2− | 2007 12 02 | D35 | 0.5+ | 0.8+ |
| 2001 09 25 | 699 | 0.3− | 0.0  | 2007 11 05 | G96 | 0.4+ | 0.2− | 2007 12 02 | D35 | 0.1− | 0.3+ |
| 2004 02 17 | 645 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.1− | 0.1− | 2007 12 02 | D35 | 0.4+ | 0.2− |
| 2004 02 17 | 645 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 12 02 | D35 | 0.0  | 0.4+ |
| 2006 07 31 | E12 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.2− | 0.0  | 2007 12 02 | D35 | 0.5+ | 0.6+ |
| 2006 07 31 | E12 | 0.0  | 0.4+ | 2007 11 13 | 691 | 0.0  | 0.1− | 2007 12 10 | 704 | 1.4+ | 1.6+ |
| 2006 07 31 | E12 | 0.1+ | 0.3+ | 2007 11 13 | 691 | 0.2− | 0.0  | 2007 12 10 | 704 | 0.3+ | 2.0+ |
| 2006 07 31 | E12 | 0.1− | 0.5+ | 2007 11 13 | 691 | 0.1+ | 0.1− | 2007 12 10 | 704 | 1.4− | 2.6+ |
| 2006 09 13 | E12 | 0.3+ | 0.4+ | 2007 11 14 | 691 | 0.2− | 0.3− | 2007 12 15 | G96 | 0.3+ | 0.3− |
| 2006 09 13 | E12 | 0.0  | 0.4+ | 2007 11 14 | 691 | 0.1+ | 1.1+ | 2007 12 15 | G96 | 0.2+ | 0.5− |
| 2007 10 14 | G96 | 0.7+ | 0.3− | 2007 11 14 | 691 | 0.0  | 0.3− | 2007 12 15 | G96 | 0.4+ | 0.5− |
| 2007 10 14 | G96 | 0.2− | 0.3− | 2007 11 15 | 704 | 0.4− | 0.9+ | 2007 12 15 | G96 | 0.4+ | 0.5− |
| 2007 10 14 | G96 | 0.5+ | 0.3− | 2007 11 15 | 704 | 0.7− | 0.0  |            |     |      |      |
| 2007 10 14 | G96 | 0.5+ | 0.2− | 2007 11 15 | 704 | 0.0  | 0.6+ |            |     |      |      |

2007 VW<sub>164</sub> = 2005 EK<sub>218</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 208.44143  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26819571 | $\omega$ | 337.09342 | −0.75479898   | +0.65286811 |
| <i>a</i> | 2.3814136  | $\Omega$ | 243.82206 | −0.59032802   | −0.71833970 |
| <i>e</i> | 0.1887029  | <i>i</i> | 4.06229   | −0.28599184   | −0.24031500 |
| <i>P</i> | 3.67       | <i>H</i> | 16.8      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 02 14 | 691 | 0.7−  | 0.9+  | 2006 09 27 | 691 | 0.3− | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.2+ |
| 2005 02 14 | 691 | 0.0   | 0.1−  | 2006 09 27 | 691 | 0.4− | 0.1+ | 2007 11 14 | 691 | 0.4− | 0.0  |
| 2005 02 14 | 691 | 0.1+  | 0.1+  | 2007 10 16 | G96 | 0.6+ | 0.7+ | 2007 11 14 | 691 | 0.5+ | 0.2− |
| 2005 03 10 | 703 | 0.6+  | 0.2+  | 2007 10 16 | G96 | 0.4− | 0.0  | 2007 11 14 | 691 | 0.2+ | 0.2+ |
| 2005 03 10 | 703 | 0.7+  | 0.8−  | 2007 10 16 | G96 | 0.7+ | 0.1+ | 2007 11 18 | 691 | 0.3− | 0.1− |
| 2005 03 10 | 703 | 0.2−  | 1.1−  | 2007 10 16 | G96 | 0.3− | 0.2− | 2007 11 18 | 691 | 0.1− | 0.1+ |
| 2005 03 10 | 703 | (1.7− | 0.4−) | 2007 11 05 | 691 | 0.3+ | 0.2− | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2005 03 11 | 699 | 0.3+  | 0.9−  | 2007 11 05 | 691 | 0.2+ | 0.1+ | 2007 12 04 | G96 | 0.7+ | 0.0  |
| 2005 03 11 | 699 | 0.6+  | 0.1−  | 2007 11 05 | G96 | 0.4+ | 0.4− | 2007 12 04 | G96 | 0.2− | 0.4− |
| 2005 03 11 | 699 | 0.0   | 0.3+  | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.4− | 0.4− |
| 2005 03 11 | 699 | 0.5+  | 0.7−  | 2007 11 05 | 691 | 0.5− | 0.3+ | 2007 12 04 | G96 | 0.4+ | 0.2− |
| 2006 09 19 | 691 | 0.4+  | 0.1+  | 2007 11 05 | G96 | 0.7+ | 0.1− | 2007 12 15 | G96 | 1.0+ | 0.5− |
| 2006 09 19 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.2+ | 0.1− | 2007 12 15 | G96 | 0.2− | 0.4− |
| 2006 09 19 | 691 | 0.3+  | 0.4−  | 2007 11 09 | 691 | 0.3− | 0.1+ | 2007 12 15 | G96 | 0.0  | 0.1− |
| 2006 09 27 | 691 | 0.0   | 0.1+  | 2007 11 09 | 691 | 0.5− | 0.3− | 2007 12 15 | G96 | 0.1+ | 0.6− |

2007 VX<sub>164</sub> = 2006 KM<sub>131</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.25343   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23786080 | $\omega$ | 294.54423 | +0.98487536   | +0.07176819 |
| <i>a</i> | 2.5798085  | $\Omega$ | 61.67996  | +0.01080636   | +0.88296503 |
| <i>e</i> | 0.2242442  | <i>i</i> | 10.31986  | −0.17292701   | +0.46392034 |
| <i>P</i> | 4.14       | <i>H</i> | 18.2      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 25 | 568 | 0.1+ | 0.6− | 2007 11 05 | G96 | 0.6+ | 0.1+ | 2007 11 13 | 691 | 0.1+ | 0.0  |
| 2006 05 25 | 568 | 0.1+ | 0.5− | 2007 11 05 | G96 | 0.5+ | 0.0  | 2007 11 13 | 691 | 0.1− | 0.4+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 25 | 568 | 0.1+ | 0.4− | 2007 11 05 | 691 | 0.1− | 0.3+ | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 2006 05 26 | 568 | 0.5− | 1.2+ | 2007 11 09 | 691 | 0.3− | 0.2+ | 2007 11 18 | 691 | 0.7+ | 0.6− |
| 2007 11 05 | 691 | 0.3+ | 0.7− | 2007 11 09 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 691 | 0.3− | 0.1+ |
| 2007 11 05 | 691 | 0.5− | 0.1+ | 2007 11 09 | 691 | 0.1+ | 0.2− | 2007 11 18 | 691 | 0.4− | 0.0  |

**2007 VD<sub>165</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 174.19329  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29391959 | $\omega$ | 16.80384  | −0.47154265   | +0.88058820 |
| <i>a</i> | 2.2403560  | $\Omega$ | 225.09104 | −0.81652015   | −0.45613582 |
| <i>e</i> | 0.0852646  | <i>i</i> | 3.80765   | −0.33308013   | −0.12846999 |
| <i>P</i> | 3.35       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 05 18 | 691 | 0.6− | 0.4− | 2004 11 19 | 291 | 0.6− | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.0  |
| 1999 05 18 | 691 | 0.4− | 0.0  | 2005 01 16 | 691 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.1− | 0.0  |
| 1999 05 18 | 691 | 0.3− | 0.2− | 2005 01 16 | 691 | 0.0  | 0.2− | 2007 11 18 | 691 | 0.2+ | 0.0  |
| 2002 03 06 | 644 | 0.7+ | 0.4+ | 2005 01 16 | 691 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.2− | 0.1− |
| 2002 03 06 | 644 | 0.7+ | 0.0  | 2007 11 05 | 691 | 0.2− | 0.1− | 2007 11 18 | 691 | 0.2− | 0.2− |
| 2002 03 06 | 644 | 0.5+ | 0.1+ | 2007 11 05 | 691 | 0.1− | 0.3− | 2007 11 21 | G96 | 0.2+ | 0.5− |
| 2003 09 27 | 691 | 0.1+ | 0.4+ | 2007 11 05 | 691 | 0.3− | 0.3+ | 2007 11 21 | G96 | 0.0  | 0.2− |
| 2003 09 27 | 691 | 0.3+ | 0.3+ | 2007 11 09 | 691 | 0.1+ | 0.4− | 2007 11 21 | G96 | 0.2− | 0.0  |
| 2003 09 27 | 691 | 0.2+ | 0.3+ | 2007 11 09 | 691 | 0.1− | 0.0  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2004 11 19 | 291 | 0.3+ | 0.2+ | 2007 11 09 | 691 | 0.3+ | 0.3+ |            |     |      |      |
| 2004 11 19 | 291 | 0.2− | 0.2+ | 2007 11 14 | 691 | 0.1− | 0.1+ |            |     |      |      |

**2007 VF<sub>165</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 2.32659    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27411620 | $\omega$ | 200.13323 | +0.66512161   | −0.74657802 |
| <i>a</i> | 2.3469991  | $\Omega$ | 208.18168 | +0.68947906   | +0.62186939 |
| <i>e</i> | 0.2086479  | <i>i</i> | 1.85816   | +0.28676099   | +0.23643122 |
| <i>P</i> | 3.60       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1960 09 24 | 675 | 0.6+ | 0.5− | 2007 09 10 | G96 | 0.1+  | 0.1−  | 2007 11 21 | G96 | 0.2− | 0.3+ |
| 1960 09 24 | 675 | 0.2+ | 0.2− | 2007 09 10 | G96 | 0.3+  | 0.2−  | 2007 11 21 | G96 | 0.2+ | 0.2− |
| 1960 09 26 | 675 | 0.3+ | 1.3− | 2007 10 09 | G96 | 0.3+  | 0.4−  | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 1960 09 26 | 675 | 0.2− | 0.1+ | 2007 10 09 | G96 | 0.5+  | 0.4−  | 2007 11 21 | G96 | 0.4+ | 0.2− |
| 1996 10 09 | 566 | 0.8− | 0.3− | 2007 10 09 | G96 | 0.2+  | 0.4−  | 2007 12 03 | 703 | 0.3+ | 0.4+ |
| 1996 10 09 | 566 | 0.2+ | 0.1+ | 2007 10 09 | G96 | 0.4+  | 0.4−  | 2007 12 03 | 703 | 0.5+ | 0.1− |
| 1996 10 09 | 566 | 0.3+ | 0.3+ | 2007 11 05 | 691 | 0.0   | 0.1−  | 2007 12 03 | 703 | 0.7+ | 0.2− |
| 2003 08 04 | 691 | 0.1− | 0.1+ | 2007 11 05 | 691 | 0.0   | 0.1−  | 2007 12 03 | 703 | 0.2− | 0.3− |
| 2003 08 04 | 691 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.2− | 0.3− |
| 2003 08 04 | 691 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.6− | 0.4+ |
| 2003 09 19 | 291 | 0.2− | 0.3+ | 2007 11 09 | 691 | 0.0   | 0.1+  | 2007 12 03 | 703 | 0.1− | 0.4+ |
| 2003 09 19 | 291 | 0.1− | 0.2+ | 2007 11 09 | 691 | 0.0   | 0.0   | 2007 12 03 | 703 | 0.2− | 0.0  |
| 2003 09 19 | 291 | 0.1+ | 0.1+ | 2007 11 13 | 699 | 0.2+  | 0.8−  | 2007 12 04 | 699 | 0.5− | 0.6+ |
| 2005 03 09 | G96 | 0.1+ | 0.1− | 2007 11 13 | 699 | 0.5+  | 0.2−  | 2007 12 04 | 699 | 0.9− | 0.1− |
| 2005 03 09 | G96 | 0.2− | 0.4+ | 2007 11 13 | 699 | 0.4+  | 0.2−  | 2007 12 04 | 699 | 0.1+ | 0.0  |
| 2005 03 09 | G96 | 0.2− | 0.3+ | 2007 11 13 | 699 | (2.0− | 1.7+) | 2007 12 04 | 699 | 0.2− | 1.1− |
| 2005 03 09 | G96 | 0.1− | 0.0  | 2007 11 14 | 704 | 0.1+  | 0.8−  | 2007 12 05 | 704 | 0.9+ | 0.5+ |
| 2005 04 09 | G96 | 0.2+ | 0.1+ | 2007 11 14 | 704 | 0.2−  | 0.4−  | 2007 12 05 | 704 | 1.4+ | 1.4+ |
| 2005 04 09 | G96 | 0.5+ | 0.3+ | 2007 11 14 | 704 | 0.5+  | 0.5+  | 2007 12 05 | 704 | 1.1+ | 1.3+ |
| 2005 04 09 | G96 | 0.5+ | 0.8+ | 2007 11 14 | 704 | 0.5+  | 0.1−  | 2007 12 05 | 704 | 0.1− | 0.6+ |
| 2005 04 09 | G96 | 0.2− | 0.4− | 2007 11 14 | 691 | 1.0−  | 0.3+  | 2007 12 05 | 704 | 0.5+ | 0.9+ |
| 2007 09 10 | G96 | 0.7− | 0.6+ | 2007 11 14 | 691 | 0.3−  | 0.1−  |            |     |      |      |
| 2007 09 10 | G96 | 0.1− | 0.2− | 2007 11 14 | 691 | 0.1−  | 0.1−  |            |     |      |      |

**2007 VG<sub>165</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.78935    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.29495034 | $\omega$ | 193.05071 | +0.71225414   | −0.70177188 |
| <i>a</i> | 2.2351334  | $\Omega$ | 211.53438 | +0.64646529   | +0.66388946 |
| <i>e</i> | 0.1547646  | <i>i</i> | 1.58874   | +0.27345322   | +0.25839312 |
| <i>P</i> | 3.34       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 20 | 691 | 0.2+ | 0.1+ | 2007 10 24 | G96 | 0.7+ | 0.0  | 2007 12 03 | 703 | 0.2+ | 0.4+ |
| 2002 03 20 | 691 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.4+ | 0.2+ | 2007 12 03 | 703 | 0.5+ | 0.0  |
| 2002 03 20 | 691 | 0.1+ | 0.6+ | 2007 10 24 | G96 | 0.1+ | 0.0  | 2007 12 03 | 703 | 0.2+ | 0.2+ |
| 2005 01 17 | 691 | 0.1+ | 0.1− | 2007 11 05 | 691 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.2− | 0.6− |
| 2005 01 17 | 691 | 0.1+ | 0.3− | 2007 11 05 | 691 | 0.2− | 0.2− | 2007 12 03 | 703 | 0.8− | 0.3+ |
| 2005 01 17 | 691 | 0.1+ | 0.4− | 2007 11 05 | 691 | 0.3− | 0.1+ | 2007 12 03 | 703 | 0.1+ | 0.8+ |
| 2005 02 04 | 691 | 0.1− | 0.0  | 2007 11 09 | 691 | 0.0  | 0.1+ | 2007 12 03 | 703 | 0.6− | 0.0  |
| 2005 02 04 | 691 | 0.3− | 0.1− | 2007 11 09 | 691 | 0.1− | 0.0  | 2007 12 04 | 699 | 0.1− | 0.7− |
| 2005 02 04 | 691 | 0.3− | 0.1− | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 12 04 | 699 | 0.4+ | 0.1+ |
| 2005 03 01 | 691 | 0.0  | 0.0  | 2007 11 14 | 704 | 0.8− | 0.0  | 2007 12 04 | 699 | 0.1− | 0.4− |
| 2005 03 01 | 691 | 0.1+ | 0.1+ | 2007 11 14 | 704 | 0.6+ | 0.6+ | 2007 12 04 | 699 | 0.6− | 1.0− |
| 2005 03 01 | 691 | 0.2+ | 0.0  | 2007 11 14 | 704 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.5+ | 0.7+ |
| 2007 09 10 | G96 | 0.1− | 0.3− | 2007 11 14 | 704 | 0.1+ | 0.5+ | 2007 12 05 | 704 | 0.8+ | 0.9+ |
| 2007 09 10 | G96 | 0.0  | 0.2− | 2007 11 14 | 704 | 0.3− | 0.9+ | 2007 12 05 | 704 | 0.7+ | 0.3+ |
| 2007 09 10 | G96 | 0.0  | 0.2+ | 2007 11 14 | 691 | 0.1− | 0.0  | 2007 12 05 | 704 | 0.4+ | 0.4+ |
| 2007 09 10 | G96 | 0.5+ | 0.0  | 2007 11 14 | 691 | 0.1− | 0.2− | 2007 12 05 | 704 | 0.8+ | 0.9+ |
| 2007 10 09 | G96 | 0.0  | 0.3− | 2007 11 14 | 691 | 0.3− | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2007 10 09 | G96 | 0.1+ | 0.2− | 2007 11 18 | 691 | 0.1− | 0.1− | 2007 12 15 | G96 | 0.3+ | 0.2− |
| 2007 10 09 | G96 | 0.2+ | 0.2− | 2007 11 18 | 691 | 0.2− | 0.2− | 2007 12 15 | G96 | 0.4+ | 0.4− |
| 2007 10 09 | G96 | 0.3+ | 0.2− | 2007 11 18 | 691 | 0.1− | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.1− |
| 2007 10 24 | G96 | 1.0+ | 0.5− | 2007 12 03 | 703 | 0.5+ | 0.5+ |            |     |      |      |

**2007 VJ<sub>165</sub> = 2004 FY<sub>133</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 250.31120  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18784915 | $\omega$ | 301.17689 | −0.99631250   | −0.04565486 |
| <i>a</i> | 3.0194643  | $\Omega$ | 236.30071 | +0.06843082   | −0.93356685 |
| <i>e</i> | 0.0694480  | <i>i</i> | 5.00920   | −0.05175552   | −0.35548356 |
| <i>P</i> | 5.25       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 10 04 | 691 | 0.2− | 0.3+ | 2004 03 27 | 703 | 0.2+  | 1.2+  | 2007 11 14 | 691 | 0.2− | 0.0  |
| 1996 10 04 | 691 | 0.1− | 0.3+ | 2004 03 27 | 703 | (0.1− | 1.8+) | 2007 11 18 | 691 | 0.3− | 0.2+ |
| 1996 10 04 | 691 | 0.1+ | 0.0  | 2004 03 27 | 703 | (2.9+ | 2.8+) | 2007 11 18 | 691 | 0.4− | 0.5− |
| 2001 10 11 | 691 | 0.1− | 0.3− | 2004 03 28 | 691 | 0.1+  | 0.2+  | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2001 10 11 | 691 | 0.3− | 0.1+ | 2004 03 28 | 691 | 0.1−  | 0.2+  | 2007 12 04 | G96 | 0.2+ | 0.2+ |
| 2001 10 11 | 691 | 0.3− | 0.1+ | 2004 03 28 | 691 | 0.2+  | 0.1+  | 2007 12 04 | G96 | 0.4+ | 0.0  |
| 2001 10 20 | 691 | 0.1+ | 0.2+ | 2007 11 05 | 691 | 0.2+  | 0.0   | 2007 12 04 | G96 | 0.5+ | 0.2+ |
| 2001 10 20 | 691 | 0.1− | 0.4+ | 2007 11 05 | 691 | 0.1−  | 0.1+  | 2007 12 04 | G96 | 0.5+ | 0.0  |
| 2001 10 20 | 691 | 0.3+ | 0.5+ | 2007 11 05 | 691 | 0.1+  | 0.1+  | 2007 12 15 | G96 | 0.7+ | 0.3− |
| 2004 03 26 | 699 | 0.8− | 1.4+ | 2007 11 09 | 691 | 0.1−  | 0.0   | 2007 12 15 | G96 | 0.6+ | 0.2− |
| 2004 03 26 | 699 | 0.4+ | 0.8− | 2007 11 09 | 691 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.9+ | 0.4− |
| 2004 03 26 | 699 | 0.7+ | 0.9+ | 2007 11 09 | 691 | 0.0   | 0.0   | 2007 12 15 | G96 | 0.7+ | 0.6− |
| 2004 03 26 | 699 | 0.9+ | 0.7− | 2007 11 14 | 691 | 0.1−  | 0.0   |            |     |      |      |
| 2004 03 27 | 703 | 0.2− | 1.1+ | 2007 11 14 | 691 | 0.2−  | 0.0   |            |     |      |      |

**2007 VO<sub>165</sub> = 2003 AP<sub>74</sub> = 2004 FL<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 336.33431  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.18120919 | $\omega$ | 20.33947 | +0.05813033   | −0.97386182 |
| <i>a</i> | 3.0927815  | $\Omega$ | 66.85855 | +0.87974435   | −0.05399329 |
| <i>e</i> | 0.0716309  | <i>i</i> | 13.81517 | +0.47188002   | +0.22063065 |
| <i>P</i> | 5.44       | <i>H</i> | 15.2     | <i>G</i> 0.15 | <i>U</i> 0  |

2007 DEC. 24

M.P.O. 130021

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 644 | 0.2+ | 0.7+ | 2004 03 23 | 704 | 1.0+  | 0.2+  | 2007 11 13 | 691 | 0.0  | 0.2+ |
| 2001 10 15 | 644 | 0.2+ | 0.6+ | 2004 03 23 | 704 | 1.2+  | 1.0+  | 2007 12 03 | 703 | 0.2- | 0.9+ |
| 2001 10 15 | 644 | 0.1+ | 0.5+ | 2004 03 23 | 704 | 0.1-  | 0.3+  | 2007 12 03 | 703 | 0.1+ | 1.0+ |
| 2001 10 23 | 644 | 0.8- | 0.3+ | 2006 08 28 | E12 | 0.5-  | 0.4+  | 2007 12 03 | 703 | 0.1- | 0.6+ |
| 2001 10 23 | 644 | 0.4- | 0.7+ | 2006 08 28 | E12 | 0.9-  | 0.7+  | 2007 12 03 | 703 | 0.4- | 0.8- |
| 2001 10 23 | 644 | 0.4- | 0.6+ | 2006 08 28 | E12 | 0.5-  | 0.0   | 2007 12 04 | G96 | 0.1+ | 0.5- |
| 2003 01 10 | 704 | 0.0  | 0.8+ | 2006 08 28 | E12 | 0.2+  | 0.4-  | 2007 12 04 | G96 | 0.3+ | 0.3- |
| 2003 01 10 | 704 | 0.2- | 1.0- | 2007 10 24 | G96 | 0.1-  | 0.2-  | 2007 12 04 | G96 | 0.3+ | 0.5- |
| 2003 01 10 | 704 | 0.3+ | 0.1- | 2007 10 24 | G96 | 0.4-  | 0.0   | 2007 12 04 | G96 | 0.5+ | 0.3- |
| 2003 01 10 | 704 | 0.1+ | 0.2- | 2007 10 24 | G96 | 0.8-  | 0.2-  | 2007 12 05 | 704 | 1.2+ | 0.0  |
| 2003 01 13 | 704 | 0.1- | 1.2- | 2007 10 24 | G96 | 0.0   | 0.5-  | 2007 12 05 | 704 | 0.0  | 0.7+ |
| 2003 01 13 | 704 | 0.6- | 0.1+ | 2007 11 05 | 691 | 0.1-  | 0.1+  | 2007 12 05 | 704 | 0.5+ | 0.1- |
| 2003 01 13 | 704 | 0.3+ | 0.8+ | 2007 11 05 | 691 | 0.2+  | 0.0   | 2007 12 05 | 704 | 0.1+ | 0.0  |
| 2003 01 13 | 704 | 0.0  | 0.4+ | 2007 11 05 | 691 | 0.0   | 0.1-  | 2007 12 05 | 704 | 0.7+ | 0.4- |
| 2003 01 13 | 704 | 0.7- | 0.9- | 2007 11 09 | 691 | 0.1-  | 0.0   | 2007 12 14 | 704 | 0.8- | 0.8- |
| 2003 01 13 | 704 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.6+  | 0.5+  | 2007 12 14 | 704 | 0.7- | 0.5- |
| 2004 03 21 | 691 | 0.2+ | 0.3+ | 2007 11 09 | 691 | 0.3-  | 0.2+  | 2007 12 14 | 704 | 0.2- | 0.0  |
| 2004 03 21 | 691 | 0.1+ | 0.3+ | 2007 11 13 | 691 | (1.9+ | 1.3-) | 2007 12 14 | 704 | 0.1+ | 0.0  |
| 2004 03 21 | 691 | 0.1+ | 0.3+ | 2007 11 13 | 691 | 0.4-  | 0.1+  |            |     |      |      |

2007 VT<sub>165</sub> = 2000 RV<sub>59</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 121.54032  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.29615610 | $\omega$ | 66.64110  | +0.38759393   | +0.92035153 |
| <i>a</i> | 2.2290626  | $\Omega$ | 226.27150 | -0.86994698   | +0.34646578 |
| <i>e</i> | 0.0268640  | <i>i</i> | 4.14183   | -0.30489868   | +0.18142358 |
| <i>P</i> | 3.33       | <i>H</i> | 18.0      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 07 | 691 | 0.7- | 0.2- | 2000 11 29 | 691 | 0.4- | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.2- |
| 2000 09 07 | 691 | 0.7- | 0.0  | 2005 01 19 | 691 | 0.0  | 0.1- | 2007 11 09 | 691 | 0.1+ | 0.2+ |
| 2000 09 07 | 691 | 0.6- | 0.2+ | 2005 01 19 | 691 | 0.0  | 0.1- | 2007 11 09 | 691 | 0.3- | 0.0  |
| 2000 09 08 | 691 | 0.4+ | 0.1- | 2005 01 19 | 691 | 0.0  | 0.3+ | 2007 11 14 | 691 | 0.4- | 0.2- |
| 2000 09 08 | 691 | 0.6+ | 0.0  | 2007 09 14 | G96 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.2- |
| 2000 09 08 | 691 | 0.4+ | 0.0  | 2007 09 14 | G96 | 0.6+ | 0.0  | 2007 11 14 | 691 | 0.6- | 0.1+ |
| 2000 10 05 | 691 | 0.5+ | 0.0  | 2007 09 14 | G96 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.2+ | 0.1+ |
| 2000 10 05 | 691 | 0.1+ | 0.1- | 2007 09 14 | G96 | 0.4- | 0.0  | 2007 11 18 | 691 | 0.1+ | 0.1- |
| 2000 10 05 | 691 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.3+ | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2000 11 29 | 691 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.2+ | 0.0  |            |     |      |      |
| 2000 11 29 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.3+ | 0.1- |            |     |      |      |

2007 VB<sub>166</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 44.85411   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21464982 | $\omega$ | 292.99749 | +0.98590409   | +0.02333040 |
| <i>a</i> | 2.7625853  | $\Omega$ | 66.00481  | +0.05612278   | +0.88674287 |
| <i>e</i> | 0.1604069  | <i>i</i> | 10.44835  | -0.15761779   | +0.46167389 |
| <i>P</i> | 4.59       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 05 25 | 644 | 0.2- | 0.2- | 2004 01 28 | 691 | 0.3+ | 0.1+ | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2001 05 25 | 644 | 0.1- | 0.3- | 2007 10 14 | G96 | 0.6+ | 0.4- | 2007 11 18 | 691 | 0.1- | 0.0  |
| 2001 05 25 | 644 | 0.1- | 0.6- | 2007 10 14 | G96 | 0.0  | 0.4- | 2007 12 02 | D35 | 0.0  | 0.7+ |
| 2002 08 24 | 644 | 0.3- | 0.0  | 2007 10 14 | G96 | 0.0  | 0.3- | 2007 12 02 | D35 | 0.1+ | 0.1+ |
| 2002 08 24 | 644 | 0.3+ | 0.2+ | 2007 10 14 | G96 | 0.0  | 0.4- | 2007 12 02 | D35 | 0.7+ | 0.6+ |
| 2002 08 24 | 644 | 0.1+ | 0.0  | 2007 11 05 | 691 | 0.2- | 0.2- | 2007 12 03 | 703 | 0.2+ | 1.0+ |
| 2002 09 15 | 608 | 0.6- | 0.3+ | 2007 11 05 | 691 | 0.2- | 0.3- | 2007 12 03 | 703 | 0.2+ | 0.2+ |
| 2002 09 15 | 608 | 0.1+ | 0.8+ | 2007 11 05 | 691 | 0.1- | 0.2- | 2007 12 03 | 703 | 0.6+ | 0.5+ |
| 2002 09 15 | 608 | 0.0  | 0.2+ | 2007 11 09 | 735 | 0.5+ | 0.4+ | 2007 12 03 | 703 | 0.6- | 0.3- |
| 2002 10 16 | 644 | 0.1+ | 0.1- | 2007 11 09 | 735 | 0.6+ | 0.4+ | 2007 12 10 | 704 | 0.6- | 1.2+ |
| 2002 10 16 | 644 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 12 10 | 704 | 0.3- | 1.2+ |
| 2002 10 16 | 644 | 0.2+ | 0.1- | 2007 11 09 | 691 | 0.0  | 0.1- | 2007 12 10 | 704 | 0.3+ | 0.7+ |
| 2002 10 25 | 644 | 0.1+ | 0.9- | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 12 15 | G96 | 0.5+ | 0.2- |
| 2002 10 25 | 644 | 0.2+ | 0.6- | 2007 11 13 | 691 | 0.2- | 0.1+ | 2007 12 15 | G96 | 0.3+ | 0.2- |
| 2002 10 25 | 644 | 0.2+ | 1.0- | 2007 11 13 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.1+ | 0.4- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 28 | 691 | 0.0  | 0.2+ | 2007 11 13 | 691 | 0.1- | 0.3- | 2007 12 15 | G96 | 0.2+ | 0.2+ |
| 2004 01 28 | 691 | 0.5- | 0.7- | 2007 11 18 | 691 | 0.1+ | 0.1+ |            |     |      |      |

2007 VK<sub>166</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 348.49433  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.22774824 | $\omega$ | 220.66869 | +0.27404524   | -0.96148512 |
| <i>a</i> | 2.6556206  | $\Omega$ | 213.44189 | +0.89198983   | +0.26232016 |
| <i>e</i> | 0.0820477  | <i>i</i> | 2.19516   | +0.35951821   | +0.08206400 |
| <i>P</i> | 4.33       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |       |            |     |      |      |
|------------|-----|------|------|------------|-----|------|-------|------------|-----|------|------|
| 2003 12 21 | 691 | 0.2- | 0.1- | 2006 08 27 | 291 | 0.1- | 0.6+  | 2007 11 14 | 704 | 0.3+ | 0.8+ |
| 2003 12 21 | 691 | 0.0  | 0.2+ | 2007 08 10 | 691 | 0.4- | 0.0   | 2007 11 14 | 691 | 0.0  | 0.4- |
| 2003 12 21 | 691 | 0.1+ | 0.1- | 2007 08 10 | 691 | 0.3- | 0.2-  | 2007 11 15 | 704 | 0.4+ | 0.7+ |
| 2003 12 27 | 691 | 0.3- | 0.3+ | 2007 08 10 | 691 | 0.4- | 0.3-  | 2007 11 15 | 704 | 0.0  | 0.3- |
| 2003 12 27 | 691 | 0.1- | 0.1+ | 2007 11 05 | 691 | 0.1+ | 0.0   | 2007 11 15 | 704 | 0.0  | 0.2+ |
| 2003 12 27 | 691 | 0.1+ | 0.3+ | 2007 11 05 | 691 | 0.5- | 0.1-  | 2007 11 15 | 704 | 0.1- | 0.4- |
| 2004 01 13 | 691 | 0.3+ | 0.2+ | 2007 11 05 | 691 | 1.1+ | 0.4+  | 2007 11 15 | 704 | 0.6- | 1.1+ |
| 2004 01 13 | 691 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1- | 0.1+  | 2007 12 03 | 703 | 0.8- | 0.5- |
| 2004 01 13 | 691 | 0.5+ | 0.3+ | 2007 11 09 | 691 | 0.0  | 0.0   | 2007 12 03 | 703 | 0.3- | 0.1- |
| 2005 04 07 | 691 | 0.2+ | 0.2+ | 2007 11 09 | 691 | 0.0  | 0.0   | 2007 12 03 | 703 | 0.4- | 0.9- |
| 2005 04 07 | 691 | 0.1+ | 0.2+ | 2007 11 13 | 691 | 0.0  | 0.1-  | 2007 12 03 | 703 | 0.6- | 0.1- |
| 2005 04 07 | 691 | 0.2+ | 0.5+ | 2007 11 13 | 691 | 0.1- | 0.2-  | 2007 12 05 | 704 | 0.0  | 0.0  |
| 2005 05 04 | G96 | 0.4- | 0.1+ | 2007 11 13 | 691 | 0.5- | 0.2-  | 2007 12 05 | 704 | 1.1+ | 1.0+ |
| 2005 05 04 | G96 | 0.1- | 0.2+ | 2007 11 14 | 704 | 0.3- | 1.0+  | 2007 12 05 | 704 | 1.0+ | 0.3+ |
| 2005 05 04 | G96 | 0.1- | 0.3+ | 2007 11 14 | 691 | 0.1- | 0.1+  | 2007 12 05 | 704 | 1.0+ | 0.5+ |
| 2005 05 04 | G96 | 0.4- | 0.3+ | 2007 11 14 | 704 | 1.0+ | 0.7+  | 2007 12 05 | 704 | 0.6+ | 0.8+ |
| 2006 08 27 | 291 | 0.0  | 0.6+ | 2007 11 14 | 704 | (0.0 | 1.7+) |            |     |      |      |
| 2006 08 27 | 291 | 0.1- | 0.6+ | 2007 11 14 | 691 | 0.0  | 0.0   |            |     |      |      |

2007 VS<sub>166</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 11.29766   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.18044680 | $\omega$ | 332.22235 | +0.72397677   | -0.66942100 |
| <i>a</i> | 3.1014867  | $\Omega$ | 70.81801  | +0.66108169   | +0.60432957 |
| <i>e</i> | 0.2135387  | <i>i</i> | 10.15561  | +0.19704984   | +0.43204318 |
| <i>P</i> | 5.46       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |        |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|--------|
| 2001 10 15 | 644 | 0.4+  | 0.1-  | 2007 11 14 | 704 | 0.0   | 0.1-  | 2007 12 04 | G96 | 0.0  | 0.3-   |
| 2001 10 15 | 644 | 0.1-  | 0.2+  | 2007 11 14 | 691 | (3.1- | 0.1-) | 2007 12 05 | 704 | 0.4+ | 0.3+   |
| 2001 10 15 | 644 | 0.1+  | 0.1+  | 2007 11 18 | 691 | 0.3-  | 0.1-  | 2007 12 05 | 701 | 0.2+ | 0.1-   |
| 2001 10 23 | 644 | 0.5-  | 0.3-  | 2007 11 18 | 691 | 0.3-  | 0.2-  | 2007 12 05 | 701 | 0.1- | 0.3-   |
| 2001 10 23 | 644 | 0.0   | 0.2-  | 2007 11 18 | 691 | 0.3-  | 0.0   | 2007 12 05 | 704 | 0.4+ | 0.5+   |
| 2001 10 23 | 644 | 0.3+  | 0.3-  | 2007 12 03 | 701 | 0.1+  | 0.1-  | 2007 12 05 | 704 | 0.6+ | 0.4+   |
| 2005 05 19 | G96 | 0.1+  | 0.2+  | 2007 12 03 | 701 | 0.1+  | 0.2-  | 2007 12 05 | 701 | 0.2+ | 0.3-   |
| 2005 05 19 | G96 | 0.3-  | 0.1+  | 2007 12 03 | 701 | 0.2-  | 0.1-  | 2007 12 05 | 701 | 0.2- | 0.2-   |
| 2005 05 19 | G96 | 0.3+  | 0.2-  | 2007 12 03 | 701 | 0.4+  | 0.2-  | 2007 12 05 | 704 | 0.4+ | 0.2+   |
| 2005 05 19 | G96 | 0.2-  | 0.2-  | 2007 12 03 | 703 | 0.0   | 0.2+  | 2007 12 05 | 704 | 0.5+ | 0.3+   |
| 2007 11 01 | 691 | (1.8- | 1.0+) | 2007 12 03 | 703 | 0.1-  | 0.3+  | 2007 12 05 | 701 | 0.5+ | 0.4-   |
| 2007 11 01 | 691 | 0.1-  | 0.0   | 2007 12 03 | 701 | 0.1-  | 0.2-  | 2007 12 05 | 701 | 0.1+ | 0.4-   |
| 2007 11 01 | 691 | 0.0   | 0.1-  | 2007 12 03 | 703 | 0.1+  | 0.2+  | 2007 12 05 | 701 | 0.1+ | 0.1-   |
| 2007 11 05 | 691 | 0.2-  | 0.0   | 2007 12 03 | 701 | 0.1+  | 0.0   | 2007 12 05 | 701 | 0.2+ | 0.4-   |
| 2007 11 05 | 691 | 0.3-  | 0.1+  | 2007 12 03 | 703 | 0.0   | 0.3+  | 2007 12 14 | 704 | 1.7- | 1.4+   |
| 2007 11 05 | 691 | 0.2-  | 0.1+  | 2007 12 03 | 701 | 0.2+  | 0.2-  | 2007 12 14 | 704 | 0.9+ | 0.8+   |
| 2007 11 09 | 691 | 0.2+  | 0.7+  | 2007 12 03 | 701 | 0.0   | 0.0   | 2007 12 14 | 704 | 1.0- | 2.3+</ |

**2007 VB<sub>167</sub> = 2006 RG<sub>98</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 50.59304   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.15728588 | $\omega$ | 122.24719 | +0.98240779   | -0.11837584 |
| <i>a</i> | 3.3989353  | $\Omega$ | 244.90822 | +0.06483940   | +0.94152959 |
| <i>e</i> | 0.0476511  | <i>i</i> | 9.17718   | +0.17513074   | +0.31545078 |
| <i>P</i> | 6.27       | <i>H</i> | 14.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 14 | 703 | 0.3+ | 1.0- | 2006 10 22 | 691 | 0.2- | 0.1+ | 2007 11 13 | 691 | 0.2- | 0.0  |
| 2006 09 14 | 703 | 0.2+ | 0.3+ | 2007 10 16 | G96 | 0.4+ | 0.3- | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2006 09 14 | 703 | 0.1- | 0.3- | 2007 10 16 | G96 | 0.3+ | 0.3- | 2007 11 18 | 691 | 0.2- | 0.4+ |
| 2006 09 14 | 703 | 0.3+ | 0.6- | 2007 10 16 | G96 | 0.1+ | 0.3- | 2007 11 18 | 691 | 0.2+ | 0.1+ |
| 2006 09 20 | 699 | 0.4+ | 0.1+ | 2007 11 05 | G96 | 0.3+ | 0.3- | 2007 12 04 | G96 | 0.0  | 0.3- |
| 2006 09 20 | 699 | 0.4- | 0.7- | 2007 11 05 | G96 | 0.7+ | 0.1- | 2007 12 04 | G96 | 0.4+ | 0.2- |
| 2006 09 20 | 699 | 0.5+ | 1.3+ | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.1+ | 0.2- |
| 2006 09 20 | 699 | 0.4- | 0.2+ | 2007 11 05 | G96 | 0.3+ | 0.0  | 2007 12 04 | G96 | 0.3+ | 0.0  |
| 2006 10 11 | 644 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.2+ | 0.5- |
| 2006 10 11 | 644 | 0.3- | 0.0  | 2007 11 09 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.1+ | 0.3- |
| 2006 10 11 | 644 | 0.2- | 0.1- | 2007 11 09 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.4+ | 0.8+ |
| 2006 10 22 | 691 | 0.0  | 0.0  | 2007 11 13 | 691 | 0.2- | 0.1- | 2007 12 05 | 704 | 1.2- | 0.0  |
| 2006 10 22 | 691 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.3- | 0.1- | 2007 12 05 | 704 | 0.9+ | 0.1- |

**2007 VV<sub>168</sub> = 1978 WM<sub>10</sub> = 2003 YG<sub>83</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 340.06630  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.23810444 | $\omega$ | 30.20599 | -0.05994467   | -0.99635702 |
| <i>a</i> | 2.5780483  | $\Omega$ | 63.29019 | +0.90170647   | -0.08011536 |
| <i>e</i> | 0.2219351  | <i>i</i> | 3.89356  | +0.42817294   | +0.02922708 |
| <i>P</i> | 4.14       | <i>H</i> | 17.2     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1978 11 29 | 675 | 2.1+ | 0.2- | 2003 12 22 | 704 | 0.4- | 0.1- | 2007 12 10 | 704 | 1.0+ | 0.2- |
| 1978 11 30 | 675 | 2.0- | 0.3- | 2007 11 05 | 691 | 0.2- | 0.2+ | 2007 12 10 | 704 | 1.1+ | 0.3- |
| 2003 12 18 | 691 | 0.2- | 0.3+ | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.1- | 0.6- |
| 2003 12 18 | 691 | 0.0  | 0.1+ | 2007 11 05 | 691 | 0.1- | 0.1+ | 2007 12 14 | 704 | 0.4- | 0.1+ |
| 2003 12 18 | 691 | 0.1- | 0.1- | 2007 11 09 | 691 | 0.2- | 0.2- | 2007 12 14 | 704 | 0.5- | 0.0  |
| 2003 12 22 | 704 | 0.3+ | 0.2- | 2007 11 09 | 691 | 0.1- | 0.1- | 2007 12 14 | 704 | 0.3+ | 0.8+ |
| 2003 12 22 | 704 | 1.0+ | 0.2- | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.5- | 0.8+ |
| 2003 12 22 | 704 | 0.0  | 0.5- | 2007 12 10 | 704 | 1.1+ | 0.1- |            |     |      |      |

**2007 VX<sub>168</sub> = 2001 WC<sub>98</sub> = 2006 SS<sub>349</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 332.17165  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17781084 | $\omega$ | 220.04081 | -0.24560398   | -0.96760985 |
| <i>a</i> | 3.1320636  | $\Omega$ | 244.24878 | +0.90514705   | -0.20735409 |
| <i>e</i> | 0.1084621  | <i>i</i> | 3.71724   | +0.34696901   | -0.14399813 |
| <i>P</i> | 5.54       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 03 23 | 691 | 0.1+ | 0.7+ | 2006 09 30 | 291 | 0.2+ | 0.4+ | 2007 11 09 | 691 | 0.0  | 0.0  |
| 1998 03 23 | 691 | 0.2+ | 0.5+ | 2006 09 30 | 291 | 0.1- | 0.4+ | 2007 11 09 | 691 | 0.1- | 0.1+ |
| 1998 03 23 | 691 | 0.4+ | 0.5+ | 2006 09 30 | 291 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.2+ | 0.1- |
| 2001 11 19 | 704 | 0.2+ | 0.5+ | 2006 10 01 | 291 | 0.3- | 0.5+ | 2007 11 13 | 691 | 0.0  | 0.1+ |
| 2001 11 19 | 704 | 0.9- | 0.0  | 2006 10 01 | 291 | 0.1- | 0.0  | 2007 11 13 | 691 | 0.2- | 0.2- |
| 2001 11 19 | 704 | 0.4- | 0.5- | 2006 10 01 | 291 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2001 11 19 | 704 | 0.8+ | 0.8- | 2007 11 05 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.3- | 0.0  |
| 2001 11 21 | 704 | 0.8+ | 1.5+ | 2007 11 05 | 691 | 0.1+ | 0.1- | 2007 12 05 | 704 | 0.1+ | 0.6+ |
| 2001 11 21 | 704 | 0.6- | 0.3+ | 2007 11 05 | 691 | 0.0  | 0.0  | 2007 12 05 | 704 | 0.8+ | 0.2+ |
| 2001 11 21 | 704 | 0.3- | 0.1+ | 2007 11 09 | 691 | 0.1- | 0.1- | 2007 12 05 | 704 | 0.8- | 0.2- |

**2007 VV<sub>169</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 23.07426   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24113480 | $\omega$ | 300.66832 | +0.94371017   | -0.31700842 |
| <i>a</i> | 2.5564038  | $\Omega$ | 77.95464  | +0.32679276   | +0.84939659 |
| <i>e</i> | 0.2979837  | <i>i</i> | 5.54080   | +0.05116261   | +0.42193730 |
| <i>P</i> | 4.09       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 24 | 695 | 0.2+ | 0.0  | 2007 11 09 | 691 | 0.0  | 0.0  | 2007 12 04 | 703 | 0.7- | 1.1+ |
| 2003 11 24 | 695 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.2- | 0.0  | 2007 12 04 | 703 | 0.3- | 0.2- |
| 2004 02 26 | 695 | 0.2- | 0.1- | 2007 11 13 | 691 | 0.0  | 0.2+ | 2007 12 12 | J75 | 0.1+ | 0.1- |
| 2004 02 26 | 695 | 0.1- | 0.0  | 2007 11 13 | 691 | 0.0  | 0.1+ | 2007 12 12 | J75 | 0.7+ | 0.6+ |
| 2007 11 05 | 691 | 0.3- | 0.0  | 2007 12 04 | 691 | 0.2+ | 0.1+ | 2007 12 13 | J75 | 0.0  | 0.1- |
| 2007 11 05 | 691 | 0.0  | 0.5- | 2007 12 04 | 691 | 0.1- | 0.0  | 2007 12 14 | 620 | 0.4+ | 0.3+ |
| 2007 11 05 | 691 | 0.2+ | 0.2+ | 2007 12 04 | 691 | 0.1- | 0.1+ | 2007 12 14 | 620 | 0.2+ | 0.6- |
| 2007 11 09 | 691 | 0.0  | 0.2+ | 2007 12 04 | 703 | 0.4- | 0.1- | 2007 12 14 | 620 | 0.2+ | 0.3- |
| 2007 11 09 | 691 | 0.1+ | 0.1- | 2007 12 04 | 703 | 0.0  | 1.0- |            |     |      |      |

**2007 VF<sub>173</sub> = 1993 DY<sub>1</sub> = 2001 VA<sub>127</sub>**Id. Minor Planet Center (*MPO* 128604; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 71.61184   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17409158 | $\omega$ | 214.47059 | +0.84644694   | +0.52010246 |
| <i>a</i> | 3.1765147  | $\Omega$ | 113.79440 | -0.45614664   | +0.81882351 |
| <i>e</i> | 0.0845962  | <i>i</i> | 7.16401   | -0.27469587   | +0.24294337 |
| <i>P</i> | 5.66       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 02 26 | 691 | 0.1+ | 0.2- | 2006 08 17 | 644 | 0.4- | 0.2+ | 2007 11 17 | 703 | 1.2- | 0.3+ |
| 1993 02 26 | 691 | 0.2+ | 0.1- | 2006 08 17 | 644 | 0.1- | 0.4+ | 2007 11 17 | 703 | 0.4+ | 0.5+ |
| 1993 02 26 | 691 | 0.3- | 0.3+ | 2006 08 17 | 644 | 0.2- | 0.5+ | 2007 11 17 | 704 | 0.4+ | 0.2- |
| 2001 10 14 | 645 | 0.1+ | 0.0  | 2007 11 02 | G96 | 0.0  | 0.1- | 2007 11 17 | 703 | 0.2- | 0.3+ |
| 2001 10 14 | 645 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.3+ | 0.4- | 2007 11 17 | 703 | 1.2- | 0.0  |
| 2001 11 11 | 645 | 0.0  | 0.1- | 2007 11 02 | G96 | 0.1+ | 0.1+ | 2007 11 20 | 291 | 0.2- | 0.2+ |
| 2001 11 11 | 645 | 0.1- | 0.1- | 2007 11 02 | G96 | 0.4+ | 0.0  | 2007 11 20 | 291 | 0.2- | 0.3+ |
| 2001 11 12 | 645 | 0.0  | 0.0  | 2007 11 09 | 703 | 0.8- | 0.5- | 2007 11 20 | 291 | 0.1- | 0.4+ |
| 2001 11 12 | 645 | 0.0  | 0.0  | 2007 11 09 | 703 | 0.0  | 0.3+ | 2007 11 20 | 291 | 0.0  | 0.3+ |
| 2005 05 14 | 644 | 0.1+ | 0.4+ | 2007 11 09 | 703 | 0.4- | 0.1- | 2007 11 20 | 291 | 0.2- | 0.2+ |
| 2005 05 14 | 644 | 0.3+ | 0.1+ | 2007 11 09 | 703 | 0.1- | 0.1- | 2007 11 20 | 291 | 0.1- | 0.3+ |
| 2005 05 14 | 644 | 0.1+ | 0.2+ | 2007 11 17 | 704 | 0.7+ | 0.9+ | 2007 11 20 | G96 | 0.1+ | 0.5+ |
| 2005 06 08 | 691 | 0.0  | 0.4+ | 2007 11 17 | 704 | 0.8+ | 0.4+ | 2007 11 20 | G96 | 0.2+ | 0.1- |
| 2005 06 08 | 691 | 0.1- | 0.4+ | 2007 11 17 | 704 | 0.1- | 0.2+ | 2007 11 20 | G96 | 0.4+ | 0.3- |
| 2005 06 08 | 691 | 0.5+ | 0.2+ | 2007 11 17 | 704 | 0.7+ | 0.2+ | 2007 11 20 | G96 | 0.1+ | 0.1- |

**2007 VH<sub>173</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 6.35843    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.12546916 | $\omega$ | 191.02687 | +0.80645652   | -0.58389529 |
| <i>a</i> | 3.9516462  | $\Omega$ | 205.41157 | +0.55769126   | +0.80351238 |
| <i>e</i> | 0.3095818  | <i>i</i> | 12.54986  | +0.19649006   | +0.11590578 |
| <i>P</i> | 7.86       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1991 10 10 | 691 | 0.0  | 0.3- | 2007 11 02 | G96 | 0.1+ | 0.2- | 2007 11 17 | 704 | 0.6+  | 0.4-  |
| 1991 10 10 | 691 | 0.2- | 0.2- | 2007 11 02 | G96 | 0.3+ | 0.3- | 2007 11 17 | 704 | (0.7+ | 1.6+) |
| 1991 10 10 | 691 | 0.4+ | 0.7- | 2007 11 09 | 703 | 0.7- | 0.6+ | 2007 11 17 | 704 | 0.5+  | 0.4+  |
| 2000 11 30 | 645 | 0.0  | 0.1- | 2007 11 09 | 703 | 0.2+ | 0.4+ | 2007 11 17 | 704 | 0.3+  | 1.0+  |
| 2000 11 30 | 645 | 0.1+ | 0.2- | 2007 11 09 | 703 | 0.2+ | 0.2+ | 2007 11 17 | 703 | 0.3+  | 0.5-  |
| 2001 02 20 | 645 | 0.0  | 0.0  | 2007 11 09 | 703 | 0.1- | 0.1+ | 2007 11 17 | 703 | 0.3-  | 0.0   |
| 2001 02 20 | 645 | 0.2- | 0.0  | 2007 11 12 | 704 | 0.2+ | 0.5+ | 2007 11 17 | 704 | 0.3+  | 0.7+  |
| 2007 07 19 | G96 | 0.2- | 0.3- | 2007 11 12 | 704 | 0.3- | 1.2+ | 2007 11 17 | 704 | (1.1+ | 2.6+) |
| 2007 07 19 | G96 | 0.7- | 0.4- | 2007 11 12 | 704 | 0.0  | 0.8+ | 2007 11 17 | 703 | 0.3-  | 0.3+  |
| 2007 07 19 | G96 | 0.2+ | 0.2- | 2007 11 12 | 704 | 0.1+ | 1.0+ | 2007 11 17 | 703 | 0.6+  | 0.2-  |
| 2007 07 19 | G96 | 0.2- | 0.0  | 2007 11 12 | 704 | 0.5+ | 0.3+ | 2007 11 19 | 291 | 0.6-  | 0.0   |

## 2007 DEC. 24

M.P.O. 130023

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 10 | 691 | 0.7− | 1.2− | 2007 11 15 | 699 | 1.1+ | 0.5− | 2007 11 19 | 291 | 0.4− | 0.0  |
| 2007 10 10 | 691 | 0.0  | 0.6+ | 2007 11 15 | 699 | 1.4+ | 0.4+ | 2007 11 19 | 291 | 0.3− | 0.0  |
| 2007 10 10 | 691 | 0.2− | 0.2+ | 2007 11 15 | 699 | 0.7+ | 0.5− | 2007 11 20 | G96 | 0.2+ | 0.9+ |
| 2007 10 21 | 691 | 0.3− | 0.0  | 2007 11 15 | 699 | 0.1+ | 0.2− | 2007 11 20 | G96 | 0.7+ | 0.1+ |
| 2007 10 21 | 691 | 0.1− | 0.1− | 2007 11 17 | 704 | 1.4+ | 0.7+ | 2007 11 20 | G96 | 0.8+ | 0.1− |
| 2007 10 21 | 691 | 0.2− | 0.1+ | 2007 11 17 | 704 | 1.2+ | 1.4+ | 2007 11 20 | G96 | 0.4+ | 0.2− |
| 2007 11 02 | G96 | 0.2+ | 0.2− | 2007 11 17 | 704 | 0.2+ | 0.1− |            |     |      |      |
| 2007 11 02 | G96 | 0.4+ | 0.2− | 2007 11 17 | 704 | 0.1+ | 0.2− |            |     |      |      |

2007 VK<sub>173</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 21.63987   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.27138090 | $\omega$ | 224.72804 | +0.94723466 | −0.31866523 |
| <i>a</i> | 2.3627432  | $\Omega$ | 153.79580 | +0.31165059 | +0.89030835 |
| <i>e</i> | 0.1418510  | <i>i</i> | 4.49750   | +0.07496939 | +0.32527451 |
| <i>P</i> | 3.63       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 699 | 0.5−  | 0.1−  | 2006 05 06 | G96 | 0.4− | 0.0  | 2007 11 15 | 699 | 0.2− | 0.1− |
| 2003 09 17 | 699 | 0.4−  | 1.2−  | 2006 05 06 | G96 | 0.4− | 0.0  | 2007 11 15 | 699 | 0.2− | 0.5− |
| 2003 09 17 | 699 | 0.9+  | 1.2+  | 2006 05 06 | G96 | 0.4− | 0.1+ | 2007 11 15 | 699 | 0.6− | 0.5− |
| 2003 09 17 | 699 | (1.9− | 1.0+) | 2006 05 26 | G96 | 0.5+ | 0.1− | 2007 11 15 | 699 | 0.9− | 0.1− |
| 2005 01 19 | 691 | 0.2−  | 0.3+  | 2006 05 26 | G96 | 0.5+ | 0.1− | 2007 11 18 | G96 | 0.0  | 0.1+ |
| 2005 01 19 | 691 | 0.1−  | 0.2+  | 2006 05 26 | G96 | 0.5+ | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.1− |
| 2005 01 19 | 691 | 0.3−  | 0.0   | 2006 05 26 | G96 | 0.4+ | 0.2+ | 2007 11 18 | G96 | 0.5+ | 0.0  |
| 2005 02 02 | 691 | 0.1+  | 0.1−  | 2007 11 02 | G96 | 0.3+ | 0.2− | 2007 11 18 | G96 | 0.1+ | 0.0  |
| 2005 02 02 | 691 | 0.3+  | 0.1−  | 2007 11 02 | G96 | 0.3+ | 0.1+ | 2007 12 04 | 704 | 1.1+ | 0.5+ |
| 2005 02 02 | 691 | 0.1+  | 0.3−  | 2007 11 02 | G96 | 0.4+ | 0.2+ | 2007 12 04 | 704 | 0.4− | 0.6+ |
| 2006 05 06 | G96 | 0.4+  | 0.2+  | 2007 11 02 | G96 | 0.4+ | 0.3+ | 2007 12 04 | 704 | 0.5− | 0.3+ |
| 2006 05 06 | G96 | 0.2−  | 0.2+  | 2007 11 09 | 703 | 0.2+ | 0.2+ | 2007 12 06 | 703 | 0.6− | 0.1+ |
| 2006 05 06 | G96 | 0.2−  | 0.4+  | 2007 11 09 | 703 | 0.4+ | 0.8+ | 2007 12 06 | 703 | 0.0  | 0.2+ |
| 2006 05 06 | G96 | 0.2−  | 0.1+  | 2007 11 09 | 703 | 0.3− | 0.1+ | 2007 12 06 | 703 | 0.5− | 0.5− |
| 2006 05 06 | G96 | 0.4−  | 0.1+  | 2007 11 09 | 703 | 0.1− | 0.2+ | 2007 12 06 | 703 | 0.0  | 0.6− |

2007 VP<sub>173</sub> = 2002 RJ<sub>259</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 350.02325  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|----------|-------------|-------------|
| <i>n</i> | 0.21056229 | $\omega$ | 59.05902 | +0.50000865 | −0.86601736 |
| <i>a</i> | 2.7982230  | $\Omega$ | 0.94949  | +0.73972329 | +0.42570812 |
| <i>e</i> | 0.2914778  | <i>i</i> | 7.97032  | +0.45033410 | +0.26227187 |
| <i>P</i> | 4.68       | <i>H</i> | 17.4     | <i>G</i>    | 0.15        |
|          |            |          |          | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 09 12 | 644 | 0.1− | 0.2− | 2007 10 16 | 703 | 0.6−  | 0.3+  | 2007 11 09 | 703 | 0.6+ | 1.2+ |
| 2002 09 12 | 644 | 0.2+ | 0.3− | 2007 10 16 | 703 | 0.3+  | 0.1+  | 2007 11 09 | 703 | 0.5+ | 0.7− |
| 2002 09 12 | 644 | 0.0  | 0.1+ | 2007 10 16 | 703 | (1.6+ | 2.4+) | 2007 11 09 | 703 | 0.9+ | 1.1+ |
| 2002 09 15 | 644 | 0.5− | 0.2− | 2007 10 16 | 703 | (2.1+ | 0.5+) | 2007 11 16 | G96 | 0.5− | 0.3− |
| 2002 09 15 | 644 | 0.2+ | 0.1− | 2007 11 02 | 703 | 0.1+  | 0.2−  | 2007 11 16 | G96 | 0.3− | 0.3− |
| 2002 09 15 | 644 | 0.1+ | 0.9+ | 2007 11 02 | 703 | 0.3−  | 0.2−  | 2007 11 16 | G96 | 0.5− | 0.2− |
| 2007 10 09 | 691 | 0.0  | 0.1− | 2007 11 02 | 703 | 0.6−  | 0.2+  | 2007 11 16 | G96 | 0.3− | 0.3− |
| 2007 10 09 | 691 | 0.2+ | 0.2− | 2007 11 02 | 703 | 1.1−  | 0.3+  | 2007 11 16 | G96 | 0.0  | 0.4− |
| 2007 10 09 | 691 | 0.1+ | 0.0  | 2007 11 09 | 703 | 0.8+  | 0.6+  | 2007 11 16 | G96 | 0.3+ | 0.3− |

2007 VT<sub>173</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 323.94259  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.22443308 | $\omega$ | 177.14029 | +0.02419417 | −0.98789904 |
| <i>a</i> | 2.6817079  | $\Omega$ | 271.43959 | +0.91414541 | +0.08389282 |
| <i>e</i> | 0.0384618  | <i>i</i> | 8.81520   | +0.40466383 | −0.13045110 |
| <i>P</i> | 4.39       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 04 | 644 | 0.2− | 0.1+ | 2007 11 02 | 703 | 0.5− | 0.4− | 2007 12 02 | 704 | 1.2+ | 0.2+ |
| 2002 09 04 | 644 | 0.0  | 0.3+ | 2007 11 09 | G96 | 0.0  | 0.3− | 2007 12 02 | 704 | 1.1+ | 0.2− |
| 2002 09 04 | 644 | 0.2− | 0.4+ | 2007 11 09 | G96 | 0.3+ | 0.5− | 2007 12 02 | 704 | 0.8+ | 0.4− |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 10 05 | 644 | 0.0  | 0.1+ | 2007 11 09 | G96 | 0.2+  | 0.4−  | 2007 12 02 | 704 | 0.6+  | 0.1+  |
| 2002 10 05 | 644 | 0.2+ | 0.3+ | 2007 11 09 | G96 | 0.1+  | 0.3−  | 2007 12 12 | 704 | (0.8+ | 1.8−) |
| 2002 10 05 | 644 | 0.1− | 0.4− | 2007 11 17 | 704 | 0.1−  | 0.4+  | 2007 12 12 | 704 | 1.4+  | 1.2+  |
| 2005 05 16 | 644 | 0.2+ | 0.2+ | 2007 11 17 | 704 | 0.1+  | 0.3−  | 2007 12 12 | 704 | (1.9+ | 0.5+) |
| 2005 05 16 | 644 | 0.1− | 0.1+ | 2007 11 17 | 704 | 0.0   | 0.1−  | 2007 12 12 | 704 | (2.0+ | 0.9+) |
| 2005 05 16 | 644 | 0.1+ | 0.3+ | 2007 11 17 | 704 | 0.3−  | 0.2−  | 2007 12 14 | 691 | 0.7−  | 0.4−  |
| 2006 05 30 | G96 | 0.1− | 0.2− | 2007 11 17 | 704 | 0.1−  | 0.3+  | 2007 12 14 | 691 | 0.1−  | 0.0   |
| 2006 05 30 | G96 | 0.1+ | 0.2+ | 2007 11 20 | 704 | 0.7+  | 1.2−  | 2007 12 14 | 691 | 0.2−  | 0.2+  |
| 2006 05 30 | G96 | 0.2− | 0.1+ | 2007 11 20 | 704 | 0.4+  | 1.3+  | 2007 12 15 | 704 | 0.3−  | 0.2+  |
| 2006 05 30 | G96 | 0.0  | 0.0  | 2007 11 20 | 704 | (0.7+ | 2.1−) | 2007 12 15 | 704 | 0.1−  | 0.8+  |
| 2006 08 14 | 644 | 0.3− | 0.3+ | 2007 11 20 | 704 | 0.6−  | 1.1+  | 2007 12 15 | 704 | 0.5+  | 0.3+  |
| 2006 08 14 | 644 | 0.1+ | 0.3− | 2007 11 20 | G96 | 0.2+  | 0.2−  | 2007 12 15 | 704 | 0.3+  | 0.4+  |
| 2006 08 14 | 644 | 0.4+ | 0.2− | 2007 11 20 | G96 | 0.4+  | 0.2−  | 2007 12 16 | 691 | 0.2−  | 0.0   |
| 2007 11 02 | 703 | 1.2− | 0.0  | 2007 11 20 | G96 | 0.6+  | 0.3−  | 2007 12 16 | 691 | 0.1−  | 0.0   |
| 2007 11 02 | 703 | 0.3− | 0.1+ | 2007 11 20 | G96 | 0.2+  | 0.1−  | 2007 12 16 | 691 | 0.3−  | 0.0   |
| 2007 11 02 | 703 | 0.1− | 0.8− | 2007 12 02 | 704 | 0.5+  | 0.1−  |            |     |       |       |

2007 VO<sub>174</sub> = 2005 CY<sub>9</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 4.44701    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.28511850 | $\omega$ | 291.29372 | +0.67683991 | −0.72894804 |
| <i>a</i> | 2.2862258  | $\Omega$ | 115.68287 | +0.71052612 | +0.61049160 |
| <i>e</i> | 0.1546216  | <i>i</i> | 6.53582   | +0.19245875 | +0.30973336 |
| <i>P</i> | 3.46       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 09 25 | 699 | (0.4+ | 2.5+) | 2007 09 27 | G96 | 0.2−  | 0.4−  | 2007 11 17 | 703 | 0.0  | 0.7− |
| 2000 09 25 | 699 | 0.0   | 1.0+  | 2007 09 27 | G96 | 0.5+  | 0.1−  | 2007 11 18 | 703 | 0.3+ | 0.8− |
| 2000 09 25 | 699 | 0.2−  | 1.7+  | 2007 09 27 | G96 | 0.0   | 0.1+  | 2007 11 18 | 703 | 0.3+ | 0.6− |
| 2000 09 25 | 699 | 1.0−  | 1.2+  | 2007 11 03 | G96 | 0.4+  | 0.1−  | 2007 11 18 | 703 | 0.5+ | 0.1+ |
| 2003 07 05 | 691 | 0.1−  | 0.4+  | 2007 11 03 | G96 | 0.3+  | 0.1−  | 2007 11 18 | 703 | 0.0  | 0.0  |
| 2003 07 05 | 691 | 0.4−  | 0.4+  | 2007 11 03 | G96 | 0.3+  | 0.2−  | 2007 11 28 | D35 | 0.3− | 0.2+ |
| 2003 07 05 | 691 | 0.2+  | 0.3+  | 2007 11 03 | G96 | 0.3+  | 0.9−  | 2007 11 28 | D35 | 0.1+ | 0.1− |
| 2004 12 20 | G96 | 0.8−  | 0.3−  | 2007 11 09 | 703 | 0.6+  | 0.5+  | 2007 11 28 | D35 | 0.2− | 0.2+ |
| 2004 12 20 | G96 | 0.3−  | 0.2+  | 2007 11 09 | 703 | 0.9+  | 0.1−  | 2007 11 29 | 704 | 0.6+ | 0.1− |
| 2004 12 20 | G96 | 0.1−  | 0.3+  | 2007 11 09 | 703 | 0.8+  | 0.0   | 2007 11 29 | 704 | 0.1+ | 0.2+ |
| 2004 12 20 | G96 | 0.1−  | 0.6−  | 2007 11 09 | 703 | 0.1−  | 0.1+  | 2007 11 29 | 704 | 0.9+ | 0.3+ |
| 2005 02 01 | 691 | 0.0   | 0.2+  | 2007 11 09 | D29 | 0.5+  | 0.3−  | 2007 11 29 | 704 | 0.4+ | 0.8+ |
| 2005 02 01 | 691 | 0.3−  | 0.3+  | 2007 11 09 | D29 | (2.1+ | 0.8−) | 2007 12 03 | 704 | 1.3− | 0.1+ |
| 2005 02 01 | 691 | 0.1+  | 0.4+  | 2007 11 09 | D29 | 0.3+  | 0.0   | 2007 12 03 | 704 | 0.9− | 0.2+ |
| 2005 02 04 | 691 | 0.2+  | 0.2+  | 2007 11 09 | D29 | 0.2+  | 0.1+  | 2007 12 03 | 704 | 1.1− | 0.3− |
| 2005 02 04 | 691 | 0.9+  | 0.2+  | 2007 11 17 | 703 | 0.7−  | 0.1−  | 2007 12 03 | 704 | 0.8− | 0.7+ |
| 2005 02 04 | 691 | 0.4+  | 0.1+  | 2007 11 17 | 703 | 1.1−  | 0.6−  | 2007 12 03 | 704 | 0.8− | 0.3− |
| 2007 09 27 | G96 | 0.2+  | 0.1+  | 2007 11 17 | 703 | 0.6−  | 0.1+  |            |     |      |      |

2007 VG<sub>176</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 42.49695   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|-------------|
| <i>n</i> | 0.20297006 | $\omega$ | 274.40528 | +0.96638438 | −0.11515642 |
| <i>a</i> | 2.8675746  | $\Omega$ | 92.32613  | +0.19778891 | +0.90420502 |
| <i>e</i> | 0.0743734  | <i>i</i> | 13.30058  | −0.16425829 | +0.41128126 |
| <i>P</i> | 4.86       | <i>H</i> | 15.5      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 06 30 | 644 | 0.4+ | 0.0  | 2007 11 04 | G96 | 0.6+ | 0.2− | 2007 11 17 | 703 | 1.1+ | 0.2+ |
| 2001 06 30 | 644 | 0.1+ | 0.3− | 2007 11 04 | G96 | 0.3+ | 0.3− | 2007 11 17 | 703 | 0.1− | 0.2+ |
| 2001 06 30 | 644 | 0.2+ | 0.4− | 2007 11 09 | 703 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.3+ | 0.2− |
| 2001 07 24 | 644 | 0.0  | 0.3+ | 2007 11 09 | 703 | 1.1− | 0.7+ | 2007 11 18 | G96 | 0.1+ | 0.3− |
| 2001 07 24 | 644 | 0.5− | 0.2+ | 2007 11 09 | 703 | 0.3− | 0.0  | 2007 11 18 | G96 | 0.0  | 0.4− |
| 2001 07 24 | 644 | 0.3− | 0.0  | 2007 11 09 | 703 | 1.0− | 1.3+ | 2007 11 18 | G96 | 0.6− | 0.9+ |
| 2004 02 11 | 644 | 0.0  | 0.0  | 2007 11 14 | 699 | 0.2− | 0.2− | 2007 11 18 | G96 | 0.5+ | 0.4− |
| 2004 02 11 | 644 | 0.1+ | 0.1− | 2007 11 14 | 699 | 0.0  | 0.9− | 2007 12 03 | 291 | 0.0  | 0.1+ |
| 2004 02 11 | 644 | 0.1− | 0.2− | 2007 11 14 | 699 | 1.4− | 0.0  | 2007 12 03 | 291 | 0.2+ | 0.1+ |
| 2007 11 04 | G96 | 0.2+ | 0.3− | 2007 11 14 | 699 | 0.1+ | 0.7− | 2007 12 03 | 291 | 0.1− | 0.1+ |
| 2007 11 04 | G96 | 0.2+ | 0.3− | 2007 11 17 | 703 | 0.8+ | 0.0  |            |     |      |      |

**2007 VH<sub>176</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 17.45400   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.16872907 | $\omega$ | 258.09542 | +0.80712181 | -0.58355379 |
| $a$ | 3.2434666  | $\Omega$ | 137.51872 | +0.58003563 | +0.75552137 |
| $e$ | 0.0873584  | $i$      | 7.61983   | +0.11005931 | +0.29774557 |
| $P$ | 5.84       | $H$      | 15.2      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 08 20 | 691 | 0.2- | 0.7+ | 2006 08 28 | 703 | 1.1- | 0.4- | 2007 11 09 | 703 | 0.4- | 0.2+ |
| 2000 08 20 | 691 | 0.1+ | 0.7+ | 2006 08 28 | 703 | 1.0+ | 0.8- | 2007 11 17 | 703 | 0.8+ | 0.8- |
| 2000 08 20 | 691 | 0.3- | 0.6+ | 2007 10 17 | G96 | 0.5+ | 0.1- | 2007 11 17 | 703 | 0.5+ | 0.3+ |
| 2003 01 29 | 291 | 0.2- | 0.2+ | 2007 10 17 | G96 | 0.5+ | 0.1- | 2007 11 17 | 703 | 1.1- | 1.4- |
| 2003 01 29 | 291 | 0.4- | 0.3+ | 2007 10 17 | G96 | 0.1+ | 0.1- | 2007 11 17 | 703 | 0.2+ | 0.6- |
| 2003 01 29 | 291 | 0.5- | 0.2+ | 2007 10 17 | G96 | 0.1+ | 0.0  | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2003 03 09 | 291 | 0.2+ | 0.3+ | 2007 11 02 | 703 | 0.1- | 1.1+ | 2007 11 18 | G96 | 0.6+ | 0.2- |
| 2003 03 09 | 291 | 0.5+ | 0.7+ | 2007 11 02 | 703 | 0.2+ | 0.4+ | 2007 11 18 | G96 | 0.5+ | 0.3- |
| 2003 03 09 | 291 | 0.7+ | 0.9+ | 2007 11 02 | 703 | 0.5- | 0.5+ | 2007 11 18 | G96 | 0.6+ | 0.1- |
| 2006 08 13 | 644 | 0.6+ | 0.1+ | 2007 11 02 | 703 | 1.1- | 0.5- | 2007 11 28 | D35 | 0.2+ | 0.3+ |
| 2006 08 13 | 644 | 0.0  | 0.7+ | 2007 11 04 | G96 | 0.3+ | 0.2- | 2007 11 28 | D35 | 0.1- | 0.0  |
| 2006 08 13 | 644 | 0.3+ | 1.0+ | 2007 11 04 | G96 | 0.3+ | 0.1- | 2007 11 28 | D35 | 0.0  | 1.0+ |
| 2006 08 13 | 644 | 0.4- | 0.5+ | 2007 11 04 | G96 | 0.2+ | 0.3- | 2007 12 05 | 703 | 0.2- | 0.5- |
| 2006 08 13 | 644 | 0.3+ | 0.6+ | 2007 11 04 | G96 | 0.5+ | 0.3- | 2007 12 05 | 703 | 2.0- | 0.7- |
| 2006 08 13 | 644 | 0.0  | 0.5+ | 2007 11 09 | 703 | 0.2+ | 0.0  | 2007 12 05 | 703 | 0.0  | 0.3+ |
| 2006 08 28 | 703 | 0.8- | 0.0  | 2007 11 09 | 703 | 0.7+ | 0.4+ | 2007 12 05 | 703 | 1.2- | 0.1+ |
| 2006 08 28 | 703 | 0.5- | 0.8- | 2007 11 09 | 703 | 0.4- | 0.6+ |            |     |      |      |

**2007 VN<sub>176</sub> = 2003 SL<sub>343</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 52.28603   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.25184994 | $\omega$ | 256.14446 | +0.55844312 | +0.82931229 |
| $a$ | 2.4833703  | $\Omega$ | 47.82105  | -0.75053620 | +0.51515652 |
| $e$ | 0.2073526  | $i$      | 1.51213   | -0.35332236 | +0.21645991 |
| $P$ | 3.91       | $H$      | 18.1      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 17 | 691 | 0.4- | 0.4- | 2007 09 12 | G96 | 0.4+ | 0.2- | 2007 10 18 | G96 | 0.5+ | 0.3- |
| 2003 09 17 | 691 | 0.2- | 0.1+ | 2007 09 12 | G96 | 0.1- | 0.0  | 2007 10 18 | G96 | 0.0  | 0.4- |
| 2003 09 17 | 691 | 0.2+ | 0.1+ | 2007 09 12 | G96 | 0.0  | 0.4- | 2007 11 05 | G96 | 0.5+ | 0.1+ |
| 2003 09 27 | 691 | 0.2+ | 0.3+ | 2007 09 12 | G96 | 0.1+ | 0.0  | 2007 11 05 | G96 | 0.2+ | 0.4+ |
| 2003 09 27 | 691 | 0.1- | 0.1+ | 2007 10 08 | G96 | 0.0  | 0.0  | 2007 11 05 | G96 | 0.1- | 0.4+ |
| 2003 09 27 | 691 | 0.0  | 0.3+ | 2007 10 08 | G96 | 0.1+ | 0.1+ | 2007 11 05 | G96 | 0.7+ | 0.4- |
| 2006 03 24 | G96 | 0.7- | 0.2+ | 2007 10 08 | G96 | 0.4- | 0.1- | 2007 11 09 | G96 | 0.2+ | 0.1+ |
| 2006 03 24 | G96 | 0.1+ | 0.3- | 2007 10 08 | G96 | 0.2- | 0.0  | 2007 11 09 | G96 | 0.2- | 0.4+ |
| 2006 03 24 | G96 | 0.2+ | 0.3+ | 2007 10 18 | G96 | 0.2+ | 0.1+ | 2007 11 09 | G96 | 0.6- | 0.1- |
| 2006 03 24 | G96 | 0.4+ | 0.2- | 2007 10 18 | G96 | 0.0  | 0.0  | 2007 11 09 | G96 | 1.0- | 0.2- |

**2007 VD<sub>180</sub> = 2004 DY<sub>26</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 203.02075  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.17722366 | $\omega$ | 104.05927 | -0.92356369 | +0.37950137 |
| $a$ | 3.1389778  | $\Omega$ | 98.26642  | -0.36971586 | -0.84340032 |
| $e$ | 0.0754429  | $i$      | 3.17746   | -0.10168726 | -0.38033487 |
| $P$ | 5.56       | $H$      | 16.1      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 25 | 645 | 0.1- | 0.3+ | 2004 02 23 | 704 | 0.5- | 0.3+ | 2007 10 20 | 691 | 0.4- | 0.1+ |
| 2001 10 25 | 645 | 0.1- | 0.3+ | 2004 02 23 | 704 | 0.4+ | 0.9+ | 2007 10 20 | 691 | 0.4- | 0.1- |
| 2001 11 12 | 645 | 0.0  | 0.2+ | 2004 02 23 | 704 | 0.3+ | 0.1+ | 2007 11 07 | G96 | 0.1- | 0.1- |
| 2001 11 12 | 645 | 0.1- | 0.0  | 2004 02 23 | 704 | 0.4+ | 0.9+ | 2007 11 07 | G96 | 0.2+ | 0.3- |
| 2001 11 18 | 645 | 0.0  | 0.2+ | 2006 08 28 | 691 | 0.3- | 0.9+ | 2007 11 07 | G96 | 0.4+ | 0.1- |
| 2001 11 18 | 645 | 0.2- | 0.3+ | 2006 08 28 | 691 | 0.6- | 0.8+ | 2007 11 07 | G96 | 0.2+ | 0.4- |
| 2004 02 16 | 291 | 0.1- | 0.2- | 2006 08 28 | 691 | 0.2- | 1.1+ | 2007 11 09 | G96 | 0.2+ | 0.2- |
| 2004 02 16 | 291 | 0.0  | 0.1- | 2007 10 12 | 691 | 0.2- | 0.0  | 2007 11 09 | G96 | 0.1+ | 0.0  |
| 2004 02 16 | 291 | 0.3+ | 0.1- | 2007 10 12 | 691 | 0.0  | 0.0  | 2007 11 09 | G96 | 0.2+ | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 23 | 704 | 0.4+ | 0.8+ | 2007 10 12 | 691 | 0.1- | 0.2+ | 2007 11 09 | G96 | 0.1+ | 0.1+ |
| 2004 02 23 | 704 | 0.3+ | 0.7+ | 2007 10 20 | 691 | 0.2- | 0.1+ |            |     |      |      |

**2007 VO<sub>180</sub> = 2005 EO<sub>273</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 54.83335   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22811277 | $\omega$ | 154.97172 | +0.93884600 | +0.34426954 |
| $a$ | 2.6527907  | $\Omega$ | 184.90618 | -0.32784150 | +0.88762604 |
| $e$ | 0.0157729  | $i$      | 4.58198   | -0.10530027 | +0.30593872 |
| $P$ | 4.32       | $H$      | 16.8      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1998 09 19 | 645 | 0.0  | 0.0  | 2005 04 02 | G96 | 0.1- | 0.0  | 2007 11 07 | 703 | 0.6+  | 0.2+  |
| 1998 09 19 | 645 | 0.2+ | 0.0  | 2005 04 02 | G96 | 0.0  | 0.2- | 2007 11 07 | 703 | 0.7-  | 0.2+  |
| 1998 09 25 | 645 | 0.1- | 0.0  | 2005 04 02 | G96 | 0.3- | 0.1+ | 2007 11 07 | 703 | 0.2+  | 0.7-  |
| 1998 09 25 | 645 | 0.1- | 0.0  | 2005 04 02 | G96 | 0.3+ | 0.1+ | 2007 11 09 | G96 | 0.4+  | 0.3-  |
| 2005 03 04 | 691 | 0.3+ | 0.2- | 2007 10 10 | 691 | 0.1- | 0.1+ | 2007 11 09 | G96 | 0.2+  | 0.4-  |
| 2005 03 04 | 691 | 0.0  | 0.4+ | 2007 10 10 | 691 | 0.1- | 0.2- | 2007 11 09 | G96 | 0.0   | 0.4-  |
| 2005 03 04 | 691 | 0.1- | 0.4- | 2007 10 10 | 691 | 0.2- | 0.0  | 2007 11 09 | G96 | 0.4+  | 0.3-  |
| 2005 03 11 | G96 | 0.4- | 0.0  | 2007 10 23 | 691 | 0.3+ | 0.2- | 2007 11 14 | 704 | 1.3+  | 0.5+  |
| 2005 03 11 | G96 | 0.3- | 0.2- | 2007 10 23 | 691 | 0.3- | 0.2+ | 2007 11 14 | 704 | 0.4+  | 0.8+  |
| 2005 03 11 | G96 | 0.0  | 0.0  | 2007 10 23 | 691 | 0.2- | 0.0  | 2007 11 14 | 704 | (1.7+ | 2.0+) |
| 2005 03 11 | G96 | 0.1- | 0.1+ | 2007 11 07 | 703 | 0.3- | 0.6+ |            |     |       |       |

**2007 VQ<sub>180</sub> = 2003 YN<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 69.46309   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21026222 | $\omega$ | 249.29135 | +0.76536062 | +0.63748881 |
| $a$ | 2.8008846  | $\Omega$ | 70.99460  | -0.55017938 | +0.71939559 |
| $e$ | 0.0609168  | $i$      | 5.37051   | -0.33395475 | +0.27582243 |
| $P$ | 4.69       | $H$      | 15.4      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 05 23 | 691 | 0.3+ | 0.1+ | 2005 04 04 | 703 | 0.4+ | 0.9- | 2007 11 14 | 704 | 0.1+  | 0.9+  |
| 1996 05 23 | 691 | 0.3+ | 0.9+ | 2005 04 04 | 703 | 0.5- | 0.6- | 2007 11 14 | 704 | 0.6-  | 0.2+  |
| 1996 05 23 | 691 | 0.5+ | 1.4+ | 2007 10 07 | 703 | 0.6- | 1.1+ | 2007 11 14 | 704 | 0.3+  | 0.4-  |
| 2003 12 23 | 704 | 0.8+ | 0.1- | 2007 10 07 | 703 | 0.2+ | 1.3+ | 2007 11 14 | 704 | 1.1+  | 0.2+  |
| 2003 12 23 | 704 | 0.0  | 0.1+ | 2007 10 07 | 703 | 0.6- | 0.2+ | 2007 12 05 | 704 | 0.2-  | 1.8+  |
| 2003 12 23 | 704 | 1.3- | 0.3+ | 2007 10 07 | 703 | 0.4- | 0.1- | 2007 12 05 | 703 | 0.3-  | 1.4+  |
| 2003 12 23 | 704 | 0.3+ | 0.2- | 2007 11 07 | 703 | 0.4- | 0.8- | 2007 12 05 | 704 | 0.0   | 0.8+  |
| 2004 02 27 | 695 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.9+ | 0.5+ | 2007 12 05 | 703 | 0.6-  | 0.3+  |
| 2004 02 27 | 695 | 0.4+ | 0.2+ | 2007 11 07 | 703 | 0.6+ | 0.4+ | 2007 12 05 | 703 | 2.0-  | 1.2-  |
| 2005 03 18 | 703 | 0.0  | 1.1- | 2007 11 07 | 703 | 0.2- | 0.1+ | 2007 12 05 | 704 | 0.9-  | 1.2+  |
| 2005 03 18 | 703 | 1.1- | 0.4+ | 2007 11 09 | G96 | 0.3+ | 0.3- | 2007 12 05 | 703 | 0.7-  | 1.0-  |
| 2005 03 18 | 703 | 0.8+ | 0.0  | 2007 11 09 | G96 | 0.2+ | 0.4- | 2007 12 05 | 704 | 0.4-  | 1.5+  |
| 2005 03 18 | 703 | 0.7- | 0.5+ | 2007 11 09 | G96 | 0.3+ | 0.4- | 2007 12 05 | 704 | (1.3- | 3.4+) |
| 2005 04 04 | 703 | 1.0+ | 1.5+ | 2007 11 09 | G96 | 0.2+ | 0.3- |            |     |       |       |
| 2005 04 04 | 703 | 0.3+ | 0.5+ | 2007 11 14 | 704 | 0.1+ | 0.0  |            |     |       |       |

**2007 VY<sub>180</sub> = 1999 WU<sub>20</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 14.06337   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.12268812 | $\omega$ | 320.84741 | +0.95653064 | -0.28518606 |
| $a$ | 4.0111389  | $\Omega$ | 55.82689  | +0.28264890 | +0.85508234 |
| $e$ | 0.2378669  | $i$      | 4.22657   | +0.07182437 | +0.43301628 |
| $P$ | 8.03       | $H$      | 15.0      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 11 06 | 691 | 0.2+ | 0.0  | 2007 10 10 | 691 | 0.1+ | 0.4- | 2007 11 09 | G96 | 0.4+ | 0.1- |
| 1991 11 06 | 691 | 0.4- | 0.0  | 2007 10 20 | 703 | 0.4+ | 0.8+ | 2007 11 17 | G96 | 0.1+ | 0.3- |
| 1991 11 06 | 691 | 0.3+ | 0.1+ | 2007 10 20 | 703 | 1.0+ | 0.7- | 2007 11 17 | G96 | 0.5+ | 0.3- |
| 1999 11 16 | 691 | 0.4+ | 0.3- | 2007 10 20 | 703 | 0.1- | 0.0  | 2007 11 17 | G96 | 0.2+ | 0.4- |
| 1999 11 16 | 691 | 0.1+ | 0.3- | 2007 10 20 | 703 | 0.0  | 0.4+ | 2007 11 17 | G96 | 0.6+ | 0.3- |
| 1999 11 16 | 691 | 0.7- | 1.0+ | 2007 10 30 | 691 | 0.2+ | 0.4- | 2007 12 05 | 704 | 0.6- | 0.6+ |
| 1999 11 28 | 691 | 0.2+ | 0.2- | 2007 10 30 | 691 | 0.3+ | 0.0  | 2007 12 05 | 704 | 1.2- | 0.5+ |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 11 28 | 691 | 0.1+ | 0.3- | 2007 10 30 | 691 | 0.3- | 0.2- | 2007 12 05 | 704 | 1.3- | 1.0+ |
| 1999 11 28 | 691 | 0.1+ | 0.4- | 2007 11 07 | 703 | 0.2- | 0.7+ | 2007 12 05 | 704 | 1.0- | 1.1+ |
| 2007 10 07 | G96 | 0.7+ | 0.6- | 2007 11 07 | 703 | 0.7+ | 0.7+ | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2007 10 07 | G96 | 0.3+ | 0.7- | 2007 11 07 | 703 | 0.5+ | 0.7+ | 2007 12 06 | G96 | 0.5+ | 0.5+ |
| 2007 10 07 | G96 | 0.5+ | 0.5- | 2007 11 07 | 703 | 0.1- | 0.4+ | 2007 12 06 | G96 | 0.6+ | 0.2- |
| 2007 10 07 | G96 | 0.1+ | 0.5- | 2007 11 09 | G96 | 0.7+ | 0.1- | 2007 12 06 | G96 | 0.7+ | 0.1+ |
| 2007 10 10 | 691 | 1.2- | 0.9+ | 2007 11 09 | G96 | 0.3+ | 0.0  |            |     |      |      |
| 2007 10 10 | 691 | 0.6- | 0.1- | 2007 11 09 | G96 | 0.4+ | 0.1- |            |     |      |      |

2007 VD<sub>182</sub> = 2003 YW<sub>81</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 299.97622  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.22469927 | $\omega$ | 187.96745 | -0.42682239  | -0.88280445  |
| $a$ | 2.6795895  | $\Omega$ | 287.47780 | +0.84063828  | -0.30734639  |
| $e$ | 0.1165567  | $i$      | 11.86784  | +0.33339155  | -0.35523864  |
| $P$ | 4.39       | $H$      | 16.4      | $G$ 0.15     | $U$ 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 04 | 644 | 0.0  | 0.1+ | 2003 12 22 | 704 | 0.6+ | 0.6+ | 2007 10 16 | 703 | (2.3- | 0.9-) |
| 2002 09 04 | 644 | 0.2- | 0.6- | 2003 12 22 | 704 | 0.2- | 0.1+ | 2007 10 16 | 703 | 1.5-  | 0.1+  |
| 2002 09 04 | 644 | 0.1+ | 0.2- | 2003 12 22 | 704 | 0.8+ | 0.9+ | 2007 11 08 | 703 | 0.3+  | 0.3-  |
| 2002 09 12 | 644 | 0.4- | 0.6+ | 2003 12 22 | 704 | 0.3- | 1.5+ | 2007 11 08 | 703 | 0.4-  | 0.1-  |
| 2002 09 12 | 644 | 0.0  | 0.5+ | 2003 12 22 | 704 | 0.1- | 0.0  | 2007 11 08 | 703 | 0.0   | 0.0   |
| 2002 09 12 | 644 | 0.1+ | 0.3+ | 2006 07 21 | D35 | 0.1+ | 0.2+ | 2007 11 08 | 703 | 0.3-  | 0.4-  |
| 2003 12 18 | 704 | 0.7+ | 0.1+ | 2006 07 21 | D35 | 0.1- | 0.2+ | 2007 11 09 | 703 | 0.5+  | 0.3-  |
| 2003 12 18 | 704 | 0.4+ | 0.9- | 2006 07 21 | D35 | 0.1- | 0.2+ | 2007 11 09 | 703 | 0.3+  | 0.2-  |
| 2003 12 18 | 704 | 0.8- | 0.1- | 2007 10 16 | 703 | 1.6- | 0.2- | 2007 11 09 | 703 | 1.6+  | 0.7-  |
| 2003 12 18 | 704 | 0.6- | 0.6- | 2007 10 16 | 703 | 0.0  | 0.2+ | 2007 11 09 | 703 | 1.0+  | 0.5+  |

2007 VP<sub>184</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 342.56824  |          | (2000.0) | $\mathbf{P}$ |      | $\mathbf{Q}$ |   |
|-----|------------|----------|----------|--------------|------|--------------|---|
| $n$ | 0.21703923 | $\omega$ | 1.90085  | +0.34942026  |      | -0.93137812  |   |
| $a$ | 2.7422722  | $\Omega$ | 67.65877 | +0.85818545  |      | +0.27436290  |   |
| $e$ | 0.0279582  | $i$      | 6.34241  | +0.37606279  |      | +0.23929020  |   |
| $P$ | 4.54       | $H$      | 15.7     | $G$          | 0.15 | $U$          | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 09 | 599 | 0.4+ | 0.1- | 2007 10 10 | G96 | 0.2- | 0.3- | 2007 11 14 | 704 | 0.1+  | 0.0   |
| 2002 09 09 | 599 | 0.3+ | 0.0  | 2007 10 10 | G96 | 0.4+ | 0.4- | 2007 11 14 | 704 | 0.7+  | 0.1-  |
| 2002 09 09 | 599 | 0.1- | 0.0  | 2007 10 10 | G96 | 0.5+ | 0.2- | 2007 11 14 | 704 | 0.2-  | 0.1+  |
| 2002 10 01 | 608 | 0.1- | 0.1+ | 2007 10 10 | G96 | 0.5+ | 0.4- | 2007 11 14 | 704 | 0.0   | 0.1+  |
| 2002 10 01 | 608 | 0.4- | 0.2+ | 2007 10 31 | 691 | 0.3- | 0.3- | 2007 11 17 | A13 | 0.3+  | 0.2+  |
| 2002 10 01 | 608 | 0.2- | 0.1+ | 2007 10 31 | 691 | 0.4- | 0.5+ | 2007 11 17 | A13 | 0.8-  | 0.6+  |
| 2005 04 14 | 691 | 0.2- | 0.1- | 2007 10 31 | 691 | 0.3- | 0.0  | 2007 11 17 | A13 | 0.4+  | 0.1+  |
| 2005 04 14 | 691 | 0.0  | 0.0  | 2007 11 06 | A13 | 0.0  | 0.1- | 2007 12 05 | 704 | (1.7+ | 0.9+) |
| 2005 04 14 | 691 | 0.1+ | 0.1+ | 2007 11 06 | A13 | 0.4+ | 0.0  | 2007 12 05 | 704 | 0.6+  | 0.2+  |
| 2005 05 14 | 644 | 0.0  | 0.1+ | 2007 11 12 | A13 | 0.0  | 0.3- | 2007 12 05 | 704 | 0.8+  | 0.2+  |
| 2005 05 14 | 644 | 0.2+ | 0.0  | 2007 11 12 | A13 | 0.2+ | 0.2- |            |     |       |       |
| 2005 05 14 | 644 | 0.4+ | 0.2+ | 2007 11 14 | 704 | 0.4+ | 0.3- |            |     |       |       |

2007 VJ<sub>185</sub> = 2001 TH<sub>23</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 343.35980  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18511203 | $\omega$ | 202.89723 | +0.08378177  | -0.99007919  |
| $a$ | 3.0491559  | $\Omega$ | 242.45794 | +0.93281674  | +0.11773780  |
| $e$ | 0.0972054  | $i$      | 7.30881   | +0.35047618  | -0.07668767  |
| $P$ | 5.32       | $H$      | 15.4      | $G$          | 0.15         |
|     |            |          |           | $U$          | 1            |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 12 14 | 691 | 0.1- | 0.0  | 2006 09 18 | 703 | 0.9+ | 1.0+ | 2007 11 14 | 704 | 0.4- | 0.1- |
| 1991 12 14 | 691 | 0.0  | 0.5+ | 2007 09 15 | G96 | 0.1+ | 0.4- | 2007 11 14 | 691 | 0.0  | 0.2+ |
| 1991 12 14 | 691 | 0.2- | 0.4+ | 2007 09 15 | G96 | 0.2+ | 0.2- | 2007 11 14 | 691 | 0.2- | 0.0  |
| 1995 07 27 | 691 | 0.0  | 0.3+ | 2007 09 15 | G96 | 0.4+ | 0.2- | 2007 11 14 | 691 | 0.2- | 0.0  |
| 1995 07 27 | 691 | 0.0  | 0.1+ | 2007 09 15 | G96 | 0.1+ | 0.2- | 2007 11 28 | D29 | 1.0+ | 0.0  |

## M.P.O. 130025

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 07 27 | 691 | 0.2+  | 0.1-  | 2007 09 15 | G96 | 0.0  | 0.3- | 2007 11 28 | D29 | 0.2+ | 0.2- |
| 2001 10 14 | 704 | 0.2+  | 0.4+  | 2007 09 15 | G96 | 0.2+ | 0.2- | 2007 11 28 | D29 | 0.0  | 0.3- |
| 2001 10 14 | 704 | 0.1-  | 0.9-  | 2007 09 15 | G96 | 0.5+ | 0.6- | 2007 11 28 | D29 | 0.0  | 0.1+ |
| 2001 10 14 | 704 | 0.9+  | 0.3-  | 2007 09 15 | G96 | 0.3+ | 0.3- | 2007 12 05 | 704 | 0.0  | 1.2+ |
| 2001 10 15 | 704 | (1.5+ | 1.8-) | 2007 11 06 | 691 | 0.2- | 0.1- | 2007 12 05 | 704 | 0.1- | 0.9+ |
| 2001 10 15 | 704 | 0.1-  | 0.5-  | 2007 11 06 | 691 | 0.2- | 0.0  | 2007 12 05 | 704 | 0.4- | 0.8+ |
| 2001 10 15 | 704 | 0.6+  | 1.0-  | 2007 11 06 | 691 | 0.1- | 0.0  | 2007 12 05 | G96 | 0.1- | 0.1- |
| 2001 10 15 | 704 | 0.5+  | 0.4+  | 2007 11 11 | D29 | 0.5+ | 0.8- | 2007 12 05 | G96 | 0.3+ | 0.3- |
| 2006 08 29 | 703 | 1.2-  | 0.8+  | 2007 11 11 | D29 | 0.5+ | 0.8- | 2007 12 05 | G96 | 0.6+ | 0.4- |
| 2006 08 29 | 703 | 1.0-  | 0.4-  | 2007 11 11 | D29 | 0.2- | 0.7- | 2007 12 05 | G96 | 0.4+ | 0.2- |
| 2006 08 29 | 703 | 0.9-  | 0.1-  | 2007 11 11 | D29 | 0.2- | 0.4+ | 2007 12 15 | G96 | 0.2- | 0.6- |
| 2006 08 29 | 703 | 0.5+  | 0.5+  | 2007 11 14 | 704 | 0.1+ | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.2- |
| 2006 09 18 | 703 | 1.0-  | 0.7-  | 2007 11 14 | 704 | 0.6+ | 0.2- | 2007 12 15 | G96 | 0.3+ | 0.1- |
| 2006 09 18 | 703 | 0.5-  | 0.1+  | 2007 11 14 | 704 | 0.1- | 0.6+ | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2006 09 18 | 703 | (1.4- | 2.2-) | 2007 11 14 | 704 | 0.1+ | 0.1- |            |     |      |      |

2007 VO<sub>185</sub> = 2001 UF<sub>199</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 321.34778  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17807467 | $\omega$ | 270.52045 | -0.45411149 | -0.88244320 |
| $a$ | 3.1289692  | $\Omega$ | 207.55940 | +0.88588369 | -0.43255418 |
| $e$ | 0.2178417  | $i$      | 15.39012  | +0.09483058 | -0.18490775 |
| $P$ | 5.53       | $H$      | 15.9      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 17 | 291 | 0.2+ | 0.1+ | 2003 02 05 | 608 | 0.2+ | 0.8- | 2007 11 09 | D29 | 0.4+ | 1.0- |
| 2001 10 17 | 291 | 0.1+ | 0.1+ | 2003 02 05 | 608 | 0.6+ | 0.7- | 2007 11 20 | 703 | 0.1+ | 0.3+ |
| 2001 10 17 | 291 | 0.3+ | 0.1- | 2003 02 05 | 608 | 0.0  | 0.8- | 2007 11 20 | 703 | 1.5- | 1.2- |
| 2001 10 19 | 644 | 0.1- | 0.4- | 2003 02 21 | 644 | 0.1+ | 0.4+ | 2007 11 20 | 703 | 0.6- | 0.4+ |
| 2001 10 19 | 644 | 0.3+ | 0.0  | 2003 02 21 | 644 | 0.0  | 0.6+ | 2007 11 20 | 703 | 0.7- | 0.3+ |
| 2001 10 19 | 644 | 0.2+ | 0.1- | 2003 02 21 | 644 | 0.2- | 0.5+ | 2007 12 04 | 703 | 0.2+ | 0.2+ |
| 2001 10 21 | 704 | 0.9- | 0.1- | 2007 11 08 | 703 | 0.2- | 1.5- | 2007 12 04 | 703 | 0.3+ | 1.0+ |
| 2001 10 21 | 704 | 1.1- | 0.0  | 2007 11 08 | 703 | 0.1- | 0.1- | 2007 12 04 | 703 | 0.7- | 0.9+ |
| 2001 10 21 | 704 | 0.5- | 0.4+ | 2007 11 08 | 703 | 0.6- | 1.3- | 2007 12 04 | 703 | 0.5+ | 0.9+ |
| 2001 10 21 | 704 | 0.6- | 0.4+ | 2007 11 08 | 703 | 1.0- | 0.3+ | 2007 12 06 | 683 | 0.4+ | 0.2- |
| 2003 01 14 | 644 | 0.3- | 0.7+ | 2007 11 09 | D29 | 0.3+ | 0.0  | 2007 12 06 | 683 | 0.2- | 0.2+ |
| 2003 01 14 | 644 | 0.4+ | 0.7+ | 2007 11 09 | D29 | 0.2+ | 0.6- | 2007 12 06 | 683 | 2.8+ | 1.2+ |
| 2003 01 14 | 644 | 0.1- | 0.5- | 2007 11 09 | D29 | 0.2+ | 0.4- |            |     |      |      |

2007 VP<sub>185</sub> = 2003 YQ<sub>105</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 34.80289   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.24094411 | $\omega$ | 253.79607 | +0.97370417 | +0.03062169 |
| $a$ | 2.5577524  | $\Omega$ | 104.02314 | +0.04810680 | +0.94094315 |
| $e$ | 0.2791492  | $i$      | 13.45509  | -0.22267898 | +0.33717697 |
| $P$ | 4.09       | $H$      | 16.1      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 06 01 | 644 | 0.2- | 0.5+ | 2007 09 13 | 703 | 0.9- | 0.4+ | 2007 11 15 | 703 | 0.4- | 0.0  |
| 2002 06 01 | 644 | 0.2- | 0.9+ | 2007 11 08 | 703 | 0.7- | 0.2+ | 2007 11 15 | 703 | 0.4+ | 0.1+ |
| 2002 06 01 | 644 | 0.6- | 0.7+ | 2007 11 08 | 703 | 0.7- | 0.4+ | 2007 11 15 | 703 | 0.3+ | 0.1+ |
| 2003 12 22 | 704 | 0.1+ | 0.1- | 2007 11 08 | 703 | 0.7- | 0.0  | 2007 11 15 | 703 | 0.1+ | 0.1+ |
| 2003 12 22 | 704 | 0.3- | 0.2- | 2007 11 08 | 703 | 0.2- | 0.1+ | 2007 11 20 | 703 | 1.0+ | 0.6+ |
| 2003 12 22 | 704 | 0.6- | 0.2- | 2007 11 10 | D29 | 0.3+ | 0.1- | 2007 11 20 | 703 | 0.1+ | 0.4- |
| 2003 12 22 | 704 | 0.5- | 0.2- | 2007 11 10 | D29 | 0.0  | 0.4+ | 2007 11 20 | 703 | 1.3- | 0.6- |
| 2003 12 22 | 704 | 0.4- | 0.2- | 2007 11 10 | D29 | 0.9- | 0.4- | 2007 11 20 | 703 | 1.5- | 0.5+ |
| 2003 12 24 | 704 | 0.4+ | 0.7+ | 2007 11 10 | D29 | 0.5+ | 0.7- | 2007 12 16 | 704 | 0.0  | 0.2+ |
| 2003 12 24 | 704 | 1.3+ | 0.6+ | 2007 11 10 | D29 | 0.3+ | 0.2- | 2007 12 16 | 704 | 0.0  | 0.4+ |
| 2003 12 24 | 704 | 0.8+ | 0.7+ | 2007 11 10 | D29 | 0.3+ | 0.0  | 2007 12 16 | 704 | 0.4+ | 0.1+ |
| 2006 04 21 | 691 | 0.3+ | 0.1+ | 2007 11 10 | D29 | 0.3+ | 0.2+ | 2007 12 16 | 704 | 0.3- | 0.9+ |
| 2006 04 21 | 691 | 0.3+ | 0.2+ | 2007 11 10 | D29 | 0.3+ | 0.5- | 2007 12 16 | 704 | 0.6+ | 0.3+ |
| 2006 04 21 | 691 | 0.1+ | 0.3+ | 2007 11 14 | 699 | 0.2- | 0.4- | 2007 12 16 | 704 | 1.1+ | 0.1- |
| 2007 09 13 | 703 | 0.9+ | 1.1+ | 2007 11 14 | 699 | 0.4- | 0.0  | 2007 12 16 | 704 | 0.1+ | 0.4+ |
| 2007 09 13 | 703 | 1.4- | 1.2+ | 2007 11 14 | 699 | 0.3- | 0.6- | 2007 12 16 | 704 | 0.2- | 0.2- |
| 2007 09 13 | 703 | 0.4+ | 1.3+ | 2007 11 14 | 699 | 0.2- | 0.2- | 2007 12 16 | 704 | 0.1+ | 0.0  |

**2007 VQ<sub>185</sub> = 2005 GV<sub>158</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 117.27610  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21379084 | $\omega$ | 17.64468  | +0.41164394   | +0.90815253 |
| <i>a</i> | 2.7699801  | $\Omega$ | 276.71929 | -0.84512260   | +0.34909976 |
| <i>e</i> | 0.0473022  | <i>i</i> | 4.40114   | -0.34105286   | +0.23105917 |
| <i>P</i> | 4.61       | <i>H</i> | 16.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1993 10 12 | 691 | 0.1- | 0.3- | 2006 05 26 | G96 | 0.1- | 0.3+ | 2007 11 13 | 691 | 0.1+ | 0.1+ |
| 1993 10 12 | 691 | 0.1+ | 0.1- | 2006 05 26 | G96 | 0.2- | 0.6+ | 2007 11 13 | 691 | 0.1- | 0.0  |
| 1993 10 12 | 691 | 0.0  | 0.5+ | 2006 05 26 | G96 | 0.2- | 0.8+ | 2007 11 13 | 691 | 0.7- | 0.8+ |
| 2000 03 03 | 645 | 0.0  | 0.0  | 2007 11 01 | 691 | 0.3- | 0.1- | 2007 11 17 | G96 | 0.6+ | 0.5- |
| 2000 03 03 | 645 | 0.0  | 0.1- | 2007 11 01 | 691 | 0.1+ | 0.2+ | 2007 11 17 | G96 | 0.5+ | 0.2- |
| 2005 04 12 | 691 | 0.1+ | 0.4+ | 2007 11 01 | 691 | 0.1- | 0.1- | 2007 11 17 | G96 | 0.4+ | 0.3- |
| 2005 04 12 | 691 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1- | 0.2+ | 2007 11 17 | G96 | 0.5+ | 0.2- |
| 2005 04 12 | 691 | 0.2+ | 0.5+ | 2007 11 09 | 691 | 0.6- | 0.0  | 2007 11 18 | 300 | 0.0  | 0.1- |
| 2005 04 16 | 691 | 0.2- | 0.1+ | 2007 11 09 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 300 | 0.1+ | 0.0  |
| 2005 04 16 | 691 | 0.3+ | 0.2+ | 2007 11 11 | J87 | 0.3+ | 0.2+ | 2007 11 18 | 300 | 0.6+ | 0.3- |
| 2005 04 16 | 691 | 0.1+ | 0.0  | 2007 11 11 | J87 | 0.5+ | 0.2+ | 2007 11 18 | 300 | 0.5+ | 0.6+ |
| 2006 05 26 | G96 | 0.0  | 0.4+ | 2007 11 11 | J87 | 0.5+ | 0.0  | 2007 11 18 | 300 | 0.4+ | 0.1- |

**2007 VQ<sub>186</sub> = 2001 WG<sub>65</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 311.30006  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.17134943 | $\omega$ | 65.32295 | -0.33455750   | -0.91718298 |
| <i>a</i> | 3.2103147  | $\Omega$ | 46.07288 | +0.71889391   | -0.39689747 |
| <i>e</i> | 0.1161416  | <i>i</i> | 17.48880 | +0.60931341   | -0.03532382 |
| <i>P</i> | 5.75       | <i>H</i> | 15.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 11 20 | 704 | 1.1+ | 0.2- | 2007 11 09 | 691 | 0.2-  | 0.2-  | 2007 11 20 | 704 | 0.6+ | 0.9- |
| 2001 11 20 | 704 | 1.2+ | 0.2+ | 2007 11 09 | 691 | 0.2-  | 0.1-  | 2007 11 20 | 704 | 0.4- | 0.9- |
| 2001 11 20 | 704 | 0.2+ | 0.1+ | 2007 11 09 | 300 | 0.7+  | 0.3-  | 2007 11 20 | 704 | 0.2- | 0.0  |
| 2001 11 20 | 704 | 0.2- | 0.2+ | 2007 11 09 | 300 | 1.3+  | 0.4+  | 2007 12 04 | 691 | 0.1+ | 0.0  |
| 2001 11 20 | 704 | 0.6- | 0.7+ | 2007 11 09 | 300 | 0.5+  | 0.6+  | 2007 12 04 | 691 | 0.1+ | 0.1- |
| 2001 11 21 | 704 | 0.4- | 0.5- | 2007 11 09 | 300 | 0.2-  | 0.1+  | 2007 12 04 | 691 | 0.2- | 0.0  |
| 2001 11 21 | 704 | 1.2- | 1.0- | 2007 11 09 | 300 | 0.3+  | 0.7+  | 2007 12 06 | 691 | 0.2- | 0.5+ |
| 2001 11 21 | 704 | 0.7- | 1.0+ | 2007 11 09 | 300 | 0.1+  | 0.4+  | 2007 12 06 | 691 | 0.0  | 0.0  |
| 2001 11 21 | 704 | 0.2- | 0.6+ | 2007 11 12 | 300 | (2.5+ | 0.8-) | 2007 12 06 | 691 | 0.4- | 0.4- |
| 2007 09 10 | G96 | 0.4+ | 0.5- | 2007 11 12 | 300 | 1.2+  | 0.5+  | 2007 12 13 | 704 | 0.9- | 0.1- |
| 2007 09 10 | G96 | 0.3+ | 0.2- | 2007 11 12 | 300 | (2.4+ | 0.0 ) | 2007 12 13 | 704 | 0.3+ | 0.0  |
| 2007 09 10 | G96 | 0.6+ | 0.5- | 2007 11 12 | 300 | 1.0+  | 0.5-  | 2007 12 13 | 704 | 0.7- | 0.3+ |
| 2007 09 10 | G96 | 0.5+ | 0.2- | 2007 11 12 | 300 | (1.7+ | 0.3+) | 2007 12 13 | 704 | 0.7- | 0.1+ |
| 2007 09 18 | G96 | 0.1- | 0.1- | 2007 11 13 | 691 | 0.3-  | 0.1-  | 2007 12 13 | 704 | 0.2- | 0.1- |
| 2007 09 18 | G96 | 0.0  | 0.3+ | 2007 11 13 | 691 | 0.2-  | 0.1+  | 2007 12 15 | 704 | 0.6- | 0.2+ |
| 2007 09 18 | G96 | 0.2+ | 0.1+ | 2007 11 13 | 691 | 0.2-  | 0.2-  | 2007 12 15 | 704 | 0.4+ | 0.7+ |
| 2007 09 18 | G96 | 0.8+ | 0.8+ | 2007 11 13 | 699 | 0.2-  | 0.4+  | 2007 12 15 | 704 | 0.2+ | 0.5- |
| 2007 10 31 | 691 | 0.1+ | 0.2+ | 2007 11 13 | 699 | (0.6- | 2.0+) | 2007 12 15 | 704 | 1.0+ | 0.4- |
| 2007 10 31 | 691 | 0.1- | 0.1- | 2007 11 13 | 699 | 0.9+  | 1.0+  | 2007 12 16 | 691 | 0.1+ | 0.0  |
| 2007 10 31 | 691 | 0.2- | 0.0  | 2007 11 13 | 699 | 0.7+  | 0.4-  | 2007 12 16 | 691 | 0.0  | 0.1- |
| 2007 11 09 | 691 | 0.2- | 0.3- | 2007 11 20 | 704 | 0.6+  | 0.7+  | 2007 12 16 | 691 | 0.0  | 0.0  |

**2007 VT<sub>186</sub> = 2003 XP<sub>42</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.58237    |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.24388341 | $\omega$ | 16.45101 | +0.63768700   | -0.75470298 |
| <i>a</i> | 2.5371601  | $\Omega$ | 34.38007 | +0.67239938   | +0.44770879 |
| <i>e</i> | 0.1108842  | <i>i</i> | 15.84769 | +0.37581160   | +0.47956256 |
| <i>P</i> | 4.04       | <i>H</i> | 16.2     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 15 | 704 | 0.6+ | 0.0  | 2007 09 20 | 703 | 0.7+ | 0.9+ | 2007 11 16 | 704 | 0.2+ | 0.1+ |
| 2003 12 15 | 704 | 0.0  | 0.1+ | 2007 09 20 | 703 | 0.6- | 0.7+ | 2007 11 16 | 704 | 0.5+ | 0.6- |
| 2003 12 15 | 704 | 0.2+ | 0.8+ | 2007 09 20 | 703 | 0.6+ | 0.2+ | 2007 11 16 | 704 | 0.3+ | 0.3- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 29 | 704 | 0.8- | 0.4- | 2007 11 12 | 300 | 0.0  | 0.1- | 2007 11 16 | 704 | 0.6- | 0.1+ |
| 2003 12 29 | 704 | 0.1- | 0.6- | 2007 11 12 | 300 | 0.2- | 0.2+ | 2007 11 16 | 704 | 0.8+ | 0.4- |
| 2003 12 29 | 704 | 0.3- | 0.6+ | 2007 11 12 | 300 | 0.0  | 0.8- | 2007 12 03 | 704 | 0.0  | 0.1+ |
| 2003 12 29 | 704 | 0.3+ | 0.1- | 2007 11 12 | 300 | 0.3+ | 0.8- | 2007 12 03 | 704 | 0.6- | 0.3+ |
| 2003 12 29 | 704 | 0.2- | 0.4+ | 2007 11 12 | 300 | 0.3- | 0.7- | 2007 12 03 | 704 | 0.1- | 0.8- |
| 2007 08 24 | 691 | 0.0  | 0.1- | 2007 11 12 | 300 | 0.1- | 0.1- | 2007 12 03 | 704 | 0.4- | 0.2- |
| 2007 08 24 | 691 | 0.2- | 0.2- | 2007 11 13 | 300 | 0.6+ | 0.1+ | 2007 12 03 | 704 | 0.5- | 0.2+ |
| 2007 08 24 | 691 | 0.0  | 0.1- | 2007 11 13 | 300 | 0.4+ | 0.7+ |            |     |      |      |
| 2007 09 20 | 703 | 0.3+ | 1.2+ | 2007 11 13 | 300 | 0.1+ | 0.8+ |            |     |      |      |

**2007 VM<sub>188</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 67.04146   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30339574 | $\omega$ | 164.25870 | +0.84114987   | +0.54053655 |
| <i>a</i> | 2.1934600  | $\Omega$ | 162.98893 | -0.50221728   | +0.79237567 |
| <i>e</i> | 0.0742086  | <i>i</i> | 3.32050   | -0.20061084   | +0.28277383 |
| <i>P</i> | 3.25       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2000 08 28 | 807 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.1- | 0.2+ | 2007 10 20 | 691 | 0.1-  | 0.7+  |
| 2000 08 28 | 807 | 0.1- | 0.0  | 2007 09 15 | G96 | 0.1+ | 0.3+ | 2007 10 20 | 691 | 0.0   | 0.1+  |
| 2006 04 08 | 691 | 0.4+ | 0.1- | 2007 09 15 | G96 | 0.4+ | 0.1+ | 2007 10 20 | 691 | 0.1-  | 0.3+  |
| 2006 04 08 | 691 | 0.0  | 0.1+ | 2007 10 08 | 691 | 0.6- | 0.1- | 2007 11 07 | 704 | (0.1+ | 3.0-) |
| 2006 04 08 | 691 | 0.0  | 0.2+ | 2007 10 08 | 691 | 1.1- | 0.4+ | 2007 11 07 | 704 | 0.6-  | 1.8-  |
| 2006 05 30 | G96 | 0.2- | 0.3- | 2007 10 08 | 691 | 1.5- | 0.8- | 2007 11 07 | 704 | 1.0+  | 1.6-  |
| 2006 05 30 | G96 | 0.5- | 0.1- | 2007 10 08 | G96 | 0.5+ | 0.2- | 2007 11 07 | 704 | (1.3+ | 2.7-) |
| 2006 05 30 | G96 | 0.0  | 0.0  | 2007 10 08 | G96 | 1.0+ | 0.0  | 2007 11 12 | 704 | 0.1-  | 1.1+  |
| 2006 05 30 | G96 | 0.3+ | 0.2+ | 2007 10 08 | G96 | 0.5+ | 0.1+ | 2007 11 12 | 704 | 0.1+  | 0.0   |
| 2007 09 15 | G96 | 0.1+ | 0.0  | 2007 10 08 | G96 | 0.4+ | 0.1- | 2007 11 12 | 704 | 0.1+  | 1.5+  |

**2007 VR<sub>188</sub> = 2003 XO<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 40.27337   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.24042322 | $\omega$ | 321.56661 | +0.98392991   | -0.05157985 |
| <i>a</i> | 2.5614455  | $\Omega$ | 42.38083  | +0.13963907   | +0.81892923 |
| <i>e</i> | 0.0899444  | <i>i</i> | 14.69086  | -0.11127832   | +0.57157190 |
| <i>P</i> | 4.10       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 03 | 704 | 0.1- | 0.6+ | 2007 11 11 | 300 | 0.2+ | 0.1+ | 2007 11 20 | G96 | 0.3- | 0.1- |
| 2003 12 03 | 704 | 0.2- | 0.5+ | 2007 11 11 | 300 | 0.1+ | 0.4+ | 2007 11 20 | G96 | 0.2- | 0.2- |
| 2003 12 03 | 704 | 0.0  | 0.2- | 2007 11 11 | 300 | 0.5+ | 0.5+ | 2007 11 20 | G96 | 0.1+ | 0.3- |
| 2003 12 03 | 704 | 0.1+ | 0.3+ | 2007 11 11 | 300 | 0.2+ | 0.5+ | 2007 11 20 | G96 | 0.1- | 0.3- |
| 2003 12 17 | 704 | 0.9+ | 0.8- | 2007 11 11 | 300 | 0.1+ | 0.5+ | 2007 11 20 | G96 | 0.2- | 0.3- |
| 2003 12 17 | 704 | 0.1+ | 0.3+ | 2007 11 11 | 300 | 0.2+ | 0.1+ | 2007 11 20 | G96 | 0.1- | 0.2- |
| 2003 12 17 | 704 | 0.7- | 0.3+ | 2007 11 14 | 300 | 0.0  | 0.1- | 2007 11 21 | G96 | 0.1- | 0.0  |
| 2003 12 17 | 704 | 0.2- | 0.5- | 2007 11 14 | 300 | 0.2- | 0.7- | 2007 11 21 | G96 | 0.2- | 0.2- |
| 2003 12 17 | 704 | 0.1+ | 0.4- | 2007 11 14 | 300 | 0.3- | 0.4- | 2007 11 21 | G96 | 0.3- | 0.2- |
| 2005 03 16 | 703 | 1.2- | 0.1- | 2007 11 14 | 300 | 0.6- | 0.1+ | 2007 11 21 | G96 | 0.3- | 0.1- |
| 2005 03 16 | 703 | 1.3+ | 0.2- | 2007 11 18 | 704 | 0.8+ | 0.3- | 2007 11 21 | G96 | 0.4- | 0.2- |
| 2005 03 16 | 703 | 1.2+ | 0.1+ | 2007 11 18 | 704 | 0.1- | 0.1- | 2007 11 21 | G96 | 0.1- | 0.2- |
| 2005 03 16 | 703 | 1.4- | 0.2+ | 2007 11 18 | 704 | 0.1+ | 0.2- | 2007 11 21 | G96 | 0.1- | 0.2- |
| 2007 10 14 | G96 | 0.3+ | 0.2+ | 2007 11 18 | 704 | 0.3+ | 0.3- | 2007 11 21 | G96 | 0.3- | 0.3- |
| 2007 10 14 | G96 | 0.1+ | 0.3+ | 2007 11 18 | 704 | 0.0  | 0.1+ | 2007 12 16 | 704 | 0.2- | 1.7+ |
| 2007 10 14 | G96 | 0.0  | 0.2+ | 2007 11 20 | G96 | 0.1- | 0.3- | 2007 12 16 | 704 | 0.3+ | 0.8+ |
| 2007 11 11 | 300 | 0.5+ | 0.3+ | 2007 11 20 | G96 | 0.4- | 0.2- | 2007 12 16 | 704 | 1.5+ | 0.3- |

**2007 VV<sub>188</sub> = 1994 WL<sub>10</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 122.04119  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.38046605 | $\omega$ | 222.24998 | +0.34236741 | +0.85828083 |
| $a$ | 1.8862190  | $\Omega$ | 71.11604  | -0.71716025 | +0.50157804 |
| $e$ | 0.0157801  | $i$      | 23.83018  | -0.60701379 | -0.10850568 |
| $P$ | 2.59       | $H$      | 17.8      | $G$ 0.15    | $U$ 2       |



## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 11 30 | 691 | 0.2+ | 0.7− | 2007 11 12 | 704 | 0.8− | 0.4− | 2007 12 03 | 291 | 0.0  | 0.5+ |
| 1994 11 30 | 691 | 0.2+ | 0.2− | 2007 11 12 | 704 | 0.0  | 1.3+ | 2007 12 04 | G96 | 0.1− | 0.0  |
| 1994 11 30 | 691 | 0.3+ | 0.6− | 2007 11 12 | 704 | 0.5− | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.1+ |
| 1994 12 01 | 691 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.4+ | 0.1+ | 2007 12 04 | G96 | 0.2+ | 0.2− |
| 1994 12 01 | 691 | 0.1+ | 0.0  | 2007 11 14 | 704 | 0.3+ | 0.3+ | 2007 12 04 | G96 | 0.1− | 0.0  |
| 1994 12 01 | 691 | 0.2− | 0.4+ | 2007 11 14 | 704 | 0.1+ | 0.1− | 2007 12 15 | G96 | 0.1− | 0.1+ |
| 2006 03 04 | G96 | 0.1+ | 0.2− | 2007 11 15 | 704 | 0.9+ | 0.3+ | 2007 12 15 | G96 | 0.1− | 0.3− |
| 2006 03 04 | G96 | 0.1− | 0.6− | 2007 11 15 | 704 | 0.0  | 0.6− | 2007 12 15 | G96 | 0.1+ | 0.3+ |
| 2006 03 04 | G96 | 0.2+ | 0.3+ | 2007 11 15 | 704 | 0.8− | 0.4+ | 2007 12 15 | G96 | 0.1− | 0.2− |
| 2006 03 04 | G96 | 0.6− | 0.0  | 2007 12 03 | 291 | 0.2− | 0.2+ |            |     |      |      |
| 2007 11 12 | 704 | 1.4+ | 0.3+ | 2007 12 03 | 291 | 0.5− | 0.3− |            |     |      |      |

2007 VC<sub>189</sub> = 2001 UK<sub>185</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 339.25633  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18174321 | $\omega$ | 196.32520 | +0.07254819  | −0.97124942  |
| $a$ | 3.0867202  | $\Omega$ | 249.96278 | +0.93993054  | +0.14261369  |
| $e$ | 0.1418566  | $i$      | 13.96620  | +0.33356759  | −0.19061976  |
| $P$ | 5.42       | $H$      | 15.4      | $G$ 0.15     | $U$ 2        |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1995 07 28 | 691 | 0.2−  | 0.1−  | 2007 11 13 | 691 | 0.1− | 0.1− | 2007 11 15 | 704 | 0.5+ | 0.0  |
| 1995 07 28 | 691 | 0.0   | 0.1+  | 2007 11 13 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.8− | 1.3− |
| 1995 07 28 | 691 | 0.1+  | 0.0   | 2007 11 13 | 691 | 0.1− | 0.1+ | 2007 11 15 | 704 | 1.1− | 1.4− |
| 2001 10 17 | 704 | (1.7+ | 1.2+) | 2007 11 13 | 300 | 0.6+ | 0.3+ | 2007 11 15 | 704 | 0.1+ | 0.7+ |
| 2001 10 17 | 704 | 1.2−  | 0.2−  | 2007 11 13 | 300 | 0.5+ | 0.1− | 2007 11 15 | 704 | 0.2+ | 0.8+ |
| 2001 10 17 | 704 | 0.5+  | 1.2+  | 2007 11 13 | 300 | 0.3+ | 0.3+ | 2007 11 17 | 691 | 0.3− | 0.0  |
| 2001 10 17 | 704 | 0.1−  | 0.8+  | 2007 11 13 | 300 | 0.7+ | 0.1+ | 2007 11 17 | 691 | 0.2− | 0.1− |
| 2001 10 19 | 608 | 0.3+  | 0.1−  | 2007 11 13 | 300 | 0.4+ | 0.2− | 2007 11 17 | 691 | 0.1− | 0.0  |
| 2001 10 19 | 608 | 0.3+  | 0.1+  | 2007 11 13 | 300 | 0.2+ | 0.1− | 2007 12 03 | 703 | 0.7− | 0.3+ |
| 2001 10 19 | 608 | 0.4+  | 0.0   | 2007 11 13 | 300 | 1.0+ | 0.1− | 2007 12 03 | 703 | 0.3− | 1.3+ |
| 2004 04 16 | E12 | 0.4+  | 0.5+  | 2007 11 14 | 300 | 0.2+ | 0.8− | 2007 12 03 | 703 | 0.3+ | 1.0+ |
| 2004 04 16 | E12 | 0.7−  | 0.2−  | 2007 11 14 | 300 | 0.0  | 0.6− | 2007 12 03 | 703 | 0.2+ | 0.8+ |
| 2004 04 16 | E12 | 0.9+  | 1.3+  | 2007 11 14 | 300 | 0.4+ | 0.3− | 2007 12 04 | 699 | 0.0  | 0.1− |
| 2004 04 16 | E12 | (0.2+ | 1.7+) | 2007 11 14 | 300 | 0.4+ | 0.2+ | 2007 12 04 | 699 | 0.7+ | 0.4+ |
| 2007 11 02 | 691 | 0.1+  | 0.0   | 2007 11 14 | 300 | 0.0  | 0.8− | 2007 12 04 | 699 | 0.7− | 0.4− |
| 2007 11 02 | 691 | 0.2−  | 0.1+  | 2007 11 14 | 300 | 0.6+ | 0.3− | 2007 12 04 | 699 | 0.6− | 0.0  |
| 2007 11 02 | 691 | 0.0   | 0.2+  | 2007 11 14 | 300 | 0.4+ | 0.1− |            |     |      |      |

2007 VR<sub>189</sub> = 2005 MH<sub>19</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 141.73878  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.18262419 | $\omega$ | 169.59513 | +0.02078640  | +0.98197590  |
| $a$ | 3.0767852  | $\Omega$ | 101.40788 | −0.93050176  | +0.08773082  |
| $e$ | 0.0560004  | $i$      | 11.04885  | −0.36569715  | −0.16741158  |
| $P$ | 5.40       | $H$      | 15.5      | $G$ 0.15     | $U$ 0        |

## Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 23 | 644 | 0.3−  | 0.7+  | 2007 10 17 | G96 | 0.5+ | 0.1+ | 2007 11 17 | 703 | 0.2− | 0.3+ |
| 2001 10 23 | 644 | 0.1−  | 0.6+  | 2007 10 17 | G96 | 0.1+ | 0.0  | 2007 11 17 | 703 | 0.9− | 1.1+ |
| 2001 10 23 | 644 | 0.3−  | 0.5+  | 2007 10 17 | G96 | 0.1+ | 0.1+ | 2007 11 17 | 703 | 0.6− | 0.4+ |
| 2004 01 28 | 645 | 0.0   | 0.1+  | 2007 10 17 | G96 | 0.3− | 0.2+ | 2007 11 17 | 703 | 0.1− | 0.7+ |
| 2004 01 28 | 645 | 0.0   | 0.1+  | 2007 11 04 | G96 | 0.4+ | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.3− |
| 2005 06 24 | 644 | 0.5+  | 0.2+  | 2007 11 04 | G96 | 0.5+ | 0.1+ | 2007 11 18 | G96 | 0.4+ | 0.3− |
| 2005 06 24 | 644 | 0.2+  | 0.0   | 2007 11 04 | G96 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.6+ | 0.2− |
| 2005 06 24 | 644 | 0.2+  | 0.1+  | 2007 11 04 | G96 | 0.3+ | 0.3+ | 2007 11 18 | G96 | 0.9+ | 0.4− |
| 2005 06 29 | 691 | 0.2−  | 0.2+  | 2007 11 12 | H01 | 0.0  | 0.2+ | 2007 11 20 | H01 | 0.1− | 0.0  |
| 2005 06 29 | 691 | 0.0   | 0.1+  | 2007 11 12 | H01 | 0.1+ | 0.3+ | 2007 11 20 | H01 | 0.0  | 0.1+ |
| 2005 06 29 | 691 | 0.2−  | 0.2+  | 2007 11 12 | H01 | 0.1+ | 0.3+ | 2007 11 20 | H01 | 0.1− | 0.2+ |
| 2005 07 03 | 691 | 0.3+  | 0.2+  | 2007 11 12 | H01 | 0.0  | 0.4+ | 2007 11 20 | H01 | 0.0  | 0.2+ |
| 2005 07 03 | 691 | 0.1+  | 0.1+  | 2007 11 12 | H01 | 0.1+ | 0.3+ | 2007 12 03 | 704 | 0.5− | 0.1+ |
| 2005 07 03 | 691 | 0.1+  | 0.2+  | 2007 11 15 | H01 | 0.5− | 0.4+ | 2007 12 03 | 704 | 0.4− | 0.1− |
| 2006 09 26 | 703 | (1.9+ | 1.3−) | 2007 11 15 | H01 | 0.3+ | 0.1− | 2007 12 03 | 704 | 1.0− | 0.0  |
| 2006 09 26 | 703 | 0.6−  | 0.5+  | 2007 11 15 | H01 | 0.3+ | 0.2− | 2007 12 03 | 704 | 0.5− | 1.4− |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 26 | 703 | (1.5− | 0.2−) | 2007 11 15 | H01 | 0.2+ | 0.0  | 2007 12 03 | 704 | 1.1− | 0.4− |
| 2006 09 26 | 703 | 0.1+  | 0.1−  | 2007 11 15 | H01 | 0.0  | 0.4+ |            |     |      |      |

2007 VX<sub>189</sub> = 2005 JA<sub>157</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 87.86309   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17005504 | $\omega$ | 67.69516  | +0.56512382 | +0.78042204 |
| $a$ | 3.2265846  | $\Omega$ | 239.49955 | −0.82382846 | +0.51650021 |
| $e$ | 0.1288458  | $i$      | 18.08959  | −0.04406514 | +0.35237618 |
| $P$ | 5.80       | $H$      | 14.9      | $G$ 0.15    | $U$ 2       |

## Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |       |       |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 05 04 | 644 | 0.1+  | 0.7+  | 2006 08 13 | 644 | 0.4+  | 0.1−  | 2007 11 15 | 704 | 0.2+  | 0.1+  |
| 2005 05 04 | 644 | 0.2−  | 0.4+  | 2006 08 13 | 644 | 0.3+  | 0.1−  | 2007 11 15 | 704 | 0.1−  | 0.8+  |
| 2005 05 04 | 644 | 0.0   | 0.6+  | 2006 08 13 | 644 | 0.2+  | 0.0   | 2007 11 15 | 704 | 0.6+  | 0.2+  |
| 2005 05 19 | 644 | 0.3−  | 0.2+  | 2007 10 31 | 691 | 0.0   | 0.0   | 2007 11 15 | 704 | 0.1−  | 0.1−  |
| 2005 05 19 | 644 | 0.7−  | 0.5+  | 2007 10 31 | 691 | 0.1−  | 0.0   | 2007 11 16 | J75 | (1.9− | 0.3−) |
| 2005 05 19 | 644 | 0.5−  | 0.5+  | 2007 10 31 | 691 | 0.2+  | 0.1−  | 2007 11 16 | J75 | 0.6−  | 0.7−  |
| 2005 06 14 | 699 | 0.3+  | 0.1−  | 2007 11 13 | 699 | (0.9+ | 2.1−) | 2007 12 03 | 703 | 0.9+  | 0.1−  |
| 2005 06 14 | 699 | 0.5+  | 0.1+  | 2007 11 13 | 699 | 0.4−  | 0.2−  | 2007 12 03 | 703 | 0.3−  | 0.9+  |
| 2005 06 14 | 699 | 0.9+  | 0.0   | 2007 11 13 | 699 | 0.4+  | 0.3+  | 2007 12 03 | 703 | 0.6−  | 0.5+  |
| 2005 06 14 | 699 | (1.8− | 1.0−) | 2007 11 13 | 699 | 0.7+  | 0.4+  | 2007 12 03 | 703 | 0.8−  | 0.0   |
| 2006 05 30 | 703 | 1.2−  | 0.2−  | 2007 11 14 | J75 | 0.1+  | 0.7+  | 2007 12 05 | 691 | 0.3−  | 0.2−  |
| 2006 05 30 | 703 | 0.8−  | 0.3+  | 2007 11 14 | J75 | 0.5+  | 0.9+  | 2007 12 05 | 691 | 0.0   | 0.1−  |
| 2006 05 30 | 703 | 1.2+  | 0.1+  | 2007 11 14 | J75 | 0.0   | 1.0+  | 2007 12 05 | 691 | 0.3−  | 0.2+  |
| 2006 05 30 | 703 | 0.7−  | 1.1+  | 2007 11 14 | J75 | 0.9+  | 0.7−  | 2007 12 15 | 691 | 0.1+  | 0.1+  |
| 2006 06 21 | 703 | 0.3−  | 0.6−  | 2007 11 15 | J75 | 1.5+  | 0.0   | 2007 12 15 | 691 | 0.1−  | 0.0   |
| 2006 06 21 | 703 | 0.2+  | 0.2−  | 2007 11 15 | J75 | (1.7+ | 0.2−) | 2007 12 15 | 691 | 0.2−  | 0.1−  |
| 2006 06 21 | 703 | 0.6+  | 0.6+  | 2007 11 15 | J75 | 0.1−  | 0.1−  |            |     |       |       |
| 2006 06 21 | 703 | 0.4−  | 0.4−  | 2007 11 15 | 704 | 0.3+  | 0.8+  |            |     |       |       |

2007 VQ<sub>190</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 13.05480   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18278846 | $\omega$ | 256.77239 | +0.85280821 | −0.50461092 |
| $a$ | 3.0749415  | $\Omega$ | 133.34286 | +0.52137109 | +0.80798458 |
| $e$ | 0.2042937  | $i$      | 10.65641  | +0.02983881 | +0.30418538 |
| $P$ | 5.39       | $H$      | 15.8      | $G$ 0.15    | $U$ 5       |

## Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 23 | 699 | 0.3− | 0.9+ | 2007 11 13 | 703 | 0.4+ | 0.2− | 2007 11 14 | 701 | 0.1+ | 0.1− |
| 2001 08 23 | 699 | 0.6+ | 0.5− | 2007 11 13 | 703 | 0.9− | 0.6+ | 2007 11 15 | 701 | 0.0  | 0.0  |
| 2001 08 23 | 699 | 0.1+ | 0.1+ | 2007 11 13 | 703 | 0.7− | 0.2− | 2007 11 15 | 701 | 0.5− | 0.2+ |
| 2001 08 23 | 699 | 0.2+ | 0.5− | 2007 11 14 | 701 | 1.1+ | 0.1− | 2007 11 15 | 701 | 0.2+ | 0.1+ |
| 2001 09 10 | 699 | 1.6+ | 0.6+ | 2007 11 14 | 704 | 0.2+ | 0.3+ | 2007 11 15 | 699 | 0.7− | 1.4− |
| 2001 09 10 | 699 | 0.5− | 0.1+ | 2007 11 14 | G96 | 0.2− | 0.1− | 2007 11 15 | 701 | 0.5− | 0.1− |
| 2001 09 10 | 699 | 1.0− | 0.2+ | 2007 11 14 | 701 | 1.8+ | 0.1+ | 2007 11 15 | 701 | 0.2+ | 0.5− |
| 2001 09 10 | 699 | 0.8− | 0.9− | 2007 11 14 | G96 | 0.2− | 0.1− | 2007 11 15 | 699 | 0.4+ | 0.2+ |
| 2007 11 05 | 703 | 0.2− | 1.1+ | 2007 11 14 | G96 | 0.3− | 0.1− | 2007 11 15 | 701 | 0.1− | 0.4+ |
| 2007 11 05 | 703 | 0.0  | 1.7− | 2007 11 14 | 704 | 0.8+ | 0.0  | 2007 11 15 | 701 | 0.3− | 0.0  |
| 2007 11 05 | 703 | 0.8+ | 0.5+ | 2007 11 14 | G96 | 0.3− | 0.1− | 2007 11 15 | 699 | 1.2+ | 0.1− |
| 2007 11 05 | 703 | 1.0+ | 0.6− | 2007 11 14 | 701 | 0.0  | 0.1− | 2007 11 15 | 701 | 0.0  | 0.0  |
| 2007 11 12 | 703 | 0.4− | 0.9+ | 2007 11 14 | 704 | 0.4− | 0.1− | 2007 11 15 | 699 | 0.0  | 0.2+ |
| 2007 11 12 | 703 | 0.3− | 0.0  | 2007 11 14 | 704 | 0.4+ | 0.5− | 2007 11 15 | 701 | 0.1− | 0.0  |
| 2007 11 12 | 703 | 0.3− | 0.8− | 2007 11 14 | 701 | 0.2− | 0.1− | 2007 11 15 | 701 | 0.0  | 0.4+ |
| 2007 11 12 | 703 | 0.4+ | 1.0− | 2007 11 14 | 704 | 0.6+ | 0.6+ | 2007 11 17 | 701 | 0.0  | 0.2+ |
| 2007 11 12 | 703 | 1.4− | 0.0  | 2007 11 14 | 701 | 0.3− | 0.3+ | 2007 11 17 | 701 | 0.0  | 0.1+ |
| 2007 11 12 | 703 | 0.3− | 0.1− | 2007 11 14 | 701 | 0.0  | 0.0  | 2007 11 17 | 701 | 0.5− | 0.1+ |
| 2007 11 13 | 701 | 0.4− | 0.2+ | 2007 11 14 | 701 | 0.1− | 0.5− | 2007 11 17 | 701 | 0.1− | 0.4+ |
| 2007 11 13 | 701 | 0.4+ | 0.4+ | 2007 11 14 | 701 | 0.5+ | 0.2− | 2007 11 20 | 703 | 0.5− | 0.3+ |
| 2007 11 13 | 701 | 0.2+ | 0.0  | 2007 11 14 | 701 | 0.1+ | 0.1− | 2007 11 20 | 703 | 0.7− | 0.2+ |
| 2007 11 13 | 701 | 0.2+ | 0.3+ | 2007 11 14 | 701 | 0.0  | 0.1− | 2007 11 20 | 703 | 0.8+ | 0.8+ |
| 2007 11 13 | 703 | 0.4− | 0.8+ | 2007 11 14 | 701 | 0.2+ | 0.0  | 2007 11 20 | 703 | 0.4− | 0.3− |

**2007 VS<sub>190</sub> = 2006 HG<sub>118</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.75903   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.30678177 | $\omega$ | 279.26259 | +0.96938397   | +0.23261838 |
| <i>a</i> | 2.1772904  | $\Omega$ | 67.31796  | -0.17819803   | +0.88676832 |
| <i>e</i> | 0.2216445  | <i>i</i> | 4.88903   | -0.16893839   | +0.39941286 |
| <i>P</i> | 3.21       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 30 | 691 | 0.1- | 0.4+ | 2007 11 11 | D35 | 0.4+ | 0.9+ | 2007 12 04 | G96 | 0.1- | 0.3- |
| 2006 04 30 | 691 | 0.4+ | 0.8- | 2007 11 14 | 300 | 0.5+ | 0.2+ | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2006 04 30 | 691 | 0.0  | 0.7- | 2007 11 14 | 300 | 0.6+ | 0.0  | 2007 12 04 | G96 | 0.1- | 0.2- |
| 2006 05 03 | 291 | 0.1- | 0.4+ | 2007 11 14 | 300 | 0.9+ | 0.3+ | 2007 12 04 | G96 | 0.3+ | 0.4- |
| 2006 05 03 | 291 | 0.2+ | 0.5+ | 2007 11 14 | 300 | 0.0  | 0.2- | 2007 12 05 | 704 | 0.3- | 0.1+ |
| 2006 05 03 | 291 | 0.2- | 0.6+ | 2007 11 14 | 300 | 0.0  | 0.2- | 2007 12 05 | 704 | 0.6- | 0.2+ |
| 2006 05 25 | G96 | 0.0  | 0.2- | 2007 11 14 | 300 | 0.2- | 0.2- | 2007 12 05 | 704 | 0.6- | 0.1+ |
| 2006 05 25 | G96 | 0.5- | 0.5- | 2007 11 14 | 300 | 0.3+ | 0.3- | 2007 12 05 | 704 | 0.6- | 0.1+ |
| 2006 05 25 | G96 | 0.4- | 0.1- | 2007 11 17 | 300 | 0.4+ | 0.4+ | 2007 12 05 | 704 | 0.8- | 0.4- |
| 2006 05 25 | G96 | 0.2+ | 0.4- | 2007 11 17 | 300 | 0.1- | 0.1- | 2007 12 14 | 704 | 0.1+ | 0.4- |
| 2007 10 31 | G96 | 0.1+ | 0.1+ | 2007 11 17 | 300 | 0.3+ | 0.3+ | 2007 12 14 | 704 | 1.1+ | 0.1+ |
| 2007 10 31 | G96 | 0.2+ | 0.1- | 2007 11 17 | 300 | 0.2+ | 0.1+ | 2007 12 14 | 704 | 0.4+ | 0.9+ |
| 2007 10 31 | G96 | 0.3+ | 0.1- | 2007 11 17 | 300 | 0.2- | 0.1- | 2007 12 14 | 704 | 0.8+ | 1.0+ |
| 2007 10 31 | G96 | 0.0  | 0.1- | 2007 11 17 | 300 | 0.1- | 0.5- | 2007 12 15 | G96 | 0.1+ | 0.2- |
| 2007 11 08 | 691 | 0.3- | 0.1+ | 2007 11 17 | 300 | 0.3+ | 0.0  | 2007 12 15 | G96 | 0.1- | 0.3- |
| 2007 11 08 | 691 | 0.3- | 0.2- | 2007 11 17 | 300 | 0.2+ | 0.4- | 2007 12 15 | G96 | 0.0  | 0.3- |
| 2007 11 08 | 691 | 0.3- | 0.1- | 2007 11 19 | 691 | 0.1- | 0.1- | 2007 12 15 | G96 | 0.2- | 0.3- |
| 2007 11 11 | D35 | 0.3+ | 0.0  | 2007 11 19 | 691 | 0.1+ | 0.1+ |            |     |      |      |
| 2007 11 11 | D35 | 0.0  | 0.9+ | 2007 11 19 | 691 | 0.0  | 0.1+ |            |     |      |      |

**2007 VT<sub>190</sub> = 1998 DY<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 328.26177  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17542513 | $\omega$ | 338.12882 | -0.05981274   | -0.99705700 |
| <i>a</i> | 3.1603960  | $\Omega$ | 115.27304 | +0.92351835   | -0.07350728 |
| <i>e</i> | 0.1042806  | <i>i</i> | 3.03994   | +0.37886184   | +0.02177208 |
| <i>P</i> | 5.62       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 26 | 691 | 0.8+ | 0.3- | 2003 02 10 | 291 | 0.2+ | 0.5+ | 2007 11 08 | 691 | 0.3- | 0.1+ |
| 1998 02 26 | 691 | 0.9+ | 0.0  | 2004 04 14 | 691 | 0.0  | 0.5+ | 2007 11 08 | 691 | 0.0  | 0.1+ |
| 1998 02 26 | 691 | 1.3+ | 0.1+ | 2004 04 14 | 691 | 0.0  | 0.6+ | 2007 11 11 | D35 | 0.6+ | 0.1+ |
| 1998 03 04 | 691 | 1.3- | 0.6+ | 2004 04 14 | 691 | 0.3+ | 0.6+ | 2007 11 11 | D35 | 0.0  | 0.1+ |
| 1998 03 04 | 691 | 0.8- | 0.2- | 2006 08 28 | 691 | 0.1- | 0.6+ | 2007 11 11 | D35 | 0.6+ | 0.4- |
| 1998 03 04 | 691 | 0.7- | 0.1+ | 2006 08 28 | 691 | 0.1- | 0.7+ | 2007 11 14 | 704 | 1.0+ | 0.1+ |
| 2001 10 24 | 691 | 0.2- | 0.0  | 2006 08 28 | 691 | 0.0  | 0.5+ | 2007 11 14 | 704 | 0.4+ | 0.5- |
| 2001 10 24 | 691 | 0.2- | 0.3+ | 2007 10 31 | 691 | 0.3- | 0.2+ | 2007 11 14 | 704 | 0.5+ | 0.6- |
| 2001 10 24 | 691 | 0.0  | 0.1+ | 2007 10 31 | 691 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.1- | 0.3+ |
| 2003 02 10 | 291 | 0.2+ | 0.2+ | 2007 10 31 | 691 | 0.3- | 0.1+ | 2007 11 19 | 691 | 0.1- | 0.1+ |
| 2003 02 10 | 291 | 0.1+ | 0.1+ | 2007 11 08 | 691 | 0.1+ | 0.0  | 2007 11 19 | 691 | 0.1- | 0.0  |

**2007 VP<sub>191</sub> = 2003 YX<sub>103</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 66.38590   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26822154 | $\omega$ | 277.93333 | +0.98797160   | -0.08402825 |
| <i>a</i> | 2.3812607  | $\Omega$ | 86.95407  | +0.12979188   | +0.90695206 |
| <i>e</i> | 0.1908882  | <i>i</i> | 7.46939   | -0.08406058   | +0.41276776 |
| <i>P</i> | 3.67       | <i>H</i> | 17.2      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 12 03 | 691 | 0.7+ | 0.8- | 2003 12 21 | 704 | 0.3+ | 0.4+ | 2007 11 11 | G96 | 0.0   | 0.5+  |
| 1996 12 03 | 691 | 1.0- | 0.7- | 2003 12 23 | 704 | 0.4+ | 0.3+ | 2007 11 11 | G96 | 0.3+  | 0.8+  |
| 1996 12 03 | 691 | 0.1+ | 0.1- | 2003 12 23 | 704 | 0.5- | 1.4+ | 2007 11 11 | G96 | 0.1-  | 0.7+  |
| 2003 12 14 | 691 | 0.0  | 0.2- | 2003 12 23 | 704 | 0.2- | 1.1- | 2007 11 11 | G96 | 0.3-  | 0.8+  |
| 2003 12 14 | 691 | 0.2+ | 0.1- | 2003 12 23 | 704 | 0.6+ | 0.1- | 2007 12 06 | G96 | (0.3- | 2.0+) |
| 2003 12 14 | 691 | 0.2+ | 0.2- | 2007 11 04 | G96 | 0.1+ | 0.9+ | 2007 12 06 | G96 | 0.2+  | 0.9+  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 704 | 0.9- | 0.4+ | 2007 11 04 | G96 | 0.2+ | 0.4+ | 2007 12 06 | G96 | 0.2+ | 1.3+ |
| 2003 12 21 | 704 | 0.1- | 0.0  | 2007 11 04 | G96 | 0.2- | 0.1+ | 2007 12 06 | G96 | 0.2+ | 0.9+ |
| 2003 12 21 | 704 | 0.7- | 0.1- | 2007 11 04 | G96 | 0.3+ | 1.0+ |            |     |      |      |

**2007 VT<sub>191</sub> = 2002 RP<sub>131</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 53.46268   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23496335 | $\omega$ | 105.64380 | +0.88427623   | -0.43728806 |
| <i>a</i> | 2.6009737  | $\Omega$ | 280.52351 | +0.33852776   | +0.84195270 |
| <i>e</i> | 0.1417219  | <i>i</i> | 9.59109   | +0.32164343   | +0.31606141 |
| <i>P</i> | 4.19       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 11 | 644 | 0.1+ | 0.0  | 2007 10 15 | G96 | 0.1- | 0.2- | 2007 11 11 | G96 | 0.2- | 0.1- |
| 2002 09 11 | 644 | 0.0  | 0.0  | 2007 10 15 | G96 | 0.1- | 0.1- | 2007 11 11 | G96 | 0.3- | 0.0  |
| 2002 09 11 | 644 | 0.0  | 0.0  | 2007 11 04 | G96 | 0.1+ | 0.4- | 2007 11 21 | G96 | 0.6+ | 0.0  |
| 2002 09 12 | 644 | 0.1+ | 0.2+ | 2007 11 04 | G96 | 0.1- | 0.3+ | 2007 11 21 | G96 | 0.0  | 0.4+ |
| 2002 09 12 | 644 | 0.0  | 0.1+ | 2007 11 04 | G96 | 0.1- | 0.3- | 2007 11 21 | G96 | 0.1- | 0.8+ |
| 2002 09 12 | 644 | 0.1- | 0.1- | 2007 11 04 | G96 | 0.2- | 0.1+ | 2007 11 21 | G96 | 0.3+ | 0.1+ |
| 2007 10 15 | G96 | 0.0  | 0.3- | 2007 11 11 | G96 | 0.1+ | 0.1- |            |     |      |      |
| 2007 10 15 | G96 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.1- | 0.3- |            |     |      |      |

**2007 VP<sub>192</sub> = 1998 XT<sub>56</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 25.96735   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22390437 | $\omega$ | 313.86368 | +0.70614844   | -0.68094635 |
| <i>a</i> | 2.6859278  | $\Omega$ | 90.09361  | +0.69248447   | +0.60698057 |
| <i>e</i> | 0.2410503  | <i>i</i> | 11.19091  | +0.14771471   | +0.40973974 |
| <i>P</i> | 4.40       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 12 15 | 704 | 0.9-  | 1.4-  | 2007 11 04 | G96 | 0.2- | 0.3- | 2007 12 04 | 691 | 0.3- | 0.1- |
| 1998 12 15 | 704 | (0.9- | 2.3-) | 2007 11 04 | G96 | 0.1+ | 0.2- | 2007 12 04 | 691 | 0.3- | 0.1- |
| 1998 12 15 | 704 | 0.7+  | 0.2+  | 2007 11 11 | G96 | 0.1- | 0.5- | 2007 12 06 | 704 | 0.0  | 0.6+ |
| 1998 12 16 | 704 | 0.6+  | 0.7-  | 2007 11 11 | G96 | 0.1- | 0.4- | 2007 12 06 | 704 | 0.6- | 0.4+ |
| 1998 12 16 | 704 | 0.6+  | 0.3-  | 2007 11 11 | G96 | 0.0  | 0.4- | 2007 12 06 | 704 | 0.2- | 0.3+ |
| 1998 12 16 | 704 | 0.8-  | 1.3+  | 2007 11 11 | G96 | 0.0  | 0.2- | 2007 12 06 | 704 | 0.3+ | 0.6+ |
| 1998 12 16 | 704 | (2.2+ | 0.1-) | 2007 11 18 | G96 | 0.0  | 0.3- | 2007 12 06 | 704 | 0.7+ | 0.9+ |
| 2002 08 11 | 608 | 0.3-  | 0.2-  | 2007 11 18 | G96 | 0.2- | 0.3- | 2007 12 10 | 704 | 0.4- | 0.6+ |
| 2002 08 11 | 608 | 0.0   | 0.1-  | 2007 11 18 | G96 | 0.3- | 0.3- | 2007 12 10 | 704 | 0.4+ | 0.2+ |
| 2002 08 11 | 608 | 0.1+  | 0.4-  | 2007 11 18 | G96 | 0.0  | 0.3- | 2007 12 10 | 704 | 0.2+ | 0.9+ |
| 2002 09 01 | 644 | 0.0   | 0.4+  | 2007 12 02 | D35 | 0.3+ | 0.0  | 2007 12 10 | 704 | 0.4+ | 0.1+ |
| 2002 09 01 | 644 | 0.2+  | 0.3+  | 2007 12 02 | D35 | 0.7+ | 0.2+ | 2007 12 10 | 704 | 0.3+ | 0.3+ |
| 2002 09 01 | 644 | 0.1-  | 0.4+  | 2007 12 02 | D35 | 0.3+ | 0.0  | 2007 12 15 | 704 | 0.4- | 0.0  |
| 2006 07 04 | D35 | 0.2+  | 0.6+  | 2007 12 04 | 703 | 0.1- | 0.5- | 2007 12 15 | 704 | 0.4+ | 0.5+ |
| 2006 07 04 | D35 | 0.4-  | 0.6+  | 2007 12 04 | 703 | 0.8- | 0.2- | 2007 12 15 | 704 | 0.1+ | 0.5+ |
| 2006 07 04 | D35 | 0.1-  | 0.5+  | 2007 12 04 | 703 | 0.7- | 0.0  | 2007 12 15 | 704 | 0.3+ | 0.6+ |
| 2007 11 04 | G96 | 0.0   | 0.2-  | 2007 12 04 | 703 | 0.1- | 0.0  | 2007 12 15 | 704 | 0.0  | 0.2- |
| 2007 11 04 | G96 | 0.2+  | 0.2-  | 2007 12 04 | 691 | 0.5+ | 0.1+ |            |     |      |      |

**2007 VQ<sub>195</sub> = 2005 JT<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 352.15872  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21403188 | $\omega$ | 4.82533  | +0.51501822   | -0.85607949 |
| <i>a</i> | 2.7679001  | $\Omega$ | 54.18254 | +0.78464458   | +0.45044561 |
| <i>e</i> | 0.0799958  | <i>i</i> | 3.06851  | +0.34509290   | +0.25342980 |
| <i>P</i> | 4.60       | <i>H</i> | 17.3     | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 06 | 644 | 0.4- | 0.9+ | 2007 10 17 | G96 | 0.7- | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2002 10 06 | 644 | 0.1+ | 0.6+ | 2007 10 17 | G96 | 0.3+ | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.1+ |
| 2002 10 06 | 644 | 0.1- | 0.6+ | 2007 10 17 | G96 | 1.5+ | 0.2+ | 2007 11 14 | 704 | 0.0  | 0.3+ |
| 2002 10 10 | 645 | 0.0  | 0.0  | 2007 10 17 | G96 | 0.0  | 0.1- | 2007 11 14 | 704 | 0.1- | 0.2+ |
| 2002 10 10 | 645 | 0.1- | 0.0  | 2007 10 30 | G96 | 0.2+ | 0.1- | 2007 11 14 | 704 | 0.5+ | 0.8- |
| 2004 02 17 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.1- | 2007 11 18 | 691 | 0.4- | 0.1- |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 17 | 691 | 0.1− | 0.3+ | 2007 10 30 | G96 | 0.3+ | 0.3− | 2007 11 18 | 691 | 0.2− | 0.0  |
| 2004 02 17 | 691 | 0.2+ | 0.1− | 2007 10 30 | G96 | 0.1+ | 0.3− | 2007 11 18 | 691 | 0.3− | 0.1+ |
| 2005 05 10 | G96 | 0.8+ | 0.0  | 2007 11 07 | 691 | 0.5− | 0.1+ | 2007 12 04 | 691 | 0.2− | 0.2+ |
| 2005 05 10 | G96 | 0.2+ | 0.3+ | 2007 11 07 | 691 | 0.1+ | 0.0  | 2007 12 04 | 691 | 0.2− | 0.1+ |
| 2005 05 10 | G96 | 0.3+ | 0.2+ | 2007 11 07 | 691 | 0.2− | 0.1− | 2007 12 04 | 691 | 0.1+ | 0.1− |
| 2005 05 10 | G96 | 0.0  | 0.1− | 2007 11 11 | G96 | 0.6+ | 0.3− | 2007 12 15 | G96 | 1.0+ | 0.1− |
| 2005 05 14 | G96 | 0.5− | 0.0  | 2007 11 11 | G96 | 0.6+ | 0.3− | 2007 12 15 | G96 | 0.0  | 0.5− |
| 2005 05 14 | G96 | 0.3+ | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.1+ | 2007 12 15 | G96 | 1.4+ | 0.1− |
| 2005 05 14 | G96 | 0.4− | 0.0  | 2007 11 11 | G96 | 1.1+ | 0.0  | 2007 12 15 | G96 | 0.3+ | 0.5− |
| 2005 05 14 | G96 | 0.6− | 0.1− | 2007 11 14 | 691 | 0.0  | 0.0  |            |     |      |      |

2007 VM<sub>196</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 322.20184  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.20610683 | $\omega$ | 222.94995 | +0.07183606  | −0.98244657  |
| $a$ | 2.8384057  | $\Omega$ | 223.78186 | +0.96923178  | +0.10950055  |
| $e$ | 0.1197420  | $i$      | 14.40732  | +0.23543434  | −0.15102437  |
| $P$ | 4.78       | $H$      | 15.9      | $G$ 0.15     | $U$ 3        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 18 | 809 | 0.5− | 0.2− | 2007 10 21 | 691 | 0.3− | 0.4+ | 2007 11 12 | G96 | 0.0  | 0.2− |
| 2005 01 18 | 809 | 0.0  | 0.6− | 2007 10 30 | G96 | 0.5+ | 0.2− | 2007 11 12 | G96 | 0.1+ | 0.2− |
| 2005 01 18 | 809 | 0.9+ | 0.8− | 2007 10 30 | G96 | 0.3+ | 0.1− | 2007 11 12 | G96 | 0.0  | 0.3− |
| 2005 05 08 | G96 | 0.2− | 0.0  | 2007 10 30 | G96 | 0.7+ | 0.3− | 2007 11 17 | G96 | 0.5+ | 0.2− |
| 2005 05 08 | G96 | 0.3− | 0.3− | 2007 10 30 | G96 | 0.5+ | 0.3− | 2007 11 17 | G96 | 0.2+ | 0.4− |
| 2005 05 08 | G96 | 0.1+ | 0.4− | 2007 11 07 | 703 | 0.1− | 0.3+ | 2007 11 17 | G96 | 0.5+ | 0.3− |
| 2005 05 08 | G96 | 0.1+ | 0.0  | 2007 11 07 | 703 | 0.2− | 0.5+ | 2007 11 17 | G96 | 0.2+ | 0.2− |
| 2007 09 25 | G96 | 0.5+ | 0.3− | 2007 11 07 | 703 | 0.6+ | 0.4− | 2007 11 17 | 703 | 0.4+ | 0.6+ |
| 2007 09 25 | G96 | 0.2+ | 0.0  | 2007 11 07 | 703 | 0.1− | 1.0− | 2007 11 17 | 703 | 0.5+ | 0.4+ |
| 2007 09 25 | G96 | 0.0  | 0.1− | 2007 11 11 | G96 | 0.5+ | 0.4− | 2007 11 17 | 703 | 0.0  | 0.4+ |
| 2007 09 25 | G96 | 0.1− | 0.4− | 2007 11 11 | G96 | 0.0  | 0.3− | 2007 11 17 | 703 | 0.4− | 0.3− |
| 2007 10 20 | 703 | 1.3+ | 0.4− | 2007 11 11 | G96 | 0.5+ | 0.1− | 2007 12 05 | 704 | 0.9− | 0.1+ |
| 2007 10 20 | 703 | 0.6− | 0.1+ | 2007 11 12 | G96 | 0.3− | 0.3− | 2007 12 05 | 704 | 0.2− | 0.4+ |
| 2007 10 20 | 703 | 0.0  | 0.2+ | 2007 11 12 | G96 | 0.5− | 0.2− | 2007 12 05 | 704 | 0.1+ | 1.0+ |
| 2007 10 20 | 703 | 0.9− | 0.2+ | 2007 11 12 | G96 | 0.2− | 0.2− | 2007 12 05 | 704 | 0.2− | 0.4− |
| 2007 10 21 | 691 | 0.3− | 0.1− | 2007 11 12 | G96 | 0.1+ | 0.3− |            |     |      |      |
| 2007 10 21 | 691 | 0.1− | 0.3+ | 2007 11 12 | G96 | 0.5− | 0.3− |            |     |      |      |

2007 VX<sub>196</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 180.83180  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27811572 | $\omega$ | 338.72855 | −0.80492257 | +0.58666404 |
| $a$ | 2.3244437  | $\Omega$ | 237.50331 | −0.52804906 | −0.77662893 |
| $e$ | 0.0839179  | $i$      | 6.05879   | −0.27067295 | −0.22950559 |
| $P$ | 3.54       | $H$      | 17.4      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 10 05 | 691 | 0.2− | 0.1− | 2003 09 30 | 691 | 0.1− | 0.1+ | 2007 11 07 | G96 | 0.2+ | 0.1− |
| 1996 10 05 | 691 | 0.0  | 1.1+ | 2004 12 11 | 691 | 0.1+ | 0.2+ | 2007 11 07 | G96 | 0.2+ | 0.1− |
| 1996 10 05 | 691 | 0.0  | 0.1+ | 2004 12 11 | 691 | 0.0  | 0.2+ | 2007 11 07 | G96 | 0.1+ | 0.0  |
| 2002 04 05 | 644 | 0.2+ | 0.8+ | 2004 12 11 | 691 | 0.9− | 0.0  | 2007 11 11 | G96 | 0.6+ | 0.2+ |
| 2002 04 05 | 644 | 0.6+ | 0.2+ | 2007 10 21 | 691 | 1.0− | 0.4+ | 2007 11 11 | G96 | 0.5+ | 0.3− |
| 2002 04 05 | 644 | 0.2+ | 0.6+ | 2007 10 21 | 691 | 1.1− | 0.3+ | 2007 11 11 | G96 | 0.3+ | 0.2− |
| 2003 09 30 | 691 | 0.4− | 0.1− | 2007 10 21 | 691 | 0.3+ | 0.6+ | 2007 11 11 | G96 | 0.6+ | 0.2− |
| 2003 09 30 | 691 | 0.4− | 0.3+ | 2007 11 07 | G96 | 0.2+ | 0.2+ |            |     |      |      |

2007 VO<sub>197</sub> = 2006 KD<sub>110</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 93.50832   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.27325995 | $\omega$ | 34.80632  | +0.30042639 | +0.95076818 |
| $a$ | 2.3518993  | $\Omega$ | 252.78091 | −0.89218301 | +0.25192718 |
| $e$ | 0.1424395  | $i$      | 4.56674   | −0.33727356 | +0.18047872 |
| $P$ | 3.61       | $H$      | 17.7      | $G$ 0.15    | $U$ 5       |

## M.P.O. 130029

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 31 | G96 | 0.0  | 0.1+ | 2007 10 11 | 691 | 0.2+ | 0.6− | 2007 11 08 | G96 | 0.2− | 0.1− |
| 2006 05 31 | G96 | 0.0  | 0.3− | 2007 10 11 | 691 | 0.5+ | 0.4− | 2007 11 08 | G96 | 0.0  | 0.3− |
| 2006 05 31 | G96 | 0.1− | 0.1− | 2007 10 11 | 691 | 0.1− | 0.6+ | 2007 11 11 | G96 | 0.1+ | 0.1− |
| 2006 05 31 | G96 | 0.3+ | 0.0  | 2007 10 19 | 691 | 0.1− | 0.2+ | 2007 11 11 | G96 | 0.1− | 0.1+ |
| 2006 06 01 | G96 | 0.1− | 0.5+ | 2007 10 19 | 691 | 0.5− | 0.4+ | 2007 11 11 | G96 | 0.2+ | 0.1+ |
| 2006 06 01 | G96 | 0.2− | 0.0  | 2007 10 19 | 691 | 0.0  | 0.1− | 2007 11 11 | G96 | 0.3+ | 0.1− |
| 2006 06 01 | G96 | 0.2− | 0.2− | 2007 11 08 | G96 | 0.1− | 0.2+ |            |     |      |      |
| 2006 06 01 | G96 | 0.2+ | 0.1− | 2007 11 08 | G96 | 0.2− | 0.1− |            |     |      |      |

2007 VQ<sub>199</sub> = 2007 VX<sub>185</sub> = 2005 JL<sub>76</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 274.34439  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.19865463 | $\omega$ | 252.86565 | −0.64770059 | −0.76173667 |
| $a$ | 2.9089544  | $\Omega$ | 237.51308 | +0.70583723 | −0.59224598 |
| $e$ | 0.0361494  | $i$      | 1.05497   | +0.28684100 | −0.26268222 |
| $P$ | 4.96       | $H$      | 16.7      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 05 09 | G96 | 0.4− | 0.0  | 2007 10 30 | G96 | 0.6− | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.0  |
| 2005 05 09 | G96 | 0.2− | 0.3− | 2007 10 30 | G96 | 0.3− | 0.3− | 2007 11 11 | G96 | 0.5+ | 0.0  |
| 2005 05 09 | G96 | 0.2− | 0.2− | 2007 11 09 | G96 | 0.0  | 0.2− | 2007 11 11 | G96 | 0.7+ | 0.3+ |
| 2005 05 09 | G96 | 0.4− | 0.3− | 2007 11 09 | G96 | 0.2− | 0.2− | 2007 11 11 | G96 | 0.4+ | 0.1+ |
| 2005 05 11 | 691 | 0.3+ | 0.1+ | 2007 11 09 | G96 | 0.2− | 0.2− | 2007 11 11 | G96 | 0.5+ | 0.5− |
| 2005 05 11 | 691 | 0.2+ | 0.1+ | 2007 11 09 | G96 | 0.4− | 0.1− | 2007 11 11 | G96 | 0.7+ | 0.1− |
| 2005 05 11 | 691 | 0.3− | 0.2− | 2007 11 09 | G96 | 0.2+ | 0.1+ | 2007 11 17 | G96 | 0.1− | 0.3+ |
| 2007 10 16 | 691 | 0.1− | 0.2+ | 2007 11 09 | G96 | 0.0  | 0.1+ | 2007 11 17 | G96 | 1.0− | 0.5− |
| 2007 10 16 | 691 | 0.3+ | 0.2− | 2007 11 09 | G96 | 0.2− | 0.1− | 2007 11 17 | G96 | 0.4− | 0.3− |
| 2007 10 16 | 691 | 0.3− | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.1+ | 2007 11 17 | G96 | 0.7− | 0.0  |
| 2007 10 30 | G96 | 0.2− | 0.0  | 2007 11 11 | G96 | 0.4+ | 0.3− |            |     |      |      |
| 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 11 11 | G96 | 0.6+ | 0.0  |            |     |      |      |

2007 VZ<sub>201</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 250.04214  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.26942194 | $\omega$ | 333.87259 | −0.97413036 | −0.22433253 |
| $a$ | 2.3741823  | $\Omega$ | 193.24986 | +0.22253900 | −0.93122937 |
| $e$ | 0.0579146  | $i$      | 6.83928   | +0.03932476 | −0.28720511 |
| $P$ | 3.66       | $H$      | 16.6      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 291 | 0.1− | 0.0  | 2007 10 20 | G96 | 0.0  | 0.0  | 2007 11 12 | G96 | 0.0  | 0.1− |
| 2003 09 18 | 291 | 0.0  | 0.1+ | 2007 10 20 | G96 | 0.1+ | 0.1+ | 2007 11 18 | G96 | 0.8+ | 0.1+ |
| 2003 09 18 | 291 | 0.1+ | 0.1− | 2007 10 20 | G96 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.6+ | 0.3+ |
| 2003 09 30 | 691 | 0.1− | 0.1− | 2007 11 05 | 691 | 0.3− | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.1+ |
| 2003 09 30 | 691 | 0.2+ | 0.1+ | 2007 11 05 | 691 | 0.1− | 0.0  | 2007 11 20 | 703 | 0.6− | 0.2+ |
| 2003 09 30 | 691 | 0.1+ | 0.1+ | 2007 11 05 | 691 | 0.1− | 0.3− | 2007 11 20 | 703 | 0.5+ | 0.5− |
| 2003 10 24 | 695 | 0.2− | 0.1− | 2007 11 12 | G96 | 0.1+ | 0.2− | 2007 11 20 | 703 | 1.1+ | 0.5+ |
| 2003 10 24 | 695 | 0.4− | 0.1− | 2007 11 12 | G96 | 0.3− | 0.4− | 2007 11 20 | 703 | 0.5− | 0.8+ |
| 2007 10 20 | G96 | 0.1− | 0.0  | 2007 11 12 | G96 | 0.2− | 0.3− |            |     |      |      |

2007 VG<sub>202</sub> = 2002 TC<sub>371</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 16.97211   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.20049801 | $\omega$ | 248.52256 | +0.97411825 | −0.18950884 |
| $a$ | 2.8910971  | $\Omega$ | 122.20895 | +0.21989164 | +0.92073491 |
| $e$ | 0.3457440  | $i$      | 8.37296   | −0.05235734 | +0.34107715 |
| $P$ | 4.92       | $H$      | 17.6      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |     |            |     |      |      |            |     |      |      |
|------------|-----|------|-----|------------|-----|------|------|------------|-----|------|------|
| 2002 10 10 | 645 | 0.0  | 0.0 | 2007 11 05 | D29 | 0.4− | 0.1− | 2007 11 14 | G96 | 0.0  | 0.5− |
| 2002 10 10 | 645 | 0.0  | 0.0 | 2007 11 05 | D29 | 0.1+ | 0.2− | 2007 11 14 | G96 | 0.2+ | 0.4− |
| 2002 10 11 | 645 | 0.0  | 0.0 | 2007 11 05 | D29 | 0.9+ | 0.3+ | 2007 11 14 | G96 | 0.2+ | 0.6− |
| 2002 10 11 | 645 | 0.0  | 0.0 | 2007 11 05 | D29 | 0.1+ | 0.3− | 2007 11 14 | G96 | 0.0  | 0.5− |
| 2002 10 31 | 645 | 0.1+ | 0.0 | 2007 11 12 | 703 | 0.8− | 0.6+ | 2007 11 20 | 703 | 0.3+ | 1.0+ |

|            |     |      |     |            |     |       |       |            |     |      |      |
|------------|-----|------|-----|------------|-----|-------|-------|------------|-----|------|------|
| 2002 10 31 | 645 | 0.1+ | 0.0 | 2007 11 12 | 703 | (2.3− | 0.6+) | 2007 11 20 | 703 | 1.1− | 0.5− |
| 2002 11 07 | 645 | 0.0  | 0.0 | 2007 11 12 | 703 | 0.4+  | 0.3+  | 2007 11 20 | 703 | 0.4+ | 0.2− |
| 2002 11 07 | 645 | 0.1− | 0.0 | 2007 11 12 | 703 | 0.6−  | 0.3+  | 2007 11 20 | 703 | 0.3+ | 0.6+ |

**2007 VH<sub>202</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 25.37722   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18108880 | $\omega$ | 338.79863 | +0.98991647 | −0.11875973 |
| $a$ | 3.0941521  | $\Omega$ | 28.36185  | +0.14162726 | +0.84004050 |
| $e$ | 0.3023271  | $i$      | 9.35412   | −0.00266436 | +0.52936574 |
| $P$ | 5.44       | $H$      | 15.9      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 03 | 644 | 0.3+ | 0.1− | 2001 10 10 | 644 | 0.1− | 0.2+ | 2007 11 12 | G96 | 0.3+ | 0.5− |
| 2001 08 03 | 644 | 0.1− | 0.5− | 2001 10 10 | 644 | 0.1+ | 0.2− | 2007 11 12 | G96 | 0.1+ | 0.3− |
| 2001 08 03 | 644 | 0.3+ | 0.1− | 2001 10 10 | 644 | 0.6+ | 0.4− | 2007 11 12 | G96 | 0.2+ | 0.3− |
| 2001 08 10 | 644 | 0.2+ | 0.2− | 2007 08 22 | 691 | 0.1− | 0.6− | 2007 11 12 | G96 | 0.1− | 0.5− |
| 2001 08 10 | 644 | 0.1− | 0.5− | 2007 08 22 | 691 | 0.7+ | 0.7+ | 2007 11 13 | 703 | 0.7+ | 0.4− |
| 2001 08 10 | 644 | 0.0  | 0.0  | 2007 08 22 | 691 | 0.3− | 0.4− | 2007 11 13 | 703 | 0.8+ | 0.3− |
| 2001 08 27 | 644 | 0.2− | 0.3+ | 2007 10 21 | G96 | 0.2+ | 0.4− | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2001 08 27 | 644 | 0.2+ | 0.3+ | 2007 10 21 | G96 | 0.3+ | 0.3− | 2007 11 19 | 691 | 0.0  | 0.0  |
| 2001 08 27 | 644 | 0.1− | 0.3+ | 2007 10 21 | G96 | 0.4+ | 0.2− | 2007 11 19 | 691 | 0.0  | 0.2− |
| 2001 09 09 | 644 | 0.4− | 0.9+ | 2007 11 06 | 691 | 0.1− | 0.2+ | 2007 12 16 | 704 | 0.1+ | 0.7+ |
| 2001 09 09 | 644 | 0.5− | 0.5+ | 2007 11 06 | 691 | 0.0  | 0.2− | 2007 12 16 | 704 | 1.2− | 0.6+ |
| 2001 09 09 | 644 | 0.4− | 0.3+ | 2007 11 06 | 691 | 0.2− | 0.4+ | 2007 12 16 | 704 | 1.3− | 1.7+ |

**2007 VA<sub>204</sub> = 2005 AV<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 23.70588   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.28619463 | $\omega$ | 279.84276 | +0.95509083 | −0.28206423 |
| $a$ | 2.2804912  | $\Omega$ | 96.58312  | +0.29482259 | +0.87389756 |
| $e$ | 0.1294040  | $i$      | 5.24324   | +0.02968425 | +0.39590760 |
| $P$ | 3.44       | $H$      | 16.9      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 11 20 | 699 | 0.1+ | 0.3+ | 2007 10 31 | 703 | (1.5+ | 1.0+) | 2007 11 12 | G96 | 0.2+ | 0.2− |
| 2000 11 20 | 699 | 0.6− | 0.2+ | 2007 10 31 | 703 | 1.4+  | 0.6+  | 2007 11 12 | G96 | 0.4+ | 0.3− |
| 2000 11 20 | 699 | 0.2− | 0.3+ | 2007 10 31 | 703 | 0.9−  | 0.2+  | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2000 11 20 | 699 | 0.5+ | 0.1− | 2007 10 31 | 703 | 1.4−  | 0.7+  | 2007 11 13 | 691 | 0.1− | 0.0  |
| 2005 01 15 | 691 | 0.0  | 0.1+ | 2007 11 09 | 691 | 0.2−  | 0.0   | 2007 11 13 | 691 | 0.2− | 0.1− |
| 2005 01 15 | 691 | 0.3− | 0.3+ | 2007 11 09 | 691 | 0.1−  | 0.1−  | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2005 01 15 | 691 | 0.1+ | 0.3+ | 2007 11 09 | 691 | 0.1−  | 0.2−  | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2005 01 16 | 704 | 0.5+ | 0.5+ | 2007 11 09 | 703 | 0.2−  | 0.7+  | 2007 11 20 | 691 | 0.2− | 0.2− |
| 2005 01 16 | 704 | 0.5− | 0.5+ | 2007 11 09 | 703 | 0.7+  | 0.4+  | 2007 12 05 | 699 | 1.0+ | 0.2+ |
| 2005 01 16 | 704 | 0.2− | 0.4− | 2007 11 09 | 703 | 0.6+  | 0.0   | 2007 12 05 | 699 | 0.1− | 0.2+ |
| 2005 01 18 | 691 | 0.1− | 0.3− | 2007 11 09 | 703 | 1.1+  | 0.3+  | 2007 12 05 | 699 | 1.2+ | 0.2− |
| 2005 01 18 | 691 | 0.1+ | 0.2− | 2007 11 12 | G96 | 0.4+  | 0.2−  | 2007 12 05 | 699 | 0.5+ | 0.2+ |
| 2005 01 18 | 691 | 0.2+ | 0.2− | 2007 11 12 | G96 | 0.3+  | 0.2−  |            |     |      |      |

**2007 VE<sub>204</sub> = 2004 JQ<sub>54</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 272.20882  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.17384743 | $\omega$ | 97.99787 | −0.85797454 | −0.31984702 |
| $a$ | 3.1794881  | $\Omega$ | 64.14397 | +0.06367798 | −0.84269201 |
| $e$ | 0.2073836  | $i$      | 26.53109 | +0.50973013 | −0.43309128 |
| $P$ | 5.67       | $H$      | 15.2     | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 05 09 | 691 | 0.0  | 0.3+ | 2007 10 14 | G96 | 0.0  | 0.7− | 2007 11 12 | G96 | 0.2+ | 0.4+ |
| 2004 05 09 | 691 | 0.2− | 0.2+ | 2007 10 14 | G96 | 0.0  | 0.1− | 2007 11 12 | G96 | 0.0  | 0.6+ |
| 2004 05 09 | 691 | 0.2− | 0.2+ | 2007 10 14 | G96 | 0.2− | 0.2− | 2007 11 12 | G96 | 0.4− | 0.5+ |
| 2004 05 17 | 704 | 0.3− | 0.5+ | 2007 10 14 | G96 | 0.2+ | 0.1− | 2007 11 12 | G96 | 0.1+ | 0.3+ |
| 2004 05 17 | 704 | 0.4+ | 1.1+ | 2007 10 14 | G96 | 0.0  | 0.3− | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 2004 05 17 | 704 | 0.5− | 0.1+ | 2007 10 14 | G96 | 0.0  | 0.1− | 2007 11 13 | 691 | 0.2− | 0.1+ |
| 2004 05 17 | 704 | 1.0− | 0.1− | 2007 10 14 | G96 | 0.4+ | 0.3− | 2007 11 13 | 691 | 0.2− | 0.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 06 12 | E12 | 0.6+ | 0.5− | 2007 10 14 | G96 | 0.8+ | 0.3− | 2007 11 20 | 691 | 0.4− | 0.2− |
| 2004 06 12 | E12 | 0.6+ | 0.2− | 2007 11 09 | 691 | 0.4− | 0.4+ | 2007 11 20 | 691 | 0.3+ | 0.1+ |
| 2004 06 12 | E12 | 0.8+ | 0.5− | 2007 11 09 | 691 | 0.3− | 0.2+ | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2004 06 12 | E12 | 0.9+ | 0.2− | 2007 11 09 | 691 | 0.6− | 0.2+ |            |     |      |      |

**2007 VD<sub>205</sub> = 2005 ES<sub>315</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |     |   |
|-----|------------|----------|-----------|-------------|-------------|-----|---|
| $M$ | 218.82846  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |     |   |
| $n$ | 0.23403651 | $\omega$ | 138.75411 | −0.98571607 | +0.16097802 |     |   |
| $a$ | 2.6078362  | $\Omega$ | 50.57885  | −0.16638205 | −0.88527357 |     |   |
| $e$ | 0.1194306  | $i$      | 3.67365   | −0.02609311 | −0.43632188 |     |   |
| $P$ | 4.21       | $H$      | 16.8      | $G$         | 0.15        | $U$ | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 11 | 691 | 0.3+ | 0.2+ | 2007 10 07 | G96 | 0.0  | 0.1+ | 2007 11 12 | G96 | 0.3+ | 0.2− |
| 2005 03 11 | 691 | 0.1+ | 0.4+ | 2007 10 07 | G96 | 0.9− | 0.1+ | 2007 11 12 | G96 | 0.2+ | 0.2+ |
| 2005 03 11 | 691 | 0.3+ | 0.3+ | 2007 11 09 | G96 | 0.1+ | 0.3− | 2007 11 12 | G96 | 0.2+ | 0.1+ |
| 2005 03 12 | 695 | 0.3+ | 0.1− | 2007 11 09 | G96 | 0.0  | 0.2− | 2007 11 17 | G96 | 0.3− | 0.0  |
| 2005 03 12 | 695 | 0.1− | 0.0  | 2007 11 09 | G96 | 0.0  | 0.2− | 2007 11 17 | G96 | 0.2− | 0.3− |
| 2005 05 12 | G96 | 0.2− | 0.4− | 2007 11 09 | G96 | 0.1− | 0.4− | 2007 11 17 | G96 | 0.4+ | 0.0  |
| 2005 05 12 | G96 | 0.7− | 0.8− | 2007 11 12 | G96 | 0.2+ | 0.3− | 2007 11 17 | G96 | 0.4− | 0.1+ |
| 2005 05 12 | G96 | 0.3− | 0.4− | 2007 11 12 | G96 | 0.0  | 0.4+ | 2007 11 17 | G96 | 0.5+ | 0.2− |
| 2005 05 12 | G96 | 0.2− | 0.1+ | 2007 11 12 | G96 | 1.6− | 0.7+ | 2007 11 17 | G96 | 0.4+ | 0.0  |
| 2007 10 07 | G96 | 0.4+ | 0.1+ | 2007 11 12 | G96 | 0.0  | 0.3+ | 2007 11 17 | G96 | 0.4+ | 0.2− |
| 2007 10 07 | G96 | 0.1+ | 0.2− | 2007 11 12 | G96 | 0.4+ | 0.3− | 2007 11 17 | G96 | 0.2+ | 0.1− |

**2007 VV<sub>206</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 15.38254   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.20603189 | $\omega$ | 316.60469 | +0.85737839 | −0.47961043 |
| $a$ | 2.8390938  | $\Omega$ | 72.93288  | +0.50926499 | +0.73800470 |
| $e$ | 0.1039862  | $i$      | 11.26544  | +0.07450813 | +0.47468189 |
| $P$ | 4.78       | $H$      | 15.7      | $G$         | 0.15        |
|     |            |          |           | $U$         | 3           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 02 | 608 | 0.3− | 0.0  | 2007 11 03 | 699 | 0.2+ | 1.2− | 2007 11 18 | G96 | 0.2− | 0.4− |
| 2002 10 02 | 608 | 0.5− | 0.4− | 2007 11 03 | 699 | 1.2+ | 0.3− | 2007 11 18 | G96 | 0.0  | 0.2− |
| 2002 10 02 | 608 | 0.3− | 0.1+ | 2007 11 09 | 703 | 0.0  | 1.3+ | 2007 11 18 | G96 | 0.3+ | 0.1− |
| 2002 10 09 | 699 | 0.5− | 0.9− | 2007 11 09 | 703 | 1.4+ | 0.7+ | 2007 11 20 | 691 | 0.5− | 0.1− |
| 2002 10 09 | 699 | 0.5+ | 0.9+ | 2007 11 09 | 703 | 0.1+ | 0.7+ | 2007 11 20 | 691 | 0.1− | 0.0  |
| 2002 10 09 | 699 | 0.2− | 0.2+ | 2007 11 09 | 703 | 0.7− | 0.1+ | 2007 11 20 | 691 | 0.2− | 0.0  |
| 2002 10 09 | 699 | 1.2+ | 0.0  | 2007 11 12 | G96 | 0.1+ | 0.2− | 2007 11 20 | 703 | 0.8− | 0.9+ |
| 2004 01 17 | 644 | 0.2+ | 0.2+ | 2007 11 12 | G96 | 0.1− | 0.3− | 2007 11 20 | 703 | 0.9− | 0.1− |
| 2004 01 17 | 644 | 0.2+ | 0.4+ | 2007 11 12 | G96 | 0.1+ | 0.1− | 2007 11 20 | 703 | 0.6+ | 0.1+ |
| 2004 01 17 | 644 | 0.0  | 0.3+ | 2007 11 12 | G96 | 0.5+ | 0.0  | 2007 11 20 | 703 | 0.0  | 0.9+ |
| 2004 02 11 | 644 | 0.0  | 0.3− | 2007 11 15 | 699 | 0.5− | 0.1+ | 2007 12 05 | 699 | 0.2+ | 0.3+ |
| 2004 02 11 | 644 | 0.3− | 0.5− | 2007 11 15 | 699 | 0.3+ | 1.2− | 2007 12 05 | 699 | 0.4+ | 0.4− |
| 2004 02 11 | 644 | 0.0  | 0.0  | 2007 11 15 | 699 | 0.1+ | 0.6− | 2007 12 05 | 699 | 0.1+ | 0.0  |
| 2007 11 03 | 699 | 0.1+ | 0.1+ | 2007 11 15 | 699 | 0.0  | 0.0  | 2007 12 05 | 699 | 0.2+ | 0.8− |
| 2007 11 03 | 699 | 0.2+ | 1.3+ | 2007 11 18 | G96 | 0.3+ | 0.3− |            |     |      |      |

**2007 VP<sub>208</sub> = 2003 YG<sub>70</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 10.66975   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23854327 | $\omega$ | 282.90778 | +0.86345364 | −0.43015821 |
| $a$ | 2.5748856  | $\Omega$ | 103.08569 | +0.49943017 | +0.80236859 |
| $e$ | 0.1112123  | $i$      | 15.69312  | −0.07083302 | +0.41372522 |
| $P$ | 4.13       | $H$      | 16.0      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 11 18 | 644 | 0.4+ | 0.4− | 2007 10 15 | 703 | 0.1+ | 0.8+ | 2007 11 12 | 703 | 0.1− | 0.7− |
| 2003 11 18 | 644 | 0.4+ | 0.6− | 2007 10 15 | 703 | 0.8+ | 0.3+ | 2007 11 12 | 703 | 0.2+ | 0.4− |
| 2003 11 18 | 644 | 0.4+ | 0.6+ | 2007 10 15 | 703 | 0.7− | 0.8+ | 2007 11 12 | 703 | 0.5+ | 0.2− |
| 2003 12 21 | 608 | 1.4− | 0.9− | 2007 10 15 | 703 | 0.0  | 0.6+ | 2007 11 18 | 703 | 0.2+ | 1.0+ |
| 2003 12 21 | 608 | 0.8− | 0.2− | 2007 11 02 | 703 | 0.0  | 0.0  | 2007 11 18 | 703 | 0.9− | 0.0  |

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|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 21 | 608 | 0.6−  | 0.7−  | 2007 11 02 | 703 | 1.0− | 0.3− | 2007 11 18 | 703 | 0.9+ | 0.1+ |
| 2003 12 22 | 691 | 0.0   | 0.1+  | 2007 11 02 | 703 | 0.3− | 0.1− | 2007 11 18 | 703 | 0.3+ | 0.5+ |
| 2003 12 22 | 691 | 0.2+  | 0.2+  | 2007 11 02 | 703 | 0.9− | 0.3− | 2007 12 06 | 703 | 0.3+ | 0.3+ |
| 2003 12 22 | 691 | 0.2+  | 0.2+  | 2007 11 11 | 703 | 0.4− | 0.6− | 2007 12 06 | 703 | 0.8− | 0.2− |
| 2007 10 10 | 703 | 0.3+  | 0.0   | 2007 11 11 | 703 | 0.0  | 0.2− | 2007 12 06 | 703 | 0.2+ | 0.9+ |
| 2007 10 10 | 703 | 0.9+  | 0.3+  | 2007 11 11 | 703 | 0.2− | 0.2− | 2007 12 06 | 703 | 0.1+ | 0.0  |
| 2007 10 10 | 703 | (1.0+ | 2.0+) | 2007 11 11 | 703 | 0.3− | 0.9− |            |     |      |      |
| 2007 10 10 | 703 | 0.6+  | 0.4−  | 2007 11 12 | 703 | 0.4+ | 0.6− |            |     |      |      |

2007 VU<sub>208</sub> = 2005 EA<sub>312</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 14.99919   | (2000.0) |           |             |             |          |   |
| <i>n</i> | 0.26493801 | $\omega$ | 258.37930 | +0.95465394 | −0.29557267 |          |   |
| <i>a</i> | 2.4008952  | $\Omega$ | 118.80380 | +0.28655146 | +0.87971890 |          |   |
| <i>e</i> | 0.2833921  | <i>i</i> | 2.33323   | +0.08077198 | +0.37246672 |          |   |
| <i>P</i> | 3.72       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 03 10 | G96 | 0.3− | 0.0  | 2007 10 31 | 703 | 0.5−  | 0.9+  | 2007 11 20 | 703 | 0.1−  | 0.3−  |
| 2005 03 10 | G96 | 0.3+ | 0.2+ | 2007 11 12 | 703 | 0.4+  | 0.0   | 2007 11 20 | 703 | 0.9−  | 0.7−  |
| 2005 03 10 | G96 | 0.2+ | 0.1− | 2007 11 12 | 703 | 0.9+  | 0.2+  | 2007 12 03 | 703 | 0.2+  | 0.5−  |
| 2005 03 10 | G96 | 0.0  | 0.0  | 2007 11 12 | 703 | 0.4+  | 0.1−  | 2007 12 03 | 703 | 0.3−  | 0.3−  |
| 2005 03 11 | 695 | 0.1+ | 0.4+ | 2007 11 12 | 703 | 1.1+  | 0.3−  | 2007 12 03 | 703 | 0.4+  | 0.3+  |
| 2005 03 11 | 695 | 0.1− | 0.5+ | 2007 11 13 | H51 | (2.2− | 1.9−) | 2007 12 03 | 703 | 1.1−  | 0.5+  |
| 2006 05 21 | 691 | 0.5+ | 0.2− | 2007 11 13 | H51 | 0.4−  | 1.4−  | 2007 12 04 | 704 | 0.1+  | 1.5+  |
| 2006 05 21 | 691 | 0.6− | 0.3+ | 2007 11 13 | H51 | 0.2−  | 0.9−  | 2007 12 04 | 704 | (0.3− | 3.0+) |
| 2006 05 21 | 691 | 0.4+ | 0.6+ | 2007 11 15 | 699 | 0.4+  | 0.1−  | 2007 12 04 | 704 | 0.3+  | 1.7+  |
| 2007 09 08 | 703 | 0.7+ | 0.3+ | 2007 11 15 | 699 | 0.5+  | 0.5−  | 2007 12 04 | 704 | 0.2−  | 0.3+  |
| 2007 09 08 | 703 | 0.0  | 0.9+ | 2007 11 15 | 699 | 0.0   | 0.2−  | 2007 12 04 | 704 | 0.4−  | 0.7+  |
| 2007 09 08 | 703 | 1.2− | 0.4+ | 2007 11 15 | 699 | 0.5+  | 0.2−  | 2007 12 05 | 699 | 0.8+  | 0.7+  |
| 2007 09 08 | 703 | 0.7+ | 0.7+ | 2007 11 18 | G96 | 0.1+  | 0.2−  | 2007 12 05 | 699 | 0.3−  | 0.4−  |
| 2007 09 20 | 703 | 0.4+ | 0.3− | 2007 11 18 | G96 | 0.1+  | 0.2−  | 2007 12 05 | 699 | 0.7+  | 0.4−  |
| 2007 09 20 | 703 | 0.7− | 0.0  | 2007 11 18 | G96 | 0.1−  | 0.2−  | 2007 12 05 | 699 | 0.5+  | 0.6−  |
| 2007 09 20 | 703 | 0.6− | 0.8+ | 2007 11 18 | G96 | 0.1+  | 0.2−  | 2007 12 05 | 106 | 0.1+  | 0.3−  |
| 2007 09 20 | 703 | 0.7− | 1.3+ | 2007 11 20 | 691 | 0.4−  | 0.1−  | 2007 12 05 | 106 | 0.4+  | 0.8+  |
| 2007 10 31 | 703 | 1.4+ | 0.2− | 2007 11 20 | 691 | 0.2−  | 0.1−  | 2007 12 06 | 106 | 0.4+  | 0.6−  |
| 2007 10 31 | 703 | 0.4+ | 0.2+ | 2007 11 20 | 691 | 0.3−  | 0.1−  | 2007 12 06 | 106 | 0.0   | 0.3+  |
| 2007 10 31 | 703 | 0.8− | 1.2− | 2007 11 20 | 703 | 0.4−  | 0.1+  |            |     |       |       |

2007 VG<sub>213</sub> = 2003 YJ<sub>103</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 291.17939  | (2000.0) |           |             |             |          |   |
| <i>n</i> | 0.23328213 | $\omega$ | 2.50141   | −0.58876659 | −0.80657696 |          |   |
| <i>a</i> | 2.6134552  | $\Omega$ | 123.57330 | +0.74049915 | −0.56441340 |          |   |
| <i>e</i> | 0.0672730  | <i>i</i> | 3.63315   | +0.32406004 | −0.17570178 |          |   |
| <i>P</i> | 4.22       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 12 20 | 704 | 0.5− | 0.1− | 2007 10 20 | 703 | 0.6+ | 0.8+ | 2007 11 15 | 699 | 0.1+  | 0.0   |
| 2003 12 20 | 704 | 0.4− | 0.4− | 2007 11 01 | 691 | 0.1− | 0.0  | 2007 11 18 | G96 | 0.0   | 0.2−  |
| 2003 12 20 | 704 | 0.1− | 0.3− | 2007 11 01 | 691 | 0.1− | 0.0  | 2007 11 18 | G96 | 0.1−  | 0.2−  |
| 2003 12 20 | 704 | 0.4− | 0.1+ | 2007 11 01 | 691 | 0.0  | 0.1+ | 2007 11 18 | G96 | 0.1−  | 0.2−  |
| 2003 12 20 | 704 | 0.2− | 1.2− | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 11 18 | G96 | 0.1+  | 0.4−  |
| 2003 12 23 | 704 | 0.9+ | 0.9+ | 2007 11 09 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.2−  | 0.2−  |
| 2003 12 23 | 704 | 0.1− | 1.0+ | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 11 20 | 703 | 0.3−  | 0.0   |
| 2003 12 23 | 704 | 0.9− | 0.1+ | 2007 11 13 | 691 | 0.0  | 0.0  | 2007 11 20 | 703 | 0.5−  | 0.9+  |
| 2003 12 23 | 704 | 1.3+ | 0.3+ | 2007 11 13 | 691 | 0.1+ | 0.2− | 2007 11 20 | 703 | (1.9+ | 0.2+) |
| 2003 12 23 | 704 | 0.2+ | 0.0  | 2007 11 13 | 691 | 0.1− | 0.1− | 2007 11 20 | 691 | 0.0   | 0.0   |
| 2007 10 20 | 703 | 0.3+ | 0.1− | 2007 11 15 | 699 | 1.2+ | 0.0  | 2007 11 20 | 703 | 1.2+  | 0.5+  |
| 2007 10 20 | 703 | 0.3− | 0.5+ | 2007 11 15 | 699 | 0.1+ | 0.1− | 2007 11 20 | 691 | 0.2+  | 0.1−  |
| 2007 10 20 | 703 | 0.4− | 0.5+ | 2007 11 15 | 699 | 0.7+ | 0.3+ |            |     |       |       |

## M.P.O. 130031

2007 VK<sub>214</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 204.17087  | (2000.0) |           |             |             |          |   |
| <i>n</i> | 0.26702343 | $\omega$ | 121.37134 | −0.84151529 | +0.52387013 |          |   |
| <i>a</i> | 2.3883784  | $\Omega$ | 90.52759  | −0.52957234 | −0.75163799 |          |   |
| <i>e</i> | 0.0986924  | <i>i</i> | 7.58290   | −0.10679491 | −0.40074982 |          |   |
| <i>P</i> | 3.69       | <i>H</i> | 17.1      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 30 | 645 | 0.0  | 0.0  | 2003 10 23 | 645 | 0.1− | 0.1− | 2007 11 13 | 691 | 0.1+ | 0.1− |
| 2003 09 30 | 645 | 0.0  | 0.0  | 2007 11 09 | 691 | 0.2− | 0.0  | 2007 11 20 | 691 | 0.1− | 0.1− |
| 2003 10 20 | 691 | 0.0  | 0.3+ | 2007 11 09 | 691 | 0.3− | 0.1− | 2007 11 20 | 691 | 0.0  | 0.3+ |
| 2003 10 20 | 691 | 0.2− | 0.2+ | 2007 11 09 | 691 | 0.3+ | 0.2− | 2007 11 20 | 691 | 0.0  | 0.3+ |
| 2003 10 20 | 691 | 0.1+ | 0.1+ | 2007 11 13 | 691 | 0.2+ | 0.0  |            |     |      |      |
| 2003 10 23 | 645 | 0.0  | 0.0  | 2007 11 13 | 691 | 0.0  | 0.1− |            |     |      |      |

2007 VG<sub>215</sub> = 1997 HY<sub>14</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |             |          |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| P        |            |          |           | Q           |             |          |   |
| <i>M</i> | 47.06300   | (2000.0) |           |             |             |          |   |
| <i>n</i> | 0.22572785 | $\omega$ | 300.46345 | +0.94282184 | +0.31678102 |          |   |
| <i>a</i> | 2.6714432  | $\Omega$ | 41.31857  | −0.22566613 | +0.83551354 |          |   |
| <i>e</i> | 0.2498813  | <i>i</i> | 9.02929   | −0.24527899 | +0.44896204 |          |   |
| <i>P</i> | 4.37       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 04 28 | 691 | 0.0  | 0.0  | 2007 10 16 | G96 | 0.6+ | 0.6− | 2007 11 17 | 691 | 0.1− | 0.1− |
| 1997 04 28 | 691 | 0.3+ | 0.3− | 2007 10 16 | G96 | 0.8+ | 0.3− | 2007 11 17 | 691 | 0.0  | 0.3− |
| 1997 04 28 | 691 | 0.1+ | 0.1− | 2007 10 16 | G96 | 0.9+ | 0.6− | 2007 11 18 | 704 | 0.4+ | 0.7+ |
| 1997 05 08 | 691 | 0.6+ | 0.4+ | 2007 10 16 | G96 | 1.0+ | 0.8− | 2007 11 18 | 704 | 0.0  | 0.4+ |
| 1997 05 08 | 691 | 0.3− | 0.1+ | 2007 11 01 | 691 | 0.2− | 0.2+ | 2007 11 18 | 704 | 0.8+ | 0.3+ |
| 1997 05 08 | 691 | 0.3− | 0.7+ | 2007 11 01 | 691 | 0.2− | 0.2+ | 2007 11 18 | 704 | 0.8+ | 0.7+ |
| 1998 09 19 | 645 | 0.1− | 0.0  | 2007 11 01 | 691 | 0.6− | 0.4+ | 2007 12 13 | 704 | 0.1+ | 0.2− |
| 1998 09 19 | 645 | 0.1− | 0.0  | 2007 11 09 | 691 | 0.3− | 0.2+ | 2007 12 13 | 704 | 0.9+ | 0.5+ |
| 1998 09 24 | 699 | 0.2+ | 0.9+ | 2007 11 09 | 691 | 0.3− | 0.1+ | 2007 12 13 | 704 | 0.4+ | 0.4− |
| 1998 09 24 | 699 | 0.1+ | 0.9+ | 2007 11 09 | 691 | 0.1− | 0.2+ | 2007 12 13 | 704 | 1.1+ | 0.3+ |
| 1998 09 24 | 699 | 0.7+ | 0.5+ | 2007 11 13 | 691 | 0.2− | 0.2+ | 2007 12 13 | 704 | 0.5+ | 0.2− |
| 1998 10 19 | 699 | 0.4+ | 0.2− | 2007 11 13 | 691 | 0.1− | 0.1+ | 2007 12 15 | 704 | 0.1+ | 1.1+ |
| 1998 10 19 | 699 | 1.7+ | 0.8+ | 2007 11 13 | 691 | 0.1− | 0.1+ | 2007 12 15 | 704 | 0.3− | 0.5− |
| 1998 10 19 | 699 | 0.3− | 0.1+ | 2007 11 13 | 703 | 1.5− | 1.3− | 2007 12 15 | 704 | 1.0+ | 0.4− |
| 2007 09 14 | G96 | 0.2− | 0.2− | 2007 11 13 | 703 | 1.4− | 1.4− | 2007 12 15 | 704 | 0.5+ | 1.2− |
| 2007 09 14 | G96 | 0.2+ | 0.0  | 2007 11 13 | 703 | 0.2− | 0.4− | 2007 12 15 | 704 | 1.2+ | 0.7+ |
| 2007 09 14 | G96 | 0.2+ | 0.1+ | 2007 11 13 | 703 | 0.5+ | 0.1+ |            |     |      |      |
| 2007 09 14 | G96 | 0.1− | 0.1+ | 2007 11 17 | 691 | 0.1+ | 0.2+ |            |     |      |      |

2007 VZ<sub>216</sub> = 1996 TF<sub>24</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |             |          |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| P        |            |          |          | Q           |             |          |   |
| <i>M</i> | 356.17035  | (2000.0) |          |             |             |          |   |
| <i>n</i> | 0.27445557 | $\omega$ | 58.83772 | +0.51597504 | −0.85660361 |          |   |
| <i>a</i> | 2.3450639  | $\Omega$ | 0.09965  | +0.77880222 | +0.46909412 |          |   |
| <i>e</i> | 0.1164225  | <i>i</i> | 1.17041  | +0.35670275 | +0.21489754 |          |   |
| <i>P</i> | 3.59       | <i>H</i> | 17.6     | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 10 06 | 691 | 0.4+ | 0.1+ | 2005 03 04 | G96 | 0.1+ | 0.1+ | 2007 09 14 | G96 | 0.1+  | 0.3+  |
| 1996 10 06 | 691 | 0.5+ | 0.0  | 2005 03 04 | G96 | 0.1− | 0.5− | 2007 11 01 | 691 | 0.1−  | 0.1+  |
| 1996 10 06 | 691 | 0.7+ | 0.4− | 2005 03 04 | G96 | 0.2− | 0.1+ | 2007 11 01 | 691 | 0.1−  | 0.1−  |
| 1996 10 16 | 691 | 0.0  | 0.7− | 2005 03 04 | G96 | 0.2+ | 0.1+ | 2007 11 01 | 691 | 0.0   | 0.3+  |
| 1996 10 16 | 691 | 0.4− | 0.6− | 2005 03 04 | G96 | 0.1+ | 0.0  | 2007 11 09 | 691 | 0.0   | 0.2+  |
| 1996 10 16 | 691 | 0.3− | 0.7− | 2005 03 04 | G96 | 0.3− | 0.1− | 2007 11 09 | 691 | 0.2−  | 0.3+  |
| 2002 05 10 | 291 | 0.1− | 0.6+ | 2005 04 02 | G96 | 0.0  | 0.5− | 2007 11 09 | 691 | 0.1+  | 0.4−  |
| 2002 05 10 | 291 | 0.0  | 0.4+ | 2005 04 02 | G96 | 0.3+ | 0.2− | 2007 11 13 | 691 | 0.4−  | 0.7+  |
| 2002 05 10 | 291 | 0.2+ | 0.3+ | 2005 04 02 | G96 | 0.1− | 0.1− | 2007 11 13 | 691 | 0.1−  | 0.1+  |
| 2003 09 17 | 291 | 0.2+ | 0.3+ | 2005 04 02 | G96 | 0.1− | 0.1+ | 2007 11 13 | 691 | 0.3−  | 0.2+  |
| 2003 09 17 | 291 | 0.7− | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.3− | 2007 11 15 | 704 | 1.3+  | 0.2+  |
| 2003 09 17 | 291 | 0.3− | 0.2+ | 2007 09 14 | G96 | 0.3+ | 0.2+ | 2007 11 15 | 704 | (1.6+ | 0.6+) |

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 09 17 | 291 | 0.2− | 0.2+ | 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 11 15 | 704 | (0.4− | 4.3+) |
| 2003 09 17 | 291 | 0.0  | 0.8+ | 2007 09 14 | G96 | 0.1+ | 0.1− | 2007 11 17 | 691 | 0.1−  | 0.3+  |
| 2003 09 17 | 291 | 0.4+ | 0.1+ | 2007 09 14 | G96 | 0.3+ | 0.4− | 2007 11 17 | 691 | 0.1+  | 0.4+  |
| 2005 03 04 | G96 | 0.0  | 0.4− | 2007 09 14 | G96 | 0.4+ | 0.2− | 2007 11 17 | 691 | 0.1−  | 0.2+  |
| 2005 03 04 | G96 | 0.4+ | 0.1− | 2007 09 14 | G96 | 0.5+ | 0.3− |            |     |       |       |

**2007 VC<sub>218</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 64.69806   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18002378 | $\omega$ | 265.02830 | +0.88265463 | +0.43110166 |
| $a$ | 3.1063434  | $\Omega$ | 69.32996  | −0.31118474 | +0.83459424 |
| $e$ | 0.1967279  | $i$      | 11.54633  | −0.35225681 | +0.34293413 |
| $P$ | 5.47       | $H$      | 15.6      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 15 | 644 | 0.3− | 0.4+ | 2007 10 14 | G96 | 0.5+  | 0.4−  | 2007 12 03 | 703 | 1.3+ | 0.1− |
| 2001 10 15 | 644 | 0.2− | 0.2+ | 2007 11 05 | 691 | 0.3−  | 0.1−  | 2007 12 03 | 703 | 0.5+ | 1.0+ |
| 2001 10 15 | 644 | 0.1− | 0.4+ | 2007 11 05 | 691 | 0.0   | 0.1−  | 2007 12 03 | 703 | 0.5+ | 0.6+ |
| 2005 04 07 | 691 | 0.2+ | 0.7+ | 2007 11 05 | 691 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.3− | 0.0  |
| 2005 04 07 | 691 | 0.4+ | 0.4+ | 2007 11 09 | 691 | 0.2−  | 0.1−  | 2007 12 03 | 703 | 1.1+ | 0.5+ |
| 2005 04 07 | 691 | 0.2+ | 0.6+ | 2007 11 09 | 691 | 0.1+  | 0.0   | 2007 12 03 | 703 | 0.8− | 0.7− |
| 2006 08 13 | E12 | 1.5− | 0.7+ | 2007 11 09 | 691 | 0.1+  | 0.0   | 2007 12 03 | 703 | 0.3− | 0.4− |
| 2006 08 13 | E12 | 0.1− | 0.4+ | 2007 11 13 | 691 | 0.3+  | 1.3+  | 2007 12 04 | G96 | 0.4+ | 0.1− |
| 2006 08 13 | E12 | 0.1+ | 0.0  | 2007 11 13 | 691 | 0.2−  | 0.3−  | 2007 12 04 | G96 | 0.6+ | 0.3− |
| 2006 08 13 | E12 | 0.5+ | 0.2+ | 2007 11 13 | 691 | 0.1−  | 0.0   | 2007 12 04 | G96 | 0.5+ | 0.0  |
| 2006 08 26 | E12 | 0.1− | 0.0  | 2007 11 14 | 704 | (1.8+ | 0.0 ) | 2007 12 04 | G96 | 0.1− | 0.2− |
| 2006 08 26 | E12 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.1−  | 0.1+  | 2007 12 05 | 704 | 0.8− | 0.1+ |
| 2006 08 26 | E12 | 0.5+ | 0.1+ | 2007 11 14 | 704 | 1.3+  | 0.7+  | 2007 12 05 | 704 | 0.5+ | 0.0  |
| 2006 08 26 | E12 | 0.4+ | 0.7+ | 2007 11 14 | 691 | 0.0   | 0.1−  | 2007 12 05 | 704 | 0.7− | 0.7+ |
| 2007 09 09 | 291 | 0.8− | 0.0  | 2007 11 14 | 704 | (2.1+ | 0.3+) | 2007 12 05 | 704 | 0.3− | 0.3+ |
| 2007 09 09 | 291 | 0.8− | 0.2+ | 2007 11 14 | 691 | 0.2−  | 0.0   | 2007 12 05 | 704 | 0.4− | 0.7+ |
| 2007 09 09 | 291 | 0.7− | 0.3+ | 2007 11 18 | 691 | 0.2+  | 0.7+  | 2007 12 15 | G96 | 0.1+ | 0.2− |
| 2007 10 14 | G96 | 0.3+ | 0.5− | 2007 11 18 | 691 | 0.0   | 0.1−  | 2007 12 15 | G96 | 0.2+ | 0.3− |
| 2007 10 14 | G96 | 0.3+ | 0.4− | 2007 11 18 | 691 | 0.3+  | 0.5−  | 2007 12 15 | G96 | 0.6+ | 0.2− |
| 2007 10 14 | G96 | 0.0  | 0.4− | 2007 12 03 | 703 | 1.4+  | 0.5+  | 2007 12 15 | G96 | 0.0  | 0.3− |

**2007 VD<sub>219</sub> = 2004 CG<sub>72</sub> = 2005 JR<sub>54</sub>**Id. Minor Planet Center (*MPO* 128606; unpublished)

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 355.85449  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|----------|--------------|--------------|
| $n$ | 0.21207563 | $\omega$ | 14.88493 | +0.37250505  | −0.92535184  |
| $a$ | 2.7848953  | $\Omega$ | 53.29406 | +0.84221936  | +0.30520112  |
| $e$ | 0.0550987  | $i$      | 5.04171  | +0.38975189  | +0.22489163  |
| $P$ | 4.65       | $H$      | 15.9     | $G$ 0.15     | $U$ 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 07 18 | 644 | 0.0  | 0.4+ | 2005 05 04 | G96 | 0.2− | 0.3− | 2007 11 13 | 691 | 0.1− | 0.1+ |
| 2001 07 18 | 644 | 0.5− | 0.7+ | 2005 05 04 | G96 | 0.2− | 0.1− | 2007 11 15 | 704 | 0.9+ | 1.2− |
| 2001 07 18 | 644 | 0.3− | 0.5+ | 2005 06 14 | G96 | 0.3− | 0.2+ | 2007 11 15 | 704 | 1.0− | 0.5+ |
| 2002 10 31 | 608 | 0.5− | 0.2− | 2005 06 14 | G96 | 0.6+ | 0.3+ | 2007 11 15 | 704 | 0.1− | 1.0+ |
| 2002 10 31 | 608 | 0.7+ | 0.0  | 2005 06 14 | G96 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.3+ | 0.1+ |
| 2002 10 31 | 608 | 0.7+ | 0.3− | 2005 06 14 | G96 | 0.0  | 0.5+ | 2007 12 10 | 704 | 0.4+ | 0.3+ |
| 2004 02 13 | 691 | 0.1− | 0.2+ | 2007 11 01 | 691 | 0.2+ | 0.4− | 2007 12 10 | 704 | 1.0+ | 0.7+ |
| 2004 02 13 | 691 | 0.1− | 0.2+ | 2007 11 01 | 691 | 0.1− | 0.2− | 2007 12 10 | 704 | 0.6+ | 0.3+ |
| 2004 02 13 | 691 | 0.2+ | 0.1+ | 2007 11 01 | 691 | 0.0  | 0.1− | 2007 12 14 | 704 | 0.0  | 1.0+ |
| 2004 02 16 | 704 | 0.1− | 0.9− | 2007 11 09 | 691 | 0.2− | 0.1− | 2007 12 14 | 704 | 1.3− | 0.7+ |
| 2004 02 16 | 704 | 0.1+ | 0.3− | 2007 11 09 | 691 | 0.0  | 0.3+ | 2007 12 14 | 704 | 0.0  | 0.9+ |
| 2004 02 16 | 704 | 0.1− | 0.4− | 2007 11 09 | 691 | 0.1+ | 0.2− | 2007 12 14 | 704 | 0.2+ | 0.2+ |
| 2005 05 04 | G96 | 0.2+ | 0.6− | 2007 11 13 | 691 | 0.0  | 0.0  |            |     |      |      |
| 2005 05 04 | G96 | 0.5+ | 0.1− | 2007 11 13 | 691 | 0.3− | 0.0  |            |     |      |      |

**2007 VN<sub>219</sub> = 2003 TP<sub>31</sub> = 2005 JR<sub>184</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 316.81843  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27146099 | $\omega$ | 61.98603 | −0.45996240 | −0.88744244 |
| $a$ | 2.3622785  | $\Omega$ | 55.42912 | +0.80148945 | −0.42933204 |
| $e$ | 0.1328344  | $i$      | 2.06519  | +0.38216391 | −0.16768997 |
| $P$ | 3.63       | $H$      | 17.6     | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 12 | 691 | 0.3− | 0.2− | 2005 04 01 | 691 | 0.4+ | 0.5+ | 2007 11 17 | 691 | 0.2− | 0.0  |
| 1994 03 12 | 691 | 0.3− | 0.8− | 2005 04 01 | 691 | 0.5+ | 0.5+ | 2007 11 17 | 691 | 0.1− | 0.5− |
| 1994 03 12 | 691 | 0.1+ | 0.2− | 2005 05 09 | G96 | 0.5− | 0.0  | 2007 12 06 | G96 | 0.2− | 0.7+ |
| 2000 12 30 | 691 | 0.0  | 0.2+ | 2005 05 09 | G96 | 0.2− | 0.1− | 2007 12 06 | G96 | 0.2+ | 0.0  |
| 2000 12 30 | 691 | 0.1− | 0.2+ | 2005 05 09 | G96 | 0.6− | 0.2+ | 2007 12 06 | G96 | 0.2+ | 0.3− |
| 2000 12 30 | 691 | 0.0  | 0.1+ | 2005 05 09 | G96 | 0.2− | 0.0  | 2007 12 06 | G96 | 0.0  | 0.3− |
| 2003 10 01 | 691 | 0.1+ | 0.1− | 2007 09 18 | G96 | 0.1+ | 0.2− | 2007 12 12 | J75 | 0.8− | 0.4− |
| 2003 10 01 | 691 | 0.3− | 0.1− | 2007 09 18 | G96 | 1.1+ | 0.6− | 2007 12 12 | J75 | 0.3− | 0.4+ |
| 2003 10 01 | 691 | 0.1+ | 0.2+ | 2007 09 18 | G96 | 0.6+ | 0.0  | 2007 12 12 | J75 | 0.2+ | 0.5+ |
| 2003 10 18 | 691 | 0.1− | 0.2+ | 2007 09 18 | G96 | 0.2+ | 0.2− | 2007 12 13 | 620 | 0.1− | 0.3− |
| 2003 10 18 | 691 | 0.0  | 0.2+ | 2007 11 09 | 691 | 0.1+ | 0.1− | 2007 12 13 | 620 | 0.1− | 0.0  |
| 2003 10 18 | 691 | 0.1− | 0.2+ | 2007 11 09 | 691 | 0.2+ | 0.2+ | 2007 12 13 | 620 | 0.3+ | 0.0  |
| 2005 03 09 | G96 | 0.8− | 0.2− | 2007 11 09 | 691 | 0.1+ | 0.2− | 2007 12 14 | 704 | 0.4+ | 0.3− |
| 2005 03 09 | G96 | 0.7− | 0.1+ | 2007 11 13 | 691 | 0.3− | 0.0  | 2007 12 14 | 704 | 0.1− | 0.9− |
| 2005 03 09 | G96 | 0.1+ | 0.2+ | 2007 11 13 | 691 | 0.2+ | 0.5+ | 2007 12 14 | 704 | 0.7+ | 0.9+ |
| 2005 03 09 | G96 | 0.1− | 0.1+ | 2007 11 13 | 691 | 0.0  | 0.2− | 2007 12 14 | 704 | 0.9+ | 0.9+ |
| 2005 04 01 | 691 | 0.4+ | 0.4+ | 2007 11 17 | 691 | 0.4− | 0.0  |            |     |      |      |

**2007 VQ<sub>219</sub> = 2004 CE<sub>69</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| $M$ | 359.65354  |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $n$ | 0.22587855 | $\omega$ | 359.29829 |     | +0.45289947 |     | −0.89018557 |
| $a$ | 2.6702549  | $\Omega$ | 63.77077  |     | +0.81826043 |     | +0.39296933 |
| $e$ | 0.1970936  | $i$      | 3.16424   |     | +0.35402251 |     | +0.23053146 |
| $P$ | 4.36       | $H$      | 16.2      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |   |            |     |       |       |            |     |      |      |
|------------|-----|------|------|---|------------|-----|-------|-------|------------|-----|------|------|
| 1998 11 18 | 809 | 1.1+ | 0.6+ | Y | 2007 09 15 | G96 | 0.3−  | 0.1+  | 2007 12 05 | 704 | 0.6+ | 0.0  |
| 2002 08 29 | 644 | 0.8− | 0.3+ |   | 2007 11 09 | 691 | 0.1−  | 0.2+  | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2002 08 29 | 644 | 0.8− | 0.7+ |   | 2007 11 09 | 691 | 0.7−  | 0.4−  | 2007 12 05 | 704 | 0.9+ | 0.0  |
| 2002 08 29 | 644 | 0.7− | 0.2+ |   | 2007 11 09 | 691 | 0.6−  | 0.8−  | 2007 12 05 | 703 | 0.3+ | 0.3+ |
| 2004 02 11 | 691 | 0.2− | 0.0  |   | 2007 11 13 | 691 | 0.1−  | 0.0   | 2007 12 05 | 703 | 0.3− | 0.5+ |
| 2004 02 11 | 691 | 0.1− | 0.1+ |   | 2007 11 13 | 691 | 0.1−  | 0.0   | 2007 12 06 | G96 | 0.1+ | 0.5− |
| 2004 02 11 | 691 | 0.2− | 0.1− |   | 2007 11 13 | 691 | 0.0   | 0.2+  | 2007 12 06 | G96 | 0.2+ | 0.0  |
| 2004 02 16 | 704 | 0.1− | 0.2+ |   | 2007 11 15 | 704 | 0.3+  | 0.8+  | 2007 12 06 | G96 | 0.2+ | 0.0  |
| 2004 02 16 | 704 | 0.5− | 0.5+ |   | 2007 11 15 | 704 | (0.7− | 1.7+) | 2007 12 06 | G96 | 0.3+ | 0.1− |
| 2004 02 16 | 704 | 0.6+ | 0.2− |   | 2007 11 15 | 704 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.5− | 0.8+ |
| 2004 02 16 | 704 | 0.4+ | 0.1− |   | 2007 11 15 | 704 | 0.2−  | 0.8+  | 2007 12 14 | 704 | 0.3− | 0.2+ |
| 2005 05 03 | 691 | 0.2+ | 0.4+ |   | 2007 12 04 | 703 | (2.3+ | 0.2+) | 2007 12 14 | 704 | 1.0+ | 1.1− |
| 2005 05 03 | 691 | 0.1− | 0.1+ |   | 2007 12 04 | 703 | 0.1−  | 0.5+  | 2007 12 14 | 704 | 0.1+ | 0.2+ |
| 2005 05 03 | 691 | 0.6+ | 0.2+ |   | 2007 12 04 | 703 | 0.1+  | 0.5+  | 2007 12 14 | 704 | 0.1− | 0.6+ |
| 2007 09 15 | G96 | 0.1− | 0.1− |   | 2007 12 04 | 703 | 0.1+  | 0.4+  | 2007 12 15 | 691 | 0.2+ | 0.1+ |
| 2007 09 15 | G96 | 0.0  | 0.2+ |   | 2007 12 05 | 704 | 0.3+  | 0.1−  | 2007 12 15 | 691 | 0.1+ | 0.1+ |
| 2007 09 15 | G96 | 0.5+ | 0.1+ |   | 2007 12 05 | 704 | 1.0+  | 1.0+  | 2007 12 15 | 691 | 0.0  | 0.1+ |

**2007 VU<sub>219</sub> = 2002 XS<sub>106</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 66.28459   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.19695337 | $\omega$ | 286.67373 | +0.97301610 | +0.10284744 |
| $a$ | 2.9256819  | $\Omega$ | 67.80857  | +0.00514796 | +0.88526624 |
| $e$ | 0.0757177  | $i$      | 12.88951  | −0.23067981 | +0.45357038 |
| $P$ | 5.00       | $H$      | 15.6      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 704 | 0.1− | 0.4+ | 2006 07 30 | E12 | 0.7+ | 1.0− | 2007 11 13 | 691 | 0.1− | 0.1− |
| 2002 12 05 | 704 | 0.1− | 0.0  | 2006 07 30 | E12 | 1.0+ | 0.0  | 2007 11 13 | 691 | 0.2− | 0.0  |

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|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 704 | 0.6+ | 0.2+ | 2006 08 25 | E12 | 0.0  | 0.4+ | 2007 11 15 | 704 | 0.4+ | 0.2− |
| 2002 12 05 | 704 | 0.5− | 0.2− | 2006 08 25 | E12 | 0.1− | 0.4+ | 2007 11 15 | 704 | 0.2+ | 0.6− |
| 2002 12 05 | 704 | 0.6+ | 0.2+ | 2006 08 25 | E12 | 0.2+ | 0.5+ | 2007 11 15 | 704 | 0.5− | 0.7− |
| 2002 12 11 | 704 | 0.6− | 0.5− | 2006 08 25 | E12 | 0.4− | 0.4− | 2007 12 14 | 704 | 1.0+ | 0.2− |
| 2002 12 11 | 704 | 0.1+ | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.5+ | 2007 12 14 | 704 | 0.3+ | 0.5+ |
| 2002 12 11 | 704 | 0.2− | 0.2+ | 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 12 14 | 704 | 0.6+ | 0.4− |
| 2006 07 30 | E12 | 0.3− | 0.1− | 2007 11 09 | 691 | 0.1− | 0.1− | 2007 12 14 | 704 | 0.3− | 0.1− |
| 2006 07 30 | E12 | 1.1− | 0.2+ | 2007 11 13 | 691 | 0.1+ | 0.0  |            |     |      |      |

2007 VN<sub>220</sub> = 1994 RZ<sub>6</sub>

|                                         |  |  |  |                    |  |  |  |               |  |  |  |
|-----------------------------------------|--|--|--|--------------------|--|--|--|---------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |                    |  |  |  |               |  |  |  |
| <i>M</i> 36.32775                       |  |  |  | (2000.0)           |  |  |  | MPC           |  |  |  |
| <i>n</i> 0.23605282                     |  |  |  | <i>ω</i> 176.57588 |  |  |  | <i>P</i> 0.15 |  |  |  |
| <i>a</i> 2.5929646                      |  |  |  | <i>Ω</i> 201.45306 |  |  |  | <i>Q</i> 0    |  |  |  |
| <i>e</i> 0.1453605                      |  |  |  | <i>i</i> 2.73031   |  |  |  | <i>U</i> 0    |  |  |  |
| <i>P</i> 4.18                           |  |  |  | <i>H</i> 16.6      |  |  |  | <i>G</i> 0.15 |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 09 12 | 691 | 0.2− | 0.2− | 2004 01 30 | 691 | 0.3+ | 0.2− | 2007 11 09 | 691 | 0.0  | 0.1+ |
| 1994 09 12 | 691 | 0.1− | 0.0  | 2005 03 10 | G96 | 0.2+ | 0.2+ | 2007 11 13 | 691 | 0.1− | 0.0  |
| 1994 09 12 | 691 | 0.1+ | 0.1− | 2005 03 10 | G96 | 0.1− | 0.2+ | 2007 11 13 | 691 | 0.3− | 0.1+ |
| 1994 09 14 | 691 | 0.4− | 0.1− | 2005 03 10 | G96 | 0.1+ | 0.2+ | 2007 11 13 | 691 | 0.1− | 0.2+ |
| 1994 09 14 | 691 | 0.4+ | 0.1+ | 2005 03 10 | G96 | 0.7− | 0.0  | 2007 11 17 | 691 | 0.1− | 0.1− |
| 1994 09 14 | 691 | 0.0  | 0.0  | 2005 04 09 | G96 | 0.7− | 0.2+ | 2007 11 17 | 691 | 0.2− | 0.1− |
| 2002 08 06 | 644 | 0.1+ | 0.3+ | 2005 04 09 | G96 | 0.3− | 0.0  | 2007 11 17 | 691 | 0.0  | 0.1− |
| 2002 08 06 | 644 | 0.5+ | 0.6+ | 2005 04 09 | G96 | 0.1− | 0.1+ | 2007 12 04 | 704 | 0.1+ | 1.0+ |
| 2002 08 06 | 644 | 0.7+ | 0.5+ | 2005 04 09 | G96 | 0.2+ | 0.1+ | 2007 12 04 | 704 | 0.3+ | 0.1− |
| 2004 01 30 | 691 | 0.2+ | 0.1+ | 2007 11 09 | 691 | 0.0  | 0.1− | 2007 12 04 | 704 | 0.7+ | 0.2+ |
| 2004 01 30 | 691 | 0.3+ | 0.1− | 2007 11 09 | 691 | 0.0  | 0.2− |            |     |      |      |

2007 VV<sub>221</sub> = 2006 KA<sub>108</sub>

|                                         |  |  |  |                    |  |  |  |               |  |  |  |
|-----------------------------------------|--|--|--|--------------------|--|--|--|---------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |                    |  |  |  |               |  |  |  |
| <i>M</i> 83.35297                       |  |  |  | (2000.0)           |  |  |  | MPC           |  |  |  |
| <i>n</i> 0.31698452                     |  |  |  | <i>ω</i> 72.44032  |  |  |  | <i>P</i> 0.15 |  |  |  |
| <i>a</i> 2.1303159                      |  |  |  | <i>Ω</i> 243.16229 |  |  |  | <i>Q</i> 2    |  |  |  |
| <i>e</i> 0.0688121                      |  |  |  | <i>i</i> 4.52302   |  |  |  | <i>U</i> 2    |  |  |  |
| <i>P</i> 3.11                           |  |  |  | <i>H</i> 17.5      |  |  |  | <i>G</i> 0.15 |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 20 | G96 | 0.1+ | 0.0  | 2006 06 01 | G96 | 0.1− | 0.2− | 2007 11 12 | A77 | 0.8+ | 0.4+ |
| 2004 12 20 | G96 | 0.2+ | 0.1+ | 2006 06 01 | G96 | 0.1+ | 0.1− | 2007 11 15 | 704 | 0.6− | 0.6− |
| 2004 12 20 | G96 | 0.0  | 0.3− | 2006 06 01 | G96 | 0.3+ | 0.1+ | 2007 11 15 | 704 | 0.0  | 0.1− |
| 2004 12 20 | G96 | 0.2− | 0.1− | 2006 06 01 | G96 | 0.1− | 0.0  | 2007 11 15 | 704 | 0.3− | 0.6+ |
| 2006 05 06 | G96 | 0.2− | 0.4− | 2007 10 11 | 691 | 0.2+ | 0.1− | 2007 11 16 | A77 | 0.4+ | 0.6+ |
| 2006 05 06 | G96 | 0.4− | 0.2− | 2007 10 11 | 691 | 0.3+ | 0.0  | 2007 11 16 | A77 | 0.8+ | 0.8+ |
| 2006 05 06 | G96 | 0.1− | 0.0  | 2007 10 11 | 691 | 0.3+ | 0.1− | 2007 11 16 | A77 | 1.1+ | 0.8+ |
| 2006 05 06 | G96 | 0.5− | 0.2− | 2007 10 15 | 691 | 0.1+ | 0.2− | 2007 12 15 | G96 | 0.7+ | 0.4− |
| 2006 05 31 | G96 | 0.1− | 0.0  | 2007 10 15 | 691 | 0.4− | 0.0  | 2007 12 15 | G96 | 0.1− | 0.3− |
| 2006 05 31 | G96 | 0.3+ | 0.1+ | 2007 10 15 | 691 | 1.4− | 0.4− | 2007 12 15 | G96 | 0.3− | 0.2− |
| 2006 05 31 | G96 | 0.8+ | 0.4+ | 2007 11 12 | A77 | 0.0  | 0.7+ | 2007 12 15 | G96 | 0.0  | 0.2− |
| 2006 05 31 | G96 | 0.1+ | 0.4+ | 2007 11 12 | A77 | 0.5+ | 0.7+ |            |     |      |      |

2007 VW<sub>223</sub> = 2000 CD<sub>131</sub>

|                                         |  |  |  |                    |  |  |  |               |  |  |  |
|-----------------------------------------|--|--|--|--------------------|--|--|--|---------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |                    |  |  |  |               |  |  |  |
| <i>M</i> 356.39586                      |  |  |  | (2000.0)           |  |  |  | MPC           |  |  |  |
| <i>n</i> 0.23162360                     |  |  |  | <i>ω</i> 270.53307 |  |  |  | <i>P</i> 0.15 |  |  |  |
| <i>a</i> 2.6259161                      |  |  |  | <i>Ω</i> 137.45362 |  |  |  | <i>Q</i> 3    |  |  |  |
| <i>e</i> 0.2611659                      |  |  |  | <i>i</i> 4.21289   |  |  |  | <i>U</i> 3    |  |  |  |
| <i>P</i> 4.26                           |  |  |  | <i>H</i> 17.4      |  |  |  | <i>G</i> 0.15 |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 03 | 691 | 0.0  | 0.2− | 2000 02 05 | 691 | 0.1+ | 0.4+ | 2007 11 07 | 703 | 0.1− | 0.2+ |
| 2000 02 03 | 691 | 0.3+ | 0.2− | 2007 10 12 | G96 | 0.0  | 0.2− | 2007 11 13 | G96 | 0.1+ | 0.0  |
| 2000 02 03 | 691 | 0.3+ | 0.0  | 2007 10 12 | G96 | 0.2+ | 0.0  | 2007 11 13 | G96 | 0.1+ | 0.1− |
| 2000 02 04 | 691 | 0.0  | 0.2− | 2007 10 12 | G96 | 0.1− | 0.1− | 2007 11 13 | G96 | 0.1+ | 0.2− |

## M.P.O. 130033

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 02 04 | 691 | 0.5− | 0.1+ | 2007 10 12 | G96 | 0.2+ | 0.0  | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2000 02 04 | 691 | 0.2− | 0.5− | 2007 11 07 | 703 | 0.8− | 0.2+ | 2007 11 17 | G96 | 0.3+ | 0.1− |
| 2000 02 05 | 691 | 0.0  | 0.2+ | 2007 11 07 | 703 | 0.5+ | 0.2+ | 2007 11 17 | G96 | 0.1+ | 0.0  |
| 2000 02 05 | 691 | 0.0  | 0.4+ | 2007 11 07 | 703 | 0.9− | 0.0  | 2007 11 17 | G96 | 0.2+ | 0.1− |

2007 VF<sub>227</sub> = 2001 SM<sub>331</sub>

|                                         |  |  |  |                    |  |  |  |               |  |  |  |
|-----------------------------------------|--|--|--|--------------------|--|--|--|---------------|--|--|--|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |  |  |  |                    |  |  |  |               |  |  |  |
| <i>M</i> 338.03643                      |  |  |  | (2000.0)           |  |  |  | MPC           |  |  |  |
| <i>n</i> 0.18081137                     |  |  |  | <i>ω</i> 306.14534 |  |  |  | <i>P</i> 0.15 |  |  |  |
| <i>a</i> 3.0973163                      |  |  |  | <i>Ω</i> 132.32307 |  |  |  | <i>Q</i> 0    |  |  |  |
| <i>e</i> 0.1480703                      |  |  |  | <i>i</i> 2.02985   |  |  |  | <i>U</i> 0    |  |  |  |
| <i>P</i> 5.45                           |  |  |  | <i>H</i> 16.1      |  |  |  | <i>G</i> 0.15 |  |  |  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 02 22 | 691 | 0.1− | 0.3− | 2007 09 14 | G96 | 0.6+  | 0.2−  | 2007 11 13 | 699 | 0.2−  | 0.7+  |
| 1998 02 22 | 691 | 0.2− | 0.4− | 2007 09 14 | G96 | 0.4+  | 0.3−  | 2007 11 14 | 691 | 0.1+  | 0.2−  |
| 1998 02 22 | 691 | 0.1− | 0.4− | 2007 10 08 | 691 | 0.2−  | 0.2−  | 2007 11 14 | 691 | 0.0   | 0.0   |
| 2001 09 19 | 704 | 0.2+ | 0.2− | 2007 10 08 | 691 | 0.7−  | 0.2+  | 2007 11 14 | 691 | 0.2−  | 0.2−  |
| 2001 09 19 | 704 | 0.2+ | 0.1+ | 2007 10 08 | 691 | 0.3−  | 0.1+  | 2007 11 14 | 704 | (1.6+ | 1.3+) |
| 2001 09 19 | 704 | 0.5− | 0.0  | 2007 10 20 | 703 | 0.0   | 1.2+  | 2007 11 14 | 704 | 1.3+  | 1.1+  |
| 2001 09 19 | 704 | 1.0+ | 1.2+ | 2007 10 20 | 703 | 0.7+  | 0.0   | 2007 11 14 | 704 | 0.1+  | 0.3+  |
| 2001 09 21 | 291 | 0.2− | 0.1+ | 2007 10 20 | 703 | 0.4+  | 0.8+  | 2007 11 14 | 704 | 1.1+  | 1.2+  |
| 2001 09 21 | 291 | 0.2− | 0.1+ | 2007 10 20 | 703 | 0.6+  | 0.6+  | 2007 11 14 | 704 | 0.8+  | 1.2+  |
| 2001 09 21 | 291 | 0.1− | 0.1− | 2007 11 03 | 691 | 0.2−  | 0.1−  | 2007 11 18 | 691 | 0.2−  | 0.0   |
| 2004 04 13 | 691 | 0.3+ | 1.0+ | 2007 11 03 | 691 | 0.2−  | 0.2−  | 2007 11 18 | 691 | 0.8−  | 0.0   |
| 2004 04 13 | 691 | 0.3+ | 0.6+ | 2007 11 03 | 691 | 0.4−  | 0.1+  | 2007 11 18 | 691 | 0.2−  | 0.1+  |
| 2004 04 13 | 691 | 0.3+ | 0.9+ | 2007 11 12 | 703 | 1.2+  | 0.9+  | 2007 11 20 | 703 | 0.2−  | 1.1−  |
| 2007 09 14 | G96 | 0.4+ | 0.0  | 2007 11 12 | 703 | 0.5+  | 0.4+  | 2007 11 20 | 703 | 1.1+  | 0.7−  |
| 2007 09 14 | G96 | 0.2+ | 0.2− | 2007 11 12 | 703 | 0.8+  | 0.5+  | 2007 11 20 | 703 | 0.3+  | 0.1−  |
| 2007 09 14 | G96 | 0.4+ | 0.3− | 2007 11 12 | 703 | 0.4−  | 0.5−  | 2007 11 20 | 703 | 0.5+  | 0.3+  |
| 2007 09 14 | G96 | 0.3+ | 0.1− | 2007 11 13 | 699 | 0.2+  | 0.8−  | 2007 12 06 | 691 | 0.2−  | 0.3+  |
| 2007 09 14 | G96 | 0.6+ | 0.4− | 2007 11 13 | 699 | (1.6+ | 0.4−) | 2007 12 06 | 691 | 0.1+  | 0.1+  |
| 2007 09 14 | G96 | 0.4+ | 0.1− | 2007 11 13 | 699 | 0.7−  | 0.7−  | 2007 12 06 | 691 | 0.2+  | 0.4+  |

2007 VK<sub>227</sub> = 2003 AP<sub>45</sub>

|                                         |            |          |          |             |      |             |   |
|-----------------------------------------|------------|----------|----------|-------------|------|-------------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |      |             |   |
| $M$                                     | 329.74306  | (2000.0) |          | $P$         |      | $Q$         |   |
| $n$                                     | 0.18141659 | $\omega$ | 13.65439 | −0.00048040 |      | −0.99373275 |   |
| $a$                                     | 3.0904239  | $\Omega$ | 76.46034 | +0.90634753 |      | −0.04766383 |   |
| $e$                                     | 0.1295209  | $i$      | 6.60226  | +0.42253275 |      | +0.10111074 |   |
| $P$                                     | 5.43       | $H$      | 15.3     | $G$         | 0.15 | $U$         | 2 |

**2007 VW<sub>227</sub> = 2005 CW<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 313.95662  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.28161019 | $\omega$ | 358.19107 | -0.22801744              |
| <i>a</i> | 2.3051745  | $\Omega$ | 104.97911 | +0.89464420              |
| <i>e</i> | 0.1206763  | <i>i</i> | 6.11075   | +0.00757054              |
| <i>P</i> | 3.50       | <i>H</i> | 17.0      | <i>G</i> 0.15 <i>U</i> 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 05 09 | 644 | 0.1+ | 0.1+ | 2005 03 02 | 703 | 0.5- | 0.2+ | 2007 11 13 | G96 | 0.8+  | 0.4+  |
| 2002 05 09 | 644 | 0.5+ | 0.7+ | 2007 11 02 | G96 | 0.3- | 0.3+ | 2007 11 13 | G96 | 0.2+  | 0.4+  |
| 2002 05 09 | 644 | 0.2- | 0.4+ | 2007 11 02 | G96 | 0.0  | 0.4+ | 2007 11 13 | G96 | 0.5+  | 0.4+  |
| 2005 02 01 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.2+ | 2007 11 13 | G96 | 0.2+  | 0.2+  |
| 2005 02 01 | 691 | 0.2+ | 0.0  | 2007 11 02 | G96 | 0.3- | 0.4+ | 2007 11 15 | 699 | 0.6-  | 1.4+  |
| 2005 02 01 | 691 | 0.1- | 0.3+ | 2007 11 09 | 703 | 0.3- | 0.0  | 2007 11 15 | 699 | (1.6- | 1.2+) |
| 2005 02 02 | 691 | 0.0  | 0.2- | 2007 11 09 | 703 | 0.5- | 1.2- | 2007 11 15 | 699 | 0.3+  | 0.4-  |
| 2005 02 02 | 691 | 0.2- | 0.1- | 2007 11 09 | 703 | 1.3- | 0.5+ | 2007 11 15 | 699 | 0.2-  | 0.9+  |
| 2005 02 02 | 691 | 0.1- | 0.1+ | 2007 11 09 | 703 | 0.6- | 1.4- | 2007 11 17 | 704 | 0.2+  | 0.4+  |
| 2005 03 02 | 703 | 0.8+ | 1.2- | 2007 11 12 | G96 | 0.3- | 0.4- | 2007 11 17 | 704 | 0.5+  | 0.1-  |
| 2005 03 02 | 703 | 0.2+ | 0.1- | 2007 11 12 | G96 | 0.1+ | 0.5- | 2007 11 17 | 704 | 0.7+  | 0.4+  |
| 2005 03 02 | 703 | 0.2+ | 0.7+ | 2007 11 12 | G96 | 0.1+ | 0.5- | 2007 11 17 | 704 | 0.4+  | 0.5-  |

**2007 VB<sub>229</sub> = 2003 WQ<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 84.20822   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.24239400 | $\omega$ | 60.98033  | +0.68893846              |
| <i>a</i> | 2.5475427  | $\Omega$ | 252.67503 | -0.68340433              |
| <i>e</i> | 0.1200864  | <i>i</i> | 3.29564   | -0.24150015              |
| <i>P</i> | 4.07       | <i>H</i> | 16.6      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 23 | 645 | 0.1+  | 0.0   | 2007 10 30 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 691 | 0.2- | 0.3+ |
| 2000 12 23 | 645 | 0.1-  | 0.0   | 2007 10 30 | 691 | 0.3+ | 0.2- | 2007 11 18 | 691 | 0.1- | 0.1- |
| 2003 10 27 | 691 | 0.2-  | 0.2-  | 2007 11 07 | 691 | 0.4+ | 0.0  | 2007 12 03 | 703 | 0.9- | 0.3+ |
| 2003 10 27 | 691 | 0.0   | 0.0   | 2007 11 07 | 691 | 0.3- | 0.0  | 2007 12 03 | 703 | 0.2+ | 0.4- |
| 2003 10 27 | 691 | 0.1-  | 0.1+  | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.9- | 0.0  |
| 2003 11 19 | 691 | 0.2-  | 0.1+  | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.5+ | 1.4- |
| 2003 11 19 | 691 | 0.2+  | 0.2+  | 2007 11 14 | 691 | 0.0  | 0.1- | 2007 12 06 | G96 | 0.1+ | 0.3+ |
| 2003 11 19 | 691 | 0.2+  | 0.3+  | 2007 11 14 | 691 | 0.2- | 0.1+ | 2007 12 06 | G96 | 0.2+ | 0.2- |
| 2003 11 21 | 704 | (1.6+ | 1.2+) | 2007 11 15 | 704 | 0.4+ | 0.5+ | 2007 12 06 | G96 | 0.6+ | 0.1- |
| 2003 11 21 | 704 | 0.1+  | 0.2+  | 2007 11 15 | 704 | 0.5- | 0.3+ | 2007 12 06 | G96 | 0.2+ | 0.1- |
| 2003 11 21 | 704 | 0.1+  | 1.0-  | 2007 11 15 | 704 | 0.6+ | 0.3+ |            |     |      |      |
| 2007 10 30 | 691 | 0.2-  | 0.4-  | 2007 11 18 | 691 | 0.1+ | 0.1+ |            |     |      |      |

**2007 VK<sub>230</sub> = 2003 WO<sub>177</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 304.04575  | (2000.0) | <b>P</b> | <b>Q</b>                 |
|----------|------------|----------|----------|--------------------------|
| <i>n</i> | 0.26154279 | $\omega$ | 78.48675 | -0.50165788              |
| <i>a</i> | 2.4216287  | $\Omega$ | 41.64737 | +0.78000507              |
| <i>e</i> | 0.1396623  | <i>i</i> | 1.92633  | +0.37407413              |
| <i>P</i> | 3.77       | <i>H</i> | 17.5     | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 19 | 691 | 0.1- | 0.2+ | 2005 03 12 | 691 | 0.0  | 0.3+ | 2007 11 07 | 691 | 0.2- | 0.3- |
| 2003 09 19 | 691 | 0.2+ | 0.2+ | 2005 03 12 | 691 | 0.1+ | 0.0  | 2007 11 07 | 691 | 0.1- | 0.1+ |
| 2003 09 19 | 691 | 0.3- | 0.3+ | 2005 03 12 | 691 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.0  | 0.0  |
| 2003 10 16 | 691 | 0.1+ | 0.1- | 2007 09 10 | G96 | 0.2- | 0.7- | 2007 11 14 | 691 | 0.2- | 0.0  |
| 2003 10 16 | 691 | 0.2- | 0.1+ | 2007 09 10 | G96 | 0.1- | 0.2- | 2007 11 14 | 691 | 0.0  | 0.1- |
| 2003 10 16 | 691 | 0.0  | 0.2- | 2007 09 10 | G96 | 0.2- | 0.2- | 2007 11 15 | 704 | 0.4+ | 0.2+ |
| 2003 10 23 | 695 | 0.2- | 0.0  | 2007 09 10 | G96 | 0.5+ | 0.2- | 2007 11 15 | 704 | 0.3- | 0.2- |
| 2003 10 23 | 695 | 0.1- | 0.1+ | 2007 10 17 | G96 | 0.5+ | 0.0  | 2007 11 15 | 704 | 0.1+ | 1.1+ |
| 2003 11 20 | 695 | 0.1+ | 0.2+ | 2007 10 17 | G96 | 0.1+ | 0.2- | 2007 11 15 | 704 | 1.3- | 0.1+ |
| 2003 11 20 | 695 | 0.1+ | 0.1+ | 2007 10 17 | G96 | 0.3+ | 0.4- | 2007 11 18 | 691 | 0.1+ | 0.1- |
| 2003 11 21 | 695 | 0.2+ | 0.2+ | 2007 10 17 | G96 | 0.4+ | 0.2- | 2007 11 18 | 691 | 0.2+ | 0.1- |
| 2003 11 21 | 695 | 0.2+ | 0.6+ | 2007 11 07 | 691 | 0.1- | 0.2+ | 2007 11 18 | 691 | 0.4+ | 0.0  |

**2007 VL<sub>230</sub> = 2001 UG<sub>175</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 34.07678   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.17030977 | $\omega$ | 303.95134 | +0.96957631              |
| <i>a</i> | 3.2233664  | $\Omega$ | 54.96641  | +0.09949279              |
| <i>e</i> | 0.2236989  | <i>i</i> | 17.16276  | -0.22365813              |
| <i>P</i> | 5.79       | <i>H</i> | 15.9      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 10 24 | 644 | 0.5+ | 0.3- | 2007 10 30 | G96 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.1+  | 0.1+  |
| 2001 10 24 | 644 | 0.5+ | 0.0  | 2007 10 30 | G96 | 0.0  | 0.2- | 2007 11 15 | 704 | 0.1-  | 0.1+  |
| 2001 10 24 | 644 | 0.3+ | 0.2+ | 2007 10 30 | G96 | 0.2- | 0.4- | 2007 11 15 | 704 | 0.6+  | 0.6+  |
| 2001 10 25 | 644 | 0.6- | 0.2+ | 2007 10 30 | G96 | 0.2+ | 0.0  | 2007 11 15 | 704 | 0.7+  | 0.1+  |
| 2001 10 25 | 644 | 0.2- | 0.3- | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.8+  | 0.8+  |
| 2001 10 25 | 644 | 0.4- | 0.1+ | 2007 11 07 | 691 | 0.2+ | 0.4+ | 2007 11 18 | 691 | 0.2-  | 0.2-  |
| 2007 10 10 | G96 | 0.1- | 0.1- | 2007 11 07 | 691 | 0.2- | 0.0  | 2007 11 18 | 691 | 0.0   | 0.2-  |
| 2007 10 10 | G96 | 0.1- | 0.2- | 2007 11 14 | 691 | 0.0  | 0.1- | 2007 11 18 | 691 | (2.1- | 1.6-) |
| 2007 10 10 | G96 | 0.0  | 0.0  | 2007 11 14 | 691 | 0.0  | 0.1- |            |     |       |       |
| 2007 10 10 | G96 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.2- | 0.0  |            |     |       |       |

**2007 VU<sub>230</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.28055    | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.22424699 | $\omega$ | 345.63975 | +0.78172544              |
| <i>a</i> | 2.6831913  | $\Omega$ | 52.90852  | +0.57793093              |
| <i>e</i> | 0.2019592  | <i>i</i> | 3.44709   | +0.23431001              |
| <i>P</i> | 4.40       | <i>H</i> | 17.3      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 21 | 691 | 0.2-  | 0.2-  | 2007 10 20 | 703 | 0.7+  | 0.6-  | 2007 11 17 | 704 | 0.2+ | 0.1+ |
| 2003 12 21 | 691 | 0.4+  | 0.8-  | 2007 10 20 | 703 | 0.6-  | 0.6-  | 2007 11 17 | 704 | 0.6+ | 0.3- |
| 2003 12 21 | 691 | 0.2-  | 0.4+  | 2007 10 20 | 703 | (1.5- | 1.0+) | 2007 11 17 | 704 | 0.1- | 1.4+ |
| 2004 01 15 | 691 | 0.0   | 0.5+  | 2007 10 30 | 691 | 0.3-  | 0.0   | 2007 11 17 | 704 | 0.8+ | 0.6- |
| 2004 01 15 | 691 | 0.1+  | 0.3+  | 2007 10 30 | 691 | 0.3-  | 0.1-  | 2007 11 18 | 691 | 0.2- | 0.0  |
| 2004 01 15 | 691 | 0.1-  | 0.4-  | 2007 10 30 | 691 | 0.2-  | 0.0   | 2007 11 18 | 691 | 0.1- | 0.2- |
| 2007 09 10 | G96 | 0.2+  | 0.2-  | 2007 11 07 | 691 | 0.0   | 0.2+  | 2007 11 18 | 691 | 0.1+ | 0.0  |
| 2007 09 10 | G96 | 0.4+  | 0.1+  | 2007 11 07 | 691 | 0.1+  | 0.1+  | 2007 12 03 | 703 | 0.0  | 0.0  |
| 2007 09 10 | G96 | 0.2+  | 0.0   | 2007 11 07 | 691 | 0.0   | 0.2+  | 2007 12 03 | 703 | 0.1- | 0.6+ |
| 2007 09 10 | G96 | 0.0   | 0.2+  | 2007 11 14 | 691 | 0.1+  | 0.2+  | 2007 12 03 | 703 | 0.1- | 0.3+ |
| 2007 09 18 | G96 | 0.1-  | 0.1-  | 2007 11 14 | 691 | 0.1+  | 0.1+  | 2007 12 03 | 703 | 0.1+ | 0.3+ |
| 2007 09 18 | G96 | 0.1-  | 0.1-  | 2007 11 14 | 691 | 0.5-  | 0.9-  | 2007 12 04 | G96 | 0.3+ | 0.1- |
| 2007 09 18 | G96 | 0.1-  | 0.1-  | 2007 11 15 | 704 | 0.4+  | 0.7+  | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2007 09 18 | G96 | 0.2+  | 0.2-  | 2007 11 15 | 704 | 0.2-  | 0.9+  | 2007 12 04 | G96 | 0.0  | 0.2- |
| 2007 10 17 | G96 | 0.3+  | 0.3-  | 2007 11 15 | 704 | 0.4-  | 0.5+  | 2007 12 06 | G96 | 0.1+ | 0.2- |
| 2007 10 17 | G96 | 0.3+  | 0.3-  | 2007 11 15 | 704 | 0.7+  | 0.4+  | 2007 12 06 | G96 | 0.4+ | 0.1- |
| 2007 10 17 | G96 | 0.1-  | 0.4-  | 2007 11 16 | 704 | 0.9-  | 0.1+  | 2007 12 06 | G96 | 0.4+ | 0.4- |
| 2007 10 17 | G96 | 0.0   | 0.0   | 2007 11 16 | 704 | 0.3+  | 0.6+  | 2007 12 06 | G96 | 0.3+ | 0.0  |
| 2007 10 20 | 703 | (2.1+ | 0.1+) | 2007 11 16 | 704 | 0.4+  | 0.6+  |            |     |      |      |

**2007 VB<sub>232</sub> = 2005 GT<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 335.13922  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.28986901 | $\omega$ | 206.70613 | +0.11742396              |
| <i>a</i> | 2.2611785  | $\Omega$ | 236.55771 | +0.91571441              |
| <i>e</i> | 0.0910770  | <i>i</i> | 1.48812   | +0.38428991              |
| <i>P</i> | 3.40       | <i>H</i> | 17.9      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 10 18 | 691 | 0.0  | 0.0  | 2005 03 09 | G96 | (1.5+ | 6.6+) | 2007 11 14 | 691 | 0.1-  | 0.1+  |
| 2000 10 18 | 691 | 0.2+ | 0.2- | 2005 04 05 | G96 | 0.2+  | 0.1-  | 2007 11 14 | 691 | 0.0   | 0.2+  |
| 2000 10 18 | 691 | 0.7+ | 0.3- | 2005 04 05 | G96 | 0.2-  | 0.4-  | 2007 11 15 | 704 | 0.2-  | 0.5+  |
| 2000 11 19 | 691 | 0.1- | 0.6- | 2005 04 05 | G96 | 0.2-  | 1.1-  | 2007 11 15 | 704 | 0.9-  | 1.1+  |
| 2000 11 19 | 691 | 0.1- | 0.5- | 2005 04 05 | G96 | 0.4-  | 0.0   | 2007 11 15 | 704 | 1.1+  | 1.4+  |
| 2000 11 19 | 691 | 0.1- | 0.3- | 2005 04 06 | G96 | 0.3-  | 0.4-  | 2007 11 15 | 704 | (0.7- | 1.8+) |
| 2005 01 13 | 691 | 0.2+ | 0.1- | 2005 04 06 | G96 | 0.7-  | 0.4-  | 2007 11 18 | 691 | 0.1+  | 0.1+  |



## 2007 DEC. 24

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2005 01 13 | 691 | 0.2+  | 0.0   | 2005 04 06 | G96 | 0.5− | 0.3+ | 2007 11 18 | 691 | 0.1+ | 0.2+ |
| 2005 01 13 | 691 | 0.1+  | 0.1−  | 2005 04 06 | G96 | 0.4− | 0.1− | 2007 11 18 | 691 | 0.3− | 0.4− |
| 2005 02 02 | 703 | 0.6−  | 0.5−  | 2007 10 30 | 691 | 0.1− | 0.3+ | 2007 12 03 | 703 | 1.0+ | 0.3− |
| 2005 02 02 | 703 | (1.7− | 0.2−) | 2007 10 30 | 691 | 0.2+ | 0.3+ | 2007 12 03 | 703 | 0.3+ | 1.1− |
| 2005 02 02 | 703 | (1.9− | 0.4+) | 2007 10 30 | 691 | 0.1− | 0.2+ | 2007 12 03 | 703 | 0.2− | 0.1− |
| 2005 02 02 | 703 | 0.2−  | 0.1+  | 2007 11 07 | 691 | 0.2− | 0.2+ | 2007 12 03 | 703 | 0.2+ | 0.7+ |
| 2005 03 09 | G96 | (0.3+ | 4.6+) | 2007 11 07 | 691 | 0.2+ | 0.1− | 2007 12 05 | 704 | 0.4− | 0.2+ |
| 2005 03 09 | G96 | (1.2+ | 5.2+) | 2007 11 07 | 691 | 0.1+ | 0.2+ | 2007 12 05 | 704 | 0.3− | 0.0  |
| 2005 03 09 | G96 | (1.2+ | 6.4+) | 2007 11 14 | 691 | 0.4− | 0.1− | 2007 12 05 | 704 | 0.6+ | 0.2− |

2007 VC<sub>232</sub> = 2002 GG<sub>40</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.29566624 | <i>ω</i> | 186.61552 | +0.42064593 |      | −0.90683742 |   |
| <i>a</i> | 2.2315240  | <i>Ω</i> | 238.51210 | +0.83378083 |      | +0.39794601 |   |
| <i>e</i> | 0.1377988  | <i>i</i> | 1.78162   | +0.35758431 |      | +0.13886996 |   |
| <i>P</i> | 3.33       | <i>H</i> | 17.2      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1995 02 01 | 691 | 0.0  | 0.1− | 2005 03 02 | 691 | 0.1+  | 0.2−  | 2007 11 14 | 691 | 0.2−  | 0.1−  |
| 1995 02 01 | 691 | 0.1+ | 0.0  | 2005 03 13 | 691 | 0.0   | 0.2+  | 2007 11 14 | 691 | 0.3−  | 0.2−  |
| 1995 02 01 | 691 | 0.1− | 0.2− | 2005 03 13 | 691 | 0.2+  | 0.3+  | 2007 11 14 | 691 | 0.2−  | 0.2−  |
| 2002 04 04 | 644 | 0.1− | 0.6+ | 2005 03 13 | 691 | 0.4+  | 0.2−  | 2007 11 15 | 704 | 0.1−  | 0.2−  |
| 2002 04 04 | 644 | 0.2+ | 0.7+ | 2005 04 06 | G96 | 0.2+  | 0.1−  | 2007 11 15 | 704 | 0.0   | 0.2+  |
| 2002 04 04 | 644 | 0.2+ | 0.9+ | 2005 04 06 | G96 | 0.1−  | 0.1−  | 2007 11 15 | 704 | 0.1+  | 1.1+  |
| 2002 04 05 | 691 | 0.2− | 0.3− | 2005 04 06 | G96 | 0.2−  | 0.1−  | 2007 12 03 | 703 | 0.1−  | 0.2−  |
| 2002 04 05 | 691 | 0.1+ | 0.1− | 2005 04 06 | G96 | 0.5+  | 0.2+  | 2007 12 03 | 703 | 0.8−  | 0.1−  |
| 2002 04 05 | 691 | 0.3− | 0.9− | 2007 09 15 | G96 | 0.3+  | 0.0   | 2007 12 03 | 703 | 0.0   | 0.3+  |
| 2005 01 18 | 703 | 0.0  | 0.3+ | 2007 09 15 | G96 | 0.1+  | 0.3−  | 2007 12 03 | 703 | 0.2+  | 0.5−  |
| 2005 01 18 | 703 | 0.3+ | 0.4− | 2007 09 15 | G96 | 0.5+  | 0.1−  | 2007 12 05 | 704 | (1.8+ | 0.2+) |
| 2005 01 18 | 703 | 1.1− | 0.0  | 2007 09 15 | G96 | 0.2−  | 0.4−  | 2007 12 05 | 704 | 0.9+  | 0.8−  |
| 2005 01 18 | 703 | 0.1− | 0.5− | 2007 10 24 | G96 | 0.3+  | 0.2−  | 2007 12 05 | 704 | 0.6+  | 0.4−  |
| 2005 02 02 | 691 | 0.1+ | 0.2+ | 2007 10 24 | G96 | 0.1−  | 0.2−  | 2007 12 05 | 704 | 0.5+  | 0.4−  |
| 2005 02 02 | 691 | 0.1+ | 0.2+ | 2007 10 24 | G96 | 0.5+  | 0.3−  | 2007 12 05 | 704 | 0.3+  | 0.3−  |
| 2005 02 02 | 691 | 0.1+ | 0.1+ | 2007 10 24 | G96 | 0.1+  | 0.2−  | 2007 12 14 | 704 | 0.5+  | 0.8+  |
| 2005 02 02 | 703 | 1.1− | 0.7− | 2007 10 30 | 691 | (0.6− | 1.9−) | 2007 12 14 | 704 | 0.3+  | 0.9+  |
| 2005 02 02 | 703 | 0.9− | 0.1− | 2007 10 30 | 691 | 0.3−  | 0.3+  | 2007 12 14 | 704 | 0.7+  | 0.5+  |
| 2005 02 02 | 703 | 1.2− | 0.1+ | 2007 10 30 | 691 | 0.0   | 0.1+  | 2007 12 15 | G96 | 0.7+  | 0.6+  |
| 2005 02 02 | 703 | 1.2− | 0.5− | 2007 11 07 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.0   | 0.5+  |
| 2005 03 02 | 691 | 0.2+ | 0.2+ | 2007 11 07 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.4+  | 0.5+  |
| 2005 03 02 | 691 | 0.5+ | 0.3+ | 2007 11 07 | 691 | 0.1−  | 0.2−  | 2007 12 15 | G96 | 0.3+  | 0.5+  |

2007 VP<sub>232</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |           | MPC         |      |             |   |
|----------|------------|----------|-----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |           | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.18040842 | <i>ω</i> | 249.46179 | +0.63680380 |      | +0.75191339 |   |
| <i>a</i> | 3.1019266  | <i>Ω</i> | 61.26825  | −0.61489481 |      | +0.62876194 |   |
| <i>e</i> | 0.0743470  | <i>i</i> | 11.21919  | −0.46517232 |      | +0.19820363 |   |
| <i>P</i> | 5.46       | <i>H</i> | 14.9      | <i>G</i>    | 0.15 | <i>U</i>    | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 10 | 644 | 0.0  | 0.7+ | 2007 11 06 | D29 | 0.2− | 0.5+ | 2007 11 16 | 704 | 0.5− | 0.5+ |
| 2001 10 10 | 644 | 0.3− | 0.2− | 2007 11 06 | D29 | 0.0  | 0.3+ | 2007 11 17 | 704 | 0.9+ | 0.6− |
| 2001 10 10 | 644 | 0.1+ | 0.2− | 2007 11 06 | D29 | 0.3+ | 0.3− | 2007 11 17 | 704 | 0.5− | 0.5+ |
| 2005 03 17 | G96 | 0.3− | 0.2+ | 2007 11 06 | D29 | 0.2+ | 0.1− | 2007 11 17 | 704 | 0.1+ | 0.0  |
| 2005 03 17 | G96 | 0.4− | 0.3+ | 2007 11 07 | G91 | 0.2− | 0.1+ | 2007 11 17 | 704 | 0.1+ | 0.6+ |
| 2005 03 17 | G96 | 0.6− | 0.3+ | 2007 11 07 | 691 | 0.2− | 0.0  | 2007 11 17 | 704 | 0.1− | 0.0  |
| 2005 03 17 | G96 | 0.1− | 0.2+ | 2007 11 07 | 691 | 0.1− | 0.0  | 2007 12 03 | 703 | 0.4− | 0.4+ |
| 2005 06 14 | G96 | 0.3+ | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.3− | 0.3+ |
| 2005 06 14 | G96 | 0.5+ | 0.1+ | 2007 11 14 | 691 | 0.2− | 0.1− | 2007 12 03 | 703 | 0.7− | 0.8+ |
| 2005 06 14 | G96 | 0.2+ | 0.2+ | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.1− | 0.3− |
| 2005 06 14 | G96 | 0.6+ | 0.0  | 2007 11 14 | 300 | 0.8+ | 0.8− | 2007 12 14 | 704 | 0.0  | 2.0+ |
| 2006 08 28 | E12 | 0.1+ | 0.8+ | 2007 11 14 | 300 | 0.3+ | 0.2+ | 2007 12 14 | 704 | 0.1− | 0.8+ |
| 2006 08 28 | E12 | 0.4+ | 1.2− | 2007 11 14 | 300 | 0.4+ | 0.4− | 2007 12 14 | 704 | 0.4+ | 0.0  |
| 2006 08 28 | E12 | 0.1− | 0.1− | 2007 11 14 | 300 | 0.6+ | 0.4− | 2007 12 14 | 704 | 0.1+ | 0.5− |
| 2006 08 28 | E12 | 0.4− | 0.4+ | 2007 11 14 | 300 | 0.5+ | 0.1− | 2007 12 15 | G96 | 0.3+ | 0.5− |

## M.P.O. 130035

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 15 | G96 | 0.3+ | 0.1− | 2007 11 14 | 300 | 0.0  | 0.7− | 2007 12 15 | G96 | 0.4+ | 0.2− |
| 2007 10 15 | G96 | 0.4+ | 0.3− | 2007 11 14 | 300 | 0.2+ | 0.0  | 2007 12 15 | G96 | 0.0  | 0.2− |
| 2007 10 15 | G96 | 0.0  | 0.5− | 2007 11 16 | 704 | 0.2+ | 0.3+ | 2007 12 15 | G96 | 0.2+ | 0.1− |
| 2007 10 15 | G96 | 0.4− | 0.3− | 2007 11 16 | 704 | 0.1− | 0.5− |            |     |      |      |

2007 VM<sub>233</sub> = 2004 FN<sub>133</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.18043328 | <i>ω</i> | 86.94027 | −0.84469196 |      | −0.50698927 |   |
| <i>a</i> | 3.1016416  | <i>Ω</i> | 62.53676 | +0.38116233 |      | −0.79487603 |   |
| <i>e</i> | 0.0476129  | <i>i</i> | 11.15300 | +0.37578022 |      | −0.33336763 |   |
| <i>P</i> | 5.46       | <i>H</i> | 15.6     | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2004 03 23 | 704 | 0.2+ | 0.4− | 2007 10 31 | G96 | 0.1−  | 0.2−  | 2007 11 18 | 300 | 1.2+ | 1.2+ |
| 2004 03 23 | 704 | 0.3− | 0.5− | 2007 10 31 | G96 | 0.4+  | 0.4−  | 2007 11 20 | 300 | 0.6+ | 0.2+ |
| 2004 03 23 | 704 | 0.8− | 0.3+ | 2007 10 31 | G96 | 0.0   | 0.0   | 2007 11 20 | 300 | 0.9+ | 0.8+ |
| 2004 03 30 | 704 | 1.1+ | 0.7+ | 2007 10 31 | 691 | 0.2+  | 0.0   | 2007 11 20 | 300 | 0.0  | 0.7+ |
| 2004 03 30 | 704 | 0.2− | 0.1− | 2007 10 31 | 691 | 0.1+  | 0.2+  | 2007 11 20 | 300 | 0.6+ | 0.9+ |
| 2004 03 30 | 704 | 0.1− | 1.2+ | 2007 10 31 | 691 | 0.1+  | 0.3+  | 2007 11 20 | 300 | 0.7+ | 1.2+ |
| 2004 03 30 | 704 | 0.1− | 0.7− | 2007 11 08 | 691 | 0.2−  | 0.2+  | 2007 12 04 | G96 | 0.3− | 0.4− |
| 2004 03 30 | 704 | 0.1− | 0.6− | 2007 11 08 | 691 | 0.1−  | 0.1−  | 2007 12 04 | G96 | 0.0  | 0.2− |
| 2004 03 30 | 704 | 0.2+ | 0.5− | 2007 11 08 | 691 | 0.1+  | 0.3−  | 2007 12 04 | G96 | 0.3− | 0.3− |
| 2004 03 30 | 704 | 0.2+ | 0.7+ | 2007 11 14 | 691 | 0.4−  | 0.5−  | 2007 12 04 | G96 | 0.0  | 0.1− |
| 2007 10 20 | G96 | 0.1− | 0.0  | 2007 11 14 | 691 | 1.0−  | 0.9−  | 2007 12 04 | G96 | 0.3+ | 0.1− |
| 2007 10 20 | G96 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.2−  | 0.2+  | 2007 12 04 | G96 | 0.1+ | 0.3− |
| 2007 10 20 | G96 | 0.2+ | 0.1+ | 2007 11 18 | 300 | (2.1+ | 1.6+) | 2007 12 04 | G96 | 0.2− | 0.2− |
| 2007 10 20 | G96 | 0.4+ | 0.0  | 2007 11 18 | 300 | (1.1+ | 2.5+) | 2007 12 04 | G96 | 0.5− | 0.3− |
| 2007 10 31 | G96 | 0.4+ | 0.8− | 2007 11 18 | 300 | 1.2+  | 1.6+  |            |     |      |      |

2007 VS<sub>233</sub> = 2003 YJ<sub>126</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| MPC      |            |          |          | MPC         |      |             |   |
|----------|------------|----------|----------|-------------|------|-------------|---|
| <i>M</i> |            | (2000.0) |          | <b>P</b>    |      | <b>Q</b>    |   |
| <i>n</i> | 0.23579245 | <i>ω</i> | 91.46305 | −0.88837454 |      | −0.40817880 |   |
| <i>a</i> | 2.5948731  | <i>Ω</i> | 64.48623 | +0.27043720 |      | −0.83518803 |   |
| <i>e</i> | 0.2816060  | <i>i</i> | 13.46814 | +0.37101807 |      | −0.36857974 |   |
| <i>P</i> | 4.18       | <i>H</i> | 15.9     | <i>G</i>    | 0.15 | <i>U</i>    | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2003 12 27 | 704 | 0.8− | 0.5+ | 2007 11 13 | A77 | 0.1−  | 0.2+  | 2007 12 03 | 703 | 0.2−  | 0.7−  |
| 2003 12 27 | 704 | 0.5+ | 0.0  | 2007 11 13 | A77 | 0.1−  | 0.5+  | 2007 12 04 | 699 | 0.1+  | 0.0   |
| 2003 12 27 | 704 | 0.8− | 0.1− | 2007 11 14 | 691 | 0.4−  | 0.2+  | 2007 12 04 | 699 | 0.1+  | 0.1+  |
| 2003 12 27 | 704 | 0.3− | 0.0  | 2007 11 14 | 704 | (1.5+ | 0.9−) | 2007 12 04 | 699 | 0.8+  | 0.2−  |
| 2003 12 29 | 704 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.2−  | 0.1+  | 2007 12 04 | 699 | (1.5+ | 1.4−) |
| 2003 12 29 | 704 | 0.4+ | 0.0  | 2007 11 14 | 704 | 0.4+  | 0.5−  | 2007 12 10 | 704 | 0.5−  | 1.6+  |
| 2003 12 29 | 704 | 0.4+ | 0.4− | 2007 11 14 | 704 | (0.2+ | 1.9−) | 2007 12 10 | 704 | 0.6−  | 0.8+  |
| 2003 12 29 | 704 | 0.6+ | 0.5− | 2007 11 14 | 691 | 0.1−  | 0.1+  | 2007 12 10 | 704 | 0.3−  | 0.6+  |
| 2003 12 29 | 704 | 0.4+ | 0.1+ | 2007 11 17 | A77 | 0.7+  | 0.1+  | 2007 12 14 | 704 | 1.1−  | 0.6−  |
| 2007 10 20 | G96 | 0.2+ | 0.2− | 2007 11 17 | A77 | 0.0   | 0.1−  | 2007 12 14 | 704 | 0.3+  | 0.5+  |
| 2007 10 20 | G96 | 0.3+ | 0.1− | 2007 11 17 | A77 | 0.4+  | 0.1+  | 2007 12 14 | 704 | 1.2−  | 1.1+  |
| 2007 10 20 | G96 | 0.7+ | 0.0  | 2007 11 18 | A77 | 0.4+  | 0.1−  | 2007 12 14 | 704 | 0.6+  | 0.4+  |
| 2007 10 20 | G96 | 0.7+ | 0.2− | 2007 11 18 | A77 | 0.0   | 0.0   | 2007 12 14 | 704 | 0.1−  | 0.2−  |
| 2007 11 08 | 691 | 0.0  | 0.1− | 2007 11 18 | A77 | 0.3+  | 0.0   | 2007 12 15 | G96 | 0.6+  | 0.7−  |
| 2007 11 08 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.2−  | 0.5−  | 2007 12 15 | G96 | 0.4+  | 0.8−  |
| 2007 11 08 | 691 | 0.0  | 0.2− | 2007 12 03 | 703 | 0.3+  | 0.5−  | 2007 12 15 | G96 | 0.3+  | 0.6−  |
| 2007 11 13 | A77 | 0.2− | 0.1− | 2007 12 03 | 703 | 0.1−  | 0.5−  |            |     |       |       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2001 08 24 | 644 | 0.7− | 0.1+ | 2007 11 13 | 699 | 0.5− | 0.7− | 2007 11 21 | G96 | 0.0   | 0.0   |
| 2001 08 24 | 644 | 0.5− | 0.1− | 2007 11 13 | 699 | 0.5− | 0.7+ | 2007 11 21 | G96 | 0.1+  | 0.1−  |
| 2001 08 24 | 644 | 0.3− | 0.1− | 2007 11 14 | 704 | 0.1− | 0.3+ | 2007 11 21 | G96 | 0.0   | 0.1−  |
| 2001 11 12 | 699 | 0.6+ | 0.3+ | 2007 11 14 | 704 | 0.4− | 0.1− | 2007 11 29 | 704 | 0.9−  | 1.1+  |
| 2001 11 12 | 699 | 0.3+ | 0.6+ | 2007 11 14 | 704 | 0.1+ | 0.4+ | 2007 11 29 | 704 | (1.0− | 2.0+) |
| 2001 11 12 | 699 | 0.1+ | 0.0  | 2007 11 14 | 704 | 0.0  | 0.5+ | 2007 11 29 | 704 | 0.1−  | 1.5+  |
| 2001 11 12 | 699 | 0.0  | 0.4+ | 2007 11 14 | 704 | 0.0  | 0.4+ | 2007 11 29 | 704 | (0.4− | 1.9+) |
| 2005 05 20 | G96 | 0.6+ | 0.2+ | 2007 11 14 | 691 | 0.1− | 0.0  | 2007 12 04 | 704 | 1.0+  | 1.2−  |
| 2005 05 20 | G96 | 0.2− | 0.3− | 2007 11 14 | 691 | 0.2− | 0.1+ | 2007 12 04 | 704 | 1.6+  | 1.5−  |
| 2005 05 20 | G96 | 0.1+ | 1.3− | 2007 11 14 | 691 | 0.1+ | 0.1+ | 2007 12 04 | 703 | 0.5−  | 0.5+  |
| 2007 10 30 | 691 | 0.2− | 0.3− | 2007 11 18 | G96 | 0.1− | 0.2− | 2007 12 04 | 704 | 1.1+  | 1.0−  |
| 2007 10 30 | 691 | 0.2− | 0.3− | 2007 11 18 | G96 | 0.4− | 0.2− | 2007 12 04 | 703 | 0.4−  | 0.3+  |
| 2007 10 30 | 691 | 0.1+ | 0.6+ | 2007 11 18 | G96 | 0.1− | 0.1− | 2007 12 04 | 703 | 0.2−  | 0.1−  |
| 2007 11 08 | D29 | 0.3+ | 0.3− | 2007 11 18 | G96 | 0.1+ | 0.3− | 2007 12 04 | 704 | 0.4+  | 0.6+  |
| 2007 11 08 | D29 | 0.6− | 0.5− | 2007 11 19 | 691 | 0.0  | 0.0  | 2007 12 04 | 703 | 0.1−  | 0.9+  |
| 2007 11 08 | D29 | 0.7+ | 1.5− | 2007 11 19 | 691 | 0.0  | 0.1− | 2007 12 04 | 704 | 0.6+  | 0.3+  |
| 2007 11 08 | D29 | 0.5+ | 0.1− | 2007 11 19 | 691 | 0.1+ | 0.0  | 2007 12 05 | 699 | 0.2+  | 0.5−  |
| 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 11 21 | G96 | 0.4+ | 0.1− | 2007 12 05 | 699 | 0.4+  | 0.2+  |
| 2007 11 09 | 691 | 0.1− | 0.1+ | 2007 11 21 | G96 | 0.2− | 0.3+ | 2007 12 05 | 699 | 0.1−  | 0.2+  |
| 2007 11 09 | 691 | 0.5− | 0.7− | 2007 11 21 | G96 | 0.0  | 0.1− | 2007 12 05 | 699 | 0.4+  | 0.0   |
| 2007 11 13 | 699 | 0.3− | 0.5− | 2007 11 21 | G96 | 0.5+ | 0.1+ |            |     |       |       |
| 2007 11 13 | 699 | 0.8+ | 0.1+ | 2007 11 21 | G96 | 0.0  | 0.1− |            |     |       |       |

**2007 VP<sub>236</sub> = 2006 KK<sub>63</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 47.40547   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.31712915 | $\omega$ | 118.92094 | +0.98532520   | +0.16569124 |
| <i>a</i> | 2.1296682  | $\Omega$ | 231.57183 | −0.16907875   | +0.91456913 |
| <i>e</i> | 0.0830225  | <i>i</i> | 2.99974   | −0.02337988   | +0.36893050 |
| <i>P</i> | 3.11       | <i>H</i> | 18.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2006 05 23 | G96 | 0.6− | 0.1+ | 2006 05 24 | G96 | 0.2− | 0.1+ | 2007 11 14 | 691 | 1.1−  | 0.1+  |
| 2006 05 23 | G96 | 0.1− | 0.1− | 2007 10 07 | 691 | 0.1− | 0.3+ | 2007 11 15 | 704 | 0.1+  | 0.5−  |
| 2006 05 23 | G96 | 0.2− | 0.0  | 2007 10 07 | 691 | 0.4+ | 0.1+ | 2007 11 15 | 704 | 0.7+  | 0.5+  |
| 2006 05 23 | G96 | 0.2+ | 0.3− | 2007 10 07 | 691 | 0.1+ | 0.3+ | 2007 11 15 | 704 | 0.8+  | 0.1−  |
| 2006 05 23 | 291 | 0.0  | 0.8+ | 2007 11 11 | G96 | 0.2+ | 0.1− | 2007 11 15 | 704 | (1.4+ | 2.4+) |
| 2006 05 23 | 291 | 0.5+ | 0.2+ | 2007 11 11 | G96 | 0.3+ | 0.2− | 2007 12 15 | G96 | 0.1−  | 0.2+  |
| 2006 05 23 | 291 | 0.4+ | 0.2+ | 2007 11 11 | G96 | 0.5+ | 0.2+ | 2007 12 15 | G96 | 0.2+  | 0.2−  |
| 2006 05 24 | G96 | 0.1+ | 0.2− | 2007 11 11 | G96 | 0.7+ | 0.9− | 2007 12 15 | G96 | 0.5+  | 0.1+  |
| 2006 05 24 | G96 | 0.4− | 0.0  | 2007 11 14 | 691 | 0.2− | 0.2+ | 2007 12 15 | G96 | 0.7+  | 0.2+  |
| 2006 05 24 | G96 | 0.9− | 0.0  | 2007 11 14 | 691 | 0.2− | 0.3+ |            |     |       |       |

**2007 VE<sub>237</sub> = 2003 XC<sub>41</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 37.35560   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23819030 | $\omega$ | 302.78411 | +0.99695096   | +0.04174118 |
| <i>a</i> | 2.5774287  | $\Omega$ | 54.90620  | −0.00858742   | +0.89845321 |
| <i>e</i> | 0.1543239  | <i>i</i> | 4.62163   | −0.07755666   | +0.43708065 |
| <i>P</i> | 4.14       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 14 | 691 | 0.0  | 0.2+ | 2007 10 30 | G96 | 0.6+ | 0.1− | 2007 11 18 | 691 | 0.0  | 0.6+ |
| 2003 12 14 | 691 | 0.0  | 0.2+ | 2007 11 11 | G96 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.1− | 0.1+ |
| 2003 12 14 | 691 | 0.0  | 0.0  | 2007 11 11 | G96 | 0.1+ | 0.4− | 2007 11 18 | 691 | 0.1− | 0.1+ |
| 2003 12 29 | 691 | 0.1− | 0.1+ | 2007 11 11 | G96 | 0.3+ | 0.3− | 2007 12 05 | 691 | 0.5− | 0.3+ |
| 2003 12 29 | 691 | 0.0  | 0.2− | 2007 11 11 | G96 | 0.0  | 0.2− | 2007 12 05 | 691 | 0.1− | 0.3− |
| 2003 12 29 | 691 | 0.0  | 0.0  | 2007 11 13 | 300 | 0.0  | 0.1− | 2007 12 05 | 691 | 0.4− | 0.1− |
| 2007 09 14 | G96 | 0.3− | 0.4− | 2007 11 13 | 300 | 0.2− | 0.5+ | 2007 12 05 | 691 | 0.5+ | 0.4− |
| 2007 09 14 | G96 | 0.3+ | 0.4− | 2007 11 13 | 300 | 0.3− | 0.2+ | 2007 12 05 | 691 | 0.2− | 0.1− |
| 2007 09 14 | G96 | 0.1− | 0.1− | 2007 11 13 | 300 | 0.3+ | 0.3− | 2007 12 05 | 691 | 0.2− | 0.5− |
| 2007 09 14 | G96 | 0.0  | 0.3− | 2007 11 14 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.8+ | 0.7+ |
| 2007 10 12 | 691 | 0.2− | 0.1− | 2007 11 14 | 691 | 0.1− | 0.1+ | 2007 12 05 | 704 | 0.0  | 0.3+ |
| 2007 10 12 | 691 | 0.0  | 0.2+ | 2007 11 14 | 691 | 0.1+ | 0.3+ | 2007 12 05 | 704 | 0.5+ | 0.8− |
| 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 15 | 704 | 1.0+ | 0.1+ | 2007 12 05 | 704 | 1.3+ | 1.0+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 30 | 691 | 0.2− | 0.0  | 2007 11 15 | 704 | 0.8+ | 0.4+ | 2007 12 05 | 704 | 0.0  | 0.2− |
| 2007 10 30 | 691 | 0.1+ | 0.2− | 2007 11 15 | 704 | 0.9+ | 0.2+ | 2007 12 15 | G96 | 0.5+ | 0.8− |
| 2007 10 30 | 691 | 0.1− | 0.1+ | 2007 11 15 | 704 | 0.6+ | 0.3+ | 2007 12 15 | G96 | 0.6+ | 1.0− |
| 2007 10 30 | G96 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1− | 0.2+ | 2007 12 15 | G96 | 0.5+ | 0.6− |
| 2007 10 30 | G96 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.3− | 0.1− | 2007 12 15 | G96 | 1.0+ | 0.5− |
| 2007 10 30 | G96 | 0.0  | 0.1− | 2007 11 18 | 691 | 0.2− | 0.0  |            |     |      |      |

**2007 VU<sub>237</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 312.33600  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17862999 | $\omega$ | 78.29786 | −0.29440358   | −0.94527712 |
| <i>a</i> | 3.1224810  | $\Omega$ | 30.01235 | +0.73013229   | −0.31742145 |
| <i>e</i> | 0.1964583  | <i>i</i> | 16.32954 | +0.61663066   | −0.07546384 |
| <i>P</i> | 5.52       | <i>H</i> | 16.1     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 21 | 910 | 0.1+ | 0.6+ | 2007 10 11 | 691 | 0.3− | 0.4+ | 2007 11 14 | 691 | 0.1− | 0.1+ |
| 1998 02 21 | 910 | 0.2+ | 0.1− | 2007 10 11 | 691 | 0.8− | 0.0  | 2007 11 14 | 691 | 0.2− | 0.3+ |
| 1998 02 21 | 910 | 0.3− | 0.4− | 2007 10 19 | 691 | 0.1+ | 0.6+ | 2007 11 17 | 704 | 0.2+ | 0.1+ |
| 2003 01 31 | 644 | 0.3− | 0.2− | 2007 10 19 | 691 | 0.4− | 0.3+ | 2007 11 17 | 704 | 0.6+ | 0.2− |
| 2003 01 31 | 644 | 0.3+ | 0.2− | 2007 10 19 | 691 | 0.1+ | 0.8− | 2007 11 17 | 704 | 0.1− | 0.5+ |
| 2003 01 31 | 644 | 0.1+ | 0.1− | 2007 11 11 | 699 | 0.3+ | 0.3− | 2007 11 17 | 704 | 0.0  | 0.7+ |
| 2004 03 23 | 291 | 0.5+ | 0.5+ | 2007 11 11 | 699 | 0.1− | 0.7− | 2007 11 18 | 691 | 0.2+ | 0.2+ |
| 2004 03 23 | 291 | 0.0  | 0.1+ | 2007 11 11 | 699 | 0.1− | 0.1+ | 2007 11 18 | 691 | 0.3+ | 0.1+ |
| 2004 03 23 | 291 | 0.4+ | 0.6+ | 2007 11 11 | 699 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.1+ | 0.1+ |
| 2007 10 11 | 691 | 0.6− | 0.1− | 2007 11 14 | 691 | 0.6− | 0.1− |            |     |      |      |

**2007 VA<sub>238</sub> = 2005 BJ<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 252.43196  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.29383937 | $\omega$ | 89.20963 | −0.93502157   | −0.33643580 |
| <i>a</i> | 2.2407637  | $\Omega$ | 71.12492 | +0.25958999   | −0.86464695 |
| <i>e</i> | 0.0370806  | <i>i</i> | 6.79819  | +0.24155268   | −0.37309062 |
| <i>P</i> | 3.35       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 01 16 | 704 | 0.7− | 0.1+ | 2007 11 14 | 691 | 0.0   | 0.2−  | 2007 12 05 | 704 | 0.4+  | 0.9+  |
| 2005 01 16 | 704 | 0.2− | 0.5+ | 2007 11 14 | 691 | 0.2−  | 0.0   | 2007 12 05 | 704 | (0.4− | 1.6+) |
| 2005 01 16 | 704 | 0.5+ | 1.2+ | 2007 11 20 | 703 | 0.7+  | 0.2+  | 2007 12 05 | 704 | 0.2+  | 1.4+  |
| 2005 01 19 | 704 | 0.3+ | 1.0− | 2007 11 20 | 703 | 0.7+  | 0.3+  | 2007 12 05 | 704 | 0.0   | 0.7−  |
| 2005 01 19 | 704 | 0.6+ | 0.0  | 2007 11 20 | 703 | 0.4−  | 0.1+  | 2007 12 05 | 704 | 1.2+  | 0.9+  |
| 2005 01 19 | 704 | 0.2− | 0.5− | 2007 11 20 | 703 | 0.5+  | 0.3+  | 2007 12 05 | 704 | 0.5−  | 0.4+  |
| 2005 01 19 | 704 | 0.3− | 0.4− | 2007 12 03 | 703 | 0.3+  | 0.5+  | 2007 12 05 | 704 | 0.5−  | 0.9+  |
| 2007 11 02 | 691 | 0.1+ | 0.1− | 2007 12 03 | 703 | 0.7+  | 0.3+  | 2007 12 05 | 704 | 0.2−  | 0.3+  |
| 2007 11 02 | 691 | 0.1+ | 0.2− | 2007 12 03 | 703 | (1.7+ | 0.4−) | 2007 12 06 | 691 | 0.5−  | 0.1−  |
| 2007 11 02 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | (0.5+ | 1.5−) | 2007 12 06 | 691 | 0.3+  | 0.4−  |
| 2007 11 12 | 703 | 0.8− | 0.3− | 2007 12 04 | 691 | 0.1−  | 0.0   | 2007 12 06 | 691 | 0.1+  | 0.2−  |
| 2007 11 12 | 703 | 0.3+ | 0.3+ | 2007 12 04 | 691 | 0.2+  | 0.2−  | 2007 12 16 | 691 | 0.5−  | 0.7−  |
| 2007 11 12 | 703 | 1.1− | 0.5− | 2007 12 04 | 691 | 0.2−  | 0.2+  | 2007 12 16 | 691 | 0.0   | 0.1+  |
| 2007 11 12 | 703 | 0.4− | 0.3− | 2007 12 05 | 704 | 1.0+  | 1.1+  | 2007 12 16 | 691 | 0.0   | 0.1+  |
| 2007 11 14 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 0.2+  | 0.2−  |            |     |       |       |

**2007 VR<sub>238</sub> = 2005 GY<sub>221</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 20.53305   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.21679003 | $\omega$ | 328.37332 | +0.84688917 | −0.50907234 |
| $a$ | 2.7443733  | $\Omega$ | 62.98891  | +0.51676234 | +0.71968002 |
| $e$ | 0.1500058  | $i$      | 9.93437   | +0.12544091 | +0.47212924 |
| $P$ | 4.55       | $H$      | 16.2      | $G$ 0.15    | $U$ 4       |

## 2007 DEC. 24

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 04 15 | 691 | 0.2− | 0.0  | 2007 11 13 | 691 | 0.3+ | 0.5+ | 2007 12 10 | 704 | 1.1+ | 0.1+ |
| 2005 04 15 | 691 | 0.0  | 0.3− | 2007 11 13 | 691 | 0.2− | 0.2− | 2007 12 14 | 704 | 0.5− | 0.3− |
| 2007 11 05 | 691 | 0.4− | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.1− | 2007 12 14 | 704 | 1.7− | 0.4− |
| 2007 11 05 | 691 | 0.2− | 0.1+ | 2007 11 14 | 691 | 0.1− | 0.2− | 2007 12 14 | 704 | 0.1− | 0.1+ |
| 2007 11 05 | G96 | 0.6+ | 0.1+ | 2007 11 14 | 691 | 0.0  | 0.1− | 2007 12 14 | 704 | 0.2− | 0.4+ |
| 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 11 15 | 704 | 0.2− | 0.2+ | 2007 12 14 | 704 | 0.1− | 0.2+ |

2007 VY<sub>238</sub> = 2006 SV<sub>65</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 131.97543  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21450472 | $\omega$ | 51.24282  | +0.32367381   | +0.94319307 |
| <i>a</i> | 2.7638310  | $\Omega$ | 237.79968 | −0.89326058   | +0.27848499 |
| <i>e</i> | 0.0124229  | <i>i</i> | 5.08363   | −0.31196283   | +0.18119863 |
| <i>P</i> | 4.59       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 02 11 | 644 | 0.2+ | 0.7+ | 2006 09 23 | 691 | 0.1− | 0.1+ | 2007 11 18 | 691 | 0.3+ | 0.0  |
| 2004 02 11 | 644 | 0.0  | 0.4+ | 2006 09 23 | 691 | 0.2− | 0.1− | 2007 11 18 | 691 | 0.5+ | 0.1− |
| 2004 02 11 | 644 | 0.2+ | 0.9+ | 2006 09 23 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.0  | 1.2− |
| 2005 05 10 | G96 | 0.2− | 0.2− | 2006 09 23 | 691 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.2+ | 0.0  |
| 2005 05 10 | G96 | 0.1− | 0.2+ | 2006 09 23 | 691 | 0.2+ | 0.1+ | 2007 12 03 | 703 | 1.7+ | 0.0  |
| 2005 05 10 | G96 | 0.3+ | 0.2− | 2006 09 23 | 691 | 0.2+ | 0.5+ | 2007 12 03 | 703 | 0.8+ | 0.3+ |
| 2005 05 10 | G96 | 0.0  | 0.1+ | 2007 11 13 | 691 | 0.3− | 0.2− | 2007 12 05 | 704 | 0.4+ | 0.3+ |
| 2006 09 19 | 691 | 0.3+ | 0.3+ | 2007 11 13 | 691 | 0.0  | 0.2+ | 2007 12 05 | 704 | 1.1+ | 0.8+ |
| 2006 09 19 | 691 | 0.1− | 0.0  | 2007 11 13 | 691 | 0.8− | 0.2+ | 2007 12 05 | 704 | 0.2+ | 0.4+ |
| 2006 09 19 | 691 | 0.0  | 0.1+ | 2007 11 14 | 691 | 0.5− | 0.3− | 2007 12 05 | 704 | 0.0  | 0.4+ |
| 2006 09 19 | 691 | 0.0  | 0.2− | 2007 11 14 | 691 | 0.3− | 0.2− | 2007 12 05 | 704 | 0.6+ | 0.5+ |
| 2006 09 19 | 691 | 0.2− | 0.2− | 2007 11 14 | 691 | 0.3− | 0.0  |            |     |      |      |
| 2006 09 19 | 691 | 0.2− | 0.2− | 2007 11 18 | 691 | 0.1+ | 0.2− |            |     |      |      |

2007 VN<sub>239</sub> = 1997 WJ<sub>23</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 0.38985    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28921984 | $\omega$ | 341.38767 | +0.59891352   | −0.79650467 |
| <i>a</i> | 2.2645608  | $\Omega$ | 71.73725  | +0.74537806   | +0.51657997 |
| <i>e</i> | 0.1602245  | <i>i</i> | 5.01197   | +0.29276979   | +0.31420605 |
| <i>P</i> | 3.41       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |             |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------------|------|
| 1997 11 30 | 691 | 0.3+ | 0.1+ | 2007 11 14 | 704 | 0.8+ | 0.1+ | 2007 12 04 | 699 | 0.2+        | 0.0  |
| 1997 11 30 | 691 | 0.4+ | 0.1+ | 2007 11 14 | 704 | 0.9+ | 0.1− | 2007 12 04 | G96 | 0.3+        | 0.4− |
| 1997 11 30 | 691 | 0.3+ | 0.4− | 2007 11 14 | 691 | 0.1− | 0.4+ | 2007 12 04 | 699 | 0.0         | 0.1+ |
| 1997 12 03 | 691 | 0.2− | 0.3− | 2007 11 14 | 704 | 0.3+ | 0.1+ | 2007 12 04 | G96 | 0.1+        | 0.5− |
| 1997 12 03 | 691 | 0.4− | 0.4+ | 2007 11 14 | 691 | 0.2− | 0.1− | 2007 12 04 | G96 | 0.0         | 0.3− |
| 1997 12 03 | 691 | 0.3− | 0.2+ | 2007 11 14 | 704 | 1.0+ | 0.3+ | 2007 12 04 | G96 | 0.4+        | 0.4− |
| 2007 11 05 | 691 | 0.2− | 0.1+ | 2007 11 14 | 704 | 0.3+ | 0.2+ | 2007 12 04 | 699 | 0.6+        | 0.1+ |
| 2007 11 05 | 691 | 0.4− | 0.0  | 2007 11 14 | 691 | 0.6+ | 0.1+ | 2007 12 05 | 704 | 0.0         | 0.0  |
| 2007 11 05 | 691 | 0.1− | 0.1+ | 2007 11 16 | 704 | 1.0+ | 0.1+ | 2007 12 05 | 704 | 0.2+        | 0.3+ |
| 2007 11 09 | 691 | 0.1− | 0.1− | 2007 11 16 | 704 | 0.7+ | 0.0  | 2007 12 05 | 704 | 0.1−        | 0.1− |
| 2007 11 09 | 691 | 0.3− | 0.0  | 2007 11 16 | 704 | 1.0+ | 0.3− | 2007 12 05 | 704 | (1.1− 1.7−) |      |
| 2007 11 09 | 691 | 0.1− | 0.0  | 2007 11 16 | 704 | 0.9+ | 0.4+ | 2007 12 05 | 704 | 0.3−        | 0.0  |
| 2007 11 09 | D29 | 0.3+ | 0.2+ | 2007 11 18 | 691 | 0.2− | 0.1− | 2007 12 14 | 704 | 0.5+        | 0.2+ |
| 2007 11 09 | D29 | 0.3+ | 0.6− | 2007 11 18 | 691 | 0.1− | 0.0  | 2007 12 14 | 704 | 1.1−        | 0.1+ |
| 2007 11 09 | D29 | 0.0  | 0.2− | 2007 11 18 | 691 | 0.1+ | 0.1− | 2007 12 14 | 704 | 0.7−        | 0.1− |
| 2007 11 09 | D29 | 0.1+ | 0.2− | 2007 12 03 | 703 | 0.4+ | 0.1− | 2007 12 14 | 704 | 0.1−        | 0.2+ |
| 2007 11 13 | 691 | 0.3− | 0.0  | 2007 12 03 | 703 | 0.2− | 0.1− | 2007 12 14 | 704 | 0.5−        | 0.8+ |
| 2007 11 13 | 691 | 0.3− | 0.1+ | 2007 12 03 | 703 | 0.2+ | 0.7− |            |     |             |      |
| 2007 11 13 | 691 | 0.1− | 0.0  | 2007 12 04 | 699 | 0.5− | 0.2− |            |     |             |      |

## M.P.O. 130037

2007 VV<sub>240</sub> = 2004 HP<sub>56</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 0.60207    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.16942286 | $\omega$ | 329.02017 | +0.51409195   | −0.77396551 |
| <i>a</i> | 3.2346059  | $\Omega$ | 87.57177  | +0.84307391   | +0.37660067 |
| <i>e</i> | 0.0877808  | <i>i</i> | 21.71834  | +0.15791087   | +0.50906712 |
| <i>P</i> | 5.82       | <i>H</i> | 14.9      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2001 10 28 | 644 | 0.4− | 0.2+ | 2004 04 27 | 704 | 0.0         | 1.2+ | 2007 11 15 | 703 | 0.0  | 0.4+ |
| 2001 10 28 | 644 | 0.5− | 0.4+ | 2004 04 27 | 704 | 0.2+        | 0.4+ | 2007 11 15 | 703 | 0.2− | 1.0+ |
| 2001 10 28 | 644 | 0.4− | 0.1− | 2004 04 27 | 704 | 0.8+        | 0.5− | 2007 11 15 | 703 | 0.5− | 0.2+ |
| 2001 11 17 | 699 | 0.0  | 0.3− | 2004 04 27 | 704 | (1.6− 0.8−) |      | 2007 11 16 | 918 | 0.0  | 0.6− |
| 2001 11 17 | 699 | 0.2− | 0.2+ | 2004 04 27 | 704 | 0.3+        | 0.3+ | 2007 11 16 | 918 | 0.2− | 0.2+ |
| 2001 11 17 | 699 | 0.2+ | 0.4+ | 2006 10 12 | E12 | 0.4−        | 1.2+ | 2007 11 16 | 918 | 0.5− | 0.3+ |
| 2001 11 17 | 699 | 0.7− | 1.0+ | 2006 10 12 | E12 | 0.4−        | 0.3+ | 2007 11 18 | G68 | 0.1− | 0.1− |
| 2001 12 18 | 645 | 0.1+ | 0.1− | 2006 10 12 | E12 | 0.1−        | 0.7+ | 2007 11 18 | G68 | 0.2+ | 0.1+ |
| 2001 12 18 | 645 | 0.0  | 0.1− | 2006 10 12 | E12 | 0.3−        | 0.2+ | 2007 11 18 | G68 | 0.3+ | 0.3+ |
| 2003 03 09 | 644 | 0.0  | 0.3− | 2007 11 09 | 703 | 0.8+        | 0.3+ | 2007 12 04 | 703 | 0.1− | 0.5+ |
| 2003 03 09 | 644 | 0.1+ | 0.1− | 2007 11 09 | 703 | 0.6−        | 0.4+ | 2007 12 04 | 703 | 0.4− | 0.6− |
| 2003 03 09 | 644 | 0.3− | 0.5+ | 2007 11 09 | 703 | 0.3+        | 1.0+ | 2007 12 04 | 703 | 0.4+ | 0.8− |
| 2004 04 26 | 704 | 0.3+ | 0.1+ | 2007 11 09 | 703 | 0.5−        | 0.3+ | 2007 12 04 | 703 | 0.5− | 0.1− |
| 2004 04 26 | 704 | 0.0  | 0.9+ | 2007 11 14 | 699 | 0.5+        | 0.5− | 2007 12 15 | 699 | 0.1− | 0.8+ |
| 2004 04 26 | 704 | 0.2− | 1.2+ | 2007 11 14 | 699 | 0.3−        | 0.3+ | 2007 12 15 | 699 | 0.4− | 0.6+ |
| 2004 04 27 | 704 | 0.1+ | 0.9+ | 2007 11 14 | 699 | 0.9−        | 0.7− | 2007 12 15 | 699 | 0.3− | 0.6+ |
| 2004 04 27 | 704 | 0.6+ | 0.2− | 2007 11 14 | 699 | 0.0         | 0.6− | 2007 12 15 | 699 | 2.4+ | 1.2+ |
| 2004 04 27 | 704 | 0.2+ | 0.9− | 2007 11 15 | 703 | 0.8−        | 0.9− |            |     |      |      |

2007 VA<sub>242</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 37.16652   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23661718 | $\omega$ | 205.12207 | +0.98061001   | +0.17607273 |
| <i>a</i> | 2.5888400  | $\Omega$ | 144.39974 | −0.14537314   | +0.94799384 |
| <i>e</i> | 0.2267821  | <i>i</i> | 8.49935   | −0.13141790   | +0.26515292 |
| <i>P</i> | 4.17       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |             |      |            |     |      |      |
|------------|-----|------|------|------------|-----|-------------|------|------------|-----|------|------|
| 2002 06 14 | 644 | 0.1+ | 0.2+ | 2007 10 13 | 703 | 0.7−        | 0.3− | 2007 11 14 | G96 | 0.0  | 0.1+ |
| 2002 06 14 | 644 | 0.2− | 0.2+ | 2007 10 13 | 703 | 0.1−        | 0.2− | 2007 11 14 | G96 | 0.4− | 0.1+ |
| 2002 06 14 | 644 | 0.1− | 0.2+ | 2007 10 13 | 703 | 0.5+        | 0.7+ | 2007 11 14 | G96 | 0.3− | 0.2+ |
| 2003 11 24 | 644 | 0.1− | 0.6+ | 2007 10 13 | 703 | 0.7−        | 1.3+ | 2007 11 15 | 699 | 0.3+ | 0.9+ |
| 2003 11 24 | 644 | 0.2− | 0.6+ | 2007 10 30 | 703 | 0.5−        | 0.8+ | 2007 11 15 | 699 | 0.1+ | 0.0  |
| 2003 11 24 | 644 | 0.1+ | 0.8+ | 2007 10 30 | 703 | 0.4+        | 0.6+ | 2007 11 15 | 699 | 0.3+ | 0.2+ |
| 2005 03 16 | G96 | 0.1+ | 0.2+ | 2007 10 30 | 703 | 1.4+        | 0.5+ | 2007 11 15 | 699 | 0.6− | 0.6+ |
| 2005 03 16 | G96 | 0.1+ | 0.1− | 2007 10 30 | 703 | 0.1+        | 0.5+ | 2007 11 20 | 703 | 0.5− | 0.5+ |
| 2005 03 16 | G96 | 0.4+ | 0.7− | 2007 11 04 | D29 | 0.1+        | 0.1+ | 2007 11 20 | 703 | 0.2− | 0.7− |
| 2005 03 16 | G96 | 0.2+ | 0.5+ | 2007 11 04 | D29 | 0.2−        | 0.1+ | 2007 11 20 | 703 | 0.3− | 0.2+ |
| 2006 04 24 | 691 | 0.3+ | 0.6+ | 2007 11 04 | D29 | 0.5+        | 0.0  | 2007 11 20 | 703 | 0.0  | 1.0− |
| 2006 04 24 | 691 | 0.3+ | 0.3+ | 2007 11 04 | D29 | 0.7+        | 0.7− | 2007 12 06 | 703 | 1.2− | 0.4− |
| 2006 04 24 | 691 | 0.2+ | 0.4+ | 2007 11 12 | 703 | 0.7−        | 0.1+ | 2007 12 06 | 703 | 0.5+ | 0.3− |
| 2006 05 24 | 699 | 0.4− | 0.5+ | 2007 11 12 | 703 | 0.1−        | 0.0  | 2007 12 06 | 703 | 0.4− | 0.1− |
| 2006 05 24 | 699 | 0.6− | 1.1+ | 2007 11 12 | 703 | 0.0         | 0.3+ | 2007 12 06 | 703 | 0.4+ | 0.6+ |
| 2006 05 24 | 699 | 0.9+ | 0.3+ | 2007 11 12 | 703 | (1.6− 1.3+) |      |            |     |      |      |
| 2006 05 24 | 699 | 1.5− | 0.1+ | 2007 11 14 | G96 | 0.2−        | 0.2− |            |     |      |      |

2007 VH<sub>245</sub> = 2005 AS<sub>51</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 25.45193   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28959179 | $\omega$ | 292.08907 | +0.95229433   | −0.28901794 |
| <i>a</i> | 2.2626214  | $\Omega$ | 84.81892  | +0.30347834   | +0.86295152 |
| <i>e</i> | 0.1561368  | <i>i</i> | 5.64720   | +0.03219326   | +0.41446750 |
| <i>P</i> | 3.40       | <i>H</i> | 17.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 03 12 | 645 | 0.0  | 0.0  | 2007 11 08 | 691 | 0.5− | 0.4− | 2007 11 20 | 703 | 0.1+ | 0.4− |
| 2002 03 12 | 645 | 0.0  | 0.0  | 2007 11 14 | 300 | 0.2+ | 0.2− | 2007 11 20 | 703 | 1.0+ | 0.9+ |
| 2005 01 13 | 691 | 0.1+ | 0.7− | 2007 11 14 | 300 | 0.7+ | 0.2− | 2007 11 20 | 703 | 0.2+ | 0.1+ |
| 2005 01 13 | 691 | 0.0  | 0.1+ | 2007 11 14 | 300 | 0.4+ | 0.2− | 2007 11 20 | 703 | 0.0  | 0.1− |
| 2005 01 13 | 691 | 0.2+ | 0.0  | 2007 11 14 | 300 | 0.5+ | 0.3− | 2007 11 20 | G96 | 0.0  | 0.3− |
| 2005 01 18 | 691 | 0.2− | 0.1− | 2007 11 14 | 300 | 0.4− | 0.0  | 2007 11 20 | G96 | 0.0  | 0.2− |
| 2005 01 18 | 691 | 0.4− | 0.2+ | 2007 11 14 | 300 | 0.4+ | 0.6− | 2007 11 20 | G96 | 0.1− | 0.6− |
| 2005 01 18 | 691 | 0.1+ | 0.5+ | 2007 11 14 | 300 | 0.0  | 0.3− | 2007 11 20 | G96 | 0.1+ | 0.3− |
| 2006 05 25 | 691 | 0.1− | 0.1+ | 2007 11 18 | 300 | 0.6+ | 0.5− | 2007 12 04 | 704 | 0.2+ | 1.3+ |
| 2006 05 25 | 691 | 0.1+ | 0.1+ | 2007 11 18 | 300 | 0.0  | 0.5+ | 2007 12 04 | 704 | 0.3+ | 1.2+ |
| 2006 05 25 | 691 | 0.1+ | 0.4+ | 2007 11 18 | 300 | 0.4+ | 0.1− | 2007 12 04 | 704 | 0.1+ | 0.9+ |
| 2007 11 08 | 691 | 0.8− | 0.1− | 2007 11 18 | 300 | 0.3+ | 0.5+ | 2007 12 04 | 704 | 0.2+ | 1.6+ |
| 2007 11 08 | 691 | 0.4− | 0.0  | 2007 11 18 | 300 | 0.1+ | 0.0  | 2007 12 04 | 704 | 0.5+ | 0.9+ |

**2007 VT<sub>245</sub> = 2004 EQ<sub>37</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 196.49689  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17826090 | $\omega$ 300.59780 | −0.80426613   | +0.55721677 |
| <i>a</i> | 3.1267896  | $\Omega$ 274.02850 | −0.44923232   | −0.79761015 |
| <i>e</i> | 0.1138510  | <i>i</i> 11.95057  | −0.38903253   | −0.23092752 |
| <i>P</i> | 5.53       | <i>H</i> 14.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |        |       |            |     |        |      |            |     |        |       |
|------------|-----|--------|-------|------------|-----|--------|------|------------|-----|--------|-------|
| 2004 01 29 | 699 | 0.2+   | 0.0   | 2007 10 21 | 703 | 0.8+   | 0.6+ | 2007 11 20 | G96 | 0.6+   | 0.4−  |
| 2004 01 29 | 699 | 0.3−   | 0.8+  | 2007 11 08 | 703 | (1.6+) | 1.1− | 2007 11 20 | G96 | 0.6+   | 0.4−  |
| 2004 01 29 | 699 | 1.1−   | 0.6+  | 2007 11 08 | 703 | 1.1−   | 0.5+ | 2007 11 20 | G96 | 0.7+   | 0.3−  |
| 2004 01 29 | 699 | 0.1−   | 1.4−  | 2007 11 08 | 703 | 0.4+   | 0.0  | 2007 11 20 | G96 | 0.7+   | 0.3−  |
| 2004 03 14 | 644 | 0.5+   | 0.0   | 2007 11 08 | 703 | 0.1−   | 0.5+ | 2007 12 04 | 291 | 0.0    | 0.0   |
| 2004 03 14 | 644 | 0.5+   | 0.0   | 2007 11 15 | G96 | 0.6+   | 0.5− | 2007 12 04 | 291 | 0.3−   | 0.3+  |
| 2004 03 14 | 644 | 0.5+   | 0.0   | 2007 11 15 | G96 | 0.6+   | 0.6− | 2007 12 04 | 291 | 0.1−   | 0.2+  |
| 2004 03 16 | 704 | 0.1+   | 0.7−  | 2007 11 15 | G96 | 0.6+   | 0.7− | 2007 12 05 | 291 | 0.1+   | 0.1+  |
| 2004 03 16 | 704 | 0.2−   | 0.2+  | 2007 11 15 | G96 | 0.6+   | 0.6− | 2007 12 05 | 291 | 0.1+   | 0.1−  |
| 2004 03 16 | 704 | 0.6−   | 0.6+  | 2007 11 17 | G96 | 0.5+   | 0.6− | 2007 12 05 | 291 | 0.1+   | 0.2+  |
| 2004 03 16 | 704 | 0.6−   | 0.4+  | 2007 11 17 | G96 | 0.5+   | 0.3− | 2007 12 05 | 291 | 0.1+   | 0.0   |
| 2004 03 16 | 704 | 0.9+   | 0.4−  | 2007 11 17 | G96 | 0.2+   | 0.4− | 2007 12 05 | 291 | 0.0    | 0.0   |
| 2004 03 27 | 699 | 0.5−   | 0.6−  | 2007 11 17 | G96 | 0.3+   | 0.3− | 2007 12 05 | 291 | 0.1−   | 0.1−  |
| 2004 03 27 | 699 | 0.2+   | 1.3+  | 2007 11 19 | 291 | 0.5−   | 0.0  | 2007 12 05 | 291 | 0.0    | 0.1+  |
| 2004 03 27 | 699 | 0.0    | 0.4−  | 2007 11 19 | 291 | 0.4−   | 0.1− | 2007 12 05 | 291 | 0.1−   | 0.1+  |
| 2004 03 27 | 699 | 0.5+   | 0.5−  | 2007 11 19 | 291 | 0.2−   | 0.1− | 2007 12 05 | 291 | 0.0    | 0.0   |
| 2007 10 21 | 703 | 1.0+   | 1.1+  | 2007 11 20 | 291 | 0.4−   | 0.1− | 2007 12 16 | 704 | (0.5+) | 2.1+) |
| 2007 10 21 | 703 | 1.2+   | 0.5+  | 2007 11 20 | 291 | 0.1−   | 0.2− | 2007 12 16 | 704 | 0.6+   | 1.0+  |
| 2007 10 21 | 703 | (2.4+) | 0.5+) | 2007 11 20 | 291 | 0.4−   | 0.1− | 2007 12 16 | 704 | (2.4+) | 1.8+) |

**2007 VH<sub>251</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 290.18974  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.37264253 | $\omega$ 278.82797 | −0.68795293   | −0.69470032 |
| <i>a</i> | 1.9125278  | $\Omega$ 217.62255 | +0.72352388   | −0.67916680 |
| <i>e</i> | 0.1224875  | <i>i</i> 20.12396  | −0.05686788   | −0.23690486 |
| <i>P</i> | 2.64       | <i>H</i> 17.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |        |       |            |     |      |      |
|------------|-----|------|------|------------|-----|--------|-------|------------|-----|------|------|
| 1998 04 24 | 910 | 0.9+ | 0.8− | 2007 09 14 | G96 | 0.1+   | 0.0   | 2007 11 16 | 703 | 0.7− | 0.4− |
| 1998 04 24 | 910 | 1.5+ | 0.1+ | 2007 11 09 | 703 | 0.4−   | 0.6+  | 2007 11 16 | 703 | 1.1+ | 1.1− |
| 1998 04 24 | 910 | 0.7+ | 0.5+ | 2007 11 09 | 703 | 0.2+   | 0.9+  | 2007 11 20 | 703 | 0.2+ | 0.6− |
| 1998 05 28 | 691 | 0.5− | 0.1+ | 2007 11 09 | 703 | 1.2−   | 0.5+  | 2007 11 20 | 703 | 0.1+ | 0.4+ |
| 1998 05 28 | 691 | 0.2− | 0.1+ | 2007 11 09 | 703 | 0.6−   | 0.2−  | 2007 11 20 | 703 | 0.1− | 0.7− |
| 1998 05 28 | 691 | 0.1− | 0.2− | 2007 11 15 | 703 | 0.1−   | 0.2+  | 2007 11 20 | 703 | 0.8− | 0.0  |
| 2006 05 24 | 644 | 0.1− | 0.2− | 2007 11 15 | 703 | 0.5+   | 0.1−  | 2007 12 05 | 703 | 0.4− | 0.3+ |
| 2006 05 24 | 644 | 0.2+ | 0.3− | 2007 11 15 | 703 | 0.4+   | 0.5+  | 2007 12 05 | 703 | 0.1− | 1.2− |
| 2006 05 24 | 644 | 0.3+ | 0.1− | 2007 11 15 | 703 | 0.7−   | 0.0   | 2007 12 05 | 703 | 0.4− | 0.3+ |
| 2006 06 05 | 691 | 0.4− | 0.1+ | 2007 11 15 | 703 | (0.6−) | 3.0+) | 2007 12 05 | 703 | 0.8− | 0.4+ |
| 2006 06 05 | 691 | 0.1+ | 0.2+ | 2007 11 15 | 703 | 0.2−   | 0.7+  | 2007 12 15 | 291 | 0.2+ | 0.1+ |
| 2006 06 05 | 691 | 0.2+ | 0.1− | 2007 11 15 | 703 | 0.1+   | 0.5−  | 2007 12 15 | 291 | 0.1+ | 0.2+ |
| 2007 09 14 | G96 | 0.5− | 0.0  | 2007 11 15 | 703 | 1.4+   | 0.3−  | 2007 12 15 | 291 | 0.1+ | 0.2+ |

|            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|
| 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 11 16 | 703 | 0.4+ | 1.1− |
| 2007 09 14 | G96 | 0.1+ | 0.1+ | 2007 11 16 | 703 | 0.6+ | 0.3− |

**2007 VK<sub>251</sub> = 1997 NK<sub>5</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.02990  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21770192 | $\omega$ 275.92998 | +0.51324208   | −0.85327314 |
| <i>a</i> | 2.7367043  | $\Omega$ 142.71977 | +0.83531243   | +0.47195839 |
| <i>e</i> | 0.0734163  | <i>i</i> 8.75890   | +0.19706780   | +0.22176615 |
| <i>P</i> | 4.53       | <i>H</i> 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 02 03 | 691 | 0.0  | 0.1− | 2006 09 26 | G96 | 0.0  | 0.8+ | 2007 11 19 | G96 | 0.3+ | 0.1− |
| 1995 02 03 | 691 | 0.2+ | 0.2− | 2006 09 26 | G96 | 0.1+ | 0.2+ | 2007 12 05 | 703 | 0.7− | 1.0− |
| 1995 02 03 | 691 | 0.2+ | 0.1+ | 2006 09 26 | G96 | 1.0+ | 0.4+ | 2007 12 05 | 703 | 0.1+ | 0.3− |
| 1997 07 02 | 691 | 0.2− | 0.3+ | 2006 09 26 | G96 | 0.5+ | 0.0  | 2007 12 05 | 703 | 1.1+ | 0.6− |
| 1997 07 02 | 691 | 0.2+ | 0.0  | 2007 11 09 | 703 | 1.1+ | 0.4+ | 2007 12 05 | 703 | 0.8− | 0.7+ |
| 1997 07 02 | 691 | 0.1− | 0.4+ | 2007 11 09 | 703 | 0.9+ | 0.4+ | 2007 12 06 | 941 | 0.4− | 0.8− |
| 1997 07 11 | 691 | 0.0  | 0.7− | 2007 11 09 | 703 | 0.2− | 0.5+ | 2007 12 06 | 941 | 0.7− | 0.8− |
| 1997 07 11 | 691 | 0.1− | 0.2− | 2007 11 09 | 703 | 0.5+ | 0.2+ | 2007 12 06 | 941 | 1.0− | 0.8− |
| 1997 07 11 | 691 | 0.2− | 0.2− | 2007 11 15 | 703 | 0.0  | 0.1+ | 2007 12 08 | 941 | 0.5+ | 0.4− |
| 2004 01 18 | 644 | 0.4+ | 0.2− | 2007 11 15 | 703 | 0.2+ | 0.2+ | 2007 12 08 | 941 | 0.5+ | 0.1+ |
| 2004 01 18 | 644 | 0.4+ | 0.0  | 2007 11 15 | 703 | 0.6+ | 0.7+ | 2007 12 08 | 941 | 0.1− | 0.2+ |
| 2004 01 18 | 644 | 0.2+ | 0.1− | 2007 11 15 | 703 | 0.7− | 0.2+ | 2007 12 08 | 941 | 0.5− | 0.9+ |
| 2004 02 13 | 691 | 0.0  | 0.0  | 2007 11 19 | G96 | 0.0  | 0.0  | 2007 12 08 | 941 | 0.2+ | 0.3+ |
| 2004 02 13 | 691 | 0.3− | 0.0  | 2007 11 19 | G96 | 0.2− | 0.3− |            |     |      |      |
| 2004 02 13 | 691 | 0.4− | 0.3+ | 2007 11 19 | G96 | 0.1− | 0.0  |            |     |      |      |

**2007 VW<sub>251</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 0.55308    | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.23697507 | $\omega$ 22.57339 | +0.72579136   | −0.68516774 |
| <i>a</i> | 2.5862327  | $\Omega$ 21.06068 | +0.60217612   | +0.58963092 |
| <i>e</i> | 0.0751947  | <i>i</i> 9.84066  | +0.33258204   | +0.42764535 |
| <i>P</i> | 4.16       | <i>H</i> 16.3     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |        |      |            |     |        |       |
|------------|-----|------|------|------------|-----|--------|------|------------|-----|--------|-------|
| 2005 04 09 | G96 | 1.4− | 0.2− | 2007 11 01 | D35 | 1.3+   | 0.7− | 2007 11 17 | 704 | (1.1+) | 1.7+) |
| 2005 04 09 | G96 | 1.0+ | 0.8− | 2007 11 12 | 703 | 0.0    | 0.1− | 2007 11 17 | 704 | 1.1+   | 0.9−  |
| 2005 04 09 | G96 | 0.3− | 0.6+ | 2007 11 12 | 703 | 0.1+   | 0.3+ | 2007 11 17 | 704 | 1.2+   | 1.2+  |
| 2005 04 09 | G96 | 0.8+ | 0.8+ | 2007 11 12 | 703 | 0.8−   | 0.6+ | 2007 11 17 | 704 | 0.9+   | 0.5+  |
| 2005 05 09 | G96 | 0.0  | 0.0  | 2007 11 12 | 703 | 0.3+   | 0.5− | 2007 12 02 | 704 | 0.8+   | 0.1−  |
| 2005 05 09 | G96 | 0.0  | 0.2− | 2007 11 15 | 699 | 1.0+   | 0.9− | 2007 12 02 | 704 | 0.6+   | 0.1−  |
| 2005 05 09 | G96 | 0.2− | 0.0  | 2007 11 15 | 699 | (1.2+) | 1.7− | 2007 12 02 | 704 | 0.7−   | 0.2−  |
| 2005 05 09 | G96 | 0.0  | 0.4− | 2007 11 15 | 699 | 0.0    | 0.0  | 2007 12 02 | 704 | 0.0    | 0.4+  |
| 2007 10 21 | 691 | 1.0− | 0.1+ | 2007 11 15 | 699 | 0.2+   | 1.3− | 2007 12 16 | 704 | 0.8−   | 0.4−  |
| 2007 10 21 | 691 | 0.9− | 0.1− | 2007 11 17 | 691 | 0.4−   | 0.2+ | 2007 12 16 | 704 | 0.2+   | 0.8+  |
| 2007 10 21 | 691 | 0.9− | 0.1− | 2007 11 17 | 691 | 0.1−   | 0.2+ | 2007 12 16 | 704 | 0.5−   | 0.2+  |
| 2007 11 01 | D35 | 0.3+ | 0.1+ | 2007 11 17 | 691 | 0.3+   | 0.0  |            |     |        |       |
| 2007 11 01 | D35 | 1.0+ | 0.1− | 2007 11 17 | 704 | 0.0    | 0.3+ |            |     |        |       |

**2007 VX<sub>251</sub> = 2000 SM<sub>367</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 33.35804   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.29180290 | $\omega$ 104.93382 | +0.98503259   | +0.09223550 |
| <i>a</i> | 2.2511770  | $\Omega$ 249.94231 | −0.13784361   | +0.92872597 |
| <i>e</i> | 0.1854421  | <i>i</i> 8.91772   | +0.10348882   | +0.35911097 |
| <i>P</i> | 3.38       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

2007 DEC. 24

M.P.O. 130039

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 09 25 | 699 | 0.1+ | 0.0  | 2007 11 12 | 703 | 0.4- | 0.1+ | 2007 11 18 | 704 | 0.0  | 0.8+ |
| 2000 09 25 | 699 | 1.0- | 0.4- | 2007 11 12 | 703 | 0.1- | 0.2+ | 2007 11 18 | 704 | 0.6- | 0.8+ |
| 2000 09 25 | 699 | 0.7- | 0.7+ | 2007 11 12 | 703 | 0.8+ | 0.1- | 2007 11 18 | 704 | 0.5- | 0.3+ |
| 2007 10 16 | 703 | 0.5- | 0.2+ | 2007 11 15 | 699 | 0.3+ | 0.1+ | 2007 11 18 | 704 | 0.2- | 0.3+ |
| 2007 10 16 | 703 | 0.8- | 0.2+ | 2007 11 15 | 699 | 0.1+ | 1.5- |            |     |      |      |
| 2007 10 16 | 703 | 0.9+ | 0.2+ | 2007 11 15 | 699 | 0.1- | 0.2+ |            |     |      |      |

**2007 VC<sub>252</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 344.77030  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23060606 | $\omega$ | 338.56421 | +0.36789852   | -0.92799665 |
| <i>a</i> | 2.6336349  | $\Omega$ | 89.81057  | +0.86147339   | +0.31629802 |
| <i>e</i> | 0.1937304  | <i>i</i> | 3.37849   | +0.35002038   | +0.19692074 |
| <i>P</i> | 4.27       | <i>H</i> | 16.9      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2002 08 11 | 807 | 0.0  | 0.0  | 2007 11 12 | 703 | (1.6+ | 0.9-) | 2007 11 20 | 703 | (2.1- | 0.8-) |
| 2002 08 11 | 807 | 0.0  | 0.2+ | 2007 11 12 | 703 | 1.0+  | 0.2-  | 2007 11 20 | 703 | 0.9-  | 0.1-  |
| 2004 01 16 | 644 | 0.1- | 0.2+ | 2007 11 12 | 703 | 0.5+  | 0.7+  | 2007 11 20 | 703 | (0.4+ | 2.5-) |
| 2004 01 16 | 644 | 0.1+ | 0.0  | 2007 11 12 | 703 | 0.1-  | 0.2+  | 2007 11 20 | 703 | 0.2+  | 1.1-  |
| 2004 01 16 | 644 | 0.0  | 0.1+ | 2007 11 14 | 704 | 0.4+  | 0.0   | 2007 12 03 | 703 | 0.7+  | 1.1-  |
| 2007 10 10 | G96 | 0.2+ | 0.1- | 2007 11 14 | 704 | 0.9+  | 0.3-  | 2007 12 03 | 703 | 1.0-  | 0.0   |
| 2007 10 10 | G96 | 0.2+ | 0.1- | 2007 11 14 | 704 | 0.9+  | 0.1-  | 2007 12 03 | 703 | 1.0-  | 1.4-  |
| 2007 10 10 | G96 | 0.3+ | 0.1+ | 2007 11 14 | 704 | 0.5+  | 0.0   | 2007 12 03 | 703 | 0.5-  | 0.4-  |
| 2007 10 10 | G96 | 0.4+ | 0.2- | 2007 11 14 | 704 | 0.4+  | 0.5+  | 2007 12 05 | 704 | 0.4+  | 0.0   |
| 2007 10 20 | 703 | 0.3+ | 0.5+ | 2007 11 15 | 699 | 0.5-  | 0.7-  | 2007 12 05 | 704 | 0.3-  | 0.8+  |
| 2007 10 20 | 703 | 0.0  | 0.7+ | 2007 11 15 | 699 | 0.3-  | 0.1+  | 2007 12 05 | 704 | 0.7+  | 0.8+  |
| 2007 10 20 | 703 | 0.8- | 0.8+ | 2007 11 15 | 699 | 0.3+  | 0.1-  | 2007 12 05 | 704 | 1.1+  | 0.1-  |
| 2007 10 20 | 703 | 1.4- | 0.5+ | 2007 11 15 | 699 | 0.2-  | 0.2-  | 2007 12 05 | 704 | 0.1+  | 0.2-  |
| 2007 11 05 | A77 | 0.8+ | 0.2- | 2007 11 20 | 691 | 0.2-  | 0.0   | 2007 12 06 | 691 | 0.4+  | 0.0   |
| 2007 11 05 | A77 | 0.2- | 1.0- | 2007 11 20 | 691 | 0.2-  | 0.1+  | 2007 12 06 | 691 | 0.3-  | 0.1+  |
| 2007 11 05 | A77 | 0.6+ | 0.6- | 2007 11 20 | 691 | 0.2-  | 0.1+  | 2007 12 06 | 691 | 0.5-  | 0.3+  |

**2007 VF<sub>252</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.52547    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18963128 | $\omega$ | 252.33830 | +0.74465948   | -0.66688023 |
| <i>a</i> | 3.0005168  | $\Omega$ | 149.47113 | +0.63102009   | +0.69002955 |
| <i>e</i> | 0.1004420  | <i>i</i> | 3.09669   | +0.21747622   | +0.28130052 |
| <i>P</i> | 5.20       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 23 | 691 | 0.9- | 0.2+ | 2007 11 02 | 691 | 0.1- | 0.1- | 2007 11 18 | G96 | 0.4+ | 0.3- |
| 2001 08 23 | 691 | 0.5+ | 0.0  | 2007 11 02 | 691 | 0.7- | 0.1- | 2007 11 20 | 691 | 0.4- | 0.3+ |
| 2001 08 23 | 691 | 0.4+ | 0.1- | 2007 11 02 | 691 | 0.2- | 0.3- | 2007 11 20 | 691 | 0.3- | 0.0  |
| 2005 06 14 | 691 | 0.2- | 0.2+ | 2007 11 12 | 703 | 0.2- | 0.2+ | 2007 11 20 | 691 | 0.0  | 0.3+ |
| 2005 06 14 | 691 | 0.1+ | 0.2+ | 2007 11 12 | 703 | 0.3- | 0.6+ | 2007 11 20 | 703 | 1.8+ | 0.9+ |
| 2005 06 14 | 691 | 0.2+ | 0.1+ | 2007 11 12 | 703 | 0.5- | 0.6+ | 2007 11 20 | 703 | 0.2- | 1.8+ |
| 2007 09 14 | G96 | 0.2- | 0.4- | 2007 11 12 | 703 | 1.1- | 0.7- | 2007 11 20 | 703 | 1.6+ | 0.7+ |
| 2007 09 14 | G96 | 0.1- | 0.4- | 2007 11 15 | 699 | 0.5+ | 0.1- | 2007 11 20 | 703 | 1.2+ | 1.0+ |
| 2007 09 14 | G96 | 0.2+ | 0.4- | 2007 11 15 | 699 | 1.2+ | 0.9- | 2007 11 20 | G96 | 0.2+ | 0.1- |
| 2007 09 14 | G96 | 0.7- | 0.3- | 2007 11 15 | 699 | 0.7- | 0.7+ | 2007 11 20 | G96 | 0.4+ | 0.2- |
| 2007 10 10 | G96 | 0.4+ | 0.1- | 2007 11 15 | 699 | 0.1+ | 0.1+ | 2007 11 20 | G96 | 0.4+ | 0.0  |
| 2007 10 10 | G96 | 0.0  | 0.2- | 2007 11 18 | G96 | 0.3+ | 0.2- | 2007 11 20 | G96 | 0.2+ | 0.1+ |
| 2007 10 10 | G96 | 0.1+ | 0.2- | 2007 11 18 | G96 | 0.5+ | 0.4- |            |     |      |      |
| 2007 10 10 | G96 | 0.3+ | 0.4- | 2007 11 18 | G96 | 0.4+ | 0.2- |            |     |      |      |

**2007 VG<sub>252</sub> = 2002 YF<sub>30</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 318.36578  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18293717 | $\omega$ | 310.53301 | -0.26603546   | -0.96376085 |
| <i>a</i> | 3.0732749  | $\Omega$ | 154.87471 | +0.89788798   | -0.25520366 |
| <i>e</i> | 0.1681865  | <i>i</i> | 2.66637   | +0.35074536   | -0.07769244 |
| <i>P</i> | 5.39       | <i>H</i> | 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 12 31 | 704 | 0.9- | 0.2+ | 2007 11 12 | 703 | 0.3+  | 0.6+  | 2007 11 18 | G96 | 1.0+ | 0.0  |
| 2002 12 31 | 704 | 0.2- | 0.7+ | 2007 11 12 | 703 | 1.0-  | 0.4+  | 2007 11 18 | G96 | 0.8+ | 0.0  |
| 2002 12 31 | 704 | 1.0- | 0.4- | 2007 11 12 | 703 | 1.1-  | 0.4+  | 2007 11 18 | G96 | 0.7+ | 0.1- |
| 2003 01 04 | 704 | 0.4+ | 0.0  | 2007 11 12 | 703 | 0.3-  | 1.1-  | 2007 11 20 | 691 | 0.4- | 0.1+ |
| 2003 01 04 | 704 | 0.4+ | 0.2- | 2007 11 14 | 704 | 0.8+  | 0.1+  | 2007 11 20 | 691 | 0.1- | 0.1+ |
| 2003 01 04 | 704 | 0.0  | 0.3- | 2007 11 14 | 704 | 0.1+  | 1.1+  | 2007 11 20 | 691 | 0.2- | 0.0  |
| 2003 01 04 | 704 | 1.2+ | 0.6- | 2007 11 14 | 704 | 0.4+  | 0.6+  | 2007 11 20 | 703 | 0.3+ | 0.7+ |
| 2007 09 14 | G96 | 0.2+ | 0.2- | 2007 11 14 | 704 | 0.2+  | 1.2+  | 2007 11 20 | 703 | 0.6+ | 1.0- |
| 2007 09 14 | G96 | 0.3+ | 0.3- | 2007 11 14 | 704 | 0.2+  | 1.2+  | 2007 11 20 | 703 | 0.3+ | 0.2+ |
| 2007 09 14 | G96 | 0.5+ | 0.2- | 2007 11 15 | 699 | 0.4+  | 0.7+  | 2007 11 20 | 703 | 1.0+ | 0.3+ |
| 2007 09 14 | G96 | 0.2- | 0.3- | 2007 11 15 | 699 | 1.2+  | 0.0   | 2007 12 05 | 699 | 0.4- | 0.5+ |
| 2007 10 12 | 691 | 0.1+ | 0.0  | 2007 11 15 | 699 | (1.5+ | 0.8-) | 2007 12 05 | 699 | 0.1- | 0.8+ |
| 2007 10 12 | 691 | 1.4- | 0.9- | 2007 11 15 | 699 | 0.3+  | 0.1+  | 2007 12 05 | 699 | 0.4+ | 1.4- |
| 2007 10 12 | 691 | 0.3+ | 0.0  | 2007 11 18 | G96 | 0.5+  | 0.2-  | 2007 12 05 | 699 | 0.5- | 1.0- |

**2007 VQ<sub>252</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 7.88330    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27219842 | $\omega$ | 38.45557  | +0.78446347   | -0.62017500 |
| <i>a</i> | 2.3580101  | $\Omega$ | 359.87304 | +0.55044818   | +0.69637977 |
| <i>e</i> | 0.1798393  | <i>i</i> | 3.98022   | +0.28569889   | +0.36116227 |
| <i>P</i> | 3.62       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 10 05 | 691 | 0.2- | 0.3+ | 2007 11 05 | D29 | 0.4+ | 0.1- | 2007 11 20 | G96 | 0.1+  | 0.1-  |
| 1996 10 05 | 691 | 0.1+ | 0.4- | 2007 11 05 | D29 | 0.4+ | 0.0  | 2007 11 20 | G96 | 0.3+  | 0.2-  |
| 1996 10 05 | 691 | 0.1+ | 0.1- | 2007 11 05 | D29 | 0.1- | 0.1+ | 2007 11 20 | G96 | 0.0   | 0.1-  |
| 2001 02 27 | 691 | 0.2+ | 0.0  | 2007 11 12 | G96 | 0.3- | 0.2- | 2007 12 04 | 703 | 0.2-  | 0.1-  |
| 2001 02 27 | 691 | 0.5+ | 0.1- | 2007 11 12 | G96 | 0.2+ | 0.3- | 2007 12 04 | 703 | 0.6+  | 0.3-  |
| 2001 02 27 | 691 | 0.3- | 0.3- | 2007 11 12 | G96 | 0.3- | 0.3- | 2007 12 04 | 703 | 1.2-  | 0.7+  |
| 2003 07 24 | 644 | 0.1+ | 0.5+ | 2007 11 12 | G96 | 0.1+ | 0.2- | 2007 12 04 | 703 | 0.6+  | 0.6+  |
| 2003 07 24 | 644 | 0.2- | 0.4+ | 2007 11 15 | 699 | 0.7- | 1.5- | 2007 12 12 | 704 | (1.8- | 1.3+) |
| 2003 07 24 | 644 | 0.3+ | 0.3+ | 2007 11 15 | 699 | 0.5- | 0.3- | 2007 12 12 | 704 | 0.7-  | 0.1+  |
| 2005 03 10 | G96 | 0.2+ | 0.1+ | 2007 11 15 | 699 | 0.5- | 1.0- | 2007 12 12 | 704 | 1.2-  | 0.2+  |
| 2005 03 10 | G96 | 0.4- | 0.1- | 2007 11 15 | 699 | 0.4- | 0.4+ | 2007 12 12 | 704 | 0.4+  | 1.1+  |
| 2005 03 10 | G96 | 0.3- | 0.2+ | 2007 11 18 | 704 | 0.1+ | 0.1- | 2007 12 13 | 704 | 0.2-  | 0.3+  |
| 2005 03 10 | G96 | 0.6- | 0.1+ | 2007 11 18 | 704 | 0.2- | 0.5- | 2007 12 13 | 704 | 0.0   | 0.2+  |
| 2007 10 21 | G96 | 0.2+ | 0.3- | 2007 11 18 | 704 | 0.0  | 0.3- | 2007 12 13 | 704 | 0.0   | 0.8+  |
| 2007 10 21 | G96 | 0.1+ | 0.2- | 2007 11 18 | 704 | 0.2- | 0.2- | 2007 12 13 | 704 | 0.6-  | 0.2+  |
| 2007 10 21 | G96 | 0.1+ | 0.1- | 2007 11 18 | 704 | 0.2- | 0.6- | 2007 12 13 | 704 | 0.5-  | 0.8+  |
| 2007 10 21 | G96 | 0.0  | 0.3- | 2007 11 20 | 704 | 0.3+ | 1.1+ | 2007 12 15 | 704 | 0.5-  | 0.1+  |
| 2007 11 05 | D29 | 0.2+ | 1.0- | 2007 11 20 | 704 | 0.4+ | 0.2+ | 2007 12 15 | 704 | 0.1+  | 0.3+  |
| 2007 11 05 | D29 | 0.5+ | 0.3+ | 2007 11 20 | 704 | 0.6+ | 0.0  | 2007 12 15 | 704 | 0.0   | 0.8+  |
| 2007 11 05 | D29 | 0.6+ | 0.0  | 2007 11 20 | 704 | 0.2+ | 0.5+ | 2007 12 15 | 704 | 0.8+  | 0.5+  |
| 2007 11 05 | D29 | 0.2+ | 0.4- | 2007 11 20 | 704 | 0.0  | 1.3+ | 2007 12 15 | 704 | 0.1+  | 0.3+  |
| 2007 11 05 | D29 | 0.2+ | 1.4- | 2007 11 20 | G96 | 0.0  | 0.1- |            |     |       |       |

**2007 VD<sub>253</sub> = 2005 GM<sub>206</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 345.37913  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21988362 | $\omega$ | 225.43685 | +0.37177511   | -0.92372501 |
| <i>a</i> | 2.7185718  | $\Omega$ | 203.21880 | +0.90419957   | +0.38283441 |
| <i>e</i> | 0.0707245  | <i>i</i> | 13.53654  | +0.21025319   | -0.01303546 |
| <i>P</i> | 4.48       | <i>H</i> | 16.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 09 13 | 644 | 0.1+ | 0.0  | 2007 10 14 | G96 | 0.1+ | 0.1- | 2007 11 15 | 699 | 0.4+ | 0.8+ |
| 2002 09 13 | 644 | 0.1+ | 0.5- | 2007 10 14 | G96 | 0.1+ | 0.0  | 2007 11 17 | 703 | 0.1+ | 0.1+ |
| 2002 09 13 | 644 | 0.1- | 0.7- | 2007 11 02 | G96 | 0.0  | 0.0  | 2007 11 17 | 703 | 0.3+ | 0.2- |
| 2005 04 12 | 695 | 0.0  | 0.1- | 2007 11 02 | G96 | 0.2- | 0.1- | 2007 11 17 | 703 | 0.6+ | 0.8+ |
| 2005 04 12 | 695 | 0.1- | 0.0  | 2007 11 02 | G96 | 0.3- | 0.0  | 2007 11 17 | 703 | 0.4- | 0.8+ |
| 2005 04 16 | 691 | 0.0  | 0.0  | 2007 11 02 | G96 | 0.2+ | 0.1- | 2007 11 19 | G96 | 0.0  | 0.4+ |
| 2005 04 16 | 691 | 0.1- | 0.2+ | 2007 11 13 | G96 | 0.1+ | 0.1+ | 2007 11 19 | G96 | 0.2- | 0.3+ |
| 2005 04 16 | 691 | 0.2+ | 0.2+ | 2007 11 13 | G96 | 0.6+ | 0.1+ | 2007 11 19 | G96 | 0.2+ | 0.6+ |
| 2006 05 31 | 691 | 0.1+ | 0.2+ | 2007 11 13 | G96 | 0.3+ | 0.1+ | 2007 11 19 | G96 | 0.2- | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 31 | 691 | 0.0  | 0.0  | 2007 11 13 | G96 | 0.5+ | 0.1+ | 2007 12 05 | 703 | 0.0  | 0.2− |
| 2006 05 31 | 691 | 0.2− | 0.3+ | 2007 11 15 | 699 | 0.5− | 0.5− | 2007 12 05 | 703 | 0.6− | 0.4− |
| 2007 10 14 | G96 | 0.0  | 0.2− | 2007 11 15 | 699 | 0.2− | 0.4+ | 2007 12 05 | 703 | 0.0  | 0.3− |
| 2007 10 14 | G96 | 0.1+ | 0.0  | 2007 11 15 | 699 | 0.1− | 0.3+ | 2007 12 05 | 703 | 1.0− | 0.4− |

**2007 VO<sub>253</sub> = 2003 OU<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 17.19746   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.27966456 | $\omega$ | 237.49569 | +0.86004970 −0.50914280  |
| <i>a</i> | 2.3158535  | $\Omega$ | 153.06804 | +0.48913624 +0.80441094  |
| <i>e</i> | 0.1635882  | <i>i</i> | 4.17652   | +0.14512154 +0.30609909  |
| <i>P</i> | 3.52       | <i>H</i> | 16.7      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1996 08 13 | 327 | 0.2+ | 0.4− | 2005 02 09 | G96 | 0.2−  | 0.1−  | 2007 11 17 | 703 | 0.3− | 0.7+ |
| 1996 08 13 | 327 | 0.3+ | 0.8− | 2005 02 09 | G96 | 0.4−  | 0.0   | 2007 11 17 | 703 | 0.9− | 0.2+ |
| 1996 08 13 | 327 | 0.1+ | 0.7− | 2005 03 04 | G96 | 0.8−  | 0.4+  | 2007 11 18 | 699 | 1.2− | 0.1− |
| 2003 07 22 | 599 | 0.3− | 0.3+ | 2005 03 04 | G96 | 0.1−  | 0.0   | 2007 11 18 | 699 | 1.0+ | 0.6− |
| 2003 07 22 | 599 | 0.4− | 0.1− | 2005 03 04 | G96 | 0.1+  | 0.2−  | 2007 11 18 | 699 | 0.2− | 0.4− |
| 2003 07 22 | 599 | 0.2+ | 0.1+ | 2005 03 04 | G96 | 0.4+  | 0.3−  | 2007 11 18 | 699 | 0.7+ | 0.0  |
| 2003 07 22 | 599 | 0.6− | 0.5− | 2007 11 12 | 703 | 0.8+  | 1.3−  | 2007 12 04 | 703 | 0.1+ | 0.6+ |
| 2003 07 24 | 599 | 0.3− | 0.1+ | 2007 11 12 | 703 | 0.8+  | 0.1−  | 2007 12 04 | 703 | 0.1− | 0.9+ |
| 2003 07 24 | 599 | 0.1+ | 0.3− | 2007 11 12 | 703 | (1.8− | 0.4−) | 2007 12 04 | 703 | 0.0  | 0.6− |
| 2003 07 25 | 599 | 1.1+ | 1.4+ | 2007 11 12 | 703 | 1.3−  | 0.8+  | 2007 12 04 | 703 | 0.2+ | 0.9+ |
| 2004 12 20 | G96 | 0.0  | 0.2− | 2007 11 14 | 699 | 0.5−  | 0.2+  | 2007 12 05 | 699 | 0.6+ | 0.1+ |
| 2004 12 20 | G96 | 0.6+ | 0.2− | 2007 11 14 | 699 | 0.2+  | 0.6+  | 2007 12 05 | 699 | 0.4+ | 0.2+ |
| 2004 12 20 | G96 | 0.3− | 0.4− | 2007 11 14 | 699 | 0.0   | 0.2−  | 2007 12 05 | 699 | 0.0  | 0.2− |
| 2004 12 20 | G96 | 0.4+ | 0.6− | 2007 11 14 | 699 | 0.5+  | 0.1−  | 2007 12 05 | 699 | 0.2+ | 0.5− |
| 2005 02 09 | G96 | 0.1+ | 0.1− | 2007 11 17 | 703 | 0.5−  | 0.3−  |            |     |      |      |
| 2005 02 09 | G96 | 0.1− | 0.1+ | 2007 11 17 | 703 | 0.6−  | 0.5−  |            |     |      |      |

**2007 VY<sub>253</sub> = 2006 MJ<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 13.08412   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.28684040 | $\omega$ | 233.77429 | +0.89380343 −0.44477862  |
| <i>a</i> | 2.2770671  | $\Omega$ | 152.49987 | +0.44090259 +0.84816070  |
| <i>e</i> | 0.1002277  | <i>i</i> | 7.13287   | +0.08197765 +0.28774190  |
| <i>P</i> | 3.44       | <i>H</i> | 17.1      | <i>G</i> 0.15 <i>U</i> 1 |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2000 10 02 | 699 | 0.5+  | 0.9+  | 2005 03 13 | G96 | 0.1−  | 0.2+  | 2007 10 20 | G96 | 0.2+ | 0.3+ |
| 2000 10 02 | 699 | (0.4− | 2.3+) | 2005 03 13 | G96 | 0.0   | 0.0   | 2007 10 20 | G96 | 0.1+ | 0.3+ |
| 2000 10 02 | 699 | 1.3−  | 0.1+  | 2005 03 13 | G96 | 0.3−  | 0.2−  | 2007 10 20 | G96 | 0.3− | 0.3+ |
| 2000 10 02 | 699 | 0.2+  | 0.6+  | 2006 05 23 | 691 | 0.2−  | 0.7+  | 2007 11 14 | G96 | 0.0  | 0.2+ |
| 2002 03 12 | 691 | 0.3+  | 0.0   | 2006 05 23 | 691 | 0.1−  | 0.2+  | 2007 11 14 | G96 | 0.1+ | 0.2+ |
| 2002 03 12 | 691 | 0.5+  | 0.0   | 2006 05 23 | 691 | 0.4+  | 0.4+  | 2007 11 14 | G96 | 0.3− | 0.2+ |
| 2002 03 12 | 691 | 0.5+  | 0.2−  | 2006 06 16 | 691 | 0.4−  | 0.0   | 2007 11 14 | G96 | 0.3+ | 0.2+ |
| 2003 07 25 | 644 | 0.7−  | 0.2+  | 2006 06 16 | 691 | 0.2−  | 0.2+  | 2007 11 15 | 699 | 0.0  | 0.7+ |
| 2003 07 25 | 644 | 0.5−  | 0.2+  | 2006 06 16 | 691 | 0.3−  | 0.2−  | 2007 11 15 | 699 | 1.0+ | 0.8− |
| 2003 07 25 | 644 | 0.5−  | 0.4+  | 2006 06 20 | 691 | 0.0   | 0.2+  | 2007 11 15 | 699 | 0.6+ | 1.0+ |
| 2005 01 13 | 703 | 0.6−  | 0.1+  | 2006 06 20 | 691 | 0.2+  | 0.2−  | 2007 11 15 | 699 | 0.8+ | 0.5+ |
| 2005 01 13 | 703 | 0.2−  | 0.9+  | 2006 06 20 | 691 | 0.6+  | 0.4+  | 2007 11 20 | 703 | 0.0  | 0.7− |
| 2005 01 13 | 703 | 0.9−  | 0.3−  | 2007 10 09 | D29 | 1.4−  | 0.3−  | 2007 11 20 | 703 | 0.4− | 1.0+ |
| 2005 01 13 | 703 | (2.4− | 1.1+) | 2007 10 09 | D29 | (0.5+ | 1.5+) | 2007 11 20 | 703 | 0.5+ | 0.1+ |
| 2005 01 18 | 703 | 1.3−  | 1.2+  | 2007 10 10 | 699 | 0.7−  | 0.0   | 2007 11 20 | 703 | 0.7+ | 0.9− |
| 2005 01 18 | 703 | 0.4+  | 1.1+  | 2007 10 10 | 699 | 0.3+  | 0.6−  | 2007 12 06 | 703 | 0.0  | 0.4+ |
| 2005 01 18 | 703 | 0.9−  | 0.1−  | 2007 10 10 | 699 | 0.1+  | 0.4−  | 2007 12 06 | 703 | 1.0− | 2.0+ |
| 2005 01 18 | 703 | 1.0−  | 0.5+  | 2007 10 10 | 699 | 1.0+  | 0.6+  | 2007 12 06 | 703 | 0.3− | 0.2+ |
| 2005 03 13 | G96 | 0.1−  | 0.1−  | 2007 10 20 | G96 | 0.0   | 0.3+  | 2007 12 06 | 703 | 0.1− | 0.6+ |

**2007 VZ<sub>253</sub> = 2003 XK<sub>22</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 326.53386  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.26559818 | $\omega$ | 217.44176 | −0.71667866 −0.58154814  |
| <i>a</i> | 2.3969151  | $\Omega$ | 282.44297 | +0.69621827 −0.56443956  |
| <i>e</i> | 0.3109677  | <i>i</i> | 23.21561  | +0.04064244 −0.58584106  |
| <i>P</i> | 3.71       | <i>H</i> | 15.3      | <i>G</i> 0.15 <i>U</i> 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 04 | 704 | 0.6− | 1.0+ | 2007 11 16 | G96 | 0.3− | 0.2− | 2007 11 20 | 704 | 0.1+ | 0.8− |
| 2003 12 04 | 704 | 0.6+ | 0.6+ | 2007 11 16 | G96 | 0.3− | 0.2− | 2007 12 04 | 703 | 0.3− | 0.5+ |
| 2003 12 04 | 704 | 0.2− | 0.3+ | 2007 11 16 | G96 | 0.3− | 0.2− | 2007 12 04 | 703 | 0.3− | 0.3+ |
| 2003 12 04 | 704 | 0.6− | 0.0  | 2007 11 16 | G96 | 0.3− | 0.4− | 2007 12 04 | 703 | 0.3− | 0.3+ |
| 2003 12 04 | 704 | 0.1− | 0.1− | 2007 11 16 | D35 | 0.1+ | 0.1− | 2007 12 06 | 704 | 0.1+ | 0.3+ |
| 2003 12 17 | 704 | 0.1+ | 0.5− | 2007 11 16 | D35 | 0.1− | 0.2+ | 2007 12 06 | 704 | 0.1− | 0.5+ |
| 2003 12 17 | 704 | 0.0  | 0.5− | 2007 11 16 | D35 | 0.5− | 0.2+ | 2007 12 06 | 704 | 0.2+ | 0.3+ |
| 2003 12 17 | 704 | 0.3+ | 0.6− | 2007 11 17 | 704 | 0.4+ | 0.1− | 2007 12 06 | 704 | 0.2− | 0.7+ |
| 2003 12 17 | 704 | 0.6+ | 0.1− | 2007 11 17 | 704 | 0.0  | 0.1− | 2007 12 10 | 704 | 0.3− | 0.4+ |
| 2003 12 17 | 704 | 0.1+ | 0.3− | 2007 11 17 | 704 | 0.0  | 0.3− | 2007 12 10 | 704 | 0.4− | 0.2+ |
| 2004 02 13 | 699 | 0.7− | 0.5+ | 2007 11 17 | 704 | 0.4− | 0.5− | 2007 12 10 | 704 | 0.1− | 0.3+ |
| 2004 02 13 | 699 | 0.8+ | 0.5− | 2007 11 17 | 704 | 0.2− | 0.3− | 2007 12 10 | 704 | 0.1+ | 0.1+ |
| 2004 02 13 | 699 | 0.2+ | 0.8+ | 2007 11 19 | 699 | 0.5− | 0.4+ | 2007 12 10 | 704 | 0.1− | 0.3+ |
| 2004 02 13 | 699 | 0.4− | 0.2+ | 2007 11 19 | 699 | 0.2− | 0.5− | 2007 12 14 | 704 | 0.7+ | 0.3− |
| 2007 10 09 | 703 | 0.4− | 0.5+ | 2007 11 19 | 699 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.3+ | 0.2− |
| 2007 10 09 | 703 | 0.3+ | 0.6+ | 2007 11 19 | 699 | 0.2− | 0.4+ | 2007 12 14 | 704 | 0.5+ | 0.4− |
| 2007 10 09 | 703 | 0.4− | 0.8+ | 2007 11 20 | 704 | 0.7+ | 0.6− | 2007 12 14 | 704 | 0.3+ | 0.5− |
| 2007 11 14 | 699 | 0.4− | 0.5− | 2007 11 20 | 704 | 1.2+ | 0.0  | 2007 12 14 | 704 | 0.5+ | 0.1+ |
| 2007 11 14 | 699 | 0.0  | 0.2− | 2007 11 20 | 704 | 0.8+ | 0.7− |            |     |      |      |
| 2007 11 14 | 699 | 0.4− | 0.1− | 2007 11 20 | 704 | 0.1− | 0.6− |            |     |      |      |

**2007 VJ<sub>254</sub> = 2006 QS<sub>91</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 17.61393   | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.17671651 | $\omega$ | 233.90033 | +0.82775912 −0.55687844  |
| <i>a</i> | 3.1449806  | $\Omega$ | 159.66270 | +0.55697962 +0.80079283  |
| <i>e</i> | 0.1239159  | <i>i</i> | 11.37822  | +0.06773871 +0.22049320  |
| <i>P</i> | 5.58       | <i>H</i> | 15.5      | <i>G</i> 0.15 <i>U</i> 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 21 | G96 | 0.1− | 0.2+ | 2006 08 17 | 644 | 0.3+  | 0.0   | 2007 11 15 | 703 | 0.2+ | 0.6+ |
| 2005 05 21 | G96 | 0.2+ | 0.0  | 2006 08 17 | 644 | 0.1+  | 0.0   | 2007 11 15 | 703 | 0.0  | 0.1+ |
| 2005 05 21 | G96 | 0.1+ | 0.1+ | 2006 08 17 | 644 | 0.1+  | 0.1−  | 2007 11 15 | 703 | 0.3− | 0.7− |
| 2005 05 21 | G96 | 0.3+ | 0.1+ | 2006 09 27 | G96 | 0.3−  | 0.2−  | 2007 11 16 | 703 | 0.6+ | 0.4+ |
| 2005 06 04 | 691 | 0.1+ | 0.3+ | 2006 09 27 | G96 | 0.1−  | 0.5−  | 2007 11 16 | 703 | 0.5+ | 0.1+ |
| 2005 06 04 | 691 | 0.1− | 0.3+ | 2006 09 27 | G96 | 0.6−  | 0.4−  | 2007 11 16 | 703 | 0.0  | 0.5+ |
| 2005 06 04 | 691 | 0.1+ | 0.1+ | 2006 09 27 | G96 | 0.3−  | 0.4−  | 2007 11 16 | 703 | 0.1− | 0.5+ |
| 2005 06 14 | 691 | 0.2+ | 0.3− | 2006 10 22 | G96 | 0.1−  | 0.0   | 2007 11 17 | 703 | 0.7− | 0.2+ |
| 2005 06 14 | 691 | 0.2− | 0.2− | 2006 10 22 | G96 | 1.1−  | 0.2−  | 2007 11 17 | 703 | 0.1+ | 0.2+ |
| 2005 06 14 | 691 | 0.1− | 0.0  | 2006 10 22 | G96 | 0.4−  | 0.3−  | 2007 11 17 | 703 | 0.6− | 0.5− |
| 2005 07 05 | 691 | 0.1− | 0.2+ | 2006 10 22 | G96 | 1.3+  | 1.3+  | 2007 11 17 | 703 | 0.2− | 0.1+ |
| 2005 07 05 | 691 | 0.0  | 0.1+ | 2007 11 09 | 703 | (0.0  | 1.9+) | 2007 11 20 | 703 | 0.7− | 0.4+ |
| 2005 07 05 | 691 | 0.1+ | 0.4+ | 2007 11 09 | 703 | 0.8+  | 0.8+  | 2007 11 20 | 703 | 0.1+ | 0.8+ |
| 2006 08 16 | 644 | 0.1+ | 0.0  | 2007 11 09 | 703 | 0.6+  | 0.5+  | 2007 11 20 | 703 | 0.3+ | 0.2− |
| 2006 08 16 | 644 | 0.1+ | 0.1+ | 2007 11 09 | 703 | (0.9+ | 1.7+) | 2007 11 20 | 703 | 0.1+ | 0.2+ |
| 2006 08 16 | 644 | 0.2+ | 0.1+ | 2007 11 15 | 703 | 1.0−  | 0.5−  |            |     |      |      |

**2007 VX<sub>254</sub> = 2003 AM<sub>51</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 347.87917  | (2000.0) | <b>P</b>  | <b>Q</b>                 |
|----------|------------|----------|-----------|--------------------------|
| <i>n</i> | 0.17985019 | $\omega$ | 345.21972 | +0.17859862 −0.93899162  |
| <i>a</i> | 3.1083419  | $\Omega$ | 93.83365  | +0.92998832 +0.06355188  |
| <i>e</i> | 0.0363117  | <i>i</i> | 17.13315  | +0.32128532 +0.33801760  |
| <i>P</i> | 5.48       | <i>H</i> | 14.9      | <i>G</i> 0.15 <i>U</i> 1 |

## 2007 DEC. 24

M.P.O. 130041

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 10 12 608 0.4− 0.5+   | 2004 03 29 703 0.7− 0.4− | 2007 11 20 703 0.8− 1.5+ |
| 2001 10 12 608 0.2− 0.4−   | 2004 04 25 699 1.3− 0.7− | 2007 11 20 703 0.1+ 0.0  |
| 2001 10 12 608 0.2− 1.1+   | 2004 04 25 699 0.8− 0.5+ | 2007 12 01 300 0.1+ 0.2+ |
| 2003 01 05 704 0.1− 0.3−   | 2004 04 25 699 0.3− 0.3+ | 2007 12 01 300 0.2+ 0.1+ |
| 2003 01 05 704 0.8+ 0.1+   | 2004 04 25 699 1.0+ 0.6+ | 2007 12 01 300 0.1+ 0.3+ |
| 2003 01 05 704 0.1+ 0.4−   | 2007 11 15 G96 0.2+ 0.1+ | 2007 12 01 300 0.0 0.3−  |
| 2003 01 05 704 0.2− 0.3+   | 2007 11 15 G96 0.0 0.3+  | 2007 12 01 300 0.2− 0.1+ |
| 2003 01 09 704 0.3+ 0.6+   | 2007 11 15 G96 0.0 0.1+  | 2007 12 01 300 0.2+ 0.1− |
| 2003 01 09 704 0.8+ 1.0−   | 2007 11 15 G96 0.2− 0.1+ | 2007 12 01 300 0.3+ 0.3+ |
| 2003 01 09 704 0.9− 0.3−   | 2007 11 17 703 0.6+ 0.4+ | 2007 12 04 300 0.3− 0.9− |
| 2003 01 09 704 0.2− 0.9−   | 2007 11 17 703 0.4+ 0.9+ | 2007 12 04 300 0.6+ 0.2+ |
| 2003 01 09 704 (1.8+ 0.4−) | 2007 11 17 703 0.4− 0.7− | 2007 12 04 300 0.4− 0.6− |
| 2004 03 29 703 0.8+ 1.4+   | 2007 11 17 703 0.0 0.2−  | 2007 12 04 300 0.0 0.3−  |
| 2004 03 29 703 0.4− 1.2−   | 2007 11 20 703 0.1− 0.1+ |                          |
| 2004 03 29 703 2.8+ 2.1+   | 2007 11 20 703 1.1− 0.3+ |                          |

2007 VC<sub>256</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 30.35596   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17502790 | $\omega$ 358.90938 | +0.98097901   | −0.19109366 |
| <i>a</i> | 3.1651760  | $\Omega$ 12.26809  | +0.17928926   | +0.82461454 |
| <i>e</i> | 0.0707396  | <i>i</i> 9.23719   | +0.07440127   | +0.53244162 |
| <i>P</i> | 5.63       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2001 09 20 691 0.0 0.2−  | 2007 10 18 691 0.0 0.2−  | 2007 11 17 691 0.3− 0.2+ |
| 2001 09 20 691 0.3+ 0.0  | 2007 10 18 691 0.4− 0.2− | 2007 11 17 691 0.2+ 0.3− |
| 2001 09 20 691 0.4+ 0.0  | 2007 11 01 691 0.2− 0.2+ | 2007 11 17 G96 0.6+ 0.5+ |
| 2001 10 15 291 0.1− 0.3+ | 2007 11 01 691 0.5− 0.0  | 2007 11 17 G96 0.1− 0.0  |
| 2001 10 15 291 1.0− 0.5+ | 2007 11 01 691 0.1+ 0.0  | 2007 11 17 G96 0.2− 0.1− |
| 2001 10 15 291 0.3− 0.5+ | 2007 11 13 G96 0.2+ 0.2− | 2007 11 17 G96 0.2− 0.2− |
| 2004 03 15 691 0.0 0.3+  | 2007 11 13 G96 0.5+ 0.2− | 2007 11 20 691 0.4− 0.1− |
| 2004 03 15 691 0.0 0.3+  | 2007 11 13 G96 0.5+ 0.3− | 2007 11 20 691 0.2− 0.5+ |
| 2004 03 15 691 0.4+ 0.0  | 2007 11 13 G96 0.4+ 0.4− | 2007 11 20 691 0.0 0.0   |
| 2007 10 18 691 0.6+ 0.1− | 2007 11 17 691 0.3− 0.1+ |                          |

2007 VN<sub>257</sub> = 1993 HE<sub>5</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 85.78540   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23353648 | $\omega$ 270.87948 | +0.61606145   | +0.78042080 |
| <i>a</i> | 2.6115573  | $\Omega$ 37.83459  | −0.63555001   | +0.57259135 |
| <i>e</i> | 0.1736954  | <i>i</i> 10.02963  | −0.46534339   | +0.25116233 |
| <i>P</i> | 4.22       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1993 04 26 691 0.2+ 0.3+ | 2007 11 05 D29 0.0 0.0     | 2007 12 04 699 0.2− 0.2− |
| 1993 04 26 691 0.4− 0.0  | 2007 11 05 D29 0.4+ 0.4−   | 2007 12 04 699 1.0+ 0.1+ |
| 1993 04 29 691 0.2+ 0.2− | 2007 11 13 703 0.0 0.1+    | 2007 12 04 699 0.2− 0.2− |
| 1993 04 29 691 0.1+ 0.2− | 2007 11 13 703 0.8− 0.3−   | 2007 12 12 704 1.1− 1.2+ |
| 1993 04 29 691 0.1− 0.0  | 2007 11 13 703 0.3− 1.2−   | 2007 12 12 704 0.2+ 0.4+ |
| 2007 10 14 G96 0.1+ 0.0  | 2007 11 13 703 0.2− 0.0    | 2007 12 12 704 0.7+ 0.7− |
| 2007 10 14 G96 0.3+ 0.2− | 2007 11 17 G96 0.0 0.0     | 2007 12 12 704 0.9+ 0.4− |
| 2007 10 14 G96 0.1+ 0.0  | 2007 11 17 G96 0.1− 0.0    | 2007 12 12 704 0.7− 0.6− |
| 2007 10 14 G96 0.0 0.0   | 2007 11 17 G96 0.4+ 0.0    | 2007 12 13 704 0.3+ 0.2− |
| 2007 10 21 G96 0.2− 0.1+ | 2007 11 17 G96 0.5+ 0.1+   | 2007 12 13 704 0.0 0.2+  |
| 2007 10 21 G96 0.1− 0.1+ | 2007 11 20 704 0.2+ 1.3+   | 2007 12 13 704 0.4− 0.2+ |
| 2007 10 21 G96 0.1− 0.1+ | 2007 11 20 704 (2.4− 0.7+) | 2007 12 13 704 0.1− 0.1− |
| 2007 10 21 G96 0.1− 0.2+ | 2007 11 20 704 0.9− 1.0+   | 2007 12 13 704 0.1− 0.5+ |
| 2007 11 05 D29 0.0 0.5−  | 2007 11 20 704 (0.9− 2.3+) |                          |
| 2007 11 05 D29 0.5+ 0.2+ | 2007 12 04 699 0.1+ 0.9−   |                          |

2007 VO<sub>257</sub> = 2004 CC<sub>35</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.05092  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22495187 | $\omega$ 57.80816  | +0.62459035   | −0.78092025 |
| <i>a</i> | 2.6775832  | $\Omega$ 353.52580 | +0.69363422   | +0.55891080 |
| <i>e</i> | 0.2601704  | <i>i</i> 3.61153   | +0.35882929   | +0.27889474 |
| <i>P</i> | 4.38       | <i>H</i> 17.5      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 1998 09 02 691 0.2− 0.3+ | 2007 11 13 703 0.3+ 1.3− | 2007 11 20 704 0.7+ 0.2−   |
| 1998 09 02 691 0.0 0.2+  | 2007 11 13 703 0.2+ 0.2− | 2007 11 20 704 0.2+ 0.3+   |
| 1998 09 02 691 0.1+ 0.3− | 2007 11 13 703 0.8− 0.1+ | 2007 11 20 G96 0.2− 0.4−   |
| 2004 02 13 691 0.1− 0.6− | 2007 11 17 G96 0.2− 0.6− | 2007 11 20 G96 0.5+ 0.4−   |
| 2004 02 13 691 0.1− 0.4+ | 2007 11 17 G96 0.1− 0.4− | 2007 11 20 G96 0.2+ 0.3−   |
| 2004 02 13 691 0.3+ 0.4+ | 2007 11 17 G96 0.1− 0.4− | 2007 11 20 G96 0.3+ 0.3−   |
| 2004 02 14 691 0.0 0.0   | 2007 11 17 G96 0.0 0.6−  | 2007 12 12 704 0.3+ 1.3+   |
| 2004 02 14 691 0.2+ 0.1− | 2007 11 18 704 0.2− 0.6+ | 2007 12 12 704 0.1− 0.5+   |
| 2004 02 14 691 0.3− 0.3− | 2007 11 18 704 0.3− 0.2+ | 2007 12 12 704 0.9+ 0.0    |
| 2007 10 21 G96 0.2− 0.2− | 2007 11 18 704 1.4− 0.4− | 2007 12 12 704 (0.7+ 1.6+) |
| 2007 10 21 G96 0.1− 0.0  | 2007 11 18 704 0.3− 0.6+ | 2007 12 15 704 0.2− 1.5+   |
| 2007 10 21 G96 0.1− 0.3− | 2007 11 20 704 0.9+ 0.0  | 2007 12 15 704 0.2− 0.4+   |
| 2007 10 21 G96 0.0 0.3−  | 2007 11 20 704 1.1+ 0.5+ | 2007 12 15 704 0.5− 0.5+   |
| 2007 11 13 703 0.2− 0.4− | 2007 11 20 704 0.4− 0.3+ | 2007 12 15 704 0.4− 0.0    |

2007 VR<sub>257</sub> = 2005 GX<sub>171</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 359.98212  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.22361876 | $\omega$ 31.14437 | +0.57360527   | −0.81799783 |
| <i>a</i> | 2.6882143  | $\Omega$ 23.93658 | +0.72799909   | +0.48497012 |
| <i>e</i> | 0.0341346  | <i>i</i> 6.09627  | +0.37549211   | +0.30932755 |
| <i>P</i> | 4.41       | <i>H</i> 15.8     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1998 11 17 691 0.1+ 0.2− | 2007 08 24 691 0.3− 0.0  | 2007 11 18 704 0.5− 0.5+ |
| 1998 11 17 691 0.1+ 0.1+ | 2007 08 24 691 0.2− 0.1+ | 2007 11 18 704 0.3+ 0.1− |
| 1998 11 17 691 0.3− 0.0  | 2007 08 24 691 0.3− 0.1+ | 2007 11 19 691 0.2− 0.1+ |
| 2005 03 10 G96 0.0 0.3+  | 2007 10 21 G96 0.4+ 0.0  | 2007 11 19 691 0.4− 0.2+ |
| 2005 03 10 G96 0.1− 0.1+ | 2007 10 21 G96 0.2+ 0.2− | 2007 11 19 691 0.1− 0.2− |
| 2005 03 10 G96 0.5− 0.1− | 2007 10 21 G96 0.1+ 0.2− | 2007 11 20 704 0.6+ 0.6− |
| 2005 03 10 G96 0.4− 0.0  | 2007 10 21 G96 0.1− 0.1− | 2007 11 20 704 0.4+ 0.3− |
| 2005 04 13 699 0.3− 0.3− | 2007 11 13 703 0.3− 0.1− | 2007 11 20 704 0.0 0.9−  |
| 2005 04 13 699 0.2− 1.3− | 2007 11 13 703 1.4− 0.0  | 2007 11 20 704 0.9+ 0.7− |
| 2005 04 13 699 0.4+ 1.0+ | 2007 11 13 703 0.0 0.3−  | 2007 12 12 704 0.7+ 1.1+ |
| 2005 04 13 699 0.2+ 0.6− | 2007 11 13 703 0.1− 0.9− | 2007 12 12 704 0.3+ 0.8+ |
| 2005 04 17 691 0.1+ 0.4+ | 2007 11 17 G96 0.1− 0.0  | 2007 12 12 704 1.0+ 0.2+ |
| 2005 04 17 691 0.3+ 0.5+ | 2007 11 17 G96 0.5+ 0.6+ | 2007 12 12 704 0.2− 1.0+ |
| 2005 04 17 691 0.2+ 0.4+ | 2007 11 17 G96 0.0 0.2−  | 2007 12 15 704 0.2+ 1.3+ |
| 2006 08 12 644 0.1+ 1.1+ | 2007 11 18 704 0.3+ 0.6− | 2007 12 15 704 0.4− 1.8+ |
| 2006 08 12 644 0.1− 1.0+ | 2007 11 18 704 0.0 0.1+  | 2007 12 15 704 0.9− 0.5+ |
| 2006 08 12 644 0.5− 0.5+ | 2007 11 18 704 0.6+ 0.2+ | 2007 12 15 704 1.1+ 0.1+ |

2007 VC<sub>260</sub> = 1998 YG<sub>14</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 3.12815    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.21832969 | $\omega$ 325.64698 | +0.76765817   | −0.58564324 |
| <i>a</i> | 2.7314558  | $\Omega$ 72.34482  | +0.63202429   | +0.62464907 |
| <i>e</i> | 0.2313417  | <i>i</i> 15.84879  | +0.10604828   | +0.51656126 |
| <i>P</i> | 4.51       | <i>H</i> 16.7      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1998 12 20 691 0.2+ 0.2− | 2007 10 16 703 0.7+ 0.9+   | 2007 11 15 699 1.0+ 0.7+ |
| 1998 12 20 691 0.2+ 0.2+ | 2007 10 16 703 0.5+ 0.1+   | 2007 11 15 699 0.2+ 0.1+ |
| 1998 12 20 691 0.1+ 0.2+ | 2007 10 16 703 (1.4− 1.8+) | 2007 11 17 G96 0.4+ 0.2+ |
| 1998 12 22 691 0.2− 0.3+ | 2007 10 16 703 1.0− 0.1−   | 2007 11 17 G96 0.6+ 0.1+ |
| 1998 12 22 691 0.4− 0.2+ | 2007 11 07 703 0.1+ 0.1−   | 2007 11 17 G96 0.1+ 0.1+ |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 12 22 | 691 | 0.8− | 0.2+ | 2007 11 07 | 703 | (1.7+ | 1.3−) | 2007 11 17 | G96 | 0.3+  | 0.2+  |
| 1999 01 10 | 691 | 0.1+ | 0.1− | 2007 11 07 | 703 | 0.3−  | 0.8−  | 2007 11 20 | 703 | 1.4−  | 0.4−  |
| 1999 01 10 | 691 | 0.6+ | 0.3+ | 2007 11 07 | 703 | 1.3+  | 0.4−  | 2007 11 20 | 703 | 0.8−  | 1.1+  |
| 1999 01 10 | 691 | 0.0  | 0.6− | 2007 11 15 | 704 | 0.6+  | 0.7−  | 2007 11 20 | 703 | (1.4− | 2.3+) |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.3+  | 1.0−  | 2007 11 20 | 703 | 0.3−  | 0.2−  |
| 2003 12 21 | 645 | 0.0  | 0.0  | 2007 11 15 | 699 | 0.1−  | 0.1−  | 2007 12 04 | 704 | 0.0   | 0.5−  |
| 2007 10 10 | 703 | 1.1− | 0.5+ | 2007 11 15 | 704 | 0.0   | 0.7−  | 2007 12 04 | 704 | 0.2−  | 1.4−  |
| 2007 10 10 | 703 | 0.6+ | 0.6+ | 2007 11 15 | 699 | 0.2+  | 0.0   | 2007 12 04 | 704 | 0.2−  | 0.5+  |
| 2007 10 10 | 703 | 1.0− | 0.2− | 2007 11 15 | 704 | 0.0   | 0.3−  | 2007 12 04 | 704 | 0.6−  | 0.3+  |
| 2007 10 10 | 703 | 0.7+ | 0.2− | 2007 11 15 | 704 | 0.5+  | 0.2+  |            |     |       |       |

**2007 VN<sub>261</sub> = 2005 GG<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 270.37793  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.23021537 | $\omega$ | 138.93738 | −0.81588848 | −0.57816762 |
| <i>a</i> | 2.6366137  | $\Omega$ | 5.75359   | +0.51076110 | −0.72628987 |
| <i>e</i> | 0.0421209  | <i>i</i> | 3.97030   | +0.27101490 | −0.37178654 |
| <i>P</i> | 4.28       | <i>H</i> | 16.6      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 2           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 02 14 | 691 | 0.0  | 0.3+ | 2007 10 14 | G96 | 0.7+ | 0.0  | 2007 11 18 | 704 | 0.2+ | 0.5+ |
| 1996 02 14 | 691 | 0.2− | 0.3− | 2007 10 14 | G96 | 0.1+ | 0.3+ | 2007 12 04 | 691 | 0.4+ | 0.1− |
| 1996 02 14 | 691 | 0.2+ | 0.0  | 2007 11 01 | 691 | 0.1− | 0.1+ | 2007 12 04 | 691 | 0.1+ | 0.2+ |
| 2005 04 05 | G96 | 0.3− | 0.4− | 2007 11 01 | 691 | 0.2+ | 0.2+ | 2007 12 04 | 691 | 0.4− | 0.1+ |
| 2005 04 05 | G96 | 0.4− | 0.3− | 2007 11 01 | 691 | 0.0  | 0.1− | 2007 12 06 | 691 | 0.1− | 0.1+ |
| 2005 04 05 | G96 | 0.4− | 0.1+ | 2007 11 13 | 691 | 0.2+ | 0.0  | 2007 12 06 | 691 | 0.1+ | 0.1− |
| 2005 04 05 | G96 | 0.3− | 0.4− | 2007 11 13 | 691 | 0.1− | 0.3− | 2007 12 06 | 691 | 0.3+ | 0.2+ |
| 2005 04 11 | 691 | 0.3+ | 0.0  | 2007 11 13 | 691 | 0.3− | 0.1− | 2007 12 13 | 704 | 0.6− | 0.2− |
| 2005 04 11 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.3− | 0.2− | 2007 12 13 | 704 | 0.3− | 1.0− |
| 2005 04 11 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.0  | 0.1− | 2007 12 13 | 704 | 0.3+ | 0.4+ |
| 2005 04 15 | 691 | 0.2+ | 0.2+ | 2007 11 17 | 691 | 0.1+ | 0.1+ | 2007 12 13 | 704 | 0.2− | 0.6− |
| 2005 04 15 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.2− | 0.1− | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2005 04 15 | 691 | 0.2− | 0.0  | 2007 11 18 | 704 | 0.4− | 0.1+ | 2007 12 16 | 691 | 0.0  | 0.0  |
| 2007 10 14 | G96 | 0.5+ | 0.3− | 2007 11 18 | 704 | 0.7− | 0.2+ | 2007 12 16 | 691 | 0.2− | 0.1+ |
| 2007 10 14 | G96 | 0.3+ | 0.0  | 2007 11 18 | 704 | 0.2+ | 0.3+ |            |     |      |      |

**2007 VG<sub>263</sub> = 2002 LR<sub>54</sub> = 2005 EO<sub>274</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 195.25694  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.26939022 | $\omega$ | 184.63396 | −0.72488745 | +0.68588818 |
| <i>a</i> | 2.3743687  | $\Omega$ | 38.92850  | −0.62870527 | −0.62074892 |
| <i>e</i> | 0.0703692  | <i>i</i> | 5.84565   | −0.28154550 | −0.37977387 |
| <i>P</i> | 3.66       | <i>H</i> | 16.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2002 06 09 | 644 | 0.4− | 0.0  | 2005 03 09 | 703 | 0.5+  | 0.6+  | 2007 11 13 | 691 | 0.3− | 0.4+ |
| 2002 06 09 | 644 | 0.2− | 0.5− | 2005 03 09 | 703 | (2.1+ | 0.9−) | 2007 11 13 | 691 | 0.0  | 0.3+ |
| 2002 06 09 | 644 | 0.1− | 0.4+ | 2006 07 29 | E12 | 0.1+  | 0.0   | 2007 11 15 | 704 | 1.0− | 1.1− |
| 2002 06 12 | 704 | 0.0  | 0.2+ | 2006 07 29 | E12 | 0.3+  | 0.0   | 2007 11 15 | 704 | 0.4+ | 0.0  |
| 2002 06 12 | 704 | 0.0  | 0.9+ | 2006 07 29 | E12 | 0.7−  | 0.3−  | 2007 11 15 | 704 | 0.7+ | 0.4+ |
| 2002 06 12 | 704 | 0.5+ | 0.5+ | 2006 07 29 | E12 | 0.2+  | 0.5−  | 2007 11 15 | 704 | 0.5− | 0.1− |
| 2003 09 29 | 691 | 0.3+ | 0.2− | 2006 08 14 | 644 | 0.2+  | 0.4+  | 2007 11 15 | 704 | 0.1− | 0.2− |
| 2003 09 29 | 691 | 0.1+ | 0.1− | 2006 08 14 | 644 | 0.2+  | 0.3+  | 2007 11 17 | 691 | 0.3− | 0.1+ |
| 2003 09 29 | 691 | 0.0  | 0.2− | 2006 08 14 | 644 | 0.3+  | 0.3+  | 2007 11 17 | 691 | 0.1− | 0.5+ |
| 2003 10 18 | 691 | 0.2+ | 0.0  | 2007 09 15 | G96 | 0.1−  | 0.0   | 2007 11 17 | 691 | 0.3− | 0.3+ |
| 2003 10 18 | 691 | 0.0  | 0.0  | 2007 09 15 | G96 | 0.0   | 0.3−  | 2007 11 17 | 691 | 0.1− | 0.2+ |
| 2003 10 18 | 691 | 0.1+ | 0.0  | 2007 09 15 | G96 | 0.1+  | 0.3−  | 2007 11 17 | 691 | 0.7− | 1.5+ |
| 2005 03 01 | 703 | 0.1+ | 1.2− | 2007 09 15 | G96 | 0.3+  | 0.2−  | 2007 11 17 | 691 | 0.2− | 0.3+ |
| 2005 03 01 | 703 | 0.1+ | 0.4− | 2007 10 16 | G96 | 0.4+  | 0.2−  | 2007 11 18 | J87 | 0.1+ | 0.3− |
| 2005 03 01 | 703 | 0.7+ | 0.6+ | 2007 10 16 | G96 | 0.3+  | 0.0   | 2007 11 18 | J87 | 0.4+ | 0.3− |
| 2005 03 01 | 703 | 0.1+ | 0.3− | 2007 10 16 | G96 | 0.1−  | 0.1−  | 2007 11 18 | J87 | 0.3+ | 0.1− |
| 2005 03 09 | 703 | 1.3− | 0.8+ | 2007 10 16 | G96 | 0.0   | 0.1+  |            |     |      |      |
| 2005 03 09 | 703 | 0.2+ | 0.5− | 2007 11 13 | 691 | 0.5−  | 0.4+  |            |     |      |      |

**2007 VW<sub>263</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 87.93472   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.30193293 | $\omega$ | 261.45512 | +0.60855733 | +0.79160567 |
| <i>a</i> | 2.2005389  | $\Omega$ | 46.17986  | −0.69479292 | +0.56501552 |
| <i>e</i> | 0.1709681  | <i>i</i> | 4.36705   | −0.38330244 | +0.23263261 |
| <i>P</i> | 3.26       | <i>H</i> | 17.7      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 02 08 | 645 | 0.0  | 0.3− | 2006 05 22 | G96 | 0.3+ | 0.4− | 2007 11 13 | 691 | 0.1−  | 0.2+  |
| 2002 02 08 | 645 | 0.1− | 0.3− | 2006 05 22 | G96 | 1.6+ | 0.3+ | 2007 11 17 | 691 | 0.3−  | 0.1+  |
| 2006 05 06 | G96 | 0.5− | 0.2− | 2007 10 16 | G96 | 0.2− | 0.3− | 2007 11 17 | 691 | 0.0   | 0.1+  |
| 2006 05 06 | G96 | 0.0  | 0.4+ | 2007 10 16 | G96 | 0.3− | 0.0  | 2007 11 17 | 691 | 0.5−  | 0.1+  |
| 2006 05 06 | G96 | 0.5− | 0.0  | 2007 10 16 | G96 | 0.3+ | 0.1+ | 2007 11 18 | A77 | (0.7+ | 2.9+) |
| 2006 05 06 | G96 | 0.3− | 0.3+ | 2007 10 16 | G96 | 0.1− | 0.2+ | 2007 11 18 | A77 | 1.8+  | 0.5+  |
| 2006 05 22 | G96 | 0.1− | 0.6+ | 2007 11 13 | 691 | 0.5− | 0.2− | 2007 11 18 | A77 | 0.1−  | 0.2+  |
| 2006 05 22 | G96 | 0.2+ | 0.0  | 2007 11 13 | 691 | 0.3− | 0.3+ |            |     |       |       |

**2007 VV<sub>267</sub> = 2006 PA<sub>43</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 338.70007  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.19246577 | $\omega$ | 144.42160 | +0.20247117 | −0.96770971 |
| <i>a</i> | 2.9709844  | $\Omega$ | 293.47541 | +0.85633622 | +0.24933567 |
| <i>e</i> | 0.1194101  | <i>i</i> | 9.42132   | +0.47507232 | −0.03700878 |
| <i>P</i> | 5.12       | <i>H</i> | 15.4      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 5           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 08 14 | E12 | 0.6− | 0.6− | 2007 11 08 | 703 | 0.3− | 0.5− | 2007 11 16 | 704 | 0.2+ | 0.0  |
| 2006 08 14 | E12 | 0.4+ | 0.8− | 2007 11 08 | 703 | 0.1− | 0.0  | 2007 11 20 | G96 | 0.0  | 0.2− |
| 2006 08 14 | E12 | 0.7+ | 0.6+ | 2007 11 09 | 704 | 0.1+ | 0.2+ | 2007 11 20 | G96 | 0.1+ | 0.1− |
| 2006 08 14 | E12 | 0.7− | 0.1+ | 2007 11 09 | 704 | 0.0  | 0.4+ | 2007 11 20 | G96 | 0.0  | 0.2− |
| 2006 08 18 | 644 | 0.0  | 0.1+ | 2007 11 09 | 704 | 0.1+ | 0.7+ | 2007 11 20 | G96 | 0.1+ | 0.2− |
| 2006 08 18 | 644 | 0.0  | 0.3+ | 2007 11 09 | 704 | 0.7+ | 0.1− | 2007 11 21 | 703 | 0.0  | 0.1− |
| 2006 08 18 | 644 | 0.4+ | 0.2+ | 2007 11 16 | 704 | 0.1− | 0.8+ | 2007 11 21 | 703 | 0.1+ | 0.1− |
| 2007 11 08 | 703 | 0.1+ | 0.4− | 2007 11 16 | 704 | 0.3− | 0.1+ | 2007 11 21 | 703 | 0.2+ | 0.2+ |
| 2007 11 08 | 703 | 0.5− | 0.4− | 2007 11 16 | 704 | 0.3+ | 0.0  | 2007 11 21 | 703 | 0.8− | 0.4− |

**2007 VV<sub>268</sub> = 2003 YS<sub>60</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |
|----------|------------|----------|-----------|-------------|-------------|
| <i>M</i> | 347.91940  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| <i>n</i> | 0.24325328 | $\omega$ | 341.80492 | +0.34232670 | −0.93109780 |
| <i>a</i> | 2.5415398  | $\Omega$ | 88.02453  | +0.87694814 | +0.26849045 |
| <i>e</i> | 0.2002692  | <i>i</i> | 7.24130   | +0.33730458 | +0.24692058 |
| <i>P</i> | 4.05       | <i>H</i> | 17.0      | <i>G</i>    | 0.15        |
|          |            |          |           | <i>U</i>    | 4           |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2003 12 19 | 691 | 0.5− | 0.4+ | 2007 11 12 | 704 | 0.1+  | 0.5+  | 2007 11 20 | 703 | 0.3− | 0.4+ |
| 2003 12 19 | 691 | 0.0  | 0.1− | 2007 11 12 | 704 | 0.3+  | 0.9+  | 2007 11 20 | 703 | 0.2+ | 1.0+ |
| 2003 12 19 | 691 | 0.3− | 0.3− | 2007 11 12 | 704 | 1.3+  | 0.6+  | 2007 11 20 | 703 | 0.4− | 1.2+ |
| 2003 12 21 | 704 | 0.3− | 0.6− | 2007 11 12 | 704 | 0.6+  | 0.4−  | 2007 12 04 | 704 | 0.0  | 0.0  |
| 2003 12 21 | 704 | 0.5− | 1.0− | 2007 11 15 | 704 | 0.6−  | 1.0−  | 2007 12 04 | 704 | 0.3+ | 0.7+ |
| 2003 12 21 | 704 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 1.1−  | 0.7−  | 2007 12 04 | 704 | 0.1+ | 0.5+ |
| 2003 12 21 | 704 | 0.1− | 0.3− | 2007 11 15 | 704 | 0.7−  | 1.1−  | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2003 12 22 | 291 | 0.6+ | 0.3+ | 2007 11 15 | 704 | (1.6− | 0.9−) | 2007 12 04 | 704 | 0.4+ | 0.6+ |
| 2003 12 22 | 291 | 0.2+ | 0.1+ | 2007 11 15 | 704 | (1.4− | 2.7−) | 2007 12 05 | 699 | 0.3− | 0.9− |
| 2003 12 22 | 291 | 0.3+ | 0.1+ | 2007 11 18 | 699 | 1.3−  | 0.3−  | 2007 12 05 | 699 | 0.0  | 0.7− |
| 2007 11 08 | G96 | 0.2+ | 0.1+ | 2007 11 18 | 699 | 0.4−  | 0.6+  | 2007 12 05 | 699 | 0.7+ | 1.2− |
| 2007 11 08 | G96 | 0.0  | 0.1+ | 2007 11 18 | 699 | 0.1+  | 0.1+  | 2007 12 05 | 699 | 0.2− | 0.8− |
| 2007 11 08 | G96 | 0.1+ | 0.2+ | 2007 11 18 | 699 | (0.2+ | 1.7+) |            |     |      |      |
| 2007 11 08 | G96 | 0.0  | 0.1+ | 2007 11 20 | 703 | 0.6+  | 1.3−  |            |     |      |      |



2007 DEC. 24

M.P.O. 130043

**2007 VN<sub>269</sub> = 2001 YU<sub>19</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 41.39733   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17374217 | $\omega$ 122.17141 | +0.97618302   | -0.02155041 |
| <i>a</i> | 3.1807722  | $\Omega$ 239.89866 | -0.03855471   | +0.96198254 |
| <i>e</i> | 0.2007767  | <i>i</i> 14.44952  | +0.21349530   | +0.27225939 |
| <i>P</i> | 5.67       | <i>H</i> 15.3      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 12 18 | 704 | 0.4- | 0.0  | 2007 10 16 | G96 | 0.3- | 0.1- | 2007 11 15 | 704 | 0.1- | 0.7+ |
| 2001 12 18 | 704 | 0.4- | 0.3+ | 2007 10 16 | G96 | 0.0  | 0.2- | 2007 11 15 | 704 | 0.2- | 0.1+ |
| 2001 12 18 | 704 | 0.2- | 1.1+ | 2007 10 16 | G96 | 0.4- | 0.2- | 2007 11 15 | 704 | 1.1+ | 0.1+ |
| 2001 12 19 | 704 | 0.2- | 0.4+ | 2007 10 16 | G96 | 0.3- | 0.2- | 2007 11 30 | D35 | 0.1+ | 0.0  |
| 2001 12 19 | 704 | 0.5+ | 0.5- | 2007 11 14 | 704 | 0.7- | 1.1- | 2007 11 30 | D35 | 0.4+ | 0.1+ |
| 2001 12 19 | 704 | 0.5+ | 0.6- | 2007 11 14 | 704 | 0.2+ | 0.3- | 2007 11 30 | D35 | 0.2+ | 0.2- |
| 2001 12 19 | 704 | 0.1+ | 0.1+ | 2007 11 14 | 704 | 0.6+ | 1.2+ | 2007 12 03 | 703 | 0.4- | 0.6- |
| 2006 06 01 | 691 | 0.6+ | 0.5- | 2007 11 14 | 704 | 1.0+ | 0.1+ | 2007 12 03 | 703 | 0.0  | 0.8+ |
| 2006 06 01 | 691 | 0.1- | 0.3+ | 2007 11 14 | 704 | 0.4- | 0.0  | 2007 12 03 | 703 | 1.0- | 0.5- |
| 2006 06 01 | 691 | 0.4- | 0.1+ | 2007 11 15 | 704 | 0.6+ | 0.0  | 2007 12 03 | 703 | 0.5- | 0.5- |

**2007 VP<sub>269</sub> = 2005 GF<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 17.86286   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.23674951 | $\omega$ 207.80500 | +0.81366846   | -0.58131566 |
| <i>a</i> | 2.5878752  | $\Omega$ 187.74177 | +0.53867456   | +0.75651437 |
| <i>e</i> | 0.1301937  | <i>i</i> 1.68760   | +0.21857115   | +0.29959658 |
| <i>P</i> | 4.16       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 03 08 | G96 | 0.7- | 0.1+ | 2007 11 09 | 691 | 0.3-  | 0.0   | 2007 11 18 | 691 | 0.0  | 0.0  |
| 2005 03 08 | G96 | 0.9- | 0.4- | 2007 11 14 | 704 | 0.7+  | 0.3+  | 2007 11 18 | 691 | 0.7+ | 0.8+ |
| 2005 03 08 | G96 | 0.5- | 0.0  | 2007 11 14 | 704 | 0.7-  | 0.5-  | 2007 12 03 | 703 | 0.8- | 0.5- |
| 2005 03 08 | G96 | 0.9- | 0.1+ | 2007 11 14 | 704 | 0.3+  | 0.4-  | 2007 12 03 | 703 | 0.3- | 0.8- |
| 2005 04 02 | 691 | 0.3+ | 0.2- | 2007 11 15 | 704 | 0.5+  | 0.5-  | 2007 12 03 | 703 | 0.3+ | 0.4+ |
| 2005 04 02 | 691 | 0.4+ | 0.0  | 2007 11 15 | 704 | 0.9+  | 0.6+  | 2007 12 03 | 703 | 0.3+ | 0.2+ |
| 2005 04 02 | 691 | 0.4+ | 0.1- | 2007 11 15 | 704 | 1.5+  | 0.4-  | 2007 12 05 | 704 | 0.2- | 0.1+ |
| 2005 04 09 | G96 | 0.4- | 0.2+ | 2007 11 15 | 704 | 0.2+  | 0.5+  | 2007 12 05 | 704 | 0.8+ | 0.4+ |
| 2005 04 09 | G96 | 0.3- | 0.5+ | 2007 11 16 | 704 | 0.9+  | 0.2+  | 2007 12 05 | 704 | 0.3- | 0.1- |
| 2005 04 09 | G96 | 0.5- | 0.5+ | 2007 11 16 | 704 | 0.4+  | 0.5+  | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2005 04 09 | G96 | 0.1- | 0.3+ | 2007 11 16 | 704 | (2.5+ | 0.1+) | 2007 12 05 | 704 | 0.0  | 0.1+ |
| 2007 11 09 | 691 | 0.4- | 0.3- | 2007 11 16 | 704 | 0.0   | 0.8+  | 2007 12 15 | G96 | 0.1- | 0.2- |
| 2007 11 09 | 691 | 0.3- | 0.2- | 2007 11 17 | 704 | 0.5+  | 0.4-  | 2007 12 15 | G96 | 0.4- | 0.5- |
| 2007 11 09 | 691 | 0.3- | 0.1- | 2007 11 17 | 704 | 1.0+  | 0.1-  | 2007 12 15 | G96 | 0.2- | 0.3- |
| 2007 11 09 | 691 | 0.4- | 0.1+ | 2007 11 17 | 704 | 0.6+  | 0.0   | 2007 12 15 | G96 | 0.0  | 0.6- |
| 2007 11 09 | 691 | 0.4- | 0.1- | 2007 11 18 | 691 | 0.2-  | 0.1+  |            |     |      |      |

**2007 VS<sub>269</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 329.26877  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26663007 | $\omega$ 68.93113 | +0.03893556   | -0.99908736 |
| <i>a</i> | 2.3907269  | $\Omega$ 18.86301 | +0.89544153   | +0.02708488 |
| <i>e</i> | 0.1656423  | <i>i</i> 3.11408  | +0.44347321   | +0.03302814 |
| <i>P</i> | 3.70       | <i>H</i> 17.7     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 18 | 691 | 0.0   | 0.0   | 2007 10 15 | 691 | 0.0  | 0.5- | 2007 11 15 | 704 | 0.4- | 0.4+ |
| 2003 09 18 | 691 | 0.0   | 0.2+  | 2007 10 15 | 691 | 0.2- | 0.3- | 2007 11 18 | 704 | 0.7+ | 0.5+ |
| 2003 09 18 | 691 | 0.1-  | 0.3+  | 2007 11 04 | 691 | 0.2- | 0.0  | 2007 11 18 | 704 | 0.7+ | 0.3- |
| 2003 09 22 | 699 | (1.0- | 1.7-) | 2007 11 04 | 691 | 0.3- | 0.1- | 2007 11 18 | 704 | 1.3+ | 0.1- |
| 2003 09 22 | 699 | 0.5-  | 1.1+  | 2007 11 04 | 691 | 0.1+ | 0.8+ | 2007 11 18 | 704 | 0.9+ | 0.0  |
| 2003 09 22 | 699 | 0.5-  | 0.3-  | 2007 11 13 | 699 | 0.1+ | 0.2- | 2007 11 18 | 704 | 0.5+ | 0.3+ |
| 2003 09 22 | 699 | 0.6-  | 1.4+  | 2007 11 13 | 699 | 0.2+ | 0.7- | 2007 11 19 | 691 | 0.3- | 0.1- |
| 2003 10 22 | 695 | 0.2-  | 0.3+  | 2007 11 13 | 699 | 0.7+ | 0.2- | 2007 11 19 | 691 | 0.1+ | 0.1- |
| 2003 10 22 | 695 | 0.3-  | 0.2+  | 2007 11 13 | 699 | 0.2+ | 0.2- | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2005 03 12 | 691 | 0.3+  | 0.3+  | 2007 11 15 | 704 | 0.4- | 0.2+ | 2007 12 05 | 691 | 0.0  | 0.0  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 12 | 691 | 0.3+ | 0.3+ | 2007 11 15 | 704 | 0.8+ | 0.7+ | 2007 12 05 | 691 | 0.3- | 0.3+ |
| 2005 03 12 | 691 | 0.2- | 0.3+ | 2007 11 15 | 704 | 0.2- | 0.6- | 2007 12 05 | 691 | 0.1- | 0.1- |
| 2007 10 15 | 691 | 0.3- | 0.3- | 2007 11 15 | 704 | 0.2- | 0.7+ |            |     |      |      |

**2007 VV<sub>269</sub> = 2003 UX<sub>368</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 272.35927  | (2000.0)          | <b>P</b>      | <b>Q</b>    |
|----------|------------|-------------------|---------------|-------------|
| <i>n</i> | 0.26124692 | $\omega$ 90.32053 | -0.80972032   | -0.54403342 |
| <i>a</i> | 2.4234567  | $\Omega$ 56.73208 | +0.37662135   | -0.76923916 |
| <i>e</i> | 0.0685714  | <i>i</i> 15.25226 | +0.45001041   | -0.33511006 |
| <i>P</i> | 3.77       | <i>H</i> 16.8     | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 04 10 | 691 | 0.2- | 0.1+ | 2007 10 20 | G96 | 0.4+ | 0.0  | 2007 11 15 | 704 | (0.6+ | 2.0+) |
| 1994 04 10 | 691 | 0.5- | 0.4- | 2007 10 20 | G96 | 0.3+ | 0.1+ | 2007 11 15 | 704 | 0.6-  | 0.1-  |
| 1994 04 10 | 691 | 0.5- | 0.8- | 2007 10 20 | G96 | 0.6+ | 0.0  | 2007 11 15 | 704 | 0.1-  | 0.7+  |
| 2003 10 21 | 691 | 0.1+ | 0.3+ | 2007 10 31 | G96 | 0.2+ | 0.4- | 2007 11 17 | 704 | 0.1+  | 0.3-  |
| 2003 10 21 | 691 | 0.1- | 0.3+ | 2007 10 31 | G96 | 0.3+ | 0.4- | 2007 11 17 | 704 | 0.6+  | 0.1-  |
| 2003 10 21 | 691 | 0.0  | 0.1+ | 2007 10 31 | G96 | 0.5+ | 0.3- | 2007 11 17 | 704 | 0.6+  | 0.4+  |
| 2003 10 22 | 645 | 0.1+ | 0.1- | 2007 10 31 | 691 | 0.2- | 0.2+ | 2007 11 17 | 704 | 0.6+  | 0.4-  |
| 2003 10 22 | 645 | 0.1+ | 0.0  | 2007 10 31 | G96 | 0.1+ | 0.3- | 2007 11 17 | 704 | 0.3+  | 0.1+  |
| 2003 10 24 | 645 | 0.1+ | 0.1- | 2007 10 31 | 691 | 0.2- | 0.1+ | 2007 11 18 | 691 | 0.1+  | 0.2-  |
| 2003 10 24 | 645 | 0.0  | 0.0  | 2007 10 31 | 691 | 0.4- | 0.1- | 2007 11 18 | 691 | 0.9-  | 0.4-  |
| 2005 04 01 | 703 | 0.8+ | 0.0  | 2007 11 14 | 691 | 0.2+ | 0.2- | 2007 11 18 | 691 | 0.1-  | 0.1+  |
| 2005 04 01 | 703 | 0.4+ | 0.5+ | 2007 11 14 | 691 | 0.2- | 0.0  | 2007 12 03 | 703 | 0.3+  | 0.6+  |
| 2005 04 01 | 703 | 0.5- | 0.1- | 2007 11 14 | 691 | 0.0  | 0.2- | 2007 12 03 | 703 | 1.3+  | 0.4-  |
| 2005 04 01 | 703 | 1.1+ | 0.5- | 2007 11 15 | 704 | 0.2+ | 0.0  | 2007 12 03 | 703 | 0.3-  | 0.4-  |
| 2007 10 20 | G96 | 0.6+ | 0.0  | 2007 11 15 | 704 | 0.2- | 0.4+ | 2007 12 03 | 703 | 0.9-  | 0.2+  |

**2007 VH<sub>270</sub> = 2006 KR<sub>110</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 104.47875  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.32080288 | $\omega$ 330.68716 | +0.59361146   | +0.80464963 |
| <i>a</i> | 2.1133781  | $\Omega$ 335.71958 | -0.73214005   | +0.53336820 |
| <i>e</i> | 0.0608404  | <i>i</i> 1.78687   | -0.33406045   | +0.26087800 |
| <i>P</i> | 3.07       | <i>H</i> 17.1      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2004 12 15 | 599 | 0.2- | 0.0  | 2006 06 01 | G96 | 0.4-  | 0.1+  | 2007 11 20 | 704 | 0.3+  | 0.4-  |
| 2004 12 15 | 599 | 0.2+ | 0.2- | 2006 06 01 | G96 | 0.5-  | 0.0   | 2007 11 20 | 704 | 1.0+  | 0.5-  |
| 2006 05 18 | 644 | 0.4- | 0.2- | 2006 06 17 | 691 | 0.0   | 0.1-  | 2007 11 20 | 704 | 0.0   | 0.4+  |
| 2006 05 18 | 644 | 0.0  | 0.2+ | 2006 06 17 | 691 | 0.8+  | 0.2+  | 2007 12 14 | 704 | (2.0+ | 0.4+) |
| 2006 05 18 | 644 | 0.3- | 0.2- | 2006 06 17 | 691 | 0.0   | 0.2+  | 2007 12 14 | 704 | 0.0   | 0.5+  |
| 2006 05 31 | G96 | 0.2- | 0.1+ | 2007 11 15 | 704 | (0.5+ | 1.7+) | 2007 12 14 | 704 | 0.3+  | 0.6+  |
| 2006 05 31 | G96 | 0.2- | 0.2+ | 2007 11 15 | 704 | 0.6+  | 0.5+  | 2007 12 15 | A77 | 0.6-  | 0.0   |
| 2006 05 31 | G96 | 0.0  | 0.0  | 2007 11 15 | 704 | 0.1+  | 0.6+  | 2007 12 15 | A77 | 0.1+  | 0.0   |
| 2006 05 31 | G96 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.1-  | 0.0   | 2007 12 15 | A77 | 0.2+  | 0.1+  |
| 2006 06 01 | G96 | 0.3- | 0.0  | 2007 11 17 | 691 | 0.2-  | 0.1+  |            |     |       |       |
| 2006 06 01 | G96 | 0.1- | 0.1+ | 2007 11 17 | 691 | 0.3-  | 0.0   |            |     |       |       |

**2007 VM<sub>270</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 326.41851  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.18176304 | $\omega$ 152.28767 | -0.01056365   | -0.99343404 |
| <i>a</i> | 3.0864956  | $\Omega$ 298.12073 | +0.89188140   | +0.04215243 |
| <i>e</i> | 0.0412447  | <i>i</i> 7.42132   | +0.45214597   | -0.10635780 |
| <i>P</i> | 5.42       | <i>H</i> 15.4      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 09 29 | 644 | 0.0  | 0.0  | 2007 10 19 | 703 | 0.0   | 0.9+  | 2007 11 15 | G96 | 0.6+ | 0.1+ |
| 2001 09 29 | 644 | 0.3+ | 0.3+ | 2007 10 19 | 703 | (1.7- | 2.1+) | 2007 11 18 | D35 | 0.1- | 0.1+ |
| 2001 09 29 | 644 | 0.1- | 0.5+ | 2007 11 03 | 291 | 0.5-  | 0.3-  | 2007 11 18 | D35 | 0.4+ | 0.2+ |
| 2001 10 13 | 644 | 0.4+ | 0.0  | 2007 11 03 | 291 | 0.2+  | 0.2-  | 2007 11 18 | D35 | 0.2+ | 0.2+ |
| 2001 10 13 | 644 | 0.4- | 0.4- | 2007 11 03 | 291 | 0.2-  | 0.1-  | 2007 12 16 | 704 | 0.8+ | 0.6- |
| 2001 10 13 | 644 | 0.0  | 0.3- | 2007 11 15 | G96 | 0.3+  | 0.0   | 2007 12 16 | 704 | 0.0  | 0.2- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 10 19 | 703 | 0.5− | 0.1− | 2007 11 15 | G96 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.0  | 1.2+ |
| 2007 10 19 | 703 | 0.2+ | 0.1+ | 2007 11 15 | G96 | 0.3+ | 0.1+ | 2007 12 16 | 704 | 0.4− | 0.1+ |

**2007 VS<sub>270</sub> = 2005 JK<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 343.00208  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21007232 | $\omega$ | 13.09036 | +0.23685032   | −0.96802922 |
| <i>a</i> | 2.8025723  | $\Omega$ | 63.26004 | +0.88283717   | +0.17895628 |
| <i>e</i> | 0.0515548  | <i>i</i> | 5.30639  | +0.40558656   | +0.17576711 |
| <i>P</i> | 4.69       | <i>H</i> | 16.6     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 02 16 | 691 | 0.1+ | 0.1− | 2007 10 24 | G96 | 0.6− | 0.1− | 2007 11 14 | 691 | 0.0   | 0.6−  |
| 2004 02 16 | 691 | 0.0  | 0.1− | 2007 10 24 | G96 | 0.8+ | 0.0  | 2007 11 18 | 691 | 0.2−  | 0.1+  |
| 2004 02 16 | 691 | 0.1− | 0.3+ | 2007 10 24 | G96 | 0.5+ | 0.8+ | 2007 11 18 | 691 | 0.1−  | 0.0   |
| 2005 04 07 | G96 | 0.2− | 0.4− | 2007 10 24 | G96 | 0.3+ | 0.4− | 2007 11 18 | 691 | 0.4−  | 0.5+  |
| 2005 04 07 | G96 | 0.2+ | 0.1+ | 2007 11 03 | 691 | 0.0  | 0.2− | 2007 11 20 | 701 | 0.1+  | 0.1−  |
| 2005 04 07 | G96 | 0.3+ | 0.3− | 2007 11 03 | 691 | 0.1− | 0.2− | 2007 11 20 | 701 | 0.1−  | 0.1+  |
| 2005 04 07 | G96 | 0.1+ | 0.1− | 2007 11 03 | 691 | 0.0  | 0.1− | 2007 11 20 | 701 | (2.2− | 0.9+) |
| 2005 05 09 | G96 | 0.4− | 0.0  | 2007 11 07 | 691 | 0.0  | 0.1− | 2007 12 05 | 704 | 1.1+  | 0.6+  |
| 2005 05 09 | G96 | 0.3− | 0.1+ | 2007 11 07 | 691 | 0.6+ | 0.1+ | 2007 12 05 | 704 | 1.3+  | 0.6−  |
| 2005 05 09 | G96 | 0.0  | 0.0  | 2007 11 07 | 691 | 0.0  | 0.2− | 2007 12 05 | 704 | 0.5+  | 0.4−  |
| 2005 05 09 | G96 | 0.1+ | 0.1− | 2007 11 07 | 691 | 0.0  | 0.1+ | 2007 12 15 | G96 | 0.3+  | 0.1+  |
| 2005 05 13 | G96 | 0.2+ | 0.5− | 2007 11 07 | 691 | 0.2+ | 0.1− | 2007 12 15 | G96 | 0.4+  | 0.1−  |
| 2005 05 13 | G96 | 0.2− | 0.0  | 2007 11 07 | 691 | 0.2+ | 0.4− | 2007 12 15 | G96 | 0.1+  | 0.5−  |
| 2005 05 13 | G96 | 0.2+ | 0.3+ | 2007 11 14 | 691 | 1.4− | 1.1+ | 2007 12 15 | G96 | 0.3+  | 0.1+  |
| 2005 05 13 | G96 | 0.2− | 0.2− | 2007 11 14 | 691 | 0.1− | 0.1+ |            |     |       |       |

**2007 VB<sub>273</sub> = 2005 LE<sub>36</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.70649   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.18839009 | $\omega$ | 267.97607 | +0.82727316   | +0.50065367 |
| <i>a</i> | 3.0136814  | $\Omega$ | 61.89268  | −0.32726209   | +0.79822041 |
| <i>e</i> | 0.0333207  | <i>i</i> | 16.79573  | −0.45663841   | +0.33494787 |
| <i>P</i> | 5.23       | <i>H</i> | 15.9      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 03 16 | 645 | 0.1− | 0.0  | 2005 06 13 | G96 | 0.4+ | 0.3+ | 2007 11 20 | 691 | 0.2−  | 0.9+  |
| 2004 03 16 | 645 | 0.1− | 0.1+ | 2005 06 14 | 691 | 0.3+ | 0.4+ | 2007 11 20 | 691 | 0.1−  | 0.3+  |
| 2004 04 15 | 645 | 0.0  | 0.0  | 2005 06 14 | 691 | 0.5+ | 0.6+ | 2007 11 20 | 691 | 0.4+  | 0.4+  |
| 2004 04 15 | 645 | 0.1+ | 0.1− | 2005 06 14 | 691 | 0.6+ | 0.4+ | 2007 11 20 | 691 | 0.2−  | 0.6+  |
| 2004 04 16 | 645 | 0.1+ | 0.1+ | 2007 10 21 | 691 | 1.0− | 0.3+ | 2007 11 20 | 691 | 0.2+  | 0.2+  |
| 2004 04 16 | 645 | 0.1+ | 0.0  | 2007 10 21 | 691 | 0.0  | 0.1+ | 2007 11 20 | 703 | 1.3−  | 0.5−  |
| 2005 05 10 | G96 | 0.2− | 0.1+ | 2007 10 21 | 691 | 0.6− | 0.1+ | 2007 11 20 | 703 | 0.5−  | 0.3−  |
| 2005 05 10 | G96 | 0.0  | 0.5+ | 2007 11 12 | 703 | 0.8− | 0.0  | 2007 11 20 | 703 | (0.1− | 1.7−) |
| 2005 05 10 | G96 | 0.0  | 0.2+ | 2007 11 12 | 703 | 0.3− | 0.3+ | 2007 11 20 | 703 | 0.1−  | 0.1−  |
| 2005 05 10 | G96 | 0.0  | 0.5+ | 2007 11 12 | 703 | 0.7− | 0.7+ | 2007 12 04 | 691 | 0.0   | 0.6+  |
| 2005 06 10 | 691 | 0.3+ | 0.5+ | 2007 11 12 | 703 | 0.0  | 1.1+ | 2007 12 04 | 691 | 0.4−  | 0.0   |
| 2005 06 10 | 691 | 0.2+ | 0.5+ | 2007 11 18 | G96 | 0.9+ | 0.1− | 2007 12 04 | 691 | 0.1−  | 0.1+  |
| 2005 06 10 | 691 | 0.6+ | 0.7+ | 2007 11 18 | G96 | 0.3+ | 0.0  | 2007 12 06 | 691 | 0.5−  | 0.4−  |
| 2005 06 13 | G96 | 0.3− | 0.6+ | 2007 11 18 | G96 | 0.4+ | 0.1− | 2007 12 06 | 691 | 0.2−  | 0.0   |
| 2005 06 13 | G96 | 0.2+ | 0.7+ | 2007 11 18 | G96 | 1.1+ | 0.0  | 2007 12 06 | 691 | 0.3+  | 0.2+  |
| 2005 06 13 | G96 | 0.3+ | 0.8+ | 2007 11 20 | 691 | 0.2+ | 0.5+ |            |     |       |       |

**2007 VJ<sub>274</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 139.36998  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.23372296 | $\omega$ | 170.74369 | −0.14415732   | +0.98308879 |
| <i>a</i> | 2.6101681  | $\Omega$ | 90.90822  | −0.91497276   | −0.08895300 |
| <i>e</i> | 0.1435745  | <i>i</i> | 6.48555   | −0.37688660   | −0.16007433 |
| <i>P</i> | 4.22       | <i>H</i> | 16.1      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 19 | 644 | 0.1+ | 0.2− | 2006 06 22 | 644 | 0.2− | 0.3− | 2007 11 05 | 691 | 0.1+ | 0.0  |
| 2002 08 19 | 644 | 0.0  | 0.4− | 2006 07 26 | 644 | 0.6+ | 0.0  | 2007 11 05 | 691 | 0.0  | 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 08 19 | 644 | 0.2+ | 0.3− | 2006 07 26 | 644 | 0.3+ | 0.6+ | 2007 11 13 | 691 | 0.1− | 0.1− |
| 2003 11 24 | 691 | 0.1+ | 0.0  | 2006 07 26 | 644 | 0.2+ | 0.4+ | 2007 11 13 | 691 | 0.2− | 0.1− |
| 2003 11 24 | 691 | 0.2+ | 0.0  | 2007 10 12 | G96 | 0.4+ | 0.3− | 2007 11 13 | 691 | 0.1− | 0.1+ |
| 2003 11 24 | 691 | 0.2− | 0.3− | 2007 10 12 | G96 | 0.5+ | 0.1+ | 2007 11 18 | G96 | 0.3+ | 0.3+ |
| 2006 06 03 | G96 | 0.2+ | 0.0  | 2007 10 12 | G96 | 0.6+ | 0.1− | 2007 11 18 | G96 | 0.3+ | 0.4+ |
| 2006 06 03 | G96 | 0.4− | 0.2− | 2007 10 12 | G96 | 0.1+ | 0.1− | 2007 11 18 | G96 | 0.4+ | 0.0  |
| 2006 06 03 | G96 | 0.2+ | 0.0  | 2007 11 01 | 691 | 0.2+ | 0.4− | 2007 11 18 | G96 | 0.0  | 0.4− |
| 2006 06 03 | G96 | 0.2− | 0.1+ | 2007 11 01 | 691 | 0.3− | 0.1+ | 2007 11 20 | 691 | 0.3− | 0.1+ |
| 2006 06 22 | 644 | 0.6− | 0.1− | 2007 11 01 | 691 | 0.1− | 0.3+ | 2007 11 20 | 691 | 0.0  | 0.2+ |
| 2006 06 22 | 644 | 0.3− | 0.0  | 2007 11 05 | 691 | 0.1+ | 0.4+ | 2007 11 20 | 691 | 0.2− | 0.1− |

**2007 VQ<sub>274</sub> = 2004 GJ<sub>17</sub> = 2006 SE<sub>137</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.99568  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.17157808 | $\omega$ | 17.50260 | −0.15111970   | −0.96738140 |
| <i>a</i> | 3.2074620  | $\Omega$ | 81.55756 | +0.88058118   | −0.22519410 |
| <i>e</i> | 0.0522096  | <i>i</i> | 11.86111 | +0.44915433   | +0.11602092 |
| <i>P</i> | 5.74       | <i>H</i> | 14.8     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 13 | 699 | 0.6− | 1.4+ | 2006 09 20 | 703 | 1.2−  | 0.1+  | 2007 11 30 | D35 | 0.1− | 0.3+ |
| 2001 10 13 | 699 | 0.4− | 1.2+ | 2006 09 26 | 703 | 0.6−  | 0.2+  | 2007 11 30 | D35 | 0.2− | 0.2+ |
| 2001 10 13 | 699 | 0.5− | 1.5+ | 2006 09 26 | 703 | 0.3−  | 0.2−  | 2007 12 03 | 703 | 0.2+ | 0.2− |
| 2001 10 13 | 699 | 0.1− | 0.5− | 2006 09 26 | 703 | 1.1−  | 0.8+  | 2007 12 03 | 703 | 0.2− | 0.6− |
| 2004 04 11 | 644 | 1.1+ | 1.0+ | 2006 09 26 | 703 | (0.7− | 1.6−) | 2007 12 03 | 703 | 0.2+ | 0.6− |
| 2004 04 11 | 644 | 0.3+ | 1.1+ | 2007 10 30 | 691 | 0.3−  | 0.0   | 2007 12 03 | 703 | 0.4+ | 0.4− |
| 2004 04 11 | 644 | 0.6+ | 1.3+ | 2007 10 30 | 691 | 0.2−  | 0.0   | 2007 12 04 | 699 | 0.9− | 0.4− |
| 2004 04 15 | 644 | 0.3+ | 0.8+ | 2007 10 30 | 691 | 0.0   | 0.6+  | 2007 12 04 | 704 | 0.7+ | 0.2+ |
| 2004 04 15 | 644 | 0.3+ | 0.8+ | 2007 11 13 | 699 | 0.2−  | 0.4−  | 2007 12 04 | 704 | 0.4+ | 0.4+ |
| 2004 04 15 | 644 | 0.5+ | 0.9+ | 2007 11 13 | 699 | 0.4+  | 0.2+  | 2007 12 04 | 699 | 0.8− | 0.1+ |
| 2006 08 28 | E12 | 1.0+ | 0.1+ | 2007 11 13 | 699 | 0.2−  | 0.6+  | 2007 12 04 | 704 | 0.3+ | 0.6+ |
| 2006 08 28 | E12 | 0.9+ | 0.9− | 2007 11 13 | 699 | 0.5+  | 0.0   | 2007 12 04 | 704 | 0.1+ | 0.6+ |
| 2006 08 28 | E12 | 0.3+ | 0.1− | 2007 11 18 | G96 | 0.2−  | 0.2−  | 2007 12 04 | 699 | 0.0  | 0.2− |
| 2006 08 28 | E12 | 0.4− | 1.0− | 2007 11 18 | G96 | 0.1+  | 0.3−  | 2007 12 04 | 704 | 0.0  | 0.6+ |
| 2006 09 20 | 703 | 0.9− | 0.4+ | 2007 11 18 | G96 | 0.4+  | 0.4−  | 2007 12 04 | 699 | 0.4+ | 1.0− |
| 2006 09 20 | 703 | 0.6+ | 0.9+ | 2007 11 18 | G96 | 0.2+  | 0.3−  |            |     |      |      |
| 2006 09 20 | 703 | 0.4+ | 1.5+ | 2007 11 30 | D35 | 0.3+  | 0.3−  |            |     |      |      |

**2007 VW<sub>274</sub> = 2002 XC<sub>27</sub> = 2005 JD<sub>118</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 337.92232  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21236088 | $\omega$ | 331.37437 | +0.12724116   | −0.98279115 |
| <i>a</i> | 2.7824009  | $\Omega$ | 111.04811 | +0.93517957   | +0.07388152 |
| <i>e</i> | 0.1561428  | <i>i</i> | 8.24931   | +0.33052816   | +0.16930176 |
| <i>P</i> | 4.64       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 05 | 291 | 0.8− | 0.4+ | 2005 05 17 | G96 | 0.7− | 0.6+ | 2007 11 17 | 703 | 0.3+ | 1.0+ |
| 2002 12 05 | 291 | 0.6+ | 0.6+ | 2005 05 17 | G96 | 0.3− | 0.5+ | 2007 11 17 | 703 | 0.7+ | 0.1+ |
| 2002 12 05 | 291 | 0.5− | 0.4+ | 2005 05 17 | G96 | 1.1− | 0.5+ | 2007 11 17 | 703 | 0.2− | 0.3+ |
| 2002 12 05 | 291 | 0.2− | 0.4+ | 2007 10 15 | G96 | 0.0  | 0.3− | 2007 11 18 | G96 | 0.1+ | 0.2− |
| 2002 12 05 | 291 | 0.4− | 0.8+ | 2007 10 15 | G96 | 0.2+ | 0.0  | 2007 11 18 | G96 | 0.0  | 0.3− |
| 2002 12 05 | 291 | 0.0  | 0.2+ | 2007 10 15 | G96 | 0.4+ | 0.1− | 2007 11 18 | G96 | 0.1− | 0.2− |
| 2002 12 07 | 291 | 0.6+ | 0.3+ | 2007 10 15 | G96 | 0.0  | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.2− |
| 2002 12 07 | 291 | 0.6− | 0.4+ | 2007 11 02 | G96 | 0.2+ | 0.1+ | 2007 11 20 | 703 | 1.3− | 0.7+ |
| 2002 12 07 | 291 | 0.0  | 0.3+ | 2007 11 02 | G96 | 0.4+ | 0.0  | 2007 11 20 | 703 | 0.3+ | 0.2+ |
| 2004 02 16 | 691 | 0.2+ | 0.6+ | 2007 11 02 | G96 | 0.4+ | 0.1− | 2007 11 20 | 703 | 1.0− | 0.7− |
| 2004 02 16 | 691 | 0.2+ | 0.3+ | 2007 11 02 | G96 | 0.6+ | 0.4− | 2007 11 20 | 703 | 0.2+ | 0.4− |
| 2004 02 16 | 691 | 0.2+ | 0.6+ | 2007 11 13 | G96 | 0.0  | 0.3− | 2007 12 05 | 703 | 0.1− | 0.0  |
| 2005 05 10 | 691 | 0.6+ | 0.8+ | 2007 11 13 | G96 | 0.4+ | 0.0  | 2007 12 05 | 703 | 0.8− | 0.4− |
| 2005 05 10 | 691 | 0.6+ | 0.8+ | 2007 11 13 | G96 | 0.2+ | 0.1− | 2007 12 05 | 703 | 0.3− | 0.7+ |
| 2005 05 10 | 691 | 0.3+ | 0.6+ | 2007 11 13 | G96 | 0.6+ | 0.1− | 2007 12 05 | 703 | 0.4− | 0.4+ |
| 2005 05 17 | G96 | 0.7− | 0.3+ | 2007 11 17 | 703 | 0.5− | 0.7− |            |     |      |      |

2007 DEC. 24

M.P.O. 130045

**2007 VP<sub>275</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 45.06999   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.21238268 | $\omega$ | 298.61172 | +0.98819722   | -0.14517957 |
| <i>a</i> | 2.7822105  | $\Omega$ | 69.77129  | +0.15232810   | +0.89755040 |
| <i>e</i> | 0.0991587  | <i>i</i> | 2.98599   | +0.01619866   | +0.41632459 |
| <i>P</i> | 4.64       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 30 | 644 | 1.2- | 0.8+ | 2007 11 18 | 691 | 0.3- | 0.0  | 2007 12 04 | 701 | 0.2+ | 0.3+ |
| 2002 10 30 | 644 | 0.1- | 0.7+ | 2007 11 18 | 691 | 0.3- | 0.1+ | 2007 12 04 | 701 | 0.3- | 0.0  |
| 2002 10 30 | 644 | 0.3+ | 0.7+ | 2007 11 30 | H55 | 0.9+ | 0.6+ | 2007 12 05 | 701 | 0.4+ | 0.2- |
| 2004 02 11 | 691 | 0.2+ | 0.1+ | 2007 11 30 | H55 | 0.8+ | 0.9+ | 2007 12 05 | 704 | 0.8+ | 1.0+ |
| 2004 02 11 | 691 | 0.0  | 0.2+ | 2007 11 30 | H55 | 0.0  | 0.3- | 2007 12 05 | 704 | 0.2+ | 0.7+ |
| 2004 02 11 | 691 | 0.0  | 0.2+ | 2007 12 03 | 701 | 0.0  | 0.1- | 2007 12 05 | 701 | 0.5- | 0.2- |
| 2004 02 26 | 695 | 0.1- | 0.0  | 2007 12 03 | 701 | 0.3+ | 0.1- | 2007 12 05 | 704 | 0.7+ | 0.4+ |
| 2004 02 26 | 695 | 0.2- | 0.1+ | 2007 12 03 | 701 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.4+ | 0.5+ |
| 2005 05 14 | G96 | 0.2+ | 0.2- | 2007 12 03 | 701 | 0.3+ | 0.0  | 2007 12 05 | 701 | 0.2+ | 0.2- |
| 2005 05 14 | G96 | 0.4- | 0.0  | 2007 12 03 | 701 | 0.4+ | 0.2- | 2007 12 05 | 701 | 0.5+ | 0.3+ |
| 2005 05 14 | G96 | 0.1- | 0.2+ | 2007 12 03 | 701 | 0.1- | 0.1+ | 2007 12 06 | 701 | 0.9+ | 0.3- |
| 2005 05 14 | G96 | 0.0  | 0.3- | 2007 12 03 | 701 | 0.1+ | 0.3- | 2007 12 06 | 701 | 0.3+ | 0.7- |
| 2007 09 15 | G96 | 0.7+ | 0.1+ | 2007 12 03 | 701 | 0.2+ | 0.2- | 2007 12 06 | 701 | 0.2+ | 0.0  |
| 2007 09 15 | G96 | 0.3+ | 0.1+ | 2007 12 04 | 701 | 0.1+ | 0.1+ | 2007 12 06 | 701 | 0.2- | 0.3- |
| 2007 09 15 | G96 | 0.0  | 0.1+ | 2007 12 04 | 701 | 0.3+ | 0.1- | 2007 12 06 | 701 | 0.3+ | 0.4- |
| 2007 09 15 | G96 | 0.3- | 0.1- | 2007 12 04 | 701 | 0.3- | 0.1- | 2007 12 15 | G96 | 0.3+ | 0.3- |
| 2007 11 13 | 691 | 0.5- | 0.1- | 2007 12 04 | G96 | 0.4+ | 0.3- | 2007 12 15 | G96 | 0.6+ | 0.2- |
| 2007 11 13 | 691 | 0.2- | 0.1- | 2007 12 04 | 701 | 0.5+ | 0.4- | 2007 12 15 | G96 | 0.4+ | 0.1- |
| 2007 11 13 | 691 | 0.4- | 0.3- | 2007 12 04 | G96 | 0.1+ | 0.2- | 2007 12 15 | G96 | 1.4- | 0.9- |
| 2007 11 18 | 691 | 0.2- | 0.1- | 2007 12 04 | G96 | 0.3+ | 0.3- |            |     |      |      |

**2007 VR<sub>280</sub> = 2005 CX<sub>45</sub> = 2005 EM<sub>109</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.53792  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.28547561 | $\omega$ | 14.09988 | +0.28635989   | -0.95808221 |
| <i>a</i> | 2.2843188  | $\Omega$ | 59.26061 | +0.87807088   | +0.25877095 |
| <i>e</i> | 0.1526830  | <i>i</i> | 0.58302  | +0.38339214   | +0.12294744 |
| <i>P</i> | 3.45       | <i>H</i> | 18.4     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1998 02 03 | 691 | 0.2- | 0.5- | 2005 03 10 | G96 | 0.1- | 0.0  | 2007 11 14 | 691 | 0.0  | 0.3+ |
| 1998 02 03 | 691 | 0.2- | 0.1+ | 2005 03 10 | G96 | 0.4- | 0.1+ | 2007 11 18 | 691 | 0.3- | 0.0  |
| 1998 02 03 | 691 | 0.1+ | 0.3- | 2005 03 10 | G96 | 0.0  | 0.0  | 2007 11 18 | 691 | 0.1- | 0.1+ |
| 2000 10 19 | 691 | 0.1+ | 0.3- | 2005 03 10 | G96 | 0.1+ | 0.0  | 2007 11 18 | 691 | 0.0  | 0.2+ |
| 2000 10 19 | 691 | 0.1+ | 0.0  | 2007 09 18 | G96 | 0.5+ | 0.4- | 2007 12 05 | 704 | 0.4+ | 0.1+ |
| 2000 10 19 | 691 | 0.1- | 0.1- | 2007 09 18 | G96 | 0.0  | 0.3- | 2007 12 05 | 704 | 0.2+ | 0.0  |
| 2005 02 02 | 691 | 0.2- | 0.3+ | 2007 09 18 | G96 | 0.3+ | 0.2+ | 2007 12 05 | 704 | 0.2- | 0.6+ |
| 2005 02 02 | 691 | 0.5+ | 0.2+ | 2007 09 18 | G96 | 0.4+ | 0.1- | 2007 12 05 | 704 | 0.5+ | 0.2+ |
| 2005 02 02 | 691 | 0.3+ | 0.0  | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 12 06 | G96 | 0.3+ | 0.1+ |
| 2005 03 04 | G96 | 0.1- | 0.2- | 2007 10 30 | 691 | 0.3- | 0.1- | 2007 12 06 | G96 | 0.6+ | 0.2- |
| 2005 03 04 | G96 | 0.2+ | 0.0  | 2007 10 30 | 691 | 0.2- | 0.3- | 2007 12 06 | G96 | 0.7+ | 0.1- |
| 2005 03 04 | G96 | 0.0  | 0.1- | 2007 11 14 | 691 | 0.1+ | 0.2+ | 2007 12 06 | G96 | 0.3+ | 0.2+ |
| 2005 03 04 | G96 | 1.1- | 0.1- | 2007 11 14 | 691 | 0.0  | 0.0  |            |     |      |      |

**2007 VM<sub>281</sub> = 2000 WF<sub>93</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 358.43737  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.27998005 | $\omega$ | 147.21218 | +0.60622898   | -0.79498137 |
| <i>a</i> | 2.3141135  | $\Omega$ | 265.46088 | +0.72479246   | +0.56374513 |
| <i>e</i> | 0.2006826  | <i>i</i> | 1.27376   | +0.32735656   | +0.22404477 |
| <i>P</i> | 3.52       | <i>H</i> | 17.1      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.5+ | 0.1+ | 2000 11 29 | 704 | 0.1- | 0.8+ | 2007 11 18 | 691 | 0.2+ | 0.3- |
| 2000 11 21 | 704 | 0.3- | 1.4+ | 2000 11 29 | 704 | 0.4+ | 0.9+ | 2007 12 10 | 704 | 1.1- | 0.4- |
| 2000 11 21 | 704 | 0.5- | 0.2+ | 2007 11 14 | 691 | 0.1- | 0.1- | 2007 12 10 | 704 | 0.4- | 0.6- |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 11 21 | 704 | 0.3- | 0.3+ | 2007 11 14 | 691 | 0.0  | 0.1- | 2007 12 10 | 704 | 0.2- | 0.0  |
| 2000 11 26 | 691 | 0.2+ | 0.2- | 2007 11 14 | 691 | 0.0  | 0.2- | 2007 12 10 | 704 | 0.5- | 0.4- |
| 2000 11 26 | 691 | 0.2+ | 0.2- | 2007 11 18 | A77 | 0.0  | 1.7+ | 2007 12 14 | 704 | 0.2+ | 0.7+ |
| 2000 11 26 | 691 | 0.0  | 1.0- | 2007 11 18 | A77 | 0.0  | 1.5+ | 2007 12 14 | 704 | 0.4+ | 0.6+ |
| 2000 11 29 | 704 | 0.4- | 0.5+ | 2007 11 18 | A77 | 0.7- | 1.3+ | 2007 12 14 | 704 | 0.2+ | 0.4+ |
| 2000 11 29 | 704 | 0.3- | 0.4+ | 2007 11 18 | 691 | 0.2+ | 0.2- | 2007 12 14 | 704 | 0.8+ | 0.0  |
| 2000 11 29 | 704 | 0.5- | 0.3+ | 2007 11 18 | 691 | 0.1+ | 0.1- |            |     |      |      |

**2007 VH<sub>284</sub> = 2006 SV<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 174.87877  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17909751 | $\omega$ | 5.65946   | -0.42373586   | +0.86864566 |
| <i>a</i> | 3.1170446  | $\Omega$ | 239.51369 | -0.84229074   | -0.48211951 |
| <i>e</i> | 0.0863247  | <i>i</i> | 17.33149  | -0.33315796   | +0.11408549 |
| <i>P</i> | 5.50       | <i>H</i> | 14.7      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 09 16 | 703 | 1.0+ | 1.1- | 2006 09 17 | 703 | 0.2+ | 0.1+ | 2007 12 03 | 703 | 0.6- | 1.0- |
| 2006 09 16 | 703 | 0.0  | 0.3+ | 2006 09 17 | 703 | 0.3+ | 0.3- | 2007 12 03 | 703 | 0.5- | 0.2- |
| 2006 09 16 | 703 | 1.1- | 0.6+ | 2007 11 14 | 691 | 0.1+ | 0.1- | 2007 12 03 | 703 | 0.0  | 0.6- |
| 2006 09 16 | 703 | 0.5+ | 0.8- | 2007 11 14 | 691 | 0.1+ | 0.0  | 2007 12 04 | 704 | 1.1+ | 0.2+ |
| 2006 09 17 | 291 | 0.1+ | 0.2+ | 2007 11 14 | 691 | 0.1- | 0.1+ | 2007 12 04 | 704 | 0.1+ | 0.3- |
| 2006 09 17 | 291 | 0.4- | 0.4+ | 2007 11 18 | 691 | 0.0  | 0.0  | 2007 12 04 | 704 | 0.2+ | 0.5+ |
| 2006 09 17 | 291 | 0.0  | 0.2- | 2007 11 18 | 691 | 0.1- | 0.1+ | 2007 12 04 | 704 | 0.2- | 0.7+ |
| 2006 09 17 | 703 | 0.2+ | 0.2+ | 2007 11 18 | 691 | 0.0  | 0.1- | 2007 12 04 | 704 | 0.1+ | 0.4+ |
| 2006 09 17 | 703 | 0.3- | 0.5- | 2007 12 03 | 703 | 0.2- | 0.1+ |            |     |      |      |

**2007 VU<sub>284</sub> = 2004 BY<sub>162</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 285.90375  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.20288628 | $\omega$ | 74.49005 | -0.79974179   | -0.56881317 |
| <i>a</i> | 2.8683640  | $\Omega$ | 70.47344 | +0.44244471   | -0.77461056 |
| <i>e</i> | 0.0957425  | <i>i</i> | 11.75447 | +0.40577795   | -0.27645987 |
| <i>P</i> | 4.86       | <i>H</i> | 15.5     | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2003 01 03 | 291 | 0.2+  | 0.4+  | 2004 04 14 | 703 | 0.5- | 0.5+ | 2007 11 18 | 691 | 0.4-  | 0.1-  |
| 2003 01 03 | 291 | 0.2-  | 0.0   | 2004 04 14 | 703 | 0.4- | 1.2- | 2007 11 18 | 691 | 0.1-  | 0.3+  |
| 2003 01 03 | 291 | 0.3-  | 0.4+  | 2007 10 20 | G96 | 0.2+ | 0.1+ | 2007 11 29 | D35 | 0.3+  | 0.2-  |
| 2004 01 29 | 703 | 0.2-  | 0.3+  | 2007 10 20 | G96 | 0.4+ | 0.0  | 2007 11 29 | D35 | 0.2+  | 0.0   |
| 2004 01 29 | 703 | (1.9- | 0.5+) | 2007 10 20 | G96 | 0.4+ | 0.1+ | 2007 11 29 | D35 | 0.3+  | 0.5+  |
| 2004 01 29 | 703 | 0.1-  | 1.3+  | 2007 10 20 | G96 | 0.4+ | 0.1- | 2007 12 03 | 703 | 0.2-  | 1.4+  |
| 2004 01 29 | 703 | 0.1-  | 0.4-  | 2007 10 30 | 691 | 0.3- | 0.1- | 2007 12 03 | 703 | 0.8+  | 0.3+  |
| 2004 01 30 | 704 | (0.5+ | 1.6-) | 2007 10 30 | 691 | 0.3- | 0.1+ | 2007 12 03 | 703 | 0.7-  | 0.7+  |
| 2004 01 30 | 704 | 0.1-  | 0.4+  | 2007 10 30 | 691 | 0.3- | 0.2- | 2007 12 03 | 703 | 0.1-  | 1.5-  |
| 2004 01 30 | 704 | 0.7+  | 0.3-  | 2007 11 09 | D29 | 0.3+ | 0.3- | 2007 12 04 | G96 | 0.7+  | 0.4-  |
| 2004 01 30 | 704 | 0.7+  | 0.1+  | 2007 11 09 | D29 | 0.1+ | 0.0  | 2007 12 04 | G96 | 0.6+  | 0.4-  |
| 2004 03 18 | 703 | 0.7+  | 0.6-  | 2007 11 09 | D29 | 1.0- | 0.6+ | 2007 12 04 | G96 | 0.3+  | 0.4-  |
| 2004 03 18 | 703 | 1.6+  | 0.7+  | 2007 11 09 | D29 | 0.2+ | 1.1+ | 2007 12 04 | G96 | 0.7+  | 0.4-  |
| 2004 03 18 | 703 | 0.4-  | 0.8+  | 2007 11 14 | 691 | 0.3- | 0.1+ | 2007 12 05 | 704 | 0.2+  | 0.8+  |
| 2004 03 18 | 703 | 0.2+  | 0.1-  | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 12 05 | 704 | 2.5+  | 0.2+  |
| 2004 04 14 | 703 | 0.9-  | 1.0-  | 2007 11 14 | 691 | 0.1- | 0.0  | 2007 12 05 | 704 | (2.6+ | 4.8-) |
| 2004 04 14 | 703 | 1.1-  | 0.4-  | 2007 11 18 | 691 | 0.2- | 0.1- |            |     |       |       |

**2007 VH<sub>285</sub> = 2006 RG<sub>13</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 347.56794  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.19266777 | $\omega$ | 195.58909 | +0.24850762   | -0.95727095 |
| <i>a</i> | 2.9689075  | $\Omega$ | 240.22340 | +0.90592270   | +0.28374204 |
| <i>e</i> | 0.0905933  | <i>i</i> | 9.81138   | +0.34285277   | -0.05588182 |
| <i>P</i> | 5.12       | <i>H</i> | 15.5      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 28 | 691 | 0.3+ | 0.3+ | 2007 10 16 | G96 | 0.4+ | 0.3- | 2007 11 30 | D35 | 0.4+ | 0.1- |
| 2004 03 28 | 691 | 0.2+ | 0.7+ | 2007 10 16 | G96 | 0.1+ | 0.1+ | 2007 11 30 | D35 | 0.3- | 0.0  |

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 03 28 | 691 | 0.1−  | 0.2+  | 2007 11 05 | 691 | 0.3− | 0.0  | 2007 11 30 | D35 | 0.1+ | 0.4− |
| 2005 06 17 | G96 | 0.2+  | 0.2+  | 2007 11 05 | 691 | 0.2− | 0.2+ | 2007 12 03 | 703 | 1.0+ | 1.0+ |
| 2005 06 17 | G96 | 0.4+  | 0.4+  | 2007 11 05 | G96 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.7− | 0.6− |
| 2005 06 17 | G96 | 0.1−  | 0.8+  | 2007 11 05 | G96 | 0.3+ | 0.1− | 2007 12 03 | 703 | 0.1+ | 0.3+ |
| 2005 06 17 | G96 | 0.0   | 0.2+  | 2007 11 05 | 691 | 0.1− | 0.1+ | 2007 12 03 | 703 | 0.0  | 0.5+ |
| 2006 09 14 | 691 | 0.1−  | 0.1−  | 2007 11 05 | G96 | 0.1+ | 0.0  | 2007 12 03 | 703 | 0.8+ | 0.7+ |
| 2006 09 14 | 691 | 0.1−  | 0.0   | 2007 11 05 | G96 | 0.2− | 0.0  | 2007 12 03 | 703 | 0.1+ | 0.0  |
| 2006 09 14 | 691 | 0.2−  | 0.0   | 2007 11 14 | 691 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 1.4+ | 0.3+ |
| 2006 09 16 | 691 | 0.2−  | 0.2+  | 2007 11 14 | 691 | 0.2− | 0.1− | 2007 12 05 | 704 | 0.3+ | 1.2+ |
| 2006 09 16 | 691 | 0.0   | 1.0+  | 2007 11 14 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.5+ | 0.1− |
| 2006 09 16 | 691 | (0.5− | 1.7−) | 2007 11 18 | 691 | 0.3− | 0.1− | 2007 12 05 | 704 | 0.1− | 0.5+ |
| 2007 10 16 | G96 | 0.2−  | 0.1−  | 2007 11 18 | 691 | 0.5− | 0.0  | 2007 12 05 | 704 | 1.1+ | 0.2+ |
| 2007 10 16 | G96 | 0.5+  | 0.2−  | 2007 11 18 | 691 | 0.1− | 0.0  |            |     |      |      |

**2007 VH<sub>286</sub> = 2000 CW<sub>128</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 50.48839   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.23317674 | $\omega$ | 64.32062  | +0.99900573 | −0.00854619 |          |
| <i>a</i> | 2.6142426  | $\Omega$ | 296.14255 | −0.01048955 | +0.90884229 |          |
| <i>e</i> | 0.1539269  | <i>i</i> | 2.79378   | +0.04333037 | +0.41705233 |          |
| <i>P</i> | 4.23       | <i>H</i> | 16.9      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 1        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1994 10 28 | 691 | 0.1− | 0.3− | 2000 02 08 | 691 | 0.2+ | 1.0− | 2007 11 14 | 691 | 0.0   | 0.3+  |
| 1994 10 28 | 691 | 0.1− | 0.5+ | 2000 02 08 | 691 | 0.2− | 0.5− | 2007 11 18 | 691 | 0.1−  | 0.1+  |
| 1994 10 28 | 691 | 0.1+ | 0.0  | 2002 08 07 | 644 | 0.3+ | 0.1− | 2007 11 18 | 691 | 0.0   | 0.1−  |
| 2000 02 03 | 691 | 0.0  | 0.4+ | 2002 08 07 | 644 | 0.0  | 0.1+ | 2007 11 18 | 691 | 0.1−  | 0.1−  |
| 2000 02 03 | 691 | 0.0  | 0.9+ | 2002 08 07 | 644 | 0.1− | 0.3− | 2007 12 14 | 704 | 1.3+  | 0.8−  |
| 2000 02 03 | 691 | 0.1+ | 1.1+ | 2007 11 14 | 691 | 0.1+ | 0.2− | 2007 12 14 | 704 | (1.6+ | 1.1−) |
| 2000 02 08 | 691 | 0.1− | 0.8− | 2007 11 14 | 691 | 0.5− | 0.1+ | 2007 12 14 | 704 | 1.3+  | 0.4−  |

**2007 VS<sub>286</sub> = 2004 GS<sub>70</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 243.04881  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.17974301 | $\omega$ | 131.56762 | −0.94112411 | +0.32362498 |          |
| <i>a</i> | 3.1095774  | $\Omega$ | 67.52306  | −0.33302564 | −0.83780128 |          |
| <i>e</i> | 0.0983295  | <i>i</i> | 6.07158   | −0.05813203 | −0.43972252 |          |
| <i>P</i> | 5.48       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 04 13 | 691 | 0.1+ | 0.0  | 2007 11 14 | 691 | 0.4+ | 0.0  | 2007 12 11 | J95 | 0.6+ | 0.7+ |
| 2004 04 13 | 691 | 0.8+ | 0.2+ | 2007 11 14 | 691 | 0.3− | 0.2− | 2007 12 12 | J95 | 0.6− | 0.0  |
| 2004 04 13 | 691 | 0.1− | 0.0  | 2007 11 18 | 691 | 0.6− | 0.4+ | 2007 12 12 | J95 | 0.4+ | 0.4− |
| 2004 04 20 | 691 | 0.2− | 0.0  | 2007 11 18 | 691 | 0.1− | 0.1− | 2007 12 12 | J95 | 0.6+ | 0.9− |
| 2004 04 20 | 691 | 0.4− | 0.1+ | 2007 11 18 | 691 | 0.0  | 0.0  | 2007 12 12 | J95 | 0.0  | 0.1− |
| 2004 04 20 | 691 | 0.2− | 0.3− | 2007 12 11 | J95 | 0.7− | 0.5+ | 2007 12 12 | J95 | 0.4− | 0.1+ |
| 2007 11 14 | 691 | 0.3+ | 0.2− | 2007 12 11 | J95 | 0.3+ | 0.2+ |            |     |      |      |

**2007 VE<sub>287</sub> = 2006 KA<sub>4</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 106.09983  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.29115728 | $\omega$ | 190.20775 | +0.32332925 | +0.93786649 |          |
| <i>a</i> | 2.2545037  | $\Omega$ | 98.74312  | −0.85897027 | +0.34672865 |          |
| <i>e</i> | 0.1308669  | <i>i</i> | 7.32144   | −0.39702427 | +0.01362655 |          |
| <i>P</i> | 3.39       | <i>H</i> | 16.7      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 3        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 19 | 691 | 0.0   | 0.0   | 2006 05 19 | 699 | 0.5− | 0.1− | 2007 11 15 | 699 | 0.3+ | 0.5+ |
| 2004 12 19 | 691 | 0.1−  | 0.1+  | 2006 05 19 | 699 | 0.2+ | 0.0  | 2007 11 15 | 699 | 0.1− | 0.6− |
| 2004 12 19 | 691 | 0.1+  | 0.1−  | 2006 05 19 | 699 | 0.4+ | 0.2+ | 2007 11 17 | 703 | 0.5− | 1.0+ |
| 2006 02 02 | 691 | 0.4−  | 0.1−  | 2006 05 21 | 644 | 0.2+ | 0.0  | 2007 11 17 | 703 | 0.4+ | 0.4+ |
| 2006 02 02 | 691 | 0.5+  | 0.3−  | 2006 05 21 | 644 | 0.2− | 0.3− | 2007 11 17 | 703 | 0.3− | 0.8+ |
| 2006 02 02 | 691 | 0.0   | 0.4+  | 2006 05 21 | 644 | 0.3+ | 0.1− | 2007 11 17 | 703 | 1.6+ | 0.9− |
| 2006 04 30 | 703 | (2.5+ | 2.1+) | 2006 06 12 | 644 | 0.6− | 0.0  | 2007 11 18 | G96 | 0.2− | 0.1+ |
| 2006 04 30 | 703 | 0.3−  | 0.3−  | 2006 06 12 | 644 | 0.2+ | 0.1− | 2007 11 18 | G96 | 0.1− | 0.1− |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 04 30 | 703 | 0.3− | 0.8+ | 2006 06 12 | 644 | 0.2+ | 0.1− | 2007 11 18 | G96 | 0.2− | 0.1+ |
| 2006 04 30 | 703 | 0.6+ | 0.9− | 2007 11 15 | 699 | 0.5− | 0.8− | 2007 11 18 | G96 | 0.3− | 0.0  |
| 2006 05 19 | 699 | 0.4− | 1.0+ | 2007 11 15 | 699 | 0.1− | 0.2− |            |     |      |      |

**2007 VF<sub>287</sub> = 2005 JN<sub>136</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 289.81073  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.23560683 | $\omega$ | 308.90450 | −0.74326822 | −0.66792647 |          |
| <i>a</i> | 2.5962358  | $\Omega$ | 189.40193 | +0.66274433 | −0.72745188 |          |
| <i>e</i> | 0.1274721  | <i>i</i> | 13.36829  | +0.09122663 | −0.15712417 |          |
| <i>P</i> | 4.18       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2005 05 11 | 703 | 0.2− | 0.4− | 2007 11 18 | G96 | 0.3+  | 0.3−  | 2007 11 20 | 703 | 0.4−  | 0.0   |
| 2005 05 11 | 703 | 0.7− | 0.1+ | 2007 11 18 | G96 | 0.3+  | 0.3−  | 2007 11 20 | 703 | (1.8− | 0.9−) |
| 2005 05 11 | 703 | 0.3+ | 0.7− | 2007 11 18 | G96 | 0.4+  | 0.1−  | 2007 11 20 | 703 | 0.3−  | 0.2+  |
| 2005 05 11 | 703 | 0.0  | 0.7+ | 2007 11 18 | G96 | 0.6+  | 0.3−  | 2007 11 20 | 703 | 0.3+  | 0.1−  |
| 2005 05 15 | 644 | 0.2− | 0.7+ | 2007 11 19 | 703 | 1.1+  | 1.2+  | 2007 11 20 | 703 | 0.1+  | 1.0−  |
| 2005 05 15 | 644 | 0.3+ | 0.2− | 2007 11 19 | 703 | (0.8+ | 1.9+) | 2007 11 20 | 703 | 1.0−  | 1.0−  |
| 2005 05 15 | 644 | 0.2+ | 0.1− | 2007 11 19 | 703 | 1.2+  | 0.0   | 2007 12 05 | 703 | 0.3+  | 0.5−  |
| 2005 06 25 | 644 | 0.1+ | 0.1− | 2007 11 19 | 703 | 1.2−  | 0.1−  | 2007 12 05 | 703 | 0.1+  | 1.2+  |
| 2005 06 25 | 644 | 0.1+ | 0.3− | 2007 11 19 | 703 | 0.9+  | 0.1−  | 2007 12 05 | 703 | 0.7−  | 0.0   |
| 2005 06 25 | 644 | 0.2− | 0.4+ | 2007 11 19 | 703 | 0.5−  | 0.1+  | 2007 12 05 | 703 | 0.9−  | 0.1+  |
| 2007 11 15 | 703 | 0.1+ | 0.3− | 2007 11 19 | 703 | 0.5+  | 0.4−  | 2007 12 05 | 703 | 0.6+  | 0.7+  |
| 2007 11 15 | 703 | 0.7− | 0.2+ | 2007 11 19 | 703 | 1.5−  | 0.4+  | 2007 12 05 | 703 | 0.1−  | 0.8−  |
| 2007 11 15 | 703 | 0.9− | 0.2+ | 2007 11 20 | 703 | 0.4+  | 0.4−  | 2007 12 05 | 703 | 0.3+  | 0.5−  |
| 2007 11 15 | 703 | 0.1− | 0.5+ | 2007 11 20 | 703 | 0.5+  | 1.4+  |            |     |       |       |

**2007 VG<sub>287</sub> = 2002 TX<sub>231</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 342.85512  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.21116693 | $\omega$ | 244.38829 | +0.21537286 | −0.97511519 |          |
| <i>a</i> | 2.7928789  | $\Omega$ | 193.49171 | +0.95717465 | +0.22146541 |          |
| <i>e</i> | 0.1857707  | <i>i</i> | 13.02526  | +0.19347149 | −0.01017063 |          |
| <i>P</i> | 4.67       | <i>H</i> | 16.8      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 3        |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 10 06 | 291 | 0.1+  | 0.3−  | 2002 11 08 | 645 | 0.1− | 0.0  | 2007 11 19 | 703 | 0.0   | 0.6+  |
| 2002 10 06 | 291 | 0.0   | 0.0   | 2007 11 15 | 703 | 0.3− | 0.6+ | 2007 11 19 | 703 | 0.8−  | 0.0   |
| 2002 10 06 | 291 | 0.3−  | 0.0   | 2007 11 15 | 703 | 0.1+ | 0.7+ | 2007 11 19 | 703 | (1.6− | 0.1−) |
| 2002 10 10 | 704 | (1.5+ | 1.1+) | 2007 11 15 | 703 | 0.2− | 0.3+ | 2007 11 19 | 703 | 0.3+  | 0.9−  |
| 2002 10 10 | 704 | 0.5−  | 0.7+  | 2007 11 15 | 703 | 0.3− | 0.6− | 2007 12 05 | 703 | 0.5+  | 0.3−  |
| 2002 10 10 | 704 | 0.4−  | 0.4+  | 2007 11 18 | G96 | 0.1+ | 0.2− | 2007 12 05 | 703 | 1.2−  | 0.4−  |
| 2002 10 31 | 645 | 0.1+  | 0.0   | 2007 11 18 | G96 | 0.0  | 0.0  | 2007 12 05 | 703 | 0.8+  | 0.3−  |
| 2002 10 31 | 645 | 0.1+  | 0.0   | 2007 11 18 | G96 | 0.5+ | 0.3− | 2007 12 05 | 703 | 0.1+  | 1.0+  |
| 2002 11 08 | 645 | 0.1−  | 0.0   | 2007 11 18 | G96 | 0.3+ | 0.2− |            |     |       |       |

**2007 VK<sub>288</sub> = 2005 AZ<sub>48</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |             |             |          |
|----------|------------|----------|-----------|-------------|-------------|----------|
| <i>M</i> | 22.37467   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |
| <i>n</i> | 0.30340001 | $\omega$ | 87.88449  | +0.93357014 | −0.35080248 |          |
| <i>a</i> | 2.1934395  | $\Omega$ | 292.64531 | +0.28903345 | +0.85800391 |          |
| <i>e</i> | 0.1566554  | <i>i</i> | 4.56030   | +0.21191145 | +0.37518917 |          |
| <i>P</i> | 3.25       | <i>H</i> | 17.9      | <i>G</i>    | 0.15        | <i>U</i> |
|          |            |          |           |             |             | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 12 19 | G96 | 0.1− | 0.8− | 2007 11 02 | 691 | 0.1− | 0.1+ | 2007 11 19 | 691 | 0.1+ | 0.1+ |
| 2004 12 19 | G96 | 0.3− | 0.7− | 2007 11 02 | 691 | 0.1+ | 0.2− | 2007 11 20 | 691 | 0.9− | 0.4+ |
| 2004 12 19 | G96 | 0.3+ | 0.5− | 2007 11 02 | 691 | 0.1− | 0.3− | 2007 11 20 | 691 | 0.0  | 0.9+ |
| 2004 12 19 | G96 | 0.2− | 0.6− | 2007 11 02 | 691 | 0.2− | 0.2− | 2007 11 20 | 691 | 0.1− | 0.2− |
| 2005 01 13 | 291 | 0.1− | 0.3+ | 2007 11 02 | 691 | 0.1+ | 0.1− | 2007 11 20 | 691 | 0.1+ | 0.0  |
| 2005 01 13 | 291 | 0.1+ | 0.1− | 2007 11 12 | G96 | 0.2+ | 0.6− | 2007 11 20 | 691 | 0.0  | 0.1+ |
| 2005 01 13 | 291 | 0.5− | 0.6+ | 2007 11 12 | G96 | 0.1+ | 0.4− | 2007 11 20 | 691 | 0.1+ | 0.1+ |
| 2005 01 17 | 691 | 0.2+ | 0.1− | 2007 11 12 | G96 | 0.6+ | 0.4− | 2007 12 12 | 704 | 0.5+ | 0.1− |
| 2005 01 17 | 691 | 0.0  | 0.1− | 2007 11 12 | G96 | 0.6+ | 0.4− | 2007 12 12 | 704 | 0.3+ | 0.8+ |

## 2007 DEC. 24

M.P.O. 130047

2005 01 17 691 0.3+ 0.3- 2007 11 19 691 0.0 0.0 2007 12 12 704 1.0+ 0.3+  
 2007 11 02 691 0.1+ 0.1- 2007 11 19 691 0.0 0.2-

**2007 VQ<sub>290</sub> = 1996 GJ<sub>12</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 63.03654   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.22162150 | $\omega$ | 279.33903 | +0.98461670   | +0.15638676 |
| <i>a</i> | 2.7043410  | $\Omega$ | 71.69389  | -0.10982690   | +0.90081232 |
| <i>e</i> | 0.1020638  | <i>i</i> | 4.70839   | -0.13589706   | +0.40506831 |
| <i>P</i> | 4.45       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |      |      |                |       |       |                |      |      |
|----------------|------|------|----------------|-------|-------|----------------|------|------|
| 1996 04 09 691 | 0.4+ | 0.7- | 2002 10 08 699 | (2.5- | 0.4+) | 2007 11 14 691 | 0.0  | 0.2+ |
| 1996 04 09 691 | 0.1- | 0.1- | 2003 12 19 691 | 0.8+  | 0.3+  | 2007 11 14 691 | 0.3- | 0.7- |
| 1996 04 09 691 | 0.5+ | 0.5- | 2003 12 19 691 | 0.2+  | 0.3+  | 2007 11 14 691 | 0.1- | 0.1+ |
| 1996 04 15 691 | 1.6- | 0.6- | 2003 12 19 691 | 0.2+  | 0.1+  | 2007 11 19 691 | 0.1+ | 0.1- |
| 1996 04 15 691 | 1.6- | 0.5- | 2005 03 09 G96 | 0.0   | 0.4+  | 2007 11 19 691 | 0.4- | 0.0  |
| 1998 12 26 691 | 0.2+ | 0.2- | 2005 03 09 G96 | 1.3-  | 0.5+  | 2007 11 19 691 | 0.0  | 0.2+ |
| 1998 12 26 691 | 0.4+ | 0.1- | 2005 03 09 G96 | (1.6+ | 0.4+) | 2007 12 05 704 | 0.2- | 0.5+ |
| 1998 12 26 691 | 0.2+ | 0.3- | 2005 03 09 G96 | 0.3+  | 0.1-  | 2007 12 05 704 | 0.3+ | 0.1- |
| 2001 05 25 644 | 0.5+ | 1.0+ | 2005 04 12 691 | 0.5+  | 0.2+  | 2007 12 05 704 | 0.4+ | 0.3+ |
| 2001 05 25 644 | 0.2+ | 0.8+ | 2005 04 12 691 | 0.3+  | 0.1+  | 2007 12 05 704 | 0.1+ | 0.5+ |
| 2001 05 25 644 | 0.7+ | 0.7+ | 2005 04 12 691 | 0.7+  | 0.1-  | 2007 12 05 704 | 0.6- | 1.4+ |
| 2002 09 30 608 | 0.5- | 0.8+ | 2005 05 07 691 | 0.1+  | 0.7+  | 2007 12 14 704 | 0.4+ | 0.5- |
| 2002 09 30 608 | 0.0  | 0.1+ | 2005 05 07 691 | 0.2+  | 0.5+  | 2007 12 14 704 | 0.7+ | 0.1- |
| 2002 09 30 608 | 0.0  | 0.2- | 2005 05 07 691 | 0.0   | 0.4+  | 2007 12 14 704 | 1.2- | 0.3- |
| 2002 10 08 699 | 0.3+ | 1.4- | 2007 11 02 691 | 0.3-  | 0.2+  | 2007 12 14 704 | 0.2- | 0.2- |
| 2002 10 08 699 | 0.2+ | 0.2+ | 2007 11 02 691 | 0.2-  | 0.2+  | 2007 12 14 704 | 0.3- | 0.3+ |
| 2002 10 08 699 | 0.6+ | 0.1- | 2007 11 02 691 | 0.0   | 0.2+  |                |      |      |

**2007 VW<sub>290</sub> = 1995 FL<sub>14</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 341.62483  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|----------|---------------|-------------|
| <i>n</i> | 0.21329820 | $\omega$ | 8.83395  | +0.00975510   | -0.99798451 |
| <i>a</i> | 2.7742435  | $\Omega$ | 80.62467 | +0.91351246   | -0.01660935 |
| <i>e</i> | 0.1663661  | <i>i</i> | 3.64375  | +0.40669378   | +0.06124578 |
| <i>P</i> | 4.62       | <i>H</i> | 16.1     | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                |       |       |                |      |      |                |      |      |
|----------------|-------|-------|----------------|------|------|----------------|------|------|
| 1993 12 15 691 | 0.5-  | 0.3-  | 2005 06 13 G96 | 0.7+ | 0.0  | 2007 12 04 G96 | 0.8+ | 1.3- |
| 1993 12 15 691 | 0.2-  | 0.2-  | 2005 06 13 G96 | 0.4- | 0.0  | 2007 12 05 704 | 1.1+ | 0.0  |
| 1993 12 15 691 | 0.3+  | 0.9+  | 2005 06 13 G96 | 0.5- | 0.2+ | 2007 12 05 704 | 0.8+ | 0.1+ |
| 1995 03 27 691 | 0.1-  | 0.3-  | 2005 06 13 G96 | 0.2- | 0.4+ | 2007 12 05 704 | 0.7+ | 0.2+ |
| 1995 03 27 691 | 0.0   | 0.2-  | 2007 11 14 691 | 0.0  | 0.0  | 2007 12 05 704 | 0.7+ | 0.4+ |
| 1995 03 27 691 | 0.2+  | 0.5-  | 2007 11 14 691 | 0.1- | 0.0  | 2007 12 05 704 | 0.3+ | 0.3+ |
| 1995 04 04 691 | 0.4+  | 0.0   | 2007 11 14 691 | 0.1+ | 0.5+ | 2007 12 14 704 | 0.0  | 0.0  |
| 1995 04 04 691 | 0.0   | 0.3+  | 2007 11 19 691 | 0.1+ | 0.1- | 2007 12 14 704 | 0.4+ | 0.4+ |
| 1995 04 04 691 | 0.3-  | 0.4-  | 2007 11 19 691 | 0.1- | 0.0  | 2007 12 14 704 | 0.4+ | 0.9- |
| 2004 02 15 703 | (1.7- | 1.0-) | 2007 11 19 691 | 0.0  | 0.0  | 2007 12 14 704 | 0.2+ | 0.3+ |
| 2004 02 15 703 | 0.7-  | 1.1+  | 2007 12 04 691 | 0.1+ | 0.1- | 2007 12 14 704 | 1.1- | 1.4- |
| 2004 02 15 703 | 0.5+  | 0.9+  | 2007 12 04 691 | 0.1- | 0.2- | 2007 12 16 691 | 0.3- | 0.0  |
| 2004 02 15 703 | 0.1+  | 0.5+  | 2007 12 04 691 | 0.0  | 0.2- | 2007 12 16 691 | 0.3- | 0.0  |
| 2004 03 10 644 | 0.1-  | 0.8+  | 2007 12 04 G96 | 0.4+ | 0.2- | 2007 12 16 691 | 0.2- | 0.1+ |
| 2004 03 10 644 | 0.1-  | 0.8+  | 2007 12 04 G96 | 0.1- | 0.4- |                |      |      |
| 2004 03 10 644 | 0.3-  | 0.9+  | 2007 12 04 G96 | 0.1+ | 0.3- |                |      |      |

**2007 VZ<sub>290</sub> = 2000 WL<sub>138</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 5.13002    |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.28473887 | $\omega$ | 343.16117 | +0.59357046   | -0.80055569 |
| <i>a</i> | 2.2882574  | $\Omega$ | 70.35357  | +0.74808505   | +0.51111980 |
| <i>e</i> | 0.1312005  | <i>i</i> | 5.01755   | +0.29672020   | +0.31283725 |
| <i>P</i> | 3.46       | <i>H</i> | 17.4      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2000 11 21 704 | 0.8- | 0.6+ | 2007 11 02 691 | 0.1+ | 0.2+ | 2007 12 10 704 | 0.8+ | 0.6- |
| 2000 11 21 704 | 0.1+ | 0.1+ | 2007 11 02 691 | 0.0  | 0.2+ | 2007 12 10 704 | 1.2+ | 0.2- |
| 2000 11 21 704 | 0.4- | 0.2+ | 2007 11 02 691 | 0.1- | 0.2+ | 2007 12 10 704 | 0.4+ | 0.4- |
| 2000 11 21 704 | 0.1+ | 0.0  | 2007 11 14 691 | 0.0  | 0.0  | 2007 12 12 704 | 0.2+ | 0.0  |
| 2000 11 24 691 | 0.1+ | 0.5- | 2007 11 14 691 | 0.1- | 0.1- | 2007 12 12 704 | 0.2+ | 0.4- |
| 2000 11 24 699 | 0.1- | 0.2+ | 2007 11 14 691 | 0.3- | 0.9+ | 2007 12 12 704 | 0.1- | 0.1+ |
| 2000 11 24 691 | 0.0  | 0.3- | 2007 11 19 691 | 0.0  | 0.2- | 2007 12 12 704 | 0.5+ | 0.0  |
| 2000 11 24 699 | 0.3+ | 0.3+ | 2007 11 19 691 | 0.1- | 0.0  | 2007 12 14 704 | 1.1- | 0.2- |
| 2000 11 24 691 | 0.1+ | 0.5- | 2007 11 19 691 | 0.0  | 0.1- | 2007 12 14 704 | 1.1- | 0.3- |
| 2000 11 24 699 | 0.6+ | 0.2- | 2007 12 04 G96 | 0.2- | 0.3- | 2007 12 14 704 | 0.1+ | 0.5- |
| 2000 11 24 699 | 0.2- | 0.6+ | 2007 12 04 G96 | 0.1- | 0.3- | 2007 12 14 704 | 0.7+ | 0.8+ |
| 2000 12 22 691 | 0.3+ | 0.1+ | 2007 12 04 G96 | 0.0  | 0.3- | 2007 12 14 704 | 0.5- | 0.9+ |
| 2000 12 22 691 | 0.2+ | 0.0  | 2007 12 04 G96 | 0.2- | 0.2- |                |      |      |
| 2000 12 22 691 | 0.2- | 0.1+ | 2007 12 10 704 | 0.5+ | 0.6+ |                |      |      |

**2007 VM<sub>291</sub> = 2003 UG<sub>215</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 267.80459  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.26970396 | $\omega$ | 67.74122  | -0.97759181   | -0.20671316 |
| <i>a</i> | 2.3725270  | $\Omega$ | 100.31112 | +0.17516815   | -0.90365085 |
| <i>e</i> | 0.1223759  | <i>i</i> | 2.31835   | +0.11674916   | -0.37507974 |
| <i>P</i> | 3.65       | <i>H</i> | 17.3      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |      |      |
|----------------|------|------|----------------|------|------|----------------|------|------|
| 2003 09 28 691 | 0.2+ | 0.2+ | 2007 11 02 691 | 1.0+ | 0.0  | 2007 11 21 G96 | 0.7+ | 0.2- |
| 2003 09 28 691 | 0.4+ | 0.1+ | 2007 11 02 691 | 0.4- | 0.0  | 2007 11 21 G96 | 0.6+ | 0.2- |
| 2003 09 28 691 | 0.0  | 0.0  | 2007 11 14 691 | 0.2- | 0.2- | 2007 12 05 704 | 0.4+ | 0.9+ |
| 2003 10 21 691 | 0.0  | 0.0  | 2007 11 14 691 | 0.5- | 0.0  | 2007 12 05 704 | 0.4+ | 0.0  |
| 2003 10 21 691 | 0.2- | 0.3+ | 2007 11 14 691 | 0.2- | 0.0  | 2007 12 05 704 | 0.2+ | 0.6+ |
| 2003 10 21 691 | 0.0  | 0.1- | 2007 11 19 691 | 0.0  | 0.1+ | 2007 12 15 G96 | 0.1+ | 0.3- |
| 2003 10 25 691 | 0.3- | 0.2- | 2007 11 19 691 | 0.1- | 0.1- | 2007 12 15 G96 | 0.1+ | 0.5- |
| 2003 10 25 691 | 0.0  | 0.1- | 2007 11 19 691 | 0.1- | 0.2+ | 2007 12 15 G96 | 0.7+ | 0.1- |
| 2003 10 25 691 | 0.0  | 0.2- | 2007 11 21 G96 | 0.4+ | 0.1- | 2007 12 15 G96 | 0.1+ | 0.5- |
| 2007 11 02 691 | 0.6- | 0.2+ | 2007 11 21 G96 | 0.6+ | 0.3- |                |      |      |

**2007 VP<sub>291</sub> = 2001 WT<sub>67</sub> = 2006 SR<sub>394</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 325.84734  |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
|----------|------------|----------|-----------|---------------|-------------|
| <i>n</i> | 0.17407088 | $\omega$ | 324.39744 | -0.22981626   | -0.97289723 |
| <i>a</i> | 3.1767666  | $\Omega$ | 138.87173 | +0.90169631   | -0.22274912 |
| <i>e</i> | 0.0516966  | <i>i</i> | 2.23074   | +0.36623524   | -0.06207907 |
| <i>P</i> | 5.66       | <i>H</i> | 15.7      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                |      |      |                |      |      |                |       |       |
|----------------|------|------|----------------|------|------|----------------|-------|-------|
| 2001 10 10 691 | 0.1- | 0.0  | 2004 05 21 691 | 0.3+ | 0.3+ | 2007 11 14 691 | 0.2-  | 0.1+  |
| 2001 10 10 691 | 0.1- | 0.1+ | 2004 05 21 691 | 0.2+ | 0.4+ | 2007 11 19 291 | 0.3-  | 0.0   |
| 2001 10 10 691 | 0.1- | 0.1+ | 2004 05 21 691 | 0.2- | 0.1+ | 2007 11 19 291 | 0.4-  | 0.1+  |
| 2001 11 20 704 | 0.4+ | 0.5- | 2006 09 26 691 | 0.1- | 0.5+ | 2007 11 19 291 | 0.2-  | 0.0   |
| 2001 11 20 704 | 0.5+ | 1.2- | 2006 09 26 691 | 0.4- | 0.3+ | 2007 11 19 291 | 0.6+  | 0.0   |
| 2001 11 20 704 | 0.3- | 0.1- | 2006 09 26 691 | 0.1- | 0.2+ | 2007 11 19 291 | 0.5+  | 0.1+  |
| 2001 11 20 704 | 0.4+ | 0.1+ | 2006 09 26 G96 | 0.2+ | 0.2- | 2007 11 19 291 | 0.7+  | 0.0   |
| 2001 11 20 704 | 0.1- | 0.7- | 2006 09 26 G96 | 0.0  | 0.3- | 2007 12 04 704 | 1.5-  | 0.2-  |
| 2001 11 21 704 | 0.6+ | 1.2- | 2006 09 26 G96 | 0.2+ | 0.2+ | 2007 12 04 704 | (1.1- | 1.8+) |
| 2001 11 21 704 | 0.7- | 0.8+ | 2006 09 26 G96 | 0.2+ | 0.4- | 2007 12 04 704 | (1.8- | 1.0+) |
| 2001 11 21 704 | 0.8+ | 0.4- | 2006 10 21 G96 | 0.3- | 0.1- | 2007 12 04 704 | (1.6- | 1.5+) |
| 2001 11 21 704 | 0.4+ | 0.5- | 2006 10 21 G96 | 0.6+ | 0.1+ | 2007 12 15 704 | 0.3+  | 0.8+  |
| 2001 11 21 704 | 0.4+ | 0.6- | 2006 10 21 G96 | 0.1- | 0.1+ | 2007 12 15 704 | 0.2-  | 0.4-  |
| 2003 01 30 291 | 0.1- | 0.0  | 2006 10 21 G96 | 0.3+ | 0.1+ | 2007 12 15 704 | 1.1+  | 0.8+  |
| 2003 01 30 291 | 0.1+ | 0.1+ | 2007 11 14 691 | 0.3- | 0.5+ | 2007 12 15 704 | 0.9-  | 0.5-  |
| 2003 01 30 291 | 0.1+ | 0.2+ | 2007 11 14 691 | 0.1- | 0.0  |                |       |       |

**2007 VQ<sub>291</sub> = 2004 FU<sub>56</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 279.08476  |          | (2000.0) | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|----------|-------------|-------------|----------|---|
| <i>n</i> | 0.19620654 | $\omega$ | 57.45117 | -0.90129168 | -0.42952141 |          |   |
| <i>a</i> | 2.9331013  | $\Omega$ | 97.05681 | +0.37595821 | -0.84023217 |          |   |
| <i>e</i> | 0.0744312  | <i>i</i> | 3.25981  | +0.21524111 | -0.33093997 |          |   |
| <i>P</i> | 5.02       | <i>H</i> | 16.1     | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1994 03 13 | 691 | 0.8+ | 0.6- | 2004 03 22 | 704 | 0.9+ | 0.5+ | 2007 11 20 | 291 | 0.4- | 0.1+ |
| 1994 03 13 | 691 | 0.2+ | 0.0  | 2004 03 22 | 704 | 0.6+ | 0.1- | 2007 11 20 | 291 | 0.3- | 0.7+ |
| 1994 03 13 | 691 | 1.3- | 0.4+ | 2004 03 22 | 704 | 0.6- | 0.3- | 2007 11 21 | G96 | 0.0  | 0.2- |
| 2003 01 11 | 291 | 0.3+ | 0.3- | 2007 11 14 | 691 | 0.0  | 0.3+ | 2007 11 21 | G96 | 0.7+ | 0.3- |
| 2003 01 11 | 291 | 0.1+ | 0.1- | 2007 11 14 | 691 | 0.3- | 0.3+ | 2007 11 21 | G96 | 0.3+ | 0.3- |
| 2003 01 11 | 291 | 0.2+ | 0.3- | 2007 11 14 | 691 | 0.0  | 0.0  | 2007 11 21 | G96 | 0.4+ | 0.4- |
| 2004 03 16 | 599 | 0.3- | 0.2+ | 2007 11 19 | 691 | 0.0  | 0.1+ | 2007 12 05 | 704 | 0.8+ | 0.4- |
| 2004 03 16 | 599 | 0.1- | 0.5+ | 2007 11 19 | 691 | 0.2+ | 0.1- | 2007 12 05 | 704 | 0.8+ | 0.2- |
| 2004 03 16 | 599 | 0.3+ | 0.1+ | 2007 11 19 | 691 | 0.2+ | 0.0  | 2007 12 05 | 704 | 0.7+ | 1.0- |
| 2004 03 22 | 704 | 0.5+ | 0.8+ | 2007 11 20 | 291 | 0.8- | 0.1+ | 2007 12 05 | 704 | 0.7+ | 0.0  |

**2007 VT<sub>296</sub> = 1997 TJ<sub>7</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 350.55019  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.20526551 | $\omega$ | 65.48600  | +0.45169536 | -0.89215775 |          |   |
| <i>a</i> | 2.8461562  | $\Omega$ | 357.64306 | +0.76728617 | +0.39136815 |          |   |
| <i>e</i> | 0.0419459  | <i>i</i> | 7.10034   | +0.45523974 | +0.22557818 |          |   |
| <i>P</i> | 4.80       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1992 09 30 | 691 | 0.2- | 0.0  | 2002 10 16 | 644 | 0.8- | 0.2- | 2007 11 15 | G96 | 0.3+ | 0.0  |
| 1992 09 30 | 691 | 0.2+ | 0.3- | 2002 10 16 | 644 | 0.7- | 0.2- | 2007 11 15 | G96 | 0.1+ | 0.1- |
| 1992 09 30 | 691 | 0.4- | 0.5+ | 2002 10 16 | 644 | 0.0  | 0.8- | 2007 11 18 | D35 | 0.1+ | 0.0  |
| 1997 10 02 | 910 | 0.6+ | 0.3- | 2007 11 08 | 703 | 0.1+ | 0.0  | 2007 11 18 | D35 | 0.5+ | 0.3+ |
| 1997 10 02 | 910 | 0.6+ | 0.2- | 2007 11 08 | 703 | 0.4- | 1.0+ | 2007 11 18 | D35 | 0.1- | 0.0  |
| 1997 10 03 | 910 | 0.7+ | 0.2+ | 2007 11 08 | 703 | 1.0- | 0.4- | 2007 11 20 | G96 | 0.5+ | 0.1+ |
| 1997 10 03 | 910 | 1.0+ | 0.2- | 2007 11 08 | 703 | 0.6- | 0.7+ | 2007 11 20 | G96 | 0.4+ | 0.1- |
| 1997 10 03 | 910 | 0.1- | 0.0  | 2007 11 15 | G96 | 0.4- | 0.0  | 2007 11 20 | G96 | 0.3+ | 0.0  |
| 1997 10 03 | 910 | 0.1- | 0.3- | 2007 11 15 | G96 | 0.1- | 0.0  | 2007 11 20 | G96 | 0.7+ | 0.2- |

**2007 VZ<sub>296</sub> = 2005 EW<sub>305</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 37.99581   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.25258912 | $\omega$ | 210.75244 | +0.98439059 | -0.16894027 |          |   |
| <i>a</i> | 2.4785230  | $\Omega$ | 158.80484 | +0.17599744 | +0.94452044 |          |   |
| <i>e</i> | 0.0943239  | <i>i</i> | 7.84346   | +0.00024863 | +0.28167415 |          |   |
| <i>P</i> | 3.90       | <i>H</i> | 16.5      | <i>G</i>    | 0.15        | <i>U</i> | 5 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 04 | 691 | 0.1+ | 0.2- | 2007 10 24 | G96 | 0.3- | 0.3+ | 2007 11 15 | 703 | 0.4+ | 0.6+ |
| 2005 03 04 | 691 | 0.0  | 0.1+ | 2007 10 24 | G96 | 0.2+ | 0.1+ | 2007 11 18 | A13 | 0.1- | 0.4+ |
| 2005 03 04 | 691 | 0.1+ | 0.3+ | 2007 10 24 | G96 | 0.8+ | 0.6+ | 2007 11 18 | A13 | 0.1+ | 0.1- |
| 2005 03 10 | 695 | 0.3- | 0.5- | 2007 11 04 | G96 | 0.4- | 0.0  | 2007 11 27 | A13 | 0.9+ | 0.3- |
| 2005 03 10 | 695 | 0.5- | 0.3- | 2007 11 04 | G96 | 0.3- | 0.0  | 2007 11 27 | A13 | 0.6- | 0.5+ |
| 2007 09 27 | G96 | 0.2+ | 0.8- | 2007 11 04 | G96 | 0.3- | 0.2- | 2007 11 27 | A13 | 0.5- | 0.2- |
| 2007 09 27 | G96 | 0.5+ | 0.3+ | 2007 11 04 | G96 | 0.0  | 0.1- | 2007 11 28 | A13 | 1.4+ | 0.0  |
| 2007 09 27 | G96 | 0.4- | 0.6+ | 2007 11 15 | 703 | 0.2- | 0.9- | 2007 11 28 | A13 | 0.2- | 1.3+ |
| 2007 09 27 | G96 | 0.3- | 0.6- | 2007 11 15 | 703 | 0.9+ | 0.2- | 2007 11 28 | A13 | 0.3- | 1.7- |
| 2007 10 24 | G96 | 0.4- | 0.1+ | 2007 11 15 | 703 | 0.4+ | 0.3+ | 2007 11 28 | A13 | 1.6- | 0.1- |

**2007 VT<sub>298</sub> = 2001 QS<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.42695   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.18093858 | $\omega$ | 272.05333 | +0.81620288 | -0.50722690 |          |   |
| <i>a</i> | 3.0958644  | $\Omega$ | 118.53248 | +0.56973711 | +0.78614188 |          |   |
| <i>e</i> | 0.1979335  | <i>i</i> | 18.35430  | -0.09598169 | +0.35313144 |          |   |
| <i>P</i> | 5.45       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 08 24 | 608 | 0.3- | 0.2- | 2007 11 11 | 703 | 0.4- | 1.2- | 2007 12 03 | 291 | 0.3+ | 0.2+ |
| 2001 08 24 | 608 | 0.1- | 0.4- | 2007 11 11 | 703 | 0.4+ | 0.1+ | 2007 12 03 | 291 | 0.1+ | 0.3+ |
| 2001 08 24 | 608 | 0.2- | 0.4+ | 2007 11 11 | 703 | 0.4- | 0.0  | 2007 12 03 | 291 | 0.0  | 0.1+ |
| 2001 08 26 | 644 | 0.2+ | 0.1- | 2007 11 18 | 703 | 0.3- | 0.6+ | 2007 12 05 | 703 | 0.7+ | 0.3- |
| 2001 08 26 | 644 | 0.1+ | 0.1+ | 2007 11 18 | 703 | 0.7+ | 0.3- | 2007 12 05 | 703 | 0.1+ | 0.4- |
| 2001 08 26 | 644 | 0.3+ | 0.1+ | 2007 11 18 | 703 | 0.4- | 0.2- | 2007 12 05 | 703 | 1.0- | 0.9- |
| 2007 11 11 | 703 | 0.5- | 0.4+ | 2007 11 18 | 703 | 0.0  | 0.5+ | 2007 12 05 | 703 | 0.5- | 1.0- |

**2007 VB<sub>299</sub> = 2004 GK<sub>16</sub> = 2006 WS<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 318.97859  |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.17296712 | $\omega$ | 293.89168 | -0.24448747 | -0.96842983 |          |   |
| <i>a</i> | 3.1902668  | $\Omega$ | 169.88830 | +0.95953514 | -0.24886445 |          |   |
| <i>e</i> | 0.0690458  | <i>i</i> | 16.09672  | +0.13970750 | +0.01449621 |          |   |
| <i>P</i> | 5.70       | <i>H</i> | 14.9      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1992 03 02 | 809 | 0.5+ | 0.8+ | 2006 10 20 | G96 | 0.1+ | 0.2+ | 2007 11 20 | 703 | 0.2-  | 0.8+  |
| 1992 03 08 | 809 | 0.8- | 0.7- | 2006 10 20 | G96 | 0.1- | 0.2- | 2007 11 20 | 703 | 0.1+  | 0.8+  |
| 2001 10 23 | 644 | 0.6+ | 0.6+ | 2006 11 17 | G96 | 0.4+ | 0.2- | 2007 11 20 | 703 | (1.7- | 1.1+) |
| 2001 10 23 | 644 | 0.0  | 0.6+ | 2006 11 17 | G96 | 0.5- | 0.1+ | 2007 11 20 | 703 | 0.3+  | 0.5+  |
| 2001 10 23 | 644 | 0.0  | 0.5+ | 2006 11 17 | G96 | 0.4- | 0.7+ | 2007 11 20 | 703 | 0.1-  | 0.0   |
| 2004 04 10 | 644 | 0.5+ | 0.6+ | 2006 11 17 | G96 | 0.7- | 0.2- | 2007 11 20 | 703 | 0.1-  | 0.1-  |
| 2004 04 10 | 644 | 0.5+ | 0.7+ | 2006 11 21 | G96 | 0.0  | 0.0  | 2007 11 20 | 703 | 0.4+  | 0.0   |
| 2004 04 10 | 644 | 0.4+ | 0.7+ | 2006 11 21 | G96 | 0.2+ | 0.0  | 2007 11 20 | 703 | 0.2-  | 0.3-  |
| 2004 04 15 | 644 | 0.2- | 0.7+ | 2006 11 21 | G96 | 0.2+ | 0.3- | 2007 11 21 | G96 | 0.4+  | 0.2+  |
| 2004 04 15 | 644 | 0.0  | 0.7+ | 2006 11 21 | G96 | 0.3- | 0.2- | 2007 11 21 | G96 | 0.1+  | 0.0   |
| 2004 04 15 | 644 | 0.2- | 0.3+ | 2007 10 19 | G96 | 0.1- | 0.5- | 2007 11 21 | G96 | 0.4+  | 0.1+  |
| 2006 08 24 | 644 | 0.3- | 0.6+ | 2007 10 19 | G96 | 0.2- | 0.5- | 2007 11 21 | G96 | 0.1+  | 0.0   |
| 2006 08 24 | 644 | 0.0  | 0.5+ | 2007 10 19 | G96 | 0.4- | 0.6- | 2007 12 05 | 703 | 0.5-  | 0.5+  |
| 2006 08 24 | 644 | 0.1+ | 0.7+ | 2007 10 19 | G96 | 0.1- | 0.3- | 2007 12 05 | 703 | 1.1-  | 0.7-  |
| 2006 09 17 | 703 | 0.8+ | 0.1+ | 2007 11 11 | 703 | 1.0+ | 0.4- | 2007 12 05 | 703 | 0.5+  | 0.5-  |
| 2006 09 17 | 703 | 0.4- | 0.5- | 2007 11 11 | 703 | 0.1+ | 1.1+ | 2007 12 05 | 703 | 1.1-  | 0.1-  |
| 2006 10 20 | G96 | 0.7- | 0.2+ | 2007 11 11 | 703 | 0.6- | 0.2+ |            |     |       |       |
| 2006 10 20 | G96 | 0.2+ | 0.1- | 2007 11 11 | 703 | 0.7+ | 1.2+ |            |     |       |       |

**2007 VS<sub>299</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 28.27432   |          | (2000.0)  | <b>P</b>    |             | <b>Q</b> |   |
|----------|------------|----------|-----------|-------------|-------------|----------|---|
| <i>n</i> | 0.23098458 | $\omega$ | 233.69829 | +0.97050310 | -0.15551138 |          |   |
| <i>a</i> | 2.6307569  | $\Omega$ | 134.41916 | +0.19472668 | +0.95616881 |          |   |
| <i>e</i> | 0.2337217  | <i>i</i> | 14.94763  | -0.14214517 | +0.24810767 |          |   |
| <i>P</i> | 4.27       | <i>H</i> | 15.8      | <i>G</i>    | 0.15        | <i>U</i> | 2 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 01 28 | 691 | 0.0  | 0.0  | 2007 09 13 | 703 | 0.2+ | 0.6+ | 2007 11 12 | 703 | 0.6+  | 0.2-  |
| 1996 01 28 | 691 | 0.2+ | 0.1- | 2007 09 26 | G96 | 0.1+ | 0.9- | 2007 11 12 | 703 | 0.7+  | 0.1-  |
| 1996 01 28 | 691 | 0.3- | 0.1- | 2007 09 26 | G96 | 0.3+ | 0.9- | 2007 11 12 | 703 | 0.1+  | 0.4+  |
| 1998 08 27 | 699 | 0.8- | 1.2+ | 2007 09 26 | G96 | 0.0  | 0.9- | 2007 11 20 | 703 | 1.0-  | 0.2-  |
| 1998 08 27 | 699 | 0.2+ | 0.9+ | 2007 09 26 | G96 | 0.1+ | 0.8- | 2007 11 20 | 703 | 0.4-  | 0.5+  |
| 1998 08 27 | 699 | 0.5+ | 0.4+ | 2007 10 10 | 703 | 0.6+ | 0.8+ | 2007 11 20 | 703 | 0.8-  | 0.6-  |
| 2000 02 05 | 695 | 0.3+ | 0.7+ | 2007 10 10 | 703 | 0.1- | 0.4- | 2007 11 20 | 703 | (2.4- | 0.9+) |
| 2000 02 05 | 695 | 0.3+ | 0.7+ | 2007 10 10 | 703 | 0.2- | 0.2- | 2007 11 29 | H06 | 0.2+  | 0.2-  |
| 2003 12 18 | 291 | 0.0  | 0.1+ | 2007 10 10 | 703 | 0.5- | 0.2- | 2007 11 29 | H06 | 0.3-  | 0.0   |
| 2003 12 18 | 291 | 0.1- | 0.3+ | 2007 10 18 | 703 | 0.8+ | 0.1- | 2007 11 29 | H06 | 0.1+  | 0.2+  |
| 2003 12 18 | 291 | 0.1- | 0.2+ | 2007 10 18 | 703 | 0.5+ | 0.9+ | 2007 12 03 | H06 | 0.3-  | 0.0   |

2007 DEC. 24

M.P.O. 130049

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 09 13 | 703 | 0.0  | 0.1− | 2007 10 18 | 703 | 0.2+ | 0.1+ | 2007 12 03 | H06 | 0.0  | 0.1− |
| 2007 09 13 | 703 | 0.4+ | 0.2+ | 2007 10 18 | 703 | 0.4+ | 0.4+ | 2007 12 03 | H06 | 0.1− | 0.2− |
| 2007 09 13 | 703 | 0.7− | 1.4− | 2007 11 12 | 703 | 0.1+ | 0.6+ |            |     |      |      |

2007 VV<sub>299</sub> = 2004 FJ<sub>21</sub>

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 3.56039    |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.22496685 | $\omega$ | 98.33495  | +0.11192842 | −0.99214109 |          |   |
| <i>a</i>                                | 2.6774643  | $\Omega$ | 344.89207 | +0.80620751 | +0.12356845 |          |   |
| <i>e</i>                                | 0.2395365  | <i>i</i> | 12.39122  | +0.58094877 | +0.01966951 |          |   |
| <i>P</i>                                | 4.38       | <i>H</i> | 16.3      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2002 09 13 | 644 | 0.3−  | 0.8+  | 2004 03 18 | 704 | 0.7+ | 0.0  | 2007 11 19 | 699 | 0.4+  | 0.0   |
| 2002 09 13 | 644 | 0.5−  | 0.9+  | 2004 03 18 | 704 | 1.2+ | 0.5+ | 2007 11 20 | 703 | 0.7−  | 0.7+  |
| 2002 09 13 | 644 | 0.8−  | 0.8+  | 2004 03 20 | 704 | 0.6− | 0.1+ | 2007 11 20 | 703 | 1.2−  | 1.0−  |
| 2004 03 16 | 703 | 0.6+  | 0.4+  | 2004 03 20 | 704 | 0.1+ | 0.4+ | 2007 11 20 | 703 | 0.7+  | 0.2+  |
| 2004 03 16 | 703 | 0.1+  | 1.1+  | 2004 03 20 | 704 | 0.2+ | 0.3− | 2007 11 20 | 703 | 0.6−  | 0.3+  |
| 2004 03 16 | 703 | 0.1+  | 0.1+  | 2007 11 12 | 703 | 0.1+ | 0.8+ | 2007 12 03 | 704 | 1.0+  | 1.0−  |
| 2004 03 16 | 703 | 1.3+  | 0.7+  | 2007 11 12 | 703 | 0.4+ | 0.9+ | 2007 12 03 | 704 | (1.2+ | 1.8−) |
| 2004 03 16 | 691 | 0.2−  | 0.0   | 2007 11 12 | 703 | 1.2− | 0.3− | 2007 12 03 | 704 | 0.8+  | 1.0−  |
| 2004 03 16 | 691 | 0.2−  | 0.1−  | 2007 11 12 | 703 | 0.9− | 0.1+ | 2007 12 03 | 704 | 0.2+  | 0.1+  |
| 2004 03 16 | 691 | 0.3−  | 0.0   | 2007 11 19 | 699 | 0.7+ | 0.1+ | 2007 12 03 | 704 | 0.7+  | 1.0−  |
| 2004 03 18 | 704 | (1.7+ | 0.3+) | 2007 11 19 | 699 | 0.2− | 0.5+ |            |     |       |       |
| 2004 03 18 | 704 | 0.7+  | 0.3+  | 2007 11 19 | 699 | 0.6− | 0.8+ |            |     |       |       |

2007 VN<sub>300</sub> = 2000 WV<sub>165</sub> = 2004 YM<sub>11</sub>

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 69.13796   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.28120320 | $\omega$ | 339.32402 | +0.72822457 | +0.68528198 |          |   |
| <i>a</i>                                | 2.3073982  | $\Omega$ | 337.41076 | −0.62552138 | +0.65935797 |          |   |
| <i>e</i>                                | 0.2181659  | <i>i</i> | 1.31396   | −0.28002140 | +0.30925017 |          |   |
| <i>P</i>                                | 3.50       | <i>H</i> | 17.2      | <i>G</i>    | 0.15        | <i>U</i> | 1 |

Residuals in seconds of arc

|            |     |      |       |            |     |      |      |            |     |      |      |
|------------|-----|------|-------|------------|-----|------|------|------------|-----|------|------|
| 1998 01 02 | 691 | 0.2− | 0.2−  | 2004 12 18 | G96 | 0.4− | 0.2− | 2007 10 30 | 691 | 0.3− | 0.5+ |
| 1998 01 02 | 691 | 0.0  | 0.5−  | 2004 12 18 | G96 | 0.1− | 0.1+ | 2007 10 30 | 691 | 0.5− | 0.3+ |
| 1998 01 02 | 691 | 0.2+ | 0.2−  | 2004 12 19 | G96 | 0.8− | 0.7− | 2007 11 05 | D29 | 0.8+ | 0.1+ |
| 2000 11 24 | 699 | 0.1+ | 0.2−  | 2004 12 19 | G96 | 0.8− | 0.2− | 2007 11 05 | D29 | 0.2+ | 0.1+ |
| 2000 11 24 | 699 | 2.2− | 0.4+  | 2004 12 19 | G96 | 0.1+ | 0.2+ | 2007 11 05 | D29 | 0.1+ | 0.3+ |
| 2000 11 24 | 699 | 0.3− | 1.3+  | 2004 12 19 | G96 | 0.3− | 0.5− | 2007 11 05 | D29 | 0.3− | 0.4− |
| 2000 11 24 | 699 | 0.8− | 0.3+  | 2005 01 18 | 291 | 0.4+ | 0.1+ | 2007 11 14 | 734 | 0.2− | 0.6+ |
| 2000 11 26 | 704 | 1.7− | 0.1+  | 2005 01 18 | 291 | 0.7+ | 0.2+ | 2007 11 14 | 734 | 0.2+ | 0.5+ |
| 2000 11 26 | 704 | 0.0  | 0.3+  | 2005 01 18 | 291 | 0.5+ | 0.3− | 2007 11 14 | 734 | 1.2+ | 0.2− |
| 2000 11 26 | 704 | 0.4− | 0.6+  | 2006 03 26 | G96 | 1.0− | 0.3+ | 2007 11 14 | 691 | 0.4− | 0.3+ |
| 2000 12 16 | 691 | 0.4+ | 0.3−  | 2006 03 26 | G96 | 0.0  | 0.0  | 2007 11 14 | 734 | 0.9+ | 0.7− |
| 2000 12 16 | 691 | 0.1+ | 0.3−  | 2006 03 26 | G96 | 0.4− | 0.1+ | 2007 11 14 | 691 | 0.3− | 0.6+ |
| 2000 12 16 | 691 | 0.2+ | 0.2−  | 2006 03 26 | G96 | 0.6− | 0.2+ | 2007 11 14 | 691 | 0.2+ | 2.6− |
| 2002 02 13 | 691 | 0.0  | 0.2+  | 2007 09 15 | G96 | 0.3+ | 0.1+ | 2007 11 17 | 734 | 0.3− | 0.4+ |
| 2002 02 13 | 691 | 0.1+ | 0.3+  | 2007 09 15 | G96 | 0.0  | 0.2+ | 2007 11 17 | 734 | 0.5+ | 0.2+ |
| 2002 02 13 | 691 | 0.1− | 0.3+  | 2007 09 15 | G96 | 0.6+ | 0.2+ | 2007 11 17 | 734 | 0.0  | 0.1− |
| 2003 08 22 | 608 | 0.5+ | 0.2+  | 2007 09 15 | G96 | 0.3+ | 0.2+ | 2007 11 17 | 734 | 0.2+ | 0.2+ |
| 2003 08 22 | 608 | 0.8+ | 1.2−  | 2007 10 14 | G96 | 0.6+ | 0.2+ | 2007 11 29 | 734 | 0.7+ | 0.8+ |
| 2003 08 22 | 608 | 0.3+ | 0.0   | 2007 10 14 | G96 | 0.3+ | 0.2+ | 2007 11 29 | 734 | 0.0  | 0.2+ |
| 2004 12 18 | G96 | (0.0 | 1.6+) | 2007 10 14 | G96 | 0.0  | 0.2+ | 2007 11 29 | 734 | 0.3+ | 0.4+ |
| 2004 12 18 | G96 | 0.1+ | 0.2−  | 2007 10 30 | 691 | 0.6− | 0.5+ |            |     |      |      |

2007 WR = 2005 LL<sub>47</sub>

|                                         |            |          |          |             |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
| <i>M</i>                                | 279.42689  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.20374294 | $\omega$ | 64.56081 | −0.71398829 | −0.69827444 |          |   |
| <i>a</i>                                | 2.8603181  | $\Omega$ | 71.10256 | +0.62132409 | −0.66568138 |          |   |
| <i>e</i>                                | 0.0100777  | <i>i</i> | 3.10934  | +0.32276476 | −0.26321305 |          |   |
| <i>P</i>                                | 4.84       | <i>H</i> | 15.9     | <i>G</i>    | 0.15        | <i>U</i> | 4 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 04 07 | G96 | 0.3+ | 0.0  | 2005 06 15 | 691 | 0.1−  | 0.2−  | 2007 11 17 | J87 | 0.7− | 0.2− |
| 2005 04 07 | G96 | 0.4+ | 0.1+ | 2005 06 15 | 691 | 0.0   | 0.0   | 2007 11 17 | J87 | 0.5− | 0.1− |
| 2005 04 07 | G96 | 0.3+ | 0.1+ | 2005 06 15 | 691 | 0.2−  | 0.4+  | 2007 11 17 | J87 | 0.0  | 0.2− |
| 2005 04 07 | G96 | 0.1+ | 0.4− | 2007 11 14 | 691 | 0.7+  | 0.2+  | 2007 11 17 | J87 | 0.4+ | 0.2− |
| 2005 06 06 | 691 | 0.1+ | 0.4+ | 2007 11 14 | 691 | 0.5−  | 0.1+  | 2007 11 17 | J87 | 0.1+ | 0.2− |
| 2005 06 06 | 691 | 0.3+ | 0.1− | 2007 11 14 | 691 | 0.5−  | 0.0   | 2007 12 04 | G96 | 0.3+ | 0.6+ |
| 2005 06 06 | 691 | 0.0  | 0.6+ | 2007 11 14 | 704 | 0.4+  | 0.4+  | 2007 12 04 | G96 | 0.2+ | 0.3+ |
| 2005 06 14 | G96 | 0.1+ | 0.3+ | 2007 11 14 | 704 | 0.2−  | 1.2+  | 2007 12 04 | G96 | 0.2+ | 0.3+ |
| 2005 06 14 | G96 | 1.0+ | 0.3+ | 2007 11 14 | 704 | 0.3+  | 1.8+  | 2007 12 04 | G96 | 0.2+ | 0.1+ |
| 2005 06 14 | G96 | 1.0− | 0.3− | 2007 11 14 | 704 | (1.1− | 1.9+) |            |     |      |      |
| 2005 06 14 | G96 | 0.3+ | 0.9+ | 2007 11 17 | J87 | 0.6−  | 0.1−  |            |     |      |      |

2007 WU = 2005 JT<sub>72</sub>

|                                         |            |          |           |             |             |          |   |
|-----------------------------------------|------------|----------|-----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |           | MPC         |             |          |   |
| <i>M</i>                                | 31.32554   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.18669370 | $\omega$ | 312.12798 | +0.96098496 | −0.21512871 |          |   |
| <i>a</i>                                | 3.0319098  | $\Omega$ | 60.98306  | +0.27336304 | +0.83455652 |          |   |
| <i>e</i>                                | 0.1143977  | <i>i</i> | 11.46779  | −0.04219667 | +0.50718345 |          |   |
| <i>P</i>                                | 5.28       | <i>H</i> | 16.1      | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 2005 05 08 | 691 | 0.4+ | 0.0  | 2007 11 14 | 704 | (0.2− | 1.8+) | 2007 11 19 | 691 | 0.1− | 0.1+ |
| 2005 05 08 | 691 | 0.0  | 0.2+ | 2007 11 14 | 704 | 0.7+  | 0.7+  | 2007 11 19 | 691 | 0.2− | 0.2− |
| 2005 05 08 | 691 | 0.2− | 0.2+ | 2007 11 14 | 704 | 0.1−  | 0.1−  | 2007 12 04 | G96 | 0.2− | 0.3− |
| 2005 05 11 | G96 | 0.7− | 0.6− | 2007 11 17 | J75 | 0.7+  | 0.1+  | 2007 12 04 | G96 | 0.4+ | 0.2− |
| 2005 05 11 | G96 | 0.2− | 0.2− | 2007 11 17 | J75 | 0.7+  | 0.1+  | 2007 12 04 | G96 | 0.2− | 0.2− |
| 2005 05 11 | G96 | 0.0  | 0.4− | 2007 11 17 | J75 | 0.8+  | 0.0   | 2007 12 04 | G96 | 0.1− | 0.3− |
| 2005 05 11 | G96 | 0.2− | 0.2− | 2007 11 17 | 620 | 0.8+  | 0.3+  | 2007 12 05 | H07 | 0.1+ | 0.1+ |
| 2007 10 31 | 691 | 0.3− | 0.0  | 2007 11 18 | 620 | 0.7−  | 0.0   | 2007 12 05 | H07 | 0.7− | 0.2+ |
| 2007 10 31 | 691 | 0.2− | 0.2+ | 2007 11 18 | 620 | 1.1−  | 0.4+  | 2007 12 05 | H07 | 0.4+ | 0.2− |
| 2007 10 31 | 691 | 0.1− | 0.6+ | 2007 11 19 | 620 | 0.1−  | 0.4−  | 2007 12 05 | 704 | 0.6− | 0.5+ |
| 2007 11 08 | 691 | 0.7+ | 0.9− | 2007 11 19 | 620 | 0.3−  | 0.3−  | 2007 12 05 | 704 | 0.3+ | 0.2+ |
| 2007 11 08 | 691 | 0.1− | 0.1− | 2007 11 19 | 620 | 0.6−  | 0.6−  | 2007 12 05 | 704 | 0.8+ | 1.4+ |
| 2007 11 08 | 691 | 0.1+ | 0.1− | 2007 11 19 | 691 | 0.1−  | 0.0   | 2007 12 05 | 704 | 0.2+ | 0.2+ |

2007 WG<sub>1</sub> = 2007 TB<sub>335</sub> = 2007 VS<sub>243</sub> = 2003 UN<sub>9</sub>

|                                         |            |          |          |             |             |          |   |
|-----------------------------------------|------------|----------|----------|-------------|-------------|----------|---|
| Epoch 2007 Oct. 27.0 TT = JDT 2454400.5 |            |          |          | MPC         |             |          |   |
| <i>M</i>                                | 354.07548  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |          |   |
| <i>n</i>                                | 0.25582058 | $\omega$ | 49.58578 | +0.58610230 | −0.81023576 |          |   |
| <i>a</i>                                | 2.4576068  | $\Omega$ | 4.53403  | +0.73770580 | +0.53289348 |          |   |
| <i>e</i>                                | 0.1711609  | <i>i</i> | 1.05220  | +0.33507350 | +0.24401343 |          |   |
| <i>P</i>                                | 3.85       | <i>H</i> | 18.0     | <i>G</i>    | 0.15        | <i>U</i> | 3 |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1999 10 14 | 691 | 0.3+ | 0.1− | 2003 10 21 | 644 | 0.2+  | 0.4+  | 2007 11 16 | A77 | 0.3+  | 0.0   |
| 1999 10 14 | 691 | 0.2− | 0.0  | 2007 10 11 | 691 | 0.1+  | 0.4−  | 2007 11 17 | A77 | 0.1+  | 0.1+  |
| 1999 10 14 | 691 | 0.0  | 0.2− | 2007 10 11 | 691 | 0.3−  | 0.2−  | 2007 11 18 | A77 | 1.5+  | 0.7+  |
| 2003 09 22 | 291 | 0.0  | 0.2+ | 2007 10 11 | 691 | 0.1−  | 0.2−  | 2007 11 18 | A77 | 1.0+  | 0.6+  |
| 2003 09 22 | 291 | 0.1− | 0.2+ | 2007 10 31 | G96 | 0.2+  | 0.4−  | 2007 11 18 | 704 | (1.5+ | 1.8+) |
| 2003 09 22 | 291 | 0.1+ | 0.2− | 2007 10 31 | G96 | 0.2+  | 0.6−  | 2007 11 18 | 704 | (0.1+ | 1.7+) |
| 2003 10 16 | 691 | 0.1− | 0.1+ | 2007 10 31 | G96 | 0.1+  | 0.4−  | 2007 11 18 | 704 | 0.3−  | 0.6+  |
| 2003 10 16 | 691 | 0.2− | 0.2− | 2007 10 31 | G96 | 0.0   | 0.4−  | 2007 11 19 | 691 | 0.1−  | 0.6−  |
| 2003 10 16 | 691 | 0.1+ | 0.1+ | 2007 11 12 | A77 | (1.8− | 0.6−) | 2007 11 19 | 691 | 0.1+  | 0.3−  |
| 2003 10 20 | 673 | 0.1+ | 0.2+ | 2007 11 12 | A77 | 0.4−  | 0.3+  | 2007 11 19 | 691 | 0.4−  | 0.1+  |
| 2003 10 20 | 673 | 0.3+ | 0.5+ | 2007 11 12 | A77 | 1.1+  | 0.2−  | 2007 12 05 | 691 | 0.3−  | 0.3−  |
| 2003 10 20 | 673 | 0.1+ | 0.0  | 2007 11 15 | 704 | (2.0+ | 0.5+) | 2007 12 05 | 691 | 0.0   | 0.1−  |
| 2003 10 21 | 673 | 0.6− | 0.1+ | 2007 11 15 | 704 | 1.4+  | 0.2+  | 2007 12 05 | 691 | 0.1−  | 0.2−  |
| 2003 10 21 | 673 | 0.4− | 0.5+ | 2007 11 15 | 704 | 0.0   | 0.3+  | 2007 12 05 | 691 | 0.1+  | 0.1+  |
| 2003 10 21 | 673 | 0.7− | 0.1+ | 2007 11 15 | 704 | 1.3+  | 0.9+  | 2007 12 05 | 691 | 0.1+  | 0.2+  |
| 2003 10 21 | 644 | 0.3+ | 0.4+ | 2007 11 16 | A77 | 0.4+  | 0.1+  | 2007 12 05 | 691 | 0.9−  | 0.7+  |
| 2003 10 21 | 644 | 0.3+ | 0.5+ | 2007 11 16 | A77 | 0.3+  | 0.0   |            |     |       |       |

**2007 WW<sub>1</sub> = 1996 BH<sub>8</sub> = 2004 YB**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 75.29190   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.31565014 | $\omega$ 30.47806  | +0.74655489   | +0.65628204 |
| <i>a</i> | 2.1363155  | $\Omega$ 288.09098 | −0.63127416   | +0.64683302 |
| <i>e</i> | 0.2177477  | <i>i</i> 6.60360   | −0.21011600   | +0.38845969 |
| <i>P</i> | 3.12       | <i>H</i> 16.6      | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 01 19 | 691 | 0.3+ | 0.2+ | 2004 12 17 | 704 | 0.7− | 0.4+ | 2007 11 20 | 704 | 0.5+  | 0.2−  |
| 1996 01 19 | 691 | 0.3− | 0.2− | 2004 12 17 | 704 | 0.3+ | 0.3− | 2007 11 20 | 704 | 0.2+  | 0.4−  |
| 1996 01 19 | 691 | 0.2+ | 0.1− | 2004 12 17 | 704 | 0.1+ | 1.1+ | 2007 11 20 | 704 | (2.7+ | 1.0−) |
| 1996 01 27 | 691 | 0.0  | 0.2+ | 2004 12 18 | 448 | 0.3− | 0.3− | 2007 11 20 | 704 | 0.3+  | 0.2−  |
| 1996 01 27 | 691 | 0.2− | 0.0  | 2004 12 18 | 448 | 0.0  | 0.3− | 2007 12 13 | 704 | 0.1+  | 0.8+  |
| 1996 01 27 | 691 | 0.1+ | 0.1− | 2004 12 18 | 448 | 0.1+ | 0.1− | 2007 12 13 | 704 | (0.7+ | 2.2−) |
| 2004 12 16 | 704 | 0.5+ | 0.4+ | 2007 11 17 | 704 | 0.8− | 1.5− | 2007 12 13 | 704 | 0.0   | 0.6+  |
| 2004 12 16 | 704 | 0.7− | 0.2− | 2007 11 17 | 704 | 0.7− | 1.8− | 2007 12 13 | 704 | 0.3+  | 0.2+  |
| 2004 12 16 | 704 | 0.5+ | 0.9− | 2007 11 17 | 704 | 0.4− | 0.9− | 2007 12 13 | 704 | 0.7+  | 0.7+  |
| 2004 12 16 | 704 | 1.0− | 0.1− | 2007 11 17 | 704 | 1.0− | 0.6+ | 2007 12 15 | 704 | 0.7+  | 0.4+  |
| 2004 12 16 | 704 | 0.0  | 0.9− | 2007 11 17 | 704 | 0.1− | 0.7− | 2007 12 15 | 704 | 0.5+  | 0.1+  |
| 2004 12 17 | 704 | 0.3+ | 0.1+ | 2007 11 18 | 704 | 0.6− | 0.6+ | 2007 12 15 | 704 | 0.4+  | 0.3+  |
| 2004 12 17 | 704 | 0.3+ | 0.3− | 2007 11 18 | 704 | 0.2− | 0.7+ | 2007 12 15 | 704 | 0.4−  | 0.1−  |
| 2004 12 17 | 704 | 0.0  | 0.0  | 2007 11 18 | 704 | 0.1+ | 1.3+ | 2007 12 15 | 704 | 0.4−  | 0.5+  |
| 2004 12 17 | 704 | 0.5+ | 0.4− | 2007 11 18 | 704 | 0.1+ | 0.1+ |            |     |       |       |
| 2004 12 17 | 704 | 0.6+ | 0.4− | 2007 11 18 | 704 | 0.2+ | 0.8+ |            |     |       |       |

**2007 WX<sub>1</sub> = 2006 KK<sub>95</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 8.55370    | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.27885750 | $\omega$ 270.54236 | +0.80189677   | −0.58843374 |
| <i>a</i> | 2.3203197  | $\Omega$ 125.50801 | +0.58617338   | +0.74134650 |
| <i>e</i> | 0.2918325  | <i>i</i> 7.30292   | +0.11559559   | +0.32272450 |
| <i>P</i> | 3.53       | <i>H</i> 17.0      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1982 08 21 | 260 | 0.3+ | 0.4− | 2007 09 27 | G96 | 0.1+ | 0.3− | 2007 11 17 | H06 | 0.4+ | 0.2+ |
| 1982 08 21 | 260 | 0.1− | 0.2+ | 2007 09 27 | G96 | 0.0  | 0.2− | 2007 11 17 | H06 | 0.4− | 0.4− |
| 2001 01 16 | 621 | 0.9− | 0.1− | 2007 09 27 | G96 | 0.1− | 0.1− | 2007 11 17 | H06 | 0.1+ | 0.0  |
| 2001 01 16 | 621 | 0.1− | 0.2− | 2007 09 27 | G96 | 0.0  | 0.1+ | 2007 11 18 | H06 | 0.3− | 0.4+ |
| 2001 01 16 | 621 | 0.2− | 0.0  | 2007 10 09 | 703 | 0.4− | 0.2− | 2007 11 18 | H06 | 0.9− | 0.7− |
| 2001 01 16 | 621 | 0.7+ | 0.7− | 2007 10 09 | 703 | 0.2+ | 0.1+ | 2007 11 18 | H06 | 0.3+ | 0.3− |
| 2003 07 21 | 608 | 0.4− | 0.3− | 2007 10 09 | 703 | 0.5− | 0.2+ | 2007 11 20 | 703 | 0.0  | 0.3+ |
| 2003 07 21 | 608 | 0.6− | 0.2+ | 2007 10 09 | 703 | 0.5− | 0.6+ | 2007 11 20 | 703 | 0.8− | 1.2+ |
| 2003 07 21 | 608 | 0.1+ | 0.2− | 2007 11 14 | 699 | 0.6+ | 0.2+ | 2007 11 20 | 703 | 0.3− | 0.7+ |
| 2006 05 25 | G96 | 0.5− | 0.5+ | 2007 11 14 | 699 | 0.0  | 0.2+ | 2007 11 20 | 703 | 0.2+ | 0.2+ |
| 2006 05 25 | G96 | 0.6− | 0.1− | 2007 11 14 | 699 | 0.1+ | 0.8− | 2007 12 15 | 699 | 0.9+ | 0.2− |
| 2006 05 25 | G96 | 0.4− | 0.2+ | 2007 11 14 | 699 | 0.9+ | 0.4− | 2007 12 15 | 699 | 1.7+ | 1.2+ |
| 2006 05 25 | G96 | 0.0  | 0.1+ | 2007 11 15 | 703 | 0.2− | 0.5+ | 2007 12 15 | 699 | 0.2− | 0.3+ |
| 2006 05 30 | 691 | 0.6+ | 0.0  | 2007 11 15 | 703 | 0.3− | 0.1+ | 2007 12 15 | 699 | 0.5− | 0.6− |
| 2006 05 30 | 691 | 0.3+ | 0.2+ | 2007 11 15 | 703 | 0.3− | 0.4+ |            |     |      |      |
| 2006 05 30 | 691 | 0.2− | 0.4+ | 2007 11 15 | 703 | 0.2− | 0.3+ |            |     |      |      |

**2007 WE<sub>2</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 356.75518  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.17491634 | $\omega$ 179.11121 | +0.52073259   | −0.82484622 |
| <i>a</i> | 3.1665217  | $\Omega$ 239.47760 | +0.78168732   | +0.56434331 |
| <i>e</i> | 0.1814358  | <i>i</i> 14.80700  | +0.34322368   | −0.03384295 |
| <i>P</i> | 5.63       | <i>H</i> 15.8      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 29 | 644 | 0.5+ | 1.0+ | 2007 10 30 | 691 | 0.3− | 0.3+ | 2007 11 18 | 300 | 0.2+ | 0.4+ |
| 2001 09 29 | 644 | 0.0  | 0.5+ | 2007 10 30 | 691 | 0.0  | 0.2− | 2007 11 18 | 300 | 0.1+ | 0.1− |
| 2001 09 29 | 644 | 0.4+ | 0.8+ | 2007 10 30 | 691 | 0.3− | 0.2− | 2007 11 18 | 300 | 0.2− | 0.5+ |
| 2001 10 15 | 608 | 0.1+ | 1.3− | 2007 11 07 | 691 | 0.0  | 0.2+ | 2007 11 18 | 300 | 0.1+ | 1.1+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 10 15 | 608 | 0.4− | 0.8− | 2007 11 07 | 691 | 0.0  | 0.2− | 2007 12 03 | 703 | 0.3+ | 0.8− |
| 2001 10 15 | 608 | 0.1− | 0.8− | 2007 11 07 | 691 | 0.0  | 0.0  | 2007 12 03 | 703 | 0.0  | 0.2− |
| 2001 10 26 | 644 | 0.5− | 0.2+ | 2007 11 14 | 300 | 0.3+ | 0.8− | 2007 12 03 | 703 | 0.3+ | 0.3+ |
| 2001 10 26 | 644 | 0.1− | 0.2+ | 2007 11 14 | 300 | 0.6− | 1.2− | 2007 12 03 | 703 | 0.1− | 0.2− |
| 2001 10 26 | 644 | 0.1+ | 0.2+ | 2007 11 15 | 704 | 0.3− | 0.8+ | 2007 12 05 | 704 | 0.0  | 0.8− |
| 2007 10 14 | G96 | 0.5+ | 0.4− | 2007 11 15 | 704 | 0.8+ | 1.1+ | 2007 12 05 | 704 | 0.3+ | 0.1+ |
| 2007 10 14 | G96 | 0.0  | 0.1− | 2007 11 15 | 704 | 0.1− | 0.4+ | 2007 12 05 | 704 | 0.0  | 0.3− |
| 2007 10 14 | G96 | 0.2+ | 0.1− | 2007 11 18 | 300 | 0.3+ | 0.1− | 2007 12 05 | 704 | 0.1+ | 0.1+ |
| 2007 10 14 | G96 | 0.3+ | 0.1− | 2007 11 18 | 300 | 0.0  | 0.1− | 2007 12 05 | 704 | 0.3− | 0.7+ |

**2007 WR<sub>3</sub> = 2003 YY<sub>35</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 322.26158  | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.22426989 | $\omega$ 334.97271 | +0.08883713   | −0.96651583 |
| <i>a</i> | 2.6830086  | $\Omega$ 109.17100 | +0.95137417   | +0.01076659 |
| <i>e</i> | 0.2246359  | <i>i</i> 14.76608  | +0.29494940   | +0.25638103 |
| <i>P</i> | 4.39       | <i>H</i> 15.7      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2001 06 16 | 691 | 0.3+  | 0.2−  | 2003 12 22 | 704 | 0.4+ | 0.4+ | 2007 11 04 | 703 | 0.8− | 0.2+ |
| 2001 06 16 | 691 | 0.4−  | 0.3+  | 2003 12 22 | 704 | 0.1+ | 0.3+ | 2007 11 15 | 703 | 0.6+ | 1.0+ |
| 2001 06 16 | 691 | 0.2+  | 0.1−  | 2003 12 22 | 704 | 0.0  | 0.1+ | 2007 11 15 | 703 | 0.8+ | 0.1+ |
| 2003 12 19 | 704 | 1.2−  | 0.3+  | 2007 09 14 | 703 | 0.1− | 0.3− | 2007 11 15 | 703 | 0.1− | 0.5+ |
| 2003 12 19 | 704 | 0.4−  | 0.7−  | 2007 09 14 | 703 | 0.6+ | 0.3+ | 2007 11 15 | 703 | 0.2+ | 0.1+ |
| 2003 12 19 | 704 | 0.1−  | 1.1−  | 2007 09 14 | 703 | 0.7− | 0.5+ | 2007 11 17 | 620 | 1.1− | 0.6− |
| 2003 12 19 | 704 | 0.8−  | 0.2−  | 2007 09 14 | 703 | 0.1+ | 0.5+ | 2007 11 17 | 620 | 0.5− | 0.1− |
| 2003 12 20 | 704 | 0.3+  | 0.1+  | 2007 10 11 | 703 | 0.0  | 0.0  | 2007 11 17 | 620 | 0.4− | 0.6+ |
| 2003 12 20 | 704 | (1.6+ | 0.2+) | 2007 10 11 | 703 | 0.7+ | 0.3− | 2007 11 18 | 620 | 0.2+ | 0.4− |
| 2003 12 20 | 704 | 0.4+  | 0.4+  | 2007 10 11 | 703 | 0.1− | 0.0  | 2007 11 18 | 620 | 0.6+ | 0.3− |
| 2003 12 20 | 704 | 0.8+  | 0.1+  | 2007 10 11 | 703 | 0.4− | 0.7− | 2007 11 18 | 620 | 0.7+ | 0.4− |
| 2003 12 20 | 704 | 0.0   | 0.3+  | 2007 11 04 | 703 | 0.6− | 0.4+ | 2007 12 05 | 620 | 0.6+ | 0.4+ |
| 2003 12 22 | 704 | 0.4+  | 0.2+  | 2007 11 04 | 703 | 0.6− | 0.3− | 2007 12 05 | 620 | 0.3+ | 0.2− |
| 2003 12 22 | 704 | 0.1−  | 0.1+  | 2007 11 04 | 703 | 0.2+ | 0.5− |            |     |      |      |

**2007 WE<sub>4</sub> = 2006 GL<sub>29</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 52.30623   | (2000.0)           | <b>P</b>      | <b>Q</b>    |
|----------|------------|--------------------|---------------|-------------|
| <i>n</i> | 0.30325244 | $\omega$ 313.78711 | +0.95823244   | +0.27791018 |
| <i>a</i> | 2.1941510  | $\Omega$ 30.26470  | −0.20847988   | +0.84036241 |
| <i>e</i> | 0.1730571  | <i>i</i> 7.69697   | −0.19577213   | +0.46535681 |
| <i>P</i> | 3.25       | <i>H</i> 17.2      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1993 04 25 | 691 | 0.2− | 0.8− | 2006 05 03 | G96 | 0.4− | 0.0  | 2007 11 18 | 704 | 0.3+  | 0.6+  |
| 1993 04 25 | 691 | 0.1− | 0.1− | 2006 05 03 | G96 | 0.1− | 0.2+ | 2007 11 19 | 691 | 0.2+  | 0.9−  |
| 1993 04 25 | 691 | 0.4− | 0.5− | 2006 05 03 | G96 | 0.2− | 0.1+ | 2007 11 19 | 691 | 0.1+  | 0.0   |
| 2006 03 25 | 691 | 0.2+ | 0.1− | 2006 05 03 | G96 | 0.5− | 0.1+ | 2007 11 19 | 691 | 0.1+  | 0.1−  |
| 2006 03 25 | 691 | 0.1+ | 0.2− | 2007 09 15 | G96 | 0.1− | 0.0  | 2007 11 20 | 704 | 0.4−  | 0.8+  |
| 2006 03 25 | 691 | 0.1− | 0.3− | 2007 09 15 | G96 | 0.2− | 0.2− | 2007 11 20 | 704 | 1.5−  | 0.1−  |
| 2006 04 02 | 691 | 0.1− | 0.4+ | 2007 09 15 | G96 | 0.1− | 0.0  | 2007 11 20 | 704 | (1.7− | 1.2+) |
| 2006 04 02 | 691 | 0.4+ | 0.2+ | 2007 09 15 | G96 | 0.1− | 0.2− | 2007 11 20 | 704 | 0.9−  | 0.1+  |
| 2006 04 02 | 691 | 0.0  | 0.2+ | 2007 11 18 | 704 | 0.3+ | 0.4+ | 2007 12 04 | 703 | 0.3+  | 0.1+  |
| 2006 04 07 | 691 | 0.3+ | 0.2+ | 2007 11 18 | 704 | 0.6+ | 0.1+ | 2007 12 04 | 703 | 0.0   | 0.1−  |
| 2006 04 07 | 691 | 0.2+ | 0.2+ | 2007 11 18 | 704 | 0.2+ | 0.4+ | 2007 12 04 | 703 | 0.2−  | 0.6+  |
| 2006 04 07 | 691 | 0.0  | 0.5+ | 2007 11 18 | 704 | 0.2+ | 0.4+ |            |     |       |       |

**2007 WM<sub>4</sub> = 2006 OK<sub>6</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| <i>M</i> | 39.76552   | (2000.0)           | <b>P</b>    | <b>Q</b>    |
|----------|------------|--------------------|-------------|-------------|
| <i>n</i> | 0.23419894 | $\omega$ 280.16643 | +0.63678075 | −0.64439822 |
| <i>a</i> | 2.6066303  | $\Omega$ 121.45869 | +0.74162359 | +0.66212076 |
| <i>e</i> | 0.2895995  | <i>i</i> 29.75863  | −0.21096143 | +0.382      |



## Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2006 06 19 691 0.1+ 0.2- | 2006 07 22 G96 0.2- 0.3+ | 2007 11 20 G96 0.6+ 0.2- |
| 2006 06 19 691 0.1+ 0.4+ | 2006 07 22 G96 0.2+ 0.1+ | 2007 11 20 G96 1.1+ 0.2+ |
| 2006 06 19 691 0.0 0.2-  | 2006 07 22 G96 0.0 0.1-  | 2007 11 20 G96 0.0 0.1-  |
| 2006 07 21 G96 0.1- 0.0  | 2006 07 22 G96 0.2+ 0.6+ | 2007 11 21 G96 0.0 0.2-  |
| 2006 07 21 G96 0.1+ 0.0  | 2006 07 22 G96 0.0 0.1-  | 2007 11 21 G96 0.2+ 0.3- |
| 2006 07 21 G96 0.1- 0.2+ | 2007 11 19 G96 0.7+ 0.2+ | 2007 11 21 G96 0.2- 0.4- |
| 2006 07 21 G96 0.4- 0.1+ | 2007 11 19 G96 0.2- 0.1- | 2007 11 21 G96 0.5- 0.6- |
| 2006 07 22 G96 0.3+ 0.2- | 2007 11 19 G96 0.0 0.1-  | 2007 11 21 691 0.0 0.0   |
| 2006 07 22 G96 0.1- 0.3- | 2007 11 19 G96 0.2+ 0.1+ | 2007 11 21 691 0.2- 0.1+ |
| 2006 07 22 G96 0.0 0.4-  | 2007 11 19 G96 0.7- 0.6+ | 2007 11 21 691 0.1- 0.1+ |
| 2006 07 22 G96 0.4- 0.3- | 2007 11 19 G96 0.0 0.2+  | 2007 12 04 G96 0.5+ 0.1- |
| 2006 07 22 G96 0.1- 0.2+ | 2007 11 19 G96 0.1+ 0.3+ | 2007 12 04 G96 0.4+ 0.3+ |
| 2006 07 22 G96 0.3- 0.0  | 2007 11 19 G96 0.4- 0.2- | 2007 12 04 G96 0.6- 0.1+ |
| 2006 07 22 G96 0.1+ 0.4+ | 2007 11 20 G96 0.1- 0.1+ | 2007 12 04 G96 0.0 0.3-  |

2007 WJ<sub>5</sub> = 2006 JD<sub>68</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 26.23968   |          | (2000.0)  | $P$         | $Q$         |
| $n$ | 0.26605417 | $\omega$ | 306.60830 | +0.98038946 | -0.18975650 |
| $a$ | 2.3941756  | $\Omega$ | 64.38491  | +0.19434604 | +0.88624227 |
| $e$ | 0.2111647  | $i$      | 3.38157   | +0.03265147 | +0.42257202 |
| $P$ | 3.70       | $H$      | 17.8      | $G$ 0.15    | $U$ 4       |

## Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2006 05 01 695 0.4+ 0.5+ | 2007 11 07 691 0.2+ 0.0  | 2007 11 20 300 0.4+ 0.2- |
| 2006 05 02 695 0.2- 0.3+ | 2007 11 07 691 0.2+ 0.0  | 2007 11 20 300 0.7+ 0.0  |
| 2006 05 02 695 0.0 0.4+  | 2007 11 07 691 0.1+ 0.2- | 2007 11 20 300 0.1+ 1.0- |
| 2007 10 15 G96 0.2+ 0.1- | 2007 11 18 691 0.1- 0.1+ | 2007 12 04 G96 0.5- 0.5- |
| 2007 10 15 G96 0.6+ 0.2- | 2007 11 18 691 0.1- 0.1- | 2007 12 04 G96 0.3- 0.4- |
| 2007 10 15 G96 0.3+ 0.0  | 2007 11 18 691 0.1- 0.1+ | 2007 12 04 G96 0.5- 0.4- |
| 2007 10 15 G96 0.1+ 0.1+ | 2007 11 18 300 1.0+ 0.8+ | 2007 12 04 G96 0.4- 0.3- |
| 2007 10 30 691 0.1+ 0.1- | 2007 11 18 300 0.6+ 1.3+ | 2007 12 05 704 0.4- 1.1+ |
| 2007 10 30 691 0.1+ 0.2+ | 2007 11 18 300 0.3+ 0.5+ | 2007 12 05 704 0.5+ 0.5+ |
| 2007 10 30 691 1.7- 0.2- | 2007 11 20 300 0.6+ 0.4- | 2007 12 05 704 0.3+ 0.0  |
| 2007 11 03 691 0.1+ 0.2+ | 2007 11 20 300 0.2- 0.6- | 2007 12 05 704 0.4+ 0.1+ |
| 2007 11 03 691 0.1+ 0.2+ | 2007 11 20 300 0.0 0.6-  |                          |
| 2007 11 03 691 0.2- 0.0  | 2007 11 20 300 0.3+ 0.1- |                          |

2007 WO<sub>5</sub> = 2002 VA<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 354.20054  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
|-----|------------|----------|-----------|--------------|--------------|
| $n$ | 0.20457632 | $\omega$ | 334.70108 | +0.37695614  | -0.92544010  |
| $a$ | 2.8525448  | $\Omega$ | 93.13426  | +0.85618290  | +0.33238748  |
| $e$ | 0.1112720  | $i$      | 2.19661   | +0.35334815  | +0.18187685  |
| $P$ | 4.82       | $H$      | 16.4      | $G$ 0.15     | $U$ 1        |

## Residuals in seconds of arc

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1999 01 19 691 0.0 0.3-    | 2002 11 06 950 0.6+ 0.1+   | 2007 11 18 691 0.1- 0.3-   |
| 1999 01 19 691 0.1+ 0.1+   | 2002 11 06 950 0.5+ 0.0    | 2007 11 30 D35 0.3- 0.7+   |
| 1999 01 19 691 0.1- 0.0    | 2007 11 16 704 (1.6+ 1.0+) | 2007 11 30 D35 0.4+ 0.6+   |
| 2001 05 24 807 0.2+ 0.1+   | 2007 11 16 704 (1.0+ 2.0+) | 2007 11 30 D35 0.6+ 0.2-   |
| 2001 05 24 807 0.0 0.8-    | 2007 11 16 704 0.6+ 0.4-   | 2007 12 03 703 0.3- 1.1+   |
| 2002 11 04 644 0.5- 0.1-   | 2007 11 16 704 0.3- 0.5+   | 2007 12 03 703 0.6- 0.0    |
| 2002 11 04 644 0.5- 0.3-   | 2007 11 17 704 (0.7+ 1.8+) | 2007 12 03 703 (1.6- 0.1-) |
| 2002 11 04 644 0.3- 0.0    | 2007 11 17 704 0.9+ 0.3-   | 2007 12 03 703 0.0 0.1-    |
| 2002 11 05 950 (5.3+ 1.7+) | 2007 11 17 704 1.0+ 1.1+   | 2007 12 05 704 0.0 0.8+    |
| 2002 11 05 950 (5.2+ 1.6+) | 2007 11 17 704 0.0 0.6+    | 2007 12 05 704 0.0 0.9-    |
| 2002 11 05 950 (4.5+ 2.0+) | 2007 11 18 691 0.1- 0.1-   | 2007 12 05 704 0.1+ 0.6-   |
| 2002 11 06 950 0.3+ 0.1-   | 2007 11 18 691 0.2- 0.2-   | 2007 12 05 704 0.4- 0.1-   |

2007 WS<sub>5</sub> = 2003 YC<sub>59</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 345.60522  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.23310743 | $\omega$ | 165.96471 | +0.41145072  | -0.88020062  |
| $a$ | 2.6147608  | $\Omega$ | 259.29796 | +0.81128167  | +0.47196796  |
| $e$ | 0.0257700  | $i$      | 13.92997  | +0.41536773  | -0.04993112  |
| $P$ | 4.23       | $H$      | 15.9      | $G$ 0.15     | $U$ 4        |

## Residuals in seconds of arc

|                          |                          |                            |
|--------------------------|--------------------------|----------------------------|
| 2003 12 19 704 0.2+ 0.2- | 2007 11 17 704 0.5+ 0.2+ | 2007 12 12 704 0.3+ 0.9+   |
| 2003 12 19 704 1.2- 0.2- | 2007 11 17 704 0.3- 0.3+ | 2007 12 13 704 (2.0+ 1.8+) |
| 2003 12 19 704 0.3+ 0.1+ | 2007 11 17 704 0.1- 0.8+ | 2007 12 13 704 0.3+ 0.0    |
| 2003 12 19 704 0.5- 0.5- | 2007 11 17 704 0.3- 0.2- | 2007 12 13 704 (2.1+ 1.4+) |
| 2003 12 21 704 0.1+ 0.5+ | 2007 11 20 704 0.0 0.2-  | 2007 12 13 704 (2.2+ 1.0+) |
| 2003 12 21 704 0.0 0.6+  | 2007 11 20 704 0.0 0.4+  | 2007 12 13 704 0.2+ 0.3+   |
| 2003 12 21 704 1.1+ 0.2- | 2007 11 20 704 0.7- 0.2+ | 2007 12 14 691 0.2- 0.2-   |
| 2007 11 08 703 0.2+ 0.4+ | 2007 11 20 704 0.6+ 0.7- | 2007 12 14 691 0.1+ 0.5+   |
| 2007 11 08 703 0.1- 0.4+ | 2007 11 20 G96 0.2- 0.4- | 2007 12 14 691 0.1+ 0.1-   |
| 2007 11 08 703 0.9+ 0.9- | 2007 11 20 704 0.4+ 0.1- | 2007 12 15 704 0.2+ 0.4+   |
| 2007 11 08 703 1.0- 0.6+ | 2007 11 20 G96 0.1- 0.5- | 2007 12 15 704 0.3+ 1.0+   |
| 2007 11 15 699 0.7- 0.1- | 2007 11 20 G96 0.1+ 0.3- | 2007 12 15 704 0.2+ 1.5-   |
| 2007 11 15 699 0.2+ 0.5+ | 2007 11 20 G96 0.1- 0.2- | 2007 12 15 704 0.3+ 0.3-   |
| 2007 11 15 699 0.3+ 0.1- | 2007 12 12 704 0.0 1.3-  | 2007 12 16 691 0.1+ 0.3-   |
| 2007 11 15 699 0.8+ 0.2- | 2007 12 12 704 0.8- 0.7+ | 2007 12 16 691 0.1- 0.0    |
| 2007 11 17 704 0.2- 0.2- | 2007 12 12 704 0.1+ 1.5+ | 2007 12 16 691 0.2- 0.2-   |

2007 WB<sub>6</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |              |              |
|-----|------------|----------|----------|--------------|--------------|
| $M$ | 336.75696  |          | (2000.0) | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.21121992 | $\omega$ | 69.95956 | -0.11352056  | -0.99140611  |
| $a$ | 2.7924118  | $\Omega$ | 26.81398 | +0.84918695  | -0.13078868  |
| $e$ | 0.2850936  | $i$      | 8.28678  | +0.51574665  | -0.00287144  |
| $P$ | 4.67       | $H$      | 16.6     | $G$ 0.15     | $U$ 2        |

## Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 10 10 645 0.1+ 0.0  | 2007 11 13 703 0.3+ 0.8+ | 2007 11 28 185 0.6+ 0.2+ |
| 2002 10 10 645 0.0 0.1-  | 2007 11 13 703 0.1- 0.6+ | 2007 11 28 185 0.4+ 0.2+ |
| 2002 10 31 645 0.0 0.0   | 2007 11 17 704 0.6+ 0.7+ | 2007 12 09 185 0.2+ 0.2- |
| 2002 10 31 645 0.1- 0.0  | 2007 11 17 704 0.1- 0.1- | 2007 12 09 185 0.0 0.3-  |
| 2007 10 08 703 0.5+ 1.4- | 2007 11 17 704 0.1+ 0.1- | 2007 12 09 185 0.3- 0.0  |
| 2007 10 08 703 0.4- 0.8+ | 2007 11 17 704 0.2+ 0.4+ | 2007 12 10 J95 0.4- 0.3+ |
| 2007 10 08 703 0.7- 0.6+ | 2007 11 17 704 0.1+ 0.8+ | 2007 12 10 J95 0.1- 0.1+ |
| 2007 10 08 703 0.1- 0.1+ | 2007 11 20 704 0.4+ 0.5+ | 2007 12 10 J95 0.1- 0.1- |
| 2007 11 06 691 0.2- 0.0  | 2007 11 20 704 0.7+ 0.0  | 2007 12 11 J95 0.1- 0.2- |
| 2007 11 06 691 0.3- 0.1- | 2007 11 20 704 0.6+ 0.9+ | 2007 12 11 J95 0.0 0.1-  |
| 2007 11 06 691 0.1- 0.3- | 2007 11 20 704 0.7+ 0.3+ | 2007 12 11 J95 0.2+ 0.4- |
| 2007 11 13 703 0.1- 0.1- | 2007 11 20 704 0.2+ 0.2- |                          |
| 2007 11 13 703 0.4+ 0.3- | 2007 11 28 185 0.7+ 0.2- |                          |

2007 WK<sub>6</sub> = 2003 YK<sub>80</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |              |              |
|-----|------------|----------|-----------|--------------|--------------|
| $M$ | 351.05837  |          | (2000.0)  | $\mathbf{P}$ | $\mathbf{Q}$ |
| $n$ | 0.23053510 | $\omega$ | 125.31645 | +0.42207101  | -0.90294394  |
| $a$ | 2.6341753  | $\Omega$ | 299.52352 | +0.79865173  | +0.41258308  |
| $e$ | 0.1888547  | $i$      | 5.33604   | +0.42896559  | +0.12028068  |
| $P$ | 4.28       | $H$      | 17.4      | $G$ 0.15     | $U$ 2        |

## Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1998 09 19 645 0.0 0.0   | 2003 12 28 691 0.0 0.2+  | 2007 11 20 704 0.7+ 0.2- |
| 1998 09 19 645 0.0 0.0   | 2007 11 13 703 0.7+ 0.0  | 2007 11 20 G96 0.1+ 0.2- |
| 2003 12 18 704 0.8- 0.4- | 2007 11 13 703 0.8+ 0.2+ | 2007 11 20 G96 0.1- 0.0  |
| 2003 12 18 704 0.1- 0.9- | 2007 11 13 703 0.9- 0.8+ | 2007 11 20 G96 0.1- 0.2- |
| 2003 12 18 704 0.6+ 0.8+ | 2007 11 13 703 0.4- 0.0  | 2007 11 20 G96 0.3- 0.0  |
| 2003 12 18 704 0.2- 1.2+ | 2007 11 17 704 0.1- 0.1- | 2007 12 15 704 0.3- 1.3- |
| 2003 12 22 704 0.1- 0.3+ | 2007 11 17 704 0.9+ 0.8+ | 2007 12 15 704 0.0 0.2-  |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 12 22 | 704 | 0.2− | 0.2+ | 2007 11 17 | 704 | 0.1+ | 0.6+ | 2007 12 15 | 704 | 0.0  | 0.1− |
| 2003 12 22 | 704 | 0.8+ | 0.4− | 2007 11 17 | 704 | 0.0  | 0.0  | 2007 12 15 | 704 | 0.0  | 0.5− |
| 2003 12 22 | 704 | 0.1+ | 0.2− | 2007 11 20 | 704 | 0.4+ | 0.0  | 2007 12 15 | 704 | 0.3− | 0.2− |
| 2003 12 28 | 691 | 0.2+ | 0.0  | 2007 11 20 | 704 | 0.2+ | 0.2+ |            |     |      |      |
| 2003 12 28 | 691 | 0.2− | 0.1− | 2007 11 20 | 704 | 1.1− | 0.9− |            |     |      |      |

**2007 WZ<sub>6</sub> = 2005 GY<sub>145</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 11.71837   |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.22229965 | $\omega$ | 27.98749 | +0.77299092 | −0.63416212 |
| $a$ | 2.6988383  | $\Omega$ | 11.42393 | +0.56380262 | +0.67367881 |
| $e$ | 0.0613743  | $i$      | 5.20958  | +0.29088080 | +0.37946708 |
| $P$ | 4.43       | $H$      | 15.9     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |       |       |
|------------|-----|------|------|------------|-----|------|------|------------|-----|-------|-------|
| 1996 03 16 | 691 | 0.2− | 0.2+ | 2007 10 21 | G96 | 0.1+ | 0.0  | 2007 11 20 | G96 | 0.1−  | 0.4−  |
| 1996 03 16 | 691 | 0.1− | 0.3+ | 2007 10 21 | G96 | 0.3+ | 0.3− | 2007 11 20 | G96 | 0.3+  | 0.4−  |
| 1996 03 16 | 691 | 0.4+ | 0.2− | 2007 11 02 | 691 | 0.1− | 0.3− | 2007 11 20 | G96 | 0.2+  | 0.4−  |
| 2003 12 28 | 691 | 0.1− | 0.5− | 2007 11 02 | 691 | 0.3− | 0.2− | 2007 12 12 | 704 | 0.5−  | 1.4+  |
| 2003 12 28 | 691 | 0.1− | 0.5− | 2007 11 02 | 691 | 0.5− | 0.1+ | 2007 12 12 | 704 | (0.6− | 2.4+) |
| 2003 12 28 | 691 | 0.2− | 0.7− | 2007 11 13 | 703 | 0.1+ | 0.7− | 2007 12 12 | 704 | 0.1+  | 0.4+  |
| 2005 03 11 | G96 | 0.5− | 0.3− | 2007 11 13 | 703 | 1.1+ | 0.5+ | 2007 12 12 | 704 | (0.8− | 1.8+) |
| 2005 03 11 | G96 | 0.3− | 0.8− | 2007 11 13 | 703 | 0.4− | 0.4+ | 2007 12 13 | 704 | 0.3−  | 1.2+  |
| 2005 03 11 | G96 | 0.6− | 0.1− | 2007 11 13 | 703 | 0.2+ | 0.4+ | 2007 12 13 | 704 | 1.0−  | 1.0+  |
| 2005 03 11 | G96 | 0.3− | 0.1+ | 2007 11 18 | 704 | 0.2− | 0.2− | 2007 12 13 | 704 | 0.2−  | 1.0+  |
| 2005 04 11 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.2− | 0.4− | 2007 12 13 | 704 | (0.8− | 1.6+) |
| 2005 04 11 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 704 | 0.2− | 0.3− | 2007 12 13 | 704 | (1.4− | 1.7+) |
| 2005 04 11 | 691 | 0.0  | 0.4+ | 2007 11 20 | 704 | 1.4+ | 0.1− | 2007 12 15 | 704 | 0.8−  | 1.4+  |
| 2005 04 15 | 691 | 0.2+ | 0.1+ | 2007 11 20 | 704 | 0.8+ | 0.8+ | 2007 12 15 | 704 | 0.0   | 1.3+  |
| 2005 04 15 | 691 | 0.3+ | 0.1+ | 2007 11 20 | 704 | 0.5− | 0.4+ | 2007 12 15 | 704 | 0.0   | 2.1+  |
| 2005 04 15 | 691 | 0.3+ | 0.4+ | 2007 11 20 | 704 | 0.2+ | 0.1+ | 2007 12 15 | 704 | 0.2−  | 1.5+  |
| 2007 10 21 | G96 | 0.4+ | 0.2− | 2007 11 20 | 704 | 0.1− | 0.2− | 2007 12 15 | 704 | 0.4−  | 1.3+  |
| 2007 10 21 | G96 | 0.4+ | 0.2− | 2007 11 20 | G96 | 0.0  | 0.4− |            |     |       |       |

**2007 WK<sub>7</sub> = 1998 QJ<sub>80</sub> = 2006 KM<sub>84</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

| $M$ | 60.59222   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
|-----|------------|----------|-----------|-------------|-------------|
| $n$ | 0.23281794 | $\omega$ | 63.03613  | +0.82733952 | +0.52565530 |
| $a$ | 2.6169279  | $\Omega$ | 264.64230 | −0.55952462 | +0.74023870 |
| $e$ | 0.2497173  | $i$      | 11.46961  | −0.04941164 | +0.41920541 |
| $P$ | 4.23       | $H$      | 15.8      | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 1998 08 24 | 704 | 0.0  | 1.1+ | 2006 05 24 | E12 | 0.6+  | 0.5−  | 2007 11 20 | 704 | 0.4+  | 1.1+  |
| 1998 08 24 | 704 | 0.3− | 0.7+ | 2006 05 24 | E12 | 0.3−  | 0.8+  | 2007 11 20 | 704 | 0.5+  | 0.3+  |
| 1998 08 24 | 704 | 0.7+ | 0.7+ | 2006 06 27 | E12 | 0.3−  | 0.0   | 2007 11 20 | 704 | 0.5+  | 0.2−  |
| 1998 08 24 | 704 | 1.2− | 0.5+ | 2006 06 27 | E12 | 0.3+  | 0.6+  | 2007 11 20 | 691 | 0.5−  | 0.0   |
| 1998 08 27 | 704 | 0.2+ | 0.4− | 2006 06 27 | E12 | 0.1−  | 0.6+  | 2007 11 20 | 691 | 0.6−  | 0.2+  |
| 1998 08 27 | 704 | 0.3+ | 1.7− | 2006 06 27 | E12 | 0.3+  | 0.6+  | 2007 11 20 | 691 | 0.4−  | 0.0   |
| 1998 08 27 | 704 | 0.5+ | 0.6− | 2007 11 06 | 691 | 0.2−  | 0.3−  | 2007 12 12 | 704 | 1.0+  | 1.0−  |
| 1998 08 27 | 704 | 1.2+ | 1.4− | 2007 11 06 | 691 | 0.4+  | 0.1−  | 2007 12 12 | 704 | (1.3+ | 1.8−) |
| 1998 10 16 | 699 | 1.1− | 1.1+ | 2007 11 06 | 691 | 0.0   | 0.6−  | 2007 12 12 | 704 | 1.1+  | 0.9−  |
| 1998 10 16 | 699 | 0.6− | 0.6+ | 2007 11 13 | 703 | 0.2−  | 0.6+  | 2007 12 12 | 704 | 0.0   | 0.6+  |
| 1998 10 16 | 699 | 0.3− | 0.0  | 2007 11 13 | 703 | 0.4−  | 0.1+  | 2007 12 13 | 704 | (0.1+ | 1.7−) |
| 2004 01 28 | 691 | 0.2+ | 0.0  | 2007 11 13 | 703 | 0.2−  | 0.1−  | 2007 12 13 | 704 | 0.7+  | 0.3+  |
| 2004 01 28 | 691 | 0.2− | 0.0  | 2007 11 13 | 703 | 0.0   | 0.3−  | 2007 12 13 | 704 | 0.0   | 0.2+  |
| 2004 01 28 | 691 | 0.0  | 0.1+ | 2007 11 18 | 704 | (0.3+ | 1.8+) | 2007 12 13 | 704 | 0.3+  | 0.4+  |
| 2006 05 22 | E12 | 0.4+ | 0.1− | 2007 11 18 | 704 | 0.4+  | 0.6+  | 2007 12 15 | 704 | 0.1−  | 0.2+  |
| 2006 05 22 | E12 | 0.3− | 0.2+ | 2007 11 18 | 704 | 0.4+  | 0.7+  | 2007 12 15 | 704 | 0.0   | 0.5−  |
| 2006 05 22 | E12 | 0.5− | 0.2+ | 2007 11 18 | 704 | 0.3+  | 0.4+  | 2007 12 15 | 704 | 0.3−  | 0.4+  |
| 2006 05 22 | E12 | 0.4+ | 0.5+ | 2007 11 18 | 704 | 0.5+  | 0.9+  | 2007 12 15 | 704 | 0.2−  | 0.2−  |
| 2006 05 24 | E12 | 0.4− | 0.3− | 2007 11 20 | 704 | 0.7+  | 0.1+  | 2007 12 15 | 704 | 0.2−  | 0.5+  |

**2007 WP<sub>7</sub> = 2001 UM<sub>225</sub> = 2002 XU<sub>116</sub> = 2003 AL<sub>77</sub> = 2004 FT<sub>101</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 320.64925  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18332084 | $\omega$ | 55.40341 | -0.24953185 | -0.95537607 |
| $a$ | 3.0689855  | $\Omega$ | 49.85275 | +0.80690427 | -0.29539222 |
| $e$ | 0.0611000  | $i$      | 11.93549 | +0.53538710 | -0.00008126 |
| $P$ | 5.38       | $H$      | 14.9     | $G$ 0.15    | $U$ 1       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 2001 10 16 | 644 | (1.2− | 1.9+) | 2004 03 23 | 704 | (1.7+ | 1.0+) | 2007 11 20 | 691 | 0.1− | 0.3− |
| 2001 10 16 | 644 | (0.8− | 1.7+) | 2004 03 26 | 691 | 0.1+  | 0.0   | 2007 11 20 | 691 | 0.2− | 0.2+ |
| 2001 10 16 | 644 | 1.0−  | 1.5+  | 2004 03 26 | 691 | 0.2−  | 0.5+  | 2007 11 30 | A77 | 0.5− | 0.9− |
| 2002 12 05 | 704 | (2.1− | 1.1+) | 2004 03 26 | 691 | 0.0   | 0.1+  | 2007 11 30 | A77 | 0.6− | 0.2− |
| 2002 12 05 | 704 | 1.2−  | 1.0+  | 2007 10 24 | G96 | 0.0   | 0.0   | 2007 11 30 | A77 | 0.2+ | 0.2− |
| 2002 12 05 | 704 | (0.3+ | 1.7+) | 2007 10 24 | G96 | 0.3−  | 0.0   | 2007 12 04 | 703 | 0.0  | 0.4− |
| 2003 01 10 | 704 | 0.5+  | 0.2−  | 2007 10 24 | G96 | 0.1−  | 0.3+  | 2007 12 04 | 703 | 0.1+ | 0.5+ |
| 2003 01 10 | 704 | 0.7−  | 0.6+  | 2007 10 24 | G96 | 0.1+  | 0.1−  | 2007 12 04 | 703 | 0.5+ | 0.1− |
| 2003 01 10 | 704 | 0.6−  | 0.6−  | 2007 11 18 | 704 | 0.3−  | 0.3+  | 2007 12 04 | 703 | 0.5+ | 0.1− |
| 2003 01 10 | 644 | 0.2+  | 0.5−  | 2007 11 18 | 704 | 0.4+  | 0.8+  | 2007 12 13 | 704 | 1.3− | 0.1− |
| 2003 01 10 | 644 | 0.3+  | 0.7−  | 2007 11 18 | 704 | 0.5+  | 0.9−  | 2007 12 13 | 704 | 0.3+ | 0.3− |
| 2003 01 10 | 644 | 0.5+  | 0.4−  | 2007 11 18 | 704 | 0.3+  | 0.5+  | 2007 12 13 | 704 | 0.5− | 0.5− |
| 2003 01 13 | 704 | 0.6−  | 0.3+  | 2007 11 18 | 704 | 0.5+  | 0.6−  | 2007 12 13 | 704 | 0.0  | 0.2+ |
| 2003 01 13 | 704 | 0.5+  | 0.3−  | 2007 11 20 | 704 | 0.1−  | 1.2+  | 2007 12 15 | 704 | 0.5+ | 0.1+ |
| 2003 01 13 | 704 | 1.3+  | 0.1+  | 2007 11 20 | 704 | 0.4+  | 0.3−  | 2007 12 15 | 704 | 0.9+ | 0.8+ |
| 2004 03 23 | 704 | 1.5+  | 0.4−  | 2007 11 20 | 704 | 0.5+  | 0.4+  | 2007 12 15 | 704 | 0.0  | 0.0  |
| 2004 03 23 | 704 | 0.2+  | 0.2−  | 2007 11 20 | 704 | 0.1+  | 0.8+  | 2007 12 15 | 704 | 1.0+ | 0.3+ |
| 2004 03 23 | 704 | 0.1+  | 0.3+  | 2007 11 20 | 691 | 0.4−  | 0.1+  |            |     |      |      |

**2007 WS<sub>7</sub> = 2001 SD<sub>354</sub> = 2001 TR<sub>132</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 311.77491  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.18349888 | $\omega$ | 207.49187 | −0.42979827 | −0.88895939 |
| $a$ | 3.0670000  | $\Omega$ | 268.33246 | +0.85476134 | −0.34412288 |
| $e$ | 0.0619068  | $i$      | 9.10585   | +0.29095790 | −0.30220962 |
| $P$ | 5.37       | $H$      | 14.5      | $G$ 0.15    | $U$ 4       |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 09 24 | 644 | 1.1+ | 0.4− | 2007 11 08 | 691 | 0.3−  | 0.2−  | 2007 11 20 | 704 | 0.3−  | 0.1+  |
| 2001 09 24 | 644 | 1.1+ | 0.3+ | 2007 11 13 | 703 | 1.1−  | 0.0   | 2007 11 20 | 704 | 0.4−  | 0.2−  |
| 2001 09 24 | 644 | 0.0  | 0.5+ | 2007 11 13 | 703 | 0.2−  | 0.5+  | 2007 11 20 | 704 | 0.1+  | 0.1−  |
| 2001 09 29 | 644 | 0.8− | 0.3+ | 2007 11 13 | 703 | 0.8+  | 0.8+  | 2007 11 20 | 704 | 0.9−  | 0.3−  |
| 2001 09 29 | 644 | 0.4− | 0.4+ | 2007 11 13 | 703 | (1.7+ | 0.4+) | 2007 11 20 | 704 | 0.4−  | 0.5+  |
| 2001 09 29 | 644 | 0.4− | 0.4+ | 2007 11 18 | 704 | 1.2+  | 0.8+  | 2007 11 20 | 691 | (1.9+ | 0.0 ) |
| 2001 10 12 | 608 | 0.2+ | 0.6− | 2007 11 18 | 704 | 0.4+  | 0.0   | 2007 11 20 | 691 | 0.9+  | 0.4+  |
| 2001 10 12 | 608 | 0.6− | 0.3− | 2007 11 18 | 704 | (1.2+ | 2.9+) | 2007 11 20 | 691 | 0.1−  | 0.2+  |
| 2001 10 12 | 608 | 0.1+ | 0.1+ | 2007 11 18 | 704 | (0.0  | 1.9+) | 2007 12 14 | 704 | 0.4−  | 0.1+  |
| 2001 10 15 | 608 | 0.0  | 0.2− | 2007 11 18 | 704 | 0.6+  | 0.0   | 2007 12 14 | 704 | 0.1+  | 0.2+  |
| 2001 10 15 | 608 | 0.0  | 0.2− | 2007 11 19 | G96 | 0.1−  | 0.4−  | 2007 12 14 | 704 | 0.1+  | 0.1+  |
| 2001 10 15 | 608 | 0.2− | 0.2− | 2007 11 19 | G96 | 0.0   | 0.3−  | 2007 12 14 | 704 | 0.2+  | 0.2+  |
| 2007 11 08 | 691 | 0.4− | 0.4− | 2007 11 19 | G96 | 0.1+  | 0.4−  | 2007 12 14 | 704 | 0.2−  | 0.9−  |
| 2007 11 08 | 691 | 0.1− | 0.2− | 2007 11 19 | G96 | 0.3+  | 0.2−  |            |     |       |       |

**2007 WR<sub>8</sub> = 2000 AC<sub>30</sub> = 2003 YW<sub>76</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|           |            |          |           |             |             |
|-----------|------------|----------|-----------|-------------|-------------|
| $\dot{M}$ | 315.47464  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$       | 0.24042317 | $\omega$ | 153.44414 | −0.58435328 | −0.81121394 |
| $a$       | 2.5614458  | $\Omega$ | 332.29744 | +0.73606099 | −0.51867764 |
| $e$       | 0.1890838  | $i$      | 2.65349   | +0.34168036 | −0.27001011 |
| $P$       | 4.10       | $H$      | 16.0      | $G$ 0.15    | $U$ 3       |

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2000 01 03 | 704 | 1.4+ | 0.2+ | 2006 09 25 | G96 | 0.2-  | 0.3-  | 2007 12 10 | J75 | 0.6-  | 0.8+  |
| 2000 01 04 | 704 | 0.7- | 0.5- | 2006 09 25 | G96 | 0.0   | 0.5-  | 2007 12 10 | J75 | (0.3+ | 1.5+) |
| 2000 01 04 | 704 | 0.1- | 0.1+ | 2006 09 25 | G96 | 0.1+  | 1.1-  | 2007 12 11 | 620 | 0.6-  | 0.0   |
| 2000 01 04 | 704 | 0.4+ | 0.2- | 2007 11 18 | 704 | 0.8+  | 0.8-  | 2007 12 11 | 620 | 1.2-  | 0.1-  |
| 2000 01 04 | 704 | 0.2- | 0.9- | 2007 11 18 | 704 | 0.7+  | 0.1+  | 2007 12 11 | 620 | 0.7-  | 0.1+  |
| 2000 01 04 | 704 | 0.0  | 0.1- | 2007 11 18 | 704 | 0.4+  | 0.7+  | 2007 12 12 | 704 | 0.1+  | 0.4+  |
| 2003 12 18 | 704 | 0.0  | 0.3- | 2007 11 18 | G96 | 0.0   | 0.8-  | 2007 12 12 | 704 | 0.1+  | 0.8-  |
| 2003 12 18 | 704 | 0.0  | 0.3+ | 2007 11 18 | 704 | 0.7+  | 0.5-  | 2007 12 12 | 704 | 0.1+  | 0.3+  |
| 2003 12 18 | 704 | 0.3+ | 0.2+ | 2007 11 18 | G96 | 0.1+  | 0.4-  | 2007 12 12 | 704 | 0.2+  | 0.1+  |
| 2003 12 18 | 704 | 0.2+ | 0.2+ | 2007 11 18 | G96 | 0.1+  | 0.4-  | 2007 12 12 | 704 | 0.9+  | 0.2-  |
| 2003 12 18 | 704 | 0.3- | 0.4- | 2007 11 18 | G96 | 0.4-  | 0.5-  | 2007 12 15 | 704 | 0.2-  | 1.6+  |
| 2003 12 22 | 704 | 0.2- | 0.5+ | 2007 11 20 | 704 | 1.3+  | 0.2-  | 2007 12 15 | 704 | 0.2-  | 0.5+  |
| 2003 12 22 | 704 | 0.0  | 0.3+ | 2007 11 20 | 704 | 0.3+  | 0.7+  | 2007 12 15 | 704 | 0.7-  | 0.5-  |
| 2003 12 22 | 704 | 0.0  | 0.7+ | 2007 11 20 | 704 | 0.3+  | 0.2-  | 2007 12 15 | 704 | 0.7-  | 0.4+  |
| 2003 12 22 | 704 | 0.2- | 0.3+ | 2007 11 20 | 704 | (1.6+ | 0.5-) | 2007 12 15 | 704 | 0.2-  | 0.2-  |
| 2003 12 22 | 704 | 0.0  | 0.2- | 2007 11 20 | 704 | 0.5-  | 1.4-  |            |     |       |       |

**2007 WE<sub>16</sub> = 2005 EJ<sub>163</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 295.06347  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.27588198 | $\omega$ | 0.96418   | -0.75066930 |          | -0.66030148 |          |
| $a$ | 2.3369737  | $\Omega$ | 137.68475 | +0.60593834 |          | -0.70153690 |          |
| $e$ | 0.1371743  | $i$      | 1.89878   | +0.26331412 |          | -0.26804466 |          |
| $P$ | 3.57       | $H$      | 18.2      | $G$         | 0.15     | $U$         | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 21 | 691 | 0.0  | 0.1- | 2005 03 12 | 691 | 0.1+ | 0.2+ | 2007 11 18 | G96 | 0.7+ | 0.2- |
| 2000 12 21 | 691 | 0.2+ | 0.2- | 2005 03 12 | 691 | 0.3+ | 0.1+ | 2007 11 19 | 691 | 0.2+ | 0.3+ |
| 2000 12 21 | 691 | 0.2- | 0.2- | 2007 11 07 | 691 | 0.5- | 0.2+ | 2007 11 19 | 691 | 0.3+ | 0.1- |
| 2005 03 10 | G96 | 0.3- | 0.1- | 2007 11 07 | 691 | 0.2- | 0.1- | 2007 11 19 | 691 | 0.2+ | 0.5+ |
| 2005 03 10 | G96 | 0.5- | 0.1- | 2007 11 07 | 691 | 0.3- | 0.0  | 2007 12 05 | 704 | 0.6- | 0.2+ |
| 2005 03 10 | G96 | 0.0  | 0.3- | 2007 11 18 | G96 | 0.1+ | 0.1+ | 2007 12 05 | 704 | 0.1+ | 0.3- |
| 2005 03 10 | G96 | 0.1+ | 0.4- | 2007 11 18 | G96 | 0.2+ | 0.1+ | 2007 12 05 | 704 | 0.1- | 0.7- |
| 2005 03 12 | 691 | 0.1- | 0.2+ | 2007 11 18 | G96 | 0.2+ | 0.1- |            |     |      |      |

**2007 WD<sub>21</sub> = 2002 TK<sub>311</sub> = 2004 DR<sub>57</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |     |             |     |             |
|-----|------------|----------|-----------|-----|-------------|-----|-------------|
| $M$ | 53.23485   |          | (2000.0)  |     | <b>P</b>    |     | <b>Q</b>    |
| $n$ | 0.24300826 | $\omega$ | 280.10815 |     | +0.49790556 |     | -0.86300807 |
| $a$ | 2.5432479  | $\Omega$ | 139.66091 |     | +0.83839158 |     | +0.45379562 |
| $e$ | 0.0217898  | $i$      | 7.58847   |     | +0.22178732 |     | +0.22200588 |
| $P$ | 4.06       | $H$      | 16.5      | $G$ | 0.15        | $U$ | 1           |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 10 04 | 645 | 0.1- | 0.0  | 2004 03 20 | 691 | 0.1+ | 0.2+ | 2007 11 19 | G96 | 0.1- | 0.1- |
| 2002 10 04 | 645 | 0.2- | 0.1+ | 2005 07 12 | G96 | 0.5- | 0.4+ | 2007 11 19 | G96 | 0.3- | 0.0  |
| 2002 10 10 | 645 | 0.2- | 0.0  | 2005 07 12 | G96 | 0.5+ | 0.0  | 2007 11 19 | G96 | 0.0  | 0.0  |
| 2002 10 10 | 645 | 0.2- | 0.0  | 2005 07 12 | G96 | 0.3+ | 0.3- | 2007 11 19 | G96 | 0.0  | 0.2+ |
| 2004 02 23 | 704 | 0.2+ | 0.8+ | 2005 07 12 | G96 | 0.5- | 0.6+ | 2007 11 19 | G96 | 0.1- | 0.1+ |
| 2004 02 23 | 704 | 0.4+ | 0.9+ | 2006 09 26 | 703 | 0.3+ | 0.2+ | 2007 11 19 | G96 | 0.0  | 0.2- |
| 2004 02 23 | 704 | 0.5+ | 0.0  | 2006 09 26 | 703 | 0.2- | 0.8+ | 2007 11 19 | G96 | 0.0  | 0.1+ |
| 2004 02 23 | 704 | 0.1- | 0.6+ | 2006 09 26 | 703 | 0.4+ | 0.3- | 2007 11 19 | G96 | 0.2+ | 0.0  |
| 2004 02 23 | 704 | 0.6+ | 0.4+ | 2006 09 26 | 703 | 0.1- | 0.8+ | 2007 11 19 | G96 | 0.0  | 0.0  |
| 2004 02 29 | 691 | 0.0  | 0.2- | 2007 11 18 | G96 | 0.1+ | 0.3- | 2007 11 19 | G96 | 0.4- | 0.1- |
| 2004 02 29 | 691 | 0.0  | 0.1- | 2007 11 18 | G96 | 0.2- | 0.5- | 2007 11 19 | G96 | 0.2+ | 0.0  |
| 2004 02 29 | 691 | 0.1- | 0.1- | 2007 11 18 | G96 | 0.5+ | 0.8- | 2007 11 21 | 691 | 0.1+ | 0.4+ |
| 2004 03 20 | 691 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.7+ | 0.6- | 2007 11 21 | 691 | 1.0- | 0.4- |
| 2004 03 20 | 691 | 0.0  | 0.2- | 2007 11 19 | G96 | 0.7- | 0.2+ | 2007 11 21 | 691 | 0.4- | 0.2+ |

**2007 WZ<sub>21</sub> = 2006 UH<sub>325</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |           |             |          |             |          |
|-----|------------|----------|-----------|-------------|----------|-------------|----------|
| $M$ | 150.50124  |          | (2000.0)  |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.19853345 | $\omega$ | 260.27593 | -0.26057679 |          | +0.96540454 |          |
| $a$ | 2.9101380  | $\Omega$ | 354.59060 | -0.84061766 |          | -0.23180629 |          |
| $e$ | 0.0507871  | $i$      | 5.89720   | -0.47482807 |          | -0.11941492 |          |
| $P$ | 4.96       | $H$      | 15.7      | $G$         | 0.15     | $U$         | 4        |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2002 11 04 | 644 | 0.2- | 0.6+ | 2006 10 22 | G96 | 0.2+ | 0.0  | 2007 11 17 | 691 | 0.4+ | 0.0  |
| 2002 11 04 | 644 | 0.4- | 0.6+ | 2007 10 09 | 691 | 0.0  | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.0  |
| 2002 11 04 | 644 | 0.1- | 0.9+ | 2007 10 09 | 691 | 0.6+ | 0.4- | 2007 11 20 | 691 | 0.5- | 0.1+ |
| 2006 10 20 | 695 | 0.3- | 0.0  | 2007 10 09 | 691 | 0.6+ | 0.5- | 2007 11 20 | 691 | 0.2+ | 0.1- |
| 2006 10 20 | 695 | 0.3- | 0.1+ | 2007 11 05 | 691 | 0.0  | 0.1- | 2007 11 20 | 691 | 0.6- | 0.2+ |
| 2006 10 22 | G96 | 0.5- | 0.1- | 2007 11 05 | 691 | 0.3- | 0.2- | 2007 12 12 | A77 | 0.4- | 0.4+ |
| 2006 10 22 | G96 | 0.6+ | 0.4+ | 2007 11 05 | 691 | 0.2- | 0.1- | 2007 12 12 | A77 | 1.1- | 0.7- |
| 2006 10 22 | G96 | 0.1+ | 0.1+ | 2007 11 17 | 691 | 0.2+ | 0.1+ | 2007 12 12 | A77 | 0.1- | 1.1+ |

**2007 WL<sub>24</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |          |             |          |
|-----|------------|----------|----------|-------------|----------|-------------|----------|
| $M$ | 329.81417  |          | (2000.0) |             | <b>P</b> |             | <b>Q</b> |
| $n$ | 0.26365130 | $\omega$ | 14.01563 | +0.00607775 |          | -0.99425723 |          |
| $a$ | 2.4087004  | $\Omega$ | 75.71812 | +0.90651679 |          | -0.03962510 |          |
| $e$ | 0.1943546  | $i$      | 6.32980  | +0.42212602 |          | +0.09941029 |          |
| $P$ | 3.74       | $H$      | 17.4     | $G$         | 0.15     | $U$         | 2        |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |       |       |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|-------|-------|
| 2001 02 02 | 608 | 0.2- | 0.4- | 2007 11 02 | 691 | 0.0   | 0.0   | 2007 11 20 | G96 | 0.1+  | 0.4-  |
| 2001 02 02 | 608 | 0.1+ | 0.2- | 2007 11 03 | 699 | 0.5+  | 0.2+  | 2007 11 20 | G96 | 0.1+  | 0.4-  |
| 2001 02 02 | 608 | 0.0  | 0.4+ | 2007 11 03 | 699 | 0.3+  | 0.6+  | 2007 11 20 | G96 | 0.5+  | 0.2-  |
| 2003 09 19 | 644 | 0.2+ | 0.1- | 2007 11 03 | 699 | 0.5-  | 0.8-  | 2007 12 03 | 703 | 0.7+  | 0.7+  |
| 2003 09 19 | 644 | 0.2+ | 0.3- | 2007 11 03 | 699 | 1.4-  | 1.2+  | 2007 12 03 | 703 | 0.8-  | 0.6-  |
| 2003 09 19 | 644 | 0.3+ | 0.1- | 2007 11 15 | 699 | 0.1+  | 0.1+  | 2007 12 03 | 703 | 0.4-  | 0.1-  |
| 2003 09 30 | 691 | 0.1- | 0.1+ | 2007 11 15 | 699 | 0.1+  | 1.0+  | 2007 12 03 | 703 | 1.4-  | 0.3-  |
| 2003 09 30 | 691 | 0.2- | 0.1+ | 2007 11 15 | 699 | 0.2+  | 0.4-  | 2007 12 05 | 704 | 0.8+  | 0.4+  |
| 2003 09 30 | 691 | 0.1- | 0.2+ | 2007 11 15 | 699 | 0.3-  | 0.6-  | 2007 12 05 | 704 | 0.3+  | 0.6-  |
| 2007 10 21 | 691 | 0.3+ | 0.4+ | 2007 11 18 | G96 | 0.5+  | 0.4-  | 2007 12 05 | 704 | (1.6+ | 0.2+) |
| 2007 10 21 | 691 | 0.7+ | 0.2- | 2007 11 18 | G96 | 0.6+  | 0.5-  | 2007 12 05 | 704 | 0.3+  | 0.6+  |
| 2007 10 21 | 691 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.3+  | 0.4-  | 2007 12 14 | 691 | 0.5-  | 0.0   |
| 2007 11 02 | 691 | 0.3- | 0.5- | 2007 11 18 | G96 | 0.0   | 0.2-  | 2007 12 14 | 691 | 0.0   | 0.1-  |
| 2007 11 02 | 691 | 0.0  | 0.2- | 2007 11 20 | 691 | 0.0   | 0.1+  | 2007 12 14 | 691 | 0.2+  | 0.6+  |
| 2007 11 02 | 691 | 0.1- | 0.4- | 2007 11 20 | 691 | 0.0   | 0.2+  | 2007 12 16 | 691 | 0.1+  | 0.3+  |
| 2007 11 02 | 691 | 0.0  | 0.1- | 2007 11 20 | 691 | (1.9+ | 0.9+) | 2007 12 16 | 691 | 0.1-  | 0.0   |
| 2007 11 02 | 691 | 0.0  | 0.3- | 2007 11 20 | G96 | 0.3+  | 0.3-  | 2007 12 16 | 691 | 0.0   | 0.2+  |

**2007 WT<sub>27</sub> = 2003 UL<sub>114</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

|     |            |          |          |             |          |             |   |
|-----|------------|----------|----------|-------------|----------|-------------|---|
| $M$ | 284.65159  |          | (2000.0) |             | <b>P</b> | <b>Q</b>    |   |
| $n$ | 0.27168396 | $\omega$ | 97.62755 | -0.82432475 |          | -0.55602891 |   |
| $a$ | 2.3609858  | $\Omega$ | 48.66014 | +0.44729090 |          | -0.75489967 |   |
| $e$ | 0.0546952  | $i$      | 8.14693  | +0.34701521 |          | -0.34779066 |   |
| $P$ | 3.63       | $H$      | 16.9     | $G$         | 0.15     | $U$         | 1 |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1996 12 08 | 327 | 0.0  | 0.3- | 2005 03 16 | 703 | 0.7+ | 0.3+ | 2007 12 01 | A77 | 0.2- | 1.1+ |
| 1996 12 08 | 327 | 0.8- | 0.0  | 2005 03 16 | 703 | 0.2+ | 0.3- | 2007 12 01 | A77 | 0.3+ | 0.3- |
| 1996 12 08 | 327 | 0.3- | 0.4- | 2005 03 16 | 703 | 0.4+ | 0.2+ | 2007 12 01 | A77 | 0.1+ | 0.3- |
| 2001 01 26 | 645 | 0.1+ | 0.1- | 2005 03 16 | 703 | 0.1+ | 0.1- | 2007 12 04 | 703 | 0.3- | 0.1- |
| 2001 01 26 | 645 | 0.0  | 0.0  | 2005 03 30 | 703 | 0.1- | 0.7- | 2007 12 04 | 703 | 1.1+ | 0.1- |
| 2003 10 20 | 691 | 0.2+ | 0.0  | 2005 03 30 | 703 | 0.0  | 0.2+ | 2007 12 04 | 703 | 0.4- | 0.1+ |
| 2003 10 20 | 691 | 0.1+ | 0.0  | 2005 03 30 | 703 | 0.3+ | 1.4+ | 2007 12 04 | 703 | 1.0+ | 1.2- |
| 2003 10 20 | 691 | 0.1+ | 0.1- | 2005 03 30 | 703 | 1.4- | 0.5- | 2007 12 13 | 704 | 0.4- | 0.7+ |
| 2003 10 21 | 644 | 0.3- | 0.1+ | 2007 11 18 | G96 | 0.2+ | 0.3- | 2007 12 13 | 704 | 0.8- | 0.4+ |
| 2003 10 21 | 644 | 0.4- | 0.3+ | 2007 11 18 | G96 | 0.0  | 0.1+ | 2007 12 13 | 704 | 0.6+ | 1.4+ |
| 2003 10 21 | 644 | 0.2- | 0.0  | 2007 11 18 | G96 | 0.2+ | 0.4- | 2007 12 15 | 704 | 0.4- | 0.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2005 03 16 | 703 | 0.3− | 0.4− | 2007 11 18 | G96 | 0.1− | 0.1− | 2007 12 15 | 704 | 0.4− | 0.4+ |
| 2005 03 16 | 703 | 0.1− | 0.1+ | 2007 11 20 | 691 | 0.1+ | 0.0  | 2007 12 15 | 704 | 0.3+ | 0.4+ |
| 2005 03 16 | 703 | 0.3+ | 0.4+ | 2007 11 20 | 691 | 0.5− | 0.1− | 2007 12 15 | 704 | 0.5+ | 0.5+ |
| 2005 03 16 | 703 | 0.2− | 0.3+ | 2007 11 20 | 691 | 0.4− | 0.0  | 2007 12 15 | 704 | 0.5+ | 0.0  |

**2007 WO<sub>31</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 284.47764  |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|--|-------------|
| <i>n</i> | 0.24716477 | $\omega$ | 17.70359  | −0.67979029 |          |  | −0.73159267 |
| <i>a</i> | 2.5146546  | $\Omega$ | 115.15858 | +0.66581073 |          |  | −0.64508355 |
| <i>e</i> | 0.0423654  | <i>i</i> | 3.26488   | +0.30754062 |          |  | −0.22054335 |
| <i>P</i> | 3.99       | <i>H</i> | 16.7      | <i>G</i>    | 0.15     |  | <i>U</i> 4  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1995 11 17 | 691 | 0.0  | 0.3− | 2007 11 01 | 691 | 0.1− | 0.0  | 2007 11 20 | G96 | 0.5+ | 0.3− |
| 1995 11 17 | 691 | 0.0  | 0.2− | 2007 11 19 | 291 | 0.2− | 0.0  | 2007 11 20 | G96 | 0.3+ | 0.2− |
| 1995 11 17 | 691 | 0.2+ | 0.0  | 2007 11 19 | 291 | 0.2− | 0.1+ | 2007 11 20 | G96 | 0.3+ | 0.5− |
| 2003 11 30 | 691 | 0.0  | 0.1− | 2007 11 19 | 291 | 0.1− | 0.1− | 2007 12 04 | H07 | 0.3− | 0.3− |
| 2003 11 30 | 691 | 0.1− | 0.0  | 2007 11 20 | 291 | 0.0  | 0.0  | 2007 12 04 | H07 | 1.8+ | 0.4+ |
| 2003 11 30 | 691 | 0.2+ | 0.2− | 2007 11 20 | 291 | 0.0  | 0.5+ | 2007 12 04 | H07 | 0.1+ | 0.4+ |
| 2007 11 01 | 691 | 0.2− | 0.0  | 2007 11 20 | 291 | 0.1− | 0.2+ |            |     |      |      |
| 2007 11 01 | 691 | 0.0  | 0.3+ | 2007 11 20 | G96 | 0.7+ | 0.2− |            |     |      |      |

**2007 WU<sub>35</sub> = 2002 XB<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 341.09655  |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|--|-------------|
| <i>n</i> | 0.19703151 | $\omega$ | 175.16440 | +0.06366259 |          |  | −0.98880414 |
| <i>a</i> | 2.9249083  | $\Omega$ | 271.14124 | +0.91103521 |          |  | +0.11278607 |
| <i>e</i> | 0.0994384  | <i>i</i> | 7.75769   | +0.40738423 |          |  | −0.09770198 |
| <i>P</i> | 5.00       | <i>H</i> | 15.4      | <i>G</i>    | 0.15     |  | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |      |      |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|------|------|
| 2002 12 10 | 644 | 0.2+  | 0.3−  | 2007 11 19 | G96 | 0.3+ | 0.1+ | 2007 12 10 | 704 | 0.2− | 0.9+ |
| 2002 12 10 | 644 | 0.3+  | 0.2−  | 2007 11 19 | G96 | 0.3+ | 0.1+ | 2007 12 10 | 704 | 1.1+ | 0.1− |
| 2002 12 10 | 644 | 0.4+  | 0.4−  | 2007 11 19 | G96 | 0.3+ | 0.0  | 2007 12 14 | 704 | 0.4− | 0.3− |
| 2002 12 11 | 704 | 0.1−  | 0.5−  | 2007 11 19 | G96 | 0.3+ | 0.1+ | 2007 12 14 | 704 | 0.0  | 0.8− |
| 2002 12 11 | 704 | (2.4− | 0.7−) | 2007 11 20 | 691 | 0.1− | 0.0  | 2007 12 14 | 704 | 0.2+ | 0.2− |
| 2002 12 11 | 704 | 0.3+  | 0.4−  | 2007 11 20 | 691 | 0.1− | 0.1− | 2007 12 14 | 704 | 0.0  | 0.5− |
| 2002 12 11 | 704 | 0.7−  | 1.5+  | 2007 11 20 | 691 | 0.2− | 0.1− | 2007 12 14 | 704 | 0.4− | 0.3− |
| 2002 12 11 | 704 | 0.5−  | 1.1+  | 2007 12 10 | 704 | 0.0  | 0.8+ |            |     |      |      |

**2007 WF<sub>49</sub> = 2001 SB<sub>331</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 311.66117  |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|--|-------------|
| <i>n</i> | 0.18802081 | $\omega$ | 289.41730 | −0.48733597 |          |  | −0.87315241 |
| <i>a</i> | 3.0176262  | $\Omega$ | 189.76815 | +0.82243023 |          |  | −0.45495166 |
| <i>e</i> | 0.1454019  | <i>i</i> | 3.52031   | +0.29344874 |          |  | −0.17499676 |
| <i>P</i> | 5.24       | <i>H</i> | 15.8      | <i>G</i>    | 0.15     |  | <i>U</i> 0  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2001 09 19 | 704 | 0.4+ | 1.4+ | 2006 08 29 | 691 | 0.0  | 0.1− | 2007 11 21 | G96 | 0.1+ | 0.1− |
| 2001 09 19 | 704 | 0.0  | 1.1+ | 2006 09 27 | G96 | 0.1+ | 0.4− | 2007 11 21 | G96 | 0.1+ | 0.0  |
| 2001 09 19 | 704 | 1.5− | 0.0  | 2006 09 27 | G96 | 0.0  | 0.3− | 2007 11 21 | G96 | 0.0  | 0.0  |
| 2001 09 19 | 704 | 0.2− | 0.7+ | 2006 09 27 | G96 | 0.1− | 0.1+ | 2007 12 04 | 703 | 0.2− | 0.4+ |
| 2001 09 21 | 691 | 0.0  | 0.2− | 2006 09 27 | G96 | 0.3− | 0.2+ | 2007 12 04 | 703 | 1.1− | 0.6+ |
| 2001 09 21 | 691 | 0.1+ | 0.0  | 2007 11 04 | 691 | 0.0  | 0.3+ | 2007 12 04 | 703 | 1.2+ | 0.1+ |
| 2001 09 21 | 691 | 0.0  | 0.1+ | 2007 11 04 | 691 | 0.2− | 0.1− | 2007 12 04 | 703 | 0.7+ | 0.9+ |
| 2004 04 25 | 691 | 0.1+ | 0.3+ | 2007 11 04 | 691 | 0.5− | 0.1− | 2007 12 13 | A77 | 0.5− | 1.1+ |
| 2004 04 25 | 691 | 0.3+ | 0.4+ | 2007 11 20 | G96 | 0.3+ | 0.1− | 2007 12 13 | A77 | 0.1− | 0.5+ |
| 2004 04 25 | 691 | 0.0  | 0.6+ | 2007 11 20 | G96 | 0.4+ | 0.5− | 2007 12 13 | A77 | 0.8+ | 0.3+ |
| 2006 08 29 | 691 | 0.1+ | 0.1+ | 2007 11 20 | G96 | 0.2+ | 0.2− |            |     |      |      |
| 2006 08 29 | 691 | 0.1− | 0.4+ | 2007 11 21 | G96 | 0.2+ | 0.1− |            |     |      |      |

**2007 WM<sub>51</sub> = 1997 WN<sub>27</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 1.76685    |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|--|-------------|
| <i>n</i> | 0.20121663 | $\omega$ | 181.06961 | +0.58994805 |          |  | −0.79075059 |
| <i>a</i> | 2.8842095  | $\Omega$ | 232.79948 | +0.74232704 |          |  | +0.61074097 |
| <i>e</i> | 0.1272587  | <i>i</i> | 11.83220  | +0.31766627 |          |  | +0.04133972 |
| <i>P</i> | 4.90       | <i>H</i> | 16.5      | <i>G</i>    | 0.15     |  | <i>U</i> 3  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1997 11 29 | 691 | 0.1− | 0.2− | 2007 11 20 | G96 | 0.2+ | 0.0  | 2007 12 14 | A77 | 0.3+ | 0.5+ |
| 1997 11 29 | 691 | 0.1− | 0.1− | 2007 11 20 | G96 | 0.0  | 0.0  | 2007 12 14 | A77 | 0.5+ | 1.1− |
| 1997 11 29 | 691 | 0.1+ | 0.2+ | 2007 11 21 | G96 | 0.0  | 0.2+ | 2007 12 15 | A77 | 0.7− | 0.3+ |
| 1997 12 05 | 691 | 0.1+ | 0.0  | 2007 11 21 | G96 | 0.1+ | 0.2− | 2007 12 15 | A77 | 0.0  | 0.2− |
| 1997 12 05 | 691 | 0.0  | 0.1+ | 2007 11 21 | G96 | 0.1+ | 0.2+ | 2007 12 15 | A77 | 1.2− | 0.1− |
| 2007 11 20 | G96 | 0.3+ | 0.0  | 2007 11 21 | G96 | 0.0  | 0.0  |            |     |      |      |
| 2007 11 20 | G96 | 0.0  | 0.0  | 2007 12 14 | A77 | 0.4+ | 0.3+ |            |     |      |      |

**2007 WC<sub>55</sub> = 1999 VK<sub>100</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 12.10052   |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|--|-------------|
| <i>n</i> | 0.12523955 | $\omega$ | 350.67394 | +0.79547078 |          |  | −0.60376972 |
| <i>a</i> | 3.9564746  | $\Omega$ | 46.59793  | +0.56048566 |          |  | +0.70050780 |
| <i>e</i> | 0.2903325  | <i>i</i> | 4.09233   | +0.23039544 |          |  | +0.38046150 |
| <i>P</i> | 7.87       | <i>H</i> | 15.2      | <i>G</i>    | 0.15     |  | <i>U</i> 1  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1991 09 09 | 261 | 0.5+ | 0.2− | 2003 04 06 | 807 | 0.6+ | 0.8+ | 2007 11 05 | 691 | 0.3− | 0.3+ |
| 1991 09 09 | 261 | 0.6+ | 0.5− | 2003 04 06 | 807 | 0.1− | 0.8+ | 2007 11 05 | 691 | 0.2− | 0.1+ |
| 1991 10 13 | 691 | 0.3− | 0.7+ | 2007 08 10 | 691 | 0.3+ | 0.5+ | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 1991 10 13 | 691 | 0.3− | 0.2− | 2007 08 10 | 691 | 0.3+ | 0.2+ | 2007 11 05 | G96 | 0.4+ | 0.3− |
| 1991 10 13 | 691 | 0.7− | 0.3+ | 2007 08 10 | 691 | 0.2− | 0.2− | 2007 11 05 | G96 | 0.6+ | 0.2− |
| 1991 10 16 | 261 | 0.4+ | 0.2+ | 2007 08 22 | 691 | 0.1+ | 0.3− | 2007 11 05 | G96 | 0.3+ | 0.2− |
| 1991 10 16 | 261 | 0.1+ | 0.2− | 2007 08 22 | 691 | 0.1+ | 0.6− | 2007 11 17 | 691 | 0.1− | 0.3+ |
| 1999 11 09 | 704 | 0.5+ | 1.0− | 2007 08 22 | 691 | 0.5− | 0.4− | 2007 11 17 | 691 | 0.4− | 0.2+ |
| 1999 11 09 | 704 | 0.3− | 0.1+ | 2007 09 14 | G96 | 0.3− | 0.3− | 2007 11 17 | 691 | 0.1− | 0.2+ |
| 1999 11 09 | 704 | 0.2+ | 0.4− | 2007 09 14 | G96 | 0.1+ | 0.2− | 2007 11 28 | H06 | 0.2− | 0.0  |
| 1999 11 09 | 704 | 0.7+ | 0.1− | 2007 09 14 | G96 | 0.0  | 0.1− | 2007 11 28 | H06 | 0.0  | 0.2− |
| 1999 11 09 | 704 | 0.8+ | 0.1− | 2007 09 14 | G96 | 0.3+ | 0.0  | 2007 11 28 | H06 | 0.3+ | 0.4− |
| 1999 11 12 | 704 | 1.5+ | 0.2− | 2007 10 16 | G96 | 0.4+ | 0.2− | 2007 11 29 | H06 | 0.5+ | 0.4− |
| 1999 11 12 | 704 | 0.8− | 0.6+ | 2007 10 16 | G96 | 0.4+ | 0.2− | 2007 11 29 | H06 | 0.3− | 0.0  |
| 1999 11 12 | 704 | 0.7+ | 0.3+ | 2007 10 16 | G96 | 0.0  | 0.0  | 2007 11 29 | H06 | 0.1+ | 0.2− |
| 1999 11 12 | 704 | 1.0+ | 0.0  | 2007 10 16 | G96 | 0.2+ | 0.0  |            |     |      |      |
| 2003 04 06 | 807 | 0.1+ | 0.9+ | 2007 11 05 | 691 | 0.3− | 0.2+ |            |     |      |      |

**2007 WH<sub>55</sub> = 1999 XW<sub>253</sub> = 2003 YO<sub>50</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

| <i>M</i> | 31.65968   |          | (2000.0)  |             | <b>P</b> |  | <b>Q</b>    |
|----------|------------|----------|-----------|-------------|----------|--|-------------|
| <i>n</i> | 0.23456205 | $\omega$ | 89.37656  | +0.99943208 |          |  | −0.00234259 |
| <i>a</i> | 2.6039394  | $\Omega$ | 270.75731 | −0.01123526 |          |  | +0.91733397 |
| <i>e</i> | 0.2213771  | <i>i</i> | 1.92659   | +0.03176935 |          |  | +0.39811166 |
| <i>P</i> | 4.20       | <i>H</i> | 16.6      | <i>G</i>    | 0.15     |  | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |       |       |            |     |      |      |
|------------|-----|------|------|------------|-----|-------|-------|------------|-----|------|------|
| 1999 12 12 | 691 | 0.3− | 0.5− | 2003 12 21 | 704 | (0.3− | 3.0−) | 2007 11 18 | 691 | 0.0  | 0.2− |
| 1999 12 12 | 691 | 0.4− | 0.5− | 2007 07 19 | G96 | 0.3+  | 0.2+  | 2007 11 30 | J75 | 0.1+ | 0.1− |
| 1999 12 12 | 691 | 0.1+ | 0.3− | 2007 07 19 | G96 | 0.3−  | 0.1−  | 2007 11 30 | J75 | 0.3− | 0.3+ |
| 1999 12 17 | 691 | 0.6+ | 0.0  | 2007 07 19 | G96 | 0.1+  | 0.3−  | 2007 11 30 | J75 | 0.2+ | 0.3+ |
| 1999 12 17 | 691 | 0.3− | 0.1− | 2007 07 19 | G96 | 0.1+  | 0.6−  | 2007 12 01 | 620 | 0.4+ | 0.1+ |
| 1999 12 17 | 691 | 0.2+ | 0.8+ | 2007 10 14 | G96 | 0.5+  | 0.4−  | 2007 12 01 | 620 | 0.1+ | 0.0  |
| 2003 11 24 | 695 | 0.6− | 0.0  | 2007 10 14 | G96 | 0.5+  | 0.2−  | 2007 12 01 | 620 | 0.1+ | 0.2+ |
| 2003 11 24 | 695 | 0.0  | 0.2+ | 2007 10 14 | G96 | 0.5+  | 0.3−  | 2007 12 03 | 703 | 0.0  | 0.4+ |
| 2003 12 18 | 704 | 0.1− | 0.9+ | 2007 10 14 | G96 | 0.0   | 0.3−  | 2007 12 03 | 703 | 0.4+ | 0.4− |
| 2003 12 18 | 704 | 0.6+ | 0.6− | 2007 11 07 | 691 | 0.7−  | 0.6+  | 2007 12 03 | 703 | 0.3+ | 0.5− |
| 2003 12 18 | 704 | 0.1+ | 1.4+ | 2007 11 07 | 691 | 0.2−  | 0.0   | 2007 12 03 | 703 | 0.2+ | 0.3+ |
| 2003 12 18 | 704 | 0.6+ | 0.1+ | 2007 11 07 | 691 | 0.1−  | 0.2−  | 2007 12 06 | 620 | 1.1+ | 0.5+ |

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2003 12 21 704 0.4− 0.2− 2007 11 18 691 0.0 0.2− 2007 12 06 620 0.1+ 0.6+  
 2003 12 21 704 (0.8− 1.5−) 2007 11 18 691 0.0 0.2−

**2007 WS<sub>55</sub> = 2003 WO<sub>88</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 13.92272   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23451028 | $\omega$ | 318.45574 | +0.77670672   | −0.34770690 |
| <i>a</i> | 2.6043227  | $\Omega$ | 69.46848  | +0.61432425   | +0.60225714 |
| <i>e</i> | 0.2881723  | <i>i</i> | 34.11220  | −0.13904099   | +0.71860020 |
| <i>P</i> | 4.20       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 3  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2003 11 23 704 1.0+ 0.0    | 2007 10 18 683 0.0 0.2−  | 2007 12 03 703 0.6− 0.3− |
| 2003 11 23 704 0.3− 0.7+   | 2007 10 18 683 0.5− 0.7− | 2007 12 04 699 0.5− 0.3− |
| 2003 11 23 704 (1.0− 2.3+) | 2007 10 18 683 0.5− 1.1− | 2007 12 04 699 0.3+ 0.8− |
| 2003 11 24 673 0.2+ 0.2+   | 2007 11 08 703 0.0 0.1+  | 2007 12 04 699 0.2− 0.1+ |
| 2003 11 24 673 0.3+ 0.7+   | 2007 11 08 703 0.3− 0.0  | 2007 12 04 G96 0.0 0.2−  |
| 2003 11 24 673 0.3+ 0.4+   | 2007 11 08 703 0.7− 0.3− | 2007 12 04 G96 0.1+ 0.1− |
| 2003 11 24 673 0.2+ 0.0    | 2007 11 08 703 0.4− 0.4− | 2007 12 04 G96 0.2+ 0.5− |
| 2003 11 24 673 0.3+ 0.8+   | 2007 11 21 703 0.4+ 1.0+ | 2007 12 04 699 0.1+ 0.2− |
| 2003 11 24 673 0.2+ 0.4+   | 2007 11 21 703 0.5− 0.3+ | 2007 12 10 704 0.6+ 0.3+ |
| 2003 11 24 926 0.3− 1.2−   | 2007 11 21 703 0.6− 0.7+ | 2007 12 10 704 0.4+ 0.4+ |
| 2003 11 24 926 0.2− 0.1+   | 2007 11 21 703 0.3− 0.9+ | 2007 12 10 704 0.5+ 0.3− |
| 2003 11 24 926 0.2+ 0.4+   | 2007 11 29 D35 0.4− 0.0  | 2007 12 10 704 1.4+ 0.5+ |
| 2003 11 26 704 0.9− 0.1+   | 2007 11 29 D35 0.3− 0.3+ | 2007 12 15 704 1.2+ 0.1+ |
| 2003 11 26 704 0.5− 0.3−   | 2007 11 29 D35 0.4− 0.3+ | 2007 12 15 704 0.3+ 0.1− |
| 2003 11 26 704 0.7− 0.6+   | 2007 12 03 703 0.6− 0.1− | 2007 12 15 704 1.3+ 0.0  |
| 2003 11 26 704 0.5+ 1.1−   | 2007 12 03 703 0.4− 0.1+ | 2007 12 15 704 1.2+ 0.2+ |
| 2003 11 26 704 0.8− 0.3−   | 2007 12 03 703 0.8− 0.2− | 2007 12 15 704 0.7+ 0.3− |

**2007 WV<sub>55</sub> = 2006 QP<sub>132</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 24.84365   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.17524909 | $\omega$ | 310.88521 | +0.61132517   | −0.64100605 |
| <i>a</i> | 3.1625121  | $\Omega$ | 94.84582  | +0.79030832   | +0.52499728 |
| <i>e</i> | 0.2236696  | <i>i</i> | 27.76001  | −0.04116189   | +0.55990098 |
| <i>P</i> | 5.62       | <i>H</i> | 15.1      | <i>G</i> 0.15 | <i>U</i> 0  |

Residuals in seconds of arc

|                            |                          |                          |
|----------------------------|--------------------------|--------------------------|
| 2001 11 12 608 0.1− 0.8−   | 2006 08 22 E12 0.2− 0.7− | 2007 11 29 D35 0.1+ 0.1+ |
| 2001 11 12 608 0.2+ 0.1−   | 2006 08 22 E12 0.4+ 0.7− | 2007 12 03 691 0.2− 0.7+ |
| 2001 11 12 608 0.1+ 0.3−   | 2006 08 22 E12 0.1− 0.9− | 2007 12 03 691 0.2− 0.0  |
| 2001 12 14 644 (0.3− 2.0+) | 2006 08 31 E12 0.1+ 0.9+ | 2007 12 03 691 0.3− 0.3− |
| 2001 12 14 644 0.2+ 0.3+   | 2006 08 31 E12 0.0 0.5+  | 2007 12 05 704 0.1+ 0.0  |
| 2001 12 14 644 0.1+ 0.6+   | 2006 08 31 E12 0.3+ 0.4+ | 2007 12 05 704 0.0 0.1+  |
| 2003 03 24 645 0.0 0.1+    | 2006 08 31 E12 0.4− 0.2+ | 2007 12 05 704 0.9+ 0.3− |
| 2003 03 24 645 0.0 0.1+    | 2006 09 28 E12 0.3+ 0.4+ | 2007 12 14 704 0.6+ 0.2+ |
| 2006 07 29 E12 0.0 0.8+    | 2006 09 28 E12 0.3+ 0.2+ | 2007 12 14 704 0.4+ 0.5− |
| 2006 07 29 E12 0.1− 0.7−   | 2006 09 28 E12 0.8− 0.5+ | 2007 12 14 704 0.3− 0.1− |
| 2006 07 29 E12 0.1+ 0.7+   | 2006 09 28 E12 0.3+ 0.5+ | 2007 12 14 704 0.2+ 0.0  |
| 2006 07 29 E12 0.6− 1.2+   | 2007 11 29 D35 0.1+ 0.1+ | 2007 12 14 704 0.6+ 0.3− |
| 2006 08 22 E12 0.2− 0.2+   | 2007 11 29 D35 0.1+ 0.1+ |                          |

**2007 WG<sub>56</sub> = 2005 JX<sub>149</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 12.29972   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.21133523 | $\omega$ | 333.56194 | +0.59871113   | −0.75953690 |
| <i>a</i> | 2.7913960  | $\Omega$ | 78.58424  | +0.77313094   | +0.46505692 |
| <i>e</i> | 0.1251828  | <i>i</i> | 15.03403  | +0.20931680   | +0.45478099 |
| <i>P</i> | 4.66       | <i>H</i> | 16.2      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2000 05 10 645 0.1+ 0.0  | 2005 05 20 G96 0.6− 0.1− | 2007 12 05 704 0.7+ 0.1+ |
| 2000 05 10 645 0.0 0.0   | 2007 11 05 691 0.6+ 0.4− | 2007 12 05 704 0.4+ 0.1+ |
| 2002 10 10 644 0.2− 0.6+ | 2007 11 05 691 0.3− 0.2+ | 2007 12 05 734 0.7+ 0.2− |

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2002 10 10 644 0.5− 0.5+ | 2007 11 05 691 0.3− 0.3− | 2007 12 05 734 0.0 0.1+  |
| 2002 10 10 644 0.5− 0.2+ | 2007 11 29 734 0.2− 0.5− | 2007 12 05 734 1.1+ 0.0  |
| 2002 10 28 644 0.1+ 0.2− | 2007 11 29 734 0.1+ 0.2− | 2007 12 05 734 0.2− 0.2+ |
| 2002 10 28 644 0.1− 0.3− | 2007 11 29 734 0.2+ 0.1− | 2007 12 06 620 0.3− 0.0  |
| 2002 10 28 644 0.1− 0.0  | 2007 12 03 734 0.2+ 0.0  | 2007 12 06 620 0.6− 0.0  |
| 2002 11 22 644 0.3− 1.1+ | 2007 12 03 734 0.4+ 0.2− | 2007 12 06 620 0.6− 0.2− |
| 2002 11 22 644 0.6− 1.7+ | 2007 12 03 734 0.3+ 0.5− | 2007 12 14 704 0.2− 0.8+ |
| 2002 11 22 644 0.4− 1.0+ | 2007 12 03 734 0.2− 0.0  | 2007 12 14 704 0.2− 0.6+ |
| 2005 05 03 691 0.3+ 0.3+ | 2007 12 05 J75 0.4+ 0.1+ | 2007 12 14 704 0.2− 0.4+ |
| 2005 05 03 691 0.2+ 0.2+ | 2007 12 05 J75 0.8+ 0.3+ | 2007 12 14 704 0.1+ 0.8+ |
| 2005 05 03 691 0.2+ 0.5+ | 2007 12 05 J75 0.2− 0.6+ | 2007 12 14 704 0.0 1.0+  |
| 2005 05 20 G96 0.1− 0.4+ | 2007 12 05 704 0.7− 0.4− | 2007 12 16 691 0.2− 0.2− |
| 2005 05 20 G96 0.1+ 0.2+ | 2007 12 05 704 0.5+ 0.3+ | 2007 12 16 691 0.2− 0.2− |
| 2005 05 20 G96 0.2− 0.2+ | 2007 12 05 704 0.3− 0.1+ | 2007 12 16 691 0.1− 0.2+ |

**2007 WH<sub>56</sub> = 1994 NP<sub>5</sub> = 2003 YU<sub>61</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 36.59978   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23917537 | $\omega$ | 243.43344 | +0.99485153   | −0.01702000 |
| <i>a</i> | 2.5703469  | $\Omega$ | 117.39727 | +0.05093742   | +0.93620468 |
| <i>e</i> | 0.2535367  | <i>i</i> | 6.46088   | −0.08761174   | +0.35104289 |
| <i>P</i> | 4.12       | <i>H</i> | 15.6      | <i>G</i> 0.15 | <i>U</i> 1  |

Residuals in seconds of arc

|                            |                            |                          |
|----------------------------|----------------------------|--------------------------|
| 1992 02 01 691 0.5− 0.4−   | 2003 12 21 704 (2.2− 0.0 ) | 2007 11 11 D29 0.1− 0.1+ |
| 1992 02 01 691 0.2− 0.6−   | 2003 12 21 704 0.9+ 0.0    | 2007 11 11 D29 0.4− 0.2+ |
| 1992 02 01 691 0.1+ 0.4−   | 2003 12 21 704 0.7+ 0.1−   | 2007 11 11 D29 0.1+ 0.1− |
| 1994 07 11 809 0.4+ 1.0+   | 2003 12 21 704 0.2+ 0.2+   | 2007 11 11 D29 0.5− 0.1− |
| 1994 07 11 809 0.2+ 1.8+   | 2003 12 21 704 0.1+ 0.7+   | 2007 11 17 703 0.0 0.6+  |
| 1994 07 11 809 (2.6+ 2.0+) | 2003 12 21 704 0.0 1.3+    | 2007 11 17 703 0.2+ 0.7+ |
| 1994 07 12 809 (0.1+ 4.1+) | 2003 12 23 704 0.3+ 0.6+   | 2007 11 17 703 0.1− 1.3+ |
| 1994 07 12 809 (1.1+ 3.5+) | 2003 12 23 704 0.2− 0.2+   | 2007 11 28 D29 0.1− 0.2+ |
| 1994 07 12 809 (0.2+ 4.0+) | 2003 12 23 704 0.3+ 0.1−   | 2007 11 28 D29 0.4− 0.1− |
| 2001 03 02 608 (3.6+ 0.4+) | 2005 04 17 691 0.5+ 0.2+   | 2007 11 28 D29 0.3− 0.1− |
| 2001 03 02 608 (2.9+ 0.8+) | 2005 04 17 691 0.4+ 0.7+   | 2007 11 28 D29 0.5− 0.1− |
| 2001 03 02 608 (3.2+ 0.5+) | 2005 04 17 691 0.3+ 0.6+   | 2007 12 03 D35 0.7− 0.4+ |
| 2003 12 19 704 0.1− 0.4+   | 2006 05 28 703 0.2+ 0.0    | 2007 12 03 D35 0.3− 0.2+ |
| 2003 12 19 704 0.1+ 0.2+   | 2006 05 28 703 1.0− 1.2−   | 2007 12 03 D35 0.1+ 0.2+ |
| 2003 12 19 704 0.6− 0.4+   | 2006 05 28 703 0.6− 0.4−   | 2007 12 05 699 0.1+ 0.2+ |
| 2003 12 19 704 (1.6− 0.1−) | 2006 05 28 703 0.7− 0.2−   | 2007 12 05 699 0.4+ 0.0  |
| 2003 12 19 704 0.0 0.6+    | 2006 06 15 691 0.1+ 0.3+   | 2007 12 05 699 0.5+ 0.7+ |
| 2003 12 21 704 1.1− 0.9−   | 2006 06 15 691 0.2+ 0.2+   | 2007 12 05 699 0.5+ 0.2− |
| 2003 12 21 704 (1.6− 0.3+) | 2006 06 15 691 0.1− 0.3+   |                          |

**2007 XZ = 2003 YP<sub>150</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |          |               |             |
|----------|------------|----------|----------|---------------|-------------|
| <i>M</i> | 353.20019  |          | (2000.0) | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.23013813 | $\omega$ | 13.72216 | +0.42178424   | −0.89962127 |
| <i>a</i> | 2.6372037  | $\Omega$ | 51.45360 | +0.81764376   | +0.32350493 |
| <i>e</i> | 0.1773960  | <i>i</i> | 8.31077  | +0.39186317   | +0.29330210 |
| <i>P</i> | 4.28       | <i>H</i> | 16.9     | <i>G</i> 0.15 | <i>U</i> 4  |

Residuals in seconds of arc

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 2003 12 29 704 0.5− 0.6+ | 2007 12 01 941 0.3+ 0.2+ | 2007 12 12 704 0.1− 0.9− |
| 2003 12 29 704 0.8+ 0.5+ | 2007 12 04 703 0.3− 0.4+ | 2007 12 13 704 0.8− 1.1+ |
| 2003 12 29 704 0.6− 0.3− | 2007 12 04 703 0.6− 0.0  | 2007 12 13 704 0.1− 0.1+ |
| 2003 12 29 704 0.5+ 0.3+ | 2007 12 04 703 0.3+ 0.3− | 2007 12 13 704 0.3− 0.4+ |
| 2003 12 29 704 0.3− 1.2+ | 2007 12 04 703 0.1− 0.1+ | 2007 12 13 704 0.1− 0.3+ |
| 2003 12 29 704 0.3+ 0.1− | 2007 12 05 941 0.1+ 0.8− | 2007 12 13 704 0.5− 0.3− |
| 2003 12 29 704 1.3+ 1.1− | 2007 12 05 941 0.4+ 0.6− | 2007 12 14 941 0.1− 0.1− |
| 2003 12 29 704 1.1− 0.0  | 2007 12 05 941 0.0 0.3−  | 2007 12 14 941 0.2+ 0.6− |
| 2003 12 30 704 0.1− 1.1− | 2007 12 05 941 0.1+ 0.2− | 2007 12 14 941 0.1+ 0.7− |
| 2003 12 30 704 0.2+ 0.4+ | 2007 12 08 941 0.3+ 0.1− | 2007 12 14 941 0.1+ 0.7− |
| 2003 12 30 704 0.1+ 0.5− | 2007 12 08 941 0.3+ 0.2− | 2007 12 14 941 0.3− 0.9− |
| 2003 12 30 704 0.6− 0.0  | 2007 12 09 941 0.4+ 0.2− | 2007 12 15 704 0.5− 0.9+ |
| 2007 12 01 941 0.0 0.4+  | 2007 12 09 941 0.2+ 0.2− | 2007 12 15 704 0.5+ 1.3+ |

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2007 12 01 | 941 | 0.1+ | 0.3+ | 2007 12 12 | 704 | 0.2− | 0.0  | 2007 12 15 | 704 | 0.4+ | 0.9+ |
| 2007 12 01 | 941 | 0.1+ | 0.3+ | 2007 12 12 | 704 | 0.1+ | 0.3+ | 2007 12 15 | 704 | 0.9+ | 0.2+ |
| 2007 12 01 | 941 | 0.0  | 0.2+ | 2007 12 12 | 704 | 0.6− | 0.1+ |            |     |      |      |

**2007 XU<sub>3</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 346.65912  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.08366023 | $\omega$ | 161.83285 | +0.99429037 | +0.06743844 |
| $a$ | 5.1775387  | $\Omega$ | 195.03830 | −0.07519875 | +0.99266849 |
| $e$ | 0.0767624  | $i$      | 18.58551  | +0.07570864 | +0.10030618 |
| $P$ | 11.78      | $H$      | 12.4      | $G$ 0.15    | $U$ 0       |

Residuals in seconds of arc

|            |     |       |       |            |     |       |       |            |     |      |      |
|------------|-----|-------|-------|------------|-----|-------|-------|------------|-----|------|------|
| 1995 10 02 | 691 | 0.1+  | 0.2+  | 2003 04 24 | 691 | 0.2−  | 0.1+  | 2007 09 20 | G96 | 0.1+ | 0.3− |
| 1995 10 02 | 691 | 0.2−  | 0.4+  | 2003 04 24 | 691 | 0.2−  | 0.1+  | 2007 12 05 | 703 | 0.8− | 0.4+ |
| 1995 10 02 | 691 | 0.1−  | 0.5+  | 2003 04 24 | 691 | 0.3−  | 0.2+  | 2007 12 05 | 703 | 0.1− | 0.9+ |
| 1996 09 10 | 809 | 0.7−  | 1.4+  | 2004 05 12 | 703 | 0.8+  | 1.1+  | 2007 12 05 | 703 | 0.4− | 0.2− |
| 1996 09 12 | 809 | 0.0   | 0.4−  | 2004 05 12 | 703 | 0.8+  | 0.3−  | 2007 12 05 | 703 | 0.2− | 1.5+ |
| 1996 10 14 | 809 | (3.1+ | 1.0+) | 2004 05 12 | 703 | 0.4−  | 0.1+  | 2007 12 05 | G96 | 0.0  | 0.3+ |
| 1996 10 14 | 809 | 0.7+  | 0.7−  | 2004 05 12 | 703 | 1.1+  | 1.0−  | 2007 12 05 | G96 | 0.2− | 0.5+ |
| 2001 02 24 | 608 | (0.4− | 1.7−) | 2005 07 02 | 703 | (1.1+ | 1.9+) | 2007 12 05 | G96 | 0.4− | 0.5+ |
| 2001 02 24 | 608 | (0.5− | 1.9−) | 2005 07 02 | 703 | (1.7+ | 1.7+) | 2007 12 05 | G96 | 0.1+ | 0.4+ |
| 2001 02 24 | 608 | (0.1− | 2.0−) | 2005 07 02 | 703 | (1.4− | 2.4−) | 2007 12 05 | G96 | 0.2+ | 0.3+ |
| 2001 03 19 | 645 | 0.0   | 0.1+  | 2005 07 02 | 703 | 0.8−  | 1.4−  | 2007 12 05 | G96 | 0.0  | 0.2+ |
| 2001 03 19 | 645 | 0.0   | 0.2+  | 2007 09 05 | 703 | 0.4+  | 0.1+  | 2007 12 05 | G96 | 0.1− | 0.3+ |
| 2002 04 05 | 644 | 0.4+  | 0.6+  | 2007 09 05 | 703 | 0.5−  | 1.1+  | 2007 12 05 | G96 | 0.3+ | 0.5+ |
| 2002 04 05 | 644 | 0.5+  | 1.0+  | 2007 09 05 | 703 | 0.4+  | 0.8+  | 2007 12 13 | 704 | 0.4+ | 0.3− |
| 2002 04 05 | 644 | 0.8+  | 0.9+  | 2007 09 05 | 703 | 0.4−  | 0.2+  | 2007 12 13 | 704 | 0.2− | 0.6+ |
| 2003 04 09 | 644 | 0.0   | 0.7+  | 2007 09 20 | G96 | 0.0   | 0.3−  | 2007 12 13 | 704 | 0.1+ | 0.6+ |
| 2003 04 09 | 644 | 0.1+  | 0.4+  | 2007 09 20 | G96 | 0.3+  | 0.3−  |            |     |      |      |
| 2003 04 09 | 644 | 0.0   | 0.7+  | 2007 09 20 | G96 | 0.3+  | 0.2−  |            |     |      |      |

**2007 XZ<sub>3</sub> = 2006 KX<sub>135</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 24.27940   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27658943 | $\omega$ | 122.15740 | +0.90707111 | −0.41854451 |
| $a$ | 2.3329871  | $\Omega$ | 262.61993 | +0.36926747 | +0.84260480 |
| $e$ | 0.2350654  | $i$      | 2.61196   | +0.20214734 | +0.33887705 |
| $P$ | 3.56       | $H$      | 18.4      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2006 05 25 | 568 | 0.2+ | 0.1− | 2007 12 03 | 691 | 0.0  | 0.2+ | 2007 12 14 | 704 | 0.0  | 0.1− |
| 2006 05 25 | 568 | 0.0  | 0.1− | 2007 12 03 | 691 | 0.2+ | 0.1+ | 2007 12 14 | 704 | 0.5− | 0.3+ |
| 2006 05 25 | 568 | 0.1+ | 0.0  | 2007 12 05 | 691 | 0.0  | 0.0  | 2007 12 14 | 704 | 0.6+ | 0.3+ |
| 2006 05 26 | 568 | 0.3− | 0.0  | 2007 12 05 | 691 | 0.1+ | 0.1+ | 2007 12 14 | 704 | 0.4− | 0.2+ |
| 2007 12 03 | 691 | 1.0− | 0.2− | 2007 12 05 | 691 | 0.7+ | 0.4− |            |     |      |      |

**2007 XN<sub>5</sub> = 1999 XY<sub>16</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 21.58744   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.36629902 | $\omega$ | 124.10854 | +0.89898305 | −0.28014411 |
| $a$ | 1.9345452  | $\Omega$ | 254.20698 | +0.18615281 | +0.94019626 |
| $e$ | 0.1022070  | $i$      | 20.48002  | +0.39645506 | +0.19377891 |
| $P$ | 2.69       | $H$      | 16.8      | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 12 07 | 704 | 0.3+ | 0.3+ | 2007 11 21 | 703 | 0.2+ | 0.0  | 2007 12 12 | 704 | 0.8− | 0.2− |
| 1999 12 07 | 704 | 0.3− | 0.3− | 2007 11 21 | 703 | 0.9+ | 1.5+ | 2007 12 12 | 704 | 0.3− | 0.3− |
| 1999 12 07 | 704 | 0.1+ | 0.1+ | 2007 11 21 | 703 | 0.2+ | 0.8+ | 2007 12 12 | 704 | 0.5− | 0.2− |
| 1999 12 07 | 704 | 0.3+ | 0.3− | 2007 12 04 | G96 | 0.1− | 0.6− | 2007 12 13 | 704 | 0.4+ | 0.2− |
| 1999 12 08 | 704 | 0.2+ | 0.5− | 2007 12 04 | G96 | 0.2+ | 0.4− | 2007 12 13 | 704 | 0.1− | 0.4− |
| 1999 12 08 | 704 | 0.4+ | 0.1− | 2007 12 04 | G96 | 0.1+ | 0.4− | 2007 12 13 | 704 | 0.1− | 0.0  |
| 1999 12 08 | 704 | 0.0  | 0.4+ | 2007 12 05 | 699 | 0.3+ | 1.0− | 2007 12 13 | 704 | 0.3− | 0.2− |
| 1999 12 08 | 704 | 0.7− | 0.0  | 2007 12 05 | 699 | 0.1− | 0.0  | 2007 12 15 | 704 | 0.1− | 1.1+ |
| 1999 12 08 | 704 | 0.4− | 0.2+ | 2007 12 05 | 699 | 0.6+ | 0.4− | 2007 12 15 | 704 | 0.4− | 0.6+ |

**2007 XF<sub>9</sub> = 2003 UT<sub>300</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 325.05244  |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.26824468 | $\omega$ | 209.94988 | −0.63478267 | −0.76367629 |
| $a$ | 2.3811237  | $\Omega$ | 279.71549 | +0.73052786 | −0.54352063 |
| $e$ | 0.2764528  | $i$      | 6.85726   | +0.25175385 | −0.34840186 |
| $P$ | 3.67       | $H$      | 16.8      | $G$ 0.15    | $U$ 2       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2003 09 30 | 691 | 0.1− | 0.1+ | 2005 01 20 | 809 | 0.1+ | 0.3− | 2007 12 07 | D29 | 0.2+ | 0.2− |
| 2003 09 30 | 691 | 0.0  | 0.1+ | 2005 01 20 | 809 | 0.2+ | 0.1− | 2007 12 07 | D29 | 0.7+ | 0.2− |
| 2003 09 30 | 691 | 0.1− | 0.4− | 2007 12 04 | G96 | 0.1+ | 1.1− | 2007 12 07 | D29 | 0.5+ | 0.1− |
| 2003 10 17 | 691 | 0.1− | 0.0  | 2007 12 04 | G96 | 0.3− | 0.9− | 2007 12 07 | D29 | 0.3+ | 0.2− |
| 2003 10 17 | 691 | 0.1− | 0.1+ | 2007 12 04 | G96 | 0.1− | 0.9− | 2007 12 10 | 704 | 0.9− | 0.2− |
| 2003 10 17 | 691 | 0.1− | 0.1+ | 2007 12 04 | G96 | 0.0  | 0.6− | 2007 12 10 | 704 | 1.6− | 1.4− |
| 2003 10 29 | 699 | 0.6− | 0.8− | 2007 12 05 | 691 | 0.1+ | 0.2+ | 2007 12 10 | 704 | 0.9+ | 0.9− |
| 2003 10 29 | 699 | 0.1− | 1.0− | 2007 12 05 | 691 | 0.1− | 0.2+ | 2007 12 10 | 704 | 0.5− | 0.7− |
| 2003 10 29 | 699 | 0.6− | 0.4− | 2007 12 05 | 691 | 0.0  | 0.1+ | 2007 12 10 | 704 | 0.4+ | 0.4− |
| 2003 10 29 | 699 | 1.2+ | 0.9+ | 2007 12 06 | 704 | 0.1− | 1.0+ | 2007 12 14 | 704 | 0.2+ | 0.3+ |
| 2003 11 02 | 691 | 0.1+ | 0.0  | 2007 12 06 | 704 | 0.5− | 1.1+ | 2007 12 14 | 704 | 0.2+ | 0.4+ |
| 2003 11 02 | 691 | 0.2+ | 0.0  | 2007 12 06 | 704 | 0.1− | 1.1+ | 2007 12 14 | 704 | 0.1+ | 0.3+ |
| 2003 11 02 | 691 | 0.3+ | 0.1+ | 2007 12 06 | 704 | 0.1+ | 0.6+ | 2007 12 14 | 704 | 0.9+ | 0.4+ |
| 2005 01 20 | 809 | 0.4− | 0.4− | 2007 12 06 | 704 | 0.7− | 0.2+ | 2007 12 14 | 704 | 0.5+ | 0.4+ |

**2007 XU<sub>16</sub> = 2000 YV<sub>23</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |           |             |             |
|-----|------------|----------|-----------|-------------|-------------|
| $M$ | 33.88248   |          | (2000.0)  | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.27500207 | $\omega$ | 82.13378  | +0.99095346 | −0.11366760 |
| $a$ | 2.3419560  | $\Omega$ | 284.37223 | +0.07432192 | +0.90747897 |
| $e$ | 0.2616281  | $i$      | 4.22399   | +0.11174741 | +0.40442749 |
| $P$ | 3.58       | $H$      | 17.5      | $G$ 0.15    | $U$ 5       |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 12 28 | 691 | 0.3+ | 0.0  | 2007 12 11 | J75 | 0.1+ | 0.8+ | 2007 12 14 | 704 | 0.5+ | 0.7+ |
| 2000 12 28 | 691 | 0.1− | 0.1+ | 2007 12 11 | 620 | 0.8− | 0.2− | 2007 12 14 | 704 | 0.6− | 0.4− |
| 2000 12 28 | 691 | 0.0  | 0.2+ | 2007 12 11 | 620 | 0.1− | 0.3+ | 2007 12 14 | 704 | 0.4+ | 0.4+ |
| 2000 12 30 | 691 | 0.4+ | 0.2− | 2007 12 11 | 620 | 0.5− | 0.3− | 2007 12 14 | 704 | 0.6+ | 0.0  |
| 2000 12 30 | 691 | 0.3− | 0.0  | 2007 12 11 | 620 | 0.3+ | 0.2− | 2007 12 15 | 620 | 0.6− | 0.1+ |
| 2000 12 30 | 691 | 0.2− | 0.0  | 2007 12 11 | 620 | 0.1− | 0.2+ | 2007 12 15 | 620 | 0.1+ | 0.2+ |
| 2007 12 11 | J75 | 0.5+ | 0.3− | 2007 12 11 | 620 | 0.1+ | 0.4− | 2007 12 15 | 620 | 0.4− | 0.2− |
| 2007 12 11 | J75 | 0.1+ | 0.5− | 2007 12 14 | 704 | 0.4+ | 0.2− |            |     |      |      |

**2007 XZ<sub>16</sub> = 2004 BS<sub>113</sub>**

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|     |            |          |          |             |             |
|-----|------------|----------|----------|-------------|-------------|
| $M$ | 333.96245  |          | (2000.0) | <b>P</b>    | <b>Q</b>    |
| $n$ | 0.23647698 | $\omega$ | 34.74270 | −0.28259093 | −0.95229460 |
| $a$ | 2.5898631  | $\Omega$ | 71.91095 | +0.85032167 | −0.30428512 |
| $e$ | 0.2740172  | $i$      | 6.96244  | +0.44395430 | −0.02335731 |
| $P$ | 4.17       | $H$      | 17.3     | $G$ 0.15    | $U$ 3       |

Residuals in seconds of arc

|            |     |       |       |            |     |      |      |            |     |       |       |
|------------|-----|-------|-------|------------|-----|------|------|------------|-----|-------|-------|
| 2004 01 13 | 699 | 1.2+  | 0.8−  | 2007 11 06 | 691 | 0.1− | 0.2+ | 2007 12 11 | J75 | (2.0− | 1.7+) |
| 2004 01 13 | 699 | 0.1−  | 0.8−  | 2007 12 04 | 703 | 0.6− | 0.1+ | 2007 12 11 | J75 | (1.6− | 0.2+) |
| 2004 01 13 | 699 | 0.2+  | 0.7+  | 2007 12 04 | 703 | 0.0  | 0.0  | 2007 12 11 | J75 | 0.2−  | 0.0   |
| 2004 01 13 | 699 | 0.0   | 1.2−  | 2007 12 04 | 703 | 0.5− | 0.6− | 2007 12 12 | 620 | 0.9+  | 0.2+  |
| 2004 01 28 | 691 | 0.2−  | 0.0   | 2007 12 04 | 703 | 0.5− | 0.3− | 2007 12 12 | 620 | 0.5+  | 0.3−  |
| 2004 01 28 | 691 | 0.2−  | 0.1+  | 2007 12 04 | 703 | 1.0+ | 0.5+ | 2007 12 12 | 620 | 1.0+  | 0.1−  |
| 2004 01 28 | 691 | 0.2−  | 0.1+  | 2007 12 04 | 703 | 0.0  | 0.1+ | 2007 12 14 | 704 | 1.1−  | 0.4+  |
| 2004 01 30 | 699 | (1.6+ | 0.8−) | 2007 12 04 | 703 | 0.5− | 0.8+ | 2007 12 14 | 704 | 0.4−  | 0.3−  |
| 2004 01 30 | 699 | 0.8+  | 0.4−  | 2007 12 04 | 703 | 0.9+ | 0.0  | 2007 12 14 | 704 | 0.2−  | 0.3−  |
| 2004 01 30 | 699 | 0.3−  | 1.0+  | 2007 12 06 | G96 | 0.4+ | 0.4− | 2007 12 14 | 704 | 0.4−  | 0.6+  |

2007 DEC. 24

M.P.O. 130057

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 01 30 | 699 | 0.4+ | 0.4+ | 2007 12 06 | G96 | 0.2+ | 0.3- | 2007 12 14 | 704 | 0.2- | 0.2+ |
| 2007 11 06 | 691 | 0.0  | 0.1+ | 2007 12 06 | G96 | 0.1+ | 0.2- |            |     |      |      |
| 2007 11 06 | 691 | 0.1- | 0.2- | 2007 12 06 | G96 | 0.1- | 0.4- |            |     |      |      |

2007 XR<sub>17</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 58.66411   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.28053292 | $\omega$ | 269.41354 | +0.88905487   | +0.42268344 |
| <i>a</i> | 2.3110721  | $\Omega$ | 65.57124  | -0.30400307   | +0.83227759 |
| <i>e</i> | 0.2696932  | <i>i</i> | 11.13557  | -0.34229166   | +0.35868192 |
| <i>P</i> | 3.51       | <i>H</i> | 16.5      | <i>G</i> 0.15 | <i>U</i> 2  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 1999 05 21 | 691 | 0.1+ | 0.2+ | 2007 11 18 | 691 | 0.4+ | 0.1+ | 2007 12 12 | 704 | 0.0  | 0.2- |
| 1999 05 21 | 691 | 0.3- | 0.3- | 2007 11 18 | 691 | 0.5- | 0.1- | 2007 12 12 | 704 | 0.1+ | 1.0+ |
| 1999 05 21 | 691 | 0.2+ | 0.1+ | 2007 11 18 | 691 | 0.3- | 0.1- | 2007 12 12 | 704 | 0.2- | 0.3- |
| 2006 05 08 | G96 | 0.1+ | 0.0  | 2007 12 01 | A77 | 1.4+ | 1.0- | 2007 12 15 | 704 | 0.5+ | 0.0  |
| 2006 05 08 | G96 | 0.2- | 0.0  | 2007 12 01 | A77 | 0.0  | 0.2- | 2007 12 15 | 704 | 0.0  | 0.5+ |
| 2006 05 08 | G96 | 0.0  | 0.0  | 2007 12 01 | A77 | 0.1+ | 0.4+ | 2007 12 15 | 704 | 0.5+ | 0.2+ |
| 2006 05 08 | G96 | 0.0  | 0.1+ | 2007 12 10 | 704 | 0.2+ | 0.3+ | 2007 12 15 | 704 | 0.3+ | 0.2+ |
| 2007 11 01 | 691 | 0.2- | 0.1- | 2007 12 10 | 704 | 0.3+ | 0.2+ | 2007 12 15 | 704 | 0.4+ | 0.0  |
| 2007 11 01 | 691 | 0.6- | 0.2+ | 2007 12 10 | 704 | 0.9+ | 0.7- |            |     |      |      |
| 2007 11 01 | 691 | 0.2- | 0.2- | 2007 12 10 | 704 | 1.0+ | 0.6+ |            |     |      |      |

2007 XK<sub>18</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 96.59188   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.38573435 | $\omega$ | 62.89462  | +0.63493600   | +0.72239921 |
| <i>a</i> | 1.8690052  | $\Omega$ | 249.28234 | -0.77093399   | +0.56943460 |
| <i>e</i> | 0.0662067  | <i>i</i> | 17.02485  | -0.05017022   | +0.39228002 |
| <i>P</i> | 2.56       | <i>H</i> | 17.9      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2004 06 12 | 691 | 0.0  | 0.3- | 2007 11 17 | 691 | 0.1- | 0.3- | 2007 12 03 | 703 | 0.1- | 0.7+ |
| 2004 06 12 | 691 | 0.0  | 0.0  | 2007 11 17 | 691 | 0.0  | 0.4- | 2007 12 04 | G96 | 0.3+ | 0.2- |
| 2004 06 12 | 691 | 0.1- | 0.3+ | 2007 11 17 | 691 | 0.2- | 0.1- | 2007 12 04 | G96 | 0.4+ | 0.4- |
| 2007 11 08 | 691 | 0.3+ | 0.1- | 2007 12 03 | 703 | 0.4+ | 0.6+ | 2007 12 04 | G96 | 0.3+ | 0.1- |
| 2007 11 08 | 691 | 0.3+ | 0.1- | 2007 12 03 | 703 | 0.2+ | 0.3+ | 2007 12 04 | G96 | 0.2+ | 0.2- |
| 2007 11 08 | 691 | 1.0- | 0.6+ | 2007 12 03 | 703 | 0.8+ | 1.2+ |            |     |      |      |

2007 XO<sub>20</sub> = 2000 UQ<sub>108</sub>

Epoch 2007 Oct. 27.0 TT = JDT 2454400.5

MPC

|          |            |          |           |               |             |
|----------|------------|----------|-----------|---------------|-------------|
| <i>M</i> | 49.90911   |          | (2000.0)  | <b>P</b>      | <b>Q</b>    |
| <i>n</i> | 0.29081478 | $\omega$ | 289.45512 | +0.98712320   | -0.06608817 |
| <i>a</i> | 2.2562735  | $\Omega$ | 74.54599  | +0.12335171   | +0.89428702 |
| <i>e</i> | 0.1727113  | <i>i</i> | 8.69275   | -0.10184368   | +0.44258681 |
| <i>P</i> | 3.39       | <i>H</i> | 16.6      | <i>G</i> 0.15 | <i>U</i> 5  |

Residuals in seconds of arc

|            |     |      |      |            |     |      |      |            |     |      |      |
|------------|-----|------|------|------------|-----|------|------|------------|-----|------|------|
| 2000 10 31 | 704 | 0.6- | 0.3- | 2000 11 03 | 704 | 0.1- | 0.1+ | 2007 12 13 | 620 | 0.4- | 0.4- |
| 2000 10 31 | 704 | 1.0+ | 0.4- | 2007 12 03 | 691 | 0.2- | 0.4+ | 2007 12 13 | 620 | 0.1+ | 0.0  |
| 2000 10 31 | 704 | 0.7- | 0.4- | 2007 12 03 | 691 | 0.1- | 0.3- | 2007 12 14 | 620 | 0.6+ | 0.1- |
| 2000 10 31 | 704 | 0.1- | 0.3+ | 2007 12 03 | 691 | 0.2+ | 0.1+ | 2007 12 14 | 620 | 0.2+ | 0.1- |
| 2000 10 31 | 704 | 0.1- | 0.2+ | 2007 12 13 | 620 | 0.1+ | 0.0  | 2007 12 14 | 620 | 0.5- | 0.0  |
| 2000 11 03 | 704 | 0.5+ | 0.6+ | 2007 12 13 | 620 | 0.5+ | 0.3+ |            |     |      |      |
| 2000 11 03 | 704 | 0.2+ | 0.1- | 2007 12 13 | 620 | 0.2- | 0.1- |            |     |      |      |

| Object  | <i>H</i> | <i>G</i> | Epoch    | <i>M</i>  | $\omega$  | $\Omega$  | <i>i</i> | <i>e</i>  | <i>a</i>  | Obs. | Opp. & Arc   | rms Perts <i>U</i> | Computer | Ref.  | Object  |
|---------|----------|----------|----------|-----------|-----------|-----------|----------|-----------|-----------|------|--------------|--------------------|----------|-------|---------|
| (903)   | 9.8      | 0.15     | 20071027 | 45.40566  | 238.56347 | 159.68336 | 11.74873 | 0.0383621 | 3.2416478 | 829  | 27 1918–2007 | 0.59 M-v 0         | MPC      | 27429 | (903)   |
| (1304)  | 8.6      | 0.15     | 20071027 | 308.34457 | 147.20525 | 87.01743  | 18.97921 | 0.1097564 | 3.2028890 | 691  | 34 1908–2007 | 0.55 M-v 0         | MPC      | 24886 | (1304)  |
| (1515)  | 13.1     | 0.15     | 20071027 | 87.73696  | 350.36305 | 49.35675  | 10.66280 | 0.2346176 | 2.5710882 | 590  | 13 1907–2007 | 0.57 M-v 0         | MPC      | 12096 | (1515)  |
| (1851)  | 12.3     | 0.15     | 20071027 | 155.12328 | 344.31376 | 24.78236  | 1.66867  | 0.1936258 | 3.1012263 | 733  | 19 1950–2007 | 0.55 M-v 0         | MPC      | 2606  | (1851)  |
| (1856)  | 12.6     | 0.15     | 20071027 | 271.26212 | 55.94914  | 186.01027 | 4.73774  | 0.0795806 | 2.2368047 | 722  | 19 1969–2007 | 0.60 M-v 0         | MPC      | 31577 | (1856)  |
| (2013)  | 12.6     | 0.15     | 20071027 | 187.04790 | 237.93706 | 96.60827  | 7.50835  | 0.2251813 | 2.2898019 | 707  | 22 1942–2007 | 0.56 M-v 0         | MPC      | 35408 | (2013)  |
| (2304)  | 12.4     | 0.15     | 20071027 | 259.64041 | 60.17600  | 196.01053 | 13.57780 | 0.1314479 | 2.6137223 | 637  | 16 1953–2007 | 0.58 M-v 0         | MPC      | 595   | (2304)  |
| (2491)  | 13.68    | 0.15     | 20071027 | 15.23441  | 357.61525 | 125.35856 | 22.86611 | 0.0543182 | 1.8777183 | 391  | 13 1977–2007 | 0.54 M-v 1         | MPC      | 38009 | (2491)  |
| (2578)  | 11.4     | 0.15     | 20071027 | 52.56678  | 338.59697 | 55.78133  | 10.57454 | 0.0951569 | 3.0029166 | 622  | 14 1952–2007 | 0.59 M-v 0         | MPC      | 77284 | (2578)  |
| (2590)  | 12.7     | 0.15     | 20071027 | 85.92778  | 165.85947 | 223.85448 | 6.13116  | 0.1182302 | 2.3423984 | 821  | 15 1974–2007 | 0.57 M-v 0         | MPC      | 2608  | (2590)  |
| (2593)  | 14.3     | 0.15     | 20071027 | 17.28979  | 75.95484  | 63.41166  | 0.21459  | 0.0788722 | 2.1696042 | 681  | 16 1976–2007 | 0.49 M-v 0         | MPC      | 35408 | (2593)  |
| (2643)  | 15.0     | 0.15     | 20071027 | 78.62668  | 65.78533  | 348.62799 | 22.94709 | 0.2754942 | 2.3771083 | 319  | 10 1973–2007 | 0.56 M-v 1         | MPC      | 38010 | (2643)  |
| (2894)  | 12.1     | 0.15     | 20071027 | 27.33302  | 32.54403  | 86.30993  | 2.58590  | 0.1435256 | 3.1110535 | 631  | 18 1953–2007 | 0.56 M-v 0         | MPC      | 2608  | (2894)  |
| (3245)  | 13.3     | 0.15     | 20071027 | 16.85752  | 84.00502  | 348.75362 | 0.33098  | 0.1634336 | 3.1237874 | 750  | 14 1973–2007 | 0.57 M-v 0         | MPC      | 3855  | (3245)  |
| (3590)  | 13.1     | 0.15     | 20071027 | 28.67325  | 354.14389 | 128.69702 | 6.70392  | 0.0805065 | 2.2510845 | 600  | 18 1950–2007 | 0.58 M-v 0         | MPC      | 32039 | (3590)  |
| (4127)  | 12.0     | 0.15     | 20071027 | 140.55303 | 223.82438 | 153.96583 | 2.26459  | 0.0424272 | 2.8660815 | 668  | 16 1981–2007 | 0.65 M-v 0         | MPC      | 3855  | (4127)  |
| (4301)  | 12.2     | 0.15     | 20071027 | 357.47665 | 98.13956  | 52.26503  | 2.29016  | 0.1211803 | 3.1049082 | 675  | 21 1951–2007 | 0.52 M-v 0         | MPC      | 32507 | (4301)  |
| (4647)  | 12.6     | 0.15     | 20071027 | 198.06840 | 128.91266 | 180.59642 | 6.93299  | 0.2599185 | 2.8934368 | 519  | 16 1931–2007 | 0.59 M-v 0         | MPC      | 3855  | (4647)  |
| (5074)  | 11.7     | 0.15     | 20071027 | 29.57743  | 89.13503  | 309.81495 | 8.55293  | 0.1015688 | 2.9938918 | 561  | 17 1949–2007 | 0.55 M-v 0         | MPC      | 15993 | (5074)  |
| (5569)  | 13.4     | 0.15     | 20071027 | 231.66193 | 283.20046 | 353.83631 | 5.26430  | 0.1602470 | 2.4344979 | 631  | 12 1974–2007 | 0.57 M-v 0         | MPC      | 38012 | (5569)  |
| (5976)  | 11.8     | 0.15     | 20071027 | 266.28896 | 235.58041 | 17.60618  | 13.37125 | 0.1384199 | 2.6826133 | 544  | 13 1942–2007 | 0.51 M-v 0         | MPC      | 47610 | (5976)  |
| (6169)  | 12.6     | 0.15     | 20071027 | 178.02166 | 117.79790 | 207.74317 | 20.01616 | 0.1390207 | 3.0981036 | 403  | 13 1981–2007 | 0.57 M-v 0         | MPC      | 25663 | (6169)  |
| (6473)  | 12.9     | 0.15     | 20071027 | 338.32349 | 327.56282 | 204.30353 | 7.43432  | 0.1280409 | 2.6858814 | 625  | 13 1955–2007 | 0.56 M-v 0         | MPC      | 15993 | (6473)  |
| (6736)  | 14.0     | 0.15     | 20071027 | 14.00948  | 57.13272  | 63.46223  | 3.09988  | 0.1663145 | 2.4021184 | 539  | 15 1952–2007 | 0.58 M-v 0         | MPC      | 12097 | (6736)  |
| (7141)  | 12.9     | 0.15     | 20071027 | 323.60852 | 155.55866 | 47.72927  | 9.86803  | 0.0902162 | 2.7869345 | 440  | 12 1991–2007 | 0.57 M-v 0         | MPC      | 3856  | (7141)  |
| (7216)  | 14.0     | 0.15     | 20071027 | 220.50259 | 20.21483  | 277.63364 | 2.01813  | 0.1788734 | 2.1568287 | 501  | 12 1977–2007 | 0.56 M-v 0         | MPC      | 8363  | (7216)  |
| (7272)  | 12.6     | 0.15     | 20071027 | 285.11814 | 209.57544 | 30.42495  | 9.62624  | 0.0983780 | 2.7814821 | 581  | 13 1952–2007 | 0.57 M-v 0         | MPC      | 3856  | (7272)  |
| (7320)  | 12.6     | 0.15     | 20071027 | 39.16817  | 123.63664 | 333.07860 | 4.49831  | 0.1965344 | 3.1213485 | 566  | 13 1978–2007 | 0.54 M-v 0         | MPC      | 4877  | (7320)  |
| (7395)  | 14.4     | 0.15     | 20071027 | 212.29768 | 126.43304 | 170.48732 | 5.70395  | 0.1750901 | 2.2690279 | 571  | 12 1985–2007 | 0.55 M-v 0         | MPC      | 31792 | (7395)  |
| (7503)  | 14.2     | 0.15     | 20071027 | 150.97831 | 41.29418  | 324.84937 | 1.95410  | 0.0443684 | 2.2301443 | 576  | 13 1986–2007 | 0.55 M-v 0         | MPC      | 10821 | (7503)  |
| (7839)  | 17.9     | 0.15     | 20071027 | 50.61837  | 227.95907 | 102.73916 | 27.18542 | 0.5176543 | 2.1656127 | 69   | 3 1994–2007  | 0.68 M-v 1         | MPC      | 30441 | (7839)  |
| (7963)  | 13.8     | 0.15     | 20071027 | 202.08932 | 62.57096  | 251.95623 | 12.75434 | 0.1797241 | 2.5890021 | 484  | 13 1988–2007 | 0.55 M-v 0         | MPC      | 15993 | (7963)  |
| (8287)  | 14.5     | 0.15     | 20071027 | 271.04557 | 151.59422 | 104.64022 | 2.31373  | 0.1127061 | 2.1414857 | 362  | 12 1990–2007 | 0.51 M-v 0         | MPC      | 31792 | (8287)  |
| (8557)  | 15.3     | 0.15     | 20071027 | 160.95571 | 204.39402 | 124.97812 | 6.96090  | 0.1402628 | 2.3064699 | 375  | 12 1992–2007 | 0.59 M-v 0         | MPC      | 30234 | (8557)  |
| (8650)  | 14.2     | 0.15     | 20071027 | 47.44342  | 109.10164 | 323.93576 | 4.95685  | 0.1311343 | 2.2757823 | 473  | 10 1989–2007 | 0.51 M-v 0         | MPC      | 9658  | (8650)  |
| (8661)  | 12.6     | 0.15     | 20071027 | 37.39760  | 80.65020  | 38.43033  | 10.56309 | 0.0406230 | 3.0043789 | 597  | 12 1974–2007 | 0.55 M-v 0         | MPC      | 4877  | (8661)  |
| (8761)  | 13.9     | 0.15     | 20071027 | 262.35098 | 5.28204   | 250.40091 | 3.16253  | 0.0911180 | 2.2417474 | 587  | 12 1971–2007 | 0.53 M-v 0         | MPC      | 33741 | (8761)  |
| (9181)  | 13.8     | 0.15     | 20071027 | 219.33803 | 350.33170 | 317.51618 | 6.84735  | 0.1494906 | 2.3170077 | 528  | 13 1977–2007 | 0.53 M-v 0         | MPC      | 12098 | (9181)  |
| (9187)  | 15.1     | 0.15     | 20071027 | 190.38884 | 64.24880  | 214.08857 | 4.35639  | 0.2044163 | 2.3940784 | 492  | 12 1990–2007 | 0.52 M-v 0         | MPC      | 9658  | (9187)  |
| (9295)  | 14.3     | 0.15     | 20071027 | 207.44175 | 321.86405 | 0.25458   | 6.28011  | 0.1400035 | 2.3896844 | 365  | 12 1950–2007 | 0.54 M-v 0         | MPC      | 38014 | (9295)  |
| (9475)  | 13.1     | 0.15     | 20071027 | 266.29078 | 169.03654 | 103.33899 | 3.59201  | 0.1308221 | 3.1747077 | 624  | 13 1976–2007 | 0.56 M-v 0         | MPC      | 27569 | (9475)  |
| (9515)  | 13.1     | 0.15     | 20071027 | 192.27088 | 314.83203 | 25.53489  | 23.70409 | 0.2250756 | 2.4224955 | 320  | 12 1955–2007 | 0.54 M-v 1         | MPC      | 32867 | (9515)  |
| (9744)  | 13.4     | 0.15     | 20071027 | 186.92375 | 134.04620 | 109.03273 | 13.54403 | 0.2964734 | 2.6152842 | 314  | 13 1984–2007 | 0.52 M-v 0         | MPC      | 13524 | (9744)  |
| (9750)  | 13.8     | 0.15     | 20071027 | 157.49687 | 258.85832 | 38.18311  | 12.74906 | 0.2507290 | 2.5695535 | 556  | 12 1976–2007 | 0.52 M-v 0         | MPC      | 13524 | (9750)  |
| (9751)  | 13.7     | 0.15     | 20071027 | 229.34826 | 125.33936 | 160.52965 | 2.83761  | 0.1792669 | 2.4276246 | 514  | 12 1990–2007 | 0.58 M-v 0         | MPC      | 14339 | (9751)  |
| (9831)  | 15.2     | 0.15     | 20071027 | 161.84765 | 187.92809 | 168.63887 | 2.40004  | 0.2096031 | 2.4157338 | 307  | 12 1979–2007 | 0.64 M-v 1         | MPC      | 13525 | (9831)  |
| (9851)  | 13.4     | 0.15     | 20071027 | 14.33102  | 359.55497 | 58.24375  | 6.48762  | 0.3180278 | 2.5958737 | 439  | 12 1983–2007 | 0.50 M-v 0         | MPC      | 53556 | (9851)  |
| (9964)  | 13.4     | 0.15     | 20071027 | 272.31949 | 271.36656 | 356.54516 | 6.21830  | 0.1498117 | 2.4701295 | 650  | 12 1982–2007 | 0.56 M-v 0         | MPC      | 14997 | (9964)  |
| (10621) | 13.4     | 0.15     | 20071027 | 113.51614 | 92.60341  | 294.45966 | 7.07774  | 0.0240134 | 2.7801953 | 433  | 12 1989–2007 | 0.57 M-v 0         | MPC      | 18125 | (10621) |
| (11115) | 14.1     | 0.15     | 20071027 | 62.12609  | 28.82774  | 39.24927  | 6.06383  | 0.1511650 | 3.0945333 | 384  | 10 1995–2007 | 0.53 M-v 0         | MPC      | 23409 | (11115) |
| (11459) | 15.2     | 0.15     | 20071027 | 226.73453 | 295.62565 | 292.03724 | 4.19858  | 0.2173997 | 2.2835040 | 306  | 12 1979–2007 | 0.57 M-v 0         | MPC      | 31793 | (11459) |



|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (11468) | 14.1 | 0.15 | 20071027 | 150.53436 | 155.19395 | 206.51375 | 0.78483  | 0.1664840 | 3.0772906 | 405 | 10 | 1981-2007 | 0.53 | M-v | 0 | MP | 25664 | (11468) |
| (11864) | 14.2 | 0.15 | 20071027 | 220.79624 | 184.30544 | 120.37922 | 5.87966  | 0.2030071 | 2.1909471 | 546 | 12 | 1986-2007 | 0.56 | M-v | 0 | MP | 31793 | (11864) |
| (11874) | 15.0 | 0.15 | 20071027 | 141.24748 | 221.36543 | 150.17006 | 4.87929  | 0.1617940 | 2.2481057 | 382 | 12 | 1979-2007 | 0.56 | M-v | 0 | MP | 30235 | (11874) |
| (11995) | 12.8 | 0.15 | 20071027 | 323.16669 | 85.17342  | 120.48803 | 5.85853  | 0.0880724 | 3.1228984 | 446 | 12 | 1980-2007 | 0.57 | M-v | 0 | MP | 23409 | (11995) |
| (12153) | 15.4 | 0.15 | 20071027 | 229.96047 | 273.04080 | 331.02705 | 3.63531  | 0.1282905 | 2.2611013 | 288 | 10 | 1971-2007 | 0.57 | M-v | 0 | MP | 31793 | (12153) |
| (12189) | 14.4 | 0.15 | 20071027 | 170.55057 | 144.40831 | 176.54060 | 5.67441  | 0.1498586 | 2.2906572 | 510 | 10 | 1978-2007 | 0.56 | M-v | 0 | MP | 31793 | (12189) |
| (12233) | 14.1 | 0.15 | 20071027 | 35.65904  | 260.88969 | 118.21235 | 4.95693  | 0.2503062 | 2.5586083 | 295 | 9  | 1986-2007 | 0.60 | M-v | 1 | MP | 77291 | (12233) |
| (12241) | 15.1 | 0.15 | 20071027 | 148.35599 | 244.43143 | 89.86047  | 1.69765  | 0.2301763 | 2.3284583 | 382 | 10 | 1988-2007 | 0.54 | M-v | 0 | MP | 31793 | (12241) |
| (12246) | 14.0 | 0.15 | 20071027 | 137.92076 | 186.76043 | 181.64012 | 5.99110  | 0.1164429 | 2.3162327 | 663 | 10 | 1988-2007 | 0.54 | M-v | 0 | MP | 33742 | (12246) |
| (12519) | 14.9 | 0.15 | 20071027 | 190.87224 | 31.62775  | 222.56894 | 1.45359  | 0.1945463 | 2.3641416 | 490 | 12 | 1954-2007 | 0.52 | M-v | 0 | MP | 27569 | (12519) |
| (12609) | 13.8 | 0.15 | 20071027 | 207.32920 | 33.16168  | 300.13573 | 0.87920  | 0.1845659 | 3.1170531 | 366 | 10 | 1960-2007 | 0.52 | M-v | 0 | MP | 47646 | (12609) |
| (12865) | 13.2 | 0.15 | 20071027 | 235.47821 | 94.11937  | 201.21769 | 9.09828  | 0.0751874 | 3.0571465 | 494 | 12 | 1992-2007 | 0.56 | M-v | 0 | MP | 25665 | (12865) |
| (13243) | 13.9 | 0.15 | 20071027 | 235.50979 | 176.02564 | 107.43792 | 7.62379  | 0.1179994 | 2.2874961 | 488 | 9  | 1997-2007 | 0.53 | M-v | 0 | MP | 35429 | (13243) |
| (13599) | 14.3 | 0.15 | 20071027 | 47.97097  | 220.09216 | 154.75487 | 7.44159  | 0.2485655 | 2.5722371 | 246 | 11 | 1990-2007 | 0.65 | M-v | 0 | MP | 77293 | (13599) |
| (14288) | 16.0 | 0.15 | 20071027 | 26.12663  | 248.34346 | 141.23783 | 3.27678  | 0.2250520 | 2.6185970 | 88  | 9  | 1960-2007 | 0.70 | M-v | 0 | MP | 39133 | (14288) |
| (14508) | 13.8 | 0.15 | 20071027 | 181.67162 | 255.21519 | 4.96958   | 10.32100 | 0.1606860 | 2.6417924 | 401 | 9  | 1993-2007 | 0.51 | M-v | 0 | MP | 73867 | (14508) |
| (14600) | 15.1 | 0.15 | 20071027 | 357.38084 | 300.49655 | 160.60201 | 4.52433  | 0.2163307 | 2.6070570 | 244 | 9  | 1960-2007 | 0.65 | M-v | 0 | MP | 39876 | (14600) |
| (15336) | 13.9 | 0.15 | 20071027 | 75.44597  | 91.14541  | 318.21852 | 1.20592  | 0.2176108 | 2.6629893 | 544 | 9  | 1993-2007 | 0.55 | M-v | 0 | MP | 14999 | (15336) |
| (15804) | 13.4 | 0.15 | 20071027 | 109.03358 | 295.50523 | 116.80701 | 6.27762  | 0.0520331 | 2.7383839 | 487 | 10 | 1994-2007 | 0.61 | M-v | 0 | MP | 41501 | (15804) |
| (15898) | 13.3 | 0.15 | 20071027 | 274.80857 | 260.98618 | 328.03010 | 13.61596 | 0.0656145 | 2.5829530 | 473 | 10 | 1993-2007 | 0.55 | M-v | 0 | MP | 38162 | (15898) |
| (16163) | 15.1 | 0.15 | 20071027 | 97.28045  | 152.50735 | 208.67522 | 1.51496  | 0.2027960 | 2.3982673 | 411 | 12 | 1991-2007 | 0.53 | M-v | 0 | MP | 33744 | (16163) |
| (16381) | 14.8 | 0.15 | 20071027 | 243.04862 | 264.33995 | 346.51902 | 9.79334  | 0.3478389 | 2.7681789 | 228 | 9  | 1981-2007 | 0.62 | M-v | 0 | MP | 2817  | (16381) |
| (16786) | 11.8 | 0.15 | 20071027 | 326.36657 | 173.45920 | 296.78605 | 12.62632 | 0.1073535 | 3.1727449 | 430 | 11 | 1979-2007 | 0.54 | M-v | 0 | MP | 77298 | (16786) |
| (16871) | 15.0 | 0.15 | 20071027 | 39.51616  | 319.32905 | 52.21933  | 5.30587  | 0.1768366 | 2.2636854 | 355 | 9  | 1992-2007 | 0.58 | M-v | 1 | MP | 73869 | (16871) |
| (16950) | 14.6 | 0.15 | 20071027 | 165.94806 | 306.13543 | 7.45110   | 7.44218  | 0.1418246 | 2.3211419 | 493 | 12 | 1955-2007 | 0.51 | M-v | 0 | MP | 31794 | (16950) |
| (17039) | 14.3 | 0.15 | 20071027 | 275.72766 | 215.48907 | 19.75326  | 4.99108  | 0.0343565 | 2.7535178 | 437 | 10 | 1990-2007 | 0.56 | M-v | 0 | MP | 62185 | (17039) |
| (17169) | 14.1 | 0.15 | 20071027 | 176.24725 | 98.81162  | 257.25388 | 0.69148  | 0.1672342 | 2.9736602 | 517 | 12 | 1979-2007 | 0.54 | M-v | 0 | MP | 47654 | (17169) |
| (17676) | 13.4 | 0.15 | 20071027 | 198.81695 | 338.78664 | 312.22163 | 8.03031  | 0.0172647 | 3.0552926 | 397 | 9  | 1997-2007 | 0.56 | M-v | 0 | MP | 38162 | (17676) |
| (17738) | 13.2 | 0.15 | 20071027 | 346.50759 | 99.53110  | 337.65638 | 6.48958  | 0.1835814 | 2.2644007 | 446 | 11 | 1983-2007 | 0.52 | M-v | 0 | MP | 57634 | (17738) |
| (17894) | 13.7 | 0.15 | 20071027 | 155.44017 | 358.89186 | 2.11089   | 5.13657  | 0.0749805 | 2.7542197 | 492 | 10 | 1994-2007 | 0.53 | M-v | 0 | MP | 62186 | (17894) |
| (18161) | 12.2 | 0.15 | 20071027 | 155.93718 | 8.02194   | 0.85488   | 9.57486  | 0.1029392 | 2.9951420 | 514 | 12 | 1979-2007 | 0.50 | M-v | 0 | MP | 4262  | (18161) |
| (18258) | 13.9 | 0.15 | 20071027 | 336.64293 | 5.34870   | 177.02803 | 14.04310 | 0.1184070 | 2.5391167 | 463 | 12 | 1973-2007 | 0.56 | M-v | 0 | MP | 14342 | (18258) |
| (18558) | 13.7 | 0.15 | 20071027 | 273.44497 | 147.62751 | 63.24177  | 6.31690  | 0.0957224 | 3.1462144 | 320 | 12 | 1972-2007 | 0.55 | M-v | 0 | MP | 41502 | (18558) |
| (18847) | 12.9 | 0.15 | 20071027 | 162.31052 | 358.08779 | 356.83354 | 8.12693  | 0.0849761 | 3.1635491 | 603 | 12 | 1982-2007 | 0.50 | M-v | 0 | MP | 43317 | (18847) |
| (18873) | 15.6 | 0.15 | 20071027 | 123.08716 | 189.17329 | 118.10528 | 9.21377  | 0.2116665 | 2.4069561 | 281 | 10 | 1991-2007 | 0.56 | M-v | 0 | MP | 30236 | (18873) |
| (19094) | 15.6 | 0.15 | 20071027 | 197.58630 | 72.73805  | 164.90991 | 4.06714  | 0.1303366 | 2.2441091 | 271 | 13 | 1979-2007 | 0.57 | M-v | 0 | MP | 6447  | (19094) |
| (19184) | 13.7 | 0.15 | 20071027 | 337.56019 | 302.51976 | 37.68595  | 16.00885 | 0.1560940 | 2.5862401 | 370 | 9  | 1987-2007 | 0.57 | M-v | 0 | MP | 6473  | (19184) |
| (19279) | 14.1 | 0.15 | 20071027 | 123.83256 | 49.28706  | 263.09762 | 0.67870  | 0.0572597 | 3.3610312 | 347 | 10 | 1995-2007 | 0.52 | M-v | 0 | MP | 41503 | (19279) |
| (19565) | 12.7 | 0.15 | 20071027 | 189.19469 | 55.28340  | 247.31978 | 23.35952 | 0.2960253 | 3.0857635 | 394 | 12 | 1972-2007 | 0.44 | M-v | 0 | MP | 62187 | (19565) |
| (19732) | 13.3 | 0.15 | 20071027 | 174.82898 | 246.41028 | 89.54086  | 12.51127 | 0.2093585 | 2.4149863 | 418 | 12 | 1979-2007 | 0.54 | M-v | 0 | MP | 10822 | (19732) |
| (19866) | 15.0 | 0.15 | 20071027 | 74.17171  | 68.36944  | 344.31524 | 5.94748  | 0.1422848 | 2.2121053 | 462 | 9  | 1960-2007 | 0.52 | M-v | 0 | MP | 6678  | (19866) |
| (19905) | 16.3 | 0.15 | 20071027 | 117.72779 | 205.92713 | 111.86727 | 3.73959  | 0.1877381 | 2.2000550 | 165 | 12 | 1954-2007 | 0.68 | M-v | 0 | MP | 6690  | (19905) |
| (19931) | 15.7 | 0.15 | 20071027 | 274.37681 | 278.47449 | 244.25046 | 6.52264  | 0.0390524 | 2.2812781 | 140 | 9  | 1981-2007 | 0.59 | M-v | 1 | MP | 31795 | (19931) |
| (20153) | 15.3 | 0.15 | 20071027 | 203.52066 | 33.72532  | 205.05783 | 2.08527  | 0.1413940 | 2.2801308 | 438 | 9  | 1993-2007 | 0.53 | M-v | 0 | MP | 30236 | (20153) |
| (20273) | 15.7 | 0.15 | 20071027 | 90.88267  | 230.83345 | 175.55335 | 4.16574  | 0.1680411 | 2.1948706 | 451 | 12 | 1980-2007 | 0.54 | M-v | 0 | MP | 7782  | (20273) |
| (20388) | 13.6 | 0.15 | 20071027 | 247.40305 | 113.92209 | 178.05408 | 10.58025 | 0.1217231 | 3.0345298 | 476 | 10 | 1997-2007 | 0.56 | M-v | 0 | MP | 41503 | (20388) |
| (20462) | 13.7 | 0.15 | 20071027 | 336.03327 | 230.61936 | 296.23360 | 8.72696  | 0.0365967 | 3.0110176 | 378 | 10 | 1997-2007 | 0.51 | M-v | 0 | MP | 41503 | (20462) |
| (20529) | 14.9 | 0.15 | 20071027 | 350.18336 | 232.68074 | 196.31848 | 6.02804  | 0.1317747 | 2.3925721 | 353 | 9  | 1981-2007 | 0.54 | M-v | 0 | MP | 7863  | (20529) |
| (20553) | 15.0 | 0.15 | 20071027 | 229.46754 | 270.03750 | 304.95548 | 2.78986  | 0.1056058 | 2.3027786 | 418 | 10 | 1991-2007 | 0.53 | M-v | 0 | MP | 73875 | (20553) |
| (20917) | 15.9 | 0.15 | 20071027 | 301.60314 | 206.05702 | 14.42537  | 4.92178  | 0.1077596 | 2.1991477 | 292 | 10 | 1960-2007 | 0.63 | M-v | 1 | MP | 7980  | (20917) |
| (21125) | 14.5 | 0.15 | 20071027 | 283.01480 | 117.20688 | 123.59136 | 7.12894  | 0.1578362 | 2.3445035 | 506 | 12 | 1990-2007 | 0.53 | M-v | 0 | MP | 8650  | (21125) |
| (21185) | 15.4 | 0.15 | 20071027 | 344.62073 | 91.30511  | 17.21200  | 7.06975  | 0.0478760 | 2.3389815 | 188 | 9  | 1992-2007 | 0.57 | M-v | 0 | MP | 8668  | (21185) |
| (21227) | 14.4 | 0.15 | 20071027 | 259.19253 | 213.71052 | 59.16195  | 5.18165  | 0.1590210 | 2.2493575 | 457 | 9  | 1995-2007 | 0.56 | M-v | 0 | MP | 33744 | (21227) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (21630) | 14.9 | 0.15 | 20071027 | 308.54060 | 354.37596 | 201.60984 | 1.20715  | 0.0518941 | 2.1906148 | 483 | 10 | 1995-2007 | 0.49 | M-v | 0 | MP | 73878 | (21630) |
| (21642) | 15.3 | 0.15 | 20071027 | 195.52060 | 260.34613 | 12.45245  | 3.22795  | 0.1815279 | 2.2379421 | 330 | 9  | 1995-2007 | 0.50 | M-v | 0 | MP | 30237 | (21642) |
| (21667) | 15.2 | 0.15 | 20071027 | 315.43842 | 198.49394 | 352.58135 | 4.46061  | 0.0514277 | 2.2542216 | 441 | 9  | 1984-2007 | 0.56 | M-v | 1 | MP | 8824  | (21667) |
| (21829) | 14.6 | 0.15 | 20071027 | 158.18605 | 181.82637 | 142.14697 | 7.24124  | 0.1925628 | 2.2742681 | 369 | 9  | 1994-2007 | 0.54 | M-v | 0 | MP | 31796 | (21829) |
| (22099) | 18.0 | 0.15 | 20071027 | 94.56723  | 186.51208 | 136.54041 | 9.84394  | 0.2760810 | 1.1042222 | 228 | 5  | 1994-2006 | 0.49 | M-v | 2 | MP | 8962  | (22099) |
| (22340) | 15.6 | 0.15 | 20071027 | 223.19660 | 136.81474 | 160.82498 | 3.63591  | 0.1353265 | 2.2292223 | 297 | 9  | 1992-2007 | 0.59 | M-v | 0 | MP | 31796 | (22340) |
| (22382) | 15.9 | 0.15 | 20071027 | 200.24046 | 182.18941 | 63.34698  | 3.24726  | 0.1758586 | 2.3726896 | 238 | 9  | 1994-2007 | 0.59 | M-v | 0 | MP | 33745 | (22382) |
| (22384) | 15.0 | 0.15 | 20071027 | 172.30513 | 222.51690 | 97.08798  | 5.96102  | 0.1515456 | 2.3104920 | 584 | 9  | 1994-2007 | 0.52 | M-v | 0 | MP | 33745 | (22384) |
| (22543) | 16.6 | 0.15 | 20071027 | 255.98758 | 234.23483 | 18.35124  | 0.94206  | 0.1612203 | 2.2551254 | 165 | 9  | 1992-2007 | 0.57 | M-v | 0 | MP | 10031 | (22543) |
| (22804) | 15.3 | 0.15 | 20071027 | 41.92094  | 19.37803  | 5.13227   | 0.91345  | 0.1978462 | 2.4191320 | 368 | 8  | 1995-2007 | 0.56 | M-v | 1 | MP | 77304 | (22804) |
| (22875) | 15.8 | 0.15 | 20071027 | 161.34149 | 13.15063  | 319.24249 | 6.57666  | 0.0983053 | 2.2600384 | 154 | 9  | 1992-2007 | 0.63 | M-v | 1 | MP | 10138 | (22875) |
| (22957) | 16.2 | 0.15 | 20071027 | 236.72648 | 310.89470 | 306.90304 | 5.19309  | 0.1077972 | 2.2718257 | 170 | 9  | 1994-2007 | 0.57 | M-v | 0 | MP | 33745 | (22957) |
| (22960) | 14.5 | 0.15 | 20071027 | 150.98477 | 290.61325 | 39.27421  | 4.39989  | 0.1611871 | 2.3100478 | 570 | 9  | 1994-2007 | 0.50 | M-v | 0 | MP | 31797 | (22960) |
| (22963) | 15.1 | 0.15 | 20071027 | 138.05945 | 18.10607  | 330.08971 | 4.21171  | 0.1687551 | 2.2972721 | 388 | 9  | 1985-2007 | 0.52 | M-v | 0 | MP | 31797 | (22963) |
| (23010) | 16.1 | 0.15 | 20071027 | 239.29770 | 248.66876 | 16.60543  | 4.70089  | 0.1379142 | 2.2813330 | 237 | 9  | 1991-2007 | 0.57 | M-v | 0 | MP | 33745 | (23010) |
| (23037) | 15.0 | 0.15 | 20071027 | 39.97243  | 307.38258 | 67.77679  | 3.32109  | 0.2126096 | 2.4390379 | 398 | 8  | 1997-2007 | 0.53 | M-v | 1 | MP | 73883 | (23037) |
| (23128) | 14.8 | 0.15 | 20071027 | 42.60299  | 323.14318 | 146.18868 | 3.09755  | 0.0965332 | 2.2900861 | 482 | 10 | 1980-2007 | 0.52 | M-v | 0 | MP | 10218 | (23128) |
| (23145) | 15.1 | 0.15 | 20071027 | 151.11273 | 207.55211 | 125.92281 | 10.95030 | 0.1944902 | 2.3177666 | 282 | 9  | 1996-2007 | 0.58 | M-v | 0 | MP | 31797 | (23145) |
| (23189) | 14.0 | 0.15 | 20071027 | 74.46879  | 261.73660 | 86.19152  | 2.34518  | 0.1385546 | 3.2159697 | 325 | 10 | 1992-2007 | 0.59 | M-v | 0 | MP | 38163 | (23189) |
| (23301) | 10.9 | 0.15 | 20071027 | 140.89319 | 359.17145 | 301.67542 | 21.40136 | 0.1974629 | 3.9990229 | 273 | 9  | 1982-2007 | 0.51 | M-v | 0 | MP | 38163 | (23301) |
| (23319) | 13.2 | 0.15 | 20071027 | 158.79129 | 296.17939 | 328.66237 | 10.44561 | 0.1856455 | 2.4749826 | 639 | 10 | 1979-2007 | 0.54 | M-v | 0 | MP | 31797 | (23319) |
| (23548) | 17.6 | 0.15 | 20071027 | 351.87272 | 123.75532 | 346.29595 | 23.35282 | 0.5188687 | 2.2899932 | 76  | 3  | 1994-2007 | 0.58 | M-v | 1 | MP | 11121 | (23548) |
| (23587) | 13.8 | 0.15 | 20071027 | 173.54262 | 171.74953 | 178.93783 | 7.53521  | 0.2182983 | 2.3122240 | 446 | 9  | 1995-2007 | 0.55 | M-v | 0 | MP | 33745 | (23587) |
| (23638) | 15.2 | 0.15 | 20071027 | 6.47621   | 359.32874 | 124.88447 | 5.53498  | 0.0744625 | 2.3432064 | 178 | 9  | 1994-2007 | 0.57 | M-v | 1 | MP | 11149 | (23638) |
| (23733) | 14.8 | 0.15 | 20071027 | 138.34502 | 212.90898 | 80.70195  | 7.85145  | 0.1148009 | 2.4024226 | 270 | 9  | 1995-2007 | 0.50 | M-v | 0 | MP | 53564 | (23733) |
| (23737) | 14.8 | 0.15 | 20071027 | 141.02095 | 205.93740 | 162.56467 | 5.13687  | 0.2386052 | 2.2994077 | 433 | 9  | 1997-2007 | 0.57 | M-v | 0 | MP | 33745 | (23737) |
| (23750) | 15.2 | 0.15 | 20071027 | 151.43318 | 64.66172  | 241.49730 | 5.79076  | 0.1123777 | 2.3795588 | 301 | 9  | 1995-2007 | 0.58 | M-v | 0 | MP | 31797 | (23750) |
| (23804) | 14.6 | 0.15 | 20071027 | 247.71603 | 262.83242 | 1.25817   | 6.15064  | 0.1087417 | 2.3668172 | 313 | 9  | 1997-2007 | 0.53 | M-v | 0 | MP | 38163 | (23804) |
| (23871) | 15.1 | 0.15 | 20071027 | 228.31831 | 130.91417 | 149.23625 | 4.98874  | 0.2238080 | 2.3832870 | 319 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 11225 | (23871) |
| (24025) | 14.7 | 0.15 | 20071027 | 6.51647   | 188.11964 | 310.31334 | 5.20138  | 0.1018506 | 2.2457231 | 295 | 9  | 1978-2007 | 0.55 | M-v | 1 | MP | 11277 | (24025) |
| (24106) | 14.6 | 0.15 | 20071027 | 122.77171 | 91.66785  | 261.59999 | 6.36902  | 0.2143401 | 2.3198421 | 318 | 9  | 1992-2007 | 0.55 | M-v | 1 | MP | 31798 | (24106) |
| (24187) | 15.1 | 0.15 | 20071027 | 22.20730  | 311.49971 | 84.74557  | 3.37802  | 0.2053482 | 2.4465925 | 321 | 8  | 1994-2007 | 0.52 | M-v | 1 | MP | 31798 | (24187) |
| (24256) | 14.6 | 0.15 | 20071027 | 120.16901 | 16.42881  | 10.27219  | 4.05639  | 0.1842841 | 2.3029261 | 508 | 9  | 1978-2007 | 0.51 | M-v | 0 | MP | 31798 | (24256) |
| (24286) | 15.5 | 0.15 | 20071027 | 151.56157 | 18.57814  | 336.66196 | 5.63867  | 0.2414977 | 2.2990458 | 270 | 9  | 1997-2007 | 0.59 | M-v | 1 | MP | 33746 | (24286) |
| (24322) | 14.4 | 0.15 | 20071027 | 85.88201  | 211.28589 | 160.76159 | 5.06017  | 0.1197723 | 2.4237006 | 376 | 9  | 1991-2007 | 0.54 | M-v | 0 | MP | 31798 | (24322) |
| (24414) | 13.0 | 0.15 | 20071027 | 347.12700 | 102.71298 | 10.04728  | 15.40048 | 0.1401526 | 2.6112644 | 482 | 8  | 1953-2007 | 0.53 | M-v | 0 | MP | 77307 | (24414) |
| (24571) | 15.8 | 0.15 | 20071027 | 6.63302   | 273.84967 | 155.18425 | 6.50717  | 0.0916853 | 2.4180524 | 155 | 9  | 1971-2007 | 0.59 | M-v | 1 | MP | 11449 | (24571) |
| (24648) | 13.5 | 0.15 | 20071027 | 223.11181 | 352.63139 | 313.58922 | 6.42562  | 0.2854931 | 2.8748173 | 318 | 12 | 1985-2007 | 0.57 | M-v | 0 | MP | 23413 | (24648) |
| (24708) | 15.2 | 0.15 | 20071027 | 167.85363 | 342.29762 | 340.69854 | 5.68253  | 0.0411307 | 2.3596346 | 284 | 9  | 1991-2007 | 0.59 | M-v | 0 | MP | 35430 | (24708) |
| (24736) | 15.5 | 0.15 | 20071027 | 337.74370 | 318.95452 | 128.83949 | 8.87914  | 0.0491267 | 2.5907947 | 132 | 10 | 1992-2007 | 0.59 | M-v | 1 | MP | 35430 | (24736) |
| (24741) | 14.2 | 0.15 | 20071027 | 195.30013 | 74.08271  | 179.47920 | 13.89914 | 0.1223166 | 2.5831662 | 357 | 9  | 1992-2007 | 0.53 | M-v | 0 | MP | 33746 | (24741) |
| (24773) | 14.4 | 0.15 | 20071027 | 88.40315  | 357.54218 | 37.86251  | 3.42817  | 0.1900004 | 2.4350052 | 422 | 9  | 1993-2007 | 0.55 | M-v | 0 | MP | 35430 | (24773) |
| (24812) | 14.2 | 0.15 | 20071027 | 99.08984  | 332.93767 | 32.16293  | 7.57790  | 0.2693225 | 2.5347709 | 535 | 12 | 1986-2007 | 0.56 | M-v | 1 | MP | 12415 | (24812) |
| (24826) | 15.2 | 0.15 | 20071027 | 91.88985  | 254.27094 | 150.58272 | 6.78373  | 0.1006075 | 2.3273446 | 364 | 9  | 1995-2007 | 0.53 | M-v | 0 | MP | 33746 | (24826) |
| (24845) | 16.1 | 0.15 | 20071027 | 10.90268  | 47.84099  | 44.62120  | 2.21215  | 0.0433719 | 2.4450171 | 220 | 9  | 1995-2007 | 0.54 | M-v | 0 | MP | 35430 | (24845) |
| (24988) | 15.4 | 0.15 | 20071027 | 46.16976  | 233.54464 | 203.17018 | 4.70914  | 0.1429282 | 2.4052676 | 366 | 10 | 1995-2007 | 0.57 | M-v | 0 | MP | 33746 | (24988) |
| (25031) | 14.8 | 0.15 | 20071027 | 138.49091 | 357.27422 | 347.77944 | 5.23534  | 0.1568908 | 2.4434482 | 435 | 9  | 1997-2007 | 0.49 | M-v | 1 | MP | 33746 | (25031) |
| (25077) | 14.9 | 0.15 | 20071027 | 151.47717 | 269.74374 | 99.20602  | 3.58590  | 0.2123471 | 2.4001198 | 372 | 9  | 1993-2007 | 0.60 | M-v | 1 | MP | 38163 | (25077) |
| (25140) | 15.2 | 0.15 | 20071027 | 156.09529 | 281.02824 | 56.45456  | 5.38592  | 0.2117842 | 2.4487718 | 356 | 9  | 1993-2007 | 0.53 | M-v | 0 | MP | 38163 | (25140) |
| (25361) | 15.1 | 0.15 | 20071027 | 327.68614 | 358.52106 | 109.89231 | 2.30776  | 0.1436015 | 2.4270245 | 352 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 77309 | (25361) |
| (25474) | 14.9 | 0.15 | 20071027 | 16.80827  | 341.39296 | 63.18626  | 6.39557  | 0.2355013 | 2.5757640 | 294 | 10 | 1982-2007 | 0.57 | M-v | 0 | MP | 77310 | (25474) |
| (25490) | 14.5 | 0.15 | 20071027 | 45.11300  | 187.80042 | 246.71338 | 1.97595  | 0.1503988 | 2.4266658 | 466 | 9  | 1993-2007 | 0.52 | M-v | 0 | MP | 33747 | (25490) |
| (25631) | 13.2 | 0.15 | 20071027 | 236.29343 | 128.99961 | 298.96946 | 11.55347 | 0.0905531 | 2.9498753 | 325 | 9  | 1995-2007 | 0.53 | M-v | 0 | MP | 70194 | (25631) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |     |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|-----|-------|---------|
| (25993) | 15.0 | 0.15 | 20071027 | 197.64798 | 344.99456 | 335.17071 | 9.55098  | 0.1226302 | 2.3396037 | 258 | 9  | 1991-2007 | 0.56 | M-v | 1 | MPC | 12810 | (25993) |
| (26014) | 15.5 | 0.15 | 20071027 | 166.41440 | 40.42622  | 247.86240 | 2.59213  | 0.1905860 | 2.4474534 | 238 | 9  | 1960-2007 | 0.57 | M-v | 0 | MPC | 12816 | (26014) |
| (26153) | 14.1 | 0.15 | 20071027 | 105.77835 | 49.91652  | 318.40348 | 2.88025  | 0.1740941 | 2.5230784 | 504 | 13 | 1950-2007 | 0.52 | M-v | 1 | MPC | 13904 | (26153) |
| (26201) | 15.3 | 0.15 | 20071027 | 299.63965 | 348.95331 | 192.70514 | 6.53332  | 0.0929889 | 2.4441713 | 128 | 9  | 1960-2007 | 0.52 | M-v | 0 | MPC | 13919 | (26201) |
| (26246) | 15.1 | 0.15 | 20071027 | 165.66256 | 191.07994 | 166.70271 | 2.81159  | 0.1805576 | 2.3820271 | 267 | 9  | 1976-2007 | 0.62 | M-v | 1 | MPC | 13934 | (26246) |
| (26286) | 13.2 | 0.15 | 20071027 | 308.12622 | 25.17713  | 187.16362 | 12.43646 | 0.1304919 | 2.4375526 | 572 | 12 | 1982-2007 | 0.52 | M-v | 0 | MPC | 13946 | (26286) |
| (26335) | 14.5 | 0.15 | 20071027 | 131.74483 | 111.98782 | 236.92247 | 13.38810 | 0.1524923 | 2.5347586 | 414 | 9  | 1994-2007 | 0.52 | M-v | 0 | MPC | 38164 | (26335) |
| (26386) | 15.5 | 0.15 | 20071027 | 264.40069 | 86.79424  | 155.45784 | 5.70744  | 0.1560745 | 2.2024382 | 283 | 10 | 1995-2007 | 0.52 | M-v | 0 | MPC | 73891 | (26386) |
| (26499) | 13.4 | 0.15 | 20071027 | 66.51050  | 226.12859 | 141.06386 | 5.85958  | 0.0792101 | 2.6548551 | 595 | 9  | 1996-2007 | 0.55 | M-v | 0 | MPC | 73892 | (26499) |
| (26545) | 14.9 | 0.15 | 20071027 | 111.64173 | 137.77387 | 196.62450 | 4.08215  | 0.1577292 | 2.6236177 | 424 | 10 | 1989-2007 | 0.54 | M-v | 0 | MPC | 35431 | (26545) |
| (26712) | 16.1 | 0.15 | 20071027 | 236.06697 | 157.74408 | 102.67261 | 2.41518  | 0.1610561 | 2.3875817 | 129 | 10 | 1993-2007 | 0.55 | M-v | 0 | MPC | 14077 | (26712) |
| (26767) | 15.3 | 0.15 | 20071027 | 165.94970 | 70.40936  | 220.23033 | 2.16241  | 0.2085382 | 2.5890457 | 363 | 13 | 1960-2007 | 0.51 | M-v | 0 | MPC | 14093 | (26767) |
| (26790) | 14.8 | 0.15 | 20071027 | 1.32361   | 300.22307 | 172.73126 | 13.13631 | 0.1644977 | 2.5905581 | 320 | 10 | 1977-2007 | 0.60 | M-v | 0 | MPC | 14099 | (26790) |
| (26807) | 13.6 | 0.15 | 20071027 | 217.77870 | 357.97307 | 297.65038 | 4.22633  | 0.1050065 | 2.4719411 | 501 | 12 | 1954-2007 | 0.60 | M-v | 0 | MPC | 14464 | (26807) |
| (26964) | 14.3 | 0.15 | 20071027 | 137.58715 | 129.70323 | 161.57067 | 5.21492  | 0.0986923 | 2.6949293 | 367 | 9  | 1996-2007 | 0.55 | M-v | 0 | MPC | 38164 | (26964) |
| (27112) | 13.6 | 0.15 | 20071027 | 322.61910 | 249.19244 | 251.68181 | 12.07601 | 0.2225096 | 2.6377585 | 305 | 9  | 1981-2007 | 0.57 | M-v | 0 | MPC | 77313 | (27112) |
| (27434) | 14.3 | 0.15 | 20071027 | 212.46504 | 75.70177  | 154.74002 | 5.91057  | 0.0069154 | 2.7161929 | 348 | 9  | 1995-2007 | 0.51 | M-v | 0 | MPC | 38165 | (27434) |
| (27450) | 15.3 | 0.15 | 20071027 | 227.15798 | 22.94397  | 208.91415 | 1.49120  | 0.0459179 | 2.6722169 | 368 | 9  | 1994-2007 | 0.52 | M-v | 0 | MPC | 14665 | (27450) |
| (27479) | 13.7 | 0.15 | 20071027 | 353.65579 | 288.85063 | 147.48248 | 5.54899  | 0.0348547 | 2.7643958 | 555 | 9  | 1995-2007 | 0.55 | M-v | 0 | MPC | 77314 | (27479) |
| (27679) | 14.1 | 0.15 | 20071027 | 51.80738  | 167.69074 | 256.97743 | 8.67481  | 0.1577325 | 2.7388911 | 246 | 10 | 1979-2007 | 0.61 | M-v | 0 | MPC | 15133 | (27679) |
| (27925) | 15.6 | 0.15 | 20071027 | 295.78057 | 166.29547 | 76.67699  | 3.17472  | 0.1894743 | 2.3261214 | 251 | 9  | 1991-2007 | 0.61 | M-v | 0 | MPC | 38165 | (27925) |
| (28045) | 15.1 | 0.15 | 20071027 | 195.64754 | 306.33729 | 350.50006 | 6.19632  | 0.1238084 | 2.2862320 | 288 | 9  | 1992-2007 | 0.56 | M-v | 0 | MPC | 33748 | (28045) |
| (28257) | 12.9 | 0.15 | 20071027 | 318.32636 | 306.63765 | 244.03307 | 8.23539  | 0.1290215 | 2.6407420 | 566 | 9  | 1993-2007 | 0.49 | M-v | 0 | MPC | 38166 | (28257) |
| (28298) | 14.0 | 0.15 | 20071027 | 338.04471 | 247.77021 | 241.64371 | 6.74421  | 0.0920895 | 2.7468617 | 466 | 9  | 1997-2007 | 0.58 | M-v | 0 | MPC | 77315 | (28298) |
| (28380) | 13.2 | 0.15 | 20071027 | 54.87904  | 244.30794 | 204.05062 | 8.55297  | 0.1368326 | 2.8090986 | 690 | 12 | 1991-2007 | 0.55 | M-v | 0 | MPC | 15344 | (28380) |
| (28424) | 14.2 | 0.15 | 20071027 | 32.53445  | 345.54867 | 36.64597  | 11.91522 | 0.2447640 | 2.4199810 | 412 | 8  | 1986-2007 | 0.56 | M-v | 1 | MPC | 73895 | (28424) |
| (28502) | 13.5 | 0.15 | 20071027 | 134.80958 | 156.06605 | 160.21363 | 12.09955 | 0.1900058 | 2.6496526 | 423 | 10 | 1993-2007 | 0.53 | M-v | 0 | MPC | 38166 | (28502) |
| (28573) | 14.0 | 0.15 | 20071027 | 193.03301 | 265.58796 | 43.57491  | 3.91870  | 0.1620051 | 2.5238197 | 235 | 12 | 1977-2007 | 0.56 | M-v | 1 | MPC | 15407 | (28573) |
| (28629) | 14.9 | 0.15 | 20071027 | 186.42551 | 209.30295 | 76.80065  | 2.88693  | 0.1850341 | 2.6829492 | 212 | 10 | 1994-2007 | 0.53 | M-v | 0 | MPC | 41505 | (28629) |
| (28637) | 12.8 | 0.15 | 20071027 | 107.44252 | 226.75957 | 140.02110 | 12.26554 | 0.2582066 | 2.6520559 | 375 | 12 | 1950-2007 | 0.49 | M-v | 0 | MPC | 15427 | (28637) |
| (28888) | 14.5 | 0.15 | 20071027 | 7.39272   | 324.31261 | 176.06453 | 5.95901  | 0.1272668 | 2.5686573 | 397 | 9  | 1997-2007 | 0.56 | M-v | 0 | MPC | 38166 | (28888) |
| (28903) | 13.6 | 0.15 | 20071027 | 130.54544 | 264.73395 | 99.26356  | 12.43579 | 0.1929019 | 2.6874530 | 361 | 10 | 1994-2007 | 0.56 | M-v | 0 | MPC | 41505 | (28903) |
| (28933) | 13.5 | 0.15 | 20071027 | 155.94364 | 82.22878  | 214.65664 | 4.75669  | 0.1005449 | 3.2102110 | 411 | 10 | 1992-2007 | 0.54 | M-v | 0 | MPC | 41505 | (28933) |
| (28961) | 15.1 | 0.15 | 20071027 | 208.46271 | 169.60851 | 156.25299 | 5.43140  | 0.2242750 | 2.2709109 | 221 | 10 | 1994-2007 | 0.57 | M-v | 1 | MPC | 33749 | (28961) |
| (29012) | 14.7 | 0.15 | 20071027 | 11.77310  | 55.06216  | 349.09472 | 8.95200  | 0.0827758 | 2.9873611 | 171 | 8  | 1960-2007 | 0.55 | M-v | 0 | MPC | 38167 | (29012) |
| (29242) | 14.1 | 0.15 | 20071027 | 97.94149  | 170.00311 | 211.17063 | 21.09523 | 0.0747329 | 1.9387798 | 321 | 9  | 1982-2007 | 0.55 | M-v | 1 | MPC | 16223 | (29242) |
| (29467) | 13.8 | 0.15 | 20071027 | 68.83817  | 349.64845 | 38.26851  | 9.80566  | 0.1658392 | 2.7954283 | 317 | 13 | 1955-2007 | 0.58 | M-v | 0 | MPC | 16292 | (29467) |
| (29489) | 13.3 | 0.15 | 20071027 | 205.53977 | 258.22413 | 54.36842  | 12.70602 | 0.1973714 | 2.6399244 | 568 | 12 | 1979-2007 | 0.57 | M-v | 0 | MPC | 16299 | (29489) |
| (29937) | 13.6 | 0.15 | 20071027 | 23.22465  | 56.20686  | 76.87948  | 10.36635 | 0.1025938 | 2.7854758 | 432 | 10 | 1978-2007 | 0.53 | M-v | 0 | MPC | 43318 | (29937) |
| (30003) | 13.8 | 0.15 | 20071027 | 231.50460 | 342.45208 | 250.21036 | 5.84531  | 0.3209166 | 2.6674169 | 396 | 12 | 1992-2007 | 0.53 | M-v | 0 | MPC | 16466 | (30003) |
| (30019) | 14.1 | 0.15 | 20071027 | 243.21011 | 271.97917 | 10.30141  | 21.74297 | 0.0955050 | 1.8437133 | 322 | 9  | 1989-2007 | 0.49 | M-v | 1 | MPC | 16472 | (30019) |
| (30376) | 13.1 | 0.15 | 20071027 | 206.26048 | 206.24633 | 103.70446 | 13.04257 | 0.1837361 | 2.6652828 | 429 | 9  | 1997-2007 | 0.53 | M-v | 0 | MPC | 41507 | (30376) |
| (30379) | 13.0 | 0.15 | 20071027 | 103.63038 | 239.43869 | 137.57308 | 17.26721 | 0.2858494 | 2.7874972 | 319 | 9  | 1994-2007 | 0.58 | M-v | 0 | MPC | 41507 | (30379) |
| (30516) | 13.8 | 0.15 | 20071027 | 92.58294  | 174.37873 | 199.06796 | 9.11378  | 0.1800493 | 2.7491661 | 396 | 9  | 1997-2007 | 0.53 | M-v | 0 | MPC | 41507 | (30516) |
| (30598) | 12.9 | 0.15 | 20071027 | 204.37685 | 303.74202 | 332.89659 | 12.43958 | 0.1628473 | 2.6991948 | 406 | 9  | 1995-2007 | 0.56 | M-v | 0 | MPC | 38168 | (30598) |
| (30611) | 14.6 | 0.15 | 20071027 | 45.38235  | 42.71350  | 22.08103  | 5.93423  | 0.1361680 | 2.7633677 | 278 | 9  | 1960-2007 | 0.60 | M-v | 0 | MPC | 16661 | (30611) |
| (30628) | 14.4 | 0.15 | 20071027 | 48.95264  | 258.77477 | 186.87565 | 4.98266  | 0.0052530 | 2.7432236 | 331 | 9  | 1960-2007 | 0.56 | M-v | 0 | MPC | 41507 | (30628) |
| (30671) | 14.6 | 0.15 | 20071027 | 250.15281 | 280.03900 | 6.07484   | 2.24713  | 0.1310367 | 2.5207249 | 443 | 10 | 1973-2007 | 0.58 | M-v | 0 | MPC | 41508 | (30671) |
| (30688) | 14.9 | 0.15 | 20071027 | 185.18115 | 123.69013 | 146.15470 | 3.79047  | 0.1211386 | 2.7983277 | 207 | 9  | 1973-2007 | 0.64 | M-v | 0 | MPC | 41508 | (30688) |
| (30717) | 14.6 | 0.15 | 20071027 | 354.76363 | 314.36822 | 33.23503  | 8.96049  | 0.3343675 | 2.1680818 | 359 | 9  | 1937-2007 | 0.55 | M-v | 1 | MPC | 18517 | (30717) |
| (30745) | 14.3 | 0.15 | 20071027 | 306.17461 | 41.24625  | 111.40228 | 2.19487  | 0.1261146 | 3.1362618 | 206 | 10 | 1981-2007 | 0.57 | M-v | 0 | MPC | 18525 | (30745) |
| (30902) | 13.6 | 0.15 | 20071027 | 34.17453  | 347.79540 | 131.33706 | 2.47416  | 0.0935257 | 2.9208056 | 444 | 9  | 1993-2007 | 0.57 | M-v | 0 | MPC | 18576 | (30902) |
| (30928) | 13.2 | 0.15 | 20071027 | 30.98530  | 69.24874  | 32.76322  | 16.26211 | 0.1648691 | 2.6506887 | 407 | 10 | 1950-2007 | 0.56 | M-v | 0 | MPC | 38168 | (30928) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (31077) | 13.2 | 0.15 | 20071027 | 273.62597 | 72.42448  | 99.26828  | 14.78492 | 0.1967905 | 3.1922723 | 300 | 9  | 1996-2007 | 0.53 | M-v | 0 | MP | 41508 | (31077) |
| (31083) | 14.0 | 0.15 | 20071027 | 313.71855 | 116.33589 | 19.14082  | 7.53573  | 0.2145683 | 3.1643047 | 254 | 7  | 1995-2007 | 0.60 | M-v | 0 | MP | 18638 | (31083) |
| (31129) | 14.1 | 0.15 | 20071027 | 239.26276 | 272.88644 | 4.66822   | 12.09568 | 0.1426022 | 2.5539914 | 355 | 9  | 1993-2007 | 0.51 | M-v | 0 | MP | 41508 | (31129) |
| (31292) | 14.0 | 0.15 | 20071027 | 2.83272   | 44.25223  | 45.39049  | 0.79157  | 0.1546961 | 3.0852464 | 495 | 11 | 1990-2007 | 0.56 | M-v | 0 | MP | 77319 | (31292) |
| (31297) | 13.1 | 0.15 | 20071027 | 64.79665  | 61.18355  | 16.60383  | 10.12927 | 0.0877183 | 2.9733853 | 351 | 9  | 1980-2007 | 0.57 | M-v | 0 | MP | 18714 | (31297) |
| (31301) | 13.1 | 0.15 | 20071027 | 30.98087  | 37.47198  | 48.35632  | 10.94212 | 0.0944901 | 2.9759501 | 568 | 11 | 1975-2007 | 0.55 | M-v | 0 | MP | 77319 | (31301) |
| (31341) | 12.5 | 0.15 | 20071027 | 246.70326 | 156.39412 | 131.40665 | 16.96992 | 0.0705926 | 3.0333748 | 563 | 9  | 1998-2007 | 0.51 | M-v | 0 | MP | 62193 | (31341) |
| (31348) | 14.7 | 0.15 | 20071027 | 194.35343 | 283.43931 | 23.10941  | 21.88523 | 0.0771819 | 1.9385172 | 283 | 7  | 1976-2007 | 0.59 | M-v | 1 | MP | 18733 | (31348) |
| (31351) | 14.9 | 0.15 | 20071027 | 180.69153 | 306.70325 | 24.98721  | 21.53251 | 0.0616644 | 1.9251987 | 339 | 7  | 1990-2007 | 0.58 | M-v | 1 | MP | 18734 | (31351) |
| (31354) | 13.7 | 0.15 | 20071027 | 204.69786 | 277.55463 | 32.16521  | 21.68979 | 0.0867895 | 1.9320261 | 454 | 10 | 1971-2007 | 0.46 | M-v | 0 | MP | 18736 | (31354) |
| (31429) | 14.6 | 0.15 | 20071027 | 43.39742  | 195.13950 | 72.99970  | 7.92715  | 0.1013365 | 2.3109621 | 373 | 9  | 1994-2007 | 0.60 | M-v | 0 | MP | 18762 | (31429) |
| (31485) | 12.8 | 0.15 | 20071027 | 102.47701 | 47.97898  | 347.08633 | 14.67275 | 0.2032038 | 2.6537829 | 327 | 9  | 1980-2007 | 0.53 | M-v | 0 | MP | 38168 | (31485) |
| (31526) | 12.8 | 0.15 | 20071027 | 262.25479 | 202.43865 | 65.09776  | 15.35554 | 0.0489913 | 2.6104377 | 350 | 9  | 1997-2007 | 0.56 | M-v | 0 | MP | 41509 | (31526) |
| (31612) | 14.6 | 0.15 | 20071027 | 336.53874 | 352.24876 | 171.45579 | 9.16693  | 0.0838619 | 2.7939440 | 260 | 12 | 1980-2007 | 0.64 | M-v | 0 | MP | 18824 | (31612) |
| (31630) | 14.8 | 0.15 | 20071027 | 353.83850 | 269.23932 | 258.37741 | 3.69819  | 0.1746459 | 2.6841292 | 236 | 8  | 1997-2007 | 0.63 | M-v | 1 | MP | 38168 | (31630) |
| (31675) | 14.1 | 0.15 | 20071027 | 89.64448  | 282.16929 | 116.11394 | 13.14206 | 0.0191969 | 2.8766347 | 305 | 9  | 1998-2007 | 0.61 | M-v | 0 | MP | 41509 | (31675) |
| (31769) | 13.5 | 0.15 | 20071027 | 120.27654 | 299.37188 | 62.84617  | 11.65261 | 0.1257641 | 2.9798266 | 439 | 9  | 1998-2007 | 0.52 | M-v | 0 | MP | 41509 | (31769) |
| (31903) | 15.4 | 0.15 | 20071027 | 194.03475 | 254.11426 | 20.10646  | 3.87743  | 0.1821916 | 2.7032446 | 191 | 9  | 1974-2007 | 0.56 | M-v | 0 | MP | 50353 | (31903) |
| (31976) | 14.3 | 0.15 | 20071027 | 155.04132 | 64.32910  | 234.65898 | 1.67392  | 0.0876630 | 2.7939703 | 391 | 9  | 1992-2007 | 0.53 | M-v | 0 | MP | 41509 | (31976) |
| (31986) | 15.9 | 0.15 | 20071027 | 331.96359 | 301.37646 | 195.03173 | 21.33163 | 0.0723117 | 1.9686380 | 113 | 5  | 1997-2005 | 0.69 | M-v | 1 | MP | 18961 | (31986) |
| (32099) | 14.3 | 0.15 | 20071027 | 253.28237 | 161.42075 | 125.54786 | 14.54294 | 0.1567764 | 2.5950446 | 337 | 9  | 1988-2007 | 0.56 | M-v | 0 | MP | 41510 | (32099) |
| (32257) | 13.2 | 0.15 | 20071027 | 12.19769  | 111.50147 | 31.18024  | 10.92503 | 0.0539501 | 3.0519617 | 530 | 9  | 1998-2007 | 0.51 | M-v | 0 | MP | 62194 | (32257) |
| (32269) | 14.0 | 0.15 | 20071027 | 52.57448  | 30.25408  | 34.79258  | 2.13783  | 0.0782726 | 2.9927405 | 296 | 9  | 1993-2007 | 0.52 | M-v | 0 | MP | 62194 | (32269) |
| (32274) | 13.7 | 0.15 | 20071027 | 201.56506 | 224.90130 | 47.05721  | 11.69018 | 0.0585153 | 3.0009187 | 423 | 9  | 1998-2007 | 0.53 | M-v | 0 | MP | 77320 | (32274) |
| (32402) | 13.7 | 0.15 | 20071027 | 180.54225 | 304.21424 | 41.85541  | 8.44929  | 0.2411167 | 2.7908209 | 404 | 12 | 1954-2007 | 0.53 | M-v | 0 | MP | 19101 | (32402) |
| (32407) | 13.9 | 0.15 | 20071027 | 232.04981 | 359.29176 | 300.50883 | 1.20213  | 0.0508826 | 2.8427997 | 460 | 9  | 1998-2007 | 0.50 | M-v | 0 | MP | 62195 | (32407) |
| (32439) | 13.6 | 0.15 | 20071027 | 1.10837   | 247.89741 | 246.22003 | 12.90274 | 0.1160132 | 3.0289497 | 323 | 9  | 1998-2007 | 0.55 | M-v | 0 | MP | 47666 | (32439) |
| (32506) | 15.1 | 0.15 | 20071027 | 222.55118 | 194.13271 | 67.28742  | 12.08489 | 0.1605119 | 2.4744643 | 184 | 9  | 1993-2007 | 0.59 | M-v | 0 | MP | 19135 | (32506) |
| (32507) | 13.8 | 0.15 | 20071027 | 118.98573 | 204.93983 | 96.20599  | 9.33008  | 0.2075882 | 2.7937039 | 155 | 9  | 1991-2007 | 0.61 | M-v | 0 | MP | 38168 | (32507) |
| (32610) | 14.1 | 0.15 | 20071027 | 301.79852 | 131.13282 | 9.29724   | 1.78495  | 0.0193355 | 2.9507060 | 328 | 9  | 1991-2007 | 0.52 | M-v | 0 | MP | 19173 | (32610) |
| (32681) | 14.2 | 0.15 | 20071027 | 312.45211 | 153.06691 | 0.69298   | 10.73603 | 0.0872150 | 3.0722810 | 218 | 9  | 1971-2007 | 0.64 | M-v | 0 | MP | 19196 | (32681) |
| (32788) | 14.1 | 0.15 | 20071027 | 70.83649  | 302.79260 | 105.08153 | 2.39166  | 0.2009091 | 3.1353188 | 435 | 9  | 1989-2007 | 0.52 | M-v | 0 | MP | 47666 | (32788) |
| (32791) | 12.6 | 0.15 | 20071027 | 55.46166  | 19.08281  | 46.28312  | 18.36750 | 0.1611216 | 3.1463127 | 446 | 9  | 1977-2007 | 0.52 | M-v | 0 | MP | 21190 | (32791) |
| (32807) | 14.6 | 0.15 | 20071027 | 2.94229   | 321.87127 | 0.07732   | 2.19338  | 0.1641755 | 2.3005500 | 377 | 10 | 1990-2007 | 0.58 | M-v | 0 | MP | 21195 | (32807) |
| (32816) | 15.3 | 0.15 | 20071027 | 189.08868 | 342.96045 | 321.87863 | 0.86762  | 0.2183681 | 2.7777383 | 251 | 10 | 1977-2007 | 0.55 | M-v | 0 | MP | 50353 | (32816) |
| (32846) | 15.0 | 0.15 | 20071027 | 300.37502 | 3.94057   | 185.07619 | 2.60584  | 0.0907680 | 3.1318649 | 307 | 9  | 1992-2007 | 0.51 | M-v | 0 | MP | 21208 | (32846) |
| (32861) | 13.8 | 0.15 | 20071027 | 110.58567 | 301.98775 | 109.11913 | 3.42642  | 0.0188620 | 2.9057774 | 428 | 9  | 1990-2007 | 0.59 | M-v | 0 | MP | 21213 | (32861) |
| (32871) | 13.9 | 0.15 | 20071027 | 165.47111 | 313.12903 | 45.90317  | 2.54543  | 0.1023751 | 2.9275464 | 480 | 9  | 1993-2007 | 0.54 | M-v | 0 | MP | 21216 | (32871) |
| (32875) | 15.5 | 0.15 | 20071027 | 61.47225  | 277.38088 | 162.61864 | 1.91950  | 0.1174352 | 2.9212081 | 211 | 10 | 1991-2007 | 0.51 | M-v | 0 | MP | 21218 | (32875) |
| (32876) | 14.3 | 0.15 | 20071027 | 101.05292 | 334.58099 | 19.33407  | 12.14759 | 0.2219464 | 3.0563273 | 156 | 7  | 1993-2007 | 0.48 | M-v | 0 | MP | 21218 | (32876) |
| (32903) | 14.4 | 0.15 | 20071027 | 112.54454 | 21.09597  | 335.97575 | 4.50334  | 0.0757568 | 3.1469117 | 331 | 9  | 1994-2007 | 0.56 | M-v | 0 | MP | 62195 | (32903) |
| (33191) | 14.5 | 0.15 | 20071027 | 37.42774  | 272.29906 | 181.52494 | 9.91381  | 0.0702626 | 2.9611288 | 237 | 10 | 1993-2007 | 0.57 | M-v | 0 | MP | 43319 | (33191) |
| (33225) | 13.9 | 0.15 | 20071027 | 249.69513 | 303.50191 | 258.88219 | 5.14076  | 0.1184629 | 3.1746805 | 245 | 10 | 1987-2007 | 0.61 | M-v | 0 | MP | 62195 | (33225) |
| (33279) | 13.7 | 0.15 | 20071027 | 162.78616 | 217.16537 | 123.74598 | 12.22273 | 0.1231987 | 3.0697336 | 268 | 9  | 1998-2007 | 0.63 | M-v | 0 | MP | 57641 | (33279) |
| (33300) | 13.5 | 0.15 | 20071027 | 341.05145 | 267.16500 | 250.10165 | 13.77287 | 0.1152626 | 3.0961227 | 333 | 9  | 1998-2007 | 0.54 | M-v | 0 | MP | 47667 | (33300) |
| (33307) | 13.3 | 0.15 | 20071027 | 285.23348 | 1.49467   | 177.14898 | 15.60057 | 0.1568237 | 3.1803445 | 339 | 9  | 1998-2007 | 0.55 | M-v | 0 | MP | 41511 | (33307) |
| (33308) | 12.8 | 0.15 | 20071027 | 75.69748  | 330.05442 | 110.14781 | 15.50154 | 0.0017699 | 3.0677395 | 438 | 9  | 1998-2007 | 0.52 | M-v | 0 | MP | 43319 | (33308) |
| (33691) | 14.4 | 0.15 | 20071027 | 210.69792 | 1.14695   | 238.19469 | 8.44023  | 0.0389697 | 3.0630652 | 252 | 9  | 1993-2007 | 0.54 | M-v | 0 | MP | 41511 | (33691) |
| (33695) | 15.2 | 0.15 | 20071027 | 138.03374 | 137.43020 | 153.78869 | 2.02643  | 0.1631514 | 3.1607231 | 195 | 9  | 1992-2007 | 0.59 | M-v | 0 | MP | 21504 | (33695) |
| (33784) | 14.6 | 0.15 | 20071027 | 303.13873 | 220.92340 | 356.69583 | 11.25740 | 0.1631583 | 3.0573045 | 251 | 9  | 1992-2007 | 0.54 | M-v | 0 | MP | 43320 | (33784) |
| (33842) | 14.9 | 0.15 | 20071027 | 92.45163  | 219.30251 | 191.45012 | 2.14293  | 0.2071827 | 2.5807393 | 323 | 9  | 1989-2007 | 0.50 | M-v | 0 | MP | 21556 | (33842) |
| (33843) | 15.4 | 0.15 | 20071027 | 202.13206 | 120.99190 | 153.05659 | 22.94328 | 0.0724500 | 1.9708409 | 212 | 9  | 1950-2007 | 0.57 | M-v | 1 | MP | 21557 | (33843) |
| (34073) | 15.2 | 0.15 | 20071027 | 256.78435 | 122.13128 | 140.58250 | 3.37634  | 0.1122318 | 2.7438013 | 199 | 9  | 1992-2007 | 0.58 | M-v | 0 | MP | 41511 | (34073) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (34077) | 15.0 | 0.15 | 20071027 | 194.03117 | 201.75227 | 101.14773 | 4.15313  | 0.0694152 | 2.8013148 | 216 | 9  | 1994-2007 | 0.56 | M-v | 0 | MP | 41511 | (34077) |
| (34106) | 14.3 | 0.15 | 20071027 | 11.11703  | 346.76172 | 319.56752 | 3.83389  | 0.1972078 | 2.3253831 | 347 | 12 | 1971-2007 | 0.56 | M-v | 1 | MP | 21647 | (34106) |
| (34112) | 14.0 | 0.15 | 20071027 | 145.92070 | 125.97169 | 156.07879 | 16.65471 | 0.0657664 | 3.2494533 | 243 | 9  | 1998-2007 | 0.63 | M-v | 0 | MP | 41511 | (34112) |
| (34116) | 12.8 | 0.15 | 20071027 | 134.50992 | 97.90146  | 273.49288 | 10.99379 | 0.0241523 | 3.0154797 | 439 | 9  | 1998-2007 | 0.53 | M-v | 0 | MP | 43320 | (34116) |
| (34351) | 14.5 | 0.15 | 20071027 | 86.71780  | 86.16917  | 343.46785 | 1.30484  | 0.0748503 | 2.9432147 | 274 | 10 | 1992-2007 | 0.56 | M-v | 0 | MP | 21727 | (34351) |
| (34359) | 13.8 | 0.15 | 20071027 | 147.78177 | 51.01189  | 248.47297 | 8.71970  | 0.0479768 | 3.1626347 | 296 | 9  | 1998-2007 | 0.61 | M-v | 0 | MP | 41511 | (34359) |
| (34383) | 14.0 | 0.15 | 20071027 | 212.67935 | 332.28900 | 305.56758 | 9.06041  | 0.0840075 | 3.0181494 | 216 | 9  | 1992-2007 | 0.61 | M-v | 0 | MP | 21739 | (34383) |
| (34430) | 14.7 | 0.15 | 20071027 | 88.07156  | 120.54238 | 217.38596 | 3.99985  | 0.1158752 | 3.2307076 | 184 | 12 | 1988-2007 | 0.48 | M-v | 0 | MP | 21756 | (34430) |
| (34436) | 14.3 | 0.15 | 20071027 | 118.28720 | 238.48936 | 158.08197 | 10.77570 | 0.0465167 | 2.9719066 | 209 | 9  | 1995-2007 | 0.60 | M-v | 0 | MP | 21757 | (34436) |
| (34448) | 14.5 | 0.15 | 20071027 | 321.11674 | 167.00351 | 354.52955 | 10.86972 | 0.0671733 | 3.0669372 | 224 | 9  | 1992-2007 | 0.58 | M-v | 0 | MP | 21761 | (34448) |
| (34460) | 13.4 | 0.15 | 20071027 | 2.02008   | 238.47092 | 209.69258 | 16.04718 | 0.1330702 | 3.2016298 | 322 | 9  | 1992-2007 | 0.57 | M-v | 0 | MP | 62197 | (34460) |
| (34483) | 13.7 | 0.15 | 20071027 | 79.13950  | 342.02622 | 58.08253  | 10.27931 | 0.0577629 | 3.1862138 | 361 | 9  | 1992-2007 | 0.52 | M-v | 0 | MP | 21773 | (34483) |
| (34537) | 13.9 | 0.15 | 20071027 | 188.70747 | 224.28888 | 100.32494 | 13.05468 | 0.1585910 | 2.9786111 | 263 | 9  | 1998-2007 | 0.51 | M-v | 0 | MP | 62197 | (34537) |
| (34573) | 13.6 | 0.15 | 20071027 | 43.04282  | 162.71620 | 250.28815 | 15.60605 | 0.0992292 | 3.1643182 | 127 | 9  | 1950-2007 | 0.49 | M-v | 0 | MP | 21803 | (34573) |
| (34578) | 14.3 | 0.15 | 20071027 | 312.90173 | 21.58376  | 149.64393 | 17.24489 | 0.0453898 | 3.0497776 | 202 | 9  | 1998-2007 | 0.58 | M-v | 0 | MP | 41512 | (34578) |
| (34668) | 12.5 | 0.15 | 20071027 | 8.82093   | 181.16508 | 322.87260 | 19.56221 | 0.0969111 | 3.1747430 | 325 | 9  | 1951-2007 | 0.50 | M-v | 0 | MP | 21832 | (34668) |
| (34676) | 14.2 | 0.15 | 20071027 | 182.32836 | 174.13458 | 128.39142 | 18.80739 | 0.1426453 | 3.2171135 | 144 | 9  | 1998-2007 | 0.58 | M-v | 0 | MP | 57642 | (34676) |
| (34681) | 15.9 | 0.15 | 20071027 | 233.03181 | 299.33290 | 261.90530 | 5.05716  | 0.0502173 | 2.3148895 | 186 | 9  | 1996-2007 | 0.57 | M-v | 0 | MP | 31799 | (34681) |
| (34862) | 14.3 | 0.15 | 20071027 | 122.14680 | 158.75130 | 166.22485 | 5.43502  | 0.1407388 | 2.9934025 | 294 | 9  | 1990-2007 | 0.55 | M-v | 0 | MP | 21898 | (34862) |
| (34902) | 14.6 | 0.15 | 20071027 | 346.82251 | 247.03253 | 13.52367  | 10.83965 | 0.0711950 | 2.9339240 | 229 | 9  | 1960-2007 | 0.65 | M-v | 1 | MP | 21911 | (34902) |
| (34951) | 14.5 | 0.15 | 20071027 | 290.05630 | 21.97561  | 167.69214 | 4.64961  | 0.0880908 | 3.0706765 | 253 | 9  | 1971-2007 | 0.63 | M-v | 0 | MP | 21926 | (34951) |
| (34975) | 14.0 | 0.15 | 20071027 | 197.81562 | 19.81759  | 276.13420 | 8.57527  | 0.0320030 | 3.1672483 | 219 | 9  | 1977-2007 | 0.60 | M-v | 0 | MP | 21934 | (34975) |
| (35045) | 15.1 | 0.15 | 20071027 | 2.92037   | 290.41251 | 176.71265 | 4.65271  | 0.1089234 | 3.1181183 | 136 | 9  | 1981-2007 | 0.55 | M-v | 0 | MP | 24083 | (35045) |
| (35121) | 14.9 | 0.15 | 20071027 | 236.32201 | 138.49867 | 75.68864  | 4.02059  | 0.1127144 | 2.2049502 | 304 | 9  | 1992-2007 | 0.56 | M-v | 1 | MP | 24110 | (35121) |
| (35255) | 15.7 | 0.15 | 20071027 | 109.69849 | 276.75680 | 35.78537  | 4.19553  | 0.1302666 | 2.1331947 | 163 | 10 | 1981-2007 | 0.52 | M-v | 1 | MP | 24154 | (35255) |
| (35266) | 15.6 | 0.15 | 20071027 | 182.49411 | 102.79093 | 139.84812 | 6.79233  | 0.1431172 | 2.2510222 | 370 | 9  | 1992-2007 | 0.56 | M-v | 0 | MP | 24158 | (35266) |
| (35325) | 15.1 | 0.15 | 20071027 | 215.89280 | 272.72473 | 352.04021 | 1.20460  | 0.1559906 | 3.2418312 | 145 | 9  | 1993-2007 | 0.55 | M-v | 0 | MP | 47670 | (35325) |
| (35328) | 14.6 | 0.15 | 20071027 | 314.35067 | 186.91958 | 359.65320 | 17.34123 | 0.1030693 | 3.1660353 | 122 | 9  | 1960-2007 | 0.48 | M-v | 0 | MP | 24177 | (35328) |
| (35514) | 13.3 | 0.15 | 20071027 | 4.93794   | 120.94292 | 9.21499   | 9.05074  | 0.0515604 | 2.9743327 | 182 | 7  | 1998-2007 | 0.59 | M-v | 0 | MP | 43321 | (35514) |
| (35599) | 14.0 | 0.15 | 20071027 | 246.28441 | 192.82079 | 92.15476  | 10.58085 | 0.0612784 | 2.9695629 | 321 | 10 | 1990-2007 | 0.54 | M-v | 0 | MP | 47670 | (35599) |
| (35635) | 15.0 | 0.15 | 20071027 | 243.03458 | 163.28480 | 100.27460 | 0.82119  | 0.1838510 | 3.1015080 | 205 | 9  | 1998-2007 | 0.56 | M-v | 0 | MP | 43321 | (35635) |
| (35785) | 15.5 | 0.15 | 20071027 | 183.84867 | 334.83225 | 270.49855 | 2.53440  | 0.0692846 | 2.2144072 | 332 | 9  | 1976-2007 | 0.55 | M-v | 0 | MP | 73898 | (35785) |
| (35992) | 14.7 | 0.15 | 20071027 | 178.86373 | 214.81654 | 136.30158 | 3.14437  | 0.0934216 | 3.0011247 | 388 | 10 | 1997-2007 | 0.57 | M-v | 0 | MP | 62197 | (35992) |
| (36155) | 12.7 | 0.15 | 20071027 | 328.42433 | 299.08198 | 245.01230 | 15.80505 | 0.1226154 | 3.2246551 | 306 | 9  | 1998-2007 | 0.55 | M-v | 0 | MP | 47671 | (36155) |
| (36191) | 14.6 | 0.15 | 20071027 | 344.40591 | 27.86638  | 147.83496 | 1.91473  | 0.1385339 | 3.2139925 | 250 | 10 | 1995-2007 | 0.53 | M-v | 0 | MP | 24483 | (36191) |
| (36331) | 14.7 | 0.15 | 20071027 | 336.06131 | 10.89675  | 350.33634 | 2.17394  | 0.2318558 | 2.3625284 | 380 | 9  | 1993-2007 | 0.60 | M-v | 1 | MP | 24531 | (36331) |
| (36544) | 14.4 | 0.15 | 20071027 | 85.24356  | 27.55843  | 34.12358  | 3.04987  | 0.0695575 | 2.9596970 | 227 | 9  | 1977-2007 | 0.58 | M-v | 0 | MP | 24607 | (36544) |
| (36594) | 16.8 | 0.15 | 20071027 | 100.39226 | 336.02250 | 342.99717 | 5.85119  | 0.1206616 | 2.1583815 | 90  | 7  | 1997-2007 | 0.52 | M-v | 1 | MP | 24625 | (36594) |
| (36741) | 12.2 | 0.15 | 20071027 | 114.32628 | 332.38525 | 63.42944  | 24.33506 | 0.1525848 | 3.1664687 | 335 | 9  | 1954-2007 | 0.52 | M-v | 0 | MP | 24676 | (36741) |
| (36780) | 14.1 | 0.15 | 20071027 | 225.15770 | 220.18325 | 94.33784  | 9.44394  | 0.1846639 | 2.7442909 | 367 | 9  | 1998-2007 | 0.52 | M-v | 0 | MP | 62198 | (36780) |
| (36982) | 14.6 | 0.15 | 20071027 | 174.27319 | 186.56446 | 169.78368 | 12.41161 | 0.1354669 | 2.9720535 | 170 | 10 | 1992-2007 | 0.53 | M-v | 0 | MP | 24757 | (36982) |
| (37044) | 14.7 | 0.15 | 20071027 | 141.84202 | 171.11235 | 196.08943 | 0.35980  | 0.1749979 | 3.0772781 | 374 | 9  | 1992-2007 | 0.51 | M-v | 0 | MP | 24777 | (37044) |
| (37205) | 14.8 | 0.15 | 20071027 | 157.87449 | 200.36182 | 141.34104 | 10.93312 | 0.0992851 | 3.1120125 | 97  | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 24828 | (37205) |
| (37244) | 13.2 | 0.15 | 20071027 | 8.27666   | 27.08085  | 113.56379 | 18.89076 | 0.0705297 | 3.2108120 | 256 | 10 | 1995-2007 | 0.59 | M-v | 0 | MP | 47673 | (37244) |
| (37419) | 14.3 | 0.15 | 20071027 | 195.89647 | 186.64178 | 122.16663 | 13.37243 | 0.1210430 | 3.0830265 | 120 | 9  | 1997-2007 | 0.49 | M-v | 0 | MP | 24895 | (37419) |
| (37454) | 13.1 | 0.15 | 20071027 | 16.17946  | 130.85205 | 13.01364  | 14.04954 | 0.0654739 | 3.1554910 | 325 | 9  | 1960-2007 | 0.58 | M-v | 0 | MP | 24905 | (37454) |
| (37470) | 14.1 | 0.15 | 20071027 | 307.14434 | 206.94720 | 20.74249  | 2.96520  | 0.1713661 | 3.1303130 | 323 | 10 | 1960-2007 | 0.54 | M-v | 0 | MP | 24910 | (37470) |
| (37680) | 15.8 | 0.15 | 20071027 | 129.09396 | 127.22538 | 155.35640 | 6.54063  | 0.1429180 | 2.2956263 | 184 | 9  | 1995-2007 | 0.56 | M-v | 0 | MP | 26243 | (37680) |
| (37933) | 14.6 | 0.15 | 20071027 | 310.42296 | 283.97490 | 214.29880 | 0.52750  | 0.1285989 | 3.0715417 | 277 | 9  | 1995-2007 | 0.52 | M-v | 0 | MP | 77323 | (37933) |
| (38082) | 16.4 | 0.15 | 20071027 | 175.08606 | 251.90947 | 14.78678  | 2.67085  | 0.0989182 | 2.1869126 | 222 | 7  | 1999-2007 | 0.62 | M-v | 0 | MP | 26387 | (38082) |
| (38143) | 15.3 | 0.15 | 20071027 | 119.56029 | 163.14523 | 143.82696 | 2.98944  | 0.1478390 | 2.2677198 | 247 | 9  | 1992-2007 | 0.59 | M-v | 0 | MP | 26410 | (38143) |
| (38193) | 16.5 | 0.15 | 20071027 | 95.33782  | 170.29666 | 144.15735 | 6.80626  | 0.2075829 | 2.2973276 | 233 | 9  | 1995-2007 | 0.56 | M-v | 0 | MP | 26427 | (38193) |
| (38462) | 14.7 | 0.15 | 20071027 | 33.57796  | 299.42492 | 188.21183 | 0.23506  | 0.1260517 | 3.1852426 | 282 | 9  | 1994-2007 | 0.54 | M-v | 0 | MP | 26519 | (38462) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (38520) | 15.6 | 0.15 | 20071027 | 355.34312 | 126.03013 | 33.91479  | 0.35948  | 0.0719498 | 3.1727669 | 90  | 7  | 1994-2007 | 0.41 | M-v | 0 | MP | 26539 | (38520) |
| (38526) | 14.2 | 0.15 | 20071027 | 264.46729 | 236.12505 | 2.59510   | 1.30773  | 0.1063840 | 3.2383696 | 291 | 13 | 1976-2007 | 0.55 | M-v | 0 | MP | 26541 | (38526) |
| (38527) | 14.8 | 0.15 | 20071027 | 353.14479 | 77.49593  | 87.43993  | 1.90992  | 0.0979772 | 3.2448911 | 184 | 9  | 1993-2007 | 0.54 | M-v | 0 | MP | 26542 | (38527) |
| (38533) | 14.6 | 0.15 | 20071027 | 316.05838 | 164.13712 | 46.13895  | 0.26482  | 0.1039785 | 3.2460862 | 274 | 9  | 1996-2007 | 0.54 | M-v | 0 | MP | 26544 | (38533) |
| (38969) | 14.9 | 0.15 | 20071027 | 95.09914  | 219.94281 | 100.62876 | 7.72740  | 0.1759513 | 2.2350786 | 299 | 10 | 1994-2007 | 0.59 | M-v | 1 | MP | 26705 | (38969) |
| (39294) | 12.3 | 0.15 | 20071027 | 267.60858 | 62.57463  | 129.30012 | 12.01162 | 0.0525158 | 3.9774190 | 343 | 10 | 1990-2007 | 0.53 | M-v | 0 | MP | 66033 | (39294) |
| (39410) | 16.2 | 0.15 | 20071027 | 129.23135 | 116.50186 | 158.07642 | 6.26293  | 0.1775065 | 2.2902235 | 164 | 7  | 1971-2007 | 0.64 | M-v | 0 | MP | 26845 | (39410) |
| (39467) | 15.8 | 0.15 | 20071027 | 150.73924 | 124.56224 | 147.02836 | 0.80285  | 0.1916307 | 2.3131196 | 306 | 10 | 1978-2007 | 0.55 | M-v | 0 | MP | 27872 | (39467) |
| (39489) | 14.7 | 0.15 | 20071027 | 89.93336  | 71.22876  | 246.14451 | 7.96272  | 0.2915123 | 2.3167427 | 243 | 9  | 1981-2007 | 0.60 | M-v | 0 | MP | 27879 | (39489) |
| (39500) | 16.4 | 0.15 | 20071027 | 160.83508 | 4.82186   | 262.29675 | 6.12158  | 0.1008733 | 2.2945299 | 143 | 10 | 1981-2007 | 0.54 | M-v | 0 | MP | 27882 | (39500) |
| (39514) | 15.2 | 0.15 | 20071027 | 81.26156  | 331.24715 | 46.57898  | 2.58850  | 0.2017326 | 2.2520363 | 467 | 9  | 1986-2007 | 0.54 | M-v | 0 | MP | 27888 | (39514) |
| (39526) | 16.0 | 0.15 | 20071027 | 110.07230 | 177.57527 | 134.03588 | 4.29838  | 0.1780546 | 2.3016477 | 152 | 12 | 1954-2007 | 0.69 | M-v | 1 | MP | 27892 | (39526) |
| (39566) | 15.0 | 0.15 | 20071027 | 95.62682  | 148.06713 | 190.92606 | 5.33022  | 0.2223475 | 2.3411800 | 255 | 9  | 1992-2007 | 0.57 | M-v | 0 | MP | 27906 | (39566) |
| (39608) | 14.1 | 0.15 | 20071027 | 60.67576  | 321.34444 | 40.66736  | 9.61194  | 0.0902381 | 2.2652471 | 256 | 7  | 1993-2007 | 0.64 | M-v | 1 | MP | 50356 | (39608) |
| (39637) | 15.2 | 0.15 | 20071027 | 264.58519 | 21.90053  | 163.46000 | 3.09548  | 0.0799036 | 2.2254509 | 291 | 9  | 1993-2007 | 0.56 | M-v | 0 | MP | 27930 | (39637) |
| (39817) | 15.3 | 0.15 | 20071027 | 168.44807 | 17.52650  | 251.59700 | 3.39668  | 0.1507726 | 2.2491383 | 243 | 9  | 1993-2007 | 0.58 | M-v | 0 | MP | 27991 | (39817) |
| (40278) | 15.6 | 0.15 | 20071027 | 103.63255 | 4.06817   | 337.92183 | 5.02319  | 0.1970444 | 2.2284966 | 296 | 9  | 1953-2007 | 0.59 | M-v | 1 | MP | 28161 | (40278) |
| (40388) | 15.0 | 0.15 | 20071027 | 175.14163 | 57.40607  | 214.72687 | 2.65374  | 0.1823835 | 2.2674038 | 490 | 9  | 1994-2007 | 0.53 | M-v | 0 | MP | 28200 | (40388) |
| (40399) | 14.8 | 0.15 | 20071027 | 160.22477 | 340.73522 | 347.79892 | 5.45691  | 0.2163678 | 2.2256805 | 298 | 9  | 1986-2007 | 0.57 | M-v | 0 | MP | 28204 | (40399) |
| (40452) | 15.9 | 0.15 | 20071027 | 97.13442  | 292.91677 | 37.72283  | 6.83860  | 0.1443236 | 2.3602193 | 218 | 9  | 1992-2007 | 0.55 | M-v | 0 | MP | 28225 | (40452) |
| (40598) | 16.1 | 0.15 | 20071027 | 81.08925  | 359.98842 | 349.11469 | 2.64803  | 0.2505183 | 2.3642118 | 133 | 7  | 1981-2007 | 0.56 | M-v | 1 | MP | 28276 | (40598) |
| (40635) | 15.3 | 0.15 | 20071027 | 70.68466  | 236.70869 | 108.25169 | 5.65413  | 0.1322820 | 2.3990422 | 166 | 7  | 1998-2007 | 0.61 | M-v | 1 | MP | 28289 | (40635) |
| (40653) | 16.5 | 0.15 | 20071027 | 123.31209 | 22.86555  | 274.53439 | 1.60433  | 0.2121222 | 2.3589978 | 128 | 9  | 1984-2007 | 0.55 | M-v | 0 | MP | 28295 | (40653) |
| (40719) | 15.6 | 0.15 | 20071027 | 158.40383 | 331.28738 | 356.72833 | 4.94304  | 0.2675958 | 2.2228922 | 273 | 9  | 1976-2007 | 0.52 | M-v | 0 | MP | 28317 | (40719) |
| (40750) | 15.4 | 0.15 | 20071027 | 108.40607 | 125.28892 | 177.50937 | 2.43051  | 0.1749407 | 2.4254870 | 133 | 7  | 1995-2007 | 0.57 | M-v | 1 | MP | 28329 | (40750) |
| (40753) | 16.0 | 0.15 | 20071027 | 132.23891 | 211.88432 | 71.67239  | 1.34109  | 0.2265186 | 2.3974922 | 183 | 9  | 1992-2007 | 0.62 | M-v | 0 | MP | 28330 | (40753) |
| (41344) | 12.9 | 0.15 | 20071027 | 290.47423 | 174.61678 | 74.84999  | 12.00487 | 0.0939754 | 3.4340504 | 350 | 9  | 1998-2007 | 0.56 | M-v | 0 | MP | 66035 | (41344) |
| (41432) | 14.6 | 0.15 | 20071027 | 177.51108 | 115.66224 | 202.50938 | 12.28342 | 0.2791322 | 2.6635835 | 257 | 9  | 1953-2007 | 0.58 | M-v | 0 | MP | 28573 | (41432) |
| (41615) | 16.5 | 0.15 | 20071027 | 4.01091   | 44.17173  | 25.96913  | 5.09995  | 0.1386465 | 2.2338818 | 275 | 8  | 1990-2007 | 0.58 | M-v | 0 | MP | 28643 | (41615) |
| (41676) | 14.9 | 0.15 | 20071027 | 88.68389  | 52.93938  | 350.51792 | 2.46257  | 0.0201424 | 2.1445331 | 513 | 9  | 1978-2007 | 0.55 | M-v | 1 | MP | 28665 | (41676) |
| (41903) | 16.4 | 0.15 | 20071027 | 208.85590 | 174.88210 | 62.54822  | 5.79990  | 0.1100738 | 2.2394981 | 170 | 9  | 1992-2007 | 0.62 | M-v | 1 | MP | 28743 | (41903) |
| (42030) | 15.4 | 0.15 | 20071027 | 20.05020  | 355.94748 | 152.70415 | 1.91239  | 0.0085878 | 3.2307343 | 207 | 9  | 1993-2007 | 0.53 | M-v | 0 | MP | 28784 | (42030) |
| (42072) | 16.0 | 0.15 | 20071027 | 76.56832  | 229.20238 | 114.10042 | 3.40243  | 0.2041006 | 2.3714284 | 131 | 7  | 1998-2007 | 0.58 | M-v | 1 | MP | 28797 | (42072) |
| (42111) | 15.1 | 0.15 | 20071027 | 49.65176  | 352.19077 | 42.80587  | 24.73066 | 0.2144863 | 2.2863766 | 231 | 10 | 1975-2007 | 0.49 | M-v | 1 | MP | 28809 | (42111) |
| (42378) | 16.6 | 0.15 | 20071027 | 169.73729 | 131.19296 | 155.42369 | 1.18261  | 0.1864983 | 2.2254476 | 270 | 9  | 1995-2007 | 0.54 | M-v | 0 | MP | 28895 | (42378) |
| (42427) | 14.8 | 0.15 | 20071027 | 159.53070 | 27.72153  | 303.71101 | 6.09709  | 0.2365511 | 2.2083049 | 357 | 10 | 1973-2007 | 0.59 | M-v | 1 | MP | 28911 | (42427) |
| (42461) | 15.8 | 0.15 | 20071027 | 196.67136 | 163.63167 | 127.60371 | 7.25562  | 0.1045920 | 2.1807350 | 286 | 10 | 1977-2007 | 0.56 | M-v | 0 | MP | 28922 | (42461) |
| (42601) | 15.3 | 0.15 | 20071027 | 0.43132   | 216.54892 | 232.66889 | 2.97428  | 0.0822357 | 2.2389574 | 356 | 9  | 1990-2007 | 0.54 | M-v | 0 | MP | 73903 | (42601) |
| (42624) | 16.0 | 0.15 | 20071027 | 229.37166 | 29.33657  | 181.52322 | 4.92156  | 0.0853788 | 2.3155958 | 278 | 9  | 1996-2007 | 0.50 | M-v | 0 | MP | 30830 | (42624) |
| (42679) | 16.3 | 0.15 | 20071027 | 216.21225 | 118.09494 | 121.68823 | 6.44006  | 0.1353554 | 2.3281377 | 117 | 7  | 1995-2007 | 0.57 | M-v | 1 | MP | 30851 | (42679) |
| (42803) | 12.6 | 0.15 | 20071027 | 49.97153  | 328.85244 | 116.75391 | 10.29204 | 0.1398795 | 2.7674593 | 514 | 12 | 1951-2007 | 0.51 | M-v | 0 | MP | 30894 | (42803) |
| (42847) | 14.1 | 0.15 | 20071027 | 177.51275 | 262.77735 | 6.31383   | 22.63935 | 0.2595673 | 2.2708317 | 514 | 9  | 1975-2007 | 0.57 | M-v | 0 | MP | 30910 | (42847) |
| (42895) | 15.6 | 0.15 | 20071027 | 180.18368 | 130.06975 | 169.91294 | 3.98027  | 0.1825133 | 2.2569523 | 308 | 9  | 1972-2007 | 0.56 | M-v | 0 | MP | 30928 | (42895) |
| (42934) | 16.2 | 0.15 | 20071027 | 94.87800  | 305.22838 | 8.32007   | 3.30657  | 0.1863400 | 2.4338673 | 139 | 7  | 1995-2007 | 0.50 | M-v | 0 | MP | 30943 | (42934) |
| (42951) | 15.1 | 0.15 | 20071027 | 193.69419 | 207.16918 | 93.76845  | 7.90380  | 0.1522200 | 2.2692702 | 275 | 9  | 1993-2007 | 0.51 | M-v | 0 | MP | 30950 | (42951) |
| (42960) | 16.3 | 0.15 | 20071027 | 106.27873 | 305.90389 | 7.84247   | 1.83348  | 0.1607896 | 2.4177998 | 125 | 9  | 1995-2007 | 0.59 | M-v | 0 | MP | 30953 | (42960) |
| (43005) | 15.7 | 0.15 | 20071027 | 164.18391 | 38.63457  | 246.30964 | 3.62347  | 0.1823607 | 2.3281592 | 252 | 9  | 1992-2007 | 0.54 | M-v | 0 | MP | 30969 | (43005) |
| (43015) | 15.8 | 0.15 | 20071027 | 151.05182 | 220.97131 | 114.39698 | 7.51159  | 0.1404272 | 2.3127287 | 176 | 9  | 1997-2007 | 0.55 | M-v | 0 | MP | 30973 | (43015) |
| (43063) | 16.6 | 0.15 | 20071027 | 167.28904 | 219.61333 | 72.72437  | 3.00218  | 0.2329705 | 2.3562060 | 177 | 9  | 1991-2007 | 0.56 | M-v | 0 | MP | 30991 | (43063) |
| (43354) | 12.0 | 0.15 | 20071027 | 150.41737 | 289.90562 | 59.59603  | 22.57514 | 0.0959972 | 3.1515366 | 353 | 10 | 1981-2007 | 0.52 | M-v | 0 | MP | 31094 | (43354) |
| (43444) | 15.5 | 0.15 | 20071027 | 179.34792 | 47.42794  | 227.31105 | 5.11040  | 0.0886276 | 2.2501740 | 259 | 9  | 1996-2007 | 0.56 | M-v | 0 | MP | 31125 | (43444) |
| (43467) | 15.9 | 0.15 | 20071027 | 92.36168  | 223.44984 | 160.58866 | 4.18864  | 0.1664911 | 2.2329336 | 407 | 9  | 1991-2007 | 0.52 | M-v | 0 | MP | 47677 | (43467) |
| (43496) | 15.8 | 0.15 | 20071027 | 114.02976 | 248.83995 | 107.29930 | 7.21329  | 0.1389471 | 2.2802754 | 150 | 9  | 1989-2007 | 0.56 | M-v | 1 | MP | 31141 | (43496) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (43524) | 14.8 | 0.15 | 20071027 | 122.35050 | 181.90146 | 128.31082 | 5.89843  | 0.0900889 | 2.4452773 | 263 | 9  | 1997-2007 | 0.50 | M-v | 0 | MP | 31150 | (43524) |
| (43585) | 14.1 | 0.15 | 20071027 | 86.89426  | 199.78650 | 179.94222 | 9.71585  | 0.1389977 | 2.7379656 | 287 | 10 | 1994-2007 | 0.55 | M-v | 0 | MP | 38170 | (43585) |
| (43636) | 16.3 | 0.15 | 20071027 | 103.27625 | 267.84844 | 40.72765  | 4.53759  | 0.1775114 | 2.2855012 | 162 | 9  | 1972-2007 | 0.61 | M-v | 0 | MP | 31184 | (43636) |
| (43697) | 15.9 | 0.15 | 20071027 | 202.88492 | 270.74159 | 20.63216  | 4.35949  | 0.1512844 | 2.2021687 | 149 | 9  | 1960-2007 | 0.53 | M-v | 0 | MP | 31203 | (43697) |
| (43703) | 15.8 | 0.15 | 20071027 | 194.45538 | 38.35550  | 221.07465 | 2.97808  | 0.1526132 | 2.2698220 | 278 | 9  | 1971-2007 | 0.56 | M-v | 0 | MP | 31205 | (43703) |
| (43705) | 16.1 | 0.15 | 20071027 | 185.03257 | 307.04702 | 310.99891 | 1.93017  | 0.1763266 | 2.3809143 | 207 | 10 | 1973-2007 | 0.56 | M-v | 0 | MP | 31205 | (43705) |
| (43759) | 15.8 | 0.15 | 20071027 | 192.75420 | 198.82977 | 134.92217 | 5.65523  | 0.1415389 | 2.1883238 | 253 | 9  | 1986-2007 | 0.62 | M-v | 1 | MP | 32059 | (43759) |
| (43785) | 14.9 | 0.15 | 20071027 | 126.54825 | 223.45570 | 160.29358 | 5.65391  | 0.1713222 | 2.2797118 | 414 | 10 | 1989-2007 | 0.51 | M-v | 0 | MP | 32067 | (43785) |
| (43819) | 15.3 | 0.15 | 20071027 | 257.40867 | 155.03053 | 86.32640  | 6.33411  | 0.1133664 | 2.2027929 | 326 | 9  | 1992-2007 | 0.52 | M-v | 1 | MP | 32078 | (43819) |
| (43829) | 15.8 | 0.15 | 20071027 | 59.01123  | 273.88329 | 144.36065 | 6.58689  | 0.0848155 | 2.4443822 | 256 | 10 | 1991-2007 | 0.56 | M-v | 0 | MP | 32082 | (43829) |
| (43834) | 15.2 | 0.15 | 20071027 | 86.77728  | 173.27143 | 164.95890 | 3.04161  | 0.0953087 | 2.5177905 | 200 | 10 | 1993-2007 | 0.54 | M-v | 1 | MP | 32084 | (43834) |
| (43880) | 15.7 | 0.15 | 20071027 | 240.91087 | 177.34425 | 112.34724 | 1.00914  | 0.1357376 | 2.1217889 | 236 | 10 | 1995-2007 | 0.47 | M-v | 1 | MP | 32098 | (43880) |
| (43897) | 14.9 | 0.15 | 20071027 | 28.71915  | 43.49934  | 38.22143  | 3.10194  | 0.1589838 | 2.4476848 | 279 | 9  | 1995-2007 | 0.53 | M-v | 0 | MP | 32104 | (43897) |
| (43955) | 16.7 | 0.15 | 20071027 | 120.16038 | 155.40048 | 198.72091 | 0.27818  | 0.0404763 | 2.3663436 | 151 | 9  | 1976-2007 | 0.48 | M-v | 0 | MP | 32123 | (43955) |
| (44013) | 14.7 | 0.15 | 20071027 | 86.88854  | 189.46549 | 210.37896 | 8.08013  | 0.1186422 | 2.7188240 | 351 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 41513 | (44013) |
| (44062) | 15.7 | 0.15 | 20071027 | 300.89469 | 196.53156 | 13.65927  | 2.49216  | 0.1203102 | 2.2210229 | 245 | 7  | 1998-2007 | 0.46 | M-v | 0 | MP | 32162 | (44062) |
| (44200) | 15.1 | 0.15 | 20071027 | 137.49521 | 121.69552 | 211.67265 | 2.05265  | 0.3209008 | 2.4259886 | 454 | 10 | 1987-2007 | 0.54 | M-v | 0 | MP | 32219 | (44200) |
| (44243) | 14.9 | 0.15 | 20071027 | 157.95042 | 311.81104 | 313.99057 | 6.93686  | 0.1297585 | 2.5341020 | 273 | 9  | 1993-2007 | 0.60 | M-v | 0 | MP | 50362 | (44243) |
| (44245) | 14.7 | 0.15 | 20071027 | 103.70355 | 119.96984 | 177.14914 | 8.17812  | 0.2338194 | 2.5796638 | 204 | 9  | 1990-2007 | 0.51 | M-v | 1 | MP | 32235 | (44245) |
| (44254) | 14.7 | 0.15 | 20071027 | 62.70729  | 154.11613 | 200.42341 | 7.32064  | 0.1227719 | 2.5923961 | 184 | 12 | 1990-2007 | 0.58 | M-v | 0 | MP | 32238 | (44254) |
| (44319) | 15.4 | 0.15 | 20071027 | 34.12171  | 244.70838 | 137.74471 | 4.25536  | 0.1324821 | 2.6039487 | 105 | 8  | 1992-2007 | 0.68 | M-v | 0 | MP | 32262 | (44319) |
| (44327) | 15.1 | 0.15 | 20071027 | 87.73502  | 107.62983 | 217.39897 | 3.57884  | 0.2570313 | 2.5854130 | 167 | 9  | 1993-2007 | 0.54 | M-v | 1 | MP | 32264 | (44327) |
| (44340) | 14.1 | 0.15 | 20071027 | 345.66705 | 244.34248 | 189.87390 | 15.38846 | 0.1541513 | 2.6496959 | 248 | 9  | 1996-2007 | 0.59 | M-v | 0 | MP | 77325 | (44340) |
| (44447) | 14.7 | 0.15 | 20071027 | 65.85942  | 168.95876 | 214.00188 | 13.60976 | 0.1907698 | 2.5701121 | 292 | 9  | 1990-2007 | 0.59 | M-v | 1 | MP | 32306 | (44447) |
| (44457) | 15.1 | 0.15 | 20071027 | 71.06739  | 62.28836  | 331.88347 | 3.44189  | 0.2798386 | 2.5511193 | 453 | 9  | 1992-2007 | 0.53 | M-v | 1 | MP | 32309 | (44457) |
| (44481) | 15.8 | 0.15 | 20071027 | 61.47002  | 193.36122 | 191.66069 | 2.93315  | 0.2203838 | 2.6100011 | 309 | 9  | 1981-2007 | 0.51 | M-v | 0 | MP | 32316 | (44481) |
| (44514) | 14.0 | 0.15 | 20071027 | 18.67479  | 104.64704 | 319.27605 | 11.49476 | 0.1313474 | 2.6702161 | 294 | 9  | 1982-2007 | 0.55 | M-v | 0 | MP | 32327 | (44514) |
| (44676) | 14.9 | 0.15 | 20071027 | 25.30525  | 90.47187  | 15.14035  | 4.84570  | 0.1221870 | 2.2806143 | 376 | 7  | 1998-2007 | 0.52 | M-v | 0 | MP | 32383 | (44676) |
| (44684) | 16.1 | 0.15 | 20071027 | 194.87593 | 6.10037   | 261.99647 | 6.55819  | 0.1472978 | 2.2868468 | 256 | 9  | 1985-2007 | 0.52 | M-v | 0 | MP | 32386 | (44684) |
| (44707) | 15.2 | 0.15 | 20071027 | 53.01727  | 226.20524 | 199.74714 | 6.24911  | 0.0852450 | 2.3377270 | 290 | 9  | 1994-2007 | 0.52 | M-v | 0 | MP | 32395 | (44707) |
| (44733) | 15.0 | 0.15 | 20071027 | 231.07780 | 330.67836 | 243.95687 | 1.43268  | 0.1440894 | 2.3837710 | 344 | 9  | 1992-2007 | 0.52 | M-v | 0 | MP | 32406 | (44733) |
| (44742) | 15.4 | 0.15 | 20071027 | 321.11487 | 79.39607  | 70.32059  | 3.86068  | 0.0785502 | 2.3308548 | 297 | 9  | 1994-2007 | 0.53 | M-v | 0 | MP | 77326 | (44742) |
| (44786) | 15.5 | 0.15 | 20071027 | 248.58877 | 27.39233  | 167.23109 | 2.25064  | 0.0639983 | 2.4134882 | 276 | 9  | 1991-2007 | 0.56 | M-v | 0 | MP | 32424 | (44786) |
| (44789) | 15.2 | 0.15 | 20071027 | 289.15849 | 281.23002 | 303.72191 | 4.51642  | 0.1208202 | 2.2573071 | 279 | 9  | 1992-2007 | 0.56 | M-v | 1 | MP | 32426 | (44789) |
| (44836) | 16.2 | 0.15 | 20071027 | 235.95657 | 277.06529 | 284.94273 | 1.60281  | 0.1241063 | 2.4210484 | 200 | 9  | 1991-2007 | 0.51 | M-v | 0 | MP | 32441 | (44836) |
| (44859) | 15.8 | 0.15 | 20071027 | 150.56138 | 252.69376 | 74.35674  | 5.70496  | 0.0482921 | 2.3307464 | 233 | 9  | 1992-2007 | 0.53 | M-v | 0 | MP | 32448 | (44859) |
| (44884) | 16.2 | 0.15 | 20071027 | 184.15593 | 30.81503  | 250.71414 | 6.39499  | 0.0935947 | 2.3404863 | 94  | 6  | 1998-2006 | 0.52 | M-v | 0 | MP | 32457 | (44884) |
| (44901) | 17.5 | 0.15 | 20071027 | 204.46172 | 285.03795 | 328.94492 | 1.57745  | 0.1802223 | 2.3491075 | 105 | 9  | 1994-2007 | 0.53 | M-v | 0 | MP | 32464 | (44901) |
| (44908) | 16.4 | 0.15 | 20071027 | 83.77291  | 145.58456 | 229.68307 | 1.12947  | 0.1514592 | 2.4025059 | 173 | 10 | 1976-2007 | 0.52 | M-v | 0 | MP | 32466 | (44908) |
| (44967) | 15.4 | 0.15 | 20071027 | 223.87877 | 194.02437 | 20.14052  | 3.13608  | 0.1168076 | 2.3953200 | 337 | 9  | 1994-2007 | 0.58 | M-v | 0 | MP | 32489 | (44967) |
| (45014) | 14.6 | 0.15 | 20071027 | 54.74500  | 287.91786 | 150.00522 | 1.32202  | 0.1707433 | 2.3695310 | 346 | 7  | 1997-2007 | 0.53 | M-v | 0 | MP | 50362 | (45014) |
| (45095) | 16.4 | 0.15 | 20071027 | 165.79406 | 236.95848 | 88.21124  | 1.26096  | 0.1234916 | 2.3351095 | 218 | 9  | 1994-2007 | 0.51 | M-v | 0 | MP | 32533 | (45095) |
| (45183) | 15.3 | 0.15 | 20071027 | 132.72759 | 282.85032 | 30.14569  | 2.79117  | 0.1942378 | 2.4240485 | 237 | 13 | 1976-2007 | 0.51 | M-v | 0 | MP | 32563 | (45183) |
| (45302) | 15.6 | 0.15 | 20071027 | 98.08820  | 359.93362 | 15.46642  | 2.65162  | 0.1994572 | 2.4500335 | 428 | 9  | 1997-2007 | 0.49 | M-v | 0 | MP | 32600 | (45302) |
| (45335) | 15.3 | 0.15 | 20071027 | 74.85367  | 189.20673 | 164.90235 | 4.65270  | 0.1617622 | 2.5239538 | 171 | 9  | 1993-2007 | 0.50 | M-v | 1 | MP | 32611 | (45335) |
| (45357) | 15.5 | 0.15 | 20071027 | 95.99799  | 220.37466 | 137.00969 | 5.98993  | 0.2549228 | 2.3749262 | 198 | 9  | 1991-2007 | 0.56 | M-v | 1 | MP | 32619 | (45357) |
| (45516) | 14.7 | 0.15 | 20071027 | 51.35860  | 254.03057 | 136.64638 | 13.96823 | 0.1066715 | 2.5578035 | 274 | 9  | 1992-2007 | 0.55 | M-v | 0 | MP | 32672 | (45516) |
| (45698) | 15.7 | 0.15 | 20071027 | 44.62770  | 281.74756 | 127.60230 | 4.74272  | 0.2937968 | 2.5393656 | 152 | 9  | 1994-2007 | 0.56 | M-v | 1 | MP | 32730 | (45698) |
| (45809) | 15.8 | 0.15 | 20071027 | 112.25994 | 331.90823 | 349.29604 | 5.29828  | 0.0199249 | 2.1667384 | 236 | 7  | 1997-2007 | 0.61 | M-v | 1 | MP | 32769 | (45809) |
| (45830) | 14.6 | 0.15 | 20071027 | 63.44297  | 64.77582  | 7.54695   | 4.39147  | 0.1167664 | 2.1814778 | 429 | 9  | 1976-2007 | 0.47 | M-v | 0 | MP | 32777 | (45830) |
| (45861) | 14.6 | 0.15 | 20071027 | 170.87248 | 126.32435 | 173.37865 | 0.85866  | 0.0952390 | 3.2251395 | 268 | 9  | 1998-2007 | 0.52 | M-v | 0 | MP | 43321 | (45861) |
| (45875) | 12.2 | 0.15 | 20071027 | 56.52662  | 0.19490   | 98.91731  | 18.02754 | 0.1249390 | 3.1543767 | 447 | 12 | 1976-2007 | 0.53 | M-v | 0 | MP | 32794 | (45875) |
| (45953) | 15.2 | 0.15 | 20071027 | 292.27604 | 114.29109 | 54.29840  | 4.74286  | 0.2076641 | 2.3260813 | 314 | 9  | 1996-2007 | 0.56 | M-v | 0 | MP | 77327 | (45953) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (45966) | 15.6 | 0.15 | 20071027 | 242.67895 | 300.75537 | 306.16399 | 6.24219  | 0.1210681 | 2.2583765 | 168 | 9  | 1996-2007 | 0.58 | M-v | 1 | MP | 32824 | (45966) |
| (45986) | 15.4 | 0.15 | 20071027 | 256.15839 | 104.11548 | 128.53216 | 7.06654  | 0.0713362 | 2.3401794 | 261 | 9  | 1992-2007 | 0.56 | M-v | 0 | MP | 32831 | (45986) |
| (45997) | 15.9 | 0.15 | 20071027 | 345.21279 | 351.95536 | 147.72026 | 3.33554  | 0.0463795 | 2.2871579 | 152 | 10 | 1992-2007 | 0.58 | M-v | 0 | MP | 32834 | (45997) |
| (46021) | 14.5 | 0.15 | 20071027 | 282.76939 | 32.10020  | 157.88348 | 11.82886 | 0.1108335 | 2.3402486 | 287 | 8  | 1998-2007 | 0.61 | M-v | 0 | MP | 77327 | (46021) |
| (46035) | 15.7 | 0.15 | 20071027 | 218.86987 | 124.92358 | 138.97518 | 6.45385  | 0.0902269 | 2.3207151 | 188 | 9  | 1995-2007 | 0.54 | M-v | 0 | MP | 32846 | (46035) |
| (46063) | 15.6 | 0.15 | 20071027 | 168.67965 | 332.00852 | 343.09607 | 8.32510  | 0.2001560 | 2.3553323 | 242 | 9  | 1994-2007 | 0.52 | M-v | 0 | MP | 32854 | (46063) |
| (46133) | 15.6 | 0.15 | 20071027 | 54.79596  | 32.95539  | 356.09164 | 5.37509  | 0.0685750 | 2.4482024 | 158 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 32875 | (46133) |
| (46175) | 15.8 | 0.15 | 20071027 | 312.40291 | 17.84579  | 129.17571 | 7.09376  | 0.0614404 | 2.3858571 | 132 | 9  | 1994-2007 | 0.52 | M-v | 0 | MP | 32887 | (46175) |
| (46297) | 13.6 | 0.15 | 20071027 | 82.08403  | 19.86701  | 313.02141 | 12.68289 | 0.1831019 | 2.6826739 | 321 | 9  | 1993-2007 | 0.54 | M-v | 0 | MP | 32923 | (46297) |
| (46353) | 14.1 | 0.15 | 20071027 | 177.15049 | 229.64495 | 120.81791 | 3.55204  | 0.0825261 | 2.6850046 | 450 | 10 | 1994-2007 | 0.52 | M-v | 0 | MP | 32943 | (46353) |
| (46397) | 16.2 | 0.15 | 20071027 | 132.71393 | 308.01736 | 350.55146 | 3.08198  | 0.1970090 | 2.2348743 | 244 | 8  | 1995-2007 | 0.61 | M-v | 1 | MP | 50363 | (46397) |
| (46429) | 16.4 | 0.15 | 20071027 | 127.52832 | 250.35705 | 81.31505  | 1.69453  | 0.1098368 | 2.2878947 | 235 | 9  | 1994-2007 | 0.50 | M-v | 0 | MP | 32968 | (46429) |
| (46468) | 15.6 | 0.15 | 20071027 | 285.68907 | 152.38325 | 31.03499  | 2.31606  | 0.0344657 | 2.7541810 | 183 | 9  | 1960-2007 | 0.52 | M-v | 0 | MP | 32980 | (46468) |
| (46475) | 14.1 | 0.15 | 20071027 | 53.06537  | 56.72401  | 351.79636 | 5.97352  | 0.0963065 | 2.4098692 | 380 | 9  | 1971-2007 | 0.57 | M-v | 0 | MP | 32982 | (46475) |
| (46500) | 14.8 | 0.15 | 20071027 | 284.09925 | 204.77553 | 313.32090 | 1.90832  | 0.1295744 | 2.3882852 | 274 | 9  | 1977-2007 | 0.55 | M-v | 0 | MP | 32991 | (46500) |
| (46509) | 16.0 | 0.15 | 20071027 | 180.90785 | 151.32153 | 134.34729 | 2.93699  | 0.1945619 | 2.3565239 | 216 | 9  | 1977-2007 | 0.62 | M-v | 0 | MP | 32994 | (46509) |
| (46536) | 13.4 | 0.15 | 20071027 | 16.29466  | 57.29075  | 346.30697 | 32.63214 | 0.3247079 | 2.7806884 | 164 | 7  | 1981-2006 | 0.67 | M-v | 1 | MP | 34068 | (46536) |
| (46609) | 13.7 | 0.15 | 20071027 | 45.50660  | 341.85343 | 29.55418  | 9.78092  | 0.1879040 | 2.7224712 | 401 | 8  | 1993-2007 | 0.56 | M-v | 0 | MP | 34092 | (46609) |
| (46622) | 15.5 | 0.15 | 20071027 | 301.56422 | 137.53095 | 52.35131  | 5.72815  | 0.0877662 | 2.3062317 | 206 | 7  | 1994-2007 | 0.50 | M-v | 1 | MP | 34096 | (46622) |
| (46650) | 15.6 | 0.15 | 20071027 | 34.31681  | 84.80995  | 14.20403  | 2.50661  | 0.1681399 | 2.3864817 | 265 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 34105 | (46650) |
| (46704) | 15.8 | 0.15 | 20071027 | 163.38992 | 175.49967 | 172.81859 | 2.46919  | 0.2323926 | 2.3744144 | 220 | 10 | 1993-2007 | 0.53 | M-v | 1 | MP | 34123 | (46704) |
| (46779) | 15.7 | 0.15 | 20071027 | 182.32127 | 225.48489 | 57.58906  | 5.11394  | 0.2419058 | 2.3548171 | 220 | 9  | 1977-2007 | 0.61 | M-v | 0 | MP | 34149 | (46779) |
| (46807) | 15.9 | 0.15 | 20071027 | 190.12115 | 241.29686 | 63.23918  | 4.86349  | 0.2577301 | 2.3466851 | 251 | 7  | 1995-2007 | 0.53 | M-v | 0 | MP | 34161 | (46807) |
| (46831) | 15.0 | 0.15 | 20071027 | 218.61605 | 300.29401 | 335.59677 | 7.43608  | 0.1018606 | 2.4032386 | 268 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 34170 | (46831) |
| (46858) | 14.5 | 0.15 | 20071027 | 218.00241 | 257.81826 | 10.75081  | 8.09433  | 0.1084861 | 2.4174510 | 355 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 34179 | (46858) |
| (46873) | 14.9 | 0.15 | 20071027 | 174.26574 | 100.22113 | 156.99256 | 9.91731  | 0.0267258 | 2.5587299 | 273 | 9  | 1992-2007 | 0.61 | M-v | 0 | MP | 34184 | (46873) |
| (46908) | 14.7 | 0.15 | 20071027 | 292.01593 | 42.64154  | 109.72372 | 1.59354  | 0.0764207 | 2.5669912 | 274 | 9  | 1978-2007 | 0.60 | M-v | 0 | MP | 34196 | (46908) |
| (46913) | 15.0 | 0.15 | 20071027 | 62.85009  | 99.50506  | 256.68914 | 4.16234  | 0.1409549 | 2.6188771 | 134 | 7  | 1998-2007 | 0.63 | M-v | 1 | MP | 34198 | (46913) |
| (46976) | 14.5 | 0.15 | 20071027 | 114.87487 | 345.79124 | 359.24627 | 9.30940  | 0.1084824 | 2.5470206 | 343 | 10 | 1992-2007 | 0.59 | M-v | 1 | MP | 34220 | (46976) |
| (46991) | 16.9 | 0.15 | 20071027 | 62.82778  | 302.93810 | 83.30384  | 1.12487  | 0.1538456 | 2.5541680 | 65  | 10 | 1994-2007 | 0.46 | M-v | 0 | MP | 34225 | (46991) |
| (47006) | 15.5 | 0.15 | 20071027 | 116.68998 | 89.90984  | 220.89519 | 10.95952 | 0.1760551 | 2.6061317 | 150 | 7  | 1994-2006 | 0.59 | M-v | 1 | MP | 34230 | (47006) |
| (47011) | 14.8 | 0.15 | 20071027 | 28.94414  | 210.61711 | 182.75910 | 11.28922 | 0.0775611 | 2.6273848 | 136 | 7  | 1998-2007 | 0.59 | M-v | 1 | MP | 34231 | (47011) |
| (47027) | 14.7 | 0.15 | 20071027 | 50.31241  | 139.97623 | 268.22682 | 5.09053  | 0.2884485 | 2.6034434 | 294 | 10 | 1953-2007 | 0.56 | M-v | 0 | MP | 34236 | (47027) |
| (47194) | 15.7 | 0.15 | 20071027 | 280.96913 | 259.36407 | 325.94893 | 5.25652  | 0.1111445 | 2.2705673 | 145 | 7  | 1993-2007 | 0.52 | M-v | 1 | MP | 34296 | (47194) |
| (47234) | 15.6 | 0.15 | 20071027 | 133.33683 | 4.02229   | 19.31983  | 3.57106  | 0.0226537 | 2.2525614 | 339 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 34309 | (47234) |
| (47248) | 15.9 | 0.15 | 20071027 | 306.43517 | 150.95949 | 44.82123  | 4.92599  | 0.1044391 | 2.3073319 | 190 | 7  | 1994-2007 | 0.53 | M-v | 1 | MP | 34315 | (47248) |
| (47250) | 15.4 | 0.15 | 20071027 | 38.19285  | 51.83993  | 51.17676  | 1.41253  | 0.1732029 | 2.3473685 | 360 | 7  | 1995-2007 | 0.52 | M-v | 0 | MP | 34316 | (47250) |
| (47299) | 15.1 | 0.15 | 20071027 | 38.71525  | 162.26305 | 282.89090 | 6.68276  | 0.0249362 | 2.3859923 | 213 | 9  | 1992-2007 | 0.54 | M-v | 0 | MP | 34333 | (47299) |
| (47335) | 14.7 | 0.15 | 20071027 | 37.34622  | 340.36054 | 112.18552 | 3.85885  | 0.2134152 | 2.4391153 | 323 | 7  | 1993-2007 | 0.51 | M-v | 0 | MP | 34347 | (47335) |
| (47353) | 15.5 | 0.15 | 20071027 | 199.30570 | 236.89789 | 59.65952  | 3.72822  | 0.1731218 | 2.3269732 | 306 | 9  | 1995-2007 | 0.51 | M-v | 0 | MP | 34353 | (47353) |
| (47399) | 15.2 | 0.15 | 20071027 | 325.35954 | 255.36209 | 267.61263 | 6.56060  | 0.0600708 | 2.3530072 | 216 | 9  | 1990-2007 | 0.60 | M-v | 1 | MP | 34369 | (47399) |
| (47406) | 15.7 | 0.15 | 20071027 | 47.28931  | 30.77677  | 37.96521  | 6.41118  | 0.0924771 | 2.3918989 | 250 | 7  | 1995-2007 | 0.51 | M-v | 0 | MP | 34371 | (47406) |
| (47431) | 14.7 | 0.15 | 20071027 | 163.67997 | 343.32248 | 7.76112   | 6.47158  | 0.1497744 | 2.3479667 | 337 | 9  | 1997-2007 | 0.57 | M-v | 1 | MP | 34380 | (47431) |
| (47455) | 16.1 | 0.15 | 20071027 | 98.49705  | 256.78036 | 94.12385  | 1.24359  | 0.2204536 | 2.4771194 | 257 | 9  | 1997-2007 | 0.46 | M-v | 0 | MP | 34387 | (47455) |
| (47486) | 16.3 | 0.15 | 20071027 | 46.80741  | 62.11985  | 10.71613  | 1.46294  | 0.1504788 | 2.4260807 | 189 | 9  | 1991-2007 | 0.50 | M-v | 0 | MP | 34397 | (47486) |
| (47500) | 15.8 | 0.15 | 20071027 | 69.69701  | 331.44881 | 44.30957  | 4.28711  | 0.0883450 | 2.5376178 | 203 | 10 | 1990-2007 | 0.54 | M-v | 0 | MP | 34401 | (47500) |
| (47543) | 15.4 | 0.15 | 20071027 | 48.05505  | 187.62867 | 239.72182 | 5.02279  | 0.0979284 | 2.4631549 | 252 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 34416 | (47543) |
| (47677) | 14.7 | 0.15 | 20071027 | 7.31006   | 306.28813 | 168.80850 | 11.09765 | 0.1246857 | 2.5308855 | 342 | 7  | 1996-2007 | 0.56 | M-v | 1 | MP | 34459 | (47677) |
| (47757) | 15.7 | 0.15 | 20071027 | 34.27776  | 70.30544  | 353.69122 | 13.59230 | 0.1430312 | 2.5429139 | 199 | 8  | 1984-2007 | 0.65 | M-v | 1 | MP | 34485 | (47757) |
| (47810) | 15.1 | 0.15 | 20071027 | 74.98069  | 241.55639 | 148.25831 | 16.23937 | 0.2149530 | 2.5281390 | 295 | 9  | 1992-2007 | 0.54 | M-v | 1 | MP | 34502 | (47810) |
| (48015) | 15.0 | 0.15 | 20071027 | 236.26587 | 254.33882 | 3.14690   | 6.78810  | 0.1775031 | 2.3230229 | 232 | 10 | 1977-2007 | 0.53 | M-v | 0 | MP | 34568 | (48015) |
| (48018) | 14.7 | 0.15 | 20071027 | 277.91007 | 185.96339 | 24.90935  | 7.76264  | 0.1739461 | 2.3683187 | 306 | 7  | 1995-2007 | 0.58 | M-v | 1 | MP | 34569 | (48018) |
| (48026) | 15.7 | 0.15 | 20071027 | 224.30579 | 138.81706 | 134.82492 | 6.85749  | 0.0975572 | 2.2789842 | 148 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 34571 | (48026) |



|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (48028) | 15.4 | 0.15 | 20071027 | 186.91655 | 178.05776 | 106.70981 | 3.15520  | 0.2108131 | 2.3928400 | 259 | 9  | 1995-2007 | 0.64 | M-v | 0 | MP | 34572 | (48028) |
| (48071) | 13.3 | 0.15 | 20071027 | 306.19929 | 206.59922 | 12.63204  | 12.60960 | 0.1332343 | 2.3229221 | 404 | 9  | 1990-2007 | 0.52 | M-v | 0 | MP | 34585 | (48071) |
| (48073) | 15.0 | 0.15 | 20071027 | 187.00772 | 266.63809 | 17.45932  | 6.43639  | 0.1310944 | 2.4196620 | 387 | 9  | 1991-2007 | 0.54 | M-v | 0 | MP | 34586 | (48073) |
| (48080) | 14.9 | 0.15 | 20071027 | 222.78706 | 104.36388 | 169.95769 | 5.64940  | 0.1944969 | 2.3440662 | 339 | 9  | 1995-2007 | 0.55 | M-v | 0 | MP | 34588 | (48080) |
| (48086) | 16.8 | 0.15 | 20071027 | 213.84559 | 87.94359  | 162.41145 | 1.91968  | 0.0754944 | 2.4141138 | 155 | 9  | 1971-2007 | 0.41 | M-v | 0 | MP | 34590 | (48086) |
| (48111) | 15.4 | 0.15 | 20071027 | 252.09122 | 61.20852  | 169.22785 | 6.94761  | 0.0821445 | 2.3968035 | 187 | 9  | 1997-2007 | 0.59 | M-v | 0 | MP | 34598 | (48111) |
| (48126) | 16.6 | 0.15 | 20071027 | 250.01817 | 121.91159 | 160.34504 | 7.53620  | 0.1344227 | 2.2504518 | 112 | 7  | 1998-2007 | 0.60 | M-v | 1 | MP | 34603 | (48126) |
| (48128) | 15.4 | 0.15 | 20071027 | 178.42173 | 29.40681  | 273.33988 | 4.43270  | 0.1775974 | 2.3651280 | 224 | 9  | 1995-2007 | 0.55 | M-v | 0 | MP | 34603 | (48128) |
| (48144) | 16.1 | 0.15 | 20071027 | 297.42806 | 58.82098  | 112.52937 | 7.97833  | 0.0647556 | 2.3811772 | 123 | 9  | 1994-2007 | 0.59 | M-v | 0 | MP | 77329 | (48144) |
| (48168) | 16.1 | 0.15 | 20071027 | 23.84547  | 254.67981 | 206.02911 | 4.95210  | 0.0565296 | 2.3822550 | 229 | 9  | 1995-2007 | 0.53 | M-v | 0 | MP | 34616 | (48168) |
| (48170) | 15.4 | 0.15 | 20071027 | 168.96934 | 278.70559 | 39.41848  | 1.95874  | 0.0401694 | 2.3830876 | 307 | 10 | 1995-2007 | 0.57 | M-v | 0 | MP | 34616 | (48170) |
| (48171) | 16.6 | 0.15 | 20071027 | 326.48502 | 29.35738  | 124.50288 | 1.91186  | 0.0499552 | 2.4024760 | 160 | 9  | 1971-2007 | 0.54 | M-v | 0 | MP | 34617 | (48171) |
| (48344) | 15.1 | 0.15 | 20071027 | 28.36194  | 93.82197  | 18.05654  | 6.18057  | 0.1722273 | 2.3210297 | 382 | 7  | 1960-2007 | 0.50 | M-v | 0 | MP | 34666 | (48344) |
| (48345) | 15.6 | 0.15 | 20071027 | 64.27288  | 72.26225  | 16.04276  | 8.24764  | 0.0705440 | 2.3128911 | 227 | 7  | 1960-2007 | 0.50 | M-v | 0 | MP | 34666 | (48345) |
| (48365) | 14.6 | 0.15 | 20071027 | 20.35891  | 37.73781  | 16.91468  | 13.79630 | 0.1801089 | 2.5926365 | 184 | 9  | 1973-2007 | 0.55 | M-v | 0 | MP | 34672 | (48365) |
| (48366) | 15.2 | 0.15 | 20071027 | 33.27083  | 323.68366 | 135.81523 | 5.38457  | 0.1904233 | 2.3771362 | 266 | 7  | 1973-2007 | 0.59 | M-v | 1 | MP | 34673 | (48366) |
| (48368) | 14.9 | 0.15 | 20071027 | 156.05443 | 269.28726 | 22.28251  | 5.61834  | 0.1508764 | 2.5709370 | 337 | 10 | 1973-2007 | 0.55 | M-v | 0 | MP | 34673 | (48368) |
| (48370) | 16.2 | 0.15 | 20071027 | 92.33197  | 15.60534  | 300.22962 | 7.82502  | 0.2220829 | 2.6081304 | 67  | 6  | 1977-2005 | 0.63 | M-v | 2 | MP | 34674 | (48370) |
| (48371) | 14.5 | 0.15 | 20071027 | 117.90217 | 51.65739  | 255.06175 | 9.04724  | 0.1372236 | 2.6015200 | 173 | 9  | 1977-2007 | 0.63 | M-v | 1 | MP | 34674 | (48371) |
| (48418) | 14.5 | 0.15 | 20071027 | 180.90974 | 84.38394  | 165.46065 | 12.84561 | 0.2283263 | 2.6163346 | 311 | 7  | 1988-2007 | 0.51 | M-v | 0 | MP | 35682 | (48418) |
| (48487) | 13.9 | 0.15 | 20071027 | 290.04175 | 40.43577  | 145.33892 | 14.13686 | 0.0955922 | 2.5403744 | 324 | 9  | 1992-2007 | 0.55 | M-v | 1 | MP | 35705 | (48487) |
| (48536) | 15.0 | 0.15 | 20071027 | 305.28138 | 278.35851 | 247.64364 | 2.62554  | 0.0252703 | 2.6367955 | 255 | 8  | 1993-2007 | 0.59 | M-v | 1 | MP | 35723 | (48536) |
| (48645) | 14.2 | 0.15 | 20071027 | 274.81907 | 190.68531 | 39.53004  | 14.25940 | 0.0784117 | 2.3712828 | 459 | 9  | 1991-2007 | 0.52 | M-v | 0 | MP | 35760 | (48645) |
| (48687) | 15.3 | 0.15 | 20071027 | 74.45253  | 211.59939 | 170.71867 | 13.41058 | 0.1678749 | 2.5666885 | 275 | 10 | 1996-2007 | 0.55 | M-v | 1 | MP | 35775 | (48687) |
| (48740) | 15.6 | 0.15 | 20071027 | 121.85190 | 2.57953   | 355.34487 | 1.53955  | 0.2387345 | 2.4195495 | 287 | 9  | 1987-2007 | 0.51 | M-v | 1 | MP | 35794 | (48740) |
| (48824) | 14.4 | 0.15 | 20071027 | 36.01505  | 193.25287 | 248.51354 | 6.77213  | 0.1826625 | 2.7867388 | 341 | 7  | 1983-2007 | 0.64 | M-v | 0 | MP | 35823 | (48824) |
| (48852) | 16.0 | 0.15 | 20071027 | 291.10530 | 249.06626 | 346.23313 | 1.87988  | 0.1021274 | 2.2149564 | 144 | 7  | 1998-2007 | 0.67 | M-v | 1 | MP | 35834 | (48852) |
| (48960) | 15.5 | 0.15 | 20071027 | 210.06230 | 39.57515  | 243.70530 | 1.40111  | 0.2043544 | 2.3920752 | 251 | 9  | 1991-2007 | 0.58 | M-v | 0 | MP | 35875 | (48960) |
| (48985) | 15.0 | 0.15 | 20071027 | 350.46155 | 172.50118 | 356.02259 | 13.79681 | 0.1170530 | 2.3747117 | 198 | 10 | 1951-2007 | 0.52 | M-v | 1 | MP | 35885 | (48985) |
| (49028) | 15.1 | 0.15 | 20071027 | 167.13972 | 327.68295 | 357.64411 | 7.83991  | 0.2992647 | 2.4183405 | 225 | 10 | 1983-2007 | 0.65 | M-v | 1 | MP | 35901 | (49028) |
| (49091) | 14.8 | 0.15 | 20071027 | 311.28788 | 168.53897 | 54.15075  | 4.60146  | 0.1654822 | 2.3566048 | 279 | 9  | 1979-2007 | 0.59 | M-v | 1 | MP | 35924 | (49091) |
| (49119) | 16.0 | 0.15 | 20071027 | 305.63358 | 153.47674 | 51.96920  | 7.42373  | 0.0567913 | 2.4207801 | 241 | 9  | 1955-2007 | 0.59 | M-v | 1 | MP | 35935 | (49119) |
| (49128) | 15.5 | 0.15 | 20071027 | 88.43404  | 193.00104 | 150.15142 | 4.03030  | 0.1715845 | 2.5624861 | 176 | 9  | 1995-2007 | 0.48 | M-v | 1 | MP | 35939 | (49128) |
| (49154) | 15.6 | 0.15 | 20071027 | 188.04764 | 323.74409 | 337.98698 | 7.72758  | 0.1791182 | 2.4224290 | 117 | 9  | 1993-2007 | 0.54 | M-v | 1 | MP | 35949 | (49154) |
| (49192) | 16.3 | 0.15 | 20071027 | 120.75855 | 115.59481 | 216.02627 | 1.32707  | 0.1161585 | 2.5216589 | 198 | 10 | 1994-2007 | 0.49 | M-v | 0 | MP | 35964 | (49192) |
| (49203) | 15.2 | 0.15 | 20071027 | 276.32433 | 311.96890 | 290.81750 | 1.68756  | 0.1308503 | 2.4074699 | 274 | 9  | 1994-2007 | 0.57 | M-v | 0 | MP | 35968 | (49203) |
| (49219) | 14.8 | 0.15 | 20071027 | 9.08580   | 330.65321 | 153.25764 | 1.84086  | 0.0067978 | 2.4800523 | 330 | 9  | 1992-2007 | 0.56 | M-v | 1 | MP | 35974 | (49219) |
| (49243) | 14.6 | 0.15 | 20071027 | 144.03605 | 257.24054 | 70.42148  | 5.52686  | 0.0209962 | 2.5495475 | 294 | 10 | 1951-2007 | 0.60 | M-v | 1 | MP | 35983 | (49243) |
| (49250) | 15.0 | 0.15 | 20071027 | 90.22849  | 163.96727 | 216.54050 | 14.08257 | 0.0943227 | 2.5521582 | 242 | 9  | 1990-2007 | 0.59 | M-v | 1 | MP | 35986 | (49250) |
| (49251) | 15.2 | 0.15 | 20071027 | 79.87397  | 170.72938 | 181.99905 | 1.32882  | 0.1120049 | 2.6239111 | 272 | 10 | 1993-2007 | 0.59 | M-v | 0 | MP | 35986 | (49251) |
| (49258) | 14.5 | 0.15 | 20071027 | 243.24628 | 343.14319 | 297.80684 | 1.30499  | 0.1121706 | 2.4123296 | 383 | 9  | 1993-2007 | 0.53 | M-v | 0 | MP | 70204 | (49258) |
| (49266) | 15.7 | 0.15 | 20071027 | 345.25079 | 44.04739  | 100.47198 | 4.11679  | 0.1234416 | 2.5362187 | 204 | 10 | 1990-2007 | 0.49 | M-v | 0 | MP | 35992 | (49266) |
| (49273) | 15.4 | 0.15 | 20071027 | 29.47363  | 183.34871 | 263.35104 | 3.21557  | 0.0937664 | 2.5507251 | 159 | 8  | 1996-2007 | 0.65 | M-v | 0 | MP | 35994 | (49273) |
| (49277) | 15.0 | 0.15 | 20071027 | 344.08291 | 86.22302  | 38.18307  | 13.01119 | 0.0673394 | 2.5588140 | 203 | 7  | 1976-2007 | 0.54 | M-v | 1 | MP | 35996 | (49277) |
| (49281) | 15.1 | 0.15 | 20071027 | 53.16760  | 354.43040 | 61.82332  | 3.21842  | 0.1241950 | 2.5834152 | 324 | 10 | 1952-2007 | 0.62 | M-v | 1 | MP | 35997 | (49281) |
| (49321) | 15.8 | 0.15 | 20071027 | 81.77392  | 51.90350  | 333.59181 | 2.57189  | 0.2843065 | 2.5587275 | 307 | 9  | 1994-2007 | 0.54 | M-v | 1 | MP | 36012 | (49321) |
| (49327) | 15.8 | 0.15 | 20071027 | 49.52538  | 193.10258 | 182.00813 | 3.62460  | 0.1073365 | 2.6803248 | 157 | 10 | 1993-2007 | 0.58 | M-v | 0 | MP | 36014 | (49327) |
| (49373) | 15.5 | 0.15 | 20071027 | 30.42604  | 304.16614 | 112.61805 | 3.78284  | 0.1026082 | 2.7325620 | 167 | 10 | 1993-2007 | 0.57 | M-v | 0 | MP | 36031 | (49373) |
| (49414) | 15.3 | 0.15 | 20071027 | 44.95373  | 356.45664 | 65.43650  | 6.47884  | 0.1923064 | 2.6060435 | 175 | 7  | 1977-2007 | 0.55 | M-v | 1 | MP | 36045 | (49414) |
| (49437) | 14.8 | 0.15 | 20071027 | 67.64119  | 359.25820 | 70.53307  | 8.06698  | 0.2110738 | 2.5423582 | 334 | 7  | 1996-2007 | 0.51 | M-v | 1 | MP | 36053 | (49437) |
| (49475) | 14.9 | 0.15 | 20071027 | 38.57909  | 87.14408  | 16.68531  | 7.78356  | 0.1576553 | 2.6133646 | 252 | 9  | 1993-2007 | 0.56 | M-v | 0 | MP | 36066 | (49475) |
| (49552) | 14.9 | 0.15 | 20071027 | 56.43683  | 316.49132 | 111.76584 | 4.75369  | 0.1527715 | 2.6436136 | 262 | 7  | 1989-2007 | 0.51 | M-v | 0 | MP | 36095 | (49552) |
| (49614) | 14.1 | 0.15 | 20071027 | 319.00420 | 122.10471 | 345.41033 | 19.25033 | 0.1441168 | 2.8845702 | 221 | 7  | 1997-2007 | 0.56 | M-v | 0 | MP | 36117 | (49614) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (49746) | 15.8 | 0.15 | 20071027 | 286.64853 | 175.40055 | 48.10413  | 3.82408  | 0.2062023 | 2.3158386 | 272 | 9  | 1992-2007 | 0.50 | M-v | 0 | MP | 36168 | (49746) |
| (49887) | 15.5 | 0.15 | 20071027 | 353.45438 | 342.79755 | 155.43972 | 2.81421  | 0.1321436 | 2.4087686 | 214 | 7  | 1991-2007 | 0.51 | M-v | 1 | MP | 36221 | (49887) |
| (49943) | 15.1 | 0.15 | 20071027 | 47.59827  | 89.48307  | 18.39669  | 8.16305  | 0.0687464 | 2.3519164 | 297 | 9  | 1995-2007 | 0.56 | M-v | 0 | MP | 36241 | (49943) |
| (49964) | 15.3 | 0.15 | 20071027 | 292.15264 | 146.27665 | 72.52017  | 2.05851  | 0.1418247 | 2.4198912 | 283 | 9  | 1993-2007 | 0.49 | M-v | 0 | MP | 36249 | (49964) |
| (50014) | 16.0 | 0.15 | 20071027 | 259.24470 | 149.97886 | 88.68629  | 4.24811  | 0.0408164 | 2.4370216 | 245 | 10 | 1993-2007 | 0.57 | M-v | 1 | MP | 36265 | (50014) |
| (50036) | 15.4 | 0.15 | 20071027 | 307.90332 | 292.84860 | 262.89437 | 4.42999  | 0.1276375 | 2.3738346 | 202 | 9  | 1995-2007 | 0.52 | M-v | 0 | MP | 36272 | (50036) |
| (50058) | 15.8 | 0.15 | 20071027 | 75.15411  | 348.10230 | 80.04780  | 3.65297  | 0.1725176 | 2.4064143 | 275 | 9  | 1980-2007 | 0.54 | M-v | 0 | MP | 36280 | (50058) |
| (50175) | 14.6 | 0.15 | 20071027 | 83.61257  | 65.44459  | 353.94154 | 12.49096 | 0.1717974 | 2.4030816 | 309 | 7  | 1965-2007 | 0.55 | M-v | 0 | MP | 36320 | (50175) |
| (50267) | 14.7 | 0.15 | 20071027 | 285.28955 | 119.01791 | 76.93236  | 13.82038 | 0.1211265 | 2.5285946 | 178 | 7  | 2000-2007 | 0.54 | M-v | 1 | MP | 57648 | (50267) |
| (50271) | 13.9 | 0.15 | 20071027 | 170.00796 | 293.21621 | 337.38164 | 9.90783  | 0.1731635 | 2.6825105 | 278 | 9  | 1994-2007 | 0.59 | M-v | 0 | MP | 73910 | (50271) |
| (50304) | 13.9 | 0.15 | 20071027 | 217.86515 | 7.41611   | 272.44678 | 1.81180  | 0.0960680 | 2.5349981 | 491 | 8  | 1998-2007 | 0.51 | M-v | 0 | MP | 77332 | (50304) |
| (50311) | 15.1 | 0.15 | 20071027 | 238.45784 | 349.57015 | 280.77110 | 6.96477  | 0.1023387 | 2.4715294 | 323 | 9  | 1995-2007 | 0.57 | M-v | 0 | MP | 36369 | (50311) |
| (50323) | 15.7 | 0.15 | 20071027 | 310.66748 | 317.33742 | 225.04273 | 2.41658  | 0.0632437 | 2.5139530 | 208 | 9  | 1994-2007 | 0.52 | M-v | 0 | MP | 36373 | (50323) |
| (50346) | 15.2 | 0.15 | 20071027 | 93.78558  | 209.37284 | 141.08669 | 2.74310  | 0.0224596 | 2.6214420 | 296 | 9  | 1996-2007 | 0.54 | M-v | 0 | MP | 36382 | (50346) |
| (50348) | 16.1 | 0.15 | 20071027 | 132.17743 | 219.07312 | 134.70870 | 3.11799  | 0.2166542 | 2.4469004 | 269 | 10 | 1993-2007 | 0.45 | M-v | 0 | MP | 36382 | (50348) |
| (50370) | 14.7 | 0.15 | 20071027 | 130.21623 | 309.57647 | 349.38204 | 2.49026  | 0.0603890 | 2.6755695 | 423 | 9  | 1993-2007 | 0.54 | M-v | 0 | MP | 36391 | (50370) |
| (50374) | 14.9 | 0.15 | 20071027 | 219.57431 | 107.95606 | 119.29488 | 3.43658  | 0.0255855 | 2.6290395 | 302 | 9  | 1992-2007 | 0.53 | M-v | 0 | MP | 36392 | (50374) |
| (50375) | 15.7 | 0.15 | 20071027 | 51.10076  | 9.55652   | 84.08240  | 3.30485  | 0.1456176 | 2.4405465 | 296 | 7  | 1960-2007 | 0.57 | M-v | 0 | MP | 36392 | (50375) |
| (50408) | 14.0 | 0.15 | 20071027 | 114.25757 | 305.54167 | 343.24928 | 12.30131 | 0.1822898 | 2.7463865 | 233 | 9  | 1997-2007 | 0.52 | M-v | 0 | MP | 36405 | (50408) |
| (50477) | 15.5 | 0.15 | 20071027 | 45.32878  | 202.35722 | 182.68651 | 3.93565  | 0.0611470 | 2.6940639 | 203 | 9  | 1993-2007 | 0.55 | M-v | 0 | MP | 36428 | (50477) |
| (50483) | 14.4 | 0.15 | 20071027 | 233.02062 | 226.14347 | 350.06436 | 12.08997 | 0.2027354 | 2.6344909 | 186 | 7  | 1993-2007 | 0.57 | M-v | 1 | MP | 36431 | (50483) |
| (50497) | 15.2 | 0.15 | 20071027 | 333.41880 | 123.88406 | 2.56147   | 4.94238  | 0.0440904 | 2.5662415 | 188 | 7  | 1996-2007 | 0.55 | M-v | 1 | MP | 36435 | (50497) |
| (50501) | 15.4 | 0.15 | 20071027 | 225.32749 | 265.99990 | 332.90051 | 7.98770  | 0.1029242 | 2.5978359 | 123 | 7  | 1997-2007 | 0.51 | M-v | 0 | MP | 36437 | (50501) |
| (50511) | 14.5 | 0.15 | 20071027 | 178.73535 | 160.04056 | 144.32219 | 15.62885 | 0.1002037 | 2.5570799 | 233 | 10 | 1988-2007 | 0.56 | M-v | 0 | MP | 36440 | (50511) |
| (50646) | 15.5 | 0.15 | 20071027 | 298.66440 | 305.42684 | 240.32852 | 9.97548  | 0.1773721 | 2.5479610 | 122 | 9  | 1978-2007 | 0.54 | M-v | 1 | MP | 36489 | (50646) |
| (50706) | 14.7 | 0.15 | 20071027 | 176.19593 | 344.64322 | 4.92203   | 7.64350  | 0.1684546 | 2.4703128 | 271 | 10 | 1982-2007 | 0.55 | M-v | 0 | MP | 36510 | (50706) |
| (50732) | 14.6 | 0.15 | 20071027 | 356.57011 | 64.59913  | 60.03963  | 14.32664 | 0.1190634 | 2.5716346 | 233 | 7  | 1992-2007 | 0.57 | M-v | 1 | MP | 36519 | (50732) |
| (50890) | 14.5 | 0.15 | 20071027 | 351.68808 | 81.47730  | 18.96566  | 13.50903 | 0.0466975 | 2.6877770 | 247 | 7  | 1993-2007 | 0.57 | M-v | 0 | MP | 36573 | (50890) |
| (50895) | 14.0 | 0.15 | 20071027 | 80.03809  | 50.81159  | 7.60224   | 5.70853  | 0.1416669 | 2.5513871 | 411 | 9  | 1996-2007 | 0.48 | M-v | 1 | MP | 36575 | (50895) |
| (50908) | 14.1 | 0.15 | 20071027 | 158.56505 | 97.82484  | 212.94277 | 8.00555  | 0.2140035 | 2.7407690 | 277 | 7  | 1986-2007 | 0.55 | M-v | 0 | MP | 36580 | (50908) |
| (50921) | 15.8 | 0.15 | 20071027 | 1.13561   | 39.43218  | 29.22863  | 14.65288 | 0.1587493 | 2.7513559 | 142 | 7  | 1993-2007 | 0.69 | M-v | 1 | MP | 36585 | (50921) |
| (50932) | 14.4 | 0.15 | 20071027 | 67.73018  | 21.78930  | 39.21971  | 13.56016 | 0.1470422 | 2.5969394 | 356 | 7  | 1985-2007 | 0.54 | M-v | 1 | MP | 36590 | (50932) |
| (50967) | 14.4 | 0.15 | 20071027 | 172.03156 | 233.47370 | 29.60104  | 13.68026 | 0.1123018 | 2.7188028 | 277 | 9  | 1993-2007 | 0.56 | M-v | 0 | MP | 36602 | (50967) |
| (50992) | 14.1 | 0.15 | 20071027 | 16.46635  | 323.15858 | 125.92441 | 12.67916 | 0.1314068 | 2.6392667 | 153 | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 36611 | (50992) |
| (51006) | 15.4 | 0.15 | 20071027 | 300.70207 | 308.95809 | 227.33891 | 4.11449  | 0.0554755 | 2.6176773 | 214 | 7  | 1996-2007 | 0.60 | M-v | 1 | MP | 36616 | (51006) |
| (51044) | 14.6 | 0.15 | 20071027 | 129.91648 | 306.26465 | 48.37722  | 15.63393 | 0.1579151 | 2.6235585 | 257 | 7  | 1996-2007 | 0.56 | M-v | 1 | MP | 36630 | (51044) |
| (51053) | 15.3 | 0.15 | 20071027 | 32.33412  | 30.44603  | 36.50311  | 12.48054 | 0.1790423 | 2.6469608 | 186 | 7  | 1989-2007 | 0.57 | M-v | 1 | MP | 36633 | (51053) |
| (51055) | 14.9 | 0.15 | 20071027 | 347.19047 | 284.19019 | 184.54632 | 11.83101 | 0.1295155 | 2.6590518 | 232 | 7  | 1976-2007 | 0.54 | M-v | 0 | MP | 36633 | (51055) |
| (51066) | 14.1 | 0.15 | 20071027 | 2.91725   | 223.61650 | 260.17443 | 13.52959 | 0.0473462 | 2.5473879 | 164 | 7  | 1998-2007 | 0.54 | M-v | 1 | MP | 36637 | (51066) |
| (51121) | 15.3 | 0.15 | 20071027 | 313.83706 | 341.68211 | 192.20987 | 12.56366 | 0.0992605 | 2.5437031 | 192 | 7  | 1992-2007 | 0.53 | M-v | 1 | MP | 53572 | (51121) |
| (51168) | 15.0 | 0.15 | 20071027 | 57.79445  | 7.81092   | 50.65002  | 9.26388  | 0.0870022 | 2.6447083 | 320 | 7  | 1998-2007 | 0.49 | M-v | 1 | MP | 36673 | (51168) |
| (51180) | 14.5 | 0.15 | 20071027 | 328.23321 | 13.23359  | 106.46712 | 13.96524 | 0.1220307 | 2.6997718 | 157 | 7  | 1998-2007 | 0.50 | M-v | 0 | MP | 36677 | (51180) |
| (51295) | 14.7 | 0.15 | 20071027 | 4.03139   | 26.78120  | 126.50400 | 4.10266  | 0.1522368 | 2.5827749 | 359 | 9  | 1994-2007 | 0.50 | M-v | 0 | MP | 36717 | (51295) |
| (51304) | 14.0 | 0.15 | 20071027 | 64.67866  | 345.71654 | 71.13412  | 16.10419 | 0.1857063 | 2.6507352 | 266 | 7  | 1998-2007 | 0.57 | M-v | 1 | MP | 36720 | (51304) |
| (51345) | 12.0 | 0.15 | 20071027 | 149.44299 | 126.09619 | 292.90224 | 13.92183 | 0.1494284 | 5.2284853 | 254 | 8  | 1999-2007 | 0.54 | M-v | 0 | MP | 57649 | (51345) |
| (51380) | 15.5 | 0.15 | 20071027 | 277.48046 | 103.57798 | 87.27503  | 4.89596  | 0.1736017 | 2.3870892 | 231 | 8  | 1997-2007 | 0.54 | M-v | 0 | MP | 53572 | (51380) |
| (51395) | 16.3 | 0.15 | 20071027 | 223.81827 | 71.87819  | 171.23934 | 1.34380  | 0.1359738 | 2.3936324 | 197 | 8  | 1998-2007 | 0.50 | M-v | 0 | MP | 77333 | (51395) |
| (51445) | 15.6 | 0.15 | 20071027 | 193.34673 | 160.19486 | 138.74396 | 7.04783  | 0.1372250 | 2.3350385 | 151 | 7  | 1998-2007 | 0.63 | M-v | 1 | MP | 36770 | (51445) |
| (51450) | 15.8 | 0.15 | 20071027 | 188.87077 | 158.98541 | 135.07936 | 3.70774  | 0.1267519 | 2.3846432 | 185 | 9  | 1997-2007 | 0.56 | M-v | 0 | MP | 36772 | (51450) |
| (51476) | 15.0 | 0.15 | 20071027 | 223.26898 | 240.08419 | 40.53274  | 12.72137 | 0.2096578 | 2.4357872 | 201 | 9  | 1997-2007 | 0.61 | M-v | 1 | MP | 36780 | (51476) |
| (51485) | 15.0 | 0.15 | 20071027 | 187.18887 | 243.45688 | 65.57762  | 7.53971  | 0.1347748 | 2.3768157 | 275 | 9  | 1993-2007 | 0.51 | M-v | 0 | MP | 36784 | (51485) |
| (51489) | 15.6 | 0.15 | 20071027 | 207.69819 | 246.65900 | 39.64411  | 7.30185  | 0.1153643 | 2.3721503 | 189 | 9  | 1991-2007 | 0.54 | M-v | 0 | MP | 36785 | (51489) |
| (51524) | 14.7 | 0.15 | 20071027 | 196.77721 | 118.54735 | 124.95783 | 8.11740  | 0.1756330 | 2.5489962 | 209 | 10 | 1956-2007 | 0.59 | M-v | 1 | MP | 36797 | (51524) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (51565) | 15.5 | 0.15 | 20071027 | 253.93605 | 174.37110 | 21.03096  | 7.38991  | 0.0537582 | 2.4829923 | 133 | 10 | 1991-2007 | 0.60 | M-v | 1 | MP | 36810 | (51565) |
| (51577) | 15.3 | 0.15 | 20071027 | 205.48936 | 322.51124 | 284.64341 | 2.99722  | 0.1799197 | 2.5378166 | 252 | 8  | 1991-2007 | 0.55 | M-v | 0 | MP | 73912 | (51577) |
| (51578) | 15.6 | 0.15 | 20071027 | 270.73347 | 61.55004  | 110.03853 | 4.41844  | 0.0224927 | 2.5366835 | 141 | 9  | 1994-2007 | 0.53 | M-v | 0 | MP | 77334 | (51578) |
| (51581) | 15.3 | 0.15 | 20071027 | 254.43957 | 198.97521 | 61.57503  | 8.94506  | 0.2283349 | 2.3758829 | 250 | 9  | 1991-2007 | 0.56 | M-v | 1 | MP | 36816 | (51581) |
| (51584) | 14.9 | 0.15 | 20071027 | 208.70773 | 197.31983 | 83.72030  | 7.30541  | 0.1278675 | 2.4507014 | 249 | 6  | 1998-2007 | 0.59 | M-v | 0 | MP | 36817 | (51584) |
| (51613) | 15.4 | 0.15 | 20071027 | 152.69551 | 246.79509 | 40.03311  | 1.01688  | 0.0780265 | 2.5761549 | 269 | 9  | 1994-2007 | 0.54 | M-v | 0 | MP | 36827 | (51613) |
| (51670) | 15.8 | 0.15 | 20071027 | 235.46603 | 4.76754   | 201.05768 | 3.28340  | 0.0341058 | 2.5689757 | 229 | 9  | 1994-2007 | 0.57 | M-v | 0 | MP | 36845 | (51670) |
| (51675) | 15.3 | 0.15 | 20071027 | 143.80853 | 166.76602 | 157.12247 | 4.43112  | 0.2251201 | 2.5522525 | 242 | 9  | 1997-2007 | 0.59 | M-v | 0 | MP | 36847 | (51675) |
| (51677) | 15.3 | 0.15 | 20071027 | 108.81757 | 246.67204 | 93.51269  | 4.78885  | 0.1764123 | 2.6082810 | 271 | 9  | 1996-2007 | 0.55 | M-v | 0 | MP | 36847 | (51677) |
| (51689) | 13.3 | 0.15 | 20071027 | 149.81096 | 86.09319  | 247.40347 | 12.16662 | 0.1981683 | 2.5987347 | 376 | 9  | 1993-2007 | 0.52 | M-v | 0 | MP | 36852 | (51689) |
| (51692) | 16.0 | 0.15 | 20071027 | 235.06524 | 138.63622 | 74.28551  | 3.01339  | 0.0396904 | 2.5106299 | 169 | 9  | 1997-2007 | 0.63 | M-v | 1 | MP | 57649 | (51692) |
| (51709) | 14.9 | 0.15 | 20071027 | 266.11884 | 300.05200 | 332.64159 | 2.50196  | 0.1460378 | 2.3044193 | 267 | 9  | 1995-2007 | 0.50 | M-v | 0 | MP | 36858 | (51709) |
| (51778) | 14.2 | 0.15 | 20071027 | 238.10805 | 159.69949 | 81.60431  | 14.79367 | 0.1381594 | 2.5570759 | 169 | 9  | 1995-2007 | 0.53 | M-v | 0 | MP | 36879 | (51778) |
| (51794) | 14.4 | 0.15 | 20071027 | 131.29915 | 132.30870 | 155.48846 | 13.09626 | 0.1768835 | 2.7105768 | 297 | 7  | 1997-2007 | 0.56 | M-v | 0 | MP | 36884 | (51794) |
| (51803) | 15.1 | 0.15 | 20071027 | 42.61041  | 352.16369 | 68.18820  | 3.56867  | 0.0467961 | 2.6733178 | 217 | 8  | 1993-2007 | 0.56 | M-v | 0 | MP | 36887 | (51803) |
| (51805) | 15.0 | 0.15 | 20071027 | 221.59693 | 8.62980   | 260.66820 | 5.31920  | 0.1614770 | 2.5358839 | 251 | 9  | 1993-2007 | 0.57 | M-v | 0 | MP | 36887 | (51805) |
| (51904) | 14.9 | 0.15 | 20071027 | 26.51733  | 133.69920 | 316.91834 | 13.58128 | 0.0753129 | 2.6601740 | 124 | 7  | 1997-2007 | 0.52 | M-v | 0 | MP | 36922 | (51904) |
| (52106) | 15.2 | 0.15 | 20071027 | 52.34365  | 280.88752 | 100.46515 | 1.79671  | 0.0833722 | 2.7763944 | 248 | 9  | 1960-2007 | 0.55 | M-v | 0 | MP | 36988 | (52106) |
| (52117) | 15.5 | 0.15 | 20071027 | 115.47507 | 102.61687 | 244.53022 | 1.44012  | 0.1750258 | 2.5915115 | 258 | 9  | 1960-2007 | 0.49 | M-v | 0 | MP | 36992 | (52117) |
| (52130) | 14.3 | 0.15 | 20071027 | 235.60703 | 189.93056 | 20.52110  | 10.03203 | 0.0520401 | 2.5999653 | 353 | 9  | 1960-2007 | 0.52 | M-v | 0 | MP | 36996 | (52130) |
| (52148) | 14.5 | 0.15 | 20071027 | 179.62158 | 248.03057 | 15.68073  | 7.05152  | 0.1624207 | 2.5916145 | 292 | 9  | 1960-2007 | 0.54 | M-v | 0 | MP | 37002 | (52148) |
| (52156) | 15.9 | 0.15 | 20071027 | 6.78833   | 32.56621  | 108.58854 | 3.41384  | 0.1334047 | 2.3866820 | 276 | 10 | 1971-2007 | 0.58 | M-v | 1 | MP | 37005 | (52156) |
| (52161) | 15.1 | 0.15 | 20071027 | 313.99272 | 125.73813 | 53.04020  | 5.41088  | 0.0781591 | 2.5745099 | 372 | 10 | 1971-2007 | 0.57 | M-v | 0 | MP | 37006 | (52161) |
| (52164) | 15.8 | 0.15 | 20071027 | 38.12130  | 225.24365 | 186.87961 | 12.89903 | 0.2215612 | 2.5854686 | 111 | 9  | 1973-2007 | 0.75 | M-v | 1 | MP | 37007 | (52164) |
| (52168) | 15.1 | 0.15 | 20071027 | 169.70144 | 354.41818 | 0.41103   | 6.87188  | 0.1324302 | 2.3511429 | 180 | 7  | 1973-2007 | 0.59 | M-v | 1 | MP | 37009 | (52168) |
| (52171) | 15.6 | 0.15 | 20071027 | 213.24653 | 318.09102 | 325.21342 | 1.97834  | 0.0263062 | 2.5502836 | 252 | 10 | 1973-2007 | 0.54 | M-v | 0 | MP | 37010 | (52171) |
| (52185) | 15.5 | 0.15 | 20071027 | 56.14377  | 34.54141  | 26.75045  | 4.30666  | 0.1731236 | 2.5686657 | 253 | 7  | 1973-2007 | 0.53 | M-v | 1 | MP | 37015 | (52185) |
| (52196) | 14.1 | 0.15 | 20071027 | 113.04013 | 83.52964  | 301.34624 | 1.85490  | 0.1755564 | 2.5615865 | 372 | 9  | 1977-2007 | 0.53 | M-v | 1 | MP | 37018 | (52196) |
| (52235) | 14.4 | 0.15 | 20071027 | 56.36477  | 202.06752 | 167.66442 | 3.63809  | 0.1390272 | 3.0455748 | 397 | 9  | 1979-2007 | 0.53 | M-v | 0 | MP | 38542 | (52235) |
| (52256) | 15.7 | 0.15 | 20071027 | 336.35863 | 165.75534 | 304.21653 | 4.19951  | 0.1209968 | 2.7698370 | 155 | 7  | 1979-2007 | 0.65 | M-v | 0 | MP | 38549 | (52256) |
| (52258) | 15.5 | 0.15 | 20071027 | 45.98778  | 222.59626 | 208.20972 | 8.27126  | 0.1281673 | 2.7434336 | 207 | 7  | 1981-2007 | 0.50 | M-v | 0 | MP | 38550 | (52258) |
| (52262) | 14.2 | 0.15 | 20071027 | 55.18318  | 186.64163 | 171.82685 | 6.63876  | 0.1683966 | 3.2026588 | 283 | 9  | 1983-2007 | 0.55 | M-v | 0 | MP | 38551 | (52262) |
| (52267) | 15.1 | 0.15 | 20071027 | 4.80013   | 160.12180 | 337.47999 | 3.03892  | 0.1612725 | 2.6681472 | 258 | 9  | 1986-2007 | 0.53 | M-v | 0 | MP | 38553 | (52267) |
| (52390) | 14.3 | 0.15 | 20071027 | 127.44459 | 28.41876  | 347.03753 | 13.16035 | 0.1988754 | 2.5811105 | 137 | 9  | 1993-2007 | 0.64 | M-v | 1 | MP | 38598 | (52390) |
| (52402) | 14.2 | 0.15 | 20071027 | 148.61143 | 320.59991 | 17.67077  | 4.65253  | 0.3014672 | 2.5962798 | 233 | 9  | 1993-2007 | 0.55 | M-v | 0 | MP | 38602 | (52402) |
| (52448) | 15.9 | 0.15 | 20071027 | 92.63759  | 47.89575  | 318.20221 | 1.95234  | 0.2445493 | 2.5392642 | 238 | 7  | 1994-2007 | 0.48 | M-v | 1 | MP | 38617 | (52448) |
| (52472) | 14.4 | 0.15 | 20071027 | 338.29240 | 93.50531  | 355.73404 | 12.97451 | 0.1283050 | 3.1504100 | 223 | 7  | 1995-2007 | 0.54 | M-v | 0 | MP | 38626 | (52472) |
| (52477) | 14.7 | 0.15 | 20071027 | 114.09049 | 58.04044  | 258.82169 | 9.65136  | 0.0925021 | 3.0510359 | 136 | 7  | 1995-2007 | 0.56 | M-v | 0 | MP | 38628 | (52477) |
| (52527) | 14.5 | 0.15 | 20071027 | 106.97657 | 231.90143 | 129.82904 | 10.13644 | 0.1331420 | 2.8009263 | 159 | 7  | 1996-2007 | 0.47 | M-v | 0 | MP | 38645 | (52527) |
| (52528) | 14.1 | 0.15 | 20071027 | 79.83510  | 164.11821 | 176.82995 | 2.12282  | 0.0992667 | 2.9072148 | 295 | 9  | 1996-2007 | 0.54 | M-v | 0 | MP | 38646 | (52528) |
| (52552) | 14.1 | 0.15 | 20071027 | 24.62540  | 286.63026 | 118.37876 | 11.62908 | 0.1169980 | 3.2223498 | 153 | 7  | 1997-2007 | 0.57 | M-v | 0 | MP | 38655 | (52552) |
| (52574) | 14.1 | 0.15 | 20071027 | 98.20563  | 269.72888 | 102.65123 | 13.96660 | 0.1845768 | 2.5945071 | 269 | 9  | 1997-2007 | 0.52 | M-v | 0 | MP | 38662 | (52574) |
| (52647) | 14.6 | 0.15 | 20071027 | 4.81069   | 313.46736 | 115.87867 | 3.57762  | 0.0701750 | 2.9324722 | 253 | 7  | 1997-2007 | 0.57 | M-v | 0 | MP | 38692 | (52647) |
| (52670) | 15.0 | 0.15 | 20071027 | 287.01255 | 59.48345  | 140.26204 | 10.91143 | 0.0501197 | 2.9408601 | 176 | 9  | 1998-2007 | 0.60 | M-v | 0 | MP | 38701 | (52670) |
| (52682) | 13.8 | 0.15 | 20071027 | 121.49707 | 295.99437 | 10.40259  | 9.06566  | 0.0709349 | 3.1796392 | 267 | 7  | 1998-2007 | 0.59 | M-v | 0 | MP | 38706 | (52682) |
| (52683) | 16.0 | 0.15 | 20071027 | 286.59685 | 155.27337 | 28.35068  | 1.40985  | 0.1490151 | 2.2676963 | 257 | 9  | 1996-2007 | 0.54 | M-v | 1 | MP | 38707 | (52683) |
| (52690) | 16.3 | 0.15 | 20071027 | 282.39525 | 136.90883 | 4.71206   | 24.20282 | 0.1168750 | 1.8899176 | 183 | 7  | 1960-2007 | 0.57 | M-v | 1 | MP | 38709 | (52690) |
| (52701) | 14.5 | 0.15 | 20071027 | 281.78900 | 41.46968  | 127.00179 | 2.11930  | 0.1069767 | 3.1393059 | 254 | 9  | 1992-2007 | 0.56 | M-v | 0 | MP | 38714 | (52701) |
| (52714) | 14.8 | 0.15 | 20071027 | 315.56105 | 171.43370 | 358.13702 | 9.08376  | 0.2022460 | 3.0309023 | 219 | 7  | 1998-2007 | 0.49 | M-v | 1 | MP | 38721 | (52714) |
| (52729) | 13.8 | 0.15 | 20071027 | 175.71699 | 179.29695 | 98.79649  | 12.66601 | 0.0243888 | 3.1370419 | 247 | 8  | 1998-2007 | 0.56 | M-v | 0 | MP | 77335 | (52729) |
| (52745) | 13.7 | 0.15 | 20071027 | 249.98275 | 169.23300 | 46.51175  | 14.13717 | 0.1261282 | 3.1163105 | 212 | 7  | 1998-2007 | 0.53 | M-v | 0 | MP | 38733 | (52745) |
| (52749) | 13.9 | 0.15 | 20071027 | 286.03325 | 124.45079 | 75.04884  | 22.72144 | 0.0705731 | 3.1349474 | 267 | 7  | 1998-2007 | 0.54 | M-v | 0 | MP | 38734 | (52749) |
| (52970) | 14.4 | 0.15 | 20071027 | 111.63879 | 326.68364 | 34.87154  | 15.70076 | 0.1338838 | 2.5382201 | 435 | 10 | 1986-2007 | 0.51 | M-v | 1 | MP | 38819 | (52970) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |        |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|--------|---------|
| (53088) | 15.2 | 0.15 | 20071027 | 45.88834  | 325.80386 | 110.91796 | 5.05042  | 0.1917428 | 2.6588863 | 281 | 7  | 1998-2007 | 0.54 | M-v | 0 | MP | 38868  | (53088) |
| (53115) | 14.8 | 0.15 | 20071027 | 88.97099  | 63.55538  | 323.45337 | 1.28611  | 0.0899088 | 2.6633477 | 369 | 7  | 1999-2007 | 0.53 | M-v | 0 | MP | 38879  | (53115) |
| (53153) | 14.5 | 0.15 | 20071027 | 18.39192  | 86.09991  | 341.73798 | 5.43196  | 0.0734016 | 2.7613200 | 203 | 7  | 1997-2007 | 0.54 | M-v | 0 | MP | 38895  | (53153) |
| (53156) | 14.5 | 0.15 | 20071027 | 57.47830  | 317.42300 | 109.34306 | 12.95308 | 0.1773701 | 2.6606744 | 193 | 7  | 1998-2007 | 0.54 | M-v | 1 | MP | 38896  | (53156) |
| (53177) | 14.0 | 0.15 | 20071027 | 137.62586 | 312.63200 | 343.34658 | 14.55593 | 0.1357494 | 2.8591344 | 327 | 7  | 1996-2007 | 0.54 | M-v | 1 | MP | 38906  | (53177) |
| (53180) | 14.4 | 0.15 | 20071027 | 271.59704 | 123.84835 | 138.98799 | 13.66318 | 0.2373808 | 2.6650536 | 253 | 7  | 1999-2007 | 0.58 | M-v | 0 | MP | 38907  | (53180) |
| (53199) | 14.0 | 0.15 | 20071027 | 237.52264 | 348.56754 | 298.12481 | 13.84523 | 0.1844152 | 2.6246186 | 287 | 9  | 1954-2007 | 0.50 | M-v | 0 | MP | 38915  | (53199) |
| (53202) | 14.8 | 0.15 | 20071027 | 267.58023 | 353.40777 | 218.74130 | 8.92795  | 0.1151803 | 2.7699920 | 264 | 9  | 1992-2007 | 0.58 | M-v | 0 | MP | 38917  | (53202) |
| (53209) | 13.8 | 0.15 | 20071027 | 225.23186 | 10.13593  | 245.90664 | 8.32528  | 0.1471912 | 2.7871640 | 409 | 9  | 1997-2007 | 0.55 | M-v | 0 | MP | 38919  | (53209) |
| (53210) | 14.2 | 0.15 | 20071027 | 225.36042 | 128.22001 | 158.62407 | 11.95872 | 0.1702806 | 2.6954650 | 347 | 7  | 1999-2007 | 0.55 | M-v | 0 | MP | 38920  | (53210) |
| (53215) | 13.9 | 0.15 | 20071027 | 54.58260  | 329.32003 | 78.03625  | 13.49220 | 0.1365715 | 2.6809035 | 220 | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 38922  | (53215) |
| (53227) | 15.1 | 0.15 | 20071027 | 336.55654 | 57.92482  | 72.06942  | 1.52862  | 0.0164855 | 2.7791775 | 294 | 9  | 1997-2007 | 0.59 | M-v | 0 | MP | 38926  | (53227) |
| (53229) | 15.0 | 0.15 | 20071027 | 5.23272   | 327.42101 | 150.45297 | 8.97275  | 0.1871661 | 2.7169923 | 168 | 7  | 1990-2007 | 0.58 | M-v | 1 | MP | 38927  | (53229) |
| (53279) | 14.9 | 0.15 | 20071027 | 351.86565 | 13.60619  | 163.15519 | 4.15594  | 0.1018489 | 2.6887601 | 249 | 7  | 1997-2007 | 0.56 | M-v | 1 | MP | 38949  | (53279) |
| (53309) | 14.8 | 0.15 | 20071027 | 280.35214 | 338.47563 | 207.60717 | 11.94584 | 0.0196527 | 2.8925254 | 331 | 10 | 1991-2007 | 0.55 | M-v | 0 | MP | 38963  | (53309) |
| (53321) | 14.6 | 0.15 | 20071027 | 355.27391 | 17.29484  | 145.02393 | 9.81587  | 0.1243798 | 2.7612917 | 254 | 7  | 1999-2007 | 0.58 | M-v | 0 | MP | 38969  | (53321) |
| (53332) | 15.7 | 0.15 | 20071027 | 330.63944 | 350.95230 | 200.50971 | 3.26463  | 0.1634784 | 2.7607026 | 178 | 6  | 1999-2007 | 0.51 | M-v | 1 | MP | 38975  | (53332) |
| (53340) | 13.7 | 0.15 | 20071027 | 352.90746 | 32.52802  | 52.11570  | 17.94774 | 0.0165814 | 3.0723927 | 319 | 7  | 1999-2007 | 0.58 | M-v | 0 | MP | 77336  | (53340) |
| (53410) | 14.6 | 0.15 | 20071027 | 225.75797 | 82.19768  | 128.02478 | 17.50849 | 0.0861173 | 3.1462965 | 188 | 10 | 1992-2007 | 0.65 | M-v | 0 | MP | 39009  | (53410) |
| (53503) | 14.9 | 0.15 | 20071027 | 286.65069 | 219.02369 | 22.06027  | 7.35215  | 0.1142415 | 2.4709235 | 369 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 39044  | (53503) |
| (53522) | 16.1 | 0.15 | 20071027 | 165.93132 | 118.09504 | 105.58453 | 24.69731 | 0.0419130 | 1.9666930 | 149 | 7  | 1998-2007 | 0.59 | M-v | 1 | MP | 39052  | (53522) |
| (53535) | 13.6 | 0.15 | 20071027 | 64.86394  | 142.82307 | 278.27760 | 5.98765  | 0.0640315 | 2.5233384 | 403 | 9  | 1950-2007 | 0.53 | M-v | 1 | MP | 39057  | (53535) |
| (53624) | 15.4 | 0.15 | 20071027 | 136.35937 | 176.83475 | 159.87618 | 2.79824  | 0.1797239 | 2.5700923 | 247 | 10 | 1977-2007 | 0.58 | M-v | 0 | MP | 39092  | (53624) |
| (53633) | 14.6 | 0.15 | 20071027 | 243.45947 | 225.34543 | 12.06302  | 7.65276  | 0.2056404 | 2.6035356 | 243 | 9  | 1993-2007 | 0.55 | M-v | 0 | MP | 39096  | (53633) |
| (53674) | 15.6 | 0.15 | 20071027 | 241.70527 | 275.37968 | 346.57341 | 1.55452  | 0.1042340 | 2.5356644 | 314 | 9  | 1996-2007 | 0.53 | M-v | 0 | MP | 39111  | (53674) |
| (53694) | 14.7 | 0.15 | 20071027 | 193.38535 | 222.22914 | 71.21038  | 5.68069  | 0.2221035 | 2.5485080 | 205 | 8  | 1992-2007 | 0.49 | M-v | 1 | MP | 77336  | (53694) |
| (53740) | 14.8 | 0.15 | 20071027 | 15.53338  | 39.17288  | 359.58936 | 26.35110 | 0.2886671 | 2.6900241 | 134 | 9  | 1989-2007 | 0.70 | M-v | 1 | MP | 128637 | (53740) |
| (53765) | 14.5 | 0.15 | 20071027 | 192.10350 | 246.84579 | 19.01618  | 13.11134 | 0.1513297 | 2.6620605 | 166 | 7  | 1993-2007 | 0.50 | M-v | 0 | MP | 39146  | (53765) |
| (53774) | 14.5 | 0.15 | 20071027 | 179.67935 | 284.07638 | 343.72970 | 11.99084 | 0.1770451 | 2.7369609 | 187 | 7  | 1992-2007 | 0.58 | M-v | 0 | MP | 39149  | (53774) |
| (53844) | 13.5 | 0.15 | 20071027 | 221.96163 | 183.51141 | 77.71684  | 14.54596 | 0.1214307 | 2.5655896 | 259 | 9  | 1976-2007 | 0.56 | M-v | 1 | MP | 39177  | (53844) |
| (53874) | 13.6 | 0.15 | 20071027 | 135.09738 | 245.62479 | 109.28924 | 15.50414 | 0.1373917 | 2.5694107 | 274 | 7  | 1998-2007 | 0.57 | M-v | 1 | MP | 39189  | (53874) |
| (53932) | 15.4 | 0.15 | 20071027 | 155.10126 | 254.82353 | 19.56149  | 3.96167  | 0.0813330 | 2.8049399 | 188 | 9  | 1995-2007 | 0.53 | M-v | 0 | MP | 39211  | (53932) |
| (53986) | 15.2 | 0.15 | 20071027 | 91.60453  | 311.62007 | 44.23699  | 9.72222  | 0.0722955 | 2.7860698 | 186 | 7  | 1997-2007 | 0.64 | M-v | 0 | MP | 39233  | (53986) |
| (54147) | 15.1 | 0.15 | 20071027 | 356.77911 | 344.64822 | 172.20525 | 13.52426 | 0.0913032 | 2.5772025 | 252 | 9  | 1989-2007 | 0.58 | M-v | 0 | MP | 39297  | (54147) |
| (54206) | 13.4 | 0.15 | 20071027 | 149.86985 | 186.06746 | 96.12482  | 18.51726 | 0.1548123 | 2.7724631 | 270 | 10 | 1954-2007 | 0.56 | M-v | 0 | MP | 39320  | (54206) |
| (54207) | 14.0 | 0.15 | 20071027 | 234.54175 | 189.14044 | 94.29272  | 15.23441 | 0.1500191 | 2.5420635 | 282 | 10 | 1988-2007 | 0.48 | M-v | 0 | MP | 39320  | (54207) |
| (54247) | 14.8 | 0.15 | 20071027 | 146.22648 | 325.67342 | 340.55738 | 6.61492  | 0.0706479 | 2.7703840 | 219 | 7  | 1978-2007 | 0.57 | M-v | 0 | MP | 39334  | (54247) |
| (54331) | 15.4 | 0.15 | 20071027 | 276.05418 | 312.92149 | 229.80556 | 5.56009  | 0.0535547 | 2.7809298 | 146 | 7  | 1997-2007 | 0.67 | M-v | 0 | MP | 39368  | (54331) |
| (54338) | 14.9 | 0.15 | 20071027 | 208.03958 | 232.75875 | 87.34167  | 4.47481  | 0.0326979 | 2.5871865 | 289 | 9  | 1997-2007 | 0.61 | M-v | 0 | MP | 39371  | (54338) |
| (54345) | 14.0 | 0.15 | 20071027 | 88.30411  | 313.41045 | 74.55864  | 6.95432  | 0.0773345 | 2.7656100 | 256 | 7  | 1997-2007 | 0.55 | M-v | 0 | MP | 39373  | (54345) |
| (54359) | 15.4 | 0.15 | 20071027 | 276.51918 | 62.05846  | 134.25973 | 4.31176  | 0.1212152 | 2.7304165 | 206 | 10 | 1992-2007 | 0.52 | M-v | 0 | MP | 39380  | (54359) |
| (54405) | 14.8 | 0.15 | 20071027 | 210.07684 | 124.84397 | 157.86916 | 9.57101  | 0.1303872 | 2.7527254 | 269 | 9  | 1996-2007 | 0.60 | M-v | 0 | MP | 39397  | (54405) |
| (54442) | 14.5 | 0.15 | 20071027 | 273.99742 | 110.70460 | 147.95125 | 15.40549 | 0.2077444 | 2.6487954 | 205 | 7  | 1999-2007 | 0.53 | M-v | 1 | MP | 39414  | (54442) |
| (54458) | 14.5 | 0.15 | 20071027 | 294.39656 | 328.90914 | 293.36931 | 14.19873 | 0.1732338 | 2.6026786 | 166 | 6  | 1999-2007 | 0.62 | M-v | 1 | MP | 39420  | (54458) |
| (54482) | 14.6 | 0.15 | 20071027 | 270.23463 | 300.49359 | 324.78135 | 8.07625  | 0.1739241 | 2.6546009 | 213 | 7  | 1999-2007 | 0.56 | M-v | 1 | MP | 39431  | (54482) |
| (54488) | 14.3 | 0.15 | 20071027 | 117.69455 | 19.75725  | 299.64107 | 9.52861  | 0.0548826 | 3.0905228 | 214 | 9  | 1992-2007 | 0.56 | M-v | 0 | MP | 39434  | (54488) |
| (54504) | 14.9 | 0.15 | 20071027 | 11.66743  | 300.33322 | 177.06585 | 1.96641  | 0.0221785 | 2.8512225 | 358 | 9  | 1991-2007 | 0.58 | M-v | 0 | MP | 39440  | (54504) |
| (54517) | 15.0 | 0.15 | 20071027 | 30.15429  | 103.47526 | 335.51751 | 8.76624  | 0.0501509 | 2.9615430 | 121 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 39447  | (54517) |
| (54580) | 14.4 | 0.15 | 20071027 | 224.22394 | 280.81274 | 326.72529 | 15.25431 | 0.0320401 | 3.0263284 | 192 | 7  | 1998-2007 | 0.60 | M-v | 0 | MP | 39472  | (54580) |
| (54603) | 13.4 | 0.15 | 20071027 | 279.04979 | 287.94374 | 302.84300 | 9.67142  | 0.0680682 | 2.8703352 | 321 | 7  | 1993-2007 | 0.57 | M-v | 0 | MP | 39480  | (54603) |
| (54616) | 13.5 | 0.15 | 20071027 | 237.77970 | 253.12349 | 311.49836 | 25.61407 | 0.0312964 | 3.2317830 | 168 | 7  | 1996-2007 | 0.63 | M-v | 0 | MP | 39485  | (54616) |
| (54621) | 14.4 | 0.15 | 20071027 | 149.94698 | 183.34595 | 114.00754 | 7.66660  | 0.0958762 | 3.0702141 | 143 | 10 | 1990-2007 | 0.57 | M-v | 0 | MP | 57651  | (54621) |
| (54633) | 14.1 | 0.15 | 20071027 | 51.52337  | 116.16442 | 293.38720 | 16.15392 | 0.0203479 | 3.1038525 | 184 | 7  | 1997-2007 | 0.52 | M-v | 0 | MP | 39492  | (54633) |

|         |      |      |          |           |           |           |          |           |            |     |    |           |      |     |   |    |        |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|----|-----------|------|-----|---|----|--------|---------|
| (54639) | 15.3 | 0.15 | 20071027 | 202.66889 | 79.49770  | 185.36550 | 1.15662  | 0.1717869 | 3.0297988  | 236 | 9  | 1995-2007 | 0.56 | M-v | 0 | MP | 39494  | (54639) |
| (54654) | 14.0 | 0.15 | 20071027 | 195.09739 | 213.52217 | 44.96949  | 17.98569 | 0.1680092 | 3.1182618  | 236 | 10 | 1993-2007 | 0.54 | M-v | 0 | MP | 39498  | (54654) |
| (54737) | 14.7 | 0.15 | 20071027 | 121.43135 | 276.65633 | 58.26268  | 13.15091 | 0.1724931 | 2.6109634  | 293 | 9  | 1981-2007 | 0.54 | M-v | 0 | MP | 39526  | (54737) |
| (54745) | 14.9 | 0.15 | 20071027 | 128.56657 | 220.08396 | 127.05065 | 5.62399  | 0.2755246 | 2.5714892  | 205 | 9  | 1989-2007 | 0.56 | M-v | 0 | MP | 39529  | (54745) |
| (54814) | 15.3 | 0.15 | 20071027 | 147.46823 | 235.17957 | 110.58301 | 3.08410  | 0.1510964 | 2.6278742  | 211 | 10 | 1996-2007 | 0.59 | M-v | 1 | MP | 39553  | (54814) |
| (54897) | 14.3 | 0.15 | 20071027 | 138.88811 | 299.26379 | 354.24219 | 1.36844  | 0.0728700 | 2.9402936  | 330 | 10 | 1991-2007 | 0.55 | M-v | 0 | MP | 39584  | (54897) |
| (54949) | 14.5 | 0.15 | 20071027 | 69.60853  | 252.07975 | 156.51371 | 12.60785 | 0.1836686 | 2.6561507  | 163 | 7  | 1999-2007 | 0.52 | M-v | 1 | MP | 39605  | (54949) |
| (54950) | 15.6 | 0.15 | 20071027 | 166.39764 | 274.39348 | 79.18368  | 7.74193  | 0.1268938 | 2.5472396  | 143 | 9  | 1992-2007 | 0.49 | M-v | 0 | MP | 39605  | (54950) |
| (54953) | 15.0 | 0.15 | 20071027 | 102.07017 | 54.75181  | 324.40930 | 6.46360  | 0.1475707 | 2.7316675  | 192 | 9  | 1992-2007 | 0.59 | M-v | 0 | MP | 39606  | (54953) |
| (54961) | 15.8 | 0.15 | 20071027 | 176.02674 | 198.61292 | 93.39336  | 3.78699  | 0.1243063 | 2.6559706  | 133 | 7  | 1996-2007 | 0.52 | M-v | 1 | MP | 39609  | (54961) |
| (55088) | 14.7 | 0.15 | 20071027 | 35.13314  | 38.71355  | 359.39677 | 5.33519  | 0.0539630 | 2.8008202  | 197 | 9  | 1997-2007 | 0.55 | M-v | 0 | MP | 39660  | (55088) |
| (55177) | 14.8 | 0.15 | 20071027 | 63.22119  | 66.83764  | 358.15397 | 1.64380  | 0.0583613 | 2.8689857  | 363 | 9  | 1998-2007 | 0.51 | M-v | 0 | MP | 39695  | (55177) |
| (55187) | 14.8 | 0.15 | 20071027 | 64.33170  | 73.44338  | 18.05283  | 2.63988  | 0.0813969 | 2.6243200  | 265 | 9  | 1994-2007 | 0.59 | M-v | 0 | MP | 39698  | (55187) |
| (55212) | 14.4 | 0.15 | 20071027 | 167.47133 | 121.73471 | 145.95439 | 2.99703  | 0.0772214 | 2.9377519  | 245 | 7  | 1994-2007 | 0.51 | M-v | 0 | MP | 39708  | (55212) |
| (55213) | 13.8 | 0.15 | 20071027 | 251.24179 | 214.41848 | 67.34690  | 28.23790 | 0.0149829 | 2.5966520  | 203 | 9  | 1998-2007 | 0.54 | M-v | 0 | MP | 39708  | (55213) |
| (55229) | 14.5 | 0.15 | 20071027 | 78.82545  | 132.13542 | 215.21258 | 10.69982 | 0.1112718 | 3.0447974  | 227 | 9  | 1969-2007 | 0.55 | M-v | 0 | MP | 39715  | (55229) |
| (55237) | 15.6 | 0.15 | 20071027 | 192.30545 | 342.19661 | 357.40056 | 6.04697  | 0.1409713 | 2.5693183  | 236 | 9  | 1993-2007 | 0.48 | M-v | 1 | MP | 39718  | (55237) |
| (55245) | 14.5 | 0.15 | 20071027 | 221.50158 | 47.02428  | 174.47684 | 13.79183 | 0.0773899 | 2.8785509  | 230 | 6  | 1999-2006 | 0.57 | M-v | 1 | MP | 77338  | (55245) |
| (55274) | 15.4 | 0.15 | 20071027 | 1.12504   | 247.32513 | 186.83261 | 1.44002  | 0.0673530 | 3.0228020  | 187 | 7  | 1998-2007 | 0.51 | M-v | 0 | MP | 39732  | (55274) |
| (55287) | 15.2 | 0.15 | 20071027 | 24.45053  | 326.19175 | 182.68581 | 2.56691  | 0.1084073 | 2.6106548  | 196 | 8  | 1991-2007 | 0.54 | M-v | 1 | MP | 62204  | (55287) |
| (55357) | 14.2 | 0.15 | 20071027 | 149.43627 | 47.41642  | 290.13553 | 3.79754  | 0.1654115 | 2.7585356  | 395 | 10 | 1978-2007 | 0.53 | M-v | 0 | MP | 39765  | (55357) |
| (55367) | 14.7 | 0.15 | 20071027 | 314.34097 | 104.74816 | 14.11956  | 10.18749 | 0.0354494 | 2.9724873  | 191 | 9  | 1960-2007 | 0.64 | M-v | 0 | MP | 39769  | (55367) |
| (55379) | 14.5 | 0.15 | 20071027 | 188.16855 | 158.21032 | 150.22686 | 7.60907  | 0.1196024 | 2.7846480  | 336 | 9  | 1995-2007 | 0.55 | M-v | 0 | MP | 39773  | (55379) |
| (55422) | 14.5 | 0.15 | 20071027 | 46.35948  | 327.19195 | 110.77354 | 6.17653  | 0.0961806 | 2.8800562  | 287 | 9  | 1993-2007 | 0.58 | M-v | 0 | MP | 39791  | (55422) |
| (55442) | 14.8 | 0.15 | 20071027 | 296.32855 | 279.44615 | 224.15215 | 8.98331  | 0.0569345 | 3.0323101  | 125 | 9  | 1990-2007 | 0.58 | M-v | 0 | MP | 39798  | (55442) |
| (55475) | 13.9 | 0.15 | 20071027 | 103.00635 | 253.66787 | 74.85163  | 12.58617 | 0.1339275 | 2.9844668  | 159 | 10 | 1980-2007 | 0.54 | M-v | 0 | MP | 39810  | (55475) |
| (55494) | 14.7 | 0.15 | 20071027 | 28.22704  | 25.56304  | 67.22261  | 11.35297 | 0.0822651 | 2.9651591  | 305 | 10 | 1996-2007 | 0.58 | M-v | 0 | MP | 39817  | (55494) |
| (55501) | 15.0 | 0.15 | 20071027 | 319.93797 | 112.28745 | 42.84741  | 4.84101  | 0.0765953 | 2.9538043  | 270 | 9  | 1991-2007 | 0.51 | M-v | 0 | MP | 39820  | (55501) |
| (55523) | 13.6 | 0.15 | 20071027 | 135.61710 | 288.77248 | 7.54235   | 11.05723 | 0.1087854 | 3.0883483  | 466 | 7  | 1999-2007 | 0.50 | M-v | 0 | MP | 39828  | (55523) |
| (55533) | 14.8 | 0.15 | 20071027 | 259.47350 | 88.23039  | 102.58121 | 6.35632  | 0.1292315 | 3.1789960  | 169 | 9  | 1996-2007 | 0.60 | M-v | 0 | MP | 39832  | (55533) |
| (55564) | 13.3 | 0.15 | 20071027 | 309.33155 | 8.92635   | 186.61888 | 16.15904 | 0.2001105 | 3.2072447  | 277 | 12 | 1991-2007 | 0.56 | M-v | 0 | MP | 39842  | (55564) |
| (55576) | 7.8  | 0.15 | 20071027 | 13.31899  | 239.41449 | 315.57154 | 13.33673 | 0.3971769 | 25.2194178 | 72  | 9  | 1987-2007 | 0.49 | M-v | 1 | MP | 110642 | (55576) |
| (55586) | 14.7 | 0.15 | 20071027 | 353.78114 | 165.27127 | 299.23028 | 12.27731 | 0.2340849 | 2.5734207  | 289 | 8  | 1986-2007 | 0.56 | M-v | 1 | MP | 39849  | (55586) |
| (55692) | 16.0 | 0.15 | 20071027 | 233.15773 | 144.47077 | 161.44519 | 6.45463  | 0.1764396 | 2.3372841  | 214 | 7  | 1973-2007 | 0.67 | M-v | 1 | MP | 39885  | (55692) |
| (55710) | 15.4 | 0.15 | 20071027 | 80.04960  | 297.26565 | 50.83209  | 2.69266  | 0.0768323 | 2.8816409  | 122 | 9  | 1977-2007 | 0.65 | M-v | 0 | MP | 39892  | (55710) |
| (55732) | 14.3 | 0.15 | 20071027 | 254.28440 | 305.73458 | 336.30938 | 12.74522 | 0.2039528 | 2.7604427  | 191 | 7  | 1986-2007 | 0.52 | M-v | 1 | MP | 41960  | (55732) |
| (55756) | 14.8 | 0.15 | 20071027 | 13.35490  | 68.52562  | 57.22722  | 10.47506 | 0.1742633 | 2.9146672  | 344 | 7  | 1991-2007 | 0.50 | M-v | 0 | MP | 57651  | (55756) |
| (55779) | 15.2 | 0.15 | 20071027 | 220.16497 | 280.91385 | 334.68855 | 1.68039  | 0.0680056 | 3.0338471  | 179 | 10 | 1993-2007 | 0.48 | M-v | 0 | MP | 41979  | (55779) |
| (55858) | 15.2 | 0.15 | 20071027 | 349.23991 | 37.54140  | 62.25139  | 8.82142  | 0.0911825 | 3.0376201  | 80  | 6  | 1996-2007 | 0.60 | M-v | 0 | MP | 42009  | (55858) |
| (55861) | 14.4 | 0.15 | 20071027 | 293.19580 | 31.17052  | 127.94872 | 10.03450 | 0.0421061 | 3.1747558  | 237 | 10 | 1996-2007 | 0.56 | M-v | 0 | MP | 42010  | (55861) |
| (55870) | 14.8 | 0.15 | 20071027 | 60.14325  | 21.55082  | 27.05914  | 9.71012  | 0.2081071 | 2.7246903  | 231 | 7  | 1997-2007 | 0.54 | M-v | 0 | MP | 42013  | (55870) |
| (55904) | 15.6 | 0.15 | 20071027 | 79.42043  | 262.76178 | 150.51810 | 2.56624  | 0.0709425 | 2.8632433  | 249 | 9  | 1991-2007 | 0.50 | M-v | 0 | MP | 42028  | (55904) |
| (55923) | 14.1 | 0.15 | 20071027 | 34.32108  | 74.02197  | 15.05671  | 8.64816  | 0.0562197 | 2.9982542  | 248 | 7  | 1998-2007 | 0.60 | M-v | 0 | MP | 42035  | (55923) |
| (55925) | 14.4 | 0.15 | 20071027 | 196.49506 | 308.70792 | 357.29869 | 8.52421  | 0.0749121 | 2.9931061  | 262 | 7  | 1998-2007 | 0.59 | M-v | 0 | MP | 42036  | (55925) |
| (56067) | 14.1 | 0.15 | 20071027 | 277.02344 | 308.49018 | 310.15395 | 12.62895 | 0.1409383 | 2.6061126  | 223 | 6  | 1996-2007 | 0.53 | M-v | 1 | MP | 42091  | (56067) |
| (56275) | 14.9 | 0.15 | 20071027 | 170.56921 | 105.91339 | 185.20358 | 1.76066  | 0.1470022 | 3.0507971  | 263 | 10 | 1992-2007 | 0.55 | M-v | 0 | MP | 42181  | (56275) |
| (56289) | 13.9 | 0.15 | 20071027 | 150.43839 | 347.78043 | 264.16024 | 23.30089 | 0.1788119 | 2.3033070  | 162 | 10 | 1989-2007 | 0.49 | M-v | 1 | MP | 42187  | (56289) |
| (56442) | 14.5 | 0.15 | 20071027 | 81.58213  | 13.60753  | 13.31890  | 5.90176  | 0.0334817 | 2.6817245  | 386 | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 42252  | (56442) |
| (56637) | 15.1 | 0.15 | 20071027 | 7.12839   | 182.51700 | 238.63459 | 5.19090  | 0.0549979 | 2.8635629  | 185 | 10 | 1994-2007 | 0.61 | M-v | 0 | MP | 57651  | (56637) |
| (56731) | 15.1 | 0.15 | 20071027 | 254.16661 | 289.11193 | 346.48098 | 4.61838  | 0.1263705 | 2.7162666  | 129 | 7  | 1999-2007 | 0.66 | M-v | 1 | MP | 42378  | (56731) |
| (56788) | 14.6 | 0.15 | 20071027 | 56.91367  | 93.52859  | 317.41654 | 11.88334 | 0.1866207 | 3.0135992  | 208 | 7  | 1998-2007 | 0.51 | M-v | 0 | MP | 42400  | (56788) |
| (56819) | 15.0 | 0.15 | 20071027 | 47.94801  | 85.34913  | 333.50515 | 9.13733  | 0.0954038 | 3.0595913  | 171 | 7  | 1998-2007 | 0.64 | M-v | 0 | MP | 42412  | (56819) |
| (56830) | 14.3 | 0.15 | 20071027 | 121.29530 | 212.74525 | 147.94314 | 12.07720 | 0.1443547 | 3.0138572  | 227 | 9  | 1998-2007 | 0.61 | M-v | 0 | MP | 42416  | (56830) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |     |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|-----|-------|---------|
| (56859) | 14.5 | 0.15 | 20071027 | 335.75437 | 144.17019 | 350.41847 | 9.12336  | 0.0747155 | 3.0775077 | 188 | 7  | 1998-2007 | 0.59 | M-v | 0 | MPC | 42425 | (56859) |
| (56906) | 14.1 | 0.15 | 20071027 | 38.21209  | 51.32203  | 339.09816 | 14.90334 | 0.0900714 | 3.2004851 | 184 | 6  | 1998-2006 | 0.55 | M-v | 0 | MPC | 42442 | (56906) |
| (56914) | 15.0 | 0.15 | 20071027 | 139.84690 | 235.84374 | 117.12901 | 3.69960  | 0.0822836 | 2.9567727 | 176 | 9  | 1998-2007 | 0.58 | M-v | 0 | MPC | 42445 | (56914) |
| (56920) | 13.9 | 0.15 | 20071027 | 49.44865  | 232.26816 | 183.74110 | 21.48994 | 0.0601045 | 3.1612266 | 312 | 10 | 1992-2007 | 0.59 | M-v | 0 | MPC | 42447 | (56920) |
| (56948) | 13.6 | 0.15 | 20071027 | 51.86289  | 95.43434  | 314.41133 | 21.60866 | 0.0295911 | 3.1482019 | 144 | 7  | 1997-2007 | 0.58 | M-v | 0 | MPC | 42458 | (56948) |
| (56975) | 13.7 | 0.15 | 20071027 | 42.91149  | 270.74266 | 103.28790 | 9.85960  | 0.0837784 | 3.3637243 | 148 | 7  | 1998-2007 | 0.57 | M-v | 0 | MPC | 42468 | (56975) |
| (56986) | 13.2 | 0.15 | 20071027 | 350.01438 | 40.64053  | 110.76919 | 9.97781  | 0.1308252 | 3.0703349 | 304 | 9  | 1998-2007 | 0.58 | M-v | 0 | MPC | 42472 | (56986) |
| (57009) | 14.4 | 0.15 | 20071027 | 231.90555 | 150.49755 | 136.92189 | 16.30601 | 0.2789517 | 2.8383956 | 222 | 7  | 1998-2007 | 0.53 | M-v | 0 | MPC | 42480 | (57009) |
| (57012) | 14.3 | 0.15 | 20071027 | 130.29006 | 190.24639 | 135.17402 | 10.29167 | 0.0634632 | 3.1692433 | 211 | 9  | 1997-2007 | 0.51 | M-v | 0 | MPC | 42481 | (57012) |
| (57028) | 14.9 | 0.15 | 20071027 | 124.53135 | 340.51329 | 353.80282 | 4.59916  | 0.1308408 | 3.2075329 | 192 | 10 | 1994-2007 | 0.53 | M-v | 0 | MPC | 42487 | (57028) |
| (57076) | 15.1 | 0.15 | 20071027 | 65.73914  | 256.62476 | 147.65836 | 8.21909  | 0.2067925 | 2.7390091 | 215 | 7  | 1994-2007 | 0.50 | M-v | 0 | MPC | 42504 | (57076) |
| (57077) | 15.0 | 0.15 | 20071027 | 51.49190  | 241.24026 | 181.71615 | 4.13324  | 0.1447995 | 2.6735618 | 257 | 7  | 1998-2007 | 0.54 | M-v | 0 | MPC | 42504 | (57077) |
| (57100) | 14.2 | 0.15 | 20071027 | 82.77456  | 267.03859 | 144.56305 | 30.91069 | 0.1792905 | 2.7079169 | 214 | 7  | 1999-2007 | 0.54 | M-v | 0 | MPC | 42515 | (57100) |
| (57116) | 16.8 | 0.15 | 20071027 | 126.97758 | 343.37478 | 322.30754 | 13.62941 | 0.1226290 | 1.9273380 | 198 | 6  | 1999-2007 | 0.58 | M-v | 1 | MPC | 42522 | (57116) |
| (57219) | 14.1 | 0.15 | 20071027 | 97.18135  | 40.30969  | 6.38150   | 15.24280 | 0.1451044 | 2.7363624 | 337 | 9  | 1992-2007 | 0.52 | M-v | 0 | MPC | 42565 | (57219) |
| (57272) | 14.9 | 0.15 | 20071027 | 349.58682 | 96.70036  | 2.33713   | 25.29419 | 0.2635970 | 3.1240559 | 190 | 6  | 1973-2007 | 0.58 | M-v | 0 | MPC | 42589 | (57272) |
| (57350) | 14.5 | 0.15 | 20071027 | 19.78944  | 61.01251  | 38.93894  | 9.98860  | 0.1141019 | 2.7642394 | 187 | 8  | 1997-2007 | 0.58 | M-v | 0 | MPC | 77339 | (57350) |
| (57412) | 15.2 | 0.15 | 20071027 | 58.43238  | 306.10366 | 115.07142 | 15.41417 | 0.2050804 | 2.7365013 | 150 | 7  | 1994-2007 | 0.55 | M-v | 0 | MPC | 42647 | (57412) |
| (57446) | 15.1 | 0.15 | 20071027 | 30.38216  | 250.95491 | 155.29359 | 7.13542  | 0.2123290 | 3.0704566 | 226 | 9  | 1990-2007 | 0.54 | M-v | 0 | MPC | 42662 | (57446) |
| (57461) | 14.8 | 0.15 | 20071027 | 136.91432 | 180.76204 | 160.70923 | 2.31238  | 0.0818691 | 2.8540375 | 349 | 9  | 1991-2007 | 0.50 | M-v | 0 | MPC | 42669 | (57461) |
| (57558) | 15.3 | 0.15 | 20071027 | 318.63725 | 22.59419  | 112.18326 | 2.33355  | 0.1320179 | 3.1251323 | 193 | 9  | 1992-2007 | 0.55 | M-v | 0 | MPC | 42708 | (57558) |
| (57620) | 15.0 | 0.15 | 20071027 | 239.52372 | 125.89414 | 168.32628 | 9.35730  | 0.0538383 | 2.6054110 | 170 | 7  | 1999-2007 | 0.55 | M-v | 0 | MPC | 42734 | (57620) |
| (57621) | 14.9 | 0.15 | 20071027 | 35.27043  | 310.12871 | 83.79432  | 6.87680  | 0.1740699 | 3.0921790 | 156 | 7  | 1993-2007 | 0.56 | M-v | 0 | MPC | 42734 | (57621) |
| (57665) | 14.3 | 0.15 | 20071027 | 66.13919  | 62.83989  | 303.30597 | 8.37569  | 0.0952494 | 3.0631407 | 185 | 7  | 1998-2007 | 0.52 | M-v | 0 | MPC | 42750 | (57665) |
| (57678) | 15.4 | 0.15 | 20071027 | 326.44713 | 67.29176  | 50.22484  | 5.43586  | 0.1578662 | 3.1276220 | 139 | 7  | 1992-2007 | 0.52 | M-v | 0 | MPC | 42755 | (57678) |
| (57681) | 15.4 | 0.15 | 20071027 | 105.13049 | 213.52325 | 158.10383 | 2.93985  | 0.0648784 | 2.9095716 | 259 | 9  | 1991-2007 | 0.53 | M-v | 0 | MPC | 42756 | (57681) |
| (57696) | 15.9 | 0.15 | 20071027 | 19.96846  | 293.07558 | 145.74126 | 1.51280  | 0.1332741 | 3.0492225 | 193 | 9  | 1992-2007 | 0.52 | M-v | 0 | MPC | 42762 | (57696) |
| (57707) | 15.5 | 0.15 | 20071027 | 79.91414  | 243.58802 | 170.20531 | 1.86448  | 0.0516321 | 2.8623784 | 234 | 9  | 1992-2007 | 0.48 | M-v | 0 | MPC | 42766 | (57707) |
| (57753) | 14.4 | 0.15 | 20071027 | 357.90369 | 88.24517  | 0.58667   | 9.10889  | 0.0731398 | 3.1608904 | 121 | 7  | 1978-2007 | 0.58 | M-v | 0 | MPC | 42782 | (57753) |
| (57767) | 15.8 | 0.15 | 20071027 | 154.29370 | 11.22647  | 320.09548 | 1.13033  | 0.0494392 | 2.8860085 | 161 | 9  | 1998-2007 | 0.56 | M-v | 0 | MPC | 42788 | (57767) |
| (57808) | 14.7 | 0.15 | 20071027 | 17.50170  | 286.87869 | 132.94505 | 18.86636 | 0.0696723 | 3.1034989 | 111 | 6  | 1999-2006 | 0.60 | M-v | 0 | MPC | 42802 | (57808) |
| (57851) | 15.0 | 0.15 | 20071027 | 339.89738 | 66.54036  | 52.09844  | 9.00918  | 0.0687926 | 3.1734967 | 192 | 9  | 1995-2007 | 0.54 | M-v | 0 | MPC | 42815 | (57851) |
| (57880) | 14.7 | 0.15 | 20071027 | 67.68049  | 307.46234 | 107.92693 | 15.27898 | 0.1009127 | 3.0488190 | 161 | 7  | 1998-2007 | 0.55 | M-v | 0 | MPC | 42824 | (57880) |
| (57885) | 13.5 | 0.15 | 20071027 | 216.07302 | 293.43044 | 298.03973 | 15.52201 | 0.1037748 | 3.1087530 | 208 | 9  | 1992-2007 | 0.56 | M-v | 0 | MPC | 57651 | (57885) |
| (57911) | 15.7 | 0.15 | 20071027 | 106.16468 | 344.42099 | 343.74518 | 4.35977  | 0.1007067 | 2.2531059 | 218 | 9  | 1993-2007 | 0.59 | M-v | 1 | MPC | 42833 | (57911) |
| (57982) | 15.6 | 0.15 | 20071027 | 69.11130  | 23.09163  | 19.70761  | 3.79532  | 0.1296798 | 2.4170788 | 228 | 9  | 1991-2007 | 0.45 | M-v | 0 | MPC | 42851 | (57982) |
| (58047) | 15.3 | 0.15 | 20071027 | 60.53681  | 357.59676 | 44.86957  | 3.78163  | 0.1896240 | 2.7589062 | 198 | 7  | 1997-2007 | 0.51 | M-v | 0 | MPC | 42871 | (58047) |
| (58103) | 15.0 | 0.15 | 20071027 | 61.75315  | 102.78250 | 265.27104 | 8.75876  | 0.0644516 | 3.0375834 | 102 | 7  | 1979-2007 | 0.55 | M-v | 0 | MPC | 43531 | (58103) |
| (58107) | 15.9 | 0.15 | 20071027 | 98.95711  | 30.05859  | 293.43993 | 17.18487 | 0.0656466 | 1.9562023 | 145 | 7  | 1979-2007 | 0.61 | M-v | 1 | MPC | 43532 | (58107) |
| (58123) | 14.9 | 0.15 | 20071027 | 321.44111 | 169.33022 | 13.26500  | 4.97143  | 0.0966451 | 3.0912863 | 201 | 9  | 1978-2007 | 0.67 | M-v | 0 | MPC | 43536 | (58123) |
| (58135) | 14.8 | 0.15 | 20071027 | 336.03223 | 305.07096 | 196.36592 | 4.93795  | 0.1137354 | 3.1166795 | 164 | 7  | 1981-2007 | 0.62 | M-v | 0 | MPC | 43540 | (58135) |
| (58214) | 14.2 | 0.15 | 20071027 | 19.99987  | 51.81715  | 336.68568 | 14.38477 | 0.1581772 | 2.8473981 | 162 | 9  | 1992-2007 | 0.60 | M-v | 0 | MPC | 43571 | (58214) |
| (58253) | 16.3 | 0.15 | 20071027 | 128.13625 | 350.93803 | 299.49022 | 3.59903  | 0.1654086 | 2.2276151 | 161 | 7  | 1993-2007 | 0.56 | M-v | 1 | MPC | 43585 | (58253) |
| (58310) | 15.6 | 0.15 | 20071027 | 64.51201  | 74.09907  | 314.37369 | 1.79455  | 0.2221508 | 2.5319440 | 221 | 9  | 1994-2007 | 0.57 | M-v | 1 | MPC | 43608 | (58310) |
| (58347) | 16.8 | 0.15 | 20071027 | 34.74678  | 180.47760 | 278.50871 | 2.03009  | 0.0397337 | 2.6223022 | 124 | 9  | 1991-2007 | 0.46 | M-v | 1 | MPC | 43621 | (58347) |
| (58369) | 15.0 | 0.15 | 20071027 | 72.91143  | 339.61452 | 11.65424  | 1.21096  | 0.1510227 | 3.0960897 | 298 | 9  | 1992-2007 | 0.53 | M-v | 0 | MPC | 43628 | (58369) |
| (58398) | 16.4 | 0.15 | 20071027 | 258.89297 | 104.21618 | 147.76875 | 3.93319  | 0.1207634 | 2.3424169 | 102 | 10 | 1994-2007 | 0.51 | M-v | 0 | MPC | 43636 | (58398) |
| (58488) | 15.6 | 0.15 | 20071027 | 350.04534 | 91.20670  | 3.73961   | 2.41961  | 0.0352328 | 2.9968647 | 147 | 7  | 1996-2007 | 0.48 | M-v | 0 | MPC | 43669 | (58488) |
| (58500) | 15.2 | 0.15 | 20071027 | 85.42851  | 27.44190  | 345.08022 | 1.26972  | 0.0845892 | 2.9279159 | 296 | 7  | 1996-2007 | 0.52 | M-v | 1 | MPC | 43673 | (58500) |
| (58544) | 14.4 | 0.15 | 20071027 | 256.30030 | 263.10180 | 320.16936 | 5.02067  | 0.0895875 | 3.1862431 | 195 | 7  | 1997-2007 | 0.53 | M-v | 0 | MPC | 43688 | (58544) |
| (58554) | 15.4 | 0.15 | 20071027 | 335.75591 | 79.69452  | 81.26483  | 0.78671  | 0.0964609 | 3.2337037 | 176 | 9  | 1994-2007 | 0.44 | M-v | 0 | MPC | 43692 | (58554) |
| (58636) | 15.4 | 0.15 | 20071027 | 69.46532  | 345.37916 | 26.61639  | 10.08695 | 0.2056001 | 2.7771807 | 164 | 7  | 1995-2007 | 0.51 | M-v | 0 | MPC | 43723 | (58636) |
| (58724) | 16.0 | 0.15 | 20071027 | 84.34030  | 293.08516 | 97.63292  | 3.26703  | 0.0933836 | 3.0091893 | 142 | 9  | 1992-2007 | 0.52 | M-v | 0 | MPC | 43761 | (58724) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (58766) | 15.0 | 0.15 | 20071027 | 271.29734 | 227.05374 | 295.66900 | 3.03656  | 0.1335382 | 3.1498220 | 133 | 9  | 1995-2007 | 0.62 | M-v | 0 | MP | 43777 | (58766) |
| (58771) | 14.6 | 0.15 | 20071027 | 145.45269 | 175.00610 | 197.77671 | 1.76849  | 0.0607195 | 2.9095918 | 361 | 7  | 1998-2007 | 0.53 | M-v | 0 | MP | 43780 | (58771) |
| (58776) | 15.1 | 0.15 | 20071027 | 232.81163 | 255.52263 | 16.29057  | 9.02619  | 0.0554061 | 2.9826585 | 198 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 43782 | (58776) |
| (58829) | 15.1 | 0.15 | 20071027 | 345.71111 | 278.23267 | 197.43385 | 11.90494 | 0.1850875 | 3.0180109 | 183 | 7  | 1998-2007 | 0.59 | M-v | 0 | MP | 43804 | (58829) |
| (58843) | 15.3 | 0.15 | 20071027 | 325.35656 | 86.77698  | 90.71979  | 1.72141  | 0.1084449 | 2.9932084 | 216 | 7  | 1998-2007 | 0.54 | M-v | 0 | MP | 43811 | (58843) |
| (58877) | 12.9 | 0.15 | 20071027 | 177.95416 | 90.27722  | 205.05425 | 21.60629 | 0.0744080 | 3.1907268 | 342 | 9  | 1998-2007 | 0.50 | M-v | 0 | MP | 43825 | (58877) |
| (58906) | 13.1 | 0.15 | 20071027 | 95.69184  | 157.93774 | 236.30705 | 21.20476 | 0.1120308 | 3.1163237 | 294 | 10 | 1976-2007 | 0.50 | M-v | 0 | MP | 43835 | (58906) |
| (58915) | 14.0 | 0.15 | 20071027 | 245.49298 | 189.18566 | 90.31631  | 14.66861 | 0.2637738 | 3.0653473 | 230 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 43838 | (58915) |
| (58976) | 15.8 | 0.15 | 20071027 | 79.04350  | 202.79753 | 124.20593 | 5.80377  | 0.1542418 | 2.5991750 | 94  | 7  | 1998-2007 | 0.62 | M-v | 1 | MP | 43860 | (58976) |
| (58990) | 15.9 | 0.15 | 20071027 | 18.94912  | 353.36896 | 87.93660  | 5.64819  | 0.2696501 | 2.5862813 | 89  | 7  | 1996-2007 | 0.59 | M-v | 0 | MP | 43865 | (58990) |
| (59010) | 16.3 | 0.15 | 20071027 | 106.62731 | 20.05283  | 290.73946 | 6.94383  | 0.1959361 | 2.5573804 | 182 | 10 | 1990-2007 | 0.51 | M-v | 1 | MP | 43872 | (59010) |
| (59056) | 15.9 | 0.15 | 20071027 | 55.92942  | 241.53965 | 135.36628 | 2.47650  | 0.1064074 | 2.6369638 | 193 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 43888 | (59056) |
| (59079) | 12.7 | 0.15 | 20071027 | 144.13139 | 218.43087 | 69.22201  | 12.43569 | 0.1478182 | 3.9767511 | 315 | 10 | 1990-2007 | 0.57 | M-v | 0 | MP | 43896 | (59079) |
| (59140) | 15.7 | 0.15 | 20071027 | 61.10729  | 157.44907 | 251.05151 | 4.17145  | 0.2075035 | 2.6106455 | 303 | 9  | 1981-2007 | 0.51 | M-v | 0 | MP | 43921 | (59140) |
| (59234) | 15.0 | 0.15 | 20071027 | 324.31813 | 204.00749 | 349.89910 | 14.41246 | 0.0574310 | 2.6560191 | 167 | 7  | 1992-2007 | 0.55 | M-v | 1 | MP | 43958 | (59234) |
| (59283) | 15.6 | 0.15 | 20071027 | 127.73600 | 80.22783  | 356.12133 | 9.21635  | 0.0988900 | 2.5226711 | 360 | 6  | 1991-2007 | 0.54 | M-v | 1 | MP | 43980 | (59283) |
| (59366) | 14.9 | 0.15 | 20071027 | 307.50700 | 265.20552 | 225.11201 | 9.74626  | 0.0575292 | 2.9769191 | 225 | 7  | 1991-2007 | 0.60 | M-v | 0 | MP | 44017 | (59366) |
| (59422) | 14.2 | 0.15 | 20071027 | 49.91755  | 33.18838  | 228.60659 | 13.84048 | 0.1077298 | 2.4432398 | 325 | 7  | 1999-2007 | 0.56 | M-v | 0 | MP | 44043 | (59422) |
| (59705) | 15.2 | 0.15 | 20071027 | 341.87922 | 197.88472 | 60.86032  | 15.13395 | 0.0637836 | 2.6221609 | 135 | 7  | 1999-2007 | 0.64 | M-v | 1 | MP | 70205 | (59705) |
| (59812) | 13.9 | 0.15 | 20071027 | 286.58460 | 216.82805 | 344.21861 | 14.98303 | 0.0415358 | 3.2378016 | 209 | 9  | 1997-2007 | 0.49 | M-v | 0 | MP | 44207 | (59812) |
| (59823) | 14.6 | 0.15 | 20071027 | 144.57511 | 207.73561 | 158.85364 | 5.47256  | 0.1082702 | 3.2014410 | 192 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 44212 | (59823) |
| (59878) | 17.0 | 0.15 | 20071027 | 58.32484  | 165.90342 | 188.03574 | 6.16326  | 0.1231409 | 2.3809928 | 138 | 7  | 1991-2007 | 0.56 | M-v | 1 | MP | 44233 | (59878) |
| (59880) | 14.6 | 0.15 | 20071027 | 159.78110 | 177.05767 | 166.16872 | 10.47035 | 0.2178250 | 3.1334290 | 204 | 10 | 1991-2007 | 0.56 | M-v | 0 | MP | 44234 | (59880) |
| (59900) | 13.9 | 0.15 | 20071027 | 202.05282 | 151.00713 | 179.27444 | 10.69041 | 0.0214653 | 3.1142496 | 402 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 44241 | (59900) |
| (59962) | 14.6 | 0.15 | 20071027 | 164.57919 | 310.33210 | 31.13528  | 10.89435 | 0.1205461 | 3.1840768 | 164 | 7  | 1999-2007 | 0.54 | M-v | 0 | MP | 44265 | (59962) |
| (59964) | 14.2 | 0.15 | 20071027 | 259.87588 | 145.72664 | 103.62379 | 6.88602  | 0.1392186 | 3.1384895 | 251 | 9  | 1991-2007 | 0.57 | M-v | 0 | MP | 44266 | (59964) |
| (60004) | 14.3 | 0.15 | 20071027 | 194.57536 | 287.28945 | 55.10059  | 2.09274  | 0.2014020 | 3.1630036 | 343 | 9  | 1996-2007 | 0.52 | M-v | 0 | MP | 44281 | (60004) |
| (60041) | 14.9 | 0.15 | 20071027 | 162.64892 | 324.88225 | 34.53448  | 8.28954  | 0.0774653 | 3.1504404 | 256 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 44294 | (60041) |
| (60097) | 16.0 | 0.15 | 20071027 | 184.19353 | 350.31836 | 259.89396 | 4.44136  | 0.2218085 | 2.3495942 | 210 | 10 | 1995-2007 | 0.52 | M-v | 0 | MP | 44313 | (60097) |
| (60175) | 14.4 | 0.15 | 20071027 | 234.58554 | 256.96154 | 33.45054  | 15.98741 | 0.2068935 | 3.1516698 | 124 | 7  | 1990-2007 | 0.49 | M-v | 0 | MP | 44341 | (60175) |
| (60193) | 15.9 | 0.15 | 20071027 | 31.54612  | 98.44884  | 21.36280  | 5.95917  | 0.1098843 | 2.2807499 | 292 | 7  | 1994-2007 | 0.55 | M-v | 0 | MP | 44348 | (60193) |
| (60235) | 13.5 | 0.15 | 20071027 | 124.80458 | 310.55048 | 39.40703  | 10.37433 | 0.0846653 | 3.4974802 | 230 | 9  | 1992-2007 | 0.57 | M-v | 0 | MP | 44362 | (60235) |
| (60241) | 15.8 | 0.15 | 20071027 | 173.48404 | 207.62010 | 111.37144 | 6.70447  | 0.2358197 | 2.2677117 | 210 | 9  | 1951-2007 | 0.57 | M-v | 0 | MP | 57652 | (60241) |
| (60281) | 16.7 | 0.15 | 20071027 | 48.57546  | 84.03991  | 13.29492  | 2.65027  | 0.1407563 | 2.3746296 | 222 | 7  | 1995-2007 | 0.52 | M-v | 0 | MP | 44378 | (60281) |
| (60341) | 15.2 | 0.15 | 20071027 | 248.49587 | 140.77329 | 53.46685  | 4.80027  | 0.1210102 | 2.6196068 | 197 | 9  | 1996-2007 | 0.58 | M-v | 0 | MP | 44396 | (60341) |
| (60348) | 15.6 | 0.15 | 20071027 | 307.08447 | 298.75262 | 227.59939 | 5.36451  | 0.0721362 | 2.4663463 | 153 | 7  | 1998-2007 | 0.49 | M-v | 1 | MP | 44398 | (60348) |
| (60356) | 15.2 | 0.15 | 20071027 | 229.19460 | 159.82412 | 83.60705  | 23.46911 | 0.0524259 | 1.9436439 | 227 | 7  | 1993-2007 | 0.55 | M-v | 1 | MP | 44401 | (60356) |
| (60374) | 16.2 | 0.15 | 20071027 | 248.97912 | 90.50084  | 145.25720 | 24.24813 | 0.0455476 | 1.9104366 | 171 | 7  | 1998-2007 | 0.61 | M-v | 1 | MP | 44407 | (60374) |
| (60391) | 16.1 | 0.15 | 20071027 | 252.99184 | 152.75087 | 98.23612  | 4.52166  | 0.1263316 | 2.3716960 | 103 | 7  | 1995-2007 | 0.52 | M-v | 0 | MP | 44413 | (60391) |
| (60397) | 15.6 | 0.15 | 20071027 | 304.59014 | 229.22009 | 266.28420 | 9.72879  | 0.1611638 | 2.6191492 | 191 | 8  | 1987-2007 | 0.54 | M-v | 1 | MP | 53573 | (60397) |
| (60434) | 14.8 | 0.15 | 20071027 | 257.50060 | 236.70530 | 323.11694 | 12.18568 | 0.1309594 | 2.6414461 | 297 | 7  | 1991-2007 | 0.54 | M-v | 0 | MP | 44428 | (60434) |
| (60528) | 15.8 | 0.15 | 20071027 | 233.46148 | 307.75070 | 289.05597 | 1.96803  | 0.0352660 | 2.6284043 | 144 | 7  | 1994-2007 | 0.52 | M-v | 0 | MP | 44458 | (60528) |
| (60544) | 14.9 | 0.15 | 20071027 | 321.58721 | 27.57081  | 98.64757  | 4.38497  | 0.0645663 | 2.6108438 | 286 | 9  | 1995-2007 | 0.51 | M-v | 0 | MP | 44464 | (60544) |
| (60578) | 15.1 | 0.15 | 20071027 | 348.32967 | 94.34531  | 37.87299  | 14.42301 | 0.1475943 | 2.5556017 | 205 | 7  | 1996-2007 | 0.55 | M-v | 1 | MP | 44476 | (60578) |
| (60654) | 15.3 | 0.15 | 20071027 | 232.72586 | 124.18768 | 148.11316 | 7.88160  | 0.1773171 | 2.5909444 | 274 | 9  | 1991-2007 | 0.59 | M-v | 0 | MP | 44501 | (60654) |
| (60694) | 15.8 | 0.15 | 20071027 | 27.10504  | 243.94108 | 203.64067 | 4.87269  | 0.2517029 | 2.5640295 | 267 | 7  | 1990-2007 | 0.58 | M-v | 0 | MP | 44516 | (60694) |
| (60737) | 15.1 | 0.15 | 20071027 | 40.25416  | 279.24542 | 169.98966 | 10.07892 | 0.1128357 | 2.5592912 | 283 | 7  | 1993-2007 | 0.54 | M-v | 1 | MP | 44533 | (60737) |
| (60742) | 13.4 | 0.15 | 20071027 | 178.20578 | 123.91909 | 180.16874 | 16.58727 | 0.2032322 | 2.7142123 | 409 | 10 | 1991-2007 | 0.55 | M-v | 0 | MP | 44535 | (60742) |
| (60774) | 16.2 | 0.15 | 20071027 | 278.33550 | 194.44909 | 350.30138 | 10.96576 | 0.0654888 | 2.6622760 | 213 | 7  | 1991-2007 | 0.63 | M-v | 1 | MP | 44548 | (60774) |
| (60781) | 15.6 | 0.15 | 20071027 | 286.09482 | 359.83048 | 183.88423 | 13.07993 | 0.1180918 | 2.6884173 | 201 | 7  | 1991-2007 | 0.53 | M-v | 1 | MP | 44550 | (60781) |
| (60813) | 15.2 | 0.15 | 20071027 | 278.11735 | 83.51172  | 122.59316 | 15.51656 | 0.0975713 | 2.6223122 | 288 | 9  | 1991-2007 | 0.56 | M-v | 0 | MP | 44563 | (60813) |
| (60861) | 15.7 | 0.15 | 20071027 | 225.68492 | 173.68319 | 106.58407 | 12.76944 | 0.0234182 | 2.5736551 | 190 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 44581 | (60861) |
| (60874) | 15.6 | 0.15 | 20071027 | 255.93203 | 73.47475  | 123.93073 | 3.08915  | 0.0056168 | 2.7572483 | 181 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 44586 | (60874) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (60892) | 14.8 | 0.15 | 20071027 | 114.29023 | 205.52764 | 166.78929 | 15.12475 | 0.1370349 | 2.6370036 | 277 | 10 | 1991-2007 | 0.58 | M-v | 0 | MP | 44594 | (60892) |
| (60913) | 15.7 | 0.15 | 20071027 | 84.85711  | 8.64767   | 37.44044  | 5.17220  | 0.0891900 | 2.6432954 | 283 | 9  | 1991-2007 | 0.55 | M-v | 0 | MP | 44603 | (60913) |
| (61063) | 14.7 | 0.15 | 20071027 | 195.74238 | 189.80389 | 121.78489 | 13.87311 | 0.1774425 | 2.7165216 | 171 | 7  | 1994-2007 | 0.58 | M-v | 0 | MP | 44662 | (61063) |
| (61328) | 15.8 | 0.15 | 20071027 | 59.53111  | 32.55891  | 327.87022 | 7.65912  | 0.0619407 | 3.1816147 | 181 | 7  | 1993-2007 | 0.62 | M-v | 0 | MP | 44768 | (61328) |
| (61450) | 15.2 | 0.15 | 20071027 | 171.95697 | 168.94311 | 163.54002 | 5.91678  | 0.2199209 | 2.8901871 | 167 | 7  | 1995-2007 | 0.54 | M-v | 1 | MP | 44815 | (61450) |
| (61472) | 14.3 | 0.15 | 20071027 | 74.18019  | 262.50465 | 111.43328 | 2.48650  | 0.2011576 | 3.1891422 | 271 | 7  | 1989-2007 | 0.51 | M-v | 0 | MP | 44825 | (61472) |
| (61497) | 15.3 | 0.15 | 20071027 | 145.27611 | 12.67993  | 2.96587   | 2.03951  | 0.0760745 | 2.8439040 | 213 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 44833 | (61497) |
| (61541) | 13.8 | 0.15 | 20071027 | 44.12188  | 319.43205 | 132.24462 | 15.64930 | 0.2491733 | 3.0867979 | 370 | 7  | 1995-2007 | 0.51 | M-v | 0 | MP | 44850 | (61541) |
| (61576) | 14.3 | 0.15 | 20071027 | 70.47469  | 209.05783 | 189.04466 | 5.25987  | 0.1895602 | 3.1408306 | 306 | 9  | 1989-2007 | 0.54 | M-v | 0 | MP | 44863 | (61576) |
| (61595) | 14.4 | 0.15 | 20071027 | 50.87785  | 203.46461 | 205.75597 | 4.53747  | 0.1422853 | 3.1388971 | 319 | 9  | 1990-2007 | 0.53 | M-v | 0 | MP | 44870 | (61595) |
| (61602) | 14.6 | 0.15 | 20071027 | 108.92088 | 164.45350 | 188.28259 | 10.25970 | 0.1016827 | 3.0991313 | 185 | 9  | 1998-2007 | 0.64 | M-v | 0 | MP | 44873 | (61602) |
| (61614) | 14.3 | 0.15 | 20071027 | 70.18109  | 44.89796  | 12.36394  | 9.86179  | 0.1358694 | 3.0594348 | 271 | 7  | 1998-2007 | 0.61 | M-v | 0 | MP | 44877 | (61614) |
| (61649) | 15.4 | 0.15 | 20071027 | 126.29311 | 230.63848 | 159.98318 | 5.56096  | 0.1264976 | 2.8949641 | 173 | 10 | 1993-2007 | 0.57 | M-v | 1 | MP | 44891 | (61649) |
| (61654) | 14.6 | 0.15 | 20071027 | 80.84594  | 85.62157  | 324.79396 | 7.83393  | 0.1026777 | 2.9734184 | 168 | 7  | 1995-2007 | 0.53 | M-v | 0 | MP | 44893 | (61654) |
| (61668) | 14.8 | 0.15 | 20071027 | 36.01273  | 242.22505 | 207.30684 | 10.04498 | 0.1203599 | 3.0634063 | 214 | 10 | 1990-2007 | 0.56 | M-v | 0 | MP | 44898 | (61668) |
| (61686) | 15.7 | 0.15 | 20071027 | 115.45401 | 6.49030   | 3.91570   | 2.02912  | 0.1050652 | 2.9961896 | 177 | 9  | 1990-2007 | 0.50 | M-v | 0 | MP | 44906 | (61686) |
| (61722) | 14.5 | 0.15 | 20071027 | 39.28658  | 52.34612  | 17.34618  | 9.83214  | 0.1194158 | 3.1538973 | 234 | 7  | 1997-2007 | 0.57 | M-v | 0 | MP | 44920 | (61722) |
| (61785) | 15.1 | 0.15 | 20071027 | 42.97626  | 247.42152 | 190.23806 | 10.88701 | 0.2167982 | 3.0559848 | 180 | 9  | 1990-2007 | 0.55 | M-v | 0 | MP | 44943 | (61785) |
| (61859) | 15.2 | 0.15 | 20071027 | 95.08583  | 336.85605 | 54.83163  | 0.91548  | 0.1768162 | 3.0510230 | 219 | 7  | 1995-2007 | 0.52 | M-v | 0 | MP | 44970 | (61859) |
| (61902) | 14.8 | 0.15 | 20071027 | 49.34537  | 112.31711 | 331.94312 | 10.22085 | 0.0577263 | 2.9735716 | 86  | 7  | 1998-2007 | 0.54 | M-v | 0 | MP | 44986 | (61902) |
| (61915) | 15.3 | 0.15 | 20071027 | 23.48729  | 172.14122 | 271.08898 | 12.04497 | 0.0920788 | 3.0665461 | 159 | 7  | 1990-2007 | 0.51 | M-v | 0 | MP | 44990 | (61915) |
| (61925) | 14.5 | 0.15 | 20071027 | 70.90301  | 215.59302 | 190.34029 | 21.58613 | 0.0554393 | 3.1325111 | 195 | 9  | 1994-2007 | 0.62 | M-v | 0 | MP | 44994 | (61925) |
| (61948) | 14.3 | 0.15 | 20071027 | 13.58412  | 249.48005 | 200.62109 | 14.09741 | 0.1691712 | 3.1561185 | 245 | 9  | 1986-2007 | 0.50 | M-v | 0 | MP | 45003 | (61948) |
| (61959) | 14.3 | 0.15 | 20071027 | 354.06609 | 269.93474 | 208.90253 | 12.88772 | 0.1962075 | 3.1461004 | 201 | 7  | 1995-2007 | 0.49 | M-v | 0 | MP | 45007 | (61959) |
| (62000) | 14.8 | 0.15 | 20071027 | 23.51252  | 275.15671 | 181.17786 | 10.96002 | 0.1170810 | 3.1691915 | 126 | 7  | 1994-2007 | 0.62 | M-v | 0 | MP | 45024 | (62000) |
| (62022) | 13.6 | 0.15 | 20071027 | 89.73523  | 61.94734  | 339.29308 | 12.05304 | 0.2276856 | 3.1483863 | 363 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 45033 | (62022) |
| (62029) | 13.9 | 0.15 | 20071027 | 129.85361 | 45.09428  | 304.51956 | 10.31973 | 0.2233033 | 3.1360550 | 331 | 9  | 1994-2007 | 0.52 | M-v | 0 | MP | 45036 | (62029) |
| (62076) | 14.4 | 0.15 | 20071027 | 9.19679   | 231.85461 | 226.71647 | 12.01840 | 0.1450352 | 3.1391950 | 240 | 7  | 1995-2007 | 0.58 | M-v | 0 | MP | 45057 | (62076) |
| (62101) | 13.9 | 0.15 | 20071027 | 49.82833  | 62.37101  | 27.55667  | 11.47584 | 0.2178630 | 3.1161517 | 223 | 7  | 1994-2007 | 0.56 | M-v | 0 | MP | 45067 | (62101) |
| (62165) | 14.7 | 0.15 | 20071027 | 67.18793  | 91.43179  | 314.56088 | 4.10034  | 0.1700350 | 3.1049950 | 333 | 7  | 1992-2007 | 0.50 | M-v | 0 | MP | 45094 | (62165) |
| (62220) | 14.6 | 0.15 | 20071027 | 98.55128  | 194.51172 | 195.37613 | 9.19332  | 0.1021649 | 3.0599690 | 197 | 9  | 1998-2007 | 0.56 | M-v | 0 | MP | 45114 | (62220) |
| (62359) | 15.7 | 0.15 | 20071027 | 70.54190  | 33.62762  | 10.74699  | 6.35560  | 0.1704111 | 3.1953101 | 178 | 7  | 1991-2007 | 0.51 | M-v | 0 | MP | 45167 | (62359) |
| (62432) | 14.3 | 0.15 | 20071027 | 44.97980  | 41.52781  | 38.11754  | 0.97519  | 0.1880298 | 3.1949167 | 424 | 7  | 1997-2007 | 0.52 | M-v | 0 | MP | 45195 | (62432) |
| (62456) | 14.1 | 0.15 | 20071027 | 18.44935  | 53.09704  | 62.89752  | 11.59353 | 0.0358202 | 3.0652379 | 214 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 45203 | (62456) |
| (62508) | 14.1 | 0.15 | 20071027 | 1.18898   | 133.78003 | 10.42453  | 10.51663 | 0.0674005 | 2.9994090 | 166 | 7  | 1998-2007 | 0.60 | M-v | 0 | MP | 45223 | (62508) |
| (62584) | 13.9 | 0.15 | 20071027 | 355.73612 | 139.30699 | 13.29374  | 22.36762 | 0.0535803 | 3.1196574 | 215 | 9  | 1994-2007 | 0.53 | M-v | 0 | MP | 45248 | (62584) |
| (62597) | 15.5 | 0.15 | 20071027 | 103.53369 | 51.80456  | 323.43326 | 16.77642 | 0.1824103 | 3.1454897 | 167 | 7  | 1991-2007 | 0.60 | M-v | 0 | MP | 45252 | (62597) |
| (62607) | 14.9 | 0.15 | 20071027 | 63.23684  | 319.04620 | 130.86454 | 3.84063  | 0.0488283 | 3.0514410 | 155 | 7  | 1999-2007 | 0.56 | M-v | 0 | MP | 45256 | (62607) |
| (62613) | 14.6 | 0.15 | 20071027 | 346.98922 | 129.70691 | 20.44054  | 10.82124 | 0.0329929 | 3.1134246 | 171 | 7  | 1997-2007 | 0.60 | M-v | 0 | MP | 45258 | (62613) |
| (62630) | 14.6 | 0.15 | 20071027 | 18.65851  | 12.77021  | 96.54318  | 11.79011 | 0.0802338 | 3.0744720 | 158 | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 45264 | (62630) |
| (62651) | 14.4 | 0.15 | 20071027 | 67.86894  | 30.33046  | 39.35945  | 10.72826 | 0.0848647 | 2.9595539 | 189 | 7  | 1998-2007 | 0.63 | M-v | 0 | MP | 45271 | (62651) |
| (62658) | 15.1 | 0.15 | 20071027 | 0.94280   | 70.95090  | 21.66089  | 9.60126  | 0.0724420 | 3.1618965 | 167 | 7  | 1998-2007 | 0.52 | M-v | 0 | MP | 45273 | (62658) |
| (62725) | 14.4 | 0.15 | 20071027 | 220.86630 | 161.21064 | 113.62628 | 10.44814 | 0.0438424 | 3.0870121 | 175 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 45296 | (62725) |
| (62830) | 16.3 | 0.15 | 20071027 | 97.54151  | 155.81632 | 168.00513 | 3.91523  | 0.2249183 | 2.2247452 | 258 | 9  | 1990-2007 | 0.53 | M-v | 0 | MP | 45336 | (62830) |
| (62832) | 14.1 | 0.15 | 20071027 | 13.09708  | 57.48956  | 72.44330  | 10.96763 | 0.1268020 | 3.2166414 | 338 | 9  | 1991-2007 | 0.56 | M-v | 0 | MP | 45336 | (62832) |
| (62856) | 16.5 | 0.15 | 20071027 | 115.38303 | 195.77030 | 112.99657 | 3.94565  | 0.1025244 | 2.2344631 | 145 | 7  | 1990-2007 | 0.58 | M-v | 1 | MP | 45345 | (62856) |
| (62881) | 14.4 | 0.15 | 20071027 | 170.81187 | 292.87835 | 13.39819  | 13.90066 | 0.1551214 | 3.1305944 | 98  | 7  | 1998-2007 | 0.60 | M-v | 1 | MP | 45353 | (62881) |
| (62890) | 14.1 | 0.15 | 20071027 | 174.01397 | 71.12523  | 258.70839 | 9.64932  | 0.0820623 | 3.1022691 | 137 | 7  | 1999-2007 | 0.55 | M-v | 0 | MP | 45356 | (62890) |
| (62934) | 15.0 | 0.15 | 20071027 | 271.89511 | 171.16133 | 57.92815  | 6.29219  | 0.0726934 | 3.1454997 | 154 | 9  | 1991-2007 | 0.51 | M-v | 0 | MP | 45371 | (62934) |
| (62962) | 14.0 | 0.15 | 20071027 | 179.07190 | 261.81609 | 27.24258  | 12.84798 | 0.0908804 | 3.2403545 | 157 | 7  | 1994-2007 | 0.56 | M-v | 0 | MP | 45381 | (62962) |
| (63045) | 14.5 | 0.15 | 20071027 | 251.98821 | 196.62177 | 70.38205  | 6.42404  | 0.1148957 | 3.1178535 | 250 | 10 | 1992-2007 | 0.49 | M-v | 0 | MP | 45410 | (63045) |
| (63155) | 14.5 | 0.15 | 20071027 | 110.69268 | 52.25341  | 338.55427 | 16.66802 | 0.1857847 | 3.1452115 | 238 | 7  | 1991-2007 | 0.55 | M-v | 0 | MP | 45447 | (63155) |
| (63164) | 16.0 | 0.15 | 20071027 | 86.48760  | 315.24266 | 22.32444  | 3.32768  | 0.3059994 | 2.2726510 | 251 | 9  | 1986-2007 | 0.49 | M-v | 1 | MP | 45450 | (63164) |



|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |     |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|-----|-------|---------|
| (63226) | 17.0 | 0.15 | 20071027 | 306.75189 | 186.83285 | 356.54542 | 7.04086  | 0.0566664 | 2.2584252 | 141 | 7  | 1991-2007 | 0.58 | M-v | 1 | MPC | 45470 | (63226) |
| (63236) | 15.7 | 0.15 | 20071027 | 237.37152 | 113.84762 | 95.66903  | 2.35356  | 0.1327088 | 2.3887602 | 187 | 9  | 1992-2007 | 0.53 | M-v | 0 | MPC | 45473 | (63236) |
| (63247) | 15.7 | 0.15 | 20071027 | 326.16336 | 208.90977 | 322.14008 | 6.16274  | 0.1096479 | 2.2852031 | 112 | 7  | 1994-2007 | 0.49 | M-v | 1 | MPC | 45477 | (63247) |
| (63254) | 14.0 | 0.15 | 20071027 | 89.65416  | 194.67449 | 124.48102 | 9.53326  | 0.2337409 | 2.2700812 | 274 | 7  | 1999-2007 | 0.57 | M-v | 1 | MPC | 45479 | (63254) |
| (63293) | 14.2 | 0.15 | 20071027 | 175.33144 | 139.48270 | 145.58387 | 3.25335  | 0.1698615 | 3.9402546 | 201 | 9  | 1990-2007 | 0.52 | M-v | 0 | MPC | 45491 | (63293) |
| (63327) | 16.3 | 0.15 | 20071027 | 246.41260 | 69.11409  | 147.15986 | 2.92376  | 0.1403185 | 2.4060193 | 113 | 10 | 1991-2007 | 0.53 | M-v | 0 | MPC | 45502 | (63327) |
| (63340) | 16.8 | 0.15 | 20071027 | 305.74987 | 2.35114   | 161.66079 | 6.71108  | 0.0519733 | 2.3956634 | 122 | 7  | 1991-2007 | 0.49 | M-v | 1 | MPC | 45506 | (63340) |
| (63357) | 16.1 | 0.15 | 20071027 | 153.74228 | 224.75635 | 41.18740  | 13.61836 | 0.1534923 | 2.5790793 | 123 | 7  | 1990-2007 | 0.56 | M-v | 0 | MPC | 45511 | (63357) |
| (63406) | 15.7 | 0.15 | 20071027 | 139.50766 | 157.94616 | 158.25753 | 2.40889  | 0.1166684 | 2.5532679 | 248 | 9  | 1996-2007 | 0.44 | M-v | 0 | MPC | 45525 | (63406) |
| (63413) | 15.4 | 0.15 | 20071027 | 103.58183 | 75.23974  | 275.42380 | 5.12588  | 0.2740597 | 2.6313919 | 220 | 9  | 1991-2007 | 0.53 | M-v | 1 | MPC | 45527 | (63413) |
| (63424) | 16.5 | 0.15 | 20071027 | 176.05956 | 158.23987 | 121.07746 | 3.44459  | 0.0611835 | 2.5255992 | 103 | 9  | 1993-2007 | 0.53 | M-v | 0 | MPC | 45530 | (63424) |
| (63457) | 15.0 | 0.15 | 20071027 | 191.94660 | 327.95100 | 282.10727 | 11.24273 | 0.0830233 | 2.7836558 | 138 | 7  | 1998-2007 | 0.54 | M-v | 0 | MPC | 45542 | (63457) |
| (63476) | 15.5 | 0.15 | 20071027 | 101.32110 | 283.76832 | 60.56124  | 10.12686 | 0.1665703 | 2.7840192 | 160 | 9  | 1991-2007 | 0.41 | M-v | 0 | MPC | 45548 | (63476) |
| (63505) | 15.9 | 0.15 | 20071027 | 144.01492 | 340.49407 | 358.06813 | 9.77651  | 0.1371551 | 2.6487200 | 144 | 7  | 1991-2007 | 0.57 | M-v | 0 | MPC | 45559 | (63505) |
| (63565) | 15.2 | 0.15 | 20071027 | 53.52723  | 16.23420  | 354.74477 | 9.55842  | 0.1190431 | 2.9620128 | 178 | 7  | 1996-2007 | 0.59 | M-v | 0 | MPC | 45580 | (63565) |
| (63596) | 15.6 | 0.15 | 20071027 | 99.28961  | 221.72759 | 157.40100 | 8.52005  | 0.2358240 | 2.7861248 | 119 | 7  | 1994-2007 | 0.48 | M-v | 0 | MPC | 45594 | (63596) |
| (63622) | 14.8 | 0.15 | 20071027 | 43.92395  | 18.57600  | 35.08160  | 12.22999 | 0.0820734 | 3.0733725 | 287 | 9  | 1990-2007 | 0.53 | M-v | 0 | MPC | 45607 | (63622) |
| (63691) | 15.8 | 0.15 | 20071027 | 0.21559   | 247.79894 | 190.33094 | 1.79541  | 0.0743852 | 2.8812166 | 194 | 10 | 1977-2007 | 0.57 | M-v | 0 | MPC | 77341 | (63691) |
| (63694) | 15.4 | 0.15 | 20071027 | 200.05460 | 147.87756 | 111.28267 | 8.99070  | 0.0166351 | 2.7390222 | 136 | 7  | 1999-2007 | 0.57 | M-v | 0 | MPC | 45636 | (63694) |
| (63796) | 15.3 | 0.15 | 20071027 | 336.84958 | 359.10730 | 147.64458 | 2.87527  | 0.1128054 | 2.7022574 | 239 | 9  | 1993-2007 | 0.55 | M-v | 0 | MPC | 45678 | (63796) |
| (63816) | 14.5 | 0.15 | 20071027 | 199.30812 | 343.62010 | 258.97843 | 0.83211  | 0.0576769 | 2.9313749 | 321 | 7  | 1994-2007 | 0.54 | M-v | 0 | MPC | 45685 | (63816) |
| (63856) | 14.8 | 0.15 | 20071027 | 35.91922  | 28.68638  | 10.40187  | 9.31770  | 0.0952421 | 2.9678876 | 256 | 7  | 1994-2007 | 0.59 | M-v | 0 | MPC | 45703 | (63856) |
| (63908) | 15.0 | 0.15 | 20071027 | 102.15332 | 201.50054 | 144.80033 | 2.54894  | 0.0848058 | 2.9170129 | 237 | 7  | 1991-2007 | 0.53 | M-v | 1 | MPC | 45723 | (63908) |
| (63943) | 15.1 | 0.15 | 20071027 | 159.68245 | 174.11397 | 116.02863 | 3.62462  | 0.0592319 | 2.9427256 | 181 | 7  | 1997-2007 | 0.57 | M-v | 0 | MPC | 77341 | (63943) |
| (63945) | 14.9 | 0.15 | 20071027 | 216.81201 | 255.72083 | 23.36919  | 4.30273  | 0.0692239 | 2.7596727 | 287 | 9  | 1994-2007 | 0.53 | M-v | 0 | MPC | 45737 | (63945) |
| (64043) | 15.5 | 0.15 | 20071027 | 247.69425 | 10.16258  | 184.60409 | 1.44318  | 0.0420685 | 3.0094528 | 137 | 7  | 1996-2007 | 0.47 | M-v | 0 | MPC | 45775 | (64043) |
| (64107) | 15.1 | 0.15 | 20071027 | 136.94827 | 114.84146 | 231.25834 | 19.25060 | 0.1215238 | 1.9248756 | 316 | 7  | 1995-2007 | 0.50 | M-v | 1 | MPC | 45802 | (64107) |
| (64126) | 15.6 | 0.15 | 20071027 | 56.38181  | 43.20259  | 4.14268   | 1.51881  | 0.0415721 | 2.8457719 | 170 | 7  | 1994-2007 | 0.51 | M-v | 0 | MPC | 45810 | (64126) |
| (64254) | 15.5 | 0.15 | 20071027 | 110.68907 | 124.99835 | 240.92067 | 19.47138 | 0.1065009 | 1.9420483 | 191 | 7  | 1998-2007 | 0.55 | M-v | 1 | MPC | 45861 | (64254) |
| (64257) | 15.9 | 0.15 | 20071027 | 127.31293 | 32.44632  | 356.61458 | 5.70647  | 0.0889040 | 2.6836648 | 176 | 9  | 1992-2007 | 0.52 | M-v | 0 | MPC | 45862 | (64257) |
| (64259) | 15.1 | 0.15 | 20071027 | 295.41990 | 272.38953 | 246.92938 | 5.40985  | 0.1543258 | 3.1089543 | 176 | 7  | 1998-2007 | 0.57 | M-v | 0 | MPC | 66045 | (64259) |
| (64264) | 15.5 | 0.15 | 20071027 | 248.54456 | 301.53237 | 313.82306 | 2.36810  | 0.0219415 | 2.8139040 | 230 | 9  | 1996-2007 | 0.55 | M-v | 0 | MPC | 45865 | (64264) |
| (64287) | 14.4 | 0.15 | 20071027 | 171.55344 | 198.00849 | 149.83276 | 9.97340  | 0.1753895 | 2.7454103 | 207 | 9  | 1994-2007 | 0.50 | M-v | 0 | MPC | 45872 | (64287) |
| (64302) | 14.2 | 0.15 | 20071027 | 176.60431 | 1.21567   | 260.59747 | 8.50583  | 0.0328084 | 2.9731769 | 179 | 7  | 1996-2007 | 0.52 | M-v | 0 | MPC | 45878 | (64302) |
| (64327) | 15.2 | 0.15 | 20071027 | 97.44107  | 275.78645 | 116.88354 | 3.09404  | 0.0891811 | 2.8436600 | 332 | 9  | 1991-2007 | 0.56 | M-v | 0 | MPC | 45887 | (64327) |
| (64336) | 14.8 | 0.15 | 20071027 | 299.34092 | 99.79031  | 32.38264  | 2.86773  | 0.0501934 | 3.1331875 | 224 | 7  | 1998-2007 | 0.55 | M-v | 0 | MPC | 45890 | (64336) |
| (64345) | 15.4 | 0.15 | 20071027 | 81.13679  | 349.89126 | 50.69623  | 1.36618  | 0.1365878 | 2.9046371 | 317 | 10 | 1991-2007 | 0.47 | M-v | 0 | MPC | 45894 | (64345) |
| (64371) | 16.0 | 0.15 | 20071027 | 359.23485 | 273.84105 | 212.47843 | 1.42576  | 0.0514276 | 2.9168028 | 144 | 7  | 1996-2007 | 0.44 | M-v | 0 | MPC | 45904 | (64371) |
| (64408) | 15.5 | 0.15 | 20071027 | 179.78846 | 182.09848 | 161.61040 | 6.64554  | 0.0356407 | 2.7086487 | 122 | 10 | 1994-2007 | 0.55 | M-v | 0 | MPC | 45917 | (64408) |
| (64422) | 14.6 | 0.15 | 20071027 | 26.78941  | 329.71583 | 70.38827  | 10.51101 | 0.0957131 | 3.0437936 | 114 | 7  | 1994-2007 | 0.55 | M-v | 0 | MPC | 45921 | (64422) |
| (64451) | 15.1 | 0.15 | 20071027 | 221.66919 | 291.85901 | 24.30386  | 2.83979  | 0.1327055 | 2.6864269 | 302 | 10 | 1994-2007 | 0.52 | M-v | 0 | MPC | 45932 | (64451) |
| (64467) | 15.7 | 0.15 | 20071027 | 75.30227  | 33.10635  | 8.92818   | 1.57151  | 0.0733586 | 3.0126713 | 151 | 7  | 1992-2007 | 0.44 | M-v | 0 | MPC | 45939 | (64467) |
| (64497) | 15.8 | 0.15 | 20071027 | 81.70061  | 255.78206 | 261.21897 | 6.16439  | 0.1785143 | 2.5600882 | 197 | 7  | 1997-2007 | 0.50 | M-v | 0 | MPC | 70206 | (64497) |
| (64544) | 15.0 | 0.15 | 20071027 | 11.74772  | 266.85072 | 176.42060 | 17.27521 | 0.2155489 | 3.1013942 | 197 | 7  | 1995-2007 | 0.55 | M-v | 0 | MPC | 45966 | (64544) |
| (64562) | 15.5 | 0.15 | 20071027 | 6.94140   | 257.82313 | 205.65993 | 9.62871  | 0.0834622 | 3.0214505 | 246 | 9  | 1990-2007 | 0.54 | M-v | 0 | MPC | 45972 | (64562) |
| (64589) | 15.0 | 0.15 | 20071027 | 3.59094   | 338.13513 | 155.23775 | 11.25446 | 0.1275463 | 2.9844998 | 148 | 7  | 1998-2007 | 0.58 | M-v | 0 | MPC | 45981 | (64589) |
| (64642) | 15.2 | 0.15 | 20071027 | 353.20748 | 37.83865  | 78.31979  | 2.73335  | 0.1483797 | 3.1036789 | 167 | 7  | 1998-2007 | 0.56 | M-v | 0 | MPC | 45999 | (64642) |
| (64700) | 14.7 | 0.15 | 20071027 | 324.39726 | 299.10781 | 241.02893 | 4.18691  | 0.1117572 | 3.1080810 | 307 | 9  | 1997-2007 | 0.59 | M-v | 0 | MPC | 46019 | (64700) |
| (64705) | 16.1 | 0.15 | 20071027 | 44.39193  | 44.32553  | 66.63749  | 1.17148  | 0.1157328 | 2.9401113 | 143 | 7  | 1996-2007 | 0.49 | M-v | 0 | MPC | 46021 | (64705) |
| (64716) | 15.0 | 0.15 | 20071027 | 9.92417   | 38.66291  | 86.77377  | 10.76231 | 0.0542947 | 3.0733294 | 222 | 7  | 1998-2007 | 0.55 | M-v | 0 | MPC | 46025 | (64716) |
| (64740) | 15.0 | 0.15 | 20071027 | 319.80615 | 308.67268 | 234.98814 | 6.18320  | 0.2075518 | 3.0379707 | 186 | 7  | 1998-2007 | 0.57 | M-v | 0 | MPC | 46034 | (64740) |
| (64759) | 14.8 | 0.15 | 20071027 | 233.53530 | 119.85599 | 114.46469 | 6.31114  | 0.0875718 | 3.1805496 | 109 | 9  | 1997-2007 | 0.56 | M-v | 0 | MPC | 46040 | (64759) |
| (64844) | 15.5 | 0.15 | 20071027 | 306.17925 | 90.31262  | 62.08835  | 1.73296  | 0.1232562 | 3.1220944 | 180 | 7  | 1990-2007 | 0.54 | M-v | 0 | MPC | 46067 | (64844) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |        |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|--------|---------|
| (64873) | 15.4 | 0.15 | 20071027 | 333.27255 | 166.50721 | 359.66747 | 0.76011  | 0.1530213 | 3.0791759 | 159 | 9  | 1997-2007 | 0.50 | M-v | 0 | MP | 46076  | (64873) |
| (65001) | 15.5 | 0.15 | 20071027 | 297.04801 | 265.51857 | 304.83176 | 3.48765  | 0.1908883 | 3.1298649 | 90  | 9  | 1994-2007 | 0.42 | M-v | 0 | MP | 46118  | (65001) |
| (65022) | 15.2 | 0.15 | 20071027 | 303.62255 | 149.34643 | 60.59198  | 0.76378  | 0.1292020 | 3.0980562 | 159 | 9  | 1994-2007 | 0.53 | M-v | 0 | MP | 46124  | (65022) |
| (65029) | 15.0 | 0.15 | 20071027 | 216.66876 | 186.20836 | 102.11249 | 6.30931  | 0.1139878 | 3.1439966 | 138 | 9  | 1977-2007 | 0.64 | M-v | 0 | MP | 46126  | (65029) |
| (65044) | 15.0 | 0.15 | 20071027 | 35.78338  | 350.83984 | 101.85570 | 7.73087  | 0.1489608 | 3.1812113 | 177 | 7  | 1995-2007 | 0.53 | M-v | 0 | MP | 46131  | (65044) |
| (65065) | 14.7 | 0.15 | 20071027 | 121.70269 | 7.67272   | 355.90113 | 11.16165 | 0.0891795 | 3.1429744 | 126 | 7  | 1991-2007 | 0.51 | M-v | 0 | MP | 46138  | (65065) |
| (65082) | 14.0 | 0.15 | 20071027 | 269.83620 | 192.76387 | 70.79220  | 11.80549 | 0.0800095 | 3.0353050 | 261 | 9  | 1998-2007 | 0.54 | M-v | 0 | MP | 46143  | (65082) |
| (65088) | 15.4 | 0.15 | 20071027 | 62.36436  | 43.83022  | 50.06619  | 10.80409 | 0.0845048 | 2.9897912 | 92  | 7  | 1998-2007 | 0.62 | M-v | 1 | MP | 46145  | (65088) |
| (65131) | 15.5 | 0.15 | 20071027 | 281.34278 | 124.91844 | 136.32895 | 2.72001  | 0.1258451 | 3.0634822 | 149 | 9  | 1992-2007 | 0.54 | M-v | 0 | MP | 46159  | (65131) |
| (65150) | 12.9 | 0.15 | 20071027 | 211.90006 | 278.59634 | 187.76754 | 7.43266  | 0.0730891 | 5.2867666 | 87  | 8  | 1978-2007 | 0.70 | M-v | 0 | MP | 97306  | (65150) |
| (65151) | 15.6 | 0.15 | 20071027 | 254.10481 | 63.15704  | 199.03799 | 0.64396  | 0.1230063 | 3.1315107 | 127 | 10 | 1991-2007 | 0.43 | M-v | 0 | MP | 46165  | (65151) |
| (65191) | 15.1 | 0.15 | 20071027 | 141.59246 | 180.41709 | 162.52800 | 0.34795  | 0.1763959 | 3.1730621 | 179 | 9  | 1994-2007 | 0.49 | M-v | 0 | MP | 46177  | (65191) |
| (65293) | 16.8 | 0.15 | 20071027 | 92.51359  | 188.28941 | 123.20855 | 3.52573  | 0.2043853 | 2.4403385 | 118 | 10 | 1991-2007 | 0.57 | M-v | 1 | MP | 46206  | (65293) |
| (65341) | 17.0 | 0.15 | 20071027 | 165.59023 | 162.75801 | 122.40221 | 3.97700  | 0.1893274 | 2.3844589 | 114 | 7  | 1991-2007 | 0.65 | M-v | 1 | MP | 46218  | (65341) |
| (65346) | 16.1 | 0.15 | 20071027 | 80.64798  | 19.64684  | 296.43175 | 13.75917 | 0.2529959 | 2.6315413 | 76  | 6  | 1995-2007 | 0.54 | M-v | 1 | MP | 128646 | (65346) |
| (65354) | 16.2 | 0.15 | 20071027 | 247.89352 | 178.91336 | 25.94708  | 5.30928  | 0.1704584 | 2.3518967 | 127 | 8  | 1992-2006 | 0.51 | M-v | 0 | MP | 46221  | (65354) |
| (65419) | 15.8 | 0.15 | 20071027 | 143.47003 | 128.81112 | 192.56741 | 3.93057  | 0.1169283 | 2.5793554 | 282 | 9  | 1993-2007 | 0.54 | M-v | 0 | MP | 46242  | (65419) |
| (65442) | 13.8 | 0.15 | 20071027 | 147.17486 | 265.66308 | 22.01036  | 12.46910 | 0.2844078 | 2.6889931 | 449 | 10 | 1993-2007 | 0.52 | M-v | 0 | MP | 46249  | (65442) |
| (65461) | 14.8 | 0.15 | 20071027 | 81.53965  | 222.52919 | 167.07238 | 11.55162 | 0.2127593 | 2.6320704 | 292 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 46254  | (65461) |
| (65522) | 14.1 | 0.15 | 20071027 | 63.11730  | 29.74336  | 38.56540  | 8.01923  | 0.1430534 | 3.1753298 | 252 | 7  | 1960-2007 | 0.56 | M-v | 0 | MP | 46273  | (65522) |
| (65553) | 16.2 | 0.15 | 20071027 | 143.09619 | 327.62123 | 9.78109   | 6.77617  | 0.1667552 | 2.2140685 | 238 | 9  | 1973-2007 | 0.52 | M-v | 1 | MP | 46284  | (65553) |
| (65567) | 16.9 | 0.15 | 20071027 | 81.06888  | 183.78612 | 149.91812 | 4.93653  | 0.1398427 | 2.5924515 | 65  | 7  | 1973-2007 | 0.56 | M-v | 1 | MP | 46289  | (65567) |
| (65584) | 15.8 | 0.15 | 20071027 | 43.68074  | 68.12141  | 328.53644 | 11.18444 | 0.2851664 | 2.5907815 | 128 | 7  | 1973-2007 | 0.64 | M-v | 1 | MP | 46294  | (65584) |
| (65592) | 14.1 | 0.15 | 20071027 | 308.98449 | 285.69063 | 236.27919 | 6.29453  | 0.1014256 | 3.2101069 | 127 | 7  | 1977-2007 | 0.52 | M-v | 0 | MP | 46297  | (65592) |
| (65611) | 15.2 | 0.15 | 20071027 | 56.86965  | 234.59420 | 151.06454 | 2.60442  | 0.1009505 | 2.8707850 | 251 | 9  | 1977-2007 | 0.52 | M-v | 0 | MP | 46305  | (65611) |
| (65703) | 15.7 | 0.15 | 20071027 | 274.49001 | 13.60172  | 145.06274 | 9.96206  | 0.0455315 | 3.1738053 | 113 | 9  | 1990-2007 | 0.60 | M-v | 0 | MP | 48421  | (65703) |
| (65730) | 14.7 | 0.15 | 20071027 | 168.05524 | 351.60754 | 280.26813 | 14.48968 | 0.1282222 | 2.5401457 | 174 | 9  | 1993-2007 | 0.57 | M-v | 0 | MP | 48430  | (65730) |
| (65745) | 16.5 | 0.15 | 20071027 | 67.74104  | 194.80461 | 147.47676 | 2.74544  | 0.2017052 | 2.2677472 | 158 | 7  | 1993-2007 | 0.52 | M-v | 1 | MP | 48434  | (65745) |
| (65880) | 15.4 | 0.15 | 20071027 | 325.49430 | 213.20355 | 247.95251 | 3.98276  | 0.1185790 | 2.2458138 | 199 | 6  | 1997-2007 | 0.53 | M-v | 0 | MP | 48477  | (65880) |
| (65899) | 16.2 | 0.15 | 20071027 | 64.16143  | 192.31465 | 149.20254 | 7.55892  | 0.2073925 | 2.3849891 | 185 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 48485  | (65899) |
| (65945) | 14.9 | 0.15 | 20071027 | 266.08312 | 308.42447 | 230.33400 | 7.94194  | 0.1051130 | 3.1223086 | 179 | 9  | 1994-2007 | 0.65 | M-v | 0 | MP | 48503  | (65945) |
| (65983) | 16.3 | 0.15 | 20071027 | 296.66582 | 92.00798  | 136.93275 | 5.39985  | 0.1609763 | 2.2388852 | 255 | 9  | 1991-2007 | 0.57 | M-v | 1 | MP | 48517  | (65983) |
| (66146) | 14.7 | 0.15 | 20071027 | 122.15840 | 84.56933  | 102.31784 | 5.41007  | 0.4837838 | 0.7872980 | 562 | 11 | 1982-2007 | 0.45 | M-v | 3 | MP | 110663 | (66146) |
| (66186) | 14.1 | 0.15 | 20071027 | 135.61244 | 12.22849  | 335.99065 | 12.62435 | 0.1826950 | 2.5713662 | 184 | 7  | 1989-2007 | 0.63 | M-v | 1 | MP | 48589  | (66186) |
| (66239) | 14.8 | 0.15 | 20071027 | 3.76630   | 63.12330  | 353.15077 | 11.59544 | 0.0517806 | 2.9474223 | 197 | 7  | 1996-2007 | 0.60 | M-v | 0 | MP | 48609  | (66239) |
| (66272) | 17.1 | 0.15 | 20071027 | 281.86401 | 68.48211  | 66.42459  | 51.31661 | 0.1432038 | 1.5075493 | 149 | 5  | 1999-2007 | 0.54 | M-v | 2 | MP | 128647 | (66272) |
| (66340) | 15.5 | 0.15 | 20071027 | 157.83932 | 219.32268 | 82.03801  | 1.81625  | 0.1385416 | 2.1804001 | 500 | 7  | 1999-2007 | 0.55 | M-v | 0 | MP | 48654  | (66340) |
| (66420) | 16.0 | 0.15 | 20071027 | 103.28835 | 204.52838 | 97.85156  | 6.52121  | 0.2254713 | 2.3462681 | 124 | 7  | 1999-2007 | 0.52 | M-v | 0 | MP | 48688  | (66420) |
| (66572) | 16.3 | 0.15 | 20071027 | 183.22153 | 302.89392 | 322.18869 | 4.15582  | 0.1501544 | 2.2919360 | 263 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 48742  | (66572) |
| (66617) | 15.9 | 0.15 | 20071027 | 322.68993 | 33.15616  | 254.26664 | 8.96819  | 0.2286731 | 2.7705310 | 60  | 6  | 1999-2007 | 0.52 | M-v | 1 | MP | 48759  | (66617) |
| (66768) | 16.2 | 0.15 | 20071027 | 349.11698 | 19.47692  | 315.65990 | 2.35150  | 0.1473850 | 2.6872181 | 98  | 7  | 1999-2007 | 0.55 | M-v | 1 | MP | 48813  | (66768) |
| (66962) | 16.3 | 0.15 | 20071027 | 357.06152 | 113.77879 | 35.20923  | 2.75048  | 0.1539208 | 2.3481712 | 197 | 7  | 1995-2007 | 0.49 | M-v | 0 | MP | 48882  | (66962) |
| (67220) | 14.9 | 0.15 | 20071027 | 212.80252 | 273.50238 | 335.76137 | 10.95512 | 0.1621769 | 2.6450839 | 184 | 7  | 1993-2007 | 0.55 | M-v | 0 | MP | 48968  | (67220) |
| (67257) | 14.9 | 0.15 | 20071027 | 245.33518 | 129.81733 | 99.61417  | 11.71013 | 0.0783533 | 2.5626574 | 200 | 7  | 1998-2007 | 0.54 | M-v | 0 | MP | 48979  | (67257) |
| (67276) | 15.7 | 0.15 | 20071027 | 141.13508 | 253.93426 | 50.44346  | 5.29134  | 0.0964195 | 2.7351855 | 189 | 9  | 1991-2007 | 0.56 | M-v | 0 | MP | 48985  | (67276) |
| (67337) | 14.9 | 0.15 | 20071027 | 262.60779 | 162.92240 | 11.53981  | 9.10284  | 0.0825346 | 2.7783512 | 117 | 7  | 1998-2007 | 0.53 | M-v | 1 | MP | 49004  | (67337) |
| (67347) | 14.2 | 0.15 | 20071027 | 283.15381 | 309.44629 | 248.83617 | 11.12080 | 0.2129718 | 2.6328378 | 271 | 8  | 1996-2007 | 0.54 | M-v | 1 | MP | 77342  | (67347) |
| (67405) | 16.6 | 0.15 | 20071027 | 177.10446 | 118.82644 | 144.42607 | 2.96564  | 0.1246875 | 2.1214971 | 232 | 9  | 1960-2007 | 0.54 | M-v | 1 | MP | 49029  | (67405) |
| (67430) | 15.7 | 0.15 | 20071027 | 122.69467 | 210.12566 | 82.10009  | 5.64619  | 0.1700564 | 2.1930870 | 188 | 7  | 1999-2007 | 0.54 | M-v | 1 | MP | 49038  | (67430) |
| (67439) | 15.8 | 0.15 | 20071027 | 85.78858  | 307.90426 | 45.37288  | 3.03218  | 0.1887529 | 2.1704189 | 251 | 7  | 1997-2007 | 0.58 | M-v | 1 | MP | 49041  | (67439) |
| (67513) | 16.5 | 0.15 | 20071027 | 73.02190  | 202.69292 | 146.62137 | 3.52129  | 0.1820586 | 2.2282344 | 182 | 7  | 1995-2007 | 0.61 | M-v | 1 | MP | 49071  | (67513) |
| (67529) | 16.5 | 0.15 | 20071027 | 5.41830   | 151.31526 | 260.09995 | 6.10104  | 0.1068346 | 2.2373376 | 164 | 7  | 1990-2007 | 0.59 | M-v | 1 | MP | 49078  | (67529) |
| (67579) | 16.6 | 0.15 | 20071027 | 61.02516  | 213.71015 | 165.73072 | 1.65320  | 0.1426985 | 2.1936147 | 170 | 6  | 1994-2007 | 0.52 | M-v | 1 | MP | 49096  | (67579) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (67714) | 16.8 | 0.15 | 20071027 | 114.51186 | 189.28457 | 153.64340 | 3.78377  | 0.1582588 | 2.1656268 | 205 | 7  | 1996-2007 | 0.52 | M-v | 1 | MP | 49148 | (67714) |
| (67718) | 16.6 | 0.15 | 20071027 | 73.55767  | 273.28144 | 64.31925  | 5.16645  | 0.1646134 | 2.2675744 | 116 | 7  | 1993-2007 | 0.44 | M-v | 0 | MP | 49150 | (67718) |
| (67721) | 15.8 | 0.15 | 20071027 | 102.34570 | 300.36853 | 3.76304   | 4.12360  | 0.2159582 | 2.2356022 | 151 | 7  | 1999-2007 | 0.51 | M-v | 1 | MP | 49151 | (67721) |
| (67733) | 16.2 | 0.15 | 20071027 | 111.21803 | 247.27222 | 88.01103  | 6.76260  | 0.2051006 | 2.1812917 | 144 | 7  | 1999-2007 | 0.61 | M-v | 1 | MP | 49155 | (67733) |
| (67739) | 16.5 | 0.15 | 20071027 | 106.19821 | 302.80777 | 15.24698  | 6.56039  | 0.1635949 | 2.2160833 | 83  | 5  | 1999-2007 | 0.52 | M-v | 1 | MP | 49157 | (67739) |
| (67742) | 16.2 | 0.15 | 20071027 | 125.70790 | 71.08310  | 220.25178 | 4.06007  | 0.1644990 | 2.2231530 | 210 | 7  | 1999-2007 | 0.57 | M-v | 0 | MP | 49158 | (67742) |
| (67764) | 16.1 | 0.15 | 20071027 | 32.97150  | 50.45221  | 339.77825 | 3.82363  | 0.0790240 | 2.2476727 | 154 | 6  | 1993-2007 | 0.62 | M-v | 1 | MP | 49166 | (67764) |
| (67786) | 15.5 | 0.15 | 20071027 | 107.36188 | 39.59742  | 267.91876 | 6.90174  | 0.1611741 | 2.2404221 | 172 | 7  | 1999-2007 | 0.53 | M-v | 1 | MP | 49173 | (67786) |
| (67808) | 17.0 | 0.15 | 20071027 | 54.97453  | 181.70162 | 172.90821 | 1.94226  | 0.1901499 | 2.2681565 | 96  | 7  | 1993-2007 | 0.54 | M-v | 0 | MP | 49181 | (67808) |
| (67830) | 16.7 | 0.15 | 20071027 | 22.65862  | 127.98882 | 264.59911 | 4.67575  | 0.1779085 | 2.2953502 | 86  | 6  | 1986-2007 | 0.54 | M-v | 1 | MP | 49189 | (67830) |
| (67834) | 13.5 | 0.15 | 20071027 | 298.89337 | 327.68429 | 240.09682 | 26.20620 | 0.1009258 | 3.1473237 | 242 | 9  | 1998-2007 | 0.55 | M-v | 0 | MP | 49191 | (67834) |
| (67900) | 16.2 | 0.15 | 20071027 | 73.37295  | 75.90522  | 259.18841 | 6.62655  | 0.1982486 | 2.2813024 | 145 | 7  | 1998-2007 | 0.52 | M-v | 1 | MP | 49214 | (67900) |
| (67936) | 15.8 | 0.15 | 20071027 | 88.64314  | 335.55370 | 30.05197  | 7.04789  | 0.1246401 | 2.2555474 | 315 | 7  | 1998-2007 | 0.51 | M-v | 1 | MP | 57653 | (67936) |
| (68008) | 15.8 | 0.15 | 20071027 | 65.89540  | 237.74571 | 113.06805 | 6.47701  | 0.1856931 | 2.2457712 | 161 | 7  | 1990-2007 | 0.62 | M-v | 1 | MP | 49250 | (68008) |
| (68275) | 16.5 | 0.15 | 20071027 | 224.13966 | 109.28642 | 141.98728 | 2.78433  | 0.1834210 | 2.4041737 | 166 | 7  | 1995-2007 | 0.52 | M-v | 1 | MP | 49336 | (68275) |
| (68355) | 14.3 | 0.15 | 20071027 | 55.36614  | 312.39752 | 99.79674  | 13.99938 | 0.1720758 | 2.6981179 | 140 | 7  | 1999-2007 | 0.57 | M-v | 1 | MP | 49361 | (68355) |
| (68413) | 14.7 | 0.15 | 20071027 | 329.58423 | 106.62708 | 338.73274 | 11.58068 | 0.0497601 | 2.9168258 | 161 | 7  | 1992-2007 | 0.50 | M-v | 0 | MP | 49381 | (68413) |
| (68452) | 15.0 | 0.15 | 20071027 | 106.10029 | 206.55693 | 136.84871 | 2.96111  | 0.0644611 | 2.9175458 | 213 | 7  | 1991-2007 | 0.55 | M-v | 0 | MP | 49394 | (68452) |
| (68534) | 15.2 | 0.15 | 20071027 | 259.15286 | 143.04978 | 118.59053 | 14.10146 | 0.1533019 | 2.7306448 | 128 | 7  | 1994-2007 | 0.57 | M-v | 0 | MP | 49422 | (68534) |
| (68555) | 14.0 | 0.15 | 20071027 | 316.52888 | 284.21377 | 242.64223 | 15.63682 | 0.1238614 | 3.1840264 | 138 | 7  | 1978-2007 | 0.55 | M-v | 0 | MP | 49429 | (68555) |
| (68618) | 17.4 | 0.15 | 20071027 | 181.06422 | 16.51854  | 233.68856 | 1.89666  | 0.1528248 | 2.1956100 | 130 | 7  | 1999-2007 | 0.58 | M-v | 0 | MP | 49450 | (68618) |
| (68737) | 16.5 | 0.15 | 20071027 | 62.90285  | 187.94425 | 148.14480 | 6.31485  | 0.1905432 | 2.2929158 | 108 | 7  | 1999-2007 | 0.61 | M-v | 1 | MP | 49489 | (68737) |
| (68738) | 15.9 | 0.15 | 20071027 | 286.57379 | 198.75465 | 70.03365  | 0.83563  | 0.3051966 | 3.2486859 | 133 | 9  | 1996-2007 | 0.53 | M-v | 0 | MP | 49489 | (68738) |
| (68800) | 15.4 | 0.15 | 20071027 | 120.54685 | 282.64098 | 28.57283  | 5.15035  | 0.1601251 | 2.3064622 | 325 | 7  | 1996-2007 | 0.56 | M-v | 0 | MP | 49509 | (68800) |
| (68970) | 15.9 | 0.15 | 20071027 | 59.01558  | 8.94147   | 17.50448  | 5.18467  | 0.1785644 | 2.6854364 | 256 | 9  | 1991-2007 | 0.53 | M-v | 0 | MP | 49558 | (68970) |
| (68979) | 15.7 | 0.15 | 20071027 | 52.31338  | 239.56507 | 139.59783 | 13.78830 | 0.1884580 | 2.6584592 | 190 | 9  | 1991-2007 | 0.52 | M-v | 1 | MP | 49562 | (68979) |
| (68982) | 15.0 | 0.15 | 20071027 | 59.69477  | 29.86959  | 34.16179  | 6.60026  | 0.1140333 | 2.4579737 | 272 | 7  | 1998-2007 | 0.56 | M-v | 1 | MP | 49563 | (68982) |
| (68993) | 14.9 | 0.15 | 20071027 | 329.57545 | 158.20255 | 325.98204 | 8.27759  | 0.1615879 | 2.6875118 | 189 | 7  | 1997-2007 | 0.54 | M-v | 0 | MP | 53573 | (68993) |
| (69028) | 14.9 | 0.15 | 20071027 | 116.88889 | 53.40866  | 304.76417 | 3.14777  | 0.1746025 | 2.6196201 | 221 | 9  | 1993-2007 | 0.51 | M-v | 1 | MP | 49577 | (69028) |
| (69087) | 15.8 | 0.15 | 20071027 | 256.29547 | 84.29689  | 117.29142 | 8.87669  | 0.0182270 | 3.0614812 | 226 | 10 | 1992-2007 | 0.56 | M-v | 0 | MP | 49594 | (69087) |
| (69091) | 15.2 | 0.15 | 20071027 | 333.27043 | 297.63046 | 166.37247 | 16.51078 | 0.1966122 | 3.1462246 | 92  | 7  | 1992-2007 | 0.58 | M-v | 0 | MP | 49595 | (69091) |
| (69092) | 14.6 | 0.15 | 20071027 | 79.02651  | 265.34012 | 152.53685 | 13.72672 | 0.1497010 | 2.5755625 | 156 | 7  | 1998-2007 | 0.53 | M-v | 1 | MP | 49596 | (69092) |
| (69105) | 14.4 | 0.15 | 20071027 | 220.84527 | 194.58411 | 68.80833  | 11.17451 | 0.0567313 | 3.0472384 | 260 | 9  | 1995-2007 | 0.52 | M-v | 0 | MP | 49600 | (69105) |
| (69120) | 15.4 | 0.15 | 20071027 | 221.40423 | 200.72014 | 77.63624  | 3.35387  | 0.2315919 | 3.0783431 | 108 | 9  | 1992-2007 | 0.59 | M-v | 0 | MP | 49604 | (69120) |
| (69126) | 14.5 | 0.15 | 20071027 | 347.30081 | 334.30831 | 167.35651 | 18.89667 | 0.1164040 | 3.0349362 | 159 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 49605 | (69126) |
| (69203) | 16.4 | 0.15 | 20071027 | 8.84378   | 223.19730 | 208.85051 | 4.19532  | 0.1318949 | 2.2392883 | 168 | 7  | 1973-2007 | 0.65 | M-v | 1 | MP | 49627 | (69203) |
| (69253) | 15.8 | 0.15 | 20071027 | 190.07129 | 8.46700   | 242.70184 | 6.67392  | 0.0904674 | 2.2864664 | 133 | 7  | 1981-2007 | 0.64 | M-v | 1 | MP | 50825 | (69253) |
| (69262) | 15.0 | 0.15 | 20071027 | 109.46374 | 46.16490  | 314.77756 | 4.62455  | 0.1725685 | 2.2322167 | 403 | 7  | 1986-2007 | 0.50 | M-v | 0 | MP | 50828 | (69262) |
| (69302) | 13.8 | 0.15 | 20071027 | 353.00786 | 358.49804 | 165.37127 | 3.83287  | 0.1358346 | 3.9584124 | 216 | 9  | 1992-2007 | 0.56 | M-v | 0 | MP | 50843 | (69302) |
| (69314) | 15.8 | 0.15 | 20071027 | 141.16956 | 265.46513 | 11.89527  | 6.98387  | 0.1113149 | 2.3418341 | 116 | 7  | 1992-2007 | 0.57 | M-v | 1 | MP | 50847 | (69314) |
| (69344) | 16.1 | 0.15 | 20071027 | 357.90555 | 51.57682  | 55.10934  | 7.49756  | 0.0554189 | 2.2318399 | 205 | 7  | 1993-2007 | 0.56 | M-v | 0 | MP | 50859 | (69344) |
| (69355) | 16.8 | 0.15 | 20071027 | 291.47424 | 97.97950  | 70.07175  | 1.28549  | 0.2072147 | 2.3370456 | 153 | 7  | 1994-2007 | 0.45 | M-v | 0 | MP | 50862 | (69355) |
| (69393) | 15.8 | 0.15 | 20071027 | 113.26574 | 248.00767 | 60.33746  | 6.27567  | 0.1532922 | 2.2994449 | 159 | 7  | 1991-2007 | 0.57 | M-v | 1 | MP | 50875 | (69393) |
| (69439) | 15.3 | 0.15 | 20071027 | 188.14981 | 304.88337 | 314.24128 | 5.26761  | 0.1488706 | 2.2241136 | 303 | 7  | 1996-2007 | 0.57 | M-v | 0 | MP | 50890 | (69439) |
| (69441) | 15.6 | 0.15 | 20071027 | 210.01142 | 289.31688 | 299.77746 | 3.67076  | 0.1141984 | 2.2324799 | 318 | 7  | 1996-2007 | 0.59 | M-v | 0 | MP | 50891 | (69441) |
| (69444) | 16.1 | 0.15 | 20071027 | 260.34854 | 163.87900 | 358.71579 | 6.59255  | 0.0395755 | 2.3024095 | 184 | 7  | 1996-2007 | 0.55 | M-v | 0 | MP | 50892 | (69444) |
| (69452) | 15.9 | 0.15 | 20071027 | 299.94077 | 23.97776  | 124.44978 | 5.81474  | 0.1306430 | 2.3106395 | 226 | 7  | 1996-2007 | 0.56 | M-v | 0 | MP | 50895 | (69452) |
| (69474) | 15.2 | 0.15 | 20071027 | 51.54517  | 145.17767 | 271.12689 | 7.84205  | 0.1777572 | 2.3126882 | 172 | 7  | 1996-2007 | 0.54 | M-v | 1 | MP | 57653 | (69474) |
| (69480) | 16.7 | 0.15 | 20071027 | 354.74494 | 127.90202 | 312.35052 | 0.65461  | 0.1529641 | 2.3824427 | 139 | 7  | 1996-2007 | 0.53 | M-v | 0 | MP | 50906 | (69480) |
| (69581) | 16.4 | 0.15 | 20071027 | 122.15330 | 218.43033 | 81.02313  | 1.34567  | 0.1107435 | 2.3290934 | 135 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 50943 | (69581) |
| (69588) | 16.7 | 0.15 | 20071027 | 356.37401 | 82.30512  | 10.16229  | 6.01686  | 0.0734920 | 2.2875174 | 170 | 7  | 1991-2007 | 0.59 | M-v | 0 | MP | 50945 | (69588) |
| (69595) | 15.6 | 0.15 | 20071027 | 326.64982 | 11.62932  | 121.08209 | 7.42767  | 0.0482480 | 2.2967195 | 267 | 7  | 1998-2007 | 0.56 | M-v | 0 | MP | 50949 | (69595) |
| (69611) | 16.4 | 0.15 | 20071027 | 9.33355   | 103.71690 | 9.59467   | 4.16205  | 0.0762069 | 2.2424408 | 251 | 7  | 1991-2007 | 0.52 | M-v | 0 | MP | 50955 | (69611) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |     |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|-----|-------|---------|
| (69618) | 15.8 | 0.15 | 20071027 | 329.81855 | 108.48977 | 8.89571   | 5.68554  | 0.1473482 | 2.2885938 | 358 | 8  | 1991-2007 | 0.57 | M-v | 0 | MPC | 50958 | (69618) |
| (69620) | 16.0 | 0.15 | 20071027 | 354.55898 | 279.49457 | 197.27122 | 6.52446  | 0.2325963 | 2.2405837 | 286 | 7  | 1993-2007 | 0.52 | M-v | 0 | MPC | 50959 | (69620) |
| (69632) | 16.2 | 0.15 | 20071027 | 298.67073 | 135.02657 | 14.44790  | 6.87247  | 0.0814643 | 2.3082524 | 175 | 7  | 1996-2007 | 0.59 | M-v | 1 | MPC | 50965 | (69632) |
| (69643) | 15.4 | 0.15 | 20071027 | 3.60262   | 16.92424  | 109.43960 | 5.20749  | 0.0944640 | 2.2447387 | 345 | 7  | 1998-2007 | 0.54 | M-v | 1 | MPC | 50969 | (69643) |
| (69647) | 15.1 | 0.15 | 20071027 | 288.38131 | 114.97067 | 48.28561  | 7.87009  | 0.0557791 | 2.2792659 | 204 | 7  | 1998-2007 | 0.51 | M-v | 1 | MPC | 73916 | (69647) |
| (69681) | 15.7 | 0.15 | 20071027 | 258.83662 | 235.77458 | 304.33511 | 3.22356  | 0.1537610 | 2.3227310 | 277 | 7  | 1998-2007 | 0.55 | M-v | 1 | MPC | 50983 | (69681) |
| (70059) | 16.4 | 0.15 | 20071027 | 202.29008 | 203.08998 | 36.52376  | 2.39895  | 0.1202187 | 2.1952792 | 223 | 7  | 1999-2007 | 0.61 | M-v | 0 | MPC | 51127 | (70059) |
| (70060) | 15.8 | 0.15 | 20071027 | 203.78562 | 192.18208 | 55.78956  | 6.51321  | 0.1129944 | 2.1872432 | 237 | 7  | 1999-2007 | 0.57 | M-v | 1 | MPC | 51127 | (70060) |
| (70079) | 15.3 | 0.15 | 20071027 | 157.96612 | 169.61090 | 100.05705 | 7.46415  | 0.1284925 | 2.2523269 | 237 | 7  | 1999-2007 | 0.56 | M-v | 1 | MPC | 51135 | (70079) |
| (70089) | 15.7 | 0.15 | 20071027 | 189.95023 | 227.29894 | 12.87073  | 3.48793  | 0.1394011 | 2.2092920 | 277 | 7  | 1999-2007 | 0.58 | M-v | 0 | MPC | 51140 | (70089) |
| (70106) | 16.1 | 0.15 | 20071027 | 96.00031  | 235.16975 | 87.40573  | 6.04424  | 0.1827908 | 2.2834429 | 116 | 7  | 1992-2007 | 0.63 | M-v | 1 | MPC | 51146 | (70106) |
| (70122) | 16.1 | 0.15 | 20071027 | 123.98654 | 115.36100 | 184.53448 | 4.04393  | 0.1459058 | 2.3135043 | 167 | 7  | 1996-2007 | 0.51 | M-v | 0 | MPC | 51152 | (70122) |
| (70130) | 16.6 | 0.15 | 20071027 | 89.29215  | 93.58623  | 232.79432 | 1.71660  | 0.1782029 | 2.3540423 | 123 | 7  | 1994-2007 | 0.52 | M-v | 1 | MPC | 51156 | (70130) |
| (70149) | 14.8 | 0.15 | 20071027 | 181.06878 | 314.20737 | 9.40044   | 1.43837  | 0.2303994 | 3.0581123 | 263 | 10 | 1971-2007 | 0.54 | M-v | 0 | MPC | 51163 | (70149) |
| (70150) | 16.4 | 0.15 | 20071027 | 147.19960 | 172.84052 | 120.23890 | 7.31777  | 0.1617889 | 2.2854994 | 155 | 7  | 1998-2007 | 0.50 | M-v | 1 | MPC | 51164 | (70150) |
| (70155) | 14.6 | 0.15 | 20071027 | 104.77800 | 206.82260 | 99.52063  | 13.80467 | 0.1559963 | 2.3386426 | 173 | 7  | 1999-2007 | 0.59 | M-v | 1 | MPC | 51166 | (70155) |
| (70156) | 15.6 | 0.15 | 20071027 | 245.80506 | 289.79701 | 305.12901 | 5.64164  | 0.1366773 | 2.2035663 | 190 | 7  | 1999-2007 | 0.58 | M-v | 1 | MPC | 51166 | (70156) |
| (70157) | 15.2 | 0.15 | 20071027 | 124.52002 | 198.26206 | 111.45259 | 8.11344  | 0.1318270 | 2.3102441 | 280 | 7  | 1999-2007 | 0.54 | M-v | 0 | MPC | 51166 | (70157) |
| (70199) | 15.1 | 0.15 | 20071027 | 84.68325  | 46.96034  | 359.70003 | 8.06457  | 0.0853570 | 2.2830247 | 382 | 7  | 1992-2007 | 0.53 | M-v | 0 | MPC | 51184 | (70199) |
| (70221) | 15.9 | 0.15 | 20071027 | 46.59288  | 164.40599 | 196.01272 | 1.45584  | 0.2332630 | 2.4156661 | 162 | 7  | 1999-2007 | 0.59 | M-v | 1 | MPC | 51195 | (70221) |
| (70265) | 14.9 | 0.15 | 20071027 | 186.06907 | 255.18375 | 1.40741   | 4.73284  | 0.1773024 | 2.3305128 | 330 | 7  | 1998-2007 | 0.52 | M-v | 0 | MPC | 51212 | (70265) |
| (70266) | 14.5 | 0.15 | 20071027 | 270.88232 | 172.55226 | 19.87398  | 12.69201 | 0.0798706 | 2.3246695 | 334 | 7  | 1998-2007 | 0.56 | M-v | 1 | MPC | 77343 | (70266) |
| (70300) | 15.8 | 0.15 | 20071027 | 128.93953 | 3.67651   | 282.14863 | 5.71500  | 0.1769350 | 2.3508746 | 100 | 7  | 1994-2007 | 0.59 | M-v | 1 | MPC | 51227 | (70300) |
| (70304) | 16.1 | 0.15 | 20071027 | 145.23401 | 6.79546   | 266.08805 | 5.79498  | 0.2376724 | 2.3333436 | 177 | 7  | 1998-2007 | 0.57 | M-v | 1 | MPC | 51228 | (70304) |
| (70318) | 15.8 | 0.15 | 20071027 | 10.35426  | 151.72817 | 271.28896 | 5.77641  | 0.0863128 | 2.3700858 | 147 | 7  | 1996-2007 | 0.56 | M-v | 1 | MPC | 51234 | (70318) |
| (70320) | 14.4 | 0.15 | 20071027 | 64.35091  | 86.84656  | 319.73638 | 8.91093  | 0.1912736 | 2.3175756 | 415 | 7  | 1985-2007 | 0.51 | M-v | 0 | MPC | 51234 | (70320) |
| (70387) | 16.6 | 0.15 | 20071027 | 161.93991 | 308.75433 | 318.98668 | 2.13178  | 0.1524142 | 2.3067404 | 173 | 7  | 1999-2007 | 0.50 | M-v | 0 | MPC | 51261 | (70387) |
| (70516) | 14.9 | 0.15 | 20071027 | 21.89149  | 46.88158  | 8.88225   | 7.71668  | 0.0665409 | 2.4379326 | 302 | 8  | 1995-2007 | 0.57 | M-v | 0 | MPC | 51311 | (70516) |
| (70529) | 16.6 | 0.15 | 20071027 | 73.53958  | 324.39465 | 17.05357  | 2.33171  | 0.2332199 | 2.4106928 | 155 | 7  | 1999-2007 | 0.52 | M-v | 1 | MPC | 51316 | (70529) |
| (70572) | 15.9 | 0.15 | 20071027 | 349.66320 | 101.63100 | 345.33720 | 5.04208  | 0.0715612 | 2.3985427 | 156 | 7  | 1973-2007 | 0.59 | M-v | 0 | MPC | 51333 | (70572) |
| (70582) | 15.4 | 0.15 | 20071027 | 253.14380 | 284.09693 | 269.06055 | 5.85552  | 0.1303286 | 2.3724569 | 243 | 7  | 1999-2007 | 0.58 | M-v | 1 | MPC | 51337 | (70582) |
| (70674) | 15.9 | 0.15 | 20071027 | 349.12446 | 129.64131 | 318.06972 | 5.80835  | 0.0594786 | 2.4208249 | 171 | 7  | 1997-2007 | 0.59 | M-v | 0 | MPC | 51370 | (70674) |
| (70967) | 15.3 | 0.15 | 20071027 | 42.97160  | 15.30593  | 45.61335  | 5.46456  | 0.1900644 | 2.3668576 | 245 | 7  | 1999-2007 | 0.52 | M-v | 0 | MPC | 51484 | (70967) |
| (70992) | 14.0 | 0.15 | 20071027 | 359.12155 | 130.58027 | 299.17138 | 21.39378 | 0.0560126 | 2.6143850 | 218 | 7  | 1998-2007 | 0.50 | M-v | 0 | MPC | 51496 | (70992) |
| (71220) | 16.3 | 0.15 | 20071027 | 186.47757 | 283.44517 | 342.62783 | 3.35280  | 0.1322086 | 2.5266052 | 140 | 9  | 1990-2007 | 0.51 | M-v | 0 | MPC | 51578 | (71220) |
| (71752) | 15.8 | 0.15 | 20071027 | 123.66697 | 238.07198 | 120.85380 | 4.93622  | 0.0468379 | 2.1747470 | 296 | 7  | 1999-2007 | 0.54 | M-v | 1 | MPC | 51763 | (71752) |
| (71770) | 15.8 | 0.15 | 20071027 | 110.99066 | 180.40006 | 124.32972 | 4.39522  | 0.1486406 | 2.2113498 | 253 | 7  | 1997-2007 | 0.54 | M-v | 1 | MPC | 51772 | (71770) |
| (71774) | 16.4 | 0.15 | 20071027 | 97.09761  | 208.30547 | 128.68614 | 3.90882  | 0.0583628 | 2.2086193 | 114 | 7  | 1992-2007 | 0.65 | M-v | 1 | MPC | 51773 | (71774) |
| (71776) | 16.3 | 0.15 | 20071027 | 353.94059 | 351.89493 | 125.94026 | 4.98318  | 0.0917624 | 2.1702630 | 234 | 8  | 1992-2007 | 0.60 | M-v | 0 | MPC | 51774 | (71776) |
| (71783) | 17.2 | 0.15 | 20071027 | 211.40984 | 296.18161 | 287.45607 | 2.12277  | 0.1158556 | 2.1766754 | 124 | 7  | 1999-2007 | 0.55 | M-v | 0 | MPC | 51777 | (71783) |
| (71789) | 16.7 | 0.15 | 20071027 | 125.88078 | 327.10671 | 346.71979 | 1.56530  | 0.1573824 | 2.1798612 | 146 | 7  | 1999-2007 | 0.52 | M-v | 1 | MPC | 51779 | (71789) |
| (71796) | 17.0 | 0.15 | 20071027 | 98.50571  | 333.67225 | 36.44903  | 3.17327  | 0.0963842 | 2.1547294 | 178 | 7  | 1999-2007 | 0.51 | M-v | 1 | MPC | 51782 | (71796) |
| (71799) | 15.7 | 0.15 | 20071027 | 300.09046 | 38.88285  | 94.51495  | 6.57455  | 0.0128622 | 2.2288510 | 101 | 7  | 1999-2007 | 0.62 | M-v | 1 | MPC | 51783 | (71799) |
| (71826) | 15.6 | 0.15 | 20071027 | 272.87327 | 269.64159 | 258.92913 | 4.20653  | 0.0333022 | 2.2389356 | 180 | 7  | 1996-2007 | 0.55 | M-v | 1 | MPC | 51794 | (71826) |
| (71827) | 16.2 | 0.15 | 20071027 | 155.35886 | 30.21164  | 270.95275 | 2.44259  | 0.1472171 | 2.1726585 | 264 | 7  | 1999-2007 | 0.54 | M-v | 1 | MPC | 51794 | (71827) |
| (71828) | 16.4 | 0.15 | 20071027 | 170.00251 | 211.89006 | 94.99750  | 0.46072  | 0.1771509 | 2.1281698 | 376 | 7  | 1999-2007 | 0.48 | M-v | 0 | MPC | 51794 | (71828) |
| (71830) | 15.5 | 0.15 | 20071027 | 101.05572 | 224.94627 | 88.99622  | 4.81370  | 0.1483304 | 2.2581772 | 131 | 7  | 1999-2007 | 0.58 | M-v | 1 | MPC | 51796 | (71830) |
| (71834) | 16.4 | 0.15 | 20071027 | 117.54113 | 279.18627 | 5.83652   | 6.83116  | 0.1118023 | 2.2565392 | 104 | 7  | 1999-2007 | 0.55 | M-v | 0 | MPC | 51797 | (71834) |
| (71836) | 16.0 | 0.15 | 20071027 | 231.49387 | 208.59114 | 347.63140 | 3.36432  | 0.0616671 | 2.2516632 | 165 | 7  | 1995-2007 | 0.57 | M-v | 1 | MPC | 51798 | (71836) |
| (71857) | 16.7 | 0.15 | 20071027 | 143.96297 | 287.95002 | 33.98881  | 2.10285  | 0.1507866 | 2.1462680 | 246 | 7  | 1999-2007 | 0.49 | M-v | 1 | MPC | 51805 | (71857) |
| (71858) | 17.2 | 0.15 | 20071027 | 65.83638  | 301.00755 | 69.79621  | 5.13656  | 0.0303375 | 2.2323594 | 90  | 7  | 1990-2007 | 0.67 | M-v | 1 | MPC | 51806 | (71858) |
| (71870) | 16.0 | 0.15 | 20071027 | 130.04525 | 194.47216 | 163.60897 | 1.17869  | 0.0934074 | 2.1479054 | 279 | 7  | 1999-2007 | 0.50 | M-v | 1 | MPC | 51811 | (71870) |
| (71889) | 16.1 | 0.15 | 20071027 | 80.36593  | 75.44649  | 316.19136 | 5.57407  | 0.1173172 | 2.1774818 | 244 | 7  | 1995-2007 | 0.47 | M-v | 1 | MPC | 51818 | (71889) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|-------|---------|
| (71899) | 16.7 | 0.15 | 20071027 | 125.83749 | 256.16596 | 57.02284  | 5.58766  | 0.1684368 | 2.2128507 | 104 | 7  | 1990-2007 | 0.51 | M-v | 1 | MP | 51822 | (71899) |
| (71906) | 16.8 | 0.15 | 20071027 | 15.13304  | 318.82915 | 113.40950 | 5.67001  | 0.0921630 | 2.2356260 | 125 | 7  | 1992-2007 | 0.59 | M-v | 1 | MP | 51825 | (71906) |
| (71974) | 15.6 | 0.15 | 20071027 | 246.22251 | 343.78453 | 233.80272 | 6.04463  | 0.0876332 | 2.2133304 | 215 | 7  | 1999-2007 | 0.56 | M-v | 1 | MP | 51850 | (71974) |
| (71985) | 16.1 | 0.15 | 20071027 | 355.44478 | 303.59900 | 136.51776 | 7.12313  | 0.2018815 | 2.3227037 | 140 | 6  | 1998-2007 | 0.58 | M-v | 1 | MP | 51854 | (71985) |
| (71988) | 15.6 | 0.15 | 20071027 | 200.66227 | 180.34237 | 60.24409  | 7.41929  | 0.1540457 | 2.2479555 | 233 | 7  | 1992-2007 | 0.58 | M-v | 1 | MP | 51855 | (71988) |
| (72003) | 16.9 | 0.15 | 20071027 | 256.81229 | 198.10611 | 343.78577 | 7.24556  | 0.0373532 | 2.2427014 | 171 | 7  | 1995-2007 | 0.57 | M-v | 1 | MP | 51861 | (72003) |
| (72009) | 16.2 | 0.15 | 20071027 | 69.63994  | 32.26617  | 344.54605 | 6.51207  | 0.1824650 | 2.2419743 | 189 | 7  | 1998-2007 | 0.55 | M-v | 1 | MP | 51863 | (72009) |
| (72092) | 17.0 | 0.15 | 20071027 | 302.20601 | 288.12895 | 208.25649 | 1.53247  | 0.1008463 | 2.3404355 | 137 | 7  | 1996-2007 | 0.60 | M-v | 0 | MP | 51894 | (72092) |
| (72121) | 15.9 | 0.15 | 20071027 | 37.79401  | 98.37409  | 308.46510 | 6.14973  | 0.1098368 | 2.3196506 | 166 | 7  | 1994-2007 | 0.48 | M-v | 1 | MP | 51904 | (72121) |
| (72198) | 16.1 | 0.15 | 20071027 | 134.64217 | 32.50609  | 262.46094 | 9.65981  | 0.0533929 | 2.3008276 | 118 | 7  | 1999-2007 | 0.54 | M-v | 0 | MP | 51932 | (72198) |
| (72238) | 16.1 | 0.15 | 20071027 | 342.27875 | 317.41012 | 179.23043 | 1.87436  | 0.1660168 | 2.2696731 | 261 | 7  | 1996-2007 | 0.52 | M-v | 0 | MP | 51945 | (72238) |
| (72245) | 16.4 | 0.15 | 20071027 | 98.61777  | 358.85408 | 3.74966   | 6.86061  | 0.1126067 | 2.2565637 | 272 | 7  | 1998-2007 | 0.53 | M-v | 1 | MP | 51948 | (72245) |
| (72247) | 16.4 | 0.15 | 20071027 | 328.77625 | 108.71121 | 22.84274  | 7.92012  | 0.1654689 | 2.3030465 | 111 | 7  | 1996-2007 | 0.53 | M-v | 1 | MP | 51949 | (72247) |
| (72249) | 16.0 | 0.15 | 20071027 | 24.15710  | 53.02576  | 13.58355  | 4.32382  | 0.1448111 | 2.2532988 | 184 | 7  | 1998-2007 | 0.51 | M-v | 0 | MP | 51949 | (72249) |
| (72252) | 16.4 | 0.15 | 20071027 | 18.32022  | 24.34276  | 30.77847  | 2.81020  | 0.1724782 | 2.2943211 | 219 | 8  | 1991-2007 | 0.55 | M-v | 0 | MP | 51950 | (72252) |
| (72255) | 15.7 | 0.15 | 20071027 | 62.49555  | 39.01787  | 333.43249 | 5.32010  | 0.1073290 | 2.2945525 | 171 | 7  | 1998-2007 | 0.53 | M-v | 1 | MP | 51951 | (72255) |
| (72261) | 16.6 | 0.15 | 20071027 | 37.52192  | 358.06539 | 67.55248  | 5.68357  | 0.1549016 | 2.2573140 | 177 | 7  | 1995-2007 | 0.48 | M-v | 1 | MP | 51953 | (72261) |
| (72313) | 15.4 | 0.15 | 20071027 | 38.81253  | 166.16890 | 226.29324 | 6.32729  | 0.2055837 | 2.3385998 | 192 | 7  | 1996-2007 | 0.52 | M-v | 1 | MP | 51971 | (72313) |
| (72401) | 16.9 | 0.15 | 20071027 | 2.70902   | 158.27092 | 296.54738 | 1.87209  | 0.1735129 | 2.3001454 | 128 | 7  | 1993-2007 | 0.49 | M-v | 1 | MP | 52002 | (72401) |
| (72449) | 15.9 | 0.15 | 20071027 | 266.03257 | 136.48272 | 46.48956  | 7.17539  | 0.0753411 | 2.3540011 | 188 | 7  | 1998-2007 | 0.56 | M-v | 1 | MP | 52017 | (72449) |
| (72569) | 13.9 | 0.15 | 20071027 | 56.24828  | 317.14206 | 71.59679  | 24.74569 | 0.2955905 | 2.3483223 | 212 | 6  | 1998-2007 | 0.56 | M-v | 1 | MP | 52057 | (72569) |
| (72864) | 13.4 | 0.15 | 20071027 | 20.81731  | 288.97206 | 98.39403  | 27.63278 | 0.1732487 | 2.6845968 | 202 | 7  | 1999-2007 | 0.55 | M-v | 1 | MP | 52157 | (72864) |
| (72924) | 16.0 | 0.15 | 20071027 | 279.88418 | 119.67913 | 141.84818 | 2.13852  | 0.1477853 | 2.5941402 | 120 | 10 | 1996-2007 | 0.62 | M-v | 0 | MP | 52175 | (72924) |
| (72986) | 15.6 | 0.15 | 20071027 | 103.97027 | 293.12045 | 357.22660 | 23.61375 | 0.2418044 | 2.2608562 | 126 | 7  | 1999-2007 | 0.57 | M-v | 1 | MP | 52198 | (72986) |
| (72990) | 16.6 | 0.15 | 20071027 | 151.61556 | 307.39877 | 351.58616 | 3.43755  | 0.1591272 | 2.1822559 | 252 | 7  | 1992-2007 | 0.52 | M-v | 1 | MP | 52199 | (72990) |
| (73009) | 16.0 | 0.15 | 20071027 | 111.46466 | 169.16532 | 141.47374 | 4.16368  | 0.2528746 | 2.3063126 | 186 | 9  | 1989-2007 | 0.55 | M-v | 0 | MP | 52206 | (73009) |
| (73040) | 15.5 | 0.15 | 20071027 | 178.08809 | 350.86434 | 259.73462 | 3.94346  | 0.1671505 | 2.2844160 | 271 | 7  | 1999-2007 | 0.59 | M-v | 0 | MP | 52217 | (73040) |
| (73068) | 15.8 | 0.15 | 20071027 | 239.02021 | 105.58911 | 97.33232  | 7.00751  | 0.0565358 | 2.1867421 | 149 | 7  | 1999-2007 | 0.59 | M-v | 1 | MP | 52227 | (73068) |
| (73087) | 15.6 | 0.15 | 20071027 | 68.05105  | 329.73752 | 48.46842  | 8.22937  | 0.1762559 | 2.2860984 | 217 | 7  | 1996-2007 | 0.53 | M-v | 1 | MP | 52234 | (73087) |
| (73095) | 15.9 | 0.15 | 20071027 | 164.30404 | 41.77297  | 237.77599 | 5.49474  | 0.0973899 | 2.2762491 | 124 | 7  | 1999-2007 | 0.57 | M-v | 1 | MP | 52237 | (73095) |
| (73097) | 16.5 | 0.15 | 20071027 | 219.62696 | 161.64069 | 40.88192  | 1.89345  | 0.0561459 | 2.3080649 | 171 | 7  | 1999-2007 | 0.53 | M-v | 0 | MP | 52237 | (73097) |
| (73100) | 16.1 | 0.15 | 20071027 | 245.81355 | 226.81686 | 19.03159  | 3.45358  | 0.1179150 | 2.1562685 | 213 | 7  | 1999-2007 | 0.51 | M-v | 1 | MP | 52238 | (73100) |
| (73132) | 16.0 | 0.15 | 20071027 | 111.45892 | 74.43088  | 253.70314 | 6.06175  | 0.1454482 | 2.2660226 | 163 | 7  | 1999-2007 | 0.58 | M-v | 1 | MP | 52249 | (73132) |
| (73161) | 15.6 | 0.15 | 20071027 | 94.28458  | 223.51420 | 95.10439  | 3.24478  | 0.1411127 | 2.3492821 | 79  | 7  | 1994-2007 | 0.60 | M-v | 1 | MP | 52258 | (73161) |
| (73162) | 16.2 | 0.15 | 20071027 | 124.36278 | 339.20979 | 321.20765 | 3.89506  | 0.1712155 | 2.3001315 | 94  | 7  | 1998-2007 | 0.57 | M-v | 1 | MP | 52258 | (73162) |
| (73170) | 15.0 | 0.15 | 20071027 | 182.21350 | 139.34261 | 115.37426 | 8.23037  | 0.1326631 | 2.2599312 | 254 | 7  | 1999-2007 | 0.54 | M-v | 0 | MP | 52260 | (73170) |
| (73176) | 15.9 | 0.15 | 20071027 | 176.54209 | 323.28917 | 286.53249 | 3.43720  | 0.1244346 | 2.3095619 | 208 | 7  | 1999-2007 | 0.52 | M-v | 0 | MP | 52262 | (73176) |
| (73179) | 15.4 | 0.15 | 20071027 | 130.80992 | 302.36857 | 264.77469 | 8.32720  | 0.1419150 | 2.5546754 | 149 | 7  | 1998-2007 | 0.51 | M-v | 1 | MP | 52263 | (73179) |
| (73237) | 15.5 | 0.15 | 20071027 | 250.04810 | 10.16681  | 217.77968 | 4.77465  | 0.0650650 | 2.1934051 | 339 | 7  | 1999-2007 | 0.53 | M-v | 1 | MP | 52282 | (73237) |
| (73268) | 15.9 | 0.15 | 20071027 | 187.21310 | 27.22132  | 238.33289 | 5.59566  | 0.0786672 | 2.2655648 | 218 | 7  | 1993-2007 | 0.51 | M-v | 0 | MP | 52292 | (73268) |
| (73271) | 15.9 | 0.15 | 20071027 | 205.21255 | 201.42974 | 37.81805  | 5.80646  | 0.0881822 | 2.2829220 | 171 | 7  | 1999-2007 | 0.53 | M-v | 1 | MP | 52293 | (73271) |
| (73287) | 15.6 | 0.15 | 20071027 | 238.96484 | 63.19247  | 176.42077 | 4.23569  | 0.0934996 | 2.1990861 | 316 | 7  | 1999-2007 | 0.53 | M-v | 1 | MP | 52299 | (73287) |
| (73360) | 17.3 | 0.15 | 20071027 | 344.74656 | 305.61025 | 168.25612 | 0.29898  | 0.0655838 | 2.1965285 | 101 | 7  | 1992-2007 | 0.58 | M-v | 0 | MP | 52322 | (73360) |
| (73653) | 16.3 | 0.15 | 20071027 | 156.98043 | 15.45794  | 269.47886 | 6.31908  | 0.2084900 | 2.2941367 | 176 | 7  | 1981-2007 | 0.61 | M-v | 1 | MP | 53878 | (73653) |
| (73659) | 15.2 | 0.15 | 20071027 | 215.23840 | 232.52708 | 341.44135 | 11.82899 | 0.0958635 | 2.5138812 | 104 | 7  | 1981-2007 | 0.63 | M-v | 1 | MP | 53880 | (73659) |
| (73684) | 15.4 | 0.15 | 20071027 | 89.06821  | 23.63954  | 320.38923 | 4.45654  | 0.3002639 | 2.5427365 | 275 | 7  | 1990-2007 | 0.59 | M-v | 1 | MP | 53889 | (73684) |
| (73739) | 16.6 | 0.15 | 20071027 | 115.98024 | 202.96396 | 174.09765 | 1.83369  | 0.1558623 | 2.1898955 | 235 | 7  | 1993-2007 | 0.48 | M-v | 0 | MP | 53909 | (73739) |
| (73848) | 16.0 | 0.15 | 20071027 | 202.26048 | 70.11603  | 181.03628 | 1.98871  | 0.1551763 | 2.2522582 | 309 | 7  | 1996-2007 | 0.51 | M-v | 0 | MP | 53944 | (73848) |
| (73869) | 16.6 | 0.15 | 20071027 | 68.59924  | 150.39445 | 250.80637 | 1.28505  | 0.2040827 | 2.3381816 | 190 | 7  | 1997-2007 | 0.47 | M-v | 0 | MP | 53951 | (73869) |
| (73900) | 16.0 | 0.15 | 20071027 | 309.56185 | 51.55175  | 160.28710 | 5.60506  | 0.1426216 | 2.3365288 | 168 | 7  | 1995-2007 | 0.55 | M-v | 0 | MP | 53962 | (73900) |
| (73914) | 15.7 | 0.15 | 20071027 | 358.83137 | 105.85652 | 49.69284  | 7.57556  | 0.0513157 | 2.3930587 | 252 | 7  | 1997-2007 | 0.57 | M-v | 1 | MP | 53966 | (73914) |
| (73985) | 16.5 | 0.15 | 20071027 | 50.13572  | 280.66219 | 142.77335 | 4.88466  | 0.0945015 | 2.2470526 | 187 | 8  | 1998-2007 | 0.48 | M-v | 1 | MP | 53991 | (73985) |
| (73998) | 16.2 | 0.15 | 20071027 | 257.72736 | 222.13622 | 341.46840 | 3.23252  | 0.0687377 | 2.2876128 | 165 | 7  | 1998-2007 | 0.61 | M-v | 1 | MP | 53996 | (73998) |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |               |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|---------------|
| (74029) | 15.7 | 0.15 | 20071027 | 160.89916 | 279.56184 | 359.20801 | 6.81206  | 0.1103893 | 2.3471109 | 250 | 7 | 1998-2007 | 0.59 | M-v | 0 | MPG | 54006 (74029) |
| (74048) | 15.9 | 0.15 | 20071027 | 317.63411 | 87.89982  | 100.77464 | 5.70133  | 0.1046244 | 2.2516480 | 98  | 5 | 1998-2006 | 0.61 | M-v | 2 | MPG | 54013 (74048) |
| (74057) | 16.4 | 0.15 | 20071027 | 183.31014 | 210.78588 | 36.56511  | 2.59684  | 0.0957347 | 2.3876181 | 134 | 7 | 1998-2007 | 0.67 | M-v | 1 | MPG | 54016 (74057) |
| (74102) | 15.6 | 0.15 | 20071027 | 191.22958 | 115.25850 | 179.97530 | 2.22352  | 0.1852050 | 2.4074265 | 258 | 7 | 1998-2007 | 0.58 | M-v | 0 | MPG | 54032 (74102) |
| (74106) | 14.9 | 0.15 | 20071027 | 11.06924  | 78.31152  | 318.10700 | 14.06101 | 0.1492572 | 2.6274196 | 153 | 7 | 1998-2007 | 0.56 | M-v | 0 | MPG | 54033 (74106) |
| (74112) | 15.0 | 0.15 | 20071027 | 63.53717  | 224.22186 | 198.65827 | 3.11702  | 0.1739876 | 2.4749072 | 429 | 7 | 1998-2007 | 0.55 | M-v | 0 | MPG | 54036 (74112) |
| (74197) | 15.9 | 0.15 | 20071027 | 235.21827 | 135.28493 | 124.78408 | 3.09980  | 0.1964164 | 2.3993355 | 161 | 7 | 1998-2007 | 0.59 | M-v | 1 | MPG | 54068 (74197) |
| (74207) | 15.0 | 0.15 | 20071027 | 94.49868  | 356.99243 | 341.36307 | 5.13480  | 0.1570603 | 2.5654698 | 219 | 7 | 1998-2007 | 0.52 | M-v | 1 | MPG | 54072 (74207) |
| (74210) | 15.2 | 0.15 | 20071027 | 100.92482 | 23.46544  | 296.85143 | 4.37609  | 0.1740356 | 2.5839221 | 198 | 7 | 1998-2007 | 0.54 | M-v | 1 | MPG | 54074 (74210) |
| (74231) | 15.7 | 0.15 | 20071027 | 53.57620  | 294.82552 | 74.87144  | 5.01098  | 0.1579583 | 2.6153470 | 109 | 7 | 1998-2007 | 0.54 | M-v | 0 | MPG | 54082 (74231) |
| (74237) | 16.0 | 0.15 | 20071027 | 315.06705 | 98.52119  | 18.80748  | 2.71628  | 0.0475037 | 2.6396938 | 154 | 7 | 1998-2007 | 0.50 | M-v | 0 | MPG | 54084 (74237) |
| (74245) | 13.7 | 0.15 | 20071027 | 14.05153  | 116.87148 | 24.66773  | 9.78392  | 0.0801215 | 2.4382019 | 449 | 7 | 1998-2007 | 0.51 | M-v | 0 | MPG | 54088 (74245) |
| (74325) | 15.2 | 0.15 | 20071027 | 97.76450  | 6.19105   | 330.40510 | 3.04537  | 0.1602173 | 2.5914254 | 230 | 7 | 1998-2007 | 0.54 | M-v | 1 | MPG | 54117 (74325) |
| (74335) | 14.8 | 0.15 | 20071027 | 58.97376  | 267.44211 | 86.02010  | 3.47866  | 0.1769571 | 2.6540081 | 186 | 9 | 1989-2007 | 0.59 | M-v | 0 | MPG | 54121 (74335) |
| (74363) | 15.2 | 0.15 | 20071027 | 92.47039  | 96.12520  | 236.33512 | 2.89461  | 0.2203573 | 2.6395451 | 243 | 7 | 1998-2007 | 0.52 | M-v | 0 | MPG | 54131 (74363) |
| (74395) | 14.7 | 0.15 | 20071027 | 358.17937 | 323.75119 | 105.92425 | 9.85757  | 0.0995791 | 2.7297824 | 129 | 7 | 1998-2007 | 0.62 | M-v | 0 | MPG | 54141 (74395) |
| (74424) | 13.8 | 0.15 | 20071027 | 332.58703 | 138.71497 | 5.21064   | 23.65766 | 0.1944393 | 2.7112391 | 298 | 7 | 1998-2007 | 0.54 | M-v | 0 | MPG | 54151 (74424) |
| (74544) | 16.7 | 0.15 | 20071027 | 165.21721 | 201.10653 | 96.49855  | 6.32219  | 0.1793669 | 2.2048723 | 159 | 7 | 1992-2007 | 0.58 | M-v | 1 | MPG | 54198 (74544) |
| (74589) | 16.0 | 0.15 | 20071027 | 93.63422  | 354.57345 | 320.73014 | 7.49542  | 0.2268289 | 2.3970218 | 118 | 7 | 1999-2007 | 0.58 | M-v | 1 | MPG | 54215 (74589) |
| (74618) | 15.7 | 0.15 | 20071027 | 106.14152 | 160.03100 | 142.18724 | 4.61854  | 0.2132091 | 2.3928681 | 206 | 7 | 1991-2007 | 0.54 | M-v | 0 | MPG | 54227 (74618) |
| (74621) | 16.7 | 0.15 | 20071027 | 92.59143  | 212.44766 | 124.88554 | 6.11243  | 0.1611483 | 2.3480235 | 122 | 7 | 1999-2007 | 0.60 | M-v | 1 | MPG | 54228 (74621) |
| (74624) | 16.2 | 0.15 | 20071027 | 158.39532 | 2.18217   | 339.04683 | 6.30226  | 0.1345295 | 2.2600531 | 110 | 7 | 1999-2007 | 0.62 | M-v | 1 | MPG | 54229 (74624) |
| (74648) | 16.5 | 0.15 | 20071027 | 173.84047 | 249.43958 | 38.69265  | 2.89083  | 0.1423324 | 2.2819615 | 211 | 7 | 1996-2007 | 0.54 | M-v | 0 | MPG | 54237 (74648) |
| (74672) | 15.9 | 0.15 | 20071027 | 18.27140  | 88.78700  | 13.28666  | 6.00409  | 0.0517435 | 2.3111734 | 187 | 7 | 1999-2007 | 0.49 | M-v | 0 | MPG | 54246 (74672) |
| (74698) | 15.9 | 0.15 | 20071027 | 123.15493 | 138.10644 | 174.69858 | 4.62399  | 0.1608856 | 2.3541173 | 279 | 7 | 1999-2007 | 0.49 | M-v | 0 | MPG | 54256 (74698) |
| (74699) | 16.4 | 0.15 | 20071027 | 173.20891 | 33.38192  | 222.45452 | 6.08819  | 0.0754249 | 2.3516192 | 115 | 7 | 1998-2007 | 0.62 | M-v | 1 | MPG | 54257 (74699) |
| (74735) | 15.8 | 0.15 | 20071027 | 62.55420  | 314.90339 | 66.49738  | 5.57590  | 0.1494335 | 2.3601214 | 143 | 7 | 1999-2007 | 0.51 | M-v | 1 | MPG | 54270 (74735) |
| (74743) | 16.4 | 0.15 | 20071027 | 130.99798 | 208.48886 | 74.52170  | 3.15022  | 0.1614358 | 2.3720097 | 136 | 7 | 1999-2007 | 0.51 | M-v | 0 | MPG | 54273 (74743) |
| (74749) | 13.9 | 0.15 | 20071027 | 209.61122 | 281.16370 | 308.08663 | 23.30899 | 0.1690048 | 2.3090874 | 191 | 7 | 1998-2007 | 0.50 | M-v | 1 | MPG | 54275 (74749) |
| (74768) | 16.8 | 0.15 | 20071027 | 121.91634 | 285.25386 | 36.54414  | 2.97619  | 0.2607990 | 2.3129060 | 182 | 7 | 1998-2007 | 0.54 | M-v | 1 | MPG | 54282 (74768) |
| (74774) | 15.7 | 0.15 | 20071027 | 73.30364  | 253.26055 | 116.37430 | 7.38594  | 0.1195731 | 2.3666622 | 139 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPG | 54284 (74774) |
| (74794) | 14.4 | 0.15 | 20071027 | 171.34791 | 329.79376 | 266.17223 | 23.34643 | 0.2019845 | 2.3951834 | 114 | 7 | 1999-2007 | 0.53 | M-v | 1 | MPG | 54291 (74794) |
| (74800) | 16.6 | 0.15 | 20071027 | 161.50003 | 205.53955 | 96.95033  | 6.38622  | 0.2045312 | 2.2831161 | 142 | 7 | 1999-2007 | 0.57 | M-v | 1 | MPG | 54293 (74800) |
| (74818) | 15.9 | 0.15 | 20071027 | 28.01332  | 41.56051  | 45.25617  | 8.79052  | 0.1455236 | 2.3777313 | 191 | 7 | 1999-2007 | 0.53 | M-v | 1 | MPG | 54300 (74818) |
| (74821) | 15.0 | 0.15 | 20071027 | 50.85445  | 192.86345 | 219.20940 | 1.93127  | 0.1424607 | 2.3661048 | 238 | 7 | 1997-2007 | 0.58 | M-v | 1 | MPG | 54302 (74821) |
| (74833) | 15.9 | 0.15 | 20071027 | 49.33777  | 29.18198  | 23.57102  | 6.68227  | 0.1493632 | 2.3835665 | 165 | 7 | 1999-2007 | 0.51 | M-v | 1 | MPG | 54306 (74833) |
| (74839) | 15.6 | 0.15 | 20071027 | 130.69131 | 313.80283 | 10.57995  | 12.83337 | 0.2887541 | 2.3296906 | 285 | 7 | 1992-2007 | 0.47 | M-v | 1 | MPG | 54309 (74839) |
| (74853) | 17.1 | 0.15 | 20071027 | 4.17067   | 209.72963 | 221.86507 | 2.15463  | 0.1489894 | 2.4015644 | 107 | 7 | 1994-2007 | 0.42 | M-v | 0 | MPG | 54314 (74853) |
| (74858) | 15.8 | 0.15 | 20071027 | 68.84122  | 252.89526 | 136.69873 | 4.84084  | 0.1882243 | 2.3476013 | 189 | 7 | 1996-2007 | 0.53 | M-v | 1 | MPG | 54315 (74858) |
| (74875) | 16.3 | 0.15 | 20071027 | 134.67025 | 239.95935 | 82.18217  | 4.82378  | 0.1389817 | 2.3196304 | 118 | 7 | 1999-2007 | 0.62 | M-v | 1 | MPG | 54321 (74875) |
| (74881) | 15.7 | 0.15 | 20071027 | 330.67198 | 234.33279 | 265.95255 | 4.00883  | 0.0411183 | 2.3475008 | 257 | 7 | 1999-2007 | 0.50 | M-v | 0 | MPG | 54323 (74881) |
| (74889) | 16.2 | 0.15 | 20071027 | 131.03540 | 124.20391 | 175.76215 | 4.98131  | 0.1983140 | 2.3617156 | 168 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPG | 54326 (74889) |
| (74896) | 16.4 | 0.15 | 20071027 | 47.76183  | 275.27244 | 127.32632 | 2.44331  | 0.1982597 | 2.3875076 | 108 | 7 | 1997-2007 | 0.45 | M-v | 0 | MPG | 54329 (74896) |
| (74897) | 15.1 | 0.15 | 20071027 | 337.99316 | 39.72666  | 119.62091 | 3.41636  | 0.1140856 | 2.2997143 | 346 | 7 | 1999-2007 | 0.53 | M-v | 1 | MPG | 54329 (74897) |
| (74899) | 15.3 | 0.15 | 20071027 | 74.52472  | 336.93803 | 45.03806  | 5.55018  | 0.1730043 | 2.3655569 | 201 | 7 | 1997-2007 | 0.51 | M-v | 1 | MPG | 54330 (74899) |
| (74903) | 16.1 | 0.15 | 20071027 | 150.77398 | 334.46814 | 324.22551 | 6.69828  | 0.1199915 | 2.3373765 | 178 | 7 | 1998-2007 | 0.56 | M-v | 1 | MPG | 54332 (74903) |
| (74918) | 16.8 | 0.15 | 20071027 | 156.35148 | 247.98438 | 49.24984  | 4.33143  | 0.2312403 | 2.3005044 | 209 | 7 | 1999-2007 | 0.52 | M-v | 0 | MPG | 54337 (74918) |
| (74921) | 16.4 | 0.15 | 20071027 | 181.32208 | 352.95070 | 273.57280 | 2.31257  | 0.2217727 | 2.3173091 | 213 | 7 | 1981-2007 | 0.55 | M-v | 0 | MPG | 54338 (74921) |
| (74924) | 15.2 | 0.15 | 20071027 | 345.19322 | 89.17592  | 48.26397  | 7.16460  | 0.0619190 | 2.3309688 | 274 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPG | 54339 (74924) |
| (74938) | 15.7 | 0.15 | 20071027 | 218.05233 | 283.20171 | 358.45956 | 7.91843  | 0.1061178 | 2.2734589 | 146 | 7 | 1999-2007 | 0.52 | M-v | 1 | MPG | 54344 (74938) |
| (74961) | 15.3 | 0.15 | 20071027 | 179.98552 | 77.49603  | 212.99867 | 3.80299  | 0.1574302 | 2.2477412 | 301 | 7 | 1999-2007 | 0.52 | M-v | 0 | MPG | 54352 (74961) |
| (74968) | 15.3 | 0.15 | 20071027 | 6.72517   | 245.55363 | 220.89639 | 5.48852  | 0.0772762 | 2.3494562 | 158 | 7 | 1999-2007 | 0.52 | M-v | 0 | MPG | 54355 (74968) |
| (74973) | 16.2 | 0.15 | 20071027 | 54.69609  | 72.96682  | 334.96178 | 6.54252  | 0.0776037 | 2.3588487 | 133 | 7 | 1999-2007 | 0.51 | M-v | 1 | MPG | 54357 (74973) |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|----------------|
| (74991) | 15.9 | 0.15 | 20071027 | 5.01986   | 201.19880 | 253.72172 | 6.32066  | 0.0692849 | 2.3606955 | 132 | 7 | 1999-2007 | 0.53 | M-v | 1 | MP | 54363 (74991)  |
| (74994) | 16.1 | 0.15 | 20071027 | 187.12662 | 1.78739   | 302.28496 | 5.35913  | 0.2242539 | 2.2632724 | 157 | 7 | 1994-2007 | 0.50 | M-v | 0 | MP | 54364 (74994)  |
| (74995) | 15.7 | 0.15 | 20071027 | 215.70493 | 279.53711 | 323.02982 | 5.99957  | 0.0839281 | 2.3419693 | 275 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 54364 (74995)  |
| (75011) | 14.9 | 0.15 | 20071027 | 80.68177  | 12.17287  | 52.56430  | 7.38993  | 0.0893957 | 2.3232956 | 426 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 54370 (75011)  |
| (75019) | 15.8 | 0.15 | 20071027 | 7.99551   | 14.22434  | 55.07509  | 5.63470  | 0.0784025 | 2.4497306 | 218 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 54373 (75019)  |
| (75039) | 16.2 | 0.15 | 20071027 | 26.63986  | 58.59770  | 51.28354  | 1.96965  | 0.1579128 | 2.3381594 | 225 | 7 | 1992-2007 | 0.49 | M-v | 0 | MP | 54380 (75039)  |
| (75044) | 15.9 | 0.15 | 20071027 | 58.63364  | 205.59067 | 211.03412 | 8.85117  | 0.1879975 | 2.3826606 | 237 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 54382 (75044)  |
| (75103) | 14.8 | 0.15 | 20071027 | 231.50268 | 271.81510 | 349.87280 | 2.98848  | 0.0564739 | 2.3212517 | 388 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 54407 (75103)  |
| (75107) | 16.2 | 0.15 | 20071027 | 144.97742 | 247.66720 | 40.15791  | 4.21595  | 0.1232451 | 2.4086710 | 164 | 7 | 1998-2007 | 0.55 | M-v | 0 | MP | 54408 (75107)  |
| (75112) | 15.1 | 0.15 | 20071027 | 68.41867  | 346.10579 | 47.27701  | 7.19818  | 0.0983122 | 2.3775149 | 277 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 54410 (75112)  |
| (75114) | 14.8 | 0.15 | 20071027 | 267.61510 | 195.14988 | 55.36566  | 4.55760  | 0.1309355 | 2.2827368 | 339 | 7 | 1999-2007 | 0.48 | M-v | 0 | MP | 54411 (75114)  |
| (75163) | 16.8 | 0.15 | 20071027 | 134.60552 | 14.29951  | 337.34312 | 2.56265  | 0.0820922 | 2.3094581 | 172 | 7 | 1999-2007 | 0.51 | M-v | 1 | MP | 54429 (75163)  |
| (75166) | 16.0 | 0.15 | 20071027 | 282.97519 | 299.55719 | 225.37288 | 5.63906  | 0.0618949 | 2.4113839 | 185 | 7 | 1999-2007 | 0.52 | M-v | 0 | MP | 54430 (75166)  |
| (75170) | 15.6 | 0.15 | 20071027 | 320.99911 | 187.65294 | 320.85375 | 6.77560  | 0.0433897 | 2.3551529 | 227 | 7 | 1999-2007 | 0.57 | M-v | 0 | MP | 54432 (75170)  |
| (75182) | 16.2 | 0.15 | 20071027 | 128.01809 | 329.74808 | 349.38111 | 2.16011  | 0.2163029 | 2.3622737 | 225 | 7 | 1999-2007 | 0.48 | M-v | 0 | MP | 54436 (75182)  |
| (75193) | 15.7 | 0.15 | 20071027 | 147.78552 | 296.05277 | 45.54546  | 6.01832  | 0.2213021 | 2.3131851 | 206 | 7 | 1998-2007 | 0.54 | M-v | 0 | MP | 54440 (75193)  |
| (75194) | 15.9 | 0.15 | 20071027 | 80.41785  | 293.48840 | 44.55566  | 7.74996  | 0.2392835 | 2.4612754 | 59  | 5 | 1994-2007 | 0.60 | M-v | 1 | MP | 128657 (75194) |
| (75211) | 15.8 | 0.15 | 20071027 | 5.54608   | 208.57654 | 248.91464 | 6.32472  | 0.1169514 | 2.3971664 | 135 | 7 | 1999-2007 | 0.55 | M-v | 1 | MP | 54446 (75211)  |
| (75218) | 15.4 | 0.15 | 20071027 | 323.17594 | 211.77116 | 350.74435 | 5.33532  | 0.1090686 | 2.2656158 | 256 | 7 | 1999-2007 | 0.55 | M-v | 1 | MP | 54448 (75218)  |
| (75219) | 15.3 | 0.15 | 20071027 | 335.80142 | 319.41734 | 168.42084 | 8.24342  | 0.1740986 | 2.4344129 | 108 | 7 | 1999-2007 | 0.55 | M-v | 1 | MP | 54449 (75219)  |
| (75223) | 14.5 | 0.15 | 20071027 | 81.53631  | 299.40048 | 96.08300  | 3.19628  | 0.2046498 | 2.3850372 | 418 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 54450 (75223)  |
| (75245) | 15.2 | 0.15 | 20071027 | 2.92122   | 80.72423  | 69.28545  | 10.28021 | 0.1450229 | 2.3539266 | 215 | 7 | 1999-2007 | 0.47 | M-v | 1 | MP | 54460 (75245)  |
| (75267) | 15.0 | 0.15 | 20071027 | 65.61666  | 220.18870 | 181.18114 | 6.74736  | 0.0830522 | 2.3908338 | 367 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 54469 (75267)  |
| (75281) | 14.1 | 0.15 | 20071027 | 241.45723 | 277.53723 | 288.41669 | 11.05326 | 0.1183268 | 2.6231081 | 175 | 7 | 1999-2007 | 0.55 | M-v | 1 | MP | 54475 (75281)  |
| (75293) | 15.3 | 0.15 | 20071027 | 192.37990 | 209.69014 | 85.91444  | 6.79924  | 0.1057814 | 2.3420514 | 251 | 7 | 1999-2007 | 0.59 | M-v | 0 | MP | 54480 (75293)  |
| (75314) | 15.0 | 0.15 | 20071027 | 311.25416 | 132.92260 | 46.42212  | 8.96937  | 0.1325805 | 2.3701552 | 256 | 7 | 1999-2007 | 0.57 | M-v | 1 | MP | 54490 (75314)  |
| (75320) | 15.7 | 0.15 | 20071027 | 289.79208 | 274.11726 | 259.38545 | 5.65516  | 0.0847725 | 2.4241623 | 89  | 7 | 1999-2007 | 0.56 | M-v | 1 | MP | 54493 (75320)  |
| (75324) | 15.6 | 0.15 | 20071027 | 340.49966 | 224.90057 | 265.17256 | 3.78284  | 0.0325148 | 2.4038345 | 229 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 54494 (75324)  |
| (75370) | 14.4 | 0.15 | 20071027 | 223.26795 | 123.95128 | 98.36812  | 13.60187 | 0.2241476 | 2.5727494 | 185 | 7 | 1999-2007 | 0.53 | M-v | 1 | MP | 54511 (75370)  |
| (75371) | 15.5 | 0.15 | 20071027 | 5.25341   | 13.10610  | 108.92978 | 1.94651  | 0.1686143 | 2.4367052 | 303 | 7 | 1991-2007 | 0.56 | M-v | 1 | MP | 54511 (75371)  |
| (75423) | 15.1 | 0.15 | 20071027 | 82.36432  | 356.41125 | 26.34632  | 6.73984  | 0.1135274 | 2.3855601 | 320 | 7 | 1999-2007 | 0.57 | M-v | 1 | MP | 54533 (75423)  |
| (75424) | 15.4 | 0.15 | 20071027 | 241.89761 | 194.22990 | 42.37455  | 10.04050 | 0.0399739 | 2.3770875 | 189 | 7 | 1999-2007 | 0.55 | M-v | 1 | MP | 54534 (75424)  |
| (75431) | 15.8 | 0.15 | 20071027 | 127.20666 | 15.56359  | 336.07913 | 4.00534  | 0.1078160 | 2.3577041 | 236 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 54536 (75431)  |
| (75453) | 14.5 | 0.15 | 20071027 | 43.36767  | 66.64578  | 285.52007 | 22.03891 | 0.1694496 | 2.5564409 | 65  | 6 | 1994-2007 | 0.70 | M-v | 1 | MP | 54545 (75453)  |
| (75473) | 14.7 | 0.15 | 20071027 | 9.32947   | 120.45004 | 21.42659  | 3.41020  | 0.1195168 | 2.4301403 | 423 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 54552 (75473)  |
| (75493) | 15.1 | 0.15 | 20071027 | 9.20903   | 82.43469  | 55.22067  | 7.41074  | 0.1170613 | 2.4345254 | 334 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 54560 (75493)  |
| (75548) | 14.7 | 0.15 | 20071027 | 42.90091  | 252.07449 | 100.65567 | 13.86864 | 0.2482289 | 2.5484069 | 174 | 7 | 1998-2007 | 0.49 | M-v | 0 | MP | 54579 (75548)  |
| (75573) | 15.2 | 0.15 | 20071027 | 312.75438 | 190.88512 | 10.49945  | 5.15966  | 0.1489648 | 2.3927086 | 264 | 7 | 1998-2007 | 0.57 | M-v | 1 | MP | 54588 (75573)  |
| (75597) | 14.3 | 0.15 | 20071027 | 238.81814 | 128.01818 | 80.55269  | 8.16097  | 0.1620453 | 2.5573716 | 161 | 7 | 1999-2007 | 0.54 | M-v | 1 | MP | 54597 (75597)  |
| (75658) | 15.2 | 0.15 | 20071027 | 124.19070 | 191.72028 | 139.53638 | 6.92918  | 0.1550708 | 2.4372205 | 252 | 7 | 1999-2007 | 0.56 | M-v | 1 | MP | 54620 (75658)  |
| (75660) | 15.0 | 0.15 | 20071027 | 10.40515  | 337.54060 | 128.62088 | 5.07081  | 0.1313807 | 2.4409165 | 276 | 7 | 1999-2007 | 0.49 | M-v | 0 | MP | 54620 (75660)  |
| (75661) | 15.2 | 0.15 | 20071027 | 89.93339  | 281.96507 | 126.50759 | 4.57614  | 0.1373895 | 2.3727120 | 270 | 7 | 1999-2007 | 0.52 | M-v | 0 | MP | 54621 (75661)  |
| (75698) | 15.4 | 0.15 | 20071027 | 309.31465 | 20.48119  | 175.18167 | 5.11955  | 0.1421429 | 2.4251760 | 225 | 7 | 1998-2007 | 0.53 | M-v | 0 | MP | 54635 (75698)  |
| (75718) | 14.7 | 0.15 | 20071027 | 292.79689 | 308.93206 | 260.88464 | 13.16826 | 0.2143471 | 2.4567405 | 222 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 54642 (75718)  |
| (75727) | 15.0 | 0.15 | 20071027 | 115.34644 | 33.61366  | 0.34710   | 6.49841  | 0.1286945 | 2.3361220 | 288 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 54646 (75727)  |
| (75735) | 15.5 | 0.15 | 20071027 | 100.74066 | 263.60484 | 137.79300 | 6.72164  | 0.2276009 | 2.3021916 | 276 | 7 | 1997-2007 | 0.51 | M-v | 1 | MP | 54649 (75735)  |
| (75736) | 14.4 | 0.15 | 20071027 | 241.31896 | 291.92197 | 299.05923 | 11.81376 | 0.1326848 | 2.5781061 | 185 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 54649 (75736)  |
| (75748) | 15.3 | 0.15 | 20071027 | 122.78826 | 317.98073 | 52.69675  | 6.96009  | 0.1002353 | 2.3514428 | 238 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 54654 (75748)  |
| (75787) | 14.7 | 0.15 | 20071027 | 166.09641 | 161.42990 | 94.20227  | 15.47967 | 0.0717624 | 2.5569015 | 153 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 54668 (75787)  |
| (75848) | 15.0 | 0.15 | 20071027 | 321.63640 | 105.28321 | 6.93355   | 4.86041  | 0.0379219 | 2.5962374 | 185 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 54690 (75848)  |
| (75854) | 15.2 | 0.15 | 20071027 | 24.89562  | 312.80421 | 124.74836 | 7.30620  | 0.1186617 | 2.4792627 | 198 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 54692 (75854)  |
| (75903) | 15.6 | 0.15 | 20071027 | 345.43364 | 134.71409 | 308.93883 | 12.05948 | 0.0774290 | 2.6443315 | 169 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 54709 (75903)  |
| (75929) | 14.8 | 0.15 | 20071027 | 266.56973 | 298.28720 | 297.11019 | 11.66992 | 0.1361521 | 2.5270151 | 271 | 7 | 2000-2007 | 0.56 | M-v | 0 | MP | 54718 (75929)  |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------|---------|
| (75937) | 15.3 | 0.15 | 20071027 | 54.85678  | 46.75464  | 323.02358 | 1.30234  | 0.0315033 | 2.6778475 | 214 | 7 | 1998-2007 | 0.50 | M-v | 0 | MP | 54722 | (75937) |
| (75947) | 14.2 | 0.15 | 20071027 | 138.80498 | 303.68497 | 339.06131 | 7.86276  | 0.1083139 | 2.7238694 | 364 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 54725 | (75947) |
| (76044) | 14.8 | 0.15 | 20071027 | 123.08337 | 311.24753 | 353.43823 | 4.36493  | 0.1109074 | 2.7111539 | 246 | 7 | 1993-2007 | 0.54 | M-v | 0 | MP | 54759 | (76044) |
| (76058) | 14.9 | 0.15 | 20071027 | 220.07340 | 253.24578 | 337.89194 | 6.19639  | 0.1250188 | 2.6636877 | 114 | 7 | 1997-2007 | 0.48 | M-v | 0 | MP | 54764 | (76058) |
| (76088) | 15.0 | 0.15 | 20071027 | 16.98444  | 352.73529 | 94.64939  | 3.28765  | 0.0188479 | 2.5543410 | 321 | 7 | 1998-2007 | 0.59 | M-v | 0 | MP | 54774 | (76088) |
| (76095) | 15.0 | 0.15 | 20071027 | 123.17758 | 325.85455 | 348.35098 | 2.97954  | 0.1176152 | 2.6455355 | 294 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 54777 | (76095) |
| (76099) | 15.3 | 0.15 | 20071027 | 12.61351  | 34.02506  | 34.33729  | 5.92275  | 0.2452566 | 2.5682292 | 119 | 6 | 1990-2007 | 0.56 | M-v | 1 | MP | 54779 | (76099) |
| (76103) | 14.9 | 0.15 | 20071027 | 75.47069  | 25.49589  | 2.78219   | 15.23089 | 0.1388098 | 2.5558356 | 332 | 7 | 1998-2007 | 0.53 | M-v | 1 | MP | 54780 | (76103) |
| (76156) | 15.2 | 0.15 | 20071027 | 165.84473 | 332.63690 | 303.53139 | 13.37465 | 0.0774403 | 2.6749359 | 160 | 7 | 1991-2007 | 0.55 | M-v | 0 | MP | 54800 | (76156) |
| (76175) | 15.3 | 0.15 | 20071027 | 261.68997 | 89.30270  | 116.93212 | 12.13093 | 0.1327898 | 2.6205180 | 178 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 54806 | (76175) |
| (76177) | 14.4 | 0.15 | 20071027 | 259.06982 | 204.44424 | 35.42255  | 8.70065  | 0.1746656 | 2.5533619 | 237 | 7 | 2000-2007 | 0.50 | M-v | 0 | MP | 54807 | (76177) |
| (76180) | 14.8 | 0.15 | 20071027 | 23.46850  | 258.90205 | 173.83879 | 15.05331 | 0.0755288 | 2.6228897 | 342 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 54808 | (76180) |
| (76195) | 15.1 | 0.15 | 20071027 | 356.20225 | 284.89939 | 184.35531 | 12.97820 | 0.1382498 | 2.5956176 | 325 | 7 | 1998-2007 | 0.58 | M-v | 0 | MP | 54815 | (76195) |
| (76235) | 14.6 | 0.15 | 20071027 | 120.98148 | 153.88893 | 136.12239 | 8.75881  | 0.2049744 | 2.8025774 | 221 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 54831 | (76235) |
| (76265) | 14.6 | 0.15 | 20071027 | 144.64705 | 198.40175 | 89.77669  | 8.98722  | 0.1074957 | 2.7677564 | 165 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 54842 | (76265) |
| (76322) | 14.9 | 0.15 | 20071027 | 269.56614 | 226.65889 | 340.15006 | 13.40171 | 0.0590572 | 2.6165107 | 188 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 54863 | (76322) |
| (76417) | 15.3 | 0.15 | 20071027 | 192.71602 | 122.03945 | 110.88695 | 10.41913 | 0.0471399 | 2.7614742 | 147 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 54896 | (76417) |
| (76424) | 14.6 | 0.15 | 20071027 | 221.30685 | 118.54118 | 98.53064  | 8.25147  | 0.1599032 | 2.7303591 | 211 | 7 | 2000-2007 | 0.52 | M-v | 1 | MP | 54899 | (76424) |
| (76458) | 14.6 | 0.15 | 20071027 | 233.58309 | 175.85737 | 40.72157  | 8.61812  | 0.1039141 | 2.7116183 | 210 | 7 | 2000-2007 | 0.58 | M-v | 0 | MP | 54912 | (76458) |
| (76529) | 15.4 | 0.15 | 20071027 | 260.51869 | 26.29085  | 186.54717 | 3.92410  | 0.2025072 | 2.6658963 | 218 | 7 | 2000-2007 | 0.47 | M-v | 0 | MP | 54939 | (76529) |
| (76543) | 15.0 | 0.15 | 20071027 | 261.27866 | 26.27270  | 150.57045 | 13.43661 | 0.0873608 | 2.7845587 | 174 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 54944 | (76543) |
| (76602) | 14.7 | 0.15 | 20071027 | 294.08428 | 194.81002 | 358.32100 | 13.40786 | 0.0986312 | 2.5961324 | 224 | 7 | 2000-2007 | 0.52 | M-v | 1 | MP | 54966 | (76602) |
| (76658) | 13.8 | 0.15 | 20071027 | 185.04810 | 210.15565 | 95.15510  | 15.81326 | 0.1514237 | 2.6882553 | 251 | 9 | 1997-2007 | 0.53 | M-v | 0 | MP | 54988 | (76658) |
| (76784) | 15.1 | 0.15 | 20071027 | 340.87285 | 6.25896   | 126.60214 | 14.42991 | 0.1378096 | 2.6586682 | 145 | 7 | 1998-2007 | 0.60 | M-v | 0 | MP | 55033 | (76784) |
| (76796) | 14.0 | 0.15 | 20071027 | 261.96872 | 105.68440 | 106.79402 | 13.09367 | 0.1385271 | 2.7144112 | 162 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 55037 | (76796) |
| (76817) | 13.9 | 0.15 | 20071027 | 118.64662 | 38.68216  | 329.86568 | 8.55019  | 0.0906556 | 3.0867858 | 205 | 7 | 1997-2007 | 0.51 | M-v | 0 | MP | 55044 | (76817) |
| (76895) | 15.6 | 0.15 | 20071027 | 339.48042 | 35.88109  | 112.63082 | 6.17096  | 0.1084898 | 2.2954905 | 171 | 7 | 1991-2007 | 0.52 | M-v | 1 | MP | 55073 | (76895) |
| (76925) | 16.3 | 0.15 | 20071027 | 94.82186  | 311.04274 | 65.72709  | 4.71909  | 0.0881084 | 2.2309826 | 188 | 7 | 1995-2007 | 0.50 | M-v | 1 | MP | 55084 | (76925) |
| (76930) | 15.8 | 0.15 | 20071027 | 97.88300  | 227.26887 | 111.71053 | 8.01053  | 0.0989287 | 2.3474825 | 161 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 55086 | (76930) |
| (76951) | 15.4 | 0.15 | 20071027 | 213.22348 | 305.63683 | 294.13992 | 7.14119  | 0.1867307 | 2.3849730 | 194 | 7 | 1999-2007 | 0.60 | M-v | 1 | MP | 55094 | (76951) |
| (76952) | 15.8 | 0.15 | 20071027 | 261.12802 | 270.55098 | 276.35625 | 2.45172  | 0.1318701 | 2.3729544 | 225 | 7 | 1999-2007 | 0.54 | M-v | 1 | MP | 55094 | (76952) |
| (76955) | 16.0 | 0.15 | 20071027 | 276.64255 | 229.84407 | 309.42264 | 4.70032  | 0.1374236 | 2.3607806 | 196 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 55095 | (76955) |
| (76957) | 15.5 | 0.15 | 20071027 | 273.81924 | 23.61445  | 176.88702 | 2.15418  | 0.1569525 | 2.3399562 | 237 | 7 | 1999-2007 | 0.48 | M-v | 0 | MP | 55096 | (76957) |
| (76960) | 15.5 | 0.15 | 20071027 | 237.56376 | 280.90815 | 327.87631 | 5.19784  | 0.0694337 | 2.3021653 | 188 | 7 | 1999-2007 | 0.49 | M-v | 0 | MP | 55098 | (76960) |
| (76969) | 15.6 | 0.15 | 20071027 | 297.86778 | 46.75834  | 123.26298 | 2.69771  | 0.1484603 | 2.3686682 | 155 | 7 | 1999-2007 | 0.53 | M-v | 1 | MP | 55101 | (76969) |
| (76973) | 15.4 | 0.15 | 20071027 | 221.89508 | 340.54351 | 270.79610 | 11.94194 | 0.1534318 | 2.3617688 | 141 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 55102 | (76973) |
| (76990) | 14.4 | 0.15 | 20071027 | 240.47813 | 329.75659 | 273.06688 | 23.98503 | 0.1656886 | 2.2949793 | 162 | 7 | 1999-2007 | 0.56 | M-v | 1 | MP | 55109 | (76990) |
| (76994) | 16.1 | 0.15 | 20071027 | 228.89547 | 293.30306 | 293.75733 | 4.26562  | 0.1081803 | 2.3487612 | 134 | 7 | 1998-2007 | 0.55 | M-v | 0 | MP | 55110 | (76994) |
| (76998) | 16.1 | 0.15 | 20071027 | 169.66833 | 240.65585 | 16.65061  | 6.71704  | 0.1045358 | 2.4571111 | 141 | 7 | 1997-2007 | 0.52 | M-v | 0 | MP | 55112 | (76998) |
| (77011) | 15.8 | 0.15 | 20071027 | 42.40278  | 340.15368 | 106.62268 | 7.36729  | 0.0518271 | 2.2490154 | 153 | 7 | 1998-2007 | 0.54 | M-v | 1 | MP | 77345 | (77011) |
| (77014) | 15.6 | 0.15 | 20071027 | 27.24336  | 79.23203  | 14.67367  | 4.49400  | 0.0382613 | 2.2726809 | 221 | 7 | 1998-2007 | 0.55 | M-v | 1 | MP | 55117 | (77014) |
| (77033) | 15.7 | 0.15 | 20071027 | 200.00795 | 219.83146 | 75.02455  | 7.62388  | 0.1231836 | 2.2573936 | 200 | 7 | 1999-2007 | 0.57 | M-v | 0 | MP | 55123 | (77033) |
| (77052) | 16.4 | 0.15 | 20071027 | 346.20925 | 345.14992 | 145.24387 | 5.01042  | 0.0445574 | 2.2972166 | 168 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 55130 | (77052) |
| (77059) | 15.7 | 0.15 | 20071027 | 275.53348 | 19.73907  | 169.70770 | 6.69406  | 0.0876296 | 2.3523087 | 221 | 7 | 1999-2007 | 0.51 | M-v | 0 | MP | 55132 | (77059) |
| (77063) | 16.1 | 0.15 | 20071027 | 258.34854 | 176.17879 | 53.41873  | 7.45519  | 0.0794107 | 2.3254590 | 101 | 7 | 1999-2007 | 0.51 | M-v | 1 | MP | 55133 | (77063) |
| (77073) | 16.3 | 0.15 | 20071027 | 327.70758 | 12.07305  | 138.36237 | 5.47711  | 0.1114012 | 2.3099009 | 146 | 7 | 1992-2007 | 0.50 | M-v | 0 | MP | 55137 | (77073) |
| (77092) | 16.1 | 0.15 | 20071027 | 312.75090 | 301.91088 | 207.23735 | 4.29965  | 0.1637527 | 2.3563376 | 148 | 7 | 1999-2007 | 0.60 | M-v | 0 | MP | 55143 | (77092) |
| (77100) | 17.0 | 0.15 | 20071027 | 292.89645 | 321.42066 | 212.27295 | 2.03211  | 0.1031402 | 2.3395453 | 128 | 7 | 1978-2007 | 0.56 | M-v | 1 | MP | 55145 | (77100) |
| (77130) | 15.7 | 0.15 | 20071027 | 194.81428 | 338.44170 | 270.94086 | 7.15891  | 0.0786418 | 2.4125272 | 117 | 7 | 1996-2007 | 0.53 | M-v | 0 | MP | 55155 | (77130) |
| (77131) | 16.8 | 0.15 | 20071027 | 289.23967 | 268.39656 | 279.95191 | 5.49350  | 0.0736337 | 2.3280529 | 75  | 7 | 1999-2007 | 0.58 | M-v | 1 | MP | 55156 | (77131) |
| (77146) | 16.2 | 0.15 | 20071027 | 306.20079 | 63.80198  | 109.08750 | 4.60122  | 0.1165887 | 2.3429647 | 123 | 7 | 1999-2007 | 0.52 | M-v | 1 | MP | 77345 | (77146) |
| (77160) | 16.8 | 0.15 | 20071027 | 294.57576 | 292.75854 | 252.34850 | 4.51017  | 0.1380724 | 2.3345706 | 177 | 7 | 1999-2007 | 0.48 | M-v | 0 | MP | 55165 | (77160) |
| (77163) | 15.0 | 0.15 | 20071027 | 123.82968 | 327.77854 | 313.61633 | 12.91374 | 0.1228451 | 2.5201303 | 148 | 7 | 1999-2007 | 0.48 | M-v | 0 | MP | 55166 | (77163) |



|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |        |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|--------|---------|
| (77173) | 16.3 | 0.15 | 20071027 | 181.45424 | 284.88994 | 1.40005   | 1.84985  | 0.1856602 | 2.4195718 | 175 | 7  | 1993-2007 | 0.52 | M-v | 0 | MP | 55169  | (77173) |
| (77191) | 15.7 | 0.15 | 20071027 | 190.66783 | 303.34765 | 3.50190   | 6.77964  | 0.1226664 | 2.3397731 | 153 | 7  | 1995-2007 | 0.57 | M-v | 1 | MP | 55176  | (77191) |
| (77192) | 15.3 | 0.15 | 20071027 | 183.09882 | 221.15100 | 34.36145  | 5.72144  | 0.0623223 | 2.4896897 | 204 | 7  | 1999-2007 | 0.51 | M-v | 0 | MP | 55176  | (77192) |
| (77199) | 15.1 | 0.15 | 20071027 | 340.17961 | 130.08029 | 347.84037 | 8.02819  | 0.0706273 | 2.4036404 | 153 | 7  | 1999-2007 | 0.53 | M-v | 0 | MP | 55179  | (77199) |
| (77203) | 15.5 | 0.15 | 20071027 | 256.81098 | 282.14880 | 337.32041 | 5.89504  | 0.0856159 | 2.2970701 | 120 | 7  | 1999-2007 | 0.59 | M-v | 1 | MP | 55180  | (77203) |
| (77209) | 15.8 | 0.15 | 20071027 | 325.16023 | 46.63043  | 82.23468  | 8.92669  | 0.1980627 | 2.4132629 | 143 | 7  | 1993-2007 | 0.56 | M-v | 0 | MP | 55182  | (77209) |
| (77224) | 16.0 | 0.15 | 20071027 | 214.44654 | 60.31524  | 151.61432 | 6.22960  | 0.1238875 | 2.5672055 | 152 | 7  | 1994-2007 | 0.60 | M-v | 1 | MP | 55187  | (77224) |
| (77227) | 16.3 | 0.15 | 20071027 | 348.19049 | 136.44063 | 342.89713 | 7.39925  | 0.0572632 | 2.3495081 | 82  | 7  | 1999-2007 | 0.59 | M-v | 1 | MP | 55188  | (77227) |
| (77257) | 16.0 | 0.15 | 20071027 | 242.60694 | 165.96224 | 47.48088  | 3.11338  | 0.1415839 | 2.4575072 | 158 | 7  | 1995-2007 | 0.52 | M-v | 1 | MP | 55198  | (77257) |
| (77279) | 16.0 | 0.15 | 20071027 | 280.25173 | 356.31898 | 147.33661 | 5.66207  | 0.0409851 | 2.4824826 | 135 | 7  | 1999-2007 | 0.59 | M-v | 1 | MP | 55206  | (77279) |
| (77290) | 15.3 | 0.15 | 20071027 | 175.70785 | 252.98584 | 60.56465  | 7.26234  | 0.1249282 | 2.3785528 | 250 | 7  | 1999-2007 | 0.53 | M-v | 0 | MP | 55210  | (77290) |
| (77300) | 16.2 | 0.15 | 20071027 | 275.09210 | 61.69535  | 105.65954 | 3.25274  | 0.1196073 | 2.4646554 | 116 | 7  | 1995-2007 | 0.53 | M-v | 0 | MP | 55213  | (77300) |
| (77326) | 15.6 | 0.15 | 20071027 | 221.37071 | 165.11948 | 121.37835 | 7.00187  | 0.2366594 | 2.3447611 | 168 | 7  | 1998-2007 | 0.60 | M-v | 1 | MP | 77345  | (77326) |
| (77342) | 17.1 | 0.15 | 20071027 | 299.84535 | 220.19400 | 277.45017 | 5.73137  | 0.0617567 | 2.4346067 | 71  | 7  | 1991-2007 | 0.57 | M-v | 1 | MP | 55228  | (77342) |
| (77351) | 16.7 | 0.15 | 20071027 | 282.31992 | 137.70603 | 17.66732  | 1.86925  | 0.1404310 | 2.4799631 | 101 | 7  | 1997-2007 | 0.60 | M-v | 1 | MP | 55230  | (77351) |
| (77358) | 16.6 | 0.15 | 20071027 | 340.60442 | 354.76584 | 144.03117 | 6.00157  | 0.1391124 | 2.3418714 | 120 | 7  | 1995-2007 | 0.52 | M-v | 0 | MP | 55233  | (77358) |
| (77363) | 16.2 | 0.15 | 20071027 | 237.08116 | 71.23751  | 187.60086 | 1.65211  | 0.1750176 | 2.4123686 | 138 | 7  | 1998-2007 | 0.53 | M-v | 1 | MP | 55234  | (77363) |
| (77378) | 16.2 | 0.15 | 20071027 | 203.18308 | 195.09008 | 92.38443  | 7.50511  | 0.1153116 | 2.3751471 | 132 | 7  | 2000-2007 | 0.59 | M-v | 0 | MP | 55239  | (77378) |
| (77398) | 14.8 | 0.15 | 20071027 | 184.63045 | 99.10974  | 147.12176 | 11.64369 | 0.2424478 | 2.5882270 | 219 | 7  | 1997-2007 | 0.53 | M-v | 1 | MP | 55245  | (77398) |
| (77472) | 15.1 | 0.15 | 20071027 | 250.66631 | 55.20040  | 133.44169 | 1.01069  | 0.0795609 | 2.5421620 | 225 | 7  | 2000-2007 | 0.54 | M-v | 0 | MP | 55271  | (77472) |
| (77481) | 14.7 | 0.15 | 20071027 | 168.29331 | 193.28792 | 74.82058  | 6.14269  | 0.1271474 | 2.6212276 | 259 | 7  | 2000-2007 | 0.54 | M-v | 0 | MP | 55274  | (77481) |
| (77493) | 15.7 | 0.15 | 20071027 | 234.20112 | 318.27620 | 247.26099 | 4.11453  | 0.0964565 | 2.5504472 | 186 | 7  | 2000-2007 | 0.48 | M-v | 0 | MP | 55279  | (77493) |
| (77513) | 15.2 | 0.15 | 20071027 | 317.88174 | 168.78592 | 328.80355 | 7.75642  | 0.1910947 | 2.4209197 | 131 | 7  | 1999-2007 | 0.48 | M-v | 1 | MP | 55286  | (77513) |
| (77626) | 16.0 | 0.15 | 20071027 | 195.29376 | 151.52202 | 109.68244 | 13.76962 | 0.2071576 | 2.5730659 | 120 | 7  | 1994-2007 | 0.52 | M-v | 1 | MP | 55323  | (77626) |
| (77646) | 14.4 | 0.15 | 20071027 | 167.61735 | 180.40221 | 94.51541  | 15.81879 | 0.1680668 | 2.6880666 | 164 | 7  | 2000-2007 | 0.54 | M-v | 1 | MP | 55329  | (77646) |
| (77662) | 14.4 | 0.15 | 20071027 | 171.90775 | 324.61495 | 287.21097 | 10.93836 | 0.1445040 | 2.7837527 | 191 | 7  | 2000-2007 | 0.56 | M-v | 0 | MP | 55335  | (77662) |
| (77675) | 15.6 | 0.15 | 20071027 | 244.12070 | 102.27615 | 93.28101  | 14.57552 | 0.1071412 | 2.6894819 | 61  | 7  | 1996-2007 | 0.57 | M-v | 1 | MP | 55339  | (77675) |
| (77713) | 14.6 | 0.15 | 20071027 | 260.94496 | 249.54066 | 329.05255 | 13.98348 | 0.0966867 | 2.6263928 | 237 | 7  | 2000-2007 | 0.58 | M-v | 0 | MP | 55352  | (77713) |
| (77796) | 13.5 | 0.15 | 20071027 | 173.29371 | 356.26325 | 262.00285 | 14.30381 | 0.1019453 | 2.8398990 | 242 | 7  | 2000-2007 | 0.50 | M-v | 0 | MP | 55385  | (77796) |
| (77834) | 14.1 | 0.15 | 20071027 | 53.89762  | 262.20638 | 112.73557 | 11.40429 | 0.0350045 | 2.9292148 | 142 | 7  | 2000-2007 | 0.53 | M-v | 0 | MP | 55399  | (77834) |
| (77857) | 14.2 | 0.15 | 20071027 | 236.69791 | 265.35286 | 5.41481   | 13.66692 | 0.1799400 | 2.6526734 | 268 | 7  | 1999-2007 | 0.53 | M-v | 0 | MP | 55408  | (77857) |
| (77873) | 14.1 | 0.15 | 20071027 | 194.62825 | 80.09040  | 156.03313 | 6.31609  | 0.1565035 | 2.9433187 | 273 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 55413  | (77873) |
| (77912) | 14.6 | 0.15 | 20071027 | 260.87752 | 39.50479  | 129.17087 | 12.25974 | 0.0106132 | 3.0056265 | 121 | 9  | 1993-2007 | 0.62 | M-v | 1 | MP | 55428  | (77912) |
| (77923) | 16.0 | 0.15 | 20071027 | 123.42115 | 77.93108  | 223.36775 | 2.64054  | 0.1677284 | 2.3124992 | 121 | 7  | 1996-2007 | 0.58 | M-v | 1 | MP | 55431  | (77923) |
| (77944) | 16.8 | 0.15 | 20071027 | 170.54490 | 317.75481 | 325.11337 | 4.58424  | 0.1486152 | 2.2509102 | 165 | 7  | 1993-2007 | 0.48 | M-v | 0 | MP | 55438  | (77944) |
| (77950) | 16.5 | 0.15 | 20071027 | 105.65261 | 103.44547 | 221.24755 | 5.18368  | 0.1335122 | 2.2784437 | 82  | 5  | 1996-2007 | 0.52 | M-v | 1 | MP | 55440  | (77950) |
| (77959) | 16.4 | 0.15 | 20071027 | 174.04312 | 201.17873 | 86.94692  | 5.78059  | 0.1983523 | 2.2183868 | 99  | 7  | 1997-2007 | 0.53 | M-v | 1 | MP | 55443  | (77959) |
| (77994) | 16.4 | 0.15 | 20071027 | 144.75465 | 153.12841 | 142.62149 | 6.52205  | 0.1332184 | 2.3251701 | 172 | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 55455  | (77994) |
| (78004) | 16.4 | 0.15 | 20071027 | 214.92337 | 209.49877 | 29.70490  | 2.15989  | 0.1751962 | 2.2581799 | 238 | 8  | 1998-2007 | 0.49 | M-v | 0 | MP | 73920  | (78004) |
| (78013) | 16.5 | 0.15 | 20071027 | 215.80383 | 241.83133 | 44.78357  | 4.01976  | 0.1729176 | 2.1636234 | 224 | 7  | 1992-2007 | 0.55 | M-v | 1 | MP | 55462  | (78013) |
| (78039) | 16.2 | 0.15 | 20071027 | 138.43436 | 262.52083 | 73.89835  | 3.77872  | 0.1607026 | 2.2392706 | 215 | 7  | 1995-2007 | 0.45 | M-v | 0 | MP | 55470  | (78039) |
| (78043) | 16.0 | 0.15 | 20071027 | 111.71174 | 53.00628  | 243.90241 | 13.51494 | 0.0982610 | 2.3656321 | 107 | 5  | 1996-2007 | 0.49 | M-v | 1 | MP | 128663 | (78043) |
| (78062) | 14.5 | 0.15 | 20071027 | 110.54469 | 2.42494   | 288.83931 | 14.17974 | 0.1151872 | 2.5708204 | 118 | 7  | 1998-2007 | 0.59 | M-v | 1 | MP | 55476  | (78062) |
| (78195) | 14.8 | 0.15 | 20071027 | 10.54174  | 305.13155 | 101.56021 | 13.59890 | 0.2591793 | 2.6475488 | 132 | 7  | 1994-2007 | 0.60 | M-v | 1 | MP | 55519  | (78195) |
| (78273) | 16.7 | 0.15 | 20071027 | 92.79938  | 142.09312 | 246.97691 | 1.36471  | 0.1360503 | 2.3896254 | 158 | 7  | 1999-2007 | 0.44 | M-v | 0 | MP | 55542  | (78273) |
| (78290) | 16.4 | 0.15 | 20071027 | 160.80991 | 261.57990 | 48.52798  | 1.42643  | 0.2168658 | 2.4352510 | 203 | 7  | 1998-2007 | 0.47 | M-v | 0 | MP | 55548  | (78290) |
| (78324) | 15.9 | 0.15 | 20071027 | 124.61941 | 188.62673 | 157.46973 | 2.51258  | 0.1918648 | 2.4158128 | 279 | 7  | 1999-2007 | 0.48 | M-v | 0 | MP | 55559  | (78324) |
| (78335) | 16.1 | 0.15 | 20071027 | 151.81038 | 186.89038 | 141.76849 | 2.43014  | 0.2174978 | 2.3624932 | 244 | 10 | 1991-2007 | 0.55 | M-v | 0 | MP | 55563  | (78335) |
| (78353) | 15.6 | 0.15 | 20071027 | 8.68047   | 6.76877   | 89.71763  | 7.12391  | 0.0648714 | 2.4553878 | 117 | 7  | 2000-2007 | 0.60 | M-v | 1 | MP | 55568  | (78353) |
| (78355) | 16.1 | 0.15 | 20071027 | 121.15398 | 82.96351  | 206.13335 | 8.63337  | 0.1144534 | 2.5461726 | 94  | 7  | 1993-2007 | 0.56 | M-v | 1 | MP | 55568  | (78355) |
| (78416) | 16.5 | 0.15 | 20071027 | 182.11025 | 274.64820 | 31.31432  | 4.48273  | 0.1427628 | 2.3480628 | 234 | 7  | 1997-2007 | 0.48 | M-v | 0 | MP | 55586  | (78416) |
| (78425) | 14.5 | 0.15 | 20071027 | 25.66445  | 289.77359 | 98.99658  | 7.96496  | 0.3150141 | 2.6713752 | 166 | 6  | 1998-2007 | 0.56 | M-v | 0 | MP | 55589  | (78425) |
| (78431) | 17.1 | 0.15 | 20071027 | 221.77408 | 355.87814 | 227.03451 | 2.98555  | 0.1484937 | 2.4444984 | 94  | 9  | 1991-2007 | 0.48 | M-v | 0 | MP | 55590  | (78431) |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------|---------|
| (78462) | 15.2 | 0.15 | 20071027 | 235.70517 | 315.62030 | 248.42012 | 3.43877  | 0.0716039 | 2.5166864 | 136 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 55601 | (78462) |
| (78509) | 14.6 | 0.15 | 20071027 | 239.96579 | 194.72315 | 359.48216 | 9.57552  | 0.1105571 | 2.6226888 | 194 | 7 | 1998-2007 | 0.55 | M-v | 0 | MP | 55616 | (78509) |
| (78578) | 16.6 | 0.15 | 20071027 | 154.94632 | 92.01105  | 178.49938 | 3.04330  | 0.0363311 | 2.5777390 | 94  | 7 | 1995-2007 | 0.44 | M-v | 0 | MP | 55638 | (78578) |
| (78588) | 15.0 | 0.15 | 20071027 | 137.41733 | 3.17570   | 296.07759 | 13.23504 | 0.1059124 | 2.6005384 | 163 | 7 | 2000-2007 | 0.51 | M-v | 1 | MP | 55641 | (78588) |
| (78630) | 15.0 | 0.15 | 20071027 | 180.82244 | 13.78582  | 242.75627 | 2.40288  | 0.0631698 | 2.6637088 | 280 | 7 | 1998-2007 | 0.53 | M-v | 0 | MP | 55654 | (78630) |
| (78655) | 14.6 | 0.15 | 20071027 | 228.27166 | 307.61246 | 261.32745 | 8.38633  | 0.0642385 | 2.6854658 | 140 | 7 | 1998-2007 | 0.54 | M-v | 0 | MP | 55662 | (78655) |
| (78670) | 16.1 | 0.15 | 20071027 | 247.99320 | 128.74422 | 126.63287 | 7.39500  | 0.0880648 | 2.3456955 | 113 | 7 | 1997-2007 | 0.56 | M-v | 1 | MP | 55667 | (78670) |
| (78695) | 14.3 | 0.15 | 20071027 | 165.89973 | 316.17124 | 289.43114 | 12.37327 | 0.0430766 | 2.7191216 | 133 | 7 | 1997-2007 | 0.50 | M-v | 0 | MP | 55675 | (78695) |
| (78702) | 14.4 | 0.15 | 20071027 | 138.22205 | 51.27713  | 255.17141 | 11.95032 | 0.1688013 | 2.5803041 | 158 | 7 | 2000-2007 | 0.54 | M-v | 1 | MP | 55677 | (78702) |
| (78710) | 16.1 | 0.15 | 20071027 | 245.23719 | 330.08501 | 291.92972 | 2.06058  | 0.1353381 | 2.3220396 | 120 | 5 | 1998-2007 | 0.52 | M-v | 1 | MP | 55680 | (78710) |
| (78777) | 14.5 | 0.15 | 20071027 | 153.80314 | 313.82254 | 316.74681 | 11.09679 | 0.1345323 | 2.7420768 | 207 | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 55702 | (78777) |
| (78791) | 15.1 | 0.15 | 20071027 | 21.75676  | 102.38667 | 304.87844 | 10.64739 | 0.1312197 | 2.7715710 | 160 | 7 | 1997-2007 | 0.58 | M-v | 0 | MP | 55705 | (78791) |
| (78856) | 16.7 | 0.15 | 20071027 | 65.69922  | 138.30208 | 241.55292 | 5.53591  | 0.1949878 | 2.2323140 | 121 | 5 | 1999-2005 | 0.58 | M-v | 1 | MP | 55726 | (78856) |
| (78890) | 16.0 | 0.15 | 20071027 | 116.26975 | 312.86262 | 337.49981 | 6.23550  | 0.1126434 | 2.3355818 | 73  | 6 | 1996-2007 | 0.58 | M-v | 1 | MP | 55738 | (78890) |
| (79030) | 16.3 | 0.15 | 20071027 | 2.01243   | 110.06846 | 321.33995 | 1.72751  | 0.1838117 | 2.4042199 | 140 | 7 | 1973-2007 | 0.64 | M-v | 1 | MP | 55783 | (79030) |
| (79047) | 15.6 | 0.15 | 20071027 | 43.76413  | 339.36680 | 66.80955  | 1.90444  | 0.1666330 | 2.3932570 | 165 | 7 | 1973-2007 | 0.56 | M-v | 1 | MP | 55789 | (79047) |
| (79073) | 16.9 | 0.15 | 20071027 | 121.72708 | 289.91506 | 4.35848   | 0.99626  | 0.1841708 | 2.3840739 | 97  | 7 | 1977-2007 | 0.55 | M-v | 0 | MP | 55797 | (79073) |
| (79109) | 15.8 | 0.15 | 20071027 | 173.14138 | 86.09617  | 188.47297 | 3.03737  | 0.0512138 | 2.7809344 | 190 | 7 | 1981-2007 | 0.55 | M-v | 0 | MP | 58152 | (79109) |
| (79298) | 16.4 | 0.15 | 20071027 | 326.72104 | 63.43593  | 134.11011 | 3.34382  | 0.1107131 | 2.3431316 | 123 | 7 | 1995-2007 | 0.42 | M-v | 0 | MP | 58222 | (79298) |
| (79320) | 15.3 | 0.15 | 20071027 | 317.30346 | 302.56293 | 211.33221 | 10.92226 | 0.1623687 | 2.6088326 | 120 | 7 | 1996-2007 | 0.62 | M-v | 1 | MP | 58230 | (79320) |
| (79470) | 15.6 | 0.15 | 20071027 | 221.34231 | 259.61674 | 322.25496 | 2.00454  | 0.1231441 | 3.0085735 | 94  | 7 | 1997-2007 | 0.52 | M-v | 0 | MP | 58285 | (79470) |
| (79495) | 14.1 | 0.15 | 20071027 | 170.24110 | 230.40951 | 41.93168  | 10.04133 | 0.0547544 | 3.1351298 | 240 | 7 | 1998-2007 | 0.53 | M-v | 0 | MP | 58297 | (79495) |
| (79510) | 14.3 | 0.15 | 20071027 | 235.03461 | 110.63805 | 95.76783  | 17.77513 | 0.1503827 | 3.2186778 | 175 | 7 | 1998-2007 | 0.57 | M-v | 0 | MP | 58303 | (79510) |
| (79656) | 15.5 | 0.15 | 20071027 | 55.96958  | 326.26401 | 60.44082  | 5.01864  | 0.1706038 | 2.5684683 | 131 | 7 | 1998-2007 | 0.61 | M-v | 1 | MP | 58364 | (79656) |
| (79665) | 14.4 | 0.15 | 20071027 | 350.47419 | 80.42908  | 356.88786 | 21.79967 | 0.0518988 | 2.6146851 | 168 | 7 | 1998-2007 | 0.60 | M-v | 1 | MP | 58367 | (79665) |
| (79820) | 16.1 | 0.15 | 20071027 | 59.42075  | 12.86213  | 19.63683  | 10.04942 | 0.2092091 | 2.5903295 | 141 | 7 | 1996-2007 | 0.58 | M-v | 1 | MP | 58428 | (79820) |
| (79871) | 13.6 | 0.15 | 20071027 | 53.72675  | 88.24690  | 11.92063  | 22.06327 | 0.0706514 | 2.5898924 | 188 | 7 | 1998-2007 | 0.54 | M-v | 1 | MP | 58448 | (79871) |
| (79878) | 15.5 | 0.15 | 20071027 | 63.71044  | 308.23655 | 99.22913  | 5.18774  | 0.1854347 | 2.5817105 | 270 | 7 | 1998-2007 | 0.54 | M-v | 1 | MP | 58450 | (79878) |
| (79881) | 16.4 | 0.15 | 20071027 | 15.96701  | 288.97009 | 155.34400 | 4.86191  | 0.2824161 | 2.6456297 | 72  | 7 | 1991-2007 | 0.67 | M-v | 1 | MP | 58452 | (79881) |
| (79918) | 14.4 | 0.15 | 20071027 | 11.14945  | 35.72760  | 94.93261  | 14.08641 | 0.1307799 | 2.6497293 | 207 | 7 | 1998-2007 | 0.61 | M-v | 0 | MP | 58466 | (79918) |
| (79922) | 13.9 | 0.15 | 20071027 | 239.52788 | 109.78479 | 131.20111 | 9.04087  | 0.0916938 | 2.7588184 | 179 | 9 | 1993-2007 | 0.57 | M-v | 0 | MP | 58468 | (79922) |
| (79949) | 14.8 | 0.15 | 20071027 | 283.81332 | 194.09676 | 356.84259 | 8.99491  | 0.0930230 | 2.7489913 | 202 | 7 | 1999-2007 | 0.61 | M-v | 1 | MP | 58479 | (79949) |
| (79953) | 15.3 | 0.15 | 20071027 | 344.34760 | 0.36580   | 128.79977 | 9.26304  | 0.0849063 | 2.7501446 | 150 | 7 | 1999-2007 | 0.51 | M-v | 0 | MP | 58481 | (79953) |
| (79955) | 15.2 | 0.15 | 20071027 | 8.30595   | 313.35863 | 153.08383 | 13.70070 | 0.0362200 | 2.7239913 | 150 | 7 | 1999-2007 | 0.62 | M-v | 0 | MP | 58481 | (79955) |
| (79979) | 13.8 | 0.15 | 20071027 | 245.65709 | 258.13302 | 20.01415  | 10.56926 | 0.0861724 | 2.6901574 | 348 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 58490 | (79979) |
| (79984) | 14.6 | 0.15 | 20071027 | 122.50218 | 315.84331 | 341.10800 | 9.61814  | 0.0902767 | 2.9803834 | 250 | 7 | 1999-2007 | 0.51 | M-v | 0 | MP | 58491 | (79984) |
| (79987) | 15.0 | 0.15 | 20071027 | 46.44284  | 66.29115  | 343.99739 | 5.38560  | 0.1215843 | 2.8065150 | 230 | 7 | 1971-2007 | 0.57 | M-v | 0 | MP | 58493 | (79987) |
| (79995) | 15.0 | 0.15 | 20071027 | 147.30728 | 73.69458  | 193.62171 | 15.61125 | 0.1128093 | 3.1164411 | 140 | 7 | 1999-2007 | 0.58 | M-v | 0 | MP | 58496 | (79995) |
| (80018) | 14.2 | 0.15 | 20071027 | 198.55651 | 165.74495 | 86.14328  | 12.99531 | 0.1033890 | 2.9798054 | 143 | 7 | 1999-2007 | 0.57 | M-v | 0 | MP | 58507 | (80018) |
| (80056) | 14.6 | 0.15 | 20071027 | 167.33473 | 213.18412 | 68.88747  | 10.63430 | 0.2374777 | 3.0753361 | 152 | 7 | 1999-2007 | 0.61 | M-v | 0 | MP | 58524 | (80056) |
| (80092) | 14.4 | 0.15 | 20071027 | 171.64419 | 128.50645 | 127.19877 | 10.13893 | 0.0422208 | 3.1717846 | 111 | 7 | 1999-2007 | 0.63 | M-v | 0 | MP | 58539 | (80092) |
| (80372) | 16.1 | 0.15 | 20071027 | 52.18299  | 326.05839 | 98.83021  | 7.50423  | 0.1040639 | 2.4007959 | 124 | 7 | 1999-2007 | 0.50 | M-v | 0 | MP | 58646 | (80372) |
| (80492) | 16.6 | 0.15 | 20071027 | 41.46167  | 297.99426 | 123.45268 | 3.08591  | 0.1826580 | 2.4619582 | 139 | 7 | 2000-2007 | 0.49 | M-v | 0 | MP | 58695 | (80492) |
| (80497) | 14.7 | 0.15 | 20071027 | 340.23958 | 319.18102 | 127.99488 | 28.92882 | 0.1155725 | 2.5866317 | 119 | 7 | 1999-2007 | 0.58 | M-v | 1 | MP | 58697 | (80497) |
| (80508) | 15.2 | 0.15 | 20071027 | 113.02723 | 70.01923  | 309.07053 | 1.55395  | 0.2276563 | 2.3911510 | 300 | 7 | 1991-2007 | 0.51 | M-v | 0 | MP | 58702 | (80508) |
| (80561) | 15.0 | 0.15 | 20071027 | 67.89631  | 265.25959 | 144.60088 | 6.24043  | 0.0847455 | 2.4010558 | 249 | 7 | 1999-2007 | 0.51 | M-v | 0 | MP | 58723 | (80561) |
| (80596) | 15.9 | 0.15 | 20071027 | 91.14882  | 133.56862 | 258.78093 | 1.49216  | 0.2431289 | 2.3280796 | 276 | 7 | 1992-2007 | 0.47 | M-v | 1 | MP | 58738 | (80596) |
| (80617) | 15.3 | 0.15 | 20071027 | 212.27427 | 151.83303 | 163.40403 | 8.34714  | 0.1259815 | 2.3017261 | 258 | 7 | 1999-2007 | 0.52 | M-v | 0 | MP | 58747 | (80617) |
| (80669) | 15.7 | 0.15 | 20071027 | 91.63934  | 321.47367 | 68.33707  | 7.53580  | 0.1667912 | 2.4231266 | 170 | 7 | 1999-2007 | 0.49 | M-v | 1 | MP | 58767 | (80669) |
| (80770) | 13.7 | 0.15 | 20071027 | 1.06560   | 276.19071 | 163.18274 | 26.52950 | 0.0646575 | 2.6206548 | 360 | 7 | 1999-2007 | 0.57 | M-v | 0 | MP | 58808 | (80770) |
| (80912) | 15.6 | 0.15 | 20071027 | 19.90549  | 255.98761 | 159.56561 | 2.10135  | 0.1208949 | 2.6333062 | 133 | 7 | 1998-2007 | 0.56 | M-v | 0 | MP | 58865 | (80912) |
| (80920) | 15.7 | 0.15 | 20071027 | 302.42189 | 237.45126 | 354.20264 | 3.39922  | 0.1487775 | 2.4615743 | 127 | 7 | 2000-2007 | 0.59 | M-v | 1 | MP | 58868 | (80920) |
| (81024) | 14.8 | 0.15 | 20071027 | 52.86581  | 1.92569   | 6.04898   | 12.45032 | 0.1342467 | 2.7590106 | 177 | 7 | 1998-2007 | 0.54 | M-v | 0 | MP | 58910 | (81024) |

|         |      |      |          |           |           |           |          |           |            |     |   |           |      |     |   |    |        |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|---|-----------|------|-----|---|----|--------|---------|
| (81025) | 16.1 | 0.15 | 20071027 | 267.13791 | 54.01930  | 172.68788 | 2.29054  | 0.1313102 | 2.5833042  | 156 | 7 | 1997-2007 | 0.52 | M-v | 1 | MP | 58910  | (81025) |
| (81093) | 15.6 | 0.15 | 20071027 | 43.82918  | 186.68936 | 207.96724 | 1.77160  | 0.1245622 | 2.6565855  | 240 | 7 | 1998-2007 | 0.55 | M-v | 0 | MP | 58938  | (81093) |
| (81101) | 14.3 | 0.15 | 20071027 | 200.09254 | 53.74651  | 224.72278 | 10.74704 | 0.1660589 | 2.6167623  | 191 | 7 | 2000-2007 | 0.47 | M-v | 0 | MP | 58941  | (81101) |
| (81113) | 14.6 | 0.15 | 20071027 | 147.63068 | 277.73507 | 22.87832  | 4.53325  | 0.0845900 | 2.6613070  | 267 | 7 | 1993-2007 | 0.51 | M-v | 0 | MP | 58946  | (81113) |
| (81142) | 14.3 | 0.15 | 20071027 | 74.07617  | 250.69854 | 112.70512 | 12.63359 | 0.1306576 | 2.7155898  | 224 | 7 | 1998-2007 | 0.56 | M-v | 0 | MP | 58957  | (81142) |
| (81143) | 14.2 | 0.15 | 20071027 | 137.20998 | 309.81687 | 56.09201  | 9.30643  | 0.0514965 | 2.5425306  | 410 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 58957  | (81143) |
| (81151) | 15.5 | 0.15 | 20071027 | 340.51730 | 89.22539  | 27.05197  | 12.16406 | 0.2482502 | 2.5623414  | 115 | 5 | 1992-2007 | 0.55 | M-v | 2 | MP | 128666 | (81151) |
| (81179) | 15.9 | 0.15 | 20071027 | 252.31399 | 158.90013 | 73.01108  | 6.95464  | 0.2181197 | 2.5704160  | 84  | 7 | 1992-2007 | 0.49 | M-v | 0 | MP | 58972  | (81179) |
| (81193) | 15.3 | 0.15 | 20071027 | 239.79538 | 14.36614  | 231.39731 | 7.43397  | 0.1680780 | 2.5977171  | 195 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 58976  | (81193) |
| (81201) | 15.6 | 0.15 | 20071027 | 222.59517 | 203.29512 | 18.87666  | 8.61450  | 0.0720993 | 2.7312527  | 130 | 7 | 1993-2007 | 0.45 | M-v | 0 | MP | 58979  | (81201) |
| (81203) | 15.0 | 0.15 | 20071027 | 274.59012 | 56.55988  | 138.50155 | 15.79779 | 0.1870729 | 2.6202735  | 184 | 7 | 2000-2007 | 0.57 | M-v | 1 | MP | 58979  | (81203) |
| (81217) | 15.5 | 0.15 | 20071027 | 337.80415 | 311.96913 | 151.82747 | 13.36506 | 0.1252824 | 2.6527963  | 137 | 7 | 1998-2007 | 0.58 | M-v | 0 | MP | 58985  | (81217) |
| (81247) | 15.2 | 0.15 | 20071027 | 22.18978  | 254.64126 | 170.80462 | 12.75437 | 0.1705999 | 2.6454570  | 195 | 7 | 1998-2007 | 0.61 | M-v | 0 | MP | 58998  | (81247) |
| (81248) | 15.9 | 0.15 | 20071027 | 224.59363 | 135.52496 | 114.39385 | 2.53692  | 0.2028817 | 2.6696832  | 173 | 7 | 1995-2007 | 0.53 | M-v | 0 | MP | 58999  | (81248) |
| (81275) | 16.1 | 0.15 | 20071027 | 45.18448  | 28.53984  | 12.33500  | 4.82454  | 0.0580205 | 2.6914367  | 94  | 7 | 1993-2007 | 0.55 | M-v | 1 | MP | 59011  | (81275) |
| (81278) | 15.5 | 0.15 | 20071027 | 25.70621  | 357.82399 | 42.08972  | 5.40681  | 0.0532408 | 2.7403611  | 128 | 7 | 1991-2007 | 0.52 | M-v | 0 | MP | 59012  | (81278) |
| (81284) | 14.6 | 0.15 | 20071027 | 120.72796 | 184.72253 | 151.04279 | 11.79805 | 0.1758673 | 2.6940787  | 196 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 59014  | (81284) |
| (81288) | 15.2 | 0.15 | 20071027 | 124.74782 | 187.90117 | 110.53722 | 5.23672  | 0.0804596 | 2.7853002  | 180 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 59016  | (81288) |
| (81304) | 15.5 | 0.15 | 20071027 | 61.03386  | 191.74145 | 195.09157 | 1.58786  | 0.1130720 | 2.6551588  | 258 | 7 | 1976-2007 | 0.55 | M-v | 0 | MP | 59022  | (81304) |
| (81308) | 15.7 | 0.15 | 20071027 | 77.63163  | 42.33089  | 352.42252 | 3.02923  | 0.1725692 | 2.5623630  | 267 | 7 | 1998-2007 | 0.46 | M-v | 1 | MP | 59024  | (81308) |
| (81322) | 15.8 | 0.15 | 20071027 | 64.84227  | 121.17491 | 320.79254 | 0.17712  | 0.0401810 | 2.51271374 | 247 | 7 | 2000-2007 | 0.49 | M-v | 0 | MP | 59029  | (81322) |
| (81330) | 15.4 | 0.15 | 20071027 | 75.57892  | 26.21908  | 16.37417  | 7.41434  | 0.1609965 | 2.5971491  | 368 | 7 | 1998-2007 | 0.57 | M-v | 1 | MP | 59033  | (81330) |
| (81348) | 14.7 | 0.15 | 20071027 | 95.67107  | 134.24219 | 216.41173 | 4.48780  | 0.0739517 | 2.7449726  | 186 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 59040  | (81348) |
| (81350) | 15.6 | 0.15 | 20071027 | 101.24427 | 104.26071 | 236.72037 | 1.17652  | 0.0357958 | 2.7532464  | 198 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 59041  | (81350) |
| (81352) | 15.0 | 0.15 | 20071027 | 32.21790  | 199.88165 | 188.74142 | 7.24922  | 0.0728378 | 2.8056749  | 193 | 7 | 1997-2007 | 0.58 | M-v | 0 | MP | 59042  | (81352) |
| (81357) | 14.1 | 0.15 | 20071027 | 116.13297 | 165.53427 | 185.32098 | 5.79998  | 0.0387841 | 2.6801279  | 388 | 7 | 2000-2007 | 0.56 | M-v | 0 | MP | 59044  | (81357) |
| (81379) | 15.2 | 0.15 | 20071027 | 204.68568 | 270.15608 | 24.20342  | 4.41588  | 0.2179646 | 2.6676273  | 243 | 7 | 2000-2007 | 0.58 | M-v | 0 | MP | 59053  | (81379) |
| (81432) | 14.6 | 0.15 | 20071027 | 194.11557 | 63.84847  | 182.74545 | 8.93431  | 0.1044924 | 2.7805503  | 296 | 7 | 2000-2007 | 0.56 | M-v | 0 | MP | 59076  | (81432) |
| (81436) | 16.1 | 0.15 | 20071027 | 28.83883  | 61.92758  | 35.45548  | 8.13985  | 0.1643934 | 2.5501281  | 195 | 7 | 1996-2007 | 0.55 | M-v | 1 | MP | 59079  | (81436) |
| (81456) | 15.3 | 0.15 | 20071027 | 45.37642  | 193.56962 | 189.71437 | 1.86581  | 0.1649474 | 2.7502778  | 202 | 7 | 1993-2007 | 0.48 | M-v | 0 | MP | 59087  | (81456) |
| (81457) | 15.5 | 0.15 | 20071027 | 63.61576  | 171.14863 | 196.41741 | 4.74465  | 0.1469359 | 2.7507786  | 179 | 7 | 1993-2007 | 0.47 | M-v | 0 | MP | 59088  | (81457) |
| (81472) | 14.6 | 0.15 | 20071027 | 72.62556  | 311.22298 | 88.97089  | 11.30392 | 0.1195614 | 2.6305189  | 187 | 9 | 1996-2007 | 0.50 | M-v | 1 | MP | 59094  | (81472) |
| (81492) | 14.8 | 0.15 | 20071027 | 237.66431 | 4.05411   | 239.06108 | 14.73789 | 0.1322635 | 2.5959377  | 158 | 7 | 2000-2007 | 0.55 | M-v | 1 | MP | 59103  | (81492) |
| (81504) | 16.1 | 0.15 | 20071027 | 276.85305 | 144.15582 | 71.46285  | 15.33665 | 0.1087644 | 2.6192845  | 93  | 7 | 2000-2007 | 0.56 | M-v | 1 | MP | 59108  | (81504) |
| (81514) | 14.8 | 0.15 | 20071027 | 100.05647 | 120.08188 | 229.75906 | 6.41182  | 0.1639979 | 2.6611888  | 401 | 7 | 1997-2007 | 0.52 | M-v | 0 | MP | 59112  | (81514) |
| (81530) | 15.1 | 0.15 | 20071027 | 270.86900 | 186.52960 | 45.52724  | 5.01614  | 0.1309435 | 2.6303000  | 233 | 7 | 2000-2007 | 0.54 | M-v | 1 | MP | 59119  | (81530) |
| (81542) | 14.9 | 0.15 | 20071027 | 205.21867 | 173.86715 | 163.51562 | 4.42354  | 0.3085767 | 2.5841885  | 389 | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 59124  | (81542) |
| (81574) | 15.5 | 0.15 | 20071027 | 21.99875  | 240.60518 | 190.45336 | 13.56639 | 0.1211447 | 2.6119071  | 188 | 7 | 1998-2007 | 0.56 | M-v | 0 | MP | 59138  | (81574) |
| (81598) | 15.7 | 0.15 | 20071027 | 260.24973 | 292.43546 | 331.27628 | 3.46622  | 0.0918688 | 2.5455750  | 183 | 7 | 1997-2007 | 0.53 | M-v | 0 | MP | 59149  | (81598) |
| (81603) | 15.0 | 0.15 | 20071027 | 48.21263  | 30.74670  | 55.32244  | 6.50136  | 0.0724370 | 2.6038371  | 203 | 7 | 2000-2007 | 0.54 | M-v | 1 | MP | 59151  | (81603) |
| (81608) | 16.3 | 0.15 | 20071027 | 251.80067 | 194.22763 | 58.51945  | 6.03335  | 0.0782108 | 2.5966670  | 137 | 7 | 1991-2007 | 0.55 | M-v | 0 | MP | 59152  | (81608) |
| (81611) | 14.3 | 0.15 | 20071027 | 134.90751 | 294.00981 | 55.15323  | 10.11056 | 0.1702341 | 2.7398038  | 338 | 7 | 2000-2007 | 0.59 | M-v | 0 | MP | 59154  | (81611) |
| (81630) | 14.8 | 0.15 | 20071027 | 278.61725 | 187.79004 | 77.77818  | 8.61789  | 0.1907608 | 2.5398557  | 227 | 7 | 2000-2007 | 0.52 | M-v | 1 | MP | 59162  | (81630) |
| (81641) | 14.4 | 0.15 | 20071027 | 150.16546 | 219.96040 | 121.22844 | 14.02118 | 0.1730117 | 2.6829646  | 177 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 59166  | (81641) |
| (81651) | 15.7 | 0.15 | 20071027 | 259.52973 | 281.48040 | 300.43132 | 9.22101  | 0.1494364 | 2.6264806  | 130 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 59170  | (81651) |
| (81664) | 15.9 | 0.15 | 20071027 | 124.86971 | 124.87573 | 225.90889 | 1.61456  | 0.0806344 | 2.6850999  | 159 | 7 | 1999-2007 | 0.54 | M-v | 1 | MP | 59175  | (81664) |
| (81672) | 14.7 | 0.15 | 20071027 | 298.46832 | 56.21510  | 169.46908 | 14.55765 | 0.0335264 | 2.5732065  | 254 | 7 | 2000-2007 | 0.50 | M-v | 1 | MP | 59178  | (81672) |
| (81680) | 14.8 | 0.15 | 20071027 | 259.28535 | 163.28785 | 100.21791 | 13.51800 | 0.1486574 | 2.5910167  | 259 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 59181  | (81680) |
| (81690) | 14.9 | 0.15 | 20071027 | 210.43152 | 218.65227 | 51.31430  | 12.16015 | 0.0541005 | 2.6789257  | 165 | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 59185  | (81690) |
| (81702) | 14.1 | 0.15 | 20071027 | 203.24077 | 311.31594 | 340.38563 | 6.97438  | 0.1537122 | 2.6456692  | 415 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 59190  | (81702) |
| (81710) | 15.0 | 0.15 | 20071027 | 200.91120 | 296.44908 | 19.01571  | 13.67284 | 0.1790708 | 2.6188224  | 214 | 7 | 1997-2007 | 0.51 | M-v | 1 | MP | 59194  | (81710) |
| (81720) | 15.1 | 0.15 | 20071027 | 262.00414 | 190.99247 | 10.83176  | 2.78271  | 0.1085957 | 2.7141945  | 137 | 7 | 1997-2007 | 0.57 | M-v | 1 | MP | 59199  | (81720) |
| (81732) | 15.2 | 0.15 | 20071027 | 294.18866 | 33.96057  | 180.89183 | 3.89824  | 0.1445211 | 2.6031017  | 270 | 7 | 2000-2007 | 0.50 | M-v | 0 | MP | 59204  | (81732) |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------|---------|
| (81740) | 14.4 | 0.15 | 20071027 | 24.71598  | 220.01690 | 242.96622 | 10.22645 | 0.1254152 | 2.6476001 | 281 | 7 | 2000-2007 | 0.53 | M-v | 1 | MP | 59207 | (81740) |
| (81747) | 14.7 | 0.15 | 20071027 | 323.14110 | 159.58776 | 35.99552  | 8.42091  | 0.1062419 | 2.5805035 | 235 | 9 | 1993-2007 | 0.55 | M-v | 1 | MP | 59210 | (81747) |
| (81755) | 14.9 | 0.15 | 20071027 | 219.22194 | 327.28038 | 303.65082 | 11.75657 | 0.2489982 | 2.6697118 | 104 | 7 | 1995-2007 | 0.53 | M-v | 1 | MP | 59214 | (81755) |
| (81764) | 15.0 | 0.15 | 20071027 | 349.22122 | 218.49471 | 239.66754 | 5.61268  | 0.0103217 | 2.7534000 | 303 | 7 | 2000-2007 | 0.50 | M-v | 0 | MP | 59217 | (81764) |
| (81777) | 14.6 | 0.15 | 20071027 | 262.63636 | 353.74127 | 241.23500 | 9.60305  | 0.1809998 | 2.5738865 | 253 | 7 | 2000-2007 | 0.50 | M-v | 0 | MP | 59222 | (81777) |
| (81783) | 15.2 | 0.15 | 20071027 | 210.52220 | 253.95585 | 6.85335   | 14.10279 | 0.0361555 | 2.6687954 | 147 | 7 | 1991-2007 | 0.59 | M-v | 0 | MP | 59225 | (81783) |
| (81829) | 14.9 | 0.15 | 20071027 | 260.83748 | 12.03854  | 208.58376 | 12.98374 | 0.1325911 | 2.6894530 | 245 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 59242 | (81829) |
| (81835) | 14.8 | 0.15 | 20071027 | 194.96596 | 178.86478 | 120.21197 | 12.33322 | 0.1688866 | 2.7459315 | 164 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 59245 | (81835) |
| (81881) | 15.6 | 0.15 | 20071027 | 318.08198 | 55.54324  | 131.24710 | 5.03392  | 0.1471287 | 2.6047536 | 168 | 7 | 2000-2007 | 0.48 | M-v | 1 | MP | 59262 | (81881) |
| (81919) | 13.2 | 0.15 | 20071027 | 68.85317  | 31.89242  | 317.04045 | 15.46396 | 0.2012968 | 3.2254868 | 308 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 59278 | (81919) |
| (82010) | 14.6 | 0.15 | 20071027 | 109.12784 | 196.43617 | 143.65053 | 6.12934  | 0.1691974 | 3.1923216 | 147 | 8 | 1994-2007 | 0.50 | M-v | 0 | MP | 59312 | (82010) |
| (82073) | 15.3 | 0.15 | 20071027 | 60.85733  | 320.29817 | 104.84528 | 5.90075  | 0.1302264 | 2.2254305 | 235 | 6 | 1998-2006 | 0.52 | M-v | 1 | MP | 77347 | (82073) |
| (82140) | 14.9 | 0.15 | 20071027 | 88.61017  | 140.17891 | 211.33116 | 3.91418  | 0.2005205 | 2.4747034 | 149 | 7 | 1999-2007 | 0.51 | M-v | 1 | MP | 59359 | (82140) |
| (82156) | 16.5 | 0.15 | 20071027 | 235.20230 | 167.12999 | 108.98113 | 10.37990 | 0.2061401 | 2.3389102 | 45  | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 59365 | (82156) |
| (82196) | 15.8 | 0.15 | 20071027 | 243.19422 | 211.19652 | 49.68166  | 3.28700  | 0.1521620 | 2.4031436 | 110 | 7 | 1998-2007 | 0.52 | M-v | 0 | MP | 59379 | (82196) |
| (82231) | 16.4 | 0.15 | 20071027 | 239.86251 | 154.09263 | 140.85509 | 2.75710  | 0.2189966 | 2.3390259 | 134 | 7 | 1998-2007 | 0.52 | M-v | 1 | MP | 59392 | (82231) |
| (82288) | 14.3 | 0.15 | 20071027 | 99.24986  | 91.19635  | 231.67807 | 8.03346  | 0.1636471 | 2.7295443 | 231 | 7 | 2000-2007 | 0.48 | M-v | 0 | MP | 59411 | (82288) |
| (82366) | 14.5 | 0.15 | 20071027 | 187.20610 | 206.26993 | 111.51090 | 6.06962  | 0.2806072 | 2.5626663 | 238 | 7 | 2000-2007 | 0.55 | M-v | 1 | MP | 59439 | (82366) |
| (82371) | 13.9 | 0.15 | 20071027 | 80.40084  | 111.38900 | 298.19410 | 11.85687 | 0.1792927 | 2.6886458 | 337 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 59441 | (82371) |
| (82381) | 14.7 | 0.15 | 20071027 | 83.89147  | 94.55525  | 254.98113 | 4.88965  | 0.0744226 | 2.7681820 | 193 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 59445 | (82381) |
| (82397) | 15.3 | 0.15 | 20071027 | 217.26844 | 231.92420 | 42.03496  | 3.04713  | 0.0966528 | 2.5506084 | 196 | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 59450 | (82397) |
| (82413) | 15.9 | 0.15 | 20071027 | 44.98966  | 115.84198 | 324.13355 | 12.90781 | 0.1330240 | 2.6158438 | 104 | 7 | 1997-2007 | 0.52 | M-v | 1 | MP | 59455 | (82413) |
| (82417) | 15.1 | 0.15 | 20071027 | 17.26382  | 82.56269  | 335.65073 | 5.80798  | 0.0325279 | 2.7760207 | 184 | 7 | 1960-2007 | 0.54 | M-v | 0 | MP | 59456 | (82417) |
| (82424) | 14.5 | 0.15 | 20071027 | 107.10488 | 216.72970 | 163.72118 | 22.04358 | 0.0491959 | 2.6215640 | 138 | 7 | 2000-2007 | 0.57 | M-v | 1 | MP | 59459 | (82424) |
| (82453) | 15.4 | 0.15 | 20071027 | 128.06798 | 291.53255 | 9.15743   | 8.00909  | 0.0820201 | 2.8119983 | 118 | 7 | 1992-2007 | 0.53 | M-v | 0 | MP | 59470 | (82453) |
| (82552) | 14.3 | 0.15 | 20071027 | 103.37892 | 36.34479  | 359.06049 | 4.06825  | 0.1725369 | 2.7264701 | 266 | 7 | 1999-2007 | 0.55 | M-v | 0 | MP | 59507 | (82552) |
| (82565) | 15.2 | 0.15 | 20071027 | 3.12533   | 130.54455 | 349.90390 | 21.87676 | 0.0559653 | 2.6553938 | 84  | 7 | 1998-2007 | 0.66 | M-v | 1 | MP | 59511 | (82565) |
| (82579) | 14.7 | 0.15 | 20071027 | 272.41291 | 359.86719 | 225.48070 | 14.72060 | 0.1280751 | 2.5529516 | 207 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 59516 | (82579) |
| (82583) | 14.6 | 0.15 | 20071027 | 59.20017  | 207.22871 | 143.86643 | 10.67681 | 0.0943818 | 3.0177438 | 138 | 7 | 1993-2007 | 0.55 | M-v | 0 | MP | 59518 | (82583) |
| (82628) | 14.4 | 0.15 | 20071027 | 30.27618  | 43.58142  | 20.38396  | 10.08375 | 0.0827033 | 2.9693251 | 311 | 6 | 1999-2007 | 0.57 | M-v | 0 | MP | 59535 | (82628) |
| (82645) | 15.2 | 0.15 | 20071027 | 284.52122 | 38.67346  | 163.64145 | 11.56796 | 0.0935188 | 2.6804596 | 223 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 59543 | (82645) |
| (82667) | 14.8 | 0.15 | 20071027 | 125.94808 | 42.88598  | 350.47724 | 21.97255 | 0.0945716 | 2.5536715 | 150 | 7 | 1999-2007 | 0.58 | M-v | 0 | MP | 59550 | (82667) |
| (82680) | 14.0 | 0.15 | 20071027 | 104.12654 | 3.44902   | 10.36459  | 8.44178  | 0.1002233 | 2.7258348 | 347 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 59555 | (82680) |
| (82699) | 14.9 | 0.15 | 20071027 | 262.73230 | 115.15423 | 108.35808 | 16.06257 | 0.0766367 | 2.6238196 | 107 | 7 | 2000-2007 | 0.54 | M-v | 0 | MP | 59563 | (82699) |
| (82730) | 15.1 | 0.15 | 20071027 | 94.21197  | 158.69617 | 176.00928 | 1.93964  | 0.0694271 | 2.9077806 | 198 | 7 | 2000-2007 | 0.52 | M-v | 1 | MP | 59574 | (82730) |
| (82759) | 15.3 | 0.15 | 20071027 | 206.93465 | 207.82393 | 68.77338  | 1.50766  | 0.0759540 | 2.6350139 | 173 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 59585 | (82759) |
| (82796) | 14.5 | 0.15 | 20071027 | 38.03203  | 292.13358 | 103.62531 | 3.60929  | 0.0681404 | 2.9130666 | 255 | 7 | 2000-2007 | 0.59 | M-v | 0 | MP | 59602 | (82796) |
| (82834) | 16.2 | 0.15 | 20071027 | 156.76759 | 345.76182 | 304.08891 | 4.72707  | 0.0443478 | 2.7683117 | 119 | 7 | 1960-2007 | 0.58 | M-v | 1 | MP | 59617 | (82834) |
| (82861) | 14.6 | 0.15 | 20071027 | 249.70254 | 285.80027 | 323.40868 | 11.85396 | 0.1297137 | 2.6201416 | 190 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 59626 | (82861) |
| (82876) | 15.5 | 0.15 | 20071027 | 151.13608 | 231.54428 | 108.52317 | 9.49492  | 0.0908167 | 2.6429656 | 116 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 59633 | (82876) |
| (82930) | 15.5 | 0.15 | 20071027 | 52.91729  | 113.35993 | 326.44557 | 5.01693  | 0.0246783 | 2.6731071 | 224 | 7 | 1998-2007 | 0.49 | M-v | 0 | MP | 59656 | (82930) |
| (82944) | 14.5 | 0.15 | 20071027 | 290.34489 | 239.56476 | 337.88572 | 12.35738 | 0.1421610 | 2.6479575 | 202 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 59662 | (82944) |
| (82966) | 14.7 | 0.15 | 20071027 | 272.06367 | 296.75857 | 295.62224 | 7.55196  | 0.1456464 | 2.5677988 | 163 | 7 | 2000-2007 | 0.55 | M-v | 1 | MP | 59670 | (82966) |
| (82987) | 15.3 | 0.15 | 20071027 | 196.66316 | 167.21841 | 138.16299 | 8.87541  | 0.1116456 | 2.7403384 | 139 | 7 | 1994-2007 | 0.54 | M-v | 0 | MP | 59678 | (82987) |
| (82992) | 14.5 | 0.15 | 20071027 | 46.44839  | 99.57562  | 340.19694 | 5.08467  | 0.0452380 | 2.7469378 | 369 | 7 | 1999-2007 | 0.57 | M-v | 0 | MP | 59680 | (82992) |
| (83039) | 14.1 | 0.15 | 20071027 | 114.67615 | 63.84625  | 251.30595 | 13.29518 | 0.1266037 | 2.9099287 | 168 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 59700 | (83039) |
| (83045) | 14.4 | 0.15 | 20071027 | 70.74246  | 8.17231   | 320.06905 | 12.68832 | 0.1009178 | 3.1621270 | 189 | 7 | 1998-2007 | 0.54 | M-v | 0 | MP | 59702 | (83045) |
| (83052) | 14.7 | 0.15 | 20071027 | 169.97179 | 303.20201 | 21.95417  | 4.34916  | 0.1935722 | 2.7606123 | 267 | 7 | 1996-2007 | 0.56 | M-v | 0 | MP | 59705 | (83052) |
| (83054) | 15.1 | 0.15 | 20071027 | 139.83487 | 146.75382 | 137.10475 | 5.09734  | 0.0307532 | 2.7919566 | 170 | 7 | 2000-2007 | 0.62 | M-v | 0 | MP | 59706 | (83054) |
| (83062) | 14.7 | 0.15 | 20071027 | 283.47404 | 227.19846 | 345.38677 | 7.19626  | 0.0315873 | 2.6668090 | 261 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 59709 | (83062) |
| (83143) | 14.7 | 0.15 | 20071027 | 149.13735 | 13.99531  | 295.91469 | 8.85837  | 0.2438359 | 2.7984226 | 141 | 7 | 1996-2007 | 0.53 | M-v | 1 | MP | 59740 | (83143) |
| (83148) | 14.7 | 0.15 | 20071027 | 85.15430  | 144.40840 | 187.91714 | 10.52241 | 0.0740943 | 2.9930624 | 241 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 59742 | (83148) |
| (83197) | 15.4 | 0.15 | 20071027 | 325.90356 | 43.49071  | 158.07181 | 15.18205 | 0.0164766 | 2.5264204 | 102 | 7 | 2000-2007 | 0.52 | M-v | 1 | MP | 59760 | (83197) |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------|---------|
| (83199) | 15.6 | 0.15 | 20071027 | 288.39230 | 248.77965 | 330.09284 | 6.58726  | 0.1619186 | 2.5506150 | 168 | 7 | 2000-2007 | 0.56 | M-v | 1 | MPC | 59761 | (83199) |
| (83248) | 16.0 | 0.15 | 20071027 | 183.36893 | 165.71063 | 139.19630 | 7.47716  | 0.0687752 | 2.7061187 | 100 | 7 | 1995-2007 | 0.52 | M-v | 0 | MPC | 59780 | (83248) |
| (83264) | 14.0 | 0.15 | 20071027 | 176.09676 | 331.33007 | 0.24727   | 6.86792  | 0.0877202 | 2.7048691 | 358 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPC | 59787 | (83264) |
| (83272) | 14.4 | 0.15 | 20071027 | 42.06506  | 192.15688 | 188.06955 | 3.63994  | 0.1032551 | 3.0217906 | 352 | 9 | 1991-2007 | 0.52 | M-v | 0 | MPC | 77347 | (83272) |
| (83308) | 15.1 | 0.15 | 20071027 | 299.56694 | 186.64041 | 353.38382 | 10.36780 | 0.0951809 | 2.7163248 | 128 | 7 | 1977-2007 | 0.62 | M-v | 1 | MPC | 59805 | (83308) |
| (83316) | 16.6 | 0.15 | 20071027 | 218.56412 | 155.98432 | 117.58535 | 4.73521  | 0.0847576 | 2.6477386 | 114 | 9 | 1991-2007 | 0.52 | M-v | 0 | MPC | 59808 | (83316) |
| (83332) | 14.4 | 0.15 | 20071027 | 69.40627  | 340.67363 | 53.71753  | 3.16876  | 0.0627320 | 2.8284939 | 292 | 7 | 1992-2007 | 0.53 | M-v | 0 | MPC | 59814 | (83332) |
| (83341) | 14.8 | 0.15 | 20071027 | 225.04144 | 157.14161 | 85.91159  | 4.81182  | 0.0421479 | 2.7914927 | 150 | 7 | 1997-2007 | 0.54 | M-v | 0 | MPC | 59817 | (83341) |
| (83367) | 15.0 | 0.15 | 20071027 | 0.09332   | 312.51681 | 146.13561 | 2.71074  | 0.0126391 | 2.9154588 | 223 | 7 | 1991-2007 | 0.51 | M-v | 0 | MPC | 59827 | (83367) |
| (83383) | 16.1 | 0.15 | 20071027 | 128.83700 | 303.34974 | 18.79479  | 2.62193  | 0.0476325 | 2.8612743 | 83  | 6 | 1977-2007 | 0.45 | M-v | 1 | MPC | 59834 | (83383) |
| (83391) | 14.8 | 0.15 | 20071027 | 196.91264 | 273.67588 | 340.63558 | 1.17603  | 0.0157890 | 2.8742190 | 356 | 7 | 1999-2007 | 0.49 | M-v | 0 | MPC | 59837 | (83391) |
| (83393) | 15.6 | 0.15 | 20071027 | 255.55070 | 346.04142 | 248.70330 | 1.02476  | 0.1027895 | 2.7002891 | 187 | 9 | 1997-2007 | 0.51 | M-v | 0 | MPC | 59838 | (83393) |
| (83402) | 14.8 | 0.15 | 20071027 | 176.88423 | 108.59931 | 171.95885 | 1.98975  | 0.0286268 | 2.8791673 | 256 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPC | 59842 | (83402) |
| (83409) | 14.6 | 0.15 | 20071027 | 198.92100 | 113.17851 | 149.96881 | 2.58439  | 0.0465683 | 2.8656375 | 266 | 7 | 1999-2007 | 0.54 | M-v | 0 | MPC | 59845 | (83409) |
| (83410) | 14.6 | 0.15 | 20071027 | 249.20098 | 59.85604  | 176.72314 | 9.23236  | 0.1023538 | 2.7579855 | 272 | 7 | 1999-2007 | 0.62 | M-v | 0 | MPC | 59846 | (83410) |
| (83464) | 14.3 | 0.15 | 20071027 | 105.90792 | 279.24394 | 56.21359  | 10.83863 | 0.1600087 | 2.9446522 | 276 | 7 | 1991-2007 | 0.53 | M-v | 1 | MPC | 59870 | (83464) |
| (83488) | 13.6 | 0.15 | 20071027 | 102.02337 | 304.78001 | 358.51894 | 16.36284 | 0.1084713 | 3.1280656 | 187 | 7 | 1999-2007 | 0.56 | M-v | 0 | MPC | 59879 | (83488) |
| (83527) | 14.3 | 0.15 | 20071027 | 286.94048 | 179.82400 | 335.98612 | 8.45366  | 0.0432978 | 2.9621293 | 188 | 7 | 1999-2007 | 0.58 | M-v | 0 | MPC | 59895 | (83527) |
| (83528) | 14.7 | 0.15 | 20071027 | 340.99138 | 277.66585 | 234.66143 | 2.55489  | 0.0359525 | 2.7693626 | 355 | 7 | 1999-2007 | 0.50 | M-v | 0 | MPC | 59895 | (83528) |
| (83532) | 14.4 | 0.15 | 20071027 | 308.33339 | 273.27950 | 271.61239 | 3.69583  | 0.0272098 | 2.7334516 | 304 | 9 | 1994-2007 | 0.57 | M-v | 0 | MPC | 59897 | (83532) |
| (83533) | 14.3 | 0.15 | 20071027 | 226.46519 | 285.44010 | 331.91660 | 8.06834  | 0.1069003 | 2.7721937 | 116 | 7 | 1999-2007 | 0.50 | M-v | 0 | MPC | 59898 | (83533) |
| (83538) | 13.8 | 0.15 | 20071027 | 271.87284 | 129.94602 | 28.42108  | 27.40697 | 0.1166307 | 3.1625186 | 222 | 7 | 1998-2007 | 0.59 | M-v | 0 | MPC | 59900 | (83538) |
| (83550) | 13.9 | 0.15 | 20071027 | 175.54918 | 93.89832  | 159.49003 | 10.35581 | 0.0584292 | 2.9730615 | 231 | 7 | 1999-2007 | 0.56 | M-v | 0 | MPC | 59905 | (83550) |
| (83555) | 15.5 | 0.15 | 20071027 | 78.51253  | 262.72795 | 161.77779 | 2.14913  | 0.0874068 | 2.6342985 | 217 | 7 | 1999-2007 | 0.48 | M-v | 0 | MPC | 59907 | (83555) |
| (83577) | 15.1 | 0.15 | 20071027 | 272.33713 | 190.26519 | 20.55491  | 13.87708 | 0.1367079 | 2.7896741 | 180 | 7 | 1999-2007 | 0.53 | M-v | 1 | MPC | 59915 | (83577) |
| (83610) | 16.4 | 0.15 | 20071027 | 124.89265 | 67.81588  | 230.21644 | 1.05327  | 0.0426383 | 3.0351399 | 79  | 7 | 1994-2007 | 0.38 | M-v | 0 | MPC | 59929 | (83610) |
| (83642) | 14.6 | 0.15 | 20071027 | 340.16969 | 260.16796 | 255.64547 | 10.70136 | 0.1433787 | 2.6542365 | 172 | 7 | 1999-2007 | 0.52 | M-v | 0 | MPC | 59939 | (83642) |
| (83653) | 14.8 | 0.15 | 20071027 | 296.87339 | 123.70675 | 34.91711  | 10.53710 | 0.0690458 | 2.9677863 | 168 | 7 | 1996-2007 | 0.57 | M-v | 0 | MPC | 59943 | (83653) |
| (83655) | 14.8 | 0.15 | 20071027 | 36.32113  | 26.89023  | 12.50003  | 6.53994  | 0.1409864 | 3.0564584 | 272 | 7 | 1993-2007 | 0.49 | M-v | 0 | MPC | 59943 | (83655) |
| (83664) | 14.3 | 0.15 | 20071027 | 277.97233 | 275.93100 | 355.35826 | 11.97172 | 0.2229475 | 2.5580936 | 212 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPC | 59947 | (83664) |
| (83688) | 14.7 | 0.15 | 20071027 | 208.87932 | 197.54346 | 93.32049  | 6.04486  | 0.0874927 | 2.7333637 | 177 | 7 | 1995-2007 | 0.55 | M-v | 0 | MPC | 59956 | (83688) |
| (83707) | 14.1 | 0.15 | 20071027 | 153.81723 | 234.30231 | 97.45175  | 6.43582  | 0.1160549 | 2.8311878 | 456 | 7 | 2000-2007 | 0.52 | M-v | 0 | MPC | 59964 | (83707) |
| (83718) | 15.1 | 0.15 | 20071027 | 79.12772  | 22.15081  | 354.40951 | 4.69861  | 0.0338890 | 2.9301606 | 209 | 7 | 1996-2007 | 0.56 | M-v | 0 | MPC | 59968 | (83718) |
| (83728) | 14.6 | 0.15 | 20071027 | 117.86461 | 309.32673 | 5.69826   | 8.91953  | 0.0616245 | 3.0593351 | 219 | 7 | 1990-2007 | 0.52 | M-v | 0 | MPC | 59972 | (83728) |
| (83732) | 14.0 | 0.15 | 20071027 | 338.38856 | 159.47578 | 295.47396 | 16.76951 | 0.0050321 | 3.0146136 | 97  | 7 | 1997-2007 | 0.55 | M-v | 0 | MPC | 59973 | (83732) |
| (83752) | 14.8 | 0.15 | 20071027 | 349.11053 | 348.44243 | 99.67881  | 12.28017 | 0.0944098 | 3.0604132 | 138 | 6 | 1998-2007 | 0.60 | M-v | 0 | MPC | 59980 | (83752) |
| (83756) | 14.7 | 0.15 | 20071027 | 359.46639 | 77.13822  | 41.74904  | 9.43158  | 0.1096999 | 2.7930888 | 145 | 7 | 1997-2007 | 0.55 | M-v | 0 | MPC | 59981 | (83756) |
| (83758) | 15.2 | 0.15 | 20071027 | 280.64541 | 62.49845  | 102.56125 | 6.09235  | 0.0593663 | 2.9872982 | 113 | 7 | 1994-2007 | 0.51 | M-v | 0 | MPC | 59982 | (83758) |
| (83788) | 14.1 | 0.15 | 20071027 | 19.69109  | 276.62970 | 123.12194 | 16.72880 | 0.1561739 | 3.1168227 | 120 | 7 | 1998-2007 | 0.51 | M-v | 0 | MPC | 59992 | (83788) |
| (83807) | 13.8 | 0.15 | 20071027 | 104.84878 | 210.33289 | 102.95578 | 13.80432 | 0.0802198 | 3.0080637 | 174 | 7 | 1998-2007 | 0.51 | M-v | 0 | MPC | 59998 | (83807) |
| (83814) | 14.5 | 0.15 | 20071027 | 38.85486  | 320.79349 | 132.53564 | 8.63562  | 0.0489984 | 2.7707127 | 196 | 7 | 1999-2007 | 0.53 | M-v | 0 | MPC | 60000 | (83814) |
| (83821) | 14.6 | 0.15 | 20071027 | 297.35637 | 129.80831 | 45.29278  | 10.38232 | 0.0297058 | 2.9618628 | 264 | 7 | 1999-2007 | 0.47 | M-v | 0 | MPC | 60003 | (83821) |
| (83833) | 14.0 | 0.15 | 20071027 | 113.12712 | 50.05582  | 257.21037 | 10.57269 | 0.1311007 | 3.0619587 | 220 | 7 | 1997-2007 | 0.49 | M-v | 0 | MPC | 60008 | (83833) |
| (83834) | 15.2 | 0.15 | 20071027 | 222.88891 | 326.99065 | 309.93507 | 6.99257  | 0.1113176 | 2.7323655 | 143 | 7 | 1994-2007 | 0.54 | M-v | 0 | MPC | 60008 | (83834) |
| (83851) | 14.1 | 0.15 | 20071027 | 210.30144 | 205.24318 | 76.11191  | 4.84933  | 0.0639415 | 2.8005292 | 362 | 7 | 1999-2007 | 0.50 | M-v | 0 | MPC | 60015 | (83851) |
| (83873) | 14.4 | 0.15 | 20071027 | 291.58163 | 110.39695 | 79.71818  | 14.95402 | 0.0275610 | 2.8666483 | 283 | 7 | 1999-2007 | 0.54 | M-v | 0 | MPC | 60023 | (83873) |
| (83906) | 14.2 | 0.15 | 20071027 | 263.44141 | 175.38024 | 49.26194  | 12.66072 | 0.0788393 | 2.7296070 | 292 | 7 | 1999-2007 | 0.55 | M-v | 0 | MPC | 60034 | (83906) |
| (83914) | 15.5 | 0.15 | 20071027 | 80.59523  | 319.28953 | 16.88172  | 1.18900  | 0.1980432 | 3.1079889 | 195 | 9 | 1991-2007 | 0.50 | M-v | 0 | MPC | 60037 | (83914) |
| (83919) | 14.2 | 0.15 | 20071027 | 179.09927 | 321.31954 | 5.9485    | 9.39065  | 0.2040189 | 2.7678449 | 226 | 7 | 1999-2007 | 0.50 | M-v | 0 | MPC | 60039 | (83919) |
| (83920) | 14.6 | 0.15 | 20071027 | 164.93841 | 221.96662 | 95.05611  | 21.76923 | 0.1322572 | 2.7871475 | 120 | 7 | 2000-2007 | 0.60 | M-v | 1 | MPC | 60039 | (83920) |
| (83925) | 14.8 | 0.15 | 20071027 | 85.99190  | 295.73762 | 55.12751  | 11.44471 | 0.0591609 | 3.1567068 | 114 | 7 | 1995-2007 | 0.58 | M-v | 0 | MPC | 60041 | (83925) |
| (83929) | 14.3 | 0.15 | 20071027 | 327.34605 | 171.77826 | 297.52076 | 9.81121  | 0.0503452 | 3.0925807 | 150 | 7 | 1998-2007 | 0.57 | M-v | 0 | MPC | 60042 | (83929) |
| (83965) | 13.6 | 0.15 | 20071027 | 165.74620 | 195.73565 | 69.57342  | 18.28665 | 0.1505575 | 3.0613192 | 147 | 7 | 1997-2007 | 0.58 | M-v | 0 | MPC | 60055 | (83965) |

|         |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |       |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------|---------|
| (83986) | 15.4 | 0.15 | 20071027 | 86.76240  | 177.21034 | 186.21942 | 2.33137  | 0.2593595 | 2.3003850 | 201 | 9 | 1968-2007 | 0.52 | M-v | 0 | MP | 60061 | (83986) |
| (83987) | 14.7 | 0.15 | 20071027 | 0.02713   | 121.75044 | 204.10347 | 14.97787 | 0.1569365 | 2.9914975 | 130 | 7 | 1997-2007 | 0.51 | M-v | 0 | MP | 60062 | (83987) |
| (84005) | 14.5 | 0.15 | 20071027 | 89.02753  | 125.02927 | 239.58972 | 14.46079 | 0.1323665 | 2.6173236 | 231 | 7 | 1998-2007 | 0.54 | M-v | 1 | MP | 60068 | (84005) |
| (84021) | 15.4 | 0.15 | 20071027 | 66.90988  | 38.52487  | 319.16534 | 14.07714 | 0.1303778 | 2.6798689 | 165 | 7 | 1991-2007 | 0.54 | M-v | 1 | MP | 60074 | (84021) |
| (84056) | 15.8 | 0.15 | 20071027 | 76.73116  | 240.28929 | 114.39297 | 14.21405 | 0.1143662 | 2.5652825 | 73  | 7 | 1995-2007 | 0.58 | M-v | 0 | MP | 60087 | (84056) |
| (84064) | 16.4 | 0.15 | 20071027 | 95.79167  | 39.16044  | 347.02454 | 1.80548  | 0.1187240 | 2.3894094 | 151 | 7 | 1999-2007 | 0.51 | M-v | 1 | MP | 60089 | (84064) |
| (84074) | 16.1 | 0.15 | 20071027 | 329.63385 | 342.97211 | 132.91994 | 5.94818  | 0.1384329 | 2.4629474 | 129 | 7 | 1999-2007 | 0.43 | M-v | 0 | MP | 60093 | (84074) |
| (84098) | 16.2 | 0.15 | 20071027 | 150.97654 | 173.35106 | 155.37600 | 1.82395  | 0.2166823 | 2.3983001 | 160 | 7 | 1994-2007 | 0.55 | M-v | 1 | MP | 60100 | (84098) |
| (84126) | 15.5 | 0.15 | 20071027 | 313.68264 | 336.60199 | 141.78602 | 9.97983  | 0.0744638 | 2.5528509 | 126 | 7 | 2000-2007 | 0.57 | M-v | 0 | MP | 60110 | (84126) |
| (84149) | 15.9 | 0.15 | 20071027 | 43.09119  | 281.78219 | 128.31525 | 5.74812  | 0.1648634 | 2.7181656 | 159 | 7 | 1999-2007 | 0.62 | M-v | 1 | MP | 60118 | (84149) |
| (84189) | 15.2 | 0.15 | 20071027 | 82.15467  | 355.32432 | 36.71320  | 3.68616  | 0.1039797 | 2.6081625 | 284 | 7 | 1998-2007 | 0.52 | M-v | 1 | MP | 60134 | (84189) |
| (84235) | 15.4 | 0.15 | 20071027 | 51.08509  | 352.78674 | 49.97480  | 6.29528  | 0.2339760 | 2.6186201 | 209 | 7 | 1996-2007 | 0.57 | M-v | 1 | MP | 60149 | (84235) |
| (84255) | 16.5 | 0.15 | 20071027 | 17.40820  | 248.57734 | 170.66820 | 2.77433  | 0.1723441 | 2.7212949 | 80  | 7 | 1993-2007 | 0.54 | M-v | 1 | MP | 60156 | (84255) |
| (84286) | 15.3 | 0.15 | 20071027 | 2.24584   | 60.91328  | 16.58322  | 11.35833 | 0.2004752 | 2.7499755 | 177 | 6 | 1995-2007 | 0.57 | M-v | 0 | MP | 60166 | (84286) |
| (84345) | 15.0 | 0.15 | 20071027 | 341.15289 | 121.94058 | 337.11600 | 8.88306  | 0.1565378 | 2.7299960 | 153 | 6 | 1994-2007 | 0.57 | M-v | 0 | MP | 60189 | (84345) |
| (84350) | 14.9 | 0.15 | 20071027 | 355.93233 | 182.02279 | 256.90862 | 3.46541  | 0.1508949 | 2.7438433 | 146 | 7 | 1993-2007 | 0.52 | M-v | 0 | MP | 60191 | (84350) |
| (84389) | 14.3 | 0.15 | 20071027 | 70.71787  | 232.91241 | 144.78699 | 15.72431 | 0.1386484 | 2.6341415 | 241 | 7 | 1998-2007 | 0.53 | M-v | 1 | MP | 60204 | (84389) |
| (84425) | 15.1 | 0.15 | 20071027 | 70.67026  | 300.47169 | 67.24014  | 15.46633 | 0.1443444 | 2.6440672 | 119 | 7 | 1998-2007 | 0.53 | M-v | 1 | MP | 60217 | (84425) |
| (84430) | 15.5 | 0.15 | 20071027 | 349.01088 | 143.69606 | 24.93120  | 14.25316 | 0.0844260 | 2.4212202 | 142 | 7 | 1998-2007 | 0.55 | M-v | 1 | MP | 60219 | (84430) |
| (84434) | 16.4 | 0.15 | 20071027 | 42.01768  | 294.80035 | 165.99061 | 4.24230  | 0.1925490 | 2.5371800 | 135 | 7 | 1996-2007 | 0.57 | M-v | 1 | MP | 60220 | (84434) |
| (84443) | 14.3 | 0.15 | 20071027 | 39.84945  | 79.77101  | 335.10235 | 13.32638 | 0.1610912 | 2.6469135 | 220 | 7 | 1989-2007 | 0.53 | M-v | 0 | MP | 60223 | (84443) |
| (84500) | 15.3 | 0.15 | 20071027 | 157.97726 | 342.26880 | 324.01955 | 4.54761  | 0.2020955 | 2.5386722 | 182 | 7 | 2000-2007 | 0.50 | M-v | 0 | MP | 60243 | (84500) |
| (84507) | 14.8 | 0.15 | 20071027 | 90.37153  | 132.54840 | 233.38476 | 12.41062 | 0.1754446 | 2.6301211 | 229 | 7 | 1998-2007 | 0.50 | M-v | 1 | MP | 60246 | (84507) |
| (84544) | 15.6 | 0.15 | 20071027 | 46.82951  | 260.56382 | 144.43690 | 12.16952 | 0.2515132 | 2.7151981 | 153 | 7 | 1999-2007 | 0.50 | M-v | 1 | MP | 60259 | (84544) |
| (84556) | 16.0 | 0.15 | 20071027 | 326.09799 | 185.00440 | 14.39033  | 4.68725  | 0.0873000 | 2.4104828 | 188 | 7 | 1998-2007 | 0.49 | M-v | 1 | MP | 60263 | (84556) |
| (84560) | 15.4 | 0.15 | 20071027 | 64.97902  | 91.12982  | 312.44124 | 2.31688  | 0.1807070 | 2.6306935 | 263 | 7 | 1993-2007 | 0.46 | M-v | 0 | MP | 60265 | (84560) |
| (84635) | 15.7 | 0.15 | 20071027 | 298.45532 | 105.90096 | 92.17106  | 2.09953  | 0.0360455 | 2.5252115 | 171 | 7 | 2000-2007 | 0.50 | M-v | 1 | MP | 60290 | (84635) |
| (84683) | 14.7 | 0.15 | 20071027 | 0.98028   | 92.89875  | 15.46320  | 12.68920 | 0.1564963 | 2.7006175 | 211 | 5 | 1998-2007 | 0.54 | M-v | 0 | MP | 60306 | (84683) |
| (84700) | 15.3 | 0.15 | 20071027 | 316.46775 | 252.61576 | 262.18714 | 11.92025 | 0.1219972 | 2.6920289 | 103 | 7 | 1998-2007 | 0.57 | M-v | 0 | MP | 60312 | (84700) |
| (84712) | 15.4 | 0.15 | 20071027 | 310.17347 | 271.25678 | 272.73946 | 15.54184 | 0.1901551 | 2.5956979 | 129 | 7 | 1998-2007 | 0.55 | M-v | 1 | MP | 60315 | (84712) |
| (84763) | 15.2 | 0.15 | 20071027 | 331.12657 | 150.44187 | 3.28061   | 15.83682 | 0.0919805 | 2.6168791 | 189 | 7 | 1993-2007 | 0.51 | M-v | 1 | MP | 60330 | (84763) |
| (84764) | 14.5 | 0.15 | 20071027 | 145.17183 | 220.83985 | 90.63411  | 13.72444 | 0.1674444 | 2.6925340 | 158 | 7 | 2000-2007 | 0.47 | M-v | 0 | MP | 60331 | (84764) |
| (84827) | 14.2 | 0.15 | 20071027 | 50.81401  | 296.08318 | 137.71564 | 23.23900 | 0.1250927 | 2.7812848 | 176 | 7 | 1999-2007 | 0.58 | M-v | 1 | MP | 60350 | (84827) |
| (84858) | 15.0 | 0.15 | 20071027 | 84.91827  | 257.23640 | 103.30049 | 11.23623 | 0.0200756 | 3.0051397 | 107 | 7 | 1994-2007 | 0.59 | M-v | 0 | MP | 60360 | (84858) |
| (84863) | 13.6 | 0.15 | 20071027 | 73.49507  | 346.70914 | 343.24190 | 18.52089 | 0.1195654 | 3.2197813 | 189 | 7 | 2000-2007 | 0.59 | M-v | 1 | MP | 60362 | (84863) |
| (84935) | 16.4 | 0.15 | 20071027 | 16.70709  | 269.33504 | 171.57090 | 2.00980  | 0.1940289 | 2.3736015 | 150 | 7 | 1997-2007 | 0.47 | M-v | 0 | MP | 60386 | (84935) |
| (84947) | 14.7 | 0.15 | 20071027 | 67.65141  | 299.93315 | 83.61372  | 13.28510 | 0.2025548 | 2.5145242 | 152 | 7 | 2000-2007 | 0.57 | M-v | 1 | MP | 60390 | (84947) |
| (84974) | 16.1 | 0.15 | 20071027 | 282.97675 | 271.20467 | 316.63888 | 4.27451  | 0.0750421 | 2.3320469 | 127 | 6 | 1997-2007 | 0.61 | M-v | 1 | MP | 73921 | (84974) |
| (85018) | 15.8 | 0.15 | 20071027 | 240.55188 | 104.21655 | 117.82751 | 5.64427  | 0.0372691 | 2.5690523 | 111 | 7 | 1993-2007 | 0.54 | M-v | 1 | MP | 60412 | (85018) |
| (85088) | 14.7 | 0.15 | 20071027 | 176.83700 | 226.38793 | 90.72169  | 4.10318  | 0.0768820 | 2.7722372 | 318 | 7 | 1973-2007 | 0.56 | M-v | 0 | MP | 60438 | (85088) |
| (85100) | 15.4 | 0.15 | 20071027 | 88.12583  | 123.11483 | 246.92136 | 3.07923  | 0.1993340 | 2.5843258 | 341 | 7 | 1977-2007 | 0.55 | M-v | 0 | MP | 60443 | (85100) |
| (85116) | 15.5 | 0.15 | 20071027 | 130.50587 | 243.82830 | 144.99303 | 4.86721  | 0.0817740 | 2.5487946 | 154 | 9 | 1977-2007 | 0.59 | M-v | 1 | MP | 60449 | (85116) |
| (85252) | 16.9 | 0.15 | 20071027 | 171.19352 | 279.59237 | 6.01336   | 4.91845  | 0.1718159 | 2.2007779 | 157 | 7 | 1993-2007 | 0.61 | M-v | 1 | MP | 62628 | (85252) |
| (85393) | 14.8 | 0.15 | 20071027 | 96.02158  | 35.54171  | 357.22564 | 5.83531  | 0.0745823 | 2.8128481 | 241 | 7 | 1996-2007 | 0.52 | M-v | 0 | MP | 62675 | (85393) |
| (85418) | 15.1 | 0.15 | 20071027 | 321.12557 | 30.04661  | 94.75624  | 7.38891  | 0.0776072 | 3.1707696 | 92  | 7 | 1996-2007 | 0.54 | M-v | 0 | MP | 62684 | (85418) |
| (85433) | 16.3 | 0.15 | 20071027 | 300.41289 | 345.25499 | 170.95108 | 2.95180  | 0.1331141 | 2.4060719 | 107 | 7 | 1997-2007 | 0.55 | M-v | 0 | MP | 62688 | (85433) |
| (85527) | 16.5 | 0.15 | 20071027 | 143.45281 | 341.90516 | 305.31451 | 1.05049  | 0.0378178 | 2.8272736 | 67  | 9 | 1997-2007 | 0.50 | M-v | 0 | MP | 62723 | (85527) |
| (85560) | 13.9 | 0.15 | 20071027 | 354.44298 | 116.96661 | 341.43870 | 9.92906  | 0.0675964 | 2.9745447 | 277 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 62736 | (85560) |
| (85590) | 14.9 | 0.15 | 20071027 | 298.55813 | 330.99918 | 181.68607 | 15.39907 | 0.1699562 | 3.0703727 | 78  | 7 | 1998-2007 | 0.54 | M-v | 0 | MP | 62748 | (85590) |
| (85594) | 16.4 | 0.15 | 20071027 | 276.97666 | 325.61359 | 183.09575 | 5.97851  | 0.0474520 | 2.3451448 | 197 | 7 | 1998-2007 | 0.49 | M-v | 0 | MP | 62750 | (85594) |
| (85598) | 14.1 | 0.15 | 20071027 | 16.27549  | 67.27162  | 35.77461  | 10.15170 | 0.0221850 | 2.2392681 | 499 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 73921 | (85598) |
| (85620) | 14.0 | 0.15 | 20071027 | 290.72281 | 24.81264  | 121.62456 | 6.69995  | 0.1327913 | 3.1863025 | 237 | 7 | 1998-2007 | 0.58 | M-v | 0 | MP | 62760 | (85620) |
| (85745) | 15.0 | 0.15 | 20071027 | 29.82373  | 0.62385   | 34.28312  | 12.10406 | 0.1839836 | 2.6319403 | 106 | 7 | 1998-2007 | 0.63 | M-v | 1 | MP | 62807 | (85745) |

|         |      |      |          |           |           |           |          |           |           |     |    |           |      |     |   |    |        |         |
|---------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|----|-----------|------|-----|---|----|--------|---------|
| (85757) | 15.4 | 0.15 | 20071027 | 355.36064 | 225.16640 | 231.44568 | 4.99377  | 0.0489195 | 2.5619339 | 144 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 62811  | (85757) |
| (85847) | 15.0 | 0.15 | 20071027 | 84.83938  | 236.17271 | 137.96072 | 14.16062 | 0.1675095 | 2.6080752 | 169 | 7  | 1998-2007 | 0.56 | M-v | 1 | MP | 62847  | (85847) |
| (85903) | 15.6 | 0.15 | 20071027 | 324.83153 | 264.57390 | 240.49620 | 7.40523  | 0.1590526 | 2.7583917 | 102 | 7  | 1999-2007 | 0.66 | M-v | 0 | MP | 62872  | (85903) |
| (85913) | 14.9 | 0.15 | 20071027 | 31.63649  | 13.86776  | 106.42215 | 14.74263 | 0.1462785 | 2.6293470 | 123 | 7  | 1999-2007 | 0.52 | M-v | 1 | MP | 62877  | (85913) |
| (85936) | 16.1 | 0.15 | 20071027 | 267.67600 | 94.16524  | 172.14320 | 4.77091  | 0.0689813 | 2.6637457 | 104 | 7  | 1999-2007 | 0.50 | M-v | 0 | MP | 62886  | (85936) |
| (85960) | 15.4 | 0.15 | 20071027 | 330.57105 | 182.94383 | 338.64005 | 8.12895  | 0.0840932 | 2.7453819 | 78  | 7  | 1999-2007 | 0.55 | M-v | 1 | MP | 62897  | (85960) |
| (85978) | 14.9 | 0.15 | 20071027 | 331.52925 | 26.30475  | 137.44022 | 8.04034  | 0.1477723 | 2.7814855 | 168 | 7  | 1999-2007 | 0.58 | M-v | 0 | MP | 62905  | (85978) |
| (85982) | 14.4 | 0.15 | 20071027 | 172.64676 | 350.89546 | 2.39925   | 8.91033  | 0.1162908 | 2.6901453 | 360 | 7  | 1999-2007 | 0.55 | M-v | 0 | MP | 62906  | (85982) |
| (85995) | 14.8 | 0.15 | 20071027 | 293.58758 | 91.61273  | 59.48503  | 12.91463 | 0.1252376 | 3.0093146 | 120 | 7  | 1999-2007 | 0.66 | M-v | 0 | MP | 62914  | (85995) |
| (86141) | 14.0 | 0.15 | 20071027 | 63.58147  | 90.02996  | 2.78827   | 21.97650 | 0.1196094 | 3.2035075 | 217 | 7  | 1999-2007 | 0.55 | M-v | 0 | MP | 62974  | (86141) |
| (86145) | 14.4 | 0.15 | 20071027 | 291.38748 | 250.33219 | 347.87600 | 4.90626  | 0.1015914 | 3.0487895 | 279 | 7  | 1999-2007 | 0.56 | M-v | 0 | MP | 62975  | (86145) |
| (86151) | 13.7 | 0.15 | 20071027 | 133.64620 | 48.21050  | 322.44035 | 18.87757 | 0.0511434 | 3.2354107 | 210 | 7  | 1999-2007 | 0.54 | M-v | 0 | MP | 62978  | (86151) |
| (86273) | 14.1 | 0.15 | 20071027 | 180.77458 | 347.76935 | 353.59866 | 8.76503  | 0.0961823 | 3.2382364 | 243 | 7  | 1999-2007 | 0.53 | M-v | 0 | MP | 63022  | (86273) |
| (86285) | 14.0 | 0.15 | 20071027 | 272.83748 | 223.34523 | 31.15820  | 9.70021  | 0.0282329 | 3.1682301 | 225 | 7  | 1999-2007 | 0.51 | M-v | 0 | MP | 63026  | (86285) |
| (86374) | 15.9 | 0.15 | 20071027 | 2.17055   | 92.92152  | 333.19116 | 18.12414 | 0.0952450 | 1.9310800 | 123 | 5  | 1999-2007 | 0.62 | M-v | 1 | MP | 63059  | (86374) |
| (86484) | 15.9 | 0.15 | 20071027 | 316.58767 | 245.33772 | 265.87768 | 4.19975  | 0.1283962 | 2.5613035 | 53  | 4  | 2000-2004 | 0.63 | M-v | 2 | MP | 63101  | (86484) |
| (86605) | 15.7 | 0.15 | 20071027 | 64.67240  | 318.22815 | 64.16386  | 4.12118  | 0.0043936 | 2.6401938 | 132 | 7  | 1998-2007 | 0.49 | M-v | 0 | MP | 63147  | (86605) |
| (86628) | 15.0 | 0.15 | 20071027 | 286.99380 | 88.77916  | 65.77095  | 4.69709  | 0.0210199 | 2.6720154 | 114 | 7  | 1998-2007 | 0.60 | M-v | 0 | MP | 63156  | (86628) |
| (86668) | 14.3 | 0.15 | 20071027 | 237.43266 | 253.71185 | 11.99673  | 16.97948 | 0.2205856 | 2.6194484 | 349 | 7  | 2000-2007 | 0.56 | M-v | 0 | MP | 63173  | (86668) |
| (86908) | 16.3 | 0.15 | 20071027 | 240.97842 | 79.31744  | 195.78840 | 1.43409  | 0.0510064 | 2.5856137 | 142 | 7  | 1998-2007 | 0.53 | M-v | 0 | MP | 63275  | (86908) |
| (86919) | 14.3 | 0.15 | 20071027 | 168.88102 | 258.68515 | 57.07595  | 12.64935 | 0.0709678 | 2.6782931 | 257 | 7  | 2000-2007 | 0.51 | M-v | 0 | MP | 63279  | (86919) |
| (86978) | 15.3 | 0.15 | 20071027 | 267.92206 | 153.34230 | 108.64334 | 13.38695 | 0.2399958 | 2.5668455 | 128 | 7  | 1994-2007 | 0.52 | M-v | 1 | MP | 63301  | (86978) |
| (87108) | 14.2 | 0.15 | 20071027 | 246.37934 | 356.88823 | 262.60433 | 11.38974 | 0.1226025 | 2.7569839 | 276 | 7  | 2000-2007 | 0.51 | M-v | 0 | MP | 63353  | (87108) |
| (87272) | 14.7 | 0.15 | 20071027 | 164.30538 | 31.06103  | 316.49390 | 2.29266  | 0.1174963 | 2.8084512 | 250 | 9  | 1991-2007 | 0.52 | M-v | 0 | MP | 63420  | (87272) |
| (87289) | 14.9 | 0.15 | 20071027 | 339.08642 | 357.81501 | 152.36665 | 2.57012  | 0.0076976 | 2.8672169 | 287 | 7  | 2000-2007 | 0.55 | M-v | 0 | MP | 63427  | (87289) |
| (87311) | 16.5 | 0.15 | 20071027 | 325.44248 | 343.30376 | 191.53531 | 7.68487  | 0.5123077 | 1.5897996 | 202 | 10 | 1982-2007 | 0.56 | M-v | 3 | MP | 128671 | (87311) |
| (87318) | 15.3 | 0.15 | 20071027 | 212.06139 | 165.69261 | 162.16694 | 8.70487  | 0.2008115 | 2.7422485 | 166 | 7  | 1994-2007 | 0.57 | M-v | 0 | MP | 63440  | (87318) |
| (87518) | 14.7 | 0.15 | 20071027 | 103.77069 | 258.49350 | 125.20307 | 10.33323 | 0.0711644 | 2.9780038 | 122 | 7  | 2000-2007 | 0.51 | M-v | 0 | MP | 63515  | (87518) |
| (87708) | 15.0 | 0.15 | 20071027 | 152.36717 | 54.14007  | 244.38081 | 7.19599  | 0.0170795 | 3.1663581 | 82  | 7  | 1995-2007 | 0.52 | M-v | 0 | MP | 63588  | (87708) |
| (87816) | 14.7 | 0.15 | 20071027 | 140.48597 | 81.26349  | 224.74654 | 4.13637  | 0.1082233 | 3.2361210 | 169 | 7  | 1999-2007 | 0.50 | M-v | 0 | MP | 63627  | (87816) |
| (87848) | 14.9 | 0.15 | 20071027 | 114.50710 | 233.57536 | 132.15129 | 8.42099  | 0.1715552 | 3.1081068 | 172 | 7  | 1991-2007 | 0.53 | M-v | 0 | MP | 63638  | (87848) |
| (87867) | 14.8 | 0.15 | 20071027 | 115.48644 | 276.16786 | 61.47598  | 5.61719  | 0.1269479 | 3.1327859 | 127 | 7  | 1992-2007 | 0.54 | M-v | 0 | MP | 63645  | (87867) |
| (88031) | 13.4 | 0.15 | 20071027 | 276.36202 | 134.38372 | 84.01946  | 11.88063 | 0.0862328 | 3.1977964 | 403 | 7  | 2000-2007 | 0.48 | M-v | 0 | MP | 63701  | (88031) |
| (88080) | 13.9 | 0.15 | 20071027 | 18.19706  | 84.72843  | 67.23069  | 16.51330 | 0.0304589 | 3.1004216 | 257 | 7  | 2000-2007 | 0.60 | M-v | 0 | MP | 63718  | (88080) |
| (88126) | 13.9 | 0.15 | 20071027 | 146.20388 | 260.32763 | 70.47147  | 17.22035 | 0.0439481 | 3.1467531 | 156 | 7  | 2000-2007 | 0.58 | M-v | 0 | MP | 63733  | (88126) |
| (88140) | 13.5 | 0.15 | 20071027 | 349.76309 | 69.98367  | 94.01400  | 14.21463 | 0.1074062 | 3.1241399 | 286 | 7  | 2000-2007 | 0.56 | M-v | 0 | MP | 63738  | (88140) |
| (88298) | 13.9 | 0.15 | 20071027 | 3.18888   | 226.97330 | 276.85462 | 16.86957 | 0.1091154 | 2.5870476 | 232 | 7  | 1998-2007 | 0.50 | M-v | 1 | MP | 63795  | (88298) |
| (88452) | 14.1 | 0.15 | 20071027 | 136.05172 | 305.58515 | 72.39556  | 15.31872 | 0.1941047 | 2.7338171 | 201 | 7  | 1992-2007 | 0.54 | M-v | 0 | MP | 63859  | (88452) |
| (88577) | 13.8 | 0.15 | 20071027 | 56.30110  | 50.33582  | 19.81985  | 13.45574 | 0.1682063 | 2.7473309 | 286 | 7  | 1999-2007 | 0.47 | M-v | 0 | MP | 63909  | (88577) |
| (88603) | 15.4 | 0.15 | 20071027 | 69.31428  | 266.83711 | 171.30752 | 9.09126  | 0.1521355 | 2.7569290 | 268 | 7  | 1996-2007 | 0.51 | M-v | 0 | MP | 63919  | (88603) |
| (88696) | 16.2 | 0.15 | 20071027 | 24.91023  | 6.99556   | 11.71359  | 9.40070  | 0.1351024 | 3.1000833 | 70  | 5  | 1996-2007 | 0.56 | M-v | 1 | MP | 128672 | (88696) |
| (88700) | 14.8 | 0.15 | 20071027 | 352.16547 | 179.57493 | 311.48126 | 8.25037  | 0.1048453 | 2.7792746 | 134 | 7  | 1993-2007 | 0.53 | M-v | 0 | MP | 63958  | (88700) |
| (88706) | 15.6 | 0.15 | 20071027 | 105.80747 | 96.46057  | 260.35915 | 1.82065  | 0.0313023 | 2.8482895 | 155 | 7  | 1992-2007 | 0.50 | M-v | 0 | MP | 63960  | (88706) |
| (88714) | 14.4 | 0.15 | 20071027 | 43.13801  | 63.20900  | 33.33899  | 9.39543  | 0.1284607 | 2.7869740 | 336 | 7  | 1999-2007 | 0.56 | M-v | 0 | MP | 63964  | (88714) |
| (88725) | 15.2 | 0.15 | 20071027 | 352.15215 | 335.40254 | 165.37986 | 3.83791  | 0.0641380 | 2.7623040 | 260 | 7  | 1999-2007 | 0.59 | M-v | 0 | MP | 63969  | (88725) |
| (88729) | 15.7 | 0.15 | 20071027 | 316.08808 | 82.38852  | 136.57929 | 1.15771  | 0.1146086 | 2.5803660 | 157 | 7  | 1998-2007 | 0.58 | M-v | 0 | MP | 63971  | (88729) |
| (88756) | 14.9 | 0.15 | 20071027 | 334.59872 | 309.88162 | 176.13151 | 1.79179  | 0.0513810 | 2.9261110 | 212 | 7  | 2000-2007 | 0.50 | M-v | 0 | MP | 63983  | (88756) |
| (88838) | 14.9 | 0.15 | 20071027 | 345.23689 | 15.56922  | 167.20357 | 11.45779 | 0.1194904 | 2.6386673 | 168 | 7  | 1999-2007 | 0.56 | M-v | 0 | MP | 64014  | (88838) |
| (88860) | 15.0 | 0.15 | 20071027 | 328.67812 | 47.68093  | 60.44508  | 4.61713  | 0.0813562 | 3.0794576 | 69  | 5  | 2001-2007 | 0.58 | M-v | 0 | MP | 64022  | (88860) |
| (88864) | 15.4 | 0.15 | 20071027 | 72.71914  | 215.43207 | 129.82221 | 2.78416  | 0.1461168 | 3.0851899 | 144 | 7  | 1994-2007 | 0.50 | M-v | 0 | MP | 64024  | (88864) |
| (88972) | 15.0 | 0.15 | 20071027 | 320.33982 | 173.04970 | 6.79831   | 4.50583  | 0.0566023 | 2.7577751 | 206 | 7  | 1999-2007 | 0.52 | M-v | 0 | MP | 64066  | (88972) |
| (88983) | 14.6 | 0.15 | 20071027 | 335.27676 | 270.19777 | 213.98837 | 10.89306 | 0.1354288 | 3.0665225 | 157 | 7  | 1998-2007 | 0.55 | M-v | 0 | MP | 64070  | (88983) |
| (89022) | 15.5 | 0.15 | 20071027 | 206.43704 | 346.38766 | 298.93520 | 3.70687  | 0.0289154 | 2.7783866 | 102 | 7  | 1994-2007 | 0.51 | M-v | 0 | MP | 64086  | (89022) |

|          |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                 |
|----------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-----------------|
| (89047)  | 14.6 | 0.15 | 20071027 | 8.83756   | 197.97701 | 249.93974 | 8.78604  | 0.0836580 | 3.0784108 | 139 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 64097 (89047)   |
| (89203)  | 15.1 | 0.15 | 20071027 | 235.61589 | 183.39060 | 112.06853 | 10.02304 | 0.0722015 | 2.6390043 | 179 | 7 | 1999-2007 | 0.63 | M-v | 0 | MP | 64156 (89203)   |
| (89234)  | 16.5 | 0.15 | 20071027 | 267.19033 | 81.34603  | 189.18606 | 1.61487  | 0.1185641 | 2.5956347 | 112 | 7 | 1999-2007 | 0.55 | M-v | 0 | MP | 64167 (89234)   |
| (89243)  | 15.4 | 0.15 | 20071027 | 142.99976 | 279.36442 | 70.44283  | 3.09564  | 0.0610595 | 2.8643548 | 187 | 7 | 2000-2007 | 0.52 | M-v | 0 | MP | 64170 (89243)   |
| (89265)  | 14.4 | 0.15 | 20071027 | 316.03410 | 32.36759  | 94.94339  | 15.01737 | 0.1215799 | 3.1723723 | 137 | 7 | 1998-2007 | 0.58 | M-v | 0 | MP | 64178 (89265)   |
| (89297)  | 14.7 | 0.15 | 20071027 | 39.50190  | 150.32597 | 248.58335 | 7.83581  | 0.0806971 | 3.1850522 | 197 | 6 | 2000-2007 | 0.54 | M-v | 0 | MP | 64190 (89297)   |
| (89339)  | 14.8 | 0.15 | 20071027 | 180.34707 | 333.11782 | 337.87057 | 5.22555  | 0.0142956 | 2.8072650 | 150 | 7 | 1999-2007 | 0.59 | M-v | 0 | MP | 64206 (89339)   |
| (89352)  | 14.2 | 0.15 | 20071027 | 72.70713  | 342.56332 | 85.12868  | 9.31369  | 0.2099762 | 2.7984751 | 287 | 7 | 1997-2007 | 0.47 | M-v | 0 | MP | 64211 (89352)   |
| (89378)  | 14.5 | 0.15 | 20071027 | 347.11999 | 322.43602 | 153.27895 | 13.77682 | 0.1082333 | 3.1284194 | 175 | 7 | 2000-2007 | 0.52 | M-v | 0 | MP | 64221 (89378)   |
| (89401)  | 15.7 | 0.15 | 20071027 | 254.34091 | 141.06862 | 51.95847  | 1.94718  | 0.1546672 | 3.1888208 | 83  | 7 | 1999-2007 | 0.46 | M-v | 0 | MP | 64228 (89401)   |
| (89449)  | 14.2 | 0.15 | 20071027 | 291.56485 | 74.14707  | 86.69338  | 19.19361 | 0.0531962 | 3.1207469 | 129 | 7 | 1993-2007 | 0.56 | M-v | 0 | MP | 64244 (89449)   |
| (89508)  | 14.4 | 0.15 | 20071027 | 123.19322 | 228.52393 | 104.72307 | 15.84369 | 0.0461461 | 3.0770225 | 104 | 7 | 1999-2007 | 0.56 | M-v | 0 | MP | 64264 (89508)   |
| (89526)  | 14.8 | 0.15 | 20071027 | 271.93865 | 153.73081 | 77.46397  | 6.18534  | 0.1042925 | 2.7671082 | 264 | 7 | 1999-2007 | 0.52 | M-v | 0 | MP | 64270 (89526)   |
| (89546)  | 15.6 | 0.15 | 20071027 | 137.54638 | 355.77878 | 1.85234   | 1.71640  | 0.0818399 | 2.8662887 | 130 | 7 | 1998-2007 | 0.49 | M-v | 0 | MP | 64277 (89546)   |
| (89605)  | 14.2 | 0.15 | 20071027 | 280.96128 | 310.97987 | 266.74349 | 15.54757 | 0.1624025 | 3.1195595 | 99  | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 64296 (89605)   |
| (89672)  | 14.7 | 0.15 | 20071027 | 234.20712 | 183.63130 | 68.79892  | 11.21528 | 0.0596285 | 2.9703377 | 216 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 64317 (89672)   |
| (89679)  | 13.8 | 0.15 | 20071027 | 81.12755  | 307.07642 | 78.60601  | 10.97160 | 0.1388869 | 3.0607978 | 252 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 64319 (89679)   |
| (89796)  | 14.3 | 0.15 | 20071027 | 236.16573 | 142.51747 | 132.63753 | 6.14299  | 0.1440673 | 3.1555093 | 210 | 7 | 1999-2007 | 0.60 | M-v | 0 | MP | 64358 (89796)   |
| (89808)  | 15.1 | 0.15 | 20071027 | 232.79962 | 68.03727  | 194.28121 | 0.85401  | 0.0762935 | 3.2687406 | 145 | 7 | 1999-2007 | 0.53 | M-v | 0 | MP | 64362 (89808)   |
| (89892)  | 14.8 | 0.15 | 20071027 | 231.14976 | 71.96491  | 205.08500 | 1.30270  | 0.1373101 | 3.1611568 | 110 | 7 | 1999-2007 | 0.51 | M-v | 0 | MP | 64388 (89892)   |
| (89902)  | 14.5 | 0.15 | 20071027 | 264.58079 | 142.96698 | 99.53226  | 6.43778  | 0.0783325 | 3.2373381 | 100 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 64391 (89902)   |
| (89928)  | 13.6 | 0.15 | 20071027 | 197.53844 | 59.44479  | 197.40543 | 3.58957  | 0.1266544 | 3.9425717 | 154 | 6 | 1997-2007 | 0.58 | M-v | 0 | MP | 64399 (89928)   |
| (90057)  | 15.1 | 0.15 | 20071027 | 161.19634 | 208.76194 | 126.14754 | 3.98746  | 0.1745066 | 2.5278199 | 145 | 7 | 2000-2007 | 0.50 | M-v | 1 | MP | 64442 (90057)   |
| (90077)  | 15.6 | 0.15 | 20071027 | 328.19420 | 282.96393 | 224.50643 | 7.62188  | 0.1514529 | 2.7159773 | 104 | 7 | 1999-2007 | 0.51 | M-v | 0 | MP | 64449 (90077)   |
| (90091)  | 14.5 | 0.15 | 20071027 | 121.33471 | 246.01764 | 89.60002  | 13.28105 | 0.0633551 | 2.6972468 | 87  | 7 | 2000-2007 | 0.57 | M-v | 1 | MP | 64454 (90091)   |
| (90111)  | 14.6 | 0.15 | 20071027 | 316.91906 | 248.81370 | 298.30440 | 10.41378 | 0.1365902 | 2.6785700 | 99  | 7 | 1999-2007 | 0.55 | M-v | 1 | MP | 64461 (90111)   |
| (90112)  | 14.8 | 0.15 | 20071027 | 283.81822 | 234.48960 | 288.83167 | 9.69755  | 0.1041375 | 3.0878908 | 117 | 7 | 1991-2007 | 0.56 | M-v | 0 | MP | 64461 (90112)   |
| (90187)  | 14.4 | 0.15 | 20071027 | 24.97886  | 353.05871 | 120.93946 | 16.04943 | 0.0607191 | 2.6956420 | 138 | 7 | 2000-2007 | 0.54 | M-v | 1 | MP | 64484 (90187)   |
| (90192)  | 13.7 | 0.15 | 20071027 | 275.82468 | 27.64279  | 155.21693 | 17.01745 | 0.1892030 | 3.1857730 | 167 | 7 | 1998-2007 | 0.54 | M-v | 1 | MP | 64486 (90192)   |
| (90411)  | 16.2 | 0.15 | 20071027 | 81.61589  | 278.86512 | 109.97195 | 7.84510  | 0.1739456 | 2.2890648 | 84  | 7 | 1999-2007 | 0.56 | M-v | 1 | MP | 64552 (90411)   |
| (90464)  | 15.7 | 0.15 | 20071027 | 260.44664 | 189.73542 | 48.54486  | 4.31489  | 0.1268190 | 2.4630832 | 120 | 7 | 2000-2007 | 0.41 | M-v | 0 | MP | 64569 (90464)   |
| (90508)  | 15.6 | 0.15 | 20071027 | 287.87236 | 93.42766  | 109.06722 | 13.52019 | 0.1403688 | 2.6562804 | 82  | 7 | 2000-2007 | 0.56 | M-v | 1 | MP | 64582 (90508)   |
| (90509)  | 15.2 | 0.15 | 20071027 | 301.19094 | 105.18249 | 80.79949  | 12.01400 | 0.1403088 | 2.6688427 | 108 | 7 | 1998-2007 | 0.55 | M-v | 1 | MP | 64583 (90509)   |
| (90554)  | 15.5 | 0.15 | 20071027 | 333.23093 | 4.66621   | 141.16497 | 14.84346 | 0.1884252 | 2.6595945 | 85  | 7 | 2000-2007 | 0.58 | M-v | 1 | MP | 64596 (90554)   |
| (90809)  | 16.5 | 0.15 | 20071027 | 244.32660 | 302.38355 | 239.87696 | 19.07900 | 0.0535626 | 1.9263438 | 90  | 6 | 1995-2007 | 0.55 | M-v | 1 | MP | 66475 (90809)   |
| (91774)  | 14.7 | 0.15 | 20071027 | 266.66490 | 286.30294 | 343.93385 | 6.10682  | 0.1925331 | 3.0305492 | 141 | 7 | 1999-2007 | 0.54 | M-v | 0 | MP | 66867 (91774)   |
| (91787)  | 13.7 | 0.15 | 20071027 | 269.39614 | 248.84645 | 346.43479 | 12.54484 | 0.1035251 | 3.2448875 | 181 | 7 | 1999-2007 | 0.61 | M-v | 0 | MP | 66872 (91787)   |
| (92026)  | 14.0 | 0.15 | 20071027 | 200.54050 | 340.71558 | 355.52885 | 16.88819 | 0.1091325 | 3.1996702 | 169 | 7 | 1999-2007 | 0.55 | M-v | 0 | MP | 66962 (92026)   |
| (95261)  | 14.0 | 0.15 | 20071027 | 317.16468 | 200.14062 | 26.50189  | 9.24333  | 0.2234243 | 3.0732577 | 104 | 7 | 1995-2007 | 0.60 | M-v | 1 | MP | 68203 (95261)   |
| (95679)  | 13.3 | 0.15 | 20071027 | 261.43288 | 277.68918 | 358.70091 | 25.09019 | 0.2396254 | 3.1532347 | 135 | 7 | 1999-2007 | 0.50 | M-v | 1 | MP | 68336 (95679)   |
| (95966)  | 15.6 | 0.15 | 20071027 | 244.44638 | 165.65033 | 105.90874 | 2.11441  | 0.1611474 | 3.1854589 | 73  | 7 | 1993-2007 | 0.51 | M-v | 0 | MP | 68427 (95966)   |
| (97601)  | 14.8 | 0.15 | 20071027 | 125.88046 | 332.65287 | 339.48129 | 3.40338  | 0.1123442 | 2.7496217 | 185 | 7 | 2000-2007 | 0.55 | M-v | 0 | MP | 71063 (97601)   |
| (98447)  | 15.6 | 0.15 | 20071027 | 72.31419  | 55.71373  | 280.84486 | 3.01869  | 0.1454818 | 2.2457608 | 137 | 7 | 1995-2007 | 0.52 | M-v | 0 | MP | 71408 (98447)   |
| (98611)  | 16.0 | 0.15 | 20071027 | 93.80799  | 1.62111   | 318.88955 | 3.47609  | 0.1849601 | 2.2577583 | 138 | 7 | 1995-2007 | 0.50 | M-v | 1 | MP | 71472 (98611)   |
| (99314)  | 15.8 | 0.15 | 20071027 | 250.14679 | 225.08687 | 20.38737  | 5.07173  | 0.0215495 | 2.7712288 | 93  | 7 | 1999-2007 | 0.55 | M-v | 0 | MP | 71729 (99314)   |
| (99334)  | 11.6 | 0.15 | 20071027 | 283.48237 | 216.61573 | 82.47523  | 29.66546 | 0.0837696 | 5.3118031 | 118 | 7 | 2000-2007 | 0.52 | M-v | 1 | MP | 116115 (99334)  |
| (99565)  | 14.5 | 0.15 | 20071027 | 79.95941  | 345.83275 | 5.94173   | 25.60219 | 0.2082096 | 2.2768630 | 190 | 6 | 1971-2006 | 0.52 | M-v | 1 | MP | 71822 (99565)   |
| (99592)  | 15.9 | 0.15 | 20071027 | 241.62503 | 196.91638 | 38.44088  | 3.78674  | 0.0994217 | 2.1796774 | 284 | 7 | 1992-2007 | 0.52 | M-v | 1 | MP | 71832 (99592)   |
| (100613) | 16.8 | 0.15 | 20071027 | 115.31630 | 91.41027  | 356.86642 | 8.32486  | 0.2311411 | 2.5286675 | 105 | 6 | 1997-2007 | 0.48 | M-v | 0 | MP | 78144 (100613)  |
| (101022) | 17.0 | 0.15 | 20071027 | 153.47104 | 107.96796 | 161.31812 | 5.11947  | 0.1876038 | 2.5453148 | 99  | 8 | 1993-2007 | 0.50 | M-v | 0 | MP | 78299 (101022)  |
| (101503) | 14.8 | 0.15 | 20071027 | 34.76942  | 332.48450 | 81.74394  | 13.11624 | 0.1783389 | 2.6417472 | 84  | 6 | 1998-2007 | 0.65 | M-v | 1 | MP | 78470 (101503)  |
| (101952) | 16.1 | 0.15 | 20071027 | 201.40561 | 209.70657 | 59.52746  | 7.94134  | 0.3167054 | 2.2534125 | 210 | 7 | 1996-2007 | 0.57 | M-v | 1 | MP | 78664 (101952)  |
| (102758) | 15.8 | 0.15 | 20071027 | 40.65513  | 36.50248  | 288.95866 | 4.38130  | 0.2850975 | 2.5440704 | 177 | 4 | 1999-2007 | 0.48 | M-v | 3 | MP | 128674 (102758) |



|          |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                |
|----------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|----------------|
| (103846) | 16.1 | 0.15 | 20071027 | 351.93566 | 317.61770 | 132.47171 | 1.59912  | 0.0662786 | 2.6096311 | 157 | 7 | 1994-2007 | 0.55 | M-v | 0 | MP | 79382 (103846) |
| (104031) | 15.2 | 0.15 | 20071027 | 293.93189 | 156.00732 | 345.45244 | 3.90839  | 0.0237544 | 2.6715639 | 286 | 7 | 1993-2007 | 0.54 | M-v | 0 | MP | 79450 (104031) |
| (104359) | 15.1 | 0.15 | 20071027 | 200.10250 | 80.98988  | 142.32288 | 9.60055  | 0.1028427 | 2.7717020 | 100 | 8 | 1995-2007 | 0.57 | M-v | 1 | MP | 79574 (104359) |
| (104438) | 15.7 | 0.15 | 20071027 | 76.10552  | 149.19575 | 188.73724 | 5.29438  | 0.0420044 | 2.7662667 | 112 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 79603 (104438) |
| (104683) | 14.5 | 0.15 | 20071027 | 83.80089  | 153.31988 | 226.00532 | 13.78110 | 0.0952484 | 2.6508208 | 226 | 7 | 1996-2007 | 0.53 | M-v | 1 | MP | 79699 (104683) |
| (105242) | 15.4 | 0.15 | 20071027 | 21.49961  | 307.25109 | 83.34025  | 5.52051  | 0.2177868 | 2.2535315 | 166 | 6 | 1997-2007 | 0.60 | M-v | 1 | MP | 79914 (105242) |
| (105306) | 14.8 | 0.15 | 20071027 | 66.50233  | 275.88143 | 140.24800 | 9.94424  | 0.1502022 | 3.0412321 | 121 | 7 | 1992-2007 | 0.49 | M-v | 0 | MP | 79938 (105306) |
| (105519) | 13.9 | 0.15 | 20071027 | 76.86257  | 119.02635 | 302.27619 | 9.40030  | 0.0440038 | 2.9691955 | 142 | 7 | 1998-2007 | 0.57 | M-v | 0 | MP | 80018 (105519) |
| (105599) | 15.7 | 0.15 | 20071027 | 81.81705  | 77.55482  | 246.50992 | 2.84906  | 0.1809110 | 2.2201340 | 158 | 7 | 1997-2007 | 0.56 | M-v | 1 | MP | 80051 (105599) |
| (105617) | 14.5 | 0.15 | 20071027 | 134.89188 | 125.96305 | 249.52244 | 11.52855 | 0.1253952 | 2.9624169 | 110 | 5 | 1997-2006 | 0.53 | M-v | 2 | MP | 80058 (105617) |
| (105631) | 16.7 | 0.15 | 20071027 | 356.24075 | 132.21013 | 308.12197 | 5.01779  | 0.1066638 | 2.2187429 | 59  | 5 | 2000-2007 | 0.52 | M-v | 1 | MP | 80064 (105631) |
| (105767) | 14.5 | 0.15 | 20071027 | 140.95938 | 115.31962 | 206.58389 | 9.36396  | 0.1002345 | 3.1392808 | 115 | 5 | 1993-2006 | 0.54 | M-v | 0 | MP | 80114 (105767) |
| (105961) | 15.0 | 0.15 | 20071027 | 105.09204 | 240.19879 | 133.65330 | 2.65550  | 0.2349887 | 3.1153125 | 146 | 7 | 1989-2007 | 0.45 | M-v | 0 | MP | 80188 (105961) |
| (106160) | 12.2 | 0.15 | 20071027 | 233.40752 | 225.28571 | 131.11212 | 15.15814 | 0.0450208 | 5.2600455 | 104 | 7 | 1998-2007 | 0.64 | M-v | 0 | MP | 80258 (106160) |
| (106289) | 16.0 | 0.15 | 20071027 | 328.79619 | 85.74271  | 42.11229  | 7.63024  | 0.0819423 | 2.2307362 | 115 | 6 | 2000-2007 | 0.54 | M-v | 1 | MP | 80307 (106289) |
| (106350) | 14.4 | 0.15 | 20071027 | 310.70930 | 58.00913  | 102.66148 | 24.19961 | 0.2644484 | 2.3158966 | 200 | 6 | 1998-2007 | 0.46 | M-v | 1 | MP | 80329 (106350) |
| (106567) | 15.1 | 0.15 | 20071027 | 24.10135  | 65.22217  | 323.74666 | 6.97704  | 0.2265010 | 2.3508846 | 229 | 6 | 1998-2007 | 0.54 | M-v | 1 | MP | 80409 (106567) |
| (106607) | 15.9 | 0.15 | 20071027 | 0.85422   | 123.79756 | 300.01761 | 3.78986  | 0.1191497 | 2.3034990 | 128 | 5 | 1998-2007 | 0.57 | M-v | 1 | MP | 80424 (106607) |
| (107094) | 16.2 | 0.15 | 20071027 | 338.40576 | 45.46345  | 58.81924  | 2.84627  | 0.1764682 | 2.2980449 | 89  | 5 | 1998-2007 | 0.58 | M-v | 1 | MP | 80605 (107094) |
| (107120) | 16.0 | 0.15 | 20071027 | 309.32216 | 247.37987 | 246.06847 | 3.44326  | 0.0260169 | 2.2824890 | 150 | 7 | 1998-2007 | 0.53 | M-v | 0 | MP | 80615 (107120) |
| (107212) | 15.9 | 0.15 | 20071027 | 5.67013   | 137.05223 | 281.26167 | 4.62784  | 0.1516825 | 2.3595777 | 86  | 5 | 1996-2007 | 0.57 | M-v | 1 | MP | 80650 (107212) |
| (107245) | 16.1 | 0.15 | 20071027 | 288.60307 | 56.12023  | 123.57899 | 3.98557  | 0.1888283 | 2.3406171 | 124 | 6 | 2001-2007 | 0.54 | M-v | 1 | MP | 80662 (107245) |
| (107330) | 16.1 | 0.15 | 20071027 | 308.07649 | 80.91412  | 64.15857  | 3.95071  | 0.1371663 | 2.3527534 | 97  | 5 | 2001-2007 | 0.52 | M-v | 1 | MP | 80694 (107330) |
| (107352) | 15.9 | 0.15 | 20071027 | 33.22217  | 267.78691 | 127.37221 | 5.70648  | 0.2034867 | 2.3436915 | 125 | 5 | 2001-2007 | 0.52 | M-v | 1 | MP | 80701 (107352) |
| (107676) | 16.6 | 0.15 | 20071027 | 213.40473 | 220.80082 | 23.94465  | 1.38139  | 0.1509683 | 2.4458042 | 206 | 7 | 1993-2007 | 0.44 | M-v | 1 | MP | 80818 (107676) |
| (107787) | 15.7 | 0.15 | 20071027 | 260.50029 | 231.91730 | 18.28204  | 5.46157  | 0.1501297 | 2.3471283 | 134 | 7 | 1998-2007 | 0.57 | M-v | 1 | MP | 80859 (107787) |
| (108057) | 16.6 | 0.15 | 20071027 | 296.90267 | 328.12588 | 187.87464 | 2.53050  | 0.1234763 | 2.4253936 | 63  | 5 | 1997-2006 | 0.48 | M-v | 0 | MP | 80954 (108057) |
| (108201) | 14.4 | 0.15 | 20071027 | 77.62724  | 99.22646  | 237.31899 | 4.53638  | 0.2115954 | 2.6962342 | 244 | 7 | 1998-2007 | 0.51 | M-v | 0 | MP | 81005 (108201) |
| (108470) | 14.6 | 0.15 | 20071027 | 70.85724  | 246.61690 | 84.59010  | 16.87479 | 0.1737108 | 2.7208270 | 66  | 6 | 1998-2007 | 0.72 | M-v | 1 | MP | 81098 (108470) |
| (108956) | 15.2 | 0.15 | 20071027 | 149.87462 | 230.84068 | 72.01361  | 8.07597  | 0.2085875 | 2.7118954 | 128 | 7 | 1996-2007 | 0.50 | M-v | 0 | MP | 81284 (108956) |
| (109746) | 15.6 | 0.15 | 20071027 | 135.57388 | 29.01223  | 349.44001 | 9.52036  | 0.0151889 | 2.6709275 | 133 | 7 | 1992-2007 | 0.55 | M-v | 0 | MP | 81605 (109746) |
| (110088) | 16.3 | 0.15 | 20071027 | 216.39400 | 334.20298 | 295.35842 | 4.26381  | 0.0654307 | 2.6945051 | 136 | 7 | 1995-2007 | 0.47 | M-v | 0 | MP | 81746 (110088) |
| (110092) | 15.8 | 0.15 | 20071027 | 119.41256 | 193.09010 | 246.28839 | 4.44788  | 0.1551395 | 2.5359048 | 201 | 5 | 1999-2007 | 0.54 | M-v | 0 | MP | 81748 (110092) |
| (110382) | 14.7 | 0.15 | 20071027 | 323.45669 | 209.02877 | 315.58416 | 8.54511  | 0.0623103 | 2.7812924 | 105 | 7 | 1994-2007 | 0.48 | M-v | 0 | MP | 81861 (110382) |
| (110492) | 14.8 | 0.15 | 20071027 | 123.57836 | 319.06243 | 78.74265  | 1.74591  | 0.0639042 | 2.6992584 | 265 | 7 | 1999-2007 | 0.52 | M-v | 0 | MP | 81905 (110492) |
| (110574) | 14.4 | 0.15 | 20071027 | 88.88961  | 337.32274 | 37.77480  | 11.23524 | 0.1079899 | 3.0087999 | 140 | 5 | 2001-2007 | 0.54 | M-v | 1 | MP | 81941 (110574) |
| (110722) | 14.7 | 0.15 | 20071027 | 110.34439 | 216.01971 | 95.20222  | 11.31674 | 0.0937592 | 3.0244981 | 149 | 7 | 1997-2007 | 0.47 | M-v | 0 | MP | 81993 (110722) |
| (110740) | 15.5 | 0.15 | 20071027 | 128.89681 | 129.18184 | 157.29560 | 5.39610  | 0.1318448 | 3.0975476 | 77  | 7 | 1995-2007 | 0.49 | M-v | 0 | MP | 81998 (110740) |
| (110745) | 15.0 | 0.15 | 20071027 | 155.81278 | 191.89616 | 174.54038 | 4.94197  | 0.1774684 | 2.7397541 | 231 | 7 | 1996-2007 | 0.51 | M-v | 1 | MP | 82000 (110745) |
| (110930) | 16.3 | 0.15 | 20071027 | 5.41097   | 320.39579 | 162.28330 | 2.31457  | 0.1052808 | 2.8843401 | 103 | 7 | 1991-2007 | 0.50 | M-v | 0 | MP | 82069 (110930) |
| (111225) | 15.9 | 0.15 | 20071027 | 218.24806 | 141.46583 | 113.10241 | 3.25728  | 0.0714688 | 2.9265997 | 77  | 7 | 1993-2007 | 0.47 | M-v | 0 | MP | 82175 (111225) |
| (111399) | 14.9 | 0.15 | 20071027 | 14.27511  | 9.97596   | 102.30643 | 11.22394 | 0.0209011 | 3.0943347 | 99  | 7 | 1998-2007 | 0.56 | M-v | 0 | MP | 82235 (111399) |
| (111619) | 16.0 | 0.15 | 20071027 | 79.88878  | 304.94536 | 28.54884  | 2.56896  | 0.1651319 | 2.1587604 | 129 | 7 | 1993-2007 | 0.48 | M-v | 1 | MP | 82308 (111619) |
| (111811) | 14.7 | 0.15 | 20071027 | 352.02116 | 78.48648  | 356.85716 | 24.16534 | 0.2905660 | 2.1955637 | 163 | 6 | 1984-2007 | 0.48 | M-v | 1 | MP | 82373 (111811) |
| (111912) | 15.7 | 0.15 | 20071027 | 62.91914  | 320.20066 | 34.59926  | 5.58685  | 0.1498538 | 2.2871806 | 104 | 5 | 2000-2007 | 0.54 | M-v | 1 | MP | 82406 (111912) |
| (112847) | 15.3 | 0.15 | 20071027 | 135.77621 | 297.49691 | 338.60053 | 8.51373  | 0.0047961 | 2.6623108 | 126 | 6 | 2000-2007 | 0.47 | M-v | 0 | MP | 82705 (112847) |
| (112889) | 16.1 | 0.15 | 20071027 | 159.38806 | 76.95224  | 194.53102 | 2.06886  | 0.1056084 | 2.5254068 | 109 | 6 | 1990-2006 | 0.58 | M-v | 1 | MP | 82718 (112889) |
| (112894) | 16.2 | 0.15 | 20071027 | 105.58107 | 173.84256 | 130.98087 | 1.87053  | 0.1749917 | 2.5694514 | 88  | 6 | 1998-2007 | 0.38 | M-v | 1 | MP | 82719 (112894) |
| (113726) | 16.8 | 0.15 | 20071027 | 150.17461 | 41.75128  | 225.51140 | 1.82974  | 0.1955892 | 2.6209100 | 67  | 7 | 1996-2007 | 0.42 | M-v | 0 | MP | 82996 (113726) |
| (114438) | 15.2 | 0.15 | 20071027 | 286.12542 | 78.40428  | 138.95927 | 14.39520 | 0.0907724 | 2.7379202 | 76  | 5 | 2001-2007 | 0.56 | M-v | 1 | MP | 83231 (114438) |
| (114629) | 14.8 | 0.15 | 20071027 | 177.93525 | 166.09603 | 133.14756 | 11.87123 | 0.0286246 | 3.0018658 | 104 | 5 | 2002-2006 | 0.55 | M-v | 0 | MP | 83295 (114629) |
| (114722) | 15.7 | 0.15 | 20071027 | 301.37286 | 8.52419   | 181.31733 | 2.26881  | 0.0558357 | 3.2018105 | 88  | 7 | 1993-2007 | 0.45 | M-v | 0 | MP | 83326 (114722) |
| (114949) | 16.1 | 0.15 | 20071027 | 28.58099  | 7.55948   | 16.18463  | 4.30302  | 0.2007004 | 2.3398674 | 79  | 5 | 1996-2007 | 0.57 | M-v | 1 | MP | 83398 (114949) |

|          |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                 |
|----------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-----------------|
| (115162) | 16.1 | 0.15 | 20071027 | 17.37431  | 242.01885 | 177.96366 | 1.88181  | 0.1989121 | 2.3443830 | 125 | 5 | 1998-2007 | 0.56 | M-v | 1 | MP | 83474 (115162)  |
| (116548) | 16.8 | 0.15 | 20071027 | 30.64309  | 290.01875 | 120.18105 | 3.30953  | 0.1588702 | 2.5635391 | 65  | 7 | 1996-2007 | 0.52 | M-v | 0 | MP | 83923 (116548)  |
| (116676) | 16.0 | 0.15 | 20071027 | 10.40834  | 335.14757 | 87.55258  | 9.08327  | 0.1336019 | 2.6517696 | 50  | 5 | 1998-2007 | 0.57 | M-v | 1 | MP | 83962 (116676)  |
| (116699) | 16.0 | 0.15 | 20071027 | 254.64719 | 210.22803 | 0.32370   | 1.01720  | 0.1441479 | 2.7577855 | 130 | 8 | 1995-2007 | 0.50 | M-v | 0 | MP | 83969 (116699)  |
| (117017) | 14.4 | 0.15 | 20071027 | 152.81029 | 229.29916 | 79.16185  | 23.59253 | 0.0923511 | 3.1526868 | 88  | 8 | 1995-2007 | 0.62 | M-v | 0 | MP | 84070 (117017)  |
| (117800) | 15.1 | 0.15 | 20071027 | 153.57396 | 111.71182 | 153.75176 | 6.54274  | 0.1010642 | 2.7241320 | 101 | 7 | 1993-2007 | 0.57 | M-v | 0 | MP | 84297 (117800)  |
| (118815) | 12.1 | 0.15 | 20071027 | 272.51162 | 278.37426 | 17.49953  | 1.97259  | 0.1763536 | 5.2715947 | 148 | 7 | 1999-2007 | 0.45 | M-v | 1 | MP | 88076 (118815)  |
| (118871) | 15.2 | 0.15 | 20071027 | 106.69895 | 75.48322  | 13.21343  | 5.58064  | 0.0917259 | 2.8604923 | 215 | 5 | 1997-2007 | 0.52 | M-v | 0 | MP | 88097 (118871)  |
| (119355) | 15.4 | 0.15 | 20071027 | 54.72427  | 356.89609 | 80.39514  | 1.79623  | 0.0465885 | 2.7969488 | 165 | 7 | 1994-2007 | 0.49 | M-v | 0 | MP | 88279 (119355)  |
| (119659) | 14.6 | 0.15 | 20071027 | 226.47226 | 224.42745 | 91.58117  | 11.81376 | 0.1921961 | 2.6719589 | 171 | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 88395 (119659)  |
| (119903) | 14.1 | 0.15 | 20071027 | 194.62387 | 208.90367 | 89.50585  | 11.17659 | 0.0648660 | 3.4998516 | 84  | 4 | 2002-2005 | 0.55 | M-v | 1 | MP | 88477 (119903)  |
| (121607) | 14.6 | 0.15 | 20071027 | 300.95667 | 236.55042 | 6.61121   | 0.27433  | 0.1180703 | 3.2078472 | 237 | 7 | 1996-2007 | 0.50 | M-v | 0 | MP | 90810 (121607)  |
| (122733) | 12.7 | 0.15 | 20071027 | 167.15733 | 206.89951 | 189.14997 | 22.01308 | 0.0417646 | 5.1184137 | 163 | 7 | 2000-2007 | 0.53 | M-v | 0 | MP | 91254 (122733)  |
| (125370) | 14.9 | 0.15 | 20071027 | 308.82602 | 260.59448 | 4.98771   | 2.09371  | 0.0891497 | 2.5166253 | 261 | 6 | 1997-2007 | 0.54 | M-v | 1 | MP | 92293 (125370)  |
| (125772) | 14.8 | 0.15 | 20071027 | 69.33603  | 296.81733 | 90.05447  | 11.38706 | 0.0061225 | 3.1517794 | 101 | 6 | 2001-2007 | 0.49 | M-v | 0 | MP | 92453 (125772)  |
| (126514) | 14.8 | 0.15 | 20071027 | 165.51816 | 305.38186 | 24.68387  | 3.80245  | 0.0585899 | 3.2222310 | 93  | 7 | 1996-2007 | 0.54 | M-v | 0 | MP | 92734 (126514)  |
| (126669) | 15.0 | 0.15 | 20071027 | 252.82010 | 95.98502  | 159.25411 | 1.27886  | 0.0999932 | 3.2558604 | 65  | 5 | 1998-2005 | 0.48 | M-v | 0 | MP | 92789 (126669)  |
| (127442) | 13.8 | 0.15 | 20071027 | 203.66022 | 212.23717 | 155.87040 | 6.11169  | 0.2908374 | 3.9563530 | 131 | 5 | 2002-2007 | 0.43 | M-v | 0 | MP | 93044 (127442)  |
| (127589) | 14.8 | 0.15 | 20071027 | 212.13861 | 235.51020 | 357.03222 | 14.05493 | 0.0077257 | 3.0910123 | 89  | 7 | 2000-2007 | 0.51 | M-v | 0 | MP | 93094 (127589)  |
| (129288) | 15.7 | 0.15 | 20071027 | 170.26401 | 114.15757 | 218.10267 | 0.50187  | 0.1468655 | 3.0193783 | 101 | 8 | 1993-2007 | 0.47 | M-v | 0 | MP | 93626 (129288)  |
| (130129) | 16.3 | 0.15 | 20071027 | 359.77410 | 291.84017 | 129.39456 | 23.70868 | 0.1161767 | 1.9197976 | 100 | 5 | 1999-2007 | 0.56 | M-v | 1 | MP | 98437 (130129)  |
| (130307) | 16.8 | 0.15 | 20071027 | 34.15493  | 202.43175 | 193.71606 | 3.02180  | 0.1904960 | 2.6630000 | 79  | 7 | 1998-2007 | 0.49 | M-v | 0 | MP | 98497 (130307)  |
| (130930) | 15.9 | 0.15 | 20071027 | 86.35296  | 259.98894 | 63.95449  | 7.45007  | 0.1392042 | 2.2940229 | 63  | 5 | 2000-2007 | 0.54 | M-v | 1 | MP | 98735 (130930)  |
| (131049) | 16.1 | 0.15 | 20071027 | 45.44096  | 124.45371 | 243.03888 | 3.81372  | 0.1700568 | 2.3315317 | 161 | 7 | 1993-2007 | 0.52 | M-v | 1 | MP | 98778 (131049)  |
| (132413) | 15.6 | 0.15 | 20071027 | 74.75434  | 239.70587 | 102.27487 | 3.16453  | 0.2355465 | 2.3295879 | 198 | 6 | 2000-2007 | 0.48 | M-v | 1 | MP | 99271 (132413)  |
| (132827) | 15.8 | 0.15 | 20071027 | 124.25952 | 4.42181   | 280.47407 | 6.76603  | 0.1821881 | 2.5934374 | 108 | 6 | 1998-2007 | 0.51 | M-v | 0 | MP | 99404 (132827)  |
| (133036) | 16.9 | 0.15 | 20071027 | 359.26609 | 112.50608 | 293.73618 | 17.03635 | 0.0982385 | 1.9124047 | 97  | 5 | 1999-2007 | 0.57 | M-v | 1 | MP | 99471 (133036)  |
| (133054) | 15.1 | 0.15 | 20071027 | 20.25045  | 4.74574   | 51.88876  | 22.87420 | 0.0727966 | 1.9253610 | 211 | 5 | 1999-2007 | 0.58 | M-v | 1 | MP | 99477 (133054)  |
| (133539) | 17.0 | 0.15 | 20071027 | 60.80538  | 287.73100 | 98.99406  | 4.78453  | 0.1758801 | 2.2776595 | 91  | 5 | 2001-2007 | 0.49 | M-v | 1 | MP | 99634 (133539)  |
| (133853) | 12.2 | 0.15 | 20071027 | 252.10217 | 0.89903   | 332.03560 | 15.87760 | 0.0772144 | 5.1682190 | 62  | 7 | 1999-2007 | 0.57 | M-v | 1 | MP | 99729 (133853)  |
| (133890) | 16.5 | 0.15 | 20071027 | 95.55588  | 59.03573  | 263.95596 | 18.12989 | 0.0739295 | 1.8923461 | 100 | 5 | 1999-2007 | 0.51 | M-v | 1 | MP | 99741 (133890)  |
| (134919) | 16.8 | 0.15 | 20071027 | 22.44088  | 137.31031 | 299.23354 | 3.95595  | 0.0853174 | 2.2782385 | 112 | 6 | 1996-2007 | 0.43 | M-v | 0 | MP | 102592 (134919) |
| (134936) | 16.5 | 0.15 | 20071027 | 294.57984 | 8.30380   | 139.78214 | 2.25996  | 0.1486142 | 2.3694812 | 180 | 6 | 1999-2007 | 0.53 | M-v | 0 | MP | 102598 (134936) |
| (134996) | 15.5 | 0.15 | 20071027 | 136.62378 | 253.10527 | 35.25356  | 16.05485 | 0.0999921 | 2.5557393 | 74  | 6 | 2001-2007 | 0.53 | M-v | 1 | MP | 102619 (134996) |
| (135141) | 14.5 | 0.15 | 20071027 | 330.63277 | 128.44117 | 323.55964 | 8.60920  | 0.0508381 | 3.0080413 | 184 | 6 | 1993-2007 | 0.57 | M-v | 0 | MP | 112712 (135141) |
| (135705) | 15.7 | 0.15 | 20071027 | 138.59877 | 127.95009 | 133.70661 | 12.52785 | 0.2821005 | 2.5470200 | 116 | 5 | 1998-2007 | 0.44 | M-v | 1 | MP | 102867 (135705) |
| (135802) | 15.5 | 0.15 | 20071027 | 0.68168   | 120.29201 | 302.11242 | 21.20644 | 0.1356209 | 2.6569145 | 115 | 5 | 1998-2007 | 0.54 | M-v | 1 | MP | 102900 (135802) |
| (135936) | 14.7 | 0.15 | 20071027 | 64.89951  | 67.44455  | 332.18326 | 12.69095 | 0.1773115 | 2.6160726 | 197 | 5 | 1998-2007 | 0.51 | M-v | 1 | MP | 102943 (135936) |
| (136066) | 14.4 | 0.15 | 20071027 | 357.18546 | 131.76267 | 299.10395 | 16.97717 | 0.2029596 | 3.0479946 | 132 | 5 | 2001-2007 | 0.58 | M-v | 1 | MP | 102986 (136066) |
| (136184) | 16.2 | 0.15 | 20071027 | 126.50737 | 20.54636  | 297.59994 | 3.80838  | 0.2456171 | 2.2403521 | 144 | 5 | 1993-2007 | 0.51 | M-v | 1 | MP | 103024 (136184) |
| (136211) | 16.2 | 0.15 | 20071027 | 15.73915  | 138.81414 | 286.20195 | 5.30694  | 0.1072659 | 2.4107747 | 90  | 5 | 1995-2007 | 0.52 | M-v | 1 | MP | 103033 (136211) |
| (136793) | 18.3 | 0.15 | 20071027 | 18.11698  | 36.94437  | 296.32980 | 17.37871 | 0.4652394 | 1.1470615 | 129 | 8 | 1997-2007 | 0.59 | M-v | 2 | MP | 104494 (136793) |
| (137028) | 15.8 | 0.15 | 20071027 | 155.89205 | 274.31573 | 6.45050   | 3.26465  | 0.1675163 | 2.5863910 | 149 | 6 | 1998-2007 | 0.55 | M-v | 0 | MP | 104586 (137028) |
| (137049) | 15.6 | 0.15 | 20071027 | 27.56835  | 93.48343  | 351.40800 | 4.73983  | 0.2099912 | 2.5866622 | 186 | 5 | 1998-2007 | 0.56 | M-v | 0 | MP | 104597 (137049) |
| (138852) | 20.2 | 0.15 | 20071027 | 79.39600  | 225.15088 | 61.00165  | 21.47349 | 0.2993161 | 1.0015807 | 278 | 8 | 2000-2007 | 0.45 | M-v | 3 | MP | 128678 (138852) |
| (138893) | 17.8 | 0.15 | 20071027 | 56.40770  | 341.28049 | 265.32835 | 18.33235 | 0.7436954 | 1.1729165 | 155 | 7 | 2000-2007 | 0.57 | M-v | 3 | MP | 128678 (138893) |
| (138900) | 16.2 | 0.15 | 20071027 | 12.80733  | 351.02046 | 121.23670 | 7.43775  | 0.0625444 | 2.2487528 | 105 | 5 | 2000-2007 | 0.51 | M-v | 1 | MP | 105329 (138900) |
| (138947) | 18.4 | 0.15 | 20071027 | 135.00849 | 359.96079 | 270.95918 | 12.84596 | 0.2537456 | 1.1189067 | 120 | 4 | 2001-2007 | 0.55 | M-v | 2 | MP | 105346 (138947) |
| (139154) | 16.1 | 0.15 | 20071027 | 352.23868 | 199.09547 | 252.06052 | 4.05096  | 0.1528540 | 2.3922665 | 142 | 6 | 1999-2007 | 0.56 | M-v | 1 | MP | 105424 (139154) |
| (139929) | 15.3 | 0.15 | 20071027 | 265.65352 | 357.19056 | 166.01635 | 11.66183 | 0.0885106 | 2.9724149 | 125 | 5 | 1999-2007 | 0.60 | M-v | 1 | MP | 105715 (139929) |
| (140021) | 14.9 | 0.15 | 20071027 | 25.85546  | 11.57789  | 26.85024  | 13.29066 | 0.0644206 | 3.0909128 | 108 | 5 | 2001-2007 | 0.51 | M-v | 1 | MP | 105750 (140021) |
| (140048) | 14.5 | 0.15 | 20071027 | 346.45872 | 199.38961 | 333.57317 | 11.81277 | 0.2082834 | 2.5663310 | 125 | 6 | 1998-2007 | 0.49 | M-v | 1 | MP | 105762 (140048) |
| (140068) | 13.6 | 0.15 | 20071027 | 344.69676 | 71.57799  | 43.55262  | 25.99491 | 0.2255851 | 3.2010209 | 208 | 5 | 2000-2007 | 0.58 | M-v | 0 | MP | 105769 (140068) |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                             |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-----------------------------|
| (140333)              | 19.0 | 0.15 | 20071027 | 259.11058 | 199.02063 | 12.89894  | 19.03692 | 0.4814405 | 0.9619536 | 146 | 6 | 2001-2007 | 0.52 | M-v | 3 | MPC | 105867(140333)              |
| (140871)              | 14.8 | 0.15 | 20071027 | 21.18066  | 42.71983  | 30.10426  | 8.62401  | 0.1184823 | 3.1242155 | 111 | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 106066(140871)              |
| (140998)              | 14.4 | 0.15 | 20071027 | 40.39038  | 291.37549 | 108.16336 | 7.34706  | 0.1346675 | 3.1607642 | 88  | 5 | 2001-2007 | 0.59 | M-v | 1 | MPC | 106115(140998)              |
| (141027)              | 15.5 | 0.15 | 20071027 | 201.10785 | 212.60105 | 45.98493  | 2.69770  | 0.0481309 | 2.9965422 | 101 | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 106125(141027)              |
| (141079)              | 18.1 | 0.15 | 20071027 | 123.46584 | 0.83522   | 251.48579 | 28.53396 | 0.8282300 | 1.1646033 | 107 | 8 | 1998-2007 | 0.57 | M-v | 3 | MPC | 128678(141079)              |
| (141904)              | 15.2 | 0.15 | 20071027 | 177.01064 | 31.28929  | 196.94043 | 12.26960 | 0.2009668 | 2.5496051 | 65  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 106429(141904)              |
| (141921)              | 15.8 | 0.15 | 20071027 | 207.15710 | 73.70547  | 146.03103 | 14.58695 | 0.0155804 | 2.5507669 | 90  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 106435(141921)              |
| (141971)              | 16.3 | 0.15 | 20071027 | 126.14425 | 104.63832 | 185.40058 | 2.88373  | 0.1967776 | 2.5428598 | 102 | 6 | 1998-2007 | 0.48 | M-v | 1 | MPC | 106453(141971)              |
| (141977)              | 16.4 | 0.15 | 20071027 | 90.73126  | 22.08374  | 6.52908   | 6.13237  | 0.1174623 | 2.4050347 | 184 | 5 | 1997-2007 | 0.38 | M-v | 1 | MPC | 106456(141977)              |
| (142277)              | 16.1 | 0.15 | 20071027 | 40.82771  | 97.38622  | 298.83923 | 7.52423  | 0.2012171 | 2.5850903 | 84  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 106566(142277)              |
| (142961)              | 14.9 | 0.15 | 20071027 | 298.16458 | 111.05010 | 69.85115  | 16.78150 | 0.2132306 | 2.7226698 | 172 | 5 | 1999-2007 | 0.56 | M-v | 1 | MPC | 106820(142961)              |
| (143175)              | 14.8 | 0.15 | 20071027 | 347.84520 | 131.76183 | 0.11012   | 13.06288 | 0.2288488 | 2.7159179 | 173 | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 106898(143175)              |
| (143571)              | 15.4 | 0.15 | 20071027 | 349.12750 | 99.33355  | 111.37597 | 13.86599 | 0.1565781 | 2.7876017 | 176 | 6 | 1999-2007 | 0.50 | M-v | 1 | MPC | 107029(143571)              |
| (143627)              | 14.8 | 0.15 | 20071027 | 353.34643 | 266.99475 | 226.29285 | 14.78655 | 0.2296612 | 3.1108058 | 136 | 5 | 2001-2007 | 0.48 | M-v | 0 | MPC | 107046(143627)              |
| (144121)              | 15.5 | 0.15 | 20071027 | 351.52658 | 271.98314 | 169.75666 | 13.19412 | 0.0827538 | 2.6884579 | 72  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 107212(144121)              |
| (145054)              | 16.5 | 0.15 | 20071027 | 270.42510 | 86.92945  | 112.92541 | 5.09687  | 0.0687332 | 2.2548349 | 95  | 6 | 1998-2007 | 0.66 | M-v | 1 | MPC | 107509(145054)              |
| (145086)              | 15.4 | 0.15 | 20071027 | 148.00801 | 254.12685 | 36.47579  | 4.72044  | 0.2172359 | 2.6997373 | 129 | 5 | 2002-2007 | 0.44 | M-v | 0 | MPC | 107519(145086)              |
| (145581)              | 16.4 | 0.15 | 20071027 | 83.89091  | 277.62746 | 61.40466  | 0.52221  | 0.0760484 | 2.8063318 | 55  | 6 | 1998-2007 | 0.44 | M-v | 0 | MPC | 107662(145581)              |
| (146272)              | 15.3 | 0.15 | 20071027 | 218.32394 | 263.25627 | 27.80053  | 7.14917  | 0.1541190 | 2.3081184 | 147 | 5 | 2001-2007 | 0.59 | M-v | 1 | MPC | 111639(146272)              |
| (146729)              | 14.3 | 0.15 | 20071027 | 333.92063 | 242.33552 | 282.20252 | 16.30141 | 0.1112728 | 3.1454256 | 144 | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 111798(146729)              |
| (147909)              | 16.1 | 0.15 | 20071027 | 193.36253 | 241.49681 | 39.25783  | 10.27661 | 0.0934711 | 2.6492506 | 72  | 4 | 2000-2006 | 0.52 | M-v | 1 | MPC | 112167(147909)              |
| (147955)              | 15.1 | 0.15 | 20071027 | 260.87617 | 314.38121 | 11.88972  | 6.91924  | 0.1397797 | 2.4793889 | 215 | 6 | 1993-2007 | 0.57 | M-v | 1 | MPC | 113030(147955)              |
| (149676)              | 15.0 | 0.15 | 20071027 | 253.49667 | 111.62368 | 82.08919  | 6.08973  | 0.1390887 | 3.0777154 | 94  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 113605(149676)              |
| (149793)              | 17.3 | 0.15 | 20071027 | 196.06005 | 37.98463  | 215.61214 | 1.47619  | 0.1258390 | 2.5218236 | 63  | 5 | 2001-2007 | 0.32 | M-v | 0 | MPC | 113639(149793)              |
| (150436)              | 15.6 | 0.15 | 20071027 | 295.48531 | 309.48321 | 347.96522 | 5.75526  | 0.1367123 | 2.3849823 | 152 | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 114955(150436)              |
| (151641)              | 14.8 | 0.15 | 20071027 | 322.21070 | 172.09611 | 294.75956 | 8.98353  | 0.0596648 | 2.9854246 | 51  | 5 | 2001-2007 | 0.63 | M-v | 1 | MPC | 115387(151641)              |
| (152558)              | 16.8 | 0.15 | 20071027 | 21.39370  | 115.08474 | 172.27394 | 38.12151 | 0.4424505 | 2.0134255 | 177 | 4 | 1990-2007 | 0.56 | M-v | 2 | MPC | 116420(152558)              |
| (154589)              | 16.5 | 0.15 | 20071027 | 47.15429  | 299.96645 | 59.05402  | 7.16882  | 0.4566790 | 2.2911452 | 65  | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 117151(154589)              |
| (158720)              | 15.3 | 0.15 | 20071027 | 326.09047 | 262.68996 | 71.98002  | 14.09913 | 0.3006794 | 2.5610482 | 70  | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 120052(158720)              |
| (160326)              | 16.0 | 0.15 | 20071027 | 7.22373   | 24.97080  | 326.21023 | 7.40366  | 0.2399742 | 2.4432623 | 160 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128678(160326)              |
| (161200)              | 15.1 | 0.15 | 20071027 | 337.35862 | 52.67585  | 52.00643  | 12.09377 | 0.0761563 | 2.7275516 | 76  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 122125(161200)              |
| (162142)              | 18.5 | 0.15 | 20071027 | 176.40569 | 170.67748 | 46.43972  | 21.80374 | 0.3181010 | 0.8757348 | 293 | 4 | 1998-2007 | 0.63 | M-v | 3 | MPC | 128678(162142)              |
| (162273)              | 17.0 | 0.15 | 20071027 | 106.54358 | 40.82711  | 234.47386 | 20.18521 | 0.2360800 | 1.5937622 | 328 | 6 | 1993-2007 | 0.54 | M-v | 3 | MPC | 128678(162273)              |
| (163902)              | 17.2 | 0.15 | 20071027 | 306.13284 | 164.88921 | 283.79844 | 16.11258 | 0.2482514 | 1.6606927 | 540 | 3 | 2003-2007 | 0.42 | M-v | 1 | MPC | 128679(163902)              |
| (168044)              | 19.0 | 0.15 | 20071027 | 155.91641 | 205.50923 | 23.56323  | 34.83981 | 0.2830385 | 0.9810299 | 302 | 4 | 2005-2007 | 0.44 | M-v | 3 | MPC | 128679(168044)              |
| (169675)              | 16.8 | 0.15 | 20071027 | 61.71419  | 235.66834 | 64.14856  | 12.68647 | 0.5406521 | 2.7343557 | 105 | 3 | 1975-2007 | 0.47 | M-v | 0 | MPC | 127294(169675)              |
| (170502)              | 17.3 | 0.15 | 20071027 | 330.85080 | 143.09863 | 49.14682  | 10.23364 | 0.8775963 | 2.4863116 | 119 | 3 | 2003-2007 | 0.46 | M-v | 1 | MPC | 127561(170502)              |
| (170903)              | 18.0 | 0.15 | 20071027 | 272.80381 | 115.21017 | 87.87096  | 8.25880  | 0.6030884 | 1.3364584 | 156 | 4 | 2002-2007 | 0.49 | M-v | 3 | MPC | 127682(170903)              |
| 1960 SM               | 16.5 | 0.15 | 19600923 | 336.08752 | 199.10016 | 193.97989 | 10.72867 | 0.1390619 | 2.6922209 | 6   | 1 | 4 days    | 0.26 |     |   | MPC | 1960 SM                     |
| 1960 SN               | 15.2 | 0.15 | 19600923 | 290.76032 | 78.42444  | 359.67033 | 6.40981  | 0.0708542 | 2.8829883 | 8   | 1 | 4 days    | 0.78 |     |   | MPC | 1960 SN                     |
| 1960 SO               | 15.8 | 0.15 | 19600923 | 21.40521  | 342.24970 | 352.19897 | 8.69944  | 0.1241361 | 3.1197138 | 7   | 1 | 4 days    | 0.35 |     |   | MPC | 1960 SO                     |
| 1960 SP               | 17.9 | 0.15 | 19600923 | 342.30840 | 65.59504  | 323.08829 | 1.49077  | 0.2073812 | 2.2298379 | 6   | 1 | 4 days    | 0.34 |     |   | MPC | 1960 SP                     |
| 1960 SQ               | 16.5 | 0.15 | 19600923 | 34.92069  | 114.28899 | 184.08281 | 7.33240  | 0.3079754 | 2.7608769 | 7   | 1 | 4 days    | 0.50 |     |   | MPC | 1960 SQ                     |
| 1960 SR               | 17.3 | 0.15 | 19600923 | 8.20973   | 135.81242 | 214.89519 | 5.03485  | 0.1808297 | 2.6264319 | 8   | 1 | 4 days    | 0.52 |     |   | MPC | 1960 SR                     |
| 1960 SS               | 16.6 | 0.15 | 19600923 | 354.72727 | 178.08348 | 192.37448 | 6.13608  | 0.2072072 | 2.9780796 | 6   | 1 | 4 days    | 0.37 |     |   | MPC | 1960 SS                     |
| 1960 ST               | 15.7 | 0.15 | 19600923 | 54.18830  | 101.02135 | 196.15325 | 10.11818 | 0.1202276 | 3.1408934 | 7   | 1 | 4 days    | 0.68 |     |   | MPC | 1960 ST                     |
| 1960 SV               | 17.9 | 0.15 | 19600923 | 349.99068 | 192.47799 | 185.95173 | 4.92458  | 0.2168790 | 2.3154071 | 7   | 1 | 4 days    | 0.40 |     |   | MPC | 1960 SV                     |
| 1960 SW               | 17.0 | 0.15 | 19600923 | 349.48834 | 105.00726 | 270.69533 | 1.08903  | 0.1806598 | 2.6273391 | 8   | 1 | 4 days    | 0.51 |     |   | MPC | 1960 SW                     |
| 1960 SX               | 12.7 | 0.15 | 19600923 | 258.41446 | 239.24522 | 235.30756 | 5.47070  | 0.1027815 | 5.0971126 | 8   | 1 | 4 days    | 0.40 |     |   | MPC | 1960 SX                     |
| 1960 SY               | 16.7 | 0.15 | 19600923 | 312.54636 | 76.99725  | 351.04486 | 11.13153 | 0.1718342 | 2.5599809 | 8   | 1 | 4 days    | 0.45 |     |   | MPC | 1960 SY                     |
| 1978 PF               | 15.6 | 0.15 | 20071027 | 61.83615  | 295.05899 | 28.96081  | 26.30939 | 0.2946609 | 3.1833610 | 58  | 4 | 1978-2007 | 0.61 | M-v | 2 | MPC | 128679 1978 PF              |
| 1979 OK <sub>9</sub>  | 15.5 | 0.15 | 20071027 | 344.52572 | 194.20201 | 154.82916 | 7.64030  | 0.2332662 | 2.5251407 | 53  | 8 | 1979-2007 | 0.60 | M-v | 1 | MPC | 128679 1979 OK <sub>9</sub> |
| 1981 EL <sub>30</sub> | 15.1 | 0.15 | 20071027 | 253.14066 | 272.02953 | 306.55914 | 10.25825 | 0.1469349 | 3.1495245 | 31  | 4 | 1981-2007 | 0.59 | M-v | 3 | MPC | 73921 1981 EL <sub>30</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|------------------------------|
| 1981 EQ <sub>36</sub> | 16.3 | 0.15 | 20071027 | 254.47347 | 264.72840 | 293.64759 | 7.99859  | 0.1298745 | 2.7787224 | 45  | 5 | 1981–2007 | 0.54 | M-v | 1 | MP | 66048 1981 EQ <sub>36</sub>  |
| 1981 EA <sub>37</sub> | 16.4 | 0.15 | 20071027 | 294.36178 | 170.99688 | 343.76803 | 7.39429  | 0.0966959 | 2.4925640 | 37  | 5 | 1981–2007 | 0.57 | M-v | 2 | MP | 110679 1981 EA <sub>37</sub> |
| 1989 NA               | 15.6 | 0.15 | 20071027 | 87.41669  | 202.11339 | 97.00296  | 14.13532 | 0.4503172 | 2.6481743 | 145 | 9 | 1950–2007 | 0.62 | M-v | 1 | MP | 104105 1989 NA               |
| 1989 UV <sub>7</sub>  | 12.8 | 0.15 | 20071027 | 264.82380 | 196.82103 | 96.15350  | 18.47965 | 0.1275358 | 5.2010982 | 29  | 6 | 1989–2007 | 0.57 | M-v | 0 | MP | 116116 1989 UV <sub>7</sub>  |
| 1990 QX <sub>3</sub>  | 15.6 | 0.15 | 20071027 | 60.38657  | 4.59470   | 338.09093 | 5.43380  | 0.2916675 | 2.5690144 | 67  | 6 | 1953–2007 | 0.57 | M-v | 1 | MP | 101962 1990 QX <sub>3</sub>  |
| 1990 TL <sub>9</sub>  | 15.8 | 0.15 | 20071027 | 51.44578  | 104.81330 | 254.37793 | 2.75480  | 0.2928118 | 2.5801832 | 45  | 6 | 1990–2007 | 0.41 | M-v | 1 | MP | 128679 1990 TL <sub>9</sub>  |
| 1990 UT <sub>2</sub>  | 17.5 | 0.15 | 20071027 | 66.66646  | 83.49422  | 276.88764 | 5.50653  | 0.2403528 | 2.2150925 | 33  | 4 | 1990–2007 | 0.50 | M-v | 1 | MP | 55804 1990 UT <sub>2</sub>   |
| 1991 TQ <sub>9</sub>  | 16.3 | 0.15 | 20071027 | 84.01606  | 295.09955 | 37.06892  | 7.12350  | 0.1028468 | 2.4714826 | 32  | 5 | 1991–2007 | 0.65 | M-v | 3 | MP | 128679 1991 TQ <sub>9</sub>  |
| 1991 TH <sub>16</sub> | 16.6 | 0.15 | 20071027 | 88.76184  | 182.80960 | 151.78677 | 4.02473  | 0.2173490 | 2.4706681 | 34  | 8 | 1952–2007 | 0.45 | M-v | 0 | MP | 104105 1991 TH <sub>16</sub> |
| 1992 BV <sub>4</sub>  | 15.9 | 0.15 | 20071027 | 350.84861 | 350.13514 | 114.37802 | 10.76510 | 0.2303295 | 3.0603698 | 30  | 4 | 1992–2007 | 0.54 | M-v | 0 | MP | 107709 1992 BV <sub>4</sub>  |
| 1992 SU <sub>3</sub>  | 18.1 | 0.15 | 20071027 | 45.75410  | 351.60390 | 8.05637   | 4.53412  | 0.1473441 | 2.3671318 | 33  | 3 | 1992–2007 | 0.41 | M-v | 2 | MP | 128679 1992 SU <sub>3</sub>  |
| 1993 FH <sub>9</sub>  | 15.9 | 0.15 | 20071027 | 288.47887 | 75.43230  | 91.91672  | 2.52430  | 0.1021892 | 3.0366854 | 31  | 4 | 1993–2007 | 0.41 | M-v | 0 | MP | 110679 1993 FH <sub>9</sub>  |
| 1993 FX <sub>47</sub> | 15.7 | 0.15 | 20071027 | 326.42602 | 329.76426 | 173.60669 | 3.78970  | 0.1588113 | 2.4432402 | 51  | 6 | 1993–2007 | 0.57 | M-v | 1 | MP | 122654 1993 FX <sub>47</sub> |
| 1993 HT <sub>3</sub>  | 15.2 | 0.15 | 20071027 | 80.72663  | 268.23615 | 50.02063  | 6.99669  | 0.0316333 | 3.1886116 | 81  | 2 | 1993–2007 | 0.39 | M-v | 4 | MP | 127849 1993 HT <sub>3</sub>  |
| 1993 OJ <sub>9</sub>  | 15.8 | 0.15 | 20071027 | 73.66241  | 205.44005 | 131.63760 | 5.33811  | 0.1742607 | 2.6632023 | 39  | 6 | 1993–2007 | 0.67 | M-v | 1 | MP | 110680 1993 OJ <sub>9</sub>  |
| 1993 TQ <sub>2</sub>  | 20.0 | 0.15 | 20071027 | 339.78582 | 77.43808  | 13.52095  | 6.04144  | 0.4209215 | 1.9847394 | 118 | 2 | 1993–2007 | 0.40 | M-v | 1 | MP | 128679 1993 TQ <sub>2</sub>  |
| 1993 TO <sub>7</sub>  | 16.3 | 0.15 | 20071027 | 72.33000  | 346.34633 | 334.79950 | 4.07673  | 0.1102565 | 2.7853721 | 58  | 5 | 1993–2007 | 0.46 | M-v | 0 | MP | 128679 1993 TO <sub>7</sub>  |
| 1993 TS <sub>9</sub>  | 16.6 | 0.15 | 20071027 | 19.73417  | 129.12718 | 268.54778 | 3.57221  | 0.0955264 | 2.7527462 | 45  | 4 | 1993–2007 | 0.48 | M-v | 1 | MP | 128679 1993 TS <sub>9</sub>  |
| 1993 TX <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 25.23959  | 82.49010  | 296.98785 | 2.70594  | 0.1102046 | 2.7690890 | 45  | 5 | 1993–2007 | 0.43 | M-v | 1 | MP | 128679 1993 TX <sub>9</sub>  |
| 1993 TQ <sub>22</sub> | 17.3 | 0.15 | 20071027 | 14.55224  | 354.25074 | 28.89470  | 4.98828  | 0.1936198 | 2.2919044 | 92  | 4 | 1993–2007 | 0.55 | M-v | 2 | MP | 128679 1993 TQ <sub>22</sub> |
| 1993 TW <sub>22</sub> | 15.7 | 0.15 | 20071027 | 41.36904  | 171.79527 | 191.34963 | 14.80254 | 0.2043726 | 2.7470873 | 71  | 4 | 1993–2007 | 0.58 | M-v | 1 | MP | 77352 1993 TW <sub>22</sub>  |
| 1993 TX <sub>24</sub> | 16.0 | 0.15 | 20071027 | 94.71877  | 182.93231 | 182.10455 | 4.80937  | 0.2298573 | 2.6592626 | 86  | 3 | 2002–2006 | 0.49 | M-v | 2 | MP | 124283 1993 TX <sub>24</sub> |
| 1993 VD               | 21.6 | 0.15 | 20071027 | 113.47519 | 253.64877 | 2.73310   | 2.06236  | 0.5514580 | 0.8761990 | 72  | 4 | 1993–2007 | 0.57 | M-v | 3 | MP | 57657 1993 VD                |
| 1994 AW <sub>1</sub>  | 17.4 | 0.15 | 20071027 | 94.12308  | 37.13672  | 290.41826 | 24.10059 | 0.0752890 | 1.1046536 | 310 | 3 | 1994–2007 | 0.60 | M-v | 2 | MP | 128679 1994 AW <sub>1</sub>  |
| 1994 AY <sub>8</sub>  | 16.3 | 0.15 | 20071027 | 28.81228  | 323.86160 | 126.08213 | 3.45532  | 0.0443960 | 2.1752799 | 70  | 7 | 1994–2007 | 0.41 | M-v | 0 | MP | 112713 1994 AY <sub>8</sub>  |
| 1994 AZ <sub>9</sub>  | 15.9 | 0.15 | 20071027 | 211.71242 | 175.41578 | 47.65186  | 2.68171  | 0.0168416 | 2.8552539 | 47  | 8 | 1994–2007 | 0.54 | M-v | 1 | MP | 110680 1994 AZ <sub>9</sub>  |
| 1994 JH <sub>2</sub>  | 15.3 | 0.15 | 20071027 | 113.60519 | 266.29547 | 51.15517  | 16.13022 | 0.2271503 | 2.4595061 | 77  | 6 | 1994–2007 | 0.49 | M-v | 1 | MP | 110681 1994 JH <sub>2</sub>  |
| 1994 JA <sub>6</sub>  | 17.5 | 0.15 | 20071027 | 288.30210 | 295.88019 | 213.38399 | 4.45662  | 0.1631367 | 2.3949739 | 43  | 4 | 1994–2007 | 0.42 | M-v | 1 | MP | 128680 1994 JA <sub>6</sub>  |
| 1994 LT <sub>3</sub>  | 16.6 | 0.15 | 20071027 | 263.26495 | 162.52455 | 65.43995  | 3.22473  | 0.0810099 | 2.3669038 | 53  | 6 | 1994–2007 | 0.47 | M-v | 1 | MP | 114580 1994 LT <sub>3</sub>  |
| 1994 PQ <sub>18</sub> | 15.9 | 0.15 | 20071027 | 62.05292  | 190.98914 | 164.48966 | 1.06915  | 0.1638074 | 2.5652114 | 48  | 5 | 1994–2007 | 0.54 | M-v | 1 | MP | 77353 1994 PQ <sub>18</sub>  |
| 1994 PY <sub>36</sub> | 15.5 | 0.15 | 20071027 | 102.71246 | 12.19491  | 322.13767 | 3.88083  | 0.1568128 | 3.2004349 | 62  | 6 | 1977–2007 | 0.60 | M-v | 1 | MP | 112713 1994 PY <sub>36</sub> |
| 1994 RD <sub>7</sub>  | 17.7 | 0.15 | 20071027 | 52.48188  | 71.83774  | 258.12284 | 1.12277  | 0.1712165 | 2.6225138 | 32  | 2 | 1994–2007 | 0.38 | M-v | 4 | MP | 127850 1994 RD <sub>7</sub>  |
| 1994 SL <sub>5</sub>  | 15.9 | 0.15 | 20071027 | 270.43826 | 149.06637 | 11.27334  | 13.87792 | 0.1002407 | 2.5781018 | 29  | 3 | 1994–2007 | 0.43 | M-v | 2 | MP | 74538 1994 SL <sub>5</sub>   |
| 1994 ST <sub>8</sub>  | 16.6 | 0.15 | 20071027 | 18.72836  | 229.98283 | 182.67611 | 1.59240  | 0.1837485 | 2.5876995 | 45  | 6 | 1994–2007 | 0.48 | M-v | 1 | MP | 104106 1994 ST <sub>8</sub>  |
| 1994 TS <sub>6</sub>  | 16.9 | 0.15 | 20071027 | 325.48074 | 39.62263  | 94.38521  | 1.26530  | 0.1233564 | 2.5481324 | 51  | 6 | 1994–2007 | 0.46 | M-v | 1 | MP | 128680 1994 TS <sub>6</sub>  |
| 1994 TW <sub>10</sub> | 16.4 | 0.15 | 20071027 | 61.96571  | 97.21884  | 220.12232 | 3.32868  | 0.1776495 | 2.6278793 | 84  | 5 | 1994–2007 | 0.37 | M-v | 0 | MP | 127850 1994 TW <sub>10</sub> |
| 1994 TZ <sub>10</sub> | 17.2 | 0.15 | 20071027 | 42.63390  | 95.39079  | 261.93258 | 1.72422  | 0.0613372 | 2.6162227 | 37  | 4 | 1994–2007 | 0.38 | M-v | 1 | MP | 127851 1994 TZ <sub>10</sub> |
| 1994 WU <sub>4</sub>  | 16.2 | 0.15 | 20071027 | 358.17298 | 318.48651 | 97.07727  | 9.98810  | 0.1214959 | 2.6540574 | 52  | 3 | 1994–2007 | 0.56 | M-v | 3 | MP | 128680 1994 WU <sub>4</sub>  |
| 1994 YP <sub>2</sub>  | 16.4 | 0.15 | 20071027 | 325.35010 | 178.97023 | 284.68105 | 21.58491 | 0.0895615 | 1.8955810 | 55  | 4 | 1994–2007 | 0.65 | M-v | 2 | MP | 68499 1994 YP <sub>2</sub>   |
| 1994 YX <sub>3</sub>  | 16.7 | 0.15 | 20071027 | 330.10265 | 163.09252 | 293.30750 | 3.76317  | 0.0296476 | 2.7033395 | 52  | 6 | 1994–2007 | 0.47 | M-v | 0 | MP | 128680 1994 YX <sub>3</sub>  |
| 1995 CJ <sub>4</sub>  | 16.1 | 0.15 | 20071027 | 7.71807   | 172.77536 | 244.20513 | 1.46445  | 0.0836625 | 2.7273753 | 66  | 5 | 1995–2007 | 0.45 | M-v | 0 | MP | 128680 1995 CJ <sub>4</sub>  |
| 1995 FT <sub>3</sub>  | 17.0 | 0.15 | 20071027 | 249.05537 | 27.26213  | 149.01825 | 4.52606  | 0.1090000 | 2.7901975 | 34  | 4 | 1995–2007 | 0.32 | M-v | 1 | MP | 128680 1995 FT <sub>3</sub>  |
| 1995 FO <sub>20</sub> | 15.8 | 0.15 | 20071027 | 297.66350 | 210.65713 | 26.53226  | 13.79673 | 0.2042649 | 2.6518577 | 33  | 5 | 1995–2007 | 0.53 | M-v | 1 | MP | 97324 1995 FO <sub>20</sub>  |
| 1995 HW <sub>2</sub>  | 17.5 | 0.15 | 20071027 | 263.62357 | 124.09472 | 82.44934  | 4.37291  | 0.1354897 | 2.2483681 | 42  | 3 | 1995–2007 | 0.55 | M-v | 3 | MP | 74541 1995 HW <sub>2</sub>   |
| 1995 KB <sub>4</sub>  | 16.3 | 0.15 | 20071027 | 257.77752 | 215.01686 | 51.11928  | 15.08126 | 0.0758213 | 2.6950474 | 50  | 5 | 1995–2007 | 0.55 | M-v | 0 | MP | 122655 1995 KB <sub>4</sub>  |
| 1995 ME <sub>6</sub>  | 16.5 | 0.15 | 20071027 | 90.57764  | 62.96803  | 271.02213 | 9.57333  | 0.0729162 | 3.0459612 | 23  | 3 | 1995–2007 | 0.27 | M-v | 2 | MP | 14737 1995 ME <sub>6</sub>   |
| 1995 ML <sub>8</sub>  | 18.0 | 0.15 | 20071027 | 85.04119  | 111.60734 | 203.80489 | 4.85267  | 0.1096972 | 2.4228482 | 35  | 3 | 1995–2007 | 0.32 | M-v | 3 | MP | 128680 1995 ML <sub>8</sub>  |
| 1995 OR <sub>2</sub>  | 16.2 | 0.15 | 20071027 | 81.77730  | 50.92258  | 268.36712 | 8.67046  | 0.0540982 | 3.1005519 | 37  | 3 | 1995–2007 | 0.51 | M-v | 3 | MP | 128680 1995 OR <sub>2</sub>  |
| 1995 OU <sub>7</sub>  | 15.9 | 0.15 | 20071027 | 21.29035  | 115.79841 | 271.67754 | 9.12314  | 0.1194634 | 3.1073777 | 76  | 5 | 1995–2007 | 0.56 | M-v | 0 | MP | 128680 1995 OU <sub>7</sub>  |
| 1995 OY <sub>9</sub>  | 16.8 | 0.15 | 20071027 | 287.10335 | 261.25804 | 303.17298 | 21.33437 | 0.1877650 | 2.2844207 | 33  | 3 | 1995–2007 | 0.48 | M-v | 2 | MP | 128680 1995 OY <sub>9</sub>  |
| 1995 OK <sub>13</sub> | 17.4 | 0.15 | 20071027 | 61.77207  | 221.71501 | 146.96499 | 1.78541  | 0.1922613 | 2.4155114 | 29  | 4 | 1995–2007 | 0.28 | M-v | 2 | MP | 55810 1995 OK <sub>13</sub>  |
| 1995 OY <sub>16</sub> | 16.1 | 0.15 | 20071027 | 15.63723  | 143.74956 | 280.96046 | 9.91495  | 0.1217856 | 3.0400292 | 28  | 4 | 1995–2007 | 0.44 | M-v | 1 | MP | 41524 1995 OY <sub>16</sub>  |
| 1995 SM               | 17.2 | 0.15 | 20071027 | 29.58520  | 65.95496  | 325.68956 | 1.19303  | 0.2216141 | 2.4594802 | 78  | 5 | 1991–2007 | 0.62 | M-v | 2 | MP | 128680 1995 SM               |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 1995 SA <sub>9</sub>  | 15.9 | 0.15 | 20071027 | 168.17807 | 280.99357 | 359.11282 | 1.41195  | 0.1168240 | 3.0273549 | 54  | 8 | 1995-2007 | 0.37 | M-v | 0 | MPC | 122655 1995 SA <sub>9</sub>  |
| 1995 SF <sub>19</sub> | 15.8 | 0.15 | 20071027 | 36.38355  | 356.28600 | 11.03385  | 3.42931  | 0.1595601 | 3.2190671 | 43  | 4 | 1995-2007 | 0.72 | M-v | 1 | MPC | 128680 1995 SF <sub>19</sub> |
| 1995 SH <sub>19</sub> | 15.9 | 0.15 | 20071027 | 132.04765 | 113.85303 | 186.00713 | 0.57188  | 0.1083791 | 3.1235980 | 162 | 6 | 1995-2007 | 0.30 | M-v | 0 | MPC | 124284 1995 SH <sub>19</sub> |
| 1995 SQ <sub>21</sub> | 16.5 | 0.15 | 20071027 | 9.30978   | 42.59941  | 9.83789   | 2.56874  | 0.1832046 | 2.4483380 | 104 | 5 | 1995-2007 | 0.52 | M-v | 3 | MPC | 77355 1995 SQ <sub>21</sub>  |
| 1995 SY <sub>24</sub> | 16.6 | 0.15 | 20071027 | 21.67037  | 311.44038 | 102.57262 | 2.58422  | 0.1833044 | 3.1589761 | 33  | 5 | 1995-2007 | 0.59 | M-v | 1 | MPC | 110683 1995 SY <sub>24</sub> |
| 1995 SD <sub>27</sub> | 17.3 | 0.15 | 20071027 | 355.57364 | 85.51880  | 8.11922   | 1.15498  | 0.1502246 | 2.4455941 | 46  | 5 | 1995-2007 | 0.50 | M-v | 1 | MPC | 77355 1995 SD <sub>27</sub>  |
| 1995 SY <sub>33</sub> | 16.7 | 0.15 | 20071027 | 16.78722  | 36.11069  | 356.46125 | 9.10082  | 0.0935342 | 3.1752302 | 33  | 5 | 1995-2007 | 0.38 | M-v | 0 | MPC | 110683 1995 SY <sub>33</sub> |
| 1995 SG <sub>42</sub> | 17.5 | 0.15 | 20071027 | 329.05323 | 350.87766 | 129.19310 | 2.08613  | 0.1409192 | 2.4331885 | 26  | 5 | 1995-2007 | 0.25 | M-v | 0 | MPC | 77356 1995 SG <sub>42</sub>  |
| 1995 SH <sub>43</sub> | 17.1 | 0.15 | 20071027 | 323.98149 | 18.36343  | 85.34396  | 2.38731  | 0.1494801 | 2.4682957 | 52  | 4 | 1995-2007 | 0.40 | M-v | 2 | MPC | 128680 1995 SH <sub>43</sub> |
| 1995 SC <sub>46</sub> | 16.8 | 0.15 | 20071027 | 345.47333 | 87.18016  | 3.90853   | 1.08293  | 0.1576211 | 2.4269982 | 55  | 6 | 1995-2007 | 0.58 | M-v | 1 | MPC | 77356 1995 SC <sub>46</sub>  |
| 1995 SC <sub>64</sub> | 17.0 | 0.15 | 20071027 | 334.22482 | 173.20501 | 298.05855 | 0.25007  | 0.1613560 | 3.1767134 | 41  | 7 | 1995-2007 | 0.32 | M-v | 0 | MPC | 114581 1995 SC <sub>64</sub> |
| 1995 SH <sub>69</sub> | 16.8 | 0.15 | 20071027 | 29.91138  | 138.66282 | 231.48886 | 0.23620  | 0.1467485 | 3.1910660 | 47  | 4 | 1995-2007 | 0.41 | M-v | 1 | MPC | 127853 1995 SH <sub>69</sub> |
| 1995 SA <sub>82</sub> | 15.2 | 0.15 | 20071027 | 13.59366  | 15.67752  | 24.63954  | 6.00102  | 0.1504248 | 3.2226682 | 64  | 5 | 1995-2007 | 0.52 | M-v | 1 | MPC | 128680 1995 SA <sub>82</sub> |
| 1995 TT <sub>3</sub>  | 16.2 | 0.15 | 20071027 | 334.29650 | 246.43209 | 210.97187 | 4.21791  | 0.1548330 | 3.2087649 | 42  | 4 | 1995-2007 | 0.46 | M-v | 2 | MPC | 128680 1995 TT <sub>3</sub>  |
| 1995 UM               | 16.1 | 0.15 | 20071027 | 6.29294   | 192.91411 | 231.87302 | 5.40546  | 0.1177349 | 2.4632183 | 123 | 6 | 1995-2007 | 0.60 | M-v | 1 | MPC | 101964 1995 UM               |
| 1995 UF <sub>15</sub> | 17.6 | 0.15 | 20071027 | 329.00348 | 205.62344 | 271.27757 | 1.47842  | 0.0860990 | 2.4618061 | 36  | 6 | 1995-2007 | 0.51 | M-v | 1 | MPC | 128680 1995 UF <sub>15</sub> |
| 1995 UT <sub>17</sub> | 17.1 | 0.15 | 20071027 | 3.83283   | 72.68253  | 349.53493 | 4.97878  | 0.0614336 | 2.4509898 | 48  | 5 | 1995-2007 | 0.38 | M-v | 1 | MPC | 77356 1995 UT <sub>17</sub>  |
| 1995 UD <sub>18</sub> | 17.5 | 0.15 | 20071027 | 134.77579 | 316.27774 | 324.70762 | 1.98478  | 0.1790879 | 2.4307434 | 37  | 4 | 1995-2007 | 0.30 | M-v | 0 | MPC | 110684 1995 UD <sub>18</sub> |
| 1995 UY <sub>21</sub> | 17.1 | 0.15 | 20071027 | 157.95830 | 271.97970 | 356.39828 | 0.76876  | 0.1617191 | 2.4360501 | 53  | 7 | 1995-2007 | 0.50 | M-v | 1 | MPC | 107730 1995 UY <sub>21</sub> |
| 1995 UV <sub>26</sub> | 16.2 | 0.15 | 20071027 | 14.40101  | 308.89213 | 109.15847 | 2.93530  | 0.1739908 | 3.1781804 | 35  | 4 | 1995-2007 | 0.41 | M-v | 1 | MPC | 28946 1995 UV <sub>26</sub>  |
| 1995 UV <sub>52</sub> | 16.5 | 0.15 | 20071027 | 346.23001 | 182.13175 | 268.60458 | 1.18684  | 0.1406459 | 2.4521922 | 89  | 5 | 1995-2007 | 0.44 | M-v | 3 | MPC | 77357 1995 UV <sub>52</sub>  |
| 1995 UB <sub>58</sub> | 17.5 | 0.15 | 20071027 | 254.34151 | 249.24759 | 320.88879 | 0.93150  | 0.1173198 | 2.4018781 | 53  | 7 | 1995-2007 | 0.47 | M-v | 1 | MPC | 110685 1995 UB <sub>58</sub> |
| 1995 UC <sub>69</sub> | 17.5 | 0.15 | 20071027 | 284.23774 | 295.27392 | 261.77588 | 0.28651  | 0.1106319 | 2.3879544 | 42  | 7 | 1995-2007 | 0.34 | M-v | 1 | MPC | 110685 1995 UC <sub>69</sub> |
| 1995 UX <sub>80</sub> | 17.3 | 0.15 | 20071027 | 335.59833 | 198.99922 | 213.95733 | 14.69338 | 0.1070718 | 2.5483243 | 29  | 4 | 1995-2007 | 0.36 | M-v | 3 | MPC | 128681 1995 UX <sub>80</sub> |
| 1995 VQ <sub>2</sub>  | 17.1 | 0.15 | 20071027 | 117.27692 | 286.97791 | 45.27674  | 1.96837  | 0.1934779 | 2.4072677 | 53  | 4 | 1995-2007 | 0.43 | M-v | 2 | MPC | 110685 1995 VQ <sub>2</sub>  |
| 1995 VX <sub>3</sub>  | 14.8 | 0.15 | 20071027 | 34.34731  | 347.16154 | 62.63666  | 11.40782 | 0.0658572 | 3.1630938 | 79  | 5 | 1995-2007 | 0.55 | M-v | 1 | MPC | 110685 1995 VX <sub>3</sub>  |
| 1995 VQ <sub>9</sub>  | 17.9 | 0.15 | 20071027 | 19.16660  | 129.04728 | 302.06889 | 0.48966  | 0.1740756 | 2.4461907 | 33  | 5 | 1995-2007 | 0.45 | M-v | 3 | MPC | 84436 1995 VQ <sub>9</sub>   |
| 1995 VW <sub>17</sub> | 17.3 | 0.15 | 20071027 | 20.22373  | 188.62294 | 238.10746 | 5.26529  | 0.0613121 | 2.4669009 | 24  | 4 | 1995-2007 | 0.31 | M-v | 1 | MPC | 120239 1995 VW <sub>17</sub> |
| 1995 VH <sub>18</sub> | 17.3 | 0.15 | 20071027 | 103.28650 | 83.13106  | 245.85907 | 1.39245  | 0.2107310 | 2.4529096 | 61  | 6 | 1995-2007 | 0.28 | M-v | 0 | MPC | 110685 1995 VH <sub>18</sub> |
| 1995 WQ <sub>1</sub>  | 15.0 | 0.15 | 20071027 | 16.77263  | 133.10154 | 264.59562 | 3.78071  | 0.2336876 | 2.5388596 | 154 | 5 | 1995-2007 | 0.51 | M-v | 2 | MPC | 128681 1995 WQ <sub>1</sub>  |
| 1995 WM <sub>12</sub> | 16.0 | 0.15 | 20071027 | 125.97972 | 184.52959 | 147.86734 | 4.37148  | 0.1779608 | 3.1082631 | 49  | 6 | 1995-2007 | 0.42 | M-v | 0 | MPC | 110685 1995 WM <sub>12</sub> |
| 1995 WW <sub>40</sub> | 16.0 | 0.15 | 20071027 | 28.06129  | 99.18524  | 4.51714   | 0.60412  | 0.0632927 | 3.0452014 | 66  | 7 | 1995-2007 | 0.39 | M-v | 0 | MPC | 122359 1995 WW <sub>40</sub> |
| 1995 XJ <sub>3</sub>  | 16.5 | 0.15 | 20071027 | 350.06849 | 288.64768 | 132.18984 | 4.10720  | 0.1273649 | 2.5266824 | 60  | 5 | 1995-2007 | 0.53 | M-v | 3 | MPC | 128681 1995 XJ <sub>3</sub>  |
| 1995 YJ <sub>11</sub> | 16.9 | 0.15 | 20071027 | 253.34412 | 1.65113   | 202.81454 | 2.53649  | 0.1650922 | 2.5500871 | 33  | 6 | 1993-2007 | 0.35 | M-v | 1 | MPC | 122360 1995 YJ <sub>11</sub> |
| 1996 AJ <sub>1</sub>  | 20.1 | 0.15 | 20071027 | 5.40125   | 238.14953 | 91.08274  | 2.53831  | 0.7814153 | 1.3100216 | 46  | 3 | 1996-2007 | 0.66 | M-v | 5 | MPC | 71951 1996 AJ <sub>1</sub>   |
| 1996 BN <sub>12</sub> | 16.8 | 0.15 | 20071027 | 12.08252  | 335.59466 | 68.51291  | 4.37383  | 0.2326424 | 2.5803976 | 41  | 3 | 1996-2007 | 0.50 | M-v | 3 | MPC | 128681 1996 BN <sub>12</sub> |
| 1996 EB <sub>12</sub> | 15.7 | 0.15 | 20071027 | 338.26139 | 88.40799  | 318.68059 | 11.62399 | 0.2608925 | 2.6474989 | 110 | 4 | 1996-2007 | 0.52 | M-v | 2 | MPC | 128681 1996 EB <sub>12</sub> |
| 1996 FG <sub>3</sub>  | 18.2 | 0.15 | 20071027 | 146.73252 | 23.91784  | 299.88488 | 1.99030  | 0.3498398 | 1.0543231 | 352 | 7 | 1996-2007 | 0.57 | M-v | 2 | MPC | 112715 1996 FG <sub>3</sub>  |
| 1996 GJ <sub>5</sub>  | 15.7 | 0.15 | 20071027 | 36.71078  | 316.53182 | 39.03547  | 9.64925  | 0.1721843 | 2.7569364 | 113 | 3 | 1996-2007 | 0.48 | M-v | 3 | MPC | 128681 1996 GJ <sub>5</sub>  |
| 1996 HZ <sub>5</sub>  | 16.5 | 0.15 | 20071027 | 347.58764 | 37.01612  | 52.06890  | 13.61794 | 0.1596882 | 2.6564272 | 24  | 3 | 1996-2007 | 0.61 | M-v | 3 | MPC | 84439 1996 HZ <sub>5</sub>   |
| 1996 RP               | 14.7 | 0.15 | 20071027 | 284.36018 | 90.21209  | 132.57810 | 28.39109 | 0.3470350 | 2.6191217 | 123 | 4 | 1996-2007 | 0.52 | M-v | 1 | MPC | 66057 1996 RP                |
| 1996 RQ <sub>6</sub>  | 16.7 | 0.15 | 20071027 | 31.91200  | 176.86995 | 225.27233 | 0.55777  | 0.2290428 | 2.9649342 | 36  | 5 | 1996-2007 | 0.37 | M-v | 0 | MPC | 128681 1996 RQ <sub>6</sub>  |
| 1996 RX <sub>12</sub> | 17.2 | 0.15 | 20071027 | 306.14391 | 350.21316 | 164.82499 | 0.80984  | 0.1818148 | 2.2498950 | 72  | 6 | 1996-2007 | 0.52 | M-v | 1 | MPC | 128681 1996 RX <sub>12</sub> |
| 1996 RC <sub>18</sub> | 16.7 | 0.15 | 20071027 | 0.63391   | 284.39131 | 147.81079 | 2.96646  | 0.1206555 | 2.2932253 | 67  | 6 | 1996-2007 | 0.61 | M-v | 1 | MPC | 77358 1996 RC <sub>18</sub>  |
| 1996 RW <sub>20</sub> | 18.0 | 0.15 | 20071027 | 5.28275   | 92.24765  | 342.57237 | 4.40961  | 0.1596651 | 2.2975670 | 36  | 4 | 1996-2007 | 0.46 | M-v | 1 | MPC | 93706 1996 RW <sub>20</sub>  |
| 1996 TA <sub>6</sub>  | 17.5 | 0.15 | 20071027 | 41.03766  | 327.77307 | 31.80642  | 6.83658  | 0.2451166 | 2.3517504 | 39  | 3 | 1996-2007 | 0.43 | M-v | 3 | MPC | 57663 1996 TA <sub>6</sub>   |
| 1996 TY <sub>11</sub> | 19.4 | 0.15 | 20071027 | 275.79665 | 158.63561 | 30.71267  | 13.92971 | 0.5353496 | 1.2281182 | 74  | 6 | 1996-2007 | 0.52 | M-v | 2 | MPC | 128681 1996 TY <sub>11</sub> |
| 1996 TF <sub>12</sub> | 14.8 | 0.15 | 20071027 | 8.37006   | 59.58312  | 267.29758 | 17.31303 | 0.2981741 | 3.1859653 | 110 | 3 | 1996-2007 | 0.51 | M-v | 2 | MPC | 128681 1996 TF <sub>12</sub> |
| 1996 TG <sub>17</sub> | 16.9 | 0.15 | 20071027 | 2.54782   | 167.46317 | 233.96829 | 4.47206  | 0.2335049 | 2.3488654 | 68  | 5 | 1996-2007 | 0.46 | M-v | 1 | MPC | 128681 1996 TG <sub>17</sub> |
| 1996 TM <sub>19</sub> | 16.8 | 0.15 | 20071027 | 280.90302 | 125.31138 | 31.39164  | 3.10032  | 0.0703436 | 2.3306071 | 58  | 6 | 1996-2007 | 0.52 | M-v | 1 | MPC | 104108 1996 TM <sub>19</sub> |
| 1996 TJ <sub>34</sub> | 17.3 | 0.15 | 20071027 | 8.73787   | 338.12557 | 19.46743  | 2.81227  | 0.2226235 | 2.4031208 | 75  | 2 | 1996-2007 | 0.52 | M-v | 2 | MPC | 128681 1996 TJ <sub>34</sub> |
| 1996 TG <sub>35</sub> | 17.3 | 0.15 | 20071027 | 28.96337  | 116.44521 | 274.36168 | 3.67413  | 0.1764525 | 2.3191730 | 38  | 4 | 1996-2007 | 0.43 | M-v | 1 | MPC | 57663 1996 TG <sub>35</sub>  |
| 1996 TE <sub>36</sub> | 17.1 | 0.15 | 20071027 | 9.28605   | 150.18032 | 216.26706 | 4.51088  | 0.1992431 | 2.3963993 | 70  | 3 | 1996-2007 | 0.48 | M-v | 2 | MPC | 128681 1996 TE <sub>36</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 1996 UD <sub>2</sub>  | 17.2 | 0.15 | 20071027 | 190.56536 | 312.24689 | 306.99102 | 6.12103  | 0.0640407 | 2.2574774 | 39  | 5 | 1996-2007 | 0.37 | M-v | 1 | MPC | 107740 1996 UD <sub>2</sub>  |
| 1996 UV <sub>3</sub>  | 17.2 | 0.15 | 20071027 | 339.88783 | 56.57521  | 329.11441 | 0.75769  | 0.1604449 | 2.4136363 | 48  | 4 | 1994-2007 | 0.53 | M-v | 1 | MPC | 127853 1996 UV <sub>3</sub>  |
| 1996 VR <sub>11</sub> | 16.2 | 0.15 | 20071027 | 107.07295 | 32.38437  | 275.43554 | 6.23530  | 0.1417701 | 3.0018047 | 32  | 5 | 1996-2007 | 0.50 | M-v | 0 | MPC | 128681 1996 VR <sub>11</sub> |
| 1996 VE <sub>13</sub> | 16.0 | 0.15 | 20071027 | 10.07542  | 296.37751 | 49.61623  | 2.97478  | 0.2329743 | 2.4173077 | 111 | 4 | 1996-2007 | 0.54 | M-v | 2 | MPC | 128681 1996 VE <sub>13</sub> |
| 1996 VL <sub>17</sub> | 17.3 | 0.15 | 20071027 | 344.19145 | 13.11534  | 57.85231  | 4.60238  | 0.1955746 | 3.1073782 | 36  | 2 | 1996-2007 | 0.36 | M-v | 3 | MPC | 127853 1996 VL <sub>17</sub> |
| 1996 VF <sub>18</sub> | 16.8 | 0.15 | 20071027 | 21.46545  | 298.39935 | 83.62680  | 2.35828  | 0.1934369 | 3.0943085 | 34  | 2 | 1996-2007 | 0.26 | M-v | 4 | MPC | 127854 1996 VF <sub>18</sub> |
| 1996 VR <sub>25</sub> | 17.3 | 0.15 | 20071027 | 343.47059 | 220.26396 | 184.49121 | 0.82027  | 0.1750494 | 2.4010445 | 102 | 6 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128682 1996 VR <sub>25</sub> |
| 1996 VS <sub>27</sub> | 16.2 | 0.15 | 20071027 | 147.93226 | 171.05747 | 94.93971  | 2.03638  | 0.1247592 | 3.0730634 | 56  | 9 | 1993-2007 | 0.43 | M-v | 0 | MPC | 128682 1996 VS <sub>27</sub> |
| 1996 VN <sub>35</sub> | 16.5 | 0.15 | 20071027 | 30.59958  | 133.81390 | 254.59290 | 7.40331  | 0.3463240 | 3.0259162 | 30  | 4 | 1996-2007 | 0.34 | M-v | 0 | MPC | 126550 1996 VN <sub>35</sub> |
| 1996 XY <sub>4</sub>  | 16.3 | 0.15 | 20071027 | 57.66821  | 91.81854  | 271.33200 | 8.64827  | 0.2698062 | 2.3295165 | 66  | 3 | 1996-2007 | 0.46 | M-v | 2 | MPC | 128682 1996 XY <sub>4</sub>  |
| 1996 XT <sub>10</sub> | 16.5 | 0.15 | 20071027 | 58.52046  | 320.08460 | 11.33392  | 6.30529  | 0.1621088 | 2.3771989 | 111 | 4 | 1992-2007 | 0.55 | M-v | 3 | MPC | 128682 1996 XT <sub>10</sub> |
| 1996 XZ <sub>11</sub> | 17.6 | 0.15 | 20071027 | 207.47239 | 309.01529 | 305.47504 | 5.03976  | 0.0856539 | 2.3755777 | 39  | 5 | 1996-2007 | 0.36 | M-v | 0 | MPC | 128682 1996 XZ <sub>11</sub> |
| 1996 XO <sub>12</sub> | 15.4 | 0.15 | 20071027 | 35.44856  | 1.74019   | 23.96930  | 11.24817 | 0.0783142 | 3.0674647 | 70  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 110687 1996 XO <sub>12</sub> |
| 1996 XP <sub>12</sub> | 16.8 | 0.15 | 20071027 | 354.59418 | 122.02901 | 310.51825 | 4.72646  | 0.1890430 | 2.3575184 | 67  | 5 | 1996-2007 | 0.51 | M-v | 0 | MPC | 53580 1996 XP <sub>12</sub>  |
| 1996 XA <sub>16</sub> | 17.9 | 0.15 | 20071027 | 66.79244  | 112.44472 | 251.50536 | 5.57167  | 0.1321582 | 2.3334134 | 27  | 4 | 1996-2007 | 0.46 | M-v | 2 | MPC | 77360 1996 XA <sub>16</sub>  |
| 1996 XA <sub>20</sub> | 17.7 | 0.15 | 20071027 | 359.69912 | 298.76677 | 133.17710 | 2.95778  | 0.1782867 | 2.3658002 | 20  | 4 | 1996-2007 | 0.27 | M-v | 0 | MPC | 110687 1996 XA <sub>20</sub> |
| 1996 XZ <sub>23</sub> | 16.9 | 0.15 | 20071027 | 322.93200 | 233.50708 | 241.50394 | 2.99758  | 0.0460034 | 2.3482567 | 51  | 8 | 1992-2007 | 0.48 | M-v | 0 | MPC | 104108 1996 XZ <sub>23</sub> |
| 1997 AM <sub>18</sub> | 14.8 | 0.15 | 20071027 | 56.06734  | 265.59380 | 131.06488 | 17.74564 | 0.2039460 | 3.1004618 | 69  | 6 | 1997-2007 | 0.50 | M-v | 1 | MPC | 110688 1997 AM <sub>18</sub> |
| 1997 BP <sub>2</sub>  | 14.1 | 0.15 | 20071027 | 309.63617 | 34.02247  | 131.85101 | 28.58068 | 0.1467078 | 3.1624907 | 62  | 6 | 1986-2007 | 0.62 | M-v | 1 | MPC | 87334 1997 BP <sub>2</sub>   |
| 1997 CN <sub>2</sub>  | 17.4 | 0.15 | 20071027 | 42.84393  | 55.35230  | 321.83498 | 2.83613  | 0.1141856 | 2.4226301 | 48  | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 77360 1997 CN <sub>2</sub>   |
| 1997 CN <sub>11</sub> | 17.8 | 0.15 | 20071027 | 225.87033 | 222.75877 | 333.78981 | 0.78599  | 0.1239099 | 2.4598034 | 51  | 7 | 1995-2007 | 0.38 | M-v | 1 | MPC | 128682 1997 CN <sub>11</sub> |
| 1997 CP <sub>11</sub> | 17.7 | 0.15 | 20071027 | 12.52247  | 93.58822  | 313.98253 | 5.40956  | 0.2421586 | 2.4016080 | 41  | 3 | 1997-2007 | 0.38 | M-v | 2 | MPC | 66060 1997 CP <sub>11</sub>  |
| 1997 EE <sub>60</sub> | 16.1 | 0.15 | 19970221 | 332.67258 | 39.94722  | 168.51818 | 8.51559  | 0.3119551 | 3.0095149 | 7   | 1 | 7 days    | 0.18 |     |   | MPC | 1997 EE <sub>60</sub>        |
| 1997 GX <sub>2</sub>  | 15.6 | 0.15 | 20071027 | 50.84860  | 187.50823 | 172.56777 | 2.78812  | 0.2090480 | 2.5390350 | 83  | 6 | 1997-2007 | 0.47 | M-v | 2 | MPC | 128682 1997 GX <sub>2</sub>  |
| 1997 HL <sub>2</sub>  | 16.9 | 0.15 | 20071027 | 268.73189 | 82.51988  | 136.59401 | 3.22683  | 0.1371740 | 2.4557913 | 41  | 5 | 1993-2007 | 0.37 | M-v | 1 | MPC | 110689 1997 HL <sub>2</sub>  |
| 1997 HE <sub>7</sub>  | 15.9 | 0.15 | 20071027 | 101.10168 | 39.08366  | 218.08066 | 12.43401 | 0.1244034 | 2.7005110 | 66  | 6 | 1997-2007 | 0.53 | M-v | 1 | MPC | 101967 1997 HE <sub>7</sub>  |
| 1997 HM <sub>12</sub> | 16.0 | 0.15 | 20071027 | 55.10702  | 92.98371  | 209.47103 | 12.79372 | 0.2174486 | 2.7411424 | 60  | 3 | 1997-2007 | 0.54 | M-v | 2 | MPC | 126551 1997 HM <sub>12</sub> |
| 1997 HJ <sub>14</sub> | 16.1 | 0.15 | 20071027 | 95.84721  | 93.18441  | 209.76925 | 3.30847  | 0.1505920 | 2.5965788 | 62  | 6 | 1997-2007 | 0.49 | M-v | 1 | MPC | 128682 1997 HJ <sub>14</sub> |
| 1997 PD <sub>4</sub>  | 15.5 | 0.15 | 20071027 | 176.80862 | 359.42549 | 307.28674 | 7.11067  | 0.1872257 | 2.5838458 | 32  | 5 | 1997-2007 | 0.64 | M-v | 2 | MPC | 110689 1997 PD <sub>4</sub>  |
| 1997 SW <sub>4</sub>  | 17.4 | 0.15 | 20071027 | 87.57812  | 280.47577 | 72.61248  | 2.76439  | 0.1541651 | 2.1559083 | 74  | 4 | 1997-2007 | 0.60 | M-v | 2 | MPC | 128682 1997 SW <sub>4</sub>  |
| 1997 SJ <sub>14</sub> | 17.6 | 0.15 | 20071027 | 8.74182   | 191.81032 | 241.77359 | 4.04469  | 0.0320384 | 2.1601417 | 29  | 5 | 1997-2007 | 0.45 | M-v | 1 | MPC | 71958 1997 SJ <sub>14</sub>  |
| 1997 SH <sub>15</sub> | 17.3 | 0.15 | 20071027 | 23.16975  | 140.96122 | 225.89884 | 4.65575  | 0.1909598 | 2.2177825 | 83  | 3 | 1997-2007 | 0.41 | M-v | 2 | MPC | 128683 1997 SH <sub>15</sub> |
| 1997 SO <sub>23</sub> | 16.7 | 0.15 | 20071027 | 107.45729 | 104.47978 | 223.18597 | 2.13932  | 0.0357872 | 2.8031831 | 32  | 5 | 1997-2007 | 0.41 | M-v | 0 | MPC | 122364 1997 SO <sub>23</sub> |
| 1997 SO <sub>34</sub> | 16.2 | 0.15 | 20071027 | 81.37616  | 328.34179 | 3.82229   | 3.92316  | 0.2061783 | 2.7851667 | 57  | 6 | 1997-2007 | 0.58 | M-v | 1 | MPC | 110690 1997 SO <sub>34</sub> |
| 1997 UY <sub>22</sub> | 18.0 | 0.15 | 20071027 | 338.84964 | 82.97246  | 347.48962 | 4.44497  | 0.1294049 | 2.2148928 | 59  | 5 | 1997-2007 | 0.55 | M-v | 1 | MPC | 128683 1997 UY <sub>22</sub> |
| 1997 WV <sub>5</sub>  | 16.0 | 0.15 | 20071027 | 129.86874 | 106.42752 | 214.60482 | 4.96679  | 0.0273898 | 2.8103472 | 56  | 6 | 1992-2007 | 0.48 | M-v | 1 | MPC | 124286 1997 WV <sub>5</sub>  |
| 1997 WH <sub>6</sub>  | 17.8 | 0.15 | 20071027 | 309.79334 | 293.00328 | 186.32109 | 2.08840  | 0.1660352 | 2.2260755 | 75  | 6 | 1993-2007 | 0.62 | M-v | 1 | MPC | 128683 1997 WH <sub>6</sub>  |
| 1997 WL <sub>11</sub> | 17.5 | 0.15 | 20071027 | 43.43865  | 114.56719 | 228.26783 | 3.77100  | 0.1913784 | 2.2254693 | 74  | 4 | 1997-2007 | 0.44 | M-v | 1 | MPC | 128683 1997 WL <sub>11</sub> |
| 1997 WK <sub>12</sub> | 17.1 | 0.15 | 20071027 | 341.73103 | 197.15152 | 237.99087 | 5.76190  | 0.1222769 | 2.2148744 | 55  | 5 | 1997-2007 | 0.43 | M-v | 1 | MPC | 128683 1997 WK <sub>12</sub> |
| 1997 WO <sub>15</sub> | 16.4 | 0.15 | 20071027 | 92.02658  | 226.14459 | 95.47572  | 3.14547  | 0.0699903 | 2.8929229 | 32  | 3 | 1997-2007 | 0.45 | M-v | 3 | MPC | 128683 1997 WO <sub>15</sub> |
| 1997 WM <sub>17</sub> | 17.9 | 0.15 | 20071027 | 12.22884  | 336.08816 | 23.17756  | 5.21017  | 0.1619442 | 2.2554854 | 35  | 3 | 1997-2007 | 0.61 | M-v | 3 | MPC | 127855 1997 WM <sub>17</sub> |
| 1997 WB <sub>18</sub> | 16.0 | 0.15 | 20071027 | 330.25373 | 40.99790  | 34.21452  | 16.14103 | 0.1145222 | 2.9279415 | 43  | 4 | 1997-2007 | 0.60 | M-v | 2 | MPC | 127855 1997 WB <sub>18</sub> |
| 1997 XV <sub>11</sub> | 18.4 | 0.15 | 20071027 | 261.94827 | 270.17511 | 241.31981 | 44.27021 | 0.3178145 | 1.8671187 | 56  | 3 | 1997-2007 | 0.39 | M-v | 2 | MPC | 110690 1997 XV <sub>11</sub> |
| 1997 YG <sub>4</sub>  | 15.7 | 0.15 | 20071027 | 39.57037  | 10.64430  | 94.52664  | 10.69335 | 0.1408202 | 2.7944534 | 90  | 6 | 1992-2007 | 0.50 | M-v | 1 | MPC | 117894 1997 YG <sub>4</sub>  |
| 1997 YW <sub>12</sub> | 18.3 | 0.15 | 20071027 | 6.05723   | 333.46536 | 67.59694  | 0.09506  | 0.2449995 | 2.2564129 | 60  | 3 | 1997-2007 | 0.50 | M-v | 2 | MPC | 127856 1997 YW <sub>12</sub> |
| 1998 AO <sub>11</sub> | 16.5 | 0.15 | 20071027 | 139.38474 | 169.48716 | 103.57921 | 4.01554  | 0.2377969 | 2.2985558 | 42  | 6 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128683 1998 AO <sub>11</sub> |
| 1998 BT <sub>5</sub>  | 17.7 | 0.15 | 20071027 | 58.19114  | 265.04102 | 126.21894 | 6.82740  | 0.1271314 | 2.2311050 | 35  | 4 | 1998-2007 | 0.25 | M-v | 1 | MPC | 103142 1998 BT <sub>5</sub>  |
| 1998 DY <sub>6</sub>  | 15.4 | 0.15 | 20071027 | 159.03755 | 333.10781 | 281.09423 | 9.11390  | 0.0327924 | 3.1280660 | 48  | 5 | 1998-2007 | 0.45 | M-v | 2 | MPC | 128683 1998 DY <sub>6</sub>  |
| 1998 DL <sub>12</sub> | 17.2 | 0.15 | 20071027 | 133.64815 | 165.43352 | 99.74153  | 3.36439  | 0.1375701 | 2.4100115 | 39  | 5 | 1998-2007 | 0.41 | M-v | 1 | MPC | 128683 1998 DL <sub>12</sub> |
| 1998 DT <sub>16</sub> | 15.1 | 0.15 | 20071027 | 162.56048 | 323.48280 | 275.36596 | 8.05715  | 0.0410371 | 3.1633866 | 61  | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 128683 1998 DT <sub>16</sub> |
| 1998 DQ <sub>17</sub> | 16.9 | 0.15 | 20071027 | 253.36715 | 45.46397  | 144.31354 | 6.57852  | 0.1072675 | 2.2948749 | 73  | 6 | 1998-2007 | 0.65 | M-v | 1 | MPC | 104109 1998 DQ <sub>17</sub> |
| 1998 DH <sub>19</sub> | 16.5 | 0.15 | 20071027 | 85.79249  | 324.26509 | 353.66229 | 6.59251  | 0.1286751 | 2.3552364 | 78  | 6 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128683 1998 DH <sub>19</sub> |
| 1998 DW <sub>36</sub> | 16.9 | 0.15 | 20071027 | 220.96730 | 97.55618  | 117.85310 | 2.23913  | 0.1761685 | 2.3404834 | 65  | 4 | 1998-2007 | 0.65 | M-v | 1 | MPC | 110691 1998 DW <sub>36</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1998 EW <sub>9</sub>   | 17.4 | 0.15 | 20071027 | 289.42233 | 346.49998 | 156.49322 | 4.82109  | 0.2391323 | 2.3077189 | 75  | 3 | 1998-2007 | 0.59 | M-v | 3 | MPC | 74565 1998 EW <sub>9</sub>    |
| 1998 EJ <sub>14</sub>  | 16.4 | 0.15 | 20071027 | 224.12112 | 130.87258 | 35.19269  | 3.85931  | 0.1523552 | 2.3893458 | 40  | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128683 1998 EJ <sub>14</sub>  |
| 1998 FP <sub>6</sub>   | 15.5 | 0.15 | 20071027 | 111.39085 | 280.42300 | 36.10868  | 6.47016  | 0.0998540 | 3.2439630 | 41  | 5 | 1998-2007 | 0.42 | M-v | 1 | MPC | 122366 1998 FP <sub>6</sub>   |
| 1998 FY <sub>7</sub>   | 16.2 | 0.15 | 20071027 | 325.18551 | 127.59302 | 355.70352 | 7.05393  | 0.1620531 | 3.0321192 | 39  | 6 | 1993-2007 | 0.54 | M-v | 1 | MPC | 114584 1998 FY <sub>7</sub>   |
| 1998 FM <sub>31</sub>  | 16.5 | 0.15 | 20071027 | 143.67181 | 195.40328 | 41.05005  | 2.71052  | 0.1854603 | 2.4388188 | 74  | 5 | 1998-2007 | 0.60 | M-v | 1 | MPC | 128683 1998 FM <sub>31</sub>  |
| 1998 FN <sub>51</sub>  | 16.6 | 0.15 | 20071027 | 273.22059 | 142.41594 | 43.54856  | 3.52043  | 0.1431408 | 2.2911714 | 101 | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128683 1998 FN <sub>51</sub>  |
| 1998 FT <sub>92</sub>  | 16.7 | 0.15 | 20071027 | 280.61741 | 152.75155 | 25.94168  | 6.21476  | 0.1038415 | 2.2813085 | 65  | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 74568 1998 FT <sub>92</sub>   |
| 1998 FV <sub>128</sub> | 15.7 | 0.15 | 20071027 | 286.73664 | 180.21042 | 359.45484 | 12.72553 | 0.2210322 | 3.0387287 | 57  | 4 | 1998-2007 | 0.65 | M-v | 2 | MPC | 110691 1998 FV <sub>128</sub> |
| 1998 HY <sub>1</sub>   | 17.5 | 0.15 | 20071027 | 178.06642 | 25.15208  | 246.30543 | 3.35857  | 0.2179902 | 2.3681252 | 56  | 5 | 1998-2007 | 0.53 | M-v | 2 | MPC | 110691 1998 HY <sub>1</sub>   |
| 1998 HZ <sub>10</sub>  | 16.7 | 0.15 | 20071027 | 66.35816  | 277.09651 | 66.55637  | 6.84267  | 0.1406618 | 2.4196332 | 70  | 5 | 1998-2007 | 0.58 | M-v | 2 | MPC | 128683 1998 HZ <sub>10</sub>  |
| 1998 HJ <sub>22</sub>  | 17.0 | 0.15 | 20071027 | 234.01147 | 171.05415 | 24.37857  | 6.23362  | 0.1655553 | 2.3504569 | 53  | 4 | 1998-2007 | 0.71 | M-v | 2 | MPC | 128683 1998 HJ <sub>22</sub>  |
| 1998 HM <sub>31</sub>  | 17.6 | 0.15 | 20071027 | 272.02110 | 96.18745  | 79.24567  | 7.23507  | 0.1481642 | 2.3419149 | 32  | 4 | 1998-2007 | 0.54 | M-v | 2 | MPC | 110692 1998 HM <sub>31</sub>  |
| 1998 HH <sub>61</sub>  | 15.2 | 0.15 | 20071027 | 283.31469 | 132.24701 | 28.55564  | 17.91597 | 0.1520783 | 3.1732722 | 45  | 5 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128683 1998 HH <sub>61</sub>  |
| 1998 HU <sub>67</sub>  | 16.9 | 0.15 | 20071027 | 232.79850 | 232.35050 | 338.35653 | 2.62716  | 0.1856164 | 2.3457275 | 87  | 6 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128684 1998 HU <sub>67</sub>  |
| 1998 HV <sub>71</sub>  | 16.6 | 0.15 | 20071027 | 174.75218 | 184.43512 | 71.58063  | 5.95879  | 0.1908673 | 2.3907706 | 48  | 7 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128684 1998 HV <sub>71</sub>  |
| 1998 HJ <sub>96</sub>  | 16.7 | 0.15 | 20071027 | 215.22178 | 127.31861 | 86.59310  | 4.65946  | 0.1629176 | 2.3784459 | 43  | 4 | 1998-2007 | 0.57 | M-v | 3 | MPC | 128684 1998 HJ <sub>96</sub>  |
| 1998 HN <sub>122</sub> | 16.7 | 0.15 | 20071027 | 262.70351 | 141.26652 | 101.26037 | 8.24025  | 0.2122730 | 2.2728937 | 37  | 6 | 1994-2007 | 0.45 | M-v | 1 | MPC | 110692 1998 HN <sub>122</sub> |
| 1998 MW <sub>1</sub>   | 16.8 | 0.15 | 20071027 | 304.64808 | 234.20384 | 238.17453 | 6.24021  | 0.0418422 | 2.4246379 | 55  | 4 | 1998-2007 | 0.40 | M-v | 1 | MPC | 128684 1998 MW <sub>1</sub>   |
| 1998 MR <sub>2</sub>   | 15.4 | 0.15 | 20071027 | 31.02872  | 240.82122 | 106.54267 | 27.94202 | 0.4617775 | 2.6156385 | 72  | 7 | 1990-2007 | 0.66 | M-v | 1 | MPC | 70218 1998 MR <sub>2</sub>    |
| 1998 ML <sub>7</sub>   | 16.7 | 0.15 | 20071027 | 1.83981   | 125.96886 | 286.29894 | 4.44962  | 0.2916064 | 2.5980002 | 112 | 3 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128684 1998 ML <sub>7</sub>   |
| 1998 MG <sub>44</sub>  | 16.7 | 0.15 | 20071027 | 184.32661 | 336.74821 | 286.18914 | 7.87417  | 0.1908317 | 2.4278209 | 41  | 5 | 1998-2007 | 0.62 | M-v | 1 | MPC | 77367 1998 MG <sub>44</sub>   |
| 1998 NR                | 16.3 | 0.15 | 20071027 | 140.87753 | 186.55994 | 103.65198 | 11.79329 | 0.2365154 | 2.4701016 | 62  | 5 | 1998-2007 | 0.53 | M-v | 2 | MPC | 110692 1998 NR                |
| 1998 NK <sub>1</sub>   | 17.0 | 0.15 | 20071027 | 262.26901 | 242.15152 | 300.57664 | 4.01453  | 0.0470399 | 2.4625016 | 56  | 7 | 1991-2007 | 0.56 | M-v | 1 | MPC | 110692 1998 NK <sub>1</sub>   |
| 1998 OG <sub>10</sub>  | 16.1 | 0.15 | 20071027 | 61.97214  | 4.58631   | 314.42630 | 10.33311 | 0.1867951 | 2.6261008 | 25  | 4 | 1998-2007 | 0.56 | M-v | 2 | MPC | 87340 1998 OG <sub>10</sub>   |
| 1998 OX <sub>11</sub>  | 15.5 | 0.15 | 20071027 | 38.03896  | 46.19128  | 315.49730 | 11.27377 | 0.3012501 | 2.6053249 | 55  | 4 | 1996-2007 | 0.61 | M-v | 2 | MPC | 128684 1998 OX <sub>11</sub>  |
| 1998 QN <sub>15</sub>  | 15.5 | 0.15 | 20071027 | 14.44813  | 174.91639 | 207.49129 | 7.15488  | 0.2638850 | 2.6645697 | 197 | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128684 1998 QN <sub>15</sub>  |
| 1998 QR <sub>15</sub>  | 18.1 | 0.15 | 20071027 | 347.30849 | 56.94862  | 320.25668 | 9.45831  | 0.5584175 | 2.7685342 | 240 | 3 | 1998-2007 | 0.52 | M-v | 1 | MPC | 37082 1998 QR <sub>15</sub>   |
| 1998 QP <sub>26</sub>  | 16.5 | 0.15 | 20071027 | 84.00861  | 297.36845 | 26.87791  | 4.08260  | 0.1593630 | 2.5785615 | 46  | 6 | 1997-2007 | 0.44 | M-v | 1 | MPC | 128684 1998 QP <sub>26</sub>  |
| 1998 QC <sub>28</sub>  | 17.3 | 0.15 | 20071027 | 32.29929  | 32.12070  | 354.90048 | 6.19660  | 0.2028210 | 2.6199911 | 31  | 3 | 1998-2007 | 0.41 | M-v | 2 | MPC | 117393 1998 QC <sub>28</sub>  |
| 1998 QV <sub>28</sub>  | 16.3 | 0.15 | 20071027 | 44.85183  | 109.92151 | 231.41389 | 3.95435  | 0.2797403 | 2.6414406 | 89  | 4 | 1994-2007 | 0.53 | M-v | 0 | MPC | 128684 1998 QV <sub>28</sub>  |
| 1998 QD <sub>33</sub>  | 16.9 | 0.15 | 20071027 | 70.30071  | 87.09075  | 263.19857 | 3.12379  | 0.2414489 | 2.5745658 | 38  | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 110693 1998 QD <sub>33</sub>  |
| 1998 QF <sub>33</sub>  | 16.4 | 0.15 | 20071027 | 68.84240  | 83.24804  | 277.16596 | 2.98063  | 0.2811333 | 2.5665574 | 70  | 4 | 1998-2007 | 0.54 | M-v | 2 | MPC | 126553 1998 QF <sub>33</sub>  |
| 1998 QV <sub>36</sub>  | 16.4 | 0.15 | 20071027 | 55.93618  | 26.55124  | 316.99827 | 12.22907 | 0.3021566 | 2.6210244 | 45  | 3 | 1996-2007 | 0.65 | M-v | 2 | MPC | 31820 1998 QV <sub>36</sub>   |
| 1998 QW <sub>44</sub>  | 16.1 | 0.15 | 20071027 | 59.60410  | 68.90176  | 299.53044 | 3.26756  | 0.2804261 | 2.5829473 | 95  | 5 | 1998-2007 | 0.62 | M-v | 1 | MPC | 77369 1998 QW <sub>44</sub>   |
| 1998 QK <sub>47</sub>  | 15.4 | 0.15 | 20071027 | 86.74216  | 139.88031 | 169.07041 | 4.13024  | 0.2049164 | 2.6059729 | 55  | 4 | 1998-2007 | 0.60 | M-v | 1 | MPC | 110693 1998 QK <sub>47</sub>  |
| 1998 QK <sub>78</sub>  | 15.4 | 0.15 | 20071027 | 28.21441  | 144.77258 | 215.06501 | 7.28836  | 0.1560720 | 2.6619404 | 110 | 6 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128684 1998 QK <sub>78</sub>  |
| 1998 QD <sub>84</sub>  | 15.3 | 0.15 | 20071027 | 29.11529  | 64.54308  | 283.45073 | 12.98711 | 0.1154340 | 2.6738925 | 50  | 4 | 1998-2007 | 0.68 | M-v | 1 | MPC | 128684 1998 QD <sub>84</sub>  |
| 1998 QH <sub>85</sub>  | 15.8 | 0.15 | 20071027 | 61.40702  | 85.64748  | 246.72293 | 11.30251 | 0.1813364 | 2.6296164 | 38  | 3 | 1998-2007 | 0.80 | M-v | 3 | MPC | 34718 1998 QH <sub>85</sub>   |
| 1998 QJ <sub>89</sub>  | 15.8 | 0.15 | 20071027 | 18.26265  | 106.70547 | 256.56085 | 11.35164 | 0.2884088 | 2.6959240 | 109 | 3 | 1998-2007 | 0.48 | M-v | 2 | MPC | 128684 1998 QJ <sub>89</sub>  |
| 1998 QN <sub>90</sub>  | 15.8 | 0.15 | 20071027 | 54.20991  | 70.15082  | 250.46834 | 11.79899 | 0.2721347 | 2.6703170 | 89  | 5 | 1998-2007 | 0.63 | M-v | 1 | MPC | 128684 1998 QN <sub>90</sub>  |
| 1998 QG <sub>97</sub>  | 15.3 | 0.15 | 20071027 | 34.43821  | 26.49086  | 298.77976 | 15.72782 | 0.2050458 | 2.6871714 | 50  | 5 | 1996-2007 | 0.59 | M-v | 2 | MPC | 128684 1998 QG <sub>97</sub>  |
| 1998 RG <sub>3</sub>   | 15.8 | 0.15 | 20071027 | 28.07528  | 132.41174 | 229.59335 | 8.10043  | 0.3478648 | 2.6820524 | 157 | 3 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128684 1998 RG <sub>3</sub>   |
| 1998 RO <sub>47</sub>  | 17.3 | 0.15 | 20071027 | 69.01250  | 70.87033  | 274.00897 | 2.92725  | 0.3118914 | 2.5991089 | 41  | 3 | 1998-2007 | 0.67 | M-v | 3 | MPC | 33037 1998 RO <sub>47</sub>   |
| 1998 RN <sub>51</sub>  | 16.4 | 0.15 | 20071027 | 83.02358  | 194.06348 | 125.01834 | 5.41926  | 0.2058545 | 2.6018132 | 70  | 5 | 1990-2007 | 0.66 | M-v | 1 | MPC | 128684 1998 RN <sub>51</sub>  |
| 1998 RH <sub>54</sub>  | 16.5 | 0.15 | 20071027 | 11.33546  | 188.91162 | 197.03077 | 7.37082  | 0.3027553 | 2.6818230 | 86  | 3 | 1998-2007 | 0.55 | M-v | 3 | MPC | 128684 1998 RH <sub>54</sub>  |
| 1998 RL <sub>63</sub>  | 16.6 | 0.15 | 20071027 | 359.04560 | 247.58500 | 163.03049 | 13.28929 | 0.2636318 | 2.6698232 | 45  | 3 | 1998-2007 | 0.71 | M-v | 2 | MPC | 127856 1998 RL <sub>63</sub>  |
| 1998 RE <sub>68</sub>  | 16.2 | 0.15 | 20071027 | 3.49300   | 23.83052  | 356.20615 | 6.62923  | 0.2556880 | 2.7131429 | 94  | 3 | 1998-2007 | 0.55 | M-v | 2 | MPC | 128685 1998 RE <sub>68</sub>  |
| 1998 SD <sub>14</sub>  | 16.0 | 0.15 | 20071027 | 23.54923  | 354.56276 | 3.39241   | 14.37201 | 0.2589594 | 2.6692369 | 54  | 3 | 1998-2007 | 0.46 | M-v | 3 | MPC | 127856 1998 SD <sub>14</sub>  |
| 1998 SS <sub>14</sub>  | 16.0 | 0.15 | 20071027 | 34.53195  | 287.76341 | 82.20305  | 4.16444  | 0.2815085 | 2.6574159 | 77  | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 62228 1998 SS <sub>14</sub>   |
| 1998 ST <sub>20</sub>  | 17.2 | 0.15 | 20071027 | 349.09165 | 284.08411 | 166.39247 | 2.76379  | 0.1476471 | 2.5903511 | 60  | 9 | 1994-2007 | 0.49 | M-v | 0 | MPC | 110694 1998 ST <sub>20</sub>  |
| 1998 SB <sub>38</sub>  | 17.0 | 0.15 | 20071027 | 43.44760  | 177.75266 | 175.99866 | 2.51085  | 0.2160456 | 2.6315475 | 28  | 3 | 1998-2007 | 0.35 | M-v | 3 | MPC | 127857 1998 SB <sub>38</sub>  |
| 1998 SH <sub>42</sub>  | 16.0 | 0.15 | 20071027 | 342.69065 | 243.63336 | 168.17354 | 8.85050  | 0.2881072 | 2.6942421 | 102 | 5 | 1996-2007 | 0.59 | M-v | 1 | MPC | 128685 1998 SH <sub>42</sub>  |
| 1998 SO <sub>47</sub>  | 16.6 | 0.15 | 20071027 | 358.44441 | 161.36064 | 217.00411 | 3.71213  | 0.0796454 | 2.7538778 | 55  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 128685 1998 SO <sub>47</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1998 SY <sub>49</sub>  | 15.0 | 0.15 | 20071027 | 69.58685  | 335.57958 | 14.33798  | 0.62940  | 0.2698023 | 3.9325344 | 123 | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 126553 1998 SY <sub>49</sub>  |
| 1998 SH <sub>50</sub>  | 16.3 | 0.15 | 20071027 | 6.19542   | 348.20676 | 24.43173  | 10.84830 | 0.2609127 | 2.7234262 | 172 | 2 | 1998-2007 | 0.55 | M-v | 2 | MPC | 128685 1998 SH <sub>50</sub>  |
| 1998 SB <sub>61</sub>  | 16.2 | 0.15 | 20071027 | 357.31236 | 213.31373 | 173.89380 | 9.33009  | 0.2355551 | 2.7126610 | 127 | 5 | 1997-2007 | 0.50 | M-v | 1 | MPC | 128685 1998 SB <sub>61</sub>  |
| 1998 SA <sub>72</sub>  | 16.2 | 0.15 | 20071027 | 72.94304  | 199.23769 | 124.23246 | 2.79968  | 0.1533250 | 2.6670325 | 45  | 4 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128685 1998 SA <sub>72</sub>  |
| 1998 SJ <sub>75</sub>  | 15.7 | 0.15 | 20071027 | 321.17092 | 50.08052  | 34.47160  | 15.45143 | 0.2873346 | 2.7398849 | 94  | 3 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128685 1998 SJ <sub>75</sub>  |
| 1998 SP <sub>76</sub>  | 15.7 | 0.15 | 20071027 | 28.22054  | 94.70079  | 256.87001 | 13.75034 | 0.1563548 | 2.6750783 | 46  | 3 | 1998-2007 | 0.66 | M-v | 3 | MPC | 127857 1998 SP <sub>76</sub>  |
| 1998 SK <sub>77</sub>  | 16.9 | 0.15 | 20071027 | 58.37341  | 99.77174  | 258.11520 | 1.93689  | 0.2559739 | 2.6044948 | 52  | 4 | 1998-2007 | 0.43 | M-v | 1 | MPC | 128685 1998 SK <sub>77</sub>  |
| 1998 SR <sub>78</sub>  | 16.0 | 0.15 | 20071027 | 4.34525   | 176.44607 | 191.88643 | 14.47251 | 0.2028221 | 2.7185609 | 152 | 5 | 1997-2007 | 0.58 | M-v | 1 | MPC | 128685 1998 SR <sub>78</sub>  |
| 1998 SK <sub>83</sub>  | 17.0 | 0.15 | 20071027 | 56.84751  | 154.17048 | 197.50304 | 2.23760  | 0.1971919 | 2.6254065 | 43  | 4 | 1998-2007 | 0.67 | M-v | 1 | MPC | 57677 1998 SK <sub>83</sub>   |
| 1998 SA <sub>85</sub>  | 16.0 | 0.15 | 20071027 | 42.58108  | 200.88586 | 167.06284 | 12.37607 | 0.1876600 | 2.6303007 | 38  | 3 | 1998-2007 | 0.55 | M-v | 2 | MPC | 35457 1998 SA <sub>85</sub>   |
| 1998 SA <sub>114</sub> | 15.1 | 0.15 | 20071027 | 61.00911  | 294.25404 | 24.40945  | 13.42567 | 0.2551717 | 2.6690511 | 93  | 3 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128685 1998 SA <sub>114</sub> |
| 1998 SL <sub>116</sub> | 15.7 | 0.15 | 20071027 | 67.50214  | 353.57951 | 355.67672 | 7.54059  | 0.1961847 | 2.6210003 | 87  | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 125790 1998 SL <sub>116</sub> |
| 1998 SY <sub>119</sub> | 16.4 | 0.15 | 20071027 | 12.54997  | 23.03615  | 17.12046  | 3.93640  | 0.1760750 | 2.6535734 | 62  | 4 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128685 1998 SY <sub>119</sub> |
| 1998 SN <sub>140</sub> | 16.0 | 0.15 | 20071027 | 17.37356  | 158.39913 | 209.32458 | 13.26879 | 0.1795556 | 2.7203863 | 139 | 6 | 1997-2007 | 0.53 | M-v | 1 | MPC | 128685 1998 SN <sub>140</sub> |
| 1998 SN <sub>155</sub> | 16.7 | 0.15 | 20071027 | 71.99245  | 199.30709 | 117.27263 | 4.02312  | 0.2576553 | 2.6427872 | 55  | 4 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128685 1998 SN <sub>155</sub> |
| 1998 SB <sub>171</sub> | 17.2 | 0.15 | 20071027 | 346.68176 | 205.58748 | 201.14379 | 5.56552  | 0.3175567 | 2.7096780 | 105 | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128685 1998 SB <sub>171</sub> |
| 1998 SG <sub>176</sub> | 17.5 | 0.15 | 20071027 | 6.58029   | 201.07023 | 188.25688 | 2.75331  | 0.2995871 | 2.6900697 | 89  | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128685 1998 SG <sub>176</sub> |
| 1998 TK <sub>11</sub>  | 16.1 | 0.15 | 20071027 | 257.85730 | 289.33563 | 217.63199 | 4.38668  | 0.1030896 | 2.7221850 | 55  | 3 | 1998-2007 | 0.37 | M-v | 3 | MPC | 128685 1998 TK <sub>11</sub>  |
| 1998 TK <sub>20</sub>  | 16.3 | 0.15 | 20071027 | 348.09285 | 184.69838 | 214.59131 | 2.22849  | 0.2033348 | 2.7446445 | 131 | 6 | 1994-2007 | 0.50 | M-v | 1 | MPC | 128685 1998 TK <sub>20</sub>  |
| 1998 TH <sub>21</sub>  | 16.9 | 0.15 | 20071027 | 25.78917  | 359.57214 | 20.52958  | 3.78965  | 0.1384345 | 2.6858562 | 30  | 3 | 1998-2007 | 0.25 | M-v | 3 | MPC | 127857 1998 TH <sub>21</sub>  |
| 1998 TN <sub>26</sub>  | 16.6 | 0.15 | 20071027 | 59.43974  | 345.87518 | 18.91735  | 1.75566  | 0.2562734 | 2.6288390 | 74  | 7 | 1996-2007 | 0.54 | M-v | 1 | MPC | 77376 1998 TN <sub>26</sub>   |
| 1998 TU <sub>29</sub>  | 16.5 | 0.15 | 20071027 | 8.18461   | 242.50058 | 146.60076 | 14.91225 | 0.3508641 | 2.7103628 | 39  | 3 | 1998-2007 | 0.55 | M-v | 2 | MPC | 128685 1998 TU <sub>29</sub>  |
| 1998 TO <sub>36</sub>  | 16.7 | 0.15 | 20071027 | 17.64426  | 130.43710 | 212.04995 | 9.21911  | 0.3269911 | 2.7561690 | 63  | 2 | 1998-2007 | 0.43 | M-v | 3 | MPC | 127858 1998 TO <sub>36</sub>  |
| 1998 UQ <sub>8</sub>   | 16.5 | 0.15 | 20071027 | 12.07875  | 332.01994 | 70.31799  | 4.08885  | 0.3118889 | 2.6668740 | 49  | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 126554 1998 UQ <sub>8</sub>   |
| 1998 UU <sub>16</sub>  | 17.1 | 0.15 | 20071027 | 317.15686 | 95.16936  | 337.84934 | 22.66065 | 0.3503117 | 2.7763612 | 44  | 3 | 1998-2007 | 0.55 | M-v | 1 | MPC | 124289 1998 UU <sub>16</sub>  |
| 1998 UV <sub>23</sub>  | 16.3 | 0.15 | 20071027 | 51.87481  | 293.09049 | 44.93306  | 14.76202 | 0.2373537 | 2.6752478 | 64  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 127858 1998 UV <sub>23</sub>  |
| 1998 UZ <sub>25</sub>  | 15.6 | 0.15 | 20071027 | 8.04739   | 182.76515 | 176.10112 | 8.42537  | 0.2815866 | 2.7613970 | 142 | 3 | 1998-2007 | 0.46 | M-v | 2 | MPC | 128686 1998 UZ <sub>25</sub>  |
| 1998 UP <sub>26</sub>  | 15.2 | 0.15 | 20071027 | 343.26088 | 354.48451 | 50.43657  | 14.96112 | 0.2612111 | 2.7545357 | 121 | 3 | 1998-2007 | 0.60 | M-v | 2 | MPC | 128686 1998 UP <sub>26</sub>  |
| 1998 VO                | 20.4 | 0.15 | 20071027 | 96.70176  | 75.77304  | 228.24316 | 10.05654 | 0.2265150 | 1.0741314 | 129 | 3 | 1998-2007 | 0.58 | M-v | 3 | MPC | 119513 1998 VO                |
| 1998 VE <sub>1</sub>   | 15.4 | 0.15 | 20071027 | 44.66593  | 326.27561 | 62.26582  | 14.13822 | 0.3007598 | 2.6262179 | 48  | 6 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128686 1998 VE <sub>1</sub>   |
| 1998 VR <sub>4</sub>   | 16.1 | 0.15 | 20071027 | 38.80073  | 133.47450 | 232.22834 | 4.92427  | 0.1560501 | 2.7019840 | 67  | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128686 1998 VR <sub>4</sub>   |
| 1998 VY <sub>13</sub>  | 15.8 | 0.15 | 20071027 | 6.73751   | 114.12893 | 240.08903 | 12.02452 | 0.2218217 | 2.7789861 | 87  | 3 | 1998-2007 | 0.54 | M-v | 2 | MPC | 128686 1998 VY <sub>13</sub>  |
| 1998 VS <sub>40</sub>  | 16.8 | 0.15 | 20071027 | 47.76821  | 319.24750 | 77.88624  | 4.34651  | 0.1145037 | 2.6314286 | 43  | 5 | 1998-2007 | 0.47 | M-v | 0 | MPC | 128686 1998 VS <sub>40</sub>  |
| 1998 WZ <sub>4</sub>   | 15.1 | 0.15 | 20071027 | 48.37917  | 259.70800 | 100.48696 | 28.13998 | 0.3250133 | 2.6807304 | 43  | 3 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128686 1998 WZ <sub>4</sub>   |
| 1998 WT <sub>10</sub>  | 16.2 | 0.15 | 20071027 | 5.95023   | 204.18187 | 240.73622 | 12.01498 | 0.2385292 | 2.6554192 | 60  | 3 | 1998-2007 | 0.69 | M-v | 3 | MPC | 128686 1998 WT <sub>10</sub>  |
| 1998 WX <sub>35</sub>  | 15.5 | 0.15 | 20071027 | 24.61498  | 323.90171 | 50.22653  | 12.56666 | 0.2311497 | 2.7082266 | 99  | 2 | 1998-2007 | 0.44 | M-v | 3 | MPC | 128686 1998 WX <sub>35</sub>  |
| 1998 WX <sub>36</sub>  | 16.6 | 0.15 | 20071027 | 45.47645  | 308.85660 | 45.46830  | 2.87067  | 0.0565777 | 2.7134247 | 57  | 3 | 1998-2007 | 0.31 | M-v | 3 | MPC | 128686 1998 WX <sub>36</sub>  |
| 1998 WY <sub>36</sub>  | 16.7 | 0.15 | 20071027 | 33.89973  | 297.90207 | 48.09605  | 9.27882  | 0.1625036 | 2.7404028 | 40  | 2 | 1998-2007 | 0.52 | M-v | 4 | MPC | 127858 1998 WY <sub>36</sub>  |
| 1998 WU <sub>38</sub>  | 17.5 | 0.15 | 20071027 | 332.37892 | 37.55228  | 66.76029  | 2.96523  | 0.1528621 | 2.6859132 | 28  | 3 | 1998-2007 | 0.44 | M-v | 2 | MPC | 88678 1998 WU <sub>38</sub>   |
| 1998 WU <sub>41</sub>  | 15.9 | 0.15 | 20071027 | 27.28393  | 315.28894 | 61.44326  | 8.50920  | 0.2367238 | 2.7074113 | 58  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128686 1998 WU <sub>41</sub>  |
| 1998 WE <sub>42</sub>  | 16.9 | 0.15 | 20071027 | 12.01182  | 165.14836 | 232.09014 | 4.07775  | 0.1672689 | 2.7114120 | 59  | 4 | 1998-2007 | 0.42 | M-v | 1 | MPC | 127859 1998 WE <sub>42</sub>  |
| 1998 WP <sub>42</sub>  | 15.1 | 0.15 | 20071027 | 39.41088  | 305.42064 | 53.48200  | 29.58974 | 0.2697019 | 2.6772401 | 67  | 2 | 1998-2007 | 0.65 | M-v | 3 | MPC | 128686 1998 WP <sub>42</sub>  |
| 1998 XK <sub>2</sub>   | 16.0 | 0.15 | 20071027 | 75.09477  | 85.13832  | 239.75342 | 7.08341  | 0.1049075 | 2.7297116 | 71  | 4 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128686 1998 XK <sub>2</sub>   |
| 1998 XU <sub>8</sub>   | 15.9 | 0.15 | 20071027 | 5.14152   | 31.05533  | 72.81970  | 6.23688  | 0.1627863 | 2.6353760 | 51  | 5 | 1998-2007 | 0.63 | M-v | 1 | MPC | 126555 1998 XU <sub>8</sub>   |
| 1998 XB <sub>9</sub>   | 16.4 | 0.15 | 20071027 | 2.75040   | 106.27463 | 320.37911 | 13.44430 | 0.4776255 | 2.7076048 | 113 | 4 | 1989-2007 | 0.56 | M-v | 1 | MPC | 128686 1998 XB <sub>9</sub>   |
| 1998 XC <sub>9</sub>   | 18.1 | 0.15 | 20071027 | 341.47554 | 120.87911 | 320.21056 | 9.31983  | 0.5321828 | 2.7493376 | 131 | 3 | 1998-2007 | 0.53 | M-v | 1 | MPC | 126555 1998 XC <sub>9</sub>   |
| 1998 XF <sub>17</sub>  | 17.6 | 0.15 | 20071027 | 7.64887   | 264.51004 | 159.25024 | 2.70806  | 0.2464914 | 2.6929977 | 21  | 3 | 1998-2007 | 0.38 | M-v | 4 | MPC | 107766 1998 XF <sub>17</sub>  |
| 1998 XY <sub>17</sub>  | 16.3 | 0.15 | 20071027 | 62.43001  | 284.54139 | 79.39321  | 6.96123  | 0.0428452 | 2.6851341 | 37  | 4 | 1998-2007 | 0.41 | M-v | 1 | MPC | 104114 1998 XY <sub>17</sub>  |
| 1998 XL <sub>25</sub>  | 17.1 | 0.15 | 20071027 | 348.56026 | 168.07063 | 235.90198 | 7.00958  | 0.2189094 | 2.7601890 | 36  | 2 | 1998-2007 | 0.49 | M-v | 3 | MPC | 128686 1998 XL <sub>25</sub>  |
| 1998 XY <sub>65</sub>  | 15.9 | 0.15 | 20071027 | 342.61490 | 185.68769 | 255.26897 | 10.80332 | 0.2951602 | 2.7304256 | 95  | 3 | 1998-2007 | 0.52 | M-v | 2 | MPC | 128686 1998 XY <sub>65</sub>  |
| 1998 YM <sub>8</sub>   | 15.5 | 0.15 | 20071027 | 347.46022 | 94.00152  | 333.62987 | 28.96436 | 0.4068302 | 2.7515959 | 103 | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128686 1998 YM <sub>8</sub>   |
| 1998 YD <sub>17</sub>  | 15.9 | 0.15 | 20071027 | 267.79555 | 255.42549 | 289.37101 | 5.96207  | 0.1406844 | 2.7950224 | 54  | 5 | 1998-2007 | 0.48 | M-v | 0 | MPC | 110699 1998 YD <sub>17</sub>  |
| 1999 AQ <sub>10</sub>  | 20.3 | 0.15 | 20071027 | 107.78198 | 299.52389 | 327.36449 | 6.55401  | 0.2348414 | 0.9375789 | 186 | 3 | 1999-2007 | 0.42 | M-v | 3 | MPC | 128686 1999 AQ <sub>10</sub>  |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1999 BV <sub>31</sub>  | 17.0 | 0.15 | 20071027 | 26.57423  | 309.06279 | 102.81381 | 3.44522  | 0.0782565 | 2.7648446 | 37  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 77381 1999 BV <sub>31</sub>   |
| 1999 CW <sub>29</sub>  | 15.7 | 0.15 | 20071027 | 333.57629 | 25.57673  | 142.24555 | 16.93544 | 0.0904918 | 2.6821265 | 41  | 5 | 1999-2007 | 0.68 | M-v | 1 | MPC | 110700 1999 CW <sub>29</sub>  |
| 1999 CZ <sub>96</sub>  | 15.8 | 0.15 | 20071027 | 3.08877   | 19.62933  | 125.06749 | 3.59271  | 0.1421788 | 2.6630525 | 61  | 5 | 1999-2007 | 0.61 | M-v | 1 | MPC | 117899 1999 CZ <sub>96</sub>  |
| 1999 CF <sub>101</sub> | 15.0 | 0.15 | 20071027 | 324.21991 | 213.26746 | 354.72627 | 8.22239  | 0.1364699 | 2.6545660 | 64  | 5 | 1999-2007 | 0.63 | M-v | 1 | MPC | 112721 1999 CF <sub>101</sub> |
| 1999 CN <sub>132</sub> | 17.2 | 0.15 | 20071027 | 43.17977  | 197.13186 | 136.49380 | 5.93932  | 0.2079601 | 2.1948972 | 40  | 3 | 1993-2007 | 0.52 | M-v | 4 | MPC | 127859 1999 CN <sub>132</sub> |
| 1999 CH <sub>144</sub> | 16.7 | 0.15 | 20071027 | 235.92594 | 178.44654 | 4.91243   | 0.52433  | 0.0960138 | 3.0231696 | 32  | 5 | 1999-2007 | 0.37 | M-v | 1 | MPC | 128686 1999 CH <sub>144</sub> |
| 1999 FQ <sub>63</sub>  | 15.2 | 0.15 | 20071027 | 144.39613 | 27.01517  | 189.31469 | 14.93194 | 0.0880194 | 3.1831778 | 30  | 4 | 1999-2007 | 0.33 | M-v | 1 | MPC | 126555 1999 FQ <sub>63</sub>  |
| 1999 GH <sub>3</sub>   | 16.0 | 0.15 | 20071027 | 14.97369  | 246.91680 | 180.36520 | 4.78319  | 0.0960965 | 2.8959490 | 57  | 5 | 1999-2007 | 0.44 | M-v | 0 | MPC | 110701 1999 GH <sub>3</sub>   |
| 1999 GA <sub>11</sub>  | 17.6 | 0.15 | 20071027 | 212.72787 | 163.42023 | 52.52099  | 1.46292  | 0.1902809 | 2.1974764 | 43  | 5 | 1999-2007 | 0.46 | M-v | 2 | MPC | 110701 1999 GA <sub>11</sub>  |
| 1999 GE <sub>14</sub>  | 17.3 | 0.15 | 20071027 | 242.87507 | 117.89715 | 17.09141  | 6.56459  | 0.0543811 | 2.2488334 | 27  | 3 | 1999-2007 | 0.41 | M-v | 3 | MPC | 125792 1999 GE <sub>14</sub>  |
| 1999 HY <sub>6</sub>   | 17.0 | 0.15 | 20071027 | 322.95961 | 45.92619  | 33.36976  | 7.45652  | 0.0323504 | 2.2472896 | 59  | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128687 1999 HY <sub>6</sub>   |
| 1999 JU <sub>61</sub>  | 16.2 | 0.15 | 20071027 | 54.80374  | 53.38915  | 238.17534 | 7.77006  | 0.3588907 | 2.4372927 | 208 | 3 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128687 1999 JU <sub>61</sub>  |
| 1999 JB <sub>70</sub>  | 14.2 | 0.15 | 20071027 | 165.72331 | 194.94097 | 56.50618  | 18.25152 | 0.1594012 | 3.1398009 | 84  | 5 | 1999-2007 | 0.63 | M-v | 1 | MPC | 128687 1999 JB <sub>70</sub>  |
| 1999 JQ <sub>77</sub>  | 16.6 | 0.15 | 20071027 | 137.73137 | 180.39284 | 102.32188 | 5.92928  | 0.3184963 | 2.2821266 | 74  | 6 | 1999-2007 | 0.60 | M-v | 1 | MPC | 104116 1999 JQ <sub>77</sub>  |
| 1999 KD                | 17.5 | 0.15 | 20071027 | 64.95808  | 269.76922 | 61.43895  | 6.01224  | 0.2671554 | 2.3325255 | 56  | 6 | 1996-2007 | 0.52 | M-v | 1 | MPC | 110702 1999 KD                |
| 1999 KT <sub>19</sub>  | 15.0 | 0.15 | 20071027 | 235.03884 | 345.20543 | 203.96439 | 17.15545 | 0.1455470 | 3.0703414 | 71  | 4 | 1999-2007 | 0.70 | M-v | 3 | MPC | 128687 1999 KT <sub>19</sub>  |
| 1999 LB <sub>9</sub>   | 15.6 | 0.15 | 20071027 | 205.55852 | 144.37796 | 93.81003  | 14.70952 | 0.2836971 | 3.0790389 | 63  | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 114588 1999 LB <sub>9</sub>   |
| 1999 LS <sub>33</sub>  | 16.7 | 0.15 | 20071027 | 127.41915 | 70.99853  | 213.78248 | 3.70376  | 0.1829875 | 2.2875613 | 88  | 6 | 1993-2007 | 0.54 | M-v | 0 | MPC | 104116 1999 LS <sub>33</sub>  |
| 1999 PT <sub>3</sub>   | 16.5 | 0.15 | 20071027 | 215.40250 | 339.77892 | 310.90088 | 9.04868  | 0.3642300 | 2.1661745 | 79  | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 74607 1999 PT <sub>3</sub>    |
| 1999 PE <sub>7</sub>   | 17.0 | 0.15 | 20071027 | 294.85115 | 209.95924 | 307.76403 | 1.83817  | 0.0937946 | 2.2759992 | 56  | 7 | 1996-2007 | 0.56 | M-v | 1 | MPC | 128687 1999 PE <sub>7</sub>   |
| 1999 QL                | 16.8 | 0.15 | 20071027 | 34.92213  | 84.80735  | 301.05876 | 5.42772  | 0.1354512 | 2.3781027 | 55  | 4 | 1999-2007 | 0.46 | M-v | 2 | MPC | 77385 1999 QL                 |
| 1999 RP <sub>2</sub>   | 15.9 | 0.15 | 20071027 | 71.43859  | 42.08234  | 283.82556 | 13.19708 | 0.2552326 | 2.4231056 | 64  | 3 | 1999-2007 | 0.57 | M-v | 2 | MPC | 128687 1999 RP <sub>2</sub>   |
| 1999 RN <sub>17</sub>  | 16.8 | 0.15 | 20071027 | 136.32482 | 349.51244 | 325.45558 | 5.32609  | 0.2082519 | 2.3085208 | 137 | 5 | 1992-2007 | 0.53 | M-v | 2 | MPC | 110702 1999 RN <sub>17</sub>  |
| 1999 RH <sub>33</sub>  | 19.5 | 0.15 | 20071027 | 268.18917 | 351.32621 | 168.40961 | 11.01431 | 0.1709130 | 1.5511657 | 63  | 5 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128687 1999 RH <sub>33</sub>  |
| 1999 RL <sub>40</sub>  | 17.2 | 0.15 | 20071027 | 349.22107 | 235.82769 | 174.04777 | 19.44842 | 0.0603656 | 1.8879676 | 66  | 3 | 1999-2007 | 0.71 | M-v | 3 | MPC | 128687 1999 RL <sub>40</sub>  |
| 1999 RQ <sub>46</sub>  | 15.3 | 0.15 | 20071027 | 95.33953  | 4.23274   | 323.69417 | 8.98278  | 0.2414832 | 2.3432589 | 93  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 73950 1999 RQ <sub>46</sub>   |
| 1999 RU <sub>50</sub>  | 16.5 | 0.15 | 20071027 | 79.84847  | 285.18188 | 69.17133  | 3.21804  | 0.2251096 | 2.3473460 | 88  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 55873 1999 RU <sub>50</sub>   |
| 1999 RK <sub>51</sub>  | 16.7 | 0.15 | 20071027 | 81.17660  | 114.07089 | 230.59093 | 1.62084  | 0.2236513 | 2.3580955 | 81  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 77387 1999 RK <sub>51</sub>   |
| 1999 RM <sub>69</sub>  | 16.9 | 0.15 | 20071027 | 114.82524 | 185.85648 | 124.16746 | 3.28342  | 0.2086475 | 2.3507976 | 40  | 6 | 1998-2007 | 0.56 | M-v | 1 | MPC | 110703 1999 RM <sub>69</sub>  |
| 1999 RV <sub>72</sub>  | 16.3 | 0.15 | 20071027 | 52.00759  | 24.89349  | 357.19645 | 2.57034  | 0.1510194 | 2.3779815 | 92  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128687 1999 RV <sub>72</sub>  |
| 1999 RG <sub>75</sub>  | 15.8 | 0.15 | 20071027 | 5.23088   | 71.51342  | 344.60597 | 9.90944  | 0.2370272 | 2.4358705 | 93  | 3 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128688 1999 RG <sub>75</sub>  |
| 1999 RF <sub>78</sub>  | 16.0 | 0.15 | 20071027 | 18.11267  | 53.78370  | 311.79278 | 6.69740  | 0.1467342 | 2.4711079 | 131 | 4 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128688 1999 RF <sub>78</sub>  |
| 1999 RT <sub>80</sub>  | 17.2 | 0.15 | 20071027 | 54.07577  | 335.97595 | 40.85283  | 1.73096  | 0.1934096 | 2.3832740 | 50  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128688 1999 RT <sub>80</sub>  |
| 1999 RZ <sub>83</sub>  | 16.7 | 0.15 | 20071027 | 24.59870  | 269.35636 | 120.75881 | 2.15802  | 0.1879532 | 2.4326506 | 82  | 5 | 1999-2007 | 0.59 | M-v | 2 | MPC | 77388 1999 RZ <sub>83</sub>   |
| 1999 RQ <sub>93</sub>  | 16.7 | 0.15 | 20071027 | 72.41700  | 308.11862 | 53.11223  | 2.84913  | 0.2251747 | 2.3830584 | 86  | 5 | 1977-2007 | 0.73 | M-v | 1 | MPC | 77389 1999 RQ <sub>93</sub>   |
| 1999 RG <sub>97</sub>  | 16.7 | 0.15 | 20071027 | 61.90423  | 214.46369 | 127.24996 | 3.32593  | 0.1911685 | 2.4256951 | 69  | 7 | 1999-2007 | 0.56 | M-v | 1 | MPC | 101977 1999 RG <sub>97</sub>  |
| 1999 RF <sub>104</sub> | 16.5 | 0.15 | 20071027 | 49.54624  | 165.36550 | 192.81783 | 6.63630  | 0.1546513 | 2.4273398 | 98  | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128688 1999 RF <sub>104</sub> |
| 1999 RP <sub>104</sub> | 14.3 | 0.15 | 20071027 | 344.85913 | 160.36856 | 241.95317 | 7.10493  | 0.3529730 | 3.9510482 | 107 | 3 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128688 1999 RP <sub>104</sub> |
| 1999 RU <sub>104</sub> | 14.7 | 0.15 | 20071027 | 176.61437 | 2.54149   | 315.42275 | 11.60226 | 0.1885438 | 3.1717358 | 87  | 4 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128688 1999 RU <sub>104</sub> |
| 1999 RF <sub>106</sub> | 15.9 | 0.15 | 20071027 | 26.67822  | 85.24670  | 304.22886 | 5.35327  | 0.1390153 | 2.4231472 | 76  | 4 | 1999-2007 | 0.44 | M-v | 2 | MPC | 126556 1999 RF <sub>106</sub> |
| 1999 RE <sub>129</sub> | 16.3 | 0.15 | 20071027 | 83.22237  | 171.45912 | 171.54766 | 2.49643  | 0.1897556 | 2.3608921 | 88  | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128688 1999 RE <sub>129</sub> |
| 1999 RO <sub>132</sub> | 16.2 | 0.15 | 20071027 | 63.76994  | 80.39438  | 261.30357 | 4.14954  | 0.2169846 | 2.4052007 | 96  | 4 | 1999-2007 | 0.45 | M-v | 1 | MPC | 101977 1999 RO <sub>132</sub> |
| 1999 RT <sub>136</sub> | 16.8 | 0.15 | 20071027 | 56.95115  | 50.02452  | 259.34135 | 0.70592  | 0.2487871 | 2.4591398 | 120 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128688 1999 RT <sub>136</sub> |
| 1999 RS <sub>141</sub> | 16.1 | 0.15 | 20071027 | 82.13712  | 351.40223 | 355.30530 | 5.76760  | 0.1456070 | 2.3563684 | 68  | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 77390 1999 RS <sub>141</sub>  |
| 1999 RD <sub>148</sub> | 17.3 | 0.15 | 20071027 | 97.72211  | 62.86477  | 273.41863 | 2.39603  | 0.2588437 | 2.3474821 | 30  | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 74618 1999 RD <sub>148</sub>  |
| 1999 RG <sub>155</sub> | 16.4 | 0.15 | 20071027 | 158.64188 | 6.00119   | 316.82784 | 6.24732  | 0.1513136 | 2.2592714 | 41  | 3 | 1999-2007 | 0.49 | M-v | 3 | MPC | 112723 1999 RG <sub>155</sub> |
| 1999 RE <sub>166</sub> | 16.3 | 0.15 | 20071027 | 94.88876  | 310.66447 | 17.29208  | 3.28563  | 0.1916521 | 2.3685016 | 60  | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 110704 1999 RE <sub>166</sub> |
| 1999 RP <sub>171</sub> | 16.1 | 0.15 | 20071027 | 30.15837  | 26.61998  | 5.25620   | 6.42387  | 0.1344134 | 2.4068115 | 85  | 4 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128688 1999 RP <sub>171</sub> |
| 1999 RT <sub>178</sub> | 16.1 | 0.15 | 20071027 | 72.24115  | 271.10286 | 100.73497 | 3.01403  | 0.2256885 | 2.3607112 | 79  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128688 1999 RT <sub>178</sub> |
| 1999 RD <sub>179</sub> | 16.4 | 0.15 | 20071027 | 53.78755  | 290.46406 | 68.30176  | 3.52907  | 0.2126216 | 2.4148383 | 92  | 5 | 1999-2007 | 0.56 | M-v | 2 | MPC | 77392 1999 RD <sub>179</sub>  |
| 1999 RG <sub>183</sub> | 16.2 | 0.15 | 20071027 | 47.77865  | 231.81792 | 148.35595 | 2.83068  | 0.1520797 | 2.3979626 | 117 | 5 | 1996-2007 | 0.55 | M-v | 1 | MPC | 110704 1999 RG <sub>183</sub> |
| 1999 RR <sub>185</sub> | 16.3 | 0.15 | 20071027 | 74.64805  | 347.49766 | 344.94520 | 6.50365  | 0.1298765 | 2.4099364 | 86  | 4 | 1999-2007 | 0.45 | M-v | 2 | MPC | 77392 1999 RR <sub>185</sub>  |
| 1999 RY <sub>185</sub> | 16.8 | 0.15 | 20071027 | 74.56218  | 327.21040 | 7.97129   | 1.56055  | 0.2063212 | 2.4002264 | 72  | 6 | 1999-2007 | 0.56 | M-v | 1 | MPC | 77392 1999 RY <sub>185</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 1999 RY <sub>189</sub> | 17.5 | 0.15 | 20071027 | 68.57138  | 23.18462  | 332.77262 | 1.88565  | 0.1975999 | 2.3904835 | 62  | 4 | 1999-2007 | 0.47 | M-v | 2 | MP | 110704 1999 RY <sub>189</sub> |
| 1999 RG <sub>190</sub> | 14.9 | 0.15 | 20071027 | 166.11566 | 4.35352   | 309.28620 | 13.27916 | 0.1050056 | 3.2379795 | 77  | 5 | 1999-2007 | 0.61 | M-v | 1 | MP | 128688 1999 RG <sub>190</sub> |
| 1999 RQ <sub>191</sub> | 17.2 | 0.15 | 20071027 | 53.36044  | 322.31416 | 350.55240 | 2.28213  | 0.2035138 | 2.4805601 | 82  | 5 | 1999-2007 | 0.47 | M-v | 2 | MP | 128688 1999 RQ <sub>191</sub> |
| 1999 RC <sub>206</sub> | 16.5 | 0.15 | 20071027 | 27.83085  | 72.73879  | 313.52888 | 7.05651  | 0.2131139 | 2.4471331 | 102 | 3 | 1999-2007 | 0.58 | M-v | 2 | MP | 57696 1999 RC <sub>206</sub>  |
| 1999 RQ <sub>214</sub> | 17.9 | 0.15 | 20071027 | 348.84969 | 108.90388 | 339.33757 | 0.98247  | 0.1467452 | 2.4019886 | 36  | 5 | 1999-2007 | 0.39 | M-v | 0 | MP | 84499 1999 RQ <sub>214</sub>  |
| 1999 RC <sub>218</sub> | 16.6 | 0.15 | 20071027 | 67.69163  | 149.19272 | 218.69617 | 1.87044  | 0.2119582 | 2.3543909 | 63  | 4 | 1999-2007 | 0.49 | M-v | 2 | MP | 77393 1999 RC <sub>218</sub>  |
| 1999 RT <sub>222</sub> | 16.2 | 0.15 | 20071027 | 106.19687 | 84.16618  | 231.70229 | 2.90475  | 0.1633938 | 2.3471167 | 101 | 5 | 1999-2007 | 0.55 | M-v | 1 | MP | 73954 1999 RT <sub>222</sub>  |
| 1999 RA <sub>242</sub> | 17.1 | 0.15 | 20071027 | 113.15292 | 129.01113 | 165.35084 | 3.98281  | 0.1763948 | 2.3878711 | 37  | 6 | 1992-2007 | 0.55 | M-v | 1 | MP | 73955 1999 RA <sub>242</sub>  |
| 1999 RN <sub>252</sub> | 15.2 | 0.15 | 20071027 | 177.35214 | 355.11976 | 327.85332 | 9.74246  | 0.0934792 | 3.0994542 | 47  | 4 | 1999-2007 | 0.51 | M-v | 1 | MP | 128688 1999 RN <sub>252</sub> |
| 1999 RY <sub>254</sub> | 16.2 | 0.15 | 20071027 | 84.85872  | 262.79478 | 75.64095  | 6.99673  | 0.1696691 | 2.4000113 | 88  | 4 | 1999-2007 | 0.63 | M-v | 2 | MP | 128688 1999 RY <sub>254</sub> |
| 1999 RK <sub>255</sub> | 17.3 | 0.15 | 20071027 | 47.24877  | 92.34582  | 275.48430 | 5.31650  | 0.2271224 | 2.4222342 | 63  | 5 | 1999-2007 | 0.45 | M-v | 1 | MP | 77394 1999 RK <sub>255</sub>  |
| 1999 SC <sub>1</sub>   | 16.2 | 0.15 | 20071027 | 104.62331 | 71.55863  | 21.64427  | 5.80002  | 0.2060403 | 3.1297727 | 29  | 3 | 1999-2007 | 0.35 | M-v | 3 | MP | 117900 1999 SC <sub>1</sub>   |
| 1999 SO <sub>2</sub>   | 15.2 | 0.15 | 20071027 | 332.93313 | 92.64700  | 335.90866 | 21.87681 | 0.3689063 | 2.5518960 | 239 | 3 | 1999-2007 | 0.49 | M-v | 2 | MP | 128688 1999 SO <sub>2</sub>   |
| 1999 ST <sub>22</sub>  | 17.2 | 0.15 | 20071027 | 8.97197   | 219.65271 | 192.77356 | 1.72751  | 0.2005067 | 2.4448792 | 74  | 4 | 1999-2007 | 0.51 | M-v | 2 | MP | 77394 1999 ST <sub>22</sub>   |
| 1999 SG <sub>26</sub>  | 16.8 | 0.15 | 20071027 | 52.50115  | 170.53629 | 187.35799 | 2.04238  | 0.2947469 | 2.4513089 | 27  | 5 | 1995-2007 | 0.46 | M-v | 2 | MP | 74628 1999 SG <sub>26</sub>   |
| 1999 TH <sub>3</sub>   | 17.2 | 0.15 | 20071027 | 5.74598   | 256.64710 | 113.69956 | 0.72013  | 0.1563956 | 2.5224367 | 72  | 5 | 1999-2007 | 0.49 | M-v | 1 | MP | 128688 1999 TH <sub>3</sub>   |
| 1999 TQ <sub>4</sub>   | 17.0 | 0.15 | 20071027 | 20.78448  | 176.89969 | 202.84927 | 22.02035 | 0.0643432 | 1.9129206 | 71  | 4 | 1999-2007 | 0.57 | M-v | 2 | MP | 127860 1999 TQ <sub>4</sub>   |
| 1999 TA <sub>28</sub>  | 16.6 | 0.15 | 20071027 | 63.83028  | 356.66741 | 0.19232   | 2.59154  | 0.1848419 | 2.4369047 | 105 | 5 | 1995-2007 | 0.59 | M-v | 2 | MP | 128689 1999 TA <sub>28</sub>  |
| 1999 TB <sub>31</sub>  | 16.8 | 0.15 | 20071027 | 70.19286  | 47.27832  | 306.66374 | 1.40557  | 0.2454836 | 2.4047199 | 85  | 4 | 1999-2007 | 0.49 | M-v | 2 | MP | 128689 1999 TB <sub>31</sub>  |
| 1999 TL <sub>31</sub>  | 16.6 | 0.15 | 20071027 | 17.55403  | 9.80204   | 9.28180   | 4.78976  | 0.2275622 | 2.4865419 | 126 | 4 | 1999-2007 | 0.54 | M-v | 2 | MP | 128689 1999 TL <sub>31</sub>  |
| 1999 TR <sub>39</sub>  | 16.5 | 0.15 | 20071027 | 344.57514 | 336.07498 | 78.72731  | 9.45421  | 0.2218424 | 2.5251825 | 124 | 3 | 1999-2007 | 0.54 | M-v | 2 | MP | 128689 1999 TR <sub>39</sub>  |
| 1999 TC <sub>40</sub>  | 17.0 | 0.15 | 20071027 | 82.91145  | 248.43914 | 120.36343 | 3.32315  | 0.2017040 | 2.3570699 | 51  | 5 | 1997-2007 | 0.53 | M-v | 2 | MP | 104119 1999 TC <sub>40</sub>  |
| 1999 TO <sub>40</sub>  | 16.5 | 0.15 | 20071027 | 79.49474  | 247.69838 | 95.75396  | 2.51674  | 0.1806527 | 2.3990231 | 71  | 6 | 1994-2007 | 0.54 | M-v | 1 | MP | 77396 1999 TO <sub>40</sub>   |
| 1999 TG <sub>43</sub>  | 17.5 | 0.15 | 20071027 | 338.24445 | 124.35964 | 318.75739 | 0.93694  | 0.1829021 | 2.4439201 | 54  | 4 | 1999-2007 | 0.48 | M-v | 3 | MP | 128689 1999 TG <sub>43</sub>  |
| 1999 TG <sub>45</sub>  | 16.9 | 0.15 | 20071027 | 133.28338 | 331.52460 | 307.65037 | 1.78429  | 0.1632239 | 2.4251204 | 34  | 4 | 1999-2007 | 0.45 | M-v | 3 | MP | 127861 1999 TG <sub>45</sub>  |
| 1999 TT <sub>45</sub>  | 18.2 | 0.15 | 20071027 | 1.91718   | 351.96145 | 8.60321   | 5.69301  | 0.2435685 | 2.5574969 | 72  | 4 | 1999-2007 | 0.52 | M-v | 2 | MP | 128689 1999 TT <sub>45</sub>  |
| 1999 TC <sub>55</sub>  | 17.1 | 0.15 | 20071027 | 328.07116 | 71.70793  | 353.67721 | 1.05242  | 0.2126195 | 2.5382026 | 83  | 5 | 1999-2007 | 0.49 | M-v | 2 | MP | 128689 1999 TC <sub>55</sub>  |
| 1999 TO <sub>62</sub>  | 17.3 | 0.15 | 20071027 | 25.47837  | 344.55517 | 20.15897  | 0.29041  | 0.0779605 | 2.5271964 | 67  | 5 | 1991-2007 | 0.42 | M-v | 3 | MP | 128689 1999 TO <sub>62</sub>  |
| 1999 TR <sub>64</sub>  | 17.5 | 0.15 | 20071027 | 334.29214 | 97.02949  | 346.58195 | 2.39388  | 0.1690564 | 2.4422131 | 69  | 5 | 1999-2007 | 0.32 | M-v | 0 | MP | 128689 1999 TR <sub>64</sub>  |
| 1999 TY <sub>67</sub>  | 15.2 | 0.15 | 20071027 | 50.76327  | 252.44875 | 86.18827  | 3.14927  | 0.2777471 | 3.9436020 | 45  | 4 | 1999-2007 | 0.33 | M-v | 0 | MP | 128689 1999 TY <sub>67</sub>  |
| 1999 TX <sub>68</sub>  | 17.6 | 0.15 | 20071027 | 154.91894 | 33.69559  | 231.20713 | 4.23449  | 0.1969304 | 2.4052229 | 24  | 3 | 1999-2007 | 0.39 | M-v | 3 | MP | 103153 1999 TX <sub>68</sub>  |
| 1999 TN <sub>69</sub>  | 16.0 | 0.15 | 20071027 | 338.06679 | 97.29426  | 3.83370   | 2.38022  | 0.1589758 | 2.4438966 | 104 | 5 | 1999-2007 | 0.51 | M-v | 1 | MP | 104119 1999 TN <sub>69</sub>  |
| 1999 TL <sub>71</sub>  | 17.3 | 0.15 | 20071027 | 320.31648 | 99.66564  | 21.87524  | 2.80124  | 0.1485091 | 2.4433476 | 39  | 5 | 1999-2007 | 0.36 | M-v | 0 | MP | 77397 1999 TL <sub>71</sub>   |
| 1999 TN <sub>75</sub>  | 16.9 | 0.15 | 20071027 | 214.02533 | 349.75565 | 220.16095 | 6.83249  | 0.0925345 | 2.4638997 | 42  | 6 | 1995-2007 | 0.45 | M-v | 1 | MP | 127861 1999 TN <sub>75</sub>  |
| 1999 TQ <sub>77</sub>  | 17.2 | 0.15 | 20071027 | 41.55912  | 126.53383 | 260.65059 | 0.50877  | 0.1909173 | 2.4430439 | 33  | 4 | 1999-2007 | 0.45 | M-v | 2 | MP | 128689 1999 TQ <sub>77</sub>  |
| 1999 TW <sub>87</sub>  | 16.2 | 0.15 | 20071027 | 88.59896  | 230.82352 | 100.45392 | 3.47465  | 0.1841012 | 2.4495959 | 57  | 7 | 1993-2007 | 0.52 | M-v | 0 | MP | 77397 1999 TW <sub>87</sub>   |
| 1999 TH <sub>90</sub>  | 17.0 | 0.15 | 20071027 | 48.91233  | 208.30657 | 146.80527 | 1.70391  | 0.1899645 | 2.4441681 | 66  | 5 | 1995-2007 | 0.51 | M-v | 2 | MP | 128689 1999 TH <sub>90</sub>  |
| 1999 TA <sub>95</sub>  | 15.9 | 0.15 | 20071027 | 2.45565   | 308.87754 | 56.36223  | 8.65483  | 0.2047835 | 2.5361642 | 113 | 4 | 1999-2007 | 0.64 | M-v | 2 | MP | 128689 1999 TA <sub>95</sub>  |
| 1999 TJ <sub>112</sub> | 16.8 | 0.15 | 20071027 | 108.55882 | 19.14240  | 297.70356 | 1.27132  | 0.2200730 | 2.3727868 | 43  | 4 | 1999-2007 | 0.61 | M-v | 2 | MP | 128689 1999 TJ <sub>112</sub> |
| 1999 TC <sub>115</sub> | 16.3 | 0.15 | 20071027 | 16.38095  | 62.47042  | 349.96787 | 10.53489 | 0.2271679 | 2.4369282 | 70  | 4 | 1999-2007 | 0.50 | M-v | 2 | MP | 128689 1999 TC <sub>115</sub> |
| 1999 TW <sub>115</sub> | 16.2 | 0.15 | 20071027 | 41.49988  | 341.30807 | 358.14474 | 8.49529  | 0.2771167 | 2.4800635 | 158 | 6 | 1995-2007 | 0.52 | M-v | 2 | MP | 128689 1999 TW <sub>115</sub> |
| 1999 TK <sub>117</sub> | 17.0 | 0.15 | 20071027 | 78.45991  | 56.60772  | 327.98855 | 2.19189  | 0.1767824 | 2.3472332 | 112 | 7 | 1997-2007 | 0.52 | M-v | 1 | MP | 114590 1999 TK <sub>117</sub> |
| 1999 TR <sub>120</sub> | 16.4 | 0.15 | 20071027 | 21.75794  | 58.27266  | 353.45252 | 4.71864  | 0.1749857 | 2.4263245 | 90  | 4 | 1999-2007 | 0.56 | M-v | 2 | MP | 128689 1999 TR <sub>120</sub> |
| 1999 TT <sub>121</sub> | 14.8 | 0.15 | 20071027 | 358.65340 | 351.64734 | 48.62699  | 2.75517  | 0.2933020 | 3.9414528 | 123 | 3 | 1999-2007 | 0.49 | M-v | 3 | MP | 128689 1999 TT <sub>121</sub> |
| 1999 TU <sub>123</sub> | 17.0 | 0.15 | 20071027 | 65.97996  | 13.25509  | 318.47636 | 0.73768  | 0.1990984 | 2.4540686 | 40  | 6 | 1995-2007 | 0.52 | M-v | 1 | MP | 124293 1999 TU <sub>123</sub> |
| 1999 TZ <sub>126</sub> | 16.6 | 0.15 | 20071027 | 59.05986  | 145.06918 | 201.98307 | 2.44791  | 0.1879304 | 2.4413086 | 48  | 4 | 1999-2007 | 0.49 | M-v | 2 | MP | 128689 1999 TZ <sub>126</sub> |
| 1999 TC <sub>129</sub> | 17.1 | 0.15 | 20071027 | 41.00084  | 14.23751  | 346.76996 | 2.97093  | 0.1904953 | 2.4460742 | 113 | 5 | 1999-2007 | 0.54 | M-v | 2 | MP | 128689 1999 TC <sub>129</sub> |
| 1999 TE <sub>129</sub> | 17.3 | 0.15 | 20071027 | 12.99009  | 45.89273  | 350.77970 | 3.02333  | 0.2448290 | 2.4590312 | 82  | 3 | 1999-2007 | 0.51 | M-v | 2 | MP | 128689 1999 TE <sub>129</sub> |
| 1999 TL <sub>132</sub> | 17.1 | 0.15 | 20071027 | 25.93714  | 40.10494  | 355.86471 | 1.00555  | 0.1924659 | 2.4351134 | 77  | 5 | 1997-2007 | 0.47 | M-v | 1 | MP | 77399 1999 TL <sub>132</sub>  |
| 1999 TX <sub>132</sub> | 14.6 | 0.15 | 20071027 | 4.53215   | 37.98708  | 344.37782 | 2.30368  | 0.2783053 | 3.9494393 | 111 | 2 | 1999-2007 | 0.49 | M-v | 4 | MP | 128690 1999 TX <sub>132</sub> |
| 1999 TK <sub>143</sub> | 17.3 | 0.15 | 20071027 | 39.45308  | 121.91383 | 245.01388 | 1.74247  | 0.1862352 | 2.4643617 | 84  | 5 | 1999-2007 | 0.47 | M-v | 2 | MP | 128690 1999 TK <sub>143</sub> |
| 1999 TT <sub>146</sub> | 17.0 | 0.15 | 20071027 | 41.42093  | 276.65455 | 69.59701  | 2.37291  | 0.2833672 | 2.4724146 | 77  | 4 | 1999-2007 | 0.49 | M-v | 2 | MP | 128690 1999 TT <sub>146</sub> |
| 1999 TT <sub>147</sub> | 16.9 | 0.15 | 20071027 | 81.83967  | 57.32789  | 272.94616 | 3.63931  | 0.1657749 | 2.4260537 | 42  | 3 | 1999-2007 | 0.60 | M-v | 2 | MP | 128690 1999 TT <sub>147</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1999 TU <sub>148</sub> | 16.9 | 0.15 | 20071027 | 68.08885  | 227.41146 | 108.22257 | 2.43139  | 0.1993417 | 2.4384406 | 40  | 5 | 1997-2007 | 0.44 | M-v | 1 | MPC | 101981 1999 TU <sub>148</sub> |
| 1999 TL <sub>149</sub> | 16.1 | 0.15 | 20071027 | 98.63985  | 308.86685 | 13.95450  | 4.95402  | 0.2498145 | 2.3890870 | 82  | 4 | 1999-2007 | 0.58 | M-v | 2 | MPC | 57703 1999 TL <sub>149</sub>  |
| 1999 TH <sub>150</sub> | 15.8 | 0.15 | 20071027 | 69.32297  | 286.71532 | 52.73655  | 3.30456  | 0.2228348 | 2.4326415 | 143 | 6 | 1999-2007 | 0.52 | M-v | 1 | MPC | 101981 1999 TH <sub>150</sub> |
| 1999 TN <sub>150</sub> | 16.6 | 0.15 | 20071027 | 19.14752  | 14.11451  | 3.75811   | 10.92552 | 0.2393354 | 2.4878854 | 99  | 3 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128690 1999 TN <sub>150</sub> |
| 1999 TS <sub>150</sub> | 16.9 | 0.15 | 20071027 | 39.57685  | 47.59532  | 315.80296 | 3.20104  | 0.2256011 | 2.4652535 | 68  | 4 | 1999-2007 | 0.56 | M-v | 3 | MPC | 74644 1999 TS <sub>150</sub>  |
| 1999 TQ <sub>151</sub> | 16.4 | 0.15 | 20071027 | 18.16234  | 343.23555 | 22.52663  | 13.91862 | 0.1919744 | 2.5139833 | 201 | 4 | 1995-2007 | 0.49 | M-v | 3 | MPC | 128690 1999 TQ <sub>151</sub> |
| 1999 TN <sub>152</sub> | 14.3 | 0.15 | 20071027 | 9.93811   | 331.09407 | 48.66758  | 6.66548  | 0.3163007 | 3.9767335 | 163 | 3 | 1999-2007 | 0.43 | M-v | 2 | MPC | 128690 1999 TN <sub>152</sub> |
| 1999 TA <sub>155</sub> | 17.4 | 0.15 | 20071027 | 59.62636  | 333.11208 | 37.93041  | 2.83089  | 0.2015246 | 2.4083129 | 45  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128690 1999 TA <sub>155</sub> |
| 1999 TW <sub>155</sub> | 16.3 | 0.15 | 20071027 | 56.42236  | 272.99527 | 100.79133 | 4.14877  | 0.1853844 | 2.4270809 | 60  | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 128690 1999 TW <sub>155</sub> |
| 1999 TU <sub>156</sub> | 17.0 | 0.15 | 20071027 | 5.46856   | 112.60291 | 294.47658 | 3.07298  | 0.1992883 | 2.4516531 | 83  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128690 1999 TU <sub>156</sub> |
| 1999 TM <sub>157</sub> | 16.8 | 0.15 | 20071027 | 107.82160 | 314.92033 | 2.20186   | 2.63831  | 0.1917697 | 2.3756614 | 58  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 101981 1999 TM <sub>157</sub> |
| 1999 TP <sub>161</sub> | 17.3 | 0.15 | 20071027 | 47.12214  | 206.01542 | 151.27692 | 2.74632  | 0.1999079 | 2.4571632 | 37  | 5 | 1997-2007 | 0.57 | M-v | 2 | MPC | 128690 1999 TP <sub>161</sub> |
| 1999 TS <sub>161</sub> | 17.3 | 0.15 | 20071027 | 33.04467  | 183.92850 | 176.51366 | 4.24448  | 0.2474009 | 2.4812151 | 58  | 4 | 1999-2007 | 0.65 | M-v | 3 | MPC | 128690 1999 TS <sub>161</sub> |
| 1999 TF <sub>163</sub> | 16.8 | 0.15 | 20071027 | 32.32128  | 5.19810   | 67.13092  | 3.63505  | 0.1661327 | 2.3788412 | 63  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 110709 1999 TF <sub>163</sub> |
| 1999 TQ <sub>164</sub> | 17.2 | 0.15 | 20071027 | 86.17426  | 94.30845  | 240.89028 | 3.93439  | 0.2209525 | 2.4037123 | 33  | 4 | 1998-2007 | 0.43 | M-v | 2 | MPC | 107795 1999 TQ <sub>164</sub> |
| 1999 TH <sub>170</sub> | 17.0 | 0.15 | 20071027 | 11.46871  | 136.73754 | 295.10473 | 1.16840  | 0.1978770 | 2.4279233 | 71  | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128690 1999 TH <sub>170</sub> |
| 1999 TG <sub>172</sub> | 15.8 | 0.15 | 20071027 | 348.09176 | 327.00144 | 74.24097  | 4.73594  | 0.1427002 | 2.5395948 | 204 | 6 | 1991-2007 | 0.58 | M-v | 2 | MPC | 128690 1999 TG <sub>172</sub> |
| 1999 TJ <sub>174</sub> | 16.7 | 0.15 | 20071027 | 62.00865  | 243.14658 | 114.60131 | 3.26379  | 0.2126591 | 2.4413854 | 44  | 4 | 1991-2007 | 0.57 | M-v | 2 | MPC | 128690 1999 TJ <sub>174</sub> |
| 1999 TD <sub>175</sub> | 16.3 | 0.15 | 20071027 | 353.23829 | 162.88070 | 239.54537 | 4.72889  | 0.1903384 | 2.5231501 | 169 | 5 | 1995-2007 | 0.48 | M-v | 2 | MPC | 128690 1999 TD <sub>175</sub> |
| 1999 TW <sub>178</sub> | 16.4 | 0.15 | 20071027 | 28.45596  | 291.61352 | 107.81448 | 3.69941  | 0.1786191 | 2.4547747 | 37  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 55929 1999 TW <sub>178</sub>  |
| 1999 TK <sub>179</sub> | 17.1 | 0.15 | 20071027 | 64.56108  | 126.13076 | 237.95348 | 5.10730  | 0.1306018 | 2.4242008 | 37  | 4 | 1999-2007 | 0.45 | M-v | 2 | MPC | 74648 1999 TK <sub>179</sub>  |
| 1999 TJ <sub>183</sub> | 17.1 | 0.15 | 20071027 | 41.90990  | 271.62799 | 90.66524  | 3.15312  | 0.2154008 | 2.4642235 | 56  | 4 | 1999-2007 | 0.57 | M-v | 3 | MPC | 128690 1999 TJ <sub>183</sub> |
| 1999 TM <sub>194</sub> | 15.9 | 0.15 | 20071027 | 355.50052 | 147.05664 | 254.19345 | 11.37884 | 0.1096793 | 2.5255876 | 56  | 3 | 1999-2007 | 0.57 | M-v | 3 | MPC | 128690 1999 TM <sub>194</sub> |
| 1999 TX <sub>194</sub> | 16.5 | 0.15 | 20071027 | 356.64829 | 167.11880 | 237.52479 | 4.29247  | 0.1647569 | 2.5195270 | 134 | 3 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128690 1999 TX <sub>194</sub> |
| 1999 TS <sub>196</sub> | 16.0 | 0.15 | 20071027 | 7.98978   | 348.01653 | 17.84101  | 15.63001 | 0.1860654 | 2.5616147 | 189 | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128690 1999 TS <sub>196</sub> |
| 1999 TX <sub>196</sub> | 15.9 | 0.15 | 20071027 | 22.67405  | 63.10149  | 302.67291 | 4.17485  | 0.2005731 | 2.5219003 | 190 | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128690 1999 TX <sub>196</sub> |
| 1999 TS <sub>201</sub> | 17.1 | 0.15 | 20071027 | 56.61300  | 115.23674 | 233.98349 | 2.01747  | 0.1905367 | 2.4274642 | 106 | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128690 1999 TS <sub>201</sub> |
| 1999 TT <sub>202</sub> | 16.1 | 0.15 | 20071027 | 329.88154 | 104.07169 | 355.95273 | 4.66504  | 0.1548172 | 2.4528364 | 91  | 4 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128690 1999 TT <sub>202</sub> |
| 1999 TL <sub>206</sub> | 16.1 | 0.15 | 20071027 | 33.21192  | 2.78598   | 28.92869  | 8.31308  | 0.1838104 | 2.4766906 | 47  | 4 | 1999-2007 | 0.40 | M-v | 3 | MPC | 128690 1999 TL <sub>206</sub> |
| 1999 TW <sub>208</sub> | 15.1 | 0.15 | 20071027 | 42.39731  | 101.64694 | 254.02525 | 14.50707 | 0.0382347 | 2.5124324 | 158 | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128690 1999 TW <sub>208</sub> |
| 1999 TN <sub>211</sub> | 16.6 | 0.15 | 20071027 | 61.78962  | 112.39351 | 230.73891 | 20.92412 | 0.0854620 | 1.8887391 | 54  | 2 | 1999-2007 | 0.45 | M-v | 3 | MPC | 127861 1999 TN <sub>211</sub> |
| 1999 TV <sub>214</sub> | 16.7 | 0.15 | 20071027 | 66.70482  | 285.97854 | 75.20790  | 3.20129  | 0.1594209 | 2.4150113 | 68  | 5 | 1997-2007 | 0.58 | M-v | 1 | MPC | 128690 1999 TV <sub>214</sub> |
| 1999 TC <sub>216</sub> | 16.8 | 0.15 | 20071027 | 32.34483  | 319.46349 | 91.06812  | 2.87485  | 0.2024291 | 2.4182840 | 60  | 4 | 1999-2007 | 0.40 | M-v | 2 | MPC | 128691 1999 TC <sub>216</sub> |
| 1999 TJ <sub>217</sub> | 16.7 | 0.15 | 20071027 | 358.97264 | 73.54871  | 350.74533 | 4.12528  | 0.2342462 | 2.4559653 | 116 | 5 | 1995-2007 | 0.49 | M-v | 2 | MPC | 126559 1999 TJ <sub>217</sub> |
| 1999 TX <sub>217</sub> | 17.4 | 0.15 | 20071027 | 15.31555  | 140.26350 | 212.47838 | 8.07936  | 0.3055647 | 2.5324547 | 153 | 4 | 1991-2007 | 0.56 | M-v | 3 | MPC | 128691 1999 TX <sub>217</sub> |
| 1999 TL <sub>218</sub> | 16.7 | 0.15 | 20071027 | 49.95869  | 120.99042 | 250.41656 | 1.59090  | 0.2079972 | 2.4451733 | 79  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128691 1999 TL <sub>218</sub> |
| 1999 TB <sub>221</sub> | 16.6 | 0.15 | 20071027 | 18.01887  | 140.37834 | 275.09049 | 9.14973  | 0.2111819 | 2.4160111 | 96  | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128691 1999 TB <sub>221</sub> |
| 1999 TB <sub>227</sub> | 17.1 | 0.15 | 20071027 | 29.18912  | 128.77381 | 213.95061 | 8.83159  | 0.0781803 | 2.5453267 | 51  | 6 | 1991-2007 | 0.46 | M-v | 0 | MPC | 126559 1999 TB <sub>227</sub> |
| 1999 TZ <sub>227</sub> | 15.2 | 0.15 | 20071027 | 19.02111  | 162.43105 | 214.01877 | 1.11146  | 0.2410852 | 3.9705341 | 69  | 3 | 1999-2007 | 0.42 | M-v | 2 | MPC | 128691 1999 TZ <sub>227</sub> |
| 1999 TR <sub>229</sub> | 16.5 | 0.15 | 20071027 | 22.28428  | 307.27357 | 85.47873  | 2.41833  | 0.1851700 | 2.4467444 | 102 | 5 | 1994-2007 | 0.52 | M-v | 2 | MPC | 128691 1999 TR <sub>229</sub> |
| 1999 TJ <sub>233</sub> | 17.0 | 0.15 | 20071027 | 66.40935  | 129.46466 | 211.36542 | 21.26019 | 0.0683033 | 1.8835643 | 57  | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 128691 1999 TJ <sub>233</sub> |
| 1999 TM <sub>237</sub> | 17.8 | 0.15 | 20071027 | 26.94267  | 197.37053 | 181.45453 | 3.08752  | 0.2027864 | 2.4585932 | 37  | 5 | 1999-2007 | 0.43 | M-v | 2 | MPC | 128691 1999 TM <sub>237</sub> |
| 1999 TE <sub>238</sub> | 16.2 | 0.15 | 20071027 | 67.71295  | 287.07637 | 71.42209  | 7.24311  | 0.1223716 | 2.4201870 | 60  | 3 | 1999-2007 | 0.53 | M-v | 3 | MPC | 55939 1999 TE <sub>238</sub>  |
| 1999 TD <sub>239</sub> | 14.4 | 0.15 | 20071027 | 14.04612  | 299.20318 | 73.79443  | 3.96977  | 0.2621162 | 3.9651894 | 102 | 5 | 1991-2007 | 0.54 | M-v | 0 | MPC | 128691 1999 TD <sub>239</sub> |
| 1999 TV <sub>241</sub> | 15.3 | 0.15 | 20071027 | 4.69526   | 326.32311 | 71.30211  | 8.09226  | 0.3531350 | 3.9590404 | 68  | 2 | 1999-2007 | 0.51 | M-v | 3 | MPC | 127862 1999 TV <sub>241</sub> |
| 1999 TG <sub>245</sub> | 17.0 | 0.15 | 20071027 | 50.68482  | 353.70008 | 4.50059   | 2.44095  | 0.2185680 | 2.4384852 | 49  | 4 | 1999-2007 | 0.43 | M-v | 2 | MPC | 110710 1999 TG <sub>245</sub> |
| 1999 TS <sub>251</sub> | 16.8 | 0.15 | 20071027 | 17.11882  | 353.04367 | 57.30307  | 1.26002  | 0.2012062 | 2.4530514 | 83  | 5 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128691 1999 TS <sub>251</sub> |
| 1999 TU <sub>252</sub> | 17.2 | 0.15 | 20071027 | 113.90665 | 269.39976 | 30.40106  | 1.54055  | 0.1835844 | 2.3995551 | 24  | 4 | 1999-2007 | 0.55 | M-v | 3 | MPC | 114591 1999 TU <sub>252</sub> |
| 1999 TY <sub>265</sub> | 17.4 | 0.15 | 20071027 | 11.40524  | 56.39707  | 346.51267 | 21.51696 | 0.1482427 | 1.8895882 | 69  | 5 | 1998-2007 | 0.65 | M-v | 1 | MPC | 110711 1999 TY <sub>265</sub> |
| 1999 TM <sub>269</sub> | 16.4 | 0.15 | 20071027 | 90.46166  | 58.62783  | 276.26912 | 7.73225  | 0.1659392 | 2.3958408 | 32  | 3 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128691 1999 TM <sub>269</sub> |
| 1999 TF <sub>280</sub> | 17.2 | 0.15 | 20071027 | 29.19857  | 304.66314 | 54.71575  | 3.72018  | 0.2493519 | 2.4819217 | 91  | 3 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128691 1999 TF <sub>280</sub> |
| 1999 TK <sub>293</sub> | 16.5 | 0.15 | 20071027 | 28.61775  | 130.26318 | 256.12772 | 3.55239  | 0.1935335 | 2.4714886 | 80  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 57709 1999 TK <sub>293</sub>  |
| 1999 TG <sub>295</sub> | 16.7 | 0.15 | 20071027 | 25.08983  | 134.55891 | 295.45523 | 4.80525  | 0.2185779 | 2.3706263 | 81  | 5 | 1999-2007 | 0.42 | M-v | 1 | MPC | 128691 1999 TG <sub>295</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 1999 TH <sub>315</sub> | 16.2 | 0.15 | 20071027 | 267.84812 | 77.84626  | 43.68245  | 2.35098  | 0.0814405 | 2.5174054 | 127 | 5 | 1999-2007 | 0.62 | M-v | 3 | MP | 128691 1999 TH <sub>315</sub> |
| 1999 TN <sub>318</sub> | 17.2 | 0.15 | 20071027 | 133.42471 | 267.11812 | 30.14991  | 2.68935  | 0.2070463 | 2.3825654 | 55  | 6 | 1999-2007 | 0.35 | M-v | 0 | MP | 104122 1999 TN <sub>318</sub> |
| 1999 TP <sub>320</sub> | 16.6 | 0.15 | 20071027 | 49.87943  | 109.48819 | 256.45092 | 5.17530  | 0.1692833 | 2.4459217 | 62  | 5 | 1993-2007 | 0.66 | M-v | 1 | MP | 87358 1999 TP <sub>320</sub>  |
| 1999 UH <sub>10</sub>  | 16.7 | 0.15 | 20071027 | 358.81967 | 61.53264  | 8.39875   | 21.39809 | 0.1069945 | 1.8973688 | 74  | 5 | 1991-2007 | 0.54 | M-v | 1 | MP | 104122 1999 UH <sub>10</sub>  |
| 1999 UJ <sub>12</sub>  | 16.9 | 0.15 | 20071027 | 66.68788  | 301.25230 | 49.36350  | 3.93722  | 0.2104500 | 2.4192145 | 66  | 4 | 1999-2007 | 0.51 | M-v | 2 | MP | 128691 1999 UJ <sub>12</sub>  |
| 1999 UQ <sub>14</sub>  | 17.0 | 0.15 | 20071027 | 319.98821 | 23.69066  | 61.18362  | 7.30692  | 0.2512351 | 2.5394029 | 161 | 5 | 1995-2007 | 0.58 | M-v | 2 | MP | 128691 1999 UQ <sub>14</sub>  |
| 1999 UH <sub>16</sub>  | 16.4 | 0.15 | 20071027 | 353.47335 | 345.51946 | 29.13700  | 5.72874  | 0.2376825 | 2.5650133 | 178 | 4 | 1999-2007 | 0.54 | M-v | 2 | MP | 128691 1999 UH <sub>16</sub>  |
| 1999 UH <sub>17</sub>  | 17.5 | 0.15 | 20071027 | 40.29957  | 182.87801 | 194.88519 | 3.82010  | 0.1075875 | 2.4134249 | 37  | 4 | 1999-2007 | 0.40 | M-v | 2 | MP | 128691 1999 UH <sub>17</sub>  |
| 1999 UC <sub>19</sub>  | 17.2 | 0.15 | 20071027 | 204.74634 | 176.04390 | 36.52475  | 5.09836  | 0.1434877 | 2.4629075 | 39  | 4 | 1999-2007 | 0.49 | M-v | 3 | MP | 77406 1999 UC <sub>19</sub>   |
| 1999 UP <sub>20</sub>  | 17.0 | 0.15 | 20071027 | 115.14243 | 198.92961 | 91.83003  | 1.87943  | 0.0735848 | 2.4449314 | 50  | 4 | 1999-2007 | 0.40 | M-v | 2 | MP | 128692 1999 UP <sub>20</sub>  |
| 1999 US <sub>25</sub>  | 16.4 | 0.15 | 20071027 | 12.33229  | 338.43023 | 29.01499  | 4.80960  | 0.2787895 | 2.5383083 | 262 | 3 | 1999-2007 | 0.51 | M-v | 2 | MP | 128692 1999 US <sub>25</sub>  |
| 1999 UX <sub>28</sub>  | 17.9 | 0.15 | 20071027 | 6.74487   | 12.04022  | 46.57795  | 3.28688  | 0.1879678 | 2.4475260 | 43  | 3 | 1999-2007 | 0.27 | M-v | 2 | MP | 57710 1999 UX <sub>28</sub>   |
| 1999 UY <sub>31</sub>  | 17.7 | 0.15 | 20071027 | 336.28255 | 220.49596 | 202.97852 | 1.25363  | 0.1941765 | 2.5268024 | 53  | 3 | 1999-2007 | 0.46 | M-v | 3 | MP | 128692 1999 UY <sub>31</sub>  |
| 1999 UM <sub>32</sub>  | 17.0 | 0.15 | 20071027 | 315.99062 | 37.88690  | 51.01599  | 2.91663  | 0.1942667 | 2.5335169 | 96  | 5 | 1995-2007 | 0.50 | M-v | 2 | MP | 128692 1999 UM <sub>32</sub>  |
| 1999 UO <sub>33</sub>  | 17.8 | 0.15 | 20071027 | 4.08520   | 31.04389  | 36.18016  | 3.03429  | 0.1846452 | 2.4569881 | 36  | 5 | 1995-2007 | 0.48 | M-v | 3 | MP | 77406 1999 UO <sub>33</sub>   |
| 1999 UC <sub>34</sub>  | 17.1 | 0.15 | 20071027 | 323.77600 | 96.63995  | 37.06928  | 2.98106  | 0.1182353 | 2.4089074 | 43  | 5 | 1999-2007 | 0.30 | M-v | 0 | MP | 128692 1999 UC <sub>34</sub>  |
| 1999 UO <sub>40</sub>  | 17.3 | 0.15 | 20071027 | 46.41855  | 96.35519  | 319.39963 | 3.01648  | 0.1044153 | 2.3714077 | 56  | 5 | 1995-2007 | 0.51 | M-v | 1 | MP | 128692 1999 UO <sub>40</sub>  |
| 1999 UP <sub>43</sub>  | 15.3 | 0.15 | 20071027 | 54.27845  | 62.63893  | 304.39530 | 10.90795 | 0.1506973 | 2.4371698 | 62  | 4 | 1999-2007 | 0.52 | M-v | 2 | MP | 77406 1999 UP <sub>43</sub>   |
| 1999 UY <sub>43</sub>  | 16.7 | 0.15 | 20071027 | 41.44263  | 63.56613  | 321.82781 | 3.79821  | 0.1690716 | 2.4440714 | 57  | 5 | 1995-2007 | 0.63 | M-v | 2 | MP | 57711 1999 UY <sub>43</sub>   |
| 1999 UM <sub>44</sub>  | 16.6 | 0.15 | 20071027 | 23.87873  | 31.50319  | 12.95847  | 11.21366 | 0.2684294 | 2.4549037 | 62  | 4 | 1999-2007 | 0.58 | M-v | 3 | MP | 77407 1999 UM <sub>44</sub>   |
| 1999 UZ <sub>46</sub>  | 16.3 | 0.15 | 20071027 | 36.71143  | 10.81833  | 6.09945   | 6.19143  | 0.2656884 | 2.4650056 | 99  | 4 | 1999-2007 | 0.52 | M-v | 2 | MP | 77407 1999 UZ <sub>46</sub>   |
| 1999 UF <sub>53</sub>  | 16.3 | 0.15 | 20071027 | 40.11757  | 74.65349  | 311.49243 | 5.52394  | 0.2389749 | 2.4192044 | 91  | 3 | 1999-2007 | 0.54 | M-v | 2 | MP | 128692 1999 UF <sub>53</sub>  |
| 1999 VD <sub>3</sub>   | 16.9 | 0.15 | 20071027 | 170.88303 | 2.40037   | 223.64769 | 15.30560 | 0.1289087 | 2.5521522 | 30  | 4 | 1995-2007 | 0.31 | M-v | 3 | MP | 127862 1999 VD <sub>3</sub>   |
| 1999 VO <sub>5</sub>   | 15.1 | 0.15 | 20071027 | 13.79220  | 173.28966 | 219.85593 | 3.77762  | 0.0904239 | 2.5160980 | 325 | 5 | 1999-2007 | 0.50 | M-v | 2 | MP | 128692 1999 VO <sub>5</sub>   |
| 1999 VY <sub>13</sub>  | 16.4 | 0.15 | 20071027 | 55.21566  | 60.97616  | 247.90863 | 17.92379 | 0.0943679 | 1.9490996 | 58  | 3 | 1999-2007 | 0.62 | M-v | 3 | MP | 128692 1999 VY <sub>13</sub>  |
| 1999 VF <sub>14</sub>  | 16.7 | 0.15 | 20071027 | 34.10040  | 325.85348 | 41.39866  | 21.29323 | 0.1018816 | 1.9251106 | 77  | 3 | 1999-2007 | 0.53 | M-v | 1 | MP | 127863 1999 VF <sub>14</sub>  |
| 1999 VX <sub>18</sub>  | 18.6 | 0.15 | 20071027 | 14.07849  | 166.88196 | 233.83985 | 3.53419  | 0.2041108 | 2.4755374 | 27  | 3 | 1999-2007 | 0.31 | M-v | 2 | MP | 107803 1999 VX <sub>18</sub>  |
| 1999 VD <sub>19</sub>  | 16.0 | 0.15 | 20071027 | 47.31343  | 314.08953 | 56.95297  | 5.26936  | 0.2491888 | 2.4619668 | 105 | 3 | 1999-2007 | 0.55 | M-v | 3 | MP | 126560 1999 VD <sub>19</sub>  |
| 1999 VE <sub>20</sub>  | 18.6 | 0.15 | 20071027 | 356.30680 | 344.82050 | 90.01449  | 2.11528  | 0.2368371 | 1.9027040 | 70  | 4 | 1999-2007 | 0.56 | M-v | 1 | MP | 128692 1999 VE <sub>20</sub>  |
| 1999 VK <sub>22</sub>  | 15.9 | 0.15 | 20071027 | 45.91639  | 132.55576 | 243.33877 | 7.65173  | 0.3188760 | 2.4327486 | 110 | 4 | 1992-2007 | 0.56 | M-v | 2 | MP | 55957 1999 VK <sub>22</sub>   |
| 1999 VS <sub>26</sub>  | 15.1 | 0.15 | 20071027 | 39.66840  | 329.32930 | 51.63494  | 3.07482  | 0.1265526 | 2.4863708 | 172 | 7 | 1991-2007 | 0.53 | M-v | 2 | MP | 128692 1999 VS <sub>26</sub>  |
| 1999 VY <sub>26</sub>  | 16.9 | 0.15 | 20071027 | 345.54277 | 186.88633 | 232.74321 | 5.75033  | 0.2563181 | 2.5389775 | 159 | 3 | 1999-2007 | 0.55 | M-v | 2 | MP | 128692 1999 VY <sub>26</sub>  |
| 1999 VJ <sub>29</sub>  | 15.9 | 0.15 | 20071027 | 25.50852  | 345.66235 | 53.61352  | 5.20239  | 0.1869225 | 2.4740645 | 130 | 4 | 1999-2007 | 0.52 | M-v | 3 | MP | 128692 1999 VJ <sub>29</sub>  |
| 1999 VV <sub>31</sub>  | 16.1 | 0.15 | 20071027 | 323.82438 | 46.29766  | 46.86592  | 6.45726  | 0.1539735 | 2.5244962 | 181 | 4 | 1999-2007 | 0.46 | M-v | 2 | MP | 128692 1999 VV <sub>31</sub>  |
| 1999 VY <sub>31</sub>  | 16.5 | 0.15 | 20071027 | 28.74960  | 333.09509 | 47.41493  | 3.12234  | 0.2037952 | 2.4922292 | 91  | 5 | 1995-2007 | 0.54 | M-v | 3 | MP | 128692 1999 VY <sub>31</sub>  |
| 1999 VK <sub>34</sub>  | 15.6 | 0.15 | 20071027 | 332.79942 | 180.24254 | 247.70523 | 14.21654 | 0.0841044 | 2.5650290 | 115 | 4 | 1999-2007 | 0.59 | M-v | 2 | MP | 128692 1999 VK <sub>34</sub>  |
| 1999 VK <sub>35</sub>  | 17.5 | 0.15 | 20071027 | 53.89449  | 292.98000 | 78.09809  | 3.67371  | 0.1877464 | 2.4659519 | 44  | 6 | 1999-2007 | 0.53 | M-v | 1 | MP | 128692 1999 VK <sub>35</sub>  |
| 1999 VJ <sub>39</sub>  | 16.2 | 0.15 | 20071027 | 10.63232  | 24.15966  | 65.42066  | 7.60665  | 0.2026033 | 2.4398926 | 119 | 4 | 1999-2007 | 0.58 | M-v | 2 | MP | 126560 1999 VJ <sub>39</sub>  |
| 1999 VA <sub>40</sub>  | 17.5 | 0.15 | 20071027 | 54.38980  | 261.57733 | 79.62145  | 2.29876  | 0.2056060 | 2.4613982 | 47  | 4 | 1995-2007 | 0.46 | M-v | 3 | MP | 128692 1999 VA <sub>40</sub>  |
| 1999 VC <sub>41</sub>  | 16.6 | 0.15 | 20071027 | 351.62182 | 160.39133 | 220.18000 | 7.73860  | 0.1571109 | 2.5602002 | 131 | 5 | 1991-2007 | 0.54 | M-v | 2 | MP | 128693 1999 VC <sub>41</sub>  |
| 1999 VQ <sub>42</sub>  | 17.7 | 0.15 | 20071027 | 101.41296 | 358.15346 | 313.29756 | 1.78396  | 0.2039821 | 2.4270054 | 28  | 4 | 1999-2007 | 0.57 | M-v | 3 | MP | 57714 1999 VQ <sub>42</sub>   |
| 1999 VO <sub>44</sub>  | 16.4 | 0.15 | 20071027 | 54.43365  | 85.29676  | 273.93499 | 5.45088  | 0.1836709 | 2.4390977 | 96  | 4 | 1999-2007 | 0.55 | M-v | 2 | MP | 57714 1999 VO <sub>44</sub>   |
| 1999 VZ <sub>45</sub>  | 16.5 | 0.15 | 20071027 | 28.38595  | 119.07153 | 244.26260 | 19.67296 | 0.1147750 | 1.8994943 | 76  | 3 | 1999-2007 | 0.47 | M-v | 3 | MP | 128693 1999 VZ <sub>45</sub>  |
| 1999 VB <sub>47</sub>  | 17.0 | 0.15 | 20071027 | 5.32943   | 12.34760  | 45.14101  | 11.05280 | 0.2414777 | 2.4809557 | 90  | 3 | 1999-2007 | 0.53 | M-v | 2 | MP | 128693 1999 VB <sub>47</sub>  |
| 1999 VP <sub>48</sub>  | 16.4 | 0.15 | 20071027 | 14.60864  | 56.23042  | 294.10643 | 3.69753  | 0.2392595 | 2.5545999 | 157 | 4 | 1999-2007 | 0.44 | M-v | 2 | MP | 128693 1999 VP <sub>48</sub>  |
| 1999 VN <sub>55</sub>  | 16.5 | 0.15 | 20071027 | 12.46577  | 246.90033 | 212.97335 | 0.79335  | 0.0886457 | 2.3742955 | 77  | 5 | 1995-2007 | 0.53 | M-v | 1 | MP | 128693 1999 VN <sub>55</sub>  |
| 1999 VR <sub>56</sub>  | 15.8 | 0.15 | 20071027 | 33.50363  | 119.27313 | 204.37992 | 3.63827  | 0.1011232 | 2.5911470 | 152 | 4 | 1999-2007 | 0.55 | M-v | 2 | MP | 128693 1999 VR <sub>56</sub>  |
| 1999 VC <sub>62</sub>  | 15.9 | 0.15 | 20071027 | 46.40116  | 142.73579 | 227.91291 | 3.68370  | 0.1503892 | 2.4629186 | 136 | 3 | 1999-2007 | 0.54 | M-v | 3 | MP | 57715 1999 VC <sub>62</sub>   |
| 1999 VE <sub>64</sub>  | 15.5 | 0.15 | 20071027 | 336.48289 | 8.28939   | 56.89682  | 5.86915  | 0.0324978 | 2.5243542 | 203 | 5 | 1999-2007 | 0.57 | M-v | 2 | MP | 128693 1999 VE <sub>64</sub>  |
| 1999 VN <sub>64</sub>  | 16.1 | 0.15 | 20071027 | 13.66302  | 355.18449 | 61.47467  | 4.70797  | 0.1635993 | 2.4655626 | 139 | 4 | 1999-2007 | 0.55 | M-v | 2 | MP | 128693 1999 VN <sub>64</sub>  |
| 1999 VW <sub>65</sub>  | 16.1 | 0.15 | 20071027 | 329.88066 | 287.23959 | 153.29260 | 1.07524  | 0.1217046 | 2.5230503 | 181 | 7 | 1991-2007 | 0.51 | M-v | 2 | MP | 128693 1999 VW <sub>65</sub>  |
| 1999 VK <sub>66</sub>  | 16.5 | 0.15 | 20071027 | 20.78867  | 358.64411 | 55.31141  | 7.12715  | 0.1394799 | 2.4562866 | 58  | 4 | 1999-2007 | 0.61 | M-v | 3 | MP | 128693 1999 VK <sub>66</sub>  |
| 1999 VW <sub>71</sub>  | 16.0 | 0.15 | 20071027 | 341.28501 | 124.93618 | 254.93953 | 10.62663 | 0.2151853 | 2.6349145 | 130 | 3 | 1999-2007 | 0.53 | M-v | 2 | MP | 128693 1999 VW <sub>71</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1999 VT <sub>72</sub>  | 16.2 | 0.15 | 20071027 | 325.31897 | 172.32273 | 254.51048 | 5.46275  | 0.1602666 | 2.5687533 | 136 | 4 | 1999-2007 | 0.58 | M-v | 2 | MPC | 128693 1999 VT <sub>72</sub>  |
| 1999 VZ <sub>72</sub>  | 16.6 | 0.15 | 20071027 | 29.23111  | 150.82097 | 228.85628 | 6.76711  | 0.2169345 | 2.4908613 | 66  | 4 | 1995-2007 | 0.59 | M-v | 3 | MPC | 128693 1999 VZ <sub>72</sub>  |
| 1999 VD <sub>73</sub>  | 17.4 | 0.15 | 20071027 | 357.52172 | 7.80053   | 358.99296 | 6.29330  | 0.1556312 | 2.5289126 | 45  | 3 | 1999-2007 | 0.42 | M-v | 3 | MPC | 128693 1999 VD <sub>73</sub>  |
| 1999 VD <sub>80</sub>  | 17.0 | 0.15 | 20071027 | 19.02799  | 32.82031  | 18.55974  | 1.26394  | 0.1712810 | 2.4538987 | 64  | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 128693 1999 VD <sub>80</sub>  |
| 1999 VO <sub>80</sub>  | 15.4 | 0.15 | 20071027 | 5.48702   | 319.35410 | 81.06882  | 4.76979  | 0.0376419 | 2.5178485 | 274 | 7 | 1991-2007 | 0.53 | M-v | 2 | MPC | 128693 1999 VO <sub>80</sub>  |
| 1999 VF <sub>84</sub>  | 18.3 | 0.15 | 20071027 | 44.05467  | 193.55213 | 183.20809 | 0.94593  | 0.2074224 | 2.4150625 | 32  | 3 | 1999-2007 | 0.26 | M-v | 2 | MPC | 128693 1999 VF <sub>84</sub>  |
| 1999 VH <sub>88</sub>  | 15.9 | 0.15 | 20071027 | 20.71782  | 165.48782 | 208.67949 | 2.28768  | 0.3115121 | 3.9275241 | 60  | 3 | 1991-2007 | 0.41 | M-v | 2 | MPC | 127863 1999 VH <sub>88</sub>  |
| 1999 VL <sub>89</sub>  | 16.8 | 0.15 | 20071027 | 52.71524  | 181.90967 | 170.80935 | 0.40052  | 0.2109466 | 2.4670584 | 33  | 4 | 1999-2007 | 0.44 | M-v | 2 | MPC | 110714 1999 VL <sub>89</sub>  |
| 1999 VN <sub>91</sub>  | 15.7 | 0.15 | 20071027 | 50.33346  | 329.35978 | 41.45844  | 6.43665  | 0.1085654 | 2.4412081 | 76  | 5 | 1994-2007 | 0.57 | M-v | 2 | MPC | 128693 1999 VN <sub>91</sub>  |
| 1999 VG <sub>96</sub>  | 17.8 | 0.15 | 20071027 | 359.06848 | 173.50170 | 220.49172 | 5.21434  | 0.2586733 | 2.5210049 | 82  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128693 1999 VG <sub>96</sub>  |
| 1999 VJ <sub>100</sub> | 17.7 | 0.15 | 20071027 | 5.11982   | 358.27967 | 39.41399  | 2.61753  | 0.2619081 | 2.5136088 | 67  | 3 | 1999-2007 | 0.42 | M-v | 2 | MPC | 128693 1999 VJ <sub>100</sub> |
| 1999 VP <sub>102</sub> | 16.7 | 0.15 | 20071027 | 112.83729 | 74.95915  | 237.15853 | 2.71836  | 0.1672014 | 2.4310041 | 51  | 5 | 1999-2007 | 0.35 | M-v | 1 | MPC | 110714 1999 VP <sub>102</sub> |
| 1999 VM <sub>103</sub> | 17.8 | 0.15 | 20071027 | 118.34662 | 98.14322  | 285.97786 | 0.53983  | 0.2121966 | 2.2984832 | 69  | 3 | 1999-2006 | 0.44 | M-v | 3 | MPC | 124296 1999 VM <sub>103</sub> |
| 1999 VA <sub>104</sub> | 17.4 | 0.15 | 20071027 | 56.25672  | 157.40158 | 200.45362 | 0.97028  | 0.2390854 | 2.4620906 | 27  | 4 | 1995-2007 | 0.33 | M-v | 2 | MPC | 110714 1999 VA <sub>104</sub> |
| 1999 VM <sub>105</sub> | 18.0 | 0.15 | 20071027 | 23.62664  | 11.22232  | 31.16823  | 0.23046  | 0.2066914 | 2.4727119 | 27  | 3 | 1995-2007 | 0.37 | M-v | 3 | MPC | 15051 1999 VM <sub>105</sub>  |
| 1999 VT <sub>105</sub> | 16.7 | 0.15 | 20071027 | 351.76133 | 61.49734  | 64.14584  | 4.13925  | 0.1666351 | 2.4096803 | 60  | 5 | 1999-2007 | 0.47 | M-v | 2 | MPC | 104124 1999 VT <sub>105</sub> |
| 1999 VF <sub>106</sub> | 17.1 | 0.15 | 20071027 | 91.24749  | 312.53343 | 21.98996  | 1.45778  | 0.2076531 | 2.4369666 | 29  | 6 | 1991-2007 | 0.46 | M-v | 2 | MPC | 47822 1999 VF <sub>106</sub>  |
| 1999 VC <sub>107</sub> | 18.1 | 0.15 | 20071027 | 336.06798 | 214.85645 | 224.79142 | 3.81275  | 0.2462759 | 2.5325079 | 71  | 3 | 1999-2007 | 0.42 | M-v | 3 | MPC | 128693 1999 VC <sub>107</sub> |
| 1999 VA <sub>113</sub> | 14.7 | 0.15 | 20071027 | 35.85166  | 301.65960 | 71.82721  | 10.42914 | 0.3341714 | 3.9543062 | 70  | 4 | 1992-2007 | 0.59 | M-v | 1 | MPC | 110715 1999 VA <sub>113</sub> |
| 1999 VA <sub>117</sub> | 17.1 | 0.15 | 20071027 | 245.98145 | 290.28124 | 227.02519 | 20.18629 | 0.0646471 | 1.9351417 | 84  | 4 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128693 1999 VA <sub>117</sub> |
| 1999 VB <sub>117</sub> | 17.5 | 0.15 | 20071027 | 330.69437 | 269.89116 | 171.07343 | 1.46717  | 0.1254623 | 2.5272227 | 74  | 5 | 1995-2007 | 0.40 | M-v | 2 | MPC | 128693 1999 VB <sub>117</sub> |
| 1999 VJ <sub>120</sub> | 16.6 | 0.15 | 20071027 | 61.18585  | 307.32274 | 54.71965  | 3.45667  | 0.2077729 | 2.4139009 | 61  | 5 | 1997-2007 | 0.49 | M-v | 2 | MPC | 128693 1999 VJ <sub>120</sub> |
| 1999 VD <sub>123</sub> | 16.0 | 0.15 | 20071027 | 358.19295 | 172.35795 | 214.17570 | 4.69520  | 0.1233740 | 2.5636220 | 175 | 4 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128693 1999 VD <sub>123</sub> |
| 1999 VV <sub>130</sub> | 16.3 | 0.15 | 20071027 | 49.29949  | 304.56395 | 37.95558  | 4.31765  | 0.0977128 | 2.5215443 | 105 | 4 | 1999-2007 | 0.44 | M-v | 3 | MPC | 128693 1999 VV <sub>130</sub> |
| 1999 VT <sub>132</sub> | 17.3 | 0.15 | 20071027 | 108.44056 | 10.38642  | 308.78570 | 1.94722  | 0.1476064 | 2.3651812 | 44  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 77412 1999 VT <sub>132</sub>  |
| 1999 VV <sub>135</sub> | 16.6 | 0.15 | 20071027 | 36.02476  | 351.32612 | 37.03931  | 3.43038  | 0.1814573 | 2.4495136 | 66  | 5 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128694 1999 VV <sub>135</sub> |
| 1999 VE <sub>136</sub> | 16.0 | 0.15 | 20071027 | 85.27248  | 272.74670 | 37.08907  | 2.29685  | 0.0666886 | 2.5210034 | 162 | 5 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128694 1999 VE <sub>136</sub> |
| 1999 VA <sub>137</sub> | 16.5 | 0.15 | 20071027 | 166.10051 | 0.60838   | 229.69997 | 5.21420  | 0.0474738 | 2.5506932 | 54  | 4 | 1999-2007 | 0.32 | M-v | 3 | MPC | 128694 1999 VA <sub>137</sub> |
| 1999 VL <sub>141</sub> | 17.3 | 0.15 | 20071027 | 40.81304  | 91.83987  | 275.82518 | 1.12121  | 0.1927783 | 2.4780856 | 40  | 5 | 1997-2007 | 0.42 | M-v | 2 | MPC | 74680 1999 VL <sub>141</sub>  |
| 1999 VZ <sub>141</sub> | 16.7 | 0.15 | 20071027 | 134.93406 | 270.99335 | 35.21511  | 2.87752  | 0.1996254 | 2.3882775 | 95  | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128694 1999 VZ <sub>141</sub> |
| 1999 VC <sub>142</sub> | 16.5 | 0.15 | 20071027 | 133.31903 | 231.90624 | 25.75208  | 1.02783  | 0.0819274 | 2.5408473 | 68  | 7 | 1995-2007 | 0.35 | M-v | 1 | MPC | 128694 1999 VC <sub>142</sub> |
| 1999 VW <sub>146</sub> | 16.4 | 0.15 | 20071027 | 75.23629  | 164.14686 | 174.66867 | 1.68726  | 0.1952410 | 2.4639179 | 49  | 5 | 1991-2007 | 0.48 | M-v | 2 | MPC | 77413 1999 VW <sub>146</sub>  |
| 1999 VH <sub>147</sub> | 15.4 | 0.15 | 20071027 | 341.17007 | 177.28283 | 239.23116 | 14.79918 | 0.1496664 | 2.5659813 | 184 | 3 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128694 1999 VH <sub>147</sub> |
| 1999 VU <sub>148</sub> | 16.9 | 0.15 | 20071027 | 19.20407  | 112.11533 | 290.89649 | 1.48528  | 0.1747847 | 2.4528065 | 88  | 3 | 1999-2007 | 0.46 | M-v | 3 | MPC | 55981 1999 VU <sub>148</sub>  |
| 1999 VO <sub>157</sub> | 15.6 | 0.15 | 20071027 | 49.02929  | 350.01252 | 16.45183  | 8.35567  | 0.1170143 | 2.4425192 | 150 | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128694 1999 VO <sub>157</sub> |
| 1999 VT <sub>158</sub> | 16.4 | 0.15 | 20071027 | 47.38720  | 27.23379  | 350.51086 | 2.36529  | 0.2137938 | 2.4440331 | 107 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128694 1999 VT <sub>158</sub> |
| 1999 VH <sub>159</sub> | 15.8 | 0.15 | 20071027 | 7.99616   | 35.68756  | 352.38854 | 3.63481  | 0.0966444 | 2.5144220 | 220 | 6 | 1995-2007 | 0.52 | M-v | 3 | MPC | 128694 1999 VH <sub>159</sub> |
| 1999 VV <sub>162</sub> | 16.1 | 0.15 | 20071027 | 73.09326  | 106.65360 | 247.29155 | 4.52789  | 0.1572257 | 2.4322883 | 94  | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 77414 1999 VV <sub>162</sub>  |
| 1999 VK <sub>163</sub> | 16.0 | 0.15 | 20071027 | 60.33367  | 322.44732 | 27.11791  | 5.40900  | 0.1475793 | 2.4636376 | 112 | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128694 1999 VK <sub>163</sub> |
| 1999 VR <sub>163</sub> | 17.1 | 0.15 | 20071027 | 53.01280  | 12.58229  | 31.78280  | 3.07098  | 0.1973278 | 2.3959307 | 57  | 4 | 1999-2007 | 0.50 | M-v | 1 | MPC | 104124 1999 VR <sub>163</sub> |
| 1999 VM <sub>164</sub> | 15.9 | 0.15 | 20071027 | 298.43416 | 193.09559 | 237.47836 | 10.94598 | 0.1850826 | 2.6242655 | 49  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 57719 1999 VM <sub>164</sub>  |
| 1999 VA <sub>165</sub> | 17.0 | 0.15 | 20071027 | 355.94551 | 190.89153 | 253.71766 | 1.61766  | 0.1458961 | 2.4637925 | 61  | 7 | 1991-2007 | 0.48 | M-v | 2 | MPC | 104124 1999 VA <sub>165</sub> |
| 1999 VV <sub>165</sub> | 15.7 | 0.15 | 20071027 | 8.64192   | 107.11929 | 288.09045 | 2.33370  | 0.1192483 | 2.5225598 | 169 | 4 | 1999-2007 | 0.43 | M-v | 2 | MPC | 128694 1999 VV <sub>165</sub> |
| 1999 VR <sub>166</sub> | 16.7 | 0.15 | 20071027 | 34.92704  | 28.27665  | 332.62953 | 2.35148  | 0.1917290 | 2.5151792 | 102 | 6 | 1995-2007 | 0.49 | M-v | 3 | MPC | 128694 1999 VR <sub>166</sub> |
| 1999 VE <sub>168</sub> | 16.9 | 0.15 | 20071027 | 350.54873 | 358.35521 | 47.36730  | 5.20054  | 0.2698304 | 2.5470743 | 163 | 3 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128694 1999 VE <sub>168</sub> |
| 1999 VF <sub>174</sub> | 16.7 | 0.15 | 20071027 | 348.88687 | 175.67402 | 228.14059 | 19.97468 | 0.0776944 | 1.9394326 | 113 | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128694 1999 VF <sub>174</sub> |
| 1999 VQ <sub>181</sub> | 15.3 | 0.15 | 20071027 | 22.62488  | 179.30366 | 198.84848 | 2.39483  | 0.2699008 | 3.9489817 | 49  | 3 | 1999-2007 | 0.47 | M-v | 1 | MPC | 110716 1999 VQ <sub>181</sub> |
| 1999 VQ <sub>182</sub> | 16.9 | 0.15 | 20071027 | 7.47440   | 324.27258 | 62.49492  | 4.17892  | 0.2258273 | 2.5376646 | 109 | 4 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128694 1999 VQ <sub>182</sub> |
| 1999 VA <sub>186</sub> | 16.9 | 0.15 | 20071027 | 23.46917  | 293.42616 | 93.75974  | 2.68492  | 0.2507379 | 2.4849121 | 52  | 3 | 1999-2007 | 0.56 | M-v | 3 | MPC | 55988 1999 VA <sub>186</sub>  |
| 1999 VS <sub>187</sub> | 16.4 | 0.15 | 20071027 | 348.28913 | 28.82149  | 67.20914  | 11.27145 | 0.1324439 | 2.4590150 | 70  | 6 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128694 1999 VS <sub>187</sub> |
| 1999 VE <sub>189</sub> | 17.3 | 0.15 | 20071027 | 343.99405 | 195.86698 | 214.21593 | 3.13592  | 0.2188003 | 2.5580970 | 120 | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128694 1999 VE <sub>189</sub> |
| 1999 VH <sub>190</sub> | 15.9 | 0.15 | 20071027 | 349.65775 | 180.53264 | 231.66004 | 12.76124 | 0.1472130 | 2.5565545 | 199 | 3 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128694 1999 VH <sub>190</sub> |
| 1999 VT <sub>191</sub> | 16.6 | 0.15 | 20071027 | 118.81704 | 223.89309 | 85.99052  | 2.40384  | 0.1886143 | 2.4378134 | 46  | 4 | 1999-2007 | 0.42 | M-v | 1 | MPC | 110716 1999 VT <sub>191</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1999 VL <sub>192</sub> | 15.9 | 0.15 | 20071027 | 7.35065   | 136.24583 | 276.18211 | 5.42467  | 0.1322642 | 2.4763346 | 112 | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128694 1999 VL <sub>192</sub> |
| 1999 VU <sub>195</sub> | 16.0 | 0.15 | 20071027 | 25.75861  | 312.05355 | 89.28111  | 6.96466  | 0.1339536 | 2.4545883 | 69  | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 77415 1999 VU <sub>195</sub>  |
| 1999 VP <sub>200</sub> | 15.2 | 0.15 | 20071027 | 358.43082 | 270.50957 | 127.26457 | 15.60114 | 0.1136623 | 2.5417609 | 104 | 5 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128694 1999 VP <sub>200</sub> |
| 1999 VP <sub>202</sub> | 18.0 | 0.15 | 20071027 | 1.65109   | 216.55148 | 208.64561 | 0.72787  | 0.1750080 | 2.4656880 | 37  | 5 | 1997-2007 | 0.41 | M-v | 1 | MPC | 77415 1999 VP <sub>202</sub>  |
| 1999 VQ <sub>209</sub> | 16.2 | 0.15 | 20071027 | 2.61516   | 114.85046 | 318.18907 | 3.46534  | 0.1527287 | 2.4408581 | 100 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128694 1999 VQ <sub>209</sub> |
| 1999 VZ <sub>209</sub> | 17.5 | 0.15 | 20071027 | 29.86840  | 326.22925 | 56.36620  | 2.73066  | 0.1787654 | 2.4782859 | 50  | 4 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128694 1999 VZ <sub>209</sub> |
| 1999 VK <sub>217</sub> | 17.4 | 0.15 | 20071027 | 187.98791 | 208.43512 | 64.22629  | 3.23287  | 0.0513156 | 2.3436443 | 46  | 6 | 1999-2007 | 0.36 | M-v | 0 | MPC | 117396 1999 VK <sub>217</sub> |
| 1999 VL <sub>224</sub> | 17.1 | 0.15 | 20071027 | 349.00018 | 197.68109 | 195.63720 | 2.59003  | 0.0763529 | 2.5808029 | 56  | 4 | 1999-2007 | 0.42 | M-v | 2 | MPC | 128694 1999 VL <sub>224</sub> |
| 1999 VA <sub>230</sub> | 17.1 | 0.15 | 20071027 | 184.28620 | 108.63027 | 240.56510 | 5.16578  | 0.0564597 | 2.2538939 | 46  | 4 | 1999-2006 | 0.56 | M-v | 1 | MPC | 112727 1999 VA <sub>230</sub> |
| 1999 WW <sub>10</sub>  | 17.5 | 0.15 | 20071027 | 13.31423  | 155.94395 | 219.03552 | 20.23944 | 0.0914658 | 1.9188209 | 84  | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128695 1999 WW <sub>10</sub>  |
| 1999 WU <sub>11</sub>  | 16.7 | 0.15 | 20071027 | 42.38606  | 15.01236  | 38.75364  | 6.30128  | 0.0985962 | 2.3740128 | 48  | 5 | 1999-2007 | 0.41 | M-v | 1 | MPC | 104125 1999 WU <sub>11</sub>  |
| 1999 WH <sub>13</sub>  | 16.2 | 0.15 | 20071027 | 70.15350  | 87.60732  | 229.17077 | 2.64253  | 0.0838092 | 2.5400024 | 160 | 5 | 1995-2007 | 0.48 | M-v | 3 | MPC | 128695 1999 WH <sub>13</sub>  |
| 1999 WQ <sub>14</sub>  | 17.0 | 0.15 | 20071027 | 332.86897 | 70.44865  | 65.34425  | 2.25568  | 0.1221524 | 2.4190222 | 47  | 6 | 1998-2007 | 0.51 | M-v | 1 | MPC | 124298 1999 WQ <sub>14</sub>  |
| 1999 WS <sub>14</sub>  | 17.1 | 0.15 | 20071027 | 120.63496 | 88.67706  | 230.34741 | 2.64198  | 0.2021708 | 2.4034814 | 60  | 5 | 1995-2007 | 0.46 | M-v | 2 | MPC | 110717 1999 WS <sub>14</sub>  |
| 1999 WW <sub>15</sub>  | 16.9 | 0.15 | 20071027 | 113.15940 | 52.81690  | 220.14100 | 3.66632  | 0.1467724 | 2.5318224 | 76  | 3 | 1999-2007 | 0.32 | M-v | 3 | MPC | 128695 1999 WW <sub>15</sub>  |
| 1999 WR <sub>19</sub>  | 17.4 | 0.15 | 20071027 | 33.25588  | 32.25558  | 352.41316 | 0.90529  | 0.1907893 | 2.4272785 | 63  | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 77417 1999 WR <sub>19</sub>   |
| 1999 WH <sub>20</sub>  | 15.7 | 0.15 | 20071027 | 350.19703 | 170.18266 | 238.37576 | 26.74156 | 0.1606029 | 2.5466973 | 140 | 3 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128695 1999 WH <sub>20</sub>  |
| 1999 WE <sub>21</sub>  | 16.0 | 0.15 | 20071027 | 12.30217  | 329.10193 | 54.72233  | 5.04066  | 0.3103626 | 3.9807796 | 58  | 3 | 1991-2007 | 0.36 | M-v | 2 | MPC | 127863 1999 WE <sub>21</sub>  |
| 1999 XK <sub>3</sub>   | 16.4 | 0.15 | 20071027 | 334.11140 | 331.56290 | 97.21356  | 6.21511  | 0.2182450 | 2.5472935 | 105 | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128695 1999 XK <sub>3</sub>   |
| 1999 XB <sub>5</sub>   | 16.2 | 0.15 | 20071027 | 58.43365  | 285.26835 | 112.35939 | 3.34016  | 0.1790439 | 2.4081577 | 90  | 4 | 1999-2007 | 0.56 | M-v | 2 | MPC | 104126 1999 XB <sub>5</sub>   |
| 1999 XY <sub>8</sub>   | 16.6 | 0.15 | 20071027 | 355.47535 | 147.46604 | 228.14511 | 19.56597 | 0.0737849 | 1.9650830 | 52  | 3 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128695 1999 XY <sub>8</sub>   |
| 1999 XN <sub>9</sub>   | 15.2 | 0.15 | 20071027 | 41.78500  | 104.23309 | 254.48678 | 21.46678 | 0.0444723 | 2.5701233 | 97  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128695 1999 XN <sub>9</sub>   |
| 1999 XZ <sub>11</sub>  | 15.9 | 0.15 | 20071027 | 49.15858  | 88.33359  | 313.87527 | 5.99582  | 0.1340791 | 2.4129343 | 106 | 4 | 1999-2007 | 0.52 | M-v | 1 | MPC | 110717 1999 XZ <sub>11</sub>  |
| 1999 XL <sub>12</sub>  | 14.9 | 0.15 | 20071027 | 2.37223   | 259.68690 | 145.11584 | 4.54332  | 0.2732808 | 2.5557081 | 178 | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128695 1999 XL <sub>12</sub>  |
| 1999 XL <sub>16</sub>  | 15.3 | 0.15 | 20071027 | 73.33387  | 280.72205 | 75.52169  | 11.43752 | 0.2800038 | 2.4346292 | 85  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128695 1999 XL <sub>16</sub>  |
| 1999 XC <sub>17</sub>  | 16.7 | 0.15 | 20071027 | 44.66700  | 144.63254 | 258.53974 | 19.97244 | 0.0592167 | 1.8918589 | 35  | 3 | 1999-2007 | 0.55 | M-v | 3 | MPC | 72035 1999 XC <sub>17</sub>   |
| 1999 XK <sub>17</sub>  | 16.7 | 0.15 | 20071027 | 35.49235  | 303.87332 | 104.22452 | 24.17439 | 0.1222926 | 1.9151138 | 52  | 6 | 1992-2007 | 0.68 | M-v | 1 | MPC | 101988 1999 XK <sub>17</sub>  |
| 1999 XP <sub>19</sub>  | 16.0 | 0.15 | 20071027 | 3.84701   | 49.03477  | 35.74478  | 5.67290  | 0.4291486 | 2.4562326 | 259 | 5 | 1993-2007 | 0.49 | M-v | 1 | MPC | 128695 1999 XP <sub>19</sub>  |
| 1999 XY <sub>23</sub>  | 15.0 | 0.15 | 20071027 | 347.59811 | 181.15645 | 235.28964 | 7.98723  | 0.0731018 | 2.5133193 | 302 | 7 | 1991-2007 | 0.53 | M-v | 2 | MPC | 128695 1999 XY <sub>23</sub>  |
| 1999 XV <sub>29</sub>  | 15.6 | 0.15 | 20071027 | 313.22313 | 186.32916 | 232.47049 | 12.81540 | 0.2301626 | 2.6317587 | 91  | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 101989 1999 XV <sub>29</sub>  |
| 1999 XV <sub>42</sub>  | 16.5 | 0.15 | 20071027 | 22.06130  | 135.45737 | 237.88412 | 1.92661  | 0.1776285 | 2.5216221 | 195 | 5 | 1995-2007 | 0.49 | M-v | 2 | MPC | 128695 1999 XV <sub>42</sub>  |
| 1999 XR <sub>46</sub>  | 16.1 | 0.15 | 20071027 | 33.55889  | 271.94902 | 89.10164  | 2.83506  | 0.1778993 | 2.5247137 | 194 | 3 | 1999-2007 | 0.53 | M-v | 3 | MPC | 128695 1999 XR <sub>46</sub>  |
| 1999 XB <sub>48</sub>  | 16.1 | 0.15 | 20071027 | 350.78116 | 310.99631 | 71.68349  | 5.98343  | 0.2194241 | 2.5850149 | 113 | 4 | 1999-2007 | 0.58 | M-v | 2 | MPC | 128695 1999 XB <sub>48</sub>  |
| 1999 XK <sub>54</sub>  | 16.9 | 0.15 | 20071027 | 31.68325  | 299.72478 | 132.79954 | 1.76873  | 0.1713408 | 2.4198606 | 50  | 4 | 1999-2007 | 0.44 | M-v | 2 | MPC | 128695 1999 XK <sub>54</sub>  |
| 1999 XS <sub>55</sub>  | 16.6 | 0.15 | 20071027 | 49.00899  | 311.92125 | 64.74458  | 9.21702  | 0.2027787 | 2.4667483 | 38  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128695 1999 XS <sub>55</sub>  |
| 1999 XO <sub>68</sub>  | 17.5 | 0.15 | 20071027 | 354.61623 | 181.59745 | 237.22671 | 3.79850  | 0.2588993 | 2.5294887 | 87  | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128695 1999 XO <sub>68</sub>  |
| 1999 XH <sub>70</sub>  | 16.4 | 0.15 | 20071027 | 331.32119 | 341.25316 | 93.93565  | 4.04543  | 0.1368366 | 2.5674044 | 74  | 3 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128695 1999 XH <sub>70</sub>  |
| 1999 XZ <sub>84</sub>  | 15.7 | 0.15 | 20071027 | 339.72427 | 169.01175 | 268.85096 | 12.42873 | 0.2389866 | 2.5672246 | 85  | 3 | 1999-2007 | 0.40 | M-v | 2 | MPC | 128695 1999 XZ <sub>84</sub>  |
| 1999 XB <sub>90</sub>  | 16.6 | 0.15 | 20071027 | 41.34052  | 291.75483 | 138.23229 | 2.99751  | 0.1792008 | 2.4414522 | 80  | 4 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128695 1999 XB <sub>90</sub>  |
| 1999 XW <sub>91</sub>  | 15.8 | 0.15 | 20071027 | 345.07298 | 183.01979 | 257.21203 | 11.17039 | 0.1929489 | 2.5401397 | 79  | 3 | 1999-2007 | 0.61 | M-v | 3 | MPC | 128695 1999 XW <sub>91</sub>  |
| 1999 XL <sub>92</sub>  | 15.1 | 0.15 | 20071027 | 35.13509  | 135.05324 | 238.58415 | 4.26706  | 0.2069671 | 2.5443632 | 87  | 3 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128695 1999 XL <sub>92</sub>  |
| 1999 XC <sub>93</sub>  | 15.7 | 0.15 | 20071027 | 19.85630  | 111.96407 | 282.91758 | 26.04615 | 0.1869353 | 2.5651934 | 73  | 4 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128695 1999 XC <sub>93</sub>  |
| 1999 XE <sub>99</sub>  | 15.5 | 0.15 | 20071027 | 23.33547  | 318.92773 | 64.09884  | 6.30824  | 0.2912812 | 2.5216669 | 102 | 4 | 1993-2007 | 0.58 | M-v | 2 | MPC | 128695 1999 XE <sub>99</sub>  |
| 1999 XR <sub>102</sub> | 15.2 | 0.15 | 20071027 | 20.48529  | 94.93949  | 290.91731 | 3.90107  | 0.2461760 | 2.5508675 | 92  | 3 | 1999-2007 | 0.48 | M-v | 3 | MPC | 128695 1999 XR <sub>102</sub> |
| 1999 XM <sub>103</sub> | 14.8 | 0.15 | 20071027 | 31.46699  | 90.99644  | 287.60011 | 11.41059 | 0.3436042 | 2.5237544 | 196 | 4 | 1992-2007 | 0.53 | M-v | 3 | MPC | 128695 1999 XM <sub>103</sub> |
| 1999 XH <sub>104</sub> | 15.7 | 0.15 | 20071027 | 2.04452   | 324.59181 | 75.50854  | 13.60544 | 0.2579775 | 2.5392490 | 229 | 3 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128695 1999 XH <sub>104</sub> |
| 1999 XD <sub>111</sub> | 16.8 | 0.15 | 20071027 | 50.38334  | 296.96809 | 59.67908  | 3.24939  | 0.2001318 | 2.4869463 | 69  | 3 | 1999-2007 | 0.46 | M-v | 3 | MPC | 128695 1999 XD <sub>111</sub> |
| 1999 XF <sub>111</sub> | 15.4 | 0.15 | 20071027 | 280.41934 | 81.10930  | 89.56663  | 31.33934 | 0.2171468 | 2.5889431 | 62  | 3 | 1999-2007 | 0.48 | M-v | 2 | MPC | 62255 1999 XF <sub>111</sub>  |
| 1999 XS <sub>111</sub> | 16.2 | 0.15 | 20071027 | 316.93376 | 154.05528 | 259.18471 | 13.06535 | 0.2457849 | 2.6268611 | 32  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 74698 1999 XS <sub>111</sub>  |
| 1999 XH <sub>116</sub> | 16.3 | 0.15 | 20071027 | 348.04270 | 196.55143 | 258.63784 | 10.39411 | 0.2245188 | 2.4676529 | 104 | 3 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128695 1999 XH <sub>116</sub> |
| 1999 XU <sub>125</sub> | 15.8 | 0.15 | 20071027 | 303.00229 | 173.58557 | 295.25557 | 4.14897  | 0.2653016 | 2.5728749 | 136 | 4 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128696 1999 XU <sub>125</sub> |
| 1999 XU <sub>130</sub> | 15.5 | 0.15 | 20071027 | 356.76937 | 76.54609  | 288.67687 | 13.41399 | 0.2231270 | 2.6165947 | 150 | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128696 1999 XU <sub>130</sub> |
| 1999 XK <sub>131</sub> | 16.2 | 0.15 | 20071027 | 7.65037   | 66.49799  | 336.06581 | 4.62902  | 0.1557124 | 2.5358435 | 75  | 5 | 1995-2007 | 0.56 | M-v | 2 | MPC | 128696 1999 XK <sub>131</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1999 XC <sub>137</sub> | 15.6 | 0.15 | 20071027 | 341.72964 | 138.11504 | 277.46615 | 9.01918  | 0.3216926 | 2.5411461 | 179 | 3 | 1999-2007 | 0.44 | M-v | 2 | MPG | 128696 1999 XC <sub>137</sub> |
| 1999 XG <sub>139</sub> | 15.8 | 0.15 | 20071027 | 342.57925 | 352.06216 | 82.61398  | 4.94137  | 0.1992235 | 2.5793298 | 132 | 4 | 1999-2007 | 0.50 | M-v | 2 | MPG | 128696 1999 XG <sub>139</sub> |
| 1999 XK <sub>139</sub> | 17.1 | 0.15 | 20071027 | 71.00477  | 278.05723 | 58.63188  | 3.61383  | 0.2091939 | 2.4330845 | 59  | 3 | 1999-2007 | 0.48 | M-v | 2 | MPG | 56023 1999 XK <sub>139</sub>  |
| 1999 XQ <sub>139</sub> | 16.1 | 0.15 | 20071027 | 34.22848  | 298.73998 | 66.57271  | 4.72922  | 0.3214915 | 3.9415629 | 35  | 4 | 1991-2007 | 0.47 | M-v | 1 | MPG | 128696 1999 XQ <sub>139</sub> |
| 1999 XD <sub>141</sub> | 16.2 | 0.15 | 20071027 | 17.26576  | 195.53027 | 216.67781 | 11.57771 | 0.1744947 | 2.4347807 | 124 | 4 | 1999-2007 | 0.54 | M-v | 2 | MPG | 128696 1999 XD <sub>141</sub> |
| 1999 XU <sub>141</sub> | 15.1 | 0.15 | 20071027 | 264.90516 | 83.62857  | 98.85507  | 28.65422 | 0.3540604 | 2.6349391 | 85  | 4 | 1999-2007 | 0.56 | M-v | 1 | MPG | 87364 1999 XU <sub>141</sub>  |
| 1999 XK <sub>146</sub> | 17.3 | 0.15 | 20071027 | 106.17106 | 68.36581  | 222.44852 | 1.83629  | 0.0237614 | 2.5540771 | 55  | 4 | 1999-2007 | 0.29 | M-v | 2 | MPG | 127864 1999 XK <sub>146</sub> |
| 1999 XY <sub>151</sub> | 16.8 | 0.15 | 20071027 | 356.51304 | 119.89868 | 297.29007 | 4.19704  | 0.1238229 | 2.5861342 | 77  | 4 | 1999-2007 | 0.54 | M-v | 2 | MPG | 128696 1999 XY <sub>151</sub> |
| 1999 XO <sub>153</sub> | 14.6 | 0.15 | 20071027 | 289.94880 | 258.47895 | 268.67275 | 12.83208 | 0.1749413 | 2.5490562 | 96  | 5 | 1999-2007 | 0.61 | M-v | 2 | MPG | 126564 1999 XO <sub>153</sub> |
| 1999 XE <sub>155</sub> | 16.5 | 0.15 | 20071027 | 345.17160 | 180.83293 | 243.40359 | 6.89252  | 0.2359664 | 2.5495732 | 166 | 3 | 1999-2007 | 0.45 | M-v | 2 | MPG | 128696 1999 XE <sub>155</sub> |
| 1999 XL <sub>156</sub> | 15.7 | 0.15 | 20071027 | 344.39598 | 277.35579 | 120.41678 | 4.54030  | 0.2555797 | 2.5903676 | 185 | 3 | 1999-2007 | 0.50 | M-v | 2 | MPG | 128696 1999 XL <sub>156</sub> |
| 1999 XL <sub>159</sub> | 14.9 | 0.15 | 20071027 | 300.38020 | 303.51366 | 208.82836 | 3.20010  | 0.1874733 | 2.5275081 | 146 | 6 | 1994-2007 | 0.50 | M-v | 2 | MPG | 126564 1999 XL <sub>159</sub> |
| 1999 XF <sub>161</sub> | 16.0 | 0.15 | 20071027 | 354.66541 | 64.89389  | 9.45819   | 5.87274  | 0.2275444 | 2.5392497 | 98  | 3 | 1999-2007 | 0.57 | M-v | 3 | MPG | 128696 1999 XF <sub>161</sub> |
| 1999 XR <sub>163</sub> | 17.4 | 0.15 | 20071027 | 3.48647   | 92.93651  | 287.94842 | 9.95349  | 0.1994518 | 2.6379413 | 38  | 3 | 1996-2007 | 0.50 | M-v | 2 | MPG | 128696 1999 XR <sub>163</sub> |
| 1999 XZ <sub>163</sub> | 13.5 | 0.15 | 20071027 | 56.71176  | 271.07838 | 93.75939  | 10.63157 | 0.2004496 | 3.9347586 | 91  | 7 | 1991-2007 | 0.55 | M-v | 0 | MPG | 112728 1999 XZ <sub>163</sub> |
| 1999 XX <sub>171</sub> | 14.5 | 0.15 | 20071027 | 62.13084  | 271.02545 | 78.25881  | 15.29718 | 0.2205284 | 2.5454785 | 120 | 5 | 1999-2007 | 0.55 | M-v | 2 | MPG | 128696 1999 XX <sub>171</sub> |
| 1999 XO <sub>172</sub> | 15.5 | 0.15 | 20071027 | 31.52507  | 301.00761 | 75.00754  | 13.57667 | 0.2963621 | 2.5371157 | 67  | 4 | 1995-2007 | 0.55 | M-v | 3 | MPG | 128696 1999 XO <sub>172</sub> |
| 1999 XX <sub>178</sub> | 14.9 | 0.15 | 20071027 | 279.99889 | 91.50855  | 78.34563  | 12.97924 | 0.1864286 | 2.5823371 | 64  | 4 | 1999-2007 | 0.59 | M-v | 3 | MPG | 128696 1999 XX <sub>178</sub> |
| 1999 XP <sub>179</sub> | 16.2 | 0.15 | 20071027 | 342.04616 | 95.38113  | 337.57738 | 5.10410  | 0.1862791 | 2.5713591 | 123 | 4 | 1996-2007 | 0.45 | M-v | 3 | MPG | 128696 1999 XP <sub>179</sub> |
| 1999 XL <sub>185</sub> | 16.5 | 0.15 | 20071027 | 17.79061  | 132.95748 | 318.35608 | 6.14932  | 0.2040309 | 2.4290134 | 80  | 4 | 1999-2007 | 0.54 | M-v | 2 | MPG | 110719 1999 XL <sub>185</sub> |
| 1999 XP <sub>189</sub> | 16.1 | 0.15 | 20071027 | 14.57270  | 103.45580 | 281.37758 | 13.31243 | 0.1298398 | 2.5656139 | 39  | 4 | 1995-2007 | 0.46 | M-v | 2 | MPG | 128696 1999 XP <sub>189</sub> |
| 1999 XM <sub>194</sub> | 14.9 | 0.15 | 20071027 | 30.28251  | 74.71643  | 301.35926 | 11.86362 | 0.2023904 | 2.5426901 | 82  | 4 | 1999-2007 | 0.56 | M-v | 2 | MPG | 128696 1999 XM <sub>194</sub> |
| 1999 XM <sub>195</sub> | 15.8 | 0.15 | 20071027 | 20.12051  | 348.20116 | 41.07317  | 9.68574  | 0.2644698 | 2.5305354 | 75  | 3 | 1999-2007 | 0.55 | M-v | 3 | MPG | 128696 1999 XM <sub>195</sub> |
| 1999 XK <sub>196</sub> | 15.2 | 0.15 | 20071027 | 8.58845   | 64.15848  | 346.45461 | 7.58489  | 0.1709886 | 2.5431769 | 60  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPG | 128696 1999 XK <sub>196</sub> |
| 1999 XP <sub>197</sub> | 15.0 | 0.15 | 20071027 | 329.26351 | 82.57809  | 35.00798  | 9.34715  | 0.1783278 | 2.5275100 | 119 | 5 | 1999-2007 | 0.54 | M-v | 2 | MPG | 128696 1999 XP <sub>197</sub> |
| 1999 XA <sub>198</sub> | 15.1 | 0.15 | 20071027 | 27.10555  | 69.32442  | 311.51036 | 11.35398 | 0.2196864 | 2.5529205 | 46  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPG | 56031 1999 XA <sub>198</sub>  |
| 1999 XF <sub>198</sub> | 15.9 | 0.15 | 20071027 | 331.01866 | 166.93118 | 292.22196 | 11.45586 | 0.1327690 | 2.5246413 | 72  | 5 | 1999-2007 | 0.56 | M-v | 3 | MPG | 128696 1999 XF <sub>198</sub> |
| 1999 XW <sub>200</sub> | 14.7 | 0.15 | 20071027 | 289.35435 | 212.29992 | 309.40186 | 8.81520  | 0.1739353 | 2.5360139 | 133 | 5 | 1999-2007 | 0.56 | M-v | 2 | MPG | 128696 1999 XW <sub>200</sub> |
| 1999 XS <sub>201</sub> | 15.4 | 0.15 | 20071027 | 15.98477  | 341.08780 | 56.23239  | 12.15899 | 0.2857454 | 2.5286745 | 82  | 4 | 1999-2007 | 0.46 | M-v | 2 | MPG | 128696 1999 XS <sub>201</sub> |
| 1999 XE <sub>203</sub> | 14.8 | 0.15 | 20071027 | 345.97571 | 86.14508  | 297.40166 | 24.73865 | 0.2359796 | 2.6446400 | 127 | 3 | 1999-2007 | 0.52 | M-v | 2 | MPG | 124300 1999 XE <sub>203</sub> |
| 1999 XS <sub>207</sub> | 14.9 | 0.15 | 20071027 | 48.07393  | 310.39240 | 61.32602  | 11.65867 | 0.2523507 | 2.5216232 | 141 | 5 | 1999-2007 | 0.54 | M-v | 2 | MPG | 128696 1999 XS <sub>207</sub> |
| 1999 XG <sub>210</sub> | 15.8 | 0.15 | 20071027 | 36.45729  | 80.59376  | 321.06171 | 10.43219 | 0.2466651 | 2.4725499 | 76  | 3 | 1999-2007 | 0.53 | M-v | 3 | MPG | 124300 1999 XG <sub>210</sub> |
| 1999 XF <sub>213</sub> | 15.7 | 0.15 | 20071027 | 286.02711 | 215.77634 | 229.04653 | 11.00374 | 0.1569913 | 2.6648316 | 43  | 3 | 1999-2007 | 0.66 | M-v | 3 | MPG | 57733 1999 XF <sub>213</sub>  |
| 1999 XO <sub>214</sub> | 15.4 | 0.15 | 20071027 | 35.25913  | 43.84649  | 320.38766 | 3.14495  | 0.1567843 | 2.5388376 | 213 | 5 | 1999-2007 | 0.56 | M-v | 2 | MPG | 128696 1999 XO <sub>214</sub> |
| 1999 XT <sub>218</sub> | 16.8 | 0.15 | 20071027 | 12.08917  | 143.14493 | 272.21549 | 2.62245  | 0.2386774 | 2.5325621 | 63  | 3 | 1999-2007 | 0.41 | M-v | 3 | MPG | 128696 1999 XT <sub>218</sub> |
| 1999 XO <sub>219</sub> | 16.2 | 0.15 | 20071027 | 323.04413 | 339.24483 | 110.81465 | 2.80979  | 0.1447861 | 2.6077719 | 115 | 5 | 1999-2007 | 0.44 | M-v | 1 | MPG | 128696 1999 XO <sub>219</sub> |
| 1999 XN <sub>221</sub> | 15.9 | 0.15 | 20071027 | 297.40045 | 217.71101 | 273.92039 | 11.76367 | 0.2314362 | 2.5569234 | 82  | 3 | 1999-2007 | 0.53 | M-v | 3 | MPG | 128696 1999 XN <sub>221</sub> |
| 1999 XV <sub>223</sub> | 18.0 | 0.15 | 20071027 | 356.86933 | 299.85516 | 98.36607  | 7.33830  | 0.3594550 | 2.5686794 | 44  | 3 | 1999-2007 | 0.43 | M-v | 2 | MPG | 128696 1999 XV <sub>223</sub> |
| 1999 XC <sub>226</sub> | 16.3 | 0.15 | 20071027 | 21.08514  | 38.17477  | 3.90736   | 0.75575  | 0.2011180 | 2.5378614 | 73  | 6 | 1997-2007 | 0.51 | M-v | 2 | MPG | 77426 1999 XC <sub>226</sub>  |
| 1999 XE <sub>233</sub> | 15.7 | 0.15 | 20071027 | 33.58969  | 307.31058 | 82.28043  | 7.01657  | 0.1494906 | 2.4758135 | 58  | 5 | 1995-2007 | 0.48 | M-v | 3 | MPG | 128696 1999 XE <sub>233</sub> |
| 1999 XR <sub>244</sub> | 16.7 | 0.15 | 20071027 | 29.11825  | 351.83293 | 354.49085 | 1.19834  | 0.0914738 | 2.5896132 | 55  | 5 | 1999-2007 | 0.36 | M-v | 1 | MPG | 127864 1999 XR <sub>244</sub> |
| 1999 XQ <sub>246</sub> | 17.7 | 0.15 | 20071027 | 357.97845 | 90.76894  | 280.72847 | 2.31599  | 0.1849861 | 2.5921856 | 56  | 3 | 1999-2007 | 0.37 | M-v | 2 | MPG | 128697 1999 XQ <sub>246</sub> |
| 1999 XE <sub>250</sub> | 16.9 | 0.15 | 20071027 | 347.26448 | 118.73666 | 252.32099 | 12.18843 | 0.2701297 | 2.6041398 | 42  | 3 | 1999-2007 | 0.43 | M-v | 2 | MPG | 122666 1999 XE <sub>250</sub> |
| 1999 XR <sub>255</sub> | 16.1 | 0.15 | 20071027 | 281.84415 | 46.16653  | 96.44075  | 6.49272  | 0.1227720 | 2.6062078 | 70  | 4 | 1999-2007 | 0.51 | M-v | 2 | MPG | 128697 1999 XR <sub>255</sub> |
| 1999 YS                | 14.7 | 0.15 | 20071027 | 306.64646 | 249.15034 | 261.35921 | 27.42247 | 0.4021044 | 2.5794657 | 176 | 5 | 1949-2007 | 0.54 | M-v | 1 | MPG | 128697 1999 YS                |
| 1999 YP <sub>2</sub>   | 16.2 | 0.15 | 20071027 | 114.66176 | 217.03552 | 100.76535 | 9.93464  | 0.1253206 | 2.5543725 | 55  | 8 | 1998-2007 | 0.54 | M-v | 0 | MPG | 110720 1999 YP <sub>2</sub>   |
| 1999 YK <sub>3</sub>   | 15.5 | 0.15 | 20071027 | 257.12061 | 121.69903 | 29.97569  | 26.22260 | 0.2680599 | 2.6823990 | 69  | 3 | 1999-2007 | 0.65 | M-v | 2 | MPG | 128697 1999 YK <sub>3</sub>   |
| 1999 YJ <sub>7</sub>   | 15.6 | 0.15 | 20071027 | 27.81308  | 281.58368 | 93.02524  | 5.25884  | 0.1774724 | 2.5151982 | 116 | 4 | 1996-2007 | 0.53 | M-v | 3 | MPG | 128697 1999 YJ <sub>7</sub>   |
| 1999 YL <sub>7</sub>   | 16.5 | 0.15 | 20071027 | 263.31167 | 68.12182  | 80.85251  | 11.96026 | 0.0683645 | 2.5446747 | 46  | 4 | 1999-2007 | 0.62 | M-v | 2 | MPG | 128697 1999 YL <sub>7</sub>   |
| 1999 YQ <sub>7</sub>   | 16.0 | 0.15 | 20071027 | 22.73709  | 247.97048 | 91.54609  | 8.02053  | 0.2029238 | 2.5981708 | 36  | 2 | 1999-2007 | 0.51 | M-v | 3 | MPG | 126565 1999 YQ <sub>7</sub>   |
| 1999 YN <sub>8</sub>   | 16.0 | 0.15 | 20071027 | 31.81043  | 274.68707 | 102.72707 | 5.40192  | 0.2564270 | 2.5594856 | 37  | 4 | 1996-2007 | 0.50 | M-v | 3 | MPG | 56041 1999 YN <sub>8</sub>    |
| 1999 YP <sub>10</sub>  | 16.2 | 0.15 | 20071027 | 76.68160  | 195.19789 | 129.99875 | 3.15081  | 0.1374201 | 2.5190141 | 62  | 5 | 1993-2007 | 0.43 | M-v | 3 | MPG | 128697 1999 YP <sub>10</sub>  |
| 1999 YO <sub>12</sub>  | 15.9 | 0.15 | 20071027 | 334.44056 | 108.38663 | 290.17910 | 10.29086 | 0.3069077 | 2.6431244 | 134 | 3 | 1999-2007 | 0.43 | M-v | 2 | MPG | 128697 1999 YO <sub>12</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 1999 YH <sub>15</sub>  | 15.4 | 0.15 | 20071027 | 53.02998  | 129.01813 | 219.37427 | 5.14816  | 0.2272321 | 3.9593965 | 47  | 3 | 1999-2007 | 0.41 | M-v | 3 | MPC | 107825 1999 YH <sub>15</sub>  |
| 1999 YA <sub>18</sub>  | 15.1 | 0.15 | 20071027 | 254.32846 | 238.67098 | 323.79255 | 12.09017 | 0.1980587 | 2.5341287 | 61  | 5 | 1999-2007 | 0.56 | M-v | 3 | MPC | 110721 1999 YA <sub>18</sub>  |
| 1999 YD <sub>23</sub>  | 16.2 | 0.15 | 20071027 | 337.94754 | 351.05095 | 90.35161  | 7.09310  | 0.2297814 | 2.5308415 | 122 | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 128697 1999 YD <sub>23</sub>  |
| 1999 YS <sub>24</sub>  | 16.9 | 0.15 | 20071027 | 248.60593 | 288.18997 | 256.34372 | 4.26325  | 0.0893983 | 2.5332640 | 40  | 5 | 1999-2007 | 0.29 | M-v | 0 | MPC | 128697 1999 YS <sub>24</sub>  |
| 1999 YJ <sub>26</sub>  | 16.7 | 0.15 | 20071027 | 22.51152  | 263.05557 | 104.62593 | 3.35475  | 0.1380948 | 2.5492938 | 67  | 5 | 1993-2007 | 0.54 | M-v | 2 | MPC | 128697 1999 YJ <sub>26</sub>  |
| 1999 YF <sub>27</sub>  | 16.4 | 0.15 | 20071027 | 193.86681 | 153.21977 | 107.33694 | 5.18151  | 0.1995747 | 2.4280178 | 52  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 114594 1999 YF <sub>27</sub>  |
| 2000 AQ                | 16.4 | 0.15 | 20071027 | 29.66292  | 245.64761 | 133.46836 | 5.49676  | 0.1682265 | 2.6185516 | 44  | 6 | 2000-2007 | 0.44 | M-v | 0 | MPC | 128697 2000 AQ                |
| 2000 AS <sub>3</sub>   | 15.0 | 0.15 | 20071027 | 350.02900 | 358.87807 | 87.20655  | 15.60276 | 0.1336809 | 2.5396631 | 87  | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128697 2000 AS <sub>3</sub>   |
| 2000 AJ <sub>4</sub>   | 16.1 | 0.15 | 20071027 | 330.96764 | 341.74461 | 101.14863 | 5.27105  | 0.0661341 | 2.5974678 | 71  | 6 | 1995-2007 | 0.50 | M-v | 1 | MPC | 128697 2000 AJ <sub>4</sub>   |
| 2000 AM <sub>5</sub>   | 16.2 | 0.15 | 20071027 | 22.99264  | 303.69813 | 95.73669  | 5.16591  | 0.2307473 | 2.5299291 | 87  | 5 | 1999-2007 | 0.49 | M-v | 3 | MPC | 128697 2000 AM <sub>5</sub>   |
| 2000 AM <sub>12</sub>  | 15.6 | 0.15 | 20071027 | 13.86355  | 39.44389  | 0.93855   | 3.06672  | 0.2217688 | 2.5195698 | 148 | 5 | 1997-2007 | 0.52 | M-v | 2 | MPC | 128697 2000 AM <sub>12</sub>  |
| 2000 AO <sub>21</sub>  | 15.6 | 0.15 | 20071027 | 1.37629   | 326.73901 | 64.85206  | 5.20419  | 0.1838193 | 2.5933034 | 158 | 3 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128697 2000 AO <sub>21</sub>  |
| 2000 AZ <sub>29</sub>  | 16.1 | 0.15 | 20071027 | 318.21194 | 119.84285 | 297.28477 | 10.94174 | 0.2754289 | 2.6571153 | 60  | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 57737 2000 AZ <sub>29</sub>   |
| 2000 AS <sub>35</sub>  | 15.9 | 0.15 | 20071027 | 24.88398  | 295.20894 | 89.50804  | 11.28023 | 0.2824335 | 2.5309836 | 53  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128697 2000 AS <sub>35</sub>  |
| 2000 AR <sub>36</sub>  | 16.8 | 0.15 | 20071027 | 348.10046 | 174.85062 | 321.44784 | 0.95144  | 0.1551759 | 2.4541745 | 84  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128697 2000 AR <sub>36</sub>  |
| 2000 AQ <sub>42</sub>  | 16.2 | 0.15 | 20071027 | 205.96616 | 295.10058 | 295.12481 | 18.14706 | 0.0660553 | 1.9449833 | 51  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128697 2000 AQ <sub>42</sub>  |
| 2000 AW <sub>42</sub>  | 16.3 | 0.15 | 20071027 | 290.55204 | 70.09886  | 116.70487 | 24.05796 | 0.0737665 | 1.9084129 | 65  | 5 | 2000-2007 | 0.61 | M-v | 1 | MPC | 104128 2000 AW <sub>42</sub>  |
| 2000 AK <sub>43</sub>  | 16.2 | 0.15 | 20071027 | 354.25239 | 139.57641 | 294.50716 | 19.32994 | 0.0613256 | 1.9448681 | 80  | 4 | 1999-2007 | 0.51 | M-v | 1 | MPC | 73981 2000 AK <sub>43</sub>   |
| 2000 AO <sub>44</sub>  | 15.6 | 0.15 | 20071027 | 34.11736  | 69.92895  | 307.60261 | 5.15313  | 0.2961806 | 2.5426151 | 66  | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 126565 2000 AO <sub>44</sub>  |
| 2000 AD <sub>48</sub>  | 16.3 | 0.15 | 20071027 | 303.64627 | 188.64738 | 262.90220 | 4.16984  | 0.1677817 | 2.6238357 | 81  | 4 | 1995-2007 | 0.44 | M-v | 2 | MPC | 128697 2000 AD <sub>48</sub>  |
| 2000 AE <sub>48</sub>  | 15.5 | 0.15 | 20071027 | 37.27488  | 244.22498 | 138.66749 | 2.53774  | 0.2538970 | 2.5335419 | 146 | 6 | 1992-2007 | 0.59 | M-v | 2 | MPC | 128697 2000 AE <sub>48</sub>  |
| 2000 AL <sub>48</sub>  | 16.5 | 0.15 | 20071027 | 17.12004  | 101.60007 | 303.67439 | 3.33195  | 0.2513134 | 2.5431844 | 60  | 3 | 2000-2007 | 0.53 | M-v | 4 | MPC | 74707 2000 AL <sub>48</sub>   |
| 2000 AD <sub>49</sub>  | 16.6 | 0.15 | 20071027 | 40.33229  | 98.62963  | 275.08119 | 21.93431 | 0.0770033 | 1.9434416 | 50  | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 73981 2000 AD <sub>49</sub>   |
| 2000 AT <sub>49</sub>  | 16.1 | 0.15 | 20071027 | 213.65006 | 290.27943 | 281.22143 | 17.92464 | 0.0424973 | 1.9610608 | 60  | 5 | 1999-2007 | 0.60 | M-v | 1 | MPC | 70239 2000 AT <sub>49</sub>   |
| 2000 AC <sub>53</sub>  | 16.4 | 0.15 | 20071027 | 350.98295 | 331.74880 | 75.26383  | 18.77442 | 0.2671984 | 2.5377336 | 92  | 3 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128697 2000 AC <sub>53</sub>  |
| 2000 AD <sub>58</sub>  | 16.4 | 0.15 | 20071027 | 12.81015  | 331.48535 | 130.48608 | 1.17866  | 0.1833718 | 2.4771156 | 99  | 4 | 2000-2007 | 0.54 | M-v | 2 | MPC | 126566 2000 AD <sub>58</sub>  |
| 2000 AH <sub>58</sub>  | 16.1 | 0.15 | 20071027 | 340.04911 | 330.11293 | 104.56444 | 5.01302  | 0.2581521 | 2.5904956 | 133 | 3 | 2000-2007 | 0.62 | M-v | 3 | MPC | 128697 2000 AH <sub>58</sub>  |
| 2000 AZ <sub>61</sub>  | 14.8 | 0.15 | 20071027 | 320.48112 | 104.46028 | 310.09141 | 11.61388 | 0.2656685 | 2.6869199 | 136 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128697 2000 AZ <sub>61</sub>  |
| 2000 AG <sub>66</sub>  | 15.7 | 0.15 | 20071027 | 289.09194 | 80.27379  | 91.40891  | 5.64383  | 0.2467312 | 2.5880202 | 107 | 4 | 1996-2007 | 0.54 | M-v | 2 | MPC | 62263 2000 AG <sub>66</sub>   |
| 2000 AW <sub>68</sub>  | 15.5 | 0.15 | 20071027 | 355.75735 | 282.53432 | 120.43580 | 4.23276  | 0.2271723 | 2.5475585 | 209 | 3 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128697 2000 AW <sub>68</sub>  |
| 2000 AU <sub>69</sub>  | 15.3 | 0.15 | 20071027 | 338.13828 | 311.46530 | 106.51251 | 9.75787  | 0.1530720 | 2.5792572 | 118 | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128698 2000 AU <sub>69</sub>  |
| 2000 AJ <sub>72</sub>  | 15.8 | 0.15 | 20071027 | 336.33732 | 171.42851 | 245.39774 | 5.40226  | 0.0926299 | 2.6025760 | 119 | 3 | 1999-2007 | 0.53 | M-v | 3 | MPC | 128698 2000 AJ <sub>72</sub>  |
| 2000 AA <sub>73</sub>  | 15.8 | 0.15 | 20071027 | 29.36299  | 213.54959 | 163.84039 | 4.13911  | 0.2033763 | 2.5203027 | 99  | 5 | 1999-2007 | 0.53 | M-v | 3 | MPC | 128698 2000 AA <sub>73</sub>  |
| 2000 AB <sub>82</sub>  | 15.7 | 0.15 | 20071027 | 8.12907   | 288.66699 | 94.83922  | 11.70107 | 0.1435943 | 2.5849266 | 91  | 4 | 1999-2007 | 0.63 | M-v | 2 | MPC | 128698 2000 AB <sub>82</sub>  |
| 2000 AL <sub>87</sub>  | 16.1 | 0.15 | 20071027 | 266.74856 | 233.77246 | 295.24580 | 4.05333  | 0.1916747 | 2.6161958 | 81  | 5 | 1999-2007 | 0.60 | M-v | 1 | MPC | 128698 2000 AL <sub>87</sub>  |
| 2000 AF <sub>89</sub>  | 16.1 | 0.15 | 20071027 | 346.16462 | 327.75005 | 121.11421 | 13.97517 | 0.2297975 | 2.5548393 | 36  | 3 | 2000-2007 | 0.65 | M-v | 3 | MPC | 56061 2000 AF <sub>89</sub>   |
| 2000 AU <sub>91</sub>  | 16.1 | 0.15 | 20071027 | 284.76340 | 235.01279 | 283.97116 | 3.41480  | 0.1930975 | 2.6010066 | 70  | 4 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128698 2000 AU <sub>91</sub>  |
| 2000 AG <sub>93</sub>  | 16.6 | 0.15 | 20071027 | 255.27356 | 249.27773 | 291.35643 | 16.31942 | 0.0618989 | 1.9377609 | 55  | 5 | 1999-2007 | 0.65 | M-v | 1 | MPC | 74709 2000 AG <sub>93</sub>   |
| 2000 AK <sub>93</sub>  | 15.6 | 0.15 | 20071027 | 1.19211   | 273.37776 | 110.80731 | 29.16106 | 0.3425963 | 2.6181341 | 43  | 3 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128698 2000 AK <sub>93</sub>  |
| 2000 AT <sub>94</sub>  | 16.6 | 0.15 | 20071027 | 354.64857 | 118.67749 | 288.67080 | 5.61856  | 0.2181990 | 2.5881764 | 74  | 4 | 1995-2007 | 0.45 | M-v | 3 | MPC | 128698 2000 AT <sub>94</sub>  |
| 2000 AY <sub>102</sub> | 15.2 | 0.15 | 20071027 | 28.47923  | 276.86561 | 121.27027 | 5.18747  | 0.1828273 | 2.4773069 | 109 | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 128698 2000 AY <sub>102</sub> |
| 2000 AX <sub>104</sub> | 16.3 | 0.15 | 20071027 | 347.41011 | 316.73378 | 107.67418 | 5.45385  | 0.2397964 | 2.5569983 | 119 | 4 | 1992-2007 | 0.45 | M-v | 2 | MPC | 128698 2000 AX <sub>104</sub> |
| 2000 AQ <sub>113</sub> | 16.2 | 0.15 | 20071027 | 342.35954 | 272.96763 | 149.05828 | 6.05855  | 0.2686576 | 2.5873248 | 139 | 5 | 1982-2007 | 0.46 | M-v | 1 | MPC | 128698 2000 AQ <sub>113</sub> |
| 2000 AY <sub>115</sub> | 15.2 | 0.15 | 20071027 | 254.53983 | 203.67157 | 271.42326 | 9.30785  | 0.2314258 | 2.7493071 | 61  | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 74710 2000 AY <sub>115</sub>  |
| 2000 AN <sub>123</sub> | 15.5 | 0.15 | 20071027 | 18.77727  | 112.41026 | 277.69952 | 8.11268  | 0.2147963 | 2.5862709 | 52  | 4 | 1996-2007 | 0.63 | M-v | 3 | MPC | 128698 2000 AN <sub>123</sub> |
| 2000 AF <sub>131</sub> | 15.4 | 0.15 | 20071027 | 282.57714 | 46.34296  | 121.74184 | 7.68452  | 0.1229754 | 2.5803677 | 74  | 5 | 1993-2007 | 0.51 | M-v | 3 | MPC | 110722 2000 AF <sub>131</sub> |
| 2000 AD <sub>133</sub> | 15.5 | 0.15 | 20071027 | 316.86240 | 110.88849 | 15.29690  | 5.22746  | 0.2150410 | 2.5706591 | 90  | 3 | 1999-2007 | 0.46 | M-v | 2 | MPC | 128698 2000 AD <sub>133</sub> |
| 2000 AK <sub>133</sub> | 14.9 | 0.15 | 20071027 | 305.47216 | 88.99099  | 11.25824  | 26.44948 | 0.2894313 | 2.6790313 | 152 | 3 | 2000-2007 | 0.58 | M-v | 2 | MPC | 128698 2000 AK <sub>133</sub> |
| 2000 AE <sub>135</sub> | 16.1 | 0.15 | 20071027 | 345.06316 | 23.53718  | 49.94092  | 5.39725  | 0.2101305 | 2.5634750 | 104 | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128698 2000 AE <sub>135</sub> |
| 2000 AS <sub>140</sub> | 15.5 | 0.15 | 20071027 | 347.11141 | 312.16737 | 119.11948 | 28.59540 | 0.1483868 | 2.5836867 | 43  | 5 | 1995-2007 | 0.51 | M-v | 1 | MPC | 74710 2000 AS <sub>140</sub>  |
| 2000 AJ <sub>143</sub> | 15.6 | 0.15 | 20071027 | 326.55696 | 225.14535 | 262.65561 | 3.48427  | 0.2348865 | 2.5692453 | 117 | 4 | 2000-2007 | 0.54 | M-v | 2 | MPC | 104129 2000 AJ <sub>143</sub> |
| 2000 AP <sub>146</sub> | 14.9 | 0.15 | 20071027 | 269.35538 | 307.62161 | 281.72703 | 23.50167 | 0.4158441 | 2.5496078 | 100 | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128698 2000 AP <sub>146</sub> |
| 2000 AU <sub>146</sub> | 16.5 | 0.15 | 20071027 | 349.71339 | 292.28017 | 134.82982 | 12.67482 | 0.3189952 | 2.5434776 | 71  | 3 | 2000-2007 | 0.45 | M-v | 2 | MPC | 128698 2000 AU <sub>146</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 AB <sub>147</sub> | 16.3 | 0.15 | 20071027 | 333.46553 | 135.90540 | 307.80448 | 4.45323  | 0.2262060 | 2.5854543 | 150 | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 128698 2000 AB <sub>147</sub> |
| 2000 AK <sub>154</sub> | 15.8 | 0.15 | 20071027 | 312.40112 | 99.69736  | 36.39146  | 3.90527  | 0.2448534 | 2.5446561 | 67  | 3 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128698 2000 AK <sub>154</sub> |
| 2000 AX <sub>158</sub> | 15.5 | 0.15 | 20071027 | 13.31084  | 109.06579 | 302.79395 | 11.87153 | 0.1905361 | 2.5448000 | 68  | 4 | 1998-2007 | 0.59 | M-v | 2 | MPC | 128698 2000 AX <sub>158</sub> |
| 2000 AB <sub>169</sub> | 15.3 | 0.15 | 20071027 | 31.18990  | 242.56400 | 142.70985 | 9.30313  | 0.2618148 | 2.4847342 | 61  | 5 | 1999-2007 | 0.45 | M-v | 2 | MPC | 77433 2000 AB <sub>169</sub>  |
| 2000 AQ <sub>196</sub> | 15.4 | 0.15 | 20071027 | 335.47884 | 134.81873 | 269.28267 | 12.11308 | 0.2454354 | 2.6753509 | 97  | 3 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128698 2000 AQ <sub>196</sub> |
| 2000 AH <sub>197</sub> | 15.1 | 0.15 | 20071027 | 15.23805  | 133.76690 | 265.17733 | 11.24976 | 0.2803830 | 2.5739209 | 110 | 3 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128698 2000 AH <sub>197</sub> |
| 2000 AM <sub>205</sub> | 16.6 | 0.15 | 20071027 | 320.06437 | 36.25701  | 109.19006 | 4.06849  | 0.1097575 | 2.5349439 | 86  | 5 | 1996-2007 | 0.43 | M-v | 2 | MPC | 128698 2000 AM <sub>205</sub> |
| 2000 AT <sub>213</sub> | 15.8 | 0.15 | 20071027 | 354.64970 | 282.99956 | 96.90404  | 3.26157  | 0.1017942 | 2.7015010 | 89  | 4 | 1999-2007 | 0.57 | M-v | 3 | MPC | 128698 2000 AT <sub>213</sub> |
| 2000 AA <sub>214</sub> | 16.1 | 0.15 | 20071027 | 337.94277 | 331.26155 | 109.71510 | 15.11909 | 0.1315957 | 2.5943651 | 50  | 4 | 1997-2007 | 0.50 | M-v | 1 | MPC | 128698 2000 AA <sub>214</sub> |
| 2000 AV <sub>215</sub> | 15.9 | 0.15 | 20071027 | 307.39138 | 103.02761 | 355.30989 | 6.33473  | 0.2051206 | 2.6411646 | 119 | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128698 2000 AV <sub>215</sub> |
| 2000 AG <sub>219</sub> | 16.5 | 0.15 | 20071027 | 28.38291  | 288.79267 | 105.39574 | 8.50026  | 0.2459574 | 2.5343360 | 44  | 5 | 1992-2007 | 0.49 | M-v | 3 | MPC | 56075 2000 AG <sub>219</sub>  |
| 2000 AS <sub>227</sub> | 15.8 | 0.15 | 20071027 | 110.67260 | 36.78737  | 318.61352 | 17.35614 | 0.0827286 | 1.9197941 | 97  | 5 | 2000-2007 | 0.62 | M-v | 1 | MPC | 101993 2000 AS <sub>227</sub> |
| 2000 AC <sub>230</sub> | 16.1 | 0.15 | 20071027 | 22.47991  | 67.56291  | 314.65441 | 2.37812  | 0.2629134 | 2.5620827 | 105 | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 128698 2000 AC <sub>230</sub> |
| 2000 AV <sub>230</sub> | 16.4 | 0.15 | 20071027 | 295.73289 | 56.68320  | 122.42436 | 8.45058  | 0.1802913 | 2.5361998 | 84  | 9 | 1992-2007 | 0.50 | M-v | 1 | MPC | 114594 2000 AV <sub>230</sub> |
| 2000 AB <sub>232</sub> | 15.9 | 0.15 | 20071027 | 50.59338  | 58.27662  | 296.52323 | 2.25194  | 0.2294967 | 2.5539203 | 26  | 4 | 1994-2007 | 0.56 | M-v | 1 | MPC | 77434 2000 AB <sub>232</sub>  |
| 2000 AF <sub>238</sub> | 16.9 | 0.15 | 20071027 | 4.44806   | 291.32892 | 97.44586  | 4.96100  | 0.2807838 | 2.5531286 | 118 | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128698 2000 AF <sub>238</sub> |
| 2000 AQ <sub>252</sub> | 16.5 | 0.15 | 20071027 | 219.68384 | 71.77279  | 119.59723 | 4.23263  | 0.0289023 | 2.6471445 | 45  | 6 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128698 2000 AQ <sub>252</sub> |
| 2000 BE                | 15.8 | 0.15 | 20071027 | 287.16448 | 227.95651 | 300.25947 | 6.87080  | 0.1359998 | 2.5616853 | 75  | 5 | 1992-2007 | 0.55 | M-v | 2 | MPC | 110722 2000 BE                |
| 2000 BL <sub>2</sub>   | 16.0 | 0.15 | 20071027 | 0.72112   | 54.55391  | 357.81211 | 29.04058 | 0.3213842 | 2.5393597 | 40  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 68640 2000 BL <sub>2</sub>    |
| 2000 BM <sub>2</sub>   | 16.2 | 0.15 | 20071027 | 342.13543 | 123.00769 | 306.25153 | 11.26471 | 0.2915245 | 2.5569080 | 86  | 3 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128699 2000 BM <sub>2</sub>   |
| 2000 BB <sub>5</sub>   | 15.0 | 0.15 | 20071027 | 331.48859 | 50.38074  | 59.14147  | 17.85858 | 0.1528982 | 2.5380988 | 82  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128699 2000 BB <sub>5</sub>   |
| 2000 BH <sub>5</sub>   | 14.9 | 0.15 | 20071027 | 33.57357  | 324.49741 | 48.53307  | 13.26149 | 0.2821444 | 2.5492543 | 71  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128699 2000 BH <sub>5</sub>   |
| 2000 BJ <sub>7</sub>   | 15.2 | 0.15 | 20071027 | 319.91124 | 156.91261 | 331.94467 | 7.08449  | 0.1541488 | 2.5242524 | 107 | 6 | 1998-2007 | 0.49 | M-v | 2 | MPC | 128699 2000 BJ <sub>7</sub>   |
| 2000 BH <sub>9</sub>   | 16.6 | 0.15 | 20071027 | 178.04501 | 342.95773 | 270.11354 | 1.16591  | 0.0497180 | 2.6285063 | 50  | 6 | 2000-2007 | 0.33 | M-v | 0 | MPC | 110723 2000 BH <sub>9</sub>   |
| 2000 BB <sub>13</sub>  | 16.5 | 0.15 | 20071027 | 305.61389 | 171.02424 | 326.39461 | 6.92848  | 0.1273708 | 2.6000629 | 60  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 110723 2000 BB <sub>13</sub>  |
| 2000 BL <sub>13</sub>  | 16.1 | 0.15 | 20071027 | 11.35822  | 54.75359  | 314.51373 | 4.11250  | 0.1713515 | 2.7109248 | 72  | 2 | 2000-2007 | 0.48 | M-v | 3 | MPC | 128699 2000 BL <sub>13</sub>  |
| 2000 BK <sub>15</sub>  | 16.2 | 0.15 | 20071027 | 344.04185 | 67.99117  | 15.72768  | 5.38311  | 0.2137247 | 2.5679948 | 67  | 4 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128699 2000 BK <sub>15</sub>  |
| 2000 BL <sub>18</sub>  | 16.2 | 0.15 | 20071027 | 318.38431 | 152.95231 | 327.83363 | 4.40189  | 0.2170927 | 2.5704240 | 59  | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128699 2000 BL <sub>18</sub>  |
| 2000 BL <sub>20</sub>  | 16.6 | 0.15 | 20071027 | 236.28942 | 240.14282 | 312.32793 | 4.88261  | 0.1046311 | 2.6537299 | 43  | 4 | 2000-2007 | 0.36 | M-v | 2 | MPC | 128699 2000 BL <sub>20</sub>  |
| 2000 BO <sub>20</sub>  | 16.3 | 0.15 | 20071027 | 0.86168   | 71.18453  | 312.40663 | 5.69136  | 0.3016419 | 2.6520259 | 92  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128699 2000 BO <sub>20</sub>  |
| 2000 BM <sub>32</sub>  | 16.1 | 0.15 | 20071027 | 255.21865 | 39.69615  | 130.26496 | 2.94590  | 0.1376169 | 2.6385911 | 63  | 6 | 1994-2007 | 0.53 | M-v | 0 | MPC | 128699 2000 BM <sub>32</sub>  |
| 2000 BC <sub>39</sub>  | 17.1 | 0.15 | 20071027 | 359.11265 | 149.87262 | 298.52094 | 2.94755  | 0.1258050 | 2.5372905 | 47  | 5 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128699 2000 BC <sub>39</sub>  |
| 2000 BP <sub>46</sub>  | 17.4 | 0.15 | 20071027 | 346.77594 | 340.22806 | 114.81834 | 1.71683  | 0.1603015 | 2.5731771 | 35  | 4 | 1996-2007 | 0.39 | M-v | 2 | MPC | 124302 2000 BP <sub>46</sub>  |
| 2000 BS <sub>48</sub>  | 17.0 | 0.15 | 20071027 | 0.93900   | 95.07785  | 325.53424 | 1.07651  | 0.2020702 | 2.5887168 | 44  | 3 | 2000-2007 | 0.39 | M-v | 3 | MPC | 56084 2000 BS <sub>48</sub>   |
| 2000 CD <sub>9</sub>   | 15.9 | 0.15 | 20071027 | 317.64164 | 329.77206 | 141.20785 | 6.45006  | 0.1442591 | 2.5862312 | 53  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128699 2000 CD <sub>9</sub>   |
| 2000 CT <sub>9</sub>   | 16.3 | 0.15 | 20071027 | 330.58093 | 309.37863 | 163.53135 | 3.73275  | 0.1866924 | 2.5503583 | 53  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 126567 2000 CT <sub>9</sub>   |
| 2000 CU <sub>10</sub>  | 16.2 | 0.15 | 20071027 | 336.39539 | 170.26584 | 288.38775 | 5.83297  | 0.2518071 | 2.5590935 | 85  | 3 | 1999-2007 | 0.49 | M-v | 3 | MPC | 128699 2000 CU <sub>10</sub>  |
| 2000 CH <sub>13</sub>  | 16.5 | 0.15 | 20071027 | 290.15460 | 336.71397 | 154.06253 | 3.34182  | 0.1139361 | 2.6327541 | 52  | 4 | 1998-2007 | 0.43 | M-v | 0 | MPC | 128699 2000 CH <sub>13</sub>  |
| 2000 CG <sub>17</sub>  | 15.3 | 0.15 | 20071027 | 221.18653 | 130.66619 | 57.74581  | 13.77151 | 0.1112030 | 2.7179841 | 86  | 3 | 2000-2007 | 0.61 | M-v | 3 | MPC | 128699 2000 CG <sub>17</sub>  |
| 2000 CT <sub>19</sub>  | 16.3 | 0.15 | 20071027 | 338.50236 | 269.99878 | 182.37216 | 5.09928  | 0.2909716 | 2.5667510 | 63  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128699 2000 CT <sub>19</sub>  |
| 2000 CS <sub>21</sub>  | 15.9 | 0.15 | 20071027 | 302.59293 | 265.91273 | 229.93923 | 2.76304  | 0.2057247 | 2.6025156 | 89  | 4 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128699 2000 CS <sub>21</sub>  |
| 2000 CC <sub>25</sub>  | 15.4 | 0.15 | 20071027 | 16.48049  | 263.43506 | 146.08079 | 22.41955 | 0.0404489 | 2.6302684 | 61  | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128699 2000 CC <sub>25</sub>  |
| 2000 CM <sub>34</sub>  | 15.8 | 0.15 | 20071027 | 25.59871  | 90.10327  | 298.41692 | 1.63338  | 0.1675207 | 2.5479886 | 38  | 4 | 2000-2007 | 0.59 | M-v | 4 | MPC | 74723 2000 CM <sub>34</sub>   |
| 2000 CU <sub>36</sub>  | 15.4 | 0.15 | 20071027 | 280.35207 | 182.44780 | 326.28693 | 11.59239 | 0.1918611 | 2.6718099 | 74  | 5 | 2000-2007 | 0.59 | M-v | 2 | MPC | 128699 2000 CU <sub>36</sub>  |
| 2000 CY <sub>38</sub>  | 16.0 | 0.15 | 20071027 | 325.34362 | 166.70703 | 349.40507 | 10.64796 | 0.1630809 | 2.5248067 | 130 | 6 | 1990-2007 | 0.54 | M-v | 2 | MPC | 110724 2000 CY <sub>38</sub>  |
| 2000 CV <sub>43</sub>  | 15.2 | 0.15 | 20071027 | 299.66777 | 359.31508 | 180.42521 | 5.82240  | 0.1473164 | 2.5360183 | 178 | 6 | 1992-2007 | 0.49 | M-v | 2 | MPC | 110724 2000 CV <sub>43</sub>  |
| 2000 CE <sub>45</sub>  | 15.9 | 0.15 | 20071027 | 313.44483 | 230.91618 | 261.86979 | 3.15898  | 0.2425776 | 2.5901916 | 75  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128699 2000 CE <sub>45</sub>  |
| 2000 CL <sub>47</sub>  | 16.0 | 0.15 | 20071027 | 17.21115  | 150.85890 | 267.57428 | 4.88385  | 0.1918676 | 2.5586262 | 49  | 5 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128699 2000 CL <sub>47</sub>  |
| 2000 CF <sub>48</sub>  | 16.0 | 0.15 | 20071027 | 260.35692 | 254.93578 | 288.81458 | 7.83446  | 0.1214666 | 2.6400806 | 57  | 4 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128699 2000 CF <sub>48</sub>  |
| 2000 CQ <sub>48</sub>  | 16.3 | 0.15 | 20071027 | 10.52593  | 300.68130 | 176.20684 | 8.91468  | 0.1797091 | 2.4857134 | 99  | 6 | 1998-2007 | 0.46 | M-v | 1 | MPC | 114595 2000 CQ <sub>48</sub>  |
| 2000 CG <sub>50</sub>  | 15.5 | 0.15 | 20071027 | 285.48091 | 202.29817 | 313.62137 | 11.87909 | 0.1211695 | 2.6370448 | 104 | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 104130 2000 CG <sub>50</sub>  |
| 2000 CH <sub>59</sub>  | 19.6 | 0.15 | 20071027 | 24.54913  | 108.99093 | 214.28013 | 3.27236  | 0.4231321 | 0.8633720 | 108 | 3 | 2000-2007 | 0.50 | M-v | 4 | MPC | 62271 2000 CH <sub>59</sub>   |
| 2000 CL <sub>64</sub>  | 16.1 | 0.15 | 20071027 | 312.33190 | 56.81706  | 104.40612 | 3.05939  | 0.0921661 | 2.5171400 | 93  | 7 | 1992-2007 | 0.54 | M-v | 3 | MPC | 128699 2000 CL <sub>64</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 CJ <sub>65</sub>  | 15.8 | 0.15 | 20071027 | 311.14197 | 128.64202 | 344.54980 | 2.87578  | 0.0818218 | 2.6408193 | 84  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128699 2000 CJ <sub>65</sub>  |
| 2000 CM <sub>69</sub>  | 16.5 | 0.15 | 20071027 | 162.28736 | 298.86242 | 317.87176 | 5.27087  | 0.1006771 | 2.6873821 | 30  | 4 | 1997-2007 | 0.37 | M-v | 1 | MPC | 107832 2000 CM <sub>69</sub>  |
| 2000 CR <sub>74</sub>  | 17.0 | 0.15 | 20071027 | 316.97413 | 343.53259 | 133.77662 | 4.50523  | 0.1202776 | 2.5910844 | 30  | 4 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128700 2000 CR <sub>74</sub>  |
| 2000 CH <sub>76</sub>  | 15.7 | 0.15 | 20071027 | 272.07050 | 204.78627 | 335.68469 | 6.14476  | 0.0532429 | 2.5774730 | 62  | 5 | 2000-2007 | 0.59 | M-v | 2 | MPC | 107832 2000 CH <sub>76</sub>  |
| 2000 CW <sub>79</sub>  | 16.2 | 0.15 | 20071027 | 319.57852 | 303.11682 | 159.40420 | 4.41922  | 0.1925866 | 2.6511592 | 88  | 4 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128700 2000 CW <sub>79</sub>  |
| 2000 CJ <sub>81</sub>  | 15.7 | 0.15 | 20071027 | 285.93379 | 209.15557 | 322.50745 | 12.06048 | 0.1704521 | 2.5905163 | 86  | 5 | 2000-2007 | 0.49 | M-v | 2 | MPC | 110725 2000 CJ <sub>81</sub>  |
| 2000 CP <sub>82</sub>  | 16.3 | 0.15 | 20071027 | 358.43259 | 321.11721 | 135.38422 | 5.53453  | 0.1732893 | 2.5486270 | 88  | 5 | 2000-2007 | 0.55 | M-v | 2 | MPC | 104130 2000 CP <sub>82</sub>  |
| 2000 CM <sub>86</sub>  | 16.9 | 0.15 | 20071027 | 339.56618 | 352.00815 | 118.79979 | 4.92970  | 0.2554682 | 2.5632124 | 95  | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128700 2000 CM <sub>86</sub>  |
| 2000 CW <sub>114</sub> | 15.8 | 0.15 | 20071027 | 4.83820   | 248.87615 | 135.00007 | 15.27784 | 0.2132695 | 2.6721992 | 51  | 4 | 1998-2007 | 0.45 | M-v | 1 | MPC | 127866 2000 CW <sub>114</sub> |
| 2000 CB <sub>115</sub> | 16.0 | 0.15 | 20071027 | 272.64261 | 51.03434  | 107.19007 | 8.57738  | 0.2632867 | 2.6802723 | 33  | 4 | 1998-2007 | 0.48 | M-v | 1 | MPC | 126568 2000 CB <sub>115</sub> |
| 2000 CJ <sub>119</sub> | 16.3 | 0.15 | 20071027 | 290.98206 | 147.17390 | 329.96966 | 6.64242  | 0.0234174 | 2.7018707 | 35  | 4 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128700 2000 CJ <sub>119</sub> |
| 2000 CO <sub>120</sub> | 16.8 | 0.15 | 20071027 | 1.68050   | 119.88511 | 317.92117 | 2.71812  | 0.1392107 | 2.5544337 | 83  | 4 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128700 2000 CO <sub>120</sub> |
| 2000 CT <sub>124</sub> | 16.3 | 0.15 | 20071027 | 19.78091  | 59.43201  | 348.55489 | 4.29834  | 0.2844287 | 2.5544924 | 101 | 3 | 2000-2007 | 0.47 | M-v | 3 | MPC | 128700 2000 CT <sub>124</sub> |
| 2000 CZ <sub>126</sub> | 17.3 | 0.15 | 20071027 | 28.69112  | 70.88089  | 316.48181 | 3.07854  | 0.2533880 | 2.5831792 | 25  | 4 | 1994-2007 | 0.50 | M-v | 2 | MPC | 62274 2000 CZ <sub>126</sub>  |
| 2000 CJ <sub>127</sub> | 16.4 | 0.15 | 20071027 | 13.54945  | 93.70540  | 311.26454 | 4.93439  | 0.2497267 | 2.5664026 | 58  | 4 | 1996-2007 | 0.53 | M-v | 2 | MPC | 126568 2000 CJ <sub>127</sub> |
| 2000 CE <sub>131</sub> | 17.0 | 0.15 | 20071027 | 18.51574  | 265.29300 | 129.86229 | 1.83627  | 0.1445070 | 2.6396492 | 45  | 5 | 2000-2007 | 0.37 | M-v | 0 | MPC | 128700 2000 CE <sub>131</sub> |
| 2000 CR <sub>142</sub> | 17.0 | 0.15 | 20071027 | 71.68123  | 36.99133  | 316.81344 | 4.44794  | 0.2140082 | 2.5892861 | 37  | 4 | 2000-2007 | 0.40 | M-v | 3 | MPC | 128700 2000 CR <sub>142</sub> |
| 2000 CL <sub>147</sub> | 15.9 | 0.15 | 20071027 | 246.25287 | 76.49550  | 117.72023 | 3.77058  | 0.1311180 | 2.6643739 | 52  | 6 | 1996-2007 | 0.60 | M-v | 1 | MPC | 128700 2000 CL <sub>147</sub> |
| 2000 DP <sub>3</sub>   | 16.1 | 0.15 | 20071027 | 236.94793 | 214.43351 | 357.13572 | 4.27224  | 0.2315530 | 2.6230739 | 50  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 107834 2000 DP <sub>3</sub>   |
| 2000 DL <sub>5</sub>   | 16.0 | 0.15 | 20071027 | 279.29351 | 136.01388 | 46.42180  | 3.95358  | 0.1495742 | 2.5842286 | 58  | 5 | 2000-2007 | 0.67 | M-v | 3 | MPC | 114596 2000 DL <sub>5</sub>   |
| 2000 DO <sub>6</sub>   | 15.3 | 0.15 | 20071027 | 293.68390 | 125.93830 | 357.34783 | 9.81662  | 0.1604613 | 2.6584214 | 78  | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 128700 2000 DO <sub>6</sub>   |
| 2000 DW <sub>8</sub>   | 16.5 | 0.15 | 20071027 | 243.14343 | 227.04063 | 317.97843 | 3.94553  | 0.0850874 | 2.6648766 | 31  | 5 | 1997-2007 | 0.43 | M-v | 1 | MPC | 128700 2000 DW <sub>8</sub>   |
| 2000 DY <sub>9</sub>   | 16.8 | 0.15 | 20071027 | 314.34003 | 155.94236 | 346.51660 | 0.77119  | 0.0239994 | 2.5764991 | 46  | 4 | 2000-2007 | 0.26 | M-v | 1 | MPC | 128700 2000 DY <sub>9</sub>   |
| 2000 DT <sub>10</sub>  | 16.3 | 0.15 | 20071027 | 19.21446  | 234.45445 | 149.76655 | 2.77997  | 0.0995820 | 2.6903387 | 58  | 4 | 2000-2007 | 0.41 | M-v | 1 | MPC | 128700 2000 DT <sub>10</sub>  |
| 2000 DD <sub>24</sub>  | 16.4 | 0.15 | 20071027 | 4.69458   | 92.49816  | 333.24786 | 3.19581  | 0.2186836 | 2.5800304 | 123 | 4 | 1996-2007 | 0.53 | M-v | 2 | MPC | 87372 2000 DD <sub>24</sub>   |
| 2000 DO <sub>24</sub>  | 15.7 | 0.15 | 20071027 | 243.13963 | 215.86520 | 333.30487 | 11.03160 | 0.1329701 | 2.6654891 | 52  | 4 | 2000-2007 | 0.56 | M-v | 2 | MPC | 110726 2000 DO <sub>24</sub>  |
| 2000 DR <sub>26</sub>  | 17.2 | 0.15 | 20071027 | 324.97715 | 137.04906 | 333.81144 | 4.83815  | 0.1814349 | 2.6042118 | 50  | 4 | 1998-2007 | 0.61 | M-v | 2 | MPC | 56102 2000 DR <sub>26</sub>   |
| 2000 DQ <sub>41</sub>  | 16.1 | 0.15 | 20071027 | 13.56034  | 68.25708  | 342.05590 | 8.54223  | 0.0770129 | 2.6579258 | 69  | 5 | 2000-2007 | 0.61 | M-v | 0 | MPC | 110727 2000 DQ <sub>41</sub>  |
| 2000 DS <sub>43</sub>  | 15.7 | 0.15 | 20071027 | 276.72276 | 136.53850 | 355.38885 | 4.45633  | 0.0578850 | 2.7240948 | 64  | 4 | 2000-2007 | 0.47 | M-v | 1 | MPC | 127866 2000 DS <sub>43</sub>  |
| 2000 DZ <sub>43</sub>  | 17.0 | 0.15 | 20071027 | 351.14896 | 124.75137 | 343.31220 | 4.33207  | 0.2340636 | 2.5441534 | 86  | 4 | 2000-2007 | 0.51 | M-v | 2 | MPC | 124303 2000 DZ <sub>43</sub>  |
| 2000 DN <sub>45</sub>  | 15.8 | 0.15 | 20071027 | 226.94520 | 269.90900 | 313.55970 | 3.53271  | 0.1128561 | 2.6466000 | 95  | 6 | 2000-2007 | 0.46 | M-v | 1 | MPC | 110727 2000 DN <sub>45</sub>  |
| 2000 DL <sub>47</sub>  | 17.6 | 0.15 | 20071027 | 320.91195 | 206.84418 | 323.63498 | 0.59306  | 0.1265206 | 2.5191196 | 53  | 4 | 2000-2007 | 0.46 | M-v | 3 | MPC | 110727 2000 DL <sub>47</sub>  |
| 2000 DB <sub>53</sub>  | 15.8 | 0.15 | 20071027 | 358.33627 | 250.00848 | 165.60523 | 13.55402 | 0.0603672 | 2.7010697 | 55  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128700 2000 DB <sub>53</sub>  |
| 2000 DV <sub>82</sub>  | 15.8 | 0.15 | 20071027 | 306.56976 | 114.74064 | 19.50662  | 5.22386  | 0.2162842 | 2.6016897 | 51  | 3 | 2000-2007 | 0.44 | M-v | 3 | MPC | 128701 2000 DV <sub>82</sub>  |
| 2000 DB <sub>88</sub>  | 14.9 | 0.15 | 20071027 | 99.46848  | 11.67032  | 13.61939  | 2.64250  | 0.0395641 | 2.5142106 | 353 | 8 | 1990-2007 | 0.54 | M-v | 2 | MPC | 114596 2000 DB <sub>88</sub>  |
| 2000 DG <sub>89</sub>  | 17.0 | 0.15 | 20071027 | 248.84547 | 77.63183  | 146.23212 | 5.81964  | 0.2046751 | 2.5946951 | 40  | 6 | 2000-2007 | 0.33 | M-v | 0 | MPC | 110728 2000 DG <sub>89</sub>  |
| 2000 DR <sub>91</sub>  | 16.7 | 0.15 | 20071027 | 291.89827 | 342.62485 | 169.16455 | 2.96575  | 0.0293044 | 2.6446938 | 49  | 6 | 2000-2007 | 0.41 | M-v | 0 | MPC | 110728 2000 DR <sub>91</sub>  |
| 2000 DD <sub>93</sub>  | 16.5 | 0.15 | 20071027 | 275.66784 | 158.78249 | 4.33594   | 5.35138  | 0.2517823 | 2.6337182 | 93  | 5 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128701 2000 DD <sub>93</sub>  |
| 2000 DW <sub>98</sub>  | 15.7 | 0.15 | 20071027 | 28.70138  | 52.95731  | 356.71214 | 12.38706 | 0.3448432 | 2.5302880 | 75  | 3 | 2000-2007 | 0.59 | M-v | 3 | MPC | 128701 2000 DW <sub>98</sub>  |
| 2000 DH <sub>100</sub> | 16.2 | 0.15 | 20071027 | 344.22585 | 97.64163  | 21.16719  | 6.62849  | 0.2087704 | 2.5464480 | 75  | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 128701 2000 DH <sub>100</sub> |
| 2000 DY <sub>109</sub> | 16.3 | 0.15 | 20071027 | 274.81497 | 103.59075 | 94.59328  | 5.45208  | 0.1582821 | 2.5955998 | 76  | 4 | 2000-2007 | 0.44 | M-v | 3 | MPC | 128701 2000 DY <sub>109</sub> |
| 2000 DW <sub>113</sub> | 16.7 | 0.15 | 20071027 | 225.65963 | 46.36084  | 142.56237 | 4.43277  | 0.0971290 | 2.7061814 | 39  | 6 | 1996-2007 | 0.39 | M-v | 0 | MPC | 104132 2000 DW <sub>113</sub> |
| 2000 DF <sub>116</sub> | 16.3 | 0.15 | 20071027 | 290.68614 | 249.13372 | 246.85200 | 5.56277  | 0.1575505 | 2.6426540 | 60  | 5 | 2000-2007 | 0.49 | M-v | 0 | MPC | 128701 2000 DF <sub>116</sub> |
| 2000 EJ <sub>16</sub>  | 16.1 | 0.15 | 20071027 | 336.23778 | 44.07370  | 69.31167  | 1.82048  | 0.1238301 | 2.5918058 | 86  | 6 | 2000-2007 | 0.60 | M-v | 1 | MPC | 128701 2000 EJ <sub>16</sub>  |
| 2000 EN <sub>18</sub>  | 16.2 | 0.15 | 20071027 | 333.43665 | 347.46170 | 120.87094 | 4.94212  | 0.1664791 | 2.5960758 | 78  | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 104133 2000 EN <sub>18</sub>  |
| 2000 ER <sub>24</sub>  | 15.9 | 0.15 | 20071027 | 336.82178 | 95.39491  | 359.37234 | 9.68565  | 0.3124401 | 2.6264140 | 106 | 3 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128701 2000 ER <sub>24</sub>  |
| 2000 ET <sub>26</sub>  | 15.5 | 0.15 | 20071027 | 344.94927 | 74.38181  | 6.00520   | 26.46667 | 0.4352031 | 2.6095982 | 171 | 4 | 1990-2007 | 0.50 | M-v | 1 | MPC | 128701 2000 ET <sub>26</sub>  |
| 2000 ES <sub>28</sub>  | 15.4 | 0.15 | 20071027 | 332.07619 | 76.04428  | 18.72058  | 11.89888 | 0.0950220 | 2.6492453 | 45  | 4 | 2000-2007 | 0.61 | M-v | 2 | MPC | 128701 2000 ES <sub>28</sub>  |
| 2000 ET <sub>29</sub>  | 16.5 | 0.15 | 20071027 | 301.34238 | 52.63018  | 119.06673 | 5.31084  | 0.1585280 | 2.5584908 | 82  | 5 | 2000-2007 | 0.46 | M-v | 2 | MPC | 114597 2000 ET <sub>29</sub>  |
| 2000 EX <sub>43</sub>  | 15.3 | 0.15 | 20071027 | 221.93319 | 190.46292 | 11.20020  | 13.19307 | 0.0711152 | 2.7720443 | 61  | 4 | 2000-2007 | 0.65 | M-v | 1 | MPC | 128701 2000 EX <sub>43</sub>  |
| 2000 EG <sub>51</sub>  | 16.4 | 0.15 | 20071027 | 315.68739 | 230.50500 | 211.43635 | 1.09158  | 0.1608456 | 2.7310148 | 70  | 2 | 2000-2007 | 0.52 | M-v | 4 | MPC | 128701 2000 EG <sub>51</sub>  |
| 2000 EX <sub>52</sub>  | 17.2 | 0.15 | 20071027 | 335.66438 | 165.77325 | 340.68887 | 1.12873  | 0.0803729 | 2.5421103 | 60  | 6 | 1994-2007 | 0.50 | M-v | 1 | MPC | 110729 2000 EX <sub>52</sub>  |
| 2000 EO <sub>53</sub>  | 16.5 | 0.15 | 20071027 | 74.59146  | 245.55061 | 173.98779 | 2.13418  | 0.1360627 | 2.5223880 | 113 | 5 | 2000-2007 | 0.50 | M-v | 2 | MPC | 110729 2000 EO <sub>53</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 EN <sub>56</sub>  | 15.8 | 0.15 | 20071027 | 242.54813 | 21.37821  | 169.71634 | 14.74780 | 0.2123645 | 2.7185212 | 64  | 6 | 1997-2007 | 0.57 | M-v | 1 | MPG | 110730 2000 EN <sub>56</sub>  |
| 2000 EY <sub>61</sub>  | 16.5 | 0.15 | 20071027 | 222.30047 | 257.72247 | 356.97760 | 1.75988  | 0.1385794 | 2.6322590 | 60  | 6 | 1993-2007 | 0.50 | M-v | 1 | MPG | 110730 2000 EY <sub>61</sub>  |
| 2000 ER <sub>70</sub>  | 16.9 | 0.15 | 20071027 | 18.07092  | 338.48868 | 111.66448 | 36.91324 | 0.3115533 | 1.8572848 | 46  | 4 | 2000-2007 | 0.54 | M-v | 2 | MPG | 101996 2000 ER <sub>70</sub>  |
| 2000 ER <sub>84</sub>  | 15.8 | 0.15 | 20071027 | 311.93832 | 308.18273 | 218.13645 | 6.20890  | 0.1846912 | 2.5454434 | 115 | 4 | 2000-2007 | 0.57 | M-v | 2 | MPG | 128701 2000 ER <sub>84</sub>  |
| 2000 EC <sub>94</sub>  | 15.5 | 0.15 | 20071027 | 238.12963 | 120.37266 | 82.23761  | 9.54352  | 0.1699785 | 2.7006745 | 31  | 2 | 2000-2007 | 0.61 | M-v | 4 | MPG | 127867 2000 EC <sub>94</sub>  |
| 2000 EM <sub>98</sub>  | 16.4 | 0.15 | 20071027 | 347.07365 | 125.86960 | 321.01344 | 3.42684  | 0.1293042 | 2.5925723 | 85  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPG | 66114 2000 EM <sub>98</sub>   |
| 2000 EL <sub>103</sub> | 14.9 | 0.15 | 20071027 | 266.08206 | 86.03391  | 81.26591  | 16.68948 | 0.2728908 | 2.6860204 | 83  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPG | 128701 2000 EL <sub>103</sub> |
| 2000 EN <sub>118</sub> | 15.6 | 0.15 | 20071027 | 343.25457 | 80.27425  | 35.36332  | 9.30653  | 0.1148719 | 2.5577017 | 71  | 5 | 2000-2007 | 0.57 | M-v | 2 | MPG | 128701 2000 EN <sub>118</sub> |
| 2000 EY <sub>125</sub> | 15.7 | 0.15 | 20071027 | 270.47891 | 95.86711  | 101.19012 | 3.26028  | 0.1204934 | 2.6119446 | 126 | 5 | 1996-2007 | 0.45 | M-v | 2 | MPG | 128701 2000 EY <sub>125</sub> |
| 2000 EB <sub>139</sub> | 15.3 | 0.15 | 20071027 | 358.01986 | 31.06748  | 73.04437  | 14.54670 | 0.2032187 | 2.5872396 | 65  | 5 | 2000-2007 | 0.56 | M-v | 2 | MPG | 128701 2000 EB <sub>139</sub> |
| 2000 EG <sub>141</sub> | 15.9 | 0.15 | 20071027 | 330.01296 | 279.75846 | 159.07458 | 5.30027  | 0.0872290 | 2.7091838 | 56  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPG | 128701 2000 EG <sub>141</sub> |
| 2000 ES <sub>164</sub> | 16.2 | 0.15 | 20071027 | 222.03633 | 325.36019 | 231.50992 | 0.71799  | 0.1423009 | 2.7572823 | 47  | 4 | 2000-2007 | 0.35 | M-v | 1 | MPG | 128701 2000 ES <sub>164</sub> |
| 2000 EX <sub>164</sub> | 16.7 | 0.15 | 20071027 | 265.02598 | 146.57705 | 12.64898  | 1.22819  | 0.1589252 | 2.7103028 | 51  | 5 | 2000-2007 | 0.49 | M-v | 1 | MPG | 128701 2000 EX <sub>164</sub> |
| 2000 EZ <sub>168</sub> | 15.7 | 0.15 | 20071027 | 306.81512 | 99.82389  | 45.65882  | 11.27140 | 0.2422371 | 2.5954153 | 78  | 4 | 1996-2007 | 0.50 | M-v | 2 | MPG | 128702 2000 EZ <sub>168</sub> |
| 2000 EH <sub>172</sub> | 15.9 | 0.15 | 20071027 | 223.69440 | 20.25000  | 185.37802 | 5.45081  | 0.0101146 | 2.7389517 | 51  | 4 | 2000-2007 | 0.64 | M-v | 1 | MPG | 110731 2000 EH <sub>172</sub> |
| 2000 EN <sub>172</sub> | 16.6 | 0.15 | 20071027 | 311.94546 | 85.49836  | 58.55954  | 28.00132 | 0.3761253 | 2.6206875 | 71  | 3 | 2000-2007 | 0.59 | M-v | 2 | MPG | 128702 2000 EN <sub>172</sub> |
| 2000 EG <sub>196</sub> | 17.1 | 0.15 | 20071027 | 281.58663 | 3.03243   | 183.33688 | 2.63397  | 0.0856183 | 2.6021619 | 41  | 4 | 2000-2007 | 0.40 | M-v | 3 | MPG | 110731 2000 EG <sub>196</sub> |
| 2000 EV <sub>199</sub> | 15.8 | 0.15 | 20071027 | 272.77335 | 252.65971 | 268.76808 | 10.35158 | 0.1398192 | 2.6502992 | 69  | 4 | 2000-2007 | 0.59 | M-v | 2 | MPG | 128702 2000 EV <sub>199</sub> |
| 2000 EZ <sub>199</sub> | 15.9 | 0.15 | 20071027 | 254.90973 | 351.94703 | 191.10339 | 12.08636 | 0.1707791 | 2.6609869 | 39  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPG | 110731 2000 EZ <sub>199</sub> |
| 2000 FX <sub>2</sub>   | 14.4 | 0.15 | 20071027 | 322.46670 | 80.57627  | 20.01774  | 24.75397 | 0.4098024 | 2.6134089 | 224 | 3 | 2000-2007 | 0.49 | M-v | 1 | MPG | 128702 2000 FX <sub>2</sub>   |
| 2000 FO <sub>4</sub>   | 16.8 | 0.15 | 20071027 | 225.61268 | 344.62084 | 211.93212 | 3.16924  | 0.0416701 | 2.7811618 | 32  | 4 | 2000-2007 | 0.27 | M-v | 0 | MPG | 127867 2000 FO <sub>4</sub>   |
| 2000 FH <sub>10</sub>  | 18.4 | 0.15 | 20071027 | 34.29455  | 354.91115 | 7.20494   | 9.84267  | 0.1139479 | 1.6546508 | 63  | 5 | 2000-2007 | 0.49 | M-v | 2 | MPG | 128702 2000 FH <sub>10</sub>  |
| 2000 FQ <sub>22</sub>  | 15.4 | 0.15 | 20071027 | 197.71163 | 196.70805 | 35.95476  | 18.02939 | 0.1910504 | 2.7834200 | 48  | 4 | 1997-2007 | 0.63 | M-v | 2 | MPG | 107841 2000 FQ <sub>22</sub>  |
| 2000 FL <sub>25</sub>  | 15.1 | 0.15 | 20071027 | 209.34634 | 191.53998 | 28.38815  | 8.87083  | 0.1276005 | 2.7704637 | 66  | 4 | 2000-2007 | 0.55 | M-v | 2 | MPG | 128702 2000 FL <sub>25</sub>  |
| 2000 FB <sub>28</sub>  | 16.3 | 0.15 | 20071027 | 336.23128 | 191.00341 | 317.02080 | 3.05025  | 0.0893248 | 2.5788270 | 96  | 4 | 2000-2007 | 0.54 | M-v | 2 | MPG | 126570 2000 FB <sub>28</sub>  |
| 2000 FQ <sub>33</sub>  | 15.5 | 0.15 | 20071027 | 296.63485 | 97.24903  | 52.85762  | 13.37232 | 0.1352128 | 2.6499476 | 81  | 4 | 1996-2007 | 0.52 | M-v | 2 | MPG | 128702 2000 FQ <sub>33</sub>  |
| 2000 FY <sub>38</sub>  | 15.6 | 0.15 | 20071027 | 194.06092 | 174.21975 | 58.64778  | 5.07356  | 0.1380542 | 2.7990920 | 57  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPG | 126570 2000 FY <sub>38</sub>  |
| 2000 FV <sub>57</sub>  | 16.4 | 0.15 | 20071027 | 313.94046 | 344.78913 | 148.28363 | 4.61757  | 0.1811388 | 2.6406700 | 69  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPG | 128702 2000 FV <sub>57</sub>  |
| 2000 FL <sub>61</sub>  | 15.8 | 0.15 | 20071027 | 197.38167 | 182.58309 | 83.38733  | 5.32949  | 0.1144847 | 2.6834188 | 65  | 6 | 2000-2007 | 0.43 | M-v | 0 | MPG | 114598 2000 FL <sub>61</sub>  |
| 2000 FA <sub>65</sub>  | 16.7 | 0.15 | 20071027 | 167.58232 | 74.33915  | 175.30854 | 3.35492  | 0.1318929 | 2.7930924 | 42  | 7 | 1995-2007 | 0.39 | M-v | 0 | MPG | 128702 2000 FA <sub>65</sub>  |
| 2000 FE <sub>73</sub>  | 16.0 | 0.15 | 20071027 | 304.36145 | 112.08334 | 67.74559  | 7.23910  | 0.1047895 | 2.5726010 | 50  | 5 | 1998-2007 | 0.54 | M-v | 2 | MPG | 110732 2000 FE <sub>73</sub>  |
| 2000 FO <sub>73</sub>  | 17.3 | 0.15 | 20071027 | 341.90496 | 284.30041 | 188.06582 | 2.30213  | 0.0293852 | 2.6386606 | 32  | 3 | 2000-2007 | 0.29 | M-v | 3 | MPG | 114598 2000 FO <sub>73</sub>  |
| 2000 GL <sub>3</sub>   | 15.8 | 0.15 | 20071027 | 325.19948 | 255.88606 | 202.36329 | 24.48520 | 0.4685353 | 2.6286703 | 150 | 4 | 1996-2007 | 0.50 | M-v | 1 | MPG | 128702 2000 GL <sub>3</sub>   |
| 2000 GG <sub>4</sub>   | 16.1 | 0.15 | 20071027 | 312.72853 | 93.46419  | 36.29506  | 28.72407 | 0.3443366 | 2.6265149 | 101 | 2 | 2000-2007 | 0.55 | M-v | 2 | MPG | 128702 2000 GG <sub>4</sub>   |
| 2000 GQ <sub>21</sub>  | 15.9 | 0.15 | 20071027 | 49.16767  | 290.67090 | 16.40190  | 10.04486 | 0.0870511 | 3.0453189 | 57  | 5 | 1991-2007 | 0.59 | M-v | 1 | MPG | 126570 2000 GQ <sub>21</sub>  |
| 2000 GA <sub>27</sub>  | 15.1 | 0.15 | 20071027 | 109.97985 | 58.06828  | 184.27693 | 7.01071  | 0.1074010 | 3.0627652 | 73  | 4 | 2000-2007 | 0.58 | M-v | 1 | MPG | 128702 2000 GA <sub>27</sub>  |
| 2000 GE <sub>27</sub>  | 16.2 | 0.15 | 20071027 | 295.15374 | 127.47914 | 22.00753  | 13.66208 | 0.2004994 | 2.6706687 | 96  | 4 | 2000-2007 | 0.57 | M-v | 1 | MPG | 62290 2000 GE <sub>27</sub>   |
| 2000 GA <sub>61</sub>  | 16.1 | 0.15 | 20071027 | 110.46010 | 272.47134 | 33.16885  | 6.65306  | 0.0529444 | 2.8349446 | 46  | 5 | 2000-2007 | 0.44 | M-v | 0 | MPG | 121756 2000 GA <sub>61</sub>  |
| 2000 GP <sub>62</sub>  | 15.8 | 0.15 | 20071027 | 204.10453 | 144.46624 | 21.25010  | 10.52194 | 0.0591734 | 2.9825219 | 56  | 5 | 2000-2007 | 0.45 | M-v | 1 | MPG | 77455 2000 GP <sub>62</sub>   |
| 2000 GU <sub>82</sub>  | 16.5 | 0.15 | 20071027 | 13.91422  | 114.51107 | 7.72044   | 20.15508 | 0.0668972 | 1.9123779 | 70  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPG | 104135 2000 GU <sub>82</sub>  |
| 2000 GK <sub>86</sub>  | 14.9 | 0.15 | 20071027 | 239.36825 | 143.72011 | 58.46767  | 17.09392 | 0.2019671 | 2.7176368 | 79  | 3 | 2000-2007 | 0.51 | M-v | 2 | MPG | 128702 2000 GK <sub>86</sub>  |
| 2000 GF <sub>93</sub>  | 16.0 | 0.15 | 20071027 | 252.72967 | 95.21860  | 98.99478  | 9.96406  | 0.1130663 | 2.7112073 | 81  | 5 | 2000-2007 | 0.60 | M-v | 2 | MPG | 110734 2000 GF <sub>93</sub>  |
| 2000 GO <sub>117</sub> | 17.6 | 0.15 | 20071027 | 325.50486 | 120.90792 | 356.30326 | 5.56515  | 0.1837017 | 2.6316017 | 24  | 3 | 2000-2007 | 0.57 | M-v | 4 | MPG | 60662 2000 GO <sub>117</sub>  |
| 2000 GK <sub>121</sub> | 16.7 | 0.15 | 20071027 | 280.65253 | 97.79860  | 23.23238  | 7.90171  | 0.1829786 | 2.7835299 | 36  | 3 | 2000-2007 | 0.42 | M-v | 4 | MPG | 128702 2000 GK <sub>121</sub> |
| 2000 GC <sub>129</sub> | 16.7 | 0.15 | 20071027 | 132.92791 | 190.03650 | 153.26262 | 0.49939  | 0.1185927 | 2.6465626 | 70  | 4 | 2000-2007 | 0.40 | M-v | 3 | MPG | 116137 2000 GC <sub>129</sub> |
| 2000 GA <sub>131</sub> | 15.9 | 0.15 | 20071027 | 39.00188  | 143.24207 | 217.59257 | 3.80538  | 0.1060626 | 2.9127914 | 96  | 6 | 1997-2007 | 0.50 | M-v | 1 | MPG | 128702 2000 GA <sub>131</sub> |
| 2000 GD <sub>141</sub> | 16.8 | 0.15 | 20071027 | 314.64105 | 180.52928 | 322.12848 | 17.44814 | 0.0873201 | 1.9480639 | 31  | 4 | 2000-2007 | 0.65 | M-v | 2 | MPG | 104136 2000 GD <sub>141</sub> |
| 2000 GV <sub>141</sub> | 16.1 | 0.15 | 20071027 | 273.27784 | 117.37888 | 73.85256  | 13.69301 | 0.1239871 | 2.6708132 | 44  | 4 | 2000-2007 | 0.55 | M-v | 2 | MPG | 87382 2000 GV <sub>141</sub>  |
| 2000 GP <sub>144</sub> | 16.6 | 0.15 | 20071027 | 116.30215 | 226.29640 | 86.67070  | 8.98567  | 0.0675287 | 3.0225341 | 28  | 3 | 2000-2007 | 0.31 | M-v | 2 | MPG | 127868 2000 GP <sub>144</sub> |
| 2000 GF <sub>156</sub> | 15.8 | 0.15 | 20071027 | 212.88709 | 22.43567  | 221.84827 | 4.99522  | 0.0730892 | 2.7008584 | 39  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPG | 114599 2000 GF <sub>156</sub> |
| 2000 GU <sub>160</sub> | 16.4 | 0.15 | 20071027 | 141.68765 | 189.62500 | 55.26557  | 13.95230 | 0.2507112 | 2.9791626 | 39  | 4 | 1995-2007 | 0.55 | M-v | 3 | MPG | 128703 2000 GU <sub>160</sub> |
| 2000 GO <sub>180</sub> | 16.0 | 0.15 | 20071027 | 159.70857 | 42.38318  | 201.51300 | 0.87980  | 0.0634686 | 2.8679107 | 34  | 2 | 2000-2007 | 0.55 | M-v | 5 | MPG | 127869 2000 GO <sub>180</sub> |
| 2000 GH <sub>186</sub> | 17.0 | 0.15 | 20071027 | 330.70762 | 101.79845 | 42.60480  | 13.23277 | 0.1110381 | 2.6464328 | 57  | 4 | 2000-2007 | 0.33 | M-v | 2 | MPG | 116138 2000 GH <sub>186</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2000 HM <sub>2</sub>  | 17.0 | 0.15 | 20071027 | 45.52103  | 251.00220 | 142.44160 | 3.24903  | 0.1000301 | 2.7633556 | 36  | 4 | 2000-2007 | 0.37 | M-v | 0 | MPC | 110735 2000 HM <sub>2</sub>  |
| 2000 HX <sub>2</sub>  | 16.9 | 0.15 | 20071027 | 302.33619 | 26.53256  | 131.01366 | 3.97989  | 0.1115439 | 2.7199323 | 52  | 5 | 2000-2007 | 0.37 | M-v | 2 | MPC | 114599 2000 HX <sub>2</sub>  |
| 2000 HE <sub>3</sub>  | 16.7 | 0.15 | 20071027 | 282.32980 | 130.80476 | 34.79486  | 1.58513  | 0.1655731 | 2.7143213 | 76  | 6 | 1995-2007 | 0.60 | M-v | 1 | MPC | 110735 2000 HE <sub>3</sub>  |
| 2000 HB <sub>6</sub>  | 17.0 | 0.15 | 20071027 | 49.51953  | 160.04761 | 357.90985 | 1.28017  | 0.1277860 | 2.4097130 | 56  | 4 | 1996-2007 | 0.54 | M-v | 1 | MPC | 119523 2000 HB <sub>6</sub>  |
| 2000 HS <sub>19</sub> | 16.2 | 0.15 | 20071027 | 104.47177 | 232.57018 | 142.92606 | 6.77953  | 0.0397280 | 2.6988660 | 61  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 110736 2000 HS <sub>19</sub> |
| 2000 HN <sub>22</sub> | 16.6 | 0.15 | 20071027 | 61.90172  | 290.48813 | 21.37682  | 4.74203  | 0.2081143 | 2.1526336 | 160 | 4 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128703 2000 HN <sub>22</sub> |
| 2000 HD <sub>43</sub> | 15.8 | 0.15 | 20071027 | 230.51375 | 167.55694 | 65.26479  | 5.75632  | 0.1010205 | 2.7216765 | 58  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128703 2000 HD <sub>43</sub> |
| 2000 HF <sub>49</sub> | 14.6 | 0.15 | 20071027 | 63.46351  | 268.95680 | 48.97408  | 20.05342 | 0.2922900 | 3.1520414 | 119 | 3 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128703 2000 HF <sub>49</sub> |
| 2000 HS <sub>66</sub> | 16.7 | 0.15 | 20071027 | 230.38455 | 133.75061 | 43.24368  | 8.68996  | 0.1440003 | 2.8628526 | 37  | 4 | 1995-2007 | 0.39 | M-v | 1 | MPC | 127869 2000 HS <sub>66</sub> |
| 2000 HN <sub>83</sub> | 15.0 | 0.15 | 20071027 | 215.80081 | 112.55468 | 107.30594 | 16.76584 | 0.2326393 | 2.7536402 | 45  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 87385 2000 HN <sub>83</sub>  |
| 2000 HX <sub>84</sub> | 15.6 | 0.15 | 20071027 | 323.12005 | 294.13781 | 230.21116 | 12.12368 | 0.1905511 | 2.5619339 | 59  | 4 | 2000-2007 | 0.60 | M-v | 3 | MPC | 110737 2000 HX <sub>84</sub> |
| 2000 HN <sub>90</sub> | 15.7 | 0.15 | 20071027 | 92.03958  | 231.50104 | 28.87118  | 5.80408  | 0.1257044 | 3.1138400 | 35  | 4 | 2000-2007 | 0.49 | M-v | 2 | MPC | 126571 2000 HN <sub>90</sub> |
| 2000 JG <sub>2</sub>  | 15.5 | 0.15 | 20071027 | 317.88162 | 105.27095 | 62.35831  | 24.92962 | 0.3235980 | 2.5682877 | 79  | 3 | 2000-2007 | 0.56 | M-v | 2 | MPC | 128703 2000 JG <sub>2</sub>  |
| 2000 JA <sub>7</sub>  | 15.6 | 0.15 | 20071027 | 107.74270 | 52.23532  | 209.95031 | 5.36130  | 0.0873046 | 3.0851306 | 50  | 3 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128703 2000 JA <sub>7</sub>  |
| 2000 JK <sub>7</sub>  | 16.3 | 0.15 | 20071027 | 212.62922 | 327.99566 | 218.21800 | 1.29107  | 0.0082066 | 2.8779367 | 52  | 6 | 2000-2007 | 0.44 | M-v | 1 | MPC | 127869 2000 JK <sub>7</sub>  |
| 2000 JR <sub>7</sub>  | 16.1 | 0.15 | 20071027 | 102.74338 | 73.25019  | 203.52030 | 4.17267  | 0.1206905 | 3.0420737 | 52  | 5 | 2000-2007 | 0.40 | M-v | 0 | MPC | 128703 2000 JR <sub>7</sub>  |
| 2000 JE <sub>8</sub>  | 17.0 | 0.15 | 20071027 | 219.10610 | 40.16761  | 170.70725 | 4.50015  | 0.0087186 | 2.7979860 | 29  | 5 | 2000-2007 | 0.36 | M-v | 0 | MPC | 112196 2000 JE <sub>8</sub>  |
| 2000 JN <sub>10</sub> | 17.8 | 0.15 | 20071027 | 42.78123  | 254.53767 | 47.27254  | 21.45089 | 0.4299059 | 2.2575265 | 56  | 3 | 1983-2007 | 0.53 | M-v | 1 | MPC | 128703 2000 JN <sub>10</sub> |
| 2000 JZ <sub>13</sub> | 16.0 | 0.15 | 20071027 | 120.50952 | 217.31023 | 53.69875  | 14.01940 | 0.2473447 | 3.0445758 | 30  | 3 | 2000-2007 | 0.53 | M-v | 3 | MPC | 88721 2000 JZ <sub>13</sub>  |
| 2000 JR <sub>18</sub> | 15.5 | 0.15 | 20071027 | 265.34174 | 109.08175 | 141.94753 | 13.23087 | 0.2222823 | 2.5971889 | 70  | 3 | 2000-2007 | 0.51 | M-v | 3 | MPC | 60684 2000 JR <sub>18</sub>  |
| 2000 JY <sub>27</sub> | 15.9 | 0.15 | 20071027 | 302.64893 | 106.93642 | 46.84327  | 10.75781 | 0.2279187 | 2.6753913 | 106 | 4 | 2000-2007 | 0.60 | M-v | 1 | MPC | 121756 2000 JY <sub>27</sub> |
| 2000 JQ <sub>34</sub> | 16.4 | 0.15 | 20071027 | 285.55534 | 171.74890 | 42.68690  | 4.48768  | 0.1452585 | 2.6121908 | 62  | 4 | 2000-2007 | 0.54 | M-v | 3 | MPC | 110737 2000 JQ <sub>34</sub> |
| 2000 JG <sub>67</sub> | 16.5 | 0.15 | 20071027 | 55.01468  | 298.29768 | 36.71711  | 1.95362  | 0.1488330 | 3.0184805 | 51  | 4 | 2000-2007 | 0.33 | M-v | 1 | MPC | 127870 2000 JG <sub>67</sub> |
| 2000 JL <sub>68</sub> | 16.7 | 0.15 | 20071027 | 27.14236  | 331.38115 | 93.67448  | 3.23433  | 0.0554678 | 2.7121017 | 43  | 3 | 2000-2007 | 0.42 | M-v | 2 | MPC | 128703 2000 JL <sub>68</sub> |
| 2000 JY <sub>78</sub> | 16.1 | 0.15 | 20071027 | 305.90524 | 66.33768  | 85.62647  | 13.48276 | 0.2179832 | 2.6576947 | 71  | 3 | 2000-2007 | 0.60 | M-v | 2 | MPC | 87386 2000 JY <sub>78</sub>  |
| 2000 JD <sub>79</sub> | 14.7 | 0.15 | 20071027 | 235.21200 | 290.00839 | 267.00521 | 11.85296 | 0.1418246 | 2.7217842 | 79  | 5 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128703 2000 JD <sub>79</sub> |
| 2000 KC <sub>25</sub> | 15.9 | 0.15 | 20071027 | 76.70767  | 253.36086 | 64.85339  | 15.94057 | 0.2310845 | 3.1253787 | 40  | 4 | 2000-2007 | 0.45 | M-v | 0 | MPC | 128703 2000 KC <sub>25</sub> |
| 2000 KW <sub>40</sub> | 16.5 | 0.15 | 20071027 | 318.52379 | 74.43447  | 69.42465  | 2.95748  | 0.1908140 | 2.6875347 | 74  | 4 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128703 2000 KW <sub>40</sub> |
| 2000 KC <sub>43</sub> | 15.7 | 0.15 | 20071027 | 140.61850 | 244.23947 | 53.37474  | 15.60213 | 0.1374626 | 2.8563147 | 57  | 6 | 1992-2007 | 0.55 | M-v | 0 | MPC | 110738 2000 KC <sub>43</sub> |
| 2000 KQ <sub>78</sub> | 16.8 | 0.15 | 20071027 | 41.85996  | 90.20587  | 217.93975 | 6.23814  | 0.2605653 | 2.2292777 | 94  | 5 | 1993-2007 | 0.52 | M-v | 1 | MPC | 128704 2000 KQ <sub>78</sub> |
| 2000 KE <sub>81</sub> | 15.8 | 0.15 | 20071027 | 187.29240 | 146.61497 | 145.59625 | 24.13271 | 0.0677198 | 1.9739970 | 75  | 7 | 1994-2007 | 0.49 | M-v | 1 | MPC | 110739 2000 KE <sub>81</sub> |
| 2000 LW <sub>34</sub> | 16.2 | 0.15 | 20071027 | 232.86623 | 144.99272 | 105.12586 | 14.05246 | 0.2018704 | 2.6522662 | 36  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128704 2000 LW <sub>34</sub> |
| 2000 NL <sub>6</sub>  | 18.2 | 0.15 | 20071027 | 96.57641  | 84.88921  | 222.76686 | 2.33135  | 0.1618888 | 2.1667507 | 34  | 5 | 1994-2007 | 0.50 | M-v | 1 | MPC | 128704 2000 NL <sub>6</sub>  |
| 2000 NH <sub>10</sub> | 16.7 | 0.15 | 20071027 | 23.33987  | 127.13852 | 242.57449 | 2.11697  | 0.3955646 | 2.2622151 | 171 | 3 | 2000-2007 | 0.54 | M-v | 1 | MPC | 121538 2000 NH <sub>10</sub> |
| 2000 NO <sub>14</sub> | 17.5 | 0.15 | 20071027 | 109.85916 | 189.14964 | 127.90565 | 2.00278  | 0.2461837 | 2.1441087 | 62  | 4 | 2000-2007 | 0.42 | M-v | 1 | MPC | 102000 2000 NO <sub>14</sub> |
| 2000 NC <sub>18</sub> | 15.0 | 0.15 | 20071027 | 76.26092  | 15.94086  | 348.85609 | 7.49926  | 0.2185371 | 3.1297402 | 134 | 4 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128704 2000 NC <sub>18</sub> |
| 2000 OB <sub>4</sub>  | 16.3 | 0.15 | 20071027 | 88.67910  | 56.18589  | 265.70767 | 4.81152  | 0.1729757 | 2.1761652 | 70  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 122670 2000 OB <sub>4</sub>  |
| 2000 OU <sub>7</sub>  | 15.5 | 0.15 | 20071027 | 85.27380  | 69.54397  | 264.30151 | 5.41122  | 0.2293939 | 3.1878790 | 127 | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 120735 2000 OU <sub>7</sub>  |
| 2000 OA <sub>13</sub> | 17.4 | 0.15 | 20071027 | 77.62432  | 215.54560 | 115.56791 | 3.76999  | 0.2447455 | 2.1737327 | 57  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 102000 2000 OA <sub>13</sub> |
| 2000 OO <sub>21</sub> | 16.3 | 0.15 | 20071027 | 57.62510  | 181.94757 | 149.11067 | 11.19806 | 0.2037991 | 2.2108854 | 63  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128704 2000 OO <sub>21</sub> |
| 2000 OA <sub>23</sub> | 16.2 | 0.15 | 20071027 | 90.43744  | 328.05824 | 332.92690 | 5.94451  | 0.2099627 | 2.1771996 | 38  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128704 2000 OA <sub>23</sub> |
| 2000 OW <sub>26</sub> | 14.0 | 0.15 | 20071027 | 161.78516 | 311.73280 | 304.74112 | 16.23154 | 0.2421257 | 3.0728151 | 74  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 110739 2000 OW <sub>26</sub> |
| 2000 OG <sub>36</sub> | 16.6 | 0.15 | 20071027 | 2.07726   | 69.85008  | 281.24135 | 6.69885  | 0.2009125 | 2.3097962 | 94  | 3 | 2000-2007 | 0.57 | M-v | 2 | MPC | 126572 2000 OG <sub>36</sub> |
| 2000 OB <sub>42</sub> | 16.2 | 0.15 | 20071027 | 15.13181  | 81.99615  | 276.71820 | 5.71184  | 0.1434050 | 2.2697948 | 102 | 4 | 1995-2007 | 0.54 | M-v | 2 | MPC | 128704 2000 OB <sub>42</sub> |
| 2000 OD <sub>56</sub> | 17.4 | 0.15 | 20071027 | 53.82965  | 51.48392  | 307.08490 | 3.81423  | 0.2000709 | 2.1858003 | 48  | 5 | 1999-2007 | 0.55 | M-v | 2 | MPC | 77467 2000 OD <sub>56</sub>  |
| 2000 PK <sub>3</sub>  | 16.2 | 0.15 | 20071027 | 3.55977   | 71.63708  | 300.22539 | 22.04096 | 0.2462443 | 2.2631088 | 96  | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128704 2000 PK <sub>3</sub>  |
| 2000 PH <sub>18</sub> | 17.0 | 0.15 | 20071027 | 3.05705   | 28.27019  | 332.75838 | 0.41660  | 0.2132464 | 2.2833702 | 88  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128704 2000 PH <sub>18</sub> |
| 2000 PK <sub>27</sub> | 15.3 | 0.15 | 20071027 | 16.27316  | 89.37747  | 327.33833 | 11.29763 | 0.1468371 | 3.2230909 | 40  | 5 | 2000-2007 | 0.67 | M-v | 1 | MPC | 110740 2000 PK <sub>27</sub> |
| 2000 PP <sub>27</sub> | 14.8 | 0.15 | 20071027 | 101.94420 | 166.87434 | 151.87272 | 5.46968  | 0.1315726 | 3.1918101 | 93  | 6 | 2000-2007 | 0.50 | M-v | 1 | MPC | 110740 2000 PP <sub>27</sub> |
| 2000 PT <sub>27</sub> | 15.4 | 0.15 | 20071027 | 24.84553  | 79.85874  | 276.21727 | 21.07022 | 0.2882174 | 2.2903517 | 102 | 3 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128704 2000 PT <sub>27</sub> |
| 2000 PD <sub>28</sub> | 16.2 | 0.15 | 20071027 | 358.35547 | 336.21064 | 85.06930  | 8.17365  | 0.2459252 | 2.2365993 | 50  | 4 | 2000-2007 | 0.61 | M-v | 2 | MPC | 128704 2000 PD <sub>28</sub> |
| 2000 QG               | 15.3 | 0.15 | 20071027 | 319.74601 | 152.13860 | 321.24553 | 11.59770 | 0.0840806 | 3.1289014 | 48  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128704 2000 QG               |
| 2000 QW <sub>1</sub>  | 15.6 | 0.15 | 20071027 | 51.05245  | 102.42973 | 268.52490 | 22.67264 | 0.2676480 | 2.2190698 | 66  | 3 | 2000-2007 | 0.56 | M-v | 2 | MPC | 127870 2000 QW <sub>1</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 QT <sub>6</sub>   | 17.3 | 0.15 | 20071027 | 7.91181   | 357.41223 | 355.99267 | 3.17626  | 0.2325445 | 2.3020843 | 118 | 2 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128704 2000 QT <sub>6</sub>   |
| 2000 QN <sub>8</sub>   | 14.8 | 0.15 | 20071027 | 94.10175  | 224.13286 | 167.21253 | 13.85934 | 0.3070269 | 3.0665939 | 70  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 62305 2000 QN <sub>8</sub>    |
| 2000 QN <sub>10</sub>  | 16.9 | 0.15 | 20071027 | 55.98888  | 232.91651 | 127.88316 | 1.69139  | 0.1806518 | 2.1777934 | 41  | 6 | 1997-2007 | 0.61 | M-v | 1 | MPC | 102001 2000 QN <sub>10</sub>  |
| 2000 QE <sub>14</sub>  | 17.4 | 0.15 | 20071027 | 25.54120  | 71.99150  | 305.67012 | 0.83100  | 0.2252642 | 2.2228632 | 82  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 128704 2000 QE <sub>14</sub>  |
| 2000 QG <sub>23</sub>  | 17.4 | 0.15 | 20071027 | 50.09157  | 103.22179 | 244.23338 | 3.24403  | 0.1869545 | 2.2259323 | 83  | 4 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128704 2000 QG <sub>23</sub>  |
| 2000 QU <sub>31</sub>  | 16.0 | 0.15 | 20071027 | 60.78683  | 326.98198 | 8.35225   | 6.77905  | 0.2314307 | 2.2179564 | 82  | 5 | 2000-2007 | 0.59 | M-v | 2 | MPC | 128704 2000 QU <sub>31</sub>  |
| 2000 QX <sub>38</sub>  | 14.9 | 0.15 | 20071027 | 89.16089  | 181.19499 | 155.77722 | 9.80631  | 0.0665472 | 3.1659899 | 91  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 110740 2000 QX <sub>38</sub>  |
| 2000 QO <sub>40</sub>  | 17.7 | 0.15 | 20071027 | 18.60801  | 196.37004 | 184.83513 | 0.84801  | 0.2382472 | 2.2389063 | 89  | 5 | 1995-2007 | 0.46 | M-v | 1 | MPC | 127871 2000 QO <sub>40</sub>  |
| 2000 QN <sub>43</sub>  | 17.4 | 0.15 | 20071027 | 42.38090  | 198.38556 | 164.01318 | 3.78982  | 0.1993174 | 2.2171637 | 57  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 102001 2000 QN <sub>43</sub>  |
| 2000 QQ <sub>47</sub>  | 17.1 | 0.15 | 20071027 | 55.26123  | 234.56412 | 142.93791 | 3.40572  | 0.1306147 | 2.1678689 | 98  | 6 | 1996-2007 | 0.59 | M-v | 3 | MPC | 77468 2000 QQ <sub>47</sub>   |
| 2000 QN <sub>48</sub>  | 16.9 | 0.15 | 20071027 | 13.04734  | 237.71781 | 157.02464 | 4.31554  | 0.1542201 | 2.2239328 | 88  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128704 2000 QN <sub>48</sub>  |
| 2000 QB <sub>60</sub>  | 17.9 | 0.15 | 20071027 | 357.44090 | 52.06559  | 335.75608 | 1.41117  | 0.2634830 | 2.2822883 | 96  | 3 | 2000-2007 | 0.46 | M-v | 2 | MPC | 126573 2000 QB <sub>60</sub>  |
| 2000 QT <sub>64</sub>  | 16.4 | 0.15 | 20071027 | 37.25180  | 277.40999 | 101.95894 | 5.47926  | 0.1365191 | 2.2158190 | 63  | 4 | 2000-2007 | 0.55 | M-v | 2 | MPC | 126573 2000 QT <sub>64</sub>  |
| 2000 QS <sub>66</sub>  | 17.1 | 0.15 | 20071027 | 25.62689  | 228.04203 | 138.06261 | 7.67652  | 0.1984979 | 2.2562038 | 45  | 3 | 1996-2007 | 0.67 | M-v | 3 | MPC | 127871 2000 QS <sub>66</sub>  |
| 2000 QB <sub>68</sub>  | 16.8 | 0.15 | 20071027 | 357.37116 | 347.86222 | 26.58983  | 6.83763  | 0.1574135 | 2.3033444 | 136 | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128704 2000 QB <sub>68</sub>  |
| 2000 QU <sub>68</sub>  | 16.9 | 0.15 | 20071027 | 30.10315  | 150.81674 | 215.25708 | 6.73403  | 0.1470768 | 2.2537331 | 114 | 3 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128705 2000 QU <sub>68</sub>  |
| 2000 QR <sub>70</sub>  | 16.0 | 0.15 | 20071027 | 23.46849  | 1.61104   | 342.66709 | 23.56785 | 0.1589892 | 2.2791122 | 92  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128705 2000 QR <sub>70</sub>  |
| 2000 QN <sub>71</sub>  | 15.0 | 0.15 | 20071027 | 119.00714 | 44.75370  | 322.14978 | 9.03326  | 0.1068861 | 2.9667128 | 91  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 128705 2000 QN <sub>71</sub>  |
| 2000 QS <sub>71</sub>  | 17.6 | 0.15 | 20071027 | 52.42892  | 351.59534 | 307.33814 | 2.20509  | 0.1658169 | 2.2857789 | 96  | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 126573 2000 QS <sub>71</sub>  |
| 2000 QV <sub>75</sub>  | 15.2 | 0.15 | 20071027 | 101.84523 | 358.99712 | 335.26159 | 7.95552  | 0.0696020 | 3.1745399 | 60  | 6 | 1992-2007 | 0.51 | M-v | 1 | MPC | 110741 2000 QV <sub>75</sub>  |
| 2000 QV <sub>82</sub>  | 16.4 | 0.15 | 20071027 | 43.95135  | 205.37744 | 174.87808 | 6.98618  | 0.2486849 | 2.2117110 | 88  | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128705 2000 QV <sub>82</sub>  |
| 2000 QM <sub>86</sub>  | 16.9 | 0.15 | 20071027 | 67.09943  | 39.85519  | 279.15038 | 4.92466  | 0.1792855 | 2.2289922 | 83  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128705 2000 QM <sub>86</sub>  |
| 2000 QG <sub>94</sub>  | 15.1 | 0.15 | 20071027 | 37.56718  | 109.12235 | 323.00619 | 15.23220 | 0.2289433 | 3.1450273 | 103 | 4 | 2000-2007 | 0.50 | M-v | 0 | MPC | 114602 2000 QG <sub>94</sub>  |
| 2000 QC <sub>96</sub>  | 16.5 | 0.15 | 20071027 | 127.65003 | 272.98031 | 16.60063  | 2.67178  | 0.1705969 | 2.1687891 | 62  | 6 | 2000-2007 | 0.48 | M-v | 1 | MPC | 102002 2000 QC <sub>96</sub>  |
| 2000 QA <sub>97</sub>  | 16.4 | 0.15 | 20071027 | 17.95269  | 347.71422 | 12.19819  | 6.99533  | 0.2085089 | 2.2832261 | 186 | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128705 2000 QA <sub>97</sub>  |
| 2000 QB <sub>100</sub> | 17.1 | 0.15 | 20071027 | 91.44960  | 224.89671 | 110.28354 | 3.95253  | 0.2257676 | 2.1757838 | 75  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 102002 2000 QB <sub>100</sub> |
| 2000 QG <sub>100</sub> | 17.0 | 0.15 | 20071027 | 0.55525   | 3.05675   | 13.32762  | 7.24293  | 0.2649279 | 2.3063576 | 181 | 2 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128705 2000 QG <sub>100</sub> |
| 2000 QM <sub>107</sub> | 15.1 | 0.15 | 20071027 | 106.22422 | 225.52333 | 116.32238 | 2.64648  | 0.1712891 | 3.1081656 | 107 | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 128705 2000 QM <sub>107</sub> |
| 2000 QN <sub>109</sub> | 16.0 | 0.15 | 20071027 | 197.50565 | 261.86812 | 333.91487 | 8.68553  | 0.0512194 | 3.1235035 | 20  | 3 | 2000-2007 | 0.26 | M-v | 2 | MPC | 107855 2000 QN <sub>109</sub> |
| 2000 QG <sub>115</sub> | 17.4 | 0.15 | 20071027 | 28.56245  | 148.05997 | 213.74457 | 3.78519  | 0.2487587 | 2.2512012 | 80  | 2 | 2000-2007 | 0.43 | M-v | 3 | MPC | 127871 2000 QG <sub>115</sub> |
| 2000 QY <sub>115</sub> | 16.4 | 0.15 | 20071027 | 77.06336  | 334.43128 | 8.54254   | 5.05762  | 0.1985160 | 2.1750589 | 48  | 4 | 1997-2007 | 0.55 | M-v | 2 | MPC | 128705 2000 QY <sub>115</sub> |
| 2000 QO <sub>118</sub> | 16.1 | 0.15 | 20071027 | 35.21498  | 34.45477  | 291.88274 | 4.47443  | 0.1966365 | 2.2944535 | 126 | 6 | 1995-2007 | 0.54 | M-v | 1 | MPC | 128705 2000 QO <sub>118</sub> |
| 2000 QG <sub>125</sub> | 16.5 | 0.15 | 20071027 | 103.09550 | 21.87596  | 272.62160 | 5.15751  | 0.1596347 | 2.1952197 | 49  | 4 | 2000-2007 | 0.53 | M-v | 3 | MPC | 128705 2000 QG <sub>125</sub> |
| 2000 QE <sub>132</sub> | 16.8 | 0.15 | 20071027 | 50.75223  | 355.74929 | 343.49217 | 5.72413  | 0.2255047 | 2.2191627 | 58  | 4 | 1999-2007 | 0.58 | M-v | 2 | MPC | 128705 2000 QE <sub>132</sub> |
| 2000 QU <sub>134</sub> | 17.3 | 0.15 | 20071027 | 31.19595  | 308.18910 | 5.74112   | 4.50531  | 0.2386282 | 2.2958698 | 100 | 5 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128705 2000 QU <sub>134</sub> |
| 2000 QA <sub>144</sub> | 17.3 | 0.15 | 20071027 | 13.42207  | 307.07541 | 74.31018  | 2.52663  | 0.2405625 | 2.2678008 | 123 | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128705 2000 QA <sub>144</sub> |
| 2000 QW <sub>144</sub> | 17.8 | 0.15 | 20071027 | 37.12926  | 334.61327 | 6.55199   | 5.85068  | 0.2927156 | 2.2701802 | 87  | 2 | 2000-2007 | 0.49 | M-v | 3 | MPC | 127871 2000 QW <sub>144</sub> |
| 2000 QE <sub>145</sub> | 17.6 | 0.15 | 20071027 | 32.53711  | 331.08161 | 21.03803  | 6.27775  | 0.2279874 | 2.2687810 | 58  | 2 | 2000-2007 | 0.54 | M-v | 3 | MPC | 128705 2000 QE <sub>145</sub> |
| 2000 QH <sub>150</sub> | 15.8 | 0.15 | 20071027 | 347.70982 | 90.59865  | 318.95476 | 6.56211  | 0.2185109 | 2.3015438 | 198 | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128705 2000 QH <sub>150</sub> |
| 2000 QX <sub>154</sub> | 14.4 | 0.15 | 20071027 | 61.51294  | 65.85404  | 295.62519 | 25.90991 | 0.1657839 | 3.1765058 | 46  | 6 | 1996-2007 | 0.54 | M-v | 1 | MPC | 110742 2000 QX <sub>154</sub> |
| 2000 QW <sub>158</sub> | 16.6 | 0.15 | 20071027 | 2.03950   | 173.92694 | 199.88302 | 6.96077  | 0.3205998 | 2.2975599 | 171 | 4 | 2000-2007 | 0.47 | M-v | 1 | MPC | 128705 2000 QW <sub>158</sub> |
| 2000 QQ <sub>160</sub> | 16.9 | 0.15 | 20071027 | 67.02859  | 48.69283  | 248.63757 | 5.90505  | 0.1176288 | 2.2704711 | 67  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128705 2000 QQ <sub>160</sub> |
| 2000 QS <sub>166</sub> | 16.8 | 0.15 | 20071027 | 104.77663 | 15.47630  | 276.01032 | 3.53610  | 0.1714998 | 2.2012492 | 51  | 4 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128705 2000 QS <sub>166</sub> |
| 2000 QW <sub>166</sub> | 17.3 | 0.15 | 20071027 | 87.83416  | 105.54401 | 209.92040 | 4.17697  | 0.1664779 | 2.2006655 | 50  | 4 | 1997-2007 | 0.67 | M-v | 1 | MPC | 128705 2000 QW <sub>166</sub> |
| 2000 QN <sub>168</sub> | 16.9 | 0.15 | 20071027 | 74.68917  | 122.64160 | 233.94160 | 3.14916  | 0.1870983 | 2.1733060 | 55  | 4 | 1997-2007 | 0.61 | M-v | 2 | MPC | 77470 2000 QN <sub>168</sub>  |
| 2000 QW <sub>169</sub> | 17.2 | 0.15 | 20071027 | 86.54509  | 16.87735  | 287.17386 | 4.46364  | 0.1240800 | 2.2296327 | 57  | 4 | 1999-2007 | 0.58 | M-v | 1 | MPC | 127872 2000 QW <sub>169</sub> |
| 2000 QA <sub>171</sub> | 16.4 | 0.15 | 20071027 | 71.63454  | 28.48762  | 326.54831 | 9.42003  | 0.1595338 | 2.1834374 | 60  | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 77470 2000 QA <sub>171</sub>  |
| 2000 QR <sub>172</sub> | 17.2 | 0.15 | 20071027 | 4.46266   | 181.40590 | 195.57607 | 4.70267  | 0.2466334 | 2.2726291 | 151 | 5 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128705 2000 QR <sub>172</sub> |
| 2000 QE <sub>174</sub> | 17.2 | 0.15 | 20071027 | 15.77007  | 65.73582  | 309.06924 | 5.19787  | 0.2736883 | 2.2595617 | 84  | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128705 2000 QE <sub>174</sub> |
| 2000 QA <sub>180</sub> | 15.9 | 0.15 | 20071027 | 325.83242 | 95.57734  | 354.84928 | 23.29828 | 0.3055477 | 2.2608917 | 189 | 3 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128705 2000 QA <sub>180</sub> |
| 2000 QJ <sub>184</sub> | 17.3 | 0.15 | 20071027 | 38.85601  | 278.04281 | 58.91950  | 3.64829  | 0.2425633 | 2.2519399 | 76  | 5 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128705 2000 QJ <sub>184</sub> |
| 2000 QC <sub>188</sub> | 17.0 | 0.15 | 20071027 | 73.19717  | 197.12557 | 109.62063 | 4.51897  | 0.2491043 | 2.2266355 | 68  | 3 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128705 2000 QC <sub>188</sub> |
| 2000 QW <sub>189</sub> | 16.7 | 0.15 | 20071027 | 44.11072  | 319.10218 | 76.16017  | 4.49562  | 0.1156010 | 2.1607823 | 93  | 6 | 1996-2007 | 0.56 | M-v | 2 | MPC | 128705 2000 QW <sub>189</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 QQ <sub>198</sub> | 17.2 | 0.15 | 20071027 | 31.51560  | 296.81388 | 42.47797  | 2.94932  | 0.1970959 | 2.2728003 | 103 | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128706 2000 QQ <sub>198</sub> |
| 2000 QV <sub>226</sub> | 16.4 | 0.15 | 20071027 | 347.52277 | 114.51065 | 251.77960 | 8.83250  | 0.1527206 | 2.3127683 | 63  | 3 | 2000-2007 | 0.58 | M-v | 2 | MPC | 126574 2000 QV <sub>226</sub> |
| 2000 QP <sub>228</sub> | 16.5 | 0.15 | 20071027 | 128.75568 | 81.35967  | 187.81876 | 4.27954  | 0.1773531 | 2.1896760 | 117 | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128706 2000 QP <sub>228</sub> |
| 2000 QS <sub>254</sub> | 16.5 | 0.15 | 20071027 | 38.53328  | 287.91552 | 82.73168  | 7.41191  | 0.2038695 | 2.2364316 | 46  | 3 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128706 2000 QS <sub>254</sub> |
| 2000 RD <sub>8</sub>   | 15.7 | 0.15 | 20071027 | 337.02670 | 111.66944 | 323.72667 | 23.34259 | 0.2925960 | 2.2609279 | 119 | 3 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128706 2000 RD <sub>8</sub>   |
| 2000 RX <sub>11</sub>  | 17.4 | 0.15 | 20071027 | 6.36721   | 173.36446 | 185.36279 | 2.48166  | 0.2416320 | 2.3219416 | 143 | 4 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128706 2000 RX <sub>11</sub>  |
| 2000 RV <sub>16</sub>  | 17.3 | 0.15 | 20071027 | 63.23762  | 55.95014  | 266.26869 | 5.02721  | 0.2341534 | 2.2375323 | 58  | 3 | 1999-2007 | 0.62 | M-v | 2 | MPC | 127873 2000 RV <sub>16</sub>  |
| 2000 RJ <sub>21</sub>  | 16.5 | 0.15 | 20071027 | 58.00546  | 98.55860  | 232.69321 | 4.70863  | 0.1714119 | 2.2466674 | 123 | 3 | 1990-2007 | 0.44 | M-v | 2 | MPC | 128706 2000 RJ <sub>21</sub>  |
| 2000 RF <sub>25</sub>  | 16.8 | 0.15 | 20071027 | 106.00910 | 55.79988  | 228.03857 | 9.18731  | 0.1602580 | 2.2165702 | 68  | 5 | 1997-2007 | 0.55 | M-v | 1 | MPC | 128706 2000 RF <sub>25</sub>  |
| 2000 RX <sub>27</sub>  | 17.0 | 0.15 | 20071027 | 21.26406  | 82.34604  | 310.62809 | 3.57590  | 0.1534286 | 2.2334941 | 50  | 4 | 1995-2007 | 0.54 | M-v | 1 | MPC | 77471 2000 RX <sub>27</sub>   |
| 2000 RJ <sub>28</sub>  | 16.8 | 0.15 | 20071027 | 78.21108  | 355.48600 | 333.47445 | 5.10911  | 0.2371340 | 2.2135260 | 53  | 4 | 2000-2007 | 0.49 | M-v | 3 | MPC | 74014 2000 RJ <sub>28</sub>   |
| 2000 RM <sub>31</sub>  | 16.5 | 0.15 | 20071027 | 31.30230  | 122.50697 | 248.05445 | 3.86688  | 0.1884247 | 2.2515845 | 122 | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128706 2000 RM <sub>31</sub>  |
| 2000 RV <sub>36</sub>  | 16.3 | 0.15 | 20071027 | 7.50212   | 357.34886 | 16.78354  | 25.88878 | 0.2112768 | 2.3277285 | 168 | 4 | 1995-2007 | 0.46 | M-v | 1 | MPC | 128706 2000 RV <sub>36</sub>  |
| 2000 RO <sub>37</sub>  | 15.5 | 0.15 | 20071027 | 352.55470 | 47.32024  | 315.38064 | 7.90505  | 0.1803735 | 2.4035960 | 156 | 3 | 2000-2007 | 0.56 | M-v | 2 | MPC | 128706 2000 RO <sub>37</sub>  |
| 2000 RP <sub>40</sub>  | 17.8 | 0.15 | 20071027 | 90.76094  | 38.39312  | 287.05734 | 6.14206  | 0.2542015 | 2.1905063 | 28  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 103178 2000 RP <sub>40</sub>  |
| 2000 RX <sub>57</sub>  | 16.8 | 0.15 | 20071027 | 188.93433 | 231.05952 | 345.35567 | 6.84089  | 0.0324892 | 2.2508998 | 79  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPC | 50486 2000 RX <sub>57</sub>   |
| 2000 RP <sub>73</sub>  | 16.9 | 0.15 | 20071027 | 354.68275 | 18.99239  | 5.02366   | 5.04218  | 0.2361299 | 2.3196076 | 141 | 4 | 1993-2007 | 0.45 | M-v | 2 | MPC | 128706 2000 RP <sub>73</sub>  |
| 2000 RK <sub>75</sub>  | 16.4 | 0.15 | 20071027 | 42.91188  | 8.99929   | 334.86898 | 10.08733 | 0.1610293 | 2.2745030 | 59  | 3 | 2000-2007 | 0.59 | M-v | 3 | MPC | 29300 2000 RK <sub>75</sub>   |
| 2000 RK <sub>80</sub>  | 16.9 | 0.15 | 20071027 | 347.00067 | 174.41623 | 207.97297 | 6.87293  | 0.1181446 | 2.3047573 | 37  | 2 | 2000-2007 | 0.55 | M-v | 4 | MPC | 128706 2000 RK <sub>80</sub>  |
| 2000 RH <sub>87</sub>  | 17.1 | 0.15 | 20071027 | 68.63249  | 333.99655 | 347.94385 | 5.74401  | 0.2019108 | 2.2423562 | 57  | 3 | 1999-2007 | 0.59 | M-v | 3 | MPC | 128706 2000 RH <sub>87</sub>  |
| 2000 RD <sub>90</sub>  | 16.8 | 0.15 | 20071027 | 12.37752  | 94.01547  | 312.27337 | 4.71100  | 0.1449884 | 2.2222377 | 66  | 4 | 1997-2007 | 0.56 | M-v | 1 | MPC | 77472 2000 RD <sub>90</sub>   |
| 2000 RJ <sub>91</sub>  | 16.9 | 0.15 | 20071027 | 55.34912  | 37.77875  | 293.51308 | 6.43034  | 0.1917473 | 2.2610322 | 62  | 5 | 1993-2007 | 0.58 | M-v | 2 | MPC | 128706 2000 RJ <sub>91</sub>  |
| 2000 RO <sub>93</sub>  | 17.3 | 0.15 | 20071027 | 37.62885  | 294.79719 | 32.62475  | 2.60589  | 0.2231378 | 2.2927517 | 123 | 4 | 1993-2007 | 0.51 | M-v | 3 | MPC | 128707 2000 RO <sub>93</sub>  |
| 2000 RS <sub>96</sub>  | 17.2 | 0.15 | 20071027 | 1.06245   | 115.96374 | 277.95067 | 3.02789  | 0.2655958 | 2.2981792 | 140 | 2 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128707 2000 RS <sub>96</sub>  |
| 2000 RH <sub>104</sub> | 15.8 | 0.15 | 20071027 | 68.01970  | 110.50128 | 255.50641 | 7.12138  | 0.2497717 | 2.1931879 | 126 | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128707 2000 RH <sub>104</sub> |
| 2000 RJ <sub>106</sub> | 16.9 | 0.15 | 20071027 | 6.74206   | 177.05273 | 242.59613 | 6.03585  | 0.1442164 | 2.2067387 | 35  | 4 | 1998-2007 | 0.57 | M-v | 1 | MPC | 74813 2000 RJ <sub>106</sub>  |
| 2000 SF                | 14.8 | 0.15 | 20071027 | 351.32330 | 57.69229  | 340.09605 | 22.40347 | 0.3133518 | 2.3359794 | 226 | 3 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128707 2000 SF                |
| 2000 SS <sub>10</sub>  | 17.3 | 0.15 | 20071027 | 14.88693  | 65.11999  | 341.25688 | 4.01423  | 0.1628486 | 2.2378061 | 32  | 3 | 2000-2007 | 0.41 | M-v | 4 | MPC | 88738 2000 SS <sub>10</sub>   |
| 2000 SN <sub>17</sub>  | 16.6 | 0.15 | 20071027 | 5.09387   | 76.28851  | 340.91450 | 5.91458  | 0.1457565 | 2.2285024 | 71  | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 77473 2000 SN <sub>17</sub>   |
| 2000 SS <sub>17</sub>  | 16.6 | 0.15 | 20071027 | 67.63280  | 90.63074  | 201.48865 | 6.69860  | 0.1004424 | 2.3078464 | 84  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128707 2000 SS <sub>17</sub>  |
| 2000 SF <sub>19</sub>  | 17.5 | 0.15 | 20071027 | 51.83038  | 5.96503   | 323.62575 | 2.93419  | 0.1910447 | 2.2631971 | 51  | 3 | 2000-2007 | 0.58 | M-v | 4 | MPC | 127873 2000 SF <sub>19</sub>  |
| 2000 SQ <sub>19</sub>  | 17.4 | 0.15 | 20071027 | 19.45954  | 83.56498  | 300.57321 | 5.33102  | 0.2329828 | 2.2637901 | 64  | 5 | 1993-2007 | 0.60 | M-v | 1 | MPC | 77473 2000 SQ <sub>19</sub>   |
| 2000 ST <sub>24</sub>  | 16.5 | 0.15 | 20071027 | 39.18431  | 1.23515   | 2.39460   | 8.76823  | 0.1442365 | 2.2601500 | 105 | 3 | 2000-2007 | 0.58 | M-v | 2 | MPC | 128707 2000 ST <sub>24</sub>  |
| 2000 SC <sub>26</sub>  | 17.6 | 0.15 | 20071027 | 38.14317  | 119.04824 | 225.35358 | 8.83680  | 0.2628289 | 2.2552263 | 61  | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 127873 2000 SC <sub>26</sub>  |
| 2000 SS <sub>26</sub>  | 17.3 | 0.15 | 20071027 | 8.05627   | 141.31520 | 269.46998 | 4.40349  | 0.1210036 | 2.2115610 | 60  | 4 | 2000-2007 | 0.64 | M-v | 1 | MPC | 110745 2000 SS <sub>26</sub>  |
| 2000 SZ <sub>27</sub>  | 17.4 | 0.15 | 20071027 | 89.19650  | 16.81746  | 315.48826 | 4.03018  | 0.2025445 | 2.1862120 | 52  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 77473 2000 SZ <sub>27</sub>   |
| 2000 SZ <sub>28</sub>  | 17.9 | 0.15 | 20071027 | 356.01133 | 164.86540 | 214.85068 | 9.19137  | 0.3153917 | 2.3261808 | 104 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128707 2000 SZ <sub>28</sub>  |
| 2000 SZ <sub>34</sub>  | 16.7 | 0.15 | 20071027 | 353.84816 | 349.25400 | 86.28757  | 1.59696  | 0.2107735 | 2.2280979 | 80  | 3 | 2000-2007 | 0.59 | M-v | 3 | MPC | 74815 2000 SZ <sub>34</sub>   |
| 2000 SG <sub>35</sub>  | 15.2 | 0.15 | 20071027 | 86.76779  | 224.25230 | 125.17360 | 2.15852  | 0.1394316 | 2.3274311 | 90  | 6 | 2000-2007 | 0.51 | M-v | 0 | MPC | 122674 2000 SG <sub>35</sub>  |
| 2000 SH <sub>40</sub>  | 16.9 | 0.15 | 20071027 | 17.01860  | 335.45738 | 58.09715  | 4.10564  | 0.1785124 | 2.2567521 | 46  | 3 | 2000-2007 | 0.60 | M-v | 3 | MPC | 128707 2000 SH <sub>40</sub>  |
| 2000 SQ <sub>40</sub>  | 16.2 | 0.15 | 20071027 | 80.97019  | 354.41497 | 325.36348 | 9.82819  | 0.1360997 | 2.2409297 | 65  | 4 | 2000-2007 | 0.62 | M-v | 3 | MPC | 128707 2000 SQ <sub>40</sub>  |
| 2000 SB <sub>49</sub>  | 17.4 | 0.15 | 20071027 | 6.34131   | 171.44617 | 220.59036 | 4.65831  | 0.1457359 | 2.2549580 | 65  | 3 | 2000-2007 | 0.52 | M-v | 3 | MPC | 128707 2000 SB <sub>49</sub>  |
| 2000 SE <sub>49</sub>  | 15.3 | 0.15 | 20071027 | 85.10749  | 70.07830  | 324.08295 | 5.29593  | 0.1367368 | 3.0652267 | 72  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 116143 2000 SE <sub>49</sub>  |
| 2000 SQ <sub>50</sub>  | 15.1 | 0.15 | 20071027 | 112.02909 | 64.16390  | 274.62145 | 4.21154  | 0.1212800 | 3.1507281 | 81  | 5 | 2000-2007 | 0.54 | M-v | 0 | MPC | 128707 2000 SQ <sub>50</sub>  |
| 2000 SK <sub>51</sub>  | 17.2 | 0.15 | 20071027 | 351.57552 | 116.54325 | 281.90908 | 5.17825  | 0.1794727 | 2.2789406 | 41  | 3 | 2000-2007 | 0.64 | M-v | 3 | MPC | 128707 2000 SK <sub>51</sub>  |
| 2000 SK <sub>53</sub>  | 17.8 | 0.15 | 20071027 | 17.84917  | 73.32945  | 269.56078 | 0.89305  | 0.2119068 | 2.3084975 | 97  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128707 2000 SK <sub>53</sub>  |
| 2000 SR <sub>59</sub>  | 17.1 | 0.15 | 20071027 | 344.17402 | 168.54093 | 246.01801 | 1.74746  | 0.1638863 | 2.2800048 | 113 | 2 | 2000-2007 | 0.57 | M-v | 4 | MPC | 128707 2000 SR <sub>59</sub>  |
| 2000 SU <sub>60</sub>  | 17.1 | 0.15 | 20071027 | 25.81390  | 343.12998 | 24.48651  | 7.49759  | 0.1513387 | 2.2687958 | 140 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128707 2000 SU <sub>60</sub>  |
| 2000 SV <sub>60</sub>  | 16.4 | 0.15 | 20071027 | 359.64666 | 237.89941 | 164.41010 | 5.84474  | 0.1124010 | 2.2668443 | 85  | 6 | 1995-2007 | 0.57 | M-v | 1 | MPC | 128707 2000 SV <sub>60</sub>  |
| 2000 SE <sub>63</sub>  | 16.6 | 0.15 | 20071027 | 356.40009 | 357.27176 | 43.36659  | 3.31827  | 0.2409175 | 2.2882435 | 198 | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128707 2000 SE <sub>63</sub>  |
| 2000 SD <sub>67</sub>  | 17.1 | 0.15 | 20071027 | 35.80317  | 305.04003 | 5.53786   | 4.37785  | 0.2383867 | 2.3240408 | 120 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128707 2000 SD <sub>67</sub>  |
| 2000 SQ <sub>69</sub>  | 16.8 | 0.15 | 20071027 | 30.98799  | 332.36081 | 39.68010  | 7.69437  | 0.1241275 | 2.2582425 | 61  | 2 | 2000-2007 | 0.50 | M-v | 3 | MPC | 127874 2000 SQ <sub>69</sub>  |
| 2000 SM <sub>70</sub>  | 16.3 | 0.15 | 20071027 | 65.31013  | 239.06964 | 61.25521  | 5.46794  | 0.2055921 | 2.2927315 | 165 | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128707 2000 SM <sub>70</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 SS <sub>72</sub>  | 16.9 | 0.15 | 20071027 | 3.47875   | 275.72513 | 133.71243 | 4.86942  | 0.2201036 | 2.2668864 | 56  | 3 | 2000-2007 | 0.52 | M-v | 3 | MPC | 128708 2000 SS <sub>72</sub>  |
| 2000 SB <sub>73</sub>  | 16.2 | 0.15 | 20071027 | 70.14065  | 310.78870 | 41.97425  | 4.28671  | 0.2170460 | 2.2072982 | 94  | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128708 2000 SB <sub>73</sub>  |
| 2000 SU <sub>75</sub>  | 16.9 | 0.15 | 20071027 | 15.15430  | 314.98904 | 30.65857  | 11.50731 | 0.2514075 | 2.3273029 | 85  | 3 | 1993-2007 | 0.55 | M-v | 2 | MPC | 128708 2000 SU <sub>75</sub>  |
| 2000 SL <sub>82</sub>  | 16.5 | 0.15 | 20071027 | 21.37877  | 308.53612 | 89.99851  | 3.23086  | 0.2097343 | 2.2444155 | 48  | 4 | 1995-2007 | 0.69 | M-v | 2 | MPC | 74820 2000 SL <sub>82</sub>   |
| 2000 SO <sub>83</sub>  | 18.4 | 0.15 | 20071027 | 31.87069  | 299.26720 | 37.09178  | 5.62121  | 0.2804830 | 2.2979251 | 58  | 2 | 2000-2007 | 0.48 | M-v | 4 | MPC | 127875 2000 SO <sub>83</sub>  |
| 2000 SX <sub>86</sub>  | 16.4 | 0.15 | 20071027 | 38.90388  | 286.29426 | 51.32388  | 6.82466  | 0.2467590 | 2.2927743 | 103 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128708 2000 SX <sub>86</sub>  |
| 2000 SA <sub>87</sub>  | 17.3 | 0.15 | 20071027 | 29.33795  | 325.26404 | 51.68901  | 8.69035  | 0.1450976 | 2.2651128 | 100 | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128708 2000 SA <sub>87</sub>  |
| 2000 SW <sub>91</sub>  | 15.1 | 0.15 | 20071027 | 123.97106 | 37.01373  | 297.50326 | 11.03682 | 0.1115426 | 3.0853419 | 53  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 117919 2000 SW <sub>91</sub>  |
| 2000 SK <sub>93</sub>  | 17.2 | 0.15 | 20071027 | 17.48082  | 89.34994  | 284.89378 | 5.33736  | 0.1939409 | 2.2637962 | 103 | 3 | 2000-2007 | 0.63 | M-v | 3 | MPC | 128708 2000 SK <sub>93</sub>  |
| 2000 SX <sub>93</sub>  | 16.9 | 0.15 | 20071027 | 66.05611  | 86.84662  | 294.81955 | 4.75426  | 0.1271902 | 2.1607573 | 37  | 4 | 2000-2007 | 0.66 | M-v | 2 | MPC | 124312 2000 SX <sub>93</sub>  |
| 2000 SH <sub>96</sub>  | 14.4 | 0.15 | 20071027 | 139.06797 | 355.42345 | 291.40457 | 12.08342 | 0.0898052 | 3.2146114 | 50  | 5 | 2000-2007 | 0.66 | M-v | 1 | MPC | 114604 2000 SH <sub>96</sub>  |
| 2000 SE <sub>98</sub>  | 17.3 | 0.15 | 20071027 | 13.66258  | 174.45083 | 208.64107 | 4.61475  | 0.2630115 | 2.2733828 | 99  | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128708 2000 SE <sub>98</sub>  |
| 2000 SX <sub>101</sub> | 17.3 | 0.15 | 20071027 | 341.51505 | 92.19012  | 305.54724 | 1.49962  | 0.2074028 | 2.3182029 | 95  | 4 | 1993-2007 | 0.50 | M-v | 2 | MPC | 128708 2000 SX <sub>101</sub> |
| 2000 SS <sub>102</sub> | 17.1 | 0.15 | 20071027 | 14.08563  | 151.73738 | 214.14466 | 3.03905  | 0.1810265 | 2.2963772 | 90  | 2 | 2000-2007 | 0.45 | M-v | 3 | MPC | 128708 2000 SS <sub>102</sub> |
| 2000 SD <sub>104</sub> | 17.3 | 0.15 | 20071027 | 62.74425  | 323.28660 | 356.44584 | 2.91107  | 0.2087322 | 2.2620805 | 44  | 2 | 2000-2007 | 0.58 | M-v | 3 | MPC | 127875 2000 SD <sub>104</sub> |
| 2000 SF <sub>106</sub> | 17.5 | 0.15 | 20071027 | 31.61270  | 144.80755 | 207.24393 | 2.26874  | 0.2084353 | 2.2803718 | 97  | 4 | 2000-2007 | 0.42 | M-v | 1 | MPC | 128708 2000 SF <sub>106</sub> |
| 2000 SW <sub>109</sub> | 16.8 | 0.15 | 20071027 | 21.50616  | 147.47937 | 196.81261 | 6.14002  | 0.2034410 | 2.3166945 | 164 | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128708 2000 SW <sub>109</sub> |
| 2000 SA <sub>114</sub> | 16.4 | 0.15 | 20071027 | 77.61595  | 279.78384 | 28.98779  | 6.84229  | 0.1733056 | 2.2644703 | 123 | 3 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128708 2000 SA <sub>114</sub> |
| 2000 SH <sub>116</sub> | 16.5 | 0.15 | 20071027 | 17.33817  | 310.07042 | 35.31958  | 6.56409  | 0.2069687 | 2.3296989 | 152 | 2 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128708 2000 SH <sub>116</sub> |
| 2000 SQ <sub>124</sub> | 16.3 | 0.15 | 20071027 | 20.60632  | 338.80804 | 41.00351  | 7.47132  | 0.1317902 | 2.2845963 | 188 | 4 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128708 2000 SQ <sub>124</sub> |
| 2000 SN <sub>126</sub> | 17.4 | 0.15 | 20071027 | 3.97104   | 226.25524 | 158.00450 | 6.80287  | 0.2697660 | 2.3144742 | 85  | 2 | 2000-2007 | 0.56 | M-v | 3 | MPC | 128708 2000 SN <sub>126</sub> |
| 2000 SX <sub>128</sub> | 15.8 | 0.15 | 20071027 | 353.85670 | 177.47972 | 253.04443 | 22.26453 | 0.2852282 | 2.2469219 | 74  | 2 | 2000-2007 | 0.47 | M-v | 2 | MPC | 127875 2000 SX <sub>128</sub> |
| 2000 SA <sub>133</sub> | 16.3 | 0.15 | 20071027 | 27.74028  | 63.59840  | 283.20856 | 6.88404  | 0.2541744 | 2.2808229 | 107 | 3 | 2000-2007 | 0.46 | M-v | 3 | MPC | 128708 2000 SA <sub>133</sub> |
| 2000 SK <sub>133</sub> | 16.3 | 0.15 | 20071027 | 332.91820 | 189.35784 | 256.57474 | 7.55774  | 0.0268749 | 2.2109917 | 78  | 6 | 1997-2007 | 0.63 | M-v | 1 | MPC | 128708 2000 SK <sub>133</sub> |
| 2000 SZ <sub>137</sub> | 16.8 | 0.15 | 20071027 | 10.41045  | 54.06433  | 332.94032 | 6.12918  | 0.1828072 | 2.2775188 | 102 | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 128708 2000 SZ <sub>137</sub> |
| 2000 SE <sub>138</sub> | 16.7 | 0.15 | 20071027 | 40.79388  | 138.75189 | 234.02846 | 5.83004  | 0.1243742 | 2.2368772 | 55  | 4 | 2000-2007 | 0.59 | M-v | 1 | MPC | 72153 2000 SE <sub>138</sub>  |
| 2000 SG <sub>139</sub> | 16.5 | 0.15 | 20071027 | 34.62701  | 125.10596 | 223.54825 | 6.12050  | 0.1643706 | 2.2848117 | 109 | 4 | 1986-2007 | 0.50 | M-v | 2 | MPC | 128708 2000 SG <sub>139</sub> |
| 2000 SO <sub>139</sub> | 14.5 | 0.15 | 20071027 | 63.11332  | 80.24246  | 346.95492 | 15.37730 | 0.2519961 | 3.1710883 | 101 | 5 | 2000-2007 | 0.52 | M-v | 0 | MPC | 112741 2000 SO <sub>139</sub> |
| 2000 SS <sub>139</sub> | 16.7 | 0.15 | 20071027 | 2.77343   | 177.50558 | 232.81534 | 5.91726  | 0.1193679 | 2.2565398 | 112 | 6 | 1999-2007 | 0.55 | M-v | 1 | MPC | 128708 2000 SS <sub>139</sub> |
| 2000 ST <sub>139</sub> | 16.4 | 0.15 | 20071027 | 14.35493  | 70.68700  | 334.87088 | 6.19878  | 0.1007618 | 2.2393909 | 73  | 3 | 2000-2007 | 0.49 | M-v | 3 | MPC | 87399 2000 ST <sub>139</sub>  |
| 2000 SD <sub>141</sub> | 16.8 | 0.15 | 20071027 | 4.90893   | 70.07498  | 322.97414 | 4.09017  | 0.1504692 | 2.2829306 | 108 | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 128708 2000 SD <sub>141</sub> |
| 2000 SC <sub>145</sub> | 17.0 | 0.15 | 20071027 | 64.08514  | 89.54187  | 228.42884 | 2.28605  | 0.2853168 | 2.2562158 | 45  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 124313 2000 SC <sub>145</sub> |
| 2000 SF <sub>145</sub> | 16.5 | 0.15 | 20071027 | 23.56407  | 175.38997 | 220.40869 | 3.57007  | 0.1596350 | 2.2428172 | 48  | 5 | 2000-2007 | 0.62 | M-v | 1 | MPC | 77475 2000 SF <sub>145</sub>  |
| 2000 SS <sub>146</sub> | 17.0 | 0.15 | 20071027 | 41.83032  | 147.09079 | 207.17939 | 5.38399  | 0.1734645 | 2.2683022 | 73  | 4 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128708 2000 SS <sub>146</sub> |
| 2000 ST <sub>154</sub> | 16.9 | 0.15 | 20071027 | 353.72654 | 8.67184   | 38.52797  | 8.21435  | 0.1561238 | 2.3002693 | 138 | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128708 2000 ST <sub>154</sub> |
| 2000 SY <sub>155</sub> | 16.3 | 0.15 | 20071027 | 7.69896   | 355.71313 | 49.84922  | 6.18961  | 0.2779555 | 2.2841941 | 166 | 5 | 1991-2007 | 0.51 | M-v | 1 | MPC | 128709 2000 SY <sub>155</sub> |
| 2000 SD <sub>159</sub> | 16.6 | 0.15 | 20071027 | 268.98354 | 290.20197 | 185.98912 | 4.86804  | 0.1723035 | 2.3421071 | 58  | 6 | 1997-2007 | 0.46 | M-v | 1 | MPC | 128709 2000 SD <sub>159</sub> |
| 2000 SR <sub>162</sub> | 16.7 | 0.15 | 20071027 | 43.34245  | 226.81908 | 135.92928 | 8.56387  | 0.1588638 | 2.2358637 | 40  | 5 | 1995-2007 | 0.62 | M-v | 1 | MPC | 128709 2000 SR <sub>162</sub> |
| 2000 SH <sub>165</sub> | 16.5 | 0.15 | 20071027 | 30.57507  | 47.59373  | 314.35094 | 9.08179  | 0.0455615 | 2.2691447 | 47  | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128709 2000 SH <sub>165</sub> |
| 2000 SU <sub>168</sub> | 17.1 | 0.15 | 20071027 | 9.69520   | 14.33292  | 351.42577 | 5.81827  | 0.1850065 | 2.3180856 | 87  | 3 | 2000-2007 | 0.51 | M-v | 3 | MPC | 128709 2000 SU <sub>168</sub> |
| 2000 SY <sub>173</sub> | 14.5 | 0.15 | 20071027 | 33.52963  | 67.53496  | 327.03944 | 15.49593 | 0.1872700 | 3.3973668 | 91  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 110747 2000 SY <sub>173</sub> |
| 2000 SE <sub>175</sub> | 16.5 | 0.15 | 20071027 | 296.99847 | 208.88752 | 227.90848 | 11.29405 | 0.2148174 | 2.3764714 | 67  | 4 | 1996-2007 | 0.50 | M-v | 2 | MPC | 99980 2000 SE <sub>175</sub>  |
| 2000 SV <sub>175</sub> | 15.5 | 0.15 | 20071027 | 29.13038  | 106.80238 | 250.76505 | 6.43641  | 0.1523874 | 2.2977538 | 145 | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128709 2000 SV <sub>175</sub> |
| 2000 SP <sub>176</sub> | 16.7 | 0.15 | 20071027 | 60.10444  | 109.47133 | 253.80765 | 5.68874  | 0.1967093 | 2.2258379 | 69  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 126577 2000 SP <sub>176</sub> |
| 2000 SZ <sub>177</sub> | 16.5 | 0.15 | 20071027 | 335.33381 | 100.88771 | 330.10159 | 4.30732  | 0.2239931 | 2.3108133 | 127 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128709 2000 SZ <sub>177</sub> |
| 2000 SG <sub>183</sub> | 17.4 | 0.15 | 20071027 | 22.32266  | 214.48381 | 162.01948 | 2.77247  | 0.2275116 | 2.2509833 | 44  | 2 | 2000-2007 | 0.49 | M-v | 3 | MPC | 127876 2000 SG <sub>183</sub> |
| 2000 SY <sub>185</sub> | 17.2 | 0.15 | 20071027 | 324.15430 | 267.69408 | 205.41472 | 3.31847  | 0.1806560 | 2.2238879 | 80  | 6 | 1997-2007 | 0.56 | M-v | 1 | MPC | 128709 2000 SY <sub>185</sub> |
| 2000 SF <sub>186</sub> | 18.2 | 0.15 | 20071027 | 18.84817  | 16.25288  | 5.81985   | 2.62815  | 0.1430199 | 2.2646128 | 32  | 2 | 2000-2007 | 0.28 | M-v | 3 | MPC | 127876 2000 SF <sub>186</sub> |
| 2000 ST <sub>186</sub> | 17.0 | 0.15 | 20071027 | 87.49011  | 20.16496  | 273.28128 | 5.64539  | 0.2390565 | 2.2404740 | 39  | 4 | 2000-2007 | 0.52 | M-v | 1 | MPC | 127876 2000 ST <sub>186</sub> |
| 2000 SD <sub>187</sub> | 16.9 | 0.15 | 20071027 | 39.48159  | 286.37063 | 72.74716  | 6.10796  | 0.2380502 | 2.2547742 | 46  | 3 | 2000-2007 | 0.43 | M-v | 3 | MPC | 99980 2000 SD <sub>187</sub>  |
| 2000 SF <sub>192</sub> | 16.8 | 0.15 | 20071027 | 28.74128  | 24.71196  | 0.87215   | 5.99383  | 0.1792377 | 2.2402646 | 62  | 3 | 2000-2007 | 0.63 | M-v | 3 | MPC | 128709 2000 SF <sub>192</sub> |
| 2000 SN <sub>196</sub> | 17.7 | 0.15 | 20071027 | 346.78065 | 238.35171 | 187.54482 | 2.95622  | 0.1201602 | 2.2397569 | 65  | 2 | 2000-2007 | 0.54 | M-v | 3 | MPC | 127876 2000 SN <sub>196</sub> |
| 2000 SR <sub>200</sub> | 15.6 | 0.15 | 20071027 | 83.68707  | 21.33280  | 5.64607   | 4.96363  | 0.1588915 | 3.1137280 | 87  | 5 | 2000-2007 | 0.43 | M-v | 0 | MPC | 116145 2000 SR <sub>200</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 SM <sub>208</sub> | 16.6 | 0.15 | 20071027 | 16.53995  | 70.60464  | 343.41366 | 4.28874  | 0.1133992 | 2.2018767 | 66  | 5 | 2000-2007 | 0.62 | M-v | 1 | MPC | 77476 2000 SM <sub>208</sub>  |
| 2000 SP <sub>217</sub> | 16.5 | 0.15 | 20071027 | 53.03728  | 275.95517 | 111.04560 | 5.69271  | 0.1549397 | 2.2035718 | 55  | 6 | 1995-2007 | 0.59 | M-v | 1 | MPC | 128709 2000 SP <sub>217</sub> |
| 2000 SL <sub>218</sub> | 16.8 | 0.15 | 20071027 | 58.13786  | 252.50674 | 61.65655  | 10.75572 | 0.2325932 | 2.2918046 | 94  | 3 | 2000-2007 | 0.58 | M-v | 2 | MPC | 128709 2000 SL <sub>218</sub> |
| 2000 SA <sub>224</sub> | 17.3 | 0.15 | 20071027 | 336.99648 | 220.27733 | 196.62149 | 4.60965  | 0.1691056 | 2.3059658 | 92  | 3 | 1998-2007 | 0.52 | M-v | 2 | MPC | 128709 2000 SA <sub>224</sub> |
| 2000 SU <sub>233</sub> | 17.0 | 0.15 | 20071027 | 38.93965  | 291.12794 | 74.82085  | 6.38890  | 0.1748534 | 2.2389985 | 60  | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128709 2000 SU <sub>233</sub> |
| 2000 SU <sub>234</sub> | 17.1 | 0.15 | 20071027 | 41.87237  | 72.74669  | 313.17948 | 2.02430  | 0.1185117 | 2.1846441 | 36  | 4 | 2000-2007 | 0.43 | M-v | 3 | MPC | 128709 2000 SU <sub>234</sub> |
| 2000 SN <sub>236</sub> | 17.1 | 0.15 | 20071027 | 64.94641  | 333.13014 | 15.68920  | 3.81160  | 0.1090618 | 2.2310116 | 37  | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 87402 2000 SN <sub>236</sub>  |
| 2000 SS <sub>236</sub> | 17.0 | 0.15 | 20071027 | 9.46769   | 10.29238  | 16.51351  | 7.20214  | 0.1726887 | 2.2852102 | 108 | 2 | 2000-2007 | 0.64 | M-v | 3 | MPC | 128709 2000 SS <sub>236</sub> |
| 2000 SM <sub>239</sub> | 17.1 | 0.15 | 20071027 | 53.74683  | 319.25664 | 13.69178  | 6.33143  | 0.1697868 | 2.2741739 | 65  | 4 | 1999-2007 | 0.58 | M-v | 2 | MPC | 128709 2000 SM <sub>239</sub> |
| 2000 SN <sub>239</sub> | 16.7 | 0.15 | 20071027 | 305.61630 | 283.70134 | 172.51931 | 2.21074  | 0.1544109 | 2.3067815 | 101 | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128709 2000 SN <sub>239</sub> |
| 2000 SN <sub>240</sub> | 16.7 | 0.15 | 20071027 | 344.29604 | 187.05934 | 225.98577 | 24.97640 | 0.2290152 | 2.2914423 | 93  | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128709 2000 SN <sub>240</sub> |
| 2000 SK <sub>245</sub> | 17.4 | 0.15 | 20071027 | 345.28416 | 41.84725  | 345.94933 | 2.25255  | 0.1813491 | 2.3103433 | 64  | 3 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128709 2000 SK <sub>245</sub> |
| 2000 SH <sub>246</sub> | 17.2 | 0.15 | 20071027 | 355.22996 | 289.99010 | 101.96552 | 3.46868  | 0.1814639 | 2.2891071 | 80  | 5 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128709 2000 SH <sub>246</sub> |
| 2000 SO <sub>248</sub> | 17.0 | 0.15 | 20071027 | 22.00786  | 311.32875 | 30.31952  | 7.37085  | 0.1426886 | 2.3108192 | 68  | 2 | 2000-2007 | 0.59 | M-v | 3 | MPC | 128709 2000 SO <sub>248</sub> |
| 2000 SZ <sub>249</sub> | 15.0 | 0.15 | 20071027 | 124.86546 | 268.09007 | 44.16859  | 5.69419  | 0.1461212 | 3.2094029 | 83  | 4 | 2000-2007 | 0.44 | M-v | 0 | MPC | 114605 2000 SZ <sub>249</sub> |
| 2000 SV <sub>250</sub> | 17.1 | 0.15 | 20071027 | 17.61729  | 297.49325 | 95.07486  | 2.86293  | 0.1226706 | 2.2468809 | 60  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128710 2000 SV <sub>250</sub> |
| 2000 SB <sub>251</sub> | 16.9 | 0.15 | 20071027 | 333.50442 | 23.96578  | 20.68034  | 7.31760  | 0.0986588 | 2.3090181 | 101 | 4 | 1995-2007 | 0.44 | M-v | 2 | MPC | 128710 2000 SB <sub>251</sub> |
| 2000 SG <sub>262</sub> | 15.6 | 0.15 | 20071027 | 151.43163 | 157.13420 | 146.90714 | 5.65026  | 0.2152008 | 3.0637664 | 73  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 90040 2000 SG <sub>262</sub>  |
| 2000 SV <sub>262</sub> | 15.2 | 0.15 | 20071027 | 117.09186 | 221.03061 | 117.33066 | 6.13554  | 0.2573776 | 3.1394903 | 63  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 124314 2000 SV <sub>262</sub> |
| 2000 SE <sub>263</sub> | 15.1 | 0.15 | 20071027 | 76.39747  | 32.53041  | 33.30638  | 10.41410 | 0.0642132 | 3.0036774 | 58  | 7 | 1995-2007 | 0.64 | M-v | 0 | MPC | 112742 2000 SE <sub>263</sub> |
| 2000 SW <sub>272</sub> | 17.2 | 0.15 | 20071027 | 83.50441  | 94.26963  | 219.47016 | 4.36384  | 0.1981286 | 2.2428883 | 66  | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128710 2000 SW <sub>272</sub> |
| 2000 SK <sub>282</sub> | 16.7 | 0.15 | 20071027 | 40.37285  | 109.73168 | 247.98336 | 5.83683  | 0.1399205 | 2.2481497 | 84  | 3 | 2000-2007 | 0.48 | M-v | 3 | MPC | 128710 2000 SK <sub>282</sub> |
| 2000 SL <sub>284</sub> | 16.9 | 0.15 | 20071027 | 24.51283  | 108.62410 | 272.08705 | 6.34837  | 0.1148208 | 2.2555792 | 48  | 3 | 2000-2007 | 0.53 | M-v | 3 | MPC | 127877 2000 SL <sub>284</sub> |
| 2000 SO <sub>284</sub> | 16.7 | 0.15 | 20071027 | 38.73187  | 70.36833  | 316.38076 | 4.80258  | 0.0996037 | 2.2125397 | 58  | 4 | 2000-2007 | 0.52 | M-v | 1 | MPC | 77477 2000 SO <sub>284</sub>  |
| 2000 SD <sub>289</sub> | 17.4 | 0.15 | 20071027 | 358.02994 | 79.02695  | 324.55222 | 3.81218  | 0.2419151 | 2.2764972 | 87  | 3 | 2000-2007 | 0.45 | M-v | 2 | MPC | 128710 2000 SD <sub>289</sub> |
| 2000 SS <sub>289</sub> | 17.0 | 0.15 | 20071027 | 37.63117  | 151.45789 | 245.26106 | 3.47165  | 0.1591800 | 2.2026561 | 55  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128710 2000 SS <sub>289</sub> |
| 2000 SZ <sub>289</sub> | 17.2 | 0.15 | 20071027 | 327.59082 | 191.99619 | 218.62596 | 4.47458  | 0.1573384 | 2.3227656 | 72  | 3 | 2000-2007 | 0.40 | M-v | 2 | MPC | 128710 2000 SZ <sub>289</sub> |
| 2000 SY <sub>290</sub> | 17.7 | 0.15 | 20071027 | 356.74480 | 101.48752 | 310.27336 | 3.20159  | 0.1933939 | 2.2677717 | 87  | 5 | 1993-2007 | 0.53 | M-v | 1 | MPC | 128710 2000 SY <sub>290</sub> |
| 2000 SM <sub>291</sub> | 17.6 | 0.15 | 20071027 | 88.05694  | 99.20256  | 233.25394 | 2.65969  | 0.1764706 | 2.1981308 | 35  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 102011 2000 SM <sub>291</sub> |
| 2000 SF <sub>293</sub> | 15.6 | 0.15 | 20071027 | 34.58583  | 48.34556  | 283.39431 | 6.99360  | 0.1770088 | 2.3362005 | 124 | 5 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128710 2000 SF <sub>293</sub> |
| 2000 SZ <sub>297</sub> | 17.1 | 0.15 | 20071027 | 21.30479  | 130.27767 | 229.41769 | 5.80432  | 0.2067293 | 2.2895482 | 117 | 3 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128710 2000 SZ <sub>297</sub> |
| 2000 SZ <sub>298</sub> | 15.0 | 0.15 | 20071027 | 80.66569  | 46.26227  | 341.33334 | 9.70785  | 0.2016780 | 3.1760365 | 55  | 3 | 2000-2007 | 0.53 | M-v | 3 | MPC | 113759 2000 SZ <sub>298</sub> |
| 2000 SE <sub>299</sub> | 16.7 | 0.15 | 20071027 | 0.62467   | 174.76926 | 229.83633 | 4.62926  | 0.1302932 | 2.2648440 | 98  | 2 | 2000-2007 | 0.45 | M-v | 3 | MPC | 127877 2000 SE <sub>299</sub> |
| 2000 SE <sub>305</sub> | 16.8 | 0.15 | 20071027 | 28.22188  | 53.25746  | 321.93211 | 5.17939  | 0.1829614 | 2.2643557 | 85  | 4 | 1995-2007 | 0.62 | M-v | 2 | MPC | 128710 2000 SE <sub>305</sub> |
| 2000 SR <sub>306</sub> | 17.0 | 0.15 | 20071027 | 13.12212  | 76.74847  | 328.30964 | 4.74953  | 0.1610651 | 2.2507286 | 52  | 4 | 1993-2007 | 0.51 | M-v | 2 | MPC | 77477 2000 SR <sub>306</sub>  |
| 2000 SZ <sub>306</sub> | 16.2 | 0.15 | 20071027 | 30.99847  | 142.00455 | 243.11614 | 4.34213  | 0.1757290 | 2.2476897 | 62  | 4 | 2000-2007 | 0.62 | M-v | 1 | MPC | 74033 2000 SZ <sub>306</sub>  |
| 2000 SO <sub>307</sub> | 17.0 | 0.15 | 20071027 | 46.73999  | 88.60087  | 294.01452 | 5.16440  | 0.1657229 | 2.2178983 | 46  | 3 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128710 2000 SO <sub>307</sub> |
| 2000 SV <sub>307</sub> | 16.8 | 0.15 | 20071027 | 18.47622  | 96.96553  | 274.08230 | 6.28264  | 0.2041187 | 2.2942644 | 76  | 2 | 2000-2007 | 0.52 | M-v | 4 | MPC | 127877 2000 SV <sub>307</sub> |
| 2000 SQ <sub>308</sub> | 17.1 | 0.15 | 20071027 | 13.23274  | 64.69497  | 294.40747 | 4.72750  | 0.1883978 | 2.3209147 | 111 | 4 | 1998-2007 | 0.62 | M-v | 2 | MPC | 128710 2000 SQ <sub>308</sub> |
| 2000 SU <sub>311</sub> | 14.6 | 0.15 | 20071027 | 117.53606 | 31.06033  | 323.74000 | 24.05732 | 0.2086763 | 3.0974374 | 82  | 4 | 2000-2007 | 0.51 | M-v | 2 | MPC | 87403 2000 SU <sub>311</sub>  |
| 2000 SU <sub>315</sub> | 17.3 | 0.15 | 20071027 | 60.79970  | 37.85373  | 288.62211 | 8.66437  | 0.2001703 | 2.2633846 | 46  | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 128710 2000 SU <sub>315</sub> |
| 2000 SP <sub>328</sub> | 16.9 | 0.15 | 20071027 | 56.49545  | 293.45179 | 63.60594  | 4.80514  | 0.1318624 | 2.2395046 | 35  | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128710 2000 SP <sub>328</sub> |
| 2000 SA <sub>334</sub> | 15.5 | 0.15 | 20071027 | 96.67282  | 290.55330 | 36.88101  | 8.76095  | 0.1980459 | 3.2333287 | 96  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 121760 2000 SA <sub>334</sub> |
| 2000 SG <sub>335</sub> | 16.4 | 0.15 | 20071027 | 352.59023 | 243.49031 | 150.23223 | 7.79622  | 0.2640063 | 2.3289656 | 78  | 2 | 2000-2007 | 0.55 | M-v | 2 | MPC | 126579 2000 SG <sub>335</sub> |
| 2000 SC <sub>340</sub> | 16.5 | 0.15 | 20071027 | 33.97026  | 261.93464 | 33.16370  | 5.62742  | 0.3275901 | 2.2996386 | 91  | 4 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128710 2000 SC <sub>340</sub> |
| 2000 SD <sub>342</sub> | 17.5 | 0.15 | 20071027 | 356.25076 | 234.48225 | 177.14925 | 2.76807  | 0.1799273 | 2.2543375 | 102 | 4 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128710 2000 SD <sub>342</sub> |
| 2000 SD <sub>344</sub> | 17.3 | 0.15 | 20071027 | 329.25587 | 196.71337 | 221.49373 | 4.52560  | 0.1655580 | 2.3264464 | 108 | 3 | 2000-2007 | 0.57 | M-v | 2 | MPC | 126579 2000 SD <sub>344</sub> |
| 2000 SD <sub>345</sub> | 16.0 | 0.15 | 20071027 | 193.27036 | 258.66006 | 263.07155 | 9.24925  | 0.0640610 | 2.3534603 | 44  | 5 | 2000-2007 | 0.60 | M-v | 1 | MPC | 110750 2000 SD <sub>345</sub> |
| 2000 SY <sub>345</sub> | 17.4 | 0.15 | 20071027 | 38.71044  | 64.51704  | 294.15288 | 3.11441  | 0.1171232 | 2.2381025 | 62  | 6 | 1995-2007 | 0.46 | M-v | 1 | MPC | 128710 2000 SY <sub>345</sub> |
| 2000 SF <sub>351</sub> | 16.7 | 0.15 | 20071027 | 49.80367  | 243.89027 | 95.80984  | 9.24858  | 0.2468994 | 2.2531296 | 44  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128711 2000 SF <sub>351</sub> |
| 2000 ST <sub>356</sub> | 16.6 | 0.15 | 20071027 | 47.07291  | 313.06616 | 43.12826  | 6.69473  | 0.2391166 | 2.2148699 | 51  | 6 | 1997-2007 | 0.50 | M-v | 1 | MPC | 102012 2000 ST <sub>356</sub> |
| 2000 SY <sub>363</sub> | 16.5 | 0.15 | 20071027 | 85.06130  | 231.13863 | 74.36219  | 5.70741  | 0.1666398 | 2.2183662 | 69  | 6 | 1997-2007 | 0.59 | M-v | 1 | MPC | 128711 2000 SY <sub>363</sub> |
| 2000 SF <sub>367</sub> | 14.8 | 0.15 | 20071027 | 78.48679  | 94.03213  | 235.36315 | 6.79498  | 0.1988086 | 3.3941709 | 59  | 4 | 2000-2007 | 0.45 | M-v | 0 | MPC | 110750 2000 SF <sub>367</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2000 SC <sub>372</sub> | 16.9 | 0.15 | 20071027 | 57.20708  | 211.00331 | 116.52828 | 4.96676  | 0.2627170 | 2.2602181 | 45  | 4 | 2000-2007 | 0.75 | M-v | 1 | MP | 128711 2000 SC <sub>372</sub> |
| 2000 TT <sub>5</sub>   | 17.0 | 0.15 | 20071027 | 332.10212 | 262.04350 | 176.29601 | 5.94325  | 0.0638966 | 2.2481654 | 42  | 4 | 2000-2007 | 0.55 | M-v | 1 | MP | 128711 2000 TT <sub>5</sub>   |
| 2000 TB <sub>11</sub>  | 17.4 | 0.15 | 20071027 | 4.67520   | 18.16409  | 18.88340  | 5.75099  | 0.1274258 | 2.2758882 | 72  | 2 | 2000-2007 | 0.42 | M-v | 3 | MP | 128711 2000 TB <sub>11</sub>  |
| 2000 TU <sub>11</sub>  | 15.7 | 0.15 | 20071027 | 181.31465 | 278.90090 | 27.67570  | 1.92725  | 0.0830221 | 3.0235906 | 47  | 5 | 2000-2007 | 0.41 | M-v | 1 | MP | 116146 2000 TU <sub>11</sub>  |
| 2000 TJ <sub>12</sub>  | 16.6 | 0.15 | 20071027 | 45.16622  | 275.23343 | 21.45682  | 5.44209  | 0.2431491 | 2.3378486 | 103 | 5 | 1993-2007 | 0.59 | M-v | 1 | MP | 126579 2000 TJ <sub>12</sub>  |
| 2000 TJ <sub>16</sub>  | 17.0 | 0.15 | 20071027 | 346.49106 | 11.50061  | 36.74467  | 5.37276  | 0.2139742 | 2.3107852 | 119 | 3 | 2000-2007 | 0.46 | M-v | 2 | MP | 128711 2000 TJ <sub>16</sub>  |
| 2000 TZ <sub>22</sub>  | 17.1 | 0.15 | 20071027 | 15.66865  | 216.87689 | 190.74259 | 3.20564  | 0.0969189 | 2.2260606 | 42  | 4 | 2000-2007 | 0.37 | M-v | 2 | MP | 74838 2000 TZ <sub>22</sub>   |
| 2000 TT <sub>26</sub>  | 17.6 | 0.15 | 20071027 | 5.42190   | 359.53442 | 43.25960  | 6.26707  | 0.2402766 | 2.2670228 | 48  | 2 | 2000-2007 | 0.49 | M-v | 2 | MP | 127879 2000 TT <sub>26</sub>  |
| 2000 TU <sub>35</sub>  | 16.7 | 0.15 | 20071027 | 291.03931 | 142.27360 | 333.88179 | 1.67207  | 0.1933599 | 2.3056936 | 133 | 5 | 1998-2007 | 0.54 | M-v | 1 | MP | 128711 2000 TU <sub>35</sub>  |
| 2000 TV <sub>36</sub>  | 17.3 | 0.15 | 20071027 | 36.21012  | 275.76793 | 104.48224 | 3.47407  | 0.1102064 | 2.2476003 | 34  | 4 | 2000-2007 | 0.59 | M-v | 1 | MP | 128711 2000 TV <sub>36</sub>  |
| 2000 TC <sub>37</sub>  | 17.3 | 0.15 | 20071027 | 188.27297 | 90.65644  | 147.93188 | 2.03737  | 0.1069509 | 2.1658107 | 40  | 5 | 2000-2007 | 0.48 | M-v | 1 | MP | 74036 2000 TC <sub>37</sub>   |
| 2000 TM <sub>46</sub>  | 15.3 | 0.15 | 20071027 | 247.12112 | 101.74334 | 154.52490 | 2.53110  | 0.0425567 | 2.9480342 | 83  | 6 | 2000-2007 | 0.64 | M-v | 0 | MP | 122677 2000 TM <sub>46</sub>  |
| 2000 TU <sub>48</sub>  | 16.1 | 0.15 | 20071027 | 13.18605  | 348.83548 | 27.35167  | 26.53292 | 0.2301818 | 2.2888538 | 168 | 2 | 2000-2007 | 0.48 | M-v | 2 | MP | 128711 2000 TU <sub>48</sub>  |
| 2000 TC <sub>52</sub>  | 15.9 | 0.15 | 20071027 | 127.51890 | 342.34350 | 18.45557  | 10.16600 | 0.0694926 | 3.0830985 | 38  | 5 | 2000-2007 | 0.69 | M-v | 1 | MP | 87406 2000 TC <sub>52</sub>   |
| 2000 TP <sub>52</sub>  | 17.0 | 0.15 | 20071027 | 192.92661 | 184.41046 | 30.22351  | 8.96825  | 0.0670409 | 2.2598663 | 58  | 6 | 1990-2007 | 0.44 | M-v | 1 | MP | 128711 2000 TP <sub>52</sub>  |
| 2000 TD <sub>54</sub>  | 17.6 | 0.15 | 20071027 | 13.72018  | 334.00144 | 34.08063  | 7.61502  | 0.1361995 | 2.3124383 | 79  | 3 | 2000-2007 | 0.43 | M-v | 2 | MP | 128711 2000 TD <sub>54</sub>  |
| 2000 TK <sub>54</sub>  | 17.3 | 0.15 | 20071027 | 2.17946   | 279.07117 | 110.73476 | 7.42790  | 0.1890085 | 2.2982376 | 43  | 2 | 2000-2007 | 0.52 | M-v | 4 | MP | 127879 2000 TK <sub>54</sub>  |
| 2000 TQ <sub>65</sub>  | 17.3 | 0.15 | 20071027 | 146.59982 | 257.41252 | 14.34438  | 4.17986  | 0.1513030 | 2.2117525 | 34  | 5 | 1998-2007 | 0.48 | M-v | 1 | MP | 128711 2000 TQ <sub>65</sub>  |
| 2000 UA <sub>4</sub>   | 17.2 | 0.15 | 20071027 | 350.75630 | 179.65005 | 231.23034 | 4.49725  | 0.2323447 | 2.3030469 | 121 | 2 | 2000-2007 | 0.58 | M-v | 3 | MP | 128711 2000 UA <sub>4</sub>   |
| 2000 UO <sub>10</sub>  | 17.0 | 0.15 | 20071027 | 21.82272  | 132.84397 | 212.67502 | 4.20072  | 0.2450266 | 2.3470213 | 96  | 3 | 2000-2007 | 0.48 | M-v | 2 | MP | 128711 2000 UO <sub>10</sub>  |
| 2000 UD <sub>12</sub>  | 17.1 | 0.15 | 20071027 | 22.19292  | 242.81513 | 117.69441 | 10.03839 | 0.2788357 | 2.2855018 | 53  | 4 | 1998-2007 | 0.57 | M-v | 2 | MP | 128711 2000 UD <sub>12</sub>  |
| 2000 UT <sub>12</sub>  | 17.1 | 0.15 | 20071027 | 353.83431 | 71.04779  | 320.37133 | 4.97742  | 0.2213172 | 2.3247797 | 109 | 3 | 2000-2007 | 0.58 | M-v | 2 | MP | 128711 2000 UT <sub>12</sub>  |
| 2000 UN <sub>14</sub>  | 16.4 | 0.15 | 20071027 | 337.63194 | 101.63284 | 302.11907 | 5.60287  | 0.1076892 | 2.3340655 | 86  | 3 | 2000-2007 | 0.55 | M-v | 2 | MP | 128711 2000 UN <sub>14</sub>  |
| 2000 US <sub>15</sub>  | 17.9 | 0.15 | 20071027 | 46.68140  | 332.38360 | 24.15994  | 3.29987  | 0.1515191 | 2.2602635 | 43  | 5 | 2000-2007 | 0.58 | M-v | 1 | MP | 128712 2000 US <sub>15</sub>  |
| 2000 UT <sub>15</sub>  | 18.0 | 0.15 | 20071027 | 324.74889 | 171.43068 | 243.46191 | 0.74947  | 0.1575435 | 2.3429948 | 49  | 3 | 2000-2007 | 0.46 | M-v | 2 | MP | 128712 2000 UT <sub>15</sub>  |
| 2000 UH <sub>16</sub>  | 15.8 | 0.15 | 20071027 | 22.64031  | 301.46909 | 61.59066  | 24.20090 | 0.3134854 | 2.2944561 | 197 | 2 | 2000-2007 | 0.38 | M-v | 2 | MP | 128712 2000 UH <sub>16</sub>  |
| 2000 UX <sub>16</sub>  | 16.7 | 0.15 | 20071027 | 38.50808  | 344.55521 | 41.42566  | 4.05906  | 0.1385196 | 2.2477637 | 67  | 5 | 2000-2007 | 0.57 | M-v | 1 | MP | 77479 2000 UX <sub>16</sub>   |
| 2000 UN <sub>19</sub>  | 17.0 | 0.15 | 20071027 | 34.96512  | 314.42280 | 39.91035  | 10.08920 | 0.1675781 | 2.2909228 | 114 | 3 | 2000-2007 | 0.44 | M-v | 2 | MP | 128712 2000 UN <sub>19</sub>  |
| 2000 UZ <sub>19</sub>  | 16.7 | 0.15 | 20071027 | 352.33365 | 39.24975  | 28.94026  | 6.14222  | 0.1300358 | 2.2657374 | 44  | 3 | 2000-2007 | 0.60 | M-v | 3 | MP | 127880 2000 UZ <sub>19</sub>  |
| 2000 UM <sub>21</sub>  | 16.4 | 0.15 | 20071027 | 24.57596  | 329.56630 | 54.87361  | 7.57655  | 0.1363237 | 2.2699503 | 78  | 3 | 2000-2007 | 0.51 | M-v | 3 | MP | 128712 2000 UM <sub>21</sub>  |
| 2000 UW <sub>22</sub>  | 17.2 | 0.15 | 20071027 | 78.64417  | 231.39874 | 118.81945 | 4.03117  | 0.1872199 | 2.2140475 | 43  | 6 | 1993-2007 | 0.52 | M-v | 1 | MP | 50498 2000 UW <sub>22</sub>   |
| 2000 UA <sub>23</sub>  | 16.7 | 0.15 | 20071027 | 23.78765  | 301.78074 | 87.97215  | 2.95847  | 0.2287564 | 2.2671523 | 50  | 4 | 2000-2007 | 0.60 | M-v | 2 | MP | 99992 2000 UA <sub>23</sub>   |
| 2000 UK <sub>26</sub>  | 16.4 | 0.15 | 20071027 | 347.55130 | 188.50295 | 206.03308 | 12.75351 | 0.1715122 | 2.3504981 | 88  | 3 | 2000-2007 | 0.60 | M-v | 2 | MP | 128712 2000 UK <sub>26</sub>  |
| 2000 UG <sub>28</sub>  | 16.9 | 0.15 | 20071027 | 340.61215 | 48.52197  | 46.02870  | 6.05952  | 0.0890572 | 2.2380011 | 47  | 5 | 2000-2007 | 0.56 | M-v | 1 | MP | 77479 2000 UG <sub>28</sub>   |
| 2000 UW <sub>29</sub>  | 15.2 | 0.15 | 20071027 | 249.67069 | 130.81784 | 19.06813  | 26.06383 | 0.2232503 | 2.3372508 | 169 | 3 | 2000-2007 | 0.60 | M-v | 2 | MP | 128712 2000 UW <sub>29</sub>  |
| 2000 UC <sub>34</sub>  | 17.3 | 0.15 | 20071027 | 5.50290   | 153.89691 | 225.02325 | 3.34286  | 0.1655725 | 2.3135858 | 99  | 3 | 2000-2007 | 0.61 | M-v | 3 | MP | 128712 2000 UC <sub>34</sub>  |
| 2000 UN <sub>36</sub>  | 17.6 | 0.15 | 20071027 | 66.97670  | 217.11474 | 114.30338 | 0.80134  | 0.2501371 | 2.2544123 | 39  | 5 | 1993-2007 | 0.61 | M-v | 1 | MP | 99992 2000 UN <sub>36</sub>   |
| 2000 UU <sub>38</sub>  | 17.0 | 0.15 | 20071027 | 23.30967  | 330.79858 | 41.07183  | 7.18504  | 0.2638763 | 2.2878270 | 73  | 3 | 2000-2007 | 0.47 | M-v | 2 | MP | 127880 2000 UU <sub>38</sub>  |
| 2000 UN <sub>48</sub>  | 16.8 | 0.15 | 20071027 | 18.52776  | 347.13837 | 47.02244  | 5.02684  | 0.1182394 | 2.2896634 | 56  | 3 | 1995-2007 | 0.44 | M-v | 3 | MP | 47978 2000 UN <sub>48</sub>   |
| 2000 UK <sub>50</sub>  | 15.7 | 0.15 | 20071027 | 56.22645  | 319.07230 | 53.25069  | 6.58873  | 0.2219951 | 2.2418933 | 68  | 4 | 2000-2007 | 0.56 | M-v | 2 | MP | 128712 2000 UK <sub>50</sub>  |
| 2000 UB <sub>51</sub>  | 17.1 | 0.15 | 20071027 | 24.08396  | 14.87293  | 34.46152  | 5.49098  | 0.1429271 | 2.2465368 | 40  | 5 | 1995-2007 | 0.65 | M-v | 1 | MP | 128712 2000 UB <sub>51</sub>  |
| 2000 UQ <sub>52</sub>  | 17.1 | 0.15 | 20071027 | 8.37335   | 186.00415 | 218.57227 | 2.43479  | 0.1653586 | 2.2927044 | 45  | 5 | 2000-2007 | 0.49 | M-v | 1 | MP | 128712 2000 UQ <sub>52</sub>  |
| 2000 UP <sub>55</sub>  | 16.4 | 0.15 | 20071027 | 38.18494  | 337.47801 | 80.02253  | 5.50300  | 0.1287850 | 2.2151715 | 60  | 3 | 2000-2007 | 0.44 | M-v | 2 | MP | 52696 2000 UP <sub>55</sub>   |
| 2000 UX <sub>58</sub>  | 16.5 | 0.15 | 20071027 | 52.42349  | 138.90091 | 235.12710 | 5.41013  | 0.1439574 | 2.2252508 | 47  | 4 | 2000-2007 | 0.40 | M-v | 1 | MP | 57784 2000 UX <sub>58</sub>   |
| 2000 UN <sub>62</sub>  | 16.3 | 0.15 | 20071027 | 42.66288  | 11.25304  | 1.67803   | 6.39327  | 0.1186225 | 2.2551662 | 36  | 5 | 2000-2007 | 0.50 | M-v | 1 | MP | 128712 2000 UN <sub>62</sub>  |
| 2000 UJ <sub>63</sub>  | 16.8 | 0.15 | 20071027 | 4.26332   | 162.85133 | 231.07414 | 7.46502  | 0.1200479 | 2.2996548 | 147 | 6 | 1993-2007 | 0.51 | M-v | 1 | MP | 128712 2000 UJ <sub>63</sub>  |
| 2000 UP <sub>63</sub>  | 16.8 | 0.15 | 20071027 | 60.65734  | 118.63973 | 239.42867 | 6.00646  | 0.1813198 | 2.2366238 | 68  | 4 | 2000-2007 | 0.50 | M-v | 1 | MP | 102015 2000 UP <sub>63</sub>  |
| 2000 UY <sub>67</sub>  | 16.6 | 0.15 | 20071027 | 338.06005 | 151.93309 | 273.45306 | 7.85789  | 0.1964082 | 2.3034799 | 110 | 3 | 2000-2007 | 0.52 | M-v | 2 | MP | 128712 2000 UY <sub>67</sub>  |
| 2000 UA <sub>69</sub>  | 16.1 | 0.15 | 20071027 | 306.14121 | 186.38888 | 259.80991 | 5.42455  | 0.2063539 | 2.3534473 | 104 | 3 | 2000-2007 | 0.56 | M-v | 1 | MP | 128712 2000 UA <sub>69</sub>  |
| 2000 UJ <sub>70</sub>  | 16.7 | 0.15 | 20071027 | 18.14153  | 94.41164  | 294.43646 | 2.21638  | 0.2382382 | 2.2800217 | 79  | 5 | 2000-2007 | 0.54 | M-v | 2 | MP | 128712 2000 UJ <sub>70</sub>  |
| 2000 UE <sub>75</sub>  | 16.4 | 0.15 | 20071027 | 70.32300  | 235.00145 | 94.23429  | 5.51844  | 0.2814850 | 2.2536244 | 67  | 4 | 2000-2007 | 0.52 | M-v | 1 | MP | 117924 2000 UE <sub>75</sub>  |
| 2000 UL <sub>75</sub>  | 16.9 | 0.15 | 20071027 | 39.20689  | 271.54293 | 95.05297  | 4.81301  | 0.2361533 | 2.2702085 | 54  | 3 | 2000-2007 | 0.62 | M-v | 2 | MP | 99993 2000 UL <sub>75</sub>   |
| 2000 UY <sub>79</sub>  | 16.3 | 0.15 | 20071027 | 60.36029  | 333.23571 | 37.82985  | 3.97217  | 0.1835669 | 2.2433512 | 87  | 4 | 2000-2007 | 0.56 | M-v | 1 | MP | 128712 2000 UY <sub>79</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 UU <sub>83</sub>  | 16.6 | 0.15 | 20071027 | 311.70234 | 358.30216 | 96.52274  | 5.75441  | 0.0920364 | 2.3111939 | 96  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128712 2000 UU <sub>83</sub>  |
| 2000 UE <sub>84</sub>  | 17.4 | 0.15 | 20071027 | 6.18580   | 355.11587 | 59.90209  | 1.13937  | 0.1715737 | 2.2615579 | 33  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 74846 2000 UE <sub>84</sub>   |
| 2000 UX <sub>85</sub>  | 16.7 | 0.15 | 20071027 | 62.33506  | 282.55586 | 77.97544  | 3.95556  | 0.1391029 | 2.2347856 | 38  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128712 2000 UX <sub>85</sub>  |
| 2000 UY <sub>91</sub>  | 16.5 | 0.15 | 20071027 | 30.06872  | 5.10812   | 355.06971 | 5.96724  | 0.1918538 | 2.2944205 | 127 | 5 | 1995-2007 | 0.46 | M-v | 2 | MPC | 128712 2000 UY <sub>91</sub>  |
| 2000 UJ <sub>93</sub>  | 16.5 | 0.15 | 20071027 | 26.06690  | 87.61796  | 270.96504 | 5.74453  | 0.1272770 | 2.3131607 | 66  | 4 | 1993-2007 | 0.59 | M-v | 3 | MPC | 128712 2000 UJ <sub>93</sub>  |
| 2000 UE <sub>96</sub>  | 16.7 | 0.15 | 20071027 | 63.56994  | 48.39193  | 295.17106 | 4.62214  | 0.2122938 | 2.2574234 | 65  | 5 | 1993-2007 | 0.51 | M-v | 1 | MPC | 104142 2000 UE <sub>96</sub>  |
| 2000 UB <sub>98</sub>  | 16.3 | 0.15 | 20071027 | 357.86723 | 56.95157  | 320.09469 | 3.47169  | 0.1557186 | 2.3548494 | 139 | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 126581 2000 UB <sub>98</sub>  |
| 2000 UH <sub>105</sub> | 16.8 | 0.15 | 20071027 | 21.93369  | 303.74766 | 99.00814  | 6.36453  | 0.0943314 | 2.2325978 | 51  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 126581 2000 UH <sub>105</sub> |
| 2000 UT <sub>114</sub> | 16.8 | 0.15 | 20071027 | 18.57525  | 14.85945  | 356.19641 | 3.09169  | 0.1775668 | 2.3175212 | 127 | 5 | 1995-2007 | 0.50 | M-v | 1 | MPC | 128713 2000 UT <sub>114</sub> |
| 2000 UV <sub>114</sub> | 16.7 | 0.15 | 20071027 | 350.20175 | 101.35153 | 293.70994 | 4.80547  | 0.2368449 | 2.3440963 | 77  | 3 | 2000-2007 | 0.60 | M-v | 2 | MPC | 128713 2000 UV <sub>114</sub> |
| 2000 VQ <sub>1</sub>   | 17.5 | 0.15 | 20071027 | 326.17861 | 73.39490  | 49.18146  | 5.67647  | 0.3361000 | 2.2750496 | 58  | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128713 2000 VQ <sub>1</sub>   |
| 2000 VV <sub>1</sub>   | 17.1 | 0.15 | 20071027 | 3.79891   | 188.52983 | 219.66950 | 23.45386 | 0.1674519 | 2.2805855 | 34  | 2 | 2000-2007 | 0.54 | M-v | 3 | MPC | 127880 2000 VV <sub>1</sub>   |
| 2000 VC <sub>2</sub>   | 15.8 | 0.15 | 20071027 | 323.73983 | 62.95895  | 60.32933  | 21.43555 | 0.3306794 | 2.3054220 | 126 | 3 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128713 2000 VC <sub>2</sub>   |
| 2000 VN <sub>5</sub>   | 16.7 | 0.15 | 20071027 | 337.16596 | 5.55456   | 31.68795  | 5.39040  | 0.1492448 | 2.3539790 | 101 | 4 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128713 2000 VN <sub>5</sub>   |
| 2000 VR <sub>6</sub>   | 17.6 | 0.15 | 20071027 | 349.79542 | 18.83659  | 44.87955  | 7.52944  | 0.2618602 | 2.2929014 | 81  | 3 | 1993-2007 | 0.61 | M-v | 2 | MPC | 128713 2000 VR <sub>6</sub>   |
| 2000 VL <sub>8</sub>   | 17.2 | 0.15 | 20071027 | 305.12208 | 239.31711 | 209.97823 | 1.84099  | 0.1618126 | 2.3432002 | 82  | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128713 2000 VL <sub>8</sub>   |
| 2000 VW <sub>8</sub>   | 16.7 | 0.15 | 20071027 | 95.45172  | 165.79587 | 146.57450 | 1.96602  | 0.1904234 | 2.2438273 | 75  | 5 | 2000-2007 | 0.60 | M-v | 1 | MPC | 110753 2000 VW <sub>8</sub>   |
| 2000 VB <sub>9</sub>   | 16.9 | 0.15 | 20071027 | 1.60990   | 353.04069 | 60.89304  | 3.51975  | 0.1997240 | 2.2804069 | 76  | 3 | 2000-2007 | 0.51 | M-v | 3 | MPC | 128713 2000 VB <sub>9</sub>   |
| 2000 VL <sub>10</sub>  | 17.1 | 0.15 | 20071027 | 6.04378   | 331.20655 | 59.72865  | 6.17319  | 0.2372537 | 2.3024371 | 93  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 127880 2000 VL <sub>10</sub>  |
| 2000 VO <sub>12</sub>  | 16.4 | 0.15 | 20071027 | 75.51653  | 277.27594 | 57.88655  | 6.29320  | 0.1573785 | 2.2558412 | 53  | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 99994 2000 VO <sub>12</sub>   |
| 2000 VJ <sub>18</sub>  | 16.8 | 0.15 | 20071027 | 351.40096 | 334.64510 | 91.51155  | 5.84395  | 0.2073229 | 2.2990924 | 94  | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128713 2000 VJ <sub>18</sub>  |
| 2000 VM <sub>21</sub>  | 16.7 | 0.15 | 20071027 | 12.08501  | 310.75350 | 59.42085  | 4.05422  | 0.1690204 | 2.3309210 | 152 | 3 | 2000-2007 | 0.58 | M-v | 2 | MPC | 128713 2000 VM <sub>21</sub>  |
| 2000 VP <sub>21</sub>  | 16.8 | 0.15 | 20071027 | 353.24548 | 218.98718 | 203.50127 | 1.60960  | 0.1320558 | 2.2890473 | 100 | 4 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128713 2000 VP <sub>21</sub>  |
| 2000 VO <sub>29</sub>  | 16.3 | 0.15 | 20071027 | 357.57482 | 192.64365 | 219.81334 | 9.15498  | 0.1956619 | 2.3155845 | 133 | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128713 2000 VO <sub>29</sub>  |
| 2000 VS <sub>41</sub>  | 17.8 | 0.15 | 20071027 | 3.80325   | 31.72880  | 345.89727 | 3.68788  | 0.2814408 | 2.3183559 | 90  | 2 | 2000-2007 | 0.46 | M-v | 2 | MPC | 126582 2000 VS <sub>41</sub>  |
| 2000 VU <sub>48</sub>  | 16.3 | 0.15 | 20071027 | 14.77325  | 349.97728 | 51.19728  | 5.83143  | 0.1695910 | 2.2930479 | 47  | 2 | 2000-2007 | 0.56 | M-v | 4 | MPC | 128713 2000 VU <sub>48</sub>  |
| 2000 VT <sub>51</sub>  | 16.5 | 0.15 | 20071027 | 68.03358  | 314.71914 | 13.51396  | 6.95677  | 0.1436973 | 2.2861145 | 64  | 4 | 1993-2007 | 0.61 | M-v | 3 | MPC | 128713 2000 VT <sub>51</sub>  |
| 2000 VX <sub>51</sub>  | 14.8 | 0.15 | 20071027 | 97.45203  | 39.51907  | 4.21853   | 8.92197  | 0.0418492 | 3.1287588 | 85  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 121761 2000 VX <sub>51</sub>  |
| 2000 VF <sub>53</sub>  | 16.3 | 0.15 | 20071027 | 55.46239  | 59.43632  | 326.99750 | 4.43555  | 0.1505344 | 2.2194731 | 101 | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 77483 2000 VF <sub>53</sub>   |
| 2000 VQ <sub>53</sub>  | 16.0 | 0.15 | 20071027 | 31.24215  | 298.24902 | 29.88472  | 6.75800  | 0.1680776 | 2.3713096 | 129 | 4 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128713 2000 VQ <sub>53</sub>  |
| 2000 VK <sub>55</sub>  | 16.0 | 0.15 | 20071027 | 10.23845  | 62.81131  | 269.42047 | 7.80641  | 0.2395637 | 2.3997958 | 95  | 5 | 1998-2007 | 0.60 | M-v | 1 | MPC | 128713 2000 VK <sub>55</sub>  |
| 2000 VN <sub>62</sub>  | 16.8 | 0.15 | 20071027 | 338.87937 | 159.69532 | 268.75747 | 6.01558  | 0.0955809 | 2.3095347 | 73  | 3 | 2000-2007 | 0.62 | M-v | 3 | MPC | 128713 2000 VN <sub>62</sub>  |
| 2000 WK <sub>3</sub>   | 16.1 | 0.15 | 20071027 | 21.81424  | 35.11814  | 311.40809 | 23.48714 | 0.2467082 | 2.3414321 | 49  | 4 | 1991-2007 | 0.52 | M-v | 2 | MPC | 128713 2000 WK <sub>3</sub>   |
| 2000 WR <sub>11</sub>  | 17.4 | 0.15 | 20071027 | 130.40665 | 224.57494 | 73.53638  | 3.44609  | 0.0817039 | 2.1936250 | 42  | 6 | 1996-2007 | 0.32 | M-v | 0 | MPC | 112745 2000 WR <sub>11</sub>  |
| 2000 WF <sub>13</sub>  | 16.7 | 0.15 | 20071027 | 55.88026  | 277.92952 | 62.14427  | 7.24938  | 0.2815039 | 2.2910814 | 46  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 102017 2000 WF <sub>13</sub>  |
| 2000 WL <sub>13</sub>  | 16.5 | 0.15 | 20071027 | 347.58428 | 351.20799 | 70.80764  | 25.96873 | 0.2488578 | 2.3195140 | 49  | 2 | 2000-2007 | 0.44 | M-v | 2 | MPC | 127881 2000 WL <sub>13</sub>  |
| 2000 WZ <sub>15</sub>  | 17.1 | 0.15 | 20071027 | 347.66195 | 352.63347 | 44.24911  | 3.89421  | 0.1970046 | 2.3486092 | 69  | 2 | 2000-2007 | 0.51 | M-v | 4 | MPC | 128713 2000 WZ <sub>15</sub>  |
| 2000 WN <sub>16</sub>  | 16.8 | 0.15 | 20071027 | 339.02569 | 177.53337 | 255.58378 | 5.24902  | 0.1515119 | 2.3200001 | 78  | 2 | 2000-2007 | 0.53 | M-v | 3 | MPC | 127881 2000 WN <sub>16</sub>  |
| 2000 WZ <sub>17</sub>  | 17.1 | 0.15 | 20071027 | 330.67804 | 46.25171  | 57.32661  | 4.43053  | 0.1647652 | 2.2760805 | 45  | 3 | 2000-2007 | 0.51 | M-v | 3 | MPC | 74857 2000 WZ <sub>17</sub>   |
| 2000 WG <sub>18</sub>  | 17.3 | 0.15 | 20071027 | 16.64961  | 307.90255 | 79.51972  | 6.14862  | 0.2099361 | 2.3014624 | 56  | 4 | 1993-2007 | 0.40 | M-v | 2 | MPC | 127882 2000 WG <sub>18</sub>  |
| 2000 WB <sub>19</sub>  | 16.5 | 0.15 | 20071027 | 24.40072  | 331.47366 | 71.34147  | 7.69017  | 0.1464660 | 2.2820966 | 68  | 5 | 1995-2007 | 0.58 | M-v | 1 | MPC | 128713 2000 WB <sub>19</sub>  |
| 2000 WA <sub>21</sub>  | 14.5 | 0.15 | 20071027 | 359.19820 | 281.47204 | 115.85728 | 4.08250  | 0.2427273 | 3.9497178 | 109 | 6 | 1994-2007 | 0.56 | M-v | 1 | MPC | 128713 2000 WA <sub>21</sub>  |
| 2000 WO <sub>22</sub>  | 16.4 | 0.15 | 20071027 | 18.95132  | 268.21685 | 95.94751  | 7.77507  | 0.1989032 | 2.3138730 | 73  | 3 | 2000-2007 | 0.58 | M-v | 3 | MPC | 128714 2000 WO <sub>22</sub>  |
| 2000 WC <sub>26</sub>  | 16.8 | 0.15 | 20071027 | 0.33884   | 88.44673  | 279.75979 | 1.12322  | 0.2216812 | 2.3820434 | 101 | 5 | 1994-2007 | 0.51 | M-v | 1 | MPC | 128714 2000 WC <sub>26</sub>  |
| 2000 WM <sub>27</sub>  | 18.3 | 0.15 | 20071027 | 12.98001  | 336.50557 | 56.68800  | 3.22561  | 0.1911561 | 2.2923602 | 44  | 2 | 2000-2007 | 0.34 | M-v | 3 | MPC | 127882 2000 WM <sub>27</sub>  |
| 2000 WB <sub>29</sub>  | 16.2 | 0.15 | 20071027 | 354.54392 | 332.59226 | 85.53736  | 11.54231 | 0.0822936 | 2.3081300 | 79  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128714 2000 WB <sub>29</sub>  |
| 2000 WW <sub>35</sub>  | 16.2 | 0.15 | 20071027 | 2.26960   | 335.85717 | 107.36108 | 7.53028  | 0.1166237 | 2.2662962 | 69  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 102018 2000 WW <sub>35</sub>  |
| 2000 WQ <sub>37</sub>  | 17.1 | 0.15 | 20071027 | 359.64909 | 339.35459 | 99.68768  | 6.75047  | 0.1332751 | 2.2618396 | 35  | 4 | 2000-2007 | 0.56 | M-v | 2 | MPC | 103185 2000 WQ <sub>37</sub>  |
| 2000 WC <sub>40</sub>  | 16.6 | 0.15 | 20071027 | 338.99285 | 200.02581 | 200.16503 | 6.75484  | 0.2259482 | 2.3813732 | 80  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128714 2000 WC <sub>40</sub>  |
| 2000 WX <sub>42</sub>  | 16.5 | 0.15 | 20071027 | 341.61071 | 276.06983 | 174.98909 | 3.09066  | 0.0851951 | 2.2728793 | 108 | 5 | 2000-2007 | 0.49 | M-v | 0 | MPC | 77485 2000 WX <sub>42</sub>   |
| 2000 WF <sub>46</sub>  | 16.7 | 0.15 | 20071027 | 359.74507 | 183.74315 | 208.64815 | 4.51934  | 0.1386894 | 2.3367515 | 112 | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128714 2000 WF <sub>46</sub>  |
| 2000 WL <sub>54</sub>  | 15.8 | 0.15 | 20071027 | 303.87920 | 271.28306 | 284.49898 | 22.99086 | 0.3153132 | 2.2790578 | 58  | 3 | 2000-2007 | 0.59 | M-v | 2 | MPC | 87410 2000 WL <sub>54</sub>   |
| 2000 WA <sub>55</sub>  | 15.9 | 0.15 | 20071027 | 352.58150 | 168.77421 | 289.39278 | 22.64836 | 0.2029588 | 2.3082525 | 86  | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128714 2000 WA <sub>55</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 WU <sub>56</sub>  | 16.4 | 0.15 | 20071027 | 337.60037 | 342.11061 | 74.39747  | 7.83752  | 0.1192644 | 2.3454520 | 83  | 3 | 2000-2007 | 0.65 | M-v | 2 | MPG | 128714 2000 WU <sub>56</sub>  |
| 2000 WY <sub>71</sub>  | 16.8 | 0.15 | 20071027 | 350.52897 | 87.62668  | 13.27685  | 6.53421  | 0.0931871 | 2.2307340 | 68  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPG | 77485 2000 WY <sub>71</sub>   |
| 2000 WR <sub>73</sub>  | 16.2 | 0.15 | 20071027 | 69.85816  | 317.37462 | 22.85979  | 7.36398  | 0.1487374 | 2.2669827 | 29  | 4 | 1993-2007 | 0.80 | M-v | 3 | MPG | 62312 2000 WR <sub>73</sub>   |
| 2000 WP <sub>75</sub>  | 16.4 | 0.15 | 20071027 | 357.79341 | 121.43032 | 281.59033 | 6.21155  | 0.0978114 | 2.3204738 | 73  | 3 | 2000-2007 | 0.52 | M-v | 3 | MPG | 128714 2000 WP <sub>75</sub>  |
| 2000 WD <sub>76</sub>  | 17.1 | 0.15 | 20071027 | 357.99622 | 30.51117  | 13.08723  | 2.78065  | 0.1626479 | 2.3149633 | 96  | 4 | 1998-2007 | 0.55 | M-v | 2 | MPG | 128714 2000 WD <sub>76</sub>  |
| 2000 WF <sub>76</sub>  | 17.0 | 0.15 | 20071027 | 18.73485  | 18.57380  | 14.93600  | 2.96713  | 0.1437109 | 2.2873388 | 58  | 5 | 1995-2007 | 0.49 | M-v | 1 | MPG | 128714 2000 WF <sub>76</sub>  |
| 2000 WP <sub>85</sub>  | 16.2 | 0.15 | 20071027 | 8.65378   | 352.10050 | 56.10008  | 6.15169  | 0.1740489 | 2.3020693 | 74  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPG | 128714 2000 WP <sub>85</sub>  |
| 2000 WW <sub>88</sub>  | 16.7 | 0.15 | 20071027 | 27.68264  | 326.20965 | 43.98049  | 3.96991  | 0.1717498 | 2.3088206 | 84  | 4 | 2000-2007 | 0.48 | M-v | 1 | MPG | 127882 2000 WW <sub>88</sub>  |
| 2000 WQ <sub>89</sub>  | 17.1 | 0.15 | 20071027 | 346.20548 | 348.27747 | 60.66545  | 5.22068  | 0.2046350 | 2.3399839 | 65  | 3 | 2000-2007 | 0.48 | M-v | 3 | MPG | 128714 2000 WQ <sub>89</sub>  |
| 2000 WM <sub>94</sub>  | 16.6 | 0.15 | 20071027 | 354.27621 | 354.74084 | 67.77020  | 6.96123  | 0.0996863 | 2.3164947 | 60  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPG | 128714 2000 WM <sub>94</sub>  |
| 2000 WQ <sub>100</sub> | 16.2 | 0.15 | 20071027 | 29.47206  | 119.84018 | 269.35685 | 2.25354  | 0.0953400 | 2.2980782 | 33  | 3 | 2000-2007 | 0.52 | M-v | 3 | MPG | 107892 2000 WQ <sub>100</sub> |
| 2000 WB <sub>107</sub> | 15.6 | 0.15 | 20071027 | 291.51823 | 102.84302 | 66.04447  | 23.92960 | 0.2156634 | 2.2619811 | 113 | 3 | 2000-2007 | 0.56 | M-v | 2 | MPG | 128714 2000 WB <sub>107</sub> |
| 2000 WJ <sub>108</sub> | 16.4 | 0.15 | 20071027 | 54.90392  | 350.84881 | 22.61423  | 4.93595  | 0.1576484 | 2.2509507 | 63  | 5 | 1995-2007 | 0.67 | M-v | 1 | MPG | 128714 2000 WJ <sub>108</sub> |
| 2000 WD <sub>110</sub> | 16.5 | 0.15 | 20071027 | 40.48530  | 334.74811 | 3.13052   | 5.55091  | 0.2485100 | 2.3325677 | 104 | 2 | 2000-2007 | 0.46 | M-v | 3 | MPG | 128714 2000 WD <sub>110</sub> |
| 2000 WL <sub>111</sub> | 16.8 | 0.15 | 20071027 | 23.82769  | 341.03319 | 26.45359  | 5.11017  | 0.1500877 | 2.3380016 | 92  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPG | 128714 2000 WL <sub>111</sub> |
| 2000 WL <sub>112</sub> | 16.8 | 0.15 | 20071027 | 296.18792 | 67.03539  | 26.10324  | 6.90867  | 0.1553923 | 2.3880446 | 34  | 3 | 2000-2007 | 0.52 | M-v | 2 | MPG | 128714 2000 WL <sub>112</sub> |
| 2000 WU <sub>122</sub> | 16.6 | 0.15 | 20071027 | 5.72181   | 343.26615 | 54.60676  | 3.13837  | 0.2037073 | 2.3260501 | 105 | 6 | 1996-2007 | 0.55 | M-v | 1 | MPG | 128714 2000 WU <sub>122</sub> |
| 2000 WU <sub>126</sub> | 17.0 | 0.15 | 20071027 | 18.58093  | 320.14481 | 77.70154  | 4.07219  | 0.2033703 | 2.2954995 | 38  | 2 | 2000-2007 | 0.53 | M-v | 4 | MPG | 127883 2000 WU <sub>126</sub> |
| 2000 WF <sub>127</sub> | 17.2 | 0.15 | 20071027 | 302.20767 | 49.44167  | 62.31786  | 3.63630  | 0.1314845 | 2.3257333 | 81  | 3 | 2000-2007 | 0.59 | M-v | 2 | MPG | 128714 2000 WF <sub>127</sub> |
| 2000 WD <sub>130</sub> | 16.5 | 0.15 | 20071027 | 73.21220  | 253.30844 | 72.23593  | 8.91850  | 0.2646526 | 2.2968749 | 52  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPG | 99998 2000 WD <sub>130</sub>  |
| 2000 WX <sub>131</sub> | 16.4 | 0.15 | 20071027 | 316.45196 | 26.65603  | 74.53085  | 6.85599  | 0.1779937 | 2.3245710 | 103 | 3 | 2000-2007 | 0.53 | M-v | 2 | MPG | 128714 2000 WX <sub>131</sub> |
| 2000 WG <sub>132</sub> | 15.2 | 0.15 | 20071027 | 321.49226 | 9.89614   | 112.80499 | 24.94987 | 0.2029562 | 2.2764726 | 98  | 4 | 2000-2007 | 0.63 | M-v | 1 | MPG | 126583 2000 WG <sub>132</sub> |
| 2000 WS <sub>133</sub> | 16.3 | 0.15 | 20071027 | 0.14772   | 140.36329 | 294.73474 | 6.69941  | 0.0962870 | 2.2497152 | 63  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPG | 74866 2000 WS <sub>133</sub>  |
| 2000 WD <sub>134</sub> | 15.6 | 0.15 | 20071027 | 0.12813   | 50.94161  | 309.03263 | 6.05685  | 0.1564049 | 2.3808270 | 142 | 3 | 2000-2007 | 0.51 | M-v | 2 | MPG | 128714 2000 WD <sub>134</sub> |
| 2000 WC <sub>136</sub> | 17.3 | 0.15 | 20071027 | 29.36236  | 46.35400  | 338.72583 | 2.81756  | 0.1727706 | 2.2731617 | 46  | 5 | 2000-2007 | 0.45 | M-v | 1 | MPG | 72250 2000 WC <sub>136</sub>  |
| 2000 WY <sub>138</sub> | 17.5 | 0.15 | 20071027 | 350.99499 | 333.42313 | 73.26707  | 5.85690  | 0.2666328 | 2.3238693 | 64  | 2 | 2000-2007 | 0.63 | M-v | 3 | MPG | 127883 2000 WY <sub>138</sub> |
| 2000 WT <sub>140</sub> | 14.7 | 0.15 | 20071027 | 332.84944 | 128.49466 | 276.94676 | 1.63071  | 0.2525260 | 3.9791024 | 73  | 5 | 1994-2007 | 0.50 | M-v | 0 | MPG | 126583 2000 WT <sub>140</sub> |
| 2000 WN <sub>173</sub> | 15.1 | 0.15 | 20071027 | 347.42081 | 227.25752 | 261.93470 | 24.18207 | 0.2182327 | 2.2918150 | 73  | 3 | 2000-2007 | 0.58 | M-v | 2 | MPG | 126583 2000 WN <sub>173</sub> |
| 2000 WP <sub>173</sub> | 14.1 | 0.15 | 20071027 | 335.86564 | 210.77977 | 180.86518 | 10.20458 | 0.2679189 | 3.9566548 | 78  | 5 | 1999-2007 | 0.48 | M-v | 0 | MPG | 126583 2000 WP <sub>173</sub> |
| 2000 WF <sub>174</sub> | 16.6 | 0.15 | 20071027 | 342.94844 | 202.11487 | 191.18934 | 8.69185  | 0.2099410 | 2.3613826 | 114 | 4 | 2000-2007 | 0.55 | M-v | 2 | MPG | 128715 2000 WF <sub>174</sub> |
| 2000 WZ <sub>176</sub> | 18.3 | 0.15 | 20071027 | 356.71993 | 299.46442 | 111.16532 | 2.53064  | 0.2506575 | 2.3050286 | 62  | 3 | 1993-2007 | 0.64 | M-v | 3 | MPG | 127883 2000 WZ <sub>176</sub> |
| 2000 WH <sub>177</sub> | 17.1 | 0.15 | 20071027 | 332.76100 | 215.54496 | 225.42960 | 3.54093  | 0.1082765 | 2.2977333 | 77  | 3 | 2000-2007 | 0.44 | M-v | 2 | MPG | 127883 2000 WH <sub>177</sub> |
| 2000 WC <sub>179</sub> | 15.7 | 0.15 | 20071027 | 30.15130  | 256.80520 | 107.94082 | 24.00198 | 0.2566725 | 2.3029115 | 52  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPG | 87412 2000 WC <sub>179</sub>  |
| 2000 WF <sub>179</sub> | 16.2 | 0.15 | 20071027 | 59.46381  | 243.23382 | 126.97989 | 6.69704  | 0.2173056 | 2.2375440 | 56  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPG | 77489 2000 WF <sub>179</sub>  |
| 2000 WG <sub>184</sub> | 16.4 | 0.15 | 20071027 | 42.70679  | 242.02425 | 123.30987 | 5.88701  | 0.1777422 | 2.2820401 | 42  | 5 | 2000-2007 | 0.44 | M-v | 1 | MPG | 102020 2000 WG <sub>184</sub> |
| 2000 WQ <sub>190</sub> | 17.3 | 0.15 | 20071027 | 11.85654  | 290.40367 | 107.86493 | 4.98217  | 0.1892844 | 2.2894648 | 57  | 5 | 1993-2007 | 0.64 | M-v | 2 | MPG | 128715 2000 WQ <sub>190</sub> |
| 2000 WN <sub>193</sub> | 17.9 | 0.15 | 20071027 | 163.83118 | 281.12921 | 325.29118 | 4.59909  | 0.1150199 | 2.2382501 | 43  | 5 | 2000-2007 | 0.38 | M-v | 1 | MPG | 110756 2000 WN <sub>193</sub> |
| 2000 XB <sub>2</sub>   | 15.9 | 0.15 | 20071027 | 0.37939   | 165.16128 | 256.66861 | 23.95252 | 0.1944194 | 2.2759651 | 77  | 3 | 2000-2007 | 0.48 | M-v | 2 | MPG | 128715 2000 XB <sub>2</sub>   |
| 2000 XF <sub>27</sub>  | 17.0 | 0.15 | 20071027 | 1.38034   | 359.79836 | 52.83403  | 9.24092  | 0.2354242 | 2.3198923 | 68  | 2 | 2000-2007 | 0.45 | M-v | 3 | MPG | 128715 2000 XF <sub>27</sub>  |
| 2000 XC <sub>28</sub>  | 16.0 | 0.15 | 20071027 | 56.69208  | 321.11634 | 50.84961  | 8.71954  | 0.1657012 | 2.2856844 | 71  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPG | 77490 2000 XC <sub>28</sub>   |
| 2000 XE <sub>34</sub>  | 15.6 | 0.15 | 20071027 | 12.88821  | 130.17236 | 296.57926 | 23.15147 | 0.1683361 | 2.2888045 | 68  | 3 | 2000-2007 | 0.56 | M-v | 2 | MPG | 128715 2000 XE <sub>34</sub>  |
| 2000 XT <sub>37</sub>  | 17.0 | 0.15 | 20071027 | 6.63647   | 93.87325  | 305.79425 | 18.35143 | 0.1154354 | 1.7799634 | 71  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPG | 97422 2000 XT <sub>37</sub>   |
| 2000 XP <sub>45</sub>  | 15.8 | 0.15 | 20071027 | 300.71467 | 125.40616 | 26.11979  | 22.85269 | 0.2622417 | 2.3148838 | 103 | 4 | 2000-2007 | 0.50 | M-v | 1 | MPG | 87413 2000 XP <sub>45</sub>   |
| 2000 XR <sub>53</sub>  | 16.9 | 0.15 | 20071027 | 355.00863 | 193.50379 | 226.03168 | 2.52855  | 0.1416009 | 2.3133641 | 75  | 5 | 2000-2007 | 0.41 | M-v | 1 | MPG | 128715 2000 XR <sub>53</sub>  |
| 2000 XU <sub>53</sub>  | 17.1 | 0.15 | 20071027 | 337.66742 | 353.96861 | 82.00683  | 6.78722  | 0.1933304 | 2.3248468 | 57  | 2 | 2000-2007 | 0.53 | M-v | 4 | MPG | 127884 2000 XU <sub>53</sub>  |
| 2000 YU <sub>7</sub>   | 17.2 | 0.15 | 20071027 | 337.08901 | 303.59837 | 127.12835 | 4.75357  | 0.2189153 | 2.3413949 | 100 | 5 | 1994-2007 | 0.50 | M-v | 1 | MPG | 128715 2000 YU <sub>7</sub>   |
| 2000 YU <sub>9</sub>   | 16.6 | 0.15 | 20071027 | 319.84486 | 49.94569  | 26.08412  | 5.78497  | 0.1911098 | 2.3863610 | 115 | 4 | 1994-2007 | 0.55 | M-v | 1 | MPG | 128715 2000 YU <sub>9</sub>   |
| 2000 YN <sub>10</sub>  | 17.3 | 0.15 | 20071027 | 333.31198 | 322.09044 | 141.61430 | 3.77076  | 0.2063623 | 2.3003846 | 39  | 5 | 1996-2007 | 0.50 | M-v | 1 | MPG | 53665 2000 YN <sub>10</sub>   |
| 2000 YB <sub>14</sub>  | 17.0 | 0.15 | 20071027 | 341.27331 | 196.17803 | 254.57366 | 4.85027  | 0.1232442 | 2.3053630 | 47  | 5 | 1996-2007 | 0.52 | M-v | 0 | MPG | 87414 2000 YB <sub>14</sub>   |
| 2000 YE <sub>14</sub>  | 17.5 | 0.15 | 20071027 | 32.16489  | 297.91382 | 121.35790 | 3.60902  | 0.1396592 | 2.2699041 | 46  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPG | 128715 2000 YE <sub>14</sub>  |
| 2000 YV <sub>15</sub>  | 17.2 | 0.15 | 20071027 | 336.79281 | 3.19162   | 73.17091  | 4.01264  | 0.2768171 | 2.3570533 | 94  | 3 | 2000-2007 | 0.53 | M-v | 3 | MPG | 128715 2000 YV <sub>15</sub>  |
| 2000 YJ <sub>28</sub>  | 16.0 | 0.15 | 20071027 | 29.32338  | 132.66273 | 264.70774 | 21.46125 | 0.2601745 | 2.3294788 | 76  | 3 | 2000-2007 | 0.56 | M-v | 1 | MPG | 128715 2000 YJ <sub>28</sub>  |
| 2000 YT <sub>38</sub>  | 16.5 | 0.15 | 20071027 | 288.36521 | 42.38903  | 114.04480 | 6.71241  | 0.1692920 | 2.3350154 | 70  | 5 | 1998-2007 | 0.53 | M-v | 1 | MPG | 74875 2000 YT <sub>38</sub>   |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2000 YL <sub>44</sub>  | 16.6 | 0.15 | 20071027 | 5.43926   | 331.08385 | 100.80002 | 7.24446  | 0.1613897 | 2.2992785 | 69  | 4 | 2000-2007 | 0.45 | M-v | 1 | MPC | 74876 2000 YL <sub>44</sub>   |
| 2000 YS <sub>44</sub>  | 17.2 | 0.15 | 20071027 | 343.24635 | 214.58594 | 241.20947 | 2.02592  | 0.1678823 | 2.3183193 | 48  | 6 | 1994-2007 | 0.52 | M-v | 0 | MPC | 104143 2000 YS <sub>44</sub>  |
| 2000 YF <sub>45</sub>  | 16.1 | 0.15 | 20071027 | 255.18691 | 99.90204  | 100.22100 | 23.28925 | 0.1118083 | 2.3087514 | 40  | 3 | 2000-2007 | 0.44 | M-v | 3 | MPC | 84662 2000 YF <sub>45</sub>   |
| 2000 YS <sub>47</sub>  | 16.2 | 0.15 | 20071027 | 54.41884  | 131.86364 | 266.23143 | 6.48155  | 0.0972117 | 2.2788252 | 82  | 4 | 2000-2007 | 0.48 | M-v | 1 | MPC | 104143 2000 YS <sub>47</sub>  |
| 2000 YF <sub>51</sub>  | 16.8 | 0.15 | 20071027 | 350.42304 | 101.51140 | 344.56270 | 1.88235  | 0.1782973 | 2.3126498 | 63  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 77493 2000 YF <sub>51</sub>   |
| 2000 YC <sub>56</sub>  | 16.0 | 0.15 | 20071027 | 342.25882 | 139.60889 | 272.02442 | 6.53413  | 0.1235148 | 2.3975079 | 96  | 5 | 1997-2007 | 0.57 | M-v | 1 | MPC | 128715 2000 YC <sub>56</sub>  |
| 2000 YO <sub>62</sub>  | 17.0 | 0.15 | 20071027 | 349.92974 | 140.70556 | 297.32402 | 6.15942  | 0.2314167 | 2.3322545 | 73  | 5 | 1996-2007 | 0.44 | M-v | 0 | MPC | 126585 2000 YO <sub>62</sub>  |
| 2000 YZ <sub>63</sub>  | 16.5 | 0.15 | 20071027 | 28.15072  | 276.47276 | 126.13605 | 6.29242  | 0.1948631 | 2.3103675 | 71  | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 53667 2000 YZ <sub>63</sub>   |
| 2000 YR <sub>64</sub>  | 16.3 | 0.15 | 20071027 | 70.49358  | 78.69085  | 274.15230 | 6.35492  | 0.1471269 | 2.3254958 | 79  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128715 2000 YR <sub>64</sub>  |
| 2000 YS <sub>66</sub>  | 16.2 | 0.15 | 20071027 | 354.59906 | 281.47197 | 111.86616 | 8.05711  | 0.3473819 | 2.3839758 | 95  | 2 | 2000-2007 | 0.43 | M-v | 2 | MPC | 128716 2000 YS <sub>66</sub>  |
| 2000 YR <sub>72</sub>  | 16.9 | 0.15 | 20071027 | 343.87290 | 140.44497 | 276.48853 | 3.92829  | 0.2211150 | 2.3415181 | 52  | 2 | 2000-2007 | 0.44 | M-v | 3 | MPC | 127884 2000 YR <sub>72</sub>  |
| 2000 YA <sub>81</sub>  | 15.8 | 0.15 | 20071027 | 284.10252 | 78.98690  | 92.85679  | 22.80251 | 0.1997014 | 2.2905975 | 88  | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 74882 2000 YA <sub>81</sub>   |
| 2000 YU <sub>82</sub>  | 17.1 | 0.15 | 20071027 | 342.15205 | 268.59216 | 163.34741 | 2.88990  | 0.1447892 | 2.3279068 | 91  | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128716 2000 YU <sub>82</sub>  |
| 2000 YU <sub>84</sub>  | 16.6 | 0.15 | 20071027 | 354.69833 | 157.35870 | 252.68815 | 3.66283  | 0.1736745 | 2.3497325 | 101 | 6 | 1994-2007 | 0.55 | M-v | 1 | MPC | 127884 2000 YU <sub>84</sub>  |
| 2000 YJ <sub>88</sub>  | 16.5 | 0.15 | 20071027 | 333.42626 | 330.11846 | 113.17327 | 6.81787  | 0.1420289 | 2.3556187 | 53  | 3 | 2000-2007 | 0.58 | M-v | 3 | MPC | 128716 2000 YJ <sub>88</sub>  |
| 2000 YJ <sub>90</sub>  | 16.7 | 0.15 | 20071027 | 8.04027   | 348.36443 | 116.20531 | 4.03522  | 0.0794588 | 2.2536588 | 62  | 6 | 1999-2007 | 0.53 | M-v | 1 | MPC | 110757 2000 YJ <sub>90</sub>  |
| 2000 YA <sub>91</sub>  | 17.3 | 0.15 | 20071027 | 352.27200 | 285.94542 | 149.18395 | 2.15291  | 0.1846238 | 2.3330361 | 32  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 74883 2000 YA <sub>91</sub>   |
| 2000 YA <sub>94</sub>  | 17.0 | 0.15 | 20071027 | 301.34416 | 249.48009 | 197.52883 | 0.97240  | 0.1586583 | 2.4266417 | 57  | 3 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128716 2000 YA <sub>94</sub>  |
| 2000 YZ <sub>94</sub>  | 16.6 | 0.15 | 20071027 | 295.45330 | 272.65249 | 301.18586 | 3.44680  | 0.0475423 | 2.1840766 | 69  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 112746 2000 YZ <sub>94</sub>  |
| 2000 YW <sub>98</sub>  | 16.8 | 0.15 | 20071027 | 312.72416 | 39.00463  | 116.90898 | 5.96612  | 0.0957259 | 2.2874499 | 41  | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 74884 2000 YW <sub>98</sub>   |
| 2000 YK <sub>108</sub> | 16.7 | 0.15 | 20071027 | 2.61267   | 27.74826  | 82.21817  | 5.43401  | 0.1099478 | 2.2482565 | 55  | 6 | 1993-2007 | 0.50 | M-v | 1 | MPC | 126585 2000 YK <sub>108</sub> |
| 2000 YK <sub>113</sub> | 16.4 | 0.15 | 20071027 | 288.06380 | 23.29165  | 101.88850 | 7.43549  | 0.0907010 | 2.4034802 | 88  | 3 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128716 2000 YK <sub>113</sub> |
| 2000 YN <sub>119</sub> | 16.6 | 0.15 | 20071027 | 4.03696   | 342.93086 | 62.27921  | 4.81684  | 0.1277490 | 2.3330889 | 69  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 127885 2000 YN <sub>119</sub> |
| 2000 YU <sub>127</sub> | 16.0 | 0.15 | 20071027 | 34.45723  | 13.96322  | 24.36764  | 4.38305  | 0.2339853 | 2.3029751 | 118 | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128716 2000 YU <sub>127</sub> |
| 2000 YG <sub>128</sub> | 16.3 | 0.15 | 20071027 | 39.50193  | 44.39235  | 333.25234 | 6.36284  | 0.1313740 | 2.3663875 | 82  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128716 2000 YG <sub>128</sub> |
| 2000 YV <sub>128</sub> | 16.9 | 0.15 | 20071027 | 314.03324 | 40.15735  | 93.01123  | 5.78032  | 0.0724743 | 2.3402674 | 63  | 6 | 1996-2007 | 0.58 | M-v | 1 | MPC | 128716 2000 YV <sub>128</sub> |
| 2000 YA <sub>129</sub> | 16.1 | 0.15 | 20071027 | 224.36372 | 112.94658 | 90.65071  | 8.03893  | 0.0854158 | 2.4069615 | 68  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128716 2000 YA <sub>129</sub> |
| 2000 YQ <sub>129</sub> | 18.2 | 0.15 | 20071027 | 334.93550 | 269.84909 | 195.02508 | 1.55016  | 0.1892898 | 2.3076267 | 27  | 4 | 2000-2007 | 0.42 | M-v | 0 | MPC | 122388 2000 YQ <sub>129</sub> |
| 2000 YW <sub>133</sub> | 17.4 | 0.15 | 20071027 | 313.62134 | 102.27137 | 354.50954 | 2.08888  | 0.2089051 | 2.3888551 | 87  | 3 | 2000-2007 | 0.43 | M-v | 2 | MPC | 128716 2000 YW <sub>133</sub> |
| 2001 AQ <sub>6</sub>   | 16.3 | 0.15 | 20071027 | 10.30218  | 300.78635 | 100.18107 | 7.54301  | 0.1953888 | 2.3428274 | 58  | 3 | 2001-2007 | 0.55 | M-v | 2 | MPC | 128716 2001 AQ <sub>6</sub>   |
| 2001 AW <sub>9</sub>   | 17.2 | 0.15 | 20071027 | 323.28452 | 159.66865 | 300.33912 | 3.41504  | 0.1796077 | 2.3507589 | 84  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128716 2001 AW <sub>9</sub>   |
| 2001 AX <sub>11</sub>  | 16.7 | 0.15 | 20071027 | 312.02024 | 288.08334 | 192.01789 | 1.93856  | 0.1524975 | 2.3595086 | 63  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128716 2001 AX <sub>11</sub>  |
| 2001 AZ <sub>21</sub>  | 16.5 | 0.15 | 20071027 | 357.48009 | 359.11199 | 77.05992  | 7.36424  | 0.0756271 | 2.3204570 | 60  | 4 | 2001-2007 | 0.57 | M-v | 1 | MPC | 77499 2001 AZ <sub>21</sub>   |
| 2001 AD <sub>22</sub>  | 16.5 | 0.15 | 20071027 | 317.09526 | 79.00560  | 50.48335  | 4.11093  | 0.1255962 | 2.3133846 | 87  | 4 | 2000-2007 | 0.56 | M-v | 0 | MPC | 77499 2001 AD <sub>22</sub>   |
| 2001 AN <sub>27</sub>  | 16.4 | 0.15 | 20071027 | 305.81248 | 99.69512  | 53.19661  | 7.35713  | 0.2418602 | 2.3215937 | 48  | 4 | 1980-2007 | 0.53 | M-v | 2 | MPC | 110758 2001 AN <sub>27</sub>  |
| 2001 AO <sub>31</sub>  | 16.6 | 0.15 | 20071027 | 358.94773 | 338.62572 | 68.52230  | 4.80271  | 0.2005238 | 2.3456422 | 100 | 4 | 1989-2007 | 0.52 | M-v | 1 | MPC | 127885 2001 AO <sub>31</sub>  |
| 2001 AD <sub>47</sub>  | 16.0 | 0.15 | 20071027 | 332.08834 | 40.94957  | 57.24442  | 24.20401 | 0.2392493 | 2.3548376 | 102 | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128716 2001 AD <sub>47</sub>  |
| 2001 AH <sub>49</sub>  | 16.6 | 0.15 | 20071027 | 332.92259 | 21.70995  | 34.75644  | 2.61148  | 0.1612226 | 2.4034604 | 123 | 5 | 1994-2007 | 0.52 | M-v | 1 | MPC | 128716 2001 AH <sub>49</sub>  |
| 2001 AM <sub>50</sub>  | 15.8 | 0.15 | 20071027 | 164.70974 | 236.95134 | 336.89052 | 3.63936  | 0.1124755 | 2.5185465 | 115 | 6 | 1996-2007 | 0.50 | M-v | 3 | MPC | 128716 2001 AM <sub>50</sub>  |
| 2001 BX <sub>2</sub>   | 15.9 | 0.15 | 20071027 | 58.73096  | 336.55482 | 29.90132  | 10.73509 | 0.4037204 | 2.2819010 | 115 | 3 | 2001-2007 | 0.47 | M-v | 1 | MPC | 57795 2001 BX <sub>2</sub>    |
| 2001 BY <sub>9</sub>   | 16.9 | 0.15 | 20071027 | 64.90993  | 204.06458 | 173.77320 | 2.06087  | 0.1363287 | 2.2974013 | 107 | 6 | 2001-2007 | 0.41 | M-v | 1 | MPC | 104144 2001 BY <sub>9</sub>   |
| 2001 BC <sub>11</sub>  | 16.8 | 0.15 | 20071027 | 308.97270 | 237.73965 | 235.55420 | 7.78660  | 0.1380070 | 2.3856022 | 47  | 3 | 2000-2007 | 0.58 | M-v | 3 | MPC | 127885 2001 BC <sub>11</sub>  |
| 2001 BH <sub>13</sub>  | 17.5 | 0.15 | 20071027 | 295.33281 | 223.84867 | 305.52748 | 1.23616  | 0.1829896 | 2.3167394 | 51  | 5 | 2001-2007 | 0.43 | M-v | 1 | MPC | 128716 2001 BH <sub>13</sub>  |
| 2001 BT <sub>17</sub>  | 17.4 | 0.15 | 20071027 | 296.23873 | 138.71381 | 357.30501 | 2.47231  | 0.1201120 | 2.3622620 | 42  | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 77501 2001 BT <sub>17</sub>   |
| 2001 BN <sub>20</sub>  | 16.2 | 0.15 | 20071027 | 242.65332 | 99.03674  | 76.05245  | 5.22386  | 0.0965750 | 2.4300362 | 72  | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128717 2001 BN <sub>20</sub>  |
| 2001 BB <sub>24</sub>  | 17.3 | 0.15 | 20071027 | 2.04630   | 113.88424 | 314.19229 | 2.27690  | 0.1504561 | 2.3364449 | 40  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 110759 2001 BB <sub>24</sub>  |
| 2001 BX <sub>26</sub>  | 16.2 | 0.15 | 20071027 | 78.74062  | 250.72225 | 133.39666 | 9.25965  | 0.1438475 | 2.2718910 | 67  | 6 | 1995-2007 | 0.45 | M-v | 1 | MPC | 104144 2001 BX <sub>26</sub>  |
| 2001 BU <sub>29</sub>  | 16.3 | 0.15 | 20071027 | 343.69865 | 343.79513 | 126.93366 | 5.46988  | 0.1011455 | 2.3058911 | 69  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128717 2001 BU <sub>29</sub>  |
| 2001 BN <sub>33</sub>  | 16.4 | 0.15 | 20071027 | 349.88978 | 268.83947 | 141.75756 | 22.07331 | 0.2795085 | 2.4088633 | 70  | 3 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128717 2001 BN <sub>33</sub>  |
| 2001 BC <sub>34</sub>  | 15.9 | 0.15 | 20071027 | 311.97451 | 359.54058 | 124.45405 | 4.88138  | 0.0932277 | 2.3953539 | 100 | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128717 2001 BC <sub>34</sub>  |
| 2001 BA <sub>35</sub>  | 16.5 | 0.15 | 20071027 | 306.12605 | 233.83772 | 301.32969 | 3.91796  | 0.2239671 | 2.3148808 | 63  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128717 2001 BA <sub>35</sub>  |
| 2001 BB <sub>41</sub>  | 16.8 | 0.15 | 20071027 | 332.67142 | 285.55621 | 157.94985 | 5.49282  | 0.1988662 | 2.3795669 | 75  | 5 | 1996-2007 | 0.49 | M-v | 1 | MPC | 127886 2001 BB <sub>41</sub>  |
| 2001 BS <sub>50</sub>  | 16.3 | 0.15 | 20071027 | 352.46036 | 320.04719 | 131.05865 | 6.14131  | 0.0829745 | 2.3790604 | 71  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 104145 2001 BS <sub>50</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2001 BJ <sub>51</sub>  | 17.2 | 0.15 | 20071027 | 316.64838 | 119.92392 | 15.66713  | 4.06140  | 0.1609025 | 2.3279224 | 30  | 3 | 2001-2007 | 0.52 | M-v | 4 | MPC | 749012001 BJ <sub>51</sub>   |
| 2001 BN <sub>51</sub>  | 16.9 | 0.15 | 20071027 | 237.63800 | 28.04070  | 181.52705 | 2.08618  | 0.1595230 | 2.3630291 | 80  | 6 | 2001-2007 | 0.45 | M-v | 1 | MPC | 1107592001 BN <sub>51</sub>  |
| 2001 BJ <sub>53</sub>  | 16.4 | 0.15 | 20071027 | 20.03266  | 315.07939 | 103.98140 | 6.53898  | 0.0854430 | 2.3549858 | 42  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 1107592001 BJ <sub>53</sub>  |
| 2001 BF <sub>56</sub>  | 16.5 | 0.15 | 20071027 | 7.58546   | 304.57231 | 98.40446  | 4.32667  | 0.2387830 | 2.3748087 | 80  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 1287172001 BF <sub>56</sub>  |
| 2001 BE <sub>61</sub>  | 17.3 | 0.15 | 20071027 | 19.98307  | 303.84528 | 124.49992 | 1.94740  | 0.1682993 | 2.3038214 | 69  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 1287172001 BE <sub>61</sub>  |
| 2001 BB <sub>64</sub>  | 15.5 | 0.15 | 20071027 | 351.44671 | 225.20605 | 213.71917 | 1.74904  | 0.1760175 | 2.3739270 | 142 | 4 | 2001-2007 | 0.52 | M-v | 0 | MPC | 775042001 BB <sub>64</sub>   |
| 2001 BT <sub>73</sub>  | 16.9 | 0.15 | 20071027 | 19.70370  | 257.50748 | 161.05286 | 2.79234  | 0.1471770 | 2.3233290 | 73  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 874172001 BT <sub>73</sub>   |
| 2001 BK <sub>75</sub>  | 16.9 | 0.15 | 20071027 | 316.24807 | 347.97745 | 130.68189 | 3.03007  | 0.1398377 | 2.3759679 | 64  | 4 | 2001-2007 | 0.62 | M-v | 1 | MPC | 1041452001 BK <sub>75</sub>  |
| 2001 BL <sub>79</sub>  | 16.9 | 0.15 | 20071027 | 295.48182 | 18.22338  | 123.35447 | 3.68827  | 0.1638064 | 2.3780115 | 40  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 749052001 BL <sub>79</sub>   |
| 2001 CB <sub>7</sub>   | 15.9 | 0.15 | 20071027 | 344.95707 | 100.87476 | 356.87494 | 6.41254  | 0.0802319 | 2.3625095 | 64  | 6 | 1992-2007 | 0.53 | M-v | 1 | MPC | 1107602001 CB <sub>7</sub>   |
| 2001 CC <sub>7</sub>   | 16.6 | 0.15 | 20071027 | 284.94034 | 56.88289  | 108.74126 | 3.12456  | 0.1474185 | 2.3734155 | 77  | 5 | 2001-2007 | 0.59 | M-v | 1 | MPC | 1041452001 CC <sub>7</sub>   |
| 2001 CG <sub>9</sub>   | 16.5 | 0.15 | 20071027 | 296.71051 | 139.47514 | 2.74660   | 3.60261  | 0.1110351 | 2.3944140 | 78  | 6 | 1999-2007 | 0.50 | M-v | 0 | MPC | 1041452001 CG <sub>9</sub>   |
| 2001 CK <sub>10</sub>  | 16.5 | 0.15 | 20071027 | 233.04464 | 220.26984 | 331.63444 | 6.05073  | 0.1481814 | 2.4345212 | 73  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 1287172001 CK <sub>10</sub>  |
| 2001 CG <sub>14</sub>  | 16.5 | 0.15 | 20071027 | 308.23711 | 52.05439  | 78.05694  | 3.73315  | 0.0949254 | 2.3680715 | 66  | 4 | 2001-2007 | 0.57 | M-v | 1 | MPC | 775062001 CG <sub>14</sub>   |
| 2001 CN <sub>23</sub>  | 17.5 | 0.15 | 20071027 | 329.56950 | 151.50013 | 325.47048 | 1.68940  | 0.1851976 | 2.3376572 | 44  | 5 | 1994-2007 | 0.53 | M-v | 1 | MPC | 1107602001 CN <sub>23</sub>  |
| 2001 CA <sub>24</sub>  | 16.9 | 0.15 | 20071027 | 7.03076   | 259.69519 | 167.40748 | 2.62518  | 0.2150971 | 2.3239099 | 50  | 5 | 1996-2007 | 0.45 | M-v | 1 | MPC | 1287172001 CA <sub>24</sub>  |
| 2001 CV <sub>25</sub>  | 16.3 | 0.15 | 20071027 | 66.06443  | 283.17538 | 117.01990 | 6.99667  | 0.1688747 | 2.2811242 | 75  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 1107602001 CV <sub>25</sub>  |
| 2001 CM <sub>31</sub>  | 17.8 | 0.15 | 20071027 | 205.39791 | 309.96156 | 270.11283 | 0.48388  | 0.1262801 | 2.4460670 | 46  | 4 | 1997-2007 | 0.47 | M-v | 2 | MPC | 1287172001 CM <sub>31</sub>  |
| 2001 CS <sub>41</sub>  | 16.7 | 0.15 | 20071027 | 355.74457 | 318.96958 | 86.00988  | 2.45857  | 0.1819871 | 2.3831452 | 112 | 5 | 1994-2007 | 0.53 | M-v | 1 | MPC | 1287172001 CS <sub>41</sub>  |
| 2001 DQ <sub>5</sub>   | 16.6 | 0.15 | 20071027 | 333.68861 | 35.43100  | 70.70679  | 5.75630  | 0.1462789 | 2.3711910 | 27  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 749132001 DQ <sub>5</sub>    |
| 2001 DO <sub>7</sub>   | 16.3 | 0.15 | 20071027 | 277.87509 | 158.54439 | 72.59820  | 4.59512  | 0.1617188 | 2.2991987 | 70  | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 1287172001 DO <sub>7</sub>   |
| 2001 DK <sub>9</sub>   | 16.4 | 0.15 | 20071027 | 357.55304 | 45.85027  | 28.33147  | 5.31829  | 0.0917998 | 2.3519247 | 54  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 775092001 DK <sub>9</sub>    |
| 2001 DG <sub>10</sub>  | 16.9 | 0.15 | 20071027 | 306.86764 | 116.65120 | 22.07855  | 5.64994  | 0.0685270 | 2.3360579 | 41  | 6 | 1998-2007 | 0.55 | M-v | 1 | MPC | 1041462001 DG <sub>10</sub>  |
| 2001 DU <sub>11</sub>  | 16.6 | 0.15 | 20071027 | 354.01203 | 346.49428 | 118.44070 | 2.78348  | 0.1261741 | 2.3357278 | 57  | 4 | 1994-2007 | 0.52 | M-v | 2 | MPC | 1287172001 DU <sub>11</sub>  |
| 2001 DG <sub>14</sub>  | 15.5 | 0.15 | 20071027 | 242.50178 | 306.62982 | 317.63855 | 23.36267 | 0.2261256 | 2.2822451 | 60  | 5 | 1994-2007 | 0.49 | M-v | 1 | MPC | 578022001 DG <sub>14</sub>   |
| 2001 DG <sub>15</sub>  | 16.5 | 0.15 | 20071027 | 323.92570 | 19.38167  | 78.22926  | 6.10302  | 0.1934434 | 2.3824752 | 73  | 3 | 2001-2007 | 0.50 | M-v | 3 | MPC | 1287172001 DG <sub>15</sub>  |
| 2001 DK <sub>15</sub>  | 16.7 | 0.15 | 20071027 | 309.77482 | 129.71775 | 14.26713  | 5.82909  | 0.2027129 | 2.3565340 | 45  | 3 | 2001-2007 | 0.50 | M-v | 3 | MPC | 578022001 DK <sub>15</sub>   |
| 2001 DM <sub>15</sub>  | 16.6 | 0.15 | 20071027 | 349.59735 | 11.36825  | 90.08841  | 4.99339  | 0.1783773 | 2.3370051 | 59  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 578022001 DM <sub>15</sub>   |
| 2001 DN <sub>15</sub>  | 17.4 | 0.15 | 20071027 | 308.18874 | 51.14413  | 94.99115  | 4.66824  | 0.2521086 | 2.3575174 | 47  | 5 | 1996-2007 | 0.50 | M-v | 1 | MPC | 1107612001 DN <sub>15</sub>  |
| 2001 DG <sub>16</sub>  | 16.8 | 0.15 | 20071027 | 249.70425 | 80.33816  | 101.15662 | 5.74626  | 0.1323075 | 2.4430501 | 68  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 1041462001 DG <sub>16</sub>  |
| 2001 DF <sub>17</sub>  | 17.4 | 0.15 | 20071027 | 342.47182 | 23.92594  | 80.47929  | 6.88337  | 0.1906692 | 2.3521606 | 40  | 4 | 2001-2007 | 0.45 | M-v | 0 | MPC | 1287172001 DF <sub>17</sub>  |
| 2001 DM <sub>19</sub>  | 16.3 | 0.15 | 20071027 | 317.05363 | 57.94225  | 72.11652  | 5.30350  | 0.1323671 | 2.3857211 | 39  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 1107612001 DM <sub>19</sub>  |
| 2001 DP <sub>24</sub>  | 15.1 | 0.15 | 20071027 | 89.86943  | 325.85351 | 341.77260 | 6.73396  | 0.0998160 | 2.5150035 | 165 | 5 | 1999-2007 | 0.48 | M-v | 3 | MPC | 1287172001 DP <sub>24</sub>  |
| 2001 DX <sub>25</sub>  | 16.5 | 0.15 | 20071027 | 300.16417 | 15.05176  | 112.25932 | 4.49994  | 0.2007205 | 2.4056955 | 48  | 4 | 1997-2007 | 0.42 | M-v | 1 | MPC | 1287182001 DX <sub>25</sub>  |
| 2001 DA <sub>33</sub>  | 16.2 | 0.15 | 20071027 | 282.85156 | 159.26903 | 11.25402  | 4.73171  | 0.0851183 | 2.3862785 | 59  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 1287182001 DA <sub>33</sub>  |
| 2001 DH <sub>38</sub>  | 16.0 | 0.15 | 20071027 | 359.81695 | 131.44396 | 285.86079 | 6.39661  | 0.2390579 | 2.3560140 | 86  | 3 | 2000-2007 | 0.52 | M-v | 1 | MPC | 1287182001 DH <sub>38</sub>  |
| 2001 DF <sub>42</sub>  | 17.2 | 0.15 | 20071027 | 298.17173 | 247.58361 | 335.83169 | 7.54364  | 0.1282387 | 2.2389552 | 49  | 5 | 1991-2007 | 0.59 | M-v | 1 | MPC | 578042001 DF <sub>42</sub>   |
| 2001 DK <sub>42</sub>  | 16.9 | 0.15 | 20071027 | 302.43787 | 185.38060 | 323.03271 | 4.50010  | 0.1757182 | 2.3686357 | 42  | 5 | 2001-2007 | 0.42 | M-v | 1 | MPC | 1179302001 DK <sub>42</sub>  |
| 2001 DD <sub>47</sub>  | 16.1 | 0.15 | 20071027 | 253.23344 | 291.57776 | 338.99164 | 5.96452  | 0.1172815 | 2.2306169 | 70  | 5 | 1999-2007 | 0.58 | M-v | 1 | MPC | 578042001 DD <sub>47</sub>   |
| 2001 DW <sub>50</sub>  | 16.5 | 0.15 | 20071027 | 346.85793 | 31.39946  | 55.03998  | 6.44535  | 0.1752812 | 2.3835231 | 41  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 749202001 DW <sub>50</sub>   |
| 2001 DJ <sub>59</sub>  | 16.8 | 0.15 | 20071027 | 319.82783 | 144.80240 | 351.81568 | 4.38761  | 0.1612553 | 2.3583059 | 52  | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 874192001 DJ <sub>59</sub>   |
| 2001 DC <sub>66</sub>  | 16.1 | 0.15 | 20071027 | 320.89460 | 211.76985 | 271.13634 | 1.62761  | 0.1488559 | 2.3726210 | 89  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 775142001 DC <sub>66</sub>   |
| 2001 DP <sub>72</sub>  | 17.3 | 0.15 | 20071027 | 333.66513 | 298.49595 | 157.09214 | 1.76996  | 0.1503250 | 2.3905771 | 37  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 1287182001 DP <sub>72</sub>  |
| 2001 DW <sub>77</sub>  | 17.4 | 0.15 | 20071027 | 113.20026 | 328.30290 | 329.31315 | 5.78497  | 0.1375495 | 2.4686967 | 37  | 4 | 2001-2007 | 0.43 | M-v | 2 | MPC | 749232001 DW <sub>77</sub>   |
| 2001 DM <sub>80</sub>  | 16.8 | 0.15 | 20071027 | 2.76634   | 159.19496 | 274.64299 | 4.35460  | 0.2482200 | 2.3306244 | 49  | 4 | 1994-2007 | 0.53 | M-v | 2 | MPC | 1287182001 DM <sub>80</sub>  |
| 2001 DV <sub>81</sub>  | 17.7 | 0.15 | 20071027 | 31.02313  | 20.16642  | 4.95334   | 1.35069  | 0.1923584 | 2.3848437 | 75  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 1107622001 DV <sub>81</sub>  |
| 2001 DJ <sub>96</sub>  | 17.0 | 0.15 | 20071027 | 300.71152 | 74.36144  | 92.10500  | 3.49174  | 0.1430339 | 2.3297366 | 35  | 3 | 2001-2007 | 0.49 | M-v | 2 | MPC | 749252001 DJ <sub>96</sub>   |
| 2001 DB <sub>100</sub> | 16.8 | 0.15 | 20071027 | 302.74986 | 234.49271 | 264.63976 | 4.19072  | 0.1795348 | 2.3930660 | 55  | 3 | 2000-2007 | 0.56 | M-v | 2 | MPC | 1287182001 DB <sub>100</sub> |
| 2001 DS <sub>101</sub> | 16.0 | 0.15 | 20071027 | 307.99114 | 86.10157  | 53.57334  | 6.52691  | 0.1269456 | 2.3642484 | 102 | 4 | 2001-2007 | 0.57 | M-v | 1 | MPC | 775152001 DS <sub>101</sub>  |
| 2001 EH <sub>3</sub>   | 15.9 | 0.15 | 20071027 | 230.56968 | 161.30019 | 16.04427  | 15.58648 | 0.0935807 | 2.5366630 | 75  | 6 | 1993-2007 | 0.64 | M-v | 2 | MPC | 1287182001 EH <sub>3</sub>   |
| 2001 EM <sub>5</sub>   | 16.3 | 0.15 | 20071027 | 277.25753 | 72.55861  | 87.84174  | 3.01956  | 0.1517442 | 2.4310980 | 83  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 1287182001 EM <sub>5</sub>   |
| 2001 EB <sub>8</sub>   | 16.1 | 0.15 | 20071027 | 311.12172 | 34.80464  | 135.08247 | 3.47841  | 0.1945141 | 2.3351753 | 82  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 1146102001 EB <sub>8</sub>   |
| 2001 EU <sub>8</sub>   | 16.8 | 0.15 | 20071027 | 329.09580 | 39.91386  | 98.42184  | 1.98460  | 0.1577925 | 2.3410249 | 86  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 1041472001 EU <sub>8</sub>   |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 EA <sub>11</sub>  | 16.7 | 0.15 | 20071027 | 234.63487 | 177.54331 | 22.69152  | 4.68476  | 0.1631864 | 2.4831196 | 79  | 4 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128718 2001 EA <sub>11</sub>  |
| 2001 ER <sub>11</sub>  | 15.9 | 0.15 | 20071027 | 286.79211 | 88.69319  | 112.79165 | 11.72866 | 0.1729271 | 2.3790061 | 59  | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 128718 2001 ER <sub>11</sub>  |
| 2001 EA <sub>23</sub>  | 17.0 | 0.15 | 20071027 | 240.27299 | 22.59896  | 178.83391 | 2.54709  | 0.1385346 | 2.4521888 | 111 | 6 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110762 2001 EA <sub>23</sub>  |
| 2001 FG <sub>1</sub>   | 15.9 | 0.15 | 20071027 | 42.21229  | 354.13123 | 23.09830  | 5.27411  | 0.1767415 | 2.5181943 | 72  | 5 | 1999-2007 | 0.49 | M-v | 4 | MPC | 77518 2001 FG <sub>1</sub>    |
| 2001 FL <sub>3</sub>   | 16.6 | 0.15 | 20071027 | 326.48232 | 144.04899 | 25.46214  | 3.99940  | 0.1717364 | 2.3124626 | 96  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128718 2001 FL <sub>3</sub>   |
| 2001 FP <sub>7</sub>   | 16.7 | 0.15 | 20071027 | 20.04734  | 218.35607 | 165.94970 | 14.93106 | 0.1070951 | 2.5450638 | 42  | 4 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128719 2001 FP <sub>7</sub>   |
| 2001 FS <sub>7</sub>   | 16.8 | 0.15 | 20071027 | 343.50673 | 7.63693   | 62.84726  | 2.60253  | 0.1432785 | 2.4535460 | 112 | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128719 2001 FS <sub>7</sub>   |
| 2001 FA <sub>19</sub>  | 16.2 | 0.15 | 20071027 | 301.47828 | 199.46878 | 353.52359 | 5.04238  | 0.1434609 | 2.3332714 | 67  | 4 | 2001-2007 | 0.58 | M-v | 2 | MPC | 122683 2001 FA <sub>19</sub>  |
| 2001 FK <sub>27</sub>  | 16.1 | 0.15 | 20071027 | 325.28384 | 187.69683 | 314.17522 | 5.25720  | 0.1719482 | 2.3610876 | 54  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 110763 2001 FK <sub>27</sub>  |
| 2001 FG <sub>28</sub>  | 16.8 | 0.15 | 20071027 | 302.33252 | 46.57564  | 94.06731  | 2.69805  | 0.1333083 | 2.4084875 | 50  | 6 | 1999-2007 | 0.54 | M-v | 0 | MPC | 104147 2001 FG <sub>28</sub>  |
| 2001 FE <sub>45</sub>  | 16.7 | 0.15 | 20071027 | 262.05771 | 266.87661 | 303.60803 | 3.40831  | 0.1363505 | 2.3878612 | 49  | 6 | 1991-2007 | 0.38 | M-v | 1 | MPC | 110763 2001 FE <sub>45</sub>  |
| 2001 FU <sub>48</sub>  | 16.9 | 0.15 | 20071027 | 305.57200 | 29.22004  | 188.92811 | 1.71481  | 0.1828857 | 2.2995343 | 88  | 6 | 1999-2007 | 0.43 | M-v | 0 | MPC | 110763 2001 FU <sub>48</sub>  |
| 2001 FF <sub>63</sub>  | 16.4 | 0.15 | 20071027 | 246.29250 | 113.52298 | 144.46410 | 8.37878  | 0.0924565 | 2.3158283 | 35  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128719 2001 FF <sub>63</sub>  |
| 2001 FF <sub>66</sub>  | 16.9 | 0.15 | 20071027 | 295.57914 | 58.27660  | 106.35641 | 3.40094  | 0.1202799 | 2.3958800 | 40  | 6 | 1997-2007 | 0.55 | M-v | 1 | MPC | 128719 2001 FF <sub>66</sub>  |
| 2001 FW <sub>70</sub>  | 17.0 | 0.15 | 20071027 | 270.70174 | 90.38123  | 125.04726 | 2.99551  | 0.1569201 | 2.3739612 | 47  | 4 | 1999-2007 | 0.40 | M-v | 1 | MPC | 128719 2001 FW <sub>70</sub>  |
| 2001 FK <sub>72</sub>  | 16.3 | 0.15 | 20071027 | 331.57278 | 88.85040  | 49.28833  | 6.74580  | 0.1940181 | 2.3613669 | 80  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 74085 2001 FK <sub>72</sub>   |
| 2001 FG <sub>77</sub>  | 16.7 | 0.15 | 20071027 | 270.10334 | 150.76462 | 82.97158  | 4.17142  | 0.1941912 | 2.3576865 | 60  | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 116152 2001 FG <sub>77</sub>  |
| 2001 FP <sub>85</sub>  | 17.1 | 0.15 | 20071027 | 39.02343  | 290.57758 | 29.51068  | 4.64300  | 0.1103887 | 2.7629589 | 38  | 2 | 2001-2007 | 0.41 | M-v | 4 | MPC | 126589 2001 FP <sub>85</sub>  |
| 2001 FH <sub>87</sub>  | 16.2 | 0.15 | 20071027 | 317.99250 | 81.81140  | 39.05332  | 13.89398 | 0.1666309 | 2.4347797 | 95  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 122683 2001 FH <sub>87</sub>  |
| 2001 FT <sub>87</sub>  | 17.0 | 0.15 | 20071027 | 217.02248 | 151.49383 | 103.60445 | 3.97125  | 0.1573169 | 2.4307632 | 62  | 7 | 1999-2007 | 0.51 | M-v | 1 | MPC | 110764 2001 FT <sub>87</sub>  |
| 2001 FG <sub>88</sub>  | 15.7 | 0.15 | 20071027 | 60.53023  | 306.96648 | 17.15004  | 15.00474 | 0.1032562 | 2.6685972 | 68  | 4 | 1998-2007 | 0.59 | M-v | 2 | MPC | 127886 2001 FG <sub>88</sub>  |
| 2001 FM <sub>92</sub>  | 16.0 | 0.15 | 20071027 | 298.88504 | 56.68225  | 121.52035 | 6.01640  | 0.1595452 | 2.3493656 | 64  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 87422 2001 FM <sub>92</sub>   |
| 2001 FK <sub>93</sub>  | 13.8 | 0.15 | 20071027 | 68.40629  | 293.75428 | 42.66432  | 8.59054  | 0.1909216 | 2.5458830 | 118 | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128719 2001 FK <sub>93</sub>  |
| 2001 FM <sub>95</sub>  | 16.2 | 0.15 | 20071027 | 251.48595 | 162.84924 | 47.03993  | 7.60498  | 0.1653781 | 2.4226004 | 69  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 110764 2001 FM <sub>95</sub>  |
| 2001 FL <sub>105</sub> | 17.2 | 0.15 | 20071027 | 297.60116 | 139.89435 | 12.87094  | 1.71051  | 0.1275656 | 2.3881855 | 35  | 6 | 1992-2007 | 0.46 | M-v | 1 | MPC | 84675 2001 FL <sub>105</sub>  |
| 2001 FB <sub>106</sub> | 16.0 | 0.15 | 20071027 | 358.68957 | 50.77703  | 41.24349  | 4.56399  | 0.1470739 | 2.3557951 | 131 | 4 | 2001-2007 | 0.62 | M-v | 1 | MPC | 128719 2001 FB <sub>106</sub> |
| 2001 FX <sub>109</sub> | 16.2 | 0.15 | 20071027 | 225.54366 | 199.37377 | 31.64455  | 5.03448  | 0.1562523 | 2.4568250 | 132 | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 121763 2001 FX <sub>109</sub> |
| 2001 FN <sub>111</sub> | 17.2 | 0.15 | 20071027 | 273.70865 | 258.39113 | 277.10610 | 2.38914  | 0.1149903 | 2.4286569 | 39  | 7 | 1991-2007 | 0.55 | M-v | 1 | MPC | 110765 2001 FN <sub>111</sub> |
| 2001 FT <sub>114</sub> | 16.7 | 0.15 | 20071027 | 276.73859 | 141.78505 | 32.38225  | 2.83752  | 0.1321878 | 2.3945521 | 36  | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 77526 2001 FT <sub>114</sub>  |
| 2001 FG <sub>115</sub> | 17.1 | 0.15 | 20071027 | 252.12044 | 185.30310 | 24.62665  | 2.83955  | 0.1457103 | 2.4193307 | 54  | 5 | 2001-2007 | 0.38 | M-v | 1 | MPC | 114611 2001 FG <sub>115</sub> |
| 2001 FA <sub>117</sub> | 16.8 | 0.15 | 20071027 | 251.52468 | 228.60117 | 314.75863 | 13.31451 | 0.1320422 | 2.4415235 | 46  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 110765 2001 FA <sub>117</sub> |
| 2001 FT <sub>118</sub> | 16.2 | 0.15 | 20071027 | 107.06025 | 292.95528 | 8.54158   | 11.37460 | 0.1844337 | 2.6032664 | 45  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 104149 2001 FT <sub>118</sub> |
| 2001 FS <sub>122</sub> | 16.6 | 0.15 | 20071027 | 232.99073 | 160.31195 | 78.50619  | 3.49617  | 0.1360369 | 2.4173626 | 72  | 4 | 2001-2007 | 0.58 | M-v | 1 | MPC | 128720 2001 FS <sub>122</sub> |
| 2001 FR <sub>128</sub> | 19.6 | 0.15 | 20071027 | 205.58599 | 123.36210 | 183.94977 | 45.29554 | 0.4041443 | 1.2433215 | 59  | 1 | 33 days   | 0.57 | M-v | 6 | MPC | 13842 2001 FR <sub>128</sub>  |
| 2001 FK <sub>132</sub> | 16.3 | 0.15 | 20071027 | 292.97281 | 213.40805 | 226.61738 | 1.09213  | 0.0310282 | 2.6399350 | 52  | 5 | 1997-2007 | 0.45 | M-v | 0 | MPC | 126590 2001 FK <sub>132</sub> |
| 2001 FK <sub>140</sub> | 17.1 | 0.15 | 20071027 | 323.66853 | 16.37725  | 132.84043 | 4.10514  | 0.0853016 | 2.3628942 | 45  | 6 | 1994-2007 | 0.50 | M-v | 1 | MPC | 110765 2001 FK <sub>140</sub> |
| 2001 FS <sub>150</sub> | 16.5 | 0.15 | 20071027 | 305.96888 | 226.96145 | 287.05857 | 4.60696  | 0.1862636 | 2.4033196 | 47  | 3 | 2001-2007 | 0.59 | M-v | 3 | MPC | 128720 2001 FS <sub>150</sub> |
| 2001 FD <sub>166</sub> | 15.6 | 0.15 | 20071027 | 53.79176  | 296.44337 | 11.34919  | 11.89869 | 0.0715493 | 2.7295957 | 95  | 5 | 1998-2007 | 0.47 | M-v | 0 | MPC | 128720 2001 FD <sub>166</sub> |
| 2001 FM <sub>170</sub> | 16.8 | 0.15 | 20071027 | 267.04014 | 35.21807  | 187.90772 | 2.87797  | 0.1502974 | 2.3775767 | 70  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 112748 2001 FM <sub>170</sub> |
| 2001 FD <sub>171</sub> | 15.4 | 0.15 | 20071027 | 273.99116 | 147.73985 | 79.07489  | 8.68648  | 0.2044952 | 2.3375968 | 73  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 110765 2001 FD <sub>171</sub> |
| 2001 FS <sub>171</sub> | 16.1 | 0.15 | 20071027 | 275.59338 | 28.65530  | 132.85889 | 13.21247 | 0.1935096 | 2.4603414 | 63  | 5 | 1998-2007 | 0.62 | M-v | 1 | MPC | 128720 2001 FS <sub>171</sub> |
| 2001 FN <sub>176</sub> | 16.0 | 0.15 | 20071027 | 225.00817 | 99.16830  | 96.71173  | 8.20142  | 0.1668181 | 2.5223972 | 76  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128720 2001 FN <sub>176</sub> |
| 2001 FY <sub>177</sub> | 16.8 | 0.15 | 20071027 | 243.38382 | 64.02843  | 149.89711 | 2.91796  | 0.1413837 | 2.4442318 | 62  | 7 | 1999-2007 | 0.47 | M-v | 1 | MPC | 116153 2001 FY <sub>177</sub> |
| 2001 FO <sub>186</sub> | 16.7 | 0.15 | 20071027 | 273.75066 | 60.86395  | 132.33281 | 5.20525  | 0.0963603 | 2.3820440 | 55  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 87424 2001 FO <sub>186</sub>  |
| 2001 FZ <sub>186</sub> | 16.0 | 0.15 | 20071027 | 27.88132  | 128.11844 | 316.82777 | 6.33361  | 0.0717090 | 2.3448690 | 89  | 7 | 1999-2007 | 0.59 | M-v | 1 | MPC | 110766 2001 FZ <sub>186</sub> |
| 2001 FN <sub>193</sub> | 16.2 | 0.15 | 20071027 | 220.08129 | 112.37901 | 122.67922 | 7.17423  | 0.0737283 | 2.4106945 | 75  | 5 | 2001-2007 | 0.61 | M-v | 1 | MPC | 110766 2001 FN <sub>193</sub> |
| 2001 GD <sub>9</sub>   | 15.9 | 0.15 | 20071027 | 150.41660 | 174.23774 | 84.00784  | 11.39553 | 0.1246188 | 2.6344415 | 45  | 5 | 2001-2007 | 0.61 | M-v | 1 | MPC | 128720 2001 GD <sub>9</sub>   |
| 2001 HA                | 16.8 | 0.15 | 20071027 | 294.10861 | 120.91739 | 32.37147  | 2.96419  | 0.1354819 | 2.4519542 | 49  | 6 | 1995-2007 | 0.44 | M-v | 0 | MPC | 74967 2001 HA                 |
| 2001 HC <sub>2</sub>   | 15.8 | 0.15 | 20071027 | 232.95104 | 202.30848 | 37.66566  | 5.12080  | 0.1905205 | 2.4564401 | 90  | 7 | 1997-2007 | 0.59 | M-v | 1 | MPC | 110766 2001 HC <sub>2</sub>   |
| 2001 HB <sub>3</sub>   | 16.3 | 0.15 | 20071027 | 176.54961 | 25.14845  | 212.55887 | 13.02643 | 0.2038261 | 2.6228001 | 59  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 127887 2001 HB <sub>3</sub>   |
| 2001 HD <sub>13</sub>  | 16.3 | 0.15 | 20071027 | 268.30883 | 195.29991 | 5.34077   | 0.97180  | 0.1277086 | 2.4331069 | 55  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128720 2001 HD <sub>13</sub>  |
| 2001 HW <sub>15</sub>  | 20.2 | 0.15 | 20071027 | 142.87174 | 194.71460 | 56.56680  | 18.99011 | 0.2529515 | 1.5254720 | 146 | 3 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128720 2001 HW <sub>15</sub>  |
| 2001 HF <sub>17</sub>  | 17.4 | 0.15 | 20071027 | 358.49848 | 212.71988 | 215.31968 | 1.95927  | 0.1495396 | 2.5238831 | 36  | 4 | 2001-2007 | 0.42 | M-v | 3 | MPC | 128720 2001 HF <sub>17</sub>  |

|                       |      |      |          |           |           |           |          |           |            |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2001 HJ <sub>20</sub> | 16.4 | 0.15 | 20071027 | 115.09791 | 116.11950 | 187.67905 | 21.62325 | 0.0866614 | 1.9014404  | 139 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 102034 2001 HJ <sub>20</sub> |
| 2001 HA <sub>21</sub> | 16.6 | 0.15 | 20071027 | 320.67569 | 117.36481 | 41.54926  | 2.97796  | 0.1491374 | 2.3762337  | 47  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 110767 2001 HA <sub>21</sub> |
| 2001 HE <sub>31</sub> | 16.9 | 0.15 | 20071027 | 284.17813 | 264.46828 | 272.26725 | 1.25989  | 0.1527844 | 2.4335394  | 38  | 5 | 1997-2007 | 0.54 | M-v | 1 | MPC | 87425 2001 HE <sub>31</sub>  |
| 2001 HK <sub>42</sub> | 16.9 | 0.15 | 20071027 | 326.12361 | 27.40578  | 160.56723 | 4.76279  | 0.1685682 | 2.3023500  | 46  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110767 2001 HK <sub>42</sub> |
| 2001 HO <sub>42</sub> | 16.3 | 0.15 | 20071027 | 154.37450 | 147.94672 | 132.13629 | 5.12917  | 0.2397274 | 2.5989823  | 65  | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 114611 2001 HO <sub>42</sub> |
| 2001 HT <sub>43</sub> | 16.5 | 0.15 | 20071027 | 241.86978 | 179.18585 | 34.83048  | 6.62981  | 0.0952482 | 2.4687434  | 50  | 5 | 1997-2007 | 0.50 | M-v | 2 | MPC | 74974 2001 HT <sub>43</sub>  |
| 2001 HD <sub>53</sub> | 16.4 | 0.15 | 20071027 | 307.51741 | 35.30669  | 161.09144 | 3.13461  | 0.1320007 | 2.3575693  | 61  | 6 | 2001-2007 | 0.47 | M-v | 1 | MPC | 110767 2001 HD <sub>53</sub> |
| 2001 JD <sub>8</sub>  | 16.0 | 0.15 | 20071027 | 117.25471 | 78.22776  | 182.93891 | 1.84657  | 0.1414528 | 2.7814537  | 49  | 5 | 1998-2007 | 0.45 | M-v | 1 | MPC | 127887 2001 JD <sub>8</sub>  |
| 2001 KS               | 15.9 | 0.15 | 20071027 | 183.93037 | 28.76740  | 235.86036 | 4.42090  | 0.0826169 | 2.5548105  | 119 | 5 | 2001-2007 | 0.60 | M-v | 1 | MPC | 110768 2001 KS               |
| 2001 KT <sub>1</sub>  | 15.8 | 0.15 | 20071027 | 126.01267 | 182.70692 | 94.39996  | 16.58476 | 0.1662663 | 2.7048072  | 70  | 5 | 2001-2007 | 0.61 | M-v | 1 | MPC | 110768 2001 KT <sub>1</sub>  |
| 2001 KY <sub>1</sub>  | 14.4 | 0.15 | 20071027 | 46.71711  | 43.53984  | 295.03150 | 8.49836  | 0.4911497 | 2.9780161  | 129 | 6 | 1981-2007 | 0.50 | M-v | 1 | MPC | 124329 2001 KY <sub>1</sub>  |
| 2001 KZ <sub>14</sub> | 16.1 | 0.15 | 20071027 | 227.61840 | 137.45970 | 124.65594 | 3.34346  | 0.1636914 | 2.4443436  | 45  | 5 | 1998-2007 | 0.41 | M-v | 1 | MPC | 110768 2001 KZ <sub>14</sub> |
| 2001 KK <sub>16</sub> | 16.4 | 0.15 | 20071027 | 179.35121 | 157.14042 | 82.66102  | 9.72433  | 0.2396217 | 2.6302870  | 51  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 110768 2001 KK <sub>16</sub> |
| 2001 KV <sub>27</sub> | 15.8 | 0.15 | 20071027 | 127.46271 | 199.76641 | 73.39552  | 6.25435  | 0.2727655 | 2.7725983  | 68  | 3 | 2001-2007 | 0.38 | M-v | 3 | MPC | 128721 2001 KV <sub>27</sub> |
| 2001 KZ <sub>49</sub> | 15.4 | 0.15 | 20071027 | 140.39209 | 12.41239  | 254.60831 | 11.61345 | 0.3172949 | 2.7439237  | 68  | 5 | 1993-2007 | 0.53 | M-v | 1 | MPC | 110769 2001 KZ <sub>49</sub> |
| 2001 KK <sub>52</sub> | 16.1 | 0.15 | 20071027 | 266.56105 | 212.41280 | 19.74419  | 3.12463  | 0.1538699 | 2.3806149  | 41  | 5 | 2001-2007 | 0.65 | M-v | 2 | MPC | 110769 2001 KK <sub>52</sub> |
| 2001 KU <sub>52</sub> | 16.2 | 0.15 | 20071027 | 276.34939 | 288.87128 | 280.86355 | 4.30791  | 0.2220761 | 2.3869369  | 48  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 107919 2001 KU <sub>52</sub> |
| 2001 KR <sub>54</sub> | 16.6 | 0.15 | 20071027 | 262.37933 | 78.96445  | 119.31307 | 2.82529  | 0.1502663 | 2.4563461  | 41  | 5 | 2001-2007 | 0.40 | M-v | 1 | MPC | 114611 2001 KR <sub>54</sub> |
| 2001 KV <sub>55</sub> | 15.3 | 0.15 | 20071027 | 135.95765 | 172.69197 | 91.23212  | 17.62902 | 0.1873902 | 2.7598227  | 44  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128721 2001 KV <sub>55</sub> |
| 2001 KR <sub>67</sub> | 15.8 | 0.15 | 20071027 | 275.99061 | 139.00913 | 129.41232 | 25.06654 | 0.2126752 | 3.3294914  | 56  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 87428 2001 KR <sub>67</sub>  |
| 2001 MS <sub>7</sub>  | 15.6 | 0.15 | 20071027 | 48.64556  | 92.23479  | 204.71553 | 15.77346 | 0.3064733 | 2.30481301 | 108 | 3 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128721 2001 MS <sub>7</sub>  |
| 2001 ML <sub>12</sub> | 15.3 | 0.15 | 20071027 | 113.18514 | 350.55677 | 323.84364 | 10.53075 | 0.1174993 | 2.7854754  | 47  | 4 | 2001-2007 | 0.59 | M-v | 2 | MPC | 110770 2001 ML <sub>12</sub> |
| 2001 MH <sub>14</sub> | 15.6 | 0.15 | 20071027 | 183.08224 | 351.39530 | 309.24159 | 7.06197  | 0.1872071 | 2.6124943  | 61  | 4 | 2001-2007 | 0.52 | M-v | 2 | MPC | 110770 2001 MH <sub>14</sub> |
| 2001 MV <sub>15</sub> | 15.5 | 0.15 | 20071027 | 153.80462 | 1.50593   | 273.65098 | 17.58882 | 0.2527413 | 2.6533202  | 38  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 110770 2001 MV <sub>15</sub> |
| 2001 MU <sub>24</sub> | 16.3 | 0.15 | 20071027 | 122.24754 | 44.60413  | 268.69606 | 7.79714  | 0.2629149 | 2.7807761  | 38  | 4 | 1997-2007 | 0.50 | M-v | 1 | MPC | 107922 2001 MU <sub>24</sub> |
| 2001 MQ <sub>29</sub> | 14.8 | 0.15 | 20071027 | 25.34234  | 234.43769 | 134.42999 | 12.68054 | 0.3255404 | 3.0617087  | 119 | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128721 2001 MQ <sub>29</sub> |
| 2001 MV <sub>29</sub> | 14.1 | 0.15 | 20071027 | 55.63501  | 52.85221  | 263.32132 | 17.07137 | 0.1751935 | 3.0752850  | 104 | 3 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128721 2001 MV <sub>29</sub> |
| 2001 NK <sub>3</sub>  | 15.6 | 0.15 | 20071027 | 27.62951  | 234.23796 | 121.20222 | 5.81763  | 0.3016030 | 3.0667052  | 51  | 2 | 2001-2007 | 0.44 | M-v | 4 | MPC | 127888 2001 NK <sub>3</sub>  |
| 2001 NT <sub>5</sub>  | 15.9 | 0.15 | 20071027 | 161.41517 | 178.03665 | 98.34767  | 13.56248 | 0.1983193 | 2.7142841  | 72  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 110770 2001 NT <sub>5</sub>  |
| 2001 NY <sub>6</sub>  | 15.5 | 0.15 | 20071027 | 42.61234  | 54.76676  | 320.86411 | 9.99747  | 0.2568187 | 3.0185660  | 127 | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 110771 2001 NY <sub>6</sub>  |
| 2001 NC <sub>9</sub>  | 16.3 | 0.15 | 20071027 | 90.61656  | 48.63929  | 254.05601 | 5.82916  | 0.2112266 | 2.9198981  | 40  | 4 | 1992-2007 | 0.32 | M-v | 2 | MPC | 128721 2001 NC <sub>9</sub>  |
| 2001 NP <sub>9</sub>  | 15.6 | 0.15 | 20071027 | 105.67898 | 251.86540 | 117.07994 | 14.51393 | 0.1004190 | 2.6465821  | 52  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 112202 2001 NP <sub>9</sub>  |
| 2001 NB <sub>11</sub> | 16.2 | 0.15 | 20071027 | 161.38589 | 169.35868 | 120.81850 | 13.91716 | 0.1234072 | 2.6907330  | 25  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 110771 2001 NB <sub>11</sub> |
| 2001 NW <sub>11</sub> | 14.7 | 0.15 | 20071027 | 61.85643  | 35.52121  | 264.46510 | 7.99303  | 0.1169593 | 3.0585514  | 80  | 5 | 2001-2007 | 0.67 | M-v | 1 | MPC | 128722 2001 NW <sub>11</sub> |
| 2001 NX <sub>18</sub> | 15.1 | 0.15 | 20071027 | 9.09802   | 109.10441 | 251.61672 | 12.02287 | 0.2840118 | 3.2048724  | 85  | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128722 2001 NX <sub>18</sub> |
| 2001 NL <sub>19</sub> | 14.9 | 0.15 | 20071027 | 20.59782  | 110.18257 | 261.47320 | 15.94121 | 0.2633643 | 3.0907114  | 92  | 4 | 1990-2007 | 0.46 | M-v | 1 | MPC | 128722 2001 NL <sub>19</sub> |
| 2001 OG <sub>5</sub>  | 13.9 | 0.15 | 20071027 | 350.81778 | 93.94235  | 304.26044 | 20.08910 | 0.1658662 | 3.1629404  | 106 | 3 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128722 2001 OG <sub>5</sub>  |
| 2001 OP <sub>7</sub>  | 14.8 | 0.15 | 20071027 | 55.03548  | 64.47756  | 262.54690 | 6.58231  | 0.1911074 | 3.0804696  | 135 | 3 | 2001-2007 | 0.47 | M-v | 3 | MPC | 128722 2001 OP <sub>7</sub>  |
| 2001 OV <sub>7</sub>  | 15.1 | 0.15 | 20071027 | 77.51155  | 48.97957  | 239.66929 | 3.40296  | 0.2900887 | 3.0686974  | 130 | 7 | 2000-2007 | 0.53 | M-v | 0 | MPC | 128722 2001 OV <sub>7</sub>  |
| 2001 OQ <sub>11</sub> | 15.4 | 0.15 | 20071027 | 44.68718  | 22.59456  | 4.73346   | 9.61597  | 0.1480366 | 2.8525047  | 55  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 114612 2001 OQ <sub>11</sub> |
| 2001 OY <sub>11</sub> | 15.2 | 0.15 | 20071027 | 37.45567  | 102.80631 | 242.50006 | 23.87968 | 0.2140182 | 3.1812507  | 96  | 2 | 2001-2007 | 0.50 | M-v | 3 | MPC | 128722 2001 OY <sub>11</sub> |
| 2001 OV <sub>18</sub> | 16.9 | 0.15 | 20071027 | 142.50242 | 350.15886 | 301.75048 | 18.65736 | 0.0652562 | 1.9092232  | 57  | 4 | 2001-2007 | 0.63 | M-v | 2 | MPC | 74094 2001 OV <sub>18</sub>  |
| 2001 OZ <sub>18</sub> | 16.3 | 0.15 | 20071027 | 173.46997 | 159.25043 | 166.83871 | 2.13872  | 0.1780573 | 2.5602463  | 51  | 6 | 2000-2007 | 0.54 | M-v | 1 | MPC | 112751 2001 OZ <sub>18</sub> |
| 2001 OS <sub>20</sub> | 14.5 | 0.15 | 20071027 | 16.19699  | 124.39035 | 265.87065 | 16.87731 | 0.2457994 | 3.1059560  | 102 | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128722 2001 OS <sub>20</sub> |
| 2001 OX <sub>22</sub> | 14.1 | 0.15 | 20071027 | 10.64276  | 117.81575 | 273.01789 | 25.20411 | 0.2429686 | 3.1698797  | 112 | 3 | 2001-2007 | 0.59 | M-v | 2 | MPC | 128722 2001 OX <sub>22</sub> |
| 2001 OF <sub>23</sub> | 14.7 | 0.15 | 20071027 | 9.19010   | 126.63839 | 263.84029 | 17.19183 | 0.2155667 | 3.2141852  | 108 | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128722 2001 OF <sub>23</sub> |
| 2001 OM <sub>29</sub> | 15.1 | 0.15 | 20071027 | 107.77558 | 216.29549 | 111.53006 | 13.86801 | 0.2263217 | 2.8056777  | 64  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128722 2001 OM <sub>29</sub> |
| 2001 OU <sub>29</sub> | 15.6 | 0.15 | 20071027 | 14.26545  | 143.74850 | 243.11626 | 26.80292 | 0.1685504 | 3.1362941  | 40  | 3 | 1996-2007 | 0.49 | M-v | 1 | MPC | 127889 2001 OU <sub>29</sub> |
| 2001 OD <sub>30</sub> | 16.4 | 0.15 | 20071027 | 144.79716 | 318.27367 | 17.07585  | 4.32530  | 0.1370078 | 2.6111561  | 49  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPC | 112751 2001 OD <sub>30</sub> |
| 2001 OU <sub>31</sub> | 15.4 | 0.15 | 20071027 | 50.00745  | 88.64530  | 228.07707 | 18.82784 | 0.3895797 | 3.1545800  | 147 | 3 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128722 2001 OU <sub>31</sub> |
| 2001 OU <sub>40</sub> | 15.2 | 0.15 | 20071027 | 31.88353  | 285.05335 | 80.09292  | 10.69650 | 0.1284822 | 3.0694057  | 83  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128722 2001 OU <sub>40</sub> |
| 2001 OF <sub>41</sub> | 15.7 | 0.15 | 20071027 | 13.88790  | 261.58066 | 105.02339 | 17.51203 | 0.2597399 | 3.0938941  | 57  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128722 2001 OF <sub>41</sub> |
| 2001 OJ <sub>44</sub> | 14.3 | 0.15 | 20071027 | 31.68886  | 112.80589 | 243.31745 | 7.03025  | 0.1833874 | 3.1794109  | 186 | 4 | 1990-2007 | 0.51 | M-v | 2 | MPC | 128722 2001 OJ <sub>44</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 OJ <sub>56</sub>  | 16.4 | 0.15 | 20071027 | 101.86731 | 68.48257  | 262.18618 | 18.07236 | 0.0860445 | 1.9507930 | 78  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128722 2001 OJ <sub>56</sub>  |
| 2001 OO <sub>66</sub>  | 14.3 | 0.15 | 20071027 | 341.71971 | 160.71878 | 235.56831 | 27.28687 | 0.1534158 | 3.1839779 | 84  | 3 | 2001-2007 | 0.62 | M-v | 1 | MPC | 128722 2001 OO <sub>66</sub>  |
| 2001 OR <sub>85</sub>  | 14.9 | 0.15 | 20071027 | 39.47063  | 99.53278  | 265.80144 | 12.91525 | 0.2186474 | 2.9859880 | 58  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128722 2001 OR <sub>85</sub>  |
| 2001 OY <sub>88</sub>  | 15.5 | 0.15 | 20071027 | 54.27239  | 197.23154 | 149.16929 | 2.33181  | 0.2366276 | 2.9924429 | 84  | 6 | 1995-2007 | 0.60 | M-v | 1 | MPC | 128722 2001 OY <sub>88</sub>  |
| 2001 OU <sub>91</sub>  | 15.5 | 0.15 | 20071027 | 5.01187   | 135.89257 | 248.08525 | 15.77256 | 0.2436564 | 3.1489153 | 85  | 2 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128722 2001 OU <sub>91</sub>  |
| 2001 OH <sub>92</sub>  | 15.2 | 0.15 | 20071027 | 10.30630  | 24.65268  | 327.32609 | 14.01825 | 0.2070617 | 3.1590917 | 76  | 2 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128722 2001 OH <sub>92</sub>  |
| 2001 OR <sub>95</sub>  | 15.8 | 0.15 | 20071027 | 102.71094 | 68.48834  | 247.62990 | 7.95461  | 0.1487627 | 2.8148447 | 52  | 5 | 2001-2007 | 0.42 | M-v | 1 | MPC | 107930 2001 OR <sub>95</sub>  |
| 2001 OB <sub>98</sub>  | 16.7 | 0.15 | 20071027 | 91.03941  | 56.36235  | 326.98829 | 16.28150 | 0.0804645 | 1.8868528 | 99  | 4 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128722 2001 OB <sub>98</sub>  |
| 2001 OV <sub>99</sub>  | 15.8 | 0.15 | 20071027 | 181.65487 | 176.09084 | 128.24655 | 6.74492  | 0.1254721 | 2.5990493 | 50  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 112752 2001 OV <sub>99</sub>  |
| 2001 OJ <sub>103</sub> | 15.7 | 0.15 | 20071027 | 210.55349 | 335.24524 | 276.68248 | 12.20862 | 0.1224501 | 2.6909455 | 47  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128722 2001 OJ <sub>103</sub> |
| 2001 OP <sub>106</sub> | 15.6 | 0.15 | 20071027 | 63.29889  | 48.74188  | 309.10031 | 10.57044 | 0.2725894 | 2.9870787 | 122 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 110773 2001 OP <sub>106</sub> |
| 2001 OU <sub>106</sub> | 14.1 | 0.15 | 20071027 | 19.08958  | 66.42567  | 315.48836 | 8.79706  | 0.2353870 | 3.1402142 | 154 | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128723 2001 OU <sub>106</sub> |
| 2001 OY <sub>112</sub> | 15.8 | 0.15 | 20071027 | 115.64340 | 49.17016  | 278.60795 | 5.41689  | 0.0416925 | 2.7639597 | 77  | 6 | 1999-2007 | 0.42 | M-v | 1 | MPC | 107931 2001 OY <sub>112</sub> |
| 2001 OA <sub>113</sub> | 15.3 | 0.15 | 20071027 | 54.38193  | 103.51311 | 223.84224 | 4.12568  | 0.1989183 | 3.0555916 | 86  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128723 2001 OA <sub>113</sub> |
| 2001 OC <sub>113</sub> | 14.8 | 0.15 | 20071027 | 95.91788  | 244.52804 | 123.31373 | 22.91845 | 0.0735144 | 2.7162488 | 36  | 6 | 2000-2007 | 0.46 | M-v | 1 | MPC | 107932 2001 OC <sub>113</sub> |
| 2001 OG <sub>113</sub> | 14.9 | 0.15 | 20071027 | 23.44178  | 295.60399 | 69.90107  | 18.14204 | 0.3222370 | 3.1597645 | 104 | 2 | 2001-2007 | 0.45 | M-v | 2 | MPC | 127889 2001 OG <sub>113</sub> |
| 2001 PV <sub>4</sub>   | 16.8 | 0.15 | 20071027 | 209.40395 | 288.70356 | 301.34226 | 17.03634 | 0.1144209 | 1.8883093 | 34  | 4 | 2001-2007 | 0.61 | M-v | 1 | MPC | 70298 2001 PV <sub>4</sub>    |
| 2001 PG <sub>5</sub>   | 15.7 | 0.15 | 20071027 | 5.48813   | 52.85888  | 350.28704 | 15.73621 | 0.3205163 | 3.0888190 | 72  | 3 | 2001-2007 | 0.58 | M-v | 1 | MPC | 48043 2001 PG <sub>5</sub>    |
| 2001 PK <sub>7</sub>   | 16.5 | 0.15 | 20071027 | 349.91190 | 214.01596 | 241.81828 | 19.58346 | 0.1243704 | 1.9340705 | 63  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 74094 2001 PK <sub>7</sub>    |
| 2001 PK <sub>9</sub>   | 18.0 | 0.15 | 20071027 | 283.74495 | 313.60063 | 273.15308 | 10.40675 | 0.3947083 | 1.7803556 | 51  | 4 | 2001-2007 | 0.51 | M-v | 2 | MPC | 110774 2001 PK <sub>9</sub>   |
| 2001 PR <sub>10</sub>  | 15.3 | 0.15 | 20071027 | 359.66736 | 268.10903 | 122.28070 | 16.14910 | 0.3238453 | 3.1355753 | 65  | 3 | 2001-2007 | 0.61 | M-v | 2 | MPC | 128723 2001 PR <sub>10</sub>  |
| 2001 PL <sub>11</sub>  | 16.0 | 0.15 | 20071027 | 44.22365  | 251.46592 | 96.17923  | 5.26150  | 0.2151753 | 3.0233440 | 45  | 2 | 2001-2007 | 0.44 | M-v | 4 | MPC | 127890 2001 PL <sub>11</sub>  |
| 2001 PY <sub>11</sub>  | 14.9 | 0.15 | 20071027 | 17.19793  | 4.79261   | 9.65834   | 15.85780 | 0.2370251 | 3.1069904 | 86  | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128723 2001 PY <sub>11</sub>  |
| 2001 PS <sub>20</sub>  | 15.3 | 0.15 | 20071027 | 115.50609 | 257.64221 | 63.92751  | 9.97935  | 0.1667351 | 2.8111264 | 90  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 110774 2001 PS <sub>20</sub>  |
| 2001 PB <sub>21</sub>  | 15.8 | 0.15 | 20071027 | 25.87347  | 47.22330  | 312.72560 | 6.00461  | 0.2743778 | 3.1051318 | 99  | 4 | 1996-2007 | 0.58 | M-v | 1 | MPC | 128723 2001 PB <sub>21</sub>  |
| 2001 PL <sub>25</sub>  | 15.3 | 0.15 | 20071027 | 21.74993  | 312.37769 | 34.79967  | 8.55640  | 0.2749967 | 3.1945528 | 139 | 2 | 2001-2007 | 0.48 | M-v | 3 | MPC | 128723 2001 PL <sub>25</sub>  |
| 2001 PN <sub>25</sub>  | 15.7 | 0.15 | 20071027 | 113.30514 | 256.07995 | 32.16328  | 6.89620  | 0.3451824 | 2.9010781 | 78  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 117934 2001 PN <sub>25</sub>  |
| 2001 PQ <sub>32</sub>  | 15.4 | 0.15 | 20071027 | 49.67763  | 265.31733 | 80.83116  | 11.61150 | 0.0872959 | 3.0154822 | 44  | 3 | 2001-2007 | 0.65 | M-v | 3 | MPC | 128723 2001 PQ <sub>32</sub>  |
| 2001 PU <sub>32</sub>  | 15.5 | 0.15 | 20071027 | 256.84864 | 232.66047 | 47.36874  | 11.62675 | 0.1942030 | 2.4361325 | 77  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 90062 2001 PU <sub>32</sub>   |
| 2001 PU <sub>34</sub>  | 15.9 | 0.15 | 20071027 | 61.69347  | 97.56130  | 255.65936 | 9.15409  | 0.1177298 | 2.9938352 | 29  | 3 | 2001-2007 | 0.38 | M-v | 3 | MPC | 103196 2001 PU <sub>34</sub>  |
| 2001 PW <sub>34</sub>  | 15.4 | 0.15 | 20071027 | 358.56078 | 118.57178 | 285.74705 | 13.80352 | 0.1845549 | 3.1331058 | 53  | 4 | 2001-2007 | 0.60 | M-v | 1 | MPC | 102037 2001 PW <sub>34</sub>  |
| 2001 PZ <sub>34</sub>  | 14.9 | 0.15 | 20071027 | 4.65205   | 138.75542 | 254.97560 | 13.51253 | 0.2396764 | 3.1602964 | 140 | 2 | 2001-2007 | 0.47 | M-v | 2 | MPC | 127890 2001 PZ <sub>34</sub>  |
| 2001 PH <sub>36</sub>  | 16.7 | 0.15 | 20071027 | 20.90321  | 126.61179 | 286.07159 | 17.15480 | 0.0826095 | 1.9635423 | 43  | 3 | 2001-2007 | 0.49 | M-v | 3 | MPC | 128723 2001 PH <sub>36</sub>  |
| 2001 PY <sub>37</sub>  | 15.2 | 0.15 | 20071027 | 24.10379  | 293.13456 | 87.74825  | 11.36588 | 0.1959177 | 3.0437829 | 53  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128723 2001 PY <sub>37</sub>  |
| 2001 PS <sub>38</sub>  | 15.7 | 0.15 | 20071027 | 31.54204  | 317.51167 | 53.68066  | 12.20910 | 0.1634933 | 3.0321945 | 61  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128723 2001 PS <sub>38</sub>  |
| 2001 PU <sub>38</sub>  | 15.4 | 0.15 | 20071027 | 52.36281  | 309.29088 | 16.63219  | 17.08489 | 0.3095741 | 3.0851466 | 58  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128723 2001 PU <sub>38</sub>  |
| 2001 PC <sub>39</sub>  | 15.2 | 0.15 | 20071027 | 39.99760  | 319.75506 | 43.73253  | 15.95943 | 0.0773080 | 2.9969319 | 74  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128723 2001 PC <sub>39</sub>  |
| 2001 PN <sub>40</sub>  | 15.0 | 0.15 | 20071027 | 17.32446  | 143.11552 | 234.82648 | 9.35006  | 0.2233447 | 3.1429897 | 162 | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128723 2001 PN <sub>40</sub>  |
| 2001 PO <sub>47</sub>  | 14.9 | 0.15 | 20071027 | 54.61614  | 251.84692 | 77.80623  | 11.58054 | 0.2293990 | 3.1130277 | 68  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128723 2001 PO <sub>47</sub>  |
| 2001 PU <sub>48</sub>  | 16.0 | 0.15 | 20071027 | 5.71311   | 138.86207 | 226.19779 | 13.45437 | 0.2732895 | 3.2041905 | 59  | 2 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128723 2001 PU <sub>48</sub>  |
| 2001 PH <sub>50</sub>  | 15.4 | 0.15 | 20071027 | 7.11688   | 47.50194  | 334.96909 | 15.85899 | 0.1512657 | 3.0772441 | 61  | 3 | 2001-2007 | 0.56 | M-v | 3 | MPC | 128723 2001 PH <sub>50</sub>  |
| 2001 PF <sub>53</sub>  | 15.7 | 0.15 | 20071027 | 29.99472  | 199.85585 | 164.94694 | 4.80980  | 0.2133629 | 3.0402880 | 82  | 3 | 2001-2007 | 0.51 | M-v | 3 | MPC | 127891 2001 PF <sub>53</sub>  |
| 2001 PZ <sub>57</sub>  | 15.9 | 0.15 | 20071027 | 205.73881 | 332.41789 | 321.80031 | 11.84225 | 0.1394631 | 2.6001274 | 81  | 4 | 2001-2007 | 0.48 | M-v | 2 | MPC | 112753 2001 PZ <sub>57</sub>  |
| 2001 QK <sub>4</sub>   | 15.8 | 0.15 | 20071027 | 132.09217 | 30.42975  | 320.18331 | 9.92780  | 0.0909093 | 2.6566088 | 54  | 4 | 2001-2007 | 0.57 | M-v | 2 | MPC | 117935 2001 QK <sub>4</sub>   |
| 2001 QL <sub>5</sub>   | 15.4 | 0.15 | 20071027 | 68.47331  | 227.96282 | 137.51469 | 9.06814  | 0.2268171 | 2.8826911 | 98  | 5 | 1994-2007 | 0.55 | M-v | 1 | MPC | 110775 2001 QL <sub>5</sub>   |
| 2001 QD <sub>9</sub>   | 15.0 | 0.15 | 20071027 | 355.48127 | 52.39450  | 334.23187 | 15.98842 | 0.1971550 | 3.1635600 | 50  | 2 | 2001-2007 | 0.48 | M-v | 3 | MPC | 125823 2001 QD <sub>9</sub>   |
| 2001 QV <sub>10</sub>  | 15.4 | 0.15 | 20071027 | 7.05580   | 241.21908 | 146.14016 | 1.64741  | 0.1913987 | 3.1126862 | 115 | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128723 2001 QV <sub>10</sub>  |
| 2001 QL <sub>20</sub>  | 19.4 | 0.15 | 20071027 | 34.12108  | 14.85071  | 348.22810 | 9.24724  | 0.2452481 | 3.1047562 | 116 | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128723 2001 QL <sub>20</sub>  |
| 2001 QZ <sub>25</sub>  | 15.0 | 0.15 | 20071027 | 15.31528  | 359.36787 | 1.71800   | 9.51272  | 0.2543594 | 3.1846504 | 188 | 2 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128723 2001 QZ <sub>25</sub>  |
| 2001 QQ <sub>33</sub>  | 16.6 | 0.15 | 20071027 | 243.07293 | 32.84653  | 152.21980 | 23.28712 | 0.0577841 | 1.9471790 | 63  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 102037 2001 QQ <sub>33</sub>  |
| 2001 QW <sub>33</sub>  | 15.1 | 0.15 | 20071027 | 29.89790  | 80.33545  | 268.39883 | 9.71490  | 0.1955155 | 3.2307472 | 83  | 2 | 2001-2007 | 0.57 | M-v | 3 | MPC | 128723 2001 QW <sub>33</sub>  |
| 2001 QR <sub>34</sub>  | 15.3 | 0.15 | 20071027 | 68.45889  | 78.15737  | 298.76504 | 8.75919  | 0.1521311 | 2.7766441 | 61  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128723 2001 QR <sub>34</sub>  |
| 2001 QG <sub>36</sub>  | 15.7 | 0.15 | 20071027 | 27.87117  | 214.34885 | 147.17604 | 4.60036  | 0.2838971 | 3.0590847 | 75  | 2 | 2001-2007 | 0.44 | M-v | 4 | MPC | 127891 2001 QG <sub>36</sub>  |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2001 QA <sub>37</sub>  | 15.1 | 0.15 | 20071027 | 40.22314  | 205.62872 | 140.68101 | 5.52831  | 0.2157687 | 3.0438222 | 102 | 3 | 1991-2007 | 0.54 | M-v | 2 | MP | 128723 2001 QA <sub>37</sub>  |
| 2001 QY <sub>39</sub>  | 15.9 | 0.15 | 20071027 | 43.59722  | 30.17469  | 288.88615 | 2.39589  | 0.1954531 | 3.1071127 | 51  | 2 | 2001-2007 | 0.46 | M-v | 4 | MP | 128723 2001 QY <sub>39</sub>  |
| 2001 QM <sub>45</sub>  | 16.0 | 0.15 | 20071027 | 30.46464  | 246.12989 | 109.29966 | 3.07908  | 0.2957077 | 3.0878352 | 59  | 2 | 2001-2007 | 0.59 | M-v | 3 | MP | 127891 2001 QM <sub>45</sub>  |
| 2001 QP <sub>65</sub>  | 15.0 | 0.15 | 20071027 | 5.62989   | 76.86698  | 310.46184 | 9.14495  | 0.2449286 | 3.1631794 | 115 | 3 | 2001-2007 | 0.48 | M-v | 2 | MP | 128724 2001 QP <sub>65</sub>  |
| 2001 QU <sub>71</sub>  | 14.6 | 0.15 | 20071027 | 38.90313  | 117.36478 | 214.18223 | 21.46717 | 0.1647431 | 3.1631428 | 129 | 3 | 2001-2007 | 0.53 | M-v | 1 | MP | 128724 2001 QU <sub>71</sub>  |
| 2001 QH <sub>73</sub>  | 15.2 | 0.15 | 20071027 | 33.52719  | 232.75659 | 126.96187 | 25.20150 | 0.3158560 | 3.1600719 | 37  | 3 | 2001-2007 | 0.52 | M-v | 3 | MP | 128724 2001 QH <sub>73</sub>  |
| 2001 QK <sub>86</sub>  | 14.6 | 0.15 | 20071027 | 38.69273  | 46.08886  | 294.60972 | 18.32714 | 0.0809541 | 3.1831562 | 64  | 4 | 2001-2007 | 0.61 | M-v | 1 | MP | 128724 2001 QK <sub>86</sub>  |
| 2001 QB <sub>91</sub>  | 17.0 | 0.15 | 20071027 | 156.58622 | 65.08528  | 195.58225 | 22.02248 | 0.0695014 | 1.9638143 | 67  | 4 | 2001-2007 | 0.59 | M-v | 2 | MP | 128724 2001 QB <sub>91</sub>  |
| 2001 QY <sub>95</sub>  | 16.6 | 0.15 | 20071027 | 3.69046   | 39.83946  | 311.52720 | 4.61950  | 0.1361432 | 3.2288912 | 40  | 2 | 2001-2007 | 0.44 | M-v | 3 | MP | 127892 2001 QY <sub>95</sub>  |
| 2001 QB <sub>100</sub> | 15.1 | 0.15 | 20071027 | 32.49442  | 240.04947 | 103.48325 | 12.68494 | 0.2646499 | 3.0778391 | 60  | 3 | 2001-2007 | 0.53 | M-v | 2 | MP | 128724 2001 QB <sub>100</sub> |
| 2001 QU <sub>106</sub> | 14.9 | 0.15 | 20071027 | 17.37839  | 112.12227 | 240.62747 | 24.59022 | 0.2968483 | 3.1911894 | 97  | 4 | 2001-2007 | 0.47 | M-v | 1 | MP | 128724 2001 QU <sub>106</sub> |
| 2001 QZ <sub>106</sub> | 17.0 | 0.15 | 20071027 | 1.03431   | 172.00426 | 269.02933 | 17.90076 | 0.0880196 | 1.9452242 | 50  | 3 | 2001-2007 | 0.55 | M-v | 3 | MP | 128724 2001 QZ <sub>106</sub> |
| 2001 QK <sub>107</sub> | 16.7 | 0.15 | 20071027 | 188.80694 | 318.85303 | 261.15508 | 17.20619 | 0.0659117 | 1.9860469 | 48  | 5 | 2001-2007 | 0.52 | M-v | 2 | MP | 128724 2001 QK <sub>107</sub> |
| 2001 QO <sub>110</sub> | 15.9 | 0.15 | 20071027 | 7.19843   | 276.05565 | 132.48838 | 9.68372  | 0.2134320 | 3.1081432 | 59  | 4 | 2001-2007 | 0.55 | M-v | 1 | MP | 128724 2001 QO <sub>110</sub> |
| 2001 QY <sub>113</sub> | 15.8 | 0.15 | 20071027 | 169.05726 | 334.94043 | 262.63424 | 8.97171  | 0.0548098 | 2.9658689 | 51  | 5 | 2001-2007 | 0.42 | M-v | 1 | MP | 128724 2001 QY <sub>113</sub> |
| 2001 QD <sub>118</sub> | 15.5 | 0.15 | 20071027 | 35.73513  | 64.98952  | 313.57574 | 8.14480  | 0.2168953 | 3.0967668 | 85  | 5 | 1990-2007 | 0.50 | M-v | 1 | MP | 128724 2001 QD <sub>118</sub> |
| 2001 QD <sub>123</sub> | 15.6 | 0.15 | 20071027 | 17.23974  | 33.38683  | 338.91427 | 12.64561 | 0.1645777 | 3.0859470 | 53  | 3 | 2001-2007 | 0.60 | M-v | 3 | MP | 127892 2001 QD <sub>123</sub> |
| 2001 QY <sub>123</sub> | 15.2 | 0.15 | 20071027 | 85.64180  | 317.76252 | 14.96157  | 6.33900  | 0.0922944 | 2.9150623 | 47  | 4 | 2001-2007 | 0.55 | M-v | 1 | MP | 110778 2001 QY <sub>123</sub> |
| 2001 QR <sub>124</sub> | 15.6 | 0.15 | 20071027 | 82.45965  | 276.61019 | 96.52176  | 3.94904  | 0.0989182 | 2.7836317 | 73  | 5 | 2001-2007 | 0.48 | M-v | 1 | MP | 128724 2001 QR <sub>124</sub> |
| 2001 QD <sub>125</sub> | 15.5 | 0.15 | 20071027 | 135.38433 | 207.33593 | 147.93187 | 16.11638 | 0.1053586 | 2.6629722 | 46  | 4 | 2001-2007 | 0.58 | M-v | 3 | MP | 107944 2001 QD <sub>125</sub> |
| 2001 QL <sub>128</sub> | 16.5 | 0.15 | 20071027 | 63.86806  | 61.40958  | 315.10402 | 17.90254 | 0.0878733 | 1.9400685 | 45  | 3 | 2001-2007 | 0.51 | M-v | 3 | MP | 124331 2001 QL <sub>128</sub> |
| 2001 QG <sub>129</sub> | 14.8 | 0.15 | 20071027 | 15.80315  | 84.81467  | 296.32518 | 9.89503  | 0.2098825 | 3.0871332 | 84  | 5 | 2001-2007 | 0.49 | M-v | 1 | MP | 128724 2001 QG <sub>129</sub> |
| 2001 QH <sub>134</sub> | 15.8 | 0.15 | 20071027 | 46.25157  | 113.75498 | 227.71164 | 17.21679 | 0.1737354 | 3.0774049 | 87  | 4 | 1996-2007 | 0.52 | M-v | 0 | MP | 128724 2001 QH <sub>134</sub> |
| 2001 QC <sub>135</sub> | 15.1 | 0.15 | 20071027 | 52.90322  | 29.49858  | 324.73308 | 12.54388 | 0.3246259 | 3.0829260 | 61  | 4 | 1990-2007 | 0.55 | M-v | 1 | MP | 128724 2001 QC <sub>135</sub> |
| 2001 QH <sub>142</sub> | 18.3 | 0.15 | 20071027 | 215.54459 | 253.41705 | 318.38831 | 30.59906 | 0.2216599 | 1.5274267 | 47  | 4 | 2001-2007 | 0.59 | M-v | 4 | MP | 128724 2001 QH <sub>142</sub> |
| 2001 QM <sub>143</sub> | 15.8 | 0.15 | 20071027 | 331.47268 | 278.62068 | 188.58334 | 2.10663  | 0.0439163 | 2.9007182 | 84  | 4 | 2001-2007 | 0.55 | M-v | 0 | MP | 117938 2001 QM <sub>143</sub> |
| 2001 QW <sub>149</sub> | 14.7 | 0.15 | 20071027 | 345.04609 | 100.83121 | 306.58092 | 11.09123 | 0.2471033 | 3.0863931 | 97  | 3 | 2001-2007 | 0.51 | M-v | 2 | MP | 128724 2001 QW <sub>149</sub> |
| 2001 QC <sub>152</sub> | 15.0 | 0.15 | 20071027 | 48.59425  | 76.51613  | 286.20544 | 24.83017 | 0.2566344 | 3.1353987 | 52  | 4 | 2001-2007 | 0.73 | M-v | 1 | MP | 103201 2001 QC <sub>152</sub> |
| 2001 QA <sub>153</sub> | 16.3 | 0.15 | 20071027 | 74.41075  | 13.24055  | 355.78979 | 6.23789  | 0.1195893 | 2.8852810 | 63  | 5 | 1999-2007 | 0.50 | M-v | 1 | MP | 117938 2001 QA <sub>153</sub> |
| 2001 QE <sub>155</sub> | 15.3 | 0.15 | 20071027 | 331.80504 | 99.01415  | 322.77274 | 24.43144 | 0.2537993 | 3.1956225 | 67  | 3 | 2001-2007 | 0.54 | M-v | 1 | MP | 128725 2001 QE <sub>155</sub> |
| 2001 QL <sub>157</sub> | 16.4 | 0.15 | 20071027 | 42.30997  | 171.78989 | 180.76200 | 6.04180  | 0.2395970 | 3.0565241 | 60  | 3 | 2001-2007 | 0.60 | M-v | 3 | MP | 127892 2001 QL <sub>157</sub> |
| 2001 QR <sub>157</sub> | 15.6 | 0.15 | 20071027 | 17.53338  | 220.31950 | 169.82018 | 5.12572  | 0.2846754 | 3.0776719 | 61  | 3 | 2001-2007 | 0.57 | M-v | 2 | MP | 128725 2001 QR <sub>157</sub> |
| 2001 QE <sub>162</sub> | 15.4 | 0.15 | 20071027 | 48.66659  | 313.99340 | 351.90909 | 11.31209 | 0.1651849 | 3.1943549 | 67  | 3 | 2001-2007 | 0.59 | M-v | 3 | MP | 126594 2001 QE <sub>162</sub> |
| 2001 QJ <sub>173</sub> | 15.4 | 0.15 | 20071027 | 14.34017  | 197.98339 | 200.75973 | 10.34900 | 0.1037269 | 3.0091282 | 68  | 5 | 1994-2007 | 0.51 | M-v | 0 | MP | 128725 2001 QJ <sub>173</sub> |
| 2001 QA <sub>187</sub> | 14.3 | 0.15 | 20071027 | 357.84106 | 100.96618 | 270.77286 | 14.05204 | 0.1717960 | 3.3174304 | 84  | 3 | 2001-2007 | 0.56 | M-v | 2 | MP | 128725 2001 QA <sub>187</sub> |
| 2001 QW <sub>187</sub> | 14.8 | 0.15 | 20071027 | 11.23314  | 104.69789 | 273.46427 | 11.93758 | 0.2989092 | 3.1967131 | 102 | 3 | 1995-2007 | 0.45 | M-v | 2 | MP | 128725 2001 QW <sub>187</sub> |
| 2001 QM <sub>189</sub> | 15.1 | 0.15 | 20071027 | 81.03537  | 35.10369  | 270.22822 | 16.89321 | 0.1761006 | 3.0616819 | 51  | 4 | 2001-2007 | 0.46 | M-v | 1 | MP | 100039 2001 QM <sub>189</sub> |
| 2001 QT <sub>190</sub> | 15.0 | 0.15 | 20071027 | 50.21191  | 100.82137 | 224.63720 | 16.09819 | 0.1109636 | 3.1701310 | 52  | 4 | 1996-2007 | 0.53 | M-v | 2 | MP | 128725 2001 QT <sub>190</sub> |
| 2001 QV <sub>190</sub> | 14.7 | 0.15 | 20071027 | 15.94990  | 122.46744 | 238.30512 | 16.23283 | 0.1253170 | 3.2092035 | 110 | 4 | 1990-2007 | 0.57 | M-v | 1 | MP | 128725 2001 QV <sub>190</sub> |
| 2001 QA <sub>192</sub> | 15.5 | 0.15 | 20071027 | 85.32949  | 267.08497 | 75.79988  | 4.24137  | 0.0852567 | 2.8498783 | 57  | 5 | 2001-2007 | 0.52 | M-v | 1 | MP | 110780 2001 QA <sub>192</sub> |
| 2001 QE <sub>192</sub> | 14.5 | 0.15 | 20071027 | 357.37176 | 100.62829 | 289.49437 | 13.71309 | 0.1676913 | 3.2154450 | 99  | 3 | 2001-2007 | 0.59 | M-v | 2 | MP | 128725 2001 QE <sub>192</sub> |
| 2001 QO <sub>192</sub> | 14.9 | 0.15 | 20071027 | 12.56598  | 106.34683 | 271.37794 | 15.05280 | 0.1284246 | 3.1809850 | 50  | 2 | 2001-2007 | 0.54 | M-v | 3 | MP | 127893 2001 QO <sub>192</sub> |
| 2001 QK <sub>193</sub> | 15.6 | 0.15 | 20071027 | 42.54148  | 62.58094  | 304.10639 | 15.11969 | 0.2347806 | 3.0880881 | 97  | 4 | 2001-2007 | 0.47 | M-v | 0 | MP | 128725 2001 QK <sub>193</sub> |
| 2001 QE <sub>195</sub> | 15.0 | 0.15 | 20071027 | 19.00662  | 73.05802  | 324.87910 | 10.19021 | 0.1791398 | 3.1395756 | 77  | 4 | 2001-2007 | 0.49 | M-v | 1 | MP | 128725 2001 QE <sub>195</sub> |
| 2001 QH <sub>202</sub> | 17.1 | 0.15 | 20071027 | 174.85038 | 77.98528  | 167.48273 | 22.63945 | 0.0720828 | 1.9458007 | 52  | 4 | 2001-2007 | 0.64 | M-v | 1 | MP | 102038 2001 QH <sub>202</sub> |
| 2001 QB <sub>203</sub> | 15.3 | 0.15 | 20071027 | 35.45916  | 1.20480   | 358.84101 | 8.66270  | 0.0975904 | 2.9951980 | 76  | 6 | 1994-2007 | 0.46 | M-v | 0 | MP | 128725 2001 QB <sub>203</sub> |
| 2001 QE <sub>204</sub> | 16.0 | 0.15 | 20071027 | 177.46543 | 355.11540 | 260.87907 | 6.20400  | 0.0934342 | 2.8172235 | 56  | 4 | 2001-2007 | 0.60 | M-v | 1 | MP | 110780 2001 QE <sub>204</sub> |
| 2001 QP <sub>205</sub> | 15.1 | 0.15 | 20071027 | 10.63308  | 339.97764 | 26.74318  | 11.60224 | 0.1020582 | 3.1946501 | 115 | 3 | 2001-2007 | 0.50 | M-v | 2 | MP | 128725 2001 QP <sub>205</sub> |
| 2001 QQ <sub>205</sub> | 15.2 | 0.15 | 20071027 | 15.86016  | 213.99775 | 171.43870 | 7.42924  | 0.1875814 | 3.0833285 | 92  | 4 | 2001-2007 | 0.55 | M-v | 1 | MP | 128725 2001 QQ <sub>205</sub> |
| 2001 QE <sub>209</sub> | 15.8 | 0.15 | 20071027 | 54.52216  | 51.43898  | 318.96103 | 1.47697  | 0.0787830 | 2.9039224 | 57  | 5 | 2001-2007 | 0.46 | M-v | 0 | MP | 128725 2001 QE <sub>209</sub> |
| 2001 QJ <sub>209</sub> | 15.5 | 0.15 | 20071027 | 97.70574  | 359.68378 | 317.80119 | 11.02721 | 0.0388553 | 2.9214655 | 49  | 5 | 2001-2007 | 0.56 | M-v | 1 | MP | 110781 2001 QJ <sub>209</sub> |
| 2001 QJ <sub>210</sub> | 15.0 | 0.15 | 20071027 | 40.79043  | 206.90131 | 156.60625 | 15.49565 | 0.1649132 | 3.0250319 | 73  | 4 | 2001-2007 | 0.49 | M-v | 1 | MP | 128725 2001 QJ <sub>210</sub> |
| 2001 QU <sub>216</sub> | 15.6 | 0.15 | 20071027 | 130.40555 | 305.85242 | 14.93306  | 3.97902  | 0.0970327 | 2.8100595 | 121 | 4 | 2001-2007 | 0.48 | M-v | 1 | MP | 128725 2001 QU <sub>216</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2001 QK <sub>223</sub> | 15.9 | 0.15 | 20071027 | 141.93346 | 205.20216 | 128.42206 | 6.80432  | 0.0571711 | 2.6724430 | 53  | 4 | 2001-2007 | 0.56 | M-v | 2 | MP | 128725 2001 QK <sub>223</sub> |
| 2001 QU <sub>223</sub> | 15.9 | 0.15 | 20071027 | 38.21847  | 110.17320 | 232.33990 | 0.69633  | 0.2140936 | 3.0750207 | 89  | 4 | 2000-2007 | 0.42 | M-v | 2 | MP | 128725 2001 QU <sub>223</sub> |
| 2001 QE <sub>225</sub> | 16.1 | 0.15 | 20071027 | 26.41372  | 34.37534  | 343.05829 | 8.48275  | 0.1221334 | 3.0110031 | 51  | 3 | 1999-2007 | 0.54 | M-v | 3 | MP | 128725 2001 QE <sub>225</sub> |
| 2001 QQ <sub>225</sub> | 15.9 | 0.15 | 20071027 | 34.88351  | 126.99271 | 292.89119 | 9.27889  | 0.2522044 | 2.9398161 | 64  | 5 | 1997-2007 | 0.46 | M-v | 1 | MP | 128725 2001 QQ <sub>225</sub> |
| 2001 QB <sub>226</sub> | 14.8 | 0.15 | 20071027 | 33.87240  | 59.77108  | 315.23679 | 11.03076 | 0.1509046 | 3.0781909 | 63  | 3 | 2001-2007 | 0.43 | M-v | 2 | MP | 128725 2001 QB <sub>226</sub> |
| 2001 QF <sub>226</sub> | 15.0 | 0.15 | 20071027 | 11.93489  | 86.82792  | 299.52598 | 8.49224  | 0.1116914 | 3.1318600 | 60  | 2 | 2001-2007 | 0.57 | M-v | 4 | MP | 127893 2001 QF <sub>226</sub> |
| 2001 QN <sub>229</sub> | 15.0 | 0.15 | 20071027 | 35.59721  | 95.77933  | 294.68226 | 7.87556  | 0.0994917 | 2.9754542 | 71  | 5 | 2001-2007 | 0.55 | M-v | 0 | MP | 110782 2001 QN <sub>229</sub> |
| 2001 QF <sub>230</sub> | 15.1 | 0.15 | 20071027 | 13.11180  | 81.90463  | 290.85541 | 8.39602  | 0.2334212 | 3.1613119 | 90  | 3 | 2001-2007 | 0.50 | M-v | 3 | MP | 128726 2001 QF <sub>230</sub> |
| 2001 QG <sub>234</sub> | 16.2 | 0.15 | 20071027 | 34.13623  | 224.82711 | 166.71048 | 4.81224  | 0.2713748 | 3.0382131 | 78  | 3 | 2001-2007 | 0.58 | M-v | 2 | MP | 110782 2001 QG <sub>234</sub> |
| 2001 QM <sub>234</sub> | 15.8 | 0.15 | 20071027 | 93.57372  | 233.40605 | 164.79007 | 8.17725  | 0.2284079 | 2.7536960 | 80  | 5 | 1999-2007 | 0.48 | M-v | 1 | MP | 114619 2001 QM <sub>234</sub> |
| 2001 QC <sub>235</sub> | 16.1 | 0.15 | 20071027 | 18.33821  | 305.33252 | 92.64125  | 1.38758  | 0.1689169 | 3.0701007 | 86  | 4 | 2001-2007 | 0.54 | M-v | 0 | MP | 128726 2001 QC <sub>235</sub> |
| 2001 QY <sub>236</sub> | 15.4 | 0.15 | 20071027 | 64.81197  | 349.68592 | 347.62417 | 11.06933 | 0.1152148 | 3.0710299 | 80  | 5 | 2001-2007 | 0.50 | M-v | 1 | MP | 128726 2001 QY <sub>236</sub> |
| 2001 QH <sub>238</sub> | 15.0 | 0.15 | 20071027 | 52.14962  | 354.79855 | 2.19939   | 6.27732  | 0.1115131 | 3.0613878 | 86  | 5 | 2001-2007 | 0.56 | M-v | 1 | MP | 128726 2001 QH <sub>238</sub> |
| 2001 QP <sub>238</sub> | 15.0 | 0.15 | 20071027 | 87.07303  | 337.07607 | 355.14300 | 10.30571 | 0.0812845 | 3.0096591 | 138 | 6 | 1996-2007 | 0.56 | M-v | 1 | MP | 110782 2001 QP <sub>238</sub> |
| 2001 QG <sub>240</sub> | 15.4 | 0.15 | 20071027 | 357.15578 | 71.47040  | 346.00537 | 10.05081 | 0.1411546 | 3.0631339 | 91  | 3 | 2001-2007 | 0.57 | M-v | 1 | MP | 128726 2001 QG <sub>240</sub> |
| 2001 QP <sub>242</sub> | 14.6 | 0.15 | 20071027 | 310.71131 | 90.49828  | 0.87582   | 18.96690 | 0.2858748 | 3.3003185 | 182 | 3 | 2001-2007 | 0.60 | M-v | 1 | MP | 128726 2001 QP <sub>242</sub> |
| 2001 QU <sub>252</sub> | 15.3 | 0.15 | 20071027 | 67.20551  | 182.26668 | 141.26506 | 13.01494 | 0.1281931 | 3.0433465 | 30  | 3 | 2001-2007 | 0.46 | M-v | 2 | MP | 113782 2001 QU <sub>252</sub> |
| 2001 QH <sub>258</sub> | 15.1 | 0.15 | 20071027 | 26.94427  | 128.75058 | 241.79766 | 8.94779  | 0.2202167 | 3.1276114 | 112 | 3 | 2001-2007 | 0.50 | M-v | 2 | MP | 128726 2001 QH <sub>258</sub> |
| 2001 QH <sub>259</sub> | 14.7 | 0.15 | 20071027 | 54.08218  | 108.46292 | 205.52457 | 15.80994 | 0.1088915 | 3.2367475 | 118 | 3 | 2001-2007 | 0.54 | M-v | 2 | MP | 128726 2001 QH <sub>259</sub> |
| 2001 QJ <sub>259</sub> | 16.0 | 0.15 | 20071027 | 35.10844  | 101.54482 | 289.66564 | 8.68129  | 0.1330529 | 3.0222145 | 65  | 5 | 1998-2007 | 0.49 | M-v | 0 | MP | 110783 2001 QJ <sub>259</sub> |
| 2001 QT <sub>264</sub> | 14.2 | 0.15 | 20071027 | 30.88244  | 105.75864 | 246.07081 | 12.67411 | 0.1388622 | 3.1497721 | 98  | 3 | 2000-2007 | 0.47 | M-v | 3 | MP | 128726 2001 QT <sub>264</sub> |
| 2001 QX <sub>267</sub> | 15.2 | 0.15 | 20071027 | 6.87029   | 221.01318 | 181.11174 | 8.91151  | 0.2034153 | 3.0875851 | 76  | 5 | 1998-2007 | 0.47 | M-v | 0 | MP | 128726 2001 QX <sub>267</sub> |
| 2001 QG <sub>268</sub> | 15.0 | 0.15 | 20071027 | 12.99732  | 214.79998 | 178.08896 | 10.73261 | 0.2604494 | 3.0944570 | 88  | 2 | 2001-2007 | 0.50 | M-v | 3 | MP | 128726 2001 QG <sub>268</sub> |
| 2001 QH <sub>268</sub> | 16.6 | 0.15 | 20071027 | 217.21492 | 325.87762 | 267.95988 | 18.02974 | 0.0394033 | 1.9439557 | 36  | 3 | 2001-2007 | 0.63 | M-v | 3 | MP | 126595 2001 QH <sub>268</sub> |
| 2001 QP <sub>268</sub> | 14.3 | 0.15 | 20071027 | 5.45284   | 129.16055 | 269.95401 | 20.38979 | 0.0789509 | 3.1501928 | 52  | 5 | 2001-2007 | 0.60 | M-v | 1 | MP | 128726 2001 QP <sub>268</sub> |
| 2001 QT <sub>270</sub> | 15.3 | 0.15 | 20071027 | 13.72088  | 135.58237 | 319.29449 | 21.57608 | 0.0372705 | 2.6596912 | 51  | 6 | 1995-2007 | 0.61 | M-v | 1 | MP | 110783 2001 QT <sub>270</sub> |
| 2001 QM <sub>274</sub> | 15.7 | 0.15 | 20071027 | 139.31003 | 201.09986 | 104.68745 | 7.29704  | 0.0804277 | 2.7691820 | 45  | 5 | 2000-2007 | 0.61 | M-v | 1 | MP | 110783 2001 QM <sub>274</sub> |
| 2001 QH <sub>275</sub> | 15.5 | 0.15 | 20071027 | 5.45690   | 346.91671 | 9.50940   | 7.95972  | 0.1396257 | 3.2066932 | 42  | 3 | 2001-2007 | 0.56 | M-v | 2 | MP | 126595 2001 QH <sub>275</sub> |
| 2001 QK <sub>276</sub> | 15.3 | 0.15 | 20071027 | 96.81792  | 287.95866 | 93.62843  | 8.24947  | 0.0905304 | 2.7223842 | 79  | 7 | 1997-2007 | 0.56 | M-v | 1 | MP | 116160 2001 QK <sub>276</sub> |
| 2001 QT <sub>281</sub> | 15.3 | 0.15 | 20071027 | 16.91816  | 295.19050 | 80.39908  | 17.19938 | 0.2264513 | 3.1753360 | 62  | 3 | 2001-2007 | 0.55 | M-v | 2 | MP | 128726 2001 QT <sub>281</sub> |
| 2001 QX <sub>287</sub> | 14.8 | 0.15 | 20071027 | 97.70778  | 343.16184 | 330.38326 | 10.85618 | 0.1138419 | 2.9886225 | 151 | 4 | 2001-2007 | 0.56 | M-v | 1 | MP | 128726 2001 QX <sub>287</sub> |
| 2001 QL <sub>295</sub> | 15.0 | 0.15 | 20071027 | 40.02789  | 16.10323  | 16.87386  | 13.36090 | 0.1488020 | 3.0543390 | 129 | 4 | 2001-2007 | 0.58 | M-v | 1 | MP | 128726 2001 QL <sub>295</sub> |
| 2001 QE <sub>317</sub> | 16.2 | 0.15 | 20071027 | 247.95747 | 220.68557 | 335.23088 | 5.68885  | 0.1707943 | 2.7298509 | 74  | 5 | 2000-2007 | 0.45 | M-v | 1 | MP | 110784 2001 QE <sub>317</sub> |
| 2001 QQ <sub>327</sub> | 14.7 | 0.15 | 20071027 | 0.99027   | 133.05451 | 251.86620 | 8.83420  | 0.1729620 | 3.1900973 | 82  | 4 | 1995-2007 | 0.50 | M-v | 2 | MP | 128726 2001 QQ <sub>327</sub> |
| 2001 QJ <sub>328</sub> | 15.1 | 0.15 | 20071027 | 66.81117  | 235.10557 | 120.57899 | 13.60887 | 0.2864168 | 3.0615466 | 74  | 5 | 2001-2007 | 0.50 | M-v | 1 | MP | 110784 2001 QJ <sub>328</sub> |
| 2001 QO <sub>328</sub> | 14.9 | 0.15 | 20071027 | 354.65197 | 331.36921 | 120.71409 | 10.06747 | 0.0225211 | 2.9138129 | 55  | 5 | 2001-2007 | 0.60 | M-v | 1 | MP | 110784 2001 QO <sub>328</sub> |
| 2001 QS <sub>328</sub> | 14.5 | 0.15 | 20071027 | 1.26370   | 309.66981 | 115.72620 | 14.14302 | 0.1023204 | 3.0833579 | 60  | 5 | 2001-2007 | 0.56 | M-v | 1 | MP | 104158 2001 QS <sub>328</sub> |
| 2001 QJ <sub>330</sub> | 15.7 | 0.15 | 20071027 | 49.44821  | 30.33247  | 326.67548 | 11.67579 | 0.1453800 | 3.0737314 | 37  | 4 | 2001-2007 | 0.44 | M-v | 1 | MP | 117942 2001 QJ <sub>330</sub> |
| 2001 QL <sub>330</sub> | 15.1 | 0.15 | 20071027 | 30.11402  | 80.26049  | 299.61057 | 8.66841  | 0.1196669 | 3.0611206 | 42  | 3 | 2001-2007 | 0.48 | M-v | 3 | MP | 128726 2001 QL <sub>330</sub> |
| 2001 QJ <sub>333</sub> | 15.7 | 0.15 | 20071027 | 54.37079  | 255.93895 | 91.25446  | 15.52083 | 0.2486174 | 3.0796901 | 35  | 5 | 1996-2007 | 0.44 | M-v | 1 | MP | 107963 2001 QJ <sub>333</sub> |
| 2001 QY <sub>333</sub> | 16.4 | 0.15 | 20071027 | 24.25081  | 284.87574 | 101.52065 | 5.61721  | 0.1801769 | 3.0872217 | 22  | 3 | 2001-2007 | 0.44 | M-v | 3 | MP | 107965 2001 QY <sub>333</sub> |
| 2001 QZ <sub>333</sub> | 15.4 | 0.15 | 20071027 | 19.26950  | 142.55582 | 223.10115 | 16.13053 | 0.1578438 | 3.1384277 | 94  | 3 | 1996-2007 | 0.44 | M-v | 2 | MP | 128726 2001 QZ <sub>333</sub> |
| 2001 RT                | 14.3 | 0.15 | 20071027 | 74.22308  | 41.63527  | 257.29071 | 24.62243 | 0.3469159 | 3.0922592 | 76  | 3 | 2001-2007 | 0.60 | M-v | 2 | MP | 128727 2001 RT                |
| 2001 RF <sub>2</sub>   | 15.4 | 0.15 | 20071027 | 16.30582  | 96.58668  | 292.16966 | 22.49435 | 0.3873442 | 3.1611699 | 63  | 3 | 2001-2007 | 0.47 | M-v | 2 | MP | 121109 2001 RF <sub>2</sub>   |
| 2001 RC <sub>3</sub>   | 15.2 | 0.15 | 20071027 | 30.65856  | 148.48234 | 217.64573 | 10.44429 | 0.3065330 | 3.0915544 | 93  | 2 | 2001-2007 | 0.51 | M-v | 2 | MP | 128727 2001 RC <sub>3</sub>   |
| 2001 RJ <sub>3</sub>   | 15.3 | 0.15 | 20071027 | 55.00482  | 75.26745  | 262.56490 | 9.52667  | 0.1841009 | 3.0629870 | 70  | 2 | 2001-2007 | 0.56 | M-v | 3 | MP | 127894 2001 RJ <sub>3</sub>   |
| 2001 RR <sub>5</sub>   | 16.3 | 0.15 | 20071027 | 18.54472  | 178.75168 | 203.89945 | 5.01059  | 0.2484172 | 3.1312304 | 103 | 2 | 2001-2007 | 0.51 | M-v | 3 | MP | 127895 2001 RR <sub>5</sub>   |
| 2001 RF <sub>9</sub>   | 14.7 | 0.15 | 20071027 | 42.84896  | 97.61497  | 258.26643 | 24.67962 | 0.2227132 | 3.1221515 | 85  | 3 | 2001-2007 | 0.54 | M-v | 1 | MP | 128727 2001 RF <sub>9</sub>   |
| 2001 RC <sub>14</sub>  | 16.2 | 0.15 | 20071027 | 23.46478  | 249.85357 | 161.02895 | 2.40743  | 0.0968674 | 2.9352556 | 60  | 5 | 1996-2007 | 0.41 | M-v | 0 | MP | 110785 2001 RC <sub>14</sub>  |
| 2001 RA <sub>15</sub>  | 15.8 | 0.15 | 20071027 | 8.20225   | 199.58959 | 216.16421 | 10.89468 | 0.1161303 | 2.9973480 | 32  | 4 | 1996-2007 | 0.54 | M-v | 1 | MP | 128727 2001 RA <sub>15</sub>  |
| 2001 RE <sub>15</sub>  | 15.4 | 0.15 | 20071027 | 21.76078  | 161.30921 | 217.91461 | 12.73398 | 0.3409487 | 3.1482233 | 89  | 2 | 2001-2007 | 0.51 | M-v | 2 | MP | 128727 2001 RE <sub>15</sub>  |
| 2001 RL <sub>15</sub>  | 15.0 | 0.15 | 20071027 | 345.44871 | 96.71385  | 330.46587 | 20.60481 | 0.2086418 | 3.1667674 | 71  | 5 | 1995-2007 | 0.56 | M-v | 0 | MP | 104158 2001 RL <sub>15</sub>  |
| 2001 RL <sub>30</sub>  | 15.3 | 0.15 | 20071027 | 36.26213  | 261.82469 | 135.07915 | 4.31301  | 0.0957100 | 2.9367827 | 93  | 5 | 2001-2007 | 0.49 | M-v | 0 | MP | 110785 2001 RL <sub>30</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 RC <sub>31</sub>  | 15.9 | 0.15 | 20071027 | 36.94628  | 322.96769 | 2.59918   | 2.59632  | 0.1774797 | 3.2030829 | 90  | 3 | 2001-2007 | 0.48 | M-v | 3 | MPC | 128727 2001 RC <sub>31</sub>  |
| 2001 RD <sub>32</sub>  | 15.2 | 0.15 | 20071027 | 5.30085   | 79.22264  | 313.44135 | 15.08615 | 0.2832025 | 3.1212620 | 41  | 3 | 2001-2007 | 0.57 | M-v | 2 | MPC | 40475 2001 RD <sub>32</sub>   |
| 2001 RQ <sub>37</sub>  | 15.5 | 0.15 | 20071027 | 46.26133  | 61.40714  | 319.36052 | 8.70289  | 0.1152418 | 2.9420957 | 39  | 3 | 2001-2007 | 0.69 | M-v | 3 | MPC | 110786 2001 RQ <sub>37</sub>  |
| 2001 RC <sub>40</sub>  | 16.8 | 0.15 | 20071027 | 30.92625  | 209.55284 | 154.57055 | 1.22287  | 0.1796650 | 3.1061876 | 59  | 3 | 1996-2007 | 0.42 | M-v | 2 | MPC | 128727 2001 RC <sub>40</sub>  |
| 2001 RD <sub>40</sub>  | 15.0 | 0.15 | 20071027 | 32.52968  | 34.23853  | 343.06093 | 10.19348 | 0.1207487 | 3.0068312 | 47  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128727 2001 RD <sub>40</sub>  |
| 2001 RJ <sub>40</sub>  | 15.5 | 0.15 | 20071027 | 23.08094  | 154.94061 | 242.26653 | 9.34860  | 0.1139233 | 3.0018517 | 50  | 7 | 1991-2007 | 0.48 | M-v | 0 | MPC | 128727 2001 RJ <sub>40</sub>  |
| 2001 RC <sub>41</sub>  | 16.1 | 0.15 | 20071027 | 35.95663  | 96.53599  | 257.13513 | 6.96897  | 0.2142484 | 3.1152090 | 77  | 3 | 1990-2007 | 0.57 | M-v | 3 | MPC | 128727 2001 RC <sub>41</sub>  |
| 2001 RA <sub>49</sub>  | 15.8 | 0.15 | 20071027 | 27.89284  | 333.89324 | 71.41235  | 23.44927 | 0.2865792 | 3.0723220 | 33  | 3 | 2001-2007 | 0.53 | M-v | 1 | MPC | 123837 2001 RA <sub>49</sub>  |
| 2001 RF <sub>49</sub>  | 14.6 | 0.15 | 20071027 | 22.36546  | 296.47788 | 79.47691  | 27.53675 | 0.2222162 | 3.1902622 | 56  | 3 | 2001-2007 | 0.39 | M-v | 2 | MPC | 128727 2001 RF <sub>49</sub>  |
| 2001 RB <sub>51</sub>  | 16.0 | 0.15 | 20071027 | 300.99523 | 234.78693 | 331.31510 | 6.82050  | 0.1441254 | 2.6158926 | 84  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128727 2001 RB <sub>51</sub>  |
| 2001 RE <sub>51</sub>  | 15.4 | 0.15 | 20071027 | 77.04092  | 237.71380 | 70.36495  | 15.44282 | 0.3204522 | 3.0637852 | 57  | 3 | 2001-2007 | 0.43 | M-v | 2 | MPC | 128727 2001 RE <sub>51</sub>  |
| 2001 RO <sub>51</sub>  | 15.5 | 0.15 | 20071027 | 9.92259   | 104.48092 | 314.55050 | 14.62654 | 0.1816094 | 3.0164023 | 87  | 4 | 2001-2007 | 0.44 | M-v | 0 | MPC | 110786 2001 RO <sub>51</sub>  |
| 2001 RF <sub>53</sub>  | 16.0 | 0.15 | 20071027 | 164.72419 | 61.72208  | 228.37471 | 4.09789  | 0.1184603 | 2.7533544 | 65  | 5 | 1997-2007 | 0.47 | M-v | 0 | MPC | 122686 2001 RF <sub>53</sub>  |
| 2001 RP <sub>55</sub>  | 15.0 | 0.15 | 20071027 | 331.86994 | 78.82834  | 354.61597 | 16.63340 | 0.1585558 | 3.1223568 | 65  | 3 | 2001-2007 | 0.56 | M-v | 2 | MPC | 128727 2001 RP <sub>55</sub>  |
| 2001 RQ <sub>55</sub>  | 15.5 | 0.15 | 20071027 | 86.74480  | 356.40784 | 1.35101   | 7.09393  | 0.0295955 | 2.8619824 | 103 | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 112759 2001 RQ <sub>55</sub>  |
| 2001 RF <sub>56</sub>  | 16.2 | 0.15 | 20071027 | 26.32898  | 252.03261 | 115.77022 | 4.54943  | 0.2073297 | 3.1187000 | 41  | 4 | 1996-2007 | 0.67 | M-v | 1 | MPC | 128727 2001 RF <sub>56</sub>  |
| 2001 RE <sub>57</sub>  | 15.3 | 0.15 | 20071027 | 4.20179   | 39.58031  | 0.93025   | 11.34381 | 0.1664621 | 3.1178006 | 92  | 5 | 1993-2007 | 0.59 | M-v | 1 | MPC | 128727 2001 RE <sub>57</sub>  |
| 2001 RS <sub>57</sub>  | 14.7 | 0.15 | 20071027 | 66.21242  | 337.90712 | 6.59896   | 13.28497 | 0.0968192 | 3.0118533 | 61  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 110786 2001 RS <sub>57</sub>  |
| 2001 RV <sub>59</sub>  | 15.8 | 0.15 | 20071027 | 54.79471  | 205.47189 | 142.51746 | 7.65600  | 0.0977191 | 3.0763132 | 32  | 5 | 2001-2007 | 0.65 | M-v | 1 | MPC | 128728 2001 RV <sub>59</sub>  |
| 2001 RG <sub>62</sub>  | 15.8 | 0.15 | 20071027 | 150.17637 | 255.34365 | 40.80582  | 6.89002  | 0.0339812 | 2.8674923 | 110 | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 114620 2001 RG <sub>62</sub>  |
| 2001 RB <sub>64</sub>  | 15.5 | 0.15 | 20071027 | 106.49696 | 341.02485 | 322.28102 | 10.39480 | 0.1439871 | 3.0118365 | 32  | 3 | 2001-2007 | 0.51 | M-v | 4 | MPC | 110787 2001 RB <sub>64</sub>  |
| 2001 RM <sub>66</sub>  | 15.5 | 0.15 | 20071027 | 27.35230  | 132.39037 | 252.22354 | 4.77614  | 0.1703717 | 3.1149407 | 67  | 2 | 2001-2007 | 0.56 | M-v | 4 | MPC | 127896 2001 RM <sub>66</sub>  |
| 2001 RS <sub>73</sub>  | 16.2 | 0.15 | 20071027 | 109.17776 | 1.09783   | 314.28762 | 5.80480  | 0.2457275 | 2.9316643 | 52  | 4 | 1996-2007 | 0.53 | M-v | 3 | MPC | 107971 2001 RS <sub>73</sub>  |
| 2001 RM <sub>82</sub>  | 15.0 | 0.15 | 20071027 | 44.74303  | 123.43954 | 218.82038 | 10.01868 | 0.1326954 | 3.1323869 | 101 | 3 | 2001-2007 | 0.49 | M-v | 3 | MPC | 128728 2001 RM <sub>82</sub>  |
| 2001 RM <sub>84</sub>  | 15.3 | 0.15 | 20071027 | 6.20410   | 211.36336 | 190.05086 | 8.15210  | 0.2040914 | 3.1071124 | 80  | 5 | 1993-2007 | 0.45 | M-v | 0 | MPC | 128728 2001 RM <sub>84</sub>  |
| 2001 RP <sub>84</sub>  | 15.7 | 0.15 | 20071027 | 57.86581  | 31.15800  | 307.50706 | 4.14616  | 0.2611777 | 3.0552412 | 109 | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128728 2001 RP <sub>84</sub>  |
| 2001 RA <sub>88</sub>  | 15.8 | 0.15 | 20071027 | 46.83351  | 356.16456 | 10.38446  | 12.89095 | 0.1399167 | 3.0689469 | 57  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 104160 2001 RA <sub>88</sub>  |
| 2001 RE <sub>88</sub>  | 16.0 | 0.15 | 20071027 | 30.22425  | 355.44386 | 42.96255  | 2.94298  | 0.2524979 | 3.0612513 | 77  | 3 | 2001-2007 | 0.55 | M-v | 2 | MPC | 103211 2001 RE <sub>88</sub>  |
| 2001 RW <sub>90</sub>  | 15.5 | 0.15 | 20071027 | 153.41673 | 195.01937 | 127.92335 | 6.12088  | 0.1600703 | 2.7276190 | 73  | 5 | 1999-2007 | 0.55 | M-v | 1 | MPC | 110788 2001 RW <sub>90</sub>  |
| 2001 RJ <sub>91</sub>  | 15.7 | 0.15 | 20071027 | 60.94526  | 313.20096 | 15.45336  | 7.37958  | 0.2621234 | 3.0914155 | 68  | 5 | 1996-2007 | 0.49 | M-v | 1 | MPC | 128728 2001 RJ <sub>91</sub>  |
| 2001 RW <sub>97</sub>  | 15.9 | 0.15 | 20071027 | 14.14859  | 50.85833  | 1.26174   | 7.04791  | 0.1133723 | 3.0753349 | 83  | 5 | 1993-2007 | 0.46 | M-v | 0 | MPC | 110788 2001 RW <sub>97</sub>  |
| 2001 RC <sub>99</sub>  | 15.8 | 0.15 | 20071027 | 21.23084  | 345.20417 | 153.45762 | 4.32109  | 0.0425206 | 2.5572813 | 61  | 5 | 2001-2007 | 0.59 | M-v | 1 | MPC | 114621 2001 RC <sub>99</sub>  |
| 2001 RM <sub>100</sub> | 15.5 | 0.15 | 20071027 | 45.87929  | 12.18624  | 353.43566 | 10.10543 | 0.1222695 | 2.9985401 | 61  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128728 2001 RM <sub>100</sub> |
| 2001 RR <sub>104</sub> | 15.6 | 0.15 | 20071027 | 36.54059  | 314.06451 | 60.02304  | 5.19666  | 0.1304602 | 3.0386823 | 87  | 7 | 1999-2007 | 0.47 | M-v | 0 | MPC | 128728 2001 RR <sub>104</sub> |
| 2001 RQ <sub>105</sub> | 15.3 | 0.15 | 20071027 | 58.93477  | 320.24251 | 16.40468  | 9.61106  | 0.1350480 | 3.0467701 | 69  | 4 | 1999-2007 | 0.60 | M-v | 1 | MPC | 128728 2001 RQ <sub>105</sub> |
| 2001 RG <sub>106</sub> | 15.9 | 0.15 | 20071027 | 220.53782 | 211.52317 | 0.50867   | 2.27091  | 0.0469896 | 2.8616430 | 47  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 110788 2001 RG <sub>106</sub> |
| 2001 RV <sub>111</sub> | 16.0 | 0.15 | 20071027 | 60.45249  | 336.79398 | 11.05938  | 1.41291  | 0.1542607 | 3.0152847 | 52  | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128728 2001 RV <sub>111</sub> |
| 2001 RN <sub>113</sub> | 15.6 | 0.15 | 20071027 | 332.99890 | 298.11936 | 147.87097 | 5.97829  | 0.2257610 | 3.1037791 | 77  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128728 2001 RN <sub>113</sub> |
| 2001 RM <sub>117</sub> | 16.6 | 0.15 | 20071027 | 35.11561  | 321.69303 | 35.47381  | 0.56872  | 0.2645900 | 3.1129738 | 63  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 77562 2001 RM <sub>117</sub>  |
| 2001 RE <sub>118</sub> | 15.7 | 0.15 | 20071027 | 141.27151 | 314.69198 | 1.78804   | 6.22207  | 0.0264653 | 2.8124736 | 87  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 110789 2001 RE <sub>118</sub> |
| 2001 RB <sub>120</sub> | 16.1 | 0.15 | 20071027 | 76.89823  | 256.55048 | 136.30781 | 5.66255  | 0.1264134 | 2.8029270 | 60  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128728 2001 RB <sub>120</sub> |
| 2001 RC <sub>121</sub> | 15.6 | 0.15 | 20071027 | 98.15810  | 279.80712 | 77.71289  | 3.35630  | 0.0970070 | 2.8305506 | 90  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128728 2001 RC <sub>121</sub> |
| 2001 RT <sub>122</sub> | 15.9 | 0.15 | 20071027 | 132.17110 | 155.28323 | 159.46538 | 2.24447  | 0.0696679 | 2.8455326 | 52  | 4 | 2001-2007 | 0.36 | M-v | 1 | MPC | 110789 2001 RT <sub>122</sub> |
| 2001 RY <sub>122</sub> | 16.4 | 0.15 | 20071027 | 40.47507  | 256.03488 | 154.14413 | 2.62799  | 0.0607328 | 2.8752135 | 63  | 6 | 1999-2007 | 0.34 | M-v | 0 | MPC | 114621 2001 RY <sub>122</sub> |
| 2001 RL <sub>123</sub> | 15.2 | 0.15 | 20071027 | 319.28699 | 96.56188  | 359.83513 | 9.38351  | 0.2036012 | 3.1284052 | 91  | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128728 2001 RL <sub>123</sub> |
| 2001 RY <sub>124</sub> | 15.4 | 0.15 | 20071027 | 352.27534 | 53.39046  | 6.12687   | 10.98236 | 0.1893893 | 3.1202403 | 49  | 2 | 2001-2007 | 0.52 | M-v | 3 | MPC | 127897 2001 RY <sub>124</sub> |
| 2001 RU <sub>125</sub> | 16.5 | 0.15 | 20010908 | 20.16445  | 232.15840 | 87.95877  | 3.28029  | 0.2039320 | 2.6723482 | 11  | 1 | 12 days   | 0.53 |     |   | MPC | 2001 RU <sub>125</sub>        |
| 2001 RH <sub>130</sub> | 16.3 | 0.15 | 20071027 | 11.13310  | 342.55583 | 58.39007  | 1.82149  | 0.3074299 | 3.1394196 | 50  | 2 | 2001-2007 | 0.54 | M-v | 3 | MPC | 128728 2001 RH <sub>130</sub> |
| 2001 RA <sub>135</sub> | 14.9 | 0.15 | 20071027 | 50.64876  | 334.43260 | 25.31698  | 12.26374 | 0.1666641 | 3.0535867 | 97  | 6 | 1999-2007 | 0.59 | M-v | 1 | MPC | 128729 2001 RA <sub>135</sub> |
| 2001 RC <sub>138</sub> | 15.4 | 0.15 | 20071027 | 347.39248 | 278.34382 | 157.62761 | 10.52079 | 0.0901373 | 3.0050275 | 58  | 5 | 1999-2007 | 0.50 | M-v | 0 | MPC | 128729 2001 RC <sub>138</sub> |
| 2001 RF <sub>138</sub> | 15.1 | 0.15 | 20071027 | 65.42148  | 277.00638 | 19.73557  | 4.65525  | 0.1238589 | 3.2034018 | 91  | 3 | 2001-2007 | 0.50 | M-v | 3 | MPC | 128729 2001 RF <sub>138</sub> |
| 2001 RQ <sub>138</sub> | 15.7 | 0.15 | 20071027 | 68.58794  | 246.69179 | 64.21510  | 2.35963  | 0.1375006 | 3.1257107 | 49  | 5 | 2001-2007 | 0.55 | M-v | 0 | MPC | 127898 2001 RQ <sub>138</sub> |
| 2001 RX <sub>138</sub> | 15.6 | 0.15 | 20071027 | 77.11504  | 304.45000 | 58.78357  | 2.83032  | 0.0916309 | 2.8969488 | 100 | 3 | 2001-2007 | 0.41 | M-v | 2 | MPC | 128729 2001 RX <sub>138</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 RE <sub>141</sub> | 15.5 | 0.15 | 20071027 | 36.23724  | 334.60178 | 22.10471  | 17.14077 | 0.2146188 | 3.1453219 | 79  | 2 | 2001-2007 | 0.53 | M-v | 2 | MPC | 127898 2001 RE <sub>141</sub> |
| 2001 RM <sub>146</sub> | 14.8 | 0.15 | 20071027 | 57.29616  | 89.27968  | 226.18911 | 14.61809 | 0.2136896 | 3.1254253 | 114 | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128729 2001 RM <sub>146</sub> |
| 2001 RN <sub>146</sub> | 15.7 | 0.15 | 20071027 | 310.10645 | 238.38469 | 205.29083 | 15.69019 | 0.1091066 | 3.1624962 | 109 | 5 | 2001-2007 | 0.56 | M-v | 0 | MPC | 128729 2001 RN <sub>146</sub> |
| 2001 RJ <sub>147</sub> | 15.8 | 0.15 | 20071027 | 5.89471   | 2.93010   | 39.10917  | 11.48636 | 0.2179485 | 3.1423713 | 126 | 4 | 2001-2007 | 0.54 | M-v | 0 | MPC | 128729 2001 RJ <sub>147</sub> |
| 2001 RE <sub>150</sub> | 15.2 | 0.15 | 20071027 | 23.73082  | 10.99713  | 1.23048   | 10.68344 | 0.1917949 | 3.0996109 | 78  | 3 | 2001-2007 | 0.58 | M-v | 3 | MPC | 128729 2001 RE <sub>150</sub> |
| 2001 RC <sub>152</sub> | 14.9 | 0.15 | 20071027 | 21.10579  | 335.47250 | 54.99794  | 10.88946 | 0.1040035 | 3.0831705 | 68  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128729 2001 RC <sub>152</sub> |
| 2001 RF <sub>152</sub> | 15.1 | 0.15 | 20071027 | 93.28688  | 224.46731 | 69.57278  | 8.12767  | 0.2369679 | 3.0545565 | 65  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128729 2001 RF <sub>152</sub> |
| 2001 RW <sub>152</sub> | 14.9 | 0.15 | 20071027 | 50.32552  | 272.97777 | 103.62378 | 12.70705 | 0.3176344 | 2.9997120 | 68  | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128729 2001 RW <sub>152</sub> |
| 2001 RF <sub>154</sub> | 15.0 | 0.15 | 20071027 | 2.33385   | 125.98472 | 296.42258 | 9.19144  | 0.1055830 | 2.9845125 | 67  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128729 2001 RF <sub>154</sub> |
| 2001 RH <sub>155</sub> | 15.9 | 0.15 | 20071027 | 322.19440 | 93.24386  | 15.21851  | 3.33492  | 0.1488305 | 3.1103145 | 39  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 110790 2001 RH <sub>155</sub> |
| 2001 SK <sub>5</sub>   | 15.4 | 0.15 | 20071027 | 37.77383  | 239.15496 | 153.21502 | 2.70128  | 0.0734419 | 2.9905451 | 67  | 6 | 1991-2007 | 0.62 | M-v | 1 | MPC | 110791 2001 SK <sub>5</sub>   |
| 2001 SL <sub>6</sub>   | 16.5 | 0.15 | 20071027 | 164.68408 | 32.32682  | 231.89667 | 0.54182  | 0.0849944 | 2.8897720 | 50  | 6 | 2001-2007 | 0.43 | M-v | 0 | MPC | 128729 2001 SL <sub>6</sub>   |
| 2001 ST <sub>7</sub>   | 16.3 | 0.15 | 20071027 | 15.66469  | 19.77751  | 3.01861   | 4.01941  | 0.2178344 | 3.1072168 | 49  | 3 | 2001-2007 | 0.51 | M-v | 4 | MPC | 127898 2001 ST <sub>7</sub>   |
| 2001 SS <sub>11</sub>  | 15.9 | 0.15 | 20071027 | 312.05907 | 225.85330 | 348.11272 | 13.52798 | 0.0875529 | 2.5364904 | 61  | 4 | 2001-2007 | 0.41 | M-v | 2 | MPC | 90079 2001 SS <sub>11</sub>   |
| 2001 SP <sub>12</sub>  | 15.8 | 0.15 | 20071027 | 359.94462 | 220.33888 | 182.73429 | 2.31578  | 0.1772985 | 3.1364400 | 77  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 127899 2001 SP <sub>12</sub>  |
| 2001 SK <sub>22</sub>  | 15.6 | 0.15 | 20071027 | 252.04839 | 206.26163 | 2.50882   | 7.81235  | 0.1557438 | 2.8084932 | 91  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 110791 2001 SK <sub>22</sub>  |
| 2001 SL <sub>23</sub>  | 16.0 | 0.15 | 20071027 | 339.94399 | 272.27717 | 155.50246 | 1.29230  | 0.1558166 | 3.1714980 | 84  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128729 2001 SL <sub>23</sub>  |
| 2001 SD <sub>24</sub>  | 15.4 | 0.15 | 20071027 | 71.60776  | 76.80392  | 357.98773 | 9.11782  | 0.1656587 | 2.7360049 | 75  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 114623 2001 SD <sub>24</sub>  |
| 2001 SE <sub>25</sub>  | 15.9 | 0.15 | 20071027 | 333.54400 | 308.19145 | 120.98292 | 0.62218  | 0.1594411 | 3.2099836 | 128 | 3 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128729 2001 SE <sub>25</sub>  |
| 2001 SF <sub>25</sub>  | 15.1 | 0.15 | 20071027 | 345.58253 | 93.16233  | 4.22773   | 5.28723  | 0.2413221 | 3.0663819 | 92  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 126598 2001 SF <sub>25</sub>  |
| 2001 SM <sub>25</sub>  | 16.2 | 0.15 | 20071027 | 97.52922  | 342.10436 | 14.78170  | 1.92293  | 0.0837483 | 2.8715821 | 83  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 112762 2001 SM <sub>25</sub>  |
| 2001 SV <sub>32</sub>  | 15.7 | 0.15 | 20071027 | 228.70799 | 212.06897 | 13.77308  | 5.94997  | 0.0150328 | 2.9007806 | 86  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 110792 2001 SV <sub>32</sub>  |
| 2001 SB <sub>33</sub>  | 15.9 | 0.15 | 20071027 | 348.78524 | 266.77799 | 184.23956 | 4.65971  | 0.1898151 | 3.0738178 | 57  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 110792 2001 SB <sub>33</sub>  |
| 2001 SQ <sub>35</sub>  | 15.3 | 0.15 | 20071027 | 99.96991  | 266.77736 | 30.25718  | 10.46257 | 0.0416154 | 3.1701358 | 84  | 5 | 2001-2007 | 0.57 | M-v | 0 | MPC | 128729 2001 SQ <sub>35</sub>  |
| 2001 SH <sub>39</sub>  | 14.7 | 0.15 | 20071027 | 69.19170  | 297.78554 | 22.98558  | 17.87673 | 0.2432941 | 3.1298208 | 122 | 4 | 2001-2007 | 0.44 | M-v | 0 | MPC | 110792 2001 SH <sub>39</sub>  |
| 2001 SG <sub>60</sub>  | 15.1 | 0.15 | 20071027 | 68.40245  | 349.72086 | 349.43233 | 13.32331 | 0.1384580 | 3.0817275 | 46  | 3 | 2001-2007 | 0.58 | M-v | 2 | MPC | 110793 2001 SG <sub>60</sub>  |
| 2001 SU <sub>75</sub>  | 15.8 | 0.15 | 20071027 | 230.27366 | 319.61707 | 320.38702 | 10.58818 | 0.1189206 | 2.5713920 | 78  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 87461 2001 SU <sub>75</sub>   |
| 2001 SU <sub>77</sub>  | 15.3 | 0.15 | 20071027 | 338.62609 | 76.42005  | 0.13108   | 8.99937  | 0.1026339 | 3.0720224 | 55  | 4 | 2001-2007 | 0.61 | M-v | 1 | MPC | 128730 2001 SU <sub>77</sub>  |
| 2001 SF <sub>82</sub>  | 16.1 | 0.15 | 20071027 | 132.24326 | 26.08681  | 293.34670 | 2.84935  | 0.0930496 | 2.7854052 | 54  | 5 | 1999-2007 | 0.42 | M-v | 1 | MPC | 128730 2001 SF <sub>82</sub>  |
| 2001 SM <sub>89</sub>  | 15.8 | 0.15 | 20071027 | 45.74422  | 16.90219  | 332.00483 | 9.12171  | 0.1099501 | 3.0935665 | 62  | 3 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128730 2001 SM <sub>89</sub>  |
| 2001 SE <sub>90</sub>  | 16.4 | 0.15 | 20071027 | 91.29429  | 38.26710  | 291.05900 | 0.83229  | 0.1020168 | 2.9513747 | 37  | 5 | 2001-2007 | 0.40 | M-v | 1 | MPC | 128730 2001 SE <sub>90</sub>  |
| 2001 SR <sub>90</sub>  | 15.5 | 0.15 | 20071027 | 8.02556   | 151.97902 | 349.86984 | 12.12187 | 0.0958178 | 2.6466282 | 47  | 6 | 1999-2007 | 0.50 | M-v | 1 | MPC | 112763 2001 SR <sub>90</sub>  |
| 2001 SP <sub>93</sub>  | 16.4 | 0.15 | 20071027 | 316.37007 | 226.90919 | 346.13649 | 6.94968  | 0.1472887 | 2.5320147 | 75  | 5 | 2000-2007 | 0.49 | M-v | 2 | MPC | 90082 2001 SP <sub>93</sub>   |
| 2001 SA <sub>94</sub>  | 15.9 | 0.15 | 20071027 | 102.50281 | 101.76255 | 233.47658 | 2.30259  | 0.0548612 | 2.9009545 | 65  | 5 | 1991-2007 | 0.47 | M-v | 1 | MPC | 110794 2001 SA <sub>94</sub>  |
| 2001 SU <sub>94</sub>  | 15.7 | 0.15 | 20071027 | 343.52241 | 196.71276 | 203.51616 | 4.74474  | 0.1463901 | 3.2328854 | 74  | 5 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128730 2001 SU <sub>94</sub>  |
| 2001 SW <sub>94</sub>  | 15.4 | 0.15 | 20071027 | 96.69507  | 316.43533 | 345.00371 | 9.26421  | 0.0407631 | 3.0855302 | 76  | 6 | 1993-2007 | 0.63 | M-v | 0 | MPC | 128730 2001 SW <sub>94</sub>  |
| 2001 SJ <sub>101</sub> | 16.3 | 0.15 | 20071027 | 19.69822  | 176.03077 | 217.15327 | 0.76285  | 0.1768839 | 3.0944505 | 84  | 5 | 1996-2007 | 0.47 | M-v | 0 | MPC | 128730 2001 SJ <sub>101</sub> |
| 2001 ST <sub>102</sub> | 15.8 | 0.15 | 20071027 | 355.94518 | 227.77386 | 191.55903 | 14.56467 | 0.2746470 | 3.1632885 | 70  | 2 | 2001-2007 | 0.49 | M-v | 3 | MPC | 127900 2001 ST <sub>102</sub> |
| 2001 SD <sub>117</sub> | 15.9 | 0.15 | 20071027 | 60.88237  | 47.94763  | 296.26452 | 7.16324  | 0.0802882 | 3.0333934 | 49  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128730 2001 SD <sub>117</sub> |
| 2001 SC <sub>118</sub> | 16.2 | 0.15 | 20071027 | 45.09027  | 164.24256 | 202.43107 | 11.84887 | 0.1147385 | 3.0359538 | 31  | 4 | 1994-2007 | 0.47 | M-v | 0 | MPC | 128730 2001 SC <sub>118</sub> |
| 2001 SJ <sub>130</sub> | 16.0 | 0.15 | 20071027 | 11.63514  | 209.22297 | 208.73028 | 1.73905  | 0.1121942 | 3.0174685 | 51  | 6 | 1994-2007 | 0.54 | M-v | 0 | MPC | 104166 2001 SJ <sub>130</sub> |
| 2001 SQ <sub>131</sub> | 15.1 | 0.15 | 20071027 | 290.44276 | 133.02737 | 356.38041 | 11.28404 | 0.0632705 | 3.0560940 | 61  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128731 2001 SQ <sub>131</sub> |
| 2001 SJ <sub>132</sub> | 14.8 | 0.15 | 20071027 | 110.10468 | 295.69605 | 348.36372 | 9.45310  | 0.0765348 | 3.1130646 | 71  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128731 2001 SJ <sub>132</sub> |
| 2001 ST <sub>132</sub> | 16.0 | 0.15 | 20071027 | 81.55093  | 134.07490 | 206.15954 | 4.32039  | 0.0886145 | 2.9977620 | 56  | 5 | 1991-2007 | 0.46 | M-v | 1 | MPC | 124335 2001 ST <sub>132</sub> |
| 2001 SY <sub>133</sub> | 15.1 | 0.15 | 20071027 | 333.35652 | 266.14822 | 194.27368 | 15.20366 | 0.2098182 | 3.0895231 | 59  | 5 | 1995-2007 | 0.57 | M-v | 1 | MPC | 128731 2001 SY <sub>133</sub> |
| 2001 SB <sub>135</sub> | 15.2 | 0.15 | 20071027 | 176.30045 | 311.44983 | 336.76151 | 2.38978  | 0.0525296 | 2.8065223 | 119 | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128731 2001 SB <sub>135</sub> |
| 2001 SO <sub>135</sub> | 16.0 | 0.15 | 20071027 | 34.89420  | 3.59030   | 354.02580 | 3.00651  | 0.1931134 | 3.1467774 | 56  | 2 | 2001-2007 | 0.47 | M-v | 3 | MPC | 128731 2001 SO <sub>135</sub> |
| 2001 SK <sub>136</sub> | 15.5 | 0.15 | 20071027 | 102.25117 | 312.04283 | 346.32393 | 8.67125  | 0.0605797 | 3.1050429 | 42  | 3 | 2001-2007 | 0.49 | M-v | 3 | MPC | 128731 2001 SK <sub>136</sub> |
| 2001 SR <sub>137</sub> | 15.8 | 0.15 | 20071027 | 26.48733  | 168.22536 | 225.10010 | 0.65556  | 0.1905934 | 3.0820387 | 97  | 6 | 2001-2007 | 0.56 | M-v | 0 | MPC | 117950 2001 SR <sub>137</sub> |
| 2001 SK <sub>139</sub> | 15.9 | 0.15 | 20071027 | 16.77998  | 196.57471 | 203.98320 | 4.12273  | 0.1315417 | 3.1024867 | 45  | 3 | 2001-2007 | 0.49 | M-v | 4 | MPC | 127900 2001 SK <sub>139</sub> |
| 2001 SP <sub>139</sub> | 16.5 | 0.15 | 20071027 | 56.39953  | 44.55073  | 331.51816 | 1.36937  | 0.1139795 | 2.9953846 | 65  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 117950 2001 SP <sub>139</sub> |
| 2001 SH <sub>141</sub> | 15.8 | 0.15 | 20071027 | 18.64877  | 205.45768 | 210.16161 | 0.57884  | 0.1866815 | 3.0626477 | 87  | 6 | 1992-2007 | 0.68 | M-v | 0 | MPC | 110796 2001 SH <sub>141</sub> |
| 2001 SK <sub>141</sub> | 16.2 | 0.15 | 20071027 | 18.65160  | 40.30353  | 352.21367 | 0.77739  | 0.2173846 | 3.1475817 | 58  | 2 | 2001-2007 | 0.43 | M-v | 3 | MPC | 127901 2001 SK <sub>141</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 SY <sub>141</sub> | 15.1 | 0.15 | 20071027 | 50.58934  | 15.28673  | 341.32077 | 10.58691 | 0.0744400 | 3.0654536 | 91  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128731 2001 SY <sub>141</sub> |
| 2001 SO <sub>142</sub> | 15.4 | 0.15 | 20071027 | 45.94644  | 79.71871  | 260.16113 | 3.53417  | 0.1565977 | 3.1510899 | 75  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 128731 2001 SO <sub>142</sub> |
| 2001 SV <sub>142</sub> | 15.1 | 0.15 | 20071027 | 31.99470  | 13.80065  | 337.88884 | 10.00389 | 0.2087085 | 3.1760252 | 59  | 2 | 2001-2007 | 0.56 | M-v | 3 | MPC | 128731 2001 SV <sub>142</sub> |
| 2001 SJ <sub>144</sub> | 16.1 | 0.15 | 20071027 | 9.90511   | 218.40747 | 213.44260 | 2.91260  | 0.1499632 | 2.9821484 | 59  | 5 | 2001-2007 | 0.56 | M-v | 0 | MPC | 108000 2001 SJ <sub>144</sub> |
| 2001 SN <sub>148</sub> | 15.5 | 0.15 | 20071027 | 157.36601 | 348.74604 | 316.15984 | 4.38529  | 0.1015282 | 2.8047706 | 98  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 110796 2001 SN <sub>148</sub> |
| 2001 SN <sub>154</sub> | 15.6 | 0.15 | 20071027 | 336.64544 | 258.74192 | 194.19590 | 16.79622 | 0.2038827 | 3.1528035 | 88  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128731 2001 SN <sub>154</sub> |
| 2001 SZ <sub>154</sub> | 15.6 | 0.15 | 20071027 | 69.42006  | 62.48636  | 337.29106 | 1.56175  | 0.1377709 | 2.8818485 | 109 | 4 | 2001-2007 | 0.54 | M-v | 2 | MPC | 112764 2001 SZ <sub>154</sub> |
| 2001 SR <sub>155</sub> | 15.0 | 0.15 | 20071027 | 352.24750 | 230.70671 | 204.41153 | 16.02417 | 0.1861669 | 3.1603121 | 95  | 2 | 2001-2007 | 0.58 | M-v | 3 | MPC | 127901 2001 SR <sub>155</sub> |
| 2001 SV <sub>156</sub> | 15.4 | 0.15 | 20071027 | 29.38253  | 166.32122 | 195.26282 | 17.17360 | 0.1980028 | 3.1595918 | 92  | 4 | 1999-2007 | 0.55 | M-v | 1 | MPC | 128731 2001 SV <sub>156</sub> |
| 2001 SW <sub>156</sub> | 15.5 | 0.15 | 20071027 | 9.26077   | 58.80945  | 339.00140 | 11.27210 | 0.1814900 | 3.1433213 | 41  | 3 | 2001-2007 | 0.54 | M-v | 3 | MPC | 84926 2001 SW <sub>156</sub>  |
| 2001 SQ <sub>157</sub> | 15.5 | 0.15 | 20071027 | 60.07723  | 129.20414 | 215.90994 | 8.36603  | 0.0928247 | 3.0947428 | 66  | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128731 2001 SQ <sub>157</sub> |
| 2001 SR <sub>158</sub> | 15.7 | 0.15 | 20071027 | 274.12337 | 262.97920 | 356.05008 | 8.65898  | 0.0762047 | 2.5694288 | 111 | 5 | 1993-2007 | 0.50 | M-v | 1 | MPC | 121766 2001 SR <sub>158</sub> |
| 2001 SU <sub>158</sub> | 14.8 | 0.15 | 20071027 | 65.20451  | 102.56599 | 342.71597 | 8.77853  | 0.1361039 | 2.7627181 | 152 | 5 | 2001-2007 | 0.56 | M-v | 0 | MPC | 112764 2001 SU <sub>158</sub> |
| 2001 SW <sub>159</sub> | 15.7 | 0.15 | 20071027 | 7.31506   | 62.88283  | 349.93132 | 6.07588  | 0.1407832 | 3.1099481 | 50  | 3 | 2001-2007 | 0.49 | M-v | 3 | MPC | 128731 2001 SW <sub>159</sub> |
| 2001 SD <sub>160</sub> | 15.1 | 0.15 | 20071027 | 74.59955  | 356.81944 | 2.65396   | 10.05449 | 0.1008487 | 2.9859887 | 175 | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 110797 2001 SD <sub>160</sub> |
| 2001 SY <sub>163</sub> | 14.7 | 0.15 | 20071027 | 41.31207  | 178.07881 | 201.92406 | 9.32089  | 0.0854838 | 3.0986743 | 127 | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128731 2001 SY <sub>163</sub> |
| 2001 SK <sub>164</sub> | 14.9 | 0.15 | 20071027 | 12.37417  | 225.97741 | 208.98407 | 15.54264 | 0.2676650 | 3.1108792 | 117 | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 110797 2001 SK <sub>164</sub> |
| 2001 SG <sub>165</sub> | 16.0 | 0.15 | 20071027 | 15.37916  | 18.06387  | 8.42480   | 1.71475  | 0.1235199 | 3.0603838 | 68  | 5 | 1996-2007 | 0.49 | M-v | 0 | MPC | 127901 2001 SG <sub>165</sub> |
| 2001 SA <sub>167</sub> | 16.1 | 0.15 | 20071027 | 29.55532  | 233.39436 | 164.10919 | 1.40445  | 0.1841146 | 3.0379397 | 88  | 5 | 1996-2007 | 0.52 | M-v | 0 | MPC | 114625 2001 SA <sub>167</sub> |
| 2001 SB <sub>169</sub> | 15.4 | 0.15 | 20071027 | 3.84121   | 21.18678  | 33.17595  | 18.01672 | 0.2137993 | 3.1605575 | 75  | 3 | 2001-2007 | 0.49 | M-v | 1 | MPC | 127902 2001 SB <sub>169</sub> |
| 2001 SO <sub>169</sub> | 15.4 | 0.15 | 20071027 | 7.79111   | 263.64127 | 138.60889 | 8.68227  | 0.2287451 | 3.1481254 | 69  | 3 | 2001-2007 | 0.64 | M-v | 3 | MPC | 128731 2001 SO <sub>169</sub> |
| 2001 SJ <sub>172</sub> | 16.5 | 0.15 | 20071027 | 130.03131 | 163.32558 | 150.19006 | 1.59332  | 0.1280053 | 2.8773581 | 44  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 108003 2001 SJ <sub>172</sub> |
| 2001 SU <sub>172</sub> | 15.8 | 0.15 | 20071027 | 17.82894  | 330.27265 | 59.50308  | 1.82483  | 0.1531911 | 3.1445169 | 93  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128731 2001 SU <sub>172</sub> |
| 2001 SM <sub>173</sub> | 15.8 | 0.15 | 20071027 | 347.33705 | 306.45079 | 116.30439 | 1.80269  | 0.1557569 | 3.2088345 | 93  | 4 | 2001-2007 | 0.52 | M-v | 0 | MPC | 128731 2001 SM <sub>173</sub> |
| 2001 SN <sub>175</sub> | 15.9 | 0.15 | 20071027 | 6.08945   | 237.70475 | 169.13876 | 11.98086 | 0.2283344 | 3.1564213 | 43  | 3 | 2001-2007 | 0.58 | M-v | 3 | MPC | 128731 2001 SN <sub>175</sub> |
| 2001 SN <sub>195</sub> | 16.1 | 0.15 | 20071027 | 36.13901  | 268.78389 | 62.40504  | 2.13557  | 0.1656054 | 3.2239193 | 29  | 2 | 2001-2007 | 0.59 | M-v | 4 | MPC | 126599 2001 SN <sub>195</sub> |
| 2001 SC <sub>200</sub> | 16.5 | 0.15 | 20071027 | 60.14627  | 314.30301 | 24.20297  | 1.64781  | 0.1098140 | 3.0831453 | 60  | 5 | 1996-2007 | 0.41 | M-v | 0 | MPC | 128732 2001 SC <sub>200</sub> |
| 2001 SD <sub>200</sub> | 15.7 | 0.15 | 20071027 | 345.40592 | 16.56147  | 53.29601  | 1.43734  | 0.1645130 | 3.1083821 | 107 | 4 | 1998-2007 | 0.46 | M-v | 0 | MPC | 128732 2001 SD <sub>200</sub> |
| 2001 SO <sub>201</sub> | 15.4 | 0.15 | 20071027 | 340.23729 | 294.51913 | 146.82970 | 1.76350  | 0.1626615 | 3.0885836 | 78  | 6 | 1998-2007 | 0.53 | M-v | 0 | MPC | 128732 2001 SO <sub>201</sub> |
| 2001 SE <sub>202</sub> | 15.8 | 0.15 | 20071027 | 134.81351 | 311.09918 | 345.43913 | 1.39843  | 0.0615839 | 2.9277606 | 92  | 4 | 1991-2007 | 0.50 | M-v | 2 | MPC | 114625 2001 SE <sub>202</sub> |
| 2001 SD <sub>203</sub> | 15.7 | 0.15 | 20071027 | 30.86166  | 259.08626 | 151.48181 | 2.37068  | 0.0962652 | 2.9449081 | 47  | 5 | 1991-2007 | 0.49 | M-v | 0 | MPC | 108007 2001 SD <sub>203</sub> |
| 2001 SF <sub>203</sub> | 15.7 | 0.15 | 20071027 | 20.28771  | 22.87361  | 38.11158  | 2.40420  | 0.0670976 | 2.9382707 | 58  | 4 | 2001-2007 | 0.48 | M-v | 0 | MPC | 110799 2001 SF <sub>203</sub> |
| 2001 SN <sub>205</sub> | 15.3 | 0.15 | 20071027 | 309.51307 | 42.09184  | 71.90102  | 1.83840  | 0.0766958 | 3.0359851 | 77  | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 127904 2001 SN <sub>205</sub> |
| 2001 SW <sub>205</sub> | 17.1 | 0.15 | 20071027 | 40.85268  | 300.77759 | 48.11988  | 3.02829  | 0.3175421 | 3.1171995 | 56  | 3 | 2001-2007 | 0.41 | M-v | 1 | MPC | 123841 2001 SW <sub>205</sub> |
| 2001 SG <sub>206</sub> | 16.2 | 0.15 | 20071027 | 1.80995   | 346.85074 | 34.90208  | 0.36407  | 0.1804116 | 3.2273897 | 77  | 2 | 2001-2007 | 0.49 | M-v | 3 | MPC | 128732 2001 SG <sub>206</sub> |
| 2001 SR <sub>209</sub> | 15.6 | 0.15 | 20071027 | 358.03506 | 348.34553 | 69.68659  | 1.73961  | 0.1849395 | 3.1198582 | 69  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 127904 2001 SR <sub>209</sub> |
| 2001 SC <sub>210</sub> | 16.3 | 0.15 | 20071027 | 36.10225  | 356.74980 | 14.89222  | 7.49797  | 0.1321581 | 3.0897357 | 32  | 4 | 1996-2007 | 0.70 | M-v | 0 | MPC | 108008 2001 SC <sub>210</sub> |
| 2001 SM <sub>217</sub> | 16.6 | 0.15 | 20071027 | 342.94754 | 52.56149  | 11.65801  | 12.75051 | 0.1340686 | 3.1544622 | 48  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 127904 2001 SM <sub>217</sub> |
| 2001 SB <sub>218</sub> | 15.9 | 0.15 | 20071027 | 50.51182  | 313.00840 | 39.66250  | 1.68675  | 0.0739876 | 3.0923678 | 57  | 5 | 1996-2007 | 0.45 | M-v | 0 | MPC | 128732 2001 SB <sub>218</sub> |
| 2001 SM <sub>218</sub> | 15.7 | 0.15 | 20071027 | 338.89686 | 273.44001 | 176.81872 | 14.72377 | 0.2056519 | 3.1069430 | 37  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128732 2001 SM <sub>218</sub> |
| 2001 SL <sub>219</sub> | 15.5 | 0.15 | 20071027 | 333.27372 | 90.53055  | 7.68746   | 11.23934 | 0.0393983 | 3.0053659 | 51  | 4 | 2001-2007 | 0.57 | M-v | 0 | MPC | 110799 2001 SL <sub>219</sub> |
| 2001 SQ <sub>219</sub> | 15.7 | 0.15 | 20071027 | 350.37107 | 72.21052  | 12.54703  | 9.19750  | 0.1354807 | 3.0390452 | 59  | 5 | 1993-2007 | 0.51 | M-v | 1 | MPC | 110799 2001 SQ <sub>219</sub> |
| 2001 SG <sub>220</sub> | 16.0 | 0.15 | 20071027 | 25.67860  | 276.25291 | 128.80456 | 2.32654  | 0.1567329 | 3.0328030 | 41  | 5 | 1998-2007 | 0.44 | M-v | 1 | MPC | 104169 2001 SG <sub>220</sub> |
| 2001 SQ <sub>220</sub> | 16.4 | 0.15 | 20071027 | 14.87327  | 265.64178 | 124.51155 | 2.33374  | 0.1803213 | 3.1467357 | 44  | 4 | 2001-2007 | 0.54 | M-v | 0 | MPC | 127904 2001 SQ <sub>220</sub> |
| 2001 SR <sub>221</sub> | 15.8 | 0.15 | 20071027 | 21.44361  | 313.25790 | 64.92546  | 2.35953  | 0.1709356 | 3.1583709 | 86  | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128732 2001 SR <sub>221</sub> |
| 2001 SJ <sub>227</sub> | 16.7 | 0.15 | 20071027 | 66.73616  | 180.28806 | 152.41468 | 1.44822  | 0.1891716 | 3.1068647 | 43  | 5 | 1999-2007 | 0.46 | M-v | 0 | MPC | 128732 2001 SJ <sub>227</sub> |
| 2001 SO <sub>227</sub> | 16.2 | 0.15 | 20071027 | 49.46376  | 357.89233 | 11.70107  | 4.09292  | 0.1221910 | 3.0709490 | 61  | 5 | 2001-2007 | 0.43 | M-v | 0 | MPC | 110800 2001 SO <sub>227</sub> |
| 2001 SP <sub>227</sub> | 16.0 | 0.15 | 20071027 | 95.30008  | 150.98315 | 193.30706 | 4.71151  | 0.0783686 | 2.9588948 | 112 | 4 | 2001-2007 | 0.36 | M-v | 1 | MPC | 121767 2001 SP <sub>227</sub> |
| 2001 SF <sub>228</sub> | 17.7 | 0.15 | 20071027 | 327.26383 | 124.80373 | 182.56741 | 3.89256  | 0.2540404 | 2.2551388 | 78  | 3 | 2001-2007 | 0.54 | M-v | 3 | MPC | 119545 2001 SF <sub>228</sub> |
| 2001 SN <sub>229</sub> | 15.9 | 0.15 | 20071027 | 89.06400  | 236.75463 | 102.26182 | 2.69934  | 0.1409076 | 2.9937968 | 91  | 6 | 1998-2007 | 0.52 | M-v | 1 | MPC | 110800 2001 SN <sub>229</sub> |
| 2001 SU <sub>229</sub> | 15.9 | 0.15 | 20071027 | 33.35921  | 260.99283 | 142.30639 | 2.47908  | 0.1785715 | 3.0403212 | 75  | 5 | 2001-2007 | 0.47 | M-v | 0 | MPC | 128732 2001 SU <sub>229</sub> |
| 2001 SX <sub>229</sub> | 15.6 | 0.15 | 20071027 | 5.64682   | 289.14286 | 123.36873 | 2.00317  | 0.1727807 | 3.1486001 | 61  | 2 | 2001-2007 | 0.49 | M-v | 4 | MPC | 127905 2001 SX <sub>229</sub> |
| 2001 SF <sub>231</sub> | 15.5 | 0.15 | 20071027 | 174.09150 | 180.96864 | 93.59825  | 3.12821  | 0.0507525 | 2.9244644 | 84  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 112765 2001 SF <sub>231</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 SH <sub>232</sub> | 15.7 | 0.15 | 20071027 | 61.48301  | 212.29035 | 164.37920 | 1.74767  | 0.1920901 | 3.0039418 | 129 | 4 | 2001-2007 | 0.52 | M-v | 2 | MPC | 112765 2001 SH <sub>232</sub> |
| 2001 SM <sub>233</sub> | 16.2 | 0.15 | 20071027 | 106.41083 | 273.07390 | 81.08419  | 3.26812  | 0.0882731 | 2.8872341 | 82  | 6 | 1999-2007 | 0.43 | M-v | 1 | MPC | 128732 2001 SM <sub>233</sub> |
| 2001 SO <sub>237</sub> | 16.6 | 0.15 | 20071027 | 90.55911  | 223.46731 | 127.89807 | 2.83264  | 0.0987694 | 2.9288062 | 38  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128732 2001 SO <sub>237</sub> |
| 2001 SG <sub>238</sub> | 16.5 | 0.15 | 20071027 | 59.79951  | 218.59760 | 169.79485 | 2.32841  | 0.0840519 | 2.9334697 | 111 | 4 | 2001-2007 | 0.36 | M-v | 1 | MPC | 121767 2001 SG <sub>238</sub> |
| 2001 SG <sub>241</sub> | 15.4 | 0.15 | 20071027 | 177.79505 | 229.75043 | 17.67181  | 10.24739 | 0.0291724 | 3.0526834 | 51  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 110800 2001 SG <sub>241</sub> |
| 2001 SV <sub>241</sub> | 15.5 | 0.15 | 20071027 | 15.21474  | 204.06635 | 179.77597 | 4.89685  | 0.1519235 | 3.2138224 | 66  | 2 | 2001-2007 | 0.48 | M-v | 3 | MPC | 128732 2001 SV <sub>241</sub> |
| 2001 SJ <sub>242</sub> | 16.1 | 0.15 | 20071027 | 345.64223 | 247.36115 | 184.17215 | 4.89680  | 0.1878940 | 3.2046150 | 69  | 3 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128732 2001 SJ <sub>242</sub> |
| 2001 SH <sub>243</sub> | 15.4 | 0.15 | 20071027 | 29.80497  | 195.16461 | 193.83615 | 11.31341 | 0.1243454 | 3.1268059 | 60  | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 110801 2001 SH <sub>243</sub> |
| 2001 SR <sub>243</sub> | 15.4 | 0.15 | 20071027 | 29.97029  | 234.65177 | 180.62298 | 13.03293 | 0.1900649 | 3.0265045 | 106 | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 110801 2001 SR <sub>243</sub> |
| 2001 SJ <sub>250</sub> | 15.5 | 0.15 | 20071027 | 133.07854 | 234.04116 | 36.83889  | 16.58274 | 0.1286766 | 3.1412014 | 43  | 5 | 1999-2007 | 0.40 | M-v | 0 | MPC | 122687 2001 SJ <sub>250</sub> |
| 2001 SU <sub>250</sub> | 15.4 | 0.15 | 20071027 | 337.20596 | 272.51777 | 195.63861 | 24.75388 | 0.2897675 | 3.1737672 | 50  | 3 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128732 2001 SU <sub>250</sub> |
| 2001 SZ <sub>253</sub> | 15.1 | 0.15 | 20071027 | 50.25793  | 330.22724 | 41.63200  | 9.52116  | 0.0830416 | 3.1222566 | 84  | 5 | 1993-2007 | 0.49 | M-v | 1 | MPC | 128732 2001 SZ <sub>253</sub> |
| 2001 SW <sub>256</sub> | 15.6 | 0.15 | 20071027 | 84.64927  | 293.62037 | 97.97265  | 3.03847  | 0.0929720 | 2.8739186 | 106 | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 116169 2001 SW <sub>256</sub> |
| 2001 SC <sub>258</sub> | 15.7 | 0.15 | 20071027 | 54.46066  | 79.75900  | 13.71586  | 21.83374 | 0.0912687 | 2.7003799 | 70  | 5 | 2001-2007 | 0.60 | M-v | 1 | MPC | 112766 2001 SC <sub>258</sub> |
| 2001 SN <sub>258</sub> | 14.9 | 0.15 | 20071027 | 39.97748  | 60.08818  | 300.43275 | 7.99162  | 0.1014112 | 3.0929709 | 71  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 127906 2001 SN <sub>258</sub> |
| 2001 SB <sub>260</sub> | 16.1 | 0.15 | 20071027 | 36.03296  | 110.75717 | 251.55630 | 4.21766  | 0.1469829 | 3.1083458 | 28  | 3 | 2001-2007 | 0.40 | M-v | 2 | MPC | 127906 2001 SB <sub>260</sub> |
| 2001 SX <sub>261</sub> | 16.3 | 0.15 | 20071027 | 30.81458  | 186.99960 | 186.13155 | 4.80900  | 0.1405732 | 3.1032652 | 42  | 3 | 2001-2007 | 0.51 | M-v | 3 | MPC | 127906 2001 SX <sub>261</sub> |
| 2001 SE <sub>264</sub> | 16.4 | 0.15 | 20071027 | 10.14207  | 143.04109 | 294.71143 | 16.95410 | 0.1027882 | 1.9721647 | 91  | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128732 2001 SE <sub>264</sub> |
| 2001 SF <sub>271</sub> | 15.3 | 0.15 | 20071027 | 43.81835  | 149.06352 | 194.56263 | 4.04096  | 0.1591394 | 3.2083411 | 101 | 3 | 2001-2007 | 0.54 | M-v | 3 | MPC | 128732 2001 SF <sub>271</sub> |
| 2001 SU <sub>272</sub> | 15.3 | 0.15 | 20071027 | 357.12132 | 121.98410 | 307.60059 | 3.90589  | 0.1312551 | 3.1296988 | 89  | 5 | 1995-2007 | 0.54 | M-v | 0 | MPC | 128732 2001 SU <sub>272</sub> |
| 2001 SO <sub>273</sub> | 16.1 | 0.15 | 20071027 | 84.70263  | 165.92852 | 155.31441 | 3.39581  | 0.0325147 | 3.1259174 | 52  | 5 | 1996-2007 | 0.34 | M-v | 0 | MPC | 128733 2001 SO <sub>273</sub> |
| 2001 SK <sub>274</sub> | 15.9 | 0.15 | 20071027 | 326.52566 | 275.59317 | 169.94198 | 2.97970  | 0.1257583 | 3.1959217 | 85  | 7 | 1995-2007 | 0.42 | M-v | 0 | MPC | 128733 2001 SK <sub>274</sub> |
| 2001 SO <sub>274</sub> | 16.2 | 0.15 | 20071027 | 313.15394 | 109.89041 | 7.71244   | 0.43996  | 0.1301326 | 3.0878651 | 43  | 4 | 1996-2007 | 0.31 | M-v | 1 | MPC | 128733 2001 SO <sub>274</sub> |
| 2001 SW <sub>288</sub> | 14.9 | 0.15 | 20071027 | 279.18446 | 162.86969 | 334.49061 | 9.33298  | 0.0538540 | 3.1343672 | 51  | 5 | 1998-2007 | 0.61 | M-v | 1 | MPC | 128733 2001 SW <sub>288</sub> |
| 2001 SN <sub>290</sub> | 15.4 | 0.15 | 20071027 | 3.65828   | 131.54242 | 250.65163 | 16.13527 | 0.3212292 | 3.1738906 | 59  | 2 | 2001-2007 | 0.50 | M-v | 2 | MPC | 127907 2001 SN <sub>290</sub> |
| 2001 SH <sub>291</sub> | 14.8 | 0.15 | 20071027 | 62.73866  | 40.19556  | 285.88192 | 16.60449 | 0.2040473 | 3.1019609 | 42  | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 104170 2001 SH <sub>291</sub> |
| 2001 SK <sub>291</sub> | 15.2 | 0.15 | 20071027 | 47.18130  | 92.33300  | 272.95492 | 13.99421 | 0.2706782 | 3.0557310 | 52  | 3 | 2001-2007 | 0.55 | M-v | 2 | MPC | 104170 2001 SK <sub>291</sub> |
| 2001 SH <sub>293</sub> | 15.8 | 0.15 | 20071027 | 341.40066 | 253.19654 | 190.66119 | 1.85205  | 0.1866690 | 3.0637695 | 74  | 5 | 1993-2007 | 0.53 | M-v | 1 | MPC | 128733 2001 SH <sub>293</sub> |
| 2001 SS <sub>293</sub> | 16.0 | 0.15 | 20071027 | 15.97739  | 244.90929 | 182.89901 | 6.67237  | 0.1346235 | 2.9696712 | 52  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 114627 2001 SS <sub>293</sub> |
| 2001 SV <sub>303</sub> | 16.1 | 0.15 | 20071027 | 13.81704  | 172.93857 | 235.03258 | 3.04747  | 0.1267459 | 3.0796402 | 57  | 6 | 1996-2007 | 0.41 | M-v | 0 | MPC | 128733 2001 SV <sub>303</sub> |
| 2001 SL <sub>304</sub> | 16.0 | 0.15 | 20071027 | 356.56992 | 218.69911 | 202.27206 | 1.03145  | 0.1636149 | 3.1316452 | 60  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 127908 2001 SL <sub>304</sub> |
| 2001 SK <sub>305</sub> | 15.3 | 0.15 | 20071027 | 78.18706  | 93.24044  | 213.02859 | 5.48877  | 0.0892533 | 3.2098046 | 65  | 3 | 2001-2007 | 0.36 | M-v | 2 | MPC | 128733 2001 SK <sub>305</sub> |
| 2001 SC <sub>307</sub> | 16.1 | 0.15 | 20071027 | 90.35955  | 311.49102 | 75.70697  | 0.55898  | 0.0831367 | 2.7699506 | 84  | 5 | 2001-2007 | 0.48 | M-v | 0 | MPC | 108019 2001 SC <sub>307</sub> |
| 2001 SJ <sub>313</sub> | 15.6 | 0.15 | 20071027 | 6.41596   | 10.52712  | 33.32439  | 16.01655 | 0.2700430 | 3.1764302 | 69  | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128733 2001 SJ <sub>313</sub> |
| 2001 SV <sub>313</sub> | 14.8 | 0.15 | 20071027 | 338.41673 | 12.57663  | 71.66118  | 11.91446 | 0.1269903 | 3.1228459 | 67  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128733 2001 SV <sub>313</sub> |
| 2001 SY <sub>313</sub> | 15.1 | 0.15 | 20071027 | 59.43419  | 268.68055 | 56.95463  | 13.80793 | 0.2168549 | 3.1579590 | 99  | 5 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128733 2001 SY <sub>313</sub> |
| 2001 SZ <sub>318</sub> | 15.3 | 0.15 | 20071027 | 58.69178  | 164.35668 | 173.79088 | 12.02022 | 0.0929633 | 3.1362181 | 46  | 3 | 2001-2007 | 0.54 | M-v | 3 | MPC | 127908 2001 SZ <sub>318</sub> |
| 2001 SH <sub>321</sub> | 15.9 | 0.15 | 20071027 | 33.65089  | 127.98301 | 247.24962 | 8.97622  | 0.2122386 | 3.0795825 | 43  | 4 | 1996-2007 | 0.49 | M-v | 0 | MPC | 128733 2001 SH <sub>321</sub> |
| 2001 SO <sub>321</sub> | 16.0 | 0.15 | 20071027 | 23.47206  | 132.77489 | 247.26755 | 8.44312  | 0.1296095 | 3.1165312 | 45  | 4 | 1996-2007 | 0.39 | M-v | 1 | MPC | 110804 2001 SO <sub>321</sub> |
| 2001 SL <sub>322</sub> | 15.1 | 0.15 | 20071027 | 119.22347 | 23.41903  | 286.45948 | 9.52493  | 0.0586563 | 2.9816263 | 71  | 4 | 1996-2007 | 0.55 | M-v | 3 | MPC | 114627 2001 SL <sub>322</sub> |
| 2001 SD <sub>324</sub> | 15.7 | 0.15 | 20071027 | 45.61862  | 94.76033  | 278.49701 | 4.48083  | 0.1179408 | 3.0604335 | 45  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 110804 2001 SD <sub>324</sub> |
| 2001 SQ <sub>324</sub> | 15.1 | 0.15 | 20071027 | 342.68630 | 136.02108 | 293.97324 | 9.46791  | 0.0811201 | 3.0591420 | 61  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128733 2001 SQ <sub>324</sub> |
| 2001 SA <sub>328</sub> | 15.3 | 0.15 | 20071027 | 81.28276  | 283.45202 | 49.12339  | 5.22065  | 0.1028491 | 3.0132653 | 60  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 104171 2001 SA <sub>328</sub> |
| 2001 SJ <sub>328</sub> | 16.5 | 0.15 | 20071027 | 124.52160 | 7.69585   | 315.94096 | 3.24351  | 0.1173633 | 2.7594966 | 55  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110804 2001 SJ <sub>328</sub> |
| 2001 SQ <sub>336</sub> | 16.0 | 0.15 | 20071027 | 313.39568 | 112.61627 | 351.53580 | 12.20251 | 0.1169930 | 3.0708996 | 39  | 3 | 2001-2007 | 0.40 | M-v | 2 | MPC | 128733 2001 SQ <sub>336</sub> |
| 2001 SU <sub>339</sub> | 15.7 | 0.15 | 20071027 | 46.49808  | 91.61405  | 234.68172 | 12.12333 | 0.2897906 | 3.1818086 | 58  | 2 | 2001-2007 | 0.42 | M-v | 3 | MPC | 127908 2001 SU <sub>339</sub> |
| 2001 SF <sub>342</sub> | 16.6 | 0.15 | 20071027 | 47.13384  | 318.74485 | 30.71056  | 0.93158  | 0.1814243 | 3.1246692 | 33  | 3 | 2001-2007 | 0.47 | M-v | 4 | MPC | 127908 2001 SF <sub>342</sub> |
| 2001 SO <sub>342</sub> | 16.2 | 0.15 | 20071027 | 95.03400  | 169.25584 | 158.12736 | 2.02043  | 0.1055092 | 3.0210535 | 68  | 6 | 1999-2007 | 0.46 | M-v | 0 | MPC | 117955 2001 SO <sub>342</sub> |
| 2001 SU <sub>344</sub> | 14.5 | 0.15 | 20071027 | 42.25074  | 235.17003 | 133.01507 | 18.01474 | 0.2298796 | 3.0952787 | 100 | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 110804 2001 SU <sub>344</sub> |
| 2001 SV <sub>344</sub> | 15.1 | 0.15 | 20071027 | 42.57512  | 284.88267 | 90.65716  | 16.93348 | 0.2343733 | 3.0661470 | 37  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128733 2001 SV <sub>344</sub> |
| 2001 SA <sub>345</sub> | 15.2 | 0.15 | 20071027 | 72.98285  | 255.16372 | 127.23482 | 20.33936 | 0.1923604 | 2.9085407 | 47  | 5 | 1998-2007 | 0.48 | M-v | 2 | MPC | 128733 2001 SA <sub>345</sub> |
| 2001 SF <sub>345</sub> | 14.9 | 0.15 | 20071027 | 30.81252  | 313.87983 | 48.76444  | 28.13393 | 0.1968123 | 3.1650705 | 139 | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128733 2001 SF <sub>345</sub> |
| 2001 SL <sub>345</sub> | 15.2 | 0.15 | 20071027 | 2.88716   | 111.73647 | 308.36880 | 13.25710 | 0.2442962 | 3.1011696 | 80  | 5 | 1996-2007 | 0.53 | M-v | 0 | MPC | 104172 2001 SL <sub>345</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2001 SH <sub>348</sub> | 15.7 | 0.15 | 20071027 | 348.47016 | 176.22832 | 247.52012 | 9.14096  | 0.0670390 | 3.1061502 | 61  | 2 | 2001-2007 | 0.51 | M-v | 3 | MP | 127909 2001 SH <sub>348</sub> |
| 2001 SX <sub>348</sub> | 15.2 | 0.15 | 20071027 | 40.44210  | 278.54400 | 105.63708 | 17.76182 | 0.2824865 | 3.0946035 | 70  | 4 | 2001-2007 | 0.51 | M-v | 0 | MP | 110805 2001 SX <sub>348</sub> |
| 2001 SF <sub>353</sub> | 15.8 | 0.15 | 20071027 | 321.24086 | 30.82221  | 76.32538  | 12.01007 | 0.0581948 | 3.1174524 | 40  | 6 | 1993-2007 | 0.53 | M-v | 0 | MP | 128733 2001 SF <sub>353</sub> |
| 2001 SX <sub>353</sub> | 14.4 | 0.15 | 20071027 | 329.82742 | 191.85829 | 247.21151 | 24.11554 | 0.0682490 | 3.2200136 | 69  | 3 | 2001-2007 | 0.52 | M-v | 2 | MP | 128733 2001 SX <sub>353</sub> |
| 2001 TW                | 15.3 | 0.15 | 20071027 | 44.97459  | 279.76654 | 59.37800  | 22.27791 | 0.4909005 | 3.1308798 | 71  | 3 | 2001-2007 | 0.54 | M-v | 1 | MP | 100063 2001 TW                |
| 2001 TM <sub>5</sub>   | 15.9 | 0.15 | 20071027 | 20.26208  | 249.05431 | 133.17330 | 9.92729  | 0.2323022 | 3.1203177 | 75  | 4 | 1999-2007 | 0.53 | M-v | 0 | MP | 128733 2001 TM <sub>5</sub>   |
| 2001 TU <sub>5</sub>   | 15.0 | 0.15 | 20071027 | 319.39399 | 54.00081  | 47.68305  | 9.62384  | 0.1127287 | 3.0450251 | 113 | 3 | 2001-2007 | 0.58 | M-v | 1 | MP | 128734 2001 TU <sub>5</sub>   |
| 2001 TY <sub>12</sub>  | 14.6 | 0.15 | 20071027 | 44.55166  | 261.82272 | 84.77069  | 26.32653 | 0.3040455 | 3.2024213 | 80  | 5 | 2000-2007 | 0.56 | M-v | 1 | MP | 128734 2001 TY <sub>12</sub>  |
| 2001 TZ <sub>13</sub>  | 15.9 | 0.15 | 20071027 | 48.77818  | 293.48855 | 96.57066  | 7.02572  | 0.2251777 | 3.0073336 | 73  | 3 | 2001-2007 | 0.48 | M-v | 2 | MP | 128734 2001 TZ <sub>13</sub>  |
| 2001 TG <sub>14</sub>  | 14.9 | 0.15 | 20071027 | 38.72128  | 128.85438 | 256.19933 | 10.60743 | 0.2908973 | 3.0587503 | 104 | 3 | 2001-2007 | 0.55 | M-v | 1 | MP | 128734 2001 TG <sub>14</sub>  |
| 2001 TH <sub>14</sub>  | 14.9 | 0.15 | 20071027 | 84.65263  | 73.59553  | 233.17549 | 15.55171 | 0.0980787 | 3.1324351 | 77  | 5 | 1996-2007 | 0.53 | M-v | 1 | MP | 128734 2001 TH <sub>14</sub>  |
| 2001 TL <sub>14</sub>  | 15.7 | 0.15 | 20071027 | 71.11653  | 92.40413  | 314.57651 | 4.76150  | 0.0786558 | 2.8552253 | 86  | 6 | 1997-2007 | 0.50 | M-v | 0 | MP | 116171 2001 TL <sub>14</sub>  |
| 2001 TE <sub>16</sub>  | 14.6 | 0.15 | 20071027 | 0.78969   | 290.84189 | 135.47999 | 11.17340 | 0.0852442 | 3.0906251 | 62  | 5 | 2001-2007 | 0.49 | M-v | 0 | MP | 104172 2001 TE <sub>16</sub>  |
| 2001 TS <sub>16</sub>  | 14.4 | 0.15 | 20071027 | 68.32005  | 284.97197 | 93.98857  | 25.81843 | 0.2534619 | 3.0078637 | 88  | 5 | 2001-2007 | 0.41 | M-v | 1 | MP | 114628 2001 TS <sub>16</sub>  |
| 2001 TC <sub>17</sub>  | 15.8 | 0.15 | 20071027 | 59.51508  | 52.27186  | 10.04821  | 6.35839  | 0.0636512 | 2.8729378 | 94  | 6 | 1991-2007 | 0.51 | M-v | 2 | MP | 110805 2001 TC <sub>17</sub>  |
| 2001 TX <sub>21</sub>  | 15.7 | 0.15 | 20071027 | 45.41204  | 282.81439 | 129.80519 | 9.55235  | 0.2077330 | 2.9669461 | 60  | 4 | 2001-2007 | 0.41 | M-v | 1 | MP | 128734 2001 TX <sub>21</sub>  |
| 2001 TE <sub>22</sub>  | 15.1 | 0.15 | 20071027 | 92.94659  | 121.28705 | 189.89252 | 17.61945 | 0.0857114 | 3.1039046 | 59  | 4 | 2001-2007 | 0.60 | M-v | 1 | MP | 108030 2001 TE <sub>22</sub>  |
| 2001 TZ <sub>22</sub>  | 16.1 | 0.15 | 20071027 | 11.17302  | 195.04970 | 196.08017 | 18.40202 | 0.2010822 | 3.2011054 | 80  | 2 | 2001-2007 | 0.57 | M-v | 2 | MP | 127909 2001 TZ <sub>22</sub>  |
| 2001 TA <sub>29</sub>  | 16.0 | 0.15 | 20071027 | 27.35552  | 166.45026 | 248.33611 | 4.64144  | 0.1609649 | 3.0888327 | 41  | 4 | 2000-2007 | 0.51 | M-v | 0 | MP | 113808 2001 TA <sub>29</sub>  |
| 2001 TQ <sub>30</sub>  | 16.1 | 0.15 | 20071027 | 351.34880 | 341.47385 | 105.49009 | 6.49703  | 0.1470059 | 3.1269026 | 38  | 4 | 1990-2007 | 0.58 | M-v | 1 | MP | 48116 2001 TQ <sub>30</sub>   |
| 2001 TD <sub>31</sub>  | 15.2 | 0.15 | 20071027 | 83.27712  | 76.65639  | 261.61372 | 10.59675 | 0.1265527 | 3.1395196 | 79  | 4 | 2001-2007 | 0.58 | M-v | 1 | MP | 110806 2001 TD <sub>31</sub>  |
| 2001 TJ <sub>34</sub>  | 14.8 | 0.15 | 20071027 | 39.29259  | 20.83450  | 20.62536  | 11.49812 | 0.1064691 | 3.1384958 | 85  | 4 | 1998-2007 | 0.57 | M-v | 1 | MP | 128734 2001 TJ <sub>34</sub>  |
| 2001 TZ <sub>36</sub>  | 14.5 | 0.15 | 20071027 | 10.39132  | 203.30852 | 254.61400 | 23.56003 | 0.2594206 | 3.1218608 | 137 | 3 | 2001-2007 | 0.48 | M-v | 2 | MP | 128734 2001 TZ <sub>36</sub>  |
| 2001 TC <sub>46</sub>  | 17.0 | 0.15 | 20071027 | 348.17925 | 175.91301 | 323.84423 | 17.39043 | 0.0591902 | 1.9130877 | 29  | 5 | 2000-2007 | 0.63 | M-v | 2 | MP | 113808 2001 TC <sub>46</sub>  |
| 2001 TO <sub>47</sub>  | 15.4 | 0.15 | 20071027 | 146.69173 | 113.76369 | 148.40150 | 9.90757  | 0.0227909 | 3.1807961 | 63  | 4 | 2001-2007 | 0.45 | M-v | 0 | MP | 128734 2001 TO <sub>47</sub>  |
| 2001 TZ <sub>49</sub>  | 15.6 | 0.15 | 20071027 | 7.04547   | 54.82489  | 19.81314  | 14.62780 | 0.3045598 | 3.0909478 | 66  | 3 | 2001-2007 | 0.56 | M-v | 2 | MP | 46718 2001 TZ <sub>49</sub>   |
| 2001 TX <sub>55</sub>  | 15.6 | 0.15 | 20071027 | 52.23274  | 190.37490 | 170.24392 | 4.96838  | 0.1496493 | 3.0850227 | 54  | 5 | 2001-2007 | 0.41 | M-v | 0 | MP | 110806 2001 TX <sub>55</sub>  |
| 2001 TM <sub>57</sub>  | 15.7 | 0.15 | 20071027 | 27.14919  | 163.39648 | 205.57798 | 6.67237  | 0.2095437 | 3.1882498 | 75  | 2 | 2001-2007 | 0.59 | M-v | 3 | MP | 128734 2001 TM <sub>57</sub>  |
| 2001 TB <sub>58</sub>  | 15.6 | 0.15 | 20071027 | 48.50648  | 122.74202 | 217.15450 | 4.93916  | 0.1498096 | 3.2055694 | 86  | 3 | 2001-2007 | 0.56 | M-v | 2 | MP | 128734 2001 TB <sub>58</sub>  |
| 2001 TJ <sub>60</sub>  | 15.6 | 0.15 | 20071027 | 26.08080  | 190.50012 | 191.07259 | 4.62896  | 0.1139240 | 3.1786101 | 62  | 4 | 2001-2007 | 0.50 | M-v | 1 | MP | 128734 2001 TJ <sub>60</sub>  |
| 2001 TO <sub>60</sub>  | 14.6 | 0.15 | 20071027 | 341.82176 | 261.91814 | 201.06790 | 12.55363 | 0.2854273 | 3.1545039 | 94  | 4 | 1990-2007 | 0.61 | M-v | 1 | MP | 48118 2001 TO <sub>60</sub>   |
| 2001 TO <sub>66</sub>  | 15.9 | 0.15 | 20071027 | 79.65901  | 145.59595 | 192.89267 | 3.45030  | 0.2886815 | 3.0404373 | 192 | 5 | 1999-2007 | 0.45 | M-v | 1 | MP | 124336 2001 TO <sub>66</sub>  |
| 2001 TR <sub>72</sub>  | 15.5 | 0.15 | 20071027 | 32.73103  | 328.02222 | 71.50197  | 3.29180  | 0.2495533 | 3.1051667 | 77  | 3 | 2001-2007 | 0.42 | M-v | 2 | MP | 128734 2001 TR <sub>72</sub>  |
| 2001 TV <sub>75</sub>  | 15.7 | 0.15 | 20071027 | 20.17529  | 182.53248 | 211.04162 | 6.60271  | 0.1846780 | 3.2078136 | 103 | 5 | 1998-2007 | 0.49 | M-v | 0 | MP | 128734 2001 TV <sub>75</sub>  |
| 2001 TO <sub>81</sub>  | 14.9 | 0.15 | 20071027 | 7.53818   | 188.98249 | 234.89804 | 8.77912  | 0.1792227 | 3.0700670 | 58  | 4 | 2001-2007 | 0.49 | M-v | 1 | MP | 128734 2001 TO <sub>81</sub>  |
| 2001 TR <sub>82</sub>  | 15.4 | 0.15 | 20071027 | 75.53691  | 103.54301 | 217.22533 | 9.19187  | 0.1364068 | 3.1143226 | 72  | 5 | 1994-2007 | 0.44 | M-v | 0 | MP | 128734 2001 TR <sub>82</sub>  |
| 2001 TT <sub>83</sub>  | 16.0 | 0.15 | 20071027 | 3.88559   | 132.92689 | 268.33564 | 4.10824  | 0.1865301 | 3.1682168 | 62  | 2 | 2001-2007 | 0.48 | M-v | 3 | MP | 127910 2001 TT <sub>83</sub>  |
| 2001 TN <sub>84</sub>  | 15.9 | 0.15 | 20071027 | 117.94355 | 98.43698  | 208.20619 | 0.64907  | 0.1857389 | 2.9811918 | 86  | 5 | 2000-2007 | 0.41 | M-v | 0 | MP | 114629 2001 TN <sub>84</sub>  |
| 2001 TX <sub>84</sub>  | 14.9 | 0.15 | 20071027 | 196.85331 | 22.05007  | 213.36794 | 8.05988  | 0.0249669 | 3.0428104 | 94  | 4 | 2001-2007 | 0.53 | M-v | 1 | MP | 120748 2001 TX <sub>84</sub>  |
| 2001 TF <sub>85</sub>  | 16.4 | 0.15 | 20071027 | 16.26009  | 275.30284 | 166.54777 | 0.94075  | 0.3082039 | 3.0661510 | 80  | 4 | 2001-2007 | 0.52 | M-v | 1 | MP | 110808 2001 TF <sub>85</sub>  |
| 2001 TJ <sub>88</sub>  | 15.4 | 0.15 | 20071027 | 25.00265  | 164.44289 | 210.38476 | 14.52301 | 0.1733258 | 3.1773821 | 69  | 3 | 2001-2007 | 0.46 | M-v | 2 | MP | 127910 2001 TJ <sub>88</sub>  |
| 2001 TY <sub>88</sub>  | 15.8 | 0.15 | 20071027 | 356.58296 | 156.35008 | 248.30004 | 3.77078  | 0.1612925 | 3.2247895 | 50  | 2 | 2001-2007 | 0.57 | M-v | 4 | MP | 127910 2001 TY <sub>88</sub>  |
| 2001 TH <sub>89</sub>  | 15.8 | 0.15 | 20071027 | 47.94928  | 110.62878 | 250.22815 | 4.13333  | 0.1353163 | 3.1194889 | 69  | 4 | 2001-2007 | 0.47 | M-v | 0 | MP | 128734 2001 TH <sub>89</sub>  |
| 2001 TX <sub>89</sub>  | 15.1 | 0.15 | 20071027 | 41.92635  | 128.93724 | 216.87411 | 16.31635 | 0.2503879 | 3.1799369 | 103 | 2 | 2001-2007 | 0.46 | M-v | 3 | MP | 127910 2001 TX <sub>89</sub>  |
| 2001 TW <sub>92</sub>  | 16.1 | 0.15 | 20071027 | 34.17573  | 26.77871  | 0.93514   | 10.75377 | 0.0949838 | 3.1010323 | 32  | 5 | 2001-2007 | 0.54 | M-v | 0 | MP | 110808 2001 TW <sub>92</sub>  |
| 2001 TF <sub>94</sub>  | 15.2 | 0.15 | 20071027 | 355.16393 | 42.09050  | 8.98732   | 9.99646  | 0.1061381 | 3.2102632 | 113 | 4 | 2001-2007 | 0.56 | M-v | 0 | MP | 128734 2001 TF <sub>94</sub>  |
| 2001 TA <sub>95</sub>  | 15.4 | 0.15 | 20071027 | 85.64439  | 324.75097 | 344.43161 | 4.97069  | 0.2773977 | 3.0985077 | 127 | 3 | 2001-2007 | 0.47 | M-v | 2 | MP | 128734 2001 TA <sub>95</sub>  |
| 2001 TP <sub>96</sub>  | 15.2 | 0.15 | 20071027 | 32.21220  | 42.50916  | 351.31074 | 4.84876  | 0.1467314 | 3.1157399 | 108 | 5 | 1995-2007 | 0.51 | M-v | 0 | MP | 114629 2001 TP <sub>96</sub>  |
| 2001 TJ <sub>99</sub>  | 14.9 | 0.15 | 20071027 | 350.60636 | 11.22517  | 1.26293   | 9.65622  | 0.1045087 | 3.4002311 | 80  | 2 | 2001-2007 | 0.47 | M-v | 3 | MP | 128734 2001 TJ <sub>99</sub>  |
| 2001 TD <sub>100</sub> | 14.6 | 0.15 | 20071027 | 344.35873 | 6.37493   | 16.44309  | 16.10339 | 0.2035595 | 3.4266329 | 108 | 3 | 2001-2007 | 0.55 | M-v | 2 | MP | 128734 2001 TD <sub>100</sub> |
| 2001 TD <sub>102</sub> | 15.5 | 0.15 | 20071027 | 39.82039  | 80.86687  | 292.59851 | 13.18093 | 0.3235040 | 3.1080276 | 66  | 4 | 2001-2007 | 0.43 | M-v | 0 | MP | 110809 2001 TD <sub>102</sub> |
| 2001 TC <sub>109</sub> | 15.0 | 0.15 | 20071027 | 18.43817  | 53.62540  | 2.61703   | 13.65464 | 0.0531014 | 3.0791566 | 93  | 6 | 1993-2007 | 0.50 | M-v | 1 | MP | 117958 2001 TC <sub>109</sub> |
| 2001 TR <sub>109</sub> | 15.5 | 0.15 | 20071027 | 346.41285 | 201.93947 | 224.62031 | 12.01030 | 0.1164868 | 3.2290071 | 56  | 2 | 2001-2007 | 0.54 | M-v | 3 | MP | 127911 2001 TR <sub>109</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 TA <sub>111</sub> | 15.5 | 0.15 | 20071027 | 52.54296  | 104.38725 | 225.52677 | 12.38533 | 0.2909123 | 3.2085610 | 102 | 3 | 2000-2007 | 0.56 | M-v | 1 | MPC | 127911 2001 TA <sub>111</sub> |
| 2001 TN <sub>118</sub> | 15.9 | 0.15 | 20071027 | 15.56153  | 134.55668 | 296.35179 | 12.77732 | 0.2863486 | 3.0765584 | 70  | 4 | 1995-2007 | 0.43 | M-v | 0 | MPC | 128735 2001 TN <sub>118</sub> |
| 2001 TZ <sub>118</sub> | 14.1 | 0.15 | 20071027 | 27.63019  | 133.11464 | 240.59196 | 21.79698 | 0.2160210 | 3.1782559 | 122 | 2 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128735 2001 TZ <sub>118</sub> |
| 2001 TR <sub>119</sub> | 15.1 | 0.15 | 20071027 | 44.90991  | 33.62082  | 331.95604 | 14.07626 | 0.2657640 | 3.1149063 | 38  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 110810 2001 TR <sub>119</sub> |
| 2001 TE <sub>120</sub> | 14.9 | 0.15 | 20071027 | 1.55463   | 149.15840 | 295.25696 | 11.85747 | 0.2482302 | 3.1070662 | 84  | 3 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128735 2001 TE <sub>120</sub> |
| 2001 TH <sub>121</sub> | 15.0 | 0.15 | 20071027 | 46.46610  | 77.48367  | 299.60883 | 9.92703  | 0.2397808 | 3.0983845 | 91  | 4 | 1995-2007 | 0.52 | M-v | 0 | MPC | 110810 2001 TH <sub>121</sub> |
| 2001 TX <sub>124</sub> | 15.4 | 0.15 | 20071027 | 343.88702 | 164.11568 | 290.09228 | 8.29840  | 0.1433180 | 3.0924592 | 79  | 5 | 1990-2007 | 0.58 | M-v | 1 | MPC | 110810 2001 TX <sub>124</sub> |
| 2001 TQ <sub>129</sub> | 15.8 | 0.15 | 20071027 | 337.49065 | 148.05727 | 297.04533 | 0.39521  | 0.1326831 | 3.1303888 | 68  | 4 | 1995-2007 | 0.44 | M-v | 2 | MPC | 127911 2001 TQ <sub>129</sub> |
| 2001 TG <sub>131</sub> | 16.0 | 0.15 | 20071027 | 73.06739  | 220.94586 | 135.83914 | 7.54618  | 0.2646200 | 2.9962018 | 92  | 6 | 1996-2007 | 0.56 | M-v | 1 | MPC | 117959 2001 TG <sub>131</sub> |
| 2001 TZ <sub>131</sub> | 16.0 | 0.15 | 20071027 | 347.67653 | 63.51032  | 359.41249 | 4.85328  | 0.1554656 | 3.1750530 | 54  | 4 | 1995-2007 | 0.41 | M-v | 1 | MPC | 128735 2001 TZ <sub>131</sub> |
| 2001 TN <sub>132</sub> | 14.8 | 0.15 | 20071027 | 47.77210  | 115.39550 | 240.70828 | 14.70932 | 0.2066249 | 3.1098551 | 77  | 3 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128735 2001 TN <sub>132</sub> |
| 2001 TA <sub>133</sub> | 15.3 | 0.15 | 20071027 | 39.27475  | 140.31441 | 232.09234 | 10.56217 | 0.0931094 | 3.1078120 | 61  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 127911 2001 TA <sub>133</sub> |
| 2001 TA <sub>134</sub> | 14.8 | 0.15 | 20071027 | 9.57623   | 325.27810 | 103.76257 | 12.21011 | 0.1521189 | 3.1056185 | 100 | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 110810 2001 TA <sub>134</sub> |
| 2001 TC <sub>134</sub> | 15.5 | 0.15 | 20071027 | 37.62343  | 339.92442 | 57.93010  | 18.40266 | 0.2070018 | 3.0772689 | 99  | 5 | 2001-2007 | 0.57 | M-v | 0 | MPC | 128735 2001 TC <sub>134</sub> |
| 2001 TQ <sub>134</sub> | 15.1 | 0.15 | 20071027 | 81.66070  | 104.73294 | 237.04068 | 11.08306 | 0.0364818 | 3.0137926 | 49  | 3 | 2001-2007 | 0.66 | M-v | 3 | MPC | 128735 2001 TQ <sub>134</sub> |
| 2001 TT <sub>135</sub> | 14.7 | 0.15 | 20071027 | 341.18857 | 154.23865 | 285.88645 | 8.09306  | 0.0701788 | 3.1108854 | 66  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128735 2001 TT <sub>135</sub> |
| 2001 TB <sub>137</sub> | 15.0 | 0.15 | 20071027 | 6.17687   | 349.05115 | 55.70042  | 16.25907 | 0.2464009 | 3.1717434 | 93  | 5 | 2001-2007 | 0.48 | M-v | 0 | MPC | 128735 2001 TB <sub>137</sub> |
| 2001 TY <sub>139</sub> | 15.1 | 0.15 | 20071027 | 73.87567  | 338.54394 | 24.03655  | 11.54606 | 0.1060183 | 2.9198417 | 79  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 114630 2001 TY <sub>139</sub> |
| 2001 TB <sub>140</sub> | 16.3 | 0.15 | 20071027 | 115.50854 | 231.74573 | 131.91550 | 7.07434  | 0.0415768 | 2.7468492 | 34  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 110811 2001 TB <sub>140</sub> |
| 2001 TO <sub>141</sub> | 15.3 | 0.15 | 20071027 | 346.58386 | 40.76659  | 32.31940  | 16.98840 | 0.1975576 | 3.1571582 | 89  | 3 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128735 2001 TO <sub>141</sub> |
| 2001 TF <sub>142</sub> | 15.9 | 0.15 | 20071027 | 334.98841 | 70.72807  | 32.74583  | 17.10563 | 0.2394206 | 3.1159093 | 53  | 3 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128735 2001 TF <sub>142</sub> |
| 2001 TF <sub>143</sub> | 15.9 | 0.15 | 20071027 | 22.49467  | 340.94160 | 62.15149  | 6.38978  | 0.1605668 | 3.0840299 | 40  | 3 | 2001-2007 | 0.63 | M-v | 2 | MPC | 103242 2001 TF <sub>143</sub> |
| 2001 TK <sub>143</sub> | 15.4 | 0.15 | 20071027 | 291.92610 | 63.75525  | 54.73730  | 8.90957  | 0.0388818 | 3.1444576 | 73  | 5 | 1993-2007 | 0.45 | M-v | 0 | MPC | 128735 2001 TK <sub>143</sub> |
| 2001 TT <sub>144</sub> | 15.7 | 0.15 | 20071027 | 128.99441 | 249.32413 | 49.36313  | 11.90264 | 0.0309533 | 3.0283411 | 43  | 4 | 2001-2007 | 0.59 | M-v | 0 | MPC | 110811 2001 TT <sub>144</sub> |
| 2001 TZ <sub>145</sub> | 16.1 | 0.15 | 20071027 | 68.39045  | 286.13849 | 59.93346  | 7.53798  | 0.1370938 | 3.0765731 | 35  | 6 | 1996-2007 | 0.45 | M-v | 0 | MPC | 128735 2001 TZ <sub>145</sub> |
| 2001 TL <sub>148</sub> | 15.3 | 0.15 | 20071027 | 198.74440 | 155.73982 | 57.40251  | 12.49975 | 0.0268404 | 3.1488304 | 71  | 4 | 1999-2007 | 0.47 | M-v | 1 | MPC | 128735 2001 TL <sub>148</sub> |
| 2001 TR <sub>153</sub> | 14.9 | 0.15 | 20071027 | 64.67601  | 62.31598  | 259.44988 | 10.03828 | 0.1490027 | 3.1900435 | 71  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128735 2001 TR <sub>153</sub> |
| 2001 TY <sub>154</sub> | 15.3 | 0.15 | 20071027 | 26.35822  | 324.60654 | 74.40924  | 10.72120 | 0.1307153 | 3.1152636 | 53  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 110811 2001 TY <sub>154</sub> |
| 2001 TZ <sub>154</sub> | 17.1 | 0.15 | 20071027 | 41.33190  | 329.04924 | 73.19215  | 10.99291 | 0.1011049 | 3.0242418 | 42  | 5 | 2001-2007 | 0.58 | M-v | 0 | MPC | 128735 2001 TZ <sub>154</sub> |
| 2001 TY <sub>159</sub> | 14.1 | 0.15 | 20071027 | 39.59781  | 128.85440 | 218.46544 | 25.20316 | 0.1490985 | 3.2146853 | 160 | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128735 2001 TY <sub>159</sub> |
| 2001 TM <sub>162</sub> | 15.0 | 0.15 | 20071027 | 89.42183  | 122.28146 | 206.18324 | 10.71196 | 0.0522505 | 3.0597525 | 43  | 4 | 2001-2007 | 0.58 | M-v | 1 | MPC | 113815 2001 TM <sub>162</sub> |
| 2001 TW <sub>162</sub> | 17.0 | 0.15 | 20071027 | 264.12516 | 329.12674 | 330.81014 | 2.03238  | 0.1912360 | 2.4468532 | 76  | 5 | 2000-2007 | 0.50 | M-v | 0 | MPC | 114631 2001 TW <sub>162</sub> |
| 2001 TU <sub>164</sub> | 15.5 | 0.15 | 20071027 | 37.02269  | 349.09451 | 38.66842  | 6.28927  | 0.1688552 | 3.1215152 | 85  | 5 | 1993-2007 | 0.53 | M-v | 1 | MPC | 110812 2001 TU <sub>164</sub> |
| 2001 TP <sub>170</sub> | 15.4 | 0.15 | 20071027 | 38.83245  | 28.63173  | 345.79487 | 11.29993 | 0.0757975 | 3.1342366 | 35  | 3 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128735 2001 TP <sub>170</sub> |
| 2001 TT <sub>170</sub> | 15.5 | 0.15 | 20071027 | 41.52855  | 31.94933  | 354.71768 | 11.60986 | 0.1200777 | 3.0897479 | 55  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 110812 2001 TT <sub>170</sub> |
| 2001 TZ <sub>170</sub> | 16.0 | 0.15 | 20071027 | 54.44021  | 99.43281  | 308.49059 | 7.60334  | 0.0224192 | 2.8821065 | 37  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110812 2001 TZ <sub>170</sub> |
| 2001 TA <sub>171</sub> | 14.9 | 0.15 | 20071027 | 314.55192 | 111.07852 | 357.24430 | 13.38325 | 0.1939150 | 3.1794204 | 61  | 3 | 2001-2007 | 0.56 | M-v | 3 | MPC | 40781 2001 TA <sub>171</sub>  |
| 2001 TX <sub>171</sub> | 14.3 | 0.15 | 20071027 | 51.99296  | 93.84973  | 235.70106 | 18.33544 | 0.1543898 | 3.2320458 | 61  | 2 | 2001-2007 | 0.47 | M-v | 4 | MPC | 127912 2001 TX <sub>171</sub> |
| 2001 TO <sub>172</sub> | 15.0 | 0.15 | 20071027 | 355.27307 | 14.98363  | 40.88078  | 9.88182  | 0.0818119 | 3.1644047 | 107 | 3 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128735 2001 TO <sub>172</sub> |
| 2001 TV <sub>173</sub> | 16.3 | 0.15 | 20071027 | 60.33093  | 203.85095 | 161.19453 | 1.44643  | 0.1176995 | 3.0622617 | 42  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 110812 2001 TV <sub>173</sub> |
| 2001 TW <sub>173</sub> | 14.9 | 0.15 | 20071027 | 35.31414  | 38.45820  | 344.13088 | 9.79335  | 0.0622426 | 3.0911173 | 56  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128735 2001 TW <sub>173</sub> |
| 2001 TQ <sub>174</sub> | 15.3 | 0.15 | 20071027 | 35.48140  | 339.63544 | 37.81518  | 12.87916 | 0.2560102 | 3.0506202 | 49  | 5 | 2001-2007 | 0.53 | M-v | 0 | MPC | 128735 2001 TQ <sub>174</sub> |
| 2001 TT <sub>174</sub> | 15.1 | 0.15 | 20071027 | 70.79457  | 247.72395 | 59.63350  | 8.87990  | 0.4481997 | 3.0449329 | 129 | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128735 2001 TT <sub>174</sub> |
| 2001 TU <sub>174</sub> | 15.7 | 0.15 | 20071027 | 344.49010 | 15.25893  | 82.12154  | 0.69854  | 0.1939869 | 3.0487865 | 63  | 6 | 1996-2007 | 0.43 | M-v | 1 | MPC | 110812 2001 TU <sub>174</sub> |
| 2001 TD <sub>175</sub> | 15.3 | 0.15 | 20071027 | 73.61937  | 148.72456 | 188.43325 | 10.82348 | 0.0713570 | 3.1154979 | 40  | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 104176 2001 TD <sub>175</sub> |
| 2001 TT <sub>177</sub> | 16.0 | 0.15 | 20071027 | 327.15317 | 120.06350 | 347.77570 | 5.25807  | 0.0634011 | 3.0632333 | 45  | 6 | 1996-2007 | 0.51 | M-v | 0 | MPC | 110813 2001 TT <sub>177</sub> |
| 2001 TF <sub>179</sub> | 15.8 | 0.15 | 20071027 | 21.78146  | 169.22733 | 213.80005 | 26.67319 | 0.1339950 | 3.1945914 | 53  | 3 | 2001-2007 | 0.55 | M-v | 2 | MPC | 128735 2001 TF <sub>179</sub> |
| 2001 TJ <sub>179</sub> | 15.4 | 0.15 | 20071027 | 2.72050   | 59.70535  | 8.05809   | 10.72044 | 0.0903891 | 3.1011735 | 44  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128736 2001 TJ <sub>179</sub> |
| 2001 TG <sub>180</sub> | 14.9 | 0.15 | 20071027 | 28.22193  | 153.16174 | 248.66319 | 8.80664  | 0.0734693 | 3.0918046 | 34  | 5 | 2001-2007 | 0.60 | M-v | 1 | MPC | 110813 2001 TG <sub>180</sub> |
| 2001 TA <sub>183</sub> | 15.3 | 0.15 | 20071027 | 40.27680  | 353.59253 | 9.00230   | 11.60696 | 0.2392234 | 3.1882136 | 39  | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128736 2001 TA <sub>183</sub> |
| 2001 TD <sub>185</sub> | 15.5 | 0.15 | 20071027 | 191.01467 | 230.93753 | 9.59711   | 8.79524  | 0.1018493 | 3.0213988 | 113 | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 112772 2001 TD <sub>185</sub> |
| 2001 TF <sub>194</sub> | 14.6 | 0.15 | 20071027 | 33.82948  | 110.77229 | 281.70751 | 7.67193  | 0.0902241 | 3.1702478 | 74  | 4 | 2001-2007 | 0.60 | M-v | 1 | MPC | 108055 2001 TF <sub>194</sub> |
| 2001 TR <sub>197</sub> | 15.5 | 0.15 | 20071027 | 348.33358 | 333.46802 | 92.84812  | 6.36716  | 0.1889469 | 3.1822441 | 47  | 3 | 2001-2007 | 0.45 | M-v | 2 | MPC | 127912 2001 TR <sub>197</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 TN <sub>199</sub> | 15.6 | 0.15 | 20071027 | 18.85422  | 316.26524 | 78.77906  | 6.32672  | 0.1097447 | 3.1014463 | 64  | 4 | 2001-2007 | 0.45 | M-v | 0 | MPC | 127912 2001 TN <sub>199</sub> |
| 2001 TT <sub>199</sub> | 14.9 | 0.15 | 20071027 | 73.57537  | 247.42938 | 74.29716  | 6.85175  | 0.1615069 | 3.1110875 | 62  | 4 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128736 2001 TT <sub>199</sub> |
| 2001 TQ <sub>200</sub> | 15.0 | 0.15 | 20071027 | 19.20608  | 328.80610 | 69.82467  | 10.99570 | 0.0769465 | 3.0876241 | 59  | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 127913 2001 TQ <sub>200</sub> |
| 2001 TE <sub>201</sub> | 16.4 | 0.15 | 20071027 | 53.97428  | 273.45101 | 109.08739 | 8.37674  | 0.2150723 | 3.0011366 | 32  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 127913 2001 TE <sub>201</sub> |
| 2001 TF <sub>201</sub> | 14.7 | 0.15 | 20071027 | 348.78516 | 354.62626 | 75.77813  | 11.37712 | 0.0569949 | 3.1018080 | 57  | 5 | 1996-2007 | 0.51 | M-v | 1 | MPC | 128736 2001 TF <sub>201</sub> |
| 2001 TR <sub>204</sub> | 15.6 | 0.15 | 20071027 | 116.58695 | 252.29139 | 66.25721  | 10.79302 | 0.1800757 | 2.9081128 | 80  | 4 | 2001-2007 | 0.43 | M-v | 0 | MPC | 110814 2001 TR <sub>204</sub> |
| 2001 TF <sub>205</sub> | 15.0 | 0.15 | 20071027 | 344.05418 | 22.36932  | 49.17540  | 17.00423 | 0.1328814 | 3.1570203 | 102 | 3 | 2001-2007 | 0.57 | M-v | 2 | MPC | 128736 2001 TF <sub>205</sub> |
| 2001 TW <sub>205</sub> | 15.0 | 0.15 | 20071027 | 29.01884  | 294.67656 | 102.05817 | 10.41127 | 0.0907155 | 3.1468816 | 48  | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 117961 2001 TW <sub>205</sub> |
| 2001 TA <sub>206</sub> | 14.4 | 0.15 | 20071027 | 18.03562  | 312.92068 | 91.68350  | 18.09360 | 0.1815546 | 3.1390493 | 58  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128736 2001 TA <sub>206</sub> |
| 2001 TY <sub>206</sub> | 15.5 | 0.15 | 20071027 | 17.37781  | 306.02094 | 106.69711 | 11.92483 | 0.0517545 | 3.0926138 | 45  | 5 | 2001-2007 | 0.49 | M-v | 0 | MPC | 110814 2001 TY <sub>206</sub> |
| 2001 TO <sub>207</sub> | 16.3 | 0.15 | 20071027 | 42.56885  | 19.85949  | 356.88960 | 2.21975  | 0.0887137 | 3.0794606 | 54  | 6 | 2001-2007 | 0.43 | M-v | 0 | MPC | 128736 2001 TO <sub>207</sub> |
| 2001 TG <sub>211</sub> | 14.9 | 0.15 | 20071027 | 108.63259 | 26.60797  | 292.87295 | 8.86820  | 0.0657019 | 2.9646742 | 63  | 4 | 2001-2007 | 0.58 | M-v | 1 | MPC | 110815 2001 TG <sub>211</sub> |
| 2001 TA <sub>213</sub> | 15.4 | 0.15 | 20071027 | 13.79664  | 185.18111 | 248.00435 | 8.24209  | 0.0450578 | 3.0145545 | 30  | 4 | 1991-2007 | 0.60 | M-v | 2 | MPC | 122394 2001 TA <sub>213</sub> |
| 2001 TT <sub>213</sub> | 15.2 | 0.15 | 20071027 | 36.07204  | 121.97904 | 270.47610 | 8.28274  | 0.0870642 | 3.0661025 | 38  | 4 | 1998-2007 | 0.51 | M-v | 1 | MPC | 122688 2001 TT <sub>213</sub> |
| 2001 TW <sub>214</sub> | 14.5 | 0.15 | 20071027 | 346.25430 | 176.75926 | 244.01315 | 12.74247 | 0.0790955 | 3.2370360 | 108 | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128736 2001 TW <sub>214</sub> |
| 2001 TN <sub>215</sub> | 14.8 | 0.15 | 20071027 | 36.24875  | 76.29674  | 312.50306 | 8.59353  | 0.0910025 | 3.1309866 | 110 | 6 | 1992-2007 | 0.52 | M-v | 0 | MPC | 128736 2001 TN <sub>215</sub> |
| 2001 TY <sub>215</sub> | 15.0 | 0.15 | 20071027 | 135.91909 | 5.15271   | 304.19968 | 10.50402 | 0.1293738 | 2.9763663 | 46  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 122688 2001 TY <sub>215</sub> |
| 2001 TL <sub>216</sub> | 14.6 | 0.15 | 20071027 | 87.72729  | 343.85913 | 336.80439 | 10.71437 | 0.1935543 | 3.1347544 | 112 | 4 | 2001-2007 | 0.47 | M-v | 3 | MPC | 110815 2001 TL <sub>216</sub> |
| 2001 TV <sub>216</sub> | 15.2 | 0.15 | 20071027 | 27.30737  | 150.04908 | 243.69121 | 9.87596  | 0.0900052 | 2.9949555 | 49  | 4 | 2001-2007 | 0.33 | M-v | 1 | MPC | 128736 2001 TV <sub>216</sub> |
| 2001 TB <sub>221</sub> | 15.7 | 0.15 | 20071027 | 263.90664 | 278.51214 | 329.38434 | 4.90921  | 0.1440860 | 2.6675620 | 77  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 87484 2001 TB <sub>221</sub>  |
| 2001 TY <sub>221</sub> | 15.6 | 0.15 | 20071027 | 46.97918  | 140.84177 | 233.35613 | 9.81418  | 0.0978114 | 3.1211779 | 40  | 7 | 2000-2007 | 0.56 | M-v | 0 | MPC | 110815 2001 TY <sub>221</sub> |
| 2001 TJ <sub>228</sub> | 14.3 | 0.15 | 20071027 | 335.34786 | 214.55925 | 237.84180 | 26.44264 | 0.1498570 | 3.1200925 | 104 | 3 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128736 2001 TJ <sub>228</sub> |
| 2001 TW <sub>228</sub> | 14.9 | 0.15 | 20071027 | 44.79345  | 51.56793  | 294.21246 | 13.17151 | 0.1467182 | 3.2295094 | 67  | 3 | 2001-2007 | 0.56 | M-v | 2 | MPC | 104178 2001 TW <sub>228</sub> |
| 2001 TT <sub>229</sub> | 14.8 | 0.15 | 20071027 | 34.54777  | 246.41583 | 134.96315 | 16.65359 | 0.3025506 | 3.1032436 | 55  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 110815 2001 TT <sub>229</sub> |
| 2001 TO <sub>230</sub> | 15.0 | 0.15 | 20071027 | 78.79946  | 42.53528  | 308.15405 | 15.18919 | 0.0619224 | 3.0696973 | 53  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 110815 2001 TO <sub>230</sub> |
| 2001 TX <sub>232</sub> | 15.7 | 0.15 | 20071027 | 115.55282 | 302.43170 | 12.57770  | 1.69704  | 0.0944090 | 3.0334559 | 99  | 6 | 1999-2007 | 0.48 | M-v | 0 | MPC | 114633 2001 TX <sub>232</sub> |
| 2001 TH <sub>237</sub> | 15.7 | 0.15 | 20071027 | 59.22051  | 302.67688 | 106.01994 | 6.18777  | 0.2380537 | 2.8952700 | 97  | 4 | 2001-2007 | 0.45 | M-v | 2 | MPC | 114633 2001 TH <sub>237</sub> |
| 2001 TW <sub>240</sub> | 14.4 | 0.15 | 20071027 | 86.36076  | 273.61562 | 31.37928  | 18.93042 | 0.0598477 | 3.3778861 | 75  | 5 | 2001-2007 | 0.62 | M-v | 1 | MPC | 128736 2001 TW <sub>240</sub> |
| 2001 TT <sub>241</sub> | 16.0 | 0.15 | 20071027 | 101.42355 | 110.60346 | 268.71453 | 1.00793  | 0.0824382 | 2.8674220 | 77  | 5 | 2001-2007 | 0.42 | M-v | 0 | MPC | 116175 2001 TT <sub>241</sub> |
| 2001 TZ <sub>241</sub> | 15.2 | 0.15 | 20071027 | 56.14588  | 250.42558 | 104.66579 | 10.93432 | 0.2274640 | 3.1450198 | 32  | 3 | 2001-2007 | 0.50 | M-v | 3 | MPC | 108061 2001 TZ <sub>241</sub> |
| 2001 TR <sub>243</sub> | 15.8 | 0.15 | 20071027 | 339.47241 | 211.29880 | 200.29195 | 9.03543  | 0.0820243 | 3.1693188 | 37  | 3 | 2001-2007 | 0.39 | M-v | 3 | MPC | 127913 2001 TR <sub>243</sub> |
| 2001 TJ <sub>245</sub> | 16.1 | 0.15 | 20071027 | 314.67178 | 129.72775 | 342.24321 | 2.45271  | 0.1059486 | 3.0431825 | 45  | 5 | 1996-2007 | 0.49 | M-v | 0 | MPC | 128736 2001 TJ <sub>245</sub> |
| 2001 TM <sub>253</sub> | 15.8 | 0.15 | 20071027 | 274.24996 | 102.20428 | 50.74246  | 10.47960 | 0.0476332 | 3.0614470 | 32  | 3 | 2001-2007 | 0.41 | M-v | 1 | MPC | 75179 2001 TM <sub>253</sub>  |
| 2001 TK <sub>255</sub> | 16.2 | 0.15 | 20071027 | 322.72211 | 37.17702  | 63.94132  | 10.63067 | 0.1084812 | 3.1473363 | 46  | 3 | 2001-2007 | 0.37 | M-v | 1 | MPC | 128736 2001 TK <sub>255</sub> |
| 2001 TA <sub>257</sub> | 16.3 | 0.15 | 20071027 | 43.16132  | 299.79559 | 154.60539 | 5.95269  | 0.0025986 | 2.7449310 | 40  | 5 | 2001-2007 | 0.41 | M-v | 1 | MPC | 108064 2001 TA <sub>257</sub> |
| 2001 TK <sub>257</sub> | 16.5 | 0.15 | 20071027 | 24.84876  | 316.48641 | 109.26821 | 4.30196  | 0.0585241 | 2.9635880 | 34  | 4 | 2001-2007 | 0.21 | M-v | 0 | MPC | 121768 2001 TK <sub>257</sub> |
| 2001 TX <sub>257</sub> | 15.3 | 0.15 | 20071027 | 35.76237  | 320.17900 | 45.22822  | 11.10228 | 0.0691188 | 3.1571901 | 81  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128736 2001 TX <sub>257</sub> |
| 2001 TF <sub>258</sub> | 13.4 | 0.15 | 20010928 | 52.16513  | 159.14846 | 145.82384 | 7.57753  | 0.0684879 | 5.1575659 | 9   | 1 | 16 days   | 0.36 |     |   | MPC | 2001 TF <sub>258</sub>        |
| 2001 UD                | 15.3 | 0.15 | 20071027 | 27.78509  | 161.72452 | 206.57704 | 15.89598 | 0.2222538 | 3.1775286 | 95  | 2 | 2001-2007 | 0.54 | M-v | 3 | MPC | 127914 2001 UD                |
| 2001 UX <sub>1</sub>   | 16.4 | 0.15 | 20071027 | 262.72998 | 261.71183 | 281.04453 | 16.94184 | 0.0666569 | 1.9643940 | 55  | 3 | 2001-2007 | 0.55 | M-v | 3 | MPC | 127914 2001 UX <sub>1</sub>   |
| 2001 UW <sub>4</sub>   | 18.7 | 0.15 | 20071027 | 275.14078 | 159.44145 | 333.81732 | 3.39062  | 0.0660322 | 1.5774446 | 150 | 5 | 1995-2007 | 0.49 | M-v | 3 | MPC | 128736 2001 UW <sub>4</sub>   |
| 2001 UY <sub>5</sub>   | 15.2 | 0.15 | 20071027 | 75.02430  | 273.25423 | 76.42350  | 15.41115 | 0.2258765 | 3.1531664 | 83  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 110816 2001 UY <sub>5</sub>   |
| 2001 UR <sub>7</sub>   | 14.8 | 0.15 | 20071027 | 23.82640  | 156.37690 | 235.17429 | 9.76079  | 0.1107273 | 3.1173726 | 70  | 4 | 1995-2007 | 0.44 | M-v | 1 | MPC | 128736 2001 UR <sub>7</sub>   |
| 2001 UO <sub>8</sub>   | 15.4 | 0.15 | 20071027 | 52.93462  | 318.92428 | 45.65883  | 7.80118  | 0.1679587 | 3.1098526 | 63  | 3 | 2001-2007 | 0.56 | M-v | 3 | MPC | 108065 2001 UO <sub>8</sub>   |
| 2001 UT <sub>23</sub>  | 15.1 | 0.15 | 20071027 | 208.70005 | 308.73872 | 340.68670 | 11.88590 | 0.1599482 | 2.6839092 | 102 | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 90103 2001 UT <sub>23</sub>   |
| 2001 UR <sub>27</sub>  | 14.8 | 0.15 | 20071027 | 31.91820  | 285.93200 | 74.59198  | 24.33333 | 0.2950421 | 3.1590630 | 114 | 5 | 1990-2007 | 0.46 | M-v | 0 | MPC | 128737 2001 UR <sub>27</sub>  |
| 2001 UD <sub>31</sub>  | 16.1 | 0.15 | 20071027 | 19.65712  | 340.46751 | 45.35379  | 6.21703  | 0.1768574 | 3.1729888 | 35  | 2 | 2001-2007 | 0.57 | M-v | 4 | MPC | 127914 2001 UD <sub>31</sub>  |
| 2001 UJ <sub>32</sub>  | 15.4 | 0.15 | 20071027 | 87.37619  | 270.37449 | 32.04080  | 9.29240  | 0.1347710 | 3.1583156 | 62  | 5 | 2001-2007 | 0.55 | M-v | 0 | MPC | 128737 2001 UJ <sub>32</sub>  |
| 2001 UL <sub>35</sub>  | 15.0 | 0.15 | 20071027 | 62.28562  | 16.01584  | 76.72367  | 15.19147 | 0.1298858 | 2.7895135 | 97  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 112774 2001 UL <sub>35</sub>  |
| 2001 UA <sub>36</sub>  | 15.6 | 0.15 | 20071027 | 50.51847  | 282.62026 | 88.36039  | 13.06625 | 0.1904938 | 3.1540443 | 52  | 4 | 2001-2006 | 0.50 | M-v | 1 | MPC | 110817 2001 UA <sub>36</sub>  |
| 2001 UK <sub>38</sub>  | 15.8 | 0.15 | 20071027 | 13.34197  | 237.87127 | 162.20667 | 0.79265  | 0.1768508 | 3.1680391 | 52  | 2 | 2001-2007 | 0.59 | M-v | 4 | MPC | 127915 2001 UK <sub>38</sub>  |
| 2001 UB <sub>44</sub>  | 15.6 | 0.15 | 20071027 | 1.29800   | 28.26001  | 43.59330  | 17.26943 | 0.2051772 | 3.1530279 | 59  | 4 | 1990-2007 | 0.57 | M-v | 1 | MPC | 128737 2001 UB <sub>44</sub>  |
| 2001 UH <sub>44</sub>  | 15.0 | 0.15 | 20071027 | 41.91226  | 156.74379 | 200.69627 | 13.88009 | 0.1374926 | 3.2240172 | 74  | 5 | 1995-2007 | 0.52 | M-v | 0 | MPC | 128737 2001 UH <sub>44</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 UB <sub>45</sub>  | 15.9 | 0.15 | 20071027 | 349.71136 | 49.68397  | 50.74148  | 11.86818 | 0.2888451 | 3.1533651 | 90  | 3 | 2001-2007 | 0.57 | M-v | 2 | MPC | 128737 2001 UB <sub>45</sub>  |
| 2001 UR <sub>45</sub>  | 14.6 | 0.15 | 20071027 | 324.11472 | 265.71271 | 211.34887 | 18.67424 | 0.1751628 | 3.1705344 | 69  | 4 | 2001-2007 | 0.54 | M-v | 0 | MPC | 128737 2001 UR <sub>45</sub>  |
| 2001 UY <sub>45</sub>  | 15.3 | 0.15 | 20071027 | 348.64629 | 10.38181  | 89.07652  | 4.65148  | 0.2018185 | 3.1266874 | 77  | 4 | 1996-2007 | 0.55 | M-v | 0 | MPC | 50568 2001 UY <sub>45</sub>   |
| 2001 UA <sub>47</sub>  | 15.3 | 0.15 | 20071027 | 26.64779  | 339.88926 | 57.19952  | 8.27029  | 0.1595911 | 3.1617730 | 77  | 4 | 1999-2007 | 0.50 | M-v | 1 | MPC | 110818 2001 UA <sub>47</sub>  |
| 2001 UE <sub>47</sub>  | 14.9 | 0.15 | 20071027 | 27.12356  | 320.62066 | 71.20641  | 5.06160  | 0.2490006 | 3.1717508 | 96  | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 103253 2001 UE <sub>47</sub>  |
| 2001 UN <sub>47</sub>  | 14.9 | 0.15 | 20071027 | 353.43433 | 44.84225  | 52.68811  | 15.09135 | 0.1992643 | 3.1231354 | 74  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128737 2001 UN <sub>47</sub>  |
| 2001 UU <sub>48</sub>  | 14.7 | 0.15 | 20071027 | 7.79848   | 38.47688  | 60.17866  | 14.33821 | 0.1566778 | 3.0468772 | 150 | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 110818 2001 UU <sub>48</sub>  |
| 2001 UP <sub>56</sub>  | 15.1 | 0.15 | 20071027 | 9.88448   | 181.13900 | 233.61575 | 12.33513 | 0.1134070 | 3.1020831 | 50  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 128737 2001 UP <sub>56</sub>  |
| 2001 UD <sub>59</sub>  | 14.6 | 0.15 | 20071027 | 219.50767 | 166.90414 | 27.47255  | 14.69139 | 0.1211698 | 3.1935027 | 100 | 4 | 1995-2007 | 0.56 | M-v | 3 | MPC | 128737 2001 UD <sub>59</sub>  |
| 2001 UG <sub>60</sub>  | 15.2 | 0.15 | 20071027 | 347.04173 | 237.55096 | 219.97981 | 7.16776  | 0.1896919 | 3.1372184 | 40  | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 85126 2001 UG <sub>60</sub>   |
| 2001 UY <sub>62</sub>  | 15.2 | 0.15 | 20071027 | 45.09182  | 322.52165 | 26.03943  | 15.37181 | 0.2088238 | 3.1982469 | 59  | 3 | 2001-2007 | 0.69 | M-v | 2 | MPC | 128737 2001 UY <sub>62</sub>  |
| 2001 UD <sub>67</sub>  | 15.7 | 0.15 | 20071027 | 11.61717  | 3.01214   | 34.55474  | 9.40396  | 0.0452693 | 3.1902017 | 35  | 2 | 2001-2007 | 0.49 | M-v | 3 | MPC | 127915 2001 UD <sub>67</sub>  |
| 2001 UZ <sub>70</sub>  | 16.4 | 0.15 | 20071027 | 359.98721 | 209.10679 | 218.95953 | 0.49005  | 0.1941080 | 3.1952963 | 59  | 5 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128737 2001 UZ <sub>70</sub>  |
| 2001 UB <sub>73</sub>  | 14.5 | 0.15 | 20071027 | 14.87642  | 1.62746   | 52.48116  | 16.25646 | 0.1809814 | 3.1438697 | 91  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128737 2001 UB <sub>73</sub>  |
| 2001 UV <sub>77</sub>  | 16.1 | 0.15 | 20071027 | 10.08424  | 188.22710 | 222.98700 | 0.83399  | 0.1960195 | 3.2029169 | 64  | 5 | 1995-2007 | 0.57 | M-v | 1 | MPC | 128737 2001 UV <sub>77</sub>  |
| 2001 UA <sub>86</sub>  | 16.2 | 0.15 | 20071027 | 6.91400   | 24.22653  | 73.98319  | 3.15632  | 0.0125085 | 2.9429292 | 53  | 5 | 2001-2007 | 0.28 | M-v | 0 | MPC | 110820 2001 UA <sub>86</sub>  |
| 2001 UG <sub>87</sub>  | 16.4 | 0.15 | 20071027 | 71.71596  | 337.37389 | 37.73178  | 2.04767  | 0.0629466 | 3.0440288 | 36  | 3 | 2001-2007 | 0.44 | M-v | 3 | MPC | 113823 2001 UG <sub>87</sub>  |
| 2001 UC <sub>88</sub>  | 16.3 | 0.15 | 20071027 | 57.29905  | 170.45621 | 188.46990 | 6.50069  | 0.0652562 | 3.1086769 | 40  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 110820 2001 UC <sub>88</sub>  |
| 2001 UU <sub>88</sub>  | 15.9 | 0.15 | 20071027 | 12.38067  | 350.49336 | 56.44673  | 6.19333  | 0.1445517 | 3.1159156 | 63  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128737 2001 UU <sub>88</sub>  |
| 2001 UL <sub>90</sub>  | 15.8 | 0.15 | 20071027 | 38.37038  | 288.43731 | 88.03441  | 2.50359  | 0.1587099 | 3.1720406 | 62  | 5 | 2001-2007 | 0.48 | M-v | 0 | MPC | 128737 2001 UL <sub>90</sub>  |
| 2001 UM <sub>90</sub>  | 16.6 | 0.15 | 20071027 | 57.81639  | 262.50286 | 154.45995 | 2.19776  | 0.0791926 | 2.9225658 | 67  | 6 | 1993-2007 | 0.40 | M-v | 0 | MPC | 117964 2001 UM <sub>90</sub>  |
| 2001 UU <sub>91</sub>  | 15.5 | 0.15 | 20071027 | 65.68687  | 253.56235 | 94.51935  | 8.75977  | 0.1878682 | 3.1257163 | 58  | 6 | 1999-2007 | 0.50 | M-v | 0 | MPC | 104180 2001 UU <sub>91</sub>  |
| 2001 UG <sub>96</sub>  | 15.6 | 0.15 | 20071027 | 20.54417  | 346.94338 | 37.96240  | 1.80365  | 0.1919028 | 3.2047905 | 84  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128737 2001 UG <sub>96</sub>  |
| 2001 UV <sub>96</sub>  | 15.9 | 0.15 | 20071027 | 356.45604 | 0.24982   | 68.24884  | 2.19169  | 0.1983665 | 3.1890456 | 75  | 4 | 2001-2007 | 0.48 | M-v | 0 | MPC | 128737 2001 UV <sub>96</sub>  |
| 2001 UF <sub>97</sub>  | 15.5 | 0.15 | 20071027 | 56.87337  | 319.16996 | 43.08509  | 6.24796  | 0.1423722 | 3.1253346 | 56  | 4 | 1993-2007 | 0.50 | M-v | 1 | MPC | 113824 2001 UF <sub>97</sub>  |
| 2001 UJ <sub>101</sub> | 16.4 | 0.15 | 20071027 | 23.28971  | 234.73642 | 142.12306 | 1.84602  | 0.1709395 | 3.1758517 | 73  | 6 | 1995-2007 | 0.46 | M-v | 0 | MPC | 128737 2001 UJ <sub>101</sub> |
| 2001 UO <sub>101</sub> | 15.7 | 0.15 | 20071027 | 56.48380  | 215.07940 | 133.37501 | 2.17540  | 0.1601665 | 3.1183098 | 59  | 6 | 1994-2007 | 0.51 | M-v | 0 | MPC | 128737 2001 UO <sub>101</sub> |
| 2001 UB <sub>103</sub> | 15.5 | 0.15 | 20071027 | 18.16615  | 23.00918  | 43.00195  | 12.85735 | 0.0696043 | 3.0253905 | 43  | 5 | 2001-2007 | 0.60 | M-v | 0 | MPC | 110821 2001 UB <sub>103</sub> |
| 2001 UX <sub>110</sub> | 16.1 | 0.15 | 20071027 | 346.36387 | 76.02474  | 20.07436  | 8.46006  | 0.2171236 | 3.1445760 | 58  | 3 | 2001-2007 | 0.48 | M-v | 2 | MPC | 85146 2001 UX <sub>110</sub>  |
| 2001 UF <sub>111</sub> | 15.1 | 0.15 | 20071027 | 221.72246 | 162.84586 | 31.96456  | 14.92439 | 0.0314981 | 3.1494887 | 33  | 3 | 2001-2007 | 0.52 | M-v | 3 | MPC | 85146 2001 UF <sub>111</sub>  |
| 2001 UL <sub>113</sub> | 14.7 | 0.15 | 20071027 | 299.43138 | 79.72095  | 35.73837  | 12.96949 | 0.0936016 | 3.2041818 | 86  | 3 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128738 2001 UL <sub>113</sub> |
| 2001 UC <sub>115</sub> | 15.6 | 0.15 | 20071027 | 91.92627  | 295.19445 | 69.46888  | 3.49403  | 0.0970238 | 2.9712247 | 106 | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128738 2001 UC <sub>115</sub> |
| 2001 UL <sub>115</sub> | 16.2 | 0.15 | 20071027 | 62.74102  | 179.87763 | 181.27466 | 3.57090  | 0.2148051 | 3.0958149 | 42  | 3 | 2001-2007 | 0.41 | M-v | 2 | MPC | 110821 2001 UL <sub>115</sub> |
| 2001 UC <sub>117</sub> | 15.1 | 0.15 | 20071027 | 19.19706  | 197.66833 | 216.99979 | 16.33460 | 0.1363169 | 3.1594216 | 70  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 126603 2001 UC <sub>117</sub> |
| 2001 UK <sub>124</sub> | 15.9 | 0.15 | 20071027 | 47.90805  | 291.58699 | 79.77485  | 17.54137 | 0.2439452 | 3.0870592 | 34  | 3 | 2001-2007 | 0.44 | M-v | 1 | MPC | 75194 2001 UK <sub>124</sub>  |
| 2001 UQ <sub>124</sub> | 15.6 | 0.15 | 20071027 | 64.14872  | 274.42651 | 99.61063  | 12.73886 | 0.1515450 | 3.0242881 | 29  | 3 | 2001-2007 | 0.41 | M-v | 3 | MPC | 128738 2001 UQ <sub>124</sub> |
| 2001 UX <sub>126</sub> | 15.2 | 0.15 | 20071027 | 31.34372  | 334.16069 | 70.43083  | 6.46140  | 0.1501540 | 3.1088610 | 79  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128738 2001 UX <sub>126</sub> |
| 2001 UQ <sub>129</sub> | 15.0 | 0.15 | 20071027 | 21.06170  | 347.97749 | 34.07491  | 16.22723 | 0.0676018 | 3.1845076 | 68  | 2 | 2001-2007 | 0.51 | M-v | 3 | MPC | 127915 2001 UQ <sub>129</sub> |
| 2001 UD <sub>141</sub> | 15.4 | 0.15 | 20071027 | 143.08858 | 240.66851 | 49.82778  | 11.48037 | 0.0311622 | 3.0681117 | 47  | 4 | 2001-2007 | 0.68 | M-v | 1 | MPC | 110822 2001 UD <sub>141</sub> |
| 2001 US <sub>143</sub> | 15.9 | 0.15 | 20071027 | 356.10490 | 238.85271 | 169.97483 | 0.86824  | 0.2587879 | 3.2971005 | 91  | 3 | 2001-2007 | 0.54 | M-v | 3 | MPC | 128738 2001 US <sub>143</sub> |
| 2001 UU <sub>145</sub> | 15.6 | 0.15 | 20071027 | 123.15311 | 275.29590 | 84.13224  | 4.33699  | 0.0707073 | 2.8782330 | 97  | 6 | 1991-2007 | 0.46 | M-v | 1 | MPC | 117966 2001 UU <sub>145</sub> |
| 2001 UT <sub>147</sub> | 16.4 | 0.15 | 20071027 | 23.01454  | 319.97381 | 130.53556 | 1.14976  | 0.1820973 | 2.9732560 | 62  | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 110823 2001 UT <sub>147</sub> |
| 2001 UG <sub>149</sub> | 15.2 | 0.15 | 20071027 | 33.50092  | 290.33774 | 89.73920  | 2.27419  | 0.1816933 | 3.2182577 | 81  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 104182 2001 UG <sub>149</sub> |
| 2001 UB <sub>153</sub> | 14.5 | 0.15 | 20071027 | 73.90981  | 288.58706 | 58.81486  | 16.28474 | 0.0640203 | 3.2415258 | 79  | 5 | 1995-2007 | 0.53 | M-v | 1 | MPC | 128738 2001 UB <sub>153</sub> |
| 2001 UG <sub>155</sub> | 14.9 | 0.15 | 20071027 | 18.15969  | 204.32346 | 222.96664 | 12.04661 | 0.1300757 | 3.1710099 | 123 | 6 | 1998-2007 | 0.54 | M-v | 1 | MPC | 110823 2001 UG <sub>155</sub> |
| 2001 UP <sub>160</sub> | 15.4 | 0.15 | 20071027 | 27.35269  | 5.77821   | 57.35768  | 6.27418  | 0.1378529 | 3.1167914 | 77  | 3 | 2001-2007 | 0.48 | M-v | 2 | MPC | 114636 2001 UP <sub>160</sub> |
| 2001 UR <sub>160</sub> | 15.1 | 0.15 | 20071027 | 322.12915 | 92.54381  | 58.07856  | 16.69380 | 0.1879886 | 3.1134172 | 103 | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128738 2001 UR <sub>160</sub> |
| 2001 UH <sub>165</sub> | 15.2 | 0.15 | 20071027 | 14.20877  | 305.59244 | 96.52036  | 10.52530 | 0.1027659 | 3.1098808 | 46  | 6 | 1997-2007 | 0.51 | M-v | 1 | MPC | 128738 2001 UH <sub>165</sub> |
| 2001 UY <sub>169</sub> | 15.7 | 0.15 | 20071027 | 122.93479 | 103.39689 | 231.17266 | 8.68948  | 0.1061817 | 2.9638871 | 34  | 4 | 2001-2006 | 0.46 | M-v | 0 | MPC | 124338 2001 UY <sub>169</sub> |
| 2001 UO <sub>172</sub> | 16.9 | 0.15 | 20071027 | 20.84766  | 307.06897 | 125.63656 | 1.88116  | 0.2437390 | 3.0612247 | 31  | 4 | 2001-2007 | 0.45 | M-v | 0 | MPC | 108094 2001 UO <sub>172</sub> |
| 2001 UU <sub>172</sub> | 15.6 | 0.15 | 20071027 | 336.36037 | 41.80572  | 43.17637  | 1.98647  | 0.1100178 | 3.2098542 | 59  | 5 | 2001-2007 | 0.48 | M-v | 0 | MPC | 128738 2001 UU <sub>172</sub> |
| 2001 UW <sub>174</sub> | 14.9 | 0.15 | 20071027 | 11.39006  | 16.80873  | 58.40540  | 18.55705 | 0.2086061 | 3.1325587 | 95  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 110824 2001 UW <sub>174</sub> |
| 2001 UH <sub>179</sub> | 14.7 | 0.15 | 20071027 | 54.04399  | 33.48037  | 324.42686 | 10.51993 | 0.0716752 | 3.1273407 | 87  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128738 2001 UH <sub>179</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 UJ <sub>179</sub> | 14.7 | 0.15 | 20071027 | 175.78666 | 270.15169 | 337.96995 | 13.04698 | 0.2011256 | 2.9996867 | 101 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 110824 2001 UJ <sub>179</sub> |
| 2001 UK <sub>186</sub> | 15.8 | 0.15 | 20071027 | 51.36004  | 103.42504 | 228.13057 | 11.19925 | 0.2296121 | 3.1865590 | 56  | 2 | 2001-2007 | 0.54 | M-v | 3 | MPC | 127916 2001 UK <sub>186</sub> |
| 2001 UG <sub>192</sub> | 14.9 | 0.15 | 20071027 | 8.53801   | 148.32996 | 272.17690 | 13.31519 | 0.1574031 | 3.1006055 | 39  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 110824 2001 UG <sub>192</sub> |
| 2001 UZ <sub>192</sub> | 15.4 | 0.15 | 20071027 | 83.95287  | 108.89715 | 244.87527 | 9.10914  | 0.0991800 | 3.0005442 | 37  | 3 | 2001-2007 | 0.54 | M-v | 4 | MPC | 114636 2001 UZ <sub>192</sub> |
| 2001 UB <sub>196</sub> | 15.6 | 0.15 | 20071027 | 95.27282  | 286.26951 | 33.41684  | 9.49135  | 0.0598238 | 3.1466432 | 43  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 77576 2001 UB <sub>196</sub>  |
| 2001 UT <sub>200</sub> | 15.7 | 0.15 | 20071027 | 196.81757 | 333.49443 | 240.75867 | 5.18882  | 0.0844461 | 3.1584560 | 34  | 3 | 1998-2007 | 0.30 | M-v | 3 | MPC | 128738 2001 UT <sub>200</sub> |
| 2001 US <sub>201</sub> | 15.8 | 0.15 | 20071027 | 12.89086  | 145.46213 | 239.43367 | 3.61677  | 0.1203178 | 3.2421998 | 38  | 2 | 2001-2007 | 0.47 | M-v | 4 | MPC | 127916 2001 US <sub>201</sub> |
| 2001 UB <sub>203</sub> | 15.0 | 0.15 | 20071027 | 53.47533  | 295.38402 | 71.33970  | 20.93701 | 0.1904352 | 3.0950168 | 64  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110825 2001 UB <sub>203</sub> |
| 2001 UW <sub>204</sub> | 15.5 | 0.15 | 20071027 | 347.12686 | 202.28284 | 237.73350 | 8.04992  | 0.0713534 | 3.1702395 | 42  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128738 2001 UW <sub>204</sub> |
| 2001 UA <sub>206</sub> | 15.8 | 0.15 | 20071027 | 14.46842  | 58.63009  | 8.84708   | 4.95867  | 0.1354714 | 3.1279563 | 45  | 5 | 2000-2007 | 0.46 | M-v | 0 | MPC | 110825 2001 UA <sub>206</sub> |
| 2001 UP <sub>210</sub> | 15.6 | 0.15 | 20071027 | 320.91017 | 60.02663  | 42.80258  | 9.51278  | 0.1053703 | 3.1172289 | 78  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128738 2001 UP <sub>210</sub> |
| 2001 UG <sub>211</sub> | 15.5 | 0.15 | 20071027 | 251.61782 | 318.72096 | 217.50981 | 9.38953  | 0.1084541 | 3.0742882 | 55  | 4 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128738 2001 UG <sub>211</sub> |
| 2001 UO <sub>212</sub> | 16.7 | 0.15 | 20071027 | 49.43544  | 339.14463 | 60.40919  | 4.00300  | 0.1086207 | 3.0284756 | 60  | 4 | 2000-2007 | 0.28 | M-v | 0 | MPC | 128738 2001 UO <sub>212</sub> |
| 2001 UX <sub>212</sub> | 15.8 | 0.15 | 20071027 | 339.27800 | 42.12198  | 47.50322  | 8.85772  | 0.0466183 | 3.1978956 | 36  | 4 | 1995-2007 | 0.39 | M-v | 3 | MPC | 128738 2001 UX <sub>212</sub> |
| 2001 UX <sub>213</sub> | 15.8 | 0.15 | 20071027 | 327.29445 | 252.96689 | 200.92759 | 10.89377 | 0.0824330 | 3.1771342 | 42  | 4 | 2001-2007 | 0.57 | M-v | 0 | MPC | 68954 2001 UX <sub>213</sub>  |
| 2001 UC <sub>220</sub> | 16.2 | 0.15 | 20071027 | 63.19358  | 128.44005 | 211.62646 | 12.09065 | 0.0858838 | 3.2443743 | 45  | 6 | 1993-2007 | 0.45 | M-v | 0 | MPC | 128738 2001 UC <sub>220</sub> |
| 2001 UV <sub>224</sub> | 15.1 | 0.15 | 20071027 | 180.17443 | 193.46887 | 31.76898  | 16.72365 | 0.0549601 | 3.1494828 | 54  | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128739 2001 UV <sub>224</sub> |
| 2001 UR <sub>227</sub> | 16.2 | 0.15 | 20071027 | 76.74652  | 261.64071 | 88.83860  | 4.86223  | 0.1651606 | 3.0113061 | 47  | 4 | 2001-2007 | 0.41 | M-v | 0 | MPC | 122689 2001 UR <sub>227</sub> |
| 2001 VE                | 15.6 | 0.15 | 20071027 | 4.98331   | 333.08087 | 62.75689  | 27.03595 | 0.4704820 | 3.2301415 | 158 | 4 | 1995-2007 | 0.38 | M-v | 1 | MPC | 128739 2001 VE                |
| 2001 VC <sub>1</sub>   | 15.1 | 0.15 | 20071027 | 38.62142  | 283.38580 | 56.82039  | 26.69209 | 0.2597126 | 3.1769040 | 63  | 2 | 2001-2007 | 0.57 | M-v | 3 | MPC | 127917 2001 VC <sub>1</sub>   |
| 2001 VG <sub>2</sub>   | 16.6 | 0.15 | 20071027 | 353.12584 | 53.69225  | 47.21990  | 15.58520 | 0.3047572 | 3.1154642 | 22  | 3 | 2001-2007 | 0.58 | M-v | 0 | MPC | 89042 2001 VG <sub>2</sub>    |
| 2001 VV <sub>16</sub>  | 14.7 | 0.15 | 20071027 | 75.45023  | 75.58786  | 273.21508 | 20.57944 | 0.2262418 | 3.0393127 | 65  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128739 2001 VV <sub>16</sub>  |
| 2001 VA <sub>18</sub>  | 15.2 | 0.15 | 20071027 | 32.84864  | 347.77007 | 36.17030  | 9.65863  | 0.2191703 | 3.1754915 | 49  | 3 | 2001-2007 | 0.44 | M-v | 1 | MPC | 103261 2001 VA <sub>18</sub>  |
| 2001 VC <sub>18</sub>  | 14.7 | 0.15 | 20071027 | 111.75964 | 278.65018 | 44.44147  | 12.30892 | 0.0743206 | 3.0818508 | 112 | 6 | 1999-2007 | 0.51 | M-v | 0 | MPC | 128739 2001 VC <sub>18</sub>  |
| 2001 VZ <sub>20</sub>  | 15.0 | 0.15 | 20071027 | 52.18492  | 355.50873 | 19.84136  | 2.01889  | 0.1256158 | 3.1524427 | 108 | 6 | 1995-2007 | 0.49 | M-v | 0 | MPC | 112779 2001 VZ <sub>20</sub>  |
| 2001 VR <sub>37</sub>  | 15.3 | 0.15 | 20071027 | 54.80194  | 308.42641 | 94.81650  | 4.54736  | 0.3244117 | 3.0501924 | 175 | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128739 2001 VR <sub>37</sub>  |
| 2001 VD <sub>38</sub>  | 15.0 | 0.15 | 20071027 | 347.78752 | 226.04087 | 239.26237 | 20.18356 | 0.1147026 | 3.1258950 | 44  | 4 | 2001-2007 | 0.68 | M-v | 1 | MPC | 113833 2001 VD <sub>38</sub>  |
| 2001 VH <sub>49</sub>  | 14.9 | 0.15 | 20071027 | 22.09243  | 140.05790 | 246.12363 | 15.39192 | 0.2221691 | 3.1606219 | 96  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128739 2001 VH <sub>49</sub>  |
| 2001 VN <sub>49</sub>  | 14.7 | 0.15 | 20071027 | 68.58953  | 82.08167  | 300.56230 | 8.24399  | 0.0870575 | 2.9751679 | 119 | 4 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128739 2001 VN <sub>49</sub>  |
| 2001 VN <sub>50</sub>  | 17.7 | 0.15 | 20071027 | 154.35328 | 232.21288 | 184.98270 | 4.38851  | 0.2684947 | 2.5761599 | 68  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 121770 2001 VN <sub>50</sub>  |
| 2001 VG <sub>51</sub>  | 14.9 | 0.15 | 20071027 | 354.91339 | 150.23723 | 291.83240 | 9.28487  | 0.2101864 | 3.1508353 | 60  | 3 | 2001-2007 | 0.48 | M-v | 3 | MPC | 110827 2001 VG <sub>51</sub>  |
| 2001 VG <sub>54</sub>  | 15.1 | 0.15 | 20071027 | 59.59044  | 101.76035 | 267.53494 | 7.94299  | 0.0925623 | 3.1130428 | 53  | 5 | 2000-2007 | 0.51 | M-v | 0 | MPC | 117970 2001 VG <sub>54</sub>  |
| 2001 VE <sub>56</sub>  | 16.1 | 0.15 | 20071027 | 355.22284 | 68.68995  | 28.41996  | 13.55725 | 0.2833548 | 3.1547249 | 56  | 4 | 2001-2007 | 0.62 | M-v | 1 | MPC | 128739 2001 VE <sub>56</sub>  |
| 2001 VT <sub>56</sub>  | 16.0 | 0.15 | 20071027 | 125.22587 | 244.22331 | 79.27493  | 3.80128  | 0.0799139 | 2.9916089 | 56  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 128739 2001 VT <sub>56</sub>  |
| 2001 VN <sub>58</sub>  | 15.4 | 0.15 | 20071027 | 20.91416  | 44.01615  | 13.27536  | 9.98778  | 0.0863491 | 3.1213966 | 45  | 4 | 1998-2007 | 0.41 | M-v | 0 | MPC | 114638 2001 VN <sub>58</sub>  |
| 2001 VR <sub>58</sub>  | 15.1 | 0.15 | 20071027 | 33.64225  | 20.16049  | 19.76707  | 12.89757 | 0.1394759 | 3.1300137 | 78  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 117970 2001 VR <sub>58</sub>  |
| 2001 VC <sub>59</sub>  | 15.6 | 0.15 | 20071027 | 51.14856  | 6.10232   | 355.04433 | 4.45412  | 0.1804472 | 3.1768446 | 81  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 114638 2001 VC <sub>59</sub>  |
| 2001 VK <sub>68</sub>  | 14.8 | 0.15 | 20071027 | 39.56048  | 27.82163  | 341.18225 | 12.76121 | 0.1596074 | 3.1969016 | 62  | 3 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110828 2001 VK <sub>68</sub>  |
| 2001 VT <sub>70</sub>  | 15.7 | 0.15 | 20071027 | 65.97595  | 319.39148 | 79.51515  | 0.37794  | 0.1982521 | 3.0206692 | 132 | 4 | 1995-2007 | 0.43 | M-v | 0 | MPC | 117970 2001 VT <sub>70</sub>  |
| 2001 VW <sub>72</sub>  | 16.9 | 0.15 | 20071027 | 22.28628  | 191.17126 | 222.59106 | 3.01863  | 0.2116808 | 3.0913299 | 35  | 3 | 2001-2007 | 0.36 | M-v | 2 | MPC | 108114 2001 VW <sub>72</sub>  |
| 2001 VA <sub>73</sub>  | 15.3 | 0.15 | 20071027 | 253.94618 | 322.91236 | 222.97125 | 8.42036  | 0.0662135 | 3.0960354 | 79  | 6 | 2000-2007 | 0.53 | M-v | 1 | MPC | 110828 2001 VA <sub>73</sub>  |
| 2001 VS <sub>73</sub>  | 15.2 | 0.15 | 20071027 | 197.00878 | 342.67404 | 321.99549 | 13.60148 | 0.2407384 | 2.6633594 | 110 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 97505 2001 VS <sub>73</sub>   |
| 2001 VK <sub>80</sub>  | 15.2 | 0.15 | 20071027 | 62.99131  | 105.21161 | 231.11580 | 10.83716 | 0.2737276 | 3.1420327 | 71  | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 104184 2001 VK <sub>80</sub>  |
| 2001 VF <sub>82</sub>  | 14.3 | 0.15 | 20071027 | 20.65175  | 156.68134 | 216.71411 | 26.78791 | 0.1387743 | 3.1829119 | 135 | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 128739 2001 VF <sub>82</sub>  |
| 2001 VW <sub>83</sub>  | 15.0 | 0.15 | 20071027 | 64.84884  | 107.54815 | 268.43413 | 8.52970  | 0.0574449 | 3.0799998 | 64  | 5 | 2000-2007 | 0.54 | M-v | 0 | MPC | 110829 2001 VW <sub>83</sub>  |
| 2001 VA <sub>84</sub>  | 15.3 | 0.15 | 20071027 | 39.36969  | 102.72972 | 285.79714 | 13.26442 | 0.2400218 | 3.1567921 | 41  | 3 | 2001-2007 | 0.66 | M-v | 2 | MPC | 108116 2001 VA <sub>84</sub>  |
| 2001 VQ <sub>84</sub>  | 14.8 | 0.15 | 20071027 | 35.92231  | 55.71399  | 336.17859 | 8.99244  | 0.0833341 | 3.1258362 | 74  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 110829 2001 VQ <sub>84</sub>  |
| 2001 VG <sub>86</sub>  | 15.3 | 0.15 | 20071027 | 7.71417   | 36.31781  | 34.29904  | 9.51669  | 0.0910069 | 3.1776546 | 38  | 5 | 1995-2007 | 0.53 | M-v | 1 | MPC | 110829 2001 VG <sub>86</sub>  |
| 2001 VZ <sub>88</sub>  | 14.8 | 0.15 | 20071027 | 36.72384  | 86.46778  | 299.70204 | 11.26544 | 0.2265746 | 3.0897127 | 101 | 3 | 2001-2007 | 0.56 | M-v | 2 | MPC | 117970 2001 VZ <sub>88</sub>  |
| 2001 VM <sub>91</sub>  | 14.8 | 0.15 | 20071027 | 41.10548  | 307.83034 | 102.27992 | 15.23409 | 0.2084195 | 3.0678619 | 100 | 3 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128739 2001 VM <sub>91</sub>  |
| 2001 VP <sub>91</sub>  | 14.9 | 0.15 | 20071027 | 345.24349 | 274.67015 | 175.30436 | 11.45273 | 0.0945146 | 3.2057705 | 59  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 110829 2001 VP <sub>91</sub>  |
| 2001 VD <sub>92</sub>  | 15.6 | 0.15 | 20071027 | 16.00835  | 322.72075 | 121.89341 | 10.72941 | 0.1060006 | 3.0724146 | 37  | 6 | 1993-2007 | 0.53 | M-v | 1 | MPC | 110829 2001 VD <sub>92</sub>  |
| 2001 VW <sub>92</sub>  | 15.4 | 0.15 | 20071027 | 54.36689  | 289.69091 | 96.36164  | 17.89848 | 0.2266828 | 3.0982438 | 50  | 3 | 2001-2007 | 0.45 | M-v | 2 | MPC | 128739 2001 VW <sub>92</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 VH <sub>93</sub>  | 15.1 | 0.15 | 20071027 | 73.52805  | 241.82486 | 117.90911 | 15.26226 | 0.2367750 | 3.0941539 | 47  | 5 | 2000-2007 | 0.45 | M-v | 0 | MPC | 110829 2001 VH <sub>93</sub>  |
| 2001 VR <sub>93</sub>  | 15.8 | 0.15 | 20071027 | 50.25899  | 263.85615 | 134.23499 | 11.22271 | 0.3114148 | 3.0720048 | 86  | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128739 2001 VR <sub>93</sub>  |
| 2001 VY <sub>95</sub>  | 15.4 | 0.15 | 20071027 | 52.13074  | 252.28066 | 111.72042 | 12.75378 | 0.2913627 | 3.1500071 | 50  | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 103265 2001 VY <sub>95</sub>  |
| 2001 VM <sub>100</sub> | 14.9 | 0.15 | 20071027 | 37.12099  | 326.66539 | 79.49814  | 20.66995 | 0.0849235 | 3.1277317 | 54  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 110830 2001 VM <sub>100</sub> |
| 2001 VD <sub>105</sub> | 15.5 | 0.15 | 20071027 | 10.24582  | 39.57140  | 38.71787  | 5.61629  | 0.1690175 | 3.1473681 | 68  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 110830 2001 VD <sub>105</sub> |
| 2001 VT <sub>106</sub> | 16.3 | 0.15 | 20071027 | 304.29407 | 234.67092 | 338.00033 | 3.53280  | 0.0544393 | 2.7835736 | 55  | 5 | 2001-2007 | 0.47 | M-v | 0 | MPC | 112781 2001 VT <sub>106</sub> |
| 2001 VP <sub>107</sub> | 14.9 | 0.15 | 20071027 | 351.75186 | 33.43323  | 47.69871  | 10.00159 | 0.0916302 | 3.2126744 | 68  | 3 | 2001-2007 | 0.51 | M-v | 3 | MPC | 128739 2001 VP <sub>107</sub> |
| 2001 VR <sub>110</sub> | 15.4 | 0.15 | 20071027 | 109.16549 | 83.92214  | 259.92466 | 7.23030  | 0.0438049 | 3.0784650 | 55  | 5 | 2001-2007 | 0.39 | M-v | 0 | MPC | 110830 2001 VR <sub>110</sub> |
| 2001 VS <sub>114</sub> | 15.1 | 0.15 | 20071027 | 83.48831  | 76.07334  | 272.96971 | 5.09987  | 0.1579876 | 3.1442708 | 111 | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 126604 2001 VS <sub>114</sub> |
| 2001 VW <sub>118</sub> | 15.4 | 0.15 | 20071027 | 82.72655  | 97.47773  | 267.66515 | 7.91542  | 0.1028461 | 3.0838756 | 42  | 3 | 2001-2007 | 0.49 | M-v | 4 | MPC | 117971 2001 VW <sub>118</sub> |
| 2001 VC <sub>120</sub> | 15.0 | 0.15 | 20071027 | 333.10550 | 81.70099  | 71.24574  | 16.50349 | 0.1805225 | 3.1176426 | 79  | 4 | 2001-2007 | 0.63 | M-v | 0 | MPC | 112782 2001 VC <sub>120</sub> |
| 2001 VZ <sub>125</sub> | 16.0 | 0.15 | 20071027 | 39.73355  | 168.10947 | 227.06947 | 4.23709  | 0.1496152 | 3.1344722 | 61  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 108126 2001 VZ <sub>125</sub> |
| 2001 VD <sub>131</sub> | 15.6 | 0.15 | 20071027 | 346.40943 | 350.30287 | 110.24280 | 15.17208 | 0.1242674 | 3.1355082 | 29  | 5 | 2001-2007 | 0.47 | M-v | 0 | MPC | 85244 2001 VD <sub>131</sub>  |
| 2001 WV                | 15.1 | 0.15 | 20071027 | 93.85082  | 107.88711 | 239.93109 | 8.53042  | 0.0802845 | 3.1109155 | 58  | 7 | 1999-2007 | 0.48 | M-v | 0 | MPC | 110831 2001 WV                |
| 2001 WX <sub>7</sub>   | 15.1 | 0.15 | 20071027 | 100.09339 | 254.25031 | 75.68195  | 18.09543 | 0.1615705 | 3.1079639 | 63  | 5 | 2001-2007 | 0.54 | M-v | 0 | MPC | 110831 2001 WX <sub>7</sub>   |
| 2001 WW <sub>8</sub>   | 15.1 | 0.15 | 20071027 | 131.96354 | 205.80609 | 97.20351  | 7.38599  | 0.2206539 | 3.0636698 | 71  | 4 | 2001-2007 | 0.48 | M-v | 0 | MPC | 128739 2001 WW <sub>8</sub>   |
| 2001 WF <sub>9</sub>   | 14.9 | 0.15 | 20071027 | 107.97369 | 239.53555 | 75.96166  | 19.34657 | 0.1346739 | 3.1658168 | 54  | 6 | 1999-2007 | 0.62 | M-v | 1 | MPC | 110831 2001 WF <sub>9</sub>   |
| 2001 WK <sub>9</sub>   | 15.4 | 0.15 | 20071027 | 13.04628  | 227.26336 | 218.34995 | 8.73635  | 0.2432659 | 3.1257106 | 87  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 120752 2001 WK <sub>9</sub>   |
| 2001 WJ <sub>16</sub>  | 15.5 | 0.15 | 20071027 | 12.88123  | 160.89808 | 230.07807 | 12.53104 | 0.1077192 | 3.2144398 | 90  | 6 | 2001-2007 | 0.55 | M-v | 0 | MPC | 128740 2001 WJ <sub>16</sub>  |
| 2001 WK <sub>17</sub>  | 15.8 | 0.15 | 20071027 | 55.80318  | 334.24069 | 35.83896  | 5.29285  | 0.1967275 | 3.0837755 | 79  | 4 | 2001-2007 | 0.60 | M-v | 1 | MPC | 110831 2001 WK <sub>17</sub>  |
| 2001 WU <sub>18</sub>  | 14.7 | 0.15 | 20071027 | 72.60688  | 105.20006 | 229.94363 | 14.41297 | 0.0862149 | 3.2019013 | 63  | 3 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128740 2001 WU <sub>18</sub>  |
| 2001 WH <sub>19</sub>  | 15.0 | 0.15 | 20071027 | 121.82148 | 68.79997  | 229.23510 | 11.25921 | 0.1129695 | 3.1196773 | 98  | 6 | 2000-2007 | 0.52 | M-v | 0 | MPC | 128740 2001 WH <sub>19</sub>  |
| 2001 WM <sub>23</sub>  | 16.2 | 0.15 | 20071027 | 40.17035  | 159.85168 | 214.85297 | 7.16353  | 0.1149638 | 3.1274618 | 31  | 3 | 2001-2007 | 0.38 | M-v | 2 | MPC | 108133 2001 WM <sub>23</sub>  |
| 2001 WS <sub>23</sub>  | 16.5 | 0.15 | 20071027 | 211.46402 | 202.59782 | 28.83459  | 0.66862  | 0.1130841 | 3.1448556 | 35  | 5 | 2001-2007 | 0.42 | M-v | 0 | MPC | 110832 2001 WS <sub>23</sub>  |
| 2001 WT <sub>26</sub>  | 15.1 | 0.15 | 20071027 | 87.59119  | 259.34499 | 68.04583  | 9.30156  | 0.1411571 | 3.1752966 | 62  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 108134 2001 WT <sub>26</sub>  |
| 2001 WO <sub>37</sub>  | 16.1 | 0.15 | 20071027 | 58.04132  | 277.43113 | 94.96295  | 4.85964  | 0.3279571 | 3.0617618 | 89  | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128740 2001 WO <sub>37</sub>  |
| 2001 WD <sub>39</sub>  | 14.9 | 0.15 | 20071027 | 18.13905  | 241.63591 | 208.73326 | 8.54045  | 0.2345265 | 3.1148904 | 124 | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 114640 2001 WD <sub>39</sub>  |
| 2001 WZ <sub>44</sub>  | 14.9 | 0.15 | 20071027 | 333.24158 | 23.97369  | 85.98047  | 19.30999 | 0.0606024 | 3.1178200 | 32  | 3 | 2001-2007 | 0.57 | M-v | 3 | MPC | 113841 2001 WZ <sub>44</sub>  |
| 2001 WS <sub>47</sub>  | 15.2 | 0.15 | 20071027 | 28.90722  | 320.35733 | 95.31313  | 11.08548 | 0.0957069 | 3.0948887 | 30  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 125841 2001 WS <sub>47</sub>  |
| 2001 WY <sub>60</sub>  | 15.1 | 0.15 | 20071027 | 73.76495  | 287.82365 | 50.02432  | 13.63759 | 0.1323427 | 3.2129030 | 63  | 3 | 2001-2007 | 0.58 | M-v | 3 | MPC | 128740 2001 WY <sub>60</sub>  |
| 2001 WH <sub>61</sub>  | 15.9 | 0.15 | 20071027 | 62.12948  | 107.05095 | 248.83241 | 8.77395  | 0.0290749 | 3.2474082 | 36  | 4 | 2000-2007 | 0.43 | M-v | 0 | MPC | 128740 2001 WH <sub>61</sub>  |
| 2001 WC <sub>62</sub>  | 15.0 | 0.15 | 20071027 | 257.35456 | 297.91256 | 239.94859 | 8.91649  | 0.0684495 | 3.2071841 | 53  | 7 | 1995-2007 | 0.56 | M-v | 0 | MPC | 110833 2001 WC <sub>62</sub>  |
| 2001 WO <sub>63</sub>  | 16.2 | 0.15 | 20071027 | 67.45610  | 352.36304 | 16.00516  | 1.26993  | 0.1913148 | 3.1036536 | 71  | 4 | 1995-2007 | 0.48 | M-v | 1 | MPC | 128740 2001 WO <sub>63</sub>  |
| 2001 WQ <sub>67</sub>  | 15.2 | 0.15 | 20071027 | 349.70814 | 206.10885 | 221.08968 | 18.26819 | 0.0433760 | 3.2274067 | 39  | 2 | 2001-2007 | 0.46 | M-v | 3 | MPC | 127918 2001 WQ <sub>67</sub>  |
| 2001 WS <sub>68</sub>  | 16.0 | 0.15 | 20071027 | 291.72925 | 88.31773  | 50.15076  | 12.16907 | 0.0503034 | 3.1827720 | 37  | 3 | 2001-2007 | 0.40 | M-v | 2 | MPC | 128740 2001 WS <sub>68</sub>  |
| 2001 WZ <sub>68</sub>  | 16.8 | 0.15 | 20071027 | 7.45715   | 319.29992 | 144.95635 | 1.40631  | 0.2007175 | 3.0338167 | 57  | 5 | 1995-2007 | 0.46 | M-v | 0 | MPC | 128740 2001 WZ <sub>68</sub>  |
| 2001 WY <sub>72</sub>  | 15.6 | 0.15 | 20071027 | 47.01496  | 267.20609 | 87.65302  | 4.49852  | 0.1451704 | 3.2548152 | 59  | 5 | 1996-2007 | 0.49 | M-v | 0 | MPC | 128740 2001 WY <sub>72</sub>  |
| 2001 WC <sub>74</sub>  | 15.6 | 0.15 | 20071027 | 90.51058  | 144.48709 | 172.01837 | 3.28739  | 0.1889874 | 3.1431810 | 93  | 4 | 2001-2007 | 0.39 | M-v | 0 | MPC | 110833 2001 WC <sub>74</sub>  |
| 2001 WR <sub>75</sub>  | 15.4 | 0.15 | 20071027 | 130.38746 | 250.87267 | 69.08024  | 4.86364  | 0.1006216 | 3.0155830 | 61  | 3 | 2001-2007 | 0.47 | M-v | 3 | MPC | 128740 2001 WR <sub>75</sub>  |
| 2001 WW <sub>77</sub>  | 16.3 | 0.15 | 20071027 | 87.91734  | 142.49972 | 213.95561 | 1.20994  | 0.1140593 | 3.0649461 | 63  | 7 | 1995-2007 | 0.46 | M-v | 0 | MPC | 116186 2001 WW <sub>77</sub>  |
| 2001 WV <sub>84</sub>  | 16.6 | 0.15 | 20071027 | 354.88654 | 7.07433   | 96.39157  | 2.51345  | 0.1708312 | 3.1399250 | 43  | 3 | 2001-2007 | 0.37 | M-v | 3 | MPC | 114641 2001 WV <sub>84</sub>  |
| 2001 WY <sub>92</sub>  | 15.1 | 0.15 | 20071027 | 27.26828  | 10.51919  | 28.92330  | 8.94787  | 0.1278585 | 3.2093964 | 56  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 110834 2001 WY <sub>92</sub>  |
| 2001 WO <sub>93</sub>  | 15.0 | 0.15 | 20071027 | 29.10468  | 308.27967 | 68.83604  | 8.53067  | 0.0731043 | 3.2479068 | 57  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128740 2001 WO <sub>93</sub>  |
| 2001 WV <sub>94</sub>  | 16.8 | 0.15 | 20071027 | 1.17226   | 334.15879 | 89.64668  | 1.94092  | 0.2014015 | 3.2037106 | 37  | 3 | 1995-2007 | 0.48 | M-v | 2 | MPC | 128740 2001 WV <sub>94</sub>  |
| 2001 WH <sub>95</sub>  | 14.8 | 0.15 | 20071027 | 65.25479  | 264.85923 | 111.42981 | 11.17148 | 0.1074482 | 3.1014985 | 60  | 5 | 1992-2007 | 0.51 | M-v | 1 | MPC | 110834 2001 WH <sub>95</sub>  |
| 2001 WC <sub>96</sub>  | 15.7 | 0.15 | 20071027 | 71.01369  | 255.58011 | 108.32016 | 5.51572  | 0.2361541 | 3.0590151 | 97  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128740 2001 WC <sub>96</sub>  |
| 2001 XC <sub>2</sub>   | 14.8 | 0.15 | 20071027 | 358.43080 | 110.93898 | 343.45666 | 25.00431 | 0.3598060 | 3.1710095 | 71  | 4 | 1997-2007 | 0.52 | M-v | 1 | MPC | 128740 2001 XC <sub>2</sub>   |
| 2001 XK <sub>8</sub>   | 14.8 | 0.15 | 20071027 | 355.26544 | 174.41306 | 270.58305 | 16.68565 | 0.1276727 | 3.2003010 | 71  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 108145 2001 XK <sub>8</sub>   |
| 2001 XV <sub>8</sub>   | 15.8 | 0.15 | 20071027 | 53.36420  | 31.54671  | 350.93918 | 4.90436  | 0.1866238 | 3.1617732 | 71  | 4 | 1997-2007 | 0.44 | M-v | 1 | MPC | 114642 2001 XV <sub>8</sub>   |
| 2001 XL <sub>11</sub>  | 15.3 | 0.15 | 20071027 | 64.13692  | 69.06524  | 297.71202 | 14.40787 | 0.2500528 | 3.0966153 | 70  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 114642 2001 XL <sub>11</sub>  |
| 2001 XP <sub>11</sub>  | 14.9 | 0.15 | 20071027 | 355.67588 | 148.36830 | 307.74791 | 15.06567 | 0.1085796 | 3.1501364 | 39  | 5 | 1997-2007 | 0.55 | M-v | 1 | MPC | 110835 2001 XP <sub>11</sub>  |
| 2001 XU <sub>11</sub>  | 15.2 | 0.15 | 20071027 | 5.01741   | 163.59388 | 285.04457 | 16.38804 | 0.1932477 | 3.1519328 | 51  | 4 | 2001-2007 | 0.57 | M-v | 1 | MPC | 128740 2001 XU <sub>11</sub>  |
| 2001 XB <sub>13</sub>  | 15.9 | 0.15 | 20071027 | 48.98895  | 89.53139  | 330.58426 | 9.57203  | 0.2195821 | 3.0785005 | 63  | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 117974 2001 XB <sub>13</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2001 XU <sub>19</sub>  | 14.6 | 0.15 | 20071027 | 305.30906 | 233.65879 | 323.61232 | 9.42318  | 0.0518733 | 3.0229027 | 63  | 6 | 1997-2007 | 0.59 | M-v | 1 | MP | 128740 2001 XU <sub>19</sub>  |
| 2001 XR <sub>20</sub>  | 14.3 | 0.15 | 20071027 | 47.90583  | 106.24726 | 291.54256 | 22.30888 | 0.2661145 | 3.1712821 | 95  | 4 | 2000-2007 | 0.52 | M-v | 0 | MP | 128740 2001 XR <sub>20</sub>  |
| 2001 XB <sub>32</sub>  | 16.2 | 0.15 | 20071027 | 49.08507  | 19.10846  | 5.18157   | 0.63351  | 0.1548323 | 3.1320477 | 57  | 3 | 2001-2007 | 0.51 | M-v | 2 | MP | 128740 2001 XB <sub>32</sub>  |
| 2001 XE <sub>69</sub>  | 14.9 | 0.15 | 20071027 | 358.76385 | 14.89527  | 62.78886  | 15.10895 | 0.1684367 | 3.1705368 | 60  | 3 | 2001-2007 | 0.53 | M-v | 2 | MP | 127918 2001 XE <sub>69</sub>  |
| 2001 XT <sub>69</sub>  | 15.0 | 0.15 | 20071027 | 33.41971  | 320.93869 | 74.02037  | 10.29951 | 0.0887569 | 3.1668904 | 63  | 5 | 2001-2007 | 0.51 | M-v | 0 | MP | 110836 2001 XT <sub>69</sub>  |
| 2001 XZ <sub>70</sub>  | 15.5 | 0.15 | 20071027 | 35.65697  | 336.02453 | 70.46502  | 10.54968 | 0.1293861 | 3.1058650 | 54  | 5 | 1993-2007 | 0.57 | M-v | 1 | MP | 128740 2001 XZ <sub>70</sub>  |
| 2001 XN <sub>74</sub>  | 15.0 | 0.15 | 20071027 | 118.90281 | 249.22458 | 62.47638  | 11.02630 | 0.0724228 | 3.0732213 | 54  | 5 | 2001-2007 | 0.65 | M-v | 1 | MP | 110837 2001 XN <sub>74</sub>  |
| 2001 XD <sub>82</sub>  | 14.9 | 0.15 | 20071027 | 324.93375 | 57.48796  | 91.04203  | 27.40217 | 0.2375654 | 3.1695666 | 49  | 3 | 2001-2007 | 0.50 | M-v | 2 | MP | 128741 2001 XD <sub>82</sub>  |
| 2001 XZ <sub>87</sub>  | 15.2 | 0.15 | 20071027 | 341.55473 | 53.29397  | 67.13265  | 15.91719 | 0.0969454 | 3.1639746 | 55  | 4 | 2001-2007 | 0.57 | M-v | 1 | MP | 110837 2001 XZ <sub>87</sub>  |
| 2001 XQ <sub>90</sub>  | 16.5 | 0.15 | 20071027 | 310.82118 | 1.83633   | 92.53611  | 3.63720  | 0.0897872 | 2.1672094 | 150 | 5 | 1999-2007 | 0.54 | M-v | 3 | MP | 128741 2001 XQ <sub>90</sub>  |
| 2001 XC <sub>104</sub> | 15.3 | 0.15 | 20071027 | 61.73831  | 46.99012  | 307.88953 | 3.37193  | 0.1313574 | 3.2077908 | 56  | 5 | 2001-2007 | 0.47 | M-v | 1 | MP | 110837 2001 XC <sub>104</sub> |
| 2001 XR <sub>111</sub> | 17.1 | 0.15 | 20071027 | 310.78159 | 80.06951  | 83.02618  | 6.50146  | 0.1787633 | 2.0339065 | 80  | 3 | 2001-2007 | 0.54 | M-v | 3 | MP | 77581 2001 XR <sub>111</sub>  |
| 2001 XU <sub>121</sub> | 15.2 | 0.15 | 20071027 | 31.02743  | 305.39744 | 121.69137 | 10.45403 | 0.1383134 | 3.1398386 | 54  | 4 | 2001-2007 | 0.54 | M-v | 1 | MP | 110838 2001 XU <sub>121</sub> |
| 2001 XE <sub>122</sub> | 15.3 | 0.15 | 20071027 | 95.46383  | 246.75592 | 78.17605  | 7.68858  | 0.1486084 | 3.1534938 | 35  | 5 | 2001-2007 | 0.55 | M-v | 0 | MP | 110838 2001 XE <sub>122</sub> |
| 2001 XO <sub>123</sub> | 16.2 | 0.15 | 20071027 | 50.01182  | 313.60432 | 109.67572 | 1.97724  | 0.1031615 | 2.9874914 | 72  | 6 | 1995-2007 | 0.44 | M-v | 0 | MP | 110838 2001 XO <sub>123</sub> |
| 2001 XQ <sub>129</sub> | 15.4 | 0.15 | 20071027 | 73.59058  | 105.60784 | 235.14138 | 11.61572 | 0.1345825 | 3.2235513 | 52  | 6 | 2000-2007 | 0.42 | M-v | 0 | MP | 128741 2001 XQ <sub>129</sub> |
| 2001 XG <sub>132</sub> | 15.8 | 0.15 | 20071027 | 321.64986 | 224.39533 | 245.82931 | 1.23182  | 0.1847181 | 3.3279010 | 51  | 5 | 2000-2007 | 0.57 | M-v | 0 | MP | 128741 2001 XG <sub>132</sub> |
| 2001 XE <sub>135</sub> | 15.1 | 0.15 | 20071027 | 104.30481 | 263.83966 | 80.31134  | 2.32729  | 0.1792077 | 3.0549847 | 123 | 4 | 2000-2007 | 0.45 | M-v | 1 | MP | 122691 2001 XE <sub>135</sub> |
| 2001 XK <sub>135</sub> | 15.3 | 0.15 | 20071027 | 296.49243 | 89.15638  | 80.66021  | 16.62263 | 0.0865424 | 3.1418683 | 38  | 4 | 2001-2007 | 0.45 | M-v | 1 | MP | 121772 2001 XK <sub>135</sub> |
| 2001 XY <sub>135</sub> | 15.2 | 0.15 | 20071027 | 348.33778 | 34.78236  | 86.71111  | 11.37410 | 0.1081224 | 3.1073799 | 80  | 4 | 2001-2007 | 0.43 | M-v | 1 | MP | 114645 2001 XY <sub>135</sub> |
| 2001 XT <sub>136</sub> | 15.7 | 0.15 | 20071027 | 45.05477  | 228.38545 | 165.85078 | 2.14355  | 0.1046392 | 3.1946059 | 86  | 5 | 1997-2007 | 0.34 | M-v | 0 | MP | 128741 2001 XT <sub>136</sub> |
| 2001 XS <sub>137</sub> | 18.0 | 0.15 | 20071027 | 317.26647 | 200.89885 | 233.57993 | 0.42935  | 0.0704411 | 2.1423941 | 63  | 4 | 2001-2007 | 0.49 | M-v | 3 | MP | 128741 2001 XS <sub>137</sub> |
| 2001 XK <sub>139</sub> | 15.9 | 0.15 | 20071027 | 33.47848  | 264.25527 | 138.68974 | 2.33611  | 0.1815029 | 3.1990196 | 49  | 3 | 2001-2007 | 0.50 | M-v | 2 | MP | 110839 2001 XK <sub>139</sub> |
| 2001 XY <sub>139</sub> | 15.3 | 0.15 | 20071027 | 342.75851 | 47.09001  | 80.12027  | 10.22741 | 0.0509177 | 3.1062427 | 46  | 6 | 2001-2007 | 0.53 | M-v | 0 | MP | 108163 2001 XY <sub>139</sub> |
| 2001 XM <sub>140</sub> | 15.3 | 0.15 | 20071027 | 39.60710  | 316.13741 | 83.63358  | 6.26714  | 0.1562889 | 3.1965809 | 36  | 3 | 2001-2007 | 0.60 | M-v | 3 | MP | 112787 2001 XM <sub>140</sub> |
| 2001 XT <sub>143</sub> | 16.2 | 0.15 | 20071027 | 23.05540  | 318.30494 | 130.85325 | 2.18059  | 0.1772090 | 3.0912176 | 77  | 7 | 1995-2007 | 0.41 | M-v | 0 | MP | 114645 2001 XT <sub>143</sub> |
| 2001 XU <sub>149</sub> | 15.9 | 0.15 | 20071027 | 63.71973  | 215.71773 | 149.26547 | 1.97919  | 0.1396827 | 3.2144966 | 126 | 7 | 1995-2007 | 0.52 | M-v | 0 | MP | 108165 2001 XU <sub>149</sub> |
| 2001 XP <sub>154</sub> | 15.5 | 0.15 | 20071027 | 218.15750 | 344.24634 | 259.50939 | 8.32527  | 0.0248924 | 3.1549285 | 47  | 3 | 2001-2007 | 0.36 | M-v | 3 | MP | 117979 2001 XP <sub>154</sub> |
| 2001 XB <sub>157</sub> | 15.7 | 0.15 | 20071027 | 46.94999  | 183.71428 | 264.71851 | 2.10076  | 0.1670319 | 2.9915085 | 124 | 4 | 2001-2007 | 0.43 | M-v | 1 | MP | 110840 2001 XB <sub>157</sub> |
| 2001 XL <sub>158</sub> | 14.4 | 0.15 | 20071027 | 34.41526  | 110.50855 | 299.20289 | 15.27227 | 0.0856455 | 3.2258379 | 58  | 5 | 2000-2007 | 0.67 | M-v | 0 | MP | 128741 2001 XL <sub>158</sub> |
| 2001 XT <sub>163</sub> | 15.8 | 0.15 | 20071027 | 63.88197  | 263.85311 | 118.28327 | 2.42714  | 0.1770210 | 3.1741681 | 70  | 4 | 1995-2007 | 0.46 | M-v | 2 | MP | 112787 2001 XT <sub>163</sub> |
| 2001 XY <sub>173</sub> | 15.7 | 0.15 | 20071027 | 351.78932 | 291.54532 | 170.56715 | 3.02264  | 0.0870079 | 3.2211721 | 65  | 6 | 2000-2007 | 0.44 | M-v | 0 | MP | 110840 2001 XY <sub>173</sub> |
| 2001 XD <sub>195</sub> | 15.1 | 0.15 | 20071027 | 28.55600  | 339.11824 | 112.92881 | 10.96222 | 0.0964492 | 3.1181382 | 60  | 5 | 2000-2007 | 0.65 | M-v | 1 | MP | 114645 2001 XD <sub>195</sub> |
| 2001 XS <sub>198</sub> | 15.8 | 0.15 | 20071027 | 61.25633  | 282.97689 | 122.92722 | 15.39256 | 0.2174751 | 3.1643395 | 72  | 6 | 2000-2007 | 0.53 | M-v | 0 | MP | 110841 2001 XS <sub>198</sub> |
| 2001 XU <sub>199</sub> | 15.6 | 0.15 | 20071027 | 2.46124   | 12.53982  | 113.84323 | 9.74072  | 0.0420927 | 3.1510324 | 51  | 5 | 1991-2007 | 0.50 | M-v | 1 | MP | 72436 2001 XU <sub>199</sub>  |
| 2001 XE <sub>201</sub> | 16.4 | 0.15 | 20071027 | 57.34064  | 80.84285  | 273.69823 | 3.95457  | 0.1807692 | 2.1288000 | 60  | 3 | 2001-2007 | 0.56 | M-v | 3 | MP | 127919 2001 XE <sub>201</sub> |
| 2001 XJ <sub>201</sub> | 17.7 | 0.15 | 20071027 | 7.56323   | 325.66496 | 60.29638  | 1.99276  | 0.1113251 | 2.1294976 | 101 | 6 | 1996-2007 | 0.46 | M-v | 2 | MP | 121543 2001 XJ <sub>201</sub> |
| 2001 XY <sub>205</sub> | 15.9 | 0.15 | 20071027 | 336.09802 | 238.22366 | 219.60161 | 15.41005 | 0.1052157 | 3.1009296 | 25  | 4 | 1999-2007 | 0.54 | M-v | 2 | MP | 128741 2001 XY <sub>205</sub> |
| 2001 XA <sub>209</sub> | 15.3 | 0.15 | 20071027 | 333.27183 | 18.60596  | 104.44235 | 7.90977  | 0.1382942 | 3.1983439 | 49  | 5 | 2000-2007 | 0.53 | M-v | 1 | MP | 104188 2001 XA <sub>209</sub> |
| 2001 XR <sub>220</sub> | 15.1 | 0.15 | 20071027 | 28.91575  | 291.22828 | 150.73472 | 5.30747  | 0.1322757 | 3.0948286 | 64  | 5 | 1997-2007 | 0.59 | M-v | 1 | MP | 128741 2001 XR <sub>220</sub> |
| 2001 XN <sub>226</sub> | 16.2 | 0.15 | 20071027 | 358.76285 | 38.63911  | 47.72823  | 6.16316  | 0.1582078 | 3.1845896 | 30  | 4 | 2001-2007 | 0.48 | M-v | 0 | MP | 110843 2001 XN <sub>226</sub> |
| 2001 XW <sub>229</sub> | 16.1 | 0.15 | 20071027 | 7.06334   | 170.15831 | 270.65821 | 8.75005  | 0.2266856 | 3.1851030 | 40  | 3 | 2001-2007 | 0.48 | M-v | 2 | MP | 128742 2001 XW <sub>229</sub> |
| 2001 XE <sub>233</sub> | 16.9 | 0.15 | 20071027 | 13.04434  | 167.40152 | 295.88347 | 0.33882  | 0.2081402 | 3.0761650 | 37  | 4 | 1997-2007 | 0.45 | M-v | 1 | MP | 128741 2001 XE <sub>233</sub> |
| 2001 XQ <sub>233</sub> | 15.6 | 0.15 | 20071027 | 65.87342  | 319.53865 | 60.26029  | 4.74893  | 0.1199279 | 3.1408602 | 58  | 6 | 1998-2007 | 0.45 | M-v | 0 | MP | 128742 2001 XQ <sub>233</sub> |
| 2001 XL <sub>240</sub> | 15.4 | 0.15 | 20071027 | 22.67527  | 158.82845 | 263.42481 | 8.26401  | 0.1289323 | 3.1915293 | 55  | 4 | 2000-2007 | 0.57 | M-v | 1 | MP | 128742 2001 XL <sub>240</sub> |
| 2001 XU <sub>242</sub> | 16.6 | 0.15 | 20071027 | 141.41943 | 240.05117 | 37.20468  | 2.68242  | 0.0627808 | 2.1293356 | 66  | 4 | 2001-2007 | 0.56 | M-v | 3 | MP | 127919 2001 XU <sub>242</sub> |
| 2001 XX <sub>243</sub> | 16.2 | 0.15 | 20071027 | 4.88196   | 110.35261 | 356.79121 | 0.40706  | 0.1548242 | 3.1432610 | 71  | 5 | 1997-2007 | 0.41 | M-v | 1 | MP | 110843 2001 XX <sub>243</sub> |
| 2001 XD <sub>245</sub> | 15.2 | 0.15 | 20071027 | 58.31034  | 118.43492 | 232.10764 | 14.62010 | 0.1203900 | 3.1908776 | 66  | 3 | 2001-2007 | 0.42 | M-v | 2 | MP | 116193 2001 XD <sub>245</sub> |
| 2001 XR <sub>245</sub> | 15.7 | 0.15 | 20071027 | 345.94531 | 61.18359  | 35.18475  | 10.12010 | 0.0384046 | 3.1023888 | 44  | 6 | 1993-2007 | 0.52 | M-v | 0 | MP | 128742 2001 XR <sub>245</sub> |
| 2001 XP <sub>246</sub> | 15.6 | 0.15 | 20071027 | 307.26967 | 100.83499 | 52.73911  | 1.85930  | 0.1326713 | 3.1547436 | 45  | 4 | 2001-2007 | 0.39 | M-v | 1 | MP | 110843 2001 XP <sub>246</sub> |
| 2001 XF <sub>249</sub> | 15.5 | 0.15 | 20071027 | 122.99894 | 253.91421 | 60.87202  | 5.72872  | 0.1310052 | 3.1573470 | 43  | 6 | 1995-2007 | 0.42 | M-v | 0 | MP | 128742 2001 XF <sub>249</sub> |
| 2001 XQ <sub>257</sub> | 16.3 | 0.15 | 20071027 | 92.75285  | 332.80140 | 46.42254  | 0.13657  | 0.1591581 | 3.1262494 | 64  | 6 | 1997-2007 | 0.45 | M-v | 0 | MP | 128742 2001 XQ <sub>257</sub> |
|                        | 15.0 | 0.15 | 20071027 | 24.30093  | 133.15408 | 250.45996 | 15.20034 | 0.1713596 | 3.1841278 | 77  | 3 | 2001-2007 | 0.48 | M-v | 2 | MP |                               |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2001 XU <sub>262</sub> | 16.4 | 0.15 | 20071027 | 82.90179  | 208.01296 | 142.29219 | 0.97906  | 0.3030563 | 3.0340940 | 101 | 4 | 2001–2007 | 0.40 | M-v | 1 | MPC | 108180 2001 XU <sub>262</sub> |
| 2001 XZ <sub>263</sub> | 15.4 | 0.15 | 20071027 | 104.27342 | 75.95317  | 269.58981 | 9.62438  | 0.1019350 | 3.0687555 | 32  | 4 | 2001–2007 | 0.49 | M-v | 1 | MPC | 122396 2001 XZ <sub>263</sub> |
| 2001 XV <sub>265</sub> | 16.1 | 0.15 | 20071027 | 12.36773  | 277.20305 | 145.60888 | 6.19213  | 0.2199660 | 3.1828192 | 21  | 3 | 2001–2007 | 0.58 | M-v | 3 | MPC | 108180 2001 XV <sub>265</sub> |
| 2001 YJ <sub>6</sub>   | 15.4 | 0.15 | 20071027 | 280.07434 | 117.77969 | 64.95075  | 13.60356 | 0.1068115 | 3.0968836 | 44  | 5 | 1998–2007 | 0.52 | M-v | 1 | MPC | 128742 2001 YJ <sub>6</sub>   |
| 2001 YT <sub>7</sub>   | 14.5 | 0.15 | 20071027 | 332.64678 | 188.93695 | 277.62602 | 10.30884 | 0.0724233 | 3.2418701 | 68  | 5 | 2001–2007 | 0.54 | M-v | 1 | MPC | 110844 2001 YT <sub>7</sub>   |
| 2001 YW <sub>8</sub>   | 15.6 | 0.15 | 20071027 | 326.16521 | 61.76156  | 79.36860  | 5.70276  | 0.1112477 | 3.1839128 | 48  | 5 | 1995–2007 | 0.49 | M-v | 0 | MPC | 128742 2001 YW <sub>8</sub>   |
| 2001 YV <sub>9</sub>   | 14.4 | 0.15 | 20071027 | 303.06884 | 259.33195 | 276.46130 | 14.97309 | 0.1499591 | 3.1234494 | 67  | 4 | 2001–2007 | 0.55 | M-v | 1 | MPC | 124340 2001 YV <sub>9</sub>   |
| 2001 YW <sub>21</sub>  | 15.9 | 0.15 | 20071027 | 52.53520  | 97.67194  | 310.21965 | 3.88050  | 0.1301822 | 3.0469119 | 52  | 3 | 2001–2007 | 0.45 | M-v | 3 | MPC | 112790 2001 YW <sub>21</sub>  |
| 2001 YP <sub>35</sub>  | 15.2 | 0.15 | 20071027 | 63.31259  | 324.36445 | 57.35001  | 10.10214 | 0.1232893 | 3.1555285 | 49  | 4 | 2001–2007 | 0.56 | M-v | 1 | MPC | 122692 2001 YP <sub>35</sub>  |
| 2001 YQ <sub>36</sub>  | 15.5 | 0.15 | 20071027 | 357.55744 | 167.78815 | 306.51365 | 4.04122  | 0.1377469 | 3.1202967 | 64  | 4 | 2001–2007 | 0.39 | M-v | 1 | MPC | 115717 2001 YQ <sub>36</sub>  |
| 2001 YB <sub>49</sub>  | 15.2 | 0.15 | 20071027 | 57.11663  | 8.97213   | 54.77380  | 3.74005  | 0.1458109 | 3.0292055 | 131 | 5 | 1992–2007 | 0.41 | M-v | 1 | MPC | 116194 2001 YB <sub>49</sub>  |
| 2001 YU <sub>59</sub>  | 14.9 | 0.15 | 20071027 | 15.05319  | 171.96706 | 283.70784 | 13.02542 | 0.0657071 | 3.1359182 | 42  | 5 | 2000–2007 | 0.58 | M-v | 1 | MPC | 122692 2001 YU <sub>59</sub>  |
| 2001 YE <sub>63</sub>  | 15.3 | 0.15 | 20071027 | 29.69352  | 174.00762 | 286.07097 | 7.02151  | 0.0988230 | 3.0554847 | 40  | 5 | 1997–2007 | 0.48 | M-v | 1 | MPC | 122692 2001 YE <sub>63</sub>  |
| 2001 YM <sub>66</sub>  | 15.3 | 0.15 | 20071027 | 72.61202  | 90.04450  | 306.89935 | 4.09893  | 0.1705803 | 3.0935076 | 83  | 4 | 2001–2007 | 0.42 | M-v | 0 | MPC | 128742 2001 YM <sub>66</sub>  |
| 2001 YV <sub>89</sub>  | 13.7 | 0.15 | 20071027 | 87.14746  | 36.40825  | 297.80668 | 16.83449 | 0.0698571 | 3.5596241 | 54  | 5 | 1999–2007 | 0.58 | M-v | 1 | MPC | 110846 2001 YV <sub>89</sub>  |
| 2001 YD <sub>99</sub>  | 15.7 | 0.15 | 20071027 | 52.51536  | 296.24411 | 86.81647  | 2.20539  | 0.1459363 | 3.2149319 | 41  | 3 | 2001–2007 | 0.34 | M-v | 2 | MPC | 114648 2001 YD <sub>99</sub>  |
| 2001 YU <sub>99</sub>  | 14.9 | 0.15 | 20071027 | 7.89028   | 148.77367 | 248.89516 | 7.22882  | 0.1389125 | 3.4476270 | 49  | 3 | 2001–2007 | 0.46 | M-v | 2 | MPC | 127920 2001 YU <sub>99</sub>  |
| 2001 YU <sub>109</sub> | 14.4 | 0.15 | 20071027 | 321.10437 | 253.72759 | 296.15001 | 10.14345 | 0.1998781 | 3.1517500 | 98  | 6 | 2000–2007 | 0.48 | M-v | 1 | MPC | 112791 2001 YU <sub>109</sub> |
| 2001 YW <sub>116</sub> | 15.6 | 0.15 | 20071027 | 41.97547  | 336.12403 | 101.18388 | 4.35824  | 0.1565537 | 3.1522721 | 103 | 5 | 2000–2007 | 0.52 | M-v | 0 | MPC | 120756 2001 YW <sub>116</sub> |
| 2001 YU <sub>118</sub> | 16.7 | 0.15 | 20071027 | 30.12570  | 303.42517 | 71.97876  | 2.71272  | 0.1197044 | 2.1469179 | 154 | 4 | 2001–2007 | 0.47 | M-v | 2 | MPC | 128742 2001 YU <sub>118</sub> |
| 2001 YE <sub>123</sub> | 14.9 | 0.15 | 20071027 | 321.41580 | 111.69369 | 41.81644  | 10.56675 | 0.1801884 | 3.1569825 | 80  | 5 | 1986–2007 | 0.48 | M-v | 1 | MPC | 110847 2001 YE <sub>123</sub> |
| 2001 YO <sub>125</sub> | 17.2 | 0.15 | 20071027 | 334.84464 | 23.59125  | 19.10574  | 3.60484  | 0.1467037 | 2.1640173 | 147 | 4 | 2001–2007 | 0.55 | M-v | 2 | MPC | 128742 2001 YO <sub>125</sub> |
| 2001 YT <sub>132</sub> | 14.8 | 0.15 | 20071027 | 25.29918  | 145.47498 | 282.32424 | 15.76864 | 0.1470064 | 3.1409415 | 65  | 4 | 2001–2007 | 0.52 | M-v | 1 | MPC | 128742 2001 YT <sub>132</sub> |
| 2001 YB <sub>134</sub> | 14.8 | 0.15 | 20071027 | 323.90969 | 85.84204  | 61.51142  | 15.18289 | 0.2189929 | 3.1815078 | 62  | 4 | 2001–2007 | 0.61 | M-v | 1 | MPC | 128742 2001 YB <sub>134</sub> |
| 2001 YH <sub>142</sub> | 16.0 | 0.15 | 20071027 | 85.94645  | 15.64700  | 337.10500 | 0.93646  | 0.1204406 | 3.1416471 | 99  | 6 | 1995–2007 | 0.36 | M-v | 0 | MPC | 124341 2001 YH <sub>142</sub> |
| 2001 YZ <sub>145</sub> | 15.0 | 0.15 | 20071027 | 335.16938 | 78.87029  | 32.91426  | 15.41708 | 0.1835460 | 3.2022457 | 45  | 4 | 2001–2007 | 0.74 | M-v | 1 | MPC | 128742 2001 YZ <sub>145</sub> |
| 2001 YM <sub>150</sub> | 15.6 | 0.15 | 20071027 | 358.08232 | 294.14837 | 174.01242 | 10.08304 | 0.2066592 | 3.1468948 | 42  | 6 | 1997–2007 | 0.57 | M-v | 1 | MPC | 114649 2001 YM <sub>150</sub> |
| 2001 YF <sub>151</sub> | 14.5 | 0.15 | 20071027 | 218.13911 | 329.28634 | 269.08945 | 25.68274 | 0.1616807 | 3.1912861 | 40  | 5 | 1999–2007 | 0.44 | M-v | 1 | MPC | 94461 2001 YF <sub>151</sub>  |
| 2001 YX <sub>152</sub> | 16.7 | 0.15 | 20071027 | 355.26086 | 34.06994  | 344.47433 | 6.67092  | 0.0549918 | 2.2090680 | 114 | 4 | 2001–2007 | 0.58 | M-v | 2 | MPC | 126606 2001 YX <sub>152</sub> |
| 2001 YF <sub>154</sub> | 15.2 | 0.15 | 20071027 | 309.02678 | 108.55471 | 86.59319  | 20.98754 | 0.2758940 | 3.2048334 | 48  | 4 | 2001–2007 | 0.56 | M-v | 1 | MPC | 128742 2001 YF <sub>154</sub> |
| 2002 AT                | 16.7 | 0.15 | 20071027 | 268.41202 | 162.79842 | 345.39654 | 5.03786  | 0.1238810 | 2.1728993 | 124 | 4 | 1999–2007 | 0.50 | M-v | 2 | MPC | 128742 2002 AT                |
| 2002 AR <sub>5</sub>   | 17.0 | 0.15 | 20071027 | 115.13050 | 173.40813 | 120.17881 | 23.20275 | 0.1444184 | 1.6169279 | 88  | 7 | 1988–2007 | 0.50 | M-v | 3 | MPC | 97543 2002 AR <sub>5</sub>    |
| 2002 AK <sub>6</sub>   | 16.8 | 0.15 | 20071027 | 14.42438  | 297.53571 | 61.56884  | 8.31280  | 0.1558397 | 2.2193429 | 65  | 5 | 2002–2007 | 0.46 | M-v | 1 | MPC | 128742 2002 AK <sub>6</sub>   |
| 2002 AA <sub>15</sub>  | 14.7 | 0.15 | 20071027 | 71.62696  | 334.25577 | 41.34470  | 15.88025 | 0.2312334 | 3.1521380 | 142 | 4 | 2001–2007 | 0.47 | M-v | 1 | MPC | 114649 2002 AA <sub>15</sub>  |
| 2002 AN <sub>17</sub>  | 17.1 | 0.15 | 20071027 | 13.45711  | 144.76934 | 243.84831 | 2.10727  | 0.1569809 | 2.1384281 | 137 | 4 | 2001–2007 | 0.42 | M-v | 2 | MPC | 128743 2002 AN <sub>17</sub>  |
| 2002 AY <sub>19</sub>  | 16.4 | 0.15 | 20071027 | 17.96314  | 225.56807 | 133.08187 | 4.12209  | 0.1743902 | 2.1929317 | 158 | 6 | 1993–2007 | 0.44 | M-v | 1 | MPC | 128743 2002 AY <sub>19</sub>  |
| 2002 AD <sub>24</sub>  | 16.5 | 0.15 | 20071027 | 302.51014 | 319.69886 | 149.05811 | 4.37127  | 0.0649865 | 2.1675529 | 128 | 5 | 1993–2007 | 0.47 | M-v | 2 | MPC | 128743 2002 AD <sub>24</sub>  |
| 2002 AO <sub>29</sub>  | 14.6 | 0.15 | 20071027 | 354.03157 | 192.49968 | 268.19087 | 17.58746 | 0.1484502 | 3.1654808 | 56  | 3 | 2001–2007 | 0.52 | M-v | 2 | MPC | 128743 2002 AO <sub>29</sub>  |
| 2002 AO <sub>31</sub>  | 17.8 | 0.15 | 20071027 | 349.34536 | 65.97518  | 346.41275 | 3.58185  | 0.2514731 | 2.1395955 | 140 | 3 | 2002–2007 | 0.51 | M-v | 2 | MPC | 128743 2002 AO <sub>31</sub>  |
| 2002 AD <sub>50</sub>  | 16.1 | 0.15 | 20071027 | 22.41252  | 317.72417 | 146.05753 | 4.08919  | 0.1717150 | 3.1609038 | 43  | 4 | 2002–2007 | 0.44 | M-v | 1 | MPC | 117987 2002 AD <sub>50</sub>  |
| 2002 AD <sub>61</sub>  | 14.5 | 0.15 | 20071027 | 31.04954  | 160.06911 | 313.60791 | 15.33498 | 0.0151657 | 3.1790223 | 56  | 5 | 2000–2007 | 0.46 | M-v | 1 | MPC | 122693 2002 AD <sub>61</sub>  |
| 2002 AV <sub>64</sub>  | 15.9 | 0.15 | 20071027 | 185.96124 | 100.63296 | 137.82302 | 17.61164 | 0.0937621 | 2.1929741 | 85  | 3 | 2002–2007 | 0.53 | M-v | 2 | MPC | 53697 2002 AV <sub>64</sub>   |
| 2002 AV <sub>66</sub>  | 16.6 | 0.15 | 20071027 | 179.15031 | 322.25114 | 271.07797 | 2.71598  | 0.0768847 | 2.1773188 | 67  | 5 | 1999–2007 | 0.56 | M-v | 2 | MPC | 128743 2002 AV <sub>66</sub>  |
| 2002 AZ <sub>66</sub>  | 18.3 | 0.15 | 20020126 | 355.36476 | 351.38946 | 142.60571 | 1.87966  | 0.1476725 | 2.3129139 | 17  | 1 | 34 days   | 0.59 |     |   | MPC | 2002 AZ <sub>66</sub>         |
| 2002 AR <sub>77</sub>  | 15.4 | 0.15 | 20071027 | 5.35424   | 203.04599 | 294.23852 | 9.63635  | 0.0273208 | 3.0532041 | 68  | 5 | 2001–2007 | 0.51 | M-v | 1 | MPC | 114650 2002 AR <sub>77</sub>  |
| 2002 AK <sub>81</sub>  | 15.5 | 0.15 | 20071027 | 48.91858  | 311.32036 | 123.94389 | 10.94301 | 0.1001125 | 3.0341524 | 47  | 4 | 2001–2007 | 0.56 | M-v | 1 | MPC | 112794 2002 AK <sub>81</sub>  |
| 2002 AN <sub>103</sub> | 15.6 | 0.15 | 20071027 | 353.23301 | 176.89605 | 354.27211 | 3.56320  | 0.2265543 | 3.0735073 | 82  | 5 | 2000–2007 | 0.42 | M-v | 1 | MPC | 121774 2002 AN <sub>103</sub> |
| 2002 AX <sub>103</sub> | 15.8 | 0.15 | 20071027 | 7.03033   | 203.18157 | 284.24312 | 0.61724  | 0.1549310 | 3.1269924 | 55  | 4 | 2002–2007 | 0.55 | M-v | 1 | MPC | 116198 2002 AX <sub>103</sub> |
| 2002 AF <sub>107</sub> | 17.6 | 0.15 | 20071027 | 353.21295 | 83.45708  | 333.09830 | 1.45380  | 0.0868641 | 2.1534658 | 53  | 4 | 1999–2007 | 0.46 | M-v | 3 | MPC | 127920 2002 AF <sub>107</sub> |
| 2002 AK <sub>110</sub> | 14.9 | 0.15 | 20071027 | 326.12106 | 220.66928 | 321.74303 | 8.11062  | 0.1107690 | 3.1385483 | 54  | 5 | 1997–2007 | 0.57 | M-v | 1 | MPC | 87523 2002 AK <sub>110</sub>  |
| 2002 AY <sub>111</sub> | 15.0 | 0.15 | 20071027 | 320.65953 | 209.02688 | 324.62039 | 5.14142  | 0.1000133 | 3.2267665 | 86  | 7 | 1999–2007 | 0.53 | M-v | 1 | MPC | 126607 2002 AY <sub>111</sub> |
| 2002 AY <sub>115</sub> | 14.7 | 0.15 | 20071027 | 191.56174 | 9.32024   | 301.61782 | 9.76914  | 0.0803242 | 3.0660698 | 68  | 7 | 1999–2007 | 0.51 | M-v | 1 | MPC | 112794 2002 AY <sub>115</sub> |
| 2002 AS <sub>117</sub> | 16.6 | 0.15 | 20071027 | 301.06708 | 18.70227  | 74.15153  | 2.01305  | 0.1539165 | 2.2097932 | 129 | 3 | 2002–2007 | 0.52 | M-v | 2 | MPC | 128743 2002 AS <sub>117</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 AO <sub>123</sub> | 14.7 | 0.15 | 20071027 | 15.00963  | 349.19645 | 128.01622 | 20.60085 | 0.1500055 | 3.1924860 | 77  | 4 | 2001-2007 | 0.56 | M-v | 0 | MPC | 128743 2002 AO <sub>123</sub> |
| 2002 AD <sub>126</sub> | 14.8 | 0.15 | 20071027 | 323.85976 | 75.73824  | 146.52003 | 26.20409 | 0.2410829 | 3.1697035 | 50  | 4 | 1996-2007 | 0.60 | M-v | 1 | MPC | 128743 2002 AD <sub>126</sub> |
| 2002 AQ <sub>132</sub> | 18.3 | 0.15 | 20071027 | 288.40365 | 198.30524 | 294.80035 | 0.42711  | 0.1225710 | 2.1354208 | 67  | 5 | 1999-2007 | 0.46 | M-v | 2 | MPC | 128743 2002 AQ <sub>132</sub> |
| 2002 AV <sub>137</sub> | 15.3 | 0.15 | 20071027 | 39.36023  | 327.54905 | 123.12662 | 11.27718 | 0.0924296 | 3.0740499 | 60  | 6 | 1998-2007 | 0.56 | M-v | 0 | MPC | 128743 2002 AV <sub>137</sub> |
| 2002 AP <sub>142</sub> | 17.4 | 0.15 | 20071027 | 2.79344   | 223.64328 | 182.46684 | 1.11868  | 0.0924445 | 2.1382074 | 71  | 4 | 1991-2007 | 0.44 | M-v | 1 | MPC | 128743 2002 AP <sub>142</sub> |
| 2002 AK <sub>144</sub> | 17.0 | 0.15 | 20071027 | 296.09156 | 214.26835 | 267.62428 | 0.55026  | 0.0445849 | 2.1464844 | 72  | 5 | 1996-2007 | 0.44 | M-v | 3 | MPC | 127921 2002 AK <sub>144</sub> |
| 2002 AA <sub>155</sub> | 15.9 | 0.15 | 20071027 | 217.47265 | 68.50274  | 127.43111 | 7.37001  | 0.0702422 | 2.2258552 | 83  | 5 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128743 2002 AA <sub>155</sub> |
| 2002 AK <sub>159</sub> | 16.7 | 0.15 | 20071027 | 25.96682  | 211.55705 | 144.73083 | 5.57453  | 0.2121825 | 2.2135670 | 99  | 5 | 1996-2007 | 0.58 | M-v | 1 | MPC | 128744 2002 AK <sub>159</sub> |
| 2002 AY <sub>171</sub> | 15.1 | 0.15 | 20071027 | 60.62028  | 57.04896  | 323.42811 | 9.26685  | 0.1239583 | 3.3886485 | 56  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 110853 2002 AY <sub>171</sub> |
| 2002 AD <sub>176</sub> | 16.4 | 0.15 | 20071027 | 205.58349 | 99.00994  | 112.99548 | 6.92750  | 0.0761987 | 2.1877886 | 64  | 4 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128744 2002 AD <sub>176</sub> |
| 2002 AJ <sub>183</sub> | 15.0 | 0.15 | 20071027 | 44.91379  | 55.62112  | 318.87653 | 11.78099 | 0.1782958 | 3.1195236 | 80  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 116199 2002 AJ <sub>183</sub> |
| 2002 AW <sub>190</sub> | 13.6 | 0.15 | 20071027 | 296.22546 | 84.93521  | 137.22126 | 18.18785 | 0.1306710 | 3.3423695 | 82  | 5 | 2002-2007 | 0.58 | M-v | 1 | MPC | 90143 2002 AW <sub>190</sub>  |
| 2002 AX <sub>198</sub> | 14.6 | 0.15 | 20071027 | 109.78282 | 57.30185  | 272.82243 | 12.19187 | 0.0575780 | 3.2613963 | 51  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 116199 2002 AX <sub>198</sub> |
| 2002 AK <sub>200</sub> | 14.5 | 0.15 | 20071027 | 312.49413 | 77.01745  | 101.25429 | 25.14040 | 0.2213291 | 3.1739340 | 59  | 3 | 2001-2007 | 0.61 | M-v | 2 | MPC | 128744 2002 AK <sub>200</sub> |
| 2002 AH <sub>201</sub> | 16.8 | 0.15 | 20071027 | 21.10613  | 108.24504 | 264.94521 | 3.29329  | 0.1713584 | 2.1832555 | 133 | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128744 2002 AH <sub>201</sub> |
| 2002 BN <sub>12</sub>  | 17.4 | 0.15 | 20071027 | 208.90153 | 90.95747  | 121.48150 | 1.50727  | 0.0331756 | 2.1598867 | 73  | 6 | 1996-2007 | 0.60 | M-v | 2 | MPC | 128744 2002 BN <sub>12</sub>  |
| 2002 BW <sub>12</sub>  | 14.4 | 0.15 | 20071027 | 348.36051 | 120.58904 | 319.96522 | 9.31523  | 0.0252287 | 3.5298918 | 99  | 5 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128744 2002 BW <sub>12</sub>  |
| 2002 BY <sub>13</sub>  | 17.1 | 0.15 | 20071027 | 330.53150 | 137.87517 | 285.47670 | 2.47128  | 0.1364094 | 2.2070972 | 105 | 4 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128744 2002 BY <sub>13</sub>  |
| 2002 BL <sub>19</sub>  | 16.4 | 0.15 | 20071027 | 253.58305 | 125.38815 | 45.21640  | 4.07461  | 0.0813638 | 2.1939507 | 94  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128744 2002 BL <sub>19</sub>  |
| 2002 BQ <sub>23</sub>  | 14.7 | 0.15 | 20071027 | 341.48955 | 130.86536 | 15.72932  | 13.51333 | 0.1571328 | 3.1838261 | 71  | 6 | 1997-2007 | 0.56 | M-v | 1 | MPC | 117991 2002 BQ <sub>23</sub>  |
| 2002 BF <sub>31</sub>  | 17.0 | 0.15 | 20071027 | 53.94861  | 195.85387 | 163.33159 | 3.47390  | 0.1198046 | 2.1632764 | 27  | 4 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128744 2002 BF <sub>31</sub>  |
| 2002 CC                | 15.2 | 0.15 | 20071027 | 346.80145 | 130.65231 | 51.03242  | 27.44218 | 0.4502900 | 3.1194189 | 88  | 3 | 2001-2007 | 0.41 | M-v | 2 | MPC | 117992 2002 CC                |
| 2002 CG <sub>1</sub>   | 15.1 | 0.15 | 20071027 | 45.35136  | 189.31345 | 260.41195 | 8.36215  | 0.0824568 | 3.1617989 | 61  | 6 | 1991-2007 | 0.40 | M-v | 0 | MPC | 122695 2002 CG <sub>1</sub>   |
| 2002 CL <sub>4</sub>   | 17.0 | 0.15 | 20071027 | 8.58853   | 245.93553 | 127.72728 | 5.97870  | 0.2449837 | 2.2042249 | 104 | 5 | 1997-2007 | 0.53 | M-v | 1 | MPC | 128744 2002 CL <sub>4</sub>   |
| 2002 CE <sub>5</sub>   | 14.7 | 0.15 | 20071027 | 108.40648 | 53.07970  | 331.29865 | 8.44953  | 0.0971646 | 3.1596842 | 79  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 112797 2002 CE <sub>5</sub>   |
| 2002 CO <sub>9</sub>   | 17.7 | 0.15 | 20071027 | 358.93138 | 280.55011 | 128.22791 | 4.29708  | 0.1775248 | 2.1630379 | 76  | 4 | 1997-2007 | 0.55 | M-v | 1 | MPC | 128744 2002 CO <sub>9</sub>   |
| 2002 CW <sub>10</sub>  | 15.5 | 0.15 | 20071027 | 230.25690 | 140.00849 | 50.42665  | 26.17983 | 0.1453410 | 2.2527093 | 125 | 3 | 2002-2007 | 0.63 | M-v | 2 | MPC | 128744 2002 CW <sub>10</sub>  |
| 2002 CZ <sub>11</sub>  | 16.3 | 0.15 | 20071027 | 137.17572 | 251.61957 | 14.55166  | 4.61694  | 0.0131171 | 2.1944526 | 112 | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128744 2002 CZ <sub>11</sub>  |
| 2002 CH <sub>12</sub>  | 16.5 | 0.15 | 20071027 | 18.18419  | 232.21537 | 139.72069 | 5.27000  | 0.1728939 | 2.1970475 | 118 | 5 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128744 2002 CH <sub>12</sub>  |
| 2002 CO <sub>17</sub>  | 15.4 | 0.15 | 20071027 | 21.28068  | 101.72278 | 355.80348 | 4.50281  | 0.1606523 | 3.2024467 | 95  | 6 | 1994-2007 | 0.52 | M-v | 0 | MPC | 110855 2002 CO <sub>17</sub>  |
| 2002 CJ <sub>18</sub>  | 16.2 | 0.15 | 20071027 | 262.92721 | 81.59131  | 71.17383  | 8.12901  | 0.0167959 | 2.1900820 | 113 | 5 | 1996-2007 | 0.48 | M-v | 2 | MPC | 128744 2002 CJ <sub>18</sub>  |
| 2002 CW <sub>19</sub>  | 15.2 | 0.15 | 20071027 | 54.08348  | 90.98760  | 344.67630 | 8.79897  | 0.0871496 | 3.1710407 | 80  | 5 | 1960-2007 | 0.49 | M-v | 0 | MPC | 112797 2002 CW <sub>19</sub>  |
| 2002 CE <sub>28</sub>  | 16.5 | 0.15 | 20071027 | 328.31792 | 41.07072  | 15.85676  | 5.47583  | 0.1933030 | 2.1895667 | 154 | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128744 2002 CE <sub>28</sub>  |
| 2002 CT <sub>28</sub>  | 16.6 | 0.15 | 20071027 | 163.17359 | 190.25734 | 9.06755   | 6.09508  | 0.0827557 | 2.3193054 | 56  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128745 2002 CT <sub>28</sub>  |
| 2002 CZ <sub>33</sub>  | 14.9 | 0.15 | 20071027 | 303.66908 | 111.01384 | 101.58587 | 11.56278 | 0.0646211 | 3.0773844 | 51  | 5 | 2002-2007 | 0.76 | M-v | 1 | MPC | 117992 2002 CZ <sub>33</sub>  |
| 2002 CL <sub>34</sub>  | 17.1 | 0.15 | 20071027 | 306.72549 | 95.22166  | 343.65663 | 7.33589  | 0.1199356 | 2.2151559 | 89  | 4 | 1991-2007 | 0.58 | M-v | 1 | MPC | 126609 2002 CL <sub>34</sub>  |
| 2002 CE <sub>35</sub>  | 16.4 | 0.15 | 20071027 | 178.80425 | 176.98038 | 9.77625   | 6.55259  | 0.1134239 | 2.3317363 | 66  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128745 2002 CE <sub>35</sub>  |
| 2002 CK <sub>49</sub>  | 15.1 | 0.15 | 20071027 | 347.11354 | 9.97993   | 158.98011 | 17.02388 | 0.1584100 | 3.1394845 | 54  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 113877 2002 CK <sub>49</sub>  |
| 2002 CP <sub>49</sub>  | 15.6 | 0.15 | 20071027 | 312.23431 | 203.37730 | 12.01205  | 0.53771  | 0.1191267 | 3.0888925 | 66  | 7 | 1997-2007 | 0.48 | M-v | 0 | MPC | 112798 2002 CP <sub>49</sub>  |
| 2002 CX <sub>49</sub>  | 15.7 | 0.15 | 20071027 | 37.91403  | 282.14047 | 164.75901 | 13.60258 | 0.2821382 | 3.1523092 | 78  | 4 | 2000-2007 | 0.52 | M-v | 1 | MPC | 112798 2002 CX <sub>49</sub>  |
| 2002 CD <sub>50</sub>  | 16.5 | 0.15 | 20071027 | 184.10960 | 317.59654 | 260.80578 | 4.79635  | 0.1315352 | 2.2778978 | 115 | 6 | 1999-2007 | 0.50 | M-v | 1 | MPC | 128745 2002 CD <sub>50</sub>  |
| 2002 CQ <sub>51</sub>  | 17.2 | 0.15 | 20071027 | 306.27200 | 150.51744 | 321.38055 | 2.77852  | 0.1239918 | 2.1820972 | 101 | 4 | 1994-2007 | 0.54 | M-v | 1 | MPC | 128745 2002 CQ <sub>51</sub>  |
| 2002 CT <sub>51</sub>  | 16.8 | 0.15 | 20071027 | 241.35877 | 32.44923  | 150.71407 | 3.19971  | 0.1218015 | 2.2033191 | 87  | 4 | 2002-2007 | 0.57 | M-v | 2 | MPC | 128745 2002 CT <sub>51</sub>  |
| 2002 CP <sub>54</sub>  | 17.2 | 0.15 | 20071027 | 275.11279 | 317.19034 | 180.40505 | 5.52937  | 0.0865418 | 2.2088719 | 79  | 5 | 1992-2007 | 0.58 | M-v | 1 | MPC | 128745 2002 CP <sub>54</sub>  |
| 2002 CW <sub>54</sub>  | 16.8 | 0.15 | 20071027 | 13.39761  | 145.76669 | 263.41855 | 2.34286  | 0.1411159 | 2.1602887 | 69  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 110856 2002 CW <sub>54</sub>  |
| 2002 CC <sub>57</sub>  | 16.5 | 0.15 | 20071027 | 332.58759 | 285.39165 | 157.06380 | 5.34141  | 0.0790451 | 2.1970905 | 120 | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128745 2002 CC <sub>57</sub>  |
| 2002 CO <sub>64</sub>  | 15.1 | 0.15 | 20071027 | 20.05974  | 32.00395  | 98.50502  | 11.62315 | 0.1793203 | 3.1464995 | 66  | 3 | 2002-2007 | 0.43 | M-v | 1 | MPC | 116201 2002 CO <sub>64</sub>  |
| 2002 CR <sub>65</sub>  | 17.1 | 0.15 | 20071027 | 257.00048 | 91.95598  | 65.63393  | 7.61260  | 0.0886192 | 2.2099960 | 35  | 2 | 2002-2007 | 0.41 | M-v | 3 | MPC | 127922 2002 CR <sub>65</sub>  |
| 2002 CP <sub>77</sub>  | 15.5 | 0.15 | 20071027 | 231.79173 | 319.96035 | 328.99874 | 2.98005  | 0.0453634 | 3.1199037 | 72  | 6 | 1999-2007 | 0.47 | M-v | 0 | MPC | 114653 2002 CP <sub>77</sub>  |
| 2002 CV <sub>81</sub>  | 15.9 | 0.15 | 20071027 | 7.10149   | 62.37319  | 338.05155 | 5.31513  | 0.1317656 | 2.1911154 | 144 | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128745 2002 CV <sub>81</sub>  |
| 2002 CP <sub>87</sub>  | 17.5 | 0.15 | 20071027 | 141.26874 | 176.37175 | 84.92960  | 3.41728  | 0.0658197 | 2.2355282 | 53  | 7 | 1999-2007 | 0.47 | M-v | 0 | MPC | 128745 2002 CP <sub>87</sub>  |
| 2002 CO <sub>97</sub>  | 16.7 | 0.15 | 20071027 | 188.08370 | 120.89493 | 108.25426 | 3.80360  | 0.1113332 | 2.2422630 | 57  | 5 | 1999-2007 | 0.61 | M-v | 1 | MPC | 128745 2002 CO <sub>97</sub>  |
| 2002 CS <sub>97</sub>  | 17.1 | 0.15 | 20071027 | 338.12455 | 85.44050  | 350.89906 | 6.02548  | 0.1157875 | 2.1895517 | 73  | 4 | 1997-2007 | 0.62 | M-v | 1 | MPC | 128745 2002 CS <sub>97</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 CT <sub>99</sub>  | 16.8 | 0.15 | 20071027 | 256.10046 | 158.47919 | 352.95807 | 7.61405  | 0.0393464 | 2.2411656 | 100 | 3 | 2002-2007 | 0.60 | M-v | 3 | MPC | 127923 2002 CT <sub>99</sub>  |
| 2002 CW <sub>104</sub> | 16.3 | 0.15 | 20071027 | 201.08756 | 221.73620 | 2.24632   | 7.11317  | 0.0576537 | 2.2267349 | 122 | 4 | 2002-2007 | 0.61 | M-v | 2 | MPC | 128745 2002 CW <sub>104</sub> |
| 2002 CP <sub>109</sub> | 17.3 | 0.15 | 20071027 | 275.13110 | 148.22705 | 18.64624  | 3.52582  | 0.0174322 | 2.1590404 | 52  | 6 | 1996-2007 | 0.65 | M-v | 1 | MPC | 102074 2002 CP <sub>109</sub> |
| 2002 CY <sub>113</sub> | 16.8 | 0.15 | 20071027 | 118.91972 | 223.70160 | 74.90837  | 2.24892  | 0.0410614 | 2.1969789 | 76  | 4 | 2002-2007 | 0.58 | M-v | 3 | MPC | 128745 2002 CY <sub>113</sub> |
| 2002 CL <sub>118</sub> | 15.2 | 0.15 | 20071027 | 275.19073 | 83.58844  | 166.49319 | 4.84945  | 0.0862759 | 3.2433119 | 80  | 5 | 1998-2007 | 0.50 | M-v | 1 | MPC | 114654 2002 CL <sub>118</sub> |
| 2002 CP <sub>119</sub> | 17.5 | 0.15 | 20071027 | 228.46925 | 340.93727 | 203.44014 | 2.65289  | 0.1004021 | 2.1934445 | 73  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128746 2002 CP <sub>119</sub> |
| 2002 CK <sub>124</sub> | 17.3 | 0.15 | 20071027 | 159.98584 | 312.83195 | 317.24231 | 3.06537  | 0.1369399 | 2.1807529 | 50  | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 102075 2002 CK <sub>124</sub> |
| 2002 CG <sub>127</sub> | 15.0 | 0.15 | 20071027 | 55.26800  | 277.43771 | 153.36443 | 5.99947  | 0.1555402 | 3.1571440 | 99  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 112799 2002 CG <sub>127</sub> |
| 2002 CK <sub>132</sub> | 14.5 | 0.15 | 20071027 | 316.60271 | 44.60698  | 178.71548 | 10.38848 | 0.1500666 | 3.1489284 | 79  | 3 | 2002-2007 | 0.52 | M-v | 3 | MPC | 90148 2002 CK <sub>132</sub>  |
| 2002 CV <sub>133</sub> | 16.6 | 0.15 | 20071027 | 255.37098 | 189.30409 | 343.37976 | 4.56897  | 0.1128173 | 2.2142374 | 111 | 3 | 2002-2007 | 0.49 | M-v | 3 | MPC | 128746 2002 CV <sub>133</sub> |
| 2002 CC <sub>137</sub> | 14.6 | 0.15 | 20071027 | 249.76980 | 108.39296 | 148.19607 | 22.92457 | 0.0226421 | 3.1137562 | 34  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 85439 2002 CC <sub>137</sub>  |
| 2002 CF <sub>144</sub> | 16.5 | 0.15 | 20071027 | 345.70894 | 247.51949 | 183.71807 | 3.32142  | 0.0906755 | 2.1839123 | 119 | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128746 2002 CF <sub>144</sub> |
| 2002 CH <sub>149</sub> | 17.7 | 0.15 | 20071027 | 296.07369 | 40.14770  | 57.35524  | 1.32475  | 0.1121425 | 2.2221044 | 70  | 5 | 1992-2007 | 0.49 | M-v | 1 | MPC | 128746 2002 CH <sub>149</sub> |
| 2002 CT <sub>161</sub> | 17.5 | 0.15 | 20071027 | 197.22592 | 161.43906 | 10.81786  | 4.64060  | 0.1266345 | 2.3132645 | 42  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 126611 2002 CT <sub>161</sub> |
| 2002 CT <sub>164</sub> | 16.2 | 0.15 | 20071027 | 116.24589 | 196.90657 | 73.27804  | 6.11308  | 0.1483094 | 2.2913421 | 99  | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128746 2002 CT <sub>164</sub> |
| 2002 CA <sub>167</sub> | 16.1 | 0.15 | 20071027 | 186.27445 | 209.65110 | 2.87299   | 5.84027  | 0.0791644 | 2.2663131 | 61  | 2 | 2002-2007 | 0.52 | M-v | 4 | MPC | 127924 2002 CA <sub>167</sub> |
| 2002 CA <sub>172</sub> | 17.0 | 0.15 | 20071027 | 223.60079 | 153.33713 | 18.53241  | 5.31842  | 0.1189278 | 2.2615384 | 58  | 2 | 2002-2007 | 0.40 | M-v | 3 | MPC | 128746 2002 CA <sub>172</sub> |
| 2002 CC <sub>174</sub> | 16.5 | 0.15 | 20071027 | 174.39265 | 171.37239 | 53.41477  | 3.51403  | 0.1123896 | 2.2843804 | 56  | 3 | 2002-2007 | 0.45 | M-v | 4 | MPC | 128746 2002 CC <sub>174</sub> |
| 2002 CS <sub>175</sub> | 15.1 | 0.15 | 20071027 | 145.91712 | 27.21340  | 316.03912 | 9.16554  | 0.0176813 | 3.1312346 | 52  | 5 | 2002-2007 | 0.63 | M-v | 1 | MPC | 112800 2002 CS <sub>175</sub> |
| 2002 CA <sub>182</sub> | 15.3 | 0.15 | 20071027 | 130.40643 | 220.61875 | 134.46458 | 11.12511 | 0.0935167 | 3.2071836 | 57  | 6 | 2000-2007 | 0.50 | M-v | 0 | MPC | 112800 2002 CA <sub>182</sub> |
| 2002 CN <sub>183</sub> | 16.6 | 0.15 | 20071027 | 115.59192 | 155.50872 | 136.63116 | 5.23846  | 0.0802883 | 2.2096004 | 47  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128746 2002 CN <sub>183</sub> |
| 2002 CF <sub>200</sub> | 15.3 | 0.15 | 20071027 | 73.49666  | 87.22155  | 340.25757 | 8.18819  | 0.0855347 | 3.1633300 | 55  | 4 | 2002-2007 | 0.43 | M-v | 0 | MPC | 112800 2002 CF <sub>200</sub> |
| 2002 CU <sub>211</sub> | 15.7 | 0.15 | 20071027 | 258.72441 | 284.22021 | 2.24368   | 1.11631  | 0.0877722 | 3.0006658 | 67  | 5 | 1999-2007 | 0.37 | M-v | 0 | MPC | 117997 2002 CU <sub>211</sub> |
| 2002 CW <sub>215</sub> | 15.6 | 0.15 | 20071027 | 27.37072  | 244.67760 | 350.56162 | 8.70240  | 0.1637514 | 2.7571248 | 48  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 119079 2002 CW <sub>215</sub> |
| 2002 CW <sub>216</sub> | 16.3 | 0.15 | 20071027 | 137.21752 | 258.57432 | 5.65711   | 6.86179  | 0.0920125 | 2.2832115 | 46  | 3 | 1993-2007 | 0.49 | M-v | 3 | MPC | 29867 2002 CW <sub>216</sub>  |
| 2002 CL <sub>217</sub> | 16.3 | 0.15 | 20071027 | 24.02426  | 26.25423  | 11.29871  | 4.42777  | 0.1372841 | 2.1795698 | 80  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 77586 2002 CL <sub>217</sub>  |
| 2002 CG <sub>221</sub> | 16.7 | 0.15 | 20071027 | 304.84525 | 95.65022  | 358.67109 | 5.49544  | 0.1735167 | 2.2377202 | 143 | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128747 2002 CG <sub>221</sub> |
| 2002 CF <sub>241</sub> | 16.2 | 0.15 | 20071027 | 257.78149 | 251.72781 | 234.23660 | 2.57291  | 0.1150574 | 2.3000039 | 105 | 3 | 2002-2007 | 0.58 | M-v | 4 | MPC | 126612 2002 CF <sub>241</sub> |
| 2002 CH <sub>241</sub> | 17.9 | 0.15 | 20071027 | 305.06437 | 226.50809 | 236.10416 | 4.84932  | 0.1307411 | 2.2021982 | 48  | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128747 2002 CH <sub>241</sub> |
| 2002 CY <sub>244</sub> | 16.5 | 0.15 | 20071027 | 355.44396 | 28.86036  | 5.55946   | 6.86031  | 0.1283200 | 2.2111673 | 139 | 2 | 2002-2007 | 0.52 | M-v | 3 | MPC | 128747 2002 CY <sub>244</sub> |
| 2002 CV <sub>245</sub> | 15.4 | 0.15 | 20071027 | 11.84600  | 329.38042 | 149.43013 | 11.51226 | 0.1371082 | 3.1793020 | 53  | 6 | 2000-2007 | 0.51 | M-v | 0 | MPC | 112801 2002 CV <sub>245</sub> |
| 2002 CP <sub>252</sub> | 15.6 | 0.15 | 20071027 | 66.43004  | 281.44668 | 148.85841 | 9.89562  | 0.0671982 | 3.1304259 | 45  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 112801 2002 CP <sub>252</sub> |
| 2002 CU <sub>253</sub> | 16.4 | 0.15 | 20071027 | 272.17411 | 73.12300  | 47.48189  | 5.42339  | 0.0836562 | 2.2473336 | 139 | 3 | 2002-2007 | 0.52 | M-v | 3 | MPC | 128747 2002 CU <sub>253</sub> |
| 2002 CU <sub>258</sub> | 14.6 | 0.15 | 20071027 | 235.92243 | 121.51412 | 145.61781 | 16.47394 | 0.0588216 | 3.1502880 | 43  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 126612 2002 CU <sub>258</sub> |
| 2002 CJ <sub>291</sub> | 16.6 | 0.15 | 20071027 | 335.61319 | 46.76103  | 2.02867   | 6.01193  | 0.1402665 | 2.2496230 | 96  | 2 | 2002-2007 | 0.54 | M-v | 4 | MPC | 126612 2002 CJ <sub>291</sub> |
| 2002 CQ <sub>292</sub> | 16.3 | 0.15 | 20071027 | 15.01906  | 49.51978  | 318.63139 | 7.43955  | 0.2628644 | 2.2153212 | 122 | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128747 2002 CQ <sub>292</sub> |
| 2002 CZ <sub>294</sub> | 15.3 | 0.15 | 20071027 | 2.55119   | 147.66862 | 344.89482 | 12.04111 | 0.1584260 | 3.1310908 | 47  | 6 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128747 2002 CZ <sub>294</sub> |
| 2002 CH <sub>301</sub> | 15.4 | 0.15 | 20071027 | 25.99076  | 158.83146 | 321.12789 | 4.09079  | 0.1175373 | 3.2232172 | 44  | 6 | 2000-2007 | 0.50 | M-v | 1 | MPC | 117999 2002 CH <sub>301</sub> |
| 2002 CL <sub>302</sub> | 15.7 | 0.15 | 20071027 | 0.01516   | 359.50673 | 152.11118 | 2.48712  | 0.1175579 | 3.0814450 | 49  | 5 | 2002-2007 | 0.46 | M-v | 1 | MPC | 121777 2002 CL <sub>302</sub> |
| 2002 CL <sub>307</sub> | 16.3 | 0.15 | 20071027 | 346.95530 | 139.15512 | 257.71222 | 4.40547  | 0.1612110 | 2.2216622 | 93  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128747 2002 CL <sub>307</sub> |
| 2002 CU <sub>310</sub> | 16.6 | 0.15 | 20071027 | 2.17871   | 314.00881 | 109.10757 | 6.36493  | 0.1231532 | 2.1758549 | 77  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 87532 2002 CU <sub>310</sub>  |
| 2002 DX <sub>2</sub>   | 16.6 | 0.15 | 20071027 | 154.59581 | 204.09535 | 35.46260  | 4.61869  | 0.1122628 | 2.2860434 | 42  | 2 | 2002-2007 | 0.37 | M-v | 4 | MPC | 127926 2002 DX <sub>2</sub>   |
| 2002 DM <sub>10</sub>  | 17.2 | 0.15 | 20071027 | 159.94573 | 285.20992 | 321.66816 | 2.78183  | 0.1273424 | 2.2791310 | 69  | 5 | 1993-2007 | 0.45 | M-v | 0 | MPC | 128747 2002 DM <sub>10</sub>  |
| 2002 DR <sub>15</sub>  | 16.6 | 0.15 | 20071027 | 148.08591 | 307.53040 | 303.07585 | 5.15076  | 0.1406617 | 2.2872006 | 52  | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 128747 2002 DR <sub>15</sub>  |
| 2002 DX <sub>15</sub>  | 15.5 | 0.15 | 20071027 | 44.53920  | 279.62273 | 160.44317 | 25.82125 | 0.2730810 | 3.1880487 | 31  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 108239 2002 DX <sub>15</sub>  |
| 2002 EW <sub>3</sub>   | 17.2 | 0.15 | 20071027 | 173.86754 | 270.27990 | 347.74102 | 3.54311  | 0.1440549 | 2.2337677 | 49  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 110863 2002 EW <sub>3</sub>   |
| 2002 EH <sub>4</sub>   | 15.2 | 0.15 | 20071027 | 327.34937 | 185.95091 | 6.79705   | 0.29100  | 0.0881532 | 3.2373051 | 66  | 5 | 2002-2007 | 0.39 | M-v | 0 | MPC | 112802 2002 EH <sub>4</sub>   |
| 2002 EY <sub>5</sub>   | 16.6 | 0.15 | 20071027 | 331.32595 | 74.02437  | 9.03952   | 7.04216  | 0.0945733 | 2.2018655 | 83  | 3 | 2002-2007 | 0.58 | M-v | 3 | MPC | 128747 2002 EY <sub>5</sub>   |
| 2002 EC <sub>12</sub>  | 16.8 | 0.15 | 20071027 | 215.80307 | 125.53277 | 70.72212  | 2.18911  | 0.1655991 | 2.2695541 | 94  | 5 | 1995-2007 | 0.48 | M-v | 1 | MPC | 128747 2002 EC <sub>12</sub>  |
| 2002 EN <sub>22</sub>  | 16.6 | 0.15 | 20071027 | 195.57856 | 103.75727 | 117.09173 | 5.75140  | 0.1616168 | 2.2671293 | 76  | 4 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128747 2002 EN <sub>22</sub>  |
| 2002 ES <sub>34</sub>  | 17.6 | 0.15 | 20071027 | 302.50642 | 34.09934  | 93.23654  | 2.96848  | 0.0826462 | 2.1917939 | 51  | 4 | 2000-2007 | 0.71 | M-v | 2 | MPC | 128747 2002 ES <sub>34</sub>  |
| 2002 EY <sub>34</sub>  | 16.2 | 0.15 | 20071027 | 194.11480 | 158.92001 | 35.18023  | 6.95519  | 0.0647515 | 2.3168335 | 76  | 2 | 2002-2007 | 0.52 | M-v | 3 | MPC | 128747 2002 EY <sub>34</sub>  |
| 2002 EL <sub>40</sub>  | 16.8 | 0.15 | 20071027 | 313.53214 | 248.32523 | 239.55285 | 0.73551  | 0.0392113 | 2.1615439 | 71  | 5 | 2000-2007 | 0.52 | M-v | 1 | MPC | 104194 2002 EL <sub>40</sub>  |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 EZ <sub>41</sub>  | 17.1 | 0.15 | 20071027 | 338.84789 | 210.48648 | 242.29644 | 2.55300  | 0.0742797 | 2.1586403 | 87  | 5 | 1991-2007 | 0.54 | M-v | 1 | MPC | 77588 2002 EZ <sub>41</sub>   |
| 2002 EM <sub>56</sub>  | 17.0 | 0.15 | 20071027 | 8.47923   | 177.67843 | 235.83527 | 1.58426  | 0.1265003 | 2.1619959 | 90  | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 72554 2002 EM <sub>56</sub>   |
| 2002 ES <sub>57</sub>  | 16.3 | 0.15 | 20071027 | 350.12302 | 108.05965 | 283.62019 | 3.67737  | 0.2323419 | 2.2311815 | 181 | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128748 2002 ES <sub>57</sub>  |
| 2002 EQ <sub>58</sub>  | 17.1 | 0.15 | 20071027 | 170.05449 | 34.14556  | 222.42759 | 2.45406  | 0.0986880 | 2.2216030 | 52  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 77588 2002 EQ <sub>58</sub>   |
| 2002 EH <sub>60</sub>  | 16.0 | 0.15 | 20071027 | 36.37045  | 196.80524 | 307.35415 | 1.89837  | 0.1055178 | 3.0579105 | 75  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 119574 2002 EH <sub>60</sub>  |
| 2002 EX <sub>60</sub>  | 16.2 | 0.15 | 20071027 | 129.19593 | 341.69699 | 315.19079 | 4.68640  | 0.1725611 | 2.2477609 | 91  | 4 | 2002-2007 | 0.48 | M-v | 2 | MPC | 77588 2002 EX <sub>60</sub>   |
| 2002 EL <sub>62</sub>  | 16.8 | 0.15 | 20071027 | 283.35059 | 261.00975 | 196.81149 | 4.66428  | 0.1201374 | 2.2940757 | 54  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 126614 2002 EL <sub>62</sub>  |
| 2002 ES <sub>62</sub>  | 16.2 | 0.15 | 20071027 | 47.08075  | 187.21362 | 209.93330 | 3.98970  | 0.1900163 | 2.1356669 | 44  | 5 | 1991-2007 | 0.50 | M-v | 1 | MPC | 77588 2002 ES <sub>62</sub>   |
| 2002 EP <sub>67</sub>  | 16.4 | 0.15 | 20071027 | 256.21458 | 266.08800 | 223.30515 | 2.21122  | 0.1474439 | 2.3003749 | 97  | 3 | 2002-2007 | 0.52 | M-v | 4 | MPC | 128748 2002 EP <sub>67</sub>  |
| 2002 EG <sub>71</sub>  | 15.9 | 0.15 | 20071027 | 130.66526 | 298.51990 | 347.18987 | 6.61861  | 0.1156319 | 2.2981340 | 150 | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 77588 2002 EG <sub>71</sub>   |
| 2002 EX <sub>71</sub>  | 16.6 | 0.15 | 20071027 | 142.01318 | 295.64666 | 333.39926 | 4.89960  | 0.1102823 | 2.3055437 | 36  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 74154 2002 EX <sub>71</sub>   |
| 2002 EZ <sub>75</sub>  | 17.2 | 0.15 | 20071027 | 244.45530 | 306.85980 | 226.20783 | 7.69290  | 0.0170211 | 2.2363588 | 56  | 3 | 2000-2007 | 0.56 | M-v | 3 | MPC | 128748 2002 EZ <sub>75</sub>  |
| 2002 EK <sub>79</sub>  | 16.3 | 0.15 | 20071027 | 147.04742 | 18.05798  | 258.97537 | 4.37038  | 0.0359544 | 2.2343775 | 44  | 5 | 2000-2007 | 0.60 | M-v | 1 | MPC | 128748 2002 EK <sub>79</sub>  |
| 2002 EE <sub>80</sub>  | 16.9 | 0.15 | 20071027 | 166.73768 | 222.11201 | 5.76387   | 6.14193  | 0.0837257 | 2.2980486 | 65  | 5 | 1993-2007 | 0.58 | M-v | 1 | MPC | 128748 2002 EE <sub>80</sub>  |
| 2002 EV <sub>82</sub>  | 16.9 | 0.15 | 20071027 | 118.37239 | 322.44766 | 324.38362 | 1.81891  | 0.2010970 | 2.3403231 | 60  | 7 | 1998-2007 | 0.41 | M-v | 0 | MPC | 128748 2002 EV <sub>82</sub>  |
| 2002 EA <sub>85</sub>  | 16.1 | 0.15 | 20071027 | 149.07852 | 236.49814 | 28.07559  | 4.35466  | 0.1151791 | 2.2892997 | 62  | 4 | 2002-2007 | 0.61 | M-v | 1 | MPC | 128748 2002 EA <sub>85</sub>  |
| 2002 ED <sub>85</sub>  | 16.6 | 0.15 | 20071027 | 170.01001 | 125.62710 | 145.23626 | 1.29036  | 0.1847038 | 2.2421320 | 112 | 6 | 1979-2007 | 0.57 | M-v | 1 | MPC | 108241 2002 ED <sub>85</sub>  |
| 2002 ED <sub>88</sub>  | 15.8 | 0.15 | 20071027 | 123.99439 | 249.35338 | 22.07888  | 7.10315  | 0.0817134 | 2.3519460 | 97  | 3 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128748 2002 ED <sub>88</sub>  |
| 2002 EW <sub>89</sub>  | 16.6 | 0.15 | 20071027 | 178.06961 | 310.58147 | 308.90537 | 5.70149  | 0.0967787 | 2.2077066 | 94  | 5 | 2002-2007 | 0.54 | M-v | 0 | MPC | 104195 2002 EW <sub>89</sub>  |
| 2002 ES <sub>90</sub>  | 16.6 | 0.15 | 20071027 | 126.78851 | 187.99307 | 114.18637 | 1.79785  | 0.0265874 | 2.2188568 | 57  | 4 | 2002-2007 | 0.57 | M-v | 2 | MPC | 128748 2002 ES <sub>90</sub>  |
| 2002 EF <sub>91</sub>  | 16.4 | 0.15 | 20071027 | 175.78042 | 108.24496 | 125.86911 | 3.30953  | 0.1661327 | 2.3054201 | 59  | 6 | 1993-2007 | 0.53 | M-v | 1 | MPC | 128748 2002 EF <sub>91</sub>  |
| 2002 EL <sub>93</sub>  | 16.4 | 0.15 | 20071027 | 135.82821 | 261.75323 | 358.17746 | 4.87575  | 0.1696464 | 2.3174341 | 85  | 5 | 1995-2007 | 0.48 | M-v | 0 | MPC | 128748 2002 EL <sub>93</sub>  |
| 2002 EN <sub>95</sub>  | 15.2 | 0.15 | 20071027 | 271.03813 | 97.79254  | 163.32047 | 11.33158 | 0.0287214 | 3.1322205 | 65  | 5 | 2002-2007 | 0.61 | M-v | 0 | MPC | 114658 2002 EN <sub>95</sub>  |
| 2002 EX <sub>97</sub>  | 16.4 | 0.15 | 20071027 | 166.95404 | 189.42650 | 17.90604  | 11.62732 | 0.1646436 | 2.3871117 | 77  | 2 | 2002-2007 | 0.40 | M-v | 3 | MPC | 128749 2002 EX <sub>97</sub>  |
| 2002 EJ <sub>100</sub> | 16.8 | 0.15 | 20071027 | 46.30148  | 5.82572   | 312.05064 | 2.20017  | 0.1839266 | 2.3633633 | 80  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128749 2002 EJ <sub>100</sub> |
| 2002 EO <sub>106</sub> | 17.5 | 0.15 | 20071027 | 204.68013 | 139.33252 | 102.02666 | 5.40290  | 0.2097731 | 2.2186899 | 47  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 110866 2002 EO <sub>106</sub> |
| 2002 EJ <sub>111</sub> | 16.4 | 0.15 | 20071027 | 262.58619 | 102.57567 | 53.77090  | 7.08308  | 0.0966430 | 2.2469941 | 102 | 3 | 2002-2007 | 0.63 | M-v | 3 | MPC | 128749 2002 EJ <sub>111</sub> |
| 2002 EX <sub>119</sub> | 17.2 | 0.15 | 20071027 | 154.91653 | 16.56230  | 229.95877 | 1.86138  | 0.1249967 | 2.3181185 | 33  | 3 | 2002-2007 | 0.42 | M-v | 3 | MPC | 128749 2002 EX <sub>119</sub> |
| 2002 EJ <sub>126</sub> | 17.6 | 0.15 | 20071027 | 272.04893 | 218.42811 | 286.10485 | 4.35265  | 0.1237202 | 2.2065041 | 41  | 3 | 2002-2007 | 0.40 | M-v | 3 | MPC | 127928 2002 EJ <sub>126</sub> |
| 2002 EY <sub>126</sub> | 16.7 | 0.15 | 20071027 | 275.00232 | 287.21792 | 214.29439 | 5.73860  | 0.0677108 | 2.2200304 | 44  | 2 | 2002-2007 | 0.48 | M-v | 4 | MPC | 127928 2002 EY <sub>126</sub> |
| 2002 EA <sub>129</sub> | 17.4 | 0.15 | 20071027 | 233.85716 | 73.13509  | 136.28709 | 2.91570  | 0.0681897 | 2.1984816 | 69  | 4 | 2002-2007 | 0.56 | M-v | 2 | MPC | 104195 2002 EA <sub>129</sub> |
| 2002 EB <sub>144</sub> | 17.0 | 0.15 | 20071027 | 11.68186  | 331.43667 | 76.40191  | 1.67854  | 0.0416820 | 2.1986209 | 65  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128749 2002 EB <sub>144</sub> |
| 2002 EP <sub>145</sub> | 16.8 | 0.15 | 20071027 | 257.37400 | 132.72723 | 6.15901   | 3.15846  | 0.1010232 | 2.3157994 | 62  | 3 | 2002-2007 | 0.51 | M-v | 4 | MPC | 128749 2002 EP <sub>145</sub> |
| 2002 EC <sub>148</sub> | 16.1 | 0.15 | 20071027 | 137.93192 | 294.51369 | 153.52133 | 2.48297  | 0.0313654 | 2.8867558 | 53  | 4 | 1999-2007 | 0.50 | M-v | 1 | MPC | 119576 2002 EC <sub>148</sub> |
| 2002 EJ <sub>155</sub> | 17.0 | 0.15 | 20071027 | 259.90457 | 103.33697 | 41.97039  | 6.78868  | 0.0568208 | 2.2536304 | 54  | 4 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128749 2002 EJ <sub>155</sub> |
| 2002 EQ <sub>155</sub> | 16.7 | 0.15 | 20071027 | 196.73316 | 334.67558 | 223.05392 | 5.75329  | 0.0974330 | 2.3007818 | 42  | 3 | 1993-2007 | 0.42 | M-v | 3 | MPC | 128749 2002 EQ <sub>155</sub> |
| 2002 EY <sub>160</sub> | 16.3 | 0.15 | 20071027 | 153.46838 | 163.24773 | 95.76116  | 8.26972  | 0.1020841 | 2.2985578 | 45  | 4 | 2002-2007 | 0.69 | M-v | 1 | MPC | 128749 2002 EY <sub>160</sub> |
| 2002 EB <sub>162</sub> | 17.7 | 0.15 | 20071027 | 294.85101 | 75.58439  | 51.01957  | 7.39491  | 0.0794387 | 2.2207413 | 38  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 127928 2002 EB <sub>162</sub> |
| 2002 FH <sub>1</sub>   | 17.5 | 0.15 | 20071027 | 43.78775  | 247.59744 | 129.54392 | 3.01514  | 0.2251608 | 2.1641234 | 48  | 4 | 2002-2007 | 0.33 | M-v | 2 | MPC | 102089 2002 FH <sub>1</sub>   |
| 2002 FP <sub>2</sub>   | 17.3 | 0.15 | 20071027 | 228.50551 | 25.41519  | 179.49361 | 4.84082  | 0.1046005 | 2.2450780 | 57  | 4 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128750 2002 FP <sub>2</sub>   |
| 2002 FC <sub>7</sub>   | 15.1 | 0.15 | 20071027 | 0.07528   | 138.40107 | 16.49073  | 26.61928 | 0.1053549 | 3.2302583 | 38  | 3 | 2002-2007 | 0.42 | M-v | 2 | MPC | 97587 2002 FC <sub>7</sub>    |
| 2002 FZ <sub>8</sub>   | 16.3 | 0.15 | 20071027 | 178.11466 | 3.71983   | 211.62800 | 6.64566  | 0.1435851 | 2.3339437 | 113 | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128750 2002 FZ <sub>8</sub>   |
| 2002 FH <sub>13</sub>  | 16.4 | 0.15 | 20071027 | 166.57064 | 178.28324 | 29.77905  | 2.78251  | 0.1408330 | 2.4066853 | 90  | 7 | 1992-2007 | 0.43 | M-v | 1 | MPC | 128750 2002 FH <sub>13</sub>  |
| 2002 FD <sub>15</sub>  | 16.2 | 0.15 | 20071027 | 269.13739 | 89.11513  | 44.82001  | 8.76747  | 0.1083636 | 2.2370185 | 107 | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 128750 2002 FD <sub>15</sub>  |
| 2002 FE <sub>16</sub>  | 16.6 | 0.15 | 20071027 | 142.05704 | 171.60156 | 92.68769  | 8.85783  | 0.1109932 | 2.3110320 | 50  | 5 | 1993-2007 | 0.49 | M-v | 1 | MPC | 128750 2002 FE <sub>16</sub>  |
| 2002 FJ <sub>17</sub>  | 16.3 | 0.15 | 20071027 | 193.00379 | 122.39896 | 96.34004  | 6.06839  | 0.2170153 | 2.2829131 | 50  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 128750 2002 FJ <sub>17</sub>  |
| 2002 FC <sub>21</sub>  | 16.4 | 0.15 | 20071027 | 288.60549 | 63.68728  | 84.48591  | 7.12914  | 0.0315504 | 2.2220795 | 46  | 5 | 2002-2007 | 0.61 | M-v | 2 | MPC | 104196 2002 FC <sub>21</sub>  |
| 2002 FP <sub>21</sub>  | 13.5 | 0.15 | 20071027 | 175.82863 | 253.59651 | 34.11851  | 5.35582  | 0.1502756 | 3.9596214 | 152 | 5 | 2002-2007 | 0.49 | M-v | 0 | MPC | 110868 2002 FP <sub>21</sub>  |
| 2002 FX <sub>21</sub>  | 16.5 | 0.15 | 20071027 | 140.21853 | 284.40957 | 338.56438 | 6.15531  | 0.0807214 | 2.3134410 | 46  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 128750 2002 FX <sub>21</sub>  |
| 2002 FX <sub>23</sub>  | 16.3 | 0.15 | 20071027 | 180.40437 | 225.07243 | 177.18784 | 6.32140  | 0.0928412 | 2.9052765 | 48  | 4 | 1997-2007 | 0.41 | M-v | 3 | MPC | 119576 2002 FX <sub>23</sub>  |
| 2002 FY <sub>23</sub>  | 17.4 | 0.15 | 20071027 | 175.82790 | 113.57745 | 133.63020 | 0.65031  | 0.1594867 | 2.2819309 | 29  | 5 | 2002-2007 | 0.46 | M-v | 1 | MPC | 104196 2002 FY <sub>23</sub>  |
| 2002 FD <sub>25</sub>  | 15.3 | 0.15 | 20071027 | 288.86434 | 240.87810 | 17.26785  | 27.11382 | 0.2085957 | 3.1371936 | 44  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 69323 2002 FD <sub>25</sub>   |
| 2002 FN <sub>25</sub>  | 14.5 | 0.15 | 20071027 | 13.98129  | 112.46947 | 21.12810  | 26.84514 | 0.2493755 | 3.1998793 | 50  | 4 | 1994-2007 | 0.59 | M-v | 1 | MPC | 104196 2002 FN <sub>25</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 FV <sub>26</sub>  | 14.7 | 0.15 | 20071027 | 328.18220 | 103.90234 | 99.18564  | 11.34498 | 0.1854138 | 3.1612163 | 54  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 121778 2002 FV <sub>26</sub>  |
| 2002 FZ <sub>30</sub>  | 15.1 | 0.15 | 20071027 | 41.69761  | 343.52768 | 126.95606 | 17.75428 | 0.1635130 | 3.1926014 | 42  | 5 | 2000-2007 | 0.45 | M-v | 0 | MPC | 70345 2002 FZ <sub>30</sub>   |
| 2002 FC <sub>35</sub>  | 16.8 | 0.15 | 20071027 | 145.66929 | 65.85514  | 191.94959 | 6.63548  | 0.0868279 | 2.3337635 | 53  | 3 | 2002-2007 | 0.36 | M-v | 2 | MPC | 128750 2002 FC <sub>35</sub>  |
| 2002 FB <sub>38</sub>  | 16.6 | 0.15 | 20071027 | 171.92466 | 173.83273 | 39.13317  | 6.88174  | 0.1744800 | 2.3505706 | 57  | 2 | 2002-2007 | 0.50 | M-v | 4 | MPC | 127929 2002 FB <sub>38</sub>  |
| 2002 GC <sub>6</sub>   | 16.5 | 0.15 | 20071027 | 252.95016 | 120.96967 | 44.42201  | 8.31764  | 0.0450677 | 2.2802604 | 56  | 2 | 2002-2007 | 0.44 | M-v | 3 | MPC | 128750 2002 GC <sub>6</sub>   |
| 2002 GK <sub>8</sub>   | 19.7 | 0.15 | 20071027 | 24.25937  | 266.73183 | 47.90335  | 39.00214 | 0.4013360 | 1.8411298 | 72  | 2 | 2002-2007 | 0.48 | M-v | 2 | MPC | 120764 2002 GK <sub>8</sub>   |
| 2002 GF <sub>11</sub>  | 15.4 | 0.15 | 20071027 | 125.25844 | 190.93158 | 83.79895  | 25.68811 | 0.1964361 | 2.4225197 | 57  | 3 | 2002-2007 | 0.59 | M-v | 3 | MPC | 127929 2002 GF <sub>11</sub>  |
| 2002 GR <sub>14</sub>  | 16.2 | 0.15 | 20071027 | 171.45334 | 203.27086 | 29.91939  | 6.05407  | 0.1196518 | 2.2925143 | 65  | 4 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128750 2002 GR <sub>14</sub>  |
| 2002 GB <sub>15</sub>  | 16.7 | 0.15 | 20071027 | 271.55231 | 144.75803 | 12.26381  | 5.33420  | 0.0831359 | 2.2143268 | 66  | 4 | 2000-2007 | 0.65 | M-v | 2 | MPC | 125849 2002 GB <sub>15</sub>  |
| 2002 GW <sub>15</sub>  | 15.3 | 0.15 | 20071027 | 102.58508 | 276.78398 | 34.37039  | 6.28475  | 0.1785141 | 2.3216888 | 119 | 4 | 2002-2007 | 0.59 | M-v | 2 | MPC | 74164 2002 GW <sub>15</sub>   |
| 2002 GD <sub>17</sub>  | 16.4 | 0.15 | 20071027 | 150.42588 | 188.53086 | 69.87868  | 3.59718  | 0.1432091 | 2.3585015 | 97  | 5 | 1996-2007 | 0.46 | M-v | 1 | MPC | 128750 2002 GD <sub>17</sub>  |
| 2002 GY <sub>37</sub>  | 15.8 | 0.15 | 20071027 | 130.41608 | 250.75178 | 20.31788  | 14.99106 | 0.1177767 | 2.3775184 | 82  | 3 | 2002-2007 | 0.59 | M-v | 2 | MPC | 128750 2002 GY <sub>37</sub>  |
| 2002 GR <sub>44</sub>  | 16.3 | 0.15 | 20071027 | 239.10584 | 262.21385 | 253.60954 | 4.25601  | 0.0915686 | 2.3103219 | 59  | 3 | 2002-2007 | 0.55 | M-v | 4 | MPC | 128750 2002 GR <sub>44</sub>  |
| 2002 GM <sub>45</sub>  | 17.6 | 0.15 | 20071027 | 198.13671 | 0.35522   | 224.39246 | 3.11175  | 0.1152103 | 2.2887516 | 54  | 6 | 2000-2007 | 0.47 | M-v | 1 | MPC | 127930 2002 GM <sub>45</sub>  |
| 2002 GW <sub>47</sub>  | 17.3 | 0.15 | 20071027 | 137.50634 | 125.02266 | 140.43806 | 0.30678  | 0.1637963 | 2.3823441 | 49  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128750 2002 GW <sub>47</sub>  |
| 2002 GS <sub>48</sub>  | 17.1 | 0.15 | 20071027 | 77.92632  | 117.72802 | 203.71687 | 4.13161  | 0.0783799 | 2.3563369 | 86  | 5 | 1995-2007 | 0.58 | M-v | 1 | MPC | 128750 2002 GS <sub>48</sub>  |
| 2002 GB <sub>49</sub>  | 17.0 | 0.15 | 20071027 | 268.25497 | 99.67419  | 16.25370  | 6.13223  | 0.1742057 | 2.3302649 | 42  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 126617 2002 GB <sub>49</sub>  |
| 2002 GE <sub>49</sub>  | 17.2 | 0.15 | 20071027 | 300.49740 | 91.64230  | 13.08486  | 4.37009  | 0.1841515 | 2.2709510 | 80  | 3 | 2002-2007 | 0.58 | M-v | 4 | MPC | 128751 2002 GE <sub>49</sub>  |
| 2002 GS <sub>50</sub>  | 15.8 | 0.15 | 20071027 | 99.67250  | 7.25595   | 303.24570 | 7.73093  | 0.1328326 | 2.3177671 | 66  | 4 | 2002-2007 | 0.59 | M-v | 2 | MPC | 74166 2002 GS <sub>50</sub>   |
| 2002 GE <sub>55</sub>  | 16.2 | 0.15 | 20071027 | 154.88544 | 356.89969 | 241.47339 | 6.56958  | 0.0831700 | 2.3485774 | 73  | 6 | 1995-2007 | 0.48 | M-v | 1 | MPC | 128751 2002 GE <sub>55</sub>  |
| 2002 GK <sub>59</sub>  | 16.9 | 0.15 | 20071027 | 187.44108 | 0.45591   | 205.11166 | 1.66319  | 0.1375335 | 2.3684345 | 51  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128751 2002 GK <sub>59</sub>  |
| 2002 GB <sub>69</sub>  | 17.4 | 0.15 | 20071027 | 138.91915 | 226.76374 | 37.93220  | 0.82662  | 0.1881213 | 2.3711963 | 50  | 5 | 1996-2007 | 0.45 | M-v | 1 | MPC | 128751 2002 GB <sub>69</sub>  |
| 2002 GD <sub>71</sub>  | 17.2 | 0.15 | 20071027 | 164.54224 | 70.48026  | 186.80986 | 1.86706  | 0.0543151 | 2.2813783 | 65  | 5 | 2000-2007 | 0.51 | M-v | 0 | MPC | 128751 2002 GD <sub>71</sub>  |
| 2002 GX <sub>71</sub>  | 16.9 | 0.15 | 20071027 | 155.38619 | 158.49620 | 108.85531 | 1.72881  | 0.2085296 | 2.3165818 | 68  | 6 | 1999-2007 | 0.53 | M-v | 1 | MPC | 104197 2002 GX <sub>71</sub>  |
| 2002 GC <sub>77</sub>  | 16.2 | 0.15 | 20071027 | 208.78057 | 81.31144  | 131.08016 | 4.72087  | 0.0423733 | 2.2687002 | 41  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 72601 2002 GC <sub>77</sub>   |
| 2002 GH <sub>77</sub>  | 16.9 | 0.15 | 20071027 | 223.14269 | 100.55982 | 120.60710 | 4.10055  | 0.1062034 | 2.2163839 | 89  | 6 | 1999-2007 | 0.58 | M-v | 1 | MPC | 104197 2002 GH <sub>77</sub>  |
| 2002 GT <sub>77</sub>  | 16.2 | 0.15 | 20071027 | 91.82289  | 140.91739 | 104.80911 | 6.36482  | 0.0461309 | 2.5160765 | 41  | 5 | 2002-2007 | 0.62 | M-v | 1 | MPC | 124356 2002 GT <sub>77</sub>  |
| 2002 GX <sub>78</sub>  | 14.3 | 0.15 | 20071027 | 332.25838 | 112.43525 | 87.65829  | 15.97599 | 0.0961347 | 3.3560630 | 38  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 116211 2002 GX <sub>78</sub>  |
| 2002 GA <sub>80</sub>  | 17.0 | 0.15 | 20071027 | 162.77621 | 172.41786 | 62.45572  | 4.65972  | 0.1842975 | 2.3634336 | 53  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128751 2002 GA <sub>80</sub>  |
| 2002 GX <sub>82</sub>  | 16.2 | 0.15 | 20071027 | 357.40838 | 7.27622   | 65.54327  | 6.95531  | 0.0525477 | 2.2545318 | 49  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 108250 2002 GX <sub>82</sub>  |
| 2002 GM <sub>85</sub>  | 17.9 | 0.15 | 20071027 | 236.57859 | 129.97065 | 49.56025  | 5.35766  | 0.0733022 | 2.2817021 | 41  | 3 | 2000-2007 | 0.36 | M-v | 3 | MPC | 127932 2002 GM <sub>85</sub>  |
| 2002 GS <sub>85</sub>  | 16.4 | 0.15 | 20071027 | 275.85595 | 60.95356  | 65.98474  | 7.36225  | 0.0475488 | 2.3080367 | 41  | 3 | 2002-2007 | 0.51 | M-v | 4 | MPC | 72604 2002 GS <sub>85</sub>   |
| 2002 GG <sub>86</sub>  | 16.7 | 0.15 | 20071027 | 180.50963 | 161.95448 | 57.95930  | 7.87801  | 0.0601562 | 2.3484666 | 29  | 2 | 2002-2007 | 0.56 | M-v | 4 | MPC | 127932 2002 GG <sub>86</sub>  |
| 2002 GL <sub>86</sub>  | 16.8 | 0.15 | 20071027 | 282.96119 | 60.14529  | 75.50422  | 4.84021  | 0.0927368 | 2.2732040 | 116 | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128751 2002 GL <sub>86</sub>  |
| 2002 GO <sub>90</sub>  | 16.2 | 0.15 | 20071027 | 66.71375  | 311.24491 | 27.15240  | 7.02810  | 0.2307333 | 2.3823483 | 138 | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 102095 2002 GO <sub>90</sub>  |
| 2002 GU <sub>91</sub>  | 15.8 | 0.15 | 20071027 | 83.69149  | 293.97878 | 40.83997  | 11.28587 | 0.2035504 | 2.3548892 | 148 | 4 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128751 2002 GU <sub>91</sub>  |
| 2002 GC <sub>93</sub>  | 16.6 | 0.15 | 20071027 | 188.15843 | 20.00517  | 221.54112 | 6.01123  | 0.0977853 | 2.2710011 | 47  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128751 2002 GC <sub>93</sub>  |
| 2002 GZ <sub>94</sub>  | 16.7 | 0.15 | 20071027 | 187.01908 | 345.87601 | 220.16636 | 5.94186  | 0.0567951 | 2.3633365 | 72  | 6 | 1996-2007 | 0.55 | M-v | 1 | MPC | 128751 2002 GZ <sub>94</sub>  |
| 2002 GH <sub>98</sub>  | 16.5 | 0.15 | 20071027 | 178.14580 | 282.17935 | 316.37212 | 6.45823  | 0.0792953 | 2.2744090 | 46  | 5 | 1995-2007 | 0.64 | M-v | 1 | MPC | 74170 2002 GH <sub>98</sub>   |
| 2002 GB <sub>100</sub> | 17.1 | 0.15 | 20071027 | 261.13926 | 315.66928 | 208.47948 | 6.38583  | 0.1160981 | 2.2367202 | 34  | 2 | 2002-2007 | 0.46 | M-v | 4 | MPC | 127933 2002 GB <sub>100</sub> |
| 2002 GN <sub>100</sub> | 16.7 | 0.15 | 20071027 | 110.22981 | 92.02756  | 217.92267 | 5.19228  | 0.1111625 | 2.2752349 | 72  | 5 | 2000-2007 | 0.61 | M-v | 1 | MPC | 85487 2002 GN <sub>100</sub>  |
| 2002 GG <sub>104</sub> | 15.9 | 0.15 | 20071027 | 95.51501  | 235.62402 | 91.86779  | 8.99873  | 0.1818637 | 2.3562601 | 87  | 5 | 1999-2007 | 0.53 | M-v | 2 | MPC | 122702 2002 GG <sub>104</sub> |
| 2002 GE <sub>105</sub> | 16.0 | 0.15 | 20071027 | 123.52490 | 213.62751 | 76.34373  | 11.39911 | 0.1283872 | 2.3252010 | 42  | 3 | 2002-2007 | 0.62 | M-v | 2 | MPC | 57858 2002 GE <sub>105</sub>  |
| 2002 GO <sub>107</sub> | 16.3 | 0.15 | 20071027 | 190.62746 | 173.43097 | 100.63279 | 6.04659  | 0.2291569 | 2.2150310 | 103 | 4 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128751 2002 GO <sub>107</sub> |
| 2002 GP <sub>107</sub> | 16.6 | 0.15 | 20071027 | 253.41382 | 111.43655 | 68.01842  | 7.44815  | 0.0884007 | 2.2269223 | 60  | 3 | 2002-2007 | 0.60 | M-v | 3 | MPC | 128751 2002 GP <sub>107</sub> |
| 2002 GT <sub>109</sub> | 16.7 | 0.15 | 20071027 | 303.10949 | 6.30944   | 101.16141 | 12.40070 | 0.0930546 | 2.2920846 | 30  | 3 | 2002-2007 | 0.66 | M-v | 4 | MPC | 128751 2002 GT <sub>109</sub> |
| 2002 GE <sub>112</sub> | 16.9 | 0.15 | 20071027 | 219.97486 | 143.35670 | 94.62180  | 4.29024  | 0.1146949 | 2.2190425 | 41  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128751 2002 GE <sub>112</sub> |
| 2002 GC <sub>118</sub> | 17.0 | 0.15 | 20071027 | 282.46942 | 30.75830  | 124.23677 | 5.86260  | 0.0536852 | 2.2197665 | 46  | 5 | 2002-2007 | 0.52 | M-v | 2 | MPC | 104198 2002 GC <sub>118</sub> |
| 2002 GX <sub>118</sub> | 17.9 | 0.15 | 20071027 | 203.34694 | 166.98968 | 80.26795  | 5.22187  | 0.1343789 | 2.2117151 | 22  | 3 | 2002-2007 | 0.37 | M-v | 2 | MPC | 94751 2002 GX <sub>118</sub>  |
| 2002 GC <sub>119</sub> | 16.7 | 0.15 | 20071027 | 214.01725 | 109.63488 | 99.40377  | 3.42807  | 0.1136479 | 2.2631380 | 68  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128752 2002 GC <sub>119</sub> |
| 2002 GW <sub>121</sub> | 16.6 | 0.15 | 20071027 | 100.18681 | 96.68753  | 232.71045 | 2.27841  | 0.1789000 | 2.2924318 | 78  | 4 | 1996-2007 | 0.49 | M-v | 1 | MPC | 128752 2002 GW <sub>121</sub> |
| 2002 GS <sub>122</sub> | 17.0 | 0.15 | 20071027 | 118.97597 | 240.42833 | 64.66127  | 2.66138  | 0.2308708 | 2.3344239 | 51  | 6 | 1999-2007 | 0.59 | M-v | 1 | MPC | 102097 2002 GS <sub>122</sub> |
| 2002 GM <sub>126</sub> | 17.3 | 0.15 | 20071027 | 127.25487 | 270.06084 | 5.17477   | 5.69442  | 0.1083309 | 2.3384502 | 48  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 126619 2002 GM <sub>126</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 GF <sub>127</sub> | 16.3 | 0.15 | 20071027 | 107.86824 | 70.92854  | 237.97949 | 2.81053  | 0.1640914 | 2.3025437 | 85  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 87538 2002 GF <sub>127</sub>  |
| 2002 GS <sub>130</sub> | 16.5 | 0.15 | 20071027 | 46.69216  | 317.31393 | 3.14598   | 6.43941  | 0.1225773 | 2.4763275 | 115 | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128752 2002 GS <sub>130</sub> |
| 2002 GC <sub>135</sub> | 16.3 | 0.15 | 20071027 | 40.92899  | 172.81600 | 198.23368 | 4.18955  | 0.1327833 | 2.3020204 | 76  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 128752 2002 GC <sub>135</sub> |
| 2002 GX <sub>137</sub> | 13.8 | 0.15 | 20071027 | 226.61572 | 303.90993 | 303.29195 | 5.24513  | 0.1676173 | 3.9751417 | 62  | 6 | 2001-2007 | 0.54 | M-v | 0 | MPC | 110872 2002 GX <sub>137</sub> |
| 2002 GT <sub>139</sub> | 17.3 | 0.15 | 20071027 | 194.79491 | 51.11359  | 168.01234 | 3.83336  | 0.0891813 | 2.3268331 | 37  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128752 2002 GT <sub>139</sub> |
| 2002 GT <sub>141</sub> | 17.0 | 0.15 | 20071027 | 274.94931 | 120.64757 | 46.75818  | 6.33117  | 0.1136146 | 2.2299096 | 29  | 4 | 1992-2007 | 0.46 | M-v | 1 | MPC | 85494 2002 GT <sub>141</sub>  |
| 2002 GK <sub>142</sub> | 16.6 | 0.15 | 20071027 | 270.03057 | 340.35622 | 160.54057 | 2.96741  | 0.0979731 | 2.3116707 | 78  | 3 | 2002-2007 | 0.52 | M-v | 4 | MPC | 128752 2002 GK <sub>142</sub> |
| 2002 GR <sub>142</sub> | 17.6 | 0.15 | 20071027 | 136.03895 | 95.52693  | 172.20015 | 1.22200  | 0.1597152 | 2.4030329 | 44  | 5 | 1999-2007 | 0.39 | M-v | 1 | MPC | 128752 2002 GR <sub>142</sub> |
| 2002 GS <sub>145</sub> | 18.0 | 0.15 | 20071027 | 172.19601 | 248.04730 | 356.26173 | 3.69520  | 0.1163132 | 2.3162754 | 24  | 5 | 1996-2007 | 0.46 | M-v | 1 | MPC | 103314 2002 GS <sub>145</sub> |
| 2002 GQ <sub>147</sub> | 16.8 | 0.15 | 20071027 | 279.24585 | 72.58995  | 58.39155  | 6.54397  | 0.0844793 | 2.2699191 | 69  | 3 | 2002-2007 | 0.50 | M-v | 4 | MPC | 128752 2002 GQ <sub>147</sub> |
| 2002 GQ <sub>148</sub> | 17.1 | 0.15 | 20071027 | 237.93050 | 293.62545 | 277.21981 | 1.71600  | 0.0907784 | 2.2064472 | 37  | 5 | 1995-2007 | 0.34 | M-v | 1 | MPC | 104198 2002 GQ <sub>148</sub> |
| 2002 GK <sub>150</sub> | 17.5 | 0.15 | 20071027 | 137.07806 | 305.38705 | 319.96294 | 1.61548  | 0.1029447 | 2.3514947 | 45  | 5 | 2000-2007 | 0.46 | M-v | 0 | MPC | 128752 2002 GK <sub>150</sub> |
| 2002 GV <sub>150</sub> | 17.4 | 0.15 | 20071027 | 246.28645 | 78.26805  | 147.65945 | 3.62617  | 0.0337368 | 2.1585300 | 77  | 5 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128752 2002 GV <sub>150</sub> |
| 2002 GO <sub>155</sub> | 17.3 | 0.15 | 20071027 | 303.52790 | 47.38170  | 72.12587  | 5.34697  | 0.0669219 | 2.2383205 | 73  | 4 | 2000-2007 | 0.60 | M-v | 1 | MPC | 128752 2002 GO <sub>155</sub> |
| 2002 GP <sub>155</sub> | 16.2 | 0.15 | 20071027 | 305.06323 | 29.83070  | 70.50768  | 7.56187  | 0.0454734 | 2.2862450 | 72  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128752 2002 GP <sub>155</sub> |
| 2002 GH <sub>157</sub> | 16.6 | 0.15 | 20071027 | 140.01848 | 166.14516 | 140.14349 | 6.05400  | 0.1369530 | 2.2562744 | 76  | 5 | 2002-2007 | 0.50 | M-v | 1 | MPC | 110872 2002 GH <sub>157</sub> |
| 2002 GZ <sub>158</sub> | 17.3 | 0.15 | 20071027 | 136.23398 | 154.53206 | 115.92620 | 3.26839  | 0.1584786 | 2.3601615 | 44  | 4 | 1998-2007 | 0.35 | M-v | 1 | MPC | 128752 2002 GZ <sub>158</sub> |
| 2002 GA <sub>160</sub> | 16.5 | 0.15 | 20071027 | 203.10848 | 150.50680 | 75.98002  | 7.32506  | 0.0696520 | 2.2435911 | 49  | 4 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128752 2002 GA <sub>160</sub> |
| 2002 GL <sub>161</sub> | 16.2 | 0.15 | 20071027 | 237.78333 | 106.73437 | 71.66817  | 7.02996  | 0.0662277 | 2.3028123 | 54  | 5 | 2000-2007 | 0.62 | M-v | 2 | MPC | 128752 2002 GL <sub>161</sub> |
| 2002 GF <sub>162</sub> | 17.3 | 0.15 | 20071027 | 172.11485 | 95.37927  | 158.85074 | 3.89949  | 0.1496607 | 2.2898821 | 39  | 5 | 2002-2007 | 0.45 | M-v | 1 | MPC | 110872 2002 GF <sub>162</sub> |
| 2002 GV <sub>162</sub> | 17.0 | 0.15 | 20071027 | 316.21733 | 337.22729 | 150.76014 | 3.94986  | 0.0706500 | 2.1975543 | 52  | 6 | 1997-2007 | 0.58 | M-v | 1 | MPC | 110872 2002 GV <sub>162</sub> |
| 2002 GA <sub>164</sub> | 16.4 | 0.15 | 20071027 | 137.39382 | 136.08760 | 124.29834 | 3.06693  | 0.1676145 | 2.3884968 | 47  | 6 | 1996-2007 | 0.44 | M-v | 1 | MPC | 128752 2002 GA <sub>164</sub> |
| 2002 GU <sub>171</sub> | 17.1 | 0.15 | 20071027 | 221.13309 | 262.34512 | 316.65654 | 5.03787  | 0.0814576 | 2.2143684 | 44  | 6 | 1992-2007 | 0.46 | M-v | 1 | MPC | 104198 2002 GU <sub>171</sub> |
| 2002 GC <sub>173</sub> | 16.5 | 0.15 | 20071027 | 120.17505 | 258.97636 | 23.25414  | 5.11969  | 0.2174804 | 2.3882144 | 28  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 127934 2002 GC <sub>173</sub> |
| 2002 GO <sub>173</sub> | 16.6 | 0.15 | 20071027 | 289.30540 | 2.89215   | 121.58927 | 8.16638  | 0.1312243 | 2.2763115 | 88  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128753 2002 GO <sub>173</sub> |
| 2002 GZ <sub>177</sub> | 17.1 | 0.15 | 20071027 | 265.62939 | 267.46349 | 256.95269 | 4.80695  | 0.0687793 | 2.2161040 | 39  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128753 2002 GZ <sub>177</sub> |
| 2002 GU <sub>181</sub> | 17.2 | 0.15 | 20071027 | 358.39852 | 72.45135  | 8.18938   | 5.82112  | 0.1069166 | 2.1975219 | 32  | 4 | 2000-2007 | 0.49 | M-v | 2 | MPC | 108254 2002 GU <sub>181</sub> |
| 2002 GA <sub>182</sub> | 16.6 | 0.15 | 20071027 | 203.21428 | 2.23329   | 203.28471 | 7.43963  | 0.0240111 | 2.3412395 | 74  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128753 2002 GA <sub>182</sub> |
| 2002 GF <sub>182</sub> | 17.5 | 0.15 | 20071027 | 333.90208 | 35.03101  | 42.84599  | 3.32591  | 0.1162799 | 2.2626250 | 50  | 4 | 1995-2007 | 0.35 | M-v | 1 | MPC | 128753 2002 GF <sub>182</sub> |
| 2002 GX <sub>182</sub> | 17.2 | 0.15 | 20020416 | 346.67661 | 180.27788 | 46.54004  | 3.27411  | 0.1286078 | 2.7184895 | 14  | 1 | 40 days   | 0.25 |     |   | MPC | 2002 GX <sub>182</sub>        |
| 2002 HZ <sub>1</sub>   | 16.7 | 0.15 | 20071027 | 166.73314 | 185.63615 | 61.38285  | 5.28511  | 0.1512587 | 2.3114330 | 44  | 5 | 1995-2007 | 0.56 | M-v | 1 | MPC | 128753 2002 HZ <sub>1</sub>   |
| 2002 HB <sub>2</sub>   | 16.9 | 0.15 | 20071027 | 220.43223 | 148.77933 | 97.23444  | 6.76985  | 0.1382125 | 2.1899067 | 53  | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128753 2002 HB <sub>2</sub>   |
| 2002 HG <sub>4</sub>   | 16.2 | 0.15 | 20071027 | 152.52305 | 202.88471 | 69.28465  | 5.81537  | 0.2152108 | 2.3461384 | 81  | 4 | 2002-2007 | 0.44 | M-v | 2 | MPC | 128753 2002 HG <sub>4</sub>   |
| 2002 HB <sub>5</sub>   | 17.1 | 0.15 | 20071027 | 223.35026 | 104.14824 | 131.50600 | 6.47488  | 0.1342030 | 2.2115743 | 87  | 5 | 2002-2007 | 0.49 | M-v | 1 | MPC | 110873 2002 HB <sub>5</sub>   |
| 2002 HY <sub>9</sub>   | 16.8 | 0.15 | 20071027 | 146.73131 | 76.01446  | 196.59887 | 7.04453  | 0.0482139 | 2.3029785 | 67  | 4 | 2002-2007 | 0.54 | M-v | 1 | MPC | 128753 2002 HY <sub>9</sub>   |
| 2002 HE <sub>18</sub>  | 17.4 | 0.15 | 20071027 | 214.54917 | 307.31202 | 272.49564 | 7.46104  | 0.0315720 | 2.2274725 | 23  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 123854 2002 HE <sub>18</sub>  |
| 2002 JE <sub>1</sub>   | 16.3 | 0.15 | 20071027 | 168.91135 | 186.80913 | 55.11551  | 6.76967  | 0.0751755 | 2.3417262 | 64  | 2 | 2002-2007 | 0.52 | M-v | 3 | MPC | 127935 2002 JE <sub>1</sub>   |
| 2002 JG <sub>5</sub>   | 17.0 | 0.15 | 20071027 | 266.12557 | 129.19089 | 46.14012  | 5.80731  | 0.0978534 | 2.2461371 | 65  | 5 | 1995-2007 | 0.63 | M-v | 1 | MPC | 77595 2002 JG <sub>5</sub>    |
| 2002 JY <sub>9</sub>   | 16.5 | 0.15 | 20071027 | 59.18717  | 73.10791  | 91.35840  | 23.91681 | 0.0642835 | 1.9493704 | 37  | 3 | 1999-2007 | 0.56 | M-v | 3 | MPC | 113898 2002 JY <sub>9</sub>   |
| 2002 JS <sub>11</sub>  | 16.2 | 0.15 | 20071027 | 140.35223 | 208.98113 | 52.93175  | 2.49811  | 0.1768433 | 2.4147830 | 62  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128753 2002 JS <sub>11</sub>  |
| 2002 JW <sub>11</sub>  | 16.5 | 0.15 | 20071027 | 203.91064 | 180.79145 | 36.34010  | 10.92178 | 0.0426894 | 2.3279597 | 38  | 4 | 2002-2007 | 0.56 | M-v | 2 | MPC | 110874 2002 JW <sub>11</sub>  |
| 2002 JO <sub>15</sub>  | 16.5 | 0.15 | 20071027 | 152.98202 | 211.75838 | 82.51421  | 6.63641  | 0.1713071 | 2.3010097 | 52  | 5 | 2002-2007 | 0.49 | M-v | 1 | MPC | 110874 2002 JO <sub>15</sub>  |
| 2002 JE <sub>18</sub>  | 17.2 | 0.15 | 20071027 | 166.27901 | 41.84504  | 233.59896 | 4.90627  | 0.0375467 | 2.2731191 | 60  | 6 | 1996-2007 | 0.51 | M-v | 0 | MPC | 110874 2002 JE <sub>18</sub>  |
| 2002 JH <sub>19</sub>  | 17.1 | 0.15 | 20071027 | 157.61474 | 162.15686 | 105.75989 | 6.72707  | 0.0936060 | 2.2350496 | 42  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 94770 2002 JH <sub>19</sub>   |
| 2002 JS <sub>19</sub>  | 17.8 | 0.15 | 20071027 | 258.79659 | 81.24218  | 120.44327 | 5.82094  | 0.0964628 | 2.2152547 | 37  | 5 | 1995-2007 | 0.47 | M-v | 1 | MPC | 85506 2002 JS <sub>19</sub>   |
| 2002 JT <sub>19</sub>  | 16.1 | 0.15 | 20071027 | 21.42349  | 329.38714 | 98.70562  | 7.94550  | 0.0374956 | 2.2511006 | 55  | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128753 2002 JT <sub>19</sub>  |
| 2002 JN <sub>21</sub>  | 15.4 | 0.15 | 20071027 | 111.11651 | 355.89526 | 225.77311 | 13.31345 | 0.1107769 | 2.6403682 | 59  | 5 | 2002-2007 | 0.46 | M-v | 1 | MPC | 102100 2002 JN <sub>21</sub>  |
| 2002 JG <sub>24</sub>  | 16.5 | 0.15 | 20071027 | 163.67049 | 175.62980 | 71.22805  | 5.18773  | 0.1694601 | 2.3729484 | 49  | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 128753 2002 JG <sub>24</sub>  |
| 2002 JH <sub>24</sub>  | 17.0 | 0.15 | 20071027 | 155.66918 | 200.10395 | 74.81111  | 6.69385  | 0.0299976 | 2.3041960 | 40  | 6 | 2000-2007 | 0.71 | M-v | 1 | MPC | 104199 2002 JH <sub>24</sub>  |
| 2002 JL <sub>24</sub>  | 16.4 | 0.15 | 20071027 | 159.05394 | 166.57062 | 93.56715  | 5.19212  | 0.2015833 | 2.3446609 | 62  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 128753 2002 JL <sub>24</sub>  |
| 2002 JL <sub>27</sub>  | 16.5 | 0.15 | 20071027 | 127.83372 | 207.64551 | 83.64531  | 7.57580  | 0.1852361 | 2.3881085 | 33  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 110874 2002 JL <sub>27</sub>  |
| 2002 JT <sub>30</sub>  | 16.8 | 0.15 | 20071027 | 156.59056 | 183.25300 | 69.36483  | 7.91244  | 0.0871579 | 2.3833206 | 83  | 5 | 1996-2007 | 0.57 | M-v | 1 | MPC | 128753 2002 JT <sub>30</sub>  |
| 2002 JK <sub>31</sub>  | 16.6 | 0.15 | 20071027 | 199.24721 | 172.12460 | 74.72140  | 7.45525  | 0.0767373 | 2.2775369 | 47  | 4 | 2002-2007 | 0.60 | M-v | 2 | MPC | 104200 2002 JK <sub>31</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2002 JS <sub>36</sub>  | 16.7 | 0.15 | 20071027 | 229.32022 | 117.17209 | 99.14980  | 8.06059  | 0.0764859 | 2.2564512 | 51  | 6 | 1999-2007 | 0.55 | M-v | 1 | MP | 110874 2002 JS <sub>36</sub>  |
| 2002 JA <sub>38</sub>  | 16.4 | 0.15 | 20071027 | 121.81175 | 206.81705 | 94.12487  | 6.50181  | 0.1596101 | 2.3905933 | 48  | 4 | 2002-2007 | 0.48 | M-v | 1 | MP | 104200 2002 JA <sub>38</sub>  |
| 2002 JV <sub>38</sub>  | 16.7 | 0.15 | 20071027 | 276.23048 | 288.24779 | 269.30516 | 3.52127  | 0.0914765 | 2.1814939 | 49  | 5 | 1992-2007 | 0.45 | M-v | 1 | MP | 128753 2002 JV <sub>38</sub>  |
| 2002 JR <sub>39</sub>  | 16.9 | 0.15 | 20071027 | 194.96074 | 132.80445 | 106.63790 | 6.34487  | 0.1948096 | 2.3137797 | 72  | 6 | 1998-2007 | 0.51 | M-v | 1 | MP | 110874 2002 JR <sub>39</sub>  |
| 2002 JD <sub>42</sub>  | 16.5 | 0.15 | 20071027 | 185.73841 | 34.85602  | 223.43611 | 6.17267  | 0.0837302 | 2.2572723 | 82  | 4 | 2002-2007 | 0.58 | M-v | 1 | MP | 110874 2002 JD <sub>42</sub>  |
| 2002 JA <sub>46</sub>  | 16.9 | 0.15 | 20071027 | 182.98295 | 230.48462 | 340.29895 | 4.42030  | 0.1772766 | 2.3655669 | 54  | 4 | 2002-2007 | 0.51 | M-v | 1 | MP | 128754 2002 JA <sub>46</sub>  |
| 2002 JO <sub>46</sub>  | 15.6 | 0.15 | 20071027 | 82.41065  | 79.19095  | 254.15437 | 5.47609  | 0.1548100 | 2.3762950 | 139 | 5 | 1999-2007 | 0.53 | M-v | 2 | MP | 77597 2002 JO <sub>46</sub>   |
| 2002 JN <sub>51</sub>  | 16.9 | 0.15 | 20071027 | 165.98160 | 251.93158 | 27.16028  | 3.07269  | 0.1732099 | 2.3130212 | 72  | 6 | 1998-2007 | 0.58 | M-v | 1 | MP | 118011 2002 JN <sub>51</sub>  |
| 2002 JQ <sub>53</sub>  | 16.7 | 0.15 | 20071027 | 221.01610 | 142.07093 | 44.56038  | 3.33140  | 0.1571336 | 2.3246200 | 83  | 3 | 2002-2007 | 0.40 | M-v | 3 | MP | 128754 2002 JQ <sub>53</sub>  |
| 2002 JS <sub>53</sub>  | 16.8 | 0.15 | 20071027 | 155.36228 | 241.65584 | 54.63848  | 3.14594  | 0.1650520 | 2.2793332 | 48  | 5 | 1999-2007 | 0.52 | M-v | 1 | MP | 108260 2002 JS <sub>53</sub>  |
| 2002 JZ <sub>53</sub>  | 17.0 | 0.15 | 20071027 | 159.35449 | 332.16637 | 286.25627 | 1.41873  | 0.1103835 | 2.3467322 | 61  | 6 | 1992-2007 | 0.49 | M-v | 1 | MP | 104200 2002 JZ <sub>53</sub>  |
| 2002 JU <sub>55</sub>  | 17.1 | 0.15 | 20071027 | 123.98008 | 230.56110 | 47.52100  | 0.97836  | 0.1914764 | 2.4338411 | 55  | 6 | 1994-2007 | 0.44 | M-v | 0 | MP | 128754 2002 JU <sub>55</sub>  |
| 2002 JY <sub>55</sub>  | 16.3 | 0.15 | 20071027 | 35.11580  | 77.60482  | 230.09302 | 14.32943 | 0.4283588 | 2.7576298 | 76  | 2 | 2002-2007 | 0.50 | M-v | 2 | MP | 127935 2002 JY <sub>55</sub>  |
| 2002 JY <sub>57</sub>  | 16.5 | 0.15 | 20071027 | 102.61669 | 83.19277  | 239.61553 | 4.73177  | 0.1631441 | 2.3627086 | 83  | 4 | 1999-2007 | 0.50 | M-v | 1 | MP | 57863 2002 JY <sub>57</sub>   |
| 2002 JF <sub>58</sub>  | 16.5 | 0.15 | 20071027 | 256.96740 | 145.34734 | 54.84955  | 6.29893  | 0.1307016 | 2.2327097 | 60  | 3 | 2002-2007 | 0.51 | M-v | 3 | MP | 75344 2002 JF <sub>58</sub>   |
| 2002 JX <sub>60</sub>  | 16.5 | 0.15 | 20071027 | 19.45921  | 21.06057  | 40.53271  | 7.44811  | 0.0841599 | 2.2734962 | 59  | 6 | 1995-2007 | 0.59 | M-v | 1 | MP | 110875 2002 JX <sub>60</sub>  |
| 2002 JG <sub>62</sub>  | 17.2 | 0.15 | 20071027 | 212.49571 | 124.69804 | 127.87815 | 3.20008  | 0.1813776 | 2.2384839 | 61  | 6 | 1995-2007 | 0.54 | M-v | 1 | MP | 110875 2002 JG <sub>62</sub>  |
| 2002 JH <sub>62</sub>  | 16.4 | 0.15 | 20071027 | 252.03942 | 98.14024  | 84.76205  | 6.46234  | 0.0988244 | 2.2783459 | 53  | 6 | 2000-2007 | 0.56 | M-v | 1 | MP | 104200 2002 JH <sub>62</sub>  |
| 2002 JX <sub>62</sub>  | 16.4 | 0.15 | 20071027 | 118.40659 | 145.48968 | 146.29065 | 5.38010  | 0.2407267 | 2.4527927 | 40  | 5 | 1991-2007 | 0.52 | M-v | 1 | MP | 57864 2002 JX <sub>62</sub>   |
| 2002 JJ <sub>63</sub>  | 16.9 | 0.15 | 20071027 | 198.31953 | 346.21878 | 225.70196 | 7.84361  | 0.1194647 | 2.3582417 | 51  | 4 | 2002-2007 | 0.44 | M-v | 1 | MP | 128754 2002 JJ <sub>63</sub>  |
| 2002 JE <sub>65</sub>  | 15.9 | 0.15 | 20071027 | 127.63093 | 169.65032 | 113.08610 | 2.43687  | 0.1728095 | 2.4300766 | 75  | 5 | 1998-2007 | 0.55 | M-v | 2 | MP | 128754 2002 JE <sub>65</sub>  |
| 2002 JH <sub>67</sub>  | 15.7 | 0.15 | 20071027 | 39.33524  | 96.81764  | 219.32755 | 10.29076 | 0.2562288 | 2.6565460 | 101 | 5 | 1998-2007 | 0.58 | M-v | 1 | MP | 128754 2002 JH <sub>67</sub>  |
| 2002 JZ <sub>67</sub>  | 16.4 | 0.15 | 20071027 | 143.49739 | 26.09064  | 234.57975 | 6.27603  | 0.1879028 | 2.4196149 | 89  | 4 | 1998-2007 | 0.59 | M-v | 1 | MP | 128754 2002 JZ <sub>67</sub>  |
| 2002 JG <sub>74</sub>  | 15.6 | 0.15 | 20071027 | 188.10834 | 173.73370 | 82.73674  | 24.79415 | 0.2099802 | 2.3266423 | 47  | 5 | 2002-2007 | 0.59 | M-v | 1 | MP | 110875 2002 JG <sub>74</sub>  |
| 2002 JY <sub>74</sub>  | 17.5 | 0.15 | 20071027 | 203.97329 | 25.48426  | 232.51428 | 4.00722  | 0.1650391 | 2.2449530 | 53  | 5 | 2002-2007 | 0.47 | M-v | 1 | MP | 110875 2002 JY <sub>74</sub>  |
| 2002 JL <sub>75</sub>  | 16.9 | 0.15 | 20071027 | 164.48694 | 169.04456 | 108.90620 | 4.96053  | 0.1492970 | 2.3215439 | 58  | 4 | 2000-2007 | 0.49 | M-v | 1 | MP | 110875 2002 JL <sub>75</sub>  |
| 2002 JG <sub>76</sub>  | 16.8 | 0.15 | 20071027 | 229.63534 | 307.10524 | 236.45325 | 4.69841  | 0.0997207 | 2.2883573 | 65  | 3 | 2002-2007 | 0.46 | M-v | 3 | MP | 127936 2002 JG <sub>76</sub>  |
| 2002 JH <sub>77</sub>  | 16.5 | 0.15 | 20071027 | 204.92938 | 309.20363 | 224.75545 | 5.58070  | 0.0502202 | 2.3943534 | 63  | 4 | 2000-2007 | 0.55 | M-v | 3 | MP | 126622 2002 JH <sub>77</sub>  |
| 2002 JD <sub>79</sub>  | 17.4 | 0.15 | 20071027 | 229.06791 | 261.78578 | 340.45775 | 1.68383  | 0.1495155 | 2.1887931 | 73  | 4 | 2002-2007 | 0.45 | M-v | 2 | MP | 110875 2002 JD <sub>79</sub>  |
| 2002 JQ <sub>79</sub>  | 15.8 | 0.15 | 20071027 | 105.10889 | 279.30428 | 25.17985  | 6.50676  | 0.1039335 | 2.3614643 | 85  | 3 | 2002-2007 | 0.54 | M-v | 2 | MP | 128754 2002 JQ <sub>79</sub>  |
| 2002 JS <sub>82</sub>  | 15.9 | 0.15 | 20071027 | 87.59189  | 294.68415 | 34.86299  | 4.78017  | 0.1510281 | 2.3658065 | 85  | 5 | 1998-2007 | 0.48 | M-v | 1 | MP | 74182 2002 JS <sub>82</sub>   |
| 2002 JM <sub>83</sub>  | 16.6 | 0.15 | 20071027 | 103.17430 | 283.56152 | 37.36602  | 3.54821  | 0.1907616 | 2.3659816 | 43  | 5 | 1998-2007 | 0.67 | M-v | 1 | MP | 74182 2002 JM <sub>83</sub>   |
| 2002 JW <sub>83</sub>  | 16.1 | 0.15 | 20071027 | 58.28821  | 139.64087 | 231.22903 | 5.39996  | 0.1224652 | 2.3120086 | 85  | 4 | 2002-2007 | 0.53 | M-v | 2 | MP | 77599 2002 JW <sub>83</sub>   |
| 2002 JG <sub>84</sub>  | 17.8 | 0.15 | 20071027 | 230.27015 | 348.69155 | 227.17222 | 3.55217  | 0.1062857 | 2.2477898 | 39  | 4 | 2002-2007 | 0.44 | M-v | 2 | MP | 110875 2002 JG <sub>84</sub>  |
| 2002 JJ <sub>84</sub>  | 17.5 | 0.15 | 20071027 | 220.75590 | 159.84133 | 47.44578  | 3.33245  | 0.1001393 | 2.2912795 | 57  | 4 | 2002-2007 | 0.45 | M-v | 1 | MP | 85519 2002 JJ <sub>84</sub>   |
| 2002 JQ <sub>86</sub>  | 17.1 | 0.15 | 20071027 | 283.14944 | 270.89883 | 228.97938 | 4.11873  | 0.1058378 | 2.2912601 | 94  | 5 | 1998-2007 | 0.46 | M-v | 0 | MP | 128754 2002 JQ <sub>86</sub>  |
| 2002 JR <sub>86</sub>  | 16.8 | 0.15 | 20071027 | 96.80975  | 260.53533 | 44.23636  | 14.81838 | 0.1722054 | 2.4424679 | 38  | 5 | 1999-2007 | 0.53 | M-v | 1 | MP | 128754 2002 JR <sub>86</sub>  |
| 2002 JA <sub>91</sub>  | 16.9 | 0.15 | 20071027 | 180.84843 | 187.15467 | 41.44704  | 6.90250  | 0.0796438 | 2.3700304 | 80  | 5 | 1998-2007 | 0.49 | M-v | 1 | MP | 128754 2002 JA <sub>91</sub>  |
| 2002 JJ <sub>93</sub>  | 16.9 | 0.15 | 20071027 | 241.70962 | 124.30305 | 77.83408  | 0.73229  | 0.1361525 | 2.2613065 | 65  | 6 | 1998-2007 | 0.48 | M-v | 1 | MP | 110875 2002 JJ <sub>93</sub>  |
| 2002 JX <sub>94</sub>  | 17.1 | 0.15 | 20071027 | 178.94873 | 192.39033 | 55.13793  | 3.52865  | 0.1599629 | 2.3440023 | 74  | 5 | 2002-2007 | 0.38 | M-v | 1 | MP | 104201 2002 JX <sub>94</sub>  |
| 2002 JZ <sub>95</sub>  | 16.6 | 0.15 | 20071027 | 146.92713 | 32.30698  | 222.62675 | 1.71776  | 0.1774218 | 2.4353452 | 61  | 6 | 1999-2007 | 0.40 | M-v | 1 | MP | 128754 2002 JZ <sub>95</sub>  |
| 2002 JR <sub>98</sub>  | 17.0 | 0.15 | 20071027 | 169.00601 | 237.60022 | 32.55036  | 2.95048  | 0.1475867 | 2.3092215 | 61  | 5 | 2002-2007 | 0.50 | M-v | 1 | MP | 110875 2002 JR <sub>98</sub>  |
| 2002 JU <sub>98</sub>  | 20.6 | 0.15 | 20071027 | 241.63651 | 144.22865 | 59.39303  | 6.52785  | 0.1307951 | 2.2483577 | 32  | 5 | 2000-2007 | 0.58 | M-v | 1 | MP | 110876 2002 JU <sub>98</sub>  |
| 2002 JW <sub>103</sub> | 16.1 | 0.15 | 20071027 | 186.24253 | 303.51626 | 223.37306 | 10.86043 | 0.1013605 | 2.5319190 | 60  | 4 | 2002-2007 | 0.47 | M-v | 3 | MP | 100263 2002 JW <sub>103</sub> |
| 2002 JF <sub>104</sub> | 16.4 | 0.15 | 20071027 | 96.87298  | 228.08524 | 84.35675  | 6.93692  | 0.1331999 | 2.4340309 | 40  | 3 | 2002-2007 | 0.53 | M-v | 2 | MP | 75353 2002 JF <sub>104</sub>  |
| 2002 JH <sub>104</sub> | 16.8 | 0.15 | 20071027 | 129.50004 | 154.44357 | 116.29702 | 3.71345  | 0.1728402 | 2.4492475 | 49  | 4 | 2002-2007 | 0.51 | M-v | 1 | MP | 128755 2002 JH <sub>104</sub> |
| 2002 JT <sub>104</sub> | 17.1 | 0.15 | 20071027 | 221.88434 | 123.58796 | 85.76726  | 5.94106  | 0.1299134 | 2.3047584 | 43  | 4 | 2002-2007 | 0.61 | M-v | 1 | MP | 128755 2002 JT <sub>104</sub> |
| 2002 JR <sub>105</sub> | 17.2 | 0.15 | 20071027 | 211.15508 | 67.90735  | 187.85267 | 1.82731  | 0.1034817 | 2.2490483 | 55  | 6 | 2000-2007 | 0.37 | M-v | 0 | MP | 110876 2002 JR <sub>105</sub> |
| 2002 JW <sub>105</sub> | 15.6 | 0.15 | 20071027 | 76.19022  | 101.84174 | 222.58859 | 7.71682  | 0.2713655 | 2.5390643 | 84  | 4 | 1998-2007 | 0.52 | M-v | 2 | MP | 104201 2002 JW <sub>105</sub> |
| 2002 JC <sub>106</sub> | 15.6 | 0.15 | 20071027 | 71.60096  | 243.98104 | 66.05141  | 16.09583 | 0.2741834 | 2.5941026 | 83  | 3 | 2002-2007 | 0.58 | M-v | 2 | MP | 128755 2002 JC <sub>106</sub> |
| 2002 JH <sub>106</sub> | 17.4 | 0.15 | 20071027 | 120.73872 | 224.31313 | 61.82103  | 3.27801  | 0.2177903 | 2.4411211 | 26  | 5 | 1995-2007 | 0.39 | M-v | 1 | MP | 48236 2002 JH <sub>106</sub>  |
| 2002 JF <sub>113</sub> | 16.1 | 0.15 | 20071027 | 156.16565 | 229.97543 | 50.07982  | 8.13978  | 0.2134402 | 2.2842458 | 83  | 4 | 2002-2007 | 0.64 | M-v | 1 | MP | 110876 2002 JF <sub>113</sub> |
| 2002 JB <sub>114</sub> | 15.9 | 0.15 | 20071027 | 76.44118  | 35.44542  | 272.94937 | 5.69502  | 0.2615674 | 2.5335379 | 84  | 4 | 2002-2007 | 0.56 | M-v | 2 | MP | 128755 2002 JB <sub>114</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 JJ <sub>114</sub> | 17.2 | 0.15 | 20071027 | 143.14451 | 278.65707 | 359.01184 | 0.93281  | 0.1713274 | 2.3601183 | 58  | 6 | 1999-2007 | 0.33 | M-v | 0 | MPC | 110876 2002 JJ <sub>114</sub> |
| 2002 JS <sub>114</sub> | 16.1 | 0.15 | 20071027 | 112.72807 | 162.58420 | 121.22345 | 7.26932  | 0.1562136 | 2.4610890 | 81  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 77600 2002 JS <sub>114</sub>  |
| 2002 JD <sub>119</sub> | 15.8 | 0.15 | 20071027 | 197.51393 | 67.92713  | 148.32782 | 12.41177 | 0.1051575 | 2.3078748 | 66  | 6 | 1999-2007 | 0.57 | M-v | 1 | MPC | 128755 2002 JD <sub>119</sub> |
| 2002 JW <sub>120</sub> | 17.8 | 0.15 | 20071027 | 343.19629 | 99.92353  | 194.65507 | 21.50064 | 0.0944527 | 1.8807623 | 35  | 3 | 2002-2007 | 0.59 | M-v | 2 | MPC | 118013 2002 JW <sub>120</sub> |
| 2002 JT <sub>126</sub> | 16.0 | 0.15 | 20071027 | 50.68291  | 204.59786 | 118.86593 | 9.03911  | 0.2916593 | 2.5810279 | 51  | 3 | 2002-2007 | 0.59 | M-v | 4 | MPC | 127937 2002 JT <sub>126</sub> |
| 2002 JN <sub>129</sub> | 17.0 | 0.15 | 20071027 | 157.60644 | 191.41492 | 76.26571  | 6.57933  | 0.1573074 | 2.3420694 | 31  | 4 | 2002-2007 | 0.39 | M-v | 1 | MPC | 118013 2002 JN <sub>129</sub> |
| 2002 JD <sub>130</sub> | 16.8 | 0.15 | 20071027 | 63.07631  | 77.33476  | 208.13118 | 12.21772 | 0.2574107 | 2.6396406 | 41  | 3 | 2002-2007 | 0.56 | M-v | 3 | MPC | 128755 2002 JD <sub>130</sub> |
| 2002 JV <sub>130</sub> | 17.0 | 0.15 | 20071027 | 172.92250 | 16.06718  | 206.07879 | 2.86292  | 0.0785584 | 2.4114706 | 44  | 4 | 2002-2007 | 0.36 | M-v | 1 | MPC | 127937 2002 JV <sub>130</sub> |
| 2002 JA <sub>135</sub> | 16.8 | 0.15 | 20071027 | 93.70099  | 283.45336 | 31.03778  | 1.97313  | 0.1740598 | 2.4145103 | 55  | 7 | 1994-2007 | 0.56 | M-v | 0 | MPC | 77601 2002 JA <sub>135</sub>  |
| 2002 JO <sub>138</sub> | 17.6 | 0.15 | 20071027 | 122.55788 | 221.34211 | 63.44782  | 2.11511  | 0.1781765 | 2.4204261 | 37  | 5 | 1999-2007 | 0.37 | M-v | 0 | MPC | 128755 2002 JO <sub>138</sub> |
| 2002 JC <sub>142</sub> | 18.1 | 0.15 | 20071027 | 246.44025 | 22.61248  | 161.00428 | 0.14127  | 0.1460274 | 2.2687484 | 29  | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 104202 2002 JC <sub>142</sub> |
| 2002 JB <sub>144</sub> | 17.1 | 0.15 | 20071027 | 174.75966 | 358.04351 | 225.37677 | 6.49019  | 0.0627200 | 2.3832344 | 46  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 127937 2002 JB <sub>144</sub> |
| 2002 JL <sub>144</sub> | 15.9 | 0.15 | 20071027 | 69.97879  | 182.77845 | 129.34092 | 6.66566  | 0.2925468 | 2.5907517 | 66  | 3 | 2002-2007 | 0.63 | M-v | 1 | MPC | 128755 2002 JL <sub>144</sub> |
| 2002 KK <sub>1</sub>   | 15.9 | 0.15 | 20071027 | 165.92846 | 190.19948 | 53.44899  | 23.80752 | 0.1894577 | 2.3436473 | 63  | 3 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128755 2002 KK <sub>1</sub>   |
| 2002 KM <sub>4</sub>   | 14.8 | 0.15 | 20071027 | 253.67017 | 162.56079 | 73.52747  | 3.04332  | 0.1860341 | 3.9444382 | 35  | 7 | 1994-2007 | 0.34 | M-v | 0 | MPC | 112806 2002 KM <sub>4</sub>   |
| 2002 KA <sub>10</sub>  | 16.6 | 0.15 | 20071027 | 129.60577 | 202.21021 | 55.30102  | 6.27543  | 0.1804090 | 2.4501732 | 39  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128755 2002 KA <sub>10</sub>  |
| 2002 LB <sub>1</sub>   | 16.7 | 0.15 | 20071027 | 136.41796 | 187.47343 | 90.33554  | 5.69679  | 0.2506445 | 2.4182343 | 53  | 3 | 2002-2007 | 0.43 | M-v | 3 | MPC | 103324 2002 LB <sub>1</sub>   |
| 2002 LG <sub>2</sub>   | 15.5 | 0.15 | 20071027 | 41.88530  | 273.88380 | 83.31773  | 15.05450 | 0.2134534 | 2.6080679 | 83  | 7 | 1993-2007 | 0.48 | M-v | 1 | MPC | 128755 2002 LG <sub>2</sub>   |
| 2002 LR <sub>9</sub>   | 16.2 | 0.15 | 20071027 | 192.12329 | 32.69190  | 204.39941 | 5.97837  | 0.1350447 | 2.3467275 | 47  | 6 | 1998-2007 | 0.66 | M-v | 1 | MPC | 128755 2002 LR <sub>9</sub>   |
| 2002 LV <sub>13</sub>  | 15.9 | 0.15 | 20071027 | 51.93568  | 80.21800  | 254.75201 | 27.74852 | 0.3481297 | 2.6096185 | 38  | 2 | 2002-2007 | 0.40 | M-v | 3 | MPC | 127938 2002 LV <sub>13</sub>  |
| 2002 LS <sub>17</sub>  | 16.9 | 0.15 | 20071027 | 164.08635 | 198.14116 | 88.33905  | 7.21620  | 0.1040673 | 2.3130773 | 44  | 6 | 1996-2007 | 0.47 | M-v | 1 | MPC | 128755 2002 LS <sub>17</sub>  |
| 2002 LS <sub>18</sub>  | 16.4 | 0.15 | 20071027 | 65.30311  | 81.07485  | 230.90722 | 4.83262  | 0.2810839 | 2.6217083 | 65  | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128756 2002 LS <sub>18</sub>  |
| 2002 LB <sub>19</sub>  | 15.9 | 0.15 | 20071027 | 112.38034 | 206.84444 | 111.80973 | 6.15239  | 0.2138024 | 2.4273080 | 82  | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 110878 2002 LB <sub>19</sub>  |
| 2002 LQ <sub>19</sub>  | 16.8 | 0.15 | 20071027 | 200.74542 | 151.39823 | 85.90404  | 3.02537  | 0.1855796 | 2.3195196 | 49  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128756 2002 LQ <sub>19</sub>  |
| 2002 LN <sub>20</sub>  | 15.4 | 0.15 | 20071027 | 42.49272  | 30.05767  | 289.89157 | 8.72465  | 0.3206038 | 2.7545307 | 100 | 5 | 1993-2007 | 0.58 | M-v | 1 | MPC | 128756 2002 LN <sub>20</sub>  |
| 2002 LU <sub>20</sub>  | 15.4 | 0.15 | 20071027 | 105.10660 | 195.31019 | 96.44484  | 8.28676  | 0.1287663 | 2.5440422 | 72  | 6 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128756 2002 LU <sub>20</sub>  |
| 2002 LD <sub>21</sub>  | 15.8 | 0.15 | 20071027 | 114.43439 | 12.00526  | 267.95347 | 12.26992 | 0.2520783 | 2.5512797 | 51  | 4 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128756 2002 LD <sub>21</sub>  |
| 2002 LE <sub>24</sub>  | 15.6 | 0.15 | 20071027 | 61.75371  | 205.45595 | 121.81968 | 15.56923 | 0.3072512 | 2.6779884 | 106 | 4 | 2002-2007 | 0.54 | M-v | 1 | MPC | 128756 2002 LE <sub>24</sub>  |
| 2002 LJ <sub>26</sub>  | 16.7 | 0.15 | 20071027 | 145.38833 | 134.31821 | 126.85265 | 3.09707  | 0.2006907 | 2.4413661 | 61  | 6 | 1995-2007 | 0.49 | M-v | 1 | MPC | 122705 2002 LJ <sub>26</sub>  |
| 2002 LL <sub>27</sub>  | 16.5 | 0.15 | 20071027 | 223.22357 | 145.68470 | 98.12636  | 8.87442  | 0.1751782 | 2.2988187 | 55  | 4 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128756 2002 LL <sub>27</sub>  |
| 2002 LN <sub>29</sub>  | 15.5 | 0.15 | 20071027 | 44.87127  | 214.48635 | 136.44874 | 7.30179  | 0.3189470 | 2.5619865 | 64  | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128756 2002 LN <sub>29</sub>  |
| 2002 LF <sub>30</sub>  | 15.7 | 0.15 | 20071027 | 178.09830 | 332.63616 | 283.24004 | 23.01631 | 0.0862567 | 2.4289403 | 29  | 4 | 2001-2007 | 0.58 | M-v | 2 | MPC | 108268 2002 LF <sub>30</sub>  |
| 2002 LS <sub>30</sub>  | 16.0 | 0.15 | 20071027 | 169.67864 | 140.32889 | 97.89602  | 8.34098  | 0.0509204 | 2.3983189 | 45  | 5 | 1998-2007 | 0.62 | M-v | 1 | MPC | 128756 2002 LS <sub>30</sub>  |
| 2002 LH <sub>31</sub>  | 16.9 | 0.15 | 20071027 | 87.85232  | 45.46261  | 256.21185 | 3.80372  | 0.3505219 | 2.6057254 | 56  | 4 | 1998-2007 | 0.56 | M-v | 2 | MPC | 102107 2002 LH <sub>31</sub>  |
| 2002 LC <sub>32</sub>  | 17.2 | 0.15 | 20071027 | 218.31464 | 127.03076 | 92.59115  | 6.11756  | 0.1127746 | 2.2975914 | 34  | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 104203 2002 LC <sub>32</sub>  |
| 2002 LG <sub>34</sub>  | 15.8 | 0.15 | 20071027 | 34.80583  | 114.86765 | 234.13988 | 25.83792 | 0.3031170 | 2.6325358 | 82  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 127938 2002 LG <sub>34</sub>  |
| 2002 LW <sub>38</sub>  | 16.4 | 0.15 | 20071027 | 174.16671 | 186.30145 | 120.67765 | 7.90860  | 0.1869317 | 2.2644717 | 68  | 7 | 1999-2007 | 0.56 | M-v | 1 | MPC | 116216 2002 LW <sub>38</sub>  |
| 2002 LZ <sub>43</sub>  | 15.3 | 0.15 | 20071027 | 29.28879  | 104.90953 | 254.08207 | 13.61716 | 0.3222662 | 2.7569238 | 97  | 2 | 2002-2007 | 0.49 | M-v | 2 | MPC | 127938 2002 LZ <sub>43</sub>  |
| 2002 LY <sub>49</sub>  | 16.6 | 0.15 | 20071027 | 231.62087 | 112.24485 | 73.91328  | 5.88557  | 0.0804607 | 2.3540884 | 46  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128756 2002 LY <sub>49</sub>  |
| 2002 LH <sub>53</sub>  | 15.0 | 0.15 | 20071027 | 66.12028  | 255.16813 | 91.44873  | 4.91440  | 0.2237795 | 2.5976385 | 84  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 77604 2002 LH <sub>53</sub>   |
| 2002 LU <sub>57</sub>  | 16.2 | 0.15 | 20071027 | 99.75790  | 65.61484  | 225.39256 | 16.37358 | 0.1799201 | 2.5252349 | 37  | 4 | 2002-2007 | 0.34 | M-v | 2 | MPC | 128756 2002 LU <sub>57</sub>  |
| 2002 LL <sub>58</sub>  | 15.5 | 0.15 | 20071027 | 52.96024  | 296.13601 | 43.22530  | 5.31967  | 0.4068849 | 2.6976137 | 87  | 5 | 1998-2007 | 0.53 | M-v | 1 | MPC | 102108 2002 LL <sub>58</sub>  |
| 2002 LT <sub>61</sub>  | 17.5 | 0.15 | 20071027 | 184.45261 | 66.99602  | 166.38196 | 2.26650  | 0.1225980 | 2.3637106 | 47  | 6 | 1999-2007 | 0.39 | M-v | 1 | MPC | 103327 2002 LT <sub>61</sub>  |
| 2002 MZ <sub>1</sub>   | 15.9 | 0.15 | 20071027 | 26.86633  | 273.78099 | 103.72915 | 14.52421 | 0.3718837 | 2.6815461 | 50  | 5 | 1998-2007 | 0.48 | M-v | 0 | MPC | 126624 2002 MZ <sub>1</sub>   |
| 2002 MB <sub>2</sub>   | 16.2 | 0.15 | 20071027 | 130.34989 | 174.56918 | 140.81339 | 1.80207  | 0.1745508 | 2.4186577 | 148 | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128756 2002 MB <sub>2</sub>   |
| 2002 NZ                | 16.0 | 0.15 | 20071027 | 131.91876 | 44.79647  | 227.66798 | 12.86915 | 0.1372820 | 2.5609141 | 52  | 3 | 2002-2007 | 0.32 | M-v | 1 | MPC | 127939 2002 NZ                |
| 2002 NA <sub>7</sub>   | 15.4 | 0.15 | 20071027 | 9.41930   | 228.35069 | 149.32447 | 10.54742 | 0.2688497 | 2.7407644 | 94  | 4 | 1998-2007 | 0.62 | M-v | 1 | MPC | 128756 2002 NA <sub>7</sub>   |
| 2002 NC <sub>7</sub>   | 15.9 | 0.15 | 20071027 | 23.66206  | 224.96656 | 140.36790 | 10.40392 | 0.1772960 | 2.6876258 | 50  | 4 | 1998-2007 | 0.63 | M-v | 1 | MPC | 128756 2002 NC <sub>7</sub>   |
| 2002 NE <sub>8</sub>   | 15.9 | 0.15 | 20071027 | 58.18946  | 78.64054  | 270.11024 | 7.43614  | 0.1581700 | 2.6074430 | 33  | 2 | 2002-2007 | 0.40 | M-v | 4 | MPC | 127939 2002 NE <sub>8</sub>   |
| 2002 NX <sub>10</sub>  | 16.6 | 0.15 | 20071027 | 159.94497 | 146.81322 | 129.87182 | 2.99702  | 0.1881200 | 2.4099190 | 67  | 7 | 1994-2007 | 0.52 | M-v | 1 | MPC | 110879 2002 NX <sub>10</sub>  |
| 2002 NE <sub>11</sub>  | 16.0 | 0.15 | 20071027 | 62.00184  | 67.95943  | 278.71081 | 2.35415  | 0.1726502 | 2.5766841 | 43  | 4 | 1998-2007 | 0.63 | M-v | 1 | MPC | 128756 2002 NE <sub>11</sub>  |
| 2002 NX <sub>11</sub>  | 15.5 | 0.15 | 20071027 | 12.64827  | 61.01562  | 286.93688 | 6.25741  | 0.2371634 | 2.8054364 | 99  | 3 | 1994-2007 | 0.45 | M-v | 2 | MPC | 128756 2002 NX <sub>11</sub>  |
| 2002 NT <sub>12</sub>  | 16.1 | 0.15 | 20071027 | 64.68337  | 246.90785 | 116.14945 | 13.91742 | 0.2273262 | 2.5472751 | 43  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 102109 2002 NT <sub>12</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2002 NJ <sub>18</sub> | 15.9 | 0.15 | 20071027 | 67.38013  | 192.40511 | 134.98407 | 15.15152 | 0.1603315 | 2.6176663 | 47  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 128756 2002 NJ <sub>18</sub> |
| 2002 NQ <sub>18</sub> | 16.0 | 0.15 | 20071027 | 108.42503 | 11.15016  | 266.92333 | 5.24374  | 0.2388583 | 2.5956192 | 58  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128756 2002 NQ <sub>18</sub> |
| 2002 NT <sub>18</sub> | 15.5 | 0.15 | 20071027 | 106.46420 | 42.67438  | 253.46024 | 6.55832  | 0.1950910 | 2.5638501 | 43  | 5 | 1998-2007 | 0.64 | M-v | 1 | MPC | 128756 2002 NT <sub>18</sub> |
| 2002 ND <sub>19</sub> | 16.7 | 0.15 | 20071027 | 133.62694 | 157.81660 | 150.69945 | 5.12414  | 0.2000895 | 2.4449856 | 92  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 110879 2002 ND <sub>19</sub> |
| 2002 NE <sub>21</sub> | 16.3 | 0.15 | 20071027 | 146.17422 | 15.98178  | 217.76853 | 4.56777  | 0.2099782 | 2.5739913 | 50  | 7 | 1995-2007 | 0.43 | M-v | 1 | MPC | 128756 2002 NE <sub>21</sub> |
| 2002 NA <sub>23</sub> | 15.7 | 0.15 | 20071027 | 60.82362  | 192.11264 | 144.15751 | 15.87259 | 0.2244661 | 2.6615651 | 60  | 4 | 1998-2007 | 0.43 | M-v | 1 | MPC | 128757 2002 NA <sub>23</sub> |
| 2002 NQ <sub>24</sub> | 15.6 | 0.15 | 20071027 | 34.70770  | 72.45649  | 276.63044 | 6.50169  | 0.3294701 | 2.7643300 | 91  | 2 | 2002-2007 | 0.42 | M-v | 3 | MPC | 127939 2002 NQ <sub>24</sub> |
| 2002 NP <sub>25</sub> | 15.7 | 0.15 | 20071027 | 36.19706  | 83.23876  | 268.75511 | 5.85057  | 0.2847383 | 2.7582894 | 111 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128757 2002 NP <sub>25</sub> |
| 2002 NQ <sub>25</sub> | 15.6 | 0.15 | 20071027 | 56.84286  | 55.59874  | 303.16627 | 13.45627 | 0.3155267 | 2.6576798 | 80  | 5 | 1998-2007 | 0.58 | M-v | 1 | MPC | 85544 2002 NQ <sub>25</sub>  |
| 2002 NX <sub>27</sub> | 15.9 | 0.15 | 20071027 | 28.56097  | 71.25750  | 261.54510 | 6.48398  | 0.2811922 | 2.7781689 | 67  | 2 | 2002-2007 | 0.51 | M-v | 3 | MPC | 128757 2002 NX <sub>27</sub> |
| 2002 NF <sub>30</sub> | 16.4 | 0.15 | 20071027 | 79.31573  | 253.74290 | 84.11446  | 4.37494  | 0.2361881 | 2.5587279 | 46  | 6 | 1996-2007 | 0.49 | M-v | 1 | MPC | 57873 2002 NF <sub>30</sub>  |
| 2002 NL <sub>32</sub> | 15.9 | 0.15 | 20071027 | 73.85981  | 106.07936 | 217.70844 | 13.39878 | 0.2215227 | 2.6763396 | 51  | 5 | 1997-2007 | 0.62 | M-v | 1 | MPC | 128757 2002 NL <sub>32</sub> |
| 2002 NN <sub>32</sub> | 15.4 | 0.15 | 20071027 | 59.14133  | 110.65218 | 227.42885 | 14.58185 | 0.2717083 | 2.7101041 | 70  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128757 2002 NN <sub>32</sub> |
| 2002 NG <sub>37</sub> | 16.3 | 0.15 | 20071027 | 50.53154  | 65.29981  | 270.43681 | 10.40188 | 0.2052508 | 2.6964922 | 52  | 2 | 2002-2007 | 0.43 | M-v | 3 | MPC | 127940 2002 NG <sub>37</sub> |
| 2002 NG <sub>38</sub> | 15.8 | 0.15 | 20071027 | 118.09556 | 28.55238  | 256.36250 | 6.47249  | 0.1725749 | 2.5853885 | 70  | 4 | 1998-2007 | 0.53 | M-v | 2 | MPC | 128757 2002 NG <sub>38</sub> |
| 2002 NX <sub>39</sub> | 17.0 | 0.15 | 20071027 | 190.62467 | 317.06489 | 308.73424 | 3.34391  | 0.1973911 | 2.3568088 | 41  | 6 | 1998-2007 | 0.50 | M-v | 1 | MPC | 110880 2002 NX <sub>39</sub> |
| 2002 NF <sub>41</sub> | 16.1 | 0.15 | 20071027 | 107.45911 | 202.55342 | 85.87138  | 6.47316  | 0.1125868 | 2.5891110 | 53  | 4 | 2000-2007 | 0.47 | M-v | 3 | MPC | 128757 2002 NF <sub>41</sub> |
| 2002 NH <sub>41</sub> | 15.5 | 0.15 | 20071027 | 27.84056  | 45.08226  | 322.18052 | 10.73484 | 0.2471511 | 2.6969707 | 57  | 5 | 1998-2007 | 0.50 | M-v | 1 | MPC | 128757 2002 NH <sub>41</sub> |
| 2002 NA <sub>44</sub> | 16.3 | 0.15 | 20071027 | 54.67523  | 206.67906 | 142.70830 | 4.12621  | 0.2116821 | 2.6282403 | 46  | 4 | 1998-2007 | 0.64 | M-v | 1 | MPC | 110881 2002 NA <sub>44</sub> |
| 2002 NG <sub>44</sub> | 15.3 | 0.15 | 20071027 | 94.30807  | 13.32538  | 276.02041 | 13.72409 | 0.0134456 | 2.6095636 | 47  | 5 | 2001-2007 | 0.63 | M-v | 1 | MPC | 126625 2002 NG <sub>44</sub> |
| 2002 NR <sub>45</sub> | 16.5 | 0.15 | 20071027 | 190.83218 | 124.92731 | 117.99530 | 7.71181  | 0.1589917 | 2.3964442 | 42  | 6 | 1998-2007 | 0.56 | M-v | 1 | MPC | 110881 2002 NR <sub>45</sub> |
| 2002 NJ <sub>46</sub> | 16.3 | 0.15 | 20071027 | 28.68346  | 82.98668  | 285.30144 | 13.30351 | 0.2473023 | 2.6729514 | 42  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128757 2002 NJ <sub>46</sub> |
| 2002 NP <sub>46</sub> | 16.6 | 0.15 | 20071027 | 106.66795 | 50.37156  | 256.12726 | 4.67527  | 0.1441057 | 2.5275258 | 60  | 5 | 1999-2007 | 0.36 | M-v | 2 | MPC | 128757 2002 NP <sub>46</sub> |
| 2002 NL <sub>47</sub> | 15.9 | 0.15 | 20071027 | 92.20218  | 245.79260 | 74.93070  | 3.41677  | 0.2045934 | 2.5507948 | 37  | 4 | 1998-2007 | 0.44 | M-v | 1 | MPC | 77609 2002 NL <sub>47</sub>  |
| 2002 NK <sub>50</sub> | 15.9 | 0.15 | 20071027 | 36.89111  | 71.48042  | 318.22179 | 2.53076  | 0.2260487 | 2.5454082 | 73  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128757 2002 NK <sub>50</sub> |
| 2002 NV <sub>50</sub> | 16.5 | 0.15 | 20071027 | 70.36962  | 208.89564 | 135.90372 | 3.46819  | 0.2348874 | 2.5870961 | 27  | 3 | 1998-2007 | 0.49 | M-v | 3 | MPC | 35227 2002 NV <sub>50</sub>  |
| 2002 NU <sub>54</sub> | 15.6 | 0.15 | 20071027 | 143.94607 | 346.31679 | 301.86610 | 13.16216 | 0.0576510 | 2.4536571 | 31  | 3 | 2002-2007 | 0.42 | M-v | 3 | MPC | 110881 2002 NU <sub>54</sub> |
| 2002 ND <sub>57</sub> | 15.9 | 0.15 | 20071027 | 290.85140 | 150.51872 | 319.91760 | 13.12024 | 0.0407694 | 2.6169018 | 43  | 2 | 2002-2007 | 0.45 | M-v | 3 | MPC | 128757 2002 ND <sub>57</sub> |
| 2002 NK <sub>59</sub> | 15.6 | 0.15 | 20071027 | 23.77496  | 234.46744 | 125.18404 | 10.18300 | 0.1755484 | 2.7713082 | 76  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128757 2002 NK <sub>59</sub> |
| 2002 NN <sub>59</sub> | 17.0 | 0.15 | 20071027 | 84.91791  | 86.81973  | 217.67438 | 11.96278 | 0.1765385 | 2.6410734 | 36  | 2 | 2002-2007 | 0.29 | M-v | 2 | MPC | 128757 2002 NN <sub>59</sub> |
| 2002 NY <sub>59</sub> | 16.9 | 0.15 | 20071027 | 239.65571 | 104.02884 | 123.12325 | 6.85392  | 0.0775841 | 2.3333178 | 40  | 5 | 2002-2007 | 0.46 | M-v | 1 | MPC | 110881 2002 NY <sub>59</sub> |
| 2002 NO <sub>60</sub> | 16.9 | 0.15 | 20071027 | 178.91166 | 182.82871 | 100.00342 | 7.55925  | 0.0964048 | 2.3547133 | 38  | 5 | 2002-2007 | 0.38 | M-v | 1 | MPC | 128757 2002 NO <sub>60</sub> |
| 2002 NV <sub>60</sub> | 17.0 | 0.15 | 20071027 | 125.79481 | 183.13970 | 101.77372 | 1.20302  | 0.1599628 | 2.5350344 | 43  | 5 | 2002-2007 | 0.33 | M-v | 1 | MPC | 128757 2002 NV <sub>60</sub> |
| 2002 NX <sub>60</sub> | 17.2 | 0.15 | 20071027 | 137.09676 | 290.71429 | 17.05493  | 3.11338  | 0.1810962 | 2.4361118 | 66  | 4 | 2002-2007 | 0.44 | M-v | 1 | MPC | 110881 2002 NX <sub>60</sub> |
| 2002 NJ <sub>64</sub> | 16.2 | 0.15 | 20071027 | 95.47392  | 270.27184 | 46.80047  | 2.05737  | 0.1427732 | 2.5372259 | 46  | 3 | 2002-2007 | 0.32 | M-v | 3 | MPC | 128757 2002 NJ <sub>64</sub> |
| 2002 NU <sub>66</sub> | 17.4 | 0.15 | 20071027 | 30.16465  | 63.55700  | 308.13384 | 6.29077  | 0.2014182 | 2.6441699 | 26  | 3 | 2002-2007 | 0.26 | M-v | 2 | MPC | 125858 2002 NU <sub>66</sub> |
| 2002 NM <sub>67</sub> | 17.0 | 0.15 | 20071027 | 311.42513 | 216.95324 | 138.22814 | 14.59179 | 0.3111930 | 3.1638097 | 24  | 1 | 64 days   | 0.28 | M-v | 4 | MPC | 2002 NM <sub>67</sub>        |
| 2002 NN <sub>67</sub> | 16.0 | 0.15 | 20020705 | 339.20871 | 232.97084 | 97.83258  | 3.70225  | 0.1639273 | 3.0108747 | 10  | 1 | 34 days   | 0.23 |     |   | MPC | 2002 NN <sub>67</sub>        |
| 2002 NO <sub>67</sub> | 16.9 | 0.15 | 20020705 | 2.74703   | 185.09290 | 110.61834 | 7.13604  | 0.1626933 | 2.5480022 | 7   | 1 | 13 days   | 0.20 |     |   | MPC | 2002 NO <sub>67</sub>        |
| 2002 ON               | 15.1 | 0.15 | 20071027 | 52.86579  | 73.89006  | 268.21531 | 11.39606 | 0.1547736 | 2.7092828 | 121 | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128758 2002 ON               |
| 2002 OU <sub>1</sub>  | 16.1 | 0.15 | 20071027 | 47.90322  | 98.95673  | 263.53939 | 10.17848 | 0.2073547 | 2.6498375 | 67  | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 110881 2002 OU <sub>1</sub>  |
| 2002 OD <sub>5</sub>  | 15.9 | 0.15 | 20071027 | 55.26709  | 178.39314 | 165.31758 | 9.50947  | 0.1014275 | 2.6713704 | 70  | 2 | 2002-2007 | 0.57 | M-v | 3 | MPC | 127941 2002 OD <sub>5</sub>  |
| 2002 OW <sub>5</sub>  | 16.6 | 0.15 | 20071027 | 49.48021  | 190.52657 | 166.76188 | 11.23334 | 0.1380455 | 2.6107720 | 48  | 6 | 1993-2007 | 0.46 | M-v | 0 | MPC | 128758 2002 OW <sub>5</sub>  |
| 2002 OF <sub>7</sub>  | 16.8 | 0.15 | 20071027 | 39.98904  | 106.01098 | 224.89860 | 7.04619  | 0.2496731 | 2.7916883 | 66  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128758 2002 OF <sub>7</sub>  |
| 2002 OK <sub>7</sub>  | 16.1 | 0.15 | 20071027 | 356.25333 | 139.85937 | 250.64831 | 8.32151  | 0.2265686 | 2.8104016 | 74  | 3 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128758 2002 OK <sub>7</sub>  |
| 2002 OD <sub>11</sub> | 16.1 | 0.15 | 20071027 | 39.50510  | 112.66940 | 264.86551 | 2.18415  | 0.1819954 | 2.6243645 | 66  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 77610 2002 OD <sub>11</sub>  |
| 2002 OB <sub>12</sub> | 16.1 | 0.15 | 20071027 | 46.07873  | 125.85591 | 234.10790 | 13.52475 | 0.1821117 | 2.6342825 | 52  | 4 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128758 2002 OB <sub>12</sub> |
| 2002 OC <sub>12</sub> | 15.1 | 0.15 | 20071027 | 27.74244  | 168.30435 | 231.41080 | 13.18449 | 0.1618249 | 2.5694435 | 37  | 5 | 1998-2007 | 0.60 | M-v | 1 | MPC | 126626 2002 OC <sub>12</sub> |
| 2002 OM <sub>12</sub> | 15.6 | 0.15 | 20071027 | 39.03949  | 91.47475  | 240.40933 | 16.51555 | 0.2780386 | 2.7973008 | 63  | 2 | 2002-2007 | 0.53 | M-v | 3 | MPC | 127942 2002 OM <sub>12</sub> |
| 2002 OV <sub>12</sub> | 15.4 | 0.15 | 20071027 | 112.87432 | 346.02127 | 296.49577 | 13.24585 | 0.2088238 | 2.6394356 | 106 | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 104206 2002 OV <sub>12</sub> |
| 2002 OU <sub>13</sub> | 15.9 | 0.15 | 20071027 | 37.61475  | 90.24761  | 269.47946 | 11.65590 | 0.2149839 | 2.6839550 | 41  | 2 | 2002-2007 | 0.54 | M-v | 3 | MPC | 127942 2002 OU <sub>13</sub> |
| 2002 OQ <sub>14</sub> | 16.1 | 0.15 | 20071027 | 10.63612  | 101.79502 | 274.84065 | 11.82307 | 0.2176060 | 2.7708417 | 61  | 2 | 2002-2007 | 0.52 | M-v | 3 | MPC | 127942 2002 OQ <sub>14</sub> |
| 2002 OW <sub>14</sub> | 15.8 | 0.15 | 20071027 | 9.54984   | 129.68869 | 271.92766 | 12.00213 | 0.1744457 | 2.6848258 | 90  | 3 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128758 2002 OW <sub>14</sub> |

|                       |      |      |          |           |           |           |          |           |            |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2002 OD <sub>15</sub> | 15.6 | 0.15 | 20071027 | 55.00505  | 61.47391  | 272.64036 | 11.47757 | 0.1822965 | 2.7245397  | 66  | 2 | 2002-2007 | 0.53 | M-v | 3 | MPC | 127942 2002 OD <sub>15</sub> |
| 2002 OR <sub>15</sub> | 16.0 | 0.15 | 20071027 | 49.52936  | 111.79851 | 203.70091 | 8.48389  | 0.1427811 | 2.7685618  | 95  | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128758 2002 OR <sub>15</sub> |
| 2002 OX <sub>15</sub> | 15.7 | 0.15 | 20071027 | 10.64112  | 157.00699 | 206.46864 | 10.18351 | 0.1381289 | 2.7966702  | 96  | 3 | 1993-2007 | 0.53 | M-v | 2 | MPC | 128758 2002 OX <sub>15</sub> |
| 2002 OZ <sub>15</sub> | 15.4 | 0.15 | 20071027 | 68.02701  | 41.62189  | 282.00765 | 13.22835 | 0.1256388 | 2.7014146  | 42  | 3 | 2002-2007 | 0.51 | M-v | 3 | MPC | 127943 2002 OZ <sub>15</sub> |
| 2002 OH <sub>18</sub> | 15.5 | 0.15 | 20071027 | 16.73037  | 99.35436  | 282.10687 | 13.56818 | 0.1411592 | 2.6918091  | 43  | 2 | 2002-2007 | 0.50 | M-v | 3 | MPC | 127943 2002 OH <sub>18</sub> |
| 2002 OC <sub>23</sub> | 15.1 | 0.15 | 20071027 | 74.84998  | 72.51286  | 261.99709 | 13.74065 | 0.1409188 | 2.5852722  | 64  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 56409 2002 OC <sub>23</sub>  |
| 2002 OD <sub>23</sub> | 15.6 | 0.15 | 20071027 | 273.77476 | 259.24755 | 293.10103 | 23.37875 | 0.1172792 | 2.38777954 | 23  | 4 | 2001-2007 | 0.43 | M-v | 3 | MPC | 113904 2002 OD <sub>23</sub> |
| 2002 OS <sub>23</sub> | 15.6 | 0.15 | 20071027 | 99.09528  | 351.54873 | 311.46319 | 13.77201 | 0.1834977 | 2.6122168  | 59  | 5 | 1998-2007 | 0.64 | M-v | 2 | MPC | 102111 2002 OS <sub>23</sub> |
| 2002 OR <sub>24</sub> | 17.4 | 0.15 | 20071027 | 150.25237 | 325.15405 | 316.92322 | 5.39618  | 0.1173885 | 2.4772634  | 46  | 5 | 1997-2007 | 0.39 | M-v | 1 | MPC | 110882 2002 OR <sub>24</sub> |
| 2002 OA <sub>26</sub> | 17.1 | 0.15 | 20071027 | 55.70774  | 61.84926  | 312.59218 | 3.04793  | 0.2395494 | 2.5686766  | 30  | 4 | 2000-2007 | 0.33 | M-v | 3 | MPC | 69380 2002 OA <sub>26</sub>  |
| 2002 OY <sub>26</sub> | 17.6 | 0.15 | 20071027 | 93.15952  | 176.65641 | 144.67431 | 1.09347  | 0.1046959 | 2.5782649  | 33  | 5 | 1998-2007 | 0.33 | M-v | 1 | MPC | 100300 2002 OY <sub>26</sub> |
| 2002 OM <sub>27</sub> | 16.7 | 0.15 | 20071027 | 66.28499  | 233.91644 | 121.54568 | 4.03911  | 0.1920262 | 2.5465925  | 31  | 5 | 1998-2007 | 0.30 | M-v | 1 | MPC | 100300 2002 OM <sub>27</sub> |
| 2002 OK <sub>29</sub> | 16.6 | 0.15 | 20071027 | 339.04788 | 277.05783 | 152.59592 | 4.10195  | 0.0546908 | 2.5817240  | 68  | 5 | 2001-2007 | 0.43 | M-v | 0 | MPC | 128758 2002 OK <sub>29</sub> |
| 2002 OZ <sub>29</sub> | 16.8 | 0.15 | 20071027 | 104.10991 | 158.26559 | 137.60827 | 9.61918  | 0.1544028 | 2.5782287  | 20  | 1 | 64 days   | 0.22 | M-v | 4 | MPC | 2002 OZ <sub>29</sub>        |
| 2002 PD               | 16.7 | 0.15 | 20071027 | 95.05223  | 217.61504 | 106.52195 | 2.70638  | 0.3056021 | 2.5622069  | 77  | 4 | 1998-2007 | 0.60 | M-v | 2 | MPC | 104206 2002 PD               |
| 2002 PX <sub>1</sub>  | 15.7 | 0.15 | 20071027 | 25.56513  | 234.63137 | 123.15239 | 10.14141 | 0.2117369 | 2.7509854  | 86  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128758 2002 PX <sub>1</sub>  |
| 2002 PG <sub>2</sub>  | 16.2 | 0.15 | 20071027 | 16.59109  | 197.73324 | 196.43970 | 12.16249 | 0.0934653 | 2.6074153  | 41  | 3 | 2002-2007 | 0.38 | M-v | 3 | MPC | 128758 2002 PG <sub>2</sub>  |
| 2002 PG <sub>5</sub>  | 15.5 | 0.15 | 20071027 | 256.72262 | 214.52480 | 287.28671 | 13.37088 | 0.0298818 | 2.6516356  | 66  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128758 2002 PG <sub>5</sub>  |
| 2002 PO <sub>9</sub>  | 15.9 | 0.15 | 20071027 | 73.22447  | 90.36275  | 228.08571 | 3.67479  | 0.1046490 | 2.6532610  | 86  | 5 | 1994-2007 | 0.44 | M-v | 0 | MPC | 128758 2002 PO <sub>9</sub>  |
| 2002 PJ <sub>10</sub> | 16.1 | 0.15 | 20071027 | 17.56025  | 94.41299  | 293.56592 | 9.13315  | 0.1031468 | 2.6556567  | 36  | 3 | 2002-2007 | 0.63 | M-v | 3 | MPC | 100302 2002 PJ <sub>10</sub> |
| 2002 PN <sub>11</sub> | 16.2 | 0.15 | 20071027 | 54.87154  | 169.52568 | 167.59191 | 4.13022  | 0.1068390 | 2.6669855  | 94  | 6 | 1997-2007 | 0.48 | M-v | 1 | MPC | 128758 2002 PN <sub>11</sub> |
| 2002 PH <sub>14</sub> | 17.0 | 0.15 | 20071027 | 183.20273 | 343.22968 | 287.30316 | 8.33450  | 0.0824257 | 2.3789822  | 46  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 108287 2002 PH <sub>14</sub> |
| 2002 PM <sub>16</sub> | 16.4 | 0.15 | 20071027 | 64.39731  | 177.34286 | 143.14868 | 6.41406  | 0.1617994 | 2.6619209  | 34  | 4 | 1995-2007 | 0.54 | M-v | 1 | MPC | 128758 2002 PM <sub>16</sub> |
| 2002 PE <sub>20</sub> | 16.3 | 0.15 | 20071027 | 74.88665  | 78.54559  | 228.80072 | 0.98208  | 0.1420823 | 2.6699974  | 69  | 3 | 2001-2007 | 0.39 | M-v | 3 | MPC | 128758 2002 PE <sub>20</sub> |
| 2002 PU <sub>21</sub> | 16.2 | 0.15 | 20071027 | 15.51279  | 89.01972  | 298.55035 | 11.61617 | 0.1872732 | 2.6786545  | 52  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 56417 2002 PU <sub>21</sub>  |
| 2002 PN <sub>24</sub> | 15.9 | 0.15 | 20071027 | 27.23027  | 80.71221  | 311.11704 | 9.58726  | 0.2164479 | 2.6297504  | 51  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 62393 2002 PN <sub>24</sub>  |
| 2002 PQ <sub>24</sub> | 16.7 | 0.15 | 20071027 | 188.03850 | 324.47997 | 310.47561 | 6.00796  | 0.0989561 | 2.3731047  | 58  | 4 | 2001-2007 | 0.39 | M-v | 1 | MPC | 108288 2002 PQ <sub>24</sub> |
| 2002 PH <sub>27</sub> | 16.7 | 0.15 | 20071027 | 21.34489  | 249.21011 | 146.96855 | 14.51874 | 0.0930089 | 2.5941319  | 27  | 4 | 1996-2007 | 0.45 | M-v | 0 | MPC | 70352 2002 PH <sub>27</sub>  |
| 2002 PU <sub>27</sub> | 16.0 | 0.15 | 20071027 | 22.59225  | 99.25416  | 305.08838 | 2.68876  | 0.1579023 | 2.5882051  | 70  | 5 | 1999-2007 | 0.55 | M-v | 1 | MPC | 104206 2002 PU <sub>27</sub> |
| 2002 PF <sub>28</sub> | 16.0 | 0.15 | 20071027 | 2.55230   | 99.32052  | 308.11990 | 6.43917  | 0.2558632 | 2.6994086  | 98  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128758 2002 PF <sub>28</sub> |
| 2002 PK <sub>30</sub> | 16.9 | 0.15 | 20071027 | 49.34830  | 68.37454  | 300.68369 | 1.06499  | 0.2321452 | 2.6264738  | 40  | 4 | 1998-2007 | 0.45 | M-v | 1 | MPC | 62393 2002 PK <sub>30</sub>  |
| 2002 PK <sub>33</sub> | 17.0 | 0.15 | 20071027 | 355.47221 | 241.05074 | 165.46218 | 4.34125  | 0.1199651 | 2.6668832  | 67  | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128759 2002 PK <sub>33</sub> |
| 2002 PS <sub>40</sub> | 15.0 | 0.15 | 20071027 | 71.09379  | 29.27799  | 309.50276 | 13.05059 | 0.2654348 | 2.6757121  | 72  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 69383 2002 PS <sub>40</sub>  |
| 2002 PX <sub>47</sub> | 15.3 | 0.15 | 20071027 | 113.93043 | 354.19324 | 292.08783 | 11.25336 | 0.1647092 | 2.6446757  | 81  | 6 | 2000-2007 | 0.54 | M-v | 1 | MPC | 104207 2002 PX <sub>47</sub> |
| 2002 PL <sub>48</sub> | 15.7 | 0.15 | 20071027 | 5.21845   | 128.03037 | 274.36752 | 6.61360  | 0.2278688 | 2.7610251  | 174 | 3 | 2002-2007 | 0.51 | M-v | 1 | MPC | 128759 2002 PL <sub>48</sub> |
| 2002 PX <sub>52</sub> | 16.3 | 0.15 | 20071027 | 31.08467  | 300.18772 | 94.54097  | 3.89110  | 0.1285320 | 2.5810168  | 56  | 7 | 2000-2007 | 0.46 | M-v | 0 | MPC | 104207 2002 PX <sub>52</sub> |
| 2002 PO <sub>54</sub> | 15.1 | 0.15 | 20071027 | 57.41448  | 309.37236 | 33.52712  | 8.96928  | 0.2515090 | 2.7619563  | 124 | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128759 2002 PO <sub>54</sub> |
| 2002 PB <sub>56</sub> | 15.2 | 0.15 | 20071027 | 37.55324  | 54.16602  | 311.10158 | 11.37607 | 0.1915202 | 2.6881953  | 69  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 56433 2002 PB <sub>56</sub>  |
| 2002 PY <sub>63</sub> | 15.4 | 0.15 | 20071027 | 58.24005  | 44.49709  | 301.49664 | 13.54699 | 0.0486954 | 2.5848350  | 39  | 5 | 1998-2007 | 0.61 | M-v | 1 | MPC | 77616 2002 PY <sub>63</sub>  |
| 2002 PP <sub>65</sub> | 16.2 | 0.15 | 20071027 | 49.85011  | 204.08237 | 144.50793 | 14.98241 | 0.0469823 | 2.6061874  | 38  | 4 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128759 2002 PP <sub>65</sub> |
| 2002 PA <sub>66</sub> | 16.0 | 0.15 | 20071027 | 46.23362  | 116.00434 | 284.24450 | 7.43708  | 0.1328917 | 2.4591426  | 45  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 110885 2002 PA <sub>66</sub> |
| 2002 PY <sub>67</sub> | 17.7 | 0.15 | 20071027 | 169.09139 | 24.26127  | 232.98891 | 2.05000  | 0.1446558 | 2.4734914  | 38  | 6 | 1999-2007 | 0.40 | M-v | 1 | MPC | 110885 2002 PY <sub>67</sub> |
| 2002 PY <sub>68</sub> | 16.8 | 0.15 | 20071027 | 36.36011  | 163.48770 | 200.82904 | 6.29630  | 0.3005474 | 2.7099429  | 78  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 102113 2002 PY <sub>68</sub> |
| 2002 PK <sub>69</sub> | 15.9 | 0.15 | 20071027 | 15.75366  | 142.97675 | 270.44300 | 11.04550 | 0.1843746 | 2.6538019  | 68  | 5 | 1998-2007 | 0.53 | M-v | 1 | MPC | 102113 2002 PK <sub>69</sub> |
| 2002 PT <sub>69</sub> | 15.3 | 0.15 | 20071027 | 62.17516  | 85.15188  | 243.55449 | 8.50167  | 0.1748275 | 2.7289187  | 112 | 4 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128759 2002 PT <sub>69</sub> |
| 2002 PC <sub>70</sub> | 15.8 | 0.15 | 20071027 | 76.33228  | 97.54330  | 219.19105 | 11.09163 | 0.0837279 | 2.6770517  | 135 | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128759 2002 PC <sub>70</sub> |
| 2002 PS <sub>70</sub> | 15.7 | 0.15 | 20071027 | 57.55742  | 134.18538 | 210.94924 | 11.89052 | 0.0832242 | 2.6873979  | 103 | 5 | 1998-2007 | 0.46 | M-v | 0 | MPC | 128759 2002 PS <sub>70</sub> |
| 2002 PD <sub>71</sub> | 15.3 | 0.15 | 20071027 | 0.51956   | 135.06093 | 274.86560 | 12.25087 | 0.2241447 | 2.7361343  | 62  | 4 | 1998-2007 | 0.50 | M-v | 1 | MPC | 128759 2002 PD <sub>71</sub> |
| 2002 PE <sub>73</sub> | 16.7 | 0.15 | 20071027 | 37.95585  | 118.92150 | 238.35278 | 10.27886 | 0.2148215 | 2.6786824  | 58  | 3 | 2000-2007 | 0.59 | M-v | 2 | MPC | 127946 2002 PE <sub>73</sub> |
| 2002 PR <sub>73</sub> | 16.6 | 0.15 | 20071027 | 26.82775  | 134.45272 | 264.38367 | 11.80201 | 0.2517284 | 2.6410254  | 35  | 3 | 1998-2007 | 0.47 | M-v | 1 | MPC | 89304 2002 PR <sub>73</sub>  |
| 2002 PA <sub>74</sub> | 15.7 | 0.15 | 20071027 | 15.89106  | 208.94503 | 181.13699 | 14.95258 | 0.1808566 | 2.6910104  | 53  | 4 | 1998-2007 | 0.50 | M-v | 1 | MPC | 128759 2002 PA <sub>74</sub> |
| 2002 PB <sub>75</sub> | 16.9 | 0.15 | 20071027 | 75.73642  | 54.62481  | 255.23050 | 9.65721  | 0.2052558 | 2.6817985  | 33  | 2 | 2002-2007 | 0.27 | M-v | 2 | MPC | 127946 2002 PB <sub>75</sub> |
| 2002 PC <sub>75</sub> | 15.6 | 0.15 | 20071027 | 54.26144  | 88.03289  | 257.37462 | 9.56217  | 0.1022333 | 2.6617982  | 76  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 128759 2002 PC <sub>75</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 PN <sub>76</sub>  | 15.6 | 0.15 | 20071027 | 8.83679   | 287.36402 | 113.40229 | 28.93849 | 0.1765310 | 2.6202985 | 41  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128759 2002 PN <sub>76</sub>  |
| 2002 PO <sub>77</sub>  | 15.2 | 0.15 | 20071027 | 64.07649  | 235.40304 | 113.70135 | 13.00859 | 0.2829361 | 2.6436470 | 58  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 77617 2002 PO <sub>77</sub>   |
| 2002 PU <sub>77</sub>  | 16.2 | 0.15 | 20071027 | 115.02431 | 197.73523 | 73.70834  | 6.03952  | 0.2268481 | 2.6375867 | 46  | 3 | 2002-2007 | 0.42 | M-v | 3 | MPC | 56443 2002 PU <sub>77</sub>   |
| 2002 PX <sub>77</sub>  | 16.2 | 0.15 | 20071027 | 90.17532  | 264.83917 | 79.56400  | 6.44805  | 0.2204244 | 2.5476554 | 69  | 4 | 1998-2007 | 0.46 | M-v | 2 | MPC | 110886 2002 PX <sub>77</sub>  |
| 2002 PM <sub>83</sub>  | 15.4 | 0.15 | 20071027 | 17.46156  | 86.82649  | 328.19835 | 6.93265  | 0.3228001 | 2.6782598 | 78  | 3 | 2002-2007 | 0.56 | M-v | 2 | MPC | 128759 2002 PM <sub>83</sub>  |
| 2002 PV <sub>85</sub>  | 16.5 | 0.15 | 20071027 | 123.35249 | 242.15263 | 81.84483  | 4.22907  | 0.1939325 | 2.4443818 | 80  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 110886 2002 PV <sub>85</sub>  |
| 2002 PL <sub>87</sub>  | 16.0 | 0.15 | 20071027 | 67.88876  | 327.97354 | 341.85498 | 12.55943 | 0.2152916 | 2.7058536 | 50  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 122707 2002 PL <sub>87</sub>  |
| 2002 PM <sub>88</sub>  | 16.3 | 0.15 | 20071027 | 73.96145  | 316.51332 | 7.02982   | 2.04646  | 0.2036419 | 2.6855147 | 76  | 6 | 1996-2007 | 0.35 | M-v | 0 | MPC | 128759 2002 PM <sub>88</sub>  |
| 2002 PP <sub>88</sub>  | 17.1 | 0.15 | 20071027 | 64.01788  | 299.91346 | 68.79608  | 3.84113  | 0.1848729 | 2.5961160 | 43  | 5 | 2002-2007 | 0.44 | M-v | 1 | MPC | 104208 2002 PP <sub>88</sub>  |
| 2002 PE <sub>89</sub>  | 15.8 | 0.15 | 20071027 | 19.93876  | 148.69999 | 237.24338 | 13.09410 | 0.2568879 | 2.7183909 | 71  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128759 2002 PE <sub>89</sub>  |
| 2002 PQ <sub>89</sub>  | 15.0 | 0.15 | 20071027 | 343.31642 | 146.31515 | 246.51603 | 11.99528 | 0.1282080 | 2.8317547 | 107 | 4 | 1998-2007 | 0.54 | M-v | 1 | MPC | 128759 2002 PQ <sub>89</sub>  |
| 2002 PX <sub>89</sub>  | 15.2 | 0.15 | 20071027 | 38.46068  | 78.59836  | 261.69985 | 10.87233 | 0.1505550 | 2.7866071 | 97  | 2 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128759 2002 PX <sub>89</sub>  |
| 2002 PE <sub>90</sub>  | 14.7 | 0.15 | 20071027 | 95.91005  | 26.14461  | 278.09935 | 14.49720 | 0.1212032 | 2.6319594 | 83  | 7 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128759 2002 PE <sub>90</sub>  |
| 2002 PF <sub>90</sub>  | 16.0 | 0.15 | 20071027 | 69.48418  | 70.82321  | 258.77051 | 10.98027 | 0.2277975 | 2.6603297 | 47  | 2 | 2002-2007 | 0.40 | M-v | 3 | MPC | 127946 2002 PF <sub>90</sub>  |
| 2002 PV <sub>90</sub>  | 15.3 | 0.15 | 20071027 | 60.89123  | 83.54152  | 284.81029 | 12.51853 | 0.1216983 | 2.6213767 | 70  | 5 | 1998-2007 | 0.54 | M-v | 1 | MPC | 103344 2002 PV <sub>90</sub>  |
| 2002 PW <sub>90</sub>  | 14.9 | 0.15 | 20071027 | 24.89651  | 101.08058 | 277.51343 | 11.17991 | 0.1975886 | 2.7558996 | 88  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128759 2002 PW <sub>90</sub>  |
| 2002 PN <sub>91</sub>  | 15.8 | 0.15 | 20071027 | 63.58279  | 329.22267 | 358.31324 | 5.80761  | 0.2703188 | 2.6815060 | 85  | 4 | 2001-2007 | 0.55 | M-v | 2 | MPC | 56449 2002 PN <sub>91</sub>   |
| 2002 PR <sub>92</sub>  | 15.9 | 0.15 | 20071027 | 85.34751  | 59.98649  | 246.29711 | 13.66057 | 0.1284448 | 2.6873308 | 37  | 2 | 2002-2007 | 0.38 | M-v | 4 | MPC | 127947 2002 PR <sub>92</sub>  |
| 2002 PT <sub>92</sub>  | 15.1 | 0.15 | 20071027 | 80.81741  | 81.14119  | 236.07321 | 13.67297 | 0.0601095 | 2.6831184 | 124 | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128759 2002 PT <sub>92</sub>  |
| 2002 PP <sub>93</sub>  | 15.2 | 0.15 | 20071027 | 98.34159  | 61.23536  | 244.15576 | 12.67996 | 0.2183427 | 2.6491687 | 71  | 3 | 2002-2007 | 0.42 | M-v | 2 | MPC | 128759 2002 PP <sub>93</sub>  |
| 2002 PR <sub>94</sub>  | 15.9 | 0.15 | 20071027 | 108.46538 | 166.22226 | 121.58088 | 12.59917 | 0.0605825 | 2.6775603 | 35  | 6 | 1996-2007 | 0.53 | M-v | 1 | MPC | 102114 2002 PR <sub>94</sub>  |
| 2002 PY <sub>95</sub>  | 16.5 | 0.15 | 20071027 | 112.89257 | 43.27501  | 311.30520 | 5.31072  | 0.1627650 | 2.4232437 | 85  | 4 | 2002-2007 | 0.43 | M-v | 2 | MPC | 110886 2002 PY <sub>95</sub>  |
| 2002 PZ <sub>95</sub>  | 15.5 | 0.15 | 20071027 | 73.89480  | 0.00556   | 326.83874 | 10.20657 | 0.2265502 | 2.6341867 | 66  | 3 | 1998-2007 | 0.55 | M-v | 2 | MPC | 38358 2002 PZ <sub>95</sub>   |
| 2002 PP <sub>96</sub>  | 16.6 | 0.15 | 20071027 | 133.74025 | 299.97539 | 14.66752  | 2.01824  | 0.2141426 | 2.4585655 | 137 | 5 | 1998-2007 | 0.50 | M-v | 2 | MPC | 112809 2002 PP <sub>96</sub>  |
| 2002 PL <sub>97</sub>  | 16.3 | 0.15 | 20071027 | 56.06491  | 256.86590 | 116.11300 | 9.12358  | 0.3262844 | 2.6303543 | 72  | 6 | 1991-2007 | 0.48 | M-v | 1 | MPC | 128760 2002 PL <sub>97</sub>  |
| 2002 PY <sub>97</sub>  | 14.9 | 0.15 | 20071027 | 74.61072  | 320.32524 | 359.09083 | 13.54733 | 0.1786808 | 2.6848284 | 85  | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128760 2002 PY <sub>97</sub>  |
| 2002 PP <sub>98</sub>  | 15.0 | 0.15 | 20071027 | 85.88629  | 289.32589 | 6.80542   | 11.89087 | 0.1990524 | 2.7148737 | 88  | 5 | 1992-2007 | 0.61 | M-v | 1 | MPC | 128760 2002 PP <sub>98</sub>  |
| 2002 PC <sub>100</sub> | 16.0 | 0.15 | 20071027 | 55.64595  | 205.94313 | 132.00167 | 12.99825 | 0.1987343 | 2.7220193 | 46  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128760 2002 PC <sub>100</sub> |
| 2002 PH <sub>102</sub> | 15.6 | 0.15 | 20071027 | 26.88150  | 106.33961 | 285.73747 | 11.38122 | 0.1527599 | 2.6219514 | 46  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128760 2002 PH <sub>102</sub> |
| 2002 PV <sub>102</sub> | 15.6 | 0.15 | 20071027 | 6.53489   | 118.92810 | 284.93313 | 11.48395 | 0.3085800 | 2.7138312 | 55  | 4 | 1998-2007 | 0.77 | M-v | 1 | MPC | 128760 2002 PV <sub>102</sub> |
| 2002 PL <sub>103</sub> | 16.0 | 0.15 | 20071027 | 29.00830  | 213.88938 | 167.19049 | 12.26342 | 0.2003156 | 2.6660334 | 39  | 5 | 1998-2007 | 0.47 | M-v | 0 | MPC | 110887 2002 PL <sub>103</sub> |
| 2002 PG <sub>104</sub> | 15.5 | 0.15 | 20071027 | 345.77390 | 157.05004 | 251.61173 | 8.58823  | 0.1443094 | 2.7406877 | 55  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 127947 2002 PG <sub>104</sub> |
| 2002 PR <sub>104</sub> | 15.8 | 0.15 | 20071027 | 77.92055  | 129.58115 | 179.16296 | 13.60903 | 0.1737272 | 2.6869545 | 48  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128760 2002 PR <sub>104</sub> |
| 2002 PK <sub>105</sub> | 16.1 | 0.15 | 20071027 | 35.48459  | 85.74190  | 293.72959 | 12.15135 | 0.1233228 | 2.6492948 | 66  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 56460 2002 PK <sub>105</sub>  |
| 2002 PE <sub>106</sub> | 16.0 | 0.15 | 20071027 | 16.49130  | 129.23449 | 281.67668 | 10.61361 | 0.1866392 | 2.6255241 | 45  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 102114 2002 PE <sub>106</sub> |
| 2002 PK <sub>106</sub> | 15.9 | 0.15 | 20071027 | 356.04889 | 140.70966 | 253.53666 | 7.80775  | 0.1718140 | 2.7654808 | 51  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128760 2002 PK <sub>106</sub> |
| 2002 PN <sub>106</sub> | 15.9 | 0.15 | 20071027 | 15.05473  | 139.82345 | 241.65428 | 7.93663  | 0.0905987 | 2.7104640 | 70  | 2 | 2002-2007 | 0.42 | M-v | 3 | MPC | 128760 2002 PN <sub>106</sub> |
| 2002 PY <sub>109</sub> | 15.7 | 0.15 | 20071027 | 119.36329 | 170.89188 | 120.59281 | 10.44976 | 0.1660633 | 2.5519658 | 73  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 104209 2002 PY <sub>109</sub> |
| 2002 PB <sub>111</sub> | 15.7 | 0.15 | 20071027 | 85.60854  | 59.85638  | 290.36548 | 12.30868 | 0.0549739 | 2.5396321 | 60  | 6 | 1998-2007 | 0.54 | M-v | 2 | MPC | 110887 2002 PB <sub>111</sub> |
| 2002 PY <sub>111</sub> | 15.3 | 0.15 | 20071027 | 9.53679   | 267.21224 | 134.12292 | 16.51978 | 0.1731779 | 2.6683106 | 88  | 3 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128760 2002 PY <sub>111</sub> |
| 2002 PD <sub>113</sub> | 15.7 | 0.15 | 20071027 | 347.36308 | 93.28674  | 319.97117 | 23.56701 | 0.2113302 | 2.7589686 | 79  | 3 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128760 2002 PD <sub>113</sub> |
| 2002 PN <sub>113</sub> | 14.8 | 0.15 | 20071027 | 18.74791  | 129.05651 | 254.65767 | 13.93406 | 0.4291808 | 2.8625116 | 143 | 3 | 1998-2007 | 0.55 | M-v | 2 | MPC | 128760 2002 PN <sub>113</sub> |
| 2002 PO <sub>115</sub> | 14.8 | 0.15 | 20071027 | 75.77382  | 62.25968  | 263.95798 | 13.90742 | 0.1596473 | 2.6329547 | 83  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128760 2002 PO <sub>115</sub> |
| 2002 PR <sub>115</sub> | 16.2 | 0.15 | 20071027 | 38.86141  | 122.82499 | 262.27789 | 10.34146 | 0.1998781 | 2.6297725 | 38  | 3 | 2002-2007 | 0.41 | M-v | 2 | MPC | 128760 2002 PR <sub>115</sub> |
| 2002 PU <sub>115</sub> | 16.0 | 0.15 | 20071027 | 106.86523 | 70.72079  | 212.03923 | 12.61828 | 0.2688539 | 2.6628343 | 67  | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128760 2002 PU <sub>115</sub> |
| 2002 PL <sub>116</sub> | 16.5 | 0.15 | 20071027 | 26.62846  | 140.12828 | 228.64445 | 12.93401 | 0.2157041 | 2.7212650 | 97  | 3 | 1998-2007 | 0.60 | M-v | 1 | MPC | 128760 2002 PL <sub>116</sub> |
| 2002 PU <sub>117</sub> | 16.3 | 0.15 | 20071027 | 95.69942  | 22.76193  | 303.75242 | 8.77939  | 0.1295454 | 2.5482692 | 47  | 5 | 1998-2007 | 0.45 | M-v | 2 | MPC | 104209 2002 PU <sub>117</sub> |
| 2002 PK <sub>120</sub> | 15.9 | 0.15 | 20071027 | 33.42399  | 87.14499  | 296.79668 | 7.23440  | 0.3071104 | 2.6910279 | 58  | 4 | 1989-2007 | 0.50 | M-v | 1 | MPC | 128760 2002 PK <sub>120</sub> |
| 2002 PL <sub>121</sub> | 16.3 | 0.15 | 20071027 | 86.57480  | 159.11075 | 168.19330 | 15.61273 | 0.1395535 | 2.6107655 | 53  | 5 | 1998-2007 | 0.53 | M-v | 1 | MPC | 110888 2002 PL <sub>121</sub> |
| 2002 PT <sub>122</sub> | 15.1 | 0.15 | 20071027 | 321.39614 | 141.52888 | 279.10201 | 7.17397  | 0.0963868 | 2.8166590 | 124 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128760 2002 PT <sub>122</sub> |
| 2002 PV <sub>123</sub> | 16.3 | 0.15 | 20071027 | 49.16092  | 99.99964  | 240.09738 | 6.52358  | 0.2012880 | 2.7106209 | 60  | 2 | 2002-2007 | 0.41 | M-v | 3 | MPC | 128760 2002 PV <sub>123</sub> |
| 2002 PS <sub>124</sub> | 16.2 | 0.15 | 20071027 | 46.30859  | 70.13835  | 313.85741 | 4.79811  | 0.2558352 | 2.6201661 | 57  | 5 | 1998-2007 | 0.63 | M-v | 1 | MPC | 128760 2002 PS <sub>124</sub> |
| 2002 PE <sub>126</sub> | 15.7 | 0.15 | 20071027 | 85.61043  | 339.20028 | 342.09390 | 3.22136  | 0.2370981 | 2.6074531 | 74  | 4 | 1998-2007 | 0.49 | M-v | 1 | MPC | 77621 2002 PE <sub>126</sub>  |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 PM <sub>128</sub> | 16.5 | 0.15 | 20071027 | 97.47957  | 76.95082  | 226.72931 | 1.72484  | 0.2035941 | 2.6106813 | 39  | 4 | 1993-2007 | 0.47 | M-v | 1 | MPC | 128760 2002 PM <sub>128</sub> |
| 2002 PU <sub>128</sub> | 16.1 | 0.15 | 20071027 | 58.19957  | 255.30566 | 77.44484  | 10.06226 | 0.1765931 | 2.7312022 | 57  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128760 2002 PU <sub>128</sub> |
| 2002 PW <sub>128</sub> | 15.2 | 0.15 | 20071027 | 45.63566  | 262.44241 | 85.57231  | 9.61277  | 0.2050903 | 2.7407168 | 82  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128761 2002 PW <sub>128</sub> |
| 2002 PJ <sub>133</sub> | 16.8 | 0.15 | 20071027 | 121.74908 | 353.01146 | 281.04625 | 3.29994  | 0.1817214 | 2.6017957 | 46  | 6 | 2001-2007 | 0.47 | M-v | 0 | MPC | 128761 2002 PJ <sub>133</sub> |
| 2002 PR <sub>133</sub> | 17.1 | 0.15 | 20071027 | 151.54575 | 339.18171 | 325.19686 | 3.64063  | 0.0872766 | 2.4201793 | 69  | 5 | 1993-2007 | 0.44 | M-v | 0 | MPC | 110888 2002 PR <sub>133</sub> |
| 2002 PR <sub>134</sub> | 15.5 | 0.15 | 20071027 | 82.04222  | 200.07132 | 125.62101 | 4.67304  | 0.1336014 | 2.6247072 | 49  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128761 2002 PR <sub>134</sub> |
| 2002 PJ <sub>136</sub> | 14.9 | 0.15 | 20071027 | 345.72201 | 112.94161 | 321.17939 | 11.72360 | 0.2348828 | 2.6492027 | 134 | 4 | 1998-2007 | 0.54 | M-v | 1 | MPC | 62396 2002 PJ <sub>136</sub>  |
| 2002 PQ <sub>136</sub> | 16.9 | 0.15 | 20071027 | 49.26716  | 241.04381 | 117.84904 | 0.97093  | 0.1386569 | 2.6326716 | 51  | 6 | 1996-2007 | 0.40 | M-v | 0 | MPC | 128761 2002 PQ <sub>136</sub> |
| 2002 PV <sub>136</sub> | 15.6 | 0.15 | 20071027 | 28.26794  | 256.42941 | 109.71211 | 5.70168  | 0.1838708 | 2.6980570 | 85  | 3 | 2002-2007 | 0.49 | M-v | 3 | MPC | 128761 2002 PV <sub>136</sub> |
| 2002 PA <sub>138</sub> | 16.3 | 0.15 | 20071027 | 41.86980  | 121.42095 | 234.81504 | 1.57954  | 0.1547060 | 2.7045627 | 70  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128761 2002 PA <sub>138</sub> |
| 2002 PU <sub>140</sub> | 16.0 | 0.15 | 20071027 | 40.04106  | 286.08730 | 54.78878  | 15.43933 | 0.1548739 | 2.7105071 | 90  | 4 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128761 2002 PU <sub>140</sub> |
| 2002 PM <sub>141</sub> | 15.2 | 0.15 | 20071027 | 80.84266  | 37.64991  | 281.93998 | 13.91796 | 0.1933029 | 2.6832216 | 53  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 127948 2002 PM <sub>141</sub> |
| 2002 PK <sub>142</sub> | 15.9 | 0.15 | 20071027 | 31.35647  | 27.04112  | 316.74522 | 10.78837 | 0.2982388 | 2.7566418 | 50  | 3 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128761 2002 PK <sub>142</sub> |
| 2002 PC <sub>152</sub> | 15.9 | 0.15 | 20071027 | 11.93405  | 269.94535 | 123.97874 | 10.30049 | 0.0749672 | 2.6234107 | 40  | 3 | 2002-2007 | 0.66 | M-v | 3 | MPC | 127948 2002 PC <sub>152</sub> |
| 2002 PK <sub>155</sub> | 16.6 | 0.15 | 20071027 | 78.58497  | 307.52936 | 20.93485  | 1.41692  | 0.1625203 | 2.6047316 | 34  | 5 | 1994-2007 | 0.41 | M-v | 1 | MPC | 128761 2002 PK <sub>155</sub> |
| 2002 PW <sub>155</sub> | 16.0 | 0.15 | 20071027 | 310.99633 | 135.22939 | 329.78725 | 5.14095  | 0.0551464 | 2.5814529 | 65  | 5 | 1994-2007 | 0.63 | M-v | 2 | MPC | 128761 2002 PW <sub>155</sub> |
| 2002 PJ <sub>160</sub> | 17.3 | 0.15 | 20071027 | 108.67835 | 220.43877 | 61.17331  | 2.67916  | 0.1649489 | 2.6205153 | 36  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 127949 2002 PJ <sub>160</sub> |
| 2002 PM <sub>162</sub> | 16.8 | 0.15 | 20071027 | 106.86623 | 311.89246 | 337.32442 | 5.09827  | 0.1631238 | 2.6141178 | 73  | 3 | 2002-2007 | 0.34 | M-v | 2 | MPC | 75473 2002 PM <sub>162</sub>  |
| 2002 PZ <sub>162</sub> | 16.6 | 0.15 | 20071027 | 79.89682  | 275.41579 | 3.69688   | 4.22276  | 0.0373399 | 2.7964009 | 42  | 4 | 1998-2007 | 0.41 | M-v | 1 | MPC | 128761 2002 PZ <sub>162</sub> |
| 2002 PL <sub>163</sub> | 17.3 | 0.15 | 20071027 | 207.79877 | 109.00660 | 136.02931 | 3.00392  | 0.1527129 | 2.3746439 | 46  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 114665 2002 PL <sub>163</sub> |
| 2002 PJ <sub>164</sub> | 16.1 | 0.15 | 20071027 | 22.73430  | 130.64999 | 255.48450 | 3.49313  | 0.1938834 | 2.7019288 | 70  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128761 2002 PJ <sub>164</sub> |
| 2002 PQ <sub>164</sub> | 17.5 | 0.15 | 20071027 | 31.40676  | 52.87358  | 324.37979 | 2.00588  | 0.2209261 | 2.6535367 | 37  | 3 | 2002-2007 | 0.41 | M-v | 3 | MPC | 61259 2002 PQ <sub>164</sub>  |
| 2002 PF <sub>167</sub> | 15.9 | 0.15 | 20071027 | 18.93477  | 261.96675 | 126.13995 | 4.22016  | 0.1023940 | 2.6700503 | 55  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 127949 2002 PF <sub>167</sub> |
| 2002 PY <sub>167</sub> | 17.5 | 0.15 | 20071027 | 59.86674  | 36.60955  | 335.93245 | 3.70022  | 0.1533925 | 2.5685674 | 31  | 4 | 2002-2007 | 0.32 | M-v | 1 | MPC | 104210 2002 PY <sub>167</sub> |
| 2002 PK <sub>170</sub> | 16.0 | 0.15 | 20071027 | 53.44090  | 104.30882 | 209.86523 | 14.12063 | 0.1378842 | 2.7417317 | 81  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128761 2002 PK <sub>170</sub> |
| 2002 PF <sub>173</sub> | 16.1 | 0.15 | 20071027 | 342.47594 | 177.42429 | 212.46916 | 3.74465  | 0.0773314 | 2.8006228 | 66  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128761 2002 PF <sub>173</sub> |
| 2002 PH <sub>177</sub> | 16.6 | 0.15 | 20071027 | 7.93373   | 332.22692 | 23.15379  | 4.63257  | 0.0820331 | 2.7814044 | 33  | 2 | 2002-2007 | 0.58 | M-v | 3 | MPC | 126630 2002 PH <sub>177</sub> |
| 2002 PN <sub>178</sub> | 16.4 | 0.15 | 20071027 | 241.11666 | 278.51932 | 259.98951 | 8.23793  | 0.0507250 | 2.5732689 | 40  | 4 | 2002-2007 | 0.44 | M-v | 1 | MPC | 128761 2002 PN <sub>178</sub> |
| 2002 PG <sub>179</sub> | 16.8 | 0.15 | 20071027 | 184.49206 | 344.67912 | 294.68053 | 6.79548  | 0.1352591 | 2.4123000 | 35  | 3 | 2002-2007 | 0.42 | M-v | 1 | MPC | 128761 2002 PG <sub>179</sub> |
| 2002 PF <sub>180</sub> | 17.2 | 0.15 | 20071027 | 32.19284  | 241.29057 | 139.48454 | 4.27805  | 0.1375062 | 2.6290465 | 44  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 112252 2002 PF <sub>180</sub> |
| 2002 PM <sub>181</sub> | 16.4 | 0.15 | 20071027 | 94.61383  | 243.90347 | 35.17010  | 2.99545  | 0.0314329 | 2.7177029 | 52  | 5 | 1998-2007 | 0.36 | M-v | 0 | MPC | 128761 2002 PM <sub>181</sub> |
| 2002 PP <sub>183</sub> | 18.2 | 0.15 | 20020725 | 334.54977 | 237.26918 | 107.05017 | 6.95037  | 0.1773007 | 2.3604944 | 18  | 1 | 47 days   | 0.27 |     |   | MPC | 2002 PP <sub>183</sub>        |
| 2002 PW <sub>183</sub> | 17.0 | 0.15 | 20071027 | 52.54608  | 126.53719 | 257.43653 | 3.73301  | 0.2730791 | 2.5580777 | 21  | 1 | 89 days   | 0.20 | M-v | 4 | MPC | 2002 PW <sub>183</sub>        |
| 2002 PY <sub>183</sub> | 18.2 | 0.15 | 20020725 | 343.57917 | 44.89989  | 282.69266 | 5.49302  | 0.1481225 | 2.3542871 | 18  | 1 | 53 days   | 0.43 |     |   | MPC | 2002 PY <sub>183</sub>        |
| 2002 PZ <sub>183</sub> | 17.3 | 0.15 | 20020725 | 327.10725 | 53.97712  | 299.08358 | 15.87374 | 0.1857750 | 2.5511666 | 17  | 1 | 40 days   | 0.41 |     |   | MPC | 2002 PZ <sub>183</sub>        |
| 2002 PA <sub>184</sub> | 18.1 | 0.15 | 20020725 | 326.56934 | 196.30643 | 154.91482 | 6.83141  | 0.1650847 | 2.3336919 | 25  | 1 | 55 days   | 0.31 |     |   | MPC | 2002 PA <sub>184</sub>        |
| 2002 PB <sub>184</sub> | 16.1 | 0.15 | 20020725 | 290.66669 | 248.57468 | 148.59486 | 10.95383 | 0.1901060 | 3.2071069 | 11  | 1 | 24 days   | 0.28 |     |   | MPC | 2002 PB <sub>184</sub>        |
| 2002 PC <sub>184</sub> | 18.0 | 0.15 | 20071027 | 80.42081  | 40.60506  | 261.64631 | 3.56683  | 0.2601839 | 2.6512155 | 24  | 1 | 71 days   | 0.26 | M-v | 4 | MPC | 2002 PC <sub>184</sub>        |
| 2002 PD <sub>184</sub> | 16.1 | 0.15 | 20020725 | 82.32590  | 84.23004  | 133.56903 | 11.03510 | 0.0485175 | 3.1589030 | 13  | 1 | 24 days   | 0.20 |     |   | MPC | 2002 PD <sub>184</sub>        |
| 2002 PE <sub>184</sub> | 17.8 | 0.15 | 20020814 | 30.98552  | 328.93779 | 318.26387 | 4.10364  | 0.1201251 | 2.1818341 | 19  | 1 | 37 days   | 0.40 |     |   | MPC | 2002 PE <sub>184</sub>        |
| 2002 PF <sub>184</sub> | 16.8 | 0.15 | 20020725 | 0.71789   | 281.32797 | 28.64461  | 4.78094  | 0.2525375 | 3.0115557 | 11  | 1 | 46 days   | 0.21 |     |   | MPC | 2002 PF <sub>184</sub>        |
| 2002 QK                | 15.6 | 0.15 | 20071027 | 75.17843  | 79.98613  | 314.14708 | 27.13325 | 0.2652419 | 2.5572048 | 65  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 114666 2002 QK                |
| 2002 QP                | 15.2 | 0.15 | 20071027 | 31.42638  | 76.26382  | 284.63458 | 7.67736  | 0.1698258 | 2.7907969 | 128 | 4 | 1993-2007 | 0.54 | M-v | 1 | MPC | 128762 2002 QP                |
| 2002 QM <sub>1</sub>   | 17.0 | 0.15 | 20071027 | 218.87675 | 133.34440 | 110.68465 | 6.39100  | 0.2001423 | 2.3440192 | 48  | 6 | 1998-2007 | 0.53 | M-v | 1 | MPC | 114666 2002 QM <sub>1</sub>   |
| 2002 QT <sub>1</sub>   | 15.8 | 0.15 | 20071027 | 146.49384 | 87.98761  | 161.36395 | 5.73093  | 0.2347350 | 2.5640001 | 57  | 5 | 1998-2007 | 0.42 | M-v | 1 | MPC | 128762 2002 QT <sub>1</sub>   |
| 2002 QS <sub>2</sub>   | 16.1 | 0.15 | 20071027 | 46.25968  | 84.97307  | 272.74740 | 1.58728  | 0.1308737 | 2.6671820 | 66  | 4 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128762 2002 QS <sub>2</sub>   |
| 2002 QK <sub>4</sub>   | 15.7 | 0.15 | 20071027 | 30.97688  | 65.27777  | 319.98332 | 12.17927 | 0.1702001 | 2.6553035 | 49  | 4 | 1998-2007 | 0.56 | M-v | 1 | MPC | 62397 2002 QK <sub>4</sub>    |
| 2002 QS <sub>4</sub>   | 16.2 | 0.15 | 20071027 | 92.80298  | 18.54722  | 290.69646 | 4.16361  | 0.1087519 | 2.6457024 | 68  | 6 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128762 2002 QS <sub>4</sub>   |
| 2002 QA <sub>5</sub>   | 15.5 | 0.15 | 20071027 | 350.22905 | 111.65277 | 296.07482 | 6.48688  | 0.2279898 | 2.7849257 | 115 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128762 2002 QA <sub>5</sub>   |
| 2002 QH <sub>7</sub>   | 15.7 | 0.15 | 20071027 | 5.92068   | 21.18147  | 350.52518 | 9.26589  | 0.2212955 | 2.7963295 | 120 | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128762 2002 QH <sub>7</sub>   |
| 2002 QW <sub>7</sub>   | 15.6 | 0.15 | 20071027 | 13.89429  | 257.40421 | 115.26596 | 11.12720 | 0.0961058 | 2.7742381 | 57  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 128762 2002 QW <sub>7</sub>   |
| 2002 QZ <sub>8</sub>   | 16.0 | 0.15 | 20071027 | 3.89170   | 10.29187  | 12.89069  | 10.05829 | 0.2001566 | 2.7944191 | 119 | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128762 2002 QZ <sub>8</sub>   |
| 2002 QJ <sub>11</sub>  | 17.3 | 0.15 | 20071027 | 71.73952  | 16.87491  | 331.94930 | 4.14519  | 0.2094867 | 2.5890349 | 35  | 4 | 2002-2007 | 0.38 | M-v | 1 | MPC | 100322 2002 QJ <sub>11</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2002 QJ <sub>12</sub> | 16.4 | 0.15 | 20071027 | 51.45807  | 152.97634 | 196.80521 | 4.85115  | 0.2291495 | 2.6818975 | 62  | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 128762 2002 QJ <sub>12</sub> |
| 2002 QV <sub>12</sub> | 15.9 | 0.15 | 20071027 | 358.64866 | 132.81426 | 248.67786 | 4.63154  | 0.0886913 | 2.7769529 | 68  | 2 | 2002-2007 | 0.49 | M-v | 3 | MPC | 128762 2002 QV <sub>12</sub> |
| 2002 QB <sub>14</sub> | 15.8 | 0.15 | 20071027 | 1.09036   | 139.22629 | 256.75242 | 8.14541  | 0.1754738 | 2.7582818 | 129 | 3 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128762 2002 QB <sub>14</sub> |
| 2002 QW <sub>19</sub> | 15.5 | 0.15 | 20071027 | 14.46860  | 85.09315  | 304.40863 | 8.10819  | 0.2252442 | 2.7602957 | 145 | 4 | 1998-2007 | 0.60 | M-v | 1 | MPC | 128762 2002 QW <sub>19</sub> |
| 2002 QE <sub>20</sub> | 16.3 | 0.15 | 20071027 | 101.10322 | 85.75992  | 253.32658 | 5.30631  | 0.1836274 | 2.5521718 | 76  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 110891 2002 QE <sub>20</sub> |
| 2002 QG <sub>20</sub> | 16.5 | 0.15 | 20071027 | 38.17327  | 141.79105 | 204.63067 | 7.42808  | 0.3205590 | 2.7908031 | 101 | 3 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128762 2002 QG <sub>20</sub> |
| 2002 QW <sub>22</sub> | 16.8 | 0.15 | 20071027 | 288.30793 | 74.32264  | 140.17835 | 6.95880  | 0.1172778 | 2.2479601 | 54  | 5 | 1998-2007 | 0.60 | M-v | 1 | MPC | 77626 2002 QW <sub>22</sub>  |
| 2002 QX <sub>24</sub> | 15.5 | 0.15 | 20071027 | 20.98369  | 129.18155 | 252.29197 | 23.46925 | 0.2725952 | 2.7923668 | 62  | 2 | 2002-2007 | 0.57 | M-v | 2 | MPC | 127950 2002 QX <sub>24</sub> |
| 2002 QS <sub>26</sub> | 17.1 | 0.15 | 20071027 | 46.85411  | 218.48700 | 148.51597 | 2.35968  | 0.1081941 | 2.6597849 | 38  | 7 | 1996-2007 | 0.53 | M-v | 1 | MPC | 104211 2002 QS <sub>26</sub> |
| 2002 QT <sub>26</sub> | 17.3 | 0.15 | 20071027 | 44.86252  | 323.65965 | 11.00538  | 1.24847  | 0.2098168 | 2.7788508 | 50  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128762 2002 QT <sub>26</sub> |
| 2002 QK <sub>30</sub> | 16.5 | 0.15 | 20071027 | 198.50639 | 172.24672 | 92.90361  | 4.24122  | 0.1296455 | 2.3769388 | 62  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128762 2002 QK <sub>30</sub> |
| 2002 QX <sub>32</sub> | 16.8 | 0.15 | 20071027 | 96.82109  | 316.00546 | 15.92408  | 0.64023  | 0.1012067 | 2.5837651 | 69  | 6 | 1998-2007 | 0.48 | M-v | 1 | MPC | 110892 2002 QX <sub>32</sub> |
| 2002 QU <sub>34</sub> | 16.6 | 0.15 | 20071027 | 79.63246  | 11.74129  | 30.29422  | 4.79629  | 0.1354918 | 2.4327958 | 80  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 118018 2002 QU <sub>34</sub> |
| 2002 QD <sub>37</sub> | 16.9 | 0.15 | 20071027 | 310.45484 | 324.82327 | 151.08081 | 4.72723  | 0.1421080 | 2.6833459 | 45  | 4 | 1996-2007 | 0.40 | M-v | 1 | MPC | 127951 2002 QD <sub>37</sub> |
| 2002 QJ <sub>38</sub> | 16.7 | 0.15 | 20071027 | 69.22586  | 310.19639 | 19.83817  | 0.92749  | 0.1305532 | 2.7255856 | 65  | 5 | 1998-2007 | 0.45 | M-v | 0 | MPC | 128763 2002 QJ <sub>38</sub> |
| 2002 QZ <sub>38</sub> | 17.3 | 0.15 | 20071027 | 21.35019  | 300.39777 | 79.51129  | 0.68630  | 0.0855203 | 2.7635528 | 42  | 4 | 2002-2007 | 0.34 | M-v | 0 | MPC | 127951 2002 QZ <sub>38</sub> |
| 2002 QD <sub>42</sub> | 16.3 | 0.15 | 20071027 | 51.92057  | 21.91506  | 336.66756 | 12.54753 | 0.2341142 | 2.6225176 | 33  | 5 | 1996-2007 | 0.42 | M-v | 1 | MPC | 57885 2002 QD <sub>42</sub>  |
| 2002 QG <sub>44</sub> | 15.9 | 0.15 | 20071027 | 41.71636  | 280.43692 | 102.45740 | 8.88992  | 0.1292609 | 2.6032177 | 45  | 4 | 2002-2007 | 0.42 | M-v | 0 | MPC | 110892 2002 QG <sub>44</sub> |
| 2002 QO <sub>45</sub> | 15.4 | 0.15 | 20071027 | 27.02636  | 270.54125 | 86.34993  | 10.59810 | 0.1715135 | 2.7732814 | 70  | 4 | 1997-2007 | 0.51 | M-v | 2 | MPC | 128763 2002 QO <sub>45</sub> |
| 2002 QV <sub>46</sub> | 15.8 | 0.15 | 20071027 | 12.88014  | 359.41691 | 22.73892  | 7.64104  | 0.1209943 | 2.7352100 | 122 | 5 | 1998-2007 | 0.44 | M-v | 1 | MPC | 128763 2002 QV <sub>46</sub> |
| 2002 QM <sub>47</sub> | 15.9 | 0.15 | 20071027 | 114.99520 | 176.33811 | 107.95508 | 8.37899  | 0.3589253 | 2.5939871 | 104 | 4 | 1997-2007 | 0.42 | M-v | 1 | MPC | 110892 2002 QM <sub>47</sub> |
| 2002 QN <sub>49</sub> | 16.8 | 0.15 | 20071027 | 26.75929  | 285.84362 | 125.87396 | 5.59160  | 0.1666378 | 2.6210562 | 26  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 89310 2002 QN <sub>49</sub>  |
| 2002 QW <sub>49</sub> | 16.7 | 0.15 | 20071027 | 21.93377  | 231.42894 | 152.45044 | 3.14136  | 0.1202879 | 2.7051115 | 41  | 3 | 2002-2007 | 0.39 | M-v | 3 | MPC | 127951 2002 QW <sub>49</sub> |
| 2002 QD <sub>52</sub> | 17.1 | 0.15 | 20071027 | 36.76509  | 348.31180 | 0.45315   | 4.93767  | 0.2803720 | 2.7641233 | 53  | 3 | 1993-2007 | 0.53 | M-v | 3 | MPC | 127952 2002 QD <sub>52</sub> |
| 2002 QM <sub>53</sub> | 15.7 | 0.15 | 20071027 | 12.37209  | 2.76988   | 5.10027   | 4.09147  | 0.1263809 | 2.7914197 | 148 | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128763 2002 QM <sub>53</sub> |
| 2002 QZ <sub>54</sub> | 16.6 | 0.15 | 20071027 | 39.46597  | 355.34072 | 27.12571  | 3.09071  | 0.0246313 | 2.5969700 | 47  | 3 | 2002-2007 | 0.40 | M-v | 4 | MPC | 128763 2002 QZ <sub>54</sub> |
| 2002 QV <sub>55</sub> | 16.0 | 0.15 | 20071027 | 330.86761 | 101.65203 | 342.06303 | 13.19393 | 0.1724600 | 2.7033274 | 59  | 3 | 2002-2007 | 0.44 | M-v | 2 | MPC | 62398 2002 QV <sub>55</sub>  |
| 2002 QB <sub>56</sub> | 15.5 | 0.15 | 20071027 | 35.76613  | 36.28972  | 319.24590 | 7.93981  | 0.1574880 | 2.7538267 | 82  | 4 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128763 2002 QB <sub>56</sub> |
| 2002 QK <sub>58</sub> | 15.9 | 0.15 | 20071027 | 351.45879 | 260.47234 | 160.57300 | 12.93532 | 0.1682632 | 2.6945456 | 52  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128763 2002 QK <sub>58</sub> |
| 2002 QE <sub>59</sub> | 15.7 | 0.15 | 20071027 | 209.73856 | 47.00170  | 171.03995 | 15.26480 | 0.0655232 | 2.5368205 | 79  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 110893 2002 QE <sub>59</sub> |
| 2002 QF <sub>60</sub> | 16.4 | 0.15 | 20071027 | 23.47590  | 87.72102  | 282.59880 | 7.49301  | 0.1122693 | 2.7195761 | 57  | 4 | 1993-2007 | 0.56 | M-v | 1 | MPC | 128763 2002 QF <sub>60</sub> |
| 2002 QE <sub>61</sub> | 16.9 | 0.15 | 20071027 | 44.96345  | 69.80581  | 318.89232 | 6.39047  | 0.1896903 | 2.6021145 | 36  | 2 | 2002-2007 | 0.48 | M-v | 4 | MPC | 127952 2002 QE <sub>61</sub> |
| 2002 QJ <sub>61</sub> | 15.8 | 0.15 | 20071027 | 327.16640 | 172.32525 | 266.13270 | 3.49629  | 0.0889948 | 2.6877240 | 88  | 5 | 1993-2007 | 0.47 | M-v | 0 | MPC | 128763 2002 QJ <sub>61</sub> |
| 2002 QM <sub>62</sub> | 16.8 | 0.15 | 20071027 | 50.11431  | 122.02962 | 221.09259 | 0.87360  | 0.1455030 | 2.7026098 | 51  | 4 | 1998-2007 | 0.45 | M-v | 1 | MPC | 128763 2002 QM <sub>62</sub> |
| 2002 QS <sub>62</sub> | 16.9 | 0.15 | 20071027 | 23.26976  | 101.83043 | 301.59507 | 1.42729  | 0.2121354 | 2.6398966 | 40  | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128763 2002 QS <sub>62</sub> |
| 2002 QT <sub>62</sub> | 16.2 | 0.15 | 20071027 | 14.45188  | 48.21050  | 317.64955 | 2.79701  | 0.0609361 | 2.7644322 | 62  | 3 | 2000-2007 | 0.42 | M-v | 3 | MPC | 127953 2002 QT <sub>62</sub> |
| 2002 QH <sub>63</sub> | 17.3 | 0.15 | 20071027 | 27.56093  | 80.50824  | 284.85763 | 2.11352  | 0.2071641 | 2.7402450 | 28  | 2 | 2002-2007 | 0.38 | M-v | 4 | MPC | 127953 2002 QH <sub>63</sub> |
| 2002 QM <sub>63</sub> | 17.0 | 0.15 | 20071027 | 37.79506  | 340.89352 | 29.71752  | 2.55900  | 0.2043077 | 2.6784711 | 42  | 4 | 1998-2007 | 0.54 | M-v | 1 | MPC | 110893 2002 QM <sub>63</sub> |
| 2002 QC <sub>64</sub> | 16.2 | 0.15 | 20071027 | 38.53176  | 298.11191 | 34.84251  | 3.97031  | 0.0972992 | 2.7853652 | 66  | 2 | 2002-2007 | 0.43 | M-v | 3 | MPC | 128763 2002 QC <sub>64</sub> |
| 2002 QX <sub>64</sub> | 16.3 | 0.15 | 20071027 | 16.56277  | 313.68152 | 66.30135  | 3.80091  | 0.0988635 | 2.7032107 | 75  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128763 2002 QX <sub>64</sub> |
| 2002 QF <sub>65</sub> | 17.1 | 0.15 | 20071027 | 118.69590 | 318.34409 | 333.51598 | 3.59367  | 0.1394007 | 2.5802885 | 41  | 4 | 1998-2007 | 0.43 | M-v | 1 | MPC | 75507 2002 QF <sub>65</sub>  |
| 2002 QH <sub>65</sub> | 16.5 | 0.15 | 20071027 | 314.23791 | 337.82055 | 82.01419  | 0.42987  | 0.0600868 | 2.8007522 | 43  | 4 | 1998-2007 | 0.29 | M-v | 0 | MPC | 126632 2002 QH <sub>65</sub> |
| 2002 QK <sub>67</sub> | 17.1 | 0.15 | 20071027 | 147.66533 | 281.19924 | 352.74641 | 2.97030  | 0.0646672 | 2.5455649 | 30  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 75509 2002 QK <sub>67</sub>  |
| 2002 QP <sub>67</sub> | 16.6 | 0.15 | 20071027 | 350.01255 | 354.86138 | 51.42678  | 3.62525  | 0.0977141 | 2.7174525 | 37  | 2 | 2002-2007 | 0.40 | M-v | 4 | MPC | 128763 2002 QP <sub>67</sub> |
| 2002 QB <sub>68</sub> | 17.4 | 0.15 | 20071027 | 157.74020 | 93.92391  | 175.29500 | 1.87712  | 0.1182107 | 2.5222572 | 49  | 7 | 1993-2007 | 0.39 | M-v | 0 | MPC | 110894 2002 QB <sub>68</sub> |
| 2002 QF <sub>69</sub> | 17.1 | 0.15 | 20071027 | 231.58141 | 187.66649 | 45.33442  | 2.73863  | 0.1828801 | 2.3546340 | 81  | 6 | 2001-2007 | 0.51 | M-v | 1 | MPC | 110894 2002 QF <sub>69</sub> |
| 2002 QG <sub>69</sub> | 17.0 | 0.15 | 20071027 | 73.81230  | 222.98928 | 107.20921 | 1.40935  | 0.1512742 | 2.6431878 | 40  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128763 2002 QG <sub>69</sub> |
| 2002 QD <sub>72</sub> | 16.9 | 0.15 | 20071027 | 29.86446  | 326.56754 | 14.67358  | 3.09566  | 0.1407795 | 2.7973104 | 50  | 4 | 1993-2007 | 0.37 | M-v | 1 | MPC | 128763 2002 QD <sub>72</sub> |
| 2002 QJ <sub>72</sub> | 16.5 | 0.15 | 20071027 | 56.93853  | 197.91376 | 150.91253 | 3.27765  | 0.0771640 | 2.6459426 | 66  | 5 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128763 2002 QJ <sub>72</sub> |
| 2002 QL <sub>75</sub> | 17.6 | 0.15 | 20071027 | 243.18865 | 216.45200 | 0.04147   | 5.76580  | 0.0587687 | 2.4173153 | 31  | 4 | 2001-2007 | 0.33 | M-v | 2 | MPC | 116218 2002 QL <sub>75</sub> |
| 2002 QQ <sub>75</sub> | 16.7 | 0.15 | 20071027 | 320.81883 | 31.00530  | 140.25531 | 6.60735  | 0.0490054 | 2.3351546 | 27  | 3 | 2002-2007 | 0.30 | M-v | 4 | MPC | 114666 2002 QQ <sub>75</sub> |
| 2002 QV <sub>75</sub> | 16.3 | 0.15 | 20071027 | 354.82528 | 300.19409 | 127.80752 | 14.85080 | 0.0489889 | 2.6084038 | 39  | 6 | 1996-2007 | 0.37 | M-v | 1 | MPC | 110894 2002 QV <sub>75</sub> |
| 2002 QF <sub>78</sub> | 16.4 | 0.15 | 20071027 | 40.09052  | 87.16655  | 290.35435 | 10.01747 | 0.2064250 | 2.6167072 | 38  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 103362 2002 QF <sub>78</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 QL <sub>78</sub>  | 16.8 | 0.15 | 20071027 | 340.81403 | 256.48313 | 177.34106 | 4.07447  | 0.0991638 | 2.6394437 | 77 | 6 | 1996-2007 | 0.49 | M-v | 0 | MPC | 128764 2002 QL <sub>78</sub>  |
| 2002 QP <sub>78</sub>  | 16.3 | 0.15 | 20071027 | 30.14890  | 273.35375 | 100.75434 | 3.23386  | 0.0953113 | 2.6615785 | 38 | 4 | 2001-2007 | 0.43 | M-v | 2 | MPC | 128764 2002 QP <sub>78</sub>  |
| 2002 QS <sub>78</sub>  | 16.6 | 0.15 | 20071027 | 315.04150 | 118.50789 | 18.38947  | 1.77892  | 0.0786959 | 2.5104718 | 33 | 4 | 2002-2007 | 0.38 | M-v | 3 | MPC | 110894 2002 QS <sub>78</sub>  |
| 2002 QC <sub>80</sub>  | 17.1 | 0.15 | 20071027 | 272.92556 | 212.99350 | 332.25666 | 6.19443  | 0.1100826 | 2.3836814 | 43 | 4 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128764 2002 QC <sub>80</sub>  |
| 2002 QH <sub>80</sub>  | 16.4 | 0.15 | 20071027 | 247.29913 | 278.02609 | 302.07069 | 5.39316  | 0.1598698 | 2.3612329 | 31 | 4 | 2002-2007 | 0.36 | M-v | 1 | MPC | 128764 2002 QH <sub>80</sub>  |
| 2002 QV <sub>83</sub>  | 16.5 | 0.15 | 20071027 | 340.60383 | 100.62886 | 338.04145 | 3.70479  | 0.0438078 | 2.6133109 | 34 | 3 | 2002-2007 | 0.34 | M-v | 3 | MPC | 94829 2002 QV <sub>83</sub>   |
| 2002 QK <sub>85</sub>  | 17.0 | 0.15 | 20071027 | 25.35327  | 75.48467  | 301.22295 | 5.15868  | 0.0818060 | 2.6715488 | 39 | 3 | 2000-2007 | 0.31 | M-v | 3 | MPC | 127954 2002 QK <sub>85</sub>  |
| 2002 QL <sub>85</sub>  | 16.4 | 0.15 | 20071027 | 31.20208  | 84.21359  | 284.96233 | 3.44716  | 0.1126856 | 2.6837566 | 44 | 2 | 2002-2007 | 0.39 | M-v | 4 | MPC | 127954 2002 QL <sub>85</sub>  |
| 2002 QZ <sub>86</sub>  | 17.6 | 0.15 | 20071027 | 69.34849  | 276.18707 | 97.04990  | 2.21997  | 0.1363660 | 2.5632807 | 30 | 4 | 2002-2007 | 0.24 | M-v | 1 | MPC | 104213 2002 QZ <sub>86</sub>  |
| 2002 QH <sub>88</sub>  | 16.4 | 0.15 | 20071027 | 64.86505  | 17.70117  | 307.47253 | 0.76254  | 0.1131143 | 2.7086006 | 70 | 5 | 1993-2007 | 0.39 | M-v | 1 | MPC | 128764 2002 QH <sub>88</sub>  |
| 2002 QU <sub>90</sub>  | 15.9 | 0.15 | 20071027 | 253.82657 | 153.25856 | 9.33419   | 12.55549 | 0.1548148 | 2.6298779 | 37 | 3 | 1998-2007 | 0.45 | M-v | 3 | MPC | 128764 2002 QU <sub>90</sub>  |
| 2002 QD <sub>91</sub>  | 16.1 | 0.15 | 20071027 | 37.44729  | 296.84491 | 65.69410  | 6.84885  | 0.0547750 | 2.7112789 | 37 | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128764 2002 QD <sub>91</sub>  |
| 2002 QW <sub>92</sub>  | 16.2 | 0.15 | 20071027 | 132.08382 | 168.80733 | 106.41819 | 3.38040  | 0.1365233 | 2.6035434 | 43 | 4 | 2002-2007 | 0.39 | M-v | 1 | MPC | 128764 2002 QW <sub>92</sub>  |
| 2002 QA <sub>95</sub>  | 17.7 | 0.15 | 20071027 | 3.25781   | 60.31545  | 250.62795 | 7.70929  | 0.2740004 | 3.0429179 | 19 | 1 | 81 days   | 0.27 | M-v | 3 | MPC | 2002 QA <sub>95</sub>         |
| 2002 QD <sub>95</sub>  | 16.8 | 0.15 | 20071027 | 56.83656  | 311.33932 | 49.80693  | 3.12981  | 0.1010868 | 2.6080688 | 44 | 5 | 1994-2007 | 0.47 | M-v | 0 | MPC | 104213 2002 QD <sub>95</sub>  |
| 2002 QY <sub>95</sub>  | 16.9 | 0.15 | 20071027 | 46.91540  | 239.92807 | 118.21611 | 3.39864  | 0.1116088 | 2.6252120 | 55 | 5 | 2000-2007 | 0.52 | M-v | 0 | MPC | 128764 2002 QY <sub>95</sub>  |
| 2002 QR <sub>96</sub>  | 16.4 | 0.15 | 20071027 | 352.86145 | 289.93550 | 126.41020 | 12.51204 | 0.1748877 | 2.6745277 | 55 | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128764 2002 QR <sub>96</sub>  |
| 2002 QM <sub>98</sub>  | 16.5 | 0.15 | 20071027 | 4.41280   | 58.64514  | 352.38465 | 3.81385  | 0.1620646 | 2.6430130 | 59 | 4 | 2000-2007 | 0.42 | M-v | 1 | MPC | 128764 2002 QM <sub>98</sub>  |
| 2002 QM <sub>99</sub>  | 16.5 | 0.15 | 20071027 | 21.39607  | 242.12250 | 140.44668 | 14.38176 | 0.1603481 | 2.7127330 | 40 | 3 | 2002-2007 | 0.42 | M-v | 2 | MPC | 128764 2002 QM <sub>99</sub>  |
| 2002 QT <sub>99</sub>  | 16.6 | 0.15 | 20071027 | 198.28357 | 90.79511  | 127.47259 | 5.25061  | 0.0738290 | 2.5820022 | 55 | 5 | 2001-2007 | 0.40 | M-v | 1 | MPC | 128764 2002 QT <sub>99</sub>  |
| 2002 QV <sub>101</sub> | 16.3 | 0.15 | 20071027 | 16.65482  | 303.39297 | 55.38404  | 2.88816  | 0.1052743 | 2.8360869 | 60 | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128764 2002 QV <sub>101</sub> |
| 2002 QF <sub>102</sub> | 15.6 | 0.15 | 20071027 | 33.20953  | 9.08033   | 342.87281 | 10.72341 | 0.2047104 | 2.7428431 | 47 | 2 | 2002-2007 | 0.57 | M-v | 3 | MPC | 127955 2002 QF <sub>102</sub> |
| 2002 QL <sub>102</sub> | 16.5 | 0.15 | 20071027 | 259.78221 | 170.05751 | 5.54937   | 3.53439  | 0.1558747 | 2.5610556 | 54 | 5 | 1998-2007 | 0.34 | M-v | 0 | MPC | 128764 2002 QL <sub>102</sub> |
| 2002 QC <sub>104</sub> | 16.1 | 0.15 | 20071027 | 51.33319  | 138.25203 | 200.61986 | 5.68988  | 0.0630495 | 2.7045168 | 60 | 3 | 2001-2007 | 0.52 | M-v | 3 | MPC | 128764 2002 QC <sub>104</sub> |
| 2002 QG <sub>105</sub> | 17.3 | 0.15 | 20071027 | 270.85510 | 353.25181 | 146.41819 | 2.33803  | 0.0055541 | 2.6275884 | 49 | 5 | 1996-2007 | 0.57 | M-v | 0 | MPC | 114667 2002 QG <sub>105</sub> |
| 2002 QV <sub>105</sub> | 16.4 | 0.15 | 20071027 | 167.98397 | 194.28425 | 44.29303  | 5.05110  | 0.1105385 | 2.6111078 | 33 | 3 | 2002-2007 | 0.35 | M-v | 3 | MPC | 127955 2002 QV <sub>105</sub> |
| 2002 QB <sub>107</sub> | 17.0 | 0.15 | 20071027 | 16.93861  | 137.63328 | 272.17694 | 3.63939  | 0.1988952 | 2.6252742 | 34 | 4 | 1998-2007 | 0.49 | M-v | 1 | MPC | 112255 2002 QB <sub>107</sub> |
| 2002 QN <sub>107</sub> | 16.4 | 0.15 | 20071027 | 122.33416 | 3.84939   | 293.14054 | 3.18692  | 0.0692486 | 2.5539202 | 39 | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128765 2002 QN <sub>107</sub> |
| 2002 QX <sub>107</sub> | 16.4 | 0.15 | 20071027 | 359.70830 | 237.63704 | 154.87570 | 16.62452 | 0.2750680 | 2.7865029 | 44 | 2 | 2002-2007 | 0.54 | M-v | 3 | MPC | 128765 2002 QX <sub>107</sub> |
| 2002 QJ <sub>108</sub> | 16.4 | 0.15 | 20071027 | 25.17254  | 67.73491  | 308.64679 | 0.92082  | 0.1027675 | 2.6599789 | 68 | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128765 2002 QJ <sub>108</sub> |
| 2002 QX <sub>114</sub> | 17.3 | 0.15 | 20071027 | 9.86991   | 153.89360 | 212.56727 | 3.82029  | 0.0844898 | 2.7950742 | 27 | 2 | 2002-2007 | 0.44 | M-v | 3 | MPC | 128765 2002 QX <sub>114</sub> |
| 2002 QZ <sub>114</sub> | 17.2 | 0.15 | 20071027 | 23.23685  | 170.68671 | 220.31944 | 3.78431  | 0.1633159 | 2.6667297 | 35 | 3 | 1998-2007 | 0.40 | M-v | 2 | MPC | 119092 2002 QZ <sub>114</sub> |
| 2002 QC <sub>116</sub> | 17.4 | 0.15 | 20071027 | 38.34162  | 123.55308 | 298.97072 | 6.56685  | 0.1033466 | 2.4720550 | 39 | 3 | 2002-2007 | 0.40 | M-v | 2 | MPC | 128765 2002 QC <sub>116</sub> |
| 2002 QD <sub>116</sub> | 16.4 | 0.15 | 20071027 | 112.17507 | 209.66041 | 87.57187  | 5.39981  | 0.0643016 | 2.5998617 | 23 | 3 | 2002-2007 | 0.30 | M-v | 3 | MPC | 127957 2002 QD <sub>116</sub> |
| 2002 QM <sub>116</sub> | 17.0 | 0.15 | 20071027 | 308.36959 | 45.35328  | 80.35010  | 2.45410  | 0.0816314 | 2.5540125 | 20 | 3 | 2002-2007 | 0.26 | M-v | 3 | MPC | 121549 2002 QM <sub>116</sub> |
| 2002 QP <sub>116</sub> | 17.1 | 0.15 | 20071027 | 20.66691  | 8.00189   | 15.38458  | 2.96596  | 0.1145953 | 2.6916329 | 44 | 3 | 1998-2007 | 0.41 | M-v | 2 | MPC | 127957 2002 QP <sub>116</sub> |
| 2002 QZ <sub>118</sub> | 17.3 | 0.15 | 20071027 | 33.48267  | 23.98964  | 337.52384 | 4.70601  | 0.1430080 | 2.6892754 | 38 | 2 | 2002-2007 | 0.31 | M-v | 3 | MPC | 127958 2002 QZ <sub>118</sub> |
| 2002 QF <sub>120</sub> | 15.8 | 0.15 | 20071027 | 127.60782 | 193.99558 | 76.74703  | 3.22179  | 0.0448455 | 2.6820062 | 96 | 5 | 1994-2007 | 0.52 | M-v | 1 | MPC | 128765 2002 QF <sub>120</sub> |
| 2002 QL <sub>121</sub> | 16.7 | 0.15 | 20071027 | 33.03064  | 161.25261 | 197.78035 | 3.02042  | 0.2056699 | 2.7414441 | 60 | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128765 2002 QL <sub>121</sub> |
| 2002 QG <sub>122</sub> | 16.6 | 0.15 | 20071027 | 2.23345   | 189.12594 | 248.10018 | 4.95903  | 0.2289034 | 2.6213647 | 48 | 3 | 2002-2007 | 0.64 | M-v | 2 | MPC | 128765 2002 QG <sub>122</sub> |
| 2002 QO <sub>122</sub> | 16.5 | 0.15 | 20071027 | 338.09810 | 75.01504  | 353.90203 | 3.64991  | 0.0414250 | 2.6127113 | 45 | 2 | 2002-2007 | 0.46 | M-v | 3 | MPC | 127958 2002 QO <sub>122</sub> |
| 2002 QR <sub>122</sub> | 16.6 | 0.15 | 20020814 | 281.08100 | 62.79103  | 7.16258   | 6.09016  | 0.1167505 | 2.6683589 | 9  | 1 | 26 days   | 0.20 |     |   | MPC | 2002 QR <sub>122</sub>        |
| 2002 QS <sub>122</sub> | 15.5 | 0.15 | 20020903 | 97.91076  | 267.47591 | 323.60022 | 11.38847 | 0.1280700 | 3.1129899 | 9  | 1 | 16 days   | 0.28 |     |   | MPC | 2002 QS <sub>122</sub>        |
| 2002 QV <sub>122</sub> | 15.7 | 0.15 | 20020814 | 357.83191 | 131.89242 | 203.77431 | 11.18402 | 0.0995290 | 3.1908704 | 14 | 1 | 28 days   | 0.19 |     |   | MPC | 2002 QV <sub>122</sub>        |
| 2002 QY <sub>122</sub> | 17.4 | 0.15 | 20020814 | 337.66352 | 315.53031 | 44.69857  | 4.12120  | 0.2149781 | 2.2240729 | 26 | 1 | 54 days   | 0.30 |     |   | MPC | 2002 QY <sub>122</sub>        |
| 2002 RW <sub>2</sub>   | 16.7 | 0.15 | 20071027 | 34.14133  | 23.40666  | 352.61896 | 8.59133  | 0.2369991 | 2.7279186 | 62 | 4 | 1993-2007 | 0.61 | M-v | 1 | MPC | 128765 2002 RW <sub>2</sub>   |
| 2002 RE <sub>3</sub>   | 16.8 | 0.15 | 20071027 | 93.80845  | 269.97779 | 45.74334  | 2.77127  | 0.2035647 | 2.6402691 | 39 | 4 | 2002-2007 | 0.44 | M-v | 1 | MPC | 103370 2002 RE <sub>3</sub>   |
| 2002 RL <sub>4</sub>   | 16.4 | 0.15 | 20071027 | 58.03144  | 97.49305  | 245.49969 | 11.73456 | 0.2093307 | 2.7010039 | 41 | 3 | 1998-2007 | 0.61 | M-v | 3 | MPC | 38374 2002 RL <sub>4</sub>    |
| 2002 RM <sub>4</sub>   | 15.5 | 0.15 | 20071027 | 121.55330 | 2.40580   | 274.65564 | 11.24458 | 0.0837385 | 2.6776943 | 60 | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128765 2002 RM <sub>4</sub>   |
| 2002 RW <sub>4</sub>   | 15.4 | 0.15 | 20071027 | 146.46764 | 13.23617  | 254.28545 | 10.05274 | 0.0309621 | 2.6391831 | 55 | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 127959 2002 RW <sub>4</sub>   |
| 2002 RB <sub>7</sub>   | 15.9 | 0.15 | 20071027 | 71.12904  | 15.69490  | 330.87034 | 11.56710 | 0.1922563 | 2.6039539 | 50 | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 104215 2002 RB <sub>7</sub>   |
| 2002 RX <sub>9</sub>   | 15.9 | 0.15 | 20071027 | 218.88958 | 244.69988 | 333.80943 | 13.28594 | 0.0401000 | 2.5183217 | 69 | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 110897 2002 RX <sub>9</sub>   |
| 2002 RV <sub>12</sub>  | 16.4 | 0.15 | 20071027 | 82.58546  | 172.02587 | 164.69300 | 2.88274  | 0.2728973 | 2.6337542 | 87 | 7 | 1998-2007 | 0.41 | M-v | 1 | MPC | 104215 2002 RV <sub>12</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 RW <sub>14</sub>  | 16.4 | 0.15 | 20071027 | 26.55731  | 48.95983  | 344.12208 | 1.09580  | 0.2385624 | 2.7174959 | 64  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 77631 2002 RW <sub>14</sub>   |
| 2002 RF <sub>16</sub>  | 15.6 | 0.15 | 20071027 | 59.27094  | 175.21346 | 169.13766 | 11.32400 | 0.0876453 | 2.6941366 | 82  | 4 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128765 2002 RF <sub>16</sub>  |
| 2002 RV <sub>16</sub>  | 16.2 | 0.15 | 20071027 | 52.59508  | 6.17556   | 341.21539 | 8.87235  | 0.1660648 | 2.7192570 | 60  | 4 | 2000-2007 | 0.45 | M-v | 2 | MPC | 128765 2002 RV <sub>16</sub>  |
| 2002 RW <sub>16</sub>  | 16.4 | 0.15 | 20071027 | 71.15358  | 356.92606 | 344.83528 | 2.77523  | 0.1515168 | 2.6565065 | 59  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 104215 2002 RW <sub>16</sub>  |
| 2002 RR <sub>18</sub>  | 16.3 | 0.15 | 20071027 | 98.65291  | 294.21918 | 358.44783 | 12.79466 | 0.2612470 | 2.6785714 | 44  | 3 | 2001-2007 | 0.48 | M-v | 2 | MPC | 48256 2002 RR <sub>18</sub>   |
| 2002 RL <sub>20</sub>  | 15.9 | 0.15 | 20071027 | 79.76269  | 248.71743 | 66.01183  | 3.60521  | 0.1776248 | 2.7116754 | 68  | 4 | 2001-2007 | 0.55 | M-v | 3 | MPC | 128765 2002 RL <sub>20</sub>  |
| 2002 RV <sub>21</sub>  | 15.6 | 0.15 | 20071027 | 37.92929  | 311.30841 | 1.51788   | 5.85579  | 0.1914098 | 2.8997582 | 91  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128765 2002 RV <sub>21</sub>  |
| 2002 RH <sub>23</sub>  | 15.5 | 0.15 | 20071027 | 355.51435 | 31.96645  | 342.03762 | 7.81916  | 0.2229791 | 2.8977674 | 165 | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128765 2002 RH <sub>23</sub>  |
| 2002 RN <sub>29</sub>  | 16.3 | 0.15 | 20071027 | 37.36804  | 91.32404  | 272.46556 | 3.79275  | 0.1776050 | 2.7273466 | 78  | 3 | 2002-2007 | 0.52 | M-v | 3 | MPC | 128766 2002 RN <sub>29</sub>  |
| 2002 RK <sub>30</sub>  | 16.5 | 0.15 | 20071027 | 39.21146  | 103.33431 | 288.60078 | 4.48408  | 0.1422780 | 2.6291165 | 49  | 4 | 2002-2007 | 0.47 | M-v | 0 | MPC | 128766 2002 RK <sub>30</sub>  |
| 2002 RW <sub>30</sub>  | 16.0 | 0.15 | 20071027 | 26.34480  | 42.47101  | 322.21074 | 7.81229  | 0.2901686 | 2.7927275 | 78  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 127959 2002 RW <sub>30</sub>  |
| 2002 RQ <sub>31</sub>  | 15.2 | 0.15 | 20071027 | 68.66930  | 146.27701 | 186.09735 | 8.49816  | 0.1458268 | 2.7010664 | 119 | 4 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128766 2002 RQ <sub>31</sub>  |
| 2002 RQ <sub>33</sub>  | 16.1 | 0.15 | 20071027 | 9.63250   | 93.10673  | 325.50174 | 7.37379  | 0.1890697 | 2.6791024 | 86  | 5 | 1998-2007 | 0.60 | M-v | 0 | MPC | 104216 2002 RQ <sub>33</sub>  |
| 2002 RY <sub>34</sub>  | 16.0 | 0.15 | 20071027 | 37.53293  | 63.40500  | 299.37674 | 5.61781  | 0.0521394 | 2.7164131 | 106 | 4 | 2000-2007 | 0.61 | M-v | 2 | MPC | 128766 2002 RY <sub>34</sub>  |
| 2002 RZ <sub>35</sub>  | 15.8 | 0.15 | 20071027 | 51.92690  | 152.96611 | 194.72434 | 6.91902  | 0.1634508 | 2.7041747 | 67  | 4 | 2001-2007 | 0.46 | M-v | 3 | MPC | 128766 2002 RZ <sub>35</sub>  |
| 2002 RD <sub>38</sub>  | 16.4 | 0.15 | 20071027 | 37.18922  | 260.90670 | 120.48929 | 2.56904  | 0.2453023 | 2.6615925 | 50  | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 77633 2002 RD <sub>38</sub>   |
| 2002 RX <sub>40</sub>  | 16.9 | 0.15 | 20071027 | 172.37977 | 279.92762 | 12.48829  | 1.95224  | 0.1976341 | 2.3953992 | 86  | 4 | 2002-2007 | 0.40 | M-v | 1 | MPC | 110899 2002 RX <sub>40</sub>  |
| 2002 RD <sub>46</sub>  | 16.4 | 0.15 | 20071027 | 98.35248  | 213.75633 | 109.14981 | 4.11522  | 0.1455520 | 2.6013602 | 51  | 5 | 2001-2007 | 0.44 | M-v | 0 | MPC | 118019 2002 RD <sub>46</sub>  |
| 2002 RM <sub>46</sub>  | 16.0 | 0.15 | 20071027 | 5.35151   | 27.43964  | 8.59511   | 9.82612  | 0.1514637 | 2.7651651 | 84  | 6 | 1993-2007 | 0.58 | M-v | 0 | MPC | 128766 2002 RM <sub>46</sub>  |
| 2002 RC <sub>54</sub>  | 16.3 | 0.15 | 20071027 | 43.50706  | 307.05683 | 45.93949  | 4.26412  | 0.1981441 | 2.7627153 | 71  | 4 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128766 2002 RC <sub>54</sub>  |
| 2002 RS <sub>54</sub>  | 16.6 | 0.15 | 20071027 | 62.00165  | 222.20360 | 148.54909 | 4.15833  | 0.2061828 | 2.6346234 | 63  | 4 | 1998-2007 | 0.60 | M-v | 1 | MPC | 122711 2002 RS <sub>54</sub>  |
| 2002 RO <sub>56</sub>  | 16.2 | 0.15 | 20071027 | 156.42568 | 12.62545  | 308.41946 | 4.24928  | 0.1534556 | 2.4261968 | 97  | 5 | 1998-2007 | 0.49 | M-v | 2 | MPC | 110900 2002 RO <sub>56</sub>  |
| 2002 RV <sub>56</sub>  | 15.2 | 0.15 | 20071027 | 13.42274  | 219.60162 | 188.89132 | 10.56357 | 0.3107879 | 2.7620556 | 101 | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 110900 2002 RV <sub>56</sub>  |
| 2002 RH <sub>57</sub>  | 16.5 | 0.15 | 20071027 | 91.82134  | 40.70655  | 288.41015 | 3.44298  | 0.2095818 | 2.6205906 | 57  | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 118019 2002 RH <sub>57</sub>  |
| 2002 RB <sub>58</sub>  | 16.5 | 0.15 | 20071027 | 92.36779  | 85.86014  | 232.87942 | 3.42831  | 0.2015966 | 2.6446179 | 78  | 4 | 1998-2007 | 0.39 | M-v | 1 | MPC | 110900 2002 RB <sub>58</sub>  |
| 2002 RP <sub>58</sub>  | 16.2 | 0.15 | 20071027 | 70.11550  | 116.89065 | 190.01903 | 8.90813  | 0.2579436 | 2.7644969 | 104 | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 100341 2002 RP <sub>58</sub>  |
| 2002 RM <sub>60</sub>  | 15.4 | 0.15 | 20071027 | 74.91143  | 287.42479 | 36.93646  | 5.77742  | 0.1302694 | 2.7542553 | 108 | 6 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128766 2002 RM <sub>60</sub>  |
| 2002 RO <sub>60</sub>  | 16.1 | 0.15 | 20071027 | 38.07344  | 30.38463  | 10.23932  | 14.79374 | 0.2392950 | 2.6765488 | 75  | 4 | 1998-2007 | 0.57 | M-v | 1 | MPC | 40961 2002 RO <sub>60</sub>   |
| 2002 RQ <sub>60</sub>  | 16.5 | 0.15 | 20071027 | 59.95291  | 114.82775 | 224.24153 | 5.24305  | 0.2247407 | 2.7100843 | 76  | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128766 2002 RQ <sub>60</sub>  |
| 2002 RC <sub>61</sub>  | 16.1 | 0.15 | 20071027 | 84.56732  | 116.27792 | 201.70193 | 10.09500 | 0.0783155 | 2.6869164 | 56  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128766 2002 RC <sub>61</sub>  |
| 2002 RE <sub>68</sub>  | 18.5 | 0.15 | 20071027 | 36.87087  | 202.71368 | 181.38987 | 21.54575 | 0.1093686 | 2.6456981 | 33  | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 103380 2002 RE <sub>68</sub>  |
| 2002 RM <sub>68</sub>  | 16.1 | 0.15 | 20071027 | 1.76834   | 43.68922  | 355.76459 | 7.07714  | 0.1567958 | 2.8014111 | 128 | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128766 2002 RM <sub>68</sub>  |
| 2002 RA <sub>69</sub>  | 16.5 | 0.15 | 20071027 | 35.89621  | 16.71586  | 333.96191 | 3.82882  | 0.2016534 | 2.7875025 | 68  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 128766 2002 RA <sub>69</sub>  |
| 2002 RS <sub>69</sub>  | 16.0 | 0.15 | 20071027 | 60.56829  | 320.99654 | 355.10574 | 8.81592  | 0.2985836 | 2.7550937 | 90  | 4 | 1996-2007 | 0.45 | M-v | 1 | MPC | 128766 2002 RS <sub>69</sub>  |
| 2002 RQ <sub>70</sub>  | 16.5 | 0.15 | 20071027 | 71.74260  | 83.88644  | 234.79546 | 6.99677  | 0.1505356 | 2.7100229 | 46  | 3 | 1998-2007 | 0.40 | M-v | 3 | MPC | 127960 2002 RQ <sub>70</sub>  |
| 2002 RV <sub>71</sub>  | 16.4 | 0.15 | 20071027 | 70.61699  | 45.93163  | 302.15303 | 2.08892  | 0.0743699 | 2.6229961 | 59  | 6 | 2000-2007 | 0.46 | M-v | 0 | MPC | 128766 2002 RV <sub>71</sub>  |
| 2002 RS <sub>73</sub>  | 16.4 | 0.15 | 20071027 | 105.50634 | 119.17499 | 174.25873 | 6.61208  | 0.1434134 | 2.6591253 | 46  | 5 | 1994-2007 | 0.46 | M-v | 1 | MPC | 128766 2002 RS <sub>73</sub>  |
| 2002 RB <sub>76</sub>  | 15.8 | 0.15 | 20071027 | 345.00441 | 273.37399 | 167.23550 | 13.30540 | 0.2383015 | 2.7217222 | 77  | 3 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128767 2002 RB <sub>76</sub>  |
| 2002 RH <sub>77</sub>  | 15.7 | 0.15 | 20071027 | 4.54271   | 68.39148  | 292.62335 | 1.17841  | 0.0736088 | 2.8917334 | 78  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128767 2002 RH <sub>77</sub>  |
| 2002 RW <sub>80</sub>  | 16.2 | 0.15 | 20071027 | 47.62764  | 342.61360 | 356.79924 | 9.53379  | 0.1588228 | 2.7844946 | 76  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128767 2002 RW <sub>80</sub>  |
| 2002 RK <sub>81</sub>  | 16.0 | 0.15 | 20071027 | 50.82848  | 172.15839 | 167.97133 | 4.36839  | 0.1065571 | 2.7781933 | 53  | 4 | 2000-2007 | 0.63 | M-v | 1 | MPC | 128767 2002 RK <sub>81</sub>  |
| 2002 RT <sub>81</sub>  | 16.0 | 0.15 | 20071027 | 111.90903 | 281.05489 | 5.13711   | 11.20199 | 0.2923456 | 2.6461287 | 110 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 110901 2002 RT <sub>81</sub>  |
| 2002 RD <sub>84</sub>  | 16.0 | 0.15 | 20071027 | 54.98944  | 162.98147 | 189.34105 | 4.82261  | 0.1722013 | 2.7218383 | 87  | 4 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128767 2002 RD <sub>84</sub>  |
| 2002 RN <sub>85</sub>  | 16.2 | 0.15 | 20071027 | 16.04180  | 220.59649 | 178.66959 | 25.65906 | 0.1638750 | 2.7521210 | 47  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 103382 2002 RN <sub>85</sub>  |
| 2002 RR <sub>90</sub>  | 16.5 | 0.15 | 20071027 | 72.52005  | 26.81054  | 349.00907 | 4.47559  | 0.0729084 | 2.5691753 | 58  | 5 | 1996-2007 | 0.62 | M-v | 1 | MPC | 128767 2002 RR <sub>90</sub>  |
| 2002 RG <sub>93</sub>  | 14.8 | 0.15 | 20071027 | 345.97238 | 124.18982 | 277.40240 | 6.88975  | 0.2191879 | 2.8760122 | 122 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128767 2002 RG <sub>93</sub>  |
| 2002 RB <sub>98</sub>  | 15.7 | 0.15 | 20071027 | 66.20546  | 134.47225 | 191.10982 | 13.19084 | 0.2150018 | 2.7811111 | 83  | 5 | 1996-2007 | 0.50 | M-v | 0 | MPC | 128767 2002 RB <sub>98</sub>  |
| 2002 RL <sub>98</sub>  | 16.5 | 0.15 | 20071027 | 19.57754  | 198.88470 | 178.38371 | 13.33271 | 0.2538102 | 2.8356872 | 56  | 2 | 2002-2007 | 0.53 | M-v | 3 | MPC | 127960 2002 RL <sub>98</sub>  |
| 2002 RO <sub>110</sub> | 15.5 | 0.15 | 20071027 | 10.42736  | 55.09819  | 341.54640 | 12.46753 | 0.1960568 | 2.8008251 | 56  | 3 | 2002-2007 | 0.62 | M-v | 3 | MPC | 75575 2002 RO <sub>110</sub>  |
| 2002 RC <sub>118</sub> | 16.7 | 0.15 | 20071027 | 351.18737 | 222.21827 | 208.98890 | 28.03164 | 0.5662184 | 2.9520700 | 372 | 2 | 2002-2007 | 0.38 | M-v | 0 | MPC | 128767 2002 RC <sub>118</sub> |
| 2002 RE <sub>122</sub> | 15.5 | 0.15 | 20071027 | 6.45907   | 331.73316 | 72.13793  | 9.20532  | 0.2215598 | 2.7730105 | 92  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 127961 2002 RE <sub>122</sub> |
| 2002 RQ <sub>122</sub> | 15.5 | 0.15 | 20071027 | 40.55799  | 291.92184 | 76.97221  | 10.54218 | 0.1452954 | 2.7192374 | 64  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128767 2002 RQ <sub>122</sub> |
| 2002 RV <sub>122</sub> | 15.9 | 0.15 | 20071027 | 31.70666  | 260.30959 | 115.76849 | 9.76436  | 0.1683599 | 2.7411524 | 60  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128767 2002 RV <sub>122</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 RF <sub>124</sub> | 15.1 | 0.15 | 20071027 | 28.59272  | 281.40956 | 93.47582  | 10.40894 | 0.1755164 | 2.7244394 | 107 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128767 2002 RF <sub>124</sub> |
| 2002 RG <sub>124</sub> | 16.7 | 0.15 | 20071027 | 348.12370 | 328.24049 | 80.74269  | 9.74764  | 0.3279922 | 2.8491037 | 35  | 2 | 2002-2007 | 0.59 | M-v | 3 | MPC | 127961 2002 RG <sub>124</sub> |
| 2002 RQ <sub>124</sub> | 16.0 | 0.15 | 20071027 | 345.19802 | 347.62338 | 95.39268  | 9.78675  | 0.0544696 | 2.6149705 | 50  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 77641 2002 RQ <sub>124</sub>  |
| 2002 RK <sub>125</sub> | 17.6 | 0.15 | 20020903 | 354.11386 | 54.98597  | 301.59266 | 11.96280 | 0.2905746 | 2.5875572 | 9   | 1 | 30 days   | 0.18 |     |   | MPC | 2002 RK <sub>125</sub>        |
| 2002 RJ <sub>127</sub> | 15.5 | 0.15 | 20071027 | 324.61239 | 194.58087 | 252.08860 | 13.65017 | 0.0719386 | 2.6646566 | 100 | 7 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128767 2002 RJ <sub>127</sub> |
| 2002 RC <sub>128</sub> | 15.8 | 0.15 | 20071027 | 76.76238  | 80.04860  | 241.65870 | 10.40166 | 0.1967040 | 2.6690117 | 57  | 2 | 2002-2007 | 0.37 | M-v | 3 | MPC | 127962 2002 RC <sub>128</sub> |
| 2002 RK <sub>128</sub> | 16.4 | 0.15 | 20071027 | 20.44514  | 120.34783 | 273.25461 | 10.80924 | 0.1756160 | 2.6917431 | 56  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 127962 2002 RK <sub>128</sub> |
| 2002 RE <sub>131</sub> | 17.2 | 0.15 | 20071027 | 10.01193  | 40.22245  | 347.59164 | 12.68384 | 0.1514649 | 2.7825364 | 32  | 2 | 2002-2007 | 0.49 | M-v | 3 | MPC | 127962 2002 RE <sub>131</sub> |
| 2002 RY <sub>131</sub> | 15.6 | 0.15 | 20071027 | 345.80919 | 102.85708 | 288.44881 | 9.77005  | 0.2502577 | 2.9280882 | 69  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128767 2002 RY <sub>131</sub> |
| 2002 RB <sub>132</sub> | 17.1 | 0.15 | 20071027 | 60.95726  | 61.13197  | 310.34111 | 11.71703 | 0.1946152 | 2.6352830 | 36  | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 113937 2002 RB <sub>132</sub> |
| 2002 RR <sub>133</sub> | 15.9 | 0.15 | 20071027 | 43.77205  | 280.67132 | 93.20523  | 7.04514  | 0.2477785 | 2.6966718 | 40  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 61320 2002 RR <sub>133</sub>  |
| 2002 RV <sub>133</sub> | 15.2 | 0.15 | 20071027 | 47.13031  | 292.91304 | 55.71826  | 9.76030  | 0.1653522 | 2.7542434 | 121 | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128768 2002 RV <sub>133</sub> |
| 2002 RY <sub>133</sub> | 16.0 | 0.15 | 20071027 | 30.29525  | 261.82356 | 98.93300  | 9.35119  | 0.2216357 | 2.7949348 | 54  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 127962 2002 RY <sub>133</sub> |
| 2002 RL <sub>134</sub> | 16.2 | 0.15 | 20071027 | 17.84345  | 342.45923 | 78.90010  | 9.20646  | 0.2418641 | 2.6819696 | 63  | 4 | 1998-2007 | 0.63 | M-v | 1 | MPC | 128768 2002 RL <sub>134</sub> |
| 2002 RN <sub>137</sub> | 16.9 | 0.15 | 20071027 | 132.20672 | 205.51774 | 18.17952  | 22.82147 | 0.1187196 | 1.8536652 | 133 | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 126636 2002 RN <sub>137</sub> |
| 2002 RL <sub>138</sub> | 15.8 | 0.15 | 20071027 | 19.83509  | 345.12682 | 48.83465  | 11.15082 | 0.1717689 | 2.7089790 | 75  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128768 2002 RL <sub>138</sub> |
| 2002 RX <sub>138</sub> | 15.6 | 0.15 | 20071027 | 70.00606  | 253.08899 | 63.95836  | 9.93473  | 0.1509527 | 2.7554823 | 51  | 2 | 2002-2007 | 0.48 | M-v | 4 | MPC | 128768 2002 RX <sub>138</sub> |
| 2002 RJ <sub>139</sub> | 15.7 | 0.15 | 20071027 | 75.21263  | 306.34063 | 40.53469  | 8.89709  | 0.0914383 | 2.6246994 | 57  | 6 | 1998-2007 | 0.50 | M-v | 1 | MPC | 104219 2002 RJ <sub>139</sub> |
| 2002 RX <sub>139</sub> | 16.2 | 0.15 | 20071027 | 139.05302 | 196.03476 | 89.40774  | 11.72179 | 0.2657201 | 2.5416338 | 35  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 108365 2002 RX <sub>139</sub> |
| 2002 RV <sub>140</sub> | 15.9 | 0.15 | 20071027 | 49.10141  | 282.87744 | 82.97088  | 7.28846  | 0.0735321 | 2.6910925 | 45  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128768 2002 RV <sub>140</sub> |
| 2002 RA <sub>142</sub> | 16.5 | 0.15 | 20071027 | 358.09699 | 141.81602 | 295.54105 | 4.60331  | 0.0718689 | 2.6155855 | 63  | 4 | 2002-2007 | 0.44 | M-v | 1 | MPC | 110904 2002 RA <sub>142</sub> |
| 2002 RV <sub>142</sub> | 16.9 | 0.15 | 20071027 | 129.21541 | 32.04558  | 246.12208 | 3.60270  | 0.1918431 | 2.6197969 | 53  | 3 | 2002-2007 | 0.34 | M-v | 2 | MPC | 128768 2002 RV <sub>142</sub> |
| 2002 RZ <sub>142</sub> | 16.4 | 0.15 | 20071027 | 142.98922 | 19.04534  | 235.51106 | 4.27495  | 0.2261128 | 2.6386565 | 77  | 3 | 2002-2007 | 0.37 | M-v | 2 | MPC | 128768 2002 RZ <sub>142</sub> |
| 2002 RT <sub>144</sub> | 16.1 | 0.15 | 20071027 | 36.20730  | 94.11075  | 228.42442 | 1.07234  | 0.0952664 | 2.9221840 | 65  | 5 | 1992-2007 | 0.56 | M-v | 1 | MPC | 128768 2002 RT <sub>144</sub> |
| 2002 RZ <sub>144</sub> | 16.4 | 0.15 | 20071027 | 28.77575  | 356.86354 | 30.29885  | 3.62621  | 0.0951707 | 2.6930404 | 42  | 3 | 2002-2007 | 0.51 | M-v | 4 | MPC | 127963 2002 RZ <sub>144</sub> |
| 2002 RL <sub>146</sub> | 19.2 | 0.15 | 20020923 | 5.40129   | 356.02591 | 354.49033 | 4.17104  | 0.2005517 | 2.1582315 | 15  | 1 | 56 days   | 0.31 |     | D | MPC | 2002 RL <sub>146</sub>        |
| 2002 RU <sub>146</sub> | 16.7 | 0.15 | 20071027 | 46.67996  | 2.47293   | 16.59747  | 3.25147  | 0.1748491 | 2.6631158 | 31  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 128768 2002 RU <sub>146</sub> |
| 2002 RK <sub>147</sub> | 16.6 | 0.15 | 20071027 | 12.30195  | 32.72775  | 353.36355 | 3.73047  | 0.1108618 | 2.7816580 | 46  | 4 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128768 2002 RK <sub>147</sub> |
| 2002 RC <sub>149</sub> | 15.4 | 0.15 | 20071027 | 14.80958  | 152.96470 | 249.87833 | 11.04122 | 0.1047426 | 2.6865800 | 61  | 5 | 1998-2007 | 0.49 | M-v | 0 | MPC | 128768 2002 RC <sub>149</sub> |
| 2002 RW <sub>150</sub> | 16.5 | 0.15 | 20071027 | 330.56708 | 182.27355 | 233.78001 | 7.20348  | 0.1297183 | 2.8129951 | 77  | 5 | 1993-2007 | 0.56 | M-v | 0 | MPC | 128768 2002 RW <sub>150</sub> |
| 2002 RA <sub>151</sub> | 15.8 | 0.15 | 20071027 | 359.03573 | 92.54066  | 305.11235 | 10.68698 | 0.0563549 | 2.7369963 | 77  | 3 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128768 2002 RA <sub>151</sub> |
| 2002 RJ <sub>153</sub> | 14.7 | 0.15 | 20071027 | 142.90052 | 328.07589 | 236.52503 | 9.18754  | 0.0128864 | 3.0419290 | 50  | 5 | 1997-2007 | 0.56 | M-v | 1 | MPC | 124372 2002 RJ <sub>153</sub> |
| 2002 RO <sub>153</sub> | 15.9 | 0.15 | 20071027 | 26.99155  | 99.16335  | 330.20282 | 12.17272 | 0.2547740 | 2.6397647 | 46  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 110904 2002 RO <sub>153</sub> |
| 2002 RK <sub>155</sub> | 16.1 | 0.15 | 20071027 | 84.57346  | 81.72740  | 221.00039 | 1.78912  | 0.0688220 | 2.7582076 | 70  | 4 | 1998-2007 | 0.45 | M-v | 0 | MPC | 128768 2002 RK <sub>155</sub> |
| 2002 RD <sub>157</sub> | 16.9 | 0.15 | 20071027 | 120.32395 | 38.63727  | 258.98216 | 2.30586  | 0.0571716 | 2.6411757 | 51  | 5 | 1998-2007 | 0.43 | M-v | 0 | MPC | 128768 2002 RD <sub>157</sub> |
| 2002 RM <sub>157</sub> | 17.2 | 0.15 | 20071027 | 71.77037  | 115.51509 | 219.79085 | 1.46185  | 0.1022844 | 2.6929085 | 59  | 6 | 1998-2007 | 0.40 | M-v | 0 | MPC | 128768 2002 RM <sub>157</sub> |
| 2002 RN <sub>157</sub> | 17.2 | 0.15 | 20071027 | 251.50237 | 293.17623 | 310.62761 | 1.65236  | 0.1715299 | 2.3222104 | 53  | 5 | 2001-2007 | 0.41 | M-v | 1 | MPC | 112817 2002 RN <sub>157</sub> |
| 2002 RH <sub>158</sub> | 16.8 | 0.15 | 20071027 | 21.64785  | 43.39284  | 339.25941 | 5.50103  | 0.0300181 | 2.7349012 | 45  | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128768 2002 RH <sub>158</sub> |
| 2002 RN <sub>158</sub> | 16.0 | 0.15 | 20071027 | 224.53896 | 313.87465 | 333.01565 | 5.41610  | 0.1687097 | 2.2857196 | 106 | 6 | 1995-2007 | 0.62 | M-v | 1 | MPC | 110905 2002 RN <sub>158</sub> |
| 2002 RH <sub>159</sub> | 15.7 | 0.15 | 20071027 | 45.97372  | 204.34754 | 175.14999 | 7.85814  | 0.0300316 | 2.6455907 | 39  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 110905 2002 RH <sub>159</sub> |
| 2002 RM <sub>160</sub> | 16.8 | 0.15 | 20071027 | 304.66000 | 14.13913  | 175.02556 | 6.79601  | 0.0663542 | 2.3604139 | 33  | 6 | 1995-2007 | 0.55 | M-v | 1 | MPC | 110905 2002 RM <sub>160</sub> |
| 2002 RU <sub>160</sub> | 15.7 | 0.15 | 20071027 | 336.48321 | 86.51122  | 348.48731 | 7.00769  | 0.0362817 | 2.6837788 | 54  | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128768 2002 RU <sub>160</sub> |
| 2002 RW <sub>160</sub> | 16.4 | 0.15 | 20071027 | 42.44102  | 199.44658 | 145.00333 | 4.02709  | 0.2149516 | 2.7666440 | 33  | 2 | 2002-2007 | 0.38 | M-v | 3 | MPC | 127963 2002 RW <sub>160</sub> |
| 2002 RL <sub>161</sub> | 16.0 | 0.15 | 20071027 | 18.38528  | 315.82798 | 29.87947  | 2.22440  | 0.0751075 | 2.8820670 | 43  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 126637 2002 RL <sub>161</sub> |
| 2002 RU <sub>171</sub> | 15.7 | 0.15 | 20071027 | 336.64476 | 80.02416  | 358.94161 | 7.27957  | 0.2095549 | 2.8034112 | 151 | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128768 2002 RU <sub>171</sub> |
| 2002 RL <sub>172</sub> | 15.8 | 0.15 | 20071027 | 36.11438  | 273.77017 | 134.05294 | 11.82450 | 0.1946537 | 2.6059200 | 51  | 6 | 2000-2007 | 0.59 | M-v | 1 | MPC | 110905 2002 RL <sub>172</sub> |
| 2002 RQ <sub>174</sub> | 15.8 | 0.15 | 20071027 | 24.64172  | 115.56824 | 258.98265 | 5.20873  | 0.0660821 | 2.7396766 | 66  | 3 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128768 2002 RQ <sub>174</sub> |
| 2002 RU <sub>174</sub> | 16.8 | 0.15 | 20071027 | 21.91324  | 151.01198 | 273.92222 | 4.44143  | 0.0930393 | 2.5727948 | 38  | 4 | 2002-2007 | 0.41 | M-v | 1 | MPC | 128768 2002 RU <sub>174</sub> |
| 2002 RN <sub>176</sub> | 16.6 | 0.15 | 20071027 | 44.08436  | 149.04723 | 221.44376 | 6.84460  | 0.1006270 | 2.6820141 | 28  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 128768 2002 RN <sub>176</sub> |
| 2002 RD <sub>177</sub> | 16.9 | 0.15 | 20071027 | 8.03696   | 182.15010 | 213.50227 | 4.42623  | 0.1064741 | 2.7561128 | 62  | 4 | 2002-2007 | 0.46 | M-v | 0 | MPC | 127963 2002 RD <sub>177</sub> |
| 2002 RR <sub>177</sub> | 16.7 | 0.15 | 20071027 | 28.02607  | 158.88595 | 225.02797 | 3.86085  | 0.1324302 | 2.7237245 | 43  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 127964 2002 RR <sub>177</sub> |
| 2002 RR <sub>182</sub> | 16.1 | 0.15 | 20071027 | 116.90597 | 61.20302  | 260.63883 | 9.67859  | 0.1342580 | 2.5546964 | 34  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 108372 2002 RR <sub>182</sub> |
| 2002 RA <sub>183</sub> | 15.3 | 0.15 | 20071027 | 251.53696 | 284.48101 | 266.61411 | 13.24258 | 0.0465472 | 2.5798366 | 44  | 6 | 2000-2007 | 0.56 | M-v | 1 | MPC | 110906 2002 RA <sub>183</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 RK <sub>183</sub> | 15.9 | 0.15 | 20071027 | 354.26793 | 109.09040 | 288.58685 | 10.86914 | 0.2247827 | 2.8700861 | 71  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128769 2002 RK <sub>183</sub> |
| 2002 RX <sub>183</sub> | 15.0 | 0.15 | 20071027 | 14.01677  | 77.92720  | 247.21515 | 14.03169 | 0.1176294 | 3.0587512 | 46  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 125874 2002 RX <sub>183</sub> |
| 2002 RD <sub>184</sub> | 15.9 | 0.15 | 20071027 | 61.09486  | 84.12756  | 246.55975 | 8.51093  | 0.2164311 | 2.7382779 | 61  | 2 | 2002-2007 | 0.46 | M-v | 3 | MPC | 127964 2002 RD <sub>184</sub> |
| 2002 RK <sub>184</sub> | 15.8 | 0.15 | 20071027 | 327.24781 | 125.66381 | 313.30121 | 12.27186 | 0.1208725 | 2.7821564 | 77  | 3 | 2002-2007 | 0.57 | M-v | 1 | MPC | 128769 2002 RK <sub>184</sub> |
| 2002 RO <sub>184</sub> | 15.1 | 0.15 | 20071027 | 5.07638   | 41.92966  | 301.33905 | 9.38188  | 0.1514678 | 2.9895847 | 84  | 5 | 1994-2007 | 0.54 | M-v | 1 | MPC | 124372 2002 RO <sub>184</sub> |
| 2002 RZ <sub>184</sub> | 16.0 | 0.15 | 20071027 | 7.47893   | 197.36575 | 230.00320 | 9.21720  | 0.3080899 | 2.7285504 | 33  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128769 2002 RZ <sub>184</sub> |
| 2002 RF <sub>185</sub> | 14.9 | 0.15 | 20071027 | 334.46575 | 98.47553  | 282.27234 | 8.54605  | 0.0927163 | 3.0000588 | 63  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 124372 2002 RF <sub>185</sub> |
| 2002 RV <sub>185</sub> | 15.9 | 0.15 | 20071027 | 22.74993  | 166.15775 | 214.57762 | 12.85789 | 0.1819568 | 2.7675967 | 65  | 2 | 2002-2007 | 0.42 | M-v | 3 | MPC | 127964 2002 RV <sub>185</sub> |
| 2002 RN <sub>186</sub> | 15.7 | 0.15 | 20071027 | 117.30176 | 45.38216  | 237.98425 | 8.41615  | 0.0745007 | 2.7272781 | 86  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 127964 2002 RN <sub>186</sub> |
| 2002 RO <sub>186</sub> | 15.5 | 0.15 | 20071027 | 42.41807  | 140.11759 | 215.20391 | 11.13258 | 0.1496180 | 2.7673717 | 121 | 2 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128769 2002 RO <sub>186</sub> |
| 2002 RW <sub>187</sub> | 16.9 | 0.15 | 20071027 | 62.39177  | 33.35049  | 333.25229 | 2.58027  | 0.0575720 | 2.6143514 | 37  | 6 | 2000-2007 | 0.42 | M-v | 1 | MPC | 110906 2002 RW <sub>187</sub> |
| 2002 RN <sub>189</sub> | 16.7 | 0.15 | 20071027 | 82.97458  | 98.58744  | 232.47207 | 3.15718  | 0.1116233 | 2.6432759 | 44  | 4 | 1998-2007 | 0.47 | M-v | 2 | MPC | 128769 2002 RN <sub>189</sub> |
| 2002 RM <sub>190</sub> | 16.6 | 0.15 | 20071027 | 142.78836 | 330.39881 | 323.57862 | 3.08523  | 0.1359783 | 2.5384189 | 57  | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 110906 2002 RM <sub>190</sub> |
| 2002 RC <sub>193</sub> | 16.5 | 0.15 | 20071027 | 91.15025  | 310.35538 | 14.74443  | 3.40497  | 0.1135821 | 2.6281024 | 38  | 4 | 2001-2007 | 0.48 | M-v | 2 | MPC | 75604 2002 RC <sub>193</sub>  |
| 2002 RE <sub>198</sub> | 16.8 | 0.15 | 20071027 | 351.99345 | 51.35820  | 11.50033  | 3.07722  | 0.0888252 | 2.7094219 | 56  | 5 | 2002-2007 | 0.53 | M-v | 0 | MPC | 128769 2002 RE <sub>198</sub> |
| 2002 RK <sub>199</sub> | 16.0 | 0.15 | 20071027 | 352.45356 | 91.46511  | 357.68951 | 11.18300 | 0.1648906 | 2.6424607 | 62  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128769 2002 RK <sub>199</sub> |
| 2002 RB <sub>201</sub> | 15.9 | 0.15 | 20071027 | 33.44033  | 355.53470 | 359.11330 | 11.17977 | 0.1494904 | 2.7653023 | 49  | 2 | 2002-2007 | 0.50 | M-v | 3 | MPC | 127965 2002 RB <sub>201</sub> |
| 2002 RS <sub>201</sub> | 16.7 | 0.15 | 20071027 | 48.06490  | 268.04040 | 137.81305 | 4.77675  | 0.2272446 | 2.5662141 | 46  | 5 | 2002-2007 | 0.39 | M-v | 1 | MPC | 128769 2002 RS <sub>201</sub> |
| 2002 RG <sub>202</sub> | 16.1 | 0.15 | 20071027 | 45.90816  | 120.06550 | 243.43206 | 5.89516  | 0.0836256 | 2.7132119 | 68  | 6 | 1998-2007 | 0.52 | M-v | 0 | MPC | 128769 2002 RG <sub>202</sub> |
| 2002 RH <sub>203</sub> | 15.3 | 0.15 | 20071027 | 244.19467 | 153.21130 | 333.79137 | 9.79509  | 0.0423995 | 2.9246292 | 62  | 3 | 1992-2007 | 0.45 | M-v | 4 | MPC | 126638 2002 RH <sub>203</sub> |
| 2002 RN <sub>205</sub> | 16.7 | 0.15 | 20071027 | 71.46516  | 205.74107 | 136.42995 | 3.52639  | 0.0931465 | 2.6477429 | 31  | 5 | 2000-2007 | 0.34 | M-v | 1 | MPC | 128769 2002 RN <sub>205</sub> |
| 2002 RY <sub>210</sub> | 17.4 | 0.15 | 20020923 | 10.11594  | 210.04578 | 141.92450 | 1.39962  | 0.1892317 | 3.1238494 | 16  | 1 | 46 days   | 0.32 |     |   | MPC | 2002 RY <sub>210</sub>        |
| 2002 RH <sub>212</sub> | 15.9 | 0.15 | 20071027 | 44.77699  | 359.01993 | 93.21057  | 10.42658 | 0.1885565 | 2.4844814 | 68  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 124373 2002 RH <sub>212</sub> |
| 2002 RT <sub>215</sub> | 16.4 | 0.15 | 20071027 | 120.01012 | 209.80677 | 112.35541 | 7.56556  | 0.1948960 | 2.5280351 | 53  | 5 | 2000-2007 | 0.51 | M-v | 3 | MPC | 128769 2002 RT <sub>215</sub> |
| 2002 RE <sub>216</sub> | 16.1 | 0.15 | 20071027 | 24.19392  | 18.67520  | 20.82688  | 8.86053  | 0.2531572 | 2.6863321 | 52  | 4 | 1998-2007 | 0.64 | M-v | 1 | MPC | 128769 2002 RE <sub>216</sub> |
| 2002 RB <sub>218</sub> | 15.6 | 0.15 | 20071027 | 58.63186  | 249.54758 | 89.33523  | 7.20081  | 0.0743104 | 2.7121896 | 57  | 4 | 2001-2007 | 0.55 | M-v | 3 | MPC | 127965 2002 RB <sub>218</sub> |
| 2002 RQ <sub>224</sub> | 16.4 | 0.15 | 20071027 | 350.90893 | 313.17420 | 89.81402  | 8.15267  | 0.2977542 | 2.8637385 | 42  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 127966 2002 RQ <sub>224</sub> |
| 2002 RR <sub>224</sub> | 16.1 | 0.15 | 20071027 | 27.73817  | 341.30777 | 61.98164  | 9.87294  | 0.2638479 | 2.6868161 | 48  | 6 | 1996-2007 | 0.62 | M-v | 1 | MPC | 128770 2002 RR <sub>224</sub> |
| 2002 RS <sub>226</sub> | 16.6 | 0.15 | 20071027 | 345.27420 | 249.76813 | 178.49457 | 8.99278  | 0.0807694 | 2.6989765 | 42  | 4 | 2001-2007 | 0.37 | M-v | 2 | MPC | 128770 2002 RS <sub>226</sub> |
| 2002 RB <sub>227</sub> | 17.0 | 0.15 | 20071027 | 57.32780  | 121.61120 | 247.91635 | 2.26497  | 0.1937644 | 2.6378311 | 44  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128770 2002 RB <sub>227</sub> |
| 2002 RW <sub>231</sub> | 16.3 | 0.15 | 20071027 | 0.09862   | 175.01521 | 221.27076 | 3.36821  | 0.0753072 | 2.7783962 | 50  | 6 | 1993-2007 | 0.42 | M-v | 0 | MPC | 128770 2002 RW <sub>231</sub> |
| 2002 RL <sub>233</sub> | 16.3 | 0.15 | 20071027 | 17.31873  | 148.22069 | 195.23501 | 1.49057  | 0.0791326 | 2.8785685 | 46  | 5 | 1994-2007 | 0.39 | M-v | 1 | MPC | 126638 2002 RL <sub>233</sub> |
| 2002 RQ <sub>233</sub> | 18.1 | 0.15 | 20071027 | 105.30219 | 41.93509  | 317.26637 | 0.70567  | 0.2003796 | 2.4689700 | 36  | 5 | 1998-2007 | 0.74 | M-v | 2 | MPC | 113942 2002 RQ <sub>233</sub> |
| 2002 RB <sub>234</sub> | 16.6 | 0.15 | 20071027 | 74.92358  | 359.15820 | 342.28415 | 1.46450  | 0.1113012 | 2.6241081 | 30  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 110908 2002 RB <sub>234</sub> |
| 2002 RG <sub>236</sub> | 16.4 | 0.15 | 20071027 | 310.64062 | 112.47949 | 16.72680  | 4.63811  | 0.1102520 | 2.5833665 | 41  | 4 | 1994-2007 | 0.65 | M-v | 2 | MPC | 128770 2002 RG <sub>236</sub> |
| 2002 RE <sub>237</sub> | 16.6 | 0.15 | 20071027 | 50.18446  | 306.02578 | 19.89147  | 5.58334  | 0.0206385 | 2.8077455 | 32  | 2 | 2002-2007 | 0.36 | M-v | 4 | MPC | 128770 2002 RE <sub>237</sub> |
| 2002 RZ <sub>237</sub> | 16.8 | 0.15 | 20071027 | 14.17245  | 250.48409 | 151.98334 | 4.99946  | 0.1604538 | 2.6841517 | 41  | 3 | 2002-2007 | 0.50 | M-v | 3 | MPC | 89331 2002 RZ <sub>237</sub>  |
| 2002 RB <sub>239</sub> | 16.5 | 0.15 | 20071027 | 5.49346   | 244.40227 | 177.35254 | 9.53452  | 0.1141540 | 2.6335487 | 47  | 6 | 2001-2007 | 0.47 | M-v | 0 | MPC | 110908 2002 RB <sub>239</sub> |
| 2002 RW <sub>239</sub> | 17.0 | 0.15 | 20071027 | 244.21056 | 104.14103 | 144.31369 | 5.70963  | 0.1363647 | 2.2995881 | 82  | 7 | 1995-2007 | 0.55 | M-v | 1 | MPC | 122714 2002 RW <sub>239</sub> |
| 2002 RE <sub>240</sub> | 17.2 | 0.15 | 20071027 | 75.51766  | 269.92439 | 86.32248  | 2.60500  | 0.1639284 | 2.5707961 | 31  | 4 | 2002-2007 | 0.24 | M-v | 1 | MPC | 128770 2002 RE <sub>240</sub> |
| 2002 RZ <sub>241</sub> | 16.5 | 0.15 | 20071027 | 310.47853 | 285.69809 | 219.71664 | 4.36975  | 0.1106377 | 2.4926744 | 47  | 6 | 2001-2007 | 0.38 | M-v | 0 | MPC | 128770 2002 RZ <sub>241</sub> |
| 2002 RU <sub>242</sub> | 16.2 | 0.15 | 20071027 | 255.27760 | 253.01937 | 297.88378 | 5.07516  | 0.0558697 | 2.4850906 | 41  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 110908 2002 RU <sub>242</sub> |
| 2002 RE <sub>243</sub> | 16.8 | 0.15 | 20071027 | 78.17766  | 90.62405  | 229.07994 | 3.43877  | 0.0802097 | 2.6673647 | 44  | 3 | 2002-2007 | 0.39 | M-v | 3 | MPC | 127967 2002 RE <sub>243</sub> |
| 2002 RL <sub>243</sub> | 16.2 | 0.15 | 20071027 | 333.96508 | 91.26722  | 288.45856 | 10.83958 | 0.0707500 | 2.9163309 | 28  | 3 | 2002-2007 | 0.45 | M-v | 1 | MPC | 89332 2002 RL <sub>243</sub>  |
| 2002 RR <sub>243</sub> | 16.4 | 0.15 | 20071027 | 260.64555 | 7.64204   | 164.76772 | 15.42055 | 0.0593023 | 2.5276476 | 54  | 6 | 1997-2007 | 0.55 | M-v | 1 | MPC | 110908 2002 RR <sub>243</sub> |
| 2002 RE <sub>244</sub> | 16.7 | 0.15 | 20071027 | 31.47333  | 104.11030 | 277.40076 | 3.56377  | 0.0970904 | 2.6462052 | 37  | 3 | 2002-2007 | 0.62 | M-v | 3 | MPC | 127968 2002 RE <sub>244</sub> |
| 2002 RY <sub>244</sub> | 15.5 | 0.15 | 20071027 | 5.97142   | 44.19680  | 350.80861 | 11.55067 | 0.0524035 | 2.6798116 | 53  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128770 2002 RY <sub>244</sub> |
| 2002 RV <sub>246</sub> | 16.7 | 0.15 | 20071027 | 124.59204 | 120.76582 | 167.75094 | 2.79681  | 0.1950066 | 2.5609642 | 78  | 6 | 1998-2007 | 0.43 | M-v | 1 | MPC | 110909 2002 RV <sub>246</sub> |
| 2002 RH <sub>247</sub> | 17.3 | 0.15 | 20071027 | 17.34530  | 67.41950  | 340.03228 | 3.07086  | 0.1837742 | 2.6410732 | 38  | 4 | 2000-2007 | 0.37 | M-v | 1 | MPC | 85618 2002 RH <sub>247</sub>  |
| 2002 RJ <sub>251</sub> | 16.6 | 0.15 | 20071027 | 36.44667  | 60.82499  | 316.08105 | 2.33093  | 0.1180352 | 2.6535982 | 38  | 4 | 2000-2007 | 0.27 | M-v | 0 | MPC | 128770 2002 RJ <sub>251</sub> |
| 2002 RX <sub>251</sub> | 16.4 | 0.15 | 20071027 | 358.89958 | 127.37555 | 293.13617 | 1.50980  | 0.0430676 | 2.6661548 | 29  | 3 | 2002-2007 | 0.30 | M-v | 2 | MPC | 127968 2002 RX <sub>251</sub> |
| 2002 RJ <sub>254</sub> | 16.2 | 0.15 | 20071027 | 346.05413 | 147.99489 | 237.97813 | 1.13716  | 0.0767366 | 2.8673122 | 40  | 3 | 2002-2007 | 0.36 | M-v | 3 | MPC | 126639 2002 RJ <sub>254</sub> |
| 2002 RS <sub>254</sub> | 16.6 | 0.15 | 20071027 | 237.71571 | 346.26218 | 205.89032 | 2.36545  | 0.0977031 | 2.5731606 | 45  | 6 | 1998-2007 | 0.25 | M-v | 1 | MPC | 128770 2002 RS <sub>254</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 RC <sub>255</sub> | 17.0 | 0.15 | 20071027 | 84.39901  | 160.04979 | 164.77858 | 3.68502  | 0.1768783 | 2.6311111 | 24  | 4 | 1994–2007 | 0.48 | M-v | 1 | MPC | 104222 2002 RC <sub>255</sub> |
| 2002 RR <sub>261</sub> | 16.4 | 0.15 | 20071027 | 142.18419 | 25.55291  | 234.82408 | 5.43990  | 0.1130601 | 2.6647298 | 56  | 6 | 1996–2007 | 0.33 | M-v | 0 | MPC | 127969 2002 RR <sub>261</sub> |
| 2002 RQ <sub>263</sub> | 16.5 | 0.15 | 20071027 | 2.12711   | 199.23204 | 210.68329 | 6.15121  | 0.1732913 | 2.7589845 | 39  | 2 | 2002–2007 | 0.41 | M-v | 4 | MPC | 127970 2002 RQ <sub>263</sub> |
| 2002 RX <sub>263</sub> | 16.5 | 0.15 | 20071027 | 106.18622 | 246.80381 | 88.60242  | 11.24518 | 0.1373630 | 2.6285804 | 32  | 4 | 2002–2007 | 0.46 | M-v | 1 | MPC | 128770 2002 RX <sub>263</sub> |
| 2002 RZ <sub>263</sub> | 16.6 | 0.15 | 20071027 | 336.82288 | 120.71147 | 322.54915 | 9.05915  | 0.0960333 | 2.6808040 | 40  | 4 | 1993–2007 | 0.54 | M-v | 1 | MPC | 128770 2002 RZ <sub>263</sub> |
| 2002 RF <sub>267</sub> | 17.3 | 0.15 | 20071027 | 49.93134  | 154.32187 | 214.17150 | 1.48684  | 0.0957544 | 2.6926088 | 32  | 5 | 1998–2007 | 0.33 | M-v | 0 | MPC | 121123 2002 RF <sub>267</sub> |
| 2002 RR <sub>267</sub> | 16.1 | 0.15 | 20071027 | 348.18061 | 5.85185   | 51.55206  | 10.31680 | 0.1500472 | 2.7807841 | 86  | 2 | 2002–2007 | 0.46 | M-v | 3 | MPC | 128771 2002 RR <sub>267</sub> |
| 2002 RV <sub>267</sub> | 16.3 | 0.15 | 20071027 | 335.77645 | 210.96663 | 222.38175 | 8.81991  | 0.1412883 | 2.7577237 | 85  | 3 | 2002–2007 | 0.43 | M-v | 2 | MPC | 128771 2002 RV <sub>267</sub> |
| 2002 RL <sub>269</sub> | 16.9 | 0.15 | 20071027 | 357.40384 | 332.29655 | 82.01572  | 10.52932 | 0.1529533 | 2.7590902 | 68  | 3 | 2002–2007 | 0.44 | M-v | 2 | MPC | 127970 2002 RL <sub>269</sub> |
| 2002 RH <sub>270</sub> | 16.7 | 0.15 | 20071027 | 46.19492  | 195.86829 | 166.29203 | 5.57136  | 0.0437908 | 2.6512449 | 32  | 5 | 1998–2007 | 0.33 | M-v | 1 | MPC | 121125 2002 RH <sub>270</sub> |
| 2002 RD <sub>273</sub> | 17.1 | 0.15 | 20071027 | 1.77362   | 187.98787 | 209.90862 | 1.59089  | 0.0882529 | 2.7198892 | 48  | 3 | 1998–2007 | 0.30 | M-v | 3 | MPC | 128771 2002 RD <sub>273</sub> |
| 2002 RL <sub>274</sub> | 16.8 | 0.15 | 20071027 | 11.92367  | 75.39856  | 352.29797 | 3.43363  | 0.2245972 | 2.6141004 | 45  | 4 | 2000–2007 | 0.37 | M-v | 1 | MPC | 128771 2002 RL <sub>274</sub> |
| 2002 RR <sub>274</sub> | 17.1 | 0.15 | 20071027 | 116.43122 | 192.25574 | 96.48018  | 0.96140  | 0.0673644 | 2.6286214 | 44  | 5 | 1998–2007 | 0.40 | M-v | 0 | MPC | 128771 2002 RR <sub>274</sub> |
| 2002 RX <sub>274</sub> | 16.6 | 0.15 | 20071027 | 197.65757 | 88.73041  | 132.60988 | 2.92846  | 0.0922858 | 2.5571113 | 39  | 6 | 1994–2007 | 0.31 | M-v | 0 | MPC | 128771 2002 RX <sub>274</sub> |
| 2002 RS <sub>278</sub> | 18.6 | 0.15 | 20020903 | 343.84269 | 157.33742 | 221.66249 | 12.00011 | 0.3328145 | 2.5844464 | 13  | 1 | 50 days   | 0.22 |     |   | MPC | 2002 RS <sub>278</sub>        |
| 2002 RW <sub>278</sub> | 16.8 | 0.15 | 20020903 | 349.32786 | 133.63086 | 225.41233 | 8.21319  | 0.0927259 | 3.0655507 | 14  | 1 | 40 days   | 0.30 |     |   | MPC | 2002 RW <sub>278</sub>        |
| 2002 RX <sub>278</sub> | 16.3 | 0.15 | 20020923 | 178.36642 | 333.26689 | 197.63655 | 14.90010 | 0.0819974 | 2.8683267 | 14  | 1 | 57 days   | 0.29 |     |   | MPC | 2002 RX <sub>278</sub>        |
| 2002 RZ <sub>278</sub> | 18.7 | 0.15 | 20020903 | 15.18907  | 10.51473  | 309.10121 | 5.66668  | 0.2370257 | 2.2207524 | 15  | 1 | 39 days   | 0.25 |     |   | MPC | 2002 RZ <sub>278</sub>        |
| 2002 RA <sub>279</sub> | 19.5 | 0.15 | 20020903 | 13.47531  | 37.29878  | 283.49266 | 4.07114  | 0.2663255 | 2.2980477 | 7   | 1 | 16 days   | 0.24 |     |   | MPC | 2002 RA <sub>279</sub>        |
| 2002 RB <sub>279</sub> | 18.0 | 0.15 | 20071027 | 180.48531 | 114.90858 | 265.69862 | 5.95724  | 0.1924985 | 2.1961797 | 20  | 1 | 102 days  | 0.18 | M-v | 3 | MPC | 2002 RB <sub>279</sub>        |
| 2002 RC <sub>279</sub> | 17.6 | 0.15 | 20020903 | 42.10908  | 352.74645 | 300.94592 | 13.07121 | 0.1466880 | 2.6825364 | 8   | 1 | 8 days    | 0.23 |     |   | MPC | 2002 RC <sub>279</sub>        |
| 2002 SE                | 15.4 | 0.15 | 20071027 | 96.22634  | 247.45632 | 15.19612  | 10.21724 | 0.0338910 | 2.9204212 | 41  | 2 | 2002–2007 | 0.50 | M-v | 5 | MPC | 128771 2002 SE                |
| 2002 SX                | 15.3 | 0.15 | 20071027 | 27.57189  | 87.21682  | 324.65925 | 22.93171 | 0.3243797 | 2.7231399 | 68  | 4 | 1999–2007 | 0.61 | M-v | 1 | MPC | 104223 2002 SX                |
| 2002 SH <sub>3</sub>   | 16.7 | 0.15 | 20071027 | 92.79260  | 43.30173  | 278.51505 | 9.41195  | 0.1015087 | 2.6121750 | 39  | 4 | 1996–2007 | 0.32 | M-v | 0 | MPC | 100360 2002 SH <sub>3</sub>   |
| 2002 SR <sub>3</sub>   | 17.1 | 0.15 | 20071027 | 121.49401 | 229.84092 | 85.16796  | 1.89593  | 0.1745765 | 2.5621550 | 48  | 5 | 2002–2007 | 0.43 | M-v | 1 | MPC | 110911 2002 SR <sub>3</sub>   |
| 2002 SN <sub>4</sub>   | 15.6 | 0.15 | 20071027 | 352.48458 | 74.06870  | 7.53345   | 12.45897 | 0.1430051 | 2.7150887 | 80  | 3 | 2002–2007 | 0.48 | M-v | 2 | MPC | 128771 2002 SN <sub>4</sub>   |
| 2002 SA <sub>5</sub>   | 16.5 | 0.15 | 20071027 | 14.40186  | 208.90819 | 183.60041 | 1.94900  | 0.2343568 | 2.8041306 | 97  | 4 | 1999–2007 | 0.50 | M-v | 1 | MPC | 127971 2002 SA <sub>5</sub>   |
| 2002 SK <sub>8</sub>   | 16.9 | 0.15 | 20071027 | 28.52897  | 39.23765  | 46.33267  | 3.81319  | 0.0973532 | 2.5356676 | 43  | 5 | 1994–2007 | 0.42 | M-v | 0 | MPC | 114671 2002 SK <sub>8</sub>   |
| 2002 SM <sub>8</sub>   | 16.0 | 0.15 | 20071027 | 339.36268 | 30.37764  | 7.91449   | 5.74661  | 0.1927497 | 2.9636615 | 114 | 5 | 1997–2007 | 0.52 | M-v | 1 | MPC | 128771 2002 SM <sub>8</sub>   |
| 2002 SK <sub>9</sub>   | 15.9 | 0.15 | 20071027 | 66.58221  | 316.66307 | 20.77310  | 3.68576  | 0.0992717 | 2.7627323 | 63  | 5 | 2002–2007 | 0.47 | M-v | 1 | MPC | 128771 2002 SK <sub>9</sub>   |
| 2002 SK <sub>10</sub>  | 15.9 | 0.15 | 20071027 | 349.59051 | 85.15081  | 20.92273  | 14.85115 | 0.0661548 | 2.6017862 | 71  | 6 | 1996–2007 | 0.58 | M-v | 1 | MPC | 110911 2002 SK <sub>10</sub>  |
| 2002 SW <sub>10</sub>  | 16.2 | 0.15 | 20071027 | 20.81080  | 206.68050 | 183.47827 | 8.33803  | 0.0884379 | 2.7750206 | 57  | 5 | 1996–2007 | 0.51 | M-v | 0 | MPC | 128771 2002 SW <sub>10</sub>  |
| 2002 SC <sub>14</sub>  | 16.4 | 0.15 | 20071027 | 83.51725  | 298.96773 | 19.06685  | 5.90230  | 0.0642436 | 2.7377240 | 65  | 4 | 2002–2007 | 0.49 | M-v | 0 | MPC | 128771 2002 SC <sub>14</sub>  |
| 2002 SZ <sub>14</sub>  | 16.1 | 0.15 | 20071027 | 165.31229 | 357.50713 | 299.78464 | 14.58273 | 0.1405523 | 2.4812124 | 44  | 5 | 1998–2007 | 0.54 | M-v | 2 | MPC | 110912 2002 SZ <sub>14</sub>  |
| 2002 SX <sub>15</sub>  | 16.4 | 0.15 | 20071027 | 109.89903 | 17.28278  | 307.47729 | 11.24272 | 0.2422414 | 2.5808516 | 66  | 4 | 2002–2007 | 0.48 | M-v | 2 | MPC | 110912 2002 SX <sub>15</sub>  |
| 2002 SJ <sub>17</sub>  | 17.1 | 0.15 | 20071027 | 112.33198 | 100.46139 | 197.31286 | 3.02494  | 0.2036854 | 2.6533220 | 34  | 4 | 2002–2007 | 0.26 | M-v | 1 | MPC | 127971 2002 SJ <sub>17</sub>  |
| 2002 SB <sub>22</sub>  | 15.7 | 0.15 | 20071027 | 121.14423 | 287.04149 | 17.62172  | 12.06117 | 0.0574719 | 2.6485930 | 95  | 5 | 2002–2007 | 0.48 | M-v | 0 | MPC | 104224 2002 SB <sub>22</sub>  |
| 2002 SJ <sub>22</sub>  | 15.6 | 0.15 | 20071027 | 299.03923 | 125.06092 | 13.20850  | 13.10455 | 0.0642995 | 2.6542253 | 65  | 4 | 2000–2007 | 0.52 | M-v | 2 | MPC | 128771 2002 SJ <sub>22</sub>  |
| 2002 SN <sub>22</sub>  | 16.0 | 0.15 | 20071027 | 44.70426  | 327.01895 | 30.49079  | 4.28762  | 0.0881741 | 2.7736384 | 100 | 3 | 2002–2007 | 0.44 | M-v | 2 | MPC | 128771 2002 SN <sub>22</sub>  |
| 2002 SO <sub>22</sub>  | 16.0 | 0.15 | 20071027 | 24.28013  | 46.15389  | 18.01934  | 13.09273 | 0.1591524 | 2.6387348 | 83  | 5 | 1998–2007 | 0.57 | M-v | 1 | MPC | 110912 2002 SO <sub>22</sub>  |
| 2002 SE <sub>24</sub>  | 15.9 | 0.15 | 20071027 | 28.18831  | 208.12682 | 163.71103 | 4.62616  | 0.1107793 | 2.7806104 | 75  | 5 | 1996–2007 | 0.46 | M-v | 1 | MPC | 128771 2002 SE <sub>24</sub>  |
| 2002 SZ <sub>25</sub>  | 15.6 | 0.15 | 20071027 | 82.70792  | 268.42207 | 44.72413  | 7.96110  | 0.2519064 | 2.7259817 | 76  | 3 | 2002–2007 | 0.54 | M-v | 2 | MPC | 75639 2002 SZ <sub>25</sub>   |
| 2002 SO <sub>26</sub>  | 16.1 | 0.15 | 20071027 | 16.40984  | 35.50878  | 358.42921 | 8.08609  | 0.0556228 | 2.7328801 | 38  | 4 | 2000–2007 | 0.48 | M-v | 1 | MPC | 128771 2002 SO <sub>26</sub>  |
| 2002 SL <sub>27</sub>  | 15.9 | 0.15 | 20071027 | 51.30386  | 305.45334 | 96.37091  | 15.24649 | 0.2135278 | 2.6178236 | 47  | 5 | 2002–2007 | 0.64 | M-v | 1 | MPC | 126640 2002 SL <sub>27</sub>  |
| 2002 SL <sub>29</sub>  | 16.4 | 0.15 | 20071027 | 349.18190 | 286.84902 | 161.13466 | 1.85490  | 0.1297872 | 2.7074812 | 58  | 6 | 2000–2007 | 0.49 | M-v | 0 | MPC | 110912 2002 SL <sub>29</sub>  |
| 2002 SL <sub>30</sub>  | 15.3 | 0.15 | 20071027 | 312.01628 | 112.11987 | 38.59485  | 13.99430 | 0.1003853 | 2.5484174 | 105 | 5 | 1999–2007 | 0.60 | M-v | 2 | MPC | 128771 2002 SL <sub>30</sub>  |
| 2002 SH <sub>32</sub>  | 15.0 | 0.15 | 20071027 | 88.14809  | 121.29072 | 197.12996 | 14.19110 | 0.0446903 | 2.7587733 | 109 | 3 | 2002–2007 | 0.50 | M-v | 2 | MPC | 128771 2002 SH <sub>32</sub>  |
| 2002 SW <sub>32</sub>  | 15.7 | 0.15 | 20071027 | 28.91091  | 30.72702  | 349.26700 | 7.52900  | 0.2325255 | 2.7798247 | 68  | 3 | 2002–2007 | 0.44 | M-v | 3 | MPC | 128771 2002 SW <sub>32</sub>  |
| 2002 SO <sub>33</sub>  | 15.5 | 0.15 | 20071027 | 17.84145  | 48.63016  | 349.29191 | 8.39692  | 0.1551586 | 2.7790651 | 65  | 4 | 1995–2007 | 0.51 | M-v | 2 | MPC | 128771 2002 SO <sub>33</sub>  |
| 2002 SG <sub>34</sub>  | 15.0 | 0.15 | 20071027 | 55.68560  | 289.75994 | 33.17129  | 9.11660  | 0.1724090 | 2.8074750 | 147 | 5 | 2001–2007 | 0.54 | M-v | 1 | MPC | 128771 2002 SG <sub>34</sub>  |
| 2002 SR <sub>34</sub>  | 15.3 | 0.15 | 20071027 | 324.51242 | 121.78443 | 21.82382  | 12.02974 | 0.1347559 | 2.5228033 | 123 | 5 | 1999–2007 | 0.55 | M-v | 2 | MPC | 114671 2002 SR <sub>34</sub>  |
| 2002 SU <sub>35</sub>  | 15.6 | 0.15 | 20071027 | 38.73245  | 45.03313  | 21.17688  | 15.13556 | 0.1197039 | 2.5905720 | 138 | 4 | 2002–2007 | 0.56 | M-v | 1 | MPC | 126640 2002 SU <sub>35</sub>  |
| 2002 SO <sub>36</sub>  | 16.3 | 0.15 | 20071027 | 80.14911  | 207.89627 | 148.04867 | 3.84856  | 0.1386731 | 2.6475738 | 79  | 6 | 1993–2007 | 0.53 | M-v | 1 | MPC | 110913 2002 SO <sub>36</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2002 SX <sub>37</sub> | 15.8 | 0.15 | 20071027 | 132.02906 | 222.01522 | 79.11307  | 9.78605  | 0.3618974 | 2.5649907 | 97  | 6 | 1994–2007 | 0.50 | M-v | 2 | MPC | 112819 2002 SX <sub>37</sub> |
| 2002 SM <sub>38</sub> | 16.4 | 0.15 | 20071027 | 25.28927  | 9.74886   | 14.97076  | 6.19403  | 0.0483447 | 2.7381611 | 80  | 3 | 2002–2007 | 0.43 | M-v | 3 | MPC | 128772 2002 SM <sub>38</sub> |
| 2002 SU <sub>41</sub> | 17.7 | 0.15 | 20071027 | 321.51075 | 117.05695 | 357.89259 | 5.41642  | 0.0996537 | 1.7731917 | 61  | 5 | 1994–2007 | 0.57 | M-v | 1 | MPC | 104225 2002 SU <sub>41</sub> |
| 2002 SE <sub>42</sub> | 16.2 | 0.15 | 20071027 | 309.88217 | 82.57565  | 22.50029  | 7.44816  | 0.1024017 | 2.8042813 | 96  | 3 | 2002–2007 | 0.49 | M-v | 2 | MPC | 128772 2002 SE <sub>42</sub> |
| 2002 SM <sub>42</sub> | 16.5 | 0.15 | 20071027 | 25.74367  | 194.16894 | 200.68706 | 5.71223  | 0.0823442 | 2.7181138 | 59  | 5 | 2002–2007 | 0.58 | M-v | 0 | MPC | 128772 2002 SM <sub>42</sub> |
| 2002 SL <sub>43</sub> | 17.2 | 0.15 | 20071027 | 81.51313  | 168.99505 | 201.63428 | 4.81637  | 0.2156967 | 2.5817230 | 92  | 3 | 2002–2006 | 0.54 | M-v | 3 | MPC | 110913 2002 SL <sub>43</sub> |
| 2002 SF <sub>46</sub> | 15.1 | 0.15 | 20071027 | 87.14121  | 272.47500 | 33.73345  | 6.93199  | 0.1354133 | 2.8099710 | 86  | 5 | 1996–2007 | 0.57 | M-v | 1 | MPC | 128772 2002 SF <sub>46</sub> |
| 2002 SA <sub>48</sub> | 16.1 | 0.15 | 20071027 | 86.83122  | 148.88614 | 186.50724 | 5.76448  | 0.0665473 | 2.6678021 | 90  | 5 | 1998–2007 | 0.52 | M-v | 1 | MPC | 110914 2002 SA <sub>48</sub> |
| 2002 SB <sub>48</sub> | 16.8 | 0.15 | 20071027 | 104.52111 | 122.26425 | 179.54573 | 1.44052  | 0.1814561 | 2.6775943 | 55  | 4 | 2002–2007 | 0.36 | M-v | 1 | MPC | 110914 2002 SB <sub>48</sub> |
| 2002 SG <sub>50</sub> | 15.3 | 0.15 | 20071027 | 70.08023  | 261.22765 | 64.69707  | 2.62152  | 0.2112699 | 2.7806433 | 96  | 5 | 1993–2007 | 0.55 | M-v | 1 | MPC | 128772 2002 SG <sub>50</sub> |
| 2002 SN <sub>52</sub> | 15.8 | 0.15 | 20071027 | 38.63866  | 293.59209 | 55.86893  | 9.96122  | 0.1690215 | 2.8083980 | 66  | 3 | 2002–2007 | 0.48 | M-v | 3 | MPC | 127972 2002 SN <sub>52</sub> |
| 2002 SP <sub>53</sub> | 14.9 | 0.15 | 20071027 | 47.83360  | 89.48981  | 285.47143 | 13.44278 | 0.0442249 | 2.7272318 | 66  | 4 | 2002–2007 | 0.54 | M-v | 1 | MPC | 104225 2002 SP <sub>53</sub> |
| 2002 SD <sub>55</sub> | 16.7 | 0.15 | 20071027 | 107.68910 | 104.08628 | 204.19868 | 6.80408  | 0.1955642 | 2.6098228 | 72  | 4 | 2002–2007 | 0.46 | M-v | 1 | MPC | 116222 2002 SD <sub>55</sub> |
| 2002 SE <sub>55</sub> | 15.9 | 0.15 | 20071027 | 73.98317  | 35.33265  | 327.80883 | 7.36143  | 0.0496016 | 2.5911517 | 66  | 4 | 2002–2007 | 0.50 | M-v | 2 | MPC | 110914 2002 SE <sub>55</sub> |
| 2002 SW <sub>55</sub> | 16.4 | 0.15 | 20071027 | 37.10488  | 298.71414 | 63.52753  | 6.75564  | 0.2059348 | 2.7962784 | 70  | 3 | 1996–2007 | 0.50 | M-v | 3 | MPC | 127972 2002 SW <sub>55</sub> |
| 2002 SW <sub>59</sub> | 16.4 | 0.15 | 20071027 | 31.79893  | 333.55250 | 26.56494  | 14.20829 | 0.1985463 | 2.7862545 | 35  | 3 | 1993–2007 | 0.35 | M-v | 2 | MPC | 127972 2002 SW <sub>59</sub> |
| 2002 SC <sub>60</sub> | 15.7 | 0.15 | 20071027 | 33.48918  | 250.47738 | 118.07383 | 9.28432  | 0.0824212 | 2.7090905 | 48  | 3 | 2002–2007 | 0.60 | M-v | 3 | MPC | 100364 2002 SC <sub>60</sub> |
| 2002 SY <sub>60</sub> | 15.7 | 0.15 | 20071027 | 31.58642  | 294.70630 | 67.73608  | 5.34947  | 0.0807506 | 2.7870512 | 75  | 5 | 1996–2007 | 0.57 | M-v | 1 | MPC | 128772 2002 SY <sub>60</sub> |
| 2002 SC <sub>63</sub> | 16.5 | 0.15 | 20071027 | 239.58919 | 100.52908 | 79.79051  | 3.58752  | 0.0258229 | 2.6294092 | 37  | 5 | 2001–2007 | 0.42 | M-v | 1 | MPC | 126640 2002 SC <sub>63</sub> |
| 2002 SE <sub>66</sub> | 16.4 | 0.15 | 20071027 | 76.48859  | 250.09832 | 61.50309  | 5.06515  | 0.1242824 | 2.7219068 | 41  | 2 | 2002–2007 | 0.35 | M-v | 4 | MPC | 127973 2002 SE <sub>66</sub> |
| 2002 SJ <sub>66</sub> | 16.2 | 0.15 | 20071027 | 8.91603   | 245.12280 | 143.31559 | 8.50604  | 0.2371921 | 2.7772579 | 64  | 2 | 2002–2007 | 0.40 | M-v | 3 | MPC | 128772 2002 SJ <sub>66</sub> |
| 2002 SM <sub>66</sub> | 16.5 | 0.15 | 20071027 | 6.31880   | 273.78693 | 127.69907 | 6.14623  | 0.1067160 | 2.6958152 | 38  | 3 | 2002–2007 | 0.50 | M-v | 2 | MPC | 128772 2002 SM <sub>66</sub> |
| 2002 SH <sub>67</sub> | 14.6 | 0.15 | 20071027 | 27.01096  | 356.91079 | 319.48593 | 20.05547 | 0.2368569 | 3.0818344 | 95  | 5 | 1996–2007 | 0.48 | M-v | 1 | MPC | 124376 2002 SH <sub>67</sub> |
| 2002 SP <sub>67</sub> | 16.6 | 0.15 | 20071027 | 74.38299  | 249.71226 | 64.22424  | 5.72334  | 0.1013920 | 2.7123823 | 39  | 2 | 2002–2007 | 0.34 | M-v | 4 | MPC | 128772 2002 SP <sub>67</sub> |
| 2002 SN <sub>68</sub> | 17.2 | 0.15 | 20071027 | 35.63551  | 103.22510 | 275.32786 | 0.50258  | 0.0970115 | 2.7198738 | 47  | 5 | 2000–2007 | 0.40 | M-v | 0 | MPC | 128772 2002 SN <sub>68</sub> |
| 2002 SC <sub>69</sub> | 17.5 | 0.15 | 20071027 | 9.36576   | 104.24380 | 308.09497 | 0.82921  | 0.1470530 | 2.7289605 | 22  | 3 | 2002–2007 | 0.31 | M-v | 3 | MPC | 120291 2002 SC <sub>69</sub> |
| 2002 SK <sub>69</sub> | 15.7 | 0.15 | 20071027 | 126.56625 | 214.73664 | 72.36602  | 10.08089 | 0.1059035 | 2.6394086 | 70  | 5 | 2001–2007 | 0.49 | M-v | 1 | MPC | 128772 2002 SK <sub>69</sub> |
| 2002 SV <sub>70</sub> | 16.5 | 0.15 | 20071027 | 78.62189  | 210.29492 | 112.91290 | 1.59861  | 0.1091851 | 2.6651750 | 57  | 5 | 1996–2007 | 0.40 | M-v | 1 | MPC | 128772 2002 SV <sub>70</sub> |
| 2002 SH <sub>71</sub> | 18.1 | 0.15 | 20020923 | 21.41436  | 165.00374 | 172.35044 | 1.89818  | 0.1503930 | 2.5916736 | 16  | 1 | 46 days   | 0.24 |     |   | MPC | 2002 SH <sub>71</sub>        |
| 2002 SL <sub>71</sub> | 16.5 | 0.15 | 20021013 | 73.64971  | 254.65988 | 37.35686  | 2.12806  | 0.0556796 | 2.9082918 | 11  | 1 | 34 days   | 0.19 |     |   | MPC | 2002 SL <sub>71</sub>        |
| 2002 SR <sub>71</sub> | 16.9 | 0.15 | 20020903 | 95.89583  | 147.63022 | 99.86864  | 7.34138  | 0.0671202 | 2.2404523 | 11  | 1 | 27 days   | 0.32 |     |   | MPC | 2002 SR <sub>71</sub>        |
| 2002 TZ               | 16.1 | 0.15 | 20071027 | 47.11574  | 277.88492 | 63.91675  | 4.23862  | 0.1103298 | 2.8092104 | 67  | 4 | 2002–2007 | 0.57 | M-v | 1 | MPC | 128772 2002 TZ               |
| 2002 TK <sub>1</sub>  | 15.6 | 0.15 | 20071027 | 87.07836  | 285.16027 | 24.17698  | 5.21596  | 0.1555256 | 2.7173649 | 51  | 5 | 2001–2007 | 0.54 | M-v | 1 | MPC | 128773 2002 TK <sub>1</sub>  |
| 2002 TC <sub>6</sub>  | 16.1 | 0.15 | 20071027 | 65.28340  | 159.52658 | 170.69787 | 8.63597  | 0.2934504 | 2.7688231 | 60  | 6 | 1997–2007 | 0.59 | M-v | 1 | MPC | 104226 2002 TC <sub>6</sub>  |
| 2002 TK <sub>6</sub>  | 16.5 | 0.15 | 20071027 | 358.21172 | 327.57071 | 74.13051  | 3.21454  | 0.2508890 | 2.8702427 | 83  | 2 | 2002–2007 | 0.47 | M-v | 3 | MPC | 128773 2002 TK <sub>6</sub>  |
| 2002 TE <sub>7</sub>  | 15.8 | 0.15 | 20071027 | 26.16659  | 320.57639 | 26.39758  | 2.73873  | 0.1314929 | 2.9129749 | 136 | 5 | 1992–2007 | 0.51 | M-v | 2 | MPC | 128773 2002 TE <sub>7</sub>  |
| 2002 TN <sub>9</sub>  | 16.2 | 0.15 | 20071027 | 85.43893  | 298.66916 | 31.66600  | 7.34821  | 0.2341237 | 2.6755190 | 94  | 6 | 2001–2007 | 0.48 | M-v | 1 | MPC | 104226 2002 TN <sub>9</sub>  |
| 2002 TS <sub>9</sub>  | 16.4 | 0.15 | 20071027 | 52.17981  | 270.86475 | 139.74214 | 4.42365  | 0.1870961 | 2.6185620 | 95  | 5 | 2000–2007 | 0.56 | M-v | 1 | MPC | 128773 2002 TS <sub>9</sub>  |
| 2002 TM <sub>10</sub> | 15.8 | 0.15 | 20071027 | 336.72405 | 74.07665  | 3.76820   | 12.87204 | 0.1870002 | 2.7805636 | 71  | 3 | 2002–2007 | 0.58 | M-v | 1 | MPC | 128773 2002 TM <sub>10</sub> |
| 2002 TA <sub>11</sub> | 16.6 | 0.15 | 20071027 | 21.48514  | 87.14326  | 301.55893 | 10.82356 | 0.1845239 | 2.7271537 | 37  | 3 | 2002–2007 | 0.33 | M-v | 2 | MPC | 61366 2002 TA <sub>11</sub>  |
| 2002 TV <sub>12</sub> | 15.3 | 0.15 | 20071027 | 319.68852 | 90.99122  | 34.04125  | 8.39128  | 0.0364722 | 2.5877819 | 78  | 4 | 2002–2007 | 0.58 | M-v | 2 | MPC | 128773 2002 TV <sub>12</sub> |
| 2002 TX <sub>12</sub> | 16.4 | 0.15 | 20071027 | 21.74259  | 277.81212 | 98.18047  | 3.77177  | 0.2091193 | 2.8007368 | 80  | 3 | 2002–2007 | 0.57 | M-v | 3 | MPC | 128773 2002 TX <sub>12</sub> |
| 2002 TU <sub>16</sub> | 16.6 | 0.15 | 20071027 | 2.76477   | 231.92692 | 210.72705 | 3.63300  | 0.0387305 | 2.6028010 | 47  | 5 | 1998–2007 | 0.51 | M-v | 1 | MPC | 110916 2002 TU <sub>16</sub> |
| 2002 TP <sub>17</sub> | 16.3 | 0.15 | 20071027 | 42.45577  | 121.88668 | 238.71332 | 1.68058  | 0.1168155 | 2.7677001 | 69  | 6 | 1995–2007 | 0.45 | M-v | 1 | MPC | 128773 2002 TP <sub>17</sub> |
| 2002 TR <sub>21</sub> | 15.8 | 0.15 | 20071027 | 58.35439  | 348.14700 | 43.92991  | 5.31900  | 0.1008185 | 2.6202966 | 59  | 4 | 2002–2007 | 0.48 | M-v | 1 | MPC | 128773 2002 TR <sub>21</sub> |
| 2002 TH <sub>22</sub> | 16.2 | 0.15 | 20071027 | 353.35396 | 164.01047 | 211.21470 | 1.08273  | 0.2750302 | 2.9753859 | 106 | 2 | 2002–2007 | 0.45 | M-v | 3 | MPC | 128773 2002 TH <sub>22</sub> |
| 2002 TP <sub>23</sub> | 16.4 | 0.15 | 20071027 | 67.21197  | 192.81354 | 176.14387 | 4.60636  | 0.0949400 | 2.6560695 | 49  | 5 | 2000–2007 | 0.47 | M-v | 1 | MPC | 110916 2002 TP <sub>23</sub> |
| 2002 TF <sub>25</sub> | 15.6 | 0.15 | 20071027 | 106.18825 | 296.41573 | 22.92229  | 3.95607  | 0.0883387 | 2.6840610 | 78  | 4 | 2002–2007 | 0.49 | M-v | 0 | MPC | 110917 2002 TF <sub>25</sub> |
| 2002 TZ <sub>27</sub> | 16.1 | 0.15 | 20071027 | 35.15582  | 168.13207 | 209.39245 | 4.44060  | 0.1681177 | 2.7855278 | 72  | 4 | 1960–2007 | 0.56 | M-v | 1 | MPC | 128773 2002 TZ <sub>27</sub> |
| 2002 TD <sub>30</sub> | 15.7 | 0.15 | 20071027 | 67.91746  | 350.47665 | 40.95719  | 13.78926 | 0.1508791 | 2.6144063 | 68  | 4 | 2002–2007 | 0.54 | M-v | 2 | MPC | 110917 2002 TD <sub>30</sub> |
| 2002 TX <sub>31</sub> | 15.0 | 0.15 | 20071027 | 71.52107  | 300.32271 | 34.54454  | 4.37490  | 0.0971754 | 2.8030510 | 128 | 3 | 2002–2007 | 0.55 | M-v | 2 | MPC | 128773 2002 TX <sub>31</sub> |
| 2002 TQ <sub>32</sub> | 15.9 | 0.15 | 20071027 | 37.81520  | 170.98654 | 200.44783 | 4.43125  | 0.2119877 | 2.8007457 | 80  | 3 | 2002–2007 | 0.50 | M-v | 3 | MPC | 128773 2002 TQ <sub>32</sub> |
| 2002 TB <sub>36</sub> | 16.2 | 0.15 | 20071027 | 27.96780  | 6.82849   | 14.41830  | 6.89728  | 0.1399886 | 2.8116432 | 51  | 4 | 2000–2007 | 0.49 | M-v | 1 | MPC | 128773 2002 TB <sub>36</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 TN <sub>42</sub>  | 15.6 | 0.15 | 20071027 | 11.80229  | 26.35068  | 48.04279  | 11.01023 | 0.2902925 | 2.7725278 | 115 | 2 | 2002-2007 | 0.52 | M-v | 2 | MPC | 127974 2002 TN <sub>42</sub>  |
| 2002 TU <sub>50</sub>  | 15.0 | 0.15 | 20071027 | 28.45651  | 349.56209 | 57.77244  | 15.42602 | 0.2297051 | 2.7838478 | 150 | 4 | 2002-2007 | 0.44 | M-v | 1 | MPC | 128773 2002 TU <sub>50</sub>  |
| 2002 TP <sub>55</sub>  | 16.3 | 0.15 | 20071027 | 14.42846  | 333.92052 | 61.00289  | 5.55519  | 0.1264922 | 2.7962735 | 102 | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128773 2002 TP <sub>55</sub>  |
| 2002 TR <sub>56</sub>  | 15.9 | 0.15 | 20071027 | 349.95920 | 62.54280  | 26.86063  | 7.97841  | 0.2211120 | 2.7520328 | 49  | 4 | 1993-2007 | 0.56 | M-v | 1 | MPC | 128773 2002 TR <sub>56</sub>  |
| 2002 TA <sub>57</sub>  | 16.4 | 0.15 | 20071027 | 67.69074  | 304.48100 | 47.70473  | 4.46439  | 0.1108124 | 2.6557130 | 44  | 7 | 1998-2007 | 0.39 | M-v | 0 | MPC | 104228 2002 TA <sub>57</sub>  |
| 2002 TT <sub>57</sub>  | 16.2 | 0.15 | 20071027 | 83.63367  | 54.59046  | 261.19957 | 8.48349  | 0.0917057 | 2.7030931 | 34  | 2 | 2002-2007 | 0.32 | M-v | 4 | MPC | 127974 2002 TT <sub>57</sub>  |
| 2002 TC <sub>58</sub>  | 14.5 | 0.15 | 20071027 | 45.62929  | 205.00545 | 129.52720 | 18.69517 | 0.4235492 | 2.7178178 | 154 | 6 | 1998-2007 | 0.59 | M-v | 1 | MPC | 126642 2002 TC <sub>58</sub>  |
| 2002 TY <sub>61</sub>  | 15.8 | 0.15 | 20071027 | 12.15462  | 119.53734 | 306.73914 | 7.81290  | 0.0668937 | 2.6577282 | 67  | 4 | 2002-2007 | 0.56 | M-v | 0 | MPC | 110919 2002 TY <sub>61</sub>  |
| 2002 TB <sub>62</sub>  | 16.0 | 0.15 | 20071027 | 45.72515  | 100.91225 | 246.28418 | 8.10604  | 0.1723565 | 2.7995632 | 67  | 4 | 1994-2007 | 0.54 | M-v | 1 | MPC | 128773 2002 TB <sub>62</sub>  |
| 2002 TK <sub>62</sub>  | 16.0 | 0.15 | 20071027 | 2.14227   | 125.40383 | 288.80391 | 3.75628  | 0.0355145 | 2.7488076 | 74  | 5 | 1995-2007 | 0.51 | M-v | 0 | MPC | 128773 2002 TK <sub>62</sub>  |
| 2002 TR <sub>62</sub>  | 16.4 | 0.15 | 20071027 | 320.36536 | 227.57033 | 207.98142 | 14.83465 | 0.1618240 | 2.9128783 | 63  | 3 | 1999-2007 | 0.44 | M-v | 1 | MPC | 127975 2002 TR <sub>62</sub>  |
| 2002 TB <sub>63</sub>  | 16.3 | 0.15 | 20071027 | 59.62121  | 117.18242 | 233.14440 | 5.06325  | 0.0323337 | 2.7683176 | 56  | 4 | 2002-2007 | 0.37 | M-v | 0 | MPC | 127975 2002 TB <sub>63</sub>  |
| 2002 TM <sub>63</sub>  | 16.4 | 0.15 | 20071027 | 13.04379  | 184.13389 | 229.21458 | 4.52119  | 0.0675439 | 2.7246285 | 28  | 4 | 2002-2007 | 0.32 | M-v | 1 | MPC | 104229 2002 TM <sub>63</sub>  |
| 2002 TJ <sub>65</sub>  | 15.3 | 0.15 | 20071027 | 332.24173 | 35.56597  | 18.74829  | 11.39184 | 0.1360188 | 2.9753225 | 136 | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128774 2002 TJ <sub>65</sub>  |
| 2002 TJ <sub>67</sub>  | 16.1 | 0.15 | 20071027 | 11.64441  | 67.01129  | 356.79628 | 7.35045  | 0.3114487 | 2.7852040 | 59  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 127975 2002 TJ <sub>67</sub>  |
| 2002 TJ <sub>68</sub>  | 16.6 | 0.15 | 20071027 | 133.16447 | 125.05361 | 164.72633 | 1.81360  | 0.0975323 | 2.6183380 | 42  | 5 | 1994-2007 | 0.38 | M-v | 0 | MPC | 128774 2002 TJ <sub>68</sub>  |
| 2002 TO <sub>68</sub>  | 15.8 | 0.15 | 20071027 | 59.08454  | 250.42430 | 168.31875 | 16.07371 | 0.1679474 | 2.5846582 | 90  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 110919 2002 TO <sub>68</sub>  |
| 2002 TF <sub>70</sub>  | 15.5 | 0.15 | 20071027 | 43.17146  | 127.31527 | 235.31096 | 8.79243  | 0.1544646 | 2.7766014 | 64  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128774 2002 TF <sub>70</sub>  |
| 2002 TJ <sub>70</sub>  | 14.8 | 0.15 | 20071027 | 11.55609  | 100.27042 | 243.46590 | 8.17076  | 0.1247279 | 3.0346343 | 72  | 6 | 1997-2007 | 0.62 | M-v | 1 | MPC | 124377 2002 TJ <sub>70</sub>  |
| 2002 TL <sub>70</sub>  | 15.6 | 0.15 | 20071027 | 340.29258 | 194.11092 | 261.94345 | 12.72473 | 0.0627568 | 2.6004725 | 53  | 6 | 2000-2007 | 0.57 | M-v | 1 | MPC | 110919 2002 TL <sub>70</sub>  |
| 2002 TD <sub>72</sub>  | 16.0 | 0.15 | 20071027 | 26.09726  | 91.94865  | 342.90790 | 7.68826  | 0.3259178 | 2.6805773 | 61  | 4 | 1999-2007 | 0.59 | M-v | 1 | MPC | 104229 2002 TD <sub>72</sub>  |
| 2002 TS <sub>72</sub>  | 15.7 | 0.15 | 20071027 | 74.81325  | 71.57758  | 270.34912 | 3.98435  | 0.1621637 | 2.7166876 | 67  | 6 | 2001-2007 | 0.49 | M-v | 0 | MPC | 110919 2002 TS <sub>72</sub>  |
| 2002 TE <sub>73</sub>  | 15.0 | 0.15 | 20071027 | 338.82293 | 114.20952 | 256.15029 | 9.41534  | 0.0833614 | 3.1326438 | 63  | 4 | 1999-2007 | 0.56 | M-v | 2 | MPC | 124377 2002 TE <sub>73</sub>  |
| 2002 TF <sub>73</sub>  | 15.3 | 0.15 | 20071027 | 15.93167  | 135.41374 | 277.50377 | 6.08452  | 0.1001400 | 2.7431413 | 93  | 4 | 2002-2007 | 0.58 | M-v | 0 | MPC | 110919 2002 TF <sub>73</sub>  |
| 2002 TB <sub>76</sub>  | 15.5 | 0.15 | 20071027 | 65.06704  | 331.75537 | 352.36689 | 9.43438  | 0.2158939 | 2.7970678 | 51  | 3 | 2002-2007 | 0.49 | M-v | 3 | MPC | 128774 2002 TB <sub>76</sub>  |
| 2002 TQ <sub>76</sub>  | 15.7 | 0.15 | 20071027 | 22.91252  | 153.92197 | 229.08419 | 5.73213  | 0.1251148 | 2.8100737 | 75  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 127975 2002 TQ <sub>76</sub>  |
| 2002 TD <sub>81</sub>  | 15.6 | 0.15 | 20071027 | 2.19410   | 349.12573 | 95.31894  | 6.22348  | 0.1380732 | 2.7120338 | 44  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128774 2002 TD <sub>81</sub>  |
| 2002 TT <sub>82</sub>  | 16.4 | 0.15 | 20071027 | 60.04322  | 109.09318 | 292.30477 | 1.61385  | 0.1740575 | 2.5913193 | 85  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128774 2002 TT <sub>82</sub>  |
| 2002 TF <sub>84</sub>  | 15.8 | 0.15 | 20071027 | 41.34229  | 322.92726 | 33.69957  | 16.05492 | 0.2008359 | 2.7921170 | 84  | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128774 2002 TF <sub>84</sub>  |
| 2002 TJ <sub>86</sub>  | 16.2 | 0.15 | 20071027 | 243.79270 | 265.73451 | 352.50419 | 5.52982  | 0.1041202 | 2.3688976 | 49  | 6 | 1998-2007 | 0.55 | M-v | 1 | MPC | 122718 2002 TJ <sub>86</sub>  |
| 2002 TF <sub>88</sub>  | 15.9 | 0.15 | 20071027 | 28.27099  | 123.61675 | 232.91414 | 9.12711  | 0.1658515 | 2.8716461 | 64  | 2 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128774 2002 TF <sub>88</sub>  |
| 2002 TH <sub>88</sub>  | 14.3 | 0.15 | 20071027 | 52.02272  | 52.77053  | 241.56480 | 8.35141  | 0.0348260 | 3.1055414 | 67  | 4 | 2002-2007 | 0.60 | M-v | 1 | MPC | 102134 2002 TH <sub>88</sub>  |
| 2002 TO <sub>88</sub>  | 15.5 | 0.15 | 20071027 | 9.79971   | 130.43495 | 231.90258 | 8.86896  | 0.0879375 | 2.9661161 | 54  | 3 | 1997-2007 | 0.51 | M-v | 3 | MPC | 128774 2002 TO <sub>88</sub>  |
| 2002 TM <sub>91</sub>  | 14.7 | 0.15 | 20071027 | 26.00321  | 23.95211  | 3.21247   | 7.98221  | 0.2350828 | 2.7983334 | 96  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128774 2002 TM <sub>91</sub>  |
| 2002 TV <sub>93</sub>  | 16.4 | 0.15 | 20071027 | 338.87332 | 45.83813  | 38.65348  | 3.84598  | 0.1725982 | 2.7440367 | 52  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128774 2002 TV <sub>93</sub>  |
| 2002 TD <sub>95</sub>  | 16.1 | 0.15 | 20071027 | 9.89725   | 46.01536  | 351.94779 | 3.93479  | 0.0736442 | 2.8042002 | 67  | 5 | 1995-2007 | 0.50 | M-v | 1 | MPC | 128774 2002 TD <sub>95</sub>  |
| 2002 TP <sub>95</sub>  | 15.3 | 0.15 | 20071027 | 25.61951  | 139.05534 | 255.58499 | 8.12869  | 0.1423998 | 2.7325373 | 40  | 3 | 2002-2007 | 0.42 | M-v | 3 | MPC | 128774 2002 TP <sub>95</sub>  |
| 2002 TC <sub>98</sub>  | 17.8 | 0.15 | 20071027 | 357.57196 | 15.02156  | 22.74301  | 1.22795  | 0.2806464 | 2.8695083 | 54  | 2 | 2002-2007 | 0.40 | M-v | 2 | MPC | 128774 2002 TC <sub>98</sub>  |
| 2002 TT <sub>98</sub>  | 16.5 | 0.15 | 20071027 | 109.66070 | 94.40309  | 212.56054 | 3.24388  | 0.0656383 | 2.7128949 | 53  | 5 | 2002-2007 | 0.42 | M-v | 0 | MPC | 128774 2002 TT <sub>98</sub>  |
| 2002 TN <sub>103</sub> | 16.2 | 0.15 | 20071027 | 44.85811  | 154.53739 | 219.82515 | 4.77013  | 0.0823336 | 2.7273082 | 53  | 3 | 2002-2007 | 0.41 | M-v | 3 | MPC | 128774 2002 TN <sub>103</sub> |
| 2002 TK <sub>105</sub> | 15.1 | 0.15 | 20071027 | 2.53197   | 50.30790  | 308.41948 | 12.41238 | 0.1247385 | 2.9261288 | 64  | 4 | 1998-2007 | 0.55 | M-v | 3 | MPC | 124378 2002 TK <sub>105</sub> |
| 2002 TS <sub>108</sub> | 15.7 | 0.15 | 20071027 | 65.01903  | 261.58783 | 67.56308  | 8.75782  | 0.2185102 | 2.7446878 | 58  | 2 | 2002-2007 | 0.49 | M-v | 3 | MPC | 127976 2002 TS <sub>108</sub> |
| 2002 TD <sub>110</sub> | 15.7 | 0.15 | 20071027 | 25.37479  | 279.14595 | 79.03135  | 10.91102 | 0.2637338 | 2.8541557 | 76  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128774 2002 TD <sub>110</sub> |
| 2002 TP <sub>110</sub> | 15.4 | 0.15 | 20071027 | 27.12759  | 272.04442 | 139.01166 | 13.02892 | 0.2034630 | 2.6994562 | 54  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128775 2002 TP <sub>110</sub> |
| 2002 TT <sub>111</sub> | 16.1 | 0.15 | 20071027 | 52.36806  | 278.72129 | 60.55778  | 4.19177  | 0.2014078 | 2.7408406 | 57  | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 127976 2002 TT <sub>111</sub> |
| 2002 TH <sub>112</sub> | 16.9 | 0.15 | 20071027 | 198.35565 | 267.51645 | 53.39056  | 4.52888  | 0.1352769 | 2.2851568 | 28  | 4 | 1992-2007 | 0.59 | M-v | 4 | MPC | 114674 2002 TH <sub>112</sub> |
| 2002 TP <sub>113</sub> | 14.4 | 0.15 | 20071027 | 16.66709  | 36.80375  | 309.31286 | 10.55527 | 0.0782709 | 2.9766015 | 67  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128775 2002 TP <sub>113</sub> |
| 2002 TC <sub>115</sub> | 15.3 | 0.15 | 20071027 | 137.00387 | 304.23150 | 332.80991 | 12.41030 | 0.1012805 | 2.6987867 | 75  | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 110921 2002 TC <sub>115</sub> |
| 2002 TG <sub>115</sub> | 16.4 | 0.15 | 20071027 | 32.70341  | 122.66434 | 280.58138 | 6.81045  | 0.2396260 | 2.6984315 | 46  | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128775 2002 TG <sub>115</sub> |
| 2002 TC <sub>116</sub> | 15.8 | 0.15 | 20071027 | 106.41538 | 63.72948  | 236.04051 | 12.33327 | 0.2671082 | 2.6638161 | 59  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 110921 2002 TC <sub>116</sub> |
| 2002 TD <sub>116</sub> | 15.2 | 0.15 | 20071027 | 35.65835  | 110.71715 | 268.38428 | 10.02545 | 0.0181937 | 2.7552943 | 82  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 127977 2002 TD <sub>116</sub> |
| 2002 TJ <sub>116</sub> | 15.9 | 0.15 | 20071027 | 86.56627  | 357.80481 | 342.36255 | 12.33166 | 0.1175238 | 2.6692042 | 53  | 3 | 2002-2007 | 0.38 | M-v | 2 | MPC | 110921 2002 TJ <sub>116</sub> |
| 2002 TN <sub>116</sub> | 15.1 | 0.15 | 20071027 | 83.15891  | 32.05786  | 277.11448 | 8.21275  | 0.1387760 | 2.7934991 | 80  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128775 2002 TN <sub>116</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 TQ <sub>116</sub> | 14.9 | 0.15 | 20071027 | 4.92604   | 139.32698 | 281.55813 | 7.93061  | 0.2575273 | 2.7865881 | 79  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 126643 2002 TQ <sub>116</sub> |
| 2002 TL <sub>117</sub> | 16.1 | 0.15 | 20071027 | 3.77708   | 105.26476 | 284.63004 | 8.06414  | 0.1893117 | 2.8784720 | 53  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 127977 2002 TL <sub>117</sub> |
| 2002 TG <sub>118</sub> | 16.3 | 0.15 | 20071027 | 18.37699  | 60.73321  | 334.18432 | 8.51654  | 0.1814237 | 2.7907334 | 25  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 89346 2002 TG <sub>118</sub>  |
| 2002 TV <sub>118</sub> | 15.4 | 0.15 | 20071027 | 16.30073  | 186.22311 | 237.35531 | 9.34795  | 0.2252339 | 2.7226752 | 87  | 6 | 1997-2007 | 0.59 | M-v | 1 | MPC | 128775 2002 TV <sub>118</sub> |
| 2002 TG <sub>119</sub> | 15.9 | 0.15 | 20071027 | 357.92490 | 109.91562 | 242.39961 | 8.41610  | 0.2282566 | 3.0490504 | 59  | 2 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128775 2002 TG <sub>119</sub> |
| 2002 TN <sub>119</sub> | 16.0 | 0.15 | 20071027 | 60.08123  | 84.88233  | 316.68791 | 7.04581  | 0.1849573 | 2.5962954 | 70  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 110922 2002 TN <sub>119</sub> |
| 2002 TE <sub>120</sub> | 16.0 | 0.15 | 20071027 | 115.19795 | 298.38655 | 356.28771 | 13.25521 | 0.0484499 | 2.7814921 | 39  | 5 | 1997-2007 | 0.68 | M-v | 1 | MPC | 104230 2002 TE <sub>120</sub> |
| 2002 TZ <sub>120</sub> | 14.9 | 0.15 | 20071027 | 298.04515 | 200.89671 | 240.28918 | 11.76805 | 0.2699372 | 3.1050978 | 57  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 124379 2002 TZ <sub>120</sub> |
| 2002 TY <sub>121</sub> | 15.8 | 0.15 | 20071027 | 41.18547  | 354.76430 | 358.05708 | 12.07031 | 0.1933472 | 2.8447373 | 52  | 4 | 1995-2007 | 0.50 | M-v | 2 | MPC | 128775 2002 TY <sub>121</sub> |
| 2002 TP <sub>122</sub> | 15.9 | 0.15 | 20071027 | 34.02261  | 76.25918  | 225.04510 | 11.43554 | 0.1459535 | 3.0122781 | 36  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 124379 2002 TP <sub>122</sub> |
| 2002 TR <sub>122</sub> | 15.4 | 0.15 | 20071027 | 352.11724 | 84.47021  | 274.45567 | 8.67936  | 0.1025094 | 2.9981683 | 26  | 2 | 2002-2007 | 0.45 | M-v | 3 | MPC | 122419 2002 TR <sub>122</sub> |
| 2002 TN <sub>123</sub> | 15.7 | 0.15 | 20071027 | 351.42627 | 142.47248 | 284.09055 | 6.86100  | 0.2136853 | 2.7792472 | 78  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128775 2002 TN <sub>123</sub> |
| 2002 TU <sub>123</sub> | 16.2 | 0.15 | 20071027 | 60.15174  | 94.45844  | 253.07879 | 7.63813  | 0.1499937 | 2.7193292 | 37  | 3 | 2002-2007 | 0.29 | M-v | 2 | MPC | 127978 2002 TU <sub>123</sub> |
| 2002 TP <sub>124</sub> | 15.5 | 0.15 | 20071027 | 89.14581  | 220.51735 | 82.62619  | 4.13424  | 0.1904283 | 2.6928025 | 39  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 75708 2002 TP <sub>124</sub>  |
| 2002 TC <sub>125</sub> | 15.6 | 0.15 | 20071027 | 101.79540 | 187.41421 | 112.67191 | 5.71126  | 0.2359599 | 2.6397204 | 54  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 104231 2002 TC <sub>125</sub> |
| 2002 TV <sub>125</sub> | 15.5 | 0.15 | 20071027 | 43.26993  | 344.37351 | 46.93885  | 6.69170  | 0.2688927 | 2.6544655 | 64  | 5 | 1998-2007 | 0.61 | M-v | 1 | MPC | 118023 2002 TV <sub>125</sub> |
| 2002 TE <sub>129</sub> | 15.2 | 0.15 | 20071027 | 89.64992  | 62.58687  | 238.72101 | 7.97168  | 0.1453980 | 2.7672548 | 110 | 5 | 1993-2007 | 0.48 | M-v | 1 | MPC | 128775 2002 TE <sub>129</sub> |
| 2002 TB <sub>130</sub> | 15.6 | 0.15 | 20071027 | 15.71003  | 66.23910  | 339.50302 | 11.44203 | 0.1446271 | 2.7438849 | 56  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 104231 2002 TB <sub>130</sub> |
| 2002 TC <sub>132</sub> | 16.5 | 0.15 | 20071027 | 160.98742 | 354.81333 | 322.56165 | 5.76736  | 0.0999966 | 2.4537725 | 88  | 5 | 1998-2007 | 0.49 | M-v | 2 | MPC | 112825 2002 TC <sub>132</sub> |
| 2002 TV <sub>133</sub> | 15.4 | 0.15 | 20071027 | 80.18675  | 31.35838  | 277.69063 | 7.61241  | 0.2813615 | 2.7062423 | 48  | 3 | 2002-2007 | 0.40 | M-v | 3 | MPC | 128775 2002 TV <sub>133</sub> |
| 2002 TG <sub>134</sub> | 15.7 | 0.15 | 20071027 | 31.28974  | 110.02480 | 229.58525 | 9.39752  | 0.1331049 | 2.9110371 | 35  | 2 | 2002-2007 | 0.48 | M-v | 4 | MPC | 127978 2002 TG <sub>134</sub> |
| 2002 TP <sub>135</sub> | 16.0 | 0.15 | 20071027 | 41.05266  | 345.39095 | 0.90861   | 12.78267 | 0.2414954 | 2.8451539 | 58  | 4 | 1997-2007 | 0.57 | M-v | 2 | MPC | 128775 2002 TP <sub>135</sub> |
| 2002 TV <sub>136</sub> | 15.4 | 0.15 | 20071027 | 66.44841  | 82.35580  | 318.25518 | 8.19397  | 0.1611803 | 2.5783449 | 92  | 5 | 1998-2007 | 0.49 | M-v | 2 | MPC | 110922 2002 TV <sub>136</sub> |
| 2002 TW <sub>136</sub> | 16.0 | 0.15 | 20071027 | 120.90818 | 28.04453  | 291.89831 | 7.38869  | 0.1890247 | 2.5943592 | 85  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 110923 2002 TW <sub>136</sub> |
| 2002 TA <sub>137</sub> | 14.7 | 0.15 | 20071027 | 10.14458  | 13.70724  | 339.35865 | 9.43138  | 0.1240171 | 3.0192489 | 107 | 3 | 2002-2007 | 0.60 | M-v | 3 | MPC | 126643 2002 TA <sub>137</sub> |
| 2002 TC <sub>137</sub> | 14.3 | 0.15 | 20071027 | 2.80902   | 103.30082 | 229.97785 | 14.65482 | 0.1043813 | 3.1639300 | 66  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 121323 2002 TC <sub>137</sub> |
| 2002 TM <sub>139</sub> | 15.4 | 0.15 | 20071027 | 347.34718 | 163.94613 | 271.66871 | 6.97358  | 0.2425506 | 2.8621772 | 106 | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128775 2002 TM <sub>139</sub> |
| 2002 TL <sub>143</sub> | 16.6 | 0.15 | 20071027 | 60.22894  | 258.63375 | 67.32739  | 8.72473  | 0.2878462 | 2.7883471 | 56  | 4 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128775 2002 TL <sub>143</sub> |
| 2002 TL <sub>144</sub> | 15.4 | 0.15 | 20071027 | 71.49989  | 218.55482 | 97.40145  | 12.69355 | 0.2221956 | 2.7914000 | 40  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 127978 2002 TL <sub>144</sub> |
| 2002 TV <sub>145</sub> | 15.4 | 0.15 | 20071027 | 264.34641 | 208.35753 | 350.93563 | 8.72142  | 0.1774786 | 2.5417018 | 46  | 4 | 2002-2007 | 0.59 | M-v | 3 | MPC | 128775 2002 TV <sub>145</sub> |
| 2002 TF <sub>148</sub> | 15.5 | 0.15 | 20071027 | 3.70851   | 168.62537 | 244.71699 | 9.11494  | 0.2339642 | 2.7210799 | 81  | 4 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128775 2002 TF <sub>148</sub> |
| 2002 TK <sub>148</sub> | 15.7 | 0.15 | 20071027 | 337.49574 | 204.48727 | 216.46616 | 11.17844 | 0.1147902 | 2.7552092 | 93  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128775 2002 TK <sub>148</sub> |
| 2002 TR <sub>148</sub> | 16.9 | 0.15 | 20071027 | 34.51641  | 150.96575 | 212.37277 | 13.22350 | 0.2626563 | 2.7432831 | 33  | 2 | 2002-2007 | 0.47 | M-v | 1 | MPC | 127978 2002 TR <sub>148</sub> |
| 2002 TU <sub>148</sub> | 15.5 | 0.15 | 20071027 | 3.62387   | 145.65697 | 255.21304 | 11.16174 | 0.1720277 | 2.7534355 | 95  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128775 2002 TU <sub>148</sub> |
| 2002 TK <sub>149</sub> | 17.2 | 0.15 | 20020923 | 4.13111   | 349.62804 | 11.53409  | 1.95042  | 0.0779410 | 2.8442452 | 14  | 1 | 47 days   | 0.26 |     |   | MPC | 2002 TK <sub>149</sub>        |
| 2002 TU <sub>153</sub> | 15.5 | 0.15 | 20071027 | 322.57217 | 213.01059 | 206.58388 | 14.28064 | 0.0400913 | 2.7830806 | 86  | 5 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128776 2002 TU <sub>153</sub> |
| 2002 TP <sub>155</sub> | 16.4 | 0.15 | 20071027 | 65.79351  | 89.06044  | 225.21656 | 6.72109  | 0.1604440 | 2.7710660 | 68  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128776 2002 TP <sub>155</sub> |
| 2002 TH <sub>157</sub> | 15.3 | 0.15 | 20071027 | 299.56865 | 87.74326  | 72.76256  | 14.34115 | 0.0823054 | 2.6033420 | 43  | 5 | 2000-2007 | 0.58 | M-v | 2 | MPC | 122719 2002 TH <sub>157</sub> |
| 2002 TP <sub>157</sub> | 15.6 | 0.15 | 20071027 | 51.90116  | 277.91648 | 45.30873  | 25.90875 | 0.2401485 | 2.8520439 | 83  | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 128776 2002 TP <sub>157</sub> |
| 2002 TH <sub>160</sub> | 15.1 | 0.15 | 20071027 | 324.65098 | 25.72259  | 82.96318  | 13.90027 | 0.1128808 | 2.7675588 | 50  | 6 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128776 2002 TH <sub>160</sub> |
| 2002 TM <sub>161</sub> | 15.8 | 0.15 | 20071027 | 355.18185 | 2.60625   | 87.59093  | 14.53111 | 0.2946347 | 2.7810114 | 50  | 2 | 2002-2007 | 0.52 | M-v | 3 | MPC | 127979 2002 TM <sub>161</sub> |
| 2002 TO <sub>163</sub> | 16.5 | 0.15 | 20071027 | 19.14620  | 260.31728 | 121.81993 | 13.45146 | 0.3216776 | 2.8516997 | 27  | 4 | 1994-2007 | 0.40 | M-v | 1 | MPC | 41075 2002 TO <sub>163</sub>  |
| 2002 TZ <sub>163</sub> | 15.2 | 0.15 | 20071027 | 44.51050  | 264.78434 | 90.69532  | 15.80621 | 0.1712720 | 2.8447955 | 58  | 2 | 2002-2007 | 0.51 | M-v | 3 | MPC | 127979 2002 TZ <sub>163</sub> |
| 2002 TO <sub>164</sub> | 16.2 | 0.15 | 20071027 | 93.92440  | 235.02397 | 109.47695 | 15.71442 | 0.1328180 | 2.6816542 | 36  | 5 | 2002-2007 | 0.42 | M-v | 1 | MPC | 108447 2002 TO <sub>164</sub> |
| 2002 TY <sub>164</sub> | 15.7 | 0.15 | 20071027 | 351.65269 | 348.14750 | 77.52694  | 9.70406  | 0.2151061 | 2.8105259 | 81  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128776 2002 TY <sub>164</sub> |
| 2002 TJ <sub>165</sub> | 16.4 | 0.15 | 20071027 | 0.74154   | 295.07731 | 111.17680 | 8.28748  | 0.3096413 | 2.8536182 | 45  | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 127979 2002 TJ <sub>165</sub> |
| 2002 TW <sub>165</sub> | 15.1 | 0.15 | 20071027 | 99.41579  | 2.08486   | 294.54940 | 11.88956 | 0.1645852 | 2.6821665 | 46  | 6 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128776 2002 TW <sub>165</sub> |
| 2002 TE <sub>166</sub> | 15.8 | 0.15 | 20071027 | 29.96041  | 136.04345 | 252.29859 | 13.46868 | 0.0856374 | 2.6838161 | 53  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 127979 2002 TE <sub>166</sub> |
| 2002 TV <sub>166</sub> | 15.1 | 0.15 | 20071027 | 8.90315   | 71.73609  | 257.99534 | 14.38401 | 0.1313875 | 3.0431880 | 42  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 124379 2002 TV <sub>166</sub> |
| 2002 TV <sub>166</sub> | 15.8 | 0.15 | 20071027 | 66.80752  | 82.08407  | 258.96853 | 13.34026 | 0.1436929 | 2.7088906 | 37  | 3 | 2002-2007 | 0.49 | M-v | 3 | MPC | 103433 2002 TV <sub>166</sub> |
| 2002 TO <sub>167</sub> | 16.4 | 0.15 | 20071027 | 69.30454  | 59.55719  | 289.36494 | 11.32037 | 0.1709802 | 2.6753463 | 58  | 5 | 2000-2007 | 0.41 | M-v | 0 | MPC | 104232 2002 TO <sub>167</sub> |
| 2002 TA <sub>170</sub> | 15.7 | 0.15 | 20071027 | 346.61181 | 143.61114 | 282.82454 | 11.38167 | 0.0627732 | 2.7697352 | 51  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128776 2002 TA <sub>170</sub> |
| 2002 TC <sub>170</sub> | 15.0 | 0.15 | 20071027 | 26.82897  | 147.61191 | 234.04331 | 13.26379 | 0.1855741 | 2.7729861 | 120 | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128776 2002 TC <sub>170</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 TJ <sub>171</sub> | 15.6 | 0.15 | 20071027 | 0.58601   | 112.00124 | 232.49917 | 14.91301 | 0.2552907 | 3.0439099 | 51  | 4 | 1997-2007 | 0.55 | M-v | 2 | MPC | 128776 2002 TJ <sub>171</sub> |
| 2002 TN <sub>171</sub> | 16.8 | 0.15 | 20071027 | 97.74432  | 50.20265  | 304.35584 | 8.94225  | 0.1169939 | 2.5795692 | 47  | 4 | 2002-2007 | 0.49 | M-v | 2 | MPC | 108448 2002 TN <sub>171</sub> |
| 2002 TS <sub>171</sub> | 15.3 | 0.15 | 20071027 | 110.95189 | 47.10410  | 255.47852 | 11.76080 | 0.1456320 | 2.6395808 | 84  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128776 2002 TS <sub>171</sub> |
| 2002 TC <sub>172</sub> | 15.7 | 0.15 | 20071027 | 47.78959  | 99.62920  | 242.04296 | 11.25748 | 0.1939299 | 2.7811631 | 64  | 2 | 2002-2007 | 0.60 | M-v | 3 | MPC | 127980 2002 TC <sub>172</sub> |
| 2002 TN <sub>175</sub> | 15.5 | 0.15 | 20071027 | 124.02098 | 4.90311   | 279.73365 | 12.39453 | 0.1447626 | 2.6512965 | 39  | 4 | 2002-2007 | 0.51 | M-v | 2 | MPC | 104232 2002 TN <sub>175</sub> |
| 2002 TC <sub>176</sub> | 15.1 | 0.15 | 20071027 | 348.13534 | 144.28053 | 266.38218 | 11.11661 | 0.2343589 | 2.9048806 | 110 | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128776 2002 TC <sub>176</sub> |
| 2002 TT <sub>176</sub> | 14.8 | 0.15 | 20071027 | 0.34502   | 176.72849 | 230.11597 | 15.66950 | 0.3082855 | 2.8739297 | 198 | 2 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128776 2002 TT <sub>176</sub> |
| 2002 TA <sub>177</sub> | 15.7 | 0.15 | 20071027 | 53.26947  | 296.01538 | 83.76094  | 13.13312 | 0.2874981 | 2.6981250 | 45  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 103434 2002 TA <sub>177</sub> |
| 2002 TH <sub>177</sub> | 15.3 | 0.15 | 20071027 | 71.74585  | 245.49155 | 116.26791 | 16.77725 | 0.1647174 | 2.7173694 | 38  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 118024 2002 TH <sub>177</sub> |
| 2002 TT <sub>177</sub> | 14.8 | 0.15 | 20071027 | 8.07412   | 75.69991  | 281.84538 | 13.10466 | 0.2149024 | 2.9884902 | 119 | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128776 2002 TT <sub>177</sub> |
| 2002 TV <sub>178</sub> | 14.4 | 0.15 | 20071027 | 20.25919  | 87.39339  | 259.46510 | 11.78928 | 0.2754113 | 3.0265006 | 167 | 3 | 2002-2007 | 0.43 | M-v | 1 | MPC | 128776 2002 TV <sub>178</sub> |
| 2002 TN <sub>179</sub> | 16.0 | 0.15 | 20071027 | 145.33632 | 77.24543  | 281.85940 | 9.29411  | 0.2088498 | 2.4245507 | 52  | 3 | 1998-2007 | 0.47 | M-v | 3 | MPC | 118024 2002 TN <sub>179</sub> |
| 2002 TO <sub>180</sub> | 15.4 | 0.15 | 20071027 | 66.25903  | 59.13056  | 305.56527 | 11.23178 | 0.2125785 | 2.7167266 | 98  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 110924 2002 TO <sub>180</sub> |
| 2002 TR <sub>186</sub> | 15.5 | 0.15 | 20071027 | 39.11157  | 13.55264  | 342.42209 | 8.94356  | 0.1878030 | 2.7971822 | 55  | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 127980 2002 TR <sub>186</sub> |
| 2002 TR <sub>189</sub> | 14.1 | 0.15 | 20071027 | 349.97292 | 107.01516 | 271.23225 | 8.94747  | 0.1213771 | 2.9724340 | 141 | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128776 2002 TR <sub>189</sub> |
| 2002 TU <sub>189</sub> | 15.7 | 0.15 | 20071027 | 10.76484  | 75.50708  | 324.33083 | 7.70758  | 0.1973972 | 2.7942458 | 57  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128776 2002 TU <sub>189</sub> |
| 2002 TM <sub>190</sub> | 14.5 | 0.15 | 20071027 | 334.72145 | 30.30305  | 35.87931  | 30.55200 | 0.3892631 | 3.1641030 | 98  | 3 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128776 2002 TM <sub>190</sub> |
| 2002 TY <sub>190</sub> | 14.2 | 0.15 | 20071027 | 21.61210  | 88.85321  | 271.24738 | 15.64005 | 0.1617247 | 2.9516805 | 150 | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128776 2002 TY <sub>190</sub> |
| 2002 TH <sub>191</sub> | 15.5 | 0.15 | 20071027 | 126.00517 | 42.26681  | 238.56958 | 16.61651 | 0.1819292 | 2.6516754 | 55  | 3 | 2002-2007 | 0.41 | M-v | 2 | MPC | 128776 2002 TH <sub>191</sub> |
| 2002 TK <sub>191</sub> | 15.8 | 0.15 | 20071027 | 123.51490 | 23.84003  | 274.88238 | 12.34817 | 0.2582997 | 2.5724520 | 78  | 4 | 2002-2007 | 0.48 | M-v | 2 | MPC | 110924 2002 TK <sub>191</sub> |
| 2002 TP <sub>193</sub> | 15.7 | 0.15 | 20071027 | 65.91062  | 304.08869 | 45.13505  | 4.87321  | 0.1249571 | 2.7209808 | 42  | 4 | 2002-2007 | 0.57 | M-v | 1 | MPC | 104232 2002 TP <sub>193</sub> |
| 2002 TJ <sub>195</sub> | 15.7 | 0.15 | 20071027 | 343.10529 | 18.94160  | 29.82131  | 14.09470 | 0.1674233 | 2.9658969 | 119 | 2 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128777 2002 TJ <sub>195</sub> |
| 2002 TZ <sub>198</sub> | 16.1 | 0.15 | 20071027 | 333.32098 | 215.50088 | 201.53665 | 3.39205  | 0.1750720 | 2.9488776 | 75  | 2 | 2002-2007 | 0.53 | M-v | 4 | MPC | 128777 2002 TZ <sub>198</sub> |
| 2002 TK <sub>202</sub> | 16.2 | 0.15 | 20071027 | 24.93728  | 329.10434 | 43.91599  | 8.54779  | 0.2278667 | 2.7880209 | 65  | 2 | 2002-2007 | 0.56 | M-v | 3 | MPC | 127980 2002 TK <sub>202</sub> |
| 2002 TX <sub>202</sub> | 16.1 | 0.15 | 20071027 | 15.48258  | 334.04718 | 44.91333  | 9.24299  | 0.2862818 | 2.8414015 | 109 | 2 | 2002-2007 | 0.44 | M-v | 3 | MPC | 127980 2002 TX <sub>202</sub> |
| 2002 TA <sub>204</sub> | 16.2 | 0.15 | 20071027 | 126.45690 | 247.77138 | 71.96086  | 7.91234  | 0.1426828 | 2.5751476 | 56  | 6 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128777 2002 TA <sub>204</sub> |
| 2002 TQ <sub>205</sub> | 15.6 | 0.15 | 20071027 | 54.97116  | 128.95474 | 244.33015 | 7.82240  | 0.1525560 | 2.7179273 | 50  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 110925 2002 TQ <sub>205</sub> |
| 2002 TB <sub>206</sub> | 16.2 | 0.15 | 20071027 | 53.07468  | 133.96512 | 237.69811 | 3.98602  | 0.1749540 | 2.7285374 | 70  | 5 | 2002-2007 | 0.50 | M-v | 1 | MPC | 110925 2002 TB <sub>206</sub> |
| 2002 TM <sub>207</sub> | 15.4 | 0.15 | 20071027 | 305.15416 | 195.06466 | 221.09707 | 16.22598 | 0.1827080 | 3.1620379 | 45  | 4 | 1994-2007 | 0.61 | M-v | 1 | MPC | 124381 2002 TM <sub>207</sub> |
| 2002 TE <sub>208</sub> | 16.5 | 0.15 | 20071027 | 42.99995  | 45.44615  | 6.32470   | 3.87450  | 0.2634223 | 2.6789362 | 69  | 6 | 1993-2007 | 0.44 | M-v | 1 | MPC | 118024 2002 TE <sub>208</sub> |
| 2002 TX <sub>209</sub> | 16.1 | 0.15 | 20071027 | 33.48020  | 203.89896 | 170.16101 | 12.53230 | 0.0766497 | 2.7999673 | 36  | 3 | 2002-2007 | 0.59 | M-v | 3 | MPC | 127981 2002 TX <sub>209</sub> |
| 2002 TP <sub>210</sub> | 16.0 | 0.15 | 20071027 | 338.17947 | 196.19474 | 209.10362 | 9.39782  | 0.2220797 | 2.9915990 | 65  | 2 | 2002-2007 | 0.57 | M-v | 3 | MPC | 128777 2002 TP <sub>210</sub> |
| 2002 TX <sub>212</sub> | 15.5 | 0.15 | 20071027 | 71.96726  | 269.74753 | 62.75135  | 13.55081 | 0.1609361 | 2.7131378 | 57  | 5 | 1998-2007 | 0.65 | M-v | 1 | MPC | 128777 2002 TX <sub>212</sub> |
| 2002 TO <sub>213</sub> | 16.4 | 0.15 | 20071027 | 59.79155  | 176.04515 | 178.49897 | 6.31633  | 0.0421638 | 2.7508976 | 34  | 5 | 2002-2007 | 0.44 | M-v | 0 | MPC | 110925 2002 TO <sub>213</sub> |
| 2002 TA <sub>216</sub> | 16.3 | 0.15 | 20071027 | 46.43644  | 288.96163 | 123.42119 | 13.42971 | 0.1948773 | 2.6643686 | 62  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128777 2002 TA <sub>216</sub> |
| 2002 TM <sub>217</sub> | 15.6 | 0.15 | 20071027 | 31.86019  | 313.90544 | 24.54777  | 10.82706 | 0.0806637 | 2.9798507 | 58  | 2 | 2002-2007 | 0.58 | M-v | 4 | MPC | 128777 2002 TM <sub>217</sub> |
| 2002 TO <sub>218</sub> | 15.8 | 0.15 | 20071027 | 7.87825   | 88.22176  | 307.53650 | 7.52247  | 0.1498796 | 2.7992172 | 37  | 2 | 2002-2007 | 0.52 | M-v | 4 | MPC | 127981 2002 TO <sub>218</sub> |
| 2002 TS <sub>218</sub> | 15.3 | 0.15 | 20071027 | 16.99697  | 79.59283  | 311.12339 | 7.21087  | 0.2198415 | 2.7890451 | 44  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128777 2002 TS <sub>218</sub> |
| 2002 TW <sub>221</sub> | 14.9 | 0.15 | 20071027 | 355.72845 | 213.35206 | 201.91127 | 34.71171 | 0.2205813 | 2.7587477 | 58  | 2 | 2002-2007 | 0.41 | M-v | 2 | MPC | 128777 2002 TW <sub>221</sub> |
| 2002 TA <sub>222</sub> | 16.1 | 0.15 | 20071027 | 6.79035   | 176.72692 | 282.43286 | 4.24260  | 0.1866637 | 2.6010885 | 42  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128777 2002 TA <sub>222</sub> |
| 2002 TA <sub>225</sub> | 15.7 | 0.15 | 20071027 | 16.15589  | 23.35767  | 41.00151  | 9.15602  | 0.2063108 | 2.7427667 | 77  | 4 | 1995-2007 | 0.55 | M-v | 2 | MPC | 87553 2002 TA <sub>225</sub>  |
| 2002 TK <sub>229</sub> | 17.0 | 0.15 | 20071027 | 99.57878  | 106.52428 | 216.43339 | 3.15334  | 0.2424267 | 2.6204630 | 46  | 5 | 1998-2007 | 0.42 | M-v | 1 | MPC | 112827 2002 TK <sub>229</sub> |
| 2002 TP <sub>230</sub> | 15.9 | 0.15 | 20071027 | 68.73916  | 218.71290 | 119.97984 | 15.69925 | 0.1347249 | 2.6813765 | 46  | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128777 2002 TP <sub>230</sub> |
| 2002 TE <sub>231</sub> | 15.2 | 0.15 | 20071027 | 27.56187  | 288.81611 | 68.89633  | 10.34281 | 0.2023723 | 2.8071355 | 87  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128777 2002 TE <sub>231</sub> |
| 2002 TT <sub>231</sub> | 15.4 | 0.15 | 20071027 | 336.78822 | 39.89006  | 62.49313  | 22.70291 | 0.0322357 | 2.6511011 | 40  | 4 | 1998-2007 | 0.40 | M-v | 1 | MPC | 122720 2002 TT <sub>231</sub> |
| 2002 TY <sub>231</sub> | 15.2 | 0.15 | 20071027 | 6.27149   | 156.44083 | 297.25603 | 13.07349 | 0.1177185 | 2.5956023 | 66  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 128777 2002 TY <sub>231</sub> |
| 2002 TZ <sub>231</sub> | 15.9 | 0.15 | 20071027 | 116.32420 | 28.21893  | 285.72874 | 12.33497 | 0.1758538 | 2.5987924 | 49  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 110927 2002 TZ <sub>231</sub> |
| 2002 TE <sub>232</sub> | 14.8 | 0.15 | 20071027 | 344.58431 | 39.09216  | 326.70631 | 15.79679 | 0.0978603 | 3.0664637 | 82  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 124381 2002 TE <sub>232</sub> |
| 2002 TJ <sub>232</sub> | 16.2 | 0.15 | 20071027 | 38.34591  | 106.52948 | 300.47725 | 11.13337 | 0.1409705 | 2.6442729 | 50  | 4 | 2002-2007 | 0.44 | M-v | 1 | MPC | 128777 2002 TJ <sub>232</sub> |
| 2002 TQ <sub>233</sub> | 15.8 | 0.15 | 20071027 | 64.74236  | 48.53922  | 311.69145 | 10.88611 | 0.1775215 | 2.6912383 | 53  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 110927 2002 TQ <sub>233</sub> |
| 2002 TS <sub>235</sub> | 16.4 | 0.15 | 20071027 | 46.83648  | 113.43666 | 269.79270 | 12.33027 | 0.2166404 | 2.7085347 | 69  | 3 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128777 2002 TS <sub>235</sub> |
| 2002 TB <sub>236</sub> | 14.6 | 0.15 | 20071027 | 323.72106 | 72.35437  | 337.38712 | 15.24802 | 0.2257753 | 3.0585280 | 206 | 3 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128777 2002 TB <sub>236</sub> |
| 2002 TT <sub>236</sub> | 14.7 | 0.15 | 20071027 | 342.08316 | 131.42824 | 258.37944 | 12.88868 | 0.2041941 | 3.0197845 | 87  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128777 2002 TT <sub>236</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 TJ <sub>239</sub> | 15.9 | 0.15 | 20071027 | 19.54811  | 136.23994 | 264.47514 | 8.08723  | 0.1279177 | 2.7308340 | 65  | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128777 2002 TJ <sub>239</sub> |
| 2002 TL <sub>239</sub> | 16.0 | 0.15 | 20071027 | 15.95081  | 103.90568 | 290.02854 | 3.66862  | 0.1676341 | 2.7885593 | 67  | 3 | 2002-2007 | 0.58 | M-v | 3 | MPC | 127982 2002 TL <sub>239</sub> |
| 2002 TS <sub>242</sub> | 15.9 | 0.15 | 20071027 | 48.80890  | 19.40585  | 340.40972 | 2.71834  | 0.1628520 | 2.7812290 | 47  | 5 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128777 2002 TS <sub>242</sub> |
| 2002 TH <sub>243</sub> | 16.0 | 0.15 | 20071027 | 143.82770 | 242.20217 | 26.80736  | 6.89210  | 0.0414635 | 2.7745211 | 42  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 104234 2002 TH <sub>243</sub> |
| 2002 TJ <sub>245</sub> | 16.2 | 0.15 | 20071027 | 40.00833  | 289.38400 | 54.53990  | 8.83010  | 0.2155556 | 2.8658527 | 66  | 3 | 2001-2007 | 0.38 | M-v | 2 | MPC | 128778 2002 TJ <sub>245</sub> |
| 2002 TV <sub>245</sub> | 16.0 | 0.15 | 20071027 | 354.60035 | 28.05293  | 61.07259  | 4.64692  | 0.1888894 | 2.7418579 | 63  | 4 | 1995-2007 | 0.56 | M-v | 1 | MPC | 128778 2002 TV <sub>245</sub> |
| 2002 TS <sub>246</sub> | 16.6 | 0.15 | 20071027 | 79.71915  | 158.23370 | 204.99932 | 1.95180  | 0.1513698 | 2.6368854 | 88  | 7 | 2000-2007 | 0.41 | M-v | 1 | MPC | 110927 2002 TS <sub>246</sub> |
| 2002 TS <sub>248</sub> | 16.2 | 0.15 | 20071027 | 42.42802  | 270.65548 | 81.89347  | 1.77054  | 0.0812275 | 2.7937826 | 46  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 127982 2002 TS <sub>248</sub> |
| 2002 TF <sub>249</sub> | 16.9 | 0.15 | 20071027 | 128.91813 | 182.15976 | 126.81081 | 2.08718  | 0.1925411 | 2.5730808 | 63  | 5 | 2002-2007 | 0.43 | M-v | 1 | MPC | 110928 2002 TF <sub>249</sub> |
| 2002 TH <sub>250</sub> | 16.2 | 0.15 | 20071027 | 333.96267 | 256.51132 | 153.46141 | 2.33383  | 0.2174479 | 2.9856744 | 84  | 4 | 1997-2007 | 0.54 | M-v | 2 | MPC | 126645 2002 TH <sub>250</sub> |
| 2002 TU <sub>250</sub> | 16.8 | 0.15 | 20071027 | 35.62115  | 108.46829 | 277.35781 | 0.75944  | 0.3229471 | 2.7686816 | 64  | 4 | 1999-2007 | 0.71 | M-v | 2 | MPC | 127982 2002 TU <sub>250</sub> |
| 2002 TU <sub>256</sub> | 15.4 | 0.15 | 20071027 | 340.46611 | 91.47821  | 35.50482  | 10.10532 | 0.2513350 | 2.7114001 | 73  | 3 | 2002-2007 | 0.63 | M-v | 2 | MPC | 128778 2002 TU <sub>256</sub> |
| 2002 TW <sub>256</sub> | 15.7 | 0.15 | 20071027 | 359.36157 | 38.99062  | 41.29411  | 8.42367  | 0.1946656 | 2.7714568 | 47  | 3 | 2002-2007 | 0.56 | M-v | 3 | MPC | 61474 2002 TW <sub>256</sub>  |
| 2002 TD <sub>257</sub> | 16.0 | 0.15 | 20071027 | 32.56434  | 6.40841   | 30.92436  | 4.24017  | 0.1088152 | 2.7559367 | 64  | 6 | 2000-2007 | 0.50 | M-v | 1 | MPC | 118024 2002 TD <sub>257</sub> |
| 2002 TT <sub>257</sub> | 15.4 | 0.15 | 20071027 | 26.85402  | 353.14904 | 60.41022  | 6.55005  | 0.1301384 | 2.7338320 | 80  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 128778 2002 TT <sub>257</sub> |
| 2002 TU <sub>259</sub> | 15.3 | 0.15 | 20071027 | 11.16792  | 331.38263 | 36.51273  | 11.74259 | 0.0933813 | 2.9786619 | 101 | 5 | 1997-2007 | 0.62 | M-v | 2 | MPC | 127982 2002 TU <sub>259</sub> |
| 2002 TL <sub>261</sub> | 14.8 | 0.15 | 20071027 | 40.80042  | 192.64063 | 228.56015 | 8.96587  | 0.1988830 | 2.7585688 | 96  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128778 2002 TL <sub>261</sub> |
| 2002 TO <sub>267</sub> | 15.9 | 0.15 | 20071027 | 105.07662 | 84.95128  | 244.92799 | 5.92942  | 0.1415779 | 2.6632674 | 64  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 110928 2002 TO <sub>267</sub> |
| 2002 TZ <sub>268</sub> | 16.2 | 0.15 | 20071027 | 26.35489  | 62.79522  | 355.25440 | 12.39003 | 0.2597686 | 2.6864236 | 37  | 5 | 1995-2007 | 0.50 | M-v | 1 | MPC | 97623 2002 TZ <sub>268</sub>  |
| 2002 TZ <sub>269</sub> | 16.2 | 0.15 | 20071027 | 129.90054 | 335.02221 | 328.23216 | 3.35534  | 0.1814303 | 2.5876452 | 83  | 4 | 2002-2007 | 0.52 | M-v | 2 | MPC | 110929 2002 TZ <sub>269</sub> |
| 2002 TB <sub>270</sub> | 14.7 | 0.15 | 20071027 | 248.68499 | 245.21024 | 226.23301 | 9.08691  | 0.1019060 | 3.1049510 | 35  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 126646 2002 TB <sub>270</sub> |
| 2002 TM <sub>270</sub> | 16.1 | 0.15 | 20071027 | 349.07638 | 205.41259 | 248.80727 | 4.61584  | 0.0508736 | 2.6590348 | 42  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 110929 2002 TM <sub>270</sub> |
| 2002 TY <sub>277</sub> | 14.5 | 0.15 | 20071027 | 331.97554 | 184.86488 | 221.37305 | 22.07032 | 0.1067399 | 2.9819072 | 92  | 3 | 1997-2007 | 0.64 | M-v | 2 | MPC | 128778 2002 TY <sub>277</sub> |
| 2002 TH <sub>279</sub> | 15.5 | 0.15 | 20071027 | 33.14582  | 40.64736  | 356.15832 | 9.18414  | 0.1518434 | 2.7403675 | 83  | 5 | 1995-2007 | 0.52 | M-v | 1 | MPC | 128778 2002 TH <sub>279</sub> |
| 2002 TQ <sub>279</sub> | 15.2 | 0.15 | 20071027 | 333.82066 | 145.20685 | 249.71117 | 10.75346 | 0.2424733 | 3.0563348 | 56  | 2 | 2002-2007 | 0.56 | M-v | 2 | MPC | 126646 2002 TQ <sub>279</sub> |
| 2002 TS <sub>279</sub> | 15.3 | 0.15 | 20071027 | 93.61066  | 353.05162 | 358.30206 | 14.64538 | 0.1164590 | 2.6414193 | 146 | 4 | 2002-2007 | 0.45 | M-v | 2 | MPC | 110929 2002 TS <sub>279</sub> |
| 2002 TB <sub>281</sub> | 14.8 | 0.15 | 20071027 | 299.84289 | 203.96491 | 226.10503 | 15.84549 | 0.2070174 | 3.1399711 | 82  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 126646 2002 TB <sub>281</sub> |
| 2002 TM <sub>282</sub> | 15.0 | 0.15 | 20071027 | 326.96126 | 147.60402 | 245.37812 | 8.67948  | 0.1281662 | 3.1384078 | 57  | 2 | 2002-2007 | 0.52 | M-v | 3 | MPC | 123885 2002 TM <sub>282</sub> |
| 2002 TU <sub>287</sub> | 15.2 | 0.15 | 20071027 | 5.64894   | 204.20499 | 249.43394 | 11.54893 | 0.2043312 | 2.7311643 | 82  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 114677 2002 TU <sub>287</sub> |
| 2002 TG <sub>289</sub> | 14.6 | 0.15 | 20071027 | 355.40490 | 99.44268  | 250.40233 | 14.20847 | 0.2041142 | 3.1942732 | 129 | 2 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128778 2002 TG <sub>289</sub> |
| 2002 TA <sub>291</sub> | 16.3 | 0.15 | 20071027 | 327.98578 | 56.75893  | 25.67731  | 17.57228 | 0.3549070 | 3.0032299 | 71  | 3 | 2002-2007 | 0.57 | M-v | 2 | MPC | 128778 2002 TA <sub>291</sub> |
| 2002 TM <sub>292</sub> | 16.0 | 0.15 | 20071027 | 60.09399  | 19.14660  | 338.58049 | 8.94280  | 0.2658166 | 2.7530092 | 64  | 4 | 1995-2007 | 0.47 | M-v | 1 | MPC | 103453 2002 TM <sub>292</sub> |
| 2002 TO <sub>292</sub> | 15.7 | 0.15 | 20071027 | 41.17424  | 339.53845 | 31.10558  | 15.72600 | 0.1431020 | 2.8516258 | 49  | 6 | 1997-2007 | 0.63 | M-v | 1 | MPC | 85695 2002 TO <sub>292</sub>  |
| 2002 TN <sub>293</sub> | 14.2 | 0.15 | 20071027 | 337.31413 | 148.66821 | 268.74185 | 12.42177 | 0.1767783 | 3.0970319 | 125 | 3 | 2001-2007 | 0.55 | M-v | 2 | MPC | 128778 2002 TN <sub>293</sub> |
| 2002 TG <sub>294</sub> | 15.3 | 0.15 | 20071027 | 32.91369  | 297.53861 | 10.11773  | 15.52117 | 0.2645650 | 3.0755349 | 79  | 5 | 1991-2007 | 0.50 | M-v | 1 | MPC | 128778 2002 TG <sub>294</sub> |
| 2002 TX <sub>294</sub> | 14.3 | 0.15 | 20071027 | 12.05588  | 76.95151  | 283.04033 | 13.67508 | 0.1893600 | 3.0141157 | 115 | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 126646 2002 TX <sub>294</sub> |
| 2002 TZ <sub>295</sub> | 14.7 | 0.15 | 20071027 | 11.01688  | 53.03081  | 322.55863 | 11.49727 | 0.1606821 | 2.9944637 | 116 | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128778 2002 TZ <sub>295</sub> |
| 2002 TD <sub>298</sub> | 16.1 | 0.15 | 20071027 | 46.69591  | 123.25669 | 241.23518 | 5.21429  | 0.0224112 | 2.7337549 | 76  | 6 | 1998-2007 | 0.55 | M-v | 0 | MPC | 128778 2002 TD <sub>298</sub> |
| 2002 TO <sub>304</sub> | 17.0 | 0.15 | 20071027 | 128.87071 | 231.58450 | 50.51320  | 10.05143 | 0.1913432 | 2.6728233 | 26  | 3 | 2001-2007 | 0.33 | M-v | 1 | MPC | 128779 2002 TO <sub>304</sub> |
| 2002 TH <sub>306</sub> | 17.1 | 0.15 | 20071027 | 235.28187 | 124.93619 | 58.00422  | 10.27197 | 0.0980629 | 2.7583729 | 31  | 4 | 2002-2007 | 0.32 | M-v | 0 | MPC | 127983 2002 TH <sub>306</sub> |
| 2002 TZ <sub>309</sub> | 16.3 | 0.15 | 20071027 | 0.27609   | 348.66521 | 51.10076  | 13.76125 | 0.1109759 | 2.8585873 | 62  | 3 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128779 2002 TZ <sub>309</sub> |
| 2002 TN <sub>311</sub> | 16.5 | 0.15 | 20071027 | 237.91989 | 133.99164 | 63.11387  | 12.37849 | 0.1183268 | 2.7010577 | 16  | 2 | 2002-2007 | 0.29 | M-v | 4 | MPC | 127984 2002 TN <sub>311</sub> |
| 2002 TG <sub>315</sub> | 16.4 | 0.15 | 20071027 | 152.43005 | 214.09454 | 80.12847  | 14.94693 | 0.0408832 | 2.6573643 | 24  | 4 | 2002-2007 | 0.27 | M-v | 0 | MPC | 110931 2002 TG <sub>315</sub> |
| 2002 TV <sub>315</sub> | 16.1 | 0.15 | 20071027 | 344.38982 | 42.75494  | 113.67373 | 11.93821 | 0.2047926 | 2.5586426 | 77  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 114678 2002 TV <sub>315</sub> |
| 2002 TO <sub>316</sub> | 16.4 | 0.15 | 20071027 | 35.03603  | 287.56772 | 122.56701 | 11.83148 | 0.1063199 | 2.7152777 | 24  | 4 | 2002-2007 | 0.47 | M-v | 0 | MPC | 113971 2002 TO <sub>316</sub> |
| 2002 TD <sub>317</sub> | 16.3 | 0.15 | 20071027 | 317.62574 | 220.48328 | 276.18928 | 7.58653  | 0.1727543 | 2.5244208 | 48  | 5 | 2000-2007 | 0.48 | M-v | 2 | MPC | 110931 2002 TD <sub>317</sub> |
| 2002 TG <sub>317</sub> | 17.1 | 0.15 | 20071027 | 323.45531 | 157.95004 | 305.05491 | 8.60054  | 0.2247560 | 2.6925461 | 60  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 62423 2002 TG <sub>317</sub>  |
| 2002 TP <sub>323</sub> | 17.1 | 0.15 | 20071027 | 36.21478  | 6.24865   | 5.24499   | 5.58801  | 0.0553818 | 2.7374129 | 37  | 3 | 2002-2007 | 0.30 | M-v | 2 | MPC | 75754 2002 TP <sub>323</sub>  |
| 2002 TE <sub>324</sub> | 15.7 | 0.15 | 20071027 | 272.60447 | 331.14779 | 186.15519 | 11.53494 | 0.1193208 | 2.6690905 | 45  | 6 | 1997-2007 | 0.40 | M-v | 0 | MPC | 128779 2002 TE <sub>324</sub> |
| 2002 TK <sub>326</sub> | 17.0 | 0.15 | 20071027 | 50.11922  | 309.93536 | 39.44920  | 1.88939  | 0.0860760 | 2.7693492 | 66  | 4 | 2002-2007 | 0.42 | M-v | 0 | MPC | 128779 2002 TK <sub>326</sub> |
| 2002 TK <sub>327</sub> | 17.2 | 0.15 | 20071027 | 19.87292  | 359.64670 | 24.98781  | 5.87079  | 0.1075705 | 2.7760443 | 43  | 2 | 2002-2007 | 0.36 | M-v | 2 | MPC | 128779 2002 TK <sub>327</sub> |
| 2002 TT <sub>330</sub> | 16.4 | 0.15 | 20071027 | 108.71683 | 284.65114 | 28.75164  | 5.86446  | 0.0104513 | 2.6889027 | 36  | 4 | 2002-2007 | 0.40 | M-v | 0 | MPC | 75755 2002 TT <sub>330</sub>  |
| 2002 TK <sub>333</sub> | 17.2 | 0.15 | 20071027 | 321.40771 | 46.26586  | 64.11033  | 3.58708  | 0.0556507 | 2.6856395 | 32  | 5 | 1998-2007 | 0.41 | M-v | 0 | MPC | 85698 2002 TK <sub>333</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 TY <sub>336</sub> | 16.8 | 0.15 | 20071027 | 26.41901  | 346.65651 | 48.99533  | 6.84301  | 0.0611395 | 2.7193251 | 27  | 3 | 2002-2007 | 0.24 | M-v | 2 | MPC | 94863 2002 TY <sub>336</sub>  |
| 2002 TW <sub>343</sub> | 16.3 | 0.15 | 20071027 | 147.29385 | 201.75537 | 60.55686  | 10.45837 | 0.0918237 | 2.7460929 | 38  | 6 | 1996-2007 | 0.39 | M-v | 0 | MPC | 128779 2002 TW <sub>343</sub> |
| 2002 TU <sub>348</sub> | 16.5 | 0.15 | 20071027 | 110.99355 | 198.19528 | 106.92719 | 10.54482 | 0.1639107 | 2.7261021 | 24  | 5 | 2001-2007 | 0.34 | M-v | 0 | MPC | 118025 2002 TU <sub>348</sub> |
| 2002 TE <sub>355</sub> | 17.3 | 0.15 | 20071027 | 10.43132  | 185.06854 | 217.45407 | 4.30778  | 0.1654676 | 2.7411198 | 35  | 2 | 2002-2007 | 0.46 | M-v | 2 | MPC | 127985 2002 TE <sub>355</sub> |
| 2002 TX <sub>362</sub> | 17.0 | 0.15 | 20071027 | 350.97616 | 357.20292 | 62.07524  | 3.91872  | 0.0753840 | 2.7881248 | 44  | 5 | 2000-2007 | 0.26 | M-v | 0 | MPC | 127985 2002 TX <sub>362</sub> |
| 2002 TZ <sub>363</sub> | 16.9 | 0.15 | 20071027 | 304.17739 | 23.77496  | 118.98542 | 3.74298  | 0.0433334 | 2.6277246 | 31  | 6 | 1996-2007 | 0.46 | M-v | 0 | MPC | 85700 2002 TZ <sub>363</sub>  |
| 2002 TH <sub>369</sub> | 16.2 | 0.15 | 20071027 | 90.14722  | 235.96004 | 82.95610  | 12.54331 | 0.0925538 | 2.7877962 | 42  | 6 | 1993-2007 | 0.45 | M-v | 0 | MPC | 128779 2002 TH <sub>369</sub> |
| 2002 TF <sub>371</sub> | 16.6 | 0.15 | 20071027 | 1.62675   | 334.61935 | 110.24424 | 11.58096 | 0.0506650 | 2.7122542 | 29  | 4 | 2002-2007 | 0.30 | M-v | 0 | MPC | 128779 2002 TF <sub>371</sub> |
| 2002 TY <sub>371</sub> | 16.3 | 0.15 | 20071027 | 350.08136 | 5.16820   | 112.01203 | 12.92624 | 0.1332123 | 2.6865711 | 36  | 4 | 2002-2007 | 0.53 | M-v | 0 | MPC | 128779 2002 TY <sub>371</sub> |
| 2002 TS <sub>374</sub> | 15.8 | 0.15 | 20071027 | 9.30242   | 115.47752 | 299.81703 | 6.59112  | 0.1810802 | 2.8107465 | 51  | 3 | 2002-2007 | 0.49 | M-v | 3 | MPC | 94864 2002 TS <sub>374</sub>  |
| 2002 TO <sub>375</sub> | 15.5 | 0.15 | 20071027 | 325.03128 | 56.19388  | 20.63064  | 5.87470  | 0.0531444 | 2.8723032 | 68  | 5 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128779 2002 TO <sub>375</sub> |
| 2002 TB <sub>376</sub> | 15.8 | 0.15 | 20071027 | 43.72048  | 28.58540  | 328.08487 | 10.39531 | 0.1282356 | 2.9155711 | 44  | 5 | 2000-2007 | 0.47 | M-v | 0 | MPC | 128779 2002 TB <sub>376</sub> |
| 2002 TH <sub>376</sub> | 15.9 | 0.15 | 20071027 | 54.56280  | 274.64661 | 76.96892  | 5.16209  | 0.1150796 | 2.8024604 | 44  | 5 | 1994-2007 | 0.46 | M-v | 1 | MPC | 128779 2002 TH <sub>376</sub> |
| 2002 TJ <sub>378</sub> | 16.9 | 0.15 | 20071027 | 303.32702 | 151.48438 | 358.27459 | 8.41717  | 0.1521907 | 2.5763736 | 30  | 5 | 1992-2007 | 0.46 | M-v | 2 | MPC | 120296 2002 TJ <sub>378</sub> |
| 2002 TL <sub>378</sub> | 16.0 | 0.15 | 20071027 | 65.61127  | 84.29464  | 230.03540 | 9.15398  | 0.1902576 | 2.9035688 | 38  | 3 | 1997-2007 | 0.39 | M-v | 3 | MPC | 127986 2002 TL <sub>378</sub> |
| 2002 TR <sub>379</sub> | 17.2 | 0.15 | 20020923 | 272.00535 | 270.70989 | 189.49058 | 8.30232  | 0.0483993 | 2.6150821 | 17  | 1 | 55 days   | 0.29 |     |   | MPC | 2002 TR <sub>379</sub>        |
| 2002 TV <sub>379</sub> | 19.9 | 0.15 | 20020923 | 6.02276   | 168.54219 | 190.26834 | 20.95600 | 0.0323809 | 1.8731283 | 10  | 1 | 5 days    | 0.48 |     |   | MPC | 2002 TV <sub>379</sub>        |
| 2002 TZ <sub>379</sub> | 16.8 | 0.15 | 20071027 | 329.54714 | 3.26010   | 75.86104  | 0.66910  | 0.0458880 | 2.7744646 | 62  | 3 | 2002-2007 | 0.38 | M-v | 3 | MPC | 127986 2002 TZ <sub>379</sub> |
| 2002 TC <sub>380</sub> | 16.8 | 0.15 | 20071027 | 346.79579 | 223.64353 | 199.99418 | 3.20522  | 0.0637184 | 2.7678172 | 34  | 3 | 2002-2007 | 0.39 | M-v | 3 | MPC | 127987 2002 TC <sub>380</sub> |
| 2002 TH <sub>380</sub> | 19.5 | 0.15 | 20020923 | 5.80103   | 164.92664 | 191.09661 | 2.99740  | 0.1996804 | 2.2394509 | 14  | 1 | 47 days   | 0.25 |     |   | MPC | 2002 TH <sub>380</sub>        |
| 2002 TO <sub>380</sub> | 17.0 | 0.15 | 20071027 | 16.94930  | 114.11161 | 286.87457 | 0.40392  | 0.0741451 | 2.7232625 | 51  | 5 | 1997-2007 | 0.39 | M-v | 1 | MPC | 127987 2002 TO <sub>380</sub> |
| 2002 TB <sub>381</sub> | 18.8 | 0.15 | 20020923 | 12.13808  | 161.17955 | 181.00516 | 2.54190  | 0.2693309 | 2.3312775 | 17  | 1 | 45 days   | 0.25 |     |   | MPC | 2002 TB <sub>381</sub>        |
| 2002 TD <sub>381</sub> | 19.0 | 0.15 | 20020923 | 10.73929  | 357.73649 | 350.63898 | 1.75182  | 0.2243329 | 2.6267153 | 15  | 1 | 53 days   | 0.28 |     |   | MPC | 2002 TD <sub>381</sub>        |
| 2002 TM <sub>381</sub> | 17.0 | 0.15 | 20020923 | 133.59057 | 56.99559  | 174.63931 | 2.09707  | 0.0136058 | 2.8809457 | 16  | 1 | 55 days   | 0.21 |     |   | MPC | 2002 TM <sub>381</sub>        |
| 2002 TS <sub>381</sub> | 18.2 | 0.15 | 20020923 | 7.70287   | 1.59794   | 353.97173 | 2.79114  | 0.1554032 | 2.5295000 | 8   | 1 | 10 days   | 0.29 |     |   | MPC | 2002 TS <sub>381</sub>        |
| 2002 TT <sub>381</sub> | 17.4 | 0.15 | 20020923 | 50.91025  | 131.73507 | 175.19954 | 3.85128  | 0.0871116 | 2.8109506 | 13  | 1 | 55 days   | 0.20 |     |   | MPC | 2002 TT <sub>381</sub>        |
| 2002 TU <sub>381</sub> | 16.3 | 0.15 | 20020923 | 70.34814  | 269.89046 | 7.74593   | 17.13595 | 0.1710946 | 3.1054100 | 12  | 1 | 27 days   | 0.31 |     |   | MPC | 2002 TU <sub>381</sub>        |
| 2002 TX <sub>381</sub> | 16.4 | 0.15 | 20020903 | 320.12617 | 126.01895 | 277.00416 | 10.49814 | 0.1880177 | 2.6212125 | 9   | 1 | 30 days   | 0.18 |     |   | MPC | 2002 TX <sub>381</sub>        |
| 2002 TY <sub>381</sub> | 17.2 | 0.15 | 20021013 | 76.58190  | 262.34137 | 27.45577  | 6.42984  | 0.1797763 | 2.3127862 | 9   | 1 | 23 days   | 0.22 |     |   | MPC | 2002 TY <sub>381</sub>        |
| 2002 UN <sub>2</sub>   | 14.4 | 0.15 | 20071027 | 328.34361 | 59.03884  | 338.02309 | 25.85180 | 0.1515128 | 3.1330869 | 118 | 3 | 2002-2007 | 0.63 | M-v | 2 | MPC | 128780 2002 UN <sub>2</sub>   |
| 2002 UV <sub>2</sub>   | 16.5 | 0.15 | 20071027 | 339.24234 | 108.54459 | 295.67444 | 15.63046 | 0.1179918 | 1.8773161 | 102 | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128780 2002 UV <sub>2</sub>   |
| 2002 UP <sub>3</sub>   | 15.2 | 0.15 | 20071027 | 70.94910  | 276.19305 | 71.31884  | 11.35987 | 0.3735347 | 2.6057499 | 59  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128780 2002 UP <sub>3</sub>   |
| 2002 UY <sub>3</sub>   | 15.8 | 0.15 | 20071027 | 20.87490  | 23.41462  | 51.96045  | 13.31003 | 0.2090018 | 2.6900339 | 57  | 4 | 2000-2007 | 0.60 | M-v | 2 | MPC | 108489 2002 UY <sub>3</sub>   |
| 2002 UH <sub>4</sub>   | 13.8 | 0.15 | 20071027 | 319.15907 | 205.18616 | 263.70559 | 34.75179 | 0.1281258 | 2.8582159 | 33  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 103458 2002 UH <sub>4</sub>   |
| 2002 UF <sub>6</sub>   | 15.3 | 0.15 | 20071027 | 14.78845  | 354.12672 | 61.33400  | 12.32762 | 0.2344409 | 2.7639650 | 53  | 4 | 1999-2007 | 0.62 | M-v | 1 | MPC | 128780 2002 UF <sub>6</sub>   |
| 2002 UD <sub>7</sub>   | 16.0 | 0.15 | 20071027 | 29.43412  | 323.16922 | 82.88521  | 11.80710 | 0.0967615 | 2.7195650 | 53  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 77672 2002 UD <sub>7</sub>    |
| 2002 UR <sub>9</sub>   | 14.1 | 0.15 | 20071027 | 332.43394 | 348.90696 | 65.65006  | 28.23509 | 0.1462553 | 3.1681539 | 88  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 126647 2002 UR <sub>9</sub>   |
| 2002 UP <sub>14</sub>  | 15.3 | 0.15 | 20071027 | 45.76765  | 273.58584 | 55.88851  | 7.33298  | 0.2024171 | 2.9018597 | 97  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128780 2002 UP <sub>14</sub>  |
| 2002 UB <sub>16</sub>  | 16.5 | 0.15 | 20071027 | 349.88560 | 13.96389  | 90.80434  | 5.22333  | 0.2421563 | 2.7439222 | 45  | 3 | 1999-2007 | 0.54 | M-v | 2 | MPC | 127988 2002 UB <sub>16</sub>  |
| 2002 UW <sub>16</sub>  | 15.5 | 0.15 | 20071027 | 6.86980   | 236.05786 | 164.27999 | 10.81229 | 0.1555980 | 2.9257066 | 67  | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128780 2002 UW <sub>16</sub>  |
| 2002 UP <sub>19</sub>  | 15.4 | 0.15 | 20071027 | 351.54541 | 28.18969  | 72.26244  | 13.81522 | 0.1508078 | 2.7747821 | 52  | 4 | 1999-2007 | 0.61 | M-v | 1 | MPC | 128780 2002 UP <sub>19</sub>  |
| 2002 UG <sub>21</sub>  | 15.4 | 0.15 | 20071027 | 270.11577 | 114.30841 | 34.17129  | 7.64329  | 0.0816837 | 2.8612828 | 73  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128780 2002 UG <sub>21</sub>  |
| 2002 UD <sub>24</sub>  | 16.2 | 0.15 | 20071027 | 343.96891 | 2.05756   | 27.31285  | 3.93386  | 0.1670899 | 3.0201085 | 34  | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 126648 2002 UD <sub>24</sub>  |
| 2002 UN <sub>25</sub>  | 16.0 | 0.15 | 20071027 | 146.72488 | 311.62248 | 329.74237 | 4.78800  | 0.3071300 | 2.5895888 | 102 | 6 | 2001-2007 | 0.45 | M-v | 1 | MPC | 110933 2002 UN <sub>25</sub>  |
| 2002 UZ <sub>25</sub>  | 16.2 | 0.15 | 20071027 | 321.59180 | 78.04320  | 33.46624  | 6.39528  | 0.0745440 | 2.7849332 | 28  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 94866 2002 UZ <sub>25</sub>   |
| 2002 UL <sub>29</sub>  | 15.1 | 0.15 | 20071027 | 17.60790  | 317.14497 | 74.32555  | 17.31246 | 0.2484000 | 2.8754562 | 118 | 4 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128780 2002 UL <sub>29</sub>  |
| 2002 UL <sub>30</sub>  | 16.7 | 0.15 | 20071027 | 359.08123 | 157.42095 | 249.13510 | 1.00512  | 0.0681460 | 2.8668530 | 39  | 2 | 2002-2007 | 0.30 | M-v | 3 | MPC | 127988 2002 UL <sub>30</sub>  |
| 2002 UF <sub>32</sub>  | 15.7 | 0.15 | 20071027 | 56.77899  | 295.56644 | 64.23956  | 2.64042  | 0.2336568 | 2.7883407 | 74  | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 104238 2002 UF <sub>32</sub>  |
| 2002 UU <sub>34</sub>  | 15.9 | 0.15 | 20071027 | 356.95494 | 173.47806 | 199.32993 | 2.29189  | 0.1607428 | 3.0477974 | 59  | 2 | 2002-2007 | 0.55 | M-v | 3 | MPC | 126648 2002 UU <sub>34</sub>  |
| 2002 US <sub>35</sub>  | 15.2 | 0.15 | 20071027 | 97.21978  | 288.28167 | 33.15563  | 8.69423  | 0.1631521 | 2.7494107 | 76  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 110933 2002 US <sub>35</sub>  |
| 2002 UC <sub>36</sub>  | 15.8 | 0.15 | 20071027 | 30.27212  | 343.29722 | 55.87552  | 15.93154 | 0.1067137 | 2.7912934 | 45  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 75768 2002 UC <sub>36</sub>   |
| 2002 UO <sub>36</sub>  | 15.9 | 0.15 | 20071027 | 338.61834 | 52.76664  | 1.77453   | 0.48377  | 0.1950190 | 2.9745512 | 117 | 2 | 2002-2007 | 0.48 | M-v | 4 | MPC | 128781 2002 UO <sub>36</sub>  |
| 2002 UW <sub>36</sub>  | 15.6 | 0.15 | 20071027 | 150.65072 | 219.99313 | 115.93526 | 2.56465  | 0.1064993 | 2.5319106 | 166 | 6 | 1998-2007 | 0.54 | M-v | 2 | MPC | 116227 2002 UW <sub>36</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2002 UQ <sub>37</sub> | 16.6 | 0.15 | 20071027 | 66.69534  | 11.75383  | 30.17685  | 2.96903  | 0.1253192 | 2.6025099 | 77  | 4 | 2002–2007 | 0.48 | M-v | 2 | MPC | 114679 2002 UQ <sub>37</sub> |
| 2002 UL <sub>39</sub> | 16.2 | 0.15 | 20071027 | 59.77638  | 286.77198 | 118.51603 | 2.63434  | 0.1332494 | 2.6326450 | 83  | 4 | 2002–2007 | 0.52 | M-v | 1 | MPC | 116227 2002 UL <sub>39</sub> |
| 2002 UQ <sub>39</sub> | 15.5 | 0.15 | 20071027 | 1.26375   | 118.17949 | 227.12695 | 11.72305 | 0.3394694 | 3.0889292 | 64  | 3 | 2002–2007 | 0.55 | M-v | 2 | MPC | 128781 2002 UQ <sub>39</sub> |
| 2002 UW <sub>39</sub> | 16.0 | 0.15 | 20071027 | 301.92245 | 96.16677  | 138.69637 | 2.66560  | 0.1856899 | 2.3531417 | 101 | 5 | 2002–2007 | 0.50 | M-v | 1 | MPC | 112831 2002 UW <sub>39</sub> |
| 2002 UO <sub>41</sub> | 16.3 | 0.15 | 20071027 | 38.27971  | 267.02928 | 117.68884 | 4.30687  | 0.1026414 | 2.8173734 | 30  | 5 | 2002–2007 | 0.44 | M-v | 0 | MPC | 104238 2002 UO <sub>41</sub> |
| 2002 UO <sub>42</sub> | 15.8 | 0.15 | 20071027 | 279.98244 | 250.87263 | 207.35531 | 10.39715 | 0.0085230 | 2.9884055 | 45  | 3 | 2002–2007 | 0.38 | M-v | 2 | MPC | 126648 2002 UO <sub>42</sub> |
| 2002 UM <sub>45</sub> | 15.3 | 0.15 | 20071027 | 17.39651  | 205.71140 | 117.80662 | 6.44943  | 0.3000359 | 3.0737051 | 106 | 5 | 1995–2007 | 0.57 | M-v | 1 | MPC | 128781 2002 UM <sub>45</sub> |
| 2002 UO <sub>45</sub> | 16.3 | 0.15 | 20071027 | 12.21694  | 128.60997 | 282.74645 | 3.03782  | 0.1011654 | 2.8054299 | 50  | 4 | 1998–2007 | 0.47 | M-v | 1 | MPC | 62425 2002 UO <sub>45</sub>  |
| 2002 US <sub>47</sub> | 16.8 | 0.15 | 20071027 | 45.46681  | 171.61998 | 209.89684 | 2.81041  | 0.2037671 | 2.7510074 | 32  | 5 | 2002–2007 | 0.46 | M-v | 1 | MPC | 110934 2002 US <sub>47</sub> |
| 2002 UW <sub>47</sub> | 15.3 | 0.15 | 20071027 | 39.90708  | 0.86729   | 29.95967  | 6.50643  | 0.0429014 | 2.7413788 | 53  | 5 | 2000–2007 | 0.50 | M-v | 1 | MPC | 110934 2002 UW <sub>47</sub> |
| 2002 UG <sub>48</sub> | 15.8 | 0.15 | 20071027 | 127.71118 | 186.68671 | 123.22177 | 6.84249  | 0.2895287 | 2.6000731 | 92  | 5 | 2002–2007 | 0.44 | M-v | 1 | MPC | 112831 2002 UG <sub>48</sub> |
| 2002 UX <sub>51</sub> | 17.5 | 0.15 | 20071027 | 32.73384  | 98.40944  | 268.39110 | 7.89414  | 0.2219596 | 2.7213915 | 39  | 3 | 1993–2007 | 0.43 | M-v | 1 | MPC | 127989 2002 UX <sub>51</sub> |
| 2002 UL <sub>57</sub> | 16.5 | 0.15 | 20071027 | 99.38963  | 234.20007 | 74.88700  | 10.72461 | 0.1245478 | 2.7590306 | 37  | 3 | 2002–2007 | 0.32 | M-v | 2 | MPC | 127989 2002 UL <sub>57</sub> |
| 2002 UZ <sub>58</sub> | 16.4 | 0.15 | 20071027 | 50.78322  | 279.28189 | 97.12781  | 8.07774  | 0.0329727 | 2.7426907 | 44  | 5 | 2002–2007 | 0.48 | M-v | 0 | MPC | 104238 2002 UZ <sub>58</sub> |
| 2002 UH <sub>61</sub> | 16.6 | 0.15 | 20071027 | 34.16007  | 144.80937 | 213.55410 | 13.46979 | 0.1983543 | 2.7312889 | 76  | 3 | 2002–2007 | 0.43 | M-v | 1 | MPC | 128781 2002 UH <sub>61</sub> |
| 2002 UJ <sub>61</sub> | 16.1 | 0.15 | 20071027 | 137.40776 | 281.83698 | 270.83817 | 9.17563  | 0.0338009 | 3.0123295 | 22  | 1 | 77 days   | 0.33 | M-v | 4 | MPC | 2002 UJ <sub>61</sub>        |
| 2002 UU <sub>63</sub> | 16.5 | 0.15 | 20071027 | 135.94544 | 270.67289 | 7.41360   | 11.40440 | 0.0517692 | 2.6831673 | 33  | 4 | 2002–2007 | 0.42 | M-v | 0 | MPC | 122423 2002 UU <sub>63</sub> |
| 2002 UX <sub>63</sub> | 17.4 | 0.15 | 20071027 | 161.21321 | 282.90284 | 349.43778 | 1.50673  | 0.0568629 | 2.6033729 | 29  | 5 | 2002–2007 | 0.39 | M-v | 0 | MPC | 113974 2002 UX <sub>63</sub> |
| 2002 UT <sub>71</sub> | 15.1 | 0.15 | 20071027 | 84.23026  | 36.14676  | 236.48878 | 7.05666  | 0.1494735 | 3.0976258 | 54  | 4 | 1991–2007 | 0.52 | M-v | 1 | MPC | 128781 2002 UT <sub>71</sub> |
| 2002 VG               | 15.6 | 0.15 | 20071027 | 349.94032 | 52.97355  | 53.76627  | 11.34806 | 0.1505686 | 2.7176974 | 47  | 5 | 1998–2007 | 0.68 | M-v | 1 | MPC | 128781 2002 VG               |
| 2002 VL               | 15.4 | 0.15 | 20071027 | 295.65105 | 208.93675 | 27.08582  | 23.86395 | 0.1830275 | 2.3508967 | 67  | 4 | 2002–2007 | 0.53 | M-v | 1 | MPC | 87555 2002 VL                |
| 2002 VP <sub>5</sub>  | 16.8 | 0.15 | 20071027 | 353.38090 | 197.11830 | 175.40705 | 1.78742  | 0.1494040 | 3.0879530 | 31  | 2 | 2002–2007 | 0.33 | M-v | 3 | MPC | 127989 2002 VP <sub>5</sub>  |
| 2002 VX <sub>6</sub>  | 15.6 | 0.15 | 20071027 | 79.66818  | 30.85185  | 312.58688 | 3.47797  | 0.0792836 | 2.8026553 | 67  | 5 | 1998–2007 | 0.55 | M-v | 1 | MPC | 128781 2002 VX <sub>6</sub>  |
| 2002 VQ <sub>7</sub>  | 15.5 | 0.15 | 20071027 | 352.41517 | 156.32761 | 294.46263 | 8.12672  | 0.2505354 | 2.7767319 | 61  | 3 | 1999–2007 | 0.47 | M-v | 2 | MPC | 128781 2002 VQ <sub>7</sub>  |
| 2002 VW <sub>9</sub>  | 15.5 | 0.15 | 20071027 | 318.82644 | 38.22483  | 32.79232  | 12.55439 | 0.0481185 | 3.0011036 | 117 | 5 | 1997–2007 | 0.57 | M-v | 0 | MPC | 128781 2002 VW <sub>9</sub>  |
| 2002 VT <sub>10</sub> | 15.7 | 0.15 | 20071027 | 21.90300  | 335.60985 | 43.38675  | 11.64164 | 0.2026116 | 2.8942209 | 139 | 5 | 1992–2007 | 0.55 | M-v | 2 | MPC | 128781 2002 VT <sub>10</sub> |
| 2002 VJ <sub>12</sub> | 15.8 | 0.15 | 20071027 | 66.12533  | 29.29428  | 297.18212 | 4.25404  | 0.1726459 | 2.8458627 | 68  | 5 | 2000–2007 | 0.58 | M-v | 1 | MPC | 128781 2002 VJ <sub>12</sub> |
| 2002 VU <sub>12</sub> | 15.0 | 0.15 | 20071027 | 13.93110  | 111.81371 | 242.42335 | 11.83681 | 0.1229445 | 3.0697179 | 59  | 2 | 2002–2007 | 0.52 | M-v | 3 | MPC | 128781 2002 VU <sub>12</sub> |
| 2002 VZ <sub>12</sub> | 16.4 | 0.15 | 20071027 | 47.67770  | 116.65761 | 257.26232 | 3.27395  | 0.0838359 | 2.8111719 | 40  | 5 | 1999–2007 | 0.59 | M-v | 1 | MPC | 104239 2002 VZ <sub>12</sub> |
| 2002 VJ <sub>13</sub> | 16.1 | 0.15 | 20071027 | 357.70638 | 107.37157 | 319.61453 | 1.34435  | 0.1919662 | 2.8578407 | 72  | 4 | 1994–2007 | 0.50 | M-v | 1 | MPC | 128781 2002 VJ <sub>13</sub> |
| 2002 VM <sub>13</sub> | 15.9 | 0.15 | 20071027 | 26.80905  | 354.37611 | 49.23607  | 2.10018  | 0.1774743 | 2.8034634 | 86  | 5 | 2002–2007 | 0.51 | M-v | 1 | MPC | 128781 2002 VM <sub>13</sub> |
| 2002 VB <sub>15</sub> | 17.3 | 0.15 | 20071027 | 2.83533   | 126.72359 | 251.28237 | 19.49968 | 0.0918041 | 1.8779489 | 64  | 2 | 2002–2007 | 0.49 | M-v | 3 | MPC | 127990 2002 VB <sub>15</sub> |
| 2002 VD <sub>15</sub> | 16.9 | 0.15 | 20071027 | 63.68290  | 96.24291  | 224.68669 | 20.54547 | 0.1026410 | 1.8687543 | 105 | 3 | 2002–2007 | 0.52 | M-v | 2 | MPC | 128782 2002 VD <sub>15</sub> |
| 2002 VN <sub>15</sub> | 15.6 | 0.15 | 20071027 | 342.50793 | 258.82855 | 178.76172 | 7.89686  | 0.3317747 | 2.9800178 | 126 | 3 | 2002–2007 | 0.47 | M-v | 2 | MPC | 128782 2002 VN <sub>15</sub> |
| 2002 VX <sub>15</sub> | 15.1 | 0.15 | 20071027 | 310.92262 | 18.82228  | 78.36093  | 13.95428 | 0.2063748 | 3.0833308 | 120 | 3 | 2002–2007 | 0.60 | M-v | 2 | MPC | 128782 2002 VX <sub>15</sub> |
| 2002 VB <sub>18</sub> | 16.2 | 0.15 | 20071027 | 36.17526  | 162.89085 | 227.15093 | 2.96596  | 0.1064963 | 2.7822540 | 51  | 5 | 2002–2007 | 0.46 | M-v | 0 | MPC | 118026 2002 VB <sub>18</sub> |
| 2002 VX <sub>26</sub> | 15.8 | 0.15 | 20071027 | 110.90813 | 281.74471 | 31.32917  | 6.21333  | 0.1090859 | 2.7549819 | 48  | 4 | 2002–2007 | 0.53 | M-v | 1 | MPC | 108516 2002 VX <sub>26</sub> |
| 2002 VR <sub>27</sub> | 15.0 | 0.15 | 20071027 | 356.20744 | 172.27697 | 242.09544 | 9.98800  | 0.1305635 | 2.9363704 | 100 | 5 | 2000–2007 | 0.46 | M-v | 1 | MPC | 128782 2002 VR <sub>27</sub> |
| 2002 VJ <sub>29</sub> | 14.7 | 0.15 | 20071027 | 333.19524 | 197.44248 | 213.96132 | 24.19786 | 0.1655865 | 3.0924990 | 106 | 4 | 2002–2007 | 0.55 | M-v | 1 | MPC | 128782 2002 VJ <sub>29</sub> |
| 2002 VJ <sub>31</sub> | 15.6 | 0.15 | 20071027 | 28.29349  | 127.21207 | 231.59816 | 12.20401 | 0.1842528 | 2.9893282 | 87  | 2 | 2002–2007 | 0.48 | M-v | 3 | MPC | 128782 2002 VJ <sub>31</sub> |
| 2002 VL <sub>32</sub> | 14.8 | 0.15 | 20071027 | 39.54821  | 275.15035 | 62.47089  | 22.90822 | 0.1058592 | 3.1136926 | 55  | 4 | 2000–2007 | 0.57 | M-v | 1 | MPC | 128782 2002 VL <sub>32</sub> |
| 2002 VS <sub>38</sub> | 16.1 | 0.15 | 20071027 | 22.50206  | 112.51424 | 277.95741 | 4.58431  | 0.1346814 | 2.8556733 | 52  | 4 | 2002–2007 | 0.53 | M-v | 1 | MPC | 102140 2002 VS <sub>38</sub> |
| 2002 VB <sub>39</sub> | 14.6 | 0.15 | 20071027 | 20.98703  | 285.83675 | 81.84616  | 16.67342 | 0.0979815 | 3.0113327 | 97  | 5 | 2000–2007 | 0.55 | M-v | 1 | MPC | 128782 2002 VB <sub>39</sub> |
| 2002 VD <sub>40</sub> | 15.2 | 0.15 | 20071027 | 310.03225 | 103.12890 | 354.18384 | 8.56297  | 0.2329654 | 3.0237167 | 131 | 3 | 2002–2007 | 0.53 | M-v | 2 | MPC | 128782 2002 VD <sub>40</sub> |
| 2002 VS <sub>40</sub> | 16.2 | 0.15 | 20071027 | 6.33076   | 165.49759 | 269.97881 | 6.65470  | 0.0668946 | 2.7634579 | 41  | 5 | 2001–2007 | 0.61 | M-v | 1 | MPC | 110937 2002 VS <sub>40</sub> |
| 2002 VZ <sub>40</sub> | 15.5 | 0.15 | 20071027 | 357.34591 | 182.09069 | 268.51789 | 4.97026  | 0.0937199 | 2.7586926 | 59  | 3 | 2002–2007 | 0.59 | M-v | 4 | MPC | 108523 2002 VZ <sub>40</sub> |
| 2002 VD <sub>42</sub> | 15.2 | 0.15 | 20071027 | 351.24562 | 131.17277 | 271.09187 | 7.59496  | 0.1237035 | 2.9954232 | 104 | 3 | 2002–2007 | 0.53 | M-v | 3 | MPC | 128782 2002 VD <sub>42</sub> |
| 2002 VG <sub>42</sub> | 15.8 | 0.15 | 20071027 | 56.02682  | 44.00891  | 332.73951 | 4.64572  | 0.1014154 | 2.7700607 | 85  | 4 | 2002–2007 | 0.51 | M-v | 1 | MPC | 110937 2002 VG <sub>42</sub> |
| 2002 VY <sub>42</sub> | 16.1 | 0.15 | 20071027 | 64.73786  | 311.35263 | 51.35378  | 6.48598  | 0.0786649 | 2.7747695 | 40  | 5 | 2000–2007 | 0.53 | M-v | 1 | MPC | 94868 2002 VY <sub>42</sub>  |
| 2002 VY <sub>43</sub> | 15.2 | 0.15 | 20071027 | 45.69247  | 87.94301  | 298.06656 | 11.48578 | 0.1928513 | 2.7769262 | 91  | 3 | 2002–2007 | 0.46 | M-v | 2 | MPC | 126650 2002 VY <sub>43</sub> |
| 2002 VN <sub>44</sub> | 15.7 | 0.15 | 20071027 | 31.40418  | 289.97386 | 77.69195  | 13.29006 | 0.1459484 | 2.9208545 | 65  | 5 | 2000–2007 | 0.49 | M-v | 1 | MPC | 128782 2002 VN <sub>44</sub> |
| 2002 VX <sub>44</sub> | 15.4 | 0.15 | 20071027 | 74.78937  | 293.11661 | 54.07615  | 12.07194 | 0.2104605 | 2.6926424 | 60  | 6 | 2001–2007 | 0.57 | M-v | 1 | MPC | 104240 2002 VX <sub>44</sub> |
| 2002 VS <sub>49</sub> | 15.1 | 0.15 | 20071027 | 20.09050  | 273.84694 | 85.27999  | 13.43914 | 0.1898598 | 3.0293652 | 88  | 4 | 1995–2007 | 0.52 | M-v | 1 | MPC | 128782 2002 VS <sub>49</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 VE <sub>50</sub>  | 16.7 | 0.15 | 20071027 | 54.39411  | 299.14571 | 89.60371  | 5.93175  | 0.1250126 | 2.7198022 | 52  | 4 | 2000-2007 | 0.42 | M-v | 0 | MPC | 128782 2002 VE <sub>50</sub>  |
| 2002 VY <sub>50</sub>  | 15.5 | 0.15 | 20071027 | 7.57051   | 177.98762 | 184.93810 | 7.44322  | 0.1921480 | 3.0073375 | 111 | 6 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128782 2002 VY <sub>50</sub>  |
| 2002 VX <sub>51</sub>  | 16.0 | 0.15 | 20071027 | 1.94046   | 307.16338 | 130.56303 | 5.43044  | 0.1416760 | 2.7680738 | 49  | 7 | 1995-2007 | 0.52 | M-v | 1 | MPC | 104240 2002 VX <sub>51</sub>  |
| 2002 VJ <sub>52</sub>  | 15.3 | 0.15 | 20071027 | 355.68563 | 341.43743 | 63.44878  | 12.67485 | 0.1150027 | 2.8982678 | 71  | 3 | 2002-2007 | 0.65 | M-v | 3 | MPC | 127990 2002 VJ <sub>52</sub>  |
| 2002 VW <sub>52</sub>  | 15.7 | 0.15 | 20071027 | 338.53560 | 349.82996 | 84.86230  | 3.98713  | 0.1523804 | 2.9068444 | 67  | 2 | 2002-2007 | 0.50 | M-v | 4 | MPC | 127990 2002 VW <sub>52</sub>  |
| 2002 VU <sub>54</sub>  | 15.4 | 0.15 | 20071027 | 358.96596 | 295.18063 | 133.24169 | 4.53645  | 0.0992857 | 2.7889953 | 47  | 6 | 1995-2007 | 0.58 | M-v | 1 | MPC | 128782 2002 VU <sub>54</sub>  |
| 2002 VC <sub>55</sub>  | 15.8 | 0.15 | 20071027 | 291.79926 | 42.50589  | 51.23379  | 1.19153  | 0.1446463 | 3.0968011 | 46  | 4 | 2002-2007 | 0.43 | M-v | 0 | MPC | 126650 2002 VC <sub>55</sub>  |
| 2002 VA <sub>56</sub>  | 15.4 | 0.15 | 20071027 | 8.85199   | 310.79488 | 128.79450 | 5.57516  | 0.0898327 | 2.7265712 | 32  | 5 | 2002-2007 | 0.58 | M-v | 1 | MPC | 118027 2002 VA <sub>56</sub>  |
| 2002 VU <sub>57</sub>  | 16.4 | 0.15 | 20071027 | 82.77827  | 158.81881 | 194.68815 | 6.24920  | 0.0730622 | 2.7107919 | 58  | 5 | 2000-2006 | 0.52 | M-v | 1 | MPC | 110938 2002 VU <sub>57</sub>  |
| 2002 VJ <sub>62</sub>  | 15.2 | 0.15 | 20071027 | 205.86999 | 232.03824 | 47.73329  | 14.77359 | 0.1371253 | 2.5325293 | 157 | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128783 2002 VJ <sub>62</sub>  |
| 2002 VW <sub>62</sub>  | 14.5 | 0.15 | 20071027 | 241.71429 | 242.68811 | 224.69359 | 12.61681 | 0.0462413 | 3.2454211 | 57  | 5 | 2001-2007 | 0.55 | M-v | 0 | MPC | 124386 2002 VW <sub>62</sub>  |
| 2002 VF <sub>68</sub>  | 15.9 | 0.15 | 20071027 | 13.18143  | 167.21651 | 190.38737 | 4.10980  | 0.1894372 | 3.0185038 | 84  | 4 | 2000-2007 | 0.45 | M-v | 2 | MPC | 128783 2002 VF <sub>68</sub>  |
| 2002 VH <sub>69</sub>  | 15.4 | 0.15 | 20071027 | 350.05757 | 338.58627 | 41.14847  | 16.99356 | 0.1511683 | 3.1069176 | 62  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128783 2002 VH <sub>69</sub>  |
| 2002 VU <sub>70</sub>  | 15.7 | 0.15 | 20071027 | 12.18053  | 332.44557 | 92.97174  | 5.55227  | 0.1078759 | 2.7578570 | 35  | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 66292 2002 VU <sub>70</sub>   |
| 2002 VK <sub>73</sub>  | 16.3 | 0.15 | 20071027 | 47.30980  | 283.64093 | 103.76023 | 4.41141  | 0.1460853 | 2.7595579 | 62  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128783 2002 VK <sub>73</sub>  |
| 2002 VJ <sub>74</sub>  | 16.0 | 0.15 | 20071027 | 6.95210   | 244.88419 | 151.96803 | 4.36683  | 0.1607693 | 2.8915681 | 48  | 3 | 2002-2007 | 0.53 | M-v | 4 | MPC | 127991 2002 VJ <sub>74</sub>  |
| 2002 VG <sub>76</sub>  | 15.7 | 0.15 | 20071027 | 336.28444 | 353.40379 | 124.32198 | 5.81886  | 0.0628501 | 2.7203863 | 70  | 4 | 2002-2007 | 0.64 | M-v | 1 | MPC | 110940 2002 VG <sub>76</sub>  |
| 2002 VV <sub>76</sub>  | 16.6 | 0.15 | 20071027 | 357.30003 | 181.89307 | 208.10418 | 6.05269  | 0.2827162 | 2.9835538 | 110 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128783 2002 VV <sub>76</sub>  |
| 2002 VK <sub>78</sub>  | 15.3 | 0.15 | 20071027 | 53.80815  | 277.77301 | 62.89504  | 24.83451 | 0.1743970 | 2.9250225 | 44  | 2 | 2002-2007 | 0.49 | M-v | 4 | MPC | 127991 2002 VK <sub>78</sub>  |
| 2002 VA <sub>80</sub>  | 16.4 | 0.15 | 20071027 | 38.89354  | 296.52497 | 158.84522 | 5.54371  | 0.2430067 | 2.6161087 | 61  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 114683 2002 VA <sub>80</sub>  |
| 2002 VS <sub>87</sub>  | 16.0 | 0.15 | 20071027 | 27.13737  | 130.30426 | 281.38736 | 3.90908  | 0.1668569 | 2.7855349 | 78  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128783 2002 VS <sub>87</sub>  |
| 2002 VR <sub>88</sub>  | 15.1 | 0.15 | 20071027 | 325.37365 | 53.28911  | 358.90248 | 4.16841  | 0.1366786 | 3.1235527 | 138 | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128783 2002 VR <sub>88</sub>  |
| 2002 VY <sub>88</sub>  | 15.9 | 0.15 | 20071027 | 28.25751  | 48.55343  | 265.21310 | 7.49053  | 0.4443466 | 3.0192952 | 83  | 2 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128783 2002 VY <sub>88</sub>  |
| 2002 VF <sub>92</sub>  | 16.7 | 0.15 | 20071027 | 349.36722 | 241.41747 | 207.76416 | 3.39649  | 0.0616355 | 2.7522902 | 32  | 6 | 2000-2007 | 0.42 | M-v | 0 | MPC | 113981 2002 VF <sub>92</sub>  |
| 2002 VH <sub>92</sub>  | 14.9 | 0.15 | 20071027 | 297.70305 | 84.62758  | 16.28581  | 25.52841 | 0.2806590 | 3.1920108 | 49  | 2 | 2002-2007 | 0.64 | M-v | 3 | MPC | 128783 2002 VH <sub>92</sub>  |
| 2002 VY <sub>92</sub>  | 15.2 | 0.15 | 20071027 | 70.01043  | 276.76426 | 76.41193  | 9.93947  | 0.1682818 | 2.7812381 | 72  | 4 | 2002-2007 | 0.54 | M-v | 1 | MPC | 110941 2002 VY <sub>92</sub>  |
| 2002 VJ <sub>93</sub>  | 16.2 | 0.15 | 20071027 | 39.57316  | 290.58374 | 170.34050 | 3.80342  | 0.0891654 | 2.5482882 | 70  | 6 | 2000-2007 | 0.46 | M-v | 1 | MPC | 118028 2002 VJ <sub>93</sub>  |
| 2002 VC <sub>94</sub>  | 15.3 | 0.15 | 20071027 | 332.73234 | 34.40517  | 49.12064  | 10.76428 | 0.0850189 | 2.9714518 | 56  | 2 | 2002-2007 | 0.53 | M-v | 3 | MPC | 127991 2002 VC <sub>94</sub>  |
| 2002 VZ <sub>96</sub>  | 15.6 | 0.15 | 20071027 | 344.13237 | 100.60938 | 9.00546   | 12.52731 | 0.1848396 | 2.7825334 | 36  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 110941 2002 VZ <sub>96</sub>  |
| 2002 VL <sub>97</sub>  | 16.5 | 0.15 | 20071027 | 8.88981   | 90.77139  | 342.29941 | 4.87507  | 0.0714608 | 2.7530504 | 35  | 5 | 1997-2007 | 0.50 | M-v | 1 | MPC | 110941 2002 VL <sub>97</sub>  |
| 2002 VB <sub>98</sub>  | 15.4 | 0.15 | 20071027 | 17.44214  | 52.92217  | 7.88417   | 6.06799  | 0.1077808 | 2.7342486 | 40  | 5 | 2002-2007 | 0.50 | M-v | 1 | MPC | 110941 2002 VB <sub>98</sub>  |
| 2002 VN <sub>99</sub>  | 14.7 | 0.15 | 20071027 | 331.66840 | 54.19245  | 358.38980 | 26.50313 | 0.2371338 | 3.1258240 | 157 | 3 | 2002-2007 | 0.59 | M-v | 2 | MPC | 128783 2002 VN <sub>99</sub>  |
| 2002 VU <sub>101</sub> | 15.7 | 0.15 | 20071027 | 18.92856  | 206.34438 | 235.32557 | 7.20308  | 0.3185847 | 2.7929264 | 57  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128783 2002 VU <sub>101</sub> |
| 2002 VS <sub>103</sub> | 15.8 | 0.15 | 20071027 | 348.59280 | 122.78608 | 268.98387 | 3.88497  | 0.2039816 | 3.0394202 | 55  | 4 | 1999-2007 | 0.52 | M-v | 1 | MPC | 125896 2002 VS <sub>103</sub> |
| 2002 VE <sub>104</sub> | 15.8 | 0.15 | 20071027 | 80.30679  | 72.57253  | 256.21174 | 8.08797  | 0.2269582 | 2.8027287 | 62  | 4 | 2002-2007 | 0.41 | M-v | 1 | MPC | 104242 2002 VE <sub>104</sub> |
| 2002 VX <sub>104</sub> | 15.6 | 0.15 | 20071027 | 9.85517   | 200.86137 | 253.14313 | 13.59334 | 0.1512549 | 2.7244083 | 71  | 5 | 1994-2007 | 0.58 | M-v | 1 | MPC | 110942 2002 VX <sub>104</sub> |
| 2002 VD <sub>105</sub> | 16.2 | 0.15 | 20071027 | 99.80386  | 8.17827   | 357.34737 | 4.08739  | 0.2078159 | 2.6022604 | 137 | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 110942 2002 VD <sub>105</sub> |
| 2002 VN <sub>106</sub> | 15.7 | 0.15 | 20071027 | 78.17543  | 93.58486  | 251.96088 | 4.93821  | 0.0714843 | 2.7633122 | 65  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 110942 2002 VN <sub>106</sub> |
| 2002 VW <sub>109</sub> | 16.4 | 0.15 | 20071027 | 356.89506 | 35.33250  | 351.17034 | 1.68589  | 0.3535230 | 3.0108202 | 133 | 5 | 1993-2007 | 0.54 | M-v | 1 | MPC | 128784 2002 VW <sub>109</sub> |
| 2002 VX <sub>110</sub> | 16.2 | 0.15 | 20071027 | 49.32773  | 75.36088  | 308.91891 | 8.10023  | 0.1050868 | 2.6959972 | 56  | 5 | 1997-2007 | 0.46 | M-v | 1 | MPC | 110942 2002 VX <sub>110</sub> |
| 2002 VZ <sub>110</sub> | 15.2 | 0.15 | 20071027 | 36.19745  | 81.50044  | 264.70392 | 10.57429 | 0.2005138 | 2.9037476 | 70  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128784 2002 VZ <sub>110</sub> |
| 2002 VM <sub>111</sub> | 15.1 | 0.15 | 20071027 | 70.09818  | 23.02709  | 311.83729 | 7.02836  | 0.2222341 | 2.7933450 | 48  | 4 | 2002-2007 | 0.54 | M-v | 1 | MPC | 103478 2002 VM <sub>111</sub> |
| 2002 VS <sub>111</sub> | 15.4 | 0.15 | 20071027 | 348.73841 | 231.97861 | 268.14244 | 9.28411  | 0.2473322 | 2.6552272 | 70  | 6 | 1998-2007 | 0.62 | M-v | 1 | MPC | 110942 2002 VS <sub>111</sub> |
| 2002 VF <sub>114</sub> | 15.2 | 0.15 | 20071027 | 3.94621   | 194.86117 | 254.79570 | 5.70584  | 0.1774342 | 2.7789974 | 95  | 4 | 2002-2007 | 0.54 | M-v | 1 | MPC | 126651 2002 VF <sub>114</sub> |
| 2002 VA <sub>116</sub> | 15.8 | 0.15 | 20071027 | 314.90123 | 32.37213  | 83.46921  | 13.21167 | 0.1384529 | 2.8987832 | 42  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128784 2002 VA <sub>116</sub> |
| 2002 VO <sub>116</sub> | 15.8 | 0.15 | 20071027 | 83.84353  | 3.85257   | 315.95807 | 7.26645  | 0.2164200 | 2.7893189 | 49  | 5 | 1995-2007 | 0.42 | M-v | 1 | MPC | 103479 2002 VO <sub>116</sub> |
| 2002 VT <sub>118</sub> | 14.0 | 0.15 | 20071027 | 254.32082 | 103.54361 | 49.41969  | 26.44212 | 0.2205897 | 3.1510739 | 152 | 3 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128784 2002 VT <sub>118</sub> |
| 2002 VA <sub>120</sub> | 17.9 | 0.15 | 20071027 | 322.57420 | 187.86440 | 252.47998 | 19.41891 | 0.0586441 | 1.8651680 | 34  | 2 | 2002-2007 | 0.54 | M-v | 4 | MPC | 127992 2002 VA <sub>120</sub> |
| 2002 VN <sub>120</sub> | 15.3 | 0.15 | 20071027 | 346.24110 | 34.47824  | 27.73635  | 11.92689 | 0.1350252 | 2.9580022 | 113 | 3 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128784 2002 VN <sub>120</sub> |
| 2002 VX <sub>120</sub> | 15.2 | 0.15 | 20071027 | 26.17607  | 63.58510  | 269.46424 | 14.88697 | 0.2818631 | 3.0638752 | 78  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128784 2002 VX <sub>120</sub> |
| 2002 VJ <sub>121</sub> | 15.6 | 0.15 | 20071027 | 348.72414 | 210.28302 | 285.89775 | 10.33347 | 0.3337990 | 2.7490245 | 85  | 5 | 2001-2007 | 0.45 | M-v | 1 | MPC | 127992 2002 VJ <sub>121</sub> |
| 2002 VZ <sub>121</sub> | 15.3 | 0.15 | 20071027 | 65.30740  | 39.65380  | 321.19214 | 8.18603  | 0.1802358 | 2.7534307 | 80  | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 110943 2002 VZ <sub>121</sub> |
| 2002 VH <sub>123</sub> | 15.7 | 0.15 | 20071027 | 48.75289  | 54.33472  | 327.85499 | 6.15174  | 0.1239184 | 2.7889948 | 56  | 3 | 2002-2007 | 0.56 | M-v | 2 | MPC | 110943 2002 VH <sub>123</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 VC <sub>124</sub> | 15.9 | 0.15 | 20071027 | 55.17016  | 17.47365  | 318.37928 | 1.97392  | 0.1678053 | 2.9322039 | 53  | 4 | 2002-2007 | 0.39 | M-v | 1 | MPC | 75805 2002 VC <sub>124</sub>  |
| 2002 VZ <sub>128</sub> | 17.4 | 0.15 | 20071027 | 26.50360  | 199.72703 | 239.76261 | 2.01900  | 0.1180095 | 2.6670059 | 30  | 4 | 2002-2007 | 0.33 | M-v | 0 | MPC | 108552 2002 VZ <sub>128</sub> |
| 2002 VL <sub>129</sub> | 15.6 | 0.15 | 20071027 | 20.25100  | 147.90304 | 253.48853 | 5.27070  | 0.0099703 | 2.7968488 | 70  | 5 | 2002-2007 | 0.45 | M-v | 0 | MPC | 110943 2002 VL <sub>129</sub> |
| 2002 VS <sub>129</sub> | 16.4 | 0.15 | 20071027 | 10.59149  | 85.33773  | 3.03266   | 2.85084  | 0.0656218 | 2.6565641 | 37  | 4 | 2000-2007 | 0.60 | M-v | 1 | MPC | 115749 2002 VS <sub>129</sub> |
| 2002 VH <sub>131</sub> | 15.0 | 0.15 | 20071027 | 280.09745 | 107.01490 | 342.23911 | 26.15833 | 0.1292728 | 3.1046954 | 124 | 3 | 2002-2007 | 0.54 | M-v | 1 | MPC | 126652 2002 VH <sub>131</sub> |
| 2002 VC <sub>136</sub> | 14.6 | 0.15 | 20071027 | 320.61492 | 192.26018 | 255.02577 | 17.02182 | 0.2389807 | 2.9325493 | 101 | 3 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128784 2002 VC <sub>136</sub> |
| 2002 VU <sub>139</sub> | 15.4 | 0.15 | 20071027 | 293.41400 | 296.05620 | 243.02165 | 11.73531 | 0.1372033 | 2.7593916 | 54  | 7 | 1999-2007 | 0.54 | M-v | 1 | MPC | 108557 2002 VU <sub>139</sub> |
| 2002 VN <sub>140</sub> | 16.4 | 0.15 | 20071027 | 25.30878  | 316.22804 | 90.27302  | 1.32593  | 0.0644706 | 2.8325538 | 35  | 7 | 1994-2007 | 0.47 | M-v | 1 | MPC | 112293 2002 VN <sub>140</sub> |
| 2002 WB                | 14.8 | 0.15 | 20071027 | 322.13395 | 116.95687 | 324.75313 | 16.81042 | 0.3342002 | 3.1345922 | 111 | 3 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128784 2002 WB                |
| 2002 WX <sub>2</sub>   | 16.2 | 0.15 | 20071027 | 84.31577  | 261.10589 | 79.55061  | 4.10845  | 0.2164569 | 2.7435698 | 52  | 5 | 2002-2007 | 0.41 | M-v | 1 | MPC | 110944 2002 WX <sub>2</sub>   |
| 2002 WD <sub>3</sub>   | 15.4 | 0.15 | 20071027 | 327.54426 | 99.29478  | 305.38769 | 9.22050  | 0.2411526 | 3.0783717 | 56  | 2 | 2002-2007 | 0.54 | M-v | 3 | MPC | 123892 2002 WD <sub>3</sub>   |
| 2002 WF <sub>4</sub>   | 15.5 | 0.15 | 20071027 | 344.45995 | 179.64713 | 227.60168 | 8.30087  | 0.1997225 | 3.0541562 | 91  | 3 | 2002-2007 | 0.56 | M-v | 3 | MPC | 128784 2002 WF <sub>4</sub>   |
| 2002 WE <sub>5</sub>   | 17.4 | 0.15 | 20071027 | 26.67574  | 108.83482 | 248.20775 | 20.81707 | 0.0854379 | 1.8785408 | 34  | 2 | 2002-2007 | 0.46 | M-v | 3 | MPC | 127993 2002 WE <sub>5</sub>   |
| 2002 WO <sub>5</sub>   | 14.8 | 0.15 | 20071027 | 28.56135  | 220.65476 | 147.82016 | 17.93526 | 0.1969656 | 2.9482671 | 67  | 4 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128784 2002 WO <sub>5</sub>   |
| 2002 WA <sub>6</sub>   | 15.4 | 0.15 | 20071027 | 102.58626 | 300.90562 | 23.34692  | 12.19635 | 0.1278925 | 2.7431470 | 64  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 110944 2002 WA <sub>6</sub>   |
| 2002 WR <sub>6</sub>   | 15.2 | 0.15 | 20071027 | 177.44794 | 211.67937 | 33.41899  | 6.81201  | 0.0144026 | 2.8715778 | 45  | 5 | 2001-2007 | 0.50 | M-v | 0 | MPC | 128784 2002 WR <sub>6</sub>   |
| 2002 WJ <sub>7</sub>   | 15.9 | 0.15 | 20071027 | 344.37755 | 172.93209 | 236.52726 | 5.75444  | 0.1367890 | 3.0380688 | 55  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128784 2002 WJ <sub>7</sub>   |
| 2002 WO <sub>7</sub>   | 15.6 | 0.15 | 20071027 | 82.43581  | 254.93028 | 71.43122  | 10.33742 | 0.2861358 | 2.7953170 | 30  | 4 | 2001-2007 | 0.58 | M-v | 1 | MPC | 113985 2002 WO <sub>7</sub>   |
| 2002 WG <sub>9</sub>   | 15.4 | 0.15 | 20071027 | 25.54777  | 309.55706 | 52.13304  | 5.37753  | 0.1714319 | 2.9932671 | 112 | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128785 2002 WG <sub>9</sub>   |
| 2002 WO <sub>14</sub>  | 15.2 | 0.15 | 20071027 | 2.25659   | 213.02824 | 163.18748 | 8.16707  | 0.2297519 | 3.0589695 | 102 | 3 | 2002-2007 | 0.44 | M-v | 2 | MPC | 126652 2002 WO <sub>14</sub>  |
| 2002 WS <sub>14</sub>  | 15.3 | 0.15 | 20071027 | 50.82424  | 240.14307 | 138.39294 | 8.62374  | 0.1791695 | 2.8076745 | 78  | 5 | 1994-2007 | 0.50 | M-v | 1 | MPC | 118029 2002 WS <sub>14</sub>  |
| 2002 WY <sub>14</sub>  | 15.3 | 0.15 | 20071027 | 12.94271  | 13.21474  | 96.22638  | 13.06642 | 0.1404040 | 2.6707194 | 62  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 110945 2002 WY <sub>14</sub>  |
| 2002 WK <sub>15</sub>  | 15.3 | 0.15 | 20071027 | 343.37653 | 24.43004  | 93.83992  | 16.19316 | 0.1508193 | 2.7671492 | 58  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128785 2002 WK <sub>15</sub>  |
| 2002 WF <sub>18</sub>  | 15.4 | 0.15 | 20071027 | 31.11020  | 326.16912 | 121.80015 | 12.93368 | 0.1688995 | 2.6473188 | 55  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 110945 2002 WF <sub>18</sub>  |
| 2002 WL <sub>19</sub>  | 16.3 | 0.15 | 20071027 | 117.35273 | 194.45714 | 112.54689 | 3.12714  | 0.0474730 | 2.8524708 | 42  | 6 | 1994-2007 | 0.40 | M-v | 0 | MPC | 128785 2002 WL <sub>19</sub>  |
| 2002 WR <sub>19</sub>  | 16.1 | 0.15 | 20071027 | 7.19625   | 346.58756 | 55.47425  | 2.66752  | 0.1065698 | 2.9414166 | 75  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128785 2002 WR <sub>19</sub>  |
| 2002 XS                | 15.3 | 0.15 | 20071027 | 45.85411  | 278.24129 | 88.61151  | 7.03006  | 0.0886953 | 2.9013120 | 68  | 6 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128785 2002 XS                |
| 2002 XY                | 15.3 | 0.15 | 20071027 | 16.94055  | 164.46758 | 256.31088 | 12.75217 | 0.1670197 | 2.7834018 | 105 | 4 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128785 2002 XY                |
| 2002 XE <sub>1</sub>   | 15.7 | 0.15 | 20071027 | 69.00813  | 263.04802 | 72.82610  | 9.79986  | 0.3036541 | 2.7959918 | 62  | 4 | 2001-2007 | 0.57 | M-v | 1 | MPC | 85768 2002 XE <sub>1</sub>    |
| 2002 XV <sub>2</sub>   | 15.9 | 0.15 | 20071027 | 2.42290   | 262.72070 | 137.53294 | 5.56424  | 0.2548358 | 2.9724075 | 68  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 127995 2002 XV <sub>2</sub>   |
| 2002 XA <sub>3</sub>   | 15.6 | 0.15 | 20071027 | 286.20622 | 264.54512 | 218.73027 | 15.36372 | 0.2173136 | 3.1195843 | 36  | 3 | 2001-2007 | 0.52 | M-v | 3 | MPC | 127995 2002 XA <sub>3</sub>   |
| 2002 XL <sub>3</sub>   | 15.6 | 0.15 | 20071027 | 339.79170 | 216.48818 | 216.46938 | 8.48848  | 0.0836097 | 2.9897608 | 58  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 127995 2002 XL <sub>3</sub>   |
| 2002 XR <sub>4</sub>   | 18.1 | 0.15 | 20071027 | 308.96210 | 216.53105 | 245.84419 | 20.73462 | 0.0962971 | 1.8604538 | 51  | 2 | 2002-2007 | 0.47 | M-v | 4 | MPC | 127995 2002 XR <sub>4</sub>   |
| 2002 XY <sub>4</sub>   | 19.0 | 0.15 | 20071027 | 309.37470 | 273.74664 | 269.05903 | 43.07577 | 0.5701810 | 1.8440784 | 123 | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 127995 2002 XY <sub>4</sub>   |
| 2002 XD <sub>6</sub>   | 15.5 | 0.15 | 20071027 | 352.21159 | 332.11765 | 87.08337  | 17.92066 | 0.1080008 | 2.9711418 | 71  | 3 | 2002-2007 | 0.65 | M-v | 2 | MPC | 128785 2002 XD <sub>6</sub>   |
| 2002 XY <sub>6</sub>   | 15.4 | 0.15 | 20071027 | 34.88783  | 94.71440  | 316.67433 | 7.40381  | 0.2919099 | 2.7031615 | 80  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128785 2002 XY <sub>6</sub>   |
| 2002 XE <sub>9</sub>   | 15.9 | 0.15 | 20071027 | 334.76913 | 87.30498  | 19.68699  | 1.96166  | 0.0530422 | 2.7988938 | 54  | 4 | 2002-2007 | 0.50 | M-v | 0 | MPC | 110946 2002 XE <sub>9</sub>   |
| 2002 XE <sub>10</sub>  | 16.3 | 0.15 | 20071027 | 321.31204 | 179.21777 | 265.01805 | 2.37243  | 0.2269011 | 3.0182145 | 55  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 127996 2002 XE <sub>10</sub>  |
| 2002 XX <sub>10</sub>  | 15.6 | 0.15 | 20071027 | 292.47892 | 61.39202  | 64.70421  | 11.95923 | 0.0271157 | 2.9747390 | 32  | 2 | 2002-2007 | 0.46 | M-v | 4 | MPC | 127996 2002 XX <sub>10</sub>  |
| 2002 XE <sub>12</sub>  | 15.7 | 0.15 | 20071027 | 339.85809 | 126.60078 | 284.72186 | 11.69521 | 0.2140911 | 3.0469950 | 60  | 2 | 2002-2007 | 0.59 | M-v | 3 | MPC | 128785 2002 XE <sub>12</sub>  |
| 2002 XG <sub>12</sub>  | 15.0 | 0.15 | 20071027 | 317.37157 | 43.23577  | 40.12560  | 16.74427 | 0.0907071 | 3.0441034 | 88  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128785 2002 XG <sub>12</sub>  |
| 2002 XJ <sub>12</sub>  | 15.6 | 0.15 | 20071027 | 71.62980  | 46.93899  | 310.66495 | 8.20187  | 0.1376503 | 2.7899977 | 87  | 6 | 1997-2007 | 0.50 | M-v | 1 | MPC | 110946 2002 XJ <sub>12</sub>  |
| 2002 XG <sub>13</sub>  | 15.4 | 0.15 | 20071027 | 54.19125  | 294.68490 | 59.53501  | 5.92039  | 0.0987119 | 2.9232923 | 77  | 5 | 1997-2007 | 0.47 | M-v | 0 | MPC | 127996 2002 XG <sub>13</sub>  |
| 2002 XC <sub>14</sub>  | 14.0 | 0.15 | 20071027 | 265.13743 | 277.73888 | 280.52603 | 24.02435 | 0.2388762 | 3.0939872 | 48  | 3 | 2002-2007 | 0.59 | M-v | 2 | MPC | 128785 2002 XC <sub>14</sub>  |
| 2002 XR <sub>15</sub>  | 15.5 | 0.15 | 20071027 | 23.74959  | 53.20973  | 311.66757 | 11.03040 | 0.1907907 | 2.9481936 | 69  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128785 2002 XR <sub>15</sub>  |
| 2002 XH <sub>16</sub>  | 15.5 | 0.15 | 20071027 | 354.11190 | 66.32370  | 288.51214 | 14.89042 | 0.2133222 | 3.1801117 | 31  | 4 | 1998-2007 | 0.45 | M-v | 1 | MPC | 124388 2002 XH <sub>16</sub>  |
| 2002 XN <sub>16</sub>  | 14.9 | 0.15 | 20071027 | 63.40408  | 13.14419  | 346.28817 | 9.61463  | 0.2139003 | 2.7736621 | 95  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 110946 2002 XN <sub>16</sub>  |
| 2002 XU <sub>17</sub>  | 15.4 | 0.15 | 20071027 | 322.40443 | 12.30793  | 73.20537  | 2.40406  | 0.1495990 | 3.0479580 | 133 | 4 | 1991-2007 | 0.50 | M-v | 0 | MPC | 128785 2002 XU <sub>17</sub>  |
| 2002 XZ <sub>17</sub>  | 15.9 | 0.15 | 20071027 | 351.31659 | 315.61498 | 71.30181  | 5.74502  | 0.3080609 | 3.0636838 | 106 | 2 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128785 2002 XZ <sub>17</sub>  |
| 2002 XV <sub>19</sub>  | 15.1 | 0.15 | 20071027 | 25.97564  | 84.59887  | 248.16138 | 18.27351 | 0.2191543 | 3.0956434 | 50  | 3 | 2002-2007 | 0.63 | M-v | 2 | MPC | 128785 2002 XV <sub>19</sub>  |
| 2002 XZ <sub>19</sub>  | 16.3 | 0.15 | 20071027 | 355.04681 | 171.59135 | 303.30864 | 3.66757  | 0.1217678 | 2.7036121 | 44  | 5 | 1999-2007 | 0.41 | M-v | 1 | MPC | 128786 2002 XZ <sub>19</sub>  |
| 2002 XK <sub>20</sub>  | 15.4 | 0.15 | 20071027 | 32.06210  | 349.04802 | 26.65353  | 5.30406  | 0.0547000 | 2.9362883 | 59  | 5 | 2001-2007 | 0.49 | M-v | 0 | MPC | 128786 2002 XK <sub>20</sub>  |
| 2002 XM <sub>21</sub>  | 15.1 | 0.15 | 20071027 | 350.40690 | 150.47190 | 270.58397 | 9.00674  | 0.1097926 | 2.9659220 | 78  | 2 | 2002-2007 | 0.51 | M-v | 3 | MPC | 127996 2002 XM <sub>21</sub>  |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2002 XJ <sub>26</sub> | 14.5 | 0.15 | 20071027 | 302.54752 | 170.78883 | 295.17764 | 14.04053 | 0.1855216 | 2.9856306 | 76  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 61649 2002 XJ <sub>26</sub>  |
| 2002 XQ <sub>26</sub> | 15.5 | 0.15 | 20071027 | 66.11822  | 73.61051  | 302.41903 | 11.58578 | 0.2857929 | 2.6737805 | 132 | 3 | 2002-2007 | 0.45 | M-v | 1 | MPC | 128786 2002 XQ <sub>26</sub> |
| 2002 XK <sub>28</sub> | 15.3 | 0.15 | 20071027 | 1.37886   | 156.24431 | 251.99932 | 7.76645  | 0.0991312 | 2.9945746 | 95  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128786 2002 XK <sub>28</sub> |
| 2002 XJ <sub>30</sub> | 15.3 | 0.15 | 20071027 | 118.27717 | 320.27051 | 18.81806  | 12.69291 | 0.1798508 | 2.6454800 | 243 | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 114687 2002 XJ <sub>30</sub> |
| 2002 XK <sub>30</sub> | 15.3 | 0.15 | 20071027 | 48.25321  | 63.24980  | 339.44787 | 8.70747  | 0.2048933 | 2.7266825 | 157 | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128786 2002 XK <sub>30</sub> |
| 2002 XZ <sub>30</sub> | 15.5 | 0.15 | 20071027 | 332.26242 | 182.65305 | 257.56517 | 11.38719 | 0.0551471 | 2.9711137 | 61  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 127997 2002 XZ <sub>30</sub> |
| 2002 XW <sub>31</sub> | 16.6 | 0.15 | 20071027 | 74.01742  | 32.93590  | 359.20995 | 4.10447  | 0.1534288 | 2.6687887 | 126 | 5 | 1993-2007 | 0.39 | M-v | 1 | MPC | 124389 2002 XW <sub>31</sub> |
| 2002 XD <sub>32</sub> | 14.2 | 0.15 | 20071027 | 1.14781   | 87.20284  | 275.06541 | 12.83446 | 0.2102910 | 3.1680761 | 91  | 3 | 2001-2007 | 0.57 | M-v | 2 | MPC | 128786 2002 XD <sub>32</sub> |
| 2002 XW <sub>33</sub> | 15.5 | 0.15 | 20071027 | 343.67829 | 183.04560 | 250.36761 | 10.81951 | 0.0332565 | 2.9527506 | 35  | 2 | 2002-2007 | 0.40 | M-v | 4 | MPC | 127997 2002 XW <sub>33</sub> |
| 2002 XQ <sub>34</sub> | 16.1 | 0.15 | 20071027 | 54.73278  | 101.44334 | 323.18871 | 8.04358  | 0.1745811 | 2.6111626 | 63  | 4 | 1998-2007 | 0.49 | M-v | 2 | MPC | 122725 2002 XQ <sub>34</sub> |
| 2002 XJ <sub>35</sub> | 16.4 | 0.15 | 20071027 | 359.27228 | 352.07589 | 38.73367  | 3.59844  | 0.2695633 | 2.9968708 | 112 | 2 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128786 2002 XJ <sub>35</sub> |
| 2002 XD <sub>37</sub> | 15.1 | 0.15 | 20071027 | 311.45508 | 83.90296  | 27.06178  | 15.54939 | 0.2310107 | 3.1151398 | 98  | 3 | 1998-2007 | 0.53 | M-v | 3 | MPC | 128786 2002 XD <sub>37</sub> |
| 2002 XA <sub>39</sub> | 15.4 | 0.15 | 20071027 | 346.20931 | 335.26479 | 105.89394 | 13.27646 | 0.3285154 | 3.0275888 | 105 | 3 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128786 2002 XA <sub>39</sub> |
| 2002 XP <sub>39</sub> | 16.0 | 0.15 | 20071027 | 22.26888  | 40.07205  | 330.72488 | 1.63239  | 0.1461450 | 3.0408908 | 73  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128786 2002 XP <sub>39</sub> |
| 2002 XQ <sub>39</sub> | 14.4 | 0.15 | 20071027 | 126.93514 | 9.10910   | 284.81314 | 21.05840 | 0.0402579 | 3.0877277 | 66  | 6 | 2000-2007 | 0.57 | M-v | 1 | MPC | 110948 2002 XQ <sub>39</sub> |
| 2002 XV <sub>40</sub> | 14.6 | 0.15 | 20071027 | 46.59299  | 330.25589 | 52.91394  | 36.39017 | 0.2017606 | 2.7136457 | 78  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 122725 2002 XV <sub>40</sub> |
| 2002 XE <sub>43</sub> | 15.3 | 0.15 | 20071027 | 269.09167 | 133.06620 | 67.45317  | 8.77101  | 0.1507916 | 2.7931215 | 91  | 6 | 1997-2007 | 0.57 | M-v | 1 | MPC | 112839 2002 XE <sub>43</sub> |
| 2002 XE <sub>44</sub> | 15.7 | 0.15 | 20071027 | 53.70055  | 336.77616 | 56.82728  | 6.92609  | 0.0740225 | 2.7878066 | 69  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 108586 2002 XE <sub>44</sub> |
| 2002 XB <sub>46</sub> | 15.3 | 0.15 | 20071027 | 349.82287 | 128.87359 | 269.92715 | 3.72840  | 0.3419331 | 3.0713245 | 98  | 2 | 2002-2007 | 0.40 | M-v | 3 | MPC | 128786 2002 XB <sub>46</sub> |
| 2002 XD <sub>46</sub> | 16.6 | 0.15 | 20071027 | 10.40906  | 272.64780 | 99.51881  | 24.91334 | 0.1915089 | 1.9072312 | 80  | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128786 2002 XD <sub>46</sub> |
| 2002 XM <sub>46</sub> | 15.8 | 0.15 | 20071027 | 32.79479  | 341.95440 | 5.81129   | 4.30949  | 0.2637933 | 2.9867816 | 91  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 127998 2002 XM <sub>46</sub> |
| 2002 XE <sub>47</sub> | 14.4 | 0.15 | 20071027 | 353.02954 | 290.07701 | 113.90376 | 21.57832 | 0.2126662 | 3.1520207 | 48  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128786 2002 XE <sub>47</sub> |
| 2002 XS <sub>47</sub> | 15.6 | 0.15 | 20071027 | 112.37885 | 50.78202  | 311.88229 | 6.79740  | 0.0994720 | 2.6311710 | 42  | 3 | 2002-2007 | 0.45 | M-v | 4 | MPC | 108587 2002 XS <sub>47</sub> |
| 2002 XP <sub>49</sub> | 15.1 | 0.15 | 20071027 | 358.74111 | 140.77885 | 244.07530 | 9.90481  | 0.1452216 | 3.1155184 | 93  | 6 | 1991-2007 | 0.54 | M-v | 1 | MPC | 128786 2002 XP <sub>49</sub> |
| 2002 XW <sub>49</sub> | 15.4 | 0.15 | 20071027 | 61.89812  | 280.61117 | 76.37569  | 12.96396 | 0.0719236 | 2.9344867 | 52  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 128786 2002 XW <sub>49</sub> |
| 2002 XK <sub>54</sub> | 14.8 | 0.15 | 20071027 | 328.98422 | 176.94714 | 240.52849 | 24.32707 | 0.0685650 | 3.1483333 | 54  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 127999 2002 XK <sub>54</sub> |
| 2002 XG <sub>56</sub> | 14.5 | 0.15 | 20071027 | 355.63401 | 77.63709  | 296.51360 | 8.49085  | 0.1059231 | 3.1112395 | 59  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 128786 2002 XG <sub>56</sub> |
| 2002 XX <sub>56</sub> | 15.6 | 0.15 | 20071027 | 350.19078 | 228.40789 | 217.29215 | 1.60807  | 0.1762890 | 2.9281552 | 40  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 110949 2002 XX <sub>56</sub> |
| 2002 XK <sub>57</sub> | 16.0 | 0.15 | 20071027 | 332.80975 | 355.60806 | 111.59375 | 7.26727  | 0.0716101 | 2.8818394 | 38  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 110949 2002 XK <sub>57</sub> |
| 2002 XZ <sub>58</sub> | 15.3 | 0.15 | 20071027 | 341.21478 | 18.35829  | 50.33213  | 7.45173  | 0.2461624 | 3.0706201 | 133 | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128786 2002 XZ <sub>58</sub> |
| 2002 XM <sub>60</sub> | 15.6 | 0.15 | 20071027 | 311.04430 | 224.01062 | 240.64215 | 1.50630  | 0.1111014 | 3.0165028 | 92  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128787 2002 XM <sub>60</sub> |
| 2002 XF <sub>61</sub> | 15.6 | 0.15 | 20071027 | 312.43028 | 57.78984  | 49.26387  | 3.78767  | 0.2663442 | 3.0652164 | 88  | 4 | 1993-2007 | 0.52 | M-v | 1 | MPC | 128787 2002 XF <sub>61</sub> |
| 2002 XO <sub>61</sub> | 17.1 | 0.15 | 20071027 | 3.77301   | 291.37367 | 124.00925 | 2.38554  | 0.3086746 | 2.9010507 | 35  | 3 | 1997-2007 | 0.48 | M-v | 3 | MPC | 128787 2002 XO <sub>61</sub> |
| 2002 XK <sub>62</sub> | 14.9 | 0.15 | 20071027 | 12.54580  | 296.97632 | 84.99629  | 11.39477 | 0.1233732 | 3.0436447 | 50  | 3 | 2001-2007 | 0.58 | M-v | 2 | MPC | 127999 2002 XK <sub>62</sub> |
| 2002 XS <sub>62</sub> | 15.4 | 0.15 | 20071027 | 332.82831 | 349.29202 | 97.34506  | 14.62474 | 0.1248354 | 2.9970662 | 51  | 4 | 1993-2007 | 0.61 | M-v | 2 | MPC | 127999 2002 XS <sub>62</sub> |
| 2002 XD <sub>63</sub> | 15.6 | 0.15 | 20071027 | 341.99713 | 3.79811   | 53.71684  | 11.85004 | 0.1663285 | 3.0714074 | 81  | 6 | 1991-2007 | 0.54 | M-v | 1 | MPC | 127999 2002 XD <sub>63</sub> |
| 2002 XO <sub>63</sub> | 15.2 | 0.15 | 20071027 | 331.69133 | 346.93327 | 99.51189  | 7.54890  | 0.2329056 | 3.0348648 | 107 | 3 | 1994-2007 | 0.46 | M-v | 3 | MPC | 128787 2002 XO <sub>63</sub> |
| 2002 XP <sub>63</sub> | 16.0 | 0.15 | 20071027 | 347.85243 | 351.05221 | 73.50980  | 12.24964 | 0.2530636 | 3.0112939 | 62  | 2 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128787 2002 XP <sub>63</sub> |
| 2002 XY <sub>63</sub> | 15.2 | 0.15 | 20071027 | 333.37728 | 3.24042   | 82.99449  | 11.35725 | 0.0404234 | 2.9920873 | 83  | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 128787 2002 XY <sub>63</sub> |
| 2002 XD <sub>64</sub> | 16.2 | 0.15 | 20071027 | 333.72401 | 68.33233  | 49.56757  | 8.74361  | 0.1794685 | 2.8652682 | 35  | 4 | 1999-2007 | 0.44 | M-v | 1 | MPC | 121789 2002 XD <sub>64</sub> |
| 2002 XS <sub>64</sub> | 16.1 | 0.15 | 20071027 | 359.41866 | 156.60756 | 327.55803 | 4.39623  | 0.1271965 | 2.7527022 | 69  | 8 | 1994-2007 | 0.45 | M-v | 0 | MPC | 110949 2002 XS <sub>64</sub> |
| 2002 XD <sub>66</sub> | 14.4 | 0.15 | 20071027 | 305.79280 | 84.52537  | 56.59058  | 25.60625 | 0.3264277 | 3.1629254 | 146 | 5 | 1990-2007 | 0.49 | M-v | 1 | MPC | 128787 2002 XD <sub>66</sub> |
| 2002 XE <sub>66</sub> | 14.7 | 0.15 | 20071027 | 314.70818 | 82.44949  | 46.82495  | 26.06678 | 0.3099358 | 3.1604311 | 130 | 3 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128787 2002 XE <sub>66</sub> |
| 2002 XL <sub>66</sub> | 15.6 | 0.15 | 20071027 | 75.70949  | 290.40767 | 72.49006  | 7.66635  | 0.0754318 | 2.8049750 | 60  | 5 | 1997-2007 | 0.53 | M-v | 1 | MPC | 128787 2002 XL <sub>66</sub> |
| 2002 XL <sub>68</sub> | 14.4 | 0.15 | 20071027 | 335.84560 | 108.15576 | 307.96207 | 11.74227 | 0.1477831 | 3.0391689 | 119 | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128787 2002 XL <sub>68</sub> |
| 2002 XN <sub>68</sub> | 15.0 | 0.15 | 20071027 | 334.42915 | 338.93154 | 166.32088 | 13.59703 | 0.2194429 | 2.6934598 | 123 | 4 | 2002-2007 | 0.54 | M-v | 0 | MPC | 128787 2002 XN <sub>68</sub> |
| 2002 XR <sub>73</sub> | 15.6 | 0.15 | 20071027 | 313.79836 | 90.42736  | 4.80870   | 3.47296  | 0.2514445 | 3.0852682 | 97  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128787 2002 XR <sub>73</sub> |
| 2002 XV <sub>73</sub> | 15.5 | 0.15 | 20071027 | 334.83935 | 24.64692  | 64.12815  | 10.31598 | 0.2035316 | 2.9787779 | 91  | 2 | 2002-2007 | 0.49 | M-v | 3 | MPC | 128000 2002 XV <sub>73</sub> |
| 2002 XR <sub>76</sub> | 15.0 | 0.15 | 20071027 | 341.85419 | 51.44726  | 24.89420  | 4.63577  | 0.1674122 | 3.0407182 | 102 | 6 | 1996-2007 | 0.43 | M-v | 0 | MPC | 128787 2002 XR <sub>76</sub> |
| 2002 XV <sub>76</sub> | 15.4 | 0.15 | 20071027 | 318.58428 | 71.54279  | 348.22197 | 4.27151  | 0.1362035 | 3.1923681 | 58  | 2 | 2002-2007 | 0.52 | M-v | 4 | MPC | 126654 2002 XV <sub>76</sub> |
| 2002 XW <sub>76</sub> | 15.4 | 0.15 | 20071027 | 27.94046  | 50.34460  | 314.42557 | 3.25293  | 0.1838844 | 2.9952993 | 113 | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128787 2002 XW <sub>76</sub> |
| 2002 XX <sub>76</sub> | 16.1 | 0.15 | 20071027 | 358.91113 | 355.09296 | 29.43477  | 4.93359  | 0.2786792 | 3.0421072 | 172 | 3 | 1991-2007 | 0.52 | M-v | 1 | MPC | 128787 2002 XX <sub>76</sub> |
| 2002 XZ <sub>76</sub> | 15.1 | 0.15 | 20071027 | 355.15785 | 343.73040 | 59.19115  | 11.04406 | 0.0967386 | 3.0642836 | 84  | 7 | 1991-2007 | 0.60 | M-v | 1 | MPC | 128787 2002 XZ <sub>76</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2002 XH <sub>77</sub>  | 15.3 | 0.15 | 20071027 | 318.00464 | 96.53476  | 60.77953  | 8.95658  | 0.1360331 | 2.7712171 | 118 | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128787 2002 XH <sub>77</sub>  |
| 2002 XJ <sub>77</sub>  | 14.9 | 0.15 | 20071027 | 314.38424 | 187.94926 | 279.78009 | 11.10973 | 0.0402440 | 2.9838140 | 62  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 110950 2002 XJ <sub>77</sub>  |
| 2002 XM <sub>79</sub>  | 15.3 | 0.15 | 20071027 | 339.58141 | 30.90513  | 64.02929  | 5.75316  | 0.2085951 | 2.9923302 | 75  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 128787 2002 XM <sub>79</sub>  |
| 2002 XQ <sub>79</sub>  | 14.9 | 0.15 | 20071027 | 336.37861 | 14.71628  | 86.14013  | 16.51249 | 0.2133084 | 2.9933987 | 79  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128787 2002 XQ <sub>79</sub>  |
| 2002 XW <sub>82</sub>  | 15.0 | 0.15 | 20071027 | 293.23284 | 77.16187  | 61.65928  | 15.11011 | 0.1602791 | 2.9920159 | 95  | 3 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128787 2002 XW <sub>82</sub>  |
| 2002 XC <sub>84</sub>  | 15.8 | 0.15 | 20071027 | 345.49262 | 307.06153 | 186.89656 | 11.68619 | 0.3307228 | 2.8992571 | 72  | 4 | 2001-2007 | 0.44 | M-v | 2 | MPC | 116235 2002 XC <sub>84</sub>  |
| 2002 XT <sub>87</sub>  | 15.1 | 0.15 | 20071027 | 19.78146  | 66.53504  | 326.98725 | 11.44568 | 0.1951931 | 2.8859621 | 56  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 104246 2002 XT <sub>87</sub>  |
| 2002 XX <sub>87</sub>  | 15.7 | 0.15 | 20071027 | 67.16391  | 336.88386 | 30.19244  | 12.08845 | 0.3180333 | 2.7260303 | 45  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 104246 2002 XX <sub>87</sub>  |
| 2002 XH <sub>88</sub>  | 15.7 | 0.15 | 20071027 | 113.46257 | 33.72444  | 324.81731 | 12.19919 | 0.2671322 | 2.6368193 | 38  | 4 | 1995-2007 | 0.43 | M-v | 2 | MPC | 118032 2002 XH <sub>88</sub>  |
| 2002 XU <sub>90</sub>  | 15.1 | 0.15 | 20071027 | 335.56930 | 333.61908 | 107.27032 | 19.09346 | 0.2020355 | 3.1403870 | 59  | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 41367 2002 XU <sub>90</sub>   |
| 2002 XP <sub>92</sub>  | 15.9 | 0.15 | 20071027 | 12.90357  | 121.20939 | 266.73118 | 7.50475  | 0.0833109 | 2.9729304 | 60  | 5 | 1999-2007 | 0.53 | M-v | 0 | MPC | 128001 2002 XP <sub>92</sub>  |
| 2002 XD <sub>95</sub>  | 15.6 | 0.15 | 20071027 | 355.05444 | 145.97962 | 228.34585 | 3.58650  | 0.1437549 | 3.1001406 | 43  | 2 | 2002-2007 | 0.52 | M-v | 4 | MPC | 126655 2002 XD <sub>95</sub>  |
| 2002 XR <sub>95</sub>  | 16.1 | 0.15 | 20071027 | 90.77721  | 264.43626 | 83.98048  | 4.01622  | 0.1206180 | 2.7393456 | 38  | 5 | 2000-2007 | 0.48 | M-v | 0 | MPC | 128787 2002 XR <sub>95</sub>  |
| 2002 XJ <sub>99</sub>  | 15.7 | 0.15 | 20071027 | 348.60612 | 342.60607 | 79.68885  | 12.97103 | 0.2080168 | 2.9789891 | 37  | 3 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128001 2002 XJ <sub>99</sub>  |
| 2002 XW <sub>100</sub> | 16.3 | 0.15 | 20071027 | 312.90863 | 238.54447 | 243.39094 | 2.68704  | 0.1586038 | 2.9466004 | 44  | 3 | 2002-2007 | 0.33 | M-v | 2 | MPC | 128787 2002 XW <sub>100</sub> |
| 2002 XU <sub>109</sub> | 15.6 | 0.15 | 20071027 | 83.36744  | 332.54661 | 18.06214  | 5.27912  | 0.1695367 | 2.7610929 | 109 | 5 | 1997-2007 | 0.54 | M-v | 1 | MPC | 110952 2002 XU <sub>109</sub> |
| 2002 XO <sub>110</sub> | 15.1 | 0.15 | 20071027 | 326.83299 | 164.24864 | 279.62714 | 8.40544  | 0.1105069 | 3.0107391 | 78  | 2 | 2002-2007 | 0.51 | M-v | 4 | MPC | 128001 2002 XO <sub>110</sub> |
| 2002 XQ <sub>113</sub> | 14.7 | 0.15 | 20071027 | 338.82563 | 30.39330  | 12.24654  | 12.61748 | 0.2733708 | 3.1169749 | 152 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128788 2002 XQ <sub>113</sub> |
| 2002 YY <sub>1</sub>   | 16.9 | 0.15 | 20071027 | 319.14670 | 36.76326  | 35.86628  | 21.99366 | 0.0977645 | 1.9157531 | 93  | 3 | 2002-2007 | 0.61 | M-v | 2 | MPC | 128788 2002 YY <sub>1</sub>   |
| 2002 YC <sub>5</sub>   | 15.5 | 0.15 | 20071027 | 332.49326 | 70.72797  | 3.58215   | 24.75576 | 0.3186141 | 3.1801032 | 89  | 3 | 2001-2007 | 0.59 | M-v | 1 | MPC | 128788 2002 YC <sub>5</sub>   |
| 2002 YB <sub>7</sub>   | 14.6 | 0.15 | 20071027 | 288.53558 | 40.11120  | 104.04661 | 18.39849 | 0.1684091 | 3.1806313 | 63  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128002 2002 YB <sub>7</sub>   |
| 2002 YE <sub>9</sub>   | 15.3 | 0.15 | 20071027 | 350.27218 | 329.83142 | 120.14656 | 3.54426  | 0.1349515 | 2.9469432 | 61  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 122726 2002 YE <sub>9</sub>   |
| 2002 YM <sub>9</sub>   | 15.5 | 0.15 | 20071027 | 1.75580   | 154.78161 | 241.69905 | 2.04616  | 0.3120477 | 3.0405187 | 114 | 3 | 2001-2007 | 0.45 | M-v | 2 | MPC | 128788 2002 YM <sub>9</sub>   |
| 2002 YQ <sub>9</sub>   | 15.5 | 0.15 | 20071027 | 356.83555 | 292.28792 | 142.84721 | 2.91788  | 0.1563496 | 2.9786555 | 58  | 5 | 1960-2007 | 0.56 | M-v | 1 | MPC | 128788 2002 YQ <sub>9</sub>   |
| 2002 YA <sub>10</sub>  | 15.2 | 0.15 | 20071027 | 321.25052 | 3.93313   | 95.10897  | 11.94205 | 0.1654377 | 3.0979282 | 68  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128788 2002 YA <sub>10</sub>  |
| 2002 YC <sub>10</sub>  | 14.7 | 0.15 | 20071027 | 307.62177 | 170.91356 | 287.81861 | 8.90950  | 0.0329906 | 3.2011084 | 57  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 128002 2002 YC <sub>10</sub>  |
| 2002 YN <sub>10</sub>  | 15.4 | 0.15 | 20071027 | 327.65850 | 140.58640 | 312.67720 | 3.99506  | 0.2162070 | 3.0830790 | 79  | 2 | 2002-2007 | 0.50 | M-v | 4 | MPC | 128002 2002 YN <sub>10</sub>  |
| 2002 YP <sub>12</sub>  | 14.8 | 0.15 | 20071027 | 331.53194 | 154.31591 | 270.62613 | 5.80469  | 0.2701305 | 3.0980447 | 112 | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128788 2002 YP <sub>12</sub>  |
| 2002 YQ <sub>12</sub>  | 15.2 | 0.15 | 20071027 | 317.36188 | 279.43617 | 268.77531 | 11.14865 | 0.1473106 | 2.6568902 | 59  | 4 | 2002-2007 | 0.40 | M-v | 1 | MPC | 116237 2002 YQ <sub>12</sub>  |
| 2002 YY <sub>15</sub>  | 15.4 | 0.15 | 20071027 | 304.70716 | 45.62789  | 78.64951  | 4.29165  | 0.2344773 | 2.9908541 | 86  | 3 | 2002-2007 | 0.57 | M-v | 2 | MPC | 128788 2002 YY <sub>15</sub>  |
| 2002 YB <sub>16</sub>  | 15.9 | 0.15 | 20071027 | 327.19163 | 228.90605 | 265.73469 | 8.23917  | 0.1039467 | 2.7787298 | 37  | 5 | 2001-2007 | 0.48 | M-v | 0 | MPC | 110953 2002 YB <sub>16</sub>  |
| 2002 YV <sub>18</sub>  | 15.3 | 0.15 | 20071027 | 69.11927  | 206.83767 | 164.55077 | 2.12190  | 0.2368748 | 2.7654621 | 156 | 6 | 1997-2007 | 0.45 | M-v | 1 | MPC | 114690 2002 YV <sub>18</sub>  |
| 2002 YM <sub>19</sub>  | 15.9 | 0.15 | 20071027 | 64.09327  | 75.96869  | 321.29068 | 0.52600  | 0.2516743 | 2.7030308 | 102 | 3 | 2002-2007 | 0.44 | M-v | 2 | MPC | 114690 2002 YM <sub>19</sub>  |
| 2002 YB <sub>22</sub>  | 15.2 | 0.15 | 20071027 | 319.70627 | 3.47475   | 84.27727  | 2.85908  | 0.1473296 | 3.1286693 | 77  | 5 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128788 2002 YB <sub>22</sub>  |
| 2002 YP <sub>22</sub>  | 15.2 | 0.15 | 20071027 | 295.95907 | 24.18050  | 95.01550  | 20.37151 | 0.0469318 | 3.1263937 | 46  | 4 | 1999-2007 | 0.61 | M-v | 1 | MPC | 128788 2002 YP <sub>22</sub>  |
| 2002 YR <sub>22</sub>  | 15.0 | 0.15 | 20071027 | 206.98981 | 136.79344 | 99.50840  | 11.23816 | 0.0582443 | 2.9647278 | 47  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 110953 2002 YR <sub>22</sub>  |
| 2002 YD <sub>23</sub>  | 16.4 | 0.15 | 20071027 | 343.53619 | 161.44727 | 267.76459 | 0.44658  | 0.2761413 | 3.0468755 | 117 | 4 | 1991-2007 | 0.44 | M-v | 0 | MPC | 128788 2002 YD <sub>23</sub>  |
| 2002 YP <sub>23</sub>  | 15.8 | 0.15 | 20071027 | 36.47019  | 311.67098 | 114.69613 | 2.76747  | 0.1941486 | 2.7848778 | 100 | 6 | 1992-2007 | 0.46 | M-v | 0 | MPC | 110953 2002 YP <sub>23</sub>  |
| 2002 YR <sub>29</sub>  | 15.2 | 0.15 | 20071027 | 305.54918 | 190.76487 | 295.48751 | 7.30373  | 0.0500457 | 3.1189297 | 46  | 6 | 1992-2007 | 0.44 | M-v | 0 | MPC | 110954 2002 YR <sub>29</sub>  |
| 2002 YY <sub>29</sub>  | 14.4 | 0.15 | 20071027 | 264.60399 | 263.75720 | 302.68034 | 10.03497 | 0.1826080 | 3.0102503 | 76  | 7 | 1998-2007 | 0.57 | M-v | 1 | MPC | 110954 2002 YY <sub>29</sub>  |
| 2002 YD <sub>31</sub>  | 15.5 | 0.15 | 20071027 | 331.21350 | 172.26568 | 290.89356 | 9.81469  | 0.0787159 | 3.0685100 | 42  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128788 2002 YD <sub>31</sub>  |
| 2002 YF <sub>31</sub>  | 14.6 | 0.15 | 20071027 | 284.77470 | 7.11486   | 130.30044 | 5.94019  | 0.1188367 | 3.1939212 | 101 | 6 | 1992-2007 | 0.57 | M-v | 0 | MPC | 128788 2002 YF <sub>31</sub>  |
| 2002 YA <sub>32</sub>  | 15.7 | 0.15 | 20071027 | 348.75919 | 144.47843 | 286.38038 | 7.72757  | 0.1631426 | 3.0808024 | 78  | 3 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128788 2002 YA <sub>32</sub>  |
| 2002 YO <sub>36</sub>  | 15.8 | 0.15 | 20071027 | 292.46631 | 140.77547 | 34.44220  | 15.45306 | 0.2527242 | 3.0564048 | 42  | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 108620 2002 YO <sub>36</sub>  |
| 2003 AD <sub>1</sub>   | 18.2 | 0.15 | 20071027 | 312.62045 | 44.66559  | 117.59108 | 27.13551 | 0.3224006 | 1.8197826 | 137 | 3 | 2003-2007 | 0.50 | M-v | 1 | MPC | 126655 2003 AD <sub>1</sub>   |
| 2003 AP <sub>1</sub>   | 14.5 | 0.15 | 20071027 | 273.84181 | 32.98458  | 128.37047 | 17.07285 | 0.0775916 | 3.0923206 | 70  | 6 | 1999-2007 | 0.50 | M-v | 0 | MPC | 110954 2003 AP <sub>1</sub>   |
| 2003 AZ <sub>2</sub>   | 18.3 | 0.15 | 20071027 | 80.87819  | 186.80107 | 131.66323 | 22.86561 | 0.2237311 | 1.4198792 | 87  | 3 | 2002-2007 | 0.56 | M-v | 2 | MPC | 77684 2003 AZ <sub>2</sub>    |
| 2003 AG <sub>3</sub>   | 15.8 | 0.15 | 20071027 | 206.62538 | 325.30828 | 261.21589 | 10.99159 | 0.0209905 | 2.9133757 | 31  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 122727 2003 AG <sub>3</sub>   |
| 2003 AL <sub>3</sub>   | 14.9 | 0.15 | 20071027 | 37.56933  | 304.47085 | 74.64505  | 34.66756 | 0.2078330 | 2.7485822 | 54  | 5 | 1998-2007 | 0.68 | M-v | 1 | MPC | 128788 2003 AL <sub>3</sub>   |
| 2003 AS <sub>4</sub>   | 15.2 | 0.15 | 20071027 | 258.73596 | 139.09758 | 351.94559 | 16.31327 | 0.1920591 | 3.1714471 | 141 | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 126655 2003 AS <sub>4</sub>   |
| 2003 AY <sub>4</sub>   | 14.6 | 0.15 | 20071027 | 57.56376  | 73.00018  | 283.84705 | 14.39020 | 0.1300314 | 3.0673384 | 96  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 112845 2003 AY <sub>4</sub>   |
| 2003 AP <sub>6</sub>   | 15.4 | 0.15 | 20071027 | 275.89310 | 82.18970  | 113.68943 | 3.32511  | 0.2010934 | 3.0242879 | 85  | 8 | 1993-2007 | 0.56 | M-v | 1 | MPC | 110954 2003 AP <sub>6</sub>   |
| 2003 AY <sub>6</sub>   | 15.2 | 0.15 | 20071027 | 9.77553   | 322.83581 | 89.49150  | 11.49476 | 0.0980337 | 2.9643906 | 59  | 6 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128788 2003 AY <sub>6</sub>   |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 AH <sub>7</sub>  | 14.7 | 0.15 | 20071027 | 247.64191 | 86.96995  | 69.56355  | 17.64604 | 0.0937557 | 3.2294306 | 77  | 3 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128788 2003 AH <sub>7</sub>  |
| 2003 AX <sub>12</sub> | 14.1 | 0.15 | 20071027 | 272.39251 | 31.92392  | 119.22766 | 28.45103 | 0.1319110 | 3.1556989 | 81  | 4 | 2001-2007 | 0.52 | M-v | 0 | MPC | 85826 2003 AX <sub>12</sub>  |
| 2003 AJ <sub>14</sub> | 15.4 | 0.15 | 20071027 | 335.67299 | 221.20454 | 212.66680 | 8.50176  | 0.1269603 | 3.0595433 | 81  | 5 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128788 2003 AJ <sub>14</sub> |
| 2003 AZ <sub>15</sub> | 15.2 | 0.15 | 20071027 | 135.28375 | 193.65382 | 97.68540  | 11.70574 | 0.0402741 | 3.0687446 | 56  | 7 | 1996-2007 | 0.57 | M-v | 0 | MPC | 110955 2003 AZ <sub>15</sub> |
| 2003 AO <sub>16</sub> | 15.1 | 0.15 | 20071027 | 342.16890 | 331.81797 | 109.34585 | 18.01272 | 0.2605831 | 3.0923946 | 72  | 5 | 1992-2007 | 0.46 | M-v | 0 | MPC | 128789 2003 AO <sub>16</sub> |
| 2003 AR <sub>16</sub> | 13.8 | 0.15 | 20071027 | 248.70364 | 289.37512 | 288.00850 | 24.88192 | 0.1832582 | 3.1262797 | 33  | 4 | 1999-2007 | 0.58 | M-v | 1 | MPC | 85828 2003 AR <sub>16</sub>  |
| 2003 AV <sub>16</sub> | 15.8 | 0.15 | 20071027 | 26.97138  | 96.60037  | 296.37273 | 9.48598  | 0.1195730 | 3.0049099 | 44  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 104247 2003 AV <sub>16</sub> |
| 2003 AX <sub>16</sub> | 15.9 | 0.15 | 20071027 | 346.91232 | 154.30290 | 270.52907 | 4.02461  | 0.1419211 | 3.1016929 | 53  | 4 | 2001-2007 | 0.55 | M-v | 0 | MPC | 128789 2003 AX <sub>16</sub> |
| 2003 AG <sub>18</sub> | 15.9 | 0.15 | 20071027 | 306.53714 | 150.89659 | 4.03706   | 10.76430 | 0.2456272 | 3.0363868 | 53  | 4 | 1998-2007 | 0.67 | M-v | 2 | MPC | 122727 2003 AG <sub>18</sub> |
| 2003 AO <sub>19</sub> | 15.0 | 0.15 | 20071027 | 0.99273   | 356.40960 | 70.39828  | 9.90315  | 0.0778846 | 2.9863173 | 60  | 3 | 2002-2007 | 0.43 | M-v | 3 | MPC | 128789 2003 AO <sub>19</sub> |
| 2003 AA <sub>21</sub> | 14.8 | 0.15 | 20071027 | 246.14525 | 100.06355 | 85.71620  | 6.70304  | 0.0934106 | 3.1126764 | 62  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128789 2003 AA <sub>21</sub> |
| 2003 AV <sub>21</sub> | 15.1 | 0.15 | 20071027 | 24.09906  | 321.24284 | 83.54278  | 11.27914 | 0.0804277 | 3.0439456 | 58  | 5 | 2001-2007 | 0.56 | M-v | 0 | MPC | 128789 2003 AV <sub>21</sub> |
| 2003 AC <sub>22</sub> | 16.4 | 0.15 | 20071027 | 324.83943 | 72.57798  | 55.80300  | 4.01684  | 0.1732664 | 2.9828974 | 39  | 6 | 2001-2007 | 0.49 | M-v | 0 | MPC | 110955 2003 AC <sub>22</sub> |
| 2003 AH <sub>25</sub> | 15.0 | 0.15 | 20071027 | 293.05703 | 36.36339  | 99.59381  | 14.41176 | 0.1359766 | 3.0688923 | 57  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128789 2003 AH <sub>25</sub> |
| 2003 AU <sub>26</sub> | 15.8 | 0.15 | 20071027 | 340.40708 | 328.33393 | 123.10779 | 2.87746  | 0.1570368 | 3.0375373 | 43  | 5 | 2001-2007 | 0.53 | M-v | 0 | MPC | 128789 2003 AU <sub>26</sub> |
| 2003 AN <sub>27</sub> | 16.5 | 0.15 | 20071027 | 314.53491 | 39.20123  | 89.58356  | 3.54306  | 0.1891976 | 3.0424991 | 48  | 6 | 1993-2007 | 0.62 | M-v | 0 | MPC | 128789 2003 AN <sub>27</sub> |
| 2003 AG <sub>28</sub> | 14.8 | 0.15 | 20071027 | 312.40223 | 349.81000 | 115.34262 | 12.42048 | 0.0946213 | 3.1868693 | 64  | 5 | 1993-2007 | 0.62 | M-v | 1 | MPC | 128789 2003 AG <sub>28</sub> |
| 2003 AO <sub>29</sub> | 15.8 | 0.15 | 20071027 | 350.23586 | 294.15555 | 132.24876 | 8.80608  | 0.2886280 | 3.0754336 | 82  | 3 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128004 2003 AO <sub>29</sub> |
| 2003 AO <sub>31</sub> | 15.0 | 0.15 | 20071027 | 330.92443 | 2.50417   | 74.88749  | 11.30057 | 0.1346104 | 3.0941061 | 52  | 2 | 2002-2007 | 0.54 | M-v | 3 | MPC | 128004 2003 AO <sub>31</sub> |
| 2003 AZ <sub>34</sub> | 14.8 | 0.15 | 20071027 | 15.85238  | 311.42243 | 104.36537 | 13.07413 | 0.0467203 | 2.9496781 | 64  | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 112846 2003 AZ <sub>34</sub> |
| 2003 AH <sub>40</sub> | 14.6 | 0.15 | 20071027 | 295.16407 | 336.82424 | 160.04134 | 8.22400  | 0.0865522 | 3.1654009 | 54  | 6 | 1998-2007 | 0.61 | M-v | 1 | MPC | 128789 2003 AH <sub>40</sub> |
| 2003 AY <sub>40</sub> | 15.2 | 0.15 | 20071027 | 338.58229 | 188.59570 | 279.63261 | 9.37673  | 0.2170137 | 3.0347520 | 83  | 5 | 1995-2007 | 0.54 | M-v | 1 | MPC | 128789 2003 AY <sub>40</sub> |
| 2003 AE <sub>46</sub> | 16.1 | 0.15 | 20071027 | 358.68952 | 174.75095 | 310.24781 | 8.18318  | 0.0885848 | 2.7686007 | 33  | 5 | 1994-2007 | 0.47 | M-v | 1 | MPC | 110957 2003 AE <sub>46</sub> |
| 2003 AA <sub>50</sub> | 14.4 | 0.15 | 20071027 | 286.43219 | 34.78639  | 102.78295 | 17.39494 | 0.0891486 | 3.1555322 | 63  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128789 2003 AA <sub>50</sub> |
| 2003 AD <sub>50</sub> | 15.8 | 0.15 | 20071027 | 50.66429  | 359.37487 | 97.13142  | 13.94769 | 0.1356089 | 2.6529185 | 55  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 120773 2003 AD <sub>50</sub> |
| 2003 AC <sub>51</sub> | 15.1 | 0.15 | 20071027 | 340.25969 | 1.64379   | 101.17923 | 11.41647 | 0.0610054 | 3.0117641 | 42  | 5 | 2001-2007 | 0.64 | M-v | 1 | MPC | 110957 2003 AC <sub>51</sub> |
| 2003 AG <sub>52</sub> | 15.3 | 0.15 | 20071027 | 325.97990 | 132.29764 | 333.77636 | 5.38366  | 0.0830380 | 3.0927780 | 27  | 3 | 2002-2007 | 0.51 | M-v | 4 | MPC | 114003 2003 AG <sub>52</sub> |
| 2003 AK <sub>53</sub> | 14.7 | 0.15 | 20071027 | 344.74997 | 333.16836 | 105.39449 | 16.47095 | 0.2305145 | 3.0743763 | 83  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128789 2003 AK <sub>53</sub> |
| 2003 AC <sub>54</sub> | 15.2 | 0.15 | 20071027 | 311.86234 | 24.93723  | 85.63468  | 6.37872  | 0.1622831 | 3.1652840 | 52  | 3 | 2001-2007 | 0.45 | M-v | 3 | MPC | 128789 2003 AC <sub>54</sub> |
| 2003 AO <sub>54</sub> | 15.5 | 0.15 | 20071027 | 282.32401 | 213.49650 | 309.47987 | 11.52038 | 0.1587028 | 3.1106200 | 57  | 4 | 1992-2007 | 0.55 | M-v | 1 | MPC | 104248 2003 AO <sub>54</sub> |
| 2003 AO <sub>56</sub> | 15.4 | 0.15 | 20071027 | 27.94345  | 69.86677  | 317.21638 | 14.07604 | 0.0666289 | 3.1658106 | 43  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128789 2003 AO <sub>56</sub> |
| 2003 AG <sub>59</sub> | 14.2 | 0.15 | 20071027 | 292.59467 | 44.31971  | 118.43651 | 16.77929 | 0.2400882 | 3.1402755 | 100 | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 87568 2003 AG <sub>59</sub>  |
| 2003 AJ <sub>59</sub> | 14.4 | 0.15 | 20071027 | 293.16372 | 43.99423  | 111.43740 | 9.40278  | 0.2280533 | 3.1650216 | 105 | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128789 2003 AJ <sub>59</sub> |
| 2003 AP <sub>59</sub> | 14.3 | 0.15 | 20071027 | 241.88683 | 246.90873 | 335.48219 | 15.34918 | 0.1793518 | 3.1914291 | 120 | 4 | 2003-2007 | 0.57 | M-v | 1 | MPC | 110958 2003 AP <sub>59</sub> |
| 2003 AD <sub>61</sub> | 14.8 | 0.15 | 20071027 | 336.95313 | 163.16787 | 274.66252 | 13.36138 | 0.0319732 | 3.1672721 | 45  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128789 2003 AD <sub>61</sub> |
| 2003 AG <sub>61</sub> | 15.0 | 0.15 | 20071027 | 298.00877 | 346.16441 | 148.95061 | 10.29109 | 0.1889385 | 3.1146688 | 95  | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128789 2003 AG <sub>61</sub> |
| 2003 AC <sub>62</sub> | 16.4 | 0.15 | 20071027 | 1.12840   | 274.54388 | 143.91475 | 23.50459 | 0.1112919 | 1.8993081 | 139 | 4 | 2003-2007 | 0.54 | M-v | 1 | MPC | 102142 2003 AC <sub>62</sub> |
| 2003 AK <sub>63</sub> | 15.6 | 0.15 | 20071027 | 302.47398 | 61.54793  | 71.36262  | 1.94257  | 0.1278795 | 3.0861244 | 41  | 4 | 2001-2007 | 0.42 | M-v | 0 | MPC | 74247 2003 AK <sub>63</sub>  |
| 2003 AV <sub>64</sub> | 15.2 | 0.15 | 20071027 | 355.65460 | 17.65755  | 14.07462  | 9.97559  | 0.3433987 | 3.0956203 | 210 | 4 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128789 2003 AV <sub>64</sub> |
| 2003 AX <sub>64</sub> | 14.6 | 0.15 | 20071027 | 268.52596 | 83.67659  | 83.23779  | 26.37026 | 0.2562074 | 3.1898025 | 63  | 4 | 1998-2007 | 0.50 | M-v | 1 | MPC | 65422 2003 AX <sub>64</sub>  |
| 2003 AM <sub>65</sub> | 14.9 | 0.15 | 20071027 | 315.36692 | 23.05291  | 81.87738  | 18.70437 | 0.2084845 | 3.1372207 | 56  | 4 | 1993-2007 | 0.42 | M-v | 1 | MPC | 128789 2003 AM <sub>65</sub> |
| 2003 AL <sub>66</sub> | 14.5 | 0.15 | 20071027 | 343.98568 | 6.08027   | 70.68130  | 17.95233 | 0.0766639 | 3.0877083 | 76  | 6 | 1996-2007 | 0.55 | M-v | 1 | MPC | 128789 2003 AL <sub>66</sub> |
| 2003 AG <sub>67</sub> | 15.1 | 0.15 | 20071027 | 325.36904 | 36.38710  | 80.27821  | 13.39157 | 0.2355573 | 3.0930481 | 64  | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128004 2003 AG <sub>67</sub> |
| 2003 AT <sub>67</sub> | 14.5 | 0.15 | 20071027 | 341.80839 | 325.05500 | 108.98210 | 34.22435 | 0.1239702 | 3.2070399 | 46  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 75830 2003 AT <sub>67</sub>  |
| 2003 AY <sub>69</sub> | 16.5 | 0.15 | 20071027 | 309.12724 | 34.39898  | 61.69678  | 0.17619  | 0.2780126 | 3.2336870 | 37  | 3 | 2001-2007 | 0.42 | M-v | 3 | MPC | 128790 2003 AY <sub>69</sub> |
| 2003 AZ <sub>69</sub> | 16.2 | 0.15 | 20071027 | 311.27333 | 51.05185  | 72.00495  | 0.24374  | 0.2641227 | 3.1179716 | 84  | 3 | 1992-2007 | 0.43 | M-v | 2 | MPC | 128005 2003 AZ <sub>69</sub> |
| 2003 AS <sub>70</sub> | 15.4 | 0.15 | 20071027 | 333.01017 | 9.91933   | 82.47319  | 6.01635  | 0.1370124 | 3.0931848 | 59  | 3 | 1993-2007 | 0.49 | M-v | 3 | MPC | 128005 2003 AS <sub>70</sub> |
| 2003 AY <sub>71</sub> | 15.0 | 0.15 | 20071027 | 327.65138 | 15.54836  | 55.24945  | 16.22634 | 0.2649908 | 3.1726807 | 64  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128005 2003 AY <sub>71</sub> |
| 2003 AM <sub>72</sub> | 17.6 | 0.15 | 20071027 | 325.86243 | 1.76959   | 88.06420  | 24.92582 | 0.0791405 | 1.8859819 | 36  | 3 | 2002-2007 | 0.40 | M-v | 2 | MPC | 70353 2003 AM <sub>72</sub>  |
| 2003 AY <sub>72</sub> | 15.3 | 0.15 | 20071027 | 289.54846 | 77.87314  | 79.28835  | 9.58409  | 0.2363499 | 3.1063150 | 68  | 4 | 1998-2007 | 0.44 | M-v | 1 | MPC | 128790 2003 AY <sub>72</sub> |
| 2003 AZ <sub>72</sub> | 16.0 | 0.15 | 20071027 | 298.18238 | 152.93256 | 8.13711   | 4.62034  | 0.1746645 | 2.9915314 | 32  | 5 | 1991-2007 | 0.42 | M-v | 0 | MPC | 118036 2003 AZ <sub>72</sub> |
| 2003 AK <sub>76</sub> | 14.8 | 0.15 | 20071027 | 319.03759 | 49.81093  | 62.11647  | 11.73426 | 0.2452692 | 3.0488995 | 108 | 4 | 1991-2007 | 0.47 | M-v | 1 | MPC | 128790 2003 AK <sub>76</sub> |
| 2003 AS <sub>76</sub> | 15.8 | 0.15 | 20071027 | 317.13591 | 86.33246  | 22.09330  | 10.25499 | 0.2238465 | 3.1331094 | 47  | 3 | 1998-2007 | 0.51 | M-v | 3 | MPC | 128006 2003 AS <sub>76</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 AF <sub>77</sub> | 16.3 | 0.15 | 20071027 | 9.11649   | 60.12517  | 66.61583  | 10.18701 | 0.2096720 | 2.7578439 | 55  | 5 | 1993-2007 | 0.66 | M-v | 1 | MPC | 110958 2003 AF <sub>77</sub> |
| 2003 AW <sub>77</sub> | 16.0 | 0.15 | 20071027 | 351.99793 | 58.21243  | 22.70980  | 10.46448 | 0.3614846 | 3.0001089 | 75  | 3 | 1991-2007 | 0.46 | M-v | 1 | MPC | 128790 2003 AW <sub>77</sub> |
| 2003 AU <sub>78</sub> | 15.4 | 0.15 | 20071027 | 306.33704 | 58.88516  | 75.56674  | 11.30495 | 0.1364072 | 3.1060504 | 50  | 4 | 2001-2007 | 0.48 | M-v | 0 | MPC | 65424 2003 AU <sub>78</sub>  |
| 2003 AX <sub>79</sub> | 14.8 | 0.15 | 20071027 | 314.61305 | 61.63147  | 80.24058  | 17.52882 | 0.2906045 | 3.0622153 | 91  | 3 | 1998-2007 | 0.53 | M-v | 2 | MPC | 128790 2003 AX <sub>79</sub> |
| 2003 AW <sub>80</sub> | 15.7 | 0.15 | 20071027 | 314.88123 | 68.30046  | 77.13471  | 26.11944 | 0.4005158 | 3.1012106 | 62  | 2 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128006 2003 AW <sub>80</sub> |
| 2003 AL <sub>81</sub> | 14.7 | 0.15 | 20071027 | 35.63331  | 335.51678 | 56.20054  | 17.53486 | 0.2135069 | 2.9355603 | 78  | 3 | 2002-2007 | 0.57 | M-v | 1 | MPC | 128790 2003 AL <sub>81</sub> |
| 2003 AV <sub>81</sub> | 14.8 | 0.15 | 20071027 | 350.64301 | 10.51830  | 48.33050  | 18.63528 | 0.2041691 | 3.1034006 | 109 | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128006 2003 AV <sub>81</sub> |
| 2003 AR <sub>84</sub> | 16.0 | 0.15 | 20071027 | 348.62158 | 7.42415   | 66.77194  | 8.64376  | 0.2366871 | 3.0262056 | 52  | 2 | 2003-2007 | 0.41 | M-v | 3 | MPC | 128007 2003 AR <sub>84</sub> |
| 2003 AG <sub>85</sub> | 15.5 | 0.15 | 20071027 | 291.02692 | 76.16770  | 78.67565  | 10.80183 | 0.1898622 | 3.1447884 | 55  | 4 | 1990-2007 | 0.60 | M-v | 1 | MPC | 128790 2003 AG <sub>85</sub> |
| 2003 AS <sub>86</sub> | 15.7 | 0.15 | 20071027 | 318.02183 | 1.52739   | 117.40766 | 13.42464 | 0.2036031 | 2.9894715 | 28  | 2 | 2002-2007 | 0.61 | M-v | 4 | MPC | 128007 2003 AS <sub>86</sub> |
| 2003 AW <sub>88</sub> | 14.3 | 0.15 | 20071027 | 278.28057 | 264.32650 | 274.97369 | 23.52971 | 0.2293195 | 3.1675911 | 45  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 122727 2003 AW <sub>88</sub> |
| 2003 AL <sub>89</sub> | 14.8 | 0.15 | 20071027 | 258.37854 | 101.72194 | 56.78704  | 12.28548 | 0.1551323 | 3.2082129 | 60  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128790 2003 AL <sub>89</sub> |
| 2003 AA <sub>90</sub> | 15.4 | 0.15 | 20071027 | 314.14744 | 176.39199 | 289.58170 | 15.35969 | 0.0844534 | 3.1742239 | 38  | 5 | 2000-2007 | 0.60 | M-v | 0 | MPC | 85856 2003 AA <sub>90</sub>  |
| 2003 AL <sub>90</sub> | 15.0 | 0.15 | 20071027 | 313.19303 | 41.74012  | 70.38146  | 12.95737 | 0.1178122 | 3.1207998 | 66  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128790 2003 AL <sub>90</sub> |
| 2003 AM <sub>92</sub> | 14.4 | 0.15 | 20071027 | 238.47223 | 284.58648 | 281.90901 | 13.38286 | 0.2125385 | 3.1051407 | 30  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 85858 2003 AM <sub>92</sub>  |
| 2003 AY <sub>93</sub> | 16.4 | 0.15 | 20071027 | 358.99037 | 184.34675 | 242.74914 | 13.71433 | 0.2178051 | 3.0773844 | 63  | 4 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128790 2003 AY <sub>93</sub> |
| 2003 AH <sub>94</sub> | 15.2 | 0.15 | 20071027 | 3.70852   | 25.94680  | 74.07302  | 11.29652 | 0.0739241 | 3.0093713 | 68  | 4 | 2003-2007 | 0.43 | M-v | 1 | MPC | 128790 2003 AH <sub>94</sub> |
| 2003 AN <sub>94</sub> | 15.6 | 0.15 | 20071027 | 359.46266 | 91.45636  | 54.35944  | 9.90660  | 0.0980457 | 2.7940461 | 38  | 4 | 2001-2007 | 0.43 | M-v | 2 | MPC | 122727 2003 AN <sub>94</sub> |
| 2003 BC <sub>1</sub>  | 14.9 | 0.15 | 20071027 | 228.86786 | 146.61618 | 79.35544  | 13.45283 | 0.2484581 | 3.1327902 | 85  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128790 2003 BC <sub>1</sub>  |
| 2003 BW <sub>1</sub>  | 15.5 | 0.15 | 20071027 | 338.10562 | 324.12578 | 124.05782 | 11.51566 | 0.2050129 | 3.0929804 | 127 | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128790 2003 BW <sub>1</sub>  |
| 2003 BX <sub>1</sub>  | 15.6 | 0.15 | 20071027 | 17.81567  | 91.94036  | 302.69292 | 14.72539 | 0.2443278 | 3.0830282 | 50  | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 114007 2003 BX <sub>1</sub>  |
| 2003 BY <sub>10</sub> | 15.7 | 0.15 | 20071027 | 16.68424  | 152.82373 | 336.87542 | 13.32840 | 0.1149032 | 2.7829201 | 59  | 4 | 2003-2007 | 0.54 | M-v | 1 | MPC | 112849 2003 BY <sub>10</sub> |
| 2003 BN <sub>11</sub> | 15.0 | 0.15 | 20071027 | 323.22523 | 348.22981 | 130.75071 | 18.72418 | 0.1351318 | 3.1222962 | 50  | 4 | 1992-2007 | 0.55 | M-v | 1 | MPC | 103496 2003 BN <sub>11</sub> |
| 2003 BZ <sub>11</sub> | 15.4 | 0.15 | 20071027 | 287.30626 | 115.19972 | 55.97671  | 1.67141  | 0.1232892 | 3.1049245 | 78  | 6 | 1998-2007 | 0.54 | M-v | 1 | MPC | 110960 2003 BZ <sub>11</sub> |
| 2003 BB <sub>12</sub> | 14.6 | 0.15 | 20071027 | 334.75382 | 162.14199 | 320.98353 | 10.76400 | 0.0873004 | 3.0516362 | 70  | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 110960 2003 BB <sub>12</sub> |
| 2003 BR <sub>12</sub> | 15.3 | 0.15 | 20071027 | 337.69874 | 151.18158 | 274.13061 | 13.87925 | 0.2692115 | 3.1742140 | 59  | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128008 2003 BR <sub>12</sub> |
| 2003 BF <sub>13</sub> | 15.1 | 0.15 | 20071027 | 306.89897 | 232.22941 | 261.09131 | 9.11064  | 0.0736706 | 3.0860451 | 53  | 5 | 2001-2007 | 0.44 | M-v | 0 | MPC | 128790 2003 BF <sub>13</sub> |
| 2003 BT <sub>15</sub> | 14.9 | 0.15 | 20071027 | 283.59686 | 78.58040  | 117.48858 | 12.74484 | 0.1262351 | 3.0291590 | 66  | 6 | 1998-2007 | 0.51 | M-v | 1 | MPC | 114694 2003 BT <sub>15</sub> |
| 2003 BZ <sub>16</sub> | 14.8 | 0.15 | 20071027 | 319.83665 | 118.15165 | 355.73509 | 12.26614 | 0.1278106 | 3.2190420 | 41  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 122728 2003 BZ <sub>16</sub> |
| 2003 BM <sub>18</sub> | 15.4 | 0.15 | 20071027 | 307.33651 | 168.31126 | 312.51716 | 9.10509  | 0.0569427 | 3.2369829 | 43  | 3 | 2003-2007 | 0.48 | M-v | 3 | MPC | 112311 2003 BM <sub>18</sub> |
| 2003 BC <sub>24</sub> | 15.4 | 0.15 | 20071027 | 326.08895 | 225.09953 | 231.98061 | 10.62556 | 0.2365029 | 3.1683272 | 95  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128790 2003 BC <sub>24</sub> |
| 2003 BD <sub>25</sub> | 13.9 | 0.15 | 20071027 | 260.47033 | 277.28357 | 302.59166 | 20.28091 | 0.2191234 | 3.1059459 | 45  | 4 | 2003-2007 | 0.53 | M-v | 2 | MPC | 112311 2003 BD <sub>25</sub> |
| 2003 BF <sub>33</sub> | 16.0 | 0.15 | 20071027 | 359.49278 | 329.31632 | 115.95841 | 5.37065  | 0.1003690 | 3.0247682 | 57  | 6 | 1998-2007 | 0.46 | M-v | 0 | MPC | 110961 2003 BF <sub>33</sub> |
| 2003 BH <sub>33</sub> | 15.3 | 0.15 | 20071027 | 307.81623 | 229.02663 | 260.63719 | 9.50449  | 0.2257788 | 3.1420335 | 65  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128008 2003 BH <sub>33</sub> |
| 2003 BK <sub>38</sub> | 15.4 | 0.15 | 20071027 | 357.14432 | 125.90265 | 316.25050 | 10.07068 | 0.2137436 | 3.0129279 | 58  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 110961 2003 BK <sub>38</sub> |
| 2003 BY <sub>38</sub> | 14.8 | 0.15 | 20071027 | 58.72637  | 61.56202  | 298.50036 | 12.33476 | 0.1824920 | 3.1288985 | 103 | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 108657 2003 BY <sub>38</sub> |
| 2003 BN <sub>42</sub> | 15.0 | 0.15 | 20071027 | 310.60383 | 189.68816 | 294.37689 | 9.10321  | 0.1595027 | 3.1938213 | 77  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128790 2003 BN <sub>42</sub> |
| 2003 BU <sub>42</sub> | 15.7 | 0.15 | 20071027 | 36.22717  | 36.25846  | 67.95678  | 9.35388  | 0.1683262 | 2.7604788 | 97  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 116242 2003 BU <sub>42</sub> |
| 2003 BZ <sub>43</sub> | 14.9 | 0.15 | 20071027 | 13.95169  | 321.54054 | 108.26892 | 10.89626 | 0.1031351 | 3.0935205 | 55  | 4 | 2001-2007 | 0.54 | M-v | 0 | MPC | 110962 2003 BZ <sub>43</sub> |
| 2003 BO <sub>46</sub> | 14.8 | 0.15 | 20071027 | 344.12410 | 234.62495 | 190.60415 | 27.01406 | 0.3796298 | 3.1311643 | 115 | 2 | 2002-2007 | 0.44 | M-v | 2 | MPC | 128790 2003 BO <sub>46</sub> |
| 2003 BX <sub>48</sub> | 15.1 | 0.15 | 20071027 | 273.24726 | 306.76659 | 301.73510 | 10.78730 | 0.1807162 | 2.7188587 | 47  | 7 | 1994-2007 | 0.71 | M-v | 1 | MPC | 114695 2003 BX <sub>48</sub> |
| 2003 BK <sub>50</sub> | 15.4 | 0.15 | 20071027 | 356.80171 | 281.81095 | 133.84329 | 26.68964 | 0.2469874 | 3.1085729 | 41  | 5 | 2001-2007 | 0.53 | M-v | 0 | MPC | 128790 2003 BK <sub>50</sub> |
| 2003 BG <sub>52</sub> | 18.0 | 0.15 | 20071027 | 166.43555 | 327.58332 | 325.70472 | 21.86138 | 0.0187775 | 1.8498861 | 35  | 3 | 2003-2007 | 0.59 | M-v | 2 | MPC | 69435 2003 BG <sub>52</sub>  |
| 2003 BD <sub>53</sub> | 14.9 | 0.15 | 20071027 | 357.79488 | 99.37194  | 338.56788 | 11.23994 | 0.1109815 | 3.1038412 | 72  | 4 | 2001-2007 | 0.51 | M-v | 0 | MPC | 110962 2003 BD <sub>53</sub> |
| 2003 BG <sub>53</sub> | 15.7 | 0.15 | 20071027 | 334.13443 | 316.48803 | 141.12972 | 4.48400  | 0.1116942 | 3.1606496 | 46  | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128790 2003 BG <sub>53</sub> |
| 2003 BH <sub>53</sub> | 15.8 | 0.15 | 20071027 | 10.14555  | 270.42173 | 134.10443 | 14.91041 | 0.2927363 | 3.1031132 | 63  | 4 | 1999-2007 | 0.55 | M-v | 0 | MPC | 126656 2003 BH <sub>53</sub> |
| 2003 BS <sub>53</sub> | 14.6 | 0.15 | 20071027 | 252.05599 | 279.50157 | 295.47756 | 14.57463 | 0.1958701 | 3.0969823 | 39  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 114011 2003 BS <sub>53</sub> |
| 2003 BD <sub>55</sub> | 15.5 | 0.15 | 20071027 | 4.62526   | 347.55621 | 101.57454 | 6.41829  | 0.0269083 | 3.0126314 | 66  | 5 | 2002-2007 | 0.45 | M-v | 0 | MPC | 128790 2003 BD <sub>55</sub> |
| 2003 BK <sub>58</sub> | 15.5 | 0.15 | 20071027 | 315.30538 | 201.13550 | 312.04876 | 9.19373  | 0.0265645 | 2.9851643 | 50  | 6 | 1995-2007 | 0.48 | M-v | 1 | MPC | 110962 2003 BK <sub>58</sub> |
| 2003 BT <sub>61</sub> | 16.5 | 0.15 | 20071027 | 198.74325 | 77.33135  | 141.83820 | 22.83157 | 0.0587485 | 1.9011622 | 70  | 4 | 2003-2007 | 0.57 | M-v | 1 | MPC | 102143 2003 BT <sub>61</sub> |
| 2003 BW <sub>61</sub> | 14.8 | 0.15 | 20071027 | 310.13090 | 219.55936 | 255.27873 | 20.79987 | 0.0721416 | 3.1768679 | 67  | 5 | 2001-2007 | 0.50 | M-v | 0 | MPC | 128790 2003 BW <sub>61</sub> |
| 2003 BE <sub>62</sub> | 15.3 | 0.15 | 20071027 | 0.45991   | 332.56426 | 99.54111  | 12.65902 | 0.1597723 | 3.0893194 | 44  | 5 | 1998-2007 | 0.64 | M-v | 1 | MPC | 128790 2003 BE <sub>62</sub> |
| 2003 BM <sub>63</sub> | 15.0 | 0.15 | 20071027 | 291.38880 | 193.72123 | 326.74769 | 16.15141 | 0.1176170 | 3.2105522 | 57  | 4 | 1997-2007 | 0.52 | M-v | 1 | MPC | 114013 2003 BM <sub>63</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 BU <sub>64</sub> | 15.7 | 0.15 | 20071027 | 356.33442 | 339.50084 | 94.60779  | 2.88981  | 0.1656113 | 3.0863611 | 49  | 4 | 1991-2007 | 0.54 | M-v | 0 | MPC | 128790 2003 BU <sub>64</sub> |
| 2003 BV <sub>65</sub> | 15.3 | 0.15 | 20071027 | 26.69970  | 44.55272  | 77.01464  | 10.48654 | 0.1048122 | 2.7537353 | 122 | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 116243 2003 BV <sub>65</sub> |
| 2003 BW <sub>65</sub> | 16.4 | 0.15 | 20071027 | 79.88912  | 305.07484 | 145.87950 | 5.96598  | 0.0638040 | 2.6095701 | 34  | 5 | 1997-2006 | 0.62 | M-v | 1 | MPC | 112851 2003 BW <sub>65</sub> |
| 2003 BR <sub>68</sub> | 16.2 | 0.15 | 20071027 | 244.85934 | 84.35916  | 138.33068 | 2.14813  | 0.0668913 | 3.0433399 | 47  | 6 | 1995-2007 | 0.33 | M-v | 0 | MPC | 128790 2003 BR <sub>68</sub> |
| 2003 BO <sub>73</sub> | 15.0 | 0.15 | 20071027 | 309.10046 | 36.54215  | 77.94085  | 5.83058  | 0.0993072 | 3.1740094 | 42  | 4 | 2001-2007 | 0.57 | M-v | 1 | MPC | 128008 2003 BO <sub>73</sub> |
| 2003 BZ <sub>74</sub> | 15.6 | 0.15 | 20071027 | 293.04234 | 62.47997  | 96.45537  | 17.32753 | 0.1857595 | 3.1203875 | 44  | 3 | 2001-2007 | 0.32 | M-v | 1 | MPC | 128790 2003 BZ <sub>74</sub> |
| 2003 BH <sub>77</sub> | 15.7 | 0.15 | 20071027 | 6.08292   | 290.92359 | 117.84132 | 17.12575 | 0.2369160 | 3.1206267 | 53  | 5 | 2001-2007 | 0.61 | M-v | 0 | MPC | 102144 2003 BH <sub>77</sub> |
| 2003 BC <sub>78</sub> | 14.9 | 0.15 | 20071027 | 19.21898  | 71.31607  | 353.54255 | 10.49916 | 0.0835356 | 3.1064272 | 80  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 110963 2003 BC <sub>78</sub> |
| 2003 BL <sub>78</sub> | 16.6 | 0.15 | 20071027 | 341.08477 | 113.97968 | 355.28342 | 6.58956  | 0.1841181 | 2.9692476 | 33  | 4 | 2001-2007 | 0.60 | M-v | 2 | MPC | 114014 2003 BL <sub>78</sub> |
| 2003 BH <sub>79</sub> | 15.6 | 0.15 | 20071027 | 328.22689 | 224.75376 | 340.70112 | 9.52954  | 0.1752146 | 2.6929531 | 43  | 4 | 1999-2007 | 0.58 | M-v | 1 | MPC | 87573 2003 BH <sub>79</sub>  |
| 2003 BH <sub>80</sub> | 16.9 | 0.15 | 20071027 | 350.16050 | 282.91281 | 142.59185 | 23.56811 | 0.1209895 | 1.9265101 | 76  | 5 | 1999-2007 | 0.65 | M-v | 1 | MPC | 102144 2003 BH <sub>80</sub> |
| 2003 BO <sub>80</sub> | 16.1 | 0.15 | 20071027 | 127.58430 | 108.88637 | 44.09381  | 6.21421  | 0.0915878 | 2.2935370 | 47  | 4 | 1998-2005 | 0.60 | M-v | 1 | MPC | 97635 2003 BO <sub>80</sub>  |
| 2003 BO <sub>81</sub> | 15.6 | 0.15 | 20071027 | 327.25403 | 178.73696 | 313.22024 | 10.13242 | 0.1188755 | 3.0623079 | 71  | 5 | 2001-2007 | 0.59 | M-v | 1 | MPC | 110963 2003 BO <sub>81</sub> |
| 2003 BH <sub>83</sub> | 14.7 | 0.15 | 20071027 | 262.68482 | 96.47281  | 113.17823 | 15.29477 | 0.2252690 | 3.1237107 | 72  | 4 | 1998-2007 | 0.51 | M-v | 2 | MPC | 121790 2003 BH <sub>83</sub> |
| 2003 BJ <sub>83</sub> | 14.8 | 0.15 | 20071027 | 260.08380 | 200.94790 | 347.58814 | 12.79143 | 0.1146376 | 3.2009120 | 47  | 3 | 2003-2007 | 0.54 | M-v | 3 | MPC | 90173 2003 BJ <sub>83</sub>  |
| 2003 BX <sub>84</sub> | 16.1 | 0.15 | 20071027 | 317.82278 | 296.30463 | 211.53786 | 1.08569  | 0.1893165 | 3.0226170 | 47  | 6 | 1993-2007 | 0.49 | M-v | 1 | MPC | 108668 2003 BX <sub>84</sub> |
| 2003 BY <sub>91</sub> | 15.5 | 0.15 | 20071027 | 258.44029 | 183.08985 | 14.60411  | 12.12865 | 0.1028708 | 3.0910480 | 28  | 6 | 1971-2007 | 0.54 | M-v | 0 | MPC | 122728 2003 BY <sub>91</sub> |
| 2003 CL <sub>2</sub>  | 15.9 | 0.15 | 20071027 | 310.57955 | 343.33156 | 166.81603 | 3.94576  | 0.1716307 | 3.0059394 | 64  | 7 | 1995-2007 | 0.49 | M-v | 0 | MPC | 121790 2003 CL <sub>2</sub>  |
| 2003 CL <sub>7</sub>  | 14.4 | 0.15 | 20071027 | 10.45649  | 279.72401 | 143.42031 | 18.58122 | 0.2461186 | 3.1103539 | 65  | 5 | 1992-2007 | 0.58 | M-v | 1 | MPC | 110965 2003 CL <sub>7</sub>  |
| 2003 CK <sub>8</sub>  | 15.7 | 0.15 | 20071027 | 325.68418 | 104.84319 | 38.03461  | 5.44126  | 0.1587048 | 3.0496159 | 61  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 110965 2003 CK <sub>8</sub>  |
| 2003 CV <sub>13</sub> | 16.0 | 0.15 | 20071027 | 313.97476 | 301.61406 | 191.61180 | 16.53059 | 0.1926743 | 3.1156761 | 42  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 110965 2003 CV <sub>13</sub> |
| 2003 CF <sub>15</sub> | 14.6 | 0.15 | 20071027 | 311.87723 | 340.28778 | 118.40922 | 9.47624  | 0.0711264 | 3.3639743 | 49  | 2 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128791 2003 CF <sub>15</sub> |
| 2003 CN <sub>15</sub> | 15.3 | 0.15 | 20071027 | 253.54378 | 190.05539 | 17.99926  | 7.08048  | 0.2014620 | 3.1541991 | 57  | 5 | 1998-2007 | 0.67 | M-v | 2 | MPC | 110965 2003 CN <sub>15</sub> |
| 2003 CB <sub>18</sub> | 15.4 | 0.15 | 20071027 | 12.44112  | 120.28720 | 318.72719 | 8.14416  | 0.1232476 | 3.0057802 | 58  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 110965 2003 CB <sub>18</sub> |
| 2003 CJ <sub>18</sub> | 16.1 | 0.15 | 20071027 | 302.89117 | 2.56481   | 143.64891 | 1.50681  | 0.1515973 | 3.1070864 | 73  | 4 | 1998-2007 | 0.42 | M-v | 2 | MPC | 114697 2003 CJ <sub>18</sub> |
| 2003 CK <sub>18</sub> | 14.4 | 0.15 | 20071027 | 72.13130  | 37.38722  | 325.42306 | 14.60288 | 0.1241671 | 3.1255631 | 61  | 5 | 2000-2007 | 0.43 | M-v | 1 | MPC | 110965 2003 CK <sub>18</sub> |
| 2003 CG <sub>21</sub> | 16.4 | 0.15 | 20071027 | 138.71388 | 27.62957  | 318.78132 | 1.60726  | 0.0247240 | 2.9815114 | 33  | 4 | 2003-2007 | 0.43 | M-v | 1 | MPC | 122430 2003 CG <sub>21</sub> |
| 2003 CU <sub>21</sub> | 15.8 | 0.15 | 20071027 | 272.93233 | 98.05246  | 151.97370 | 8.64896  | 0.1424123 | 2.7540672 | 43  | 7 | 1994-2007 | 0.61 | M-v | 0 | MPC | 121791 2003 CU <sub>21</sub> |
| 2003 CE <sub>25</sub> | 15.9 | 0.15 | 20071027 | 50.69912  | 36.43128  | 68.65236  | 14.13350 | 0.0875106 | 2.7251544 | 43  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 112853 2003 CE <sub>25</sub> |
| 2003 DQ               | 15.0 | 0.15 | 20071027 | 334.12423 | 312.58191 | 158.54135 | 11.10676 | 0.1273669 | 3.1575290 | 45  | 5 | 2001-2007 | 0.50 | M-v | 0 | MPC | 122729 2003 DQ               |
| 2003 DS <sub>3</sub>  | 15.2 | 0.15 | 20071027 | 326.18582 | 132.29725 | 342.97442 | 7.25090  | 0.0814390 | 3.2351344 | 43  | 5 | 2000-2007 | 0.39 | M-v | 0 | MPC | 110966 2003 DS <sub>3</sub>  |
| 2003 DE <sub>13</sub> | 16.1 | 0.15 | 20071027 | 300.52754 | 5.62168   | 150.22487 | 1.53512  | 0.1592041 | 3.1597273 | 57  | 7 | 1994-2007 | 0.48 | M-v | 1 | MPC | 122729 2003 DE <sub>13</sub> |
| 2003 DL <sub>13</sub> | 15.4 | 0.15 | 20071027 | 265.29091 | 259.76422 | 308.50660 | 14.17425 | 0.1757211 | 3.1178946 | 75  | 3 | 2001-2007 | 0.58 | M-v | 2 | MPC | 48328 2003 DL <sub>13</sub>  |
| 2003 DQ <sub>14</sub> | 15.3 | 0.15 | 20071027 | 322.65046 | 27.62233  | 117.99263 | 11.82206 | 0.2461513 | 3.0866750 | 88  | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128791 2003 DQ <sub>14</sub> |
| 2003 DE <sub>17</sub> | 15.4 | 0.15 | 20071027 | 235.82578 | 252.09263 | 336.12160 | 7.51560  | 0.0590655 | 3.1295608 | 46  | 6 | 1994-2007 | 0.70 | M-v | 1 | MPC | 110966 2003 DE <sub>17</sub> |
| 2003 DK <sub>18</sub> | 15.7 | 0.15 | 20071027 | 13.16717  | 346.95303 | 100.04250 | 11.12497 | 0.0448330 | 3.0359192 | 35  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128009 2003 DK <sub>18</sub> |
| 2003 DO <sub>19</sub> | 15.6 | 0.15 | 20071027 | 12.00478  | 123.80770 | 328.46235 | 9.18309  | 0.0617924 | 3.0499203 | 70  | 4 | 2001-2007 | 0.45 | M-v | 0 | MPC | 110967 2003 DO <sub>19</sub> |
| 2003 DO <sub>20</sub> | 15.8 | 0.15 | 20071027 | 269.35436 | 212.93945 | 336.66798 | 4.12395  | 0.3582279 | 3.2774721 | 78  | 4 | 1997-2007 | 0.47 | M-v | 1 | MPC | 128791 2003 DO <sub>20</sub> |
| 2003 DF <sub>21</sub> | 15.4 | 0.15 | 20071027 | 287.63625 | 156.70551 | 355.69659 | 11.86972 | 0.1714785 | 3.1952802 | 41  | 4 | 1992-2007 | 0.43 | M-v | 1 | MPC | 128791 2003 DF <sub>21</sub> |
| 2003 DM <sub>21</sub> | 15.5 | 0.15 | 20071027 | 321.23984 | 156.39004 | 324.82647 | 6.04301  | 0.1535296 | 3.1836655 | 45  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 110967 2003 DM <sub>21</sub> |
| 2003 DL <sub>24</sub> | 14.6 | 0.15 | 20071027 | 257.56568 | 104.73294 | 111.25785 | 16.98607 | 0.1702287 | 3.1412771 | 49  | 4 | 1998-2007 | 0.54 | M-v | 2 | MPC | 114698 2003 DL <sub>24</sub> |
| 2003 DP <sub>24</sub> | 15.5 | 0.15 | 20071027 | 332.85277 | 355.87438 | 136.94302 | 6.14149  | 0.0976860 | 3.1325159 | 40  | 5 | 2000-2007 | 0.40 | M-v | 1 | MPC | 108683 2003 DP <sub>24</sub> |
| 2003 EW <sub>1</sub>  | 14.8 | 0.15 | 20071027 | 335.77094 | 110.94667 | 6.87416   | 11.25156 | 0.0546626 | 3.1237836 | 56  | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 122729 2003 EW <sub>1</sub>  |
| 2003 ES <sub>5</sub>  | 15.0 | 0.15 | 20071027 | 285.81963 | 206.47893 | 341.90456 | 7.10960  | 0.1508781 | 3.1717820 | 46  | 5 | 1994-2007 | 0.46 | M-v | 1 | MPC | 110967 2003 ES <sub>5</sub>  |
| 2003 EJ <sub>18</sub> | 16.0 | 0.15 | 20071027 | 355.36086 | 175.21586 | 356.17943 | 5.21458  | 0.0161015 | 2.7455178 | 43  | 6 | 1994-2007 | 0.38 | M-v | 1 | MPC | 121791 2003 EJ <sub>18</sub> |
| 2003 EK <sub>18</sub> | 16.2 | 0.15 | 20071027 | 301.98629 | 48.75859  | 109.50820 | 2.78969  | 0.1390859 | 3.1286510 | 30  | 5 | 1992-2007 | 0.44 | M-v | 1 | MPC | 114699 2003 EK <sub>18</sub> |
| 2003 EU <sub>21</sub> | 15.7 | 0.15 | 20071027 | 321.85319 | 5.12784   | 140.20750 | 5.30646  | 0.0891678 | 3.0943193 | 38  | 6 | 1998-2007 | 0.47 | M-v | 1 | MPC | 110968 2003 EU <sub>21</sub> |
| 2003 EA <sub>25</sub> | 15.7 | 0.15 | 20071027 | 285.31405 | 102.80070 | 91.59590  | 4.97441  | 0.2210677 | 3.1239758 | 52  | 4 | 2003-2007 | 0.45 | M-v | 1 | MPC | 110968 2003 EA <sub>25</sub> |
| 2003 EF <sub>37</sub> | 14.6 | 0.15 | 20071027 | 297.17907 | 66.50743  | 117.33287 | 20.86223 | 0.1650836 | 3.0958163 | 58  | 5 | 1998-2007 | 0.61 | M-v | 1 | MPC | 128791 2003 EF <sub>37</sub> |
| 2003 EM <sub>38</sub> | 15.2 | 0.15 | 20071027 | 303.43942 | 268.46622 | 271.02438 | 10.02415 | 0.2281055 | 3.0505565 | 41  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 125905 2003 EM <sub>38</sub> |
| 2003 EG <sub>40</sub> | 14.8 | 0.15 | 20071027 | 278.52036 | 107.79912 | 105.34721 | 15.51643 | 0.1108989 | 3.0519208 | 33  | 3 | 1998-2007 | 0.61 | M-v | 5 | MPC | 128791 2003 EG <sub>40</sub> |
| 2003 EF <sub>45</sub> | 15.2 | 0.15 | 20071027 | 328.18100 | 213.84470 | 313.58754 | 6.77601  | 0.2546073 | 3.0071942 | 67  | 4 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128791 2003 EF <sub>45</sub> |
| 2003 ED <sub>47</sub> | 14.5 | 0.15 | 20071027 | 350.43374 | 355.62359 | 132.44724 | 19.74430 | 0.2342706 | 3.0400205 | 63  | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128791 2003 ED <sub>47</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 EF <sub>53</sub>  | 15.3 | 0.15 | 20071027 | 285.61459 | 168.85805 | 85.00719  | 9.86600  | 0.2555414 | 2.8691855 | 90  | 4 | 2003-2007 | 0.46 | M-v | 1 | MPC | 110969 2003 EF <sub>53</sub>  |
| 2003 EA <sub>55</sub>  | 15.3 | 0.15 | 20071027 | 238.63407 | 137.60558 | 82.24937  | 10.97167 | 0.0266341 | 3.0614652 | 64  | 5 | 2001-2007 | 0.38 | M-v | 0 | MPC | 128791 2003 EA <sub>55</sub>  |
| 2003 EZ <sub>55</sub>  | 14.8 | 0.15 | 20071027 | 166.83467 | 216.19325 | 75.96534  | 11.43350 | 0.0763256 | 3.4542172 | 45  | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 116248 2003 EZ <sub>55</sub>  |
| 2003 EV <sub>59</sub>  | 14.5 | 0.15 | 20071027 | 291.37960 | 143.02156 | 45.69603  | 20.09773 | 0.0938347 | 3.1163037 | 83  | 5 | 1998-2007 | 0.45 | M-v | 1 | MPC | 128791 2003 EV <sub>59</sub>  |
| 2003 EM <sub>60</sub>  | 15.6 | 0.15 | 20071027 | 309.56019 | 58.02535  | 123.69181 | 12.26917 | 0.2303158 | 3.0632116 | 60  | 6 | 1998-2007 | 0.46 | M-v | 1 | MPC | 114700 2003 EM <sub>60</sub>  |
| 2003 FD <sub>3</sub>   | 17.3 | 0.15 | 20071027 | 230.12579 | 117.87419 | 114.20370 | 23.46348 | 0.0631164 | 1.9059885 | 43  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 102145 2003 FD <sub>3</sub>   |
| 2003 FN <sub>3</sub>   | 16.8 | 0.15 | 20071027 | 270.19878 | 51.43310  | 85.18804  | 23.82399 | 0.0759839 | 1.9819359 | 67  | 4 | 1999-2007 | 0.64 | M-v | 1 | MPC | 128791 2003 FN <sub>3</sub>   |
| 2003 FK <sub>4</sub>   | 15.0 | 0.15 | 20071027 | 306.42459 | 77.93047  | 97.91571  | 26.29147 | 0.2393008 | 3.1092032 | 73  | 2 | 2003-2007 | 0.58 | M-v | 3 | MPC | 128009 2003 FK <sub>4</sub>   |
| 2003 FL <sub>8</sub>   | 17.3 | 0.15 | 20071027 | 329.48990 | 276.02123 | 183.56566 | 22.02330 | 0.1154455 | 1.9529516 | 91  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 85968 2003 FL <sub>8</sub>    |
| 2003 FB <sub>12</sub>  | 16.3 | 0.15 | 20071027 | 299.98146 | 292.63183 | 273.29320 | 0.57254  | 0.1904403 | 3.0468191 | 44  | 5 | 1994-2007 | 0.59 | M-v | 2 | MPC | 100423 2003 FB <sub>12</sub>  |
| 2003 FP <sub>12</sub>  | 15.5 | 0.15 | 20071027 | 288.46549 | 71.08442  | 129.58133 | 10.55775 | 0.0069231 | 2.9890498 | 36  | 7 | 2000-2007 | 0.58 | M-v | 1 | MPC | 110970 2003 FP <sub>12</sub>  |
| 2003 FG <sub>13</sub>  | 15.8 | 0.15 | 20071027 | 0.38807   | 95.32102  | 348.46167 | 8.81615  | 0.2476404 | 3.1659359 | 40  | 4 | 2001-2007 | 0.59 | M-v | 0 | MPC | 122730 2003 FG <sub>13</sub>  |
| 2003 FC <sub>17</sub>  | 16.1 | 0.15 | 20071027 | 351.59634 | 31.10115  | 71.80617  | 2.50508  | 0.1612400 | 3.1434390 | 28  | 4 | 2000-2007 | 0.48 | M-v | 0 | MPC | 85970 2003 FC <sub>17</sub>   |
| 2003 FQ <sub>21</sub>  | 16.2 | 0.15 | 20071027 | 3.40239   | 280.15777 | 160.67294 | 4.75054  | 0.1550738 | 3.1624550 | 50  | 5 | 1997-2007 | 0.37 | M-v | 0 | MPC | 122730 2003 FQ <sub>21</sub>  |
| 2003 FL <sub>26</sub>  | 15.9 | 0.15 | 20071027 | 323.81339 | 354.44649 | 152.28459 | 3.78863  | 0.1803829 | 3.1316653 | 55  | 7 | 1992-2007 | 0.52 | M-v | 1 | MPC | 110970 2003 FL <sub>26</sub>  |
| 2003 FS <sub>46</sub>  | 17.1 | 0.15 | 20071027 | 74.31180  | 337.65887 | 175.80833 | 3.69589  | 0.1608661 | 2.5370280 | 74  | 3 | 2003-2007 | 0.47 | M-v | 3 | MPC | 118047 2003 FS <sub>46</sub>  |
| 2003 FZ <sub>56</sub>  | 15.6 | 0.15 | 20071027 | 249.86057 | 274.92389 | 332.51979 | 2.26638  | 0.0865585 | 3.0301784 | 33  | 5 | 1998-2007 | 0.36 | M-v | 0 | MPC | 112856 2003 FZ <sub>56</sub>  |
| 2003 FF <sub>62</sub>  | 15.3 | 0.15 | 20071027 | 335.62902 | 70.66693  | 59.21067  | 6.46749  | 0.1292595 | 3.1711041 | 61  | 6 | 1997-2007 | 0.56 | M-v | 0 | MPC | 110971 2003 FF <sub>62</sub>  |
| 2003 FN <sub>67</sub>  | 15.4 | 0.15 | 20071027 | 60.38430  | 282.26089 | 153.85697 | 9.88882  | 0.0649280 | 3.0315870 | 49  | 8 | 1993-2007 | 0.52 | M-v | 0 | MPC | 112856 2003 FN <sub>67</sub>  |
| 2003 FN <sub>72</sub>  | 15.2 | 0.15 | 20071027 | 345.87728 | 76.13901  | 40.75877  | 15.76564 | 0.2295901 | 3.1655793 | 49  | 5 | 1995-2007 | 0.59 | M-v | 0 | MPC | 128791 2003 FN <sub>72</sub>  |
| 2003 FT <sub>88</sub>  | 15.5 | 0.15 | 20071027 | 318.43792 | 132.45012 | 34.21352  | 14.52393 | 0.0589604 | 3.1812410 | 45  | 5 | 2000-2007 | 0.48 | M-v | 0 | MPC | 122731 2003 FT <sub>88</sub>  |
| 2003 FB <sub>99</sub>  | 14.7 | 0.15 | 20071027 | 282.47271 | 131.94188 | 54.32653  | 5.96660  | 0.0927426 | 3.2201544 | 68  | 6 | 1997-2007 | 0.38 | M-v | 0 | MPC | 128791 2003 FB <sub>99</sub>  |
| 2003 FT <sub>115</sub> | 15.6 | 0.15 | 20071027 | 300.71722 | 229.32533 | 326.96408 | 2.38575  | 0.1474466 | 3.1450011 | 41  | 6 | 1997-2007 | 0.61 | M-v | 1 | MPC | 122731 2003 FT <sub>115</sub> |
| 2003 FA <sub>123</sub> | 15.3 | 0.15 | 20071027 | 190.83310 | 158.87715 | 150.97893 | 10.46810 | 0.0355339 | 2.9878998 | 60  | 6 | 2000-2007 | 0.62 | M-v | 1 | MPC | 112857 2003 FA <sub>123</sub> |
| 2003 GQ <sub>5</sub>   | 15.5 | 0.15 | 20071027 | 349.03804 | 285.52481 | 209.99364 | 6.64389  | 0.1124231 | 3.1128442 | 52  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 110974 2003 GQ <sub>5</sub>   |
| 2003 GJ <sub>14</sub>  | 16.5 | 0.15 | 20071027 | 58.92138  | 1.08747   | 134.60280 | 6.75856  | 0.2288377 | 2.6202406 | 92  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 126657 2003 GJ <sub>14</sub>  |
| 2003 GP <sub>14</sub>  | 15.9 | 0.15 | 20071027 | 301.23661 | 134.92930 | 30.44333  | 14.28917 | 0.1817976 | 3.1801391 | 26  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 122434 2003 GP <sub>14</sub>  |
| 2003 GS <sub>16</sub>  | 15.4 | 0.15 | 20071027 | 265.37629 | 138.21806 | 99.69170  | 7.79494  | 0.1284843 | 2.9970594 | 41  | 5 | 2000-2007 | 0.38 | M-v | 1 | MPC | 116252 2003 GS <sub>16</sub>  |
| 2003 GC <sub>17</sub>  | 14.6 | 0.15 | 20071027 | 335.67620 | 49.21876  | 64.00874  | 18.05562 | 0.3764375 | 3.1311133 | 101 | 3 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128792 2003 GC <sub>17</sub>  |
| 2003 GK <sub>21</sub>  | 17.1 | 0.15 | 20071027 | 347.67019 | 345.34604 | 66.22560  | 6.74115  | 0.2702495 | 1.9959716 | 104 | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128792 2003 GK <sub>21</sub>  |
| 2003 GT <sub>35</sub>  | 15.7 | 0.15 | 20071027 | 290.06694 | 103.49627 | 85.81143  | 11.89745 | 0.1837267 | 3.1298941 | 26  | 4 | 1998-2007 | 0.50 | M-v | 1 | MPC | 50186 2003 GT <sub>35</sub>   |
| 2003 GE <sub>47</sub>  | 16.0 | 0.15 | 20071027 | 294.88908 | 56.80237  | 141.99850 | 4.11728  | 0.0498416 | 2.9988365 | 48  | 6 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128792 2003 GE <sub>47</sub>  |
| 2003 GL <sub>54</sub>  | 14.9 | 0.15 | 20071027 | 357.43585 | 334.67922 | 138.62275 | 25.25006 | 0.1534481 | 3.1067235 | 32  | 4 | 2003-2007 | 0.67 | M-v | 1 | MPC | 128792 2003 GL <sub>54</sub>  |
| 2003 HH <sub>2</sub>   | 16.4 | 0.15 | 20071027 | 275.81551 | 61.54601  | 77.67126  | 24.10250 | 0.0734193 | 1.9905379 | 67  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 128792 2003 HH <sub>2</sub>   |
| 2003 HH <sub>4</sub>   | 15.4 | 0.15 | 20071027 | 307.94309 | 134.31240 | 27.04907  | 14.85635 | 0.2188846 | 3.2486824 | 44  | 3 | 2003-2007 | 0.52 | M-v | 3 | MPC | 108710 2003 HH <sub>4</sub>   |
| 2003 HT <sub>6</sub>   | 16.3 | 0.15 | 20071027 | 29.84658  | 109.97358 | 204.89989 | 4.50209  | 0.2329690 | 2.2644300 | 119 | 5 | 1997-2007 | 0.48 | M-v | 1 | MPC | 128792 2003 HT <sub>6</sub>   |
| 2003 HZ <sub>9</sub>   | 17.4 | 0.15 | 20071027 | 126.27638 | 177.63369 | 68.18148  | 1.90467  | 0.1110116 | 2.1576603 | 70  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128792 2003 HZ <sub>9</sub>   |
| 2003 HP <sub>10</sub>  | 15.3 | 0.15 | 20071027 | 342.26055 | 37.88224  | 132.54379 | 7.30565  | 0.2112771 | 3.0515749 | 48  | 5 | 1997-2007 | 0.62 | M-v | 1 | MPC | 112858 2003 HP <sub>10</sub>  |
| 2003 HS <sub>10</sub>  | 16.3 | 0.15 | 20071027 | 56.92465  | 139.70957 | 188.38221 | 6.97006  | 0.2033874 | 2.2020760 | 117 | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128792 2003 HS <sub>10</sub>  |
| 2003 HK <sub>16</sub>  | 16.8 | 0.15 | 20071027 | 283.08085 | 68.51091  | 72.26376  | 23.14192 | 0.0721242 | 1.9794971 | 59  | 3 | 2003-2007 | 0.57 | M-v | 2 | MPC | 128792 2003 HK <sub>16</sub>  |
| 2003 HL <sub>16</sub>  | 16.9 | 0.15 | 20071027 | 97.51517  | 226.90323 | 52.09443  | 5.82695  | 0.1548297 | 2.1599163 | 67  | 4 | 2003-2007 | 0.55 | M-v | 1 | MPC | 128792 2003 HL <sub>16</sub>  |
| 2003 HS <sub>19</sub>  | 14.6 | 0.15 | 20071027 | 78.86464  | 252.43590 | 102.54830 | 1.37053  | 0.1520921 | 3.9593042 | 74  | 4 | 2003-2007 | 0.46 | M-v | 0 | MPC | 116254 2003 HS <sub>19</sub>  |
| 2003 HJ <sub>32</sub>  | 16.4 | 0.15 | 20071027 | 20.49762  | 208.69721 | 112.33179 | 7.97210  | 0.1899796 | 2.2656919 | 49  | 3 | 2003-2007 | 0.57 | M-v | 2 | MPC | 124392 2003 HJ <sub>32</sub>  |
| 2003 HH <sub>33</sub>  | 17.5 | 0.15 | 20071027 | 69.63413  | 77.00830  | 206.99853 | 6.13045  | 0.2031220 | 2.2290794 | 48  | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128792 2003 HH <sub>33</sub>  |
| 2003 HJ <sub>35</sub>  | 16.5 | 0.15 | 20071027 | 34.61765  | 265.52053 | 64.34234  | 5.81860  | 0.2270851 | 2.2250409 | 125 | 6 | 1997-2007 | 0.56 | M-v | 1 | MPC | 128792 2003 HJ <sub>35</sub>  |
| 2003 HG <sub>42</sub>  | 15.3 | 0.15 | 20071027 | 314.21257 | 37.07321  | 139.96099 | 11.61497 | 0.1051799 | 3.1563233 | 31  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 110976 2003 HG <sub>42</sub>  |
| 2003 HN <sub>42</sub>  | 15.1 | 0.15 | 20071027 | 322.23729 | 0.78567   | 193.67713 | 8.81464  | 0.1425401 | 3.0935464 | 44  | 5 | 1992-2007 | 0.48 | M-v | 1 | MPC | 104256 2003 HN <sub>42</sub>  |
| 2003 HQ <sub>52</sub>  | 17.1 | 0.15 | 20071027 | 46.09499  | 98.47703  | 204.87586 | 7.14922  | 0.1452255 | 2.2642927 | 61  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 126658 2003 HQ <sub>52</sub>  |
| 2003 HD <sub>58</sub>  | 16.7 | 0.15 | 20071027 | 89.96632  | 237.40281 | 49.6329   | 6.87582  | 0.1970571 | 2.2092779 | 71  | 3 | 2003-2007 | 0.55 | M-v | 2 | MPC | 128792 2003 HD <sub>58</sub>  |
| 2003 JU <sub>6</sub>   | 16.7 | 0.15 | 20071027 | 66.14628  | 248.41826 | 62.21386  | 5.83466  | 0.2192677 | 2.2196902 | 73  | 3 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128792 2003 JU <sub>6</sub>   |
| 2003 JE <sub>8</sub>   | 16.8 | 0.15 | 20071027 | 43.41206  | 76.69168  | 245.78390 | 4.20849  | 0.1929717 | 2.2395417 | 59  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 128792 2003 JE <sub>8</sub>   |
| 2003 KQ <sub>3</sub>   | 17.2 | 0.15 | 20071027 | 112.38529 | 343.79490 | 297.65862 | 4.97314  | 0.1883010 | 2.1633635 | 34  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128792 2003 KQ <sub>3</sub>   |
| 2003 KN <sub>13</sub>  | 16.4 | 0.15 | 20071027 | 98.18741  | 155.25964 | 136.27216 | 7.89281  | 0.2248411 | 2.1658687 | 63  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 126658 2003 KN <sub>13</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 KW <sub>16</sub> | 20.1 | 0.15 | 20071027 | 92.23533  | 52.07328  | 247.40457 | 38.39670 | 0.2580161 | 1.5254634 | 145 | 3 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128792 2003 KW <sub>16</sub> |
| 2003 KR <sub>18</sub> | 17.9 | 0.15 | 20071027 | 61.95703  | 85.90935  | 244.70417 | 5.58087  | 0.4827618 | 2.3434579 | 495 | 3 | 1985-2007 | 0.43 | M-v | 0 | MPC | 95010 2003 KR <sub>18</sub>  |
| 2003 KV <sub>36</sub> | 15.9 | 0.15 | 20071027 | 70.97928  | 36.87388  | 253.05311 | 8.25460  | 0.2470481 | 2.3412202 | 71  | 6 | 1996-2007 | 0.56 | M-v | 1 | MPC | 128793 2003 KV <sub>36</sub> |
| 2003 LL <sub>1</sub>  | 15.6 | 0.15 | 20071027 | 320.93205 | 57.01143  | 127.64548 | 9.59018  | 0.2540540 | 3.1063419 | 33  | 4 | 1997-2007 | 0.49 | M-v | 1 | MPC | 103507 2003 LL <sub>1</sub>  |
| 2003 LY <sub>3</sub>  | 15.8 | 0.15 | 20071027 | 48.97493  | 57.48788  | 255.88583 | 20.69801 | 0.2886215 | 2.3302019 | 94  | 3 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128793 2003 LY <sub>3</sub>  |
| 2003 MS <sub>3</sub>  | 16.8 | 0.15 | 20071027 | 87.24227  | 222.88811 | 71.58974  | 3.01934  | 0.2173051 | 2.2808462 | 69  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128793 2003 MS <sub>3</sub>  |
| 2003 ML <sub>5</sub>  | 15.2 | 0.15 | 20071027 | 300.72969 | 137.93079 | 124.73803 | 16.22618 | 0.3242001 | 3.0938781 | 71  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 118055 2003 ML <sub>5</sub>  |
| 2003 MZ <sub>5</sub>  | 17.0 | 0.15 | 20071027 | 102.95581 | 61.60094  | 250.53886 | 5.95818  | 0.2283441 | 2.2044537 | 58  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 102149 2003 MZ <sub>5</sub>  |
| 2003 MB <sub>7</sub>  | 16.2 | 0.15 | 20071027 | 49.31412  | 31.53236  | 312.38427 | 11.93826 | 0.4239580 | 2.3815320 | 148 | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 108715 2003 MB <sub>7</sub>  |
| 2003 MX <sub>8</sub>  | 17.3 | 0.15 | 20071027 | 125.73079 | 30.96025  | 247.88170 | 6.92291  | 0.2094851 | 2.2045516 | 46  | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 100449 2003 MX <sub>8</sub>  |
| 2003 MJ <sub>10</sub> | 16.5 | 0.15 | 20071027 | 41.52223  | 287.53827 | 44.16558  | 5.42272  | 0.2515893 | 2.3515735 | 105 | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128793 2003 MJ <sub>10</sub> |
| 2003 NZ               | 18.7 | 0.15 | 20071027 | 56.13435  | 221.56490 | 87.47757  | 7.44503  | 0.3832432 | 2.3841979 | 48  | 2 | 2003-2007 | 0.26 | M-v | 2 | MPC | 128011 2003 NZ               |
| 2003 NJ <sub>1</sub>  | 16.1 | 0.15 | 20071027 | 21.88192  | 279.56291 | 68.17691  | 9.16456  | 0.3378798 | 2.4110322 | 76  | 3 | 1999-2007 | 0.39 | M-v | 2 | MPC | 128793 2003 NJ <sub>1</sub>  |
| 2003 NE <sub>5</sub>  | 15.5 | 0.15 | 20071027 | 14.47433  | 56.67450  | 278.57830 | 28.99381 | 0.3933824 | 2.5778401 | 293 | 3 | 1999-2007 | 0.41 | M-v | 1 | MPC | 124394 2003 NE <sub>5</sub>  |
| 2003 NQ <sub>6</sub>  | 16.2 | 0.15 | 20071027 | 66.62096  | 108.75696 | 232.73477 | 2.90375  | 0.2489267 | 2.2957260 | 85  | 4 | 2000-2007 | 0.39 | M-v | 1 | MPC | 100452 2003 NQ <sub>6</sub>  |
| 2003 NE <sub>7</sub>  | 16.8 | 0.15 | 20071027 | 48.83704  | 329.05218 | 7.87052   | 3.37089  | 0.2613775 | 2.3260736 | 73  | 6 | 1995-2007 | 0.46 | M-v | 1 | MPC | 128793 2003 NE <sub>7</sub>  |
| 2003 NT <sub>7</sub>  | 16.1 | 0.15 | 20071027 | 32.79962  | 78.86311  | 251.04385 | 6.24111  | 0.2086029 | 2.4231040 | 103 | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128793 2003 NT <sub>7</sub>  |
| 2003 NC <sub>12</sub> | 17.7 | 0.15 | 20071027 | 71.10376  | 148.71613 | 177.16232 | 3.34700  | 0.1508245 | 2.2843070 | 40  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128793 2003 NC <sub>12</sub> |
| 2003 NQ <sub>12</sub> | 17.1 | 0.15 | 20071027 | 101.00701 | 354.30051 | 309.48693 | 2.19549  | 0.2024962 | 2.2369307 | 48  | 5 | 1995-2007 | 0.44 | M-v | 1 | MPC | 128793 2003 NQ <sub>12</sub> |
| 2003 NV <sub>12</sub> | 17.4 | 0.15 | 20071027 | 71.96525  | 281.95939 | 20.42548  | 7.89473  | 0.2603142 | 2.3650733 | 36  | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 128793 2003 NV <sub>12</sub> |
| 2003 OY               | 15.7 | 0.15 | 20071027 | 128.93500 | 357.90647 | 265.32987 | 26.12654 | 0.2629535 | 2.2632899 | 63  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 100454 2003 OY               |
| 2003 OH <sub>1</sub>  | 15.8 | 0.15 | 20071027 | 73.01218  | 18.94052  | 294.23658 | 12.67342 | 0.1986676 | 2.2929525 | 57  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128793 2003 OH <sub>1</sub>  |
| 2003 OZ <sub>3</sub>  | 16.7 | 0.15 | 20071027 | 23.11517  | 17.84859  | 324.76781 | 0.75487  | 0.2043512 | 2.4416408 | 137 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128793 2003 OZ <sub>3</sub>  |
| 2003 OS <sub>4</sub>  | 17.3 | 0.15 | 20071027 | 92.41048  | 36.93769  | 273.10718 | 7.27018  | 0.1723347 | 2.2364341 | 48  | 6 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128793 2003 OS <sub>4</sub>  |
| 2003 OB <sub>5</sub>  | 16.4 | 0.15 | 20071027 | 30.26845  | 205.54815 | 145.88916 | 7.15895  | 0.2124746 | 2.3853332 | 114 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128793 2003 OB <sub>5</sub>  |
| 2003 OE <sub>6</sub>  | 16.8 | 0.15 | 20071027 | 24.77540  | 104.91964 | 242.38612 | 5.70116  | 0.1195498 | 2.4213671 | 62  | 3 | 2003-2007 | 0.58 | M-v | 3 | MPC | 128793 2003 OE <sub>6</sub>  |
| 2003 OE <sub>7</sub>  | 17.1 | 0.15 | 20071027 | 73.02697  | 127.67580 | 179.37423 | 4.17936  | 0.2508447 | 2.3247397 | 44  | 2 | 2003-2007 | 0.36 | M-v | 3 | MPC | 128012 2003 OE <sub>7</sub>  |
| 2003 OM <sub>7</sub>  | 17.4 | 0.15 | 20071027 | 110.89196 | 101.11883 | 185.69585 | 4.40502  | 0.1470371 | 2.2442930 | 62  | 6 | 1999-2007 | 0.47 | M-v | 0 | MPC | 128793 2003 OM <sub>7</sub>  |
| 2003 OB <sub>8</sub>  | 15.8 | 0.15 | 20071027 | 17.29212  | 49.75411  | 308.47016 | 21.25653 | 0.2726284 | 2.3908417 | 62  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128793 2003 OB <sub>8</sub>  |
| 2003 OH <sub>8</sub>  | 18.1 | 0.15 | 20071027 | 80.49350  | 188.90449 | 114.35669 | 4.06936  | 0.2147631 | 2.2934811 | 38  | 4 | 1999-2007 | 0.42 | M-v | 1 | MPC | 128012 2003 OH <sub>8</sub>  |
| 2003 OS <sub>8</sub>  | 17.1 | 0.15 | 20071027 | 73.74217  | 256.31381 | 82.34777  | 5.57100  | 0.2422788 | 2.2596251 | 35  | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 100455 2003 OS <sub>8</sub>  |
| 2003 OZ <sub>8</sub>  | 15.4 | 0.15 | 20071027 | 351.64308 | 123.38764 | 241.54846 | 12.41513 | 0.1820648 | 2.4728820 | 121 | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128793 2003 OZ <sub>8</sub>  |
| 2003 OZ <sub>10</sub> | 16.6 | 0.15 | 20071027 | 31.99366  | 285.56847 | 69.43420  | 3.97732  | 0.2174255 | 2.3592756 | 111 | 6 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128793 2003 OZ <sub>10</sub> |
| 2003 OA <sub>11</sub> | 16.4 | 0.15 | 20071027 | 26.30869  | 107.20550 | 228.71180 | 15.04113 | 0.2820951 | 2.4627517 | 88  | 3 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128794 2003 OA <sub>11</sub> |
| 2003 OV <sub>12</sub> | 15.9 | 0.15 | 20071027 | 87.42157  | 23.41366  | 288.10475 | 7.01740  | 0.2620762 | 2.3236174 | 73  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 102150 2003 OV <sub>12</sub> |
| 2003 OL <sub>16</sub> | 16.4 | 0.15 | 20071027 | 43.64726  | 68.75102  | 328.44777 | 22.61758 | 0.3258124 | 2.3404949 | 57  | 3 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128012 2003 OL <sub>16</sub> |
| 2003 ON <sub>17</sub> | 17.2 | 0.15 | 20071027 | 35.64568  | 342.92703 | 2.11174   | 2.22689  | 0.2518907 | 2.3673114 | 61  | 2 | 2003-2007 | 0.56 | M-v | 4 | MPC | 128794 2003 ON <sub>17</sub> |
| 2003 OS <sub>17</sub> | 17.0 | 0.15 | 20071027 | 52.73759  | 256.57938 | 75.56692  | 5.46717  | 0.1990001 | 2.3226550 | 76  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128794 2003 OS <sub>17</sub> |
| 2003 OY <sub>17</sub> | 16.4 | 0.15 | 20071027 | 17.82510  | 293.56328 | 77.24278  | 6.24155  | 0.2782814 | 2.3695593 | 86  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128794 2003 OY <sub>17</sub> |
| 2003 OL <sub>19</sub> | 16.4 | 0.15 | 20071027 | 69.41863  | 113.87069 | 235.97382 | 6.79403  | 0.2036891 | 2.2776730 | 101 | 4 | 1993-2007 | 0.48 | M-v | 1 | MPC | 102151 2003 OL <sub>19</sub> |
| 2003 OW <sub>19</sub> | 16.8 | 0.15 | 20071027 | 66.56280  | 176.69604 | 157.44495 | 4.67995  | 0.2395466 | 2.3339828 | 98  | 6 | 1995-2007 | 0.44 | M-v | 1 | MPC | 102151 2003 OW <sub>19</sub> |
| 2003 OH <sub>22</sub> | 16.1 | 0.15 | 20071027 | 51.83707  | 22.52514  | 353.80569 | 5.55181  | 0.2671258 | 2.3530183 | 121 | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128794 2003 OH <sub>22</sub> |
| 2003 OW <sub>22</sub> | 15.6 | 0.15 | 20071027 | 70.35685  | 340.04753 | 358.02033 | 8.28582  | 0.1487904 | 2.3699769 | 107 | 5 | 1999-2007 | 0.53 | M-v | 2 | MPC | 122734 2003 OW <sub>22</sub> |
| 2003 OE <sub>23</sub> | 16.9 | 0.15 | 20071027 | 45.51381  | 199.10659 | 150.87706 | 3.44651  | 0.1842657 | 2.3125729 | 39  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128012 2003 OE <sub>23</sub> |
| 2003 OH <sub>23</sub> | 16.6 | 0.15 | 20071027 | 34.43102  | 50.75880  | 283.05867 | 4.72105  | 0.2288366 | 2.4224810 | 84  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128013 2003 OH <sub>23</sub> |
| 2003 OC <sub>24</sub> | 16.1 | 0.15 | 20071027 | 23.99532  | 218.03669 | 152.68975 | 11.53408 | 0.2412129 | 2.3460430 | 108 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128794 2003 OC <sub>24</sub> |
| 2003 OG <sub>24</sub> | 17.0 | 0.15 | 20071027 | 38.59599  | 110.11210 | 250.09990 | 3.41684  | 0.1810972 | 2.3066517 | 51  | 4 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128794 2003 OG <sub>24</sub> |
| 2003 OA <sub>27</sub> | 16.5 | 0.15 | 20071027 | 40.91455  | 175.14854 | 186.36646 | 4.94264  | 0.2044936 | 2.3159428 | 60  | 5 | 2002-2007 | 0.44 | M-v | 1 | MPC | 128794 2003 OA <sub>27</sub> |
| 2003 OH <sub>27</sub> | 17.1 | 0.15 | 20071027 | 58.80026  | 103.77994 | 199.70222 | 1.02792  | 0.1855480 | 2.3971396 | 52  | 2 | 2003-2007 | 0.42 | M-v | 4 | MPC | 128794 2003 OH <sub>27</sub> |
| 2003 OO <sub>27</sub> | 17.1 | 0.15 | 20071027 | 38.80783  | 68.01238  | 253.05353 | 1.16020  | 0.2143980 | 2.4346718 | 91  | 4 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128794 2003 OO <sub>27</sub> |
| 2003 OV <sub>28</sub> | 16.8 | 0.15 | 20071027 | 46.36999  | 17.66988  | 327.04538 | 5.23941  | 0.1622476 | 2.3555227 | 57  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128794 2003 OV <sub>28</sub> |
| 2003 OA <sub>29</sub> | 16.3 | 0.15 | 20071027 | 9.28742   | 90.70483  | 337.53288 | 6.05297  | 0.1553798 | 2.2377259 | 63  | 4 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128794 2003 OA <sub>29</sub> |
| 2003 OE <sub>31</sub> | 17.3 | 0.15 | 20071027 | 38.68090  | 138.18226 | 238.29608 | 2.51552  | 0.2605003 | 2.3533966 | 99  | 4 | 2003-2007 | 0.51 | M-v | 1 | MPC | 128794 2003 OE <sub>31</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 PL <sub>2</sub>  | 17.0 | 0.15 | 20071027 | 81.91439  | 1.85908   | 320.56262 | 2.46762  | 0.1662265 | 2.2472152 | 36  | 6 | 1993-2007 | 0.42 | M-v | 1 | MPC | 102152 2003 PL <sub>2</sub>  |
| 2003 PH <sub>4</sub>  | 16.1 | 0.15 | 20071027 | 75.76216  | 341.42505 | 338.59194 | 9.69978  | 0.2424692 | 2.2851023 | 72  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 102152 2003 PH <sub>4</sub>  |
| 2003 PQ <sub>5</sub>  | 16.2 | 0.15 | 20071027 | 67.57364  | 140.90957 | 203.98697 | 3.92977  | 0.2099132 | 2.2765667 | 110 | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 102152 2003 PQ <sub>5</sub>  |
| 2003 PW <sub>5</sub>  | 17.0 | 0.15 | 20071027 | 91.95041  | 53.55031  | 239.18275 | 3.17536  | 0.2893205 | 2.3012493 | 63  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128794 2003 PW <sub>5</sub>  |
| 2003 PH <sub>6</sub>  | 16.9 | 0.15 | 20071027 | 38.83411  | 54.10991  | 294.85320 | 6.04608  | 0.2211778 | 2.3886564 | 127 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128794 2003 PH <sub>6</sub>  |
| 2003 PK <sub>6</sub>  | 16.2 | 0.15 | 20071027 | 354.94661 | 98.89978  | 296.89930 | 6.29158  | 0.2283547 | 2.4392391 | 124 | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128794 2003 PK <sub>6</sub>  |
| 2003 PZ <sub>6</sub>  | 17.0 | 0.15 | 20071027 | 80.05401  | 81.12288  | 230.18860 | 3.86538  | 0.2396598 | 2.2738208 | 41  | 4 | 1979-2007 | 0.64 | M-v | 1 | MPC | 128794 2003 PZ <sub>6</sub>  |
| 2003 PA <sub>7</sub>  | 16.5 | 0.15 | 20071027 | 10.39080  | 90.32256  | 266.22219 | 5.20352  | 0.2100393 | 2.4137509 | 83  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128794 2003 PA <sub>7</sub>  |
| 2003 PQ <sub>8</sub>  | 16.5 | 0.15 | 20071027 | 356.38341 | 77.39923  | 304.48034 | 8.00193  | 0.2673327 | 2.4410241 | 81  | 2 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128795 2003 PQ <sub>8</sub>  |
| 2003 PF <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 40.11732  | 15.57548  | 317.62197 | 7.69430  | 0.2875620 | 2.4069549 | 54  | 2 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128013 2003 PF <sub>9</sub>  |
| 2003 PK <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 27.85533  | 192.48292 | 167.73953 | 5.59147  | 0.2454524 | 2.3950862 | 57  | 2 | 2003-2007 | 0.39 | M-v | 3 | MPC | 128014 2003 PK <sub>9</sub>  |
| 2003 PV <sub>12</sub> | 16.8 | 0.15 | 20071027 | 81.88265  | 45.90441  | 274.88175 | 4.66598  | 0.1839117 | 2.2880465 | 36  | 3 | 2003-2007 | 0.35 | M-v | 2 | MPC | 128014 2003 PV <sub>12</sub> |
| 2003 QH               | 16.8 | 0.15 | 20071027 | 61.11410  | 14.81319  | 316.53763 | 6.19837  | 0.1306174 | 2.3286688 | 78  | 4 | 1998-2007 | 0.47 | M-v | 2 | MPC | 128795 2003 QH               |
| 2003 QM               | 16.7 | 0.15 | 20071027 | 2.59206   | 62.28958  | 314.17569 | 4.18367  | 0.1847944 | 2.4332008 | 76  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128795 2003 QM               |
| 2003 QJ <sub>2</sub>  | 16.8 | 0.15 | 20071027 | 49.90986  | 88.65415  | 272.46911 | 4.89546  | 0.1546376 | 2.3019836 | 45  | 3 | 2003-2007 | 0.56 | M-v | 3 | MPC | 75886 2003 QJ <sub>2</sub>   |
| 2003 QU <sub>3</sub>  | 16.9 | 0.15 | 20071027 | 38.72759  | 35.61565  | 315.67362 | 1.69838  | 0.2055346 | 2.3637378 | 85  | 3 | 1996-2007 | 0.51 | M-v | 2 | MPC | 128014 2003 QU <sub>3</sub>  |
| 2003 QY <sub>3</sub>  | 17.4 | 0.15 | 20071027 | 76.31668  | 192.43965 | 151.62933 | 3.36510  | 0.2016845 | 2.2466399 | 51  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 118056 2003 QY <sub>3</sub>  |
| 2003 QH <sub>4</sub>  | 16.7 | 0.15 | 20071027 | 58.61009  | 106.37118 | 238.98090 | 2.06969  | 0.1311802 | 2.3018864 | 66  | 4 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128795 2003 QH <sub>4</sub>  |
| 2003 QD <sub>5</sub>  | 17.4 | 0.15 | 20071027 | 33.15353  | 126.02465 | 207.82130 | 1.57992  | 0.2010658 | 2.4427092 | 55  | 2 | 2003-2007 | 0.57 | M-v | 4 | MPC | 128795 2003 QD <sub>5</sub>  |
| 2003 QM <sub>5</sub>  | 15.9 | 0.15 | 20071027 | 68.98063  | 69.80973  | 248.64562 | 22.70550 | 0.1597267 | 2.3383667 | 66  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128015 2003 QM <sub>5</sub>  |
| 2003 QN <sub>5</sub>  | 15.9 | 0.15 | 20071027 | 29.76226  | 106.02788 | 287.27953 | 20.94021 | 0.3128886 | 2.3551596 | 68  | 3 | 2001-2007 | 0.57 | M-v | 2 | MPC | 128015 2003 QN <sub>5</sub>  |
| 2003 QY <sub>5</sub>  | 16.8 | 0.15 | 20071027 | 36.88305  | 136.95264 | 194.31451 | 1.26582  | 0.2166974 | 2.4654009 | 137 | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128795 2003 QY <sub>5</sub>  |
| 2003 QA <sub>7</sub>  | 17.6 | 0.15 | 20071027 | 44.85522  | 70.65984  | 249.11711 | 0.60807  | 0.1969719 | 2.4428915 | 42  | 2 | 2003-2007 | 0.37 | M-v | 4 | MPC | 126661 2003 QA <sub>7</sub>  |
| 2003 QW <sub>7</sub>  | 17.4 | 0.15 | 20071027 | 10.79525  | 16.50506  | 347.76945 | 0.76536  | 0.2089268 | 2.4615013 | 129 | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128795 2003 QW <sub>7</sub>  |
| 2003 QJ <sub>8</sub>  | 17.4 | 0.15 | 20071027 | 28.38478  | 130.49459 | 252.12217 | 5.60333  | 0.1226554 | 2.3332565 | 41  | 2 | 2003-2007 | 0.28 | M-v | 3 | MPC | 128015 2003 QJ <sub>8</sub>  |
| 2003 QW <sub>9</sub>  | 16.5 | 0.15 | 20071027 | 69.64282  | 223.21002 | 90.63010  | 7.23530  | 0.2040343 | 2.3338494 | 58  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128795 2003 QW <sub>9</sub>  |
| 2003 QA <sub>11</sub> | 15.7 | 0.15 | 20071027 | 45.67290  | 340.55534 | 355.18920 | 11.96538 | 0.2030925 | 2.3995801 | 117 | 4 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128795 2003 QA <sub>11</sub> |
| 2003 QE <sub>11</sub> | 16.5 | 0.15 | 20071027 | 43.95840  | 10.93130  | 343.69697 | 9.77335  | 0.1483872 | 2.3471795 | 78  | 5 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128795 2003 QE <sub>11</sub> |
| 2003 QL <sub>11</sub> | 16.5 | 0.15 | 20071027 | 124.98490 | 188.99488 | 98.88015  | 5.26164  | 0.1579628 | 2.2165248 | 53  | 5 | 2000-2007 | 0.36 | M-v | 1 | MPC | 100467 2003 QL <sub>11</sub> |
| 2003 QO <sub>11</sub> | 17.0 | 0.15 | 20071027 | 67.68626  | 220.72424 | 119.43637 | 6.74998  | 0.1561362 | 2.2812926 | 61  | 6 | 1998-2007 | 0.43 | M-v | 1 | MPC | 102153 2003 QO <sub>11</sub> |
| 2003 QX <sub>12</sub> | 17.0 | 0.15 | 20071027 | 88.98632  | 227.54666 | 58.47509  | 3.30887  | 0.2059931 | 2.3454918 | 51  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128795 2003 QX <sub>12</sub> |
| 2003 QM <sub>14</sub> | 17.4 | 0.15 | 20071027 | 58.60972  | 112.65877 | 261.07395 | 5.11587  | 0.1253520 | 2.2373222 | 27  | 2 | 2003-2007 | 0.32 | M-v | 4 | MPC | 128015 2003 QM <sub>14</sub> |
| 2003 QE <sub>15</sub> | 17.7 | 0.15 | 20071027 | 45.85242  | 60.35542  | 287.09302 | 4.80700  | 0.2628817 | 2.3681080 | 70  | 3 | 2000-2007 | 0.47 | M-v | 1 | MPC | 128016 2003 QE <sub>15</sub> |
| 2003 QG <sub>15</sub> | 16.9 | 0.15 | 20071027 | 149.42509 | 11.81637  | 241.54886 | 4.39735  | 0.1649132 | 2.2554661 | 37  | 3 | 2003-2007 | 0.33 | M-v | 3 | MPC | 128795 2003 QG <sub>15</sub> |
| 2003 QT <sub>15</sub> | 16.7 | 0.15 | 20071027 | 76.07554  | 34.82197  | 307.96019 | 6.00217  | 0.1393374 | 2.2706452 | 81  | 4 | 2000-2007 | 0.48 | M-v | 1 | MPC | 110979 2003 QT <sub>15</sub> |
| 2003 QX <sub>15</sub> | 17.0 | 0.15 | 20071027 | 34.35216  | 111.71234 | 252.63080 | 6.20644  | 0.1425243 | 2.3662123 | 75  | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128016 2003 QX <sub>15</sub> |
| 2003 QE <sub>19</sub> | 16.9 | 0.15 | 20071027 | 21.30366  | 298.52773 | 52.63191  | 1.89049  | 0.2412827 | 2.4608629 | 127 | 3 | 2000-2007 | 0.44 | M-v | 3 | MPC | 128795 2003 QE <sub>19</sub> |
| 2003 QU <sub>20</sub> | 17.9 | 0.15 | 20071027 | 63.39245  | 320.76065 | 17.81257  | 2.90589  | 0.2398038 | 2.3361245 | 47  | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 103508 2003 QU <sub>20</sub> |
| 2003 QJ <sub>21</sub> | 17.0 | 0.15 | 20071027 | 71.50026  | 238.49424 | 87.99523  | 3.54459  | 0.2354352 | 2.3391563 | 81  | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128795 2003 QJ <sub>21</sub> |
| 2003 QQ <sub>21</sub> | 16.3 | 0.15 | 20071027 | 118.79087 | 202.23217 | 102.23309 | 5.64603  | 0.1223970 | 2.2563580 | 64  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 122735 2003 QQ <sub>21</sub> |
| 2003 QF <sub>22</sub> | 16.4 | 0.15 | 20071027 | 51.01524  | 62.21748  | 303.09906 | 5.92485  | 0.1530114 | 2.2980674 | 70  | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 108723 2003 QF <sub>22</sub> |
| 2003 QK <sub>22</sub> | 16.3 | 0.15 | 20071027 | 133.49995 | 0.18001   | 276.11086 | 6.24096  | 0.0913006 | 2.2728551 | 79  | 6 | 1999-2007 | 0.57 | M-v | 1 | MPC | 128795 2003 QK <sub>22</sub> |
| 2003 QX <sub>22</sub> | 16.4 | 0.15 | 20071027 | 27.64351  | 172.74297 | 213.26008 | 4.28381  | 0.2331326 | 2.3519828 | 93  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 102154 2003 QX <sub>22</sub> |
| 2003 QS <sub>23</sub> | 16.9 | 0.15 | 20071027 | 33.57066  | 192.30030 | 183.37071 | 6.31992  | 0.1481767 | 2.3643715 | 96  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128795 2003 QS <sub>23</sub> |
| 2003 QJ <sub>24</sub> | 17.0 | 0.15 | 20071027 | 33.77145  | 127.09178 | 202.98155 | 2.07038  | 0.2129304 | 2.4468848 | 136 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128796 2003 QJ <sub>24</sub> |
| 2003 QK <sub>24</sub> | 17.1 | 0.15 | 20071027 | 34.21595  | 81.02480  | 283.83182 | 6.07252  | 0.1433340 | 2.3456162 | 67  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128016 2003 QK <sub>24</sub> |
| 2003 QF <sub>25</sub> | 17.0 | 0.15 | 20071027 | 54.24458  | 108.70648 | 250.47867 | 2.18384  | 0.1270200 | 2.2902355 | 38  | 4 | 2000-2007 | 0.48 | M-v | 1 | MPC | 53747 2003 QF <sub>25</sub>  |
| 2003 QG <sub>26</sub> | 17.9 | 0.15 | 20071027 | 31.26017  | 81.81778  | 295.57186 | 4.31929  | 0.2378394 | 2.3409157 | 27  | 3 | 2000-2007 | 0.39 | M-v | 2 | MPC | 53148 2003 QG <sub>26</sub>  |
| 2003 QL <sub>26</sub> | 17.5 | 0.15 | 20071027 | 87.88311  | 13.58947  | 297.07651 | 4.70308  | 0.2192604 | 2.2884387 | 41  | 4 | 1993-2007 | 0.41 | M-v | 1 | MPC | 128796 2003 QL <sub>26</sub> |
| 2003 QR <sub>26</sub> | 16.8 | 0.15 | 20071027 | 118.13012 | 350.65142 | 315.13029 | 3.73092  | 0.2016412 | 2.2287833 | 93  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 77699 2003 QR <sub>26</sub>  |
| 2003 QV <sub>26</sub> | 16.0 | 0.15 | 20071027 | 80.60879  | 358.44426 | 338.97761 | 5.19486  | 0.1892694 | 2.3139400 | 110 | 3 | 2003-2007 | 0.37 | M-v | 2 | MPC | 77699 2003 QV <sub>26</sub>  |
| 2003 QB <sub>27</sub> | 17.5 | 0.15 | 20071027 | 5.99144   | 213.06167 | 182.15699 | 8.62886  | 0.2259159 | 2.3895402 | 45  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128796 2003 QB <sub>27</sub> |
| 2003 QC <sub>27</sub> | 16.7 | 0.15 | 20071027 | 73.99079  | 97.13050  | 200.02443 | 6.55353  | 0.0865714 | 2.4268263 | 84  | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128796 2003 QC <sub>27</sub> |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 QX <sub>27</sub> | 16.0 | 0.15 | 20071027 | 13.74334  | 81.26889  | 263.40546 | 11.99028 | 0.1990599 | 2.5709300 | 104 | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128796 2003 QX <sub>27</sub> |
| 2003 QK <sub>29</sub> | 17.0 | 0.15 | 20071027 | 82.51753  | 103.48405 | 190.84751 | 6.39658  | 0.2638924 | 2.3126732 | 42  | 3 | 2003-2007 | 0.30 | M-v | 2 | MPC | 128796 2003 QK <sub>29</sub> |
| 2003 QF <sub>30</sub> | 17.0 | 0.15 | 20071027 | 70.81709  | 256.44108 | 101.73464 | 8.54601  | 0.2370261 | 2.2318273 | 42  | 5 | 1997-2007 | 0.46 | M-v | 1 | MPC | 102154 2003 QF <sub>30</sub> |
| 2003 QL <sub>30</sub> | 16.8 | 0.15 | 20071027 | 11.88845  | 317.89672 | 70.88776  | 7.13306  | 0.4012087 | 2.4234220 | 82  | 2 | 2003-2007 | 0.61 | M-v | 2 | MPC | 128796 2003 QL <sub>30</sub> |
| 2003 QO <sub>30</sub> | 17.1 | 0.15 | 20071027 | 47.93018  | 47.73118  | 346.10860 | 7.21090  | 0.0927575 | 2.2030850 | 55  | 4 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128796 2003 QO <sub>30</sub> |
| 2003 QD <sub>31</sub> | 17.8 | 0.15 | 20071027 | 44.69077  | 109.84267 | 244.83498 | 1.50967  | 0.2173790 | 2.3519279 | 66  | 5 | 1996-2007 | 0.43 | M-v | 1 | MPC | 124397 2003 QD <sub>31</sub> |
| 2003 QG <sub>31</sub> | 17.3 | 0.15 | 20071027 | 345.15699 | 114.42472 | 298.62520 | 10.22757 | 0.2578423 | 2.4179673 | 31  | 3 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128796 2003 QG <sub>31</sub> |
| 2003 QK <sub>31</sub> | 16.4 | 0.15 | 20071027 | 31.59192  | 107.02499 | 217.70929 | 5.27714  | 0.1247026 | 2.4700793 | 82  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128796 2003 QK <sub>31</sub> |
| 2003 QM <sub>31</sub> | 16.5 | 0.15 | 20071027 | 16.72017  | 28.31204  | 330.04271 | 3.57415  | 0.2346973 | 2.4376604 | 90  | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128796 2003 QM <sub>31</sub> |
| 2003 QT <sub>31</sub> | 16.9 | 0.15 | 20071027 | 27.74922  | 88.89534  | 265.06778 | 1.66768  | 0.1901035 | 2.4034524 | 106 | 3 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128796 2003 QT <sub>31</sub> |
| 2003 QV <sub>31</sub> | 17.2 | 0.15 | 20071027 | 99.83002  | 73.52525  | 235.83214 | 1.48659  | 0.1288838 | 2.2583975 | 48  | 6 | 1999-2007 | 0.45 | M-v | 1 | MPC | 128796 2003 QV <sub>31</sub> |
| 2003 QG <sub>32</sub> | 16.7 | 0.15 | 20071027 | 25.56903  | 36.96823  | 332.40599 | 6.41003  | 0.1216829 | 2.3643392 | 69  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128796 2003 QG <sub>32</sub> |
| 2003 QR <sub>32</sub> | 17.1 | 0.15 | 20071027 | 119.48701 | 310.87008 | 351.77833 | 3.36669  | 0.1868684 | 2.2129672 | 53  | 5 | 1999-2007 | 0.49 | M-v | 3 | MPC | 74265 2003 QR <sub>32</sub>  |
| 2003 QD <sub>33</sub> | 16.2 | 0.15 | 20071027 | 57.00285  | 30.72103  | 295.48615 | 4.18532  | 0.2480926 | 2.3938787 | 136 | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128796 2003 QD <sub>33</sub> |
| 2003 QE <sub>34</sub> | 16.6 | 0.15 | 20071027 | 51.18954  | 352.40073 | 325.04239 | 6.62951  | 0.2219093 | 2.3965126 | 77  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128796 2003 QE <sub>34</sub> |
| 2003 QH <sub>34</sub> | 16.3 | 0.15 | 20071027 | 16.37970  | 76.61813  | 326.41197 | 7.13081  | 0.1868805 | 2.2956365 | 67  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 77700 2003 QH <sub>34</sub>  |
| 2003 QN <sub>35</sub> | 17.2 | 0.15 | 20071027 | 358.64414 | 23.20551  | 333.82375 | 12.39351 | 0.2743666 | 2.5465807 | 113 | 3 | 1999-2007 | 0.48 | M-v | 2 | MPC | 126662 2003 QN <sub>35</sub> |
| 2003 QS <sub>36</sub> | 17.1 | 0.15 | 20071027 | 84.96555  | 333.64970 | 344.44733 | 5.43991  | 0.1832159 | 2.3093353 | 76  | 5 | 2002-2007 | 0.49 | M-v | 1 | MPC | 110980 2003 QS <sub>36</sub> |
| 2003 QT <sub>36</sub> | 16.8 | 0.15 | 20071027 | 46.42405  | 345.68107 | 351.58294 | 2.44201  | 0.1991917 | 2.4045927 | 107 | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128796 2003 QT <sub>36</sub> |
| 2003 QH <sub>38</sub> | 17.2 | 0.15 | 20071027 | 44.75819  | 24.13595  | 324.32638 | 5.78792  | 0.2087064 | 2.3581334 | 47  | 2 | 2003-2007 | 0.56 | M-v | 3 | MPC | 128017 2003 QH <sub>38</sub> |
| 2003 QL <sub>38</sub> | 16.8 | 0.15 | 20071027 | 24.11184  | 226.27099 | 143.78918 | 2.06665  | 0.1980655 | 2.3791652 | 79  | 5 | 2002-2007 | 0.46 | M-v | 1 | MPC | 128796 2003 QL <sub>38</sub> |
| 2003 QT <sub>38</sub> | 17.1 | 0.15 | 20071027 | 50.80824  | 265.54198 | 96.01042  | 0.71742  | 0.0925822 | 2.3023980 | 61  | 5 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128796 2003 QT <sub>38</sub> |
| 2003 QL <sub>39</sub> | 17.1 | 0.15 | 20071027 | 74.17951  | 331.84566 | 340.18505 | 1.25618  | 0.2441549 | 2.3426873 | 94  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 128796 2003 QL <sub>39</sub> |
| 2003 QM <sub>39</sub> | 17.3 | 0.15 | 20071027 | 47.07898  | 46.91135  | 322.97394 | 2.74493  | 0.2380879 | 2.3122330 | 52  | 3 | 1996-2007 | 0.47 | M-v | 2 | MPC | 128017 2003 QM <sub>39</sub> |
| 2003 QQ <sub>39</sub> | 17.4 | 0.15 | 20071027 | 47.95467  | 61.57102  | 288.34815 | 0.10003  | 0.2778986 | 2.3589438 | 80  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 110980 2003 QQ <sub>39</sub> |
| 2003 QS <sub>39</sub> | 16.9 | 0.15 | 20071027 | 40.56224  | 100.17346 | 236.17892 | 0.75905  | 0.2575519 | 2.4183820 | 133 | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128796 2003 QS <sub>39</sub> |
| 2003 QF <sub>40</sub> | 16.3 | 0.15 | 20071027 | 26.22037  | 10.85100  | 344.61560 | 6.45982  | 0.1400697 | 2.4327424 | 121 | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128796 2003 QF <sub>40</sub> |
| 2003 QG <sub>40</sub> | 17.1 | 0.15 | 20071027 | 41.67165  | 15.03640  | 341.12525 | 5.24785  | 0.1588217 | 2.3732834 | 97  | 4 | 1992-2007 | 0.50 | M-v | 1 | MPC | 128017 2003 QG <sub>40</sub> |
| 2003 QM <sub>40</sub> | 16.4 | 0.15 | 20071027 | 59.60078  | 350.61837 | 317.75175 | 9.82307  | 0.2500271 | 2.3577521 | 49  | 2 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128017 2003 QM <sub>40</sub> |
| 2003 QU <sub>40</sub> | 16.3 | 0.15 | 20071027 | 68.31575  | 12.39940  | 320.90079 | 6.45584  | 0.1386870 | 2.2942980 | 56  | 4 | 1996-2007 | 0.52 | M-v | 2 | MPC | 128796 2003 QU <sub>40</sub> |
| 2003 QM <sub>42</sub> | 16.4 | 0.15 | 20071027 | 49.76460  | 2.22154   | 5.04416   | 6.42071  | 0.2594793 | 2.3455497 | 138 | 4 | 1996-2007 | 0.47 | M-v | 1 | MPC | 128797 2003 QM <sub>42</sub> |
| 2003 QR <sub>42</sub> | 17.9 | 0.15 | 20071027 | 27.86397  | 252.95854 | 65.96370  | 0.22914  | 0.3530927 | 2.5038680 | 109 | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 126662 2003 QR <sub>42</sub> |
| 2003 QM <sub>43</sub> | 17.0 | 0.15 | 20071027 | 41.43615  | 48.56621  | 324.52800 | 1.54966  | 0.2546718 | 2.3352778 | 101 | 5 | 1978-2007 | 0.41 | M-v | 1 | MPC | 128797 2003 QM <sub>43</sub> |
| 2003 QJ <sub>44</sub> | 16.0 | 0.15 | 20071027 | 50.73728  | 3.44559   | 304.63011 | 5.64698  | 0.1400633 | 2.4122197 | 74  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 126662 2003 QJ <sub>44</sub> |
| 2003 QL <sub>44</sub> | 16.9 | 0.15 | 20071027 | 15.72034  | 124.77311 | 225.37736 | 1.37659  | 0.2304233 | 2.4492336 | 111 | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 126662 2003 QL <sub>44</sub> |
| 2003 QY <sub>45</sub> | 16.3 | 0.15 | 20071027 | 53.86578  | 358.69617 | 7.65891   | 2.61081  | 0.1828324 | 2.2974937 | 77  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 75897 2003 QY <sub>45</sub>  |
| 2003 QD <sub>46</sub> | 16.6 | 0.15 | 20071027 | 50.99421  | 357.83545 | 344.62764 | 3.44364  | 0.1374445 | 2.3572862 | 73  | 4 | 1998-2007 | 0.52 | M-v | 2 | MPC | 128797 2003 QD <sub>46</sub> |
| 2003 QE <sub>46</sub> | 16.9 | 0.15 | 20071027 | 26.83593  | 264.95874 | 122.76070 | 0.86828  | 0.2669248 | 2.3486009 | 52  | 4 | 2002-2007 | 0.46 | M-v | 3 | MPC | 75898 2003 QE <sub>46</sub>  |
| 2003 QL <sub>46</sub> | 16.7 | 0.15 | 20071027 | 41.94501  | 206.71604 | 147.48374 | 7.33590  | 0.1829760 | 2.3647436 | 70  | 4 | 2003-2007 | 0.49 | M-v | 1 | MPC | 128797 2003 QL <sub>46</sub> |
| 2003 QC <sub>49</sub> | 17.6 | 0.15 | 20071027 | 52.80257  | 246.62848 | 100.70959 | 1.87104  | 0.2163827 | 2.3289377 | 28  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 103509 2003 QC <sub>49</sub> |
| 2003 QG <sub>50</sub> | 16.8 | 0.15 | 20071027 | 6.62037   | 330.00950 | 46.84951  | 4.38704  | 0.2381330 | 2.4673702 | 147 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128797 2003 QG <sub>50</sub> |
| 2003 QT <sub>50</sub> | 16.5 | 0.15 | 20071027 | 15.14924  | 358.34483 | 25.04572  | 4.69224  | 0.1612135 | 2.4097347 | 124 | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128797 2003 QT <sub>50</sub> |
| 2003 QE <sub>51</sub> | 16.5 | 0.15 | 20071027 | 20.72259  | 346.28758 | 25.44366  | 4.19368  | 0.1911002 | 2.4317824 | 137 | 4 | 1994-2007 | 0.48 | M-v | 2 | MPC | 128797 2003 QE <sub>51</sub> |
| 2003 QQ <sub>51</sub> | 16.4 | 0.15 | 20071027 | 43.59753  | 350.66453 | 359.63204 | 6.46483  | 0.1473572 | 2.3365612 | 96  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128797 2003 QQ <sub>51</sub> |
| 2003 QV <sub>51</sub> | 16.5 | 0.15 | 20071027 | 2.43351   | 5.62914   | 27.52958  | 4.84931  | 0.1296546 | 2.3674373 | 91  | 5 | 1996-2007 | 0.47 | M-v | 1 | MPC | 128797 2003 QV <sub>51</sub> |
| 2003 QY <sub>51</sub> | 16.4 | 0.15 | 20071027 | 5.93516   | 29.64718  | 343.43169 | 13.63934 | 0.1747602 | 2.4339010 | 65  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128797 2003 QY <sub>51</sub> |
| 2003 QG <sub>52</sub> | 17.0 | 0.15 | 20071027 | 79.34287  | 184.38201 | 124.02012 | 3.26828  | 0.1647775 | 2.3189442 | 55  | 4 | 2000-2007 | 0.45 | M-v | 0 | MPC | 128797 2003 QG <sub>52</sub> |
| 2003 QJ <sub>52</sub> | 17.3 | 0.15 | 20071027 | 71.92614  | 303.28260 | 18.47435  | 3.11967  | 0.2644055 | 2.3105259 | 73  | 4 | 1999-2007 | 0.40 | M-v | 1 | MPC | 128797 2003 QJ <sub>52</sub> |
| 2003 QS <sub>52</sub> | 16.7 | 0.15 | 20071027 | 4.08139   | 258.52526 | 121.13537 | 4.31566  | 0.2437113 | 2.4373596 | 118 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128797 2003 QS <sub>52</sub> |
| 2003 QA <sub>53</sub> | 17.7 | 0.15 | 20071027 | 90.12966  | 250.85037 | 66.48119  | 3.50979  | 0.2430830 | 2.2631444 | 43  | 4 | 2000-2007 | 0.48 | M-v | 1 | MPC | 100480 2003 QA <sub>53</sub> |
| 2003 QC <sub>53</sub> | 17.2 | 0.15 | 20071027 | 62.53965  | 260.78259 | 79.48934  | 3.42787  | 0.2337284 | 2.3180414 | 44  | 4 | 1999-2007 | 0.46 | M-v | 1 | MPC | 110980 2003 QC <sub>53</sub> |
| 2003 QB <sub>54</sub> | 17.1 | 0.15 | 20071027 | 56.09416  | 297.13611 | 47.07816  | 2.95011  | 0.2239928 | 2.3356388 | 58  | 5 | 1996-2007 | 0.47 | M-v | 1 | MPC | 128797 2003 QB <sub>54</sub> |
| 2003 QK <sub>55</sub> | 17.0 | 0.15 | 20071027 | 76.05524  | 310.95510 | 33.45136  | 3.69385  | 0.2512167 | 2.2668870 | 70  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128797 2003 QK <sub>55</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2003 QP <sub>55</sub>  | 16.8 | 0.15 | 20071027 | 26.36775  | 12.80270  | 3.65243   | 5.86306  | 0.1467595 | 2.3646091 | 73  | 3 | 2003-2007 | 0.56 | M-v | 3 | MP | 128797 2003 QP <sub>55</sub>  |
| 2003 QZ <sub>55</sub>  | 16.3 | 0.15 | 20071027 | 44.24696  | 261.65878 | 119.91521 | 6.36134  | 0.1853866 | 2.2929816 | 55  | 4 | 1995-2007 | 0.49 | M-v | 1 | MP | 53754 2003 QZ <sub>55</sub>   |
| 2003 QB <sub>56</sub>  | 16.4 | 0.15 | 20071027 | 84.18616  | 210.80326 | 137.45346 | 5.09426  | 0.1951523 | 2.2352855 | 67  | 4 | 2000-2007 | 0.45 | M-v | 2 | MP | 75900 2003 QB <sub>56</sub>   |
| 2003 QH <sub>56</sub>  | 16.0 | 0.15 | 20071027 | 37.38734  | 356.69726 | 14.78551  | 5.95014  | 0.2507418 | 2.3535341 | 114 | 5 | 1994-2007 | 0.53 | M-v | 1 | MP | 128797 2003 QH <sub>56</sub>  |
| 2003 QB <sub>57</sub>  | 16.6 | 0.15 | 20071027 | 49.94845  | 326.61790 | 5.58203   | 3.45943  | 0.2228513 | 2.4042120 | 138 | 5 | 2002-2007 | 0.51 | M-v | 1 | MP | 128797 2003 QB <sub>57</sub>  |
| 2003 QK <sub>58</sub>  | 17.0 | 0.15 | 20071027 | 57.95120  | 205.86688 | 126.83839 | 3.12451  | 0.2293928 | 2.3524524 | 55  | 4 | 2003-2007 | 0.61 | M-v | 1 | MP | 128797 2003 QK <sub>58</sub>  |
| 2003 QR <sub>58</sub>  | 17.1 | 0.15 | 20071027 | 44.99085  | 291.48404 | 61.91012  | 3.09066  | 0.2282446 | 2.3544899 | 48  | 4 | 2003-2007 | 0.42 | M-v | 1 | MP | 128797 2003 QR <sub>58</sub>  |
| 2003 QW <sub>58</sub>  | 17.1 | 0.15 | 20071027 | 56.97503  | 254.92711 | 47.13741  | 3.92045  | 0.1985669 | 2.4482271 | 40  | 3 | 2003-2007 | 0.57 | M-v | 2 | MP | 102157 2003 QW <sub>58</sub>  |
| 2003 QW <sub>59</sub>  | 16.7 | 0.15 | 20071027 | 87.89909  | 278.62523 | 14.39985  | 8.03413  | 0.2380357 | 2.3593742 | 107 | 3 | 2003-2007 | 0.50 | M-v | 2 | MP | 128797 2003 QW <sub>59</sub>  |
| 2003 QX <sub>60</sub>  | 15.7 | 0.15 | 20071027 | 98.36824  | 292.62159 | 31.51608  | 5.20058  | 0.1981919 | 2.2598577 | 100 | 4 | 2002-2007 | 0.52 | M-v | 2 | MP | 128797 2003 QX <sub>60</sub>  |
| 2003 QJ <sub>61</sub>  | 16.0 | 0.15 | 20071027 | 16.93022  | 222.39715 | 124.90221 | 6.72234  | 0.2078653 | 2.5292471 | 119 | 6 | 1991-2007 | 0.54 | M-v | 2 | MP | 128797 2003 QJ <sub>61</sub>  |
| 2003 QT <sub>61</sub>  | 16.3 | 0.15 | 20071027 | 68.51236  | 210.45132 | 135.51071 | 4.77817  | 0.2588783 | 2.3212247 | 100 | 5 | 1998-2007 | 0.46 | M-v | 1 | MP | 102157 2003 QT <sub>61</sub>  |
| 2003 QW <sub>63</sub>  | 16.0 | 0.15 | 20071027 | 51.96301  | 332.34183 | 38.29944  | 5.73433  | 0.2437233 | 2.3562728 | 120 | 3 | 2002-2007 | 0.51 | M-v | 2 | MP | 56760 2003 QW <sub>63</sub>   |
| 2003 QT <sub>64</sub>  | 16.3 | 0.15 | 20071027 | 3.73439   | 222.23602 | 136.13282 | 6.50239  | 0.2541706 | 2.5977576 | 138 | 5 | 1999-2007 | 0.52 | M-v | 1 | MP | 128797 2003 QT <sub>64</sub>  |
| 2003 QC <sub>65</sub>  | 16.5 | 0.15 | 20071027 | 40.63221  | 317.63553 | 73.42198  | 8.75296  | 0.1448275 | 2.2747370 | 59  | 5 | 1993-2007 | 0.57 | M-v | 1 | MP | 128797 2003 QC <sub>65</sub>  |
| 2003 QX <sub>65</sub>  | 16.9 | 0.15 | 20071027 | 15.42863  | 278.28413 | 121.71173 | 2.19069  | 0.236250  | 2.3574976 | 42  | 3 | 2003-2007 | 0.48 | M-v | 3 | MP | 86069 2003 QX <sub>65</sub>   |
| 2003 QY <sub>65</sub>  | 16.3 | 0.15 | 20071027 | 66.97966  | 46.31187  | 292.76676 | 7.12917  | 0.2428336 | 2.3618155 | 76  | 5 | 2001-2007 | 0.50 | M-v | 1 | MP | 102157 2003 QY <sub>65</sub>  |
| 2003 QE <sub>66</sub>  | 16.6 | 0.15 | 20071027 | 43.09749  | 50.63120  | 315.06351 | 3.05610  | 0.1952211 | 2.3325620 | 64  | 3 | 1994-2007 | 0.49 | M-v | 3 | MP | 53201 2003 QE <sub>66</sub>   |
| 2003 QE <sub>67</sub>  | 16.2 | 0.15 | 20071027 | 70.85639  | 224.26418 | 130.06706 | 5.40504  | 0.1273806 | 2.2815720 | 61  | 5 | 1995-2007 | 0.58 | M-v | 1 | MP | 77702 2003 QE <sub>67</sub>   |
| 2003 QF <sub>67</sub>  | 16.8 | 0.15 | 20071027 | 40.52598  | 246.62269 | 113.83807 | 3.12961  | 0.2160245 | 2.3802099 | 76  | 5 | 2001-2007 | 0.46 | M-v | 1 | MP | 128797 2003 QF <sub>67</sub>  |
| 2003 QP <sub>67</sub>  | 16.8 | 0.15 | 20071027 | 23.01437  | 152.20885 | 199.39022 | 3.85477  | 0.2213871 | 2.4140419 | 160 | 3 | 2003-2007 | 0.50 | M-v | 2 | MP | 128798 2003 QP <sub>67</sub>  |
| 2003 QR <sub>67</sub>  | 16.4 | 0.15 | 20071027 | 89.79597  | 5.37918   | 309.34437 | 6.80331  | 0.1308366 | 2.2741533 | 57  | 4 | 2000-2007 | 0.57 | M-v | 1 | MP | 128798 2003 QR <sub>67</sub>  |
| 2003 QX <sub>67</sub>  | 16.6 | 0.15 | 20071027 | 40.71227  | 251.25787 | 105.27509 | 3.34538  | 0.1945046 | 2.3704944 | 74  | 4 | 2003-2007 | 0.48 | M-v | 1 | MP | 128798 2003 QX <sub>67</sub>  |
| 2003 QM <sub>70</sub>  | 15.0 | 0.15 | 20071027 | 38.36957  | 63.33440  | 10.03711  | 22.67756 | 0.3256791 | 2.3400613 | 84  | 5 | 1992-2007 | 0.44 | M-v | 1 | MP | 110981 2003 QM <sub>70</sub>  |
| 2003 QO <sub>71</sub>  | 17.0 | 0.15 | 20071027 | 7.57856   | 52.67588  | 286.32825 | 7.36997  | 0.2658147 | 2.5460539 | 103 | 3 | 1999-2007 | 0.60 | M-v | 2 | MP | 126663 2003 QO <sub>71</sub>  |
| 2003 QO <sub>73</sub>  | 16.9 | 0.15 | 20071027 | 1.30275   | 77.48231  | 309.22326 | 3.22249  | 0.2168808 | 2.4255432 | 98  | 4 | 2000-2007 | 0.49 | M-v | 1 | MP | 128798 2003 QO <sub>73</sub>  |
| 2003 QA <sub>74</sub>  | 17.2 | 0.15 | 20071027 | 32.35851  | 96.33679  | 285.07188 | 4.67694  | 0.1751331 | 2.3000181 | 37  | 4 | 2000-2007 | 0.51 | M-v | 1 | MP | 77702 2003 QA <sub>74</sub>   |
| 2003 QM <sub>74</sub>  | 16.9 | 0.15 | 20071027 | 13.87219  | 91.40625  | 279.53554 | 4.12977  | 0.2640395 | 2.4301076 | 66  | 2 | 2003-2007 | 0.45 | M-v | 3 | MP | 128798 2003 QM <sub>74</sub>  |
| 2003 QZ <sub>75</sub>  | 16.3 | 0.15 | 20071027 | 19.25893  | 196.84378 | 209.44610 | 4.69977  | 0.2224537 | 2.3372472 | 129 | 4 | 2001-2007 | 0.53 | M-v | 1 | MP | 128798 2003 QZ <sub>75</sub>  |
| 2003 QH <sub>76</sub>  | 17.1 | 0.15 | 20071027 | 78.42873  | 31.87137  | 293.33259 | 3.72247  | 0.1676631 | 2.2997775 | 56  | 4 | 2003-2007 | 0.51 | M-v | 1 | MP | 128798 2003 QH <sub>76</sub>  |
| 2003 QT <sub>76</sub>  | 16.5 | 0.15 | 20071027 | 39.90646  | 43.62163  | 324.56870 | 6.27327  | 0.2339652 | 2.3584733 | 72  | 4 | 2001-2007 | 0.37 | M-v | 1 | MP | 75905 2003 QT <sub>76</sub>   |
| 2003 QO <sub>77</sub>  | 16.3 | 0.15 | 20071027 | 101.42102 | 21.60856  | 282.93850 | 5.48231  | 0.2347194 | 2.2844030 | 117 | 5 | 2000-2007 | 0.49 | M-v | 1 | MP | 100491 2003 QO <sub>77</sub>  |
| 2003 QH <sub>79</sub>  | 15.7 | 0.15 | 20071027 | 42.07941  | 79.06487  | 287.20338 | 9.17499  | 0.0886205 | 2.3405815 | 54  | 4 | 2001-2007 | 0.53 | M-v | 1 | MP | 128798 2003 QH <sub>79</sub>  |
| 2003 QG <sub>80</sub>  | 17.7 | 0.15 | 20071027 | 27.42301  | 280.75773 | 106.81437 | 2.16869  | 0.2083297 | 2.3188397 | 24  | 4 | 1996-2007 | 0.46 | M-v | 1 | MP | 110981 2003 QG <sub>80</sub>  |
| 2003 QR <sub>82</sub>  | 16.6 | 0.15 | 20071027 | 355.94217 | 295.73831 | 115.69960 | 3.43338  | 0.3143993 | 2.3863051 | 100 | 4 | 1994-2007 | 0.51 | M-v | 2 | MP | 128019 2003 QR <sub>82</sub>  |
| 2003 QY <sub>84</sub>  | 17.4 | 0.15 | 20071027 | 50.05627  | 140.24597 | 231.06779 | 1.93024  | 0.1668742 | 2.2802360 | 52  | 4 | 2000-2007 | 0.51 | M-v | 1 | MP | 77703 2003 QY <sub>84</sub>   |
| 2003 QB <sub>85</sub>  | 17.0 | 0.15 | 20071027 | 54.67537  | 89.60952  | 226.52315 | 4.09621  | 0.2510537 | 2.4092746 | 76  | 2 | 2003-2007 | 0.49 | M-v | 3 | MP | 128798 2003 QB <sub>85</sub>  |
| 2003 QJ <sub>85</sub>  | 16.9 | 0.15 | 20071027 | 302.30468 | 347.44352 | 147.43847 | 4.19661  | 0.1520008 | 2.2557541 | 64  | 5 | 1993-2007 | 0.49 | M-v | 1 | MP | 75906 2003 QJ <sub>85</sub>   |
| 2003 QN <sub>85</sub>  | 16.6 | 0.15 | 20071027 | 62.90533  | 101.38092 | 229.88144 | 6.03054  | 0.1523448 | 2.3567381 | 115 | 3 | 2003-2007 | 0.49 | M-v | 1 | MP | 128798 2003 QN <sub>85</sub>  |
| 2003 QO <sub>87</sub>  | 16.1 | 0.15 | 20071027 | 61.90835  | 13.94495  | 334.98746 | 6.45921  | 0.1505491 | 2.3065334 | 75  | 5 | 2000-2007 | 0.43 | M-v | 1 | MP | 128798 2003 QO <sub>87</sub>  |
| 2003 QM <sub>89</sub>  | 17.2 | 0.15 | 20071027 | 348.65869 | 152.36283 | 228.45414 | 1.64374  | 0.1769962 | 2.4773880 | 66  | 3 | 2003-2007 | 0.50 | M-v | 2 | MP | 128798 2003 QM <sub>89</sub>  |
| 2003 QM <sub>90</sub>  | 16.2 | 0.15 | 20071027 | 65.89373  | 15.08605  | 335.85412 | 5.72198  | 0.1900874 | 2.3190484 | 120 | 3 | 2003-2007 | 0.45 | M-v | 2 | MP | 75908 2003 QM <sub>90</sub>   |
| 2003 QQ <sub>92</sub>  | 16.7 | 0.15 | 20071027 | 18.14750  | 273.82150 | 82.12406  | 6.92394  | 0.3125921 | 2.4803841 | 89  | 2 | 2003-2007 | 0.47 | M-v | 2 | MP | 128798 2003 QQ <sub>92</sub>  |
| 2003 QO <sub>93</sub>  | 16.7 | 0.15 | 20071027 | 34.07437  | 297.78911 | 30.68858  | 2.94430  | 0.2130167 | 2.4356107 | 92  | 3 | 2003-2007 | 0.52 | M-v | 2 | MP | 128798 2003 QO <sub>93</sub>  |
| 2003 QQ <sub>93</sub>  | 16.5 | 0.15 | 20071027 | 63.60604  | 334.07229 | 5.42470   | 1.85336  | 0.1748598 | 2.2951829 | 45  | 5 | 1995-2007 | 0.51 | M-v | 1 | MP | 128798 2003 QQ <sub>93</sub>  |
| 2003 QE <sub>95</sub>  | 16.9 | 0.15 | 20071027 | 56.62028  | 277.84847 | 67.29534  | 6.65622  | 0.2589599 | 2.3503266 | 47  | 3 | 2003-2007 | 0.54 | M-v | 2 | MP | 103511 2003 QE <sub>95</sub>  |
| 2003 QR <sub>95</sub>  | 16.7 | 0.15 | 20071027 | 24.30780  | 323.16181 | 55.54751  | 4.54223  | 0.2151781 | 2.3546518 | 61  | 4 | 1995-2007 | 0.58 | M-v | 1 | MP | 128798 2003 QR <sub>95</sub>  |
| 2003 QM <sub>100</sub> | 17.0 | 0.15 | 20071027 | 61.06547  | 154.25833 | 179.23336 | 4.52839  | 0.1281564 | 2.3405313 | 62  | 5 | 2002-2007 | 0.40 | M-v | 0 | MP | 128798 2003 QM <sub>100</sub> |
| 2003 QV <sub>103</sub> | 16.3 | 0.15 | 20071027 | 130.43830 | 241.43996 | 52.06034  | 7.17812  | 0.1482736 | 2.3233934 | 84  | 6 | 1992-2007 | 0.53 | M-v | 1 | MP | 104258 2003 QV <sub>103</sub> |
| 2003 QZ <sub>103</sub> | 16.5 | 0.15 | 20071027 | 80.26268  | 303.03756 | 35.72557  | 4.63600  | 0.1528487 | 2.2873598 | 70  | 4 | 2002-2007 | 0.54 | M-v | 2 | MP | 74270 2003 QZ <sub>103</sub>  |
| 2003 QP <sub>104</sub> | 16.4 | 0.15 | 20071027 | 346.77604 | 80.46745  | 353.25582 | 12.97960 | 0.3811358 | 2.4624983 | 108 | 2 | 2003-2007 | 0.46 | M-v | 2 | MP | 128798 2003 QP <sub>104</sub> |
| 2003 QQ <sub>104</sub> | 16.7 | 0.15 | 20071027 | 53.42601  | 26.29446  | 323.91334 | 4.24226  | 0.1378441 | 2.3351334 | 90  | 3 | 2003-2007 | 0.53 | M-v | 3 | MP | 128798 2003 QQ <sub>104</sub> |
| 2003 QW <sub>104</sub> | 16.2 | 0.15 | 20071027 | 33.82767  | 298.10502 | 53.14266  | 10.41665 | 0.2886213 | 2.4561143 | 170 | 3 | 2003-2007 | 0.42 | M-v | 1 | MP | 128798 2003 QW <sub>104</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 QG <sub>105</sub> | 17.3 | 0.15 | 20071027 | 69.53770  | 328.99197 | 17.34954  | 4.15439  | 0.2376264 | 2.3035668 | 69  | 4 | 1995-2007 | 0.58 | M-v | 1 | MPG | 110981 2003 QG <sub>105</sub> |
| 2003 QK <sub>109</sub> | 16.7 | 0.15 | 20071027 | 350.92996 | 359.26105 | 20.49444  | 5.45332  | 0.1761015 | 2.4730122 | 87  | 2 | 2003-2007 | 0.55 | M-v | 3 | MPG | 128799 2003 QK <sub>109</sub> |
| 2003 QJ <sub>111</sub> | 17.0 | 0.15 | 20071027 | 23.26154  | 334.26220 | 37.08704  | 5.96188  | 0.2496435 | 2.3942862 | 102 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPG | 128799 2003 QJ <sub>111</sub> |
| 2003 QN <sub>111</sub> | 15.6 | 0.15 | 20071027 | 11.09702  | 286.25473 | 150.65906 | 22.73321 | 0.2170338 | 2.2816934 | 69  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPG | 128799 2003 QN <sub>111</sub> |
| 2003 QO <sub>111</sub> | 16.6 | 0.15 | 20071027 | 131.75587 | 214.84960 | 68.97357  | 6.74010  | 0.2142474 | 2.2309895 | 55  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPG | 102159 2003 QO <sub>111</sub> |
| 2003 QS <sub>111</sub> | 16.9 | 0.15 | 20071027 | 109.53946 | 208.12421 | 92.47875  | 7.19225  | 0.1751176 | 2.2451976 | 69  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPG | 104258 2003 QS <sub>111</sub> |
| 2003 QB <sub>114</sub> | 17.7 | 0.15 | 20071027 | 20.49476  | 139.19881 | 235.69684 | 4.06249  | 0.2054919 | 2.3825065 | 60  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPG | 128799 2003 QB <sub>114</sub> |
| 2003 QK <sub>114</sub> | 17.6 | 0.15 | 20071027 | 103.80864 | 17.05092  | 267.61300 | 2.51569  | 0.2352411 | 2.3299770 | 50  | 5 | 1999-2007 | 0.45 | M-v | 0 | MPG | 128799 2003 QK <sub>114</sub> |
| 2003 RA <sub>1</sub>   | 16.6 | 0.15 | 20071027 | 34.47304  | 277.53149 | 97.71736  | 6.51841  | 0.1795601 | 2.3778915 | 49  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPG | 128799 2003 RA <sub>1</sub>   |
| 2003 RX <sub>2</sub>   | 17.1 | 0.15 | 20071027 | 30.16444  | 16.51176  | 354.40031 | 6.07727  | 0.1217455 | 2.3455530 | 47  | 3 | 2003-2007 | 0.46 | M-v | 3 | MPG | 128799 2003 RX <sub>2</sub>   |
| 2003 RD <sub>3</sub>   | 17.4 | 0.15 | 20071027 | 26.90827  | 15.60949  | 359.43271 | 2.81720  | 0.1806925 | 2.3610054 | 57  | 3 | 2003-2007 | 0.46 | M-v | 3 | MPG | 128020 2003 RD <sub>3</sub>   |
| 2003 RE <sub>3</sub>   | 17.1 | 0.15 | 20071027 | 356.48551 | 298.45711 | 116.97545 | 2.93587  | 0.2080199 | 2.3665040 | 69  | 3 | 2000-2007 | 0.45 | M-v | 2 | MPG | 128799 2003 RE <sub>3</sub>   |
| 2003 RQ <sub>4</sub>   | 16.3 | 0.15 | 20071027 | 31.60077  | 147.97936 | 230.30393 | 5.99323  | 0.1224092 | 2.3580091 | 83  | 3 | 1978-2007 | 0.50 | M-v | 2 | MPG | 128799 2003 RQ <sub>4</sub>   |
| 2003 RA <sub>5</sub>   | 16.1 | 0.15 | 20071027 | 38.77952  | 0.70501   | 18.10402  | 3.43096  | 0.2254066 | 2.3891104 | 148 | 6 | 1999-2007 | 0.49 | M-v | 1 | MPG | 128799 2003 RA <sub>5</sub>   |
| 2003 RF <sub>5</sub>   | 17.1 | 0.15 | 20071027 | 8.72546   | 208.21712 | 188.75206 | 1.03249  | 0.1891308 | 2.3734706 | 56  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPG | 128799 2003 RF <sub>5</sub>   |
| 2003 RT <sub>5</sub>   | 15.8 | 0.15 | 20071027 | 40.26312  | 327.41425 | 69.10518  | 6.14641  | 0.2616073 | 2.3837986 | 125 | 5 | 1997-2007 | 0.55 | M-v | 1 | MPG | 128799 2003 RT <sub>5</sub>   |
| 2003 RX <sub>6</sub>   | 17.6 | 0.15 | 20071027 | 141.06227 | 296.65390 | 329.80081 | 3.82074  | 0.1420737 | 2.2537562 | 38  | 3 | 2002-2007 | 0.39 | M-v | 3 | MPG | 110982 2003 RX <sub>6</sub>   |
| 2003 RN <sub>7</sub>   | 16.4 | 0.15 | 20071027 | 44.38959  | 23.17527  | 343.32454 | 10.93618 | 0.2579395 | 2.3865253 | 75  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPG | 75915 2003 RN <sub>7</sub>    |
| 2003 RT <sub>7</sub>   | 16.7 | 0.15 | 20071027 | 52.05775  | 253.91793 | 59.37817  | 10.37529 | 0.2551719 | 2.4248697 | 100 | 2 | 2003-2007 | 0.59 | M-v | 3 | MPG | 128799 2003 RT <sub>7</sub>   |
| 2003 RZ <sub>7</sub>   | 16.5 | 0.15 | 20071027 | 70.56781  | 80.49295  | 248.40906 | 6.03959  | 0.1392219 | 2.3395207 | 34  | 2 | 2003-2007 | 0.49 | M-v | 4 | MPG | 128020 2003 RZ <sub>7</sub>   |
| 2003 RB <sub>8</sub>   | 15.9 | 0.15 | 20071027 | 344.33753 | 88.47144  | 284.16338 | 12.78090 | 0.3049241 | 2.6508696 | 87  | 3 | 2000-2007 | 0.49 | M-v | 2 | MPG | 122738 2003 RB <sub>8</sub>   |
| 2003 RS <sub>8</sub>   | 17.3 | 0.15 | 20071027 | 350.37830 | 86.45186  | 298.87978 | 8.31644  | 0.4668295 | 2.5856072 | 134 | 3 | 2000-2007 | 0.45 | M-v | 1 | MPG | 128799 2003 RS <sub>8</sub>   |
| 2003 RX <sub>8</sub>   | 16.9 | 0.15 | 20071027 | 14.34454  | 311.23291 | 81.92290  | 3.49519  | 0.1848055 | 2.3660125 | 76  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPG | 128799 2003 RX <sub>8</sub>   |
| 2003 RY <sub>8</sub>   | 16.9 | 0.15 | 20071027 | 47.71220  | 215.36189 | 139.33594 | 3.26863  | 0.1404834 | 2.3445495 | 62  | 5 | 1995-2007 | 0.55 | M-v | 1 | MPG | 128799 2003 RY <sub>8</sub>   |
| 2003 RQ <sub>9</sub>   | 16.5 | 0.15 | 20071027 | 2.20348   | 161.78290 | 226.36166 | 8.08413  | 0.2053778 | 2.4479497 | 158 | 3 | 2001-2007 | 0.47 | M-v | 1 | MPG | 128799 2003 RQ <sub>9</sub>   |
| 2003 RE <sub>11</sub>  | 16.9 | 0.15 | 20071027 | 111.90683 | 184.57312 | 113.82559 | 6.88968  | 0.1807146 | 2.2464636 | 57  | 4 | 2003-2007 | 0.49 | M-v | 1 | MPG | 102160 2003 RE <sub>11</sub>  |
| 2003 RB <sub>12</sub>  | 16.7 | 0.15 | 20071027 | 37.11178  | 262.19153 | 85.37499  | 5.66556  | 0.2452601 | 2.3963668 | 66  | 3 | 2003-2007 | 0.41 | M-v | 2 | MPG | 128020 2003 RB <sub>12</sub>  |
| 2003 RQ <sub>12</sub>  | 16.8 | 0.15 | 20071027 | 359.14616 | 276.38296 | 135.30285 | 2.79641  | 0.1995250 | 2.3808662 | 78  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPG | 128799 2003 RQ <sub>12</sub>  |
| 2003 RT <sub>12</sub>  | 16.4 | 0.15 | 20071027 | 61.88228  | 291.70506 | 69.35081  | 6.22405  | 0.2213697 | 2.2804739 | 56  | 2 | 2003-2007 | 0.55 | M-v | 3 | MPG | 128021 2003 RT <sub>12</sub>  |
| 2003 RJ <sub>14</sub>  | 16.4 | 0.15 | 20071027 | 114.81050 | 113.34479 | 178.60418 | 22.72938 | 0.1708542 | 2.2782869 | 52  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPG | 100501 2003 RJ <sub>14</sub>  |
| 2003 RJ <sub>17</sub>  | 16.3 | 0.15 | 20071027 | 350.45297 | 104.63824 | 258.18791 | 7.79555  | 0.1181037 | 2.5287700 | 72  | 5 | 1995-2007 | 0.54 | M-v | 2 | MPG | 128799 2003 RJ <sub>17</sub>  |
| 2003 RU <sub>17</sub>  | 16.6 | 0.15 | 20071027 | 107.68559 | 30.32475  | 262.77949 | 5.86562  | 0.1401405 | 2.3071881 | 62  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPG | 128799 2003 RU <sub>17</sub>  |
| 2003 RW <sub>17</sub>  | 17.0 | 0.15 | 20071027 | 359.27973 | 343.07255 | 44.86478  | 3.24276  | 0.1856141 | 2.4456805 | 106 | 3 | 2003-2007 | 0.44 | M-v | 2 | MPG | 128799 2003 RW <sub>17</sub>  |
| 2003 RC <sub>18</sub>  | 16.4 | 0.15 | 20071027 | 67.55399  | 38.37825  | 269.76228 | 12.32067 | 0.2634556 | 2.4006840 | 34  | 2 | 2003-2007 | 0.48 | M-v | 4 | MPG | 128021 2003 RC <sub>18</sub>  |
| 2003 RD <sub>19</sub>  | 16.9 | 0.15 | 20071027 | 51.04740  | 156.38892 | 178.37330 | 5.61260  | 0.1992446 | 2.4001924 | 82  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPG | 128799 2003 RD <sub>19</sub>  |
| 2003 RJ <sub>19</sub>  | 17.1 | 0.15 | 20071027 | 32.93756  | 100.12585 | 295.88911 | 1.41033  | 0.2110965 | 2.3101358 | 60  | 5 | 1996-2007 | 0.43 | M-v | 1 | MPG | 128799 2003 RJ <sub>19</sub>  |
| 2003 RJ <sub>20</sub>  | 18.1 | 0.15 | 20071027 | 37.86883  | 334.65812 | 21.09292  | 2.94822  | 0.2375294 | 2.3999237 | 58  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPG | 128799 2003 RJ <sub>20</sub>  |
| 2003 RW <sub>20</sub>  | 17.1 | 0.15 | 20071027 | 17.94755  | 301.72703 | 90.65194  | 2.10501  | 0.2410258 | 2.3867943 | 47  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPG | 128021 2003 RW <sub>20</sub>  |
| 2003 RT <sub>22</sub>  | 17.6 | 0.15 | 20071027 | 74.23717  | 48.91882  | 293.26099 | 1.55604  | 0.2428807 | 2.2889532 | 69  | 5 | 1996-2007 | 0.42 | M-v | 1 | MPG | 128800 2003 RT <sub>22</sub>  |
| 2003 RC <sub>23</sub>  | 16.6 | 0.15 | 20071027 | 358.31548 | 326.58384 | 67.96092  | 5.04656  | 0.2407123 | 2.4217210 | 94  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPG | 128800 2003 RC <sub>23</sub>  |
| 2003 RM <sub>23</sub>  | 16.3 | 0.15 | 20071027 | 55.36597  | 65.09506  | 263.73656 | 10.78405 | 0.1724735 | 2.3764808 | 54  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPG | 128022 2003 RM <sub>23</sub>  |
| 2003 RY <sub>23</sub>  | 16.7 | 0.15 | 20071027 | 73.75160  | 102.65482 | 234.32670 | 6.03967  | 0.1380357 | 2.3052400 | 82  | 4 | 2002-2007 | 0.53 | M-v | 1 | MPG | 128800 2003 RY <sub>23</sub>  |
| 2003 RL <sub>24</sub>  | 17.9 | 0.15 | 20071027 | 90.65495  | 10.91605  | 341.09711 | 2.10424  | 0.1477963 | 2.2196561 | 55  | 5 | 1995-2007 | 0.46 | M-v | 1 | MPG | 108733 2003 RL <sub>24</sub>  |
| 2003 RU <sub>25</sub>  | 15.7 | 0.15 | 20071027 | 29.53761  | 67.96635  | 240.34867 | 13.07468 | 0.1829407 | 2.5962293 | 68  | 3 | 1999-2007 | 0.50 | M-v | 2 | MPG | 128800 2003 RU <sub>25</sub>  |
| 2003 RB <sub>27</sub>  | 16.5 | 0.15 | 20071027 | 79.87147  | 281.76580 | 40.13617  | 5.88393  | 0.1341772 | 2.3444120 | 49  | 5 | 1996-2007 | 0.56 | M-v | 1 | MPG | 128800 2003 RB <sub>27</sub>  |
| 2003 RE <sub>27</sub>  | 16.0 | 0.15 | 20071027 | 66.29441  | 289.95573 | 69.20164  | 6.19583  | 0.2098158 | 2.2979734 | 59  | 4 | 2001-2007 | 0.56 | M-v | 2 | MPG | 126665 2003 RE <sub>27</sub>  |
| 2003 RF <sub>27</sub>  | 17.1 | 0.15 | 20071027 | 129.29848 | 94.57885  | 210.62506 | 2.37824  | 0.1933080 | 2.2258728 | 31  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPG | 108734 2003 RF <sub>27</sub>  |
| 2003 SB                | 16.9 | 0.15 | 20071027 | 20.47916  | 123.10796 | 242.62043 | 14.31647 | 0.2968806 | 2.4289271 | 112 | 2 | 2003-2007 | 0.45 | M-v | 3 | MPG | 128022 2003 SB                |
| 2003 SK                | 17.7 | 0.15 | 20071027 | 36.69151  | 112.50853 | 311.48165 | 4.98238  | 0.1032365 | 2.1904072 | 46  | 4 | 1995-2007 | 0.45 | M-v | 0 | MPG | 128800 2003 SK                |
| 2003 SL <sub>3</sub>   | 17.0 | 0.15 | 20071027 | 31.46563  | 65.19480  | 334.56016 | 3.26000  | 0.1875937 | 2.3280778 | 87  | 5 | 2001-2007 | 0.39 | M-v | 1 | MPG | 128800 2003 SL <sub>3</sub>   |
| 2003 SM <sub>3</sub>   | 16.6 | 0.15 | 20071027 | 133.36329 | 80.84392  | 202.34536 | 2.95331  | 0.1618788 | 2.2787771 | 63  | 5 | 1999-2007 | 0.56 | M-v | 2 | MPG | 74272 2003 SM <sub>3</sub>    |
| 2003 SN <sub>3</sub>   | 17.3 | 0.15 | 20071027 | 60.39774  | 19.93212  | 339.88875 | 2.00702  | 0.2229744 | 2.3191789 | 108 | 5 | 1996-2007 | 0.43 | M-v | 1 | MPG | 128800 2003 SN <sub>3</sub>   |
| 2003 SX <sub>3</sub>   | 16.8 | 0.15 | 20071027 | 26.13032  | 43.03450  | 2.83479   | 5.82187  | 0.0500547 | 2.2961661 | 61  | 4 | 1998-2007 | 0.45 | M-v | 1 | MPG | 75922 2003 SX <sub>3</sub>    |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 SZ <sub>3</sub>  | 17.2 | 0.15 | 20071027 | 294.78432 | 256.14273 | 186.51932 | 2.61579  | 0.1174446 | 2.5619549 | 50  | 4 | 1997-2007 | 0.35 | M-v | 0 | MPC | 128800 2003 SZ <sub>3</sub>  |
| 2003 SP <sub>4</sub>  | 17.0 | 0.15 | 20071027 | 160.56448 | 214.45304 | 66.27263  | 4.59504  | 0.1507318 | 2.1660655 | 60  | 5 | 2000-2007 | 0.38 | M-v | 1 | MPC | 128800 2003 SP <sub>4</sub>  |
| 2003 SZ <sub>4</sub>  | 16.8 | 0.15 | 20071027 | 52.08927  | 17.52790  | 348.17008 | 5.53525  | 0.2778177 | 2.3484127 | 97  | 4 | 2002-2007 | 0.42 | M-v | 2 | MPC | 108735 2003 SZ <sub>4</sub>  |
| 2003 SY <sub>5</sub>  | 16.4 | 0.15 | 20071027 | 43.65089  | 36.37875  | 337.57054 | 2.62393  | 0.1777883 | 2.3465703 | 115 | 4 | 2001-2007 | 0.39 | M-v | 1 | MPC | 77705 2003 SY <sub>5</sub>   |
| 2003 SG <sub>6</sub>  | 16.4 | 0.15 | 20071027 | 353.56099 | 359.87795 | 65.52075  | 7.06015  | 0.0984939 | 2.3290753 | 65  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128800 2003 SG <sub>6</sub>  |
| 2003 SD <sub>7</sub>  | 16.7 | 0.15 | 20071027 | 96.49340  | 287.38831 | 5.54679   | 6.29756  | 0.2568304 | 2.3420544 | 83  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128800 2003 SD <sub>7</sub>  |
| 2003 SV <sub>7</sub>  | 17.1 | 0.15 | 20071027 | 33.67302  | 136.04015 | 253.45416 | 3.05948  | 0.1130484 | 2.3110571 | 59  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 86094 2003 SV <sub>7</sub>   |
| 2003 ST <sub>8</sub>  | 17.8 | 0.15 | 20071027 | 7.48108   | 157.37607 | 248.97503 | 2.70234  | 0.1240921 | 2.3612205 | 45  | 2 | 2003-2007 | 0.36 | M-v | 3 | MPC | 128023 2003 ST <sub>8</sub>  |
| 2003 SE <sub>10</sub> | 17.1 | 0.15 | 20071027 | 49.79477  | 109.54634 | 231.98557 | 1.49999  | 0.2259017 | 2.4055162 | 101 | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128800 2003 SE <sub>10</sub> |
| 2003 SX <sub>11</sub> | 16.7 | 0.15 | 20071027 | 91.06651  | 335.41216 | 343.65977 | 0.98241  | 0.0912177 | 2.3036416 | 56  | 6 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128800 2003 SX <sub>11</sub> |
| 2003 SY <sub>12</sub> | 17.0 | 0.15 | 20071027 | 39.79940  | 344.59585 | 351.76354 | 0.85867  | 0.1853511 | 2.4426178 | 124 | 6 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128800 2003 SY <sub>12</sub> |
| 2003 SE <sub>13</sub> | 16.9 | 0.15 | 20071027 | 356.39245 | 288.67456 | 133.82724 | 1.65606  | 0.1743710 | 2.3618389 | 52  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128800 2003 SE <sub>13</sub> |
| 2003 SL <sub>13</sub> | 16.3 | 0.15 | 20071027 | 8.37588   | 51.46919  | 359.51590 | 5.94955  | 0.1486475 | 2.3388857 | 57  | 3 | 2003-2007 | 0.37 | M-v | 3 | MPC | 128800 2003 SL <sub>13</sub> |
| 2003 SZ <sub>13</sub> | 17.3 | 0.15 | 20071027 | 8.17221   | 54.75062  | 343.81284 | 3.53485  | 0.1947313 | 2.3989667 | 83  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128023 2003 SZ <sub>13</sub> |
| 2003 SE <sub>14</sub> | 17.0 | 0.15 | 20071027 | 351.39859 | 258.61546 | 151.01203 | 1.39909  | 0.1744474 | 2.4300012 | 119 | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 128800 2003 SE <sub>14</sub> |
| 2003 SY <sub>14</sub> | 17.4 | 0.15 | 20071027 | 58.76760  | 332.47958 | 27.29384  | 1.97875  | 0.1200843 | 2.3064310 | 56  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 75926 2003 SY <sub>14</sub>  |
| 2003 SU <sub>15</sub> | 16.9 | 0.15 | 20071027 | 30.22959  | 205.13039 | 161.73251 | 2.10840  | 0.1052714 | 2.3872877 | 72  | 3 | 2003-2007 | 0.56 | M-v | 3 | MPC | 128800 2003 SU <sub>15</sub> |
| 2003 SH <sub>16</sub> | 16.8 | 0.15 | 20071027 | 55.70352  | 32.09394  | 339.38332 | 2.05069  | 0.2031529 | 2.2969760 | 96  | 4 | 1996-2007 | 0.50 | M-v | 2 | MPC | 86097 2003 SH <sub>16</sub>  |
| 2003 SO <sub>18</sub> | 17.3 | 0.15 | 20071027 | 29.25158  | 171.18426 | 199.61426 | 1.41503  | 0.2215491 | 2.3872985 | 71  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128800 2003 SO <sub>18</sub> |
| 2003 SD <sub>19</sub> | 17.9 | 0.15 | 20071027 | 346.31072 | 145.84416 | 281.63623 | 1.36509  | 0.2000836 | 2.3866617 | 56  | 6 | 1992-2007 | 0.45 | M-v | 0 | MPC | 128023 2003 SD <sub>19</sub> |
| 2003 SE <sub>22</sub> | 16.1 | 0.15 | 20071027 | 346.96741 | 43.45310  | 324.00170 | 11.37574 | 0.0965499 | 2.6145029 | 64  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 128800 2003 SE <sub>22</sub> |
| 2003 SC <sub>25</sub> | 17.4 | 0.15 | 20071027 | 87.18184  | 33.08939  | 312.54344 | 3.92683  | 0.1348328 | 2.2374354 | 54  | 4 | 1997-2007 | 0.56 | M-v | 1 | MPC | 128023 2003 SC <sub>25</sub> |
| 2003 SJ <sub>26</sub> | 16.6 | 0.15 | 20071027 | 8.05827   | 32.33915  | 357.96830 | 7.31551  | 0.1127354 | 2.4173751 | 151 | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128801 2003 SJ <sub>26</sub> |
| 2003 SK <sub>26</sub> | 17.2 | 0.15 | 20071027 | 28.43216  | 37.79032  | 339.63195 | 4.29718  | 0.1471077 | 2.3809056 | 43  | 4 | 1992-2007 | 0.45 | M-v | 1 | MPC | 128801 2003 SK <sub>26</sub> |
| 2003 SS <sub>26</sub> | 17.2 | 0.15 | 20071027 | 51.42830  | 335.52023 | 8.07445   | 3.36256  | 0.1841707 | 2.3866855 | 100 | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128801 2003 SS <sub>26</sub> |
| 2003 SU <sub>27</sub> | 16.4 | 0.15 | 20071027 | 84.98300  | 13.29905  | 332.36318 | 4.98388  | 0.1247841 | 2.2700037 | 67  | 4 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128801 2003 SU <sub>27</sub> |
| 2003 SW <sub>27</sub> | 16.1 | 0.15 | 20071027 | 303.00035 | 82.33288  | 350.70876 | 14.27804 | 0.0917930 | 2.5535512 | 83  | 5 | 1997-2007 | 0.56 | M-v | 1 | MPC | 126666 2003 SW <sub>27</sub> |
| 2003 SB <sub>28</sub> | 17.4 | 0.15 | 20071027 | 0.22358   | 167.08960 | 240.87000 | 3.94492  | 0.2109017 | 2.4309028 | 89  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128801 2003 SB <sub>28</sub> |
| 2003 SP <sub>28</sub> | 16.5 | 0.15 | 20071027 | 6.02909   | 183.30478 | 223.13588 | 5.92006  | 0.0987007 | 2.3827460 | 52  | 3 | 2002-2007 | 0.36 | M-v | 3 | MPC | 128024 2003 SP <sub>28</sub> |
| 2003 SU <sub>29</sub> | 16.7 | 0.15 | 20071027 | 308.80773 | 217.14440 | 241.85609 | 1.49239  | 0.1005151 | 2.3606239 | 56  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 128024 2003 SU <sub>29</sub> |
| 2003 SO <sub>31</sub> | 17.2 | 0.15 | 20071027 | 31.34226  | 329.10212 | 3.65137   | 2.98006  | 0.0963563 | 2.5871545 | 54  | 3 | 2003-2007 | 0.34 | M-v | 2 | MPC | 128024 2003 SO <sub>31</sub> |
| 2003 SW <sub>31</sub> | 17.0 | 0.15 | 20071027 | 247.08305 | 349.16906 | 205.13605 | 5.24225  | 0.1210584 | 2.3046205 | 58  | 6 | 1998-2007 | 0.57 | M-v | 1 | MPC | 110983 2003 SW <sub>31</sub> |
| 2003 SB <sub>33</sub> | 17.4 | 0.15 | 20071027 | 51.79096  | 281.25281 | 113.04703 | 2.22807  | 0.1873701 | 2.2639694 | 67  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 86105 2003 SB <sub>33</sub>  |
| 2003 SF <sub>33</sub> | 17.0 | 0.15 | 20071027 | 37.18193  | 235.56029 | 136.06741 | 2.80012  | 0.1853772 | 2.3581829 | 80  | 5 | 2002-2007 | 0.36 | M-v | 1 | MPC | 128801 2003 SF <sub>33</sub> |
| 2003 SJ <sub>33</sub> | 17.6 | 0.15 | 20071027 | 40.46002  | 159.13974 | 200.22911 | 6.34508  | 0.1535942 | 2.3599462 | 40  | 4 | 2002-2007 | 0.41 | M-v | 1 | MPC | 100510 2003 SJ <sub>33</sub> |
| 2003 SM <sub>33</sub> | 17.5 | 0.15 | 20071027 | 14.79197  | 259.21162 | 137.13465 | 3.09161  | 0.1985893 | 2.3894949 | 56  | 3 | 2001-2007 | 0.42 | M-v | 2 | MPC | 128801 2003 SM <sub>33</sub> |
| 2003 SO <sub>33</sub> | 16.7 | 0.15 | 20071027 | 25.42953  | 229.61103 | 133.89791 | 1.92990  | 0.2026928 | 2.4375375 | 131 | 6 | 1999-2007 | 0.50 | M-v | 1 | MPC | 128801 2003 SO <sub>33</sub> |
| 2003 SY <sub>33</sub> | 16.8 | 0.15 | 20071027 | 55.81359  | 278.20083 | 43.54867  | 3.65538  | 0.2440116 | 2.4167282 | 103 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128801 2003 SY <sub>33</sub> |
| 2003 SG <sub>35</sub> | 18.2 | 0.15 | 20071027 | 12.62501  | 21.19876  | 16.66672  | 2.68174  | 0.1892703 | 2.3939589 | 40  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128801 2003 SG <sub>35</sub> |
| 2003 SF <sub>36</sub> | 16.8 | 0.15 | 20071027 | 127.32164 | 257.59831 | 41.21807  | 6.76920  | 0.1601981 | 2.2670167 | 87  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 102162 2003 SF <sub>36</sub> |
| 2003 SV <sub>36</sub> | 16.8 | 0.15 | 20071027 | 74.43879  | 192.46016 | 157.87375 | 1.64524  | 0.2237950 | 2.2859225 | 130 | 4 | 2003-2007 | 0.40 | M-v | 1 | MPC | 128801 2003 SV <sub>36</sub> |
| 2003 SH <sub>37</sub> | 16.7 | 0.15 | 20071027 | 95.73530  | 47.44418  | 242.96355 | 6.95388  | 0.1216716 | 2.3691756 | 47  | 3 | 2003-2007 | 0.37 | M-v | 2 | MPC | 128801 2003 SH <sub>37</sub> |
| 2003 SG <sub>38</sub> | 16.1 | 0.15 | 20071027 | 305.97057 | 185.57180 | 254.65037 | 8.13447  | 0.1940887 | 2.5609912 | 58  | 3 | 1999-2007 | 0.47 | M-v | 3 | MPC | 128801 2003 SG <sub>38</sub> |
| 2003 SH <sub>38</sub> | 16.3 | 0.15 | 20071027 | 20.22643  | 26.92527  | 294.88823 | 7.32961  | 0.2143590 | 2.6041509 | 65  | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 124401 2003 SH <sub>38</sub> |
| 2003 SP <sub>39</sub> | 17.2 | 0.15 | 20071027 | 72.30967  | 32.89377  | 294.08841 | 3.76334  | 0.1425588 | 2.3767298 | 48  | 4 | 1999-2007 | 0.41 | M-v | 2 | MPC | 128801 2003 SP <sub>39</sub> |
| 2003 SQ <sub>39</sub> | 16.6 | 0.15 | 20071027 | 62.85052  | 94.79755  | 220.74965 | 6.38283  | 0.2478260 | 2.4197866 | 121 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128024 2003 SQ <sub>39</sub> |
| 2003 SN <sub>40</sub> | 16.4 | 0.15 | 20071027 | 122.67391 | 28.56946  | 263.52716 | 5.01109  | 0.1694140 | 2.2948296 | 66  | 5 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128801 2003 SN <sub>40</sub> |
| 2003 SH <sub>41</sub> | 16.1 | 0.15 | 20071027 | 27.45632  | 29.98052  | 12.77412  | 10.08346 | 0.2100496 | 2.3521190 | 119 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128801 2003 SH <sub>41</sub> |
| 2003 SJ <sub>44</sub> | 16.5 | 0.15 | 20071027 | 69.02821  | 354.96882 | 325.80853 | 6.02526  | 0.1224594 | 2.3993010 | 67  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128801 2003 SJ <sub>44</sub> |
| 2003 SO <sub>44</sub> | 16.1 | 0.15 | 20071027 | 33.49219  | 62.57640  | 321.52904 | 5.74920  | 0.1199180 | 2.3450755 | 91  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 77707 2003 SO <sub>44</sub>  |
| 2003 SX <sub>44</sub> | 17.1 | 0.15 | 20071027 | 28.54964  | 79.92721  | 284.56965 | 1.38382  | 0.2036284 | 2.4281806 | 95  | 4 | 2003-2007 | 0.57 | M-v | 2 | MPC | 128801 2003 SX <sub>44</sub> |
| 2003 SD <sub>45</sub> | 17.7 | 0.15 | 20071027 | 28.32582  | 233.84888 | 145.28786 | 1.75406  | 0.1895076 | 2.3840527 | 59  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128801 2003 SD <sub>45</sub> |
| 2003 SA <sub>46</sub> | 16.9 | 0.15 | 20071027 | 44.50984  | 288.37960 | 41.39786  | 3.13026  | 0.2103667 | 2.4460551 | 123 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128801 2003 SA <sub>46</sub> |

|                       |      |      |          |           |           |           |         |           |           |     |   |           |      |     |   |    |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|---------|-----------|-----------|-----|---|-----------|------|-----|---|----|------------------------------|
| 2003 SL <sub>46</sub> | 17.3 | 0.15 | 20071027 | 88.08264  | 140.20733 | 185.55062 | 4.63267 | 0.1339993 | 2.3050817 | 83  | 6 | 1995-2007 | 0.50 | M-v | 1 | MP | 102163 2003 SL <sub>46</sub> |
| 2003 SS <sub>48</sub> | 17.2 | 0.15 | 20071027 | 9.08974   | 144.03044 | 236.54267 | 5.33327 | 0.2069204 | 2.4656467 | 109 | 5 | 1995-2007 | 0.45 | M-v | 0 | MP | 128801 2003 SS <sub>48</sub> |
| 2003 SW <sub>49</sub> | 17.2 | 0.15 | 20071027 | 79.75161  | 9.47217   | 306.89961 | 6.05571 | 0.1331982 | 2.3390548 | 58  | 3 | 2003-2007 | 0.49 | M-v | 3 | MP | 128801 2003 SW <sub>49</sub> |
| 2003 SZ <sub>49</sub> | 16.0 | 0.15 | 20071027 | 336.79081 | 116.89119 | 306.57087 | 7.42700 | 0.2499623 | 2.4525219 | 124 | 2 | 2003-2007 | 0.52 | M-v | 3 | MP | 128802 2003 SZ <sub>49</sub> |
| 2003 SC <sub>50</sub> | 16.7 | 0.15 | 20071027 | 17.81899  | 178.66045 | 211.75681 | 5.63541 | 0.2176939 | 2.3744120 | 94  | 3 | 2003-2007 | 0.53 | M-v | 3 | MP | 128802 2003 SC <sub>50</sub> |
| 2003 SH <sub>50</sub> | 17.5 | 0.15 | 20071027 | 6.02564   | 191.49268 | 229.31438 | 4.56316 | 0.2143027 | 2.3359805 | 51  | 3 | 2003-2007 | 0.48 | M-v | 2 | MP | 75941 2003 SH <sub>50</sub>  |
| 2003 SD <sub>51</sub> | 17.3 | 0.15 | 20071027 | 114.26978 | 297.70565 | 36.21007  | 2.35742 | 0.0895280 | 2.2083092 | 74  | 5 | 2002-2007 | 0.46 | M-v | 1 | MP | 104259 2003 SD <sub>51</sub> |
| 2003 SF <sub>51</sub> | 16.3 | 0.15 | 20071027 | 27.57915  | 311.07939 | 72.93739  | 4.61940 | 0.1869363 | 2.3792791 | 102 | 4 | 1996-2007 | 0.50 | M-v | 1 | MP | 128802 2003 SF <sub>51</sub> |
| 2003 SS <sub>51</sub> | 16.9 | 0.15 | 20071027 | 32.18758  | 296.54199 | 56.27568  | 5.25080 | 0.1931701 | 2.4544225 | 75  | 3 | 2003-2007 | 0.47 | M-v | 2 | MP | 128802 2003 SS <sub>51</sub> |
| 2003 SU <sub>51</sub> | 17.4 | 0.15 | 20071027 | 15.62143  | 338.19206 | 77.57015  | 2.90019 | 0.2408392 | 2.3572311 | 76  | 3 | 2003-2007 | 0.44 | M-v | 3 | MP | 128802 2003 SU <sub>51</sub> |
| 2003 SX <sub>51</sub> | 17.2 | 0.15 | 20071027 | 35.09896  | 296.48724 | 80.52828  | 2.50085 | 0.1975191 | 2.3757725 | 71  | 4 | 1994-2007 | 0.50 | M-v | 1 | MP | 87586 2003 SX <sub>51</sub>  |
| 2003 SA <sub>52</sub> | 16.8 | 0.15 | 20071027 | 22.44677  | 300.95174 | 98.22494  | 3.60775 | 0.0901994 | 2.3494876 | 50  | 4 | 2000-2007 | 0.57 | M-v | 1 | MP | 77708 2003 SA <sub>52</sub>  |
| 2003 SO <sub>52</sub> | 16.9 | 0.15 | 20071027 | 359.13666 | 13.72026  | 29.14759  | 6.61380 | 0.1355105 | 2.4443245 | 181 | 3 | 2003-2007 | 0.51 | M-v | 2 | MP | 128802 2003 SO <sub>52</sub> |
| 2003 SG <sub>54</sub> | 17.1 | 0.15 | 20071027 | 107.25144 | 56.87542  | 252.62258 | 5.32036 | 0.1367377 | 2.2698807 | 44  | 4 | 1993-2007 | 0.44 | M-v | 3 | MP | 57943 2003 SG <sub>54</sub>  |
| 2003 SR <sub>54</sub> | 16.7 | 0.15 | 20071027 | 49.10006  | 29.00789  | 313.06147 | 6.86555 | 0.1341427 | 2.4002187 | 53  | 3 | 2003-2007 | 0.42 | M-v | 3 | MP | 128802 2003 SR <sub>54</sub> |
| 2003 SM <sub>55</sub> | 16.9 | 0.15 | 20071027 | 59.35792  | 67.39155  | 273.91784 | 3.42917 | 0.1216117 | 2.3644405 | 73  | 5 | 1994-2007 | 0.46 | M-v | 1 | MP | 128802 2003 SM <sub>55</sub> |
| 2003 SA <sub>56</sub> | 17.3 | 0.15 | 20071027 | 49.90153  | 96.25442  | 217.80800 | 4.30677 | 0.1998437 | 2.4677668 | 98  | 3 | 2003-2007 | 0.53 | M-v | 2 | MP | 128802 2003 SA <sub>56</sub> |
| 2003 SM <sub>57</sub> | 16.4 | 0.15 | 20071027 | 16.41157  | 23.44769  | 7.34009   | 4.22717 | 0.1346923 | 2.4246945 | 133 | 3 | 2003-2007 | 0.46 | M-v | 2 | MP | 128802 2003 SM <sub>57</sub> |
| 2003 SQ <sub>58</sub> | 16.4 | 0.15 | 20071027 | 42.73561  | 25.42984  | 295.89651 | 9.50281 | 0.1807759 | 2.4619733 | 81  | 3 | 2003-2007 | 0.52 | M-v | 3 | MP | 128802 2003 SQ <sub>58</sub> |
| 2003 ST <sub>58</sub> | 17.4 | 0.15 | 20071027 | 13.13084  | 142.49040 | 217.74915 | 9.02459 | 0.1937216 | 2.4701987 | 70  | 3 | 2003-2007 | 0.49 | M-v | 2 | MP | 128802 2003 ST <sub>58</sub> |
| 2003 SW <sub>58</sub> | 16.5 | 0.15 | 20071027 | 7.39676   | 137.23859 | 239.89214 | 6.65186 | 0.0969247 | 2.4281760 | 83  | 3 | 2002-2007 | 0.49 | M-v | 2 | MP | 128802 2003 SW <sub>58</sub> |
| 2003 SN <sub>61</sub> | 17.0 | 0.15 | 20071027 | 46.24351  | 217.47562 | 121.99876 | 2.42032 | 0.2091991 | 2.3987565 | 58  | 3 | 2002-2007 | 0.53 | M-v | 3 | MP | 128025 2003 SN <sub>61</sub> |
| 2003 SS <sub>61</sub> | 17.2 | 0.15 | 20071027 | 355.45853 | 312.20796 | 83.84755  | 3.58887 | 0.1983734 | 2.4517658 | 113 | 3 | 2003-2007 | 0.53 | M-v | 3 | MP | 128802 2003 SS <sub>61</sub> |
| 2003 SF <sub>63</sub> | 16.3 | 0.15 | 20071027 | 44.41825  | 34.15846  | 307.74341 | 5.61403 | 0.1342594 | 2.4119272 | 88  | 3 | 2003-2007 | 0.58 | M-v | 3 | MP | 128802 2003 SF <sub>63</sub> |
| 2003 SU <sub>65</sub> | 16.9 | 0.15 | 20071027 | 113.20345 | 171.94147 | 144.23669 | 5.19824 | 0.1944274 | 2.2370357 | 52  | 5 | 1995-2007 | 0.51 | M-v | 1 | MP | 74275 2003 SU <sub>65</sub>  |
| 2003 SF <sub>66</sub> | 17.1 | 0.15 | 20071027 | 92.98132  | 204.26112 | 92.53486  | 4.05809 | 0.2383130 | 2.3555010 | 56  | 4 | 1995-2007 | 0.60 | M-v | 1 | MP | 104259 2003 SF <sub>66</sub> |
| 2003 SJ <sub>66</sub> | 17.5 | 0.15 | 20071027 | 32.10472  | 138.04741 | 218.00331 | 6.20807 | 0.1581775 | 2.4086447 | 43  | 3 | 2003-2007 | 0.45 | M-v | 3 | MP | 128025 2003 SJ <sub>66</sub> |
| 2003 SR <sub>66</sub> | 17.3 | 0.15 | 20071027 | 46.89525  | 100.66027 | 239.89435 | 3.68973 | 0.2022509 | 2.4082507 | 67  | 3 | 2003-2007 | 0.42 | M-v | 2 | MP | 128026 2003 SR <sub>66</sub> |
| 2003 SV <sub>67</sub> | 16.8 | 0.15 | 20071027 | 43.70583  | 340.45753 | 6.85709   | 6.86841 | 0.1620978 | 2.4229863 | 88  | 2 | 2003-2007 | 0.49 | M-v | 3 | MP | 128026 2003 SV <sub>67</sub> |
| 2003 SK <sub>71</sub> | 16.8 | 0.15 | 20071027 | 24.39651  | 82.79826  | 338.46205 | 5.99900 | 0.0573910 | 2.2426843 | 62  | 3 | 2003-2007 | 0.56 | M-v | 3 | MP | 75948 2003 SK <sub>71</sub>  |
| 2003 SP <sub>71</sub> | 16.4 | 0.15 | 20071027 | 15.83265  | 157.85747 | 256.86016 | 5.08189 | 0.2276876 | 2.3339932 | 57  | 3 | 2001-2007 | 0.55 | M-v | 1 | MP | 128802 2003 SP <sub>71</sub> |
| 2003 SA <sub>72</sub> | 16.8 | 0.15 | 20071027 | 10.14768  | 53.45427  | 333.42953 | 9.60258 | 0.0873496 | 2.4090203 | 47  | 5 | 1999-2007 | 0.47 | M-v | 1 | MP | 128802 2003 SA <sub>72</sub> |
| 2003 SE <sub>72</sub> | 17.2 | 0.15 | 20071027 | 24.35819  | 154.36098 | 228.86614 | 3.61526 | 0.1396464 | 2.3669590 | 105 | 5 | 1996-2007 | 0.51 | M-v | 0 | MP | 128802 2003 SE <sub>72</sub> |
| 2003 SG <sub>72</sub> | 17.1 | 0.15 | 20071027 | 77.68911  | 354.38697 | 332.29307 | 6.56826 | 0.1313136 | 2.3296159 | 53  | 3 | 2003-2007 | 0.50 | M-v | 3 | MP | 75948 2003 SG <sub>72</sub>  |
| 2003 SL <sub>72</sub> | 17.5 | 0.15 | 20071027 | 37.53023  | 123.28287 | 255.04289 | 2.31505 | 0.1802640 | 2.3394373 | 43  | 3 | 2003-2007 | 0.41 | M-v | 2 | MP | 121798 2003 SL <sub>72</sub> |
| 2003 SD <sub>73</sub> | 17.7 | 0.15 | 20071027 | 36.30771  | 56.78133  | 318.44752 | 1.27577 | 0.2256020 | 2.3623274 | 68  | 3 | 2003-2007 | 0.52 | M-v | 2 | MP | 87587 2003 SD <sub>73</sub>  |
| 2003 SP <sub>76</sub> | 16.4 | 0.15 | 20071027 | 88.74182  | 116.44227 | 196.47347 | 3.34140 | 0.2647534 | 2.3422660 | 101 | 7 | 1995-2007 | 0.51 | M-v | 0 | MP | 102164 2003 SP <sub>76</sub> |
| 2003 SS <sub>76</sub> | 16.6 | 0.15 | 20071027 | 1.17412   | 181.56124 | 214.46509 | 8.17424 | 0.2206533 | 2.4522906 | 146 | 3 | 2003-2007 | 0.48 | M-v | 2 | MP | 128803 2003 SS <sub>76</sub> |
| 2003 SN <sub>77</sub> | 16.2 | 0.15 | 20071027 | 19.46023  | 92.69829  | 309.48126 | 6.80395 | 0.0989325 | 2.3336590 | 68  | 4 | 2001-2007 | 0.51 | M-v | 1 | MP | 77709 2003 SN <sub>77</sub>  |
| 2003 ST <sub>77</sub> | 16.9 | 0.15 | 20071027 | 86.23233  | 71.07272  | 274.33828 | 5.00222 | 0.2020700 | 2.2503974 | 68  | 2 | 2003-2007 | 0.36 | M-v | 3 | MP | 128026 2003 ST <sub>77</sub> |
| 2003 SQ <sub>80</sub> | 17.4 | 0.15 | 20071027 | 39.00767  | 197.57666 | 167.01910 | 1.60419 | 0.2028153 | 2.4136680 | 61  | 5 | 1999-2007 | 0.49 | M-v | 1 | MP | 77709 2003 SQ <sub>80</sub>  |
| 2003 SG <sub>81</sub> | 16.5 | 0.15 | 20071027 | 84.87966  | 312.41318 | 32.23537  | 4.92531 | 0.1374058 | 2.3011702 | 95  | 3 | 1996-2007 | 0.56 | M-v | 3 | MP | 128803 2003 SG <sub>81</sub> |
| 2003 SK <sub>82</sub> | 17.1 | 0.15 | 20071027 | 25.97311  | 343.03091 | 18.69753  | 9.17288 | 0.1751669 | 2.4378412 | 101 | 2 | 2003-2007 | 0.41 | M-v | 2 | MP | 128803 2003 SK <sub>82</sub> |
| 2003 SU <sub>83</sub> | 17.7 | 0.15 | 20071027 | 35.52639  | 213.17514 | 151.01021 | 2.09586 | 0.2357184 | 2.4000019 | 99  | 6 | 1992-2007 | 0.53 | M-v | 1 | MP | 128803 2003 SU <sub>83</sub> |
| 2003 SA <sub>84</sub> | 17.4 | 0.15 | 20071027 | 41.08671  | 212.77695 | 170.47685 | 2.30923 | 0.2259801 | 2.3320768 | 97  | 5 | 1994-2007 | 0.49 | M-v | 1 | MP | 87588 2003 SA <sub>84</sub>  |
| 2003 SW <sub>87</sub> | 16.6 | 0.15 | 20071027 | 26.86417  | 79.17265  | 316.29479 | 6.43706 | 0.1178214 | 2.3329206 | 61  | 5 | 1996-2007 | 0.54 | M-v | 1 | MP | 128803 2003 SW <sub>87</sub> |
| 2003 SK <sub>88</sub> | 17.1 | 0.15 | 20071027 | 94.59481  | 154.74115 | 180.39723 | 1.23015 | 0.0739955 | 2.2827323 | 56  | 6 | 1993-2007 | 0.51 | M-v | 1 | MP | 77709 2003 SK <sub>88</sub>  |
| 2003 SS <sub>88</sub> | 17.1 | 0.15 | 20071027 | 85.92063  | 238.54449 | 61.35020  | 3.96662 | 0.1248858 | 2.3812054 | 57  | 5 | 2000-2007 | 0.42 | M-v | 0 | MP | 128803 2003 SS <sub>88</sub> |
| 2003 ST <sub>91</sub> | 16.6 | 0.15 | 20071027 | 329.69907 | 86.88713  | 323.18022 | 5.87345 | 0.1260400 | 2.4743188 | 86  | 3 | 2003-2007 | 0.52 | M-v | 2 | MP | 126668 2003 ST <sub>91</sub> |
| 2003 SD <sub>92</sub> | 16.9 | 0.15 | 20071027 | 340.16951 | 300.59619 | 173.45179 | 3.57106 | 0.0949786 | 2.2230971 | 63  | 6 | 2000-2007 | 0.61 | M-v | 1 | MP | 112859 2003 SD <sub>92</sub> |
| 2003 SY <sub>92</sub> | 16.7 | 0.15 | 20071027 | 351.88265 | 149.23954 | 293.19843 | 2.61646 | 0.2262583 | 2.4006139 | 81  | 3 | 1997-2007 | 0.42 | M-v | 2 | MP | 57948 2003 SY <sub>92</sub>  |
| 2003 SS <sub>94</sub> | 16.1 | 0.15 | 20071027 | 1.49642   | 49.09993  | 299.89010 | 8.02604 | 0.1803277 | 2.5892290 | 85  | 4 | 1999-2007 | 0.54 | M-v | 2 | MP | 124403 2003 SS <sub>94</sub> |
| 2003 ST <sub>94</sub> | 17.0 | 0.15 | 20071027 | 59.98433  | 49.33671  | 281.75238 | 6.09363 | 0.1424941 | 2.3930722 | 45  | 3 | 2003-2007 | 0.47 | M-v | 3 | MP | 125925 2003 ST <sub>94</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 SG <sub>95</sub>  | 16.7 | 0.15 | 20071027 | 99.52157  | 38.38868  | 286.76881 | 4.68552  | 0.1982826 | 2.2709170 | 64  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128803 2003 SG <sub>95</sub>  |
| 2003 SV <sub>95</sub>  | 16.2 | 0.15 | 20071027 | 99.05009  | 19.94160  | 293.97041 | 2.66239  | 0.1662536 | 2.3184937 | 70  | 5 | 2002-2007 | 0.59 | M-v | 1 | MPC | 104260 2003 SV <sub>95</sub>  |
| 2003 SD <sub>98</sub>  | 16.6 | 0.15 | 20071027 | 9.50761   | 148.53309 | 259.44350 | 0.52336  | 0.1724726 | 2.4162976 | 103 | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128803 2003 SD <sub>98</sub>  |
| 2003 SD <sub>101</sub> | 16.4 | 0.15 | 20071027 | 359.88159 | 126.22731 | 227.47013 | 12.74468 | 0.1945388 | 2.5749997 | 63  | 3 | 1999-2007 | 0.57 | M-v | 2 | MPC | 126669 2003 SD <sub>101</sub> |
| 2003 SK <sub>101</sub> | 16.3 | 0.15 | 20071027 | 4.64647   | 136.28137 | 244.47385 | 8.52900  | 0.1879450 | 2.4708101 | 91  | 4 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128803 2003 SK <sub>101</sub> |
| 2003 SL <sub>101</sub> | 16.1 | 0.15 | 20071027 | 2.87911   | 146.03345 | 250.20424 | 9.20172  | 0.1783619 | 2.4325394 | 121 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128803 2003 SL <sub>101</sub> |
| 2003 SN <sub>101</sub> | 17.0 | 0.15 | 20071027 | 101.64084 | 59.18032  | 260.96971 | 6.82912  | 0.2806880 | 2.2414438 | 42  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 100527 2003 SN <sub>101</sub> |
| 2003 SH <sub>103</sub> | 17.2 | 0.15 | 20071027 | 51.86165  | 117.26867 | 223.15747 | 1.82933  | 0.2372134 | 2.4034326 | 64  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128803 2003 SH <sub>103</sub> |
| 2003 SU <sub>103</sub> | 17.0 | 0.15 | 20071027 | 57.51233  | 143.47118 | 205.92071 | 1.78197  | 0.2263392 | 2.3682963 | 95  | 6 | 1992-2007 | 0.51 | M-v | 1 | MPC | 102165 2003 SU <sub>103</sub> |
| 2003 SZ <sub>103</sub> | 17.3 | 0.15 | 20071027 | 38.22095  | 3.85279   | 22.40723  | 2.66338  | 0.2179070 | 2.3528984 | 85  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128803 2003 SZ <sub>103</sub> |
| 2003 SA <sub>104</sub> | 16.5 | 0.15 | 20071027 | 356.78436 | 38.23816  | 16.84145  | 5.32098  | 0.1967880 | 2.4414551 | 131 | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 128803 2003 SA <sub>104</sub> |
| 2003 SB <sub>104</sub> | 17.5 | 0.15 | 20071027 | 83.87517  | 125.00243 | 202.97166 | 2.23607  | 0.2450580 | 2.3181122 | 56  | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 100527 2003 SB <sub>104</sub> |
| 2003 SO <sub>105</sub> | 17.0 | 0.15 | 20071027 | 358.60572 | 182.36460 | 182.83694 | 0.11370  | 0.0674891 | 2.5760371 | 63  | 7 | 1997-2007 | 0.33 | M-v | 1 | MPC | 128803 2003 SO <sub>105</sub> |
| 2003 SV <sub>105</sub> | 15.7 | 0.15 | 20071027 | 62.42385  | 64.24567  | 260.69302 | 6.92350  | 0.2281494 | 2.3931846 | 146 | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 128803 2003 SV <sub>105</sub> |
| 2003 SU <sub>107</sub> | 16.5 | 0.15 | 20071027 | 83.18377  | 41.52608  | 268.21011 | 3.33526  | 0.1490201 | 2.4107932 | 75  | 5 | 2002-2007 | 0.39 | M-v | 0 | MPC | 128803 2003 SU <sub>107</sub> |
| 2003 SD <sub>108</sub> | 17.0 | 0.15 | 20071027 | 121.08567 | 349.93566 | 326.16810 | 5.62642  | 0.0861443 | 2.2705476 | 48  | 5 | 1998-2007 | 0.35 | M-v | 1 | MPC | 128803 2003 SD <sub>108</sub> |
| 2003 SO <sub>108</sub> | 16.4 | 0.15 | 20071027 | 69.14577  | 93.81673  | 243.49140 | 3.94536  | 0.1550103 | 2.3761114 | 70  | 3 | 2000-2007 | 0.42 | M-v | 3 | MPC | 128027 2003 SO <sub>108</sub> |
| 2003 SS <sub>109</sub> | 16.8 | 0.15 | 20071027 | 16.41564  | 168.99587 | 253.81708 | 4.16979  | 0.1502528 | 2.3243876 | 69  | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128027 2003 SS <sub>109</sub> |
| 2003 SD <sub>110</sub> | 16.5 | 0.15 | 20071027 | 56.98456  | 25.10990  | 339.36418 | 4.37431  | 0.1685238 | 2.3508191 | 74  | 5 | 1992-2007 | 0.50 | M-v | 2 | MPC | 77710 2003 SD <sub>110</sub>  |
| 2003 SF <sub>110</sub> | 16.2 | 0.15 | 20071027 | 88.04324  | 329.19790 | 350.55842 | 4.92783  | 0.2168386 | 2.3484486 | 77  | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 102166 2003 SF <sub>110</sub> |
| 2003 SM <sub>110</sub> | 16.7 | 0.15 | 20071027 | 83.63550  | 98.69170  | 228.41121 | 4.03404  | 0.2538357 | 2.3360789 | 134 | 5 | 1999-2007 | 0.46 | M-v | 0 | MPC | 100529 2003 SM <sub>110</sub> |
| 2003 SZ <sub>110</sub> | 16.7 | 0.15 | 20071027 | 359.16922 | 306.70698 | 128.48028 | 6.28076  | 0.2150252 | 2.5307007 | 51  | 3 | 1999-2007 | 0.47 | M-v | 3 | MPC | 56808 2003 SZ <sub>110</sub>  |
| 2003 SC <sub>111</sub> | 16.2 | 0.15 | 20071027 | 64.58205  | 236.59728 | 150.15452 | 4.79604  | 0.1969406 | 2.2955851 | 115 | 6 | 2001-2007 | 0.43 | M-v | 1 | MPC | 110984 2003 SC <sub>111</sub> |
| 2003 SD <sub>112</sub> | 16.9 | 0.15 | 20071027 | 43.34497  | 25.36352  | 344.72929 | 0.80569  | 0.1947416 | 2.3652709 | 79  | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 75959 2003 SD <sub>112</sub>  |
| 2003 SX <sub>113</sub> | 17.1 | 0.15 | 20071027 | 62.42578  | 111.03351 | 216.20905 | 5.27187  | 0.1420366 | 2.3619782 | 60  | 3 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128028 2003 SX <sub>113</sub> |
| 2003 SA <sub>116</sub> | 16.9 | 0.15 | 20071027 | 6.46468   | 145.84647 | 236.40551 | 4.46797  | 0.0951804 | 2.4509801 | 51  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128804 2003 SA <sub>116</sub> |
| 2003 SB <sub>116</sub> | 16.8 | 0.15 | 20071027 | 50.84528  | 111.57113 | 226.04303 | 5.63909  | 0.1201528 | 2.4192691 | 94  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128804 2003 SB <sub>116</sub> |
| 2003 SF <sub>117</sub> | 15.9 | 0.15 | 20071027 | 10.20500  | 167.60378 | 236.16986 | 2.93660  | 0.0517804 | 2.3992114 | 89  | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128804 2003 SF <sub>117</sub> |
| 2003 SW <sub>117</sub> | 17.1 | 0.15 | 20071027 | 31.88337  | 188.50666 | 196.60222 | 0.93140  | 0.1943553 | 2.3828818 | 89  | 4 | 2002-2007 | 0.46 | M-v | 2 | MPC | 75960 2003 SW <sub>117</sub>  |
| 2003 SX <sub>117</sub> | 17.5 | 0.15 | 20071027 | 30.21274  | 9.72779   | 354.28934 | 0.96058  | 0.2022216 | 2.4478706 | 78  | 5 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128804 2003 SX <sub>117</sub> |
| 2003 SC <sub>118</sub> | 16.5 | 0.15 | 20071027 | 26.70053  | 122.21368 | 244.88185 | 5.56616  | 0.1323301 | 2.4425829 | 114 | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128804 2003 SC <sub>118</sub> |
| 2003 SC <sub>119</sub> | 16.5 | 0.15 | 20071027 | 94.81690  | 38.59811  | 282.98721 | 5.96796  | 0.1264058 | 2.3194701 | 44  | 3 | 1996-2007 | 0.42 | M-v | 4 | MPC | 53401 2003 SC <sub>119</sub>  |
| 2003 SN <sub>119</sub> | 16.2 | 0.15 | 20071027 | 127.89993 | 236.48522 | 32.68723  | 7.28918  | 0.1369971 | 2.3237708 | 43  | 4 | 2002-2007 | 0.40 | M-v | 1 | MPC | 128028 2003 SN <sub>119</sub> |
| 2003 ST <sub>120</sub> | 17.4 | 0.15 | 20071027 | 55.23873  | 331.72831 | 9.77049   | 2.55375  | 0.2038837 | 2.3792975 | 70  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128804 2003 ST <sub>120</sub> |
| 2003 SZ <sub>120</sub> | 16.4 | 0.15 | 20071027 | 347.15598 | 346.39029 | 81.42615  | 7.08756  | 0.1378943 | 2.3666388 | 64  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 128804 2003 SZ <sub>120</sub> |
| 2003 SG <sub>122</sub> | 17.5 | 0.15 | 20071027 | 120.95346 | 333.77711 | 354.27702 | 3.40527  | 0.1281850 | 2.1828760 | 71  | 3 | 2003-2007 | 0.38 | M-v | 1 | MPC | 128029 2003 SG <sub>122</sub> |
| 2003 SC <sub>123</sub> | 17.4 | 0.15 | 20071027 | 9.33170   | 221.14559 | 178.26914 | 2.14198  | 0.1499397 | 2.3968685 | 72  | 5 | 1992-2007 | 0.48 | M-v | 0 | MPC | 128804 2003 SC <sub>123</sub> |
| 2003 SE <sub>123</sub> | 16.4 | 0.15 | 20071027 | 62.25356  | 325.65569 | 41.55897  | 7.24856  | 0.1210242 | 2.2943955 | 57  | 3 | 2002-2007 | 0.56 | M-v | 3 | MPC | 128029 2003 SE <sub>123</sub> |
| 2003 SP <sub>123</sub> | 16.7 | 0.15 | 20071027 | 11.20303  | 171.48507 | 231.47840 | 1.26847  | 0.1711642 | 2.3992009 | 121 | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128804 2003 SP <sub>123</sub> |
| 2003 SB <sub>124</sub> | 16.9 | 0.15 | 20071027 | 58.21835  | 265.45294 | 82.95033  | 5.62375  | 0.2138209 | 2.3780902 | 75  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 100533 2003 SB <sub>124</sub> |
| 2003 SU <sub>125</sub> | 17.2 | 0.15 | 20071027 | 47.08502  | 217.37181 | 138.47202 | 1.78060  | 0.2050274 | 2.3863479 | 78  | 4 | 2003-2007 | 0.45 | M-v | 1 | MPC | 102166 2003 SU <sub>125</sub> |
| 2003 SH <sub>126</sub> | 16.4 | 0.15 | 20071027 | 48.36788  | 189.60527 | 180.61685 | 2.15161  | 0.2186900 | 2.3613622 | 95  | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 75962 2003 SH <sub>126</sub>  |
| 2003 SP <sub>126</sub> | 16.4 | 0.15 | 20071027 | 76.64757  | 67.47461  | 258.79455 | 5.99298  | 0.1216959 | 2.3755213 | 70  | 5 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128804 2003 SP <sub>126</sub> |
| 2003 SS <sub>129</sub> | 17.3 | 0.15 | 20071027 | 11.02744  | 355.25672 | 36.00476  | 3.46283  | 0.2044681 | 2.4312369 | 111 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128804 2003 SS <sub>129</sub> |
| 2003 SJ <sub>131</sub> | 16.9 | 0.15 | 20071027 | 95.36000  | 277.29694 | 27.63890  | 1.75072  | 0.1787721 | 2.3746525 | 61  | 5 | 1998-2007 | 0.38 | M-v | 1 | MPC | 128804 2003 SJ <sub>131</sub> |
| 2003 SR <sub>131</sub> | 17.3 | 0.15 | 20071027 | 74.06859  | 163.16296 | 193.83152 | 1.41689  | 0.1429496 | 2.3055126 | 69  | 5 | 1996-2007 | 0.44 | M-v | 1 | MPC | 118059 2003 SR <sub>131</sub> |
| 2003 SV <sub>131</sub> | 16.7 | 0.15 | 20071027 | 122.03320 | 56.43951  | 195.23741 | 2.13608  | 0.0829301 | 2.5452621 | 59  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 128804 2003 SV <sub>131</sub> |
| 2003 SP <sub>132</sub> | 17.5 | 0.15 | 20071027 | 97.47117  | 120.20020 | 171.17264 | 1.23706  | 0.1889332 | 2.4184014 | 47  | 5 | 1999-2007 | 0.26 | M-v | 0 | MPC | 128804 2003 SP <sub>132</sub> |
| 2003 SA <sub>133</sub> | 16.6 | 0.15 | 20071027 | 329.40043 | 212.44331 | 187.34076 | 1.73041  | 0.0948538 | 2.6160358 | 74  | 5 | 1999-2007 | 0.43 | M-v | 2 | MPC | 128804 2003 SA <sub>133</sub> |
| 2003 SU <sub>133</sub> | 17.1 | 0.15 | 20071027 | 39.71456  | 317.45883 | 41.22322  | 4.40343  | 0.2166466 | 2.3944592 | 73  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128804 2003 SU <sub>133</sub> |
| 2003 SS <sub>135</sub> | 17.1 | 0.15 | 20071027 | 351.33367 | 6.66198   | 49.02813  | 2.33231  | 0.1563000 | 2.4173761 | 92  | 5 | 1992-2007 | 0.41 | M-v | 0 | MPC | 128804 2003 SS <sub>135</sub> |
| 2003 SD <sub>137</sub> | 15.4 | 0.15 | 20071027 | 348.24854 | 357.32046 | 8.32697   | 13.37480 | 0.2933281 | 2.6448003 | 122 | 4 | 1990-2007 | 0.49 | M-v | 1 | MPC | 128804 2003 SD <sub>137</sub> |
| 2003 SM <sub>137</sub> | 16.7 | 0.15 | 20071027 | 8.47070   | 354.10284 | 356.49858 | 4.59943  | 0.1992211 | 2.6121541 | 66  | 2 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128804 2003 SM <sub>137</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 SW <sub>137</sub> | 16.6 | 0.15 | 20071027 | 58.48899  | 11.35459  | 353.04360 | 4.06848  | 0.2370612 | 2.3408605 | 112 | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128804 2003 SW <sub>137</sub> |
| 2003 SG <sub>138</sub> | 16.1 | 0.15 | 20071027 | 30.02638  | 353.33270 | 35.76031  | 10.78298 | 0.2098148 | 2.3757725 | 134 | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 128804 2003 SG <sub>138</sub> |
| 2003 SX <sub>138</sub> | 15.8 | 0.15 | 20071027 | 28.62523  | 54.56862  | 338.66813 | 6.75279  | 0.1221021 | 2.3792807 | 110 | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 77711 2003 SX <sub>138</sub>  |
| 2003 SF <sub>139</sub> | 15.9 | 0.15 | 20071027 | 328.08113 | 32.26445  | 31.31008  | 13.98855 | 0.2466568 | 2.6719639 | 80  | 2 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128804 2003 SF <sub>139</sub> |
| 2003 SP <sub>140</sub> | 17.2 | 0.15 | 20071027 | 21.63681  | 128.98831 | 252.55356 | 11.94683 | 0.0704740 | 2.4329921 | 37  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128029 2003 SP <sub>140</sub> |
| 2003 SN <sub>141</sub> | 17.5 | 0.15 | 20071027 | 20.35022  | 271.68258 | 146.84672 | 2.34390  | 0.1930529 | 2.3462448 | 64  | 4 | 2001-2007 | 0.38 | M-v | 1 | MPC | 110985 2003 SN <sub>141</sub> |
| 2003 SJ <sub>143</sub> | 17.2 | 0.15 | 20071027 | 76.04725  | 78.37435  | 238.06186 | 4.68449  | 0.2351059 | 2.3829622 | 65  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128804 2003 SJ <sub>143</sub> |
| 2003 SO <sub>143</sub> | 17.0 | 0.15 | 20071027 | 64.87813  | 353.41098 | 335.54358 | 5.23391  | 0.1450266 | 2.4247548 | 46  | 4 | 1999-2007 | 0.58 | M-v | 3 | MPC | 72874 2003 SO <sub>143</sub>  |
| 2003 SL <sub>145</sub> | 16.3 | 0.15 | 20071027 | 37.24512  | 71.15783  | 301.94462 | 6.15165  | 0.1334684 | 2.3933354 | 79  | 4 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128804 2003 SL <sub>145</sub> |
| 2003 SM <sub>145</sub> | 16.0 | 0.15 | 20071027 | 38.36052  | 63.07558  | 299.71163 | 6.42479  | 0.1268560 | 2.4175105 | 85  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128804 2003 SM <sub>145</sub> |
| 2003 SR <sub>146</sub> | 16.3 | 0.15 | 20071027 | 14.47388  | 74.19730  | 331.13985 | 6.40785  | 0.1075104 | 2.3917312 | 83  | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 128805 2003 SR <sub>146</sub> |
| 2003 SJ <sub>146</sub> | 16.3 | 0.15 | 20071027 | 70.25068  | 34.19449  | 311.49432 | 4.48668  | 0.1367766 | 2.3589093 | 72  | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 77712 2003 SR <sub>146</sub>  |
| 2003 SZ <sub>146</sub> | 16.0 | 0.15 | 20071027 | 72.02880  | 99.90854  | 248.59664 | 5.62800  | 0.1487844 | 2.3417240 | 101 | 6 | 1996-2007 | 0.46 | M-v | 1 | MPC | 77712 2003 SZ <sub>146</sub>  |
| 2003 SH <sub>147</sub> | 16.4 | 0.15 | 20071027 | 103.08667 | 62.03653  | 253.03138 | 3.67897  | 0.1960645 | 2.3166129 | 67  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 75971 2003 SH <sub>147</sub>  |
| 2003 SK <sub>147</sub> | 15.8 | 0.15 | 20071027 | 345.78592 | 167.39830 | 221.84739 | 12.86294 | 0.1466767 | 2.6006297 | 123 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128805 2003 SK <sub>147</sub> |
| 2003 SL <sub>147</sub> | 16.4 | 0.15 | 20071027 | 49.48075  | 68.54278  | 317.08301 | 2.21715  | 0.2261743 | 2.3520189 | 108 | 5 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128805 2003 SL <sub>147</sub> |
| 2003 SF <sub>149</sub> | 17.9 | 0.15 | 20071027 | 66.08955  | 327.75252 | 23.08064  | 1.69887  | 0.2020670 | 2.3367906 | 31  | 4 | 1996-2007 | 0.44 | M-v | 1 | MPC | 103522 2003 SF <sub>149</sub> |
| 2003 SP <sub>150</sub> | 16.4 | 0.15 | 20071027 | 25.37196  | 321.48506 | 75.84287  | 7.79945  | 0.1120514 | 2.3298299 | 53  | 5 | 2001-2007 | 0.65 | M-v | 1 | MPC | 77712 2003 SP <sub>150</sub>  |
| 2003 SR <sub>150</sub> | 16.2 | 0.15 | 20071027 | 59.11690  | 237.06512 | 94.18036  | 5.68426  | 0.2138132 | 2.3902788 | 72  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128805 2003 SR <sub>150</sub> |
| 2003 SX <sub>150</sub> | 16.3 | 0.15 | 20071027 | 79.58550  | 238.32918 | 89.49809  | 7.65430  | 0.1449671 | 2.3253974 | 41  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 110985 2003 SX <sub>150</sub> |
| 2003 SY <sub>150</sub> | 17.3 | 0.15 | 20071027 | 98.47568  | 213.87413 | 112.07351 | 6.86903  | 0.1874337 | 2.2546537 | 30  | 6 | 1996-2007 | 0.52 | M-v | 1 | MPC | 110985 2003 SY <sub>150</sub> |
| 2003 SB <sub>152</sub> | 16.6 | 0.15 | 20071027 | 2.92270   | 325.81486 | 61.66286  | 5.85681  | 0.1875170 | 2.4159766 | 111 | 4 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128805 2003 SB <sub>152</sub> |
| 2003 SV <sub>153</sub> | 17.3 | 0.15 | 20071027 | 80.54273  | 252.68396 | 67.68300  | 5.79639  | 0.2053819 | 2.3252968 | 40  | 5 | 1995-2007 | 0.40 | M-v | 1 | MPC | 100540 2003 SV <sub>153</sub> |
| 2003 SM <sub>154</sub> | 16.1 | 0.15 | 20071027 | 57.75981  | 144.39362 | 216.18764 | 5.87852  | 0.1305021 | 2.3564561 | 96  | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 75972 2003 SM <sub>154</sub>  |
| 2003 SD <sub>155</sub> | 16.6 | 0.15 | 20071027 | 32.68910  | 150.62425 | 243.63299 | 1.66529  | 0.2010664 | 2.3466488 | 101 | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128805 2003 SD <sub>155</sub> |
| 2003 SJ <sub>155</sub> | 16.8 | 0.15 | 20071027 | 3.80208   | 156.69744 | 266.84639 | 1.44211  | 0.1979843 | 2.3823829 | 56  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 75973 2003 SJ <sub>155</sub>  |
| 2003 SG <sub>156</sub> | 16.4 | 0.15 | 20071027 | 21.64088  | 358.33913 | 20.83741  | 2.97903  | 0.1850084 | 2.4337619 | 138 | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128805 2003 SG <sub>156</sub> |
| 2003 SJ <sub>156</sub> | 16.6 | 0.15 | 20071027 | 10.67424  | 110.50928 | 292.75093 | 0.62875  | 0.1709514 | 2.4013200 | 98  | 5 | 1992-2007 | 0.48 | M-v | 1 | MPC | 128805 2003 SJ <sub>156</sub> |
| 2003 SF <sub>157</sub> | 16.5 | 0.15 | 20071027 | 81.70236  | 318.35423 | 16.23851  | 3.53848  | 0.2141459 | 2.3087767 | 74  | 5 | 1995-2007 | 0.40 | M-v | 1 | MPC | 128805 2003 SF <sub>157</sub> |
| 2003 ST <sub>157</sub> | 16.1 | 0.15 | 20071027 | 30.48570  | 29.14761  | 0.94008   | 2.75493  | 0.1699191 | 2.3762825 | 93  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 77713 2003 ST <sub>157</sub>  |
| 2003 SE <sub>160</sub> | 16.3 | 0.15 | 20071027 | 2.29979   | 169.75531 | 228.91558 | 6.00374  | 0.1140730 | 2.4338961 | 157 | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128805 2003 SE <sub>160</sub> |
| 2003 SZ <sub>160</sub> | 17.8 | 0.15 | 20071027 | 40.59918  | 206.07557 | 137.99064 | 1.72513  | 0.2192287 | 2.4183091 | 45  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128030 2003 SZ <sub>160</sub> |
| 2003 SH <sub>161</sub> | 16.2 | 0.15 | 20071027 | 17.72714  | 313.27745 | 85.60897  | 3.21267  | 0.2071421 | 2.3728045 | 81  | 6 | 1992-2007 | 0.51 | M-v | 1 | MPC | 77713 2003 SH <sub>161</sub>  |
| 2003 SM <sub>161</sub> | 16.5 | 0.15 | 20071027 | 359.61099 | 43.17882  | 34.37310  | 5.03549  | 0.1146663 | 2.2887465 | 38  | 4 | 2002-2007 | 0.44 | M-v | 2 | MPC | 128805 2003 SM <sub>161</sub> |
| 2003 SV <sub>161</sub> | 17.2 | 0.15 | 20071027 | 102.36082 | 206.03313 | 91.65899  | 2.72281  | 0.1655024 | 2.3275095 | 60  | 6 | 2000-2007 | 0.44 | M-v | 0 | MPC | 128805 2003 SV <sub>161</sub> |
| 2003 SA <sub>163</sub> | 17.0 | 0.15 | 20071027 | 89.91686  | 167.28528 | 175.10157 | 2.11311  | 0.1457335 | 2.2890235 | 59  | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 75975 2003 SA <sub>163</sub>  |
| 2003 SM <sub>164</sub> | 16.5 | 0.15 | 20071027 | 73.38996  | 101.32851 | 217.74380 | 4.66434  | 0.2060667 | 2.4064212 | 115 | 5 | 1999-2007 | 0.52 | M-v | 0 | MPC | 128805 2003 SM <sub>164</sub> |
| 2003 SO <sub>164</sub> | 17.3 | 0.15 | 20071027 | 34.64384  | 66.88565  | 324.79720 | 0.83735  | 0.1915584 | 2.3590083 | 89  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128805 2003 SO <sub>164</sub> |
| 2003 SU <sub>165</sub> | 16.6 | 0.15 | 20071027 | 342.70886 | 2.24699   | 65.65618  | 6.56728  | 0.0949964 | 2.3631465 | 86  | 4 | 1978-2007 | 0.50 | M-v | 1 | MPC | 128030 2003 SU <sub>165</sub> |
| 2003 SZ <sub>166</sub> | 16.7 | 0.15 | 20071027 | 40.85304  | 336.66108 | 24.55898  | 5.46561  | 0.2190211 | 2.3878870 | 121 | 2 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128030 2003 SZ <sub>166</sub> |
| 2003 SA <sub>168</sub> | 16.2 | 0.15 | 20071027 | 23.69053  | 294.04459 | 84.43014  | 7.12845  | 0.1448323 | 2.3584525 | 86  | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128805 2003 SA <sub>168</sub> |
| 2003 SH <sub>168</sub> | 16.8 | 0.15 | 20071027 | 64.26725  | 65.70432  | 228.43890 | 1.74088  | 0.2412531 | 2.4386938 | 83  | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 128805 2003 SH <sub>168</sub> |
| 2003 SC <sub>169</sub> | 15.8 | 0.15 | 20071027 | 123.59954 | 258.11666 | 43.31344  | 6.08587  | 0.1909456 | 2.2367415 | 76  | 6 | 1999-2007 | 0.64 | M-v | 1 | MPC | 74281 2003 SC <sub>169</sub>  |
| 2003 SF <sub>169</sub> | 16.9 | 0.15 | 20071027 | 22.82586  | 306.15278 | 45.33599  | 6.64488  | 0.1836031 | 2.4872873 | 88  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128805 2003 SF <sub>169</sub> |
| 2003 SM <sub>170</sub> | 16.4 | 0.15 | 20071027 | 300.57153 | 269.42104 | 239.87708 | 1.51776  | 0.1770555 | 2.2645940 | 103 | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 77713 2003 SM <sub>170</sub>  |
| 2003 SZ <sub>170</sub> | 17.7 | 0.15 | 20071027 | 356.11091 | 203.40488 | 229.36153 | 1.63730  | 0.1834145 | 2.3588373 | 33  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 87589 2003 SZ <sub>170</sub>  |
| 2003 SD <sub>172</sub> | 16.9 | 0.15 | 20071027 | 56.20910  | 1.83620   | 5.28750   | 3.66181  | 0.1732377 | 2.2933330 | 47  | 4 | 2002-2007 | 0.58 | M-v | 3 | MPC | 128805 2003 SD <sub>172</sub> |
| 2003 SO <sub>172</sub> | 17.1 | 0.15 | 20071027 | 17.37626  | 160.67246 | 220.84691 | 0.39280  | 0.1945599 | 2.4104813 | 79  | 4 | 1992-2007 | 0.41 | M-v | 1 | MPC | 128805 2003 SO <sub>172</sub> |
| 2003 SU <sub>172</sub> | 17.2 | 0.15 | 20071027 | 14.81284  | 8.60922   | 32.03910  | 0.97132  | 0.2457297 | 2.3836443 | 57  | 5 | 1992-2007 | 0.45 | M-v | 1 | MPC | 77713 2003 SU <sub>172</sub>  |
| 2003 SA <sub>173</sub> | 17.3 | 0.15 | 20071027 | 64.22291  | 198.49681 | 139.19204 | 2.95929  | 0.2219087 | 2.3456340 | 65  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 128805 2003 SA <sub>173</sub> |
| 2003 SH <sub>173</sub> | 17.1 | 0.15 | 20071027 | 19.51132  | 300.15294 | 79.61504  | 3.37118  | 0.2156502 | 2.4281588 | 65  | 2 | 2003-2007 | 0.58 | M-v | 3 | MPC | 128031 2003 SH <sub>173</sub> |
| 2003 SQ <sub>173</sub> | 16.7 | 0.15 | 20071027 | 342.73899 | 209.03373 | 222.02737 | 4.05528  | 0.1302727 | 2.4075941 | 94  | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128032 2003 SQ <sub>173</sub> |
| 2003 ST <sub>175</sub> | 17.3 | 0.15 | 20071027 | 349.55516 | 115.88232 | 302.73001 | 4.50998  | 0.1858187 | 2.3976589 | 76  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128032 2003 ST <sub>175</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 SR <sub>176</sub> | 16.7 | 0.15 | 20071027 | 70.43616  | 172.27056 | 146.16090 | 1.75101  | 0.1892943 | 2.3795325 | 68  | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 128805 2003 SR <sub>176</sub> |
| 2003 SD <sub>178</sub> | 16.8 | 0.15 | 20071027 | 20.96912  | 148.92144 | 230.39333 | 4.38927  | 0.1202525 | 2.4258627 | 101 | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128032 2003 SD <sub>178</sub> |
| 2003 SF <sub>178</sub> | 15.9 | 0.15 | 20071027 | 213.53450 | 223.65509 | 330.49952 | 6.52959  | 0.0569559 | 2.3919837 | 111 | 4 | 1998-2007 | 0.55 | M-v | 3 | MPC | 128805 2003 SF <sub>178</sub> |
| 2003 SH <sub>178</sub> | 15.9 | 0.15 | 20071027 | 143.94003 | 252.56597 | 354.49506 | 14.54144 | 0.0710526 | 2.4374548 | 58  | 5 | 1994-2007 | 0.52 | M-v | 1 | MPC | 128805 2003 SH <sub>178</sub> |
| 2003 SQ <sub>178</sub> | 17.3 | 0.15 | 20071027 | 10.40442  | 136.32660 | 283.02217 | 2.22637  | 0.1441712 | 2.3113108 | 49  | 4 | 2000-2007 | 0.57 | M-v | 0 | MPC | 87590 2003 SQ <sub>178</sub>  |
| 2003 ST <sub>178</sub> | 17.9 | 0.15 | 20071027 | 76.54817  | 357.27156 | 326.51296 | 1.58131  | 0.2094918 | 2.3315437 | 57  | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 108742 2003 ST <sub>178</sub> |
| 2003 SE <sub>179</sub> | 16.4 | 0.15 | 20071027 | 348.11464 | 326.85299 | 94.49257  | 3.99657  | 0.1717943 | 2.4236166 | 87  | 3 | 1997-2007 | 0.53 | M-v | 3 | MPC | 128033 2003 SE <sub>179</sub> |
| 2003 SC <sub>180</sub> | 16.9 | 0.15 | 20071027 | 357.01378 | 124.56532 | 283.32782 | 5.57018  | 0.0858848 | 2.4134312 | 38  | 2 | 2003-2007 | 0.51 | M-v | 4 | MPC | 128033 2003 SC <sub>180</sub> |
| 2003 SH <sub>180</sub> | 17.7 | 0.15 | 20071027 | 40.84025  | 23.61417  | 351.11114 | 4.78905  | 0.2969614 | 2.3137566 | 38  | 4 | 2001-2007 | 0.66 | M-v | 1 | MPC | 128806 2003 SH <sub>180</sub> |
| 2003 SB <sub>181</sub> | 16.5 | 0.15 | 20071027 | 115.52057 | 314.16394 | 331.39191 | 6.35649  | 0.1230200 | 2.3592310 | 44  | 4 | 1998-2007 | 0.47 | M-v | 2 | MPC | 128806 2003 SB <sub>181</sub> |
| 2003 SF <sub>181</sub> | 17.7 | 0.15 | 20071027 | 11.50357  | 56.57370  | 330.68257 | 1.48615  | 0.2506756 | 2.4507156 | 58  | 4 | 1993-2007 | 0.53 | M-v | 1 | MPC | 128806 2003 SF <sub>181</sub> |
| 2003 SF <sub>182</sub> | 16.5 | 0.15 | 20071027 | 0.47599   | 272.86725 | 162.99007 | 8.31966  | 0.1463805 | 2.3935759 | 63  | 6 | 1995-2007 | 0.52 | M-v | 1 | MPC | 110986 2003 SF <sub>182</sub> |
| 2003 SW <sub>184</sub> | 17.9 | 0.15 | 20071027 | 83.18419  | 195.09863 | 106.60720 | 2.17738  | 0.1802541 | 2.4009495 | 39  | 4 | 1999-2007 | 0.45 | M-v | 1 | MPC | 126671 2003 SW <sub>184</sub> |
| 2003 SE <sub>185</sub> | 17.4 | 0.15 | 20071027 | 156.80162 | 264.22681 | 352.54343 | 6.44800  | 0.0875431 | 2.2888834 | 36  | 4 | 2002-2007 | 0.57 | M-v | 1 | MPC | 87590 2003 SE <sub>185</sub>  |
| 2003 SU <sub>186</sub> | 16.7 | 0.15 | 20071027 | 28.01037  | 349.65738 | 52.99492  | 6.06318  | 0.2297448 | 2.3321153 | 57  | 4 | 1996-2007 | 0.51 | M-v | 1 | MPC | 128806 2003 SU <sub>186</sub> |
| 2003 SE <sub>187</sub> | 17.7 | 0.15 | 20071027 | 37.10719  | 300.73065 | 53.68937  | 3.14810  | 0.1936046 | 2.4219154 | 64  | 3 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128806 2003 SE <sub>187</sub> |
| 2003 SJ <sub>188</sub> | 16.7 | 0.15 | 20071027 | 356.67677 | 195.66978 | 228.92839 | 5.97966  | 0.0921197 | 2.3667901 | 53  | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128806 2003 SJ <sub>188</sub> |
| 2003 SO <sub>188</sub> | 18.4 | 0.15 | 20071027 | 1.13449   | 308.03221 | 61.35213  | 1.06970  | 0.2709349 | 2.5428013 | 64  | 5 | 1995-2007 | 0.53 | M-v | 2 | MPC | 128806 2003 SO <sub>188</sub> |
| 2003 SJ <sub>189</sub> | 16.5 | 0.15 | 20071027 | 58.09817  | 12.50694  | 348.77677 | 2.09162  | 0.2229563 | 2.3539772 | 97  | 5 | 1992-2007 | 0.53 | M-v | 1 | MPC | 128806 2003 SJ <sub>189</sub> |
| 2003 SZ <sub>189</sub> | 17.1 | 0.15 | 20071027 | 356.96864 | 43.31521  | 11.27258  | 5.07109  | 0.2249736 | 2.3957204 | 62  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128806 2003 SZ <sub>189</sub> |
| 2003 SJ <sub>190</sub> | 16.3 | 0.15 | 20071027 | 49.13194  | 300.52191 | 71.84927  | 7.91841  | 0.1263758 | 2.3547136 | 74  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 87590 2003 SJ <sub>190</sub>  |
| 2003 SP <sub>190</sub> | 17.4 | 0.15 | 20071027 | 3.28274   | 129.30410 | 311.04155 | 2.49962  | 0.0953193 | 2.2837456 | 38  | 4 | 2001-2007 | 0.46 | M-v | 0 | MPC | 110986 2003 SP <sub>190</sub> |
| 2003 SC <sub>191</sub> | 16.5 | 0.15 | 20071027 | 351.16155 | 206.76011 | 251.06561 | 6.11692  | 0.0186765 | 2.2197363 | 66  | 7 | 1996-2007 | 0.51 | M-v | 1 | MPC | 128806 2003 SC <sub>191</sub> |
| 2003 SH <sub>193</sub> | 16.7 | 0.15 | 20071027 | 79.76706  | 5.87280   | 310.36446 | 5.92053  | 0.1052030 | 2.4140849 | 56  | 3 | 2003-2007 | 0.37 | M-v | 3 | MPC | 128806 2003 SH <sub>193</sub> |
| 2003 SK <sub>195</sub> | 16.8 | 0.15 | 20071027 | 26.76393  | 70.35823  | 312.34364 | 5.43898  | 0.1475796 | 2.4134098 | 40  | 4 | 1994-2007 | 0.38 | M-v | 2 | MPC | 128806 2003 SK <sub>195</sub> |
| 2003 SL <sub>195</sub> | 16.6 | 0.15 | 20071027 | 1.44877   | 125.55749 | 225.30159 | 13.39303 | 0.1178991 | 2.6495218 | 48  | 5 | 2001-2007 | 0.42 | M-v | 1 | MPC | 124406 2003 SL <sub>195</sub> |
| 2003 SM <sub>195</sub> | 17.0 | 0.15 | 20071027 | 69.45447  | 84.13628  | 272.79471 | 5.89562  | 0.1495930 | 2.3222037 | 38  | 3 | 2000-2007 | 0.43 | M-v | 3 | MPC | 128034 2003 SM <sub>195</sub> |
| 2003 SX <sub>195</sub> | 16.9 | 0.15 | 20071027 | 14.38485  | 29.07166  | 332.48486 | 3.91453  | 0.2386645 | 2.5323229 | 118 | 3 | 1999-2007 | 0.45 | M-v | 3 | MPC | 128806 2003 SX <sub>195</sub> |
| 2003 SR <sub>197</sub> | 16.2 | 0.15 | 20071027 | 22.99632  | 209.49690 | 163.42536 | 6.69079  | 0.1051563 | 2.4264024 | 62  | 3 | 2003-2007 | 0.55 | M-v | 3 | MPC | 128806 2003 SR <sub>197</sub> |
| 2003 SY <sub>201</sub> | 16.8 | 0.15 | 20071027 | 343.06613 | 197.09050 | 192.97539 | 3.72976  | 0.0978204 | 2.5242487 | 67  | 5 | 1991-2007 | 0.47 | M-v | 1 | MPC | 128806 2003 SY <sub>201</sub> |
| 2003 SZ <sub>201</sub> | 16.8 | 0.15 | 20071027 | 59.73192  | 274.34008 | 74.10232  | 4.67326  | 0.1968278 | 2.3671711 | 70  | 6 | 1999-2007 | 0.48 | M-v | 0 | MPC | 100554 2003 SZ <sub>201</sub> |
| 2003 SE <sub>203</sub> | 17.8 | 0.15 | 20071027 | 11.04941  | 104.74975 | 268.75765 | 0.75462  | 0.1962653 | 2.4608646 | 56  | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128034 2003 SE <sub>203</sub> |
| 2003 SF <sub>203</sub> | 17.8 | 0.15 | 20071027 | 66.82742  | 124.39995 | 212.38364 | 2.34008  | 0.1975502 | 2.3325553 | 41  | 4 | 1996-2007 | 0.36 | M-v | 0 | MPC | 128806 2003 SF <sub>203</sub> |
| 2003 SY <sub>203</sub> | 17.8 | 0.15 | 20071027 | 359.57997 | 260.49075 | 164.07133 | 1.46706  | 0.1623785 | 2.3686859 | 43  | 4 | 2001-2007 | 0.48 | M-v | 0 | MPC | 128806 2003 SY <sub>203</sub> |
| 2003 SF <sub>204</sub> | 16.9 | 0.15 | 20071027 | 27.11074  | 191.79253 | 181.47341 | 2.32417  | 0.2223679 | 2.4430833 | 117 | 6 | 1997-2007 | 0.50 | M-v | 1 | MPC | 128806 2003 SF <sub>204</sub> |
| 2003 SR <sub>204</sub> | 15.7 | 0.15 | 20071027 | 347.60731 | 343.47755 | 36.73553  | 9.47292  | 0.3102947 | 2.6562913 | 105 | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 126672 2003 SR <sub>204</sub> |
| 2003 SS <sub>204</sub> | 15.3 | 0.15 | 20071027 | 358.51317 | 325.76424 | 43.99783  | 7.94987  | 0.2221696 | 2.6655971 | 152 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128806 2003 SS <sub>204</sub> |
| 2003 SO <sub>205</sub> | 16.9 | 0.15 | 20071027 | 86.08041  | 81.25826  | 242.76046 | 1.13707  | 0.1922949 | 2.3478227 | 74  | 5 | 1996-2007 | 0.53 | M-v | 1 | MPC | 102171 2003 SO <sub>205</sub> |
| 2003 SN <sub>206</sub> | 16.5 | 0.15 | 20071027 | 4.94032   | 202.03185 | 224.03032 | 4.56123  | 0.0838896 | 2.3238680 | 57  | 4 | 2002-2007 | 0.54 | M-v | 2 | MPC | 75990 2003 SN <sub>206</sub>  |
| 2003 SP <sub>207</sub> | 16.6 | 0.15 | 20071027 | 2.56983   | 43.77279  | 25.55587  | 1.67129  | 0.1643327 | 2.3889326 | 128 | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 77715 2003 SP <sub>207</sub>  |
| 2003 SV <sub>207</sub> | 16.3 | 0.15 | 20071027 | 311.81577 | 300.73268 | 195.57578 | 10.85182 | 0.1260331 | 2.3374329 | 125 | 5 | 2000-2007 | 0.54 | M-v | 0 | MPC | 110986 2003 SV <sub>207</sub> |
| 2003 SG <sub>208</sub> | 16.9 | 0.15 | 20071027 | 6.69074   | 72.73902  | 320.07905 | 6.60857  | 0.2012886 | 2.3925028 | 63  | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128807 2003 SG <sub>208</sub> |
| 2003 SV <sub>209</sub> | 17.1 | 0.15 | 20071027 | 73.01051  | 82.07493  | 250.32629 | 2.92531  | 0.1894027 | 2.3472616 | 59  | 5 | 1996-2007 | 0.49 | M-v | 1 | MPC | 110986 2003 SV <sub>209</sub> |
| 2003 SW <sub>209</sub> | 16.5 | 0.15 | 20071027 | 281.61806 | 187.25866 | 334.68970 | 5.00164  | 0.0911190 | 2.2751913 | 124 | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 104262 2003 SW <sub>209</sub> |
| 2003 SA <sub>211</sub> | 16.5 | 0.15 | 20071027 | 334.73032 | 167.72195 | 243.46514 | 5.49489  | 0.0874834 | 2.4243240 | 78  | 3 | 2003-2007 | 0.57 | M-v | 2 | MPC | 128807 2003 SA <sub>211</sub> |
| 2003 SV <sub>212</sub> | 16.3 | 0.15 | 20071027 | 35.62595  | 313.17498 | 51.81914  | 7.54914  | 0.1372239 | 2.3636708 | 65  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128035 2003 SV <sub>212</sub> |
| 2003 SO <sub>213</sub> | 16.4 | 0.15 | 20071027 | 337.88808 | 50.83733  | 24.20421  | 4.89114  | 0.1300173 | 2.4551588 | 158 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128807 2003 SO <sub>213</sub> |
| 2003 SZ <sub>213</sub> | 17.3 | 0.15 | 20071027 | 64.86296  | 269.79871 | 68.63923  | 3.23201  | 0.2338262 | 2.4081136 | 75  | 6 | 1998-2007 | 0.43 | M-v | 0 | MPC | 102171 2003 SZ <sub>213</sub> |
| 2003 SA <sub>215</sub> | 15.4 | 0.15 | 20071027 | 226.26376 | 161.04019 | 323.09147 | 27.62060 | 0.0962622 | 2.7267842 | 94  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 124407 2003 SA <sub>215</sub> |
| 2003 SB <sub>215</sub> | 17.0 | 0.15 | 20071027 | 283.75589 | 250.98360 | 260.63308 | 5.57873  | 0.0416298 | 2.2622677 | 34  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 110986 2003 SB <sub>215</sub> |
| 2003 SY <sub>216</sub> | 17.0 | 0.15 | 20071027 | 356.12575 | 250.68794 | 193.39742 | 4.59236  | 0.2042710 | 2.3749070 | 67  | 4 | 2001-2007 | 0.37 | M-v | 0 | MPC | 128807 2003 SY <sub>216</sub> |
| 2003 SA <sub>217</sub> | 17.5 | 0.15 | 20071027 | 12.21263  | 67.95598  | 348.74467 | 2.56665  | 0.1594204 | 2.2985616 | 37  | 3 | 2003-2007 | 0.50 | M-v | 4 | MPC | 75994 2003 SA <sub>217</sub>  |
| 2003 SR <sub>219</sub> | 16.4 | 0.15 | 20071027 | 15.14173  | 142.33982 | 199.97049 | 11.29011 | 0.2077127 | 2.6222345 | 113 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128807 2003 SR <sub>219</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 SO <sub>220</sub> | 16.5 | 0.15 | 20071027 | 8.31981   | 30.26436  | 38.32488  | 10.07149 | 0.2191807 | 2.4160186 | 119 | 4 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128807 2003 SO <sub>220</sub> |
| 2003 SN <sub>221</sub> | 17.2 | 0.15 | 20071027 | 15.62516  | 338.85196 | 359.38203 | 4.58143  | 0.2422776 | 2.5832103 | 70  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128807 2003 SN <sub>221</sub> |
| 2003 SS <sub>221</sub> | 17.8 | 0.15 | 20071027 | 334.48984 | 219.11154 | 189.84592 | 1.92762  | 0.0558296 | 2.4630398 | 45  | 5 | 1994-2007 | 0.35 | M-v | 1 | MPC | 128807 2003 SS <sub>221</sub> |
| 2003 SF <sub>222</sub> | 17.3 | 0.15 | 20071027 | 12.02994  | 250.17528 | 165.78993 | 0.63583  | 0.1902626 | 2.4026811 | 70  | 4 | 2001-2007 | 0.54 | M-v | 2 | MPC | 75997 2003 SF <sub>222</sub>  |
| 2003 SN <sub>222</sub> | 17.2 | 0.15 | 20071027 | 15.26154  | 253.22304 | 170.25222 | 2.38231  | 0.1484544 | 2.3573576 | 61  | 5 | 1992-2007 | 0.42 | M-v | 1 | MPC | 75998 2003 SN <sub>222</sub>  |
| 2003 SW <sub>223</sub> | 17.1 | 0.15 | 20071027 | 38.38269  | 339.43844 | 37.73642  | 7.24659  | 0.1091267 | 2.4080003 | 53  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128035 2003 SW <sub>223</sub> |
| 2003 SX <sub>223</sub> | 17.1 | 0.15 | 20071027 | 44.60608  | 8.40061   | 41.81728  | 3.14469  | 0.1968451 | 2.2904479 | 92  | 4 | 2001-2007 | 0.55 | M-v | 2 | MPC | 75999 2003 SX <sub>223</sub>  |
| 2003 SA <sub>225</sub> | 16.2 | 0.15 | 20071027 | 350.10939 | 340.57379 | 91.34999  | 2.23124  | 0.1772104 | 2.4361476 | 114 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128807 2003 SA <sub>225</sub> |
| 2003 SU <sub>226</sub> | 16.3 | 0.15 | 20071027 | 326.69808 | 24.49809  | 23.33214  | 15.06843 | 0.0661947 | 2.5846625 | 55  | 3 | 1997-2007 | 0.44 | M-v | 2 | MPC | 128807 2003 SU <sub>226</sub> |
| 2003 SG <sub>227</sub> | 18.2 | 0.15 | 20071027 | 68.42340  | 3.84304   | 18.81751  | 1.96181  | 0.0367055 | 2.1932907 | 41  | 4 | 2002-2007 | 0.42 | M-v | 3 | MPC | 77716 2003 SG <sub>227</sub>  |
| 2003 SM <sub>227</sub> | 16.8 | 0.15 | 20071027 | 324.18005 | 230.05502 | 204.88383 | 12.31221 | 0.2530854 | 2.5481444 | 108 | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 128807 2003 SM <sub>227</sub> |
| 2003 SQ <sub>227</sub> | 16.8 | 0.15 | 20071027 | 14.12438  | 39.35142  | 354.00071 | 4.76860  | 0.1422741 | 2.4361023 | 76  | 4 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128807 2003 SQ <sub>227</sub> |
| 2003 SS <sub>227</sub> | 16.9 | 0.15 | 20071027 | 53.52048  | 356.21498 | 358.44639 | 3.25646  | 0.2395462 | 2.3896719 | 64  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 76002 2003 SS <sub>227</sub>  |
| 2003 SL <sub>228</sub> | 17.9 | 0.15 | 20071027 | 31.97727  | 37.84660  | 343.46679 | 2.11947  | 0.1333538 | 2.3531004 | 44  | 3 | 2003-2007 | 0.31 | M-v | 1 | MPC | 95095 2003 SL <sub>228</sub>  |
| 2003 SQ <sub>230</sub> | 16.4 | 0.15 | 20071027 | 352.64898 | 35.09346  | 19.82652  | 6.75552  | 0.0876851 | 2.3609745 | 78  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 128035 2003 SQ <sub>230</sub> |
| 2003 SR <sub>230</sub> | 16.5 | 0.15 | 20071027 | 45.74256  | 218.05107 | 143.76371 | 6.60407  | 0.1549121 | 2.3428108 | 41  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 128807 2003 SR <sub>230</sub> |
| 2003 SN <sub>232</sub> | 16.6 | 0.15 | 20071027 | 77.95016  | 238.64736 | 84.75217  | 2.43899  | 0.1982904 | 2.3756838 | 83  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 102172 2003 SN <sub>232</sub> |
| 2003 SP <sub>232</sub> | 17.0 | 0.15 | 20071027 | 61.44157  | 205.93199 | 145.58844 | 3.01166  | 0.2322832 | 2.3545062 | 65  | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 110987 2003 SP <sub>232</sub> |
| 2003 ST <sub>232</sub> | 17.1 | 0.15 | 20071027 | 53.35765  | 302.34873 | 21.61677  | 6.23410  | 0.2145657 | 2.3697038 | 85  | 5 | 1996-2007 | 0.52 | M-v | 0 | MPC | 128807 2003 ST <sub>232</sub> |
| 2003 SQ <sub>233</sub> | 16.5 | 0.15 | 20071027 | 57.31647  | 220.93916 | 109.20523 | 3.69760  | 0.2329458 | 2.4095064 | 82  | 5 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128807 2003 SQ <sub>233</sub> |
| 2003 SC <sub>235</sub> | 17.3 | 0.15 | 20071027 | 56.09689  | 273.82908 | 72.92950  | 2.26185  | 0.1997313 | 2.3841097 | 48  | 4 | 2003-2007 | 0.42 | M-v | 1 | MPC | 128807 2003 SC <sub>235</sub> |
| 2003 SJ <sub>235</sub> | 17.0 | 0.15 | 20071027 | 348.68661 | 88.63872  | 293.13767 | 1.85531  | 0.2285442 | 2.5718375 | 94  | 5 | 1995-2007 | 0.56 | M-v | 2 | MPC | 128807 2003 SJ <sub>235</sub> |
| 2003 SQ <sub>235</sub> | 16.7 | 0.15 | 20071027 | 2.72551   | 13.16167  | 17.63250  | 10.58346 | 0.2034987 | 2.3975427 | 103 | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128807 2003 SQ <sub>235</sub> |
| 2003 SD <sub>236</sub> | 17.3 | 0.15 | 20071027 | 312.73419 | 243.32426 | 189.74132 | 1.93760  | 0.2002716 | 2.5283184 | 65  | 4 | 1997-2007 | 0.44 | M-v | 1 | MPC | 128807 2003 SD <sub>236</sub> |
| 2003 SL <sub>236</sub> | 16.5 | 0.15 | 20071027 | 21.96916  | 43.23222  | 15.44187  | 3.06146  | 0.1362984 | 2.2778246 | 89  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 76005 2003 SL <sub>236</sub>  |
| 2003 ST <sub>237</sub> | 17.5 | 0.15 | 20071027 | 54.06529  | 347.48428 | 14.95077  | 2.71145  | 0.2338615 | 2.3580150 | 72  | 3 | 1992-2007 | 0.53 | M-v | 3 | MPC | 53485 2003 ST <sub>237</sub>  |
| 2003 SU <sub>237</sub> | 15.8 | 0.15 | 20071027 | 19.09631  | 309.92493 | 21.71322  | 5.34533  | 0.1345738 | 2.6465557 | 89  | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 126673 2003 SU <sub>237</sub> |
| 2003 SY <sub>237</sub> | 17.3 | 0.15 | 20071027 | 25.07486  | 141.51507 | 240.14501 | 1.53267  | 0.2149565 | 2.4299993 | 78  | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 128807 2003 SY <sub>237</sub> |
| 2003 SD <sub>240</sub> | 17.5 | 0.15 | 20071027 | 31.81005  | 59.84721  | 306.52864 | 1.90616  | 0.1930005 | 2.4449025 | 56  | 5 | 1997-2007 | 0.45 | M-v | 1 | MPC | 110987 2003 SD <sub>240</sub> |
| 2003 SE <sub>240</sub> | 16.5 | 0.15 | 20071027 | 53.31346  | 324.57623 | 339.74928 | 3.44258  | 0.2237742 | 2.5492733 | 81  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128807 2003 SE <sub>240</sub> |
| 2003 SS <sub>245</sub> | 15.3 | 0.15 | 20071027 | 170.08521 | 209.99262 | 344.43738 | 4.62569  | 0.1700881 | 2.5412382 | 52  | 5 | 1999-2007 | 0.49 | M-v | 2 | MPC | 126673 2003 SS <sub>245</sub> |
| 2003 SY <sub>245</sub> | 18.0 | 0.15 | 20071027 | 47.97778  | 315.58675 | 19.17516  | 2.32689  | 0.2275276 | 2.4222202 | 60  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128808 2003 SY <sub>245</sub> |
| 2003 SC <sub>246</sub> | 18.1 | 0.15 | 20071027 | 34.85069  | 343.65342 | 10.07576  | 6.82400  | 0.1954416 | 2.4292939 | 43  | 2 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128036 2003 SC <sub>246</sub> |
| 2003 SO <sub>246</sub> | 17.4 | 0.15 | 20071027 | 146.22519 | 73.03277  | 217.99073 | 2.07916  | 0.1507514 | 2.2240073 | 60  | 4 | 2003-2007 | 0.40 | M-v | 1 | MPC | 110987 2003 SO <sub>246</sub> |
| 2003 SX <sub>246</sub> | 17.1 | 0.15 | 20071027 | 64.84209  | 152.32210 | 172.49922 | 4.75566  | 0.1957172 | 2.4051458 | 78  | 5 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128808 2003 SX <sub>246</sub> |
| 2003 SP <sub>247</sub> | 16.9 | 0.15 | 20071027 | 46.67378  | 206.47323 | 157.83162 | 2.90864  | 0.1785859 | 2.3715639 | 66  | 3 | 2003-2007 | 0.51 | M-v | 3 | MPC | 76008 2003 SP <sub>247</sub>  |
| 2003 SH <sub>248</sub> | 16.8 | 0.15 | 20071027 | 71.07221  | 344.97159 | 2.66492   | 3.04694  | 0.0930439 | 2.3390058 | 37  | 5 | 1960-2007 | 0.57 | M-v | 1 | MPC | 110987 2003 SH <sub>248</sub> |
| 2003 SB <sub>249</sub> | 16.8 | 0.15 | 20071027 | 355.72985 | 351.09123 | 68.04105  | 1.52590  | 0.2127167 | 2.4415136 | 105 | 4 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128808 2003 SB <sub>249</sub> |
| 2003 SJ <sub>249</sub> | 15.9 | 0.15 | 20071027 | 24.62258  | 351.67805 | 35.09362  | 6.63982  | 0.1125692 | 2.4101008 | 136 | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128808 2003 SJ <sub>249</sub> |
| 2003 SM <sub>249</sub> | 16.4 | 0.15 | 20071027 | 12.41251  | 353.70842 | 59.94287  | 2.08883  | 0.1812034 | 2.3904212 | 86  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 77717 2003 SM <sub>249</sub>  |
| 2003 SO <sub>249</sub> | 16.5 | 0.15 | 20071027 | 49.43321  | 340.00861 | 26.77073  | 4.44291  | 0.1510929 | 2.3752296 | 68  | 3 | 2003-2007 | 0.48 | M-v | 3 | MPC | 76009 2003 SO <sub>249</sub>  |
| 2003 SD <sub>250</sub> | 16.5 | 0.15 | 20071027 | 83.56941  | 141.37396 | 184.72596 | 1.94680  | 0.2287483 | 2.3614651 | 106 | 7 | 1992-2007 | 0.50 | M-v | 1 | MPC | 102173 2003 SD <sub>250</sub> |
| 2003 SO <sub>250</sub> | 16.3 | 0.15 | 20071027 | 356.63742 | 172.26657 | 203.35849 | 7.58272  | 0.2341957 | 2.6040204 | 153 | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128808 2003 SO <sub>250</sub> |
| 2003 SQ <sub>250</sub> | 16.0 | 0.15 | 20071027 | 39.50472  | 345.85585 | 34.16595  | 8.03956  | 0.2414950 | 2.3982022 | 133 | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128036 2003 SQ <sub>250</sub> |
| 2003 SB <sub>251</sub> | 16.3 | 0.15 | 20071027 | 36.25289  | 179.57714 | 189.29529 | 6.19074  | 0.1288791 | 2.4257986 | 81  | 4 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128808 2003 SB <sub>251</sub> |
| 2003 SU <sub>251</sub> | 16.3 | 0.15 | 20071027 | 356.10490 | 338.44957 | 41.41851  | 6.50295  | 0.2806448 | 2.6105059 | 155 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128808 2003 SU <sub>251</sub> |
| 2003 SX <sub>251</sub> | 15.5 | 0.15 | 20071027 | 340.36745 | 345.14943 | 43.10643  | 11.44711 | 0.1770227 | 2.6995419 | 117 | 2 | 2003-2007 | 0.52 | M-v | 2 | MPC | 128808 2003 SX <sub>251</sub> |
| 2003 SK <sub>252</sub> | 15.2 | 0.15 | 20071027 | 18.40610  | 164.65796 | 225.67676 | 5.68446  | 0.1691911 | 2.5317123 | 112 | 3 | 1999-2007 | 0.39 | M-v | 2 | MPC | 128808 2003 SK <sub>252</sub> |
| 2003 SL <sub>252</sub> | 15.4 | 0.15 | 20071027 | 0.78640   | 313.13409 | 49.12886  | 14.36377 | 0.2768058 | 2.6961636 | 73  | 3 | 1994-2007 | 0.52 | M-v | 2 | MPC | 128808 2003 SL <sub>252</sub> |
| 2003 SO <sub>252</sub> | 16.1 | 0.15 | 20071027 | 36.30712  | 8.13034   | 40.50910  | 6.50826  | 0.1536313 | 2.3607121 | 112 | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128808 2003 SO <sub>252</sub> |
| 2003 SO <sub>255</sub> | 17.4 | 0.15 | 20071027 | 10.93387  | 78.86974  | 323.56509 | 0.87274  | 0.1918796 | 2.4357187 | 103 | 5 | 1999-2007 | 0.47 | M-v | 1 | MPC | 128808 2003 SO <sub>255</sub> |
| 2003 ST <sub>255</sub> | 17.2 | 0.15 | 20071027 | 78.44206  | 312.63819 | 21.76974  | 2.08714  | 0.1694275 | 2.3612492 | 69  | 5 | 1992-2007 | 0.51 | M-v | 1 | MPC | 74284 2003 ST <sub>255</sub>  |
| 2003 SW <sub>256</sub> | 16.8 | 0.15 | 20071027 | 335.66607 | 108.55548 | 330.21200 | 2.71601  | 0.0702532 | 2.3399304 | 49  | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128808 2003 SW <sub>256</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 SB <sub>257</sub> | 17.3 | 0.15 | 20071027 | 1.12081   | 235.80708 | 185.46558 | 1.93714  | 0.1906922 | 2.3532927 | 32  | 3 | 2003-2007 | 0.41 | M-v | 3 | MPC | 86122 2003 SB <sub>257</sub>  |
| 2003 SY <sub>257</sub> | 17.2 | 0.15 | 20071027 | 31.78640  | 302.49426 | 60.21361  | 3.30110  | 0.2247290 | 2.4393140 | 93  | 6 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128808 2003 SY <sub>257</sub> |
| 2003 SQ <sub>258</sub> | 17.0 | 0.15 | 20071027 | 83.52594  | 193.40888 | 124.86188 | 1.39868  | 0.2227242 | 2.3538803 | 60  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 100572 2003 SQ <sub>258</sub> |
| 2003 SR <sub>258</sub> | 16.7 | 0.15 | 20071027 | 8.33648   | 4.65493   | 43.88692  | 2.92777  | 0.2046566 | 2.4164815 | 79  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128808 2003 SR <sub>258</sub> |
| 2003 SA <sub>260</sub> | 15.9 | 0.15 | 20071027 | 20.93533  | 327.16650 | 21.91427  | 6.66559  | 0.1285776 | 2.5963368 | 132 | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128808 2003 SA <sub>260</sub> |
| 2003 SD <sub>260</sub> | 16.6 | 0.15 | 20071027 | 74.98672  | 305.51340 | 34.86196  | 4.67666  | 0.1719401 | 2.3664062 | 71  | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 122744 2003 SD <sub>260</sub> |
| 2003 SA <sub>261</sub> | 17.6 | 0.15 | 20071027 | 2.28947   | 187.06203 | 216.64557 | 6.71393  | 0.2182382 | 2.4132383 | 52  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128037 2003 SA <sub>261</sub> |
| 2003 SF <sub>261</sub> | 16.7 | 0.15 | 20071027 | 71.38371  | 9.05298   | 356.63431 | 6.24082  | 0.0497678 | 2.2845397 | 61  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 104263 2003 SF <sub>261</sub> |
| 2003 SW <sub>261</sub> | 15.9 | 0.15 | 20071027 | 294.67740 | 210.91341 | 242.11436 | 5.42225  | 0.0415559 | 2.5419425 | 99  | 5 | 1995-2007 | 0.58 | M-v | 1 | MPC | 128808 2003 SW <sub>261</sub> |
| 2003 SS <sub>262</sub> | 17.1 | 0.15 | 20071027 | 282.23808 | 113.35585 | 30.18302  | 7.08390  | 0.0432630 | 2.3205866 | 48  | 3 | 2003-2007 | 0.58 | M-v | 3 | MPC | 87592 2003 SS <sub>262</sub>  |
| 2003 ST <sub>263</sub> | 16.4 | 0.15 | 20071027 | 28.23212  | 34.00259  | 22.47888  | 10.35868 | 0.2016049 | 2.3055052 | 83  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 77718 2003 ST <sub>263</sub>  |
| 2003 SU <sub>263</sub> | 17.0 | 0.15 | 20071027 | 359.94286 | 15.37030  | 31.05509  | 7.12636  | 0.1095675 | 2.4265076 | 108 | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128808 2003 SU <sub>263</sub> |
| 2003 SW <sub>263</sub> | 16.5 | 0.15 | 20071027 | 2.94424   | 343.44660 | 19.74621  | 15.10338 | 0.1886732 | 2.5627079 | 72  | 2 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128037 2003 SW <sub>263</sub> |
| 2003 SZ <sub>265</sub> | 17.8 | 0.15 | 20071027 | 65.57234  | 269.48551 | 54.98427  | 2.06345  | 0.2022191 | 2.3906956 | 54  | 3 | 2003-2007 | 0.41 | M-v | 1 | MPC | 128808 2003 SZ <sub>265</sub> |
| 2003 SA <sub>266</sub> | 17.5 | 0.15 | 20071027 | 7.58986   | 253.91038 | 163.68479 | 2.42210  | 0.2068718 | 2.3837387 | 56  | 4 | 1999-2007 | 0.53 | M-v | 3 | MPC | 110987 2003 SA <sub>266</sub> |
| 2003 SL <sub>266</sub> | 16.0 | 0.15 | 20071027 | 223.83941 | 162.48026 | 356.71140 | 2.01662  | 0.0353237 | 2.5220063 | 159 | 7 | 1991-2007 | 0.48 | M-v | 3 | MPC | 128808 2003 SL <sub>266</sub> |
| 2003 SR <sub>266</sub> | 17.7 | 0.15 | 20071027 | 74.83576  | 196.02852 | 162.60660 | 3.06428  | 0.1872160 | 2.2804638 | 65  | 3 | 2003-2007 | 0.46 | M-v | 3 | MPC | 76016 2003 SR <sub>266</sub>  |
| 2003 SV <sub>266</sub> | 17.3 | 0.15 | 20071027 | 33.96349  | 208.66197 | 170.37489 | 4.14463  | 0.1128350 | 2.3789042 | 45  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 87592 2003 SV <sub>266</sub>  |
| 2003 SC <sub>268</sub> | 17.2 | 0.15 | 20071027 | 345.32969 | 222.75374 | 204.79809 | 0.67195  | 0.1639364 | 2.4160789 | 84  | 4 | 1992-2007 | 0.41 | M-v | 0 | MPC | 128037 2003 SC <sub>268</sub> |
| 2003 SX <sub>269</sub> | 17.6 | 0.15 | 20071027 | 101.32196 | 205.58401 | 130.66212 | 6.65449  | 0.1501018 | 2.2599216 | 37  | 4 | 1998-2007 | 0.41 | M-v | 2 | MPC | 110988 2003 SX <sub>269</sub> |
| 2003 SB <sub>270</sub> | 16.7 | 0.15 | 20071027 | 88.71185  | 260.43198 | 59.80534  | 12.41043 | 0.1899682 | 2.3375382 | 80  | 4 | 2002-2007 | 0.51 | M-v | 0 | MPC | 128809 2003 SB <sub>270</sub> |
| 2003 SU <sub>270</sub> | 16.7 | 0.15 | 20071027 | 20.31285  | 343.12230 | 47.11809  | 6.72223  | 0.1471991 | 2.3931501 | 74  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128809 2003 SU <sub>270</sub> |
| 2003 SK <sub>271</sub> | 17.3 | 0.15 | 20071027 | 81.09535  | 256.59276 | 92.26699  | 6.89907  | 0.2039477 | 2.2959571 | 59  | 3 | 2001-2007 | 0.55 | M-v | 3 | MPC | 128038 2003 SK <sub>271</sub> |
| 2003 SL <sub>271</sub> | 17.4 | 0.15 | 20071027 | 82.26924  | 249.48647 | 83.91218  | 6.13749  | 0.2607205 | 2.3177761 | 80  | 3 | 2003-2007 | 0.43 | M-v | 1 | MPC | 126674 2003 SL <sub>271</sub> |
| 2003 ST <sub>271</sub> | 16.4 | 0.15 | 20071027 | 357.67942 | 225.90767 | 172.96790 | 6.01354  | 0.0939586 | 2.4617271 | 139 | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128809 2003 ST <sub>271</sub> |
| 2003 SP <sub>272</sub> | 17.1 | 0.15 | 20071027 | 46.42260  | 41.08109  | 337.96408 | 6.46646  | 0.1278143 | 2.3332653 | 40  | 4 | 2001-2007 | 0.36 | M-v | 1 | MPC | 76017 2003 SP <sub>272</sub>  |
| 2003 SM <sub>273</sub> | 16.1 | 0.15 | 20071027 | 355.66051 | 77.02221  | 328.34492 | 5.51380  | 0.3153935 | 2.5537014 | 133 | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128809 2003 SM <sub>273</sub> |
| 2003 SQ <sub>273</sub> | 16.4 | 0.15 | 20071027 | 91.72721  | 27.46989  | 271.47106 | 9.58069  | 0.2423641 | 2.3118372 | 49  | 3 | 2003-2007 | 0.41 | M-v | 2 | MPC | 128809 2003 SQ <sub>273</sub> |
| 2003 SG <sub>274</sub> | 16.4 | 0.15 | 20071027 | 357.04116 | 234.35138 | 172.48990 | 6.10558  | 0.1208417 | 2.4376732 | 113 | 4 | 1999-2007 | 0.49 | M-v | 3 | MPC | 128809 2003 SG <sub>274</sub> |
| 2003 SW <sub>277</sub> | 17.1 | 0.15 | 20071027 | 36.97042  | 93.08395  | 250.99630 | 5.69470  | 0.2582837 | 2.4581544 | 60  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128809 2003 SW <sub>277</sub> |
| 2003 SJ <sub>280</sub> | 16.6 | 0.15 | 20071027 | 50.10362  | 294.22234 | 71.03672  | 5.78258  | 0.2563463 | 2.3488587 | 61  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128038 2003 SJ <sub>280</sub> |
| 2003 SE <sub>284</sub> | 16.8 | 0.15 | 20071027 | 38.53080  | 77.14726  | 327.85282 | 6.57141  | 0.0576882 | 2.2452506 | 58  | 4 | 2000-2007 | 0.61 | M-v | 1 | MPC | 77719 2003 SE <sub>284</sub>  |
| 2003 SS <sub>285</sub> | 17.4 | 0.15 | 20071027 | 12.07104  | 101.28473 | 288.74245 | 3.56554  | 0.2233490 | 2.4265351 | 63  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128038 2003 SS <sub>285</sub> |
| 2003 SG <sub>286</sub> | 17.9 | 0.15 | 20071027 | 42.01832  | 134.74734 | 225.34475 | 3.83301  | 0.1218348 | 2.3661966 | 36  | 3 | 1996-2007 | 0.33 | M-v | 2 | MPC | 87593 2003 SG <sub>286</sub>  |
| 2003 SN <sub>286</sub> | 16.9 | 0.15 | 20071027 | 43.37771  | 79.92022  | 260.93817 | 7.38333  | 0.2410914 | 2.4492204 | 74  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128809 2003 SN <sub>286</sub> |
| 2003 SA <sub>289</sub> | 16.6 | 0.15 | 20071027 | 321.83205 | 40.03709  | 62.63800  | 5.69047  | 0.1071415 | 2.3703089 | 82  | 5 | 1996-2007 | 0.43 | M-v | 0 | MPC | 128809 2003 SA <sub>289</sub> |
| 2003 SW <sub>289</sub> | 16.3 | 0.15 | 20071027 | 28.81376  | 260.08092 | 102.53290 | 4.86620  | 0.1486998 | 2.4425142 | 87  | 3 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128809 2003 SW <sub>289</sub> |
| 2003 SD <sub>290</sub> | 17.1 | 0.15 | 20071027 | 131.47299 | 213.86960 | 84.63501  | 6.68560  | 0.1766077 | 2.2336145 | 33  | 5 | 2000-2007 | 0.58 | M-v | 1 | MPC | 100580 2003 SD <sub>290</sub> |
| 2003 SM <sub>290</sub> | 17.5 | 0.15 | 20071027 | 72.74878  | 82.58882  | 242.44541 | 1.33772  | 0.2167321 | 2.4109272 | 40  | 3 | 2003-2007 | 0.30 | M-v | 1 | MPC | 100580 2003 SM <sub>290</sub> |
| 2003 SB <sub>291</sub> | 16.2 | 0.15 | 20071027 | 49.70378  | 340.69184 | 19.16899  | 5.55026  | 0.1253424 | 2.4225645 | 93  | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 128809 2003 SB <sub>291</sub> |
| 2003 SS <sub>291</sub> | 16.5 | 0.15 | 20071027 | 74.33975  | 2.41570   | 324.08914 | 6.51610  | 0.0892050 | 2.4082870 | 53  | 3 | 2003-2007 | 0.40 | M-v | 3 | MPC | 128809 2003 SS <sub>291</sub> |
| 2003 SV <sub>292</sub> | 17.1 | 0.15 | 20071027 | 8.63929   | 57.63014  | 315.54803 | 9.23158  | 0.2712404 | 2.5269493 | 80  | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128809 2003 SV <sub>292</sub> |
| 2003 SU <sub>293</sub> | 15.5 | 0.15 | 20071027 | 2.90893   | 330.71098 | 30.30218  | 18.18386 | 0.2014513 | 2.6522835 | 88  | 3 | 2003-2007 | 0.55 | M-v | 2 | MPC | 128809 2003 SU <sub>293</sub> |
| 2003 SJ <sub>295</sub> | 16.3 | 0.15 | 20071027 | 337.65725 | 188.97794 | 240.66798 | 7.33160  | 0.1066169 | 2.4114684 | 56  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128039 2003 SJ <sub>295</sub> |
| 2003 SN <sub>295</sub> | 16.8 | 0.15 | 20071027 | 117.07190 | 342.85551 | 305.42132 | 4.73024  | 0.1955948 | 2.3087253 | 40  | 6 | 1996-2007 | 0.44 | M-v | 1 | MPC | 128809 2003 SN <sub>295</sub> |
| 2003 SY <sub>296</sub> | 16.4 | 0.15 | 20071027 | 10.94594  | 27.15504  | 303.94716 | 14.57872 | 0.2133874 | 2.6005603 | 48  | 3 | 1999-2007 | 0.50 | M-v | 2 | MPC | 126675 2003 SY <sub>296</sub> |
| 2003 SA <sub>300</sub> | 16.7 | 0.15 | 20071027 | 341.54926 | 123.22788 | 331.30906 | 6.79947  | 0.2894073 | 2.3766155 | 52  | 4 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128809 2003 SA <sub>300</sub> |
| 2003 SB <sub>300</sub> | 17.3 | 0.15 | 20071027 | 18.64364  | 93.53799  | 321.11650 | 5.43979  | 0.2158614 | 2.3269492 | 39  | 4 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128809 2003 SB <sub>300</sub> |
| 2003 SF <sub>300</sub> | 17.2 | 0.15 | 20071027 | 38.07189  | 103.64525 | 264.38165 | 5.27060  | 0.1565594 | 2.3655055 | 40  | 2 | 2003-2007 | 0.35 | M-v | 3 | MPC | 128039 2003 SF <sub>300</sub> |
| 2003 SW <sub>300</sub> | 16.3 | 0.15 | 20071027 | 131.64958 | 51.54696  | 230.69086 | 6.28062  | 0.1085771 | 2.2935410 | 58  | 5 | 1993-2007 | 0.45 | M-v | 1 | MPC | 124409 2003 SW <sub>300</sub> |
| 2003 SS <sub>301</sub> | 16.8 | 0.15 | 20071027 | 355.50253 | 1.30099   | 29.14179  | 7.02320  | 0.1232478 | 2.4611812 | 65  | 3 | 1994-2007 | 0.50 | M-v | 3 | MPC | 128809 2003 SS <sub>301</sub> |
| 2003 SB <sub>303</sub> | 16.8 | 0.15 | 20071027 | 342.77183 | 213.95330 | 251.36474 | 4.96859  | 0.0442285 | 2.2708875 | 51  | 6 | 2000-2007 | 0.57 | M-v | 0 | MPC | 104264 2003 SB <sub>303</sub> |
| 2003 SD <sub>303</sub> | 16.2 | 0.15 | 20071027 | 36.14018  | 65.08774  | 338.47596 | 6.97903  | 0.1114687 | 2.3055873 | 72  | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 77719 2003 SD <sub>303</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 SH <sub>303</sub> | 16.5 | 0.15 | 20071027 | 112.12900 | 18.19607  | 288.36561 | 5.96820  | 0.1192650 | 2.3214283 | 50  | 5 | 1999-2007 | 0.59 | M-v | 1 | MPC | 77719 2003 SH <sub>303</sub>  |
| 2003 SN <sub>303</sub> | 16.8 | 0.15 | 20071027 | 295.61376 | 224.47608 | 274.21068 | 5.79622  | 0.0741084 | 2.3349138 | 41  | 4 | 1994-2007 | 0.46 | M-v | 1 | MPC | 128809 2003 SN <sub>303</sub> |
| 2003 SX <sub>303</sub> | 16.6 | 0.15 | 20071027 | 36.21175  | 247.73766 | 133.29851 | 3.19372  | 0.1723700 | 2.3727298 | 67  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 87593 2003 SX <sub>303</sub>  |
| 2003 SB <sub>304</sub> | 15.7 | 0.15 | 20071027 | 3.64637   | 121.23563 | 254.42404 | 12.23734 | 0.0558622 | 2.5477892 | 91  | 5 | 1999-2007 | 0.61 | M-v | 2 | MPC | 128809 2003 SB <sub>304</sub> |
| 2003 SB <sub>306</sub> | 15.0 | 0.15 | 20071027 | 215.11065 | 234.63192 | 255.81844 | 13.78235 | 0.0996859 | 2.8549380 | 46  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 76028 2003 SB <sub>306</sub>  |
| 2003 SH <sub>307</sub> | 16.0 | 0.15 | 20071027 | 20.98923  | 65.31811  | 295.96826 | 12.72087 | 0.1678948 | 2.5179698 | 89  | 5 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128810 2003 SH <sub>307</sub> |
| 2003 SK <sub>307</sub> | 16.2 | 0.15 | 20071027 | 353.25966 | 45.32574  | 315.78777 | 12.81258 | 0.1932426 | 2.6598035 | 58  | 3 | 2003-2007 | 0.42 | M-v | 2 | MPC | 124410 2003 SK <sub>307</sub> |
| 2003 SM <sub>308</sub> | 15.9 | 0.15 | 20071027 | 12.15261  | 39.76431  | 291.06465 | 14.00330 | 0.1139338 | 2.6855027 | 52  | 3 | 2001-2007 | 0.42 | M-v | 2 | MPC | 124410 2003 SM <sub>308</sub> |
| 2003 SW <sub>308</sub> | 16.5 | 0.15 | 20071027 | 218.91357 | 316.26544 | 253.81458 | 5.60130  | 0.0604900 | 2.2613156 | 73  | 5 | 2002-2007 | 0.54 | M-v | 1 | MPC | 128810 2003 SW <sub>308</sub> |
| 2003 SZ <sub>308</sub> | 16.6 | 0.15 | 20071027 | 270.76469 | 179.65312 | 315.33282 | 6.51146  | 0.0476851 | 2.3781035 | 71  | 3 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128810 2003 SZ <sub>308</sub> |
| 2003 SO <sub>309</sub> | 16.4 | 0.15 | 20071027 | 350.18748 | 91.60723  | 353.22018 | 8.33511  | 0.1307133 | 2.3158815 | 58  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 77720 2003 SO <sub>309</sub>  |
| 2003 SA <sub>310</sub> | 16.4 | 0.15 | 20071027 | 60.58009  | 321.14308 | 38.73251  | 5.78815  | 0.2501706 | 2.3185608 | 110 | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128810 2003 SA <sub>310</sub> |
| 2003 SA <sub>312</sub> | 17.1 | 0.15 | 20071027 | 66.83359  | 54.41818  | 269.37115 | 5.59661  | 0.1567335 | 2.3505279 | 66  | 2 | 2003-2007 | 0.55 | M-v | 2 | MPC | 128039 2003 SA <sub>312</sub> |
| 2003 SX <sub>312</sub> | 17.2 | 0.15 | 20071027 | 341.11624 | 321.46838 | 90.07913  | 4.06043  | 0.1524170 | 2.4561336 | 35  | 2 | 2003-2007 | 0.51 | M-v | 4 | MPC | 128040 2003 SX <sub>312</sub> |
| 2003 ST <sub>318</sub> | 17.1 | 0.15 | 20071027 | 95.80629  | 282.26459 | 14.78533  | 6.51002  | 0.1340548 | 2.3690917 | 40  | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 128810 2003 ST <sub>318</sub> |
| 2003 SZ <sub>318</sub> | 17.2 | 0.15 | 20071027 | 5.04250   | 88.31515  | 332.75503 | 2.18550  | 0.1665969 | 2.3767685 | 47  | 5 | 1999-2007 | 0.47 | M-v | 0 | MPC | 108750 2003 SZ <sub>318</sub> |
| 2003 SC <sub>320</sub> | 17.6 | 0.15 | 20071027 | 52.09870  | 111.94264 | 201.64493 | 3.54783  | 0.1654645 | 2.4604636 | 71  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128810 2003 SC <sub>320</sub> |
| 2003 SQ <sub>320</sub> | 17.1 | 0.15 | 20071027 | 346.22183 | 126.28856 | 286.62801 | 3.50827  | 0.0494787 | 2.3896670 | 71  | 4 | 2001-2007 | 0.52 | M-v | 0 | MPC | 128810 2003 SQ <sub>320</sub> |
| 2003 SZ <sub>320</sub> | 16.9 | 0.15 | 20071027 | 354.23616 | 309.00011 | 136.49301 | 6.44771  | 0.0685882 | 2.3120328 | 29  | 5 | 2001-2007 | 0.39 | M-v | 1 | MPC | 108758 2003 SZ <sub>320</sub> |
| 2003 SY <sub>321</sub> | 15.5 | 0.15 | 20071027 | 7.54616   | 159.58088 | 227.29209 | 12.90962 | 0.0722829 | 2.6104979 | 110 | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128810 2003 SY <sub>321</sub> |
| 2003 SO <sub>325</sub> | 17.9 | 0.15 | 20071027 | 351.71891 | 285.18451 | 131.43351 | 2.08139  | 0.0629645 | 2.3941412 | 41  | 5 | 1994-2007 | 0.35 | M-v | 0 | MPC | 128810 2003 SO <sub>325</sub> |
| 2003 SP <sub>327</sub> | 17.7 | 0.15 | 20071027 | 91.36142  | 71.29734  | 216.60236 | 4.12549  | 0.1633945 | 2.3979298 | 52  | 3 | 2003-2007 | 0.37 | M-v | 2 | MPC | 128810 2003 SP <sub>327</sub> |
| 2003 SY <sub>328</sub> | 18.6 | 0.15 | 20071027 | 353.11643 | 355.31779 | 58.49619  | 2.57536  | 0.1660206 | 2.4356859 | 43  | 2 | 2003-2007 | 0.33 | M-v | 2 | MPC | 128041 2003 SY <sub>328</sub> |
| 2003 SL <sub>331</sub> | 16.8 | 0.15 | 20071027 | 0.74437   | 335.35351 | 92.75078  | 8.38654  | 0.0836770 | 2.3775902 | 36  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 108768 2003 SL <sub>331</sub> |
| 2003 SM <sub>331</sub> | 17.9 | 0.15 | 20071027 | 27.44714  | 272.21730 | 89.01799  | 7.90836  | 0.2607420 | 2.4744184 | 44  | 2 | 2003-2007 | 0.58 | M-v | 3 | MPC | 128041 2003 SM <sub>331</sub> |
| 2003 SW <sub>331</sub> | 15.9 | 0.15 | 20071027 | 29.28248  | 341.30322 | 18.56544  | 10.73994 | 0.2598284 | 2.5419432 | 100 | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128810 2003 SW <sub>331</sub> |
| 2003 SD <sub>332</sub> | 17.5 | 0.15 | 20071027 | 193.54130 | 159.55572 | 56.83550  | 14.55775 | 0.0790208 | 2.4172599 | 29  | 2 | 2003-2007 | 0.28 | M-v | 2 | MPC | 128041 2003 SD <sub>332</sub> |
| 2003 SK <sub>332</sub> | 18.0 | 0.15 | 20071027 | 5.10378   | 280.66992 | 128.80974 | 3.54694  | 0.1866167 | 2.4170955 | 31  | 3 | 1997-2007 | 0.41 | M-v | 2 | MPC | 128810 2003 SK <sub>332</sub> |
| 2003 SA <sub>333</sub> | 16.5 | 0.15 | 20071027 | 18.00569  | 268.73050 | 115.34301 | 7.26799  | 0.2945939 | 2.5403192 | 38  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 128041 2003 SA <sub>333</sub> |
| 2003 SZ <sub>333</sub> | 17.3 | 0.15 | 20071027 | 346.92125 | 107.79552 | 330.72537 | 5.35259  | 0.0650412 | 2.3079925 | 39  | 4 | 2000-2007 | 0.48 | M-v | 0 | MPC | 122745 2003 SZ <sub>333</sub> |
| 2003 SB <sub>335</sub> | 17.2 | 0.15 | 20071027 | 151.10626 | 202.57850 | 19.49430  | 11.31555 | 0.0504212 | 2.5095637 | 54  | 2 | 2003-2007 | 0.32 | M-v | 3 | MPC | 128810 2003 SB <sub>335</sub> |
| 2003 SP <sub>382</sub> | 17.9 | 0.15 | 20071027 | 341.33255 | 355.35540 | 81.16132  | 2.41062  | 0.1656337 | 2.4011852 | 48  | 3 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128043 2003 SP <sub>382</sub> |
| 2003 SX <sub>391</sub> | 17.4 | 0.15 | 20071027 | 40.55499  | 292.63152 | 56.71150  | 7.17705  | 0.1173229 | 2.4520550 | 32  | 2 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128044 2003 SX <sub>391</sub> |
| 2003 TM                | 16.2 | 0.15 | 20071027 | 348.32908 | 74.73513  | 310.65375 | 10.02845 | 0.1983784 | 2.6018247 | 79  | 3 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128810 2003 TM                |
| 2003 TH <sub>1</sub>   | 16.7 | 0.15 | 20071027 | 7.67547   | 128.33354 | 264.23451 | 12.13658 | 0.2180463 | 2.4713041 | 78  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128044 2003 TH <sub>1</sub>   |
| 2003 TN <sub>2</sub>   | 16.6 | 0.15 | 20071027 | 242.21905 | 142.67160 | 46.55525  | 2.84363  | 0.1305013 | 2.3838363 | 62  | 5 | 1996-2007 | 0.42 | M-v | 1 | MPC | 128810 2003 TN <sub>2</sub>   |
| 2003 TP <sub>2</sub>   | 16.1 | 0.15 | 20071027 | 14.89823  | 318.57432 | 76.77621  | 5.55346  | 0.2907866 | 2.5258105 | 98  | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128810 2003 TP <sub>2</sub>   |
| 2003 TA <sub>4</sub>   | 16.2 | 0.15 | 20071027 | 189.25066 | 305.58581 | 215.15405 | 14.47325 | 0.0269392 | 2.6543291 | 42  | 5 | 1999-2007 | 0.39 | M-v | 1 | MPC | 124411 2003 TA <sub>4</sub>   |
| 2003 TW <sub>4</sub>   | 16.9 | 0.15 | 20071027 | 348.22484 | 192.29490 | 266.77230 | 5.43524  | 0.1633997 | 2.3372304 | 42  | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 56922 2003 TW <sub>4</sub>    |
| 2003 TV <sub>5</sub>   | 16.8 | 0.15 | 20071027 | 310.11681 | 230.75203 | 241.18372 | 10.70166 | 0.0382020 | 2.4288603 | 74  | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 128045 2003 TV <sub>5</sub>   |
| 2003 TX <sub>5</sub>   | 16.7 | 0.15 | 20071027 | 335.78086 | 29.94608  | 9.48499   | 9.29899  | 0.1781601 | 2.6250634 | 171 | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128811 2003 TX <sub>5</sub>   |
| 2003 TC <sub>6</sub>   | 17.7 | 0.15 | 20071027 | 30.84460  | 336.88192 | 48.86783  | 5.34744  | 0.0947643 | 2.3594485 | 28  | 2 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128811 2003 TC <sub>6</sub>   |
| 2003 TG <sub>7</sub>   | 16.3 | 0.15 | 20071027 | 35.70925  | 331.83533 | 44.67406  | 13.20698 | 0.2815805 | 2.3686784 | 59  | 2 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128045 2003 TG <sub>7</sub>   |
| 2003 TL <sub>9</sub>   | 16.4 | 0.15 | 20071027 | 108.45360 | 279.29749 | 51.58527  | 3.43838  | 0.1320065 | 2.2271722 | 59  | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128811 2003 TL <sub>9</sub>   |
| 2003 TW <sub>9</sub>   | 16.9 | 0.15 | 20071027 | 19.54666  | 105.38482 | 293.59991 | 20.74355 | 0.3519079 | 2.4070178 | 95  | 2 | 2003-2007 | 0.37 | M-v | 2 | MPC | 128045 2003 TW <sub>9</sub>   |
| 2003 TC <sub>11</sub>  | 16.5 | 0.15 | 20071027 | 30.50013  | 264.62376 | 109.08891 | 7.56582  | 0.1554220 | 2.4396869 | 77  | 3 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128811 2003 TC <sub>11</sub>  |
| 2003 TD <sub>11</sub>  | 17.4 | 0.15 | 20071027 | 5.53679   | 255.79664 | 138.42468 | 6.04632  | 0.2624516 | 2.4874953 | 65  | 4 | 1995-2007 | 0.60 | M-v | 2 | MPC | 128811 2003 TD <sub>11</sub>  |
| 2003 TP <sub>11</sub>  | 16.5 | 0.15 | 20071027 | 61.99103  | 32.82733  | 308.67227 | 1.58521  | 0.2088577 | 2.3944886 | 70  | 5 | 1999-2007 | 0.59 | M-v | 1 | MPC | 128811 2003 TP <sub>11</sub>  |
| 2003 TY <sub>11</sub>  | 16.0 | 0.15 | 20071027 | 327.61395 | 66.03639  | 36.03367  | 8.87720  | 0.2158136 | 2.4416481 | 157 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128811 2003 TY <sub>11</sub>  |
| 2003 TC <sub>12</sub>  | 16.9 | 0.15 | 20071027 | 26.31580  | 292.42075 | 88.40524  | 3.16513  | 0.2105893 | 2.4236559 | 89  | 2 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128045 2003 TC <sub>12</sub>  |
| 2003 TB <sub>13</sub>  | 16.1 | 0.15 | 20071027 | 319.05508 | 244.98969 | 229.22334 | 18.80780 | 0.2235810 | 2.4282893 | 76  | 3 | 2003-2007 | 0.41 | M-v | 2 | MPC | 128811 2003 TB <sub>13</sub>  |
| 2003 TG <sub>13</sub>  | 17.2 | 0.15 | 20071027 | 357.15531 | 238.60282 | 203.65596 | 5.09679  | 0.1276712 | 2.2996920 | 29  | 4 | 2003-2007 | 0.45 | M-v | 0 | MPC | 102176 2003 TG <sub>13</sub>  |
| 2003 TS <sub>13</sub>  | 15.7 | 0.15 | 20071027 | 346.42955 | 140.11001 | 233.36949 | 7.89949  | 0.3960761 | 2.6152184 | 128 | 4 | 1999-2007 | 0.43 | M-v | 1 | MPC | 121334 2003 TS <sub>13</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 TE <sub>15</sub> | 16.8 | 0.15 | 20071027 | 9.46262   | 166.53383 | 251.10368 | 4.41640  | 0.2155259 | 2.3666899 | 45  | 3 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128811 2003 TE <sub>15</sub> |
| 2003 TX <sub>15</sub> | 16.9 | 0.15 | 20071027 | 350.53816 | 349.44118 | 80.26025  | 6.55912  | 0.2106245 | 2.4333179 | 62  | 2 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128046 2003 TX <sub>15</sub> |
| 2003 TE <sub>16</sub> | 16.1 | 0.15 | 20071027 | 350.92141 | 26.04167  | 37.12842  | 11.40469 | 0.2610157 | 2.4536467 | 170 | 5 | 1999-2007 | 0.42 | M-v | 1 | MPC | 128811 2003 TE <sub>16</sub> |
| 2003 TN <sub>16</sub> | 16.6 | 0.15 | 20071027 | 18.40734  | 161.66969 | 232.83866 | 4.22831  | 0.2041293 | 2.4301247 | 81  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128811 2003 TN <sub>16</sub> |
| 2003 TP <sub>16</sub> | 16.2 | 0.15 | 20071027 | 56.06354  | 119.96172 | 254.20499 | 4.91414  | 0.0953978 | 2.3334809 | 63  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 77721 2003 TP <sub>16</sub>  |
| 2003 TA <sub>17</sub> | 16.9 | 0.15 | 20071027 | 11.45667  | 268.39683 | 137.53948 | 1.28493  | 0.2003596 | 2.4151522 | 66  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 76036 2003 TA <sub>17</sub>  |
| 2003 TQ <sub>17</sub> | 17.0 | 0.15 | 20071027 | 318.23085 | 224.08432 | 210.10001 | 3.59905  | 0.1698983 | 2.5414895 | 78  | 5 | 1991-2007 | 0.56 | M-v | 2 | MPC | 128811 2003 TQ <sub>17</sub> |
| 2003 TA <sub>18</sub> | 15.5 | 0.15 | 20071027 | 294.16324 | 198.47672 | 238.24972 | 10.96906 | 0.1565622 | 2.6089758 | 52  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 124412 2003 TA <sub>18</sub> |
| 2003 TR <sub>19</sub> | 16.4 | 0.15 | 20071027 | 5.74585   | 336.67059 | 20.79966  | 14.85426 | 0.1788134 | 2.5734039 | 68  | 2 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128811 2003 TR <sub>19</sub> |
| 2003 TL <sub>20</sub> | 16.1 | 0.15 | 20071027 | 355.04105 | 193.65016 | 248.63832 | 8.88631  | 0.1706388 | 2.3497087 | 59  | 4 | 1996-2007 | 0.44 | M-v | 1 | MPC | 128811 2003 TL <sub>20</sub> |
| 2003 TS <sub>20</sub> | 17.5 | 0.15 | 20071027 | 15.97735  | 277.73514 | 95.81938  | 3.62030  | 0.2044426 | 2.4713240 | 62  | 2 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128046 2003 TS <sub>20</sub> |
| 2003 TT <sub>20</sub> | 17.0 | 0.15 | 20071027 | 54.69223  | 311.92188 | 42.93573  | 7.79005  | 0.1353140 | 2.3714632 | 62  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 87594 2003 TT <sub>20</sub>  |
| 2003 TT <sub>21</sub> | 17.0 | 0.15 | 20071027 | 85.82448  | 254.19696 | 55.94875  | 3.69165  | 0.0996242 | 2.4034329 | 81  | 5 | 1998-2007 | 0.40 | M-v | 1 | MPC | 128811 2003 TT <sub>21</sub> |
| 2003 TX <sub>28</sub> | 17.0 | 0.15 | 20071027 | 104.07211 | 313.43072 | 332.16579 | 1.79962  | 0.1799395 | 2.4034323 | 37  | 4 | 2003-2007 | 0.35 | M-v | 1 | MPC | 128811 2003 TX <sub>28</sub> |
| 2003 TM <sub>37</sub> | 16.7 | 0.15 | 20071027 | 340.92954 | 171.01348 | 277.10947 | 6.66802  | 0.0724060 | 2.3559138 | 36  | 4 | 2003-2007 | 0.41 | M-v | 0 | MPC | 102177 2003 TM <sub>37</sub> |
| 2003 TX <sub>37</sub> | 16.1 | 0.15 | 20071027 | 132.49507 | 309.17249 | 261.03621 | 7.88358  | 0.0932388 | 2.7205611 | 26  | 5 | 2001-2007 | 0.39 | M-v | 0 | MPC | 102177 2003 TX <sub>37</sub> |
| 2003 TH <sub>39</sub> | 16.7 | 0.15 | 20071027 | 206.25725 | 317.38914 | 242.31608 | 6.22563  | 0.1256210 | 2.4143908 | 39  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 128046 2003 TH <sub>39</sub> |
| 2003 TS <sub>43</sub> | 16.5 | 0.15 | 20071027 | 92.33081  | 242.09168 | 39.34501  | 5.77703  | 0.0815853 | 2.5821568 | 42  | 2 | 2003-2007 | 0.48 | M-v | 4 | MPC | 128047 2003 TS <sub>43</sub> |
| 2003 TY <sub>49</sub> | 15.8 | 0.15 | 20071027 | 357.37719 | 76.85700  | 309.81951 | 11.19544 | 0.2020924 | 2.5662707 | 94  | 3 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128811 2003 TY <sub>49</sub> |
| 2003 TO <sub>58</sub> | 16.9 | 0.15 | 20071027 | 355.49584 | 168.78729 | 240.98237 | 6.93836  | 0.3127128 | 2.5652695 | 130 | 3 | 2000-2007 | 0.45 | M-v | 2 | MPC | 128811 2003 TO <sub>58</sub> |
| 2003 TW <sub>58</sub> | 16.1 | 0.15 | 20071027 | 2.93736   | 3.85249   | 68.35145  | 8.07418  | 0.0796988 | 2.3539816 | 54  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 108773 2003 TW <sub>58</sub> |
| 2003 TY <sub>58</sub> | 16.5 | 0.15 | 20071027 | 340.45407 | 91.87207  | 286.77269 | 11.89490 | 0.2268598 | 2.6722982 | 35  | 3 | 1996-2007 | 0.48 | M-v | 2 | MPC | 123931 2003 TY <sub>58</sub> |
| 2003 UV               | 17.4 | 0.15 | 20071027 | 217.26851 | 139.14554 | 95.82720  | 2.44086  | 0.0354411 | 2.2429417 | 53  | 6 | 2000-2007 | 0.53 | M-v | 1 | MPC | 104265 2003 UV               |
| 2003 UO <sub>1</sub>  | 16.9 | 0.15 | 20071027 | 320.09667 | 156.53215 | 318.47775 | 5.56707  | 0.0518744 | 2.3390888 | 37  | 7 | 1996-2007 | 0.39 | M-v | 0 | MPC | 110994 2003 UO <sub>1</sub>  |
| 2003 UP <sub>1</sub>  | 17.4 | 0.15 | 20071027 | 66.18666  | 40.59354  | 314.13886 | 2.64092  | 0.0693400 | 2.3445623 | 37  | 5 | 1999-2007 | 0.45 | M-v | 1 | MPC | 102177 2003 UP <sub>1</sub>  |
| 2003 UC <sub>2</sub>  | 17.0 | 0.15 | 20071027 | 74.44871  | 76.09611  | 237.21232 | 3.80025  | 0.1985046 | 2.4203460 | 103 | 5 | 1992-2007 | 0.49 | M-v | 1 | MPC | 128811 2003 UC <sub>2</sub>  |
| 2003 UH <sub>2</sub>  | 17.7 | 0.15 | 20071027 | 14.40574  | 33.87319  | 352.27031 | 4.24221  | 0.1197864 | 2.4542784 | 46  | 3 | 1999-2007 | 0.43 | M-v | 3 | MPC | 128811 2003 UH <sub>2</sub>  |
| 2003 UQ <sub>2</sub>  | 17.3 | 0.15 | 20071027 | 59.03372  | 171.60223 | 154.62283 | 2.83432  | 0.2032199 | 2.4410803 | 50  | 4 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128811 2003 UQ <sub>2</sub>  |
| 2003 UZ <sub>4</sub>  | 15.3 | 0.15 | 20071027 | 102.77420 | 239.64484 | 93.42720  | 24.99052 | 0.2138476 | 2.2834858 | 40  | 4 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128811 2003 UZ <sub>4</sub>  |
| 2003 UQ <sub>7</sub>  | 15.0 | 0.15 | 20071027 | 22.25745  | 63.84699  | 262.20550 | 13.75142 | 0.2044779 | 2.6303409 | 141 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128812 2003 UQ <sub>7</sub>  |
| 2003 UO <sub>8</sub>  | 15.6 | 0.15 | 20071027 | 3.47913   | 159.86016 | 203.92778 | 13.94876 | 0.1300948 | 2.6527588 | 124 | 4 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128812 2003 UO <sub>8</sub>  |
| 2003 UE <sub>10</sub> | 15.7 | 0.15 | 20071027 | 174.34566 | 191.90358 | 42.13527  | 7.42494  | 0.0763142 | 2.4279982 | 132 | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128812 2003 UE <sub>10</sub> |
| 2003 US <sub>10</sub> | 15.9 | 0.15 | 20071027 | 340.41305 | 23.29769  | 24.29204  | 16.10334 | 0.1377537 | 2.5944634 | 113 | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128812 2003 US <sub>10</sub> |
| 2003 UU <sub>13</sub> | 16.7 | 0.15 | 20071027 | 79.48675  | 70.37609  | 271.60813 | 4.42777  | 0.0615759 | 2.3751071 | 65  | 3 | 2003-2007 | 0.63 | M-v | 3 | MPC | 76049 2003 UU <sub>13</sub>  |
| 2003 UL <sub>14</sub> | 17.0 | 0.15 | 20071027 | 20.51802  | 298.21523 | 70.76239  | 8.86586  | 0.2397173 | 2.4787729 | 66  | 2 | 2003-2007 | 0.57 | M-v | 4 | MPC | 128048 2003 UL <sub>14</sub> |
| 2003 UM <sub>14</sub> | 16.9 | 0.15 | 20071027 | 47.62552  | 261.27878 | 84.95662  | 11.66042 | 0.1959501 | 2.4463428 | 30  | 3 | 2003-2007 | 0.61 | M-v | 2 | MPC | 100597 2003 UM <sub>14</sub> |
| 2003 UQ <sub>14</sub> | 16.4 | 0.15 | 20071027 | 299.74509 | 223.52104 | 206.99580 | 1.59561  | 0.0730585 | 2.6842369 | 67  | 5 | 1994-2007 | 0.40 | M-v | 0 | MPC | 126678 2003 UQ <sub>14</sub> |
| 2003 UR <sub>14</sub> | 17.5 | 0.15 | 20071027 | 71.98131  | 247.18900 | 121.62756 | 7.75089  | 0.1338255 | 2.3166807 | 73  | 4 | 2001-2007 | 0.61 | M-v | 1 | MPC | 104265 2003 UR <sub>14</sub> |
| 2003 UH <sub>15</sub> | 17.1 | 0.15 | 20071027 | 352.29808 | 145.57343 | 286.04177 | 1.46681  | 0.1934135 | 2.4290539 | 90  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128812 2003 UH <sub>15</sub> |
| 2003 UM <sub>15</sub> | 16.1 | 0.15 | 20071027 | 79.90356  | 114.86815 | 234.73383 | 2.83695  | 0.1904362 | 2.3313830 | 119 | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128812 2003 UM <sub>15</sub> |
| 2003 UG <sub>16</sub> | 15.9 | 0.15 | 20071027 | 331.33031 | 21.44373  | 41.67129  | 13.43900 | 0.2754879 | 2.5834393 | 128 | 2 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128812 2003 UG <sub>16</sub> |
| 2003 UQ <sub>16</sub> | 15.8 | 0.15 | 20071027 | 15.48230  | 31.30991  | 284.45076 | 12.76534 | 0.2569795 | 2.6982199 | 71  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 126678 2003 UQ <sub>16</sub> |
| 2003 UR <sub>16</sub> | 16.2 | 0.15 | 20071027 | 4.71557   | 349.34225 | 46.87279  | 5.61955  | 0.1397811 | 2.5662577 | 117 | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128812 2003 UR <sub>16</sub> |
| 2003 UU <sub>16</sub> | 16.4 | 0.15 | 20071027 | 53.99291  | 196.21288 | 175.37297 | 2.47552  | 0.1832671 | 2.3751412 | 57  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 76051 2003 UU <sub>16</sub>  |
| 2003 US <sub>18</sub> | 17.1 | 0.15 | 20071027 | 11.46827  | 278.15851 | 71.68099  | 12.15731 | 0.2921183 | 2.5885451 | 92  | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128812 2003 US <sub>18</sub> |
| 2003 UG <sub>19</sub> | 16.5 | 0.15 | 20071027 | 25.70884  | 309.06383 | 84.57550  | 3.57154  | 0.2027053 | 2.4337932 | 103 | 4 | 1993-2007 | 0.52 | M-v | 1 | MPC | 110994 2003 UG <sub>19</sub> |
| 2003 UD <sub>22</sub> | 19.7 | 0.15 | 20071027 | 131.13511 | 23.39909  | 253.91821 | 10.08003 | 0.3182144 | 1.1687006 | 102 | 2 | 2003-2007 | 0.45 | M-v | 4 | MPC | 128812 2003 UD <sub>22</sub> |
| 2003 UZ <sub>22</sub> | 16.4 | 0.15 | 20071027 | 274.48879 | 123.54160 | 44.14986  | 7.58471  | 0.0595233 | 2.3740743 | 141 | 4 | 2001-2007 | 0.58 | M-v | 1 | MPC | 77723 2003 UZ <sub>22</sub>  |
| 2003 UT <sub>23</sub> | 17.3 | 0.15 | 20071027 | 4.53214   | 47.38152  | 29.69984  | 2.48722  | 0.1682936 | 2.3847501 | 46  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128049 2003 UT <sub>23</sub> |
| 2003 UB <sub>24</sub> | 17.0 | 0.15 | 20071027 | 309.29939 | 233.84773 | 205.52148 | 4.99862  | 0.1151472 | 2.5491261 | 60  | 3 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128812 2003 UB <sub>24</sub> |
| 2003 UQ <sub>24</sub> | 15.9 | 0.15 | 20071027 | 323.99975 | 68.58686  | 56.83508  | 28.45686 | 0.4276899 | 2.6179353 | 169 | 2 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128049 2003 UQ <sub>24</sub> |
| 2003 UV <sub>24</sub> | 16.9 | 0.15 | 20071027 | 288.11968 | 234.83816 | 298.75171 | 4.60331  | 0.0841918 | 2.2343656 | 39  | 4 | 2003-2007 | 0.51 | M-v | 1 | MPC | 104265 2003 UV <sub>24</sub> |
| 2003 UJ <sub>27</sub> | 17.5 | 0.15 | 20071027 | 118.45411 | 228.79920 | 97.18338  | 6.86534  | 0.1986233 | 2.2374449 | 74  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128812 2003 UJ <sub>27</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                             |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-----------------------------|
| 2003 UG <sub>28</sub> | 17.7 | 0.15 | 20071027 | 344.88246 | 126.91629 | 320.65458 | 4.07084  | 0.2028522 | 2.4201827 | 45  | 4 | 1997-2007 | 0.49 | M-v | 1 | MPC | 1218042003 UG <sub>28</sub> |
| 2003 UQ <sub>28</sub> | 16.9 | 0.15 | 20071027 | 347.94252 | 180.38736 | 213.75904 | 2.93102  | 0.0890703 | 2.6126648 | 41  | 3 | 2003-2007 | 0.40 | M-v | 3 | MPC | 1288122003 UQ <sub>28</sub> |
| 2003 UG <sub>29</sub> | 16.9 | 0.15 | 20071027 | 0.86199   | 359.30371 | 36.08649  | 1.96117  | 0.1244073 | 2.5327482 | 121 | 6 | 1991-2007 | 0.53 | M-v | 2 | MPC | 1288122003 UG <sub>29</sub> |
| 2003 UJ <sub>29</sub> | 16.9 | 0.15 | 20071027 | 333.36790 | 196.35791 | 212.19664 | 3.11964  | 0.2436130 | 2.6264325 | 113 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 1288122003 UJ <sub>29</sub> |
| 2003 UN <sub>34</sub> | 17.2 | 0.15 | 20071027 | 323.10529 | 242.61477 | 218.84911 | 6.90180  | 0.0503275 | 2.3692525 | 31  | 3 | 1996-2007 | 0.39 | M-v | 4 | MPC | 569682003 UN <sub>34</sub>  |
| 2003 UN <sub>35</sub> | 16.8 | 0.15 | 20071027 | 66.73885  | 331.24040 | 67.36902  | 5.36145  | 0.1210374 | 2.1954739 | 44  | 6 | 1997-2007 | 0.50 | M-v | 1 | MPC | 1109942003 UN <sub>35</sub> |
| 2003 UK <sub>36</sub> | 17.4 | 0.15 | 20071027 | 130.68549 | 11.22358  | 305.78070 | 6.91705  | 0.1686705 | 2.2292664 | 46  | 5 | 1998-2007 | 0.34 | M-v | 1 | MPC | 1109942003 UK <sub>36</sub> |
| 2003 UV <sub>36</sub> | 16.0 | 0.15 | 20071027 | 355.45350 | 116.50327 | 265.30140 | 12.94053 | 0.1791812 | 2.5868324 | 61  | 3 | 1999-2007 | 0.48 | M-v | 2 | MPC | 1288132003 UV <sub>36</sub> |
| 2003 UA <sub>38</sub> | 17.1 | 0.15 | 20071027 | 51.43306  | 268.36129 | 96.12549  | 8.47366  | 0.2847761 | 2.3253647 | 34  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 1288132003 UA <sub>38</sub> |
| 2003 UT <sub>38</sub> | 16.9 | 0.15 | 20071027 | 25.11406  | 312.11170 | 70.33463  | 5.67630  | 0.1958605 | 2.4263934 | 63  | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 1280502003 UT <sub>38</sub> |
| 2003 UV <sub>38</sub> | 17.0 | 0.15 | 20071027 | 328.43650 | 250.00803 | 219.40088 | 1.49594  | 0.1607958 | 2.3673319 | 49  | 5 | 1998-2007 | 0.39 | M-v | 0 | MPC | 951202003 UV <sub>38</sub>  |
| 2003 UC <sub>40</sub> | 17.0 | 0.15 | 20071027 | 23.86941  | 166.69280 | 188.87919 | 3.01443  | 0.0379437 | 2.6179882 | 43  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 1288132003 UC <sub>40</sub> |
| 2003 UH <sub>40</sub> | 17.1 | 0.15 | 20071027 | 137.82231 | 84.95006  | 194.26270 | 3.71060  | 0.1919325 | 2.3740727 | 54  | 4 | 2002-2007 | 0.30 | M-v | 1 | MPC | 1288132003 UH <sub>40</sub> |
| 2003 UN <sub>42</sub> | 17.8 | 0.15 | 20071027 | 328.30458 | 287.20529 | 166.07064 | 1.55901  | 0.1229223 | 2.3970623 | 46  | 5 | 1992-2007 | 0.47 | M-v | 0 | MPC | 1288132003 UN <sub>42</sub> |
| 2003 UC <sub>44</sub> | 17.4 | 0.15 | 20071027 | 57.54098  | 60.12627  | 268.16155 | 0.44585  | 0.1945718 | 2.4401411 | 49  | 2 | 2003-2007 | 0.38 | M-v | 3 | MPC | 1280502003 UC <sub>44</sub> |
| 2003 UG <sub>44</sub> | 16.7 | 0.15 | 20071027 | 255.65007 | 173.13009 | 0.80355   | 3.85620  | 0.0703865 | 2.3379362 | 64  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 1288132003 UG <sub>44</sub> |
| 2003 UT <sub>46</sub> | 18.0 | 0.15 | 20071027 | 76.77396  | 130.98033 | 195.27800 | 1.92932  | 0.2153294 | 2.3675568 | 27  | 3 | 2003-2007 | 0.26 | M-v | 2 | MPC | 1087752003 UT <sub>46</sub> |
| 2003 UX <sub>46</sub> | 17.3 | 0.15 | 20071027 | 339.19798 | 196.41003 | 220.28468 | 4.34662  | 0.2667844 | 2.5687822 | 102 | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 1288132003 UX <sub>46</sub> |
| 2003 UJ <sub>48</sub> | 16.6 | 0.15 | 20071027 | 20.80134  | 213.91902 | 180.33776 | 7.99269  | 0.1553413 | 2.4422661 | 58  | 4 | 1999-2007 | 0.56 | M-v | 2 | MPC | 1244142003 UJ <sub>48</sub> |
| 2003 UR <sub>48</sub> | 16.5 | 0.15 | 20071027 | 46.72304  | 306.10432 | 79.22815  | 8.19937  | 0.1249665 | 2.3622891 | 71  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 1288132003 UR <sub>48</sub> |
| 2003 UJ <sub>49</sub> | 15.8 | 0.15 | 20071027 | 37.70464  | 321.04365 | 355.55330 | 12.73688 | 0.2559302 | 2.5788698 | 130 | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 1288132003 UJ <sub>49</sub> |
| 2003 UF <sub>50</sub> | 16.1 | 0.15 | 20071027 | 334.82989 | 61.97829  | 342.19728 | 9.57809  | 0.1396276 | 2.6127466 | 149 | 5 | 1992-2007 | 0.51 | M-v | 1 | MPC | 1266792003 UF <sub>50</sub> |
| 2003 UY <sub>51</sub> | 17.1 | 0.15 | 20071027 | 7.61021   | 76.96655  | 325.19344 | 7.59829  | 0.2302901 | 2.4552472 | 44  | 4 | 1997-2007 | 0.53 | M-v | 2 | MPC | 1288132003 UY <sub>51</sub> |
| 2003 UW <sub>53</sub> | 16.5 | 0.15 | 20071027 | 103.20859 | 43.59081  | 292.40595 | 5.32407  | 0.1374543 | 2.2948852 | 81  | 5 | 1999-2007 | 0.37 | M-v | 1 | MPC | 1288132003 UW <sub>53</sub> |
| 2003 UY <sub>54</sub> | 17.0 | 0.15 | 20071027 | 10.01394  | 138.26397 | 257.89229 | 6.03965  | 0.2132838 | 2.4883346 | 103 | 3 | 1999-2007 | 0.57 | M-v | 3 | MPC | 1288132003 UY <sub>54</sub> |
| 2003 UB <sub>56</sub> | 17.5 | 0.15 | 20071027 | 359.39572 | 307.29467 | 104.49893 | 3.89314  | 0.1738283 | 2.4443158 | 62  | 2 | 2003-2007 | 0.58 | M-v | 3 | MPC | 1280512003 UB <sub>56</sub> |
| 2003 UO <sub>56</sub> | 17.0 | 0.15 | 20071027 | 55.63856  | 331.82480 | 9.11018   | 1.36587  | 0.2010684 | 2.4532195 | 58  | 6 | 1995-2007 | 0.41 | M-v | 1 | MPC | 1021792003 UO <sub>56</sub> |
| 2003 UN <sub>57</sub> | 17.1 | 0.15 | 20071027 | 11.91033  | 0.54108   | 55.03037  | 3.10227  | 0.2002544 | 2.4301383 | 73  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 777252003 UN <sub>57</sub>  |
| 2003 UX <sub>57</sub> | 16.8 | 0.15 | 20071027 | 288.91774 | 228.57041 | 268.57016 | 6.33871  | 0.0680129 | 2.3692124 | 54  | 6 | 1994-2007 | 0.56 | M-v | 1 | MPC | 1288132003 UX <sub>57</sub> |
| 2003 UV <sub>60</sub> | 16.0 | 0.15 | 20071027 | 134.69273 | 166.31226 | 113.22510 | 7.31429  | 0.1896751 | 2.2982101 | 67  | 8 | 1994-2007 | 0.65 | M-v | 1 | MPC | 951222003 UV <sub>60</sub>  |
| 2003 UA <sub>61</sub> | 17.4 | 0.15 | 20071027 | 28.26551  | 284.60350 | 142.91841 | 5.44466  | 0.1700948 | 2.2756841 | 43  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 1109952003 UA <sub>61</sub> |
| 2003 UC <sub>61</sub> | 16.1 | 0.15 | 20071027 | 56.49923  | 270.90699 | 70.60273  | 7.73110  | 0.1042380 | 2.4126384 | 80  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 1288142003 UC <sub>61</sub> |
| 2003 UH <sub>61</sub> | 16.5 | 0.15 | 20071027 | 359.70416 | 306.04802 | 95.03842  | 3.94977  | 0.0954306 | 2.4352424 | 58  | 3 | 2003-2007 | 0.58 | M-v | 3 | MPC | 1288142003 UH <sub>61</sub> |
| 2003 UG <sub>62</sub> | 16.6 | 0.15 | 20071027 | 47.10361  | 252.55576 | 107.55359 | 7.15714  | 0.1237978 | 2.4064321 | 48  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 1288142003 UG <sub>62</sub> |
| 2003 UK <sub>62</sub> | 16.3 | 0.15 | 20071027 | 111.45089 | 211.72992 | 109.84216 | 7.47413  | 0.1607155 | 2.2581047 | 47  | 5 | 1999-2007 | 0.60 | M-v | 2 | MPC | 875952003 UK <sub>62</sub>  |
| 2003 UQ <sub>62</sub> | 16.6 | 0.15 | 20071027 | 44.54524  | 325.65602 | 70.00439  | 7.35273  | 0.1000879 | 2.2843682 | 52  | 6 | 2000-2007 | 0.59 | M-v | 1 | MPC | 1288142003 UQ <sub>62</sub> |
| 2003 UT <sub>62</sub> | 15.9 | 0.15 | 20071027 | 78.52045  | 223.38079 | 112.54954 | 4.12493  | 0.1818373 | 2.3112011 | 97  | 9 | 1989-2007 | 0.60 | M-v | 1 | MPC | 1109952003 UT <sub>62</sub> |
| 2003 UN <sub>63</sub> | 16.3 | 0.15 | 20071027 | 58.00922  | 274.26459 | 89.20244  | 7.52530  | 0.1368752 | 2.3415756 | 53  | 4 | 1995-2007 | 0.56 | M-v | 2 | MPC | 569922003 UN <sub>63</sub>  |
| 2003 UZ <sub>64</sub> | 16.0 | 0.15 | 20071027 | 344.90736 | 1.22936   | 73.87619  | 13.29894 | 0.1356011 | 2.4265241 | 63  | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 1288142003 UZ <sub>64</sub> |
| 2003 UO <sub>66</sub> | 16.4 | 0.15 | 20071027 | 44.57367  | 302.20529 | 75.42907  | 14.29213 | 0.2432618 | 2.3659389 | 69  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 1288142003 UO <sub>66</sub> |
| 2003 UJ <sub>68</sub> | 16.3 | 0.15 | 20071027 | 342.69813 | 250.36260 | 218.22304 | 3.59430  | 0.1641407 | 2.3701045 | 102 | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 1288142003 UJ <sub>68</sub> |
| 2003 UJ <sub>74</sub> | 15.9 | 0.15 | 20071027 | 4.40063   | 276.30397 | 90.48168  | 4.48513  | 0.2256950 | 2.6071813 | 142 | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 1288142003 UJ <sub>74</sub> |
| 2003 UX <sub>74</sub> | 15.5 | 0.15 | 20071027 | 292.72989 | 150.65635 | 304.70302 | 7.06399  | 0.1546770 | 2.5636817 | 33  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 1288142003 UX <sub>74</sub> |
| 2003 UL <sub>75</sub> | 17.0 | 0.15 | 20071027 | 61.42091  | 88.65285  | 245.92791 | 4.15582  | 0.1210989 | 2.4167237 | 53  | 3 | 1992-2007 | 0.38 | M-v | 3 | MPC | 1280522003 UL <sub>75</sub> |
| 2003 UA <sub>76</sub> | 17.2 | 0.15 | 20071027 | 1.26406   | 162.39573 | 281.90953 | 3.13778  | 0.1057867 | 2.3126481 | 30  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 760722003 UA <sub>76</sub>  |
| 2003 UZ <sub>76</sub> | 16.1 | 0.15 | 20071027 | 9.70501   | 96.32913  | 239.37072 | 12.44019 | 0.2529006 | 2.6403593 | 87  | 2 | 2003-2007 | 0.52 | M-v | 2 | MPC | 1288142003 UZ <sub>76</sub> |
| 2003 UE <sub>78</sub> | 15.6 | 0.15 | 20071027 | 33.54520  | 87.80731  | 237.01406 | 13.02010 | 0.2302050 | 2.5792527 | 139 | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 1288142003 UE <sub>78</sub> |
| 2003 UF <sub>78</sub> | 16.5 | 0.15 | 20071027 | 51.35605  | 115.85198 | 264.59070 | 4.66294  | 0.1600829 | 2.3462886 | 88  | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 1288142003 UF <sub>78</sub> |
| 2003 UR <sub>79</sub> | 16.8 | 0.15 | 20071027 | 354.45814 | 76.89471  | 0.85269   | 1.24902  | 0.1648966 | 2.4295338 | 86  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 777262003 UR <sub>79</sub>  |
| 2003 UB <sub>80</sub> | 17.9 | 0.15 | 20071027 | 94.08249  | 243.73456 | 126.63633 | 6.20068  | 0.1040725 | 2.2191583 | 43  | 3 | 2003-2007 | 0.42 | M-v | 4 | MPC | 1109962003 UB <sub>80</sub> |
| 2003 UJ <sub>81</sub> | 16.5 | 0.15 | 20071027 | 31.19094  | 309.98653 | 97.93286  | 5.06811  | 0.2091521 | 2.3513187 | 42  | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 1280522003 UJ <sub>81</sub> |
| 2003 UH <sub>82</sub> | 16.7 | 0.15 | 20071027 | 96.82896  | 257.39662 | 38.98383  | 5.65447  | 0.2018018 | 2.3686930 | 52  | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 1288142003 UH <sub>82</sub> |
| 2003 UN <sub>82</sub> | 16.3 | 0.15 | 20071027 | 1.98742   | 304.41799 | 137.57595 | 12.81203 | 0.2447251 | 2.4129169 | 56  | 3 | 2001-2007 | 0.41 | M-v | 2 | MPC | 1280522003 UN <sub>82</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 UC <sub>86</sub>  | 16.8 | 0.15 | 20071027 | 350.62970 | 45.76472  | 341.87609 | 7.29240  | 0.2765451 | 2.6089158 | 95  | 3 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128814 2003 UC <sub>86</sub>  |
| 2003 UG <sub>86</sub>  | 16.0 | 0.15 | 20071027 | 12.55174  | 137.87535 | 249.82304 | 8.09048  | 0.0908119 | 2.5439444 | 115 | 4 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128814 2003 UG <sub>86</sub>  |
| 2003 UX <sub>92</sub>  | 16.1 | 0.15 | 20071027 | 90.91415  | 290.14455 | 21.89374  | 7.98808  | 0.1305480 | 2.4299122 | 74  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128814 2003 UX <sub>92</sub>  |
| 2003 UK <sub>93</sub>  | 16.3 | 0.15 | 20071027 | 247.27722 | 292.95294 | 230.11358 | 5.71723  | 0.0557654 | 2.4232362 | 94  | 6 | 1992-2007 | 0.54 | M-v | 1 | MPC | 128814 2003 UK <sub>93</sub>  |
| 2003 UY <sub>93</sub>  | 16.8 | 0.15 | 20071027 | 1.18674   | 87.10961  | 344.30635 | 6.35287  | 0.0729092 | 2.3519076 | 59  | 6 | 1999-2007 | 0.52 | M-v | 1 | MPC | 102181 2003 UY <sub>93</sub>  |
| 2003 UW <sub>94</sub>  | 16.9 | 0.15 | 20071027 | 15.36807  | 331.91100 | 25.65863  | 8.78986  | 0.1827131 | 2.5456436 | 79  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128814 2003 UW <sub>94</sub>  |
| 2003 UA <sub>95</sub>  | 16.3 | 0.15 | 20071027 | 75.95363  | 106.74235 | 211.04365 | 5.81887  | 0.0878241 | 2.4523490 | 105 | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128814 2003 UA <sub>95</sub>  |
| 2003 UR <sub>95</sub>  | 17.3 | 0.15 | 20071027 | 1.24998   | 25.61841  | 29.56922  | 1.42162  | 0.1810147 | 2.4347130 | 56  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 128814 2003 UR <sub>95</sub>  |
| 2003 UP <sub>96</sub>  | 16.8 | 0.15 | 20071027 | 58.74399  | 267.18026 | 128.87938 | 5.87667  | 0.1706103 | 2.2919284 | 75  | 4 | 2001-2007 | 0.38 | M-v | 1 | MPC | 128815 2003 UP <sub>96</sub>  |
| 2003 US <sub>96</sub>  | 17.6 | 0.15 | 20071027 | 40.66481  | 104.70654 | 226.32273 | 2.37406  | 0.2704858 | 2.4771744 | 47  | 2 | 2003-2007 | 0.39 | M-v | 3 | MPC | 128053 2003 US <sub>96</sub>  |
| 2003 UA <sub>97</sub>  | 16.6 | 0.15 | 20071027 | 324.87089 | 92.36281  | 325.62039 | 2.57970  | 0.1772724 | 2.6090669 | 72  | 3 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128815 2003 UA <sub>97</sub>  |
| 2003 UW <sub>97</sub>  | 16.8 | 0.15 | 20071027 | 1.07456   | 245.53816 | 196.87990 | 3.07694  | 0.1489166 | 2.3540800 | 59  | 5 | 1992-2007 | 0.47 | M-v | 1 | MPC | 102181 2003 UW <sub>97</sub>  |
| 2003 UW <sub>98</sub>  | 16.2 | 0.15 | 20071027 | 24.82170  | 304.93545 | 109.11541 | 7.57092  | 0.1036530 | 2.3740416 | 63  | 4 | 1999-2007 | 0.62 | M-v | 3 | MPC | 76080 2003 UW <sub>98</sub>   |
| 2003 UR <sub>100</sub> | 16.2 | 0.15 | 20071027 | 25.08430  | 187.18152 | 154.32295 | 6.29551  | 0.2517101 | 2.5676937 | 111 | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128815 2003 UR <sub>100</sub> |
| 2003 US <sub>102</sub> | 17.1 | 0.15 | 20071027 | 353.90902 | 249.46114 | 180.89786 | 4.91761  | 0.1923083 | 2.4217335 | 62  | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 124416 2003 US <sub>102</sub> |
| 2003 UM <sub>103</sub> | 16.4 | 0.15 | 20071027 | 0.46686   | 177.28209 | 192.94466 | 12.42486 | 0.2235706 | 2.5927357 | 116 | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128815 2003 UM <sub>103</sub> |
| 2003 UN <sub>103</sub> | 16.9 | 0.15 | 20071027 | 41.93404  | 273.95495 | 112.70958 | 4.44825  | 0.1661367 | 2.3641593 | 47  | 4 | 1998-2007 | 0.43 | M-v | 1 | MPC | 57028 2003 UN <sub>103</sub>  |
| 2003 UP <sub>103</sub> | 16.5 | 0.15 | 20071027 | 63.13180  | 231.31216 | 96.61972  | 5.64535  | 0.2482216 | 2.4355660 | 67  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 128815 2003 UP <sub>103</sub> |
| 2003 UQ <sub>103</sub> | 16.6 | 0.15 | 20071027 | 22.60365  | 114.14802 | 223.24368 | 2.23095  | 0.2724501 | 2.5868984 | 155 | 3 | 1999-2007 | 0.50 | M-v | 2 | MPC | 126681 2003 UQ <sub>103</sub> |
| 2003 UT <sub>103</sub> | 16.6 | 0.15 | 20071027 | 4.09469   | 342.06437 | 90.21332  | 3.33594  | 0.2037413 | 2.4109680 | 113 | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128815 2003 UT <sub>103</sub> |
| 2003 UW <sub>103</sub> | 16.8 | 0.15 | 20071027 | 9.56306   | 268.97077 | 139.06564 | 3.94954  | 0.1998642 | 2.4599621 | 102 | 6 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128815 2003 UW <sub>103</sub> |
| 2003 UQ <sub>106</sub> | 16.0 | 0.15 | 20071027 | 114.49821 | 350.21436 | 302.70881 | 7.02629  | 0.1162616 | 2.4120388 | 47  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 77728 2003 UQ <sub>106</sub>  |
| 2003 UU <sub>106</sub> | 15.9 | 0.15 | 20071027 | 22.64584  | 103.07376 | 264.22021 | 8.08606  | 0.1032180 | 2.5388800 | 95  | 3 | 1999-2007 | 0.56 | M-v | 3 | MPC | 128815 2003 UU <sub>106</sub> |
| 2003 UG <sub>108</sub> | 17.3 | 0.15 | 20071027 | 355.23005 | 355.56451 | 28.57748  | 4.38752  | 0.1967084 | 2.5874812 | 46  | 2 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128815 2003 UG <sub>108</sub> |
| 2003 UB <sub>109</sub> | 16.8 | 0.15 | 20071027 | 109.88281 | 24.02217  | 296.57199 | 6.11572  | 0.1369827 | 2.3196653 | 49  | 6 | 1994-2007 | 0.50 | M-v | 1 | MPC | 102182 2003 UB <sub>109</sub> |
| 2003 UT <sub>110</sub> | 17.2 | 0.15 | 20071027 | 23.32858  | 243.06565 | 169.04866 | 2.04350  | 0.1601990 | 2.3794433 | 53  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 110996 2003 UT <sub>110</sub> |
| 2003 UK <sub>112</sub> | 16.3 | 0.15 | 20071027 | 357.89998 | 343.99883 | 94.84823  | 4.66475  | 0.1358551 | 2.3746913 | 50  | 6 | 1992-2007 | 0.56 | M-v | 1 | MPC | 102182 2003 UK <sub>112</sub> |
| 2003 UN <sub>112</sub> | 15.9 | 0.15 | 20071027 | 38.75204  | 293.77945 | 68.28530  | 7.10317  | 0.1538430 | 2.4464961 | 107 | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128815 2003 UN <sub>112</sub> |
| 2003 UX <sub>113</sub> | 16.4 | 0.15 | 20071027 | 29.09708  | 271.89818 | 109.55227 | 7.99776  | 0.1245835 | 2.4450486 | 76  | 6 | 1997-2007 | 0.53 | M-v | 1 | MPC | 128815 2003 UX <sub>113</sub> |
| 2003 UL <sub>115</sub> | 17.0 | 0.15 | 20071027 | 4.40333   | 31.74987  | 8.33613   | 6.18568  | 0.1238859 | 2.4828134 | 70  | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128053 2003 UL <sub>115</sub> |
| 2003 UM <sub>115</sub> | 16.2 | 0.15 | 20071027 | 31.23810  | 24.77663  | 3.34698   | 6.09718  | 0.1327705 | 2.4068804 | 91  | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 77728 2003 UM <sub>115</sub>  |
| 2003 UO <sub>115</sub> | 15.1 | 0.15 | 20071027 | 265.11184 | 212.45624 | 239.03574 | 8.57558  | 0.0728682 | 2.7615110 | 65  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 123939 2003 UO <sub>115</sub> |
| 2003 UX <sub>115</sub> | 16.6 | 0.15 | 20071027 | 120.76372 | 65.49418  | 248.30870 | 6.26649  | 0.1355978 | 2.3007762 | 73  | 4 | 2003-2007 | 0.40 | M-v | 1 | MPC | 118062 2003 UX <sub>115</sub> |
| 2003 UR <sub>116</sub> | 16.3 | 0.15 | 20071027 | 343.58903 | 11.31632  | 27.15777  | 4.54010  | 0.1658536 | 2.5988891 | 163 | 5 | 1999-2007 | 0.61 | M-v | 2 | MPC | 128815 2003 UR <sub>116</sub> |
| 2003 UW <sub>116</sub> | 16.8 | 0.15 | 20071027 | 4.42777   | 257.45136 | 148.86373 | 3.17979  | 0.1738043 | 2.4599668 | 43  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128054 2003 UW <sub>116</sub> |
| 2003 UD <sub>117</sub> | 16.4 | 0.15 | 20071027 | 34.90878  | 356.61717 | 70.17921  | 6.87587  | 0.0882108 | 2.2657236 | 67  | 6 | 1995-2007 | 0.52 | M-v | 1 | MPC | 126681 2003 UD <sub>117</sub> |
| 2003 UK <sub>117</sub> | 16.7 | 0.15 | 20071027 | 81.01911  | 212.83876 | 135.22877 | 2.48885  | 0.2288218 | 2.3048486 | 62  | 5 | 1994-2007 | 0.49 | M-v | 2 | MPC | 128815 2003 UK <sub>117</sub> |
| 2003 UE <sub>120</sub> | 17.0 | 0.15 | 20071027 | 315.17129 | 85.54091  | 24.26278  | 13.17247 | 0.1557701 | 2.4349305 | 48  | 3 | 2003-2007 | 0.55 | M-v | 2 | MPC | 128815 2003 UE <sub>120</sub> |
| 2003 UY <sub>122</sub> | 15.5 | 0.15 | 20071027 | 54.60203  | 22.95500  | 286.06442 | 11.05883 | 0.1827747 | 2.6071577 | 56  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128815 2003 UY <sub>122</sub> |
| 2003 UM <sub>123</sub> | 17.6 | 0.15 | 20071027 | 318.69774 | 85.76084  | 40.87973  | 5.25748  | 0.1744583 | 2.4163268 | 34  | 4 | 2001-2007 | 0.28 | M-v | 0 | MPC | 110997 2003 UM <sub>123</sub> |
| 2003 UP <sub>124</sub> | 17.0 | 0.15 | 20071027 | 17.81617  | 263.44200 | 117.47664 | 2.42092  | 0.1601157 | 2.4600131 | 73  | 2 | 2003-2007 | 0.53 | M-v | 4 | MPC | 128054 2003 UP <sub>124</sub> |
| 2003 UW <sub>126</sub> | 16.7 | 0.15 | 20071027 | 33.85447  | 94.91944  | 240.07502 | 0.64230  | 0.1631913 | 2.6018312 | 84  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128815 2003 UW <sub>126</sub> |
| 2003 UA <sub>128</sub> | 15.9 | 0.15 | 20071027 | 44.67795  | 50.34301  | 269.85707 | 6.57883  | 0.0739908 | 2.6211422 | 62  | 5 | 2001-2007 | 0.41 | M-v | 1 | MPC | 126682 2003 UA <sub>128</sub> |
| 2003 UU <sub>128</sub> | 17.3 | 0.15 | 20071027 | 51.18151  | 327.50550 | 25.87881  | 2.41438  | 0.2085964 | 2.4182418 | 66  | 5 | 1999-2007 | 0.38 | M-v | 2 | MPC | 128815 2003 UU <sub>128</sub> |
| 2003 UQ <sub>129</sub> | 16.6 | 0.15 | 20071027 | 166.87441 | 340.92771 | 309.94831 | 6.59975  | 0.1355138 | 2.2205088 | 85  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128815 2003 UQ <sub>129</sub> |
| 2003 UT <sub>129</sub> | 16.1 | 0.15 | 20071027 | 110.67722 | 322.49764 | 339.79378 | 6.32599  | 0.1163279 | 2.4079785 | 53  | 5 | 1999-2007 | 0.45 | M-v | 1 | MPC | 77729 2003 UT <sub>129</sub>  |
| 2003 UA <sub>133</sub> | 15.8 | 0.15 | 20071027 | 348.99114 | 175.63405 | 270.51759 | 5.07393  | 0.0441516 | 2.4205195 | 109 | 6 | 1997-2007 | 0.45 | M-v | 1 | MPC | 104268 2003 UA <sub>133</sub> |
| 2003 UK <sub>133</sub> | 16.5 | 0.15 | 20071027 | 113.61267 | 171.80058 | 146.57479 | 4.14724  | 0.1727694 | 2.2732189 | 52  | 6 | 1992-2007 | 0.55 | M-v | 2 | MPC | 110997 2003 UK <sub>133</sub> |
| 2003 UQ <sub>133</sub> | 16.3 | 0.15 | 20071027 | 17.19982  | 300.10057 | 94.11689  | 6.94324  | 0.1190574 | 2.4504037 | 57  | 3 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128055 2003 UQ <sub>133</sub> |
| 2003 US <sub>133</sub> | 15.5 | 0.15 | 20071027 | 347.48289 | 143.47759 | 229.41212 | 10.87712 | 0.2445325 | 2.6774768 | 160 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128816 2003 US <sub>133</sub> |
| 2003 UX <sub>134</sub> | 15.9 | 0.15 | 20071027 | 0.41576   | 98.25511  | 279.71098 | 2.97924  | 0.1687303 | 2.5966761 | 165 | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128816 2003 UX <sub>134</sub> |
| 2003 UE <sub>135</sub> | 17.0 | 0.15 | 20071027 | 63.59241  | 91.42129  | 243.63317 | 1.25212  | 0.1320063 | 2.4208211 | 73  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 128816 2003 UE <sub>135</sub> |
| 2003 UQ <sub>135</sub> | 16.9 | 0.15 | 20071027 | 141.66436 | 340.66393 | 338.22052 | 4.96310  | 0.1563139 | 2.2155698 | 124 | 3 | 2003-2006 | 0.53 | M-v | 3 | MPC | 116257 2003 UQ <sub>135</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 UQ <sub>136</sub> | 17.0 | 0.15 | 20071027 | 20.72556  | 357.10237 | 25.76851  | 6.90480  | 0.1245257 | 2.4516644 | 95  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128055 2003 UQ <sub>136</sub> |
| 2003 UY <sub>137</sub> | 17.0 | 0.15 | 20071027 | 33.90436  | 260.97333 | 108.54455 | 2.96014  | 0.2114977 | 2.4469630 | 53  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 128816 2003 UY <sub>137</sub> |
| 2003 UK <sub>139</sub> | 17.1 | 0.15 | 20071027 | 50.65164  | 261.34489 | 79.69356  | 6.96279  | 0.1756527 | 2.4270584 | 54  | 3 | 2003-2007 | 0.58 | M-v | 2 | MPC | 128816 2003 UK <sub>139</sub> |
| 2003 UM <sub>142</sub> | 15.9 | 0.15 | 20071027 | 43.79196  | 81.52010  | 306.53639 | 5.18626  | 0.2045182 | 2.3645174 | 106 | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128816 2003 UM <sub>142</sub> |
| 2003 UM <sub>143</sub> | 16.4 | 0.15 | 20071027 | 3.33660   | 358.21087 | 23.16225  | 10.67049 | 0.1799396 | 2.5722983 | 136 | 2 | 2003-2007 | 0.55 | M-v | 2 | MPC | 128816 2003 UM <sub>143</sub> |
| 2003 US <sub>143</sub> | 16.5 | 0.15 | 20071027 | 28.80960  | 93.70989  | 257.28985 | 5.45085  | 0.2495038 | 2.5357746 | 180 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128816 2003 US <sub>143</sub> |
| 2003 UO <sub>144</sub> | 16.3 | 0.15 | 20071027 | 341.01923 | 164.69922 | 288.37877 | 3.85731  | 0.1491646 | 2.4487808 | 103 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 102184 2003 UO <sub>144</sub> |
| 2003 UQ <sub>144</sub> | 15.9 | 0.15 | 20071027 | 17.21126  | 99.00630  | 250.49985 | 11.07932 | 0.1741714 | 2.6341158 | 96  | 4 | 1999-2007 | 0.58 | M-v | 2 | MPC | 128816 2003 UQ <sub>144</sub> |
| 2003 UU <sub>144</sub> | 16.7 | 0.15 | 20071027 | 49.87039  | 111.86082 | 294.18544 | 5.36136  | 0.1133940 | 2.2980861 | 83  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128816 2003 UU <sub>144</sub> |
| 2003 UY <sub>144</sub> | 15.9 | 0.15 | 20071027 | 9.57124   | 335.78346 | 45.18995  | 9.05179  | 0.1636875 | 2.5703967 | 123 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128816 2003 UY <sub>144</sub> |
| 2003 UZ <sub>144</sub> | 15.4 | 0.15 | 20071027 | 9.61474   | 331.11179 | 49.63888  | 12.90488 | 0.1106696 | 2.5867525 | 150 | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128816 2003 UZ <sub>144</sub> |
| 2003 UG <sub>145</sub> | 16.5 | 0.15 | 20071027 | 329.55522 | 213.42295 | 203.18226 | 5.95961  | 0.1650782 | 2.6267239 | 95  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128816 2003 UG <sub>145</sub> |
| 2003 UO <sub>145</sub> | 17.0 | 0.15 | 20071027 | 60.33799  | 178.58866 | 184.63955 | 1.98391  | 0.2111165 | 2.3767332 | 61  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 76099 2003 UO <sub>145</sub>  |
| 2003 UR <sub>145</sub> | 17.0 | 0.15 | 20071027 | 0.36928   | 19.33971  | 63.44672  | 6.24136  | 0.1461346 | 2.4006246 | 63  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128056 2003 UR <sub>145</sub> |
| 2003 UD <sub>146</sub> | 16.4 | 0.15 | 20071027 | 70.33476  | 305.32165 | 62.15184  | 7.68589  | 0.1167451 | 2.3429806 | 83  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 104268 2003 UD <sub>146</sub> |
| 2003 UM <sub>148</sub> | 16.4 | 0.15 | 20071027 | 344.43233 | 302.95466 | 120.53430 | 5.41200  | 0.1863338 | 2.5235420 | 88  | 4 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128816 2003 UM <sub>148</sub> |
| 2003 US <sub>148</sub> | 16.1 | 0.15 | 20071027 | 29.19570  | 315.14922 | 34.21769  | 8.89149  | 0.1739144 | 2.5587701 | 180 | 4 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128816 2003 US <sub>148</sub> |
| 2003 UP <sub>149</sub> | 17.7 | 0.15 | 20071027 | 0.31591   | 347.16690 | 74.03400  | 4.91704  | 0.1771057 | 2.4054949 | 53  | 4 | 1996-2007 | 0.45 | M-v | 0 | MPC | 128816 2003 UP <sub>149</sub> |
| 2003 UU <sub>149</sub> | 16.4 | 0.15 | 20071027 | 23.20492  | 327.12550 | 73.15703  | 3.14757  | 0.2218415 | 2.3812905 | 86  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128056 2003 UU <sub>149</sub> |
| 2003 UA <sub>150</sub> | 17.0 | 0.15 | 20071027 | 87.86084  | 245.90230 | 68.15218  | 3.86840  | 0.2370059 | 2.3478338 | 43  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 100628 2003 UA <sub>150</sub> |
| 2003 UK <sub>150</sub> | 15.4 | 0.15 | 20071027 | 46.84256  | 208.61976 | 140.50129 | 10.57369 | 0.1067860 | 2.5531791 | 87  | 5 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128817 2003 UK <sub>150</sub> |
| 2003 UL <sub>150</sub> | 17.2 | 0.15 | 20071027 | 337.70952 | 66.99601  | 352.93255 | 1.79637  | 0.2874401 | 2.5837827 | 133 | 3 | 1995-2007 | 0.49 | M-v | 2 | MPC | 128817 2003 UL <sub>150</sub> |
| 2003 UU <sub>150</sub> | 16.0 | 0.15 | 20071027 | 65.20312  | 291.21677 | 45.18821  | 9.09570  | 0.1066968 | 2.4475551 | 99  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128817 2003 UU <sub>150</sub> |
| 2003 UX <sub>151</sub> | 16.7 | 0.15 | 20071027 | 10.60151  | 143.18864 | 245.26527 | 7.55354  | 0.1975952 | 2.4894864 | 143 | 3 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128817 2003 UX <sub>151</sub> |
| 2003 UZ <sub>152</sub> | 16.8 | 0.15 | 20071027 | 58.93849  | 205.43390 | 166.12890 | 1.61890  | 0.1668052 | 2.3488576 | 73  | 4 | 2002-2007 | 0.44 | M-v | 2 | MPC | 76105 2003 UZ <sub>152</sub>  |
| 2003 UE <sub>153</sub> | 17.2 | 0.15 | 20071027 | 32.59486  | 213.46311 | 173.96637 | 1.96822  | 0.1704363 | 2.4114805 | 53  | 4 | 1999-2007 | 0.44 | M-v | 2 | MPC | 110997 2003 UE <sub>153</sub> |
| 2003 UF <sub>153</sub> | 16.8 | 0.15 | 20071027 | 68.95053  | 349.15672 | 41.19947  | 12.54170 | 0.0823891 | 2.2699553 | 57  | 3 | 2003-2006 | 0.57 | M-v | 3 | MPC | 104268 2003 UF <sub>153</sub> |
| 2003 UK <sub>153</sub> | 15.9 | 0.15 | 20071027 | 42.93506  | 33.39834  | 256.97698 | 12.83827 | 0.1375106 | 2.6201903 | 36  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 124418 2003 UK <sub>153</sub> |
| 2003 UX <sub>154</sub> | 17.5 | 0.15 | 20071027 | 57.68910  | 223.33574 | 113.25390 | 3.11678  | 0.2575998 | 2.4004565 | 49  | 4 | 1999-2007 | 0.46 | M-v | 2 | MPC | 102184 2003 UX <sub>154</sub> |
| 2003 UG <sub>156</sub> | 17.4 | 0.15 | 20071027 | 8.21476   | 234.17281 | 168.32870 | 6.99586  | 0.1400108 | 2.4229862 | 62  | 3 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128817 2003 UG <sub>156</sub> |
| 2003 US <sub>157</sub> | 17.2 | 0.15 | 20071027 | 316.62677 | 227.72543 | 208.34509 | 3.32246  | 0.2453824 | 2.6319184 | 49  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128817 2003 US <sub>157</sub> |
| 2003 UD <sub>158</sub> | 17.1 | 0.15 | 20071027 | 351.52097 | 148.13527 | 302.08339 | 1.63338  | 0.1816285 | 2.4174211 | 51  | 4 | 1997-2007 | 0.54 | M-v | 1 | MPC | 110998 2003 UD <sub>158</sub> |
| 2003 UH <sub>158</sub> | 16.3 | 0.15 | 20071027 | 342.68305 | 133.37745 | 313.19639 | 3.25077  | 0.1082090 | 2.4221879 | 83  | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128817 2003 UH <sub>158</sub> |
| 2003 UJ <sub>158</sub> | 17.7 | 0.15 | 20071027 | 12.53257  | 140.87442 | 288.06221 | 4.16509  | 0.1681696 | 2.3712929 | 45  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 128817 2003 UJ <sub>158</sub> |
| 2003 UQ <sub>158</sub> | 16.4 | 0.15 | 20071027 | 321.14469 | 34.70241  | 40.52577  | 13.68872 | 0.1470937 | 2.6021976 | 80  | 2 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128057 2003 UQ <sub>158</sub> |
| 2003 UW <sub>158</sub> | 16.4 | 0.15 | 20071027 | 22.46277  | 303.96835 | 51.39451  | 2.68724  | 0.0477511 | 2.6390437 | 67  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128817 2003 UW <sub>158</sub> |
| 2003 UG <sub>159</sub> | 17.1 | 0.15 | 20071027 | 326.73040 | 278.66232 | 192.09606 | 2.79160  | 0.1551029 | 2.4429806 | 55  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 77731 2003 UG <sub>159</sub>  |
| 2003 UN <sub>159</sub> | 16.3 | 0.15 | 20071027 | 248.49360 | 141.48251 | 51.32779  | 7.49648  | 0.0533918 | 2.3836902 | 74  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 104269 2003 UN <sub>159</sub> |
| 2003 UQ <sub>159</sub> | 17.9 | 0.15 | 20071027 | 15.75573  | 318.69442 | 57.52172  | 7.67816  | 0.1344838 | 2.5467281 | 31  | 2 | 2003-2007 | 0.38 | M-v | 3 | MPC | 128057 2003 UQ <sub>159</sub> |
| 2003 UT <sub>160</sub> | 17.5 | 0.15 | 20071027 | 316.20828 | 226.74184 | 223.33714 | 5.58181  | 0.2772364 | 2.5743236 | 43  | 2 | 2003-2007 | 0.41 | M-v | 3 | MPC | 128817 2003 UT <sub>160</sub> |
| 2003 UY <sub>160</sub> | 18.0 | 0.15 | 20071027 | 290.43180 | 259.19669 | 257.82265 | 1.28724  | 0.1410197 | 2.3592373 | 22  | 3 | 2003-2007 | 0.43 | M-v | 3 | MPC | 76109 2003 UY <sub>160</sub>  |
| 2003 UF <sub>162</sub> | 16.3 | 0.15 | 20071027 | 63.41744  | 268.55639 | 64.29076  | 3.59465  | 0.1521241 | 2.4335770 | 88  | 4 | 2003-2007 | 0.43 | M-v | 1 | MPC | 128817 2003 UF <sub>162</sub> |
| 2003 UG <sub>162</sub> | 17.0 | 0.15 | 20071027 | 334.37728 | 61.66638  | 38.13912  | 7.21851  | 0.0849420 | 2.3788202 | 46  | 4 | 1992-2007 | 0.50 | M-v | 1 | MPC | 76110 2003 UG <sub>162</sub>  |
| 2003 UL <sub>162</sub> | 16.4 | 0.15 | 20071027 | 84.87733  | 209.16965 | 114.26888 | 3.57713  | 0.1749444 | 2.3847899 | 61  | 7 | 1999-2007 | 0.58 | M-v | 1 | MPC | 110998 2003 UL <sub>162</sub> |
| 2003 UG <sub>164</sub> | 17.0 | 0.15 | 20071027 | 11.90757  | 338.81781 | 93.51138  | 3.57592  | 0.1740470 | 2.3577014 | 42  | 3 | 2003-2007 | 0.54 | M-v | 3 | MPC | 128817 2003 UG <sub>164</sub> |
| 2003 UP <sub>164</sub> | 16.4 | 0.15 | 20071027 | 8.12768   | 338.68573 | 81.49627  | 2.60310  | 0.1773744 | 2.4317812 | 99  | 5 | 1999-2007 | 0.61 | M-v | 2 | MPC | 77731 2003 UP <sub>164</sub>  |
| 2003 UQ <sub>164</sub> | 16.1 | 0.15 | 20071027 | 335.09689 | 207.60554 | 214.52559 | 9.26262  | 0.1873865 | 2.5887775 | 154 | 5 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128817 2003 UQ <sub>164</sub> |
| 2003 UW <sub>166</sub> | 17.4 | 0.15 | 20071027 | 329.66566 | 34.28974  | 18.89753  | 7.94868  | 0.1736182 | 2.5923959 | 41  | 2 | 2003-2007 | 0.35 | M-v | 3 | MPC | 128817 2003 UW <sub>166</sub> |
| 2003 UM <sub>168</sub> | 15.0 | 0.15 | 20071027 | 80.29469  | 286.71105 | 18.90016  | 14.31285 | 0.0978234 | 2.5350077 | 160 | 5 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128817 2003 UM <sub>168</sub> |
| 2003 UR <sub>168</sub> | 15.8 | 0.15 | 20071027 | 356.63608 | 127.09791 | 255.67510 | 3.92337  | 0.1454813 | 2.6134416 | 171 | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128817 2003 UR <sub>168</sub> |
| 2003 UU <sub>168</sub> | 17.0 | 0.15 | 20071027 | 46.53424  | 352.16384 | 30.85200  | 1.82709  | 0.1877591 | 2.3739150 | 83  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128817 2003 UU <sub>168</sub> |
| 2003 UX <sub>168</sub> | 16.6 | 0.15 | 20071027 | 39.01218  | 49.71521  | 340.58282 | 0.62313  | 0.1904671 | 2.3864376 | 84  | 3 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128817 2003 UX <sub>168</sub> |
| 2003 UX <sub>170</sub> | 16.7 | 0.15 | 20071027 | 1.42218   | 4.32595   | 22.40127  | 9.46293  | 0.1542141 | 2.5385007 | 112 | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128817 2003 UX <sub>170</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 UF <sub>171</sub> | 16.7 | 0.15 | 20071027 | 336.08090 | 189.36557 | 273.74802 | 1.51818  | 0.1674875 | 2.4237618 | 44  | 4 | 1997-2007 | 0.55 | M-v | 1 | MPC | 110998 2003 UF <sub>171</sub> |
| 2003 UJ <sub>173</sub> | 16.8 | 0.15 | 20071027 | 351.86048 | 221.35663 | 237.89334 | 4.89083  | 0.2383048 | 2.3835526 | 70  | 4 | 1992-2007 | 0.49 | M-v | 1 | MPC | 128817 2003 UJ <sub>173</sub> |
| 2003 UF <sub>174</sub> | 17.4 | 0.15 | 20071027 | 39.80194  | 82.54592  | 290.93717 | 1.43947  | 0.2252547 | 2.4055882 | 58  | 5 | 1997-2007 | 0.40 | M-v | 1 | MPC | 77732 2003 UF <sub>174</sub>  |
| 2003 UG <sub>174</sub> | 16.9 | 0.15 | 20071027 | 61.09397  | 0.52152   | 342.48327 | 1.14522  | 0.2038760 | 2.4096206 | 51  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 128817 2003 UG <sub>174</sub> |
| 2003 UJ <sub>174</sub> | 16.2 | 0.15 | 20071027 | 80.43122  | 288.24569 | 5.86516   | 3.03913  | 0.1038326 | 2.5715051 | 73  | 3 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128817 2003 UJ <sub>174</sub> |
| 2003 UU <sub>178</sub> | 16.9 | 0.15 | 20071027 | 61.05443  | 84.42673  | 221.79966 | 3.93927  | 0.0820618 | 2.5726725 | 57  | 5 | 1999-2007 | 0.37 | M-v | 0 | MPC | 128817 2003 UU <sub>178</sub> |
| 2003 UC <sub>179</sub> | 16.6 | 0.15 | 20071027 | 122.21585 | 257.90078 | 27.36947  | 5.43097  | 0.2056380 | 2.3477512 | 43  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128817 2003 UC <sub>179</sub> |
| 2003 UC <sub>180</sub> | 17.3 | 0.15 | 20071027 | 9.39391   | 358.66857 | 72.70756  | 3.32242  | 0.1609518 | 2.3716959 | 65  | 3 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128818 2003 UC <sub>180</sub> |
| 2003 UU <sub>180</sub> | 16.1 | 0.15 | 20071027 | 343.25149 | 301.04717 | 113.77673 | 5.89202  | 0.2224481 | 2.5529505 | 138 | 3 | 1999-2007 | 0.58 | M-v | 2 | MPC | 128818 2003 UU <sub>180</sub> |
| 2003 US <sub>183</sub> | 17.3 | 0.15 | 20071027 | 344.58652 | 48.31494  | 39.87620  | 3.03614  | 0.1540709 | 2.4131059 | 50  | 5 | 1997-2007 | 0.41 | M-v | 1 | MPC | 76122 2003 US <sub>183</sub>  |
| 2003 UU <sub>184</sub> | 16.4 | 0.15 | 20071027 | 100.57448 | 280.25917 | 21.89258  | 6.89780  | 0.1794473 | 2.4124869 | 31  | 3 | 2002-2007 | 0.57 | M-v | 2 | MPC | 57112 2003 UU <sub>184</sub>  |
| 2003 UA <sub>185</sub> | 17.4 | 0.15 | 20071027 | 51.60593  | 358.35154 | 50.93951  | 3.83929  | 0.1619568 | 2.2729657 | 67  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPC | 77733 2003 UA <sub>185</sub>  |
| 2003 UN <sub>185</sub> | 16.5 | 0.15 | 20071027 | 328.69784 | 40.64558  | 22.15731  | 4.61841  | 0.2051450 | 2.5894801 | 106 | 4 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128818 2003 UN <sub>185</sub> |
| 2003 UQ <sub>186</sub> | 16.5 | 0.15 | 20071027 | 18.72975  | 94.30024  | 336.36155 | 4.73302  | 0.1764112 | 2.3394984 | 55  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128818 2003 UQ <sub>186</sub> |
| 2003 UF <sub>187</sub> | 16.7 | 0.15 | 20071027 | 42.84213  | 88.02246  | 276.90762 | 4.06947  | 0.0882898 | 2.4481655 | 42  | 2 | 2003-2007 | 0.38 | M-v | 4 | MPC | 128059 2003 UF <sub>187</sub> |
| 2003 UK <sub>187</sub> | 15.6 | 0.15 | 20071027 | 23.35194  | 60.81993  | 255.45591 | 8.33531  | 0.1682199 | 2.7418252 | 78  | 4 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128818 2003 UK <sub>187</sub> |
| 2003 UN <sub>187</sub> | 15.9 | 0.15 | 20071027 | 107.75493 | 324.12377 | 355.63768 | 5.93436  | 0.2363011 | 2.3014003 | 82  | 4 | 2002-2007 | 0.51 | M-v | 2 | MPC | 77733 2003 UN <sub>187</sub>  |
| 2003 UR <sub>187</sub> | 16.8 | 0.15 | 20071027 | 4.39826   | 149.66997 | 259.17918 | 4.76740  | 0.1774255 | 2.4631974 | 82  | 3 | 1999-2007 | 0.58 | M-v | 3 | MPC | 128818 2003 UR <sub>187</sub> |
| 2003 UQ <sub>188</sub> | 16.5 | 0.15 | 20071027 | 303.88820 | 241.62427 | 264.86814 | 8.96925  | 0.1561457 | 2.3679978 | 41  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 110998 2003 UQ <sub>188</sub> |
| 2003 UE <sub>189</sub> | 16.3 | 0.15 | 20071027 | 88.93622  | 310.74684 | 7.18812   | 6.26216  | 0.1653290 | 2.3942654 | 50  | 5 | 1999-2007 | 0.47 | M-v | 1 | MPC | 74296 2003 UE <sub>189</sub>  |
| 2003 UE <sub>190</sub> | 16.6 | 0.15 | 20071027 | 92.46904  | 308.62954 | 8.87227   | 1.33133  | 0.1907656 | 2.3822432 | 57  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 77733 2003 UE <sub>190</sub>  |
| 2003 UO <sub>190</sub> | 15.9 | 0.15 | 20071027 | 165.23281 | 245.48906 | 26.60420  | 5.81975  | 0.0405556 | 2.3424514 | 118 | 7 | 1998-2007 | 0.59 | M-v | 1 | MPC | 104269 2003 UO <sub>190</sub> |
| 2003 UV <sub>190</sub> | 17.1 | 0.15 | 20071027 | 25.44122  | 290.45136 | 58.56521  | 8.12329  | 0.2745355 | 2.5350525 | 68  | 4 | 1995-2007 | 0.48 | M-v | 3 | MPC | 128818 2003 UV <sub>190</sub> |
| 2003 UW <sub>191</sub> | 16.9 | 0.15 | 20071027 | 350.18222 | 48.86262  | 339.11195 | 3.86369  | 0.2018503 | 2.6045823 | 68  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128818 2003 UW <sub>191</sub> |
| 2003 UF <sub>193</sub> | 18.2 | 0.15 | 20071027 | 13.78132  | 73.45827  | 325.97858 | 1.90592  | 0.1885643 | 2.3970839 | 24  | 2 | 2003-2007 | 0.27 | M-v | 3 | MPC | 128059 2003 UF <sub>193</sub> |
| 2003 UC <sub>195</sub> | 17.2 | 0.15 | 20071027 | 1.81642   | 120.33242 | 275.08644 | 2.05405  | 0.2307685 | 2.5372603 | 115 | 4 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128818 2003 UC <sub>195</sub> |
| 2003 UT <sub>195</sub> | 16.4 | 0.15 | 20071027 | 29.76420  | 243.83264 | 129.78601 | 2.60370  | 0.0563599 | 2.5136241 | 123 | 5 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128818 2003 UT <sub>195</sub> |
| 2003 UV <sub>195</sub> | 17.1 | 0.15 | 20071027 | 15.20341  | 300.79009 | 111.22144 | 2.29439  | 0.1866847 | 2.4277203 | 59  | 7 | 1993-2007 | 0.46 | M-v | 1 | MPC | 77733 2003 UV <sub>195</sub>  |
| 2003 UH <sub>196</sub> | 16.6 | 0.15 | 20071027 | 59.09754  | 53.15903  | 266.04844 | 2.51265  | 0.0506254 | 2.5776309 | 68  | 5 | 1993-2007 | 0.54 | M-v | 1 | MPC | 128818 2003 UH <sub>196</sub> |
| 2003 UY <sub>199</sub> | 17.2 | 0.15 | 20071027 | 25.51649  | 294.87328 | 58.20639  | 4.60546  | 0.1809429 | 2.5193609 | 72  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128818 2003 UY <sub>199</sub> |
| 2003 UW <sub>200</sub> | 16.7 | 0.15 | 20071027 | 359.55031 | 312.37779 | 70.28461  | 1.68803  | 0.1376397 | 2.5484945 | 87  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128818 2003 UW <sub>200</sub> |
| 2003 UR <sub>201</sub> | 16.2 | 0.15 | 20071027 | 341.75449 | 342.25079 | 56.70120  | 6.55799  | 0.1792662 | 2.6133033 | 70  | 2 | 2003-2007 | 0.54 | M-v | 3 | MPC | 128818 2003 UR <sub>201</sub> |
| 2003 UZ <sub>201</sub> | 16.0 | 0.15 | 20071027 | 354.90349 | 144.52072 | 216.23735 | 9.89247  | 0.3061722 | 2.6682457 | 96  | 2 | 2003-2007 | 0.60 | M-v | 2 | MPC | 128818 2003 UZ <sub>201</sub> |
| 2003 UH <sub>203</sub> | 16.8 | 0.15 | 20071027 | 35.36528  | 347.45348 | 20.78858  | 6.77650  | 0.1635694 | 2.4559179 | 55  | 3 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128818 2003 UH <sub>203</sub> |
| 2003 UJ <sub>203</sub> | 16.7 | 0.15 | 20071027 | 145.36406 | 248.96241 | 26.74655  | 9.09234  | 0.0694251 | 2.3936617 | 49  | 6 | 1998-2007 | 0.61 | M-v | 1 | MPC | 104270 2003 UJ <sub>203</sub> |
| 2003 UC <sub>204</sub> | 16.5 | 0.15 | 20071027 | 280.91896 | 275.45004 | 196.92843 | 4.44685  | 0.1146706 | 2.6022777 | 53  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128818 2003 UC <sub>204</sub> |
| 2003 UE <sub>204</sub> | 16.4 | 0.15 | 20071027 | 85.26780  | 260.89937 | 61.31117  | 3.98013  | 0.0868049 | 2.4357619 | 69  | 6 | 1994-2007 | 0.48 | M-v | 1 | MPC | 128818 2003 UE <sub>204</sub> |
| 2003 UT <sub>205</sub> | 16.8 | 0.15 | 20071027 | 20.01081  | 129.59223 | 239.93324 | 11.22328 | 0.2780703 | 2.5372430 | 123 | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128818 2003 UT <sub>205</sub> |
| 2003 UW <sub>205</sub> | 15.5 | 0.15 | 20071027 | 334.18890 | 202.71720 | 240.78787 | 11.55037 | 0.2655343 | 2.5693039 | 186 | 3 | 1999-2007 | 0.45 | M-v | 2 | MPC | 128818 2003 UW <sub>205</sub> |
| 2003 UC <sub>207</sub> | 17.4 | 0.15 | 20071027 | 20.86451  | 315.00486 | 64.13966  | 2.11123  | 0.1944338 | 2.4460001 | 47  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128819 2003 UC <sub>207</sub> |
| 2003 UJ <sub>207</sub> | 16.2 | 0.15 | 20071027 | 70.38038  | 93.71306  | 258.66339 | 2.58301  | 0.2197190 | 2.3389741 | 64  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128061 2003 UJ <sub>207</sub> |
| 2003 UT <sub>207</sub> | 16.4 | 0.15 | 20071027 | 16.07008  | 300.51500 | 71.76111  | 4.90341  | 0.1949518 | 2.5684507 | 145 | 5 | 1993-2007 | 0.53 | M-v | 1 | MPC | 128819 2003 UT <sub>207</sub> |
| 2003 UQ <sub>208</sub> | 17.2 | 0.15 | 20071027 | 31.15739  | 239.42229 | 152.32020 | 1.17613  | 0.1811088 | 2.4030057 | 50  | 4 | 1997-2007 | 0.42 | M-v | 1 | MPC | 76139 2003 UQ <sub>208</sub>  |
| 2003 UY <sub>209</sub> | 15.9 | 0.15 | 20071027 | 36.30609  | 80.01528  | 272.47462 | 3.45633  | 0.1199845 | 2.5420433 | 122 | 5 | 1991-2007 | 0.47 | M-v | 3 | MPC | 128819 2003 UY <sub>209</sub> |
| 2003 UL <sub>210</sub> | 17.6 | 0.15 | 20071027 | 41.66502  | 271.52302 | 88.04818  | 2.69175  | 0.1852242 | 2.4450827 | 33  | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128061 2003 UL <sub>210</sub> |
| 2003 UT <sub>210</sub> | 15.3 | 0.15 | 20071027 | 26.76196  | 78.54393  | 237.61299 | 12.09569 | 0.1555753 | 2.7597701 | 80  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128819 2003 UT <sub>210</sub> |
| 2003 UA <sub>211</sub> | 17.2 | 0.15 | 20071027 | 351.73859 | 189.78392 | 272.26176 | 1.34525  | 0.1822901 | 2.3771416 | 59  | 4 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128819 2003 UA <sub>211</sub> |
| 2003 UY <sub>211</sub> | 16.2 | 0.15 | 20071027 | 359.75428 | 166.83517 | 218.41944 | 12.75153 | 0.1362536 | 2.5905088 | 98  | 2 | 2003-2007 | 0.55 | M-v | 3 | MPC | 128819 2003 UY <sub>211</sub> |
| 2003 UB <sub>212</sub> | 16.8 | 0.15 | 20071027 | 102.93428 | 277.42874 | 55.60705  | 6.89276  | 0.1755767 | 2.3079314 | 67  | 5 | 1996-2007 | 0.49 | M-v | 1 | MPC | 128819 2003 UB <sub>212</sub> |
| 2003 UG <sub>213</sub> | 16.9 | 0.15 | 20071027 | 54.57756  | 285.30328 | 84.98831  | 3.22802  | 0.2106502 | 2.3818629 | 85  | 4 | 1992-2007 | 0.51 | M-v | 1 | MPC | 128819 2003 UG <sub>213</sub> |
| 2003 UR <sub>213</sub> | 16.8 | 0.15 | 20071027 | 300.79383 | 133.68846 | 18.74701  | 4.40512  | 0.1457341 | 2.3192067 | 85  | 5 | 1992-2007 | 0.55 | M-v | 1 | MPC | 77734 2003 UR <sub>213</sub>  |
| 2003 UF <sub>217</sub> | 17.6 | 0.15 | 20071027 | 3.06669   | 335.61511 | 63.25267  | 4.77295  | 0.2555636 | 2.4864355 | 87  | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128062 2003 UF <sub>217</sub> |
| 2003 UW <sub>217</sub> | 16.5 | 0.15 | 20071027 | 36.23697  | 313.31137 | 64.69093  | 6.76163  | 0.0999081 | 2.4106619 | 67  | 5 | 1992-2007 | 0.50 | M-v | 1 | MPC | 128819 2003 UW <sub>217</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 UZ <sub>217</sub> | 16.1 | 0.15 | 20071027 | 51.39738  | 233.98023 | 134.75917 | 2.94488  | 0.1692587 | 2.3762373 | 64  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 77735 2003 UZ <sub>217</sub>  |
| 2003 UH <sub>218</sub> | 16.8 | 0.15 | 20071027 | 9.29231   | 311.69073 | 109.87971 | 3.50237  | 0.1609652 | 2.4091915 | 63  | 4 | 1999-2007 | 0.63 | M-v | 1 | MPC | 62451 2003 UH <sub>218</sub>  |
| 2003 UW <sub>218</sub> | 16.9 | 0.15 | 20071027 | 49.51418  | 41.75603  | 332.28709 | 3.46482  | 0.1070491 | 2.3742427 | 33  | 4 | 1999-2007 | 0.39 | M-v | 2 | MPC | 86146 2003 UW <sub>218</sub>  |
| 2003 UP <sub>219</sub> | 18.0 | 0.15 | 20071027 | 17.76709  | 30.81184  | 7.31201   | 5.35770  | 0.1195303 | 2.4284490 | 27  | 4 | 1999-2007 | 0.35 | M-v | 3 | MPC | 110999 2003 UP <sub>219</sub> |
| 2003 UX <sub>223</sub> | 16.7 | 0.15 | 20071027 | 12.51552  | 355.00044 | 12.27881  | 4.75761  | 0.3399594 | 2.5643390 | 207 | 3 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128819 2003 UX <sub>223</sub> |
| 2003 UD <sub>224</sub> | 16.7 | 0.15 | 20071027 | 31.06918  | 6.36031   | 359.04223 | 4.41102  | 0.1659723 | 2.5225570 | 86  | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128819 2003 UD <sub>224</sub> |
| 2003 UP <sub>224</sub> | 16.2 | 0.15 | 20071027 | 28.02934  | 327.16137 | 4.27045   | 6.13476  | 0.0318360 | 2.6961862 | 94  | 4 | 1994-2007 | 0.38 | M-v | 0 | MPC | 128819 2003 UP <sub>224</sub> |
| 2003 UH <sub>225</sub> | 16.6 | 0.15 | 20071027 | 325.46271 | 57.31160  | 9.61843   | 5.25121  | 0.1412653 | 2.5714170 | 118 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128819 2003 UH <sub>225</sub> |
| 2003 UF <sub>226</sub> | 16.3 | 0.15 | 20071027 | 346.82509 | 140.97759 | 262.59901 | 11.29485 | 0.2917713 | 2.6439740 | 80  | 3 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128819 2003 UF <sub>226</sub> |
| 2003 UW <sub>226</sub> | 16.9 | 0.15 | 20071027 | 228.43210 | 311.44194 | 275.59576 | 4.17882  | 0.0858713 | 2.2848762 | 39  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 128819 2003 UW <sub>226</sub> |
| 2003 UD <sub>228</sub> | 16.8 | 0.15 | 20071027 | 333.03630 | 197.08242 | 251.12717 | 5.62587  | 0.0768141 | 2.4501693 | 57  | 3 | 1999-2007 | 0.46 | M-v | 3 | MPC | 128062 2003 UD <sub>228</sub> |
| 2003 UH <sub>228</sub> | 16.1 | 0.15 | 20071027 | 325.49485 | 322.21795 | 119.35225 | 4.06499  | 0.0949777 | 2.5197096 | 73  | 4 | 1993-2007 | 0.56 | M-v | 3 | MPC | 128819 2003 UH <sub>228</sub> |
| 2003 UN <sub>228</sub> | 17.5 | 0.15 | 20071027 | 345.74748 | 305.76116 | 119.48966 | 3.40644  | 0.1789928 | 2.4544968 | 32  | 2 | 2003-2007 | 0.56 | M-v | 5 | MPC | 128062 2003 UN <sub>228</sub> |
| 2003 UY <sub>228</sub> | 15.5 | 0.15 | 20071027 | 12.49917  | 320.22800 | 16.68852  | 5.13317  | 0.1649466 | 2.7219869 | 129 | 6 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128819 2003 UY <sub>228</sub> |
| 2003 UM <sub>229</sub> | 16.0 | 0.15 | 20071027 | 316.60073 | 174.48528 | 235.99714 | 11.06507 | 0.1774907 | 2.6997721 | 54  | 4 | 2001-2007 | 0.45 | M-v | 2 | MPC | 124420 2003 UM <sub>229</sub> |
| 2003 UN <sub>229</sub> | 16.2 | 0.15 | 20071027 | 41.81415  | 301.93815 | 27.83917  | 14.62697 | 0.2071241 | 2.5567542 | 105 | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128819 2003 UN <sub>229</sub> |
| 2003 UV <sub>229</sub> | 16.7 | 0.15 | 20071027 | 343.17162 | 9.60243   | 30.40023  | 9.84386  | 0.1727989 | 2.6053076 | 78  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128062 2003 UV <sub>229</sub> |
| 2003 UP <sub>231</sub> | 17.2 | 0.15 | 20071027 | 293.69692 | 146.58490 | 4.32629   | 2.21981  | 0.0566307 | 2.3190084 | 66  | 5 | 1994-2007 | 0.44 | M-v | 1 | MPC | 76150 2003 UP <sub>231</sub>  |
| 2003 UF <sub>232</sub> | 17.8 | 0.15 | 20071027 | 325.54317 | 60.09849  | 49.29514  | 2.09321  | 0.1393483 | 2.3995018 | 72  | 5 | 1992-2007 | 0.38 | M-v | 0 | MPC | 128819 2003 UF <sub>232</sub> |
| 2003 UV <sub>232</sub> | 17.2 | 0.15 | 20071027 | 12.20192  | 233.50958 | 224.24964 | 2.41411  | 0.0288986 | 2.2258826 | 42  | 4 | 2003-2007 | 0.42 | M-v | 1 | MPC | 110999 2003 UV <sub>232</sub> |
| 2003 UJ <sub>234</sub> | 16.1 | 0.15 | 20071027 | 25.38479  | 327.86677 | 41.10012  | 10.42261 | 0.1199347 | 2.5576196 | 115 | 3 | 1997-2007 | 0.52 | M-v | 2 | MPC | 128820 2003 UJ <sub>234</sub> |
| 2003 UA <sub>235</sub> | 16.0 | 0.15 | 20071027 | 302.95461 | 54.27220  | 59.67709  | 17.70118 | 0.1825375 | 2.5885225 | 115 | 4 | 1999-2007 | 0.61 | M-v | 2 | MPC | 128820 2003 UA <sub>235</sub> |
| 2003 UV <sub>235</sub> | 16.5 | 0.15 | 20071027 | 289.35371 | 212.98651 | 304.75332 | 6.95881  | 0.1535457 | 2.3006770 | 38  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 122759 2003 UV <sub>235</sub> |
| 2003 UU <sub>237</sub> | 17.6 | 0.15 | 20071027 | 68.46122  | 117.32976 | 232.04594 | 1.97116  | 0.1889377 | 2.4134903 | 42  | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 77736 2003 UU <sub>237</sub>  |
| 2003 UW <sub>237</sub> | 16.1 | 0.15 | 20071027 | 59.50142  | 284.15450 | 50.43304  | 6.91812  | 0.1539101 | 2.5318422 | 54  | 2 | 2003-2007 | 0.41 | M-v | 3 | MPC | 128820 2003 UW <sub>237</sub> |
| 2003 UO <sub>238</sub> | 16.7 | 0.15 | 20071027 | 242.21658 | 319.23037 | 238.22983 | 6.08136  | 0.0660859 | 2.3002199 | 36  | 4 | 2002-2007 | 0.53 | M-v | 2 | MPC | 76153 2003 UO <sub>238</sub>  |
| 2003 UR <sub>238</sub> | 16.4 | 0.15 | 20071027 | 53.35830  | 91.79201  | 203.02144 | 11.42059 | 0.1833078 | 2.5793651 | 49  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 126686 2003 UR <sub>238</sub> |
| 2003 UV <sub>238</sub> | 16.7 | 0.15 | 20071027 | 18.03826  | 20.14656  | 7.94797   | 4.70683  | 0.0803851 | 2.4305504 | 62  | 3 | 2003-2007 | 0.40 | M-v | 3 | MPC | 128820 2003 UV <sub>238</sub> |
| 2003 UA <sub>240</sub> | 17.7 | 0.15 | 20071027 | 2.44889   | 258.87670 | 151.62091 | 2.04760  | 0.1721131 | 2.4355872 | 41  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128063 2003 UA <sub>240</sub> |
| 2003 UU <sub>240</sub> | 16.6 | 0.15 | 20071027 | 192.91283 | 325.22101 | 249.89767 | 6.39239  | 0.0354514 | 2.4926195 | 67  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128820 2003 UU <sub>240</sub> |
| 2003 UV <sub>240</sub> | 17.1 | 0.15 | 20071027 | 88.88040  | 55.50368  | 252.32532 | 5.54522  | 0.1318544 | 2.4719611 | 36  | 2 | 2003-2007 | 0.47 | M-v | 4 | MPC | 128064 2003 UV <sub>240</sub> |
| 2003 UG <sub>241</sub> | 16.4 | 0.15 | 20071027 | 340.98514 | 43.62155  | 347.54754 | 1.53053  | 0.0879578 | 2.6580780 | 70  | 3 | 2003-2007 | 0.41 | M-v | 3 | MPC | 128820 2003 UG <sub>241</sub> |
| 2003 UX <sub>241</sub> | 16.4 | 0.15 | 20071027 | 337.97588 | 185.75234 | 205.33577 | 11.51025 | 0.1206915 | 2.6573106 | 50  | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128820 2003 UX <sub>241</sub> |
| 2003 UE <sub>242</sub> | 16.2 | 0.15 | 20071027 | 239.14287 | 164.74246 | 48.34381  | 7.61185  | 0.0144175 | 2.3015151 | 76  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 104270 2003 UE <sub>242</sub> |
| 2003 UF <sub>242</sub> | 16.6 | 0.15 | 20071027 | 22.62410  | 158.52383 | 182.06531 | 2.37066  | 0.1267726 | 2.6430636 | 50  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 126686 2003 UF <sub>242</sub> |
| 2003 UJ <sub>243</sub> | 17.1 | 0.15 | 20071027 | 325.57689 | 53.55887  | 60.93339  | 3.09894  | 0.1521415 | 2.3882821 | 44  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 76155 2003 UJ <sub>243</sub>  |
| 2003 UC <sub>244</sub> | 16.1 | 0.15 | 20071027 | 290.83142 | 219.65339 | 241.62038 | 9.86897  | 0.0722469 | 2.6695852 | 73  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128820 2003 UC <sub>244</sub> |
| 2003 UN <sub>246</sub> | 16.4 | 0.15 | 20071027 | 30.27471  | 135.18167 | 193.55229 | 3.85404  | 0.3152206 | 2.6056686 | 137 | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128820 2003 UN <sub>246</sub> |
| 2003 UP <sub>246</sub> | 16.0 | 0.15 | 20071027 | 21.58612  | 293.52435 | 78.62874  | 5.13889  | 0.1672079 | 2.5439716 | 140 | 3 | 1999-2007 | 0.53 | M-v | 3 | MPC | 128820 2003 UP <sub>246</sub> |
| 2003 UV <sub>246</sub> | 16.1 | 0.15 | 20071027 | 17.13365  | 143.53739 | 219.55474 | 10.79647 | 0.1857889 | 2.6060269 | 117 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128820 2003 UV <sub>246</sub> |
| 2003 UD <sub>249</sub> | 17.0 | 0.15 | 20071027 | 69.87706  | 348.44800 | 348.76869 | 3.89164  | 0.0727399 | 2.4149528 | 41  | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128820 2003 UD <sub>249</sub> |
| 2003 UB <sub>251</sub> | 15.8 | 0.15 | 20071027 | 5.49924   | 130.36541 | 225.79902 | 25.26565 | 0.2629578 | 2.6738383 | 94  | 3 | 2003-2007 | 0.57 | M-v | 2 | MPC | 128820 2003 UB <sub>251</sub> |
| 2003 UH <sub>251</sub> | 17.0 | 0.15 | 20071027 | 223.61124 | 352.78103 | 214.39324 | 5.00924  | 0.0624261 | 2.3657351 | 33  | 4 | 2003-2007 | 0.33 | M-v | 1 | MPC | 104271 2003 UH <sub>251</sub> |
| 2003 UR <sub>251</sub> | 16.8 | 0.15 | 20071027 | 347.52394 | 150.73219 | 304.44197 | 3.75719  | 0.1620183 | 2.3711048 | 61  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128820 2003 UR <sub>251</sub> |
| 2003 UU <sub>252</sub> | 16.5 | 0.15 | 20071027 | 285.98239 | 106.11884 | 57.39502  | 6.59778  | 0.0888983 | 2.4189452 | 57  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 104271 2003 UU <sub>252</sub> |
| 2003 UE <sub>253</sub> | 16.3 | 0.15 | 20071027 | 100.20676 | 279.32605 | 62.82706  | 2.05448  | 0.2203604 | 2.2853806 | 95  | 6 | 1998-2007 | 0.42 | M-v | 1 | MPC | 128820 2003 UE <sub>253</sub> |
| 2003 UP <sub>254</sub> | 17.0 | 0.15 | 20071027 | 225.79606 | 142.80682 | 48.49894  | 2.13473  | 0.1267918 | 2.4408354 | 77  | 5 | 1999-2007 | 0.47 | M-v | 1 | MPC | 128820 2003 UP <sub>254</sub> |
| 2003 UC <sub>256</sub> | 17.0 | 0.15 | 20071027 | 354.19082 | 177.63314 | 244.00480 | 5.28569  | 0.0947092 | 2.4591266 | 36  | 3 | 1999-2007 | 0.43 | M-v | 3 | MPC | 128065 2003 UC <sub>256</sub> |
| 2003 UQ <sub>258</sub> | 16.5 | 0.15 | 20071027 | 46.59768  | 112.09081 | 199.39247 | 2.63960  | 0.0741043 | 2.6563908 | 44  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128820 2003 UQ <sub>258</sub> |
| 2003 UK <sub>259</sub> | 16.7 | 0.15 | 20071027 | 0.29879   | 284.54617 | 109.83878 | 3.87154  | 0.2661033 | 2.5553894 | 114 | 4 | 1992-2007 | 0.54 | M-v | 2 | MPC | 128820 2003 UK <sub>259</sub> |
| 2003 US <sub>259</sub> | 15.7 | 0.15 | 20071027 | 20.32382  | 290.65413 | 75.43705  | 13.79692 | 0.1758927 | 2.6018989 | 89  | 2 | 2003-2007 | 0.54 | M-v | 3 | MPC | 128820 2003 US <sub>259</sub> |
| 2003 UY <sub>259</sub> | 16.2 | 0.15 | 20071027 | 32.10463  | 234.25420 | 141.43517 | 4.29166  | 0.0571414 | 2.5145678 | 111 | 4 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128820 2003 UY <sub>259</sub> |
| 2003 UG <sub>261</sub> | 17.0 | 0.15 | 20071027 | 10.84126  | 32.55204  | 40.72942  | 3.16235  | 0.2504158 | 2.3571217 | 65  | 3 | 2001-2007 | 0.51 | M-v | 2 | MPC | 128065 2003 UG <sub>261</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 UT <sub>261</sub> | 16.1 | 0.15 | 20071027 | 126.93662 | 211.97135 | 34.89186  | 12.82971 | 0.1362094 | 2.5738845 | 45  | 2 | 2003-2007 | 0.47 | M-v | 4 | MPC | 128821 2003 UT <sub>261</sub> |
| 2003 UD <sub>264</sub> | 17.2 | 0.15 | 20071027 | 13.83675  | 344.80649 | 91.57146  | 7.54230  | 0.0738639 | 2.3371425 | 24  | 3 | 2003-2007 | 0.33 | M-v | 2 | MPC | 86149 2003 UD <sub>264</sub>  |
| 2003 UF <sub>264</sub> | 16.7 | 0.15 | 20071027 | 64.90035  | 292.85877 | 74.69221  | 7.62058  | 0.1459287 | 2.3522572 | 57  | 3 | 2002-2007 | 0.64 | M-v | 3 | MPC | 128065 2003 UF <sub>264</sub> |
| 2003 UX <sub>264</sub> | 16.0 | 0.15 | 20071027 | 345.54142 | 23.48441  | 79.27328  | 9.07570  | 0.1629026 | 2.4094569 | 114 | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 128821 2003 UX <sub>264</sub> |
| 2003 UV <sub>266</sub> | 16.3 | 0.15 | 20071027 | 42.68012  | 264.95849 | 97.01611  | 3.26092  | 0.0838161 | 2.4856310 | 61  | 5 | 1991-2007 | 0.59 | M-v | 3 | MPC | 128821 2003 UV <sub>266</sub> |
| 2003 UP <sub>267</sub> | 16.1 | 0.15 | 20071027 | 36.87337  | 267.26231 | 50.03592  | 12.89536 | 0.2704826 | 2.6251854 | 68  | 3 | 2002-2007 | 0.59 | M-v | 1 | MPC | 128821 2003 UP <sub>267</sub> |
| 2003 UQ <sub>267</sub> | 17.1 | 0.15 | 20071027 | 63.63802  | 312.35063 | 46.57152  | 2.01401  | 0.2049754 | 2.3742516 | 66  | 6 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128821 2003 UQ <sub>267</sub> |
| 2003 UL <sub>268</sub> | 16.2 | 0.15 | 20071027 | 349.77950 | 353.32159 | 39.72789  | 4.11721  | 0.0854738 | 2.6136187 | 77  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128821 2003 UL <sub>268</sub> |
| 2003 UQ <sub>268</sub> | 17.7 | 0.15 | 20071027 | 32.16608  | 158.29714 | 238.23335 | 1.90782  | 0.1975046 | 2.3991513 | 46  | 5 | 1997-2007 | 0.48 | M-v | 1 | MPC | 126687 2003 UQ <sub>268</sub> |
| 2003 UD <sub>269</sub> | 17.3 | 0.15 | 20071027 | 359.35934 | 152.68841 | 248.96262 | 1.90317  | 0.2500456 | 2.5301830 | 113 | 4 | 1995-2007 | 0.51 | M-v | 2 | MPC | 128821 2003 UD <sub>269</sub> |
| 2003 UP <sub>269</sub> | 17.2 | 0.15 | 20071027 | 102.78435 | 3.67088   | 5.93212   | 1.79870  | 0.0459494 | 2.2147471 | 62  | 4 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128821 2003 UP <sub>269</sub> |
| 2003 UU <sub>269</sub> | 16.4 | 0.15 | 20071027 | 344.87495 | 64.16063  | 27.44710  | 7.00585  | 0.0617774 | 2.3989372 | 52  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 104271 2003 UU <sub>269</sub> |
| 2003 UB <sub>270</sub> | 17.5 | 0.15 | 20071027 | 11.50005  | 355.52330 | 34.62378  | 1.13144  | 0.1869032 | 2.4103841 | 63  | 4 | 1992-2007 | 0.42 | M-v | 0 | MPC | 128821 2003 UB <sub>270</sub> |
| 2003 UE <sub>272</sub> | 16.7 | 0.15 | 20071027 | 345.37318 | 211.87434 | 215.99074 | 5.68091  | 0.1040736 | 2.4429774 | 91  | 5 | 1994-2007 | 0.53 | M-v | 2 | MPC | 128821 2003 UE <sub>272</sub> |
| 2003 UO <sub>272</sub> | 16.6 | 0.15 | 20071027 | 23.82263  | 318.41499 | 96.09643  | 3.27249  | 0.1688588 | 2.3610146 | 64  | 2 | 2003-2007 | 0.55 | M-v | 3 | MPC | 128066 2003 UO <sub>272</sub> |
| 2003 UO <sub>274</sub> | 16.5 | 0.15 | 20071027 | 356.85576 | 66.85559  | 359.75889 | 6.31704  | 0.1195655 | 2.4090081 | 81  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 76170 2003 UO <sub>274</sub>  |
| 2003 UW <sub>274</sub> | 15.9 | 0.15 | 20071027 | 348.63996 | 216.69081 | 195.46210 | 8.56694  | 0.1543795 | 2.5715860 | 136 | 4 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128821 2003 UW <sub>274</sub> |
| 2003 UX <sub>274</sub> | 16.1 | 0.15 | 20071027 | 2.78679   | 299.73778 | 94.23712  | 8.89351  | 0.2531270 | 2.5483823 | 126 | 3 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128821 2003 UX <sub>274</sub> |
| 2003 UM <sub>275</sub> | 16.4 | 0.15 | 20071027 | 335.58409 | 20.37066  | 68.03338  | 7.19684  | 0.0951200 | 2.4503432 | 47  | 3 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128821 2003 UM <sub>275</sub> |
| 2003 UO <sub>276</sub> | 16.5 | 0.15 | 20071027 | 341.80883 | 73.83388  | 339.14367 | 5.40378  | 0.2239847 | 2.5574139 | 102 | 4 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128821 2003 UO <sub>276</sub> |
| 2003 UR <sub>277</sub> | 17.1 | 0.15 | 20071027 | 21.30675  | 303.28239 | 72.22312  | 2.90088  | 0.1788339 | 2.4443366 | 108 | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 128821 2003 UR <sub>277</sub> |
| 2003 UE <sub>278</sub> | 16.7 | 0.15 | 20071027 | 352.99731 | 62.10029  | 359.58654 | 6.35041  | 0.1104945 | 2.4430038 | 86  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128821 2003 UE <sub>278</sub> |
| 2003 UB <sub>279</sub> | 16.1 | 0.15 | 20071027 | 329.89111 | 33.53377  | 52.98614  | 13.26846 | 0.2219341 | 2.5538767 | 139 | 3 | 1999-2007 | 0.46 | M-v | 2 | MPC | 128821 2003 UB <sub>279</sub> |
| 2003 UO <sub>279</sub> | 16.8 | 0.15 | 20071027 | 324.85100 | 2.78959   | 91.94077  | 5.17939  | 0.2495245 | 2.4704818 | 101 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128821 2003 UO <sub>279</sub> |
| 2003 UH <sub>281</sub> | 17.9 | 0.15 | 20071027 | 41.23591  | 170.62743 | 240.56836 | 0.63765  | 0.1807912 | 2.3312982 | 52  | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 128822 2003 UH <sub>281</sub> |
| 2003 UH <sub>282</sub> | 16.2 | 0.15 | 20071027 | 118.17491 | 211.04529 | 110.20085 | 6.07279  | 0.0825068 | 2.3458674 | 73  | 6 | 2001-2007 | 0.57 | M-v | 1 | MPC | 104271 2003 UH <sub>282</sub> |
| 2003 UM <sub>283</sub> | 16.9 | 0.15 | 20071027 | 32.44996  | 102.37048 | 331.58436 | 5.22198  | 0.1864981 | 2.3093912 | 67  | 5 | 1994-2007 | 0.35 | M-v | 1 | MPC | 111000 2003 UM <sub>283</sub> |
| 2003 UQ <sub>283</sub> | 15.3 | 0.15 | 20071027 | 355.92615 | 130.09597 | 257.74055 | 10.87952 | 0.1836197 | 2.6225597 | 124 | 3 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128822 2003 UQ <sub>283</sub> |
| 2003 UA <sub>291</sub> | 17.5 | 0.15 | 20071027 | 42.56943  | 222.21287 | 150.24096 | 1.48945  | 0.2042055 | 2.4164810 | 32  | 4 | 1999-2007 | 0.38 | M-v | 2 | MPC | 77740 2003 UA <sub>291</sub>  |
| 2003 UN <sub>297</sub> | 16.9 | 0.15 | 20071027 | 314.79960 | 144.59886 | 9.47145   | 6.29657  | 0.1249461 | 2.2575433 | 42  | 5 | 1998-2007 | 0.59 | M-v | 1 | MPC | 111001 2003 UN <sub>297</sub> |
| 2003 UT <sub>302</sub> | 17.1 | 0.15 | 20071027 | 109.40644 | 42.04741  | 229.86330 | 5.58736  | 0.1681157 | 2.4483552 | 49  | 4 | 1998-2007 | 0.28 | M-v | 1 | MPC | 128822 2003 UT <sub>302</sub> |
| 2003 UW <sub>303</sub> | 17.6 | 0.15 | 20071027 | 338.97887 | 107.25874 | 354.02911 | 6.37004  | 0.1961850 | 2.3993648 | 25  | 4 | 1999-2007 | 0.39 | M-v | 1 | MPC | 111001 2003 UW <sub>303</sub> |
| 2003 UO <sub>304</sub> | 16.4 | 0.15 | 20071027 | 337.84813 | 0.42263   | 62.42408  | 9.87718  | 0.0804525 | 2.4673285 | 45  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128822 2003 UO <sub>304</sub> |
| 2003 UV <sub>307</sub> | 17.1 | 0.15 | 20071027 | 314.70625 | 272.50894 | 204.55854 | 9.99447  | 0.1906684 | 2.4554534 | 42  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128067 2003 UV <sub>307</sub> |
| 2003 UX <sub>308</sub> | 17.0 | 0.15 | 20071027 | 76.52559  | 262.89981 | 52.32396  | 2.89155  | 0.1547832 | 2.4473105 | 70  | 5 | 2002-2007 | 0.39 | M-v | 0 | MPC | 128822 2003 UX <sub>308</sub> |
| 2003 UN <sub>314</sub> | 15.6 | 0.15 | 20071027 | 339.61519 | 298.91312 | 152.55789 | 10.78375 | 0.2005896 | 2.5325526 | 53  | 5 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128822 2003 UN <sub>314</sub> |
| 2003 UR <sub>314</sub> | 18.8 | 0.15 | 20071027 | 24.45500  | 47.73628  | 356.73568 | 0.98650  | 0.1851965 | 2.4363353 | 24  | 4 | 1995-2007 | 0.47 | M-v | 3 | MPC | 108789 2003 UR <sub>314</sub> |
| 2003 UD <sub>315</sub> | 15.8 | 0.15 | 20071027 | 44.08821  | 310.10300 | 42.25035  | 11.45888 | 0.0984588 | 2.5850414 | 94  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128822 2003 UD <sub>315</sub> |
| 2003 US <sub>315</sub> | 18.1 | 0.15 | 20071027 | 3.06795   | 308.79363 | 96.37819  | 5.05984  | 0.1831677 | 2.4514526 | 38  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128068 2003 US <sub>315</sub> |
| 2003 UZ <sub>315</sub> | 16.7 | 0.15 | 20071027 | 23.02703  | 278.92030 | 91.09779  | 2.24950  | 0.1747582 | 2.5163141 | 85  | 5 | 1991-2007 | 0.54 | M-v | 1 | MPC | 128822 2003 UZ <sub>315</sub> |
| 2003 UP <sub>316</sub> | 16.2 | 0.15 | 20071027 | 17.82437  | 238.08775 | 118.76368 | 4.86343  | 0.2850309 | 2.5999203 | 93  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128822 2003 UP <sub>316</sub> |
| 2003 UF <sub>372</sub> | 17.8 | 0.15 | 20071027 | 33.92125  | 152.34606 | 211.15821 | 7.18655  | 0.1282883 | 2.3851491 | 42  | 2 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128069 2003 UF <sub>372</sub> |
| 2003 UG <sub>374</sub> | 19.1 | 0.15 | 20071027 | 21.61944  | 154.30821 | 217.92815 | 1.91550  | 0.1867461 | 2.4222675 | 22  | 2 | 2003-2007 | 0.30 | M-v | 2 | MPC | 128070 2003 UG <sub>374</sub> |
| 2003 UH <sub>375</sub> | 17.0 | 0.15 | 20071027 | 335.65266 | 210.95486 | 227.37824 | 4.97383  | 0.0617742 | 2.3457106 | 72  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 128070 2003 UH <sub>375</sub> |
| 2003 UR <sub>375</sub> | 17.3 | 0.15 | 20071027 | 324.20956 | 120.08017 | 333.50407 | 5.33428  | 0.0579903 | 2.3369652 | 30  | 3 | 2003-2007 | 0.50 | M-v | 1 | MPC | 128822 2003 UR <sub>375</sub> |
| 2003 US <sub>376</sub> | 17.8 | 0.15 | 20071027 | 335.19951 | 170.92796 | 255.27338 | 0.65048  | 0.1752636 | 2.4529943 | 41  | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128070 2003 US <sub>376</sub> |
| 2003 UD <sub>377</sub> | 18.3 | 0.15 | 20071027 | 357.93532 | 198.59125 | 203.22682 | 2.07810  | 0.1864955 | 2.4427382 | 30  | 2 | 2003-2007 | 0.28 | M-v | 2 | MPC | 128822 2003 UD <sub>377</sub> |
| 2003 UJ <sub>381</sub> | 16.9 | 0.15 | 20071027 | 240.73652 | 119.09750 | 45.23425  | 7.26801  | 0.0470162 | 2.4154499 | 57  | 3 | 2003-2007 | 0.41 | M-v | 2 | MPC | 128070 2003 UJ <sub>381</sub> |
| 2003 UD <sub>391</sub> | 16.7 | 0.15 | 20071027 | 212.11557 | 119.32764 | 65.50212  | 2.28657  | 0.0514515 | 2.5339286 | 45  | 2 | 2003-2007 | 0.40 | M-v | 4 | MPC | 128071 2003 UD <sub>391</sub> |
| 2003 VF                | 16.3 | 0.15 | 20071027 | 36.92517  | 47.59190  | 291.26129 | 12.93353 | 0.1597610 | 2.5775143 | 62  | 2 | 2003-2007 | 0.52 | M-v | 4 | MPC | 128071 2003 VF                |
| 2003 VB <sub>2</sub>   | 16.5 | 0.15 | 20071027 | 347.99787 | 106.05490 | 357.21786 | 10.26264 | 0.2020878 | 2.3957481 | 54  | 3 | 1999-2007 | 0.56 | M-v | 3 | MPC | 128822 2003 VB <sub>2</sub>   |
| 2003 VZ <sub>2</sub>   | 17.0 | 0.15 | 20071027 | 88.24229  | 248.83781 | 78.02141  | 5.15142  | 0.1492120 | 2.4074934 | 29  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 57229 2003 VZ <sub>2</sub>    |
| 2003 VJ <sub>3</sub>   | 16.2 | 0.15 | 20071027 | 114.72343 | 39.67654  | 236.55997 | 9.26840  | 0.1161039 | 2.5553974 | 69  | 3 | 1999-2007 | 0.42 | M-v | 3 | MPC | 128823 2003 VJ <sub>3</sub>   |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 VU <sub>3</sub>  | 15.9 | 0.15 | 20071027 | 33.83279  | 279.27930 | 69.15636  | 3.91476  | 0.2275043 | 2.5834079 | 133 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128823 2003 VU <sub>3</sub>  |
| 2003 VW <sub>3</sub>  | 16.5 | 0.15 | 20071027 | 115.07318 | 63.87412  | 250.57652 | 5.79111  | 0.1373778 | 2.3434148 | 46  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 111001 2003 VW <sub>3</sub>  |
| 2003 VB <sub>4</sub>  | 17.3 | 0.15 | 20071027 | 344.03498 | 51.12671  | 16.44774  | 7.18645  | 0.2456546 | 2.5297079 | 78  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128072 2003 VB <sub>4</sub>  |
| 2003 VA <sub>5</sub>  | 17.4 | 0.15 | 20071027 | 28.96619  | 235.05086 | 168.42141 | 1.34760  | 0.1811065 | 2.3946639 | 35  | 4 | 1999-2007 | 0.47 | M-v | 1 | MPC | 57231 2003 VA <sub>5</sub>   |
| 2003 VO <sub>5</sub>  | 16.7 | 0.15 | 20071027 | 41.32081  | 286.22205 | 52.24903  | 13.22638 | 0.1990121 | 2.5559533 | 78  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128823 2003 VO <sub>5</sub>  |
| 2003 VD <sub>7</sub>  | 17.3 | 0.15 | 20071027 | 303.13508 | 50.28331  | 44.24549  | 4.04509  | 0.1309742 | 2.6199485 | 38  | 3 | 2003-2007 | 0.26 | M-v | 2 | MPC | 128072 2003 VD <sub>7</sub>  |
| 2003 VG <sub>7</sub>  | 17.0 | 0.15 | 20071027 | 100.74412 | 274.64743 | 34.13419  | 2.16019  | 0.0537436 | 2.4922071 | 59  | 4 | 1999-2007 | 0.34 | M-v | 2 | MPC | 128823 2003 VG <sub>7</sub>  |
| 2003 VW <sub>7</sub>  | 16.1 | 0.15 | 20071027 | 318.79190 | 49.59928  | 25.65995  | 13.60522 | 0.1695174 | 2.6347020 | 100 | 3 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128823 2003 VW <sub>7</sub>  |
| 2003 VE <sub>8</sub>  | 15.4 | 0.15 | 20071027 | 356.95134 | 352.37625 | 10.61620  | 14.02261 | 0.1901616 | 2.7010853 | 105 | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128823 2003 VE <sub>8</sub>  |
| 2003 VG <sub>9</sub>  | 16.8 | 0.15 | 20071027 | 359.99624 | 340.13268 | 52.71652  | 3.89832  | 0.2245371 | 2.5693147 | 98  | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128823 2003 VG <sub>9</sub>  |
| 2003 VK <sub>9</sub>  | 15.8 | 0.15 | 20071027 | 281.52189 | 244.66254 | 236.08472 | 12.07982 | 0.1175614 | 2.6466395 | 98  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128823 2003 VK <sub>9</sub>  |
| 2003 VN <sub>9</sub>  | 16.4 | 0.15 | 20071027 | 0.65655   | 318.32518 | 65.45337  | 5.38530  | 0.2869760 | 2.5880352 | 167 | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128823 2003 VN <sub>9</sub>  |
| 2003 VU <sub>9</sub>  | 16.7 | 0.15 | 20071027 | 348.84599 | 78.70185  | 354.57106 | 5.43778  | 0.0915461 | 2.4669133 | 63  | 5 | 1999-2007 | 0.60 | M-v | 2 | MPC | 128823 2003 VU <sub>9</sub>  |
| 2003 VH <sub>10</sub> | 15.6 | 0.15 | 20071027 | 53.86771  | 331.76094 | 4.76496   | 10.58501 | 0.1255350 | 2.5456103 | 50  | 2 | 2003-2007 | 0.50 | M-v | 4 | MPC | 128072 2003 VH <sub>10</sub> |
| 2003 VJ <sub>10</sub> | 14.7 | 0.15 | 20071027 | 41.40535  | 302.06470 | 358.19363 | 12.14158 | 0.1005638 | 2.8361540 | 86  | 6 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128823 2003 VJ <sub>10</sub> |
| 2003 VN <sub>10</sub> | 17.0 | 0.15 | 20071027 | 139.94566 | 38.51638  | 264.04318 | 4.61846  | 0.1652361 | 2.2981056 | 50  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 111002 2003 VN <sub>10</sub> |
| 2003 VP <sub>10</sub> | 17.3 | 0.15 | 20071027 | 354.87706 | 9.70137   | 63.98924  | 2.28890  | 0.1650003 | 2.4512252 | 42  | 4 | 1999-2007 | 0.56 | M-v | 3 | MPC | 76185 2003 VP <sub>10</sub>  |
| 2003 VD <sub>11</sub> | 16.9 | 0.15 | 20071027 | 19.25237  | 312.71171 | 47.06531  | 4.10591  | 0.2674631 | 2.5556496 | 89  | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128823 2003 VD <sub>11</sub> |
| 2003 VH <sub>11</sub> | 16.8 | 0.15 | 20071027 | 352.00851 | 138.22433 | 261.05646 | 3.47343  | 0.2008030 | 2.5819938 | 115 | 3 | 1999-2007 | 0.44 | M-v | 2 | MPC | 128823 2003 VH <sub>11</sub> |
| 2003 VK <sub>11</sub> | 16.3 | 0.15 | 20071027 | 1.65179   | 131.96078 | 234.90006 | 11.55066 | 0.2488485 | 2.6521050 | 103 | 3 | 2003-2007 | 0.55 | M-v | 2 | MPC | 128823 2003 VK <sub>11</sub> |
| 2003 VX <sub>11</sub> | 16.3 | 0.15 | 20071027 | 64.88519  | 69.05055  | 264.58394 | 14.74044 | 0.2564962 | 2.4287797 | 56  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 128823 2003 VX <sub>11</sub> |
| 2003 VL <sub>12</sub> | 15.5 | 0.15 | 20071027 | 16.20945  | 103.11023 | 275.76328 | 14.67987 | 0.0940680 | 2.5481508 | 54  | 3 | 1999-2007 | 0.57 | M-v | 3 | MPC | 128823 2003 VL <sub>12</sub> |
| 2003 VN <sub>12</sub> | 15.8 | 0.15 | 20071027 | 25.21026  | 38.87130  | 314.34324 | 11.21026 | 0.1664567 | 2.5941485 | 47  | 2 | 2003-2007 | 0.53 | M-v | 4 | MPC | 128823 2003 VN <sub>12</sub> |
| 2003 WX               | 17.2 | 0.15 | 20071027 | 9.75042   | 211.28053 | 219.03630 | 2.50147  | 0.1569860 | 2.4055913 | 36  | 3 | 2003-2007 | 0.43 | M-v | 3 | MPC | 76187 2003 WX                |
| 2003 WD <sub>2</sub>  | 16.1 | 0.15 | 20071027 | 49.59677  | 36.14851  | 311.84405 | 1.04890  | 0.1148819 | 2.5158836 | 87  | 5 | 1997-2007 | 0.51 | M-v | 3 | MPC | 128823 2003 WD <sub>2</sub>  |
| 2003 WL <sub>3</sub>  | 17.1 | 0.15 | 20071027 | 25.19985  | 261.87779 | 105.88431 | 2.96128  | 0.2227152 | 2.5215806 | 65  | 3 | 1999-2007 | 0.47 | M-v | 3 | MPC | 128073 2003 WL <sub>3</sub>  |
| 2003 WX <sub>4</sub>  | 16.3 | 0.15 | 20071027 | 25.12832  | 79.90756  | 297.17108 | 5.03402  | 0.0672680 | 2.5220976 | 85  | 2 | 2003-2007 | 0.53 | M-v | 4 | MPC | 128073 2003 WX <sub>4</sub>  |
| 2003 WQ <sub>6</sub>  | 17.0 | 0.15 | 20071027 | 359.46054 | 17.90915  | 22.81550  | 4.52072  | 0.1785196 | 2.5418424 | 64  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128073 2003 WQ <sub>6</sub>  |
| 2003 WV <sub>7</sub>  | 15.9 | 0.15 | 20071027 | 357.57393 | 91.49661  | 276.69966 | 13.74413 | 0.1995107 | 2.6803230 | 80  | 3 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128823 2003 WV <sub>7</sub>  |
| 2003 WT <sub>8</sub>  | 16.2 | 0.15 | 20071027 | 22.55239  | 316.77860 | 24.27202  | 11.85400 | 0.0949257 | 2.6958819 | 76  | 5 | 1994-2007 | 0.51 | M-v | 1 | MPC | 128823 2003 WT <sub>8</sub>  |
| 2003 WV <sub>9</sub>  | 17.4 | 0.15 | 20071027 | 88.31664  | 37.66430  | 311.91650 | 6.21711  | 0.1444075 | 2.3368353 | 39  | 5 | 1994-2007 | 0.35 | M-v | 1 | MPC | 128823 2003 WV <sub>9</sub>  |
| 2003 WY <sub>9</sub>  | 16.7 | 0.15 | 20071027 | 313.87422 | 183.04583 | 321.07861 | 6.27530  | 0.0501551 | 2.3408199 | 42  | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 111002 2003 WY <sub>9</sub>  |
| 2003 WP <sub>10</sub> | 17.0 | 0.15 | 20071027 | 43.16848  | 91.98432  | 269.40268 | 7.83364  | 0.2350589 | 2.4533813 | 60  | 3 | 1999-2007 | 0.46 | M-v | 2 | MPC | 57249 2003 WP <sub>10</sub>  |
| 2003 WT <sub>10</sub> | 16.6 | 0.15 | 20071027 | 43.71235  | 25.41780  | 324.12558 | 5.50019  | 0.1313075 | 2.5382589 | 36  | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128823 2003 WT <sub>10</sub> |
| 2003 WZ <sub>10</sub> | 16.7 | 0.15 | 20071027 | 181.59591 | 348.07131 | 277.14654 | 5.91534  | 0.0813554 | 2.2801403 | 50  | 5 | 1998-2007 | 0.40 | M-v | 1 | MPC | 128823 2003 WZ <sub>10</sub> |
| 2003 WD <sub>12</sub> | 16.3 | 0.15 | 20071027 | 356.37112 | 162.50482 | 320.85547 | 5.24230  | 0.1638418 | 2.3129827 | 74  | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 111002 2003 WD <sub>12</sub> |
| 2003 WX <sub>14</sub> | 16.9 | 0.15 | 20071027 | 319.40180 | 14.50705  | 79.90381  | 0.37960  | 0.1287826 | 2.5235065 | 76  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128823 2003 WX <sub>14</sub> |
| 2003 WD <sub>15</sub> | 16.2 | 0.15 | 20071027 | 15.81283  | 335.58900 | 50.18233  | 10.20194 | 0.0136233 | 2.5230754 | 69  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128823 2003 WD <sub>15</sub> |
| 2003 WM <sub>15</sub> | 17.0 | 0.15 | 20071027 | 88.62919  | 108.23653 | 228.56177 | 4.92151  | 0.1052750 | 2.3749584 | 32  | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 114052 2003 WM <sub>15</sub> |
| 2003 WN <sub>15</sub> | 17.6 | 0.15 | 20071027 | 272.26565 | 326.92983 | 219.97844 | 4.18717  | 0.0888121 | 2.3128263 | 36  | 4 | 1996-2007 | 0.35 | M-v | 1 | MPC | 76191 2003 WN <sub>15</sub>  |
| 2003 WB <sub>17</sub> | 15.6 | 0.15 | 20071027 | 264.96820 | 236.29625 | 273.09674 | 13.07217 | 0.0396698 | 2.5329392 | 68  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 128824 2003 WB <sub>17</sub> |
| 2003 WL <sub>18</sub> | 17.0 | 0.15 | 20071027 | 25.33655  | 72.86513  | 340.49956 | 7.07300  | 0.0959092 | 2.3970905 | 41  | 4 | 1999-2007 | 0.49 | M-v | 1 | MPC | 57255 2003 WL <sub>18</sub>  |
| 2003 WE <sub>19</sub> | 15.8 | 0.15 | 20071027 | 17.17925  | 94.14146  | 261.76650 | 13.55241 | 0.1569350 | 2.6379837 | 49  | 3 | 2003-2007 | 0.55 | M-v | 3 | MPC | 128074 2003 WE <sub>19</sub> |
| 2003 WG <sub>19</sub> | 17.4 | 0.15 | 20071027 | 26.05459  | 100.44061 | 313.17604 | 5.10557  | 0.0829582 | 2.3949688 | 40  | 5 | 1997-2007 | 0.50 | M-v | 1 | MPC | 128824 2003 WG <sub>19</sub> |
| 2003 WX <sub>19</sub> | 15.6 | 0.15 | 20071027 | 325.08078 | 163.39059 | 267.38624 | 13.06241 | 0.0716839 | 2.6136701 | 75  | 3 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128074 2003 WX <sub>19</sub> |
| 2003 WC <sub>20</sub> | 15.3 | 0.15 | 20071027 | 38.24890  | 301.11809 | 29.38199  | 14.22629 | 0.0776197 | 2.7139309 | 84  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128824 2003 WC <sub>20</sub> |
| 2003 WN <sub>20</sub> | 16.3 | 0.15 | 20071027 | 322.37043 | 153.96716 | 302.95462 | 5.40848  | 0.1703974 | 2.5452064 | 73  | 4 | 1998-2007 | 0.53 | M-v | 3 | MPC | 128824 2003 WN <sub>20</sub> |
| 2003 WC <sub>21</sub> | 16.1 | 0.15 | 20071027 | 21.97345  | 117.36569 | 251.37510 | 28.74255 | 0.2236531 | 2.5401977 | 65  | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128824 2003 WC <sub>21</sub> |
| 2003 WK <sub>21</sub> | 16.0 | 0.15 | 20071027 | 122.59534 | 253.00297 | 48.84375  | 7.54629  | 0.0990825 | 2.4283592 | 73  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 104273 2003 WK <sub>21</sub> |
| 2003 WO <sub>22</sub> | 15.6 | 0.15 | 20071027 | 264.40665 | 236.18524 | 262.34768 | 15.72407 | 0.0932755 | 2.5678643 | 59  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 128824 2003 WO <sub>22</sub> |
| 2003 WP <sub>22</sub> | 15.4 | 0.15 | 20071027 | 12.39999  | 89.52857  | 273.66431 | 12.87529 | 0.1093842 | 2.6134599 | 59  | 2 | 2003-2007 | 0.59 | M-v | 3 | MPC | 128824 2003 WP <sub>22</sub> |
| 2003 WQ <sub>22</sub> | 17.0 | 0.15 | 20071027 | 345.28323 | 154.61175 | 262.10151 | 16.77353 | 0.2843215 | 2.5473216 | 49  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128824 2003 WQ <sub>22</sub> |
| 2003 WG <sub>25</sub> | 16.8 | 0.15 | 20071027 | 354.91530 | 5.59058   | 90.80428  | 11.74721 | 0.1940596 | 2.4302911 | 56  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 76197 2003 WG <sub>25</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 WK <sub>25</sub> | 16.9 | 0.15 | 20071027 | 219.44409 | 333.18065 | 272.59795 | 5.95365  | 0.0994626 | 2.2510003 | 63  | 6 | 1998-2007 | 0.51 | M-v | 1 | MPC | 120789 2003 WK <sub>25</sub> |
| 2003 WL <sub>25</sub> | 16.7 | 0.15 | 20071027 | 61.76664  | 24.96320  | 267.18194 | 23.77180 | 0.7408046 | 2.3980971 | 71  | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128824 2003 WL <sub>25</sub> |
| 2003 WM <sub>25</sub> | 17.6 | 0.15 | 20071027 | 359.54669 | 295.09836 | 67.94364  | 12.22737 | 0.5671448 | 2.6160720 | 63  | 2 | 2003-2007 | 0.58 | M-v | 2 | MPC | 128824 2003 WM <sub>25</sub> |
| 2003 WH <sub>26</sub> | 16.0 | 0.15 | 20071027 | 42.47219  | 256.48862 | 71.94822  | 28.40685 | 0.4135399 | 2.5692156 | 99  | 3 | 2002-2007 | 0.45 | M-v | 1 | MPC | 128075 2003 WH <sub>26</sub> |
| 2003 WM <sub>27</sub> | 17.9 | 0.15 | 20071027 | 67.88724  | 340.06004 | 348.59113 | 4.02450  | 0.3485478 | 2.4009546 | 34  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 69584 2003 WM <sub>27</sub>  |
| 2003 WN <sub>28</sub> | 16.7 | 0.15 | 20071027 | 340.64057 | 140.20658 | 270.67118 | 3.03213  | 0.1391392 | 2.5903290 | 84  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128824 2003 WN <sub>28</sub> |
| 2003 WK <sub>30</sub> | 16.8 | 0.15 | 20071027 | 321.69345 | 70.26369  | 358.25528 | 3.11433  | 0.2133918 | 2.6413381 | 91  | 4 | 1996-2007 | 0.46 | M-v | 2 | MPC | 128824 2003 WK <sub>30</sub> |
| 2003 WV <sub>31</sub> | 16.1 | 0.15 | 20071027 | 73.01451  | 344.39479 | 321.71914 | 3.96668  | 0.1134752 | 2.5610648 | 68  | 5 | 1997-2007 | 0.46 | M-v | 1 | MPC | 128824 2003 WV <sub>31</sub> |
| 2003 WF <sub>32</sub> | 16.2 | 0.15 | 20071027 | 60.58324  | 274.27613 | 46.02437  | 11.18932 | 0.1393314 | 2.5902149 | 69  | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128076 2003 WF <sub>32</sub> |
| 2003 WT <sub>32</sub> | 17.0 | 0.15 | 20071027 | 106.62430 | 75.03843  | 254.36733 | 5.86336  | 0.1478369 | 2.3119773 | 37  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 114053 2003 WT <sub>32</sub> |
| 2003 WD <sub>33</sub> | 16.1 | 0.15 | 20071027 | 226.08623 | 178.12427 | 9.78674   | 4.15265  | 0.0681101 | 2.4944742 | 78  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128824 2003 WD <sub>33</sub> |
| 2003 WK <sub>33</sub> | 17.4 | 0.15 | 20071027 | 312.40613 | 187.35577 | 304.54405 | 1.27682  | 0.0747102 | 2.3921857 | 37  | 6 | 1992-2007 | 0.33 | M-v | 0 | MPC | 111003 2003 WK <sub>33</sub> |
| 2003 WR <sub>33</sub> | 15.9 | 0.15 | 20071027 | 309.78837 | 217.30588 | 256.85997 | 14.23653 | 0.0812347 | 2.5316983 | 78  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128077 2003 WR <sub>33</sub> |
| 2003 WF <sub>34</sub> | 16.8 | 0.15 | 20071027 | 317.32473 | 142.03866 | 346.57894 | 2.00752  | 0.1648926 | 2.4524858 | 43  | 4 | 1995-2007 | 0.46 | M-v | 2 | MPC | 57268 2003 WF <sub>34</sub>  |
| 2003 WJ <sub>34</sub> | 16.0 | 0.15 | 20071027 | 42.86237  | 292.13739 | 46.54305  | 9.12649  | 0.1209916 | 2.6178482 | 76  | 2 | 2003-2007 | 0.52 | M-v | 4 | MPC | 128077 2003 WJ <sub>34</sub> |
| 2003 WV <sub>34</sub> | 16.1 | 0.15 | 20071027 | 281.08069 | 254.20165 | 249.87543 | 13.94316 | 0.1266198 | 2.5396829 | 63  | 5 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128824 2003 WV <sub>34</sub> |
| 2003 WB <sub>35</sub> | 16.7 | 0.15 | 20071027 | 353.21205 | 43.09595  | 49.91229  | 7.21760  | 0.0940659 | 2.4047973 | 47  | 4 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128824 2003 WB <sub>35</sub> |
| 2003 WD <sub>35</sub> | 16.7 | 0.15 | 20071027 | 349.31687 | 0.07950   | 54.48000  | 13.41469 | 0.1398406 | 2.5635368 | 53  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128077 2003 WD <sub>35</sub> |
| 2003 WZ <sub>36</sub> | 16.4 | 0.15 | 20071027 | 40.84887  | 29.59029  | 11.37641  | 7.16000  | 0.1169259 | 2.3687626 | 51  | 4 | 1999-2007 | 0.50 | M-v | 3 | MPC | 76202 2003 WZ <sub>36</sub>  |
| 2003 WB <sub>37</sub> | 15.1 | 0.15 | 20071027 | 335.29376 | 145.10817 | 265.02132 | 12.05894 | 0.1588628 | 2.6334649 | 128 | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128824 2003 WB <sub>37</sub> |
| 2003 WY <sub>37</sub> | 15.9 | 0.15 | 20071027 | 347.62373 | 21.40917  | 11.82209  | 8.80737  | 0.0780402 | 2.6802693 | 144 | 6 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128824 2003 WY <sub>37</sub> |
| 2003 WD <sub>38</sub> | 15.9 | 0.15 | 20071027 | 336.78518 | 17.28035  | 28.29422  | 14.36181 | 0.0912343 | 2.6906670 | 79  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128825 2003 WD <sub>38</sub> |
| 2003 WG <sub>38</sub> | 16.2 | 0.15 | 20071027 | 1.24855   | 52.65602  | 325.84789 | 6.62447  | 0.2015694 | 2.6381271 | 73  | 2 | 2003-2007 | 0.56 | M-v | 3 | MPC | 128825 2003 WG <sub>38</sub> |
| 2003 WK <sub>38</sub> | 16.2 | 0.15 | 20071027 | 23.88159  | 61.47816  | 306.20897 | 5.79063  | 0.1540099 | 2.5862637 | 60  | 4 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128078 2003 WK <sub>38</sub> |
| 2003 WX <sub>40</sub> | 16.6 | 0.15 | 20071027 | 347.73464 | 138.89625 | 275.42844 | 4.13003  | 0.2655013 | 2.5731740 | 123 | 3 | 1995-2007 | 0.44 | M-v | 2 | MPC | 128825 2003 WX <sub>40</sub> |
| 2003 WA <sub>41</sub> | 16.0 | 0.15 | 20071027 | 97.09857  | 318.15575 | 337.18627 | 2.92092  | 0.2015800 | 2.5593595 | 53  | 6 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128825 2003 WA <sub>41</sub> |
| 2003 WL <sub>41</sub> | 16.5 | 0.15 | 20071027 | 1.75535   | 348.55443 | 47.47611  | 7.89408  | 0.2029996 | 2.5731245 | 134 | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128825 2003 WL <sub>41</sub> |
| 2003 WK <sub>43</sub> | 16.6 | 0.15 | 20071027 | 251.37540 | 142.40352 | 42.43701  | 4.30854  | 0.0638021 | 2.3790181 | 68  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128825 2003 WK <sub>43</sub> |
| 2003 WR <sub>43</sub> | 15.5 | 0.15 | 20071027 | 39.34828  | 14.66939  | 299.24726 | 10.50970 | 0.0930107 | 2.7524857 | 64  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128255 2003 WR <sub>43</sub> |
| 2003 WS <sub>44</sub> | 16.8 | 0.15 | 20071027 | 358.22436 | 318.92605 | 129.07112 | 8.43200  | 0.2063260 | 2.3841864 | 53  | 4 | 1997-2007 | 0.58 | M-v | 1 | MPC | 102192 2003 WS <sub>44</sub> |
| 2003 WC <sub>45</sub> | 16.2 | 0.15 | 20071027 | 353.63234 | 179.62099 | 264.80463 | 5.71455  | 0.0888757 | 2.4350775 | 60  | 6 | 1999-2007 | 0.57 | M-v | 1 | MPC | 104273 2003 WC <sub>45</sub> |
| 2003 WL <sub>46</sub> | 17.9 | 0.15 | 20071027 | 356.38980 | 178.63626 | 211.99742 | 2.35345  | 0.2383898 | 2.5537193 | 75  | 3 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128825 2003 WL <sub>46</sub> |
| 2003 WP <sub>46</sub> | 17.0 | 0.15 | 20071027 | 21.69665  | 313.46050 | 34.83481  | 3.96349  | 0.2061839 | 2.5774614 | 75  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128825 2003 WP <sub>46</sub> |
| 2003 WE <sub>49</sub> | 16.7 | 0.15 | 20071027 | 162.37150 | 149.89012 | 80.37017  | 1.11902  | 0.0475381 | 2.5504097 | 62  | 5 | 1995-2007 | 0.38 | M-v | 3 | MPC | 128825 2003 WE <sub>49</sub> |
| 2003 WW <sub>49</sub> | 16.9 | 0.15 | 20071027 | 2.92173   | 170.32618 | 307.25582 | 6.11238  | 0.2240461 | 2.2984735 | 56  | 3 | 2001-2007 | 0.39 | M-v | 1 | MPC | 57281 2003 WW <sub>49</sub>  |
| 2003 WG <sub>50</sub> | 16.5 | 0.15 | 20071027 | 28.89010  | 92.67599  | 254.97540 | 11.26491 | 0.1907539 | 2.5677102 | 86  | 3 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128825 2003 WG <sub>50</sub> |
| 2003 WK <sub>50</sub> | 16.6 | 0.15 | 20071027 | 344.40567 | 144.01241 | 263.47111 | 12.71017 | 0.2739309 | 2.6034056 | 71  | 2 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128825 2003 WK <sub>50</sub> |
| 2003 WW <sub>50</sub> | 18.0 | 0.15 | 20071027 | 303.67556 | 284.37186 | 229.14141 | 2.36613  | 0.0890767 | 2.3199148 | 30  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 76207 2003 WW <sub>50</sub>  |
| 2003 WE <sub>51</sub> | 17.8 | 0.15 | 20071027 | 300.35077 | 94.55127  | 48.16130  | 2.12826  | 0.1213284 | 2.3960103 | 26  | 4 | 1999-2007 | 0.41 | M-v | 2 | MPC | 100668 2003 WE <sub>51</sub> |
| 2003 WE <sub>52</sub> | 15.6 | 0.15 | 20071027 | 111.94139 | 30.40335  | 257.80842 | 12.50851 | 0.1186153 | 2.5576987 | 67  | 4 | 1999-2007 | 0.48 | M-v | 3 | MPC | 128825 2003 WE <sub>52</sub> |
| 2003 WF <sub>53</sub> | 17.6 | 0.15 | 20071027 | 303.98536 | 95.34330  | 41.63182  | 2.02315  | 0.1460738 | 2.4190400 | 44  | 5 | 1997-2007 | 0.32 | M-v | 0 | MPC | 128825 2003 WF <sub>53</sub> |
| 2003 WC <sub>54</sub> | 16.1 | 0.15 | 20071027 | 25.28282  | 302.92518 | 37.91077  | 11.88181 | 0.2185713 | 2.6348937 | 96  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128825 2003 WC <sub>54</sub> |
| 2003 WB <sub>55</sub> | 15.8 | 0.15 | 20071027 | 36.86751  | 63.07619  | 297.51653 | 6.20754  | 0.0752012 | 2.5763048 | 73  | 4 | 1992-2007 | 0.49 | M-v | 2 | MPC | 128825 2003 WB <sub>55</sub> |
| 2003 WM <sub>55</sub> | 15.7 | 0.15 | 20071027 | 86.55456  | 63.99456  | 256.72792 | 12.98490 | 0.0315811 | 2.5465869 | 93  | 4 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128825 2003 WM <sub>55</sub> |
| 2003 WS <sub>55</sub> | 16.2 | 0.15 | 20071027 | 344.95156 | 65.52237  | 5.24612   | 3.21554  | 0.1448596 | 2.5350722 | 106 | 5 | 2000-2007 | 0.46 | M-v | 2 | MPC | 128825 2003 WS <sub>55</sub> |
| 2003 WT <sub>55</sub> | 17.0 | 0.15 | 20071027 | 40.43980  | 85.57372  | 330.96038 | 2.03810  | 0.1568593 | 2.3379963 | 60  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128825 2003 WT <sub>55</sub> |
| 2003 WW <sub>55</sub> | 16.5 | 0.15 | 20071027 | 28.86486  | 355.50062 | 13.99691  | 6.37642  | 0.1796873 | 2.5369254 | 69  | 2 | 2003-2007 | 0.49 | M-v | 5 | MPC | 128078 2003 WW <sub>55</sub> |
| 2003 WB <sub>56</sub> | 16.1 | 0.15 | 20071027 | 333.89338 | 105.47866 | 352.98910 | 3.49515  | 0.0588144 | 2.4694764 | 72  | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 104274 2003 WB <sub>56</sub> |
| 2003 WK <sub>57</sub> | 17.4 | 0.15 | 20071027 | 40.51070  | 67.76450  | 323.19670 | 0.79667  | 0.1677452 | 2.5737672 | 48  | 2 | 2003-2007 | 0.38 | M-v | 3 | MPC | 128079 2003 WK <sub>57</sub> |
| 2003 WX <sub>57</sub> | 16.4 | 0.15 | 20071027 | 30.78167  | 117.40714 | 256.36637 | 3.07144  | 0.1064210 | 2.5145087 | 96  | 4 | 1999-2007 | 0.56 | M-v | 3 | MPC | 128825 2003 WX <sub>57</sub> |
| 2003 WA <sub>59</sub> | 17.0 | 0.15 | 20071027 | 348.65989 | 225.44010 | 226.73658 | 2.35574  | 0.1574259 | 2.4306894 | 38  | 4 | 1999-2007 | 0.46 | M-v | 3 | MPC | 76210 2003 WA <sub>59</sub>  |
| 2003 WN <sub>59</sub> | 17.0 | 0.15 | 20071027 | 28.60221  | 277.96017 | 76.84089  | 4.69571  | 0.2163921 | 2.5558047 | 69  | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128825 2003 WN <sub>59</sub> |
| 2003 WY <sub>59</sub> | 16.7 | 0.15 | 20071027 | 334.31351 | 177.06775 | 250.96763 | 0.84815  | 0.1736734 | 2.5806691 | 123 | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128825 2003 WY <sub>59</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 WN <sub>60</sub> | 16.1 | 0.15 | 20071027 | 355.14619 | 147.17192 | 246.88951 | 8.25782  | 0.1260807 | 2.6365989 | 64  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128079 2003 WN <sub>60</sub> |
| 2003 WW <sub>61</sub> | 16.5 | 0.15 | 20071027 | 343.46357 | 180.35608 | 224.67651 | 1.82095  | 0.1188267 | 2.6263003 | 96  | 3 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128825 2003 WW <sub>61</sub> |
| 2003 WH <sub>62</sub> | 16.3 | 0.15 | 20071027 | 18.31383  | 197.93237 | 231.14877 | 5.69519  | 0.1420612 | 2.3821238 | 72  | 5 | 1994-2007 | 0.53 | M-v | 1 | MPC | 111003 2003 WH <sub>62</sub> |
| 2003 WS <sub>62</sub> | 16.2 | 0.15 | 20071027 | 3.89452   | 3.15925   | 75.83571  | 6.92606  | 0.0738125 | 2.4017846 | 43  | 4 | 2003-2007 | 0.46 | M-v | 1 | MPC | 104274 2003 WS <sub>62</sub> |
| 2003 WY <sub>62</sub> | 17.2 | 0.15 | 20071027 | 348.55353 | 126.89672 | 269.24936 | 3.36572  | 0.2289688 | 2.6236148 | 61  | 3 | 1999-2007 | 0.53 | M-v | 3 | MPC | 128825 2003 WY <sub>62</sub> |
| 2003 WC <sub>63</sub> | 12.7 | 0.15 | 20071027 | 240.85410 | 241.35255 | 55.61930  | 10.47399 | 0.0287930 | 5.2608743 | 42  | 6 | 2001-2007 | 0.52 | M-v | 1 | MPC | 116258 2003 WC <sub>63</sub> |
| 2003 WK <sub>64</sub> | 16.2 | 0.15 | 20071027 | 65.68264  | 272.40949 | 64.26033  | 15.35681 | 0.1182783 | 2.5241038 | 49  | 4 | 1991-2007 | 0.62 | M-v | 4 | MPC | 128079 2003 WK <sub>64</sub> |
| 2003 WN <sub>64</sub> | 16.9 | 0.15 | 20071027 | 326.33096 | 212.77027 | 242.23732 | 2.89090  | 0.1285706 | 2.5323553 | 65  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128825 2003 WN <sub>64</sub> |
| 2003 WN <sub>65</sub> | 15.7 | 0.15 | 20071027 | 37.84471  | 279.34742 | 73.30599  | 7.11108  | 0.0924253 | 2.5964583 | 72  | 2 | 2003-2007 | 0.55 | M-v | 4 | MPC | 128080 2003 WN <sub>65</sub> |
| 2003 WM <sub>66</sub> | 15.9 | 0.15 | 20071027 | 188.23105 | 156.19064 | 47.47726  | 6.80478  | 0.2055864 | 2.7216374 | 68  | 3 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128826 2003 WM <sub>66</sub> |
| 2003 WY <sub>66</sub> | 17.1 | 0.15 | 20071027 | 321.78009 | 93.84818  | 68.06062  | 3.34681  | 0.1037571 | 2.3100391 | 37  | 6 | 1994-2007 | 0.49 | M-v | 1 | MPC | 114706 2003 WY <sub>66</sub> |
| 2003 WE <sub>67</sub> | 16.1 | 0.15 | 20071027 | 39.73744  | 76.82445  | 259.38908 | 9.21507  | 0.1778715 | 2.6363614 | 68  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128826 2003 WE <sub>67</sub> |
| 2003 WX <sub>67</sub> | 16.6 | 0.15 | 20071027 | 68.63724  | 73.89848  | 260.70932 | 2.37214  | 0.2184353 | 2.4738080 | 44  | 6 | 1999-2007 | 0.58 | M-v | 1 | MPC | 102193 2003 WX <sub>67</sub> |
| 2003 WJ <sub>68</sub> | 15.1 | 0.15 | 20071027 | 65.17537  | 243.61019 | 65.52475  | 17.99126 | 0.2230392 | 2.6240086 | 145 | 3 | 2003-2007 | 0.52 | M-v | 1 | MPC | 128826 2003 WJ <sub>68</sub> |
| 2003 WS <sub>70</sub> | 15.1 | 0.15 | 20071027 | 349.02941 | 83.29531  | 328.33059 | 13.38847 | 0.1776088 | 2.5368598 | 114 | 5 | 1974-2007 | 0.55 | M-v | 2 | MPC | 128826 2003 WS <sub>70</sub> |
| 2003 WT <sub>70</sub> | 15.6 | 0.15 | 20071027 | 320.85215 | 91.34611  | 351.34245 | 14.79249 | 0.0918056 | 2.5547139 | 51  | 4 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128826 2003 WT <sub>70</sub> |
| 2003 WE <sub>71</sub> | 15.4 | 0.15 | 20071027 | 44.22198  | 15.04795  | 323.76339 | 13.14150 | 0.1107366 | 2.5926591 | 70  | 4 | 1999-2007 | 0.46 | M-v | 3 | MPC | 128826 2003 WE <sub>71</sub> |
| 2003 WG <sub>72</sub> | 16.0 | 0.15 | 20071027 | 44.94841  | 9.99098   | 350.68859 | 4.88681  | 0.1159510 | 2.5252438 | 92  | 4 | 2001-2007 | 0.54 | M-v | 3 | MPC | 128826 2003 WG <sub>72</sub> |
| 2003 WO <sub>72</sub> | 15.4 | 0.15 | 20071027 | 350.53235 | 134.19345 | 256.55540 | 14.05799 | 0.1367146 | 2.6644916 | 84  | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128826 2003 WO <sub>72</sub> |
| 2003 WU <sub>72</sub> | 16.2 | 0.15 | 20071027 | 355.29214 | 9.25313   | 7.74621   | 5.03277  | 0.1292088 | 2.7108804 | 104 | 2 | 2003-2007 | 0.48 | M-v | 4 | MPC | 128826 2003 WU <sub>72</sub> |
| 2003 WZ <sub>72</sub> | 15.1 | 0.15 | 20071027 | 83.93100  | 279.85105 | 30.44856  | 6.74208  | 0.1769115 | 2.5539428 | 96  | 5 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128826 2003 WZ <sub>72</sub> |
| 2003 WB <sub>73</sub> | 16.4 | 0.15 | 20071027 | 4.77194   | 58.39412  | 309.51676 | 3.82116  | 0.3298274 | 2.6093665 | 145 | 2 | 2003-2007 | 0.45 | M-v | 2 | MPC | 128826 2003 WB <sub>73</sub> |
| 2003 WT <sub>73</sub> | 15.0 | 0.15 | 20071027 | 281.24842 | 108.60738 | 46.45576  | 25.07030 | 0.2443070 | 2.5901634 | 119 | 3 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128826 2003 WT <sub>73</sub> |
| 2003 WA <sub>74</sub> | 17.4 | 0.15 | 20071027 | 17.25671  | 358.80940 | 18.83424  | 6.06139  | 0.2425186 | 2.5424188 | 35  | 2 | 2003-2007 | 0.47 | M-v | 4 | MPC | 128081 2003 WA <sub>74</sub> |
| 2003 WB <sub>75</sub> | 17.0 | 0.15 | 20071027 | 67.64677  | 205.71319 | 124.85177 | 3.20387  | 0.2252395 | 2.4604557 | 46  | 4 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128826 2003 WB <sub>75</sub> |
| 2003 WX <sub>75</sub> | 17.1 | 0.15 | 20071027 | 35.81655  | 133.52637 | 288.87822 | 6.13712  | 0.0712320 | 2.2929640 | 40  | 4 | 2001-2007 | 0.36 | M-v | 1 | MPC | 128826 2003 WX <sub>75</sub> |
| 2003 WA <sub>77</sub> | 15.7 | 0.15 | 20071027 | 298.15293 | 52.97361  | 67.18997  | 11.78814 | 0.2538931 | 2.7633140 | 111 | 3 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128826 2003 WA <sub>77</sub> |
| 2003 WL <sub>79</sub> | 15.6 | 0.15 | 20071027 | 46.13310  | 17.21306  | 302.34927 | 3.93862  | 0.1259708 | 2.6876480 | 122 | 5 | 1992-2007 | 0.51 | M-v | 1 | MPC | 128826 2003 WL <sub>79</sub> |
| 2003 WS <sub>79</sub> | 15.5 | 0.15 | 20071027 | 109.30485 | 329.79667 | 265.80070 | 8.72648  | 0.0518455 | 2.9161949 | 47  | 5 | 2002-2007 | 0.47 | M-v | 0 | MPC | 124426 2003 WS <sub>79</sub> |
| 2003 WU <sub>79</sub> | 15.5 | 0.15 | 20071027 | 50.40920  | 281.48184 | 42.76470  | 12.55454 | 0.1933930 | 2.6106925 | 123 | 3 | 2003-2007 | 0.42 | M-v | 1 | MPC | 128826 2003 WU <sub>79</sub> |
| 2003 WW <sub>79</sub> | 17.7 | 0.15 | 20071027 | 356.08326 | 151.33886 | 292.72954 | 2.73039  | 0.1855911 | 2.4376902 | 44  | 5 | 1995-2007 | 0.55 | M-v | 2 | MPC | 128826 2003 WW <sub>79</sub> |
| 2003 WX <sub>79</sub> | 17.3 | 0.15 | 20071027 | 341.11027 | 53.99666  | 21.95310  | 3.01061  | 0.2147282 | 2.5321071 | 79  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128826 2003 WX <sub>79</sub> |
| 2003 WD <sub>80</sub> | 15.9 | 0.15 | 20071027 | 272.18080 | 143.13784 | 4.21166   | 4.23895  | 0.1458474 | 2.5882570 | 68  | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128826 2003 WD <sub>80</sub> |
| 2003 WE <sub>80</sub> | 15.2 | 0.15 | 20071027 | 66.90824  | 243.53064 | 56.77808  | 28.19525 | 0.2493336 | 2.6455108 | 95  | 3 | 2003-2007 | 0.55 | M-v | 1 | MPC | 128826 2003 WE <sub>80</sub> |
| 2003 WM <sub>80</sub> | 17.0 | 0.15 | 20071027 | 352.16523 | 41.01629  | 11.67020  | 2.75943  | 0.1739655 | 2.5422940 | 73  | 4 | 1993-2007 | 0.51 | M-v | 2 | MPC | 128826 2003 WM <sub>80</sub> |
| 2003 WO <sub>80</sub> | 16.1 | 0.15 | 20071027 | 333.16789 | 157.79681 | 265.94105 | 8.62317  | 0.0537555 | 2.6093991 | 52  | 3 | 2002-2007 | 0.49 | M-v | 3 | MPC | 128826 2003 WO <sub>80</sub> |
| 2003 WE <sub>81</sub> | 16.6 | 0.15 | 20071027 | 41.96499  | 23.14509  | 307.42628 | 3.87616  | 0.3248166 | 2.5502790 | 88  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128826 2003 WE <sub>81</sub> |
| 2003 WJ <sub>81</sub> | 17.3 | 0.15 | 20071027 | 45.32275  | 5.68300   | 16.37913  | 2.09703  | 0.1437455 | 2.4316540 | 40  | 6 | 1995-2007 | 0.45 | M-v | 2 | MPC | 95144 2003 WJ <sub>81</sub>  |
| 2003 WJ <sub>83</sub> | 15.5 | 0.15 | 20071027 | 27.95637  | 334.37530 | 26.07980  | 15.09718 | 0.1867301 | 2.5564012 | 141 | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128826 2003 WJ <sub>83</sub> |
| 2003 WT <sub>83</sub> | 16.5 | 0.15 | 20071027 | 328.42020 | 333.24335 | 115.16470 | 7.22146  | 0.1881467 | 2.4605347 | 71  | 2 | 2003-2007 | 0.55 | M-v | 3 | MPC | 128081 2003 WT <sub>83</sub> |
| 2003 WH <sub>84</sub> | 16.9 | 0.15 | 20071027 | 6.15626   | 143.12910 | 268.70167 | 7.22461  | 0.3348847 | 2.4597401 | 94  | 3 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128827 2003 WH <sub>84</sub> |
| 2003 WA <sub>85</sub> | 16.6 | 0.15 | 20071027 | 208.28626 | 145.67931 | 47.25977  | 9.74912  | 0.0680098 | 2.5446296 | 55  | 4 | 2001-2007 | 0.39 | M-v | 2 | MPC | 128827 2003 WA <sub>85</sub> |
| 2003 WZ <sub>85</sub> | 15.6 | 0.15 | 20071027 | 333.59934 | 0.85978   | 65.28836  | 13.67069 | 0.2609605 | 2.6789995 | 105 | 2 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128081 2003 WZ <sub>85</sub> |
| 2003 WO <sub>86</sub> | 15.7 | 0.15 | 20071027 | 300.99140 | 207.30113 | 247.37200 | 21.20094 | 0.0429005 | 2.6571541 | 65  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 128827 2003 WO <sub>86</sub> |
| 2003 WU <sub>86</sub> | 16.1 | 0.15 | 20071027 | 15.19950  | 94.76025  | 245.41987 | 6.84255  | 0.3583962 | 2.6471798 | 116 | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128827 2003 WU <sub>86</sub> |
| 2003 WH <sub>90</sub> | 17.0 | 0.15 | 20071027 | 315.23814 | 352.79165 | 126.92384 | 2.62903  | 0.1275321 | 2.4462606 | 36  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 104274 2003 WH <sub>90</sub> |
| 2003 WT <sub>91</sub> | 16.8 | 0.15 | 20071027 | 332.80228 | 6.57297   | 77.13001  | 5.73196  | 0.2092447 | 2.5403053 | 68  | 3 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128827 2003 WT <sub>91</sub> |
| 2003 WE <sub>92</sub> | 16.5 | 0.15 | 20071027 | 45.34031  | 260.71676 | 139.44058 | 3.07639  | 0.1960594 | 2.3580690 | 60  | 5 | 2001-2007 | 0.38 | M-v | 1 | MPC | 128827 2003 WE <sub>92</sub> |
| 2003 WN <sub>93</sub> | 16.8 | 0.15 | 20071027 | 340.23922 | 26.55116  | 17.03052  | 2.09085  | 0.1468764 | 2.6331662 | 71  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128827 2003 WN <sub>93</sub> |
| 2003 WN <sub>94</sub> | 16.2 | 0.15 | 20071027 | 300.50529 | 60.43545  | 18.77632  | 2.89870  | 0.1305270 | 2.6778001 | 55  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 76227 2003 WN <sub>94</sub>  |
| 2003 WD <sub>95</sub> | 17.2 | 0.15 | 20071027 | 340.61057 | 50.31633  | 54.29237  | 2.10215  | 0.1522214 | 2.4252342 | 55  | 5 | 1993-2007 | 0.49 | M-v | 1 | MPC | 128827 2003 WD <sub>95</sub> |
| 2003 WY <sub>96</sub> | 17.0 | 0.15 | 20071027 | 1.15768   | 289.31652 | 152.89648 | 1.72560  | 0.0969745 | 2.3870783 | 81  | 4 | 2000-2007 | 0.40 | M-v | 1 | MPC | 128827 2003 WY <sub>96</sub> |
| 2003 WP <sub>97</sub> | 18.0 | 0.15 | 20071027 | 354.42420 | 349.64496 | 69.83191  | 10.41451 | 0.3365285 | 2.5049268 | 65  | 2 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128082 2003 WP <sub>97</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 WZ <sub>97</sub>  | 15.6 | 0.15 | 20071027 | 8.24881   | 323.29228 | 81.56924  | 7.94153  | 0.3461378 | 2.5822181 | 140 | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128827 2003 WZ <sub>97</sub>  |
| 2003 WC <sub>98</sub>  | 16.0 | 0.15 | 20071027 | 331.74227 | 284.03294 | 146.41676 | 8.55604  | 0.2862896 | 2.6948060 | 58  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 126693 2003 WC <sub>98</sub>  |
| 2003 WN <sub>98</sub>  | 15.5 | 0.15 | 20071027 | 315.60674 | 236.08103 | 274.20291 | 20.74394 | 0.3291244 | 2.3749761 | 68  | 4 | 2001-2007 | 0.39 | M-v | 1 | MPC | 128827 2003 WN <sub>98</sub>  |
| 2003 WA <sub>99</sub>  | 16.9 | 0.15 | 20071027 | 4.50469   | 43.12439  | 342.80490 | 3.84433  | 0.2987025 | 2.5460228 | 121 | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128827 2003 WA <sub>99</sub>  |
| 2003 WH <sub>99</sub>  | 17.1 | 0.15 | 20071027 | 305.76876 | 163.06308 | 346.10860 | 2.07012  | 0.1579927 | 2.4174709 | 54  | 7 | 1997-2007 | 0.50 | M-v | 1 | MPC | 111004 2003 WH <sub>99</sub>  |
| 2003 WT <sub>99</sub>  | 15.3 | 0.15 | 20071027 | 352.99814 | 110.20178 | 286.74667 | 12.31793 | 0.0592499 | 2.5984624 | 66  | 5 | 1999-2007 | 0.59 | M-v | 2 | MPC | 128827 2003 WT <sub>99</sub>  |
| 2003 WF <sub>100</sub> | 15.8 | 0.15 | 20071027 | 358.63720 | 102.66887 | 258.25303 | 13.40263 | 0.3069869 | 2.6861466 | 130 | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128827 2003 WF <sub>100</sub> |
| 2003 WJ <sub>103</sub> | 17.1 | 0.15 | 20071027 | 323.55429 | 235.94303 | 231.84413 | 3.16153  | 0.2655390 | 2.5478813 | 81  | 3 | 1999-2007 | 0.45 | M-v | 3 | MPC | 128827 2003 WJ <sub>103</sub> |
| 2003 WQ <sub>103</sub> | 16.4 | 0.15 | 20071027 | 346.03879 | 162.02330 | 242.01267 | 2.33153  | 0.2571558 | 2.6166738 | 128 | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 128827 2003 WQ <sub>103</sub> |
| 2003 WG <sub>104</sub> | 16.8 | 0.15 | 20071027 | 352.50461 | 332.66502 | 79.19345  | 5.60254  | 0.2577448 | 2.5611745 | 96  | 2 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128827 2003 WG <sub>104</sub> |
| 2003 WU <sub>104</sub> | 14.9 | 0.15 | 20071027 | 7.48820   | 106.12347 | 245.81867 | 17.13149 | 0.1964814 | 2.7393657 | 127 | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128827 2003 WU <sub>104</sub> |
| 2003 WZ <sub>104</sub> | 16.8 | 0.15 | 20071027 | 355.44732 | 60.18714  | 352.44236 | 2.00971  | 0.1023982 | 2.5724938 | 55  | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128083 2003 WZ <sub>104</sub> |
| 2003 WF <sub>105</sub> | 16.4 | 0.15 | 20071027 | 282.22166 | 78.09700  | 63.88870  | 5.32324  | 0.1688082 | 2.5886874 | 51  | 3 | 2003-2007 | 0.69 | M-v | 3 | MPC | 128083 2003 WF <sub>105</sub> |
| 2003 WK <sub>105</sub> | 17.9 | 0.15 | 20071027 | 338.18972 | 189.64236 | 249.43228 | 11.26221 | 0.2489426 | 2.5559237 | 49  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128083 2003 WK <sub>105</sub> |
| 2003 WV <sub>105</sub> | 17.0 | 0.15 | 20071027 | 307.37933 | 245.14812 | 269.70287 | 4.50958  | 0.0762992 | 2.3808965 | 36  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128827 2003 WV <sub>105</sub> |
| 2003 WY <sub>105</sub> | 16.5 | 0.15 | 20071027 | 308.12574 | 58.70573  | 74.35163  | 12.58161 | 0.2542057 | 2.5391754 | 62  | 3 | 1999-2007 | 0.51 | M-v | 3 | MPC | 128827 2003 WY <sub>105</sub> |
| 2003 WS <sub>106</sub> | 16.1 | 0.15 | 20071027 | 0.05122   | 334.64824 | 60.26217  | 14.87286 | 0.1276172 | 2.6097058 | 95  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128827 2003 WS <sub>106</sub> |
| 2003 WN <sub>107</sub> | 15.7 | 0.15 | 20071027 | 343.22004 | 57.10553  | 41.19024  | 16.68192 | 0.1826046 | 2.5409439 | 61  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 128827 2003 WN <sub>107</sub> |
| 2003 WU <sub>107</sub> | 16.1 | 0.15 | 20071027 | 334.82049 | 302.13750 | 139.99604 | 5.45315  | 0.2171819 | 2.5642485 | 94  | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128827 2003 WU <sub>107</sub> |
| 2003 WX <sub>107</sub> | 16.4 | 0.15 | 20071027 | 346.25422 | 137.91651 | 252.58587 | 5.18487  | 0.0584524 | 2.7387224 | 54  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 126693 2003 WX <sub>107</sub> |
| 2003 WE <sub>108</sub> | 15.7 | 0.15 | 20071027 | 119.40134 | 46.99628  | 244.69743 | 5.45611  | 0.0688143 | 2.3323358 | 92  | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128827 2003 WE <sub>108</sub> |
| 2003 WU <sub>108</sub> | 17.4 | 0.15 | 20071027 | 5.81797   | 8.99346   | 9.61386   | 4.56105  | 0.2559687 | 2.5473495 | 119 | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128828 2003 WU <sub>108</sub> |
| 2003 WM <sub>109</sub> | 18.2 | 0.15 | 20071027 | 18.09061  | 137.84818 | 267.28557 | 5.73124  | 0.3169708 | 2.4321068 | 45  | 3 | 1999-2007 | 0.36 | M-v | 2 | MPC | 128828 2003 WM <sub>109</sub> |
| 2003 WP <sub>110</sub> | 16.9 | 0.15 | 20071027 | 12.64786  | 132.56819 | 245.63061 | 15.36649 | 0.1586722 | 2.5666653 | 28  | 2 | 2003-2007 | 0.57 | M-v | 4 | MPC | 128084 2003 WP <sub>110</sub> |
| 2003 WU <sub>110</sub> | 16.5 | 0.15 | 20071027 | 350.62564 | 30.86726  | 6.44585   | 3.83906  | 0.1069890 | 2.6180422 | 81  | 3 | 2003-2007 | 0.41 | M-v | 3 | MPC | 128828 2003 WU <sub>110</sub> |
| 2003 WH <sub>111</sub> | 17.0 | 0.15 | 20071027 | 64.50316  | 117.30387 | 264.51271 | 4.07087  | 0.0994697 | 2.3438409 | 43  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128828 2003 WH <sub>111</sub> |
| 2003 WP <sub>112</sub> | 17.1 | 0.15 | 20071027 | 347.64136 | 100.36057 | 295.92630 | 3.44504  | 0.1051940 | 2.6499061 | 39  | 4 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128828 2003 WP <sub>112</sub> |
| 2003 WP <sub>113</sub> | 16.0 | 0.15 | 20071027 | 312.91837 | 84.28361  | 42.61600  | 6.92774  | 0.0991355 | 2.4312349 | 65  | 4 | 2001-2007 | 0.44 | M-v | 0 | MPC | 77748 2003 WP <sub>113</sub>  |
| 2003 WX <sub>114</sub> | 15.5 | 0.15 | 20071027 | 241.68466 | 120.61009 | 48.59664  | 16.42652 | 0.1331692 | 2.6372955 | 94  | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 128828 2003 WX <sub>114</sub> |
| 2003 WJ <sub>115</sub> | 16.7 | 0.15 | 20071027 | 314.21170 | 72.12249  | 41.85580  | 4.32930  | 0.1780902 | 2.5379936 | 58  | 4 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128828 2003 WJ <sub>115</sub> |
| 2003 WS <sub>115</sub> | 16.9 | 0.15 | 20071027 | 345.83304 | 59.60537  | 34.33746  | 5.77364  | 0.2211120 | 2.4712972 | 44  | 4 | 1993-2007 | 0.52 | M-v | 2 | MPC | 57342 2003 WS <sub>115</sub>  |
| 2003 WW <sub>115</sub> | 16.1 | 0.15 | 20071027 | 340.63090 | 105.71471 | 288.82180 | 5.07997  | 0.1510619 | 2.7062099 | 107 | 5 | 1998-2007 | 0.59 | M-v | 0 | MPC | 126694 2003 WW <sub>115</sub> |
| 2003 WE <sub>116</sub> | 15.5 | 0.15 | 20071027 | 15.95734  | 346.19479 | 40.54949  | 6.73888  | 0.0882190 | 2.5758802 | 158 | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128828 2003 WE <sub>116</sub> |
| 2003 WV <sub>116</sub> | 16.2 | 0.15 | 20071027 | 336.33266 | 94.52183  | 350.11979 | 4.43325  | 0.1384234 | 2.5401140 | 86  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128828 2003 WV <sub>116</sub> |
| 2003 WL <sub>117</sub> | 16.4 | 0.15 | 20071027 | 321.16878 | 199.32685 | 307.56346 | 4.65600  | 0.1717919 | 2.3991276 | 49  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128828 2003 WL <sub>117</sub> |
| 2003 WO <sub>117</sub> | 16.0 | 0.15 | 20071027 | 305.01761 | 204.42180 | 288.93133 | 4.33910  | 0.1828463 | 2.5275840 | 81  | 3 | 1999-2007 | 0.45 | M-v | 4 | MPC | 128828 2003 WO <sub>117</sub> |
| 2003 WP <sub>117</sub> | 16.4 | 0.15 | 20071027 | 239.19827 | 285.17493 | 281.31114 | 5.34309  | 0.0589955 | 2.4373152 | 57  | 6 | 2001-2007 | 0.54 | M-v | 1 | MPC | 104275 2003 WP <sub>117</sub> |
| 2003 WB <sub>118</sub> | 15.4 | 0.15 | 20071027 | 36.77261  | 65.09454  | 282.11342 | 6.65317  | 0.2145768 | 2.5957675 | 105 | 3 | 1990-2007 | 0.50 | M-v | 3 | MPC | 128828 2003 WB <sub>118</sub> |
| 2003 WC <sub>118</sub> | 15.6 | 0.15 | 20071027 | 9.78407   | 357.99688 | 44.56789  | 8.31872  | 0.1642683 | 2.5329208 | 125 | 5 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128828 2003 WC <sub>118</sub> |
| 2003 WG <sub>118</sub> | 15.2 | 0.15 | 20071027 | 296.13492 | 223.77800 | 268.25723 | 14.08645 | 0.0870790 | 2.5361250 | 62  | 3 | 1999-2007 | 0.45 | M-v | 4 | MPC | 128085 2003 WG <sub>118</sub> |
| 2003 WQ <sub>118</sub> | 15.6 | 0.15 | 20071027 | 323.11523 | 148.63038 | 286.37413 | 8.17793  | 0.1489305 | 2.6532053 | 88  | 4 | 2000-2007 | 0.59 | M-v | 2 | MPC | 128828 2003 WQ <sub>118</sub> |
| 2003 WV <sub>118</sub> | 16.1 | 0.15 | 20071027 | 355.47115 | 32.34368  | 4.81748   | 3.03541  | 0.1157356 | 2.6433234 | 123 | 3 | 2003-2007 | 0.52 | M-v | 4 | MPC | 128828 2003 WV <sub>118</sub> |
| 2003 WQ <sub>119</sub> | 16.2 | 0.15 | 20071027 | 302.35310 | 85.38316  | 36.95560  | 4.83084  | 0.1532586 | 2.5854959 | 84  | 4 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128828 2003 WQ <sub>119</sub> |
| 2003 WR <sub>119</sub> | 15.4 | 0.15 | 20071027 | 55.64529  | 85.01431  | 266.02945 | 11.80489 | 0.1362209 | 2.5372472 | 74  | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128828 2003 WR <sub>119</sub> |
| 2003 WX <sub>119</sub> | 15.9 | 0.15 | 20071027 | 351.25950 | 351.04084 | 48.77233  | 5.41120  | 0.1268222 | 2.6580823 | 69  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128828 2003 WX <sub>119</sub> |
| 2003 WD <sub>120</sub> | 16.8 | 0.15 | 20071027 | 336.02024 | 169.46459 | 270.37282 | 7.44079  | 0.1951541 | 2.5775565 | 56  | 3 | 2000-2007 | 0.47 | M-v | 3 | MPC | 128828 2003 WD <sub>120</sub> |
| 2003 WE <sub>120</sub> | 16.8 | 0.15 | 20071027 | 52.18201  | 100.38829 | 302.62364 | 4.23444  | 0.2124043 | 2.3407109 | 50  | 4 | 2003-2007 | 0.46 | M-v | 1 | MPC | 128828 2003 WE <sub>120</sub> |
| 2003 WJ <sub>120</sub> | 15.6 | 0.15 | 20071027 | 71.28144  | 43.68415  | 306.99922 | 4.46683  | 0.1189274 | 2.4821023 | 33  | 3 | 2003-2007 | 0.55 | M-v | 4 | MPC | 76241 2003 WJ <sub>120</sub>  |
| 2003 WF <sub>121</sub> | 16.6 | 0.15 | 20071027 | 3.60203   | 353.80208 | 43.03177  | 4.84014  | 0.3164164 | 2.5584444 | 164 | 3 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128828 2003 WF <sub>121</sub> |
| 2003 WM <sub>121</sub> | 16.8 | 0.15 | 20071027 | 8.45562   | 37.04978  | 357.55847 | 5.00228  | 0.2812716 | 2.5569574 | 55  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128085 2003 WM <sub>121</sub> |
| 2003 WN <sub>121</sub> | 16.0 | 0.15 | 20071027 | 4.30336   | 128.11771 | 320.72660 | 5.54412  | 0.0971263 | 2.4304562 | 79  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128828 2003 WN <sub>121</sub> |
| 2003 WY <sub>121</sub> | 15.5 | 0.15 | 20071027 | 36.89441  | 326.71983 | 36.54411  | 5.08183  | 0.2045288 | 2.5749383 | 65  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128085 2003 WY <sub>121</sub> |
| 2003 WO <sub>122</sub> | 16.9 | 0.15 | 20071027 | 63.86411  | 35.34379  | 5.03102   | 4.61454  | 0.1407536 | 2.3000523 | 57  | 4 | 2003-2007 | 0.41 | M-v | 1 | MPC | 111005 2003 WO <sub>122</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 WQ <sub>122</sub> | 16.8 | 0.15 | 20071027 | 346.62928 | 78.85106  | 332.22422 | 3.53536  | 0.2661266 | 2.5908049 | 118 | 2 | 2003-2007 | 0.55 | M-v | 3 | MPC | 128828 2003 WQ <sub>122</sub> |
| 2003 WM <sub>123</sub> | 16.3 | 0.15 | 20071027 | 354.75190 | 124.25959 | 284.70980 | 3.68793  | 0.1944417 | 2.5821397 | 134 | 4 | 1996-2007 | 0.44 | M-v | 2 | MPC | 128828 2003 WM <sub>123</sub> |
| 2003 WP <sub>123</sub> | 16.6 | 0.15 | 20071027 | 14.33239  | 69.51047  | 309.90199 | 4.42643  | 0.2952504 | 2.5519055 | 102 | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 128828 2003 WP <sub>123</sub> |
| 2003 WW <sub>123</sub> | 15.7 | 0.15 | 20071027 | 4.86119   | 74.13971  | 304.01025 | 4.24924  | 0.1729647 | 2.6710139 | 117 | 4 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128828 2003 WW <sub>123</sub> |
| 2003 WJ <sub>124</sub> | 16.1 | 0.15 | 20071027 | 13.88419  | 109.86028 | 274.98428 | 11.53148 | 0.2084528 | 2.5957476 | 66  | 2 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128085 2003 WJ <sub>124</sub> |
| 2003 WS <sub>124</sub> | 15.6 | 0.15 | 20071027 | 331.32877 | 121.09675 | 334.57395 | 3.33924  | 0.1479327 | 2.5568521 | 59  | 2 | 2003-2007 | 0.46 | M-v | 4 | MPC | 128085 2003 WS <sub>124</sub> |
| 2003 WC <sub>125</sub> | 16.5 | 0.15 | 20071027 | 13.60616  | 115.44228 | 276.02579 | 10.51799 | 0.3310111 | 2.5312490 | 57  | 3 | 1999-2007 | 0.50 | M-v | 3 | MPC | 128828 2003 WC <sub>125</sub> |
| 2003 WD <sub>125</sub> | 16.2 | 0.15 | 20071027 | 339.44623 | 163.85510 | 272.60652 | 12.06097 | 0.2600645 | 2.5957163 | 52  | 3 | 2000-2007 | 0.46 | M-v | 3 | MPC | 128828 2003 WD <sub>125</sub> |
| 2003 WF <sub>125</sub> | 15.2 | 0.15 | 20071027 | 294.69273 | 236.39440 | 270.49334 | 27.31216 | 0.1065098 | 2.5472896 | 69  | 3 | 1999-2007 | 0.57 | M-v | 3 | MPC | 128828 2003 WF <sub>125</sub> |
| 2003 WG <sub>125</sub> | 15.4 | 0.15 | 20071027 | 13.68015  | 72.21816  | 283.48693 | 12.52709 | 0.2397771 | 2.7379775 | 52  | 3 | 1993-2007 | 0.49 | M-v | 3 | MPC | 128828 2003 WG <sub>125</sub> |
| 2003 WJ <sub>125</sub> | 15.5 | 0.15 | 20071027 | 42.23101  | 15.14754  | 343.69215 | 4.45005  | 0.2576773 | 2.5556773 | 78  | 5 | 1997-2007 | 0.61 | M-v | 2 | MPC | 77749 2003 WJ <sub>125</sub>  |
| 2003 WP <sub>125</sub> | 16.1 | 0.15 | 20071027 | 17.43210  | 352.49047 | 35.14038  | 6.74660  | 0.3003388 | 2.5496994 | 83  | 5 | 1999-2007 | 0.53 | M-v | 2 | MPC | 128828 2003 WP <sub>125</sub> |
| 2003 WD <sub>126</sub> | 16.5 | 0.15 | 20071027 | 327.87783 | 94.27059  | 20.47047  | 5.95674  | 0.2288558 | 2.5576724 | 53  | 4 | 2000-2007 | 0.45 | M-v | 3 | MPC | 128828 2003 WD <sub>126</sub> |
| 2003 WH <sub>126</sub> | 16.5 | 0.15 | 20071027 | 348.47893 | 14.94948  | 44.16367  | 6.38481  | 0.3248872 | 2.6083306 | 110 | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128828 2003 WH <sub>126</sub> |
| 2003 WM <sub>126</sub> | 16.4 | 0.15 | 20071027 | 352.78206 | 45.65303  | 20.51209  | 5.33575  | 0.3018920 | 2.5736526 | 96  | 2 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128828 2003 WM <sub>126</sub> |
| 2003 WN <sub>126</sub> | 14.7 | 0.15 | 20071027 | 263.78752 | 97.23279  | 83.98120  | 12.35138 | 0.4070964 | 2.7748222 | 149 | 7 | 1972-2007 | 0.47 | M-v | 1 | MPC | 128828 2003 WN <sub>126</sub> |
| 2003 WU <sub>126</sub> | 16.5 | 0.15 | 20071027 | 341.27094 | 0.02438   | 63.28155  | 14.88742 | 0.2545506 | 2.6289872 | 92  | 2 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128086 2003 WU <sub>126</sub> |
| 2003 WA <sub>127</sub> | 15.4 | 0.15 | 20071027 | 235.85044 | 124.32600 | 71.37086  | 14.25199 | 0.0933184 | 2.6204114 | 92  | 4 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128829 2003 WA <sub>127</sub> |
| 2003 WJ <sub>127</sub> | 15.8 | 0.15 | 20071027 | 294.51222 | 67.05156  | 68.15968  | 12.92732 | 0.2360717 | 2.6701743 | 63  | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 128829 2003 WJ <sub>127</sub> |
| 2003 WS <sub>127</sub> | 15.9 | 0.15 | 20071027 | 36.15799  | 350.70046 | 23.09780  | 3.85186  | 0.2211102 | 2.5439534 | 65  | 4 | 1997-2007 | 0.44 | M-v | 2 | MPC | 128829 2003 WS <sub>127</sub> |
| 2003 WV <sub>127</sub> | 15.4 | 0.15 | 20071027 | 317.62624 | 334.80093 | 74.18115  | 15.02706 | 0.2023621 | 2.8948224 | 28  | 3 | 1998-2007 | 0.48 | M-v | 2 | MPC | 125969 2003 WV <sub>127</sub> |
| 2003 WW <sub>127</sub> | 15.7 | 0.15 | 20071027 | 252.97002 | 162.77137 | 17.86072  | 14.09972 | 0.1746324 | 2.6460099 | 51  | 7 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128829 2003 WW <sub>127</sub> |
| 2003 WL <sub>129</sub> | 16.4 | 0.15 | 20071027 | 62.90582  | 197.53284 | 123.16709 | 1.55666  | 0.1555478 | 2.5541247 | 90  | 4 | 2003-2007 | 0.48 | M-v | 0 | MPC | 128829 2003 WL <sub>129</sub> |
| 2003 WH <sub>130</sub> | 16.6 | 0.15 | 20071027 | 338.68747 | 18.86147  | 39.20743  | 7.25857  | 0.2546883 | 2.6365287 | 94  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128829 2003 WH <sub>130</sub> |
| 2003 WK <sub>130</sub> | 16.8 | 0.15 | 20071027 | 1.58749   | 331.46881 | 54.84231  | 6.65663  | 0.2314049 | 2.6079534 | 72  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128829 2003 WK <sub>130</sub> |
| 2003 WV <sub>131</sub> | 15.7 | 0.15 | 20071027 | 77.66583  | 196.13757 | 124.81982 | 1.47638  | 0.1212217 | 2.5413304 | 102 | 4 | 1999-2007 | 0.63 | M-v | 4 | MPC | 128829 2003 WV <sub>131</sub> |
| 2003 WH <sub>132</sub> | 16.3 | 0.15 | 20071027 | 307.36126 | 49.50290  | 66.75621  | 5.04158  | 0.2210210 | 2.5793947 | 92  | 4 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128829 2003 WH <sub>132</sub> |
| 2003 WM <sub>132</sub> | 16.1 | 0.15 | 20071027 | 49.27250  | 116.86465 | 240.47395 | 7.87284  | 0.0403638 | 2.5608369 | 57  | 3 | 2002-2007 | 0.44 | M-v | 2 | MPC | 128086 2003 WM <sub>132</sub> |
| 2003 WU <sub>132</sub> | 16.8 | 0.15 | 20071027 | 0.82516   | 203.83772 | 242.90208 | 2.20790  | 0.1503936 | 2.4055419 | 50  | 4 | 1997-2007 | 0.53 | M-v | 1 | MPC | 126694 2003 WU <sub>132</sub> |
| 2003 WY <sub>133</sub> | 17.1 | 0.15 | 20071027 | 17.25940  | 129.37259 | 247.60631 | 1.96188  | 0.1735162 | 2.5597637 | 99  | 4 | 1999-2007 | 0.42 | M-v | 2 | MPC | 128829 2003 WY <sub>133</sub> |
| 2003 WB <sub>134</sub> | 16.3 | 0.15 | 20071027 | 336.75041 | 359.31882 | 62.85539  | 15.58319 | 0.1798621 | 2.6093624 | 74  | 2 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128829 2003 WB <sub>134</sub> |
| 2003 WM <sub>134</sub> | 16.5 | 0.15 | 20071027 | 33.50476  | 298.00670 | 61.69392  | 4.26075  | 0.1726908 | 2.5594348 | 114 | 6 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128829 2003 WM <sub>134</sub> |
| 2003 WN <sub>134</sub> | 15.6 | 0.15 | 20071027 | 84.49279  | 245.81111 | 63.56144  | 8.91639  | 0.1570416 | 2.5614585 | 76  | 2 | 2003-2007 | 0.56 | M-v | 4 | MPC | 128087 2003 WN <sub>134</sub> |
| 2003 WQ <sub>134</sub> | 16.9 | 0.15 | 20071027 | 341.35317 | 194.06539 | 240.75961 | 10.14000 | 0.2169732 | 2.5474902 | 96  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128087 2003 WQ <sub>134</sub> |
| 2003 WW <sub>134</sub> | 17.0 | 0.15 | 20071027 | 334.59607 | 188.21790 | 240.41125 | 10.49286 | 0.2155050 | 2.6040345 | 68  | 2 | 2003-2007 | 0.63 | M-v | 3 | MPC | 128087 2003 WW <sub>134</sub> |
| 2003 WC <sub>135</sub> | 16.8 | 0.15 | 20071027 | 4.65809   | 129.01879 | 264.23782 | 1.29551  | 0.1986688 | 2.5743298 | 71  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128087 2003 WC <sub>135</sub> |
| 2003 WJ <sub>135</sub> | 16.2 | 0.15 | 20071027 | 13.21741  | 208.90487 | 189.43711 | 1.31493  | 0.0883004 | 2.5411870 | 91  | 5 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128829 2003 WJ <sub>135</sub> |
| 2003 WQ <sub>135</sub> | 16.5 | 0.15 | 20071027 | 345.12075 | 217.25326 | 209.31039 | 0.94968  | 0.2134504 | 2.5623843 | 158 | 5 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128829 2003 WQ <sub>135</sub> |
| 2003 WU <sub>135</sub> | 15.5 | 0.15 | 20071027 | 21.76988  | 121.23010 | 249.69551 | 12.79645 | 0.1498683 | 2.5970925 | 120 | 3 | 1990-2007 | 0.53 | M-v | 3 | MPC | 128829 2003 WU <sub>135</sub> |
| 2003 WX <sub>135</sub> | 17.1 | 0.15 | 20071027 | 58.52339  | 11.12225  | 9.84940   | 1.58306  | 0.1751576 | 2.3808694 | 41  | 4 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128829 2003 WX <sub>135</sub> |
| 2003 WB <sub>136</sub> | 16.4 | 0.15 | 20071027 | 337.44004 | 27.59730  | 59.32033  | 6.45971  | 0.1707381 | 2.5357390 | 66  | 3 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128829 2003 WB <sub>136</sub> |
| 2003 WC <sub>136</sub> | 16.1 | 0.15 | 20071027 | 8.03448   | 327.69142 | 65.75794  | 3.53242  | 0.1548505 | 2.5741793 | 148 | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128829 2003 WC <sub>136</sub> |
| 2003 WK <sub>136</sub> | 16.9 | 0.15 | 20071027 | 23.92612  | 301.23502 | 69.28496  | 15.06127 | 0.2812558 | 2.5350748 | 69  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128088 2003 WK <sub>136</sub> |
| 2003 WN <sub>136</sub> | 16.6 | 0.15 | 20071027 | 12.44088  | 302.35148 | 69.98472  | 12.67816 | 0.2863721 | 2.5802195 | 91  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128829 2003 WN <sub>136</sub> |
| 2003 WD <sub>137</sub> | 16.7 | 0.15 | 20071027 | 341.82790 | 35.09474  | 50.39291  | 2.67135  | 0.1917033 | 2.5268839 | 60  | 4 | 1999-2007 | 0.47 | M-v | 3 | MPC | 128829 2003 WD <sub>137</sub> |
| 2003 WM <sub>137</sub> | 16.4 | 0.15 | 20071027 | 9.05500   | 140.66101 | 256.13618 | 7.63969  | 0.2635775 | 2.5331776 | 128 | 3 | 1999-2007 | 0.47 | M-v | 2 | MPC | 128829 2003 WM <sub>137</sub> |
| 2003 WO <sub>137</sub> | 15.8 | 0.15 | 20071027 | 23.18563  | 104.49709 | 250.15339 | 11.04159 | 0.2233194 | 2.6363225 | 99  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128829 2003 WO <sub>137</sub> |
| 2003 WS <sub>137</sub> | 16.3 | 0.15 | 20071027 | 56.22202  | 116.24908 | 228.38770 | 4.02755  | 0.1991473 | 2.5247442 | 70  | 6 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128829 2003 WS <sub>137</sub> |
| 2003 WW <sub>137</sub> | 15.5 | 0.15 | 20071027 | 29.25277  | 303.96764 | 68.32098  | 8.60050  | 0.1455446 | 2.5692898 | 116 | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 128829 2003 WW <sub>137</sub> |
| 2003 WA <sub>138</sub> | 15.9 | 0.15 | 20071027 | 7.91015   | 337.68097 | 67.92152  | 3.92677  | 0.1475797 | 2.5443086 | 89  | 4 | 2000-2007 | 0.31 | M-v | 3 | MPC | 128829 2003 WA <sub>138</sub> |
| 2003 WE <sub>139</sub> | 15.8 | 0.15 | 20071027 | 359.25311 | 330.58573 | 71.09951  | 5.35800  | 0.1792587 | 2.6014155 | 117 | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128829 2003 WE <sub>139</sub> |
| 2003 WX <sub>139</sub> | 15.4 | 0.15 | 20071027 | 357.82312 | 131.52429 | 254.25454 | 11.05863 | 0.2671307 | 2.6441101 | 97  | 2 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128829 2003 WX <sub>139</sub> |
| 2003 WF <sub>140</sub> | 16.6 | 0.15 | 20071027 | 338.21950 | 196.09647 | 242.79407 | 12.60890 | 0.1195396 | 2.5451272 | 44  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128088 2003 WF <sub>140</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 WW <sub>140</sub> | 15.8 | 0.15 | 20071027 | 27.50713  | 288.10829 | 89.84429  | 4.65952  | 0.1772462 | 2.5550524 | 90  | 6 | 1993-2007 | 0.52 | M-v | 2 | MPC | 128829 2003 WW <sub>140</sub> |
| 2003 WX <sub>140</sub> | 15.9 | 0.15 | 20071027 | 358.17475 | 139.90126 | 255.87433 | 11.51002 | 0.1772417 | 2.6406177 | 60  | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128088 2003 WX <sub>140</sub> |
| 2003 WL <sub>141</sub> | 15.7 | 0.15 | 20071027 | 355.59673 | 333.56100 | 69.24807  | 8.78768  | 0.1898324 | 2.6395212 | 92  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128829 2003 WL <sub>141</sub> |
| 2003 WY <sub>141</sub> | 16.2 | 0.15 | 20071027 | 338.86173 | 327.85617 | 84.25770  | 10.84770 | 0.2833259 | 2.6910949 | 44  | 2 | 2003-2007 | 0.56 | M-v | 3 | MPC | 128829 2003 WY <sub>141</sub> |
| 2003 WD <sub>142</sub> | 16.4 | 0.15 | 20071027 | 354.78449 | 342.41794 | 73.46891  | 6.47395  | 0.3561084 | 2.5757902 | 175 | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128829 2003 WD <sub>142</sub> |
| 2003 WH <sub>142</sub> | 15.6 | 0.15 | 20071027 | 297.26423 | 161.37349 | 274.00580 | 7.41752  | 0.1901382 | 2.8512276 | 32  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 123963 2003 WH <sub>142</sub> |
| 2003 WN <sub>142</sub> | 16.6 | 0.15 | 20071027 | 48.19141  | 92.02300  | 253.53527 | 3.43388  | 0.1889904 | 2.5349498 | 63  | 3 | 2003-2007 | 0.49 | M-v | 1 | MPC | 128829 2003 WN <sub>142</sub> |
| 2003 WT <sub>144</sub> | 16.8 | 0.15 | 20071027 | 318.07930 | 220.94740 | 252.28133 | 5.15146  | 0.0727891 | 2.4552061 | 33  | 3 | 2003-2007 | 0.54 | M-v | 3 | MPC | 128830 2003 WT <sub>144</sub> |
| 2003 WM <sub>145</sub> | 16.1 | 0.15 | 20071027 | 5.04815   | 143.91380 | 218.09353 | 5.13136  | 0.1205679 | 2.7048482 | 83  | 3 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128830 2003 WM <sub>145</sub> |
| 2003 WQ <sub>145</sub> | 16.4 | 0.15 | 20071027 | 36.38598  | 306.61775 | 33.94663  | 12.66547 | 0.1116158 | 2.6197559 | 100 | 2 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128830 2003 WQ <sub>145</sub> |
| 2003 WW <sub>145</sub> | 16.4 | 0.15 | 20071027 | 9.99923   | 331.48823 | 67.17429  | 3.94256  | 0.0856321 | 2.5410838 | 60  | 2 | 2003-2007 | 0.51 | M-v | 4 | MPC | 128089 2003 WW <sub>145</sub> |
| 2003 WZ <sub>145</sub> | 16.7 | 0.15 | 20071027 | 309.12810 | 10.68229  | 95.17237  | 3.32110  | 0.0686558 | 2.5446760 | 39  | 3 | 2003-2007 | 0.36 | M-v | 2 | MPC | 128830 2003 WZ <sub>145</sub> |
| 2003 WJ <sub>146</sub> | 16.2 | 0.15 | 20071027 | 8.64440   | 45.95351  | 344.95682 | 14.14312 | 0.1235121 | 2.5481058 | 38  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128830 2003 WJ <sub>146</sub> |
| 2003 WS <sub>146</sub> | 16.1 | 0.15 | 20071027 | 127.41235 | 229.00217 | 67.70398  | 6.87804  | 0.1287477 | 2.4208928 | 49  | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 103576 2003 WS <sub>146</sub> |
| 2003 WX <sub>146</sub> | 16.6 | 0.15 | 20071027 | 334.64242 | 198.98556 | 232.86228 | 4.07316  | 0.2289701 | 2.6011623 | 109 | 4 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128830 2003 WX <sub>146</sub> |
| 2003 WC <sub>147</sub> | 16.8 | 0.15 | 20071027 | 351.44233 | 306.93749 | 107.53302 | 3.53976  | 0.1969908 | 2.5604212 | 60  | 2 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128089 2003 WC <sub>147</sub> |
| 2003 WS <sub>147</sub> | 16.4 | 0.15 | 20071027 | 50.30967  | 225.47274 | 103.57380 | 9.61260  | 0.2993933 | 2.5400193 | 48  | 3 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128089 2003 WS <sub>147</sub> |
| 2003 WP <sub>148</sub> | 16.2 | 0.15 | 20071027 | 73.82476  | 45.07461  | 280.13047 | 7.41448  | 0.2293645 | 2.4575529 | 42  | 3 | 1999-2007 | 0.58 | M-v | 3 | MPC | 128830 2003 WP <sub>148</sub> |
| 2003 WW <sub>148</sub> | 17.4 | 0.15 | 20071027 | 13.08491  | 295.56882 | 151.02372 | 2.45985  | 0.1608673 | 2.3559939 | 45  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128830 2003 WW <sub>148</sub> |
| 2003 WQ <sub>149</sub> | 16.8 | 0.15 | 20071027 | 8.18514   | 163.51136 | 202.81328 | 5.88001  | 0.0497702 | 2.6991988 | 52  | 5 | 1997-2007 | 0.46 | M-v | 0 | MPC | 128830 2003 WQ <sub>149</sub> |
| 2003 WV <sub>149</sub> | 15.8 | 0.15 | 20071027 | 337.30746 | 185.53722 | 232.34395 | 21.39964 | 0.0617288 | 2.6178364 | 70  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128090 2003 WV <sub>149</sub> |
| 2003 WZ <sub>150</sub> | 16.6 | 0.15 | 20071027 | 339.30059 | 332.99645 | 103.52544 | 6.29278  | 0.1670653 | 2.5323126 | 56  | 3 | 2000-2007 | 0.53 | M-v | 3 | MPC | 128830 2003 WZ <sub>150</sub> |
| 2003 WB <sub>151</sub> | 16.0 | 0.15 | 20071027 | 348.13530 | 339.35459 | 81.20417  | 15.54846 | 0.0995571 | 2.5419606 | 69  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128830 2003 WB <sub>151</sub> |
| 2003 WV <sub>151</sub> | 15.5 | 0.15 | 20071027 | 108.41597 | 216.57945 | 71.45225  | 16.81736 | 0.1781536 | 2.6160556 | 41  | 4 | 1993-2007 | 0.59 | M-v | 1 | MPC | 128090 2003 WV <sub>151</sub> |
| 2003 WR <sub>152</sub> | 15.8 | 0.15 | 20071027 | 255.37012 | 160.11930 | 7.71261   | 14.77853 | 0.0998716 | 2.6014573 | 50  | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 76261 2003 WR <sub>152</sub>  |
| 2003 WF <sub>154</sub> | 16.3 | 0.15 | 20071027 | 69.86240  | 355.44056 | 303.31798 | 1.29651  | 0.0647936 | 2.6706217 | 65  | 6 | 1998-2007 | 0.45 | M-v | 0 | MPC | 128830 2003 WF <sub>154</sub> |
| 2003 WR <sub>155</sub> | 16.4 | 0.15 | 20071027 | 343.24179 | 19.04494  | 90.55112  | 13.49357 | 0.1440757 | 2.4004620 | 60  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128090 2003 WR <sub>155</sub> |
| 2003 WB <sub>156</sub> | 16.9 | 0.15 | 20071027 | 353.63908 | 26.68959  | 45.28695  | 6.49757  | 0.1125927 | 2.4728699 | 51  | 5 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128830 2003 WB <sub>156</sub> |
| 2003 WH <sub>156</sub> | 16.2 | 0.15 | 20071027 | 8.68642   | 211.09600 | 188.66208 | 13.41549 | 0.1697345 | 2.5495568 | 64  | 3 | 2003-2007 | 0.64 | M-v | 3 | MPC | 128830 2003 WH <sub>156</sub> |
| 2003 WR <sub>158</sub> | 17.1 | 0.15 | 20071027 | 59.72678  | 243.21995 | 124.23962 | 1.97273  | 0.1951048 | 2.3752042 | 38  | 5 | 1992-2007 | 0.58 | M-v | 1 | MPC | 126695 2003 WR <sub>158</sub> |
| 2003 WY <sub>161</sub> | 15.7 | 0.15 | 20071027 | 334.36063 | 175.77454 | 226.76242 | 16.84131 | 0.1354390 | 2.7324965 | 55  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128830 2003 WY <sub>161</sub> |
| 2003 WL <sub>162</sub> | 16.2 | 0.15 | 20071027 | 45.86452  | 273.24178 | 106.56489 | 11.45860 | 0.1767757 | 2.4177964 | 45  | 4 | 1998-2007 | 0.60 | M-v | 2 | MPC | 128830 2003 WL <sub>162</sub> |
| 2003 WW <sub>162</sub> | 16.5 | 0.15 | 20071027 | 26.76870  | 246.23969 | 128.56047 | 2.82427  | 0.1004614 | 2.5367080 | 73  | 5 | 1999-2007 | 0.48 | M-v | 3 | MPC | 128830 2003 WW <sub>162</sub> |
| 2003 WM <sub>164</sub> | 17.5 | 0.15 | 20071027 | 15.71303  | 350.67599 | 74.10635  | 3.29670  | 0.1626787 | 2.4192112 | 40  | 5 | 1995-2007 | 0.52 | M-v | 2 | MPC | 128830 2003 WM <sub>164</sub> |
| 2003 WB <sub>165</sub> | 16.3 | 0.15 | 20071027 | 42.09979  | 107.37278 | 236.09998 | 2.42014  | 0.1694889 | 2.5968179 | 106 | 3 | 2003-2007 | 0.41 | M-v | 2 | MPC | 128830 2003 WB <sub>165</sub> |
| 2003 WJ <sub>165</sub> | 17.0 | 0.15 | 20071027 | 26.63493  | 284.15034 | 77.53205  | 4.15469  | 0.2568745 | 2.5527950 | 62  | 2 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128091 2003 WJ <sub>165</sub> |
| 2003 WT <sub>169</sub> | 16.3 | 0.15 | 20071027 | 346.78059 | 260.90656 | 173.28718 | 9.73566  | 0.1256607 | 2.5174880 | 80  | 4 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128830 2003 WT <sub>169</sub> |
| 2003 WA <sub>170</sub> | 16.3 | 0.15 | 20071027 | 357.80882 | 175.33111 | 197.55518 | 11.35984 | 0.1872666 | 2.6514845 | 90  | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128831 2003 WA <sub>170</sub> |
| 2003 WR <sub>171</sub> | 16.0 | 0.15 | 20071027 | 318.08754 | 240.72022 | 121.27906 | 14.46085 | 0.0828144 | 2.5465467 | 58  | 2 | 2003-2007 | 0.55 | M-v | 4 | MPC | 128091 2003 WR <sub>171</sub> |
| 2003 WX <sub>171</sub> | 15.4 | 0.15 | 20071027 | 14.94943  | 242.65070 | 212.57863 | 16.41316 | 0.2114227 | 2.6017008 | 66  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128831 2003 WX <sub>171</sub> |
| 2003 WY <sub>171</sub> | 15.3 | 0.15 | 20071027 | 356.18248 | 272.25078 | 149.37537 | 14.46733 | 0.1170247 | 2.5204420 | 110 | 5 | 1999-2007 | 0.61 | M-v | 3 | MPC | 128831 2003 WY <sub>171</sub> |
| 2003 WR <sub>172</sub> | 15.8 | 0.15 | 20071027 | 61.45876  | 245.31310 | 86.59175  | 4.61072  | 0.0961964 | 2.5967430 | 76  | 4 | 2000-2007 | 0.52 | M-v | 3 | MPC | 128831 2003 WR <sub>172</sub> |
| 2003 WO <sub>188</sub> | 17.3 | 0.15 | 20071027 | 338.12977 | 158.11044 | 297.24692 | 1.73194  | 0.1703426 | 2.4468064 | 45  | 5 | 1999-2007 | 0.47 | M-v | 1 | MPC | 128831 2003 WO <sub>188</sub> |
| 2003 WR <sub>190</sub> | 16.4 | 0.15 | 20071027 | 331.77003 | 240.53814 | 190.67984 | 17.18344 | 0.2614759 | 2.6409336 | 118 | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128831 2003 WR <sub>190</sub> |
| 2003 WD <sub>192</sub> | 17.1 | 0.15 | 20071027 | 14.46001  | 162.76243 | 220.80787 | 8.96068  | 0.2124073 | 2.5229404 | 76  | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128831 2003 WD <sub>192</sub> |
| 2003 WE <sub>192</sub> | 16.0 | 0.15 | 20071027 | 352.56588 | 43.21630  | 332.52872 | 7.33242  | 0.3652471 | 2.6616185 | 108 | 4 | 1994-2007 | 0.55 | M-v | 1 | MPC | 128831 2003 WE <sub>192</sub> |
| 2003 WS <sub>192</sub> | 16.0 | 0.15 | 20071027 | 34.67032  | 81.13908  | 296.06485 | 11.03829 | 0.1871135 | 2.5631802 | 35  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128831 2003 WS <sub>192</sub> |
| 2003 XC                | 15.3 | 0.15 | 20071027 | 34.59686  | 325.58124 | 65.17111  | 27.75677 | 0.2901903 | 2.5527691 | 63  | 3 | 2003-2007 | 0.63 | M-v | 2 | MPC | 128831 2003 XC                |
| 2003 XM <sub>2</sub>   | 16.6 | 0.15 | 20071027 | 2.52503   | 221.85497 | 183.87298 | 2.90047  | 0.2332112 | 2.5270876 | 98  | 4 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128831 2003 XM <sub>2</sub>   |
| 2003 XV <sub>2</sub>   | 16.8 | 0.15 | 20071027 | 357.88894 | 223.54123 | 189.95138 | 3.15441  | 0.2177635 | 2.5336683 | 86  | 4 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128831 2003 XV <sub>2</sub>   |
| 2003 XB <sub>3</sub>   | 16.5 | 0.15 | 20071027 | 10.83200  | 243.78122 | 148.18795 | 4.73320  | 0.1995901 | 2.5483266 | 75  | 2 | 2003-2007 | 0.45 | M-v | 4 | MPC | 128093 2003 XB <sub>3</sub>   |
| 2003 XK <sub>3</sub>   | 16.3 | 0.15 | 20071027 | 32.74713  | 300.35507 | 110.86496 | 7.15371  | 0.0918708 | 2.4152475 | 38  | 5 | 1999-2007 | 0.40 | M-v | 1 | MPC | 108808 2003 XK <sub>3</sub>   |
| 2003 XO <sub>3</sub>   | 15.9 | 0.15 | 20071027 | 337.49787 | 184.58285 | 236.72940 | 14.05962 | 0.1928637 | 2.6333670 | 60  | 2 | 2003-2007 | 0.54 | M-v | 3 | MPC | 128093 2003 XO <sub>3</sub>   |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 XW <sub>3</sub>  | 16.9 | 0.15 | 20071027 | 359.00644 | 168.65821 | 228.85080 | 9.06124  | 0.2805214 | 2.5823100 | 96  | 2 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128093 2003 XW <sub>3</sub>  |
| 2003 XY <sub>3</sub>  | 17.1 | 0.15 | 20071027 | 355.47687 | 13.11400  | 100.49009 | 3.14226  | 0.1620922 | 2.3459365 | 61  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128831 2003 XY <sub>3</sub>  |
| 2003 XF <sub>4</sub>  | 16.3 | 0.15 | 20071027 | 0.31713   | 335.55420 | 113.44180 | 6.01943  | 0.1284380 | 2.4082730 | 68  | 6 | 2001-2007 | 0.43 | M-v | 1 | MPC | 111007 2003 XF <sub>4</sub>  |
| 2003 XR <sub>4</sub>  | 16.4 | 0.15 | 20071027 | 30.62692  | 267.24893 | 189.53541 | 2.75800  | 0.1914945 | 2.3070021 | 80  | 5 | 1999-2007 | 0.51 | M-v | 1 | MPC | 108808 2003 XR <sub>4</sub>  |
| 2003 XC <sub>5</sub>  | 16.2 | 0.15 | 20071027 | 345.43342 | 180.68600 | 247.81242 | 5.62094  | 0.3188025 | 2.6265879 | 171 | 4 | 1986-2007 | 0.46 | M-v | 1 | MPC | 128831 2003 XC <sub>5</sub>  |
| 2003 XS <sub>5</sub>  | 15.6 | 0.15 | 20071027 | 20.42403  | 37.37857  | 296.70652 | 9.72738  | 0.2830407 | 2.6365688 | 126 | 4 | 1995-2007 | 0.46 | M-v | 1 | MPC | 128831 2003 XS <sub>5</sub>  |
| 2003 XB <sub>6</sub>  | 16.0 | 0.15 | 20071027 | 17.48442  | 340.64859 | 46.99704  | 15.55309 | 0.1222876 | 2.5698437 | 139 | 3 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128831 2003 XB <sub>6</sub>  |
| 2003 XE <sub>6</sub>  | 15.3 | 0.15 | 20071027 | 5.14018   | 77.38900  | 295.21058 | 11.61268 | 0.2056053 | 2.6713709 | 74  | 3 | 1998-2007 | 0.56 | M-v | 3 | MPC | 128831 2003 XE <sub>6</sub>  |
| 2003 XD <sub>7</sub>  | 15.0 | 0.15 | 20071027 | 330.23158 | 121.76647 | 7.84452   | 31.33427 | 0.2796958 | 2.6202703 | 135 | 6 | 1998-2007 | 0.53 | M-v | 1 | MPC | 126697 2003 XD <sub>7</sub>  |
| 2003 XX <sub>7</sub>  | 16.1 | 0.15 | 20071027 | 36.88055  | 339.85457 | 8.13761   | 6.07393  | 0.3156259 | 2.5582785 | 67  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128831 2003 XX <sub>7</sub>  |
| 2003 XK <sub>8</sub>  | 15.7 | 0.15 | 20071027 | 358.33015 | 36.19076  | 348.65844 | 13.44833 | 0.1361936 | 2.6448195 | 78  | 3 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128831 2003 XK <sub>8</sub>  |
| 2003 XM <sub>8</sub>  | 15.1 | 0.15 | 20071027 | 352.09861 | 89.48457  | 328.96720 | 11.63329 | 0.2010271 | 2.5427548 | 46  | 3 | 1999-2007 | 0.54 | M-v | 3 | MPC | 86179 2003 XM <sub>8</sub>   |
| 2003 XD <sub>9</sub>  | 15.8 | 0.15 | 20071027 | 354.78753 | 56.29875  | 316.90924 | 12.05606 | 0.2777493 | 2.6793598 | 103 | 2 | 2003-2007 | 0.52 | M-v | 2 | MPC | 128831 2003 XD <sub>9</sub>  |
| 2003 XG <sub>9</sub>  | 15.5 | 0.15 | 20071027 | 4.56082   | 49.79166  | 334.22819 | 13.42907 | 0.1448572 | 2.6474184 | 83  | 3 | 2003-2007 | 0.57 | M-v | 2 | MPC | 128831 2003 XG <sub>9</sub>  |
| 2003 XN <sub>9</sub>  | 15.4 | 0.15 | 20071027 | 38.55395  | 352.10199 | 359.95919 | 12.87807 | 0.2123233 | 2.5907241 | 51  | 5 | 1999-2007 | 0.43 | M-v | 2 | MPC | 128831 2003 XN <sub>9</sub>  |
| 2003 XC <sub>10</sub> | 16.5 | 0.15 | 20071027 | 349.01473 | 57.71715  | 12.65500  | 12.53949 | 0.2491460 | 2.5698817 | 38  | 2 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128094 2003 XC <sub>10</sub> |
| 2003 XO <sub>10</sub> | 15.2 | 0.15 | 20071027 | 355.52149 | 163.91197 | 270.20395 | 21.21921 | 0.0415506 | 2.6275054 | 47  | 3 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128832 2003 XO <sub>10</sub> |
| 2003 XH <sub>11</sub> | 14.7 | 0.15 | 20071027 | 330.72769 | 110.94586 | 348.18139 | 29.46864 | 0.1771965 | 2.5871667 | 46  | 5 | 1996-2007 | 0.54 | M-v | 2 | MPC | 65520 2003 XH <sub>11</sub>  |
| 2003 XA <sub>12</sub> | 14.9 | 0.15 | 20071027 | 11.51809  | 201.57761 | 197.22264 | 12.97884 | 0.1472694 | 2.5586760 | 112 | 5 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128832 2003 XA <sub>12</sub> |
| 2003 XD <sub>12</sub> | 16.4 | 0.15 | 20071027 | 328.69918 | 342.19334 | 143.58475 | 3.93819  | 0.1266186 | 2.4280754 | 59  | 5 | 2001-2007 | 0.43 | M-v | 0 | MPC | 104277 2003 XD <sub>12</sub> |
| 2003 XQ <sub>12</sub> | 16.0 | 0.15 | 20071027 | 318.59766 | 40.21799  | 42.65411  | 14.93016 | 0.1689056 | 2.7142184 | 92  | 5 | 1996-2007 | 0.59 | M-v | 1 | MPC | 128832 2003 XQ <sub>12</sub> |
| 2003 XR <sub>12</sub> | 15.9 | 0.15 | 20071027 | 77.41942  | 316.70400 | 35.49591  | 13.78432 | 0.1163018 | 2.5194315 | 64  | 4 | 2003-2007 | 0.63 | M-v | 1 | MPC | 128832 2003 XR <sub>12</sub> |
| 2003 XQ <sub>14</sub> | 15.5 | 0.15 | 20071027 | 292.21019 | 165.92502 | 330.51244 | 11.20443 | 0.3024344 | 2.7450741 | 119 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128832 2003 XQ <sub>14</sub> |
| 2003 XA <sub>15</sub> | 15.2 | 0.15 | 20071027 | 146.57086 | 14.03181  | 303.15678 | 25.44953 | 0.2355294 | 2.3365166 | 50  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128832 2003 XA <sub>15</sub> |
| 2003 XO <sub>15</sub> | 15.5 | 0.15 | 20071027 | 25.18946  | 104.13575 | 282.05198 | 25.76951 | 0.3303092 | 2.5738141 | 50  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128094 2003 XO <sub>15</sub> |
| 2003 XQ <sub>16</sub> | 15.8 | 0.15 | 20071027 | 308.99987 | 229.17587 | 227.93471 | 11.14200 | 0.1612234 | 2.6484243 | 74  | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128832 2003 XQ <sub>16</sub> |
| 2003 XB <sub>17</sub> | 16.1 | 0.15 | 20071027 | 270.51620 | 286.81578 | 230.23048 | 7.51537  | 0.0596407 | 2.5435987 | 60  | 6 | 1999-2007 | 0.53 | M-v | 0 | MPC | 128832 2003 XB <sub>17</sub> |
| 2003 XO <sub>17</sub> | 16.4 | 0.15 | 20071027 | 136.15960 | 145.02148 | 164.30455 | 2.62976  | 0.1267063 | 2.3703663 | 113 | 6 | 1998-2007 | 0.43 | M-v | 1 | MPC | 114707 2003 XO <sub>17</sub> |
| 2003 XD <sub>18</sub> | 15.3 | 0.15 | 20071027 | 329.08907 | 17.04255  | 69.75445  | 22.76425 | 0.0614508 | 2.6564557 | 100 | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128832 2003 XD <sub>18</sub> |
| 2003 XG <sub>18</sub> | 16.1 | 0.15 | 20071027 | 16.62202  | 99.46723  | 309.61772 | 11.62555 | 0.1969053 | 2.5456092 | 47  | 4 | 2000-2007 | 0.53 | M-v | 3 | MPC | 102196 2003 XG <sub>18</sub> |
| 2003 XH <sub>18</sub> | 15.9 | 0.15 | 20071027 | 342.42811 | 89.50819  | 289.62001 | 12.20314 | 0.3012959 | 2.6877229 | 45  | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 123965 2003 XH <sub>18</sub> |
| 2003 XL <sub>19</sub> | 15.8 | 0.15 | 20071027 | 342.72155 | 47.56561  | 44.03911  | 13.92359 | 0.2214662 | 2.5801818 | 48  | 3 | 1999-2007 | 0.58 | M-v | 3 | MPC | 128832 2003 XL <sub>19</sub> |
| 2003 XM <sub>19</sub> | 16.1 | 0.15 | 20071027 | 343.87926 | 50.93008  | 30.05486  | 12.71025 | 0.2727875 | 2.6002205 | 64  | 2 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128832 2003 XM <sub>19</sub> |
| 2003 XX <sub>19</sub> | 15.8 | 0.15 | 20071027 | 333.08510 | 115.65584 | 307.60543 | 10.85602 | 0.1405555 | 2.7396841 | 59  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 128832 2003 XX <sub>19</sub> |
| 2003 XC <sub>20</sub> | 15.2 | 0.15 | 20071027 | 328.58149 | 80.70908  | 309.29796 | 9.58940  | 0.1161907 | 2.9627617 | 81  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 126697 2003 XC <sub>20</sub> |
| 2003 XM <sub>20</sub> | 15.9 | 0.15 | 20071027 | 24.45075  | 329.87444 | 32.87058  | 14.42682 | 0.2534957 | 2.6783784 | 121 | 3 | 1998-2007 | 0.44 | M-v | 2 | MPC | 128832 2003 XM <sub>20</sub> |
| 2003 XZ <sub>20</sub> | 17.0 | 0.15 | 20071027 | 300.27864 | 52.94994  | 50.47502  | 2.90822  | 0.1792100 | 2.6654975 | 58  | 4 | 1996-2007 | 0.45 | M-v | 1 | MPC | 128094 2003 XZ <sub>20</sub> |
| 2003 XJ <sub>21</sub> | 16.7 | 0.15 | 20071027 | 357.92571 | 315.10381 | 64.61195  | 7.77246  | 0.3623195 | 2.6704799 | 70  | 2 | 2003-2007 | 0.52 | M-v | 2 | MPC | 128094 2003 XJ <sub>21</sub> |
| 2003 XL <sub>21</sub> | 15.9 | 0.15 | 20071027 | 330.86445 | 186.86875 | 313.28833 | 4.76044  | 0.1500917 | 2.4478841 | 55  | 3 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128094 2003 XL <sub>21</sub> |
| 2003 XM <sub>21</sub> | 16.1 | 0.15 | 20071027 | 355.49349 | 40.92578  | 344.36759 | 3.59870  | 0.3036771 | 2.6920742 | 143 | 5 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128832 2003 XM <sub>21</sub> |
| 2003 XO <sub>21</sub> | 16.5 | 0.15 | 20071027 | 285.89285 | 223.67366 | 316.07412 | 5.65583  | 0.0669766 | 2.4641781 | 38  | 5 | 1998-2007 | 0.47 | M-v | 2 | MPC | 128832 2003 XO <sub>21</sub> |
| 2003 XS <sub>22</sub> | 15.6 | 0.15 | 20071027 | 6.77511   | 331.60243 | 15.84629  | 9.64963  | 0.1533488 | 2.7129241 | 65  | 2 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128832 2003 XS <sub>22</sub> |
| 2003 XD <sub>25</sub> | 17.4 | 0.15 | 20071027 | 351.73889 | 44.13133  | 32.28376  | 6.52325  | 0.0722910 | 2.4557449 | 34  | 5 | 1995-2007 | 0.28 | M-v | 0 | MPC | 77755 2003 XD <sub>25</sub>  |
| 2003 XZ <sub>25</sub> | 15.7 | 0.15 | 20071027 | 71.25764  | 103.79005 | 225.61993 | 13.67688 | 0.0405136 | 2.6096391 | 93  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128832 2003 XZ <sub>25</sub> |
| 2003 XD <sub>28</sub> | 17.4 | 0.15 | 20071027 | 323.62251 | 215.61810 | 284.06845 | 2.21577  | 0.1382392 | 2.3845297 | 32  | 6 | 1997-2007 | 0.28 | M-v | 1 | MPC | 111008 2003 XD <sub>28</sub> |
| 2003 XR <sub>31</sub> | 18.5 | 0.15 | 20071027 | 5.36919   | 237.73635 | 194.81378 | 1.75216  | 0.1669241 | 2.4342543 | 21  | 3 | 1995-2007 | 0.32 | M-v | 3 | MPC | 100687 2003 XR <sub>31</sub> |
| 2003 XQ <sub>35</sub> | 16.8 | 0.15 | 20071027 | 62.46079  | 91.85888  | 318.56077 | 7.78670  | 0.0757462 | 2.2914050 | 45  | 3 | 2003-2007 | 0.58 | M-v | 3 | MPC | 108810 2003 XQ <sub>35</sub> |
| 2003 XN <sub>36</sub> | 16.0 | 0.15 | 20071027 | 340.89711 | 123.10717 | 280.11610 | 11.67500 | 0.1898710 | 2.6705433 | 45  | 2 | 2003-2007 | 0.56 | M-v | 3 | MPC | 128832 2003 XN <sub>36</sub> |
| 2003 XS <sub>37</sub> | 15.7 | 0.15 | 20071027 | 4.09800   | 51.86478  | 299.71828 | 8.25031  | 0.2020083 | 2.7176768 | 80  | 3 | 1998-2007 | 0.54 | M-v | 2 | MPC | 128832 2003 XS <sub>37</sub> |
| 2003 XU <sub>37</sub> | 16.7 | 0.15 | 20071027 | 0.40814   | 133.13761 | 298.78048 | 6.04965  | 0.2174133 | 2.4663517 | 39  | 3 | 1999-2007 | 0.56 | M-v | 3 | MPC | 69602 2003 XU <sub>37</sub>  |
| 2003 XO <sub>38</sub> | 16.3 | 0.15 | 20071027 | 352.26273 | 11.81989  | 52.01230  | 8.38573  | 0.1901533 | 2.5614865 | 58  | 3 | 1999-2007 | 0.49 | M-v | 3 | MPC | 128832 2003 XO <sub>38</sub> |
| 2003 XU <sub>38</sub> | 15.9 | 0.15 | 20071027 | 15.23920  | 293.79450 | 68.11467  | 15.16619 | 0.2653411 | 2.6631019 | 48  | 3 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128832 2003 XU <sub>38</sub> |
| 2003 XR <sub>40</sub> | 15.0 | 0.15 | 20071027 | 107.77634 | 217.08968 | 75.35860  | 14.58894 | 0.1493477 | 2.5442715 | 63  | 6 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128832 2003 XR <sub>40</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 XU <sub>40</sub> | 17.0 | 0.15 | 20071027 | 31.42075  | 312.10530 | 58.61416  | 1.87371  | 0.1696221 | 2.5426375 | 51  | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128095 2003 XU <sub>40</sub> |
| 2003 XJ <sub>43</sub> | 16.2 | 0.15 | 20071027 | 57.37090  | 301.81786 | 31.16283  | 2.20156  | 0.1977285 | 2.5523870 | 67  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128832 2003 XJ <sub>43</sub> |
| 2003 XK <sub>43</sub> | 16.4 | 0.15 | 20071027 | 344.62553 | 136.19745 | 296.02807 | 3.33983  | 0.1912511 | 2.5859536 | 81  | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128832 2003 XK <sub>43</sub> |
| 2003 YF <sub>1</sub>  | 14.7 | 0.15 | 20071027 | 15.73722  | 61.98731  | 301.29037 | 26.15104 | 0.2857735 | 2.6887907 | 79  | 3 | 1998-2007 | 0.53 | M-v | 2 | MPC | 128832 2003 YF <sub>1</sub>  |
| 2003 YG <sub>3</sub>  | 15.5 | 0.15 | 20071027 | 277.03580 | 88.40718  | 36.75874  | 16.38102 | 0.1186902 | 2.7959914 | 112 | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128832 2003 YG <sub>3</sub>  |
| 2003 YH <sub>3</sub>  | 16.4 | 0.15 | 20071027 | 341.31528 | 55.29372  | 357.12383 | 13.49259 | 0.2138331 | 2.7110283 | 108 | 3 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128832 2003 YH <sub>3</sub>  |
| 2003 YT <sub>4</sub>  | 16.1 | 0.15 | 20071027 | 77.37229  | 177.23814 | 146.15024 | 4.54671  | 0.1485374 | 2.5234665 | 33  | 3 | 2003-2007 | 0.45 | M-v | 4 | MPC | 128833 2003 YT <sub>4</sub>  |
| 2003 YV <sub>4</sub>  | 16.9 | 0.15 | 20071027 | 352.63880 | 314.94332 | 106.87119 | 7.83197  | 0.2295828 | 2.5314036 | 67  | 3 | 1999-2007 | 0.57 | M-v | 3 | MPC | 128833 2003 YV <sub>4</sub>  |
| 2003 YB <sub>5</sub>  | 16.3 | 0.15 | 20071027 | 355.25554 | 226.27579 | 154.56357 | 6.40361  | 0.2559764 | 2.6443606 | 101 | 3 | 1994-2007 | 0.53 | M-v | 2 | MPC | 128833 2003 YB <sub>5</sub>  |
| 2003 YD <sub>5</sub>  | 16.7 | 0.15 | 20071027 | 5.96611   | 158.32863 | 240.75968 | 13.15506 | 0.1637756 | 2.5493503 | 91  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128095 2003 YD <sub>5</sub>  |
| 2003 YR <sub>6</sub>  | 16.3 | 0.15 | 20071027 | 337.39665 | 87.66752  | 6.32293   | 2.98410  | 0.2132641 | 2.5887399 | 80  | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 128833 2003 YR <sub>6</sub>  |
| 2003 YW <sub>6</sub>  | 16.5 | 0.15 | 20071027 | 347.45046 | 179.31083 | 326.74137 | 6.42597  | 0.1578611 | 2.3560166 | 44  | 5 | 1997-2007 | 0.57 | M-v | 2 | MPC | 111009 2003 YW <sub>6</sub>  |
| 2003 YV <sub>7</sub>  | 16.8 | 0.15 | 20071027 | 336.95150 | 160.23912 | 282.38500 | 5.19390  | 0.2696928 | 2.6350915 | 133 | 3 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128833 2003 YV <sub>7</sub>  |
| 2003 YP <sub>8</sub>  | 16.1 | 0.15 | 20071027 | 288.21947 | 256.03165 | 253.04276 | 26.46602 | 0.1877393 | 2.5487613 | 53  | 3 | 1999-2007 | 0.58 | M-v | 3 | MPC | 128833 2003 YP <sub>8</sub>  |
| 2003 YP <sub>10</sub> | 16.9 | 0.15 | 20071027 | 8.86105   | 341.17795 | 17.01731  | 7.96434  | 0.4291996 | 2.6201285 | 135 | 2 | 2003-2007 | 0.42 | M-v | 1 | MPC | 128833 2003 YP <sub>10</sub> |
| 2003 YT <sub>10</sub> | 14.9 | 0.15 | 20071027 | 66.01480  | 294.90124 | 55.38841  | 11.38287 | 0.1872799 | 2.5206218 | 69  | 3 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128833 2003 YT <sub>10</sub> |
| 2003 YB <sub>11</sub> | 15.2 | 0.15 | 20071027 | 66.76668  | 289.93441 | 46.41837  | 13.86724 | 0.2075521 | 2.5858199 | 44  | 3 | 2003-2007 | 0.54 | M-v | 3 | MPC | 128096 2003 YB <sub>11</sub> |
| 2003 YC <sub>11</sub> | 17.2 | 0.15 | 20071027 | 339.92547 | 30.08026  | 62.58293  | 10.37599 | 0.2742008 | 2.5474821 | 89  | 3 | 1999-2007 | 0.55 | M-v | 2 | MPC | 128833 2003 YC <sub>11</sub> |
| 2003 YF <sub>11</sub> | 15.5 | 0.15 | 20071027 | 60.50714  | 0.56240   | 353.68414 | 6.64404  | 0.1925722 | 2.5265437 | 78  | 6 | 1997-2007 | 0.50 | M-v | 3 | MPC | 128833 2003 YF <sub>11</sub> |
| 2003 YL <sub>11</sub> | 16.4 | 0.15 | 20071027 | 4.56542   | 27.69697  | 12.55427  | 5.08042  | 0.3137500 | 2.5617586 | 109 | 2 | 2003-2007 | 0.41 | M-v | 2 | MPC | 128833 2003 YL <sub>11</sub> |
| 2003 YT <sub>11</sub> | 15.3 | 0.15 | 20071027 | 41.21350  | 347.22258 | 31.48065  | 8.83784  | 0.1526191 | 2.5380265 | 65  | 6 | 1999-2007 | 0.46 | M-v | 1 | MPC | 128833 2003 YT <sub>11</sub> |
| 2003 YV <sub>11</sub> | 15.7 | 0.15 | 20071027 | 335.72179 | 95.75083  | 352.10616 | 8.12852  | 0.1583413 | 2.5944188 | 90  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128833 2003 YV <sub>11</sub> |
| 2003 YY <sub>11</sub> | 15.3 | 0.15 | 20071027 | 315.66607 | 38.61578  | 66.49067  | 17.99738 | 0.1459929 | 2.6425646 | 114 | 3 | 2003-2007 | 0.50 | M-v | 2 | MPC | 128833 2003 YY <sub>11</sub> |
| 2003 YP <sub>12</sub> | 15.2 | 0.15 | 20071027 | 267.84951 | 111.19259 | 68.08053  | 8.30651  | 0.1098805 | 2.6062581 | 51  | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 86190 2003 YP <sub>12</sub>  |
| 2003 YQ <sub>12</sub> | 16.8 | 0.15 | 20071027 | 318.99591 | 68.90016  | 50.48946  | 5.38165  | 0.3188363 | 2.6161524 | 120 | 2 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128833 2003 YQ <sub>12</sub> |
| 2003 YF <sub>13</sub> | 15.7 | 0.15 | 20071027 | 33.40782  | 343.17078 | 40.89492  | 3.88855  | 0.2908434 | 2.5283559 | 75  | 4 | 2001-2007 | 0.50 | M-v | 3 | MPC | 128833 2003 YF <sub>13</sub> |
| 2003 YX <sub>13</sub> | 16.5 | 0.15 | 20071027 | 356.90743 | 82.32323  | 65.70549  | 9.61724  | 0.1298432 | 2.3344933 | 64  | 4 | 2001-2007 | 0.60 | M-v | 1 | MPC | 116258 2003 YX <sub>13</sub> |
| 2003 YS <sub>15</sub> | 15.6 | 0.15 | 20071027 | 249.09170 | 115.23898 | 66.77347  | 6.41926  | 0.1822930 | 2.5957544 | 105 | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128833 2003 YS <sub>15</sub> |
| 2003 YT <sub>15</sub> | 15.6 | 0.15 | 20071027 | 15.83788  | 321.53207 | 53.75209  | 11.98988 | 0.2190713 | 2.6720415 | 134 | 5 | 1976-2007 | 0.51 | M-v | 1 | MPC | 128833 2003 YT <sub>15</sub> |
| 2003 YV <sub>15</sub> | 15.4 | 0.15 | 20071027 | 345.95226 | 345.25780 | 65.31254  | 10.12171 | 0.1617160 | 2.7784226 | 79  | 3 | 2002-2007 | 0.54 | M-v | 1 | MPC | 128833 2003 YV <sub>15</sub> |
| 2003 YE <sub>17</sub> | 16.0 | 0.15 | 20071027 | 338.27045 | 87.70050  | 42.61546  | 2.59662  | 0.1307008 | 2.4719995 | 82  | 4 | 2002-2007 | 0.42 | M-v | 2 | MPC | 128833 2003 YE <sub>17</sub> |
| 2003 YK <sub>17</sub> | 16.1 | 0.15 | 20071027 | 45.55539  | 45.02068  | 335.89450 | 2.80592  | 0.2343785 | 2.5261271 | 64  | 4 | 2000-2007 | 0.44 | M-v | 3 | MPC | 128833 2003 YK <sub>17</sub> |
| 2003 YQ <sub>17</sub> | 15.2 | 0.15 | 20071027 | 31.64268  | 76.42635  | 289.38801 | 26.60524 | 0.4264586 | 2.6157232 | 64  | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128096 2003 YQ <sub>17</sub> |
| 2003 YD <sub>18</sub> | 15.2 | 0.15 | 20071027 | 310.19819 | 156.59567 | 288.33127 | 6.94366  | 0.1955780 | 2.8017543 | 116 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128833 2003 YD <sub>18</sub> |
| 2003 YK <sub>19</sub> | 16.8 | 0.15 | 20071027 | 59.27670  | 257.39491 | 80.63977  | 2.54538  | 0.1328301 | 2.5753444 | 39  | 2 | 2003-2007 | 0.36 | M-v | 4 | MPC | 128096 2003 YK <sub>19</sub> |
| 2003 YN <sub>19</sub> | 15.8 | 0.15 | 20071027 | 345.73917 | 321.40645 | 80.35867  | 14.23601 | 0.1679657 | 2.6559202 | 56  | 2 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128833 2003 YN <sub>19</sub> |
| 2003 YR <sub>19</sub> | 15.2 | 0.15 | 20071027 | 175.33704 | 165.51494 | 96.32157  | 15.36727 | 0.1475851 | 2.6622724 | 85  | 5 | 2002-2007 | 0.54 | M-v | 1 | MPC | 111009 2003 YR <sub>19</sub> |
| 2003 YS <sub>19</sub> | 15.6 | 0.15 | 20071027 | 349.15889 | 92.75908  | 296.41366 | 13.66370 | 0.1590316 | 2.8501109 | 53  | 3 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128833 2003 YS <sub>19</sub> |
| 2003 YT <sub>19</sub> | 15.2 | 0.15 | 20071027 | 205.77224 | 151.41028 | 88.31999  | 9.66835  | 0.0663779 | 2.5979221 | 65  | 5 | 2002-2007 | 0.57 | M-v | 1 | MPC | 111009 2003 YT <sub>19</sub> |
| 2003 YC <sub>20</sub> | 16.3 | 0.15 | 20071027 | 356.01357 | 342.39205 | 79.58187  | 5.76246  | 0.1374906 | 2.6512502 | 75  | 5 | 2001-2007 | 0.43 | M-v | 1 | MPC | 128833 2003 YC <sub>20</sub> |
| 2003 YW <sub>20</sub> | 16.6 | 0.15 | 20071027 | 330.73970 | 141.43590 | 10.09713  | 1.35804  | 0.1237051 | 2.4262877 | 96  | 5 | 1997-2007 | 0.43 | M-v | 1 | MPC | 111009 2003 YW <sub>20</sub> |
| 2003 YX <sub>20</sub> | 16.5 | 0.15 | 20071027 | 37.60071  | 70.56038  | 304.97019 | 4.03864  | 0.2376667 | 2.5866609 | 30  | 4 | 2000-2007 | 0.38 | M-v | 2 | MPC | 111009 2003 YX <sub>20</sub> |
| 2003 YE <sub>21</sub> | 16.6 | 0.15 | 20071027 | 357.48349 | 187.13462 | 309.64599 | 3.08813  | 0.0840222 | 2.3573378 | 76  | 5 | 1997-2007 | 0.51 | M-v | 2 | MPC | 111009 2003 YE <sub>21</sub> |
| 2003 YL <sub>21</sub> | 16.6 | 0.15 | 20071027 | 265.05449 | 214.46147 | 316.32109 | 3.49717  | 0.1420931 | 2.6939976 | 48  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128833 2003 YL <sub>21</sub> |
| 2003 YV <sub>21</sub> | 16.4 | 0.15 | 20071027 | 238.70095 | 239.76441 | 299.44576 | 10.60704 | 0.0248848 | 2.7419101 | 34  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 108814 2003 YV <sub>21</sub> |
| 2003 YY <sub>22</sub> | 16.8 | 0.15 | 20071027 | 327.21968 | 3.14017   | 92.08870  | 6.74679  | 0.2219110 | 2.5613874 | 56  | 2 | 2003-2007 | 0.48 | M-v | 4 | MPC | 128096 2003 YY <sub>22</sub> |
| 2003 YG <sub>23</sub> | 16.7 | 0.15 | 20071027 | 358.31154 | 319.83432 | 130.37350 | 3.04634  | 0.1617376 | 2.4142735 | 55  | 5 | 1999-2007 | 0.41 | M-v | 1 | MPC | 76301 2003 YG <sub>23</sub>  |
| 2003 YA <sub>25</sub> | 16.1 | 0.15 | 20071027 | 359.46588 | 326.74001 | 83.25618  | 4.08419  | 0.1423300 | 2.6018898 | 71  | 2 | 2003-2007 | 0.50 | M-v | 4 | MPC | 128096 2003 YA <sub>25</sub> |
| 2003 YJ <sub>25</sub> | 16.3 | 0.15 | 20071027 | 325.83415 | 150.98805 | 289.92725 | 5.64959  | 0.2359622 | 2.6493071 | 57  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128833 2003 YJ <sub>25</sub> |
| 2003 YN <sub>25</sub> | 16.2 | 0.15 | 20071027 | 313.86117 | 176.24766 | 286.82534 | 12.70511 | 0.1347160 | 2.6567650 | 47  | 5 | 2000-2007 | 0.62 | M-v | 1 | MPC | 128833 2003 YN <sub>25</sub> |
| 2003 YT <sub>25</sub> | 16.0 | 0.15 | 20071027 | 2.57962   | 21.72407  | 17.02518  | 2.22582  | 0.2169319 | 2.6444053 | 115 | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128834 2003 YT <sub>25</sub> |
| 2003 YX <sub>25</sub> | 16.3 | 0.15 | 20071027 | 333.98902 | 9.33856   | 62.64655  | 4.32881  | 0.2296045 | 2.6731233 | 88  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128834 2003 YX <sub>25</sub> |
| 2003 YZ <sub>25</sub> | 15.6 | 0.15 | 20071027 | 57.38496  | 329.04210 | 30.28369  | 3.07455  | 0.2386607 | 2.5346164 | 90  | 5 | 2000-2007 | 0.58 | M-v | 3 | MPC | 128834 2003 YZ <sub>25</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 YA <sub>26</sub> | 15.7 | 0.15 | 20071027 | 271.50788 | 106.91951 | 64.31246  | 4.68706  | 0.1756477 | 2.6242433 | 54  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128834 2003 YA <sub>26</sub> |
| 2003 YE <sub>27</sub> | 16.0 | 0.15 | 20071027 | 310.93789 | 179.18859 | 288.40536 | 13.06650 | 0.1391821 | 2.7014448 | 74  | 3 | 2002-2007 | 0.50 | M-v | 1 | MPC | 87601 2003 YE <sub>27</sub>  |
| 2003 YX <sub>27</sub> | 16.1 | 0.15 | 20071027 | 323.93025 | 180.89909 | 230.18048 | 2.46428  | 0.0988737 | 2.7518889 | 51  | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128097 2003 YX <sub>27</sub> |
| 2003 YQ <sub>28</sub> | 16.1 | 0.15 | 20071027 | 276.32714 | 72.28330  | 81.14385  | 7.45273  | 0.0987542 | 2.5517683 | 66  | 3 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128834 2003 YQ <sub>28</sub> |
| 2003 YN <sub>29</sub> | 14.7 | 0.15 | 20071027 | 29.20097  | 232.17469 | 106.14935 | 27.90104 | 0.2280514 | 2.8681433 | 66  | 3 | 2003-2007 | 0.50 | M-v | 1 | MPC | 128834 2003 YN <sub>29</sub> |
| 2003 YR <sub>30</sub> | 17.1 | 0.15 | 20071027 | 347.61327 | 44.36218  | 62.14266  | 6.37073  | 0.1562325 | 2.4386666 | 58  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128834 2003 YR <sub>30</sub> |
| 2003 YZ <sub>30</sub> | 17.3 | 0.15 | 20071027 | 37.61513  | 97.23249  | 326.21385 | 0.26547  | 0.1849036 | 2.3577628 | 61  | 5 | 1999-2007 | 0.57 | M-v | 1 | MPC | 77757 2003 YZ <sub>30</sub>  |
| 2003 YE <sub>31</sub> | 15.9 | 0.15 | 20071027 | 357.77717 | 109.84806 | 272.32589 | 11.50385 | 0.2789350 | 2.6529145 | 75  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128834 2003 YE <sub>31</sub> |
| 2003 YS <sub>32</sub> | 16.3 | 0.15 | 20071027 | 304.72199 | 356.66878 | 117.53703 | 6.90381  | 0.1686469 | 2.5771176 | 38  | 3 | 2003-2007 | 0.65 | M-v | 3 | MPC | 128098 2003 YS <sub>32</sub> |
| 2003 YL <sub>33</sub> | 14.9 | 0.15 | 20071027 | 7.70843   | 283.16916 | 119.06933 | 26.10431 | 0.1155989 | 2.6830784 | 31  | 3 | 2003-2007 | 0.60 | M-v | 3 | MPC | 126699 2003 YL <sub>33</sub> |
| 2003 YM <sub>33</sub> | 16.4 | 0.15 | 20071027 | 337.63580 | 300.83880 | 141.76065 | 3.86031  | 0.2792558 | 2.6844550 | 117 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128834 2003 YM <sub>33</sub> |
| 2003 YP <sub>33</sub> | 15.6 | 0.15 | 20071027 | 317.02037 | 199.54259 | 231.19584 | 15.03672 | 0.1368423 | 2.6851971 | 86  | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128834 2003 YP <sub>33</sub> |
| 2003 YV <sub>33</sub> | 15.0 | 0.15 | 20071027 | 11.22136  | 112.56733 | 213.55999 | 12.61054 | 0.2122203 | 2.8476999 | 59  | 5 | 1993-2007 | 0.66 | M-v | 1 | MPC | 128834 2003 YV <sub>33</sub> |
| 2003 YJ <sub>34</sub> | 16.4 | 0.15 | 20071027 | 15.92184  | 149.12195 | 217.47922 | 11.60631 | 0.2089972 | 2.6296723 | 91  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128098 2003 YJ <sub>34</sub> |
| 2003 YZ <sub>34</sub> | 15.5 | 0.15 | 20071027 | 342.63493 | 352.35258 | 78.17031  | 3.32768  | 0.0647437 | 2.7040235 | 71  | 4 | 1996-2007 | 0.52 | M-v | 1 | MPC | 128098 2003 YZ <sub>34</sub> |
| 2003 YL <sub>35</sub> | 16.2 | 0.15 | 20071027 | 19.76111  | 71.42920  | 277.49423 | 10.16509 | 0.3195138 | 2.6437642 | 58  | 2 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128099 2003 YL <sub>35</sub> |
| 2003 YU <sub>35</sub> | 15.9 | 0.15 | 20071027 | 347.61792 | 115.59416 | 268.08779 | 7.37090  | 0.3746100 | 2.6784359 | 116 | 2 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128834 2003 YU <sub>35</sub> |
| 2003 YV <sub>35</sub> | 15.3 | 0.15 | 20071027 | 324.25563 | 346.64583 | 94.68643  | 11.22144 | 0.1741566 | 2.6742078 | 49  | 5 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128834 2003 YV <sub>35</sub> |
| 2003 YA <sub>36</sub> | 16.7 | 0.15 | 20071027 | 68.66467  | 63.58857  | 319.97420 | 6.60369  | 0.2422131 | 2.3989692 | 62  | 4 | 1999-2007 | 0.42 | M-v | 2 | MPC | 111010 2003 YA <sub>36</sub> |
| 2003 YB <sub>36</sub> | 15.7 | 0.15 | 20071027 | 292.03497 | 289.36412 | 224.98739 | 8.14238  | 0.2226195 | 2.6339829 | 54  | 4 | 2000-2007 | 0.41 | M-v | 2 | MPC | 128834 2003 YB <sub>36</sub> |
| 2003 YD <sub>36</sub> | 15.8 | 0.15 | 20071027 | 348.88156 | 135.61971 | 302.72673 | 4.22011  | 0.1666821 | 2.5986848 | 91  | 4 | 2000-2007 | 0.64 | M-v | 2 | MPC | 128834 2003 YD <sub>36</sub> |
| 2003 YQ <sub>36</sub> | 16.8 | 0.15 | 20071027 | 70.39312  | 290.86792 | 72.65325  | 7.67401  | 0.1548686 | 2.3729208 | 37  | 3 | 1998-2007 | 0.47 | M-v | 3 | MPC | 76307 2003 YQ <sub>36</sub>  |
| 2003 YR <sub>36</sub> | 15.5 | 0.15 | 20071027 | 320.37758 | 92.79893  | 51.55525  | 3.26803  | 0.1436376 | 2.5258799 | 155 | 6 | 1996-2007 | 0.53 | M-v | 2 | MPC | 128834 2003 YR <sub>36</sub> |
| 2003 YT <sub>36</sub> | 15.9 | 0.15 | 20071027 | 68.89651  | 23.81889  | 323.63492 | 4.06763  | 0.2539712 | 2.5714833 | 68  | 6 | 1998-2007 | 0.58 | M-v | 1 | MPC | 77758 2003 YT <sub>36</sub>  |
| 2003 YX <sub>38</sub> | 15.1 | 0.15 | 20071027 | 249.75517 | 253.91653 | 293.47347 | 8.47735  | 0.2179832 | 2.7502371 | 64  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128099 2003 YX <sub>38</sub> |
| 2003 YF <sub>40</sub> | 16.7 | 0.15 | 20071027 | 263.50817 | 67.11509  | 92.31763  | 5.78900  | 0.0503339 | 2.7224432 | 38  | 5 | 1998-2007 | 0.33 | M-v | 0 | MPC | 128834 2003 YF <sub>40</sub> |
| 2003 YK <sub>41</sub> | 16.6 | 0.15 | 20071027 | 106.90313 | 213.10005 | 107.07193 | 3.50202  | 0.0613063 | 2.6544430 | 33  | 5 | 2002-2007 | 0.37 | M-v | 0 | MPC | 111010 2003 YK <sub>41</sub> |
| 2003 YG <sub>42</sub> | 17.4 | 0.15 | 20071027 | 303.01080 | 299.10606 | 186.22075 | 1.39561  | 0.0360748 | 2.6569507 | 40  | 6 | 1998-2007 | 0.39 | M-v | 0 | MPC | 111011 2003 YG <sub>42</sub> |
| 2003 YN <sub>43</sub> | 16.6 | 0.15 | 20071027 | 5.46980   | 347.01086 | 110.38231 | 3.57177  | 0.1638604 | 2.4670999 | 54  | 5 | 2000-2007 | 0.42 | M-v | 2 | MPC | 128834 2003 YN <sub>43</sub> |
| 2003 YO <sub>43</sub> | 16.3 | 0.15 | 20071027 | 340.53377 | 177.54702 | 282.19277 | 3.15428  | 0.2412216 | 2.5741878 | 107 | 5 | 1998-2007 | 0.53 | M-v | 1 | MPC | 126699 2003 YO <sub>43</sub> |
| 2003 YA <sub>44</sub> | 17.6 | 0.15 | 20071027 | 335.54117 | 152.89283 | 305.99562 | 2.75507  | 0.1878323 | 2.6042147 | 34  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 87601 2003 YA <sub>44</sub>  |
| 2003 YB <sub>45</sub> | 15.7 | 0.15 | 20071027 | 193.25259 | 172.71601 | 80.36479  | 24.62409 | 0.1629996 | 2.3520299 | 52  | 6 | 1998-2007 | 0.67 | M-v | 1 | MPC | 111011 2003 YB <sub>45</sub> |
| 2003 YZ <sub>45</sub> | 17.1 | 0.15 | 20071027 | 348.77253 | 57.34701  | 357.93709 | 3.84374  | 0.2597525 | 2.5991187 | 47  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128100 2003 YZ <sub>45</sub> |
| 2003 YA <sub>46</sub> | 15.8 | 0.15 | 20071027 | 272.30383 | 148.53141 | 15.61288  | 7.50783  | 0.1552456 | 2.5561454 | 34  | 4 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128834 2003 YA <sub>46</sub> |
| 2003 YE <sub>46</sub> | 15.8 | 0.15 | 20071027 | 113.24124 | 241.86556 | 72.98291  | 22.87798 | 0.0608489 | 2.6056436 | 54  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 111011 2003 YE <sub>46</sub> |
| 2003 YG <sub>47</sub> | 16.4 | 0.15 | 20071027 | 5.03084   | 297.87567 | 97.11651  | 6.72823  | 0.2393857 | 2.6479589 | 64  | 3 | 1994-2007 | 0.45 | M-v | 3 | MPC | 128100 2003 YG <sub>47</sub> |
| 2003 YN <sub>47</sub> | 16.2 | 0.15 | 20071027 | 309.67400 | 42.98039  | 63.87899  | 5.63048  | 0.1308342 | 2.5928902 | 80  | 4 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128834 2003 YN <sub>47</sub> |
| 2003 YC <sub>48</sub> | 16.1 | 0.15 | 20071027 | 12.15113  | 106.71353 | 270.01294 | 11.94561 | 0.1670205 | 2.6465073 | 47  | 2 | 2003-2007 | 0.52 | M-v | 4 | MPC | 128100 2003 YC <sub>48</sub> |
| 2003 YG <sub>48</sub> | 16.6 | 0.15 | 20071027 | 344.37301 | 35.44660  | 49.40501  | 2.07089  | 0.1590389 | 2.5293774 | 74  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 124432 2003 YG <sub>48</sub> |
| 2003 YR <sub>48</sub> | 14.8 | 0.15 | 20071027 | 70.59015  | 242.62668 | 83.07598  | 15.92356 | 0.1319412 | 2.6295849 | 117 | 6 | 1997-2007 | 0.45 | M-v | 1 | MPC | 128834 2003 YR <sub>48</sub> |
| 2003 YZ <sub>51</sub> | 16.3 | 0.15 | 20071027 | 315.86646 | 15.14667  | 95.54574  | 15.29986 | 0.2303728 | 2.6432461 | 46  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128835 2003 YZ <sub>51</sub> |
| 2003 YD <sub>52</sub> | 15.8 | 0.15 | 20071027 | 342.32819 | 341.27394 | 78.49589  | 13.34163 | 0.1809787 | 2.6587716 | 58  | 2 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128100 2003 YD <sub>52</sub> |
| 2003 YR <sub>52</sub> | 16.4 | 0.15 | 20071027 | 26.27035  | 99.18851  | 263.31292 | 4.87568  | 0.1918767 | 2.6359415 | 85  | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128835 2003 YR <sub>52</sub> |
| 2003 YQ <sub>53</sub> | 17.1 | 0.15 | 20071027 | 350.38223 | 24.67953  | 77.13192  | 3.29724  | 0.1720190 | 2.4228890 | 45  | 4 | 2001-2007 | 0.45 | M-v | 2 | MPC | 128100 2003 YQ <sub>53</sub> |
| 2003 YG <sub>55</sub> | 17.3 | 0.15 | 20071027 | 336.70364 | 32.08992  | 95.89214  | 3.45400  | 0.1248625 | 2.3978927 | 40  | 5 | 2001-2007 | 0.43 | M-v | 1 | MPC | 128835 2003 YG <sub>55</sub> |
| 2003 YH <sub>55</sub> | 15.4 | 0.15 | 20071027 | 207.03656 | 136.09081 | 83.48583  | 15.05994 | 0.0645822 | 2.5475449 | 50  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 77759 2003 YH <sub>55</sub>  |
| 2003 YF <sub>56</sub> | 15.7 | 0.15 | 20071027 | 342.70897 | 158.96365 | 257.30246 | 13.60026 | 0.0951188 | 2.6588063 | 53  | 3 | 2002-2007 | 0.44 | M-v | 2 | MPC | 128835 2003 YF <sub>56</sub> |
| 2003 YN <sub>56</sub> | 16.5 | 0.15 | 20071027 | 18.70159  | 303.56333 | 90.50750  | 1.05023  | 0.0842179 | 2.5774045 | 53  | 7 | 1994-2007 | 0.59 | M-v | 1 | MPC | 128101 2003 YN <sub>56</sub> |
| 2003 YU <sub>56</sub> | 16.7 | 0.15 | 20071027 | 347.70211 | 324.95721 | 105.13853 | 7.03839  | 0.2218094 | 2.5485800 | 64  | 4 | 1992-2007 | 0.44 | M-v | 3 | MPC | 128835 2003 YU <sub>56</sub> |
| 2003 YM <sub>57</sub> | 16.2 | 0.15 | 20071027 | 286.26142 | 42.20106  | 98.64850  | 12.41506 | 0.1214066 | 2.5878584 | 39  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 128835 2003 YM <sub>57</sub> |
| 2003 YN <sub>57</sub> | 15.4 | 0.15 | 20071027 | 23.30002  | 276.40728 | 95.30513  | 13.99812 | 0.1895567 | 2.5931033 | 83  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128835 2003 YN <sub>57</sub> |
| 2003 YX <sub>57</sub> | 16.4 | 0.15 | 20071027 | 102.71302 | 269.37837 | 92.56025  | 4.79498  | 0.1978008 | 2.2973110 | 54  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 122766 2003 YX <sub>57</sub> |
| 2003 YH <sub>58</sub> | 15.9 | 0.15 | 20071027 | 336.28613 | 13.47094  | 115.44135 | 3.57198  | 0.1331392 | 2.4289168 | 51  | 5 | 1999-2007 | 0.57 | M-v | 2 | MPC | 128835 2003 YH <sub>58</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2003 YN <sub>58</sub> | 15.7 | 0.15 | 20071027 | 334.15369 | 27.75814  | 102.19315 | 9.53037  | 0.1559903 | 2.4435419 | 62  | 6 | 1995–2007 | 0.58 | M-v | 1 | MPC | 128835 2003 YN <sub>58</sub> |
| 2003 YQ <sub>59</sub> | 16.5 | 0.15 | 20071027 | 61.50433  | 22.78643  | 325.81114 | 2.13335  | 0.0768816 | 2.5396111 | 35  | 4 | 2001–2007 | 0.38 | M-v | 2 | MPC | 128835 2003 YQ <sub>59</sub> |
| 2003 YA <sub>60</sub> | 16.4 | 0.15 | 20071027 | 281.80597 | 69.53552  | 73.27256  | 3.48268  | 0.1031798 | 2.5692361 | 51  | 7 | 1992–2007 | 0.36 | M-v | 0 | MPC | 128835 2003 YA <sub>60</sub> |
| 2003 YV <sub>60</sub> | 16.9 | 0.15 | 20071027 | 22.39588  | 343.93841 | 107.70773 | 5.55251  | 0.1593689 | 2.3452277 | 42  | 5 | 1997–2007 | 0.47 | M-v | 1 | MPC | 128835 2003 YV <sub>60</sub> |
| 2003 YC <sub>62</sub> | 16.3 | 0.15 | 20071027 | 339.43549 | 315.53236 | 115.13235 | 3.18066  | 0.1966345 | 2.6618809 | 46  | 2 | 2003–2007 | 0.48 | M-v | 3 | MPC | 128101 2003 YC <sub>62</sub> |
| 2003 YA <sub>63</sub> | 16.9 | 0.15 | 20071027 | 16.18764  | 113.50995 | 292.50171 | 3.31272  | 0.1919293 | 2.5867075 | 41  | 5 | 2000–2007 | 0.49 | M-v | 1 | MPC | 87601 2003 YA <sub>63</sub>  |
| 2003 YQ <sub>63</sub> | 16.5 | 0.15 | 20071027 | 0.07183   | 305.46265 | 102.66204 | 6.32682  | 0.3045778 | 2.5751194 | 71  | 2 | 2003–2007 | 0.37 | M-v | 3 | MPC | 128101 2003 YQ <sub>63</sub> |
| 2003 YD <sub>64</sub> | 16.7 | 0.15 | 20071027 | 346.78975 | 5.90350   | 107.96434 | 3.17961  | 0.1580068 | 2.4697932 | 39  | 4 | 1999–2007 | 0.51 | M-v | 2 | MPC | 126700 2003 YD <sub>64</sub> |
| 2003 YH <sub>64</sub> | 16.7 | 0.15 | 20071027 | 305.08243 | 201.28445 | 280.69810 | 6.22849  | 0.2810118 | 2.6795744 | 59  | 2 | 2003–2007 | 0.53 | M-v | 2 | MPC | 128102 2003 YH <sub>64</sub> |
| 2003 YS <sub>64</sub> | 16.5 | 0.15 | 20071027 | 356.29035 | 149.50266 | 270.73460 | 12.31082 | 0.2242729 | 2.6040278 | 51  | 3 | 2000–2007 | 0.51 | M-v | 3 | MPC | 128835 2003 YS <sub>64</sub> |
| 2003 YV <sub>65</sub> | 16.2 | 0.15 | 20071027 | 25.61368  | 92.41275  | 299.00227 | 1.75966  | 0.1347594 | 2.5353915 | 84  | 3 | 2003–2007 | 0.47 | M-v | 4 | MPC | 76324 2003 YV <sub>65</sub>  |
| 2003 YR <sub>66</sub> | 15.7 | 0.15 | 20071027 | 330.86954 | 349.23815 | 118.46166 | 4.57356  | 0.2040280 | 2.6705005 | 109 | 4 | 2000–2007 | 0.54 | M-v | 2 | MPC | 128835 2003 YR <sub>66</sub> |
| 2003 YT <sub>66</sub> | 15.7 | 0.15 | 20071027 | 317.91372 | 178.39417 | 320.14881 | 10.99399 | 0.0964340 | 2.6577900 | 88  | 4 | 2002–2007 | 0.54 | M-v | 1 | MPC | 111011 2003 YT <sub>66</sub> |
| 2003 YG <sub>67</sub> | 17.2 | 0.15 | 20071027 | 50.62069  | 264.42002 | 94.92097  | 2.26885  | 0.1903640 | 2.4638859 | 32  | 5 | 1995–2007 | 0.38 | M-v | 2 | MPC | 77760 2003 YG <sub>67</sub>  |
| 2003 YJ <sub>67</sub> | 17.3 | 0.15 | 20071027 | 97.16268  | 244.90878 | 88.10311  | 2.48577  | 0.1998006 | 2.3610823 | 26  | 5 | 1992–2007 | 0.42 | M-v | 1 | MPC | 89496 2003 YJ <sub>67</sub>  |
| 2003 YA <sub>68</sub> | 16.5 | 0.15 | 20071027 | 64.24905  | 233.25802 | 104.75995 | 2.17978  | 0.0476192 | 2.5963991 | 52  | 4 | 2002–2007 | 0.37 | M-v | 1 | MPC | 128835 2003 YA <sub>68</sub> |
| 2003 YK <sub>68</sub> | 16.7 | 0.15 | 20071027 | 346.57813 | 217.31823 | 241.18807 | 3.51608  | 0.1153144 | 2.5533660 | 45  | 7 | 1994–2007 | 0.51 | M-v | 1 | MPC | 128835 2003 YK <sub>68</sub> |
| 2003 YT <sub>68</sub> | 16.6 | 0.15 | 20071027 | 308.07031 | 49.45082  | 125.13377 | 3.23187  | 0.1188011 | 2.4592521 | 57  | 3 | 2003–2007 | 0.28 | M-v | 3 | MPC | 128835 2003 YT <sub>68</sub> |
| 2003 YG <sub>71</sub> | 16.1 | 0.15 | 20071027 | 287.87764 | 234.20716 | 286.12644 | 5.41330  | 0.0722040 | 2.4599224 | 40  | 6 | 2001–2007 | 0.51 | M-v | 1 | MPC | 111012 2003 YG <sub>71</sub> |
| 2003 YL <sub>71</sub> | 16.0 | 0.15 | 20071027 | 339.83086 | 104.93074 | 292.98175 | 2.34393  | 0.1869416 | 2.7139331 | 86  | 4 | 2000–2007 | 0.53 | M-v | 1 | MPC | 128835 2003 YL <sub>71</sub> |
| 2003 YR <sub>71</sub> | 15.5 | 0.15 | 20071027 | 265.77238 | 248.45307 | 272.22811 | 20.85692 | 0.1033006 | 2.5849798 | 34  | 5 | 2000–2007 | 0.54 | M-v | 1 | MPC | 86200 2003 YR <sub>71</sub>  |
| 2003 YD <sub>72</sub> | 16.3 | 0.15 | 20071027 | 49.41062  | 22.79484  | 322.09941 | 2.26983  | 0.1257335 | 2.6283993 | 74  | 4 | 2002–2007 | 0.45 | M-v | 1 | MPC | 128835 2003 YD <sub>72</sub> |
| 2003 YF <sub>72</sub> | 16.6 | 0.15 | 20071027 | 342.87564 | 15.21010  | 70.79241  | 9.60441  | 0.0412042 | 2.5297074 | 35  | 4 | 2001–2007 | 0.59 | M-v | 3 | MPC | 86200 2003 YF <sub>72</sub>  |
| 2003 YL <sub>72</sub> | 15.9 | 0.15 | 20071027 | 351.62156 | 92.57524  | 338.38768 | 3.17700  | 0.1081575 | 2.5462652 | 58  | 4 | 1999–2007 | 0.47 | M-v | 3 | MPC | 128835 2003 YL <sub>72</sub> |
| 2003 YQ <sub>73</sub> | 16.9 | 0.15 | 20071027 | 17.46508  | 60.61242  | 38.58379  | 2.19174  | 0.1411720 | 2.3592697 | 44  | 5 | 1999–2007 | 0.57 | M-v | 1 | MPC | 111012 2003 YQ <sub>73</sub> |
| 2003 YH <sub>74</sub> | 16.3 | 0.15 | 20071027 | 332.98748 | 41.52847  | 47.09026  | 3.07443  | 0.1103800 | 2.5761183 | 67  | 6 | 1996–2007 | 0.45 | M-v | 1 | MPC | 128835 2003 YH <sub>74</sub> |
| 2003 YG <sub>75</sub> | 16.6 | 0.15 | 20071027 | 323.90727 | 215.37540 | 304.11001 | 5.15662  | 0.1162977 | 2.3552542 | 49  | 5 | 2001–2007 | 0.51 | M-v | 1 | MPC | 128835 2003 YG <sub>75</sub> |
| 2003 YA <sub>76</sub> | 16.2 | 0.15 | 20071027 | 352.37419 | 41.95374  | 32.22484  | 2.18083  | 0.1693376 | 2.5499672 | 79  | 5 | 1992–2007 | 0.60 | M-v | 2 | MPC | 128835 2003 YA <sub>76</sub> |
| 2003 YD <sub>76</sub> | 15.9 | 0.15 | 20071027 | 287.38251 | 92.71875  | 66.96004  | 4.14353  | 0.0954009 | 2.5335694 | 42  | 5 | 2000–2007 | 0.43 | M-v | 0 | MPC | 111012 2003 YD <sub>76</sub> |
| 2003 YN <sub>77</sub> | 15.5 | 0.15 | 20071027 | 331.45915 | 4.89169   | 93.22208  | 18.03680 | 0.1697840 | 2.5901573 | 64  | 3 | 2000–2007 | 0.49 | M-v | 2 | MPC | 128835 2003 YN <sub>77</sub> |
| 2003 YS <sub>77</sub> | 16.2 | 0.15 | 20071027 | 292.48936 | 52.93656  | 82.91725  | 4.18187  | 0.1548417 | 2.6533358 | 71  | 4 | 2000–2007 | 0.59 | M-v | 2 | MPC | 128836 2003 YS <sub>77</sub> |
| 2003 YZ <sub>77</sub> | 16.1 | 0.15 | 20071027 | 350.39086 | 113.57693 | 288.62002 | 12.22096 | 0.1054217 | 2.7518250 | 55  | 4 | 1998–2007 | 0.50 | M-v | 1 | MPC | 128836 2003 YZ <sub>77</sub> |
| 2003 YW <sub>78</sub> | 16.7 | 0.15 | 20071027 | 59.27983  | 92.93681  | 304.43883 | 4.63923  | 0.1865720 | 2.3755807 | 50  | 4 | 1999–2007 | 0.43 | M-v | 1 | MPC | 111012 2003 YW <sub>78</sub> |
| 2003 YD <sub>79</sub> | 15.7 | 0.15 | 20071027 | 19.49533  | 341.63474 | 68.52260  | 6.45532  | 0.1456368 | 2.5287537 | 53  | 4 | 2000–2007 | 0.55 | M-v | 3 | MPC | 111012 2003 YD <sub>79</sub> |
| 2003 YJ <sub>79</sub> | 16.1 | 0.15 | 20071027 | 327.93476 | 161.56451 | 293.86188 | 9.37140  | 0.0839213 | 2.6407578 | 48  | 4 | 2002–2007 | 0.50 | M-v | 1 | MPC | 128836 2003 YJ <sub>79</sub> |
| 2003 YS <sub>79</sub> | 16.7 | 0.15 | 20071027 | 324.82874 | 26.62901  | 72.97568  | 3.89719  | 0.1620811 | 2.6399033 | 55  | 5 | 1994–2007 | 0.49 | M-v | 1 | MPC | 128836 2003 YS <sub>79</sub> |
| 2003 YA <sub>80</sub> | 14.7 | 0.15 | 20071027 | 223.09303 | 201.81262 | 296.12500 | 9.49589  | 0.1959748 | 3.1333886 | 58  | 4 | 2002–2007 | 0.52 | M-v | 1 | MPC | 124433 2003 YA <sub>80</sub> |
| 2003 YE <sub>80</sub> | 15.7 | 0.15 | 20071027 | 19.12386  | 298.53642 | 86.05593  | 6.59260  | 0.3038332 | 2.5880100 | 68  | 4 | 1986–2007 | 0.42 | M-v | 2 | MPC | 128836 2003 YE <sub>80</sub> |
| 2003 YJ <sub>80</sub> | 16.6 | 0.15 | 20071027 | 303.14096 | 33.10572  | 89.31245  | 7.32281  | 0.2076119 | 2.6849966 | 56  | 3 | 1998–2007 | 0.49 | M-v | 3 | MPC | 128102 2003 YJ <sub>80</sub> |
| 2003 YN <sub>80</sub> | 16.3 | 0.15 | 20071027 | 24.29173  | 96.60667  | 301.63039 | 13.97805 | 0.1324545 | 2.6086322 | 33  | 3 | 2002–2007 | 0.57 | M-v | 2 | MPC | 57520 2003 YN <sub>80</sub>  |
| 2003 YS <sub>81</sub> | 14.7 | 0.15 | 20071027 | 115.02270 | 297.82612 | 291.23025 | 7.99196  | 0.0485143 | 3.2221906 | 69  | 5 | 1999–2007 | 0.52 | M-v | 0 | MPC | 126700 2003 YS <sub>81</sub> |
| 2003 YQ <sub>82</sub> | 16.3 | 0.15 | 20071027 | 28.61784  | 347.25312 | 45.86467  | 3.93599  | 0.1365591 | 2.5624630 | 38  | 5 | 1997–2007 | 0.41 | M-v | 1 | MPC | 76332 2003 YQ <sub>82</sub>  |
| 2003 YV <sub>82</sub> | 15.7 | 0.15 | 20071027 | 358.54898 | 328.51696 | 112.95025 | 6.91583  | 0.0292687 | 2.6414980 | 73  | 5 | 2002–2007 | 0.46 | M-v | 1 | MPC | 104282 2003 YV <sub>82</sub> |
| 2003 YS <sub>83</sub> | 17.2 | 0.15 | 20071027 | 2.13032   | 64.91246  | 47.18135  | 4.47399  | 0.1381413 | 2.3639576 | 48  | 4 | 1999–2007 | 0.42 | M-v | 3 | MPC | 57523 2003 YS <sub>83</sub>  |
| 2003 YU <sub>84</sub> | 16.6 | 0.15 | 20071027 | 269.17086 | 111.48596 | 56.43110  | 5.09943  | 0.2099917 | 2.5690787 | 46  | 3 | 2003–2007 | 0.42 | M-v | 2 | MPC | 128102 2003 YU <sub>84</sub> |
| 2003 YE <sub>85</sub> | 15.1 | 0.15 | 20071027 | 42.79714  | 130.80776 | 218.45547 | 5.91803  | 0.2111357 | 2.5957461 | 119 | 6 | 1998–2007 | 0.51 | M-v | 1 | MPC | 128836 2003 YE <sub>85</sub> |
| 2003 YF <sub>85</sub> | 17.0 | 0.15 | 20071027 | 40.91698  | 301.13528 | 116.77679 | 7.10638  | 0.1058142 | 2.3756592 | 29  | 5 | 1997–2007 | 0.49 | M-v | 1 | MPC | 128836 2003 YF <sub>85</sub> |
| 2003 YP <sub>85</sub> | 16.1 | 0.15 | 20071027 | 19.94694  | 182.32032 | 197.62007 | 3.63390  | 0.2433410 | 2.5660792 | 75  | 4 | 2000–2007 | 0.37 | M-v | 2 | MPC | 128836 2003 YP <sub>85</sub> |
| 2003 YX <sub>85</sub> | 16.4 | 0.15 | 20071027 | 324.78652 | 298.02097 | 170.35221 | 3.50197  | 0.2513968 | 2.5690795 | 70  | 4 | 2000–2007 | 0.56 | M-v | 3 | MPC | 128836 2003 YX <sub>85</sub> |
| 2003 YW <sub>86</sub> | 16.4 | 0.15 | 20071027 | 338.33918 | 341.50920 | 117.01996 | 6.48967  | 0.1715674 | 2.5352193 | 35  | 4 | 2000–2007 | 0.48 | M-v | 3 | MPC | 86202 2003 YW <sub>86</sub>  |
| 2003 YY <sub>86</sub> | 15.9 | 0.15 | 20071027 | 293.80079 | 216.94549 | 239.00141 | 7.77150  | 0.1136482 | 2.7943218 | 37  | 4 | 2002–2007 | 0.49 | M-v | 0 | MPC | 128836 2003 YY <sub>86</sub> |
| 2003 YM <sub>87</sub> | 14.9 | 0.15 | 20071027 | 283.72536 | 132.59374 | 302.99235 | 8.29059  | 0.0790209 | 3.1131886 | 84  | 3 | 2002–2007 | 0.45 | M-v | 1 | MPC | 126701 2003 YM <sub>87</sub> |
| 2003 YS <sub>87</sub> | 16.8 | 0.15 | 20071027 | 331.00078 | 350.82064 | 100.87719 | 7.30519  | 0.3093056 | 2.6401801 | 93  | 2 | 2003–2007 | 0.57 | M-v | 3 | MPC | 128836 2003 YS <sub>87</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 YE <sub>88</sub>  | 16.1 | 0.15 | 20071027 | 323.85031 | 214.19517 | 241.12808 | 7.89440  | 0.1374860 | 2.6015696 | 65  | 5 | 2000-2007 | 0.42 | M-v | 2 | MPC | 128836 2003 YE <sub>88</sub>  |
| 2003 YQ <sub>88</sub>  | 16.3 | 0.15 | 20071027 | 302.78752 | 67.79925  | 76.48162  | 5.27146  | 0.1517714 | 2.5722773 | 32  | 4 | 1996-2007 | 0.54 | M-v | 3 | MPC | 77761 2003 YQ <sub>88</sub>   |
| 2003 YG <sub>89</sub>  | 16.2 | 0.15 | 20071027 | 338.72740 | 327.40166 | 113.09094 | 14.64966 | 0.2242503 | 2.6926071 | 81  | 3 | 2002-2007 | 0.48 | M-v | 1 | MPC | 128836 2003 YG <sub>89</sub>  |
| 2003 YK <sub>89</sub>  | 16.0 | 0.15 | 20071027 | 21.40222  | 98.45302  | 304.14133 | 15.95967 | 0.1880554 | 2.6212799 | 59  | 5 | 1998-2007 | 0.52 | M-v | 0 | MPC | 128836 2003 YK <sub>89</sub>  |
| 2003 YN <sub>89</sub>  | 16.9 | 0.15 | 20071027 | 353.17900 | 328.67809 | 97.94096  | 7.96801  | 0.3179605 | 2.6255581 | 74  | 2 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128836 2003 YN <sub>89</sub>  |
| 2003 YR <sub>89</sub>  | 15.9 | 0.15 | 20071027 | 308.74139 | 21.70169  | 82.23943  | 4.54403  | 0.0618323 | 2.7570193 | 91  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128836 2003 YR <sub>89</sub>  |
| 2003 YY <sub>89</sub>  | 15.9 | 0.15 | 20071027 | 293.45121 | 48.74263  | 83.99406  | 6.10175  | 0.1099890 | 2.7090234 | 63  | 3 | 2003-2007 | 0.56 | M-v | 3 | MPC | 128836 2003 YY <sub>89</sub>  |
| 2003 YH <sub>90</sub>  | 17.3 | 0.15 | 20071027 | 338.79038 | 198.45804 | 319.91345 | 1.98189  | 0.1630259 | 2.3894705 | 61  | 3 | 2003-2007 | 0.41 | M-v | 2 | MPC | 108824 2003 YH <sub>90</sub>  |
| 2003 YT <sub>90</sub>  | 16.5 | 0.15 | 20071027 | 359.34735 | 197.07445 | 190.99943 | 5.73903  | 0.3737184 | 2.5897381 | 204 | 3 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128836 2003 YT <sub>90</sub>  |
| 2003 YX <sub>90</sub>  | 16.0 | 0.15 | 20071027 | 25.77438  | 311.28973 | 99.73874  | 15.29755 | 0.2227419 | 2.4322553 | 62  | 3 | 1999-2007 | 0.56 | M-v | 2 | MPC | 128836 2003 YX <sub>90</sub>  |
| 2003 YK <sub>91</sub>  | 17.3 | 0.15 | 20071027 | 345.33575 | 248.64520 | 190.81088 | 4.68396  | 0.2546906 | 2.6021353 | 39  | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128103 2003 YK <sub>91</sub>  |
| 2003 YQ <sub>91</sub>  | 15.4 | 0.15 | 20071027 | 322.96874 | 164.31638 | 297.94992 | 13.20631 | 0.0761210 | 2.7522822 | 53  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 108824 2003 YQ <sub>91</sub>  |
| 2003 YQ <sub>94</sub>  | 17.8 | 0.15 | 20071027 | 356.35900 | 85.67663  | 272.58207 | 8.53231  | 0.6180218 | 2.6527758 | 61  | 2 | 2003-2007 | 0.46 | M-v | 2 | MPC | 120324 2003 YQ <sub>94</sub>  |
| 2003 YD <sub>95</sub>  | 16.2 | 0.15 | 20071027 | 30.17180  | 321.55904 | 94.11985  | 7.70111  | 0.0828397 | 2.4030806 | 56  | 4 | 1999-2007 | 0.46 | M-v | 2 | MPC | 128836 2003 YD <sub>95</sub>  |
| 2003 YE <sub>97</sub>  | 17.2 | 0.15 | 20071027 | 7.75069   | 266.17624 | 168.08623 | 2.60119  | 0.1073161 | 2.4592412 | 39  | 6 | 1997-2007 | 0.45 | M-v | 1 | MPC | 121808 2003 YE <sub>97</sub>  |
| 2003 YN <sub>97</sub>  | 17.2 | 0.15 | 20071027 | 31.61386  | 289.79629 | 131.27999 | 1.58250  | 0.1576513 | 2.3829492 | 30  | 5 | 1999-2007 | 0.39 | M-v | 1 | MPC | 115782 2003 YN <sub>97</sub>  |
| 2003 YS <sub>99</sub>  | 16.5 | 0.15 | 20071027 | 77.05833  | 266.01947 | 115.86319 | 5.69610  | 0.1613743 | 2.3683088 | 61  | 5 | 1999-2007 | 0.49 | M-v | 1 | MPC | 104282 2003 YS <sub>99</sub>  |
| 2003 YK <sub>101</sub> | 15.8 | 0.15 | 20071027 | 288.33533 | 254.16912 | 253.81984 | 11.76947 | 0.1144423 | 2.5640618 | 42  | 4 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128836 2003 YK <sub>101</sub> |
| 2003 YH <sub>102</sub> | 16.2 | 0.15 | 20071027 | 316.19295 | 343.41403 | 119.31662 | 9.93408  | 0.2273456 | 2.6791722 | 91  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128836 2003 YH <sub>102</sub> |
| 2003 YR <sub>102</sub> | 15.9 | 0.15 | 20071027 | 310.08826 | 221.22572 | 280.77405 | 6.49233  | 0.1391791 | 2.5939157 | 73  | 5 | 2000-2007 | 0.47 | M-v | 2 | MPC | 104282 2003 YR <sub>102</sub> |
| 2003 YC <sub>103</sub> | 17.2 | 0.15 | 20071027 | 44.68976  | 244.23228 | 201.98595 | 2.02958  | 0.1469393 | 2.3175855 | 44  | 5 | 1996-2007 | 0.43 | M-v | 1 | MPC | 111013 2003 YC <sub>103</sub> |
| 2003 YL <sub>103</sub> | 16.0 | 0.15 | 20071027 | 316.99392 | 131.91126 | 14.55142  | 4.01997  | 0.1693338 | 2.5241692 | 81  | 5 | 2000-2007 | 0.46 | M-v | 3 | MPC | 128836 2003 YL <sub>103</sub> |
| 2003 YU <sub>103</sub> | 16.7 | 0.15 | 20071027 | 60.31918  | 253.05517 | 118.10372 | 4.59431  | 0.1790099 | 2.3997113 | 34  | 3 | 1999-2007 | 0.52 | M-v | 3 | MPC | 57539 2003 YU <sub>103</sub>  |
| 2003 YV <sub>103</sub> | 16.7 | 0.15 | 20071027 | 346.06892 | 315.06839 | 109.38978 | 5.46722  | 0.2652531 | 2.5577668 | 62  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128836 2003 YV <sub>103</sub> |
| 2003 YF <sub>104</sub> | 15.1 | 0.15 | 20071027 | 269.73194 | 237.20598 | 272.46538 | 10.98212 | 0.1183368 | 2.6513708 | 48  | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128103 2003 YF <sub>104</sub> |
| 2003 YC <sub>105</sub> | 16.3 | 0.15 | 20071027 | 329.43031 | 306.30458 | 169.60379 | 5.06525  | 0.2997165 | 2.6523944 | 139 | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128836 2003 YC <sub>105</sub> |
| 2003 YP <sub>105</sub> | 16.0 | 0.15 | 20071027 | 323.76708 | 295.77908 | 176.47231 | 4.39507  | 0.1006066 | 2.5261809 | 51  | 6 | 1993-2007 | 0.65 | M-v | 1 | MPC | 111013 2003 YP <sub>105</sub> |
| 2003 YX <sub>105</sub> | 16.2 | 0.15 | 20071027 | 344.19040 | 140.38199 | 276.06870 | 11.76255 | 0.2184612 | 2.6209826 | 69  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128836 2003 YX <sub>105</sub> |
| 2003 YC <sub>106</sub> | 16.3 | 0.15 | 20071027 | 33.00316  | 303.44739 | 79.63662  | 6.24293  | 0.1521671 | 2.5754006 | 42  | 5 | 1995-2007 | 0.46 | M-v | 1 | MPC | 128836 2003 YC <sub>106</sub> |
| 2003 YR <sub>107</sub> | 15.5 | 0.15 | 20071027 | 323.24198 | 142.88145 | 287.47301 | 8.30568  | 0.1173526 | 2.7588572 | 69  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128836 2003 YR <sub>107</sub> |
| 2003 YS <sub>108</sub> | 17.1 | 0.15 | 20071027 | 357.74963 | 340.72290 | 43.55971  | 3.81114  | 0.2207998 | 2.6365816 | 74  | 2 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128836 2003 YS <sub>108</sub> |
| 2003 YA <sub>109</sub> | 15.6 | 0.15 | 20071027 | 127.53627 | 199.00421 | 96.09097  | 15.96959 | 0.0803989 | 2.5335829 | 50  | 4 | 2003-2007 | 0.57 | M-v | 1 | MPC | 104282 2003 YA <sub>109</sub> |
| 2003 YN <sub>109</sub> | 15.3 | 0.15 | 20071027 | 327.93281 | 23.60426  | 136.09726 | 12.90832 | 0.2046737 | 2.4333617 | 54  | 5 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128836 2003 YN <sub>109</sub> |
| 2003 YM <sub>110</sub> | 16.4 | 0.15 | 20071027 | 322.39066 | 347.67825 | 117.30022 | 14.67550 | 0.2023828 | 2.6496153 | 63  | 3 | 2003-2007 | 0.59 | M-v | 2 | MPC | 128103 2003 YM <sub>110</sub> |
| 2003 YQ <sub>110</sub> | 16.2 | 0.15 | 20071027 | 317.70088 | 207.59394 | 260.96341 | 7.07988  | 0.1382186 | 2.6063882 | 73  | 4 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128836 2003 YQ <sub>110</sub> |
| 2003 YC <sub>111</sub> | 16.6 | 0.15 | 20071027 | 7.54631   | 282.95985 | 111.82800 | 7.07029  | 0.0618452 | 2.7848920 | 42  | 4 | 2002-2007 | 0.57 | M-v | 1 | MPC | 128836 2003 YC <sub>111</sub> |
| 2003 YM <sub>111</sub> | 16.5 | 0.15 | 20071027 | 33.39276  | 34.55611  | 326.14288 | 1.63643  | 0.1608080 | 2.5871206 | 90  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128104 2003 YM <sub>111</sub> |
| 2003 YS <sub>111</sub> | 16.1 | 0.15 | 20071027 | 276.84817 | 98.05819  | 58.22549  | 11.72193 | 0.2545665 | 2.6339982 | 57  | 4 | 2000-2007 | 0.56 | M-v | 2 | MPC | 128837 2003 YS <sub>111</sub> |
| 2003 YX <sub>111</sub> | 15.7 | 0.15 | 20071027 | 288.75545 | 186.60407 | 290.55708 | 12.25692 | 0.1322530 | 2.6793233 | 70  | 5 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128837 2003 YX <sub>111</sub> |
| 2003 YD <sub>112</sub> | 16.6 | 0.15 | 20071027 | 21.32621  | 336.75169 | 23.15521  | 5.67910  | 0.3010230 | 2.5976050 | 95  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128837 2003 YD <sub>112</sub> |
| 2003 YE <sub>112</sub> | 16.3 | 0.15 | 20071027 | 358.62571 | 356.67291 | 34.28400  | 6.08122  | 0.2397940 | 2.6248921 | 103 | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128837 2003 YE <sub>112</sub> |
| 2003 YE <sub>113</sub> | 17.0 | 0.15 | 20071027 | 317.19798 | 79.39536  | 46.13369  | 5.46919  | 0.3022786 | 2.6081233 | 51  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128104 2003 YE <sub>113</sub> |
| 2003 YO <sub>113</sub> | 17.0 | 0.15 | 20071027 | 311.93934 | 60.59683  | 55.34534  | 3.06532  | 0.1066382 | 2.6228363 | 48  | 4 | 1998-2007 | 0.40 | M-v | 1 | MPC | 128104 2003 YO <sub>113</sub> |
| 2003 YP <sub>113</sub> | 16.2 | 0.15 | 20071027 | 29.75509  | 342.40651 | 27.68156  | 3.47417  | 0.3127339 | 2.5840090 | 34  | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 76340 2003 YP <sub>113</sub>  |
| 2003 YR <sub>113</sub> | 17.0 | 0.15 | 20071027 | 354.66572 | 81.57479  | 0.88726   | 5.45982  | 0.1588164 | 2.5818989 | 32  | 4 | 1994-2007 | 0.66 | M-v | 1 | MPC | 87602 2003 YR <sub>113</sub>  |
| 2003 YM <sub>114</sub> | 16.0 | 0.15 | 20071027 | 335.47213 | 179.38997 | 267.09248 | 4.45161  | 0.1202270 | 2.6501952 | 35  | 3 | 2002-2007 | 0.42 | M-v | 3 | MPC | 128104 2003 YM <sub>114</sub> |
| 2003 YN <sub>114</sub> | 16.2 | 0.15 | 20071027 | 10.37836  | 293.56877 | 101.89657 | 5.40043  | 0.2271133 | 2.6316316 | 43  | 2 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128104 2003 YN <sub>114</sub> |
| 2003 YV <sub>115</sub> | 16.8 | 0.15 | 20071027 | 10.18408  | 153.21723 | 302.33723 | 5.65486  | 0.0765797 | 2.4445481 | 38  | 4 | 2002-2007 | 0.49 | M-v | 2 | MPC | 111013 2003 YV <sub>115</sub> |
| 2003 YX <sub>115</sub> | 15.4 | 0.15 | 20071027 | 267.29949 | 228.34644 | 297.60698 | 8.35392  | 0.1320768 | 2.6785377 | 59  | 2 | 2003-2007 | 0.62 | M-v | 4 | MPC | 128105 2003 YX <sub>115</sub> |
| 2003 YB <sub>116</sub> | 16.8 | 0.15 | 20071027 | 318.45982 | 44.72040  | 71.89276  | 6.42560  | 0.2064587 | 2.6020081 | 62  | 2 | 2003-2007 | 0.35 | M-v | 3 | MPC | 128105 2003 YB <sub>116</sub> |
| 2003 YF <sub>117</sub> | 17.4 | 0.15 | 20071027 | 66.75295  | 297.13271 | 94.31650  | 5.88679  | 0.1933451 | 2.3921014 | 33  | 6 | 1997-2007 | 0.58 | M-v | 1 | MPC | 114064 2003 YF <sub>117</sub> |
| 2003 YS <sub>117</sub> | 18.3 | 0.15 | 20071027 | 140.85520 | 322.02365 | 300.46382 | 29.55622 | 0.3305707 | 1.2494557 | 117 | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 128837 2003 YS <sub>117</sub> |
| 2003 YT <sub>118</sub> | 16.0 | 0.15 | 20071027 | 268.56351 | 91.21951  | 67.98986  | 7.86166  | 0.0763087 | 2.6599301 | 53  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128837 2003 YT <sub>118</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 YK <sub>122</sub> | 16.5 | 0.15 | 20071027 | 249.17190 | 105.95744 | 62.50193  | 4.17330  | 0.1527972 | 2.6293005 | 58  | 3 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128837 2003 YK <sub>122</sub> |
| 2003 YV <sub>122</sub> | 16.0 | 0.15 | 20071027 | 22.51203  | 302.20467 | 81.61102  | 31.52158 | 0.0621500 | 2.5812534 | 37  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128837 2003 YV <sub>122</sub> |
| 2003 YF <sub>123</sub> | 16.2 | 0.15 | 20071027 | 270.71596 | 96.28094  | 101.94390 | 8.41944  | 0.1381072 | 2.5660089 | 55  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128837 2003 YF <sub>123</sub> |
| 2003 YP <sub>123</sub> | 16.1 | 0.15 | 20071027 | 39.07848  | 89.15211  | 256.24312 | 11.33234 | 0.2029150 | 2.5973833 | 77  | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128837 2003 YP <sub>123</sub> |
| 2003 YJ <sub>125</sub> | 16.5 | 0.15 | 20071027 | 48.06633  | 77.33456  | 343.87358 | 6.29965  | 0.1046684 | 2.3099498 | 64  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 111014 2003 YJ <sub>125</sub> |
| 2003 YF <sub>126</sub> | 15.9 | 0.15 | 20071027 | 32.92757  | 19.53571  | 338.95800 | 7.33040  | 0.2980093 | 2.5539907 | 62  | 4 | 1999-2007 | 0.44 | M-v | 3 | MPC | 128837 2003 YF <sub>126</sub> |
| 2003 YM <sub>127</sub> | 16.1 | 0.15 | 20071027 | 11.19933  | 5.69802   | 55.03054  | 9.31830  | 0.0902715 | 2.5342535 | 53  | 7 | 1993-2007 | 0.58 | M-v | 1 | MPC | 87603 2003 YM <sub>127</sub>  |
| 2003 YA <sub>128</sub> | 16.2 | 0.15 | 20071027 | 105.24570 | 14.78113  | 349.27799 | 7.06693  | 0.1295253 | 2.3834425 | 126 | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 111014 2003 YA <sub>128</sub> |
| 2003 YE <sub>128</sub> | 16.4 | 0.15 | 20071027 | 351.38237 | 24.23636  | 56.24767  | 8.38724  | 0.1572042 | 2.5953455 | 39  | 3 | 2003-2007 | 0.65 | M-v | 4 | MPC | 76346 2003 YE <sub>128</sub>  |
| 2003 YN <sub>128</sub> | 16.0 | 0.15 | 20071027 | 38.50996  | 53.93635  | 335.29010 | 10.78376 | 0.1944154 | 2.5532580 | 57  | 5 | 1990-2007 | 0.58 | M-v | 1 | MPC | 104283 2003 YN <sub>128</sub> |
| 2003 YA <sub>129</sub> | 15.7 | 0.15 | 20071027 | 327.44975 | 53.65006  | 70.46965  | 8.28549  | 0.1534241 | 2.5758718 | 84  | 5 | 2000-2007 | 0.56 | M-v | 2 | MPC | 128837 2003 YA <sub>129</sub> |
| 2003 YG <sub>129</sub> | 16.0 | 0.15 | 20071027 | 324.89818 | 11.87173  | 87.89959  | 15.13443 | 0.2122022 | 2.6849018 | 71  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 128837 2003 YG <sub>129</sub> |
| 2003 YK <sub>129</sub> | 15.2 | 0.15 | 20071027 | 291.09729 | 79.34273  | 89.03047  | 13.44037 | 0.1302381 | 2.6059974 | 76  | 5 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128837 2003 YK <sub>129</sub> |
| 2003 YO <sub>129</sub> | 15.0 | 0.15 | 20071027 | 22.87148  | 319.93149 | 81.23749  | 11.32071 | 0.2319509 | 2.6195803 | 92  | 7 | 1994-2007 | 0.51 | M-v | 1 | MPC | 128837 2003 YO <sub>129</sub> |
| 2003 YN <sub>130</sub> | 15.6 | 0.15 | 20071027 | 32.88845  | 19.05378  | 5.80639   | 3.76055  | 0.1764990 | 2.5390309 | 67  | 5 | 1999-2007 | 0.48 | M-v | 3 | MPC | 77763 2003 YN <sub>130</sub>  |
| 2003 YH <sub>131</sub> | 15.8 | 0.15 | 20071027 | 31.76973  | 285.87331 | 81.87332  | 14.11101 | 0.2960731 | 2.5952722 | 52  | 3 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128837 2003 YH <sub>131</sub> |
| 2003 YM <sub>131</sub> | 16.2 | 0.15 | 20071027 | 38.45980  | 310.80739 | 50.79336  | 14.09693 | 0.1232081 | 2.6413570 | 87  | 3 | 2001-2007 | 0.42 | M-v | 2 | MPC | 128106 2003 YM <sub>131</sub> |
| 2003 YG <sub>134</sub> | 15.9 | 0.15 | 20071027 | 352.38857 | 70.78765  | 338.68270 | 12.22184 | 0.2118862 | 2.6841299 | 67  | 4 | 2000-2007 | 0.59 | M-v | 2 | MPC | 128837 2003 YG <sub>134</sub> |
| 2003 YK <sub>134</sub> | 15.7 | 0.15 | 20071027 | 285.67318 | 64.83250  | 78.80391  | 14.80100 | 0.2371261 | 2.7259275 | 73  | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128106 2003 YK <sub>134</sub> |
| 2003 YS <sub>134</sub> | 15.4 | 0.15 | 20071027 | 285.14966 | 103.31720 | 59.98901  | 12.00324 | 0.1230868 | 2.6150220 | 62  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 108833 2003 YS <sub>134</sub> |
| 2003 YB <sub>135</sub> | 15.8 | 0.15 | 20071027 | 4.37249   | 330.98516 | 78.86247  | 14.00289 | 0.2203531 | 2.6457713 | 70  | 2 | 2003-2007 | 0.48 | M-v | 3 | MPC | 128106 2003 YB <sub>135</sub> |
| 2003 YG <sub>135</sub> | 15.9 | 0.15 | 20071027 | 271.54795 | 126.71970 | 34.71036  | 8.71334  | 0.2354779 | 2.7658224 | 89  | 2 | 2003-2007 | 0.63 | M-v | 3 | MPC | 128106 2003 YG <sub>135</sub> |
| 2003 YP <sub>135</sub> | 15.8 | 0.15 | 20071027 | 356.21083 | 327.52661 | 86.59520  | 14.51074 | 0.3918856 | 2.6594975 | 86  | 2 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128837 2003 YP <sub>135</sub> |
| 2003 YA <sub>136</sub> | 16.5 | 0.15 | 20071027 | 18.37243  | 347.37220 | 60.10192  | 7.15445  | 0.1226298 | 2.5754104 | 42  | 4 | 1999-2007 | 0.38 | M-v | 3 | MPC | 76350 2003 YA <sub>136</sub>  |
| 2003 YL <sub>137</sub> | 16.2 | 0.15 | 20071027 | 16.57612  | 300.14550 | 91.14846  | 7.55706  | 0.0578277 | 2.7396598 | 59  | 5 | 1998-2007 | 0.54 | M-v | 1 | MPC | 128837 2003 YL <sub>137</sub> |
| 2003 YG <sub>138</sub> | 16.2 | 0.15 | 20071027 | 329.68271 | 20.52989  | 83.73121  | 5.75104  | 0.0820344 | 2.6450519 | 40  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 87603 2003 YG <sub>138</sub>  |
| 2003 YP <sub>138</sub> | 16.1 | 0.15 | 20071027 | 320.33247 | 339.24810 | 117.58150 | 14.57265 | 0.1477470 | 2.7840749 | 55  | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128837 2003 YP <sub>138</sub> |
| 2003 YK <sub>139</sub> | 15.5 | 0.15 | 20071027 | 338.80522 | 36.65481  | 49.36947  | 13.54934 | 0.1359153 | 2.5570568 | 85  | 4 | 1999-2007 | 0.51 | M-v | 2 | MPC | 128838 2003 YK <sub>139</sub> |
| 2003 YX <sub>139</sub> | 15.6 | 0.15 | 20071027 | 222.73558 | 120.82335 | 77.80403  | 10.44243 | 0.0940583 | 2.6812374 | 63  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128838 2003 YX <sub>139</sub> |
| 2003 YC <sub>140</sub> | 15.3 | 0.15 | 20071027 | 252.38275 | 144.93859 | 59.01534  | 6.96496  | 0.1323085 | 2.5312370 | 50  | 6 | 2000-2007 | 0.60 | M-v | 1 | MPC | 111014 2003 YC <sub>140</sub> |
| 2003 YP <sub>140</sub> | 15.0 | 0.15 | 20071027 | 63.87633  | 286.22679 | 43.57881  | 13.66141 | 0.2101240 | 2.6168233 | 90  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128838 2003 YP <sub>140</sub> |
| 2003 YG <sub>141</sub> | 16.1 | 0.15 | 20071027 | 351.67044 | 5.23213   | 52.49639  | 13.58520 | 0.1497255 | 2.6245582 | 94  | 2 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128107 2003 YG <sub>141</sub> |
| 2003 YL <sub>141</sub> | 16.3 | 0.15 | 20071027 | 346.51898 | 6.13978   | 45.91507  | 12.42277 | 0.1622118 | 2.6784911 | 68  | 2 | 2003-2007 | 0.51 | M-v | 4 | MPC | 128838 2003 YL <sub>141</sub> |
| 2003 YR <sub>141</sub> | 15.2 | 0.15 | 20071027 | 316.90651 | 71.18425  | 62.85549  | 14.56027 | 0.0915758 | 2.5115067 | 49  | 3 | 1999-2007 | 0.52 | M-v | 4 | MPC | 128838 2003 YR <sub>141</sub> |
| 2003 YA <sub>142</sub> | 16.5 | 0.15 | 20071027 | 314.97221 | 63.01504  | 15.40540  | 9.18171  | 0.1487988 | 2.7672974 | 42  | 3 | 2000-2007 | 0.44 | M-v | 4 | MPC | 128838 2003 YA <sub>142</sub> |
| 2003 YV <sub>142</sub> | 15.3 | 0.15 | 20071027 | 272.72857 | 101.51029 | 58.28901  | 13.81101 | 0.1213788 | 2.6643353 | 68  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128838 2003 YV <sub>142</sub> |
| 2003 YF <sub>144</sub> | 16.0 | 0.15 | 20071027 | 328.80420 | 94.00472  | 40.25833  | 3.46419  | 0.0917484 | 2.5224372 | 97  | 5 | 1992-2007 | 0.54 | M-v | 2 | MPC | 128838 2003 YF <sub>144</sub> |
| 2003 YM <sub>144</sub> | 16.3 | 0.15 | 20071027 | 146.37800 | 332.75228 | 287.40118 | 3.39916  | 0.0208636 | 2.7638755 | 49  | 5 | 2002-2007 | 0.41 | M-v | 0 | MPC | 128838 2003 YM <sub>144</sub> |
| 2003 YS <sub>144</sub> | 15.8 | 0.15 | 20071027 | 31.69856  | 10.17066  | 9.20040   | 10.13113 | 0.0814138 | 2.6801760 | 34  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128838 2003 YS <sub>144</sub> |
| 2003 YA <sub>145</sub> | 15.2 | 0.15 | 20071027 | 348.78108 | 353.57755 | 61.02400  | 12.73206 | 0.0876588 | 2.7765663 | 106 | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 128838 2003 YA <sub>145</sub> |
| 2003 YR <sub>145</sub> | 16.1 | 0.15 | 20071027 | 343.91342 | 7.20401   | 81.33817  | 14.86564 | 0.1558262 | 2.6407448 | 61  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128838 2003 YR <sub>145</sub> |
| 2003 YQ <sub>146</sub> | 15.8 | 0.15 | 20071027 | 15.86774  | 348.71941 | 84.71967  | 14.03992 | 0.2189861 | 2.5627769 | 72  | 3 | 2003-2007 | 0.55 | M-v | 2 | MPC | 126702 2003 YQ <sub>146</sub> |
| 2003 YA <sub>147</sub> | 15.5 | 0.15 | 20071027 | 50.29395  | 322.11593 | 21.49182  | 13.62736 | 0.1908200 | 2.5471054 | 46  | 2 | 2003-2007 | 0.65 | M-v | 4 | MPC | 128108 2003 YA <sub>147</sub> |
| 2003 YF <sub>147</sub> | 16.0 | 0.15 | 20071027 | 310.93534 | 176.96592 | 342.60596 | 9.83166  | 0.2055116 | 2.4193303 | 38  | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 114708 2003 YF <sub>147</sub> |
| 2003 YK <sub>147</sub> | 15.4 | 0.15 | 20071027 | 337.63374 | 89.93699  | 326.48182 | 11.67946 | 0.1662480 | 2.6777397 | 71  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128838 2003 YK <sub>147</sub> |
| 2003 YL <sub>147</sub> | 15.4 | 0.15 | 20071027 | 352.87799 | 58.87610  | 8.14173   | 10.31458 | 0.0849887 | 2.5734826 | 55  | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128838 2003 YL <sub>147</sub> |
| 2003 YN <sub>147</sub> | 15.3 | 0.15 | 20071027 | 7.74508   | 344.32526 | 51.06112  | 16.21354 | 0.1094846 | 2.6442761 | 126 | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128838 2003 YN <sub>147</sub> |
| 2003 YQ <sub>148</sub> | 15.9 | 0.15 | 20071027 | 25.74893  | 47.65451  | 10.99760  | 11.17168 | 0.1406317 | 2.5151377 | 45  | 5 | 1999-2007 | 0.54 | M-v | 2 | MPC | 122767 2003 YQ <sub>148</sub> |
| 2003 YC <sub>149</sub> | 15.7 | 0.15 | 20071027 | 197.29626 | 170.34681 | 83.92611  | 28.16513 | 0.0210726 | 2.5480965 | 54  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128838 2003 YC <sub>149</sub> |
| 2003 YW <sub>149</sub> | 15.9 | 0.15 | 20071027 | 334.20706 | 140.09621 | 286.80168 | 11.35541 | 0.2729330 | 2.6459581 | 75  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128838 2003 YW <sub>149</sub> |
| 2003 YQ <sub>150</sub> | 15.6 | 0.15 | 20071027 | 285.91280 | 109.13317 | 27.48082  | 9.69954  | 0.0415602 | 2.7352726 | 55  | 5 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128838 2003 YQ <sub>150</sub> |
| 2003 YY <sub>150</sub> | 16.1 | 0.15 | 20071027 | 341.83903 | 13.15347  | 34.27313  | 10.26478 | 0.2312140 | 2.7731541 | 70  | 2 | 2003-2007 | 0.54 | M-v | 4 | MPC | 128108 2003 YY <sub>150</sub> |
| 2003 YD <sub>151</sub> | 15.7 | 0.15 | 20071027 | 10.40783  | 2.57268   | 57.03103  | 14.90327 | 0.1343206 | 2.6050734 | 51  | 3 | 2003-2007 | 0.57 | M-v | 3 | MPC | 128838 2003 YD <sub>151</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2003 YJ <sub>151</sub> | 15.3 | 0.15 | 20071027 | 242.96277 | 169.40122 | 11.66804  | 14.19651 | 0.1094862 | 2.7908584 | 55  | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128838 2003 YJ <sub>151</sub> |
| 2003 YK <sub>151</sub> | 15.5 | 0.15 | 20071027 | 4.79627   | 355.47231 | 54.08866  | 15.42142 | 0.1761948 | 2.6476178 | 90  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128838 2003 YK <sub>151</sub> |
| 2003 YN <sub>151</sub> | 16.7 | 0.15 | 20071027 | 279.39771 | 120.54988 | 41.68112  | 13.74011 | 0.2005103 | 2.6835408 | 33  | 5 | 1998-2007 | 0.67 | M-v | 1 | MPC | 87603 2003 YN <sub>151</sub>  |
| 2003 YX <sub>152</sub> | 16.1 | 0.15 | 20071027 | 335.17467 | 82.20718  | 26.40738  | 12.06996 | 0.2016916 | 2.6085545 | 72  | 6 | 1994-2007 | 0.52 | M-v | 1 | MPC | 128838 2003 YX <sub>152</sub> |
| 2003 YO <sub>153</sub> | 15.9 | 0.15 | 20071027 | 298.98795 | 46.20060  | 75.65821  | 16.78524 | 0.1901554 | 2.7279575 | 38  | 2 | 2003-2007 | 0.53 | M-v | 3 | MPC | 128109 2003 YO <sub>153</sub> |
| 2003 YW <sub>153</sub> | 15.3 | 0.15 | 20071027 | 326.18628 | 49.24841  | 63.18797  | 14.04071 | 0.1411356 | 2.6217184 | 79  | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128109 2003 YW <sub>153</sub> |
| 2003 YD <sub>154</sub> | 15.8 | 0.15 | 20071027 | 336.78122 | 55.85123  | 65.68705  | 15.43367 | 0.0822600 | 2.5236266 | 45  | 2 | 2003-2007 | 0.59 | M-v | 3 | MPC | 128109 2003 YD <sub>154</sub> |
| 2003 YE <sub>154</sub> | 16.4 | 0.15 | 20071027 | 294.90718 | 104.12396 | 62.41173  | 14.00474 | 0.2311891 | 2.5963819 | 39  | 4 | 1998-2007 | 0.56 | M-v | 2 | MPC | 61760 2003 YE <sub>154</sub>  |
| 2003 YR <sub>154</sub> | 15.6 | 0.15 | 20071027 | 348.63843 | 50.21481  | 46.13347  | 11.45164 | 0.2488516 | 2.5902988 | 84  | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128838 2003 YR <sub>154</sub> |
| 2003 YZ <sub>154</sub> | 15.3 | 0.15 | 20071027 | 287.08801 | 101.19307 | 44.64744  | 15.98611 | 0.1726714 | 2.6264899 | 72  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128110 2003 YZ <sub>154</sub> |
| 2003 YA <sub>155</sub> | 16.0 | 0.15 | 20071027 | 356.97915 | 105.77646 | 328.75330 | 16.87312 | 0.1484531 | 2.5583061 | 30  | 3 | 2002-2007 | 0.46 | M-v | 3 | MPC | 119610 2003 YA <sub>155</sub> |
| 2003 YD <sub>155</sub> | 16.1 | 0.15 | 20071027 | 332.20069 | 56.30098  | 49.74517  | 12.40856 | 0.2694673 | 2.5872402 | 49  | 2 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128110 2003 YD <sub>155</sub> |
| 2003 YF <sub>155</sub> | 15.1 | 0.15 | 20071027 | 258.15176 | 137.54303 | 67.07783  | 16.52544 | 0.1277959 | 2.5821615 | 38  | 4 | 2000-2007 | 0.60 | M-v | 3 | MPC | 65539 2003 YF <sub>155</sub>  |
| 2003 YH <sub>155</sub> | 15.8 | 0.15 | 20071027 | 19.40878  | 19.28477  | 45.63200  | 13.69515 | 0.1668439 | 2.5487638 | 43  | 5 | 2000-2007 | 0.67 | M-v | 1 | MPC | 128838 2003 YH <sub>155</sub> |
| 2003 YL <sub>155</sub> | 16.6 | 0.15 | 20071027 | 346.27057 | 357.23903 | 112.64314 | 3.95843  | 0.1356984 | 2.4601999 | 54  | 6 | 1999-2007 | 0.37 | M-v | 1 | MPC | 128838 2003 YL <sub>155</sub> |
| 2003 YT <sub>155</sub> | 15.4 | 0.15 | 20071027 | 280.13438 | 284.25534 | 246.29105 | 10.52383 | 0.1408476 | 2.6363586 | 50  | 5 | 2000-2007 | 0.57 | M-v | 2 | MPC | 111015 2003 YT <sub>155</sub> |
| 2003 YM <sub>156</sub> | 15.9 | 0.15 | 20071027 | 350.98770 | 282.52237 | 135.33733 | 6.20968  | 0.1426638 | 2.5684636 | 59  | 3 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128838 2003 YM <sub>156</sub> |
| 2003 YP <sub>156</sub> | 16.5 | 0.15 | 20071027 | 255.15639 | 277.08168 | 213.41264 | 3.71581  | 0.0543043 | 2.7459582 | 42  | 3 | 2002-2007 | 0.33 | M-v | 3 | MPC | 128110 2003 YP <sub>156</sub> |
| 2003 YT <sub>157</sub> | 16.3 | 0.15 | 20071027 | 181.16120 | 174.99229 | 19.99771  | 10.00203 | 0.0429949 | 2.7293614 | 43  | 4 | 1998-2007 | 0.31 | M-v | 1 | MPC | 128839 2003 YT <sub>157</sub> |
| 2003 YB <sub>158</sub> | 15.7 | 0.15 | 20071027 | 21.80497  | 69.29749  | 276.05264 | 12.39665 | 0.1684170 | 2.6090274 | 47  | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128839 2003 YB <sub>158</sub> |
| 2003 YG <sub>158</sub> | 16.2 | 0.15 | 20071027 | 23.67410  | 15.29904  | 6.63936   | 11.70307 | 0.1185263 | 2.5275589 | 69  | 5 | 1993-2007 | 0.50 | M-v | 2 | MPC | 128839 2003 YG <sub>158</sub> |
| 2003 YH <sub>159</sub> | 16.4 | 0.15 | 20071027 | 41.51343  | 87.36336  | 294.44291 | 8.84642  | 0.1639070 | 2.4757883 | 32  | 3 | 1999-2007 | 0.55 | M-v | 4 | MPC | 72990 2003 YH <sub>159</sub>  |
| 2003 YL <sub>159</sub> | 15.3 | 0.15 | 20071027 | 94.22580  | 255.26845 | 49.39469  | 9.19176  | 0.1439168 | 2.6236277 | 41  | 4 | 1998-2007 | 0.58 | M-v | 2 | MPC | 128110 2003 YL <sub>159</sub> |
| 2003 YN <sub>161</sub> | 15.9 | 0.15 | 20071027 | 7.80172   | 7.18350   | 8.66581   | 8.48497  | 0.1981948 | 2.6691255 | 141 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPC | 128839 2003 YN <sub>161</sub> |
| 2003 YL <sub>162</sub> | 16.1 | 0.15 | 20071027 | 325.72729 | 58.45919  | 27.67135  | 13.07229 | 0.1533241 | 2.6783471 | 81  | 3 | 1998-2007 | 0.45 | M-v | 2 | MPC | 128110 2003 YL <sub>162</sub> |
| 2003 YW <sub>162</sub> | 16.1 | 0.15 | 20071027 | 319.89445 | 72.40025  | 44.64504  | 6.35297  | 0.0809120 | 2.5537641 | 42  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 76363 2003 YW <sub>162</sub>  |
| 2003 YB <sub>163</sub> | 16.9 | 0.15 | 20071027 | 7.65221   | 344.43035 | 45.72309  | 6.17267  | 0.3343550 | 2.5853827 | 76  | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128111 2003 YB <sub>163</sub> |
| 2003 YR <sub>163</sub> | 15.1 | 0.15 | 20071027 | 128.90152 | 302.82224 | 261.91101 | 14.27488 | 0.0709202 | 3.1189402 | 34  | 6 | 1999-2007 | 0.60 | M-v | 0 | MPC | 111015 2003 YR <sub>163</sub> |
| 2003 YV <sub>163</sub> | 16.5 | 0.15 | 20071027 | 34.35184  | 86.16961  | 264.47103 | 8.13030  | 0.2234682 | 2.5913764 | 46  | 2 | 2003-2007 | 0.47 | M-v | 4 | MPC | 128111 2003 YV <sub>163</sub> |
| 2003 YG <sub>167</sub> | 16.3 | 0.15 | 20071027 | 78.69237  | 207.34696 | 122.29999 | 4.63229  | 0.0956932 | 2.8072073 | 41  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 104284 2003 YG <sub>167</sub> |
| 2003 YP <sub>167</sub> | 16.0 | 0.15 | 20071027 | 337.69951 | 11.58963  | 41.66210  | 13.63612 | 0.1586652 | 2.6268810 | 84  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128839 2003 YP <sub>167</sub> |
| 2003 YY <sub>167</sub> | 16.4 | 0.15 | 20071027 | 344.00832 | 20.66627  | 59.76256  | 9.49361  | 0.1159278 | 2.5518395 | 59  | 5 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128839 2003 YY <sub>167</sub> |
| 2003 YS <sub>168</sub> | 15.5 | 0.15 | 20071027 | 27.77444  | 299.52418 | 60.79243  | 8.39043  | 0.1454672 | 2.6946007 | 76  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128111 2003 YS <sub>168</sub> |
| 2003 YB <sub>169</sub> | 16.5 | 0.15 | 20071027 | 281.34226 | 175.66022 | 1.00651   | 4.62261  | 0.1428272 | 2.5262878 | 68  | 7 | 1994-2007 | 0.48 | M-v | 3 | MPC | 114708 2003 YB <sub>169</sub> |
| 2003 YF <sub>169</sub> | 16.4 | 0.15 | 20071027 | 54.95400  | 86.83454  | 322.93480 | 5.57281  | 0.1076535 | 2.3965078 | 64  | 3 | 2003-2007 | 0.53 | M-v | 1 | MPC | 128839 2003 YF <sub>169</sub> |
| 2003 YR <sub>169</sub> | 15.6 | 0.15 | 20071027 | 61.31134  | 252.82679 | 83.31232  | 16.52399 | 0.0894616 | 2.7495942 | 71  | 7 | 1998-2007 | 0.61 | M-v | 1 | MPC | 128839 2003 YR <sub>169</sub> |
| 2003 YU <sub>169</sub> | 15.9 | 0.15 | 20071027 | 67.56020  | 261.50296 | 81.81001  | 13.44494 | 0.1793143 | 2.6216942 | 41  | 3 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128112 2003 YU <sub>169</sub> |
| 2003 YM <sub>170</sub> | 15.9 | 0.15 | 20071027 | 42.25806  | 52.59648  | 335.46343 | 4.74398  | 0.1918003 | 2.4895815 | 40  | 4 | 1999-2007 | 0.51 | M-v | 4 | MPC | 111015 2003 YM <sub>170</sub> |
| 2003 YO <sub>170</sub> | 15.9 | 0.15 | 20071027 | 87.37657  | 263.93610 | 56.51587  | 6.94863  | 0.0206624 | 2.7126021 | 65  | 4 | 1996-2007 | 0.49 | M-v | 0 | MPC | 128839 2003 YO <sub>170</sub> |
| 2003 YV <sub>174</sub> | 16.7 | 0.15 | 20071027 | 60.12143  | 253.85886 | 107.18309 | 6.74665  | 0.0580031 | 2.6642384 | 36  | 4 | 2003-2007 | 0.32 | M-v | 0 | MPC | 128839 2003 YV <sub>174</sub> |
| 2003 YK <sub>175</sub> | 16.0 | 0.15 | 20071027 | 204.53319 | 110.38238 | 105.50483 | 8.89950  | 0.0402735 | 2.7527663 | 32  | 3 | 2003-2007 | 0.41 | M-v | 2 | MPC | 95155 2003 YK <sub>175</sub>  |
| 2003 YG <sub>180</sub> | 16.5 | 0.15 | 20071027 | 16.71520  | 7.66569   | 54.27469  | 7.69073  | 0.0508920 | 2.5263779 | 42  | 4 | 2001-2007 | 0.45 | M-v | 3 | MPC | 108839 2003 YG <sub>180</sub> |
| 2003 YR <sub>180</sub> | 15.9 | 0.15 | 20071027 | 333.12915 | 340.11904 | 113.94137 | 10.47701 | 0.2481770 | 2.7780777 | 81  | 5 | 1998-2007 | 0.62 | M-v | 1 | MPC | 128839 2003 YR <sub>180</sub> |
| 2003 YU <sub>180</sub> | 16.0 | 0.15 | 20071027 | 33.77020  | 9.14986   | 23.44683  | 3.78317  | 0.2012028 | 2.5709272 | 35  | 3 | 2003-2007 | 0.61 | M-v | 4 | MPC | 108841 2003 YU <sub>180</sub> |
| 2003 YW <sub>180</sub> | 15.8 | 0.15 | 20071027 | 340.55908 | 322.32938 | 108.62749 | 6.88740  | 0.0429602 | 2.7191743 | 49  | 3 | 2003-2007 | 0.64 | M-v | 4 | MPC | 128112 2003 YW <sub>180</sub> |
| 2003 YE <sub>181</sub> | 16.1 | 0.15 | 20071027 | 335.53545 | 142.61883 | 274.02324 | 11.48500 | 0.3877730 | 2.7537135 | 56  | 3 | 1998-2007 | 0.58 | M-v | 1 | MPC | 128839 2003 YE <sub>181</sub> |
| 2003 YH <sub>181</sub> | 16.2 | 0.15 | 20071027 | 325.18043 | 74.64655  | 87.37039  | 6.97342  | 0.0719903 | 2.4383416 | 71  | 3 | 2003-2007 | 0.47 | M-v | 3 | MPC | 112863 2003 YH <sub>181</sub> |
| 2004 AR <sub>1</sub>   | 19.8 | 0.15 | 20071027 | 359.44332 | 50.14216  | 336.71184 | 9.07612  | 0.4695327 | 1.5766951 | 105 | 3 | 2004-2007 | 0.45 | M-v | 2 | MPC | 97695 2004 AR <sub>1</sub>    |
| 2004 AW <sub>1</sub>   | 14.9 | 0.15 | 20071027 | 290.81124 | 252.28823 | 264.19323 | 11.61310 | 0.2047363 | 2.6643015 | 78  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128839 2004 AW <sub>1</sub>   |
| 2004 AH <sub>2</sub>   | 15.9 | 0.15 | 20071027 | 276.95139 | 195.54022 | 300.57587 | 3.16248  | 0.0392531 | 2.7848207 | 67  | 5 | 1997-2007 | 0.42 | M-v | 1 | MPC | 128839 2004 AH <sub>2</sub>   |
| 2004 AO <sub>2</sub>   | 15.5 | 0.15 | 20071027 | 11.74337  | 263.41524 | 127.15785 | 5.65136  | 0.0792092 | 2.7754946 | 64  | 5 | 1993-2007 | 0.66 | M-v | 1 | MPC | 128839 2004 AO <sub>2</sub>   |
| 2004 AS <sub>2</sub>   | 15.5 | 0.15 | 20071027 | 232.03908 | 117.10722 | 122.13446 | 13.41973 | 0.1390046 | 2.5323175 | 64  | 7 | 2000-2007 | 0.54 | M-v | 1 | MPC | 111016 2004 AS <sub>2</sub>   |
| 2004 AC <sub>3</sub>   | 15.7 | 0.15 | 20071027 | 347.58884 | 356.32195 | 65.41018  | 18.36791 | 0.0689696 | 2.7050496 | 74  | 2 | 2003-2007 | 0.52 | M-v | 3 | MPC | 128112 2004 AC <sub>3</sub>   |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 AP <sub>3</sub>  | 15.9 | 0.15 | 20071027 | 330.79213 | 65.04600  | 23.92641  | 4.41924  | 0.0666549 | 2.6778669 | 62  | 5 | 1998–2007 | 0.46 | M-v | 0 | MPC | 128839 2004 AP <sub>3</sub>  |
| 2004 AQ <sub>3</sub>  | 16.7 | 0.15 | 20071027 | 27.50351  | 123.98553 | 315.59351 | 7.57954  | 0.1867364 | 2.4045404 | 51  | 3 | 2003–2007 | 0.48 | M-v | 2 | MPC | 111016 2004 AQ <sub>3</sub>  |
| 2004 AB <sub>5</sub>  | 16.2 | 0.15 | 20071027 | 337.31123 | 303.07117 | 120.45440 | 7.56717  | 0.3202919 | 2.6985695 | 91  | 2 | 2003–2007 | 0.51 | M-v | 3 | MPC | 126703 2004 AB <sub>5</sub>  |
| 2004 AO <sub>6</sub>  | 17.2 | 0.15 | 20071027 | 6.79699   | 318.20111 | 89.13942  | 3.54663  | 0.1021560 | 2.6894189 | 41  | 2 | 2003–2007 | 0.35 | M-v | 3 | MPC | 128113 2004 AO <sub>6</sub>  |
| 2004 AP <sub>7</sub>  | 16.6 | 0.15 | 20071027 | 353.54340 | 174.90005 | 298.65739 | 8.07425  | 0.1559277 | 2.4852310 | 54  | 4 | 2000–2007 | 0.47 | M-v | 2 | MPC | 128839 2004 AP <sub>7</sub>  |
| 2004 AR <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 11.60509  | 336.52053 | 158.04629 | 5.92260  | 0.1714060 | 2.3387649 | 73  | 4 | 2002–2007 | 0.49 | M-v | 2 | MPC | 116259 2004 AR <sub>7</sub>  |
| 2004 AS <sub>7</sub>  | 16.7 | 0.15 | 20071027 | 328.01312 | 231.89952 | 249.74717 | 4.19565  | 0.2082761 | 2.5904718 | 63  | 4 | 2000–2007 | 0.50 | M-v | 2 | MPC | 111016 2004 AS <sub>7</sub>  |
| 2004 AY <sub>7</sub>  | 17.3 | 0.15 | 20071027 | 355.47750 | 72.26117  | 5.39460   | 5.89969  | 0.3212997 | 2.5673964 | 62  | 3 | 1996–2007 | 0.48 | M-v | 2 | MPC | 128113 2004 AY <sub>7</sub>  |
| 2004 AE <sub>8</sub>  | 16.6 | 0.15 | 20071027 | 358.05567 | 280.37474 | 129.68240 | 13.93750 | 0.3451478 | 2.5425840 | 55  | 3 | 2000–2007 | 0.47 | M-v | 2 | MPC | 128839 2004 AE <sub>8</sub>  |
| 2004 AQ <sub>8</sub>  | 16.0 | 0.15 | 20071027 | 48.63359  | 195.07373 | 186.70034 | 13.78336 | 0.2930260 | 2.5356057 | 31  | 6 | 1993–2007 | 0.65 | M-v | 1 | MPC | 121808 2004 AQ <sub>8</sub>  |
| 2004 AG <sub>9</sub>  | 15.8 | 0.15 | 20071027 | 13.72166  | 169.94828 | 214.17901 | 13.13275 | 0.1784548 | 2.5788408 | 133 | 2 | 2003–2007 | 0.48 | M-v | 3 | MPC | 128839 2004 AG <sub>9</sub>  |
| 2004 AK <sub>9</sub>  | 16.6 | 0.15 | 20071027 | 286.53603 | 322.85109 | 183.74069 | 9.23222  | 0.2026183 | 2.7282468 | 55  | 6 | 2000–2007 | 0.48 | M-v | 0 | MPC | 128839 2004 AK <sub>9</sub>  |
| 2004 AL <sub>9</sub>  | 16.2 | 0.15 | 20071027 | 319.53851 | 270.12131 | 192.44922 | 8.79970  | 0.1034920 | 2.7289452 | 66  | 5 | 2000–2007 | 0.50 | M-v | 0 | MPC | 128839 2004 AL <sub>9</sub>  |
| 2004 AS <sub>9</sub>  | 17.5 | 0.15 | 20071027 | 327.18339 | 170.79377 | 310.43515 | 4.12372  | 0.2350914 | 2.5776291 | 38  | 3 | 2000–2007 | 0.44 | M-v | 3 | MPC | 69622 2004 AS <sub>9</sub>   |
| 2004 AM <sub>10</sub> | 15.7 | 0.15 | 20071027 | 4.43804   | 131.44010 | 296.24390 | 21.35368 | 0.0434957 | 2.6449192 | 38  | 4 | 2002–2007 | 0.44 | M-v | 1 | MPC | 122768 2004 AM <sub>10</sub> |
| 2004 AD <sub>13</sub> | 15.8 | 0.15 | 20071027 | 73.66546  | 225.25217 | 111.41947 | 5.69892  | 0.0546588 | 2.7276426 | 62  | 5 | 2000–2007 | 0.50 | M-v | 1 | MPC | 128840 2004 AD <sub>13</sub> |
| 2004 AO <sub>13</sub> | 17.3 | 0.15 | 20071027 | 295.11698 | 165.33787 | 326.64829 | 1.80064  | 0.1296107 | 2.6886978 | 28  | 4 | 2000–2007 | 0.47 | M-v | 1 | MPC | 128840 2004 AO <sub>13</sub> |
| 2004 AZ <sub>13</sub> | 17.1 | 0.15 | 20071027 | 338.08378 | 4.44119   | 112.39383 | 6.69142  | 0.0291792 | 2.5177158 | 35  | 6 | 1999–2007 | 0.40 | M-v | 1 | MPC | 111016 2004 AZ <sub>13</sub> |
| 2004 AF <sub>23</sub> | 17.2 | 0.15 | 20071027 | 27.95109  | 246.08386 | 169.33393 | 2.77665  | 0.0604202 | 2.5626832 | 30  | 5 | 1998–2007 | 0.32 | M-v | 0 | MPC | 111016 2004 AF <sub>23</sub> |
| 2004 AN <sub>24</sub> | 15.8 | 0.15 | 20071027 | 359.94515 | 315.99293 | 93.63269  | 6.22305  | 0.0444190 | 2.7616700 | 55  | 3 | 2003–2007 | 0.49 | M-v | 2 | MPC | 128840 2004 AN <sub>24</sub> |
| 2004 AJ <sub>25</sub> | 16.3 | 0.15 | 20071027 | 10.72656  | 247.24000 | 137.03287 | 3.85000  | 0.2085076 | 2.5692968 | 100 | 4 | 1999–2007 | 0.56 | M-v | 2 | MPC | 128840 2004 AJ <sub>25</sub> |
| 2004 AL <sub>25</sub> | 15.8 | 0.15 | 20071027 | 289.67825 | 222.29949 | 259.23214 | 13.36535 | 0.0890060 | 2.6487304 | 58  | 6 | 2000–2007 | 0.50 | M-v | 1 | MPC | 128840 2004 AL <sub>25</sub> |
| 2004 AD <sub>26</sub> | 16.6 | 0.15 | 20071027 | 350.24365 | 168.09290 | 217.27497 | 7.90583  | 0.2309680 | 2.6752434 | 91  | 5 | 1994–2007 | 0.42 | M-v | 0 | MPC | 128840 2004 AD <sub>26</sub> |
| 2004 AF <sub>26</sub> | 16.1 | 0.15 | 20071027 | 323.98715 | 240.31607 | 215.70631 | 11.05556 | 0.1701190 | 2.5798977 | 93  | 3 | 2003–2007 | 0.46 | M-v | 2 | MPC | 128840 2004 AF <sub>26</sub> |
| 2004 AQ <sub>26</sub> | 15.2 | 0.15 | 20071027 | 285.22723 | 287.10510 | 230.48955 | 11.86089 | 0.2080053 | 2.6875815 | 75  | 3 | 2000–2007 | 0.42 | M-v | 2 | MPC | 128840 2004 AQ <sub>26</sub> |
| 2004 BD <sub>2</sub>  | 15.9 | 0.15 | 20071027 | 58.42077  | 350.36762 | 21.38608  | 4.49344  | 0.1423463 | 2.5238693 | 43  | 5 | 2000–2007 | 0.40 | M-v | 1 | MPC | 128840 2004 BD <sub>2</sub>  |
| 2004 BU <sub>2</sub>  | 16.3 | 0.15 | 20071027 | 269.65945 | 132.06761 | 37.56454  | 2.97663  | 0.0583625 | 2.6588892 | 57  | 6 | 1996–2007 | 0.51 | M-v | 1 | MPC | 111017 2004 BU <sub>2</sub>  |
| 2004 BX <sub>2</sub>  | 17.4 | 0.15 | 20071027 | 323.54283 | 140.69567 | 17.10548  | 1.37252  | 0.1196608 | 2.4609975 | 41  | 4 | 2002–2007 | 0.32 | M-v | 2 | MPC | 128840 2004 BX <sub>2</sub>  |
| 2004 BB <sub>3</sub>  | 17.6 | 0.15 | 20071027 | 345.42440 | 25.00565  | 105.98062 | 2.40641  | 0.1424688 | 2.4670337 | 57  | 3 | 2000–2007 | 0.46 | M-v | 3 | MPC | 87604 2004 BB <sub>3</sub>   |
| 2004 BQ <sub>3</sub>  | 16.6 | 0.15 | 20071027 | 332.57221 | 7.54040   | 71.95128  | 3.92876  | 0.1610679 | 2.7319861 | 68  | 3 | 2004–2007 | 0.50 | M-v | 3 | MPC | 128840 2004 BQ <sub>3</sub>  |
| 2004 BF <sub>5</sub>  | 15.5 | 0.15 | 20071027 | 232.58704 | 237.93743 | 324.87866 | 8.60466  | 0.0660414 | 2.7347986 | 67  | 6 | 1995–2007 | 0.55 | M-v | 1 | MPC | 111017 2004 BF <sub>5</sub>  |
| 2004 BZ <sub>5</sub>  | 17.3 | 0.15 | 20071027 | 265.57201 | 67.89918  | 159.09560 | 1.45608  | 0.1241645 | 2.4365960 | 53  | 5 | 1998–2007 | 0.36 | M-v | 1 | MPC | 111017 2004 BZ <sub>5</sub>  |
| 2004 BL <sub>6</sub>  | 16.2 | 0.15 | 20071027 | 8.12601   | 159.50802 | 235.38432 | 2.69232  | 0.1051376 | 2.7841020 | 59  | 3 | 2003–2007 | 0.41 | M-v | 3 | MPC | 128840 2004 BL <sub>6</sub>  |
| 2004 BU <sub>7</sub>  | 14.8 | 0.15 | 20071027 | 28.49765  | 13.66779  | 309.10464 | 13.54075 | 0.1592938 | 3.1017997 | 64  | 4 | 2002–2007 | 0.49 | M-v | 1 | MPC | 128840 2004 BU <sub>7</sub>  |
| 2004 BG <sub>9</sub>  | 16.1 | 0.15 | 20071027 | 348.55638 | 356.57859 | 82.78659  | 13.77574 | 0.1545186 | 2.6672353 | 45  | 3 | 2004–2007 | 0.52 | M-v | 3 | MPC | 128840 2004 BG <sub>9</sub>  |
| 2004 BA <sub>10</sub> | 16.3 | 0.15 | 20071027 | 321.37985 | 26.53239  | 97.04871  | 4.93048  | 0.1418289 | 2.6335498 | 59  | 4 | 1996–2007 | 0.48 | M-v | 2 | MPC | 108849 2004 BA <sub>10</sub> |
| 2004 BE <sub>10</sub> | 16.5 | 0.15 | 20071027 | 32.58996  | 315.34120 | 80.53012  | 5.68338  | 0.2200064 | 2.5969787 | 58  | 5 | 2001–2007 | 0.38 | M-v | 0 | MPC | 128840 2004 BE <sub>10</sub> |
| 2004 BU <sub>10</sub> | 16.1 | 0.15 | 20071027 | 351.31556 | 201.62774 | 260.20294 | 6.72135  | 0.1428992 | 2.5340971 | 45  | 5 | 1996–2007 | 0.46 | M-v | 2 | MPC | 126704 2004 BU <sub>10</sub> |
| 2004 BR <sub>11</sub> | 17.1 | 0.15 | 20071027 | 299.63627 | 23.19782  | 85.33414  | 0.57784  | 0.0880452 | 2.8158325 | 46  | 5 | 1997–2007 | 0.37 | M-v | 0 | MPC | 128114 2004 BR <sub>11</sub> |
| 2004 BZ <sub>11</sub> | 16.8 | 0.15 | 20071027 | 285.13467 | 13.60740  | 144.19472 | 4.51659  | 0.1686742 | 2.6836484 | 51  | 4 | 2000–2007 | 0.47 | M-v | 1 | MPC | 128840 2004 BZ <sub>11</sub> |
| 2004 BP <sub>13</sub> | 16.5 | 0.15 | 20071027 | 6.08658   | 10.40598  | 44.24272  | 2.64126  | 0.1112564 | 2.6855620 | 55  | 6 | 1996–2007 | 0.51 | M-v | 1 | MPC | 128840 2004 BP <sub>13</sub> |
| 2004 BF <sub>14</sub> | 15.7 | 0.15 | 20071027 | 280.88056 | 235.05939 | 253.57129 | 8.18070  | 0.1111200 | 2.8112604 | 50  | 4 | 1997–2007 | 0.58 | M-v | 3 | MPC | 128840 2004 BF <sub>14</sub> |
| 2004 BD <sub>16</sub> | 16.1 | 0.15 | 20071027 | 337.92593 | 35.01504  | 80.70719  | 5.78114  | 0.1825297 | 2.5982828 | 81  | 4 | 1994–2007 | 0.47 | M-v | 1 | MPC | 128840 2004 BD <sub>16</sub> |
| 2004 BF <sub>16</sub> | 16.0 | 0.15 | 20071027 | 354.08955 | 77.42084  | 21.04535  | 4.83785  | 0.1258532 | 2.6003403 | 43  | 5 | 1977–2007 | 0.64 | M-v | 1 | MPC | 122768 2004 BF <sub>16</sub> |
| 2004 BQ <sub>16</sub> | 16.6 | 0.15 | 20071027 | 324.60413 | 68.95817  | 52.42886  | 9.74296  | 0.1431289 | 2.5407808 | 25  | 3 | 1999–2007 | 0.53 | M-v | 3 | MPC | 66327 2004 BQ <sub>16</sub>  |
| 2004 BS <sub>16</sub> | 16.2 | 0.15 | 20071027 | 344.17573 | 115.92887 | 14.30921  | 7.25093  | 0.1564433 | 2.4484218 | 66  | 5 | 1999–2007 | 0.56 | M-v | 2 | MPC | 111017 2004 BS <sub>16</sub> |
| 2004 BB <sub>17</sub> | 16.9 | 0.15 | 20071027 | 247.14679 | 111.64749 | 70.05580  | 14.21412 | 0.1918547 | 2.7947141 | 28  | 3 | 2002–2007 | 0.38 | M-v | 2 | MPC | 69630 2004 BB <sub>17</sub>  |
| 2004 BK <sub>17</sub> | 15.8 | 0.15 | 20071027 | 285.33287 | 137.59740 | 59.72257  | 15.08908 | 0.1151137 | 2.5281924 | 52  | 3 | 2003–2007 | 0.53 | M-v | 3 | MPC | 116260 2004 BK <sub>17</sub> |
| 2004 BE <sub>18</sub> | 15.4 | 0.15 | 20071027 | 2.77251   | 343.19044 | 58.77160  | 15.62055 | 0.1898568 | 2.7675772 | 111 | 2 | 2003–2007 | 0.48 | M-v | 2 | MPC | 128840 2004 BE <sub>18</sub> |
| 2004 BG <sub>18</sub> | 15.7 | 0.15 | 20071027 | 51.83467  | 343.93375 | 45.21930  | 14.97975 | 0.0099622 | 2.6774836 | 41  | 6 | 1996–2007 | 0.58 | M-v | 1 | MPC | 111017 2004 BG <sub>18</sub> |
| 2004 BJ <sub>18</sub> | 16.5 | 0.15 | 20071027 | 340.87591 | 65.00393  | 62.15448  | 3.23569  | 0.2661865 | 2.5864660 | 92  | 3 | 1998–2007 | 0.52 | M-v | 1 | MPC | 66327 2004 BJ <sub>18</sub>  |
| 2004 BT <sub>18</sub> | 15.2 | 0.15 | 20071027 | 301.80481 | 148.37877 | 267.75669 | 7.64024  | 0.0916026 | 3.0967710 | 66  | 4 | 2002–2007 | 0.54 | M-v | 0 | MPC | 124436 2004 BT <sub>18</sub> |
| 2004 BX <sub>18</sub> | 16.1 | 0.15 | 20071027 | 328.30348 | 296.91800 | 162.33621 | 13.40236 | 0.2307307 | 2.6898932 | 93  | 6 | 2000–2007 | 0.60 | M-v | 1 | MPC | 128840 2004 BX <sub>18</sub> |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 BA <sub>19</sub> | 15.1 | 0.15 | 20071027 | 2.55355   | 119.99737 | 277.98485 | 12.80683 | 0.1569854 | 2.5901812 | 76  | 3 | 1999-2007 | 0.44 | M-v | 3 | MPC | 128840 2004 BA <sub>19</sub> |
| 2004 BV <sub>19</sub> | 16.4 | 0.15 | 20071027 | 346.90252 | 92.37511  | 340.66237 | 4.41508  | 0.2030612 | 2.6360566 | 84  | 4 | 1998-2007 | 0.51 | M-v | 1 | MPC | 128840 2004 BV <sub>19</sub> |
| 2004 BD <sub>20</sub> | 16.2 | 0.15 | 20071027 | 21.39300  | 319.28823 | 106.85171 | 14.33542 | 0.0797853 | 2.5995673 | 37  | 6 | 2000-2007 | 0.47 | M-v | 0 | MPC | 122768 2004 BD <sub>20</sub> |
| 2004 BR <sub>20</sub> | 17.0 | 0.15 | 20071027 | 307.77692 | 200.26567 | 350.39239 | 5.47093  | 0.1267937 | 2.3777332 | 30  | 5 | 2002-2007 | 0.29 | M-v | 0 | MPC | 121808 2004 BR <sub>20</sub> |
| 2004 BZ <sub>20</sub> | 17.0 | 0.15 | 20071027 | 308.03506 | 38.81361  | 138.92263 | 3.41568  | 0.1125866 | 2.4481977 | 54  | 4 | 1997-2007 | 0.40 | M-v | 1 | MPC | 128840 2004 BZ <sub>20</sub> |
| 2004 BC <sub>21</sub> | 17.5 | 0.15 | 20071027 | 350.28622 | 344.19328 | 124.63260 | 3.64027  | 0.1772876 | 2.5100183 | 51  | 3 | 2000-2007 | 0.46 | M-v | 3 | MPC | 128841 2004 BC <sub>21</sub> |
| 2004 BP <sub>21</sub> | 16.2 | 0.15 | 20071027 | 312.80447 | 329.46845 | 136.68963 | 12.95327 | 0.1005158 | 2.7338269 | 41  | 5 | 1995-2007 | 0.45 | M-v | 1 | MPC | 128841 2004 BP <sub>21</sub> |
| 2004 BV <sub>21</sub> | 16.1 | 0.15 | 20071027 | 301.78713 | 65.47192  | 87.22436  | 5.00820  | 0.0330630 | 2.5293996 | 53  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128841 2004 BV <sub>21</sub> |
| 2004 BK <sub>22</sub> | 16.7 | 0.15 | 20071027 | 336.84962 | 341.41017 | 116.45457 | 3.49337  | 0.1649909 | 2.6265407 | 45  | 3 | 2002-2007 | 0.54 | M-v | 3 | MPC | 123973 2004 BK <sub>22</sub> |
| 2004 BT <sub>22</sub> | 16.1 | 0.15 | 20071027 | 27.03480  | 249.14502 | 118.82005 | 10.25163 | 0.1980920 | 2.7682047 | 91  | 4 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128841 2004 BT <sub>22</sub> |
| 2004 BZ <sub>22</sub> | 15.4 | 0.15 | 20071027 | 234.96940 | 315.79787 | 313.34367 | 12.92188 | 0.2592324 | 2.4523982 | 112 | 3 | 2004-2007 | 0.45 | M-v | 2 | MPC | 128841 2004 BZ <sub>22</sub> |
| 2004 BQ <sub>23</sub> | 15.9 | 0.15 | 20071027 | 277.33534 | 239.03219 | 282.78250 | 10.81368 | 0.1355958 | 2.6755272 | 46  | 3 | 2000-2007 | 0.63 | M-v | 3 | MPC | 61776 2004 BQ <sub>23</sub>  |
| 2004 BP <sub>24</sub> | 17.0 | 0.15 | 20071027 | 30.16027  | 87.94066  | 303.84187 | 2.91007  | 0.2567825 | 2.5760778 | 44  | 5 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128841 2004 BP <sub>24</sub> |
| 2004 BE <sub>25</sub> | 16.9 | 0.15 | 20071027 | 11.38240  | 310.04610 | 118.46477 | 7.76882  | 0.1408282 | 2.5599790 | 43  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 72993 2004 BE <sub>25</sub>  |
| 2004 BH <sub>25</sub> | 15.7 | 0.15 | 20071027 | 61.95627  | 221.13225 | 124.39160 | 11.06939 | 0.1706017 | 2.7352934 | 42  | 4 | 1997-2007 | 0.48 | M-v | 1 | MPC | 86227 2004 BH <sub>25</sub>  |
| 2004 BX <sub>25</sub> | 15.3 | 0.15 | 20071027 | 198.79020 | 276.22160 | 305.10664 | 10.77497 | 0.0916750 | 2.7551825 | 67  | 5 | 2000-2007 | 0.61 | M-v | 1 | MPC | 128841 2004 BX <sub>25</sub> |
| 2004 BF <sub>27</sub> | 17.1 | 0.15 | 20071027 | 325.77716 | 40.07933  | 67.88239  | 14.05886 | 0.2053012 | 2.6404732 | 45  | 3 | 1994-2007 | 0.51 | M-v | 2 | MPC | 128841 2004 BF <sub>27</sub> |
| 2004 BL <sub>27</sub> | 16.6 | 0.15 | 20071027 | 11.04605  | 34.31243  | 0.91938   | 1.82720  | 0.2745103 | 2.6370489 | 72  | 3 | 1994-2007 | 0.36 | M-v | 2 | MPC | 128841 2004 BL <sub>27</sub> |
| 2004 BO <sub>27</sub> | 15.6 | 0.15 | 20071027 | 23.65510  | 314.83289 | 73.76940  | 5.04752  | 0.1523961 | 2.6580100 | 59  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 86228 2004 BO <sub>27</sub>  |
| 2004 BG <sub>28</sub> | 17.1 | 0.15 | 20071027 | 37.01133  | 352.22964 | 80.85650  | 2.37429  | 0.1746367 | 2.4436416 | 52  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 114068 2004 BG <sub>28</sub> |
| 2004 BT <sub>29</sub> | 15.6 | 0.15 | 20071027 | 338.57140 | 98.50435  | 321.41845 | 11.57855 | 0.1131110 | 2.8838156 | 63  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128841 2004 BT <sub>29</sub> |
| 2004 BM <sub>31</sub> | 16.7 | 0.15 | 20071027 | 25.10472  | 97.76649  | 347.45892 | 3.43686  | 0.1225314 | 2.4302906 | 47  | 5 | 1991-2007 | 0.44 | M-v | 1 | MPC | 114068 2004 BM <sub>31</sub> |
| 2004 BX <sub>32</sub> | 16.8 | 0.15 | 20071027 | 20.99710  | 67.23158  | 312.31241 | 11.65275 | 0.2815806 | 2.6756242 | 39  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 87606 2004 BX <sub>32</sub>  |
| 2004 BG <sub>34</sub> | 17.4 | 0.15 | 20071027 | 307.77175 | 41.46191  | 114.45334 | 5.90869  | 0.2163781 | 2.5776384 | 55  | 4 | 1998-2007 | 0.59 | M-v | 2 | MPC | 61781 2004 BG <sub>34</sub>  |
| 2004 BV <sub>34</sub> | 17.1 | 0.15 | 20071027 | 4.42054   | 62.22483  | 7.35741   | 1.95638  | 0.0560450 | 2.5663029 | 32  | 6 | 2000-2007 | 0.37 | M-v | 0 | MPC | 111018 2004 BV <sub>34</sub> |
| 2004 BD <sub>35</sub> | 16.1 | 0.15 | 20071027 | 333.88484 | 29.96003  | 22.06573  | 1.96598  | 0.0919236 | 2.9373488 | 81  | 3 | 2004-2007 | 0.44 | M-v | 3 | MPC | 128841 2004 BD <sub>35</sub> |
| 2004 BS <sub>35</sub> | 16.6 | 0.15 | 20071027 | 312.59132 | 74.34190  | 23.41513  | 2.05287  | 0.0300772 | 2.8319627 | 66  | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 128841 2004 BS <sub>35</sub> |
| 2004 BG <sub>36</sub> | 16.4 | 0.15 | 20071027 | 21.80380  | 306.32957 | 82.07686  | 3.79875  | 0.3002292 | 2.6309983 | 40  | 4 | 1998-2007 | 0.44 | M-v | 1 | MPC | 111018 2004 BG <sub>36</sub> |
| 2004 BW <sub>36</sub> | 15.9 | 0.15 | 20071027 | 310.82581 | 134.92845 | 326.18014 | 3.65328  | 0.0756016 | 2.8044729 | 89  | 3 | 2002-2007 | 0.52 | M-v | 3 | MPC | 128841 2004 BW <sub>36</sub> |
| 2004 BM <sub>37</sub> | 17.4 | 0.15 | 20071027 | 314.80610 | 187.58904 | 320.33826 | 5.90790  | 0.0220486 | 2.5428614 | 30  | 5 | 1994-2007 | 0.49 | M-v | 2 | MPC | 128841 2004 BM <sub>37</sub> |
| 2004 BV <sub>38</sub> | 15.1 | 0.15 | 20071027 | 64.00202  | 225.53171 | 105.14623 | 6.36975  | 0.0992018 | 2.8146367 | 87  | 5 | 2002-2007 | 0.45 | M-v | 1 | MPC | 128841 2004 BV <sub>38</sub> |
| 2004 BX <sub>38</sub> | 15.4 | 0.15 | 20071027 | 27.57547  | 265.80149 | 109.72439 | 14.99696 | 0.1757276 | 2.6976629 | 59  | 4 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128841 2004 BX <sub>38</sub> |
| 2004 BY <sub>38</sub> | 16.0 | 0.15 | 20071027 | 30.89181  | 279.74972 | 100.52527 | 6.66518  | 0.1078051 | 2.6984570 | 68  | 6 | 2001-2007 | 0.45 | M-v | 0 | MPC | 128841 2004 BY <sub>38</sub> |
| 2004 BG <sub>39</sub> | 17.2 | 0.15 | 20071027 | 310.38028 | 32.69286  | 135.70240 | 3.20982  | 0.1148454 | 2.4438488 | 39  | 4 | 1995-2007 | 0.45 | M-v | 2 | MPC | 114709 2004 BG <sub>39</sub> |
| 2004 BH <sub>41</sub> | 19.4 | 0.15 | 20071027 | 88.86588  | 200.30114 | 123.24134 | 30.45304 | 0.5000688 | 1.1949653 | 45  | 3 | 2004-2007 | 0.51 | M-v | 3 | MPC | 119610 2004 BH <sub>41</sub> |
| 2004 BD <sub>42</sub> | 16.7 | 0.15 | 20071027 | 316.29560 | 137.17868 | 339.62163 | 8.74446  | 0.2361931 | 2.7117583 | 78  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128841 2004 BD <sub>42</sub> |
| 2004 BE <sub>42</sub> | 16.3 | 0.15 | 20071027 | 17.89114  | 317.94171 | 115.93585 | 8.88098  | 0.1739664 | 2.5702710 | 45  | 5 | 2002-2007 | 0.47 | M-v | 0 | MPC | 104288 2004 BE <sub>42</sub> |
| 2004 BK <sub>42</sub> | 15.9 | 0.15 | 20071027 | 267.15287 | 229.63005 | 304.02077 | 5.04333  | 0.2039367 | 2.7683219 | 94  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 114069 2004 BK <sub>42</sub> |
| 2004 BP <sub>42</sub> | 15.2 | 0.15 | 20071027 | 255.82473 | 136.53288 | 63.80797  | 14.01891 | 0.0842443 | 2.5910141 | 60  | 5 | 2000-2007 | 0.58 | M-v | 2 | MPC | 118065 2004 BP <sub>42</sub> |
| 2004 BN <sub>43</sub> | 16.2 | 0.15 | 20071027 | 298.79463 | 185.18060 | 324.69474 | 12.49764 | 0.1380864 | 2.6880719 | 78  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 114709 2004 BN <sub>43</sub> |
| 2004 BJ <sub>46</sub> | 15.8 | 0.15 | 20071027 | 312.11523 | 243.73743 | 256.88067 | 3.80708  | 0.1968516 | 2.6064240 | 67  | 4 | 2000-2007 | 0.63 | M-v | 3 | MPC | 104288 2004 BJ <sub>46</sub> |
| 2004 BK <sub>47</sub> | 15.4 | 0.15 | 20071027 | 292.32783 | 136.39081 | 290.89498 | 9.31954  | 0.1099368 | 3.0552035 | 46  | 3 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128841 2004 BK <sub>47</sub> |
| 2004 BR <sub>49</sub> | 16.8 | 0.15 | 20071027 | 2.12206   | 313.24667 | 124.98629 | 2.24068  | 0.0904618 | 2.5915436 | 57  | 6 | 1998-2007 | 0.33 | M-v | 0 | MPC | 108863 2004 BR <sub>49</sub> |
| 2004 BW <sub>50</sub> | 16.7 | 0.15 | 20071027 | 20.89352  | 307.65458 | 131.12379 | 5.01379  | 0.1752641 | 2.4842989 | 63  | 4 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128842 2004 BW <sub>50</sub> |
| 2004 BT <sub>51</sub> | 15.7 | 0.15 | 20071027 | 349.65604 | 111.21571 | 309.42233 | 7.12411  | 0.2873872 | 2.6849471 | 94  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128842 2004 BT <sub>51</sub> |
| 2004 BY <sub>51</sub> | 15.7 | 0.15 | 20071027 | 183.78503 | 90.77707  | 137.39525 | 6.89877  | 0.0341985 | 2.8990841 | 69  | 6 | 1999-2007 | 0.46 | M-v | 0 | MPC | 128842 2004 BY <sub>51</sub> |
| 2004 BK <sub>52</sub> | 16.2 | 0.15 | 20071027 | 259.62046 | 90.28777  | 109.02690 | 4.44059  | 0.1096684 | 2.5511622 | 39  | 4 | 2002-2007 | 0.42 | M-v | 2 | MPC | 128842 2004 BK <sub>52</sub> |
| 2004 BP <sub>52</sub> | 17.0 | 0.15 | 20071027 | 311.49339 | 317.63967 | 160.97214 | 1.07171  | 0.1407107 | 2.6774931 | 48  | 5 | 1998-2007 | 0.47 | M-v | 0 | MPC | 128842 2004 BP <sub>52</sub> |
| 2004 BT <sub>52</sub> | 15.7 | 0.15 | 20071027 | 14.97355  | 105.33865 | 295.45155 | 6.37420  | 0.0454782 | 2.7625942 | 63  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 128842 2004 BT <sub>52</sub> |
| 2004 BU <sub>52</sub> | 16.5 | 0.15 | 20071027 | 73.03203  | 256.06945 | 126.23687 | 3.12146  | 0.2180814 | 2.4420617 | 60  | 6 | 2000-2007 | 0.45 | M-v | 1 | MPC | 111020 2004 BU <sub>52</sub> |
| 2004 BR <sub>53</sub> | 15.6 | 0.15 | 20071027 | 106.59491 | 2.10585   | 308.52955 | 8.04925  | 0.0500124 | 2.7482439 | 64  | 5 | 2002-2007 | 0.42 | M-v | 1 | MPC | 111020 2004 BR <sub>53</sub> |
| 2004 BY <sub>53</sub> | 16.7 | 0.15 | 20071027 | 329.42204 | 346.71536 | 101.35027 | 6.45373  | 0.0610564 | 2.7589778 | 34  | 3 | 2004-2007 | 0.40 | M-v | 2 | MPC | 128842 2004 BY <sub>53</sub> |
| 2004 BB <sub>54</sub> | 16.7 | 0.15 | 20071027 | 48.94916  | 260.94868 | 114.19456 | 7.38318  | 0.0450399 | 2.7217036 | 36  | 5 | 2002-2007 | 0.42 | M-v | 0 | MPC | 104289 2004 BB <sub>54</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 BP <sub>54</sub> | 15.6 | 0.15 | 20071027 | 247.85165 | 121.11826 | 73.16684  | 2.65330  | 0.0370251 | 2.6946636 | 79  | 7 | 2000-2007 | 0.50 | M-v | 1 | MPC | 111020 2004 BP <sub>54</sub> |
| 2004 BZ <sub>54</sub> | 16.7 | 0.15 | 20071027 | 351.12605 | 129.94203 | 293.24053 | 3.99694  | 0.1537071 | 2.7265980 | 44  | 4 | 2002-2007 | 0.43 | M-v | 0 | MPC | 128116 2004 BZ <sub>54</sub> |
| 2004 BM <sub>55</sub> | 16.6 | 0.15 | 20071027 | 311.71432 | 227.88844 | 318.54516 | 1.55759  | 0.1157845 | 2.4303746 | 68  | 4 | 2004-2007 | 0.44 | M-v | 1 | MPC | 128842 2004 BM <sub>55</sub> |
| 2004 BO <sub>55</sub> | 17.2 | 0.15 | 20071027 | 4.80572   | 287.72999 | 138.30384 | 4.27560  | 0.2651712 | 2.5850204 | 22  | 4 | 2000-2007 | 0.38 | M-v | 3 | MPC | 61799 2004 BO <sub>55</sub>  |
| 2004 BC <sub>57</sub> | 15.9 | 0.15 | 20071027 | 239.66629 | 148.80160 | 109.70058 | 8.87068  | 0.1190876 | 2.4779797 | 49  | 5 | 1996-2007 | 0.46 | M-v | 1 | MPC | 111020 2004 BC <sub>57</sub> |
| 2004 BN <sub>57</sub> | 15.6 | 0.15 | 20071027 | 333.04629 | 198.40695 | 284.47664 | 14.01530 | 0.0414478 | 2.5631164 | 40  | 4 | 2000-2007 | 0.51 | M-v | 3 | MPC | 128842 2004 BN <sub>57</sub> |
| 2004 BP <sub>57</sub> | 15.6 | 0.15 | 20071027 | 40.45396  | 141.84486 | 245.52439 | 5.63459  | 0.2856408 | 2.5359917 | 67  | 5 | 1996-2007 | 0.50 | M-v | 3 | MPC | 128842 2004 BP <sub>57</sub> |
| 2004 BL <sub>58</sub> | 15.9 | 0.15 | 20071027 | 32.48601  | 157.48444 | 233.66277 | 5.39025  | 0.2918529 | 2.5713459 | 67  | 5 | 1990-2007 | 0.52 | M-v | 1 | MPC | 128842 2004 BL <sub>58</sub> |
| 2004 BM <sub>60</sub> | 15.9 | 0.15 | 20071027 | 97.70534  | 27.20766  | 297.21138 | 17.35299 | 0.1968952 | 2.6543825 | 58  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 111020 2004 BM <sub>60</sub> |
| 2004 BP <sub>60</sub> | 17.2 | 0.15 | 20071027 | 40.21308  | 88.88411  | 291.88081 | 2.75090  | 0.1125653 | 2.6514886 | 46  | 6 | 1998-2007 | 0.43 | M-v | 0 | MPC | 104289 2004 BP <sub>60</sub> |
| 2004 BM <sub>61</sub> | 15.5 | 0.15 | 20071027 | 39.54214  | 255.84910 | 103.83998 | 8.23376  | 0.1650387 | 2.7222597 | 62  | 3 | 2002-2007 | 0.41 | M-v | 2 | MPC | 128842 2004 BM <sub>61</sub> |
| 2004 BC <sub>63</sub> | 17.2 | 0.15 | 20071027 | 96.15709  | 281.60561 | 94.01831  | 2.46153  | 0.0876240 | 2.4098079 | 68  | 7 | 1998-2007 | 0.48 | M-v | 0 | MPC | 122470 2004 BC <sub>63</sub> |
| 2004 BR <sub>64</sub> | 16.6 | 0.15 | 20071027 | 317.18904 | 50.84958  | 85.74253  | 2.53869  | 0.0642996 | 2.5630387 | 52  | 7 | 1998-2007 | 0.45 | M-v | 1 | MPC | 126705 2004 BR <sub>64</sub> |
| 2004 BB <sub>65</sub> | 16.2 | 0.15 | 20071027 | 118.46740 | 226.30586 | 46.11996  | 2.76264  | 0.0109141 | 2.9382687 | 51  | 5 | 1994-2007 | 0.36 | M-v | 0 | MPC | 128842 2004 BB <sub>65</sub> |
| 2004 BO <sub>65</sub> | 16.5 | 0.15 | 20071027 | 156.74632 | 260.77219 | 2.13034   | 3.56590  | 0.0520874 | 2.7714092 | 33  | 6 | 2000-2007 | 0.44 | M-v | 1 | MPC | 111020 2004 BO <sub>65</sub> |
| 2004 BV <sub>65</sub> | 16.5 | 0.15 | 20071027 | 109.13254 | 203.33359 | 105.90634 | 7.52665  | 0.0404601 | 2.7533181 | 33  | 5 | 1996-2007 | 0.44 | M-v | 0 | MPC | 128842 2004 BV <sub>65</sub> |
| 2004 BZ <sub>65</sub> | 17.5 | 0.15 | 20071027 | 8.44744   | 279.00519 | 152.55706 | 2.74982  | 0.1342035 | 2.5546257 | 26  | 5 | 1996-2007 | 0.42 | M-v | 3 | MPC | 111020 2004 BZ <sub>65</sub> |
| 2004 BA <sub>67</sub> | 16.3 | 0.15 | 20071027 | 39.55677  | 89.28224  | 297.69302 | 12.02346 | 0.1984432 | 2.5563708 | 32  | 3 | 2002-2007 | 0.48 | M-v | 1 | MPC | 86237 2004 BA <sub>67</sub>  |
| 2004 BJ <sub>67</sub> | 15.8 | 0.15 | 20071027 | 297.98855 | 83.88729  | 347.67945 | 0.64501  | 0.0710032 | 3.0433272 | 58  | 5 | 1994-2007 | 0.41 | M-v | 0 | MPC | 128842 2004 BJ <sub>67</sub> |
| 2004 BH <sub>68</sub> | 15.9 | 0.15 | 20071027 | 288.58656 | 235.64046 | 298.68702 | 13.94416 | 0.2118256 | 2.6452364 | 66  | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 108868 2004 BH <sub>68</sub> |
| 2004 BZ <sub>68</sub> | 16.2 | 0.15 | 20071027 | 339.44204 | 280.38112 | 182.60943 | 27.46159 | 0.3884257 | 2.6006821 | 55  | 3 | 2002-2007 | 0.42 | M-v | 1 | MPC | 128842 2004 BZ <sub>68</sub> |
| 2004 BG <sub>69</sub> | 16.0 | 0.15 | 20071027 | 330.83645 | 274.48137 | 166.16469 | 9.90022  | 0.4201838 | 2.7718382 | 138 | 2 | 2004-2007 | 0.52 | M-v | 3 | MPC | 126706 2004 BG <sub>69</sub> |
| 2004 BB <sub>70</sub> | 16.6 | 0.15 | 20071027 | 341.91207 | 113.02072 | 316.91131 | 8.29111  | 0.2148142 | 2.6823288 | 93  | 3 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128842 2004 BB <sub>70</sub> |
| 2004 BN <sub>70</sub> | 16.0 | 0.15 | 20071027 | 327.52013 | 116.72364 | 336.89270 | 5.18383  | 0.0969281 | 2.7438218 | 69  | 5 | 1995-2007 | 0.47 | M-v | 1 | MPC | 128842 2004 BN <sub>70</sub> |
| 2004 BY <sub>70</sub> | 15.8 | 0.15 | 20071027 | 328.43487 | 117.10573 | 322.82754 | 6.93299  | 0.2017102 | 2.7781513 | 82  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128842 2004 BY <sub>70</sub> |
| 2004 BT <sub>71</sub> | 16.4 | 0.15 | 20071027 | 300.87218 | 313.05735 | 166.72730 | 6.93680  | 0.1514806 | 2.7377533 | 40  | 5 | 2000-2007 | 0.51 | M-v | 0 | MPC | 128842 2004 BT <sub>71</sub> |
| 2004 BZ <sub>71</sub> | 16.1 | 0.15 | 20071027 | 301.76652 | 351.16427 | 147.69425 | 12.43554 | 0.1187124 | 2.6564972 | 59  | 5 | 2000-2007 | 0.51 | M-v | 1 | MPC | 111020 2004 BZ <sub>71</sub> |
| 2004 BH <sub>72</sub> | 16.5 | 0.15 | 20071027 | 355.53188 | 197.76959 | 233.50803 | 3.47482  | 0.2328728 | 2.6255787 | 76  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128842 2004 BH <sub>72</sub> |
| 2004 BM <sub>73</sub> | 16.0 | 0.15 | 20071027 | 252.61109 | 229.11046 | 310.04607 | 8.33389  | 0.0962883 | 2.7708679 | 74  | 4 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128116 2004 BM <sub>73</sub> |
| 2004 BR <sub>73</sub> | 16.2 | 0.15 | 20071027 | 281.09433 | 353.42763 | 159.69018 | 3.04400  | 0.1146667 | 2.7495601 | 43  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128842 2004 BR <sub>73</sub> |
| 2004 BU <sub>74</sub> | 16.2 | 0.15 | 20071027 | 12.97833  | 171.31707 | 247.09072 | 3.96082  | 0.2249607 | 2.5802635 | 56  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 128842 2004 BU <sub>74</sub> |
| 2004 BG <sub>75</sub> | 15.9 | 0.15 | 20071027 | 355.79350 | 327.47123 | 108.93952 | 5.73449  | 0.1556146 | 2.6447627 | 61  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 108871 2004 BG <sub>75</sub> |
| 2004 BC <sub>76</sub> | 15.7 | 0.15 | 20071027 | 305.25603 | 211.94942 | 277.38778 | 8.16885  | 0.0692235 | 2.7263064 | 42  | 4 | 2002-2007 | 0.57 | M-v | 1 | MPC | 104290 2004 BC <sub>76</sub> |
| 2004 BJ <sub>76</sub> | 16.6 | 0.15 | 20071027 | 331.35725 | 55.34467  | 139.40290 | 2.68826  | 0.2035332 | 2.3357095 | 74  | 5 | 2000-2007 | 0.43 | M-v | 1 | MPC | 112864 2004 BJ <sub>76</sub> |
| 2004 BQ <sub>77</sub> | 16.7 | 0.15 | 20071027 | 349.30783 | 99.00760  | 320.60225 | 3.21418  | 0.0935511 | 2.7716418 | 33  | 2 | 2004-2007 | 0.45 | M-v | 4 | MPC | 128117 2004 BQ <sub>77</sub> |
| 2004 BV <sub>78</sub> | 16.9 | 0.15 | 20071027 | 328.74843 | 20.94581  | 71.99874  | 2.50638  | 0.0335640 | 2.7369640 | 30  | 3 | 2004-2007 | 0.41 | M-v | 4 | MPC | 128843 2004 BV <sub>78</sub> |
| 2004 BE <sub>79</sub> | 16.5 | 0.15 | 20071027 | 192.05117 | 231.78790 | 4.17215   | 3.55806  | 0.0416995 | 2.7698609 | 41  | 6 | 1995-2007 | 0.49 | M-v | 0 | MPC | 128843 2004 BE <sub>79</sub> |
| 2004 BQ <sub>82</sub> | 15.7 | 0.15 | 20071027 | 276.48594 | 63.05083  | 84.03076  | 6.19160  | 0.1056059 | 2.8710681 | 106 | 6 | 1993-2007 | 0.48 | M-v | 0 | MPC | 128843 2004 BQ <sub>82</sub> |
| 2004 BX <sub>83</sub> | 15.6 | 0.15 | 20071027 | 354.08689 | 156.04652 | 319.52439 | 13.37761 | 0.1379515 | 2.6035893 | 63  | 5 | 1993-2007 | 0.64 | M-v | 1 | MPC | 111021 2004 BX <sub>83</sub> |
| 2004 BB <sub>84</sub> | 16.3 | 0.15 | 20071027 | 100.40672 | 41.14081  | 287.17912 | 2.95498  | 0.0379673 | 2.7152791 | 37  | 6 | 1993-2007 | 0.35 | M-v | 0 | MPC | 111021 2004 BB <sub>84</sub> |
| 2004 BH <sub>84</sub> | 15.4 | 0.15 | 20071027 | 11.68288  | 179.24766 | 254.79799 | 15.62810 | 0.2028317 | 2.5551255 | 39  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128843 2004 BH <sub>84</sub> |
| 2004 BK <sub>84</sub> | 15.7 | 0.15 | 20071027 | 288.55182 | 294.34017 | 224.39495 | 12.09376 | 0.2112687 | 2.6918741 | 43  | 3 | 2000-2007 | 0.57 | M-v | 3 | MPC | 128843 2004 BK <sub>84</sub> |
| 2004 BY <sub>85</sub> | 16.1 | 0.15 | 20071027 | 333.58227 | 313.98943 | 134.44559 | 33.03622 | 0.2611049 | 2.6103268 | 29  | 3 | 2000-2007 | 0.50 | M-v | 3 | MPC | 128843 2004 BY <sub>85</sub> |
| 2004 BA <sub>88</sub> | 15.3 | 0.15 | 20071027 | 324.03949 | 340.76555 | 141.43635 | 16.43387 | 0.2551874 | 2.7023909 | 70  | 3 | 1995-2007 | 0.48 | M-v | 1 | MPC | 128117 2004 BA <sub>88</sub> |
| 2004 BL <sub>88</sub> | 16.5 | 0.15 | 20071027 | 325.81926 | 254.08419 | 221.19633 | 3.39345  | 0.1617023 | 2.6277554 | 44  | 4 | 2004-2007 | 0.50 | M-v | 1 | MPC | 118065 2004 BL <sub>88</sub> |
| 2004 BQ <sub>88</sub> | 16.4 | 0.15 | 20071027 | 329.35247 | 274.17016 | 221.66761 | 4.52526  | 0.2004357 | 2.5443804 | 69  | 4 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128843 2004 BQ <sub>88</sub> |
| 2004 BH <sub>89</sub> | 14.6 | 0.15 | 20071027 | 177.52045 | 304.65049 | 279.78260 | 7.19025  | 0.1285604 | 3.1001313 | 86  | 6 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128843 2004 BH <sub>89</sub> |
| 2004 BP <sub>89</sub> | 15.2 | 0.15 | 20071027 | 296.50768 | 208.40302 | 305.75900 | 15.07936 | 0.0595943 | 2.6869000 | 51  | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 111021 2004 BP <sub>89</sub> |
| 2004 BV <sub>89</sub> | 15.4 | 0.15 | 20071027 | 342.95029 | 167.87200 | 294.13625 | 11.14511 | 0.1494012 | 2.6703642 | 54  | 5 | 1995-2007 | 0.46 | M-v | 1 | MPC | 118065 2004 BV <sub>89</sub> |
| 2004 BA <sub>90</sub> | 15.4 | 0.15 | 20071027 | 11.06726  | 136.72642 | 302.18271 | 13.46124 | 0.0950774 | 2.6460540 | 58  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 111021 2004 BA <sub>90</sub> |
| 2004 BM <sub>90</sub> | 15.3 | 0.15 | 20071027 | 245.43048 | 260.65596 | 280.36111 | 8.33922  | 0.1157390 | 2.7903035 | 59  | 5 | 1993-2007 | 0.54 | M-v | 1 | MPC | 128843 2004 BM <sub>90</sub> |
| 2004 BH <sub>91</sub> | 16.2 | 0.15 | 20071027 | 210.77065 | 302.13641 | 312.80628 | 9.33687  | 0.1316570 | 2.6464169 | 52  | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 111022 2004 BH <sub>91</sub> |
| 2004 BJ <sub>92</sub> | 15.3 | 0.15 | 20071027 | 189.12608 | 302.28046 | 274.62826 | 9.78335  | 0.1623204 | 3.0424254 | 41  | 4 | 1995-2007 | 0.37 | M-v | 1 | MPC | 87609 2004 BJ <sub>92</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 BJ <sub>95</sub>  | 15.1 | 0.15 | 20071027 | 293.39472 | 236.07182 | 286.49080 | 13.28691 | 0.1585921 | 2.7142566 | 54  | 5 | 1998-2007 | 0.58 | M-v | 1 | MPC | 111022 2004 BJ <sub>95</sub>  |
| 2004 BF <sub>96</sub>  | 16.3 | 0.15 | 20071027 | 261.79757 | 36.13266  | 121.94388 | 6.09538  | 0.0517541 | 2.7899924 | 48  | 5 | 2000-2007 | 0.48 | M-v | 0 | MPC | 128843 2004 BF <sub>96</sub>  |
| 2004 BB <sub>97</sub>  | 16.6 | 0.15 | 20071027 | 282.67687 | 256.66138 | 310.30134 | 3.58874  | 0.0161567 | 2.4338141 | 39  | 5 | 1993-2007 | 0.53 | M-v | 2 | MPC | 111022 2004 BB <sub>97</sub>  |
| 2004 BD <sub>97</sub>  | 16.5 | 0.15 | 20071027 | 334.28697 | 310.73958 | 131.70034 | 4.78325  | 0.2246260 | 2.7370369 | 56  | 4 | 1995-2007 | 0.53 | M-v | 1 | MPC | 128118 2004 BD <sub>97</sub>  |
| 2004 BG <sub>101</sub> | 16.2 | 0.15 | 20071027 | 41.08494  | 58.12259  | 305.43539 | 2.84047  | 0.1125249 | 2.8096923 | 48  | 4 | 1997-2007 | 0.45 | M-v | 2 | MPC | 128843 2004 BG <sub>101</sub> |
| 2004 BM <sub>102</sub> | 15.4 | 0.15 | 20071027 | 298.29684 | 64.64504  | 124.34817 | 15.63575 | 0.1648458 | 2.7684146 | 74  | 4 | 1999-2007 | 0.59 | M-v | 1 | MPC | 77772 2004 BM <sub>102</sub>  |
| 2004 BQ <sub>102</sub> | 16.5 | 0.15 | 20071027 | 332.57340 | 52.34003  | 97.41837  | 27.00750 | 0.4044461 | 2.5835131 | 59  | 2 | 2004-2007 | 0.49 | M-v | 2 | MPC | 128118 2004 BQ <sub>102</sub> |
| 2004 BC <sub>103</sub> | 17.2 | 0.15 | 20071027 | 320.14461 | 78.11115  | 60.07009  | 27.61586 | 0.4578870 | 2.6487829 | 123 | 2 | 2004-2007 | 0.50 | M-v | 2 | MPC | 128118 2004 BC <sub>103</sub> |
| 2004 BS <sub>104</sub> | 15.9 | 0.15 | 20071027 | 104.38374 | 67.69660  | 287.05303 | 14.21914 | 0.0272297 | 2.5517112 | 48  | 4 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128843 2004 BS <sub>104</sub> |
| 2004 BX <sub>105</sub> | 16.2 | 0.15 | 20071027 | 4.78958   | 333.65786 | 79.39546  | 6.20923  | 0.1113017 | 2.7140307 | 60  | 3 | 1998-2007 | 0.52 | M-v | 3 | MPC | 128843 2004 BX <sub>105</sub> |
| 2004 BY <sub>105</sub> | 17.2 | 0.15 | 20071027 | 328.72722 | 98.74187  | 31.69227  | 4.41478  | 0.1119828 | 2.5562120 | 30  | 2 | 2004-2007 | 0.41 | M-v | 2 | MPC | 128118 2004 BY <sub>105</sub> |
| 2004 BA <sub>106</sub> | 16.4 | 0.15 | 20071027 | 277.60347 | 152.97906 | 67.11720  | 4.24726  | 0.1475277 | 2.4416723 | 40  | 6 | 1994-2007 | 0.52 | M-v | 1 | MPC | 111022 2004 BA <sub>106</sub> |
| 2004 BD <sub>106</sub> | 16.6 | 0.15 | 20071027 | 312.25963 | 32.76421  | 75.18130  | 4.43518  | 0.1560957 | 2.7392196 | 47  | 2 | 2004-2007 | 0.55 | M-v | 4 | MPC | 128119 2004 BD <sub>106</sub> |
| 2004 BK <sub>106</sub> | 16.4 | 0.15 | 20071027 | 353.34810 | 330.65928 | 119.55956 | 13.35030 | 0.2371853 | 2.5664758 | 57  | 3 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128843 2004 BK <sub>106</sub> |
| 2004 BC <sub>108</sub> | 16.1 | 0.15 | 20071027 | 351.11544 | 1.29694   | 109.48895 | 9.64186  | 0.1982167 | 2.5277868 | 59  | 4 | 1996-2007 | 0.53 | M-v | 3 | MPC | 86247 2004 BC <sub>108</sub>  |
| 2004 BN <sub>108</sub> | 16.1 | 0.15 | 20071027 | 350.59184 | 47.90275  | 56.38732  | 5.16562  | 0.1627093 | 2.5713203 | 43  | 3 | 2000-2007 | 0.45 | M-v | 3 | MPC | 61856 2004 BN <sub>108</sub>  |
| 2004 BE <sub>109</sub> | 15.8 | 0.15 | 20071027 | 10.13091  | 267.50231 | 120.74928 | 14.22351 | 0.1611869 | 2.8050523 | 75  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128843 2004 BE <sub>109</sub> |
| 2004 BF <sub>109</sub> | 16.1 | 0.15 | 20071027 | 37.72616  | 291.63146 | 116.41215 | 18.80335 | 0.1961828 | 2.5788835 | 53  | 4 | 2002-2007 | 0.44 | M-v | 0 | MPC | 128843 2004 BF <sub>109</sub> |
| 2004 BK <sub>109</sub> | 15.7 | 0.15 | 20071027 | 319.04023 | 44.62941  | 105.68348 | 12.70926 | 0.1207401 | 2.5790465 | 65  | 3 | 2000-2007 | 0.52 | M-v | 3 | MPC | 128843 2004 BK <sub>109</sub> |
| 2004 BO <sub>110</sub> | 15.7 | 0.15 | 20071027 | 305.65135 | 39.12017  | 89.89696  | 9.97835  | 0.1020776 | 2.7776904 | 86  | 3 | 2002-2007 | 0.45 | M-v | 2 | MPC | 128843 2004 BO <sub>110</sub> |
| 2004 BL <sub>111</sub> | 15.8 | 0.15 | 20071027 | 307.33904 | 39.44601  | 112.76941 | 14.97067 | 0.0620795 | 2.6735626 | 63  | 5 | 2000-2007 | 0.66 | M-v | 1 | MPC | 111023 2004 BL <sub>111</sub> |
| 2004 BN <sub>111</sub> | 15.4 | 0.15 | 20071027 | 355.38601 | 313.91224 | 140.31411 | 32.80064 | 0.2190254 | 2.6418718 | 78  | 5 | 1993-2007 | 0.51 | M-v | 1 | MPC | 104291 2004 BN <sub>111</sub> |
| 2004 BT <sub>111</sub> | 16.5 | 0.15 | 20071027 | 342.07852 | 10.82329  | 82.80488  | 6.01969  | 0.1584937 | 2.6576363 | 34  | 3 | 1996-2007 | 0.40 | M-v | 3 | MPC | 86248 2004 BT <sub>111</sub>  |
| 2004 BE <sub>113</sub> | 16.4 | 0.15 | 20071027 | 21.72383  | 241.52309 | 137.67101 | 4.73929  | 0.1101795 | 2.7646707 | 53  | 3 | 1997-2007 | 0.52 | M-v | 4 | MPC | 128119 2004 BE <sub>113</sub> |
| 2004 BH <sub>113</sub> | 16.7 | 0.15 | 20071027 | 312.08396 | 69.98142  | 59.96582  | 12.66623 | 0.2410307 | 2.6244447 | 52  | 2 | 2003-2007 | 0.57 | M-v | 2 | MPC | 128119 2004 BH <sub>113</sub> |
| 2004 BT <sub>113</sub> | 15.7 | 0.15 | 20071027 | 67.54737  | 277.86795 | 97.86643  | 15.35148 | 0.1350144 | 2.5439136 | 47  | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 108881 2004 BT <sub>113</sub> |
| 2004 BA <sub>114</sub> | 15.8 | 0.15 | 20071027 | 326.68236 | 311.01087 | 155.93743 | 16.90073 | 0.2154259 | 2.7239940 | 79  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128843 2004 BA <sub>114</sub> |
| 2004 BK <sub>115</sub> | 15.7 | 0.15 | 20071027 | 276.00836 | 234.36260 | 342.75747 | 4.87874  | 0.1304172 | 2.4829021 | 89  | 5 | 2000-2007 | 0.51 | M-v | 2 | MPC | 126707 2004 BK <sub>115</sub> |
| 2004 BN <sub>116</sub> | 15.5 | 0.15 | 20071027 | 236.73088 | 149.32570 | 61.33045  | 12.24132 | 0.1384081 | 2.6839764 | 48  | 4 | 2000-2007 | 0.61 | M-v | 2 | MPC | 86250 2004 BN <sub>116</sub>  |
| 2004 BL <sub>117</sub> | 16.1 | 0.15 | 20071027 | 304.92272 | 30.54448  | 86.21698  | 9.15007  | 0.1785569 | 2.7785193 | 60  | 2 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128120 2004 BL <sub>117</sub> |
| 2004 BT <sub>117</sub> | 15.7 | 0.15 | 20071027 | 299.59313 | 235.19420 | 262.01041 | 9.05881  | 0.1782306 | 2.7323688 | 78  | 3 | 2000-2007 | 0.49 | M-v | 3 | MPC | 128120 2004 BT <sub>117</sub> |
| 2004 BE <sub>118</sub> | 16.3 | 0.15 | 20071027 | 302.70858 | 285.25646 | 235.65065 | 5.34406  | 0.1031993 | 2.5935941 | 56  | 5 | 1998-2007 | 0.36 | M-v | 1 | MPC | 111023 2004 BE <sub>118</sub> |
| 2004 BO <sub>118</sub> | 16.7 | 0.15 | 20071027 | 314.57793 | 100.86215 | 49.92821  | 7.09938  | 0.1782889 | 2.6310281 | 61  | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128843 2004 BO <sub>118</sub> |
| 2004 BV <sub>118</sub> | 16.1 | 0.15 | 20071027 | 338.58565 | 27.46807  | 58.54456  | 14.30801 | 0.2659995 | 2.6748384 | 122 | 2 | 2003-2007 | 0.47 | M-v | 2 | MPC | 128120 2004 BV <sub>118</sub> |
| 2004 BH <sub>119</sub> | 17.1 | 0.15 | 20071027 | 297.56747 | 73.88976  | 97.58415  | 13.79271 | 0.1934088 | 2.6252826 | 46  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 86251 2004 BH <sub>119</sub>  |
| 2004 BK <sub>119</sub> | 16.0 | 0.15 | 20071027 | 248.05943 | 269.11311 | 342.92512 | 6.40180  | 0.1671751 | 2.4581027 | 67  | 4 | 2004-2007 | 0.45 | M-v | 1 | MPC | 118065 2004 BK <sub>119</sub> |
| 2004 BL <sub>119</sub> | 16.5 | 0.15 | 20071027 | 320.18223 | 286.68751 | 193.34739 | 1.69522  | 0.1568061 | 2.6591022 | 62  | 6 | 1998-2007 | 0.55 | M-v | 0 | MPC | 121809 2004 BL <sub>119</sub> |
| 2004 BS <sub>119</sub> | 15.7 | 0.15 | 20071027 | 19.02798  | 334.70267 | 83.92304  | 17.12446 | 0.2402271 | 2.6044230 | 73  | 3 | 2003-2007 | 0.53 | M-v | 2 | MPC | 128843 2004 BS <sub>119</sub> |
| 2004 BA <sub>120</sub> | 16.6 | 0.15 | 20071027 | 348.13321 | 66.84930  | 4.61449   | 10.43299 | 0.2427976 | 2.6673668 | 44  | 3 | 2000-2007 | 0.47 | M-v | 1 | MPC | 128844 2004 BA <sub>120</sub> |
| 2004 BX <sub>120</sub> | 16.4 | 0.15 | 20071027 | 323.09687 | 26.98418  | 68.69854  | 15.55904 | 0.2525436 | 2.7365979 | 64  | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128844 2004 BX <sub>120</sub> |
| 2004 BC <sub>121</sub> | 15.4 | 0.15 | 20071027 | 242.61141 | 150.55992 | 49.03005  | 13.25711 | 0.1294412 | 2.7990598 | 49  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 111024 2004 BC <sub>121</sub> |
| 2004 BG <sub>121</sub> | 19.0 | 0.15 | 20071027 | 73.61137  | 206.69151 | 128.71203 | 19.42901 | 0.3427035 | 1.6126669 | 50  | 3 | 2004-2007 | 0.51 | M-v | 4 | MPC | 95170 2004 BG <sub>121</sub>  |
| 2004 BE <sub>124</sub> | 17.0 | 0.15 | 20071027 | 337.56080 | 245.82005 | 209.91814 | 3.96176  | 0.2765223 | 2.5980525 | 51  | 2 | 2004-2007 | 0.48 | M-v | 3 | MPC | 128121 2004 BE <sub>124</sub> |
| 2004 BY <sub>124</sub> | 14.6 | 0.15 | 20071027 | 218.82974 | 327.89814 | 211.20761 | 16.75309 | 0.1667166 | 3.0906357 | 50  | 5 | 1999-2007 | 0.42 | M-v | 1 | MPC | 128844 2004 BY <sub>124</sub> |
| 2004 BC <sub>126</sub> | 15.8 | 0.15 | 20071027 | 109.77348 | 222.71826 | 42.32210  | 2.50595  | 0.0306872 | 3.0902060 | 67  | 5 | 2001-2007 | 0.33 | M-v | 0 | MPC | 128844 2004 BC <sub>126</sub> |
| 2004 BN <sub>127</sub> | 16.7 | 0.15 | 20071027 | 114.91614 | 216.93789 | 100.64536 | 3.06631  | 0.0769630 | 2.6629385 | 41  | 7 | 1996-2007 | 0.43 | M-v | 0 | MPC | 104292 2004 BN <sub>127</sub> |
| 2004 BG <sub>128</sub> | 17.0 | 0.15 | 20071027 | 257.40145 | 101.86363 | 133.14864 | 2.17301  | 0.1444936 | 2.4423707 | 34  | 5 | 1994-2007 | 0.38 | M-v | 1 | MPC | 128844 2004 BG <sub>128</sub> |
| 2004 BB <sub>129</sub> | 16.1 | 0.15 | 20071027 | 352.11817 | 88.02645  | 299.99754 | 5.40128  | 0.1678112 | 2.8810363 | 86  | 3 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128844 2004 BB <sub>129</sub> |
| 2004 BS <sub>130</sub> | 16.3 | 0.15 | 20071027 | 166.98911 | 354.61556 | 298.20603 | 14.12949 | 0.1463819 | 2.5443454 | 34  | 5 | 1995-2007 | 0.33 | M-v | 2 | MPC | 111024 2004 BS <sub>130</sub> |
| 2004 BW <sub>131</sub> | 17.3 | 0.15 | 20071027 | 92.30306  | 162.80815 | 165.70564 | 2.74555  | 0.0687669 | 2.7185362 | 31  | 5 | 2000-2007 | 0.25 | M-v | 0 | MPC | 111024 2004 BW <sub>131</sub> |
| 2004 BP <sub>134</sub> | 16.0 | 0.15 | 20071027 | 116.20700 | 219.16048 | 92.01328  | 6.93092  | 0.0536116 | 2.7514867 | 38  | 4 | 2003-2007 | 0.50 | M-v | 0 | MPC | 111024 2004 BP <sub>134</sub> |
| 2004 BQ <sub>136</sub> | 17.0 | 0.15 | 20071027 | 74.30994  | 244.92809 | 101.82960 | 3.42598  | 0.0959088 | 2.7033971 | 33  | 6 | 2001-2007 | 0.28 | M-v | 0 | MPC | 128844 2004 BQ <sub>136</sub> |
| 2004 BR <sub>139</sub> | 16.3 | 0.15 | 20071027 | 12.90436  | 314.86751 | 53.35434  | 0.17797  | 0.1052425 | 2.9585602 | 61  | 3 | 1997-2007 | 0.49 | M-v | 3 | MPC | 128844 2004 BR <sub>139</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 BB <sub>142</sub> | 16.5 | 0.15 | 20071027 | 49.38566  | 147.62009 | 191.10947 | 1.61773  | 0.1143619 | 2.9367292 | 47  | 5 | 1997-2007 | 0.42 | M-v | 0 | MPC | 128121 2004 BB <sub>142</sub> |
| 2004 BV <sub>144</sub> | 15.3 | 0.15 | 20071027 | 18.97971  | 315.77698 | 75.71884  | 14.45950 | 0.2594215 | 2.6768767 | 70  | 3 | 1998-2007 | 0.60 | M-v | 2 | MPC | 128844 2004 BV <sub>144</sub> |
| 2004 BV <sub>145</sub> | 15.6 | 0.15 | 20071027 | 289.61518 | 125.57300 | 304.65925 | 11.70134 | 0.0976529 | 3.1216235 | 34  | 3 | 2002-2007 | 0.39 | M-v | 0 | MPC | 124439 2004 BV <sub>145</sub> |
| 2004 BA <sub>147</sub> | 16.7 | 0.15 | 20071027 | 2.38808   | 281.29404 | 144.53163 | 2.59219  | 0.0588203 | 2.7143906 | 38  | 6 | 1996-2007 | 0.37 | M-v | 0 | MPC | 128844 2004 BA <sub>147</sub> |
| 2004 BE <sub>147</sub> | 15.5 | 0.15 | 20071027 | 57.89884  | 53.17257  | 325.59610 | 13.65925 | 0.1171301 | 2.6791937 | 69  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 111024 2004 BE <sub>147</sub> |
| 2004 BT <sub>147</sub> | 16.5 | 0.15 | 20071027 | 5.79194   | 351.52331 | 38.43907  | 2.80335  | 0.2478667 | 2.6727922 | 142 | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128844 2004 BT <sub>147</sub> |
| 2004 BF <sub>148</sub> | 16.2 | 0.15 | 20071027 | 18.42555  | 303.80979 | 84.54304  | 4.84257  | 0.2199514 | 2.7007546 | 65  | 5 | 1998-2007 | 0.43 | M-v | 0 | MPC | 128844 2004 BF <sub>148</sub> |
| 2004 BF <sub>151</sub> | 15.5 | 0.15 | 20071027 | 358.34345 | 156.03911 | 276.40899 | 12.44112 | 0.1334270 | 2.6167872 | 34  | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 86257 2004 BF <sub>151</sub>  |
| 2004 BU <sub>151</sub> | 16.6 | 0.15 | 20071027 | 280.71861 | 87.02871  | 107.17905 | 2.15819  | 0.0443524 | 2.5186030 | 48  | 4 | 2000-2007 | 0.40 | M-v | 3 | MPC | 128844 2004 BU <sub>151</sub> |
| 2004 BE <sub>152</sub> | 16.1 | 0.15 | 20071027 | 239.88101 | 42.31952  | 187.18352 | 4.17300  | 0.1741483 | 2.5733236 | 64  | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 111024 2004 BE <sub>152</sub> |
| 2004 BG <sub>153</sub> | 16.2 | 0.15 | 20071027 | 132.26082 | 28.84463  | 286.44554 | 4.95662  | 0.1710731 | 2.5573398 | 80  | 4 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128844 2004 BG <sub>153</sub> |
| 2004 BO <sub>158</sub> | 16.2 | 0.15 | 20071027 | 23.89944  | 25.59129  | 348.54155 | 4.58820  | 0.3535847 | 2.6391148 | 36  | 3 | 1998-2007 | 0.55 | M-v | 3 | MPC | 86258 2004 BO <sub>158</sub>  |
| 2004 BD <sub>162</sub> | 16.0 | 0.15 | 20071027 | 353.58026 | 199.40145 | 245.48861 | 12.39086 | 0.2071653 | 2.6319907 | 35  | 5 | 1995-2007 | 0.56 | M-v | 1 | MPC | 128844 2004 BD <sub>162</sub> |
| 2004 BE <sub>162</sub> | 16.4 | 0.15 | 20071027 | 207.77826 | 173.61710 | 95.01394  | 3.40675  | 0.1629673 | 2.5593721 | 31  | 3 | 2004-2007 | 0.48 | M-v | 2 | MPC | 112865 2004 BE <sub>162</sub> |
| 2004 BG <sub>162</sub> | 16.3 | 0.15 | 20071027 | 327.42959 | 23.34255  | 62.50522  | 6.18771  | 0.1446462 | 2.7839894 | 70  | 2 | 2004-2007 | 0.56 | M-v | 3 | MPC | 128121 2004 BG <sub>162</sub> |
| 2004 BB <sub>163</sub> | 15.9 | 0.15 | 20071027 | 359.26821 | 10.84421  | 56.55176  | 18.18656 | 0.0860594 | 2.7774128 | 52  | 6 | 2000-2007 | 0.44 | M-v | 0 | MPC | 128844 2004 BB <sub>163</sub> |
| 2004 CO                | 15.3 | 0.15 | 20071027 | 332.53147 | 40.15763  | 46.55241  | 25.09856 | 0.2460781 | 2.7494534 | 112 | 2 | 2004-2007 | 0.45 | M-v | 3 | MPC | 128122 2004 CO                |
| 2004 CA <sub>1</sub>   | 16.6 | 0.15 | 20071027 | 337.07438 | 102.36914 | 3.35779   | 28.96450 | 0.3398559 | 2.6043032 | 40  | 3 | 2000-2007 | 0.53 | M-v | 2 | MPC | 87611 2004 CA <sub>1</sub>    |
| 2004 CP <sub>1</sub>   | 15.0 | 0.15 | 20071027 | 30.06150  | 56.00788  | 308.43461 | 12.74065 | 0.2049551 | 2.8721372 | 72  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 87611 2004 CP <sub>1</sub>    |
| 2004 CQ <sub>1</sub>   | 16.5 | 0.15 | 20071027 | 294.03188 | 242.56128 | 286.19989 | 3.14709  | 0.1495254 | 2.6192021 | 65  | 4 | 2000-2007 | 0.46 | M-v | 2 | MPC | 128844 2004 CQ <sub>1</sub>   |
| 2004 CV <sub>1</sub>   | 16.5 | 0.15 | 20071027 | 328.36923 | 23.99864  | 96.71577  | 14.09860 | 0.1484857 | 2.6275677 | 33  | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 111025 2004 CV <sub>1</sub>   |
| 2004 CN <sub>2</sub>   | 16.3 | 0.15 | 20071027 | 330.50034 | 164.13834 | 319.55504 | 6.71703  | 0.1495286 | 2.6090508 | 90  | 4 | 2000-2007 | 0.51 | M-v | 3 | MPC | 128844 2004 CN <sub>2</sub>   |
| 2004 CK <sub>3</sub>   | 16.2 | 0.15 | 20071027 | 227.81558 | 280.34572 | 318.13669 | 9.33639  | 0.1301755 | 2.6103237 | 61  | 6 | 2000-2007 | 0.63 | M-v | 1 | MPC | 111025 2004 CK <sub>3</sub>   |
| 2004 CN <sub>3</sub>   | 15.9 | 0.15 | 20071027 | 196.28965 | 186.35302 | 66.39115  | 13.98054 | 0.0412610 | 2.6419732 | 45  | 6 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128845 2004 CN <sub>3</sub>   |
| 2004 CG <sub>4</sub>   | 15.8 | 0.15 | 20071027 | 346.36179 | 56.18989  | 41.51731  | 3.92842  | 0.1063886 | 2.6224152 | 50  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128845 2004 CG <sub>4</sub>   |
| 2004 CE <sub>5</sub>   | 16.3 | 0.15 | 20071027 | 261.20030 | 95.71753  | 83.79801  | 5.50380  | 0.0786038 | 2.7395100 | 29  | 2 | 2004-2007 | 0.31 | M-v | 5 | MPC | 128122 2004 CE <sub>5</sub>   |
| 2004 CN <sub>6</sub>   | 16.2 | 0.15 | 20071027 | 284.13067 | 91.75313  | 89.45971  | 15.20905 | 0.1717332 | 2.6391471 | 63  | 4 | 2000-2007 | 0.58 | M-v | 2 | MPC | 87612 2004 CN <sub>6</sub>    |
| 2004 CV <sub>6</sub>   | 16.0 | 0.15 | 20071027 | 232.53217 | 330.08616 | 213.07976 | 2.80029  | 0.2113861 | 2.9794728 | 51  | 3 | 2004-2007 | 0.45 | M-v | 3 | MPC | 111025 2004 CV <sub>6</sub>   |
| 2004 CA <sub>7</sub>   | 16.1 | 0.15 | 20071027 | 309.20520 | 350.27936 | 104.89214 | 3.18426  | 0.0258325 | 2.8594544 | 60  | 5 | 1995-2007 | 0.38 | M-v | 0 | MPC | 128845 2004 CA <sub>7</sub>   |
| 2004 CK <sub>7</sub>   | 15.9 | 0.15 | 20071027 | 212.80984 | 115.77852 | 132.06414 | 8.38414  | 0.0958995 | 2.6699032 | 50  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 116261 2004 CK <sub>7</sub>   |
| 2004 CJ <sub>8</sub>   | 17.3 | 0.15 | 20071027 | 37.29097  | 294.26819 | 123.92522 | 6.16609  | 0.1431521 | 2.5261111 | 38  | 5 | 2001-2007 | 0.36 | M-v | 0 | MPC | 115785 2004 CJ <sub>8</sub>   |
| 2004 CG <sub>9</sub>   | 17.0 | 0.15 | 20071027 | 331.29277 | 203.59868 | 295.80013 | 10.24900 | 0.1434173 | 2.5474868 | 24  | 3 | 2000-2007 | 0.29 | M-v | 2 | MPC | 128845 2004 CG <sub>9</sub>   |
| 2004 CH <sub>9</sub>   | 15.5 | 0.15 | 20071027 | 250.40989 | 289.29663 | 291.47697 | 10.09494 | 0.1240910 | 2.6254181 | 61  | 5 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128845 2004 CH <sub>9</sub>   |
| 2004 CW <sub>10</sub>  | 16.2 | 0.15 | 20071027 | 350.53280 | 131.69723 | 308.48856 | 5.63106  | 0.0328422 | 2.7533756 | 45  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128845 2004 CW <sub>10</sub>  |
| 2004 CG <sub>12</sub>  | 16.2 | 0.15 | 20071027 | 330.15940 | 154.10868 | 32.75250  | 1.58019  | 0.1325376 | 2.3915404 | 114 | 5 | 2000-2007 | 0.47 | M-v | 2 | MPC | 114711 2004 CG <sub>12</sub>  |
| 2004 CF <sub>14</sub>  | 16.1 | 0.15 | 20071027 | 85.33914  | 61.53544  | 302.79149 | 4.99858  | 0.0377494 | 2.6888570 | 60  | 3 | 2004-2007 | 0.38 | M-v | 3 | MPC | 108890 2004 CF <sub>14</sub>  |
| 2004 CB <sub>16</sub>  | 16.5 | 0.15 | 20071027 | 329.42654 | 49.59599  | 8.39338   | 0.76309  | 0.1099840 | 3.0271852 | 34  | 2 | 2004-2007 | 0.40 | M-v | 4 | MPC | 125991 2004 CB <sub>16</sub>  |
| 2004 CK <sub>16</sub>  | 17.5 | 0.15 | 20071027 | 351.97165 | 323.37037 | 132.72562 | 3.46893  | 0.1107430 | 2.6425952 | 36  | 5 | 1996-2007 | 0.36 | M-v | 0 | MPC | 111026 2004 CK <sub>16</sub>  |
| 2004 CE <sub>18</sub>  | 15.5 | 0.15 | 20071027 | 130.35422 | 336.79389 | 336.18070 | 13.27519 | 0.0837532 | 2.7143127 | 56  | 4 | 2001-2007 | 0.51 | M-v | 3 | MPC | 108892 2004 CE <sub>18</sub>  |
| 2004 CB <sub>19</sub>  | 16.6 | 0.15 | 20071027 | 263.38339 | 229.92361 | 300.33885 | 4.03458  | 0.0975892 | 2.7171400 | 33  | 4 | 1995-2007 | 0.48 | M-v | 1 | MPC | 128122 2004 CB <sub>19</sub>  |
| 2004 CH <sub>20</sub>  | 16.9 | 0.15 | 20071027 | 185.83752 | 168.88545 | 89.49067  | 3.89313  | 0.0521975 | 2.6842329 | 30  | 5 | 1996-2007 | 0.36 | M-v | 0 | MPC | 111026 2004 CH <sub>20</sub>  |
| 2004 CO <sub>20</sub>  | 16.7 | 0.15 | 20071027 | 279.81641 | 70.89829  | 62.81941  | 2.93967  | 0.0139692 | 2.8484237 | 31  | 3 | 2004-2007 | 0.30 | M-v | 3 | MPC | 128845 2004 CO <sub>20</sub>  |
| 2004 CV <sub>20</sub>  | 17.5 | 0.15 | 20071027 | 349.45881 | 57.74694  | 54.70560  | 2.14545  | 0.0251367 | 2.5446041 | 39  | 5 | 2002-2007 | 0.31 | M-v | 0 | MPC | 114711 2004 CV <sub>20</sub>  |
| 2004 CQ <sub>21</sub>  | 15.8 | 0.15 | 20071027 | 291.40588 | 341.55083 | 159.04568 | 4.61364  | 0.0656546 | 2.7774454 | 55  | 4 | 2004-2007 | 0.56 | M-v | 1 | MPC | 128845 2004 CQ <sub>21</sub>  |
| 2004 CV <sub>21</sub>  | 15.7 | 0.15 | 20071027 | 212.10036 | 265.82655 | 300.19019 | 5.42163  | 0.0278104 | 2.8886313 | 41  | 5 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128845 2004 CV <sub>21</sub>  |
| 2004 CE <sub>22</sub>  | 16.4 | 0.15 | 20071027 | 302.00092 | 298.19915 | 220.05526 | 2.94072  | 0.1040685 | 2.6458933 | 59  | 6 | 1998-2007 | 0.54 | M-v | 1 | MPC | 111026 2004 CE <sub>22</sub>  |
| 2004 CV <sub>22</sub>  | 16.7 | 0.15 | 20071027 | 304.68422 | 4.08980   | 108.52164 | 6.11952  | 0.1146725 | 2.7815938 | 52  | 4 | 2002-2007 | 0.45 | M-v | 0 | MPC | 76410 2004 CV <sub>22</sub>   |
| 2004 CZ <sub>22</sub>  | 17.2 | 0.15 | 20071027 | 321.92551 | 40.21691  | 62.84982  | 2.46027  | 0.0298577 | 2.7424673 | 39  | 3 | 2000-2007 | 0.43 | M-v | 3 | MPC | 128845 2004 CZ <sub>22</sub>  |
| 2004 CB <sub>25</sub>  | 16.5 | 0.15 | 20071027 | 279.83419 | 269.93634 | 298.17687 | 5.81892  | 0.1408025 | 2.5767506 | 61  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128845 2004 CB <sub>25</sub>  |
| 2004 CR <sub>27</sub>  | 16.4 | 0.15 | 20071027 | 195.16755 | 200.31180 | 17.45933  | 2.26300  | 0.1101231 | 2.9007530 | 42  | 5 | 1994-2007 | 0.41 | M-v | 0 | MPC | 128845 2004 CR <sub>27</sub>  |
| 2004 CQ <sub>29</sub>  | 16.9 | 0.15 | 20071027 | 276.74911 | 290.29268 | 195.47942 | 0.62146  | 0.0597696 | 2.8857898 | 42  | 6 | 1992-2007 | 0.36 | M-v | 0 | MPC | 128845 2004 CQ <sub>29</sub>  |
| 2004 CC <sub>32</sub>  | 15.4 | 0.15 | 20071027 | 258.57372 | 260.02284 | 213.12958 | 2.84431  | 0.0242584 | 3.1149799 | 50  | 5 | 1991-2007 | 0.35 | M-v | 0 | MPC | 124439 2004 CC <sub>32</sub>  |
| 2004 CO <sub>33</sub>  | 16.6 | 0.15 | 20071027 | 47.24195  | 282.56624 | 102.67336 | 4.90442  | 0.0998463 | 2.6488484 | 33  | 6 | 2001-2007 | 0.45 | M-v | 0 | MPC | 103610 2004 CO <sub>33</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 CE <sub>36</sub> | 15.2 | 0.15 | 20071027 | 353.88577 | 19.70203  | 65.33832  | 11.21792 | 0.0999026 | 2.6930833 | 54  | 5 | 1996-2007 | 0.56 | M-v | 1 | MPC | 111027 2004 CE <sub>36</sub> |
| 2004 CJ <sub>36</sub> | 15.8 | 0.15 | 20071027 | 307.54549 | 40.90625  | 80.51924  | 8.65624  | 0.1754853 | 2.7854124 | 119 | 3 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128845 2004 CJ <sub>36</sub> |
| 2004 CA <sub>37</sub> | 16.1 | 0.15 | 20071027 | 332.63828 | 210.32793 | 284.53429 | 10.25534 | 0.2076777 | 2.5686747 | 72  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128845 2004 CA <sub>37</sub> |
| 2004 CX <sub>39</sub> | 16.6 | 0.15 | 20071027 | 346.51974 | 184.89224 | 291.56659 | 5.97026  | 0.1584202 | 2.5911985 | 76  | 5 | 2000-2007 | 0.59 | M-v | 2 | MPC | 128845 2004 CX <sub>39</sub> |
| 2004 CU <sub>42</sub> | 15.5 | 0.15 | 20071027 | 251.41222 | 132.85202 | 357.68366 | 4.63705  | 0.1549089 | 3.1982197 | 56  | 3 | 2002-2007 | 0.41 | M-v | 2 | MPC | 126708 2004 CU <sub>42</sub> |
| 2004 CE <sub>45</sub> | 16.0 | 0.15 | 20071027 | 37.84907  | 268.24559 | 95.40956  | 10.66076 | 0.0626961 | 2.9309519 | 31  | 4 | 2002-2007 | 0.33 | M-v | 0 | MPC | 128845 2004 CE <sub>45</sub> |
| 2004 CL <sub>45</sub> | 16.2 | 0.15 | 20071027 | 24.89492  | 308.11868 | 81.87688  | 5.91998  | 0.1118646 | 2.7908671 | 67  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128845 2004 CL <sub>45</sub> |
| 2004 CM <sub>45</sub> | 16.3 | 0.15 | 20071027 | 52.47200  | 267.62307 | 118.67382 | 12.47394 | 0.2118188 | 2.5868825 | 43  | 4 | 2002-2007 | 0.39 | M-v | 1 | MPC | 128845 2004 CM <sub>45</sub> |
| 2004 CC <sub>48</sub> | 16.2 | 0.15 | 20071027 | 358.68023 | 314.24773 | 149.21967 | 8.12152  | 0.1469997 | 2.5876622 | 50  | 4 | 1995-2007 | 0.56 | M-v | 1 | MPC | 108898 2004 CC <sub>48</sub> |
| 2004 CU <sub>50</sub> | 16.6 | 0.15 | 20071027 | 333.10148 | 74.09318  | 45.53476  | 4.97595  | 0.1894424 | 2.5538898 | 79  | 4 | 2000-2007 | 0.53 | M-v | 2 | MPC | 128845 2004 CU <sub>50</sub> |
| 2004 CZ <sub>50</sub> | 14.8 | 0.15 | 20071027 | 142.46992 | 11.52648  | 322.78832 | 13.55066 | 0.2215037 | 2.5590724 | 58  | 7 | 1981-2007 | 0.49 | M-v | 1 | MPC | 112866 2004 CZ <sub>50</sub> |
| 2004 CH <sub>51</sub> | 15.2 | 0.15 | 20071027 | 339.12351 | 311.17595 | 117.94211 | 10.89602 | 0.1051410 | 2.9234569 | 62  | 6 | 2001-2007 | 0.61 | M-v | 1 | MPC | 128845 2004 CH <sub>51</sub> |
| 2004 CJ <sub>54</sub> | 16.9 | 0.15 | 20071027 | 227.22763 | 206.48963 | 25.99038  | 1.77093  | 0.1767578 | 2.7887394 | 28  | 5 | 2001-2007 | 0.38 | M-v | 0 | MPC | 111027 2004 CJ <sub>54</sub> |
| 2004 CE <sub>57</sub> | 15.9 | 0.15 | 20071027 | 120.72380 | 254.28558 | 28.51234  | 10.99201 | 0.0225808 | 2.9609842 | 41  | 4 | 2001-2007 | 0.41 | M-v | 0 | MPC | 128124 2004 CE <sub>57</sub> |
| 2004 CW <sub>57</sub> | 16.0 | 0.15 | 20071027 | 326.84735 | 9.34503   | 85.78042  | 8.96835  | 0.1533147 | 2.7209608 | 54  | 3 | 2004-2007 | 0.45 | M-v | 3 | MPC | 128124 2004 CW <sub>57</sub> |
| 2004 CL <sub>58</sub> | 16.7 | 0.15 | 20071027 | 9.75493   | 13.44524  | 87.65968  | 6.65156  | 0.1610776 | 2.4581521 | 41  | 4 | 2000-2007 | 0.50 | M-v | 2 | MPC | 111027 2004 CL <sub>58</sub> |
| 2004 CR <sub>58</sub> | 16.5 | 0.15 | 20071027 | 317.10629 | 19.80637  | 84.67761  | 4.53489  | 0.1579155 | 2.7416035 | 58  | 2 | 2004-2007 | 0.50 | M-v | 4 | MPC | 128124 2004 CR <sub>58</sub> |
| 2004 CS <sub>58</sub> | 16.5 | 0.15 | 20071027 | 351.84040 | 22.15961  | 71.82166  | 4.81708  | 0.2084523 | 2.5714465 | 65  | 4 | 2000-2007 | 0.48 | M-v | 2 | MPC | 128846 2004 CS <sub>58</sub> |
| 2004 CE <sub>59</sub> | 16.7 | 0.15 | 20071027 | 269.54139 | 142.96113 | 22.13019  | 8.04505  | 0.1605439 | 2.7763453 | 43  | 2 | 2004-2007 | 0.45 | M-v | 3 | MPC | 128124 2004 CE <sub>59</sub> |
| 2004 CH <sub>59</sub> | 16.4 | 0.15 | 20071027 | 335.54965 | 25.28472  | 65.09137  | 5.17386  | 0.2357623 | 2.6791818 | 59  | 2 | 2004-2007 | 0.46 | M-v | 3 | MPC | 128124 2004 CH <sub>59</sub> |
| 2004 CJ <sub>59</sub> | 17.7 | 0.15 | 20071027 | 351.29095 | 63.97404  | 38.80816  | 5.67980  | 0.1637523 | 2.5661713 | 24  | 4 | 1994-2007 | 0.48 | M-v | 1 | MPC | 108901 2004 CJ <sub>59</sub> |
| 2004 CS <sub>59</sub> | 17.0 | 0.15 | 20071027 | 346.53616 | 325.69435 | 102.11234 | 10.06016 | 0.3231814 | 2.6696581 | 81  | 3 | 2002-2007 | 0.59 | M-v | 2 | MPC | 128846 2004 CS <sub>59</sub> |
| 2004 CN <sub>60</sub> | 16.7 | 0.15 | 20071027 | 355.07134 | 2.55671   | 90.90790  | 6.26696  | 0.1484906 | 2.5965759 | 29  | 2 | 2004-2007 | 0.39 | M-v | 3 | MPC | 128124 2004 CN <sub>60</sub> |
| 2004 CE <sub>61</sub> | 16.8 | 0.15 | 20071027 | 350.50065 | 5.12855   | 92.72095  | 7.76244  | 0.0929543 | 2.6040851 | 36  | 3 | 2004-2007 | 0.53 | M-v | 2 | MPC | 89511 2004 CE <sub>61</sub>  |
| 2004 CT <sub>62</sub> | 15.5 | 0.15 | 20071027 | 195.33900 | 180.97181 | 63.95632  | 9.75667  | 0.1659044 | 2.9025130 | 55  | 4 | 2004-2007 | 0.43 | M-v | 1 | MPC | 121809 2004 CT <sub>62</sub> |
| 2004 CU <sub>62</sub> | 15.5 | 0.15 | 20071027 | 194.48157 | 153.25086 | 111.49585 | 15.12672 | 0.0679027 | 2.7006440 | 42  | 5 | 2000-2007 | 0.58 | M-v | 2 | MPC | 111028 2004 CU <sub>62</sub> |
| 2004 CG <sub>64</sub> | 16.2 | 0.15 | 20071027 | 17.34901  | 341.56677 | 71.77706  | 7.14694  | 0.1135777 | 2.6945350 | 27  | 4 | 1996-2007 | 0.45 | M-v | 1 | MPC | 100707 2004 CG <sub>64</sub> |
| 2004 CP <sub>64</sub> | 16.5 | 0.15 | 20071027 | 56.79912  | 282.23031 | 124.72243 | 15.20788 | 0.1041272 | 2.5217254 | 43  | 5 | 1997-2007 | 0.46 | M-v | 0 | MPC | 128846 2004 CP <sub>64</sub> |
| 2004 CX <sub>64</sub> | 15.1 | 0.15 | 20071027 | 251.54528 | 103.69590 | 85.77461  | 8.72103  | 0.1582203 | 2.7995469 | 47  | 3 | 2000-2007 | 0.46 | M-v | 3 | MPC | 128125 2004 CX <sub>64</sub> |
| 2004 CL <sub>65</sub> | 16.1 | 0.15 | 20071027 | 313.36390 | 35.28341  | 78.42315  | 4.50432  | 0.1529681 | 2.7355598 | 48  | 3 | 2004-2007 | 0.55 | M-v | 4 | MPC | 128846 2004 CL <sub>65</sub> |
| 2004 CM <sub>65</sub> | 16.6 | 0.15 | 20071027 | 277.16457 | 85.99396  | 118.48399 | 11.76710 | 0.1268218 | 2.5444996 | 47  | 7 | 2000-2007 | 0.38 | M-v | 0 | MPC | 114711 2004 CM <sub>65</sub> |
| 2004 CW <sub>65</sub> | 15.9 | 0.15 | 20071027 | 350.10137 | 356.50535 | 80.34678  | 6.80271  | 0.1184512 | 2.6671874 | 74  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128846 2004 CW <sub>65</sub> |
| 2004 CP <sub>67</sub> | 16.7 | 0.15 | 20071027 | 272.71937 | 80.80056  | 125.96353 | 5.54013  | 0.0561037 | 2.5357809 | 35  | 3 | 2003-2007 | 0.33 | M-v | 2 | MPC | 114079 2004 CP <sub>67</sub> |
| 2004 CF <sub>68</sub> | 16.0 | 0.15 | 20071027 | 355.64725 | 59.84976  | 16.61934  | 1.97642  | 0.0552694 | 2.7126546 | 47  | 5 | 2000-2007 | 0.59 | M-v | 1 | MPC | 104294 2004 CF <sub>68</sub> |
| 2004 CW <sub>68</sub> | 16.1 | 0.15 | 20071027 | 239.81040 | 170.70803 | 25.30040  | 3.64078  | 0.0612211 | 2.7716975 | 44  | 6 | 1995-2007 | 0.51 | M-v | 1 | MPC | 111028 2004 CW <sub>68</sub> |
| 2004 CC <sub>69</sub> | 16.7 | 0.15 | 20071027 | 355.71823 | 107.60230 | 332.54683 | 10.87098 | 0.2406318 | 2.5944496 | 39  | 4 | 1998-2007 | 0.47 | M-v | 1 | MPC | 61913 2004 CC <sub>69</sub>  |
| 2004 CN <sub>69</sub> | 16.1 | 0.15 | 20071027 | 69.85925  | 265.84081 | 105.12024 | 7.11003  | 0.0638860 | 2.7407062 | 70  | 5 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128846 2004 CN <sub>69</sub> |
| 2004 CP <sub>71</sub> | 16.5 | 0.15 | 20071027 | 11.48584  | 142.51550 | 275.98421 | 12.87163 | 0.2516207 | 2.6439871 | 37  | 3 | 2002-2007 | 0.52 | M-v | 1 | MPC | 108905 2004 CP <sub>71</sub> |
| 2004 CB <sub>72</sub> | 16.0 | 0.15 | 20071027 | 301.78441 | 34.15197  | 101.51858 | 8.94242  | 0.1707071 | 2.7814596 | 52  | 3 | 2002-2007 | 0.61 | M-v | 2 | MPC | 128846 2004 CB <sub>72</sub> |
| 2004 CH <sub>73</sub> | 15.4 | 0.15 | 20071027 | 290.20583 | 90.06303  | 60.18415  | 8.30258  | 0.1653598 | 2.7746691 | 61  | 4 | 1995-2007 | 0.67 | M-v | 1 | MPC | 128846 2004 CH <sub>73</sub> |
| 2004 CL <sub>73</sub> | 15.5 | 0.15 | 20071027 | 344.57609 | 258.28382 | 210.94847 | 9.87207  | 0.1456365 | 2.6254384 | 73  | 4 | 2000-2007 | 0.58 | M-v | 2 | MPC | 128846 2004 CL <sub>73</sub> |
| 2004 CS <sub>75</sub> | 16.8 | 0.15 | 20071027 | 23.52800  | 257.96285 | 188.55258 | 2.22009  | 0.0749797 | 2.5161210 | 63  | 6 | 1998-2007 | 0.44 | M-v | 2 | MPC | 114712 2004 CS <sub>75</sub> |
| 2004 CD <sub>77</sub> | 15.7 | 0.15 | 20071027 | 337.84702 | 131.15883 | 327.36536 | 6.92895  | 0.1690328 | 2.7120953 | 75  | 5 | 1995-2007 | 0.49 | M-v | 1 | MPC | 111029 2004 CD <sub>77</sub> |
| 2004 CH <sub>78</sub> | 16.3 | 0.15 | 20071027 | 356.73861 | 265.52094 | 152.11765 | 7.79259  | 0.2476520 | 2.7486387 | 50  | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 128846 2004 CH <sub>78</sub> |
| 2004 CL <sub>79</sub> | 16.0 | 0.15 | 20071027 | 269.73742 | 269.85885 | 337.11759 | 1.53984  | 0.1677672 | 2.4313579 | 65  | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 87614 2004 CL <sub>79</sub>  |
| 2004 CN <sub>79</sub> | 15.7 | 0.15 | 20071027 | 348.79758 | 0.13232   | 101.27817 | 4.72269  | 0.0687945 | 2.6814579 | 38  | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128846 2004 CN <sub>79</sub> |
| 2004 CH <sub>80</sub> | 15.5 | 0.15 | 20071027 | 247.20278 | 151.45442 | 44.29100  | 4.48420  | 0.0361775 | 2.7972935 | 61  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 108909 2004 CH <sub>80</sub> |
| 2004 CH <sub>82</sub> | 16.5 | 0.15 | 20071027 | 17.76570  | 164.80706 | 289.86726 | 1.57500  | 0.0567248 | 2.5258701 | 36  | 3 | 2004-2007 | 0.37 | M-v | 3 | MPC | 128846 2004 CH <sub>82</sub> |
| 2004 CX <sub>82</sub> | 16.0 | 0.15 | 20071027 | 75.94698  | 11.70916  | 349.79230 | 3.63346  | 0.0400198 | 2.7483504 | 69  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 111029 2004 CX <sub>82</sub> |
| 2004 CD <sub>83</sub> | 16.4 | 0.15 | 20071027 | 300.83091 | 342.31100 | 145.21095 | 11.38890 | 0.2162104 | 2.7729365 | 47  | 3 | 2004-2007 | 0.45 | M-v | 3 | MPC | 128846 2004 CD <sub>83</sub> |
| 2004 CG <sub>84</sub> | 16.4 | 0.15 | 20071027 | 317.65465 | 339.67722 | 128.23568 | 9.44926  | 0.2435960 | 2.7702189 | 38  | 2 | 2004-2007 | 0.51 | M-v | 4 | MPC | 128125 2004 CG <sub>84</sub> |
| 2004 CF <sub>85</sub> | 15.3 | 0.15 | 20071027 | 176.76754 | 304.76464 | 296.52081 | 9.51711  | 0.1521105 | 2.9714531 | 57  | 5 | 2001-2007 | 0.49 | M-v | 0 | MPC | 128846 2004 CF <sub>85</sub> |
| 2004 CF <sub>89</sub> | 17.1 | 0.15 | 20071027 | 23.28509  | 298.06369 | 98.31068  | 5.82289  | 0.2636718 | 2.6241620 | 24  | 4 | 1994-2007 | 0.28 | M-v | 0 | MPC | 69674 2004 CF <sub>89</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 CG <sub>89</sub>  | 16.0 | 0.15 | 20071027 | 80.17908  | 215.27804 | 106.42168 | 7.41019  | 0.0436694 | 2.9285517 | 59  | 5 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128846 2004 CG <sub>89</sub>  |
| 2004 CZ <sub>92</sub>  | 16.3 | 0.15 | 20071027 | 348.84844 | 87.86524  | 356.56230 | 5.99481  | 0.0069841 | 2.7117613 | 59  | 7 | 1993-2007 | 0.47 | M-v | 0 | MPC | 108912 2004 CZ <sub>92</sub>  |
| 2004 CU <sub>94</sub>  | 15.8 | 0.15 | 20071027 | 271.01953 | 288.38269 | 206.50480 | 2.70358  | 0.0931015 | 3.0020176 | 78  | 6 | 1999-2007 | 0.51 | M-v | 1 | MPC | 128847 2004 CU <sub>94</sub>  |
| 2004 CK <sub>96</sub>  | 14.8 | 0.15 | 20071027 | 225.49846 | 204.85194 | 330.77515 | 15.22115 | 0.0337529 | 3.1171844 | 58  | 4 | 2001-2007 | 0.58 | M-v | 1 | MPC | 128847 2004 CK <sub>96</sub>  |
| 2004 CS <sub>98</sub>  | 16.6 | 0.15 | 20071027 | 351.95480 | 169.32792 | 356.23078 | 4.57576  | 0.1137678 | 2.4114002 | 97  | 6 | 1998-2007 | 0.51 | M-v | 1 | MPC | 116261 2004 CS <sub>98</sub>  |
| 2004 CW <sub>98</sub>  | 16.3 | 0.15 | 20071027 | 296.40595 | 242.57808 | 342.60034 | 4.01008  | 0.1316629 | 2.4382219 | 57  | 5 | 2000-2007 | 0.45 | M-v | 1 | MPC | 87614 2004 CW <sub>98</sub>   |
| 2004 CA <sub>99</sub>  | 16.3 | 0.15 | 20071027 | 1.50481   | 129.58267 | 338.46447 | 13.08990 | 0.1979544 | 2.5541687 | 57  | 5 | 2000-2007 | 0.57 | M-v | 2 | MPC | 108914 2004 CA <sub>99</sub>  |
| 2004 CB <sub>99</sub>  | 15.5 | 0.15 | 20071027 | 277.64718 | 199.78104 | 333.56857 | 11.41292 | 0.0882196 | 2.7653716 | 63  | 5 | 2001-2007 | 0.59 | M-v | 1 | MPC | 111030 2004 CB <sub>99</sub>  |
| 2004 CC <sub>100</sub> | 14.7 | 0.15 | 20071027 | 255.53954 | 17.67833  | 141.47902 | 14.19269 | 0.1050518 | 3.0215949 | 31  | 3 | 2004-2007 | 0.52 | M-v | 3 | MPC | 103611 2004 CC <sub>100</sub> |
| 2004 CF <sub>103</sub> | 17.0 | 0.15 | 20071027 | 314.96409 | 289.31605 | 190.98068 | 8.71230  | 0.2055158 | 2.7397149 | 43  | 3 | 2002-2007 | 0.46 | M-v | 2 | MPC | 121809 2004 CF <sub>103</sub> |
| 2004 CT <sub>104</sub> | 17.2 | 0.15 | 20071027 | 321.67466 | 306.59404 | 177.62099 | 4.31966  | 0.3580766 | 2.6624253 | 117 | 2 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128126 2004 CT <sub>104</sub> |
| 2004 CR <sub>105</sub> | 16.0 | 0.15 | 20071027 | 29.01249  | 15.52406  | 63.59265  | 16.09904 | 0.0910924 | 2.5546423 | 33  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 111030 2004 CR <sub>105</sub> |
| 2004 CV <sub>105</sub> | 14.9 | 0.15 | 20071027 | 206.41144 | 334.49735 | 238.93829 | 9.71155  | 0.0720279 | 2.9770806 | 53  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128847 2004 CV <sub>105</sub> |
| 2004 CA <sub>108</sub> | 16.0 | 0.15 | 20071027 | 25.79774  | 80.23530  | 327.68080 | 3.66414  | 0.0685836 | 2.7697155 | 47  | 5 | 1997-2007 | 0.53 | M-v | 0 | MPC | 111030 2004 CA <sub>108</sub> |
| 2004 CM <sub>109</sub> | 15.2 | 0.15 | 20071027 | 279.15052 | 93.88564  | 74.37507  | 14.96159 | 0.0372693 | 2.6473165 | 58  | 6 | 2000-2007 | 0.52 | M-v | 1 | MPC | 111031 2004 CM <sub>109</sub> |
| 2004 CR <sub>109</sub> | 15.9 | 0.15 | 20071027 | 321.63391 | 59.62153  | 72.13536  | 15.04228 | 0.0810396 | 2.6440441 | 42  | 4 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128847 2004 CR <sub>109</sub> |
| 2004 CA <sub>110</sub> | 15.2 | 0.15 | 20071027 | 172.86180 | 344.86898 | 244.38759 | 10.61771 | 0.0245952 | 3.0918152 | 80  | 6 | 1995-2007 | 0.52 | M-v | 0 | MPC | 128847 2004 CA <sub>110</sub> |
| 2004 CV <sub>111</sub> | 16.2 | 0.15 | 20071027 | 277.84921 | 119.26815 | 57.26610  | 5.46354  | 0.0942401 | 2.6282922 | 44  | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128847 2004 CV <sub>111</sub> |
| 2004 CB <sub>113</sub> | 16.4 | 0.15 | 20071027 | 21.36259  | 13.19061  | 47.70344  | 4.85358  | 0.1744394 | 2.5478932 | 50  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128847 2004 CB <sub>113</sub> |
| 2004 CP <sub>113</sub> | 16.7 | 0.15 | 20071027 | 307.00303 | 285.85726 | 204.28407 | 4.77293  | 0.1132992 | 2.1716141 | 42  | 5 | 2000-2007 | 0.43 | M-v | 1 | MPC | 111031 2004 CP <sub>113</sub> |
| 2004 CB <sub>114</sub> | 14.9 | 0.15 | 20071027 | 249.19861 | 294.57453 | 190.17470 | 12.13887 | 0.0848743 | 3.1922723 | 61  | 5 | 2001-2007 | 0.60 | M-v | 1 | MPC | 128847 2004 CB <sub>114</sub> |
| 2004 CR <sub>114</sub> | 16.1 | 0.15 | 20071027 | 252.72568 | 176.03048 | 53.49663  | 15.87091 | 0.0627161 | 2.5296784 | 37  | 4 | 1994-2007 | 0.52 | M-v | 2 | MPC | 122770 2004 CR <sub>114</sub> |
| 2004 CC <sub>116</sub> | 16.4 | 0.15 | 20071027 | 319.15640 | 49.44036  | 53.41480  | 2.68541  | 0.0360570 | 2.7700864 | 47  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128847 2004 CC <sub>116</sub> |
| 2004 CS <sub>117</sub> | 16.8 | 0.15 | 20071027 | 27.39698  | 104.18984 | 303.52834 | 1.80864  | 0.0773556 | 2.6711224 | 33  | 6 | 2000-2007 | 0.54 | M-v | 1 | MPC | 111031 2004 CS <sub>117</sub> |
| 2004 CQ <sub>126</sub> | 16.6 | 0.15 | 20071027 | 59.64898  | 187.60569 | 196.94183 | 3.75161  | 0.1019075 | 2.6790950 | 61  | 5 | 2002-2007 | 0.49 | M-v | 1 | MPC | 108918 2004 CQ <sub>126</sub> |
| 2004 CJ <sub>129</sub> | 16.7 | 0.15 | 20071027 | 343.87267 | 72.06082  | 15.55749  | 1.81329  | 0.0445946 | 2.8005191 | 40  | 5 | 1995-2007 | 0.45 | M-v | 1 | MPC | 108919 2004 CJ <sub>129</sub> |
| 2004 CS <sub>130</sub> | 16.1 | 0.15 | 20071027 | 230.02572 | 241.57906 | 14.88340  | 12.74255 | 0.1433988 | 2.5412117 | 41  | 5 | 2000-2007 | 0.66 | M-v | 1 | MPC | 118066 2004 CS <sub>130</sub> |
| 2004 DC                | 18.2 | 0.15 | 20071027 | 250.02690 | 156.13591 | 75.00879  | 19.44434 | 0.3994843 | 1.6338010 | 159 | 2 | 2004-2007 | 0.48 | M-v | 0 | MPC | 116262 2004 DC                |
| 2004 DY <sub>1</sub>   | 16.5 | 0.15 | 20071027 | 318.69857 | 329.09716 | 133.92544 | 3.94838  | 0.1808909 | 2.8070567 | 56  | 4 | 2002-2007 | 0.46 | M-v | 0 | MPC | 128847 2004 DY <sub>1</sub>   |
| 2004 DJ <sub>3</sub>   | 17.1 | 0.15 | 20071027 | 267.45626 | 352.39915 | 191.98020 | 0.88630  | 0.0400907 | 2.7348674 | 50  | 4 | 2001-2007 | 0.37 | M-v | 2 | MPC | 114712 2004 DJ <sub>3</sub>   |
| 2004 DK <sub>3</sub>   | 16.3 | 0.15 | 20071027 | 27.57598  | 110.76657 | 305.83002 | 2.49728  | 0.1072508 | 2.6961323 | 56  | 5 | 1995-2007 | 0.53 | M-v | 0 | MPC | 128847 2004 DK <sub>3</sub>   |
| 2004 DJ <sub>4</sub>   | 14.9 | 0.15 | 20071027 | 184.44881 | 151.98767 | 85.22840  | 15.17910 | 0.1280640 | 3.1814344 | 50  | 7 | 1999-2007 | 0.74 | M-v | 1 | MPC | 111031 2004 DJ <sub>4</sub>   |
| 2004 DP <sub>4</sub>   | 15.9 | 0.15 | 20071027 | 301.90648 | 120.41760 | 12.77640  | 3.43169  | 0.0391408 | 2.7736220 | 43  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 114712 2004 DP <sub>4</sub>   |
| 2004 DV <sub>5</sub>   | 16.5 | 0.15 | 20071027 | 25.02474  | 258.09564 | 144.98184 | 4.63632  | 0.1035609 | 2.8062716 | 45  | 6 | 1999-2007 | 0.51 | M-v | 1 | MPC | 111031 2004 DV <sub>5</sub>   |
| 2004 DJ <sub>10</sub>  | 16.6 | 0.15 | 20071027 | 327.29715 | 205.02461 | 275.57490 | 2.55658  | 0.1269875 | 2.6860203 | 60  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 111032 2004 DJ <sub>10</sub>  |
| 2004 DY <sub>10</sub>  | 15.7 | 0.15 | 20071027 | 193.71152 | 123.21437 | 135.92151 | 6.47092  | 0.0426595 | 2.7786446 | 76  | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 114712 2004 DY <sub>10</sub>  |
| 2004 DQ <sub>12</sub>  | 16.1 | 0.15 | 20071027 | 357.57622 | 350.66889 | 138.88718 | 3.60103  | 0.0734130 | 2.5460500 | 75  | 5 | 1996-2007 | 0.46 | M-v | 2 | MPC | 128847 2004 DQ <sub>12</sub>  |
| 2004 DV <sub>12</sub>  | 15.4 | 0.15 | 20071027 | 343.05636 | 90.48569  | 6.77714   | 9.12876  | 0.1578438 | 2.7658439 | 95  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128848 2004 DV <sub>12</sub>  |
| 2004 DN <sub>14</sub>  | 16.0 | 0.15 | 20071027 | 339.94218 | 276.15048 | 198.94001 | 6.22973  | 0.3006024 | 2.6253807 | 73  | 4 | 2000-2007 | 0.46 | M-v | 2 | MPC | 128848 2004 DN <sub>14</sub>  |
| 2004 DD <sub>19</sub>  | 16.3 | 0.15 | 20071027 | 342.10354 | 73.32967  | 52.29369  | 8.22571  | 0.1717189 | 2.5929184 | 71  | 4 | 1998-2007 | 0.62 | M-v | 1 | MPC | 87616 2004 DD <sub>19</sub>   |
| 2004 DF <sub>19</sub>  | 14.5 | 0.15 | 20071027 | 329.20555 | 81.19533  | 329.05912 | 17.31005 | 0.1960098 | 3.0971560 | 90  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128848 2004 DF <sub>19</sub>  |
| 2004 DR <sub>20</sub>  | 15.1 | 0.15 | 20071027 | 240.28500 | 45.27238  | 136.51931 | 9.00106  | 0.0817140 | 2.9802045 | 80  | 4 | 2001-2007 | 0.40 | M-v | 1 | MPC | 128848 2004 DR <sub>20</sub>  |
| 2004 DA <sub>22</sub>  | 17.2 | 0.15 | 20071027 | 321.36299 | 41.16693  | 113.74081 | 6.18269  | 0.2391843 | 2.6043018 | 50  | 4 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128848 2004 DA <sub>22</sub>  |
| 2004 DP <sub>22</sub>  | 16.1 | 0.15 | 20071027 | 345.56334 | 266.93825 | 166.21008 | 9.22484  | 0.1950767 | 2.7668747 | 63  | 2 | 2004-2007 | 0.49 | M-v | 4 | MPC | 128127 2004 DP <sub>22</sub>  |
| 2004 DW <sub>23</sub>  | 16.4 | 0.15 | 20071027 | 250.21244 | 251.43438 | 264.84772 | 1.30320  | 0.0553032 | 3.0114926 | 50  | 4 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128848 2004 DW <sub>23</sub>  |
| 2004 DK <sub>24</sub>  | 16.0 | 0.15 | 20071027 | 323.52674 | 301.30348 | 172.56181 | 15.95463 | 0.2535571 | 2.7293075 | 41  | 2 | 2004-2007 | 0.48 | M-v | 3 | MPC | 128127 2004 DK <sub>24</sub>  |
| 2004 DU <sub>24</sub>  | 15.8 | 0.15 | 20071027 | 9.96680   | 24.00728  | 45.78915  | 3.90147  | 0.4700735 | 2.5754582 | 118 | 4 | 1996-2007 | 0.51 | M-v | 2 | MPC | 128848 2004 DU <sub>24</sub>  |
| 2004 DD <sub>26</sub>  | 15.7 | 0.15 | 20071027 | 197.84685 | 254.75978 | 352.90187 | 4.88414  | 0.0722514 | 2.7399958 | 52  | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 125993 2004 DD <sub>26</sub>  |
| 2004 DO <sub>26</sub>  | 16.8 | 0.15 | 20071027 | 356.18454 | 306.16080 | 124.56141 | 5.90151  | 0.1472454 | 2.7388861 | 32  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128848 2004 DO <sub>26</sub>  |
| 2004 DK <sub>30</sub>  | 16.0 | 0.15 | 20071027 | 29.56503  | 283.27339 | 126.24178 | 6.02366  | 0.3206086 | 2.5758541 | 35  | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 128848 2004 DK <sub>30</sub>  |
| 2004 DK <sub>32</sub>  | 16.2 | 0.15 | 20071027 | 347.95120 | 171.46315 | 274.91585 | 4.47563  | 0.1885744 | 2.6939919 | 32  | 3 | 2002-2007 | 0.58 | M-v | 2 | MPC | 108927 2004 DK <sub>32</sub>  |
| 2004 DB <sub>33</sub>  | 15.7 | 0.15 | 20071027 | 197.50864 | 124.72970 | 120.14370 | 3.05867  | 0.1749569 | 2.9651839 | 73  | 4 | 2004-2007 | 0.42 | M-v | 0 | MPC | 111033 2004 DB <sub>33</sub>  |
| 2004 DS <sub>35</sub>  | 15.2 | 0.15 | 20071027 | 215.05786 | 332.56798 | 211.69667 | 6.15854  | 0.0970399 | 3.1344410 | 53  | 4 | 2001-2007 | 0.35 | M-v | 1 | MPC | 128848 2004 DS <sub>35</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|------------------------------|
| 2004 DG <sub>36</sub> | 16.2 | 0.15 | 20071027 | 289.56016 | 227.04870 | 298.09295 | 3.96348  | 0.0935205 | 2.7396643 | 53  | 4 | 2002-2007 | 0.45 | M-v | 1 | MP | 108928 2004 DG <sub>36</sub> |
| 2004 DO <sub>38</sub> | 16.6 | 0.15 | 20071027 | 326.37843 | 128.21166 | 1.29140   | 2.84988  | 0.1793444 | 2.6727735 | 51  | 4 | 1993-2007 | 0.44 | M-v | 1 | MP | 128848 2004 DO <sub>38</sub> |
| 2004 DJ <sub>39</sub> | 15.8 | 0.15 | 20071027 | 322.29824 | 6.90819   | 73.45471  | 1.09707  | 0.0641649 | 2.9771427 | 57  | 3 | 2002-2007 | 0.47 | M-v | 3 | MP | 128848 2004 DJ <sub>39</sub> |
| 2004 DN <sub>39</sub> | 16.4 | 0.15 | 20071027 | 145.01409 | 283.28237 | 16.71946  | 1.85116  | 0.0448496 | 2.7496467 | 57  | 5 | 1997-2007 | 0.35 | M-v | 0 | MP | 114713 2004 DN <sub>39</sub> |
| 2004 DT <sub>39</sub> | 16.7 | 0.15 | 20071027 | 347.24575 | 264.68408 | 168.08716 | 28.74955 | 0.4793010 | 2.6865156 | 53  | 2 | 2004-2007 | 0.48 | M-v | 2 | MP | 126710 2004 DT <sub>39</sub> |
| 2004 DF <sub>41</sub> | 16.3 | 0.15 | 20071027 | 303.81191 | 69.61221  | 109.59863 | 5.50846  | 0.1719798 | 2.6253052 | 64  | 3 | 2000-2007 | 0.46 | M-v | 2 | MP | 128127 2004 DF <sub>41</sub> |
| 2004 DW <sub>41</sub> | 16.5 | 0.15 | 20071027 | 322.34437 | 286.52275 | 191.97645 | 5.61924  | 0.2367967 | 2.7278276 | 64  | 3 | 2002-2007 | 0.54 | M-v | 3 | MP | 128848 2004 DW <sub>41</sub> |
| 2004 DZ <sub>41</sub> | 16.0 | 0.15 | 20071027 | 351.41228 | 191.67404 | 286.09686 | 3.20751  | 0.1377745 | 2.6032968 | 62  | 3 | 2004-2007 | 0.53 | M-v | 2 | MP | 128848 2004 DZ <sub>41</sub> |
| 2004 DF <sub>42</sub> | 15.5 | 0.15 | 20071027 | 296.59854 | 42.51727  | 111.80367 | 5.63312  | 0.1191343 | 2.8195543 | 66  | 6 | 1994-2007 | 0.59 | M-v | 1 | MP | 111034 2004 DF <sub>42</sub> |
| 2004 DL <sub>42</sub> | 15.2 | 0.15 | 20071027 | 207.76758 | 267.85224 | 337.40222 | 14.19077 | 0.1150850 | 2.8589987 | 62  | 7 | 1996-2007 | 0.66 | M-v | 1 | MP | 111034 2004 DL <sub>42</sub> |
| 2004 DQ <sub>42</sub> | 14.2 | 0.15 | 20071027 | 313.17076 | 66.09316  | 25.58643  | 19.27882 | 0.1671579 | 3.1373843 | 193 | 3 | 2002-2007 | 0.54 | M-v | 2 | MP | 128848 2004 DQ <sub>42</sub> |
| 2004 DR <sub>42</sub> | 16.1 | 0.15 | 20071027 | 322.61586 | 147.55361 | 19.92439  | 14.34172 | 0.1921988 | 2.6080581 | 97  | 3 | 2004-2007 | 0.58 | M-v | 2 | MP | 126710 2004 DR <sub>42</sub> |
| 2004 DA <sub>44</sub> | 15.1 | 0.15 | 20071027 | 332.60634 | 71.87594  | 337.66536 | 25.54137 | 0.2226003 | 3.0892761 | 64  | 3 | 2002-2007 | 0.59 | M-v | 2 | MP | 126710 2004 DA <sub>44</sub> |
| 2004 DP <sub>44</sub> | 16.5 | 0.15 | 20071027 | 303.86754 | 177.10954 | 314.12807 | 2.60901  | 0.0448736 | 2.8120189 | 44  | 5 | 1997-2007 | 0.48 | M-v | 1 | MP | 111034 2004 DP <sub>44</sub> |
| 2004 DS <sub>44</sub> | 16.1 | 0.15 | 20071027 | 357.96285 | 267.69887 | 163.47404 | 13.43238 | 0.1887637 | 2.7137151 | 55  | 4 | 2002-2007 | 0.62 | M-v | 1 | MP | 126710 2004 DS <sub>44</sub> |
| 2004 DA <sub>46</sub> | 15.7 | 0.15 | 20071027 | 253.82066 | 41.96281  | 228.57620 | 5.47683  | 0.2052164 | 2.3939285 | 76  | 6 | 1998-2007 | 0.57 | M-v | 1 | MP | 114088 2004 DA <sub>46</sub> |
| 2004 DC <sub>46</sub> | 15.3 | 0.15 | 20071027 | 314.65560 | 124.65181 | 332.53842 | 12.33821 | 0.0844472 | 2.9181366 | 47  | 3 | 2002-2007 | 0.57 | M-v | 2 | MP | 128848 2004 DC <sub>46</sub> |
| 2004 DX <sub>47</sub> | 15.8 | 0.15 | 20071027 | 336.76089 | 140.75746 | 336.71206 | 9.14971  | 0.1077267 | 2.6920111 | 37  | 5 | 1995-2007 | 0.54 | M-v | 1 | MP | 122770 2004 DX <sub>47</sub> |
| 2004 DF <sub>48</sub> | 16.8 | 0.15 | 20071027 | 335.72091 | 28.85393  | 160.36341 | 2.72877  | 0.1375089 | 2.4064210 | 66  | 5 | 1998-2007 | 0.46 | M-v | 1 | MP | 112869 2004 DF <sub>48</sub> |
| 2004 DU <sub>48</sub> | 15.3 | 0.15 | 20071027 | 205.22029 | 259.29595 | 301.88031 | 0.22918  | 0.1324244 | 3.1874913 | 83  | 5 | 1998-2007 | 0.47 | M-v | 1 | MP | 128848 2004 DU <sub>48</sub> |
| 2004 DN <sub>49</sub> | 15.5 | 0.15 | 20071027 | 257.45487 | 219.91362 | 341.32637 | 6.31008  | 0.0736880 | 2.7301008 | 63  | 5 | 2000-2007 | 0.53 | M-v | 2 | MP | 118066 2004 DN <sub>49</sub> |
| 2004 DT <sub>49</sub> | 15.9 | 0.15 | 20071027 | 220.70874 | 117.18096 | 116.07307 | 5.86258  | 0.0415933 | 2.7667817 | 43  | 5 | 1995-2007 | 0.55 | M-v | 1 | MP | 114713 2004 DT <sub>49</sub> |
| 2004 DG <sub>50</sub> | 16.7 | 0.15 | 20071027 | 29.90348  | 150.01442 | 292.49020 | 1.91376  | 0.1076640 | 2.5215947 | 42  | 6 | 1994-2007 | 0.51 | M-v | 1 | MP | 111034 2004 DG <sub>50</sub> |
| 2004 DH <sub>50</sub> | 15.2 | 0.15 | 20071027 | 167.92641 | 272.34587 | 318.04847 | 10.57385 | 0.0355108 | 3.1008361 | 70  | 5 | 2002-2007 | 0.48 | M-v | 0 | MP | 128848 2004 DH <sub>50</sub> |
| 2004 DN <sub>50</sub> | 16.2 | 0.15 | 20071027 | 359.28724 | 184.25343 | 287.93056 | 5.06314  | 0.1103824 | 2.5434278 | 42  | 5 | 2000-2007 | 0.45 | M-v | 2 | MP | 128849 2004 DN <sub>50</sub> |
| 2004 DO <sub>50</sub> | 15.9 | 0.15 | 20071027 | 356.40489 | 120.73459 | 297.69248 | 6.06796  | 0.2919110 | 2.7177894 | 70  | 3 | 2002-2007 | 0.51 | M-v | 1 | MP | 128849 2004 DO <sub>50</sub> |
| 2004 DZ <sub>50</sub> | 16.7 | 0.15 | 20071027 | 266.37982 | 100.16603 | 120.05104 | 2.51852  | 0.0603188 | 2.5442535 | 45  | 5 | 2000-2007 | 0.53 | M-v | 1 | MP | 112869 2004 DZ <sub>50</sub> |
| 2004 DJ <sub>51</sub> | 15.3 | 0.15 | 20071027 | 313.01136 | 96.82880  | 3.79455   | 7.68330  | 0.0939205 | 2.9941454 | 129 | 3 | 1991-2007 | 0.47 | M-v | 1 | MP | 128849 2004 DJ <sub>51</sub> |
| 2004 DP <sub>51</sub> | 15.3 | 0.15 | 20071027 | 39.54245  | 32.32082  | 358.43036 | 6.16640  | 0.0849781 | 2.9005710 | 89  | 5 | 2001-2007 | 0.48 | M-v | 1 | MP | 111035 2004 DP <sub>51</sub> |
| 2004 DP <sub>52</sub> | 15.6 | 0.15 | 20071027 | 354.76301 | 175.15254 | 304.46560 | 2.85491  | 0.0486816 | 2.5862245 | 69  | 4 | 2002-2007 | 0.37 | M-v | 1 | MP | 128849 2004 DP <sub>52</sub> |
| 2004 DU <sub>55</sub> | 16.6 | 0.15 | 20071027 | 341.66363 | 112.38518 | 303.28465 | 0.41382  | 0.0181506 | 3.0538588 | 55  | 7 | 1999-2007 | 0.33 | M-v | 0 | MP | 128849 2004 DU <sub>55</sub> |
| 2004 DQ <sub>56</sub> | 15.4 | 0.15 | 20071027 | 262.04007 | 297.80750 | 179.67956 | 4.51951  | 0.1571019 | 3.1483957 | 43  | 3 | 2002-2007 | 0.27 | M-v | 2 | MP | 128849 2004 DQ <sub>56</sub> |
| 2004 DG <sub>58</sub> | 16.6 | 0.15 | 20071027 | 256.79554 | 128.08066 | 89.02554  | 2.72505  | 0.0415311 | 2.5995912 | 78  | 6 | 1999-2007 | 0.44 | M-v | 1 | MP | 112869 2004 DG <sub>58</sub> |
| 2004 DA <sub>63</sub> | 16.8 | 0.15 | 20071027 | 1.92534   | 305.54044 | 134.71438 | 7.34053  | 0.0498190 | 2.7291564 | 30  | 5 | 2000-2007 | 0.36 | M-v | 0 | MP | 121809 2004 DA <sub>63</sub> |
| 2004 DF <sub>63</sub> | 15.9 | 0.15 | 20071027 | 324.11004 | 351.07574 | 95.98906  | 3.18884  | 0.0795921 | 2.9210672 | 58  | 5 | 1997-2007 | 0.54 | M-v | 0 | MP | 128849 2004 DF <sub>63</sub> |
| 2004 DB <sub>69</sub> | 16.4 | 0.15 | 20071027 | 31.39783  | 265.73322 | 117.75506 | 10.98288 | 0.1522312 | 2.7313874 | 23  | 4 | 2002-2007 | 0.43 | M-v | 1 | MP | 102202 2004 DB <sub>69</sub> |
| 2004 DS <sub>71</sub> | 15.7 | 0.15 | 20071027 | 296.84512 | 259.89597 | 241.60759 | 7.87589  | 0.1618236 | 2.8002972 | 49  | 3 | 2002-2007 | 0.50 | M-v | 3 | MP | 128849 2004 DS <sub>71</sub> |
| 2004 DU <sub>71</sub> | 14.8 | 0.15 | 20071027 | 303.09188 | 345.96272 | 123.88130 | 22.24590 | 0.1268596 | 3.0697866 | 41  | 2 | 2004-2007 | 0.59 | M-v | 4 | MP | 128129 2004 DU <sub>71</sub> |
| 2004 DY <sub>74</sub> | 16.6 | 0.15 | 20071027 | 48.40879  | 228.02663 | 165.96741 | 2.62897  | 0.0934337 | 2.7131528 | 57  | 6 | 2000-2007 | 0.46 | M-v | 0 | MP | 111036 2004 DY <sub>74</sub> |
| 2004 DX <sub>75</sub> | 16.7 | 0.15 | 20071027 | 81.13685  | 64.89545  | 333.20767 | 1.80039  | 0.2123666 | 2.4192593 | 131 | 6 | 2000-2007 | 0.44 | M-v | 1 | MP | 112869 2004 DX <sub>75</sub> |
| 2004 DD <sub>77</sub> | 16.8 | 0.15 | 20071027 | 0.57984   | 139.42333 | 8.39443   | 1.39620  | 0.1264404 | 2.4246585 | 57  | 5 | 1998-2007 | 0.47 | M-v | 1 | MP | 111036 2004 DD <sub>77</sub> |
| 2004 EF <sub>3</sub>  | 15.3 | 0.15 | 20071027 | 248.34091 | 51.62782  | 122.29631 | 13.32834 | 0.1215315 | 2.9889640 | 60  | 4 | 2001-2007 | 0.50 | M-v | 1 | MP | 128849 2004 EF <sub>3</sub>  |
| 2004 ES <sub>3</sub>  | 15.9 | 0.15 | 20071027 | 2.08047   | 343.85711 | 132.83788 | 12.72616 | 0.1381973 | 2.5578394 | 53  | 5 | 2000-2007 | 0.50 | M-v | 1 | MP | 111036 2004 ES <sub>3</sub>  |
| 2004 EK <sub>4</sub>  | 15.4 | 0.15 | 20071027 | 245.47585 | 130.44630 | 41.91328  | 16.37069 | 0.2597826 | 3.0647182 | 37  | 2 | 2004-2007 | 0.38 | M-v | 2 | MP | 128129 2004 EK <sub>4</sub>  |
| 2004 EU <sub>4</sub>  | 15.4 | 0.15 | 20071027 | 185.79759 | 124.96047 | 110.80892 | 2.25954  | 0.1210416 | 3.1116977 | 74  | 5 | 1998-2007 | 0.48 | M-v | 1 | MP | 128849 2004 EU <sub>4</sub>  |
| 2004 EZ <sub>4</sub>  | 16.8 | 0.15 | 20071027 | 358.98332 | 340.96845 | 135.49507 | 1.45937  | 0.1398352 | 2.5810003 | 91  | 5 | 1998-2007 | 0.41 | M-v | 1 | MP | 128849 2004 EZ <sub>4</sub>  |
| 2004 EE <sub>5</sub>  | 16.2 | 0.15 | 20071027 | 340.78867 | 351.86396 | 102.72006 | 2.99228  | 0.1953962 | 2.7667823 | 46  | 4 | 1998-2007 | 0.53 | M-v | 1 | MP | 90191 2004 EE <sub>5</sub>   |
| 2004 EG <sub>5</sub>  | 15.3 | 0.15 | 20071027 | 316.54174 | 62.66121  | 15.48410  | 8.45574  | 0.1470337 | 3.1057493 | 125 | 3 | 2002-2007 | 0.54 | M-v | 2 | MP | 128849 2004 EG <sub>5</sub>  |
| 2004 EV <sub>5</sub>  | 15.7 | 0.15 | 20071027 | 262.71342 | 183.57831 | 12.44344  | 12.23200 | 0.0928301 | 2.7908853 | 89  | 4 | 2004-2007 | 0.51 | M-v | 1 | MP | 108939 2004 EV <sub>5</sub>  |
| 2004 EZ <sub>5</sub>  | 14.8 | 0.15 | 20071027 | 252.40448 | 103.00806 | 47.16787  | 6.99292  | 0.0450037 | 3.1918772 | 92  | 2 | 2004-2007 | 0.52 | M-v | 4 | MP | 128849 2004 EZ <sub>5</sub>  |
| 2004 EB <sub>6</sub>  | 15.6 | 0.15 | 20071027 | 277.76446 | 81.78117  | 93.57473  | 7.07808  | 0.0907718 | 2.7947258 | 49  | 6 | 2000-2007 | 0.59 | M-v | 1 | MP | 111036 2004 EB <sub>6</sub>  |
| 2004 EK <sub>8</sub>  | 15.5 | 0.15 | 20071027 | 312.65769 | 140.33593 | 357.73947 | 12.44618 | 0.1270414 | 2.8046007 | 65  | 4 | 2002-2007 | 0.49 | M-v | 1 | MP | 128849 2004 EK <sub>8</sub>  |
| 2004 EW <sub>8</sub>  | 16.1 | 0.15 | 20071027 | 230.22533 | 58.96227  | 133.15207 | 3.80874  | 0.1111656 | 2.9723917 | 46  | 4 | 2001-2007 | 0.37 | M-v | 1 | MP | 128849 2004 EW <sub>8</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 EK <sub>13</sub> | 15.8 | 0.15 | 20071027 | 246.92045 | 106.29053 | 69.15241  | 3.60859  | 0.1152478 | 3.0176976 | 50  | 2 | 2004-2007 | 0.45 | M-v | 3 | MPC | 128129 2004 EK <sub>13</sub> |
| 2004 ES <sub>14</sub> | 14.7 | 0.15 | 20071027 | 265.38867 | 22.97902  | 143.83179 | 12.27159 | 0.0867509 | 2.9679574 | 67  | 4 | 2003-2007 | 0.52 | M-v | 1 | MPC | 128850 2004 ES <sub>14</sub> |
| 2004 EV <sub>14</sub> | 14.7 | 0.15 | 20071027 | 284.91629 | 0.00289   | 130.59678 | 11.07324 | 0.0390973 | 3.0947567 | 56  | 7 | 1998-2007 | 0.51 | M-v | 0 | MPC | 128850 2004 EV <sub>14</sub> |
| 2004 EF <sub>16</sub> | 15.6 | 0.15 | 20071027 | 205.78671 | 234.89827 | 341.57186 | 9.31249  | 0.0382357 | 2.9971417 | 53  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 111037 2004 EF <sub>16</sub> |
| 2004 EB <sub>17</sub> | 15.2 | 0.15 | 20071027 | 244.10944 | 69.59585  | 117.94518 | 10.03302 | 0.0830524 | 3.0158131 | 65  | 5 | 1999-2007 | 0.47 | M-v | 1 | MPC | 128850 2004 EB <sub>17</sub> |
| 2004 EJ <sub>17</sub> | 15.1 | 0.15 | 20071027 | 273.23539 | 91.97454  | 49.15790  | 10.78453 | 0.1200936 | 3.0938156 | 56  | 2 | 2004-2007 | 0.54 | M-v | 3 | MPC | 128850 2004 EJ <sub>17</sub> |
| 2004 EH <sub>18</sub> | 15.6 | 0.15 | 20071027 | 283.34529 | 121.25153 | 97.64588  | 14.13365 | 0.2093543 | 2.6383762 | 76  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 65591 2004 EH <sub>18</sub>  |
| 2004 EB <sub>20</sub> | 15.4 | 0.15 | 20071027 | 282.07916 | 125.99471 | 61.76028  | 7.95685  | 0.0789234 | 2.7630653 | 72  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 112870 2004 EB <sub>20</sub> |
| 2004 EG <sub>24</sub> | 16.2 | 0.15 | 20071027 | 339.15467 | 11.03674  | 108.29869 | 6.23433  | 0.2266225 | 2.6529190 | 56  | 3 | 2003-2007 | 0.44 | M-v | 1 | MPC | 128129 2004 EG <sub>24</sub> |
| 2004 EV <sub>25</sub> | 16.0 | 0.15 | 20071027 | 78.34058  | 91.13097  | 300.80374 | 5.20677  | 0.0185624 | 2.6988755 | 60  | 6 | 1997-2007 | 0.53 | M-v | 1 | MPC | 108945 2004 EV <sub>25</sub> |
| 2004 EJ <sub>31</sub> | 14.6 | 0.15 | 20071027 | 222.72874 | 300.17527 | 254.73259 | 9.00133  | 0.0531179 | 3.1077735 | 59  | 6 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128850 2004 EJ <sub>31</sub> |
| 2004 EW <sub>32</sub> | 15.7 | 0.15 | 20071027 | 311.14263 | 226.66430 | 284.55789 | 10.41409 | 0.1421726 | 2.7508672 | 41  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 77778 2004 EW <sub>32</sub>  |
| 2004 EH <sub>33</sub> | 14.9 | 0.15 | 20071027 | 261.20063 | 91.17106  | 58.05534  | 9.34503  | 0.0818196 | 3.0731070 | 56  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 128130 2004 EH <sub>33</sub> |
| 2004 EE <sub>34</sub> | 16.4 | 0.15 | 20071027 | 297.57005 | 173.03554 | 339.82430 | 4.61249  | 0.1109124 | 2.7861933 | 37  | 4 | 1997-2007 | 0.49 | M-v | 1 | MPC | 111038 2004 EE <sub>34</sub> |
| 2004 EK <sub>36</sub> | 15.4 | 0.15 | 20071027 | 271.95558 | 220.80416 | 333.42070 | 8.36538  | 0.0851858 | 2.7532079 | 56  | 3 | 2001-2007 | 0.48 | M-v | 3 | MPC | 66342 2004 EK <sub>36</sub>  |
| 2004 EH <sub>37</sub> | 16.0 | 0.15 | 20071027 | 350.99619 | 40.22517  | 68.32194  | 11.23993 | 0.3923567 | 2.6111288 | 51  | 2 | 2004-2007 | 0.52 | M-v | 2 | MPC | 128850 2004 EH <sub>37</sub> |
| 2004 EB <sub>38</sub> | 15.8 | 0.15 | 20071027 | 253.27231 | 274.09880 | 331.25809 | 10.22688 | 0.1184996 | 2.6589064 | 60  | 4 | 1995-2007 | 0.51 | M-v | 1 | MPC | 86356 2004 EB <sub>38</sub>  |
| 2004 EQ <sub>39</sub> | 15.6 | 0.15 | 20071027 | 213.26083 | 318.25145 | 266.27840 | 1.89794  | 0.1147373 | 2.9723323 | 55  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 111038 2004 EQ <sub>39</sub> |
| 2004 EB <sub>40</sub> | 15.0 | 0.15 | 20071027 | 211.37570 | 112.60587 | 109.01886 | 7.43328  | 0.0767685 | 2.9940347 | 52  | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128850 2004 EB <sub>40</sub> |
| 2004 EH <sub>41</sub> | 20.4 | 0.15 | 20071027 | 29.89270  | 8.86357   | 101.56855 | 12.87885 | 0.1593762 | 2.4202741 | 35  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 122771 2004 EH <sub>41</sub> |
| 2004 EJ <sub>49</sub> | 16.0 | 0.15 | 20071027 | 313.47176 | 171.18592 | 6.19388   | 4.88524  | 0.0847318 | 2.5945760 | 67  | 4 | 2000-2007 | 0.39 | M-v | 3 | MPC | 108955 2004 EJ <sub>49</sub> |
| 2004 EU <sub>49</sub> | 15.6 | 0.15 | 20071027 | 289.74678 | 15.21839  | 97.04972  | 4.04011  | 0.0503972 | 3.1414152 | 37  | 4 | 1993-2007 | 0.47 | M-v | 1 | MPC | 128850 2004 EU <sub>49</sub> |
| 2004 EB <sub>50</sub> | 16.3 | 0.15 | 20071027 | 336.89031 | 117.01292 | 359.18290 | 4.73343  | 0.0653582 | 2.7202537 | 42  | 5 | 1993-2007 | 0.46 | M-v | 1 | MPC | 128850 2004 EB <sub>50</sub> |
| 2004 EK <sub>50</sub> | 15.5 | 0.15 | 20071027 | 338.38843 | 34.47628  | 41.17556  | 10.71233 | 0.0845039 | 3.0188746 | 92  | 3 | 1999-2007 | 0.46 | M-v | 2 | MPC | 128850 2004 EK <sub>50</sub> |
| 2004 EB <sub>52</sub> | 15.3 | 0.15 | 20071027 | 107.90626 | 318.81344 | 347.88622 | 13.14110 | 0.0603203 | 3.0746374 | 36  | 3 | 2004-2007 | 0.54 | M-v | 3 | MPC | 108956 2004 EB <sub>52</sub> |
| 2004 EW <sub>54</sub> | 15.7 | 0.15 | 20071027 | 292.81876 | 249.06396 | 263.86952 | 11.38120 | 0.1083162 | 2.7985657 | 33  | 4 | 2002-2007 | 0.60 | M-v | 1 | MPC | 111039 2004 EW <sub>54</sub> |
| 2004 EO <sub>55</sub> | 15.4 | 0.15 | 20071027 | 249.23495 | 303.41194 | 220.34751 | 11.36937 | 0.1193698 | 3.1235172 | 42  | 2 | 2004-2007 | 0.38 | M-v | 3 | MPC | 128851 2004 EO <sub>55</sub> |
| 2004 EP <sub>55</sub> | 16.2 | 0.15 | 20071027 | 334.72051 | 260.44044 | 208.67070 | 15.72718 | 0.2118412 | 2.7458481 | 42  | 4 | 2000-2007 | 0.47 | M-v | 1 | MPC | 74309 2004 EP <sub>55</sub>  |
| 2004 EY <sub>55</sub> | 15.5 | 0.15 | 20071027 | 252.54405 | 323.17453 | 218.07281 | 8.61477  | 0.1310696 | 2.9986178 | 54  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128851 2004 EY <sub>55</sub> |
| 2004 EH <sub>56</sub> | 14.8 | 0.15 | 20071027 | 228.84163 | 197.62278 | 359.14711 | 10.91642 | 0.0805734 | 3.1530133 | 64  | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128851 2004 EH <sub>56</sub> |
| 2004 EH <sub>58</sub> | 16.1 | 0.15 | 20071027 | 269.12783 | 78.91274  | 138.22807 | 5.63187  | 0.0846221 | 2.6343346 | 58  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128851 2004 EH <sub>58</sub> |
| 2004 EZ <sub>58</sub> | 15.4 | 0.15 | 20071027 | 285.39618 | 227.19323 | 307.88659 | 11.53531 | 0.0445427 | 2.7924120 | 63  | 5 | 1994-2007 | 0.58 | M-v | 1 | MPC | 111040 2004 EZ <sub>58</sub> |
| 2004 EM <sub>59</sub> | 16.4 | 0.15 | 20071027 | 282.22674 | 261.47464 | 287.36230 | 7.91858  | 0.1200988 | 2.7585418 | 39  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128851 2004 EM <sub>59</sub> |
| 2004 EP <sub>60</sub> | 15.9 | 0.15 | 20071027 | 249.96892 | 35.69183  | 131.35163 | 2.30873  | 0.1020073 | 3.0489636 | 69  | 3 | 2004-2007 | 0.42 | M-v | 3 | MPC | 128851 2004 EP <sub>60</sub> |
| 2004 EG <sub>61</sub> | 16.5 | 0.15 | 20071027 | 334.34709 | 297.20702 | 178.57131 | 2.65087  | 0.1323708 | 2.7088461 | 47  | 5 | 1993-2007 | 0.48 | M-v | 0 | MPC | 114097 2004 EG <sub>61</sub> |
| 2004 EZ <sub>62</sub> | 15.8 | 0.15 | 20071027 | 4.49524   | 182.76374 | 243.16885 | 1.29002  | 0.0722904 | 2.8715230 | 46  | 5 | 1994-2007 | 0.37 | M-v | 0 | MPC | 128851 2004 EZ <sub>62</sub> |
| 2004 EL <sub>64</sub> | 16.0 | 0.15 | 20071027 | 341.27864 | 11.12022  | 62.11138  | 2.80459  | 0.0941819 | 2.9557422 | 44  | 2 | 2004-2007 | 0.41 | M-v | 3 | MPC | 128130 2004 EL <sub>64</sub> |
| 2004 EP <sub>64</sub> | 16.3 | 0.15 | 20071027 | 329.03481 | 353.39743 | 124.53664 | 14.83423 | 0.1403624 | 2.7118835 | 48  | 6 | 1998-2007 | 0.71 | M-v | 1 | MPC | 111040 2004 EP <sub>64</sub> |
| 2004 EQ <sub>64</sub> | 16.7 | 0.15 | 20071027 | 268.35418 | 104.86674 | 98.81610  | 10.19970 | 0.1929138 | 2.7003639 | 54  | 4 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128851 2004 EQ <sub>64</sub> |
| 2004 EJ <sub>65</sub> | 14.3 | 0.15 | 20071027 | 298.93462 | 67.84175  | 39.84757  | 22.28350 | 0.0585317 | 3.0953030 | 116 | 2 | 2004-2007 | 0.49 | M-v | 3 | MPC | 128851 2004 EJ <sub>65</sub> |
| 2004 EC <sub>68</sub> | 15.7 | 0.15 | 20071027 | 340.37926 | 263.40880 | 168.38493 | 10.42794 | 0.1092605 | 2.8983707 | 40  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 76453 2004 EC <sub>68</sub>  |
| 2004 EM <sub>68</sub> | 15.0 | 0.15 | 20071027 | 158.27615 | 284.82086 | 333.66141 | 10.63026 | 0.0655299 | 3.0440872 | 64  | 4 | 2001-2007 | 0.52 | M-v | 0 | MPC | 128851 2004 EM <sub>68</sub> |
| 2004 EP <sub>68</sub> | 15.6 | 0.15 | 20071027 | 336.50543 | 141.09412 | 343.43496 | 12.44917 | 0.1193849 | 2.6451108 | 59  | 4 | 2002-2007 | 0.57 | M-v | 1 | MPC | 128851 2004 EP <sub>68</sub> |
| 2004 EX <sub>71</sub> | 15.2 | 0.15 | 20071027 | 206.67776 | 222.49847 | 346.43660 | 10.33001 | 0.0565424 | 3.1370749 | 39  | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 126712 2004 EX <sub>71</sub> |
| 2004 EA <sub>73</sub> | 15.9 | 0.15 | 20071027 | 64.77753  | 4.04005   | 29.11326  | 6.33632  | 0.0155085 | 2.7394885 | 74  | 6 | 1995-2007 | 0.42 | M-v | 1 | MPC | 111041 2004 EA <sub>73</sub> |
| 2004 EJ <sub>73</sub> | 16.7 | 0.15 | 20071027 | 290.20547 | 5.66029   | 183.21920 | 1.99135  | 0.0256250 | 2.6872868 | 66  | 7 | 1993-2007 | 0.43 | M-v | 0 | MPC | 111041 2004 EJ <sub>73</sub> |
| 2004 EL <sub>74</sub> | 15.4 | 0.15 | 20071027 | 227.67075 | 108.54254 | 87.43656  | 2.59089  | 0.1075382 | 3.1376702 | 68  | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128851 2004 EL <sub>74</sub> |
| 2004 EP <sub>74</sub> | 15.8 | 0.15 | 20071027 | 314.86162 | 343.96728 | 159.78687 | 3.97099  | 0.0748540 | 2.8104502 | 64  | 5 | 1994-2007 | 0.47 | M-v | 0 | MPC | 114715 2004 EP <sub>74</sub> |
| 2004 EU <sub>78</sub> | 15.9 | 0.15 | 20071027 | 306.29439 | 138.20900 | 10.27311  | 12.59790 | 0.1159210 | 2.7448621 | 80  | 3 | 2004-2007 | 0.61 | M-v | 3 | MPC | 128851 2004 EU <sub>78</sub> |
| 2004 EN <sub>79</sub> | 16.1 | 0.15 | 20071027 | 273.88117 | 139.34899 | 61.07056  | 2.77373  | 0.1725314 | 2.7927900 | 56  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 108965 2004 EN <sub>79</sub> |
| 2004 EN <sub>80</sub> | 14.5 | 0.15 | 20071027 | 187.09614 | 134.24019 | 134.59021 | 17.76757 | 0.0576737 | 2.8422848 | 53  | 5 | 1999-2007 | 0.69 | M-v | 1 | MPC | 108966 2004 EN <sub>80</sub> |
| 2004 ET <sub>80</sub> | 16.2 | 0.15 | 20071027 | 26.49459  | 320.55931 | 118.49515 | 4.43595  | 0.1693198 | 2.5593692 | 39  | 5 | 1998-2007 | 0.61 | M-v | 1 | MPC | 111041 2004 ET <sub>80</sub> |
| 2004 EL <sub>81</sub> | 15.0 | 0.15 | 20071027 | 267.25612 | 100.74515 | 94.73376  | 10.49750 | 0.1429831 | 2.8109975 | 67  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128851 2004 EL <sub>81</sub> |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 EE <sub>82</sub> | 15.9 | 0.15 | 20071027 | 240.49937 | 138.56073 | 36.91093  | 12.85972 | 0.0829491 | 3.1150226 | 40  | 3 | 2001-2007 | 0.38 | M-v | 2 | MPC | 128851 2004 EE <sub>82</sub> |
| 2004 ET <sub>82</sub> | 16.9 | 0.15 | 20071027 | 320.21091 | 201.62386 | 305.28874 | 2.07018  | 0.2048522 | 2.6701672 | 49  | 3 | 2004-2007 | 0.41 | M-v | 3 | MPC | 128131 2004 ET <sub>82</sub> |
| 2004 EC <sub>83</sub> | 16.4 | 0.15 | 20071027 | 344.01010 | 48.49023  | 58.64645  | 4.10324  | 0.1388735 | 2.6305474 | 53  | 4 | 1998-2007 | 0.49 | M-v | 0 | MPC | 128132 2004 EC <sub>83</sub> |
| 2004 EK <sub>83</sub> | 15.7 | 0.15 | 20071027 | 324.21349 | 9.97293   | 123.12680 | 7.00523  | 0.0073929 | 2.8418880 | 50  | 4 | 2001-2007 | 0.39 | M-v | 1 | MPC | 124442 2004 EK <sub>83</sub> |
| 2004 EH <sub>84</sub> | 16.2 | 0.15 | 20071027 | 279.40629 | 229.43807 | 304.96286 | 3.28723  | 0.0067084 | 2.7829961 | 43  | 5 | 1999-2007 | 0.35 | M-v | 1 | MPC | 128851 2004 EH <sub>84</sub> |
| 2004 EY <sub>84</sub> | 16.5 | 0.15 | 20071027 | 350.06211 | 341.03860 | 127.24085 | 5.25367  | 0.1720445 | 2.6608399 | 49  | 3 | 2002-2007 | 0.51 | M-v | 1 | MPC | 66345 2004 EY <sub>84</sub>  |
| 2004 EK <sub>86</sub> | 15.9 | 0.15 | 20071027 | 18.98839  | 302.00531 | 131.64579 | 5.78403  | 0.0928115 | 2.7434794 | 38  | 6 | 1995-2007 | 0.54 | M-v | 1 | MPC | 108968 2004 EK <sub>86</sub> |
| 2004 EN <sub>86</sub> | 15.8 | 0.15 | 20071027 | 7.93442   | 316.41005 | 123.43118 | 3.03678  | 0.0560188 | 2.8476778 | 48  | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 128851 2004 EN <sub>86</sub> |
| 2004 EF <sub>88</sub> | 15.4 | 0.15 | 20071027 | 169.13249 | 271.92756 | 343.02657 | 9.91490  | 0.0657407 | 3.0434096 | 42  | 4 | 2001-2007 | 0.44 | M-v | 0 | MPC | 111042 2004 EF <sub>88</sub> |
| 2004 EE <sub>92</sub> | 16.0 | 0.15 | 20071027 | 5.44602   | 63.93505  | 340.10138 | 5.11312  | 0.1623951 | 2.9828493 | 71  | 5 | 1991-2007 | 0.48 | M-v | 1 | MPC | 128851 2004 EE <sub>92</sub> |
| 2004 EJ <sub>92</sub> | 16.5 | 0.15 | 20071027 | 4.50039   | 93.63801  | 346.12919 | 5.24420  | 0.2127992 | 2.6866101 | 65  | 5 | 1993-2007 | 0.41 | M-v | 0 | MPC | 128852 2004 EJ <sub>92</sub> |
| 2004 ET <sub>92</sub> | 14.9 | 0.15 | 20071027 | 276.23623 | 90.87927  | 55.38211  | 9.77397  | 0.0971533 | 3.0669938 | 83  | 3 | 2004-2007 | 0.52 | M-v | 3 | MPC | 128132 2004 ET <sub>92</sub> |
| 2004 EX <sub>93</sub> | 16.3 | 0.15 | 20071027 | 351.48576 | 32.77968  | 61.35418  | 3.08089  | 0.1788702 | 2.7298930 | 55  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 62067 2004 EX <sub>93</sub>  |
| 2004 EY <sub>93</sub> | 15.0 | 0.15 | 20071027 | 184.94069 | 110.14843 | 119.80866 | 3.90199  | 0.0324412 | 3.1448925 | 59  | 3 | 1993-2007 | 0.47 | M-v | 4 | MPC | 128132 2004 EY <sub>93</sub> |
| 2004 FG <sub>2</sub>  | 16.5 | 0.15 | 20071027 | 271.85091 | 1.20581   | 174.38847 | 3.96465  | 0.1803357 | 2.8427237 | 95  | 5 | 1994-2007 | 0.52 | M-v | 1 | MPC | 128852 2004 FG <sub>2</sub>  |
| 2004 FA <sub>4</sub>  | 16.1 | 0.15 | 20071027 | 157.58286 | 173.68570 | 97.52812  | 2.73051  | 0.0370486 | 3.0731014 | 27  | 3 | 2004-2007 | 0.38 | M-v | 2 | MPC | 114101 2004 FA <sub>4</sub>  |
| 2004 FG <sub>9</sub>  | 15.7 | 0.15 | 20071027 | 278.75831 | 58.39249  | 132.43667 | 5.57115  | 0.0485184 | 2.7809654 | 74  | 7 | 1999-2007 | 0.45 | M-v | 0 | MPC | 111042 2004 FG <sub>9</sub>  |
| 2004 FS <sub>11</sub> | 15.3 | 0.15 | 20071027 | 337.08686 | 227.69267 | 243.37472 | 6.76547  | 0.1834505 | 2.7491163 | 68  | 4 | 2002-2007 | 0.61 | M-v | 1 | MPC | 104301 2004 FS <sub>11</sub> |
| 2004 FZ <sub>12</sub> | 16.0 | 0.15 | 20071027 | 318.32484 | 152.49588 | 344.03962 | 12.79902 | 0.1540160 | 2.7579820 | 33  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 114102 2004 FZ <sub>12</sub> |
| 2004 FM <sub>13</sub> | 15.7 | 0.15 | 20071027 | 266.90892 | 178.98618 | 332.54377 | 8.75143  | 0.0505665 | 3.0673909 | 30  | 3 | 2004-2007 | 0.44 | M-v | 3 | MPC | 111043 2004 FM <sub>13</sub> |
| 2004 FU <sub>14</sub> | 15.2 | 0.15 | 20071027 | 307.83819 | 142.78074 | 7.76158   | 7.85171  | 0.1635103 | 2.7999815 | 95  | 4 | 2002-2007 | 0.47 | M-v | 0 | MPC | 114716 2004 FU <sub>14</sub> |
| 2004 FS <sub>17</sub> | 16.4 | 0.15 | 20071027 | 16.45887  | 116.79223 | 212.85566 | 26.58274 | 0.0530255 | 1.8729079 | 77  | 5 | 1997-2007 | 0.54 | M-v | 2 | MPC | 66347 2004 FS <sub>17</sub>  |
| 2004 FK <sub>19</sub> | 15.2 | 0.15 | 20071027 | 319.82579 | 202.61993 | 301.30988 | 6.69988  | 0.1334383 | 2.6909355 | 54  | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128852 2004 FK <sub>19</sub> |
| 2004 FC <sub>20</sub> | 14.8 | 0.15 | 20071027 | 214.50317 | 2.43292   | 210.01627 | 4.27571  | 0.1470759 | 3.0598990 | 51  | 4 | 1996-2007 | 0.46 | M-v | 1 | MPC | 111043 2004 FC <sub>20</sub> |
| 2004 FK <sub>20</sub> | 15.7 | 0.15 | 20071027 | 177.82769 | 348.51574 | 353.34052 | 7.32537  | 0.2511689 | 2.4842115 | 60  | 8 | 1992-2007 | 0.52 | M-v | 1 | MPC | 112873 2004 FK <sub>20</sub> |
| 2004 FA <sub>24</sub> | 16.3 | 0.15 | 20071027 | 355.27732 | 132.92867 | 327.35955 | 3.58490  | 0.0256527 | 2.7911464 | 40  | 6 | 1997-2007 | 0.31 | M-v | 0 | MPC | 128852 2004 FA <sub>24</sub> |
| 2004 FK <sub>26</sub> | 16.1 | 0.15 | 20071027 | 220.58717 | 230.61161 | 8.15380   | 3.50928  | 0.0386060 | 2.8159217 | 57  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 111044 2004 FK <sub>26</sub> |
| 2004 FG <sub>30</sub> | 14.5 | 0.15 | 20071027 | 290.59302 | 12.27798  | 111.93981 | 20.09735 | 0.1953642 | 3.0845682 | 98  | 3 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128852 2004 FG <sub>30</sub> |
| 2004 FK <sub>30</sub> | 15.1 | 0.15 | 20071027 | 344.25013 | 217.95190 | 249.98814 | 23.03798 | 0.2043009 | 2.6865289 | 49  | 4 | 1998-2007 | 0.70 | M-v | 1 | MPC | 128852 2004 FK <sub>30</sub> |
| 2004 FT <sub>35</sub> | 16.5 | 0.15 | 20071027 | 342.18803 | 66.92737  | 45.90415  | 4.61349  | 0.1814329 | 2.7401639 | 42  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 66349 2004 FT <sub>35</sub>  |
| 2004 FW <sub>35</sub> | 15.8 | 0.15 | 20071027 | 271.20539 | 106.71888 | 79.41769  | 2.89297  | 0.1802069 | 2.8537297 | 107 | 6 | 1994-2007 | 0.43 | M-v | 0 | MPC | 114717 2004 FW <sub>35</sub> |
| 2004 FM <sub>36</sub> | 15.1 | 0.15 | 20071027 | 271.03921 | 81.28365  | 62.25086  | 5.59400  | 0.1276384 | 3.1478400 | 71  | 2 | 2004-2007 | 0.47 | M-v | 3 | MPC | 128852 2004 FM <sub>36</sub> |
| 2004 FT <sub>37</sub> | 15.1 | 0.15 | 20071027 | 232.95193 | 247.64286 | 301.41005 | 5.80160  | 0.1051445 | 3.0997742 | 57  | 5 | 1996-2007 | 0.50 | M-v | 1 | MPC | 128852 2004 FT <sub>37</sub> |
| 2004 FD <sub>38</sub> | 15.4 | 0.15 | 20071027 | 125.69136 | 151.29431 | 137.58255 | 4.24491  | 0.0187633 | 3.2067677 | 45  | 4 | 2003-2007 | 0.57 | M-v | 0 | MPC | 128852 2004 FD <sub>38</sub> |
| 2004 FF <sub>38</sub> | 14.9 | 0.15 | 20071027 | 272.70354 | 298.92121 | 207.88070 | 13.60827 | 0.0672835 | 3.0928352 | 51  | 5 | 1995-2007 | 0.54 | M-v | 1 | MPC | 128852 2004 FF <sub>38</sub> |
| 2004 FJ <sub>39</sub> | 16.2 | 0.15 | 20071027 | 59.36343  | 281.54572 | 146.09320 | 4.10346  | 0.0818898 | 2.5781213 | 38  | 4 | 2002-2007 | 0.51 | M-v | 2 | MPC | 108980 2004 FJ <sub>39</sub> |
| 2004 FZ <sub>41</sub> | 16.3 | 0.15 | 20071027 | 337.54301 | 315.46132 | 145.83608 | 9.99213  | 0.1914026 | 2.7794487 | 29  | 4 | 1999-2007 | 0.39 | M-v | 0 | MPC | 111045 2004 FZ <sub>41</sub> |
| 2004 FF <sub>44</sub> | 15.1 | 0.15 | 20071027 | 238.87143 | 232.76354 | 349.27198 | 4.96958  | 0.0839992 | 2.9221605 | 56  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 111045 2004 FF <sub>44</sub> |
| 2004 FO <sub>44</sub> | 15.3 | 0.15 | 20071027 | 217.43303 | 184.76921 | 30.25977  | 11.25276 | 0.0983150 | 3.0604169 | 60  | 5 | 1996-2007 | 0.62 | M-v | 1 | MPC | 111045 2004 FO <sub>44</sub> |
| 2004 FC <sub>45</sub> | 16.3 | 0.15 | 20071027 | 248.97026 | 123.28660 | 140.15708 | 7.72879  | 0.2098474 | 2.6640851 | 75  | 5 | 1996-2007 | 0.56 | M-v | 1 | MPC | 87624 2004 FC <sub>45</sub>  |
| 2004 FX <sub>45</sub> | 15.0 | 0.15 | 20071027 | 297.66547 | 66.65641  | 50.74402  | 10.56463 | 0.2007127 | 3.1268906 | 86  | 3 | 2002-2007 | 0.59 | M-v | 2 | MPC | 128852 2004 FX <sub>45</sub> |
| 2004 FP <sub>47</sub> | 16.2 | 0.15 | 20071027 | 275.31581 | 252.68921 | 300.44773 | 6.82426  | 0.1438545 | 2.6236900 | 36  | 3 | 2004-2007 | 0.55 | M-v | 3 | MPC | 128134 2004 FP <sub>47</sub> |
| 2004 FO <sub>49</sub> | 16.6 | 0.15 | 20071027 | 326.05495 | 200.95497 | 331.51795 | 3.27335  | 0.1477729 | 2.5517441 | 39  | 4 | 2000-2007 | 0.58 | M-v | 2 | MPC | 128852 2004 FO <sub>49</sub> |
| 2004 FO <sub>50</sub> | 14.9 | 0.15 | 20071027 | 247.47187 | 184.41133 | 7.36098   | 5.19600  | 0.1072329 | 3.0644132 | 82  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128852 2004 FO <sub>50</sub> |
| 2004 FZ <sub>51</sub> | 15.8 | 0.15 | 20071027 | 198.96761 | 84.38208  | 152.85507 | 5.38395  | 0.1429231 | 3.0793201 | 40  | 4 | 2004-2007 | 0.48 | M-v | 1 | MPC | 116266 2004 FZ <sub>51</sub> |
| 2004 FX <sub>52</sub> | 14.9 | 0.15 | 20071027 | 249.66414 | 319.12448 | 207.14990 | 13.49016 | 0.0722251 | 3.1815712 | 39  | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128852 2004 FX <sub>52</sub> |
| 2004 FF <sub>53</sub> | 16.1 | 0.15 | 20071027 | 272.56234 | 292.98213 | 212.36537 | 1.34764  | 0.0565236 | 3.0061384 | 46  | 4 | 1996-2007 | 0.38 | M-v | 0 | MPC | 111045 2004 FF <sub>53</sub> |
| 2004 FU <sub>55</sub> | 15.9 | 0.15 | 20071027 | 304.45157 | 58.02993  | 112.03469 | 5.67106  | 0.0507986 | 2.7264561 | 61  | 6 | 1998-2007 | 0.56 | M-v | 1 | MPC | 128853 2004 FU <sub>55</sub> |
| 2004 FR <sub>56</sub> | 15.3 | 0.15 | 20071027 | 212.82136 | 147.45299 | 95.86121  | 5.66649  | 0.1387679 | 3.0412045 | 56  | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 111045 2004 FR <sub>56</sub> |
| 2004 FM <sub>58</sub> | 16.9 | 0.15 | 20071027 | 285.74331 | 92.12139  | 57.76074  | 2.67568  | 0.1568275 | 2.9020885 | 25  | 2 | 2004-2007 | 0.36 | M-v | 3 | MPC | 128134 2004 FM <sub>58</sub> |
| 2004 FO <sub>58</sub> | 15.5 | 0.15 | 20071027 | 181.70931 | 112.49507 | 134.52360 | 1.98303  | 0.0634745 | 3.0836685 | 68  | 7 | 1999-2007 | 0.37 | M-v | 0 | MPC | 116266 2004 FO <sub>58</sub> |
| 2004 FC <sub>63</sub> | 16.0 | 0.15 | 20071027 | 238.41742 | 104.83087 | 104.09878 | 2.80022  | 0.0800432 | 2.9972352 | 55  | 6 | 1993-2007 | 0.41 | M-v | 0 | MPC | 114718 2004 FC <sub>63</sub> |
| 2004 FE <sub>63</sub> | 15.0 | 0.15 | 20071027 | 297.86783 | 91.43835  | 33.59750  | 14.65368 | 0.2269812 | 3.0445286 | 133 | 3 | 2002-2007 | 0.56 | M-v | 2 | MPC | 128853 2004 FE <sub>63</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 FN <sub>63</sub>  | 16.4 | 0.15 | 20071027 | 325.15594 | 118.89005 | 24.40774  | 13.40829 | 0.1487124 | 2.7217138 | 65 | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 121580 2004 FN <sub>63</sub>  |
| 2004 FU <sub>64</sub>  | 18.0 | 0.15 | 20071027 | 91.56110  | 286.31293 | 20.99910  | 24.87617 | 0.3670640 | 1.8375088 | 66 | 3 | 1999-2007 | 0.47 | M-v | 2 | MPC | 70365 2004 FU <sub>64</sub>   |
| 2004 FJ <sub>70</sub>  | 15.9 | 0.15 | 20071027 | 295.91434 | 308.15919 | 166.72133 | 0.71858  | 0.0846561 | 3.0702084 | 64 | 6 | 1999-2007 | 0.48 | M-v | 0 | MPC | 128853 2004 FJ <sub>70</sub>  |
| 2004 FM <sub>74</sub>  | 16.7 | 0.15 | 20071027 | 238.28093 | 287.83904 | 328.36589 | 1.90686  | 0.0722336 | 2.6130776 | 50 | 7 | 1997-2007 | 0.48 | M-v | 0 | MPC | 115789 2004 FM <sub>74</sub>  |
| 2004 FV <sub>80</sub>  | 15.7 | 0.15 | 20071027 | 255.15976 | 117.90156 | 43.48542  | 13.49050 | 0.1494208 | 3.1399588 | 49 | 2 | 2004-2007 | 0.51 | M-v | 3 | MPC | 128853 2004 FV <sub>80</sub>  |
| 2004 FP <sub>82</sub>  | 16.5 | 0.15 | 20071027 | 150.39269 | 200.66023 | 111.04195 | 7.43668  | 0.0524949 | 2.7432578 | 43 | 3 | 2004-2007 | 0.32 | M-v | 2 | MPC | 128853 2004 FP <sub>82</sub>  |
| 2004 FO <sub>84</sub>  | 16.6 | 0.15 | 20071027 | 287.87927 | 94.85770  | 61.57185  | 9.79911  | 0.1639677 | 2.7991239 | 39 | 3 | 1995-2007 | 0.51 | M-v | 2 | MPC | 128135 2004 FO <sub>84</sub>  |
| 2004 FF <sub>89</sub>  | 15.7 | 0.15 | 20071027 | 67.70687  | 264.70301 | 143.70503 | 14.81204 | 0.1124850 | 2.5243926 | 45 | 5 | 2000-2007 | 0.56 | M-v | 2 | MPC | 108991 2004 FF <sub>89</sub>  |
| 2004 FH <sub>90</sub>  | 16.4 | 0.15 | 20071027 | 345.27964 | 53.36565  | 94.31761  | 5.52686  | 0.1691142 | 2.5857467 | 36 | 4 | 1998-2007 | 0.54 | M-v | 1 | MPC | 114105 2004 FH <sub>90</sub>  |
| 2004 FQ <sub>90</sub>  | 15.4 | 0.15 | 20071027 | 308.05822 | 265.01506 | 249.87389 | 23.57741 | 0.1647839 | 2.7116005 | 36 | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128853 2004 FQ <sub>90</sub>  |
| 2004 FD <sub>92</sub>  | 16.1 | 0.15 | 20071027 | 261.17411 | 91.91255  | 140.29063 | 10.88087 | 0.1290963 | 2.6323060 | 60 | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 90195 2004 FD <sub>92</sub>   |
| 2004 FF <sub>93</sub>  | 15.8 | 0.15 | 20071027 | 248.21416 | 231.19677 | 319.28183 | 1.73260  | 0.1007076 | 2.9780670 | 44 | 3 | 2004-2007 | 0.46 | M-v | 4 | MPC | 114106 2004 FF <sub>93</sub>  |
| 2004 FX <sub>93</sub>  | 16.1 | 0.15 | 20071027 | 228.19184 | 94.18469  | 108.55740 | 4.47633  | 0.1504013 | 3.1007532 | 55 | 5 | 1996-2007 | 0.51 | M-v | 1 | MPC | 128853 2004 FX <sub>93</sub>  |
| 2004 FP <sub>94</sub>  | 14.4 | 0.15 | 20071027 | 188.66234 | 130.23373 | 95.72763  | 11.78196 | 0.0759778 | 3.0547973 | 70 | 4 | 1999-2007 | 0.55 | M-v | 1 | MPC | 128853 2004 FP <sub>94</sub>  |
| 2004 FV <sub>94</sub>  | 14.6 | 0.15 | 20071027 | 192.33129 | 158.70914 | 83.46025  | 11.89445 | 0.0561327 | 2.9673937 | 52 | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128853 2004 FV <sub>94</sub>  |
| 2004 FB <sub>95</sub>  | 16.4 | 0.15 | 20071027 | 350.52044 | 358.04510 | 110.53438 | 12.82787 | 0.1120330 | 2.7019952 | 29 | 4 | 2000-2007 | 0.51 | M-v | 0 | MPC | 128853 2004 FB <sub>95</sub>  |
| 2004 FT <sub>97</sub>  | 14.7 | 0.15 | 20071027 | 311.74037 | 65.89521  | 35.64407  | 16.89010 | 0.0995059 | 3.0582378 | 95 | 2 | 2004-2007 | 0.49 | M-v | 2 | MPC | 128853 2004 FT <sub>97</sub>  |
| 2004 FH <sub>107</sub> | 15.7 | 0.15 | 20071027 | 237.85113 | 351.91224 | 206.31271 | 5.65887  | 0.2046061 | 3.0651139 | 42 | 3 | 2004-2007 | 0.55 | M-v | 3 | MPC | 86425 2004 FH <sub>107</sub>  |
| 2004 FJ <sub>107</sub> | 14.9 | 0.15 | 20071027 | 217.57385 | 227.74984 | 6.62242   | 12.12407 | 0.0547019 | 2.9759033 | 82 | 6 | 1999-2007 | 0.56 | M-v | 1 | MPC | 111048 2004 FJ <sub>107</sub> |
| 2004 FT <sub>108</sub> | 16.2 | 0.15 | 20071027 | 214.00175 | 237.46996 | 44.05005  | 3.16609  | 0.1382252 | 2.7449074 | 45 | 6 | 1993-2007 | 0.39 | M-v | 0 | MPC | 111048 2004 FT <sub>108</sub> |
| 2004 FH <sub>109</sub> | 15.5 | 0.15 | 20071027 | 300.51081 | 121.24894 | 35.74192  | 2.47753  | 0.0313599 | 2.8433796 | 67 | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128853 2004 FH <sub>109</sub> |
| 2004 FA <sub>112</sub> | 15.9 | 0.15 | 20071027 | 163.00450 | 82.48257  | 183.58125 | 4.84215  | 0.0868652 | 3.1200322 | 67 | 4 | 1993-2007 | 0.31 | M-v | 0 | MPC | 128853 2004 FA <sub>112</sub> |
| 2004 FS <sub>115</sub> | 14.9 | 0.15 | 20071027 | 215.03966 | 136.06135 | 75.77751  | 7.18871  | 0.0762475 | 3.0946352 | 51 | 5 | 1999-2007 | 0.58 | M-v | 1 | MPC | 128853 2004 FS <sub>115</sub> |
| 2004 FO <sub>116</sub> | 15.7 | 0.15 | 20071027 | 276.65739 | 75.77923  | 125.98081 | 10.02928 | 0.0637132 | 2.7496076 | 66 | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 114720 2004 FO <sub>116</sub> |
| 2004 FM <sub>118</sub> | 16.3 | 0.15 | 20071027 | 307.82179 | 50.53750  | 141.67541 | 2.99341  | 0.1316251 | 2.6332118 | 48 | 3 | 2004-2007 | 0.48 | M-v | 3 | MPC | 128853 2004 FM <sub>118</sub> |
| 2004 FS <sub>119</sub> | 16.0 | 0.15 | 20071027 | 37.01010  | 4.13539   | 16.82753  | 1.73221  | 0.0572213 | 3.1345837 | 35 | 6 | 1993-2007 | 0.32 | M-v | 0 | MPC | 111048 2004 FS <sub>119</sub> |
| 2004 FV <sub>119</sub> | 16.2 | 0.15 | 20071027 | 270.36049 | 85.64314  | 52.17775  | 1.48433  | 0.1314801 | 3.1542565 | 41 | 6 | 1993-2007 | 0.39 | M-v | 0 | MPC | 128854 2004 FV <sub>119</sub> |
| 2004 FF <sub>128</sub> | 15.5 | 0.15 | 20071027 | 290.69653 | 75.17436  | 59.83635  | 5.22724  | 0.1310098 | 3.0741516 | 60 | 3 | 1999-2007 | 0.44 | M-v | 2 | MPC | 128854 2004 FF <sub>128</sub> |
| 2004 FE <sub>134</sub> | 15.9 | 0.15 | 20071027 | 285.28104 | 277.53975 | 256.75361 | 6.45447  | 0.1267506 | 2.7991569 | 42 | 5 | 1999-2007 | 0.68 | M-v | 1 | MPC | 66353 2004 FE <sub>134</sub>  |
| 2004 FT <sub>134</sub> | 16.3 | 0.15 | 20071027 | 323.77625 | 291.48762 | 226.17969 | 8.78183  | 0.2508997 | 2.6321345 | 76 | 6 | 1998-2007 | 0.48 | M-v | 1 | MPC | 65670 2004 FT <sub>134</sub>  |
| 2004 FD <sub>138</sub> | 17.3 | 0.15 | 20071027 | 1.58470   | 310.17635 | 165.87926 | 2.64185  | 0.0883395 | 2.6662073 | 39 | 4 | 2001-2007 | 0.50 | M-v | 3 | MPC | 109001 2004 FD <sub>138</sub> |
| 2004 FE <sub>139</sub> | 15.1 | 0.15 | 20071027 | 249.56840 | 292.23819 | 235.90701 | 8.95300  | 0.0984177 | 3.1872159 | 54 | 3 | 2001-2007 | 0.51 | M-v | 3 | MPC | 128135 2004 FE <sub>139</sub> |
| 2004 FT <sub>139</sub> | 15.1 | 0.15 | 20071027 | 270.59644 | 298.32224 | 211.03186 | 13.44348 | 0.1139783 | 3.0400953 | 60 | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128136 2004 FT <sub>139</sub> |
| 2004 FQ <sub>140</sub> | 14.9 | 0.15 | 20071027 | 333.33603 | 161.50109 | 321.50886 | 7.74285  | 0.0975381 | 2.8106531 | 56 | 6 | 1994-2007 | 0.62 | M-v | 1 | MPC | 111049 2004 FQ <sub>140</sub> |
| 2004 FZ <sub>143</sub> | 14.8 | 0.15 | 20071027 | 318.82494 | 77.03314  | 45.88598  | 10.90311 | 0.0950728 | 3.0147031 | 83 | 5 | 2001-2007 | 0.57 | M-v | 0 | MPC | 128854 2004 FZ <sub>143</sub> |
| 2004 FN <sub>148</sub> | 15.0 | 0.15 | 20071027 | 200.93640 | 171.09596 | 71.80824  | 18.81284 | 0.1489048 | 3.0878870 | 41 | 4 | 1999-2007 | 0.52 | M-v | 1 | MPC | 87627 2004 FN <sub>148</sub>  |
| 2004 FV <sub>149</sub> | 15.5 | 0.15 | 20071027 | 275.20311 | 250.62364 | 289.94855 | 11.73137 | 0.0505051 | 2.6755309 | 45 | 4 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128854 2004 FV <sub>149</sub> |
| 2004 FU <sub>151</sub> | 15.8 | 0.15 | 20071027 | 265.12854 | 103.93253 | 35.40469  | 2.23059  | 0.0724847 | 3.0053511 | 37 | 3 | 2004-2007 | 0.37 | M-v | 3 | MPC | 128854 2004 FU <sub>151</sub> |
| 2004 FL <sub>152</sub> | 16.4 | 0.15 | 20071027 | 77.93458  | 158.62580 | 209.59105 | 1.39446  | 0.0804797 | 2.8619777 | 56 | 4 | 2001-2007 | 0.40 | M-v | 1 | MPC | 114720 2004 FL <sub>152</sub> |
| 2004 FP <sub>153</sub> | 16.2 | 0.15 | 20071027 | 318.98904 | 43.10214  | 41.62295  | 8.74422  | 0.1087657 | 3.0479689 | 38 | 2 | 2004-2007 | 0.32 | M-v | 3 | MPC | 128136 2004 FP <sub>153</sub> |
| 2004 FU <sub>158</sub> | 16.6 | 0.15 | 20071027 | 218.61354 | 21.15381  | 160.14288 | 1.45051  | 0.1107348 | 3.0997316 | 33 | 4 | 2001-2007 | 0.40 | M-v | 1 | MPC | 128136 2004 FU <sub>158</sub> |
| 2004 FW <sub>158</sub> | 16.5 | 0.15 | 20071027 | 288.63263 | 342.99741 | 189.62835 | 3.57945  | 0.0504805 | 2.6483181 | 60 | 6 | 1996-2007 | 0.32 | M-v | 1 | MPC | 114720 2004 FW <sub>158</sub> |
| 2004 FH <sub>160</sub> | 16.3 | 0.15 | 20071027 | 354.63982 | 37.62195  | 83.54475  | 12.54286 | 0.1405557 | 2.5795912 | 43 | 6 | 1995-2007 | 0.60 | M-v | 1 | MPC | 111050 2004 FH <sub>160</sub> |
| 2004 FL <sub>160</sub> | 17.0 | 0.15 | 20071027 | 297.74436 | 147.76242 | 39.10469  | 0.99103  | 0.0562505 | 2.5501718 | 51 | 6 | 1998-2007 | 0.40 | M-v | 1 | MPC | 111050 2004 FL <sub>160</sub> |
| 2004 GN <sub>2</sub>   | 14.7 | 0.15 | 20071027 | 288.28229 | 20.33988  | 105.64874 | 23.70901 | 0.1038481 | 3.1066870 | 49 | 3 | 2003-2007 | 0.58 | M-v | 1 | MPC | 86446 2004 GN <sub>2</sub>    |
| 2004 GW <sub>2</sub>   | 17.3 | 0.15 | 20071027 | 257.36360 | 114.16454 | 57.23172  | 14.82253 | 0.0669645 | 3.1666832 | 38 | 2 | 2004-2007 | 0.43 | M-v | 3 | MPC | 128136 2004 GW <sub>2</sub>   |
| 2004 GD <sub>5</sub>   | 15.1 | 0.15 | 20071027 | 272.57584 | 83.34938  | 76.36821  | 11.09819 | 0.0684243 | 3.1390512 | 51 | 2 | 2004-2007 | 0.43 | M-v | 3 | MPC | 128136 2004 GD <sub>5</sub>   |
| 2004 GX <sub>5</sub>   | 16.0 | 0.15 | 20071027 | 283.15001 | 260.26561 | 288.93069 | 6.49639  | 0.1161565 | 2.7478697 | 31 | 5 | 2002-2007 | 0.43 | M-v | 1 | MPC | 111050 2004 GX <sub>5</sub>   |
| 2004 GH <sub>8</sub>   | 16.5 | 0.15 | 20071027 | 336.81085 | 21.17106  | 155.01323 | 3.62843  | 0.1350771 | 2.5632342 | 52 | 5 | 1997-2007 | 0.43 | M-v | 1 | MPC | 112877 2004 GH <sub>8</sub>   |
| 2004 GA <sub>12</sub>  | 15.5 | 0.15 | 20071027 | 322.70054 | 55.16458  | 66.69274  | 33.02725 | 0.2900472 | 2.7947600 | 73 | 3 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128854 2004 GA <sub>12</sub>  |
| 2004 GA <sub>15</sub>  | 14.6 | 0.15 | 20071027 | 153.57274 | 4.20555   | 271.79597 | 15.86390 | 0.0995300 | 3.2442543 | 49 | 6 | 2000-2007 | 0.62 | M-v | 0 | MPC | 128854 2004 GA <sub>15</sub>  |
| 2004 GB <sub>15</sub>  | 15.8 | 0.15 | 20071027 | 314.28939 | 246.63866 | 278.84448 | 9.48791  | 0.2938879 | 2.6676582 | 76 | 3 | 2004-2007 | 0.53 | M-v | 2 | MPC | 128137 2004 GB <sub>15</sub>  |
| 2004 GN <sub>18</sub>  | 15.4 | 0.15 | 20071027 | 319.93507 | 76.86940  | 54.21210  | 21.11384 | 0.3145265 | 2.7284075 | 99 | 3 | 1998-2007 | 0.50 | M-v | 1 | MPC | 128854 2004 GN <sub>18</sub>  |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2004 GP <sub>22</sub> | 15.6 | 0.15 | 20071027 | 284.25250 | 112.86629 | 30.20011  | 17.67919 | 0.1158239 | 3.0903305 | 65 | 4 | 1993-2007 | 0.42 | M-v | 0 | MPG | 128854 2004 GP <sub>22</sub> |
| 2004 GU <sub>28</sub> | 15.9 | 0.15 | 20071027 | 344.35508 | 7.68723   | 100.85889 | 11.22996 | 0.0569119 | 2.9296350 | 39 | 4 | 2002-2007 | 0.46 | M-v | 1 | MPG | 128854 2004 GU <sub>28</sub> |
| 2004 GJ <sub>32</sub> | 14.8 | 0.15 | 20071027 | 212.82280 | 314.47485 | 276.99947 | 10.11937 | 0.1106202 | 2.9837183 | 56 | 5 | 2001-2007 | 0.56 | M-v | 0 | MPG | 87629 2004 GJ <sub>32</sub>  |
| 2004 GL <sub>32</sub> | 15.9 | 0.15 | 20071027 | 256.47853 | 310.39038 | 266.22661 | 8.14139  | 0.1616444 | 2.7901808 | 27 | 3 | 2004-2007 | 0.52 | M-v | 3 | MPG | 95203 2004 GL <sub>32</sub>  |
| 2004 GL <sub>36</sub> | 16.4 | 0.15 | 20071027 | 269.50474 | 299.69032 | 325.40953 | 3.77166  | 0.1943668 | 2.5905736 | 54 | 4 | 1999-2007 | 0.41 | M-v | 1 | MPG | 90198 2004 GL <sub>36</sub>  |
| 2004 GD <sub>40</sub> | 16.1 | 0.15 | 20071027 | 271.39700 | 118.78771 | 89.28654  | 4.16102  | 0.0792262 | 2.7539724 | 58 | 7 | 1995-2007 | 0.52 | M-v | 1 | MPG | 128854 2004 GD <sub>40</sub> |
| 2004 GP <sub>41</sub> | 16.6 | 0.15 | 20071027 | 316.44947 | 231.69926 | 320.85211 | 6.33836  | 0.1429218 | 2.6077829 | 33 | 4 | 2001-2007 | 0.60 | M-v | 1 | MPG | 95203 2004 GP <sub>41</sub>  |
| 2004 GF <sub>47</sub> | 16.2 | 0.15 | 20071027 | 284.59461 | 307.45200 | 178.05364 | 0.52599  | 0.1537122 | 3.2002281 | 52 | 5 | 1995-2007 | 0.41 | M-v | 0 | MPG | 128854 2004 GF <sub>47</sub> |
| 2004 GG <sub>47</sub> | 16.4 | 0.15 | 20071027 | 294.32547 | 89.36939  | 39.79173  | 3.94846  | 0.1308719 | 3.0988386 | 42 | 5 | 1993-2007 | 0.37 | M-v | 0 | MPG | 128854 2004 GG <sub>47</sub> |
| 2004 GS <sub>47</sub> | 15.4 | 0.15 | 20071027 | 348.68116 | 53.74915  | 41.99619  | 2.76958  | 0.1616088 | 2.8986788 | 48 | 5 | 2001-2007 | 0.46 | M-v | 0 | MPG | 109015 2004 GS <sub>47</sub> |
| 2004 GS <sub>50</sub> | 15.9 | 0.15 | 20071027 | 323.13146 | 326.47020 | 126.12913 | 2.00753  | 0.2051236 | 3.0655704 | 50 | 4 | 1991-2007 | 0.41 | M-v | 1 | MPG | 128138 2004 GS <sub>50</sub> |
| 2004 GW <sub>52</sub> | 16.0 | 0.15 | 20071027 | 350.62914 | 18.03942  | 75.60939  | 2.09212  | 0.0257971 | 3.0070165 | 51 | 6 | 1999-2007 | 0.37 | M-v | 0 | MPG | 114722 2004 GW <sub>52</sub> |
| 2004 GZ <sub>55</sub> | 15.6 | 0.15 | 20071027 | 102.25815 | 335.87651 | 358.29382 | 4.03681  | 0.0927346 | 3.1802823 | 61 | 6 | 1996-2007 | 0.47 | M-v | 0 | MPG | 112878 2004 GZ <sub>55</sub> |
| 2004 GB <sub>57</sub> | 16.3 | 0.15 | 20071027 | 305.25843 | 318.50352 | 147.66290 | 0.10237  | 0.1723150 | 3.0464945 | 40 | 3 | 2002-2007 | 0.38 | M-v | 3 | MPG | 128138 2004 GB <sub>57</sub> |
| 2004 GF <sub>58</sub> | 15.7 | 0.15 | 20071027 | 321.83762 | 54.18046  | 45.84411  | 7.56728  | 0.1314334 | 3.1016751 | 68 | 5 | 1993-2007 | 0.51 | M-v | 1 | MPG | 128855 2004 GF <sub>58</sub> |
| 2004 GB <sub>62</sub> | 15.9 | 0.15 | 20071027 | 335.32285 | 50.97443  | 31.87304  | 5.08670  | 0.1324109 | 3.1084688 | 59 | 3 | 2003-2007 | 0.46 | M-v | 2 | MPG | 128855 2004 GB <sub>62</sub> |
| 2004 GQ <sub>68</sub> | 15.9 | 0.15 | 20071027 | 252.23538 | 102.45709 | 130.06398 | 5.29317  | 0.0142345 | 2.7909006 | 57 | 6 | 1996-2007 | 0.42 | M-v | 0 | MPG | 111053 2004 GQ <sub>68</sub> |
| 2004 GL <sub>72</sub> | 16.4 | 0.15 | 20071027 | 10.50974  | 84.22232  | 48.40451  | 10.82744 | 0.0494833 | 2.6006727 | 58 | 4 | 2000-2007 | 0.36 | M-v | 1 | MPG | 112878 2004 GL <sub>72</sub> |
| 2004 GD <sub>75</sub> | 15.6 | 0.15 | 20071027 | 192.12222 | 324.38933 | 331.93045 | 5.47233  | 0.1100206 | 2.7836162 | 47 | 4 | 2004-2007 | 0.57 | M-v | 1 | MPG | 118070 2004 GD <sub>75</sub> |
| 2004 GY <sub>75</sub> | 14.9 | 0.15 | 20071027 | 241.10102 | 280.03493 | 313.80416 | 16.74916 | 0.1533298 | 2.8636954 | 47 | 5 | 2000-2007 | 0.70 | M-v | 1 | MPG | 122772 2004 GY <sub>75</sub> |
| 2004 GV <sub>77</sub> | 15.4 | 0.15 | 20071027 | 316.68387 | 80.42588  | 77.88716  | 25.45399 | 0.1445528 | 2.7792012 | 35 | 4 | 1999-2007 | 0.66 | M-v | 1 | MPG | 65723 2004 GV <sub>77</sub>  |
| 2004 GD <sub>84</sub> | 16.5 | 0.15 | 20071027 | 333.06707 | 296.38791 | 182.01513 | 1.27920  | 0.0427377 | 2.9825943 | 33 | 4 | 2003-2007 | 0.33 | M-v | 0 | MPG | 109020 2004 GD <sub>84</sub> |
| 2004 GG <sub>87</sub> | 15.4 | 0.15 | 20071027 | 291.18141 | 250.97834 | 311.82273 | 8.33499  | 0.1256538 | 2.7341382 | 35 | 6 | 1999-2007 | 0.62 | M-v | 1 | MPG | 111054 2004 GG <sub>87</sub> |
| 2004 HV               | 14.8 | 0.15 | 20071027 | 295.17835 | 288.75633 | 281.77003 | 36.14557 | 0.3709760 | 2.7325152 | 88 | 4 | 1999-2007 | 0.67 | M-v | 1 | MPG | 128855 2004 HV               |
| 2004 HD <sub>1</sub>  | 14.8 | 0.15 | 20071027 | 18.44325  | 112.01795 | 22.34718  | 28.80607 | 0.1458545 | 2.5740482 | 64 | 4 | 2002-2007 | 0.49 | M-v | 1 | MPG | 12879 2004 HD <sub>1</sub>   |
| 2004 HT <sub>2</sub>  | 15.6 | 0.15 | 20071027 | 263.71759 | 278.99308 | 234.89960 | 7.40070  | 0.1697560 | 3.1148769 | 51 | 4 | 2000-2007 | 0.53 | M-v | 1 | MPG | 128139 2004 HT <sub>2</sub>  |
| 2004 HH <sub>4</sub>  | 15.3 | 0.15 | 20071027 | 305.57693 | 79.08510  | 37.21715  | 10.47981 | 0.1028910 | 3.1118252 | 80 | 3 | 2001-2007 | 0.44 | M-v | 1 | MPG | 128855 2004 HH <sub>4</sub>  |
| 2004 HV <sub>5</sub>  | 15.7 | 0.15 | 20071027 | 287.26600 | 123.91265 | 58.13149  | 4.82168  | 0.1519000 | 2.8324798 | 65 | 5 | 2001-2007 | 0.53 | M-v | 1 | MPG | 128855 2004 HV <sub>5</sub>  |
| 2004 HX <sub>6</sub>  | 16.8 | 0.15 | 20071027 | 305.27151 | 174.10234 | 99.60227  | 3.61008  | 0.2100320 | 2.3729910 | 46 | 6 | 1994-2007 | 0.54 | M-v | 1 | MPG | 114722 2004 HX <sub>6</sub>  |
| 2004 HO <sub>8</sub>  | 15.0 | 0.15 | 20071027 | 179.32342 | 125.52292 | 149.23304 | 6.71694  | 0.1143695 | 3.1591065 | 67 | 7 | 1998-2007 | 0.59 | M-v | 0 | MPG | 111055 2004 HO <sub>8</sub>  |
| 2004 HY <sub>10</sub> | 15.4 | 0.15 | 20071027 | 230.00250 | 268.18365 | 310.09357 | 2.67901  | 0.2370444 | 3.1306523 | 44 | 4 | 2004-2007 | 0.39 | M-v | 1 | MPG | 128855 2004 HY <sub>10</sub> |
| 2004 HZ <sub>15</sub> | 14.6 | 0.15 | 20071027 | 159.81607 | 186.58286 | 107.73126 | 15.11149 | 0.1281634 | 3.2448448 | 89 | 4 | 2004-2007 | 0.53 | M-v | 1 | MPG | 121812 2004 HZ <sub>15</sub> |
| 2004 HA <sub>17</sub> | 16.0 | 0.15 | 20071027 | 310.03180 | 125.61241 | 26.38790  | 15.44242 | 0.0885615 | 2.8652275 | 51 | 6 | 1999-2007 | 0.58 | M-v | 1 | MPG | 111055 2004 HA <sub>17</sub> |
| 2004 HH <sub>19</sub> | 16.1 | 0.15 | 20071027 | 320.02482 | 288.09433 | 258.65631 | 4.37670  | 0.2663747 | 2.6120002 | 72 | 3 | 2004-2007 | 0.46 | M-v | 2 | MPG | 126000 2004 HH <sub>19</sub> |
| 2004 HP <sub>24</sub> | 16.1 | 0.15 | 20071027 | 288.25795 | 182.69804 | 65.72547  | 13.55961 | 0.1337489 | 2.5973793 | 67 | 5 | 2001-2007 | 0.55 | M-v | 1 | MPG | 111055 2004 HP <sub>24</sub> |
| 2004 HO <sub>25</sub> | 15.2 | 0.15 | 20071027 | 292.61166 | 89.98910  | 45.06061  | 16.58386 | 0.1322549 | 3.1501830 | 42 | 2 | 2004-2007 | 0.48 | M-v | 3 | MPG | 128139 2004 HO <sub>25</sub> |
| 2004 HD <sub>30</sub> | 15.8 | 0.15 | 20071027 | 236.38068 | 352.41089 | 208.88580 | 4.66971  | 0.0953908 | 3.1335800 | 46 | 6 | 1995-2007 | 0.33 | M-v | 0 | MPG | 111055 2004 HD <sub>30</sub> |
| 2004 HL <sub>31</sub> | 15.7 | 0.15 | 20071027 | 3.46719   | 3.08810   | 76.34324  | 8.68952  | 0.1249503 | 2.9766613 | 43 | 5 | 2001-2007 | 0.56 | M-v | 1 | MPG | 128855 2004 HL <sub>31</sub> |
| 2004 HQ <sub>34</sub> | 14.8 | 0.15 | 20071027 | 310.41851 | 65.99521  | 64.55349  | 13.95705 | 0.1351934 | 2.9802498 | 47 | 2 | 2004-2007 | 0.52 | M-v | 3 | MPG | 128140 2004 HQ <sub>34</sub> |
| 2004 HU <sub>36</sub> | 14.6 | 0.15 | 20071027 | 172.06553 | 190.64243 | 78.32774  | 23.43477 | 0.1535765 | 3.2132223 | 67 | 6 | 1995-2007 | 0.58 | M-v | 1 | MPG | 111056 2004 HU <sub>36</sub> |
| 2004 HR <sub>37</sub> | 15.1 | 0.15 | 20071027 | 293.26578 | 85.44751  | 74.08403  | 15.81889 | 0.0959635 | 2.8622101 | 38 | 4 | 1999-2007 | 0.55 | M-v | 2 | MPG | 65757 2004 HR <sub>37</sub>  |
| 2004 HB <sub>38</sub> | 16.1 | 0.15 | 20071027 | 311.84594 | 30.68768  | 76.44573  | 5.99306  | 0.1377685 | 3.0642876 | 42 | 3 | 1996-2007 | 0.31 | M-v | 1 | MPG | 128855 2004 HB <sub>38</sub> |
| 2004 HY <sub>39</sub> | 15.9 | 0.15 | 20071027 | 358.85092 | 30.42260  | 46.28873  | 4.20422  | 0.1765012 | 2.9641717 | 35 | 3 | 2003-2007 | 0.40 | M-v | 4 | MPG | 65758 2004 HY <sub>39</sub>  |
| 2004 HB <sub>41</sub> | 15.7 | 0.15 | 20071027 | 262.62884 | 142.44127 | 48.82760  | 9.67877  | 0.0787437 | 3.0008678 | 42 | 6 | 1996-2007 | 0.54 | M-v | 1 | MPG | 111056 2004 HB <sub>41</sub> |
| 2004 HY <sub>47</sub> | 16.2 | 0.15 | 20071027 | 358.99623 | 178.44784 | 327.49060 | 7.14284  | 0.1435950 | 2.5828315 | 42 | 6 | 2001-2007 | 0.46 | M-v | 1 | MPG | 111056 2004 HY <sub>47</sub> |
| 2004 HG <sub>50</sub> | 15.7 | 0.15 | 20071027 | 337.03477 | 77.92765  | 64.85798  | 13.78034 | 0.2618513 | 2.6790937 | 32 | 3 | 1998-2007 | 0.68 | M-v | 2 | MPG | 128855 2004 HG <sub>50</sub> |
| 2004 HF <sub>51</sub> | 15.6 | 0.15 | 20071027 | 334.71908 | 50.15223  | 86.72911  | 14.11251 | 0.2035329 | 2.6381677 | 61 | 5 | 1999-2007 | 0.63 | M-v | 1 | MPG | 128855 2004 HF <sub>51</sub> |
| 2004 HZ <sub>51</sub> | 14.8 | 0.15 | 20071027 | 287.81671 | 44.00577  | 92.02380  | 13.50398 | 0.0990281 | 3.1537560 | 46 | 4 | 2001-2007 | 0.53 | M-v | 1 | MPG | 128855 2004 HZ <sub>51</sub> |
| 2004 HN <sub>52</sub> | 15.3 | 0.15 | 20071027 | 250.63753 | 123.88588 | 96.10076  | 13.60711 | 0.0834349 | 2.9807563 | 70 | 5 | 1999-2007 | 0.43 | M-v | 1 | MPG | 128855 2004 HN <sub>52</sub> |
| 2004 HU <sub>52</sub> | 17.4 | 0.15 | 20071027 | 44.80998  | 75.66415  | 221.47517 | 19.99245 | 0.0790711 | 1.9321912 | 53 | 3 | 2002-2007 | 0.56 | M-v | 2 | MPG | 120791 2004 HU <sub>52</sub> |
| 2004 HB <sub>53</sub> | 14.7 | 0.15 | 20071027 | 147.22014 | 177.26776 | 103.84440 | 20.63717 | 0.0536394 | 3.1995353 | 54 | 5 | 2001-2007 | 0.63 | M-v | 0 | MPG | 111057 2004 HB <sub>53</sub> |
| 2004 HH <sub>53</sub> | 15.5 | 0.15 | 20071027 | 284.79134 | 291.79749 | 221.93842 | 7.18619  | 0.0854825 | 3.1002817 | 43 | 4 | 2004-2007 | 0.47 | M-v | 1 | MPG | 109030 2004 HH <sub>53</sub> |
| 2004 HB <sub>60</sub> | 15.0 | 0.15 | 20071027 | 222.15022 | 152.79510 | 83.58274  | 12.20284 | 0.1539711 | 3.1140029 | 60 | 6 | 2001-2007 | 0.55 | M-v | 0 | MPG | 111057 2004 HB <sub>60</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 HW <sub>62</sub>  | 15.2 | 0.15 | 20071027 | 264.91821 | 83.56973  | 97.24495  | 14.87617 | 0.2290455 | 3.0894162 | 54  | 3 | 2002-2007 | 0.53 | M-v | 2 | MPC | 65779 2004 HW <sub>62</sub>   |
| 2004 JU <sub>10</sub>  | 15.1 | 0.15 | 20071027 | 294.23616 | 56.29375  | 116.42837 | 13.16509 | 0.2028752 | 2.8879475 | 48  | 4 | 1999-2007 | 0.61 | M-v | 1 | MPC | 65793 2004 JU <sub>10</sub>   |
| 2004 JK <sub>11</sub>  | 15.0 | 0.15 | 20071027 | 162.64766 | 193.09923 | 92.62437  | 10.40239 | 0.1222720 | 3.2536375 | 33  | 4 | 2004-2007 | 0.55 | M-v | 1 | MPC | 111058 2004 JK <sub>11</sub>  |
| 2004 JS <sub>16</sub>  | 15.4 | 0.15 | 20071027 | 280.67901 | 101.60229 | 63.50998  | 6.49143  | 0.1127234 | 3.1021833 | 34  | 5 | 1993-2007 | 0.43 | M-v | 0 | MPC | 109037 2004 JS <sub>16</sub>  |
| 2004 JO <sub>17</sub>  | 16.1 | 0.15 | 20071027 | 242.20206 | 150.72080 | 56.12257  | 1.87457  | 0.1280639 | 3.1565584 | 39  | 6 | 1998-2007 | 0.55 | M-v | 1 | MPC | 111058 2004 JO <sub>17</sub>  |
| 2004 JG <sub>21</sub>  | 16.0 | 0.15 | 20071027 | 260.38965 | 91.75966  | 78.05208  | 1.81980  | 0.1652048 | 3.1845559 | 46  | 3 | 1998-2007 | 0.41 | M-v | 2 | MPC | 128855 2004 JG <sub>21</sub>  |
| 2004 JM <sub>25</sub>  | 14.9 | 0.15 | 20071027 | 190.12248 | 172.82851 | 108.53674 | 11.69591 | 0.1749970 | 3.1724688 | 69  | 7 | 1998-2007 | 0.54 | M-v | 0 | MPC | 128855 2004 JM <sub>25</sub>  |
| 2004 JX <sub>32</sub>  | 15.2 | 0.15 | 20071027 | 220.91960 | 152.48923 | 82.24596  | 11.54123 | 0.1623851 | 3.1575078 | 41  | 4 | 1998-2007 | 0.52 | M-v | 2 | MPC | 65814 2004 JX <sub>32</sub>   |
| 2004 JY <sub>34</sub>  | 15.8 | 0.15 | 20071027 | 249.52584 | 127.43894 | 80.21838  | 10.66475 | 0.1878234 | 3.0932054 | 49  | 6 | 1993-2007 | 0.46 | M-v | 0 | MPC | 114725 2004 JY <sub>34</sub>  |
| 2004 JA <sub>40</sub>  | 14.5 | 0.15 | 20071027 | 3.54902   | 272.55935 | 146.60825 | 10.50311 | 0.0540804 | 3.4846988 | 48  | 6 | 1996-2007 | 0.68 | M-v | 0 | MPC | 128855 2004 JA <sub>40</sub>  |
| 2004 JV <sub>40</sub>  | 15.9 | 0.15 | 20071027 | 67.29067  | 273.35984 | 109.71179 | 10.95902 | 0.0323225 | 3.2030177 | 25  | 5 | 2003-2007 | 0.31 | M-v | 0 | MPC | 114725 2004 JV <sub>40</sub>  |
| 2004 JM <sub>44</sub>  | 16.2 | 0.15 | 20071027 | 310.51022 | 32.15200  | 179.04636 | 4.30437  | 0.1364531 | 2.5886796 | 43  | 4 | 2004-2007 | 0.49 | M-v | 1 | MPC | 111059 2004 JM <sub>44</sub>  |
| 2004 JS <sub>48</sub>  | 15.7 | 0.15 | 20071027 | 206.86794 | 183.48164 | 72.73543  | 4.96809  | 0.0937791 | 3.1076180 | 36  | 6 | 2001-2007 | 0.33 | M-v | 0 | MPC | 128855 2004 JS <sub>48</sub>  |
| 2004 JE <sub>55</sub>  | 16.4 | 0.15 | 20071027 | 200.42302 | 256.22746 | 358.25599 | 2.15020  | 0.1590256 | 3.0676733 | 24  | 6 | 1995-2007 | 0.38 | M-v | 0 | MPC | 111060 2004 JE <sub>55</sub>  |
| 2004 JX <sub>55</sub>  | 16.1 | 0.15 | 20071027 | 343.36259 | 15.76346  | 158.00187 | 11.82003 | 0.1130310 | 2.6755498 | 27  | 5 | 1999-2007 | 0.42 | M-v | 1 | MPC | 109040 2004 JX <sub>55</sub>  |
| 2004 KB <sub>14</sub>  | 15.9 | 0.15 | 20071027 | 248.22074 | 115.51286 | 164.21626 | 11.48717 | 0.1221085 | 2.6965523 | 42  | 4 | 2003-2007 | 0.40 | M-v | 1 | MPC | 126000 2004 KB <sub>14</sub>  |
| 2004 KB <sub>16</sub>  | 15.3 | 0.15 | 20071027 | 312.25241 | 52.58442  | 131.94913 | 10.70229 | 0.2054997 | 2.7681133 | 55  | 4 | 1999-2007 | 0.59 | M-v | 1 | MPC | 114725 2004 KB <sub>16</sub>  |
| 2004 LW <sub>4</sub>   | 15.6 | 0.15 | 20071027 | 305.33419 | 110.27204 | 109.16349 | 12.28319 | 0.1240236 | 2.6457260 | 37  | 4 | 2003-2007 | 0.52 | M-v | 1 | MPC | 116272 2004 LW <sub>4</sub>   |
| 2004 LG <sub>6</sub>   | 15.5 | 0.15 | 20071027 | 301.87708 | 92.17994  | 101.80340 | 14.49441 | 0.4634553 | 2.7418046 | 49  | 4 | 1998-2007 | 0.63 | M-v | 1 | MPC | 114725 2004 LG <sub>6</sub>   |
| 2004 LX <sub>10</sub>  | 16.0 | 0.15 | 20071027 | 225.72777 | 358.47743 | 250.84841 | 4.40999  | 0.1388658 | 3.0412766 | 45  | 5 | 2003-2007 | 0.50 | M-v | 0 | MPC | 121813 2004 LX <sub>10</sub>  |
| 2004 LY <sub>13</sub>  | 15.7 | 0.15 | 20071027 | 301.38855 | 135.39127 | 101.13774 | 14.25443 | 0.1230564 | 2.6477521 | 48  | 5 | 2001-2007 | 0.59 | M-v | 0 | MPC | 112883 2004 LY <sub>13</sub>  |
| 2004 MC <sub>6</sub>   | 17.3 | 0.15 | 20071027 | 49.17772  | 120.12601 | 222.41602 | 19.81431 | 0.1405471 | 1.8667876 | 71  | 2 | 2004-2007 | 0.46 | M-v | 4 | MPC | 128855 2004 MC <sub>6</sub>   |
| 2004 MN <sub>7</sub>   | 15.3 | 0.15 | 20071027 | 282.00537 | 274.54823 | 288.43821 | 18.37381 | 0.1816784 | 3.1277513 | 32  | 4 | 1996-2007 | 0.41 | M-v | 0 | MPC | 128855 2004 MN <sub>7</sub>   |
| 2004 NV <sub>9</sub>   | 15.1 | 0.15 | 20071027 | 172.74999 | 59.73615  | 296.95834 | 13.33938 | 0.2476255 | 3.1735581 | 33  | 3 | 2004-2007 | 0.43 | M-v | 3 | MPC | 120331 2004 NV <sub>9</sub>   |
| 2004 OO <sub>5</sub>   | 16.8 | 0.15 | 20071027 | 30.98789  | 279.75944 | 87.92082  | 22.56820 | 0.0849243 | 1.9268623 | 39  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128855 2004 OO <sub>5</sub>   |
| 2004 PP <sub>32</sub>  | 15.0 | 0.15 | 20071027 | 244.30578 | 297.37927 | 349.61349 | 7.13952  | 0.1146497 | 3.1225753 | 60  | 4 | 1999-2007 | 0.57 | M-v | 2 | MPC | 122774 2004 PP <sub>32</sub>  |
| 2004 QJ <sub>1</sub>   | 17.8 | 0.15 | 20071027 | 53.87559  | 153.99227 | 199.84548 | 16.61498 | 0.0588348 | 1.9030322 | 55  | 5 | 1999-2007 | 0.45 | M-v | 1 | MPC | 128856 2004 QJ <sub>1</sub>   |
| 2004 QK <sub>9</sub>   | 17.1 | 0.15 | 20071027 | 58.42242  | 320.49890 | 4.38726   | 19.38653 | 0.0745634 | 1.9375996 | 54  | 3 | 2004-2007 | 0.52 | M-v | 2 | MPC | 128856 2004 QK <sub>9</sub>   |
| 2004 QG <sub>14</sub>  | 16.7 | 0.15 | 20071027 | 317.98237 | 128.11146 | 185.67620 | 9.36604  | 0.2982556 | 2.4162249 | 103 | 5 | 1996-2007 | 0.41 | M-v | 1 | MPC | 119620 2004 QG <sub>14</sub>  |
| 2004 QJ <sub>17</sub>  | 16.7 | 0.15 | 20071027 | 15.50503  | 162.10887 | 230.90743 | 20.31843 | 0.0926564 | 1.9480515 | 84  | 2 | 2004-2007 | 0.43 | M-v | 3 | MPC | 128142 2004 QJ <sub>17</sub>  |
| 2004 RX <sub>1</sub>   | 17.2 | 0.15 | 20071027 | 25.24232  | 145.60491 | 234.53001 | 21.16864 | 0.0971876 | 1.9496762 | 63  | 2 | 2004-2007 | 0.55 | M-v | 3 | MPC | 128142 2004 RX <sub>1</sub>   |
| 2004 RW <sub>51</sub>  | 16.1 | 0.15 | 20071027 | 305.89483 | 177.43307 | 159.79947 | 12.64925 | 0.2154115 | 2.4312672 | 67  | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 122484 2004 RW <sub>51</sub>  |
| 2004 RO <sub>110</sub> | 17.4 | 0.15 | 20071027 | 57.67669  | 157.95761 | 193.62322 | 21.88558 | 0.0708984 | 1.9382241 | 60  | 3 | 2004-2007 | 0.47 | M-v | 3 | MPC | 111067 2004 RO <sub>110</sub> |
| 2004 RH <sub>139</sub> | 15.9 | 0.15 | 20071027 | 243.87011 | 182.80357 | 115.84436 | 1.91795  | 0.1526281 | 3.0738750 | 42  | 5 | 2002-2007 | 0.32 | M-v | 0 | MPC | 118089 2004 RH <sub>139</sub> |
| 2004 RV <sub>217</sub> | 16.8 | 0.15 | 20071027 | 38.47243  | 177.36691 | 204.91133 | 21.34708 | 0.0802391 | 1.9478973 | 85  | 3 | 2004-2007 | 0.50 | M-v | 2 | MPC | 118092 2004 RV <sub>217</sub> |
| 2004 RZ <sub>220</sub> | 16.6 | 0.15 | 20071027 | 48.92720  | 154.86314 | 244.35754 | 19.47525 | 0.0513983 | 1.9263632 | 76  | 5 | 1996-2007 | 0.50 | M-v | 1 | MPC | 102211 2004 RZ <sub>220</sub> |
| 2004 RY <sub>247</sub> | 17.5 | 0.15 | 20071027 | 3.44660   | 100.05853 | 303.40930 | 17.36875 | 0.1144250 | 1.9770737 | 32  | 3 | 2000-2007 | 0.38 | M-v | 1 | MPC | 73160 2004 RY <sub>247</sub>  |
| 2004 RO <sub>248</sub> | 16.8 | 0.15 | 20071027 | 322.99586 | 168.87318 | 284.64904 | 15.04107 | 0.1519171 | 2.0042228 | 36  | 3 | 2001-2007 | 0.55 | M-v | 3 | MPC | 70087 2004 RO <sub>248</sub>  |
| 2004 RD <sub>252</sub> | 19.0 | 0.15 | 20071027 | 339.04272 | 174.60534 | 288.23912 | 10.41953 | 0.6015759 | 2.0980609 | 138 | 2 | 2004-2007 | 0.55 | M-v | 1 | MPC | 128856 2004 RD <sub>252</sub> |
| 2004 RG <sub>252</sub> | 17.1 | 0.15 | 20071027 | 313.12661 | 245.11189 | 216.30423 | 19.87208 | 0.1006864 | 1.9671757 | 77  | 3 | 2004-2007 | 0.54 | M-v | 2 | MPC | 128856 2004 RG <sub>252</sub> |
| 2004 RL <sub>252</sub> | 16.5 | 0.15 | 20071027 | 94.85401  | 58.93970  | 265.87842 | 18.01318 | 0.0828615 | 1.9451668 | 73  | 7 | 1997-2007 | 0.60 | M-v | 1 | MPC | 128856 2004 RL <sub>252</sub> |
| 2004 RV <sub>252</sub> | 16.4 | 0.15 | 20071027 | 3.89957   | 146.33875 | 279.94430 | 18.54877 | 0.0846663 | 1.8797760 | 51  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128856 2004 RV <sub>252</sub> |
| 2004 RE <sub>289</sub> | 17.0 | 0.15 | 20071027 | 19.44762  | 106.52191 | 296.78220 | 17.67689 | 0.1098335 | 1.9286560 | 40  | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 70096 2004 RE <sub>289</sub>  |
| 2004 RC <sub>290</sub> | 16.7 | 0.15 | 20071027 | 38.39707  | 101.22648 | 289.37281 | 17.71670 | 0.1048642 | 1.8845624 | 81  | 5 | 1999-2007 | 0.50 | M-v | 1 | MPC | 128856 2004 RC <sub>290</sub> |
| 2004 RB <sub>292</sub> | 17.6 | 0.15 | 20071027 | 221.33247 | 6.22624   | 188.11725 | 22.85209 | 0.0068119 | 1.9487542 | 39  | 3 | 2004-2007 | 0.56 | M-v | 3 | MPC | 114135 2004 RB <sub>292</sub> |
| 2004 RL <sub>306</sub> | 16.6 | 0.15 | 20071027 | 280.29898 | 323.17122 | 180.54151 | 22.10847 | 0.0663029 | 1.9684499 | 51  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 128856 2004 RL <sub>306</sub> |
| 2004 SS <sub>58</sub>  | 17.7 | 0.15 | 20071027 | 87.88188  | 248.06807 | 64.08014  | 24.03136 | 0.0470400 | 1.9173131 | 33  | 2 | 2004-2007 | 0.57 | M-v | 4 | MPC | 128144 2004 SS <sub>58</sub>  |
| 2004 TE <sub>11</sub>  | 16.6 | 0.15 | 20071027 | 356.72340 | 188.25684 | 243.59177 | 21.11206 | 0.0644550 | 1.9422862 | 52  | 3 | 2004-2007 | 0.42 | M-v | 3 | MPC | 128856 2004 TE <sub>11</sub>  |
| 2004 TJ <sub>13</sub>  | 16.8 | 0.15 | 20071027 | 3.86467   | 155.65763 | 267.47243 | 18.11095 | 0.0737075 | 1.9330301 | 60  | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128856 2004 TJ <sub>13</sub>  |
| 2004 TH <sub>159</sub> | 17.2 | 0.15 | 20071027 | 109.44231 | 273.30864 | 347.12495 | 1.25695  | 0.0972943 | 2.1643341 | 69  | 4 | 2001-2007 | 0.46 | M-v | 2 | MPC | 128857 2004 TH <sub>159</sub> |
| 2004 TG <sub>171</sub> | 17.2 | 0.15 | 20071027 | 295.63472 | 239.48732 | 247.22110 | 18.32341 | 0.0609574 | 1.9362758 | 56  | 5 | 2000-2007 | 0.42 | M-v | 1 | MPC | 128857 2004 TG <sub>171</sub> |
| 2004 TW <sub>275</sub> | 16.8 | 0.15 | 20071027 | 270.44414 | 244.83067 | 223.53977 | 4.71974  | 0.0840300 | 2.2173505 | 61  | 3 | 2004-2007 | 0.44 | M-v | 2 | MPC | 128857 2004 TW <sub>275</sub> |
| 2004 TY <sub>336</sub> | 17.2 | 0.15 | 20071027 | 5.25880   | 144.65672 | 216.97346 | 4.09983  | 0.1372043 | 2.2058011 | 70  | 4 | 2003-2007 | 0.44 | M-v | 1 | MPC | 126716 2004 TY <sub>336</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 TZ <sub>338</sub> | 16.9 | 0.15 | 20071027 | 50.64500  | 316.73887 | 73.39487  | 23.63487 | 0.1033851 | 1.9489658 | 91  | 5 | 2000-2007 | 0.41 | M-v | 1 | MPC | 128857 2004 TZ <sub>338</sub> |
| 2004 UK                | 16.2 | 0.15 | 20071027 | 311.36857 | 273.32187 | 170.46579 | 21.05639 | 0.3746403 | 2.2769583 | 75  | 2 | 2004-2007 | 0.57 | M-v | 2 | MPC | 128857 2004 UK                |
| 2004 UN                | 17.1 | 0.15 | 20071027 | 46.78449  | 78.36117  | 289.52539 | 17.09131 | 0.1286001 | 1.9600182 | 30  | 3 | 2001-2007 | 0.46 | M-v | 3 | MPC | 73472 2004 UN                 |
| 2004 UT <sub>9</sub>   | 16.6 | 0.15 | 20071027 | 66.97132  | 89.94827  | 281.08947 | 18.42229 | 0.1327091 | 1.9326125 | 40  | 3 | 2001-2007 | 0.45 | M-v | 2 | MPC | 128857 2004 UT <sub>9</sub>   |
| 2004 VN <sub>14</sub>  | 16.3 | 0.15 | 20071027 | 17.84647  | 278.29461 | 53.82609  | 7.97708  | 0.2321823 | 2.2511515 | 75  | 3 | 2003-2007 | 0.60 | M-v | 2 | MPC | 128857 2004 VN <sub>14</sub>  |
| 2004 VT <sub>16</sub>  | 18.3 | 0.15 | 20071027 | 20.35267  | 67.64959  | 261.32999 | 4.34109  | 0.3814514 | 2.1639174 | 102 | 2 | 2004-2007 | 0.46 | M-v | 1 | MPC | 128857 2004 VT <sub>16</sub>  |
| 2004 VA <sub>64</sub>  | 17.2 | 0.15 | 20071027 | 291.81067 | 19.83666  | 225.58221 | 30.06127 | 0.8910324 | 2.4633251 | 99  | 3 | 2004-2007 | 0.51 | M-v | 3 | MPC | 95607 2004 VA <sub>64</sub>   |
| 2004 VW <sub>69</sub>  | 16.1 | 0.15 | 20071027 | 272.71347 | 343.87508 | 28.31381  | 5.59700  | 0.1748181 | 2.7283416 | 67  | 5 | 1999-2006 | 0.59 | M-v | 1 | MPC | 97771 2004 VW <sub>69</sub>   |
| 2004 VA <sub>70</sub>  | 15.8 | 0.15 | 20071027 | 241.82714 | 60.40415  | 344.96510 | 4.24440  | 0.1021762 | 2.8764068 | 61  | 5 | 2001-2006 | 0.39 | M-v | 1 | MPC | 111074 2004 VA <sub>70</sub>  |
| 2004 VW <sub>74</sub>  | 16.4 | 0.15 | 20071027 | 100.26471 | 277.54693 | 69.06453  | 24.61224 | 0.1070879 | 1.9360966 | 94  | 4 | 2003-2007 | 0.52 | M-v | 1 | MPC | 100853 2004 VW <sub>74</sub>  |
| 2004 VB <sub>78</sub>  | 17.3 | 0.15 | 20071027 | 267.77555 | 116.48593 | 63.07646  | 23.30409 | 0.0909340 | 2.0014483 | 45  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 102227 2004 VB <sub>78</sub>  |
| 2004 WO <sub>9</sub>   | 16.1 | 0.15 | 20071027 | 324.81280 | 159.63339 | 255.35741 | 8.83513  | 0.0773639 | 2.2187616 | 122 | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128858 2004 WO <sub>9</sub>   |
| 2004 WB <sub>11</sub>  | 17.8 | 0.15 | 20071027 | 343.98044 | 11.69697  | 23.75908  | 4.42081  | 0.1953600 | 2.2073758 | 60  | 2 | 2004-2007 | 0.51 | M-v | 3 | MPC | 128858 2004 WB <sub>11</sub>  |
| 2004 XO <sub>2</sub>   | 16.0 | 0.15 | 20071027 | 147.15051 | 229.73713 | 19.68370  | 7.47413  | 0.1071156 | 2.1600159 | 150 | 4 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128858 2004 XO <sub>2</sub>   |
| 2004 XB <sub>8</sub>   | 17.2 | 0.15 | 20071027 | 312.97515 | 224.02375 | 200.70871 | 5.73070  | 0.1168100 | 2.2358485 | 73  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128858 2004 XB <sub>8</sub>   |
| 2004 XA <sub>11</sub>  | 16.7 | 0.15 | 20071027 | 327.33936 | 1.47243   | 74.86804  | 6.22579  | 0.0847150 | 2.2183967 | 72  | 2 | 2004-2007 | 0.49 | M-v | 3 | MPC | 128858 2004 XA <sub>11</sub>  |
| 2004 XP <sub>20</sub>  | 16.5 | 0.15 | 20071027 | 301.26097 | 17.30653  | 74.26460  | 5.75146  | 0.1095555 | 2.2395003 | 72  | 4 | 2002-2007 | 0.56 | M-v | 2 | MPC | 128858 2004 XP <sub>20</sub>  |
| 2004 XB <sub>29</sub>  | 17.0 | 0.15 | 20071027 | 13.59498  | 116.65890 | 259.97920 | 6.29108  | 0.1467517 | 2.2147094 | 57  | 3 | 2000-2007 | 0.55 | M-v | 3 | MPC | 128148 2004 XB <sub>29</sub>  |
| 2004 XX <sub>30</sub>  | 16.4 | 0.15 | 20071027 | 7.76241   | 335.77311 | 109.84386 | 24.98198 | 0.1178243 | 1.9526694 | 54  | 6 | 1997-2007 | 0.53 | M-v | 1 | MPC | 128858 2004 XX <sub>30</sub>  |
| 2004 XO <sub>32</sub>  | 17.4 | 0.15 | 20071027 | 6.22416   | 98.88121  | 261.94391 | 2.24455  | 0.1813862 | 2.2388883 | 42  | 2 | 2004-2007 | 0.46 | M-v | 3 | MPC | 128148 2004 XO <sub>32</sub>  |
| 2004 XW <sub>34</sub>  | 17.0 | 0.15 | 20071027 | 256.02470 | 85.08783  | 80.01172  | 4.64681  | 0.0876302 | 2.2008984 | 50  | 3 | 2002-2007 | 0.44 | M-v | 3 | MPC | 128858 2004 XW <sub>34</sub>  |
| 2004 XJ <sub>35</sub>  | 20.3 | 0.15 | 20071027 | 339.08238 | 7.61573   | 72.89659  | 7.64960  | 0.3904586 | 2.1166013 | 86  | 2 | 2004-2007 | 0.53 | M-v | 2 | MPC | 128858 2004 XJ <sub>35</sub>  |
| 2004 XK <sub>35</sub>  | 18.1 | 0.15 | 20071027 | 78.46370  | 63.99286  | 263.96035 | 31.48588 | 0.4161028 | 1.9527684 | 49  | 2 | 2004-2007 | 0.44 | M-v | 3 | MPC | 126010 2004 XK <sub>35</sub>  |
| 2004 XV <sub>36</sub>  | 16.9 | 0.15 | 20071027 | 114.98980 | 3.21705   | 279.34938 | 2.15267  | 0.1740326 | 2.1533346 | 54  | 6 | 1997-2007 | 0.40 | M-v | 1 | MPC | 128858 2004 XV <sub>36</sub>  |
| 2004 XH <sub>40</sub>  | 16.8 | 0.15 | 20071027 | 0.44234   | 97.63350  | 275.49020 | 6.48464  | 0.1890875 | 2.2220907 | 73  | 3 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128858 2004 XH <sub>40</sub>  |
| 2004 XU <sub>44</sub>  | 18.3 | 0.15 | 20071027 | 4.33630   | 326.70830 | 49.38022  | 3.11565  | 0.1765445 | 2.1790216 | 62  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128148 2004 XU <sub>44</sub>  |
| 2004 XA <sub>50</sub>  | 16.5 | 0.15 | 20071027 | 60.77795  | 69.48679  | 240.03732 | 5.16187  | 0.2074455 | 2.2156539 | 102 | 4 | 1996-2007 | 0.53 | M-v | 1 | MPC | 128858 2004 XA <sub>50</sub>  |
| 2004 XV <sub>51</sub>  | 14.9 | 0.15 | 20071027 | 201.82514 | 231.86700 | 328.29577 | 30.97776 | 0.2372845 | 2.6336016 | 94  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 111075 2004 XV <sub>51</sub>  |
| 2004 XQ <sub>59</sub>  | 16.5 | 0.15 | 20071027 | 354.67905 | 4.47547   | 52.41120  | 5.41215  | 0.0822426 | 2.1785543 | 97  | 5 | 1996-2007 | 0.47 | M-v | 2 | MPC | 128858 2004 XQ <sub>59</sub>  |
| 2004 XH <sub>61</sub>  | 17.0 | 0.15 | 20071027 | 14.51142  | 64.53831  | 297.87906 | 5.24824  | 0.2029059 | 2.2034439 | 71  | 3 | 2002-2007 | 0.51 | M-v | 2 | MPC | 128858 2004 XH <sub>61</sub>  |
| 2004 XV <sub>63</sub>  | 16.9 | 0.15 | 20071027 | 61.35009  | 269.40991 | 42.13675  | 6.81792  | 0.1260704 | 2.2590335 | 101 | 3 | 2004-2007 | 0.45 | M-v | 2 | MPC | 128858 2004 XV <sub>63</sub>  |
| 2004 XL <sub>64</sub>  | 16.3 | 0.15 | 20071027 | 45.59135  | 13.61032  | 303.58299 | 6.73224  | 0.1307357 | 2.3462795 | 63  | 5 | 2000-2007 | 0.64 | M-v | 1 | MPC | 126718 2004 XL <sub>64</sub>  |
| 2004 XM <sub>64</sub>  | 17.0 | 0.15 | 20071027 | 303.50241 | 72.44360  | 3.14399   | 2.99407  | 0.1373838 | 2.3096498 | 40  | 3 | 2000-2007 | 0.48 | M-v | 3 | MPC | 73645 2004 XM <sub>64</sub>   |
| 2004 XJ <sub>70</sub>  | 17.3 | 0.15 | 20071027 | 284.28235 | 68.95342  | 29.06570  | 3.85704  | 0.1126066 | 2.2752183 | 31  | 2 | 2004-2007 | 0.41 | M-v | 4 | MPC | 128149 2004 XJ <sub>70</sub>  |
| 2004 XE <sub>71</sub>  | 15.3 | 0.15 | 20071027 | 199.87156 | 248.02447 | 256.34325 | 13.07374 | 0.1465400 | 2.7259004 | 38  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 122782 2004 XE <sub>71</sub>  |
| 2004 XS <sub>77</sub>  | 16.3 | 0.15 | 20071027 | 45.74060  | 79.29176  | 236.11842 | 5.37371  | 0.2268461 | 2.2333203 | 120 | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128858 2004 XS <sub>77</sub>  |
| 2004 XG <sub>85</sub>  | 16.1 | 0.15 | 20071027 | 290.25537 | 14.40352  | 95.85006  | 10.43730 | 0.0480215 | 2.2688724 | 54  | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128859 2004 XG <sub>85</sub>  |
| 2004 XL <sub>85</sub>  | 17.5 | 0.15 | 20071027 | 323.72018 | 150.50099 | 277.35702 | 1.22572  | 0.1703846 | 2.2671504 | 82  | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128859 2004 XL <sub>85</sub>  |
| 2004 XL <sub>89</sub>  | 16.7 | 0.15 | 20071027 | 118.26837 | 302.73723 | 335.76219 | 2.93655  | 0.1538672 | 2.1620718 | 58  | 6 | 1997-2007 | 0.37 | M-v | 1 | MPC | 128859 2004 XL <sub>89</sub>  |
| 2004 XK <sub>95</sub>  | 17.0 | 0.15 | 20071027 | 18.99261  | 158.75220 | 216.89657 | 3.12668  | 0.1370328 | 2.2109474 | 104 | 4 | 1997-2007 | 0.45 | M-v | 1 | MPC | 128859 2004 XK <sub>95</sub>  |
| 2004 XP <sub>99</sub>  | 17.3 | 0.15 | 20071027 | 353.57911 | 335.13135 | 67.89893  | 2.53624  | 0.1558660 | 2.1996918 | 75  | 4 | 2002-2007 | 0.54 | M-v | 2 | MPC | 128859 2004 XP <sub>99</sub>  |
| 2004 XZ <sub>99</sub>  | 17.5 | 0.15 | 20071027 | 14.07115  | 289.59086 | 88.52834  | 7.06293  | 0.1681383 | 2.2298186 | 97  | 3 | 2004-2007 | 0.63 | M-v | 3 | MPC | 128859 2004 XZ <sub>99</sub>  |
| 2004 XB <sub>107</sub> | 17.9 | 0.15 | 20071027 | 348.88383 | 3.56403   | 23.08485  | 2.60200  | 0.1683437 | 2.1882728 | 64  | 2 | 2004-2007 | 0.58 | M-v | 3 | MPC | 128859 2004 XB <sub>107</sub> |
| 2004 XB <sub>110</sub> | 16.5 | 0.15 | 20071027 | 16.99582  | 71.17551  | 289.07979 | 3.24442  | 0.0814878 | 2.1921641 | 111 | 3 | 2001-2007 | 0.50 | M-v | 3 | MPC | 128859 2004 XB <sub>110</sub> |
| 2004 XD <sub>110</sub> | 17.0 | 0.15 | 20071027 | 356.47163 | 12.25955  | 2.56760   | 5.37506  | 0.1217708 | 2.2638299 | 65  | 2 | 2004-2007 | 0.45 | M-v | 3 | MPC | 128859 2004 XD <sub>110</sub> |
| 2004 XV <sub>110</sub> | 17.5 | 0.15 | 20071027 | 345.67264 | 64.96777  | 343.41510 | 4.02338  | 0.1128984 | 2.1616278 | 117 | 3 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128859 2004 XV <sub>110</sub> |
| 2004 XV <sub>120</sub> | 17.0 | 0.15 | 20071027 | 348.06230 | 176.42745 | 207.80651 | 2.35550  | 0.1667333 | 2.2765155 | 100 | 5 | 2000-2007 | 0.42 | M-v | 1 | MPC | 128859 2004 XV <sub>120</sub> |
| 2004 XE <sub>121</sub> | 17.0 | 0.15 | 20071027 | 2.90641   | 107.49597 | 278.75928 | 3.09689  | 0.2076174 | 2.2153606 | 72  | 3 | 2004-2007 | 0.49 | M-v | 3 | MPC | 128859 2004 XE <sub>121</sub> |
| 2004 XM <sub>121</sub> | 16.6 | 0.15 | 20071027 | 232.31387 | 82.39422  | 93.35532  | 1.12614  | 0.1012479 | 2.2887623 | 72  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128859 2004 XM <sub>121</sub> |
| 2004 XK <sub>146</sub> | 16.6 | 0.15 | 20071027 | 347.53000 | 125.20846 | 297.98156 | 4.74143  | 0.0757349 | 2.2185015 | 103 | 6 | 1997-2007 | 0.51 | M-v | 1 | MPC | 128859 2004 XK <sub>146</sub> |
| 2004 XE <sub>147</sub> | 15.7 | 0.15 | 20071027 | 318.38612 | 337.28795 | 115.63914 | 24.63133 | 0.2458183 | 2.2984394 | 58  | 4 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128859 2004 XE <sub>147</sub> |
| 2004 XL <sub>149</sub> | 17.1 | 0.15 | 20071027 | 281.74502 | 95.11835  | 6.29369   | 1.39519  | 0.1428981 | 2.3740535 | 66  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128859 2004 XL <sub>149</sub> |
| 2004 XM <sub>155</sub> | 16.8 | 0.15 | 20071027 | 128.02971 | 10.02468  | 274.94728 | 7.79993  | 0.1774048 | 2.2019148 | 31  | 4 | 2000-2007 | 0.56 | M-v | 2 | MPC | 76564 2004 XM <sub>155</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2004 XW <sub>161</sub> | 17.8 | 0.15 | 20071027 | 2.56607   | 341.89527 | 59.16851  | 4.15345  | 0.1254852 | 2.1602619 | 83  | 3 | 2004-2007 | 0.44 | M-v | 3 | MPC | 128859 2004 XW <sub>161</sub> |
| 2004 XL <sub>162</sub> | 16.6 | 0.15 | 20071027 | 336.02034 | 6.44087   | 69.14108  | 6.46166  | 0.0964963 | 2.2176694 | 86  | 3 | 2002-2007 | 0.50 | M-v | 3 | MPC | 128859 2004 XL <sub>162</sub> |
| 2004 XV <sub>162</sub> | 16.5 | 0.15 | 20071027 | 31.70309  | 326.47729 | 58.60577  | 4.88125  | 0.1369920 | 2.1817339 | 67  | 6 | 1996-2007 | 0.52 | M-v | 1 | MPC | 111076 2004 XV <sub>162</sub> |
| 2004 XJ <sub>163</sub> | 17.8 | 0.15 | 20071027 | 318.80053 | 24.17425  | 52.85248  | 3.67096  | 0.1443405 | 2.2592916 | 51  | 4 | 2002-2007 | 0.34 | M-v | 2 | MPC | 128859 2004 XJ <sub>163</sub> |
| 2004 XP <sub>164</sub> | 17.5 | 0.15 | 20071027 | 338.99295 | 310.35189 | 127.02906 | 22.65437 | 0.4129557 | 2.1775978 | 69  | 3 | 2004-2007 | 0.50 | M-v | 2 | MPC | 128859 2004 XP <sub>164</sub> |
| 2004 XO <sub>165</sub> | 16.6 | 0.15 | 20071027 | 28.57999  | 47.64306  | 288.76547 | 6.89357  | 0.1588176 | 2.2336839 | 72  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128859 2004 XO <sub>165</sub> |
| 2004 XY <sub>165</sub> | 16.1 | 0.15 | 20071027 | 55.11691  | 49.02085  | 263.45214 | 6.28976  | 0.0872911 | 2.2154955 | 75  | 5 | 1997-2007 | 0.52 | M-v | 1 | MPC | 128151 2004 XY <sub>165</sub> |
| 2004 XZ <sub>165</sub> | 17.2 | 0.15 | 20071027 | 64.76907  | 136.41803 | 205.17839 | 3.47868  | 0.0420384 | 2.1584645 | 50  | 4 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128859 2004 XZ <sub>165</sub> |
| 2004 XM <sub>168</sub> | 16.7 | 0.15 | 20071027 | 18.95130  | 342.41004 | 66.80146  | 23.45329 | 0.0870193 | 1.9583254 | 52  | 4 | 2003-2007 | 0.55 | M-v | 1 | MPC | 128859 2004 XM <sub>168</sub> |
| 2004 XE <sub>184</sub> | 17.3 | 0.15 | 20071027 | 2.63987   | 354.38249 | 49.28490  | 4.22762  | 0.1396890 | 2.1619787 | 63  | 3 | 2004-2007 | 0.44 | M-v | 3 | MPC | 128859 2004 XE <sub>184</sub> |
| 2004 XG <sub>186</sub> | 17.7 | 0.15 | 20071027 | 321.51117 | 38.01653  | 23.85833  | 2.82902  | 0.1811377 | 2.2896944 | 44  | 4 | 2002-2007 | 0.38 | M-v | 2 | MPC | 128152 2004 XG <sub>186</sub> |
| 2004 YZ <sub>1</sub>   | 16.0 | 0.15 | 20071027 | 292.85219 | 97.93727  | 18.50071  | 22.69815 | 0.1810080 | 2.3422490 | 124 | 3 | 1998-2007 | 0.57 | M-v | 2 | MPC | 128859 2004 YZ <sub>1</sub>   |
| 2004 YB <sub>2</sub>   | 17.3 | 0.15 | 20071027 | 0.79551   | 337.84569 | 52.59964  | 5.53910  | 0.1673329 | 2.1827857 | 103 | 3 | 2004-2007 | 0.52 | M-v | 3 | MPC | 128859 2004 YB <sub>2</sub>   |
| 2004 YP <sub>4</sub>   | 16.8 | 0.15 | 20071027 | 24.36284  | 50.55235  | 302.92022 | 4.05093  | 0.1796164 | 2.1973030 | 94  | 3 | 2002-2007 | 0.55 | M-v | 2 | MPC | 128859 2004 YP <sub>4</sub>   |
| 2004 YZ <sub>19</sub>  | 17.6 | 0.15 | 20071027 | 38.48188  | 122.74046 | 265.25960 | 1.03615  | 0.1218779 | 2.1298687 | 34  | 5 | 1994-2007 | 0.48 | M-v | 1 | MPC | 102236 2004 YZ <sub>19</sub>  |
| 2004 YV <sub>21</sub>  | 15.8 | 0.15 | 20071027 | 178.79211 | 293.24243 | 300.55392 | 6.27108  | 0.1788701 | 2.4050026 | 92  | 5 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128860 2004 YV <sub>21</sub>  |
| 2004 YY <sub>21</sub>  | 17.2 | 0.15 | 20071027 | 24.71126  | 268.14996 | 113.46665 | 5.87766  | 0.1674125 | 2.2196533 | 68  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128860 2004 YY <sub>21</sub>  |
| 2004 YK <sub>23</sub>  | 17.5 | 0.15 | 20071027 | 211.26385 | 263.20479 | 297.83641 | 4.73342  | 0.0942059 | 2.3603430 | 38  | 4 | 2001-2007 | 0.29 | M-v | 1 | MPC | 128860 2004 YK <sub>23</sub>  |
| 2004 YA <sub>27</sub>  | 15.9 | 0.15 | 20071027 | 177.89234 | 185.22142 | 47.07449  | 13.54985 | 0.1286741 | 2.6571268 | 73  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128860 2004 YA <sub>27</sub>  |
| 2004 YM <sub>32</sub>  | 16.4 | 0.15 | 20071027 | 357.81147 | 165.05575 | 338.61509 | 18.14001 | 0.0676361 | 1.9583747 | 153 | 3 | 2004-2007 | 0.53 | M-v | 2 | MPC | 111077 2004 YM <sub>32</sub>  |
| 2005 AO <sub>2</sub>   | 16.7 | 0.15 | 20071027 | 321.87936 | 138.22184 | 311.36321 | 6.95905  | 0.1170103 | 2.2472632 | 77  | 2 | 2005-2007 | 0.54 | M-v | 3 | MPC | 128153 2005 AO <sub>2</sub>   |
| 2005 AH <sub>3</sub>   | 16.8 | 0.15 | 20071027 | 18.65890  | 248.96657 | 135.04828 | 6.39552  | 0.1634141 | 2.2037011 | 95  | 4 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128860 2005 AH <sub>3</sub>   |
| 2005 AC <sub>4</sub>   | 16.4 | 0.15 | 20071027 | 272.75293 | 91.07146  | 56.31809  | 6.05052  | 0.0653543 | 2.1979015 | 92  | 4 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128860 2005 AC <sub>4</sub>   |
| 2005 AS <sub>4</sub>   | 16.3 | 0.15 | 20071027 | 342.75255 | 80.96732  | 298.06312 | 9.93170  | 0.1877766 | 2.3703509 | 72  | 2 | 2004-2007 | 0.49 | M-v | 3 | MPC | 128860 2005 AS <sub>4</sub>   |
| 2005 AX <sub>4</sub>   | 16.7 | 0.15 | 20071027 | 250.57315 | 140.63703 | 354.85755 | 2.49670  | 0.1494559 | 2.4058515 | 72  | 5 | 1994-2007 | 0.50 | M-v | 1 | MPC | 126720 2005 AX <sub>4</sub>   |
| 2005 AX <sub>5</sub>   | 17.2 | 0.15 | 20071027 | 355.68513 | 327.71245 | 76.25996  | 4.68980  | 0.2094532 | 2.2063942 | 106 | 5 | 1996-2007 | 0.51 | M-v | 1 | MPC | 128860 2005 AX <sub>5</sub>   |
| 2005 AD <sub>7</sub>   | 16.6 | 0.15 | 20071027 | 214.20536 | 195.05274 | 11.65158  | 3.63842  | 0.1498921 | 2.3309510 | 43  | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128860 2005 AD <sub>7</sub>   |
| 2005 AT <sub>7</sub>   | 16.9 | 0.15 | 20071027 | 270.01737 | 90.48655  | 36.62482  | 2.67254  | 0.1359382 | 2.3826908 | 63  | 6 | 1992-2007 | 0.55 | M-v | 1 | MPC | 128860 2005 AT <sub>7</sub>   |
| 2005 AZ <sub>7</sub>   | 16.9 | 0.15 | 20071027 | 243.29233 | 217.47557 | 330.38501 | 6.94512  | 0.0687171 | 2.2410570 | 90  | 4 | 2002-2007 | 0.50 | M-v | 2 | MPC | 77799 2005 AZ <sub>7</sub>    |
| 2005 AV <sub>8</sub>   | 16.8 | 0.15 | 20071027 | 342.33671 | 318.65912 | 108.23582 | 5.69235  | 0.1277949 | 2.1924943 | 63  | 3 | 1995-2007 | 0.52 | M-v | 3 | MPC | 128154 2005 AV <sub>8</sub>   |
| 2005 AG <sub>11</sub>  | 15.6 | 0.15 | 20071027 | 8.57910   | 240.94433 | 114.19160 | 5.94527  | 0.2357091 | 2.3999342 | 120 | 5 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128860 2005 AG <sub>11</sub>  |
| 2005 AV <sub>11</sub>  | 17.2 | 0.15 | 20071027 | 267.78395 | 135.70308 | 25.35551  | 4.22958  | 0.1237088 | 2.2145888 | 51  | 4 | 2000-2007 | 0.57 | M-v | 2 | MPC | 128860 2005 AV <sub>11</sub>  |
| 2005 AK <sub>12</sub>  | 17.0 | 0.15 | 20071027 | 321.80374 | 117.20362 | 337.15040 | 4.03313  | 0.1363637 | 2.2548916 | 130 | 3 | 2000-2007 | 0.55 | M-v | 2 | MPC | 128860 2005 AK <sub>12</sub>  |
| 2005 AS <sub>12</sub>  | 17.1 | 0.15 | 20071027 | 262.34026 | 181.84403 | 313.57769 | 1.92535  | 0.1120144 | 2.3349582 | 80  | 4 | 1998-2007 | 0.47 | M-v | 2 | MPC | 128860 2005 AS <sub>12</sub>  |
| 2005 AW <sub>14</sub>  | 16.5 | 0.15 | 20071027 | 254.42093 | 178.88519 | 333.17720 | 9.05835  | 0.1428175 | 2.3415494 | 47  | 3 | 1998-2007 | 0.55 | M-v | 3 | MPC | 126017 2005 AW <sub>14</sub>  |
| 2005 AF <sub>18</sub>  | 17.1 | 0.15 | 20071027 | 295.61355 | 175.15769 | 308.97971 | 1.93052  | 0.1934639 | 2.2677731 | 83  | 3 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128861 2005 AF <sub>18</sub>  |
| 2005 AT <sub>19</sub>  | 17.0 | 0.15 | 20071027 | 287.38171 | 101.07673 | 358.69424 | 2.98638  | 0.1695554 | 2.3561770 | 66  | 3 | 2000-2007 | 0.49 | M-v | 2 | MPC | 128861 2005 AT <sub>19</sub>  |
| 2005 AY <sub>19</sub>  | 16.5 | 0.15 | 20071027 | 294.19325 | 202.10256 | 278.97566 | 5.02907  | 0.1261600 | 2.2735437 | 98  | 3 | 2000-2007 | 0.49 | M-v | 3 | MPC | 128861 2005 AY <sub>19</sub>  |
| 2005 AP <sub>20</sub>  | 16.8 | 0.15 | 20071027 | 358.80957 | 126.07741 | 294.94804 | 6.62371  | 0.0658085 | 2.1925136 | 54  | 4 | 1992-2007 | 0.54 | M-v | 2 | MPC | 128861 2005 AP <sub>20</sub>  |
| 2005 AM <sub>21</sub>  | 17.7 | 0.15 | 20071027 | 338.25532 | 32.03655  | 16.80578  | 3.33882  | 0.1596641 | 2.3183888 | 48  | 3 | 2000-2007 | 0.54 | M-v | 2 | MPC | 128861 2005 AM <sub>21</sub>  |
| 2005 AA <sub>22</sub>  | 16.6 | 0.15 | 20071027 | 269.83071 | 282.80110 | 201.26808 | 2.63987  | 0.1531746 | 2.4167903 | 92  | 4 | 2000-2007 | 0.52 | M-v | 1 | MPC | 128861 2005 AA <sub>22</sub>  |
| 2005 AU <sub>22</sub>  | 16.8 | 0.15 | 20071027 | 279.35889 | 111.60327 | 356.56475 | 2.83197  | 0.1915491 | 2.3637892 | 64  | 5 | 1998-2007 | 0.48 | M-v | 1 | MPC | 128861 2005 AU <sub>22</sub>  |
| 2005 AZ <sub>22</sub>  | 16.9 | 0.15 | 20071027 | 232.27550 | 130.04869 | 41.52145  | 2.71417  | 0.1438167 | 2.3649830 | 62  | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128861 2005 AZ <sub>22</sub>  |
| 2005 AD <sub>23</sub>  | 16.5 | 0.15 | 20071027 | 274.34568 | 133.04906 | 355.02937 | 3.11647  | 0.1579925 | 2.3138460 | 85  | 2 | 2004-2007 | 0.54 | M-v | 3 | MPC | 128861 2005 AD <sub>23</sub>  |
| 2005 AE <sub>25</sub>  | 16.7 | 0.15 | 20071027 | 257.11310 | 260.41765 | 219.56191 | 3.33181  | 0.0857995 | 2.5169234 | 46  | 5 | 1999-2007 | 0.48 | M-v | 2 | MPC | 126722 2005 AE <sub>25</sub>  |
| 2005 AV <sub>26</sub>  | 16.5 | 0.15 | 20071027 | 327.60362 | 177.53523 | 260.67602 | 6.46415  | 0.0971912 | 2.3178774 | 107 | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 128861 2005 AV <sub>26</sub>  |
| 2005 AX <sub>26</sub>  | 17.4 | 0.15 | 20071027 | 260.84959 | 280.15019 | 232.59267 | 3.22798  | 0.1139644 | 2.3421178 | 79  | 5 | 2000-2007 | 0.34 | M-v | 0 | MPC | 128861 2005 AX <sub>26</sub>  |
| 2005 AQ <sub>27</sub>  | 17.0 | 0.15 | 20071027 | 275.31545 | 16.33793  | 123.66882 | 4.26006  | 0.0815243 | 2.2342414 | 78  | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128861 2005 AQ <sub>27</sub>  |
| 2005 AU <sub>29</sub>  | 15.6 | 0.15 | 20071027 | 141.35750 | 263.30902 | 296.91868 | 11.64270 | 0.1376954 | 2.7831722 | 37  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 124452 2005 AU <sub>29</sub>  |
| 2005 AU <sub>29</sub>  | 17.3 | 0.15 | 20071027 | 70.88690  | 228.83754 | 99.78250  | 3.45785  | 0.0623276 | 2.2931421 | 74  | 5 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128861 2005 AU <sub>29</sub>  |
| 2005 AX <sub>29</sub>  | 16.5 | 0.15 | 20071027 | 6.50632   | 43.56340  | 316.75149 | 0.56721  | 0.1921454 | 2.3765030 | 111 | 5 | 1996-2007 | 0.42 | M-v | 1 | MPC | 128861 2005 AX <sub>29</sub>  |
| 2005 AE <sub>32</sub>  | 17.5 | 0.15 | 20071027 | 354.53594 | 282.82025 | 133.27277 | 2.67385  | 0.1993127 | 2.1789846 | 83  | 5 | 1996-2007 | 0.55 | M-v | 1 | MPC | 128861 2005 AE <sub>32</sub>  |
| 2005 AZ <sub>32</sub>  | 16.1 | 0.15 | 20071027 | 332.49399 | 200.45194 | 291.70387 | 17.78218 | 0.0532878 | 1.9676796 | 65  | 4 | 2001-2007 | 0.56 | M-v | 3 | MPC | 128861 2005 AZ <sub>32</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                             |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-----------------------------|
| 2005 AE <sub>33</sub> | 16.3 | 0.15 | 20071027 | 332.04693 | 315.91978 | 106.58511 | 7.69793  | 0.0922901 | 2.3220249 | 83  | 5 | 2000-2007 | 0.60 | M-v | 1 | MP | 1288612005 AE <sub>33</sub> |
| 2005 AY <sub>35</sub> | 16.7 | 0.15 | 20071027 | 236.95946 | 283.72885 | 260.78154 | 4.60778  | 0.1007379 | 2.2758173 | 47  | 5 | 2002-2007 | 0.49 | M-v | 1 | MP | 1288612005 AY <sub>35</sub> |
| 2005 AT <sub>41</sub> | 16.9 | 0.15 | 20071027 | 297.98376 | 221.28385 | 229.47644 | 2.64333  | 0.0703712 | 2.3547914 | 63  | 3 | 2002-2007 | 0.47 | M-v | 3 | MP | 1288612005 AT <sub>41</sub> |
| 2005 AZ <sub>43</sub> | 16.8 | 0.15 | 20071027 | 207.65212 | 157.85768 | 37.04282  | 2.12651  | 0.1128518 | 2.4165038 | 49  | 4 | 1994-2007 | 0.42 | M-v | 2 | MP | 1288622005 AZ <sub>43</sub> |
| 2005 AE <sub>45</sub> | 17.0 | 0.15 | 20071027 | 280.71300 | 125.43816 | 340.80238 | 2.69306  | 0.1385391 | 2.4240908 | 43  | 2 | 2005-2007 | 0.33 | M-v | 3 | MP | 1260192005 AE <sub>45</sub> |
| 2005 AD <sub>46</sub> | 16.7 | 0.15 | 20071027 | 170.03374 | 311.77690 | 268.88632 | 5.43569  | 0.0863379 | 2.4791512 | 32  | 3 | 2003-2007 | 0.37 | M-v | 3 | MP | 1267232005 AD <sub>46</sub> |
| 2005 AX <sub>53</sub> | 17.3 | 0.15 | 20071027 | 303.90627 | 247.28909 | 216.29538 | 1.37031  | 0.2009062 | 2.3012564 | 98  | 4 | 2000-2007 | 0.48 | M-v | 1 | MP | 1288622005 AX <sub>53</sub> |
| 2005 AH <sub>56</sub> | 17.5 | 0.15 | 20071027 | 231.54911 | 97.25358  | 100.39227 | 5.57704  | 0.0944051 | 2.1908637 | 34  | 4 | 1999-2007 | 0.47 | M-v | 2 | MP | 1288622005 AH <sub>56</sub> |
| 2005 AL <sub>56</sub> | 16.2 | 0.15 | 20071027 | 23.98412  | 49.29874  | 299.31597 | 6.18831  | 0.1464849 | 2.3635525 | 49  | 4 | 2000-2007 | 0.51 | M-v | 1 | MP | 1288622005 AL <sub>56</sub> |
| 2005 AE <sub>60</sub> | 17.0 | 0.15 | 20071027 | 259.12462 | 91.72652  | 41.29580  | 1.81607  | 0.1114283 | 2.4162360 | 54  | 4 | 1998-2007 | 0.49 | M-v | 2 | MP | 1288622005 AE <sub>60</sub> |
| 2005 AH <sub>60</sub> | 17.3 | 0.15 | 20071027 | 310.12467 | 117.87353 | 350.48934 | 0.16085  | 0.1062871 | 2.2197779 | 64  | 3 | 2002-2007 | 0.44 | M-v | 3 | MP | 1288622005 AH <sub>60</sub> |
| 2005 AK <sub>61</sub> | 16.9 | 0.15 | 20071027 | 322.55274 | 45.95415  | 57.33509  | 2.99480  | 0.0583937 | 2.2242907 | 56  | 3 | 2002-2007 | 0.41 | M-v | 3 | MP | 1239992005 AK <sub>61</sub> |
| 2005 AR <sub>65</sub> | 17.6 | 0.15 | 20071027 | 265.33934 | 293.80837 | 216.66930 | 1.37269  | 0.0887503 | 2.2758400 | 68  | 5 | 2000-2007 | 0.43 | M-v | 1 | MP | 1288622005 AR <sub>65</sub> |
| 2005 AT <sub>67</sub> | 16.7 | 0.15 | 20071027 | 323.10410 | 168.28833 | 263.68127 | 4.94998  | 0.0690870 | 2.3029031 | 60  | 3 | 2003-2007 | 0.61 | M-v | 3 | MP | 1288622005 AT <sub>67</sub> |
| 2005 AR <sub>68</sub> | 17.5 | 0.15 | 20071027 | 287.29719 | 55.34508  | 83.83587  | 3.31689  | 0.1051694 | 2.2600133 | 55  | 4 | 2000-2007 | 0.48 | M-v | 1 | MP | 1288622005 AR <sub>68</sub> |
| 2005 AX <sub>68</sub> | 15.8 | 0.15 | 20071027 | 88.50038  | 312.12072 | 347.63401 | 6.09341  | 0.1653070 | 2.5399895 | 62  | 3 | 2003-2007 | 0.50 | M-v | 3 | MP | 1288622005 AX <sub>68</sub> |
| 2005 AC <sub>69</sub> | 16.8 | 0.15 | 20071027 | 358.75277 | 35.26450  | 14.75743  | 8.11844  | 0.0606319 | 2.2232826 | 60  | 4 | 2000-2007 | 0.52 | M-v | 1 | MP | 1288622005 AC <sub>69</sub> |
| 2005 AW <sub>71</sub> | 17.1 | 0.15 | 20071027 | 43.00795  | 262.33633 | 107.84866 | 3.96147  | 0.1582612 | 2.2087833 | 43  | 6 | 1996-2007 | 0.53 | M-v | 1 | MP | 1022402005 AW <sub>71</sub> |
| 2005 AU <sub>74</sub> | 17.2 | 0.15 | 20071027 | 27.39622  | 273.47127 | 93.54733  | 2.14177  | 0.1615038 | 2.2979292 | 81  | 3 | 2005-2007 | 0.55 | M-v | 2 | MP | 1281582005 AU <sub>74</sub> |
| 2005 AA <sub>82</sub> | 16.6 | 0.15 | 20071027 | 33.72175  | 324.51984 | 70.76299  | 4.42607  | 0.0823526 | 2.1819893 | 38  | 5 | 1996-2007 | 0.52 | M-v | 2 | MP | 1091072005 AA <sub>82</sub> |
| 2005 BV <sub>2</sub>  | 16.9 | 0.15 | 20071027 | 40.49434  | 316.26145 | 138.78160 | 23.25159 | 0.0605670 | 1.8955865 | 50  | 5 | 2000-2007 | 0.43 | M-v | 1 | MP | 1288622005 BV <sub>2</sub>  |
| 2005 BO <sub>4</sub>  | 17.0 | 0.15 | 20071027 | 350.28279 | 348.42657 | 76.12247  | 3.36815  | 0.0625531 | 2.1968662 | 42  | 2 | 2005-2007 | 0.45 | M-v | 4 | MP | 1281582005 BO <sub>4</sub>  |
| 2005 BY <sub>5</sub>  | 17.0 | 0.15 | 20071027 | 226.79807 | 137.94035 | 56.63459  | 3.29740  | 0.0802656 | 2.2553575 | 36  | 2 | 2005-2007 | 0.45 | M-v | 4 | MP | 1281592005 BY <sub>5</sub>  |
| 2005 BP <sub>6</sub>  | 16.8 | 0.15 | 20071027 | 278.92977 | 171.51643 | 319.82034 | 6.90220  | 0.0863194 | 2.2807543 | 36  | 2 | 2004-2007 | 0.50 | M-v | 4 | MP | 1281592005 BP <sub>6</sub>  |
| 2005 BF <sub>9</sub>  | 17.2 | 0.15 | 20071027 | 325.53922 | 112.99293 | 359.10817 | 3.98469  | 0.0694853 | 2.1652363 | 32  | 3 | 2002-2007 | 0.53 | M-v | 3 | MP | 866232005 BF <sub>9</sub>   |
| 2005 BX <sub>9</sub>  | 16.9 | 0.15 | 20071027 | 50.85729  | 3.44679   | 350.19667 | 3.06834  | 0.0799864 | 2.3175955 | 48  | 3 | 2002-2007 | 0.46 | M-v | 3 | MP | 1281602005 BX <sub>9</sub>  |
| 2005 BB <sub>14</sub> | 16.5 | 0.15 | 20071027 | 66.66082  | 276.34874 | 86.20832  | 7.09007  | 0.0427027 | 2.1732531 | 43  | 4 | 2000-2007 | 0.64 | M-v | 3 | MP | 766192005 BB <sub>14</sub>  |
| 2005 BZ <sub>14</sub> | 15.9 | 0.15 | 20071027 | 127.79419 | 355.11334 | 228.00443 | 3.43191  | 0.1466521 | 2.7820417 | 36  | 5 | 2001-2007 | 0.37 | M-v | 0 | MP | 1267242005 BZ <sub>14</sub> |
| 2005 BD <sub>20</sub> | 16.9 | 0.15 | 20071027 | 337.87807 | 331.86349 | 95.23458  | 3.82107  | 0.1537623 | 2.2679413 | 68  | 2 | 2005-2007 | 0.58 | M-v | 4 | MP | 1288632005 BD <sub>20</sub> |
| 2005 BZ <sub>23</sub> | 17.4 | 0.15 | 20071027 | 248.08791 | 103.76288 | 72.23480  | 2.79412  | 0.0893473 | 2.2356024 | 30  | 2 | 2005-2007 | 0.32 | M-v | 4 | MP | 1281612005 BZ <sub>23</sub> |
| 2005 BA <sub>26</sub> | 14.9 | 0.15 | 20071027 | 82.66280  | 355.83029 | 312.04461 | 11.45292 | 0.1746975 | 2.5396116 | 72  | 5 | 1999-2007 | 0.54 | M-v | 2 | MP | 1288632005 BA <sub>26</sub> |
| 2005 BQ <sub>26</sub> | 16.2 | 0.15 | 20071027 | 352.68826 | 164.53702 | 315.13785 | 16.71826 | 0.0732783 | 1.9947750 | 68  | 4 | 2001-2007 | 0.46 | M-v | 2 | MP | 1043132005 BQ <sub>26</sub> |
| 2005 BB <sub>27</sub> | 16.5 | 0.15 | 20071027 | 272.94831 | 122.84811 | 45.95886  | 22.85987 | 0.2553479 | 2.2898894 | 83  | 2 | 2005-2007 | 0.54 | M-v | 2 | MP | 1288632005 BB <sub>27</sub> |
| 2005 BL <sub>32</sub> | 17.9 | 0.15 | 20071027 | 76.51244  | 324.92003 | 351.04741 | 1.00382  | 0.2054391 | 2.3507007 | 49  | 6 | 1996-2007 | 0.45 | M-v | 1 | MP | 1288632005 BL <sub>32</sub> |
| 2005 CN               | 22.9 | 0.15 | 20071027 | 120.05684 | 321.25989 | 308.81951 | 2.31339  | 0.1849608 | 1.0159354 | 50  | 4 | 2005-2007 | 0.54 | M-v | 5 | MP | 1147322005 CN               |
| 2005 CG <sub>2</sub>  | 17.8 | 0.15 | 20071027 | 236.47623 | 84.91336  | 120.61346 | 5.43645  | 0.1612885 | 2.2873910 | 44  | 4 | 2002-2007 | 0.58 | M-v | 1 | MP | 1110792005 CG <sub>2</sub>  |
| 2005 CV <sub>2</sub>  | 16.7 | 0.15 | 20071027 | 228.16511 | 158.81903 | 31.75824  | 2.98718  | 0.1442032 | 2.4016860 | 95  | 3 | 2003-2007 | 0.50 | M-v | 3 | MP | 1288632005 CV <sub>2</sub>  |
| 2005 CO <sub>4</sub>  | 16.3 | 0.15 | 20071027 | 235.63408 | 187.66245 | 358.07101 | 2.98556  | 0.1076234 | 2.3649372 | 76  | 4 | 1998-2007 | 0.54 | M-v | 3 | MP | 1288632005 CO <sub>4</sub>  |
| 2005 CR <sub>4</sub>  | 16.8 | 0.15 | 20071027 | 23.44602  | 265.18824 | 129.82005 | 4.36227  | 0.1277457 | 2.2556105 | 39  | 4 | 2000-2007 | 0.52 | M-v | 1 | MP | 1288632005 CR <sub>4</sub>  |
| 2005 CX <sub>4</sub>  | 16.1 | 0.15 | 20071027 | 348.43415 | 341.34156 | 57.16559  | 3.30151  | 0.1651578 | 2.3882908 | 145 | 5 | 2001-2007 | 0.51 | M-v | 1 | MP | 1288632005 CX <sub>4</sub>  |
| 2005 CA <sub>5</sub>  | 16.9 | 0.15 | 20071027 | 209.98967 | 252.81793 | 330.24124 | 5.87426  | 0.1264677 | 2.3023508 | 52  | 4 | 2003-2007 | 0.57 | M-v | 1 | MP | 1110792005 CA <sub>5</sub>  |
| 2005 CP <sub>5</sub>  | 16.7 | 0.15 | 20071027 | 206.48971 | 162.73849 | 11.27663  | 4.37153  | 0.0828856 | 2.5844798 | 52  | 3 | 1997-2007 | 0.40 | M-v | 3 | MP | 1288632005 CP <sub>5</sub>  |
| 2005 CT <sub>5</sub>  | 17.1 | 0.15 | 20071027 | 25.64797  | 52.68048  | 344.65959 | 6.08458  | 0.2085339 | 2.1736345 | 45  | 3 | 2002-2007 | 0.43 | M-v | 2 | MP | 778092005 CT <sub>5</sub>   |
| 2005 CV <sub>5</sub>  | 16.3 | 0.15 | 20071027 | 179.27567 | 257.85101 | 338.24335 | 5.73887  | 0.0929874 | 2.4721165 | 76  | 6 | 2001-2007 | 0.54 | M-v | 1 | MP | 1110792005 CV <sub>5</sub>  |
| 2005 CZ <sub>5</sub>  | 16.8 | 0.15 | 20071027 | 273.57143 | 10.19962  | 148.32197 | 5.80862  | 0.0975345 | 2.3031225 | 63  | 4 | 1998-2007 | 0.59 | M-v | 1 | MP | 1288642005 CZ <sub>5</sub>  |
| 2005 CO <sub>6</sub>  | 17.2 | 0.15 | 20071027 | 38.12250  | 3.08967   | 30.83252  | 1.58344  | 0.1423461 | 2.1390043 | 29  | 4 | 2000-2007 | 0.40 | M-v | 2 | MP | 1288642005 CO <sub>6</sub>  |
| 2005 CO <sub>9</sub>  | 17.2 | 0.15 | 20071027 | 241.75464 | 73.97576  | 119.72086 | 6.38659  | 0.1504193 | 2.3085203 | 82  | 5 | 2002-2007 | 0.53 | M-v | 1 | MP | 1043142005 CO <sub>9</sub>  |
| 2005 CT <sub>9</sub>  | 16.6 | 0.15 | 20071027 | 335.41639 | 359.23011 | 71.40301  | 3.19422  | 0.1302799 | 2.3320578 | 82  | 2 | 2005-2007 | 0.46 | M-v | 4 | MP | 1288642005 CT <sub>9</sub>  |
| 2005 CV <sub>10</sub> | 16.7 | 0.15 | 20071027 | 230.72632 | 195.72130 | 359.13100 | 5.60654  | 0.1567051 | 2.3808518 | 47  | 4 | 1999-2007 | 0.50 | M-v | 3 | MP | 778092005 CV <sub>10</sub>  |
| 2005 CC <sub>11</sub> | 17.7 | 0.15 | 20071027 | 284.02779 | 130.96868 | 10.94879  | 2.57845  | 0.1360364 | 2.2973374 | 40  | 3 | 2000-2007 | 0.59 | M-v | 3 | MP | 1260232005 CC <sub>11</sub> |
| 2005 CK <sub>11</sub> | 16.7 | 0.15 | 20071027 | 190.98969 | 134.26321 | 104.51097 | 2.91845  | 0.1240012 | 2.3624418 | 71  | 6 | 1998-2007 | 0.42 | M-v | 0 | MP | 1288642005 CK <sub>11</sub> |
| 2005 CG <sub>12</sub> | 15.2 | 0.15 | 20071027 | 104.40076 | 192.26672 | 99.37100  | 6.16080  | 0.2082699 | 2.5339304 | 39  | 2 | 2005-2007 | 0.55 | M-v | 5 | MP | 1281632005 CG <sub>12</sub> |
| 2005 CC <sub>13</sub> | 17.4 | 0.15 | 20071027 | 190.14464 | 171.92275 | 63.16063  | 2.07841  | 0.1418408 | 2.3549691 | 28  | 4 | 1998-2007 | 0.52 | M-v | 2 | MP | 1288642005 CC <sub>13</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|------------------------------|
| 2005 CG <sub>13</sub> | 16.5 | 0.15 | 20071027 | 337.53028 | 76.79918  | 347.66330 | 6.46230  | 0.0899562 | 2.3436887 | 49  | 3 | 2003-2007 | 0.49 | M-v | 2 | MP | 128163 2005 CG <sub>13</sub> |
| 2005 CJ <sub>13</sub> | 17.0 | 0.15 | 20071027 | 218.71859 | 118.10181 | 80.90399  | 3.43388  | 0.1635352 | 2.4058997 | 32  | 3 | 1998-2007 | 0.46 | M-v | 3 | MP | 128163 2005 CJ <sub>13</sub> |
| 2005 CW <sub>13</sub> | 16.9 | 0.15 | 20071027 | 175.53518 | 188.58074 | 60.58059  | 2.06897  | 0.1557334 | 2.3828793 | 44  | 7 | 1998-2007 | 0.44 | M-v | 0 | MP | 104314 2005 CW <sub>13</sub> |
| 2005 CA <sub>14</sub> | 17.0 | 0.15 | 20071027 | 193.22425 | 256.38591 | 339.01275 | 6.82149  | 0.0952298 | 2.3148857 | 45  | 6 | 1996-2007 | 0.59 | M-v | 1 | MP | 111079 2005 CA <sub>14</sub> |
| 2005 CK <sub>15</sub> | 16.7 | 0.15 | 20071027 | 274.44929 | 205.61643 | 272.21463 | 2.80293  | 0.0794539 | 2.3878769 | 54  | 4 | 1998-2007 | 0.41 | M-v | 3 | MP | 128164 2005 CK <sub>15</sub> |
| 2005 CY <sub>15</sub> | 17.4 | 0.15 | 20071027 | 281.77969 | 273.16333 | 200.48537 | 0.77498  | 0.1423312 | 2.3829178 | 52  | 3 | 2000-2007 | 0.43 | M-v | 2 | MP | 128864 2005 CY <sub>15</sub> |
| 2005 CG <sub>16</sub> | 14.9 | 0.15 | 20071027 | 78.30869  | 353.74652 | 308.57792 | 11.54635 | 0.2583437 | 2.5768839 | 85  | 4 | 2003-2007 | 0.43 | M-v | 1 | MP | 128864 2005 CG <sub>16</sub> |
| 2005 CH <sub>17</sub> | 18.1 | 0.15 | 20071027 | 322.26997 | 316.28282 | 143.70334 | 2.14937  | 0.1250077 | 2.2248916 | 37  | 3 | 1997-2007 | 0.45 | M-v | 2 | MP | 76648 2005 CH <sub>17</sub>  |
| 2005 CY <sub>18</sub> | 17.1 | 0.15 | 20071027 | 303.29829 | 183.59979 | 243.44477 | 1.14366  | 0.0808773 | 2.5249176 | 48  | 5 | 1997-2007 | 0.31 | M-v | 1 | MP | 126726 2005 CY <sub>18</sub> |
| 2005 CE <sub>19</sub> | 17.1 | 0.15 | 20071027 | 347.37097 | 47.48431  | 18.68809  | 0.78389  | 0.1647883 | 2.2326222 | 105 | 5 | 1995-2007 | 0.45 | M-v | 1 | MP | 128864 2005 CE <sub>19</sub> |
| 2005 CT <sub>19</sub> | 17.4 | 0.15 | 20071027 | 223.39504 | 282.08363 | 265.40923 | 1.51961  | 0.1244782 | 2.4008447 | 59  | 5 | 1996-2007 | 0.40 | M-v | 1 | MP | 128864 2005 CT <sub>19</sub> |
| 2005 CM <sub>20</sub> | 15.7 | 0.15 | 20071027 | 53.13968  | 13.56058  | 307.10860 | 12.86746 | 0.1860411 | 2.5489034 | 47  | 4 | 2003-2007 | 0.50 | M-v | 1 | MP | 128864 2005 CM <sub>20</sub> |
| 2005 CQ <sub>20</sub> | 16.9 | 0.15 | 20071027 | 340.20562 | 104.92339 | 334.26155 | 6.17219  | 0.0274180 | 2.3042457 | 72  | 3 | 2003-2007 | 0.48 | M-v | 1 | MP | 128864 2005 CQ <sub>20</sub> |
| 2005 CU <sub>20</sub> | 16.4 | 0.15 | 20071027 | 352.83025 | 296.05408 | 123.45719 | 5.57455  | 0.0589936 | 2.3322028 | 75  | 3 | 2000-2007 | 0.49 | M-v | 3 | MP | 128864 2005 CU <sub>20</sub> |
| 2005 CX <sub>20</sub> | 16.9 | 0.15 | 20071027 | 241.50512 | 334.78630 | 210.31750 | 1.30265  | 0.0883886 | 2.3197066 | 60  | 5 | 2002-2007 | 0.42 | M-v | 1 | MP | 128864 2005 CX <sub>20</sub> |
| 2005 CF <sub>21</sub> | 16.9 | 0.15 | 20071027 | 241.78074 | 113.71630 | 71.26345  | 3.23129  | 0.1420036 | 2.3415345 | 53  | 3 | 2000-2007 | 0.58 | M-v | 3 | MP | 128864 2005 CF <sub>21</sub> |
| 2005 CN <sub>21</sub> | 17.0 | 0.15 | 20071027 | 316.04179 | 99.61308  | 5.12144   | 5.09563  | 0.1045029 | 2.3042808 | 42  | 5 | 1996-2007 | 0.51 | M-v | 1 | MP | 128864 2005 CN <sub>21</sub> |
| 2005 CL <sub>22</sub> | 16.8 | 0.15 | 20071027 | 289.58411 | 106.17301 | 8.45787   | 2.64876  | 0.1346704 | 2.3894934 | 84  | 4 | 1996-2007 | 0.53 | M-v | 1 | MP | 126726 2005 CL <sub>22</sub> |
| 2005 CT <sub>22</sub> | 16.9 | 0.15 | 20071027 | 209.80921 | 124.33298 | 86.25559  | 8.43040  | 0.1403082 | 2.3589776 | 39  | 4 | 2002-2007 | 0.43 | M-v | 1 | MP | 128864 2005 CT <sub>22</sub> |
| 2005 CZ <sub>22</sub> | 16.3 | 0.15 | 20071027 | 285.56330 | 40.16938  | 101.07420 | 6.51099  | 0.1187089 | 2.2667289 | 122 | 5 | 1998-2007 | 0.54 | M-v | 1 | MP | 128864 2005 CZ <sub>22</sub> |
| 2005 CU <sub>24</sub> | 16.6 | 0.15 | 20071027 | 299.06730 | 112.42478 | 4.75369   | 6.83105  | 0.1142819 | 2.3046433 | 81  | 4 | 1998-2007 | 0.49 | M-v | 2 | MP | 102242 2005 CU <sub>24</sub> |
| 2005 CK <sub>25</sub> | 15.8 | 0.15 | 20071027 | 184.80940 | 291.70347 | 230.39352 | 13.96467 | 0.0938615 | 2.8510674 | 33  | 4 | 2003-2007 | 0.45 | M-v | 1 | MP | 128164 2005 CK <sub>25</sub> |
| 2005 CM <sub>26</sub> | 16.2 | 0.15 | 20071027 | 156.17105 | 110.53068 | 106.76412 | 4.06710  | 0.0139025 | 2.6980516 | 38  | 4 | 2002-2007 | 0.42 | M-v | 1 | MP | 128865 2005 CM <sub>26</sub> |
| 2005 CO <sub>26</sub> | 16.6 | 0.15 | 20071027 | 315.59860 | 59.64849  | 10.15896  | 5.22530  | 0.0921782 | 2.4210087 | 63  | 2 | 2005-2007 | 0.52 | M-v | 4 | MP | 76662 2005 CO <sub>26</sub>  |
| 2005 CP <sub>26</sub> | 18.3 | 0.15 | 20071027 | 319.20065 | 15.31386  | 107.06356 | 3.04007  | 0.0992333 | 2.1624164 | 38  | 5 | 1994-2007 | 0.51 | M-v | 1 | MP | 122499 2005 CP <sub>26</sub> |
| 2005 CS <sub>27</sub> | 17.3 | 0.15 | 20071027 | 145.65863 | 197.08476 | 108.42585 | 6.13422  | 0.1950684 | 2.2262371 | 31  | 4 | 2003-2007 | 0.47 | M-v | 2 | MP | 128165 2005 CS <sub>27</sub> |
| 2005 CO <sub>28</sub> | 16.5 | 0.15 | 20071027 | 317.91828 | 349.22995 | 108.75914 | 4.51843  | 0.0928452 | 2.3355657 | 86  | 4 | 2002-2007 | 0.56 | M-v | 1 | MP | 128865 2005 CO <sub>28</sub> |
| 2005 CZ <sub>28</sub> | 17.4 | 0.15 | 20071027 | 330.08774 | 53.34179  | 8.55094   | 2.53344  | 0.1952434 | 2.3551863 | 56  | 4 | 1994-2007 | 0.43 | M-v | 1 | MP | 95645 2005 CZ <sub>28</sub>  |
| 2005 CD <sub>29</sub> | 18.3 | 0.15 | 20071027 | 231.52675 | 109.25072 | 112.60926 | 4.51421  | 0.1169185 | 2.2116988 | 26  | 4 | 2002-2007 | 0.29 | M-v | 2 | MP | 111079 2005 CD <sub>29</sub> |
| 2005 CG <sub>30</sub> | 17.7 | 0.15 | 20071027 | 166.39708 | 231.43327 | 31.73713  | 2.65241  | 0.1510309 | 2.3587795 | 26  | 5 | 2002-2007 | 0.43 | M-v | 1 | MP | 128865 2005 CG <sub>30</sub> |
| 2005 CT <sub>30</sub> | 17.2 | 0.15 | 20071027 | 310.70206 | 60.02461  | 18.61969  | 2.62852  | 0.1842648 | 2.4011350 | 46  | 3 | 1996-2007 | 0.53 | M-v | 1 | MP | 128165 2005 CT <sub>30</sub> |
| 2005 CW <sub>31</sub> | 16.9 | 0.15 | 20071027 | 21.39115  | 280.77298 | 92.00763  | 3.40488  | 0.2369904 | 2.3546122 | 73  | 5 | 1995-2007 | 0.51 | M-v | 1 | MP | 76665 2005 CW <sub>31</sub>  |
| 2005 CZ <sub>31</sub> | 16.8 | 0.15 | 20071027 | 36.69899  | 13.75134  | 4.76803   | 3.47311  | 0.1608928 | 2.2687933 | 52  | 4 | 2000-2007 | 0.44 | M-v | 1 | MP | 126727 2005 CZ <sub>31</sub> |
| 2005 CJ <sub>36</sub> | 17.0 | 0.15 | 20071027 | 324.64241 | 13.56439  | 41.77992  | 1.91596  | 0.1762812 | 2.4493563 | 82  | 3 | 2001-2007 | 0.38 | M-v | 2 | MP | 76667 2005 CJ <sub>36</sub>  |
| 2005 CL <sub>36</sub> | 17.1 | 0.15 | 20071027 | 279.17106 | 158.31206 | 343.61830 | 4.22595  | 0.0689164 | 2.2848778 | 32  | 4 | 1993-2007 | 0.53 | M-v | 1 | MP | 128865 2005 CL <sub>36</sub> |
| 2005 CT <sub>36</sub> | 16.8 | 0.15 | 20071027 | 222.37397 | 96.81796  | 107.78352 | 3.13545  | 0.1525168 | 2.3491840 | 46  | 5 | 1992-2007 | 0.58 | M-v | 2 | MP | 128865 2005 CT <sub>36</sub> |
| 2005 CY <sub>36</sub> | 16.5 | 0.15 | 20071027 | 167.59186 | 233.20870 | 7.13066   | 2.72333  | 0.1401797 | 2.4860256 | 61  | 6 | 2001-2007 | 0.49 | M-v | 1 | MP | 128166 2005 CY <sub>36</sub> |
| 2005 CZ <sub>36</sub> | 17.1 | 0.15 | 20071027 | 300.81664 | 64.79501  | 48.41903  | 6.21829  | 0.0641912 | 2.3124582 | 53  | 3 | 2000-2007 | 0.53 | M-v | 2 | MP | 112352 2005 CZ <sub>36</sub> |
| 2005 CH <sub>37</sub> | 17.5 | 0.15 | 20071027 | 245.39263 | 139.20059 | 116.92620 | 16.13100 | 0.5776682 | 2.2344927 | 70  | 3 | 2005-2007 | 0.59 | M-v | 2 | MP | 128865 2005 CH <sub>37</sub> |
| 2005 CO <sub>37</sub> | 16.9 | 0.15 | 20071027 | 270.86234 | 19.63788  | 128.87771 | 2.60279  | 0.1410760 | 2.3262110 | 93  | 4 | 2000-2007 | 0.63 | M-v | 2 | MP | 128865 2005 CO <sub>37</sub> |
| 2005 CR <sub>38</sub> | 17.2 | 0.15 | 20071027 | 243.20815 | 294.97910 | 245.67935 | 1.35501  | 0.1546349 | 2.3561868 | 78  | 5 | 1998-2007 | 0.43 | M-v | 1 | MP | 128865 2005 CR <sub>38</sub> |
| 2005 CC <sub>40</sub> | 16.8 | 0.15 | 20071027 | 280.55275 | 84.93953  | 69.45116  | 6.31777  | 0.1341994 | 2.2726834 | 63  | 3 | 2002-2007 | 0.43 | M-v | 3 | MP | 128865 2005 CC <sub>40</sub> |
| 2005 CB <sub>45</sub> | 16.8 | 0.15 | 20071027 | 126.38596 | 269.97587 | 5.61202   | 3.31252  | 0.0990387 | 2.5516972 | 34  | 5 | 1993-2007 | 0.37 | M-v | 1 | MP | 104315 2005 CB <sub>45</sub> |
| 2005 CU <sub>45</sub> | 16.8 | 0.15 | 20071027 | 121.08032 | 244.06085 | 52.19594  | 1.86794  | 0.1930959 | 2.4482783 | 48  | 6 | 1995-2007 | 0.45 | M-v | 1 | MP | 111080 2005 CU <sub>45</sub> |
| 2005 CM <sub>46</sub> | 16.9 | 0.15 | 20071027 | 151.44851 | 291.30345 | 344.74420 | 2.01844  | 0.1757007 | 2.4129237 | 44  | 4 | 2003-2007 | 0.28 | M-v | 0 | MP | 128865 2005 CM <sub>46</sub> |
| 2005 CU <sub>46</sub> | 17.6 | 0.15 | 20071027 | 204.54697 | 268.94555 | 334.07202 | 2.30541  | 0.1215634 | 2.2691373 | 40  | 5 | 2002-2007 | 0.34 | M-v | 0 | MP | 128865 2005 CU <sub>46</sub> |
| 2005 CB <sub>47</sub> | 17.4 | 0.15 | 20071027 | 357.18334 | 284.96036 | 118.70149 | 1.63724  | 0.2078251 | 2.3189099 | 102 | 3 | 2000-2007 | 0.53 | M-v | 3 | MP | 128166 2005 CB <sub>47</sub> |
| 2005 CY <sub>47</sub> | 16.6 | 0.15 | 20071027 | 293.39076 | 340.36965 | 141.07972 | 6.85713  | 0.0579594 | 2.3504019 | 32  | 2 | 2005-2007 | 0.47 | M-v | 4 | MP | 128865 2005 CY <sub>47</sub> |
| 2005 CV <sub>48</sub> | 16.8 | 0.15 | 20071027 | 240.65329 | 216.10885 | 317.94243 | 1.18789  | 0.0726247 | 2.3878982 | 62  | 5 | 1998-2007 | 0.46 | M-v | 3 | MP | 128865 2005 CV <sub>48</sub> |
| 2005 CQ <sub>49</sub> | 15.9 | 0.15 | 20071027 | 46.91719  | 217.20984 | 136.86594 | 8.79826  | 0.0468709 | 2.4172482 | 80  | 5 | 1999-2007 | 0.55 | M-v | 2 | MP | 128865 2005 CQ <sub>49</sub> |
| 2005 CV <sub>49</sub> | 16.6 | 0.15 | 20071027 | 247.00246 | 359.03682 | 173.16338 | 2.15247  | 0.1569604 | 2.3786318 | 106 | 4 | 1998-2007 | 0.55 | M-v | 3 | MP | 111080 2005 CV <sub>49</sub> |
| 2005 CD <sub>51</sub> | 16.6 | 0.15 | 20071027 | 223.84159 | 270.93864 | 300.59952 | 3.92963  | 0.0887627 | 2.3049749 | 73  | 6 | 1998-2007 | 0.51 | M-v | 1 | MP | 128866 2005 CD <sub>51</sub> |
|                       | 17.5 | 0.15 | 20071027 | 226.29841 | 1.87503   | 209.57061 | 1.83080  | 0.1705613 | 2.3531122 | 38  | 4 | 1994-2007 | 0.51 | M-v | 1 | MP |                              |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2005 CF <sub>51</sub> | 16.8 | 0.15 | 20071027 | 207.19322 | 177.20626 | 46.13022  | 2.83996  | 0.1621184 | 2.3728048 | 35  | 4 | 1998-2007 | 0.62 | M-v | 4 | MPC | 128866 2005 CF <sub>51</sub> |
| 2005 CT <sub>52</sub> | 17.2 | 0.15 | 20071027 | 328.83639 | 29.13675  | 47.02636  | 3.61148  | 0.1937254 | 2.2964634 | 91  | 2 | 2005-2007 | 0.48 | M-v | 4 | MPC | 128866 2005 CT <sub>52</sub> |
| 2005 CZ <sub>52</sub> | 16.8 | 0.15 | 20071027 | 209.16217 | 173.85493 | 34.67092  | 2.37480  | 0.1588384 | 2.4594246 | 50  | 5 | 1999-2007 | 0.48 | M-v | 2 | MPC | 128866 2005 CZ <sub>52</sub> |
| 2005 CH <sub>53</sub> | 16.3 | 0.15 | 20071027 | 236.91340 | 106.32626 | 77.75658  | 3.44052  | 0.1204366 | 2.4137385 | 74  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128866 2005 CH <sub>53</sub> |
| 2005 CM <sub>53</sub> | 16.8 | 0.15 | 20071027 | 227.83691 | 165.86979 | 34.21504  | 3.33114  | 0.1026132 | 2.3326591 | 43  | 3 | 2003-2007 | 0.53 | M-v | 4 | MPC | 128866 2005 CM <sub>53</sub> |
| 2005 CJ <sub>58</sub> | 16.4 | 0.15 | 20071027 | 188.01511 | 295.34195 | 281.61083 | 5.35097  | 0.0741015 | 2.4394686 | 56  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128866 2005 CJ <sub>58</sub> |
| 2005 CR <sub>59</sub> | 17.3 | 0.15 | 20071027 | 305.69365 | 215.63020 | 255.29402 | 2.36080  | 0.0949082 | 2.3074966 | 53  | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 128166 2005 CR <sub>59</sub> |
| 2005 CK <sub>60</sub> | 16.7 | 0.15 | 20071027 | 324.29435 | 10.98633  | 87.65385  | 5.04270  | 0.0853566 | 2.2348852 | 46  | 2 | 2005-2007 | 0.52 | M-v | 4 | MPC | 128167 2005 CK <sub>60</sub> |
| 2005 CE <sub>62</sub> | 17.5 | 0.15 | 20071027 | 267.18912 | 86.56108  | 75.23952  | 3.07785  | 0.1504590 | 2.3179686 | 50  | 2 | 2005-2007 | 0.62 | M-v | 4 | MPC | 128167 2005 CE <sub>62</sub> |
| 2005 CF <sub>62</sub> | 17.1 | 0.15 | 20071027 | 137.11877 | 168.06030 | 92.20262  | 5.10318  | 0.0780505 | 2.5258023 | 45  | 4 | 1995-2007 | 0.31 | M-v | 3 | MPC | 128167 2005 CF <sub>62</sub> |
| 2005 CX <sub>62</sub> | 16.3 | 0.15 | 20071027 | 215.13585 | 127.05747 | 74.89264  | 4.13797  | 0.0743396 | 2.4060941 | 57  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128866 2005 CX <sub>62</sub> |
| 2005 CY <sub>62</sub> | 16.9 | 0.15 | 20071027 | 303.27253 | 59.65584  | 35.33743  | 2.94216  | 0.1518860 | 2.3998848 | 55  | 3 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128866 2005 CY <sub>62</sub> |
| 2005 CG <sub>63</sub> | 17.6 | 0.15 | 20071027 | 234.24919 | 104.14844 | 87.75664  | 4.42258  | 0.0913535 | 2.3173706 | 47  | 5 | 2000-2007 | 0.40 | M-v | 1 | MPC | 128866 2005 CG <sub>63</sub> |
| 2005 CJ <sub>63</sub> | 17.3 | 0.15 | 20071027 | 291.55318 | 247.69493 | 224.45723 | 3.46887  | 0.1030259 | 2.3892347 | 61  | 4 | 1996-2007 | 0.48 | M-v | 0 | MPC | 128866 2005 CJ <sub>63</sub> |
| 2005 CV <sub>64</sub> | 16.0 | 0.15 | 20071027 | 359.99638 | 10.66280  | 351.87736 | 6.04775  | 0.0420098 | 2.6740945 | 70  | 3 | 2003-2007 | 0.53 | M-v | 3 | MPC | 126728 2005 CV <sub>64</sub> |
| 2005 CX <sub>64</sub> | 16.4 | 0.15 | 20071027 | 134.09767 | 193.38009 | 60.48948  | 3.10290  | 0.1004015 | 2.5943625 | 40  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 128167 2005 CX <sub>64</sub> |
| 2005 CY <sub>66</sub> | 16.8 | 0.15 | 20071027 | 277.20496 | 32.41107  | 108.65677 | 2.43752  | 0.1259615 | 2.3658000 | 70  | 4 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128866 2005 CY <sub>66</sub> |
| 2005 CA <sub>67</sub> | 16.7 | 0.15 | 20071027 | 260.63625 | 80.94079  | 87.07916  | 3.54084  | 0.1054058 | 2.3476348 | 86  | 4 | 1998-2007 | 0.57 | M-v | 2 | MPC | 128866 2005 CA <sub>67</sub> |
| 2005 CN <sub>68</sub> | 16.9 | 0.15 | 20071027 | 301.14453 | 284.78312 | 196.29914 | 4.09465  | 0.1476757 | 2.2685122 | 81  | 3 | 2000-2007 | 0.50 | M-v | 2 | MPC | 128866 2005 CN <sub>68</sub> |
| 2005 CX <sub>68</sub> | 16.5 | 0.15 | 20071027 | 208.74032 | 274.97971 | 285.20001 | 7.17601  | 0.0869352 | 2.4419774 | 34  | 4 | 2003-2007 | 0.44 | M-v | 1 | MPC | 128866 2005 CX <sub>68</sub> |
| 2005 CQ <sub>69</sub> | 18.3 | 0.15 | 20071027 | 254.17538 | 110.05431 | 43.53321  | 1.79691  | 0.1326061 | 2.4061394 | 42  | 4 | 1996-2007 | 0.41 | M-v | 1 | MPC | 128866 2005 CQ <sub>69</sub> |
| 2005 CF <sub>71</sub> | 17.3 | 0.15 | 20071027 | 172.70560 | 183.92585 | 100.84893 | 4.09880  | 0.1520865 | 2.1947601 | 48  | 6 | 2000-2007 | 0.46 | M-v | 1 | MPC | 111080 2005 CF <sub>71</sub> |
| 2005 CT <sub>73</sub> | 17.9 | 0.15 | 20071027 | 229.08419 | 220.98644 | 353.47377 | 2.64673  | 0.0629412 | 2.2381600 | 29  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 111080 2005 CT <sub>73</sub> |
| 2005 CV <sub>78</sub> | 17.5 | 0.15 | 20071027 | 251.65723 | 110.32918 | 53.02192  | 2.13478  | 0.1267642 | 2.3893698 | 48  | 5 | 1992-2007 | 0.50 | M-v | 2 | MPC | 128168 2005 CV <sub>78</sub> |
| 2005 DQ <sub>1</sub>  | 17.6 | 0.15 | 20071027 | 331.92322 | 119.94655 | 322.71638 | 1.96373  | 0.1556846 | 2.3223989 | 49  | 2 | 2005-2007 | 0.28 | M-v | 3 | MPC | 128867 2005 DQ <sub>1</sub>  |
| 2005 EB <sub>1</sub>  | 17.6 | 0.15 | 20071027 | 251.54651 | 210.36971 | 337.06276 | 1.72056  | 0.1080634 | 2.3710942 | 54  | 5 | 1999-2007 | 0.45 | M-v | 1 | MPC | 128867 2005 EB <sub>1</sub>  |
| 2005 EG <sub>1</sub>  | 17.1 | 0.15 | 20071027 | 344.35579 | 125.68389 | 325.98837 | 7.79096  | 0.1376232 | 2.2279733 | 52  | 4 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128867 2005 EG <sub>1</sub>  |
| 2005 EO <sub>2</sub>  | 16.3 | 0.15 | 20071027 | 280.71154 | 219.05471 | 290.76684 | 4.92013  | 0.1076793 | 2.3271959 | 71  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128867 2005 EO <sub>2</sub>  |
| 2005 EW <sub>2</sub>  | 18.1 | 0.15 | 20071027 | 261.16440 | 52.26381  | 132.87001 | 0.83275  | 0.1298549 | 2.1939511 | 33  | 5 | 1992-2007 | 0.46 | M-v | 1 | MPC | 86639 2005 EW <sub>2</sub>   |
| 2005 EJ <sub>5</sub>  | 16.6 | 0.15 | 20071027 | 175.55992 | 143.21357 | 132.75133 | 4.64670  | 0.1084718 | 2.3367190 | 37  | 3 | 2005-2007 | 0.55 | M-v | 3 | MPC | 109118 2005 EJ <sub>5</sub>  |
| 2005 EK <sub>5</sub>  | 17.0 | 0.15 | 20071027 | 306.35986 | 38.82213  | 74.33515  | 3.16505  | 0.1581513 | 2.3653919 | 83  | 4 | 2001-2007 | 0.45 | M-v | 0 | MPC | 128867 2005 EK <sub>5</sub>  |
| 2005 EM <sub>5</sub>  | 17.3 | 0.15 | 20071027 | 283.86123 | 59.51572  | 93.70590  | 3.12120  | 0.1362635 | 2.3191490 | 61  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128867 2005 EM <sub>5</sub>  |
| 2005 EP <sub>6</sub>  | 16.5 | 0.15 | 20071027 | 281.65778 | 122.51014 | 30.11776  | 0.82656  | 0.1278139 | 2.3237050 | 114 | 6 | 1996-2007 | 0.56 | M-v | 1 | MPC | 128867 2005 EP <sub>6</sub>  |
| 2005 EH <sub>7</sub>  | 16.2 | 0.15 | 20071027 | 232.20151 | 147.22086 | 359.10185 | 9.05475  | 0.0396217 | 2.7934033 | 41  | 2 | 2005-2007 | 0.39 | M-v | 3 | MPC | 126729 2005 EH <sub>7</sub>  |
| 2005 EO <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 223.81838 | 39.09831  | 163.57168 | 3.16252  | 0.1209790 | 2.4771104 | 61  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128867 2005 EO <sub>7</sub>  |
| 2005 EM <sub>9</sub>  | 17.3 | 0.15 | 20071027 | 255.03522 | 317.03272 | 223.25820 | 2.41940  | 0.1169086 | 2.3351493 | 64  | 6 | 1998-2007 | 0.58 | M-v | 1 | MPC | 111080 2005 EM <sub>9</sub>  |
| 2005 ET <sub>9</sub>  | 17.0 | 0.15 | 20071027 | 195.23717 | 79.15966  | 181.11504 | 3.37805  | 0.1640029 | 2.3278889 | 82  | 6 | 1998-2007 | 0.49 | M-v | 0 | MPC | 122786 2005 ET <sub>9</sub>  |
| 2005 EG <sub>10</sub> | 17.1 | 0.15 | 20071027 | 323.26743 | 137.41176 | 319.57523 | 2.76899  | 0.1332288 | 2.3465741 | 109 | 4 | 1993-2007 | 0.54 | M-v | 0 | MPC | 128867 2005 EG <sub>10</sub> |
| 2005 EM <sub>10</sub> | 15.6 | 0.15 | 20071027 | 132.73153 | 291.81151 | 330.19610 | 7.39559  | 0.1619120 | 2.7708548 | 79  | 5 | 2000-2007 | 0.49 | M-v | 0 | MPC | 128867 2005 EM <sub>10</sub> |
| 2005 EH <sub>11</sub> | 17.1 | 0.15 | 20071027 | 350.64671 | 348.66475 | 88.69554  | 4.48375  | 0.1313495 | 2.2094913 | 44  | 5 | 2000-2007 | 0.60 | M-v | 1 | MPC | 128867 2005 EH <sub>11</sub> |
| 2005 EJ <sub>11</sub> | 16.5 | 0.15 | 20071027 | 284.30784 | 71.01733  | 32.09393  | 4.69217  | 0.1505019 | 2.4581006 | 60  | 3 | 2001-2007 | 0.66 | M-v | 3 | MPC | 126729 2005 EJ <sub>11</sub> |
| 2005 ET <sub>11</sub> | 16.4 | 0.15 | 20071027 | 233.84311 | 198.51998 | 5.75952   | 6.49108  | 0.0544731 | 2.2774561 | 46  | 5 | 2002-2007 | 0.48 | M-v | 1 | MPC | 104316 2005 ET <sub>11</sub> |
| 2005 EA <sub>12</sub> | 16.7 | 0.15 | 20071027 | 308.54260 | 122.86629 | 356.02265 | 8.66310  | 0.1208014 | 2.2746289 | 48  | 3 | 2003-2007 | 0.51 | M-v | 3 | MPC | 128169 2005 EA <sub>12</sub> |
| 2005 ED <sub>12</sub> | 17.3 | 0.15 | 20071027 | 256.00590 | 107.04874 | 76.54314  | 2.96659  | 0.0811755 | 2.2764237 | 42  | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 111081 2005 ED <sub>12</sub> |
| 2005 EA <sub>13</sub> | 16.4 | 0.15 | 20071027 | 340.98632 | 55.85705  | 24.74928  | 4.22981  | 0.0757105 | 2.3187840 | 67  | 4 | 2002-2007 | 0.58 | M-v | 1 | MPC | 76736 2005 EA <sub>13</sub>  |
| 2005 EK <sub>13</sub> | 17.6 | 0.15 | 20071027 | 49.44963  | 230.77021 | 143.60769 | 4.19731  | 0.1314730 | 2.1988279 | 26  | 4 | 2000-2007 | 0.39 | M-v | 2 | MPC | 86640 2005 EK <sub>13</sub>  |
| 2005 ED <sub>15</sub> | 17.4 | 0.15 | 20071027 | 235.67864 | 53.12620  | 143.95986 | 2.77015  | 0.1461124 | 2.3786919 | 57  | 4 | 1995-2007 | 0.50 | M-v | 1 | MPC | 76741 2005 ED <sub>15</sub>  |
| 2005 EG <sub>15</sub> | 16.2 | 0.15 | 20071027 | 258.40698 | 194.56097 | 350.97877 | 11.46696 | 0.0765129 | 2.2839590 | 90  | 5 | 1998-2007 | 0.51 | M-v | 1 | MPC | 104316 2005 EG <sub>15</sub> |
| 2005 EU <sub>15</sub> | 18.0 | 0.15 | 20071027 | 348.06901 | 278.80198 | 131.16888 | 0.95390  | 0.2312417 | 2.3770558 | 68  | 3 | 2000-2007 | 0.39 | M-v | 2 | MPC | 128169 2005 EU <sub>15</sub> |
| 2005 ED <sub>16</sub> | 18.3 | 0.15 | 20071027 | 313.53785 | 59.60166  | 42.36620  | 0.44619  | 0.1835852 | 2.3269910 | 40  | 2 | 2005-2007 | 0.47 | M-v | 4 | MPC | 128170 2005 ED <sub>16</sub> |
| 2005 EH <sub>17</sub> | 16.0 | 0.15 | 20071027 | 295.43538 | 75.78431  | 356.09652 | 2.56703  | 0.0149629 | 2.8657925 | 61  | 5 | 2000-2007 | 0.56 | M-v | 0 | MPC | 128868 2005 EH <sub>17</sub> |
| 2005 EW <sub>17</sub> | 17.3 | 0.15 | 20071027 | 125.69148 | 269.87237 | 35.53639  | 1.01954  | 0.0285226 | 2.4003482 | 40  | 5 | 1999-2007 | 0.36 | M-v | 1 | MPC | 76743 2005 EW <sub>17</sub>  |
| 2005 EE <sub>18</sub> | 17.8 | 0.15 | 20071027 | 304.70853 | 117.95336 | 5.61857   | 3.70483  | 0.1344487 | 2.3339662 | 39  | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128868 2005 EE <sub>18</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2005 EV <sub>18</sub> | 17.6 | 0.15 | 20071027 | 219.79437 | 52.75988  | 166.74405 | 2.62609  | 0.1374242 | 2.4105735 | 35  | 4 | 1995-2007 | 0.32 | M-v | 1 | MPC | 121163 2005 EV <sub>18</sub> |
| 2005 ER <sub>20</sub> | 17.7 | 0.15 | 20071027 | 294.47303 | 15.52408  | 141.55028 | 4.67129  | 0.0929732 | 2.2107374 | 31  | 3 | 2002-2007 | 0.51 | M-v | 3 | MPC | 76747 2005 ER <sub>20</sub>  |
| 2005 ES <sub>20</sub> | 16.7 | 0.15 | 20071027 | 238.75805 | 96.25484  | 97.72887  | 2.08141  | 0.1178666 | 2.3552429 | 44  | 4 | 1998-2007 | 0.70 | M-v | 2 | MPC | 111081 2005 ES <sub>20</sub> |
| 2005 ET <sub>20</sub> | 17.1 | 0.15 | 20071027 | 253.13420 | 153.02624 | 34.74271  | 2.54321  | 0.1398449 | 2.3066262 | 51  | 4 | 1998-2007 | 0.43 | M-v | 1 | MPC | 128868 2005 ET <sub>20</sub> |
| 2005 EU <sub>20</sub> | 16.1 | 0.15 | 20071027 | 300.77451 | 337.67500 | 146.12942 | 5.62015  | 0.0722075 | 2.3375476 | 83  | 6 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128868 2005 EU <sub>20</sub> |
| 2005 EC <sub>21</sub> | 15.7 | 0.15 | 20071027 | 53.16998  | 196.70327 | 143.41122 | 9.15590  | 0.1124698 | 2.5942698 | 62  | 5 | 1998-2007 | 0.49 | M-v | 1 | MPC | 128170 2005 EC <sub>21</sub> |
| 2005 EU <sub>21</sub> | 16.6 | 0.15 | 20071027 | 322.21346 | 97.84468  | 350.24049 | 2.26124  | 0.1505013 | 2.3518930 | 97  | 5 | 1994-2007 | 0.53 | M-v | 1 | MPC | 128868 2005 EU <sub>21</sub> |
| 2005 EJ <sub>22</sub> | 17.0 | 0.15 | 20071027 | 356.48527 | 259.86289 | 157.34815 | 7.75192  | 0.0974993 | 2.3662966 | 40  | 4 | 1992-2007 | 0.52 | M-v | 1 | MPC | 128868 2005 EJ <sub>22</sub> |
| 2005 EN <sub>22</sub> | 15.8 | 0.15 | 20071027 | 87.09622  | 320.81537 | 313.28474 | 1.06945  | 0.0270885 | 2.8456244 | 46  | 3 | 2002-2007 | 0.44 | M-v | 2 | MPC | 126730 2005 EN <sub>22</sub> |
| 2005 EU <sub>24</sub> | 15.9 | 0.15 | 20071027 | 161.77566 | 217.55407 | 22.83627  | 8.51497  | 0.2232952 | 2.7452628 | 48  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128868 2005 EU <sub>24</sub> |
| 2005 ED <sub>25</sub> | 16.7 | 0.15 | 20071027 | 288.85639 | 5.06628   | 137.36250 | 6.84707  | 0.1565288 | 2.3275171 | 51  | 2 | 2005-2007 | 0.48 | M-v | 3 | MPC | 128170 2005 ED <sub>25</sub> |
| 2005 EJ <sub>25</sub> | 16.8 | 0.15 | 20071027 | 262.65665 | 88.01758  | 80.39402  | 2.71826  | 0.1361139 | 2.3661027 | 51  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128868 2005 EJ <sub>25</sub> |
| 2005 EN <sub>25</sub> | 16.3 | 0.15 | 20071027 | 338.78764 | 287.77927 | 145.05587 | 6.67988  | 0.1054753 | 2.4104551 | 70  | 4 | 2001-2007 | 0.59 | M-v | 1 | MPC | 128868 2005 EN <sub>25</sub> |
| 2005 EU <sub>25</sub> | 15.5 | 0.15 | 20071027 | 61.54490  | 358.47441 | 344.77168 | 11.34661 | 0.0753835 | 2.5227397 | 60  | 4 | 2001-2007 | 0.52 | M-v | 3 | MPC | 128868 2005 EU <sub>25</sub> |
| 2005 EX <sub>25</sub> | 18.0 | 0.15 | 20071027 | 291.03616 | 149.27534 | 344.43184 | 2.35028  | 0.1416497 | 2.3382826 | 59  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128171 2005 EX <sub>25</sub> |
| 2005 EO <sub>26</sub> | 17.1 | 0.15 | 20071027 | 18.38194  | 65.60040  | 348.90480 | 6.29277  | 0.1692313 | 2.2386466 | 53  | 3 | 2000-2007 | 0.58 | M-v | 3 | MPC | 76760 2005 EO <sub>26</sub>  |
| 2005 EQ <sub>26</sub> | 17.3 | 0.15 | 20071027 | 258.83375 | 348.81408 | 185.86882 | 1.39050  | 0.1254674 | 2.3495706 | 63  | 4 | 1999-2007 | 0.41 | M-v | 2 | MPC | 128868 2005 EQ <sub>26</sub> |
| 2005 EZ <sub>26</sub> | 16.3 | 0.15 | 20071027 | 220.69680 | 154.95185 | 4.13733   | 4.73542  | 0.0589486 | 2.7199133 | 47  | 3 | 2003-2007 | 0.46 | M-v | 3 | MPC | 128868 2005 EZ <sub>26</sub> |
| 2005 EM <sub>27</sub> | 17.0 | 0.15 | 20071027 | 310.45852 | 319.21375 | 161.58739 | 5.30436  | 0.2635366 | 2.2539293 | 101 | 2 | 2005-2007 | 0.51 | M-v | 3 | MPC | 128171 2005 EM <sub>27</sub> |
| 2005 EK <sub>28</sub> | 16.5 | 0.15 | 20071027 | 314.58210 | 94.35868  | 41.71631  | 4.14568  | 0.1069749 | 2.2389187 | 79  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128868 2005 EK <sub>28</sub> |
| 2005 EB <sub>29</sub> | 16.5 | 0.15 | 20071027 | 242.18882 | 151.92682 | 46.22699  | 2.83929  | 0.1417395 | 2.3824208 | 85  | 4 | 1999-2007 | 0.44 | M-v | 3 | MPC | 128868 2005 EB <sub>29</sub> |
| 2005 EP <sub>29</sub> | 16.0 | 0.15 | 20071027 | 176.72527 | 170.40634 | 58.52931  | 5.13743  | 0.1930518 | 2.7367631 | 97  | 5 | 1996-2007 | 0.60 | M-v | 1 | MPC | 128868 2005 EP <sub>29</sub> |
| 2005 EQ <sub>29</sub> | 16.9 | 0.15 | 20071027 | 269.50083 | 296.61831 | 208.91790 | 2.79052  | 0.1858233 | 2.3234720 | 74  | 3 | 1993-2007 | 0.53 | M-v | 3 | MPC | 128868 2005 EQ <sub>29</sub> |
| 2005 EE <sub>30</sub> | 17.3 | 0.15 | 20071027 | 242.39720 | 356.92857 | 195.88442 | 2.94744  | 0.1140770 | 2.3492555 | 47  | 3 | 1999-2007 | 0.45 | M-v | 3 | MPC | 128171 2005 EE <sub>30</sub> |
| 2005 EY <sub>30</sub> | 16.8 | 0.15 | 20071027 | 9.71986   | 197.53457 | 210.79437 | 2.32045  | 0.1663974 | 2.3125564 | 49  | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128868 2005 EY <sub>30</sub> |
| 2005 EP <sub>32</sub> | 15.7 | 0.15 | 20071027 | 178.96979 | 177.57137 | 43.42183  | 5.86959  | 0.0724695 | 2.6831835 | 87  | 2 | 2005-2007 | 0.42 | M-v | 3 | MPC | 128868 2005 EP <sub>32</sub> |
| 2005 EQ <sub>32</sub> | 17.3 | 0.15 | 20071027 | 250.60388 | 55.15908  | 126.33826 | 1.28494  | 0.1491239 | 2.3976213 | 75  | 6 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128868 2005 EQ <sub>32</sub> |
| 2005 EW <sub>32</sub> | 17.2 | 0.15 | 20071027 | 251.49389 | 342.84674 | 200.16803 | 2.56155  | 0.1380856 | 2.3396691 | 78  | 4 | 1998-2007 | 0.59 | M-v | 2 | MPC | 128868 2005 EW <sub>32</sub> |
| 2005 ER <sub>33</sub> | 16.1 | 0.15 | 20071027 | 122.72533 | 339.98735 | 274.38631 | 3.19059  | 0.0479786 | 2.7597330 | 58  | 4 | 2002-2007 | 0.44 | M-v | 0 | MPC | 128171 2005 ER <sub>33</sub> |
| 2005 ET <sub>33</sub> | 17.1 | 0.15 | 20071027 | 294.95107 | 33.70445  | 122.51930 | 5.90849  | 0.0957294 | 2.2947751 | 56  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 104317 2005 ET <sub>33</sub> |
| 2005 EE <sub>36</sub> | 16.7 | 0.15 | 20071027 | 249.87010 | 263.41208 | 284.27753 | 5.91901  | 0.1448474 | 2.3418330 | 55  | 5 | 1999-2007 | 0.55 | M-v | 1 | MPC | 128869 2005 EE <sub>36</sub> |
| 2005 ER <sub>36</sub> | 16.5 | 0.15 | 20071027 | 180.78574 | 189.47963 | 54.65738  | 3.81217  | 0.1487062 | 2.4398442 | 47  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 128869 2005 ER <sub>36</sub> |
| 2005 ET <sub>37</sub> | 16.3 | 0.15 | 20071027 | 117.28729 | 27.83972  | 292.47044 | 6.32298  | 0.1291983 | 2.3402789 | 65  | 7 | 1994-2007 | 0.49 | M-v | 1 | MPC | 109124 2005 ET <sub>37</sub> |
| 2005 EB <sub>38</sub> | 15.8 | 0.15 | 20071027 | 354.03357 | 179.20618 | 203.62082 | 6.72879  | 0.0127099 | 2.7876450 | 82  | 6 | 1996-2007 | 0.58 | M-v | 1 | MPC | 128869 2005 EB <sub>38</sub> |
| 2005 ET <sub>38</sub> | 16.9 | 0.15 | 20071027 | 306.36191 | 24.56140  | 80.48868  | 2.21262  | 0.1462143 | 2.3712792 | 62  | 5 | 1994-2007 | 0.53 | M-v | 1 | MPC | 128172 2005 ET <sub>38</sub> |
| 2005 EG <sub>39</sub> | 17.2 | 0.15 | 20071027 | 294.27465 | 336.42798 | 162.21872 | 2.72464  | 0.0992140 | 2.2746619 | 48  | 5 | 2000-2007 | 0.57 | M-v | 1 | MPC | 76789 2005 EG <sub>39</sub>  |
| 2005 EQ <sub>40</sub> | 16.7 | 0.15 | 20071027 | 168.19743 | 143.62005 | 137.39964 | 3.39661  | 0.1564625 | 2.3694521 | 64  | 7 | 1994-2007 | 0.48 | M-v | 0 | MPC | 111082 2005 EQ <sub>40</sub> |
| 2005 ER <sub>40</sub> | 16.4 | 0.15 | 20071027 | 184.59173 | 129.40974 | 135.10154 | 3.06099  | 0.1897428 | 2.4078770 | 80  | 6 | 2001-2007 | 0.56 | M-v | 1 | MPC | 111082 2005 ER <sub>40</sub> |
| 2005 EO <sub>41</sub> | 16.6 | 0.15 | 20071027 | 300.03303 | 313.12194 | 174.10415 | 5.20570  | 0.1356224 | 2.3608747 | 116 | 5 | 1992-2007 | 0.44 | M-v | 0 | MPC | 128869 2005 EO <sub>41</sub> |
| 2005 EW <sub>43</sub> | 16.0 | 0.15 | 20071027 | 244.37135 | 305.21154 | 187.47090 | 3.58111  | 0.1170393 | 2.5803265 | 66  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128869 2005 EW <sub>43</sub> |
| 2005 ED <sub>45</sub> | 16.8 | 0.15 | 20071027 | 258.45563 | 354.10518 | 160.31432 | 3.24684  | 0.0591466 | 2.3933598 | 77  | 4 | 1994-2007 | 0.49 | M-v | 1 | MPC | 128869 2005 ED <sub>45</sub> |
| 2005 EK <sub>46</sub> | 16.9 | 0.15 | 20071027 | 236.05894 | 11.48279  | 191.05726 | 2.71505  | 0.1040835 | 2.3146899 | 71  | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 111082 2005 EK <sub>46</sub> |
| 2005 EZ <sub>46</sub> | 17.6 | 0.15 | 20071027 | 232.81897 | 87.28220  | 146.17958 | 3.24578  | 0.1209351 | 2.2547331 | 35  | 6 | 1993-2007 | 0.39 | M-v | 1 | MPC | 114732 2005 EZ <sub>46</sub> |
| 2005 EH <sub>47</sub> | 17.0 | 0.15 | 20071027 | 219.86612 | 259.90349 | 327.64995 | 2.11527  | 0.1280758 | 2.3515906 | 56  | 6 | 1999-2007 | 0.46 | M-v | 1 | MPC | 111082 2005 EH <sub>47</sub> |
| 2005 ET <sub>47</sub> | 15.4 | 0.15 | 20071027 | 78.28444  | 335.79243 | 348.30895 | 11.88359 | 0.1257286 | 2.5278430 | 47  | 5 | 1999-2007 | 0.56 | M-v | 3 | MPC | 76801 2005 ET <sub>47</sub>  |
| 2005 EF <sub>48</sub> | 17.1 | 0.15 | 20071027 | 352.93141 | 98.38775  | 335.84746 | 4.79148  | 0.1438130 | 2.2563610 | 37  | 4 | 1993-2007 | 0.40 | M-v | 2 | MPC | 76802 2005 EF <sub>48</sub>  |
| 2005 EQ <sub>49</sub> | 16.7 | 0.15 | 20071027 | 201.71534 | 7.94270   | 220.37933 | 2.51687  | 0.1353579 | 2.4378290 | 59  | 6 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128869 2005 EQ <sub>49</sub> |
| 2005 EB <sub>50</sub> | 17.1 | 0.15 | 20071027 | 235.06930 | 204.92834 | 24.86027  | 4.68958  | 0.1067687 | 2.2374239 | 47  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 128869 2005 EB <sub>50</sub> |
| 2005 EG <sub>50</sub> | 16.7 | 0.15 | 20071027 | 298.74531 | 2.12765   | 149.70143 | 4.35775  | 0.0635965 | 2.2313474 | 49  | 5 | 1995-2007 | 0.49 | M-v | 1 | MPC | 111082 2005 EG <sub>50</sub> |
| 2005 EM <sub>50</sub> | 17.0 | 0.15 | 20071027 | 318.61116 | 118.88341 | 348.50429 | 1.88909  | 0.1530303 | 2.3206204 | 58  | 4 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128869 2005 EM <sub>50</sub> |
| 2005 EU <sub>50</sub> | 16.8 | 0.15 | 20071027 | 211.65413 | 236.29316 | 339.07129 | 5.66942  | 0.0636789 | 2.4191866 | 83  | 6 | 1995-2007 | 0.59 | M-v | 1 | MPC | 111082 2005 EU <sub>50</sub> |
| 2005 EX <sub>50</sub> | 18.2 | 0.15 | 20071027 | 292.65130 | 240.85941 | 256.55716 | 1.67797  | 0.1539218 | 2.3112743 | 42  | 3 | 2003-2007 | 0.39 | M-v | 3 | MPC | 128869 2005 EX <sub>50</sub> |
| 2005 EN <sub>54</sub> | 16.9 | 0.15 | 20071027 | 146.99951 | 283.65895 | 345.55357 | 3.52666  | 0.2015409 | 2.6185332 | 38  | 3 | 2005-2007 | 0.29 | M-v | 3 | MPC | 128869 2005 EN <sub>54</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2005 EX <sub>54</sub> | 16.8 | 0.15 | 20071027 | 105.18451 | 157.92490 | 170.93070 | 2.32415  | 0.1888786 | 2.3969049 | 61  | 6 | 1999-2007 | 0.38 | M-v | 1 | MPC | 111082 2005 EX <sub>54</sub> |
| 2005 EJ <sub>58</sub> | 17.7 | 0.15 | 20071027 | 303.85427 | 260.38224 | 222.66520 | 1.76091  | 0.1697223 | 2.3215210 | 42  | 2 | 2005-2007 | 0.58 | M-v | 4 | MPC | 128173 2005 EJ <sub>58</sub> |
| 2005 EQ <sub>58</sub> | 17.3 | 0.15 | 20071027 | 239.09945 | 9.40493   | 193.30660 | 1.97576  | 0.1544208 | 2.3689035 | 70  | 5 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128869 2005 EQ <sub>58</sub> |
| 2005 ES <sub>58</sub> | 16.9 | 0.15 | 20071027 | 257.05467 | 322.98962 | 213.51595 | 0.91338  | 0.1151198 | 2.3766296 | 66  | 4 | 1999-2007 | 0.45 | M-v | 3 | MPC | 128869 2005 ES <sub>58</sub> |
| 2005 EU <sub>58</sub> | 16.7 | 0.15 | 20071027 | 217.81216 | 49.60092  | 174.61322 | 4.52856  | 0.2231017 | 2.4345673 | 67  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 114733 2005 EU <sub>58</sub> |
| 2005 EV <sub>58</sub> | 15.5 | 0.15 | 20071027 | 112.93213 | 66.42510  | 178.39320 | 4.88016  | 0.0901328 | 3.1347167 | 47  | 3 | 2000-2007 | 0.33 | M-v | 2 | MPC | 128869 2005 EV <sub>58</sub> |
| 2005 EO <sub>60</sub> | 17.2 | 0.15 | 20071027 | 328.74440 | 158.91207 | 310.17973 | 3.27340  | 0.1094505 | 2.2693863 | 48  | 5 | 1993-2007 | 0.52 | M-v | 0 | MPC | 128869 2005 EO <sub>60</sub> |
| 2005 ES <sub>60</sub> | 17.2 | 0.15 | 20071027 | 250.62309 | 232.75998 | 309.29126 | 1.93981  | 0.1294309 | 2.3805303 | 67  | 6 | 1999-2007 | 0.49 | M-v | 1 | MPC | 128869 2005 ES <sub>60</sub> |
| 2005 EU <sub>60</sub> | 17.3 | 0.15 | 20071027 | 291.39074 | 330.95281 | 196.38245 | 3.10125  | 0.1338929 | 2.2246068 | 64  | 5 | 2000-2007 | 0.50 | M-v | 1 | MPC | 111083 2005 EU <sub>60</sub> |
| 2005 EG <sub>61</sub> | 16.7 | 0.15 | 20071027 | 338.51167 | 240.87670 | 194.81696 | 9.63428  | 0.1733909 | 2.3466764 | 56  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128174 2005 EG <sub>61</sub> |
| 2005 EU <sub>61</sub> | 16.6 | 0.15 | 20071027 | 303.40980 | 350.84606 | 136.52022 | 4.11452  | 0.1233441 | 2.2708897 | 51  | 3 | 2004-2007 | 0.50 | M-v | 3 | MPC | 128174 2005 EU <sub>61</sub> |
| 2005 EF <sub>62</sub> | 17.9 | 0.15 | 20071027 | 332.23236 | 35.83346  | 75.83666  | 2.65953  | 0.1496511 | 2.1842160 | 31  | 3 | 2002-2007 | 0.62 | M-v | 4 | MPC | 76819 2005 EF <sub>62</sub>  |
| 2005 EK <sub>63</sub> | 16.9 | 0.15 | 20071027 | 297.78884 | 59.06821  | 40.99211  | 3.14667  | 0.1566848 | 2.4164253 | 48  | 6 | 1992-2007 | 0.50 | M-v | 1 | MPC | 128870 2005 EK <sub>63</sub> |
| 2005 EW <sub>64</sub> | 17.2 | 0.15 | 20071027 | 267.79987 | 107.76086 | 44.53105  | 1.86119  | 0.1322330 | 2.3910853 | 64  | 3 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128870 2005 EW <sub>64</sub> |
| 2005 ED <sub>66</sub> | 15.9 | 0.15 | 20071027 | 171.42513 | 166.03317 | 79.31798  | 12.42968 | 0.1357169 | 2.5692103 | 39  | 7 | 1997-2007 | 0.58 | M-v | 1 | MPC | 104318 2005 ED <sub>66</sub> |
| 2005 ES <sub>67</sub> | 15.6 | 0.15 | 20071027 | 8.41484   | 28.01088  | 1.97769   | 13.44936 | 0.0421711 | 2.6257792 | 52  | 3 | 2001-2007 | 0.60 | M-v | 3 | MPC | 128175 2005 ES <sub>67</sub> |
| 2005 EE <sub>68</sub> | 16.8 | 0.15 | 20071027 | 293.63988 | 208.61648 | 305.12166 | 5.55113  | 0.0841035 | 2.2719536 | 40  | 4 | 2003-2007 | 0.50 | M-v | 1 | MPC | 104318 2005 EE <sub>68</sub> |
| 2005 ES <sub>68</sub> | 16.7 | 0.15 | 20071027 | 258.93417 | 240.17025 | 300.53037 | 4.08710  | 0.0984087 | 2.3477829 | 48  | 5 | 1994-2007 | 0.48 | M-v | 1 | MPC | 111083 2005 ES <sub>68</sub> |
| 2005 EP <sub>69</sub> | 15.4 | 0.15 | 20071027 | 339.09422 | 61.97388  | 336.89463 | 12.22859 | 0.1591252 | 2.6688830 | 90  | 5 | 1994-2007 | 0.54 | M-v | 1 | MPC | 128870 2005 EP <sub>69</sub> |
| 2005 EN <sub>71</sub> | 16.9 | 0.15 | 20071027 | 224.41570 | 108.83741 | 94.40561  | 5.60509  | 0.0958326 | 2.3404651 | 50  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 128870 2005 EN <sub>71</sub> |
| 2005 EQ <sub>71</sub> | 16.8 | 0.15 | 20071027 | 283.48138 | 61.82794  | 72.93500  | 5.48116  | 0.1201473 | 2.3295197 | 48  | 4 | 2000-2007 | 0.64 | M-v | 1 | MPC | 128870 2005 EQ <sub>71</sub> |
| 2005 ES <sub>71</sub> | 16.3 | 0.15 | 20071027 | 168.92625 | 161.41747 | 95.36214  | 6.75158  | 0.0960339 | 2.3831440 | 44  | 6 | 1998-2007 | 0.69 | M-v | 1 | MPC | 104318 2005 ES <sub>71</sub> |
| 2005 EA <sub>73</sub> | 17.4 | 0.15 | 20071027 | 247.61519 | 125.46523 | 65.79176  | 4.21836  | 0.0649786 | 2.2912795 | 30  | 5 | 2002-2007 | 0.59 | M-v | 1 | MPC | 104318 2005 EA <sub>73</sub> |
| 2005 EQ <sub>73</sub> | 16.7 | 0.15 | 20071027 | 179.68153 | 142.90340 | 114.52923 | 3.26712  | 0.0869444 | 2.3737726 | 45  | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 122787 2005 EQ <sub>73</sub> |
| 2005 EF <sub>74</sub> | 16.5 | 0.15 | 20071027 | 233.25990 | 109.72698 | 40.96358  | 2.40291  | 0.0262887 | 2.6718458 | 58  | 4 | 1994-2007 | 0.44 | M-v | 1 | MPC | 128870 2005 EF <sub>74</sub> |
| 2005 EG <sub>74</sub> | 17.0 | 0.15 | 20071027 | 347.71341 | 40.63347  | 20.85418  | 3.22519  | 0.1842012 | 2.3540546 | 107 | 2 | 2005-2007 | 0.49 | M-v | 3 | MPC | 128175 2005 EG <sub>74</sub> |
| 2005 ES <sub>74</sub> | 16.8 | 0.15 | 20071027 | 227.46319 | 39.69144  | 147.75733 | 3.70345  | 0.0850147 | 2.5126208 | 53  | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 128870 2005 ES <sub>74</sub> |
| 2005 ES <sub>76</sub> | 16.4 | 0.15 | 20071027 | 93.53494  | 111.31295 | 191.68243 | 2.89153  | 0.1047841 | 2.6891549 | 53  | 4 | 1993-2007 | 0.41 | M-v | 1 | MPC | 128870 2005 ES <sub>76</sub> |
| 2005 ED <sub>77</sub> | 16.8 | 0.15 | 20071027 | 160.82536 | 274.76652 | 342.84004 | 4.93238  | 0.1543910 | 2.5814492 | 40  | 4 | 2002-2007 | 0.29 | M-v | 0 | MPC | 111083 2005 ED <sub>77</sub> |
| 2005 EO <sub>77</sub> | 17.1 | 0.15 | 20071027 | 327.55527 | 348.51604 | 91.99858  | 2.40232  | 0.1642254 | 2.3555144 | 67  | 4 | 2000-2007 | 0.49 | M-v | 1 | MPC | 128870 2005 EO <sub>77</sub> |
| 2005 EG <sub>79</sub> | 16.7 | 0.15 | 20071027 | 291.34030 | 21.34055  | 115.14770 | 6.05980  | 0.1683049 | 2.3403774 | 52  | 5 | 1994-2007 | 0.67 | M-v | 1 | MPC | 128870 2005 EG <sub>79</sub> |
| 2005 EQ <sub>79</sub> | 16.6 | 0.15 | 20071027 | 269.17961 | 45.24881  | 107.32156 | 8.26360  | 0.0974958 | 2.4363598 | 63  | 5 | 1994-2007 | 0.55 | M-v | 1 | MPC | 128870 2005 EQ <sub>79</sub> |
| 2005 EE <sub>82</sub> | 16.9 | 0.15 | 20071027 | 90.23144  | 80.72317  | 227.76237 | 1.03816  | 0.0936376 | 2.6056811 | 38  | 5 | 1998-2007 | 0.31 | M-v | 1 | MPC | 128870 2005 EE <sub>82</sub> |
| 2005 EA <sub>85</sub> | 16.7 | 0.15 | 20071027 | 278.48227 | 102.24139 | 73.36259  | 6.70780  | 0.1555198 | 2.2546763 | 77  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 76847 2005 EA <sub>85</sub>  |
| 2005 EJ <sub>85</sub> | 16.9 | 0.15 | 20071027 | 253.91317 | 39.25325  | 131.11152 | 3.22652  | 0.1244199 | 2.3822097 | 58  | 6 | 1996-2007 | 0.45 | M-v | 1 | MPC | 128871 2005 EJ <sub>85</sub> |
| 2005 EV <sub>85</sub> | 16.6 | 0.15 | 20071027 | 282.20343 | 353.50366 | 151.86215 | 6.69495  | 0.0592284 | 2.3532430 | 64  | 6 | 1998-2007 | 0.59 | M-v | 1 | MPC | 128871 2005 EV <sub>85</sub> |
| 2005 EJ <sub>86</sub> | 17.0 | 0.15 | 20071027 | 247.00457 | 61.96281  | 130.65481 | 3.59236  | 0.1545660 | 2.3756562 | 43  | 5 | 1994-2007 | 0.56 | M-v | 1 | MPC | 128871 2005 EJ <sub>86</sub> |
| 2005 EN <sub>86</sub> | 17.2 | 0.15 | 20071027 | 218.64210 | 162.60047 | 82.02480  | 2.75209  | 0.1734442 | 2.3129525 | 64  | 6 | 1998-2007 | 0.59 | M-v | 1 | MPC | 114733 2005 EN <sub>86</sub> |
| 2005 EU <sub>87</sub> | 17.0 | 0.15 | 20071027 | 291.74361 | 146.99466 | 358.77743 | 5.03669  | 0.1637432 | 2.3266609 | 43  | 3 | 2003-2007 | 0.61 | M-v | 3 | MPC | 76852 2005 EU <sub>87</sub>  |
| 2005 EV <sub>87</sub> | 17.1 | 0.15 | 20071027 | 265.72507 | 179.63074 | 352.70005 | 2.86343  | 0.0704724 | 2.3470111 | 40  | 3 | 2003-2007 | 0.37 | M-v | 3 | MPC | 87654 2005 EV <sub>87</sub>  |
| 2005 EO <sub>88</sub> | 16.0 | 0.15 | 20071027 | 30.30781  | 171.79202 | 188.82351 | 10.00735 | 0.1741999 | 2.6099979 | 69  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128871 2005 EO <sub>88</sub> |
| 2005 EW <sub>88</sub> | 17.0 | 0.15 | 20071027 | 8.15852   | 113.10330 | 321.23534 | 4.90163  | 0.1192111 | 2.2277094 | 41  | 4 | 1993-2007 | 0.43 | M-v | 1 | MPC | 76853 2005 EW <sub>88</sub>  |
| 2005 EW <sub>90</sub> | 16.8 | 0.15 | 20071027 | 277.33384 | 284.77774 | 240.37377 | 2.27432  | 0.0897009 | 2.3250608 | 64  | 7 | 1994-2007 | 0.56 | M-v | 1 | MPC | 111083 2005 EW <sub>90</sub> |
| 2005 EY <sub>90</sub> | 17.1 | 0.15 | 20071027 | 303.38877 | 151.14525 | 333.45432 | 6.33880  | 0.0705837 | 2.3515295 | 34  | 3 | 2003-2007 | 0.57 | M-v | 3 | MPC | 76856 2005 EY <sub>90</sub>  |
| 2005 EE <sub>92</sub> | 17.1 | 0.15 | 20071027 | 225.33443 | 82.43599  | 146.68123 | 3.58457  | 0.1058975 | 2.3273772 | 45  | 8 | 1996-2007 | 0.50 | M-v | 1 | MPC | 124462 2005 EE <sub>92</sub> |
| 2005 ED <sub>93</sub> | 15.1 | 0.15 | 20071027 | 85.60541  | 265.19255 | 42.11424  | 14.96945 | 0.1185476 | 2.6163374 | 149 | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128871 2005 ED <sub>93</sub> |
| 2005 EQ <sub>94</sub> | 17.3 | 0.15 | 20071027 | 227.98627 | 2.86695   | 193.38741 | 0.94848  | 0.1245142 | 2.4478649 | 68  | 5 | 1999-2007 | 0.55 | M-v | 1 | MPC | 128871 2005 EQ <sub>94</sub> |
| 2005 EE <sub>95</sub> | 17.5 | 0.15 | 20071027 | 299.87979 | 284.49961 | 199.25775 | 6.09407  | 0.1605464 | 2.3537635 | 53  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128871 2005 EE <sub>95</sub> |
| 2005 EJ <sub>96</sub> | 17.2 | 0.15 | 20071027 | 252.75708 | 301.63901 | 225.63142 | 5.10556  | 0.1685788 | 2.3569929 | 55  | 2 | 2005-2007 | 0.54 | M-v | 3 | MPC | 128177 2005 EJ <sub>96</sub> |
| 2005 EW <sub>97</sub> | 17.3 | 0.15 | 20071027 | 209.65428 | 321.94811 | 258.57831 | 2.59389  | 0.1504876 | 2.4030635 | 42  | 4 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128871 2005 EW <sub>97</sub> |
| 2005 ED <sub>98</sub> | 16.8 | 0.15 | 20071027 | 267.19223 | 260.33066 | 248.27060 | 5.68091  | 0.0755295 | 2.3870871 | 37  | 4 | 1996-2007 | 0.49 | M-v | 1 | MPC | 128871 2005 ED <sub>98</sub> |
| 2005 EZ <sub>98</sub> | 16.6 | 0.15 | 20071027 | 329.87261 | 135.11418 | 312.49377 | 6.97189  | 0.0798779 | 2.3454736 | 48  | 3 | 2003-2007 | 0.51 | M-v | 2 | MPC | 128871 2005 EZ <sub>98</sub> |
| 2005 ED <sub>99</sub> | 17.4 | 0.15 | 20071027 | 320.60300 | 199.41587 | 251.02491 | 2.26527  | 0.0814029 | 2.3937836 | 45  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128871 2005 ED <sub>99</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 EZ <sub>99</sub>  | 16.4 | 0.15 | 20071027 | 147.62544 | 348.36034 | 286.21627 | 5.71694  | 0.2040572 | 2.5487128 | 62  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 111084 2005 EZ <sub>99</sub>  |
| 2005 EX <sub>100</sub> | 16.5 | 0.15 | 20071027 | 282.48332 | 82.61140  | 30.01710  | 9.42605  | 0.1564219 | 2.5425045 | 55  | 5 | 1997-2007 | 0.47 | M-v | 1 | MPC | 128871 2005 EX <sub>100</sub> |
| 2005 EM <sub>101</sub> | 16.4 | 0.15 | 20071027 | 216.91813 | 141.01043 | 84.72425  | 10.39319 | 0.1554066 | 2.4445297 | 58  | 4 | 2003-2007 | 0.61 | M-v | 1 | MPC | 111084 2005 EM <sub>101</sub> |
| 2005 ES <sub>101</sub> | 15.3 | 0.15 | 20071027 | 199.05809 | 203.44712 | 5.94084   | 14.37632 | 0.0209711 | 2.6626285 | 54  | 4 | 2002-2007 | 0.56 | M-v | 1 | MPC | 128871 2005 ES <sub>101</sub> |
| 2005 EO <sub>103</sub> | 17.2 | 0.15 | 20071027 | 326.59062 | 92.65919  | 357.72436 | 6.87894  | 0.1566723 | 2.3452404 | 72  | 3 | 2003-2007 | 0.36 | M-v | 2 | MPC | 128178 2005 EO <sub>103</sub> |
| 2005 EH <sub>105</sub> | 16.9 | 0.15 | 20071027 | 14.90246  | 256.82088 | 131.61422 | 5.91986  | 0.1102898 | 2.2825105 | 43  | 3 | 2003-2007 | 0.72 | M-v | 3 | MPC | 128178 2005 EH <sub>105</sub> |
| 2005 EC <sub>112</sub> | 16.9 | 0.15 | 20071027 | 246.66553 | 172.33922 | 26.48442  | 4.59788  | 0.0855628 | 2.3325648 | 59  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 104319 2005 EC <sub>112</sub> |
| 2005 EZ <sub>114</sub> | 17.2 | 0.15 | 20071027 | 187.73448 | 113.88468 | 150.62081 | 2.98950  | 0.2620477 | 2.4331755 | 45  | 4 | 2002-2007 | 0.38 | M-v | 1 | MPC | 111084 2005 EZ <sub>114</sub> |
| 2005 EV <sub>117</sub> | 17.3 | 0.15 | 20071027 | 336.16023 | 308.01920 | 150.34331 | 3.08211  | 0.1176341 | 2.3145076 | 44  | 7 | 1998-2007 | 0.53 | M-v | 1 | MPC | 104319 2005 EV <sub>117</sub> |
| 2005 EQ <sub>118</sub> | 16.1 | 0.15 | 20071027 | 270.09323 | 271.96147 | 278.05348 | 4.27564  | 0.2792331 | 2.2497437 | 73  | 5 | 1993-2007 | 0.51 | M-v | 1 | MPC | 87655 2005 EQ <sub>118</sub>  |
| 2005 ES <sub>118</sub> | 14.4 | 0.15 | 20071027 | 193.66364 | 274.49544 | 243.40184 | 8.82225  | 0.0405424 | 3.0173428 | 65  | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 126033 2005 ES <sub>118</sub> |
| 2005 EE <sub>119</sub> | 16.3 | 0.15 | 20071027 | 277.69357 | 263.16983 | 215.57913 | 7.20404  | 0.1634247 | 2.5250166 | 55  | 2 | 2005-2007 | 0.41 | M-v | 3 | MPC | 128871 2005 EE <sub>119</sub> |
| 2005 EW <sub>119</sub> | 17.3 | 0.15 | 20071027 | 320.42523 | 240.83408 | 208.70006 | 1.36338  | 0.1721785 | 2.3268220 | 71  | 2 | 2005-2007 | 0.50 | M-v | 4 | MPC | 128179 2005 EW <sub>119</sub> |
| 2005 EF <sub>120</sub> | 17.3 | 0.15 | 20071027 | 352.19297 | 207.95920 | 211.35607 | 4.67579  | 0.1691150 | 2.3706593 | 59  | 2 | 2005-2007 | 0.49 | M-v | 3 | MPC | 128180 2005 EF <sub>120</sub> |
| 2005 EX <sub>121</sub> | 16.9 | 0.15 | 20071027 | 323.46911 | 176.90701 | 262.75455 | 1.25701  | 0.1630660 | 2.4081813 | 96  | 4 | 2001-2007 | 0.42 | M-v | 0 | MPC | 128872 2005 EX <sub>121</sub> |
| 2005 EC <sub>122</sub> | 16.3 | 0.15 | 20071027 | 14.70023  | 27.21006  | 317.09311 | 2.93501  | 0.1045483 | 2.7968234 | 57  | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 126734 2005 EC <sub>122</sub> |
| 2005 EA <sub>124</sub> | 16.8 | 0.15 | 20071027 | 209.00613 | 155.70081 | 46.95673  | 2.79895  | 0.0759556 | 2.5626083 | 50  | 3 | 2003-2007 | 0.40 | M-v | 3 | MPC | 128180 2005 EA <sub>124</sub> |
| 2005 ED <sub>124</sub> | 16.2 | 0.15 | 20071027 | 147.36701 | 244.52552 | 35.89101  | 5.21331  | 0.1529894 | 2.5607105 | 57  | 5 | 1998-2007 | 0.48 | M-v | 0 | MPC | 111084 2005 ED <sub>124</sub> |
| 2005 EB <sub>125</sub> | 16.6 | 0.15 | 20071027 | 314.78426 | 323.19489 | 169.79964 | 2.42154  | 0.0283842 | 2.3282845 | 64  | 6 | 1999-2007 | 0.48 | M-v | 1 | MPC | 111084 2005 EB <sub>125</sub> |
| 2005 EP <sub>125</sub> | 16.5 | 0.15 | 20071027 | 31.85343  | 200.41365 | 180.94392 | 3.24807  | 0.0615722 | 2.5747505 | 42  | 4 | 2001-2007 | 0.52 | M-v | 1 | MPC | 128872 2005 EP <sub>125</sub> |
| 2005 EO <sub>126</sub> | 15.9 | 0.15 | 20071027 | 271.70446 | 262.30271 | 190.45025 | 10.02930 | 0.0205983 | 3.1104234 | 43  | 4 | 2000-2007 | 0.47 | M-v | 0 | MPC | 124463 2005 EO <sub>126</sub> |
| 2005 EU <sub>128</sub> | 17.0 | 0.15 | 20071027 | 326.14843 | 303.34542 | 149.40081 | 5.95373  | 0.1191477 | 2.3121813 | 43  | 4 | 1996-2007 | 0.43 | M-v | 1 | MPC | 128872 2005 EU <sub>128</sub> |
| 2005 EW <sub>128</sub> | 17.7 | 0.15 | 20071027 | 312.83778 | 163.03867 | 278.79450 | 1.51194  | 0.1263797 | 2.5192067 | 40  | 5 | 1995-2007 | 0.51 | M-v | 2 | MPC | 128872 2005 EW <sub>128</sub> |
| 2005 EY <sub>128</sub> | 17.3 | 0.15 | 20071027 | 5.80783   | 125.96870 | 294.11526 | 1.45351  | 0.1499308 | 2.3107707 | 30  | 4 | 2002-2007 | 0.46 | M-v | 2 | MPC | 87655 2005 EY <sub>128</sub>  |
| 2005 EG <sub>129</sub> | 17.5 | 0.15 | 20071027 | 318.29402 | 90.83804  | 38.96960  | 1.26850  | 0.0682927 | 2.2239103 | 42  | 4 | 2002-2007 | 0.39 | M-v | 2 | MPC | 128872 2005 EG <sub>129</sub> |
| 2005 EG <sub>130</sub> | 16.6 | 0.15 | 20071027 | 54.14086  | 49.07513  | 304.84294 | 5.84534  | 0.1386833 | 2.2900853 | 54  | 5 | 1996-2007 | 0.53 | M-v | 1 | MPC | 87655 2005 EG <sub>130</sub>  |
| 2005 EY <sub>130</sub> | 17.2 | 0.15 | 20071027 | 4.97178   | 169.21333 | 217.72698 | 1.25346  | 0.0212568 | 2.4861520 | 48  | 3 | 2003-2007 | 0.32 | M-v | 3 | MPC | 128872 2005 EY <sub>130</sub> |
| 2005 EX <sub>131</sub> | 16.3 | 0.15 | 20071027 | 320.26598 | 24.50531  | 62.26540  | 7.25070  | 0.0922688 | 2.3644109 | 58  | 3 | 2002-2007 | 0.56 | M-v | 4 | MPC | 128180 2005 EX <sub>131</sub> |
| 2005 EU <sub>135</sub> | 17.1 | 0.15 | 20071027 | 212.75398 | 82.29609  | 142.36606 | 3.03802  | 0.1642652 | 2.4445373 | 48  | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 111085 2005 EU <sub>135</sub> |
| 2005 EJ <sub>136</sub> | 18.0 | 0.15 | 20071027 | 311.44859 | 265.08070 | 212.84918 | 5.87349  | 0.1686670 | 2.3100751 | 46  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 109134 2005 EJ <sub>136</sub> |
| 2005 ER <sub>136</sub> | 16.5 | 0.15 | 20071027 | 215.54812 | 139.18889 | 54.61370  | 5.60326  | 0.0352222 | 2.5495015 | 62  | 4 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128872 2005 ER <sub>136</sub> |
| 2005 EY <sub>137</sub> | 16.2 | 0.15 | 20071027 | 162.38453 | 219.56631 | 49.39166  | 2.09841  | 0.0155527 | 2.5206063 | 41  | 5 | 2002-2007 | 0.44 | M-v | 1 | MPC | 104320 2005 EY <sub>137</sub> |
| 2005 EL <sub>139</sub> | 16.2 | 0.15 | 20071027 | 170.82189 | 183.19314 | 52.14605  | 3.38369  | 0.0297295 | 2.7371186 | 65  | 4 | 1998-2007 | 0.42 | M-v | 1 | MPC | 128872 2005 EL <sub>139</sub> |
| 2005 EA <sub>141</sub> | 16.9 | 0.15 | 20071027 | 358.01902 | 168.10263 | 255.71048 | 6.16801  | 0.0775934 | 2.2812141 | 49  | 5 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128872 2005 EA <sub>141</sub> |
| 2005 EK <sub>141</sub> | 17.1 | 0.15 | 20071027 | 157.04517 | 121.96153 | 141.08358 | 3.16201  | 0.1645857 | 2.3951083 | 48  | 6 | 1998-2007 | 0.49 | M-v | 1 | MPC | 111085 2005 EK <sub>141</sub> |
| 2005 EC <sub>142</sub> | 16.7 | 0.15 | 20071027 | 219.39580 | 321.75259 | 247.64504 | 4.41808  | 0.0229750 | 2.3624950 | 55  | 4 | 2003-2007 | 0.46 | M-v | 1 | MPC | 128872 2005 EC <sub>142</sub> |
| 2005 EV <sub>142</sub> | 16.4 | 0.15 | 20071027 | 226.36282 | 129.15130 | 59.71954  | 3.43421  | 0.0831880 | 2.5791530 | 82  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128872 2005 EV <sub>142</sub> |
| 2005 ED <sub>143</sub> | 17.1 | 0.15 | 20071027 | 250.75505 | 141.74222 | 44.02958  | 2.75455  | 0.1771974 | 2.4106090 | 70  | 5 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128872 2005 ED <sub>143</sub> |
| 2005 EV <sub>143</sub> | 16.1 | 0.15 | 20071027 | 81.67493  | 262.01219 | 27.67481  | 2.10498  | 0.0533361 | 2.9215942 | 52  | 4 | 2000-2007 | 0.35 | M-v | 2 | MPC | 128872 2005 EV <sub>143</sub> |
| 2005 EU <sub>144</sub> | 15.8 | 0.15 | 20071027 | 66.53968  | 270.84922 | 39.77823  | 2.56011  | 0.0522490 | 2.8673474 | 55  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 128181 2005 EU <sub>144</sub> |
| 2005 EV <sub>146</sub> | 15.9 | 0.15 | 20071027 | 63.75695  | 340.84661 | 16.66997  | 7.59207  | 0.1100323 | 2.5422917 | 46  | 5 | 2002-2007 | 0.47 | M-v | 1 | MPC | 128873 2005 EV <sub>146</sub> |
| 2005 EH <sub>148</sub> | 16.8 | 0.15 | 20071027 | 127.46521 | 159.90779 | 129.19587 | 3.56926  | 0.1567559 | 2.7108766 | 42  | 6 | 1996-2007 | 0.32 | M-v | 0 | MPC | 104320 2005 EH <sub>148</sub> |
| 2005 EL <sub>148</sub> | 16.6 | 0.15 | 20071027 | 112.10715 | 214.41184 | 143.94321 | 5.44337  | 0.2440750 | 2.2581243 | 127 | 4 | 2003-2007 | 0.48 | M-v | 2 | MPC | 112886 2005 EL <sub>148</sub> |
| 2005 EN <sub>149</sub> | 16.6 | 0.15 | 20071027 | 73.58264  | 288.21903 | 40.34876  | 7.02806  | 0.0576232 | 2.7425048 | 38  | 3 | 2003-2007 | 0.30 | M-v | 2 | MPC | 128182 2005 EN <sub>149</sub> |
| 2005 EG <sub>150</sub> | 16.3 | 0.15 | 20071027 | 299.08152 | 108.48936 | 48.21368  | 5.41308  | 0.0686989 | 2.2921352 | 42  | 3 | 2003-2007 | 0.52 | M-v | 3 | MPC | 76916 2005 EG <sub>150</sub>  |
| 2005 EG <sub>151</sub> | 17.0 | 0.15 | 20071027 | 265.89753 | 101.94632 | 64.25121  | 3.22381  | 0.1328804 | 2.4325889 | 53  | 4 | 1999-2007 | 0.54 | M-v | 1 | MPC | 128873 2005 EG <sub>151</sub> |
| 2005 ES <sub>151</sub> | 16.2 | 0.15 | 20071027 | 46.46915  | 258.98341 | 105.63543 | 3.44741  | 0.0793674 | 2.6384596 | 59  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128873 2005 ES <sub>151</sub> |
| 2005 ET <sub>151</sub> | 16.9 | 0.15 | 20071027 | 342.74485 | 22.15332  | 60.32899  | 3.25339  | 0.1879300 | 2.3736671 | 66  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128873 2005 ET <sub>151</sub> |
| 2005 EX <sub>151</sub> | 15.8 | 0.15 | 20071027 | 87.66043  | 282.89449 | 55.75014  | 4.05474  | 0.0785508 | 2.5538394 | 56  | 6 | 1998-2007 | 0.51 | M-v | 0 | MPC | 122788 2005 EX <sub>151</sub> |
| 2005 EA <sub>153</sub> | 17.3 | 0.15 | 20071027 | 349.88788 | 208.75971 | 232.10438 | 0.47659  | 0.0434816 | 2.3434422 | 53  | 5 | 1996-2007 | 0.43 | M-v | 0 | MPC | 76918 2005 EA <sub>153</sub>  |
| 2005 EQ <sub>153</sub> | 15.7 | 0.15 | 20071027 | 178.98501 | 159.86659 | 76.82881  | 18.55919 | 0.1404238 | 2.5750657 | 43  | 4 | 2003-2007 | 0.55 | M-v | 1 | MPC | 128873 2005 EQ <sub>153</sub> |
| 2005 EF <sub>154</sub> | 16.2 | 0.15 | 20071027 | 151.79265 | 298.74702 | 350.71263 | 5.30830  | 0.1155880 | 2.4091972 | 87  | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 111085 2005 EF <sub>154</sub> |
| 2005 EP <sub>154</sub> | 15.4 | 0.15 | 20071027 | 342.16544 | 57.69889  | 11.78736  | 14.85900 | 0.0725102 | 2.5635454 | 32  | 3 | 2005-2007 | 0.46 | M-v | 3 | MPC | 114148 2005 EP <sub>154</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 EQ <sub>154</sub> | 17.0 | 0.15 | 20071027 | 337.18548 | 75.50418  | 35.62938  | 2.23200  | 0.1519248 | 2.2602541 | 39  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPC | 76920 2005 EQ <sub>154</sub>  |
| 2005 ED <sub>155</sub> | 15.8 | 0.15 | 20071027 | 347.50760 | 25.61135  | 14.50292  | 4.89127  | 0.0723755 | 2.7928872 | 64  | 3 | 2002-2007 | 0.42 | M-v | 3 | MPC | 128873 2005 ED <sub>155</sub> |
| 2005 EL <sub>155</sub> | 17.3 | 0.15 | 20071027 | 349.12501 | 247.77686 | 180.62634 | 1.44628  | 0.1545249 | 2.4610871 | 55  | 6 | 1995-2007 | 0.43 | M-v | 2 | MPC | 128873 2005 EL <sub>155</sub> |
| 2005 ER <sub>155</sub> | 17.1 | 0.15 | 20071027 | 335.55981 | 47.00819  | 34.79922  | 1.77132  | 0.1656023 | 2.4424086 | 80  | 5 | 1997-2007 | 0.46 | M-v | 1 | MPC | 128873 2005 ER <sub>155</sub> |
| 2005 EW <sub>155</sub> | 15.3 | 0.15 | 20071027 | 100.76477 | 262.42048 | 16.13304  | 10.31895 | 0.0818081 | 3.0347358 | 76  | 5 | 1991-2007 | 0.48 | M-v | 0 | MPC | 128873 2005 EW <sub>155</sub> |
| 2005 EQ <sub>156</sub> | 16.9 | 0.15 | 20071027 | 272.87492 | 78.20859  | 68.79061  | 5.85407  | 0.1608336 | 2.3260402 | 56  | 3 | 2003-2007 | 0.43 | M-v | 3 | MPC | 128873 2005 EQ <sub>156</sub> |
| 2005 EM <sub>157</sub> | 17.3 | 0.15 | 20071027 | 247.56962 | 290.38763 | 257.89886 | 0.48447  | 0.1212843 | 2.3805765 | 37  | 2 | 2005-2007 | 0.38 | M-v | 3 | MPC | 128183 2005 EM <sub>157</sub> |
| 2005 EU <sub>157</sub> | 16.8 | 0.15 | 20071027 | 351.39454 | 250.53903 | 189.23210 | 2.36562  | 0.1448544 | 2.2965683 | 26  | 3 | 2003-2007 | 0.37 | M-v | 3 | MPC | 76922 2005 EU <sub>157</sub>  |
| 2005 EX <sub>159</sub> | 16.9 | 0.15 | 20071027 | 290.19015 | 294.36285 | 189.95691 | 0.86399  | 0.1323840 | 2.4459526 | 81  | 5 | 1995-2007 | 0.42 | M-v | 1 | MPC | 128873 2005 EX <sub>159</sub> |
| 2005 EG <sub>160</sub> | 17.4 | 0.15 | 20071027 | 348.28659 | 321.82867 | 113.11175 | 1.55066  | 0.1887039 | 2.3969558 | 68  | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 76924 2005 EG <sub>160</sub>  |
| 2005 EV <sub>161</sub> | 17.8 | 0.15 | 20071027 | 290.56973 | 44.29659  | 118.28795 | 1.83535  | 0.1466336 | 2.2942049 | 40  | 5 | 1998-2007 | 0.44 | M-v | 1 | MPC | 104320 2005 EV <sub>161</sub> |
| 2005 EB <sub>163</sub> | 16.2 | 0.15 | 20071027 | 75.67131  | 256.30183 | 60.79691  | 1.93352  | 0.0618006 | 2.7409254 | 63  | 5 | 1998-2007 | 0.46 | M-v | 0 | MPC | 128873 2005 EB <sub>163</sub> |
| 2005 EG <sub>163</sub> | 16.3 | 0.15 | 20071027 | 241.21738 | 351.76848 | 172.91352 | 14.45361 | 0.0539415 | 2.5807088 | 62  | 5 | 2001-2007 | 0.60 | M-v | 1 | MPC | 128873 2005 EG <sub>163</sub> |
| 2005 EP <sub>164</sub> | 17.6 | 0.15 | 20071027 | 321.13553 | 80.06082  | 17.29715  | 8.63699  | 0.2190803 | 2.2673179 | 101 | 3 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128873 2005 EP <sub>164</sub> |
| 2005 EE <sub>165</sub> | 16.9 | 0.15 | 20071027 | 323.57425 | 352.27386 | 117.20220 | 1.42251  | 0.1499555 | 2.3118723 | 59  | 5 | 2000-2007 | 0.51 | M-v | 0 | MPC | 128874 2005 EE <sub>165</sub> |
| 2005 EF <sub>165</sub> | 16.5 | 0.15 | 20071027 | 346.43157 | 23.14336  | 17.60521  | 7.44284  | 0.0752157 | 2.7094441 | 57  | 4 | 1998-2007 | 0.47 | M-v | 1 | MPC | 128184 2005 EF <sub>165</sub> |
| 2005 EO <sub>165</sub> | 17.6 | 0.15 | 20071027 | 303.97185 | 98.27326  | 22.44957  | 1.95864  | 0.1305694 | 2.3736347 | 64  | 5 | 1994-2007 | 0.47 | M-v | 0 | MPC | 128874 2005 EO <sub>165</sub> |
| 2005 EU <sub>165</sub> | 16.8 | 0.15 | 20071027 | 198.30972 | 222.46832 | 25.35850  | 2.18723  | 0.0654276 | 2.3626516 | 55  | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128874 2005 EU <sub>165</sub> |
| 2005 EA <sub>166</sub> | 16.8 | 0.15 | 20071027 | 56.65993  | 313.54467 | 29.85884  | 2.25904  | 0.0992659 | 2.6746648 | 50  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128874 2005 EA <sub>166</sub> |
| 2005 EM <sub>166</sub> | 16.9 | 0.15 | 20071027 | 329.59676 | 173.52968 | 263.63356 | 0.94743  | 0.2057092 | 2.3976763 | 87  | 3 | 2001-2007 | 0.52 | M-v | 3 | MPC | 128874 2005 EM <sub>166</sub> |
| 2005 EA <sub>167</sub> | 18.0 | 0.15 | 20071027 | 297.20768 | 163.07454 | 336.07649 | 1.95669  | 0.1470789 | 2.3074286 | 46  | 4 | 2000-2007 | 0.56 | M-v | 0 | MPC | 128874 2005 EA <sub>167</sub> |
| 2005 EX <sub>167</sub> | 16.4 | 0.15 | 20071027 | 76.21359  | 108.88703 | 219.88186 | 0.88041  | 0.0644920 | 2.6155139 | 57  | 5 | 1994-2007 | 0.43 | M-v | 1 | MPC | 128874 2005 EX <sub>167</sub> |
| 2005 EF <sub>170</sub> | 15.7 | 0.15 | 20071027 | 105.80188 | 193.59074 | 96.57605  | 4.70327  | 0.1288796 | 2.8466529 | 62  | 5 | 2002-2007 | 0.44 | M-v | 0 | MPC | 128874 2005 EF <sub>170</sub> |
| 2005 EE <sub>173</sub> | 17.3 | 0.15 | 20071027 | 179.41327 | 23.13408  | 212.79458 | 0.70261  | 0.1410923 | 2.4074634 | 38  | 4 | 1995-2007 | 0.27 | M-v | 0 | MPC | 128874 2005 EE <sub>173</sub> |
| 2005 EM <sub>173</sub> | 15.7 | 0.15 | 20071027 | 31.40847  | 3.94600   | 4.38351   | 11.28718 | 0.1366245 | 2.5741510 | 65  | 5 | 1999-2007 | 0.52 | M-v | 2 | MPC | 128874 2005 EM <sub>173</sub> |
| 2005 EZ <sub>176</sub> | 15.6 | 0.15 | 20071027 | 24.63621  | 332.54924 | 16.10973  | 22.69079 | 0.0547099 | 3.0829358 | 49  | 3 | 1994-2007 | 0.38 | M-v | 2 | MPC | 128874 2005 EZ <sub>176</sub> |
| 2005 EE <sub>177</sub> | 17.4 | 0.15 | 20071027 | 7.92743   | 237.34850 | 191.46398 | 2.12368  | 0.1761308 | 2.3569760 | 39  | 3 | 2003-2007 | 0.36 | M-v | 3 | MPC | 89639 2005 EE <sub>177</sub>  |
| 2005 EH <sub>177</sub> | 17.3 | 0.15 | 20071027 | 176.90976 | 260.43662 | 351.52808 | 0.38286  | 0.0921960 | 2.5906046 | 39  | 5 | 1998-2007 | 0.29 | M-v | 0 | MPC | 111086 2005 EH <sub>177</sub> |
| 2005 ED <sub>179</sub> | 15.8 | 0.15 | 20071027 | 38.91884  | 6.39621   | 347.50868 | 14.02425 | 0.1635221 | 2.6336582 | 28  | 3 | 1998-2007 | 0.71 | M-v | 4 | MPC | 89639 2005 ED <sub>179</sub>  |
| 2005 EJ <sub>179</sub> | 15.3 | 0.15 | 20071027 | 10.70275  | 350.63796 | 352.44669 | 18.35689 | 0.2183300 | 3.0978603 | 111 | 3 | 2002-2007 | 0.58 | M-v | 2 | MPC | 128874 2005 EJ <sub>179</sub> |
| 2005 EK <sub>179</sub> | 18.0 | 0.15 | 20071027 | 248.22628 | 209.55120 | 345.94493 | 2.07007  | 0.1403628 | 2.3368357 | 30  | 4 | 1994-2007 | 0.32 | M-v | 1 | MPC | 114149 2005 EK <sub>179</sub> |
| 2005 EJ <sub>180</sub> | 16.4 | 0.15 | 20071027 | 29.19800  | 147.31846 | 217.08753 | 3.26337  | 0.1187778 | 2.6098746 | 96  | 4 | 1997-2007 | 0.43 | M-v | 1 | MPC | 128874 2005 EJ <sub>180</sub> |
| 2005 EP <sub>181</sub> | 16.8 | 0.15 | 20071027 | 200.69547 | 156.36110 | 78.44254  | 4.22051  | 0.1495218 | 2.3438737 | 35  | 6 | 1994-2007 | 0.60 | M-v | 1 | MPC | 104321 2005 EP <sub>181</sub> |
| 2005 ES <sub>182</sub> | 16.6 | 0.15 | 20071027 | 325.49813 | 34.12670  | 44.39059  | 3.12158  | 0.1770900 | 2.4227957 | 86  | 3 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128874 2005 ES <sub>182</sub> |
| 2005 ET <sub>182</sub> | 16.7 | 0.15 | 20071027 | 216.60238 | 154.10303 | 59.98233  | 2.42666  | 0.1347140 | 2.4455093 | 51  | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128874 2005 ET <sub>182</sub> |
| 2005 ED <sub>183</sub> | 15.4 | 0.15 | 20071027 | 87.71443  | 269.44896 | 358.13183 | 8.44148  | 0.0594167 | 3.1728592 | 41  | 2 | 2005-2007 | 0.45 | M-v | 3 | MPC | 128874 2005 ED <sub>183</sub> |
| 2005 EH <sub>184</sub> | 16.2 | 0.15 | 20071027 | 121.94770 | 294.62607 | 4.59778   | 1.83046  | 0.1862533 | 2.6543902 | 64  | 5 | 1996-2007 | 0.49 | M-v | 1 | MPC | 111086 2005 EH <sub>184</sub> |
| 2005 EO <sub>184</sub> | 16.5 | 0.15 | 20071027 | 250.26682 | 298.82537 | 202.59344 | 11.07071 | 0.1407027 | 2.6904796 | 55  | 3 | 2001-2007 | 0.35 | M-v | 2 | MPC | 128874 2005 EO <sub>184</sub> |
| 2005 EP <sub>184</sub> | 15.8 | 0.15 | 20071027 | 334.36614 | 207.39058 | 205.66889 | 12.60967 | 0.1162281 | 2.7585121 | 72  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128874 2005 EP <sub>184</sub> |
| 2005 ER <sub>184</sub> | 16.3 | 0.15 | 20071027 | 318.10809 | 159.56143 | 276.85696 | 2.58596  | 0.0875498 | 2.6979613 | 81  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 128874 2005 ER <sub>184</sub> |
| 2005 EN <sub>186</sub> | 17.2 | 0.15 | 20071027 | 337.17049 | 37.53914  | 47.41674  | 3.47176  | 0.1883783 | 2.2789169 | 65  | 3 | 2000-2007 | 0.44 | M-v | 2 | MPC | 128874 2005 EN <sub>186</sub> |
| 2005 ER <sub>186</sub> | 16.0 | 0.15 | 20071027 | 143.05103 | 212.88405 | 38.12971  | 2.98392  | 0.0431858 | 2.7540007 | 57  | 5 | 2002-2007 | 0.42 | M-v | 0 | MPC | 128874 2005 ER <sub>186</sub> |
| 2005 ED <sub>187</sub> | 17.2 | 0.15 | 20071027 | 192.42991 | 31.63357  | 228.94890 | 1.71267  | 0.1592798 | 2.4493478 | 44  | 5 | 2001-2007 | 0.37 | M-v | 1 | MPC | 111086 2005 ED <sub>187</sub> |
| 2005 EN <sub>187</sub> | 17.5 | 0.15 | 20071027 | 283.48296 | 308.43362 | 204.35818 | 1.93473  | 0.1325050 | 2.3952100 | 25  | 3 | 2003-2007 | 0.28 | M-v | 2 | MPC | 86660 2005 EN <sub>187</sub>  |
| 2005 EF <sub>189</sub> | 14.9 | 0.15 | 20071027 | 177.16460 | 224.41292 | 302.15462 | 16.06826 | 0.0964179 | 3.1240890 | 37  | 5 | 1999-2007 | 0.45 | M-v | 1 | MPC | 76948 2005 EF <sub>189</sub>  |
| 2005 EM <sub>190</sub> | 17.2 | 0.15 | 20071027 | 215.78680 | 264.12257 | 303.12698 | 4.86200  | 0.0378754 | 2.3167816 | 48  | 4 | 1999-2007 | 0.49 | M-v | 2 | MPC | 128875 2005 EM <sub>190</sub> |
| 2005 EC <sub>191</sub> | 16.5 | 0.15 | 20071027 | 60.88680  | 30.74211  | 306.64173 | 4.95548  | 0.1559596 | 2.4670666 | 46  | 3 | 2003-2007 | 0.55 | M-v | 4 | MPC | 128875 2005 EC <sub>191</sub> |
| 2005 EH <sub>192</sub> | 16.8 | 0.15 | 20071027 | 2.77024   | 168.65212 | 208.44931 | 2.52094  | 0.1009020 | 2.6909497 | 69  | 5 | 1994-2007 | 0.48 | M-v | 0 | MPC | 128875 2005 EH <sub>192</sub> |
| 2005 EW <sub>192</sub> | 17.2 | 0.15 | 20071027 | 326.66689 | 138.83451 | 311.07302 | 1.86019  | 0.1701665 | 2.3484949 | 65  | 2 | 2005-2007 | 0.49 | M-v | 3 | MPC | 128185 2005 EW <sub>192</sub> |
| 2005 EH <sub>197</sub> | 16.3 | 0.15 | 20071027 | 221.93043 | 7.12916   | 188.88503 | 6.85276  | 0.0712604 | 2.4835239 | 58  | 6 | 1995-2007 | 0.49 | M-v | 1 | MPC | 128875 2005 EH <sub>197</sub> |
| 2005 EA <sub>198</sub> | 16.3 | 0.15 | 20071027 | 242.69562 | 291.79261 | 226.59690 | 2.26533  | 0.0210240 | 2.7081523 | 53  | 5 | 1998-2007 | 0.37 | M-v | 1 | MPC | 128875 2005 EA <sub>198</sub> |
| 2005 ED <sub>198</sub> | 17.1 | 0.15 | 20071027 | 349.75999 | 112.83262 | 327.00748 | 1.95284  | 0.1607526 | 2.3753792 | 38  | 5 | 1999-2007 | 0.55 | M-v | 1 | MPC | 109146 2005 ED <sub>198</sub> |
| 2005 ER <sub>198</sub> | 16.8 | 0.15 | 20071027 | 186.80254 | 26.58028  | 209.98465 | 2.00265  | 0.1378117 | 2.6210426 | 68  | 6 | 1995-2007 | 0.45 | M-v | 0 | MPC | 128875 2005 ER <sub>198</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 ES <sub>198</sub> | 16.8 | 0.15 | 20071027 | 355.60214 | 213.95806 | 207.72566 | 3.13935  | 0.0150330 | 2.5854428 | 50  | 6 | 1994–2007 | 0.35 | M-v | 0 | MPC | 128875 2005 ES <sub>198</sub> |
| 2005 ET <sub>199</sub> | 16.7 | 0.15 | 20071027 | 209.27631 | 241.87955 | 343.08096 | 1.53603  | 0.1486354 | 2.4588153 | 57  | 8 | 1995–2007 | 0.51 | M-v | 1 | MPC | 128875 2005 ET <sub>199</sub> |
| 2005 EY <sub>199</sub> | 16.8 | 0.15 | 20071027 | 358.54440 | 12.84209  | 35.83020  | 7.25123  | 0.1172514 | 2.3704720 | 93  | 4 | 1998–2007 | 0.44 | M-v | 2 | MPC | 128875 2005 EY <sub>199</sub> |
| 2005 ED <sub>202</sub> | 15.6 | 0.15 | 20071027 | 184.16912 | 152.74683 | 86.84536  | 14.59306 | 0.1709725 | 2.4368082 | 50  | 5 | 2001–2007 | 0.50 | M-v | 1 | MPC | 111087 2005 ED <sub>202</sub> |
| 2005 EF <sub>202</sub> | 15.4 | 0.15 | 20071027 | 187.25605 | 94.81721  | 37.52678  | 16.29445 | 0.1996581 | 3.1360251 | 24  | 3 | 2000–2005 | 0.62 | M-v | 2 | MPC | 126038 2005 EF <sub>202</sub> |
| 2005 ER <sub>203</sub> | 18.2 | 0.15 | 20071027 | 237.33445 | 201.83918 | 345.96726 | 4.66575  | 0.1420163 | 2.3117177 | 24  | 3 | 2003–2007 | 0.34 | M-v | 3 | MPC | 76958 2005 ER <sub>203</sub>  |
| 2005 EU <sub>203</sub> | 17.2 | 0.15 | 20071027 | 88.10405  | 340.80808 | 340.58928 | 5.30967  | 0.0886225 | 2.3230108 | 35  | 3 | 2003–2007 | 0.38 | M-v | 2 | MPC | 76958 2005 EU <sub>203</sub>  |
| 2005 EP <sub>204</sub> | 17.1 | 0.15 | 20071027 | 317.34718 | 129.35523 | 331.36955 | 1.98876  | 0.1752125 | 2.4114414 | 59  | 4 | 2001–2007 | 0.54 | M-v | 1 | MPC | 128875 2005 EP <sub>204</sub> |
| 2005 EF <sub>205</sub> | 16.2 | 0.15 | 20071027 | 255.80431 | 99.70168  | 50.23497  | 3.76185  | 0.0549509 | 2.7023149 | 105 | 2 | 2005–2007 | 0.42 | M-v | 3 | MPC | 128875 2005 EF <sub>205</sub> |
| 2005 EL <sub>205</sub> | 16.1 | 0.15 | 20071027 | 334.67567 | 208.92435 | 200.59664 | 4.06536  | 0.0657032 | 2.7955164 | 60  | 3 | 1993–2007 | 0.51 | M-v | 3 | MPC | 128875 2005 EL <sub>205</sub> |
| 2005 EZ <sub>206</sub> | 16.4 | 0.15 | 20071027 | 207.39773 | 225.01735 | 349.85691 | 4.01023  | 0.2108999 | 2.6198889 | 65  | 3 | 2005–2007 | 0.35 | M-v | 2 | MPC | 128875 2005 EZ <sub>206</sub> |
| 2005 EU <sub>207</sub> | 16.8 | 0.15 | 20071027 | 231.71691 | 294.24362 | 270.56668 | 1.42429  | 0.1436755 | 2.4030203 | 36  | 4 | 2003–2007 | 0.48 | M-v | 1 | MPC | 128875 2005 EU <sub>207</sub> |
| 2005 ED <sub>208</sub> | 16.5 | 0.15 | 20071027 | 355.76588 | 251.79950 | 159.48381 | 8.05949  | 0.2189079 | 2.3624481 | 62  | 3 | 2003–2007 | 0.54 | M-v | 3 | MPC | 128875 2005 ED <sub>208</sub> |
| 2005 EY <sub>208</sub> | 15.7 | 0.15 | 20071027 | 50.49741  | 109.25231 | 189.28424 | 4.62578  | 0.1231137 | 3.1265489 | 55  | 5 | 2000–2007 | 0.52 | M-v | 1 | MPC | 128875 2005 EY <sub>208</sub> |
| 2005 EN <sub>209</sub> | 16.4 | 0.15 | 20071027 | 240.78463 | 148.63644 | 330.99669 | 21.82935 | 0.0925251 | 2.6105889 | 35  | 4 | 2001–2007 | 0.57 | M-v | 1 | MPC | 124465 2005 EN <sub>209</sub> |
| 2005 EY <sub>209</sub> | 16.4 | 0.15 | 20071027 | 136.66347 | 58.34838  | 201.46156 | 1.46868  | 0.0313452 | 2.6660192 | 54  | 6 | 1998–2007 | 0.34 | M-v | 0 | MPC | 128875 2005 EY <sub>209</sub> |
| 2005 EQ <sub>210</sub> | 17.0 | 0.15 | 20071027 | 333.86261 | 117.30963 | 346.20442 | 7.87843  | 0.0513873 | 2.3322428 | 24  | 4 | 2001–2007 | 0.45 | M-v | 1 | MPC | 76964 2005 EQ <sub>210</sub>  |
| 2005 EY <sub>211</sub> | 16.9 | 0.15 | 20071027 | 200.91770 | 125.80590 | 130.00372 | 5.50553  | 0.1535756 | 2.2723789 | 34  | 5 | 2002–2007 | 0.41 | M-v | 0 | MPC | 111087 2005 EY <sub>211</sub> |
| 2005 EP <sub>212</sub> | 15.6 | 0.15 | 20071027 | 53.13113  | 286.80054 | 65.47064  | 13.94715 | 0.1192231 | 2.5699383 | 64  | 3 | 2001–2007 | 0.48 | M-v | 3 | MPC | 128186 2005 EP <sub>212</sub> |
| 2005 EC <sub>214</sub> | 17.3 | 0.15 | 20071027 | 265.11800 | 261.78505 | 276.08793 | 3.83223  | 0.1683968 | 2.3370711 | 35  | 4 | 2003–2007 | 0.59 | M-v | 1 | MPC | 104322 2005 EC <sub>214</sub> |
| 2005 EH <sub>216</sub> | 15.6 | 0.15 | 20071027 | 79.72499  | 131.85642 | 163.21742 | 1.05323  | 0.1840780 | 3.2210788 | 59  | 4 | 2004–2007 | 0.29 | M-v | 0 | MPC | 128186 2005 EH <sub>216</sub> |
| 2005 ED <sub>217</sub> | 15.6 | 0.15 | 20071027 | 79.58027  | 295.21085 | 15.94436  | 14.62850 | 0.1263576 | 2.5884338 | 66  | 2 | 2005–2007 | 0.58 | M-v | 4 | MPC | 128187 2005 ED <sub>217</sub> |
| 2005 EZ <sub>217</sub> | 16.7 | 0.15 | 20071027 | 333.87581 | 15.26295  | 99.65203  | 6.26009  | 0.0947275 | 2.2252905 | 39  | 5 | 2000–2007 | 0.51 | M-v | 1 | MPC | 104322 2005 EZ <sub>217</sub> |
| 2005 EF <sub>218</sub> | 15.7 | 0.15 | 20071027 | 280.42119 | 117.79203 | 19.09668  | 15.01709 | 0.1162512 | 2.5498629 | 76  | 3 | 2003–2007 | 0.51 | M-v | 2 | MPC | 128876 2005 EF <sub>218</sub> |
| 2005 EL <sub>219</sub> | 15.3 | 0.15 | 20071027 | 159.20306 | 3.92868   | 200.48218 | 5.18447  | 0.1071527 | 3.1401512 | 34  | 2 | 2005–2007 | 0.37 | M-v | 3 | MPC | 128876 2005 EL <sub>219</sub> |
| 2005 EH <sub>220</sub> | 17.8 | 0.15 | 20071027 | 269.47771 | 63.39199  | 123.49390 | 2.40249  | 0.1336887 | 2.2693876 | 32  | 4 | 2000–2007 | 0.44 | M-v | 1 | MPC | 111087 2005 EH <sub>220</sub> |
| 2005 EN <sub>220</sub> | 15.6 | 0.15 | 20071027 | 130.95011 | 268.00180 | 15.11764  | 14.26670 | 0.0413577 | 2.5968585 | 50  | 3 | 2005–2007 | 0.61 | M-v | 3 | MPC | 128876 2005 EN <sub>220</sub> |
| 2005 EA <sub>222</sub> | 17.0 | 0.15 | 20071027 | 255.25144 | 326.07212 | 209.41870 | 2.08807  | 0.1698842 | 2.3963103 | 59  | 4 | 2001–2007 | 0.46 | M-v | 1 | MPC | 128876 2005 EA <sub>222</sub> |
| 2005 ET <sub>222</sub> | 15.8 | 0.15 | 20071027 | 216.68098 | 91.91385  | 105.66852 | 12.91727 | 0.1089250 | 2.5532809 | 56  | 4 | 2001–2007 | 0.52 | M-v | 2 | MPC | 76977 2005 ET <sub>222</sub>  |
| 2005 ES <sub>223</sub> | 17.5 | 0.15 | 20071027 | 294.71022 | 25.54662  | 155.01482 | 3.83428  | 0.0584665 | 2.2020078 | 48  | 5 | 2000–2007 | 0.43 | M-v | 1 | MPC | 128876 2005 ES <sub>223</sub> |
| 2005 EA <sub>231</sub> | 16.7 | 0.15 | 20071027 | 255.14616 | 109.44858 | 68.96070  | 8.21837  | 0.1468960 | 2.4093171 | 36  | 3 | 2003–2007 | 0.44 | M-v | 3 | MPC | 128188 2005 EA <sub>231</sub> |
| 2005 ED <sub>234</sub> | 16.6 | 0.15 | 20071027 | 311.21707 | 50.66855  | 47.91735  | 6.97663  | 0.1052948 | 2.4505592 | 75  | 3 | 2003–2007 | 0.47 | M-v | 1 | MPC | 128876 2005 ED <sub>234</sub> |
| 2005 EK <sub>235</sub> | 17.6 | 0.15 | 20071027 | 333.31875 | 294.64043 | 144.52674 | 2.34146  | 0.1905865 | 2.3661775 | 45  | 3 | 2003–2007 | 0.44 | M-v | 2 | MPC | 128188 2005 EK <sub>235</sub> |
| 2005 ES <sub>237</sub> | 16.9 | 0.15 | 20071027 | 300.80127 | 77.72900  | 12.36473  | 6.60388  | 0.0600968 | 2.6272860 | 55  | 5 | 1992–2007 | 0.48 | M-v | 1 | MPC | 128876 2005 ES <sub>237</sub> |
| 2005 EL <sub>241</sub> | 17.0 | 0.15 | 20071027 | 204.18773 | 132.92549 | 112.41325 | 6.95620  | 0.0590565 | 2.2605919 | 41  | 4 | 2002–2007 | 0.62 | M-v | 1 | MPC | 111087 2005 EL <sub>241</sub> |
| 2005 EQ <sub>241</sub> | 16.0 | 0.15 | 20071027 | 212.22786 | 106.78184 | 102.83626 | 7.10710  | 0.0809178 | 2.4233369 | 46  | 5 | 2001–2007 | 0.50 | M-v | 1 | MPC | 128876 2005 EQ <sub>241</sub> |
| 2005 EK <sub>243</sub> | 16.7 | 0.15 | 20071027 | 261.16716 | 105.50845 | 69.36274  | 7.88182  | 0.0562302 | 2.3267205 | 63  | 5 | 2001–2007 | 0.58 | M-v | 1 | MPC | 104323 2005 EK <sub>243</sub> |
| 2005 EU <sub>244</sub> | 17.7 | 0.15 | 20071027 | 332.14202 | 246.79575 | 198.44622 | 2.21032  | 0.1581819 | 2.3687019 | 48  | 4 | 1996–2007 | 0.50 | M-v | 0 | MPC | 128876 2005 EU <sub>244</sub> |
| 2005 EE <sub>245</sub> | 17.7 | 0.15 | 20071027 | 257.82943 | 62.27569  | 119.35968 | 2.16894  | 0.1300280 | 2.4381302 | 41  | 4 | 2001–2007 | 0.34 | M-v | 1 | MPC | 76987 2005 EE <sub>245</sub>  |
| 2005 EF <sub>245</sub> | 17.0 | 0.15 | 20071027 | 311.49907 | 89.06681  | 50.62786  | 3.81487  | 0.1573230 | 2.2982974 | 54  | 4 | 2000–2007 | 0.47 | M-v | 1 | MPC | 76987 2005 EF <sub>245</sub>  |
| 2005 EW <sub>245</sub> | 17.7 | 0.15 | 20071027 | 271.33029 | 348.51535 | 167.82250 | 2.59620  | 0.1576028 | 2.3808483 | 32  | 2 | 2005–2007 | 0.31 | M-v | 3 | MPC | 128189 2005 EW <sub>245</sub> |
| 2005 EB <sub>247</sub> | 17.2 | 0.15 | 20071027 | 233.39752 | 184.51759 | 24.76652  | 1.70773  | 0.1276573 | 2.3842109 | 43  | 5 | 2001–2007 | 0.39 | M-v | 1 | MPC | 111087 2005 EB <sub>247</sub> |
| 2005 EF <sub>247</sub> | 17.4 | 0.15 | 20071027 | 306.85282 | 79.26210  | 44.58124  | 0.88829  | 0.1512439 | 2.3365621 | 57  | 3 | 2003–2007 | 0.37 | M-v | 2 | MPC | 128876 2005 EF <sub>247</sub> |
| 2005 ET <sub>247</sub> | 16.8 | 0.15 | 20071027 | 344.41969 | 39.82590  | 29.35660  | 2.64147  | 0.1787892 | 2.3388931 | 94  | 2 | 2005–2007 | 0.50 | M-v | 2 | MPC | 128876 2005 ET <sub>247</sub> |
| 2005 EM <sub>248</sub> | 18.0 | 0.15 | 20071027 | 326.21213 | 81.37481  | 15.39027  | 1.36576  | 0.1442617 | 2.3601827 | 49  | 5 | 1996–2007 | 0.34 | M-v | 0 | MPC | 128876 2005 EM <sub>248</sub> |
| 2005 ED <sub>249</sub> | 17.9 | 0.15 | 20071027 | 329.47941 | 122.04617 | 308.38217 | 0.44155  | 0.1650723 | 2.4579022 | 49  | 5 | 1997–2007 | 0.35 | M-v | 0 | MPC | 128876 2005 ED <sub>249</sub> |
| 2005 EJ <sub>251</sub> | 16.2 | 0.15 | 20071027 | 250.25013 | 65.08410  | 100.16279 | 7.01623  | 0.0737962 | 2.4526656 | 50  | 5 | 2001–2007 | 0.57 | M-v | 1 | MPC | 128876 2005 EJ <sub>251</sub> |
| 2005 EQ <sub>251</sub> | 17.2 | 0.15 | 20071027 | 305.91224 | 53.45761  | 61.65284  | 4.73394  | 0.1938927 | 2.3464988 | 59  | 2 | 2005–2007 | 0.52 | M-v | 3 | MPC | 128190 2005 EQ <sub>251</sub> |
| 2005 EO <sub>252</sub> | 16.2 | 0.15 | 20071027 | 7.31826   | 209.25914 | 196.48170 | 6.20768  | 0.1359459 | 2.5670211 | 41  | 3 | 1998–2007 | 0.48 | M-v | 4 | MPC | 128191 2005 EO <sub>252</sub> |
| 2005 ED <sub>253</sub> | 16.2 | 0.15 | 20071027 | 310.97124 | 343.60279 | 126.87147 | 12.36551 | 0.1823901 | 2.4447222 | 49  | 5 | 2001–2007 | 0.57 | M-v | 1 | MPC | 128876 2005 ED <sub>253</sub> |
| 2005 EF <sub>253</sub> | 16.0 | 0.15 | 20071027 | 283.28112 | 22.96433  | 107.05831 | 11.89224 | 0.1053737 | 2.5674585 | 52  | 6 | 1991–2007 | 0.67 | M-v | 1 | MPC | 128876 2005 EF <sub>253</sub> |
| 2005 EJ <sub>253</sub> | 17.2 | 0.15 | 20071027 | 344.22431 | 205.93466 | 251.82499 | 3.22392  | 0.1212252 | 2.1676821 | 45  | 4 | 2000–2007 | 0.47 | M-v | 2 | MPC | 128876 2005 EJ <sub>253</sub> |
| 2005 EP <sub>253</sub> | 16.4 | 0.15 | 20071027 | 149.83753 | 113.23344 | 151.05691 | 5.36888  | 0.1299255 | 2.6275515 | 37  | 5 | 1995–2007 | 0.55 | M-v | 0 | MPC | 116290 2005 EP <sub>253</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 EW <sub>255</sub> | 17.1 | 0.15 | 20071027 | 357.98978 | 178.00643 | 229.53151 | 1.95366  | 0.1862980 | 2.3862527 | 92  | 5 | 1992-2007 | 0.49 | M-v | 1 | MPC | 128877 2005 EW <sub>255</sub> |
| 2005 EL <sub>256</sub> | 16.1 | 0.15 | 20071027 | 236.72888 | 242.02243 | 253.85161 | 1.10319  | 0.0309457 | 2.8794660 | 36  | 5 | 2000-2007 | 0.37 | M-v | 0 | MPC | 124466 2005 EL <sub>256</sub> |
| 2005 EB <sub>258</sub> | 16.0 | 0.15 | 20071027 | 30.70993  | 37.20426  | 345.88508 | 3.60977  | 0.1875334 | 2.5299491 | 42  | 4 | 1999-2007 | 0.41 | M-v | 3 | MPC | 128877 2005 EB <sub>258</sub> |
| 2005 EF <sub>258</sub> | 15.4 | 0.15 | 20071027 | 3.20222   | 162.12802 | 195.02149 | 8.35952  | 0.0846549 | 3.1188834 | 64  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 128877 2005 EF <sub>258</sub> |
| 2005 EJ <sub>258</sub> | 15.8 | 0.15 | 20071027 | 149.19739 | 6.62361   | 204.65898 | 4.06389  | 0.0638148 | 3.1239776 | 32  | 3 | 2001-2007 | 0.38 | M-v | 3 | MPC | 76995 2005 EJ <sub>258</sub>  |
| 2005 ED <sub>259</sub> | 17.1 | 0.15 | 20071027 | 334.85912 | 265.27052 | 181.48626 | 1.96668  | 0.1491973 | 2.4026745 | 47  | 3 | 2003-2007 | 0.40 | M-v | 2 | MPC | 128877 2005 ED <sub>259</sub> |
| 2005 EN <sub>260</sub> | 16.6 | 0.15 | 20071027 | 284.36613 | 84.80883  | 30.68038  | 11.10699 | 0.1123647 | 2.6806565 | 54  | 2 | 2005-2007 | 0.29 | M-v | 3 | MPC | 128877 2005 EN <sub>260</sub> |
| 2005 EO <sub>260</sub> | 15.5 | 0.15 | 20071027 | 162.96155 | 206.07639 | 43.95740  | 5.35393  | 0.1027993 | 2.7579175 | 78  | 6 | 2000-2007 | 0.47 | M-v | 1 | MPC | 126739 2005 EO <sub>260</sub> |
| 2005 EO <sub>262</sub> | 16.5 | 0.15 | 20071027 | 347.51616 | 328.88963 | 118.34277 | 5.48411  | 0.1243388 | 2.2707686 | 39  | 4 | 2000-2007 | 0.60 | M-v | 2 | MPC | 111088 2005 EO <sub>262</sub> |
| 2005 EE <sub>263</sub> | 17.2 | 0.15 | 20071027 | 291.28146 | 301.02798 | 193.91396 | 4.21585  | 0.1396093 | 2.3730365 | 39  | 3 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128191 2005 EE <sub>263</sub> |
| 2005 EM <sub>266</sub> | 15.2 | 0.15 | 20071027 | 323.88679 | 24.20678  | 56.68720  | 22.84970 | 0.0518277 | 2.6653448 | 60  | 2 | 2005-2007 | 0.61 | M-v | 3 | MPC | 128192 2005 EM <sub>266</sub> |
| 2005 EZ <sub>267</sub> | 17.7 | 0.15 | 20071027 | 319.81741 | 241.45513 | 223.84287 | 1.47657  | 0.1669333 | 2.3729442 | 52  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128877 2005 EZ <sub>267</sub> |
| 2005 EN <sub>268</sub> | 17.1 | 0.15 | 20071027 | 189.27046 | 340.82048 | 257.19322 | 1.99967  | 0.1569387 | 2.5892279 | 27  | 4 | 2003-2007 | 0.26 | M-v | 0 | MPC | 109156 2005 EN <sub>268</sub> |
| 2005 EU <sub>269</sub> | 16.8 | 0.15 | 20071027 | 247.56443 | 281.00012 | 271.95491 | 8.97187  | 0.1297412 | 2.3972470 | 36  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128877 2005 EU <sub>269</sub> |
| 2005 ER <sub>270</sub> | 17.2 | 0.15 | 20071027 | 305.78589 | 31.11637  | 100.26052 | 6.25043  | 0.0987077 | 2.2860586 | 38  | 6 | 1999-2007 | 0.61 | M-v | 1 | MPC | 128877 2005 ER <sub>270</sub> |
| 2005 EX <sub>271</sub> | 15.5 | 0.15 | 20071027 | 5.45604   | 32.85062  | 352.73329 | 14.76473 | 0.1395566 | 2.5711972 | 106 | 4 | 1999-2007 | 0.50 | M-v | 2 | MPC | 128877 2005 EX <sub>271</sub> |
| 2005 EH <sub>273</sub> | 17.6 | 0.15 | 20071027 | 341.94302 | 237.32183 | 193.83947 | 1.83542  | 0.1839002 | 2.3563752 | 78  | 3 | 2003-2007 | 0.34 | M-v | 2 | MPC | 128192 2005 EH <sub>273</sub> |
| 2005 EV <sub>274</sub> | 16.7 | 0.15 | 20071027 | 231.01744 | 355.24995 | 228.47849 | 3.32888  | 0.1317119 | 2.3431547 | 44  | 6 | 1994-2007 | 0.58 | M-v | 1 | MPC | 111088 2005 EV <sub>274</sub> |
| 2005 EM <sub>276</sub> | 15.2 | 0.15 | 20071027 | 59.61037  | 276.14055 | 72.60558  | 15.19546 | 0.1061496 | 2.5884754 | 88  | 4 | 2001-2007 | 0.49 | M-v | 2 | MPC | 128877 2005 EM <sub>276</sub> |
| 2005 EY <sub>276</sub> | 16.0 | 0.15 | 20071027 | 22.54528  | 297.62766 | 55.14513  | 0.74700  | 0.0877085 | 3.0762021 | 67  | 5 | 1996-2007 | 0.46 | M-v | 1 | MPC | 128877 2005 EY <sub>276</sub> |
| 2005 EN <sub>277</sub> | 16.5 | 0.15 | 20071027 | 197.49148 | 162.60177 | 61.37184  | 9.24127  | 0.1532687 | 2.4575625 | 39  | 3 | 2003-2007 | 0.56 | M-v | 4 | MPC | 128193 2005 EN <sub>277</sub> |
| 2005 EE <sub>279</sub> | 16.9 | 0.15 | 20071027 | 271.88602 | 120.62262 | 25.05609  | 11.87025 | 0.0997863 | 2.5533887 | 42  | 3 | 2003-2007 | 0.42 | M-v | 2 | MPC | 128877 2005 EE <sub>279</sub> |
| 2005 EY <sub>279</sub> | 17.1 | 0.15 | 20071027 | 176.85734 | 164.29514 | 112.77146 | 7.61817  | 0.1141986 | 2.3734848 | 30  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 111088 2005 EY <sub>279</sub> |
| 2005 EN <sub>282</sub> | 16.0 | 0.15 | 20071027 | 54.73332  | 299.83696 | 9.90261   | 9.89381  | 0.0331598 | 3.1747259 | 29  | 2 | 2005-2007 | 0.33 | M-v | 3 | MPC | 128877 2005 EN <sub>282</sub> |
| 2005 EV <sub>282</sub> | 15.7 | 0.15 | 20071027 | 269.96104 | 75.50141  | 59.67017  | 16.53133 | 0.0578964 | 2.6519076 | 42  | 3 | 2003-2007 | 0.56 | M-v | 1 | MPC | 128877 2005 EV <sub>282</sub> |
| 2005 EO <sub>283</sub> | 16.3 | 0.15 | 20071027 | 208.47780 | 113.30648 | 95.05898  | 7.66473  | 0.0674545 | 2.4640489 | 63  | 7 | 1997-2007 | 0.54 | M-v | 1 | MPC | 128878 2005 EO <sub>283</sub> |
| 2005 EQ <sub>283</sub> | 16.1 | 0.15 | 20071027 | 304.98102 | 25.80018  | 91.21174  | 7.67555  | 0.0796954 | 2.3691246 | 70  | 5 | 1998-2007 | 0.60 | M-v | 1 | MPC | 128878 2005 EQ <sub>283</sub> |
| 2005 EX <sub>283</sub> | 15.1 | 0.15 | 20071027 | 92.81766  | 253.81778 | 17.71143  | 15.78217 | 0.0377121 | 3.0509319 | 53  | 3 | 2003-2007 | 0.69 | M-v | 2 | MPC | 126739 2005 EX <sub>283</sub> |
| 2005 EE <sub>284</sub> | 17.3 | 0.15 | 20071027 | 250.53153 | 66.37052  | 139.98397 | 2.80707  | 0.0958052 | 2.2933991 | 41  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 104323 2005 EE <sub>284</sub> |
| 2005 EJ <sub>287</sub> | 17.4 | 0.15 | 20071027 | 292.62220 | 117.73293 | 24.63938  | 1.62853  | 0.1315526 | 2.3628099 | 41  | 4 | 1994-2007 | 0.48 | M-v | 1 | MPC | 128878 2005 EJ <sub>287</sub> |
| 2005 EL <sub>290</sub> | 15.2 | 0.15 | 20071027 | 164.87292 | 323.19712 | 290.96511 | 8.55911  | 0.1508863 | 2.7161632 | 78  | 6 | 2000-2007 | 0.59 | M-v | 1 | MPC | 111088 2005 EL <sub>290</sub> |
| 2005 EZ <sub>290</sub> | 16.2 | 0.15 | 20071027 | 189.82026 | 155.25704 | 77.40260  | 10.60643 | 0.0872163 | 2.5741300 | 41  | 4 | 1997-2007 | 0.54 | M-v | 3 | MPC | 128193 2005 EZ <sub>290</sub> |
| 2005 EB <sub>293</sub> | 16.1 | 0.15 | 20071027 | 186.78568 | 169.16931 | 63.98509  | 10.91541 | 0.1399551 | 2.6565883 | 67  | 3 | 2004-2007 | 0.51 | M-v | 3 | MPC | 128878 2005 EB <sub>293</sub> |
| 2005 EW <sub>302</sub> | 16.2 | 0.15 | 20071027 | 26.20677  | 99.09080  | 247.19752 | 1.19668  | 0.0397787 | 3.0217129 | 42  | 5 | 1999-2007 | 0.34 | M-v | 0 | MPC | 128878 2005 EW <sub>302</sub> |
| 2005 ER <sub>305</sub> | 17.7 | 0.15 | 20071027 | 339.06705 | 310.47834 | 160.00848 | 3.70640  | 0.1117576 | 2.2661533 | 53  | 4 | 1998-2007 | 0.50 | M-v | 0 | MPC | 77020 2005 ER <sub>305</sub>  |
| 2005 EK <sub>306</sub> | 18.0 | 0.15 | 20071027 | 311.85385 | 305.75911 | 162.26201 | 1.33126  | 0.1455821 | 2.4008605 | 42  | 3 | 2003-2007 | 0.37 | M-v | 2 | MPC | 128878 2005 EK <sub>306</sub> |
| 2005 EX <sub>309</sub> | 16.5 | 0.15 | 20071027 | 73.94047  | 0.02117   | 345.39284 | 0.79935  | 0.1106753 | 2.5438292 | 41  | 6 | 1995-2007 | 0.31 | M-v | 0 | MPC | 104324 2005 EX <sub>309</sub> |
| 2005 EV <sub>313</sub> | 17.1 | 0.15 | 20071027 | 61.83424  | 323.26763 | 43.58797  | 1.46391  | 0.0288647 | 2.4042652 | 31  | 5 | 1999-2007 | 0.40 | M-v | 1 | MPC | 109161 2005 EV <sub>313</sub> |
| 2005 EA <sub>314</sub> | 16.2 | 0.15 | 20071027 | 55.17914  | 306.62150 | 42.47533  | 1.80502  | 0.1298382 | 2.6147386 | 42  | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 128878 2005 EA <sub>314</sub> |
| 2005 EO <sub>315</sub> | 17.8 | 0.15 | 20071027 | 1.27938   | 262.12636 | 153.53157 | 5.45766  | 0.1904209 | 2.4096174 | 26  | 4 | 1999-2007 | 0.39 | M-v | 2 | MPC | 128878 2005 EO <sub>315</sub> |
| 2005 EP <sub>315</sub> | 16.2 | 0.15 | 20071027 | 107.56584 | 224.54263 | 70.80570  | 3.13333  | 0.0638485 | 2.7026833 | 53  | 6 | 1998-2007 | 0.37 | M-v | 0 | MPC | 128194 2005 EP <sub>315</sub> |
| 2005 EG <sub>317</sub> | 17.7 | 0.15 | 20071027 | 90.52571  | 63.50914  | 247.33964 | 0.79483  | 0.0761208 | 2.6258761 | 34  | 3 | 1998-2007 | 0.43 | M-v | 3 | MPC | 128878 2005 EG <sub>317</sub> |
| 2005 EL <sub>321</sub> | 17.2 | 0.15 | 20071027 | 275.70985 | 32.03616  | 80.35205  | 2.33536  | 0.0154613 | 2.6126559 | 34  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 128194 2005 EL <sub>321</sub> |
| 2005 EP <sub>323</sub> | 16.2 | 0.15 | 20071027 | 130.78913 | 66.72017  | 209.40399 | 10.97779 | 0.1187293 | 2.9697448 | 38  | 5 | 1996-2007 | 0.27 | M-v | 0 | MPC | 128878 2005 EP <sub>323</sub> |
| 2005 EV <sub>323</sub> | 16.6 | 0.15 | 20071027 | 244.05897 | 341.58704 | 206.04284 | 4.41518  | 0.0968846 | 2.3932116 | 55  | 6 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128878 2005 EV <sub>323</sub> |
| 2005 EW <sub>323</sub> | 16.8 | 0.15 | 20071027 | 263.87925 | 345.68105 | 177.87940 | 5.25532  | 0.1404587 | 2.4221610 | 64  | 5 | 1994-2007 | 0.43 | M-v | 1 | MPC | 128878 2005 EW <sub>323</sub> |
| 2005 EZ <sub>323</sub> | 15.7 | 0.15 | 20071027 | 159.45574 | 7.38200   | 261.83287 | 11.34539 | 0.2130293 | 2.6359975 | 54  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 109164 2005 EZ <sub>323</sub> |
| 2005 FP                | 17.3 | 0.15 | 20071027 | 257.10277 | 357.24654 | 180.53249 | 2.99492  | 0.0927762 | 2.3997671 | 32  | 3 | 2003-2007 | 0.43 | M-v | 4 | MPC | 77022 2005 FP                 |
| 2005 FO <sub>2</sub>   | 15.9 | 0.15 | 20071027 | 150.81583 | 259.56105 | 11.29120  | 7.68250  | 0.1386202 | 2.6795455 | 44  | 4 | 2002-2007 | 0.59 | M-v | 1 | MPC | 111089 2005 FO <sub>2</sub>   |
| 2005 FX <sub>2</sub>   | 17.0 | 0.15 | 20071027 | 265.60556 | 96.78620  | 76.19924  | 3.38966  | 0.1547712 | 2.3668324 | 65  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 77024 2005 FX <sub>2</sub>    |
| 2005 FD <sub>3</sub>   | 16.3 | 0.15 | 20071027 | 258.18088 | 120.74855 | 111.38886 | 39.60928 | 0.2852653 | 2.2893457 | 102 | 3 | 2001-2007 | 0.40 | M-v | 2 | MPC | 97782 2005 FD <sub>3</sub>    |
| 2005 FC <sub>6</sub>   | 15.8 | 0.15 | 20071027 | 148.65111 | 191.67930 | 73.62651  | 4.47883  | 0.2349529 | 2.7650023 | 56  | 6 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128878 2005 FC <sub>6</sub>   |
| 2005 FF <sub>6</sub>   | 16.9 | 0.15 | 20071027 | 321.46775 | 323.35755 | 169.15932 | 3.01433  | 0.0620884 | 2.2669479 | 32  | 5 | 1996-2007 | 0.34 | M-v | 1 | MPC | 111089 2005 FF <sub>6</sub>   |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2005 FU <sub>7</sub>  | 16.7 | 0.15 | 20071027 | 331.96250 | 64.30670  | 23.11877  | 25.96211 | 0.2677814 | 2.3182878 | 62  | 2 | 2005-2007 | 0.47 | M-v | 3 | MPC | 128878 2005 FU <sub>7</sub>  |
| 2005 FB <sub>8</sub>  | 15.7 | 0.15 | 20071027 | 215.26963 | 104.66270 | 92.10688  | 12.66828 | 0.0202454 | 2.6393633 | 63  | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 128878 2005 FB <sub>8</sub>  |
| 2005 FL <sub>8</sub>  | 17.5 | 0.15 | 20071027 | 263.48066 | 151.64023 | 27.34873  | 2.06053  | 0.1221934 | 2.4409866 | 47  | 5 | 1995-2007 | 0.42 | M-v | 0 | MPC | 104324 2005 FL <sub>8</sub>  |
| 2005 FG <sub>11</sub> | 16.8 | 0.15 | 20071027 | 259.57296 | 108.46863 | 78.62455  | 6.15765  | 0.1038493 | 2.2829031 | 37  | 6 | 1993-2007 | 0.48 | M-v | 1 | MPC | 109167 2005 FG <sub>11</sub> |
| 2005 GL               | 21.2 | 0.15 | 20071027 | 48.66644  | 265.09081 | 43.70674  | 15.90959 | 0.3061964 | 1.0551963 | 94  | 2 | 2005-2007 | 0.42 | M-v | 3 | MPC | 128195 2005 GL               |
| 2005 GC <sub>1</sub>  | 15.9 | 0.15 | 20071027 | 144.68657 | 207.41657 | 72.67879  | 7.94841  | 0.0732590 | 2.6199485 | 57  | 6 | 1992-2007 | 0.58 | M-v | 1 | MPC | 128878 2005 GC <sub>1</sub>  |
| 2005 GO <sub>1</sub>  | 16.8 | 0.15 | 20071027 | 248.15315 | 148.97789 | 44.67085  | 8.22975  | 0.1266846 | 2.2810390 | 39  | 4 | 2002-2007 | 0.60 | M-v | 1 | MPC | 100942 2005 GO <sub>1</sub>  |
| 2005 GU <sub>3</sub>  | 16.7 | 0.15 | 20071027 | 159.18513 | 193.29742 | 57.97918  | 6.03482  | 0.1095562 | 2.7824132 | 28  | 2 | 2005-2007 | 0.26 | M-v | 3 | MPC | 128196 2005 GU <sub>3</sub>  |
| 2005 GJ <sub>5</sub>  | 16.3 | 0.15 | 20071027 | 339.11734 | 6.04710   | 77.48732  | 5.92041  | 0.0414693 | 2.6021547 | 47  | 3 | 2002-2007 | 0.35 | M-v | 2 | MPC | 128196 2005 GJ <sub>5</sub>  |
| 2005 GN <sub>5</sub>  | 16.5 | 0.15 | 20071027 | 355.35735 | 284.36400 | 136.03467 | 3.65089  | 0.1511134 | 2.5948607 | 31  | 3 | 2000-2007 | 0.48 | M-v | 3 | MPC | 128196 2005 GN <sub>5</sub>  |
| 2005 GF <sub>7</sub>  | 16.7 | 0.15 | 20071027 | 148.15190 | 195.27820 | 69.09249  | 5.39226  | 0.0766990 | 2.7669832 | 40  | 2 | 2005-2007 | 0.29 | M-v | 3 | MPC | 128196 2005 GF <sub>7</sub>  |
| 2005 GC <sub>8</sub>  | 15.8 | 0.15 | 20071027 | 244.64358 | 71.23884  | 113.75460 | 5.27057  | 0.1743240 | 2.5664051 | 97  | 6 | 1992-2007 | 0.62 | M-v | 1 | MPC | 128879 2005 GC <sub>8</sub>  |
| 2005 GX <sub>9</sub>  | 17.2 | 0.15 | 20071027 | 214.64888 | 157.81394 | 78.62560  | 5.95349  | 0.1542253 | 2.4239226 | 54  | 5 | 1995-2007 | 0.59 | M-v | 1 | MPC | 111090 2005 GX <sub>9</sub>  |
| 2005 GN <sub>10</sub> | 16.1 | 0.15 | 20071027 | 20.13236  | 351.45380 | 31.79247  | 6.72974  | 0.0378145 | 2.6770059 | 62  | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128879 2005 GN <sub>10</sub> |
| 2005 GX <sub>10</sub> | 17.4 | 0.15 | 20071027 | 295.31962 | 17.26960  | 109.53821 | 2.15488  | 0.1401951 | 2.4435656 | 43  | 4 | 2001-2007 | 0.31 | M-v | 0 | MPC | 128879 2005 GX <sub>10</sub> |
| 2005 GD <sub>11</sub> | 17.2 | 0.15 | 20071027 | 302.53024 | 63.89046  | 62.79399  | 7.70483  | 0.1694061 | 2.3687794 | 65  | 3 | 2003-2007 | 0.54 | M-v | 2 | MPC | 128197 2005 GD <sub>11</sub> |
| 2005 GE <sub>12</sub> | 15.5 | 0.15 | 20071027 | 61.52648  | 277.33034 | 60.69310  | 6.98035  | 0.0530671 | 2.7736312 | 61  | 5 | 1996-2007 | 0.54 | M-v | 1 | MPC | 128197 2005 GE <sub>12</sub> |
| 2005 GJ <sub>12</sub> | 16.8 | 0.15 | 20071027 | 233.89499 | 113.93718 | 100.37513 | 2.24595  | 0.1337898 | 2.4107240 | 51  | 5 | 1995-2007 | 0.44 | M-v | 1 | MPC | 111090 2005 GJ <sub>12</sub> |
| 2005 GL <sub>12</sub> | 15.6 | 0.15 | 20071027 | 134.22303 | 253.58287 | 32.72221  | 14.06383 | 0.1406353 | 2.6878472 | 59  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 111090 2005 GL <sub>12</sub> |
| 2005 GK <sub>13</sub> | 15.5 | 0.15 | 20071027 | 213.94427 | 115.71291 | 88.24633  | 12.07963 | 0.1506149 | 2.6483355 | 63  | 3 | 2003-2007 | 0.57 | M-v | 3 | MPC | 77052 2005 GK <sub>13</sub>  |
| 2005 GL <sub>13</sub> | 16.3 | 0.15 | 20071027 | 185.00893 | 167.42537 | 73.67596  | 11.60470 | 0.1610157 | 2.6638934 | 41  | 3 | 2004-2007 | 0.50 | M-v | 3 | MPC | 128198 2005 GL <sub>13</sub> |
| 2005 GQ <sub>13</sub> | 16.8 | 0.15 | 20071027 | 258.25869 | 101.48338 | 88.64915  | 6.90117  | 0.1310544 | 2.3974497 | 43  | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 86679 2005 GQ <sub>13</sub>  |
| 2005 GD <sub>16</sub> | 16.9 | 0.15 | 20071027 | 339.23991 | 261.48698 | 169.59047 | 6.46468  | 0.0917525 | 2.3843657 | 51  | 5 | 1996-2007 | 0.50 | M-v | 1 | MPC | 128879 2005 GD <sub>16</sub> |
| 2005 GY <sub>18</sub> | 17.2 | 0.15 | 20071027 | 327.76729 | 93.34247  | 19.62021  | 3.49563  | 0.1176190 | 2.3180251 | 35  | 3 | 1996-2007 | 0.60 | M-v | 3 | MPC | 77055 2005 GY <sub>18</sub>  |
| 2005 GS <sub>20</sub> | 15.9 | 0.15 | 20071027 | 60.31540  | 315.80040 | 40.85047  | 9.55874  | 0.1242898 | 2.9064794 | 35  | 5 | 2000-2007 | 0.41 | M-v | 0 | MPC | 111090 2005 GS <sub>20</sub> |
| 2005 GW <sub>20</sub> | 16.7 | 0.15 | 20071027 | 299.91474 | 264.16668 | 215.53218 | 20.35571 | 0.2959885 | 2.2829218 | 51  | 2 | 2005-2007 | 0.64 | M-v | 3 | MPC | 128199 2005 GW <sub>20</sub> |
| 2005 GA <sub>21</sub> | 16.6 | 0.15 | 20071027 | 256.14439 | 193.78814 | 352.54768 | 5.10006  | 0.0397723 | 2.4068572 | 28  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 86681 2005 GA <sub>21</sub>  |
| 2005 GH <sub>21</sub> | 16.4 | 0.15 | 20071027 | 204.72472 | 225.29964 | 359.99103 | 4.94770  | 0.1258292 | 2.5684382 | 61  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 128879 2005 GH <sub>21</sub> |
| 2005 GJ <sub>21</sub> | 15.9 | 0.15 | 20071027 | 333.16434 | 73.90495  | 0.65741   | 2.24141  | 0.0516959 | 2.6832844 | 67  | 2 | 2005-2007 | 0.48 | M-v | 4 | MPC | 128199 2005 GJ <sub>21</sub> |
| 2005 GV <sub>21</sub> | 16.8 | 0.15 | 20050331 | 287.58722 | 209.64434 | 56.07750  | 3.25997  | 0.0746268 | 2.7567839 | 12  | 1 | 2 days    | 0.34 |     |   | MPC | 89651 2005 GV <sub>21</sub>  |
| 2005 GY <sub>21</sub> | 17.2 | 0.15 | 20071027 | 234.56530 | 116.94890 | 129.76674 | 7.46640  | 0.0564433 | 2.2376575 | 34  | 5 | 1993-2007 | 0.48 | M-v | 1 | MPC | 109173 2005 GY <sub>21</sub> |
| 2005 GN <sub>23</sub> | 16.6 | 0.15 | 20071027 | 274.36875 | 143.03827 | 35.72903  | 6.25672  | 0.1605623 | 2.3317775 | 63  | 4 | 1992-2007 | 0.53 | M-v | 2 | MPC | 86682 2005 GN <sub>23</sub>  |
| 2005 GT <sub>24</sub> | 16.0 | 0.15 | 20071027 | 137.40536 | 285.34090 | 356.63900 | 3.98721  | 0.1467834 | 2.6574089 | 72  | 5 | 1996-2007 | 0.40 | M-v | 0 | MPC | 128879 2005 GT <sub>24</sub> |
| 2005 GZ <sub>26</sub> | 15.7 | 0.15 | 20071027 | 238.02668 | 352.09149 | 188.84187 | 13.15156 | 0.1042675 | 2.6587577 | 59  | 3 | 2005-2007 | 0.50 | M-v | 3 | MPC | 128879 2005 GZ <sub>26</sub> |
| 2005 GT <sub>27</sub> | 15.7 | 0.15 | 20071027 | 178.86604 | 278.82727 | 331.30426 | 5.08895  | 0.1336013 | 2.6025095 | 74  | 5 | 2001-2007 | 0.58 | M-v | 1 | MPC | 111091 2005 GT <sub>27</sub> |
| 2005 GU <sub>27</sub> | 17.2 | 0.15 | 20071027 | 233.99680 | 293.27488 | 275.93934 | 3.36372  | 0.1275529 | 2.4415925 | 38  | 7 | 1998-2007 | 0.45 | M-v | 1 | MPC | 111091 2005 GU <sub>27</sub> |
| 2005 GT <sub>28</sub> | 15.1 | 0.15 | 20071027 | 97.20148  | 69.38465  | 205.50674 | 26.35985 | 0.0429427 | 3.1443281 | 58  | 2 | 2005-2007 | 0.48 | M-v | 2 | MPC | 128879 2005 GT <sub>28</sub> |
| 2005 GH <sub>30</sub> | 16.0 | 0.15 | 20071027 | 109.92700 | 208.16973 | 78.22272  | 4.45065  | 0.0391699 | 2.7664946 | 59  | 6 | 1993-2007 | 0.57 | M-v | 0 | MPC | 128879 2005 GH <sub>30</sub> |
| 2005 GT <sub>30</sub> | 16.7 | 0.15 | 20071027 | 82.89628  | 144.33206 | 178.20280 | 3.50464  | 0.0705783 | 2.8020168 | 41  | 4 | 2004-2007 | 0.32 | M-v | 0 | MPC | 128880 2005 GT <sub>30</sub> |
| 2005 GW <sub>30</sub> | 16.4 | 0.15 | 20071027 | 4.56992   | 338.97072 | 47.39229  | 2.85193  | 0.0791634 | 2.8707723 | 41  | 3 | 2003-2007 | 0.44 | M-v | 3 | MPC | 128880 2005 GW <sub>30</sub> |
| 2005 GY <sub>30</sub> | 16.1 | 0.15 | 20071027 | 92.25704  | 272.26513 | 43.20951  | 3.33789  | 0.0618500 | 2.7781257 | 56  | 4 | 2002-2007 | 0.30 | M-v | 0 | MPC | 128201 2005 GY <sub>30</sub> |
| 2005 GR <sub>31</sub> | 17.2 | 0.15 | 20071027 | 242.24386 | 286.84138 | 281.63721 | 1.31323  | 0.1274707 | 2.3905161 | 55  | 6 | 1999-2007 | 0.50 | M-v | 1 | MPC | 111091 2005 GR <sub>31</sub> |
| 2005 GD <sub>32</sub> | 17.7 | 0.15 | 20071027 | 224.02503 | 343.60322 | 238.39183 | 0.61199  | 0.1396616 | 2.3960896 | 50  | 6 | 1999-2007 | 0.40 | M-v | 1 | MPC | 111091 2005 GD <sub>32</sub> |
| 2005 GT <sub>38</sub> | 16.7 | 0.15 | 20071027 | 201.70278 | 185.47850 | 39.49331  | 2.03103  | 0.1405333 | 2.5419453 | 46  | 6 | 1993-2007 | 0.50 | M-v | 1 | MPC | 128880 2005 GT <sub>38</sub> |
| 2005 GB <sub>39</sub> | 16.6 | 0.15 | 20071027 | 296.27114 | 98.51987  | 44.24274  | 1.38219  | 0.1594107 | 2.3303369 | 63  | 6 | 1994-2007 | 0.56 | M-v | 1 | MPC | 128880 2005 GB <sub>39</sub> |
| 2005 GW <sub>39</sub> | 15.9 | 0.15 | 20071027 | 342.73075 | 43.04193  | 30.31716  | 5.61584  | 0.1182737 | 2.5808150 | 106 | 4 | 1999-2007 | 0.55 | M-v | 3 | MPC | 128880 2005 GW <sub>39</sub> |
| 2005 GX <sub>40</sub> | 16.2 | 0.15 | 20071027 | 70.38334  | 288.93638 | 53.23404  | 4.24759  | 0.0986882 | 2.7960823 | 38  | 3 | 2002-2007 | 0.47 | M-v | 3 | MPC | 128880 2005 GX <sub>40</sub> |
| 2005 GV <sub>41</sub> | 17.6 | 0.15 | 20071027 | 217.73430 | 340.18605 | 223.90754 | 1.45201  | 0.1261443 | 2.3616107 | 27  | 4 | 1996-2007 | 0.29 | M-v | 1 | MPC | 128880 2005 GV <sub>41</sub> |
| 2005 GQ <sub>42</sub> | 16.5 | 0.15 | 20071027 | 264.38866 | 79.78694  | 86.93213  | 7.08671  | 0.0794161 | 2.4147454 | 55  | 3 | 2001-2007 | 0.62 | M-v | 3 | MPC | 128880 2005 GQ <sub>42</sub> |
| 2005 GS <sub>42</sub> | 17.1 | 0.15 | 20071027 | 287.55349 | 316.73212 | 172.72916 | 6.65380  | 0.0591255 | 2.3442874 | 41  | 3 | 2003-2007 | 0.61 | M-v | 3 | MPC | 128201 2005 GS <sub>42</sub> |
| 2005 GH <sub>44</sub> | 16.6 | 0.15 | 20071027 | 139.92602 | 359.58421 | 281.46827 | 4.40659  | 0.1623782 | 2.7218748 | 40  | 5 | 1993-2007 | 0.47 | M-v | 0 | MPC | 109177 2005 GH <sub>44</sub> |
| 2005 GE <sub>46</sub> | 16.6 | 0.15 | 20071027 | 4.79127   | 99.74703  | 274.97886 | 0.93052  | 0.0852853 | 2.8510715 | 64  | 4 | 1997-2007 | 0.40 | M-v | 3 | MPC | 128880 2005 GE <sub>46</sub> |
| 2005 GX <sub>46</sub> | 17.5 | 0.15 | 20071027 | 318.24954 | 240.78621 | 250.94241 | 0.47843  | 0.0957161 | 2.2810827 | 50  | 5 | 1998-2007 | 0.35 | M-v | 1 | MPC | 128880 2005 GX <sub>46</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 GB <sub>47</sub>  | 15.5 | 0.15 | 20071027 | 96.43392  | 70.76806  | 195.21892 | 1.81441  | 0.0604035 | 3.1455635 | 50  | 4 | 1994-2007 | 0.32 | M-v | 1 | MPC | 128880 2005 GB <sub>47</sub>  |
| 2005 GN <sub>48</sub>  | 17.2 | 0.15 | 20071027 | 171.26004 | 217.50327 | 47.99589  | 3.25489  | 0.1947009 | 2.6284314 | 53  | 2 | 2005-2006 | 0.27 | M-v | 3 | MPC | 114734 2005 GN <sub>48</sub>  |
| 2005 GZ <sub>48</sub>  | 16.7 | 0.15 | 20071027 | 33.58925  | 317.98304 | 73.49573  | 2.20670  | 0.0758982 | 2.5831135 | 41  | 3 | 2002-2007 | 0.43 | M-v | 4 | MPC | 109179 2005 GZ <sub>48</sub>  |
| 2005 GV <sub>51</sub>  | 16.4 | 0.15 | 20071027 | 342.86051 | 41.08475  | 39.00665  | 3.52321  | 0.1515157 | 2.5784405 | 66  | 5 | 2000-2007 | 0.60 | M-v | 2 | MPC | 128880 2005 GV <sub>51</sub>  |
| 2005 GX <sub>52</sub>  | 15.9 | 0.15 | 20071027 | 29.98242  | 315.99469 | 40.70110  | 9.70007  | 0.0722759 | 3.1802667 | 37  | 2 | 2005-2007 | 0.40 | M-v | 3 | MPC | 128880 2005 GX <sub>52</sub>  |
| 2005 GZ <sub>53</sub>  | 16.5 | 0.15 | 20071027 | 240.48129 | 149.95346 | 32.60817  | 4.29876  | 0.1306711 | 2.5615520 | 52  | 4 | 2001-2007 | 0.40 | M-v | 1 | MPC | 128880 2005 GZ <sub>53</sub>  |
| 2005 GK <sub>55</sub>  | 16.2 | 0.15 | 20071027 | 59.25953  | 167.88710 | 180.33955 | 4.35816  | 0.0817943 | 2.7823277 | 41  | 4 | 2000-2007 | 0.34 | M-v | 0 | MPC | 128880 2005 GK <sub>55</sub>  |
| 2005 GX <sub>55</sub>  | 16.1 | 0.15 | 20071027 | 79.49483  | 51.04871  | 239.60499 | 1.30200  | 0.0597191 | 3.0259327 | 52  | 3 | 2000-2007 | 0.39 | M-v | 2 | MPC | 128881 2005 GX <sub>55</sub>  |
| 2005 GK <sub>58</sub>  | 16.0 | 0.15 | 20071027 | 182.82206 | 187.85209 | 31.75145  | 16.77750 | 0.0929858 | 2.8114151 | 33  | 3 | 2003-2007 | 0.29 | M-v | 2 | MPC | 89653 2005 GK <sub>58</sub>   |
| 2005 GA <sub>59</sub>  | 16.1 | 0.15 | 20071027 | 273.58157 | 80.47456  | 93.57373  | 11.20153 | 0.1780693 | 2.4031250 | 83  | 4 | 1996-2007 | 0.49 | M-v | 1 | MPC | 77094 2005 GA <sub>59</sub>   |
| 2005 GE <sub>59</sub>  | 18.1 | 0.15 | 20071027 | 2.21533   | 242.78196 | 195.01533 | 16.10126 | 0.6014952 | 2.1099297 | 63  | 3 | 2005-2007 | 0.48 | M-v | 2 | MPC | 124469 2005 GE <sub>59</sub>  |
| 2005 GV <sub>59</sub>  | 15.8 | 0.15 | 20071027 | 94.67090  | 277.48572 | 18.65346  | 8.41578  | 0.2425836 | 3.1468990 | 54  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 104327 2005 GV <sub>59</sub>  |
| 2005 GX <sub>60</sub>  | 16.1 | 0.15 | 20071027 | 197.52054 | 173.91726 | 60.78482  | 13.53730 | 0.1086139 | 2.5793069 | 66  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 87665 2005 GX <sub>60</sub>   |
| 2005 GY <sub>62</sub>  | 17.1 | 0.15 | 20071027 | 282.36666 | 86.92632  | 83.11282  | 6.29002  | 0.0966546 | 2.2346035 | 35  | 4 | 2003-2007 | 0.67 | M-v | 2 | MPC | 126046 2005 GY <sub>62</sub>  |
| 2005 GK <sub>63</sub>  | 16.0 | 0.15 | 20071027 | 219.99112 | 163.72609 | 42.65756  | 13.84978 | 0.0841766 | 2.4171694 | 34  | 4 | 1999-2007 | 0.60 | M-v | 3 | MPC | 128881 2005 GK <sub>63</sub>  |
| 2005 GQ <sub>63</sub>  | 17.0 | 0.15 | 20071027 | 217.93560 | 123.65527 | 90.56691  | 10.61357 | 0.1409274 | 2.4406709 | 25  | 3 | 1996-2007 | 0.46 | M-v | 3 | MPC | 86693 2005 GQ <sub>63</sub>   |
| 2005 GY <sub>64</sub>  | 15.8 | 0.15 | 20071027 | 77.46958  | 267.89542 | 66.44453  | 12.64273 | 0.0679982 | 2.5639907 | 58  | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 128881 2005 GY <sub>64</sub>  |
| 2005 GL <sub>66</sub>  | 16.5 | 0.15 | 20071027 | 102.81430 | 253.02415 | 52.12880  | 0.69227  | 0.0539628 | 2.7668511 | 48  | 3 | 2002-2007 | 0.34 | M-v | 3 | MPC | 128203 2005 GL <sub>66</sub>  |
| 2005 GM <sub>66</sub>  | 17.0 | 0.15 | 20071027 | 91.85529  | 135.23738 | 191.57903 | 2.53970  | 0.0570989 | 2.6668917 | 46  | 5 | 2001-2007 | 0.49 | M-v | 0 | MPC | 128881 2005 GM <sub>66</sub>  |
| 2005 GR <sub>71</sub>  | 17.0 | 0.15 | 20071027 | 326.62779 | 316.86163 | 163.43498 | 3.70152  | 0.1008963 | 2.2788800 | 49  | 5 | 1998-2007 | 0.61 | M-v | 1 | MPC | 86697 2005 GR <sub>71</sub>   |
| 2005 GA <sub>74</sub>  | 16.6 | 0.15 | 20071027 | 165.63391 | 172.36226 | 102.22308 | 12.05054 | 0.1957875 | 2.6638229 | 35  | 4 | 2003-2007 | 0.48 | M-v | 1 | MPC | 111092 2005 GA <sub>74</sub>  |
| 2005 GV <sub>74</sub>  | 16.9 | 0.15 | 20071027 | 303.64035 | 2.29308   | 138.23023 | 2.57819  | 0.1429273 | 2.3379245 | 48  | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 104327 2005 GV <sub>74</sub>  |
| 2005 GM <sub>75</sub>  | 16.7 | 0.15 | 20071027 | 262.91787 | 135.34547 | 59.42121  | 3.76518  | 0.1439936 | 2.3346455 | 96  | 5 | 1996-2007 | 0.45 | M-v | 1 | MPC | 128881 2005 GM <sub>75</sub>  |
| 2005 GW <sub>77</sub>  | 15.4 | 0.15 | 20071027 | 344.07914 | 254.09363 | 176.32072 | 25.49686 | 0.1054618 | 2.5587890 | 32  | 3 | 2003-2007 | 0.62 | M-v | 3 | MPC | 86699 2005 GW <sub>77</sub>   |
| 2005 GH <sub>79</sub>  | 15.2 | 0.15 | 20071027 | 259.07248 | 56.67420  | 101.34832 | 16.05893 | 0.0421256 | 2.6688531 | 73  | 4 | 2003-2007 | 0.58 | M-v | 1 | MPC | 128881 2005 GH <sub>79</sub>  |
| 2005 GQ <sub>79</sub>  | 16.3 | 0.15 | 20071027 | 173.58592 | 186.20312 | 45.40023  | 4.50087  | 0.0432895 | 2.7764805 | 61  | 2 | 2005-2007 | 0.37 | M-v | 3 | MPC | 128881 2005 GQ <sub>79</sub>  |
| 2005 GF <sub>80</sub>  | 16.9 | 0.15 | 20071027 | 214.54902 | 138.23721 | 142.77945 | 4.39125  | 0.0908288 | 2.2214359 | 58  | 7 | 1995-2007 | 0.55 | M-v | 1 | MPC | 111093 2005 GF <sub>80</sub>  |
| 2005 GZ <sub>80</sub>  | 16.9 | 0.15 | 20071027 | 166.20932 | 18.53083  | 243.85981 | 2.60610  | 0.0445303 | 2.6715390 | 43  | 5 | 1998-2007 | 0.35 | M-v | 0 | MPC | 128882 2005 GZ <sub>80</sub>  |
| 2005 GB <sub>81</sub>  | 17.3 | 0.15 | 20071027 | 295.86869 | 112.49659 | 14.13298  | 3.12391  | 0.1388706 | 2.5639349 | 31  | 3 | 2003-2007 | 0.30 | M-v | 2 | MPC | 128204 2005 GB <sub>81</sub>  |
| 2005 GD <sub>81</sub>  | 16.6 | 0.15 | 20071027 | 176.16647 | 181.07544 | 96.62193  | 12.29999 | 0.2239256 | 2.5350073 | 41  | 6 | 1998-2007 | 0.61 | M-v | 1 | MPC | 121819 2005 GD <sub>81</sub>  |
| 2005 GY <sub>83</sub>  | 17.2 | 0.15 | 20071027 | 297.55501 | 275.02282 | 223.18353 | 3.72888  | 0.2029127 | 2.3701114 | 51  | 3 | 1996-2007 | 0.51 | M-v | 2 | MPC | 128204 2005 GY <sub>83</sub>  |
| 2005 GU <sub>86</sub>  | 15.5 | 0.15 | 20071027 | 285.96815 | 247.42556 | 200.82429 | 9.99561  | 0.0891957 | 3.0329149 | 37  | 3 | 2004-2007 | 0.26 | M-v | 3 | MPC | 128882 2005 GU <sub>86</sub>  |
| 2005 GW <sub>88</sub>  | 15.9 | 0.15 | 20071027 | 315.70631 | 205.22519 | 210.25787 | 8.01050  | 0.0577320 | 3.1267221 | 50  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 128882 2005 GW <sub>88</sub>  |
| 2005 GH <sub>89</sub>  | 16.7 | 0.15 | 20071027 | 9.55321   | 220.77917 | 175.03338 | 1.90932  | 0.0847074 | 2.7114881 | 64  | 5 | 1998-2007 | 0.43 | M-v | 1 | MPC | 128205 2005 GH <sub>89</sub>  |
| 2005 GZ <sub>89</sub>  | 16.5 | 0.15 | 20071027 | 132.90728 | 160.14003 | 152.80904 | 4.53607  | 0.1046360 | 2.6195417 | 50  | 5 | 2000-2007 | 0.37 | M-v | 0 | MPC | 114734 2005 GZ <sub>89</sub>  |
| 2005 GE <sub>96</sub>  | 16.1 | 0.15 | 20071027 | 138.25767 | 147.07988 | 154.36535 | 2.59188  | 0.1871288 | 2.6720097 | 75  | 5 | 1993-2007 | 0.33 | M-v | 0 | MPC | 121819 2005 GE <sub>96</sub>  |
| 2005 GV <sub>97</sub>  | 16.1 | 0.15 | 20071027 | 106.15612 | 216.00840 | 105.60323 | 5.01143  | 0.0210803 | 2.6265926 | 52  | 6 | 2001-2007 | 0.39 | M-v | 0 | MPC | 115820 2005 GV <sub>97</sub>  |
| 2005 GW <sub>97</sub>  | 15.8 | 0.15 | 20071027 | 347.23931 | 14.89890  | 51.05602  | 14.01842 | 0.1971191 | 2.6093120 | 121 | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128882 2005 GW <sub>97</sub>  |
| 2005 GG <sub>98</sub>  | 16.4 | 0.15 | 20071027 | 192.69373 | 336.80696 | 251.52847 | 11.50376 | 0.1317130 | 2.6796196 | 39  | 3 | 1997-2007 | 0.39 | M-v | 3 | MPC | 128205 2005 GG <sub>98</sub>  |
| 2005 GT <sub>99</sub>  | 15.6 | 0.15 | 20071027 | 98.84748  | 73.73561  | 220.34618 | 10.06653 | 0.0208293 | 3.1355131 | 50  | 4 | 1996-2007 | 0.39 | M-v | 0 | MPC | 128882 2005 GT <sub>99</sub>  |
| 2005 GL <sub>101</sub> | 16.4 | 0.15 | 20071027 | 330.91694 | 356.23467 | 69.96005  | 1.54141  | 0.0586231 | 2.7781583 | 59  | 6 | 1995-2007 | 0.45 | M-v | 0 | MPC | 128882 2005 GL <sub>101</sub> |
| 2005 GA <sub>102</sub> | 17.0 | 0.15 | 20071027 | 223.82779 | 141.06357 | 95.16737  | 3.26584  | 0.1327826 | 2.3894673 | 66  | 6 | 1995-2007 | 0.54 | M-v | 1 | MPC | 114734 2005 GA <sub>102</sub> |
| 2005 GG <sub>102</sub> | 16.5 | 0.15 | 20071027 | 318.46144 | 35.84801  | 51.78525  | 12.91377 | 0.1621463 | 2.6546176 | 73  | 3 | 2003-2007 | 0.56 | M-v | 2 | MPC | 128882 2005 GG <sub>102</sub> |
| 2005 GB <sub>103</sub> | 15.9 | 0.15 | 20071027 | 149.56270 | 264.63528 | 25.84824  | 3.58872  | 0.1179454 | 2.6463186 | 108 | 4 | 2002-2007 | 0.39 | M-v | 0 | MPC | 116290 2005 GB <sub>103</sub> |
| 2005 GK <sub>105</sub> | 16.3 | 0.15 | 20071027 | 357.59669 | 233.63442 | 177.54619 | 5.31345  | 0.1384605 | 2.6831841 | 63  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128882 2005 GK <sub>105</sub> |
| 2005 GY <sub>105</sub> | 16.4 | 0.15 | 20071027 | 48.21426  | 322.52552 | 47.81956  | 6.85776  | 0.0437649 | 2.6753962 | 38  | 5 | 1998-2007 | 0.43 | M-v | 1 | MPC | 128882 2005 GY <sub>105</sub> |
| 2005 GO <sub>108</sub> | 16.2 | 0.15 | 20071027 | 115.02917 | 230.88258 | 61.77111  | 3.88735  | 0.1547241 | 2.9478086 | 33  | 3 | 2005-2007 | 0.51 | M-v | 3 | MPC | 128882 2005 GO <sub>108</sub> |
| 2005 GT <sub>109</sub> | 16.1 | 0.15 | 20071027 | 40.49700  | 322.46514 | 53.87926  | 4.32129  | 0.0910346 | 2.6650761 | 38  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128882 2005 GT <sub>109</sub> |
| 2005 GZ <sub>109</sub> | 15.5 | 0.15 | 20071027 | 233.58689 | 150.77085 | 29.30172  | 13.71969 | 0.1037350 | 2.6903376 | 107 | 6 | 1996-2007 | 0.49 | M-v | 1 | MPC | 128882 2005 GZ <sub>109</sub> |
| 2005 GL <sub>110</sub> | 15.6 | 0.15 | 20071027 | 221.75080 | 326.08901 | 216.39887 | 7.15908  | 0.1610986 | 2.7578762 | 86  | 2 | 2005-2007 | 0.45 | M-v | 3 | MPC | 128882 2005 GL <sub>110</sub> |
| 2005 GC <sub>111</sub> | 16.7 | 0.15 | 20071027 | 164.99194 | 152.45520 | 99.55412  | 6.25845  | 0.1262264 | 2.7007218 | 23  | 4 | 2002-2007 | 0.45 | M-v | 1 | MPC | 128882 2005 GC <sub>111</sub> |
| 2005 GM <sub>111</sub> | 16.2 | 0.15 | 20071027 | 77.29006  | 30.02173  | 299.04341 | 0.64809  | 0.1025318 | 2.8682427 | 49  | 3 | 2005-2007 | 0.34 | M-v | 3 | MPC | 128206 2005 GM <sub>111</sub> |
| 2005 GZ <sub>111</sub> | 15.6 | 0.15 | 20071027 | 124.66210 | 268.13998 | 1.77914   | 9.35069  | 0.1152124 | 2.9980819 | 40  | 5 | 1996-2007 | 0.56 | M-v | 0 | MPC | 103691 2005 GZ <sub>111</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 GW <sub>113</sub> | 16.8 | 0.15 | 20071027 | 221.06628 | 105.26922 | 110.99410 | 5.96756  | 0.1328453 | 2.5503705 | 37 | 3 | 1997-2007 | 0.53 | M-v | 3 | MPG | 128883 2005 GW <sub>113</sub> |
| 2005 GT <sub>115</sub> | 16.8 | 0.15 | 20071027 | 185.96173 | 209.31404 | 41.73643  | 5.15738  | 0.1081598 | 2.5381704 | 38 | 5 | 1997-2007 | 0.39 | M-v | 1 | MPG | 111094 2005 GT <sub>115</sub> |
| 2005 GW <sub>117</sub> | 15.5 | 0.15 | 20071027 | 53.61472  | 311.79572 | 26.21540  | 16.52796 | 0.2182704 | 3.0025102 | 38 | 5 | 2000-2007 | 0.46 | M-v | 0 | MPG | 128883 2005 GW <sub>117</sub> |
| 2005 GX <sub>117</sub> | 15.5 | 0.15 | 20071027 | 32.15102  | 343.90610 | 44.43062  | 5.64902  | 0.2005613 | 2.5307789 | 65 | 4 | 1999-2007 | 0.57 | M-v | 3 | MPG | 128883 2005 GX <sub>117</sub> |
| 2005 GX <sub>118</sub> | 17.6 | 0.15 | 20071027 | 350.10652 | 12.32655  | 77.46234  | 2.84602  | 0.1688617 | 2.3161556 | 35 | 4 | 1994-2007 | 0.43 | M-v | 3 | MPG | 86707 2005 GX <sub>118</sub>  |
| 2005 GD <sub>119</sub> | 16.4 | 0.15 | 20071027 | 249.99526 | 109.51895 | 47.16080  | 5.15149  | 0.1263971 | 2.6304529 | 48 | 2 | 2005-2007 | 0.41 | M-v | 3 | MPG | 128883 2005 GD <sub>119</sub> |
| 2005 GN <sub>120</sub> | 16.3 | 0.15 | 20071027 | 297.12323 | 236.39833 | 195.05204 | 1.58428  | 0.0483896 | 2.8669953 | 38 | 4 | 2000-2007 | 0.32 | M-v | 1 | MPG | 128207 2005 GN <sub>120</sub> |
| 2005 GM <sub>121</sub> | 15.9 | 0.15 | 20071027 | 140.67564 | 93.13572  | 169.95095 | 3.20209  | 0.2620299 | 3.0840868 | 70 | 5 | 2001-2007 | 0.33 | M-v | 0 | MPG | 128883 2005 GM <sub>121</sub> |
| 2005 GO <sub>121</sub> | 16.5 | 0.15 | 20071027 | 210.67650 | 184.44297 | 61.04806  | 3.16441  | 0.1297079 | 2.4727586 | 65 | 4 | 2001-2007 | 0.44 | M-v | 1 | MPG | 121819 2005 GO <sub>121</sub> |
| 2005 GK <sub>122</sub> | 16.2 | 0.15 | 20071027 | 109.93064 | 91.39783  | 192.78489 | 4.65770  | 0.1330344 | 2.7846367 | 51 | 5 | 1996-2007 | 0.29 | M-v | 0 | MPG | 128883 2005 GK <sub>122</sub> |
| 2005 GF <sub>123</sub> | 15.9 | 0.15 | 20071027 | 13.05419  | 336.81464 | 52.08020  | 10.26551 | 0.1150418 | 2.9203999 | 92 | 3 | 2002-2007 | 0.48 | M-v | 2 | MPG | 128207 2005 GF <sub>123</sub> |
| 2005 GJ <sub>126</sub> | 16.6 | 0.15 | 20071027 | 261.90899 | 82.01016  | 112.18329 | 5.32435  | 0.1142954 | 2.3392410 | 81 | 6 | 2000-2007 | 0.63 | M-v | 1 | MPG | 111094 2005 GJ <sub>126</sub> |
| 2005 GS <sub>126</sub> | 16.5 | 0.15 | 20071027 | 347.63303 | 192.97083 | 215.62915 | 9.56477  | 0.1092250 | 2.9097833 | 42 | 2 | 2005-2007 | 0.34 | M-v | 4 | MPG | 128208 2005 GS <sub>126</sub> |
| 2005 GC <sub>127</sub> | 16.5 | 0.15 | 20071027 | 200.67058 | 49.47848  | 165.11142 | 3.49729  | 0.0825304 | 2.7150728 | 42 | 5 | 1996-2007 | 0.33 | M-v | 0 | MPG | 128883 2005 GC <sub>127</sub> |
| 2005 GA <sub>128</sub> | 15.8 | 0.15 | 20071027 | 99.10917  | 285.61088 | 48.44347  | 13.92287 | 0.0642138 | 2.5461508 | 36 | 6 | 2001-2007 | 0.51 | M-v | 1 | MPG | 111094 2005 GA <sub>128</sub> |
| 2005 GW <sub>129</sub> | 15.9 | 0.15 | 20071027 | 350.18311 | 7.96545   | 60.21682  | 9.40156  | 0.0420936 | 2.6555847 | 52 | 5 | 2002-2007 | 0.50 | M-v | 1 | MPG | 128883 2005 GW <sub>129</sub> |
| 2005 GA <sub>130</sub> | 17.2 | 0.15 | 20071027 | 259.25181 | 113.52557 | 67.28999  | 6.94907  | 0.0759057 | 2.4780222 | 46 | 6 | 1995-2007 | 0.44 | M-v | 1 | MPG | 77140 2005 GA <sub>130</sub>  |
| 2005 GV <sub>130</sub> | 15.7 | 0.15 | 20071027 | 51.37205  | 178.32587 | 160.98686 | 6.47143  | 0.1823820 | 3.2041328 | 42 | 5 | 2001-2007 | 0.43 | M-v | 0 | MPG | 128208 2005 GV <sub>130</sub> |
| 2005 GQ <sub>132</sub> | 17.7 | 0.15 | 20071027 | 276.97262 | 93.91765  | 39.77145  | 10.93194 | 0.1821166 | 2.5485192 | 45 | 5 | 1999-2007 | 0.38 | M-v | 1 | MPG | 126744 2005 GQ <sub>132</sub> |
| 2005 GA <sub>133</sub> | 16.6 | 0.15 | 20071027 | 132.19120 | 214.28798 | 58.41451  | 5.70963  | 0.0255536 | 2.7859589 | 57 | 3 | 2002-2007 | 0.33 | M-v | 2 | MPG | 128883 2005 GA <sub>133</sub> |
| 2005 GV <sub>134</sub> | 15.5 | 0.15 | 20071027 | 33.12721  | 135.99660 | 216.84855 | 9.41371  | 0.0676691 | 3.1144857 | 60 | 5 | 1994-2007 | 0.48 | M-v | 1 | MPG | 128883 2005 GV <sub>134</sub> |
| 2005 GW <sub>134</sub> | 15.8 | 0.15 | 20071027 | 239.96775 | 303.33036 | 216.51510 | 8.30365  | 0.0882971 | 2.8066487 | 42 | 3 | 2002-2007 | 0.28 | M-v | 2 | MPG | 128209 2005 GW <sub>134</sub> |
| 2005 GK <sub>135</sub> | 15.4 | 0.15 | 20071027 | 47.77819  | 280.53831 | 68.94458  | 7.75527  | 0.1816528 | 3.0742151 | 63 | 5 | 2001-2007 | 0.47 | M-v | 1 | MPG | 128883 2005 GK <sub>135</sub> |
| 2005 GT <sub>135</sub> | 16.2 | 0.15 | 20071027 | 133.05723 | 174.54922 | 108.72060 | 7.85069  | 0.2575604 | 3.0103466 | 27 | 4 | 2001-2007 | 0.53 | M-v | 0 | MPG | 109200 2005 GT <sub>135</sub> |
| 2005 GY <sub>136</sub> | 16.8 | 0.15 | 20071027 | 315.68372 | 51.05062  | 88.50172  | 7.32530  | 0.0583260 | 2.3904562 | 42 | 3 | 2003-2007 | 0.44 | M-v | 2 | MPG | 128883 2005 GY <sub>136</sub> |
| 2005 GE <sub>137</sub> | 17.7 | 0.15 | 20071027 | 334.84658 | 330.91998 | 165.93163 | 2.64270  | 0.0369926 | 2.2418042 | 42 | 5 | 1996-2007 | 0.30 | M-v | 0 | MPG | 128883 2005 GE <sub>137</sub> |
| 2005 GP <sub>138</sub> | 16.3 | 0.15 | 20071027 | 237.92105 | 112.82392 | 60.00801  | 4.59092  | 0.0672225 | 2.6572932 | 84 | 5 | 1998-2007 | 0.42 | M-v | 0 | MPG | 128883 2005 GP <sub>138</sub> |
| 2005 GQ <sub>138</sub> | 17.4 | 0.15 | 20071027 | 335.07191 | 315.95711 | 139.35726 | 2.91675  | 0.1597841 | 2.4074255 | 35 | 5 | 2001-2007 | 0.54 | M-v | 1 | MPG | 128883 2005 GQ <sub>138</sub> |
| 2005 GY <sub>138</sub> | 16.5 | 0.15 | 20071027 | 196.96664 | 251.88397 | 348.90524 | 2.66419  | 0.1295243 | 2.5739451 | 30 | 3 | 2005-2007 | 0.35 | M-v | 4 | MPG | 128883 2005 GY <sub>138</sub> |
| 2005 GK <sub>139</sub> | 17.0 | 0.15 | 20071027 | 283.84792 | 80.73287  | 89.13455  | 4.48845  | 0.0910349 | 2.3835299 | 31 | 5 | 1992-2007 | 0.48 | M-v | 1 | MPG | 111095 2005 GK <sub>139</sub> |
| 2005 GE <sub>140</sub> | 17.0 | 0.15 | 20071027 | 236.87330 | 157.31843 | 34.67813  | 0.96051  | 0.0505807 | 2.6041591 | 43 | 5 | 2000-2007 | 0.37 | M-v | 1 | MPG | 128883 2005 GE <sub>140</sub> |
| 2005 GY <sub>142</sub> | 16.3 | 0.15 | 20071027 | 241.56421 | 306.04236 | 231.09549 | 7.08678  | 0.0608415 | 2.5906497 | 53 | 6 | 2001-2007 | 0.35 | M-v | 0 | MPG | 128883 2005 GY <sub>142</sub> |
| 2005 GH <sub>143</sub> | 16.4 | 0.15 | 20071027 | 339.26704 | 314.47895 | 124.43999 | 5.44834  | 0.1632925 | 2.5768121 | 56 | 4 | 2000-2007 | 0.40 | M-v | 1 | MPG | 128210 2005 GH <sub>143</sub> |
| 2005 GZ <sub>144</sub> | 15.9 | 0.15 | 20071027 | 110.86019 | 298.24222 | 358.65368 | 4.36145  | 0.0429794 | 2.7739715 | 44 | 4 | 2004-2007 | 0.38 | M-v | 0 | MPG | 128211 2005 GZ <sub>144</sub> |
| 2005 GU <sub>145</sub> | 15.8 | 0.15 | 20071027 | 311.51111 | 231.13780 | 214.33753 | 10.95329 | 0.1595064 | 2.6869060 | 79 | 3 | 2003-2007 | 0.56 | M-v | 3 | MPG | 128883 2005 GU <sub>145</sub> |
| 2005 GW <sub>145</sub> | 16.2 | 0.15 | 20071027 | 263.55694 | 206.05970 | 274.89236 | 1.03863  | 0.0427705 | 2.9218635 | 38 | 2 | 2005-2007 | 0.32 | M-v | 3 | MPG | 128884 2005 GW <sub>145</sub> |
| 2005 GZ <sub>147</sub> | 15.6 | 0.15 | 20071027 | 183.27529 | 187.09905 | 358.60576 | 5.16116  | 0.1082129 | 3.1135418 | 24 | 2 | 2005-2007 | 0.31 | M-v | 3 | MPG | 128211 2005 GZ <sub>147</sub> |
| 2005 GO <sub>150</sub> | 16.9 | 0.15 | 20071027 | 17.19663  | 325.83404 | 76.81080  | 6.63989  | 0.0415753 | 2.7494855 | 21 | 3 | 2002-2007 | 0.31 | M-v | 2 | MPG | 77152 2005 GO <sub>150</sub>  |
| 2005 GT <sub>150</sub> | 16.3 | 0.15 | 20071027 | 216.75155 | 141.07295 | 63.89120  | 9.55200  | 0.0657769 | 2.7146369 | 37 | 2 | 2005-2007 | 0.40 | M-v | 3 | MPG | 128211 2005 GT <sub>150</sub> |
| 2005 GB <sub>151</sub> | 16.8 | 0.15 | 20071027 | 291.11063 | 48.51034  | 145.50460 | 3.69413  | 0.1187323 | 2.2292768 | 63 | 6 | 1998-2007 | 0.44 | M-v | 1 | MPG | 128884 2005 GB <sub>151</sub> |
| 2005 GS <sub>151</sub> | 15.9 | 0.15 | 20071027 | 230.91783 | 346.32704 | 200.90640 | 3.69715  | 0.0436206 | 2.6540432 | 63 | 5 | 2000-2007 | 0.48 | M-v | 1 | MPG | 128884 2005 GS <sub>151</sub> |
| 2005 GZ <sub>151</sub> | 16.0 | 0.15 | 20071027 | 230.61618 | 161.98093 | 24.64898  | 10.09993 | 0.1102613 | 2.6439095 | 85 | 5 | 1998-2007 | 0.52 | M-v | 1 | MPG | 128884 2005 GZ <sub>151</sub> |
| 2005 GS <sub>152</sub> | 16.1 | 0.15 | 20071027 | 229.93155 | 6.37842   | 185.76339 | 5.46960  | 0.1256947 | 2.6347589 | 64 | 8 | 1992-2007 | 0.51 | M-v | 1 | MPG | 128884 2005 GS <sub>152</sub> |
| 2005 GE <sub>153</sub> | 15.6 | 0.15 | 20071027 | 157.39881 | 200.76180 | 64.12393  | 10.19197 | 0.1127892 | 2.7781123 | 47 | 4 | 2002-2007 | 0.60 | M-v | 1 | MPG | 128884 2005 GE <sub>153</sub> |
| 2005 GJ <sub>153</sub> | 16.6 | 0.15 | 20071027 | 212.60675 | 214.40218 | 358.98463 | 3.52794  | 0.0835991 | 2.6105316 | 35 | 4 | 2002-2007 | 0.49 | M-v | 1 | MPG | 128884 2005 GJ <sub>153</sub> |
| 2005 GN <sub>154</sub> | 17.0 | 0.15 | 20071027 | 291.78839 | 62.12201  | 126.88980 | 3.00030  | 0.0685050 | 2.1923054 | 47 | 5 | 1995-2007 | 0.45 | M-v | 1 | MPG | 114735 2005 GN <sub>154</sub> |
| 2005 GY <sub>157</sub> | 16.4 | 0.15 | 20071027 | 166.98172 | 201.29458 | 40.89695  | 9.75355  | 0.0787991 | 2.8517794 | 38 | 3 | 2002-2007 | 0.33 | M-v | 3 | MPG | 126744 2005 GY <sub>157</sub> |
| 2005 GM <sub>158</sub> | 16.6 | 0.15 | 20071027 | 173.79214 | 266.61113 | 354.29620 | 3.85462  | 0.1588760 | 2.6424532 | 40 | 4 | 1996-2007 | 0.31 | M-v | 0 | MPG | 111095 2005 GM <sub>158</sub> |
| 2005 GW <sub>158</sub> | 16.6 | 0.15 | 20071027 | 264.90879 | 236.98188 | 297.38180 | 3.65985  | 0.1170430 | 2.4482953 | 34 | 5 | 2001-2007 | 0.65 | M-v | 1 | MPG | 128884 2005 GW <sub>158</sub> |
| 2005 GQ <sub>159</sub> | 17.5 | 0.15 | 20071027 | 299.24432 | 92.79143  | 46.90039  | 1.09581  | 0.1495678 | 2.4047835 | 37 | 4 | 1992-2007 | 0.35 | M-v | 0 | MPG | 128212 2005 GQ <sub>159</sub> |
| 2005 GV <sub>160</sub> | 15.6 | 0.15 | 20071027 | 178.25672 | 359.88043 | 211.15433 | 11.59402 | 0.1459717 | 3.0520938 | 59 | 3 | 2001-2007 | 0.38 | M-v | 2 | MPG | 128884 2005 GV <sub>160</sub> |
| 2005 GB <sub>161</sub> | 16.3 | 0.15 | 20071027 | 216.68290 | 108.45332 | 104.66924 | 5.93263  | 0.0554298 | 2.5482763 | 62 | 5 | 2001-2007 | 0.48 | M-v | 1 | MPG | 128884 2005 GB <sub>161</sub> |
| 2005 GA <sub>162</sub> | 16.2 | 0.15 | 20071027 | 80.10056  | 117.93681 | 215.67686 | 1.33423  | 0.0979203 | 2.8718910 | 52 | 5 | 2002-2007 | 0.31 | M-v | 0 | MPG | 128884 2005 GA <sub>162</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 GP <sub>162</sub> | 15.9 | 0.15 | 20071027 | 185.48282 | 164.61913 | 83.10625  | 9.32296  | 0.1707079 | 2.6562320 | 56 | 5 | 2002-2007 | 0.57 | M-v | 1 | MPC | 111095 2005 GP <sub>162</sub> |
| 2005 GT <sub>162</sub> | 16.0 | 0.15 | 20071027 | 264.06129 | 109.51770 | 45.70401  | 10.25083 | 0.1276601 | 2.6693166 | 88 | 3 | 2003-2007 | 0.44 | M-v | 1 | MPC | 128884 2005 GT <sub>162</sub> |
| 2005 GM <sub>163</sub> | 17.5 | 0.15 | 20071027 | 7.91329   | 229.32548 | 194.59439 | 1.53542  | 0.0177224 | 2.5401567 | 43 | 6 | 1998-2007 | 0.37 | M-v | 0 | MPC | 111095 2005 GM <sub>163</sub> |
| 2005 GX <sub>164</sub> | 15.8 | 0.15 | 20071027 | 28.66625  | 344.23106 | 32.76368  | 12.40755 | 0.0889885 | 2.8563226 | 58 | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 128884 2005 GX <sub>164</sub> |
| 2005 GU <sub>165</sub> | 17.2 | 0.15 | 20071027 | 297.86624 | 106.26927 | 36.18484  | 1.12841  | 0.1198343 | 2.3892074 | 46 | 4 | 2001-2007 | 0.42 | M-v | 0 | MPC | 128884 2005 GU <sub>165</sub> |
| 2005 GC <sub>167</sub> | 16.2 | 0.15 | 20071027 | 78.81355  | 265.36371 | 68.71924  | 3.01035  | 0.0861702 | 2.9452597 | 52 | 5 | 2000-2007 | 0.35 | M-v | 0 | MPC | 128884 2005 GC <sub>167</sub> |
| 2005 GT <sub>167</sub> | 17.2 | 0.15 | 20071027 | 287.67453 | 130.28368 | 42.93311  | 2.78264  | 0.1537149 | 2.3557746 | 31 | 4 | 2001-2007 | 0.37 | M-v | 0 | MPC | 111095 2005 GT <sub>167</sub> |
| 2005 GA <sub>169</sub> | 16.4 | 0.15 | 20071027 | 8.39149   | 229.23715 | 207.55250 | 6.91119  | 0.0854814 | 2.4139830 | 47 | 6 | 1995-2007 | 0.40 | M-v | 1 | MPC | 104330 2005 GA <sub>169</sub> |
| 2005 GK <sub>169</sub> | 15.8 | 0.15 | 20071027 | 33.94971  | 162.96707 | 210.11721 | 5.33622  | 0.0389648 | 2.8098656 | 55 | 5 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128884 2005 GK <sub>169</sub> |
| 2005 GS <sub>170</sub> | 14.8 | 0.15 | 20071027 | 110.06266 | 227.09810 | 70.28688  | 22.95620 | 0.2631275 | 3.1771623 | 72 | 5 | 2001-2007 | 0.54 | M-v | 0 | MPC | 111096 2005 GS <sub>170</sub> |
| 2005 GY <sub>170</sub> | 16.4 | 0.15 | 20071027 | 198.32106 | 319.39146 | 246.16549 | 2.51172  | 0.0347665 | 2.8067805 | 33 | 2 | 2005-2007 | 0.37 | M-v | 3 | MPC | 128884 2005 GY <sub>170</sub> |
| 2005 GP <sub>171</sub> | 16.5 | 0.15 | 20071027 | 160.44353 | 11.60089  | 218.01747 | 9.33815  | 0.1021134 | 3.0145271 | 49 | 3 | 2000-2007 | 0.34 | M-v | 3 | MPC | 128884 2005 GP <sub>171</sub> |
| 2005 GQ <sub>172</sub> | 16.3 | 0.15 | 20071027 | 324.56800 | 48.00960  | 37.35024  | 12.54010 | 0.3410632 | 2.4334128 | 61 | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 128215 2005 GQ <sub>172</sub> |
| 2005 GV <sub>172</sub> | 16.6 | 0.15 | 20071027 | 125.44717 | 227.78761 | 61.29268  | 3.79991  | 0.1179897 | 2.7928043 | 31 | 3 | 2002-2007 | 0.30 | M-v | 3 | MPC | 77165 2005 GV <sub>172</sub>  |
| 2005 GX <sub>172</sub> | 16.3 | 0.15 | 20071027 | 226.00324 | 113.55971 | 68.92913  | 3.51286  | 0.0765079 | 2.7024279 | 58 | 3 | 2003-2007 | 0.39 | M-v | 2 | MPC | 128884 2005 GX <sub>172</sub> |
| 2005 GO <sub>173</sub> | 15.9 | 0.15 | 20071027 | 78.58317  | 165.79219 | 173.61083 | 7.58870  | 0.0908516 | 2.7636619 | 40 | 5 | 2002-2007 | 0.54 | M-v | 0 | MPC | 124470 2005 GO <sub>173</sub> |
| 2005 GQ <sub>178</sub> | 16.6 | 0.15 | 20071027 | 63.63564  | 265.50824 | 84.70258  | 7.67333  | 0.0039704 | 2.7775341 | 36 | 3 | 2002-2007 | 0.39 | M-v | 1 | MPC | 128884 2005 GQ <sub>178</sub> |
| 2005 GT <sub>179</sub> | 15.7 | 0.15 | 20071027 | 246.26683 | 78.07574  | 102.46385 | 31.43466 | 0.1303551 | 2.5685512 | 51 | 4 | 2001-2007 | 0.52 | M-v | 2 | MPC | 109207 2005 GT <sub>179</sub> |
| 2005 GG <sub>180</sub> | 15.9 | 0.15 | 20071027 | 261.44995 | 59.39702  | 109.93239 | 29.10309 | 0.1537023 | 2.5591774 | 32 | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 77170 2005 GG <sub>180</sub>  |
| 2005 GL <sub>181</sub> | 16.5 | 0.15 | 20071027 | 163.06226 | 180.45726 | 70.91665  | 3.41323  | 0.0415655 | 2.6834037 | 38 | 5 | 1998-2007 | 0.33 | M-v | 1 | MPC | 128884 2005 GL <sub>181</sub> |
| 2005 GN <sub>181</sub> | 16.0 | 0.15 | 20071027 | 342.62781 | 248.42582 | 182.26596 | 8.42802  | 0.1469940 | 2.5642802 | 98 | 4 | 2000-2007 | 0.42 | M-v | 2 | MPC | 128884 2005 GN <sub>181</sub> |
| 2005 GO <sub>181</sub> | 17.0 | 0.15 | 20071027 | 295.16751 | 356.99785 | 135.06046 | 3.15054  | 0.1445438 | 2.4471932 | 52 | 4 | 2000-2007 | 0.49 | M-v | 0 | MPC | 128884 2005 GO <sub>181</sub> |
| 2005 GC <sub>182</sub> | 16.5 | 0.15 | 20071027 | 185.05840 | 318.64658 | 288.86162 | 2.35110  | 0.2111947 | 2.6647745 | 61 | 4 | 2002-2007 | 0.39 | M-v | 0 | MPC | 109208 2005 GC <sub>182</sub> |
| 2005 GD <sub>182</sub> | 16.3 | 0.15 | 20071027 | 243.55025 | 239.61579 | 324.83753 | 6.42814  | 0.0698901 | 2.3925664 | 79 | 4 | 2003-2007 | 0.55 | M-v | 1 | MPC | 111096 2005 GD <sub>182</sub> |
| 2005 GK <sub>187</sub> | 16.8 | 0.15 | 20071027 | 137.72266 | 138.76241 | 145.70492 | 1.74484  | 0.1758309 | 2.4363007 | 46 | 4 | 2003-2007 | 0.32 | M-v | 1 | MPC | 128885 2005 GK <sub>187</sub> |
| 2005 GF <sub>198</sub> | 17.1 | 0.15 | 20071027 | 356.69177 | 213.40885 | 240.48920 | 4.42903  | 0.2176364 | 2.5966843 | 33 | 2 | 2005-2007 | 0.53 | M-v | 3 | MPC | 128216 2005 GF <sub>198</sub> |
| 2005 GP <sub>203</sub> | 16.9 | 0.15 | 20071027 | 136.10153 | 110.86601 | 155.27389 | 3.20250  | 0.1366913 | 2.7764458 | 29 | 4 | 1997-2007 | 0.37 | M-v | 0 | MPC | 100950 2005 GP <sub>203</sub> |
| 2005 GP <sub>205</sub> | 16.6 | 0.15 | 20071027 | 279.62927 | 54.08242  | 95.33287  | 2.79348  | 0.0596253 | 2.5985507 | 32 | 4 | 2000-2007 | 0.34 | M-v | 1 | MPC | 103695 2005 GP <sub>205</sub> |
| 2005 GM <sub>209</sub> | 16.4 | 0.15 | 20071027 | 189.12187 | 173.57436 | 68.76329  | 15.77077 | 0.1517026 | 2.5760737 | 37 | 3 | 2001-2007 | 0.52 | M-v | 3 | MPC | 128885 2005 GM <sub>209</sub> |
| 2005 GA <sub>213</sub> | 16.5 | 0.15 | 20071027 | 151.62613 | 178.53490 | 93.55915  | 3.61870  | 0.0257968 | 2.5273162 | 48 | 7 | 1993-2007 | 0.49 | M-v | 1 | MPC | 128885 2005 GA <sub>213</sub> |
| 2005 GS <sub>214</sub> | 17.5 | 0.15 | 20071027 | 295.08080 | 78.67868  | 79.85413  | 10.20209 | 0.1089773 | 2.3062657 | 27 | 3 | 2003-2007 | 0.58 | M-v | 2 | MPC | 122505 2005 GS <sub>214</sub> |
| 2005 GC <sub>215</sub> | 15.9 | 0.15 | 20071027 | 193.49609 | 315.53882 | 291.10469 | 3.28048  | 0.1344588 | 2.5943781 | 66 | 6 | 1993-2007 | 0.48 | M-v | 0 | MPC | 109212 2005 GC <sub>215</sub> |
| 2005 GL <sub>215</sub> | 15.8 | 0.15 | 20071027 | 194.48279 | 347.54688 | 252.22451 | 10.63580 | 0.1843308 | 2.7007212 | 38 | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 109212 2005 GL <sub>215</sub> |
| 2005 GP <sub>222</sub> | 15.7 | 0.15 | 20071027 | 313.11763 | 20.96812  | 63.42910  | 7.01904  | 0.0609809 | 2.7930613 | 53 | 2 | 2005-2007 | 0.49 | M-v | 3 | MPC | 128216 2005 GP <sub>222</sub> |
| 2005 GX <sub>223</sub> | 16.3 | 0.15 | 20071027 | 142.88312 | 222.52948 | 74.92424  | 6.20854  | 0.1953807 | 2.6403796 | 39 | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128885 2005 GX <sub>223</sub> |
| 2005 GA <sub>224</sub> | 16.1 | 0.15 | 20071027 | 142.94956 | 228.22002 | 61.02159  | 4.53594  | 0.0643739 | 2.7729963 | 27 | 5 | 1993-2007 | 0.32 | M-v | 1 | MPC | 124026 2005 GA <sub>224</sub> |
| 2005 HQ                | 16.7 | 0.15 | 20071027 | 69.02239  | 44.42471  | 327.35248 | 2.76274  | 0.2051980 | 2.5560838 | 61 | 7 | 1998-2007 | 0.51 | M-v | 1 | MPC | 111096 2005 HQ                |
| 2005 HN <sub>2</sub>   | 17.2 | 0.15 | 20071027 | 261.33829 | 119.47536 | 54.39427  | 1.81950  | 0.1303472 | 2.4678806 | 45 | 5 | 1995-2007 | 0.37 | M-v | 1 | MPC | 128885 2005 HN <sub>2</sub>   |
| 2005 HP <sub>2</sub>   | 17.1 | 0.15 | 20071027 | 173.06841 | 32.99886  | 222.72626 | 2.97047  | 0.0211516 | 2.6830544 | 29 | 5 | 1998-2007 | 0.37 | M-v | 0 | MPC | 114159 2005 HP <sub>2</sub>   |
| 2005 HY <sub>2</sub>   | 16.5 | 0.15 | 20071027 | 321.14196 | 228.68617 | 214.93468 | 16.03361 | 0.1528252 | 2.6575523 | 97 | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128885 2005 HY <sub>2</sub>   |
| 2005 HP <sub>3</sub>   | 15.7 | 0.15 | 20071027 | 219.74398 | 349.41929 | 229.83675 | 13.32990 | 0.2105283 | 2.6324731 | 76 | 6 | 1998-2007 | 0.46 | M-v | 1 | MPC | 128885 2005 HP <sub>3</sub>   |
| 2005 HU <sub>4</sub>   | 16.0 | 0.15 | 20071027 | 159.00547 | 213.11273 | 76.75162  | 8.52192  | 0.1789597 | 2.6282665 | 54 | 5 | 2002-2007 | 0.48 | M-v | 0 | MPC | 128885 2005 HU <sub>4</sub>   |
| 2005 HA <sub>5</sub>   | 16.9 | 0.15 | 20071027 | 222.29962 | 135.31648 | 80.21470  | 10.60166 | 0.2521285 | 2.6002739 | 63 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 77178 2005 HA <sub>5</sub>    |
| 2005 HC <sub>5</sub>   | 17.0 | 0.15 | 20071027 | 268.31134 | 93.18590  | 76.24359  | 14.58335 | 0.1222388 | 2.5717098 | 42 | 3 | 2004-2007 | 0.38 | M-v | 1 | MPC | 128217 2005 HC <sub>5</sub>   |
| 2005 HY <sub>5</sub>   | 17.3 | 0.15 | 20071027 | 229.20093 | 133.23086 | 109.78608 | 6.83948  | 0.1240066 | 2.4250679 | 31 | 5 | 2001-2007 | 0.29 | M-v | 1 | MPC | 114735 2005 HY <sub>5</sub>   |
| 2005 HZ <sub>5</sub>   | 17.5 | 0.15 | 20071027 | 303.03044 | 24.31007  | 132.59728 | 6.19404  | 0.2008007 | 2.3532939 | 35 | 4 | 2001-2007 | 0.44 | M-v | 0 | MPC | 122790 2005 HZ <sub>5</sub>   |
| 2005 HC <sub>9</sub>   | 17.3 | 0.15 | 20071027 | 219.74684 | 18.45186  | 228.62226 | 3.45979  | 0.1490799 | 2.3875258 | 44 | 5 | 1999-2007 | 0.40 | M-v | 1 | MPC | 109215 2005 HC <sub>9</sub>   |
| 2005 HD <sub>9</sub>   | 16.5 | 0.15 | 20071027 | 232.38614 | 112.42826 | 65.53942  | 5.01435  | 0.0432510 | 2.7891554 | 41 | 3 | 2004-2007 | 0.31 | M-v | 2 | MPC | 128885 2005 HD <sub>9</sub>   |
| 2005 HK <sub>9</sub>   | 15.9 | 0.15 | 20071027 | 0.19553   | 326.65098 | 92.23553  | 13.11206 | 0.1102033 | 2.8116892 | 51 | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 128885 2005 HK <sub>9</sub>   |
| 2005 JP                | 17.2 | 0.15 | 20071027 | 321.05796 | 352.66127 | 128.17158 | 2.05258  | 0.1472949 | 2.4392613 | 44 | 5 | 2001-2007 | 0.40 | M-v | 0 | MPC | 104331 2005 JP                |
| 2005 JF <sub>2</sub>   | 16.1 | 0.15 | 20071027 | 338.85965 | 26.12620  | 18.17038  | 4.37790  | 0.1074443 | 2.8054083 | 51 | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128885 2005 JF <sub>2</sub>   |
| 2005 JH <sub>2</sub>   | 17.3 | 0.15 | 20071027 | 332.10505 | 262.38366 | 203.90592 | 1.92149  | 0.1393037 | 2.3278178 | 33 | 3 | 2003-2007 | 0.29 | M-v | 2 | MPC | 122506 2005 JH <sub>2</sub>   |
| 2005 JJ <sub>2</sub>   | 17.5 | 0.15 | 20071027 | 259.26173 | 310.36631 | 225.28475 | 0.62299  | 0.1325880 | 2.4201679 | 49 | 4 | 1995-2007 | 0.41 | M-v | 1 | MPC | 128218 2005 JJ <sub>2</sub>   |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2005 JB <sub>5</sub>  | 15.0 | 0.15 | 20071027 | 110.53827 | 217.29487 | 92.67937  | 29.67821 | 0.2638329 | 3.2054350 | 80 | 4 | 2004-2007 | 0.50 | M-v | 1 | MPC | 109217 2005 JB <sub>5</sub>  |
| 2005 JH <sub>8</sub>  | 16.5 | 0.15 | 20071027 | 0.23145   | 206.18788 | 209.39048 | 5.00821  | 0.1917781 | 2.5748916 | 63 | 3 | 1996-2007 | 0.36 | M-v | 2 | MPC | 128218 2005 JH <sub>8</sub>  |
| 2005 JK <sub>11</sub> | 17.5 | 0.15 | 20071027 | 39.06042  | 312.26593 | 55.02751  | 0.67827  | 0.0838970 | 2.8140872 | 30 | 3 | 2002-2007 | 0.44 | M-v | 4 | MPC | 128885 2005 JK <sub>11</sub> |
| 2005 JF <sub>13</sub> | 16.6 | 0.15 | 20071027 | 244.83218 | 135.00228 | 50.88430  | 3.50553  | 0.0554662 | 2.5550000 | 43 | 4 | 2001-2007 | 0.42 | M-v | 2 | MPC | 128885 2005 JF <sub>13</sub> |
| 2005 JW <sub>13</sub> | 16.1 | 0.15 | 20071027 | 194.96215 | 0.62444   | 224.33340 | 13.15467 | 0.1958864 | 2.6680239 | 43 | 4 | 1994-2007 | 0.48 | M-v | 2 | MPC | 128885 2005 JW <sub>13</sub> |
| 2005 JK <sub>15</sub> | 16.2 | 0.15 | 20071027 | 106.30892 | 123.47298 | 209.95193 | 4.21047  | 0.1195800 | 2.7170793 | 90 | 5 | 2002-2007 | 0.39 | M-v | 0 | MPC | 112887 2005 JK <sub>15</sub> |
| 2005 JL <sub>15</sub> | 17.3 | 0.15 | 20071027 | 240.09375 | 352.13626 | 202.26513 | 2.02252  | 0.1650937 | 2.5673248 | 50 | 4 | 2002-2007 | 0.39 | M-v | 1 | MPC | 128885 2005 JL <sub>15</sub> |
| 2005 JP <sub>15</sub> | 17.0 | 0.15 | 20071027 | 191.07915 | 40.63527  | 217.16666 | 4.62374  | 0.1100851 | 2.5763947 | 31 | 5 | 1998-2007 | 0.38 | M-v | 1 | MPC | 109220 2005 JP <sub>15</sub> |
| 2005 JA <sub>16</sub> | 16.4 | 0.15 | 20071027 | 328.43381 | 29.64808  | 74.59698  | 1.37201  | 0.1086930 | 2.5667597 | 52 | 6 | 1999-2007 | 0.40 | M-v | 1 | MPC | 128885 2005 JA <sub>16</sub> |
| 2005 JS <sub>19</sub> | 15.8 | 0.15 | 20071027 | 155.50813 | 190.06667 | 88.63757  | 14.83538 | 0.0651850 | 2.6324285 | 40 | 5 | 2002-2007 | 0.70 | M-v | 1 | MPC | 111098 2005 JS <sub>19</sub> |
| 2005 JZ <sub>19</sub> | 16.0 | 0.15 | 20071027 | 255.79174 | 61.45337  | 108.84478 | 12.21083 | 0.1421869 | 2.5677404 | 30 | 3 | 2001-2007 | 0.63 | M-v | 3 | MPC | 128219 2005 JZ <sub>19</sub> |
| 2005 JZ <sub>20</sub> | 16.1 | 0.15 | 20071027 | 125.01218 | 280.41278 | 12.53850  | 1.86292  | 0.0484188 | 2.8632112 | 48 | 6 | 2000-2007 | 0.34 | M-v | 0 | MPC | 122790 2005 JZ <sub>20</sub> |
| 2005 JE <sub>22</sub> | 16.7 | 0.15 | 20071027 | 336.46702 | 18.48440  | 85.78041  | 4.06422  | 0.1339345 | 2.3417998 | 45 | 4 | 2001-2007 | 0.60 | M-v | 0 | MPC | 77196 2005 JE <sub>22</sub>  |
| 2005 JU <sub>22</sub> | 17.0 | 0.15 | 20071027 | 264.08084 | 123.01513 | 33.85962  | 3.24866  | 0.1135606 | 2.5687114 | 47 | 5 | 2001-2007 | 0.32 | M-v | 0 | MPC | 128885 2005 JU <sub>22</sub> |
| 2005 JT <sub>23</sub> | 17.0 | 0.15 | 20071027 | 199.47152 | 142.22859 | 68.19345  | 3.04731  | 0.0096699 | 2.8511450 | 44 | 3 | 2004-2007 | 0.38 | M-v | 3 | MPC | 86726 2005 JT <sub>23</sub>  |
| 2005 JN <sub>24</sub> | 17.2 | 0.15 | 20071027 | 141.96110 | 133.41335 | 158.05468 | 1.39976  | 0.0416518 | 2.6872179 | 32 | 5 | 2002-2007 | 0.34 | M-v | 0 | MPC | 104332 2005 JN <sub>24</sub> |
| 2005 JT <sub>24</sub> | 14.6 | 0.15 | 20071027 | 124.52449 | 214.41682 | 47.73502  | 20.64016 | 0.0915639 | 3.2092805 | 62 | 4 | 2001-2007 | 0.65 | M-v | 1 | MPC | 128885 2005 JT <sub>24</sub> |
| 2005 JB <sub>26</sub> | 16.1 | 0.15 | 20071027 | 155.57580 | 139.41267 | 133.69647 | 5.95354  | 0.0462305 | 2.7694700 | 35 | 5 | 2002-2007 | 0.42 | M-v | 0 | MPC | 111098 2005 JB <sub>26</sub> |
| 2005 JN <sub>26</sub> | 14.8 | 0.15 | 20071027 | 196.26518 | 330.05950 | 215.34866 | 15.73795 | 0.1557152 | 3.1306811 | 72 | 3 | 2005-2007 | 0.45 | M-v | 3 | MPC | 128885 2005 JN <sub>26</sub> |
| 2005 JK <sub>27</sub> | 16.5 | 0.15 | 20071027 | 267.12111 | 141.66421 | 91.85990  | 4.68028  | 0.1047681 | 2.2028903 | 65 | 7 | 1995-2007 | 0.60 | M-v | 2 | MPC | 111098 2005 JK <sub>27</sub> |
| 2005 JS <sub>29</sub> | 15.3 | 0.15 | 20071027 | 169.95871 | 185.26642 | 76.84001  | 10.37553 | 0.0927390 | 2.7701036 | 84 | 7 | 2000-2007 | 0.51 | M-v | 0 | MPC | 111098 2005 JS <sub>29</sub> |
| 2005 JP <sub>30</sub> | 15.5 | 0.15 | 20071027 | 257.57725 | 168.21517 | 2.08133   | 11.89394 | 0.1007046 | 2.5360088 | 42 | 4 | 2001-2007 | 0.45 | M-v | 2 | MPC | 128886 2005 JP <sub>30</sub> |
| 2005 JM <sub>31</sub> | 16.5 | 0.15 | 20071027 | 176.96490 | 5.17193   | 278.61053 | 7.12214  | 0.2365181 | 2.5502184 | 35 | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 111098 2005 JM <sub>31</sub> |
| 2005 JY <sub>32</sub> | 16.9 | 0.15 | 20071027 | 204.69407 | 113.65845 | 129.89077 | 4.70160  | 0.1566787 | 2.5679240 | 34 | 4 | 2002-2007 | 0.38 | M-v | 1 | MPC | 116291 2005 JY <sub>32</sub> |
| 2005 JE <sub>33</sub> | 16.4 | 0.15 | 20071027 | 140.55602 | 61.96135  | 215.44423 | 0.98766  | 0.0232985 | 2.8338422 | 35 | 4 | 2000-2007 | 0.35 | M-v | 1 | MPC | 128220 2005 JE <sub>33</sub> |
| 2005 JX <sub>33</sub> | 16.2 | 0.15 | 20071027 | 148.41538 | 229.62733 | 76.74003  | 1.24779  | 0.0915956 | 2.6159331 | 58 | 4 | 2002-2007 | 0.34 | M-v | 0 | MPC | 128886 2005 JX <sub>33</sub> |
| 2005 JE <sub>34</sub> | 16.6 | 0.15 | 20071027 | 233.32855 | 313.71242 | 255.48641 | 4.74301  | 0.1555110 | 2.5413577 | 50 | 3 | 2005-2007 | 0.36 | M-v | 3 | MPC | 109226 2005 JE <sub>34</sub> |
| 2005 JS <sub>35</sub> | 15.6 | 0.15 | 20071027 | 42.70322  | 287.86525 | 85.99800  | 13.62835 | 0.1185622 | 3.0375632 | 44 | 5 | 2003-2007 | 0.40 | M-v | 0 | MPC | 128886 2005 JS <sub>35</sub> |
| 2005 JD <sub>36</sub> | 15.7 | 0.15 | 20071027 | 278.70894 | 56.58573  | 87.01552  | 11.00973 | 0.0629333 | 2.7756886 | 37 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 77209 2005 JD <sub>36</sub>  |
| 2005 JE <sub>36</sub> | 16.8 | 0.15 | 20071027 | 3.45898   | 319.25490 | 143.73948 | 5.99587  | 0.1322424 | 2.3882759 | 30 | 4 | 1999-2007 | 0.28 | M-v | 0 | MPC | 111099 2005 JE <sub>36</sub> |
| 2005 JB <sub>39</sub> | 17.1 | 0.15 | 20071027 | 267.88798 | 277.11700 | 231.31597 | 2.90268  | 0.0522184 | 2.7616649 | 41 | 3 | 2003-2007 | 0.34 | M-v | 3 | MPC | 128886 2005 JB <sub>39</sub> |
| 2005 JB <sub>43</sub> | 16.7 | 0.15 | 20071027 | 330.76826 | 292.23936 | 134.97765 | 0.90765  | 0.0564488 | 3.0521769 | 38 | 4 | 1999-2007 | 0.33 | M-v | 0 | MPC | 128886 2005 JB <sub>43</sub> |
| 2005 JN <sub>46</sub> | 16.1 | 0.15 | 20071027 | 38.47596  | 146.81922 | 215.82711 | 10.61990 | 0.0963952 | 3.0171262 | 49 | 3 | 1996-2007 | 0.36 | M-v | 2 | MPC | 128220 2005 JN <sub>46</sub> |
| 2005 JV <sub>46</sub> | 17.5 | 0.15 | 20071027 | 277.43945 | 334.16181 | 195.21268 | 2.07350  | 0.1607051 | 2.4209267 | 30 | 3 | 2003-2007 | 0.31 | M-v | 2 | MPC | 114163 2005 JV <sub>46</sub> |
| 2005 JR <sub>47</sub> | 17.0 | 0.15 | 20071027 | 69.59528  | 184.96329 | 192.09863 | 3.35697  | 0.0140778 | 2.5360088 | 41 | 6 | 1996-2007 | 0.34 | M-v | 0 | MPC | 128886 2005 JR <sub>47</sub> |
| 2005 JX <sub>47</sub> | 15.6 | 0.15 | 20071027 | 82.77412  | 257.85683 | 53.44919  | 16.09120 | 0.0567422 | 3.1191526 | 47 | 3 | 2004-2007 | 0.45 | M-v | 2 | MPC | 128220 2005 JX <sub>47</sub> |
| 2005 JE <sub>48</sub> | 16.5 | 0.15 | 20071027 | 46.67373  | 307.07177 | 90.36023  | 11.02734 | 0.0937331 | 2.6506374 | 42 | 5 | 2002-2007 | 0.47 | M-v | 0 | MPC | 122790 2005 JE <sub>48</sub> |
| 2005 JD <sub>49</sub> | 15.2 | 0.15 | 20071027 | 49.64716  | 293.89937 | 52.63521  | 22.90487 | 0.0570275 | 3.0522380 | 73 | 3 | 1991-2007 | 0.54 | M-v | 2 | MPC | 128886 2005 JD <sub>49</sub> |
| 2005 JU <sub>50</sub> | 17.3 | 0.15 | 20071027 | 292.08849 | 35.09962  | 118.60732 | 2.27238  | 0.1164647 | 2.4416314 | 30 | 4 | 2003-2007 | 0.37 | M-v | 0 | MPC | 104332 2005 JU <sub>50</sub> |
| 2005 JW <sub>50</sub> | 16.1 | 0.15 | 20071027 | 163.95745 | 183.09125 | 71.57068  | 4.75993  | 0.0489436 | 2.7895011 | 46 | 3 | 2001-2007 | 0.37 | M-v | 3 | MPC | 128221 2005 JW <sub>50</sub> |
| 2005 JO <sub>51</sub> | 16.0 | 0.15 | 20071027 | 96.74806  | 225.33949 | 79.49013  | 6.11968  | 0.1253181 | 3.1069906 | 43 | 5 | 2001-2007 | 0.61 | M-v | 0 | MPC | 128886 2005 JO <sub>51</sub> |
| 2005 JP <sub>51</sub> | 15.5 | 0.15 | 20071027 | 127.35794 | 222.17556 | 63.11214  | 6.17770  | 0.1038913 | 2.9101015 | 69 | 6 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128886 2005 JP <sub>51</sub> |
| 2005 JB <sub>54</sub> | 17.2 | 0.15 | 20071027 | 217.13855 | 132.42157 | 78.21473  | 10.32050 | 0.0733152 | 2.6786528 | 18 | 3 | 2003-2007 | 0.37 | M-v | 3 | MPC | 77219 2005 JB <sub>54</sub>  |
| 2005 JU <sub>57</sub> | 17.3 | 0.15 | 20071027 | 250.31457 | 245.83579 | 292.35113 | 0.85415  | 0.0108944 | 2.7023325 | 37 | 4 | 2004-2007 | 0.32 | M-v | 0 | MPC | 128886 2005 JU <sub>57</sub> |
| 2005 JT <sub>58</sub> | 17.0 | 0.15 | 20071027 | 87.14912  | 145.86278 | 195.70460 | 3.10831  | 0.0984866 | 2.7703623 | 40 | 5 | 2000-2007 | 0.33 | M-v | 0 | MPC | 111099 2005 JT <sub>58</sub> |
| 2005 JC <sub>59</sub> | 16.0 | 0.15 | 20071027 | 91.66393  | 291.50068 | 358.00093 | 0.99194  | 0.2207745 | 3.1684024 | 49 | 3 | 2005-2007 | 0.42 | M-v | 3 | MPC | 128886 2005 JC <sub>59</sub> |
| 2005 JT <sub>61</sub> | 16.0 | 0.15 | 20071027 | 224.25346 | 332.03454 | 241.94900 | 4.42586  | 0.1680113 | 2.6035013 | 76 | 3 | 2005-2007 | 0.47 | M-v | 3 | MPC | 128886 2005 JT <sub>61</sub> |
| 2005 JL <sub>64</sub> | 16.2 | 0.15 | 20071027 | 148.66927 | 21.17791  | 263.01349 | 13.12100 | 0.2325732 | 2.6813382 | 32 | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 109237 2005 JL <sub>64</sub> |
| 2005 JQ <sub>64</sub> | 15.6 | 0.15 | 20071027 | 288.09674 | 225.00391 | 250.59422 | 14.21439 | 0.0606595 | 2.6733465 | 64 | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128886 2005 JQ <sub>64</sub> |
| 2005 JV <sub>65</sub> | 16.0 | 0.15 | 20071027 | 188.04821 | 339.97998 | 258.84498 | 7.93482  | 0.1038396 | 2.6634220 | 48 | 3 | 2005-2007 | 0.42 | M-v | 3 | MPC | 128222 2005 JV <sub>65</sub> |
| 2005 JH <sub>67</sub> | 15.4 | 0.15 | 20071027 | 103.28779 | 222.23023 | 85.25759  | 18.03236 | 0.1954541 | 3.0963971 | 35 | 4 | 2001-2007 | 0.43 | M-v | 0 | MPC | 128886 2005 JH <sub>67</sub> |
| 2005 JG <sub>68</sub> | 15.7 | 0.15 | 20071027 | 289.80621 | 309.47753 | 187.22427 | 14.76184 | 0.1370367 | 2.5502083 | 63 | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128886 2005 JG <sub>68</sub> |
| 2005 JT <sub>68</sub> | 15.5 | 0.15 | 20071027 | 118.52444 | 198.55697 | 95.46603  | 13.50068 | 0.2380878 | 3.0844395 | 60 | 4 | 2001-2007 | 0.57 | M-v | 0 | MPC | 111100 2005 JT <sub>68</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 JZ <sub>68</sub>  | 15.4 | 0.15 | 20071027 | 310.01888 | 21.77721  | 90.17004  | 15.47703 | 0.0835087 | 2.6436316 | 51 | 5 | 2000-2007 | 0.59 | M-v | 1 | MPC | 128886 2005 JZ <sub>68</sub>  |
| 2005 JO <sub>72</sub>  | 16.7 | 0.15 | 20071027 | 73.59909  | 188.12883 | 156.69496 | 2.48508  | 0.0744536 | 2.8658121 | 29 | 5 | 1997-2007 | 0.25 | M-v | 0 | MPC | 111100 2005 JO <sub>72</sub>  |
| 2005 JB <sub>73</sub>  | 16.8 | 0.15 | 20071027 | 342.12270 | 301.70102 | 145.51886 | 2.43067  | 0.0646490 | 2.6537238 | 34 | 4 | 2000-2007 | 0.31 | M-v | 2 | MPC | 77229 2005 JB <sub>73</sub>   |
| 2005 JD <sub>74</sub>  | 15.0 | 0.15 | 20071027 | 7.04322   | 325.64542 | 64.71237  | 10.77774 | 0.0689669 | 3.0766310 | 47 | 3 | 2001-2007 | 0.47 | M-v | 3 | MPC | 128222 2005 JD <sub>74</sub>  |
| 2005 JZ <sub>74</sub>  | 16.3 | 0.15 | 20071027 | 210.92098 | 304.96021 | 284.80623 | 3.37329  | 0.1228199 | 2.5506636 | 49 | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 118112 2005 JZ <sub>74</sub>  |
| 2005 JB <sub>75</sub>  | 16.5 | 0.15 | 20071027 | 212.00575 | 292.77379 | 345.10949 | 7.05136  | 0.1039670 | 2.2620142 | 68 | 6 | 1998-2007 | 0.58 | M-v | 1 | MPC | 112888 2005 JB <sub>75</sub>  |
| 2005 JN <sub>76</sub>  | 16.4 | 0.15 | 20071027 | 177.44275 | 170.53340 | 51.11729  | 10.71581 | 0.0465026 | 3.0131468 | 41 | 3 | 2004-2007 | 0.35 | M-v | 2 | MPC | 128886 2005 JN <sub>76</sub>  |
| 2005 JV <sub>76</sub>  | 15.4 | 0.15 | 20071027 | 160.04482 | 9.42565   | 233.11342 | 21.84967 | 0.1593843 | 3.0097768 | 58 | 2 | 2005-2007 | 0.45 | M-v | 3 | MPC | 128222 2005 JV <sub>76</sub>  |
| 2005 JV <sub>77</sub>  | 16.1 | 0.15 | 20071027 | 247.48285 | 295.65283 | 257.73307 | 2.96706  | 0.0293044 | 2.5913475 | 48 | 7 | 2000-2007 | 0.46 | M-v | 0 | MPC | 122790 2005 JV <sub>77</sub>  |
| 2005 JA <sub>79</sub>  | 16.6 | 0.15 | 20071027 | 232.06520 | 184.20101 | 12.76266  | 1.51422  | 0.0249476 | 2.6959553 | 38 | 4 | 2002-2007 | 0.24 | M-v | 0 | MPC | 86737 2005 JA <sub>79</sub>   |
| 2005 JZ <sub>81</sub>  | 16.6 | 0.15 | 20071027 | 170.03632 | 179.81889 | 100.09968 | 9.75417  | 0.0570504 | 2.5952514 | 53 | 5 | 2002-2007 | 0.42 | M-v | 0 | MPC | 128887 2005 JZ <sub>81</sub>  |
| 2005 JD <sub>82</sub>  | 15.6 | 0.15 | 20071027 | 139.78327 | 207.87660 | 97.23159  | 15.20151 | 0.1477954 | 2.6857067 | 64 | 5 | 2001-2007 | 0.57 | M-v | 1 | MPC | 111100 2005 JD <sub>82</sub>  |
| 2005 JL <sub>83</sub>  | 17.4 | 0.15 | 20071027 | 320.75641 | 22.70105  | 110.14481 | 2.15754  | 0.1329124 | 2.3952387 | 42 | 5 | 1999-2007 | 0.33 | M-v | 0 | MPC | 128887 2005 JL <sub>83</sub>  |
| 2005 JE <sub>84</sub>  | 17.0 | 0.15 | 20071027 | 286.07748 | 311.67941 | 190.85999 | 1.50288  | 0.1419370 | 2.5624990 | 59 | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128887 2005 JE <sub>84</sub>  |
| 2005 JJ <sub>85</sub>  | 15.7 | 0.15 | 20071027 | 265.43238 | 77.96159  | 97.01265  | 8.85602  | 0.1058180 | 2.5651933 | 53 | 5 | 1992-2007 | 0.51 | M-v | 2 | MPC | 77233 2005 JJ <sub>85</sub>   |
| 2005 JV <sub>85</sub>  | 16.2 | 0.15 | 20071027 | 212.25630 | 324.70792 | 219.18810 | 9.16492  | 0.0528696 | 3.0115867 | 45 | 3 | 1999-2007 | 0.33 | M-v | 2 | MPC | 128887 2005 JV <sub>85</sub>  |
| 2005 JR <sub>87</sub>  | 15.9 | 0.15 | 20071027 | 248.87744 | 49.58674  | 139.48948 | 16.15259 | 0.0871096 | 2.5781840 | 38 | 4 | 1992-2007 | 0.72 | M-v | 2 | MPC | 95679 2005 JR <sub>87</sub>   |
| 2005 JQ <sub>88</sub>  | 15.5 | 0.15 | 20071027 | 206.03727 | 8.75686   | 214.61183 | 7.03849  | 0.0969960 | 2.7241801 | 43 | 4 | 2003-2007 | 0.44 | M-v | 1 | MPC | 111100 2005 JQ <sub>88</sub>  |
| 2005 JK <sub>90</sub>  | 15.3 | 0.15 | 20071027 | 13.59028  | 253.60413 | 136.66139 | 2.67403  | 0.1116731 | 3.0096539 | 76 | 3 | 2005-2007 | 0.45 | M-v | 2 | MPC | 128223 2005 JK <sub>90</sub>  |
| 2005 JH <sub>91</sub>  | 15.5 | 0.15 | 20071027 | 50.75581  | 273.57008 | 87.70026  | 10.75996 | 0.2345444 | 3.1637346 | 46 | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 111100 2005 JH <sub>91</sub>  |
| 2005 JJ <sub>92</sub>  | 17.1 | 0.15 | 20071027 | 196.64137 | 332.96981 | 314.43574 | 6.83812  | 0.1029768 | 2.3477200 | 42 | 5 | 2002-2007 | 0.39 | M-v | 1 | MPC | 111101 2005 JJ <sub>92</sub>  |
| 2005 JZ <sub>92</sub>  | 15.4 | 0.15 | 20071027 | 292.83082 | 223.18553 | 259.79676 | 10.74828 | 0.0270942 | 2.6463335 | 68 | 5 | 2000-2007 | 0.42 | M-v | 1 | MPC | 128887 2005 JZ <sub>92</sub>  |
| 2005 JT <sub>93</sub>  | 15.9 | 0.15 | 20071027 | 134.20270 | 222.71503 | 58.44837  | 17.97107 | 0.1818235 | 3.0997243 | 41 | 4 | 2004-2007 | 0.47 | M-v | 0 | MPC | 128887 2005 JT <sub>93</sub>  |
| 2005 JH <sub>94</sub>  | 16.3 | 0.15 | 20071027 | 289.21317 | 256.59560 | 226.12962 | 3.48051  | 0.0602430 | 2.7732798 | 52 | 3 | 2003-2007 | 0.35 | M-v | 3 | MPC | 128887 2005 JH <sub>94</sub>  |
| 2005 JZ <sub>94</sub>  | 15.2 | 0.15 | 20071027 | 75.55844  | 273.09670 | 53.67588  | 10.29594 | 0.0675932 | 3.0752505 | 66 | 3 | 2005-2007 | 0.37 | M-v | 2 | MPC | 128887 2005 JZ <sub>94</sub>  |
| 2005 JQ <sub>95</sub>  | 15.3 | 0.15 | 20071027 | 20.82719  | 145.82365 | 191.40323 | 9.07887  | 0.0886000 | 3.1143146 | 50 | 2 | 2005-2007 | 0.40 | M-v | 3 | MPC | 128887 2005 JQ <sub>95</sub>  |
| 2005 JG <sub>97</sub>  | 16.0 | 0.15 | 20071027 | 308.23579 | 296.54696 | 174.63858 | 4.46859  | 0.0214960 | 2.7809916 | 35 | 4 | 1997-2007 | 0.39 | M-v | 2 | MPC | 128223 2005 JG <sub>97</sub>  |
| 2005 JV <sub>98</sub>  | 15.4 | 0.15 | 20071027 | 237.58792 | 350.88478 | 195.19743 | 15.66268 | 0.1918315 | 2.6669065 | 57 | 2 | 2005-2007 | 0.49 | M-v | 3 | MPC | 128232 2005 JV <sub>98</sub>  |
| 2005 JX <sub>99</sub>  | 15.3 | 0.15 | 20071027 | 95.64684  | 150.60464 | 169.46038 | 9.46297  | 0.1382041 | 3.1083048 | 87 | 4 | 2001-2007 | 0.45 | M-v | 0 | MPC | 111101 2005 JX <sub>99</sub>  |
| 2005 JL <sub>100</sub> | 16.8 | 0.15 | 20071027 | 263.60385 | 82.89472  | 102.26494 | 9.12642  | 0.0500969 | 2.5490612 | 31 | 6 | 1996-2007 | 0.40 | M-v | 0 | MPC | 111101 2005 JL <sub>100</sub> |
| 2005 JT <sub>100</sub> | 15.6 | 0.15 | 20071027 | 133.24203 | 210.70568 | 49.03503  | 7.46218  | 0.1240888 | 3.1360866 | 57 | 5 | 2001-2007 | 0.39 | M-v | 0 | MPC | 128887 2005 JT <sub>100</sub> |
| 2005 JY <sub>100</sub> | 15.6 | 0.15 | 20071027 | 296.45433 | 341.73543 | 154.36339 | 15.60035 | 0.0382311 | 2.5951623 | 70 | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 128887 2005 JY <sub>100</sub> |
| 2005 JE <sub>102</sub> | 16.0 | 0.15 | 20071027 | 103.13144 | 239.36946 | 111.58880 | 10.13304 | 0.0812310 | 2.6466111 | 53 | 5 | 1995-2007 | 0.40 | M-v | 0 | MPC | 128887 2005 JE <sub>102</sub> |
| 2005 JG <sub>102</sub> | 15.5 | 0.15 | 20071027 | 196.94604 | 72.50286  | 124.25370 | 9.20324  | 0.0295563 | 3.1936255 | 28 | 5 | 1992-2007 | 0.44 | M-v | 0 | MPC | 103702 2005 JG <sub>102</sub> |
| 2005 JA <sub>103</sub> | 16.1 | 0.15 | 20071027 | 187.80297 | 161.98819 | 94.63167  | 15.06086 | 0.0869590 | 2.6802979 | 56 | 6 | 2000-2007 | 0.42 | M-v | 0 | MPC | 111101 2005 JA <sub>103</sub> |
| 2005 JO <sub>103</sub> | 16.9 | 0.15 | 20071027 | 281.20950 | 120.53843 | 21.23358  | 7.23042  | 0.0973984 | 2.4600699 | 58 | 4 | 1995-2007 | 0.29 | M-v | 2 | MPC | 128887 2005 JO <sub>103</sub> |
| 2005 JP <sub>104</sub> | 16.5 | 0.15 | 20071027 | 266.81959 | 303.59989 | 225.47566 | 4.09765  | 0.1197141 | 2.5667036 | 59 | 6 | 2001-2007 | 0.43 | M-v | 0 | MPC | 128887 2005 JP <sub>104</sub> |
| 2005 JR <sub>105</sub> | 15.8 | 0.15 | 20071027 | 214.41762 | 122.11919 | 83.85804  | 4.79135  | 0.0336063 | 2.7673390 | 36 | 4 | 2001-2007 | 0.31 | M-v | 0 | MPC | 86742 2005 JR <sub>105</sub>  |
| 2005 JP <sub>106</sub> | 15.2 | 0.15 | 20071027 | 192.31738 | 187.13934 | 335.53607 | 22.07718 | 0.1457616 | 3.1685049 | 29 | 2 | 2005-2007 | 0.42 | M-v | 3 | MPC | 126057 2005 JP <sub>106</sub> |
| 2005 JP <sub>109</sub> | 15.8 | 0.15 | 20071027 | 163.92822 | 192.64967 | 97.43005  | 12.96009 | 0.1657352 | 2.6543980 | 50 | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128887 2005 JP <sub>109</sub> |
| 2005 JU <sub>114</sub> | 16.7 | 0.15 | 20071027 | 334.29002 | 302.57393 | 151.38342 | 0.87112  | 0.1339728 | 2.5446035 | 53 | 4 | 2003-2007 | 0.42 | M-v | 1 | MPC | 128887 2005 JU <sub>114</sub> |
| 2005 JL <sub>115</sub> | 16.6 | 0.15 | 20071027 | 88.27715  | 215.41172 | 121.64487 | 7.06157  | 0.0419250 | 2.7889440 | 34 | 5 | 2000-2007 | 0.41 | M-v | 0 | MPC | 111101 2005 JL <sub>115</sub> |
| 2005 JE <sub>117</sub> | 16.2 | 0.15 | 20071027 | 87.38851  | 240.99014 | 112.05066 | 7.14461  | 0.0578664 | 2.7089847 | 29 | 3 | 2005-2007 | 0.52 | M-v | 3 | MPC | 109250 2005 JE <sub>117</sub> |
| 2005 JH <sub>119</sub> | 16.5 | 0.15 | 20071027 | 163.91045 | 125.05722 | 138.50439 | 5.13689  | 0.0159377 | 2.7928080 | 32 | 5 | 1995-2007 | 0.32 | M-v | 0 | MPC | 104334 2005 JH <sub>119</sub> |
| 2005 JL <sub>120</sub> | 15.3 | 0.15 | 20071027 | 85.18400  | 199.26411 | 119.95431 | 5.87994  | 0.1101280 | 3.1854535 | 49 | 5 | 2001-2007 | 0.38 | M-v | 0 | MPC | 128887 2005 JL <sub>120</sub> |
| 2005 JA <sub>121</sub> | 15.8 | 0.15 | 20071027 | 13.12874  | 300.43749 | 89.24346  | 11.20493 | 0.1055739 | 3.1276837 | 35 | 3 | 1999-2007 | 0.40 | M-v | 2 | MPC | 128887 2005 JA <sub>121</sub> |
| 2005 JX <sub>126</sub> | 16.3 | 0.15 | 20071027 | 200.82742 | 148.09609 | 106.75478 | 11.01435 | 0.1755960 | 2.5764792 | 47 | 5 | 2002-2007 | 0.52 | M-v | 1 | MPC | 111102 2005 JX <sub>126</sub> |
| 2005 JM <sub>129</sub> | 15.8 | 0.15 | 20071027 | 102.36362 | 240.75809 | 63.62828  | 11.37891 | 0.0577484 | 2.9839133 | 48 | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128887 2005 JM <sub>129</sub> |
| 2005 JR <sub>130</sub> | 16.2 | 0.15 | 20071027 | 147.65325 | 206.30768 | 63.81620  | 4.95046  | 0.0597146 | 2.7985376 | 50 | 2 | 2005-2007 | 0.39 | M-v | 3 | MPC | 128225 2005 JR <sub>130</sub> |
| 2005 JX <sub>133</sub> | 16.5 | 0.15 | 20071027 | 65.81666  | 251.35629 | 117.57401 | 5.57290  | 0.0857712 | 2.7669720 | 35 | 6 | 2000-2007 | 0.46 | M-v | 0 | MPC | 115822 2005 JX <sub>133</sub> |
| 2005 JY <sub>135</sub> | 15.5 | 0.15 | 20071027 | 196.75480 | 120.67346 | 93.67749  | 6.10228  | 0.0544478 | 2.7242134 | 73 | 5 | 1995-2007 | 0.67 | M-v | 1 | MPC | 128887 2005 JY <sub>135</sub> |
| 2005 JW <sub>136</sub> | 17.6 | 0.15 | 20071027 | 328.69576 | 24.01218  | 101.53543 | 6.88424  | 0.1374471 | 2.2961395 | 21 | 4 | 2001-2007 | 0.29 | M-v | 0 | MPC | 95682 2005 JW <sub>136</sub>  |
| 2005 JD <sub>138</sub> | 15.5 | 0.15 | 20071027 | 359.94612 | 287.20537 | 117.24080 | 11.25271 | 0.0656014 | 3.0534267 | 42 | 3 | 2005-2007 | 0.47 | M-v | 3 | MPC | 128887 2005 JD <sub>138</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 JV <sub>138</sub> | 15.7 | 0.15 | 20071027 | 231.02208 | 347.00360 | 200.33359 | 1.40906  | 0.0202248 | 2.8462066 | 70 | 5 | 2000-2007 | 0.47 | M-v | 0 | MPC | 128887 2005 JV <sub>138</sub> |
| 2005 JB <sub>139</sub> | 15.4 | 0.15 | 20071027 | 156.96683 | 13.63829  | 234.43148 | 9.26720  | 0.0609174 | 3.0380034 | 61 | 4 | 2004-2007 | 0.35 | M-v | 1 | MPC | 122790 2005 JB <sub>139</sub> |
| 2005 JZ <sub>139</sub> | 15.8 | 0.15 | 20071027 | 321.25376 | 38.22810  | 74.61368  | 14.99131 | 0.0748837 | 2.6396225 | 57 | 3 | 2003-2007 | 0.43 | M-v | 3 | MPC | 77251 2005 JZ <sub>139</sub>  |
| 2005 JU <sub>142</sub> | 15.0 | 0.15 | 20071027 | 95.70972  | 219.98531 | 77.53214  | 11.41348 | 0.1941244 | 3.1910060 | 42 | 4 | 1994-2007 | 0.51 | M-v | 0 | MPC | 128888 2005 JU <sub>142</sub> |
| 2005 JT <sub>143</sub> | 15.6 | 0.15 | 20071027 | 302.18730 | 253.91252 | 220.49293 | 10.95837 | 0.0350179 | 2.8877843 | 69 | 4 | 2002-2007 | 0.54 | M-v | 1 | MPC | 128888 2005 JT <sub>143</sub> |
| 2005 JB <sub>144</sub> | 15.5 | 0.15 | 20071027 | 170.92501 | 178.46121 | 83.56241  | 5.51624  | 0.0176613 | 2.7835822 | 43 | 6 | 2000-2007 | 0.49 | M-v | 1 | MPC | 104335 2005 JB <sub>144</sub> |
| 2005 JD <sub>145</sub> | 15.6 | 0.15 | 20071027 | 92.04768  | 260.85329 | 70.80257  | 11.69861 | 0.1182789 | 2.9932687 | 39 | 4 | 2001-2007 | 0.42 | M-v | 0 | MPC | 111102 2005 JD <sub>145</sub> |
| 2005 JF <sub>145</sub> | 16.5 | 0.15 | 20071027 | 269.21949 | 322.86075 | 203.57710 | 3.31145  | 0.1627634 | 2.5779627 | 33 | 3 | 2005-2007 | 0.43 | M-v | 4 | MPC | 109257 2005 JF <sub>145</sub> |
| 2005 JL <sub>145</sub> | 16.8 | 0.15 | 20071027 | 263.30501 | 118.29616 | 89.51634  | 3.26515  | 0.1261513 | 2.3852170 | 48 | 5 | 2001-2007 | 0.34 | M-v | 1 | MPC | 128888 2005 JL <sub>145</sub> |
| 2005 JT <sub>145</sub> | 15.6 | 0.15 | 20071027 | 252.98238 | 146.75209 | 49.85995  | 13.96899 | 0.0727052 | 2.5546162 | 43 | 5 | 2000-2007 | 0.38 | M-v | 1 | MPC | 111102 2005 JT <sub>145</sub> |
| 2005 JY <sub>145</sub> | 17.2 | 0.15 | 20071027 | 309.44341 | 228.74201 | 283.78787 | 2.96951  | 0.0900941 | 2.3769817 | 50 | 7 | 1997-2007 | 0.42 | M-v | 0 | MPC | 128888 2005 JY <sub>145</sub> |
| 2005 JC <sub>146</sub> | 15.9 | 0.15 | 20071027 | 174.98587 | 169.87468 | 54.45228  | 4.88692  | 0.0480201 | 3.0507031 | 61 | 5 | 2002-2007 | 0.38 | M-v | 0 | MPC | 128888 2005 JC <sub>146</sub> |
| 2005 JL <sub>146</sub> | 16.2 | 0.15 | 20071027 | 110.43816 | 249.19421 | 89.38160  | 13.06491 | 0.0329550 | 2.5739800 | 43 | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128888 2005 JL <sub>146</sub> |
| 2005 JL <sub>150</sub> | 16.1 | 0.15 | 20071027 | 283.23271 | 16.48816  | 119.46289 | 5.43121  | 0.0196161 | 2.8031690 | 27 | 3 | 2004-2007 | 0.36 | M-v | 3 | MPC | 95683 2005 JL <sub>150</sub>  |
| 2005 JZ <sub>153</sub> | 17.1 | 0.15 | 20071027 | 257.37952 | 94.72420  | 107.30931 | 7.31279  | 0.0598363 | 2.4528784 | 36 | 3 | 2002-2007 | 0.28 | M-v | 2 | MPC | 128888 2005 JZ <sub>153</sub> |
| 2005 JU <sub>155</sub> | 15.9 | 0.15 | 20071027 | 1.99840   | 191.04549 | 207.59598 | 1.85778  | 0.0893675 | 3.0052569 | 82 | 7 | 1999-2007 | 0.56 | M-v | 0 | MPC | 128226 2005 JU <sub>155</sub> |
| 2005 JM <sub>156</sub> | 15.9 | 0.15 | 20071027 | 195.57548 | 148.72695 | 56.95221  | 3.49721  | 0.0629703 | 3.0313028 | 49 | 5 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128888 2005 JM <sub>156</sub> |
| 2005 JT <sub>157</sub> | 16.1 | 0.15 | 20071027 | 238.32447 | 349.40101 | 203.03285 | 6.40919  | 0.1889641 | 2.6411695 | 37 | 2 | 2005-2007 | 0.32 | M-v | 3 | MPC | 128226 2005 JT <sub>157</sub> |
| 2005 JA <sub>159</sub> | 16.7 | 0.15 | 20071027 | 301.23575 | 61.68492  | 91.00714  | 4.38250  | 0.0768831 | 2.3253973 | 35 | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 128888 2005 JA <sub>159</sub> |
| 2005 JV <sub>161</sub> | 16.2 | 0.15 | 20071027 | 102.86046 | 219.49925 | 91.42511  | 3.30667  | 0.0423210 | 2.9011284 | 33 | 3 | 1997-2007 | 0.26 | M-v | 2 | MPC | 86753 2005 JV <sub>161</sub>  |
| 2005 JJ <sub>163</sub> | 15.8 | 0.15 | 20071027 | 211.06870 | 241.64760 | 337.41824 | 3.98963  | 0.1512923 | 2.6458040 | 46 | 5 | 1996-2007 | 0.32 | M-v | 0 | MPC | 128888 2005 JJ <sub>163</sub> |
| 2005 JW <sub>163</sub> | 16.2 | 0.15 | 20071027 | 170.00999 | 31.94074  | 204.49322 | 5.75635  | 0.0142227 | 2.8637608 | 43 | 4 | 2000-2007 | 0.38 | M-v | 1 | MPC | 128226 2005 JW <sub>163</sub> |
| 2005 JX <sub>163</sub> | 15.8 | 0.15 | 20071027 | 163.59274 | 235.11692 | 34.94906  | 15.10913 | 0.0830343 | 2.6510530 | 41 | 6 | 1992-2007 | 0.59 | M-v | 1 | MPC | 111103 2005 JX <sub>163</sub> |
| 2005 JZ <sub>163</sub> | 14.8 | 0.15 | 20071027 | 83.93316  | 216.21058 | 97.53234  | 23.41522 | 0.1040747 | 3.1549642 | 56 | 3 | 2005-2007 | 0.65 | M-v | 3 | MPC | 128888 2005 JZ <sub>163</sub> |
| 2005 JD <sub>166</sub> | 16.3 | 0.15 | 20071027 | 197.66204 | 339.81823 | 250.35404 | 8.83776  | 0.0738095 | 2.6969976 | 28 | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 87677 2005 JD <sub>166</sub>  |
| 2005 JG <sub>168</sub> | 16.3 | 0.15 | 20071027 | 278.69936 | 287.89304 | 222.03972 | 13.77218 | 0.0504085 | 2.5793275 | 32 | 4 | 2002-2007 | 0.40 | M-v | 1 | MPC | 128888 2005 JG <sub>168</sub> |
| 2005 JQ <sub>171</sub> | 17.6 | 0.15 | 20071027 | 280.30667 | 94.24989  | 63.71437  | 2.05010  | 0.1335897 | 2.4596768 | 28 | 4 | 2001-2007 | 0.33 | M-v | 1 | MPC | 128888 2005 JQ <sub>171</sub> |
| 2005 JD <sub>179</sub> | 16.1 | 0.15 | 20071027 | 86.83956  | 256.26151 | 85.18284  | 7.46195  | 0.0574930 | 2.7921698 | 42 | 7 | 2000-2007 | 0.53 | M-v | 0 | MPC | 111103 2005 JD <sub>179</sub> |
| 2005 JB <sub>180</sub> | 15.8 | 0.15 | 20071027 | 116.69455 | 217.01119 | 133.28125 | 30.76747 | 0.1297848 | 2.5435130 | 29 | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 128227 2005 JB <sub>180</sub> |
| 2005 KG <sub>1</sub>   | 16.2 | 0.15 | 20071027 | 108.37757 | 222.98399 | 130.33169 | 6.59618  | 0.2053865 | 2.6557966 | 73 | 3 | 2005-2007 | 0.48 | M-v | 3 | MPC | 116291 2005 KG <sub>1</sub>   |
| 2005 KG <sub>3</sub>   | 17.5 | 0.15 | 20071027 | 305.15548 | 328.16676 | 176.05650 | 2.19364  | 0.1450168 | 2.3865116 | 27 | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 86759 2005 KG <sub>3</sub>    |
| 2005 KM <sub>3</sub>   | 16.4 | 0.15 | 20071027 | 48.77276  | 248.68533 | 130.57059 | 2.36179  | 0.0844011 | 2.7074278 | 47 | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 111103 2005 KM <sub>3</sub>   |
| 2005 KF <sub>4</sub>   | 17.3 | 0.15 | 20071027 | 304.93317 | 334.77290 | 169.51294 | 2.41555  | 0.0656966 | 2.4398109 | 41 | 6 | 1999-2007 | 0.36 | M-v | 0 | MPC | 111103 2005 KF <sub>4</sub>   |
| 2005 KL <sub>6</sub>   | 16.2 | 0.15 | 20071027 | 231.48896 | 344.30667 | 221.12480 | 2.96506  | 0.1721200 | 2.6033818 | 38 | 3 | 2005-2007 | 0.29 | M-v | 3 | MPC | 128888 2005 KL <sub>6</sub>   |
| 2005 KZ <sub>6</sub>   | 16.4 | 0.15 | 20071027 | 213.70989 | 219.88148 | 42.65490  | 6.59428  | 0.1010089 | 2.4233491 | 80 | 6 | 2001-2007 | 0.40 | M-v | 1 | MPC | 111104 2005 KZ <sub>6</sub>   |
| 2005 KU <sub>7</sub>   | 16.0 | 0.15 | 20071027 | 93.91832  | 268.02970 | 88.22912  | 7.27086  | 0.0489205 | 2.6811091 | 41 | 5 | 2002-2007 | 0.50 | M-v | 0 | MPC | 126748 2005 KU <sub>7</sub>   |
| 2005 KJ <sub>8</sub>   | 15.4 | 0.15 | 20071027 | 117.01773 | 227.87439 | 73.04277  | 14.47653 | 0.1672563 | 3.1498513 | 37 | 5 | 1999-2007 | 0.49 | M-v | 0 | MPC | 128888 2005 KJ <sub>8</sub>   |
| 2005 LZ <sub>3</sub>   | 16.1 | 0.15 | 20071027 | 235.79845 | 331.79692 | 232.97402 | 11.13736 | 0.2374599 | 2.5859288 | 69 | 2 | 2005-2007 | 0.38 | M-v | 3 | MPC | 128228 2005 LZ <sub>3</sub>   |
| 2005 LQ <sub>4</sub>   | 16.8 | 0.15 | 20071027 | 325.07033 | 342.66623 | 141.52564 | 6.07805  | 0.1536513 | 2.4347877 | 37 | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 87680 2005 LQ <sub>4</sub>    |
| 2005 LA <sub>5</sub>   | 16.5 | 0.15 | 20071027 | 326.40310 | 339.99172 | 138.14984 | 5.90821  | 0.0517760 | 2.5442955 | 48 | 6 | 2001-2007 | 0.44 | M-v | 0 | MPC | 104336 2005 LA <sub>5</sub>   |
| 2005 LR <sub>8</sub>   | 15.2 | 0.15 | 20071027 | 72.28496  | 269.13057 | 78.42635  | 16.93257 | 0.2387723 | 3.1256203 | 64 | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 122791 2005 LR <sub>8</sub>   |
| 2005 LQ <sub>10</sub>  | 15.2 | 0.15 | 20071027 | 337.22483 | 238.57340 | 200.01979 | 11.62984 | 0.0389724 | 2.9504753 | 64 | 5 | 2001-2007 | 0.62 | M-v | 1 | MPC | 128889 2005 LQ <sub>10</sub>  |
| 2005 LK <sub>11</sub>  | 15.3 | 0.15 | 20071027 | 119.31725 | 56.93872  | 263.26686 | 3.96285  | 0.1088145 | 3.2315409 | 72 | 5 | 2000-2007 | 0.34 | M-v | 0 | MPC | 128889 2005 LK <sub>11</sub>  |
| 2005 LD <sub>12</sub>  | 17.0 | 0.15 | 20071027 | 266.98539 | 89.44278  | 122.69233 | 3.15002  | 0.1088230 | 2.3173319 | 44 | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128889 2005 LD <sub>12</sub>  |
| 2005 LK <sub>15</sub>  | 16.3 | 0.15 | 20071027 | 208.34447 | 142.67707 | 88.20672  | 3.85442  | 0.0912053 | 2.6549054 | 42 | 5 | 2002-2007 | 0.40 | M-v | 0 | MPC | 111105 2005 LK <sub>15</sub>  |
| 2005 LY <sub>17</sub>  | 16.4 | 0.15 | 20071027 | 275.92427 | 286.86234 | 231.34455 | 11.88648 | 0.2067662 | 2.5578198 | 38 | 2 | 2005-2007 | 0.35 | M-v | 3 | MPC | 128228 2005 LY <sub>17</sub>  |
| 2005 LX <sub>20</sub>  | 15.9 | 0.15 | 20071027 | 356.62254 | 343.81142 | 89.21848  | 15.70605 | 0.2592240 | 2.6738471 | 35 | 4 | 2002-2007 | 0.53 | M-v | 1 | MPC | 128889 2005 LX <sub>20</sub>  |
| 2005 LK <sub>21</sub>  | 17.6 | 0.15 | 20071027 | 255.59633 | 359.04656 | 206.54187 | 0.75731  | 0.1385857 | 2.4324831 | 56 | 5 | 1997-2007 | 0.32 | M-v | 0 | MPC | 128889 2005 LK <sub>21</sub>  |
| 2005 LM <sub>21</sub>  | 15.2 | 0.15 | 20071027 | 51.86889  | 296.94835 | 58.84788  | 5.35125  | 0.0047308 | 2.9971207 | 60 | 2 | 2005-2007 | 0.40 | M-v | 3 | MPC | 128229 2005 LM <sub>21</sub>  |
| 2005 LD <sub>23</sub>  | 16.0 | 0.15 | 20071027 | 333.16220 | 199.87227 | 292.89991 | 8.08328  | 0.0989049 | 2.7831173 | 48 | 6 | 2001-2007 | 0.47 | M-v | 0 | MPC | 128889 2005 LD <sub>23</sub>  |
| 2005 LR <sub>23</sub>  | 16.2 | 0.15 | 20071027 | 143.05878 | 177.34182 | 80.28941  | 2.81589  | 0.0781853 | 3.0613606 | 29 | 2 | 2005-2007 | 0.33 | M-v | 4 | MPC | 128229 2005 LR <sub>23</sub>  |
| 2005 LQ <sub>24</sub>  | 15.2 | 0.15 | 20071027 | 15.49415  | 328.15685 | 65.54144  | 12.19058 | 0.1255817 | 3.1016658 | 77 | 4 | 2001-2007 | 0.43 | M-v | 1 | MPC | 128889 2005 LQ <sub>24</sub>  |
| 2005 LF <sub>25</sub>  | 15.9 | 0.15 | 20071027 | 90.08058  | 100.61629 | 222.31953 | 9.36926  | 0.1002915 | 3.1097451 | 25 | 4 | 2001-2007 | 0.58 | M-v | 0 | MPC | 104336 2005 LF <sub>25</sub>  |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2005 LR <sub>26</sub> | 16.3 | 0.15 | 20071027 | 6.40665   | 356.78422 | 113.93954 | 5.79123  | 0.0804587 | 2.7017175 | 60 | 6 | 1998-2007 | 0.42 | M-v | 1 | MPC | 114738 2005 LR <sub>26</sub> |
| 2005 LW <sub>27</sub> | 16.0 | 0.15 | 20071027 | 79.58452  | 196.49955 | 135.92875 | 5.82376  | 0.1450334 | 3.0921679 | 53 | 6 | 1999-2007 | 0.46 | M-v | 0 | MPC | 122791 2005 LW <sub>27</sub> |
| 2005 LW <sub>28</sub> | 15.8 | 0.15 | 20071027 | 226.00355 | 334.06907 | 227.46031 | 4.57992  | 0.0963773 | 2.7023772 | 48 | 3 | 2000-2007 | 0.53 | M-v | 3 | MPC | 128889 2005 LW <sub>28</sub> |
| 2005 LG <sub>30</sub> | 15.8 | 0.15 | 20071027 | 114.15519 | 64.89951  | 276.67699 | 3.15650  | 0.2366368 | 3.2004938 | 64 | 6 | 2000-2007 | 0.45 | M-v | 0 | MPC | 111106 2005 LG <sub>30</sub> |
| 2005 LX <sub>32</sub> | 16.7 | 0.15 | 20071027 | 104.44581 | 163.05157 | 166.03938 | 2.83361  | 0.0726305 | 2.7676075 | 33 | 5 | 2000-2007 | 0.37 | M-v | 0 | MPC | 121349 2005 LX <sub>32</sub> |
| 2005 LJ <sub>33</sub> | 16.5 | 0.15 | 20071027 | 159.48970 | 79.77723  | 187.68861 | 4.07607  | 0.0248898 | 2.7888006 | 33 | 6 | 2000-2007 | 0.25 | M-v | 0 | MPC | 111106 2005 LJ <sub>33</sub> |
| 2005 LD <sub>35</sub> | 16.0 | 0.15 | 20071027 | 126.20103 | 177.77824 | 136.86255 | 5.78018  | 0.1284323 | 3.2178935 | 28 | 5 | 2000-2007 | 0.31 | M-v | 0 | MPC | 89674 2005 LD <sub>35</sub>  |
| 2005 LU <sub>36</sub> | 15.2 | 0.15 | 20071027 | 53.74986  | 270.01388 | 102.77341 | 18.28558 | 0.1704095 | 3.0367018 | 43 | 5 | 2001-2007 | 0.37 | M-v | 0 | MPC | 104337 2005 LU <sub>36</sub> |
| 2005 LK <sub>37</sub> | 16.8 | 0.15 | 20071027 | 181.41906 | 10.68282  | 259.17071 | 3.04851  | 0.0690706 | 2.5861964 | 35 | 4 | 2004-2007 | 0.32 | M-v | 0 | MPC | 126748 2005 LK <sub>37</sub> |
| 2005 LD <sub>38</sub> | 16.1 | 0.15 | 20071027 | 307.01834 | 0.04779   | 101.26107 | 12.69872 | 0.0490277 | 3.0294166 | 47 | 5 | 2001-2007 | 0.67 | M-v | 1 | MPC | 128889 2005 LD <sub>38</sub> |
| 2005 LO <sub>38</sub> | 16.4 | 0.15 | 20071027 | 289.93859 | 9.51757   | 135.67192 | 6.31005  | 0.2335499 | 2.5451747 | 40 | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128889 2005 LO <sub>38</sub> |
| 2005 LM <sub>40</sub> | 17.2 | 0.15 | 20071027 | 274.99044 | 32.53634  | 202.40156 | 1.85003  | 0.1345009 | 2.3500977 | 57 | 6 | 2001-2007 | 0.40 | M-v | 1 | MPC | 111106 2005 LM <sub>40</sub> |
| 2005 LY <sub>43</sub> | 15.6 | 0.15 | 20071027 | 242.04833 | 300.76232 | 248.59967 | 15.34527 | 0.1376206 | 2.6530605 | 75 | 6 | 1995-2007 | 0.51 | M-v | 1 | MPC | 128889 2005 LY <sub>43</sub> |
| 2005 LD <sub>44</sub> | 14.3 | 0.15 | 20071027 | 102.29116 | 66.92059  | 247.17848 | 25.64622 | 0.1572064 | 3.1244799 | 74 | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 111106 2005 LD <sub>44</sub> |
| 2005 LF <sub>47</sub> | 16.3 | 0.15 | 20071027 | 224.32970 | 323.76921 | 299.12821 | 32.24494 | 0.2147533 | 2.6217391 | 36 | 3 | 2001-2007 | 0.30 | M-v | 2 | MPC | 86795 2005 LF <sub>47</sub>  |
| 2005 LU <sub>49</sub> | 15.6 | 0.15 | 20071027 | 169.37560 | 149.38206 | 85.56647  | 23.58721 | 0.0355290 | 3.1546652 | 39 | 5 | 1989-2007 | 0.54 | M-v | 0 | MPC | 128889 2005 LU <sub>49</sub> |
| 2005 MM <sub>3</sub>  | 16.1 | 0.15 | 20071027 | 134.69282 | 211.74721 | 128.01069 | 13.73340 | 0.1375219 | 2.5868731 | 56 | 4 | 2004-2007 | 0.40 | M-v | 0 | MPC | 120815 2005 MM <sub>3</sub>  |
| 2005 MW <sub>4</sub>  | 15.1 | 0.15 | 20071027 | 97.47956  | 249.92093 | 81.45381  | 22.80597 | 0.2231651 | 3.2180319 | 53 | 6 | 1999-2007 | 0.63 | M-v | 0 | MPC | 111107 2005 MW <sub>4</sub>  |
| 2005 MC <sub>6</sub>  | 16.1 | 0.15 | 20071027 | 145.98927 | 177.07478 | 129.46460 | 9.89374  | 0.1320238 | 2.7333614 | 66 | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 114738 2005 MC <sub>6</sub>  |
| 2005 MK <sub>7</sub>  | 16.8 | 0.15 | 20071027 | 335.83546 | 10.10881  | 125.60422 | 1.92183  | 0.1311382 | 2.3758561 | 46 | 6 | 2001-2007 | 0.50 | M-v | 1 | MPC | 128889 2005 MK <sub>7</sub>  |
| 2005 MD <sub>8</sub>  | 14.9 | 0.15 | 20071027 | 92.78524  | 53.73143  | 265.31027 | 4.34090  | 0.1499135 | 3.9994491 | 65 | 5 | 2000-2007 | 0.40 | M-v | 0 | MPC | 128889 2005 MD <sub>8</sub>  |
| 2005 MA <sub>10</sub> | 14.9 | 0.15 | 20071027 | 241.32117 | 275.87533 | 312.74295 | 13.00749 | 0.1272517 | 2.8617274 | 87 | 7 | 2000-2007 | 0.56 | M-v | 1 | MPC | 111107 2005 MA <sub>10</sub> |
| 2005 MO <sub>10</sub> | 15.8 | 0.15 | 20071027 | 281.31039 | 278.10998 | 233.20183 | 13.63078 | 0.0506580 | 2.7409277 | 38 | 4 | 2004-2007 | 0.62 | M-v | 1 | MPC | 104337 2005 MO <sub>10</sub> |
| 2005 MK <sub>12</sub> | 15.1 | 0.15 | 20071027 | 138.54905 | 212.79633 | 113.22258 | 14.03050 | 0.1346874 | 3.0428408 | 36 | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 111108 2005 MK <sub>12</sub> |
| 2005 MN <sub>12</sub> | 15.3 | 0.15 | 20071027 | 123.44232 | 5.85440   | 326.43217 | 3.87664  | 0.1245523 | 3.1869204 | 61 | 6 | 1997-2007 | 0.57 | M-v | 0 | MPC | 116292 2005 MN <sub>12</sub> |
| 2005 MC <sub>14</sub> | 15.7 | 0.15 | 20071027 | 161.57927 | 100.72376 | 152.64749 | 3.20806  | 0.0834031 | 3.0114280 | 48 | 4 | 2004-2007 | 0.36 | M-v | 0 | MPC | 128890 2005 MC <sub>14</sub> |
| 2005 MD <sub>14</sub> | 15.1 | 0.15 | 20071027 | 41.10504  | 135.38312 | 237.49190 | 21.62127 | 0.0884729 | 3.1435354 | 52 | 4 | 2001-2007 | 0.42 | M-v | 1 | MPC | 128890 2005 MD <sub>14</sub> |
| 2005 MF <sub>15</sub> | 15.2 | 0.15 | 20071027 | 155.01544 | 87.78857  | 205.94906 | 1.84752  | 0.1380880 | 3.2324431 | 77 | 6 | 1994-2007 | 0.38 | M-v | 0 | MPC | 111108 2005 MF <sub>15</sub> |
| 2005 MY <sub>15</sub> | 15.6 | 0.15 | 20071027 | 158.60154 | 110.95172 | 141.26739 | 16.88182 | 0.1939435 | 3.1048231 | 33 | 4 | 2000-2007 | 0.41 | M-v | 1 | MPC | 86822 2005 MY <sub>15</sub>  |
| 2005 ME <sub>19</sub> | 17.0 | 0.15 | 20071027 | 2.25068   | 345.71156 | 153.36923 | 4.36512  | 0.0927170 | 2.2260694 | 60 | 6 | 1998-2007 | 0.39 | M-v | 1 | MPC | 114739 2005 ME <sub>19</sub> |
| 2005 MQ <sub>21</sub> | 15.7 | 0.15 | 20071027 | 247.44369 | 262.72691 | 304.04662 | 8.34515  | 0.0420546 | 3.1237784 | 35 | 4 | 2002-2007 | 0.40 | M-v | 0 | MPC | 111108 2005 MQ <sub>21</sub> |
| 2005 MU <sub>22</sub> | 17.1 | 0.15 | 20071027 | 242.94564 | 307.80392 | 306.05475 | 1.70368  | 0.1346089 | 2.5442419 | 45 | 5 | 2001-2007 | 0.39 | M-v | 0 | MPC | 111108 2005 MU <sub>22</sub> |
| 2005 MJ <sub>23</sub> | 15.4 | 0.15 | 20071027 | 97.72109  | 235.74531 | 92.48187  | 16.76151 | 0.2103141 | 3.1704365 | 27 | 4 | 1999-2007 | 0.40 | M-v | 0 | MPC | 111108 2005 MJ <sub>23</sub> |
| 2005 ML <sub>23</sub> | 15.2 | 0.15 | 20071027 | 73.75897  | 207.45324 | 125.39500 | 16.64095 | 0.0764357 | 3.2370372 | 42 | 4 | 2003-2007 | 0.51 | M-v | 0 | MPC | 128890 2005 ML <sub>23</sub> |
| 2005 MZ <sub>24</sub> | 16.2 | 0.15 | 20071027 | 121.53236 | 91.81456  | 229.43754 | 5.08359  | 0.0373052 | 2.7461893 | 43 | 4 | 2002-2007 | 0.43 | M-v | 0 | MPC | 109292 2005 MZ <sub>24</sub> |
| 2005 MZ <sub>28</sub> | 16.0 | 0.15 | 20071027 | 235.76682 | 308.71564 | 275.32805 | 12.00414 | 0.1319628 | 2.9000064 | 23 | 3 | 2004-2007 | 0.34 | M-v | 2 | MPC | 86833 2005 MZ <sub>28</sub>  |
| 2005 MZ <sub>29</sub> | 15.9 | 0.15 | 20071027 | 147.06039 | 104.35054 | 206.83620 | 4.44073  | 0.1545038 | 3.1313462 | 37 | 5 | 2000-2007 | 0.35 | M-v | 0 | MPC | 111109 2005 MZ <sub>29</sub> |
| 2005 MJ <sub>33</sub> | 16.3 | 0.15 | 20071027 | 185.18897 | 343.79029 | 287.71314 | 14.45963 | 0.1045339 | 2.9715869 | 25 | 3 | 2003-2007 | 0.39 | M-v | 3 | MPC | 86840 2005 MJ <sub>33</sub>  |
| 2005 MZ <sub>35</sub> | 16.8 | 0.15 | 20071027 | 208.15542 | 334.95593 | 308.50287 | 7.98273  | 0.1314852 | 2.6285685 | 33 | 3 | 2001-2007 | 0.18 | M-v | 1 | MPC | 86844 2005 MZ <sub>35</sub>  |
| 2005 MN <sub>39</sub> | 16.2 | 0.15 | 20071027 | 158.70430 | 345.09565 | 341.91066 | 5.08932  | 0.0420937 | 2.8038539 | 36 | 5 | 2001-2007 | 0.47 | M-v | 0 | MPC | 121820 2005 MN <sub>39</sub> |
| 2005 MR <sub>39</sub> | 15.4 | 0.15 | 20071027 | 140.44481 | 23.12240  | 294.97076 | 7.87130  | 0.0939725 | 3.1534359 | 37 | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 128890 2005 MR <sub>39</sub> |
| 2005 MK <sub>44</sub> | 16.6 | 0.15 | 20071027 | 186.98266 | 27.63970  | 236.25702 | 4.20179  | 0.0844860 | 2.6552270 | 27 | 5 | 2000-2007 | 0.43 | M-v | 0 | MPC | 122510 2005 MK <sub>44</sub> |
| 2005 NO <sub>3</sub>  | 16.2 | 0.15 | 20071027 | 260.57604 | 98.50406  | 130.39306 | 12.55223 | 0.1463481 | 2.5917378 | 50 | 5 | 2000-2007 | 0.42 | M-v | 1 | MPC | 114739 2005 NO <sub>3</sub>  |
| 2005 NM <sub>4</sub>  | 16.1 | 0.15 | 20071027 | 215.53590 | 316.79559 | 271.54465 | 3.45065  | 0.0754185 | 3.1089022 | 44 | 6 | 2000-2007 | 0.34 | M-v | 0 | MPC | 111110 2005 NM <sub>4</sub>  |
| 2005 NB <sub>5</sub>  | 16.0 | 0.15 | 20071027 | 184.13009 | 126.57858 | 123.87832 | 5.82026  | 0.1212294 | 3.2350960 | 60 | 6 | 1995-2007 | 0.36 | M-v | 0 | MPC | 114739 2005 NB <sub>5</sub>  |
| 2005 NA <sub>13</sub> | 15.0 | 0.15 | 20071027 | 76.70445  | 238.42349 | 112.58787 | 3.98529  | 0.2498140 | 3.9536969 | 50 | 3 | 2005-2007 | 0.39 | M-v | 2 | MPC | 128890 2005 NA <sub>13</sub> |
| 2005 ND <sub>15</sub> | 14.7 | 0.15 | 20071027 | 147.74424 | 28.12122  | 280.53984 | 14.80181 | 0.2559623 | 3.2167596 | 82 | 4 | 1999-2007 | 0.56 | M-v | 2 | MPC | 118113 2005 ND <sub>15</sub> |
| 2005 NL <sub>16</sub> | 15.4 | 0.15 | 20071027 | 173.88183 | 165.47727 | 93.45670  | 6.36647  | 0.1851179 | 3.1784637 | 43 | 6 | 2001-2007 | 0.58 | M-v | 0 | MPC | 128890 2005 NL <sub>16</sub> |
| 2005 NM <sub>16</sub> | 16.4 | 0.15 | 20071027 | 292.33709 | 144.44394 | 49.48109  | 2.84722  | 0.0132292 | 2.6787772 | 58 | 4 | 1995-2007 | 0.29 | M-v | 0 | MPC | 114740 2005 NM <sub>16</sub> |
| 2005 NG <sub>18</sub> | 16.1 | 0.15 | 20071027 | 208.29594 | 51.77914  | 177.02977 | 1.48965  | 0.1219872 | 3.1612105 | 41 | 6 | 2000-2007 | 0.38 | M-v | 0 | MPC | 128890 2005 NG <sub>18</sub> |
| 2005 NX <sub>19</sub> | 17.3 | 0.15 | 20071027 | 342.09582 | 297.04358 | 230.63849 | 1.77135  | 0.1232218 | 2.4490781 | 39 | 4 | 2004-2007 | 0.37 | M-v | 1 | MPC | 109303 2005 NX <sub>19</sub> |
| 2005 NV <sub>22</sub> | 16.2 | 0.15 | 20071027 | 136.75830 | 164.97858 | 148.76262 | 5.94265  | 0.0663751 | 2.7125878 | 47 | 7 | 1996-2007 | 0.48 | M-v | 0 | MPC | 114740 2005 NV <sub>22</sub> |
| 2005 ND <sub>24</sub> | 15.7 | 0.15 | 20071027 | 268.62994 | 285.52943 | 272.32235 | 10.84183 | 0.1658028 | 2.7599778 | 31 | 3 | 2004-2007 | 0.46 | M-v | 3 | MPC | 86886 2005 ND <sub>24</sub>  |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 NE <sub>26</sub>  | 15.2 | 0.15 | 20071027 | 140.99548 | 213.67664 | 103.54835 | 10.42792 | 0.1767677 | 3.2297985 | 36  | 5 | 2002-2007 | 0.43 | M-v | 1 | MPC | 122791 2005 NE <sub>26</sub>  |
| 2005 NR <sub>31</sub>  | 16.1 | 0.15 | 20071027 | 232.48537 | 129.26118 | 109.68937 | 4.49705  | 0.1383397 | 2.7438876 | 30  | 5 | 2000-2007 | 0.42 | M-v | 1 | MPC | 111112 2005 NR <sub>31</sub>  |
| 2005 NX <sub>32</sub>  | 15.7 | 0.15 | 20071027 | 208.30128 | 320.35855 | 293.60472 | 4.57155  | 0.1242690 | 2.8491132 | 70  | 4 | 2004-2007 | 0.45 | M-v | 1 | MPC | 128890 2005 NX <sub>32</sub>  |
| 2005 NN <sub>35</sub>  | 17.6 | 0.15 | 20071027 | 155.31090 | 71.07527  | 309.38225 | 2.15617  | 0.1906302 | 2.4564751 | 31  | 3 | 1996-2007 | 0.53 | M-v | 3 | MPC | 120376 2005 NN <sub>35</sub>  |
| 2005 NL <sub>39</sub>  | 14.8 | 0.15 | 20071027 | 137.61509 | 342.28515 | 338.53715 | 9.49176  | 0.0949624 | 2.9761205 | 61  | 5 | 1998-2007 | 0.52 | M-v | 1 | MPC | 124472 2005 NL <sub>39</sub>  |
| 2005 NH <sub>41</sub>  | 16.4 | 0.15 | 20071027 | 91.50100  | 162.04924 | 199.04028 | 1.82083  | 0.0804305 | 3.1577905 | 51  | 5 | 1995-2007 | 0.36 | M-v | 0 | MPC | 111112 2005 NH <sub>41</sub>  |
| 2005 NM <sub>41</sub>  | 15.9 | 0.15 | 20071027 | 138.92982 | 35.02814  | 287.47721 | 9.14901  | 0.1202598 | 3.0077392 | 40  | 5 | 1998-2007 | 0.57 | M-v | 1 | MPC | 128890 2005 NM <sub>41</sub>  |
| 2005 NQ <sub>43</sub>  | 16.2 | 0.15 | 20071027 | 69.85303  | 274.75475 | 129.18209 | 6.78654  | 0.1032261 | 2.9278320 | 38  | 4 | 1998-2007 | 0.46 | M-v | 1 | MPC | 111112 2005 NQ <sub>43</sub>  |
| 2005 NH <sub>44</sub>  | 15.9 | 0.15 | 20071027 | 166.03677 | 2.55677   | 289.42414 | 8.89856  | 0.0813394 | 2.9928014 | 32  | 5 | 1998-2007 | 0.36 | M-v | 0 | MPC | 128890 2005 NH <sub>44</sub>  |
| 2005 NT <sub>49</sub>  | 15.9 | 0.15 | 20071027 | 249.96803 | 266.09253 | 283.96940 | 9.61310  | 0.1161193 | 3.1037852 | 28  | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 86903 2005 NT <sub>49</sub>   |
| 2005 NW <sub>55</sub>  | 15.2 | 0.15 | 20071027 | 182.52599 | 353.57458 | 266.65980 | 14.15118 | 0.2179910 | 3.1834026 | 56  | 5 | 1976-2007 | 0.48 | M-v | 0 | MPC | 97787 2005 NW <sub>55</sub>   |
| 2005 NA <sub>59</sub>  | 15.9 | 0.15 | 20071027 | 75.59866  | 280.20157 | 117.22625 | 6.29541  | 0.1026776 | 2.9991647 | 58  | 7 | 2000-2007 | 0.48 | M-v | 0 | MPC | 122792 2005 NA <sub>59</sub>  |
| 2005 NM <sub>59</sub>  | 16.5 | 0.15 | 20071027 | 10.85064  | 0.61838   | 106.96677 | 2.57038  | 0.0628349 | 2.8068930 | 41  | 5 | 1999-2007 | 0.29 | M-v | 0 | MPC | 112894 2005 NM <sub>59</sub>  |
| 2005 NP <sub>59</sub>  | 15.0 | 0.15 | 20071027 | 158.18434 | 324.88215 | 302.09419 | 8.87418  | 0.0616526 | 3.4594246 | 27  | 4 | 2004-2007 | 0.37 | M-v | 1 | MPC | 114186 2005 NP <sub>59</sub>  |
| 2005 NX <sub>70</sub>  | 16.6 | 0.15 | 20071027 | 261.80084 | 84.92350  | 121.32053 | 6.23551  | 0.1377800 | 2.4400305 | 56  | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 114741 2005 NX <sub>70</sub>  |
| 2005 NU <sub>75</sub>  | 15.6 | 0.15 | 20071027 | 126.57580 | 27.45110  | 294.53286 | 6.17560  | 0.1331875 | 3.1739689 | 42  | 3 | 2005-2007 | 0.42 | M-v | 2 | MPC | 128890 2005 NU <sub>75</sub>  |
| 2005 NS <sub>80</sub>  | 16.3 | 0.15 | 20071027 | 230.17706 | 101.99993 | 180.61314 | 10.24746 | 0.1558391 | 2.4075656 | 48  | 7 | 1994-2007 | 0.61 | M-v | 1 | MPC | 114741 2005 NS <sub>80</sub>  |
| 2005 ND <sub>81</sub>  | 16.1 | 0.15 | 20071027 | 127.35427 | 41.00702  | 318.13847 | 4.47376  | 0.0753261 | 2.7860806 | 29  | 4 | 2001-2007 | 0.29 | M-v | 0 | MPC | 126060 2005 ND <sub>81</sub>  |
| 2005 NH <sub>85</sub>  | 16.0 | 0.15 | 20071027 | 98.36996  | 262.43478 | 118.40524 | 6.44115  | 0.0586173 | 2.7757307 | 38  | 5 | 2003-2007 | 0.41 | M-v | 1 | MPC | 126748 2005 NH <sub>85</sub>  |
| 2005 NN <sub>85</sub>  | 15.8 | 0.15 | 20071027 | 28.90893  | 284.35620 | 134.14900 | 1.71652  | 0.1002303 | 3.2377218 | 27  | 4 | 2003-2007 | 0.33 | M-v | 0 | MPC | 128230 2005 NN <sub>85</sub>  |
| 2005 NU <sub>85</sub>  | 15.5 | 0.15 | 20071027 | 304.91887 | 208.28252 | 292.34967 | 9.02046  | 0.0649664 | 3.1226954 | 45  | 5 | 2001-2007 | 0.44 | M-v | 1 | MPC | 111114 2005 NU <sub>85</sub>  |
| 2005 NV <sub>122</sub> | 14.9 | 0.15 | 20071027 | 347.40242 | 155.79925 | 315.01589 | 8.46045  | 0.0578715 | 3.1661864 | 32  | 4 | 2003-2007 | 0.52 | M-v | 1 | MPC | 109318 2005 NV <sub>122</sub> |
| 2005 OL <sub>8</sub>   | 15.6 | 0.15 | 20071027 | 210.66885 | 323.83521 | 279.97988 | 10.03718 | 0.0455975 | 3.0662384 | 30  | 5 | 1992-2007 | 0.46 | M-v | 0 | MPC | 128890 2005 OL <sub>8</sub>   |
| 2005 OU <sub>9</sub>   | 16.3 | 0.15 | 20071027 | 228.36571 | 147.60077 | 119.88456 | 6.16934  | 0.2399749 | 2.5680330 | 37  | 4 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128231 2005 OU <sub>9</sub>   |
| 2005 OH <sub>11</sub>  | 15.6 | 0.15 | 20071027 | 252.65786 | 98.68487  | 126.82714 | 8.77048  | 0.1415102 | 2.8129035 | 45  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 86949 2005 OH <sub>11</sub>   |
| 2005 OS <sub>15</sub>  | 14.5 | 0.15 | 20071027 | 326.22268 | 212.58386 | 282.57681 | 20.57195 | 0.0676112 | 3.1105695 | 44  | 6 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128890 2005 OS <sub>15</sub>  |
| 2005 OG <sub>24</sub>  | 15.5 | 0.15 | 20071027 | 51.19191  | 261.58908 | 164.12179 | 12.35036 | 0.0764757 | 3.1241708 | 45  | 6 | 2000-2007 | 0.43 | M-v | 0 | MPC | 114742 2005 OG <sub>24</sub>  |
| 2005 PZ <sub>9</sub>   | 15.2 | 0.15 | 20071027 | 70.77439  | 76.52730  | 333.13233 | 8.99824  | 0.0572518 | 3.0689873 | 43  | 6 | 1992-2007 | 0.47 | M-v | 1 | MPC | 111117 2005 PZ <sub>9</sub>   |
| 2005 PR <sub>19</sub>  | 14.4 | 0.15 | 20071027 | 85.00174  | 225.28493 | 122.90511 | 1.83353  | 0.2988305 | 3.9997881 | 112 | 4 | 1998-2007 | 0.47 | M-v | 0 | MPC | 116296 2005 PR <sub>19</sub>  |
| 2005 QB <sub>1</sub>   | 16.0 | 0.15 | 20071027 | 176.01424 | 172.42257 | 151.90586 | 14.78178 | 0.0912390 | 2.7218845 | 44  | 4 | 2001-2007 | 0.44 | M-v | 2 | MPC | 90222 2005 QB <sub>1</sub>    |
| 2005 QT <sub>2</sub>   | 16.0 | 0.15 | 20071027 | 208.81494 | 7.78139   | 244.11169 | 7.37289  | 0.1214330 | 3.0631794 | 44  | 6 | 2001-2007 | 0.48 | M-v | 0 | MPC | 112897 2005 QT <sub>2</sub>   |
| 2005 QC <sub>5</sub>   | 19.7 | 0.15 | 20071027 | 25.05228  | 108.65265 | 48.21728  | 9.46042  | 0.3645759 | 0.8935574 | 71  | 3 | 1978-2006 | 0.43 | M-v | 4 | MPC | 109332 2005 QC <sub>5</sub>   |
| 2005 QD <sub>16</sub>  | 16.2 | 0.15 | 20071027 | 242.55082 | 296.43161 | 325.86244 | 3.44433  | 0.0832136 | 2.7440758 | 35  | 5 | 2003-2007 | 0.43 | M-v | 0 | MPC | 112898 2005 QD <sub>16</sub>  |
| 2005 QR <sub>31</sub>  | 15.6 | 0.15 | 20071027 | 102.78646 | 228.12569 | 165.22240 | 16.71292 | 0.2158681 | 2.9183996 | 33  | 5 | 2001-2007 | 0.61 | M-v | 1 | MPC | 87029 2005 QR <sub>31</sub>   |
| 2005 QG <sub>36</sub>  | 15.1 | 0.15 | 20071027 | 131.78604 | 203.34526 | 168.81169 | 12.82990 | 0.2266006 | 3.0727839 | 80  | 5 | 2000-2007 | 0.49 | M-v | 1 | MPC | 116298 2005 QG <sub>36</sub>  |
| 2005 QQ <sub>44</sub>  | 14.6 | 0.15 | 20071027 | 115.48603 | 186.14781 | 130.86473 | 3.79678  | 0.2030812 | 3.9858624 | 56  | 5 | 2002-2007 | 0.41 | M-v | 0 | MPC | 118116 2005 QQ <sub>44</sub>  |
| 2005 QV <sub>63</sub>  | 15.6 | 0.15 | 20071027 | 29.91963  | 331.29688 | 147.87194 | 11.74835 | 0.1124554 | 2.9252694 | 28  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 112899 2005 QV <sub>63</sub>  |
| 2005 QY <sub>93</sub>  | 15.5 | 0.15 | 20071027 | 248.61721 | 135.68193 | 121.40129 | 8.41861  | 0.0974203 | 2.7667869 | 42  | 3 | 2004-2007 | 0.50 | M-v | 3 | MPC | 87101 2005 QY <sub>93</sub>   |
| 2005 QD <sub>101</sub> | 15.9 | 0.15 | 20071027 | 229.27546 | 348.41009 | 257.32367 | 3.76523  | 0.0953373 | 3.1044852 | 41  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 128891 2005 QD <sub>101</sub> |
| 2005 QP <sub>146</sub> | 15.6 | 0.15 | 20071027 | 50.40321  | 322.35050 | 110.21192 | 10.09752 | 0.0410475 | 2.9820705 | 43  | 6 | 2001-2007 | 0.46 | M-v | 0 | MPC | 112902 2005 QP <sub>146</sub> |
| 2005 QE <sub>163</sub> | 15.6 | 0.15 | 20071027 | 198.78910 | 201.12640 | 93.98610  | 5.92828  | 0.0925367 | 2.8150775 | 60  | 6 | 1996-2007 | 0.48 | M-v | 1 | MPC | 124031 2005 QE <sub>163</sub> |
| 2005 RH                | 15.6 | 0.15 | 20071027 | 95.32816  | 91.77192  | 276.93593 | 14.43781 | 0.1269800 | 3.4539463 | 30  | 3 | 1999-2006 | 0.72 | M-v | 3 | MPC | 124034 2005 RH                |
| 2005 RU <sub>4</sub>   | 14.2 | 0.15 | 20071027 | 238.30364 | 293.58521 | 280.86354 | 24.02704 | 0.2158072 | 3.1817749 | 63  | 4 | 1999-2007 | 0.47 | M-v | 1 | MPC | 90241 2005 RU <sub>4</sub>    |
| 2005 RT <sub>7</sub>   | 14.6 | 0.15 | 20071027 | 119.39536 | 25.47234  | 351.72627 | 12.78296 | 0.0727346 | 3.2209692 | 75  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 112903 2005 RT <sub>7</sub>   |
| 2005 RU <sub>9</sub>   | 16.0 | 0.15 | 20071027 | 224.53985 | 315.72180 | 323.11966 | 8.52815  | 0.2055647 | 2.7172267 | 40  | 5 | 1999-2007 | 0.54 | M-v | 1 | MPC | 111126 2005 RU <sub>9</sub>   |
| 2005 RE <sub>11</sub>  | 14.5 | 0.15 | 20071027 | 212.57650 | 65.62633  | 226.75450 | 9.32261  | 0.0427547 | 3.0122215 | 78  | 6 | 1998-2007 | 0.69 | M-v | 1 | MPC | 122793 2005 RE <sub>11</sub>  |
| 2005 RG <sub>40</sub>  | 15.0 | 0.15 | 20071027 | 30.48268  | 136.08480 | 329.62109 | 9.89621  | 0.0487034 | 3.0773120 | 47  | 7 | 1994-2007 | 0.55 | M-v | 1 | MPC | 128891 2005 RG <sub>40</sub>  |
| 2005 SF <sub>11</sub>  | 16.7 | 0.15 | 20071027 | 151.98552 | 328.58356 | 57.67822  | 0.85531  | 0.0841887 | 2.7700408 | 66  | 4 | 2000-2007 | 0.34 | M-v | 1 | MPC | 118122 2005 SF <sub>11</sub>  |
| 2005 SE <sub>52</sub>  | 15.1 | 0.15 | 20071027 | 187.48903 | 303.32573 | 33.94861  | 12.39455 | 0.0301667 | 3.0712840 | 67  | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 95790 2005 SE <sub>52</sub>   |
| 2005 SX <sub>65</sub>  | 15.0 | 0.15 | 20071027 | 186.94746 | 307.02899 | 35.65287  | 18.43253 | 0.1379651 | 2.7730747 | 124 | 5 | 1996-2007 | 0.52 | M-v | 1 | MPC | 121828 2005 SX <sub>65</sub>  |
| 2005 SV <sub>69</sub>  | 16.7 | 0.15 | 20071027 | 245.59214 | 181.09031 | 125.64675 | 3.87061  | 0.0060827 | 2.6279779 | 71  | 3 | 2003-2007 | 0.28 | M-v | 2 | MPC | 126062 2005 SV <sub>69</sub>  |
| 2005 SA <sub>71</sub>  | 18.8 | 0.15 | 20071027 | 27.38968  | 283.59130 | 44.38702  | 20.20595 | 0.3675923 | 1.6179445 | 158 | 2 | 2005-2007 | 0.42 | M-v | 1 | MPC | 128891 2005 SA <sub>71</sub>  |
| 2005 SR <sub>84</sub>  | 16.9 | 0.15 | 20071027 | 94.32605  | 54.76170  | 11.44252  | 0.77176  | 0.1685178 | 3.1565060 | 37  | 3 | 2003-2007 | 0.31 | M-v | 3 | MPC | 118125 2005 SR <sub>84</sub>  |



|                        |      |      |          |           |           |           |          |           |            |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2005 SA <sub>143</sub> | 16.8 | 0.15 | 20071027 | 51.27252  | 357.55806 | 157.00099 | 7.51856  | 0.0659670 | 2.4888272  | 56  | 4 | 2001-2007 | 0.24 | M-v | 2 | MPC | 121834 2005 SA <sub>143</sub> |
| 2005 SW <sub>230</sub> | 15.3 | 0.15 | 20071027 | 148.19567 | 105.57651 | 196.55618 | 2.48039  | 0.1821780 | 3.9427063  | 46  | 7 | 1997-2007 | 0.39 | M-v | 0 | MPC | 112910 2005 SW <sub>230</sub> |
| 2005 SE <sub>246</sub> | 16.8 | 0.15 | 20071027 | 57.06422  | 323.04921 | 204.54386 | 3.16472  | 0.0677381 | 2.4245396  | 71  | 5 | 1993-2007 | 0.45 | M-v | 1 | MPC | 119655 2005 SE <sub>246</sub> |
| 2005 SW <sub>278</sub> | 15.5 | 0.15 | 20071027 | 277.03920 | 274.87124 | 348.00049 | 13.06957 | 0.1413671 | 2.5989311  | 33  | 5 | 2001-2007 | 0.53 | M-v | 1 | MPC | 114758 2005 SW <sub>278</sub> |
| 2005 TH <sub>43</sub>  | 15.9 | 0.15 | 20071027 | 301.16989 | 66.86423  | 162.24068 | 3.93279  | 0.0367708 | 2.7214986  | 63  | 5 | 2000-2007 | 0.37 | M-v | 1 | MPC | 121842 2005 TH <sub>43</sub>  |
| 2005 TU <sub>45</sub>  | 17.0 | 0.15 | 20071027 | 300.31072 | 76.89424  | 120.26620 | 28.54332 | 0.4954981 | 1.9742173  | 92  | 3 | 2005-2007 | 0.19 | M-v | 1 | MPC | 124475 2005 TU <sub>45</sub>  |
| 2005 TF <sub>49</sub>  | 19.1 | 0.15 | 20071027 | 37.94784  | 302.37228 | 25.76732  | 24.55053 | 0.0254293 | 1.0418937  | 456 | 2 | 2005-2007 | 0.39 | M-v | 1 | MPC | 128891 2005 TF <sub>49</sub>  |
| 2005 TF <sub>50</sub>  | 20.3 | 0.15 | 20071027 | 190.43563 | 159.75934 | 0.73303   | 10.70201 | 0.8708536 | 2.2652363  | 47  | 1 | 26 days   | 0.57 | M-v | 7 | MPC | 90319 2005 TF <sub>50</sub>   |
| 2005 TF <sub>128</sub> | 16.8 | 0.15 | 20071027 | 126.45458 | 85.96993  | 323.89670 | 1.19057  | 0.0671310 | 2.8861616  | 35  | 5 | 2000-2007 | 0.28 | M-v | 0 | MPC | 118134 2005 TF <sub>128</sub> |
| 2005 TH <sub>167</sub> | 17.0 | 0.15 | 20071027 | 58.25294  | 135.78592 | 347.58399 | 1.29848  | 0.0470535 | 2.9492680  | 20  | 2 | 2005-2007 | 0.23 | M-v | 4 | MPC | 117590 2005 TH <sub>167</sub> |
| 2005 UB                | 16.6 | 0.15 | 20071027 | 297.13116 | 3.07694   | 272.16196 | 27.72319 | 0.7386695 | 1.8955139  | 125 | 3 | 2005-2007 | 0.38 | M-v | 2 | MPC | 128891 2005 UB                |
| 2005 UD <sub>22</sub>  | 16.9 | 0.15 | 20071027 | 94.81067  | 95.50477  | 20.73365  | 7.86274  | 0.1784130 | 2.7879951  | 40  | 2 | 2005-2007 | 0.42 | M-v | 3 | MPC | 117593 2005 UD <sub>22</sub>  |
| 2005 UD <sub>49</sub>  | 14.9 | 0.15 | 20071027 | 210.66816 | 292.42423 | 13.63573  | 15.12790 | 0.0670842 | 3.1437710  | 53  | 6 | 1960-2007 | 0.61 | M-v | 1 | MPC | 96101 2005 UD <sub>49</sub>   |
| 2005 UC <sub>97</sub>  | 15.1 | 0.15 | 20071027 | 255.90607 | 210.04002 | 64.70628  | 10.85639 | 0.0518819 | 3.1324141  | 38  | 7 | 1994-2007 | 0.51 | M-v | 1 | MPC | 112914 2005 UC <sub>97</sub>  |
| 2005 UD <sub>135</sub> | 14.8 | 0.15 | 20071027 | 38.15033  | 52.50145  | 62.98119  | 10.07534 | 0.1742455 | 3.9512488  | 45  | 3 | 2005-2007 | 0.47 | M-v | 2 | MPC | 116324 2005 UD <sub>135</sub> |
| 2005 UR <sub>265</sub> | 14.3 | 0.15 | 20071027 | 320.36963 | 54.48480  | 143.06363 | 2.54076  | 0.1726406 | 3.9681500  | 47  | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 112916 2005 UR <sub>265</sub> |
| 2005 UE <sub>495</sub> | 15.3 | 0.15 | 20071027 | 169.10972 | 181.33031 | 137.94161 | 11.18389 | 0.1915321 | 3.1487700  | 63  | 6 | 1999-2007 | 0.60 | M-v | 1 | MPC | 111146 2005 UE <sub>495</sub> |
| 2005 UQ <sub>513</sub> | 3.7  | 0.15 | 20071027 | 212.70038 | 222.55095 | 307.64850 | 25.69947 | 0.1470369 | 43.2692767 | 42  | 8 | 1990-2007 | 0.31 | M-v | 3 | MPC | 128892 2005 UQ <sub>513</sub> |
| 2005 WR <sub>2</sub>   | 19.3 | 0.15 | 20071027 | 40.56776  | 49.42486  | 282.47950 | 7.85840  | 0.5461192 | 1.5316799  | 112 | 3 | 2005-2007 | 0.36 | M-v | 2 | MPC | 120824 2005 WR <sub>2</sub>   |
| 2005 WY <sub>3</sub>   | 13.4 | 0.15 | 20071027 | 354.99659 | 309.22243 | 190.23589 | 29.40956 | 0.7353300 | 6.7376399  | 103 | 3 | 2005-2007 | 0.51 | M-v | 1 | MPC | 128892 2005 WY <sub>3</sub>   |
| 2005 WB <sub>5</sub>   | 16.5 | 0.15 | 20071027 | 94.43223  | 48.58860  | 62.36518  | 1.00445  | 0.1689760 | 3.0600925  | 66  | 3 | 2002-2007 | 0.35 | M-v | 2 | MPC | 118155 2005 WB <sub>5</sub>   |
| 2005 WU <sub>5</sub>   | 14.8 | 0.15 | 20071027 | 201.56342 | 268.42732 | 64.02800  | 11.28831 | 0.1256489 | 3.1023434  | 86  | 5 | 1999-2007 | 0.56 | M-v | 0 | MPC | 101113 2005 WU <sub>5</sub>   |
| 2005 WJ <sub>56</sub>  | 17.9 | 0.15 | 20071027 | 179.70470 | 297.81583 | 288.11151 | 21.62443 | 0.1518688 | 0.9585574  | 195 | 3 | 2005-2007 | 0.41 | M-v | 2 | MPC | 124477 2005 WJ <sub>56</sub>  |
| 2005 WO <sub>60</sub>  | 15.1 | 0.15 | 20071027 | 271.48850 | 135.12806 | 129.86272 | 16.12383 | 0.1356640 | 2.7073839  | 57  | 7 | 2000-2007 | 0.58 | M-v | 1 | MPC | 112918 2005 WO <sub>60</sub>  |
| 2005 XY <sub>61</sub>  | 16.7 | 0.15 | 20071027 | 146.35750 | 35.87375  | 49.82562  | 10.01904 | 0.2342828 | 2.6348360  | 38  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 122804 2005 XY <sub>61</sub>  |
| 2005 XW <sub>77</sub>  | 20.8 | 0.15 | 20071027 | 8.55431   | 99.98362  | 268.84216 | 16.44049 | 0.3554047 | 1.6154244  | 52  | 2 | 2005-2007 | 0.59 | M-v | 1 | MPC | 124477 2005 XW <sub>77</sub>  |
| 2005 XL <sub>80</sub>  | 18.1 | 0.15 | 20071027 | 250.05996 | 143.44579 | 53.46671  | 10.89435 | 0.4875337 | 1.7260601  | 175 | 2 | 2005-2007 | 0.47 | M-v | 0 | MPC | 128892 2005 XL <sub>80</sub>  |
| 2005 XY <sub>114</sub> | 17.3 | 0.15 | 20071027 | 46.95089  | 306.97754 | 358.99355 | 1.32187  | 0.1850459 | 2.3747747  | 58  | 6 | 1996-2007 | 0.49 | M-v | 1 | MPC | 128892 2005 XY <sub>114</sub> |
| 2005 YY <sub>128</sub> | 18.3 | 0.15 | 20071027 | 257.08915 | 314.50935 | 300.55658 | 3.76238  | 0.7320142 | 1.6494067  | 168 | 3 | 2005-2007 | 0.41 | M-v | 2 | MPC | 109477 2005 YY <sub>128</sub> |
| 2006 AO <sub>5</sub>   | 16.7 | 0.15 | 20071027 | 336.08130 | 49.54068  | 332.54837 | 19.10742 | 0.0806599 | 1.9036780  | 124 | 3 | 2002-2007 | 0.52 | M-v | 2 | MPC | 128892 2006 AO <sub>5</sub>   |
| 2006 BS <sub>98</sub>  | 17.6 | 0.15 | 20071027 | 218.37347 | 138.21052 | 18.13916  | 19.46965 | 0.0981570 | 1.9114751  | 32  | 3 | 2002-2007 | 0.48 | M-v | 3 | MPC | 128236 2006 BS <sub>98</sub>  |
| 2006 BT <sub>189</sub> | 16.9 | 0.15 | 20071027 | 49.26307  | 274.29897 | 19.65815  | 4.74532  | 0.2109306 | 2.3748133  | 80  | 2 | 2006-2007 | 0.56 | M-v | 3 | MPC | 128892 2006 BT <sub>189</sub> |
| 2006 BO <sub>211</sub> | 17.6 | 0.15 | 20071027 | 52.60076  | 259.33302 | 47.36450  | 2.52041  | 0.1877672 | 2.2020942  | 81  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128892 2006 BO <sub>211</sub> |
| 2006 BC <sub>263</sub> | 17.1 | 0.15 | 20071027 | 95.18141  | 241.74983 | 18.18417  | 2.85990  | 0.1943649 | 2.2878845  | 43  | 2 | 2006-2007 | 0.48 | M-v | 4 | MPC | 126751 2006 BC <sub>263</sub> |
| 2006 BL <sub>264</sub> | 16.9 | 0.15 | 20071027 | 68.93883  | 226.64884 | 52.46870  | 3.00537  | 0.1949071 | 2.3577638  | 59  | 3 | 2002-2007 | 0.34 | M-v | 1 | MPC | 128892 2006 BL <sub>264</sub> |
| 2006 BM <sub>275</sub> | 17.1 | 0.15 | 20071027 | 95.96419  | 241.23270 | 23.54248  | 2.70247  | 0.1692841 | 2.4043084  | 54  | 4 | 2002-2007 | 0.38 | M-v | 1 | MPC | 128893 2006 BM <sub>275</sub> |
| 2006 CV <sub>42</sub>  | 15.5 | 0.15 | 20071027 | 19.98614  | 11.51671  | 307.44613 | 7.18294  | 0.3052967 | 2.4602828  | 133 | 3 | 2002-2007 | 0.58 | M-v | 1 | MPC | 128893 2006 CV <sub>42</sub>  |
| 2006 DL <sub>14</sub>  | 17.0 | 0.15 | 20071027 | 114.34190 | 226.41587 | 12.89862  | 6.68191  | 0.1523691 | 2.2612585  | 97  | 3 | 2004-2007 | 0.52 | M-v | 2 | MPC | 126752 2006 DL <sub>14</sub>  |
| 2006 DG <sub>27</sub>  | 17.3 | 0.15 | 20071027 | 76.32183  | 266.19170 | 15.86610  | 2.35609  | 0.2036464 | 2.3505300  | 43  | 4 | 1995-2007 | 0.36 | M-v | 0 | MPC | 128238 2006 DG <sub>27</sub>  |
| 2006 DH <sub>37</sub>  | 15.8 | 0.15 | 20071027 | 36.66047  | 322.82224 | 356.07961 | 12.09794 | 0.3881935 | 2.6183422  | 102 | 3 | 2002-2007 | 0.38 | M-v | 2 | MPC | 128893 2006 DH <sub>37</sub>  |
| 2006 DB <sub>66</sub>  | 17.4 | 0.15 | 20071027 | 335.06258 | 40.24221  | 7.79430   | 21.60888 | 0.0847575 | 1.8907775  | 102 | 3 | 1994-2007 | 0.47 | M-v | 2 | MPC | 128893 2006 DB <sub>66</sub>  |
| 2006 DV <sub>76</sub>  | 16.6 | 0.15 | 20071027 | 18.58436  | 221.63401 | 95.50396  | 2.02609  | 0.1998709 | 2.4181037  | 58  | 6 | 1996-2007 | 0.52 | M-v | 1 | MPC | 126753 2006 DV <sub>76</sub>  |
| 2006 DY <sub>90</sub>  | 17.2 | 0.15 | 20071027 | 27.62976  | 288.38649 | 36.12671  | 1.95675  | 0.1947687 | 2.3955753  | 65  | 2 | 2006-2007 | 0.44 | M-v | 3 | MPC | 128894 2006 DY <sub>90</sub>  |
| 2006 DA <sub>98</sub>  | 15.6 | 0.15 | 20071027 | 81.13820  | 171.08576 | 129.59832 | 13.23275 | 0.1620826 | 2.6047272  | 66  | 4 | 1998-2007 | 0.52 | M-v | 1 | MPC | 128894 2006 DA <sub>98</sub>  |
| 2006 DH <sub>147</sub> | 17.7 | 0.15 | 20071027 | 64.03427  | 49.37197  | 237.90484 | 1.53153  | 0.1744932 | 2.4076127  | 39  | 3 | 2003-2007 | 0.31 | M-v | 2 | MPC | 126755 2006 DH <sub>147</sub> |
| 2006 DH <sub>148</sub> | 17.0 | 0.15 | 20071027 | 66.00445  | 65.60939  | 223.20521 | 0.69697  | 0.2014061 | 2.4186797  | 63  | 4 | 1996-2007 | 0.36 | M-v | 0 | MPC | 128894 2006 DH <sub>148</sub> |
| 2006 DF <sub>164</sub> | 17.3 | 0.15 | 20071027 | 62.08327  | 74.70524  | 216.09718 | 1.94584  | 0.1730029 | 2.3208762  | 79  | 5 | 1995-2007 | 0.50 | M-v | 1 | MPC | 128894 2006 DF <sub>164</sub> |
| 2006 DH <sub>209</sub> | 16.2 | 0.15 | 20071027 | 81.26385  | 227.05048 | 69.07929  | 3.15350  | 0.2529494 | 2.2963319  | 101 | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128894 2006 DH <sub>209</sub> |
| 2006 DS <sub>209</sub> | 16.8 | 0.15 | 20071027 | 43.62883  | 336.28495 | 347.58476 | 4.88764  | 0.2189166 | 2.2401713  | 69  | 2 | 2006-2007 | 0.54 | M-v | 4 | MPC | 128894 2006 DS <sub>209</sub> |
| 2006 DC <sub>210</sub> | 16.7 | 0.15 | 20071027 | 49.86345  | 305.31642 | 5.96362   | 3.40029  | 0.2176098 | 2.3419073  | 119 | 6 | 1999-2007 | 0.47 | M-v | 1 | MPC | 128894 2006 DC <sub>210</sub> |
| 2006 ER <sub>7</sub>   | 17.1 | 0.15 | 20071027 | 51.42273  | 23.85349  | 272.36198 | 1.83360  | 0.1727663 | 2.3863238  | 69  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 128895 2006 ER <sub>7</sub>   |
| 2006 EF <sub>16</sub>  | 17.4 | 0.15 | 20071027 | 88.52544  | 241.71067 | 32.90952  | 2.69514  | 0.1299697 | 2.2871649  | 54  | 4 | 2000-2007 | 0.30 | M-v | 0 | MPC | 128895 2006 EF <sub>16</sub>  |
| 2006 EZ <sub>16</sub>  | 16.6 | 0.15 | 20071027 | 87.04170  | 286.25439 | 10.17993  | 8.96747  | 0.2054419 | 2.2106928  | 106 | 3 | 2000-2007 | 0.51 | M-v | 2 | MPC | 128895 2006 EZ <sub>16</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2006 EH <sub>53</sub> | 14.6 | 0.15 | 20071027 | 100.36935 | 195.13733 | 74.13313  | 34.44626 | 0.1687904 | 2.6361754 | 119 | 5 | 1999-2007 | 0.44 | M-v | 1 | MPC | 122814 2006 EH <sub>53</sub> |
| 2006 FG <sub>7</sub>  | 16.8 | 0.15 | 20071027 | 97.63883  | 261.77028 | 29.41342  | 6.57820  | 0.1722842 | 2.2615015 | 56  | 2 | 2006-2007 | 0.35 | M-v | 3 | MPC | 128895 2006 FG <sub>7</sub>  |
| 2006 FH <sub>12</sub> | 17.1 | 0.15 | 20071027 | 9.67640   | 151.01900 | 204.41997 | 3.31144  | 0.2701732 | 2.2259740 | 122 | 4 | 2003-2007 | 0.53 | M-v | 1 | MPC | 128895 2006 FH <sub>12</sub> |
| 2006 FQ <sub>12</sub> | 17.5 | 0.15 | 20071027 | 48.42513  | 196.64287 | 124.05733 | 2.09400  | 0.1840814 | 2.3888908 | 36  | 2 | 2006-2007 | 0.44 | M-v | 4 | MPC | 128243 2006 FQ <sub>12</sub> |
| 2006 FF <sub>21</sub> | 16.4 | 0.15 | 20071027 | 61.84328  | 276.26612 | 13.34984  | 7.55651  | 0.1268361 | 2.4169799 | 95  | 2 | 2006-2007 | 0.45 | M-v | 3 | MPC | 128895 2006 FF <sub>21</sub> |
| 2006 FM <sub>22</sub> | 17.0 | 0.15 | 20071027 | 34.80971  | 319.14141 | 7.04814   | 5.33017  | 0.2376867 | 2.4114514 | 110 | 2 | 2006-2007 | 0.46 | M-v | 3 | MPC | 128895 2006 FM <sub>22</sub> |
| 2006 FN <sub>22</sub> | 16.6 | 0.15 | 20071027 | 19.84385  | 146.90290 | 191.38267 | 4.47170  | 0.2470795 | 2.4008584 | 110 | 3 | 1996-2007 | 0.51 | M-v | 2 | MPC | 128895 2006 FN <sub>22</sub> |
| 2006 FZ <sub>23</sub> | 18.1 | 0.15 | 20071027 | 107.51547 | 123.31440 | 156.08378 | 2.03659  | 0.2013758 | 2.2778378 | 38  | 5 | 1999-2007 | 0.36 | M-v | 0 | MPC | 128895 2006 FZ <sub>23</sub> |
| 2006 FA <sub>30</sub> | 18.4 | 0.15 | 20071027 | 111.15711 | 96.80345  | 187.42780 | 2.97516  | 0.2010118 | 2.2584515 | 48  | 5 | 1999-2007 | 0.41 | M-v | 0 | MPC | 128895 2006 FA <sub>30</sub> |
| 2006 FH <sub>34</sub> | 16.1 | 0.15 | 20071027 | 107.31346 | 19.34990  | 244.73565 | 6.13173  | 0.0954597 | 2.2779021 | 101 | 6 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128895 2006 FH <sub>34</sub> |
| 2006 FO <sub>34</sub> | 16.3 | 0.15 | 20071027 | 136.62234 | 209.10130 | 3.59931   | 12.04543 | 0.2270549 | 2.5482916 | 63  | 3 | 2003-2007 | 0.30 | M-v | 2 | MPC | 128895 2006 FO <sub>34</sub> |
| 2006 FZ <sub>36</sub> | 14.8 | 0.15 | 20071027 | 53.45726  | 224.19052 | 62.20151  | 19.86334 | 0.3442864 | 3.1394750 | 43  | 2 | 2006-2007 | 0.71 | M-v | 4 | MPC | 128895 2006 FZ <sub>36</sub> |
| 2006 FD <sub>37</sub> | 16.8 | 0.15 | 20071027 | 123.78201 | 206.50392 | 31.14519  | 7.10368  | 0.1948817 | 2.3224724 | 52  | 2 | 2006-2007 | 0.48 | M-v | 3 | MPC | 128895 2006 FD <sub>37</sub> |
| 2006 FK <sub>37</sub> | 15.3 | 0.15 | 20071027 | 60.67034  | 295.01357 | 357.88353 | 11.14767 | 0.1879140 | 2.6653725 | 127 | 3 | 2003-2007 | 0.45 | M-v | 1 | MPC | 128895 2006 FK <sub>37</sub> |
| 2006 FJ <sub>41</sub> | 17.2 | 0.15 | 20071027 | 53.89718  | 277.91524 | 53.73040  | 3.66203  | 0.1834738 | 2.2787182 | 64  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 128895 2006 FJ <sub>41</sub> |
| 2006 FO <sub>41</sub> | 17.0 | 0.15 | 20071027 | 7.42797   | 325.57052 | 44.46728  | 5.04049  | 0.1784827 | 2.2483761 | 88  | 2 | 2006-2007 | 0.50 | M-v | 3 | MPC | 128895 2006 FO <sub>41</sub> |
| 2006 FJ <sub>42</sub> | 17.3 | 0.15 | 20071027 | 57.51137  | 148.65006 | 177.50011 | 4.95717  | 0.2416625 | 2.3349476 | 53  | 4 | 1996-2007 | 0.47 | M-v | 0 | MPC | 128896 2006 FJ <sub>42</sub> |
| 2006 FF <sub>52</sub> | 15.4 | 0.15 | 20071027 | 83.46604  | 295.45317 | 297.77094 | 15.69594 | 0.2580878 | 3.1052213 | 47  | 3 | 2004-2007 | 0.34 | M-v | 2 | MPC | 124487 2006 FF <sub>52</sub> |
| 2006 FG <sub>52</sub> | 15.4 | 0.15 | 20071027 | 83.01702  | 3.96634   | 294.96972 | 12.69421 | 0.2797138 | 2.5488807 | 43  | 4 | 2003-2007 | 0.46 | M-v | 1 | MPC | 101559 2006 FG <sub>52</sub> |
| 2006 FJ <sub>52</sub> | 16.0 | 0.15 | 20071027 | 103.15491 | 56.18715  | 217.74681 | 23.39481 | 0.2169551 | 2.2953194 | 77  | 5 | 1993-2007 | 0.53 | M-v | 1 | MPC | 128896 2006 FJ <sub>52</sub> |
| 2006 GS <sub>1</sub>  | 16.8 | 0.15 | 20071027 | 52.54058  | 275.35853 | 48.60128  | 6.09904  | 0.1528855 | 2.2256863 | 103 | 4 | 1997-2007 | 0.50 | M-v | 1 | MPC | 128896 2006 GS <sub>1</sub>  |
| 2006 GH <sub>2</sub>  | 16.9 | 0.15 | 20071027 | 50.41016  | 256.11841 | 74.90377  | 4.79208  | 0.2164768 | 2.2192233 | 85  | 5 | 2002-2007 | 0.40 | M-v | 1 | MPC | 128896 2006 GH <sub>2</sub>  |
| 2006 GL <sub>6</sub>  | 16.6 | 0.15 | 20071027 | 51.53592  | 139.95432 | 182.54598 | 22.82001 | 0.1948322 | 2.3146093 | 40  | 2 | 2006-2007 | 0.47 | M-v | 3 | MPC | 128246 2006 GL <sub>6</sub>  |
| 2006 GV <sub>12</sub> | 16.7 | 0.15 | 20071027 | 72.71529  | 258.87309 | 56.36335  | 5.20971  | 0.1471345 | 2.2052415 | 119 | 3 | 1997-2007 | 0.44 | M-v | 2 | MPC | 128896 2006 GV <sub>12</sub> |
| 2006 GT <sub>20</sub> | 16.9 | 0.15 | 20071027 | 49.67283  | 284.29989 | 48.01328  | 7.30129  | 0.1450911 | 2.2866142 | 75  | 2 | 2006-2007 | 0.43 | M-v | 3 | MPC | 128896 2006 GT <sub>20</sub> |
| 2006 GC <sub>23</sub> | 17.2 | 0.15 | 20071027 | 92.13229  | 152.05740 | 149.77683 | 2.97558  | 0.1410765 | 2.1998576 | 63  | 5 | 1999-2007 | 0.50 | M-v | 0 | MPC | 128896 2006 GC <sub>23</sub> |
| 2006 GD <sub>26</sub> | 17.7 | 0.15 | 20071027 | 4.36852   | 337.54134 | 39.66369  | 7.19800  | 0.1221910 | 2.2196887 | 60  | 2 | 2006-2007 | 0.49 | M-v | 3 | MPC | 128896 2006 GD <sub>26</sub> |
| 2006 GR <sub>29</sub> | 18.0 | 0.15 | 20071027 | 51.00399  | 279.73939 | 47.74731  | 1.97528  | 0.2030747 | 2.4399657 | 100 | 3 | 2003-2007 | 0.31 | M-v | 1 | MPC | 128896 2006 GR <sub>29</sub> |
| 2006 GQ <sub>31</sub> | 16.6 | 0.15 | 20071027 | 150.97429 | 29.63711  | 208.13381 | 4.47938  | 0.1069078 | 2.2010071 | 133 | 3 | 2004-2007 | 0.53 | M-v | 3 | MPC | 128896 2006 GQ <sub>31</sub> |
| 2006 GD <sub>32</sub> | 16.6 | 0.15 | 20071027 | 134.87778 | 206.42700 | 34.35460  | 7.08090  | 0.0731384 | 2.3045103 | 81  | 4 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128896 2006 GD <sub>32</sub> |
| 2006 GC <sub>35</sub> | 18.2 | 0.15 | 20071027 | 105.39296 | 216.51144 | 69.96714  | 3.20439  | 0.1509660 | 2.2196286 | 34  | 4 | 1996-2007 | 0.41 | M-v | 0 | MPC | 128896 2006 GC <sub>35</sub> |
| 2006 GF <sub>39</sub> | 17.1 | 0.15 | 20071027 | 161.34368 | 184.53266 | 63.67855  | 23.99425 | 0.0460229 | 1.8964251 | 70  | 4 | 2001-2007 | 0.54 | M-v | 2 | MPC | 128896 2006 GF <sub>39</sub> |
| 2006 GZ <sub>39</sub> | 16.7 | 0.15 | 20071027 | 119.56467 | 34.93111  | 223.03503 | 4.46313  | 0.2427189 | 2.2729716 | 76  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 128896 2006 GZ <sub>39</sub> |
| 2006 GD <sub>40</sub> | 16.5 | 0.15 | 20071027 | 155.37122 | 203.68983 | 1.90716   | 4.67153  | 0.1092682 | 2.3005229 | 46  | 3 | 2004-2007 | 0.48 | M-v | 3 | MPC | 128896 2006 GD <sub>40</sub> |
| 2006 GE <sub>40</sub> | 15.8 | 0.15 | 20071027 | 113.12354 | 231.85398 | 359.15577 | 7.76907  | 0.2369586 | 2.6042608 | 65  | 2 | 2006-2007 | 0.49 | M-v | 3 | MPC | 128248 2006 GE <sub>40</sub> |
| 2006 GP <sub>40</sub> | 17.1 | 0.15 | 20071027 | 127.54195 | 181.25355 | 86.50440  | 4.42964  | 0.1678450 | 2.1916464 | 94  | 4 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128897 2006 GP <sub>40</sub> |
| 2006 GB <sub>45</sub> | 17.2 | 0.15 | 20071027 | 51.03490  | 111.46295 | 197.30262 | 0.68918  | 0.1889425 | 2.4163111 | 64  | 4 | 1996-2007 | 0.43 | M-v | 2 | MPC | 128897 2006 GB <sub>45</sub> |
| 2006 HR <sub>5</sub>  | 17.1 | 0.15 | 20071027 | 52.64027  | 241.78095 | 119.00873 | 23.63294 | 0.0888864 | 1.9296675 | 39  | 5 | 2000-2007 | 0.44 | M-v | 1 | MPC | 109552 2006 HR <sub>5</sub>  |
| 2006 HO <sub>16</sub> | 17.2 | 0.15 | 20071027 | 69.51088  | 207.42230 | 111.25363 | 5.23415  | 0.2080810 | 2.3977501 | 38  | 4 | 1999-2007 | 0.32 | M-v | 1 | MPC | 128897 2006 HO <sub>16</sub> |
| 2006 HL <sub>17</sub> | 16.9 | 0.15 | 20071027 | 163.91279 | 12.08636  | 222.68449 | 3.32475  | 0.0860221 | 2.1600434 | 93  | 2 | 2006-2007 | 0.33 | M-v | 3 | MPC | 128897 2006 HL <sub>17</sub> |
| 2006 HD <sub>19</sub> | 16.1 | 0.15 | 20071027 | 22.87942  | 304.86872 | 51.32110  | 11.77923 | 0.2628804 | 2.3979281 | 124 | 3 | 1995-2007 | 0.38 | M-v | 2 | MPC | 128897 2006 HD <sub>19</sub> |
| 2006 HR <sub>22</sub> | 17.8 | 0.15 | 20071027 | 71.85489  | 240.18384 | 76.98983  | 3.52381  | 0.2172343 | 2.3503677 | 45  | 5 | 2000-2007 | 0.44 | M-v | 0 | MPC | 126760 2006 HR <sub>22</sub> |
| 2006 HA <sub>25</sub> | 17.5 | 0.15 | 20071027 | 299.97782 | 64.04841  | 49.77583  | 20.96924 | 0.0989149 | 1.9400496 | 53  | 2 | 2006-2007 | 0.36 | M-v | 4 | MPC | 128251 2006 HA <sub>25</sub> |
| 2006 HM <sub>25</sub> | 16.7 | 0.15 | 20071027 | 75.14971  | 192.25660 | 125.89980 | 3.59087  | 0.2085047 | 2.4451917 | 45  | 5 | 1995-2007 | 0.37 | M-v | 0 | MPC | 128898 2006 HM <sub>25</sub> |
| 2006 HS <sub>25</sub> | 17.2 | 0.15 | 20071027 | 13.38463  | 315.43315 | 63.25244  | 7.41027  | 0.1198144 | 2.2733384 | 54  | 3 | 2005-2007 | 0.56 | M-v | 3 | MPC | 128251 2006 HS <sub>25</sub> |
| 2006 HB <sub>27</sub> | 17.6 | 0.15 | 20071027 | 236.09632 | 340.49684 | 209.03188 | 22.03044 | 0.0524214 | 1.9435317 | 28  | 4 | 2001-2007 | 0.53 | M-v | 2 | MPC | 101641 2006 HB <sub>27</sub> |
| 2006 HZ <sub>32</sub> | 17.4 | 0.15 | 20071027 | 128.82760 | 70.44393  | 193.44227 | 0.79527  | 0.2045674 | 2.1941134 | 68  | 3 | 2000-2007 | 0.41 | M-v | 2 | MPC | 128898 2006 HZ <sub>32</sub> |
| 2006 HV <sub>34</sub> | 16.8 | 0.15 | 20071027 | 46.64896  | 280.21097 | 43.69762  | 12.23424 | 0.1895781 | 2.6581229 | 45  | 2 | 2006-2007 | 0.53 | M-v | 3 | MPC | 128252 2006 HV <sub>34</sub> |
| 2006 HV <sub>39</sub> | 16.8 | 0.15 | 20071027 | 111.90776 | 39.57690  | 239.87816 | 4.95426  | 0.2459360 | 2.2820385 | 57  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 128898 2006 HV <sub>39</sub> |
| 2006 HU <sub>40</sub> | 15.2 | 0.15 | 20071027 | 11.24343  | 278.72758 | 77.97094  | 25.24708 | 0.3957782 | 3.1569588 | 53  | 3 | 2004-2007 | 0.47 | M-v | 1 | MPC | 128898 2006 HU <sub>40</sub> |
| 2006 HW <sub>41</sub> | 16.3 | 0.15 | 20071027 | 81.18255  | 205.94811 | 113.23251 | 9.14617  | 0.1639447 | 2.3067229 | 65  | 4 | 2003-2007 | 0.42 | M-v | 0 | MPC | 128898 2006 HW <sub>41</sub> |
| 2006 HY <sub>42</sub> | 17.1 | 0.15 | 20071027 | 33.33677  | 310.21402 | 35.90651  | 1.14812  | 0.0667042 | 2.3499821 | 73  | 4 | 2000-2007 | 0.53 | M-v | 1 | MPC | 128898 2006 HY <sub>42</sub> |
| 2006 HW <sub>43</sub> | 16.6 | 0.15 | 20071027 | 119.09376 | 258.23373 | 28.45067  | 2.25532  | 0.0885826 | 2.1461465 | 60  | 5 | 1993-2007 | 0.50 | M-v | 2 | MPC | 128898 2006 HW <sub>43</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 HM <sub>55</sub>  | 16.8 | 0.15 | 20071027 | 136.55127 | 191.21050 | 60.60799  | 4.94705  | 0.1276928 | 2.2249001 | 102 | 5 | 2000-2007 | 0.56 | M-v | 1 | MPC | 128899 2006 HM <sub>55</sub>  |
| 2006 HA <sub>56</sub>  | 17.5 | 0.15 | 20071027 | 340.05476 | 345.35278 | 77.18440  | 22.82806 | 0.1036632 | 1.9052665 | 43  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 101675 2006 HA <sub>56</sub>  |
| 2006 HP <sub>57</sub>  | 16.0 | 0.15 | 20071027 | 60.17251  | 26.61013  | 259.04983 | 9.34171  | 0.0729933 | 2.5375643 | 35  | 3 | 2003-2007 | 0.52 | M-v | 2 | MPC | 124081 2006 HP <sub>57</sub>  |
| 2006 HP <sub>59</sub>  | 17.2 | 0.15 | 20071027 | 105.74531 | 141.74869 | 150.96273 | 2.06186  | 0.1563554 | 2.1785939 | 38  | 4 | 2000-2007 | 0.41 | M-v | 1 | MPC | 126762 2006 HP <sub>59</sub>  |
| 2006 HN <sub>60</sub>  | 15.0 | 0.15 | 20071027 | 87.62972  | 50.63448  | 196.27634 | 27.01476 | 0.1298256 | 3.1089620 | 43  | 4 | 1991-2007 | 0.60 | M-v | 2 | MPC | 101680 2006 HN <sub>60</sub>  |
| 2006 HW <sub>60</sub>  | 16.9 | 0.15 | 20071027 | 135.73220 | 139.22364 | 115.65087 | 0.76136  | 0.0680042 | 2.1920746 | 77  | 5 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128899 2006 HW <sub>60</sub>  |
| 2006 HJ <sub>63</sub>  | 17.7 | 0.15 | 20071027 | 19.32498  | 174.47330 | 203.76316 | 5.11395  | 0.1769803 | 2.1967918 | 73  | 5 | 1999-2007 | 0.48 | M-v | 1 | MPC | 128899 2006 HJ <sub>63</sub>  |
| 2006 HK <sub>63</sub>  | 16.6 | 0.15 | 20071027 | 17.68482  | 300.88568 | 66.01044  | 5.60499  | 0.1648191 | 2.3457285 | 87  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128899 2006 HK <sub>63</sub>  |
| 2006 HL <sub>65</sub>  | 15.9 | 0.15 | 20071027 | 49.96295  | 106.72659 | 213.68825 | 8.84438  | 0.1404621 | 2.6039074 | 108 | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 128899 2006 HL <sub>65</sub>  |
| 2006 HQ <sub>65</sub>  | 17.5 | 0.15 | 20071027 | 86.78016  | 253.80200 | 54.00732  | 8.10877  | 0.1685074 | 2.3411036 | 39  | 2 | 2006-2007 | 0.35 | M-v | 3 | MPC | 128253 2006 HQ <sub>65</sub>  |
| 2006 HP <sub>66</sub>  | 17.4 | 0.15 | 20071027 | 55.24428  | 269.90190 | 65.62526  | 3.26660  | 0.2021610 | 2.3978563 | 42  | 3 | 2003-2007 | 0.37 | M-v | 2 | MPC | 128899 2006 HP <sub>66</sub>  |
| 2006 HB <sub>67</sub>  | 16.6 | 0.15 | 20071027 | 76.80797  | 276.53431 | 52.35790  | 8.31058  | 0.2130395 | 2.2639850 | 36  | 4 | 1976-2007 | 0.38 | M-v | 1 | MPC | 101686 2006 HB <sub>67</sub>  |
| 2006 HE <sub>67</sub>  | 17.9 | 0.15 | 20071027 | 86.77859  | 105.44293 | 198.12204 | 3.65018  | 0.2176867 | 2.4174734 | 48  | 4 | 2002-2007 | 0.37 | M-v | 1 | MPC | 128899 2006 HE <sub>67</sub>  |
| 2006 HF <sub>69</sub>  | 15.9 | 0.15 | 20071027 | 42.49011  | 116.02093 | 197.55523 | 3.59347  | 0.0916862 | 2.7765118 | 82  | 6 | 2001-2007 | 0.47 | M-v | 0 | MPC | 128899 2006 HF <sub>69</sub>  |
| 2006 HG <sub>78</sub>  | 17.0 | 0.15 | 20071027 | 90.70885  | 123.16501 | 188.92980 | 3.19586  | 0.1005252 | 2.1329948 | 55  | 2 | 2006-2007 | 0.43 | M-v | 3 | MPC | 128254 2006 HG <sub>78</sub>  |
| 2006 HU <sub>79</sub>  | 16.9 | 0.15 | 20071027 | 34.23659  | 124.14077 | 214.21761 | 4.09090  | 0.1607710 | 2.6041760 | 67  | 4 | 2003-2007 | 0.42 | M-v | 1 | MPC | 128899 2006 HU <sub>79</sub>  |
| 2006 HO <sub>81</sub>  | 16.5 | 0.15 | 20071027 | 50.33148  | 299.15804 | 36.47431  | 10.08259 | 0.1286669 | 2.3644036 | 110 | 4 | 1996-2007 | 0.57 | M-v | 1 | MPC | 128899 2006 HO <sub>81</sub>  |
| 2006 HX <sub>81</sub>  | 17.1 | 0.15 | 20071027 | 298.50046 | 232.58808 | 212.97362 | 5.39401  | 0.0490872 | 2.2442082 | 46  | 2 | 2006-2007 | 0.52 | M-v | 3 | MPC | 126763 2006 HX <sub>81</sub>  |
| 2006 HW <sub>82</sub>  | 17.5 | 0.15 | 20071027 | 90.27940  | 81.15281  | 220.69841 | 3.55849  | 0.0729886 | 2.2630517 | 47  | 2 | 2006-2007 | 0.38 | M-v | 3 | MPC | 128899 2006 HW <sub>82</sub>  |
| 2006 HC <sub>83</sub>  | 17.9 | 0.15 | 20071027 | 101.59081 | 88.10490  | 206.78273 | 0.48102  | 0.1236569 | 2.2679004 | 49  | 5 | 2000-2007 | 0.33 | M-v | 0 | MPC | 128899 2006 HC <sub>83</sub>  |
| 2006 HL <sub>86</sub>  | 17.0 | 0.15 | 20071027 | 183.59490 | 358.76969 | 188.92282 | 5.57691  | 0.0870855 | 2.2557159 | 39  | 5 | 1999-2007 | 0.44 | M-v | 1 | MPC | 124492 2006 HL <sub>86</sub>  |
| 2006 HP <sub>86</sub>  | 17.1 | 0.15 | 20071027 | 100.42664 | 233.86108 | 62.12669  | 5.48170  | 0.1381727 | 2.1776958 | 58  | 3 | 2004-2007 | 0.45 | M-v | 2 | MPC | 128255 2006 HP <sub>86</sub>  |
| 2006 HZ <sub>86</sub>  | 17.1 | 0.15 | 20071027 | 129.53443 | 203.44791 | 68.82076  | 7.96737  | 0.1860452 | 2.2234430 | 69  | 2 | 2006-2007 | 0.41 | M-v | 3 | MPC | 128255 2006 HZ <sub>86</sub>  |
| 2006 HG <sub>89</sub>  | 16.8 | 0.15 | 20071027 | 126.96657 | 137.48302 | 131.15350 | 6.34599  | 0.1521733 | 2.2195136 | 41  | 2 | 2006-2007 | 0.43 | M-v | 4 | MPC | 128256 2006 HG <sub>89</sub>  |
| 2006 HC <sub>99</sub>  | 18.5 | 0.15 | 20071027 | 100.50138 | 219.27880 | 74.37856  | 2.24080  | 0.1870853 | 2.3540157 | 29  | 3 | 2003-2007 | 0.28 | M-v | 3 | MPC | 128900 2006 HC <sub>99</sub>  |
| 2006 HV <sub>99</sub>  | 16.8 | 0.15 | 20071027 | 37.94143  | 102.50971 | 215.46603 | 3.46246  | 0.0980934 | 2.8011058 | 37  | 6 | 1998-2007 | 0.44 | M-v | 0 | MPC | 126763 2006 HV <sub>99</sub>  |
| 2006 HF <sub>101</sub> | 17.9 | 0.15 | 20071027 | 66.41484  | 202.79397 | 133.31638 | 3.55325  | 0.1656720 | 2.3043366 | 26  | 3 | 2003-2007 | 0.39 | M-v | 2 | MPC | 101716 2006 HF <sub>101</sub> |
| 2006 HE <sub>103</sub> | 16.3 | 0.15 | 20071027 | 111.39980 | 203.96758 | 93.01990  | 11.20109 | 0.2183957 | 2.2714514 | 61  | 4 | 2003-2007 | 0.44 | M-v | 1 | MPC | 101718 2006 HE <sub>103</sub> |
| 2006 HW <sub>116</sub> | 17.6 | 0.15 | 20071027 | 118.92760 | 45.35056  | 226.30331 | 5.40955  | 0.1007375 | 2.2752728 | 46  | 2 | 2006-2007 | 0.31 | M-v | 3 | MPC | 128257 2006 HW <sub>116</sub> |
| 2006 HB <sub>117</sub> | 16.0 | 0.15 | 20071027 | 336.02892 | 162.50090 | 216.46940 | 11.60953 | 0.1011273 | 2.8039248 | 25  | 4 | 1998-2007 | 0.39 | M-v | 1 | MPC | 126165 2006 HB <sub>117</sub> |
| 2006 HB <sub>120</sub> | 18.2 | 0.15 | 20071027 | 329.39520 | 3.19362   | 65.77462  | 1.49053  | 0.0192715 | 2.1330085 | 42  | 2 | 2006-2007 | 0.34 | M-v | 3 | MPC | 128900 2006 HB <sub>120</sub> |
| 2006 HT <sub>120</sub> | 16.9 | 0.15 | 20071027 | 42.35407  | 262.03506 | 88.57520  | 7.55352  | 0.1433463 | 2.3719003 | 59  | 5 | 2000-2007 | 0.52 | M-v | 0 | MPC | 128900 2006 HT <sub>120</sub> |
| 2006 HX <sub>121</sub> | 16.8 | 0.15 | 20071027 | 106.72650 | 240.28610 | 99.83865  | 26.50229 | 0.0533028 | 1.8766192 | 36  | 2 | 2006-2007 | 0.49 | M-v | 3 | MPC | 128257 2006 HX <sub>121</sub> |
| 2006 HA <sub>125</sub> | 16.9 | 0.15 | 20071027 | 76.63243  | 246.95300 | 53.23546  | 6.39568  | 0.2233246 | 2.6094115 | 49  | 3 | 2003-2007 | 0.35 | M-v | 2 | MPC | 128257 2006 HA <sub>125</sub> |
| 2006 JQ                | 17.0 | 0.15 | 20071027 | 250.11683 | 101.05122 | 79.59956  | 26.28272 | 0.0962520 | 1.8662618 | 85  | 3 | 2003-2007 | 0.43 | M-v | 2 | MPC | 128900 2006 JQ                |
| 2006 JG <sub>2</sub>   | 17.6 | 0.15 | 20071027 | 121.24497 | 251.75524 | 24.15630  | 2.09940  | 0.2227825 | 2.2761280 | 46  | 3 | 1999-2007 | 0.43 | M-v | 3 | MPC | 128258 2006 JG <sub>2</sub>   |
| 2006 JG <sub>3</sub>   | 17.0 | 0.15 | 20071027 | 36.13942  | 271.36222 | 46.14332  | 2.78352  | 0.2924565 | 3.0618115 | 33  | 2 | 2006-2007 | 0.43 | M-v | 4 | MPC | 126764 2006 JG <sub>3</sub>   |
| 2006 JQ <sub>4</sub>   | 16.2 | 0.15 | 20071027 | 39.92433  | 280.93461 | 55.90167  | 10.30380 | 0.3231311 | 2.7225399 | 78  | 3 | 1998-2007 | 0.46 | M-v | 2 | MPC | 128258 2006 JQ <sub>4</sub>   |
| 2006 JK <sub>5</sub>   | 16.9 | 0.15 | 20071027 | 110.69861 | 44.97387  | 217.36965 | 6.50562  | 0.0835624 | 2.3689923 | 49  | 4 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128258 2006 JK <sub>5</sub>   |
| 2006 JH <sub>10</sub>  | 15.4 | 0.15 | 20071027 | 13.09576  | 312.81934 | 46.93532  | 9.41275  | 0.2718006 | 2.7949869 | 99  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 128900 2006 JH <sub>10</sub>  |
| 2006 JO <sub>12</sub>  | 14.9 | 0.15 | 20071027 | 40.03886  | 241.31258 | 91.30584  | 10.91489 | 0.3357500 | 3.0696666 | 66  | 2 | 2006-2007 | 0.46 | M-v | 3 | MPC | 128900 2006 JO <sub>12</sub>  |
| 2006 JM <sub>14</sub>  | 16.3 | 0.15 | 20071027 | 34.92259  | 331.07054 | 351.82386 | 14.37086 | 0.1117283 | 2.6809689 | 81  | 4 | 2001-2007 | 0.52 | M-v | 2 | MPC | 128901 2006 JM <sub>14</sub>  |
| 2006 JS <sub>14</sub>  | 17.4 | 0.15 | 20071027 | 113.29857 | 47.21106  | 232.68554 | 1.94016  | 0.1537947 | 2.2589543 | 50  | 3 | 2002-2007 | 0.37 | M-v | 3 | MPC | 128260 2006 JS <sub>14</sub>  |
| 2006 JZ <sub>17</sub>  | 17.4 | 0.15 | 20071027 | 80.28931  | 252.90331 | 69.96573  | 5.81603  | 0.2569907 | 2.3805699 | 39  | 4 | 1999-2007 | 0.49 | M-v | 1 | MPC | 109563 2006 JZ <sub>17</sub>  |
| 2006 JZ <sub>18</sub>  | 16.5 | 0.15 | 20071027 | 24.44498  | 292.97945 | 64.59192  | 13.85240 | 0.2827292 | 2.6532892 | 67  | 3 | 1999-2007 | 0.54 | M-v | 2 | MPC | 128901 2006 JZ <sub>18</sub>  |
| 2006 JP <sub>19</sub>  | 17.4 | 0.15 | 20071027 | 104.85657 | 212.79082 | 83.18686  | 3.99290  | 0.0684214 | 2.1762873 | 48  | 4 | 2002-2007 | 0.40 | M-v | 2 | MPC | 128901 2006 JP <sub>19</sub>  |
| 2006 JT <sub>19</sub>  | 17.5 | 0.15 | 20071027 | 125.58185 | 59.19080  | 210.60532 | 9.08246  | 0.1488846 | 2.2576757 | 53  | 4 | 2000-2007 | 0.28 | M-v | 0 | MPC | 128901 2006 JT <sub>19</sub>  |
| 2006 JZ <sub>23</sub>  | 17.7 | 0.15 | 20071027 | 71.25499  | 80.42334  | 240.84989 | 1.65099  | 0.1454735 | 2.3014625 | 39  | 2 | 2006-2007 | 0.42 | M-v | 3 | MPC | 128260 2006 JZ <sub>23</sub>  |
| 2006 JL <sub>25</sub>  | 17.2 | 0.15 | 20071027 | 91.70730  | 236.89751 | 61.71696  | 4.27210  | 0.2342915 | 2.3442156 | 50  | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 109563 2006 JL <sub>25</sub>  |
| 2006 JQ <sub>25</sub>  | 17.0 | 0.15 | 20071027 | 81.97982  | 248.78801 | 50.52396  | 6.88993  | 0.1283593 | 2.3258464 | 48  | 2 | 2006-2007 | 0.42 | M-v | 3 | MPC | 128260 2006 JQ <sub>25</sub>  |
| 2006 JB <sub>26</sub>  | 17.4 | 0.15 | 20071027 | 116.78828 | 298.61925 | 345.89194 | 3.66528  | 0.2790987 | 2.2959558 | 35  | 3 | 2003-2007 | 0.49 | M-v | 3 | MPC | 128901 2006 JB <sub>26</sub>  |
| 2006 JU <sub>27</sub>  | 16.3 | 0.15 | 20071027 | 48.17656  | 100.77429 | 214.33925 | 11.93165 | 0.1745537 | 2.6801855 | 63  | 4 | 1994-2007 | 0.51 | M-v | 1 | MPC | 128901 2006 JU <sub>27</sub>  |
| 2006 JV <sub>27</sub>  | 16.5 | 0.15 | 20071027 | 18.97607  | 288.67460 | 70.43063  | 4.56121  | 0.1467623 | 2.3877919 | 93  | 5 | 1995-2007 | 0.53 | M-v | 1 | MPC | 128901 2006 JV <sub>27</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2006 JC <sub>28</sub> | 17.7 | 0.15 | 20071027 | 72.68846  | 241.98843 | 71.55143  | 4.56107  | 0.2066571 | 2.4122565 | 35  | 3 | 2003-2007 | 0.37 | M-v | 1 | MPC | 126169 2006 JC <sub>28</sub> |
| 2006 JX <sub>28</sub> | 16.9 | 0.15 | 20071027 | 95.07762  | 228.43779 | 68.68279  | 6.40509  | 0.1416670 | 2.2799139 | 35  | 2 | 2006-2007 | 0.39 | M-v | 3 | MPC | 128261 2006 JX <sub>28</sub> |
| 2006 JR <sub>34</sub> | 16.8 | 0.15 | 20071027 | 77.99472  | 245.36519 | 51.59652  | 7.63990  | 0.2045352 | 2.6234433 | 61  | 3 | 2003-2007 | 0.31 | M-v | 2 | MPC | 128901 2006 JR <sub>34</sub> |
| 2006 JW <sub>34</sub> | 16.1 | 0.15 | 20071027 | 221.63137 | 265.66862 | 228.80571 | 13.24859 | 0.0424869 | 2.5328555 | 19  | 4 | 1998-2007 | 0.41 | M-v | 3 | MPC | 101757 2006 JW <sub>34</sub> |
| 2006 JJ <sub>35</sub> | 17.7 | 0.15 | 20071027 | 307.09402 | 56.40790  | 58.37536  | 22.97505 | 0.0835448 | 1.9195202 | 55  | 5 | 1991-2007 | 0.52 | M-v | 1 | MPC | 128901 2006 JJ <sub>35</sub> |
| 2006 JZ <sub>37</sub> | 14.9 | 0.15 | 20071027 | 29.93538  | 117.28748 | 204.20588 | 15.92605 | 0.2368149 | 3.1348943 | 102 | 4 | 1995-2007 | 0.56 | M-v | 1 | MPC | 128901 2006 JZ <sub>37</sub> |
| 2006 JR <sub>44</sub> | 16.5 | 0.15 | 20071027 | 93.31101  | 225.38862 | 67.91103  | 8.42275  | 0.3332971 | 2.6454880 | 50  | 3 | 2002-2007 | 0.43 | M-v | 3 | MPC | 128901 2006 JR <sub>44</sub> |
| 2006 JA <sub>45</sub> | 16.6 | 0.15 | 20071027 | 87.82893  | 244.84044 | 42.40092  | 4.93076  | 0.1669202 | 2.5846422 | 56  | 5 | 1999-2007 | 0.39 | M-v | 1 | MPC | 128901 2006 JA <sub>45</sub> |
| 2006 JX <sub>45</sub> | 16.5 | 0.15 | 20071027 | 100.34331 | 29.37606  | 248.02505 | 3.64840  | 0.2624696 | 2.5890680 | 65  | 3 | 2003-2007 | 0.39 | M-v | 3 | MPC | 128264 2006 JX <sub>45</sub> |
| 2006 JZ <sub>45</sub> | 16.5 | 0.15 | 20071027 | 83.95906  | 303.72825 | 1.85814   | 1.97331  | 0.2984778 | 2.5965228 | 48  | 5 | 1993-2007 | 0.44 | M-v | 0 | MPC | 128902 2006 JZ <sub>45</sub> |
| 2006 JN <sub>48</sub> | 17.2 | 0.15 | 20071027 | 126.62739 | 35.09360  | 230.43005 | 2.93516  | 0.0886915 | 2.2485008 | 55  | 4 | 2002-2007 | 0.36 | M-v | 1 | MPC | 128902 2006 JN <sub>48</sub> |
| 2006 JD <sub>49</sub> | 17.2 | 0.15 | 20071027 | 98.87467  | 65.98429  | 198.98793 | 2.58026  | 0.1526227 | 2.3205294 | 45  | 5 | 2000-2007 | 0.44 | M-v | 1 | MPC | 128264 2006 JD <sub>49</sub> |
| 2006 JN <sub>49</sub> | 16.4 | 0.15 | 20071027 | 32.31960  | 314.09430 | 45.02185  | 15.27436 | 0.1606414 | 2.3690340 | 87  | 2 | 2006-2007 | 0.45 | M-v | 3 | MPC | 128264 2006 JN <sub>49</sub> |
| 2006 JR <sub>49</sub> | 15.8 | 0.15 | 20071027 | 57.79974  | 274.89565 | 43.86701  | 13.09911 | 0.2739420 | 2.6602926 | 83  | 2 | 2006-2007 | 0.43 | M-v | 3 | MPC | 128265 2006 JR <sub>49</sub> |
| 2006 JC <sub>51</sub> | 17.1 | 0.15 | 20071027 | 33.49070  | 272.92567 | 83.03333  | 3.10589  | 0.2286840 | 2.3618985 | 63  | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 128902 2006 JC <sub>51</sub> |
| 2006 JG <sub>51</sub> | 16.9 | 0.15 | 20071027 | 337.86877 | 326.23525 | 80.09625  | 4.39384  | 0.2037942 | 2.2906855 | 75  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128902 2006 JG <sub>51</sub> |
| 2006 JZ <sub>52</sub> | 16.8 | 0.15 | 20071027 | 26.79818  | 126.12111 | 217.35454 | 5.26465  | 0.2201130 | 2.6488076 | 65  | 3 | 2003-2007 | 0.49 | M-v | 2 | MPC | 128902 2006 JZ <sub>52</sub> |
| 2006 JA <sub>53</sub> | 16.8 | 0.15 | 20071027 | 84.06778  | 146.20540 | 169.72930 | 3.49805  | 0.0706963 | 2.1953041 | 57  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128902 2006 JA <sub>53</sub> |
| 2006 JD <sub>53</sub> | 16.2 | 0.15 | 20071027 | 71.78064  | 291.68761 | 16.60379  | 4.15937  | 0.2385106 | 2.5875452 | 49  | 2 | 2006-2007 | 0.48 | M-v | 3 | MPC | 128902 2006 JD <sub>53</sub> |
| 2006 JX <sub>57</sub> | 16.5 | 0.15 | 20071027 | 120.43855 | 196.11452 | 80.94542  | 5.63578  | 0.1673009 | 2.3175236 | 66  | 5 | 1999-2007 | 0.53 | M-v | 1 | MPC | 128902 2006 JX <sub>57</sub> |
| 2006 JQ <sub>60</sub> | 17.4 | 0.15 | 20071027 | 109.12747 | 88.17593  | 195.16129 | 1.58801  | 0.2240238 | 2.3934686 | 29  | 5 | 2002-2007 | 0.31 | M-v | 1 | MPC | 128902 2006 JQ <sub>60</sub> |
| 2006 KO               | 16.7 | 0.15 | 20071027 | 124.96380 | 203.85095 | 76.22878  | 2.38664  | 0.1294231 | 2.2005122 | 66  | 5 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128902 2006 KO               |
| 2006 KT               | 16.8 | 0.15 | 20071027 | 87.98123  | 124.94374 | 185.45144 | 1.10270  | 0.1773454 | 2.3872553 | 58  | 4 | 2002-2007 | 0.50 | M-v | 0 | MPC | 128902 2006 KT               |
| 2006 KV               | 17.1 | 0.15 | 20071027 | 114.08721 | 183.72988 | 95.98320  | 3.53679  | 0.1695358 | 2.3601422 | 55  | 6 | 1995-2007 | 0.42 | M-v | 0 | MPC | 101781 2006 KV               |
| 2006 KT <sub>1</sub>  | 16.6 | 0.15 | 20071027 | 97.62262  | 188.83040 | 138.75346 | 9.26526  | 0.4743740 | 2.3069174 | 93  | 3 | 2006-2007 | 0.48 | M-v | 3 | MPC | 112397 2006 KT <sub>1</sub>  |
| 2006 KL <sub>2</sub>  | 16.5 | 0.15 | 20071027 | 89.58738  | 285.72231 | 342.11199 | 2.30005  | 0.1686535 | 2.6694694 | 48  | 4 | 1998-2007 | 0.39 | M-v | 0 | MPC | 126767 2006 KL <sub>2</sub>  |
| 2006 KS <sub>2</sub>  | 18.0 | 0.15 | 20071027 | 128.64289 | 37.98364  | 241.19622 | 1.76662  | 0.1330043 | 2.1658696 | 54  | 5 | 1997-2007 | 0.47 | M-v | 1 | MPC | 128266 2006 KS <sub>2</sub>  |
| 2006 KA <sub>3</sub>  | 17.4 | 0.15 | 20071027 | 115.14170 | 143.30337 | 136.62459 | 5.48859  | 0.1996596 | 2.3839785 | 57  | 5 | 1992-2007 | 0.51 | M-v | 1 | MPC | 128902 2006 KA <sub>3</sub>  |
| 2006 KQ <sub>3</sub>  | 17.3 | 0.15 | 20071027 | 93.73918  | 229.98064 | 57.86588  | 5.42520  | 0.1745479 | 2.3175157 | 34  | 2 | 2006-2007 | 0.38 | M-v | 3 | MPC | 128266 2006 KQ <sub>3</sub>  |
| 2006 KS <sub>3</sub>  | 17.5 | 0.15 | 20071027 | 157.18855 | 3.95579   | 206.30330 | 6.91294  | 0.0673629 | 2.2714666 | 41  | 4 | 2000-2007 | 0.33 | M-v | 1 | MPC | 124495 2006 KS <sub>3</sub>  |
| 2006 KE <sub>6</sub>  | 17.2 | 0.15 | 20071027 | 100.58448 | 236.63645 | 57.89294  | 3.53643  | 0.1613239 | 2.3465700 | 50  | 3 | 2003-2007 | 0.44 | M-v | 2 | MPC | 101785 2006 KE <sub>6</sub>  |
| 2006 KV <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 46.04474  | 301.21371 | 65.23544  | 5.02586  | 0.1544898 | 2.1905068 | 46  | 3 | 2005-2007 | 0.38 | M-v | 3 | MPC | 103919 2006 KV <sub>7</sub>  |
| 2006 KC <sub>8</sub>  | 16.5 | 0.15 | 20071027 | 46.39083  | 109.96855 | 234.43129 | 11.77413 | 0.2929820 | 2.6746562 | 55  | 3 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128902 2006 KC <sub>8</sub>  |
| 2006 KD <sub>10</sub> | 17.9 | 0.15 | 20071027 | 62.36320  | 114.68178 | 219.93535 | 1.07796  | 0.1392253 | 2.3585919 | 24  | 3 | 1996-2007 | 0.25 | M-v | 3 | MPC | 128267 2006 KD <sub>10</sub> |
| 2006 KE <sub>16</sub> | 17.1 | 0.15 | 20071027 | 87.99745  | 213.21213 | 101.21709 | 7.47142  | 0.1352058 | 2.3042524 | 32  | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 111171 2006 KE <sub>16</sub> |
| 2006 KJ <sub>16</sub> | 16.9 | 0.15 | 20071027 | 76.87232  | 264.56374 | 97.97309  | 24.11518 | 0.1043337 | 1.9731156 | 32  | 3 | 2004-2007 | 0.54 | M-v | 2 | MPC | 109569 2006 KJ <sub>16</sub> |
| 2006 KY <sub>16</sub> | 16.6 | 0.15 | 20071027 | 76.22327  | 215.55989 | 95.25259  | 12.62762 | 0.1952242 | 2.4593235 | 44  | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128902 2006 KY <sub>16</sub> |
| 2006 KO <sub>19</sub> | 17.9 | 0.15 | 20071027 | 98.21288  | 270.90395 | 23.70128  | 0.78078  | 0.2213936 | 2.2825108 | 37  | 3 | 2003-2007 | 0.37 | M-v | 3 | MPC | 128903 2006 KO <sub>19</sub> |
| 2006 KY <sub>19</sub> | 16.2 | 0.15 | 20071027 | 78.14986  | 270.10640 | 17.53005  | 5.16249  | 0.1915168 | 2.6303803 | 50  | 3 | 1993-2007 | 0.58 | M-v | 3 | MPC | 128903 2006 KY <sub>19</sub> |
| 2006 KG <sub>20</sub> | 16.5 | 0.15 | 20071027 | 92.51744  | 217.98499 | 82.45357  | 8.76548  | 0.1607140 | 2.2798699 | 56  | 3 | 2004-2007 | 0.47 | M-v | 2 | MPC | 128903 2006 KG <sub>20</sub> |
| 2006 KX <sub>22</sub> | 16.1 | 0.15 | 20071027 | 95.05561  | 61.77536  | 187.14257 | 16.48954 | 0.1700075 | 3.0621792 | 28  | 4 | 2002-2007 | 0.29 | M-v | 0 | MPC | 101798 2006 KX <sub>22</sub> |
| 2006 KJ <sub>23</sub> | 17.1 | 0.15 | 20071027 | 120.03816 | 219.02065 | 61.91812  | 3.62545  | 0.1226092 | 2.2732306 | 50  | 5 | 2000-2007 | 0.36 | M-v | 1 | MPC | 128268 2006 KJ <sub>23</sub> |
| 2006 KE <sub>27</sub> | 17.9 | 0.15 | 20071027 | 113.23047 | 231.31593 | 62.27322  | 3.94847  | 0.1238260 | 2.1950455 | 38  | 4 | 2000-2007 | 0.41 | M-v | 1 | MPC | 128903 2006 KE <sub>27</sub> |
| 2006 KK <sub>27</sub> | 18.0 | 0.15 | 20071027 | 170.67260 | 355.93539 | 232.41788 | 1.34823  | 0.1220554 | 2.1427197 | 47  | 2 | 2006-2007 | 0.42 | M-v | 4 | MPC | 128268 2006 KK <sub>27</sub> |
| 2006 KP <sub>27</sub> | 16.4 | 0.15 | 20071027 | 11.03969  | 327.24554 | 55.21886  | 9.89759  | 0.2725625 | 2.3657244 | 120 | 2 | 2006-2007 | 0.44 | M-v | 3 | MPC | 128903 2006 KP <sub>27</sub> |
| 2006 KH <sub>28</sub> | 17.2 | 0.15 | 20071027 | 80.05359  | 89.57443  | 229.54533 | 3.46761  | 0.1256021 | 2.2834828 | 66  | 6 | 1993-2007 | 0.44 | M-v | 0 | MPC | 128903 2006 KH <sub>28</sub> |
| 2006 KK <sub>31</sub> | 17.4 | 0.15 | 20071027 | 124.01355 | 232.76417 | 45.39146  | 2.88513  | 0.1742985 | 2.2410270 | 41  | 4 | 2002-2007 | 0.43 | M-v | 1 | MPC | 128903 2006 KK <sub>31</sub> |
| 2006 KX <sub>31</sub> | 17.4 | 0.15 | 20071027 | 96.80045  | 247.12009 | 41.71985  | 2.90737  | 0.1944377 | 2.4515993 | 49  | 6 | 1998-2007 | 0.34 | M-v | 0 | MPC | 128903 2006 KX <sub>31</sub> |
| 2006 KY <sub>33</sub> | 17.4 | 0.15 | 20071027 | 88.65847  | 68.42529  | 226.31877 | 5.78604  | 0.1163284 | 2.4599146 | 37  | 4 | 2002-2007 | 0.32 | M-v | 1 | MPC | 128903 2006 KY <sub>33</sub> |
| 2006 KO <sub>38</sub> | 17.2 | 0.15 | 20071027 | 236.38516 | 302.42083 | 234.51588 | 19.58890 | 0.0697487 | 1.9801577 | 65  | 5 | 1993-2007 | 0.44 | M-v | 1 | MPC | 128903 2006 KO <sub>38</sub> |
| 2006 KR <sub>38</sub> | 17.2 | 0.15 | 20071027 | 123.21992 | 310.11577 | 320.34723 | 3.06859  | 0.1510536 | 2.2514162 | 40  | 5 | 2002-2007 | 0.44 | M-v | 1 | MPC | 128903 2006 KR <sub>38</sub> |
| 2006 KG <sub>39</sub> | 17.1 | 0.15 | 20071027 | 113.15392 | 203.11535 | 94.34296  | 4.63580  | 0.2029387 | 2.3034961 | 42  | 5 | 2002-2007 | 0.40 | M-v | 0 | MPC | 122819 2006 KG <sub>39</sub> |
| 2006 KH <sub>40</sub> | 16.7 | 0.15 | 20071027 | 85.85064  | 151.45198 | 158.54922 | 3.11976  | 0.1841243 | 2.4311783 | 30  | 3 | 2003-2007 | 0.35 | M-v | 2 | MPC | 128903 2006 KH <sub>40</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2006 KU <sub>41</sub>  | 16.6 | 0.15 | 20071027 | 61.81245  | 303.98842 | 50.22868  | 3.03328  | 0.2448588 | 2.1452034 | 41  | 5 | 1997-2007 | 0.53 | M-v | 1 | MP | 128903 2006 KU <sub>41</sub>  |
| 2006 KO <sub>42</sub>  | 17.2 | 0.15 | 20071027 | 93.51098  | 243.65224 | 64.20521  | 2.36750  | 0.1157206 | 2.3071897 | 43  | 5 | 2000-2007 | 0.39 | M-v | 1 | MP | 128903 2006 KO <sub>42</sub>  |
| 2006 KV <sub>42</sub>  | 15.9 | 0.15 | 20071027 | 37.65447  | 277.99082 | 71.30924  | 6.61476  | 0.2561855 | 2.6288013 | 85  | 3 | 2003-2007 | 0.36 | M-v | 2 | MP | 128269 2006 KV <sub>42</sub>  |
| 2006 KY <sub>42</sub>  | 16.6 | 0.15 | 20071027 | 123.22149 | 217.97251 | 65.10548  | 7.16085  | 0.1825321 | 2.2698635 | 52  | 3 | 2005-2007 | 0.33 | M-v | 3 | MP | 128270 2006 KY <sub>42</sub>  |
| 2006 KU <sub>45</sub>  | 17.1 | 0.15 | 20071027 | 39.75494  | 291.31496 | 75.47461  | 6.78031  | 0.2066426 | 2.2893796 | 35  | 3 | 2000-2007 | 0.36 | M-v | 3 | MP | 128270 2006 KU <sub>45</sub>  |
| 2006 KB <sub>46</sub>  | 15.9 | 0.15 | 20071027 | 20.03272  | 156.91453 | 208.73286 | 4.67229  | 0.2547231 | 2.6142764 | 125 | 5 | 1990-2007 | 0.52 | M-v | 1 | MP | 128903 2006 KB <sub>46</sub>  |
| 2006 KK <sub>47</sub>  | 16.1 | 0.15 | 20071027 | 27.10318  | 129.05315 | 218.32607 | 8.03582  | 0.1393701 | 2.6719101 | 110 | 6 | 1997-2007 | 0.50 | M-v | 1 | MP | 128903 2006 KK <sub>47</sub>  |
| 2006 KR <sub>48</sub>  | 17.5 | 0.15 | 20071027 | 42.55906  | 271.38999 | 89.77622  | 6.58225  | 0.1573323 | 2.2810499 | 32  | 3 | 2001-2007 | 0.37 | M-v | 2 | MP | 128271 2006 KR <sub>48</sub>  |
| 2006 KG <sub>52</sub>  | 17.0 | 0.15 | 20071027 | 97.28354  | 216.64568 | 83.55869  | 8.33553  | 0.1198048 | 2.3139509 | 41  | 5 | 2000-2007 | 0.46 | M-v | 0 | MP | 128271 2006 KG <sub>52</sub>  |
| 2006 KL <sub>55</sub>  | 16.3 | 0.15 | 20071027 | 65.33196  | 234.24002 | 110.77879 | 13.28826 | 0.3231662 | 2.5379119 | 33  | 4 | 2002-2007 | 0.34 | M-v | 1 | MP | 101817 2006 KL <sub>55</sub>  |
| 2006 KA <sub>56</sub>  | 15.9 | 0.15 | 20071027 | 42.24993  | 211.25258 | 144.83431 | 1.16715  | 0.1167737 | 2.9949292 | 104 | 7 | 1996-2007 | 0.40 | M-v | 0 | MP | 128903 2006 KA <sub>56</sub>  |
| 2006 KH <sub>56</sub>  | 16.0 | 0.15 | 20071027 | 9.61772   | 293.90026 | 75.52233  | 12.41975 | 0.3413128 | 2.7993107 | 41  | 2 | 2006-2007 | 0.41 | M-v | 3 | MP | 128271 2006 KH <sub>56</sub>  |
| 2006 KO <sub>59</sub>  | 16.1 | 0.15 | 20071027 | 60.79258  | 98.59084  | 191.22922 | 7.94767  | 0.1594226 | 3.0543091 | 37  | 2 | 2006-2007 | 0.30 | M-v | 3 | MP | 128272 2006 KO <sub>59</sub>  |
| 2006 KE <sub>61</sub>  | 16.6 | 0.15 | 20071027 | 106.36805 | 49.81618  | 217.68733 | 11.45771 | 0.1777144 | 2.6056867 | 56  | 2 | 2006-2007 | 0.43 | M-v | 3 | MP | 128272 2006 KE <sub>61</sub>  |
| 2006 KC <sub>65</sub>  | 17.1 | 0.15 | 20071027 | 126.17884 | 204.33794 | 102.25013 | 6.00327  | 0.1735042 | 2.2962624 | 37  | 4 | 2003-2007 | 0.29 | M-v | 1 | MP | 103925 2006 KC <sub>65</sub>  |
| 2006 KK <sub>68</sub>  | 17.2 | 0.15 | 20071027 | 121.38854 | 225.54520 | 53.28645  | 7.66325  | 0.1142656 | 2.2473293 | 32  | 2 | 2006-2007 | 0.22 | M-v | 3 | MP | 128272 2006 KK <sub>68</sub>  |
| 2006 KP <sub>68</sub>  | 16.3 | 0.15 | 20071027 | 53.84575  | 271.70606 | 57.31414  | 12.52171 | 0.2389463 | 2.6996495 | 42  | 3 | 2003-2007 | 0.46 | M-v | 2 | MP | 128272 2006 KP <sub>68</sub>  |
| 2006 KO <sub>73</sub>  | 16.3 | 0.15 | 20071027 | 41.31232  | 250.29502 | 111.55198 | 13.40021 | 0.3215501 | 2.5975085 | 22  | 3 | 2003-2007 | 0.36 | M-v | 2 | MP | 101826 2006 KO <sub>73</sub>  |
| 2006 KK <sub>76</sub>  | 17.7 | 0.15 | 20071027 | 68.99759  | 126.64849 | 198.84212 | 4.45695  | 0.1522478 | 2.2727416 | 54  | 5 | 2000-2007 | 0.43 | M-v | 0 | MP | 128904 2006 KK <sub>76</sub>  |
| 2006 KS <sub>76</sub>  | 16.6 | 0.15 | 20071027 | 80.57315  | 75.95513  | 219.98893 | 5.40216  | 0.1502072 | 2.6628690 | 43  | 3 | 2002-2007 | 0.26 | M-v | 2 | MP | 128904 2006 KS <sub>76</sub>  |
| 2006 KR <sub>77</sub>  | 16.4 | 0.15 | 20071027 | 74.94155  | 80.13863  | 236.02345 | 11.64291 | 0.2617841 | 2.6710691 | 38  | 3 | 2002-2007 | 0.44 | M-v | 3 | MP | 109574 2006 KR <sub>77</sub>  |
| 2006 KS <sub>77</sub>  | 15.7 | 0.15 | 20071027 | 62.67002  | 107.68823 | 220.16236 | 6.47978  | 0.1999497 | 2.6183951 | 74  | 4 | 1993-2007 | 0.52 | M-v | 0 | MP | 128904 2006 KS <sub>77</sub>  |
| 2006 KZ <sub>82</sub>  | 17.4 | 0.15 | 20071027 | 118.33477 | 206.25561 | 87.45661  | 1.86171  | 0.1031568 | 2.1640248 | 39  | 4 | 2000-2007 | 0.35 | M-v | 1 | MP | 128904 2006 KZ <sub>82</sub>  |
| 2006 KX <sub>90</sub>  | 16.2 | 0.15 | 20071027 | 81.57289  | 98.01416  | 206.16461 | 3.22257  | 0.1908107 | 2.5907312 | 87  | 5 | 1993-2007 | 0.43 | M-v | 1 | MP | 128904 2006 KX <sub>90</sub>  |
| 2006 KM <sub>93</sub>  | 17.2 | 0.15 | 20071027 | 48.54036  | 121.62609 | 202.98661 | 3.38935  | 0.1074449 | 2.5743116 | 33  | 4 | 2003-2007 | 0.36 | M-v | 1 | MP | 126769 2006 KM <sub>93</sub>  |
| 2006 KW <sub>96</sub>  | 16.8 | 0.15 | 20071027 | 162.43442 | 356.68380 | 263.92507 | 5.84346  | 0.1465544 | 2.2793790 | 48  | 4 | 2003-2007 | 0.53 | M-v | 1 | MP | 104377 2006 KW <sub>96</sub>  |
| 2006 KG <sub>97</sub>  | 16.0 | 0.15 | 20071027 | 119.20140 | 25.31461  | 252.76876 | 11.95568 | 0.1358014 | 2.7285771 | 44  | 2 | 2006-2007 | 0.35 | M-v | 2 | MP | 128274 2006 KG <sub>97</sub>  |
| 2006 KP <sub>98</sub>  | 17.3 | 0.15 | 20071027 | 29.67852  | 185.20022 | 184.05904 | 5.99621  | 0.1180117 | 2.3574510 | 37  | 3 | 2002-2007 | 0.44 | M-v | 2 | MP | 128274 2006 KP <sub>98</sub>  |
| 2006 KY <sub>100</sub> | 17.7 | 0.15 | 20071027 | 101.10342 | 232.73907 | 107.54435 | 3.94674  | 0.1164921 | 2.2867073 | 35  | 5 | 1996-2007 | 0.33 | M-v | 1 | MP | 104377 2006 KY <sub>100</sub> |
| 2006 KR <sub>101</sub> | 15.5 | 0.15 | 20071027 | 64.98764  | 78.81735  | 252.80912 | 18.71669 | 0.1407471 | 3.1730545 | 34  | 3 | 2001-2007 | 0.32 | M-v | 2 | MP | 101837 2006 KR <sub>101</sub> |
| 2006 KO <sub>104</sub> | 17.7 | 0.15 | 20071027 | 205.48975 | 146.23962 | 127.50493 | 23.84608 | 0.1117034 | 1.8673119 | 36  | 4 | 2001-2007 | 0.29 | M-v | 1 | MP | 103929 2006 KO <sub>104</sub> |
| 2006 KW <sub>107</sub> | 17.6 | 0.15 | 20071027 | 31.32391  | 330.43569 | 33.31572  | 4.86542  | 0.1459625 | 2.1814266 | 65  | 3 | 1994-2007 | 0.39 | M-v | 2 | MP | 128275 2006 KW <sub>107</sub> |
| 2006 KO <sub>114</sub> | 17.0 | 0.15 | 20071027 | 92.76612  | 252.80789 | 94.77129  | 23.31603 | 0.1106994 | 1.9291368 | 36  | 3 | 2004-2007 | 0.52 | M-v | 1 | MP | 128904 2006 KO <sub>114</sub> |
| 2006 KN <sub>115</sub> | 16.8 | 0.15 | 20071027 | 11.77375  | 309.38419 | 80.64374  | 7.22626  | 0.1341364 | 2.2295870 | 76  | 3 | 2005-2007 | 0.56 | M-v | 3 | MP | 128904 2006 KN <sub>115</sub> |
| 2006 KL <sub>117</sub> | 16.8 | 0.15 | 20071027 | 37.87257  | 217.57206 | 148.93394 | 15.71062 | 0.1987487 | 2.4462569 | 26  | 5 | 1997-2007 | 0.62 | M-v | 1 | MP | 101842 2006 KL <sub>117</sub> |
| 2006 KH <sub>118</sub> | 15.5 | 0.15 | 20071027 | 88.97372  | 237.53652 | 104.68519 | 31.91562 | 0.3179923 | 2.6277310 | 55  | 4 | 1998-2007 | 0.53 | M-v | 1 | MP | 111172 2006 KH <sub>118</sub> |
| 2006 KM <sub>118</sub> | 18.0 | 0.15 | 20071027 | 97.01491  | 117.89864 | 187.19609 | 0.50267  | 0.2267963 | 2.3359148 | 35  | 5 | 1995-2007 | 0.37 | M-v | 0 | MP | 101842 2006 KM <sub>118</sub> |
| 2006 KK <sub>120</sub> | 16.1 | 0.15 | 20071027 | 35.81588  | 246.87249 | 105.73286 | 12.44821 | 0.2165682 | 2.6357994 | 62  | 5 | 1997-2007 | 0.56 | M-v | 1 | MP | 128905 2006 KK <sub>120</sub> |
| 2006 KX <sub>120</sub> | 15.6 | 0.15 | 20071027 | 124.92545 | 359.16424 | 212.20076 | 14.15468 | 0.1062162 | 2.8768805 | 55  | 6 | 1998-2007 | 0.42 | M-v | 0 | MP | 101843 2006 KX <sub>120</sub> |
| 2006 KP <sub>121</sub> | 15.5 | 0.15 | 20071027 | 59.66705  | 225.15759 | 115.56823 | 15.06018 | 0.3817877 | 2.7084048 | 58  | 4 | 2002-2007 | 0.56 | M-v | 1 | MP | 101844 2006 KP <sub>121</sub> |
| 2006 KS <sub>122</sub> | 15.1 | 0.15 | 20071027 | 112.48765 | 244.71275 | 49.18427  | 29.27387 | 0.1747555 | 2.6611753 | 36  | 5 | 1998-2007 | 0.57 | M-v | 1 | MP | 128905 2006 KS <sub>122</sub> |
| 2006 KU <sub>123</sub> | 15.1 | 0.15 | 20071027 | 90.93740  | 249.64322 | 51.59840  | 14.72624 | 0.2335739 | 2.5534113 | 72  | 4 | 1999-2007 | 0.51 | M-v | 2 | MP | 128905 2006 KU <sub>123</sub> |
| 2006 KD <sub>139</sub> | 16.5 | 0.15 | 20071027 | 12.07066  | 118.77603 | 248.61725 | 12.25811 | 0.1935905 | 2.7361925 | 48  | 2 | 2006-2007 | 0.60 | M-v | 3 | MP | 128276 2006 KD <sub>139</sub> |
| 2006 LZ                | 16.2 | 0.15 | 20071027 | 87.70684  | 49.70868  | 254.02226 | 3.92887  | 0.1575770 | 2.5444992 | 59  | 5 | 2000-2007 | 0.42 | M-v | 1 | MP | 128905 2006 LZ                |
| 2006 LB <sub>2</sub>   | 15.6 | 0.15 | 20071027 | 58.60700  | 230.27421 | 106.18718 | 12.83138 | 0.2267814 | 2.6729182 | 34  | 3 | 2002-2007 | 0.49 | M-v | 2 | MP | 128905 2006 LB <sub>2</sub>   |
| 2006 LO <sub>2</sub>   | 17.4 | 0.15 | 20071027 | 119.38916 | 36.32553  | 247.91930 | 5.85072  | 0.2096233 | 2.3449373 | 35  | 4 | 1999-2007 | 0.44 | M-v | 1 | MP | 128905 2006 LO <sub>2</sub>   |
| 2006 LL <sub>4</sub>   | 15.7 | 0.15 | 20071027 | 74.16680  | 298.75563 | 30.92126  | 3.01701  | 0.3167964 | 2.9041893 | 45  | 6 | 2000-2007 | 0.42 | M-v | 0 | MP | 104378 2006 LL <sub>4</sub>   |
| 2006 LN <sub>4</sub>   | 16.0 | 0.15 | 20071027 | 96.44056  | 36.03904  | 276.38844 | 12.40245 | 0.2021338 | 2.7299369 | 60  | 5 | 2000-2007 | 0.46 | M-v | 1 | MP | 128905 2006 LN <sub>4</sub>   |
| 2006 LR <sub>4</sub>   | 15.1 | 0.15 | 20071027 | 88.05494  | 249.82444 | 54.88218  | 16.46734 | 0.2164228 | 2.9292923 | 81  | 3 | 2002-2007 | 0.43 | M-v | 2 | MP | 128905 2006 LR <sub>4</sub>   |
| 2006 LZ <sub>4</sub>   | 15.8 | 0.15 | 20071027 | 96.76795  | 358.76052 | 296.76758 | 4.96123  | 0.2596002 | 2.5508182 | 47  | 5 | 2002-2007 | 0.39 | M-v | 1 | MP | 128905 2006 LZ <sub>4</sub>   |
| 2006 LF <sub>5</sub>   | 16.8 | 0.15 | 20071027 | 145.53185 | 182.42452 | 110.34161 | 8.23091  | 0.1667458 | 2.2407110 | 36  | 5 | 2002-2007 | 0.36 | M-v | 1 | MP | 111172 2006 LF <sub>5</sub>   |
| 2006 LU <sub>5</sub>   | 15.1 | 0.15 | 20071027 | 27.95771  | 255.63363 | 112.40979 | 13.78395 | 0.1667764 | 3.1476850 | 75  | 3 | 2001-2007 | 0.55 | M-v | 2 | MP | 128905 2006 LU <sub>5</sub>   |
| 2006 LZ <sub>6</sub>   | 16.6 | 0.15 | 20071027 | 104.29412 | 97.12229  | 238.27005 | 1.56409  | 0.1972763 | 2.4247633 | 67  | 6 | 1991-2007 | 0.35 | M-v | 1 | MP | 128905 2006 LZ <sub>6</sub>   |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2006 LF <sub>7</sub>  | 16.1 | 0.15 | 20071027 | 109.70274 | 6.95737   | 315.36068 | 6.71103  | 0.2149878 | 2.4163944 | 72  | 7 | 1991–2007 | 0.37 | M-v | 1 | MPC | 111172 2006 LF <sub>7</sub>  |
| 2006 LV <sub>7</sub>  | 15.0 | 0.15 | 20071027 | 75.45981  | 262.38119 | 67.96960  | 12.25959 | 0.2924205 | 2.5795021 | 31  | 3 | 2003–2007 | 0.50 | M-v | 3 | MPC | 111172 2006 LV <sub>7</sub>  |
| 2006 LZ <sub>7</sub>  | 15.5 | 0.15 | 20071027 | 126.81375 | 223.88880 | 44.56297  | 14.68343 | 0.2109623 | 2.5924531 | 49  | 2 | 2006–2007 | 0.49 | M-v | 3 | MPC | 128277 2006 LZ <sub>7</sub>  |
| 2006 MR <sub>3</sub>  | 17.0 | 0.15 | 20071027 | 149.46842 | 192.92826 | 70.39603  | 5.34535  | 0.1129657 | 2.2254719 | 42  | 5 | 2002–2007 | 0.45 | M-v | 1 | MPC | 128905 2006 MR <sub>3</sub>  |
| 2006 MR <sub>5</sub>  | 17.2 | 0.15 | 20071027 | 124.89112 | 347.26149 | 302.10750 | 2.02235  | 0.1977310 | 2.4465978 | 26  | 4 | 2003–2007 | 0.25 | M-v | 1 | MPC | 111172 2006 MR <sub>5</sub>  |
| 2006 MN <sub>6</sub>  | 16.2 | 0.15 | 20071027 | 24.91231  | 276.01677 | 114.92461 | 8.96792  | 0.1482066 | 2.7971374 | 33  | 5 | 1998–2007 | 0.41 | M-v | 0 | MPC | 128905 2006 MN <sub>6</sub>  |
| 2006 MA <sub>8</sub>  | 17.7 | 0.15 | 20071027 | 121.88417 | 190.43131 | 117.76517 | 7.02734  | 0.1308157 | 2.3054532 | 25  | 4 | 2003–2007 | 0.27 | M-v | 1 | MPC | 122820 2006 MA <sub>8</sub>  |
| 2006 MN <sub>9</sub>  | 12.7 | 0.15 | 20071027 | 16.76053  | 57.48274  | 271.65937 | 10.61808 | 0.0792286 | 5.1937436 | 49  | 3 | 1995–2007 | 0.60 | M-v | 2 | MPC | 124498 2006 MN <sub>9</sub>  |
| 2006 MP <sub>9</sub>  | 16.7 | 0.15 | 20071027 | 108.55091 | 95.34985  | 221.60150 | 2.33305  | 0.2445038 | 2.4719682 | 67  | 4 | 1998–2007 | 0.39 | M-v | 1 | MPC | 128905 2006 MP <sub>9</sub>  |
| 2006 MD <sub>11</sub> | 16.4 | 0.15 | 20071027 | 74.90118  | 217.86216 | 95.15213  | 4.71273  | 0.2210143 | 2.6094483 | 50  | 6 | 1993–2007 | 0.48 | M-v | 0 | MPC | 128905 2006 MD <sub>11</sub> |
| 2006 MJ <sub>11</sub> | 15.0 | 0.15 | 20071027 | 86.84360  | 64.13889  | 257.52188 | 11.93752 | 0.1898482 | 2.8588600 | 40  | 5 | 2000–2007 | 0.32 | M-v | 1 | MPC | 111173 2006 MJ <sub>11</sub> |
| 2006 MT <sub>12</sub> | 15.6 | 0.15 | 20071027 | 115.28078 | 208.76356 | 91.90133  | 12.17981 | 0.1367989 | 2.5384034 | 58  | 7 | 2000–2007 | 0.41 | M-v | 1 | MPC | 103942 2006 MT <sub>12</sub> |
| 2006 MD <sub>14</sub> | 15.7 | 0.15 | 20071027 | 123.66160 | 224.67383 | 48.19790  | 13.24736 | 0.1574334 | 2.5799700 | 49  | 4 | 2003–2007 | 0.32 | M-v | 1 | MPC | 128277 2006 MD <sub>14</sub> |
| 2006 ME <sub>14</sub> | 16.0 | 0.15 | 20071027 | 131.01565 | 206.15965 | 58.14669  | 14.26354 | 0.1883115 | 2.5980488 | 54  | 3 | 2003–2007 | 0.40 | M-v | 2 | MPC | 128905 2006 ME <sub>14</sub> |
| 2006 MM <sub>14</sub> | 14.7 | 0.15 | 20071027 | 89.46531  | 26.36695  | 315.50945 | 14.36667 | 0.2359386 | 2.7452835 | 103 | 5 | 2002–2007 | 0.47 | M-v | 1 | MPC | 112920 2006 MM <sub>14</sub> |
| 2006 MP <sub>14</sub> | 17.2 | 0.15 | 20071027 | 138.06402 | 307.40551 | 318.44685 | 4.04535  | 0.1431595 | 2.4310339 | 32  | 4 | 2003–2007 | 0.36 | M-v | 1 | MPC | 126770 2006 MP <sub>14</sub> |
| 2006 MD <sub>15</sub> | 14.5 | 0.15 | 20071027 | 42.78497  | 239.54683 | 103.16440 | 18.92268 | 0.2068973 | 3.2298742 | 67  | 5 | 2001–2007 | 0.54 | M-v | 0 | MPC | 128905 2006 MD <sub>15</sub> |
| 2006 NH               | 16.2 | 0.15 | 20071027 | 113.44559 | 238.21822 | 61.95078  | 4.69926  | 0.1879501 | 2.6225344 | 40  | 4 | 2002–2007 | 0.39 | M-v | 1 | MPC | 111173 2006 NH               |
| 2006 NC <sub>1</sub>  | 16.4 | 0.15 | 20071027 | 89.33553  | 248.76478 | 101.16573 | 8.87083  | 0.1971279 | 2.4301966 | 37  | 5 | 1994–2007 | 0.31 | M-v | 1 | MPC | 128906 2006 NC <sub>1</sub>  |
| 2006 OA               | 16.2 | 0.15 | 20071027 | 343.87855 | 178.76900 | 262.17541 | 12.50832 | 0.1512011 | 2.6233510 | 76  | 5 | 2002–2007 | 0.47 | M-v | 1 | MPC | 128906 2006 OA               |
| 2006 OV               | 16.2 | 0.15 | 20071027 | 54.08673  | 116.62132 | 233.62418 | 10.09353 | 0.0540142 | 2.9682700 | 53  | 4 | 2000–2007 | 0.39 | M-v | 0 | MPC | 128906 2006 OV               |
| 2006 OH <sub>2</sub>  | 14.8 | 0.15 | 20071027 | 72.15059  | 33.15038  | 322.66025 | 17.16419 | 0.2267999 | 2.7781931 | 117 | 4 | 2002–2007 | 0.50 | M-v | 1 | MPC | 112920 2006 OH <sub>2</sub>  |
| 2006 OL <sub>2</sub>  | 16.7 | 0.15 | 20071027 | 43.06455  | 260.54445 | 121.82063 | 7.86396  | 0.2096564 | 2.7536148 | 31  | 5 | 1993–2007 | 0.38 | M-v | 0 | MPC | 103951 2006 OL <sub>2</sub>  |
| 2006 OZ <sub>2</sub>  | 13.8 | 0.15 | 20071027 | 345.54245 | 53.81092  | 310.13206 | 14.82586 | 0.0657035 | 5.2395246 | 28  | 5 | 1997–2007 | 0.34 | M-v | 0 | MPC | 126182 2006 OZ <sub>2</sub>  |
| 2006 OO <sub>3</sub>  | 15.0 | 0.15 | 20071027 | 48.72681  | 50.13028  | 309.49242 | 15.55906 | 0.2866318 | 3.1368866 | 48  | 4 | 2001–2007 | 0.33 | M-v | 1 | MPC | 111174 2006 OO <sub>3</sub>  |
| 2006 OO <sub>5</sub>  | 12.3 | 0.15 | 20071027 | 157.27664 | 260.25523 | 282.00733 | 12.24898 | 0.0110758 | 5.1967769 | 35  | 4 | 2002–2007 | 0.44 | M-v | 1 | MPC | 126183 2006 OO <sub>5</sub>  |
| 2006 OA <sub>7</sub>  | 16.2 | 0.15 | 20071027 | 158.22248 | 7.71983   | 250.08237 | 12.81281 | 0.2189371 | 2.6349157 | 45  | 4 | 2001–2007 | 0.47 | M-v | 1 | MPC | 111174 2006 OA <sub>7</sub>  |
| 2006 OJ <sub>7</sub>  | 15.6 | 0.15 | 20071027 | 49.67917  | 80.62714  | 312.73996 | 12.09683 | 0.2378078 | 2.7288162 | 69  | 5 | 1997–2007 | 0.43 | M-v | 1 | MPC | 111174 2006 OJ <sub>7</sub>  |
| 2006 OM <sub>7</sub>  | 17.1 | 0.15 | 20071027 | 170.72243 | 298.41678 | 314.38751 | 1.63091  | 0.1747113 | 2.4159801 | 69  | 6 | 1999–2007 | 0.33 | M-v | 0 | MPC | 111174 2006 OM <sub>7</sub>  |
| 2006 OC <sub>8</sub>  | 16.6 | 0.15 | 20071027 | 70.94125  | 250.60280 | 96.57085  | 4.94427  | 0.1474627 | 2.6176323 | 50  | 7 | 1996–2007 | 0.49 | M-v | 0 | MPC | 103955 2006 OC <sub>8</sub>  |
| 2006 OJ <sub>8</sub>  | 17.1 | 0.15 | 20071027 | 115.17416 | 198.31333 | 118.11468 | 7.59284  | 0.1557153 | 2.3351557 | 26  | 5 | 1999–2007 | 0.41 | M-v | 1 | MPC | 126183 2006 OJ <sub>8</sub>  |
| 2006 OY <sub>8</sub>  | 16.9 | 0.15 | 20071027 | 130.95734 | 295.35167 | 5.21786   | 2.31531  | 0.2031875 | 2.3614702 | 69  | 6 | 1999–2007 | 0.51 | M-v | 1 | MPC | 111174 2006 OY <sub>8</sub>  |
| 2006 OB <sub>10</sub> | 15.4 | 0.15 | 20071027 | 32.63738  | 83.85843  | 311.00463 | 24.41340 | 0.2719511 | 3.2013125 | 43  | 3 | 2001–2007 | 0.52 | M-v | 1 | MPC | 111175 2006 OB <sub>10</sub> |
| 2006 OS <sub>10</sub> | 15.3 | 0.15 | 20071027 | 59.72544  | 76.15546  | 305.44224 | 16.69163 | 0.1833608 | 2.6857891 | 44  | 3 | 2002–2007 | 0.50 | M-v | 2 | MPC | 128906 2006 OS <sub>10</sub> |
| 2006 OA <sub>11</sub> | 16.6 | 0.15 | 20071027 | 108.63385 | 322.71480 | 10.00095  | 1.36610  | 0.2093290 | 2.4174194 | 80  | 4 | 1999–2007 | 0.36 | M-v | 1 | MPC | 128906 2006 OA <sub>11</sub> |
| 2006 OV <sub>11</sub> | 15.5 | 0.15 | 20071027 | 57.31967  | 78.36672  | 288.61646 | 5.93035  | 0.0948334 | 2.7956504 | 69  | 5 | 1997–2007 | 0.46 | M-v | 1 | MPC | 109590 2006 OV <sub>11</sub> |
| 2006 OL <sub>12</sub> | 17.4 | 0.15 | 20071027 | 119.76777 | 25.72499  | 295.70759 | 4.66051  | 0.1834399 | 2.3005497 | 62  | 5 | 1994–2007 | 0.42 | M-v | 1 | MPC | 111175 2006 OL <sub>12</sub> |
| 2006 OE <sub>14</sub> | 16.9 | 0.15 | 20071027 | 124.94277 | 182.69888 | 130.19487 | 7.23455  | 0.1303080 | 2.3698836 | 42  | 5 | 1995–2007 | 0.45 | M-v | 1 | MPC | 111176 2006 OE <sub>14</sub> |
| 2006 OF <sub>14</sub> | 15.9 | 0.15 | 20071027 | 29.12684  | 275.57172 | 131.16886 | 16.49595 | 0.2578393 | 3.0925654 | 25  | 4 | 1992–2007 | 0.61 | M-v | 1 | MPC | 126183 2006 OF <sub>14</sub> |
| 2006 OL <sub>14</sub> | 17.5 | 0.15 | 20071027 | 146.00165 | 177.64074 | 116.47482 | 3.02508  | 0.1696135 | 2.2743925 | 58  | 6 | 1998–2007 | 0.43 | M-v | 1 | MPC | 111176 2006 OL <sub>14</sub> |
| 2006 OA <sub>15</sub> | 17.2 | 0.15 | 20071027 | 143.47784 | 204.75604 | 92.46638  | 7.11113  | 0.1754907 | 2.2149734 | 37  | 4 | 2000–2007 | 0.38 | M-v | 2 | MPC | 111176 2006 OA <sub>15</sub> |
| 2006 OG <sub>16</sub> | 15.6 | 0.15 | 20071027 | 103.95340 | 226.79345 | 71.88855  | 7.58718  | 0.0823097 | 2.8525287 | 40  | 4 | 2003–2007 | 0.44 | M-v | 1 | MPC | 128278 2006 OG <sub>16</sub> |
| 2006 OR <sub>17</sub> | 16.1 | 0.15 | 20071027 | 84.83136  | 256.59337 | 69.49026  | 14.83594 | 0.1766710 | 2.6397014 | 34  | 6 | 1997–2007 | 0.48 | M-v | 0 | MPC | 122820 2006 OR <sub>17</sub> |
| 2006 OT <sub>17</sub> | 15.4 | 0.15 | 20071027 | 37.50510  | 344.01941 | 18.17174  | 10.88857 | 0.0665734 | 3.0767565 | 69  | 6 | 1999–2007 | 0.53 | M-v | 0 | MPC | 128906 2006 OT <sub>17</sub> |
| 2006 OA <sub>20</sub> | 15.6 | 0.15 | 20071027 | 91.83293  | 280.85737 | 47.50217  | 7.89337  | 0.1472686 | 2.5849429 | 51  | 5 | 1998–2007 | 0.54 | M-v | 1 | MPC | 122820 2006 OA <sub>20</sub> |
| 2006 OV <sub>20</sub> | 16.3 | 0.15 | 20071027 | 42.97380  | 217.30862 | 184.79546 | 2.94625  | 0.0709492 | 2.9338316 | 49  | 5 | 1999–2007 | 0.46 | M-v | 1 | MPC | 124093 2006 OV <sub>20</sub> |
| 2006 PF               | 16.3 | 0.15 | 20071027 | 63.71761  | 88.75086  | 280.27259 | 12.02541 | 0.2414476 | 2.7463746 | 47  | 3 | 2002–2007 | 0.39 | M-v | 2 | MPC | 128906 2006 PF               |
| 2006 PG               | 16.3 | 0.15 | 20071027 | 70.64284  | 56.86730  | 289.71446 | 10.59258 | 0.1610921 | 2.8616752 | 52  | 4 | 2001–2007 | 0.39 | M-v | 1 | MPC | 103972 2006 PG               |
| 2006 PX               | 16.5 | 0.15 | 20071027 | 94.04810  | 196.24220 | 132.08357 | 4.86829  | 0.1775339 | 2.6641062 | 55  | 4 | 2002–2007 | 0.41 | M-v | 0 | MPC | 103973 2006 PX               |
| 2006 PW <sub>6</sub>  | 16.2 | 0.15 | 20071027 | 56.64465  | 245.83172 | 99.28912  | 7.28048  | 0.1547949 | 3.1842366 | 48  | 5 | 2002–2007 | 0.65 | M-v | 0 | MPC | 128906 2006 PW <sub>6</sub>  |
| 2006 PD <sub>7</sub>  | 15.4 | 0.15 | 20071027 | 49.48014  | 232.29973 | 122.98027 | 11.61241 | 0.0854674 | 3.0933550 | 28  | 2 | 2006–2007 | 0.47 | M-v | 4 | MPC | 128278 2006 PD <sub>7</sub>  |
| 2006 PL <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 110.47105 | 307.80276 | 17.74783  | 1.55188  | 0.2017636 | 2.4340646 | 47  | 4 | 1991–2007 | 0.39 | M-v | 1 | MPC | 112398 2006 PL <sub>7</sub>  |
| 2006 PC <sub>8</sub>  | 16.6 | 0.15 | 20071027 | 164.61039 | 137.92000 | 115.79682 | 1.84129  | 0.1671413 | 2.4261326 | 77  | 7 | 1995–2007 | 0.35 | M-v | 1 | MPC | 128906 2006 PC <sub>8</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2006 PA <sub>9</sub>  | 16.6 | 0.15 | 20071027 | 109.89847 | 103.72247 | 223.34155 | 1.41822  | 0.2203141 | 2.4577103 | 80  | 5 | 1997-2007 | 0.41 | M-v | 1 | MPC | 111177 2006 PA <sub>9</sub>  |
| 2006 PJ <sub>9</sub>  | 15.4 | 0.15 | 20071027 | 17.85216  | 92.51564  | 319.89782 | 13.95973 | 0.1491546 | 2.8625731 | 51  | 6 | 1999-2007 | 0.47 | M-v | 0 | MPC | 109597 2006 PJ <sub>9</sub>  |
| 2006 PW <sub>9</sub>  | 17.7 | 0.15 | 20071027 | 199.28970 | 92.84605  | 158.79200 | 1.60446  | 0.1161441 | 2.1459661 | 42  | 4 | 2002-2007 | 0.38 | M-v | 1 | MPC | 111178 2006 PW <sub>9</sub>  |
| 2006 PX <sub>9</sub>  | 14.6 | 0.15 | 20071027 | 36.01444  | 164.59091 | 188.74601 | 0.22729  | 0.1297854 | 3.9366823 | 98  | 4 | 2002-2007 | 0.46 | M-v | 0 | MPC | 128906 2006 PX <sub>9</sub>  |
| 2006 PY <sub>10</sub> | 16.2 | 0.15 | 20071027 | 224.04763 | 261.53747 | 312.58077 | 8.49596  | 0.0826284 | 2.3573235 | 67  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 111178 2006 PY <sub>10</sub> |
| 2006 PG <sub>11</sub> | 15.4 | 0.15 | 20071027 | 94.25788  | 228.45484 | 71.56426  | 2.68055  | 0.1778123 | 3.2285358 | 61  | 6 | 1993-2007 | 0.31 | M-v | 0 | MPC | 128906 2006 PG <sub>11</sub> |
| 2006 PD <sub>12</sub> | 15.7 | 0.15 | 20071027 | 124.55250 | 341.04218 | 312.62582 | 1.57315  | 0.0277149 | 2.8322124 | 64  | 6 | 2001-2007 | 0.52 | M-v | 0 | MPC | 128906 2006 PD <sub>12</sub> |
| 2006 PP <sub>12</sub> | 16.7 | 0.15 | 20071027 | 38.97860  | 115.77758 | 317.87389 | 8.92569  | 0.1936862 | 2.3294510 | 42  | 4 | 1999-2007 | 0.35 | M-v | 1 | MPC | 109600 2006 PP <sub>12</sub> |
| 2006 PS <sub>12</sub> | 16.6 | 0.15 | 20071027 | 108.66068 | 171.55138 | 165.36200 | 2.53514  | 0.2041207 | 2.4289140 | 123 | 6 | 1991-2007 | 0.42 | M-v | 1 | MPC | 111178 2006 PS <sub>12</sub> |
| 2006 PY <sub>14</sub> | 16.9 | 0.15 | 20071027 | 121.03412 | 195.11052 | 116.09292 | 3.30560  | 0.1933201 | 2.4444121 | 33  | 4 | 1995-2007 | 0.34 | M-v | 1 | MPC | 103986 2006 PY <sub>14</sub> |
| 2006 PN <sub>15</sub> | 16.5 | 0.15 | 20071027 | 88.53200  | 30.87753  | 308.48324 | 2.22626  | 0.0492942 | 2.7149684 | 38  | 5 | 2000-2007 | 0.40 | M-v | 1 | MPC | 122821 2006 PN <sub>15</sub> |
| 2006 PP <sub>15</sub> | 15.5 | 0.15 | 20071027 | 102.70274 | 226.23837 | 63.01047  | 2.10051  | 0.1439627 | 3.2162204 | 64  | 5 | 2001-2007 | 0.39 | M-v | 0 | MPC | 128907 2006 PP <sub>15</sub> |
| 2006 PR <sub>16</sub> | 16.7 | 0.15 | 20071027 | 162.02181 | 348.58682 | 300.91122 | 4.10287  | 0.1208430 | 2.2709563 | 69  | 6 | 1999-2007 | 0.52 | M-v | 1 | MPC | 128907 2006 PR <sub>16</sub> |
| 2006 PN <sub>17</sub> | 15.8 | 0.15 | 20071027 | 101.72723 | 141.23523 | 164.52730 | 5.55971  | 0.1267829 | 3.1304217 | 47  | 7 | 1994-2007 | 0.41 | M-v | 0 | MPC | 109603 2006 PN <sub>17</sub> |
| 2006 PT <sub>19</sub> | 15.6 | 0.15 | 20071027 | 129.14989 | 150.13351 | 143.68794 | 5.87952  | 0.0834521 | 2.6231226 | 44  | 5 | 2002-2007 | 0.58 | M-v | 1 | MPC | 109604 2006 PT <sub>19</sub> |
| 2006 PE <sub>20</sub> | 15.9 | 0.15 | 20071027 | 65.18199  | 281.45298 | 88.25694  | 12.97211 | 0.1309967 | 2.6058954 | 47  | 5 | 1994-2007 | 0.43 | M-v | 1 | MPC | 128907 2006 PE <sub>20</sub> |
| 2006 PF <sub>20</sub> | 15.7 | 0.15 | 20071027 | 95.08023  | 239.97999 | 54.78096  | 10.63602 | 0.1964500 | 3.1537927 | 42  | 3 | 2005-2007 | 0.35 | M-v | 3 | MPC | 128907 2006 PF <sub>20</sub> |
| 2006 PL <sub>20</sub> | 15.3 | 0.15 | 20071027 | 45.88674  | 311.97551 | 55.30920  | 27.29754 | 0.1648591 | 3.1699493 | 29  | 3 | 2001-2007 | 0.56 | M-v | 2 | MPC | 128907 2006 PL <sub>20</sub> |
| 2006 PT <sub>20</sub> | 16.5 | 0.15 | 20071027 | 105.37571 | 43.07942  | 265.73967 | 2.22054  | 0.0840508 | 2.6569514 | 55  | 6 | 1998-2007 | 0.46 | M-v | 0 | MPC | 128907 2006 PT <sub>20</sub> |
| 2006 PH <sub>21</sub> | 16.8 | 0.15 | 20071027 | 77.42546  | 257.26777 | 125.62972 | 5.01460  | 0.1581495 | 2.3044642 | 54  | 4 | 1999-2007 | 0.50 | M-v | 1 | MPC | 111179 2006 PH <sub>21</sub> |
| 2006 PB <sub>22</sub> | 16.5 | 0.15 | 20071027 | 178.94376 | 165.64975 | 80.20594  | 3.15886  | 0.1754205 | 2.3753642 | 47  | 4 | 2003-2007 | 0.49 | M-v | 1 | MPC | 111179 2006 PB <sub>22</sub> |
| 2006 PO <sub>23</sub> | 16.9 | 0.15 | 20071027 | 147.08784 | 124.89594 | 145.51905 | 0.50946  | 0.1900359 | 2.4395553 | 37  | 5 | 1995-2007 | 0.34 | M-v | 1 | MPC | 128907 2006 PO <sub>23</sub> |
| 2006 PQ <sub>23</sub> | 16.9 | 0.15 | 20071027 | 150.64621 | 162.78958 | 105.53924 | 2.39152  | 0.1566543 | 2.4418997 | 29  | 4 | 2003-2007 | 0.38 | M-v | 0 | MPC | 121858 2006 PQ <sub>23</sub> |
| 2006 PA <sub>24</sub> | 17.0 | 0.15 | 20071027 | 137.20539 | 237.77271 | 59.50320  | 3.26460  | 0.1514071 | 2.3382216 | 44  | 6 | 1999-2007 | 0.52 | M-v | 1 | MPC | 103996 2006 PA <sub>24</sub> |
| 2006 PT <sub>24</sub> | 15.2 | 0.15 | 20071027 | 129.37618 | 19.95853  | 285.84868 | 15.45784 | 0.2434823 | 2.7424959 | 47  | 3 | 2005-2007 | 0.47 | M-v | 2 | MPC | 109607 2006 PT <sub>24</sub> |
| 2006 PX <sub>27</sub> | 15.5 | 0.15 | 20071027 | 33.07380  | 143.34946 | 216.46287 | 5.34826  | 0.2952909 | 3.9618943 | 36  | 2 | 2006-2007 | 0.31 | M-v | 3 | MPC | 128278 2006 PX <sub>27</sub> |
| 2006 PC <sub>28</sub> | 16.1 | 0.15 | 20071027 | 146.18444 | 223.29172 | 32.76379  | 13.60119 | 0.2155595 | 2.5994098 | 37  | 6 | 1997-2007 | 0.55 | M-v | 1 | MPC | 109610 2006 PC <sub>28</sub> |
| 2006 PR <sub>28</sub> | 15.7 | 0.15 | 20071027 | 124.14344 | 223.43529 | 58.39901  | 18.42365 | 0.2804591 | 2.6830912 | 62  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128907 2006 PR <sub>28</sub> |
| 2006 PL <sub>31</sub> | 16.8 | 0.15 | 20071027 | 84.93855  | 253.90749 | 83.53656  | 13.86550 | 0.1608761 | 2.6699352 | 23  | 5 | 1998-2007 | 0.42 | M-v | 1 | MPC | 126184 2006 PL <sub>31</sub> |
| 2006 PT <sub>32</sub> | 15.4 | 0.15 | 20071027 | 79.10023  | 245.16198 | 88.62481  | 17.45921 | 0.2366502 | 3.0986856 | 28  | 4 | 2001-2007 | 0.34 | M-v | 0 | MPC | 109614 2006 PT <sub>32</sub> |
| 2006 PX <sub>32</sub> | 16.1 | 0.15 | 20071027 | 97.31719  | 248.83365 | 88.26214  | 15.30710 | 0.1747752 | 2.6825547 | 40  | 3 | 2002-2007 | 0.40 | M-v | 2 | MPC | 128907 2006 PX <sub>32</sub> |
| 2006 PF <sub>33</sub> | 15.1 | 0.15 | 20071027 | 94.58314  | 215.30387 | 84.01082  | 16.01666 | 0.2480053 | 3.1985121 | 35  | 3 | 2005-2007 | 0.49 | M-v | 2 | MPC | 111181 2006 PF <sub>33</sub> |
| 2006 PQ <sub>34</sub> | 16.3 | 0.15 | 20071027 | 103.88985 | 249.99595 | 74.80831  | 3.41572  | 0.2283503 | 2.4554414 | 42  | 6 | 1995-2007 | 0.42 | M-v | 1 | MPC | 109615 2006 PQ <sub>34</sub> |
| 2006 PN <sub>35</sub> | 17.2 | 0.15 | 20071027 | 112.23869 | 21.54560  | 296.68736 | 2.70666  | 0.1963680 | 2.4433265 | 27  | 3 | 2005-2007 | 0.31 | M-v | 2 | MPC | 109615 2006 PN <sub>35</sub> |
| 2006 PS <sub>35</sub> | 16.9 | 0.15 | 20071027 | 115.70035 | 243.91042 | 79.97202  | 7.57451  | 0.1431212 | 2.3192456 | 33  | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128907 2006 PS <sub>35</sub> |
| 2006 PJ <sub>39</sub> | 15.8 | 0.15 | 20071027 | 65.70592  | 359.47793 | 339.38860 | 11.76110 | 0.0740923 | 2.8574307 | 29  | 4 | 2002-2007 | 0.40 | M-v | 0 | MPC | 111181 2006 PJ <sub>39</sub> |
| 2006 PM <sub>40</sub> | 16.3 | 0.15 | 20071027 | 48.11623  | 268.77997 | 136.21959 | 5.06312  | 0.2534242 | 2.5438064 | 44  | 6 | 2000-2007 | 0.54 | M-v | 1 | MPC | 109616 2006 PM <sub>40</sub> |
| 2006 PT <sub>41</sub> | 16.0 | 0.15 | 20071027 | 22.55258  | 241.74613 | 153.54310 | 10.59641 | 0.1128897 | 2.9801935 | 36  | 5 | 2001-2007 | 0.38 | M-v | 0 | MPC | 109617 2006 PT <sub>41</sub> |
| 2006 PD <sub>42</sub> | 14.8 | 0.15 | 20071027 | 31.84488  | 41.76657  | 352.08556 | 11.30096 | 0.1211120 | 3.1478063 | 69  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 109617 2006 PD <sub>42</sub> |
| 2006 PK <sub>43</sub> | 16.5 | 0.15 | 20071027 | 67.52914  | 97.84107  | 255.15423 | 0.94755  | 0.0827793 | 2.8785374 | 34  | 5 | 2002-2007 | 0.45 | M-v | 0 | MPC | 109617 2006 PK <sub>43</sub> |
| 2006 QY               | 15.2 | 0.15 | 20071027 | 23.29440  | 261.69011 | 140.25613 | 16.82050 | 0.1322931 | 3.0356047 | 62  | 5 | 2001-2007 | 0.32 | M-v | 0 | MPC | 122821 2006 QY               |
| 2006 QM <sub>1</sub>  | 16.2 | 0.15 | 20071027 | 152.45702 | 193.06171 | 87.04433  | 7.31491  | 0.0956966 | 2.4161677 | 24  | 4 | 1996-2007 | 0.22 | M-v | 1 | MPC | 104005 2006 QM <sub>1</sub>  |
| 2006 QN <sub>3</sub>  | 16.0 | 0.15 | 20071027 | 79.25170  | 134.46049 | 217.35310 | 0.63167  | 0.2671679 | 2.8044979 | 128 | 4 | 2004-2007 | 0.44 | M-v | 1 | MPC | 114778 2006 QN <sub>3</sub>  |
| 2006 QY <sub>7</sub>  | 15.9 | 0.15 | 20071027 | 173.39505 | 280.42378 | 328.56167 | 9.73097  | 0.1217559 | 2.6102268 | 73  | 5 | 1996-2007 | 0.56 | M-v | 1 | MPC | 111184 2006 QY <sub>7</sub>  |
| 2006 QE <sub>8</sub>  | 16.0 | 0.15 | 20071027 | 37.19290  | 258.84347 | 141.43679 | 4.23509  | 0.0996447 | 2.7749596 | 37  | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 109624 2006 QE <sub>8</sub>  |
| 2006 QU <sub>8</sub>  | 16.3 | 0.15 | 20071027 | 104.59937 | 128.62709 | 194.34224 | 1.08659  | 0.2198592 | 2.7103684 | 97  | 3 | 2005-2007 | 0.42 | M-v | 2 | MPC | 109625 2006 QU <sub>8</sub>  |
| 2006 QV <sub>10</sub> | 17.4 | 0.15 | 20071027 | 250.17185 | 237.14946 | 320.37929 | 6.47622  | 0.0548435 | 2.3717822 | 69  | 4 | 2001-2007 | 0.34 | M-v | 1 | MPC | 109628 2006 QV <sub>10</sub> |
| 2006 QD <sub>11</sub> | 16.7 | 0.15 | 20071027 | 30.35415  | 113.27658 | 275.19157 | 2.21414  | 0.1368679 | 3.3068971 | 38  | 3 | 2000-2007 | 0.35 | M-v | 2 | MPC | 128279 2006 QD <sub>11</sub> |
| 2006 QK <sub>11</sub> | 16.1 | 0.15 | 20071027 | 39.13390  | 328.71304 | 50.19265  | 2.80649  | 0.0953043 | 3.0525087 | 45  | 5 | 2001-2007 | 0.35 | M-v | 0 | MPC | 128907 2006 QK <sub>11</sub> |
| 2006 QV <sub>11</sub> | 15.5 | 0.15 | 20071027 | 39.81401  | 354.96832 | 9.26704   | 5.41023  | 0.0655672 | 3.1344672 | 44  | 4 | 1998-2007 | 0.52 | M-v | 0 | MPC | 128279 2006 QV <sub>11</sub> |
| 2006 QF <sub>12</sub> | 16.6 | 0.15 | 20071027 | 149.78400 | 258.64322 | 7.36910   | 4.53676  | 0.0704023 | 2.6577122 | 55  | 5 | 1996-2007 | 0.41 | M-v | 0 | MPC | 128907 2006 QF <sub>12</sub> |
| 2006 QJ <sub>13</sub> | 15.5 | 0.15 | 20071027 | 116.54833 | 228.33913 | 70.53406  | 5.12635  | 0.0798757 | 2.8001171 | 55  | 5 | 2001-2007 | 0.46 | M-v | 1 | MPC | 128279 2006 QJ <sub>13</sub> |
| 2006 QM <sub>13</sub> | 17.2 | 0.15 | 20071027 | 146.77791 | 42.43684  | 250.28877 | 3.44372  | 0.0553470 | 2.3949497 | 38  | 6 | 1998-2007 | 0.46 | M-v | 0 | MPC | 109628 2006 QM <sub>13</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2006 QU <sub>16</sub> | 15.9 | 0.15 | 20071027 | 111.82821 | 238.61279 | 89.69816  | 2.37058  | 0.1990574 | 2.4353179 | 100 | 6 | 1991-2007 | 0.34 | M-v | 1 | MPC | 128907 2006 QU <sub>16</sub> |
| 2006 QW <sub>18</sub> | 16.6 | 0.15 | 20071027 | 118.93617 | 321.26474 | 354.48079 | 3.69063  | 0.2153408 | 2.6197866 | 74  | 4 | 2000-2007 | 0.43 | M-v | 1 | MPC | 114778 2006 QW <sub>18</sub> |
| 2006 QO <sub>20</sub> | 17.8 | 0.15 | 20071027 | 122.69321 | 112.52711 | 224.06103 | 1.04604  | 0.2338069 | 2.2794494 | 109 | 3 | 1999-2006 | 0.43 | M-v | 2 | MPC | 120842 2006 QO <sub>20</sub> |
| 2006 QO <sub>21</sub> | 16.6 | 0.15 | 20071027 | 155.61752 | 10.85521  | 234.61958 | 4.98310  | 0.2464710 | 2.5830990 | 29  | 3 | 2002-2007 | 0.47 | M-v | 4 | MPC | 109635 2006 QO <sub>21</sub> |
| 2006 QS <sub>21</sub> | 17.5 | 0.15 | 20071027 | 138.71413 | 344.60207 | 320.36475 | 5.67958  | 0.1366732 | 2.2677447 | 36  | 6 | 1996-2007 | 0.46 | M-v | 1 | MPC | 114292 2006 QS <sub>21</sub> |
| 2006 QV <sub>21</sub> | 16.7 | 0.15 | 20071027 | 109.74609 | 295.76191 | 34.72854  | 1.92888  | 0.1555105 | 2.4000066 | 27  | 4 | 1995-2007 | 0.50 | M-v | 1 | MPC | 109636 2006 QV <sub>21</sub> |
| 2006 QZ <sub>21</sub> | 16.1 | 0.15 | 20071027 | 68.28184  | 19.50064  | 334.70754 | 13.76976 | 0.1011423 | 2.7722242 | 62  | 5 | 1997-2007 | 0.42 | M-v | 1 | MPC | 109636 2006 QZ <sub>21</sub> |
| 2006 QA <sub>22</sub> | 16.5 | 0.15 | 20071027 | 49.03210  | 292.29895 | 94.44416  | 3.29249  | 0.0914192 | 2.6105886 | 31  | 5 | 2002-2007 | 0.48 | M-v | 0 | MPC | 109636 2006 QA <sub>22</sub> |
| 2006 QM <sub>23</sub> | 17.0 | 0.15 | 20071027 | 67.59794  | 60.97846  | 316.85714 | 3.98095  | 0.1769759 | 2.7103937 | 70  | 5 | 1993-2007 | 0.46 | M-v | 1 | MPC | 128908 2006 QM <sub>23</sub> |
| 2006 QY <sub>24</sub> | 16.7 | 0.15 | 20071027 | 116.70734 | 89.43836  | 235.57914 | 3.73027  | 0.2086283 | 2.4165871 | 73  | 4 | 2001-2007 | 0.45 | M-v | 2 | MPC | 114779 2006 QY <sub>24</sub> |
| 2006 QS <sub>25</sub> | 15.4 | 0.15 | 20071027 | 41.53406  | 14.51521  | 24.66451  | 5.44875  | 0.1888374 | 3.1885433 | 105 | 4 | 2001-2007 | 0.51 | M-v | 1 | MPC | 109643 2006 QS <sub>25</sub> |
| 2006 QK <sub>26</sub> | 15.9 | 0.15 | 20071027 | 37.09486  | 162.60969 | 221.66506 | 2.19609  | 0.0676681 | 3.1435988 | 44  | 5 | 2001-2007 | 0.41 | M-v | 0 | MPC | 128908 2006 QK <sub>26</sub> |
| 2006 QK <sub>28</sub> | 15.0 | 0.15 | 20071027 | 53.72906  | 284.46836 | 61.19823  | 18.94824 | 0.0855719 | 3.1062203 | 65  | 3 | 2005-2007 | 0.52 | M-v | 3 | MPC | 128908 2006 QK <sub>28</sub> |
| 2006 QP <sub>29</sub> | 15.3 | 0.15 | 20071027 | 51.01811  | 322.14796 | 47.77897  | 2.51665  | 0.1128894 | 2.9232834 | 69  | 6 | 1994-2007 | 0.47 | M-v | 0 | MPC | 128908 2006 QP <sub>29</sub> |
| 2006 QB <sub>30</sub> | 15.8 | 0.15 | 20071027 | 62.99445  | 256.26166 | 133.22455 | 7.69973  | 0.3181479 | 3.0662370 | 83  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 112921 2006 QB <sub>30</sub> |
| 2006 QH <sub>30</sub> | 17.1 | 0.15 | 20071027 | 130.95093 | 175.42715 | 121.41698 | 1.91764  | 0.1781830 | 2.4402907 | 52  | 7 | 1994-2007 | 0.36 | M-v | 1 | MPC | 111187 2006 QH <sub>30</sub> |
| 2006 QG <sub>34</sub> | 16.8 | 0.15 | 20071027 | 101.72742 | 5.22265   | 324.86817 | 4.31682  | 0.1688605 | 2.7031821 | 31  | 5 | 2002-2007 | 0.33 | M-v | 0 | MPC | 111188 2006 QG <sub>34</sub> |
| 2006 QK <sub>34</sub> | 16.3 | 0.15 | 20071027 | 211.38877 | 253.46462 | 326.97128 | 2.97818  | 0.0957248 | 2.5968154 | 33  | 5 | 1994-2007 | 0.51 | M-v | 1 | MPC | 109656 2006 QK <sub>34</sub> |
| 2006 QE <sub>36</sub> | 17.1 | 0.15 | 20071027 | 153.15946 | 248.91421 | 47.94210  | 5.26863  | 0.1205460 | 2.3559429 | 56  | 4 | 2003-2007 | 0.40 | M-v | 1 | MPC | 128908 2006 QE <sub>36</sub> |
| 2006 QH <sub>36</sub> | 15.8 | 0.15 | 20071027 | 106.88654 | 330.91370 | 355.32239 | 12.54554 | 0.1307794 | 2.7615241 | 91  | 5 | 1997-2007 | 0.49 | M-v | 1 | MPC | 109658 2006 QH <sub>36</sub> |
| 2006 QJ <sub>36</sub> | 15.9 | 0.15 | 20071027 | 63.92590  | 88.22805  | 263.21838 | 15.11578 | 0.1161065 | 3.1099162 | 43  | 3 | 2001-2007 | 0.42 | M-v | 3 | MPC | 109659 2006 QJ <sub>36</sub> |
| 2006 QG <sub>39</sub> | 15.2 | 0.15 | 20071027 | 34.63051  | 241.81249 | 135.05918 | 12.23353 | 0.0900508 | 3.0229588 | 70  | 6 | 1997-2007 | 0.51 | M-v | 0 | MPC | 128908 2006 QG <sub>39</sub> |
| 2006 QL <sub>39</sub> | 13.6 | 0.15 | 20071027 | 21.26129  | 254.09189 | 172.48995 | 13.33998 | 0.5999341 | 5.1277788 | 397 | 2 | 2006-2007 | 0.33 | M-v | 2 | MPC | 128280 2006 QL <sub>39</sub> |
| 2006 QA <sub>41</sub> | 16.2 | 0.15 | 20071027 | 5.76130   | 60.57657  | 348.18471 | 10.09764 | 0.0872470 | 3.1460897 | 48  | 4 | 2001-2007 | 0.50 | M-v | 0 | MPC | 128908 2006 QA <sub>41</sub> |
| 2006 QH <sub>41</sub> | 15.5 | 0.15 | 20071027 | 73.32828  | 209.87252 | 124.03529 | 9.09642  | 0.1595584 | 3.1614949 | 54  | 6 | 1999-2007 | 0.41 | M-v | 0 | MPC | 128908 2006 QH <sub>41</sub> |
| 2006 QC <sub>42</sub> | 15.6 | 0.15 | 20071027 | 83.49570  | 213.95040 | 102.02934 | 3.11526  | 0.0868524 | 2.9407218 | 39  | 5 | 1996-2007 | 0.47 | M-v | 1 | MPC | 111189 2006 QC <sub>42</sub> |
| 2006 QV <sub>42</sub> | 16.5 | 0.15 | 20071027 | 99.33812  | 230.30384 | 137.76484 | 7.54000  | 0.1311905 | 2.3087667 | 50  | 4 | 1999-2007 | 0.54 | M-v | 2 | MPC | 111189 2006 QV <sub>42</sub> |
| 2006 QU <sub>43</sub> | 16.4 | 0.15 | 20071027 | 65.23254  | 265.95979 | 92.63836  | 5.03302  | 0.1885275 | 2.6791791 | 49  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 122821 2006 QU <sub>43</sub> |
| 2006 QX <sub>43</sub> | 16.7 | 0.15 | 20071027 | 28.62095  | 108.38842 | 284.96701 | 4.23328  | 0.1374343 | 3.0589395 | 43  | 4 | 2001-2007 | 0.39 | M-v | 0 | MPC | 111190 2006 QX <sub>43</sub> |
| 2006 QS <sub>44</sub> | 16.0 | 0.15 | 20071027 | 88.48338  | 213.89277 | 120.36037 | 7.33979  | 0.0347503 | 2.7039159 | 36  | 5 | 2000-2007 | 0.40 | M-v | 1 | MPC | 128908 2006 QS <sub>44</sub> |
| 2006 QY <sub>44</sub> | 14.4 | 0.15 | 20071027 | 32.52113  | 236.23702 | 132.25802 | 10.94621 | 0.1106707 | 3.5403377 | 31  | 4 | 2000-2007 | 0.57 | M-v | 1 | MPC | 128281 2006 QY <sub>44</sub> |
| 2006 QC <sub>45</sub> | 16.1 | 0.15 | 20071027 | 272.45506 | 351.41347 | 156.94155 | 12.26014 | 0.0100263 | 2.7780396 | 35  | 4 | 2002-2007 | 0.50 | M-v | 0 | MPC | 122821 2006 QC <sub>45</sub> |
| 2006 QW <sub>45</sub> | 14.8 | 0.15 | 20071027 | 68.74058  | 182.18929 | 170.80488 | 18.34666 | 0.0945771 | 3.1645067 | 85  | 8 | 1998-2007 | 0.55 | M-v | 1 | MPC | 109668 2006 QW <sub>45</sub> |
| 2006 QT <sub>46</sub> | 15.8 | 0.15 | 20071027 | 26.91570  | 56.78217  | 353.15212 | 10.32526 | 0.1364251 | 2.7376732 | 33  | 5 | 1993-2007 | 0.69 | M-v | 1 | MPC | 122821 2006 QT <sub>46</sub> |
| 2006 QW <sub>46</sub> | 16.0 | 0.15 | 20071027 | 138.05258 | 146.94908 | 124.06863 | 10.40586 | 0.1276684 | 2.7766210 | 40  | 5 | 2002-2007 | 0.44 | M-v | 0 | MPC | 109669 2006 QW <sub>46</sub> |
| 2006 QX <sub>46</sub> | 16.4 | 0.15 | 20071027 | 170.83215 | 163.99825 | 100.56309 | 7.71658  | 0.0897481 | 2.3779081 | 36  | 5 | 1998-2007 | 0.56 | M-v | 1 | MPC | 109669 2006 QX <sub>46</sub> |
| 2006 QH <sub>47</sub> | 15.2 | 0.15 | 20071027 | 28.10370  | 17.24663  | 22.20986  | 11.97719 | 0.1135319 | 2.9907607 | 52  | 5 | 1991-2007 | 0.57 | M-v | 1 | MPC | 128908 2006 QH <sub>47</sub> |
| 2006 QW <sub>47</sub> | 17.0 | 0.15 | 20071027 | 73.11545  | 221.03450 | 179.69305 | 4.45909  | 0.1928669 | 2.3523000 | 68  | 4 | 1999-2006 | 0.56 | M-v | 1 | MPC | 116347 2006 QW <sub>47</sub> |
| 2006 QD <sub>48</sub> | 16.6 | 0.15 | 20071027 | 124.68323 | 146.86962 | 141.77570 | 5.33305  | 0.2326690 | 2.7530308 | 40  | 4 | 1996-2007 | 0.42 | M-v | 2 | MPC | 111190 2006 QD <sub>48</sub> |
| 2006 QG <sub>51</sub> | 17.0 | 0.15 | 20071027 | 117.23889 | 260.90015 | 65.68164  | 2.30303  | 0.1952074 | 2.4143902 | 66  | 3 | 2005-2007 | 0.51 | M-v | 2 | MPC | 114779 2006 QG <sub>51</sub> |
| 2006 QW <sub>51</sub> | 16.0 | 0.15 | 20071027 | 46.87352  | 341.72864 | 30.28650  | 3.58391  | 0.0917060 | 2.9635990 | 41  | 4 | 2004-2007 | 0.40 | M-v | 1 | MPC | 128908 2006 QW <sub>51</sub> |
| 2006 QD <sub>52</sub> | 15.8 | 0.15 | 20071027 | 56.27331  | 290.47842 | 70.51216  | 2.91535  | 0.0746430 | 2.9727698 | 39  | 3 | 2005-2007 | 0.31 | M-v | 3 | MPC | 128908 2006 QD <sub>52</sub> |
| 2006 QG <sub>52</sub> | 16.4 | 0.15 | 20071027 | 92.91465  | 210.95932 | 96.37926  | 2.85940  | 0.1993302 | 3.1297884 | 32  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 128281 2006 QG <sub>52</sub> |
| 2006 QR <sub>52</sub> | 15.9 | 0.15 | 20071027 | 132.63925 | 175.83713 | 114.90747 | 4.40135  | 0.0494551 | 2.7288851 | 48  | 5 | 1996-2007 | 0.40 | M-v | 0 | MPC | 111191 2006 QR <sub>52</sub> |
| 2006 QO <sub>53</sub> | 16.8 | 0.15 | 20071027 | 132.12053 | 220.78024 | 78.28143  | 6.96094  | 0.1884831 | 2.4052802 | 34  | 4 | 1998-2007 | 0.35 | M-v | 1 | MPC | 128908 2006 QO <sub>53</sub> |
| 2006 QK <sub>54</sub> | 15.6 | 0.15 | 20071027 | 74.86216  | 44.31458  | 294.85400 | 8.93889  | 0.3143687 | 3.1222498 | 47  | 3 | 2001-2007 | 0.50 | M-v | 3 | MPC | 109677 2006 QK <sub>54</sub> |
| 2006 QP <sub>54</sub> | 15.0 | 0.15 | 20071027 | 40.26110  | 326.80448 | 35.82074  | 3.21541  | 0.2297247 | 3.9851314 | 35  | 2 | 2006-2007 | 0.39 | M-v | 2 | MPC | 128281 2006 QP <sub>54</sub> |
| 2006 QA <sub>56</sub> | 16.3 | 0.15 | 20071027 | 125.48535 | 130.11378 | 148.95398 | 2.38736  | 0.2004414 | 3.0182061 | 38  | 4 | 2001-2007 | 0.40 | M-v | 1 | MPC | 109678 2006 QA <sub>56</sub> |
| 2006 QB <sub>56</sub> | 16.5 | 0.15 | 20071027 | 104.38096 | 194.02352 | 138.79242 | 2.50322  | 0.1343010 | 2.6671555 | 49  | 4 | 2002-2007 | 0.50 | M-v | 1 | MPC | 109678 2006 QB <sub>56</sub> |
| 2006 QC <sub>56</sub> | 15.4 | 0.15 | 20071027 | 128.51506 | 322.81060 | 314.16466 | 8.08317  | 0.0457415 | 3.0434269 | 54  | 4 | 2001-2007 | 0.40 | M-v | 0 | MPC | 128908 2006 QC <sub>56</sub> |
| 2006 QH <sub>56</sub> | 14.3 | 0.15 | 20071027 | 45.92542  | 170.25927 | 197.46709 | 2.51085  | 0.2631879 | 3.9823867 | 101 | 6 | 1998-2007 | 0.54 | M-v | 0 | MPC | 112921 2006 QH <sub>56</sub> |
| 2006 QG <sub>58</sub> | 16.1 | 0.15 | 20071027 | 109.06824 | 50.60101  | 277.12487 | 10.96483 | 0.1797172 | 2.6185122 | 51  | 4 | 2002-2007 | 0.50 | M-v | 2 | MPC | 128908 2006 QG <sub>58</sub> |
| 2006 QK <sub>58</sub> | 14.8 | 0.15 | 20071027 | 155.99013 | 331.51615 | 291.81920 | 8.02419  | 0.1295827 | 3.0807434 | 55  | 3 | 2004-2007 | 0.58 | M-v | 3 | MPC | 128908 2006 QK <sub>58</sub> |



|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 QU <sub>61</sub>  | 14.5 | 0.15 | 20071027 | 26.78474  | 92.25559  | 326.64727 | 24.60679 | 0.2871609 | 3.1857711 | 88 | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128908 2006 QU <sub>61</sub>  |
| 2006 QS <sub>68</sub>  | 15.9 | 0.15 | 20071027 | 225.95251 | 210.67742 | 346.10673 | 4.42567  | 0.0994230 | 2.7840077 | 46 | 6 | 1995-2007 | 0.51 | M-v | 0 | MPC | 128908 2006 QS <sub>68</sub>  |
| 2006 QH <sub>73</sub>  | 17.0 | 0.15 | 20071027 | 15.39223  | 49.28829  | 22.83305  | 2.99940  | 0.0351239 | 2.5463805 | 27 | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 109694 2006 QH <sub>73</sub>  |
| 2006 QC <sub>76</sub>  | 17.3 | 0.15 | 20071027 | 215.20086 | 81.94293  | 133.31545 | 3.98153  | 0.0399441 | 2.6629447 | 37 | 8 | 1996-2007 | 0.43 | M-v | 0 | MPC | 128909 2006 QC <sub>76</sub>  |
| 2006 QK <sub>78</sub>  | 17.2 | 0.15 | 20071027 | 131.99227 | 168.08618 | 165.30394 | 0.31634  | 0.1241245 | 2.2895242 | 63 | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 114779 2006 QK <sub>78</sub>  |
| 2006 QD <sub>79</sub>  | 15.8 | 0.15 | 20071027 | 313.71305 | 322.74601 | 148.68210 | 4.41885  | 0.0439041 | 2.9776702 | 55 | 5 | 1999-2007 | 0.42 | M-v | 0 | MPC | 128909 2006 QD <sub>79</sub>  |
| 2006 QL <sub>79</sub>  | 16.3 | 0.15 | 20071027 | 145.38199 | 128.38444 | 142.47269 | 2.69705  | 0.0469559 | 2.9461358 | 54 | 5 | 2001-2007 | 0.40 | M-v | 0 | MPC | 126771 2006 QL <sub>79</sub>  |
| 2006 QG <sub>84</sub>  | 16.3 | 0.15 | 20071027 | 170.92963 | 117.50974 | 135.03490 | 3.26461  | 0.0291885 | 2.7906170 | 49 | 6 | 2000-2007 | 0.44 | M-v | 0 | MPC | 109703 2006 QG <sub>84</sub>  |
| 2006 QZ <sub>85</sub>  | 15.6 | 0.15 | 20071027 | 24.18023  | 237.56537 | 158.03747 | 11.57315 | 0.0802904 | 3.1025598 | 39 | 4 | 2001-2007 | 0.49 | M-v | 1 | MPC | 109704 2006 QZ <sub>85</sub>  |
| 2006 QN <sub>90</sub>  | 17.6 | 0.15 | 20071027 | 129.27877 | 297.05351 | 11.51366  | 5.14459  | 0.1177876 | 2.4209314 | 27 | 4 | 1995-2007 | 0.29 | M-v | 1 | MPC | 111196 2006 QN <sub>90</sub>  |
| 2006 QF <sub>91</sub>  | 15.2 | 0.15 | 20071027 | 94.79480  | 43.04393  | 257.64904 | 9.74940  | 0.1484869 | 3.0833146 | 43 | 5 | 2001-2007 | 0.48 | M-v | 1 | MPC | 128909 2006 QF <sub>91</sub>  |
| 2006 QX <sub>91</sub>  | 16.1 | 0.15 | 20071027 | 79.92180  | 35.17326  | 287.14033 | 7.94724  | 0.1337255 | 3.0768743 | 31 | 3 | 2001-2007 | 0.47 | M-v | 2 | MPC | 122821 2006 QX <sub>91</sub>  |
| 2006 QG <sub>93</sub>  | 16.0 | 0.15 | 20071027 | 288.64943 | 152.73248 | 339.82976 | 8.39626  | 0.0913534 | 2.7411684 | 70 | 3 | 2003-2007 | 0.42 | M-v | 3 | MPC | 128909 2006 QG <sub>93</sub>  |
| 2006 QV <sub>93</sub>  | 14.9 | 0.15 | 20071027 | 37.06939  | 117.91023 | 243.03157 | 5.14565  | 0.3166565 | 3.9685657 | 61 | 4 | 1999-2007 | 0.41 | M-v | 0 | MPC | 111196 2006 QV <sub>93</sub>  |
| 2006 QX <sub>93</sub>  | 16.0 | 0.15 | 20071027 | 81.65343  | 93.64233  | 243.15047 | 4.84553  | 0.0763519 | 2.8371505 | 48 | 6 | 2001-2007 | 0.45 | M-v | 1 | MPC | 128909 2006 QX <sub>93</sub>  |
| 2006 QD <sub>95</sub>  | 17.2 | 0.15 | 20071027 | 186.43846 | 144.95398 | 125.63709 | 7.85692  | 0.1187399 | 2.1756346 | 43 | 5 | 1999-2007 | 0.39 | M-v | 2 | MPC | 111196 2006 QD <sub>95</sub>  |
| 2006 QA <sub>97</sub>  | 16.2 | 0.15 | 20071027 | 56.38497  | 19.95071  | 2.73993   | 1.70293  | 0.0764382 | 2.8374247 | 56 | 6 | 1992-2007 | 0.41 | M-v | 0 | MPC | 128909 2006 QA <sub>97</sub>  |
| 2006 QD <sub>98</sub>  | 15.7 | 0.15 | 20071027 | 154.36986 | 320.31212 | 295.78039 | 14.12963 | 0.1786353 | 2.6568657 | 45 | 6 | 2000-2007 | 0.51 | M-v | 1 | MPC | 109714 2006 QD <sub>98</sub>  |
| 2006 QT <sub>98</sub>  | 15.3 | 0.15 | 20071027 | 56.17461  | 118.82576 | 224.27898 | 3.17035  | 0.2157538 | 3.9674018 | 52 | 4 | 1999-2007 | 0.38 | M-v | 0 | MPC | 128909 2006 QT <sub>98</sub>  |
| 2006 QC <sub>99</sub>  | 16.4 | 0.15 | 20071027 | 106.48592 | 331.67381 | 17.23768  | 6.65483  | 0.1395570 | 2.3970385 | 84 | 6 | 1997-2007 | 0.52 | M-v | 1 | MPC | 112922 2006 QC <sub>99</sub>  |
| 2006 QA <sub>100</sub> | 15.8 | 0.15 | 20071027 | 109.76259 | 99.52797  | 191.84789 | 6.47830  | 0.1235104 | 3.0701034 | 43 | 5 | 2001-2007 | 0.36 | M-v | 0 | MPC | 128909 2006 QA <sub>100</sub> |
| 2006 QX <sub>102</sub> | 16.2 | 0.15 | 20071027 | 226.17281 | 229.70770 | 325.00272 | 5.10217  | 0.1374672 | 2.7717571 | 43 | 6 | 1993-2007 | 0.38 | M-v | 1 | MPC | 111197 2006 QX <sub>102</sub> |
| 2006 QG <sub>103</sub> | 17.1 | 0.15 | 20071027 | 181.91447 | 26.59796  | 226.14351 | 1.05649  | 0.0740988 | 2.5341440 | 39 | 5 | 1994-2007 | 0.37 | M-v | 0 | MPC | 109719 2006 QG <sub>103</sub> |
| 2006 QU <sub>104</sub> | 14.9 | 0.15 | 20071027 | 37.24242  | 319.08954 | 52.61116  | 5.57375  | 0.3054883 | 3.9509257 | 75 | 5 | 1991-2007 | 0.55 | M-v | 0 | MPC | 109720 2006 QU <sub>104</sub> |
| 2006 QT <sub>107</sub> | 16.9 | 0.15 | 20071027 | 152.71899 | 347.35012 | 306.61052 | 4.92686  | 0.0835895 | 2.4113302 | 32 | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 128909 2006 QT <sub>107</sub> |
| 2006 QD <sub>111</sub> | 15.4 | 0.15 | 20071027 | 122.51578 | 242.96833 | 63.76418  | 9.21255  | 0.0785571 | 3.0730806 | 46 | 6 | 2001-2007 | 0.55 | M-v | 1 | MPC | 122822 2006 QD <sub>111</sub> |
| 2006 QS <sub>111</sub> | 15.2 | 0.15 | 20071027 | 121.88639 | 355.06414 | 303.97660 | 7.85926  | 0.0801496 | 3.0590341 | 56 | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 109725 2006 QS <sub>111</sub> |
| 2006 QN <sub>114</sub> | 15.6 | 0.15 | 20071027 | 47.97344  | 92.48265  | 279.26576 | 7.32658  | 0.1551158 | 3.1160506 | 42 | 3 | 2001-2007 | 0.44 | M-v | 3 | MPC | 109730 2006 QN <sub>114</sub> |
| 2006 QZ <sub>114</sub> | 15.6 | 0.15 | 20071027 | 89.45653  | 49.44493  | 295.54539 | 12.57440 | 0.1906216 | 2.7474461 | 50 | 3 | 2004-2007 | 0.53 | M-v | 2 | MPC | 128282 2006 QZ <sub>114</sub> |
| 2006 QD <sub>115</sub> | 16.0 | 0.15 | 20071027 | 131.99227 | 28.03415  | 265.87502 | 10.78217 | 0.1631443 | 2.5992324 | 40 | 3 | 2002-2007 | 0.43 | M-v | 2 | MPC | 109731 2006 QD <sub>115</sub> |
| 2006 QF <sub>115</sub> | 15.3 | 0.15 | 20071027 | 78.25406  | 85.95429  | 250.62195 | 8.94057  | 0.1105257 | 3.1288792 | 33 | 4 | 2001-2007 | 0.54 | M-v | 1 | MPC | 111199 2006 QF <sub>115</sub> |
| 2006 QZ <sub>115</sub> | 16.6 | 0.15 | 20071027 | 125.72692 | 33.17229  | 288.46940 | 5.20722  | 0.2339158 | 2.3703691 | 66 | 7 | 1994-2007 | 0.44 | M-v | 1 | MPC | 116347 2006 QZ <sub>115</sub> |
| 2006 QC <sub>116</sub> | 15.0 | 0.15 | 20071027 | 34.74556  | 110.88278 | 279.80476 | 7.67818  | 0.0560805 | 3.0795195 | 29 | 3 | 2001-2007 | 0.48 | M-v | 3 | MPC | 128282 2006 QC <sub>116</sub> |
| 2006 QJ <sub>116</sub> | 16.2 | 0.15 | 20071027 | 89.24201  | 80.55585  | 267.72466 | 3.02031  | 0.2104917 | 2.7880201 | 79 | 6 | 1992-2007 | 0.39 | M-v | 1 | MPC | 109733 2006 QJ <sub>116</sub> |
| 2006 QD <sub>118</sub> | 16.5 | 0.15 | 20071027 | 98.43564  | 199.96650 | 140.45922 | 3.62635  | 0.1189755 | 2.7290781 | 52 | 5 | 2000-2007 | 0.53 | M-v | 1 | MPC | 111199 2006 QD <sub>118</sub> |
| 2006 QO <sub>118</sub> | 16.3 | 0.15 | 20071027 | 152.18897 | 354.49296 | 308.92805 | 6.49611  | 0.1081913 | 2.3400056 | 62 | 4 | 2003-2007 | 0.53 | M-v | 1 | MPC | 128909 2006 QO <sub>118</sub> |
| 2006 QD <sub>120</sub> | 16.2 | 0.15 | 20071027 | 61.91328  | 70.63137  | 305.70443 | 7.66705  | 0.2613977 | 2.7391994 | 45 | 3 | 2002-2007 | 0.55 | M-v | 3 | MPC | 128909 2006 QD <sub>120</sub> |
| 2006 QK <sub>120</sub> | 15.5 | 0.15 | 20071027 | 93.64256  | 37.93439  | 275.42650 | 7.99841  | 0.1218420 | 3.0574518 | 44 | 6 | 2001-2007 | 0.54 | M-v | 1 | MPC | 128909 2006 QK <sub>120</sub> |
| 2006 QL <sub>120</sub> | 15.4 | 0.15 | 20071027 | 66.80502  | 82.06171  | 259.63733 | 7.62797  | 0.0752863 | 3.1740269 | 48 | 4 | 2000-2007 | 0.46 | M-v | 1 | MPC | 128909 2006 QL <sub>120</sub> |
| 2006 QN <sub>120</sub> | 15.9 | 0.15 | 20071027 | 148.46270 | 43.01715  | 220.22502 | 8.24760  | 0.1235593 | 2.7503021 | 38 | 5 | 2000-2007 | 0.52 | M-v | 0 | MPC | 128909 2006 QN <sub>120</sub> |
| 2006 QR <sub>120</sub> | 15.2 | 0.15 | 20071027 | 62.71294  | 68.71243  | 282.51226 | 8.60344  | 0.0474587 | 3.1141388 | 39 | 3 | 2001-2007 | 0.54 | M-v | 4 | MPC | 109739 2006 QR <sub>120</sub> |
| 2006 QU <sub>120</sub> | 16.2 | 0.15 | 20071027 | 66.68649  | 96.55473  | 273.43717 | 7.68896  | 0.1691031 | 2.7822081 | 43 | 3 | 2002-2007 | 0.53 | M-v | 3 | MPC | 128909 2006 QU <sub>120</sub> |
| 2006 QM <sub>122</sub> | 15.3 | 0.15 | 20071027 | 183.01716 | 293.35120 | 331.74641 | 14.48208 | 0.0653682 | 2.5618132 | 68 | 6 | 2000-2007 | 0.58 | M-v | 1 | MPC | 109741 2006 QM <sub>122</sub> |
| 2006 QU <sub>123</sub> | 15.6 | 0.15 | 20071027 | 104.92945 | 51.37364  | 287.11838 | 8.80809  | 0.1205756 | 2.7129816 | 56 | 6 | 1997-2007 | 0.55 | M-v | 1 | MPC | 128909 2006 QU <sub>123</sub> |
| 2006 QB <sub>125</sub> | 16.2 | 0.15 | 20071027 | 42.76857  | 89.11360  | 283.49503 | 9.18735  | 0.1010189 | 3.1185839 | 24 | 4 | 2001-2007 | 0.48 | M-v | 1 | MPC | 109745 2006 QB <sub>125</sub> |
| 2006 QD <sub>125</sub> | 16.5 | 0.15 | 20071027 | 71.22014  | 61.26648  | 307.48866 | 11.86844 | 0.1242024 | 2.6229973 | 41 | 5 | 2000-2007 | 0.48 | M-v | 1 | MPC | 124499 2006 QD <sub>125</sub> |
| 2006 QV <sub>125</sub> | 16.7 | 0.15 | 20071027 | 95.03938  | 248.78592 | 97.80261  | 8.73131  | 0.1216785 | 2.5795421 | 41 | 6 | 1994-2007 | 0.42 | M-v | 0 | MPC | 128909 2006 QV <sub>125</sub> |
| 2006 QD <sub>128</sub> | 15.2 | 0.15 | 20071027 | 354.98335 | 156.94128 | 269.98495 | 9.56714  | 0.0481858 | 2.9714661 | 53 | 4 | 2001-2007 | 0.48 | M-v | 2 | MPC | 128909 2006 QD <sub>128</sub> |
| 2006 QG <sub>128</sub> | 16.1 | 0.15 | 20071027 | 81.82795  | 77.12372  | 250.33783 | 8.30350  | 0.1113920 | 3.1080285 | 44 | 4 | 1995-2007 | 0.39 | M-v | 1 | MPC | 128909 2006 QG <sub>128</sub> |
| 2006 QW <sub>128</sub> | 16.7 | 0.15 | 20071027 | 44.21485  | 286.10669 | 136.36376 | 5.10400  | 0.1344370 | 2.3696104 | 38 | 5 | 1995-2007 | 0.50 | M-v | 1 | MPC | 109748 2006 QW <sub>128</sub> |
| 2006 QU <sub>129</sub> | 17.0 | 0.15 | 20071027 | 154.79531 | 319.68252 | 288.99114 | 6.91848  | 0.2341790 | 2.5866541 | 42 | 6 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128909 2006 QU <sub>129</sub> |
| 2006 QV <sub>129</sub> | 15.8 | 0.15 | 20071027 | 301.93181 | 332.82121 | 147.82467 | 7.34188  | 0.0112954 | 2.7165220 | 46 | 5 | 2000-2007 | 0.45 | M-v | 1 | MPC | 128909 2006 QV <sub>129</sub> |
| 2006 QL <sub>131</sub> | 15.7 | 0.15 | 20071027 | 97.24921  | 79.24335  | 243.97205 | 7.82419  | 0.0425968 | 2.7859102 | 57 | 5 | 2002-2007 | 0.55 | M-v | 1 | MPC | 128909 2006 QL <sub>131</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 QL <sub>134</sub> | 15.7 | 0.15 | 20071027 | 79.68488  | 78.79565  | 263.90023 | 13.20809 | 0.1947114 | 3.1262999 | 46  | 4 | 2001-2007 | 0.56 | M-v | 1 | MPC | 109751 2006 QL <sub>134</sub> |
| 2006 QH <sub>135</sub> | 16.9 | 0.15 | 20071027 | 167.38563 | 181.53050 | 99.65857  | 2.99806  | 0.1289722 | 2.3752829 | 46  | 5 | 2002-2007 | 0.51 | M-v | 1 | MPC | 109751 2006 QH <sub>135</sub> |
| 2006 QL <sub>135</sub> | 16.9 | 0.15 | 20071027 | 163.66290 | 343.13487 | 297.12453 | 8.12870  | 0.2280720 | 2.2781670 | 42  | 4 | 1999-2007 | 0.59 | M-v | 2 | MPC | 109752 2006 QL <sub>135</sub> |
| 2006 QC <sub>136</sub> | 15.9 | 0.15 | 20071027 | 156.24325 | 38.47866  | 252.88836 | 5.43247  | 0.0919063 | 2.4597125 | 80  | 7 | 1999-2007 | 0.46 | M-v | 1 | MPC | 109752 2006 QC <sub>136</sub> |
| 2006 QJ <sub>136</sub> | 15.5 | 0.15 | 20071027 | 119.00984 | 51.09192  | 253.37296 | 6.93554  | 0.2221063 | 2.8068572 | 31  | 3 | 2001-2007 | 0.44 | M-v | 3 | MPC | 109754 2006 QJ <sub>136</sub> |
| 2006 QU <sub>136</sub> | 15.2 | 0.15 | 20071027 | 2.31372   | 141.81981 | 275.28840 | 9.64256  | 0.1255233 | 2.9720891 | 53  | 4 | 2001-2007 | 0.50 | M-v | 2 | MPC | 128909 2006 QU <sub>136</sub> |
| 2006 QX <sub>136</sub> | 16.4 | 0.15 | 20071027 | 83.92308  | 244.57682 | 110.37800 | 9.87439  | 0.1895976 | 2.7126774 | 45  | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 128909 2006 QX <sub>136</sub> |
| 2006 QB <sub>137</sub> | 16.3 | 0.15 | 20071027 | 136.83339 | 27.39288  | 257.51834 | 3.91331  | 0.1341276 | 2.7546921 | 53  | 5 | 2000-2007 | 0.43 | M-v | 0 | MPC | 111201 2006 QB <sub>137</sub> |
| 2006 QG <sub>137</sub> | 17.0 | 0.15 | 20071027 | 29.37338  | 194.76313 | 218.12457 | 1.32920  | 0.0926230 | 2.6467126 | 40  | 6 | 1993-2007 | 0.50 | M-v | 0 | MPC | 109755 2006 QG <sub>137</sub> |
| 2006 QJ <sub>138</sub> | 15.7 | 0.15 | 20071027 | 93.21484  | 344.01649 | 329.25382 | 9.73777  | 0.0681948 | 3.2428095 | 41  | 5 | 2001-2007 | 0.51 | M-v | 0 | MPC | 128909 2006 QJ <sub>138</sub> |
| 2006 QA <sub>140</sub> | 15.6 | 0.15 | 20071027 | 83.19488  | 20.48671  | 295.89233 | 7.70154  | 0.0661902 | 3.0222118 | 64  | 3 | 2001-2007 | 0.44 | M-v | 3 | MPC | 128910 2006 QA <sub>140</sub> |
| 2006 QN <sub>141</sub> | 15.7 | 0.15 | 20071027 | 83.75417  | 30.87111  | 306.78445 | 8.73288  | 0.0886828 | 3.0918500 | 38  | 5 | 2001-2007 | 0.51 | M-v | 1 | MPC | 111202 2006 QN <sub>141</sub> |
| 2006 QU <sub>141</sub> | 16.5 | 0.15 | 20071027 | 187.21330 | 95.91463  | 146.69621 | 5.04392  | 0.0843396 | 2.6532359 | 52  | 4 | 2002-2007 | 0.44 | M-v | 0 | MPC | 109758 2006 QU <sub>141</sub> |
| 2006 QK <sub>142</sub> | 14.6 | 0.15 | 20071027 | 79.39164  | 14.48697  | 337.62636 | 11.18051 | 0.1081437 | 3.1252731 | 80  | 5 | 1998-2007 | 0.47 | M-v | 1 | MPC | 120843 2006 QK <sub>142</sub> |
| 2006 QC <sub>146</sub> | 16.3 | 0.15 | 20071027 | 340.51068 | 139.09083 | 353.16129 | 8.21601  | 0.1492015 | 2.3376628 | 57  | 5 | 1999-2007 | 0.58 | M-v | 1 | MPC | 109764 2006 QC <sub>146</sub> |
| 2006 QF <sub>148</sub> | 16.9 | 0.15 | 20071027 | 200.11958 | 124.38002 | 124.55455 | 2.07350  | 0.1391335 | 2.4097055 | 37  | 6 | 1994-2007 | 0.41 | M-v | 1 | MPC | 114780 2006 QF <sub>148</sub> |
| 2006 QC <sub>149</sub> | 16.1 | 0.15 | 20071027 | 106.06296 | 307.72059 | 20.89492  | 5.08432  | 0.1585945 | 2.7889880 | 76  | 6 | 1997-2007 | 0.51 | M-v | 1 | MPC | 114780 2006 QC <sub>149</sub> |
| 2006 QW <sub>151</sub> | 16.9 | 0.15 | 20071027 | 357.27543 | 91.35244  | 339.99297 | 1.39299  | 0.0509656 | 2.8832393 | 29  | 4 | 2001-2007 | 0.32 | M-v | 0 | MPC | 109769 2006 QW <sub>151</sub> |
| 2006 QA <sub>153</sub> | 16.2 | 0.15 | 20071027 | 288.75450 | 347.61239 | 144.36170 | 2.75282  | 0.0488494 | 2.9452521 | 48  | 6 | 1996-2007 | 0.51 | M-v | 0 | MPC | 128910 2006 QA <sub>153</sub> |
| 2006 QD <sub>154</sub> | 16.0 | 0.15 | 20071027 | 9.08502   | 83.58003  | 325.96812 | 4.41319  | 0.0711938 | 3.1317620 | 42  | 4 | 2001-2007 | 0.47 | M-v | 0 | MPC | 128910 2006 QD <sub>154</sub> |
| 2006 QV <sub>154</sub> | 16.4 | 0.15 | 20071027 | 67.53407  | 10.96518  | 357.04976 | 4.93595  | 0.0688497 | 2.6836901 | 49  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 109769 2006 QV <sub>154</sub> |
| 2006 QE <sub>157</sub> | 15.0 | 0.15 | 20071027 | 13.95784  | 254.79089 | 158.63744 | 22.83644 | 0.1077302 | 3.2057766 | 38  | 5 | 2000-2007 | 0.50 | M-v | 0 | MPC | 128910 2006 QE <sub>157</sub> |
| 2006 QZ <sub>159</sub> | 16.9 | 0.15 | 20071027 | 101.49007 | 183.81065 | 159.65877 | 2.80879  | 0.1008522 | 2.5992563 | 43  | 5 | 2000-2007 | 0.54 | M-v | 1 | MPC | 122822 2006 QZ <sub>159</sub> |
| 2006 QQ <sub>161</sub> | 17.0 | 0.15 | 20071027 | 271.01543 | 176.99816 | 7.45803   | 2.84616  | 0.0963560 | 2.5309454 | 42  | 6 | 1994-2007 | 0.45 | M-v | 2 | MPC | 122822 2006 QQ <sub>161</sub> |
| 2006 QY <sub>161</sub> | 16.8 | 0.15 | 20071027 | 44.19775  | 121.91070 | 298.89166 | 4.03771  | 0.0908142 | 2.4410586 | 41  | 5 | 2002-2007 | 0.60 | M-v | 1 | MPC | 109774 2006 QY <sub>161</sub> |
| 2006 QQ <sub>162</sub> | 16.2 | 0.15 | 20071027 | 98.58533  | 28.67621  | 285.48462 | 5.92624  | 0.1877742 | 3.1405449 | 41  | 4 | 2000-2007 | 0.40 | M-v | 3 | MPC | 128910 2006 QQ <sub>162</sub> |
| 2006 QQ <sub>165</sub> | 16.2 | 0.15 | 20071027 | 335.28733 | 184.84941 | 284.88483 | 3.77255  | 0.0709355 | 2.7263614 | 58  | 7 | 1993-2007 | 0.45 | M-v | 0 | MPC | 109778 2006 QQ <sub>165</sub> |
| 2006 QS <sub>165</sub> | 16.1 | 0.15 | 20071027 | 192.57337 | 325.42870 | 278.01293 | 3.74801  | 0.0507709 | 2.7047287 | 31  | 5 | 1993-2007 | 0.45 | M-v | 0 | MPC | 109779 2006 QS <sub>165</sub> |
| 2006 QY <sub>165</sub> | 16.0 | 0.15 | 20071027 | 76.52834  | 138.77960 | 233.14302 | 5.48468  | 0.0375102 | 2.7253404 | 66  | 6 | 2001-2007 | 0.44 | M-v | 0 | MPC | 120843 2006 QY <sub>165</sub> |
| 2006 QP <sub>166</sub> | 16.8 | 0.15 | 20071027 | 107.76612 | 46.77312  | 316.58906 | 5.70610  | 0.1440647 | 2.3898572 | 60  | 4 | 2002-2007 | 0.48 | M-v | 1 | MPC | 109780 2006 QP <sub>166</sub> |
| 2006 QB <sub>168</sub> | 16.2 | 0.15 | 20071027 | 75.04455  | 319.79871 | 40.22863  | 4.87229  | 0.0834043 | 2.7832936 | 47  | 6 | 2000-2007 | 0.52 | M-v | 1 | MPC | 109781 2006 QB <sub>168</sub> |
| 2006 QY <sub>168</sub> | 16.2 | 0.15 | 20071027 | 133.67428 | 202.01291 | 100.68864 | 9.16176  | 0.1158675 | 2.6361831 | 44  | 6 | 2001-2007 | 0.58 | M-v | 1 | MPC | 109783 2006 QY <sub>168</sub> |
| 2006 QZ <sub>179</sub> | 16.6 | 0.15 | 20071027 | 91.83877  | 357.92357 | 351.63645 | 4.83589  | 0.1361451 | 2.6111907 | 33  | 4 | 1996-2007 | 0.39 | M-v | 1 | MPC | 122822 2006 QZ <sub>179</sub> |
| 2006 QA <sub>183</sub> | 16.6 | 0.15 | 20071027 | 84.45821  | 17.72241  | 319.68625 | 1.04037  | 0.0559434 | 3.1337772 | 24  | 4 | 2001-2007 | 0.39 | M-v | 1 | MPC | 124096 2006 QA <sub>183</sub> |
| 2006 QD <sub>183</sub> | 16.6 | 0.15 | 20071027 | 315.42685 | 279.31502 | 205.83832 | 3.11352  | 0.1213288 | 2.7298263 | 26  | 3 | 2003-2007 | 0.48 | M-v | 2 | MPC | 124096 2006 QD <sub>183</sub> |
| 2006 QN <sub>183</sub> | 17.2 | 0.15 | 20071027 | 121.76760 | 248.92457 | 90.57581  | 2.35319  | 0.2369440 | 2.5694072 | 28  | 3 | 2001-2006 | 0.51 | M-v | 2 | MPC | 124098 2006 QN <sub>183</sub> |
| 2006 RG                | 14.5 | 0.15 | 20071027 | 128.03921 | 338.19061 | 334.20243 | 9.28132  | 0.0708002 | 3.0268160 | 62  | 5 | 2001-2007 | 0.54 | M-v | 1 | MPC | 109785 2006 RG                |
| 2006 RJ <sub>1</sub>   | 22.2 | 0.15 | 20071027 | 202.14696 | 110.26673 | 93.50955  | 1.41442  | 0.3006722 | 0.9507745 | 111 | 2 | 2006-2007 | 0.48 | M-v | 4 | MPC | 128910 2006 RJ <sub>1</sub>   |
| 2006 RN <sub>1</sub>   | 15.7 | 0.15 | 20071027 | 87.92810  | 231.22504 | 96.37825  | 10.83744 | 0.2010785 | 2.8084565 | 40  | 5 | 2002-2007 | 0.32 | M-v | 1 | MPC | 109786 2006 RN <sub>1</sub>   |
| 2006 RW <sub>4</sub>   | 16.3 | 0.15 | 20071027 | 144.98608 | 339.08984 | 280.38696 | 8.01738  | 0.1705379 | 2.8382499 | 38  | 4 | 2001-2007 | 0.36 | M-v | 0 | MPC | 109792 2006 RW <sub>4</sub>   |
| 2006 RC <sub>5</sub>   | 14.9 | 0.15 | 20071027 | 104.01996 | 23.94715  | 293.31882 | 10.03375 | 0.0768330 | 3.0686030 | 39  | 3 | 2001-2007 | 0.56 | M-v | 4 | MPC | 109793 2006 RC <sub>5</sub>   |
| 2006 RU <sub>6</sub>   | 15.7 | 0.15 | 20071027 | 358.58556 | 108.17567 | 6.18471   | 14.70518 | 0.1047700 | 2.7185643 | 43  | 4 | 2002-2007 | 0.52 | M-v | 1 | MPC | 109797 2006 RU <sub>6</sub>   |
| 2006 RX <sub>7</sub>   | 17.1 | 0.15 | 20071027 | 58.25323  | 82.02859  | 340.38330 | 5.52714  | 0.1453940 | 2.2966655 | 45  | 3 | 1999-2006 | 0.47 | M-v | 2 | MPC | 109800 2006 RX <sub>7</sub>   |
| 2006 RK <sub>9</sub>   | 16.0 | 0.15 | 20071027 | 74.23473  | 356.31133 | 346.30855 | 1.45078  | 0.0722312 | 2.8647375 | 38  | 3 | 2005-2007 | 0.48 | M-v | 3 | MPC | 109803 2006 RK <sub>9</sub>   |
| 2006 RZ <sub>9</sub>   | 16.0 | 0.15 | 20071027 | 102.02908 | 48.06668  | 288.43604 | 4.99389  | 0.0667755 | 2.8684693 | 66  | 4 | 2001-2007 | 0.42 | M-v | 2 | MPC | 120843 2006 RZ <sub>9</sub>   |
| 2006 RZ <sub>11</sub>  | 16.2 | 0.15 | 20071027 | 50.83369  | 166.86195 | 218.46096 | 0.40862  | 0.1673323 | 3.2140942 | 63  | 4 | 2000-2007 | 0.40 | M-v | 1 | MPC | 128910 2006 RZ <sub>11</sub>  |
| 2006 RP <sub>13</sub>  | 15.9 | 0.15 | 20071027 | 300.00629 | 243.63619 | 230.34895 | 10.05688 | 0.0809806 | 3.1008638 | 38  | 2 | 2006-2007 | 0.33 | M-v | 3 | MPC | 128282 2006 RP <sub>13</sub>  |
| 2006 RT <sub>13</sub>  | 16.5 | 0.15 | 20071027 | 293.62289 | 304.01629 | 195.21851 | 12.61833 | 0.2031611 | 2.6691056 | 46  | 4 | 2000-2007 | 0.50 | M-v | 1 | MPC | 128910 2006 RT <sub>13</sub>  |
| 2006 RS <sub>15</sub>  | 15.9 | 0.15 | 20071027 | 96.74178  | 106.12696 | 233.97235 | 7.08536  | 0.1241548 | 2.7779048 | 46  | 4 | 2002-2007 | 0.37 | M-v | 0 | MPC | 109811 2006 RS <sub>15</sub>  |
| 2006 RU <sub>15</sub>  | 15.9 | 0.15 | 20071027 | 46.47203  | 114.17830 | 277.05454 | 8.98641  | 0.1278826 | 3.0466558 | 36  | 3 | 2003-2007 | 0.47 | M-v | 2 | MPC | 126190 2006 RU <sub>15</sub>  |
| 2006 RK <sub>16</sub>  | 15.7 | 0.15 | 20071027 | 126.42536 | 0.51276   | 315.67291 | 12.33548 | 0.1948312 | 2.5869363 | 63  | 6 | 2000-2007 | 0.53 | M-v | 1 | MPC | 109812 2006 RK <sub>16</sub>  |
| 2006 RN <sub>16</sub>  | 13.9 | 0.15 | 20071027 | 53.25493  | 89.68279  | 245.90854 | 12.79278 | 0.4004403 | 4.4352095 | 113 | 4 | 1997-2007 | 0.40 | M-v | 0 | MPC | 128910 2006 RN <sub>16</sub>  |
| 2006 RB <sub>18</sub>  | 15.1 | 0.15 | 20071027 | 101.19464 | 13.03968  | 318.98880 | 9.37708  | 0.1401615 | 3.0637489 | 71  | 5 | 2001-2007 | 0.52 | M-v | 1 | MPC | 109816 2006 RB <sub>18</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2006 RG <sub>20</sub> | 15.3 | 0.15 | 20071027 | 141.91703 | 44.38411  | 229.79426 | 11.52294 | 0.0714281 | 3.1013328 | 43  | 3 | 2001-2007 | 0.64 | M-v | 3 | MPC | 128910 2006 RG <sub>20</sub> |
| 2006 RJ <sub>20</sub> | 15.7 | 0.15 | 20071027 | 57.10300  | 88.48094  | 289.22024 | 9.52424  | 0.1870622 | 3.0990445 | 47  | 4 | 2001-2007 | 0.37 | M-v | 0 | MPC | 128910 2006 RJ <sub>20</sub> |
| 2006 RC <sub>21</sub> | 16.6 | 0.15 | 20071027 | 231.13652 | 238.94140 | 340.04073 | 1.49141  | 0.0915371 | 2.5863852 | 42  | 6 | 1998-2007 | 0.38 | M-v | 0 | MPC | 109824 2006 RC <sub>21</sub> |
| 2006 RV <sub>21</sub> | 15.2 | 0.15 | 20071027 | 84.04097  | 51.28870  | 290.58000 | 16.50816 | 0.2945661 | 3.0057679 | 65  | 4 | 1998-2007 | 0.55 | M-v | 1 | MPC | 122823 2006 RV <sub>21</sub> |
| 2006 RL <sub>24</sub> | 16.2 | 0.15 | 20071027 | 268.96315 | 246.44065 | 259.99794 | 7.71071  | 0.0685517 | 3.0296800 | 36  | 4 | 2003-2007 | 0.34 | M-v | 0 | MPC | 128283 2006 RL <sub>24</sub> |
| 2006 RY <sub>24</sub> | 15.1 | 0.15 | 20071027 | 351.87979 | 256.48556 | 173.65723 | 16.21337 | 0.1159614 | 3.1533995 | 45  | 6 | 1995-2007 | 0.52 | M-v | 0 | MPC | 109831 2006 RY <sub>24</sub> |
| 2006 RK <sub>26</sub> | 15.5 | 0.15 | 20071027 | 68.34007  | 266.05164 | 111.21032 | 6.18148  | 0.0378521 | 2.7755262 | 67  | 8 | 1995-2007 | 0.53 | M-v | 1 | MPC | 115932 2006 RK <sub>26</sub> |
| 2006 RO <sub>26</sub> | 15.9 | 0.15 | 20071027 | 150.30392 | 243.95043 | 56.17845  | 2.84354  | 0.0437139 | 2.8560588 | 60  | 4 | 1992-2007 | 0.43 | M-v | 1 | MPC | 128910 2006 RO <sub>26</sub> |
| 2006 RU <sub>26</sub> | 15.4 | 0.15 | 20071027 | 46.36317  | 277.49148 | 118.49403 | 12.41830 | 0.2189197 | 3.1420876 | 43  | 4 | 2001-2007 | 0.44 | M-v | 1 | MPC | 109833 2006 RU <sub>26</sub> |
| 2006 RV <sub>30</sub> | 15.2 | 0.15 | 20071027 | 71.81817  | 46.34426  | 313.89680 | 10.26830 | 0.1565107 | 3.0831469 | 67  | 4 | 1995-2007 | 0.48 | M-v | 1 | MPC | 109836 2006 RV <sub>30</sub> |
| 2006 RD <sub>31</sub> | 16.0 | 0.15 | 20071027 | 131.81711 | 46.02756  | 266.64642 | 5.19727  | 0.0541256 | 2.7199738 | 50  | 5 | 2001-2007 | 0.37 | M-v | 1 | MPC | 128910 2006 RD <sub>31</sub> |
| 2006 RJ <sub>32</sub> | 16.1 | 0.15 | 20071027 | 284.53586 | 240.47211 | 300.58231 | 2.37995  | 0.0487662 | 2.6210475 | 39  | 4 | 2002-2007 | 0.46 | M-v | 1 | MPC | 126772 2006 RJ <sub>32</sub> |
| 2006 RK <sub>32</sub> | 16.6 | 0.15 | 20071027 | 142.25118 | 70.54792  | 229.48714 | 1.82198  | 0.1886717 | 2.6309139 | 43  | 4 | 2001-2007 | 0.31 | M-v | 1 | MPC | 109841 2006 RK <sub>32</sub> |
| 2006 RU <sub>34</sub> | 16.2 | 0.15 | 20071027 | 94.67535  | 56.55675  | 295.08062 | 3.37727  | 0.0898419 | 2.7561209 | 58  | 7 | 1997-2007 | 0.40 | M-v | 1 | MPC | 128910 2006 RU <sub>34</sub> |
| 2006 RE <sub>35</sub> | 16.3 | 0.15 | 20071027 | 95.72527  | 63.93377  | 286.62181 | 7.71508  | 0.1318940 | 2.7233116 | 77  | 4 | 1998-2007 | 0.44 | M-v | 1 | MPC | 128910 2006 RE <sub>35</sub> |
| 2006 RF <sub>35</sub> | 15.1 | 0.15 | 20071027 | 199.63807 | 295.45452 | 296.10482 | 10.08411 | 0.0701078 | 3.0229882 | 42  | 7 | 1995-2007 | 0.65 | M-v | 1 | MPC | 122823 2006 RF <sub>35</sub> |
| 2006 RW <sub>35</sub> | 15.2 | 0.15 | 20071027 | 91.04759  | 336.51369 | 8.43030   | 5.26431  | 0.1150480 | 3.1622649 | 210 | 6 | 2000-2007 | 0.34 | M-v | 0 | MPC | 124499 2006 RW <sub>35</sub> |
| 2006 RL <sub>37</sub> | 15.3 | 0.15 | 20071027 | 35.88995  | 2.80965   | 48.27968  | 4.71525  | 0.1894661 | 3.2063870 | 78  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128910 2006 RL <sub>37</sub> |
| 2006 RF <sub>40</sub> | 16.5 | 0.15 | 20071027 | 171.39420 | 207.53048 | 80.24530  | 3.77958  | 0.1566295 | 2.3431056 | 68  | 7 | 1998-2007 | 0.65 | M-v | 1 | MPC | 120843 2006 RF <sub>40</sub> |
| 2006 RS <sub>40</sub> | 16.4 | 0.15 | 20071027 | 26.40476  | 146.83182 | 242.62655 | 9.59559  | 0.0724247 | 3.1383619 | 29  | 2 | 2006-2007 | 0.29 | M-v | 3 | MPC | 128283 2006 RS <sub>40</sub> |
| 2006 RX <sub>40</sub> | 15.1 | 0.15 | 20071027 | 272.54131 | 263.14556 | 239.03402 | 10.09656 | 0.0331348 | 3.0886417 | 68  | 4 | 1995-2007 | 0.37 | M-v | 0 | MPC | 128283 2006 RX <sub>40</sub> |
| 2006 RF <sub>45</sub> | 15.9 | 0.15 | 20071027 | 230.99372 | 66.83301  | 152.57166 | 3.00111  | 0.0227402 | 2.9677807 | 41  | 5 | 1991-2007 | 0.48 | M-v | 1 | MPC | 122824 2006 RF <sub>45</sub> |
| 2006 RY <sub>49</sub> | 17.4 | 0.15 | 20071027 | 182.40505 | 93.72697  | 185.76046 | 2.44167  | 0.1879195 | 2.3439132 | 55  | 5 | 1995-2007 | 0.45 | M-v | 1 | MPC | 122824 2006 RY <sub>49</sub> |
| 2006 RC <sub>52</sub> | 15.9 | 0.15 | 20071027 | 299.44950 | 142.34679 | 21.49496  | 10.79118 | 0.1627572 | 3.1304022 | 42  | 5 | 1992-2007 | 0.44 | M-v | 1 | MPC | 122824 2006 RC <sub>52</sub> |
| 2006 RP <sub>54</sub> | 16.6 | 0.15 | 20071027 | 141.11158 | 255.96092 | 48.57404  | 2.71482  | 0.0772103 | 3.0107363 | 37  | 5 | 1999-2007 | 0.35 | M-v | 0 | MPC | 112412 2006 RP <sub>54</sub> |
| 2006 RO <sub>57</sub> | 16.5 | 0.15 | 20071027 | 40.85958  | 38.04712  | 2.39496   | 2.78480  | 0.0884939 | 3.0033377 | 54  | 5 | 2001-2007 | 0.45 | M-v | 0 | MPC | 116348 2006 RO <sub>57</sub> |
| 2006 RR <sub>60</sub> | 16.9 | 0.15 | 20071027 | 93.92020  | 94.08311  | 255.83733 | 2.70439  | 0.1367093 | 2.7446477 | 42  | 5 | 1999-2007 | 0.46 | M-v | 1 | MPC | 109882 2006 RR <sub>60</sub> |
| 2006 RU <sub>60</sub> | 15.4 | 0.15 | 20071027 | 132.27981 | 336.05548 | 304.57659 | 3.81462  | 0.1252319 | 3.1384085 | 38  | 4 | 2001-2007 | 0.46 | M-v | 1 | MPC | 109882 2006 RU <sub>60</sub> |
| 2006 RB <sub>62</sub> | 16.3 | 0.15 | 20071027 | 267.34397 | 240.56497 | 309.09929 | 5.42291  | 0.0732194 | 2.4469735 | 45  | 5 | 2001-2007 | 0.55 | M-v | 1 | MPC | 128910 2006 RB <sub>62</sub> |
| 2006 RE <sub>64</sub> | 15.8 | 0.15 | 20071027 | 56.12287  | 205.49448 | 165.64898 | 2.12398  | 0.1756854 | 3.2018104 | 62  | 7 | 1960-2007 | 0.56 | M-v | 0 | MPC | 109885 2006 RE <sub>64</sub> |
| 2006 RH <sub>64</sub> | 15.9 | 0.15 | 20071027 | 22.99969  | 23.45989  | 34.05257  | 2.45163  | 0.0576589 | 2.8764038 | 46  | 4 | 1977-2007 | 0.70 | M-v | 2 | MPC | 109886 2006 RH <sub>64</sub> |
| 2006 RC <sub>65</sub> | 16.1 | 0.15 | 20071027 | 33.87067  | 209.90004 | 202.69825 | 1.35369  | 0.0669769 | 2.7434547 | 54  | 5 | 1997-2007 | 0.45 | M-v | 0 | MPC | 128910 2006 RC <sub>65</sub> |
| 2006 RC <sub>66</sub> | 16.6 | 0.15 | 20071027 | 275.45023 | 153.33394 | 35.38060  | 2.69917  | 0.0172029 | 2.6752113 | 59  | 4 | 2000-2007 | 0.34 | M-v | 3 | MPC | 128910 2006 RC <sub>66</sub> |
| 2006 RC <sub>68</sub> | 15.3 | 0.15 | 20071027 | 340.02029 | 107.00898 | 350.33479 | 10.50960 | 0.0844639 | 3.0556496 | 29  | 3 | 2001-2007 | 0.39 | M-v | 3 | MPC | 126192 2006 RC <sub>68</sub> |
| 2006 RZ <sub>68</sub> | 16.3 | 0.15 | 20071027 | 59.18505  | 51.95045  | 342.85082 | 3.49076  | 0.0956454 | 2.7553743 | 62  | 4 | 2002-2007 | 0.49 | M-v | 1 | MPC | 112925 2006 RZ <sub>68</sub> |
| 2006 RL <sub>71</sub> | 17.3 | 0.15 | 20071027 | 34.56516  | 156.20906 | 285.37189 | 0.29226  | 0.0329883 | 2.3531526 | 50  | 7 | 1995-2007 | 0.29 | M-v | 0 | MPC | 116348 2006 RL <sub>71</sub> |
| 2006 RH <sub>72</sub> | 16.7 | 0.15 | 20071027 | 356.15872 | 324.78212 | 130.98886 | 0.60104  | 0.0334147 | 2.8095034 | 50  | 7 | 1994-2007 | 0.41 | M-v | 0 | MPC | 121860 2006 RH <sub>72</sub> |
| 2006 RJ <sub>73</sub> | 16.5 | 0.15 | 20071027 | 4.73713   | 86.74272  | 5.29724   | 1.40714  | 0.1335272 | 2.9879723 | 50  | 6 | 1996-2007 | 0.36 | M-v | 0 | MPC | 128911 2006 RJ <sub>73</sub> |
| 2006 RE <sub>74</sub> | 16.1 | 0.15 | 20071027 | 180.58929 | 90.72744  | 169.51474 | 1.99144  | 0.0326891 | 2.9311130 | 70  | 5 | 1999-2007 | 0.44 | M-v | 0 | MPC | 121860 2006 RE <sub>74</sub> |
| 2006 RR <sub>74</sub> | 16.3 | 0.15 | 20071027 | 303.83773 | 102.60160 | 42.55939  | 1.24646  | 0.1213234 | 3.0919397 | 41  | 5 | 2000-2007 | 0.30 | M-v | 1 | MPC | 114305 2006 RR <sub>74</sub> |
| 2006 RJ <sub>75</sub> | 17.3 | 0.15 | 20071027 | 186.04374 | 239.25204 | 25.86637  | 2.77620  | 0.1530114 | 2.4410611 | 51  | 3 | 2005-2007 | 0.27 | M-v | 2 | MPC | 114784 2006 RJ <sub>75</sub> |
| 2006 RT <sub>75</sub> | 16.8 | 0.15 | 20071027 | 174.31359 | 116.11226 | 161.26304 | 2.27007  | 0.0411615 | 2.6706558 | 54  | 4 | 2000-2007 | 0.30 | M-v | 2 | MPC | 121638 2006 RT <sub>75</sub> |
| 2006 RD <sub>77</sub> | 16.1 | 0.15 | 20071027 | 100.03351 | 196.19557 | 146.81723 | 2.75120  | 0.0425673 | 2.9143737 | 47  | 5 | 1994-2007 | 0.36 | M-v | 0 | MPC | 114784 2006 RD <sub>77</sub> |
| 2006 RO <sub>78</sub> | 16.3 | 0.15 | 20071027 | 275.48349 | 158.31501 | 29.02912  | 5.82823  | 0.1949354 | 2.5414101 | 45  | 5 | 2000-2007 | 0.45 | M-v | 2 | MPC | 114784 2006 RO <sub>78</sub> |
| 2006 RU <sub>78</sub> | 16.0 | 0.15 | 20071027 | 13.81449  | 275.76388 | 166.09419 | 2.93690  | 0.0675575 | 2.7995052 | 70  | 6 | 1992-2007 | 0.43 | M-v | 0 | MPC | 114784 2006 RU <sub>78</sub> |
| 2006 RG <sub>79</sub> | 16.2 | 0.15 | 20071027 | 325.11865 | 325.28511 | 149.99677 | 2.25479  | 0.0498752 | 3.1608936 | 50  | 5 | 2000-2007 | 0.30 | M-v | 0 | MPC | 114784 2006 RG <sub>79</sub> |
| 2006 RM <sub>79</sub> | 16.3 | 0.15 | 20071027 | 85.78725  | 215.45053 | 136.84615 | 2.51115  | 0.0446701 | 3.0286251 | 47  | 5 | 2001-2007 | 0.38 | M-v | 0 | MPC | 121861 2006 RM <sub>79</sub> |
| 2006 RA <sub>81</sub> | 16.4 | 0.15 | 20071027 | 94.83281  | 331.20646 | 30.62369  | 1.54284  | 0.0860338 | 2.5982594 | 74  | 4 | 2002-2007 | 0.46 | M-v | 2 | MPC | 128911 2006 RA <sub>81</sub> |
| 2006 RL <sub>83</sub> | 16.2 | 0.15 | 20071027 | 168.76834 | 46.35524  | 216.08321 | 1.65737  | 0.1247670 | 2.9865108 | 26  | 3 | 1999-2007 | 0.19 | M-v | 3 | MPC | 109903 2006 RL <sub>83</sub> |
| 2006 RE <sub>85</sub> | 16.9 | 0.15 | 20071027 | 229.15938 | 215.02910 | 10.43371  | 1.13002  | 0.1305888 | 2.5856787 | 39  | 5 | 1998-2007 | 0.33 | M-v | 1 | MPC | 109904 2006 RE <sub>85</sub> |
| 2006 RK <sub>87</sub> | 16.2 | 0.15 | 20071027 | 66.64951  | 217.88832 | 159.32947 | 1.30912  | 0.0148789 | 3.0311485 | 52  | 3 | 2004-2007 | 0.30 | M-v | 3 | MPC | 114785 2006 RK <sub>87</sub> |
| 2006 RP <sub>92</sub> | 16.2 | 0.15 | 20071027 | 75.75521  | 66.57503  | 300.60206 | 1.14590  | 0.0644016 | 3.0904509 | 49  | 6 | 2000-2007 | 0.36 | M-v | 0 | MPC | 112925 2006 RP <sub>92</sub> |
| 2006 RU <sub>95</sub> | 15.9 | 0.15 | 20071027 | 56.88734  | 198.45839 | 196.19099 | 2.25343  | 0.0791900 | 3.1646487 | 68  | 6 | 2001-2007 | 0.32 | M-v | 0 | MPC | 122824 2006 RU <sub>95</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|----|-------------------------------|
| 2006 RU <sub>97</sub>  | 16.3 | 0.15 | 20071027 | 24.10146  | 140.08461 | 305.91469 | 1.16612  | 0.0549238 | 2.6878890 | 58  | 4 | 2002-2007 | 0.34 | M-v | 0 | MP | 109921 2006 RU <sub>97</sub>  |
| 2006 RG <sub>99</sub>  | 16.9 | 0.15 | 20071027 | 46.98115  | 43.14656  | 23.48920  | 3.26612  | 0.0652790 | 2.3864194 | 46  | 6 | 1999-2007 | 0.42 | M-v | 1 | MP | 122825 2006 RG <sub>99</sub>  |
| 2006 RR <sub>99</sub>  | 16.7 | 0.15 | 20071027 | 97.52099  | 326.04125 | 15.71833  | 3.35364  | 0.0794717 | 2.7635632 | 37  | 6 | 2000-2007 | 0.47 | M-v | 1 | MP | 109923 2006 RR <sub>99</sub>  |
| 2006 RE <sub>101</sub> | 15.7 | 0.15 | 20071027 | 119.03321 | 46.04503  | 295.66417 | 7.61678  | 0.0847284 | 2.6264750 | 48  | 4 | 2002-2007 | 0.54 | M-v | 2 | MP | 109925 2006 RE <sub>101</sub> |
| 2006 RT <sub>101</sub> | 16.8 | 0.15 | 20071027 | 171.53630 | 177.42733 | 98.50196  | 6.10101  | 0.1502460 | 2.2960089 | 36  | 4 | 2002-2007 | 0.55 | M-v | 2 | MP | 128911 2006 RT <sub>101</sub> |
| 2006 RB <sub>104</sub> | 16.8 | 0.15 | 20071027 | 126.07575 | 233.32308 | 68.75453  | 3.23396  | 0.0961129 | 3.1165692 | 34  | 4 | 1995-2007 | 0.19 | M-v | 1 | MP | 126194 2006 RB <sub>104</sub> |
| 2006 RT <sub>104</sub> | 16.1 | 0.15 | 20071027 | 350.50450 | 150.27131 | 305.49397 | 11.70053 | 0.0731775 | 2.8406623 | 25  | 3 | 2001-2007 | 0.59 | M-v | 3 | MP | 124098 2006 RT <sub>104</sub> |
| 2006 ST                | 16.7 | 0.15 | 20071027 | 138.95846 | 357.07766 | 308.62528 | 3.68092  | 0.1798887 | 2.6408628 | 69  | 5 | 2000-2007 | 0.52 | M-v | 2 | MP | 109928 2006 ST                |
| 2006 SO <sub>2</sub>   | 16.2 | 0.15 | 20071027 | 39.57323  | 145.70354 | 261.67640 | 0.94933  | 0.0683387 | 2.8675080 | 53  | 5 | 1994-2007 | 0.49 | M-v | 0 | MP | 128283 2006 SO <sub>2</sub>   |
| 2006 SU <sub>3</sub>   | 15.8 | 0.15 | 20071027 | 18.97866  | 116.70053 | 1.87866   | 31.09826 | 0.2969108 | 2.6122878 | 73  | 4 | 1998-2007 | 0.64 | M-v | 2 | MP | 126194 2006 SU <sub>3</sub>   |
| 2006 SE <sub>5</sub>   | 15.6 | 0.15 | 20071027 | 86.39851  | 125.75913 | 224.61974 | 4.42652  | 0.1463496 | 3.0967483 | 53  | 4 | 2001-2007 | 0.41 | M-v | 1 | MP | 122557 2006 SE <sub>5</sub>   |
| 2006 SK <sub>5</sub>   | 14.4 | 0.15 | 20071027 | 51.46796  | 92.24312  | 274.78509 | 1.72800  | 0.2480986 | 3.9955511 | 90  | 5 | 1998-2007 | 0.40 | M-v | 0 | MP | 112926 2006 SK <sub>5</sub>   |
| 2006 SX <sub>12</sub>  | 15.3 | 0.15 | 20071027 | 332.97002 | 234.59443 | 205.85800 | 10.79212 | 0.0259192 | 2.9921113 | 57  | 5 | 1991-2007 | 0.59 | M-v | 1 | MP | 128911 2006 SX <sub>12</sub>  |
| 2006 SE <sub>13</sub>  | 16.3 | 0.15 | 20071027 | 192.80064 | 309.88376 | 303.93904 | 12.26063 | 0.0445357 | 2.5974208 | 27  | 3 | 2003-2007 | 0.45 | M-v | 2 | MP | 109949 2006 SE <sub>13</sub>  |
| 2006 SJ <sub>14</sub>  | 16.8 | 0.15 | 20071027 | 129.93173 | 13.40688  | 299.94542 | 3.94674  | 0.1927845 | 2.5346400 | 62  | 4 | 2002-2007 | 0.52 | M-v | 3 | MP | 122826 2006 SJ <sub>14</sub>  |
| 2006 SK <sub>14</sub>  | 17.2 | 0.15 | 20071027 | 164.19662 | 28.05895  | 268.56683 | 3.94142  | 0.1361567 | 2.2955045 | 47  | 6 | 1999-2007 | 0.58 | M-v | 1 | MP | 109952 2006 SK <sub>14</sub>  |
| 2006 SX <sub>14</sub>  | 15.9 | 0.15 | 20071027 | 74.63905  | 109.13539 | 268.62148 | 4.32023  | 0.0893393 | 2.7761975 | 48  | 3 | 2002-2007 | 0.40 | M-v | 3 | MP | 128911 2006 SX <sub>14</sub>  |
| 2006 SX <sub>18</sub>  | 16.4 | 0.15 | 20071027 | 89.30048  | 217.98949 | 154.98138 | 3.42133  | 0.1314725 | 2.6712516 | 65  | 4 | 2004-2007 | 0.38 | M-v | 1 | MP | 122826 2006 SX <sub>18</sub>  |
| 2006 SY <sub>19</sub>  | 15.5 | 0.15 | 20071027 | 107.19182 | 309.68223 | 22.68921  | 5.36832  | 0.1689006 | 3.1390269 | 94  | 4 | 2000-2006 | 0.55 | M-v | 1 | MP | 126772 2006 SY <sub>19</sub>  |
| 2006 SD <sub>23</sub>  | 16.2 | 0.15 | 20071027 | 102.26823 | 228.41849 | 112.09584 | 10.32005 | 0.1695400 | 2.7425781 | 34  | 5 | 1996-2007 | 0.41 | M-v | 0 | MP | 128911 2006 SD <sub>23</sub>  |
| 2006 SB <sub>24</sub>  | 15.8 | 0.15 | 20071027 | 20.61465  | 19.49604  | 66.39126  | 15.40399 | 0.1559932 | 3.2001536 | 38  | 4 | 2001-2007 | 0.37 | M-v | 0 | MP | 122558 2006 SB <sub>24</sub>  |
| 2006 SO <sub>24</sub>  | 15.1 | 0.15 | 20071027 | 309.46946 | 240.07476 | 250.30840 | 8.42572  | 0.0182571 | 3.0690408 | 24  | 3 | 2001-2006 | 0.38 | M-v | 2 | MP | 114309 2006 SO <sub>24</sub>  |
| 2006 SR <sub>25</sub>  | 15.4 | 0.15 | 20071027 | 89.27988  | 140.59780 | 191.06192 | 5.40515  | 0.1131945 | 3.1983649 | 52  | 5 | 2000-2007 | 0.45 | M-v | 1 | MP | 122826 2006 SR <sub>25</sub>  |
| 2006 SO <sub>26</sub>  | 16.3 | 0.15 | 20071027 | 113.73234 | 139.97340 | 156.05657 | 3.71166  | 0.2116910 | 3.0179767 | 36  | 4 | 2000-2007 | 0.48 | M-v | 1 | MP | 109967 2006 SO <sub>26</sub>  |
| 2006 SO <sub>27</sub>  | 15.5 | 0.15 | 20071027 | 138.82108 | 2.30737   | 289.79705 | 19.50043 | 0.2416571 | 2.5433673 | 53  | 5 | 2001-2007 | 0.52 | M-v | 1 | MP | 109969 2006 SO <sub>27</sub>  |
| 2006 SU <sub>29</sub>  | 17.0 | 0.15 | 20071027 | 81.25837  | 104.87617 | 243.03855 | 5.18551  | 0.0396963 | 2.7014873 | 28  | 5 | 2000-2007 | 0.36 | M-v | 0 | MP | 109971 2006 SU <sub>29</sub>  |
| 2006 SA <sub>34</sub>  | 16.8 | 0.15 | 20071027 | 282.03905 | 202.17071 | 337.03380 | 5.94681  | 0.0618091 | 2.4773586 | 49  | 5 | 1998-2007 | 0.47 | M-v | 2 | MP | 122826 2006 SA <sub>34</sub>  |
| 2006 SV <sub>34</sub>  | 16.6 | 0.15 | 20071027 | 118.40504 | 60.20587  | 268.67580 | 3.27298  | 0.0735986 | 2.8040081 | 41  | 5 | 2001-2007 | 0.45 | M-v | 1 | MP | 128911 2006 SV <sub>34</sub>  |
| 2006 SW <sub>35</sub>  | 15.7 | 0.15 | 20071027 | 89.45438  | 271.08521 | 88.65220  | 7.29775  | 0.0499941 | 2.7498076 | 53  | 4 | 2001-2007 | 0.48 | M-v | 1 | MP | 128911 2006 SW <sub>35</sub>  |
| 2006 SK <sub>39</sub>  | 17.1 | 0.15 | 20071027 | 97.90825  | 57.68705  | 334.37545 | 5.23622  | 0.1693949 | 2.3089640 | 38  | 3 | 1999-2006 | 0.61 | M-v | 3 | MP | 114310 2006 SK <sub>39</sub>  |
| 2006 SF <sub>40</sub>  | 16.8 | 0.15 | 20071027 | 70.20094  | 313.74165 | 57.18893  | 2.88950  | 0.1317417 | 2.9241816 | 38  | 4 | 1999-2007 | 0.34 | M-v | 0 | MP | 109982 2006 SF <sub>40</sub>  |
| 2006 SA <sub>43</sub>  | 15.3 | 0.15 | 20071027 | 104.55755 | 194.93015 | 171.21101 | 11.17308 | 0.3149789 | 2.7121412 | 61  | 3 | 2005-2007 | 0.51 | M-v | 2 | MP | 122826 2006 SA <sub>43</sub>  |
| 2006 SP <sub>43</sub>  | 15.9 | 0.15 | 20071027 | 30.47944  | 123.21779 | 318.73632 | 8.23850  | 0.0940458 | 2.6860806 | 39  | 3 | 2004-2007 | 0.43 | M-v | 1 | MP | 128911 2006 SP <sub>43</sub>  |
| 2006 SB <sub>45</sub>  | 15.4 | 0.15 | 20071027 | 283.15505 | 224.02044 | 269.03331 | 11.18086 | 0.1144688 | 3.0942835 | 58  | 4 | 2002-2007 | 0.53 | M-v | 1 | MP | 128911 2006 SB <sub>45</sub>  |
| 2006 SQ <sub>46</sub>  | 16.0 | 0.15 | 20071027 | 165.02860 | 299.64109 | 336.23183 | 13.59908 | 0.0510001 | 2.6767766 | 35  | 4 | 2000-2007 | 0.58 | M-v | 2 | MP | 122826 2006 SQ <sub>46</sub>  |
| 2006 SA <sub>50</sub>  | 16.5 | 0.15 | 20071027 | 67.03520  | 199.94770 | 205.64811 | 1.47943  | 0.0810364 | 2.7227270 | 91  | 5 | 1999-2007 | 0.39 | M-v | 0 | MP | 120843 2006 SA <sub>50</sub>  |
| 2006 SV <sub>50</sub>  | 15.6 | 0.15 | 20071027 | 106.39208 | 233.50643 | 85.17605  | 7.34963  | 0.1046435 | 2.7152910 | 45  | 6 | 2000-2007 | 0.63 | M-v | 1 | MP | 122827 2006 SV <sub>50</sub>  |
| 2006 SY <sub>50</sub>  | 15.7 | 0.15 | 20071027 | 58.08845  | 81.89775  | 298.04647 | 7.70017  | 0.1546917 | 3.0640395 | 43  | 4 | 2001-2007 | 0.57 | M-v | 1 | MP | 128911 2006 SY <sub>50</sub>  |
| 2006 SW <sub>53</sub>  | 15.9 | 0.15 | 20071027 | 73.70330  | 122.05749 | 230.10207 | 15.75136 | 0.3156073 | 3.0996146 | 34  | 3 | 2001-2006 | 0.52 | M-v | 3 | MP | 114312 2006 SW <sub>53</sub>  |
| 2006 SV <sub>54</sub>  | 15.8 | 0.15 | 20071027 | 82.26038  | 241.00456 | 111.78861 | 4.84244  | 0.1825500 | 3.1503727 | 42  | 4 | 1995-2007 | 0.37 | M-v | 2 | MP | 114788 2006 SV <sub>54</sub>  |
| 2006 SY <sub>54</sub>  | 15.3 | 0.15 | 20071027 | 62.17817  | 256.41048 | 125.35366 | 8.36178  | 0.1891165 | 3.1900237 | 35  | 4 | 2000-2006 | 0.51 | M-v | 1 | MP | 114313 2006 SY <sub>54</sub>  |
| 2006 SG <sub>57</sub>  | 15.4 | 0.15 | 20071027 | 258.42600 | 204.91816 | 339.21512 | 11.41058 | 0.0171625 | 3.0337124 | 49  | 5 | 1995-2007 | 0.49 | M-v | 1 | MP | 122827 2006 SG <sub>57</sub>  |
| 2006 SZ <sub>57</sub>  | 14.6 | 0.15 | 20071027 | 42.91274  | 281.81844 | 129.04512 | 16.74333 | 0.2446954 | 3.1493624 | 71  | 6 | 2000-2007 | 0.39 | M-v | 0 | MP | 128911 2006 SZ <sub>57</sub>  |
| 2006 SE <sub>59</sub>  | 15.0 | 0.15 | 20071027 | 334.80769 | 149.61201 | 315.91001 | 11.84911 | 0.1030713 | 3.2280153 | 42  | 4 | 1997-2007 | 0.59 | M-v | 1 | MP | 126196 2006 SE <sub>59</sub>  |
| 2006 SD <sub>63</sub>  | 15.2 | 0.15 | 20071027 | 77.42629  | 203.19994 | 164.62780 | 5.18521  | 0.1119938 | 3.1771632 | 64  | 6 | 1997-2007 | 0.44 | M-v | 0 | MP | 122827 2006 SD <sub>63</sub>  |
| 2006 SK <sub>63</sub>  | 15.9 | 0.15 | 20071027 | 171.41825 | 151.27995 | 134.03762 | 7.19053  | 0.0172624 | 2.7661905 | 52  | 6 | 1999-2007 | 0.42 | M-v | 0 | MP | 114789 2006 SK <sub>63</sub>  |
| 2006 SF <sub>64</sub>  | 15.9 | 0.15 | 20071027 | 88.75213  | 25.63685  | 0.14794   | 7.22699  | 0.2135023 | 2.6089534 | 140 | 4 | 2002-2007 | 0.45 | M-v | 2 | MP | 120843 2006 SF <sub>64</sub>  |
| 2006 SF <sub>65</sub>  | 16.1 | 0.15 | 20071027 | 163.19147 | 140.81177 | 114.99758 | 0.86941  | 0.1288590 | 3.1491525 | 54  | 5 | 1999-2007 | 0.37 | M-v | 0 | MP | 122827 2006 SF <sub>65</sub>  |
| 2006 SA <sub>66</sub>  | 16.0 | 0.15 | 20071027 | 80.18634  | 78.13330  | 246.28313 | 6.08346  | 0.1379268 | 3.1737700 | 46  | 4 | 2001-2007 | 0.31 | M-v | 0 | MP | 128284 2006 SA <sub>66</sub>  |
| 2006 SA <sub>67</sub>  | 16.0 | 0.15 | 20071027 | 324.67055 | 317.34094 | 169.08400 | 1.08221  | 0.1593647 | 3.2032035 | 42  | 3 | 2003-2007 | 0.40 | M-v | 3 | MP | 116350 2006 SA <sub>67</sub>  |
| 2006 SL <sub>69</sub>  | 16.5 | 0.15 | 20071027 | 100.27885 | 182.01458 | 162.59380 | 3.02521  | 0.0324668 | 2.8348060 | 57  | 5 | 1994-2007 | 0.41 | M-v | 1 | MP | 114789 2006 SL <sub>69</sub>  |
| 2006 SQ <sub>72</sub>  | 15.4 | 0.15 | 20071027 | 72.98520  | 304.61266 | 51.14988  | 4.24551  | 0.1297190 | 3.9430584 | 40  | 4 | 1998-2007 | 0.35 | M-v | 0 | MP | 114789 2006 SQ <sub>72</sub>  |
| 2006 SM <sub>75</sub>  | 16.0 | 0.15 | 20071027 | 349.77518 | 94.35018  | 34.77215  | 14.04374 | 0.2106074 | 3.0578019 | 42  | 4 | 2001-2007 | 0.43 | M-v | 1 | MP | 124500 2006 SM <sub>75</sub>  |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|----|-------------------------------|
| 2006 SU <sub>77</sub>  | 15.8 | 0.15 | 20071027 | 76.68275  | 150.81540 | 221.72746 | 4.11013  | 0.0592956 | 3.0695048 | 65 | 5 | 2001-2007 | 0.49 | M-v | 0 | MP | 110022 2006 SU <sub>77</sub>  |
| 2006 SW <sub>77</sub>  | 15.9 | 0.15 | 20071027 | 308.54481 | 65.10976  | 76.23140  | 7.16614  | 0.0109600 | 3.0389364 | 45 | 4 | 2003-2007 | 0.32 | M-v | 0 | MP | 114789 2006 SW <sub>77</sub>  |
| 2006 SS <sub>78</sub>  | 15.5 | 0.15 | 20071027 | 335.63279 | 204.99423 | 273.26582 | 10.42106 | 0.0008777 | 2.6991488 | 53 | 5 | 2001-2007 | 0.56 | M-v | 1 | MP | 128911 2006 SS <sub>78</sub>  |
| 2006 ST <sub>79</sub>  | 15.0 | 0.15 | 20071027 | 86.50169  | 75.73857  | 278.90460 | 15.06970 | 0.1266168 | 3.1106797 | 45 | 3 | 2004-2007 | 0.50 | M-v | 2 | MP | 128911 2006 ST <sub>79</sub>  |
| 2006 ST <sub>87</sub>  | 16.5 | 0.15 | 20071027 | 228.33644 | 208.85922 | 27.65174  | 4.56736  | 0.1320242 | 2.5460813 | 46 | 4 | 1998-2007 | 0.34 | M-v | 1 | MP | 128912 2006 ST <sub>87</sub>  |
| 2006 SN <sub>89</sub>  | 15.2 | 0.15 | 20071027 | 268.30537 | 169.46456 | 17.75715  | 11.10528 | 0.1080684 | 3.1873928 | 59 | 7 | 1992-2007 | 0.39 | M-v | 1 | MP | 122827 2006 SN <sub>89</sub>  |
| 2006 SX <sub>90</sub>  | 17.0 | 0.15 | 20071027 | 73.57425  | 68.45941  | 330.45721 | 1.02373  | 0.0853478 | 2.6892624 | 41 | 4 | 1999-2007 | 0.31 | M-v | 1 | MP | 110030 2006 SX <sub>90</sub>  |
| 2006 SB <sub>93</sub>  | 16.4 | 0.15 | 20071027 | 272.10295 | 183.33314 | 5.25223   | 0.97441  | 0.0251036 | 3.0164296 | 34 | 6 | 1998-2007 | 0.26 | M-v | 0 | MP | 110033 2006 SB <sub>93</sub>  |
| 2006 SQ <sub>98</sub>  | 15.1 | 0.15 | 20071027 | 136.19112 | 72.39383  | 212.75169 | 3.27868  | 0.1046895 | 3.9658478 | 59 | 5 | 2002-2007 | 0.34 | M-v | 0 | MP | 110039 2006 SQ <sub>98</sub>  |
| 2006 SW <sub>101</sub> | 16.1 | 0.15 | 20071027 | 282.90643 | 22.50317  | 133.52716 | 0.44948  | 0.1184370 | 3.2095531 | 40 | 5 | 2000-2007 | 0.36 | M-v | 1 | MP | 114790 2006 SW <sub>101</sub> |
| 2006 SM <sub>104</sub> | 17.3 | 0.15 | 20071027 | 164.87901 | 119.08172 | 174.59775 | 3.00708  | 0.0345909 | 2.5933652 | 42 | 4 | 2000-2007 | 0.28 | M-v | 2 | MP | 115938 2006 SM <sub>104</sub> |
| 2006 SV <sub>104</sub> | 16.8 | 0.15 | 20071027 | 337.21303 | 313.35239 | 165.05785 | 1.03079  | 0.0804138 | 2.9654261 | 50 | 6 | 2001-2007 | 0.28 | M-v | 0 | MP | 128912 2006 SV <sub>104</sub> |
| 2006 SP <sub>108</sub> | 16.4 | 0.15 | 20071027 | 234.66419 | 28.29749  | 202.42875 | 3.34096  | 0.1029364 | 2.5777539 | 39 | 3 | 2004-2007 | 0.38 | M-v | 3 | MP | 114318 2006 SP <sub>108</sub> |
| 2006 SO <sub>111</sub> | 14.5 | 0.15 | 20071027 | 91.92174  | 54.54875  | 292.19266 | 9.87236  | 0.0788749 | 3.1236930 | 35 | 3 | 2000-2007 | 0.41 | M-v | 4 | MP | 110049 2006 SO <sub>111</sub> |
| 2006 SF <sub>112</sub> | 16.5 | 0.15 | 20071027 | 105.49552 | 19.90150  | 8.82012   | 11.61655 | 0.2551487 | 2.3539016 | 73 | 3 | 1999-2007 | 0.53 | M-v | 2 | MP | 114318 2006 SF <sub>112</sub> |
| 2006 SH <sub>115</sub> | 16.4 | 0.15 | 20071027 | 47.38408  | 6.06894   | 29.67922  | 1.18897  | 0.0832752 | 3.1587900 | 44 | 5 | 1995-2007 | 0.41 | M-v | 1 | MP | 110050 2006 SH <sub>115</sub> |
| 2006 SW <sub>115</sub> | 14.8 | 0.15 | 20071027 | 66.65057  | 270.59508 | 90.69222  | 11.37327 | 0.1223539 | 3.4774822 | 27 | 5 | 1997-2007 | 0.65 | M-v | 1 | MP | 126199 2006 SW <sub>115</sub> |
| 2006 SZ <sub>119</sub> | 15.9 | 0.15 | 20071027 | 53.53910  | 302.82700 | 100.03623 | 6.48758  | 0.0381902 | 2.8007566 | 38 | 3 | 2004-2007 | 0.45 | M-v | 2 | MP | 128285 2006 SZ <sub>119</sub> |
| 2006 SF <sub>120</sub> | 16.8 | 0.15 | 20071027 | 158.99381 | 172.66814 | 138.81625 | 6.41857  | 0.2133184 | 2.2037256 | 68 | 5 | 1993-2007 | 0.53 | M-v | 2 | MP | 128912 2006 SF <sub>120</sub> |
| 2006 SN <sub>120</sub> | 15.2 | 0.15 | 20071027 | 48.57051  | 324.57107 | 73.48003  | 10.22231 | 0.0894890 | 3.1733119 | 45 | 3 | 2001-2007 | 0.62 | M-v | 3 | MP | 128912 2006 SN <sub>120</sub> |
| 2006 SK <sub>122</sub> | 15.5 | 0.15 | 20071027 | 145.72308 | 11.24733  | 304.15082 | 13.00397 | 0.1736610 | 2.5589543 | 70 | 5 | 2001-2007 | 0.49 | M-v | 1 | MP | 128912 2006 SK <sub>122</sub> |
| 2006 SE <sub>124</sub> | 16.4 | 0.15 | 20071027 | 92.20031  | 279.52785 | 78.30749  | 7.41242  | 0.0594071 | 2.7139907 | 42 | 6 | 2000-2007 | 0.50 | M-v | 1 | MP | 128912 2006 SE <sub>124</sub> |
| 2006 SR <sub>126</sub> | 15.7 | 0.15 | 20071027 | 165.84492 | 201.04006 | 81.87611  | 10.72428 | 0.2338439 | 2.4469312 | 66 | 4 | 2002-2007 | 0.51 | M-v | 1 | MP | 126772 2006 SR <sub>126</sub> |
| 2006 SX <sub>126</sub> | 15.5 | 0.15 | 20071027 | 91.37296  | 225.46054 | 123.74877 | 4.72159  | 0.1514787 | 2.9989373 | 47 | 5 | 2001-2007 | 0.52 | M-v | 1 | MP | 114791 2006 SX <sub>126</sub> |
| 2006 ST <sub>127</sub> | 15.7 | 0.15 | 20071027 | 43.07777  | 293.14509 | 127.37501 | 12.24136 | 0.2127440 | 3.0076906 | 46 | 6 | 2000-2007 | 0.47 | M-v | 1 | MP | 128912 2006 ST <sub>127</sub> |
| 2006 SA <sub>128</sub> | 16.6 | 0.15 | 20071027 | 142.12265 | 86.71777  | 213.25782 | 2.05480  | 0.0905903 | 2.6518744 | 36 | 5 | 1997-2007 | 0.46 | M-v | 0 | MP | 114321 2006 SA <sub>128</sub> |
| 2006 SD <sub>128</sub> | 16.1 | 0.15 | 20071027 | 111.78776 | 107.87624 | 227.23193 | 2.01202  | 0.1185532 | 2.7742701 | 52 | 4 | 1997-2007 | 0.36 | M-v | 1 | MP | 122828 2006 SD <sub>128</sub> |
| 2006 SU <sub>129</sub> | 16.0 | 0.15 | 20071027 | 84.57800  | 116.01249 | 226.78639 | 4.47759  | 0.1507398 | 3.2038517 | 41 | 5 | 1960-2007 | 0.46 | M-v | 1 | MP | 112931 2006 SU <sub>129</sub> |
| 2006 SE <sub>132</sub> | 15.6 | 0.15 | 20071027 | 94.07322  | 80.33122  | 276.62080 | 7.58400  | 0.1123183 | 2.7986791 | 67 | 7 | 1994-2007 | 0.46 | M-v | 1 | MP | 128912 2006 SE <sub>132</sub> |
| 2006 SD <sub>134</sub> | 15.7 | 0.15 | 20071027 | 28.17027  | 38.17578  | 12.49033  | 11.66557 | 0.0802397 | 3.2071444 | 62 | 3 | 2001-2007 | 0.45 | M-v | 1 | MP | 112931 2006 SD <sub>134</sub> |
| 2006 SP <sub>134</sub> | 16.9 | 0.15 | 20071027 | 229.23240 | 192.25719 | 16.70911  | 13.03938 | 0.7354411 | 2.0520624 | 58 | 3 | 2003-2007 | 0.34 | M-v | 3 | MP | 128912 2006 SP <sub>134</sub> |
| 2006 SC <sub>135</sub> | 15.3 | 0.15 | 20071027 | 310.93269 | 198.69223 | 295.84254 | 7.92995  | 0.0318253 | 3.1179650 | 31 | 4 | 2004-2007 | 0.44 | M-v | 1 | MP | 110070 2006 SC <sub>135</sub> |
| 2006 SP <sub>135</sub> | 15.1 | 0.15 | 20071027 | 59.22851  | 87.13173  | 277.89916 | 7.37513  | 0.0905355 | 3.3432040 | 45 | 4 | 2000-2007 | 0.53 | M-v | 2 | MP | 110071 2006 SP <sub>135</sub> |
| 2006 SR <sub>142</sub> | 17.2 | 0.15 | 20071027 | 164.07806 | 169.91680 | 111.94823 | 2.28748  | 0.1721018 | 2.3822830 | 45 | 5 | 1998-2007 | 0.59 | M-v | 1 | MP | 110075 2006 SR <sub>142</sub> |
| 2006 SQ <sub>146</sub> | 17.2 | 0.15 | 20071027 | 145.64821 | 335.59484 | 329.24206 | 0.80519  | 0.0500009 | 2.7898212 | 28 | 5 | 2001-2007 | 0.31 | M-v | 1 | MP | 110078 2006 SQ <sub>146</sub> |
| 2006 SO <sub>149</sub> | 16.8 | 0.15 | 20071027 | 210.44089 | 3.49653   | 242.38398 | 1.79482  | 0.1599166 | 2.6218079 | 47 | 5 | 2001-2007 | 0.42 | M-v | 0 | MP | 110079 2006 SO <sub>149</sub> |
| 2006 SO <sub>160</sub> | 16.0 | 0.15 | 20071027 | 37.18720  | 35.62789  | 32.67394  | 13.44216 | 0.1165387 | 3.0189439 | 51 | 3 | 2001-2006 | 0.35 | M-v | 2 | MP | 114323 2006 SO <sub>160</sub> |
| 2006 SK <sub>163</sub> | 16.3 | 0.15 | 20071027 | 35.90114  | 17.55960  | 52.23900  | 2.23350  | 0.1848012 | 3.1859660 | 44 | 3 | 2000-2007 | 0.34 | M-v | 2 | MP | 114324 2006 SK <sub>163</sub> |
| 2006 SL <sub>164</sub> | 15.7 | 0.15 | 20071027 | 9.11891   | 149.63481 | 292.96268 | 12.41908 | 0.1476927 | 2.6760817 | 32 | 3 | 2002-2007 | 0.40 | M-v | 3 | MP | 110089 2006 SL <sub>164</sub> |
| 2006 SW <sub>166</sub> | 16.2 | 0.15 | 20071027 | 152.26313 | 353.55680 | 300.69755 | 2.73440  | 0.0780356 | 2.6675830 | 47 | 5 | 2000-2007 | 0.42 | M-v | 1 | MP | 126772 2006 SW <sub>166</sub> |
| 2006 SV <sub>167</sub> | 15.0 | 0.15 | 20071027 | 63.39272  | 60.78538  | 284.71820 | 1.96522  | 0.1573348 | 3.9322758 | 50 | 5 | 1999-2007 | 0.25 | M-v | 0 | MP | 128912 2006 SV <sub>167</sub> |
| 2006 SC <sub>168</sub> | 16.0 | 0.15 | 20071027 | 301.70733 | 172.32166 | 330.78237 | 4.51260  | 0.1006739 | 3.0984593 | 29 | 4 | 2000-2007 | 0.44 | M-v | 3 | MP | 128912 2006 SC <sub>168</sub> |
| 2006 SK <sub>169</sub> | 16.3 | 0.15 | 20071027 | 40.77708  | 101.72755 | 310.85235 | 3.29799  | 0.0724715 | 2.7952355 | 35 | 3 | 2004-2007 | 0.33 | M-v | 2 | MP | 121642 2006 SK <sub>169</sub> |
| 2006 SZ <sub>173</sub> | 16.4 | 0.15 | 20071027 | 90.39459  | 132.83019 | 211.53859 | 1.01327  | 0.0801807 | 2.6973386 | 53 | 7 | 1994-2007 | 0.38 | M-v | 0 | MP | 110093 2006 SZ <sub>173</sub> |
| 2006 SC <sub>189</sub> | 16.0 | 0.15 | 20071027 | 247.97098 | 70.44278  | 119.55433 | 3.36715  | 0.0542797 | 3.1812510 | 42 | 6 | 1995-2007 | 0.43 | M-v | 0 | MP | 114793 2006 SC <sub>189</sub> |
| 2006 SO <sub>193</sub> | 15.8 | 0.15 | 20071027 | 20.24594  | 348.01072 | 78.77220  | 6.36613  | 0.0410536 | 2.7219402 | 51 | 5 | 2002-2007 | 0.50 | M-v | 0 | MP | 128912 2006 SO <sub>193</sub> |
| 2006 SN <sub>200</sub> | 16.4 | 0.15 | 20071027 | 127.94029 | 69.13063  | 255.29140 | 0.91495  | 0.0658343 | 2.9507610 | 57 | 6 | 1996-2007 | 0.29 | M-v | 0 | MP | 122830 2006 SN <sub>200</sub> |
| 2006 SY <sub>201</sub> | 16.4 | 0.15 | 20071027 | 163.56760 | 277.99960 | 18.03512  | 4.56263  | 0.0463498 | 2.7896233 | 67 | 5 | 1992-2007 | 0.42 | M-v | 1 | MP | 128912 2006 SY <sub>201</sub> |
| 2006 SU <sub>202</sub> | 16.9 | 0.15 | 20071027 | 243.46052 | 252.73249 | 327.90917 | 3.42094  | 0.0399615 | 2.3710348 | 48 | 5 | 1995-2007 | 0.37 | M-v | 1 | MP | 122830 2006 SU <sub>202</sub> |
| 2006 SF <sub>206</sub> | 16.3 | 0.15 | 20071027 | 46.47314  | 29.35154  | 18.48709  | 2.62145  | 0.0529862 | 3.0235089 | 47 | 4 | 1998-2007 | 0.39 | M-v | 1 | MP | 122830 2006 SF <sub>206</sub> |
| 2006 SN <sub>208</sub> | 15.0 | 0.15 | 20071027 | 32.43089  | 34.18819  | 18.86826  | 11.05218 | 0.0911382 | 3.1061831 | 80 | 3 | 2001-2007 | 0.46 | M-v | 1 | MP | 122830 2006 SN <sub>208</sub> |
| 2006 SM <sub>211</sub> | 15.6 | 0.15 | 20071027 | 108.31301 | 203.48725 | 135.35686 | 8.68555  | 0.1063530 | 3.0451192 | 34 | 4 | 1998-2007 | 0.57 | M-v | 2 | MP | 122559 2006 SM <sub>211</sub> |
| 2006 SO <sub>212</sub> | 16.4 | 0.15 | 20071027 | 156.80376 | 8.43359   | 303.27779 | 5.09195  | 0.0166856 | 2.7679897 | 38 | 4 | 1997-2007 | 0.39 | M-v | 1 | MP | 126772 2006 SO <sub>212</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 SD <sub>217</sub> | 16.1 | 0.15 | 20071027 | 107.46066 | 207.84754 | 121.09127 | 3.29369  | 0.1639717 | 2.9893022 | 62 | 5 | 1999-2007 | 0.44 | M-v | 1 | MPC | 122830 2006 SD <sub>217</sub> |
| 2006 ST <sub>218</sub> | 16.3 | 0.15 | 20071027 | 197.34015 | 311.41805 | 343.49963 | 6.41670  | 0.1083053 | 2.2191750 | 61 | 4 | 1998-2007 | 0.53 | M-v | 1 | MPC | 110118 2006 ST <sub>218</sub> |
| 2006 SU <sub>219</sub> | 15.8 | 0.15 | 20071027 | 200.01466 | 73.86868  | 160.62130 | 9.82149  | 0.0358467 | 3.0698681 | 39 | 3 | 2004-2007 | 0.49 | M-v | 3 | MPC | 128912 2006 SU <sub>219</sub> |
| 2006 SA <sub>224</sub> | 17.3 | 0.15 | 20071027 | 340.84460 | 338.77474 | 188.65144 | 1.93306  | 0.0882592 | 2.3055820 | 41 | 6 | 1994-2007 | 0.48 | M-v | 1 | MPC | 110121 2006 SA <sub>224</sub> |
| 2006 SP <sub>225</sub> | 16.2 | 0.15 | 20071027 | 195.10172 | 74.48832  | 142.67528 | 2.63293  | 0.0359283 | 3.0260723 | 32 | 4 | 2004-2007 | 0.36 | M-v | 0 | MPC | 128912 2006 SP <sub>225</sub> |
| 2006 SM <sub>228</sub> | 15.8 | 0.15 | 20071027 | 124.03346 | 29.71058  | 296.85863 | 4.10420  | 0.0221353 | 2.7796638 | 40 | 5 | 2001-2007 | 0.43 | M-v | 1 | MPC | 126772 2006 SM <sub>228</sub> |
| 2006 SS <sub>229</sub> | 16.0 | 0.15 | 20071027 | 229.27570 | 357.68726 | 224.94595 | 5.82987  | 0.0090776 | 2.7961557 | 24 | 3 | 2001-2006 | 0.40 | M-v | 3 | MPC | 114329 2006 SS <sub>229</sub> |
| 2006 SE <sub>238</sub> | 16.7 | 0.15 | 20071027 | 2.30008   | 301.21770 | 147.46856 | 2.26774  | 0.1016387 | 3.1183267 | 52 | 5 | 1995-2007 | 0.25 | M-v | 0 | MPC | 114794 2006 SE <sub>238</sub> |
| 2006 SN <sub>239</sub> | 16.1 | 0.15 | 20071027 | 78.08970  | 212.90147 | 144.99551 | 1.93262  | 0.1568250 | 3.1374976 | 54 | 5 | 2000-2007 | 0.35 | M-v | 0 | MPC | 122830 2006 SN <sub>239</sub> |
| 2006 SN <sub>241</sub> | 16.1 | 0.15 | 20071027 | 19.73726  | 281.52549 | 141.37762 | 1.97242  | 0.0881341 | 3.0098475 | 38 | 5 | 2001-2007 | 0.35 | M-v | 0 | MPC | 114794 2006 SN <sub>241</sub> |
| 2006 SS <sub>243</sub> | 16.2 | 0.15 | 20071027 | 294.70189 | 127.12250 | 34.01589  | 5.81535  | 0.0074982 | 2.7122212 | 58 | 5 | 2000-2007 | 0.34 | M-v | 1 | MPC | 116353 2006 SS <sub>243</sub> |
| 2006 ST <sub>244</sub> | 16.4 | 0.15 | 20071027 | 58.41697  | 263.24010 | 123.24935 | 3.00310  | 0.0445412 | 3.0203983 | 39 | 4 | 1996-2007 | 0.31 | M-v | 1 | MPC | 128912 2006 ST <sub>244</sub> |
| 2006 SV <sub>247</sub> | 17.0 | 0.15 | 20071027 | 6.30846   | 51.80044  | 27.87973  | 2.95824  | 0.0915298 | 3.0601876 | 39 | 5 | 2001-2007 | 0.31 | M-v | 0 | MPC | 121644 2006 SV <sub>247</sub> |
| 2006 ST <sub>256</sub> | 16.4 | 0.15 | 20071027 | 223.89073 | 305.49933 | 289.76307 | 2.38624  | 0.0375086 | 2.7952967 | 42 | 5 | 1994-2007 | 0.42 | M-v | 0 | MPC | 128912 2006 ST <sub>256</sub> |
| 2006 SL <sub>257</sub> | 15.1 | 0.15 | 20071027 | 77.68232  | 122.87520 | 220.83798 | 3.73092  | 0.1566427 | 3.9152957 | 58 | 3 | 2005-2007 | 0.31 | M-v | 2 | MPC | 114794 2006 SL <sub>257</sub> |
| 2006 SK <sub>267</sub> | 15.9 | 0.15 | 20071027 | 40.85456  | 117.38704 | 307.42645 | 3.83898  | 0.1516025 | 3.1547961 | 44 | 5 | 1997-2007 | 0.29 | M-v | 0 | MPC | 128912 2006 SK <sub>267</sub> |
| 2006 SS <sub>280</sub> | 15.7 | 0.15 | 20071027 | 128.54131 | 209.86245 | 112.72515 | 4.89923  | 0.2287761 | 2.7120935 | 55 | 4 | 1998-2007 | 0.59 | M-v | 1 | MPC | 110145 2006 SS <sub>280</sub> |
| 2006 SJ <sub>281</sub> | 15.4 | 0.15 | 20071027 | 65.39923  | 295.05806 | 66.66042  | 26.42319 | 0.3862966 | 3.2822730 | 74 | 5 | 2000-2007 | 0.42 | M-v | 0 | MPC | 121868 2006 SJ <sub>281</sub> |
| 2006 SR <sub>282</sub> | 16.5 | 0.15 | 20071027 | 64.33031  | 347.03238 | 60.22173  | 5.06787  | 0.1553797 | 2.6911068 | 38 | 4 | 2002-2007 | 0.42 | M-v | 1 | MPC | 116353 2006 SR <sub>282</sub> |
| 2006 SF <sub>285</sub> | 16.5 | 0.15 | 20071027 | 135.63329 | 354.46373 | 326.12169 | 0.88572  | 0.1252197 | 2.7418271 | 63 | 5 | 1997-2007 | 0.35 | M-v | 1 | MPC | 122831 2006 SF <sub>285</sub> |
| 2006 SU <sub>286</sub> | 16.2 | 0.15 | 20071027 | 26.57995  | 140.45116 | 317.88992 | 8.39029  | 0.1448585 | 2.6800429 | 39 | 3 | 1998-2007 | 0.55 | M-v | 2 | MPC | 110152 2006 SU <sub>286</sub> |
| 2006 SY <sub>291</sub> | 15.5 | 0.15 | 20071027 | 60.14604  | 317.75000 | 81.10909  | 28.57637 | 0.1324574 | 3.0613046 | 35 | 3 | 2001-2007 | 0.54 | M-v | 3 | MPC | 128286 2006 SY <sub>291</sub> |
| 2006 SP <sub>294</sub> | 16.3 | 0.15 | 20071027 | 302.69037 | 222.58147 | 290.09486 | 1.87125  | 0.0197239 | 2.7295203 | 44 | 5 | 2000-2007 | 0.43 | M-v | 1 | MPC | 128913 2006 SP <sub>294</sub> |
| 2006 SH <sub>298</sub> | 16.5 | 0.15 | 20071027 | 12.56330  | 268.27392 | 186.66657 | 1.34937  | 0.1749968 | 3.1978190 | 29 | 4 | 1997-2007 | 0.31 | M-v | 2 | MPC | 114338 2006 SH <sub>298</sub> |
| 2006 SD <sub>300</sub> | 15.5 | 0.15 | 20071027 | 50.03568  | 269.92153 | 121.20090 | 8.44867  | 0.0588038 | 3.0848306 | 37 | 6 | 1993-2007 | 0.54 | M-v | 1 | MPC | 112456 2006 SD <sub>300</sub> |
| 2006 SW <sub>300</sub> | 15.2 | 0.15 | 20071027 | 132.60359 | 239.43583 | 76.92416  | 13.59920 | 0.1116261 | 2.7884720 | 64 | 6 | 2000-2007 | 0.48 | M-v | 1 | MPC | 122832 2006 SW <sub>300</sub> |
| 2006 SK <sub>303</sub> | 16.5 | 0.15 | 20071027 | 39.65491  | 169.54491 | 243.47930 | 3.51442  | 0.0661592 | 2.7713209 | 38 | 6 | 1992-2007 | 0.45 | M-v | 0 | MPC | 110158 2006 SK <sub>303</sub> |
| 2006 SL <sub>308</sub> | 15.4 | 0.15 | 20071027 | 180.19212 | 242.68281 | 358.86908 | 8.62299  | 0.3108099 | 3.0250960 | 23 | 3 | 2000-2006 | 0.51 | M-v | 3 | MPC | 114339 2006 SL <sub>308</sub> |
| 2006 SP <sub>319</sub> | 16.8 | 0.15 | 20071027 | 153.44410 | 172.73503 | 123.80361 | 3.81198  | 0.1933622 | 2.5706066 | 48 | 5 | 1994-2007 | 0.43 | M-v | 0 | MPC | 122832 2006 SP <sub>319</sub> |
| 2006 SY <sub>322</sub> | 16.6 | 0.15 | 20071027 | 242.47526 | 146.76875 | 68.49492  | 3.77982  | 0.0535114 | 2.7801196 | 22 | 3 | 2004-2007 | 0.29 | M-v | 3 | MPC | 110166 2006 SY <sub>322</sub> |
| 2006 SS <sub>324</sub> | 16.5 | 0.15 | 20071027 | 346.48282 | 315.86036 | 160.13828 | 3.86058  | 0.1511830 | 3.1537513 | 24 | 5 | 1995-2007 | 0.31 | M-v | 1 | MPC | 110167 2006 SS <sub>324</sub> |
| 2006 SA <sub>329</sub> | 16.6 | 0.15 | 20071027 | 206.76722 | 106.71050 | 155.34573 | 2.91315  | 0.0812992 | 2.5418945 | 38 | 6 | 1996-2007 | 0.30 | M-v | 0 | MPC | 122832 2006 SA <sub>329</sub> |
| 2006 SZ <sub>335</sub> | 16.7 | 0.15 | 20071027 | 21.73866  | 23.65275  | 77.64562  | 5.37227  | 0.1411603 | 2.5990645 | 53 | 5 | 2000-2007 | 0.36 | M-v | 0 | MPC | 116354 2006 SZ <sub>335</sub> |
| 2006 SM <sub>338</sub> | 15.7 | 0.15 | 20071027 | 200.47124 | 206.32567 | 41.53126  | 9.44599  | 0.0875242 | 2.8161514 | 44 | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 122832 2006 SM <sub>338</sub> |
| 2006 SK <sub>339</sub> | 16.7 | 0.15 | 20071027 | 86.19520  | 223.47846 | 144.69205 | 4.41701  | 0.1071920 | 2.8037257 | 35 | 4 | 2000-2007 | 0.28 | M-v | 2 | MPC | 126206 2006 SK <sub>339</sub> |
| 2006 SE <sub>341</sub> | 16.1 | 0.15 | 20071027 | 144.07164 | 250.69607 | 56.18564  | 5.01811  | 0.0494788 | 2.7707006 | 81 | 5 | 1995-2007 | 0.38 | M-v | 1 | MPC | 128913 2006 SE <sub>341</sub> |
| 2006 SK <sub>342</sub> | 16.5 | 0.15 | 20071027 | 299.57815 | 269.08229 | 278.72772 | 3.47565  | 0.1235900 | 2.4435865 | 46 | 3 | 2003-2007 | 0.38 | M-v | 2 | MPC | 128913 2006 SK <sub>342</sub> |
| 2006 SN <sub>350</sub> | 15.0 | 0.15 | 20071027 | 88.96921  | 319.58734 | 8.87560   | 7.37777  | 0.0774790 | 3.1915137 | 58 | 5 | 2000-2007 | 0.42 | M-v | 1 | MPC | 122832 2006 SN <sub>350</sub> |
| 2006 SZ <sub>352</sub> | 15.8 | 0.15 | 20071027 | 129.68386 | 245.88510 | 58.30021  | 5.80189  | 0.1317029 | 3.2055210 | 35 | 4 | 1995-2007 | 0.38 | M-v | 0 | MPC | 112936 2006 SZ <sub>352</sub> |
| 2006 SE <sub>367</sub> | 15.8 | 0.15 | 20071027 | 60.77904  | 102.70797 | 330.04834 | 15.04040 | 0.1459507 | 2.5616458 | 44 | 4 | 2002-2007 | 0.48 | M-v | 2 | MPC | 122833 2006 SE <sub>367</sub> |
| 2006 SB <sub>372</sub> | 17.0 | 0.15 | 20071027 | 337.13102 | 292.87910 | 201.11590 | 2.35654  | 0.0885814 | 2.5377147 | 32 | 5 | 1992-2007 | 0.38 | M-v | 3 | MPC | 126207 2006 SB <sub>372</sub> |
| 2006 SE <sub>373</sub> | 16.5 | 0.15 | 20071027 | 160.73617 | 197.86745 | 73.52822  | 2.81791  | 0.0446590 | 3.0968431 | 29 | 5 | 1993-2007 | 0.20 | M-v | 0 | MPC | 122560 2006 SE <sub>373</sub> |
| 2006 SH <sub>373</sub> | 16.7 | 0.15 | 20071027 | 76.33040  | 235.70435 | 132.36249 | 3.29771  | 0.0884440 | 2.9200348 | 28 | 4 | 1999-2007 | 0.30 | M-v | 1 | MPC | 126207 2006 SH <sub>373</sub> |
| 2006 SU <sub>373</sub> | 15.5 | 0.15 | 20071027 | 179.45570 | 142.15503 | 99.56851  | 4.49642  | 0.1830260 | 3.1991175 | 44 | 5 | 1995-2007 | 0.37 | M-v | 0 | MPC | 128913 2006 SU <sub>373</sub> |
| 2006 SX <sub>376</sub> | 15.9 | 0.15 | 20071027 | 217.44962 | 126.53903 | 114.44864 | 8.82785  | 0.1868107 | 2.6015775 | 36 | 5 | 2000-2007 | 0.47 | M-v | 1 | MPC | 122563 2006 SX <sub>376</sub> |
| 2006 SB <sub>378</sub> | 16.9 | 0.15 | 20071027 | 3.30455   | 289.68609 | 160.20675 | 2.08468  | 0.0745530 | 2.8377119 | 37 | 4 | 2001-2007 | 0.26 | M-v | 0 | MPC | 126208 2006 SB <sub>378</sub> |
| 2006 SM <sub>385</sub> | 16.1 | 0.15 | 20071027 | 241.61168 | 131.47943 | 96.15493  | 12.54921 | 0.1128612 | 2.7296567 | 37 | 3 | 2000-2007 | 0.35 | M-v | 3 | MPC | 128913 2006 SM <sub>385</sub> |
| 2006 SZ <sub>386</sub> | 16.1 | 0.15 | 20071027 | 161.74646 | 209.75286 | 59.07023  | 2.58566  | 0.0454445 | 3.1171615 | 24 | 5 | 2001-2007 | 0.17 | M-v | 0 | MPC | 126208 2006 SZ <sub>386</sub> |
| 2006 SF <sub>387</sub> | 16.5 | 0.15 | 20071027 | 122.19794 | 135.42383 | 172.39861 | 9.58737  | 0.1419377 | 3.0543358 | 39 | 4 | 1995-2006 | 0.41 | M-v | 0 | MPC | 124502 2006 SF <sub>387</sub> |
| 2006 SU <sub>388</sub> | 15.7 | 0.15 | 20071027 | 295.73476 | 79.67266  | 93.74828  | 12.29441 | 0.1094795 | 3.0993662 | 51 | 3 | 2003-2007 | 0.25 | M-v | 2 | MPC | 128913 2006 SU <sub>388</sub> |
| 2006 SR <sub>389</sub> | 15.7 | 0.15 | 20071027 | 194.41923 | 186.69777 | 83.17051  | 15.55502 | 0.1544823 | 2.6956266 | 41 | 5 | 2000-2007 | 0.44 | M-v | 1 | MPC | 124502 2006 SR <sub>389</sub> |
| 2006 SZ <sub>390</sub> | 16.2 | 0.15 | 20071027 | 38.77461  | 165.17408 | 262.40038 | 3.71673  | 0.1074032 | 2.7819881 | 32 | 5 | 1999-2007 | 0.28 | M-v | 0 | MPC | 128913 2006 SZ <sub>390</sub> |
| 2006 SC <sub>392</sub> | 16.9 | 0.15 | 20071027 | 353.83311 | 337.62581 | 143.62725 | 2.87014  | 0.0521874 | 2.7682678 | 31 | 5 | 1997-2007 | 0.31 | M-v | 0 | MPC | 128913 2006 SC <sub>392</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 SC <sub>393</sub> | 15.8 | 0.15 | 20071027 | 85.53510  | 88.04983  | 296.82988 | 8.25841  | 0.0959071 | 2.6537743 | 42  | 4 | 1998-2007 | 0.47 | M-v | 2 | MPC | 124112 2006 SC <sub>393</sub> |
| 2006 SA <sub>394</sub> | 16.4 | 0.15 | 20071027 | 175.93102 | 1.79778   | 274.75494 | 5.48661  | 0.2390435 | 2.5693515 | 23  | 4 | 2001-2007 | 0.38 | M-v | 1 | MPC | 124115 2006 SA <sub>394</sub> |
| 2006 TM <sub>4</sub>   | 16.2 | 0.15 | 20071027 | 15.48793  | 98.58699  | 349.30319 | 14.71283 | 0.1226266 | 2.8455041 | 29  | 4 | 2001-2007 | 0.31 | M-v | 1 | MPC | 122840 2006 TM <sub>4</sub>   |
| 2006 TD <sub>9</sub>   | 15.1 | 0.15 | 20071027 | 110.74949 | 355.26671 | 331.56964 | 7.82315  | 0.1081214 | 3.0797097 | 40  | 3 | 2000-2007 | 0.41 | M-v | 3 | MPC | 122840 2006 TD <sub>9</sub>   |
| 2006 TS <sub>9</sub>   | 15.8 | 0.15 | 20071027 | 27.95918  | 121.85938 | 299.75530 | 7.17152  | 0.1029017 | 3.0535850 | 71  | 5 | 1995-2007 | 0.49 | M-v | 0 | MPC | 128913 2006 TS <sub>9</sub>   |
| 2006 TL <sub>12</sub>  | 16.1 | 0.15 | 20071027 | 33.96700  | 44.28294  | 34.41395  | 17.60951 | 0.2787338 | 3.0697438 | 58  | 3 | 2001-2006 | 0.45 | M-v | 2 | MPC | 116355 2006 TL <sub>12</sub>  |
| 2006 TE <sub>13</sub>  | 16.6 | 0.15 | 20071027 | 69.53534  | 192.36613 | 212.34074 | 11.44855 | 0.1631989 | 2.6204531 | 45  | 3 | 2002-2006 | 0.55 | M-v | 3 | MPC | 110200 2006 TE <sub>13</sub>  |
| 2006 TT <sub>13</sub>  | 16.2 | 0.15 | 20071027 | 144.31066 | 175.74722 | 129.83376 | 5.29497  | 0.0905645 | 2.8074250 | 52  | 5 | 1999-2007 | 0.37 | M-v | 1 | MPC | 121870 2006 TT <sub>13</sub>  |
| 2006 TZ <sub>13</sub>  | 15.8 | 0.15 | 20071027 | 64.72920  | 355.55176 | 31.91161  | 8.90625  | 0.1458415 | 3.0845424 | 43  | 3 | 2001-2006 | 0.37 | M-v | 3 | MPC | 114347 2006 TZ <sub>13</sub>  |
| 2006 TJ <sub>16</sub>  | 16.6 | 0.15 | 20071027 | 56.55705  | 217.80204 | 197.10677 | 3.28284  | 0.0910846 | 2.7774854 | 48  | 3 | 2001-2006 | 0.42 | M-v | 3 | MPC | 114348 2006 TJ <sub>16</sub>  |
| 2006 TN <sub>20</sub>  | 14.9 | 0.15 | 20071027 | 209.63522 | 208.20120 | 39.59119  | 4.68599  | 0.0737912 | 3.2236651 | 51  | 4 | 2003-2007 | 0.42 | M-v | 1 | MPC | 114798 2006 TN <sub>20</sub>  |
| 2006 TB <sub>22</sub>  | 15.6 | 0.15 | 20071027 | 123.07354 | 258.69047 | 78.10462  | 4.51081  | 0.0904909 | 3.0664451 | 51  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 116355 2006 TB <sub>22</sub>  |
| 2006 TE <sub>23</sub>  | 16.9 | 0.15 | 20071027 | 111.18386 | 205.30311 | 160.09969 | 2.23536  | 0.1024290 | 2.6568201 | 50  | 5 | 1999-2007 | 0.35 | M-v | 1 | MPC | 112939 2006 TE <sub>23</sub>  |
| 2006 TE <sub>24</sub>  | 15.5 | 0.15 | 20071027 | 136.42267 | 329.97972 | 336.89571 | 2.74274  | 0.1485806 | 2.9967134 | 80  | 6 | 1993-2007 | 0.36 | M-v | 1 | MPC | 122841 2006 TE <sub>24</sub>  |
| 2006 TQ <sub>25</sub>  | 15.5 | 0.15 | 20071027 | 197.87938 | 241.18971 | 16.76457  | 2.13102  | 0.0494306 | 3.1854484 | 64  | 7 | 2000-2007 | 0.39 | M-v | 0 | MPC | 128913 2006 TQ <sub>25</sub>  |
| 2006 TP <sub>28</sub>  | 16.8 | 0.15 | 20071027 | 108.48702 | 318.14278 | 45.70153  | 5.62381  | 0.2340615 | 2.5532359 | 54  | 3 | 2002-2006 | 0.41 | M-v | 2 | MPC | 114350 2006 TP <sub>28</sub>  |
| 2006 TX <sub>29</sub>  | 15.4 | 0.15 | 20071027 | 70.11652  | 166.36212 | 192.23075 | 2.57490  | 0.2253389 | 3.9719349 | 53  | 4 | 2003-2007 | 0.33 | M-v | 0 | MPC | 114798 2006 TX <sub>29</sub>  |
| 2006 TG <sub>36</sub>  | 16.1 | 0.15 | 20071027 | 301.24233 | 335.21078 | 225.87805 | 6.47310  | 0.0609686 | 2.3616612 | 62  | 7 | 1995-2007 | 0.53 | M-v | 1 | MPC | 122842 2006 TG <sub>36</sub>  |
| 2006 TR <sub>41</sub>  | 14.8 | 0.15 | 20071027 | 339.18925 | 72.44039  | 43.62686  | 11.97854 | 0.0570305 | 3.1351729 | 55  | 5 | 2001-2007 | 0.56 | M-v | 1 | MPC | 126211 2006 TR <sub>41</sub>  |
| 2006 TL <sub>43</sub>  | 16.3 | 0.15 | 20071027 | 31.21379  | 284.72734 | 164.09418 | 0.04435  | 0.1499207 | 3.1793830 | 67  | 4 | 2001-2007 | 0.45 | M-v | 1 | MPC | 122842 2006 TL <sub>43</sub>  |
| 2006 TY <sub>48</sub>  | 17.6 | 0.15 | 20071027 | 160.95719 | 278.10257 | 41.75793  | 4.49947  | 0.2413500 | 2.2578867 | 54  | 4 | 1999-2006 | 0.34 | M-v | 1 | MPC | 114356 2006 TY <sub>48</sub>  |
| 2006 TK <sub>50</sub>  | 15.7 | 0.15 | 20071027 | 93.80604  | 232.41758 | 119.95592 | 6.25061  | 0.1912742 | 3.1894709 | 57  | 4 | 2000-2007 | 0.55 | M-v | 1 | MPC | 128913 2006 TK <sub>50</sub>  |
| 2006 TY <sub>51</sub>  | 16.9 | 0.15 | 20071027 | 30.51278  | 296.79127 | 165.10705 | 2.07279  | 0.0298485 | 2.7241234 | 32  | 5 | 1997-2006 | 0.49 | M-v | 1 | MPC | 124502 2006 TY <sub>51</sub>  |
| 2006 TR <sub>61</sub>  | 15.6 | 0.15 | 20071027 | 286.78093 | 263.77751 | 250.59168 | 10.03748 | 0.0370168 | 2.9056794 | 26  | 3 | 2004-2007 | 0.57 | M-v | 3 | MPC | 110259 2006 TR <sub>61</sub>  |
| 2006 TW <sub>61</sub>  | 15.9 | 0.15 | 20071027 | 62.44893  | 333.12819 | 47.78369  | 5.37622  | 0.1284594 | 2.7781376 | 55  | 6 | 2001-2007 | 0.45 | M-v | 1 | MPC | 122843 2006 TW <sub>61</sub>  |
| 2006 TG <sub>62</sub>  | 14.7 | 0.15 | 20071027 | 88.48402  | 287.83375 | 52.22632  | 19.64037 | 0.1370478 | 3.2424466 | 46  | 5 | 2001-2007 | 0.47 | M-v | 0 | MPC | 128914 2006 TG <sub>62</sub>  |
| 2006 TK <sub>66</sub>  | 16.3 | 0.15 | 20071027 | 88.45208  | 260.11914 | 103.34842 | 4.61020  | 0.1050771 | 2.8063374 | 51  | 6 | 1992-2007 | 0.49 | M-v | 1 | MPC | 128914 2006 TK <sub>66</sub>  |
| 2006 TA <sub>71</sub>  | 15.9 | 0.15 | 20071027 | 125.33970 | 268.39492 | 54.45308  | 9.14540  | 0.0818796 | 3.0456918 | 45  | 4 | 1999-2006 | 0.46 | M-v | 0 | MPC | 124503 2006 TA <sub>71</sub>  |
| 2006 TL <sub>71</sub>  | 15.9 | 0.15 | 20071027 | 107.76697 | 71.10584  | 256.64312 | 3.87387  | 0.2024446 | 3.1070765 | 46  | 3 | 2001-2007 | 0.38 | M-v | 3 | MPC | 112485 2006 TL <sub>71</sub>  |
| 2006 TB <sub>73</sub>  | 14.7 | 0.15 | 20071027 | 89.56238  | 128.75895 | 240.24970 | 14.86236 | 0.0634144 | 3.0826419 | 56  | 4 | 2000-2007 | 0.59 | M-v | 1 | MPC | 116356 2006 TB <sub>73</sub>  |
| 2006 TM <sub>76</sub>  | 15.4 | 0.15 | 20071027 | 74.99281  | 95.66393  | 295.41721 | 9.20462  | 0.1914722 | 2.9868123 | 45  | 3 | 2000-2006 | 0.50 | M-v | 3 | MPC | 114361 2006 TM <sub>76</sub>  |
| 2006 TN <sub>77</sub>  | 15.6 | 0.15 | 20071027 | 121.77451 | 23.41952  | 287.40118 | 9.94249  | 0.1361674 | 3.0636823 | 26  | 5 | 1998-2007 | 0.33 | M-v | 1 | MPC | 122844 2006 TN <sub>77</sub>  |
| 2006 TB <sub>83</sub>  | 16.2 | 0.15 | 20071027 | 245.34967 | 290.29021 | 303.82809 | 3.30186  | 0.0504492 | 2.6201044 | 61  | 4 | 2002-2007 | 0.41 | M-v | 1 | MPC | 128914 2006 TB <sub>83</sub>  |
| 2006 TQ <sub>84</sub>  | 16.0 | 0.15 | 20071027 | 190.27915 | 321.84327 | 316.69226 | 3.77035  | 0.1460368 | 2.6418517 | 56  | 5 | 2000-2007 | 0.55 | M-v | 1 | MPC | 122844 2006 TQ <sub>84</sub>  |
| 2006 TP <sub>99</sub>  | 16.7 | 0.15 | 20071027 | 228.73054 | 182.35448 | 59.30808  | 2.46956  | 0.0776092 | 2.6409245 | 49  | 5 | 2000-2007 | 0.46 | M-v | 1 | MPC | 122845 2006 TP <sub>99</sub>  |
| 2006 TH <sub>107</sub> | 17.6 | 0.15 | 20071027 | 98.52664  | 191.88880 | 212.22267 | 6.14619  | 0.1049772 | 2.2908058 | 53  | 3 | 1999-2006 | 0.45 | M-v | 2 | MPC | 112946 2006 TH <sub>107</sub> |
| 2006 TB <sub>109</sub> | 16.5 | 0.15 | 20071027 | 257.16855 | 112.93074 | 110.29716 | 3.40548  | 0.1592932 | 2.6407891 | 36  | 6 | 1994-2007 | 0.59 | M-v | 1 | MPC | 124117 2006 TB <sub>109</sub> |
| 2006 TV <sub>109</sub> | 15.6 | 0.15 | 20071027 | 52.82567  | 313.14496 | 129.21884 | 14.59697 | 0.1348394 | 2.6203506 | 55  | 4 | 2002-2007 | 0.51 | M-v | 1 | MPC | 124120 2006 TV <sub>109</sub> |
| 2006 TK <sub>117</sub> | 15.9 | 0.15 | 20071027 | 190.00837 | 185.45364 | 90.57600  | 10.52086 | 0.0657178 | 2.7276583 | 35  | 4 | 2002-2007 | 0.21 | M-v | 0 | MPC | 128914 2006 TK <sub>117</sub> |
| 2006 TN <sub>120</sub> | 15.4 | 0.15 | 20071027 | 2.29076   | 348.98626 | 118.90390 | 9.48213  | 0.1208056 | 3.1844344 | 49  | 4 | 2002-2007 | 0.26 | M-v | 0 | MPC | 128914 2006 TN <sub>120</sub> |
| 2006 TP <sub>120</sub> | 15.6 | 0.15 | 20071027 | 0.55231   | 340.96493 | 124.45358 | 10.61022 | 0.0439517 | 3.1534581 | 42  | 4 | 2000-2007 | 0.34 | M-v | 0 | MPC | 124127 2006 TP <sub>120</sub> |
| 2006 UD                | 16.0 | 0.15 | 20071027 | 27.08934  | 323.99167 | 100.52874 | 2.79556  | 0.1106044 | 2.9437240 | 64  | 5 | 2001-2007 | 0.46 | M-v | 0 | MPC | 128914 2006 UD                |
| 2006 UJ <sub>3</sub>   | 16.5 | 0.15 | 20071027 | 353.62060 | 268.32558 | 216.86703 | 1.19713  | 0.0248914 | 2.8404861 | 48  | 4 | 1999-2007 | 0.34 | M-v | 1 | MPC | 116357 2006 UJ <sub>3</sub>   |
| 2006 UP <sub>3</sub>   | 16.5 | 0.15 | 20071027 | 305.91416 | 125.72267 | 40.05138  | 2.04580  | 0.1581776 | 3.0392455 | 33  | 3 | 2003-2007 | 0.49 | M-v | 4 | MPC | 126216 2006 UP <sub>3</sub>   |
| 2006 UF <sub>6</sub>   | 15.9 | 0.15 | 20071027 | 117.60499 | 272.55149 | 59.87253  | 6.00365  | 0.1343426 | 3.1248542 | 61  | 6 | 1995-2007 | 0.31 | M-v | 0 | MPC | 128914 2006 UF <sub>6</sub>   |
| 2006 UY <sub>7</sub>   | 17.3 | 0.15 | 20071027 | 122.85746 | 296.35484 | 72.06458  | 2.70557  | 0.2466257 | 2.2992745 | 74  | 3 | 1999-2007 | 0.46 | M-v | 2 | MPC | 116357 2006 UY <sub>7</sub>   |
| 2006 UK <sub>8</sub>   | 15.5 | 0.15 | 20071027 | 123.98668 | 306.10836 | 41.02589  | 2.91599  | 0.2123644 | 2.6490921 | 101 | 4 | 2004-2007 | 0.42 | M-v | 1 | MPC | 122845 2006 UK <sub>8</sub>   |
| 2006 UO <sub>12</sub>  | 16.3 | 0.15 | 20071027 | 64.13202  | 284.22324 | 134.96271 | 2.62792  | 0.0561930 | 2.6833576 | 41  | 5 | 1999-2007 | 0.30 | M-v | 1 | MPC | 121648 2006 UO <sub>12</sub>  |
| 2006 UV <sub>22</sub>  | 15.4 | 0.15 | 20071027 | 127.97788 | 296.59227 | 358.05322 | 8.52400  | 0.0617101 | 3.1217777 | 33  | 4 | 2001-2007 | 0.40 | M-v | 1 | MPC | 121871 2006 UV <sub>22</sub>  |
| 2006 UB <sub>41</sub>  | 15.3 | 0.15 | 20071027 | 170.77494 | 58.92524  | 224.41480 | 0.41538  | 0.1248315 | 3.2556377 | 53  | 7 | 1998-2007 | 0.40 | M-v | 0 | MPC | 124507 2006 UB <sub>41</sub>  |
| 2006 UK <sub>46</sub>  | 14.7 | 0.15 | 20071027 | 145.42758 | 111.20334 | 193.88385 | 3.02372  | 0.0584176 | 3.9566896 | 58  | 6 | 1997-2007 | 0.45 | M-v | 0 | MPC | 122847 2006 UK <sub>46</sub>  |
| 2006 UL <sub>54</sub>  | 14.7 | 0.15 | 20071027 | 70.51487  | 42.94767  | 297.70354 | 5.68084  | 0.3252387 | 3.9584568 | 47  | 3 | 1998-2007 | 0.50 | M-v | 4 | MPC | 110342 2006 UL <sub>54</sub>  |
| 2006 UU <sub>54</sub>  | 16.6 | 0.15 | 20071027 | 171.04274 | 343.73781 | 298.85315 | 4.08262  | 0.2057189 | 2.5608850 | 35  | 6 | 2000-2007 | 0.49 | M-v | 1 | MPC | 114375 2006 UU <sub>54</sub>  |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 UM <sub>56</sub>  | 15.6 | 0.15 | 20071027 | 136.23702 | 359.63736 | 283.84863 | 8.22640  | 0.1648186 | 2.9039169 | 43 | 4 | 2001–2007 | 0.45 | M-v | 1 | MPC | 128914 2006 UM <sub>56</sub>  |
| 2006 UV <sub>58</sub>  | 16.1 | 0.15 | 20071027 | 160.69465 | 347.75315 | 285.65732 | 1.39889  | 0.0440899 | 2.7696038 | 29 | 5 | 2000–2007 | 0.35 | M-v | 1 | MPC | 126218 2006 UV <sub>58</sub>  |
| 2006 UO <sub>64</sub>  | 16.0 | 0.15 | 20071027 | 27.47180  | 160.15294 | 264.51457 | 7.62064  | 0.0574255 | 3.1180008 | 31 | 4 | 2000–2007 | 0.39 | M-v | 0 | MPC | 110348 2006 UO <sub>64</sub>  |
| 2006 UY <sub>70</sub>  | 15.6 | 0.15 | 20071027 | 63.09085  | 358.92726 | 72.09884  | 9.34019  | 0.2101203 | 2.6939777 | 94 | 3 | 2003–2007 | 0.51 | M-v | 2 | MPC | 118179 2006 UY <sub>70</sub>  |
| 2006 UL <sub>71</sub>  | 16.6 | 0.15 | 20071027 | 47.41333  | 312.28007 | 101.54046 | 2.48249  | 0.0369782 | 3.0278151 | 36 | 5 | 1993–2007 | 0.41 | M-v | 1 | MPC | 122848 2006 UL <sub>71</sub>  |
| 2006 UC <sub>77</sub>  | 16.4 | 0.15 | 20071027 | 42.67353  | 67.84283  | 7.19082   | 8.18520  | 0.2371272 | 3.0359010 | 39 | 3 | 2001–2006 | 0.49 | M-v | 3 | MPC | 110358 2006 UC <sub>77</sub>  |
| 2006 UE <sub>77</sub>  | 16.5 | 0.15 | 20071027 | 20.87195  | 147.90202 | 330.55135 | 3.92431  | 0.1063914 | 2.4567384 | 62 | 6 | 1996–2007 | 0.47 | M-v | 1 | MPC | 122848 2006 UE <sub>77</sub>  |
| 2006 UT <sub>79</sub>  | 16.5 | 0.15 | 20071027 | 217.42102 | 342.51115 | 264.95444 | 3.22092  | 0.1526843 | 2.6473520 | 34 | 3 | 2004–2007 | 0.21 | M-v | 2 | MPC | 128915 2006 UT <sub>79</sub>  |
| 2006 US <sub>87</sub>  | 16.8 | 0.15 | 20071027 | 244.26627 | 344.05614 | 277.63297 | 2.37750  | 0.1420203 | 2.3268711 | 53 | 6 | 1998–2006 | 0.45 | M-v | 1 | MPC | 124508 2006 US <sub>87</sub>  |
| 2006 UE <sub>90</sub>  | 16.6 | 0.15 | 20071027 | 108.94428 | 339.07497 | 35.91509  | 6.53672  | 0.2218076 | 2.5466655 | 69 | 3 | 2002–2006 | 0.40 | M-v | 2 | MPC | 112953 2006 UE <sub>90</sub>  |
| 2006 UU <sub>96</sub>  | 16.3 | 0.15 | 20071027 | 34.98520  | 338.43611 | 89.28229  | 3.54817  | 0.0826342 | 3.2193175 | 32 | 4 | 2000–2007 | 0.32 | M-v | 0 | MPC | 122848 2006 UU <sub>96</sub>  |
| 2006 UH <sub>124</sub> | 15.3 | 0.15 | 20071027 | 105.51710 | 31.94679  | 297.71829 | 9.26303  | 0.1951876 | 3.0628001 | 41 | 2 | 2006–2007 | 0.45 | M-v | 3 | MPC | 128288 2006 UH <sub>124</sub> |
| 2006 UZ <sub>137</sub> | 16.4 | 0.15 | 20071027 | 178.72648 | 354.49861 | 311.52659 | 4.79400  | 0.0359633 | 2.6597198 | 32 | 3 | 1998–2007 | 0.35 | M-v | 4 | MPC | 126222 2006 UZ <sub>137</sub> |
| 2006 UR <sub>146</sub> | 16.6 | 0.15 | 20071027 | 22.68570  | 85.14925  | 329.06863 | 6.96486  | 0.1509057 | 2.6765875 | 22 | 3 | 2004–2007 | 0.45 | M-v | 3 | MPC | 110403 2006 UR <sub>146</sub> |
| 2006 UE <sub>168</sub> | 17.3 | 0.15 | 20071027 | 120.26253 | 318.22050 | 56.02281  | 5.04910  | 0.1373280 | 2.2349639 | 50 | 3 | 2003–2007 | 0.40 | M-v | 2 | MPC | 114804 2006 UE <sub>168</sub> |
| 2006 UW <sub>176</sub> | 16.0 | 0.15 | 20071027 | 10.45902  | 8.09904   | 82.68847  | 7.59484  | 0.0132497 | 2.8611573 | 63 | 5 | 2001–2007 | 0.42 | M-v | 1 | MPC | 128915 2006 UW <sub>176</sub> |
| 2006 UX <sub>177</sub> | 16.5 | 0.15 | 20071027 | 82.21777  | 265.05254 | 116.20527 | 3.70351  | 0.0554677 | 2.8815731 | 32 | 4 | 2001–2007 | 0.41 | M-v | 1 | MPC | 114385 2006 UX <sub>177</sub> |
| 2006 UL <sub>181</sub> | 15.4 | 0.15 | 20071027 | 82.90498  | 270.15201 | 105.32332 | 12.04574 | 0.1013077 | 3.1953354 | 55 | 5 | 2000–2007 | 0.44 | M-v | 1 | MPC | 128915 2006 UL <sub>181</sub> |
| 2006 UX <sub>185</sub> | 15.3 | 0.15 | 20071027 | 30.78621  | 103.68155 | 315.99258 | 7.99154  | 0.0830158 | 3.0933689 | 35 | 5 | 2000–2007 | 0.46 | M-v | 1 | MPC | 122850 2006 UX <sub>185</sub> |
| 2006 UL <sub>187</sub> | 15.2 | 0.15 | 20071027 | 222.77698 | 311.42720 | 273.97521 | 12.98524 | 0.0375275 | 3.0357823 | 32 | 4 | 2004–2007 | 0.53 | M-v | 1 | MPC | 114386 2006 UL <sub>187</sub> |
| 2006 UO <sub>188</sub> | 16.3 | 0.15 | 20071027 | 107.06508 | 73.38223  | 289.96600 | 10.82041 | 0.0642008 | 2.5823344 | 47 | 3 | 2002–2007 | 0.37 | M-v | 4 | MPC | 110420 2006 UO <sub>188</sub> |
| 2006 US <sub>188</sub> | 14.5 | 0.15 | 20071027 | 304.23919 | 242.60672 | 282.44260 | 15.15431 | 0.1837516 | 3.1206833 | 51 | 3 | 2003–2007 | 0.54 | M-v | 2 | MPC | 128915 2006 US <sub>188</sub> |
| 2006 UT <sub>190</sub> | 15.5 | 0.15 | 20071027 | 177.89643 | 10.91137  | 276.82172 | 11.48002 | 0.1110582 | 2.6281692 | 32 | 3 | 2001–2006 | 0.50 | M-v | 3 | MPC | 110421 2006 UT <sub>190</sub> |
| 2006 UN <sub>191</sub> | 15.2 | 0.15 | 20071027 | 149.64470 | 2.19845   | 306.58580 | 9.01886  | 0.0643238 | 2.9697699 | 59 | 6 | 2000–2007 | 0.45 | M-v | 1 | MPC | 128915 2006 UN <sub>191</sub> |
| 2006 UV <sub>191</sub> | 14.7 | 0.15 | 20071027 | 262.03892 | 287.11171 | 271.48185 | 8.83738  | 0.0276857 | 3.1543148 | 58 | 4 | 2001–2007 | 0.43 | M-v | 1 | MPC | 128915 2006 UV <sub>191</sub> |
| 2006 UJ <sub>201</sub> | 16.7 | 0.15 | 20071027 | 48.70455  | 208.31066 | 232.94214 | 1.55537  | 0.0959896 | 2.8878188 | 41 | 4 | 2000–2007 | 0.34 | M-v | 1 | MPC | 122851 2006 UJ <sub>201</sub> |
| 2006 US <sub>202</sub> | 16.2 | 0.15 | 20071027 | 185.17266 | 333.14348 | 300.30101 | 12.25529 | 0.1557400 | 2.6296185 | 39 | 5 | 2000–2007 | 0.51 | M-v | 1 | MPC | 128915 2006 US <sub>202</sub> |
| 2006 UN <sub>203</sub> | 16.6 | 0.15 | 20071027 | 116.07958 | 41.63627  | 309.69342 | 11.72685 | 0.2089593 | 2.5725631 | 37 | 5 | 2000–2007 | 0.40 | M-v | 1 | MPC | 122851 2006 UN <sub>203</sub> |
| 2006 UT <sub>204</sub> | 15.2 | 0.15 | 20071027 | 134.44406 | 300.44505 | 33.50607  | 10.98526 | 0.1135953 | 3.0068264 | 57 | 3 | 2001–2007 | 0.40 | M-v | 1 | MPC | 118180 2006 UT <sub>204</sub> |
| 2006 UR <sub>205</sub> | 17.2 | 0.15 | 20071027 | 265.27495 | 184.31917 | 33.23423  | 1.73142  | 0.1314100 | 2.3954890 | 34 | 5 | 1997–2007 | 0.41 | M-v | 1 | MPC | 114389 2006 UR <sub>205</sub> |
| 2006 UN <sub>212</sub> | 16.7 | 0.15 | 20071027 | 270.39365 | 262.04137 | 324.52397 | 2.90761  | 0.0342717 | 2.6291299 | 38 | 5 | 1993–2007 | 0.33 | M-v | 1 | MPC | 122851 2006 UN <sub>212</sub> |
| 2006 US <sub>216</sub> | 19.8 | 0.15 | 20071027 | 115.26159 | 55.30999  | 194.35056 | 3.45982  | 0.5628337 | 0.6366390 | 67 | 3 | 2005–2007 | 0.46 | M-v | 3 | MPC | 128288 2006 US <sub>216</sub> |
| 2006 UN <sub>217</sub> | 12.9 | 0.15 | 20071027 | 310.87551 | 143.95487 | 269.18426 | 1.52308  | 0.1032502 | 5.2046215 | 52 | 2 | 2006–2007 | 0.46 | M-v | 3 | MPC | 126773 2006 UN <sub>217</sub> |
| 2006 UJ <sub>218</sub> | 16.7 | 0.15 | 20071027 | 130.06726 | 350.26400 | 2.45793   | 4.79362  | 0.0380513 | 2.5915185 | 59 | 4 | 2001–2007 | 0.39 | M-v | 1 | MPC | 110440 2006 UJ <sub>218</sub> |
| 2006 UB <sub>219</sub> | 13.5 | 0.15 | 20071027 | 306.26931 | 42.09620  | 84.35680  | 7.12860  | 0.1336169 | 4.3029197 | 61 | 6 | 1993–2007 | 0.48 | M-v | 0 | MPC | 128289 2006 UB <sub>219</sub> |
| 2006 UT <sub>219</sub> | 16.2 | 0.15 | 20071027 | 160.34257 | 171.49256 | 126.71087 | 4.72609  | 0.0914809 | 2.7431346 | 37 | 6 | 1995–2007 | 0.49 | M-v | 1 | MPC | 128915 2006 UT <sub>219</sub> |
| 2006 UV <sub>219</sub> | 16.7 | 0.15 | 20071027 | 197.41515 | 63.10633  | 212.74686 | 23.88658 | 0.2251788 | 2.2975087 | 34 | 4 | 1999–2006 | 0.41 | M-v | 1 | MPC | 114391 2006 UV <sub>219</sub> |
| 2006 UV <sub>232</sub> | 15.6 | 0.15 | 20071027 | 166.09785 | 17.63982  | 273.61863 | 8.43301  | 0.0589265 | 3.0533026 | 37 | 4 | 2004–2007 | 0.51 | M-v | 1 | MPC | 128915 2006 UV <sub>232</sub> |
| 2006 UN <sub>237</sub> | 16.9 | 0.15 | 20071027 | 248.03001 | 166.77337 | 59.56923  | 5.75465  | 0.1708561 | 2.6002566 | 38 | 5 | 2000–2007 | 0.43 | M-v | 0 | MPC | 122852 2006 UN <sub>237</sub> |
| 2006 UR <sub>237</sub> | 15.8 | 0.15 | 20071027 | 310.93948 | 344.72588 | 171.53033 | 2.81243  | 0.1170608 | 3.1752509 | 38 | 5 | 2001–2007 | 0.46 | M-v | 0 | MPC | 122852 2006 UR <sub>237</sub> |
| 2006 UZ <sub>247</sub> | 16.2 | 0.15 | 20071027 | 204.34539 | 18.33089  | 231.50651 | 3.33450  | 0.0846908 | 3.1279836 | 38 | 6 | 1995–2007 | 0.33 | M-v | 0 | MPC | 110455 2006 UZ <sub>247</sub> |
| 2006 UK <sub>250</sub> | 15.9 | 0.15 | 20071027 | 209.58977 | 37.67367  | 207.10414 | 2.88441  | 0.0963563 | 3.1831330 | 39 | 6 | 1994–2007 | 0.39 | M-v | 0 | MPC | 114396 2006 UK <sub>250</sub> |
| 2006 UU <sub>253</sub> | 16.1 | 0.15 | 20071027 | 246.12150 | 59.97818  | 159.12941 | 0.68654  | 0.0869444 | 3.2183011 | 37 | 4 | 1998–2007 | 0.40 | M-v | 3 | MPC | 121872 2006 UU <sub>253</sub> |
| 2006 UH <sub>273</sub> | 15.6 | 0.15 | 20071027 | 39.39739  | 155.87720 | 293.73004 | 4.11952  | 0.0609569 | 2.9167674 | 63 | 3 | 2001–2006 | 0.52 | M-v | 4 | MPC | 114399 2006 UH <sub>273</sub> |
| 2006 UZ <sub>291</sub> | 15.8 | 0.15 | 20071027 | 306.18723 | 192.36919 | 283.71665 | 9.23779  | 0.0565084 | 3.0621334 | 54 | 3 | 1995–2007 | 0.37 | M-v | 3 | MPC | 128915 2006 UZ <sub>291</sub> |
| 2006 UW <sub>322</sub> | 14.7 | 0.15 | 20071027 | 281.66977 | 211.00902 | 324.04361 | 2.68920  | 0.0613537 | 3.9942902 | 41 | 8 | 1993–2007 | 0.37 | M-v | 0 | MPC | 122853 2006 UW <sub>322</sub> |
| 2006 UB <sub>329</sub> | 16.3 | 0.15 | 20071027 | 24.19718  | 225.19258 | 239.10693 | 2.31572  | 0.1566384 | 3.0485745 | 28 | 3 | 2001–2006 | 0.31 | M-v | 3 | MPC | 124132 2006 UB <sub>329</sub> |
| 2006 VB <sub>4</sub>   | 16.1 | 0.15 | 20071027 | 62.53992  | 83.05475  | 339.13018 | 0.95790  | 0.0474504 | 2.8699805 | 77 | 6 | 1996–2007 | 0.45 | M-v | 0 | MPC | 124509 2006 VB <sub>4</sub>   |
| 2006 VS <sub>7</sub>   | 15.5 | 0.15 | 20071027 | 115.31845 | 299.27693 | 60.16753  | 10.94479 | 0.1070432 | 2.9852424 | 47 | 3 | 1999–2006 | 0.36 | M-v | 2 | MPC | 114404 2006 VS <sub>7</sub>   |
| 2006 VK <sub>21</sub>  | 16.6 | 0.15 | 20071027 | 145.63854 | 49.54317  | 230.96828 | 3.89052  | 0.1305195 | 2.6888745 | 30 | 3 | 2005–2007 | 0.46 | M-v | 2 | MPC | 114407 2006 VK <sub>21</sub>  |
| 2006 VT <sub>37</sub>  | 15.5 | 0.15 | 20071027 | 54.49401  | 329.84734 | 100.87773 | 7.78977  | 0.2071035 | 2.9188854 | 49 | 3 | 2001–2006 | 0.47 | M-v | 3 | MPC | 114409 2006 VT <sub>37</sub>  |
| 2006 VX <sub>40</sub>  | 15.5 | 0.15 | 20071027 | 236.23235 | 24.36222  | 227.36365 | 6.71534  | 0.0577075 | 2.7159768 | 50 | 3 | 2005–2007 | 0.29 | M-v | 3 | MPC | 118181 2006 VX <sub>40</sub>  |
| 2006 VC <sub>45</sub>  | 15.7 | 0.15 | 20071027 | 166.27951 | 228.01999 | 64.43074  | 6.50163  | 0.1140390 | 3.1441291 | 40 | 6 | 1995–2007 | 0.27 | M-v | 0 | MPC | 114411 2006 VC <sub>45</sub>  |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2006 VN <sub>45</sub>  | 15.7 | 0.15 | 20071027 | 100.54892 | 284.06480 | 77.60005  | 9.61864  | 0.1369612 | 3.0268587 | 47  | 4 | 2001-2007 | 0.53 | M-v | 1 | MPC | 122855 2006 VN <sub>45</sub>  |
| 2006 VY <sub>45</sub>  | 15.3 | 0.15 | 20071027 | 314.10070 | 267.27284 | 264.55281 | 14.22841 | 0.1407384 | 3.1082491 | 49  | 4 | 2001-2007 | 0.50 | M-v | 1 | MPC | 122855 2006 VY <sub>45</sub>  |
| 2006 VK <sub>46</sub>  | 16.1 | 0.15 | 20071027 | 170.70035 | 306.19203 | 350.90961 | 1.73001  | 0.0508889 | 3.2112857 | 43  | 6 | 1999-2007 | 0.36 | M-v | 0 | MPC | 112971 2006 VK <sub>46</sub>  |
| 2006 VH <sub>54</sub>  | 16.3 | 0.15 | 20071027 | 10.49693  | 322.30375 | 153.68290 | 0.90273  | 0.0754299 | 3.1237181 | 46  | 6 | 2000-2007 | 0.36 | M-v | 0 | MPC | 122855 2006 VH <sub>54</sub>  |
| 2006 VX <sub>55</sub>  | 16.2 | 0.15 | 20071027 | 218.63593 | 194.59018 | 83.04147  | 3.76384  | 0.0239601 | 2.6431439 | 45  | 3 | 2004-2007 | 0.38 | M-v | 2 | MPC | 115953 2006 VX <sub>55</sub>  |
| 2006 VY <sub>82</sub>  | 15.8 | 0.15 | 20071027 | 281.74897 | 262.38706 | 299.98295 | 0.93782  | 0.0363485 | 2.9306236 | 60  | 6 | 2000-2007 | 0.40 | M-v | 1 | MPC | 128916 2006 VY <sub>82</sub>  |
| 2006 VB <sub>95</sub>  | 15.7 | 0.15 | 20071027 | 40.31135  | 148.41645 | 283.62032 | 9.08139  | 0.0294413 | 3.0257742 | 47  | 5 | 2001-2007 | 0.47 | M-v | 1 | MPC | 126773 2006 VB <sub>95</sub>  |
| 2006 VO <sub>97</sub>  | 16.6 | 0.15 | 20071027 | 143.02774 | 32.21552  | 307.18507 | 4.48602  | 0.0810334 | 2.7731830 | 33  | 5 | 2001-2007 | 0.49 | M-v | 0 | MPC | 122857 2006 VO <sub>97</sub>  |
| 2006 VW <sub>103</sub> | 16.2 | 0.15 | 20071027 | 64.83326  | 7.30122   | 80.60197  | 11.49055 | 0.0514217 | 2.5537276 | 57  | 5 | 1996-2007 | 0.42 | M-v | 2 | MPC | 116365 2006 VW <sub>103</sub> |
| 2006 VV <sub>143</sub> | 15.2 | 0.15 | 20071027 | 72.06450  | 80.38115  | 305.22870 | 8.07800  | 0.1243139 | 3.1210537 | 39  | 4 | 2001-2007 | 0.53 | M-v | 2 | MPC | 122858 2006 VV <sub>143</sub> |
| 2006 VT <sub>144</sub> | 15.6 | 0.15 | 20071027 | 67.54367  | 94.57884  | 313.92045 | 8.22499  | 0.1043460 | 3.0272727 | 48  | 5 | 1992-2007 | 0.41 | M-v | 0 | MPC | 114422 2006 VT <sub>144</sub> |
| 2006 VT <sub>145</sub> | 15.2 | 0.15 | 20071027 | 118.04240 | 44.44811  | 313.93371 | 9.39238  | 0.1428718 | 2.6293351 | 44  | 3 | 2004-2007 | 0.50 | M-v | 3 | MPC | 126773 2006 VT <sub>145</sub> |
| 2006 VL <sub>153</sub> | 15.7 | 0.15 | 20071027 | 8.56985   | 359.65969 | 114.64829 | 11.87874 | 0.1509478 | 3.0076910 | 62  | 6 | 1992-2007 | 0.43 | M-v | 1 | MPC | 122858 2006 VL <sub>153</sub> |
| 2006 VY <sub>154</sub> | 16.5 | 0.15 | 20071027 | 104.16614 | 250.14740 | 123.24986 | 6.65003  | 0.0865724 | 2.7568298 | 39  | 6 | 1994-2007 | 0.50 | M-v | 1 | MPC | 122858 2006 VY <sub>154</sub> |
| 2006 VT <sub>168</sub> | 16.4 | 0.15 | 20071027 | 144.92600 | 217.82411 | 115.67294 | 3.27660  | 0.0668877 | 2.8437672 | 31  | 5 | 1999-2007 | 0.35 | M-v | 1 | MPC | 124137 2006 VT <sub>168</sub> |
| 2006 WY <sub>2</sub>   | 18.6 | 0.15 | 20071027 | 96.82265  | 159.97435 | 99.89456  | 27.55189 | 0.3329692 | 0.9833869 | 61  | 2 | 2006-2007 | 0.46 | M-v | 3 | MPC | 126774 2006 WY <sub>2</sub>   |
| 2006 WK <sub>8</sub>   | 15.5 | 0.15 | 20071027 | 139.75134 | 237.87991 | 108.04103 | 7.13551  | 0.0503182 | 2.7457321 | 58  | 6 | 1994-2007 | 0.50 | M-v | 0 | MPC | 122859 2006 WK <sub>8</sub>   |
| 2006 WM <sub>8</sub>   | 15.5 | 0.15 | 20071027 | 69.44808  | 342.25578 | 78.04448  | 8.65184  | 0.1690902 | 2.9781960 | 78  | 3 | 2001-2007 | 0.54 | M-v | 2 | MPC | 122859 2006 WM <sub>8</sub>   |
| 2006 WR <sub>11</sub>  | 15.5 | 0.15 | 20071027 | 22.97954  | 103.83277 | 17.50584  | 5.17721  | 0.2922664 | 3.3029430 | 52  | 5 | 2000-2007 | 0.57 | M-v | 0 | MPC | 112987 2006 WR <sub>11</sub>  |
| 2006 WM <sub>14</sub>  | 16.1 | 0.15 | 20071027 | 74.57031  | 332.58487 | 77.13454  | 18.16909 | 0.2736489 | 3.0426104 | 82  | 3 | 2001-2007 | 0.43 | M-v | 2 | MPC | 122859 2006 WM <sub>14</sub>  |
| 2006 WQ <sub>47</sub>  | 16.1 | 0.15 | 20071027 | 101.01535 | 74.16573  | 311.19226 | 2.33492  | 0.0097808 | 3.2259918 | 37  | 6 | 1993-2007 | 0.39 | M-v | 0 | MPC | 126233 2006 WQ <sub>47</sub>  |
| 2006 WE <sub>99</sub>  | 14.5 | 0.15 | 20071027 | 151.56839 | 226.99427 | 76.15129  | 7.48658  | 0.1330920 | 3.9572376 | 56  | 6 | 1998-2007 | 0.35 | M-v | 0 | MPC | 122861 2006 WE <sub>99</sub>  |
| 2006 WP <sub>148</sub> | 15.3 | 0.15 | 20071027 | 135.56020 | 80.32528  | 266.24009 | 8.86128  | 0.0976617 | 3.1000194 | 31  | 3 | 2005-2007 | 0.28 | M-v | 2 | MPC | 122862 2006 WP <sub>148</sub> |
| 2006 WY <sub>178</sub> | 15.4 | 0.15 | 20071027 | 84.29441  | 249.89990 | 128.60030 | 27.00098 | 0.2523427 | 3.1112134 | 35  | 4 | 1997-2007 | 0.64 | M-v | 2 | MPC | 114815 2006 WY <sub>178</sub> |
| 2006 XX <sub>4</sub>   | 15.1 | 0.15 | 20071027 | 55.28902  | 272.35460 | 116.76675 | 29.12729 | 0.3697086 | 2.6242863 | 55  | 4 | 1998-2007 | 0.51 | M-v | 1 | MPC | 122863 2006 XX <sub>4</sub>   |
| 2006 XP <sub>5</sub>   | 15.0 | 0.15 | 20071027 | 137.93993 | 32.38052  | 300.43891 | 12.95364 | 0.2675800 | 2.6397124 | 51  | 5 | 1999-2007 | 0.43 | M-v | 1 | MPC | 128916 2006 XP <sub>5</sub>   |
| 2006 XF <sub>6</sub>   | 15.5 | 0.15 | 20071027 | 88.59331  | 290.24011 | 99.03048  | 11.42785 | 0.2481118 | 3.0401590 | 62  | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 119323 2006 XF <sub>6</sub>   |
| 2006 YV <sub>7</sub>   | 15.0 | 0.15 | 20071027 | 28.59673  | 84.05463  | 44.15661  | 17.01431 | 0.1022519 | 3.1191564 | 49  | 6 | 2000-2007 | 0.59 | M-v | 1 | MPC | 122866 2006 YV <sub>7</sub>   |
| 2006 YK <sub>13</sub>  | 14.9 | 0.15 | 20071027 | 246.23794 | 186.32134 | 102.58975 | 11.66098 | 0.0618195 | 3.0882299 | 63  | 7 | 1999-2007 | 0.52 | M-v | 1 | MPC | 122867 2006 YK <sub>13</sub>  |
| 2007 AH <sub>27</sub>  | 17.9 | 0.15 | 20071027 | 144.06928 | 103.25288 | 303.14700 | 4.92505  | 0.1980619 | 2.2837898 | 26  | 3 | 2000-2007 | 0.38 | M-v | 3 | MPC | 120511 2007 AH <sub>27</sub>  |
| 2007 BQ <sub>2</sub>   | 14.7 | 0.15 | 20071027 | 70.32514  | 86.36207  | 272.19958 | 17.92797 | 0.1744388 | 3.0248068 | 58  | 3 | 2001-2007 | 0.63 | M-v | 2 | MPC | 128916 2007 BQ <sub>2</sub>   |
| 2007 BM <sub>8</sub>   | 18.5 | 0.15 | 20071027 | 116.81885 | 179.20540 | 87.67329  | 27.63705 | 0.7207825 | 1.3415924 | 43  | 3 | 2002-2007 | 0.45 | M-v | 3 | MPC | 117682 2007 BM <sub>8</sub>   |
| 2007 BY <sub>15</sub>  | 16.2 | 0.15 | 20070120 | 143.55514 | 17.07058  | 316.86151 | 10.01870 | 0.1849379 | 2.9941603 | 13  | 1 | 37 days   | 0.16 |     |   | MPC | 2007 BY <sub>15</sub>         |
| 2007 BB <sub>16</sub>  | 16.4 | 0.15 | 20070120 | 57.33180  | 104.88772 | 319.29287 | 8.94803  | 0.0604322 | 3.1465845 | 11  | 1 | 36 days   | 0.20 |     |   | MPC | 2007 BB <sub>16</sub>         |
| 2007 BM <sub>20</sub>  | 17.0 | 0.15 | 20071027 | 62.78354  | 190.65213 | 326.79831 | 5.30138  | 0.1683085 | 2.3408026 | 74  | 3 | 2000-2007 | 0.54 | M-v | 3 | MPC | 119695 2007 BM <sub>20</sub>  |
| 2007 BQ <sub>40</sub>  | 18.3 | 0.15 | 20070120 | 22.15618  | 175.22880 | 277.34969 | 0.48190  | 0.1760827 | 2.2607270 | 11  | 1 | 30 days   | 0.38 |     |   | MPC | 2007 BQ <sub>40</sub>         |
| 2007 BU <sub>42</sub>  | 17.2 | 0.15 | 20071027 | 112.20647 | 105.11836 | 312.84733 | 8.48027  | 0.1592504 | 2.7629887 | 37  | 2 | 2005-2007 | 0.30 | M-v | 3 | MPC | 126242 2007 BU <sub>42</sub>  |
| 2007 BZ <sub>42</sub>  | 18.3 | 0.15 | 20071027 | 78.02699  | 180.66931 | 313.18431 | 3.15994  | 0.0621329 | 2.1812996 | 23  | 3 | 2002-2007 | 0.30 | M-v | 3 | MPC | 116026 2007 BZ <sub>42</sub>  |
| 2007 CT <sub>25</sub>  | 14.9 | 0.15 | 20071027 | 352.06736 | 310.77622 | 217.91859 | 1.31026  | 0.1437329 | 3.9347980 | 42  | 5 | 2000-2007 | 0.38 | M-v | 1 | MPC | 122873 2007 CT <sub>25</sub>  |
| 2007 CA <sub>42</sub>  | 17.2 | 0.15 | 20071027 | 74.52657  | 168.58749 | 345.20228 | 6.88329  | 0.1390026 | 2.2819405 | 67  | 3 | 1998-2007 | 0.41 | M-v | 3 | MPC | 119698 2007 CA <sub>42</sub>  |
| 2007 CH <sub>45</sub>  | 17.3 | 0.15 | 20071027 | 78.28173  | 105.22088 | 23.75283  | 3.39717  | 0.1714407 | 2.3428425 | 42  | 4 | 1998-2007 | 0.48 | M-v | 2 | MPC | 116069 2007 CH <sub>45</sub>  |
| 2007 CN <sub>52</sub>  | 16.7 | 0.15 | 20071027 | 35.57143  | 245.76744 | 307.77581 | 5.16459  | 0.0712063 | 2.3480458 | 61  | 3 | 2001-2007 | 0.52 | M-v | 3 | MPC | 119699 2007 CN <sub>52</sub>  |
| 2007 CV <sub>55</sub>  | 18.6 | 0.15 | 20071027 | 128.53194 | 271.57157 | 142.73139 | 2.23841  | 0.1986334 | 2.3158187 | 25  | 3 | 2000-2007 | 0.32 | M-v | 3 | MPC | 119349 2007 CV <sub>55</sub>  |
| 2007 DG                | 17.0 | 0.15 | 20071027 | 83.17960  | 211.39177 | 306.41266 | 18.25163 | 0.0429952 | 1.9383866 | 39  | 2 | 2005-2007 | 0.46 | M-v | 3 | MPC | 116084 2007 DG                |
| 2007 DA <sub>7</sub>   | 15.8 | 0.15 | 20071027 | 93.88383  | 341.62412 | 99.23015  | 8.24750  | 0.1759603 | 3.0077005 | 29  | 3 | 2000-2007 | 0.52 | M-v | 2 | MPC | 119352 2007 DA <sub>7</sub>   |
| 2007 DG <sub>51</sub>  | 17.1 | 0.15 | 20071027 | 102.84047 | 134.43269 | 323.98957 | 5.15182  | 0.1651053 | 2.5357321 | 28  | 3 | 2001-2007 | 0.46 | M-v | 2 | MPC | 119360 2007 DG <sub>51</sub>  |
| 2007 DT <sub>103</sub> | 19.2 | 0.15 | 20071027 | 35.14981  | 233.98728 | 137.20216 | 5.44408  | 0.5738302 | 2.2079839 | 675 | 2 | 2007-2007 | 0.51 | M-v | 3 | MPC | 124511 2007 DT <sub>103</sub> |
| 2007 EM <sub>30</sub>  | 17.4 | 0.15 | 20070321 | 81.01099  | 158.13512 | 181.92832 | 8.45853  | 0.1873045 | 2.7035081 | 17  | 1 | 46 days   | 0.23 |     |   | MPC | 2007 EM <sub>30</sub>         |
| 2007 EF <sub>52</sub>  | 15.7 | 0.15 | 20071027 | 62.99904  | 161.09639 | 340.60838 | 9.95566  | 0.1572122 | 3.1662583 | 48  | 3 | 2001-2007 | 0.50 | M-v | 2 | MPC | 119396 2007 EF <sub>52</sub>  |
| 2007 EY <sub>77</sub>  | 16.5 | 0.15 | 20071027 | 121.89009 | 72.05300  | 18.96615  | 6.47728  | 0.2030687 | 2.6397905 | 62  | 3 | 2001-2007 | 0.54 | M-v | 2 | MPC | 122881 2007 EY <sub>77</sub>  |
| 2007 EE <sub>78</sub>  | 16.8 | 0.15 | 20071027 | 287.39934 | 272.03503 | 42.01173  | 3.02215  | 0.0834453 | 2.7272232 | 28  | 4 | 2000-2007 | 0.39 | M-v | 1 | MPC | 120558 2007 EE <sub>78</sub>  |
| 2007 EU <sub>81</sub>  | 18.5 | 0.15 | 20070321 | 24.53579  | 129.70829 | 17.88205  | 12.15629 | 0.2069358 | 2.6623217 | 12  | 1 | 44 days   | 0.23 |     |   | MPC | 2007 EU <sub>81</sub>         |
| 2007 EN <sub>92</sub>  | 15.6 | 0.15 | 20071027 | 35.08935  | 233.63884 | 305.14237 | 7.77787  | 0.0951747 | 2.7477879 | 35  | 3 | 2002-2007 | 0.60 | M-v | 3 | MPC | 119414 2007 EN <sub>92</sub>  |

|                        |      |      |          |           |           |           |          |           |           |      |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|------|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 EL <sub>192</sub> | 13.9 | 0.15 | 20071027 | 356.25020 | 186.31352 | 22.86243  | 6.68003  | 0.0605919 | 5.2060171 | 27   | 4 | 2001–2007 | 0.27 | M-v | 1 | MPC | 126263 2007 EL <sub>192</sub> |
| 2007 FC <sub>42</sub>  | 15.6 | 0.15 | 20070410 | 331.78370 | 36.45636  | 184.42127 | 10.79120 | 0.0537155 | 3.0415026 | 26   | 1 | 29 days   | 0.28 |     |   | MPC | 2007 FC <sub>42</sub>         |
| 2007 GS <sub>3</sub>   | 19.4 | 0.15 | 20071027 | 115.74663 | 61.12145  | 215.48841 | 15.09027 | 0.1290082 | 1.0610570 | 121  | 2 | 2007–2007 | 0.42 | M-v | 2 | MPC | 128916 2007 GS <sub>3</sub>   |
| 2007 JB <sub>22</sub>  | 15.5 | 0.15 | 20071027 | 129.44633 | 302.11406 | 199.44407 | 28.34974 | 0.0480020 | 2.6348708 | 49   | 4 | 1998–2007 | 0.62 | M-v | 2 | MPC | 121367 2007 JB <sub>22</sub>  |
| 2007 JE <sub>36</sub>  | 16.2 | 0.15 | 20071027 | 311.73118 | 100.33898 | 236.99191 | 21.21476 | 0.0522415 | 2.5856079 | 38   | 3 | 2000–2007 | 0.45 | M-v | 2 | MPC | 126290 2007 JE <sub>36</sub>  |
| 2007 LQ <sub>19</sub>  | 17.4 | 0.15 | 20071027 | 27.53683  | 207.57800 | 110.94299 | 17.05545 | 0.6276801 | 2.6090534 | 61   | 1 | 175 days  | 0.42 | M-v | 3 | MPC | 128917 2007 LQ <sub>19</sub>  |
| 2007 LR <sub>32</sub>  | 17.2 | 0.15 | 20071027 | 13.45108  | 71.86571  | 266.78114 | 10.18112 | 0.5159635 | 2.6255220 | 1410 | 1 | 194 days  | 0.32 | M-v | 2 | MPC | 128917 2007 LR <sub>32</sub>  |
| 2007 LA <sub>33</sub>  | 16.4 | 0.15 | 20071027 | 11.52989  | 52.26694  | 284.68814 | 7.56671  | 0.3324206 | 2.4311594 | 116  | 2 | 2004–2007 | 0.54 | M-v | 2 | MPC | 128917 2007 LA <sub>33</sub>  |
| 2007 ML <sub>6</sub>   | 18.5 | 0.15 | 20071027 | 21.44486  | 220.54286 | 109.99532 | 11.43027 | 0.4662882 | 2.2326023 | 82   | 1 | 162 days  | 0.42 | M-v | 3 | MPC | 128917 2007 ML <sub>6</sub>   |
| 2007 MK <sub>13</sub>  | 20.0 | 0.15 | 20071027 | 53.16954  | 260.11851 | 95.16398  | 19.87890 | 0.1398414 | 1.0246592 | 26   | 1 | 175 days  | 0.48 | M-v | 3 | MPC | 121376 2007 MK <sub>13</sub>  |
| 2007 MA <sub>24</sub>  | 14.8 | 0.15 | 20071027 | 5.64875   | 186.37417 | 194.29813 | 19.68681 | 0.3591471 | 3.0569753 | 130  | 1 | 147 days  | 0.41 | M-v | 3 | MPC | 128917 2007 MA <sub>24</sub>  |
| 2007 NS <sub>1</sub>   | 16.3 | 0.15 | 20071027 | 352.45141 | 78.30368  | 279.12300 | 13.58121 | 0.1907436 | 2.6444841 | 32   | 2 | 2003–2007 | 0.49 | M-v | 3 | MPC | 122597 2007 NS <sub>1</sub>   |
| 2007 NH <sub>4</sub>   | 19.1 | 0.15 | 20071027 | 10.16388  | 341.49361 | 354.38879 | 8.91369  | 0.3514934 | 2.2082298 | 19   | 1 | 95 days   | 0.31 | M-v | 4 | MPC | 128917 2007 NH <sub>4</sub>   |
| 2007 NF <sub>5</sub>   | 16.6 | 0.15 | 20071027 | 1.68660   | 204.60334 | 142.54511 | 7.41450  | 0.1994258 | 2.4845842 | 70   | 4 | 1999–2007 | 0.44 | M-v | 2 | MPC | 126298 2007 NF <sub>5</sub>   |
| 2007 NQ <sub>5</sub>   | 14.5 | 0.15 | 20071027 | 21.97241  | 353.87116 | 339.84192 | 29.47011 | 0.2765064 | 3.1854981 | 66   | 3 | 2001–2007 | 0.47 | M-v | 1 | MPC | 128917 2007 NQ <sub>5</sub>   |
| 2007 NK <sub>6</sub>   | 16.5 | 0.15 | 20071027 | 351.78028 | 342.35107 | 11.27694  | 13.21415 | 0.2750657 | 2.5478302 | 23   | 3 | 1999–2007 | 0.30 | M-v | 4 | MPC | 122599 2007 NK <sub>6</sub>   |
| 2007 OJ                | 17.5 | 0.15 | 20071027 | 18.81264  | 160.62252 | 153.73939 | 14.16572 | 0.2935706 | 2.5752395 | 36   | 2 | 2003–2007 | 0.54 | M-v | 3 | MPC | 126300 2007 OJ                |
| 2007 OE <sub>1</sub>   | 17.0 | 0.15 | 20071027 | 25.61802  | 5.63077   | 324.34897 | 0.62134  | 0.2045391 | 2.3684869 | 83   | 3 | 2000–2007 | 0.42 | M-v | 2 | MPC | 128917 2007 OE <sub>1</sub>   |
| 2007 OJ <sub>1</sub>   | 15.0 | 0.15 | 20071027 | 349.58657 | 204.48340 | 178.70667 | 18.43822 | 0.2641756 | 3.1888882 | 136  | 3 | 1993–2007 | 0.47 | M-v | 1 | MPC | 128917 2007 OJ <sub>1</sub>   |
| 2007 OS <sub>1</sub>   | 17.3 | 0.15 | 20071027 | 14.39958  | 56.30022  | 296.03824 | 9.36217  | 0.3007485 | 2.3202811 | 54   | 3 | 2000–2007 | 0.52 | M-v | 2 | MPC | 126300 2007 OS <sub>1</sub>   |
| 2007 OB <sub>2</sub>   | 17.3 | 0.15 | 20071027 | 18.59092  | 191.28408 | 147.55661 | 3.70623  | 0.3895303 | 2.4560664 | 117  | 1 | 169 days  | 0.51 | M-v | 3 | MPC | 128917 2007 OB <sub>2</sub>   |
| 2007 OH <sub>2</sub>   | 16.4 | 0.15 | 20071027 | 2.95275   | 33.43784  | 308.39338 | 9.28367  | 0.2905131 | 3.1005010 | 42   | 1 | 147 days  | 0.49 | M-v | 3 | MPC | 124513 2007 OH <sub>2</sub>   |
| 2007 OG <sub>3</sub>   | 18.4 | 0.15 | 20071027 | 27.41028  | 271.77690 | 78.45372  | 1.69259  | 0.4799005 | 2.1659336 | 45   | 1 | 148 days  | 0.52 | M-v | 4 | MPC | 122895 2007 OG <sub>3</sub>   |
| 2007 OS <sub>3</sub>   | 15.1 | 0.15 | 20071027 | 345.36338 | 88.65648  | 289.92219 | 23.38266 | 0.3407180 | 3.1749035 | 27   | 3 | 1997–2007 | 0.46 | M-v | 3 | MPC | 126301 2007 OS <sub>3</sub>   |
| 2007 OM <sub>4</sub>   | 15.0 | 0.15 | 20071027 | 29.24048  | 297.37727 | 28.84234  | 32.94185 | 0.3329194 | 2.7693862 | 143  | 2 | 2006–2007 | 0.42 | M-v | 2 | MPC | 128917 2007 OM <sub>4</sub>   |
| 2007 OW <sub>4</sub>   | 16.8 | 0.15 | 20071027 | 25.52813  | 328.67988 | 340.32202 | 12.56648 | 0.1493371 | 2.6926227 | 21   | 1 | 108 days  | 0.23 | M-v | 3 | MPC | 128917 2007 OW <sub>4</sub>   |
| 2007 OT <sub>5</sub>   | 17.1 | 0.15 | 20071027 | 47.72378  | 298.87470 | 329.21978 | 16.84874 | 0.3069845 | 2.6394625 | 61   | 3 | 2003–2007 | 0.47 | M-v | 2 | MPC | 124157 2007 OT <sub>5</sub>   |
| 2007 OC <sub>6</sub>   | 15.0 | 0.15 | 20071027 | 348.09651 | 20.95081  | 339.78066 | 17.95635 | 0.1479719 | 3.1927353 | 44   | 2 | 2002–2007 | 0.43 | M-v | 3 | MPC | 126302 2007 OC <sub>6</sub>   |
| 2007 OS <sub>6</sub>   | 17.1 | 0.15 | 20071027 | 5.96355   | 325.63920 | 40.35665  | 16.09506 | 0.5869487 | 3.3087514 | 314  | 1 | 147 days  | 0.34 | M-v | 2 | MPC | 128917 2007 OS <sub>6</sub>   |
| 2007 OT <sub>6</sub>   | 14.6 | 0.15 | 20071027 | 13.25781  | 299.93145 | 61.76763  | 26.98192 | 0.3835581 | 3.1684107 | 87   | 3 | 2002–2007 | 0.41 | M-v | 1 | MPC | 128917 2007 OT <sub>6</sub>   |
| 2007 OU <sub>6</sub>   | 12.2 | 0.15 | 20071027 | 347.45054 | 196.57767 | 172.99824 | 16.05736 | 0.0830625 | 5.2136316 | 103  | 5 | 1995–2007 | 0.46 | M-v | 0 | MPC | 128917 2007 OU <sub>6</sub>   |
| 2007 OH <sub>7</sub>   | 15.2 | 0.15 | 20071027 | 20.86089  | 98.49220  | 246.12020 | 23.80173 | 0.3702591 | 3.1854930 | 41   | 1 | 138 days  | 0.45 | M-v | 3 | MPC | 128917 2007 OH <sub>7</sub>   |
| 2007 OK <sub>7</sub>   | 15.1 | 0.15 | 20071027 | 343.66116 | 81.89748  | 311.95566 | 12.81587 | 0.2167266 | 2.7384026 | 90   | 4 | 1998–2007 | 0.45 | M-v | 1 | MPC | 128917 2007 OK <sub>7</sub>   |
| 2007 OW <sub>7</sub>   | 15.7 | 0.15 | 20071027 | 353.68368 | 56.41961  | 299.54571 | 11.25362 | 0.1358685 | 2.8048401 | 33   | 3 | 1999–2007 | 0.42 | M-v | 3 | MPC | 124158 2007 OW <sub>7</sub>   |
| 2007 OE <sub>8</sub>   | 17.2 | 0.15 | 20071027 | 28.37491  | 236.19207 | 83.43741  | 3.94971  | 0.2076232 | 2.2820193 | 68   | 6 | 1997–2007 | 0.48 | M-v | 1 | MPC | 126776 2007 OE <sub>8</sub>   |
| 2007 PR                | 16.7 | 0.15 | 20071027 | 0.88043   | 49.99600  | 318.29541 | 12.74812 | 0.5281235 | 3.0481821 | 379  | 2 | 2003–2007 | 0.42 | M-v | 1 | MPC | 128918 2007 PR                |
| 2007 PU <sub>1</sub>   | 16.8 | 0.15 | 20071027 | 4.30032   | 24.36521  | 316.17232 | 0.94372  | 0.1975904 | 2.4099508 | 70   | 6 | 1994–2007 | 0.43 | M-v | 1 | MPC | 128918 2007 PU <sub>1</sub>   |
| 2007 PM <sub>5</sub>   | 16.8 | 0.15 | 20071027 | 19.52249  | 8.00653   | 329.29965 | 8.72244  | 0.2266210 | 2.3408480 | 102  | 3 | 2000–2007 | 0.52 | M-v | 2 | MPC | 128918 2007 PM <sub>5</sub>   |
| 2007 PD <sub>6</sub>   | 15.2 | 0.15 | 20071027 | 326.82521 | 273.89365 | 139.60830 | 13.63840 | 0.3055016 | 3.1739184 | 44   | 3 | 1999–2007 | 0.53 | M-v | 2 | MPC | 126308 2007 PD <sub>6</sub>   |
| 2007 PP <sub>7</sub>   | 15.7 | 0.15 | 20071027 | 348.42924 | 137.82199 | 243.03243 | 12.26653 | 0.2064652 | 2.7526345 | 53   | 1 | 115 days  | 0.50 | M-v | 4 | MPC | 128918 2007 PP <sub>7</sub>   |
| 2007 PQ <sub>7</sub>   | 15.6 | 0.15 | 20071027 | 54.03083  | 317.10833 | 309.16973 | 8.89209  | 0.0768021 | 3.0803340 | 19   | 1 | 87 days   | 0.32 | M-v | 5 | MPC | 128918 2007 PQ <sub>7</sub>   |
| 2007 PA <sub>8</sub>   | 16.0 | 0.15 | 20071027 | 334.49832 | 291.92960 | 142.99824 | 1.98238  | 0.6614829 | 2.8295478 | 96   | 3 | 2002–2007 | 0.51 | M-v | 2 | MPC | 128292 2007 PA <sub>8</sub>   |
| 2007 PS <sub>8</sub>   | 17.4 | 0.15 | 20071027 | 1.99427   | 248.60233 | 142.22168 | 7.55527  | 0.4861830 | 2.6251209 | 76   | 1 | 119 days  | 0.46 | M-v | 4 | MPC | 128918 2007 PS <sub>8</sub>   |
| 2007 PG <sub>9</sub>   | 16.8 | 0.15 | 20071027 | 23.93373  | 292.20542 | 27.57946  | 11.41646 | 0.2669714 | 2.4425409 | 43   | 1 | 140 days  | 0.39 | M-v | 3 | MPC | 128918 2007 PG <sub>9</sub>   |
| 2007 PG <sub>10</sub>  | 17.0 | 0.15 | 20071027 | 9.11374   | 193.53436 | 145.51624 | 7.39363  | 0.1452211 | 2.4204520 | 30   | 1 | 90 days   | 0.61 | M-v | 4 | MPC | 2007 PG <sub>10</sub>         |
| 2007 PV <sub>10</sub>  | 15.9 | 0.15 | 20071027 | 5.35979   | 102.27421 | 263.72745 | 21.08028 | 0.1923426 | 2.4153554 | 51   | 3 | 2003–2007 | 0.49 | M-v | 2 | MPC | 128918 2007 PV <sub>10</sub>  |
| 2007 PK <sub>11</sub>  | 16.8 | 0.15 | 20070808 | 24.05983  | 147.67461 | 147.37644 | 1.41225  | 0.1764494 | 3.0470707 | 18   | 1 | 35 days   | 0.31 |     |   | MPC | 2007 PK <sub>11</sub>         |
| 2007 PU <sub>11</sub>  | 16.3 | 0.15 | 20071027 | 358.32316 | 195.04088 | 207.96523 | 13.80678 | 0.5524264 | 2.8241278 | 856  | 3 | 1989–2007 | 0.33 | M-v | 0 | MPC | 128918 2007 PU <sub>11</sub>  |
| 2007 PX <sub>11</sub>  | 16.7 | 0.15 | 20071027 | 52.74844  | 214.92660 | 64.97990  | 4.53143  | 0.1906950 | 2.5663055 | 29   | 3 | 1998–2007 | 0.57 | M-v | 2 | MPC | 128292 2007 PX <sub>11</sub>  |
| 2007 PT <sub>15</sub>  | 14.8 | 0.15 | 20071027 | 45.58389  | 302.39227 | 346.11858 | 16.37722 | 0.2055480 | 3.0886357 | 73   | 4 | 2000–2007 | 0.54 | M-v | 2 | MPC | 126313 2007 PT <sub>15</sub>  |
| 2007 PC <sub>16</sub>  | 17.0 | 0.15 | 20071027 | 46.55172  | 219.00693 | 71.92538  | 3.50035  | 0.1916240 | 2.3953257 | 33   | 3 | 2004–2007 | 0.54 | M-v | 2 | MPC | 128292 2007 PC <sub>16</sub>  |
| 2007 PH <sub>16</sub>  | 17.1 | 0.15 | 20071027 | 34.27452  | 189.59020 | 121.97129 | 7.56511  | 0.2549974 | 2.3597915 | 30   | 3 | 2003–2007 | 0.37 | M-v | 2 | MPC | 128292 2007 PH <sub>16</sub>  |
| 2007 PV <sub>16</sub>  | 15.7 | 0.15 | 20071027 | 32.27725  | 317.40445 | 5.24757   | 17.93039 | 0.2134332 | 2.8443303 | 85   | 2 | 2002–2007 | 0.53 | M-v | 3 | MPC | 128918 2007 PV <sub>16</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-----|------------------------------|
| 2007 PX <sub>16</sub> | 16.2 | 0.15 | 20071027 | 33.69807  | 247.51550 | 81.53395  | 3.35783  | 0.2107720 | 2.3921910 | 82  | 4 | 2003-2007 | 0.47 | M-v | 1   | MPC | 128918 2007 PX <sub>16</sub> |
| 2007 PE <sub>17</sub> | 17.0 | 0.15 | 20071027 | 356.84618 | 8.66458   | 12.89173  | 7.05364  | 0.1606534 | 2.1971385 | 130 | 3 | 2001-2007 | 0.55 | M-v | 3   | MPC | 128918 2007 PE <sub>17</sub> |
| 2007 PX <sub>18</sub> | 16.9 | 0.15 | 20071027 | 354.01800 | 49.49585  | 314.62105 | 5.63102  | 0.2301530 | 2.4870530 | 65  | 5 | 1996-2007 | 0.59 | M-v | 2   | MPC | 126778 2007 PX <sub>18</sub> |
| 2007 PU <sub>21</sub> | 16.8 | 0.15 | 20071027 | 342.02292 | 237.29740 | 157.44669 | 22.56293 | 0.2532661 | 2.3859509 | 76  | 4 | 2000-2007 | 0.46 | M-v | 1   | MPC | 126316 2007 PU <sub>21</sub> |
| 2007 PY <sub>21</sub> | 17.5 | 0.15 | 20071027 | 27.67926  | 306.64341 | 23.85808  | 2.46325  | 0.2545886 | 2.3402635 | 86  | 3 | 2000-2007 | 0.50 | M-v | 2   | MPC | 126317 2007 PY <sub>21</sub> |
| 2007 PS <sub>22</sub> | 16.4 | 0.15 | 20071027 | 33.61701  | 258.34757 | 71.00266  | 3.43150  | 0.2062489 | 2.3592223 | 103 | 4 | 2000-2007 | 0.54 | M-v | 2   | MPC | 128919 2007 PS <sub>22</sub> |
| 2007 PU <sub>22</sub> | 15.9 | 0.15 | 20071027 | 29.63355  | 212.94677 | 126.64844 | 7.88093  | 0.2304163 | 2.3784506 | 72  | 4 | 2003-2007 | 0.43 | M-v | 1   | MPC | 128919 2007 PU <sub>22</sub> |
| 2007 PX <sub>22</sub> | 17.5 | 0.15 | 20071027 | 33.43444  | 275.82006 | 53.05176  | 4.11907  | 0.2335717 | 2.2349829 | 89  | 3 | 2001-2007 | 0.50 | M-v | 2   | MPC | 128919 2007 PX <sub>22</sub> |
| 2007 PZ <sub>22</sub> | 16.2 | 0.15 | 20071027 | 21.03822  | 229.25968 | 114.64919 | 6.24653  | 0.3077368 | 2.6317520 | 48  | 1 | 117 days  | 0.51 | M-v | 4 D | MPC | 128919 2007 PZ <sub>22</sub> |
| 2007 PP <sub>23</sub> | 15.0 | 0.15 | 20071027 | 359.40276 | 60.43101  | 289.23823 | 12.71286 | 0.2713602 | 3.1978967 | 77  | 1 | 115 days  | 0.50 | M-v | 3   | MPC | 128919 2007 PP <sub>23</sub> |
| 2007 PR <sub>23</sub> | 15.8 | 0.15 | 20071027 | 22.04795  | 52.22259  | 269.27180 | 4.93551  | 0.2388297 | 2.4603053 | 106 | 5 | 1999-2007 | 0.55 | M-v | 2   | MPC | 128919 2007 PR <sub>23</sub> |
| 2007 PH <sub>24</sub> | 17.1 | 0.15 | 20071027 | 36.54305  | 106.77543 | 203.51306 | 6.04951  | 0.1542910 | 2.3007092 | 50  | 7 | 1993-2007 | 0.65 | M-v | 1   | MPC | 128293 2007 PH <sub>24</sub> |
| 2007 PL <sub>24</sub> | 17.4 | 0.15 | 20071027 | 15.70411  | 131.00688 | 209.57079 | 4.42889  | 0.1837040 | 2.2318068 | 57  | 4 | 2003-2007 | 0.53 | M-v | 1   | MPC | 128919 2007 PL <sub>24</sub> |
| 2007 PU <sub>24</sub> | 16.4 | 0.15 | 20071027 | 13.48049  | 113.72171 | 230.58175 | 1.66151  | 0.1941909 | 2.4241406 | 94  | 4 | 1996-2007 | 0.44 | M-v | 1   | MPC | 128919 2007 PU <sub>24</sub> |
| 2007 PV <sub>24</sub> | 15.9 | 0.15 | 20071027 | 326.49092 | 78.47415  | 327.08927 | 13.33450 | 0.1438537 | 2.6927359 | 69  | 2 | 2003-2007 | 0.52 | M-v | 4   | MPC | 126779 2007 PV <sub>24</sub> |
| 2007 PA <sub>25</sub> | 16.2 | 0.15 | 20071027 | 347.33108 | 62.43517  | 310.41810 | 13.09223 | 0.2991656 | 3.1209660 | 32  | 1 | 148 days  | 0.54 | M-v | 4   | MPC | 124518 2007 PA <sub>25</sub> |
| 2007 PJ <sub>25</sub> | 15.7 | 0.15 | 20071027 | 17.66274  | 201.06681 | 177.74799 | 15.64134 | 0.3158103 | 2.5794204 | 63  | 3 | 2005-2007 | 0.48 | M-v | 1   | MPC | 128919 2007 PJ <sub>25</sub> |
| 2007 PM <sub>25</sub> | 15.6 | 0.15 | 20071027 | 336.42861 | 78.93362  | 307.72036 | 14.95652 | 0.2547227 | 3.1355679 | 37  | 1 | 114 days  | 0.48 | M-v | 5   | MPC | 2007 PM <sub>25</sub>        |
| 2007 PT <sub>25</sub> | 16.7 | 0.15 | 20071027 | 29.02287  | 330.78745 | 323.99583 | 15.59733 | 0.2058452 | 2.7428734 | 27  | 1 | 88 days   | 0.40 | M-v | 4   | MPC | 128919 2007 PT <sub>25</sub> |
| 2007 PY <sub>25</sub> | 16.3 | 0.15 | 20071027 | 12.46562  | 231.67192 | 145.13717 | 5.81530  | 0.2986840 | 2.6032033 | 120 | 3 | 2002-2007 | 0.48 | M-v | 2   | MPC | 128919 2007 PY <sub>25</sub> |
| 2007 PG <sub>26</sub> | 17.5 | 0.15 | 20071027 | 21.92851  | 317.32050 | 27.45868  | 5.26002  | 0.2266332 | 2.1771092 | 75  | 3 | 2004-2007 | 0.56 | M-v | 2   | MPC | 128919 2007 PG <sub>26</sub> |
| 2007 PQ <sub>26</sub> | 15.1 | 0.15 | 20071027 | 36.54343  | 343.39081 | 339.92629 | 11.78273 | 0.2972422 | 2.6231997 | 94  | 5 | 1997-2007 | 0.49 | M-v | 1   | MPC | 128919 2007 PQ <sub>26</sub> |
| 2007 PC <sub>27</sub> | 16.4 | 0.15 | 20071027 | 12.18930  | 330.41300 | 19.06542  | 3.04070  | 0.1447511 | 2.6738338 | 74  | 5 | 2001-2007 | 0.50 | M-v | 1   | MPC | 128919 2007 PC <sub>27</sub> |
| 2007 PD <sub>27</sub> | 17.3 | 0.15 | 20071027 | 323.27321 | 33.34818  | 21.31615  | 4.42382  | 0.1446188 | 2.4075866 | 21  | 1 | 119 days  | 0.27 | M-v | 4   | MPC | 128919 2007 PD <sub>27</sub> |
| 2007 PE <sub>27</sub> | 17.5 | 0.15 | 20071027 | 354.50294 | 162.97798 | 210.49478 | 5.82572  | 0.1330281 | 2.4802767 | 22  | 1 | 119 days  | 0.43 | M-v | 4   | MPC | 128919 2007 PE <sub>27</sub> |
| 2007 PV <sub>27</sub> | 20.2 | 0.15 | 20071027 | 340.99861 | 107.61638 | 324.51702 | 24.59735 | 0.3710903 | 1.2735837 | 71  | 1 | 73 days   | 0.39 | M-v | 4   | MPC | 128920 2007 PV <sub>27</sub> |
| 2007 PP <sub>28</sub> | 16.8 | 0.15 | 20071027 | 327.43232 | 124.98125 | 293.80220 | 11.78025 | 0.1579584 | 2.5432586 | 24  | 1 | 112 days  | 0.53 | M-v | 4   | MPC | 2007 PP <sub>28</sub>        |
| 2007 PG <sub>29</sub> | 15.5 | 0.15 | 20071027 | 28.78946  | 12.74980  | 295.67311 | 11.90429 | 0.1883975 | 3.1987472 | 31  | 4 | 2001-2007 | 0.39 | M-v | 1   | MPC | 128920 2007 PG <sub>29</sub> |
| 2007 PV <sub>29</sub> | 16.6 | 0.15 | 20071027 | 5.93919   | 217.21679 | 134.24006 | 6.59055  | 0.1255656 | 2.3842270 | 45  | 3 | 1999-2007 | 0.53 | M-v | 2   | MPC | 126323 2007 PV <sub>29</sub> |
| 2007 PU <sub>30</sub> | 16.3 | 0.15 | 20071027 | 14.81958  | 82.71150  | 248.90216 | 6.21502  | 0.3440277 | 2.8570131 | 90  | 2 | 2002-2007 | 0.47 | M-v | 2   | MPC | 128920 2007 PU <sub>30</sub> |
| 2007 PE <sub>33</sub> | 16.4 | 0.15 | 20071027 | 30.30100  | 52.69888  | 265.09190 | 1.45386  | 0.2102885 | 2.3772926 | 75  | 4 | 2000-2007 | 0.53 | M-v | 1   | MPC | 128920 2007 PE <sub>33</sub> |
| 2007 PQ <sub>33</sub> | 15.7 | 0.15 | 20071027 | 12.92212  | 219.86314 | 168.90836 | 11.47398 | 0.2233781 | 2.5880344 | 52  | 3 | 2000-2007 | 0.48 | M-v | 2   | MPC | 128920 2007 PQ <sub>33</sub> |
| 2007 PW <sub>33</sub> | 16.3 | 0.15 | 20071027 | 343.40111 | 51.99930  | 336.16448 | 6.83192  | 0.2317742 | 2.8047026 | 69  | 6 | 1995-2007 | 0.55 | M-v | 1   | MPC | 128920 2007 PW <sub>33</sub> |
| 2007 PC <sub>34</sub> | 17.1 | 0.15 | 20071027 | 54.77542  | 88.72830  | 200.33045 | 2.07339  | 0.1827428 | 2.3631330 | 84  | 2 | 2006-2007 | 0.48 | M-v | 3   | MPC | 128920 2007 PC <sub>34</sub> |
| 2007 PY <sub>34</sub> | 17.0 | 0.15 | 20071027 | 24.56646  | 306.06564 | 18.80636  | 0.60419  | 0.2251662 | 2.2781171 | 101 | 5 | 2000-2007 | 0.52 | M-v | 1   | MPC | 128920 2007 PY <sub>34</sub> |
| 2007 PE <sub>35</sub> | 17.1 | 0.15 | 20071027 | 2.34875   | 358.49731 | 0.89997   | 1.03130  | 0.1985249 | 2.3617404 | 70  | 5 | 2000-2007 | 0.47 | M-v | 1   | MPC | 128920 2007 PE <sub>35</sub> |
| 2007 PH <sub>35</sub> | 16.4 | 0.15 | 20071027 | 10.91803  | 17.94558  | 351.05668 | 5.30235  | 0.2539410 | 2.3927517 | 142 | 4 | 2001-2007 | 0.40 | M-v | 1   | MPC | 128920 2007 PH <sub>35</sub> |
| 2007 PK <sub>35</sub> | 16.6 | 0.15 | 20071027 | 25.30371  | 134.18795 | 209.42139 | 1.57645  | 0.2537628 | 2.3666328 | 122 | 4 | 1995-2007 | 0.46 | M-v | 2   | MPC | 128920 2007 PK <sub>35</sub> |
| 2007 PL <sub>35</sub> | 14.9 | 0.15 | 20071027 | 27.13697  | 345.16793 | 19.38677  | 11.31381 | 0.2258362 | 2.6178569 | 113 | 4 | 1990-2007 | 0.40 | M-v | 2   | MPC | 128920 2007 PL <sub>35</sub> |
| 2007 PP <sub>35</sub> | 17.6 | 0.15 | 20071027 | 30.65799  | 5.33258   | 313.95241 | 2.08161  | 0.2062497 | 2.2427490 | 51  | 1 | 118 days  | 0.53 | M-v | 4   | MPC | 128920 2007 PP <sub>35</sub> |
| 2007 PH <sub>37</sub> | 11.5 | 0.15 | 20071027 | 293.39841 | 94.32313  | 317.32812 | 20.01382 | 0.0736299 | 5.2039237 | 54  | 4 | 2001-2007 | 0.57 | M-v | 2   | MPC | 126329 2007 PH <sub>37</sub> |
| 2007 PO <sub>37</sub> | 17.4 | 0.15 | 20071027 | 358.95412 | 57.12271  | 309.92281 | 6.38654  | 0.2622129 | 2.2190656 | 67  | 3 | 2002-2007 | 0.46 | M-v | 2   | MPC | 128920 2007 PO <sub>37</sub> |
| 2007 PD <sub>38</sub> | 16.6 | 0.15 | 20071027 | 14.68528  | 47.83217  | 309.59066 | 5.39040  | 0.2704544 | 2.3862412 | 67  | 2 | 2004-2007 | 0.44 | M-v | 3   | MPC | 128920 2007 PD <sub>38</sub> |
| 2007 PD <sub>39</sub> | 15.2 | 0.15 | 20071027 | 35.95449  | 68.88123  | 223.47022 | 15.69317 | 0.1929781 | 3.1408820 | 44  | 3 | 2002-2007 | 0.58 | M-v | 1   | MPC | 126331 2007 PD <sub>39</sub> |
| 2007 PH <sub>39</sub> | 16.5 | 0.15 | 20071027 | 18.80329  | 166.56080 | 180.12137 | 2.09890  | 0.2215654 | 2.3669464 | 117 | 5 | 1996-2007 | 0.47 | M-v | 1   | MPC | 128920 2007 PH <sub>39</sub> |
| 2007 PH <sub>40</sub> | 18.0 | 0.15 | 20071027 | 29.57805  | 90.59444  | 223.64263 | 2.34519  | 0.2527895 | 2.4330038 | 27  | 1 | 116 days  | 0.52 | M-v | 4   | MPC | 2007 PH <sub>40</sub>        |
| 2007 PM <sub>40</sub> | 13.1 | 0.15 | 20071027 | 325.68423 | 64.81262  | 324.65606 | 17.91034 | 0.0931066 | 5.2089935 | 22  | 1 | 116 days  | 0.56 | M-v | 6   | MPC | 2007 PM <sub>40</sub>        |
| 2007 PS <sub>40</sub> | 15.1 | 0.15 | 20071027 | 342.16652 | 53.41184  | 322.19643 | 10.57397 | 0.2282764 | 3.2341324 | 44  | 2 | 2001-2007 | 0.51 | M-v | 3   | MPC | 124520 2007 PS <sub>40</sub> |
| 2007 PO <sub>42</sub> | 16.8 | 0.15 | 20071027 | 11.73670  | 155.79601 | 216.20751 | 2.58747  | 0.2665862 | 2.2213630 | 194 | 6 | 1997-2007 | 0.45 | M-v | 1   | MPC | 128921 2007 PO <sub>42</sub> |
| 2007 PC <sub>43</sub> | 16.3 | 0.15 | 20071027 | 27.63896  | 348.29511 | 326.58441 | 12.94629 | 0.1631963 | 2.6506203 | 55  | 4 | 2001-2007 | 0.59 | M-v | 2   | MPC | 126334 2007 PC <sub>43</sub> |
| 2007 PF <sub>43</sub> | 15.9 | 0.15 | 20071027 | 2.39420   | 192.37211 | 183.42884 | 3.97919  | 0.3137462 | 3.0864509 | 109 | 4 | 1996-2007 | 0.47 | M-v | 2   | MPC | 128921 2007 PF <sub>43</sub> |
| 2007 PK <sub>43</sub> | 17.9 | 0.15 | 20071027 | 47.52903  | 333.30394 | 322.37542 | 1.82979  | 0.2177368 | 2.2973599 | 42  | 2 | 2003-2007 | 0.47 | M-v | 4   | MPC | 126334 2007 PK <sub>43</sub> |
| 2007 PR <sub>44</sub> | 16.8 | 0.15 | 20071027 | 343.91249 | 13.21590  | 27.98021  | 0.95128  | 0.3537144 | 3.0499323 | 84  | 4 | 1998-2007 | 0.46 | M-v | 2   | MPC | 128921 2007 PR <sub>44</sub> |

|                       |      |      |          |           |           |           |          |           |            |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 PX <sub>44</sub> | 15.6 | 0.15 | 20071027 | 359.03188 | 260.30947 | 125.45620 | 29.58319 | 0.3259880 | 2.6437880  | 40  | 1 | 140 days  | 0.36 | M-v | 3 | MPC | 2007 PX <sub>44</sub>        |
| 2007 QD               | 16.8 | 0.15 | 20071027 | 25.40896  | 17.11167  | 319.45464 | 6.58981  | 0.1364969 | 2.3181672  | 54  | 2 | 2002-2007 | 0.51 | M-v | 3 | MPC | 126781 2007 QD               |
| 2007 QH               | 15.3 | 0.15 | 20071027 | 22.60748  | 358.03522 | 319.05654 | 16.84148 | 0.1639466 | 3.0940279  | 55  | 2 | 2002-2007 | 0.50 | M-v | 3 | MPC | 124194 2007 QH               |
| 2007 QJ               | 15.5 | 0.15 | 20071027 | 31.64544  | 355.65241 | 311.04946 | 9.70274  | 0.1891381 | 2.7225584  | 85  | 3 | 1998-2007 | 0.49 | M-v | 2 | MPC | 128921 2007 QJ               |
| 2007 QO               | 15.6 | 0.15 | 20071027 | 342.74274 | 14.04992  | 16.07311  | 8.32271  | 0.2443329 | 2.4372633  | 95  | 5 | 1994-2007 | 0.51 | M-v | 1 | MPC | 128921 2007 QO               |
| 2007 QR               | 15.8 | 0.15 | 20071027 | 8.75046   | 351.05849 | 0.81073   | 11.61832 | 0.3115822 | 2.4035447  | 103 | 4 | 2002-2007 | 0.36 | M-v | 1 | MPC | 128921 2007 QR               |
| 2007 QF <sub>2</sub>  | 16.5 | 0.15 | 20071027 | 336.63753 | 146.70212 | 232.76450 | 11.18270 | 0.1517123 | 2.8924231  | 37  | 3 | 1997-2007 | 0.28 | M-v | 2 | MPC | 124196 2007 QF <sub>2</sub>  |
| 2007 QD <sub>3</sub>  | 16.4 | 0.15 | 20071027 | 358.07306 | 335.02548 | 74.68090  | 8.17779  | 0.4864621 | 2.6881090  | 130 | 1 | 125 days  | 0.38 | M-v | 3 | MPC | 128921 2007 QD <sub>3</sub>  |
| 2007 QR <sub>3</sub>  | 15.5 | 0.15 | 20071027 | 0.02351   | 29.63805  | 318.43220 | 17.20374 | 0.1549558 | 3.1256206  | 43  | 1 | 146 days  | 0.52 | M-v | 3 | MPC | 128921 2007 QR <sub>3</sub>  |
| 2007 QS <sub>3</sub>  | 16.1 | 0.15 | 20071027 | 50.11403  | 271.56512 | 23.17317  | 13.90268 | 0.2472663 | 2.4248122  | 72  | 3 | 1996-2007 | 0.55 | M-v | 2 | MPC | 128921 2007 QS <sub>3</sub>  |
| 2007 QJ <sub>5</sub>  | 17.7 | 0.15 | 20071027 | 11.23166  | 354.20196 | 353.74331 | 4.26852  | 0.1770436 | 2.2621690  | 61  | 2 | 2006-2007 | 0.49 | M-v | 3 | MPC | 128921 2007 QJ <sub>5</sub>  |
| 2007 QK <sub>5</sub>  | 12.7 | 0.15 | 20071027 | 342.72994 | 16.78563  | 352.58293 | 19.93843 | 0.0740348 | 5.1881245  | 54  | 2 | 2002-2007 | 0.50 | M-v | 2 | MPC | 126339 2007 QK <sub>5</sub>  |
| 2007 QU <sub>5</sub>  | 16.7 | 0.15 | 20071027 | 25.74102  | 4.02770   | 323.45356 | 1.79836  | 0.2425633 | 2.3845632  | 87  | 4 | 1998-2007 | 0.43 | M-v | 2 | MPC | 128921 2007 QU <sub>5</sub>  |
| 2007 QY <sub>5</sub>  | 15.3 | 0.15 | 20070828 | 317.48249 | 220.81262 | 158.66326 | 9.65407  | 0.0752840 | 3.1751049  | 24  | 1 | 44 days   | 0.63 |     | D | MPC | 2007 QY <sub>5</sub>         |
| 2007 QX <sub>6</sub>  | 17.1 | 0.15 | 20071027 | 350.62213 | 226.47745 | 146.79210 | 8.33365  | 0.2240165 | 2.6876988  | 29  | 2 | 2003-2007 | 0.50 | M-v | 4 | MPC | 126341 2007 QX <sub>6</sub>  |
| 2007 QO <sub>7</sub>  | 17.4 | 0.15 | 20071027 | 31.72278  | 113.24555 | 204.93643 | 1.99804  | 0.1864444 | 2.3513907  | 41  | 3 | 2000-2007 | 0.47 | M-v | 2 | MPC | 126782 2007 QO <sub>7</sub>  |
| 2007 QX <sub>7</sub>  | 17.4 | 0.15 | 20071027 | 17.01996  | 322.78617 | 19.67848  | 2.75247  | 0.2040771 | 2.3551887  | 93  | 3 | 2002-2007 | 0.49 | M-v | 2 | MPC | 128922 2007 QX <sub>7</sub>  |
| 2007 QZ <sub>7</sub>  | 15.4 | 0.15 | 20071027 | 29.49015  | 331.73571 | 350.92458 | 5.00004  | 0.1333357 | 3.1664605  | 77  | 3 | 1993-2007 | 0.47 | M-v | 2 | MPC | 126782 2007 QZ <sub>7</sub>  |
| 2007 QF <sub>8</sub>  | 17.7 | 0.15 | 20070828 | 350.98905 | 248.36782 | 114.61206 | 5.26912  | 0.3367462 | 2.6428685  | 25  | 1 | 51 days   | 0.63 |     |   | MPC | 2007 QF <sub>8</sub>         |
| 2007 QJ <sub>8</sub>  | 17.1 | 0.15 | 20071027 | 356.32077 | 357.06907 | 19.06612  | 4.57658  | 0.2055696 | 2.3666883  | 61  | 2 | 2000-2007 | 0.47 | M-v | 3 | MPC | 128922 2007 QJ <sub>8</sub>  |
| 2007 QU <sub>8</sub>  | 16.7 | 0.15 | 20070917 | 2.98249   | 175.95653 | 161.07746 | 10.20358 | 0.2248648 | 2.7120714  | 26  | 1 | 54 days   | 0.59 |     | D | MPC | 2007 QU <sub>8</sub>         |
| 2007 QZ <sub>8</sub>  | 18.1 | 0.15 | 20071027 | 29.18917  | 329.49444 | 347.24361 | 1.24926  | 0.2372833 | 2.2865356  | 28  | 1 | 71 days   | 0.51 | M-v | 4 | MPC | 2007 QZ <sub>8</sub>         |
| 2007 QR <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 7.24283   | 164.53232 | 192.25903 | 0.58956  | 0.2034820 | 2.4269324  | 74  | 3 | 2005-2007 | 0.35 | M-v | 2 | MPC | 128922 2007 QR <sub>9</sub>  |
| 2007 QV <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 344.88094 | 47.73982  | 345.74600 | 1.99169  | 0.2306238 | 2.3792700  | 72  | 2 | 1996-2007 | 0.49 | M-v | 3 | MPC | 128922 2007 QV <sub>9</sub>  |
| 2007 QY <sub>9</sub>  | 16.0 | 0.15 | 20071027 | 1.34280   | 357.39496 | 6.22990   | 5.07148  | 0.1700129 | 2.7804269  | 93  | 3 | 2002-2007 | 0.48 | M-v | 2 | MPC | 128922 2007 QY <sub>9</sub>  |
| 2007 QF <sub>11</sub> | 17.4 | 0.15 | 20071027 | 66.11985  | 116.55678 | 161.32407 | 14.15775 | 0.1615891 | 2.6081901  | 19  | 1 | 66 days   | 0.29 | M-v | 4 | MPC | 2007 QF <sub>11</sub>        |
| 2007 QK <sub>11</sub> | 18.1 | 0.15 | 20071027 | 1.77344   | 250.78149 | 116.76341 | 0.73895  | 0.2813757 | 2.4698841  | 63  | 1 | 104 days  | 0.33 | M-v | 3 | MPC | 128922 2007 QK <sub>11</sub> |
| 2007 QS <sub>11</sub> | 17.1 | 0.15 | 20071027 | 354.69334 | 41.02273  | 331.79620 | 5.43178  | 0.2404555 | 2.7206569  | 27  | 1 | 94 days   | 0.40 | M-v | 3 | MPC | 2007 QS <sub>11</sub>        |
| 2007 QY <sub>11</sub> | 15.6 | 0.15 | 20071027 | 33.62813  | 327.45233 | 21.06494  | 12.29815 | 0.2763140 | 2.5931940  | 95  | 3 | 1986-2007 | 0.49 | M-v | 3 | MPC | 128922 2007 QY <sub>11</sub> |
| 2007 RE <sub>1</sub>  | 22.1 | 0.15 | 20071027 | 359.84451 | 165.59691 | 235.70796 | 5.44860  | 0.6177427 | 2.6392976  | 69  | 1 | 95 days   | 0.48 | M-v | 4 | MPC | 128922 2007 RE <sub>1</sub>  |
| 2007 RH <sub>1</sub>  | 22.6 | 0.15 | 20071027 | 39.26037  | 170.89211 | 158.02828 | 6.98510  | 0.1976579 | 1.4147780  | 39  | 1 | 45 days   | 0.49 | M-v | 5 | MPC | 124524 2007 RH <sub>1</sub>  |
| 2007 RP <sub>1</sub>  | 17.2 | 0.15 | 20071027 | 7.22646   | 4.19233   | 357.38536 | 8.04402  | 0.1961246 | 2.1866798  | 96  | 5 | 1996-2007 | 0.48 | M-v | 1 | MPC | 128922 2007 RP <sub>1</sub>  |
| 2007 RB <sub>2</sub>  | 17.0 | 0.15 | 20071027 | 20.18399  | 354.90000 | 358.23363 | 2.42527  | 0.2173141 | 2.4270116  | 86  | 3 | 2002-2007 | 0.52 | M-v | 3 | MPC | 128923 2007 RB <sub>2</sub>  |
| 2007 RL <sub>3</sub>  | 16.8 | 0.15 | 20071027 | 19.02089  | 330.40787 | 351.98471 | 0.88985  | 0.1945161 | 3.0888456  | 25  | 3 | 2002-2007 | 0.52 | M-v | 4 | MPC | 128295 2007 RL <sub>3</sub>  |
| 2007 RF <sub>5</sub>  | 18.4 | 0.15 | 20071027 | 125.87282 | 221.41519 | 12.72628  | 31.92563 | 0.3832910 | 1.0639776  | 311 | 1 | 86 days   | 0.38 | M-v | 4 | MPC | 128923 2007 RF <sub>5</sub>  |
| 2007 RX <sub>5</sub>  | 16.7 | 0.15 | 20071027 | 68.47872  | 76.53688  | 202.05744 | 4.30258  | 0.1412679 | 2.3965695  | 70  | 2 | 2006-2007 | 0.46 | M-v | 3 | MPC | 126784 2007 RX <sub>5</sub>  |
| 2007 RA <sub>7</sub>  | 16.3 | 0.15 | 20071027 | 38.67445  | 21.86078  | 292.96190 | 6.52999  | 0.1610328 | 2.3870784  | 65  | 4 | 2002-2007 | 0.55 | M-v | 1 | MPC | 126350 2007 RA <sub>7</sub>  |
| 2007 RD <sub>7</sub>  | 16.5 | 0.15 | 20071027 | 359.07196 | 13.23063  | 5.05308   | 6.69569  | 0.1838825 | 2.2391884  | 126 | 2 | 1997-2007 | 0.45 | M-v | 3 | MPC | 128923 2007 RD <sub>7</sub>  |
| 2007 RM <sub>7</sub>  | 16.6 | 0.15 | 20070828 | 321.11767 | 245.02787 | 162.56623 | 12.42378 | 0.2696691 | 3.0517896  | 21  | 1 | 47 days   | 0.34 |     |   | MPC | 2007 RM <sub>7</sub>         |
| 2007 RG <sub>8</sub>  | 16.6 | 0.15 | 20071027 | 8.81699   | 80.45850  | 296.93390 | 6.19522  | 0.1713320 | 2.6170815  | 38  | 1 | 98 days   | 0.51 | M-v | 4 | MPC | 128923 2007 RG <sub>8</sub>  |
| 2007 RW <sub>8</sub>  | 18.7 | 0.15 | 20071027 | 358.47807 | 33.91969  | 10.68871  | 3.36310  | 0.5145882 | 2.8178153  | 289 | 1 | 91 days   | 0.39 | M-v | 4 | MPC | 128923 2007 RW <sub>8</sub>  |
| 2007 RV <sub>9</sub>  | 20.1 | 0.15 | 20071027 | 332.87633 | 116.33602 | 340.80599 | 6.38748  | 0.5677398 | 1.9399529  | 85  | 1 | 85 days   | 0.39 | M-v | 4 | MPC | 128923 2007 RV <sub>9</sub>  |
| 2007 RG <sub>10</sub> | 16.5 | 0.15 | 20071027 | 51.52438  | 88.28202  | 214.04843 | 5.97032  | 0.1183854 | 2.3417292  | 70  | 3 | 2002-2007 | 0.61 | M-v | 2 | MPC | 128923 2007 RG <sub>10</sub> |
| 2007 RW <sub>10</sub> | 7.4  | 0.15 | 20071007 | 46.96602  | 94.96227  | 187.01670 | 36.21974 | 0.3257865 | 30.7162576 | 18  | 1 | 81 days   | 0.32 |     |   | MPC | 2007 RW <sub>10</sub>        |
| 2007 RH <sub>11</sub> | 16.8 | 0.15 | 20071027 | 35.85854  | 307.70568 | 16.89552  | 28.95864 | 0.3070227 | 2.2225662  | 117 | 1 | 88 days   | 0.45 | M-v | 4 | MPC | 128924 2007 RH <sub>11</sub> |
| 2007 RU <sub>12</sub> | 20.0 | 0.15 | 20071027 | 1.49591   | 334.58976 | 56.39557  | 7.00742  | 0.4483291 | 2.2916798  | 240 | 1 | 94 days   | 0.44 | M-v | 3 | MPC | 128924 2007 RU <sub>12</sub> |
| 2007 RH <sub>13</sub> | 16.0 | 0.15 | 20071027 | 33.75036  | 298.85266 | 12.30125  | 11.87982 | 0.2744979 | 3.0739984  | 59  | 1 | 104 days  | 0.50 | M-v | 4 | MPC | 128924 2007 RH <sub>13</sub> |
| 2007 RQ <sub>13</sub> | 17.2 | 0.15 | 20071027 | 28.47245  | 3.12623   | 329.34946 | 1.81808  | 0.2299957 | 2.2576271  | 125 | 4 | 2002-2007 | 0.47 | M-v | 2 | MPC | 128924 2007 RQ <sub>13</sub> |
| 2007 RY <sub>13</sub> | 16.0 | 0.15 | 20071027 | 17.59117  | 73.10340  | 266.82156 | 6.54603  | 0.2348772 | 2.7762536  | 58  | 2 | 2003-2007 | 0.50 | M-v | 3 | MPC | 128924 2007 RY <sub>13</sub> |
| 2007 RA <sub>14</sub> | 16.7 | 0.15 | 20071027 | 19.49238  | 137.02437 | 223.80848 | 1.56641  | 0.2524968 | 2.3560231  | 148 | 5 | 1996-2007 | 0.43 | M-v | 1 | MPC | 128924 2007 RA <sub>14</sub> |
| 2007 RF <sub>15</sub> | 17.1 | 0.15 | 20071027 | 320.11176 | 22.61947  | 43.36958  | 1.65361  | 0.1626206 | 2.4350500  | 49  | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 126355 2007 RF <sub>15</sub> |
| 2007 RH <sub>15</sub> | 17.7 | 0.15 | 20071027 | 36.62241  | 113.74950 | 203.68152 | 2.15738  | 0.2560305 | 2.3653521  | 70  | 1 | 84 days   | 0.69 | M-v | 5 | MPC | 2007 RH <sub>15</sub>        |
| 2007 RK <sub>15</sub> | 17.0 | 0.15 | 20071027 | 11.29206  | 333.42636 | 30.48317  | 13.63098 | 0.2200655 | 2.3952412  | 81  | 1 | 83 days   | 0.55 | M-v | 3 | MPC | 128924 2007 RK <sub>15</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 RO <sub>15</sub> | 16.1 | 0.15 | 20071027 | 66.55710  | 88.52923  | 285.52330 | 30.61829 | 0.1409941 | 2.5751352 | 22  | 1 | 84 days   | 0.31 | M-v | 4 | MPC | 2007 RO <sub>15</sub>        |
| 2007 RX <sub>15</sub> | 14.4 | 0.15 | 20071027 | 254.99787 | 290.70794 | 195.04569 | 17.46113 | 0.3661456 | 3.0653322 | 24  | 1 | 84 days   | 0.30 | M-v | 5 | MPC | 2007 RX <sub>15</sub>        |
| 2007 RZ <sub>15</sub> | 16.5 | 0.15 | 20071027 | 21.91332  | 140.76611 | 210.36185 | 2.75333  | 0.2169490 | 2.3628736 | 156 | 4 | 1996-2007 | 0.41 | M-v | 2 | MPC | 128924 2007 RZ <sub>15</sub> |
| 2007 RE <sub>16</sub> | 15.9 | 0.15 | 20071007 | 58.16461  | 2.15617   | 282.22774 | 7.82002  | 0.0539949 | 3.1571686 | 23  | 1 | 50 days   | 0.31 |     |   | MPC | 2007 RE <sub>16</sub>        |
| 2007 RQ <sub>16</sub> | 16.9 | 0.15 | 20071027 | 23.70291  | 311.71720 | 31.97966  | 2.83767  | 0.2379947 | 2.4155942 | 150 | 5 | 1992-2007 | 0.52 | M-v | 1 | MPC | 128924 2007 RQ <sub>16</sub> |
| 2007 RU <sub>16</sub> | 17.8 | 0.15 | 20071027 | 7.15657   | 121.28478 | 245.80475 | 0.47156  | 0.2066814 | 2.3348459 | 100 | 3 | 2004-2007 | 0.52 | M-v | 3 | MPC | 126357 2007 RU <sub>16</sub> |
| 2007 RV <sub>16</sub> | 17.7 | 0.15 | 20071027 | 359.84366 | 357.65753 | 26.63181  | 4.48761  | 0.2451493 | 2.3710086 | 152 | 2 | 1996-2007 | 0.52 | M-v | 3 | MPC | 128924 2007 RV <sub>16</sub> |
| 2007 RU <sub>17</sub> | 18.2 | 0.15 | 20071027 | 335.02618 | 128.33731 | 18.86676  | 8.91230  | 0.8260090 | 2.0442941 | 137 | 1 | 83 days   | 0.45 | M-v | 5 | MPC | 128925 2007 RU <sub>17</sub> |
| 2007 RA <sub>18</sub> | 17.2 | 0.15 | 20071027 | 345.48059 | 157.67473 | 233.32921 | 2.65333  | 0.2439686 | 2.4354627 | 40  | 1 | 94 days   | 0.43 | M-v | 4 | MPC | 128925 2007 RA <sub>18</sub> |
| 2007 RE <sub>18</sub> | 17.6 | 0.15 | 20071027 | 30.67581  | 241.53571 | 80.30159  | 7.77008  | 0.1290970 | 2.3592864 | 12  | 1 | 82 days   | 0.55 | M-v | 5 | MPC | 2007 RE <sub>18</sub>        |
| 2007 RH <sub>18</sub> | 17.0 | 0.15 | 20071027 | 312.26069 | 204.78006 | 222.44915 | 4.12325  | 0.1117776 | 2.3238371 | 43  | 2 | 2006-2007 | 0.44 | M-v | 4 | MPC | 128925 2007 RH <sub>18</sub> |
| 2007 RS <sub>18</sub> | 18.2 | 0.15 | 20071027 | 3.25781   | 170.38240 | 191.52973 | 1.97812  | 0.2098334 | 2.4579014 | 34  | 1 | 78 days   | 0.44 | M-v | 4 | MPC | 2007 RS <sub>18</sub>        |
| 2007 RU <sub>18</sub> | 17.7 | 0.15 | 20071027 | 42.62617  | 115.49634 | 188.07758 | 1.68319  | 0.2074360 | 2.3779716 | 37  | 1 | 114 days  | 0.44 | M-v | 4 | MPC | 2007 RU <sub>18</sub>        |
| 2007 RD <sub>20</sub> | 21.0 | 0.15 | 20071027 | 8.04210   | 341.22801 | 26.64808  | 11.03560 | 0.5480498 | 2.4133137 | 79  | 1 | 74 days   | 0.37 | M-v | 4 | MPC | 128925 2007 RD <sub>20</sub> |
| 2007 RB <sub>21</sub> | 18.2 | 0.15 | 20071027 | 7.37212   | 205.43904 | 146.65136 | 1.76390  | 0.2031524 | 2.4102856 | 27  | 1 | 70 days   | 0.47 | M-v | 4 | MPC | 2007 RB <sub>21</sub>        |
| 2007 RX <sub>21</sub> | 15.7 | 0.15 | 20071027 | 69.76988  | 277.11257 | 4.30236   | 12.31148 | 0.0913182 | 2.7240188 | 82  | 2 | 2001-2007 | 0.45 | M-v | 3 | MPC | 128925 2007 RX <sub>21</sub> |
| 2007 RC <sub>22</sub> | 15.4 | 0.15 | 20071027 | 0.03326   | 212.78892 | 143.24671 | 9.96934  | 0.1058563 | 3.0316351 | 27  | 1 | 60 days   | 0.58 | M-v | 5 | MPC | 2007 RC <sub>22</sub>        |
| 2007 RM <sub>22</sub> | 15.1 | 0.15 | 20071027 | 71.78961  | 306.15330 | 315.05341 | 12.99995 | 0.1549219 | 3.1770073 | 35  | 3 | 2001-2007 | 0.53 | M-v | 2 | MPC | 126363 2007 RM <sub>22</sub> |
| 2007 RN <sub>22</sub> | 15.2 | 0.15 | 20071027 | 54.25699  | 333.25815 | 312.16652 | 11.01328 | 0.1195454 | 3.1710157 | 29  | 1 | 94 days   | 0.57 | M-v | 6 | MPC | 2007 RN <sub>22</sub>        |
| 2007 RV <sub>22</sub> | 17.9 | 0.15 | 20071027 | 1.86099   | 135.57605 | 229.22586 | 1.58599  | 0.2320302 | 2.3631722 | 51  | 3 | 2000-2007 | 0.41 | M-v | 2 | MPC | 128925 2007 RV <sub>22</sub> |
| 2007 RA <sub>23</sub> | 14.6 | 0.15 | 20071027 | 10.74456  | 69.21250  | 267.37739 | 11.10053 | 0.0615180 | 3.1298536 | 45  | 3 | 2001-2007 | 0.49 | M-v | 3 | MPC | 126363 2007 RA <sub>23</sub> |
| 2007 RP <sub>23</sub> | 15.9 | 0.15 | 20071027 | 41.56387  | 327.06858 | 333.96850 | 13.38317 | 0.2542205 | 2.6674180 | 41  | 1 | 111 days  | 0.41 | M-v | 4 | MPC | 128925 2007 RP <sub>23</sub> |
| 2007 RY <sub>23</sub> | 18.0 | 0.15 | 20071027 | 11.24281  | 111.35972 | 241.00085 | 1.18447  | 0.2580072 | 2.3457773 | 63  | 1 | 106 days  | 0.44 | M-v | 3 | MPC | 128925 2007 RY <sub>23</sub> |
| 2007 RM <sub>24</sub> | 16.3 | 0.15 | 20071027 | 20.86727  | 200.19422 | 153.81256 | 6.57929  | 0.2361298 | 2.3610726 | 103 | 5 | 1996-2007 | 0.44 | M-v | 1 | MPC | 128926 2007 RM <sub>24</sub> |
| 2007 RT <sub>27</sub> | 16.1 | 0.15 | 20071027 | 358.12811 | 311.77152 | 51.30780  | 6.45373  | 0.2404564 | 2.4561999 | 57  | 4 | 2001-2007 | 0.47 | M-v | 1 | MPC | 128926 2007 RT <sub>27</sub> |
| 2007 RC <sub>28</sub> | 14.9 | 0.15 | 20071027 | 334.78926 | 30.48408  | 3.06321   | 17.25277 | 0.2115756 | 3.1385257 | 73  | 4 | 1997-2007 | 0.50 | M-v | 1 | MPC | 128926 2007 RC <sub>28</sub> |
| 2007 RK <sub>29</sub> | 17.3 | 0.15 | 20071027 | 349.85382 | 163.69988 | 219.69102 | 5.30326  | 0.1486814 | 2.2631037 | 48  | 1 | 91 days   | 0.56 | M-v | 4 | MPC | 2007 RK <sub>29</sub>        |
| 2007 RL <sub>29</sub> | 17.0 | 0.15 | 20071027 | 339.99219 | 182.79296 | 211.59343 | 8.78208  | 0.1074667 | 2.2372821 | 40  | 2 | 2006-2007 | 0.46 | M-v | 3 | MPC | 128926 2007 RL <sub>29</sub> |
| 2007 RG <sub>30</sub> | 14.8 | 0.15 | 20071027 | 289.14475 | 265.78722 | 158.85062 | 22.47382 | 0.0616003 | 3.2219569 | 52  | 5 | 1994-2007 | 0.55 | M-v | 0 | MPC | 128297 2007 RG <sub>30</sub> |
| 2007 RP <sub>30</sub> | 15.2 | 0.15 | 20071027 | 28.72351  | 17.98251  | 302.88399 | 15.36105 | 0.2460722 | 3.1294462 | 32  | 2 | 2003-2007 | 0.43 | M-v | 3 | MPC | 126368 2007 RP <sub>30</sub> |
| 2007 RV <sub>30</sub> | 17.2 | 0.15 | 20071027 | 351.63691 | 166.76447 | 215.20004 | 4.84621  | 0.3164034 | 2.6649827 | 39  | 1 | 112 days  | 0.55 | M-v | 4 | MPC | 128926 2007 RV <sub>30</sub> |
| 2007 RS <sub>31</sub> | 15.2 | 0.15 | 20071027 | 40.19413  | 62.77522  | 239.28539 | 8.81404  | 0.1827740 | 2.7939772 | 24  | 1 | 117 days  | 0.53 | M-v | 5 | MPC | 2007 RS <sub>31</sub>        |
| 2007 RU <sub>31</sub> | 17.4 | 0.15 | 20071027 | 359.60457 | 160.77840 | 206.12264 | 9.66613  | 0.2704570 | 2.4337946 | 27  | 1 | 92 days   | 0.54 | M-v | 4 | MPC | 2007 RU <sub>31</sub>        |
| 2007 RW <sub>31</sub> | 16.0 | 0.15 | 20071027 | 21.47600  | 279.05415 | 53.98255  | 8.35653  | 0.1776768 | 2.4230036 | 48  | 3 | 1995-2007 | 0.45 | M-v | 2 | MPC | 126369 2007 RW <sub>31</sub> |
| 2007 RF <sub>32</sub> | 16.1 | 0.15 | 20071027 | 25.65631  | 318.48149 | 9.26247   | 14.85618 | 0.1632321 | 2.4601405 | 53  | 1 | 92 days   | 0.53 | M-v | 4 | MPC | 2007 RF <sub>32</sub>        |
| 2007 RV <sub>32</sub> | 16.1 | 0.15 | 20071027 | 5.47189   | 346.25331 | 18.26783  | 10.06735 | 0.2866975 | 2.4200792 | 112 | 3 | 1992-2007 | 0.49 | M-v | 2 | MPC | 128926 2007 RV <sub>32</sub> |
| 2007 RX <sub>32</sub> | 16.1 | 0.15 | 20071027 | 12.95732  | 321.27541 | 23.67602  | 9.22186  | 0.2952396 | 2.7858235 | 72  | 1 | 91 days   | 0.47 | M-v | 3 | MPC | 128926 2007 RX <sub>32</sub> |
| 2007 RB <sub>33</sub> | 16.0 | 0.15 | 20071027 | 358.16041 | 165.49431 | 204.58159 | 11.06335 | 0.1074769 | 2.8550476 | 83  | 6 | 1996-2007 | 0.51 | M-v | 1 | MPC | 128926 2007 RB <sub>33</sub> |
| 2007 RC <sub>33</sub> | 14.9 | 0.15 | 20071027 | 352.67675 | 49.07798  | 330.09342 | 10.86577 | 0.2354383 | 3.9504351 | 45  | 4 | 1999-2007 | 0.53 | M-v | 1 | MPC | 126371 2007 RC <sub>33</sub> |
| 2007 RD <sub>33</sub> | 16.4 | 0.15 | 20071027 | 16.10802  | 61.62661  | 282.43816 | 9.70338  | 0.2261743 | 2.6915457 | 28  | 1 | 65 days   | 0.51 | M-v | 4 | MPC | 128926 2007 RD <sub>33</sub> |
| 2007 RL <sub>33</sub> | 16.7 | 0.15 | 20071027 | 10.00618  | 304.59414 | 57.30088  | 6.55596  | 0.2390707 | 2.3823854 | 70  | 2 | 2006-2007 | 0.50 | M-v | 3 | MPC | 128926 2007 RL <sub>33</sub> |
| 2007 RR <sub>33</sub> | 16.3 | 0.15 | 20071027 | 20.40431  | 285.72106 | 58.26899  | 5.93184  | 0.2677230 | 2.3905668 | 77  | 4 | 1999-2007 | 0.56 | M-v | 1 | MPC | 128926 2007 RR <sub>33</sub> |
| 2007 RS <sub>33</sub> | 17.0 | 0.15 | 20071027 | 23.14464  | 317.66183 | 20.31508  | 13.69197 | 0.2711108 | 2.6793678 | 60  | 1 | 74 days   | 0.48 | M-v | 4 | MPC | 128926 2007 RS <sub>33</sub> |
| 2007 RU <sub>34</sub> | 17.6 | 0.15 | 20071027 | 14.24106  | 359.54983 | 345.80603 | 3.57775  | 0.1580143 | 2.1719810 | 48  | 3 | 2004-2007 | 0.44 | M-v | 2 | MPC | 124216 2007 RU <sub>34</sub> |
| 2007 RP <sub>36</sub> | 17.2 | 0.15 | 20071027 | 44.08883  | 335.66408 | 337.29848 | 1.74925  | 0.2146381 | 2.4157459 | 88  | 2 | 2006-2007 | 0.58 | M-v | 4 | MPC | 126374 2007 RP <sub>36</sub> |
| 2007 RQ <sub>36</sub> | 16.9 | 0.15 | 20071027 | 27.76298  | 335.41087 | 2.92788   | 1.33800  | 0.1881764 | 2.3515413 | 80  | 5 | 1996-2007 | 0.48 | M-v | 2 | MPC | 128927 2007 RQ <sub>36</sub> |
| 2007 RU <sub>36</sub> | 15.4 | 0.15 | 20071027 | 17.27392  | 312.79459 | 40.80953  | 1.37325  | 0.1723077 | 3.1174458 | 75  | 2 | 2001-2007 | 0.53 | M-v | 3 | MPC | 128927 2007 RU <sub>36</sub> |
| 2007 RX <sub>36</sub> | 17.9 | 0.15 | 20071027 | 353.98254 | 17.79992  | 14.70921  | 2.94959  | 0.2171981 | 2.2680181 | 79  | 1 | 100 days  | 0.45 | M-v | 3 | MPC | 128927 2007 RX <sub>36</sub> |
| 2007 RB <sub>37</sub> | 17.0 | 0.15 | 20071027 | 12.09684  | 246.38819 | 116.54421 | 3.51170  | 0.2101115 | 2.4089043 | 76  | 4 | 2000-2007 | 0.54 | M-v | 1 | MPC | 128927 2007 RB <sub>37</sub> |
| 2007 RF <sub>37</sub> | 17.5 | 0.15 | 20071027 | 4.46689   | 357.95035 | 12.44996  | 1.26895  | 0.2011928 | 2.3943735 | 44  | 1 | 87 days   | 0.56 | M-v | 4 | MPC | 2007 RF <sub>37</sub>        |
| 2007 RH <sub>37</sub> | 16.9 | 0.15 | 20071027 | 359.98638 | 208.22193 | 170.56903 | 2.62043  | 0.2396372 | 2.3789929 | 84  | 1 | 118 days  | 0.49 | M-v | 3 | MPC | 128927 2007 RH <sub>37</sub> |
| 2007 RX <sub>37</sub> | 16.6 | 0.15 | 20071027 | 352.37499 | 233.20009 | 154.45940 | 6.27934  | 0.1771194 | 2.3940586 | 70  | 5 | 1998-2007 | 0.63 | M-v | 1 | MPC | 128927 2007 RX <sub>37</sub> |
| 2007 RF <sub>38</sub> | 17.4 | 0.15 | 20071027 | 343.42817 | 338.12891 | 60.78935  | 3.78322  | 0.1840993 | 2.4205864 | 17  | 1 | 71 days   | 0.34 | M-v | 5 | MPC | 2007 RF <sub>38</sub>        |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-------|------------------------------|
| 2007 RP <sub>38</sub> | 17.5 | 0.15 | 20071027 | 14.26017  | 203.31908 | 148.06880 | 3.90486  | 0.2354417 | 2.3480146 | 63  | 2 | 2000-2007 | 0.58 | M-v | 3   | MPC   | 126378 2007 RP <sub>38</sub> |
| 2007 RC <sub>39</sub> | 15.5 | 0.15 | 20071027 | 3.62825   | 198.85568 | 200.84179 | 2.21281  | 0.2815693 | 3.0455570 | 117 | 3 | 1996-2007 | 0.42 | M-v | 2   | MPC   | 128927 2007 RC <sub>39</sub> |
| 2007 RD <sub>39</sub> | 18.4 | 0.15 | 20071027 | 4.44873   | 216.10845 | 173.61475 | 2.62942  | 0.1751041 | 2.2114371 | 27  | 1 | 67 days   | 0.34 | M-v | 4   | MPC   | 128927 2007 RD <sub>39</sub> |
| 2007 RH <sub>39</sub> | 18.5 | 0.15 | 20071007 | 23.75081  | 337.30900 | 15.46990  | 0.60715  | 0.1886028 | 2.1501941 | 37  | 1 | 58 days   | 0.36 |     |     | MPC   | 2007 RH <sub>39</sub>        |
| 2007 RE <sub>40</sub> | 17.1 | 0.15 | 20071027 | 323.62043 | 20.03826  | 32.02122  | 4.11203  | 0.0690563 | 2.4752610 | 37  | 4 | 2001-2007 | 0.46 | M-v | 1   | MPC   | 128298 2007 RE <sub>40</sub> |
| 2007 RW <sub>40</sub> | 18.4 | 0.15 | 20071027 | 16.58059  | 322.63812 | 26.94669  | 3.55633  | 0.2625873 | 2.2563843 | 27  | 1 | 86 days   | 0.41 | M-v | 4   | MPC   | 2007 RW <sub>40</sub>        |
| 2007 RC <sub>41</sub> | 17.0 | 0.15 | 20070917 | 21.09808  | 159.71610 | 155.45576 | 13.41217 | 0.2915623 | 2.6429368 | 24  | 1 | 38 days   | 0.44 |     |     | MPC   | 2007 RC <sub>41</sub>        |
| 2007 RF <sub>41</sub> | 16.8 | 0.15 | 20071027 | 318.91741 | 40.56078  | 11.75720  | 6.74577  | 0.0892646 | 2.3391983 | 44  | 4 | 1993-2007 | 0.46 | M-v | 2   | MPC   | 126789 2007 RF <sub>41</sub> |
| 2007 RN <sub>41</sub> | 17.5 | 0.15 | 20071027 | 38.00021  | 287.52023 | 23.07089  | 6.06949  | 0.2248469 | 2.2082514 | 60  | 3 | 1994-2007 | 0.46 | M-v | 3   | MPC   | 128927 2007 RN <sub>41</sub> |
| 2007 RQ <sub>41</sub> | 17.1 | 0.15 | 20071027 | 18.75532  | 319.97253 | 17.38800  | 3.08518  | 0.2261535 | 2.4249615 | 53  | 1 | 92 days   | 0.57 | M-v | 4   | MPC   | 128927 2007 RQ <sub>41</sub> |
| 2007 RN <sub>42</sub> | 15.3 | 0.15 | 20071027 | 74.30709  | 82.24392  | 204.93272 | 10.78146 | 0.0389038 | 3.0601780 | 37  | 2 | 2002-2007 | 0.47 | M-v | 4   | MPC   | 128928 2007 RN <sub>42</sub> |
| 2007 RP <sub>42</sub> | 14.7 | 0.15 | 20070917 | 78.26068  | 248.08540 | 7.58007   | 11.17211 | 0.1056953 | 3.1310343 | 19  | 1 | 36 days   | 0.43 |     |     | D MPC | 2007 RP <sub>42</sub>        |
| 2007 RC <sub>43</sub> | 16.0 | 0.15 | 20071027 | 219.13152 | 307.57347 | 204.84268 | 10.01274 | 0.0492507 | 2.8667371 | 25  | 2 | 2002-2007 | 0.23 | M-v | 3   | MPC   | 128299 2007 RC <sub>43</sub> |
| 2007 RC <sub>45</sub> | 17.2 | 0.15 | 20071027 | 68.30051  | 79.99026  | 206.42592 | 6.49760  | 0.1320620 | 2.2664110 | 57  | 3 | 2000-2007 | 0.55 | M-v | 1   | MPC   | 128928 2007 RC <sub>45</sub> |
| 2007 RE <sub>45</sub> | 16.5 | 0.15 | 20071027 | 337.70215 | 195.57650 | 211.56056 | 4.90017  | 0.2175064 | 2.3940369 | 91  | 5 | 1996-2007 | 0.49 | M-v | 1   | MPC   | 128928 2007 RE <sub>45</sub> |
| 2007 RL <sub>45</sub> | 16.8 | 0.15 | 20071027 | 35.66310  | 114.84688 | 210.00377 | 6.08085  | 0.1357470 | 2.3631805 | 110 | 3 | 1999-2007 | 0.47 | M-v | 2   | MPC   | 128928 2007 RL <sub>45</sub> |
| 2007 RS <sub>45</sub> | 16.6 | 0.15 | 20071027 | 37.28856  | 111.31935 | 206.09791 | 6.51622  | 0.1924509 | 2.6257789 | 87  | 4 | 2002-2007 | 0.53 | M-v | 1   | MPC   | 128928 2007 RS <sub>45</sub> |
| 2007 RW <sub>46</sub> | 16.3 | 0.15 | 20071027 | 293.16981 | 238.49900 | 207.13445 | 6.48994  | 0.0718859 | 2.4361160 | 42  | 2 | 2006-2007 | 0.52 | M-v | 3   | MPC   | 128928 2007 RW <sub>46</sub> |
| 2007 RE <sub>48</sub> | 16.4 | 0.15 | 20071027 | 353.64172 | 15.97995  | 10.54900  | 10.05748 | 0.0983721 | 2.9857956 | 22  | 1 | 60 days   | 0.26 | M-v | 5 D | MPC   | 128928 2007 RE <sub>48</sub> |
| 2007 RH <sub>48</sub> | 16.1 | 0.15 | 20071027 | 55.10200  | 142.31901 | 161.85248 | 1.14206  | 0.1802859 | 3.1718533 | 46  | 4 | 2000-2007 | 0.28 | M-v | 1   | MPC   | 128299 2007 RH <sub>48</sub> |
| 2007 RS <sub>48</sub> | 17.4 | 0.15 | 20071027 | 50.98547  | 302.54542 | 7.97862   | 5.18232  | 0.1951831 | 2.2127747 | 102 | 4 | 1993-2007 | 0.51 | M-v | 1   | MPC   | 128928 2007 RS <sub>48</sub> |
| 2007 RO <sub>49</sub> | 18.0 | 0.15 | 20071027 | 22.46130  | 156.74940 | 189.55539 | 1.91042  | 0.2204828 | 2.3480434 | 68  | 1 | 88 days   | 0.46 | M-v | 4   | MPC   | 2007 RO <sub>49</sub>        |
| 2007 RQ <sub>49</sub> | 17.6 | 0.15 | 20071027 | 306.33130 | 105.95635 | 336.49504 | 1.31235  | 0.0958504 | 2.2516001 | 51  | 4 | 2000-2007 | 0.35 | M-v | 1   | MPC   | 128300 2007 RQ <sub>49</sub> |
| 2007 RA <sub>50</sub> | 16.7 | 0.15 | 20070917 | 306.76440 | 244.93883 | 187.82898 | 14.72866 | 0.1098256 | 2.7645394 | 19  | 1 | 39 days   | 0.36 |     |     | MPC   | 2007 RA <sub>50</sub>        |
| 2007 RL <sub>50</sub> | 16.1 | 0.15 | 20071027 | 260.49618 | 188.34619 | 289.07737 | 6.46978  | 0.0570634 | 2.7377735 | 27  | 3 | 2002-2007 | 0.41 | M-v | 3   | MPC   | 124220 2007 RL <sub>50</sub> |
| 2007 RR <sub>51</sub> | 17.6 | 0.15 | 20071027 | 345.91045 | 177.34701 | 221.58173 | 6.14173  | 0.1849653 | 2.2510030 | 39  | 1 | 86 days   | 0.48 | M-v | 4   | MPC   | 2007 RR <sub>51</sub>        |
| 2007 RY <sub>55</sub> | 15.3 | 0.15 | 20071027 | 14.15629  | 4.48835   | 349.15390 | 15.19076 | 0.2119981 | 3.1200495 | 55  | 1 | 115 days  | 0.56 | M-v | 3   | MPC   | 128929 2007 RY <sub>55</sub> |
| 2007 RT <sub>57</sub> | 17.9 | 0.15 | 20071007 | 31.27247  | 316.10275 | 31.53066  | 4.98793  | 0.1718566 | 2.2987024 | 28  | 1 | 59 days   | 0.23 |     |     | MPC   | 2007 RT <sub>57</sub>        |
| 2007 RU <sub>57</sub> | 17.3 | 0.15 | 20071027 | 29.73366  | 312.06781 | 36.40674  | 5.09229  | 0.2677786 | 2.6328604 | 28  | 1 | 69 days   | 0.30 | M-v | 4   | MPC   | 128930 2007 RU <sub>57</sub> |
| 2007 RC <sub>58</sub> | 17.3 | 0.15 | 20071027 | 7.40647   | 227.46887 | 145.76593 | 3.24915  | 0.2020085 | 2.4159526 | 97  | 4 | 2002-2007 | 0.55 | M-v | 1   | MPC   | 128930 2007 RC <sub>58</sub> |
| 2007 RH <sub>58</sub> | 14.9 | 0.15 | 20071027 | 32.85520  | 319.04933 | 63.01553  | 17.57889 | 0.1116448 | 3.0521492 | 48  | 4 | 2001-2007 | 0.42 | M-v | 0   | MPC   | 128300 2007 RH <sub>58</sub> |
| 2007 RB <sub>59</sub> | 16.9 | 0.15 | 20071027 | 47.11252  | 8.34173   | 290.22406 | 1.61853  | 0.2056317 | 2.3634543 | 65  | 2 | 2006-2007 | 0.41 | M-v | 3   | MPC   | 128930 2007 RB <sub>59</sub> |
| 2007 RK <sub>59</sub> | 16.0 | 0.15 | 20071027 | 350.78281 | 184.15961 | 189.02500 | 6.00096  | 0.1019360 | 3.0852400 | 36  | 1 | 105 days  | 0.47 | M-v | 4   | MPC   | 128930 2007 RK <sub>59</sub> |
| 2007 RO <sub>60</sub> | 17.8 | 0.15 | 20071027 | 357.56360 | 168.79402 | 203.05873 | 5.09398  | 0.1826031 | 2.3272246 | 38  | 2 | 2006-2007 | 0.49 | M-v | 3   | MPC   | 128930 2007 RO <sub>60</sub> |
| 2007 RT <sub>60</sub> | 16.6 | 0.15 | 20071027 | 7.60509   | 131.84851 | 223.77940 | 3.46241  | 0.2640595 | 2.6655959 | 70  | 3 | 2002-2007 | 0.40 | M-v | 2   | MPC   | 128930 2007 RT <sub>60</sub> |
| 2007 RP <sub>63</sub> | 17.8 | 0.15 | 20071027 | 354.36694 | 15.52816  | 356.64336 | 2.37187  | 0.1973118 | 2.3993948 | 62  | 3 | 1996-2007 | 0.43 | M-v | 2   | MPC   | 128930 2007 RP <sub>63</sub> |
| 2007 RX <sub>63</sub> | 16.2 | 0.15 | 20070917 | 296.60801 | 271.37873 | 156.76254 | 1.68529  | 0.1732004 | 3.1441713 | 16  | 1 | 49 days   | 0.27 |     |     | MPC   | 2007 RX <sub>63</sub>        |
| 2007 RQ <sub>65</sub> | 18.2 | 0.15 | 20070828 | 11.36081  | 151.03609 | 169.58482 | 3.53671  | 0.2266873 | 2.5873562 | 16  | 1 | 40 days   | 0.37 |     |     | MPC   | 2007 RQ <sub>65</sub>        |
| 2007 RU <sub>68</sub> | 17.2 | 0.15 | 20070828 | 220.35071 | 46.27898  | 91.24059  | 2.54576  | 0.1418144 | 2.4508290 | 16  | 1 | 45 days   | 0.33 |     |     | MPC   | 2007 RU <sub>68</sub>        |
| 2007 RY <sub>69</sub> | 15.9 | 0.15 | 20070917 | 288.27325 | 299.36361 | 147.64524 | 8.10196  | 0.2027645 | 2.8079662 | 17  | 1 | 52 days   | 0.40 |     |     | MPC   | 2007 RY <sub>69</sub>        |
| 2007 RA <sub>70</sub> | 18.2 | 0.15 | 20070808 | 12.84218  | 163.31385 | 153.97568 | 6.22065  | 0.1775382 | 2.2236337 | 20  | 1 | 58 days   | 0.31 |     |     | MPC   | 2007 RA <sub>70</sub>        |
| 2007 RC <sub>71</sub> | 17.4 | 0.15 | 20070917 | 286.54464 | 332.29438 | 97.75325  | 2.69767  | 0.0351941 | 2.7421459 | 16  | 1 | 49 days   | 0.19 |     |     | MPC   | 2007 RC <sub>71</sub>        |
| 2007 RC <sub>73</sub> | 18.3 | 0.15 | 20070917 | 336.32968 | 33.35055  | 351.12838 | 2.16113  | 0.2113987 | 2.3734204 | 18  | 1 | 32 days   | 0.25 |     |     | MPC   | 2007 RC <sub>73</sub>        |
| 2007 RC <sub>75</sub> | 16.8 | 0.15 | 20070828 | 63.65855  | 269.80385 | 355.16844 | 6.00812  | 0.1286576 | 2.5999781 | 20  | 1 | 51 days   | 0.41 |     |     | MPC   | 2007 RC <sub>75</sub>        |
| 2007 RF <sub>77</sub> | 15.7 | 0.15 | 20070917 | 35.76696  | 126.49892 | 167.30336 | 10.18300 | 0.2114335 | 3.1463299 | 24  | 1 | 39 days   | 0.29 |     |     | MPC   | 2007 RF <sub>77</sub>        |
| 2007 RY <sub>78</sub> | 19.8 | 0.15 | 20071027 | 3.23361   | 194.02760 | 174.83069 | 2.16105  | 0.3357346 | 2.2117574 | 29  | 1 | 68 days   | 0.28 | M-v | 4   | MPC   | 128931 2007 RY <sub>78</sub> |
| 2007 RR <sub>83</sub> | 17.2 | 0.15 | 20071027 | 354.41694 | 56.60069  | 317.53443 | 1.07828  | 0.2421366 | 2.7020094 | 59  | 4 | 2000-2007 | 0.43 | M-v | 1   | MPC   | 128931 2007 RR <sub>83</sub> |
| 2007 RE <sub>84</sub> | 18.8 | 0.15 | 20071027 | 3.13600   | 147.01878 | 219.78118 | 1.96395  | 0.2531363 | 2.2951220 | 44  | 1 | 93 days   | 0.39 | M-v | 3   | MPC   | 128931 2007 RE <sub>84</sub> |
| 2007 RF <sub>84</sub> | 17.0 | 0.15 | 20071027 | 3.43927   | 122.37532 | 237.07378 | 1.88323  | 0.0549011 | 2.5094731 | 56  | 6 | 1995-2007 | 0.49 | M-v | 1   | MPC   | 126793 2007 RF <sub>84</sub> |
| 2007 RT <sub>84</sub> | 18.0 | 0.15 | 20070917 | 345.87561 | 209.70350 | 161.51221 | 5.59211  | 0.1661263 | 2.4180221 | 17  | 1 | 59 days   | 0.27 |     |     | D MPC | 2007 RT <sub>84</sub>        |
| 2007 RJ <sub>85</sub> | 16.1 | 0.15 | 20071027 | 0.29561   | 195.38305 | 162.57021 | 6.82056  | 0.1726720 | 3.1888125 | 43  | 1 | 95 days   | 0.35 | M-v | 3   | MPC   | 128932 2007 RJ <sub>85</sub> |
| 2007 RL <sub>87</sub> | 17.5 | 0.15 | 20071027 | 318.12416 | 62.15453  | 5.36131   | 2.89860  | 0.1509555 | 2.3111443 | 56  | 2 | 2004-2007 | 0.35 | M-v | 3   | MPC   | 128932 2007 RL <sub>87</sub> |
| 2007 RQ <sub>87</sub> | 18.0 | 0.15 | 20071027 | 0.94501   | 199.19955 | 176.21154 | 9.74199  | 0.2999691 | 2.5347902 | 59  | 2 | 2003-2007 | 0.49 | M-v | 3   | MPC   | 126400 2007 RQ <sub>87</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 RU <sub>90</sub>  | 17.1 | 0.15 | 20070917 | 299.16265 | 71.13330  | 3.59471   | 4.64531  | 0.0959337 | 2.7812612 | 23  | 1 | 52 days   | 0.33 |     | D | MPC | 2007 RU <sub>90</sub>         |
| 2007 RW <sub>91</sub>  | 17.5 | 0.15 | 20071027 | 341.50119 | 48.75142  | 355.48061 | 1.24731  | 0.1852087 | 2.3715214 | 55  | 2 | 2005–2007 | 0.40 | M-v | 4 | MPC | 128932 2007 RW <sub>91</sub>  |
| 2007 RU <sub>92</sub>  | 18.4 | 0.15 | 20071027 | 0.76852   | 205.03126 | 173.77831 | 1.11588  | 0.2724053 | 2.4823197 | 41  | 3 | 1999–2007 | 0.52 | M-v | 3 | MPC | 128932 2007 RU <sub>92</sub>  |
| 2007 RW <sub>92</sub>  | 17.2 | 0.15 | 20071007 | 31.23287  | 325.56488 | 3.62894   | 6.74164  | 0.1347023 | 2.4123591 | 25  | 1 | 58 days   | 0.42 |     | D | MPC | 2007 RW <sub>92</sub>         |
| 2007 RA <sub>93</sub>  | 17.4 | 0.15 | 20071027 | 29.44565  | 298.68257 | 31.08629  | 15.42959 | 0.3439185 | 2.7653062 | 30  | 1 | 66 days   | 0.65 | M-v | 4 | MPC | 128932 2007 RA <sub>93</sub>  |
| 2007 RU <sub>93</sub>  | 17.0 | 0.15 | 20071007 | 7.63532   | 214.06033 | 151.21095 | 2.62554  | 0.1035143 | 2.9351867 | 21  | 1 | 54 days   | 0.30 |     |   | MPC | 2007 RU <sub>93</sub>         |
| 2007 RZ <sub>93</sub>  | 17.2 | 0.15 | 20071007 | 340.25093 | 261.25975 | 143.22877 | 2.72240  | 0.2039322 | 2.4251270 | 39  | 1 | 57 days   | 0.60 |     |   | MPC | 2007 RZ <sub>93</sub>         |
| 2007 RA <sub>94</sub>  | 17.8 | 0.15 | 20071027 | 16.60864  | 318.49837 | 37.85838  | 2.95129  | 0.2228302 | 2.4023745 | 59  | 1 | 87 days   | 0.54 | M-v | 4 | MPC | 2007 RA <sub>94</sub>         |
| 2007 RQ <sub>94</sub>  | 18.7 | 0.15 | 20071027 | 3.26697   | 342.79207 | 36.71984  | 2.99843  | 0.1915325 | 2.1479926 | 56  | 2 | 2004–2007 | 0.49 | M-v | 2 | MPC | 128932 2007 RQ <sub>94</sub>  |
| 2007 RT <sub>94</sub>  | 17.7 | 0.15 | 20071027 | 20.72148  | 314.73645 | 36.66073  | 2.95740  | 0.2118662 | 2.3640962 | 95  | 2 | 2000–2007 | 0.57 | M-v | 3 | MPC | 128932 2007 RT <sub>94</sub>  |
| 2007 RA <sub>95</sub>  | 17.0 | 0.15 | 20071027 | 30.73234  | 297.89936 | 40.26804  | 3.56057  | 0.1916358 | 2.3754127 | 100 | 2 | 2006–2007 | 0.48 | M-v | 3 | MPC | 128932 2007 RA <sub>95</sub>  |
| 2007 RD <sub>95</sub>  | 16.8 | 0.15 | 20070917 | 30.53127  | 191.75120 | 142.45887 | 2.87210  | 0.1071010 | 2.9264189 | 17  | 1 | 52 days   | 0.20 |     | D | MPC | 2007 RD <sub>95</sub>         |
| 2007 RK <sub>95</sub>  | 16.6 | 0.15 | 20071007 | 73.99943  | 261.97595 | 39.47555  | 13.44841 | 0.2062295 | 2.7808062 | 22  | 1 | 54 days   | 0.22 |     |   | MPC | 2007 RK <sub>95</sub>         |
| 2007 RL <sub>95</sub>  | 18.0 | 0.15 | 20071027 | 332.04044 | 281.33971 | 174.70921 | 2.40649  | 0.3018282 | 2.3418106 | 61  | 3 | 1996–2007 | 0.51 | M-v | 2 | MPC | 128933 2007 RL <sub>95</sub>  |
| 2007 RU <sub>95</sub>  | 17.6 | 0.15 | 20070917 | 351.75561 | 215.97772 | 163.80840 | 6.27040  | 0.1280751 | 2.3183905 | 33  | 1 | 51 days   | 0.45 |     |   | MPC | 2007 RU <sub>95</sub>         |
| 2007 RV <sub>95</sub>  | 17.6 | 0.15 | 20071027 | 12.83955  | 324.01286 | 42.22143  | 3.11515  | 0.1696382 | 2.2517717 | 102 | 4 | 1999–2007 | 0.50 | M-v | 1 | MPC | 128933 2007 RV <sub>95</sub>  |
| 2007 RG <sub>96</sub>  | 16.7 | 0.15 | 20071027 | 355.73388 | 339.22918 | 51.40017  | 4.09268  | 0.1876914 | 2.4309682 | 118 | 4 | 2000–2007 | 0.51 | M-v | 1 | MPC | 128933 2007 RG <sub>96</sub>  |
| 2007 RP <sub>96</sub>  | 14.7 | 0.15 | 20071027 | 344.47469 | 11.55702  | 37.51973  | 8.20356  | 0.2530565 | 3.9456828 | 62  | 1 | 87 days   | 0.42 | M-v | 3 | MPC | 128933 2007 RP <sub>96</sub>  |
| 2007 RE <sub>97</sub>  | 15.7 | 0.15 | 20071027 | 16.49200  | 342.48367 | 50.74348  | 9.09814  | 0.0558382 | 3.0357737 | 28  | 1 | 62 days   | 0.25 | M-v | 5 | MPC | 128933 2007 RE <sub>97</sub>  |
| 2007 RT <sub>97</sub>  | 17.4 | 0.15 | 20071027 | 23.19862  | 288.35321 | 50.33014  | 3.45333  | 0.3224201 | 2.6337446 | 67  | 2 | 2003–2007 | 0.47 | M-v | 3 | MPC | 128933 2007 RT <sub>97</sub>  |
| 2007 RV <sub>97</sub>  | 16.3 | 0.15 | 20070917 | 345.43512 | 357.80119 | 32.72885  | 9.60897  | 0.1350360 | 3.0598454 | 33  | 1 | 40 days   | 0.70 |     |   | MPC | 2007 RV <sub>97</sub>         |
| 2007 RY <sub>97</sub>  | 16.1 | 0.15 | 20071027 | 344.66927 | 21.79374  | 23.32429  | 14.11069 | 0.1987032 | 2.7786658 | 73  | 1 | 94 days   | 0.54 | M-v | 3 | MPC | 128933 2007 RY <sub>97</sub>  |
| 2007 RB <sub>98</sub>  | 16.1 | 0.15 | 20071027 | 63.52500  | 245.48729 | 39.35625  | 7.60542  | 0.2787996 | 2.7340475 | 44  | 3 | 2003–2007 | 0.47 | M-v | 2 | MPC | 128933 2007 RB <sub>98</sub>  |
| 2007 RZ <sub>98</sub>  | 16.0 | 0.15 | 20071027 | 352.54830 | 332.86486 | 60.24801  | 5.96399  | 0.1329115 | 2.8106861 | 71  | 3 | 2002–2007 | 0.50 | M-v | 2 | MPC | 128303 2007 RZ <sub>98</sub>  |
| 2007 RQ <sub>101</sub> | 16.5 | 0.15 | 20070917 | 135.02450 | 216.61738 | 353.39117 | 6.05358  | 0.0090636 | 2.8758015 | 35  | 1 | 38 days   | 0.34 |     |   | MPC | 2007 RQ <sub>101</sub>        |
| 2007 RH <sub>102</sub> | 16.0 | 0.15 | 20071027 | 322.75772 | 234.88043 | 194.19316 | 13.77327 | 0.2863048 | 3.1753540 | 37  | 1 | 86 days   | 0.53 | M-v | 4 | MPC | 128933 2007 RH <sub>102</sub> |
| 2007 RJ <sub>102</sub> | 16.5 | 0.15 | 20071027 | 319.60968 | 217.51085 | 206.11367 | 7.16362  | 0.1709427 | 2.4645035 | 72  | 2 | 2003–2007 | 0.43 | M-v | 3 | MPC | 128933 2007 RJ <sub>102</sub> |
| 2007 RJ <sub>103</sub> | 16.9 | 0.15 | 20071027 | 22.72756  | 144.53491 | 197.57086 | 4.47949  | 0.2504957 | 2.4177329 | 94  | 3 | 2003–2007 | 0.49 | M-v | 2 | MPC | 128934 2007 RJ <sub>103</sub> |
| 2007 RL <sub>103</sub> | 17.1 | 0.15 | 20071027 | 35.88875  | 325.86505 | 358.98982 | 2.25780  | 0.2118653 | 2.3708664 | 48  | 1 | 68 days   | 0.56 | M-v | 5 | MPC | 2007 RL <sub>103</sub>        |
| 2007 RS <sub>103</sub> | 15.4 | 0.15 | 20071027 | 358.42899 | 12.33590  | 5.95001   | 18.53385 | 0.1033839 | 3.0840318 | 99  | 3 | 2002–2007 | 0.58 | M-v | 2 | MPC | 128934 2007 RS <sub>103</sub> |
| 2007 RX <sub>103</sub> | 17.4 | 0.15 | 20071027 | 33.94658  | 305.35868 | 22.89073  | 2.35949  | 0.2308677 | 2.3973758 | 98  | 2 | 2006–2007 | 0.48 | M-v | 4 | MPC | 128934 2007 RX <sub>103</sub> |
| 2007 RZ <sub>103</sub> | 15.5 | 0.15 | 20071027 | 43.46019  | 310.83935 | 15.91805  | 11.61882 | 0.1262391 | 3.0739912 | 113 | 6 | 1991–2007 | 0.51 | M-v | 1 | MPC | 128934 2007 RZ <sub>103</sub> |
| 2007 RB <sub>105</sub> | 17.1 | 0.15 | 20071027 | 56.69467  | 271.30116 | 32.05697  | 5.84537  | 0.1841458 | 2.2932738 | 47  | 1 | 86 days   | 0.57 | M-v | 4 | MPC | 2007 RB <sub>105</sub>        |
| 2007 RN <sub>105</sub> | 18.0 | 0.15 | 20071027 | 32.62929  | 295.89223 | 38.47531  | 3.93450  | 0.1879661 | 2.2219126 | 38  | 1 | 86 days   | 0.54 | M-v | 4 | MPC | 2007 RN <sub>105</sub>        |
| 2007 RR <sub>105</sub> | 15.0 | 0.15 | 20071027 | 350.45472 | 4.26197   | 29.00270  | 3.15984  | 0.2658078 | 3.9821871 | 70  | 1 | 84 days   | 0.48 | M-v | 4 | MPC | 2007 RR <sub>105</sub>        |
| 2007 RD <sub>106</sub> | 16.5 | 0.15 | 20071027 | 53.64721  | 290.51369 | 21.07806  | 7.61236  | 0.1232156 | 2.4426795 | 93  | 3 | 2003–2007 | 0.56 | M-v | 2 | MPC | 128934 2007 RD <sub>106</sub> |
| 2007 RJ <sub>108</sub> | 18.1 | 0.15 | 20071027 | 353.09920 | 161.83779 | 226.85729 | 1.62228  | 0.2163678 | 2.3149570 | 50  | 1 | 84 days   | 0.69 | M-v | 4 | MPC | 2007 RJ <sub>108</sub>        |
| 2007 RK <sub>109</sub> | 18.0 | 0.15 | 20071027 | 15.34334  | 136.10455 | 216.76575 | 1.39244  | 0.2282601 | 2.4609063 | 33  | 1 | 84 days   | 0.36 | M-v | 4 | MPC | 2007 RK <sub>109</sub>        |
| 2007 RM <sub>109</sub> | 17.5 | 0.15 | 20071027 | 6.40842   | 26.76816  | 341.03084 | 2.16506  | 0.1940303 | 2.3916867 | 79  | 1 | 87 days   | 0.60 | M-v | 4 | MPC | 2007 RM <sub>109</sub>        |
| 2007 RT <sub>109</sub> | 15.4 | 0.15 | 20071027 | 263.75859 | 103.65004 | 0.07603   | 10.29214 | 0.0164055 | 3.1117503 | 42  | 3 | 2004–2007 | 0.41 | M-v | 2 | MPC | 126415 2007 RT <sub>109</sub> |
| 2007 RV <sub>111</sub> | 17.2 | 0.15 | 20071027 | 13.97540  | 237.85135 | 112.96295 | 0.77597  | 0.2950699 | 3.0042593 | 41  | 1 | 84 days   | 0.67 | M-v | 4 | MPC | 2007 RV <sub>111</sub>        |
| 2007 RN <sub>113</sub> | 18.2 | 0.15 | 20071027 | 17.87553  | 137.31803 | 214.23664 | 4.37348  | 0.1906381 | 2.1781880 | 73  | 1 | 84 days   | 0.43 | M-v | 3 | MPC | 2007 RN <sub>113</sub>        |
| 2007 RY <sub>116</sub> | 15.8 | 0.15 | 20071027 | 340.85975 | 47.99711  | 347.39898 | 11.61289 | 0.1037192 | 3.0685903 | 57  | 5 | 1996–2007 | 0.60 | M-v | 1 | MPC | 126418 2007 RY <sub>116</sub> |
| 2007 RF <sub>118</sub> | 17.8 | 0.15 | 20071027 | 6.08435   | 99.39651  | 270.38006 | 1.45664  | 0.1734289 | 2.2484943 | 57  | 2 | 1997–2007 | 0.45 | M-v | 3 | MPC | 126419 2007 RF <sub>118</sub> |
| 2007 RH <sub>118</sub> | 16.6 | 0.15 | 20071027 | 250.71678 | 126.19584 | 15.95085  | 6.53924  | 0.0896486 | 2.3658072 | 69  | 4 | 1998–2007 | 0.52 | M-v | 3 | MPC | 128935 2007 RH <sub>118</sub> |
| 2007 RM <sub>118</sub> | 16.0 | 0.15 | 20071027 | 38.50065  | 317.28926 | 12.60691  | 11.76645 | 0.1907014 | 2.6346015 | 90  | 2 | 2003–2007 | 0.51 | M-v | 3 | MPC | 128935 2007 RM <sub>118</sub> |
| 2007 RP <sub>118</sub> | 18.2 | 0.15 | 20071007 | 23.90049  | 190.41151 | 154.12586 | 1.49371  | 0.1865174 | 2.3522533 | 28  | 1 | 59 days   | 0.37 |     |   | MPC | 2007 RP <sub>118</sub>        |
| 2007 RY <sub>118</sub> | 18.2 | 0.15 | 20071027 | 21.18273  | 314.09282 | 34.19289  | 2.16157  | 0.2519059 | 2.2607571 | 88  | 1 | 86 days   | 0.59 | M-v | 4 | MPC | 2007 RY <sub>118</sub>        |
| 2007 RE <sub>119</sub> | 14.6 | 0.15 | 20071027 | 336.86790 | 28.19086  | 11.06949  | 8.61180  | 0.1960486 | 3.9630911 | 38  | 1 | 161 days  | 0.34 | M-v | 3 | MPC | 128936 2007 RE <sub>119</sub> |
| 2007 RU <sub>119</sub> | 15.9 | 0.15 | 20071027 | 310.92176 | 63.24817  | 6.81289   | 14.98691 | 0.1373845 | 2.8379927 | 60  | 4 | 2000–2007 | 0.52 | M-v | 1 | MPC | 128936 2007 RU <sub>119</sub> |
| 2007 RV <sub>123</sub> | 15.6 | 0.15 | 20071027 | 319.05885 | 231.31661 | 201.96487 | 15.93482 | 0.1913728 | 3.1225883 | 52  | 1 | 84 days   | 0.57 | M-v | 4 | MPC | 2007 RV <sub>123</sub>        |
| 2007 RG <sub>124</sub> | 17.3 | 0.15 | 20071027 | 338.28260 | 29.05048  | 6.22939   | 5.21436  | 0.1286195 | 2.3464492 | 55  | 1 | 85 days   | 0.45 | M-v | 4 | MPC | 2007 RG <sub>124</sub>        |
| 2007 RR <sub>125</sub> | 16.2 | 0.15 | 20071027 | 323.12251 | 95.77392  | 329.87617 | 9.26166  | 0.1149640 | 2.7417036 | 27  | 3 | 2002–2007 | 0.40 | M-v | 2 | MPC | 128305 2007 RR <sub>125</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-----|-------------------------------|
| 2007 RA <sub>126</sub> | 16.5 | 0.15 | 20071027 | 42.45827  | 277.62419 | 43.60455  | 7.31046  | 0.1787545 | 2.2705455 | 106 | 6 | 1997–2007 | 0.55 | M-v | 1   | MPC | 128936 2007 RA <sub>126</sub> |
| 2007 RK <sub>126</sub> | 16.6 | 0.15 | 20071027 | 356.31294 | 17.95275  | 2.51992   | 4.68780  | 0.0619681 | 2.7468693 | 25  | 1 | 83 days   | 0.40 | M-v | 4   | MPC | 2007 RK <sub>126</sub>        |
| 2007 RO <sub>126</sub> | 17.1 | 0.15 | 20071027 | 35.16663  | 149.80935 | 184.32247 | 1.10779  | 0.1170309 | 2.3449580 | 80  | 4 | 2002–2007 | 0.54 | M-v | 1   | MPC | 128936 2007 RO <sub>126</sub> |
| 2007 RW <sub>126</sub> | 18.0 | 0.15 | 20071027 | 332.52415 | 238.25795 | 185.54535 | 1.97649  | 0.2331675 | 2.3928059 | 53  | 2 | 2005–2007 | 0.42 | M-v | 4   | MPC | 128936 2007 RW <sub>126</sub> |
| 2007 RX <sub>126</sub> | 17.8 | 0.15 | 20071027 | 28.54972  | 164.59398 | 172.43294 | 1.16923  | 0.2034555 | 2.3905657 | 32  | 1 | 85 days   | 0.47 | M-v | 4   | MPC | 2007 RX <sub>126</sub>        |
| 2007 RM <sub>127</sub> | 15.9 | 0.15 | 20071027 | 127.67896 | 220.81180 | 13.22222  | 8.66870  | 0.1861909 | 2.9038075 | 30  | 1 | 67 days   | 0.35 | M-v | 5   | MPC | 2007 RM <sub>127</sub>        |
| 2007 RB <sub>128</sub> | 16.9 | 0.15 | 20071027 | 2.19177   | 337.58182 | 38.75053  | 2.58626  | 0.0798679 | 2.9352267 | 29  | 2 | 2003–2007 | 0.26 | M-v | 3   | MPC | 128306 2007 RB <sub>128</sub> |
| 2007 RC <sub>128</sub> | 16.3 | 0.15 | 20071027 | 7.17700   | 300.97425 | 68.63053  | 1.38713  | 0.1710494 | 2.9736371 | 61  | 4 | 1992–2007 | 0.42 | M-v | 2   | MPC | 128306 2007 RC <sub>128</sub> |
| 2007 RH <sub>128</sub> | 18.6 | 0.15 | 20071007 | 3.01523   | 200.55670 | 168.93409 | 2.92053  | 0.2343654 | 2.5938622 | 27  | 1 | 52 days   | 0.30 |     | D   | MPC | 2007 RH <sub>128</sub>        |
| 2007 RY <sub>128</sub> | 18.6 | 0.15 | 20071007 | 28.27472  | 320.37719 | 13.50351  | 5.40824  | 0.1773666 | 2.2811278 | 24  | 1 | 56 days   | 0.27 |     |     | MPC | 2007 RY <sub>128</sub>        |
| 2007 RU <sub>129</sub> | 16.4 | 0.15 | 20071027 | 13.11819  | 216.84103 | 145.95206 | 2.75728  | 0.1025477 | 2.6918486 | 42  | 2 | 2005–2007 | 0.33 | M-v | 4   | MPC | 128306 2007 RU <sub>129</sub> |
| 2007 RV <sub>129</sub> | 16.5 | 0.15 | 20071027 | 0.40716   | 347.17323 | 34.33365  | 3.03900  | 0.2088067 | 2.3679746 | 139 | 5 | 1996–2007 | 0.51 | M-v | 1   | MPC | 128936 2007 RV <sub>129</sub> |
| 2007 RW <sub>129</sub> | 16.7 | 0.15 | 20071027 | 65.55152  | 253.48417 | 37.37763  | 2.85012  | 0.1912698 | 2.4708516 | 41  | 2 | 2006–2007 | 0.48 | M-v | 4   | MPC | 126426 2007 RW <sub>129</sub> |
| 2007 RX <sub>129</sub> | 17.7 | 0.15 | 20071027 | 8.04676   | 240.70920 | 128.17910 | 1.15737  | 0.2103204 | 2.4236164 | 71  | 3 | 2000–2007 | 0.49 | M-v | 3   | MPC | 128936 2007 RX <sub>129</sub> |
| 2007 RJ <sub>130</sub> | 18.1 | 0.15 | 20070917 | 328.73193 | 27.50972  | 23.35779  | 2.87997  | 0.1139041 | 2.3915111 | 30  | 1 | 48 days   | 0.26 |     |     | MPC | 2007 RJ <sub>130</sub>        |
| 2007 RV <sub>130</sub> | 16.6 | 0.15 | 20071007 | 140.93044 | 47.98134  | 187.63264 | 8.31938  | 0.0560718 | 3.0285406 | 23  | 1 | 56 days   | 0.28 |     | D   | MPC | 2007 RV <sub>130</sub>        |
| 2007 RO <sub>131</sub> | 17.0 | 0.15 | 20071027 | 19.34513  | 117.26663 | 230.75618 | 2.23150  | 0.1941189 | 2.3898738 | 74  | 3 | 2005–2007 | 0.48 | M-v | 2   | MPC | 126427 2007 RO <sub>131</sub> |
| 2007 RS <sub>131</sub> | 17.3 | 0.15 | 20071007 | 0.59307   | 246.06477 | 126.54120 | 2.19700  | 0.0526293 | 2.6204102 | 23  | 1 | 51 days   | 0.24 |     |     | MPC | 2007 RS <sub>131</sub>        |
| 2007 RV <sub>131</sub> | 16.4 | 0.15 | 20071027 | 28.59293  | 322.84457 | 14.14095  | 17.83209 | 0.1918516 | 3.0665068 | 28  | 1 | 60 days   | 0.29 | M-v | 4   | MPC | 128937 2007 RV <sub>131</sub> |
| 2007 RW <sub>131</sub> | 17.9 | 0.15 | 20071007 | 51.45670  | 152.28328 | 148.75304 | 3.24486  | 0.2017116 | 2.4106666 | 24  | 1 | 51 days   | 0.20 |     |     | MPC | 2007 RW <sub>131</sub>        |
| 2007 RT <sub>132</sub> | 16.7 | 0.15 | 20071027 | 42.89429  | 80.06455  | 244.38660 | 1.54593  | 0.1786934 | 2.3300657 | 91  | 2 | 2006–2007 | 0.48 | M-v | 3   | MPC | 128937 2007 RT <sub>132</sub> |
| 2007 RZ <sub>132</sub> | 12.9 | 0.15 | 20071027 | 316.70685 | 182.16864 | 211.18620 | 12.79844 | 0.0605982 | 5.1835314 | 45  | 5 | 1995–2007 | 0.44 | M-v | 0   | MPC | 128937 2007 RZ <sub>132</sub> |
| 2007 RP <sub>133</sub> | 20.8 | 0.15 | 20071027 | 6.84755   | 31.09088  | 338.89652 | 8.71716  | 0.5391261 | 2.6137875 | 66  | 1 | 73 days   | 0.39 | M-v | 4   | MPC | 128937 2007 RP <sub>133</sub> |
| 2007 RB <sub>134</sub> | 17.1 | 0.15 | 20071027 | 11.60900  | 292.90396 | 62.76223  | 3.37940  | 0.1987236 | 2.3753468 | 59  | 3 | 1999–2007 | 0.53 | M-v | 2   | MPC | 128937 2007 RB <sub>134</sub> |
| 2007 RR <sub>134</sub> | 17.1 | 0.15 | 20071027 | 48.04707  | 105.02138 | 193.00177 | 4.53812  | 0.2346439 | 2.3639048 | 55  | 4 | 2003–2007 | 0.52 | M-v | 1   | MPC | 128937 2007 RR <sub>134</sub> |
| 2007 RZ <sub>134</sub> | 16.8 | 0.15 | 20071027 | 20.16403  | 308.25768 | 39.52980  | 7.42943  | 0.2431953 | 2.2380067 | 73  | 2 | 2003–2007 | 0.59 | M-v | 3   | MPC | 128937 2007 RZ <sub>134</sub> |
| 2007 RB <sub>135</sub> | 17.2 | 0.15 | 20070917 | 9.28968   | 85.60742  | 253.97246 | 1.01032  | 0.0765268 | 2.8400842 | 21  | 1 | 57 days   | 0.37 |     |     | MPC | 2007 RB <sub>135</sub>        |
| 2007 RM <sub>136</sub> | 18.3 | 0.15 | 20071027 | 332.08337 | 55.59621  | 9.32981   | 2.38887  | 0.3297962 | 2.3782272 | 54  | 3 | 1996–2007 | 0.35 | M-v | 2   | MPC | 128937 2007 RM <sub>136</sub> |
| 2007 RB <sub>137</sub> | 17.7 | 0.15 | 20071027 | 319.35014 | 24.00042  | 38.08664  | 1.82765  | 0.1623176 | 2.3812395 | 17  | 1 | 83 days   | 0.24 | M-v | 5   | MPC | 2007 RB <sub>137</sub>        |
| 2007 RC <sub>137</sub> | 16.8 | 0.15 | 20071027 | 312.46771 | 59.51211  | 5.50933   | 7.14318  | 0.1175551 | 2.3478286 | 36  | 3 | 2002–2007 | 0.45 | M-v | 3   | MPC | 128938 2007 RC <sub>137</sub> |
| 2007 RQ <sub>137</sub> | 16.9 | 0.15 | 20071027 | 330.93268 | 105.01115 | 306.81666 | 1.66318  | 0.1825000 | 2.3964387 | 70  | 5 | 1996–2007 | 0.45 | M-v | 1   | MPC | 126799 2007 RQ <sub>137</sub> |
| 2007 RW <sub>137</sub> | 15.7 | 0.15 | 20071027 | 346.72339 | 65.48414  | 319.91411 | 2.32903  | 0.1758846 | 3.1431540 | 51  | 3 | 2002–2007 | 0.52 | M-v | 3   | MPC | 126432 2007 RW <sub>137</sub> |
| 2007 RX <sub>137</sub> | 18.1 | 0.15 | 20071027 | 350.04615 | 199.12930 | 187.05846 | 3.19518  | 0.1676784 | 2.2863884 | 40  | 3 | 2002–2007 | 0.43 | M-v | 3   | MPC | 126432 2007 RX <sub>137</sub> |
| 2007 RA <sub>138</sub> | 17.1 | 0.15 | 20071027 | 57.84981  | 39.90371  | 254.38778 | 1.99685  | 0.1540362 | 2.2952269 | 57  | 6 | 1999–2007 | 0.48 | M-v | 1   | MPC | 128938 2007 RA <sub>138</sub> |
| 2007 RK <sub>138</sub> | 16.0 | 0.15 | 20071027 | 350.88096 | 9.95902   | 5.21912   | 5.33355  | 0.1288572 | 3.2562602 | 34  | 3 | 2001–2007 | 0.50 | M-v | 3   | MPC | 128307 2007 RK <sub>138</sub> |
| 2007 RN <sub>138</sub> | 17.0 | 0.15 | 20071027 | 343.47934 | 190.79506 | 200.65052 | 3.05404  | 0.1450387 | 2.4200212 | 51  | 3 | 2005–2007 | 0.57 | M-v | 3   | MPC | 128938 2007 RN <sub>138</sub> |
| 2007 RP <sub>138</sub> | 17.0 | 0.15 | 20071027 | 359.52598 | 354.63380 | 22.07037  | 4.07188  | 0.2153220 | 2.7221987 | 79  | 3 | 1998–2007 | 0.50 | M-v | 2   | MPC | 128938 2007 RP <sub>138</sub> |
| 2007 RM <sub>139</sub> | 16.4 | 0.15 | 20071027 | 0.73316   | 27.18638  | 356.93990 | 12.43316 | 0.3000816 | 2.6434410 | 79  | 1 | 116 days  | 0.57 | M-v | 3   | MPC | 128938 2007 RM <sub>139</sub> |
| 2007 RV <sub>139</sub> | 17.8 | 0.15 | 20071027 | 4.60695   | 33.39420  | 330.37056 | 1.58989  | 0.2291683 | 2.3857391 | 56  | 2 | 2005–2007 | 0.51 | M-v | 3   | MPC | 126434 2007 RV <sub>139</sub> |
| 2007 RX <sub>139</sub> | 17.9 | 0.15 | 20071027 | 6.64087   | 19.52757  | 342.05012 | 4.33736  | 0.2486309 | 2.3698946 | 41  | 1 | 60 days   | 0.55 | M-v | 4 D | MPC | 2007 RX <sub>139</sub>        |
| 2007 RF <sub>140</sub> | 16.2 | 0.15 | 20071027 | 359.14648 | 292.02994 | 72.94284  | 0.96657  | 0.1060310 | 2.7490791 | 76  | 5 | 1998–2007 | 0.51 | M-v | 1   | MPC | 128938 2007 RF <sub>140</sub> |
| 2007 RH <sub>140</sub> | 17.1 | 0.15 | 20071027 | 50.23308  | 292.86663 | 3.38099   | 5.41575  | 0.1934978 | 2.4359885 | 72  | 2 | 2006–2007 | 0.49 | M-v | 3   | MPC | 128938 2007 RH <sub>140</sub> |
| 2007 RT <sub>140</sub> | 16.5 | 0.15 | 20071027 | 43.37639  | 102.40212 | 206.83612 | 0.66532  | 0.1911858 | 2.3632687 | 87  | 6 | 1999–2007 | 0.52 | M-v | 1   | MPC | 128938 2007 RT <sub>140</sub> |
| 2007 RV <sub>140</sub> | 14.7 | 0.15 | 20071027 | 330.15163 | 225.61078 | 188.37903 | 2.69488  | 0.2512327 | 3.9788155 | 39  | 1 | 82 days   | 0.66 | M-v | 5   | MPC | 2007 RV <sub>140</sub>        |
| 2007 RG <sub>141</sub> | 17.3 | 0.15 | 20071027 | 22.03907  | 139.07510 | 205.53867 | 2.15709  | 0.2053750 | 2.4173004 | 41  | 2 | 2003–2007 | 0.45 | M-v | 4   | MPC | 128938 2007 RG <sub>141</sub> |
| 2007 RH <sub>141</sub> | 17.1 | 0.15 | 20071027 | 41.51873  | 292.37389 | 16.23297  | 4.17706  | 0.2784560 | 2.5970999 | 79  | 4 | 2002–2007 | 0.49 | M-v | 1   | MPC | 128938 2007 RH <sub>141</sub> |
| 2007 RJ <sub>141</sub> | 17.2 | 0.15 | 20071027 | 50.06609  | 102.28742 | 209.90078 | 2.04877  | 0.1709423 | 2.2771056 | 77  | 4 | 2000–2007 | 0.54 | M-v | 2   | MPC | 126436 2007 RJ <sub>141</sub> |
| 2007 RU <sub>141</sub> | 17.9 | 0.15 | 20071027 | 1.42414   | 194.97889 | 187.63185 | 2.64654  | 0.2315190 | 2.2611986 | 78  | 1 | 84 days   | 0.57 | M-v | 4   | MPC | 2007 RU <sub>141</sub>        |
| 2007 RW <sub>141</sub> | 16.2 | 0.15 | 20071027 | 12.00469  | 186.48449 | 177.79172 | 3.50398  | 0.2050543 | 2.7428190 | 133 | 5 | 1998–2007 | 0.54 | M-v | 1   | MPC | 128938 2007 RW <sub>141</sub> |
| 2007 RX <sub>141</sub> | 16.0 | 0.15 | 20071027 | 41.94557  | 294.78865 | 19.58611  | 8.60845  | 0.2627190 | 2.7170711 | 94  | 2 | 2006–2007 | 0.53 | M-v | 3   | MPC | 128938 2007 RX <sub>141</sub> |
| 2007 RY <sub>141</sub> | 15.7 | 0.15 | 20071027 | 331.45652 | 241.23893 | 194.37458 | 11.52017 | 0.2784867 | 2.6435293 | 129 | 3 | 1990–2007 | 0.46 | M-v | 2   | MPC | 128938 2007 RY <sub>141</sub> |
| 2007 RC <sub>142</sub> | 14.9 | 0.15 | 20071027 | 351.06986 | 16.75482  | 25.79347  | 17.44943 | 0.2079148 | 3.1477460 | 144 | 3 | 2001–2007 | 0.47 | M-v | 1   | MPC | 128938 2007 RC <sub>142</sub> |
| 2007 RJ <sub>142</sub> | 15.1 | 0.15 | 20071027 | 41.46713  | 315.70368 | 27.74479  | 14.64736 | 0.1564915 | 2.6778350 | 96  | 3 | 1998–2007 | 0.45 | M-v | 2   | MPC | 128938 2007 RJ <sub>142</sub> |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-------|-------------------------------|
| 2007 RN <sub>142</sub> | 16.5 | 0.15 | 20071027 | 13.61797  | 164.47410 | 213.27452 | 5.94487  | 0.2841337 | 2.5797777 | 116 | 1 | 83 days   | 0.44 | M-v | 3   | MPC   | 128939 2007 RN <sub>142</sub> |
| 2007 RO <sub>142</sub> | 17.1 | 0.15 | 20071027 | 18.80939  | 346.24247 | 21.47736  | 11.61360 | 0.2897985 | 2.3580727 | 85  | 3 | 1996-2007 | 0.56 | M-v | 2   | MPC   | 128939 2007 RO <sub>142</sub> |
| 2007 RP <sub>142</sub> | 16.6 | 0.15 | 20071027 | 21.15967  | 182.04887 | 174.01729 | 4.54493  | 0.3586941 | 2.6395543 | 111 | 2 | 2005-2007 | 0.50 | M-v | 4   | MPC   | 128939 2007 RP <sub>142</sub> |
| 2007 RQ <sub>142</sub> | 17.1 | 0.15 | 20071027 | 25.63498  | 334.71875 | 13.74309  | 6.85646  | 0.3416975 | 2.6473568 | 88  | 1 | 80 days   | 0.51 | M-v | 4   | MPC   | 128939 2007 RQ <sub>142</sub> |
| 2007 RR <sub>142</sub> | 15.7 | 0.15 | 20071027 | 11.06390  | 161.08850 | 238.54929 | 6.18394  | 0.1915947 | 2.5686608 | 79  | 5 | 1998-2007 | 0.49 | M-v | 1   | MPC   | 128308 2007 RR <sub>142</sub> |
| 2007 RH <sub>143</sub> | 17.1 | 0.15 | 20071027 | 349.77305 | 55.42108  | 328.80923 | 8.28941  | 0.2473133 | 2.7334279 | 30  | 1 | 86 days   | 0.65 | M-v | 4   | MPC   | 128939 2007 RH <sub>143</sub> |
| 2007 RO <sub>143</sub> | 17.3 | 0.15 | 20071027 | 26.66971  | 139.72086 | 191.28654 | 5.97772  | 0.2112622 | 2.2170882 | 78  | 4 | 2000-2007 | 0.47 | M-v | 2   | MPC   | 128939 2007 RO <sub>143</sub> |
| 2007 RP <sub>144</sub> | 16.8 | 0.15 | 20071027 | 324.39787 | 204.28589 | 206.93455 | 6.17945  | 0.1152552 | 2.4054460 | 59  | 3 | 2005-2007 | 0.56 | M-v | 3   | MPC   | 128939 2007 RP <sub>144</sub> |
| 2007 RC <sub>145</sub> | 17.0 | 0.15 | 20071027 | 28.96455  | 127.09621 | 211.76911 | 4.65352  | 0.1563539 | 2.2107269 | 86  | 3 | 2003-2007 | 0.50 | M-v | 2   | MPC   | 128939 2007 RC <sub>145</sub> |
| 2007 RD <sub>145</sub> | 17.6 | 0.15 | 20071027 | 352.24749 | 184.27180 | 205.78258 | 3.79699  | 0.1680417 | 2.2383344 | 100 | 4 | 2002-2007 | 0.51 | M-v | 1   | MPC   | 128939 2007 RD <sub>145</sub> |
| 2007 RJ <sub>145</sub> | 17.5 | 0.15 | 20071027 | 17.13929  | 114.28810 | 244.29378 | 3.98875  | 0.2131191 | 2.2033990 | 56  | 1 | 81 days   | 0.50 | M-v | 4   | MPC   | 2007 RJ <sub>145</sub>        |
| 2007 RW <sub>145</sub> | 17.0 | 0.15 | 20071027 | 7.84457   | 46.87615  | 335.45110 | 3.36045  | 0.3063617 | 2.6553546 | 93  | 1 | 67 days   | 0.41 | M-v | 3   | MPC   | 128939 2007 RW <sub>145</sub> |
| 2007 RX <sub>145</sub> | 17.7 | 0.15 | 20071027 | 37.87743  | 338.93385 | 12.77609  | 21.16363 | 0.0820736 | 1.8874021 | 51  | 1 | 66 days   | 0.48 | M-v | 4   | MPC   | 128939 2007 RX <sub>145</sub> |
| 2007 RA <sub>146</sub> | 16.8 | 0.15 | 20071027 | 15.48004  | 119.29828 | 254.86162 | 2.60002  | 0.2583309 | 2.3372289 | 87  | 4 | 2000-2007 | 0.41 | M-v | 2   | MPC   | 128308 2007 RA <sub>146</sub> |
| 2007 RN <sub>146</sub> | 16.4 | 0.15 | 20071027 | 26.56276  | 197.94356 | 137.28618 | 1.90224  | 0.1982027 | 2.3910514 | 87  | 6 | 1994-2007 | 0.47 | M-v | 1   | MPC   | 128939 2007 RN <sub>146</sub> |
| 2007 RA <sub>147</sub> | 17.1 | 0.15 | 20071027 | 4.71642   | 199.51913 | 163.32251 | 10.12580 | 0.2397243 | 2.7462850 | 31  | 1 | 60 days   | 0.66 | M-v | 4   | MPC   | 2007 RA <sub>147</sub>        |
| 2007 RL <sub>147</sub> | 16.1 | 0.15 | 20071027 | 15.04707  | 330.72116 | 16.70105  | 14.57047 | 0.1031549 | 2.7114509 | 44  | 2 | 2003-2007 | 0.43 | M-v | 3   | MPC   | 128940 2007 RL <sub>147</sub> |
| 2007 RQ <sub>147</sub> | 16.7 | 0.15 | 20071027 | 351.42878 | 7.33778   | 14.46561  | 12.95369 | 0.1945122 | 2.8591120 | 30  | 1 | 83 days   | 0.52 | M-v | 4   | MPC   | 128940 2007 RQ <sub>147</sub> |
| 2007 RT <sub>147</sub> | 18.1 | 0.15 | 20071027 | 334.57656 | 345.00159 | 99.20935  | 3.83603  | 0.4703848 | 2.2877687 | 76  | 1 | 79 days   | 0.46 | M-v | 4   | MPC   | 128940 2007 RT <sub>147</sub> |
| 2007 RQ <sub>148</sub> | 17.3 | 0.15 | 20070917 | 326.14940 | 339.20685 | 63.16042  | 5.41172  | 0.1567827 | 2.3712975 | 35  | 1 | 39 days   | 0.68 |     |     | MPC   | 2007 RQ <sub>148</sub>        |
| 2007 RR <sub>148</sub> | 17.6 | 0.15 | 20071027 | 23.45453  | 296.98573 | 40.76318  | 3.82903  | 0.1762336 | 2.2684645 | 51  | 4 | 2002-2007 | 0.55 | M-v | 2   | MPC   | 128940 2007 RR <sub>148</sub> |
| 2007 RX <sub>148</sub> | 16.3 | 0.15 | 20071027 | 329.63433 | 11.98870  | 41.64214  | 6.93500  | 0.1306594 | 2.4646485 | 40  | 3 | 2003-2007 | 0.58 | M-v | 2   | MPC   | 126446 2007 RX <sub>148</sub> |
| 2007 RZ <sub>148</sub> | 16.6 | 0.15 | 20071027 | 334.73383 | 197.52787 | 202.52998 | 9.35460  | 0.1740769 | 2.7801148 | 28  | 1 | 85 days   | 0.40 | M-v | 4   | MPC   | 128940 2007 RZ <sub>148</sub> |
| 2007 RF <sub>149</sub> | 17.7 | 0.15 | 20071027 | 4.92515   | 20.41004  | 342.11244 | 4.28666  | 0.1700519 | 2.2862469 | 24  | 1 | 94 days   | 0.46 | M-v | 3 D | MPC   | 2007 RF <sub>149</sub>        |
| 2007 RM <sub>149</sub> | 15.2 | 0.15 | 20071027 | 342.69933 | 204.17243 | 208.44758 | 25.71764 | 0.2315187 | 3.1511080 | 88  | 2 | 2001-2007 | 0.51 | M-v | 2   | MPC   | 128309 2007 RM <sub>149</sub> |
| 2007 RN <sub>149</sub> | 15.9 | 0.15 | 20071027 | 345.44623 | 190.43059 | 212.62912 | 19.40868 | 0.2047830 | 3.1225222 | 38  | 1 | 85 days   | 0.57 | M-v | 4   | MPC   | 128940 2007 RN <sub>149</sub> |
| 2007 RT <sub>149</sub> | 17.8 | 0.15 | 20071027 | 5.56700   | 273.30942 | 102.90668 | 7.61027  | 0.3500704 | 2.3489942 | 44  | 1 | 85 days   | 0.52 | M-v | 4   | MPC   | 128940 2007 RT <sub>149</sub> |
| 2007 RV <sub>149</sub> | 15.6 | 0.15 | 20071027 | 4.22177   | 258.68692 | 132.97223 | 17.19102 | 0.2405372 | 3.1319909 | 31  | 1 | 67 days   | 0.61 | M-v | 4   | MPC   | 128940 2007 RV <sub>149</sub> |
| 2007 RK <sub>150</sub> | 16.0 | 0.15 | 20071027 | 346.63229 | 3.87194   | 22.15994  | 15.58928 | 0.1541623 | 2.9367285 | 24  | 1 | 81 days   | 0.57 | M-v | 4   | MPC   | 2007 RK <sub>150</sub>        |
| 2007 RK <sub>152</sub> | 18.6 | 0.15 | 20071007 | 7.61806   | 136.95170 | 209.49456 | 3.05830  | 0.2113157 | 2.2345018 | 22  | 1 | 58 days   | 0.24 |     |     | MPC   | 2007 RK <sub>152</sub>        |
| 2007 RU <sub>152</sub> | 16.1 | 0.15 | 20070917 | 284.57419 | 168.96289 | 262.24693 | 3.03521  | 0.0711754 | 2.9387611 | 16  | 1 | 49 days   | 0.17 |     |     | MPC   | 2007 RU <sub>152</sub>        |
| 2007 RY <sub>153</sub> | 17.3 | 0.15 | 20070917 | 356.74535 | 148.07469 | 205.55692 | 3.02950  | 0.1060810 | 2.7933413 | 19  | 1 | 49 days   | 0.36 |     |     | MPC   | 2007 RY <sub>153</sub>        |
| 2007 RD <sub>154</sub> | 17.7 | 0.15 | 20070917 | 328.43788 | 201.27575 | 184.75270 | 6.51489  | 0.0738452 | 2.6031240 | 17  | 1 | 48 days   | 0.25 |     |     | D MPC | 2007 RD <sub>154</sub>        |
| 2007 RQ <sub>156</sub> | 17.7 | 0.15 | 20071027 | 333.72367 | 107.20031 | 294.07988 | 0.59876  | 0.1815726 | 2.4145426 | 22  | 1 | 87 days   | 0.30 | M-v | 5   | MPC   | 2007 RQ <sub>156</sub>        |
| 2007 RN <sub>157</sub> | 16.3 | 0.15 | 20071027 | 31.35059  | 245.23866 | 78.40743  | 4.48410  | 0.1991507 | 2.3593999 | 57  | 4 | 1989-2007 | 0.55 | M-v | 1   | MPC   | 128940 2007 RN <sub>157</sub> |
| 2007 RQ <sub>157</sub> | 16.5 | 0.15 | 20070917 | 7.72144   | 306.43578 | 36.43437  | 9.43513  | 0.1880894 | 2.7620328 | 19  | 1 | 39 days   | 0.46 |     |     | MPC   | 2007 RQ <sub>157</sub>        |
| 2007 RC <sub>158</sub> | 17.7 | 0.15 | 20071027 | 56.64788  | 284.64020 | 10.35479  | 5.95381  | 0.1443116 | 2.2073127 | 42  | 3 | 2003-2007 | 0.41 | M-v | 2   | MPC   | 128941 2007 RC <sub>158</sub> |
| 2007 RP <sub>158</sub> | 16.9 | 0.15 | 20071027 | 31.73849  | 316.16544 | 9.30665   | 6.58315  | 0.1273843 | 2.4789468 | 52  | 3 | 2003-2007 | 0.48 | M-v | 2   | MPC   | 128941 2007 RP <sub>158</sub> |
| 2007 RH <sub>160</sub> | 17.5 | 0.15 | 20070917 | 325.20562 | 253.35589 | 174.78862 | 7.49994  | 0.2910075 | 2.6737548 | 23  | 1 | 39 days   | 0.41 |     |     | MPC   | 2007 RH <sub>160</sub>        |
| 2007 RO <sub>160</sub> | 16.3 | 0.15 | 20071027 | 334.04800 | 28.85013  | 26.01636  | 4.83899  | 0.1688941 | 3.1544488 | 30  | 1 | 85 days   | 0.24 | M-v | 4   | MPC   | 2007 RO <sub>160</sub>        |
| 2007 RQ <sub>160</sub> | 18.0 | 0.15 | 20071027 | 358.21120 | 353.45029 | 31.78846  | 2.58400  | 0.2259120 | 2.4141477 | 58  | 1 | 85 days   | 0.37 | M-v | 3   | MPC   | 128941 2007 RQ <sub>160</sub> |
| 2007 RE <sub>161</sub> | 18.1 | 0.15 | 20071027 | 31.05893  | 305.19810 | 4.17829   | 1.07109  | 0.2021301 | 2.3591435 | 32  | 3 | 2000-2007 | 0.39 | M-v | 3   | MPC   | 128311 2007 RE <sub>161</sub> |
| 2007 RH <sub>161</sub> | 17.3 | 0.15 | 20070917 | 356.56278 | 197.71101 | 172.76160 | 13.61119 | 0.3155045 | 2.5928522 | 31  | 1 | 36 days   | 0.70 |     |     | MPC   | 2007 RH <sub>161</sub>        |
| 2007 RS <sub>161</sub> | 17.5 | 0.15 | 20071027 | 56.87286  | 242.31444 | 55.84125  | 2.38809  | 0.2177925 | 2.3143623 | 36  | 1 | 82 days   | 0.38 | M-v | 4   | MPC   | 2007 RS <sub>161</sub>        |
| 2007 RW <sub>161</sub> | 17.0 | 0.15 | 20071027 | 249.50537 | 106.49288 | 30.39097  | 5.71980  | 0.0849662 | 2.2475068 | 47  | 3 | 2002-2007 | 0.43 | M-v | 3   | MPC   | 128311 2007 RW <sub>161</sub> |
| 2007 RJ <sub>165</sub> | 17.1 | 0.15 | 20070917 | 47.53459  | 302.74403 | 337.15561 | 9.00652  | 0.2326744 | 3.0780910 | 18  | 1 | 32 days   | 0.23 |     |     | MPC   | 2007 RJ <sub>165</sub>        |
| 2007 RR <sub>165</sub> | 16.4 | 0.15 | 20071027 | 346.90723 | 40.45295  | 343.73352 | 16.28977 | 0.2218557 | 3.1418914 | 35  | 1 | 63 days   | 0.46 | M-v | 4   | MPC   | 2007 RR <sub>165</sub>        |
| 2007 RC <sub>167</sub> | 17.2 | 0.15 | 20071027 | 6.40099   | 339.79519 | 15.34464  | 4.11145  | 0.1270748 | 2.6885602 | 51  | 2 | 2003-2007 | 0.36 | M-v | 2   | MPC   | 128941 2007 RC <sub>167</sub> |
| 2007 RH <sub>168</sub> | 17.8 | 0.15 | 20071027 | 351.33683 | 348.89165 | 34.08920  | 2.76402  | 0.1990311 | 2.4235776 | 25  | 1 | 85 days   | 0.33 | M-v | 4   | MPC   | 2007 RH <sub>168</sub>        |
| 2007 RV <sub>170</sub> | 17.3 | 0.15 | 20070917 | 329.05458 | 50.54449  | 353.88775 | 27.05095 | 0.2728149 | 2.7707437 | 18  | 1 | 32 days   | 0.29 |     |     | MPC   | 2007 RV <sub>170</sub>        |
| 2007 RA <sub>173</sub> | 15.8 | 0.15 | 20071027 | 25.73665  | 319.44250 | 26.71846  | 9.75280  | 0.0712294 | 2.9898271 | 44  | 3 | 1997-2007 | 0.41 | M-v | 3   | MPC   | 128312 2007 RA <sub>173</sub> |
| 2007 RB <sub>173</sub> | 16.7 | 0.15 | 20071027 | 332.93728 | 24.37902  | 28.36304  | 8.73300  | 0.1426603 | 2.7760499 | 33  | 2 | 2005-2007 | 0.40 | M-v | 3   | MPC   | 128942 2007 RB <sub>173</sub> |
| 2007 RC <sub>173</sub> | 16.0 | 0.15 | 20071027 | 330.27681 | 38.98520  | 19.77088  | 13.01582 | 0.1766800 | 3.0971192 | 32  | 1 | 85 days   | 0.36 | M-v | 4   | MPC   | 128942 2007 RC <sub>173</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-------|-------------------------------|
| 2007 RG <sub>174</sub> | 15.2 | 0.15 | 20071027 | 334.63023 | 18.45277  | 30.81889  | 10.13727 | 0.1067876 | 3.0996822 | 79  | 4 | 1994–2007 | 0.48 | M-v | 1   | MPC   | 128942 2007 RG <sub>174</sub> |
| 2007 RT <sub>174</sub> | 17.1 | 0.15 | 20071027 | 1.58391   | 334.99623 | 44.72886  | 5.42456  | 0.2062470 | 2.4013207 | 60  | 3 | 2005–2007 | 0.43 | M-v | 2   | MPC   | 128942 2007 RT <sub>174</sub> |
| 2007 RY <sub>174</sub> | 17.1 | 0.15 | 20071027 | 353.95777 | 345.97238 | 44.91185  | 5.90826  | 0.1876979 | 2.4307297 | 58  | 1 | 87 days   | 0.50 | M-v | 3   | MPC   | 2007 RY <sub>174</sub>        |
| 2007 RK <sub>175</sub> | 17.8 | 0.15 | 20070917 | 344.46547 | 9.36902   | 21.19402  | 14.41566 | 0.1900595 | 2.5570451 | 26  | 1 | 52 days   | 0.22 |     |     | MPC   | 2007 RK <sub>175</sub>        |
| 2007 RW <sub>175</sub> | 17.0 | 0.15 | 20071027 | 352.20710 | 223.00516 | 184.64437 | 6.53075  | 0.2830351 | 2.6303634 | 83  | 1 | 71 days   | 0.49 | M-v | 3   | MPC   | 128312 2007 RW <sub>175</sub> |
| 2007 RB <sub>176</sub> | 15.5 | 0.15 | 20071027 | 10.41884  | 184.44491 | 207.24156 | 12.81089 | 0.2945207 | 3.0660051 | 44  | 2 | 1996–2007 | 0.48 | M-v | 3   | MPC   | 128942 2007 RB <sub>176</sub> |
| 2007 RB <sub>178</sub> | 19.0 | 0.15 | 20070917 | 353.31371 | 352.06548 | 24.25601  | 6.81897  | 0.3116912 | 2.5843359 | 22  | 1 | 52 days   | 0.30 |     |     | MPC   | 2007 RB <sub>178</sub>        |
| 2007 RZ <sub>178</sub> | 17.9 | 0.15 | 20071027 | 36.13992  | 293.57094 | 33.85415  | 9.00373  | 0.1826457 | 2.5739728 | 33  | 3 | 2003–2007 | 0.29 | M-v | 2   | MPC   | 128942 2007 RZ <sub>178</sub> |
| 2007 RA <sub>179</sub> | 16.8 | 0.15 | 20071027 | 14.40191  | 181.35714 | 203.27242 | 11.69140 | 0.1959217 | 2.6859721 | 31  | 1 | 68 days   | 0.43 | M-v | 4   | MPC   | 128942 2007 RA <sub>179</sub> |
| 2007 RB <sub>179</sub> | 17.1 | 0.15 | 20071027 | 346.22998 | 232.52508 | 189.63803 | 3.77425  | 0.0836271 | 2.3617255 | 48  | 1 | 84 days   | 0.40 | M-v | 3   | MPC   | 128942 2007 RB <sub>179</sub> |
| 2007 RC <sub>179</sub> | 15.5 | 0.15 | 20071027 | 334.18952 | 227.10580 | 208.94776 | 10.01296 | 0.0512688 | 3.1239291 | 30  | 1 | 71 days   | 0.35 | M-v | 4   | MPC   | 128943 2007 RC <sub>179</sub> |
| 2007 RE <sub>179</sub> | 17.5 | 0.15 | 20071027 | 15.68350  | 214.19521 | 168.80386 | 2.39941  | 0.1933287 | 2.3277116 | 29  | 1 | 71 days   | 0.31 | M-v | 4   | MPC   | 2007 RE <sub>179</sub>        |
| 2007 RF <sub>179</sub> | 15.4 | 0.15 | 20071027 | 315.05112 | 249.33446 | 209.07709 | 10.01662 | 0.0586411 | 3.1523992 | 51  | 5 | 1993–2007 | 0.51 | M-v | 0   | MPC   | 128313 2007 RF <sub>179</sub> |
| 2007 RG <sub>179</sub> | 17.0 | 0.15 | 20071027 | 50.54528  | 145.34135 | 188.37002 | 3.77501  | 0.2046929 | 2.1871400 | 63  | 4 | 1994–2007 | 0.59 | M-v | 2   | MPC   | 128313 2007 RG <sub>179</sub> |
| 2007 RJ <sub>179</sub> | 15.5 | 0.15 | 20071027 | 353.29024 | 10.84191  | 48.26521  | 8.11933  | 0.2172221 | 3.0602571 | 77  | 1 | 91 days   | 0.38 | M-v | 3   | MPC   | 128943 2007 RJ <sub>179</sub> |
| 2007 RK <sub>179</sub> | 15.4 | 0.15 | 20071027 | 321.81373 | 241.11811 | 216.38328 | 16.76390 | 0.1232411 | 3.2211726 | 69  | 3 | 2001–2007 | 0.49 | M-v | 2   | MPC   | 128313 2007 RK <sub>179</sub> |
| 2007 RU <sub>179</sub> | 16.0 | 0.15 | 20071027 | 5.28457   | 7.37286   | 39.12262  | 14.31372 | 0.1867680 | 2.6708974 | 29  | 1 | 85 days   | 0.36 | M-v | 3 D | MPC   | 2007 RU <sub>179</sub>        |
| 2007 RY <sub>179</sub> | 16.0 | 0.15 | 20071027 | 358.21362 | 10.47585  | 47.31892  | 10.42561 | 0.0794412 | 3.0792500 | 25  | 1 | 68 days   | 0.27 | M-v | 4   | MPC   | 128943 2007 RY <sub>179</sub> |
| 2007 RF <sub>180</sub> | 16.1 | 0.15 | 20071027 | 325.59088 | 227.43796 | 192.77297 | 2.34309  | 0.0640842 | 2.7416619 | 125 | 8 | 1996–2007 | 0.51 | M-v | 1   | MPC   | 128943 2007 RF <sub>180</sub> |
| 2007 RH <sub>180</sub> | 16.2 | 0.15 | 20071027 | 321.38304 | 56.42989  | 10.45455  | 10.03062 | 0.0788829 | 2.3865059 | 99  | 3 | 2002–2007 | 0.53 | M-v | 2   | MPC   | 128943 2007 RH <sub>180</sub> |
| 2007 RJ <sub>180</sub> | 16.0 | 0.15 | 20071027 | 342.43779 | 59.16429  | 343.35942 | 3.62533  | 0.1093769 | 2.7337171 | 64  | 2 | 2005–2007 | 0.50 | M-v | 4   | MPC   | 128943 2007 RJ <sub>180</sub> |
| 2007 RS <sub>182</sub> | 18.0 | 0.15 | 20071027 | 351.25837 | 359.45927 | 19.96198  | 4.62879  | 0.1825553 | 2.4131262 | 28  | 1 | 85 days   | 0.39 | M-v | 4   | MPC   | 2007 RS <sub>182</sub>        |
| 2007 RS <sub>184</sub> | 16.0 | 0.15 | 20071027 | 22.46735  | 156.07056 | 186.09133 | 9.84133  | 0.0762244 | 3.1717061 | 32  | 1 | 83 days   | 0.31 | M-v | 4   | MPC   | 2007 RS <sub>184</sub>        |
| 2007 RP <sub>187</sub> | 18.1 | 0.15 | 20071027 | 26.41639  | 355.86022 | 342.97612 | 1.77746  | 0.2111397 | 2.4309777 | 28  | 1 | 66 days   | 0.50 | M-v | 4   | MPC   | 2007 RP <sub>187</sub>        |
| 2007 RK <sub>188</sub> | 17.2 | 0.15 | 20071027 | 17.12091  | 135.24096 | 205.92472 | 6.70830  | 0.1775019 | 2.6436035 | 28  | 1 | 87 days   | 0.51 | M-v | 4   | MPC   | 2007 RK <sub>188</sub>        |
| 2007 RV <sub>188</sub> | 17.0 | 0.15 | 20071027 | 3.02574   | 3.87404   | 356.61013 | 12.19119 | 0.0887626 | 2.5866427 | 26  | 1 | 81 days   | 0.29 | M-v | 3   | MPC   | 128943 2007 RV <sub>188</sub> |
| 2007 RA <sub>189</sub> | 16.1 | 0.15 | 20071027 | 7.96067   | 129.06207 | 223.31233 | 12.59591 | 0.2166477 | 2.7869105 | 25  | 1 | 142 days  | 0.72 | M-v | 4   | MPC   | 2007 RA <sub>189</sub>        |
| 2007 RX <sub>189</sub> | 17.8 | 0.15 | 20071007 | 316.71156 | 56.24441  | 12.72660  | 10.07407 | 0.1720823 | 2.5889887 | 23  | 1 | 58 days   | 0.28 |     |     | MPC   | 2007 RX <sub>189</sub>        |
| 2007 RR <sub>190</sub> | 17.4 | 0.15 | 20070917 | 15.93185  | 352.44690 | 343.36396 | 3.88358  | 0.2237470 | 2.6676147 | 18  | 1 | 33 days   | 0.41 |     |     | MPC   | 2007 RR <sub>190</sub>        |
| 2007 RK <sub>192</sub> | 16.8 | 0.15 | 20071027 | 354.42096 | 315.86300 | 61.23220  | 2.17177  | 0.1994615 | 2.4437604 | 92  | 7 | 1992–2007 | 0.50 | M-v | 1   | MPC   | 128944 2007 RK <sub>192</sub> |
| 2007 RR <sub>200</sub> | 17.2 | 0.15 | 20071027 | 93.77412  | 325.37960 | 297.48868 | 1.78901  | 0.1859368 | 2.3073580 | 41  | 4 | 2002–2007 | 0.47 | M-v | 1   | MPC   | 128314 2007 RR <sub>200</sub> |
| 2007 RL <sub>201</sub> | 16.1 | 0.15 | 20071027 | 346.20755 | 213.61470 | 191.82945 | 14.67998 | 0.2899630 | 3.1358403 | 82  | 1 | 82 days   | 0.47 | M-v | 4   | MPC   | 128944 2007 RL <sub>201</sub> |
| 2007 RP <sub>202</sub> | 16.3 | 0.15 | 20071027 | 272.73666 | 111.09100 | 4.59115   | 9.61746  | 0.0886848 | 2.8996959 | 38  | 3 | 1992–2007 | 0.28 | M-v | 3   | MPC   | 128315 2007 RP <sub>202</sub> |
| 2007 RT <sub>202</sub> | 16.1 | 0.15 | 20071027 | 17.19289  | 157.27841 | 200.50298 | 4.85691  | 0.1088060 | 3.0793653 | 51  | 2 | 2005–2007 | 0.45 | M-v | 3   | MPC   | 128944 2007 RT <sub>202</sub> |
| 2007 RD <sub>203</sub> | 16.6 | 0.15 | 20071027 | 311.75240 | 239.22534 | 203.05167 | 0.83080  | 0.1730682 | 3.0951484 | 30  | 3 | 2001–2007 | 0.32 | M-v | 2   | MPC   | 128315 2007 RD <sub>203</sub> |
| 2007 RK <sub>203</sub> | 15.8 | 0.15 | 20070917 | 282.61494 | 92.77825  | 8.00190   | 4.62676  | 0.1230163 | 3.1079343 | 22  | 1 | 53 days   | 0.33 |     |     | D MPC | 2007 RK <sub>203</sub>        |
| 2007 RQ <sub>203</sub> | 17.1 | 0.15 | 20071027 | 355.14621 | 206.19040 | 180.99257 | 1.14444  | 0.2039468 | 2.8073841 | 41  | 3 | 2002–2007 | 0.29 | M-v | 2   | MPC   | 128944 2007 RQ <sub>203</sub> |
| 2007 RE <sub>204</sub> | 15.0 | 0.15 | 20071027 | 299.83799 | 251.72794 | 197.23730 | 17.28217 | 0.1355781 | 3.1613617 | 85  | 5 | 1993–2007 | 0.58 | M-v | 1   | MPC   | 128944 2007 RE <sub>204</sub> |
| 2007 RP <sub>204</sub> | 16.6 | 0.15 | 20071027 | 81.28065  | 64.42820  | 217.14294 | 6.36607  | 0.1288944 | 2.4349979 | 45  | 5 | 1996–2007 | 0.47 | M-v | 1   | MPC   | 128944 2007 RP <sub>204</sub> |
| 2007 RS <sub>204</sub> | 18.0 | 0.15 | 20071027 | 19.54248  | 144.36186 | 209.73196 | 5.65359  | 0.1315022 | 2.4063731 | 28  | 1 | 88 days   | 0.42 | M-v | 3   | MPC   | 2007 RS <sub>204</sub>        |
| 2007 RX <sub>204</sub> | 15.5 | 0.15 | 20071027 | 2.24870   | 166.88676 | 208.39637 | 11.19577 | 0.0907881 | 3.2520878 | 71  | 3 | 2001–2007 | 0.43 | M-v | 2   | MPC   | 128945 2007 RX <sub>204</sub> |
| 2007 RM <sub>205</sub> | 16.0 | 0.15 | 20071027 | 332.12019 | 216.96379 | 202.76836 | 8.73323  | 0.1762334 | 2.8010166 | 71  | 2 | 2005–2007 | 0.46 | M-v | 3   | MPC   | 128945 2007 RM <sub>205</sub> |
| 2007 RH <sub>206</sub> | 16.9 | 0.15 | 20071007 | 6.30675   | 218.42298 | 141.73422 | 2.79561  | 0.1098991 | 2.8857728 | 22  | 1 | 53 days   | 0.32 |     |     | MPC   | 2007 RH <sub>206</sub>        |
| 2007 RC <sub>209</sub> | 17.9 | 0.15 | 20071027 | 0.05978   | 337.55411 | 39.44333  | 3.14137  | 0.2041679 | 2.4583120 | 33  | 1 | 85 days   | 0.29 | M-v | 3   | MPC   | 2007 RC <sub>209</sub>        |
| 2007 RM <sub>209</sub> | 15.4 | 0.15 | 20071027 | 21.91165  | 334.22458 | 9.46729   | 27.29486 | 0.1345368 | 3.1977545 | 56  | 2 | 2005–2007 | 0.52 | M-v | 3   | MPC   | 128945 2007 RM <sub>209</sub> |
| 2007 RQ <sub>209</sub> | 17.9 | 0.15 | 20071027 | 28.77612  | 315.31843 | 22.03874  | 7.04377  | 0.1767937 | 2.2186867 | 34  | 1 | 85 days   | 0.44 | M-v | 3   | MPC   | 128945 2007 RQ <sub>209</sub> |
| 2007 RR <sub>210</sub> | 16.5 | 0.15 | 20070828 | 341.33814 | 42.61665  | 324.04125 | 5.67413  | 0.1785882 | 3.1295402 | 16  | 1 | 47 days   | 0.18 |     |     | MPC   | 2007 RR <sub>210</sub>        |
| 2007 RJ <sub>211</sub> | 15.8 | 0.15 | 20071027 | 307.01833 | 107.93179 | 351.10322 | 5.62298  | 0.2370229 | 2.7268056 | 77  | 1 | 93 days   | 0.56 | M-v | 4   | MPC   | 128945 2007 RJ <sub>211</sub> |
| 2007 RM <sub>211</sub> | 16.8 | 0.15 | 20071027 | 23.35552  | 335.57548 | 352.01232 | 4.37092  | 0.2409323 | 3.0594546 | 27  | 1 | 88 days   | 0.44 | M-v | 4 D | MPC   | 128945 2007 RM <sub>211</sub> |
| 2007 RP <sub>212</sub> | 15.9 | 0.15 | 20071027 | 72.67824  | 281.80833 | 3.51870   | 11.25607 | 0.0781725 | 2.8396760 | 49  | 2 | 2002–2007 | 0.35 | M-v | 4   | MPC   | 128946 2007 RP <sub>212</sub> |
| 2007 RS <sub>212</sub> | 17.7 | 0.15 | 20071027 | 13.06684  | 314.25132 | 42.36225  | 3.07695  | 0.2199086 | 2.3569735 | 38  | 1 | 83 days   | 0.54 | M-v | 3   | MPC   | 2007 RS <sub>212</sub>        |
| 2007 RC <sub>213</sub> | 17.6 | 0.15 | 20070828 | 323.55728 | 49.68839  | 339.78761 | 6.45968  | 0.1114601 | 2.2592539 | 22  | 1 | 59 days   | 0.37 |     |     | MPC   | 2007 RC <sub>213</sub>        |
| 2007 RD <sub>213</sub> | 16.0 | 0.15 | 20071027 | 3.80028   | 159.01489 | 196.94509 | 9.08886  | 0.2038411 | 3.1062307 | 32  | 2 | 2006–2007 | 0.39 | M-v | 3   | MPC   | 128946 2007 RD <sub>213</sub> |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 RH <sub>213</sub> | 18.2 | 0.15 | 20071027 | 11.79545  | 34.10575  | 316.47946 | 0.55501  | 0.2064946 | 2.3517738 | 27  | 1 | 78 days   | 0.35 | M-v | 4 | MPC | 2007 RH <sub>213</sub>        |
| 2007 RN <sub>213</sub> | 16.8 | 0.15 | 20071027 | 5.10113   | 148.99439 | 207.77925 | 1.38919  | 0.2186376 | 2.9942537 | 41  | 2 | 2006–2007 | 0.42 | M-v | 3 | MPC | 128946 2007 RN <sub>213</sub> |
| 2007 RA <sub>215</sub> | 16.8 | 0.15 | 20071027 | 350.40270 | 176.03951 | 214.26739 | 4.38165  | 0.1615295 | 2.7838611 | 41  | 3 | 1998–2007 | 0.33 | M-v | 3 | MPC | 128946 2007 RA <sub>215</sub> |
| 2007 RB <sub>215</sub> | 17.6 | 0.15 | 20070917 | 314.45783 | 71.96187  | 346.31351 | 6.71393  | 0.0962318 | 2.2470734 | 19  | 1 | 34 days   | 0.37 |     |   | MPC | 2007 RB <sub>215</sub>        |
| 2007 RG <sub>216</sub> | 16.7 | 0.15 | 20071027 | 345.16285 | 64.40130  | 339.70525 | 1.97986  | 0.1796737 | 2.3926248 | 108 | 5 | 2000–2007 | 0.44 | M-v | 1 | MPC | 128946 2007 RG <sub>216</sub> |
| 2007 RA <sub>217</sub> | 17.0 | 0.15 | 20071027 | 18.95846  | 322.77548 | 18.12707  | 3.48025  | 0.2044192 | 2.6555614 | 53  | 4 | 1994–2007 | 0.45 | M-v | 1 | MPC | 128946 2007 RA <sub>217</sub> |
| 2007 RY <sub>217</sub> | 16.8 | 0.15 | 20071027 | 10.44499  | 206.13045 | 183.54330 | 2.84360  | 0.1636918 | 2.6435613 | 46  | 1 | 66 days   | 0.45 | M-v | 4 | MPC | 128946 2007 RY <sub>217</sub> |
| 2007 RB <sub>218</sub> | 15.9 | 0.15 | 20071027 | 25.97729  | 300.78038 | 67.78220  | 2.64747  | 0.1699335 | 3.0871146 | 49  | 1 | 83 days   | 0.40 | M-v | 4 | MPC | 128946 2007 RB <sub>218</sub> |
| 2007 RC <sub>218</sub> | 16.6 | 0.15 | 20071027 | 353.24550 | 215.40117 | 196.94510 | 6.25937  | 0.1013164 | 2.3464692 | 72  | 4 | 2000–2007 | 0.49 | M-v | 1 | MPC | 128946 2007 RC <sub>218</sub> |
| 2007 RP <sub>221</sub> | 18.1 | 0.15 | 20071027 | 341.60574 | 207.52208 | 203.71021 | 3.83472  | 0.1387428 | 2.4525441 | 46  | 2 | 2003–2007 | 0.36 | M-v | 3 | MPC | 128318 2007 RP <sub>221</sub> |
| 2007 RT <sub>221</sub> | 18.0 | 0.15 | 20071007 | 36.71466  | 102.05371 | 222.57256 | 1.16585  | 0.2184904 | 2.5935986 | 34  | 1 | 52 days   | 0.39 |     |   | MPC | 2007 RT <sub>221</sub>        |
| 2007 RV <sub>221</sub> | 16.3 | 0.15 | 20071007 | 57.94934  | 108.64767 | 204.74445 | 9.23677  | 0.1021560 | 3.1226978 | 25  | 1 | 54 days   | 0.29 |     |   | MPC | 2007 RV <sub>221</sub>        |
| 2007 RW <sub>221</sub> | 18.4 | 0.15 | 20071027 | 35.94742  | 324.39714 | 7.09658   | 5.70815  | 0.2279787 | 2.4224003 | 24  | 1 | 60 days   | 0.26 | M-v | 4 | MPC | 128947 2007 RW <sub>221</sub> |
| 2007 RK <sub>223</sub> | 15.1 | 0.15 | 20071027 | 30.10993  | 298.92252 | 29.12186  | 6.18011  | 0.1529650 | 3.1401428 | 75  | 5 | 1994–2007 | 0.53 | M-v | 1 | MPC | 126806 2007 RK <sub>223</sub> |
| 2007 RG <sub>226</sub> | 16.8 | 0.15 | 20070917 | 56.87051  | 194.58595 | 99.54112  | 1.97879  | 0.1129835 | 2.5696699 | 18  | 1 | 40 days   | 0.47 |     |   | MPC | 2007 RG <sub>226</sub>        |
| 2007 RQ <sub>227</sub> | 15.2 | 0.15 | 20071027 | 32.70046  | 331.75043 | 32.89845  | 9.98852  | 0.1138608 | 3.0030870 | 111 | 5 | 1991–2007 | 0.43 | M-v | 0 | MPC | 128947 2007 RQ <sub>227</sub> |
| 2007 RR <sub>227</sub> | 16.0 | 0.15 | 20071027 | 354.34097 | 19.54063  | 33.82401  | 18.64190 | 0.1375223 | 3.1370956 | 48  | 1 | 83 days   | 0.35 | M-v | 3 | MPC | 128947 2007 RR <sub>227</sub> |
| 2007 RW <sub>227</sub> | 16.8 | 0.15 | 20071027 | 28.42526  | 340.73342 | 38.77581  | 5.29942  | 0.0960312 | 2.6599169 | 20  | 1 | 68 days   | 0.27 | M-v | 5 | MPC | 128947 2007 RW <sub>227</sub> |
| 2007 RY <sub>227</sub> | 17.2 | 0.15 | 20071027 | 152.96660 | 198.30761 | 56.07155  | 3.83197  | 0.1133928 | 2.2046024 | 21  | 1 | 85 days   | 0.30 | M-v | 4 | MPC | 2007 RY <sub>227</sub>        |
| 2007 RC <sub>228</sub> | 16.6 | 0.15 | 20071027 | 12.63791  | 195.89810 | 199.25863 | 3.35905  | 0.1924695 | 2.6407080 | 38  | 1 | 85 days   | 0.47 | M-v | 4 | MPC | 128947 2007 RC <sub>228</sub> |
| 2007 RD <sub>228</sub> | 17.0 | 0.15 | 20071027 | 299.07442 | 76.65093  | 57.02198  | 4.62359  | 0.1653700 | 2.6866159 | 36  | 4 | 1998–2007 | 0.39 | M-v | 1 | MPC | 128319 2007 RD <sub>228</sub> |
| 2007 RF <sub>228</sub> | 16.7 | 0.15 | 20071027 | 358.31146 | 201.35937 | 214.36967 | 11.30995 | 0.1541951 | 2.5551912 | 27  | 1 | 86 days   | 0.33 | M-v | 3 | MPC | 128947 2007 RF <sub>228</sub> |
| 2007 RR <sub>230</sub> | 16.1 | 0.15 | 20071027 | 159.14165 | 202.31607 | 5.88436   | 13.87629 | 0.0218515 | 2.7608925 | 64  | 3 | 2000–2007 | 0.44 | M-v | 2 | MPC | 128947 2007 RR <sub>230</sub> |
| 2007 RE <sub>231</sub> | 18.6 | 0.15 | 20070917 | 2.73962   | 349.20893 | 5.64599   | 6.21415  | 0.1677546 | 2.6639003 | 19  | 1 | 31 days   | 0.30 |     |   | MPC | 2007 RE <sub>231</sub>        |
| 2007 RK <sub>232</sub> | 16.7 | 0.15 | 20071027 | 65.24725  | 193.43395 | 97.13993  | 3.24292  | 0.1119808 | 2.3422585 | 39  | 1 | 61 days   | 0.45 | M-v | 5 | MPC | 2007 RK <sub>232</sub>        |
| 2007 RL <sub>232</sub> | 16.6 | 0.15 | 20071027 | 344.13799 | 13.07928  | 23.45693  | 7.73149  | 0.2142343 | 2.3886370 | 78  | 3 | 2000–2007 | 0.48 | M-v | 2 | MPC | 128948 2007 RL <sub>232</sub> |
| 2007 RO <sub>233</sub> | 17.5 | 0.15 | 20070917 | 6.61277   | 223.43970 | 127.40435 | 6.27687  | 0.2127040 | 2.4162128 | 20  | 1 | 36 days   | 0.60 |     |   | MPC | 2007 RO <sub>233</sub>        |
| 2007 RB <sub>234</sub> | 15.4 | 0.15 | 20071027 | 16.97635  | 20.34494  | 328.71139 | 13.09535 | 0.3227921 | 3.0779696 | 43  | 2 | 1996–2007 | 0.41 | M-v | 3 | MPC | 128319 2007 RB <sub>234</sub> |
| 2007 RJ <sub>234</sub> | 16.5 | 0.15 | 20071027 | 336.34683 | 284.98467 | 127.33297 | 5.40146  | 0.1737903 | 2.4653812 | 64  | 6 | 1996–2007 | 0.56 | M-v | 1 | MPC | 128948 2007 RJ <sub>234</sub> |
| 2007 RV <sub>235</sub> | 17.0 | 0.15 | 20071027 | 354.39913 | 79.86504  | 313.07452 | 1.90454  | 0.1844766 | 2.4353850 | 87  | 5 | 2001–2007 | 0.49 | M-v | 1 | MPC | 128948 2007 RV <sub>235</sub> |
| 2007 RW <sub>235</sub> | 18.0 | 0.15 | 20071027 | 47.00262  | 292.12014 | 46.99995  | 3.36523  | 0.1384714 | 2.3558308 | 69  | 2 | 2003–2007 | 0.30 | M-v | 4 | MPC | 128948 2007 RW <sub>235</sub> |
| 2007 RX <sub>235</sub> | 17.0 | 0.15 | 20071027 | 43.74347  | 272.03973 | 65.91393  | 2.09205  | 0.1841181 | 2.2962788 | 90  | 5 | 2000–2007 | 0.38 | M-v | 1 | MPC | 128948 2007 RX <sub>235</sub> |
| 2007 RA <sub>236</sub> | 17.7 | 0.15 | 20071027 | 336.79305 | 61.37744  | 18.88487  | 5.05131  | 0.2111151 | 2.6869254 | 29  | 1 | 69 days   | 0.27 | M-v | 4 | MPC | 2007 RA <sub>236</sub>        |
| 2007 RE <sub>236</sub> | 17.2 | 0.15 | 20070828 | 330.07626 | 33.42056  | 356.27002 | 13.66158 | 0.2582911 | 2.6521431 | 26  | 1 | 55 days   | 0.52 |     |   | MPC | 2007 RE <sub>236</sub>        |
| 2007 RX <sub>236</sub> | 15.1 | 0.15 | 20071027 | 354.93698 | 167.11304 | 225.32496 | 16.90056 | 0.2094998 | 3.1288610 | 89  | 3 | 2001–2007 | 0.41 | M-v | 2 | MPC | 128948 2007 RX <sub>236</sub> |
| 2007 RF <sub>239</sub> | 17.8 | 0.15 | 20071027 | 21.14475  | 292.34477 | 44.16799  | 6.15015  | 0.2800436 | 2.3617512 | 36  | 1 | 73 days   | 0.47 | M-v | 4 | MPC | 128948 2007 RF <sub>239</sub> |
| 2007 RJ <sub>240</sub> | 17.4 | 0.15 | 20071027 | 23.11935  | 31.90097  | 319.61245 | 0.46722  | 0.1937029 | 2.4093419 | 68  | 2 | 2005–2007 | 0.44 | M-v | 3 | MPC | 128948 2007 RJ <sub>240</sub> |
| 2007 RA <sub>242</sub> | 16.0 | 0.15 | 20071027 | 353.85217 | 21.40391  | 35.64063  | 14.55850 | 0.1479029 | 2.5710255 | 89  | 2 | 2005–2007 | 0.46 | M-v | 3 | MPC | 128948 2007 RA <sub>242</sub> |
| 2007 RL <sub>242</sub> | 16.5 | 0.15 | 20070917 | 357.42078 | 208.44067 | 148.59712 | 10.59249 | 0.3160324 | 3.0831401 | 27  | 1 | 31 days   | 0.66 |     |   | MPC | 2007 RL <sub>242</sub>        |
| 2007 RW <sub>242</sub> | 16.8 | 0.15 | 20071007 | 6.15025   | 246.30535 | 107.15967 | 3.46439  | 0.2620025 | 2.7208327 | 23  | 1 | 49 days   | 0.48 |     |   | MPC | 2007 RW <sub>242</sub>        |
| 2007 RY <sub>242</sub> | 16.9 | 0.15 | 20071027 | 339.68444 | 345.21087 | 56.96907  | 2.13120  | 0.1852688 | 2.4435864 | 80  | 6 | 1992–2007 | 0.48 | M-v | 1 | MPC | 126488 2007 RY <sub>242</sub> |
| 2007 RZ <sub>242</sub> | 16.1 | 0.15 | 20071027 | 14.20077  | 326.80826 | 28.22080  | 5.48887  | 0.1761205 | 2.7899026 | 56  | 3 | 2001–2007 | 0.54 | M-v | 3 | MPC | 128323 2007 RZ <sub>242</sub> |
| 2007 RT <sub>243</sub> | 15.8 | 0.15 | 20071027 | 10.66119  | 229.08610 | 166.23694 | 22.15098 | 0.0705879 | 2.6117858 | 44  | 5 | 1998–2007 | 0.52 | M-v | 1 | MPC | 128324 2007 RT <sub>243</sub> |
| 2007 RB <sub>244</sub> | 16.9 | 0.15 | 20071027 | 22.81307  | 318.01754 | 30.58179  | 6.45013  | 0.1392626 | 2.3570074 | 52  | 1 | 85 days   | 0.56 | M-v | 4 | MPC | 128949 2007 RB <sub>244</sub> |
| 2007 RC <sub>244</sub> | 17.2 | 0.15 | 20071027 | 14.31749  | 317.65223 | 46.45792  | 3.79096  | 0.2091717 | 2.3773694 | 126 | 3 | 2005–2007 | 0.48 | M-v | 2 | MPC | 128949 2007 RC <sub>244</sub> |
| 2007 RE <sub>244</sub> | 16.0 | 0.15 | 20071027 | 14.04997  | 198.42463 | 176.52350 | 14.30244 | 0.2345518 | 2.3469995 | 87  | 4 | 1996–2007 | 0.54 | M-v | 2 | MPC | 128324 2007 RE <sub>244</sub> |
| 2007 RG <sub>244</sub> | 18.5 | 0.15 | 20071027 | 5.83964   | 207.57763 | 149.90016 | 3.32772  | 0.2435773 | 2.3392148 | 23  | 1 | 60 days   | 0.39 | M-v | 4 | MPC | 2007 RG <sub>244</sub>        |
| 2007 RT <sub>244</sub> | 17.3 | 0.15 | 20071027 | 61.82148  | 224.61977 | 75.31292  | 2.42060  | 0.1776085 | 2.3804991 | 38  | 5 | 1999–2007 | 0.54 | M-v | 1 | MPC | 128324 2007 RT <sub>244</sub> |
| 2007 RF <sub>245</sub> | 17.7 | 0.15 | 20071007 | 323.69320 | 343.81405 | 84.85674  | 3.44193  | 0.1808163 | 2.3417763 | 22  | 1 | 57 days   | 0.40 |     |   | MPC | 2007 RF <sub>245</sub>        |
| 2007 RO <sub>245</sub> | 17.9 | 0.15 | 20071027 | 10.30387  | 325.53928 | 44.17692  | 4.59450  | 0.1889738 | 2.2246127 | 59  | 1 | 86 days   | 0.47 | M-v | 3 | MPC | 128949 2007 RO <sub>245</sub> |
| 2007 RZ <sub>245</sub> | 16.2 | 0.15 | 20070917 | 351.47849 | 340.99457 | 22.66595  | 7.43971  | 0.1226663 | 2.7980192 | 30  | 1 | 55 days   | 0.73 |     |   | MPC | 2007 RZ <sub>245</sub>        |
| 2007 RD <sub>246</sub> | 17.4 | 0.15 | 20071027 | 25.62187  | 305.01183 | 30.60218  | 5.43012  | 0.1345622 | 2.3418906 | 20  | 1 | 83 days   | 0.62 | M-v | 4 | MPC | 2007 RD <sub>246</sub>        |
| 2007 RL <sub>246</sub> | 15.7 | 0.15 | 20070917 | 26.73714  | 160.39646 | 154.49072 | 13.35973 | 0.1581835 | 3.0629650 | 23  | 1 | 43 days   | 0.52 |     |   | MPC | 2007 RL <sub>246</sub>        |

|                        |      |      |          |           |           |           |          |           |            |    |   |           |      |     |     |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|----|---|-----------|------|-----|-----|-----|-------------------------------|
| 2007 RX <sub>246</sub> | 16.9 | 0.15 | 20071027 | 49.51022  | 281.71187 | 8.26581   | 5.35251  | 0.2235774 | 2.3987070  | 67 | 1 | 107 days  | 0.34 | M-v | 4   | MPC | 128949 2007 RX <sub>246</sub> |
| 2007 RY <sub>246</sub> | 16.0 | 0.15 | 20071027 | 337.57280 | 73.34082  | 337.81816 | 12.20380 | 0.1416932 | 2.6983450  | 40 | 1 | 82 days   | 0.53 | M-v | 4   | MPC | 2007 RY <sub>246</sub>        |
| 2007 RB <sub>247</sub> | 16.1 | 0.15 | 20071027 | 49.60976  | 285.37569 | 6.39950   | 16.03188 | 0.2087189 | 2.9727889  | 29 | 1 | 85 days   | 0.57 | M-v | 4   | MPC | 2007 RB <sub>247</sub>        |
| 2007 RC <sub>247</sub> | 17.1 | 0.15 | 20071027 | 6.00550   | 154.45998 | 216.10076 | 8.51108  | 0.3001965 | 2.7153474  | 56 | 1 | 85 days   | 0.45 | M-v | 3   | MPC | 2007 RC <sub>247</sub>        |
| 2007 RG <sub>247</sub> | 17.2 | 0.15 | 20071027 | 25.23079  | 199.14309 | 144.69345 | 6.85602  | 0.2425166 | 2.1789746  | 27 | 1 | 60 days   | 0.51 | M-v | 4   | MPC | 2007 RG <sub>247</sub>        |
| 2007 RQ <sub>247</sub> | 16.3 | 0.15 | 20071027 | 10.04603  | 78.54627  | 279.80160 | 11.26134 | 0.2796124 | 2.6581811  | 27 | 1 | 81 days   | 0.45 | M-v | 3   | MPC | 128949 2007 RQ <sub>247</sub> |
| 2007 RX <sub>247</sub> | 17.3 | 0.15 | 20071027 | 11.72089  | 144.43374 | 216.90389 | 5.80527  | 0.1328969 | 2.3456754  | 54 | 3 | 1999-2007 | 0.56 | M-v | 3   | MPC | 128949 2007 RX <sub>247</sub> |
| 2007 RO <sub>250</sub> | 17.5 | 0.15 | 20071027 | 42.45669  | 105.37264 | 216.69403 | 5.78207  | 0.1402501 | 2.2322815  | 28 | 1 | 86 days   | 0.45 | M-v | 4   | MPC | 2007 RO <sub>250</sub>        |
| 2007 RO <sub>252</sub> | 16.2 | 0.15 | 20071027 | 10.64942  | 22.60856  | 342.78261 | 1.13061  | 0.1608524 | 3.1603937  | 42 | 1 | 84 days   | 0.54 | M-v | 4   | MPC | 2007 RO <sub>252</sub>        |
| 2007 RE <sub>253</sub> | 18.1 | 0.15 | 20071027 | 4.71019   | 359.94413 | 35.29021  | 3.26446  | 0.2046516 | 2.1924411  | 56 | 1 | 81 days   | 0.45 | M-v | 4   | MPC | 128949 2007 RE <sub>253</sub> |
| 2007 RF <sub>253</sub> | 17.7 | 0.15 | 20071027 | 351.36672 | 21.19206  | 33.95890  | 6.61533  | 0.1671540 | 2.3715909  | 39 | 1 | 67 days   | 0.38 | M-v | 3   | MPC | 128949 2007 RF <sub>253</sub> |
| 2007 RR <sub>254</sub> | 16.4 | 0.15 | 20070917 | 354.61833 | 157.97279 | 194.70369 | 9.03259  | 0.0213790 | 2.8788250  | 16 | 1 | 32 days   | 0.31 |     |     | MPC | 2007 RR <sub>254</sub>        |
| 2007 RW <sub>254</sub> | 17.6 | 0.15 | 20070917 | 292.41404 | 139.62142 | 305.21769 | 5.82201  | 0.2509102 | 2.6245646  | 13 | 1 | 30 days   | 0.38 |     |     | MPC | 2007 RW <sub>254</sub>        |
| 2007 RG <sub>256</sub> | 18.3 | 0.15 | 20070917 | 1.17497   | 332.67218 | 17.72916  | 2.12596  | 0.1882521 | 2.4519836  | 25 | 1 | 52 days   | 0.42 |     |     | MPC | 2007 RG <sub>256</sub>        |
| 2007 RW <sub>257</sub> | 15.9 | 0.15 | 20071027 | 47.71381  | 112.44853 | 198.52636 | 6.44575  | 0.1689068 | 3.0490655  | 40 | 1 | 81 days   | 0.61 | M-v | 5   | MPC | 2007 RW <sub>257</sub>        |
| 2007 RX <sub>257</sub> | 17.0 | 0.15 | 20071027 | 5.19910   | 333.67176 | 23.72420  | 13.35892 | 0.2980777 | 2.6451950  | 30 | 1 | 81 days   | 0.56 | M-v | 4 D | MPC | 128950 2007 RX <sub>257</sub> |
| 2007 RB <sub>259</sub> | 16.9 | 0.15 | 20071027 | 333.59101 | 205.73214 | 216.68829 | 3.87383  | 0.2246643 | 3.0075901  | 28 | 1 | 83 days   | 0.31 | M-v | 4   | MPC | 2007 RB <sub>259</sub>        |
| 2007 RN <sub>259</sub> | 17.9 | 0.15 | 20071027 | 27.10474  | 326.34951 | 41.46396  | 8.93538  | 0.1619073 | 2.4550485  | 30 | 1 | 82 days   | 0.30 | M-v | 3   | MPC | 2007 RN <sub>259</sub>        |
| 2007 RR <sub>259</sub> | 17.3 | 0.15 | 20071027 | 38.49706  | 297.15067 | 37.36053  | 13.08002 | 0.3247813 | 2.5535623  | 47 | 1 | 81 days   | 0.45 | M-v | 4   | MPC | 128950 2007 RR <sub>259</sub> |
| 2007 RF <sub>260</sub> | 16.5 | 0.15 | 20071027 | 27.09277  | 327.61054 | 47.26362  | 8.06656  | 0.1093942 | 2.7001591  | 68 | 3 | 2003-2007 | 0.37 | M-v | 2   | MPC | 128327 2007 RF <sub>260</sub> |
| 2007 RJ <sub>260</sub> | 17.6 | 0.15 | 20071027 | 320.86841 | 235.71099 | 222.17718 | 2.31546  | 0.1432111 | 2.4349511  | 77 | 6 | 1997-2007 | 0.41 | M-v | 0   | MPC | 128327 2007 RJ <sub>260</sub> |
| 2007 RL <sub>260</sub> | 17.7 | 0.15 | 20071027 | 10.56221  | 183.10745 | 208.95443 | 2.91641  | 0.1403333 | 2.2605957  | 49 | 1 | 82 days   | 0.46 | M-v | 4   | MPC | 128950 2007 RL <sub>260</sub> |
| 2007 RN <sub>260</sub> | 17.0 | 0.15 | 20071027 | 3.16799   | 12.89982  | 29.65395  | 4.67712  | 0.1845510 | 2.6128572  | 61 | 4 | 1996-2007 | 0.57 | M-v | 2   | MPC | 128327 2007 RN <sub>260</sub> |
| 2007 RO <sub>260</sub> | 18.1 | 0.15 | 20071027 | 70.63470  | 101.40087 | 212.07637 | 4.56039  | 0.1886626 | 2.3140994  | 27 | 1 | 82 days   | 0.29 | M-v | 4 D | MPC | 2007 RO <sub>260</sub>        |
| 2007 RP <sub>260</sub> | 17.3 | 0.15 | 20071027 | 333.64661 | 220.75028 | 214.24956 | 5.48250  | 0.0395605 | 2.2694297  | 41 | 1 | 83 days   | 0.32 | M-v | 3   | MPC | 128950 2007 RP <sub>260</sub> |
| 2007 RV <sub>260</sub> | 16.3 | 0.15 | 20070917 | 330.46015 | 282.73471 | 121.20383 | 4.24646  | 0.0942897 | 2.7225320  | 18 | 1 | 37 days   | 0.46 |     |     | MPC | 2007 RV <sub>260</sub>        |
| 2007 RL <sub>261</sub> | 16.3 | 0.15 | 20071027 | 336.01966 | 14.10238  | 37.94648  | 9.10392  | 0.1488086 | 3.0801872  | 26 | 1 | 83 days   | 0.42 | M-v | 4   | MPC | 2007 RL <sub>261</sub>        |
| 2007 RS <sub>261</sub> | 15.9 | 0.15 | 20071007 | 287.41968 | 94.59522  | 18.12640  | 23.53212 | 0.2607870 | 3.1878314  | 22 | 1 | 52 days   | 0.23 |     |     | MPC | 2007 RS <sub>261</sub>        |
| 2007 RR <sub>262</sub> | 15.4 | 0.15 | 20071027 | 316.74211 | 238.26689 | 186.86738 | 4.66375  | 0.3120177 | 3.9731481  | 19 | 1 | 60 days   | 0.25 | M-v | 4   | MPC | 2007 RR <sub>262</sub>        |
| 2007 RT <sub>262</sub> | 15.8 | 0.15 | 20071027 | 331.41183 | 125.64051 | 274.47541 | 1.59842  | 0.2700847 | 3.9593536  | 19 | 1 | 60 days   | 0.17 | M-v | 4   | MPC | 2007 RT <sub>262</sub>        |
| 2007 RB <sub>265</sub> | 16.7 | 0.15 | 20070917 | 257.11390 | 136.99996 | 340.11625 | 6.17081  | 0.2007231 | 2.6429512  | 16 | 1 | 30 days   | 0.29 |     |     | MPC | 2007 RB <sub>265</sub>        |
| 2007 RC <sub>265</sub> | 18.5 | 0.15 | 20071027 | 48.66956  | 333.38543 | 325.56540 | 2.07014  | 0.2107800 | 2.2068641  | 25 | 1 | 116 days  | 0.24 | M-v | 3   | MPC | 2007 RC <sub>265</sub>        |
| 2007 RV <sub>265</sub> | 18.1 | 0.15 | 20071027 | 0.15701   | 106.89016 | 263.35273 | 0.69872  | 0.2148695 | 2.4187154  | 31 | 1 | 122 days  | 0.33 | M-v | 3   | MPC | 128950 2007 RV <sub>265</sub> |
| 2007 RD <sub>266</sub> | 17.7 | 0.15 | 20071007 | 340.94932 | 39.70370  | 349.96151 | 12.57477 | 0.1981816 | 2.6821383  | 16 | 1 | 34 days   | 0.26 |     | D   | MPC | 2007 RD <sub>266</sub>        |
| 2007 RW <sub>266</sub> | 18.1 | 0.15 | 20070917 | 320.80856 | 24.49598  | 34.61861  | 2.88927  | 0.2088083 | 2.4553623  | 18 | 1 | 31 days   | 0.19 |     |     | MPC | 2007 RW <sub>266</sub>        |
| 2007 RT <sub>267</sub> | 15.9 | 0.15 | 20071027 | 262.10185 | 103.03133 | 19.68900  | 8.94605  | 0.1315163 | 2.5488985  | 45 | 4 | 2001-2007 | 0.45 | M-v | 2   | MPC | 128328 2007 RT <sub>267</sub> |
| 2007 RY <sub>268</sub> | 18.2 | 0.15 | 20071007 | 353.72888 | 1.70347   | 41.81377  | 1.93258  | 0.1796588 | 2.3431793  | 31 | 1 | 51 days   | 0.35 |     |     | MPC | 2007 RY <sub>268</sub>        |
| 2007 RC <sub>269</sub> | 18.2 | 0.15 | 20071027 | 48.89140  | 285.64050 | 55.37902  | 2.45498  | 0.1354855 | 1.21351469 | 51 | 3 | 1996-2007 | 0.45 | M-v | 2   | MPC | 128328 2007 RC <sub>269</sub> |
| 2007 RD <sub>269</sub> | 18.2 | 0.15 | 20071027 | 8.40714   | 190.28745 | 194.87486 | 10.97729 | 0.3556472 | 2.6904220  | 24 | 1 | 60 days   | 0.48 | M-v | 4   | MPC | 128950 2007 RD <sub>269</sub> |
| 2007 RE <sub>269</sub> | 17.7 | 0.15 | 20071027 | 349.10494 | 305.74753 | 113.27622 | 2.07756  | 0.1675811 | 2.3807009  | 63 | 4 | 2000-2007 | 0.48 | M-v | 1   | MPC | 128328 2007 RE <sub>269</sub> |
| 2007 RP <sub>269</sub> | 14.6 | 0.15 | 20071027 | 347.03035 | 158.48445 | 242.14640 | 9.55916  | 0.2211262 | 3.1571478  | 71 | 2 | 2003-2007 | 0.41 | M-v | 4   | MPC | 128950 2007 RP <sub>269</sub> |
| 2007 RL <sub>270</sub> | 17.3 | 0.15 | 20071027 | 15.41781  | 355.66751 | 42.12979  | 3.25037  | 0.1882110 | 2.3332466  | 26 | 1 | 90 days   | 0.29 | M-v | 5   | MPC | 2007 RL <sub>270</sub>        |
| 2007 RD <sub>271</sub> | 15.5 | 0.15 | 20071027 | 180.77795 | 273.27767 | 283.62779 | 3.77382  | 0.0425519 | 2.9062296  | 43 | 3 | 2002-2007 | 0.52 | M-v | 3   | MPC | 128329 2007 RD <sub>271</sub> |
| 2007 RN <sub>271</sub> | 16.5 | 0.15 | 20071027 | 271.33656 | 101.92713 | 62.78129  | 4.31346  | 0.1109913 | 2.5618308  | 36 | 1 | 90 days   | 0.31 | M-v | 5   | MPC | 2007 RN <sub>271</sub>        |
| 2007 RS <sub>271</sub> | 16.4 | 0.15 | 20071027 | 61.83869  | 279.27026 | 61.23607  | 5.81432  | 0.2006441 | 3.0805892  | 32 | 3 | 2001-2007 | 0.38 | M-v | 2   | MPC | 128329 2007 RS <sub>271</sub> |
| 2007 RB <sub>272</sub> | 16.8 | 0.15 | 20071027 | 323.34162 | 228.66250 | 205.43056 | 8.81820  | 0.2057802 | 3.0975119  | 28 | 1 | 82 days   | 0.36 | M-v | 4   | MPC | 128951 2007 RB <sub>272</sub> |
| 2007 RZ <sub>272</sub> | 17.0 | 0.15 | 20071007 | 4.40200   | 7.79197   | 358.98659 | 15.07401 | 0.2420229 | 2.7262214  | 26 | 1 | 50 days   | 0.54 |     |     | MPC | 2007 RZ <sub>272</sub>        |
| 2007 RV <sub>273</sub> | 16.9 | 0.15 | 20071027 | 34.82802  | 131.38495 | 211.44564 | 5.49442  | 0.0249939 | 2.7274155  | 23 | 1 | 82 days   | 0.21 | M-v | 4   | MPC | 2007 RV <sub>273</sub>        |
| 2007 RZ <sub>273</sub> | 16.7 | 0.15 | 20071027 | 321.07462 | 220.75306 | 204.40861 | 6.69820  | 0.0670006 | 2.3865486  | 60 | 3 | 2002-2007 | 0.50 | M-v | 3   | MPC | 128951 2007 RZ <sub>273</sub> |
| 2007 RN <sub>275</sub> | 15.8 | 0.15 | 20071027 | 353.04168 | 278.99068 | 101.66588 | 21.14825 | 0.3626250 | 3.1999356  | 25 | 2 | 2001-2007 | 0.37 | M-v | 3   | MPC | 126495 2007 RN <sub>275</sub> |
| 2007 RL <sub>277</sub> | 14.8 | 0.15 | 20071027 | 83.39817  | 353.73013 | 280.50522 | 11.02799 | 0.0990719 | 3.0090828  | 56 | 4 | 2000-2007 | 0.68 | M-v | 1   | MPC | 128951 2007 RL <sub>277</sub> |
| 2007 RC <sub>278</sub> | 18.0 | 0.15 | 20070917 | 20.88709  | 313.30692 | 20.32847  | 20.92026 | 0.0916859 | 1.8976578  | 19 | 1 | 40 days   | 0.58 |     | D   | MPC | 2007 RC <sub>278</sub>        |
| 2007 RO <sub>279</sub> | 16.0 | 0.15 | 20071027 | 1.85219   | 326.19598 | 36.51504  | 14.44066 | 0.2701032 | 2.8080346  | 31 | 1 | 111 days  | 0.57 | M-v | 3   | MPC | 128951 2007 RO <sub>279</sub> |

|                        |      |      |          |           |           |           |          |           |            |     |   |           |      |     |   |     |                              |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|------------|-----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 RQ <sub>280</sub> | 16.9 | 0.15 | 20071027 | 6.88813   | 141.36963 | 225.74709 | 11.51979 | 0.3081169 | 2.6454944  | 48  | 1 | 82 days   | 0.50 | M-v | 3 | MPC | 1289512007 RQ <sub>280</sub> |
| 2007 RR <sub>280</sub> | 15.1 | 0.15 | 20071027 | 310.60300 | 191.10313 | 249.01134 | 13.90136 | 0.1671029 | 3.1832728  | 29  | 1 | 65 days   | 0.52 | M-v | 4 | MPC | 2007 RR <sub>280</sub>       |
| 2007 RX <sub>280</sub> | 15.9 | 0.15 | 20071027 | 333.08066 | 125.98961 | 290.33372 | 12.20466 | 0.1635897 | 2.6917486  | 28  | 1 | 81 days   | 0.70 | M-v | 4 | MPC | 2007 RX <sub>280</sub>       |
| 2007 RL <sub>281</sub> | 17.1 | 0.15 | 20071027 | 355.89185 | 79.31277  | 325.35017 | 11.70854 | 0.3116049 | 2.6144924  | 25  | 1 | 67 days   | 0.49 | M-v | 4 | MPC | 2007 RL <sub>281</sub>       |
| 2007 RF <sub>283</sub> | 16.5 | 0.15 | 20071027 | 1.45836   | 245.58710 | 153.19818 | 25.32944 | 0.4451889 | 3.1492519  | 20  | 1 | 86 days   | 0.49 | M-v | 4 | MPC | 2007 RF <sub>283</sub>       |
| 2007 RG <sub>283</sub> | 8.8  | 0.15 | 20071027 | 299.07678 | 149.83247 | 311.81098 | 28.75774 | 0.2408527 | 19.9727601 | 9   | 1 | 63 days   | 0.25 | M-v | 6 | MPC | 2007 RG <sub>283</sub>       |
| 2007 SC                | 16.9 | 0.15 | 20071027 | 2.33227   | 172.70038 | 198.00707 | 7.14320  | 0.3691193 | 2.6385173  | 98  | 1 | 84 days   | 0.39 | M-v | 3 | MPC | 1289512007 SC                |
| 2007 SN                | 15.9 | 0.15 | 20071027 | 358.65341 | 137.26502 | 248.26663 | 7.62871  | 0.2535344 | 2.3880799  | 110 | 4 | 2000–2007 | 0.44 | M-v | 1 | MPC | 1289512007 SN                |
| 2007 SO                | 15.5 | 0.15 | 20071027 | 342.62485 | 125.99075 | 306.48586 | 7.65291  | 0.4474221 | 2.7282967  | 174 | 3 | 1998–2007 | 0.37 | M-v | 1 | MPC | 1289512007 SO                |
| 2007 SB <sub>1</sub>   | 17.5 | 0.15 | 20071027 | 341.45454 | 220.45385 | 203.27679 | 3.71252  | 0.2183058 | 2.7732923  | 39  | 1 | 85 days   | 0.37 | M-v | 4 | MPC | 2007 SB <sub>1</sub>         |
| 2007 SC <sub>1</sub>   | 15.4 | 0.15 | 20071027 | 14.96620  | 91.68009  | 245.08366 | 9.68879  | 0.3396586 | 3.0696844  | 93  | 3 | 1991–2007 | 0.48 | M-v | 2 | MPC | 1289522007 SC <sub>1</sub>   |
| 2007 SN <sub>1</sub>   | 16.9 | 0.15 | 20071027 | 356.29549 | 1.48982   | 42.84195  | 22.19614 | 0.1096119 | 1.9094671  | 117 | 4 | 1999–2007 | 0.44 | M-v | 1 | MPC | 1289522007 SN <sub>1</sub>   |
| 2007 SS <sub>1</sub>   | 23.6 | 0.15 | 20071027 | 10.08931  | 327.14537 | 33.48802  | 3.35308  | 0.5305905 | 2.2048710  | 54  | 1 | 62 days   | 0.45 | M-v | 4 | MPC | 1289522007 SS <sub>1</sub>   |
| 2007 SV <sub>2</sub>   | 21.0 | 0.15 | 20071027 | 340.71028 | 110.18330 | 323.37628 | 7.43631  | 0.4673399 | 1.8832057  | 35  | 1 | 60 days   | 0.54 | M-v | 5 | MPC | 1289522007 SV <sub>2</sub>   |
| 2007 SX <sub>2</sub>   | 17.1 | 0.15 | 20071027 | 8.66656   | 0.74678   | 20.34717  | 6.28294  | 0.1518608 | 2.2240296  | 132 | 4 | 1997–2007 | 0.49 | M-v | 1 | MPC | 1283302007 SX <sub>2</sub>   |
| 2007 SY <sub>2</sub>   | 16.4 | 0.15 | 20071027 | 326.25716 | 156.34395 | 258.01688 | 1.59759  | 0.1849107 | 2.4448814  | 70  | 6 | 1999–2007 | 0.58 | M-v | 1 | MPC | 1289522007 SY <sub>2</sub>   |
| 2007 SS <sub>3</sub>   | 17.5 | 0.15 | 20071027 | 22.54392  | 280.63596 | 68.50280  | 1.25908  | 0.2494905 | 2.2394919  | 132 | 4 | 2002–2007 | 0.42 | M-v | 1 | MPC | 1289522007 SS <sub>3</sub>   |
| 2007 SU <sub>3</sub>   | 16.9 | 0.15 | 20071027 | 16.58888  | 0.56418   | 3.63519   | 5.98795  | 0.2006757 | 2.2384858  | 82  | 1 | 99 days   | 0.46 | M-v | 4 | MPC | 1289522007 SU <sub>3</sub>   |
| 2007 SX <sub>3</sub>   | 16.3 | 0.15 | 20071027 | 351.48573 | 209.45154 | 202.75447 | 12.29655 | 0.3160985 | 3.0047340  | 84  | 1 | 63 days   | 0.45 | M-v | 3 | MPC | 2007 SX <sub>3</sub>         |
| 2007 SA <sub>4</sub>   | 17.2 | 0.15 | 20071027 | 7.85166   | 222.67894 | 145.33614 | 0.91446  | 0.2572344 | 2.6176163  | 89  | 4 | 2003–2007 | 0.42 | M-v | 2 | MPC | 1289522007 SA <sub>4</sub>   |
| 2007 SD <sub>4</sub>   | 15.7 | 0.15 | 20071027 | 23.92310  | 158.38612 | 222.91715 | 17.15151 | 0.2148516 | 2.5711505  | 40  | 1 | 87 days   | 0.45 | M-v | 4 | MPC | 1289522007 SD <sub>4</sub>   |
| 2007 SA <sub>5</sub>   | 17.3 | 0.15 | 20071027 | 2.79139   | 227.97021 | 149.51643 | 4.45135  | 0.2080933 | 2.3927619  | 36  | 1 | 70 days   | 0.52 | M-v | 3 | MPC | 2007 SA <sub>5</sub>         |
| 2007 SG <sub>5</sub>   | 16.2 | 0.15 | 20071027 | 20.02262  | 304.25720 | 32.91050  | 16.49111 | 0.4505880 | 3.0709985  | 99  | 1 | 93 days   | 0.40 | M-v | 3 | MPC | 1289522007 SG <sub>5</sub>   |
| 2007 SH <sub>5</sub>   | 17.3 | 0.15 | 20071027 | 24.59356  | 299.24355 | 49.13325  | 6.70099  | 0.2013586 | 2.2180431  | 97  | 4 | 2002–2007 | 0.52 | M-v | 1 | MPC | 1289522007 SH <sub>5</sub>   |
| 2007 SR <sub>5</sub>   | 18.1 | 0.15 | 20071027 | 36.71298  | 312.26202 | 15.69816  | 2.50910  | 0.1994038 | 2.2174433  | 79  | 3 | 1997–2007 | 0.64 | M-v | 3 | MPC | 1289522007 SR <sub>5</sub>   |
| 2007 SU <sub>5</sub>   | 15.6 | 0.15 | 20071027 | 336.13011 | 34.30908  | 7.76502   | 4.78729  | 0.1423613 | 3.2137339  | 44  | 2 | 2001–2007 | 0.50 | M-v | 4 | MPC | 1283312007 SU <sub>5</sub>   |
| 2007 SW <sub>5</sub>   | 17.8 | 0.15 | 20071027 | 24.71952  | 321.29474 | 18.61137  | 5.05226  | 0.2044266 | 2.4498273  | 36  | 1 | 85 days   | 0.47 | M-v | 4 | MPC | 2007 SW <sub>5</sub>         |
| 2007 SX <sub>5</sub>   | 17.0 | 0.15 | 20071027 | 38.49879  | 80.97069  | 242.94781 | 1.63258  | 0.2130239 | 2.3392642  | 70  | 2 | 2006–2007 | 0.55 | M-v | 3 | MPC | 1289532007 SX <sub>5</sub>   |
| 2007 SA <sub>6</sub>   | 17.0 | 0.15 | 20071027 | 357.75112 | 156.05620 | 226.79804 | 2.85102  | 0.0854232 | 2.2653574  | 84  | 3 | 2004–2007 | 0.47 | M-v | 3 | MPC | 1289532007 SA <sub>6</sub>   |
| 2007 SB <sub>6</sub>   | 18.3 | 0.15 | 20071027 | 25.16323  | 112.04026 | 232.68773 | 2.72687  | 0.1736476 | 2.2109315  | 39  | 1 | 82 days   | 0.47 | M-v | 4 | MPC | 2007 SB <sub>6</sub>         |
| 2007 SE <sub>6</sub>   | 17.5 | 0.15 | 20071027 | 2.32646   | 123.62605 | 254.91454 | 1.41979  | 0.2111338 | 2.4335534  | 47  | 1 | 64 days   | 0.50 | M-v | 4 | MPC | 2007 SE <sub>6</sub>         |
| 2007 SF <sub>6</sub>   | 16.5 | 0.15 | 20071007 | 329.69945 | 289.60790 | 129.81883 | 3.84476  | 0.0550854 | 2.5116648  | 22  | 1 | 58 days   | 0.56 |     |   | MPC | 2007 SF <sub>6</sub>         |
| 2007 SH <sub>6</sub>   | 17.1 | 0.15 | 20071027 | 22.42107  | 137.91668 | 201.15200 | 6.36156  | 0.1264485 | 2.4264128  | 57  | 3 | 2003–2007 | 0.57 | M-v | 3 | MPC | 1283312007 SH <sub>6</sub>   |
| 2007 SP <sub>6</sub>   | 18.2 | 0.15 | 20071027 | 2.33850   | 330.41914 | 68.79176  | 13.94723 | 0.5463012 | 2.5627352  | 188 | 1 | 87 days   | 0.33 | M-v | 3 | MPC | 1289532007 SP <sub>6</sub>   |
| 2007 SY <sub>6</sub>   | 16.7 | 0.15 | 20071027 | 0.25787   | 0.60377   | 23.36665  | 13.42849 | 0.1965734 | 2.6493730  | 74  | 1 | 93 days   | 0.51 | M-v | 3 | MPC | 1289532007 SY <sub>6</sub>   |
| 2007 SE <sub>7</sub>   | 18.1 | 0.15 | 20070917 | 348.12673 | 213.47949 | 173.32888 | 5.40202  | 0.2503264 | 2.4312895  | 30  | 1 | 34 days   | 0.42 |     |   | MPC | 2007 SE <sub>7</sub>         |
| 2007 SF <sub>7</sub>   | 15.6 | 0.15 | 20071027 | 51.52989  | 282.85818 | 20.70799  | 15.80135 | 0.2315997 | 3.1760118  | 64  | 1 | 68 days   | 0.50 | M-v | 4 | MPC | 2007 SF <sub>7</sub>         |
| 2007 SM <sub>7</sub>   | 17.8 | 0.15 | 20071027 | 20.43888  | 311.50646 | 39.94524  | 2.54063  | 0.2229577 | 2.3717557  | 81  | 3 | 1994–2007 | 0.56 | M-v | 3 | MPC | 1289532007 SM <sub>7</sub>   |
| 2007 ST <sub>7</sub>   | 16.0 | 0.15 | 20071007 | 78.25738  | 146.96084 | 142.21538 | 2.86660  | 0.0825462 | 2.9358882  | 17  | 1 | 44 days   | 0.25 |     | D | MPC | 2007 ST <sub>7</sub>         |
| 2007 SE <sub>8</sub>   | 17.1 | 0.15 | 20071007 | 327.47102 | 56.31889  | 18.91612  | 18.18269 | 0.3005469 | 3.0698366  | 20  | 1 | 54 days   | 0.47 |     | D | MPC | 2007 SE <sub>8</sub>         |
| 2007 SM <sub>8</sub>   | 18.7 | 0.15 | 20071007 | 2.46572   | 259.52791 | 113.45556 | 2.13323  | 0.1915404 | 2.3496140  | 23  | 1 | 58 days   | 0.25 |     | D | MPC | 2007 SM <sub>8</sub>         |
| 2007 ST <sub>8</sub>   | 18.7 | 0.15 | 20070917 | 38.22010  | 170.21918 | 142.74417 | 3.53224  | 0.1991890 | 2.1667239  | 25  | 1 | 40 days   | 0.52 |     |   | MPC | 2007 ST <sub>8</sub>         |
| 2007 SA <sub>9</sub>   | 15.9 | 0.15 | 20070917 | 330.20048 | 228.18559 | 177.82396 | 11.01467 | 0.0192576 | 3.0391993  | 18  | 1 | 33 days   | 0.41 |     |   | MPC | 2007 SA <sub>9</sub>         |
| 2007 SF <sub>9</sub>   | 18.3 | 0.15 | 20070917 | 347.41333 | 358.06899 | 27.43949  | 7.17284  | 0.1939807 | 2.2561834  | 20  | 1 | 52 days   | 0.25 |     |   | MPC | 2007 SF <sub>9</sub>         |
| 2007 SL <sub>9</sub>   | 16.3 | 0.15 | 20071027 | 357.68875 | 324.15127 | 62.92883  | 4.03613  | 0.2483226 | 3.0354853  | 67  | 1 | 86 days   | 0.60 | M-v | 3 | MPC | 2007 SL <sub>9</sub>         |
| 2007 SZ <sub>9</sub>   | 19.3 | 0.15 | 20071027 | 355.63378 | 5.00652   | 39.87796  | 5.32634  | 0.4815946 | 2.8181468  | 53  | 1 | 61 days   | 0.49 | M-v | 5 | MPC | 2007 SZ <sub>9</sub>         |
| 2007 SS <sub>10</sub>  | 15.9 | 0.15 | 20071027 | 23.84068  | 19.81277  | 349.36160 | 8.64885  | 0.2794206 | 2.5389795  | 51  | 3 | 2001–2007 | 0.57 | M-v | 3 | MPC | 1283322007 SS <sub>10</sub>  |
| 2007 SY <sub>10</sub>  | 16.3 | 0.15 | 20071007 | 245.06515 | 137.96309 | 356.59796 | 8.39455  | 0.0737110 | 3.0021062  | 17  | 1 | 51 days   | 0.40 |     | D | MPC | 2007 SY <sub>10</sub>        |
| 2007 SB <sub>11</sub>  | 17.2 | 0.15 | 20071007 | 29.55970  | 203.34917 | 126.98799 | 5.15834  | 0.2510847 | 2.5407811  | 32  | 1 | 50 days   | 0.48 |     |   | MPC | 2007 SB <sub>11</sub>        |
| 2007 SE <sub>11</sub>  | 17.8 | 0.15 | 20071027 | 357.59414 | 353.18541 | 50.10219  | 48.27051 | 0.3563902 | 1.9583968  | 270 | 1 | 81 days   | 0.35 | M-v | 4 | MPC | 1289532007 SE <sub>11</sub>  |
| 2007 SK <sub>11</sub>  | 15.3 | 0.15 | 20071027 | 28.56643  | 349.66005 | 12.97315  | 14.14890 | 0.1761940 | 2.5536441  | 65  | 3 | 2003–2007 | 0.45 | M-v | 2 | MPC | 1289532007 SK <sub>11</sub>  |
| 2007 SP <sub>11</sub>  | 16.4 | 0.15 | 20071007 | 1.39354   | 66.66481  | 24.45010  | 30.52712 | 0.2635987 | 2.6161240  | 20  | 1 | 56 days   | 0.64 |     |   | MPC | 2007 SP <sub>11</sub>        |
| 2007 SV <sub>11</sub>  | 18.0 | 0.15 | 20071027 | 20.74570  | 23.61975  | 292.29940 | 32.23904 | 0.4936660 | 1.7343953  | 81  | 1 | 63 days   | 0.49 | M-v | 5 | MPC | 1289532007 SV <sub>11</sub>  |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 SB <sub>12</sub> | 16.5 | 0.15 | 20071027 | 25.15973  | 298.82973 | 40.26159  | 12.33642 | 0.3122978 | 2.6458688 | 77 | 2 | 2006–2007 | 0.45 | M-v | 3 | MPC | 128953 2007 SB <sub>12</sub> |
| 2007 SD <sub>14</sub> | 17.7 | 0.15 | 20071027 | 3.06785   | 159.86578 | 219.20323 | 4.76135  | 0.1623483 | 2.2823134 | 59 | 1 | 77 days   | 0.54 | M-v | 4 | MPC | 2007 SD <sub>14</sub>        |
| 2007 SE <sub>14</sub> | 15.6 | 0.15 | 20071027 | 301.05629 | 248.03821 | 203.94170 | 14.56965 | 0.1209668 | 2.8412861 | 87 | 4 | 2000–2007 | 0.50 | M-v | 1 | MPC | 128954 2007 SE <sub>14</sub> |
| 2007 SK <sub>14</sub> | 17.4 | 0.15 | 20071027 | 346.90298 | 101.11856 | 322.16799 | 1.75504  | 0.2009007 | 2.3193951 | 63 | 2 | 2005–2007 | 0.47 | M-v | 3 | MPC | 128333 2007 SK <sub>14</sub> |
| 2007 SM <sub>14</sub> | 15.6 | 0.15 | 20071027 | 0.20103   | 155.77932 | 255.45066 | 11.04749 | 0.1899923 | 2.6098607 | 67 | 2 | 2003–2007 | 0.36 | M-v | 3 | MPC | 128334 2007 SM <sub>14</sub> |
| 2007 SO <sub>14</sub> | 17.4 | 0.15 | 20071027 | 28.38302  | 316.06953 | 23.23768  | 6.37867  | 0.3107415 | 2.6143823 | 68 | 1 | 71 days   | 0.55 | M-v | 4 | MPC | 128954 2007 SO <sub>14</sub> |
| 2007 SJ <sub>15</sub> | 16.1 | 0.15 | 20071007 | 2.12587   | 354.55899 | 29.82804  | 10.15819 | 0.0907647 | 3.0387473 | 30 | 1 | 54 days   | 0.36 |     | D | MPC | 2007 SJ <sub>15</sub>        |
| 2007 SL <sub>15</sub> | 17.5 | 0.15 | 20071027 | 66.08756  | 314.11724 | 10.29906  | 20.31366 | 0.0513936 | 1.9012318 | 46 | 3 | 1993–2007 | 0.49 | M-v | 2 | MPC | 128334 2007 SL <sub>15</sub> |
| 2007 SM <sub>15</sub> | 15.5 | 0.15 | 20071027 | 42.01083  | 62.23738  | 272.72052 | 6.32356  | 0.2083079 | 2.6900970 | 79 | 5 | 1998–2007 | 0.51 | M-v | 1 | MPC | 128334 2007 SM <sub>15</sub> |
| 2007 SD <sub>16</sub> | 18.2 | 0.15 | 20071027 | 8.54089   | 196.27174 | 156.52410 | 2.43447  | 0.1971060 | 2.3972406 | 25 | 1 | 67 days   | 0.40 | M-v | 4 | MPC | 2007 SD <sub>16</sub>        |
| 2007 SY <sub>16</sub> | 17.6 | 0.15 | 20071027 | 308.09109 | 81.45457  | 350.27031 | 3.09212  | 0.1367208 | 2.2948340 | 32 | 1 | 85 days   | 0.32 | M-v | 4 | MPC | 2007 SY <sub>16</sub>        |
| 2007 SC <sub>17</sub> | 17.2 | 0.15 | 20070917 | 324.13177 | 36.56953  | 358.84004 | 13.81022 | 0.0868153 | 3.0579507 | 19 | 1 | 47 days   | 0.36 |     |   | MPC | 2007 SC <sub>17</sub>        |
| 2007 SH <sub>17</sub> | 16.4 | 0.15 | 20071027 | 48.55694  | 289.99103 | 9.17794   | 14.75025 | 0.1478852 | 2.8477259 | 32 | 1 | 85 days   | 0.34 | M-v | 4 | MPC | 2007 SH <sub>17</sub>        |
| 2007 ST <sub>17</sub> | 18.3 | 0.15 | 20070917 | 19.61715  | 142.20903 | 180.62171 | 3.02337  | 0.2143309 | 2.5638052 | 17 | 1 | 30 days   | 0.45 |     |   | MPC | 2007 ST <sub>17</sub>        |
| 2007 SL <sub>18</sub> | 16.3 | 0.15 | 20071007 | 0.10780   | 144.37682 | 246.60340 | 5.12567  | 0.1222810 | 2.7954873 | 18 | 1 | 47 days   | 0.39 |     |   | MPC | 2007 SL <sub>18</sub>        |
| 2007 TA               | 12.9 | 0.15 | 20071027 | 303.80299 | 268.50806 | 133.89091 | 13.61888 | 0.0905107 | 5.1487084 | 23 | 1 | 59 days   | 0.44 |     |   | MPC | 2007 TA                      |
| 2007 TK               | 18.7 | 0.15 | 20071007 | 22.49371  | 327.76966 | 8.34741   | 1.81202  | 0.1992843 | 2.3927309 | 32 | 1 | 50 days   | 0.26 |     | D | MPC | 2007 TK                      |
| 2007 TS               | 16.4 | 0.15 | 20071027 | 354.42104 | 174.59815 | 219.94018 | 10.34973 | 0.2222217 | 2.4191160 | 99 | 5 | 1992–2007 | 0.47 | M-v | 1 | MPC | 128954 2007 TS               |
| 2007 TX               | 15.1 | 0.15 | 20071027 | 307.80727 | 82.95240  | 14.40368  | 9.71366  | 0.0649293 | 3.0547730 | 65 | 5 | 1991–2007 | 0.51 | M-v | 1 | MPC | 128336 2007 TX               |
| 2007 TY               | 16.2 | 0.15 | 20071027 | 329.56896 | 91.42567  | 342.81504 | 3.94482  | 0.0881018 | 2.6616027 | 56 | 3 | 2002–2007 | 0.51 | M-v | 3 | MPC | 128954 2007 TY               |
| 2007 TA <sub>1</sub>  | 18.2 | 0.15 | 20071007 | 0.30174   | 12.89645  | 358.34547 | 7.02078  | 0.1256202 | 2.4503566 | 25 | 1 | 59 days   | 0.31 |     |   | MPC | 2007 TA <sub>1</sub>         |
| 2007 TB <sub>1</sub>  | 17.1 | 0.15 | 20071027 | 312.89941 | 34.61596  | 30.62721  | 20.34636 | 0.1124595 | 1.9152708 | 39 | 3 | 2002–2007 | 0.50 | M-v | 2 | MPC | 126514 2007 TB <sub>1</sub>  |
| 2007 TF <sub>1</sub>  | 17.7 | 0.15 | 20071007 | 336.12816 | 212.51146 | 196.62390 | 3.28787  | 0.1535584 | 2.2453576 | 44 | 1 | 48 days   | 0.57 |     |   | MPC | 2007 TF <sub>1</sub>         |
| 2007 TO <sub>1</sub>  | 17.5 | 0.15 | 20071007 | 290.98039 | 255.31835 | 202.49760 | 6.36635  | 0.0629934 | 2.3829317 | 25 | 1 | 33 days   | 0.60 |     |   | MPC | 2007 TO <sub>1</sub>         |
| 2007 TP <sub>1</sub>  | 16.3 | 0.15 | 20071027 | 339.80361 | 216.34032 | 221.00058 | 15.94846 | 0.2698968 | 3.0970934 | 66 | 1 | 62 days   | 0.62 | M-v | 4 | MPC | 2007 TP <sub>1</sub>         |
| 2007 TT <sub>1</sub>  | 14.9 | 0.15 | 20071007 | 335.41258 | 221.39726 | 180.27056 | 8.88139  | 0.3211694 | 3.9657355 | 39 | 1 | 46 days   | 0.48 |     |   | MPC | 2007 TT <sub>1</sub>         |
| 2007 TZ <sub>1</sub>  | 15.9 | 0.15 | 20071027 | 35.92045  | 262.66889 | 52.74181  | 0.69371  | 0.1729190 | 3.2167971 | 52 | 8 | 1994–2007 | 0.44 | M-v | 0 | MPC | 128336 2007 TZ <sub>1</sub>  |
| 2007 TA <sub>2</sub>  | 16.5 | 0.15 | 20071007 | 15.95756  | 336.87910 | 19.51388  | 15.33581 | 0.2596347 | 3.2026057 | 23 | 1 | 53 days   | 0.35 |     |   | MPC | 2007 TA <sub>2</sub>         |
| 2007 TD <sub>2</sub>  | 15.8 | 0.15 | 20071007 | 103.87759 | 55.12554  | 229.04257 | 7.77255  | 0.0683817 | 3.1379157 | 15 | 1 | 17 days   | 0.31 |     |   | MPC | 2007 TD <sub>2</sub>         |
| 2007 TE <sub>2</sub>  | 18.6 | 0.15 | 20071027 | 33.69622  | 77.48584  | 239.12475 | 1.99834  | 0.2441709 | 2.1975838 | 22 | 1 | 62 days   | 0.36 | M-v | 5 | MPC | 2007 TE <sub>2</sub>         |
| 2007 TG <sub>2</sub>  | 16.6 | 0.15 | 20071027 | 45.80788  | 276.68885 | 61.36305  | 2.21027  | 0.1166546 | 2.9225667 | 43 | 5 | 1999–2007 | 0.38 | M-v | 0 | MPC | 128337 2007 TG <sub>2</sub>  |
| 2007 TK <sub>2</sub>  | 18.7 | 0.15 | 20071027 | 348.76334 | 27.72649  | 23.76253  | 17.17391 | 0.0819311 | 1.6902023 | 42 | 1 | 45 days   | 0.48 | M-v | 4 | MPC | 128955 2007 TK <sub>2</sub>  |
| 2007 TM <sub>2</sub>  | 15.3 | 0.15 | 20071027 | 70.07045  | 55.87914  | 221.73191 | 4.81541  | 0.1162108 | 3.1645170 | 52 | 5 | 2000–2007 | 0.49 | M-v | 1 | MPC | 128337 2007 TM <sub>2</sub>  |
| 2007 TW <sub>2</sub>  | 17.0 | 0.15 | 20071027 | 33.26163  | 319.79237 | 16.63431  | 7.49970  | 0.1541885 | 2.5940608 | 67 | 2 | 2003–2007 | 0.56 | M-v | 4 | MPC | 128955 2007 TW <sub>2</sub>  |
| 2007 TG <sub>3</sub>  | 16.5 | 0.15 | 20071027 | 16.43956  | 351.81410 | 0.04847   | 10.53524 | 0.2067826 | 3.1746171 | 33 | 1 | 60 days   | 0.53 | M-v | 5 | MPC | 2007 TG <sub>3</sub>         |
| 2007 TK <sub>3</sub>  | 17.9 | 0.15 | 20071027 | 348.64894 | 345.83121 | 47.67564  | 5.57640  | 0.1095475 | 2.4542668 | 57 | 1 | 62 days   | 0.41 | M-v | 4 | MPC | 2007 TK <sub>3</sub>         |
| 2007 TP <sub>3</sub>  | 18.0 | 0.15 | 20071007 | 17.64410  | 35.84916  | 308.18716 | 1.15135  | 0.2193908 | 2.6268067 | 29 | 1 | 48 days   | 0.43 |     |   | MPC | 2007 TP <sub>3</sub>         |
| 2007 TB <sub>4</sub>  | 17.1 | 0.15 | 20071027 | 63.51086  | 91.12314  | 213.41042 | 11.63384 | 0.1360025 | 2.6303964 | 27 | 2 | 2006–2007 | 0.24 | M-v | 3 | MPC | 128338 2007 TB <sub>4</sub>  |
| 2007 TE <sub>4</sub>  | 16.0 | 0.15 | 20071027 | 47.24779  | 258.67393 | 78.95625  | 13.65611 | 0.1797972 | 2.7817208 | 50 | 3 | 2001–2007 | 0.56 | M-v | 3 | MPC | 128338 2007 TE <sub>4</sub>  |
| 2007 TF <sub>4</sub>  | 16.8 | 0.15 | 20071027 | 20.42787  | 214.28193 | 152.01404 | 6.14738  | 0.3183357 | 2.5651622 | 63 | 2 | 2006–2007 | 0.45 | M-v | 3 | MPC | 128338 2007 TF <sub>4</sub>  |
| 2007 TH <sub>4</sub>  | 17.1 | 0.15 | 20071027 | 359.81833 | 49.05083  | 337.77379 | 10.34895 | 0.3441672 | 2.7467161 | 47 | 1 | 82 days   | 0.63 | M-v | 4 | MPC | 2007 TH <sub>4</sub>         |
| 2007 TR <sub>4</sub>  | 17.5 | 0.15 | 20071027 | 35.75177  | 282.47161 | 51.79025  | 5.52846  | 0.2234468 | 2.4062685 | 55 | 1 | 61 days   | 0.43 | M-v | 4 | MPC | 2007 TR <sub>4</sub>         |
| 2007 TV <sub>4</sub>  | 16.9 | 0.15 | 20071027 | 357.54204 | 167.14488 | 228.18938 | 3.51561  | 0.0734941 | 2.7858681 | 32 | 1 | 45 days   | 0.37 |     |   | MPC | 2007 TV <sub>4</sub>         |
| 2007 TY <sub>4</sub>  | 17.6 | 0.15 | 20071027 | 344.51321 | 232.92264 | 169.07398 | 0.59367  | 0.2114471 | 2.6499383 | 56 | 3 | 1998–2007 | 0.40 | M-v | 2 | MPC | 128339 2007 TY <sub>4</sub>  |
| 2007 TZ <sub>4</sub>  | 17.8 | 0.15 | 20071027 | 348.25053 | 36.15208  | 14.11057  | 4.35089  | 0.1959674 | 2.6246151 | 42 | 1 | 82 days   | 0.42 | M-v | 4 | MPC | 2007 TZ <sub>4</sub>         |
| 2007 TA <sub>5</sub>  | 18.4 | 0.15 | 20071007 | 23.93649  | 94.33865  | 255.94794 | 0.81032  | 0.1760960 | 2.2714318 | 57 | 1 | 46 days   | 0.52 |     |   | MPC | 2007 TA <sub>5</sub>         |
| 2007 TH <sub>5</sub>  | 17.0 | 0.15 | 20070917 | 3.48245   | 338.77470 | 25.90711  | 3.29880  | 0.2885035 | 3.1033283 | 31 | 1 | 48 days   | 0.61 |     |   | MPC | 2007 TH <sub>5</sub>         |
| 2007 TJ <sub>5</sub>  | 17.7 | 0.15 | 20070917 | 326.83830 | 51.99918  | 359.46280 | 1.54037  | 0.1612197 | 2.4578426 | 29 | 1 | 53 days   | 0.33 |     |   | MPC | 2007 TJ <sub>5</sub>         |
| 2007 TO <sub>5</sub>  | 17.4 | 0.15 | 20071027 | 25.49549  | 151.54717 | 190.86729 | 2.30744  | 0.1825099 | 2.3770103 | 44 | 1 | 82 days   | 0.63 | M-v | 5 | MPC | 2007 TO <sub>5</sub>         |
| 2007 TR <sub>5</sub>  | 17.7 | 0.15 | 20071027 | 21.95604  | 121.55387 | 224.83860 | 1.48531  | 0.2265162 | 2.3960447 | 58 | 2 | 1996–2007 | 0.40 | M-v | 3 | MPC | 128340 2007 TR <sub>5</sub>  |
| 2007 TT <sub>5</sub>  | 17.3 | 0.15 | 20071007 | 29.50556  | 324.31208 | 3.68775   | 3.65959  | 0.2590626 | 2.3953231 | 63 | 1 | 49 days   | 0.48 |     |   | MPC | 2007 TT <sub>5</sub>         |
| 2007 TU <sub>5</sub>  | 17.7 | 0.15 | 20071007 | 47.27886  | 311.06761 | 358.08937 | 2.03422  | 0.2209678 | 2.4040577 | 31 | 1 | 52 days   | 0.47 |     |   | MPC | 2007 TU <sub>5</sub>         |
| 2007 TG <sub>6</sub>  | 15.1 | 0.15 | 20071027 | 350.86714 | 59.90156  | 331.50147 | 10.54473 | 0.0997786 | 3.1298364 | 28 | 2 | 2004–2007 | 0.54 | M-v | 3 | MPC | 128340 2007 TG <sub>6</sub>  |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |                       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-----------------------|------------------------------|
| 2007 TK <sub>6</sub>  | 17.3 | 0.15 | 20070917 | 2.83423   | 101.82829 | 243.20913 | 5.26618  | 0.1381643 | 2.3554252 | 22  | 1 | 39 days   | 0.55 |     | MPC | 2007 TK <sub>6</sub>  |                              |
| 2007 TS <sub>6</sub>  | 16.0 | 0.15 | 20071027 | 10.06043  | 152.21462 | 221.56042 | 15.54374 | 0.2653308 | 3.0705706 | 83  | 1 | 59 days   | 0.46 |     | MPC | 2007 TS <sub>6</sub>  |                              |
| 2007 TU <sub>6</sub>  | 14.7 | 0.15 | 20071027 | 327.73910 | 223.32902 | 214.76314 | 26.96350 | 0.2035346 | 3.1911410 | 105 | 2 | 2001–2007 | 0.47 | M-v | 3   | MPC                   | 128341 2007 TU <sub>6</sub>  |
| 2007 TL <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 1.61864   | 182.10736 | 218.04922 | 3.63069  | 0.1440625 | 3.0417178 | 41  | 1 | 66 days   | 0.39 | M-v | 4   | MPC                   | 2007 TL <sub>7</sub>         |
| 2007 TQ <sub>7</sub>  | 16.7 | 0.15 | 20071027 | 55.93042  | 212.37855 | 110.47628 | 2.66645  | 0.2436569 | 2.3083191 | 69  | 5 | 1998–2007 | 0.59 | M-v | 1   | MPC                   | 128342 2007 TQ <sub>7</sub>  |
| 2007 TR <sub>7</sub>  | 17.8 | 0.15 | 20071007 | 48.79684  | 324.20485 | 348.35316 | 3.82301  | 0.1805415 | 2.3783869 | 18  | 1 | 6 days    | 0.18 |     | MPC | 2007 TR <sub>7</sub>  |                              |
| 2007 TS <sub>7</sub>  | 15.9 | 0.15 | 20071027 | 9.43357   | 349.23565 | 43.09149  | 12.90555 | 0.1846188 | 2.5582710 | 103 | 1 | 68 days   | 0.38 | M-v | 3   | MPC                   | 2007 TS <sub>7</sub>         |
| 2007 TY <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 17.64245  | 275.78472 | 84.96247  | 3.71346  | 0.1923814 | 2.2412448 | 97  | 5 | 2002–2007 | 0.56 | M-v | 1   | MPC                   | 128956 2007 TY <sub>7</sub>  |
| 2007 TB <sub>8</sub>  | 18.4 | 0.15 | 20071027 | 329.03187 | 131.45390 | 297.67497 | 1.66273  | 0.1620187 | 2.6002671 | 19  | 1 | 39 days   | 0.45 |     | MPC | 2007 TB <sub>8</sub>  |                              |
| 2007 TE <sub>8</sub>  | 17.1 | 0.15 | 20071027 | 28.63101  | 270.36297 | 66.67692  | 5.42346  | 0.2468377 | 2.3320040 | 47  | 1 | 77 days   | 0.53 | M-v | 4   | MPC                   | 2007 TE <sub>8</sub>         |
| 2007 TF <sub>8</sub>  | 14.5 | 0.15 | 20071027 | 315.45182 | 226.20264 | 294.04777 | 26.13987 | 0.2180750 | 3.1857836 | 29  | 1 | 67 days   | 0.42 | M-v | 5 D | MPC                   | 2007 TF <sub>8</sub>         |
| 2007 TG <sub>8</sub>  | 18.6 | 0.15 | 20071027 | 344.98556 | 103.96073 | 348.19502 | 15.40624 | 0.6268372 | 2.6467902 | 177 | 1 | 78 days   | 0.42 | M-v | 4   | MPC                   | 128956 2007 TG <sub>8</sub>  |
| 2007 TH <sub>8</sub>  | 18.0 | 0.15 | 20071027 | 352.83937 | 172.43982 | 215.32725 | 4.61835  | 0.1180291 | 2.2966629 | 37  | 1 | 86 days   | 0.34 | M-v | 4   | MPC                   | 128956 2007 TH <sub>8</sub>  |
| 2007 TK <sub>8</sub>  | 21.0 | 0.15 | 20071027 | 0.77619   | 171.75722 | 217.22821 | 3.09382  | 0.1597455 | 1.4967056 | 121 | 1 | 54 days   | 0.35 | M-v | 4   | MPC                   | 128956 2007 TK <sub>8</sub>  |
| 2007 TL <sub>8</sub>  | 17.5 | 0.15 | 20071027 | 353.04123 | 86.58012  | 317.79803 | 3.85208  | 0.2498174 | 2.4373047 | 73  | 1 | 92 days   | 0.49 | M-v | 3   | MPC                   | 2007 TL <sub>8</sub>         |
| 2007 TT <sub>8</sub>  | 16.5 | 0.15 | 20071027 | 338.01319 | 205.96663 | 212.99088 | 8.95164  | 0.0757483 | 3.0705139 | 27  | 1 | 60 days   | 0.32 | M-v | 5   | MPC                   | 2007 TT <sub>8</sub>         |
| 2007 TW <sub>8</sub>  | 17.6 | 0.15 | 20071027 | 309.10586 | 247.32255 | 212.99240 | 3.52679  | 0.1610470 | 2.5855538 | 39  | 2 | 2003–2007 | 0.41 | M-v | 4   | MPC                   | 128343 2007 TW <sub>8</sub>  |
| 2007 TF <sub>9</sub>  | 17.5 | 0.15 | 20071027 | 348.63549 | 358.10668 | 39.26705  | 2.75880  | 0.2123016 | 2.3547881 | 45  | 1 | 61 days   | 0.51 | M-v | 5   | MPC                   | 2007 TF <sub>9</sub>         |
| 2007 TK <sub>9</sub>  | 18.0 | 0.15 | 20071007 | 9.85093   | 192.01790 | 164.73265 | 2.35190  | 0.2464202 | 2.3419072 | 34  | 1 | 49 days   | 0.56 |     | MPC | 2007 TK <sub>9</sub>  |                              |
| 2007 TP <sub>9</sub>  | 17.8 | 0.15 | 20071007 | 355.59071 | 14.56050  | 7.14233   | 4.59661  | 0.1941099 | 2.3798813 | 31  | 1 | 59 days   | 0.59 |     | MPC | 2007 TP <sub>9</sub>  |                              |
| 2007 TS <sub>9</sub>  | 17.8 | 0.15 | 20071027 | 16.13661  | 322.12261 | 36.24057  | 1.36352  | 0.1926222 | 2.4172096 | 58  | 1 | 88 days   | 0.63 | M-v | 4   | MPC                   | 2007 TS <sub>9</sub>         |
| 2007 TU <sub>9</sub>  | 15.7 | 0.15 | 20071027 | 7.59553   | 345.68776 | 23.44931  | 11.58007 | 0.1678409 | 3.2015390 | 38  | 1 | 45 days   | 0.68 |     | MPC | 2007 TU <sub>9</sub>  |                              |
| 2007 TX <sub>9</sub>  | 17.8 | 0.15 | 20071027 | 37.05612  | 305.66161 | 11.67733  | 9.54434  | 0.3005330 | 2.6368846 | 25  | 1 | 60 days   | 0.43 | M-v | 5   | MPC                   | 2007 TX <sub>9</sub>         |
| 2007 TB <sub>10</sub> | 17.5 | 0.15 | 20071027 | 11.10635  | 334.41418 | 33.81397  | 3.72872  | 0.1809379 | 2.3016814 | 112 | 2 | 2000–2007 | 0.57 | M-v | 3   | MPC                   | 128956 2007 TB <sub>10</sub> |
| 2007 TD <sub>10</sub> | 17.1 | 0.15 | 20071007 | 9.40589   | 189.20033 | 173.96080 | 4.07788  | 0.1879856 | 2.6010925 | 31  | 1 | 53 days   | 0.59 |     | MPC | 2007 TD <sub>10</sub> |                              |
| 2007 TE <sub>10</sub> | 17.4 | 0.15 | 20071007 | 36.28374  | 139.83377 | 181.94817 | 2.04025  | 0.2260157 | 2.4125231 | 57  | 1 | 55 days   | 0.56 |     | MPC | 2007 TE <sub>10</sub> |                              |
| 2007 TH <sub>10</sub> | 16.0 | 0.15 | 20071027 | 4.70215   | 4.19400   | 15.36571  | 6.49831  | 0.0528901 | 2.6993503 | 76  | 2 | 1998–2007 | 0.46 | M-v | 3   | MPC                   | 128956 2007 TH <sub>10</sub> |
| 2007 TL <sub>10</sub> | 17.7 | 0.15 | 20071007 | 22.28538  | 320.28543 | 23.86276  | 3.44706  | 0.1978159 | 2.2196309 | 49  | 1 | 54 days   | 0.46 |     | MPC | 2007 TL <sub>10</sub> |                              |
| 2007 TP <sub>10</sub> | 17.7 | 0.15 | 20071027 | 23.52260  | 307.85307 | 46.42059  | 3.84595  | 0.1355543 | 2.2991809 | 83  | 2 | 2000–2007 | 0.60 | M-v | 4   | MPC                   | 128956 2007 TP <sub>10</sub> |
| 2007 TD <sub>11</sub> | 16.8 | 0.15 | 20071027 | 24.38958  | 153.05047 | 197.29865 | 11.14835 | 0.2153093 | 2.7043912 | 54  | 1 | 68 days   | 0.63 | M-v | 4   | MPC                   | 2007 TD <sub>11</sub>        |
| 2007 TE <sub>11</sub> | 16.6 | 0.15 | 20071027 | 35.89166  | 281.23912 | 61.95569  | 0.54531  | 0.1207994 | 2.3810027 | 102 | 5 | 1996–2007 | 0.50 | M-v | 1   | MPC                   | 128957 2007 TE <sub>11</sub> |
| 2007 TF <sub>11</sub> | 16.9 | 0.15 | 20071027 | 1.81407   | 180.99254 | 204.69995 | 7.44816  | 0.3203836 | 2.7763607 | 81  | 1 | 66 days   | 0.57 | M-v | 4   | MPC                   | 2007 TF <sub>11</sub>        |
| 2007 TJ <sub>11</sub> | 17.0 | 0.15 | 20071027 | 34.17686  | 126.92015 | 205.86432 | 2.33898  | 0.2583206 | 2.6313031 | 83  | 4 | 1994–2007 | 0.45 | M-v | 1   | MPC                   | 128957 2007 TJ <sub>11</sub> |
| 2007 TL <sub>11</sub> | 16.9 | 0.15 | 20071027 | 6.12283   | 357.03460 | 24.97783  | 6.49365  | 0.0961248 | 2.2418019 | 74  | 2 | 2006–2007 | 0.47 | M-v | 3   | MPC                   | 128345 2007 TL <sub>11</sub> |
| 2007 TS <sub>11</sub> | 16.1 | 0.15 | 20071027 | 30.62699  | 295.37622 | 44.58313  | 5.26079  | 0.2309878 | 3.0659232 | 72  | 1 | 61 days   | 0.63 | M-v | 5   | MPC                   | 2007 TS <sub>11</sub>        |
| 2007 TT <sub>11</sub> | 15.2 | 0.15 | 20071027 | 337.22561 | 29.35473  | 29.15173  | 27.04456 | 0.1300317 | 3.1776541 | 91  | 1 | 52 days   | 0.50 |     | MPC | 2007 TT <sub>11</sub> |                              |
| 2007 TW <sub>11</sub> | 18.1 | 0.15 | 20071027 | 17.93135  | 62.89119  | 298.01867 | 0.48531  | 0.2423269 | 2.3153940 | 58  | 1 | 74 days   | 0.57 | M-v | 4   | MPC                   | 2007 TW <sub>11</sub>        |
| 2007 TA <sub>12</sub> | 15.7 | 0.15 | 20071027 | 13.84889  | 161.12496 | 209.57670 | 4.69872  | 0.1877117 | 2.6472268 | 94  | 5 | 1994–2007 | 0.48 | M-v | 1   | MPC                   | 128957 2007 TA <sub>12</sub> |
| 2007 TD <sub>12</sub> | 17.4 | 0.15 | 20071027 | 11.71262  | 138.93178 | 234.14822 | 1.21967  | 0.2341089 | 2.4041164 | 106 | 3 | 2003–2007 | 0.48 | M-v | 2   | MPC                   | 128347 2007 TD <sub>12</sub> |
| 2007 TJ <sub>12</sub> | 15.6 | 0.15 | 20071027 | 15.12562  | 319.61938 | 45.20699  | 6.05316  | 0.2687473 | 3.9394185 | 51  | 1 | 60 days   | 0.49 | M-v | 4   | MPC                   | 2007 TJ <sub>12</sub>        |
| 2007 TP <sub>12</sub> | 16.3 | 0.15 | 20071027 | 15.94280  | 306.22387 | 64.65188  | 2.40504  | 0.2013596 | 2.3709659 | 118 | 3 | 2003–2007 | 0.49 | M-v | 3   | MPC                   | 128957 2007 TP <sub>12</sub> |
| 2007 TT <sub>12</sub> | 16.8 | 0.15 | 20071027 | 7.36204   | 337.46291 | 46.10382  | 3.70423  | 0.2404731 | 2.3835531 | 98  | 3 | 2005–2007 | 0.48 | M-v | 2   | MPC                   | 128347 2007 TT <sub>12</sub> |
| 2007 TU <sub>12</sub> | 17.0 | 0.15 | 20071027 | 57.05964  | 201.13513 | 114.53748 | 1.50763  | 0.2135449 | 2.3263834 | 59  | 4 | 1993–2007 | 0.47 | M-v | 1   | MPC                   | 128348 2007 TU <sub>12</sub> |
| 2007 TW <sub>12</sub> | 16.6 | 0.15 | 20071027 | 36.40368  | 301.86184 | 41.13450  | 4.06618  | 0.1969879 | 2.2447429 | 104 | 2 | 2006–2007 | 0.43 | M-v | 3   | MPC                   | 128348 2007 TW <sub>12</sub> |
| 2007 TY <sub>12</sub> | 17.3 | 0.15 | 20071027 | 14.52184  | 342.22695 | 35.00141  | 3.31360  | 0.1448073 | 2.1734871 | 91  | 2 | 2006–2007 | 0.43 | M-v | 3   | MPC                   | 128957 2007 TY <sub>12</sub> |
| 2007 TZ <sub>12</sub> | 18.1 | 0.15 | 20070917 | 346.07840 | 4.28653   | 23.50927  | 2.95761  | 0.1972043 | 2.4140929 | 38  | 1 | 48 days   | 0.58 |     | MPC | 2007 TZ <sub>12</sub> |                              |
| 2007 TD <sub>13</sub> | 17.0 | 0.15 | 20071027 | 1.31136   | 209.36401 | 176.82857 | 1.15099  | 0.1889051 | 2.3763257 | 101 | 5 | 2002–2007 | 0.47 | M-v | 1   | MPC                   | 128957 2007 TD <sub>13</sub> |
| 2007 TF <sub>13</sub> | 16.2 | 0.15 | 20071007 | 31.58882  | 278.86627 | 61.61838  | 2.07546  | 0.1608798 | 3.0622850 | 41  | 1 | 54 days   | 0.49 |     | MPC | 2007 TF <sub>13</sub> |                              |
| 2007 TK <sub>13</sub> | 16.4 | 0.15 | 20071027 | 9.40573   | 347.65881 | 31.51454  | 14.25140 | 0.3087215 | 2.6775367 | 122 | 1 | 83 days   | 0.48 | M-v | 3   | MPC                   | 128957 2007 TK <sub>13</sub> |
| 2007 TL <sub>13</sub> | 15.2 | 0.15 | 20071027 | 76.72610  | 98.62411  | 210.99980 | 14.14996 | 0.1085729 | 2.6162418 | 82  | 5 | 2001–2007 | 0.53 | M-v | 1   | MPC                   | 128957 2007 TL <sub>13</sub> |
| 2007 TM <sub>13</sub> | 16.4 | 0.15 | 20071027 | 29.02413  | 313.41216 | 33.47102  | 13.84970 | 0.2859868 | 2.3661291 | 119 | 3 | 1995–2007 | 0.41 | M-v | 2   | MPC                   | 128348 2007 TM <sub>13</sub> |
| 2007 TN <sub>13</sub> | 16.0 | 0.15 | 20071027 | 38.43541  | 301.38413 | 37.35283  | 13.28827 | 0.2627086 | 2.3519428 | 103 | 2 | 2006–2007 | 0.43 | M-v | 3   | MPC                   | 128349 2007 TN <sub>13</sub> |
| 2007 TR <sub>13</sub> | 15.8 | 0.15 | 20071027 | 33.93828  | 314.78585 | 53.17989  | 14.60528 | 0.1873921 | 2.6067052 | 48  | 1 | 68 days   | 0.46 | M-v | 4   | MPC                   | 2007 TR <sub>13</sub>        |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |    |    |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|----|----|------------------------------|
| 2007 TZ <sub>13</sub> | 17.1 | 0.15 | 20071027 | 338.66261 | 56.07381  | 25.44857  | 30.63864 | 0.3619239 | 2.5920132 | 70  | 1 | 46 days   | 0.52 |     | MP |    | 2007 TZ <sub>13</sub>        |
| 2007 TH <sub>14</sub> | 17.3 | 0.15 | 20071027 | 27.78695  | 310.06666 | 42.34586  | 7.69209  | 0.1353954 | 2.2867405 | 61  | 2 | 2006–2007 | 0.46 | M-v | 3  | MP | 128349 2007 TH <sub>14</sub> |
| 2007 TO <sub>14</sub> | 17.9 | 0.15 | 20071007 | 287.82234 | 54.88093  | 31.80063  | 7.40597  | 0.0361517 | 2.2439233 | 29  | 1 | 54 days   | 0.41 |     |    | MP | 2007 TO <sub>14</sub>        |
| 2007 TU <sub>14</sub> | 17.0 | 0.15 | 20071027 | 45.44635  | 300.86076 | 31.48033  | 2.69141  | 0.2276617 | 2.3435039 | 94  | 2 | 2006–2007 | 0.40 | M-v | 4  | MP | 128958 2007 TU <sub>14</sub> |
| 2007 TY <sub>14</sub> | 19.0 | 0.15 | 20071007 | 14.21969  | 160.26284 | 190.54862 | 1.76099  | 0.2503500 | 2.3745341 | 23  | 1 | 30 days   | 0.39 |     |    | MP | 2007 TY <sub>14</sub>        |
| 2007 TZ <sub>14</sub> | 16.0 | 0.15 | 20071027 | 346.85241 | 5.00843   | 41.19845  | 10.02651 | 0.1445318 | 3.1647000 | 54  | 1 | 59 days   | 0.58 |     |    | MP | 2007 TZ <sub>14</sub>        |
| 2007 TG <sub>15</sub> | 19.6 | 0.15 | 20071027 | 350.54092 | 136.56178 | 282.33862 | 4.59441  | 0.4750496 | 2.2539185 | 337 | 1 | 67 days   | 0.39 | M-v | 4  | MP | 128958 2007 TG <sub>15</sub> |
| 2007 TP <sub>15</sub> | 16.4 | 0.15 | 20071027 | 7.86372   | 294.90611 | 80.95628  | 10.16311 | 0.0802164 | 3.1753142 | 18  | 1 | 61 days   | 0.45 | M-v | 4  | MP | 2007 TP <sub>15</sub>        |
| 2007 TA <sub>16</sub> | 18.5 | 0.15 | 20071007 | 331.75722 | 225.30352 | 186.81095 | 1.86432  | 0.1858336 | 2.3083314 | 18  | 1 | 30 days   | 0.31 |     |    | MP | 2007 TA <sub>16</sub>        |
| 2007 TC <sub>16</sub> | 16.3 | 0.15 | 20071027 | 24.92379  | 205.98101 | 154.88820 | 6.16598  | 0.3413289 | 2.6402844 | 54  | 2 | 2006–2007 | 0.42 | M-v | 3  | MP | 128350 2007 TC <sub>16</sub> |
| 2007 TD <sub>16</sub> | 17.6 | 0.15 | 20071027 | 0.24041   | 131.80877 | 260.18899 | 1.27342  | 0.1040942 | 2.7037378 | 37  | 1 | 43 days   | 0.52 |     |    | MP | 2007 TD <sub>16</sub>        |
| 2007 TF <sub>16</sub> | 16.4 | 0.15 | 20071027 | 17.10494  | 170.78739 | 205.83136 | 2.72421  | 0.1883583 | 2.6245860 | 83  | 3 | 1994–2007 | 0.41 | M-v | 3  | MP | 128958 2007 TF <sub>16</sub> |
| 2007 TJ <sub>16</sub> | 17.6 | 0.15 | 20071027 | 5.80986   | 162.19806 | 219.91178 | 5.64450  | 0.2387688 | 2.2026010 | 92  | 2 | 2006–2007 | 0.43 | M-v | 3  | MP | 128958 2007 TJ <sub>16</sub> |
| 2007 TU <sub>16</sub> | 17.5 | 0.15 | 20071027 | 8.42797   | 175.50185 | 213.11717 | 5.15669  | 0.2476275 | 2.3292136 | 103 | 1 | 75 days   | 0.45 | M-v | 4  | MP | 2007 TU <sub>16</sub>        |
| 2007 TW <sub>16</sub> | 16.2 | 0.15 | 20071027 | 16.03516  | 21.11371  | 358.48852 | 3.43613  | 0.2269524 | 2.6569912 | 129 | 4 | 1998–2007 | 0.51 | M-v | 1  | MP | 128351 2007 TW <sub>16</sub> |
| 2007 TB <sub>17</sub> | 17.8 | 0.15 | 20071027 | 327.25919 | 224.19371 | 215.82821 | 7.92690  | 0.1183897 | 2.3771093 | 46  | 1 | 60 days   | 0.47 | M-v | 4  | MP | 2007 TB <sub>17</sub>        |
| 2007 TD <sub>17</sub> | 17.3 | 0.15 | 20071007 | 3.44992   | 199.11018 | 183.69376 | 4.73839  | 0.2495411 | 2.5922728 | 53  | 1 | 59 days   | 0.55 |     |    | MP | 2007 TD <sub>17</sub>        |
| 2007 TH <sub>17</sub> | 15.6 | 0.15 | 20071027 | 44.23420  | 126.87859 | 222.73388 | 8.17003  | 0.0752428 | 3.1792663 | 94  | 4 | 2001–2007 | 0.40 | M-v | 0  | MP | 128958 2007 TH <sub>17</sub> |
| 2007 TJ <sub>17</sub> | 18.5 | 0.15 | 20071027 | 37.30505  | 321.54041 | 17.55753  | 2.47465  | 0.2401183 | 2.2069429 | 58  | 1 | 85 days   | 0.47 | M-v | 4  | MP | 2007 TJ <sub>17</sub>        |
| 2007 TQ <sub>17</sub> | 14.8 | 0.15 | 20071027 | 320.62830 | 227.60733 | 213.79894 | 17.07045 | 0.1205974 | 3.1121553 | 71  | 1 | 58 days   | 0.60 |     |    | MP | 2007 TQ <sub>17</sub>        |
| 2007 TR <sub>17</sub> | 17.2 | 0.15 | 20071027 | 343.28532 | 55.95665  | 9.39005   | 4.24544  | 0.3101334 | 2.7250214 | 53  | 1 | 99 days   | 0.44 | M-v | 4  | MP | 2007 TR <sub>17</sub>        |
| 2007 TS <sub>17</sub> | 16.6 | 0.15 | 20071027 | 319.47884 | 81.59070  | 24.02238  | 29.14304 | 0.3184073 | 2.6145061 | 72  | 1 | 79 days   | 0.50 | M-v | 4  | MP | 2007 TS <sub>17</sub>        |
| 2007 TX <sub>17</sub> | 18.7 | 0.15 | 20071027 | 2.42192   | 6.76748   | 20.02128  | 4.78012  | 0.1750618 | 2.3881867 | 46  | 1 | 70 days   | 0.47 | M-v | 4  | MP | 2007 TX <sub>17</sub>        |
| 2007 TA <sub>18</sub> | 17.3 | 0.15 | 20071027 | 355.15767 | 62.28698  | 344.42915 | 0.65928  | 0.1725343 | 3.0080203 | 41  | 1 | 60 days   | 0.47 | M-v | 4  | MP | 2007 TA <sub>18</sub>        |
| 2007 TH <sub>18</sub> | 17.5 | 0.15 | 20071027 | 341.75434 | 9.79159   | 40.79621  | 2.77368  | 0.1960815 | 2.4299254 | 49  | 1 | 77 days   | 0.52 | M-v | 4  | MP | 2007 TH <sub>18</sub>        |
| 2007 TN <sub>18</sub> | 17.0 | 0.15 | 20071027 | 5.09505   | 305.24528 | 81.30903  | 7.25850  | 0.2452038 | 2.7250933 | 88  | 1 | 59 days   | 0.68 |     |    | MP | 2007 TN <sub>18</sub>        |
| 2007 TS <sub>18</sub> | 17.1 | 0.15 | 20071027 | 73.36936  | 300.69481 | 17.19030  | 22.02897 | 0.0806466 | 1.9226078 | 49  | 3 | 2004–2007 | 0.48 | M-v | 2  | MP | 128958 2007 TS <sub>18</sub> |
| 2007 TZ <sub>18</sub> | 21.0 | 0.15 | 20071027 | 2.09935   | 184.23448 | 211.64434 | 8.78990  | 0.4911654 | 2.2028559 | 39  | 1 | 49 days   | 0.39 | M-v | 5  | MP | 128959 2007 TZ <sub>18</sub> |
| 2007 TH <sub>19</sub> | 17.8 | 0.15 | 20071027 | 63.75842  | 194.67735 | 86.42346  | 2.27629  | 0.4978741 | 2.5134993 | 60  | 1 | 41 days   | 0.39 | M-v | 5  | MP | 128959 2007 TH <sub>19</sub> |
| 2007 TJ <sub>19</sub> | 20.9 | 0.15 | 20071027 | 322.07750 | 251.25589 | 200.29345 | 40.60985 | 0.2763210 | 1.4255247 | 59  | 1 | 29 days   | 0.52 | M-v | 6  | MP | 128959 2007 TJ <sub>19</sub> |
| 2007 TU <sub>19</sub> | 17.6 | 0.15 | 20071027 | 352.34225 | 25.61731  | 10.06614  | 8.15588  | 0.2100163 | 2.4300750 | 55  | 1 | 62 days   | 0.62 | M-v | 5  | MP | 2007 TU <sub>19</sub>        |
| 2007 TV <sub>19</sub> | 15.7 | 0.15 | 20071027 | 345.74443 | 195.88592 | 206.78121 | 5.05900  | 0.1734867 | 3.1551950 | 60  | 1 | 77 days   | 0.54 | M-v | 4  | MP | 2007 TV <sub>19</sub>        |
| 2007 TW <sub>19</sub> | 17.5 | 0.15 | 20071007 | 333.40649 | 46.38429  | 10.96694  | 9.58764  | 0.2015866 | 2.3780221 | 58  | 1 | 57 days   | 0.50 |     |    | MP | 2007 TW <sub>19</sub>        |
| 2007 TE <sub>20</sub> | 16.1 | 0.15 | 20071027 | 31.72810  | 317.87288 | 31.14113  | 14.14395 | 0.2722011 | 2.6683493 | 94  | 1 | 86 days   | 0.47 | M-v | 4  | MP | 128959 2007 TE <sub>20</sub> |
| 2007 TF <sub>20</sub> | 15.2 | 0.15 | 20071027 | 335.14703 | 39.30527  | 11.58779  | 11.08678 | 0.0666137 | 3.1525487 | 51  | 1 | 60 days   | 0.59 | M-v | 5  | MP | 2007 TF <sub>20</sub>        |
| 2007 TG <sub>20</sub> | 15.9 | 0.15 | 20071027 | 54.81124  | 84.32204  | 236.73032 | 2.01713  | 0.0732421 | 2.7857806 | 49  | 4 | 2002–2007 | 0.46 | M-v | 1  | MP | 128959 2007 TG <sub>20</sub> |
| 2007 TL <sub>20</sub> | 17.3 | 0.15 | 20071027 | 39.98647  | 274.22808 | 52.19798  | 3.21897  | 0.2427080 | 2.3226148 | 75  | 1 | 83 days   | 0.66 | M-v | 4  | MP | 2007 TL <sub>20</sub>        |
| 2007 TN <sub>20</sub> | 16.1 | 0.15 | 20071007 | 24.32612  | 89.61952  | 252.85619 | 3.14247  | 0.1321665 | 2.9461323 | 39  | 1 | 44 days   | 0.52 |     |    | MP | 2007 TN <sub>20</sub>        |
| 2007 TQ <sub>20</sub> | 16.5 | 0.15 | 20071027 | 342.19489 | 210.56906 | 201.70947 | 12.84620 | 0.1672951 | 2.6721856 | 85  | 1 | 42 days   | 0.49 |     |    | MP | 2007 TQ <sub>20</sub>        |
| 2007 TU <sub>20</sub> | 17.0 | 0.15 | 20071007 | 345.72753 | 30.79368  | 5.20889   | 2.04256  | 0.1193668 | 3.0860324 | 28  | 1 | 50 days   | 0.30 |     |    | MP | 2007 TU <sub>20</sub>        |
| 2007 TZ <sub>20</sub> | 17.0 | 0.15 | 20070917 | 20.47257  | 72.24863  | 253.15754 | 5.45789  | 0.3302297 | 2.6627240 | 39  | 1 | 58 days   | 0.62 |     |    | MP | 2007 TZ <sub>20</sub>        |
| 2007 TE <sub>21</sub> | 17.4 | 0.15 | 20071027 | 16.94525  | 128.73300 | 219.69264 | 11.89483 | 0.3333864 | 2.7318373 | 28  | 1 | 85 days   | 0.52 | M-v | 4  | MP | 2007 TE <sub>21</sub>        |
| 2007 TJ <sub>21</sub> | 16.8 | 0.15 | 20071027 | 10.15866  | 162.40840 | 207.11605 | 0.39724  | 0.1853811 | 3.0017520 | 56  | 1 | 84 days   | 0.55 | M-v | 4  | MP | 2007 TJ <sub>21</sub>        |
| 2007 TN <sub>21</sub> | 18.0 | 0.15 | 20071007 | 23.54890  | 142.74677 | 210.38238 | 20.44596 | 0.1164326 | 1.8904609 | 61  | 1 | 50 days   | 0.60 |     |    | MP | 2007 TN <sub>21</sub>        |
| 2007 TX <sub>21</sub> | 15.8 | 0.15 | 20071027 | 336.86680 | 207.10904 | 232.95323 | 9.42492  | 0.1623253 | 2.6390804 | 106 | 5 | 1994–2007 | 0.44 | M-v | 0  | MP | 128355 2007 TX <sub>21</sub> |
| 2007 TY <sub>21</sub> | 16.3 | 0.15 | 20071027 | 332.78149 | 219.82197 | 231.35055 | 11.34478 | 0.2233521 | 2.8073922 | 63  | 1 | 59 days   | 0.52 |     |    | MP | 2007 TY <sub>21</sub>        |
| 2007 TE <sub>22</sub> | 15.6 | 0.15 | 20071027 | 34.50764  | 277.68716 | 74.84600  | 14.88025 | 0.1958524 | 2.7320533 | 105 | 5 | 1998–2007 | 0.58 | M-v | 1  | MP | 128959 2007 TE <sub>22</sub> |
| 2007 TF <sub>22</sub> | 16.9 | 0.15 | 20071027 | 333.69953 | 4.48223   | 94.05278  | 14.77762 | 0.2738276 | 2.6989213 | 19  | 1 | 57 days   | 0.62 |     |    | MP | 2007 TF <sub>22</sub>        |
| 2007 TG <sub>22</sub> | 17.1 | 0.15 | 20071027 | 5.84680   | 192.47688 | 206.53195 | 5.55367  | 0.1205934 | 2.1837578 | 66  | 2 | 2006–2007 | 0.42 | M-v | 3  | MP | 128355 2007 TG <sub>22</sub> |
| 2007 TJ <sub>22</sub> | 16.6 | 0.15 | 20071027 | 2.11948   | 344.62152 | 58.98771  | 6.73721  | 0.1732749 | 2.3859113 | 69  | 2 | 2003–2007 | 0.50 | M-v | 3  | MP | 128355 2007 TJ <sub>22</sub> |
| 2007 TK <sub>22</sub> | 15.8 | 0.15 | 20071027 | 48.94491  | 284.71531 | 54.56105  | 11.94537 | 0.2016632 | 2.7010683 | 61  | 1 | 67 days   | 0.59 | M-v | 4  | MP | 2007 TK <sub>22</sub>        |
| 2007 TL <sub>22</sub> | 16.9 | 0.15 | 20071027 | 55.77851  | 280.62096 | 53.12487  | 7.39256  | 0.1662910 | 2.2206671 | 70  | 2 | 2006–2007 | 0.45 | M-v | 3  | MP | 128355 2007 TL <sub>22</sub> |
| 2007 TM <sub>22</sub> | 17.1 | 0.15 | 20071027 | 5.03820   | 163.25984 | 207.16775 | 7.51483  | 0.0939344 | 2.7545707 | 25  | 1 | 75 days   | 0.34 | M-v | 4  | MP | 2007 TM <sub>22</sub>        |



|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-------|------------------------------|
| 2007 TB <sub>23</sub> | 18.7 | 0.15 | 20071027 | 183.30415 | 173.76230 | 40.14625  | 38.29852 | 0.1976760 | 1.2621513 | 184 | 1 | 51 days   | 0.49 | M-v | 5 | MPC   | 128959 2007 TB <sub>23</sub> |
| 2007 TC <sub>23</sub> | 20.7 | 0.15 | 20071027 | 355.34773 | 13.03248  | 56.01886  | 13.25089 | 0.6197171 | 2.7940910 | 45  | 1 | 65 days   | 0.46 | M-v | 5 | MPC   | 128959 2007 TC <sub>23</sub> |
| 2007 TL <sub>23</sub> | 21.4 | 0.15 | 20071027 | 59.46609  | 101.92098 | 136.77376 | 2.11564  | 0.7364693 | 1.1341310 | 81  | 1 | 23 days   | 0.42 | M-v | 6 | MPC   | 128960 2007 TL <sub>23</sub> |
| 2007 TQ <sub>23</sub> | 18.2 | 0.15 | 20071027 | 354.69691 | 193.05771 | 210.13167 | 11.21726 | 0.4748756 | 2.7662045 | 74  | 1 | 92 days   | 0.48 | M-v | 4 | MPC   | 128960 2007 TQ <sub>23</sub> |
| 2007 TR <sub>23</sub> | 17.5 | 0.15 | 20070917 | 271.60750 | 94.15870  | 12.57265  | 19.50784 | 0.1420023 | 1.9344054 | 26  | 1 | 37 days   | 0.55 |     |   | MPC   | 2007 TR <sub>23</sub>        |
| 2007 TX <sub>23</sub> | 16.9 | 0.15 | 20071027 | 7.70114   | 358.95060 | 25.48311  | 35.07582 | 0.2402343 | 2.5966033 | 49  | 1 | 44 days   | 0.72 |     |   | MPC   | 2007 TX <sub>23</sub>        |
| 2007 TD <sub>24</sub> | 17.8 | 0.15 | 20071027 | 338.17767 | 52.08305  | 26.68378  | 30.35063 | 0.4561727 | 2.6700496 | 43  | 1 | 52 days   | 0.49 |     |   | MPC   | 2007 TD <sub>24</sub>        |
| 2007 TE <sub>24</sub> | 17.4 | 0.15 | 20071027 | 24.15188  | 278.28179 | 77.61060  | 5.59427  | 0.2194688 | 2.2125615 | 102 | 4 | 1996–2007 | 0.49 | M-v | 1 | MPC   | 128356 2007 TE <sub>24</sub> |
| 2007 TG <sub>24</sub> | 18.0 | 0.15 | 20071027 | 347.27747 | 77.08126  | 333.28382 | 0.59720  | 0.1722201 | 2.3664034 | 89  | 3 | 2000–2007 | 0.47 | M-v | 3 | MPC   | 128357 2007 TG <sub>24</sub> |
| 2007 TO <sub>24</sub> | 15.8 | 0.15 | 20071027 | 66.59948  | 330.09810 | 313.54759 | 7.78039  | 0.0460670 | 2.9937173 | 17  | 1 | 50 days   | 0.27 |     |   | D MPC | 2007 TO <sub>24</sub>        |
| 2007 TU <sub>24</sub> | 20.1 | 0.15 | 20071027 | 334.82463 | 333.59023 | 127.17576 | 5.80116  | 0.5290443 | 2.0098827 | 86  | 1 | 54 days   | 0.39 | M-v | 5 | MPC   | 128960 2007 TU <sub>24</sub> |
| 2007 TZ <sub>24</sub> | 17.6 | 0.15 | 20071027 | 79.74299  | 116.52792 | 180.39160 | 23.39285 | 0.0510584 | 1.9387501 | 50  | 2 | 1999–2007 | 0.46 | M-v | 4 | MPC   | 128358 2007 TZ <sub>24</sub> |
| 2007 TC <sub>25</sub> | 18.6 | 0.15 | 20071027 | 34.29916  | 324.65136 | 26.30449  | 5.11201  | 0.1669047 | 2.2178676 | 41  | 1 | 86 days   | 0.45 | M-v | 4 | MPC   | 2007 TC <sub>25</sub>        |
| 2007 TG <sub>25</sub> | 18.9 | 0.15 | 20071027 | 30.47182  | 279.66588 | 40.38694  | 3.74173  | 0.4474522 | 2.3140588 | 55  | 1 | 41 days   | 0.43 | M-v | 5 | MPC   | 128960 2007 TG <sub>25</sub> |
| 2007 TT <sub>26</sub> | 17.4 | 0.15 | 20071007 | 328.19058 | 228.71426 | 196.08354 | 3.92336  | 0.1756448 | 2.6560482 | 35  | 1 | 56 days   | 0.33 |     |   | MPC   | 2007 TT <sub>26</sub>        |
| 2007 TU <sub>26</sub> | 17.5 | 0.15 | 20071027 | 317.58291 | 59.32604  | 21.68340  | 5.38666  | 0.1380991 | 2.3963019 | 49  | 1 | 65 days   | 0.40 | M-v | 4 | MPC   | 2007 TU <sub>26</sub>        |
| 2007 TB <sub>27</sub> | 18.1 | 0.15 | 20071007 | 51.97652  | 281.97659 | 27.69792  | 1.82575  | 0.1821800 | 2.3654935 | 27  | 1 | 55 days   | 0.20 |     |   | MPC   | 2007 TB <sub>27</sub>        |
| 2007 TD <sub>27</sub> | 16.6 | 0.15 | 20071007 | 19.36809  | 159.99259 | 199.48881 | 5.84135  | 0.0753356 | 2.9781370 | 28  | 1 | 54 days   | 0.32 |     |   | MPC   | 2007 TD <sub>27</sub>        |
| 2007 TH <sub>27</sub> | 18.5 | 0.15 | 20071007 | 318.53401 | 229.22261 | 196.86100 | 3.16252  | 0.0517674 | 2.1740269 | 25  | 1 | 56 days   | 0.39 |     |   | D MPC | 2007 TH <sub>27</sub>        |
| 2007 TO <sub>27</sub> | 18.6 | 0.15 | 20071007 | 304.88741 | 81.67924  | 19.76713  | 6.99873  | 0.2364106 | 2.2189870 | 17  | 1 | 58 days   | 0.21 |     |   | MPC   | 2007 TO <sub>27</sub>        |
| 2007 TQ <sub>27</sub> | 16.5 | 0.15 | 20071007 | 30.15898  | 318.83909 | 23.96847  | 13.83400 | 0.1370585 | 3.0477063 | 21  | 1 | 58 days   | 0.30 |     |   | MPC   | 2007 TQ <sub>27</sub>        |
| 2007 TL <sub>28</sub> | 17.3 | 0.15 | 20071007 | 350.78417 | 147.02601 | 251.67574 | 1.08427  | 0.0635114 | 2.7527461 | 19  | 1 | 30 days   | 0.36 |     |   | D MPC | 2007 TL <sub>28</sub>        |
| 2007 TS <sub>28</sub> | 17.8 | 0.15 | 20071027 | 48.03915  | 23.81611  | 303.01176 | 0.26267  | 0.1936253 | 2.4330404 | 16  | 1 | 45 days   | 0.57 |     |   | MPC   | 2007 TS <sub>28</sub>        |
| 2007 TT <sub>28</sub> | 17.2 | 0.15 | 20071007 | 325.81569 | 230.35867 | 211.25939 | 9.32909  | 0.2117858 | 3.1473569 | 18  | 1 | 29 days   | 0.29 |     |   | MPC   | 2007 TT <sub>28</sub>        |
| 2007 TU <sub>28</sub> | 17.1 | 0.15 | 20071027 | 61.85008  | 109.33942 | 203.58187 | 1.39769  | 0.1772644 | 2.3997134 | 35  | 4 | 1995–2007 | 0.40 | M-v | 1 | MPC   | 128359 2007 TU <sub>28</sub> |
| 2007 TY <sub>28</sub> | 17.8 | 0.15 | 20071027 | 37.35874  | 132.73521 | 211.09593 | 4.24143  | 0.1733335 | 2.3808496 | 27  | 1 | 45 days   | 0.31 |     |   | MPC   | 2007 TY <sub>28</sub>        |
| 2007 TA <sub>29</sub> | 16.5 | 0.15 | 20071007 | 44.23978  | 307.33270 | 32.98043  | 3.79108  | 0.0809710 | 2.7821536 | 18  | 1 | 29 days   | 0.22 |     |   | MPC   | 2007 TA <sub>29</sub>        |
| 2007 TB <sub>29</sub> | 18.5 | 0.15 | 20071007 | 48.36761  | 112.35531 | 202.52860 | 5.26990  | 0.2122658 | 2.2038052 | 21  | 1 | 34 days   | 0.45 |     |   | MPC   | 2007 TB <sub>29</sub>        |
| 2007 TM <sub>29</sub> | 17.2 | 0.15 | 20071027 | 333.51019 | 39.68455  | 28.08441  | 2.33000  | 0.1380494 | 2.5812427 | 55  | 3 | 2003–2007 | 0.36 | M-v | 3 | MPC   | 128961 2007 TM <sub>29</sub> |
| 2007 TN <sub>29</sub> | 16.7 | 0.15 | 20071027 | 76.09854  | 98.35509  | 212.75664 | 3.69425  | 0.0526700 | 2.8136497 | 33  | 3 | 2002–2007 | 0.32 | M-v | 3 | MPC   | 128360 2007 TN <sub>29</sub> |
| 2007 TR <sub>29</sub> | 18.1 | 0.15 | 20071007 | 27.68911  | 311.16159 | 25.06855  | 13.90498 | 0.2872704 | 2.6074169 | 16  | 1 | 12 days   | 0.23 |     |   | MPC   | 2007 TR <sub>29</sub>        |
| 2007 TW <sub>29</sub> | 18.2 | 0.15 | 20071027 | 358.62753 | 13.33097  | 22.05802  | 1.84097  | 0.1753204 | 2.3756739 | 29  | 1 | 71 days   | 0.35 | M-v | 3 | MPC   | 2007 TW <sub>29</sub>        |
| 2007 TY <sub>29</sub> | 17.1 | 0.15 | 20071007 | 355.39748 | 2.69547   | 31.12305  | 6.62749  | 0.0456343 | 2.7976633 | 20  | 1 | 26 days   | 0.40 |     |   | MPC   | 2007 TY <sub>29</sub>        |
| 2007 TC <sub>30</sub> | 18.2 | 0.15 | 20071007 | 41.47322  | 302.30316 | 25.70456  | 1.89089  | 0.1866577 | 2.3540481 | 18  | 1 | 28 days   | 0.31 |     |   | MPC   | 2007 TC <sub>30</sub>        |
| 2007 TD <sub>30</sub> | 16.3 | 0.15 | 20071027 | 310.13440 | 54.90955  | 33.80502  | 4.38107  | 0.0478628 | 3.0347067 | 28  | 1 | 62 days   | 0.34 | M-v | 4 | MPC   | 2007 TD <sub>30</sub>        |
| 2007 TE <sub>30</sub> | 18.4 | 0.15 | 20071007 | 12.86641  | 161.71121 | 204.85666 | 1.88976  | 0.2038225 | 2.4352085 | 13  | 1 | 8 days    | 0.90 |     |   | D MPC | 2007 TE <sub>30</sub>        |
| 2007 TK <sub>30</sub> | 16.5 | 0.15 | 20071027 | 16.11476  | 330.20902 | 34.08721  | 3.27960  | 0.2972795 | 3.0278794 | 70  | 1 | 71 days   | 0.46 | M-v | 4 | MPC   | 128961 2007 TK <sub>30</sub> |
| 2007 TP <sub>30</sub> | 16.0 | 0.15 | 20071027 | 132.97615 | 215.53023 | 35.76250  | 14.23752 | 0.1404757 | 2.7054970 | 29  | 1 | 64 days   | 0.39 | M-v | 4 | MPC   | 2007 TP <sub>30</sub>        |
| 2007 TZ <sub>30</sub> | 15.3 | 0.15 | 20071027 | 41.52864  | 305.86332 | 29.82014  | 14.95248 | 0.2507777 | 3.0904821 | 48  | 1 | 67 days   | 0.42 | M-v | 4 | MPC   | 128961 2007 TZ <sub>30</sub> |
| 2007 TB <sub>31</sub> | 16.5 | 0.15 | 20071027 | 140.15772 | 39.87711  | 213.89111 | 1.63629  | 0.1204416 | 3.0285276 | 40  | 6 | 1994–2007 | 0.38 | M-v | 0 | MPC   | 128360 2007 TB <sub>31</sub> |
| 2007 TG <sub>31</sub> | 15.9 | 0.15 | 20071027 | 23.74973  | 326.09129 | 36.76793  | 12.22282 | 0.2317117 | 3.0954140 | 80  | 3 | 2001–2007 | 0.50 | M-v | 2 | MPC   | 128961 2007 TG <sub>31</sub> |
| 2007 TJ <sub>31</sub> | 18.4 | 0.15 | 20071007 | 37.92580  | 297.93604 | 34.74481  | 4.25175  | 0.2331894 | 2.2475692 | 22  | 1 | 40 days   | 0.25 |     |   | MPC   | 2007 TJ <sub>31</sub>        |
| 2007 TK <sub>31</sub> | 16.0 | 0.15 | 20071007 | 20.05730  | 149.66583 | 214.78654 | 16.18352 | 0.2190002 | 3.0900756 | 49  | 1 | 39 days   | 0.61 |     |   | MPC   | 2007 TK <sub>31</sub>        |
| 2007 TN <sub>31</sub> | 17.0 | 0.15 | 20071007 | 254.52380 | 302.38095 | 174.58892 | 8.04527  | 0.1261697 | 2.4556767 | 19  | 1 | 14 days   | 0.52 |     |   | MPC   | 2007 TN <sub>31</sub>        |
| 2007 TP <sub>31</sub> | 16.9 | 0.15 | 20071027 | 237.03866 | 298.89607 | 229.01367 | 7.62421  | 0.0408218 | 2.4298078 | 66  | 4 | 1992–2007 | 0.44 | M-v | 1 | MPC   | 128361 2007 TP <sub>31</sub> |
| 2007 TY <sub>31</sub> | 15.4 | 0.15 | 20071027 | 5.78402   | 343.74822 | 44.18560  | 17.68866 | 0.2119640 | 3.1205583 | 72  | 3 | 1999–2007 | 0.45 | M-v | 2 | MPC   | 128361 2007 TY <sub>31</sub> |
| 2007 TZ <sub>31</sub> | 16.5 | 0.15 | 20071027 | 2.56629   | 317.85480 | 53.96462  | 16.65535 | 0.1740927 | 2.6690887 | 48  | 3 | 2003–2007 | 0.46 | M-v | 2 | MPC   | 128361 2007 TZ <sub>31</sub> |
| 2007 TK <sub>32</sub> | 16.9 | 0.15 | 20071027 | 74.08548  | 79.85368  | 184.73936 | 2.27112  | 0.2255394 | 3.2794526 | 50  | 4 | 1996–2007 | 0.40 | M-v | 1 | MPC   | 128362 2007 TK <sub>32</sub> |
| 2007 TU <sub>32</sub> | 16.2 | 0.15 | 20071027 | 10.17785  | 333.63563 | 43.93358  | 6.54582  | 0.2201639 | 3.0911728 | 49  | 1 | 60 days   | 0.55 | M-v | 4 | MPC   | 2007 TU <sub>32</sub>        |
| 2007 TV <sub>32</sub> | 15.9 | 0.15 | 20071027 | 91.60228  | 239.99337 | 53.63449  | 4.64539  | 0.0746247 | 2.7930327 | 46  | 5 | 1996–2007 | 0.45 | M-v | 1 | MPC   | 128363 2007 TV <sub>32</sub> |
| 2007 TB <sub>33</sub> | 16.8 | 0.15 | 20071007 | 242.71772 | 123.01740 | 30.66555  | 3.91579  | 0.0402952 | 2.6741393 | 21  | 1 | 27 days   | 0.31 |     |   | MPC   | 2007 TB <sub>33</sub>        |
| 2007 TE <sub>33</sub> | 17.0 | 0.15 | 20071027 | 2.06753   | 233.57975 | 160.73945 | 0.97431  | 0.1801593 | 3.0966404 | 55  | 2 | 2004–2007 | 0.31 | M-v | 3 | MPC   | 128363 2007 TE <sub>33</sub> |
| 2007 TG <sub>33</sub> | 18.1 | 0.15 | 20071027 | 359.04393 | 10.31320  | 28.30948  | 5.45173  | 0.2751751 | 2.5586323 | 40  | 1 | 43 days   | 0.62 |     |   | MPC   | 2007 TG <sub>33</sub>        |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |    |                       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|----|-----------------------|------------------------------|
| 2007 TJ <sub>33</sub> | 16.4 | 0.15 | 20071007 | 337.93106 | 204.94711 | 213.21523 | 1.45505  | 0.0850057 | 2.6586127 | 43  | 1 | 32 days   | 0.39 |     | MP | 2007 TJ <sub>33</sub> |                              |
| 2007 TK <sub>33</sub> | 16.3 | 0.15 | 20071027 | 14.00447  | 333.18904 | 45.51347  | 2.64217  | 0.1418807 | 2.9443100 | 47  | 3 | 2002–2007 | 0.53 | M-v | 4  | MP                    | 128363 2007 TK <sub>33</sub> |
| 2007 TL <sub>33</sub> | 17.1 | 0.15 | 20071027 | 10.74058  | 349.55367 | 31.48770  | 7.84986  | 0.1672860 | 2.2190164 | 93  | 3 | 2005–2007 | 0.52 | M-v | 3  | MP                    | 128962 2007 TL <sub>33</sub> |
| 2007 TR <sub>33</sub> | 17.2 | 0.15 | 20071007 | 62.46558  | 263.85201 | 37.77752  | 4.58618  | 0.2458967 | 2.5972511 | 26  | 1 | 29 days   | 0.30 |     |    | MP                    | 2007 TR <sub>33</sub>        |
| 2007 TS <sub>33</sub> | 18.0 | 0.15 | 20071027 | 335.83468 | 33.28193  | 40.68941  | 2.78681  | 0.2136196 | 2.3185355 | 45  | 1 | 64 days   | 0.44 | M-v | 4  | MP                    | 2007 TS <sub>33</sub>        |
| 2007 TT <sub>33</sub> | 17.6 | 0.15 | 20071007 | 25.16840  | 151.34382 | 204.41441 | 2.27185  | 0.1773411 | 2.7703939 | 32  | 1 | 34 days   | 0.38 |     | D  | MP                    | 2007 TT <sub>33</sub>        |
| 2007 TU <sub>33</sub> | 17.0 | 0.15 | 20071007 | 135.20196 | 213.89449 | 37.81100  | 7.49802  | 0.0655686 | 2.3111166 | 28  | 1 | 29 days   | 0.27 |     |    | MP                    | 2007 TU <sub>33</sub>        |
| 2007 TX <sub>33</sub> | 18.5 | 0.15 | 20071007 | 32.58898  | 302.20864 | 31.13861  | 5.82727  | 0.2712247 | 2.3315257 | 20  | 1 | 25 days   | 0.29 |     |    | MP                    | 2007 TX <sub>33</sub>        |
| 2007 TY <sub>33</sub> | 16.6 | 0.15 | 20071007 | 107.31986 | 244.50094 | 35.03410  | 10.34102 | 0.0703128 | 2.7657481 | 27  | 1 | 32 days   | 0.37 |     |    | MP                    | 2007 TY <sub>33</sub>        |
| 2007 TZ <sub>33</sub> | 15.9 | 0.15 | 20071007 | 66.44030  | 242.73593 | 61.33181  | 1.76412  | 0.2153178 | 3.2354321 | 16  | 1 | 12 days   | 0.45 |     |    | MP                    | 2007 TZ <sub>33</sub>        |
| 2007 TA <sub>34</sub> | 15.9 | 0.15 | 20071007 | 277.44649 | 282.78695 | 211.67195 | 10.83914 | 0.1465706 | 3.0347932 | 27  | 1 | 27 days   | 0.25 |     |    | MP                    | 2007 TA <sub>34</sub>        |
| 2007 TB <sub>34</sub> | 16.1 | 0.15 | 20071027 | 32.05743  | 313.74447 | 37.18870  | 5.32156  | 0.1931896 | 2.6544546 | 107 | 1 | 83 days   | 0.45 | M-v | 4  | MP                    | 128962 2007 TB <sub>34</sub> |
| 2007 TD <sub>34</sub> | 15.6 | 0.15 | 20071007 | 349.52817 | 7.69856   | 38.30584  | 10.01916 | 0.0425466 | 3.0186067 | 37  | 1 | 32 days   | 0.39 |     |    | MP                    | 2007 TD <sub>34</sub>        |
| 2007 TE <sub>34</sub> | 17.2 | 0.15 | 20071027 | 24.92577  | 321.68712 | 34.91137  | 5.04517  | 0.2435450 | 2.5917616 | 48  | 1 | 64 days   | 0.47 | M-v | 5  | MP                    | 2007 TE <sub>34</sub>        |
| 2007 TJ <sub>34</sub> | 18.1 | 0.15 | 20071027 | 22.84113  | 324.84433 | 35.15877  | 2.48305  | 0.2374244 | 2.3141045 | 62  | 2 | 2006–2007 | 0.49 | M-v | 4  | MP                    | 128364 2007 TJ <sub>34</sub> |
| 2007 TM <sub>34</sub> | 16.2 | 0.15 | 20071027 | 58.68584  | 285.32658 | 38.33482  | 6.59902  | 0.1488370 | 2.6666698 | 48  | 2 | 2002–2007 | 0.29 | M-v | 4  | MP                    | 128364 2007 TM <sub>34</sub> |
| 2007 TO <sub>34</sub> | 17.1 | 0.15 | 20071007 | 10.86298  | 338.07703 | 37.25547  | 3.20683  | 0.1881554 | 2.6503130 | 39  | 1 | 59 days   | 0.43 |     |    | MP                    | 2007 TO <sub>34</sub>        |
| 2007 TT <sub>34</sub> | 17.0 | 0.15 | 20071027 | 8.10897   | 181.11802 | 206.43251 | 8.98664  | 0.1454982 | 2.7557552 | 32  | 1 | 66 days   | 0.46 | M-v | 4  | MP                    | 2007 TT <sub>34</sub>        |
| 2007 TU <sub>34</sub> | 18.0 | 0.15 | 20071027 | 9.98510   | 200.68900 | 182.10327 | 1.93368  | 0.1965137 | 2.5261007 | 25  | 1 | 61 days   | 0.33 | M-v | 4  | MP                    | 2007 TU <sub>34</sub>        |
| 2007 TX <sub>34</sub> | 16.6 | 0.15 | 20071007 | 321.26149 | 46.26869  | 40.06835  | 11.55864 | 0.1441048 | 3.0948761 | 27  | 1 | 34 days   | 0.36 |     | D  | MP                    | 2007 TX <sub>34</sub>        |
| 2007 TG <sub>35</sub> | 17.4 | 0.15 | 20071027 | 14.63752  | 3.61193   | 14.37210  | 6.12026  | 0.2683606 | 2.5896780 | 47  | 1 | 69 days   | 0.44 | M-v | 4  | MP                    | 2007 TG <sub>35</sub>        |
| 2007 TJ <sub>35</sub> | 16.8 | 0.15 | 20071027 | 6.52080   | 331.15688 | 53.63440  | 14.51956 | 0.2962941 | 2.7625019 | 73  | 1 | 60 days   | 0.51 | M-v | 4  | MP                    | 2007 TJ <sub>35</sub>        |
| 2007 TL <sub>35</sub> | 17.8 | 0.15 | 20071027 | 10.49270  | 225.95494 | 156.50284 | 5.02852  | 0.1909390 | 2.1879904 | 40  | 1 | 42 days   | 0.59 |     |    | MP                    | 2007 TL <sub>35</sub>        |
| 2007 TN <sub>35</sub> | 15.9 | 0.15 | 20071027 | 44.49373  | 263.49626 | 79.46282  | 6.96584  | 0.1796517 | 2.6665058 | 50  | 1 | 59 days   | 0.51 |     |    | MP                    | 2007 TN <sub>35</sub>        |
| 2007 TP <sub>35</sub> | 17.1 | 0.15 | 20071027 | 350.81409 | 240.39556 | 181.60234 | 7.46462  | 0.2879370 | 2.6543727 | 60  | 1 | 60 days   | 0.62 | M-v | 4  | MP                    | 2007 TP <sub>35</sub>        |
| 2007 TQ <sub>35</sub> | 14.6 | 0.15 | 20071027 | 102.21632 | 228.91572 | 51.80484  | 32.75397 | 0.2303829 | 2.6432098 | 85  | 1 | 68 days   | 0.51 | M-v | 4  | MP                    | 2007 TQ <sub>35</sub>        |
| 2007 TR <sub>35</sub> | 16.6 | 0.15 | 20071027 | 31.97213  | 279.53824 | 65.01273  | 11.96804 | 0.3150062 | 2.6057763 | 56  | 2 | 2006–2007 | 0.46 | M-v | 4  | MP                    | 128366 2007 TR <sub>35</sub> |
| 2007 TS <sub>35</sub> | 16.3 | 0.15 | 20071027 | 3.31652   | 209.83679 | 190.21290 | 12.98188 | 0.1571733 | 2.6168183 | 66  | 4 | 1994–2007 | 0.53 | M-v | 2  | MP                    | 128366 2007 TS <sub>35</sub> |
| 2007 TU <sub>35</sub> | 16.5 | 0.15 | 20071027 | 356.39902 | 14.40032  | 34.85382  | 14.97642 | 0.1349201 | 2.5787559 | 69  | 1 | 78 days   | 0.51 | M-v | 3  | MP                    | 128962 2007 TU <sub>35</sub> |
| 2007 TV <sub>35</sub> | 16.5 | 0.15 | 20071027 | 26.40961  | 154.50338 | 206.76096 | 13.35055 | 0.2406930 | 2.6325172 | 67  | 1 | 87 days   | 0.53 | M-v | 4  | MP                    | 128962 2007 TV <sub>35</sub> |
| 2007 TW <sub>35</sub> | 15.9 | 0.15 | 20071027 | 30.05654  | 298.43823 | 56.07679  | 6.43062  | 0.2390966 | 3.0101825 | 67  | 1 | 59 days   | 0.51 |     |    | MP                    | 2007 TW <sub>35</sub>        |
| 2007 TY <sub>35</sub> | 17.6 | 0.15 | 20071007 | 2.10651   | 174.04636 | 215.73308 | 13.19683 | 0.1903287 | 2.6293996 | 26  | 1 | 41 days   | 0.43 |     |    | MP                    | 2007 TY <sub>35</sub>        |
| 2007 TE <sub>36</sub> | 17.1 | 0.15 | 20071027 | 4.46517   | 39.55206  | 346.76241 | 6.73550  | 0.2707371 | 2.2035940 | 109 | 2 | 2004–2007 | 0.43 | M-v | 3  | MP                    | 128962 2007 TE <sub>36</sub> |
| 2007 TT <sub>36</sub> | 19.2 | 0.15 | 20071007 | 7.39574   | 347.44992 | 12.61153  | 2.78198  | 0.2320623 | 2.3203445 | 25  | 1 | 50 days   | 0.24 |     |    | MP                    | 2007 TT <sub>36</sub>        |
| 2007 TF <sub>37</sub> | 16.0 | 0.15 | 20070917 | 53.29715  | 113.83964 | 190.86004 | 10.87119 | 0.1144512 | 3.0692280 | 30  | 1 | 54 days   | 0.47 |     |    | MP                    | 2007 TF <sub>37</sub>        |
| 2007 TG <sub>37</sub> | 17.3 | 0.15 | 20070917 | 48.03408  | 285.30169 | 17.23197  | 1.81986  | 0.1812408 | 2.4460811 | 24  | 1 | 40 days   | 0.36 |     |    | MP                    | 2007 TG <sub>37</sub>        |
| 2007 TN <sub>37</sub> | 18.5 | 0.15 | 20071027 | 5.93722   | 346.11235 | 26.44910  | 4.72526  | 0.2304799 | 2.3759660 | 24  | 1 | 45 days   | 0.36 |     |    | MP                    | 2007 TN <sub>37</sub>        |
| 2007 TP <sub>37</sub> | 18.2 | 0.15 | 20071027 | 30.80899  | 141.01413 | 191.27861 | 22.55444 | 0.2347020 | 2.2762533 | 26  | 1 | 121 days  | 0.49 | M-v | 3  | MP                    | 2007 TP <sub>37</sub>        |
| 2007 TU <sub>37</sub> | 18.7 | 0.15 | 20071007 | 2.17718   | 347.02218 | 22.65045  | 3.91827  | 0.1767328 | 2.2398723 | 19  | 1 | 47 days   | 0.40 |     |    | MP                    | 2007 TU <sub>37</sub>        |
| 2007 TX <sub>37</sub> | 18.1 | 0.15 | 20070917 | 353.61402 | 191.00290 | 182.37623 | 6.58483  | 0.1319816 | 2.2007085 | 21  | 1 | 39 days   | 0.45 |     |    | MP                    | 2007 TX <sub>37</sub>        |
| 2007 TG <sub>38</sub> | 18.0 | 0.15 | 20071027 | 11.79045  | 329.84266 | 32.40163  | 1.87470  | 0.1987207 | 2.3542941 | 44  | 1 | 84 days   | 0.51 | M-v | 4  | MP                    | 128962 2007 TG <sub>38</sub> |
| 2007 TL <sub>38</sub> | 16.9 | 0.15 | 20071027 | 358.02688 | 197.11601 | 214.00141 | 12.19133 | 0.2614435 | 2.5951470 | 79  | 1 | 62 days   | 0.56 | M-v | 4  | MP                    | 2007 TL <sub>38</sub>        |
| 2007 TQ <sub>38</sub> | 16.9 | 0.15 | 20071027 | 345.47227 | 199.58767 | 213.43693 | 4.73098  | 0.1465791 | 3.0740810 | 25  | 1 | 60 days   | 0.27 | M-v | 4  | MP                    | 2007 TQ <sub>38</sub>        |
| 2007 TU <sub>38</sub> | 17.7 | 0.15 | 20071027 | 336.36133 | 238.83206 | 203.38279 | 5.37955  | 0.2900365 | 2.6006639 | 46  | 1 | 66 days   | 0.54 | M-v | 4  | MP                    | 2007 TU <sub>38</sub>        |
| 2007 TX <sub>38</sub> | 16.5 | 0.15 | 20071027 | 319.45900 | 47.48041  | 47.43219  | 3.56110  | 0.1651660 | 2.6379582 | 73  | 2 | 2005–2007 | 0.44 | M-v | 3  | MP                    | 128367 2007 TX <sub>38</sub> |
| 2007 TY <sub>38</sub> | 18.2 | 0.15 | 20071027 | 34.33191  | 300.74293 | 48.60385  | 1.89669  | 0.1947934 | 2.4110934 | 44  | 1 | 66 days   | 0.38 | M-v | 5  | MP                    | 2007 TY <sub>38</sub>        |
| 2007 TZ <sub>38</sub> | 18.4 | 0.15 | 20071007 | 336.92371 | 22.65434  | 37.58596  | 6.61649  | 0.0942534 | 2.2559679 | 25  | 1 | 34 days   | 0.38 |     |    | MP                    | 2007 TZ <sub>38</sub>        |
| 2007 TE <sub>39</sub> | 17.0 | 0.15 | 20071027 | 349.53595 | 13.77655  | 38.67987  | 7.60151  | 0.1059039 | 2.2322167 | 87  | 4 | 1997–2007 | 0.55 | M-v | 2  | MP                    | 128368 2007 TE <sub>39</sub> |
| 2007 TF <sub>39</sub> | 17.6 | 0.15 | 20071007 | 29.70632  | 194.01322 | 154.23112 | 1.47097  | 0.1989804 | 2.3933069 | 27  | 1 | 55 days   | 0.39 |     |    | MP                    | 2007 TF <sub>39</sub>        |
| 2007 TG <sub>39</sub> | 17.3 | 0.15 | 20071027 | 13.84899  | 340.22017 | 42.19224  | 7.69408  | 0.1096361 | 2.3604728 | 39  | 1 | 42 days   | 0.47 |     |    | MP                    | 2007 TG <sub>39</sub>        |
| 2007 TH <sub>39</sub> | 16.7 | 0.15 | 20071007 | 7.34771   | 188.09891 | 199.36284 | 4.69758  | 0.0661366 | 2.7023685 | 31  | 1 | 57 days   | 0.47 |     |    | MP                    | 2007 TH <sub>39</sub>        |
| 2007 TL <sub>39</sub> | 16.6 | 0.15 | 20071007 | 334.20176 | 238.86845 | 190.41547 | 2.38185  | 0.0982155 | 3.2197212 | 20  | 1 | 34 days   | 0.33 |     | D  | MP                    | 2007 TL <sub>39</sub>        |
| 2007 TN <sub>39</sub> | 16.7 | 0.15 | 20071027 | 33.05359  | 301.24065 | 48.37089  | 4.14295  | 0.1941346 | 3.1240281 | 37  | 2 | 1996–2007 | 0.48 | M-v | 4  | MP                    | 128368 2007 TN <sub>39</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|------------------------------|
| 2007 TQ <sub>39</sub> | 16.7 | 0.15 | 20071027 | 326.66636 | 5.04405   | 78.03486  | 1.91118  | 0.1579331 | 3.0606952 | 26 | 1 | 42 days   | 0.26 |     |     | 2007 TQ <sub>39</sub>        |
| 2007 TS <sub>39</sub> | 17.3 | 0.15 | 20071027 | 68.12309  | 203.91414 | 118.72312 | 1.41967  | 0.0654146 | 2.8121162 | 36 | 4 | 1995–2007 | 0.34 | M-v | 0   | 128368 2007 TS <sub>39</sub> |
| 2007 TY <sub>39</sub> | 16.9 | 0.15 | 20071007 | 123.68898 | 66.89183  | 194.38350 | 4.61555  | 0.1058470 | 2.6384141 | 18 | 1 | 30 days   | 0.42 |     |     | 2007 TY <sub>39</sub>        |
| 2007 TE <sub>40</sub> | 19.2 | 0.15 | 20071007 | 358.93100 | 348.99938 | 40.38799  | 4.55012  | 0.3221200 | 2.4834536 | 33 | 1 | 38 days   | 0.38 |     |     | 2007 TE <sub>40</sub>        |
| 2007 TF <sub>40</sub> | 17.3 | 0.15 | 20071027 | 5.27877   | 186.92456 | 204.33081 | 15.46486 | 0.1440172 | 2.6113368 | 23 | 1 | 66 days   | 0.46 | M-v | 4   | 2007 TF <sub>40</sub>        |
| 2007 TH <sub>40</sub> | 16.1 | 0.15 | 20071027 | 25.08369  | 153.25408 | 202.23852 | 12.28755 | 0.2699994 | 3.0099043 | 35 | 1 | 64 days   | 0.48 | M-v | 4   | 2007 TH <sub>40</sub>        |
| 2007 TN <sub>40</sub> | 16.1 | 0.15 | 20071027 | 228.17542 | 316.99608 | 224.87922 | 3.43426  | 0.0438759 | 2.7983993 | 56 | 3 | 2003–2007 | 0.34 | M-v | 2   | 128369 2007 TN <sub>40</sub> |
| 2007 TO <sub>40</sub> | 15.8 | 0.15 | 20071027 | 318.22164 | 52.41620  | 43.27624  | 14.04183 | 0.0827989 | 3.1865541 | 39 | 1 | 78 days   | 0.40 | M-v | 4   | 2007 TO <sub>40</sub>        |
| 2007 TR <sub>40</sub> | 16.6 | 0.15 | 20071007 | 51.27610  | 283.55438 | 38.95462  | 13.01713 | 0.2125556 | 2.7340720 | 25 | 1 | 25 days   | 0.31 |     |     | 2007 TR <sub>40</sub>        |
| 2007 TT <sub>40</sub> | 17.9 | 0.15 | 20071007 | 23.22638  | 153.21447 | 205.77017 | 4.70082  | 0.1803251 | 2.2965311 | 33 | 1 | 58 days   | 0.42 |     |     | 2007 TT <sub>40</sub>        |
| 2007 TV <sub>40</sub> | 16.3 | 0.15 | 20071027 | 10.25263  | 206.07788 | 183.42339 | 1.83657  | 0.1136755 | 2.9376502 | 80 | 7 | 1992–2007 | 0.57 | M-v | 1   | 128370 2007 TV <sub>40</sub> |
| 2007 TW <sub>40</sub> | 15.5 | 0.15 | 20071007 | 263.57061 | 287.13254 | 215.95127 | 15.54860 | 0.0553421 | 3.1656886 | 26 | 1 | 32 days   | 0.32 |     |     | 2007 TW <sub>40</sub>        |
| 2007 TY <sub>40</sub> | 17.0 | 0.15 | 20071007 | 341.31933 | 16.05644  | 43.38181  | 4.88466  | 0.1044597 | 2.5987905 | 45 | 1 | 40 days   | 0.40 |     |     | 2007 TY <sub>40</sub>        |
| 2007 TZ <sub>40</sub> | 15.7 | 0.15 | 20071027 | 345.70712 | 17.09346  | 45.11441  | 9.88238  | 0.1350048 | 3.0545039 | 70 | 1 | 79 days   | 0.40 | M-v | 3   | 2007 TZ <sub>40</sub>        |
| 2007 TC <sub>41</sub> | 18.3 | 0.15 | 20071027 | 358.86978 | 202.93673 | 200.85006 | 5.51907  | 0.3160817 | 2.6244754 | 42 | 1 | 44 days   | 0.45 |     |     | 2007 TC <sub>41</sub>        |
| 2007 TD <sub>41</sub> | 17.9 | 0.15 | 20071027 | 53.46793  | 130.04935 | 196.73792 | 3.39234  | 0.1992763 | 2.2165955 | 39 | 1 | 60 days   | 0.58 | M-v | 5   | 2007 TD <sub>41</sub>        |
| 2007 TG <sub>41</sub> | 16.4 | 0.15 | 20071027 | 59.70883  | 286.43190 | 41.39169  | 15.46240 | 0.1439400 | 2.5855947 | 44 | 1 | 68 days   | 0.52 | M-v | 4   | 2007 TG <sub>41</sub>        |
| 2007 TH <sub>41</sub> | 17.0 | 0.15 | 20071027 | 44.98083  | 279.06457 | 56.79415  | 3.02968  | 0.2150479 | 2.3624394 | 64 | 2 | 2006–2007 | 0.39 | M-v | 4   | 128370 2007 TH <sub>41</sub> |
| 2007 TJ <sub>41</sub> | 16.4 | 0.15 | 20071027 | 51.14381  | 295.28722 | 45.77793  | 11.44793 | 0.1242949 | 3.0249048 | 33 | 1 | 43 days   | 0.27 |     |     | 2007 TJ <sub>41</sub>        |
| 2007 TL <sub>41</sub> | 18.3 | 0.15 | 20071027 | 341.33262 | 25.25178  | 42.51899  | 8.14071  | 0.1541848 | 2.3416800 | 30 | 1 | 43 days   | 0.37 |     |     | 2007 TL <sub>41</sub>        |
| 2007 TN <sub>41</sub> | 16.6 | 0.15 | 20071027 | 12.81378  | 187.67453 | 201.58499 | 5.01894  | 0.0723617 | 2.7309160 | 52 | 1 | 65 days   | 0.37 | M-v | 4   | 2007 TN <sub>41</sub>        |
| 2007 TP <sub>41</sub> | 16.0 | 0.15 | 20071027 | 31.41432  | 255.01446 | 116.18275 | 1.67692  | 0.0472652 | 3.1468497 | 31 | 1 | 60 days   | 0.38 | M-v | 5   | 2007 TP <sub>41</sub>        |
| 2007 TQ <sub>41</sub> | 16.3 | 0.15 | 20071027 | 165.15151 | 93.60945  | 145.37705 | 1.31547  | 0.0458579 | 2.7417788 | 59 | 5 | 1998–2007 | 0.39 | M-v | 0   | 128371 2007 TQ <sub>41</sub> |
| 2007 TS <sub>41</sub> | 17.1 | 0.15 | 20071027 | 342.11443 | 195.87670 | 230.12052 | 10.66839 | 0.2301503 | 2.4279878 | 84 | 1 | 86 days   | 0.50 | M-v | 4   | 2007 TS <sub>41</sub>        |
| 2007 TU <sub>41</sub> | 15.9 | 0.15 | 20071027 | 76.38969  | 302.00947 | 357.33376 | 7.53503  | 0.2220171 | 2.5435407 | 89 | 4 | 2002–2007 | 0.56 | M-v | 1   | 128963 2007 TU <sub>41</sub> |
| 2007 TV <sub>41</sub> | 16.1 | 0.15 | 20071027 | 4.55432   | 143.64625 | 250.29236 | 6.73267  | 0.1944548 | 2.6113449 | 90 | 2 | 2003–2007 | 0.45 | M-v | 3   | 128371 2007 TV <sub>41</sub> |
| 2007 TZ <sub>41</sub> | 16.5 | 0.15 | 20070917 | 238.69249 | 296.38716 | 181.15762 | 4.99380  | 0.0343837 | 2.7946140 | 21 | 1 | 32 days   | 0.22 |     |     | 2007 TZ <sub>41</sub>        |
| 2007 TC <sub>43</sub> | 16.6 | 0.15 | 20071007 | 28.63531  | 152.97637 | 212.01512 | 11.11104 | 0.0960457 | 3.0052633 | 25 | 1 | 32 days   | 0.29 |     | D   | 2007 TC <sub>43</sub>        |
| 2007 TF <sub>43</sub> | 16.2 | 0.15 | 20071007 | 28.61186  | 270.34029 | 70.30263  | 2.36628  | 0.3637447 | 3.8937983 | 17 | 1 | 11 days   | 0.62 |     |     | 2007 TF <sub>43</sub>        |
| 2007 TG <sub>43</sub> | 16.0 | 0.15 | 20071027 | 328.82097 | 46.11102  | 44.05466  | 9.22441  | 0.2082563 | 2.7659521 | 74 | 1 | 86 days   | 0.38 | M-v | 4   | 128963 2007 TG <sub>43</sub> |
| 2007 TH <sub>43</sub> | 17.8 | 0.15 | 20071007 | 320.60380 | 29.14410  | 60.02207  | 2.32141  | 0.1568539 | 2.4630235 | 21 | 1 | 29 days   | 0.27 |     |     | 2007 TH <sub>43</sub>        |
| 2007 TJ <sub>43</sub> | 15.8 | 0.15 | 20071027 | 308.58399 | 53.29646  | 52.38117  | 10.52447 | 0.0911532 | 3.0764396 | 26 | 1 | 44 days   | 0.33 |     |     | 2007 TJ <sub>43</sub>        |
| 2007 TL <sub>43</sub> | 16.5 | 0.15 | 20071027 | 4.72896   | 347.82189 | 52.05935  | 7.05474  | 0.0342981 | 2.7276327 | 61 | 3 | 2003–2007 | 0.44 | M-v | 3   | 128371 2007 TL <sub>43</sub> |
| 2007 TM <sub>43</sub> | 17.9 | 0.15 | 20071027 | 345.66606 | 14.86907  | 48.86151  | 5.11944  | 0.1646860 | 2.4159306 | 36 | 1 | 63 days   | 0.32 | M-v | 3 D | 2007 TM <sub>43</sub>        |
| 2007 TO <sub>43</sub> | 16.4 | 0.15 | 20071027 | 2.95951   | 187.39595 | 214.16625 | 13.67961 | 0.0921524 | 2.6864007 | 56 | 4 | 2000–2007 | 0.43 | M-v | 0   | 128372 2007 TO <sub>43</sub> |
| 2007 TQ <sub>43</sub> | 16.3 | 0.15 | 20071027 | 44.89172  | 272.73305 | 78.69333  | 2.53222  | 0.1064628 | 2.6556193 | 66 | 4 | 2001–2007 | 0.38 | M-v | 1   | 128372 2007 TQ <sub>43</sub> |
| 2007 TS <sub>43</sub> | 17.0 | 0.15 | 20071007 | 348.47607 | 173.17437 | 233.38955 | 9.23470  | 0.2845472 | 2.7127536 | 69 | 1 | 53 days   | 0.47 |     |     | 2007 TS <sub>43</sub>        |
| 2007 TV <sub>43</sub> | 15.9 | 0.15 | 20071027 | 348.15594 | 11.01912  | 48.86055  | 5.74459  | 0.1134014 | 2.7702780 | 97 | 3 | 2002–2007 | 0.39 | M-v | 3   | 128373 2007 TV <sub>43</sub> |
| 2007 TX <sub>43</sub> | 16.5 | 0.15 | 20071027 | 4.90327   | 336.07957 | 61.97783  | 2.77568  | 0.1947343 | 3.1118242 | 57 | 3 | 1996–2007 | 0.42 | M-v | 2   | 128373 2007 TX <sub>43</sub> |
| 2007 TZ <sub>43</sub> | 17.2 | 0.15 | 20071007 | 11.00908  | 136.62057 | 230.29432 | 13.35947 | 0.2972528 | 3.1912257 | 20 | 1 | 31 days   | 0.43 |     | D   | 2007 TZ <sub>43</sub>        |
| 2007 TA <sub>44</sub> | 16.4 | 0.15 | 20071027 | 32.00955  | 321.41926 | 46.72434  | 6.39945  | 0.0533120 | 2.7835740 | 42 | 1 | 39 days   | 0.32 |     |     | 2007 TA <sub>44</sub>        |
| 2007 TE <sub>44</sub> | 15.2 | 0.15 | 20071027 | 23.44446  | 346.06480 | 17.28001  | 18.00200 | 0.1985999 | 3.1201636 | 32 | 1 | 69 days   | 0.45 | M-v | 4   | 2007 TE <sub>44</sub>        |
| 2007 TJ <sub>44</sub> | 17.7 | 0.15 | 20071027 | 49.82971  | 11.14327  | 310.49594 | 3.22688  | 0.2588839 | 2.3121004 | 43 | 1 | 42 days   | 0.45 |     |     | 2007 TJ <sub>44</sub>        |
| 2007 TK <sub>44</sub> | 16.9 | 0.15 | 20071027 | 353.53775 | 42.60566  | 10.19712  | 7.58266  | 0.2992606 | 2.7651118 | 83 | 2 | 2002–2007 | 0.51 | M-v | 3   | 128373 2007 TK <sub>44</sub> |
| 2007 TQ <sub>44</sub> | 15.8 | 0.15 | 20071007 | 313.69081 | 49.35042  | 25.44792  | 9.19301  | 0.0841188 | 3.1151755 | 44 | 1 | 54 days   | 0.51 |     |     | 2007 TQ <sub>44</sub>        |
| 2007 TR <sub>44</sub> | 17.7 | 0.15 | 20071027 | 289.42733 | 74.45566  | 37.49468  | 2.16576  | 0.1379522 | 2.3636801 | 39 | 2 | 2004–2007 | 0.35 | M-v | 3   | 128374 2007 TR <sub>44</sub> |
| 2007 TT <sub>44</sub> | 18.4 | 0.15 | 20071027 | 36.55340  | 139.09881 | 193.48930 | 5.71256  | 0.2103749 | 2.2673617 | 42 | 1 | 60 days   | 0.37 | M-v | 4 D | 2007 TT <sub>44</sub>        |
| 2007 TX <sub>44</sub> | 15.7 | 0.15 | 20071027 | 101.94812 | 244.04633 | 34.89967  | 10.25222 | 0.0473821 | 2.8910726 | 58 | 2 | 2005–2007 | 0.51 | M-v | 3   | 128374 2007 TX <sub>44</sub> |
| 2007 TY <sub>44</sub> | 16.5 | 0.15 | 20071027 | 356.15307 | 349.69199 | 43.29924  | 5.51407  | 0.1829542 | 2.7058103 | 76 | 3 | 2003–2007 | 0.43 | M-v | 3   | 128374 2007 TY <sub>44</sub> |
| 2007 TZ <sub>44</sub> | 16.7 | 0.15 | 20071027 | 320.20074 | 32.56824  | 43.75660  | 5.38855  | 0.1146091 | 2.3964233 | 51 | 1 | 84 days   | 0.43 | M-v | 4   | 2007 TZ <sub>44</sub>        |
| 2007 TJ <sub>45</sub> | 16.3 | 0.15 | 20071007 | 330.60665 | 31.92303  | 28.55538  | 12.23693 | 0.0397994 | 3.2106904 | 25 | 1 | 31 days   | 0.35 |     | D   | 2007 TJ <sub>45</sub>        |
| 2007 TL <sub>45</sub> | 18.8 | 0.15 | 20070917 | 14.54675  | 326.65071 | 25.31840  | 3.05127  | 0.2129032 | 2.2273247 | 38 | 1 | 55 days   | 0.36 |     |     | 2007 TL <sub>45</sub>        |
| 2007 TT <sub>45</sub> | 16.1 | 0.15 | 20071027 | 35.93872  | 294.88024 | 53.00468  | 8.18001  | 0.1867622 | 2.3790247 | 63 | 1 | 60 days   | 0.53 | M-v | 4   | 2007 TT <sub>45</sub>        |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|--------|-----------------------|
| 2007 TV <sub>45</sub> | 16.0 | 0.15 | 20071027 | 36.85297  | 305.51519 | 49.29746  | 12.30671 | 0.1113700 | 2.6942056 | 84  | 4 | 1998–2007 | 0.54 | M-v | 2 | MPC | 128374 | 2007 TV <sub>45</sub> |
| 2007 TX <sub>45</sub> | 18.5 | 0.15 | 20071007 | 33.83588  | 301.42241 | 28.93040  | 5.59691  | 0.2493443 | 2.3249847 | 22  | 1 | 30 days   | 0.29 |     |   | MPC |        | 2007 TX <sub>45</sub> |
| 2007 TA <sub>46</sub> | 16.6 | 0.15 | 20071027 | 359.85377 | 353.65136 | 47.89703  | 10.35052 | 0.1953773 | 2.2739070 | 75  | 1 | 67 days   | 0.40 | M-v | 4 | MPC |        | 2007 TA <sub>46</sub> |
| 2007 TB <sub>46</sub> | 18.6 | 0.15 | 20071007 | 20.74408  | 325.49533 | 38.11802  | 21.60285 | 0.0846043 | 1.8503915 | 30  | 1 | 31 days   | 0.52 |     |   | MPC |        | 2007 TB <sub>46</sub> |
| 2007 TC <sub>46</sub> | 15.9 | 0.15 | 20071027 | 345.59558 | 193.55518 | 226.43943 | 16.58272 | 0.1425947 | 2.7303089 | 114 | 1 | 59 days   | 0.52 |     |   | MPC |        | 2007 TC <sub>46</sub> |
| 2007 TD <sub>46</sub> | 17.0 | 0.15 | 20071027 | 38.46282  | 335.70197 | 1.46648   | 4.95284  | 0.2736246 | 2.5737207 | 54  | 1 | 42 days   | 0.54 |     |   | MPC |        | 2007 TD <sub>46</sub> |
| 2007 TE <sub>46</sub> | 17.1 | 0.15 | 20071027 | 40.94702  | 331.40781 | 15.77818  | 7.23337  | 0.1571528 | 2.2275137 | 97  | 4 | 1997–2007 | 0.50 | M-v | 2 | MPC | 128375 | 2007 TE <sub>46</sub> |
| 2007 TF <sub>46</sub> | 17.4 | 0.15 | 20071027 | 11.76889  | 24.36361  | 357.74679 | 3.58288  | 0.2501409 | 2.3892239 | 76  | 1 | 59 days   | 0.52 |     |   | MPC |        | 2007 TF <sub>46</sub> |
| 2007 TG <sub>46</sub> | 17.6 | 0.15 | 20071027 | 16.94633  | 342.87447 | 38.13524  | 22.25961 | 0.1349039 | 1.8601729 | 69  | 1 | 42 days   | 0.43 |     |   | MPC |        | 2007 TG <sub>46</sub> |
| 2007 TJ <sub>46</sub> | 16.4 | 0.15 | 20071027 | 19.06295  | 336.15557 | 42.75905  | 13.35306 | 0.1039233 | 2.5641400 | 70  | 3 | 1993–2007 | 0.46 | M-v | 2 | MPC | 128375 | 2007 TJ <sub>46</sub> |
| 2007 TO <sub>46</sub> | 15.0 | 0.15 | 20071027 | 157.54591 | 193.13213 | 51.30314  | 14.10707 | 0.0873854 | 3.2071266 | 73  | 4 | 2001–2007 | 0.43 | M-v | 1 | MPC | 128375 | 2007 TO <sub>46</sub> |
| 2007 TP <sub>46</sub> | 17.3 | 0.15 | 20071027 | 16.02609  | 329.40605 | 48.70979  | 6.39246  | 0.2267709 | 2.5695769 | 71  | 1 | 78 days   | 0.37 | M-v | 4 | MPC |        | 2007 TP <sub>46</sub> |
| 2007 TS <sub>46</sub> | 15.9 | 0.15 | 20071027 | 301.43811 | 233.79945 | 218.49057 | 10.61792 | 0.0546391 | 3.0648242 | 31  | 2 | 2005–2007 | 0.35 | M-v | 3 | MPC | 128376 | 2007 TS <sub>46</sub> |
| 2007 TB <sub>47</sub> | 17.6 | 0.15 | 20071027 | 336.77181 | 208.62481 | 219.84510 | 5.63455  | 0.2500274 | 2.4333717 | 62  | 2 | 2003–2007 | 0.55 | M-v | 3 | MPC | 128376 | 2007 TB <sub>47</sub> |
| 2007 TM <sub>47</sub> | 17.6 | 0.15 | 20071007 | 70.49122  | 325.68485 | 325.11343 | 3.06179  | 0.2022583 | 2.6358465 | 20  | 1 | 30 days   | 0.28 |     |   | MPC |        | 2007 TM <sub>47</sub> |
| 2007 TT <sub>47</sub> | 17.5 | 0.15 | 20071027 | 339.45870 | 190.88484 | 227.32260 | 5.46487  | 0.1585996 | 2.6016556 | 20  | 1 | 45 days   | 0.32 |     |   | MPC |        | 2007 TT <sub>47</sub> |
| 2007 TU <sub>47</sub> | 17.6 | 0.15 | 20071007 | 103.34416 | 342.40231 | 284.19018 | 2.38511  | 0.1325796 | 2.2399500 | 26  | 1 | 30 days   | 0.34 |     | D | MPC |        | 2007 TU <sub>47</sub> |
| 2007 TP <sub>48</sub> | 18.0 | 0.15 | 20071007 | 328.38223 | 66.96065  | 357.46163 | 3.99473  | 0.1105190 | 2.6944468 | 16  | 1 | 20 days   | 0.34 |     |   | MPC |        | 2007 TP <sub>48</sub> |
| 2007 TX <sub>48</sub> | 16.4 | 0.15 | 20071027 | 275.79237 | 259.66692 | 220.95219 | 7.30767  | 0.0493880 | 2.9235778 | 46  | 5 | 1995–2007 | 0.54 | M-v | 2 | MPC | 128377 | 2007 TX <sub>48</sub> |
| 2007 TY <sub>48</sub> | 18.1 | 0.15 | 20071027 | 49.59683  | 95.34402  | 232.08324 | 3.84466  | 0.1419739 | 2.4180875 | 21  | 1 | 45 days   | 0.35 |     |   | MPC |        | 2007 TY <sub>48</sub> |
| 2007 TQ <sub>49</sub> | 18.4 | 0.15 | 20071027 | 348.56523 | 66.09471  | 343.62917 | 1.78884  | 0.2000871 | 2.2859485 | 27  | 1 | 63 days   | 0.35 | M-v | 4 | MPC |        | 2007 TQ <sub>49</sub> |
| 2007 TV <sub>49</sub> | 16.0 | 0.15 | 20071007 | 208.90980 | 286.36503 | 257.78741 | 2.50809  | 0.0713051 | 3.0611209 | 16  | 1 | 36 days   | 0.26 |     |   | MPC |        | 2007 TV <sub>49</sub> |
| 2007 TW <sub>49</sub> | 15.5 | 0.15 | 20071027 | 48.45649  | 118.71897 | 215.16211 | 11.31847 | 0.1121827 | 3.0598102 | 74  | 3 | 2001–2007 | 0.49 | M-v | 2 | MPC | 128965 | 2007 TW <sub>49</sub> |
| 2007 TX <sub>49</sub> | 18.8 | 0.15 | 20071007 | 349.09896 | 171.16772 | 228.09326 | 2.23859  | 0.2167314 | 2.4189312 | 13  | 1 | 28 days   | 0.20 |     |   | MPC |        | 2007 TX <sub>49</sub> |
| 2007 TA <sub>50</sub> | 17.5 | 0.15 | 20071007 | 333.24414 | 207.35402 | 210.57287 | 6.48358  | 0.1207902 | 2.7421478 | 22  | 1 | 44 days   | 0.34 |     |   | MPC |        | 2007 TA <sub>50</sub> |
| 2007 TB <sub>50</sub> | 17.4 | 0.15 | 20071007 | 5.02541   | 168.47826 | 207.41547 | 14.83847 | 0.1845755 | 2.7003567 | 31  | 1 | 40 days   | 0.48 |     |   | MPC |        | 2007 TB <sub>50</sub> |
| 2007 TH <sub>50</sub> | 16.2 | 0.15 | 20071027 | 51.90299  | 309.90215 | 18.87490  | 13.84874 | 0.0954487 | 2.7283018 | 46  | 1 | 63 days   | 0.63 | M-v | 5 | MPC |        | 2007 TH <sub>50</sub> |
| 2007 TO <sub>50</sub> | 17.2 | 0.15 | 20071007 | 269.52753 | 118.59990 | 5.04072   | 3.28544  | 0.0781494 | 2.2935593 | 16  | 1 | 30 days   | 0.25 |     |   | MPC |        | 2007 TO <sub>50</sub> |
| 2007 TC <sub>51</sub> | 16.4 | 0.15 | 20071027 | 53.22179  | 45.41970  | 287.73586 | 0.76941  | 0.0550260 | 2.9811615 | 28  | 1 | 45 days   | 0.33 |     |   | MPC |        | 2007 TC <sub>51</sub> |
| 2007 TJ <sub>51</sub> | 15.9 | 0.15 | 20071007 | 98.69299  | 243.12866 | 27.37134  | 11.20748 | 0.1828066 | 2.0242047 | 24  | 1 | 34 days   | 0.33 |     |   | MPC |        | 2007 TJ <sub>51</sub> |
| 2007 TL <sub>51</sub> | 17.6 | 0.15 | 20071007 | 11.04946  | 152.02625 | 219.18934 | 1.70675  | 0.1442928 | 2.6384088 | 21  | 1 | 44 days   | 0.25 |     |   | MPC |        | 2007 TL <sub>51</sub> |
| 2007 TR <sub>51</sub> | 15.6 | 0.15 | 20071027 | 273.85939 | 271.62423 | 217.29082 | 8.96709  | 0.0809704 | 3.1603410 | 36  | 2 | 2004–2007 | 0.28 | M-v | 3 | MPC | 128378 | 2007 TR <sub>51</sub> |
| 2007 TS <sub>51</sub> | 16.9 | 0.15 | 20071027 | 4.54997   | 4.51435   | 22.23775  | 12.12171 | 0.1958577 | 2.9847021 | 23  | 1 | 60 days   | 0.25 | M-v | 3 | MPC |        | 2007 TS <sub>51</sub> |
| 2007 TK <sub>52</sub> | 16.9 | 0.15 | 20071007 | 110.11479 | 63.39427  | 212.29312 | 12.54400 | 0.0430970 | 2.7416895 | 17  | 1 | 28 days   | 0.21 |     |   | MPC |        | 2007 TK <sub>52</sub> |
| 2007 TL <sub>52</sub> | 16.9 | 0.15 | 20071007 | 6.11365   | 166.99605 | 213.52460 | 9.10117  | 0.1477537 | 2.7447477 | 20  | 1 | 31 days   | 0.25 |     |   | MPC |        | 2007 TL <sub>52</sub> |
| 2007 TQ <sub>52</sub> | 16.7 | 0.15 | 20071027 | 45.77514  | 126.91508 | 216.35601 | 5.18290  | 0.0701384 | 2.7314470 | 28  | 1 | 81 days   | 0.35 | M-v | 4 | MPC |        | 2007 TQ <sub>52</sub> |
| 2007 TR <sub>52</sub> | 17.1 | 0.15 | 20071007 | 110.70003 | 58.57838  | 212.25918 | 14.44765 | 0.0865656 | 2.5371847 | 25  | 1 | 34 days   | 0.31 |     |   | MPC |        | 2007 TR <sub>52</sub> |
| 2007 TS <sub>52</sub> | 17.1 | 0.15 | 20071027 | 274.39758 | 277.56766 | 210.46304 | 1.61379  | 0.0627500 | 2.6545127 | 38  | 3 | 1998–2007 | 0.38 | M-v | 4 | MPC | 128379 | 2007 TS <sub>52</sub> |
| 2007 TB <sub>53</sub> | 16.7 | 0.15 | 20071027 | 3.25203   | 193.03725 | 198.44214 | 2.28436  | 0.1084093 | 2.6083969 | 46  | 1 | 45 days   | 0.40 |     |   | MPC |        | 2007 TB <sub>53</sub> |
| 2007 TK <sub>53</sub> | 16.9 | 0.15 | 20071007 | 9.87982   | 194.06448 | 183.32387 | 1.83104  | 0.0771658 | 2.8595787 | 21  | 1 | 44 days   | 0.23 |     |   | MPC |        | 2007 TK <sub>53</sub> |
| 2007 TP <sub>53</sub> | 16.9 | 0.15 | 20071027 | 32.32642  | 313.85397 | 40.35104  | 2.25200  | 0.1133265 | 2.6560999 | 30  | 1 | 62 days   | 0.29 | M-v | 4 | MPC |        | 2007 TP <sub>53</sub> |
| 2007 TS <sub>53</sub> | 18.5 | 0.15 | 20071007 | 10.87847  | 334.57102 | 33.94550  | 5.16606  | 0.2140594 | 2.3352138 | 23  | 1 | 53 days   | 0.30 |     |   | MPC |        | 2007 TS <sub>53</sub> |
| 2007 TV <sub>53</sub> | 17.1 | 0.15 | 20071007 | 9.89978   | 173.67561 | 202.98875 | 4.63933  | 0.1259266 | 2.7226328 | 24  | 1 | 29 days   | 0.23 |     | D | MPC |        | 2007 TV <sub>53</sub> |
| 2007 TX <sub>53</sub> | 16.9 | 0.15 | 20071007 | 345.26549 | 201.68629 | 206.02493 | 10.72752 | 0.0910525 | 2.6720396 | 22  | 1 | 36 days   | 0.40 |     |   | MPC |        | 2007 TX <sub>53</sub> |
| 2007 TY <sub>53</sub> | 17.8 | 0.15 | 20071007 | 27.20194  | 137.11179 | 202.44759 | 12.87018 | 0.2835465 | 2.6309726 | 26  | 1 | 48 days   | 0.27 |     |   | MPC |        | 2007 TY <sub>53</sub> |
| 2007 TZ <sub>53</sub> | 16.0 | 0.15 | 20071027 | 294.53472 | 63.09697  | 52.68003  | 1.68759  | 0.1295621 | 3.0549892 | 32  | 1 | 62 days   | 0.39 | M-v | 4 | MPC |        | 2007 TZ <sub>53</sub> |
| 2007 TL <sub>54</sub> | 16.0 | 0.15 | 20071027 | 354.16376 | 346.47054 | 56.73419  | 2.29766  | 0.0569493 | 3.1018691 | 20  | 1 | 62 days   | 0.17 | M-v | 4 | MPC |        | 2007 TL <sub>54</sub> |
| 2007 TN <sub>54</sub> | 17.8 | 0.15 | 20071027 | 346.93750 | 323.20696 | 91.46182  | 1.34286  | 0.1841837 | 2.2974889 | 35  | 1 | 67 days   | 0.55 | M-v | 4 | MPC |        | 2007 TN <sub>54</sub> |
| 2007 TO <sub>54</sub> | 17.2 | 0.15 | 20071027 | 343.38099 | 22.67141  | 36.71323  | 10.60753 | 0.1598732 | 3.0104221 | 24  | 1 | 60 days   | 0.28 | M-v | 4 | MPC |        | 2007 TO <sub>54</sub> |
| 2007 TV <sub>54</sub> | 16.0 | 0.15 | 20071027 | 328.95052 | 214.12325 | 220.22730 | 13.77866 | 0.0798248 | 2.6810036 | 102 | 4 | 2001–2007 | 0.47 | M-v | 2 | MPC | 128966 | 2007 TV <sub>54</sub> |
| 2007 TX <sub>54</sub> | 17.5 | 0.15 | 20071007 | 56.65928  | 62.04562  | 252.42167 | 2.57543  | 0.1816483 | 2.2293119 | 23  | 1 | 43 days   | 0.24 |     | D | MPC |        | 2007 TX <sub>54</sub> |
| 2007 TB <sub>55</sub> | 16.3 | 0.15 | 20071027 | 317.91027 | 227.13331 | 221.81180 | 8.69428  | 0.0898704 | 3.1023528 | 29  | 1 | 63 days   | 0.20 | M-v | 4 | MPC |        | 2007 TB <sub>55</sub> |
| 2007 TE <sub>55</sub> | 15.9 | 0.15 | 20071027 | 57.37592  | 306.69169 | 26.95449  | 10.42203 | 0.0841102 | 2.9784894 | 31  | 1 | 35 days   | 0.53 |     | D | MPC |        | 2007 TE <sub>55</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |       |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-------|--------|-----------------------|
| 2007 TJ <sub>55</sub> | 18.1 | 0.15 | 20071027 | 359.37604 | 28.45285  | 10.77189  | 2.62964  | 0.2841522 | 2.3385995 | 67 | 1 | 71 days   | 0.51 | M-v | 3   | MPC   | 128966 | 2007 TJ <sub>55</sub> |
| 2007 TK <sub>55</sub> | 15.7 | 0.15 | 20071027 | 39.50436  | 129.47022 | 223.43127 | 9.64513  | 0.0943162 | 3.0485227 | 68 | 1 | 63 days   | 0.49 | M-v | 4   | MPC   |        | 2007 TK <sub>55</sub> |
| 2007 TN <sub>55</sub> | 17.0 | 0.15 | 20071027 | 125.11625 | 255.90477 | 11.30170  | 2.55676  | 0.0793846 | 2.3271195 | 45 | 4 | 1995–2007 | 0.39 | M-v | 1   | MPC   | 128380 | 2007 TN <sub>55</sub> |
| 2007 TO <sub>55</sub> | 16.7 | 0.15 | 20071007 | 76.34392  | 279.07231 | 11.47709  | 3.72566  | 0.2500783 | 2.6518774 | 18 | 1 | 36 days   | 0.35 |     |     | MPC   |        | 2007 TO <sub>55</sub> |
| 2007 TW <sub>55</sub> | 17.4 | 0.15 | 20071027 | 1.69564   | 168.72961 | 226.16964 | 4.46489  | 0.1117589 | 2.6747088 | 27 | 1 | 62 days   | 0.31 | M-v | 4   | MPC   |        | 2007 TW <sub>55</sub> |
| 2007 TA <sub>56</sub> | 17.2 | 0.15 | 20071007 | 54.18879  | 333.02363 | 344.76790 | 1.14247  | 0.1872995 | 2.6479690 | 12 | 1 | 17 days   | 0.39 |     |     | D MPC |        | 2007 TA <sub>56</sub> |
| 2007 TE <sub>56</sub> | 18.5 | 0.15 | 20071027 | 48.49550  | 89.09695  | 233.46607 | 1.10391  | 0.2425211 | 2.2859180 | 20 | 1 | 29 days   | 0.21 |     |     | D MPC |        | 2007 TE <sub>56</sub> |
| 2007 TG <sub>56</sub> | 17.0 | 0.15 | 20071007 | 337.58786 | 188.30579 | 229.31351 | 3.36881  | 0.0544587 | 2.6366258 | 17 | 1 | 30 days   | 0.28 |     |     | MPC   |        | 2007 TG <sub>56</sub> |
| 2007 TH <sub>56</sub> | 17.4 | 0.15 | 20071027 | 22.49156  | 150.15691 | 218.83076 | 5.96365  | 0.1155374 | 2.4577904 | 56 | 5 | 1999–2007 | 0.42 | M-v | 1   | MPC   | 128381 | 2007 TH <sub>56</sub> |
| 2007 TM <sub>56</sub> | 17.9 | 0.15 | 20071007 | 357.86983 | 34.00006  | 358.77002 | 1.53406  | 0.1747428 | 2.4033761 | 24 | 1 | 34 days   | 0.46 |     |     | MPC   |        | 2007 TM <sub>56</sub> |
| 2007 TN <sub>56</sub> | 17.9 | 0.15 | 20071027 | 345.71914 | 36.95378  | 22.49878  | 5.49963  | 0.2128786 | 2.2677763 | 56 | 1 | 47 days   | 0.61 |     |     | MPC   |        | 2007 TN <sub>56</sub> |
| 2007 TU <sub>56</sub> | 18.4 | 0.15 | 20071007 | 15.93782  | 113.49887 | 249.98892 | 1.04595  | 0.2232905 | 2.3443364 | 20 | 1 | 31 days   | 0.26 |     |     | MPC   |        | 2007 TU <sub>56</sub> |
| 2007 TV <sub>56</sub> | 16.7 | 0.15 | 20071007 | 32.18738  | 91.13784  | 250.52219 | 1.47108  | 0.2478619 | 3.1955923 | 17 | 1 | 31 days   | 0.18 |     |     | MPC   |        | 2007 TV <sub>56</sub> |
| 2007 TX <sub>56</sub> | 15.4 | 0.15 | 20071027 | 310.97191 | 233.18120 | 222.38212 | 7.25618  | 0.0750949 | 3.2175286 | 57 | 2 | 2001–2007 | 0.54 | M-v | 4   | MPC   | 128381 | 2007 TX <sub>56</sub> |
| 2007 TB <sub>57</sub> | 16.1 | 0.15 | 20071007 | 348.71394 | 16.91544  | 31.91794  | 10.98965 | 0.1060788 | 3.0806493 | 30 | 1 | 34 days   | 0.43 |     |     | MPC   |        | 2007 TB <sub>57</sub> |
| 2007 TL <sub>57</sub> | 17.1 | 0.15 | 20070917 | 27.68410  | 315.77380 | 33.71172  | 5.59212  | 0.1664786 | 2.7974782 | 20 | 1 | 52 days   | 0.21 |     |     | MPC   |        | 2007 TL <sub>57</sub> |
| 2007 TM <sub>57</sub> | 16.3 | 0.15 | 20071027 | 324.70639 | 232.85651 | 215.64067 | 4.71226  | 0.1697011 | 3.1084366 | 31 | 1 | 63 days   | 0.33 | M-v | 4 D | MPC   |        | 2007 TM <sub>57</sub> |
| 2007 TR <sub>57</sub> | 16.6 | 0.15 | 20071027 | 306.75914 | 247.66554 | 212.38344 | 3.69499  | 0.0737320 | 2.8107868 | 59 | 6 | 1993–2007 | 0.41 | M-v | 0   | MPC   | 128381 | 2007 TR <sub>57</sub> |
| 2007 TV <sub>57</sub> | 17.3 | 0.15 | 20071027 | 17.50655  | 160.16052 | 210.50307 | 1.83203  | 0.2279943 | 2.6862957 | 50 | 3 | 1998–2007 | 0.37 | M-v | 3   | MPC   | 128382 | 2007 TV <sub>57</sub> |
| 2007 TW <sub>57</sub> | 17.9 | 0.15 | 20071027 | 8.55365   | 177.13812 | 208.75463 | 0.79064  | 0.1820995 | 2.3609081 | 48 | 1 | 69 days   | 0.26 | M-v | 4   | MPC   |        | 2007 TW <sub>57</sub> |
| 2007 TM <sub>58</sub> | 16.8 | 0.15 | 20071027 | 349.33613 | 29.04903  | 29.50810  | 0.60729  | 0.2335492 | 3.1024165 | 26 | 1 | 63 days   | 0.29 | M-v | 4   | MPC   |        | 2007 TM <sub>58</sub> |
| 2007 TT <sub>58</sub> | 16.3 | 0.15 | 20071027 | 290.31932 | 120.52627 | 342.34326 | 11.47866 | 0.2689603 | 2.8372942 | 24 | 2 | 2003–2007 | 0.43 | M-v | 4   | MPC   | 128382 | 2007 TT <sub>58</sub> |
| 2007 TW <sub>58</sub> | 15.8 | 0.15 | 20071007 | 90.69402  | 270.43887 | 333.91900 | 8.93262  | 0.1997873 | 3.1329993 | 15 | 1 | 14 days   | 0.38 |     |     | MPC   |        | 2007 TW <sub>58</sub> |
| 2007 TZ <sub>58</sub> | 16.4 | 0.15 | 20071007 | 223.63393 | 311.64674 | 189.63619 | 13.80348 | 0.0959294 | 2.6485425 | 20 | 1 | 55 days   | 0.27 |     |     | MPC   |        | 2007 TZ <sub>58</sub> |
| 2007 TJ <sub>59</sub> | 16.9 | 0.15 | 20070917 | 337.52339 | 219.64147 | 160.03509 | 3.91610  | 0.1062820 | 2.7841790 | 25 | 1 | 57 days   | 0.22 |     |     | MPC   |        | 2007 TJ <sub>59</sub> |
| 2007 TL <sub>59</sub> | 18.3 | 0.15 | 20071007 | 34.53307  | 155.03119 | 161.49434 | 3.88248  | 0.1254318 | 2.1623709 | 18 | 1 | 10 days   | 0.32 |     |     | D MPC |        | 2007 TL <sub>59</sub> |
| 2007 TM <sub>59</sub> | 19.7 | 0.15 | 20070917 | 0.65746   | 330.43986 | 20.70253  | 2.87182  | 0.2765025 | 2.2291132 | 33 | 1 | 34 days   | 0.26 |     |     | MPC   |        | 2007 TM <sub>59</sub> |
| 2007 TR <sub>59</sub> | 18.5 | 0.15 | 20071007 | 351.74994 | 208.74355 | 163.49424 | 2.73899  | 0.1229938 | 2.1228384 | 26 | 1 | 53 days   | 0.22 |     |     | MPC   |        | 2007 TR <sub>59</sub> |
| 2007 TW <sub>59</sub> | 17.2 | 0.15 | 20071027 | 328.52488 | 22.67103  | 21.39781  | 3.62217  | 0.1133910 | 2.5394852 | 47 | 5 | 1991–2007 | 0.35 | M-v | 2   | MPC   | 128382 | 2007 TW <sub>59</sub> |
| 2007 TX <sub>59</sub> | 17.2 | 0.15 | 20071027 | 3.58134   | 313.86450 | 45.58509  | 1.47341  | 0.1619684 | 2.9004669 | 22 | 1 | 62 days   | 0.32 | M-v | 5   | MPC   |        | 2007 TX <sub>59</sub> |
| 2007 TP <sub>60</sub> | 16.5 | 0.15 | 20071027 | 55.65315  | 94.77034  | 200.27245 | 5.60459  | 0.1179104 | 2.7115575 | 42 | 4 | 2001–2007 | 0.34 | M-v | 1   | MPC   | 128383 | 2007 TP <sub>60</sub> |
| 2007 TT <sub>60</sub> | 17.5 | 0.15 | 20071007 | 316.72039 | 343.46446 | 74.50305  | 2.07928  | 0.1606975 | 2.2996953 | 25 | 1 | 50 days   | 0.23 |     |     | MPC   |        | 2007 TT <sub>60</sub> |
| 2007 TV <sub>60</sub> | 18.0 | 0.15 | 20071027 | 15.34800  | 328.89684 | 34.18413  | 3.75740  | 0.3184163 | 2.5938018 | 44 | 1 | 43 days   | 0.67 |     |     | MPC   |        | 2007 TV <sub>60</sub> |
| 2007 TZ <sub>60</sub> | 16.3 | 0.15 | 20071027 | 1.40210   | 171.37590 | 223.83074 | 1.85630  | 0.2896550 | 3.9943389 | 58 | 2 | 1999–2007 | 0.34 | M-v | 3   | MPC   | 128383 | 2007 TZ <sub>60</sub> |
| 2007 TA <sub>61</sub> | 16.9 | 0.15 | 20071027 | 335.40701 | 218.79733 | 214.51556 | 3.69891  | 0.1922722 | 2.7743489 | 61 | 1 | 61 days   | 0.54 | M-v | 4   | MPC   |        | 2007 TA <sub>61</sub> |
| 2007 TF <sub>61</sub> | 18.9 | 0.15 | 20071007 | 327.24075 | 236.55479 | 206.11278 | 6.76412  | 0.2842465 | 2.5497733 | 21 | 1 | 40 days   | 0.38 |     |     | MPC   |        | 2007 TF <sub>61</sub> |
| 2007 TG <sub>61</sub> | 15.8 | 0.15 | 20071007 | 276.17638 | 104.96876 | 33.82694  | 0.59826  | 0.2170020 | 3.2228345 | 16 | 1 | 12 days   | 0.67 |     |     | MPC   |        | 2007 TG <sub>61</sub> |
| 2007 TK <sub>61</sub> | 17.8 | 0.15 | 20071027 | 18.52911  | 242.10574 | 123.31314 | 0.66343  | 0.2177030 | 2.3771871 | 55 | 1 | 70 days   | 0.46 | M-v | 4   | MPC   |        | 2007 TK <sub>61</sub> |
| 2007 TL <sub>61</sub> | 16.6 | 0.15 | 20071027 | 208.17823 | 152.74633 | 36.78220  | 10.80682 | 0.0423838 | 3.0007716 | 22 | 1 | 42 days   | 0.27 |     |     | MPC   |        | 2007 TL <sub>61</sub> |
| 2007 TP <sub>61</sub> | 17.0 | 0.15 | 20071027 | 60.28145  | 112.45287 | 215.02883 | 4.04900  | 0.0652429 | 2.7788642 | 31 | 2 | 2002–2007 | 0.40 | M-v | 4   | MPC   | 128384 | 2007 TP <sub>61</sub> |
| 2007 TQ <sub>61</sub> | 16.4 | 0.15 | 20071007 | 64.15445  | 105.70692 | 207.02235 | 4.81739  | 0.1260961 | 3.0894085 | 18 | 1 | 25 days   | 0.28 |     |     | MPC   |        | 2007 TQ <sub>61</sub> |
| 2007 TR <sub>61</sub> | 16.6 | 0.15 | 20071027 | 345.51210 | 202.00138 | 211.72738 | 4.56811  | 0.1283219 | 3.0817562 | 29 | 1 | 59 days   | 0.32 |     |     | D MPC |        | 2007 TR <sub>61</sub> |
| 2007 TW <sub>61</sub> | 16.0 | 0.15 | 20071027 | 66.58837  | 263.36836 | 41.51869  | 1.63306  | 0.2059420 | 3.0109377 | 19 | 1 | 59 days   | 0.22 |     |     | MPC   |        | 2007 TW <sub>61</sub> |
| 2007 TZ <sub>61</sub> | 17.4 | 0.15 | 20071027 | 45.90789  | 317.99041 | 20.72440  | 2.77696  | 0.1013460 | 2.6613979 | 24 | 1 | 42 days   | 0.33 |     |     | D MPC |        | 2007 TZ <sub>61</sub> |
| 2007 TP <sub>62</sub> | 17.5 | 0.15 | 20071007 | 29.56728  | 133.46943 | 209.62836 | 9.48777  | 0.2203173 | 3.1651980 | 18 | 1 | 31 days   | 0.31 |     |     | MPC   |        | 2007 TP <sub>62</sub> |
| 2007 TT <sub>62</sub> | 17.2 | 0.15 | 20071027 | 34.82360  | 336.85867 | 5.08083   | 2.34546  | 0.1951789 | 2.3253013 | 68 | 1 | 68 days   | 0.49 | M-v | 4   | MPC   |        | 2007 TT <sub>62</sub> |
| 2007 TV <sub>62</sub> | 18.3 | 0.15 | 20071007 | 45.19600  | 293.80156 | 18.35802  | 4.95693  | 0.2645829 | 2.1603361 | 31 | 1 | 39 days   | 0.64 |     |     | MPC   |        | 2007 TV <sub>62</sub> |
| 2007 TW <sub>62</sub> | 15.6 | 0.15 | 20071027 | 257.40476 | 300.46257 | 213.42697 | 12.73291 | 0.1748306 | 3.1351270 | 29 | 1 | 59 days   | 0.39 |     |     | MPC   |        | 2007 TW <sub>62</sub> |
| 2007 TZ <sub>62</sub> | 17.5 | 0.15 | 20071027 | 276.39609 | 139.75302 | 351.19751 | 1.29192  | 0.1279184 | 2.3443061 | 28 | 1 | 42 days   | 0.41 |     |     | MPC   |        | 2007 TZ <sub>62</sub> |
| 2007 TB <sub>63</sub> | 17.4 | 0.15 | 20071027 | 349.19509 | 177.38064 | 228.04990 | 1.16088  | 0.0685361 | 2.8662957 | 25 | 1 | 59 days   | 0.34 |     |     | MPC   |        | 2007 TB <sub>63</sub> |
| 2007 TC <sub>63</sub> | 16.7 | 0.15 | 20071027 | 289.29697 | 260.85584 | 211.91249 | 9.88187  | 0.0639520 | 2.9702439 | 31 | 3 | 1999–2007 | 0.31 | M-v | 1   | MPC   | 128384 | 2007 TC <sub>63</sub> |
| 2007 TK <sub>63</sub> | 16.6 | 0.15 | 20071027 | 73.02526  | 265.80540 | 48.00814  | 4.23080  | 0.1136752 | 2.1601416 | 73 | 4 | 2003–2007 | 0.43 | M-v | 1   | MPC   | 128384 | 2007 TK <sub>63</sub> |
| 2007 TL <sub>63</sub> | 16.8 | 0.15 | 20071027 | 11.41366  | 329.20188 | 52.90407  | 3.89532  | 0.2205981 | 2.6767547 | 67 | 1 | 60 days   | 0.31 | M-v | 4   | MPC   |        | 2007 TL <sub>63</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|-----------------------|
| 2007 TM <sub>63</sub> | 15.9 | 0.15 | 20071027 | 320.44967 | 337.88064 | 112.85761 | 1.56787  | 0.1125079 | 3.0666196 | 45 | 4 | 1999–2007 | 0.62 | M-v | 1 | MPC | 128385 | 2007 TM <sub>63</sub> |
| 2007 TS <sub>63</sub> | 18.0 | 0.15 | 20071007 | 26.38136  | 162.23038 | 188.05512 | 3.15358  | 0.2438283 | 2.6108460 | 22 | 1 | 57 days   | 0.33 |     |   | MPC |        | 2007 TS <sub>63</sub> |
| 2007 TU <sub>63</sub> | 18.4 | 0.15 | 20071007 | 32.57729  | 164.61948 | 181.83839 | 2.22206  | 0.1730869 | 2.2123592 | 24 | 1 | 57 days   | 0.23 |     |   | MPC |        | 2007 TU <sub>63</sub> |
| 2007 TV <sub>63</sub> | 16.6 | 0.15 | 20071027 | 325.46584 | 42.63707  | 46.60056  | 7.69056  | 0.1622900 | 3.0707396 | 37 | 1 | 41 days   | 0.35 |     |   | MPC |        | 2007 TV <sub>63</sub> |
| 2007 TW <sub>63</sub> | 18.3 | 0.15 | 20071027 | 37.70533  | 297.46712 | 50.13872  | 3.60984  | 0.1763117 | 2.3066214 | 61 | 1 | 60 days   | 0.37 | M-v | 4 | MPC |        | 2007 TW <sub>63</sub> |
| 2007 TX <sub>63</sub> | 18.0 | 0.15 | 20071007 | 21.35124  | 155.93257 | 200.02943 | 5.89026  | 0.2408697 | 2.3060506 | 32 | 1 | 36 days   | 0.52 |     |   | MPC |        | 2007 TX <sub>63</sub> |
| 2007 TY <sub>63</sub> | 17.0 | 0.15 | 20071007 | 356.71894 | 257.25574 | 144.71924 | 1.47802  | 0.1730486 | 3.1750972 | 30 | 1 | 55 days   | 0.39 |     | D | MPC |        | 2007 TY <sub>63</sub> |
| 2007 TA <sub>64</sub> | 19.1 | 0.15 | 20071007 | 33.50751  | 152.34101 | 189.17794 | 2.45221  | 0.2096758 | 2.1861320 | 27 | 1 | 33 days   | 0.32 |     |   | MPC |        | 2007 TA <sub>64</sub> |
| 2007 TC <sub>64</sub> | 17.3 | 0.15 | 20071027 | 325.68195 | 254.25148 | 186.64891 | 2.54260  | 0.0641634 | 2.6237839 | 18 | 1 | 33 days   | 0.26 |     | D | MPC |        | 2007 TC <sub>64</sub> |
| 2007 TE <sub>64</sub> | 16.4 | 0.15 | 20071027 | 36.23458  | 304.63595 | 52.59668  | 5.01565  | 0.1144700 | 2.7801745 | 51 | 1 | 60 days   | 0.58 | M-v | 4 | MPC |        | 2007 TE <sub>64</sub> |
| 2007 TF <sub>64</sub> | 17.7 | 0.15 | 20071007 | 26.90678  | 148.47626 | 200.17089 | 4.58940  | 0.2692377 | 2.7868166 | 21 | 1 | 33 days   | 0.25 |     |   | MPC |        | 2007 TF <sub>64</sub> |
| 2007 TG <sub>64</sub> | 17.0 | 0.15 | 20071007 | 50.10268  | 284.07627 | 44.46824  | 12.77756 | 0.1748165 | 2.6514646 | 45 | 1 | 35 days   | 0.37 |     |   | MPC |        | 2007 TG <sub>64</sub> |
| 2007 TK <sub>64</sub> | 17.4 | 0.15 | 20071007 | 336.02187 | 248.83129 | 179.13547 | 2.87251  | 0.1429419 | 2.6839406 | 33 | 1 | 55 days   | 0.28 |     | D | MPC |        | 2007 TK <sub>64</sub> |
| 2007 TO <sub>64</sub> | 18.0 | 0.15 | 20071007 | 21.02257  | 291.09055 | 68.79990  | 2.67663  | 0.2109297 | 2.3241548 | 28 | 1 | 35 days   | 0.45 |     |   | MPC |        | 2007 TO <sub>64</sub> |
| 2007 TS <sub>64</sub> | 17.4 | 0.15 | 20071027 | 36.11530  | 193.87043 | 154.44897 | 1.73542  | 0.2001918 | 2.3570491 | 61 | 3 | 2003–2007 | 0.50 | M-v | 3 | MPC | 128386 | 2007 TS <sub>64</sub> |
| 2007 TW <sub>64</sub> | 17.3 | 0.15 | 20071007 | 108.69045 | 185.09216 | 95.75191  | 1.92249  | 0.0859713 | 2.5308383 | 23 | 1 | 29 days   | 0.36 |     |   | MPC |        | 2007 TW <sub>64</sub> |
| 2007 TX <sub>64</sub> | 17.2 | 0.15 | 20071007 | 354.87385 | 195.14973 | 211.10606 | 16.90406 | 0.2070990 | 3.2018240 | 21 | 1 | 59 days   | 0.25 |     |   | MPC |        | 2007 TX <sub>64</sub> |
| 2007 TY <sub>64</sub> | 17.2 | 0.15 | 20071027 | 29.52810  | 180.80064 | 176.09227 | 2.37529  | 0.2085224 | 2.4152983 | 76 | 5 | 2002–2007 | 0.47 | M-v | 1 | MPC | 128386 | 2007 TY <sub>64</sub> |
| 2007 TA <sub>65</sub> | 16.8 | 0.15 | 20071007 | 7.81149   | 341.01298 | 47.82660  | 10.77689 | 0.1076916 | 2.9629067 | 28 | 1 | 29 days   | 0.32 |     |   | MPC |        | 2007 TA <sub>65</sub> |
| 2007 TB <sub>65</sub> | 16.3 | 0.15 | 20071007 | 40.87234  | 298.07017 | 55.30420  | 7.07473  | 0.0530389 | 2.7219847 | 32 | 1 | 38 days   | 0.48 |     |   | MPC |        | 2007 TB <sub>65</sub> |
| 2007 TC <sub>65</sub> | 16.0 | 0.15 | 20071027 | 215.81701 | 5.37694   | 185.07886 | 2.88723  | 0.0358461 | 2.7758443 | 35 | 1 | 65 days   | 0.41 | M-v | 5 | MPC |        | 2007 TC <sub>65</sub> |
| 2007 TD <sub>65</sub> | 18.0 | 0.15 | 20071007 | 280.57511 | 43.75510  | 75.25999  | 2.57824  | 0.0385977 | 2.1310058 | 20 | 1 | 13 days   | 0.68 |     |   | MPC |        | 2007 TD <sub>65</sub> |
| 2007 TE <sub>65</sub> | 17.7 | 0.15 | 20071007 | 262.42632 | 312.70806 | 192.40519 | 4.76172  | 0.0867282 | 2.4330635 | 21 | 1 | 28 days   | 0.34 |     |   | MPC |        | 2007 TE <sub>65</sub> |
| 2007 TF <sub>65</sub> | 15.5 | 0.15 | 20071027 | 338.64025 | 215.41329 | 214.12958 | 15.86297 | 0.0790224 | 3.1152245 | 76 | 5 | 1999–2007 | 0.49 | M-v | 1 | MPC | 128386 | 2007 TF <sub>65</sub> |
| 2007 TG <sub>65</sub> | 18.4 | 0.15 | 20071007 | 2.00938   | 207.40437 | 183.42937 | 3.09785  | 0.1248670 | 2.1788060 | 17 | 1 | 9 days    | 0.73 |     |   | MPC |        | 2007 TG <sub>65</sub> |
| 2007 TH <sub>65</sub> | 15.9 | 0.15 | 20071027 | 9.27342   | 183.81275 | 207.85357 | 12.17110 | 0.1064059 | 2.6134931 | 81 | 3 | 2001–2007 | 0.49 | M-v | 2 | MPC | 128387 | 2007 TH <sub>65</sub> |
| 2007 TK <sub>65</sub> | 16.1 | 0.15 | 20071027 | 128.35630 | 221.66155 | 41.10244  | 6.28523  | 0.1301330 | 3.0117395 | 32 | 1 | 59 days   | 0.35 |     |   | MPC |        | 2007 TK <sub>65</sub> |
| 2007 TR <sub>65</sub> | 18.8 | 0.15 | 20071027 | 83.51929  | 215.69204 | 23.80285  | 43.50905 | 0.5610821 | 1.1543784 | 62 | 1 | 38 days   | 0.43 | M-v | 6 | MPC | 128968 | 2007 TR <sub>65</sub> |
| 2007 TV <sub>65</sub> | 16.7 | 0.15 | 20071027 | 5.05039   | 143.11318 | 262.87510 | 6.68811  | 0.4585999 | 2.5949499 | 81 | 2 | 2004–2007 | 0.53 | M-v | 2 | MPC | 128387 | 2007 TV <sub>65</sub> |
| 2007 TE <sub>66</sub> | 21.3 | 0.15 | 20071027 | 216.91819 | 355.24712 | 195.81576 | 10.24493 | 0.2043671 | 1.0555780 | 48 | 1 | 39 days   | 0.46 | M-v | 5 | MPC | 128968 | 2007 TE <sub>66</sub> |
| 2007 TO <sub>66</sub> | 15.7 | 0.15 | 20071027 | 345.16832 | 73.17970  | 326.59632 | 9.08311  | 0.1149872 | 3.0657998 | 26 | 3 | 1993–2007 | 0.49 | M-v | 3 | MPC | 128388 | 2007 TO <sub>66</sub> |
| 2007 TP <sub>66</sub> | 17.6 | 0.15 | 20071027 | 46.53022  | 111.61020 | 207.64290 | 1.83311  | 0.1967809 | 2.3930591 | 56 | 3 | 1996–2007 | 0.40 | M-v | 3 | MPC | 128388 | 2007 TP <sub>66</sub> |
| 2007 TR <sub>66</sub> | 17.8 | 0.15 | 20071027 | 343.43515 | 207.53006 | 203.05581 | 1.74389  | 0.1943724 | 2.5806848 | 52 | 2 | 2003–2007 | 0.42 | M-v | 3 | MPC | 128388 | 2007 TR <sub>66</sub> |
| 2007 TS <sub>66</sub> | 15.4 | 0.15 | 20071027 | 9.00826   | 107.92151 | 288.86101 | 10.81093 | 0.2089364 | 2.9433948 | 38 | 1 | 53 days   | 0.49 |     |   | MPC |        | 2007 TS <sub>66</sub> |
| 2007 TU <sub>66</sub> | 18.7 | 0.15 | 20070917 | 352.16974 | 179.89118 | 198.49381 | 2.05235  | 0.2197894 | 2.3354391 | 31 | 1 | 36 days   | 0.53 |     |   | MPC |        | 2007 TU <sub>66</sub> |
| 2007 TW <sub>66</sub> | 18.5 | 0.15 | 20071007 | 335.16522 | 239.90445 | 176.26120 | 5.59737  | 0.1727876 | 2.1894566 | 28 | 1 | 56 days   | 0.37 |     |   | MPC |        | 2007 TW <sub>66</sub> |
| 2007 TX <sub>66</sub> | 16.8 | 0.15 | 20071027 | 291.15987 | 63.08963  | 43.12422  | 9.30810  | 0.0621573 | 2.4758541 | 63 | 2 | 2003–2007 | 0.47 | M-v | 4 | MPC | 128969 | 2007 TX <sub>66</sub> |
| 2007 TZ <sub>66</sub> | 17.2 | 0.15 | 20071007 | 311.82694 | 236.75145 | 200.13708 | 4.44808  | 0.1069893 | 2.3965161 | 44 | 1 | 52 days   | 0.48 |     |   | MPC |        | 2007 TZ <sub>66</sub> |
| 2007 TF <sub>67</sub> | 16.1 | 0.15 | 20071027 | 343.24473 | 191.95837 | 229.55343 | 9.28528  | 0.2354997 | 2.7170071 | 83 | 4 | 1998–2007 | 0.52 | M-v | 1 | MPC | 128389 | 2007 TF <sub>67</sub> |
| 2007 TO <sub>67</sub> | 16.5 | 0.15 | 20071027 | 335.48964 | 32.16593  | 40.72695  | 9.63951  | 0.2494893 | 2.4002269 | 97 | 2 | 2001–2007 | 0.44 | M-v | 4 | MPC | 128969 | 2007 TO <sub>67</sub> |
| 2007 TC <sub>68</sub> | 17.5 | 0.15 | 20071027 | 34.58642  | 272.13181 | 67.77734  | 9.23345  | 0.2543272 | 2.2372271 | 81 | 3 | 2003–2007 | 0.67 | M-v | 2 | MPC | 128390 | 2007 TC <sub>68</sub> |
| 2007 TH <sub>68</sub> | 16.3 | 0.15 | 20071027 | 7.16292   | 49.79691  | 310.39266 | 9.38148  | 0.2329557 | 3.1545296 | 35 | 1 | 51 days   | 0.41 |     |   | MPC |        | 2007 TH <sub>68</sub> |
| 2007 TJ <sub>68</sub> | 15.5 | 0.15 | 20071027 | 355.36412 | 41.76007  | 17.71197  | 17.35168 | 0.2337072 | 2.7532848 | 32 | 3 | 2002–2007 | 0.41 | M-v | 2 | MPC | 128390 | 2007 TJ <sub>68</sub> |
| 2007 TV <sub>68</sub> | 23.0 | 0.15 | 20071027 | 2.35907   | 337.87062 | 46.93166  | 1.78336  | 0.5692154 | 2.6071299 | 73 | 1 | 38 days   | 0.45 | M-v | 5 | MPC | 128969 | 2007 TV <sub>68</sub> |
| 2007 TD <sub>69</sub> | 16.1 | 0.15 | 20071027 | 55.80959  | 115.73701 | 201.71069 | 12.48193 | 0.0857356 | 3.2209578 | 45 | 3 | 2001–2007 | 0.30 | M-v | 1 | MPC | 128391 | 2007 TD <sub>69</sub> |
| 2007 TG <sub>69</sub> | 16.4 | 0.15 | 20071027 | 27.67058  | 149.83190 | 223.30657 | 1.78741  | 0.0399909 | 3.0549419 | 26 | 1 | 38 days   | 0.36 |     |   | MPC |        | 2007 TG <sub>69</sub> |
| 2007 TH <sub>69</sub> | 16.8 | 0.15 | 20071027 | 21.71131  | 317.28717 | 53.17088  | 4.21426  | 0.1017899 | 2.7784193 | 42 | 1 | 56 days   | 0.51 |     |   | MPC |        | 2007 TH <sub>69</sub> |
| 2007 TK <sub>69</sub> | 16.9 | 0.15 | 20071027 | 338.18422 | 36.98273  | 38.25119  | 8.16904  | 0.2126845 | 2.7768297 | 51 | 1 | 64 days   | 0.44 | M-v | 4 | MPC | 128969 | 2007 TK <sub>69</sub> |
| 2007 TO <sub>69</sub> | 18.5 | 0.15 | 20071027 | 6.52094   | 25.55082  | 351.89782 | 2.59694  | 0.2126175 | 2.4289010 | 42 | 1 | 60 days   | 0.48 | M-v | 4 | MPC |        | 2007 TO <sub>69</sub> |
| 2007 TP <sub>69</sub> | 17.6 | 0.15 | 20071027 | 13.24109  | 148.54360 | 217.86741 | 4.30177  | 0.1923075 | 2.2482705 | 97 | 4 | 1997–2007 | 0.46 | M-v | 1 | MPC | 128969 | 2007 TP <sub>69</sub> |
| 2007 TY <sub>69</sub> | 18.2 | 0.15 | 20071007 | 28.45011  | 124.91596 | 203.68916 | 2.85865  | 0.2191183 | 2.2671566 | 30 | 1 | 46 days   | 0.59 |     |   | MPC |        | 2007 TY <sub>69</sub> |
| 2007 TD <sub>70</sub> | 17.3 | 0.15 | 20071007 | 5.50040   | 38.57624  | 331.67907 | 1.19013  | 0.1787279 | 2.6474403 | 37 | 1 | 54 days   | 0.52 |     |   | MPC |        | 2007 TD <sub>70</sub> |
| 2007 TG <sub>70</sub> | 16.8 | 0.15 | 20071027 | 347.41766 | 349.48802 | 53.84007  | 4.67376  | 0.0480850 | 2.3963177 | 46 | 2 | 1996–2007 | 0.39 | M-v | 4 | MPC | 128392 | 2007 TG <sub>70</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |       |                       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-------|-----------------------|------------------------------|
| 2007 TL <sub>70</sub> | 17.7 | 0.15 | 20071007 | 30.29657  | 148.08491 | 199.17445 | 4.70632  | 0.2372910 | 2.5809313 | 38 | 1 | 46 days   | 0.30 |     | MPC   | 2007 TL <sub>70</sub> |                              |
| 2007 TQ <sub>70</sub> | 15.9 | 0.15 | 20071027 | 1.30509   | 327.54338 | 70.61936  | 14.71573 | 0.1673006 | 3.1318234 | 50 | 1 | 39 days   | 0.76 |     | MPC   | 2007 TQ <sub>70</sub> |                              |
| 2007 TT <sub>70</sub> | 17.2 | 0.15 | 20071027 | 12.25149  | 151.81681 | 201.74341 | 13.21714 | 0.2852971 | 2.6143527 | 49 | 1 | 70 days   | 0.54 | M-v | 4     | MPC                   | 2007 TT <sub>70</sub>        |
| 2007 TV <sub>70</sub> | 15.4 | 0.15 | 20071027 | 52.36200  | 322.73687 | 7.37655   | 11.69757 | 0.1379251 | 2.6037993 | 74 | 4 | 1990–2007 | 0.49 | M-v | 2     | MPC                   | 128392 2007 TV <sub>70</sub> |
| 2007 TY <sub>70</sub> | 16.9 | 0.15 | 20071027 | 351.60709 | 344.83198 | 54.62482  | 5.33437  | 0.1505833 | 2.4465841 | 95 | 2 | 2003–2007 | 0.57 | M-v | 4     | MPC                   | 128969 2007 TY <sub>70</sub> |
| 2007 TZ <sub>70</sub> | 15.6 | 0.15 | 20071027 | 354.02578 | 340.75068 | 64.55553  | 14.94432 | 0.1318001 | 3.1525027 | 74 | 3 | 1996–2007 | 0.68 | M-v | 3     | MPC                   | 128393 2007 TZ <sub>70</sub> |
| 2007 TB <sub>71</sub> | 16.4 | 0.15 | 20071027 | 347.61322 | 187.19099 | 239.99950 | 8.49787  | 0.0777065 | 3.0760157 | 40 | 1 | 64 days   | 0.46 |     | MPC   | 2007 TB <sub>71</sub> |                              |
| 2007 TC <sub>71</sub> | 15.9 | 0.15 | 20071027 | 1.40035   | 51.94515  | 341.22943 | 12.33807 | 0.1734318 | 2.6612933 | 37 | 2 | 2003–2007 | 0.63 | M-v | 4     | MPC                   | 128393 2007 TC <sub>71</sub> |
| 2007 TD <sub>71</sub> | 18.5 | 0.15 | 20071027 | 79.10903  | 220.72103 | 49.61574  | 49.75881 | 0.2795740 | 1.2863814 | 39 | 1 | 61 days   | 0.39 | M-v | 5     | MPC                   | 128970 2007 TD <sub>71</sub> |
| 2007 TO <sub>71</sub> | 16.6 | 0.15 | 20071027 | 2.61236   | 271.11042 | 125.18469 | 6.78433  | 0.1003627 | 2.3209993 | 68 | 3 | 2005–2007 | 0.49 | M-v | 3     | MPC                   | 128393 2007 TO <sub>71</sub> |
| 2007 TP <sub>71</sub> | 18.3 | 0.15 | 20070917 | 96.63271  | 73.62558  | 202.45403 | 20.23858 | 0.1197370 | 1.8308973 | 20 | 1 | 37 days   | 0.37 |     | MPC   | 2007 TP <sub>71</sub> |                              |
| 2007 TA <sub>72</sub> | 16.6 | 0.15 | 20071027 | 117.84067 | 248.78032 | 29.45535  | 4.79603  | 0.0863997 | 2.7534245 | 49 | 3 | 2002–2007 | 0.32 | M-v | 2     | MPC                   | 128394 2007 TA <sub>72</sub> |
| 2007 TB <sub>72</sub> | 17.4 | 0.15 | 20071027 | 336.86642 | 40.50893  | 32.41452  | 7.59806  | 0.1450523 | 2.2957652 | 58 | 4 | 2000–2007 | 0.55 | M-v | 2     | MPC                   | 128394 2007 TB <sub>72</sub> |
| 2007 TD <sub>72</sub> | 17.9 | 0.15 | 20071027 | 49.37536  | 329.85304 | 3.60103   | 1.21109  | 0.1947174 | 2.4404618 | 30 | 1 | 69 days   | 0.38 | M-v | 5 D   | MPC                   | 2007 TD <sub>72</sub>        |
| 2007 TF <sub>72</sub> | 17.4 | 0.15 | 20071007 | 32.30015  | 78.77562  | 249.72001 | 2.63414  | 0.0982412 | 2.7825881 | 22 | 1 | 51 days   | 0.40 |     | MPC   | 2007 TF <sub>72</sub> |                              |
| 2007 TH <sub>72</sub> | 24.2 | 0.15 | 20071027 | 20.75478  | 288.26400 | 15.82998  | 2.15717  | 0.6417545 | 2.0380337 | 41 | 1 | 18 days   | 0.39 | M-v | 7     | MPC                   | 128970 2007 TH <sub>72</sub> |
| 2007 TU <sub>72</sub> | 18.4 | 0.15 | 20071007 | 309.40756 | 227.62265 | 210.93951 | 20.47789 | 0.0782428 | 1.8427246 | 32 | 1 | 26 days   | 0.49 |     | MPC   | 2007 TU <sub>72</sub> |                              |
| 2007 TY <sub>72</sub> | 17.8 | 0.15 | 20071027 | 344.72834 | 219.21114 | 234.42358 | 7.59231  | 0.4293513 | 2.3436992 | 39 | 1 | 63 days   | 0.46 | M-v | 4     | MPC                   | 2007 TY <sub>72</sub>        |
| 2007 TZ <sub>72</sub> | 16.7 | 0.15 | 20071027 | 357.06997 | 131.20019 | 260.57964 | 13.08263 | 0.2810308 | 3.1705949 | 56 | 1 | 50 days   | 0.44 |     | MPC   | 2007 TZ <sub>72</sub> |                              |
| 2007 TA <sub>73</sub> | 17.9 | 0.15 | 20071007 | 23.14701  | 123.86644 | 217.72050 | 1.44113  | 0.2130378 | 2.6191959 | 16 | 1 | 17 days   | 0.21 |     | MPC   | 2007 TA <sub>73</sub> |                              |
| 2007 TC <sub>73</sub> | 16.4 | 0.15 | 20071007 | 205.13633 | 159.25279 | 17.23134  | 7.01365  | 0.0732078 | 2.8022153 | 19 | 1 | 18 days   | 0.29 |     | MPC   | 2007 TC <sub>73</sub> |                              |
| 2007 TD <sub>73</sub> | 17.4 | 0.15 | 20071027 | 4.01165   | 17.83990  | 0.72625   | 1.26462  | 0.0862658 | 2.6385458 | 33 | 1 | 65 days   | 0.46 | M-v | 4     | MPC                   | 2007 TD <sub>73</sub>        |
| 2007 TH <sub>73</sub> | 17.0 | 0.15 | 20071027 | 9.29635   | 302.92098 | 78.91483  | 1.56361  | 0.0827389 | 2.7909711 | 31 | 1 | 60 days   | 0.26 | M-v | 4 D   | MPC                   | 2007 TH <sub>73</sub>        |
| 2007 TU <sub>73</sub> | 14.6 | 0.15 | 20071027 | 342.47177 | 153.68561 | 260.12655 | 5.34498  | 0.2722010 | 3.9564072 | 87 | 3 | 2000–2007 | 0.52 | M-v | 3     | MPC                   | 128395 2007 TU <sub>73</sub> |
| 2007 TW <sub>73</sub> | 18.1 | 0.15 | 20071027 | 331.53831 | 318.51633 | 112.85858 | 2.43067  | 0.1783779 | 2.4137578 | 26 | 1 | 34 days   | 0.49 |     | MPC   | 2007 TW <sub>73</sub> |                              |
| 2007 TF <sub>74</sub> | 15.8 | 0.15 | 20071027 | 337.36225 | 58.68281  | 29.81376  | 13.67777 | 0.2418132 | 2.6284222 | 63 | 2 | 2004–2007 | 0.47 | M-v | 3     | MPC                   | 128396 2007 TF <sub>74</sub> |
| 2007 TG <sub>74</sub> | 15.2 | 0.15 | 20071027 | 63.32087  | 120.07926 | 209.03189 | 14.25359 | 0.1572100 | 2.6045272 | 51 | 3 | 1998–2007 | 0.42 | M-v | 3     | MPC                   | 128396 2007 TG <sub>74</sub> |
| 2007 TH <sub>74</sub> | 16.6 | 0.15 | 20071027 | 357.51258 | 11.09680  | 40.68357  | 15.54960 | 0.2652231 | 2.6111588 | 57 | 1 | 45 days   | 0.50 |     | MPC   | 2007 TH <sub>74</sub> |                              |
| 2007 TJ <sub>74</sub> | 15.0 | 0.15 | 20071027 | 50.40961  | 105.07928 | 239.15230 | 17.98606 | 0.1642266 | 3.1496220 | 46 | 2 | 2001–2007 | 0.44 | M-v | 3     | MPC                   | 128396 2007 TJ <sub>74</sub> |
| 2007 TM <sub>74</sub> | 16.2 | 0.15 | 20071027 | 357.99983 | 269.18140 | 134.83051 | 7.47936  | 0.1932764 | 2.6162727 | 48 | 2 | 2000–2007 | 0.61 | M-v | 3     | MPC                   | 128397 2007 TM <sub>74</sub> |
| 2007 TO <sub>74</sub> | 19.7 | 0.15 | 20071027 | 39.00238  | 249.10942 | 49.10694  | 6.84543  | 0.4774180 | 2.1610775 | 40 | 1 | 34 days   | 0.49 | M-v | 6     | MPC                   | 128970 2007 TO <sub>74</sub> |
| 2007 TP <sub>74</sub> | 17.5 | 0.15 | 20071027 | 66.42437  | 101.81389 | 218.10518 | 2.24062  | 0.1281165 | 2.1656042 | 64 | 2 | 2006–2007 | 0.45 | M-v | 4     | MPC                   | 128970 2007 TP <sub>74</sub> |
| 2007 TQ <sub>74</sub> | 18.3 | 0.15 | 20071027 | 4.87467   | 154.98707 | 224.37551 | 4.46636  | 0.1701835 | 2.2742590 | 42 | 1 | 60 days   | 0.35 | M-v | 4     | MPC                   | 2007 TQ <sub>74</sub>        |
| 2007 TW <sub>74</sub> | 17.4 | 0.15 | 20071027 | 325.98901 | 213.31754 | 218.85894 | 7.20128  | 0.1057149 | 2.2509859 | 73 | 1 | 59 days   | 0.66 |     | MPC   | 2007 TW <sub>74</sub> |                              |
| 2007 TZ <sub>74</sub> | 17.4 | 0.15 | 20071027 | 37.90125  | 120.06695 | 214.39534 | 6.58813  | 0.2075272 | 2.5929668 | 42 | 3 | 2003–2007 | 0.47 | M-v | 3     | MPC                   | 128397 2007 TZ <sub>74</sub> |
| 2007 TD <sub>75</sub> | 16.7 | 0.15 | 20071027 | 32.45638  | 16.00710  | 329.02260 | 8.90300  | 0.2362000 | 2.3466341 | 44 | 1 | 84 days   | 0.51 | M-v | 4     | MPC                   | 128970 2007 TD <sub>75</sub> |
| 2007 TM <sub>75</sub> | 18.5 | 0.15 | 20070917 | 9.64515   | 246.10583 | 108.09361 | 1.98966  | 0.1694774 | 2.1667305 | 30 | 1 | 27 days   | 0.39 |     | D MPC | 2007 TM <sub>75</sub> |                              |
| 2007 TN <sub>75</sub> | 17.4 | 0.15 | 20071007 | 19.10444  | 318.83173 | 28.08177  | 13.98662 | 0.2199808 | 2.6948445 | 27 | 1 | 43 days   | 0.54 |     | MPC   | 2007 TN <sub>75</sub> |                              |
| 2007 TP <sub>75</sub> | 18.1 | 0.15 | 20071007 | 10.52014  | 334.74275 | 21.47156  | 14.44134 | 0.2664392 | 2.6284937 | 28 | 1 | 57 days   | 0.54 |     | MPC   | 2007 TP <sub>75</sub> |                              |
| 2007 TS <sub>75</sub> | 18.3 | 0.15 | 20071007 | 39.65119  | 324.63646 | 351.24110 | 0.90341  | 0.1805805 | 2.4462612 | 20 | 1 | 50 days   | 0.38 |     | MPC   | 2007 TS <sub>75</sub> |                              |
| 2007 TT <sub>75</sub> | 16.3 | 0.15 | 20071007 | 313.62021 | 60.73392  | 10.99533  | 12.89790 | 0.1531079 | 3.0897014 | 20 | 1 | 54 days   | 0.35 |     | MPC   | 2007 TT <sub>75</sub> |                              |
| 2007 TY <sub>75</sub> | 17.6 | 0.15 | 20071027 | 342.39010 | 37.84353  | 20.18203  | 3.39650  | 0.1154630 | 2.7071404 | 17 | 1 | 60 days   | 0.31 | M-v | 4 D   | MPC                   | 2007 TY <sub>75</sub>        |
| 2007 TD <sub>76</sub> | 18.8 | 0.15 | 20070917 | 3.33652   | 341.11674 | 1.81285   | 5.37084  | 0.2042391 | 2.1973045 | 27 | 1 | 48 days   | 0.26 |     | MPC   | 2007 TD <sub>76</sub> |                              |
| 2007 TQ <sub>76</sub> | 18.1 | 0.15 | 20071007 | 310.68012 | 278.61893 | 140.66370 | 2.47608  | 0.1400950 | 2.2266759 | 25 | 1 | 38 days   | 0.41 |     | D MPC | 2007 TQ <sub>76</sub> |                              |
| 2007 TS <sub>76</sub> | 16.4 | 0.15 | 20071027 | 346.62894 | 247.36901 | 125.64158 | 2.56867  | 0.0937484 | 3.0882502 | 51 | 3 | 2004–2007 | 0.39 | M-v | 3     | MPC                   | 128398 2007 TS <sub>76</sub> |
| 2007 TF <sub>77</sub> | 18.0 | 0.15 | 20071027 | 356.90344 | 171.51810 | 226.80601 | 5.43941  | 0.1710593 | 2.3053397 | 44 | 1 | 61 days   | 0.54 | M-v | 4     | MPC                   | 2007 TF <sub>77</sub>        |
| 2007 TJ <sub>77</sub> | 16.2 | 0.15 | 20071027 | 1.56688   | 168.07617 | 223.92883 | 8.48863  | 0.2228499 | 3.0704265 | 37 | 1 | 61 days   | 0.45 | M-v | 4     | MPC                   | 2007 TJ <sub>77</sub>        |
| 2007 TT <sub>77</sub> | 16.7 | 0.15 | 20071027 | 347.01874 | 177.93404 | 235.99146 | 4.88156  | 0.1765599 | 2.3424212 | 79 | 2 | 2000–2007 | 0.47 | M-v | 3     | MPC                   | 128971 2007 TT <sub>77</sub> |
| 2007 TY <sub>77</sub> | 15.7 | 0.15 | 20071027 | 339.14284 | 209.00138 | 223.81810 | 9.33663  | 0.2632692 | 3.0710358 | 59 | 3 | 1996–2007 | 0.49 | M-v | 2     | MPC                   | 128398 2007 TY <sub>77</sub> |
| 2007 TE <sub>78</sub> | 18.2 | 0.15 | 20071007 | 21.04169  | 13.48080  | 343.34445 | 2.16400  | 0.1951713 | 2.2963495 | 21 | 1 | 57 days   | 0.21 |     | MPC   | 2007 TE <sub>78</sub> |                              |
| 2007 TG <sub>78</sub> | 18.8 | 0.15 | 20071007 | 14.61453  | 138.10586 | 221.18212 | 5.52428  | 0.2790353 | 2.1971207 | 54 | 1 | 53 days   | 0.36 |     | MPC   | 2007 TG <sub>78</sub> |                              |
| 2007 TK <sub>78</sub> | 17.5 | 0.15 | 20071007 | 340.81524 | 179.93121 | 235.19203 | 4.36692  | 0.1828873 | 2.6966430 | 15 | 1 | 16 days   | 0.35 |     | MPC   | 2007 TK <sub>78</sub> |                              |
| 2007 TM <sub>78</sub> | 17.7 | 0.15 | 20071027 | 5.04966   | 163.63034 | 222.40700 | 4.56403  | 0.1792575 | 2.2357589 | 80 | 4 | 1997–2007 | 0.54 | M-v | 1     | MPC                   | 128398 2007 TM <sub>78</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |       |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-------|------------------------------|
| 2007 TU <sub>78</sub> | 18.9 | 0.15 | 20071007 | 11.09133  | 10.53770  | 357.57732 | 2.24043  | 0.2143213 | 2.3652962 | 25 | 1 | 16 days   | 0.35 |       | MPC   | 2007 TU <sub>78</sub>        |
| 2007 TL <sub>79</sub> | 16.3 | 0.15 | 20071007 | 343.69643 | 73.59089  | 335.57405 | 1.74726  | 0.0439477 | 2.6849956 | 24 | 1 | 41 days   | 0.48 |       | MPC   | 2007 TL <sub>79</sub>        |
| 2007 TS <sub>79</sub> | 16.3 | 0.15 | 20071007 | 333.97543 | 8.08212   | 56.62184  | 2.80545  | 0.2029865 | 3.2968663 | 20 | 1 | 30 days   | 0.70 |       | MPC   | 2007 TS <sub>79</sub>        |
| 2007 TU <sub>79</sub> | 17.7 | 0.15 | 20071027 | 12.87300  | 195.93597 | 185.64214 | 2.80659  | 0.2221172 | 2.3557562 | 42 | 1 | 59 days   | 0.60 |       | MPC   | 2007 TU <sub>79</sub>        |
| 2007 TV <sub>79</sub> | 17.5 | 0.15 | 20071027 | 3.27650   | 54.70160  | 340.15413 | 4.24412  | 0.1592824 | 2.1821884 | 54 | 3 | 2002–2007 | 0.44 | M-v 3 | MPC   | 128971 2007 TV <sub>79</sub> |
| 2007 TG <sub>80</sub> | 17.0 | 0.15 | 20071027 | 336.18264 | 320.71835 | 99.78929  | 2.41276  | 0.1635834 | 2.3804590 | 61 | 1 | 42 days   | 0.71 |       | MPC   | 2007 TG <sub>80</sub>        |
| 2007 TP <sub>80</sub> | 18.1 | 0.15 | 20071007 | 336.17090 | 248.89245 | 177.16511 | 6.47631  | 0.3129254 | 2.6029155 | 27 | 1 | 56 days   | 0.61 |       | MPC   | 2007 TP <sub>80</sub>        |
| 2007 TT <sub>80</sub> | 16.4 | 0.15 | 20070917 | 256.08815 | 302.40269 | 186.40404 | 1.69587  | 0.0491753 | 2.8910036 | 21 | 1 | 40 days   | 0.24 |       | D MPC | 2007 TT <sub>80</sub>        |
| 2007 TC <sub>81</sub> | 16.9 | 0.15 | 20070917 | 332.91294 | 244.68133 | 169.38389 | 1.01256  | 0.1425603 | 3.0310116 | 18 | 1 | 40 days   | 0.27 |       | MPC   | 2007 TC <sub>81</sub>        |
| 2007 TG <sub>81</sub> | 17.5 | 0.15 | 20071007 | 8.09852   | 198.52230 | 172.86673 | 0.94593  | 0.1776159 | 3.1778382 | 23 | 1 | 55 days   | 0.32 |       | MPC   | 2007 TG <sub>81</sub>        |
| 2007 TH <sub>81</sub> | 17.9 | 0.15 | 20071007 | 43.88639  | 285.77870 | 29.29770  | 4.62908  | 0.2256921 | 2.2178788 | 29 | 1 | 53 days   | 0.45 |       | MPC   | 2007 TH <sub>81</sub>        |
| 2007 TJ <sub>81</sub> | 17.7 | 0.15 | 20071027 | 359.39520 | 200.84852 | 189.29953 | 2.14276  | 0.2125843 | 2.3862928 | 56 | 1 | 70 days   | 0.55 | M-v 4 | MPC   | 2007 TJ <sub>81</sub>        |
| 2007 TO <sub>81</sub> | 16.9 | 0.15 | 20071027 | 0.36334   | 353.72717 | 42.07598  | 15.05911 | 0.2529138 | 2.6550820 | 62 | 1 | 68 days   | 0.55 | M-v 4 | MPC   | 2007 TO <sub>81</sub>        |
| 2007 TR <sub>81</sub> | 17.1 | 0.15 | 20071027 | 359.80886 | 209.20791 | 186.80585 | 9.00202  | 0.3229601 | 2.6774338 | 36 | 1 | 64 days   | 0.55 | M-v 4 | MPC   | 2007 TR <sub>81</sub>        |
| 2007 TT <sub>81</sub> | 17.1 | 0.15 | 20071027 | 24.10700  | 281.65574 | 68.95070  | 4.75174  | 0.3040456 | 2.5986428 | 61 | 2 | 2003–2007 | 0.48 | M-v 3 | MPC   | 128401 2007 TT <sub>81</sub> |
| 2007 TV <sub>81</sub> | 16.6 | 0.15 | 20071027 | 349.48706 | 211.22783 | 203.61153 | 13.15582 | 0.1950595 | 2.7273124 | 44 | 1 | 64 days   | 0.53 | M-v 4 | MPC   | 2007 TV <sub>81</sub>        |
| 2007 TW <sub>81</sub> | 16.5 | 0.15 | 20071007 | 187.33633 | 61.11444  | 151.36869 | 2.19043  | 0.0229776 | 2.6387355 | 29 | 1 | 38 days   | 0.41 |       | MPC   | 2007 TW <sub>81</sub>        |
| 2007 TB <sub>82</sub> | 17.3 | 0.15 | 20070917 | 323.23008 | 225.11888 | 171.63767 | 13.31325 | 0.1634430 | 2.6788016 | 23 | 1 | 39 days   | 0.27 |       | MPC   | 2007 TB <sub>82</sub>        |
| 2007 TQ <sub>82</sub> | 17.4 | 0.15 | 20071007 | 342.04388 | 38.05542  | 1.40233   | 7.79793  | 0.2460159 | 2.8108900 | 16 | 1 | 6 days    | 0.79 |       | D MPC | 2007 TQ <sub>82</sub>        |
| 2007 TU <sub>82</sub> | 17.8 | 0.15 | 20071007 | 340.78486 | 47.77000  | 4.47505   | 14.19912 | 0.2740183 | 2.6300655 | 17 | 1 | 6 days    | 0.57 |       | MPC   | 2007 TU <sub>82</sub>        |
| 2007 TW <sub>82</sub> | 15.5 | 0.15 | 20071007 | 335.27327 | 45.21173  | 11.38659  | 27.64775 | 0.1957066 | 3.1594049 | 50 | 1 | 54 days   | 0.46 |       | MPC   | 2007 TW <sub>82</sub>        |
| 2007 TC <sub>83</sub> | 16.6 | 0.15 | 20071007 | 327.10649 | 39.64503  | 15.63685  | 10.97151 | 0.1298124 | 2.8435758 | 27 | 1 | 56 days   | 0.38 |       | MPC   | 2007 TC <sub>83</sub>        |
| 2007 TG <sub>83</sub> | 17.8 | 0.15 | 20071007 | 335.44508 | 38.74241  | 15.76519  | 13.49603 | 0.2530189 | 2.6662274 | 22 | 1 | 59 days   | 0.15 |       | MPC   | 2007 TG <sub>83</sub>        |
| 2007 TB <sub>84</sub> | 18.0 | 0.15 | 20071027 | 322.27509 | 209.04976 | 230.31954 | 2.31518  | 0.0796181 | 2.1616437 | 36 | 3 | 2002–2007 | 0.46 | M-v 4 | MPC   | 128402 2007 TB <sub>84</sub> |
| 2007 TD <sub>84</sub> | 16.8 | 0.15 | 20071007 | 17.24005  | 349.49454 | 13.43346  | 7.89867  | 0.1671352 | 2.6905636 | 14 | 1 | 6 days    | 0.71 |       | MPC   | 2007 TD <sub>84</sub>        |
| 2007 TG <sub>84</sub> | 16.2 | 0.15 | 20070917 | 66.77168  | 259.64268 | 30.20409  | 6.94303  | 0.1995613 | 3.0164143 | 25 | 1 | 48 days   | 0.35 |       | D MPC | 2007 TG <sub>84</sub>        |
| 2007 TK <sub>84</sub> | 18.3 | 0.15 | 20071027 | 348.37084 | 7.39495   | 35.69655  | 3.64272  | 0.1177728 | 2.5397150 | 30 | 3 | 1999–2007 | 0.41 | M-v 3 | MPC   | 128402 2007 TK <sub>84</sub> |
| 2007 TO <sub>84</sub> | 17.1 | 0.15 | 20071027 | 349.80778 | 48.79598  | 12.16045  | 7.27631  | 0.2382747 | 2.6592075 | 37 | 1 | 55 days   | 0.52 |       | MPC   | 2007 TO <sub>84</sub>        |
| 2007 TQ <sub>84</sub> | 16.7 | 0.15 | 20071027 | 332.71787 | 14.14212  | 61.82229  | 4.83320  | 0.0808387 | 2.7768760 | 49 | 1 | 61 days   | 0.44 | M-v 5 | MPC   | 2007 TQ <sub>84</sub>        |
| 2007 TT <sub>84</sub> | 17.6 | 0.15 | 20071027 | 352.64633 | 213.90763 | 202.78784 | 13.67045 | 0.2744142 | 2.6563221 | 33 | 1 | 43 days   | 0.66 |       | MPC   | 2007 TT <sub>84</sub>        |
| 2007 TU <sub>84</sub> | 15.7 | 0.15 | 20071027 | 9.87835   | 198.65605 | 188.16807 | 6.98382  | 0.2622857 | 3.0455112 | 63 | 1 | 59 days   | 0.46 |       | MPC   | 2007 TU <sub>84</sub>        |
| 2007 TW <sub>84</sub> | 17.3 | 0.15 | 20071027 | 14.69402  | 60.70912  | 305.31408 | 8.52819  | 0.2555248 | 2.7203562 | 24 | 1 | 56 days   | 0.60 |       | MPC   | 2007 TW <sub>84</sub>        |
| 2007 TX <sub>84</sub> | 17.7 | 0.15 | 20071007 | 303.46335 | 93.79805  | 3.46176   | 19.48064 | 0.1549665 | 1.8843355 | 32 | 1 | 54 days   | 0.50 |       | MPC   | 2007 TX <sub>84</sub>        |
| 2007 TZ <sub>84</sub> | 15.5 | 0.15 | 20071027 | 209.12759 | 328.93519 | 230.73157 | 23.80745 | 0.1883239 | 2.2973656 | 65 | 4 | 1993–2007 | 0.51 | M-v 2 | MPC   | 128402 2007 TZ <sub>84</sub> |
| 2007 TA <sub>85</sub> | 17.9 | 0.15 | 20071027 | 333.08755 | 27.15913  | 51.58450  | 5.28745  | 0.2216673 | 2.5694942 | 31 | 1 | 58 days   | 0.37 |       | MPC   | 2007 TA <sub>85</sub>        |
| 2007 TG <sub>85</sub> | 16.0 | 0.15 | 20071027 | 25.61710  | 289.24233 | 70.30404  | 3.25145  | 0.1898971 | 2.6185081 | 95 | 4 | 1996–2007 | 0.40 | M-v 2 | MPC   | 128402 2007 TG <sub>85</sub> |
| 2007 TH <sub>85</sub> | 18.4 | 0.15 | 20071027 | 4.98014   | 341.00833 | 49.08539  | 5.58384  | 0.1238614 | 2.1946535 | 26 | 1 | 58 days   | 0.23 |       | MPC   | 2007 TH <sub>85</sub>        |
| 2007 TL <sub>85</sub> | 15.6 | 0.15 | 20071007 | 346.24296 | 349.80276 | 66.88098  | 4.80582  | 0.2180325 | 3.9380602 | 29 | 1 | 30 days   | 0.23 |       | MPC   | 2007 TL <sub>85</sub>        |
| 2007 TM <sub>85</sub> | 16.9 | 0.15 | 20071027 | 35.40757  | 17.85673  | 336.90698 | 5.15817  | 0.1474447 | 2.3431531 | 43 | 2 | 2003–2007 | 0.44 | M-v 4 | MPC   | 128403 2007 TM <sub>85</sub> |
| 2007 TO <sub>85</sub> | 16.2 | 0.15 | 20071027 | 37.16013  | 331.74962 | 10.54048  | 9.98527  | 0.2679135 | 2.7217266 | 58 | 1 | 83 days   | 0.56 | M-v 4 | MPC   | 2007 TO <sub>85</sub>        |
| 2007 TV <sub>85</sub> | 15.9 | 0.15 | 20071027 | 117.43560 | 212.51477 | 48.24900  | 11.23797 | 0.2278547 | 2.6408187 | 37 | 1 | 59 days   | 0.28 |       | MPC   | 2007 TV <sub>85</sub>        |
| 2007 TG <sub>86</sub> | 17.2 | 0.15 | 20071027 | 5.05116   | 350.10149 | 40.11522  | 14.88394 | 0.1776429 | 2.5650050 | 41 | 1 | 38 days   | 0.35 |       | MPC   | 2007 TG <sub>86</sub>        |
| 2007 TH <sub>86</sub> | 15.9 | 0.15 | 20071027 | 42.54875  | 313.36083 | 22.56383  | 13.67858 | 0.2710661 | 2.6482195 | 56 | 1 | 68 days   | 0.51 | M-v 4 | MPC   | 2007 TH <sub>86</sub>        |
| 2007 TO <sub>86</sub> | 15.9 | 0.15 | 20071027 | 120.26623 | 141.00347 | 129.79606 | 3.05652  | 0.0832734 | 2.6062211 | 50 | 4 | 2002–2007 | 0.32 | M-v 0 | MPC   | 128403 2007 TO <sub>86</sub> |
| 2007 TX <sub>86</sub> | 17.3 | 0.15 | 20071007 | 341.72841 | 241.33231 | 177.09188 | 5.01977  | 0.1525249 | 2.7770207 | 21 | 1 | 26 days   | 0.27 |       | MPC   | 2007 TX <sub>86</sub>        |
| 2007 TY <sub>86</sub> | 16.2 | 0.15 | 20071007 | 300.51605 | 263.66711 | 199.90244 | 11.10457 | 0.0693036 | 3.2142111 | 26 | 1 | 26 days   | 0.31 |       | MPC   | 2007 TY <sub>86</sub>        |
| 2007 TP <sub>87</sub> | 17.0 | 0.15 | 20071027 | 307.06299 | 46.60078  | 55.16770  | 7.70070  | 0.0996705 | 2.3411813 | 37 | 1 | 59 days   | 0.35 |       | MPC   | 2007 TP <sub>87</sub>        |
| 2007 TC <sub>88</sub> | 15.9 | 0.15 | 20071007 | 41.88836  | 243.00315 | 107.25546 | 3.35503  | 0.0593676 | 3.0324713 | 11 | 1 | 34 days   | 0.39 |       | MPC   | 2007 TC <sub>88</sub>        |
| 2007 TH <sub>88</sub> | 17.5 | 0.15 | 20071027 | 47.36572  | 284.59068 | 52.84195  | 9.14265  | 0.1501303 | 2.3777158 | 26 | 1 | 59 days   | 0.41 |       | MPC   | 2007 TH <sub>88</sub>        |
| 2007 TK <sub>88</sub> | 17.6 | 0.15 | 20071027 | 19.83137  | 313.45741 | 53.46029  | 7.09958  | 0.2278248 | 2.3453256 | 41 | 1 | 58 days   | 0.42 |       | MPC   | 2007 TK <sub>88</sub>        |
| 2007 TO <sub>88</sub> | 17.8 | 0.15 | 20071027 | 16.02730  | 332.81275 | 36.29034  | 7.56741  | 0.3520128 | 2.6354386 | 50 | 1 | 41 days   | 0.46 |       | MPC   | 2007 TO <sub>88</sub>        |
| 2007 TP <sub>88</sub> | 16.4 | 0.15 | 20071027 | 16.11037  | 323.14299 | 60.29571  | 1.03886  | 0.1832650 | 2.9932153 | 54 | 1 | 86 days   | 0.36 | M-v 3 | MPC   | 2007 TP <sub>88</sub>        |
| 2007 TQ <sub>88</sub> | 17.4 | 0.15 | 20071027 | 14.37301  | 340.40214 | 44.03923  | 6.55694  | 0.1699183 | 2.3246408 | 41 | 1 | 82 days   | 0.43 | M-v 4 | MPC   | 2007 TQ <sub>88</sub>        |



|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-----|------------------------------|
| 2007 TT <sub>88</sub> | 15.6 | 0.15 | 20071027 | 346.22082 | 180.38387 | 225.74115 | 28.64434 | 0.1602719 | 3.1660197 | 40 | 1 | 75 days   | 0.62 | M-v | 4   | MPC | 2007 TT <sub>88</sub>        |
| 2007 TV <sub>88</sub> | 15.7 | 0.15 | 20071027 | 50.82427  | 280.67518 | 46.70736  | 14.17837 | 0.1928250 | 3.1623779 | 58 | 1 | 59 days   | 0.48 |     |     | MPC | 2007 TV <sub>88</sub>        |
| 2007 TQ <sub>89</sub> | 17.1 | 0.15 | 20071007 | 301.38534 | 11.16186  | 96.18254  | 4.11430  | 0.1430122 | 2.4602752 | 34 | 1 | 35 days   | 0.44 |     |     | MPC | 2007 TQ <sub>89</sub>        |
| 2007 TR <sub>89</sub> | 15.6 | 0.15 | 20071027 | 325.56926 | 24.18485  | 57.29518  | 10.97437 | 0.0923114 | 3.1923024 | 25 | 1 | 37 days   | 0.36 |     |     | MPC | 2007 TR <sub>89</sub>        |
| 2007 TA <sub>90</sub> | 15.6 | 0.15 | 20071007 | 344.55747 | 341.36608 | 71.66905  | 7.12971  | 0.0556807 | 2.8691948 | 22 | 1 | 30 days   | 0.64 |     |     | MPC | 2007 TA <sub>90</sub>        |
| 2007 TH <sub>90</sub> | 18.2 | 0.15 | 20071007 | 353.55655 | 230.83827 | 168.24275 | 3.82546  | 0.2013785 | 2.3606052 | 23 | 1 | 36 days   | 0.42 |     |     | MPC | 2007 TH <sub>90</sub>        |
| 2007 TJ <sub>90</sub> | 17.2 | 0.15 | 20071007 | 314.78510 | 283.30528 | 163.97566 | 4.42366  | 0.1186411 | 2.3567339 | 22 | 1 | 35 days   | 0.59 |     |     | MPC | 2007 TJ <sub>90</sub>        |
| 2007 TR <sub>90</sub> | 18.7 | 0.15 | 20071027 | 10.41914  | 329.10498 | 47.29088  | 6.91604  | 0.3040932 | 2.5529793 | 25 | 1 | 40 days   | 0.84 |     |     | MPC | 2007 TR <sub>90</sub>        |
| 2007 TF <sub>91</sub> | 16.1 | 0.15 | 20071007 | 349.91057 | 229.50156 | 178.25884 | 5.90024  | 0.1730778 | 3.0934966 | 19 | 1 | 36 days   | 0.44 |     |     | MPC | 2007 TF <sub>91</sub>        |
| 2007 TH <sub>91</sub> | 15.4 | 0.15 | 20071027 | 343.34449 | 45.24715  | 24.85872  | 17.74540 | 0.2068938 | 3.0394163 | 71 | 2 | 2004–2007 | 0.40 | M-v | 2   | MPC | 128404 2007 TH <sub>91</sub> |
| 2007 TK <sub>91</sub> | 16.8 | 0.15 | 20071027 | 354.19248 | 167.27776 | 215.47261 | 6.02357  | 0.2061024 | 2.2889605 | 57 | 3 | 2000–2007 | 0.53 | M-v | 3   | MPC | 128973 2007 TK <sub>91</sub> |
| 2007 TO <sub>91</sub> | 17.2 | 0.15 | 20071027 | 341.74781 | 248.34324 | 165.61619 | 1.09790  | 0.2424899 | 3.0483226 | 26 | 1 | 86 days   | 0.45 | M-v | 4 D | MPC | 2007 TO <sub>91</sub>        |
| 2007 TR <sub>91</sub> | 16.1 | 0.15 | 20071007 | 4.66276   | 184.08885 | 188.34264 | 3.84453  | 0.1251398 | 3.1280926 | 36 | 1 | 55 days   | 0.61 |     |     | MPC | 2007 TR <sub>91</sub>        |
| 2007 TU <sub>91</sub> | 17.5 | 0.15 | 20071027 | 347.46809 | 12.79211  | 37.27458  | 9.87704  | 0.2030902 | 2.7384939 | 32 | 1 | 45 days   | 0.45 |     |     | MPC | 2007 TU <sub>91</sub>        |
| 2007 TX <sub>91</sub> | 16.8 | 0.15 | 20071027 | 13.30960  | 266.00759 | 92.71664  | 1.14027  | 0.2800614 | 3.2131475 | 39 | 1 | 85 days   | 0.70 | M-v | 4   | MPC | 2007 TX <sub>91</sub>        |
| 2007 TZ <sub>91</sub> | 17.5 | 0.15 | 20070917 | 325.01600 | 338.58430 | 79.95582  | 4.02040  | 0.1938715 | 2.3902535 | 36 | 1 | 51 days   | 0.61 |     |     | MPC | 2007 TZ <sub>91</sub>        |
| 2007 TB <sub>92</sub> | 16.4 | 0.15 | 20071027 | 345.84935 | 306.59503 | 107.83525 | 5.77790  | 0.2270688 | 2.4097570 | 58 | 3 | 2001–2007 | 0.47 | M-v | 2   | MPC | 128973 2007 TB <sub>92</sub> |
| 2007 TE <sub>92</sub> | 15.7 | 0.15 | 20071027 | 34.55846  | 292.48575 | 52.86490  | 15.44758 | 0.1497874 | 2.7469113 | 51 | 1 | 45 days   | 0.53 |     |     | MPC | 2007 TE <sub>92</sub>        |
| 2007 TQ <sub>92</sub> | 17.6 | 0.15 | 20071027 | 21.60528  | 307.18017 | 47.03212  | 5.28083  | 0.2009192 | 2.2235654 | 52 | 3 | 2004–2007 | 0.43 | M-v | 2   | MPC | 128404 2007 TQ <sub>92</sub> |
| 2007 TR <sub>92</sub> | 16.0 | 0.15 | 20071027 | 22.44976  | 247.09572 | 107.54043 | 5.73442  | 0.2783203 | 2.6593339 | 78 | 4 | 1998–2007 | 0.50 | M-v | 1   | MPC | 128404 2007 TR <sub>92</sub> |
| 2007 TZ <sub>92</sub> | 16.0 | 0.15 | 20071027 | 329.49704 | 259.65784 | 181.77094 | 6.66256  | 0.2199068 | 2.6424666 | 85 | 4 | 2000–2007 | 0.50 | M-v | 1   | MPC | 128404 2007 TZ <sub>92</sub> |
| 2007 TD <sub>93</sub> | 17.2 | 0.15 | 20071027 | 3.43413   | 189.06609 | 203.32555 | 13.98512 | 0.2518446 | 2.6253070 | 51 | 1 | 57 days   | 0.67 |     |     | MPC | 2007 TD <sub>93</sub>        |
| 2007 TM <sub>93</sub> | 18.0 | 0.15 | 20071007 | 3.34746   | 212.92190 | 171.86745 | 2.58389  | 0.2465961 | 2.5851798 | 39 | 1 | 56 days   | 0.55 |     |     | MPC | 2007 TM <sub>93</sub>        |
| 2007 TN <sub>93</sub> | 17.5 | 0.15 | 20071027 | 339.63466 | 3.61048   | 58.90002  | 4.28299  | 0.0911664 | 2.1926954 | 51 | 2 | 2004–2007 | 0.51 | M-v | 4   | MPC | 128405 2007 TN <sub>93</sub> |
| 2007 TO <sub>93</sub> | 16.3 | 0.15 | 20071007 | 22.86172  | 159.39919 | 204.16267 | 12.55884 | 0.1553658 | 2.9927501 | 35 | 1 | 52 days   | 0.25 |     |     | MPC | 2007 TO <sub>93</sub>        |
| 2007 TP <sub>93</sub> | 17.6 | 0.15 | 20071027 | 343.61073 | 341.63409 | 80.02170  | 2.52543  | 0.1648332 | 2.4407320 | 41 | 1 | 60 days   | 0.47 | M-v | 4   | MPC | 2007 TP <sub>93</sub>        |
| 2007 TQ <sub>93</sub> | 15.7 | 0.15 | 20071007 | 25.46714  | 153.75656 | 210.59506 | 22.09687 | 0.1143516 | 3.1436608 | 32 | 1 | 56 days   | 0.36 |     |     | MPC | 2007 TQ <sub>93</sub>        |
| 2007 TT <sub>93</sub> | 18.2 | 0.15 | 20071007 | 357.02324 | 259.36343 | 136.21250 | 1.88042  | 0.2318711 | 2.5384376 | 27 | 1 | 56 days   | 0.50 |     |     | MPC | 2007 TT <sub>93</sub>        |
| 2007 TY <sub>93</sub> | 16.5 | 0.15 | 20071027 | 45.47351  | 202.83992 | 145.05468 | 2.60065  | 0.0791242 | 2.9009429 | 25 | 3 | 2004–2007 | 0.24 | M-v | 3   | MPC | 128405 2007 TY <sub>93</sub> |
| 2007 TC <sub>94</sub> | 17.9 | 0.15 | 20071027 | 2.10273   | 176.05224 | 196.37021 | 11.87617 | 0.2403864 | 2.3230820 | 44 | 1 | 68 days   | 0.46 | M-v | 3   | MPC | 128974 2007 TC <sub>94</sub> |
| 2007 TD <sub>94</sub> | 15.6 | 0.15 | 20071027 | 15.10039  | 158.58444 | 189.27409 | 28.21408 | 0.1641093 | 3.1911573 | 27 | 1 | 65 days   | 0.59 | M-v | 4   | MPC | 2007 TD <sub>94</sub>        |
| 2007 TF <sub>94</sub> | 15.6 | 0.15 | 20071027 | 332.18280 | 213.40591 | 203.80806 | 16.76095 | 0.2003659 | 3.1048555 | 53 | 1 | 84 days   | 0.65 | M-v | 4   | MPC | 2007 TF <sub>94</sub>        |
| 2007 TG <sub>94</sub> | 16.0 | 0.15 | 20071027 | 354.31903 | 121.58718 | 262.48968 | 4.00155  | 0.1421830 | 3.1238469 | 26 | 1 | 64 days   | 0.45 | M-v | 4   | MPC | 2007 TG <sub>94</sub>        |
| 2007 TK <sub>94</sub> | 17.1 | 0.15 | 20071027 | 38.37300  | 57.18955  | 260.25181 | 4.13245  | 0.2454471 | 2.4080137 | 51 | 4 | 2000–2007 | 0.44 | M-v | 1   | MPC | 128406 2007 TK <sub>94</sub> |
| 2007 TM <sub>94</sub> | 15.3 | 0.15 | 20071027 | 328.36565 | 184.67949 | 243.13919 | 7.05476  | 0.2779547 | 3.1789677 | 38 | 2 | 2003–2007 | 0.54 | M-v | 4   | MPC | 128974 2007 TM <sub>94</sub> |
| 2007 TO <sub>94</sub> | 15.4 | 0.15 | 20071027 | 326.81039 | 36.41509  | 36.96480  | 14.43723 | 0.1709069 | 3.0862316 | 52 | 1 | 75 days   | 0.58 | M-v | 4   | MPC | 2007 TO <sub>94</sub>        |
| 2007 TQ <sub>94</sub> | 16.3 | 0.15 | 20071007 | 338.77036 | 354.73009 | 55.09321  | 5.96384  | 0.1231738 | 2.7413201 | 27 | 1 | 38 days   | 0.60 |     |     | MPC | 2007 TQ <sub>94</sub>        |
| 2007 TT <sub>94</sub> | 15.2 | 0.15 | 20071027 | 325.89827 | 38.51917  | 39.92070  | 15.92154 | 0.1901745 | 3.1098854 | 50 | 1 | 79 days   | 0.49 | M-v | 4   | MPC | 2007 TT <sub>94</sub>        |
| 2007 TY <sub>94</sub> | 15.7 | 0.15 | 20071027 | 23.05044  | 304.86583 | 45.40765  | 12.42091 | 0.2913995 | 3.0425985 | 64 | 1 | 59 days   | 0.50 |     |     | MPC | 2007 TY <sub>94</sub>        |
| 2007 TZ <sub>94</sub> | 17.4 | 0.15 | 20071027 | 335.91868 | 26.02172  | 34.02210  | 21.57438 | 0.0868299 | 1.9705015 | 67 | 2 | 2006–2007 | 0.47 | M-v | 3   | MPC | 128974 2007 TZ <sub>94</sub> |
| 2007 TB <sub>95</sub> | 14.9 | 0.15 | 20071027 | 58.96278  | 176.55852 | 130.98230 | 5.62781  | 0.2394195 | 3.2997241 | 51 | 1 | 42 days   | 0.78 |     |     | MPC | 2007 TB <sub>95</sub>        |
| 2007 TC <sub>95</sub> | 16.0 | 0.15 | 20071027 | 39.09949  | 294.19993 | 43.91976  | 12.65033 | 0.1830987 | 2.6206238 | 73 | 2 | 2003–2007 | 0.54 | M-v | 4   | MPC | 128406 2007 TC <sub>95</sub> |
| 2007 TD <sub>95</sub> | 16.0 | 0.15 | 20071027 | 115.11733 | 197.56438 | 73.68566  | 7.72316  | 0.0662436 | 2.5303208 | 37 | 2 | 2003–2007 | 0.55 | M-v | 5   | MPC | 128406 2007 TD <sub>95</sub> |
| 2007 TH <sub>95</sub> | 15.4 | 0.15 | 20071027 | 42.71445  | 288.83254 | 43.89485  | 20.78754 | 0.2135222 | 2.7809477 | 58 | 1 | 42 days   | 0.40 |     |     | MPC | 2007 TH <sub>95</sub>        |
| 2007 TL <sub>95</sub> | 15.7 | 0.15 | 20071027 | 55.57370  | 268.52841 | 55.41403  | 13.34881 | 0.1776388 | 2.7158087 | 94 | 4 | 2001–2007 | 0.48 | M-v | 1   | MPC | 128406 2007 TL <sub>95</sub> |
| 2007 TU <sub>95</sub> | 15.2 | 0.15 | 20071027 | 313.93394 | 61.80808  | 39.49087  | 10.19833 | 0.0557437 | 3.0347796 | 35 | 1 | 67 days   | 0.43 | M-v | 4 D | MPC | 2007 TU <sub>95</sub>        |
| 2007 TV <sub>95</sub> | 15.4 | 0.15 | 20071027 | 300.81293 | 92.02403  | 41.80425  | 16.89700 | 0.2164338 | 3.1177068 | 45 | 1 | 86 days   | 0.33 | M-v | 4   | MPC | 2007 TV <sub>95</sub>        |
| 2007 TW <sub>95</sub> | 16.4 | 0.15 | 20071027 | 41.58838  | 5.55931   | 357.57068 | 1.20974  | 0.0708214 | 3.0551100 | 51 | 5 | 1996–2007 | 0.40 | M-v | 1   | MPC | 128407 2007 TW <sub>95</sub> |
| 2007 TM <sub>96</sub> | 17.4 | 0.15 | 20070917 | 343.82102 | 198.81472 | 190.31729 | 10.18831 | 0.1092252 | 2.8940214 | 24 | 1 | 54 days   | 0.28 |     |     | MPC | 2007 TM <sub>96</sub>        |
| 2007 TT <sub>96</sub> | 17.7 | 0.15 | 20071007 | 26.93140  | 317.14472 | 16.86591  | 18.72389 | 0.1987953 | 3.1616135 | 20 | 1 | 30 days   | 0.37 |     |     | MPC | 2007 TT <sub>96</sub>        |
| 2007 TN <sub>97</sub> | 17.8 | 0.15 | 20071007 | 7.28663   | 265.44392 | 102.45108 | 2.53306  | 0.1993238 | 2.6537987 | 27 | 1 | 30 days   | 0.58 |     |     | MPC | 2007 TN <sub>97</sub>        |
| 2007 TO <sub>97</sub> | 17.2 | 0.15 | 20071027 | 351.15076 | 347.36123 | 51.78940  | 3.58212  | 0.1734727 | 2.4101924 | 40 | 1 | 60 days   | 0.53 | M-v | 5   | MPC | 2007 TO <sub>97</sub>        |
| 2007 TG <sub>98</sub> | 16.9 | 0.15 | 20071007 | 304.92115 | 355.88383 | 87.72532  | 2.84852  | 0.0994190 | 2.7735718 | 20 | 1 | 11 days   | 0.31 |     |     | MPC | 2007 TG <sub>98</sub>        |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |       |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-------|-------|-------------------------------|
| 2007 TS <sub>98</sub>  | 18.8 | 0.15 | 20071007 | 26.50723  | 282.78248 | 57.82951  | 1.54319  | 0.1890845 | 2.1796395 | 32  | 1 | 58 days   | 0.24 |       | MPC   | 2007 TS <sub>98</sub>         |
| 2007 TT <sub>98</sub>  | 19.0 | 0.15 | 20071007 | 356.50690 | 355.39187 | 29.23308  | 5.68960  | 0.1786910 | 2.3212398 | 23  | 1 | 28 days   | 0.22 |       | MPC   | 2007 TT <sub>98</sub>         |
| 2007 TW <sub>98</sub>  | 17.0 | 0.15 | 20071007 | 234.06954 | 113.20952 | 40.80426  | 4.85463  | 0.0732363 | 2.6476549 | 23  | 1 | 58 days   | 0.30 |       | MPC   | 2007 TW <sub>98</sub>         |
| 2007 TZ <sub>98</sub>  | 18.5 | 0.15 | 20071007 | 3.52465   | 320.62217 | 53.73816  | 2.32633  | 0.1987650 | 2.4364697 | 22  | 1 | 32 days   | 0.20 |       | MPC   | 2007 TZ <sub>98</sub>         |
| 2007 TB <sub>99</sub>  | 17.7 | 0.15 | 20071007 | 313.41594 | 244.61114 | 192.91707 | 9.98254  | 0.1120350 | 2.3647850 | 26  | 1 | 50 days   | 0.32 |       | MPC   | 2007 TB <sub>99</sub>         |
| 2007 TC <sub>99</sub>  | 16.8 | 0.15 | 20071007 | 35.44109  | 194.94827 | 144.52716 | 1.47787  | 0.0948287 | 2.9224471 | 23  | 1 | 38 days   | 0.35 | D     | MPC   | 2007 TC <sub>99</sub>         |
| 2007 TE <sub>99</sub>  | 19.0 | 0.15 | 20071007 | 12.56119  | 323.55647 | 36.12444  | 3.35970  | 0.2040628 | 2.1485297 | 19  | 1 | 27 days   | 0.19 |       | MPC   | 2007 TE <sub>99</sub>         |
| 2007 TV <sub>99</sub>  | 16.8 | 0.15 | 20071007 | 307.56710 | 62.51746  | 47.64585  | 16.33066 | 0.1732019 | 3.1037541 | 36  | 1 | 34 days   | 0.35 | D     | MPC   | 2007 TV <sub>99</sub>         |
| 2007 TW <sub>99</sub>  | 17.9 | 0.15 | 20071027 | 297.80543 | 311.60720 | 170.95027 | 3.12451  | 0.1569437 | 2.3817758 | 61  | 3 | 2003–2007 | 0.35 | M-v 2 | MPC   | 128408 2007 TW <sub>99</sub>  |
| 2007 TY <sub>99</sub>  | 17.8 | 0.15 | 20071007 | 10.61004  | 186.21322 | 196.41581 | 6.82884  | 0.1149764 | 2.3660917 | 18  | 1 | 35 days   | 0.41 |       | MPC   | 2007 TY <sub>99</sub>         |
| 2007 TF <sub>101</sub> | 16.3 | 0.15 | 20071027 | 48.02312  | 142.47266 | 186.33072 | 9.28428  | 0.0764876 | 3.1779834 | 25  | 1 | 62 days   | 0.20 | M-v 4 | MPC   | 2007 TF <sub>101</sub>        |
| 2007 TW <sub>101</sub> | 17.8 | 0.15 | 20071007 | 50.80139  | 281.13307 | 33.72541  | 10.19005 | 0.1510118 | 2.6829421 | 19  | 1 | 32 days   | 0.30 |       | MPC   | 2007 TW <sub>101</sub>        |
| 2007 TQ <sub>102</sub> | 16.5 | 0.15 | 20071007 | 32.27279  | 288.38009 | 69.68334  | 5.00281  | 0.1207966 | 2.8123599 | 28  | 1 | 12 days   | 0.22 | D     | MPC   | 2007 TQ <sub>102</sub>        |
| 2007 TR <sub>102</sub> | 16.2 | 0.15 | 20071027 | 25.41601  | 257.80949 | 110.53139 | 2.82232  | 0.1727977 | 3.0959357 | 35  | 2 | 2005–2007 | 0.35 | M-v 3 | MPC   | 128409 2007 TR <sub>102</sub> |
| 2007 TU <sub>102</sub> | 17.4 | 0.15 | 20071007 | 38.79447  | 282.78054 | 61.18763  | 4.37841  | 0.1733860 | 2.6855066 | 58  | 1 | 59 days   | 0.41 |       | MPC   | 2007 TU <sub>102</sub>        |
| 2007 TC <sub>103</sub> | 15.9 | 0.15 | 20071027 | 33.84968  | 290.09753 | 75.46539  | 3.08301  | 0.0733364 | 2.9181189 | 90  | 7 | 1992–2007 | 0.43 | M-v 0 | MPC   | 128409 2007 TC <sub>103</sub> |
| 2007 TE <sub>103</sub> | 16.2 | 0.15 | 20071027 | 327.23857 | 26.07778  | 59.86853  | 6.22016  | 0.1223778 | 3.0538318 | 58  | 1 | 61 days   | 0.34 | M-v 4 | MPC   | 2007 TE <sub>103</sub>        |
| 2007 TH <sub>103</sub> | 17.1 | 0.15 | 20071007 | 123.12732 | 174.58782 | 89.35325  | 2.69289  | 0.1299744 | 2.2808084 | 29  | 1 | 28 days   | 0.28 |       | MPC   | 2007 TH <sub>103</sub>        |
| 2007 TJ <sub>103</sub> | 17.6 | 0.15 | 20071007 | 253.79942 | 318.22895 | 195.65561 | 4.93262  | 0.0851817 | 2.4026896 | 30  | 1 | 31 days   | 0.32 |       | MPC   | 2007 TJ <sub>103</sub>        |
| 2007 TM <sub>103</sub> | 17.9 | 0.15 | 20070917 | 11.82635  | 157.63361 | 207.42644 | 13.61890 | 0.2678041 | 2.5727152 | 19  | 1 | 34 days   | 0.19 |       | MPC   | 2007 TM <sub>103</sub>        |
| 2007 TP <sub>103</sub> | 17.3 | 0.15 | 20071007 | 22.96065  | 193.77355 | 176.43282 | 3.44588  | 0.1059256 | 2.7274057 | 27  | 1 | 54 days   | 0.29 |       | MPC   | 2007 TP <sub>103</sub>        |
| 2007 TZ <sub>103</sub> | 17.1 | 0.15 | 20071027 | 278.34674 | 81.63566  | 56.35584  | 7.27352  | 0.1085926 | 2.4577921 | 26  | 1 | 38 days   | 0.31 |       | MPC   | 2007 TZ <sub>103</sub>        |
| 2007 TC <sub>104</sub> | 18.7 | 0.15 | 20071027 | 359.20421 | 3.06011   | 40.30089  | 13.47518 | 0.2323037 | 2.5673159 | 25  | 1 | 42 days   | 0.38 |       | MPC   | 2007 TC <sub>104</sub>        |
| 2007 TE <sub>104</sub> | 16.1 | 0.15 | 20071027 | 260.08988 | 102.46608 | 47.41234  | 16.75453 | 0.0423215 | 3.1989115 | 29  | 1 | 43 days   | 0.32 |       | MPC   | 2007 TE <sub>104</sub>        |
| 2007 TF <sub>104</sub> | 16.3 | 0.15 | 20071027 | 249.50820 | 87.40544  | 80.97803  | 2.45564  | 0.1237614 | 3.0508210 | 23  | 1 | 38 days   | 0.27 |       | MPC   | 2007 TF <sub>104</sub>        |
| 2007 TG <sub>104</sub> | 17.4 | 0.15 | 20071027 | 347.31415 | 234.26490 | 184.07281 | 2.34029  | 0.0852230 | 2.5208680 | 47  | 4 | 2001–2007 | 0.28 | M-v 3 | MPC   | 128410 2007 TG <sub>104</sub> |
| 2007 TK <sub>104</sub> | 17.4 | 0.15 | 20071007 | 251.47357 | 95.22317  | 55.86232  | 5.53618  | 0.0353204 | 2.4733697 | 33  | 1 | 51 days   | 0.30 |       | MPC   | 2007 TK <sub>104</sub>        |
| 2007 TO <sub>104</sub> | 17.7 | 0.15 | 20071027 | 7.74402   | 342.15436 | 37.03554  | 10.46188 | 0.4304914 | 2.6386150 | 116 | 1 | 82 days   | 0.41 | M-v 3 | MPC   | 128975 2007 TO <sub>104</sub> |
| 2007 TT <sub>104</sub> | 18.1 | 0.15 | 20071027 | 315.97329 | 31.07532  | 67.21741  | 3.72157  | 0.1259857 | 2.3017639 | 18  | 1 | 38 days   | 0.25 |       | MPC   | 2007 TT <sub>104</sub>        |
| 2007 TX <sub>104</sub> | 16.6 | 0.15 | 20071027 | 50.84109  | 266.81000 | 78.10656  | 3.14499  | 0.0940632 | 2.9208453 | 31  | 1 | 43 days   | 0.29 | D     | MPC   | 2007 TX <sub>104</sub>        |
| 2007 TJ <sub>105</sub> | 16.0 | 0.15 | 20071007 | 20.40843  | 33.92651  | 306.87458 | 10.52326 | 0.1354807 | 3.1528182 | 27  | 1 | 58 days   | 0.43 |       | MPC   | 2007 TJ <sub>105</sub>        |
| 2007 TO <sub>105</sub> | 18.4 | 0.15 | 20071007 | 344.64022 | 262.63006 | 134.90942 | 3.11285  | 0.2242929 | 2.6191810 | 36  | 1 | 50 days   | 0.43 |       | MPC   | 2007 TO <sub>105</sub>        |
| 2007 TP <sub>105</sub> | 18.7 | 0.15 | 20071027 | 38.92251  | 105.53291 | 225.99803 | 1.59183  | 0.2197725 | 2.3558509 | 33  | 1 | 63 days   | 0.42 | M-v 4 | D MPC | 2007 TP <sub>105</sub>        |
| 2007 TR <sub>105</sub> | 17.5 | 0.15 | 20071027 | 39.22301  | 54.83498  | 263.41965 | 4.11913  | 0.1507763 | 2.2346649 | 31  | 1 | 68 days   | 0.41 | M-v 5 | MPC   | 2007 TR <sub>105</sub>        |
| 2007 TT <sub>105</sub> | 16.9 | 0.15 | 20071007 | 298.08628 | 68.90459  | 17.66936  | 6.80812  | 0.0627186 | 2.3077420 | 49  | 1 | 53 days   | 0.77 | D     | MPC   | 2007 TT <sub>105</sub>        |
| 2007 TU <sub>105</sub> | 18.4 | 0.15 | 20071007 | 353.57009 | 10.48362  | 19.07613  | 14.84039 | 0.3051473 | 2.7065274 | 36  | 1 | 58 days   | 0.63 |       | MPC   | 2007 TU <sub>105</sub>        |
| 2007 TB <sub>106</sub> | 17.9 | 0.15 | 20071007 | 61.17691  | 98.23391  | 204.75332 | 1.30517  | 0.1695052 | 2.2942138 | 21  | 1 | 35 days   | 0.26 |       | MPC   | 2007 TB <sub>106</sub>        |
| 2007 TV <sub>106</sub> | 16.7 | 0.15 | 20071007 | 6.56771   | 86.71055  | 285.03673 | 1.01760  | 0.0801568 | 2.8668097 | 25  | 1 | 54 days   | 0.39 |       | MPC   | 2007 TV <sub>106</sub>        |
| 2007 TA <sub>107</sub> | 17.3 | 0.15 | 20071007 | 323.16380 | 215.19645 | 215.56112 | 2.75611  | 0.1678031 | 2.9659371 | 22  | 1 | 52 days   | 0.25 |       | MPC   | 2007 TA <sub>107</sub>        |
| 2007 TB <sub>107</sub> | 15.5 | 0.15 | 20071027 | 347.32997 | 31.50587  | 10.57597  | 5.15866  | 0.1356463 | 3.1175892 | 78  | 1 | 62 days   | 0.44 | M-v 4 | MPC   | 2007 TB <sub>107</sub>        |
| 2007 TV <sub>107</sub> | 16.1 | 0.15 | 20071007 | 356.85270 | 177.43491 | 203.77449 | 2.28929  | 0.2682619 | 3.9485639 | 22  | 1 | 47 days   | 0.57 |       | MPC   | 2007 TV <sub>107</sub>        |
| 2007 TM <sub>108</sub> | 17.0 | 0.15 | 20071027 | 5.43889   | 153.80704 | 216.19865 | 11.82589 | 0.2881639 | 2.6628789 | 44  | 1 | 85 days   | 0.40 | M-v 3 | MPC   | 2007 TM <sub>108</sub>        |
| 2007 TQ <sub>108</sub> | 17.5 | 0.15 | 20071027 | 21.14199  | 329.91057 | 39.82559  | 8.13600  | 0.2365266 | 2.6672659 | 33  | 1 | 65 days   | 0.36 | M-v 4 | MPC   | 2007 TQ <sub>108</sub>        |
| 2007 TR <sub>108</sub> | 17.5 | 0.15 | 20071027 | 343.92238 | 132.43158 | 276.15662 | 1.89429  | 0.2195737 | 2.3519574 | 63  | 4 | 2000–2007 | 0.52 | M-v 2 | MPC   | 128412 2007 TR <sub>108</sub> |
| 2007 TT <sub>108</sub> | 17.4 | 0.15 | 20071007 | 11.65881  | 26.56306  | 335.05457 | 4.07309  | 0.1579510 | 2.2803152 | 42  | 1 | 48 days   | 0.53 |       | MPC   | 2007 TT <sub>108</sub>        |
| 2007 TB <sub>109</sub> | 15.9 | 0.15 | 20071027 | 318.81976 | 225.72484 | 212.73876 | 12.37522 | 0.1748106 | 2.7698023 | 50  | 1 | 60 days   | 0.61 | M-v 5 | MPC   | 2007 TB <sub>109</sub>        |
| 2007 TE <sub>109</sub> | 16.9 | 0.15 | 20071027 | 72.47747  | 16.09271  | 271.46409 | 3.17223  | 0.1967120 | 2.3392949 | 43  | 3 | 2004–2007 | 0.57 | M-v 2 | MPC   | 128413 2007 TE <sub>109</sub> |
| 2007 TG <sub>109</sub> | 17.0 | 0.15 | 20071007 | 27.24008  | 62.35356  | 266.34609 | 2.67994  | 0.2800948 | 2.6096433 | 40  | 1 | 48 days   | 0.52 |       | MPC   | 2007 TG <sub>109</sub>        |
| 2007 TJ <sub>109</sub> | 17.8 | 0.15 | 20071007 | 24.36981  | 101.32655 | 232.61503 | 4.23958  | 0.2502751 | 2.3256459 | 39  | 1 | 53 days   | 0.61 |       | MPC   | 2007 TJ <sub>109</sub>        |
| 2007 TO <sub>109</sub> | 18.0 | 0.15 | 20071027 | 26.21126  | 125.56654 | 216.28786 | 6.15443  | 0.2095203 | 2.2620514 | 23  | 1 | 60 days   | 0.59 | M-v 5 | MPC   | 2007 TO <sub>109</sub>        |
| 2007 TQ <sub>109</sub> | 17.4 | 0.15 | 20071007 | 320.97042 | 200.60738 | 227.92709 | 4.36587  | 0.1663756 | 2.2274870 | 50  | 1 | 48 days   | 0.63 |       | MPC   | 2007 TQ <sub>109</sub>        |
| 2007 TV <sub>109</sub> | 16.0 | 0.15 | 20071027 | 356.20560 | 341.59901 | 55.53581  | 6.53657  | 0.1721786 | 2.7336799 | 83  | 3 | 1998–2007 | 0.48 | M-v 3 | MPC   | 128413 2007 TV <sub>109</sub> |
| 2007 TY <sub>109</sub> | 17.0 | 0.15 | 20071027 | 48.14647  | 262.96133 | 58.36459  | 7.31643  | 0.2530448 | 2.1917623 | 35  | 1 | 59 days   | 0.50 |       | MPC   | 2007 TY <sub>109</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-------------------------------|
| 2007 TZ <sub>109</sub> | 15.9 | 0.15 | 20071027 | 17.56107  | 246.34715 | 122.21395 | 4.50592  | 0.2166052 | 3.0831509 | 45 | 1 | 42 days   | 0.65 |     |   | 2007 TZ <sub>109</sub>        |
| 2007 TB <sub>110</sub> | 15.7 | 0.15 | 20071027 | 14.26491  | 147.50648 | 210.70115 | 15.97071 | 0.2051872 | 3.1023270 | 57 | 1 | 92 days   | 0.53 | M-v | 3 | 2007 TB <sub>110</sub>        |
| 2007 TG <sub>110</sub> | 17.3 | 0.15 | 20071007 | 266.51052 | 89.99866  | 42.24530  | 3.61137  | 0.0664926 | 2.3128064 | 35 | 1 | 31 days   | 0.42 |     |   | 2007 TG <sub>110</sub>        |
| 2007 TH <sub>110</sub> | 17.3 | 0.15 | 20071007 | 124.25664 | 95.71011  | 160.88864 | 1.58457  | 0.1413833 | 2.4233279 | 22 | 1 | 26 days   | 0.19 |     |   | 2007 TH <sub>110</sub>        |
| 2007 TS <sub>110</sub> | 16.3 | 0.15 | 20071007 | 332.40358 | 187.38195 | 229.62045 | 12.92730 | 0.2926421 | 3.0850276 | 20 | 1 | 31 days   | 0.63 |     |   | 2007 TS <sub>110</sub>        |
| 2007 TD <sub>111</sub> | 16.6 | 0.15 | 20071027 | 357.05721 | 154.92202 | 229.37537 | 9.21539  | 0.2444621 | 2.7815643 | 31 | 1 | 61 days   | 0.49 | M-v | 4 | 2007 TD <sub>111</sub>        |
| 2007 TN <sub>111</sub> | 18.1 | 0.15 | 20071007 | 347.34290 | 114.05186 | 287.28625 | 3.82063  | 0.3133818 | 2.5884089 | 26 | 1 | 30 days   | 0.48 |     |   | 2007 TN <sub>111</sub>        |
| 2007 TV <sub>111</sub> | 17.2 | 0.15 | 20071007 | 42.22093  | 71.38487  | 255.70140 | 4.14371  | 0.1122186 | 2.2982077 | 44 | 1 | 48 days   | 0.73 |     |   | 2007 TV <sub>111</sub>        |
| 2007 TF <sub>112</sub> | 16.3 | 0.15 | 20071027 | 339.90737 | 181.02272 | 235.02780 | 9.02444  | 0.2233226 | 2.7149950 | 38 | 1 | 64 days   | 0.58 | M-v | 4 | 2007 TF <sub>112</sub>        |
| 2007 TA <sub>113</sub> | 16.9 | 0.15 | 20071007 | 350.97052 | 94.13282  | 298.74184 | 9.02126  | 0.2505246 | 2.7867175 | 28 | 1 | 49 days   | 0.57 |     |   | 2007 TA <sub>113</sub>        |
| 2007 TM <sub>113</sub> | 15.6 | 0.15 | 20071027 | 323.94287 | 273.00605 | 188.31272 | 23.51913 | 0.3745459 | 3.0947767 | 24 | 1 | 40 days   | 0.43 |     |   | 2007 TM <sub>113</sub>        |
| 2007 TO <sub>113</sub> | 16.1 | 0.15 | 20071007 | 9.73369   | 287.09712 | 75.55623  | 7.82279  | 0.2901213 | 3.2203331 | 28 | 1 | 57 days   | 0.55 |     |   | 2007 TO <sub>113</sub>        |
| 2007 TY <sub>113</sub> | 16.2 | 0.15 | 20071007 | 335.24745 | 184.70702 | 231.13108 | 9.03271  | 0.1011599 | 3.0617271 | 14 | 1 | 30 days   | 0.44 |     |   | 2007 TY <sub>113</sub>        |
| 2007 TC <sub>114</sub> | 17.8 | 0.15 | 20071007 | 17.41713  | 86.72650  | 266.33714 | 3.37815  | 0.2563195 | 2.3107871 | 25 | 1 | 30 days   | 0.54 |     |   | 2007 TC <sub>114</sub>        |
| 2007 TO <sub>114</sub> | 17.5 | 0.15 | 20071027 | 147.95027 | 239.07243 | 3.29324   | 4.84740  | 0.0365640 | 2.1553363 | 35 | 2 | 2004-2007 | 0.48 | M-v | 4 | 128416 2007 TO <sub>114</sub> |
| 2007 TS <sub>114</sub> | 16.9 | 0.15 | 20071027 | 8.55949   | 144.52062 | 231.67700 | 4.86476  | 0.2998682 | 2.6312033 | 69 | 1 | 84 days   | 0.48 | M-v | 3 | 2007 TS <sub>114</sub>        |
| 2007 TZ <sub>114</sub> | 17.9 | 0.15 | 20071027 | 10.40414  | 235.32183 | 141.05560 | 3.30637  | 0.2824062 | 2.5426490 | 28 | 1 | 41 days   | 0.72 |     |   | 2007 TZ <sub>114</sub>        |
| 2007 TC <sub>115</sub> | 15.4 | 0.15 | 20071027 | 341.88285 | 13.03688  | 56.06897  | 17.25037 | 0.2494661 | 3.0509992 | 58 | 1 | 58 days   | 0.49 |     |   | 2007 TC <sub>115</sub>        |
| 2007 TH <sub>115</sub> | 16.8 | 0.15 | 20071027 | 329.72852 | 27.50235  | 60.23289  | 14.48801 | 0.2724062 | 2.7728442 | 46 | 1 | 57 days   | 0.76 |     |   | 2007 TH <sub>115</sub>        |
| 2007 TQ <sub>115</sub> | 18.3 | 0.15 | 20071007 | 44.98445  | 287.98241 | 48.94265  | 8.77278  | 0.1515657 | 2.3749804 | 27 | 1 | 28 days   | 0.34 |     |   | 2007 TQ <sub>115</sub>        |
| 2007 TR <sub>115</sub> | 15.8 | 0.15 | 20071007 | 121.04533 | 52.62882  | 217.23533 | 21.29266 | 0.1333074 | 3.0681121 | 26 | 1 | 8 days    | 0.42 |     |   | 2007 TR <sub>115</sub>        |
| 2007 TF <sub>116</sub> | 15.5 | 0.15 | 20071007 | 305.75922 | 325.84534 | 140.96047 | 3.61891  | 0.1359009 | 3.0562057 | 30 | 1 | 35 days   | 0.55 |     |   | 2007 TF <sub>116</sub>        |
| 2007 TG <sub>116</sub> | 17.7 | 0.15 | 20071007 | 31.31770  | 248.04528 | 96.33785  | 3.60647  | 0.2082780 | 2.1577720 | 32 | 1 | 36 days   | 0.67 |     |   | 2007 TG <sub>116</sub>        |
| 2007 TH <sub>116</sub> | 17.0 | 0.15 | 20071027 | 49.50954  | 264.08570 | 68.07749  | 6.39239  | 0.1944797 | 2.2132580 | 65 | 2 | 2006-2007 | 0.51 | M-v | 4 | 128416 2007 TH <sub>116</sub> |
| 2007 TX <sub>116</sub> | 17.4 | 0.15 | 20071007 | 9.52321   | 116.96803 | 246.78489 | 11.36548 | 0.1860646 | 2.2914307 | 37 | 1 | 50 days   | 0.58 |     |   | 2007 TX <sub>116</sub>        |
| 2007 TZ <sub>116</sub> | 17.0 | 0.15 | 20071007 | 33.65550  | 101.95917 | 234.56779 | 3.06022  | 0.0970837 | 2.3696894 | 36 | 1 | 48 days   | 0.59 |     |   | 2007 TZ <sub>116</sub>        |
| 2007 TA <sub>117</sub> | 18.4 | 0.15 | 20071027 | 7.42216   | 146.44539 | 228.95306 | 1.93877  | 0.1964972 | 2.1697272 | 33 | 1 | 58 days   | 0.49 |     |   | 2007 TA <sub>117</sub>        |
| 2007 TO <sub>117</sub> | 15.2 | 0.15 | 20071027 | 22.16086  | 315.06090 | 59.38328  | 11.49372 | 0.0335746 | 3.1909889 | 18 | 1 | 35 days   | 0.34 |     |   | 2007 TO <sub>117</sub>        |
| 2007 TW <sub>117</sub> | 17.2 | 0.15 | 20071027 | 20.76778  | 306.02313 | 61.70929  | 9.32531  | 0.1874472 | 2.8540367 | 25 | 1 | 36 days   | 0.28 |     |   | 2007 TW <sub>117</sub>        |
| 2007 TE <sub>119</sub> | 17.0 | 0.15 | 20071027 | 330.17864 | 3.70266   | 85.72137  | 2.49048  | 0.2175585 | 2.9674924 | 40 | 1 | 61 days   | 0.29 | M-v | 4 | 2007 TE <sub>119</sub>        |
| 2007 TH <sub>119</sub> | 15.5 | 0.15 | 20071027 | 336.81131 | 165.91223 | 270.04596 | 8.41995  | 0.0872349 | 3.0990006 | 20 | 1 | 56 days   | 0.64 |     |   | 2007 TH <sub>119</sub>        |
| 2007 TJ <sub>119</sub> | 16.4 | 0.15 | 20071027 | 282.24302 | 245.83720 | 254.50874 | 11.38638 | 0.1303921 | 2.7294646 | 22 | 1 | 57 days   | 0.23 |     |   | 2007 TJ <sub>119</sub>        |
| 2007 TM <sub>119</sub> | 17.4 | 0.15 | 20071027 | 356.93468 | 97.57751  | 312.19748 | 4.34945  | 0.2247471 | 2.3727942 | 72 | 3 | 1996-2007 | 0.42 | M-v | 2 | 128417 2007 TM <sub>119</sub> |
| 2007 TN <sub>119</sub> | 16.8 | 0.15 | 20071027 | 19.43469  | 2.87249   | 19.66872  | 12.34037 | 0.1502823 | 3.1518764 | 19 | 1 | 37 days   | 0.28 |     |   | 2007 TN <sub>119</sub>        |
| 2007 TP <sub>119</sub> | 16.2 | 0.15 | 20071027 | 89.32592  | 61.03469  | 247.12121 | 3.47105  | 0.1144365 | 3.0803691 | 20 | 1 | 58 days   | 0.27 |     |   | 2007 TP <sub>119</sub>        |
| 2007 TQ <sub>119</sub> | 18.5 | 0.15 | 20071027 | 352.96060 | 48.83070  | 7.40046   | 1.67729  | 0.2101700 | 2.2187401 | 39 | 3 | 1997-2007 | 0.40 | M-v | 2 | 128417 2007 TQ <sub>119</sub> |
| 2007 TV <sub>119</sub> | 15.8 | 0.15 | 20071027 | 327.20984 | 221.44913 | 228.56674 | 14.33221 | 0.1146593 | 2.8372038 | 75 | 4 | 2002-2007 | 0.46 | M-v | 1 | 128417 2007 TV <sub>119</sub> |
| 2007 TW <sub>119</sub> | 16.5 | 0.15 | 20071027 | 26.46672  | 144.03170 | 233.25240 | 9.26337  | 0.1067686 | 3.0292422 | 38 | 1 | 58 days   | 0.32 |     |   | 2007 TW <sub>119</sub>        |
| 2007 TX <sub>119</sub> | 17.6 | 0.15 | 20071027 | 46.13726  | 276.26975 | 53.75387  | 5.99005  | 0.2544372 | 2.1800093 | 67 | 4 | 1991-2007 | 0.57 | M-v | 1 | 128417 2007 TX <sub>119</sub> |
| 2007 TZ <sub>119</sub> | 17.2 | 0.15 | 20071027 | 37.20405  | 290.06144 | 51.17499  | 6.79432  | 0.2663949 | 2.3585577 | 53 | 1 | 42 days   | 0.51 |     |   | 2007 TZ <sub>119</sub>        |
| 2007 TF <sub>120</sub> | 16.6 | 0.15 | 20071027 | 356.09352 | 318.05734 | 79.18742  | 4.59630  | 0.2883599 | 2.6322423 | 59 | 1 | 58 days   | 0.51 |     |   | 2007 TF <sub>120</sub>        |
| 2007 TJ <sub>120</sub> | 16.0 | 0.15 | 20071027 | 19.94720  | 257.66278 | 107.87745 | 3.11655  | 0.0804043 | 3.0494482 | 31 | 1 | 40 days   | 0.41 |     |   | 2007 TJ <sub>120</sub>        |
| 2007 TK <sub>120</sub> | 18.4 | 0.15 | 20070917 | 4.96441   | 176.14117 | 188.81384 | 9.17723  | 0.3050056 | 2.7621326 | 28 | 1 | 44 days   | 0.29 |     | D | 2007 TK <sub>120</sub>        |
| 2007 TP <sub>120</sub> | 16.3 | 0.15 | 20071027 | 28.04990  | 300.56255 | 55.25637  | 0.82891  | 0.1862713 | 3.0848882 | 43 | 1 | 62 days   | 0.46 | M-v | 4 | 2007 TP <sub>120</sub>        |
| 2007 TS <sub>120</sub> | 17.9 | 0.15 | 20071027 | 357.45618 | 173.61126 | 229.91331 | 3.62227  | 0.1208106 | 2.3225185 | 54 | 1 | 63 days   | 0.35 | M-v | 4 | 2007 TS <sub>120</sub>        |
| 2007 TW <sub>120</sub> | 16.3 | 0.15 | 20071027 | 34.23737  | 322.40337 | 40.73685  | 1.68175  | 0.0637893 | 2.9824261 | 41 | 1 | 63 days   | 0.35 | M-v | 4 | 2007 TW <sub>120</sub>        |
| 2007 TX <sub>120</sub> | 16.3 | 0.15 | 20071027 | 60.64165  | 295.58639 | 38.09025  | 10.20236 | 0.0729863 | 3.0069151 | 34 | 4 | 2002-2007 | 0.35 | M-v | 0 | 128418 2007 TX <sub>120</sub> |
| 2007 TE <sub>121</sub> | 17.3 | 0.15 | 20070917 | 320.35902 | 227.57019 | 174.66597 | 6.42716  | 0.1135966 | 2.4226363 | 25 | 1 | 57 days   | 0.27 |     |   | 2007 TE <sub>121</sub>        |
| 2007 TN <sub>121</sub> | 17.9 | 0.15 | 20071007 | 6.73033   | 230.60470 | 144.18782 | 1.15520  | 0.2060210 | 2.5645183 | 16 | 1 | 17 days   | 0.39 |     |   | 2007 TN <sub>121</sub>        |
| 2007 TQ <sub>121</sub> | 16.6 | 0.15 | 20071007 | 336.70104 | 23.12139  | 34.07322  | 10.50616 | 0.1048333 | 3.0773356 | 17 | 1 | 26 days   | 0.24 |     |   | 2007 TQ <sub>121</sub>        |
| 2007 TB <sub>122</sub> | 17.0 | 0.15 | 20071027 | 349.89687 | 354.39434 | 53.48339  | 2.40928  | 0.1762230 | 2.3655880 | 61 | 1 | 70 days   | 0.46 | M-v | 4 | 2007 TB <sub>122</sub>        |
| 2007 TH <sub>122</sub> | 16.9 | 0.15 | 20071027 | 313.58632 | 47.92754  | 38.15365  | 8.03866  | 0.0727605 | 2.3281985 | 34 | 1 | 43 days   | 0.53 |     |   | 2007 TH <sub>122</sub>        |
| 2007 TK <sub>122</sub> | 17.1 | 0.15 | 20071027 | 52.36844  | 273.09356 | 39.54145  | 6.02007  | 0.2611256 | 2.5491642 | 44 | 4 | 2002-2007 | 0.42 | M-v | 1 | 128418 2007 TK <sub>122</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|----|-------------------------------|
| 2007 TT <sub>122</sub> | 16.4 | 0.15 | 20071027 | 91.20804  | 249.22368 | 42.34983  | 7.76617  | 0.1047288 | 2.7459506 | 22 | 1 | 60 days   | 0.32 | M-v | 5 | MP | 2007 TT <sub>122</sub>        |
| 2007 TU <sub>122</sub> | 18.0 | 0.15 | 20071027 | 23.42273  | 160.74285 | 193.76324 | 5.36806  | 0.2596679 | 2.3245525 | 31 | 1 | 43 days   | 0.44 |     |   | MP | 2007 TU <sub>122</sub>        |
| 2007 TB <sub>123</sub> | 18.5 | 0.15 | 20071027 | 8.73842   | 338.98188 | 43.76318  | 4.79122  | 0.1446572 | 2.2048337 | 22 | 1 | 42 days   | 0.26 |     |   | MP | 2007 TB <sub>123</sub>        |
| 2007 TC <sub>123</sub> | 16.6 | 0.15 | 20071027 | 335.40401 | 247.35640 | 191.69309 | 5.87268  | 0.2812290 | 2.6255645 | 52 | 1 | 71 days   | 0.36 | M-v | 4 | MP | 128978 2007 TC <sub>123</sub> |
| 2007 TF <sub>123</sub> | 18.2 | 0.15 | 20071027 | 3.65319   | 333.40727 | 56.06976  | 3.20323  | 0.2033839 | 2.3801489 | 31 | 1 | 81 days   | 0.34 | M-v | 3 | MP | 2007 TF <sub>123</sub>        |
| 2007 TG <sub>123</sub> | 16.1 | 0.15 | 20071027 | 35.53381  | 307.13375 | 37.78140  | 13.83643 | 0.1809275 | 2.6202033 | 58 | 1 | 59 days   | 0.34 |     |   | MP | 2007 TG <sub>123</sub>        |
| 2007 TJ <sub>123</sub> | 15.9 | 0.15 | 20071027 | 49.16070  | 292.20647 | 47.15868  | 10.22275 | 0.0815336 | 3.1789533 | 27 | 1 | 60 days   | 0.42 | M-v | 4 | MP | 2007 TJ <sub>123</sub>        |
| 2007 TN <sub>123</sub> | 18.4 | 0.15 | 20071007 | 7.92372   | 261.42535 | 113.74093 | 1.69563  | 0.1976164 | 2.3326893 | 31 | 1 | 53 days   | 0.47 |     |   | MP | 2007 TN <sub>123</sub>        |
| 2007 TP <sub>123</sub> | 18.2 | 0.15 | 20071027 | 354.75636 | 215.69634 | 188.66860 | 5.09760  | 0.2285869 | 2.3484051 | 28 | 1 | 65 days   | 0.48 | M-v | 3 | MP | 2007 TP <sub>123</sub>        |
| 2007 TX <sub>123</sub> | 15.8 | 0.15 | 20071027 | 48.99558  | 280.55603 | 54.13118  | 4.09831  | 0.0923190 | 2.6527696 | 74 | 5 | 1994–2007 | 0.50 | M-v | 1 | MP | 128419 2007 TX <sub>123</sub> |
| 2007 TG <sub>124</sub> | 15.8 | 0.15 | 20071027 | 339.74755 | 13.29481  | 42.00739  | 11.43725 | 0.0527328 | 3.1143726 | 23 | 1 | 60 days   | 0.21 | M-v | 4 | MP | 2007 TG <sub>124</sub>        |
| 2007 TK <sub>124</sub> | 15.1 | 0.15 | 20071027 | 227.33979 | 133.23139 | 39.06701  | 14.56350 | 0.0829983 | 3.0613832 | 34 | 1 | 60 days   | 0.46 | M-v | 4 | MP | 2007 TK <sub>124</sub>        |
| 2007 TT <sub>124</sub> | 16.2 | 0.15 | 20071027 | 69.34954  | 251.50450 | 63.00599  | 4.31591  | 0.0849841 | 2.7682143 | 38 | 5 | 1998–2007 | 0.40 | M-v | 0 | MP | 128420 2007 TT <sub>124</sub> |
| 2007 TU <sub>124</sub> | 16.3 | 0.15 | 20070917 | 186.71662 | 1.72858   | 197.53663 | 12.34204 | 0.0674930 | 2.5611275 | 16 | 1 | 33 days   | 0.26 |     |   | MP | 2007 TU <sub>124</sub>        |
| 2007 TW <sub>124</sub> | 17.0 | 0.15 | 20071027 | 2.12163   | 350.80167 | 39.78908  | 7.90490  | 0.1091138 | 2.3033510 | 40 | 1 | 43 days   | 0.55 |     |   | MP | 2007 TW <sub>124</sub>        |
| 2007 TC <sub>125</sub> | 18.0 | 0.15 | 20071007 | 3.62900   | 299.15294 | 81.07595  | 2.30525  | 0.1942652 | 2.3703223 | 40 | 1 | 39 days   | 0.60 |     |   | MP | 2007 TC <sub>125</sub>        |
| 2007 TE <sub>125</sub> | 18.7 | 0.15 | 20071007 | 28.16110  | 177.67567 | 162.12449 | 2.63176  | 0.2391971 | 2.2346929 | 23 | 1 | 38 days   | 0.24 |     |   | MP | 2007 TE <sub>125</sub>        |
| 2007 TK <sub>125</sub> | 17.8 | 0.15 | 20071007 | 337.48017 | 348.86370 | 71.47915  | 3.24762  | 0.1972082 | 2.4141023 | 26 | 1 | 34 days   | 0.41 |     |   | MP | 2007 TK <sub>125</sub>        |
| 2007 TW <sub>125</sub> | 16.1 | 0.15 | 20071027 | 146.41517 | 51.87825  | 192.70958 | 1.24974  | 0.1050399 | 2.8066734 | 21 | 1 | 60 days   | 0.35 | M-v | 5 | MP | 2007 TW <sub>125</sub>        |
| 2007 TX <sub>125</sub> | 16.4 | 0.15 | 20071027 | 317.65732 | 354.71845 | 100.47769 | 0.39536  | 0.1730271 | 3.1808724 | 41 | 1 | 60 days   | 0.34 | M-v | 4 | MP | 2007 TX <sub>125</sub>        |
| 2007 TY <sub>125</sub> | 17.0 | 0.15 | 20071027 | 11.75945  | 163.31222 | 217.56636 | 1.54037  | 0.1468885 | 2.7106050 | 70 | 1 | 60 days   | 0.46 | M-v | 4 | MP | 2007 TY <sub>125</sub>        |
| 2007 TC <sub>126</sub> | 16.7 | 0.15 | 20071007 | 345.86243 | 210.98691 | 200.34519 | 3.64959  | 0.1485392 | 3.0303127 | 21 | 1 | 27 days   | 0.34 |     |   | MP | 2007 TC <sub>126</sub>        |
| 2007 TD <sub>126</sub> | 18.0 | 0.15 | 20071007 | 22.88298  | 160.15602 | 193.33049 | 0.89464  | 0.2077592 | 2.3634995 | 25 | 1 | 30 days   | 0.44 |     |   | MP | 2007 TD <sub>126</sub>        |
| 2007 TF <sub>126</sub> | 15.3 | 0.15 | 20071027 | 277.00344 | 343.60204 | 152.43004 | 0.98533  | 0.1320269 | 3.1327911 | 71 | 6 | 1995–2007 | 0.40 | M-v | 0 | MP | 128421 2007 TF <sub>126</sub> |
| 2007 TJ <sub>126</sub> | 16.3 | 0.15 | 20071027 | 18.99113  | 162.50164 | 209.86457 | 14.98383 | 0.1559085 | 2.6198251 | 55 | 1 | 59 days   | 0.57 |     |   | MP | 2007 TJ <sub>126</sub>        |
| 2007 TK <sub>126</sub> | 17.6 | 0.15 | 20071027 | 73.18564  | 245.47951 | 53.66468  | 2.95155  | 0.2217828 | 2.4181960 | 35 | 3 | 2002–2007 | 0.38 | M-v | 2 | MP | 128421 2007 TK <sub>126</sub> |
| 2007 TN <sub>126</sub> | 17.6 | 0.15 | 20071027 | 21.69931  | 168.18289 | 193.10903 | 2.69420  | 0.2486361 | 2.3196234 | 52 | 1 | 66 days   | 0.50 | M-v | 4 | MP | 2007 TN <sub>126</sub>        |
| 2007 TO <sub>126</sub> | 16.2 | 0.15 | 20071027 | 311.04030 | 250.72752 | 204.66093 | 4.45307  | 0.0783921 | 2.7477613 | 46 | 6 | 2000–2007 | 0.51 | M-v | 1 | MP | 128422 2007 TO <sub>126</sub> |
| 2007 TQ <sub>126</sub> | 17.6 | 0.15 | 20071027 | 348.76113 | 320.84735 | 93.80454  | 1.35982  | 0.1792030 | 2.4214458 | 58 | 4 | 1999–2007 | 0.38 | M-v | 2 | MP | 128422 2007 TQ <sub>126</sub> |
| 2007 TR <sub>126</sub> | 16.3 | 0.15 | 20071027 | 8.62681   | 325.19491 | 64.25674  | 2.93398  | 0.0674845 | 2.7637333 | 56 | 3 | 2003–2007 | 0.36 | M-v | 3 | MP | 128422 2007 TR <sub>126</sub> |
| 2007 TS <sub>126</sub> | 15.4 | 0.15 | 20071027 | 21.06216  | 330.72399 | 38.98696  | 16.39792 | 0.1703607 | 3.0852157 | 80 | 2 | 2005–2007 | 0.59 | M-v | 3 | MP | 128422 2007 TS <sub>126</sub> |
| 2007 TY <sub>126</sub> | 18.0 | 0.15 | 20071027 | 25.95357  | 300.41027 | 59.20923  | 2.63959  | 0.1710673 | 2.1923996 | 29 | 1 | 60 days   | 0.37 | M-v | 4 | MP | 2007 TY <sub>126</sub>        |
| 2007 TZ <sub>126</sub> | 18.2 | 0.15 | 20071007 | 14.78909  | 316.48805 | 51.89850  | 2.73019  | 0.1545815 | 2.2785438 | 30 | 1 | 27 days   | 0.30 |     |   | MP | 2007 TZ <sub>126</sub>        |
| 2007 TA <sub>127</sub> | 15.4 | 0.15 | 20071027 | 280.68216 | 82.44484  | 44.21932  | 11.44046 | 0.0840689 | 3.0681128 | 42 | 1 | 60 days   | 0.53 | M-v | 4 | MP | 2007 TA <sub>127</sub>        |
| 2007 TC <sub>127</sub> | 16.8 | 0.15 | 20071007 | 43.94385  | 157.67588 | 170.27119 | 2.08768  | 0.2050690 | 2.6530284 | 17 | 1 | 32 days   | 0.28 |     |   | MP | 2007 TC <sub>127</sub>        |
| 2007 TF <sub>127</sub> | 16.7 | 0.15 | 20071027 | 117.29326 | 213.70954 | 56.70663  | 4.27354  | 0.1068567 | 2.6110305 | 28 | 1 | 61 days   | 0.29 | M-v | 4 | MP | 2007 TF <sub>127</sub>        |
| 2007 TG <sub>127</sub> | 18.4 | 0.15 | 20071007 | 28.99794  | 290.62980 | 48.35274  | 3.78416  | 0.2625889 | 2.2764558 | 36 | 1 | 32 days   | 0.60 |     |   | MP | 2007 TG <sub>127</sub>        |
| 2007 TO <sub>127</sub> | 15.0 | 0.15 | 20071007 | 13.29248  | 209.18936 | 165.09986 | 3.15582  | 0.2217580 | 3.9794763 | 35 | 1 | 39 days   | 0.47 |     |   | MP | 2007 TO <sub>127</sub>        |
| 2007 TP <sub>127</sub> | 16.9 | 0.15 | 20071027 | 83.39411  | 226.01467 | 64.99049  | 3.18324  | 0.2018316 | 2.3256585 | 27 | 1 | 60 days   | 0.47 | M-v | 5 | MP | 2007 TP <sub>127</sub>        |
| 2007 TR <sub>127</sub> | 17.7 | 0.15 | 20071027 | 76.99996  | 254.83654 | 49.84069  | 5.32455  | 0.1362608 | 2.2514476 | 32 | 1 | 60 days   | 0.34 | M-v | 4 | MP | 2007 TR <sub>127</sub>        |
| 2007 TT <sub>127</sub> | 16.0 | 0.15 | 20071007 | 136.56708 | 191.16912 | 63.14711  | 4.79159  | 0.0496111 | 2.7649565 | 17 | 1 | 32 days   | 0.18 |     |   | MP | 2007 TT <sub>127</sub>        |
| 2007 TK <sub>128</sub> | 18.0 | 0.15 | 20071027 | 341.38208 | 176.75418 | 250.78888 | 1.14374  | 0.1786254 | 2.3859259 | 56 | 3 | 1996–2007 | 0.47 | M-v | 3 | MP | 128423 2007 TK <sub>128</sub> |
| 2007 TN <sub>128</sub> | 17.9 | 0.15 | 20071007 | 5.08016   | 138.94957 | 248.74303 | 1.59572  | 0.1629899 | 2.5982370 | 21 | 1 | 54 days   | 0.22 |     |   | MP | 2007 TN <sub>128</sub>        |
| 2007 TO <sub>128</sub> | 16.6 | 0.15 | 20071027 | 343.20743 | 129.30375 | 298.38979 | 0.68522  | 0.1945502 | 3.1130677 | 31 | 1 | 60 days   | 0.25 | M-v | 4 | MP | 2007 TO <sub>128</sub>        |
| 2007 TS <sub>128</sub> | 15.2 | 0.15 | 20071027 | 316.16164 | 57.41746  | 37.54552  | 19.15045 | 0.0834164 | 3.1987193 | 53 | 1 | 68 days   | 0.62 | M-v | 4 | MP | 2007 TS <sub>128</sub>        |
| 2007 TT <sub>128</sub> | 15.3 | 0.15 | 20071007 | 19.32259  | 155.25091 | 221.85912 | 9.24848  | 0.0884150 | 3.3857617 | 38 | 1 | 39 days   | 0.49 |     |   | MP | 2007 TT <sub>128</sub>        |
| 2007 TU <sub>128</sub> | 16.5 | 0.15 | 20071007 | 41.74572  | 118.45004 | 225.58807 | 6.26185  | 0.1516845 | 3.1440646 | 23 | 1 | 30 days   | 0.44 |     |   | MP | 2007 TU <sub>128</sub>        |
| 2007 TV <sub>128</sub> | 15.9 | 0.15 | 20071027 | 340.39890 | 26.88340  | 39.15258  | 12.53385 | 0.0705543 | 3.1191547 | 31 | 1 | 63 days   | 0.39 | M-v | 4 | MP | 2007 TV <sub>128</sub>        |
| 2007 TX <sub>128</sub> | 18.2 | 0.15 | 20071027 | 25.05959  | 334.50956 | 28.86714  | 5.56964  | 0.1983931 | 2.3054955 | 23 | 1 | 62 days   | 0.26 | M-v | 4 | MP | 2007 TX <sub>128</sub>        |
| 2007 TY <sub>128</sub> | 16.1 | 0.15 | 20071007 | 313.05789 | 235.68107 | 223.01470 | 11.36840 | 0.1303950 | 3.1561166 | 31 | 1 | 30 days   | 0.30 |     |   | MP | 2007 TY <sub>128</sub>        |
| 2007 TF <sub>129</sub> | 16.8 | 0.15 | 20071027 | 108.79062 | 244.72106 | 33.19520  | 4.26398  | 0.1744399 | 2.6064057 | 27 | 1 | 43 days   | 0.36 |     |   | MP | 2007 TF <sub>129</sub>        |
| 2007 TG <sub>129</sub> | 14.7 | 0.15 | 20071027 | 169.86861 | 192.89201 | 41.12386  | 14.81040 | 0.1103390 | 3.1416420 | 60 | 4 | 1999–2007 | 0.62 | M-v | 1 | MP | 128424 2007 TG <sub>129</sub> |
| 2007 TH <sub>129</sub> | 16.7 | 0.15 | 20071027 | 81.52452  | 264.29091 | 38.15545  | 16.14449 | 0.1707833 | 2.5488722 | 15 | 1 | 44 days   | 0.23 |     |   | MP | 2007 TH <sub>129</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-----|-------------------------------|
| 2007 TJ <sub>129</sub> | 16.5 | 0.15 | 20071027 | 310.66958 | 246.68834 | 221.68810 | 6.21410  | 0.1534361 | 2.7530853 | 38 | 1 | 84 days   | 0.52 | M-v | 4   | MPC | 2007 TJ <sub>129</sub>        |
| 2007 TK <sub>129</sub> | 16.8 | 0.15 | 20071027 | 19.52810  | 345.34541 | 35.45145  | 2.94392  | 0.0899683 | 2.6743320 | 46 | 4 | 1998-2007 | 0.43 | M-v | 1   | MPC | 128424 2007 TK <sub>129</sub> |
| 2007 TL <sub>129</sub> | 17.4 | 0.15 | 20071027 | 321.39704 | 63.49102  | 33.74376  | 4.54256  | 0.1811348 | 2.3703080 | 81 | 3 | 2001-2007 | 0.51 | M-v | 2   | MPC | 128424 2007 TL <sub>129</sub> |
| 2007 TM <sub>129</sub> | 17.2 | 0.15 | 20071027 | 36.36008  | 130.21437 | 221.56920 | 3.24561  | 0.1734720 | 2.2271139 | 87 | 4 | 1997-2007 | 0.51 | M-v | 1   | MPC | 128425 2007 TM <sub>129</sub> |
| 2007 TN <sub>129</sub> | 15.5 | 0.15 | 20071027 | 353.10043 | 16.30602  | 37.96589  | 9.10662  | 0.1348349 | 3.0441607 | 88 | 2 | 2004-2007 | 0.44 | M-v | 3   | MPC | 128425 2007 TN <sub>129</sub> |
| 2007 TP <sub>129</sub> | 16.2 | 0.15 | 20071027 | 21.56316  | 334.97407 | 37.84454  | 1.84590  | 0.1941871 | 3.0414510 | 49 | 1 | 85 days   | 0.44 | M-v | 4   | MPC | 2007 TP <sub>129</sub>        |
| 2007 TQ <sub>129</sub> | 16.5 | 0.15 | 20071027 | 46.08841  | 300.81117 | 40.48422  | 10.96906 | 0.1870189 | 3.0727049 | 26 | 1 | 70 days   | 0.27 | M-v | 4   | MPC | 2007 TQ <sub>129</sub>        |
| 2007 TU <sub>129</sub> | 16.1 | 0.15 | 20071007 | 33.15717  | 317.45207 | 40.02593  | 5.65621  | 0.1109550 | 3.2198559 | 29 | 1 | 36 days   | 0.38 |     | D   | MPC | 2007 TU <sub>129</sub>        |
| 2007 TW <sub>129</sub> | 17.4 | 0.15 | 20071027 | 338.42208 | 37.06858  | 38.51110  | 9.22956  | 0.2174082 | 2.7656280 | 28 | 1 | 61 days   | 0.52 | M-v | 4   | MPC | 2007 TW <sub>129</sub>        |
| 2007 TX <sub>129</sub> | 17.0 | 0.15 | 20071007 | 30.75558  | 317.32708 | 43.96486  | 4.89962  | 0.0853593 | 2.7597386 | 23 | 1 | 36 days   | 0.28 |     |     | MPC | 2007 TX <sub>129</sub>        |
| 2007 TA <sub>130</sub> | 18.3 | 0.15 | 20071007 | 24.69272  | 166.06740 | 191.71994 | 0.84376  | 0.1904678 | 2.3914815 | 35 | 1 | 51 days   | 0.44 |     |     | MPC | 2007 TA <sub>130</sub>        |
| 2007 TC <sub>130</sub> | 15.9 | 0.15 | 20071027 | 333.45024 | 37.21531  | 38.92278  | 22.79273 | 0.1104552 | 2.6308202 | 62 | 1 | 60 days   | 0.49 | M-v | 4   | MPC | 2007 TC <sub>130</sub>        |
| 2007 TD <sub>130</sub> | 16.3 | 0.15 | 20071027 | 294.61426 | 39.13413  | 80.99861  | 0.93308  | 0.0850556 | 3.1345435 | 29 | 2 | 2001-2007 | 0.33 | M-v | 5   | MPC | 128425 2007 TD <sub>130</sub> |
| 2007 TF <sub>130</sub> | 16.6 | 0.15 | 20071027 | 20.78174  | 329.80797 | 41.50282  | 6.79717  | 0.2113152 | 2.6200941 | 76 | 1 | 88 days   | 0.51 | M-v | 4   | MPC | 128980 2007 TF <sub>130</sub> |
| 2007 TJ <sub>130</sub> | 16.4 | 0.15 | 20071007 | 345.62210 | 332.44512 | 76.01050  | 2.65403  | 0.1485320 | 2.9807473 | 34 | 1 | 39 days   | 0.57 |     |     | MPC | 2007 TJ <sub>130</sub>        |
| 2007 TM <sub>130</sub> | 16.8 | 0.15 | 20071027 | 342.26015 | 175.07392 | 239.70386 | 5.78854  | 0.0963553 | 2.3441922 | 70 | 3 | 2001-2007 | 0.54 | M-v | 3   | MPC | 128426 2007 TM <sub>130</sub> |
| 2007 TX <sub>130</sub> | 17.9 | 0.15 | 20071027 | 358.62720 | 111.64302 | 290.45011 | 2.61087  | 0.1860660 | 2.2001695 | 54 | 1 | 59 days   | 0.57 |     |     | MPC | 2007 TX <sub>130</sub>        |
| 2007 TY <sub>130</sub> | 15.8 | 0.15 | 20071027 | 3.41910   | 17.23193  | 21.40553  | 9.27261  | 0.1221755 | 3.0681231 | 68 | 5 | 1999-2007 | 0.45 | M-v | 1   | MPC | 128426 2007 TY <sub>130</sub> |
| 2007 TA <sub>131</sub> | 16.5 | 0.15 | 20071027 | 83.13693  | 282.96664 | 12.89546  | 0.91405  | 0.1574020 | 3.1010772 | 26 | 1 | 59 days   | 0.34 |     |     | MPC | 2007 TA <sub>131</sub>        |
| 2007 TF <sub>131</sub> | 18.2 | 0.15 | 20071027 | 324.68901 | 46.22485  | 38.07417  | 1.83983  | 0.1567393 | 2.3457651 | 45 | 1 | 59 days   | 0.31 |     | D   | MPC | 2007 TF <sub>131</sub>        |
| 2007 TG <sub>131</sub> | 16.5 | 0.15 | 20071007 | 8.95682   | 168.95083 | 210.80459 | 10.98990 | 0.1201279 | 2.5840001 | 38 | 1 | 39 days   | 0.50 |     |     | MPC | 2007 TG <sub>131</sub>        |
| 2007 TH <sub>131</sub> | 16.2 | 0.15 | 20071007 | 19.90133  | 159.13078 | 212.40735 | 5.55632  | 0.0417916 | 2.7580220 | 31 | 1 | 33 days   | 0.47 |     |     | MPC | 2007 TH <sub>131</sub>        |
| 2007 TX <sub>131</sub> | 16.2 | 0.15 | 20071007 | 276.26169 | 97.70258  | 40.35737  | 17.98222 | 0.1628376 | 3.1040663 | 18 | 1 | 28 days   | 0.32 |     |     | MPC | 2007 TX <sub>131</sub>        |
| 2007 TE <sub>132</sub> | 17.1 | 0.15 | 20071027 | 338.37958 | 231.16132 | 194.83887 | 3.03275  | 0.1397160 | 2.4521490 | 62 | 2 | 2005-2007 | 0.43 | M-v | 3   | MPC | 128427 2007 TE <sub>132</sub> |
| 2007 TG <sub>132</sub> | 17.0 | 0.15 | 20071027 | 338.68865 | 20.84440  | 46.41952  | 3.52242  | 0.1661352 | 2.3988414 | 66 | 4 | 1994-2007 | 0.54 | M-v | 2   | MPC | 128427 2007 TG <sub>132</sub> |
| 2007 TK <sub>132</sub> | 16.8 | 0.15 | 20071007 | 24.75278  | 173.94473 | 180.92619 | 2.61022  | 0.1978633 | 2.7247955 | 33 | 1 | 59 days   | 0.30 |     |     | MPC | 2007 TK <sub>132</sub>        |
| 2007 TL <sub>132</sub> | 16.9 | 0.15 | 20071007 | 16.39860  | 329.95716 | 44.32025  | 4.48343  | 0.0656123 | 2.9522268 | 29 | 1 | 28 days   | 0.28 |     | D   | MPC | 2007 TL <sub>132</sub>        |
| 2007 TN <sub>132</sub> | 17.0 | 0.15 | 20071007 | 111.65833 | 227.45557 | 49.68469  | 3.24921  | 0.0382653 | 2.6723204 | 21 | 1 | 26 days   | 0.30 |     |     | MPC | 2007 TN <sub>132</sub>        |
| 2007 TO <sub>132</sub> | 17.6 | 0.15 | 20071027 | 13.82772  | 164.99768 | 207.25650 | 18.11753 | 0.2768359 | 3.0115101 | 21 | 1 | 60 days   | 0.40 | M-v | 4   | MPC | 2007 TO <sub>132</sub>        |
| 2007 TP <sub>132</sub> | 17.7 | 0.15 | 20071007 | 1.84989   | 341.09228 | 45.99608  | 2.55186  | 0.2140649 | 2.6965281 | 26 | 1 | 51 days   | 0.32 |     |     | MPC | 2007 TP <sub>132</sub>        |
| 2007 TT <sub>132</sub> | 17.9 | 0.15 | 20071007 | 70.54417  | 103.15307 | 207.73537 | 7.15557  | 0.0998796 | 2.2143103 | 18 | 1 | 31 days   | 0.22 |     |     | MPC | 2007 TT <sub>132</sub>        |
| 2007 TA <sub>133</sub> | 18.5 | 0.15 | 20071027 | 45.94006  | 284.27476 | 48.96913  | 3.34066  | 0.2006314 | 2.3449714 | 30 | 1 | 41 days   | 0.29 |     |     | MPC | 2007 TA <sub>133</sub>        |
| 2007 TG <sub>133</sub> | 16.1 | 0.15 | 20071007 | 344.38205 | 10.26801  | 44.43969  | 11.35001 | 0.0431748 | 3.1367480 | 30 | 1 | 37 days   | 0.39 |     |     | MPC | 2007 TG <sub>133</sub>        |
| 2007 TL <sub>133</sub> | 16.3 | 0.15 | 20071007 | 291.95107 | 260.13237 | 214.01643 | 9.93544  | 0.0609940 | 2.9740672 | 23 | 1 | 38 days   | 0.30 |     |     | MPC | 2007 TL <sub>133</sub>        |
| 2007 TO <sub>133</sub> | 16.4 | 0.15 | 20071027 | 347.21413 | 6.23767   | 51.89244  | 4.76368  | 0.0944239 | 2.7666371 | 42 | 1 | 60 days   | 0.37 | M-v | 4   | MPC | 2007 TO <sub>133</sub>        |
| 2007 TP <sub>133</sub> | 18.7 | 0.15 | 20071027 | 22.96261  | 320.63818 | 39.92773  | 5.22733  | 0.2651951 | 2.3054679 | 40 | 1 | 42 days   | 0.41 |     |     | MPC | 2007 TP <sub>133</sub>        |
| 2007 TR <sub>133</sub> | 16.9 | 0.15 | 20071027 | 20.84381  | 333.67398 | 40.40168  | 9.00192  | 0.1308777 | 2.3363051 | 73 | 1 | 60 days   | 0.51 | M-v | 4 D | MPC | 2007 TR <sub>133</sub>        |
| 2007 TT <sub>133</sub> | 18.8 | 0.15 | 20071027 | 26.98027  | 318.87306 | 47.30351  | 4.21142  | 0.1262513 | 2.1793558 | 32 | 1 | 63 days   | 0.31 | M-v | 4   | MPC | 2007 TT <sub>133</sub>        |
| 2007 TU <sub>133</sub> | 16.9 | 0.15 | 20071027 | 21.36764  | 330.75938 | 40.50373  | 12.74857 | 0.1800339 | 2.6689095 | 40 | 1 | 42 days   | 0.64 |     |     | MPC | 2007 TU <sub>133</sub>        |
| 2007 TX <sub>133</sub> | 17.8 | 0.15 | 20071027 | 330.94168 | 283.91853 | 157.61805 | 1.10990  | 0.1592597 | 2.3895923 | 45 | 4 | 1992-2007 | 0.52 | M-v | 1   | MPC | 128428 2007 TX <sub>133</sub> |
| 2007 TA <sub>134</sub> | 15.9 | 0.15 | 20071027 | 40.52884  | 305.30674 | 45.80191  | 5.83013  | 0.1315381 | 3.1022050 | 38 | 1 | 41 days   | 0.41 |     |     | MPC | 2007 TA <sub>134</sub>        |
| 2007 TF <sub>134</sub> | 17.6 | 0.15 | 20071027 | 352.06230 | 4.28191   | 47.63575  | 2.88090  | 0.1694005 | 2.6205229 | 45 | 1 | 60 days   | 0.39 | M-v | 4   | MPC | 2007 TF <sub>134</sub>        |
| 2007 TH <sub>134</sub> | 16.3 | 0.15 | 20071007 | 39.62933  | 308.91708 | 44.19086  | 9.89973  | 0.0718777 | 3.1666528 | 33 | 1 | 35 days   | 0.29 |     |     | MPC | 2007 TH <sub>134</sub>        |
| 2007 TU <sub>134</sub> | 17.8 | 0.15 | 20071027 | 359.50189 | 143.33569 | 226.88977 | 2.21261  | 0.1866540 | 2.3448713 | 38 | 3 | 2000-2007 | 0.40 | M-v | 2   | MPC | 128429 2007 TU <sub>134</sub> |
| 2007 TX <sub>134</sub> | 17.6 | 0.15 | 20071027 | 321.96068 | 216.46958 | 206.13152 | 6.08343  | 0.1962908 | 2.4055906 | 33 | 1 | 82 days   | 0.31 | M-v | 4   | MPC | 2007 TX <sub>134</sub>        |
| 2007 TE <sub>135</sub> | 17.4 | 0.15 | 20071007 | 17.50350  | 320.59250 | 10.84738  | 13.52952 | 0.2175766 | 2.6529407 | 33 | 1 | 58 days   | 0.44 |     |     | MPC | 2007 TE <sub>135</sub>        |
| 2007 TM <sub>135</sub> | 17.0 | 0.15 | 20071007 | 297.88639 | 307.83779 | 141.49032 | 2.13195  | 0.2504000 | 2.4548132 | 21 | 1 | 10 days   | 0.32 |     |     | MPC | 2007 TM <sub>135</sub>        |
| 2007 TA <sub>136</sub> | 15.9 | 0.15 | 20071007 | 36.69149  | 16.21018  | 301.33147 | 13.70090 | 0.1673480 | 2.6470109 | 24 | 1 | 51 days   | 0.43 |     |     | MPC | 2007 TA <sub>136</sub>        |
| 2007 TE <sub>136</sub> | 16.4 | 0.15 | 20071027 | 277.89748 | 294.91861 | 194.53544 | 6.08772  | 0.1008175 | 2.3033599 | 55 | 1 | 41 days   | 0.56 |     |     | MPC | 2007 TE <sub>136</sub>        |
| 2007 TR <sub>136</sub> | 16.5 | 0.15 | 20071027 | 306.50062 | 248.11167 | 215.84914 | 23.59937 | 0.2501229 | 2.2848740 | 89 | 3 | 2000-2007 | 0.56 | M-v | 2   | MPC | 128429 2007 TR <sub>136</sub> |
| 2007 TT <sub>136</sub> | 16.1 | 0.15 | 20071007 | 36.76137  | 78.92766  | 246.60736 | 11.91025 | 0.1966633 | 2.6970656 | 28 | 1 | 59 days   | 0.69 |     |     | MPC | 2007 TT <sub>136</sub>        |
| 2007 TW <sub>136</sub> | 16.5 | 0.15 | 20071027 | 13.82231  | 111.11525 | 244.96057 | 11.56966 | 0.2886075 | 2.6786597 | 74 | 1 | 66 days   | 0.48 | M-v | 4   | MPC | 2007 TW <sub>136</sub>        |
| 2007 TC <sub>137</sub> | 18.5 | 0.15 | 20071007 | 338.38210 | 39.84374  | 19.45716  | 1.46526  | 0.1635916 | 2.4220885 | 23 | 1 | 27 days   | 0.32 |     |     | MPC | 2007 TC <sub>137</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |      |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|------|-------------------------------|
| 2007 TD <sub>137</sub> | 17.7 | 0.15 | 20071007 | 73.53525  | 80.16379  | 216.52492 | 2.80001  | 0.1792950 | 2.3560004 | 17 | 1 | 27 days   | 0.40 |     | MP   | 2007 TD <sub>137</sub>        |
| 2007 TE <sub>137</sub> | 16.1 | 0.15 | 20071027 | 42.67112  | 135.65725 | 213.87647 | 5.10919  | 0.0714413 | 2.7925899 | 34 | 1 | 40 days   | 0.35 |     | MP   | 2007 TE <sub>137</sub>        |
| 2007 TF <sub>137</sub> | 16.8 | 0.15 | 20071027 | 10.06727  | 2.55185   | 17.32345  | 13.84752 | 0.1808429 | 2.6390009 | 54 | 2 | 1994–2007 | 0.62 | M-v | 3    | 128429 2007 TF <sub>137</sub> |
| 2007 TL <sub>137</sub> | 17.3 | 0.15 | 20071007 | 19.48626  | 88.28886  | 264.47699 | 4.34834  | 0.2871164 | 2.5593065 | 55 | 1 | 54 days   | 0.54 |     | MP   | 2007 TL <sub>137</sub>        |
| 2007 TM <sub>137</sub> | 16.6 | 0.15 | 20071027 | 348.70527 | 180.44445 | 238.00018 | 8.75232  | 0.2809131 | 2.7682409 | 75 | 1 | 69 days   | 0.48 | M-v | 4    | 2007 TM <sub>137</sub>        |
| 2007 TN <sub>137</sub> | 15.0 | 0.15 | 20071027 | 17.24502  | 6.23971   | 12.27138  | 12.61113 | 0.1388962 | 3.0919356 | 57 | 1 | 55 days   | 0.51 |     | MP   | 2007 TN <sub>137</sub>        |
| 2007 TT <sub>137</sub> | 15.4 | 0.15 | 20071027 | 61.85938  | 315.42306 | 8.51870   | 13.02699 | 0.1473249 | 2.7375343 | 40 | 2 | 2005–2007 | 0.48 | M-v | 3    | 128430 2007 TT <sub>137</sub> |
| 2007 TV <sub>137</sub> | 16.7 | 0.15 | 20071007 | 324.50694 | 29.26432  | 61.18858  | 4.62277  | 0.2565596 | 3.0592270 | 30 | 1 | 30 days   | 0.46 |     | MP   | 2007 TV <sub>137</sub>        |
| 2007 TB <sub>138</sub> | 16.6 | 0.15 | 20071007 | 273.00777 | 108.67663 | 46.05799  | 12.23453 | 0.2496686 | 2.6600414 | 30 | 1 | 34 days   | 0.40 |     | MP   | 2007 TB <sub>138</sub>        |
| 2007 TC <sub>138</sub> | 17.7 | 0.15 | 20071007 | 26.48490  | 275.69677 | 87.40746  | 1.56665  | 0.1281126 | 2.6104993 | 17 | 1 | 28 days   | 0.28 |     | MP   | 2007 TC <sub>138</sub>        |
| 2007 TF <sub>138</sub> | 16.4 | 0.15 | 20071007 | 2.16953   | 221.64727 | 175.88527 | 1.62252  | 0.2477635 | 3.9818790 | 21 | 1 | 56 days   | 0.25 |     | MP   | 2007 TF <sub>138</sub>        |
| 2007 TG <sub>138</sub> | 18.9 | 0.15 | 20071027 | 348.58408 | 21.76646  | 43.38992  | 8.56683  | 0.3059911 | 2.7800877 | 25 | 1 | 42 days   | 0.56 |     | MP   | 2007 TG <sub>138</sub>        |
| 2007 TH <sub>138</sub> | 16.1 | 0.15 | 20071027 | 91.92516  | 244.33570 | 60.25177  | 3.29678  | 0.0712002 | 2.6435798 | 35 | 1 | 58 days   | 0.56 |     | MP   | 2007 TH <sub>138</sub>        |
| 2007 TJ <sub>138</sub> | 16.8 | 0.15 | 20071027 | 97.05390  | 84.07534  | 202.39295 | 3.55902  | 0.1979248 | 2.5976445 | 33 | 3 | 2003–2007 | 0.32 | M-v | 3    | 128430 2007 TJ <sub>138</sub> |
| 2007 TQ <sub>138</sub> | 15.5 | 0.15 | 20070917 | 311.10819 | 102.38041 | 344.81420 | 16.08531 | 0.2052784 | 3.0940494 | 24 | 1 | 22 days   | 0.57 |     | MP   | 2007 TQ <sub>138</sub>        |
| 2007 TU <sub>138</sub> | 16.4 | 0.15 | 20071027 | 5.50031   | 61.85041  | 316.14823 | 13.88229 | 0.1922387 | 2.7587647 | 31 | 1 | 61 days   | 0.68 | M-v | 4    | 2007 TU <sub>138</sub>        |
| 2007 TX <sub>138</sub> | 15.9 | 0.15 | 20071027 | 339.10791 | 163.55161 | 252.48898 | 16.28820 | 0.1843013 | 3.1236115 | 29 | 1 | 57 days   | 0.52 |     | MP   | 2007 TX <sub>138</sub>        |
| 2007 TY <sub>138</sub> | 16.0 | 0.15 | 20071027 | 35.85793  | 15.04378  | 320.57954 | 14.37602 | 0.1775624 | 2.6893208 | 34 | 1 | 65 days   | 0.56 | M-v | 4    | 2007 TY <sub>138</sub>        |
| 2007 TT <sub>139</sub> | 16.7 | 0.15 | 20071027 | 355.39838 | 155.51785 | 251.50633 | 11.36565 | 0.3453627 | 3.0541395 | 37 | 1 | 64 days   | 0.47 | M-v | 4    | 2007 TT <sub>139</sub>        |
| 2007 TW <sub>139</sub> | 16.0 | 0.15 | 20071027 | 358.79873 | 135.51718 | 264.24605 | 11.32432 | 0.1520081 | 3.0834955 | 42 | 3 | 2001–2007 | 0.50 | M-v | 3    | 128431 2007 TW <sub>139</sub> |
| 2007 TZ <sub>139</sub> | 15.9 | 0.15 | 20071027 | 318.02006 | 226.88948 | 229.19962 | 23.25697 | 0.1836540 | 2.2671914 | 66 | 3 | 2000–2007 | 0.42 | M-v | 2    | 128431 2007 TZ <sub>139</sub> |
| 2007 TB <sub>140</sub> | 15.1 | 0.15 | 20071027 | 337.79877 | 189.02288 | 246.08388 | 16.84617 | 0.2013076 | 3.1458617 | 63 | 1 | 65 days   | 0.74 | M-v | 4    | 2007 TB <sub>140</sub>        |
| 2007 TC <sub>140</sub> | 17.2 | 0.15 | 20071027 | 61.11600  | 347.38073 | 329.00127 | 6.59594  | 0.2107065 | 2.2054257 | 32 | 1 | 54 days   | 0.61 |     | MP   | 2007 TC <sub>140</sub>        |
| 2007 TD <sub>140</sub> | 16.7 | 0.15 | 20071007 | 42.42736  | 82.39681  | 229.75080 | 27.14555 | 0.3770006 | 2.6012160 | 26 | 1 | 29 days   | 0.59 |     | MP   | 2007 TD <sub>140</sub>        |
| 2007 TG <sub>140</sub> | 15.2 | 0.15 | 20071027 | 27.34516  | 327.03187 | 33.03367  | 26.13126 | 0.0711617 | 2.7500134 | 87 | 2 | 2005–2007 | 0.50 | M-v | 2    | 128431 2007 TG <sub>140</sub> |
| 2007 TK <sub>140</sub> | 17.4 | 0.15 | 20071027 | 14.86363  | 280.42615 | 88.39609  | 2.38427  | 0.2220528 | 2.3971007 | 52 | 1 | 36 days   | 0.54 |     | MP   | 2007 TK <sub>140</sub>        |
| 2007 TN <sub>140</sub> | 17.1 | 0.15 | 20071027 | 34.96756  | 285.88906 | 49.67356  | 5.45837  | 0.2537440 | 2.3821382 | 72 | 4 | 1996–2007 | 0.41 | M-v | 1    | 128432 2007 TN <sub>140</sub> |
| 2007 TR <sub>140</sub> | 15.6 | 0.15 | 20071027 | 325.85154 | 28.75035  | 44.98131  | 10.85998 | 0.0928121 | 3.0872038 | 41 | 1 | 57 days   | 0.53 |     | MP   | 2007 TR <sub>140</sub>        |
| 2007 TB <sub>141</sub> | 15.6 | 0.15 | 20071027 | 345.87859 | 48.57737  | 11.77772  | 9.83043  | 0.1037417 | 3.0587199 | 50 | 2 | 2004–2007 | 0.51 | M-v | 3    | 128432 2007 TB <sub>141</sub> |
| 2007 TR <sub>141</sub> | 16.7 | 0.15 | 20071007 | 165.31773 | 57.91226  | 168.36269 | 2.66037  | 0.1499766 | 2.4448730 | 18 | 1 | 29 days   | 0.22 |     | MP   | 2007 TR <sub>141</sub>        |
| 2007 TG <sub>142</sub> | 17.0 | 0.15 | 20071027 | 6.90622   | 233.99555 | 159.97779 | 6.60183  | 0.3442839 | 2.5856179 | 53 | 1 | 84 days   | 0.50 | M-v | 4    | 2007 TG <sub>142</sub>        |
| 2007 TO <sub>142</sub> | 15.9 | 0.15 | 20071007 | 1.60443   | 0.37113   | 16.25740  | 6.01921  | 0.2840809 | 3.9782919 | 36 | 1 | 55 days   | 0.56 |     | MP   | 2007 TO <sub>142</sub>        |
| 2007 TW <sub>142</sub> | 16.7 | 0.15 | 20071027 | 7.62943   | 73.40846  | 306.52270 | 5.21567  | 0.2224649 | 2.6686223 | 82 | 3 | 1998–2007 | 0.50 | M-v | 3    | 128433 2007 TW <sub>142</sub> |
| 2007 TX <sub>142</sub> | 17.3 | 0.15 | 20071027 | 340.77356 | 9.40135   | 46.53516  | 5.85430  | 0.1150636 | 2.1982774 | 56 | 1 | 57 days   | 0.48 |     | MP   | 2007 TX <sub>142</sub>        |
| 2007 TA <sub>143</sub> | 17.5 | 0.15 | 20071027 | 23.11219  | 200.43480 | 157.72307 | 1.67591  | 0.1946094 | 2.1976107 | 72 | 3 | 1994–2007 | 0.46 | M-v | 3    | 128433 2007 TA <sub>143</sub> |
| 2007 TB <sub>143</sub> | 16.3 | 0.15 | 20071027 | 1.91250   | 307.32212 | 90.25206  | 7.02535  | 0.1340314 | 2.3457921 | 56 | 1 | 58 days   | 0.50 |     | MP   | 2007 TB <sub>143</sub>        |
| 2007 TD <sub>143</sub> | 17.0 | 0.15 | 20071027 | 348.22974 | 317.37836 | 98.90201  | 6.25141  | 0.2300206 | 2.4030658 | 56 | 1 | 87 days   | 0.54 | M-v | 4    | 2007 TD <sub>143</sub>        |
| 2007 TE <sub>143</sub> | 16.4 | 0.15 | 20071027 | 20.72048  | 229.38783 | 142.91419 | 8.40799  | 0.2024905 | 2.6028513 | 40 | 1 | 86 days   | 0.53 | M-v | 4    | 128982 2007 TE <sub>143</sub> |
| 2007 TQ <sub>143</sub> | 15.6 | 0.15 | 20071007 | 63.72264  | 268.62318 | 12.22985  | 25.64008 | 0.2257284 | 3.0969887 | 22 | 1 | 58 days   | 0.37 |     | MP   | 2007 TQ <sub>143</sub>        |
| 2007 TW <sub>143</sub> | 18.0 | 0.15 | 20071027 | 25.58816  | 48.48820  | 294.90720 | 0.64026  | 0.1773271 | 2.3326009 | 41 | 1 | 84 days   | 0.48 | M-v | 4    | 2007 TW <sub>143</sub>        |
| 2007 TH <sub>144</sub> | 15.5 | 0.15 | 20071007 | 330.78012 | 40.50984  | 13.42836  | 10.03219 | 0.1007130 | 3.0930176 | 44 | 1 | 51 days   | 0.50 |     | D MP | 2007 TH <sub>144</sub>        |
| 2007 TV <sub>144</sub> | 16.4 | 0.15 | 20071027 | 324.01558 | 26.97927  | 41.45776  | 3.15457  | 0.0961490 | 2.4351177 | 64 | 3 | 2003–2007 | 0.49 | M-v | 2    | 128434 2007 TV <sub>144</sub> |
| 2007 TX <sub>144</sub> | 17.0 | 0.15 | 20071007 | 357.10341 | 9.60217   | 14.47593  | 1.64442  | 0.2274198 | 2.6787764 | 71 | 1 | 55 days   | 0.49 |     | MP   | 2007 TX <sub>144</sub>        |
| 2007 TY <sub>144</sub> | 18.4 | 0.15 | 20071027 | 0.18680   | 107.71214 | 279.59350 | 0.91837  | 0.2134171 | 2.3973304 | 37 | 2 | 1996–2007 | 0.53 | M-v | 3    | 128434 2007 TY <sub>144</sub> |
| 2007 TA <sub>145</sub> | 17.4 | 0.15 | 20071027 | 353.25041 | 195.02555 | 205.97834 | 4.97438  | 0.2923501 | 2.6269948 | 89 | 1 | 62 days   | 0.45 | M-v | 4    | 2007 TA <sub>145</sub>        |
| 2007 TE <sub>145</sub> | 17.5 | 0.15 | 20071007 | 36.19016  | 113.41507 | 206.45432 | 12.08699 | 0.2735802 | 2.6268254 | 27 | 1 | 34 days   | 0.39 |     | MP   | 2007 TE <sub>145</sub>        |
| 2007 TQ <sub>145</sub> | 17.5 | 0.15 | 20071027 | 352.52180 | 358.75596 | 45.83835  | 2.93913  | 0.2160504 | 2.4362037 | 61 | 1 | 71 days   | 0.51 | M-v | 4    | 2007 TQ <sub>145</sub>        |
| 2007 TX <sub>145</sub> | 16.3 | 0.15 | 20071027 | 56.89523  | 287.88522 | 28.27484  | 6.53407  | 0.0892701 | 2.7646091 | 33 | 1 | 61 days   | 0.59 | M-v | 5 D  | 2007 TX <sub>145</sub>        |
| 2007 TB <sub>146</sub> | 16.0 | 0.15 | 20071027 | 24.45076  | 3.45316   | 349.98193 | 1.83147  | 0.1448706 | 3.0903355 | 26 | 1 | 60 days   | 0.42 | M-v | 4    | 2007 TB <sub>146</sub>        |
| 2007 TH <sub>146</sub> | 16.2 | 0.15 | 20071027 | 350.69716 | 188.09543 | 218.04809 | 3.68844  | 0.1236416 | 2.9375675 | 57 | 4 | 2002–2007 | 0.49 | M-v | 1    | 128436 2007 TH <sub>146</sub> |
| 2007 TL <sub>146</sub> | 16.6 | 0.15 | 20071027 | 354.37152 | 197.97777 | 199.71091 | 9.17649  | 0.1892915 | 2.9377763 | 49 | 1 | 70 days   | 0.59 | M-v | 4    | 2007 TL <sub>146</sub>        |
| 2007 TO <sub>146</sub> | 17.5 | 0.15 | 20071027 | 17.86654  | 327.64277 | 34.01641  | 5.77521  | 0.3367346 | 2.5827576 | 62 | 1 | 58 days   | 0.55 |     | MP   | 2007 TO <sub>146</sub>        |
| 2007 TP <sub>146</sub> | 16.5 | 0.15 | 20071027 | 35.29758  | 325.21963 | 24.29087  | 3.52914  | 0.1941990 | 2.3572359 | 86 | 2 | 2006–2007 | 0.49 | M-v | 3    | 128982 2007 TP <sub>146</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-----|-------------------------------|
| 2007 TW <sub>146</sub> | 15.8 | 0.15 | 20071027 | 28.37177  | 325.82711 | 44.18096  | 15.53768 | 0.1891842 | 2.6922112 | 71 | 3 | 1998-2007 | 0.55 | M-v | 3   | MPC | 128437 2007 TW <sub>146</sub> |
| 2007 TY <sub>146</sub> | 17.3 | 0.15 | 20071027 | 353.82727 | 203.73673 | 222.93849 | 9.01265  | 0.4206977 | 2.6750516 | 59 | 1 | 85 days   | 0.53 | M-v | 4 D | MPC | 2007 TY <sub>146</sub>        |
| 2007 TZ <sub>146</sub> | 15.8 | 0.15 | 20071027 | 90.72920  | 93.55321  | 202.81102 | 7.83150  | 0.1175101 | 2.5680446 | 46 | 3 | 2003-2007 | 0.55 | M-v | 3   | MPC | 128437 2007 TZ <sub>146</sub> |
| 2007 TA <sub>147</sub> | 16.8 | 0.15 | 20071027 | 356.52568 | 14.85194  | 32.22208  | 10.62553 | 0.2287664 | 2.7459776 | 60 | 1 | 60 days   | 0.56 | M-v | 4   | MPC | 2007 TA <sub>147</sub>        |
| 2007 TJ <sub>147</sub> | 17.5 | 0.15 | 20071007 | 353.05181 | 304.77468 | 75.36639  | 4.44738  | 0.1404040 | 2.2427353 | 15 | 1 | 6 days    | 0.48 |     |     | MPC | 2007 TJ <sub>147</sub>        |
| 2007 TY <sub>147</sub> | 14.8 | 0.15 | 20071027 | 340.35383 | 13.24365  | 39.59332  | 17.23862 | 0.1921018 | 3.1804698 | 93 | 3 | 2002-2007 | 0.44 | M-v | 2   | MPC | 128438 2007 TY <sub>147</sub> |
| 2007 TA <sub>148</sub> | 17.8 | 0.15 | 20071007 | 10.69128  | 298.46521 | 65.32524  | 5.07411  | 0.1758400 | 2.1502001 | 41 | 1 | 58 days   | 0.50 |     |     | MPC | 2007 TA <sub>148</sub>        |
| 2007 TC <sub>148</sub> | 16.9 | 0.15 | 20071027 | 3.74944   | 290.01894 | 95.29863  | 2.22358  | 0.1963978 | 2.3753576 | 81 | 5 | 1996-2007 | 0.43 | M-v | 1   | MPC | 128438 2007 TC <sub>148</sub> |
| 2007 TF <sub>148</sub> | 16.8 | 0.15 | 20071027 | 11.10456  | 319.82183 | 53.94680  | 6.01291  | 0.2454987 | 2.3492727 | 96 | 2 | 2006-2007 | 0.50 | M-v | 3   | MPC | 128438 2007 TF <sub>148</sub> |
| 2007 TK <sub>148</sub> | 14.8 | 0.15 | 20071027 | 302.52729 | 50.91003  | 32.89256  | 17.25549 | 0.0689368 | 3.0907258 | 46 | 4 | 2002-2007 | 0.46 | M-v | 1   | MPC | 128438 2007 TK <sub>148</sub> |
| 2007 TP <sub>148</sub> | 16.9 | 0.15 | 20071027 | 11.43915  | 194.94031 | 185.47432 | 7.16994  | 0.2926643 | 2.5905197 | 58 | 1 | 53 days   | 0.46 |     |     | MPC | 2007 TP <sub>148</sub>        |
| 2007 TQ <sub>148</sub> | 16.3 | 0.15 | 20071027 | 15.85642  | 253.01206 | 131.34190 | 5.48815  | 0.2934875 | 2.6143504 | 43 | 3 | 2000-2007 | 0.44 | M-v | 2   | MPC | 128439 2007 TQ <sub>148</sub> |
| 2007 TY <sub>148</sub> | 17.9 | 0.15 | 20071027 | 350.01395 | 220.36917 | 179.22977 | 1.08733  | 0.1905070 | 2.3998066 | 35 | 1 | 86 days   | 0.43 | M-v | 4   | MPC | 2007 TY <sub>148</sub>        |
| 2007 TZ <sub>148</sub> | 17.9 | 0.15 | 20071007 | 22.65055  | 138.50250 | 198.56367 | 4.86491  | 0.2885868 | 2.4873951 | 20 | 1 | 11 days   | 0.52 |     |     | MPC | 2007 TZ <sub>148</sub>        |
| 2007 TC <sub>149</sub> | 16.1 | 0.15 | 20071027 | 7.29704   | 345.34794 | 32.26567  | 4.67655  | 0.0802506 | 2.7931186 | 53 | 4 | 2002-2007 | 0.41 | M-v | 1   | MPC | 128439 2007 TC <sub>149</sub> |
| 2007 TD <sub>149</sub> | 17.5 | 0.15 | 20071007 | 20.01609  | 321.39078 | 21.50755  | 13.01657 | 0.3054751 | 2.6626898 | 29 | 1 | 31 days   | 0.68 |     |     | MPC | 2007 TD <sub>149</sub>        |
| 2007 TQ <sub>149</sub> | 15.0 | 0.15 | 20071027 | 357.75209 | 6.47034   | 53.76771  | 19.38451 | 0.1604784 | 3.1318331 | 76 | 3 | 2001-2007 | 0.43 | M-v | 2   | MPC | 128439 2007 TQ <sub>149</sub> |
| 2007 TY <sub>149</sub> | 17.6 | 0.15 | 20071027 | 4.29671   | 140.66950 | 224.03266 | 5.49013  | 0.2862251 | 2.6420284 | 32 | 1 | 71 days   | 0.58 | M-v | 4   | MPC | 2007 TY <sub>149</sub>        |
| 2007 TZ <sub>149</sub> | 15.7 | 0.15 | 20071027 | 25.86823  | 123.45336 | 206.00213 | 7.44560  | 0.1785621 | 3.1812222 | 49 | 4 | 2001-2007 | 0.50 | M-v | 0   | MPC | 128440 2007 TZ <sub>149</sub> |
| 2007 TW <sub>150</sub> | 15.6 | 0.15 | 20071027 | 31.22957  | 112.92168 | 221.36424 | 8.42502  | 0.1493731 | 3.0371034 | 34 | 1 | 60 days   | 0.53 | M-v | 4   | MPC | 2007 TW <sub>150</sub>        |
| 2007 TY <sub>150</sub> | 15.8 | 0.15 | 20071007 | 11.06095  | 117.31605 | 238.89684 | 6.85914  | 0.1879861 | 3.1601797 | 36 | 1 | 55 days   | 0.51 |     |     | MPC | 2007 TY <sub>150</sub>        |
| 2007 TX <sub>151</sub> | 17.7 | 0.15 | 20070917 | 358.31356 | 71.99757  | 287.95753 | 3.97623  | 0.1914095 | 2.3632502 | 24 | 1 | 37 days   | 0.44 |     |     | MPC | 2007 TX <sub>151</sub>        |
| 2007 TZ <sub>151</sub> | 17.5 | 0.15 | 20071027 | 34.20858  | 119.69140 | 210.30842 | 6.18424  | 0.1390035 | 2.2409196 | 31 | 1 | 65 days   | 0.55 | M-v | 4   | MPC | 2007 TZ <sub>151</sub>        |
| 2007 TD <sub>152</sub> | 17.3 | 0.15 | 20071007 | 24.33677  | 84.79764  | 251.88907 | 4.37419  | 0.2150084 | 2.6821256 | 26 | 1 | 35 days   | 0.40 |     |     | MPC | 2007 TD <sub>152</sub>        |
| 2007 TE <sub>152</sub> | 15.6 | 0.15 | 20071007 | 42.69684  | 31.34639  | 293.79703 | 4.07978  | 0.0822228 | 3.0871807 | 25 | 1 | 49 days   | 0.72 |     |     | MPC | 2007 TE <sub>152</sub>        |
| 2007 TF <sub>152</sub> | 15.6 | 0.15 | 20070917 | 34.23440  | 59.83782  | 265.66974 | 4.07956  | 0.1432936 | 3.1896203 | 30 | 1 | 32 days   | 0.67 |     |     | MPC | 2007 TF <sub>152</sub>        |
| 2007 TM <sub>152</sub> | 15.4 | 0.15 | 20071007 | 59.59467  | 98.59281  | 204.62805 | 11.06440 | 0.1116354 | 3.0575150 | 17 | 1 | 6 days    | 0.77 |     | D   | MPC | 2007 TM <sub>152</sub>        |
| 2007 TN <sub>152</sub> | 16.6 | 0.15 | 20071027 | 353.13714 | 79.00707  | 311.16756 | 2.69180  | 0.1258060 | 2.3843489 | 66 | 4 | 2003-2007 | 0.51 | M-v | 1   | MPC | 128441 2007 TN <sub>152</sub> |
| 2007 TV <sub>152</sub> | 16.9 | 0.15 | 20071007 | 352.96515 | 180.03513 | 207.28029 | 7.33024  | 0.2289085 | 2.9768095 | 28 | 1 | 38 days   | 0.64 |     |     | MPC | 2007 TV <sub>152</sub>        |
| 2007 TW <sub>152</sub> | 17.6 | 0.15 | 20071027 | 354.41802 | 155.66013 | 237.56456 | 1.64183  | 0.2225789 | 2.3968497 | 57 | 1 | 82 days   | 0.57 | M-v | 4   | MPC | 2007 TW <sub>152</sub>        |
| 2007 TY <sub>152</sub> | 16.5 | 0.15 | 20071027 | 15.18881  | 151.90395 | 210.53493 | 12.55390 | 0.1157647 | 2.7343875 | 37 | 1 | 60 days   | 0.66 | M-v | 4   | MPC | 2007 TY <sub>152</sub>        |
| 2007 TC <sub>153</sub> | 16.9 | 0.15 | 20071027 | 356.96989 | 122.22248 | 269.79028 | 2.89679  | 0.3207292 | 2.6341314 | 60 | 1 | 56 days   | 0.49 |     |     | MPC | 2007 TC <sub>153</sub>        |
| 2007 TL <sub>153</sub> | 15.9 | 0.15 | 20071007 | 278.36248 | 279.53382 | 210.76062 | 12.45912 | 0.2762026 | 2.7164503 | 22 | 1 | 7 days    | 0.60 |     |     | MPC | 2007 TL <sub>153</sub>        |
| 2007 TM <sub>153</sub> | 17.0 | 0.15 | 20071027 | 16.08799  | 60.19894  | 300.05439 | 1.63695  | 0.2058261 | 2.4001730 | 63 | 4 | 1997-2007 | 0.46 | M-v | 2   | MPC | 128984 2007 TM <sub>153</sub> |
| 2007 TO <sub>153</sub> | 17.3 | 0.15 | 20071007 | 334.49582 | 88.31864  | 324.34545 | 1.77493  | 0.1742392 | 2.4048720 | 47 | 1 | 33 days   | 0.62 |     |     | MPC | 2007 TO <sub>153</sub>        |
| 2007 TP <sub>153</sub> | 15.0 | 0.15 | 20071007 | 300.24447 | 80.56175  | 5.31161   | 8.24991  | 0.0731464 | 3.0472137 | 40 | 1 | 58 days   | 0.45 |     |     | MPC | 2007 TP <sub>153</sub>        |
| 2007 TR <sub>153</sub> | 17.5 | 0.15 | 20071007 | 7.83674   | 143.57220 | 218.95355 | 4.49414  | 0.2926422 | 2.6699196 | 38 | 1 | 46 days   | 0.43 |     |     | MPC | 2007 TR <sub>153</sub>        |
| 2007 TS <sub>153</sub> | 15.9 | 0.15 | 20071007 | 85.19871  | 269.67884 | 5.67502   | 9.56370  | 0.1642606 | 2.7223212 | 26 | 1 | 23 days   | 0.41 |     | D   | MPC | 2007 TS <sub>153</sub>        |
| 2007 TJ <sub>154</sub> | 17.3 | 0.15 | 20071027 | 50.30139  | 338.99420 | 352.54836 | 5.69327  | 0.0485198 | 2.1757662 | 44 | 1 | 44 days   | 0.62 |     |     | MPC | 2007 TJ <sub>154</sub>        |
| 2007 TL <sub>154</sub> | 17.5 | 0.15 | 20071007 | 359.22213 | 160.92478 | 218.45812 | 12.09379 | 0.2487864 | 2.5802999 | 19 | 1 | 6 days    | 0.50 |     |     | MPC | 2007 TL <sub>154</sub>        |
| 2007 TQ <sub>154</sub> | 17.0 | 0.15 | 20071007 | 338.99745 | 85.72934  | 324.96831 | 3.71974  | 0.1734676 | 2.6449090 | 15 | 1 | 7 days    | 0.82 |     | D   | MPC | 2007 TQ <sub>154</sub>        |
| 2007 TT <sub>154</sub> | 16.1 | 0.15 | 20071027 | 344.87584 | 192.48415 | 212.47212 | 14.24295 | 0.1090278 | 2.6539752 | 46 | 1 | 64 days   | 0.55 | M-v | 4   | MPC | 2007 TT <sub>154</sub>        |
| 2007 TU <sub>154</sub> | 16.7 | 0.15 | 20071007 | 355.60500 | 35.16831  | 350.82521 | 4.08004  | 0.1081791 | 2.7081396 | 31 | 1 | 41 days   | 0.54 |     |     | MPC | 2007 TU <sub>154</sub>        |
| 2007 TV <sub>154</sub> | 15.9 | 0.15 | 20071027 | 357.78976 | 124.50419 | 264.60379 | 2.65740  | 0.1624297 | 3.0698902 | 68 | 4 | 1991-2007 | 0.52 | M-v | 1   | MPC | 128443 2007 TV <sub>154</sub> |
| 2007 TW <sub>154</sub> | 16.5 | 0.15 | 20071027 | 355.83335 | 147.86765 | 244.57502 | 2.11189  | 0.1622859 | 2.6327990 | 55 | 1 | 61 days   | 0.55 | M-v | 4   | MPC | 2007 TW <sub>154</sub>        |
| 2007 TX <sub>154</sub> | 16.8 | 0.15 | 20071027 | 64.24487  | 89.61733  | 220.34412 | 3.20969  | 0.1053977 | 2.2491217 | 61 | 3 | 1997-2007 | 0.57 | M-v | 3   | MPC | 128984 2007 TX <sub>154</sub> |
| 2007 TE <sub>155</sub> | 16.2 | 0.15 | 20071027 | 11.41569  | 154.77863 | 218.43257 | 13.40788 | 0.0769087 | 2.6016144 | 77 | 3 | 1993-2007 | 0.63 | M-v | 3   | MPC | 128444 2007 TE <sub>155</sub> |
| 2007 TH <sub>155</sub> | 16.8 | 0.15 | 20071007 | 4.54343   | 41.95366  | 333.15064 | 5.38951  | 0.1331985 | 2.3623196 | 23 | 1 | 30 days   | 0.62 |     |     | MPC | 2007 TH <sub>155</sub>        |
| 2007 TM <sub>155</sub> | 16.9 | 0.15 | 20071007 | 56.79705  | 35.40878  | 269.81350 | 4.05337  | 0.1854039 | 2.2946652 | 49 | 1 | 52 days   | 0.64 |     |     | MPC | 2007 TM <sub>155</sub>        |
| 2007 TP <sub>155</sub> | 17.4 | 0.15 | 20071007 | 13.07491  | 71.19425  | 289.43606 | 3.15356  | 0.2061235 | 2.4159225 | 39 | 1 | 29 days   | 0.59 |     |     | MPC | 2007 TP <sub>155</sub>        |
| 2007 TR <sub>155</sub> | 16.0 | 0.15 | 20071027 | 26.45720  | 344.77115 | 10.31058  | 14.00610 | 0.1072114 | 2.7303859 | 54 | 1 | 67 days   | 0.51 | M-v | 4   | MPC | 2007 TR <sub>155</sub>        |
| 2007 TT <sub>155</sub> | 17.9 | 0.15 | 20071027 | 16.70931  | 140.90726 | 220.90246 | 6.16479  | 0.2363177 | 2.3312394 | 35 | 1 | 62 days   | 0.47 | M-v | 4   | MPC | 2007 TT <sub>155</sub>        |
| 2007 TY <sub>155</sub> | 17.0 | 0.15 | 20071007 | 354.89410 | 27.87900  | 5.63848   | 10.07555 | 0.3598175 | 3.0825093 | 49 | 1 | 49 days   | 0.50 |     |     | MPC | 2007 TY <sub>155</sub>        |

|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 TZ <sub>155</sub> | 15.8 | 0.15 | 20071027 | 354.48888 | 27.49070  | 9.27328   | 11.87186 | 0.1502169 | 2.7159560 | 79  | 3 | 1998–2007 | 0.50 | M-v | 3 | MPC | 128445 2007 TZ <sub>155</sub> |
| 2007 TB <sub>156</sub> | 15.6 | 0.15 | 20071007 | 28.28778  | 131.98889 | 211.18946 | 26.13123 | 0.1780083 | 3.2172560 | 28  | 1 | 50 days   | 0.44 |     |   | MPC | 2007 TB <sub>156</sub>        |
| 2007 TO <sub>156</sub> | 17.1 | 0.15 | 20071027 | 16.80460  | 13.27545  | 353.43108 | 4.40965  | 0.1686603 | 2.3499913 | 44  | 3 | 1996–2007 | 0.45 | M-v | 3 | MPC | 128446 2007 TO <sub>156</sub> |
| 2007 TP <sub>156</sub> | 17.8 | 0.15 | 20071027 | 5.29384   | 14.47686  | 7.32867   | 5.94894  | 0.2438468 | 2.3518689 | 61  | 1 | 74 days   | 0.57 | M-v | 4 | MPC | 2007 TP <sub>156</sub>        |
| 2007 TQ <sub>156</sub> | 16.7 | 0.15 | 20071027 | 59.29933  | 11.00137  | 298.18651 | 1.75828  | 0.1845928 | 2.3848318 | 74  | 3 | 2002–2007 | 0.46 | M-v | 3 | MPC | 128446 2007 TQ <sub>156</sub> |
| 2007 TS <sub>156</sub> | 15.6 | 0.15 | 20071027 | 359.53462 | 95.65401  | 293.98755 | 1.71434  | 0.0890356 | 2.7848988 | 72  | 5 | 2000–2007 | 0.45 | M-v | 1 | MPC | 128447 2007 TS <sub>156</sub> |
| 2007 TF <sub>157</sub> | 16.6 | 0.15 | 20071027 | 46.08840  | 328.16885 | 12.79799  | 8.55376  | 0.0989020 | 2.2435254 | 42  | 1 | 63 days   | 0.51 | M-v | 5 | MPC | 2007 TF <sub>157</sub>        |
| 2007 TH <sub>157</sub> | 18.2 | 0.15 | 20071007 | 4.37107   | 4.56031   | 1.51090   | 8.24213  | 0.3058900 | 2.5859049 | 21  | 1 | 6 days    | 0.61 |     |   | MPC | 2007 TH <sub>157</sub>        |
| 2007 TN <sub>157</sub> | 17.8 | 0.15 | 20071007 | 19.47558  | 111.25996 | 233.53407 | 2.05861  | 0.2326715 | 2.4333385 | 37  | 1 | 42 days   | 0.65 |     |   | MPC | 2007 TN <sub>157</sub>        |
| 2007 TO <sub>157</sub> | 16.9 | 0.15 | 20071027 | 71.70817  | 78.15197  | 210.79691 | 9.78905  | 0.1987113 | 2.3346193 | 52  | 1 | 58 days   | 0.60 |     |   | MPC | 2007 TO <sub>157</sub>        |
| 2007 TQ <sub>157</sub> | 17.4 | 0.15 | 20071007 | 38.03062  | 91.34843  | 235.41523 | 5.32662  | 0.1530415 | 2.3044611 | 34  | 1 | 53 days   | 0.59 |     |   | MPC | 2007 TQ <sub>157</sub>        |
| 2007 TS <sub>157</sub> | 16.2 | 0.15 | 20071007 | 0.05701   | 17.03926  | 2.24359   | 14.60845 | 0.2150560 | 3.2022551 | 23  | 1 | 43 days   | 0.38 |     |   | MPC | 2007 TS <sub>157</sub>        |
| 2007 TX <sub>157</sub> | 15.9 | 0.15 | 20071007 | 300.86786 | 230.55626 | 213.24695 | 20.26952 | 0.0553342 | 2.6444473 | 19  | 1 | 6 days    | 0.45 |     |   | MPC | 2007 TX <sub>157</sub>        |
| 2007 TZ <sub>157</sub> | 16.6 | 0.15 | 20071007 | 44.58416  | 293.06933 | 16.49659  | 24.52315 | 0.2664228 | 2.7199989 | 16  | 1 | 10 days   | 0.70 |     |   | MPC | 2007 TZ <sub>157</sub>        |
| 2007 TC <sub>158</sub> | 16.2 | 0.15 | 20071027 | 356.34913 | 171.52589 | 220.98549 | 10.58980 | 0.1446229 | 3.0115710 | 56  | 1 | 58 days   | 0.41 |     |   | MPC | 2007 TC <sub>158</sub>        |
| 2007 TN <sub>158</sub> | 16.4 | 0.15 | 20071027 | 6.83202   | 6.76779   | 11.03964  | 12.71926 | 0.2960733 | 3.1287539 | 45  | 1 | 73 days   | 0.53 | M-v | 4 | MPC | 2007 TN <sub>158</sub>        |
| 2007 TY <sub>158</sub> | 16.1 | 0.15 | 20071007 | 99.76531  | 10.14724  | 253.72274 | 5.28802  | 0.1146329 | 2.6968861 | 15  | 1 | 6 days    | 0.79 |     |   | MPC | 2007 TY <sub>158</sub>        |
| 2007 TB <sub>159</sub> | 18.2 | 0.15 | 20071007 | 32.45561  | 328.38917 | 355.56191 | 5.03513  | 0.2459476 | 2.2838439 | 26  | 1 | 7 days    | 0.57 |     |   | MPC | 2007 TB <sub>159</sub>        |
| 2007 TH <sub>159</sub> | 16.4 | 0.15 | 20071027 | 347.74378 | 99.79405  | 310.44199 | 3.73604  | 0.1813376 | 2.9239989 | 41  | 1 | 39 days   | 0.58 |     |   | MPC | 2007 TH <sub>159</sub>        |
| 2007 TJ <sub>159</sub> | 17.5 | 0.15 | 20071007 | 28.43434  | 300.01868 | 30.54466  | 13.13513 | 0.2935380 | 2.6293953 | 40  | 1 | 23 days   | 0.58 |     |   | MPC | 2007 TJ <sub>159</sub>        |
| 2007 TM <sub>159</sub> | 16.0 | 0.15 | 20071027 | 73.86296  | 289.33852 | 20.94318  | 15.03087 | 0.1214859 | 2.5593575 | 49  | 2 | 2003–2007 | 0.50 | M-v | 4 | MPC | 128449 2007 TM <sub>159</sub> |
| 2007 TR <sub>159</sub> | 15.6 | 0.15 | 20071027 | 24.03234  | 137.22629 | 223.05647 | 15.86382 | 0.2250820 | 3.1535772 | 64  | 1 | 71 days   | 0.59 | M-v | 4 | MPC | 2007 TR <sub>159</sub>        |
| 2007 TT <sub>159</sub> | 17.7 | 0.15 | 20071027 | 4.68206   | 154.94148 | 235.07143 | 3.74433  | 0.2355830 | 2.2384819 | 93  | 1 | 87 days   | 0.46 | M-v | 3 | MPC | 2007 TT <sub>159</sub>        |
| 2007 TV <sub>159</sub> | 16.7 | 0.15 | 20071027 | 3.37159   | 160.98664 | 233.13632 | 5.85270  | 0.1604746 | 2.3280646 | 69  | 2 | 2003–2007 | 0.43 | M-v | 3 | MPC | 128985 2007 TV <sub>159</sub> |
| 2007 TY <sub>159</sub> | 16.5 | 0.15 | 20071027 | 18.84805  | 148.13542 | 231.29666 | 13.06763 | 0.0396445 | 2.3783875 | 31  | 1 | 59 days   | 0.59 |     |   | MPC | 2007 TY <sub>159</sub>        |
| 2007 TB <sub>160</sub> | 17.3 | 0.15 | 20071027 | 22.29796  | 140.24305 | 223.68832 | 7.30799  | 0.2301857 | 2.3348726 | 66  | 1 | 59 days   | 0.48 |     |   | MPC | 2007 TB <sub>160</sub>        |
| 2007 TD <sub>160</sub> | 15.8 | 0.15 | 20071027 | 51.78707  | 88.87766  | 225.63529 | 10.15216 | 0.3059140 | 2.3589140 | 125 | 1 | 86 days   | 0.44 | M-v | 4 | MPC | 128985 2007 TD <sub>160</sub> |
| 2007 TE <sub>160</sub> | 16.6 | 0.15 | 20071027 | 352.63082 | 30.17594  | 24.02697  | 14.01944 | 0.2517743 | 2.6764755 | 56  | 1 | 86 days   | 0.47 | M-v | 3 | MPC | 128985 2007 TE <sub>160</sub> |
| 2007 TF <sub>160</sub> | 17.4 | 0.15 | 20071027 | 9.00752   | 18.15230  | 7.96628   | 8.08100  | 0.2274256 | 2.3328945 | 49  | 1 | 67 days   | 0.58 | M-v | 4 | MPC | 2007 TF <sub>160</sub>        |
| 2007 TH <sub>160</sub> | 16.2 | 0.15 | 20071027 | 343.15755 | 204.06778 | 223.61646 | 15.00832 | 0.1928567 | 2.6989222 | 96  | 4 | 1998–2007 | 0.48 | M-v | 1 | MPC | 128449 2007 TH <sub>160</sub> |
| 2007 TJ <sub>160</sub> | 15.0 | 0.15 | 20071027 | 2.07417   | 29.00122  | 14.77771  | 11.18162 | 0.1102449 | 2.9988683 | 72  | 4 | 2001–2007 | 0.47 | M-v | 1 | MPC | 128449 2007 TJ <sub>160</sub> |
| 2007 TK <sub>160</sub> | 16.3 | 0.15 | 20071027 | 11.98026  | 357.82389 | 21.46699  | 9.62001  | 0.3477455 | 3.1492811 | 62  | 1 | 70 days   | 0.54 | M-v | 4 | MPC | 2007 TK <sub>160</sub>        |
| 2007 TN <sub>160</sub> | 16.0 | 0.15 | 20071027 | 4.00919   | 10.78971  | 30.44249  | 19.52091 | 0.2740958 | 3.0456732 | 36  | 1 | 38 days   | 0.52 |     |   | MPC | 2007 TN <sub>160</sub>        |
| 2007 TP <sub>160</sub> | 17.1 | 0.15 | 20071027 | 25.72263  | 7.89033   | 354.43357 | 4.42331  | 0.2711103 | 2.3450285 | 55  | 1 | 71 days   | 0.46 | M-v | 4 | MPC | 2007 TP <sub>160</sub>        |
| 2007 TQ <sub>160</sub> | 15.8 | 0.15 | 20071027 | 29.15774  | 344.03895 | 28.84151  | 9.12880  | 0.1212515 | 2.6350877 | 84  | 6 | 1998–2007 | 0.44 | M-v | 1 | MPC | 128450 2007 TQ <sub>160</sub> |
| 2007 TR <sub>160</sub> | 15.9 | 0.15 | 20071027 | 23.02942  | 346.75673 | 30.73412  | 13.95872 | 0.1838187 | 2.5712713 | 61  | 1 | 86 days   | 0.47 | M-v | 4 | MPC | 2007 TR <sub>160</sub>        |
| 2007 TU <sub>160</sub> | 15.9 | 0.15 | 20071027 | 21.79802  | 23.33632  | 349.75755 | 5.42105  | 0.2759259 | 2.6400799 | 65  | 3 | 2003–2007 | 0.49 | M-v | 2 | MPC | 128450 2007 TU <sub>160</sub> |
| 2007 TY <sub>160</sub> | 17.1 | 0.15 | 20071027 | 345.23571 | 70.10425  | 350.09531 | 4.70981  | 0.1911433 | 2.3514507 | 69  | 2 | 2005–2007 | 0.48 | M-v | 3 | MPC | 128450 2007 TY <sub>160</sub> |
| 2007 TE <sub>161</sub> | 16.7 | 0.15 | 20071007 | 331.46363 | 50.87305  | 7.46810   | 16.93293 | 0.3442671 | 3.0463518 | 30  | 1 | 32 days   | 0.56 |     |   | MPC | 2007 TE <sub>161</sub>        |
| 2007 TM <sub>161</sub> | 18.7 | 0.15 | 20071027 | 5.91566   | 333.93577 | 37.74856  | 1.73657  | 0.2913343 | 2.4740076 | 28  | 1 | 66 days   | 0.39 | M-v | 4 | MPC | 2007 TM <sub>161</sub>        |
| 2007 TR <sub>161</sub> | 17.3 | 0.15 | 20071007 | 336.96627 | 44.69652  | 6.15607   | 4.59451  | 0.1876497 | 2.4123278 | 42  | 1 | 55 days   | 0.49 |     |   | MPC | 2007 TR <sub>161</sub>        |
| 2007 TU <sub>161</sub> | 16.8 | 0.15 | 20071027 | 34.59960  | 309.92486 | 26.13664  | 13.36139 | 0.1620249 | 2.8831214 | 21  | 1 | 40 days   | 0.37 |     |   | MPC | 2007 TU <sub>161</sub>        |
| 2007 TV <sub>161</sub> | 17.8 | 0.15 | 20071007 | 341.36709 | 16.13134  | 26.98475  | 8.44670  | 0.1575800 | 2.2428675 | 36  | 1 | 51 days   | 0.38 |     |   | MPC | 2007 TV <sub>161</sub>        |
| 2007 TW <sub>161</sub> | 17.5 | 0.15 | 20071027 | 358.33344 | 341.24640 | 44.99499  | 4.38977  | 0.1171000 | 2.5939317 | 35  | 2 | 2003–2007 | 0.44 | M-v | 3 | MPC | 128451 2007 TW <sub>161</sub> |
| 2007 TY <sub>161</sub> | 17.4 | 0.15 | 20071027 | 343.24904 | 175.54746 | 234.57803 | 1.58513  | 0.1708446 | 2.4345915 | 37  | 1 | 63 days   | 0.59 | M-v | 5 | MPC | 2007 TY <sub>161</sub>        |
| 2007 TZ <sub>161</sub> | 16.3 | 0.15 | 20071027 | 311.02844 | 68.62920  | 18.29034  | 15.02096 | 0.1303577 | 2.8505190 | 31  | 1 | 84 days   | 0.45 | M-v | 4 | MPC | 2007 TZ <sub>161</sub>        |
| 2007 TD <sub>162</sub> | 17.0 | 0.15 | 20071007 | 33.54191  | 125.90072 | 195.91118 | 12.31354 | 0.2757257 | 2.6873478 | 46  | 1 | 52 days   | 0.49 |     |   | MPC | 2007 TD <sub>162</sub>        |
| 2007 TG <sub>162</sub> | 18.0 | 0.15 | 20071027 | 52.09041  | 128.39172 | 182.88573 | 2.48487  | 0.2189002 | 2.3060518 | 44  | 3 | 1999–2007 | 0.41 | M-v | 3 | MPC | 128451 2007 TG <sub>162</sub> |
| 2007 TH <sub>162</sub> | 17.9 | 0.15 | 20071007 | 6.32895   | 343.07953 | 25.00563  | 4.66602  | 0.2411282 | 2.4448842 | 63  | 1 | 54 days   | 0.49 |     |   | MPC | 2007 TH <sub>162</sub>        |
| 2007 TJ <sub>162</sub> | 17.9 | 0.15 | 20071027 | 348.25405 | 190.38212 | 216.20660 | 4.04550  | 0.2236808 | 2.4439996 | 40  | 1 | 63 days   | 0.49 | M-v | 4 | MPC | 2007 TJ <sub>162</sub>        |
| 2007 TQ <sub>162</sub> | 16.0 | 0.15 | 20071027 | 157.26674 | 187.37489 | 35.86055  | 9.29782  | 0.1216181 | 2.5323025 | 35  | 3 | 1995–2007 | 0.43 | M-v | 4 | MPC | 128451 2007 TQ <sub>162</sub> |
| 2007 TW <sub>162</sub> | 16.5 | 0.15 | 20071007 | 46.85663  | 296.13898 | 18.51233  | 12.33367 | 0.2205148 | 2.7952566 | 25  | 1 | 29 days   | 0.60 |     |   | MPC | 2007 TW <sub>162</sub>        |
| 2007 TY <sub>162</sub> | 16.9 | 0.15 | 20071027 | 353.91726 | 14.31221  | 24.89553  | 8.42018  | 0.2252756 | 2.7906000 | 33  | 1 | 64 days   | 0.53 | M-v | 4 | MPC | 2007 TY <sub>162</sub>        |



|                        |      |      |          |           |           |           |          |           |           |     |   |           |      |     |     |     |        |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|-----|-----|--------|------------------------|
| 2007 TD <sub>163</sub> | 17.2 | 0.15 | 20071027 | 336.45052 | 14.43281  | 54.57513  | 2.75178  | 0.2447290 | 2.6662098 | 45  | 3 | 2001-2007 | 0.53 | M-v | 4   | MPC | 128452 | 2007 TD <sub>163</sub> |
| 2007 TG <sub>163</sub> | 16.9 | 0.15 | 20071027 | 32.14432  | 123.82589 | 219.42632 | 2.57141  | 0.2032600 | 2.7369248 | 27  | 1 | 37 days   | 0.43 |     |     | MPC |        | 2007 TG <sub>163</sub> |
| 2007 TL <sub>163</sub> | 17.0 | 0.15 | 20071027 | 355.76851 | 17.17258  | 20.16309  | 5.95262  | 0.1097556 | 2.3642297 | 43  | 1 | 65 days   | 0.58 | M-v | 4   | MPC |        | 2007 TL <sub>163</sub> |
| 2007 TP <sub>163</sub> | 17.5 | 0.15 | 20071027 | 10.54602  | 321.51986 | 56.67065  | 2.41822  | 0.1954562 | 2.3529808 | 46  | 1 | 60 days   | 0.48 | M-v | 4   | MPC |        | 2007 TP <sub>163</sub> |
| 2007 TC <sub>164</sub> | 18.2 | 0.15 | 20071007 | 16.84967  | 348.82453 | 2.95664   | 2.76550  | 0.1797318 | 2.3645142 | 25  | 1 | 54 days   | 0.44 |     |     | MPC |        | 2007 TC <sub>164</sub> |
| 2007 TD <sub>164</sub> | 17.3 | 0.15 | 20071027 | 346.69413 | 19.74303  | 21.30543  | 3.89871  | 0.1095913 | 2.3978632 | 49  | 3 | 2003-2007 | 0.56 | M-v | 2   | MPC | 128453 | 2007 TD <sub>164</sub> |
| 2007 TL <sub>164</sub> | 17.7 | 0.15 | 20071007 | 19.41976  | 338.74028 | 8.56737   | 2.53290  | 0.2233705 | 2.4290004 | 26  | 1 | 55 days   | 0.42 |     |     | MPC |        | 2007 TL <sub>164</sub> |
| 2007 TM <sub>164</sub> | 16.5 | 0.15 | 20071027 | 62.87718  | 117.61943 | 196.54036 | 10.84880 | 0.0790549 | 2.6962543 | 49  | 1 | 60 days   | 0.43 | M-v | 4 D | MPC |        | 2007 TM <sub>164</sub> |
| 2007 TP <sub>164</sub> | 18.4 | 0.15 | 20071007 | 358.14536 | 177.95919 | 205.34868 | 6.33026  | 0.2282436 | 2.3626489 | 26  | 1 | 32 days   | 0.38 |     |     | MPC |        | 2007 TP <sub>164</sub> |
| 2007 TR <sub>164</sub> | 15.9 | 0.15 | 20071027 | 323.35832 | 59.49681  | 23.16069  | 15.35357 | 0.2093206 | 3.1638123 | 34  | 1 | 67 days   | 0.58 | M-v | 4   | MPC |        | 2007 TR <sub>164</sub> |
| 2007 TV <sub>164</sub> | 16.6 | 0.15 | 20071027 | 31.84213  | 306.14657 | 48.86937  | 5.51472  | 0.1287276 | 2.7256377 | 50  | 2 | 2001-2007 | 0.42 | M-v | 4   | MPC | 128454 | 2007 TV <sub>164</sub> |
| 2007 TA <sub>165</sub> | 17.7 | 0.15 | 20071007 | 357.41005 | 357.77920 | 24.75537  | 4.30806  | 0.1563330 | 2.2577378 | 60  | 1 | 54 days   | 0.43 |     |     | MPC |        | 2007 TA <sub>165</sub> |
| 2007 TC <sub>165</sub> | 15.6 | 0.15 | 20071027 | 22.92886  | 95.78386  | 276.37027 | 5.03268  | 0.0359184 | 2.7329029 | 57  | 3 | 2002-2007 | 0.48 | M-v | 3   | MPC | 128454 | 2007 TC <sub>165</sub> |
| 2007 TD <sub>165</sub> | 17.1 | 0.15 | 20071007 | 14.59284  | 130.30927 | 238.39778 | 7.61670  | 0.1866338 | 2.7320751 | 44  | 1 | 47 days   | 0.49 |     |     | MPC |        | 2007 TD <sub>165</sub> |
| 2007 TE <sub>165</sub> | 17.7 | 0.15 | 20071007 | 7.64912   | 107.71550 | 262.98017 | 3.93272  | 0.1671535 | 2.3489071 | 35  | 1 | 30 days   | 0.68 |     |     | MPC |        | 2007 TE <sub>165</sub> |
| 2007 TF <sub>165</sub> | 17.4 | 0.15 | 20071027 | 11.80164  | 353.83610 | 27.29728  | 5.71316  | 0.1682720 | 2.2587729 | 78  | 1 | 70 days   | 0.54 | M-v | 4   | MPC |        | 2007 TF <sub>165</sub> |
| 2007 TH <sub>165</sub> | 14.8 | 0.15 | 20071027 | 3.57736   | 217.15709 | 177.36043 | 2.86877  | 0.2683101 | 3.9572194 | 83  | 4 | 1999-2007 | 0.50 | M-v | 1   | MPC | 128454 | 2007 TH <sub>165</sub> |
| 2007 TK <sub>165</sub> | 16.1 | 0.15 | 20071027 | 8.11708   | 251.74526 | 136.97929 | 1.81123  | 0.2044938 | 3.0406544 | 100 | 6 | 1991-2007 | 0.44 | M-v | 1   | MPC | 128454 | 2007 TK <sub>165</sub> |
| 2007 TL <sub>165</sub> | 16.5 | 0.15 | 20071027 | 334.70727 | 46.58972  | 36.13402  | 13.71314 | 0.2383296 | 2.6507573 | 70  | 2 | 1994-2007 | 0.55 | M-v | 3   | MPC | 128455 | 2007 TL <sub>165</sub> |
| 2007 TM <sub>165</sub> | 16.9 | 0.15 | 20071027 | 40.74629  | 341.25114 | 2.91402   | 2.52792  | 0.1976116 | 2.3375491 | 81  | 5 | 1995-2007 | 0.55 | M-v | 1   | MPC | 128986 | 2007 TM <sub>165</sub> |
| 2007 TN <sub>165</sub> | 15.5 | 0.15 | 20071027 | 343.29868 | 216.89718 | 224.97159 | 15.39466 | 0.2936712 | 3.0885547 | 78  | 1 | 55 days   | 0.57 |     |     | MPC |        | 2007 TN <sub>165</sub> |
| 2007 TU <sub>165</sub> | 15.7 | 0.15 | 20071027 | 4.08677   | 319.80879 | 73.86355  | 6.76394  | 0.1143654 | 2.6591560 | 77  | 4 | 2001-2007 | 0.51 | M-v | 1   | MPC | 128455 | 2007 TU <sub>165</sub> |
| 2007 TW <sub>165</sub> | 16.6 | 0.15 | 20071027 | 352.30752 | 16.27008  | 56.25829  | 2.90826  | 0.3107943 | 2.6379032 | 62  | 3 | 1977-2007 | 0.56 | M-v | 2   | MPC | 128455 | 2007 TW <sub>165</sub> |
| 2007 TZ <sub>165</sub> | 16.3 | 0.15 | 20071027 | 17.21123  | 335.40415 | 49.00840  | 13.81162 | 0.2936957 | 2.6425601 | 24  | 1 | 54 days   | 0.42 |     |     | MPC |        | 2007 TZ <sub>165</sub> |
| 2007 TB <sub>166</sub> | 15.9 | 0.15 | 20071027 | 8.59334   | 314.75888 | 59.80349  | 18.60733 | 0.2533267 | 3.1336250 | 38  | 1 | 57 days   | 0.51 |     |     | MPC |        | 2007 TB <sub>166</sub> |
| 2007 TD <sub>166</sub> | 16.4 | 0.15 | 20071027 | 358.50832 | 288.02432 | 104.46067 | 11.37662 | 0.1314645 | 3.0186322 | 26  | 1 | 39 days   | 0.55 |     |     | MPC |        | 2007 TD <sub>166</sub> |
| 2007 TW <sub>166</sub> | 16.8 | 0.15 | 20071007 | 317.51549 | 206.87256 | 233.26837 | 3.67365  | 0.1759170 | 2.7828014 | 27  | 1 | 24 days   | 0.43 |     |     | MPC |        | 2007 TW <sub>166</sub> |
| 2007 TX <sub>166</sub> | 18.3 | 0.15 | 20071027 | 36.38303  | 333.23153 | 1.28165   | 3.58703  | 0.2033283 | 2.2529196 | 28  | 1 | 60 days   | 0.46 | M-v | 4   | MPC |        | 2007 TX <sub>166</sub> |
| 2007 TY <sub>166</sub> | 17.3 | 0.15 | 20071027 | 326.38252 | 65.49175  | 8.21079   | 5.36962  | 0.1621013 | 2.3189643 | 41  | 1 | 34 days   | 0.52 |     |     | MPC |        | 2007 TY <sub>166</sub> |
| 2007 TZ <sub>166</sub> | 17.4 | 0.15 | 20071027 | 45.97804  | 319.74978 | 4.62033   | 4.83191  | 0.1834745 | 2.3471667 | 53  | 1 | 65 days   | 0.49 | M-v | 4   | MPC |        | 2007 TZ <sub>166</sub> |
| 2007 TA <sub>167</sub> | 17.2 | 0.15 | 20071027 | 27.57906  | 116.03575 | 235.82297 | 2.16233  | 0.1367639 | 2.4140943 | 70  | 3 | 2000-2007 | 0.41 | M-v | 3   | MPC | 128456 | 2007 TA <sub>167</sub> |
| 2007 TH <sub>167</sub> | 17.2 | 0.15 | 20070917 | 55.04725  | 354.30872 | 308.28819 | 3.46858  | 0.1330987 | 2.3094327 | 20  | 1 | 25 days   | 0.66 |     |     | MPC |        | 2007 TH <sub>167</sub> |
| 2007 TP <sub>167</sub> | 16.7 | 0.15 | 20071007 | 295.11539 | 180.12583 | 280.46447 | 1.82363  | 0.1470724 | 2.3991243 | 27  | 1 | 11 days   | 0.51 |     | D   | MPC |        | 2007 TP <sub>167</sub> |
| 2007 TM <sub>168</sub> | 16.2 | 0.15 | 20071027 | 16.34408  | 41.08184  | 326.91798 | 4.29673  | 0.1500160 | 2.3508367 | 59  | 3 | 2003-2007 | 0.44 | M-v | 3   | MPC | 128457 | 2007 TM <sub>168</sub> |
| 2007 TO <sub>168</sub> | 15.7 | 0.15 | 20071007 | 354.77355 | 125.82260 | 267.74344 | 4.67709  | 0.1512940 | 3.2049449 | 36  | 1 | 30 days   | 0.55 |     |     | MPC |        | 2007 TO <sub>168</sub> |
| 2007 TT <sub>168</sub> | 15.7 | 0.15 | 20071027 | 3.62734   | 112.44744 | 280.03898 | 3.95404  | 0.1621067 | 3.0722445 | 46  | 1 | 79 days   | 0.47 |     |     | MPC |        | 2007 TT <sub>168</sub> |
| 2007 TV <sub>168</sub> | 15.5 | 0.15 | 20071027 | 317.38306 | 209.75019 | 236.28808 | 8.13484  | 0.0689805 | 2.7232734 | 50  | 1 | 70 days   | 0.56 | M-v | 4   | MPC |        | 2007 TV <sub>168</sub> |
| 2007 TG <sub>169</sub> | 16.7 | 0.15 | 20071027 | 1.97228   | 161.89780 | 229.26439 | 7.38243  | 0.2252763 | 2.6902189 | 59  | 1 | 62 days   | 0.49 | M-v | 4   | MPC |        | 2007 TG <sub>169</sub> |
| 2007 TJ <sub>169</sub> | 16.8 | 0.15 | 20071007 | 348.60126 | 186.56152 | 221.03019 | 8.97824  | 0.1997565 | 2.7016379 | 53  | 1 | 53 days   | 0.44 |     |     | MPC |        | 2007 TJ <sub>169</sub> |
| 2007 TK <sub>169</sub> | 17.0 | 0.15 | 20071007 | 321.37068 | 278.15518 | 181.05583 | 26.36374 | 0.4225120 | 2.6195505 | 37  | 1 | 57 days   | 0.50 |     |     | MPC |        | 2007 TK <sub>169</sub> |
| 2007 TP <sub>169</sub> | 15.3 | 0.15 | 20071027 | 43.77399  | 293.53103 | 43.73163  | 16.99016 | 0.1286371 | 3.0924758 | 37  | 1 | 54 days   | 0.52 |     |     | MPC |        | 2007 TP <sub>169</sub> |
| 2007 TS <sub>169</sub> | 18.2 | 0.15 | 20071027 | 18.31747  | 300.33626 | 61.23189  | 5.28603  | 0.2477604 | 2.2402584 | 32  | 1 | 32 days   | 0.49 |     |     | MPC |        | 2007 TS <sub>169</sub> |
| 2007 TT <sub>169</sub> | 17.3 | 0.15 | 20071007 | 20.07022  | 272.29059 | 78.79424  | 4.23999  | 0.2407823 | 2.3740235 | 30  | 1 | 37 days   | 0.47 |     |     | MPC |        | 2007 TT <sub>169</sub> |
| 2007 TW <sub>169</sub> | 18.0 | 0.15 | 20071007 | 339.16556 | 296.59190 | 118.83015 | 3.42110  | 0.2086307 | 2.3573161 | 26  | 1 | 25 days   | 0.48 |     |     | MPC |        | 2007 TW <sub>169</sub> |
| 2007 TY <sub>169</sub> | 16.8 | 0.15 | 20071027 | 330.69908 | 215.28162 | 227.31673 | 10.93405 | 0.2173073 | 2.4283111 | 75  | 3 | 2003-2007 | 0.52 | M-v | 2   | MPC | 128459 | 2007 TY <sub>169</sub> |
| 2007 TZ <sub>169</sub> | 15.3 | 0.15 | 20071027 | 39.22078  | 121.98248 | 224.94859 | 14.10797 | 0.1537831 | 2.6792074 | 90  | 2 | 1998-2007 | 0.45 | M-v | 3   | MPC | 128459 | 2007 TZ <sub>169</sub> |
| 2007 TE <sub>170</sub> | 17.2 | 0.15 | 20071027 | 11.59038  | 27.05600  | 0.92579   | 4.24236  | 0.1301306 | 2.1468349 | 71  | 3 | 2001-2007 | 0.50 | M-v | 3   | MPC | 128460 | 2007 TE <sub>170</sub> |
| 2007 TF <sub>170</sub> | 17.1 | 0.15 | 20071027 | 34.45651  | 346.46508 | 355.37361 | 5.48970  | 0.3119607 | 2.3313117 | 43  | 1 | 69 days   | 0.50 | M-v | 4   | MPC |        | 2007 TF <sub>170</sub> |
| 2007 TM <sub>170</sub> | 15.6 | 0.15 | 20071027 | 1.94927   | 31.38924  | 17.50485  | 9.53920  | 0.1461637 | 2.9696509 | 44  | 2 | 2004-2007 | 0.51 | M-v | 3   | MPC | 128460 | 2007 TM <sub>170</sub> |
| 2007 TN <sub>170</sub> | 15.8 | 0.15 | 20071027 | 347.73061 | 200.48351 | 221.90116 | 21.62459 | 0.0693382 | 2.6611450 | 43  | 1 | 39 days   | 0.54 |     |     | MPC |        | 2007 TN <sub>170</sub> |
| 2007 TO <sub>170</sub> | 17.5 | 0.15 | 20071027 | 359.40033 | 144.48509 | 267.35848 | 3.46294  | 0.3396645 | 2.5762388 | 44  | 1 | 63 days   | 0.57 | M-v | 4   | MPC |        | 2007 TO <sub>170</sub> |
| 2007 TQ <sub>170</sub> | 16.6 | 0.15 | 20071027 | 357.97959 | 170.96068 | 249.15646 | 12.89642 | 0.2393326 | 2.5723665 | 28  | 1 | 54 days   | 0.37 |     |     | MPC |        | 2007 TQ <sub>170</sub> |
| 2007 TY <sub>170</sub> | 17.9 | 0.15 | 20071007 | 71.61705  | 87.21199  | 202.35008 | 2.10048  | 0.1536015 | 2.2825150 | 24  | 1 | 23 days   | 0.28 |     |     | MPC |        | 2007 TY <sub>170</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-------|-------------------------------|
| 2007 TC <sub>171</sub> | 17.5 | 0.15 | 20071007 | 334.47332 | 218.73427 | 200.15019 | 12.49448 | 0.2261563 | 2.7398642 | 24 | 1 | 33 days   | 0.35 |       | MPC   | 2007 TC <sub>171</sub>        |
| 2007 TE <sub>171</sub> | 18.8 | 0.15 | 20071007 | 12.68276  | 155.94740 | 203.93146 | 1.04346  | 0.1845689 | 2.4149867 | 21 | 1 | 46 days   | 0.27 |       | MPC   | 2007 TE <sub>171</sub>        |
| 2007 TL <sub>171</sub> | 17.1 | 0.15 | 20071027 | 331.48564 | 190.34621 | 244.06531 | 3.07877  | 0.2117510 | 2.3302302 | 64 | 3 | 2000–2007 | 0.57 | M-v 2 | MPC   | 128460 2007 TL <sub>171</sub> |
| 2007 TM <sub>171</sub> | 17.1 | 0.15 | 20071007 | 343.68570 | 11.34635  | 30.20276  | 14.51356 | 0.1996733 | 2.7154750 | 26 | 1 | 27 days   | 0.55 |       | MPC   | 2007 TM <sub>171</sub>        |
| 2007 TS <sub>171</sub> | 16.0 | 0.15 | 20071027 | 64.30642  | 159.73265 | 145.83033 | 3.42700  | 0.1354284 | 3.0487547 | 42 | 5 | 1996–2007 | 0.39 | M-v 1 | MPC   | 128461 2007 TS <sub>171</sub> |
| 2007 TV <sub>171</sub> | 18.1 | 0.15 | 20071027 | 9.15811   | 301.04423 | 72.20042  | 3.12128  | 0.2262293 | 2.3956127 | 50 | 1 | 58 days   | 0.71 |       | MPC   | 2007 TV <sub>171</sub>        |
| 2007 TX <sub>171</sub> | 17.8 | 0.15 | 20071007 | 340.28248 | 233.22537 | 173.98230 | 5.65595  | 0.1362799 | 2.2148252 | 40 | 1 | 59 days   | 0.66 |       | MPC   | 2007 TX <sub>171</sub>        |
| 2007 TZ <sub>171</sub> | 17.0 | 0.15 | 20071007 | 33.88183  | 286.88017 | 33.47371  | 14.94504 | 0.3154739 | 2.7408795 | 33 | 1 | 36 days   | 0.62 |       | MPC   | 2007 TZ <sub>171</sub>        |
| 2007 TA <sub>172</sub> | 17.2 | 0.15 | 20071027 | 357.66190 | 349.06532 | 45.11608  | 8.30791  | 0.1168439 | 2.2405492 | 68 | 3 | 2004–2007 | 0.50 | M-v 3 | MPC   | 128461 2007 TA <sub>172</sub> |
| 2007 TE <sub>172</sub> | 18.0 | 0.15 | 20071027 | 20.75150  | 181.59225 | 178.02345 | 5.24487  | 0.2374694 | 2.3105623 | 38 | 1 | 65 days   | 0.57 | M-v 4 | MPC   | 2007 TE <sub>172</sub>        |
| 2007 TG <sub>172</sub> | 16.9 | 0.15 | 20071027 | 357.34844 | 277.93225 | 123.56042 | 3.76779  | 0.2568064 | 2.7528220 | 48 | 1 | 39 days   | 0.74 |       | MPC   | 2007 TG <sub>172</sub>        |
| 2007 TL <sub>172</sub> | 18.0 | 0.15 | 20071007 | 5.96396   | 58.50445  | 311.39174 | 1.13138  | 0.2408894 | 2.5195702 | 26 | 1 | 36 days   | 0.48 |       | MPC   | 2007 TL <sub>172</sub>        |
| 2007 TS <sub>172</sub> | 18.3 | 0.15 | 20071007 | 314.97036 | 57.16471  | 21.95174  | 21.92668 | 0.1055114 | 1.8462120 | 25 | 1 | 30 days   | 0.61 |       | D MPC | 2007 TS <sub>172</sub>        |
| 2007 TY <sub>172</sub> | 18.6 | 0.15 | 20070917 | 20.49408  | 135.24496 | 184.10709 | 5.16080  | 0.1937807 | 2.4341300 | 17 | 1 | 48 days   | 0.35 |       | MPC   | 2007 TY <sub>172</sub>        |
| 2007 TZ <sub>172</sub> | 16.1 | 0.15 | 20071027 | 355.05240 | 351.31903 | 54.11176  | 8.43097  | 0.1903150 | 2.6145933 | 66 | 2 | 2003–2007 | 0.41 | M-v 3 | MPC   | 128462 2007 TZ <sub>172</sub> |
| 2007 TM <sub>173</sub> | 20.8 | 0.15 | 20071007 | 2.18528   | 355.43935 | 16.27070  | 0.40992  | 0.1519400 | 1.6941383 | 9  | 1 | 11 days   | 0.74 |       | MPC   | 2007 TM <sub>173</sub>        |
| 2007 TN <sub>173</sub> | 16.8 | 0.15 | 20071027 | 48.67436  | 286.57918 | 39.23758  | 2.40254  | 0.0767203 | 2.9372650 | 33 | 3 | 2002–2007 | 0.47 | M-v 3 | MPC   | 128462 2007 TN <sub>173</sub> |
| 2007 TS <sub>173</sub> | 16.1 | 0.15 | 20071007 | 347.01905 | 166.06530 | 231.57951 | 3.50941  | 0.1401739 | 3.2337418 | 22 | 1 | 42 days   | 0.28 |       | MPC   | 2007 TS <sub>173</sub>        |
| 2007 TV <sub>173</sub> | 16.1 | 0.15 | 20071007 | 333.20497 | 33.54142  | 23.55519  | 6.43933  | 0.1096370 | 3.0460532 | 14 | 1 | 51 days   | 0.26 |       | MPC   | 2007 TV <sub>173</sub>        |
| 2007 TB <sub>174</sub> | 16.7 | 0.15 | 20070917 | 357.48930 | 190.51428 | 192.78436 | 11.27403 | 0.1022551 | 2.7397692 | 23 | 1 | 39 days   | 0.20 |       | MPC   | 2007 TB <sub>174</sub>        |
| 2007 TF <sub>174</sub> | 15.1 | 0.15 | 20071027 | 82.51342  | 274.74801 | 23.30636  | 14.97334 | 0.0995463 | 3.4002418 | 23 | 1 | 64 days   | 0.26 | M-v 4 | MPC   | 2007 TF <sub>174</sub>        |
| 2007 TK <sub>174</sub> | 17.8 | 0.15 | 20071007 | 10.45945  | 161.22133 | 196.69866 | 7.75022  | 0.1536258 | 2.4751712 | 21 | 1 | 15 days   | 0.66 |       | D MPC | 2007 TK <sub>174</sub>        |
| 2007 TM <sub>174</sub> | 16.3 | 0.15 | 20071027 | 314.53616 | 234.09960 | 200.23333 | 10.14096 | 0.1282632 | 3.1200103 | 27 | 1 | 64 days   | 0.35 | M-v 5 | MPC   | 2007 TM <sub>174</sub>        |
| 2007 TP <sub>174</sub> | 15.4 | 0.15 | 20070917 | 249.62628 | 298.70887 | 191.04638 | 24.34637 | 0.0756763 | 3.2377115 | 20 | 1 | 54 days   | 0.36 |       | MPC   | 2007 TP <sub>174</sub>        |
| 2007 TU <sub>174</sub> | 16.8 | 0.15 | 20071007 | 312.61179 | 46.67393  | 27.99295  | 12.12789 | 0.1326841 | 2.6015096 | 20 | 1 | 9 days    | 0.76 |       | MPC   | 2007 TU <sub>174</sub>        |
| 2007 TX <sub>174</sub> | 17.5 | 0.15 | 20071027 | 33.69449  | 111.64870 | 225.50944 | 2.21471  | 0.2649959 | 2.3690576 | 28 | 1 | 45 days   | 0.53 |       | MPC   | 2007 TX <sub>174</sub>        |
| 2007 TY <sub>174</sub> | 17.8 | 0.15 | 20071027 | 34.46627  | 127.85239 | 220.39685 | 3.32318  | 0.1429070 | 2.3154377 | 25 | 1 | 45 days   | 0.25 |       | MPC   | 2007 TY <sub>174</sub>        |
| 2007 TZ <sub>174</sub> | 16.1 | 0.15 | 20071007 | 3.05253   | 19.27838  | 6.10977   | 2.35367  | 0.2663913 | 4.0095973 | 20 | 1 | 38 days   | 0.30 |       | MPC   | 2007 TZ <sub>174</sub>        |
| 2007 TF <sub>175</sub> | 17.4 | 0.15 | 20071027 | 1.28045   | 2.97989   | 30.41497  | 8.60585  | 0.1019581 | 2.4202597 | 24 | 1 | 64 days   | 0.55 | M-v 4 | MPC   | 2007 TF <sub>175</sub>        |
| 2007 TJ <sub>175</sub> | 15.6 | 0.15 | 20071007 | 299.75210 | 62.85912  | 38.44911  | 11.46110 | 0.0781946 | 3.0847552 | 21 | 1 | 31 days   | 0.49 |       | MPC   | 2007 TJ <sub>175</sub>        |
| 2007 TS <sub>175</sub> | 16.3 | 0.15 | 20071027 | 351.84035 | 192.13784 | 217.41083 | 5.46696  | 0.1364489 | 2.8959263 | 58 | 1 | 62 days   | 0.60 | M-v 4 | MPC   | 2007 TS <sub>175</sub>        |
| 2007 TG <sub>176</sub> | 16.4 | 0.15 | 20071027 | 46.41561  | 119.66214 | 217.46515 | 15.14069 | 0.1139950 | 2.9511487 | 23 | 1 | 43 days   | 0.25 |       | MPC   | 2007 TG <sub>176</sub>        |
| 2007 TM <sub>176</sub> | 17.1 | 0.15 | 20071027 | 14.56137  | 354.39092 | 19.28954  | 3.34586  | 0.2094868 | 3.0574283 | 30 | 1 | 64 days   | 0.32 | M-v 4 | MPC   | 2007 TM <sub>176</sub>        |
| 2007 TR <sub>176</sub> | 17.0 | 0.15 | 20071027 | 301.79255 | 61.19742  | 34.73110  | 7.28583  | 0.0555421 | 2.3444199 | 29 | 1 | 43 days   | 0.48 |       | MPC   | 2007 TR <sub>176</sub>        |
| 2007 TA <sub>177</sub> | 16.7 | 0.15 | 20071027 | 146.42504 | 194.46078 | 41.88668  | 10.18307 | 0.1676830 | 2.6030932 | 32 | 2 | 2003–2007 | 0.38 | M-v 4 | MPC   | 128463 2007 TA <sub>177</sub> |
| 2007 TK <sub>177</sub> | 16.1 | 0.15 | 20071027 | 235.60794 | 318.36778 | 212.84885 | 4.55476  | 0.1005262 | 3.0505107 | 30 | 1 | 61 days   | 0.36 | M-v 5 | MPC   | 2007 TK <sub>177</sub>        |
| 2007 TP <sub>177</sub> | 17.0 | 0.15 | 20071007 | 27.51505  | 317.56715 | 43.10919  | 9.82754  | 0.1357101 | 3.0312838 | 37 | 1 | 38 days   | 0.25 |       | MPC   | 2007 TP <sub>177</sub>        |
| 2007 TT <sub>177</sub> | 15.9 | 0.15 | 20071027 | 6.23472   | 332.11771 | 58.35874  | 4.27289  | 0.1736294 | 3.1659591 | 33 | 1 | 61 days   | 0.40 | M-v 4 | MPC   | 2007 TT <sub>177</sub>        |
| 2007 TV <sub>177</sub> | 17.4 | 0.15 | 20071027 | 22.41548  | 293.16553 | 71.96173  | 2.53932  | 0.1955353 | 2.3585988 | 40 | 1 | 61 days   | 0.48 | M-v 4 | MPC   | 2007 TV <sub>177</sub>        |
| 2007 TX <sub>177</sub> | 17.7 | 0.15 | 20071027 | 343.46060 | 198.61721 | 222.51293 | 3.58201  | 0.0817904 | 2.4171840 | 34 | 1 | 85 days   | 0.39 | M-v 3 | MPC   | 2007 TX <sub>177</sub>        |
| 2007 TY <sub>177</sub> | 15.6 | 0.15 | 20071027 | 3.92370   | 174.40745 | 225.10001 | 8.90023  | 0.0789315 | 3.1735439 | 78 | 5 | 1995–2007 | 0.43 | M-v 0 | MPC   | 128464 2007 TY <sub>177</sub> |
| 2007 TA <sub>178</sub> | 16.5 | 0.15 | 20071027 | 61.92842  | 283.99706 | 36.80390  | 4.42340  | 0.1858821 | 2.6368739 | 37 | 1 | 69 days   | 0.35 | M-v 5 | MPC   | 2007 TA <sub>178</sub>        |
| 2007 TB <sub>178</sub> | 18.7 | 0.15 | 20071027 | 350.63254 | 209.53063 | 213.29751 | 6.29016  | 0.3389151 | 2.5707091 | 39 | 1 | 45 days   | 0.60 |       | MPC   | 2007 TB <sub>178</sub>        |
| 2007 TJ <sub>178</sub> | 16.5 | 0.15 | 20071027 | 19.48866  | 121.61207 | 249.51380 | 3.63299  | 0.1732644 | 2.6245773 | 56 | 1 | 84 days   | 0.37 | M-v 4 | MPC   | 128989 2007 TJ <sub>178</sub> |
| 2007 TL <sub>178</sub> | 17.9 | 0.15 | 20071027 | 18.16246  | 136.04826 | 233.86122 | 4.25446  | 0.2265231 | 2.3318296 | 57 | 1 | 61 days   | 0.62 | M-v 4 | MPC   | 2007 TL <sub>178</sub>        |
| 2007 TW <sub>178</sub> | 16.6 | 0.15 | 20071007 | 107.89361 | 22.86020  | 223.44532 | 6.21445  | 0.1876008 | 2.8846130 | 18 | 1 | 57 days   | 0.28 |       | MPC   | 2007 TW <sub>178</sub>        |
| 2007 TX <sub>178</sub> | 15.2 | 0.15 | 20071007 | 9.81010   | 11.24701  | 10.35471  | 11.58074 | 0.1103724 | 3.1207042 | 28 | 1 | 44 days   | 0.46 |       | MPC   | 2007 TX <sub>178</sub>        |
| 2007 TY <sub>178</sub> | 17.9 | 0.15 | 20071027 | 10.79367  | 47.50645  | 332.10130 | 3.51994  | 0.2342375 | 2.3419250 | 54 | 1 | 42 days   | 0.63 |       | MPC   | 2007 TY <sub>178</sub>        |
| 2007 TJ <sub>179</sub> | 16.7 | 0.15 | 20071027 | 15.73451  | 326.98780 | 47.61022  | 16.56597 | 0.2378678 | 2.7960122 | 41 | 1 | 39 days   | 0.53 |       | MPC   | 2007 TJ <sub>179</sub>        |
| 2007 TL <sub>179</sub> | 16.7 | 0.15 | 20071027 | 6.14145   | 334.28358 | 51.95013  | 12.73218 | 0.3288317 | 2.7504558 | 73 | 1 | 57 days   | 0.45 |       | MPC   | 2007 TL <sub>179</sub>        |
| 2007 TM <sub>179</sub> | 16.8 | 0.15 | 20071027 | 60.79013  | 218.69551 | 95.35181  | 6.58254  | 0.2253430 | 2.2029942 | 41 | 1 | 42 days   | 0.53 |       | MPC   | 2007 TM <sub>179</sub>        |
| 2007 TN <sub>179</sub> | 17.4 | 0.15 | 20071027 | 36.14235  | 251.52141 | 90.93724  | 8.17051  | 0.2593866 | 2.3456706 | 43 | 1 | 60 days   | 0.52 | M-v 4 | MPC   | 2007 TN <sub>179</sub>        |
| 2007 TR <sub>179</sub> | 16.8 | 0.15 | 20071027 | 317.34031 | 33.51616  | 64.78502  | 1.27015  | 0.1880166 | 3.1926082 | 30 | 1 | 41 days   | 0.39 |       | MPC   | 2007 TR <sub>179</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 TS <sub>179</sub> | 18.4 | 0.15 | 20071007 | 34.62209  | 136.80700 | 206.86862 | 6.35185  | 0.1503312 | 2.2539947 | 25 | 1 | 31 days   | 0.32 |       | MPC | 2007 TS <sub>179</sub>        |
| 2007 TY <sub>179</sub> | 16.6 | 0.15 | 20071027 | 349.31187 | 230.12635 | 200.24647 | 11.06589 | 0.3905258 | 2.9963606 | 45 | 1 | 83 days   | 0.49 | M-v 3 | MPC | 2007 TY <sub>179</sub>        |
| 2007 TB <sub>180</sub> | 15.7 | 0.15 | 20071027 | 332.90821 | 227.05374 | 212.58303 | 12.06145 | 0.1845834 | 3.1468457 | 60 | 4 | 1995–2007 | 0.53 | M-v 1 | MPC | 128465 2007 TB <sub>180</sub> |
| 2007 TE <sub>180</sub> | 16.8 | 0.15 | 20071027 | 336.94540 | 197.10342 | 235.64947 | 6.18499  | 0.0892875 | 2.3964147 | 87 | 5 | 1992–2007 | 0.47 | M-v 1 | MPC | 128465 2007 TE <sub>180</sub> |
| 2007 TH <sub>180</sub> | 17.0 | 0.15 | 20071007 | 328.80386 | 229.63016 | 197.96634 | 3.56977  | 0.1173694 | 3.0044740 | 16 | 1 | 30 days   | 0.25 |       | MPC | 2007 TH <sub>180</sub>        |
| 2007 TL <sub>180</sub> | 15.5 | 0.15 | 20071007 | 41.45081  | 58.94184  | 260.41055 | 8.09522  | 0.1733226 | 3.1184278 | 24 | 1 | 44 days   | 0.72 |       | MPC | 2007 TL <sub>180</sub>        |
| 2007 TX <sub>180</sub> | 18.3 | 0.15 | 20071027 | 6.34758   | 323.73593 | 51.42411  | 6.76809  | 0.3423208 | 2.5795326 | 35 | 1 | 75 days   | 0.61 | M-v 4 | MPC | 2007 TX <sub>180</sub>        |
| 2007 TY <sub>180</sub> | 17.7 | 0.15 | 20071027 | 26.84558  | 182.83060 | 163.58133 | 5.95456  | 0.2233089 | 2.2279592 | 40 | 1 | 63 days   | 0.54 | M-v 4 | MPC | 2007 TY <sub>180</sub>        |
| 2007 TA <sub>181</sub> | 18.0 | 0.15 | 20071007 | 8.24275   | 246.99058 | 117.71386 | 4.04088  | 0.1984119 | 2.1479196 | 33 | 1 | 54 days   | 0.58 |       | MPC | 2007 TA <sub>181</sub>        |
| 2007 TC <sub>181</sub> | 15.1 | 0.15 | 20071027 | 313.99363 | 28.65832  | 46.98112  | 15.81011 | 0.0624687 | 3.2281740 | 32 | 1 | 37 days   | 0.61 |       | MPC | 2007 TC <sub>181</sub>        |
| 2007 TG <sub>181</sub> | 18.1 | 0.15 | 20071027 | 353.42722 | 347.29246 | 56.82735  | 8.60075  | 0.3437339 | 2.6073234 | 42 | 1 | 58 days   | 0.60 |       | MPC | 2007 TG <sub>181</sub>        |
| 2007 TO <sub>181</sub> | 17.1 | 0.15 | 20071027 | 4.32885   | 332.90895 | 46.33056  | 14.70133 | 0.2621505 | 2.6895767 | 67 | 1 | 58 days   | 0.61 |       | MPC | 2007 TO <sub>181</sub>        |
| 2007 TY <sub>181</sub> | 18.0 | 0.15 | 20071007 | 228.49521 | 58.05483  | 101.45543 | 2.65900  | 0.1223421 | 2.3146893 | 20 | 1 | 11 days   | 0.38 |       | MPC | 2007 TY <sub>181</sub>        |
| 2007 TZ <sub>181</sub> | 18.0 | 0.15 | 20071007 | 44.57083  | 320.38242 | 11.35037  | 20.35624 | 0.0572832 | 1.9215661 | 19 | 1 | 9 days    | 0.54 |       | MPC | 2007 TZ <sub>181</sub>        |
| 2007 TA <sub>182</sub> | 18.2 | 0.15 | 20071007 | 344.34321 | 113.91192 | 293.61815 | 2.38385  | 0.2285296 | 2.3312571 | 28 | 1 | 30 days   | 0.67 |       | MPC | 2007 TA <sub>182</sub>        |
| 2007 TB <sub>182</sub> | 15.9 | 0.15 | 20071027 | 6.17111   | 166.94130 | 218.83625 | 15.59806 | 0.0934232 | 3.1949061 | 25 | 1 | 58 days   | 0.42 |       | MPC | 2007 TB <sub>182</sub>        |
| 2007 TJ <sub>182</sub> | 17.2 | 0.15 | 20071027 | 20.41021  | 289.87091 | 72.27839  | 7.24823  | 0.2596306 | 2.3777711 | 50 | 1 | 84 days   | 0.51 | M-v 4 | MPC | 128990 2007 TJ <sub>182</sub> |
| 2007 TL <sub>182</sub> | 16.1 | 0.15 | 20071027 | 339.61506 | 12.07288  | 56.11304  | 18.49334 | 0.2260262 | 3.0540736 | 41 | 1 | 57 days   | 0.64 |       | MPC | 2007 TL <sub>182</sub>        |
| 2007 TO <sub>182</sub> | 16.7 | 0.15 | 20071027 | 12.02854  | 306.72717 | 71.40579  | 10.05859 | 0.2229007 | 2.4117161 | 94 | 3 | 2003–2007 | 0.52 | M-v 2 | MPC | 128466 2007 TO <sub>182</sub> |
| 2007 TP <sub>182</sub> | 16.7 | 0.15 | 20071027 | 359.60006 | 296.61493 | 101.14221 | 10.72261 | 0.1253365 | 2.3665817 | 32 | 1 | 59 days   | 0.56 |       | MPC | 2007 TP <sub>182</sub>        |
| 2007 TQ <sub>182</sub> | 15.4 | 0.15 | 20071027 | 355.49195 | 337.17659 | 64.20562  | 19.07800 | 0.2062909 | 3.1313599 | 24 | 1 | 59 days   | 0.66 |       | MPC | 2007 TQ <sub>182</sub>        |
| 2007 TR <sub>182</sub> | 16.1 | 0.15 | 20071027 | 2.05762   | 239.12719 | 150.48099 | 9.11715  | 0.2338503 | 2.6255473 | 31 | 1 | 68 days   | 0.48 | M-v 4 | MPC | 2007 TR <sub>182</sub>        |
| 2007 TZ <sub>182</sub> | 16.3 | 0.15 | 20071027 | 36.13362  | 156.58116 | 201.83184 | 4.94132  | 0.1371442 | 2.5723043 | 60 | 2 | 2005–2007 | 0.55 | M-v 3 | MPC | 128466 2007 TZ <sub>182</sub> |
| 2007 TC <sub>183</sub> | 15.2 | 0.15 | 20071027 | 32.52322  | 282.21028 | 78.11169  | 10.98579 | 0.1209098 | 3.0747795 | 40 | 1 | 40 days   | 0.54 |       | MPC | 2007 TC <sub>183</sub>        |
| 2007 TJ <sub>183</sub> | 17.4 | 0.15 | 20071007 | 17.91195  | 132.68854 | 226.98968 | 4.42241  | 0.2312373 | 3.0938243 | 16 | 1 | 6 days    | 0.41 |       | MPC | 2007 TJ <sub>183</sub>        |
| 2007 TM <sub>183</sub> | 16.6 | 0.15 | 20071007 | 331.43353 | 232.64026 | 199.42156 | 19.35657 | 0.2418778 | 3.0462146 | 28 | 1 | 35 days   | 0.50 |       | MPC | 2007 TM <sub>183</sub>        |
| 2007 TO <sub>183</sub> | 18.1 | 0.15 | 20071027 | 12.22156  | 130.50048 | 251.87495 | 4.18678  | 0.2315300 | 2.3546030 | 34 | 1 | 41 days   | 0.55 |       | MPC | 2007 TO <sub>183</sub>        |
| 2007 TP <sub>183</sub> | 16.7 | 0.15 | 20071027 | 41.26763  | 71.31024  | 276.45574 | 3.50564  | 0.1694774 | 2.5900232 | 35 | 1 | 41 days   | 0.47 |       | MPC | 2007 TP <sub>183</sub>        |
| 2007 TT <sub>183</sub> | 16.9 | 0.15 | 20071027 | 64.43419  | 246.19791 | 75.94514  | 5.99318  | 0.1431076 | 2.1661691 | 48 | 3 | 2003–2007 | 0.49 | M-v 2 | MPC | 128467 2007 TT <sub>183</sub> |
| 2007 TX <sub>183</sub> | 15.4 | 0.15 | 20071027 | 37.68869  | 283.32443 | 77.44698  | 7.14065  | 0.1144006 | 3.2340464 | 39 | 1 | 57 days   | 0.55 |       | MPC | 2007 TX <sub>183</sub>        |
| 2007 TY <sub>183</sub> | 16.7 | 0.15 | 20071027 | 24.07132  | 269.95846 | 100.59819 | 6.60387  | 0.1359610 | 2.2205479 | 57 | 1 | 57 days   | 0.49 |       | MPC | 2007 TY <sub>183</sub>        |
| 2007 TD <sub>184</sub> | 16.2 | 0.15 | 20071027 | 351.14686 | 354.01619 | 64.44830  | 10.72625 | 0.1533103 | 2.7901247 | 74 | 3 | 2000–2007 | 0.48 | M-v 2 | MPC | 128467 2007 TD <sub>184</sub> |
| 2007 TF <sub>184</sub> | 14.9 | 0.15 | 20071027 | 274.18204 | 19.95656  | 118.61536 | 6.52321  | 0.0374103 | 3.1937611 | 57 | 4 | 2001–2007 | 0.50 | M-v 1 | MPC | 128467 2007 TF <sub>184</sub> |
| 2007 TA <sub>185</sub> | 17.6 | 0.15 | 20071027 | 359.29547 | 140.28696 | 260.64215 | 6.29648  | 0.0730988 | 2.2403789 | 31 | 1 | 40 days   | 0.38 |       | MPC | 2007 TA <sub>185</sub>        |
| 2007 TB <sub>185</sub> | 15.7 | 0.15 | 20071027 | 14.69303  | 123.33925 | 251.23614 | 10.18611 | 0.2969917 | 3.9763023 | 30 | 1 | 36 days   | 0.54 |       | MPC | 2007 TB <sub>185</sub>        |
| 2007 TH <sub>185</sub> | 16.7 | 0.15 | 20071007 | 26.75576  | 353.34145 | 349.90850 | 3.15090  | 0.2023923 | 2.7334318 | 33 | 1 | 26 days   | 0.60 |       | MPC | 2007 TH <sub>185</sub>        |
| 2007 TK <sub>185</sub> | 17.6 | 0.15 | 20071027 | 14.75554  | 300.95756 | 47.43499  | 4.88504  | 0.3149024 | 2.6210454 | 39 | 2 | 2003–2007 | 0.49 | M-v 3 | MPC | 128467 2007 TK <sub>185</sub> |
| 2007 TN <sub>185</sub> | 17.6 | 0.15 | 20071007 | 354.81110 | 219.08831 | 161.96721 | 5.50933  | 0.1474816 | 2.2630600 | 49 | 1 | 52 days   | 0.58 |       | MPC | 2007 TN <sub>185</sub>        |
| 2007 TQ <sub>185</sub> | 16.3 | 0.15 | 20071027 | 343.91855 | 10.48178  | 33.94915  | 14.73131 | 0.1704218 | 2.6354133 | 48 | 1 | 56 days   | 0.56 |       | MPC | 2007 TQ <sub>185</sub>        |
| 2007 TS <sub>185</sub> | 18.0 | 0.15 | 20071007 | 344.06499 | 323.21169 | 74.23384  | 2.53777  | 0.1900662 | 2.3696431 | 27 | 1 | 50 days   | 0.47 |       | MPC | 2007 TS <sub>185</sub>        |
| 2007 TT <sub>185</sub> | 17.8 | 0.15 | 20071027 | 359.76174 | 350.94927 | 33.00362  | 13.72932 | 0.2475238 | 2.6158528 | 39 | 1 | 39 days   | 0.50 |       | MPC | 2007 TT <sub>185</sub>        |
| 2007 TU <sub>185</sub> | 15.4 | 0.15 | 20071027 | 50.47921  | 263.19558 | 60.90528  | 6.99621  | 0.0613652 | 2.8520911 | 31 | 1 | 32 days   | 0.70 |       | MPC | 2007 TU <sub>185</sub>        |
| 2007 TW <sub>185</sub> | 16.8 | 0.15 | 20071027 | 20.63143  | 323.03500 | 31.22154  | 14.28532 | 0.1827987 | 2.6739961 | 83 | 3 | 2001–2007 | 0.49 | M-v 2 | MPC | 128468 2007 TW <sub>185</sub> |
| 2007 TY <sub>185</sub> | 17.1 | 0.15 | 20071027 | 7.96767   | 329.51463 | 45.47971  | 8.19711  | 0.1161071 | 2.3689103 | 63 | 3 | 2005–2007 | 0.51 | M-v 3 | MPC | 128468 2007 TY <sub>185</sub> |
| 2007 TZ <sub>185</sub> | 18.1 | 0.15 | 20071027 | 17.71583  | 318.52930 | 40.73176  | 7.34135  | 0.2083851 | 2.2592655 | 31 | 1 | 59 days   | 0.39 |       | MPC | 2007 TZ <sub>185</sub>        |
| 2007 TC <sub>186</sub> | 15.9 | 0.15 | 20071007 | 347.36653 | 326.03344 | 70.14013  | 5.81680  | 0.1072888 | 2.8546569 | 41 | 1 | 47 days   | 0.62 |       | MPC | 2007 TC <sub>186</sub>        |
| 2007 TQ <sub>186</sub> | 16.8 | 0.15 | 20071027 | 2.81444   | 202.53064 | 183.50303 | 12.49434 | 0.1824380 | 2.6214239 | 36 | 1 | 64 days   | 0.60 | M-v 4 | MPC | 2007 TQ <sub>186</sub>        |
| 2007 TS <sub>186</sub> | 16.9 | 0.15 | 20071007 | 6.78141   | 313.80237 | 61.41063  | 6.92830  | 0.1601319 | 2.6805764 | 33 | 1 | 37 days   | 0.59 |       | MPC | 2007 TS <sub>186</sub>        |
| 2007 TT <sub>186</sub> | 16.7 | 0.15 | 20071027 | 351.53336 | 355.32230 | 46.89768  | 6.74065  | 0.0989990 | 2.3328670 | 81 | 2 | 2000–2007 | 0.50 | M-v 4 | MPC | 128469 2007 TT <sub>186</sub> |
| 2007 TY <sub>186</sub> | 15.9 | 0.15 | 20071007 | 28.31222  | 178.00751 | 160.81721 | 6.16479  | 0.1815687 | 3.0985945 | 37 | 1 | 48 days   | 0.66 |       | MPC | 2007 TY <sub>186</sub>        |
| 2007 TZ <sub>186</sub> | 15.6 | 0.15 | 20071007 | 339.12324 | 214.36907 | 191.74416 | 18.58339 | 0.0806796 | 3.1188848 | 31 | 1 | 56 days   | 0.55 |       | MPC | 2007 TZ <sub>186</sub>        |
| 2007 TB <sub>187</sub> | 18.1 | 0.15 | 20071007 | 16.89635  | 260.77182 | 94.06289  | 2.32184  | 0.2097540 | 2.3762841 | 24 | 1 | 38 days   | 0.61 |       | MPC | 2007 TB <sub>187</sub>        |
| 2007 TK <sub>187</sub> | 15.6 | 0.15 | 20071007 | 12.21104  | 197.59257 | 172.38437 | 3.09265  | 0.3157922 | 3.9327758 | 29 | 1 | 39 days   | 0.50 |       | MPC | 2007 TK <sub>187</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |    |      |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|----|------|-------------------------------|
| 2007 TN <sub>187</sub> | 17.3 | 0.15 | 20071027 | 14.53631  | 227.96875 | 141.90544 | 5.15482  | 0.2318671 | 2.7430874 | 25 | 1 | 30 days   | 0.67 |     | MP |      | 2007 TN <sub>187</sub>        |
| 2007 TP <sub>187</sub> | 16.3 | 0.15 | 20071027 | 349.80478 | 359.39124 | 52.22996  | 25.40321 | 0.1753567 | 2.2878023 | 84 | 3 | 2000–2007 | 0.54 | M-v | 2  | MP   | 128470 2007 TP <sub>187</sub> |
| 2007 TU <sub>187</sub> | 16.5 | 0.15 | 20071027 | 237.12385 | 107.46088 | 48.12214  | 6.74152  | 0.0871464 | 2.4672143 | 19 | 1 | 26 days   | 0.53 |     |    | MP   | 2007 TU <sub>187</sub>        |
| 2007 TY <sub>187</sub> | 18.1 | 0.15 | 20071027 | 5.08057   | 289.28813 | 90.23789  | 2.39199  | 0.1983137 | 2.3253720 | 25 | 1 | 25 days   | 0.54 |     |    | MP   | 2007 TY <sub>187</sub>        |
| 2007 TZ <sub>187</sub> | 17.5 | 0.15 | 20071007 | 34.32155  | 39.44046  | 291.79645 | 2.28276  | 0.1974785 | 2.2146953 | 40 | 1 | 34 days   | 0.65 |     |    | MP   | 2007 TZ <sub>187</sub>        |
| 2007 TC <sub>188</sub> | 16.9 | 0.15 | 20071007 | 72.42854  | 278.72208 | 25.93328  | 2.85213  | 0.2072832 | 3.0217875 | 18 | 1 | 21 days   | 0.38 |     |    | MP   | 2007 TC <sub>188</sub>        |
| 2007 TD <sub>188</sub> | 16.7 | 0.15 | 20071027 | 7.00835   | 256.34988 | 129.38301 | 5.77773  | 0.1825268 | 2.6249806 | 40 | 1 | 66 days   | 0.53 | M-v | 4  | MP   | 2007 TD <sub>188</sub>        |
| 2007 TE <sub>188</sub> | 17.3 | 0.15 | 20071027 | 357.81864 | 335.71341 | 74.82640  | 3.65950  | 0.2290537 | 2.3592349 | 53 | 1 | 58 days   | 0.47 |     |    | MP   | 2007 TE <sub>188</sub>        |
| 2007 TF <sub>188</sub> | 16.0 | 0.15 | 20071027 | 31.72035  | 294.82472 | 47.04251  | 24.89232 | 0.2579441 | 3.1847171 | 51 | 1 | 56 days   | 0.66 |     |    | MP   | 2007 TF <sub>188</sub>        |
| 2007 TO <sub>191</sub> | 18.0 | 0.15 | 20071007 | 19.57107  | 336.82765 | 16.54383  | 6.93778  | 0.1782638 | 2.3093620 | 24 | 1 | 53 days   | 0.37 |     |    | MP   | 2007 TO <sub>191</sub>        |
| 2007 TW <sub>191</sub> | 16.6 | 0.15 | 20071027 | 18.43693  | 312.48981 | 41.53896  | 5.72299  | 0.1743820 | 2.7190423 | 44 | 4 | 1998–2007 | 0.55 | M-v | 2  | MP   | 128470 2007 TW <sub>191</sub> |
| 2007 TC <sub>192</sub> | 17.1 | 0.15 | 20071007 | 359.77987 | 149.20265 | 231.62944 | 6.70645  | 0.2795251 | 3.1358592 | 19 | 1 | 39 days   | 0.25 |     |    | MP   | 2007 TC <sub>192</sub>        |
| 2007 TG <sub>192</sub> | 16.9 | 0.15 | 20071007 | 342.17887 | 148.62950 | 262.38794 | 3.12596  | 0.2633145 | 3.1085265 | 16 | 1 | 39 days   | 0.29 |     |    | MP   | 2007 TG <sub>192</sub>        |
| 2007 TH <sub>192</sub> | 18.4 | 0.15 | 20071007 | 357.55064 | 37.29713  | 345.78605 | 3.42587  | 0.2845219 | 2.5508709 | 21 | 1 | 33 days   | 0.27 |     |    | MP   | 2007 TH <sub>192</sub>        |
| 2007 TN <sub>192</sub> | 15.9 | 0.15 | 20071007 | 78.87026  | 72.15808  | 219.26939 | 9.60028  | 0.0969221 | 3.0033247 | 19 | 1 | 41 days   | 0.33 |     |    | MP   | 2007 TN <sub>192</sub>        |
| 2007 TS <sub>192</sub> | 17.3 | 0.15 | 20071007 | 258.79593 | 187.00316 | 305.46316 | 2.12184  | 0.0952636 | 2.2746882 | 16 | 1 | 33 days   | 0.29 |     |    | MP   | 2007 TS <sub>192</sub>        |
| 2007 TU <sub>192</sub> | 16.8 | 0.15 | 20071007 | 30.39585  | 338.57418 | 11.53625  | 8.54344  | 0.0739393 | 3.1196565 | 17 | 1 | 29 days   | 0.25 |     |    | MP   | 2007 TU <sub>192</sub>        |
| 2007 TV <sub>192</sub> | 16.1 | 0.15 | 20071027 | 317.87945 | 240.03828 | 216.88881 | 9.14053  | 0.2051277 | 3.1417123 | 33 | 1 | 61 days   | 0.53 | M-v | 5  | MP   | 2007 TV <sub>192</sub>        |
| 2007 TA <sub>193</sub> | 16.3 | 0.15 | 20071027 | 260.87784 | 86.00644  | 55.90244  | 2.98372  | 0.0728172 | 2.7723523 | 46 | 3 | 1998–2007 | 0.30 | M-v | 3  | MP   | 128471 2007 TA <sub>193</sub> |
| 2007 TF <sub>193</sub> | 18.1 | 0.15 | 20071027 | 43.17801  | 133.57442 | 206.93441 | 2.10402  | 0.2180143 | 2.4593221 | 38 | 2 | 2003–2007 | 0.33 | M-v | 3  | MP   | 128471 2007 TF <sub>193</sub> |
| 2007 TH <sub>193</sub> | 16.9 | 0.15 | 20071027 | 11.86257  | 329.32078 | 51.94790  | 3.49055  | 0.2971976 | 3.0626182 | 63 | 1 | 45 days   | 0.45 |     |    | MP   | 2007 TH <sub>193</sub>        |
| 2007 TJ <sub>193</sub> | 15.5 | 0.15 | 20071027 | 56.09351  | 125.87933 | 217.72952 | 10.06436 | 0.0623055 | 3.0180415 | 63 | 3 | 2005–2007 | 0.46 | M-v | 3  | MP   | 128471 2007 TJ <sub>193</sub> |
| 2007 TX <sub>193</sub> | 17.6 | 0.15 | 20071027 | 34.18911  | 97.60422  | 228.94934 | 2.15068  | 0.2912180 | 2.4052996 | 43 | 1 | 60 days   | 0.43 | M-v | 5  | MP   | 2007 TX <sub>193</sub>        |
| 2007 TK <sub>194</sub> | 16.2 | 0.15 | 20071027 | 71.21356  | 274.27580 | 31.37779  | 5.21482  | 0.1359261 | 3.1249412 | 22 | 1 | 42 days   | 0.54 |     |    | MP   | 2007 TK <sub>194</sub>        |
| 2007 TW <sub>194</sub> | 16.1 | 0.15 | 20071027 | 139.94466 | 68.24774  | 179.65096 | 1.88784  | 0.1132164 | 2.8593910 | 48 | 5 | 1992–2007 | 0.37 | M-v | 1  | MP   | 128472 2007 TW <sub>194</sub> |
| 2007 TY <sub>194</sub> | 16.7 | 0.15 | 20071007 | 119.08439 | 44.91115  | 211.80750 | 12.85749 | 0.1704146 | 2.7661232 | 19 | 1 | 47 days   | 0.29 |     |    | MP   | 2007 TY <sub>194</sub>        |
| 2007 TE <sub>195</sub> | 18.7 | 0.15 | 20071007 | 352.05005 | 197.46801 | 203.17291 | 4.73500  | 0.2726739 | 2.5725106 | 18 | 1 | 31 days   | 0.24 |     |    | MP   | 2007 TE <sub>195</sub>        |
| 2007 TQ <sub>195</sub> | 18.5 | 0.15 | 20071027 | 14.86839  | 343.45057 | 25.24985  | 6.09410  | 0.2841107 | 2.6124141 | 29 | 1 | 64 days   | 0.25 | M-v | 4  | MP   | 2007 TQ <sub>195</sub>        |
| 2007 TR <sub>195</sub> | 16.8 | 0.15 | 20071007 | 26.18638  | 316.86560 | 32.12947  | 12.12342 | 0.2407668 | 2.8995417 | 23 | 1 | 57 days   | 0.33 |     |    | MP   | 2007 TR <sub>195</sub>        |
| 2007 TS <sub>195</sub> | 18.1 | 0.15 | 20071007 | 9.44369   | 341.41210 | 32.89451  | 4.25768  | 0.2772945 | 3.0947010 | 18 | 1 | 28 days   | 0.29 |     |    | MP   | 2007 TS <sub>195</sub>        |
| 2007 TX <sub>195</sub> | 16.7 | 0.15 | 20071007 | 40.97065  | 141.59936 | 210.58678 | 10.03584 | 0.0609340 | 3.0459385 | 21 | 1 | 33 days   | 0.16 |     |    | MP   | 2007 TX <sub>195</sub>        |
| 2007 TB <sub>196</sub> | 16.3 | 0.15 | 20071027 | 9.34957   | 344.29299 | 46.35523  | 13.03303 | 0.1165779 | 3.1931901 | 25 | 1 | 41 days   | 0.36 |     |    | MP   | 2007 TB <sub>196</sub>        |
| 2007 TG <sub>196</sub> | 17.3 | 0.15 | 20071007 | 49.73135  | 187.29759 | 150.44975 | 1.69894  | 0.0953360 | 2.5202394 | 21 | 1 | 33 days   | 0.31 |     |    | MP   | 2007 TG <sub>196</sub>        |
| 2007 TH <sub>196</sub> | 16.7 | 0.15 | 20071007 | 211.71594 | 353.93229 | 196.16369 | 3.99337  | 0.0440545 | 2.7835755 | 18 | 1 | 29 days   | 0.32 |     |    | MP   | 2007 TH <sub>196</sub>        |
| 2007 TJ <sub>196</sub> | 17.2 | 0.15 | 20071027 | 256.84624 | 96.90229  | 55.17534  | 6.12486  | 0.0652616 | 2.2384528 | 56 | 1 | 60 days   | 0.59 | M-v | 5  | MP   | 2007 TJ <sub>196</sub>        |
| 2007 TR <sub>196</sub> | 17.3 | 0.15 | 20071007 | 359.06952 | 0.40296   | 36.11809  | 9.43919  | 0.0684246 | 2.7173239 | 17 | 1 | 27 days   | 0.32 |     |    | MP   | 2007 TR <sub>196</sub>        |
| 2007 TC <sub>198</sub> | 17.6 | 0.15 | 20071007 | 151.41740 | 222.14873 | 5.42455   | 6.03691  | 0.1093720 | 2.1997921 | 17 | 1 | 26 days   | 0.31 |     |    | MP   | 2007 TC <sub>198</sub>        |
| 2007 TV <sub>198</sub> | 17.6 | 0.15 | 20071007 | 16.42131  | 7.23466   | 354.22586 | 2.97868  | 0.1633426 | 2.6159528 | 22 | 1 | 16 days   | 0.29 |     |    | MP   | 2007 TV <sub>198</sub>        |
| 2007 TS <sub>199</sub> | 17.9 | 0.15 | 20071027 | 330.25935 | 53.23617  | 16.25796  | 3.82295  | 0.1416489 | 2.3116014 | 45 | 4 | 2000–2007 | 0.39 | M-v | 0  | MP   | 128472 2007 TS <sub>199</sub> |
| 2007 TU <sub>199</sub> | 17.2 | 0.15 | 20071027 | 353.56097 | 179.83422 | 218.31083 | 5.62861  | 0.0961474 | 2.9671853 | 14 | 1 | 41 days   | 0.31 |     |    | MP   | 2007 TU <sub>199</sub>        |
| 2007 TF <sub>200</sub> | 17.5 | 0.15 | 20071007 | 50.43141  | 117.38351 | 208.01647 | 2.04508  | 0.0986026 | 2.3390451 | 16 | 1 | 16 days   | 0.67 |     |    | D MP | 2007 TF <sub>200</sub>        |
| 2007 TQ <sub>200</sub> | 17.6 | 0.15 | 20071007 | 352.89895 | 189.30549 | 208.15828 | 13.87390 | 0.2472496 | 2.6375385 | 34 | 1 | 36 days   | 0.57 |     |    | MP   | 2007 TQ <sub>200</sub>        |
| 2007 TR <sub>200</sub> | 16.5 | 0.15 | 20071007 | 294.23492 | 245.59790 | 215.45483 | 10.94670 | 0.0513245 | 3.0763405 | 13 | 1 | 22 days   | 0.22 |     |    | MP   | 2007 TR <sub>200</sub>        |
| 2007 TT <sub>200</sub> | 18.3 | 0.15 | 20071027 | 24.97664  | 95.29182  | 250.02150 | 0.85011  | 0.3192578 | 2.5845103 | 23 | 1 | 45 days   | 0.83 |     |    | D MP | 2007 TT <sub>200</sub>        |
| 2007 TY <sub>200</sub> | 17.5 | 0.15 | 20071027 | 140.79875 | 33.82516  | 213.69561 | 5.38800  | 0.0909299 | 2.4382194 | 18 | 1 | 58 days   | 0.27 |     |    | MP   | 2007 TY <sub>200</sub>        |
| 2007 TE <sub>201</sub> | 17.6 | 0.15 | 20071027 | 56.56748  | 95.95660  | 230.26376 | 1.57497  | 0.1223602 | 2.6113008 | 29 | 1 | 58 days   | 0.30 |     |    | MP   | 2007 TE <sub>201</sub>        |
| 2007 TH <sub>201</sub> | 16.8 | 0.15 | 20071027 | 326.63178 | 78.29520  | 4.92151   | 0.99307  | 0.1797132 | 2.9976384 | 27 | 1 | 58 days   | 0.34 |     |    | MP   | 2007 TH <sub>201</sub>        |
| 2007 TK <sub>201</sub> | 18.0 | 0.15 | 20071027 | 76.39926  | 59.18640  | 240.55259 | 0.58783  | 0.1683418 | 2.4406838 | 37 | 3 | 2003–2007 | 0.29 | M-v | 2  | MP   | 128473 2007 TK <sub>201</sub> |
| 2007 TL <sub>201</sub> | 16.5 | 0.15 | 20070917 | 24.87059  | 318.53550 | 29.60944  | 18.89130 | 0.1780542 | 3.1504977 | 16 | 1 | 31 days   | 0.46 |     |    | MP   | 2007 TL <sub>201</sub>        |
| 2007 TP <sub>201</sub> | 16.5 | 0.15 | 20071027 | 10.32443  | 313.08412 | 56.14287  | 8.47018  | 0.1434508 | 2.3618373 | 53 | 1 | 57 days   | 0.48 |     |    | MP   | 2007 TP <sub>201</sub>        |
| 2007 TQ <sub>201</sub> | 18.8 | 0.15 | 20071007 | 6.96766   | 177.41179 | 199.88680 | 6.85712  | 0.3286307 | 2.6243204 | 20 | 1 | 35 days   | 0.36 |     |    | MP   | 2007 TQ <sub>201</sub>        |
| 2007 TW <sub>201</sub> | 16.2 | 0.15 | 20071027 | 17.97247  | 212.64902 | 167.14171 | 2.83071  | 0.1074730 | 3.0764686 | 45 | 4 | 2001–2007 | 0.50 | M-v | 1  | MP   | 128473 2007 TW <sub>201</sub> |
| 2007 TZ <sub>201</sub> | 18.4 | 0.15 | 20071007 | 3.19301   | 247.19361 | 143.53965 | 2.16436  | 0.0432937 | 2.2678866 | 22 | 1 | 32 days   | 0.28 |     |    | MP   | 2007 TZ <sub>201</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |                        |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|------------------------|-------------------------------|
| 2007 TE <sub>202</sub> | 16.8 | 0.15 | 20071027 | 26.68783  | 305.90249 | 49.42280  | 8.22231  | 0.2731528 | 3.1474980 | 27 | 1 | 40 days   | 0.23 |     | MPC | 2007 TE <sub>202</sub> |                               |
| 2007 TH <sub>202</sub> | 17.1 | 0.15 | 20071027 | 40.24956  | 299.74932 | 48.53355  | 6.92062  | 0.1406886 | 2.3373383 | 74 | 1 | 58 days   | 0.46 | D   | MPC | 2007 TH <sub>202</sub> |                               |
| 2007 TK <sub>202</sub> | 15.7 | 0.15 | 20071007 | 73.57709  | 253.14774 | 47.13536  | 15.95807 | 0.2178942 | 3.0946668 | 41 | 1 | 32 days   | 0.37 | D   | MPC | 2007 TK <sub>202</sub> |                               |
| 2007 TM <sub>202</sub> | 18.9 | 0.15 | 20071027 | 19.29882  | 313.66334 | 54.36660  | 3.85347  | 0.2398076 | 2.2748469 | 41 | 1 | 40 days   | 0.45 |     | MPC | 2007 TM <sub>202</sub> |                               |
| 2007 TN <sub>202</sub> | 16.6 | 0.15 | 20071007 | 64.56283  | 285.74835 | 43.62660  | 22.60717 | 0.0281522 | 2.6224965 | 44 | 1 | 34 days   | 0.43 |     | MPC | 2007 TN <sub>202</sub> |                               |
| 2007 TR <sub>202</sub> | 17.0 | 0.15 | 20071027 | 99.04164  | 234.53002 | 51.35371  | 9.33393  | 0.1551852 | 2.3878299 | 48 | 4 | 1996–2007 | 0.41 | M-v | 1   | MPC                    | 128474 2007 TR <sub>202</sub> |
| 2007 TS <sub>202</sub> | 17.1 | 0.15 | 20071027 | 309.82550 | 25.38575  | 81.31737  | 3.36714  | 0.1527948 | 2.3904603 | 38 | 1 | 58 days   | 0.52 |     | MPC | 2007 TS <sub>202</sub> |                               |
| 2007 TU <sub>202</sub> | 18.1 | 0.15 | 20071027 | 16.04830  | 325.36998 | 45.92572  | 10.05846 | 0.2947634 | 2.6853987 | 40 | 1 | 41 days   | 0.38 |     | MPC | 2007 TU <sub>202</sub> |                               |
| 2007 TZ <sub>202</sub> | 19.2 | 0.15 | 20071027 | 8.74726   | 188.97717 | 193.65914 | 6.24386  | 0.3305164 | 2.3844920 | 29 | 1 | 69 days   | 0.33 | M-v | 4   | MPC                    | 2007 TZ <sub>202</sub>        |
| 2007 TL <sub>203</sub> | 15.4 | 0.15 | 20071027 | 2.72060   | 349.37286 | 53.63994  | 10.59653 | 0.0952309 | 3.1318453 | 66 | 1 | 67 days   | 0.47 | M-v | 4   | MPC                    | 2007 TL <sub>203</sub>        |
| 2007 TM <sub>203</sub> | 17.2 | 0.15 | 20071027 | 358.17569 | 351.96476 | 56.65861  | 5.57331  | 0.1809952 | 3.1210917 | 35 | 3 | 1996–2007 | 0.35 | M-v | 3   | MPC                    | 128474 2007 TM <sub>203</sub> |
| 2007 TO <sub>203</sub> | 15.0 | 0.15 | 20071027 | 285.06377 | 85.82640  | 48.94991  | 22.60612 | 0.1143133 | 3.1358264 | 60 | 1 | 58 days   | 0.45 |     | MPC | 2007 TO <sub>203</sub> |                               |
| 2007 TT <sub>203</sub> | 17.0 | 0.15 | 20071027 | 42.59412  | 153.33899 | 201.53652 | 5.31494  | 0.0990043 | 2.6596669 | 28 | 1 | 61 days   | 0.32 | M-v | 5   | MPC                    | 2007 TT <sub>203</sub>        |
| 2007 TU <sub>203</sub> | 16.7 | 0.15 | 20071027 | 337.43900 | 222.83860 | 211.09622 | 8.47290  | 0.0832067 | 3.1744597 | 17 | 1 | 43 days   | 0.22 |     | MPC | 2007 TU <sub>203</sub> |                               |
| 2007 TV <sub>203</sub> | 16.8 | 0.15 | 20071007 | 315.83177 | 48.00999  | 48.75593  | 18.92927 | 0.1093261 | 3.1432319 | 31 | 1 | 34 days   | 0.29 |     | MPC | 2007 TV <sub>203</sub> |                               |
| 2007 TY <sub>203</sub> | 16.5 | 0.15 | 20071027 | 82.53430  | 262.12544 | 53.66065  | 10.59193 | 0.0714488 | 2.7546454 | 37 | 1 | 59 days   | 0.33 |     | MPC | 2007 TY <sub>203</sub> |                               |
| 2007 TA <sub>204</sub> | 17.3 | 0.15 | 20071007 | 61.93677  | 283.28315 | 48.04608  | 15.32184 | 0.0723186 | 2.5570726 | 18 | 1 | 34 days   | 0.25 |     | MPC | 2007 TA <sub>204</sub> |                               |
| 2007 TC <sub>204</sub> | 17.6 | 0.15 | 20071027 | 71.76855  | 263.26698 | 58.46676  | 6.44126  | 0.1094259 | 2.4806947 | 22 | 1 | 58 days   | 0.24 |     | MPC | 2007 TC <sub>204</sub> |                               |
| 2007 TD <sub>204</sub> | 18.3 | 0.15 | 20071027 | 23.98334  | 314.96261 | 44.01661  | 13.04436 | 0.3073609 | 2.6435471 | 38 | 1 | 58 days   | 0.36 |     | MPC | 2007 TD <sub>204</sub> |                               |
| 2007 TH <sub>204</sub> | 18.2 | 0.15 | 20071007 | 339.81847 | 259.27457 | 164.83734 | 3.68174  | 0.2094145 | 2.4234334 | 21 | 1 | 32 days   | 0.28 |     | MPC | 2007 TH <sub>204</sub> |                               |
| 2007 TK <sub>204</sub> | 17.7 | 0.15 | 20071027 | 325.24888 | 9.14479   | 78.31789  | 4.02226  | 0.1448547 | 2.4317700 | 28 | 1 | 37 days   | 0.33 |     | MPC | 2007 TK <sub>204</sub> |                               |
| 2007 TP <sub>204</sub> | 16.2 | 0.15 | 20071007 | 330.48097 | 303.93956 | 129.35545 | 3.06486  | 0.0700468 | 3.0531611 | 24 | 1 | 31 days   | 0.43 |     | MPC | 2007 TP <sub>204</sub> |                               |
| 2007 TQ <sub>204</sub> | 16.4 | 0.15 | 20071007 | 316.75622 | 311.83745 | 135.26377 | 3.39887  | 0.0702983 | 2.7198535 | 20 | 1 | 31 days   | 0.23 |     | MPC | 2007 TQ <sub>204</sub> |                               |
| 2007 TG <sub>205</sub> | 17.9 | 0.15 | 20071007 | 17.75090  | 295.96838 | 63.75236  | 5.02073  | 0.2875851 | 2.6399236 | 25 | 1 | 32 days   | 0.32 |     | MPC | 2007 TG <sub>205</sub> |                               |
| 2007 TW <sub>205</sub> | 18.7 | 0.15 | 20071027 | 9.81213   | 329.09870 | 51.59686  | 7.63428  | 0.3106966 | 2.5475836 | 26 | 1 | 36 days   | 0.46 |     | MPC | 2007 TW <sub>205</sub> |                               |
| 2007 TZ <sub>205</sub> | 17.4 | 0.15 | 20071027 | 68.66197  | 254.36237 | 72.75775  | 3.17188  | 0.0764375 | 2.7464397 | 19 | 1 | 37 days   | 0.32 |     | MPC | 2007 TZ <sub>205</sub> |                               |
| 2007 TF <sub>206</sub> | 18.3 | 0.15 | 20071007 | 21.07466  | 223.22860 | 132.17013 | 2.92203  | 0.1405784 | 2.2909509 | 16 | 1 | 13 days   | 0.28 |     | MPC | 2007 TF <sub>206</sub> |                               |
| 2007 TG <sub>206</sub> | 18.0 | 0.15 | 20071007 | 357.24826 | 226.53263 | 159.98961 | 3.54155  | 0.1813840 | 2.2074575 | 23 | 1 | 26 days   | 0.40 |     | MPC | 2007 TG <sub>206</sub> |                               |
| 2007 TF <sub>207</sub> | 17.4 | 0.15 | 20071007 | 325.13743 | 226.45626 | 186.59164 | 2.44955  | 0.1761211 | 3.0737212 | 22 | 1 | 5 days    | 0.27 | D   | MPC | 2007 TF <sub>207</sub> |                               |
| 2007 TG <sub>207</sub> | 17.7 | 0.15 | 20071007 | 344.41415 | 25.89304  | 4.69172   | 4.61992  | 0.2286534 | 2.8445229 | 20 | 1 | 5 days    | 0.25 |     | MPC | 2007 TG <sub>207</sub> |                               |
| 2007 TQ <sub>207</sub> | 17.2 | 0.15 | 20071007 | 341.09500 | 204.14661 | 182.73157 | 1.72502  | 0.0880106 | 2.9717419 | 19 | 1 | 5 days    | 0.34 |     | MPC | 2007 TQ <sub>207</sub> |                               |
| 2007 TR <sub>207</sub> | 16.3 | 0.15 | 20071007 | 311.80129 | 238.85200 | 186.64041 | 2.96517  | 0.1384406 | 3.2002165 | 20 | 1 | 5 days    | 0.25 |     | MPC | 2007 TR <sub>207</sub> |                               |
| 2007 TU <sub>207</sub> | 17.3 | 0.15 | 20071007 | 325.59419 | 223.41949 | 187.12651 | 14.89132 | 0.1429328 | 2.6215981 | 20 | 1 | 5 days    | 0.26 |     | MPC | 2007 TU <sub>207</sub> |                               |
| 2007 TD <sub>208</sub> | 17.2 | 0.15 | 20071027 | 15.02965  | 250.51419 | 111.23376 | 9.74307  | 0.3341950 | 2.6960308 | 31 | 1 | 67 days   | 0.55 | M-v | 4   | MPC                    | 128994 2007 TD <sub>208</sub> |
| 2007 TP <sub>208</sub> | 14.9 | 0.15 | 20071027 | 24.55055  | 263.40051 | 97.43041  | 16.27133 | 0.1852643 | 3.1572654 | 40 | 1 | 57 days   | 0.53 |     | MPC | 2007 TP <sub>208</sub> |                               |
| 2007 TO <sub>209</sub> | 16.8 | 0.15 | 20071007 | 70.13021  | 255.97073 | 10.61581  | 2.28906  | 0.2362583 | 3.0691108 | 19 | 1 | 4 days    | 0.29 |     | MPC | 2007 TO <sub>209</sub> |                               |
| 2007 TV <sub>209</sub> | 17.6 | 0.15 | 20071007 | 107.44908 | 23.34228  | 227.96392 | 4.92825  | 0.2075263 | 2.2111248 | 15 | 1 | 5 days    | 0.40 |     | MPC | 2007 TV <sub>209</sub> |                               |
| 2007 TW <sub>209</sub> | 16.6 | 0.15 | 20071027 | 351.24617 | 5.82359   | 48.96269  | 15.94442 | 0.0838028 | 3.0845256 | 25 | 1 | 40 days   | 0.27 |     | MPC | 2007 TW <sub>209</sub> |                               |
| 2007 TY <sub>209</sub> | 15.9 | 0.15 | 20071027 | 15.91440  | 334.13503 | 52.39313  | 11.29495 | 0.0526750 | 3.0369920 | 21 | 1 | 34 days   | 0.34 |     | MPC | 2007 TY <sub>209</sub> |                               |
| 2007 TF <sub>210</sub> | 16.5 | 0.15 | 20070917 | 358.42425 | 353.02563 | 356.51503 | 15.52721 | 0.0769475 | 3.1241042 | 22 | 1 | 37 days   | 0.37 | D   | MPC | 2007 TF <sub>210</sub> |                               |
| 2007 TM <sub>210</sub> | 14.4 | 0.15 | 20071027 | 281.44365 | 90.81879  | 37.18783  | 18.66815 | 0.0458096 | 3.0989773 | 86 | 5 | 2000–2007 | 0.54 | M-v | 1   | MPC                    | 128475 2007 TM <sub>210</sub> |
| 2007 TP <sub>210</sub> | 17.5 | 0.15 | 20071027 | 4.74725   | 4.86394   | 31.28024  | 6.36568  | 0.1510917 | 2.2681059 | 52 | 2 | 2000–2007 | 0.45 | M-v | 3   | MPC                    | 128475 2007 TP <sub>210</sub> |
| 2007 TV <sub>210</sub> | 17.4 | 0.15 | 20071027 | 333.98495 | 206.68829 | 228.34295 | 13.11570 | 0.2376174 | 2.5898616 | 32 | 1 | 71 days   | 0.59 | M-v | 4   | MPC                    | 2007 TV <sub>210</sub>        |
| 2007 TW <sub>210</sub> | 16.8 | 0.15 | 20071027 | 197.27268 | 304.24465 | 253.59796 | 7.49566  | 0.0683012 | 2.2648561 | 26 | 3 | 2003–2007 | 0.48 | M-v | 3   | MPC                    | 128476 2007 TW <sub>210</sub> |
| 2007 TZ <sub>210</sub> | 16.2 | 0.15 | 20071007 | 29.03587  | 341.93730 | 6.89303   | 12.97128 | 0.1788357 | 3.0668758 | 37 | 1 | 59 days   | 0.69 |     | MPC | 2007 TZ <sub>210</sub> |                               |
| 2007 TB <sub>211</sub> | 17.8 | 0.15 | 20071007 | 52.81500  | 43.49792  | 271.66772 | 5.09099  | 0.1864134 | 2.2400351 | 16 | 1 | 24 days   | 0.28 |     | MPC | 2007 TB <sub>211</sub> |                               |
| 2007 TV <sub>211</sub> | 15.8 | 0.15 | 20071007 | 316.42845 | 80.35602  | 15.04581  | 15.71143 | 0.2103219 | 3.1572956 | 19 | 1 | 32 days   | 0.39 |     | MPC | 2007 TV <sub>211</sub> |                               |
| 2007 TW <sub>211</sub> | 16.4 | 0.15 | 20071007 | 76.13523  | 297.21203 | 3.47632   | 8.11917  | 0.1226895 | 2.5557736 | 17 | 1 | 31 days   | 0.40 |     | MPC | 2007 TW <sub>211</sub> |                               |
| 2007 TA <sub>212</sub> | 16.1 | 0.15 | 20071007 | 339.91702 | 40.41879  | 23.38579  | 28.06203 | 0.2245098 | 3.0959503 | 35 | 1 | 55 days   | 0.55 |     | MPC | 2007 TA <sub>212</sub> |                               |
| 2007 TE <sub>212</sub> | 17.2 | 0.15 | 20071007 | 46.02547  | 62.76073  | 271.41486 | 4.68756  | 0.1230891 | 2.5904464 | 23 | 1 | 44 days   | 0.29 |     | MPC | 2007 TE <sub>212</sub> |                               |
| 2007 TG <sub>212</sub> | 17.0 | 0.15 | 20071007 | 102.25966 | 280.21411 | 2.56080   | 8.25448  | 0.0581067 | 2.2773408 | 28 | 1 | 44 days   | 0.45 |     | MPC | 2007 TG <sub>212</sub> |                               |
| 2007 TN <sub>212</sub> | 17.0 | 0.15 | 20071007 | 327.67972 | 173.13328 | 255.63545 | 5.53487  | 0.0852847 | 2.3228448 | 31 | 1 | 54 days   | 0.43 |     | MPC | 2007 TN <sub>212</sub> |                               |
| 2007 TP <sub>212</sub> | 17.3 | 0.15 | 20071027 | 327.02032 | 215.56848 | 241.96894 | 7.77557  | 0.3086713 | 2.6619202 | 42 | 2 | 2004–2007 | 0.41 | M-v | 4   | MPC                    | 128476 2007 TP <sub>212</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-------|-------------------------------|
| 2007 TS <sub>212</sub> | 17.1 | 0.15 | 20071007 | 358.77356 | 53.21105  | 340.85893 | 4.11482  | 0.2895716 | 3.1426976 | 54 | 1 | 54 days   | 0.48 |       | MPC   | 2007 TS <sub>212</sub>        |
| 2007 TW <sub>212</sub> | 16.5 | 0.15 | 20071027 | 326.27227 | 141.58006 | 297.05369 | 3.78326  | 0.0787313 | 2.7430176 | 29 | 1 | 42 days   | 0.42 |       | MPC   | 2007 TW <sub>212</sub>        |
| 2007 TY <sub>212</sub> | 16.2 | 0.15 | 20071007 | 95.89499  | 326.27239 | 326.01411 | 4.45000  | 0.0693117 | 2.7843519 | 25 | 1 | 54 days   | 0.39 |       | MPC   | 2007 TY <sub>212</sub>        |
| 2007 TA <sub>213</sub> | 16.8 | 0.15 | 20071027 | 7.14643   | 72.86512  | 317.53838 | 3.90933  | 0.1260882 | 2.7067297 | 27 | 1 | 42 days   | 0.32 |       | MPC   | 2007 TA <sub>213</sub>        |
| 2007 TC <sub>213</sub> | 16.5 | 0.15 | 20071027 | 40.94457  | 110.85427 | 230.61877 | 11.16045 | 0.1859661 | 2.7004301 | 34 | 1 | 72 days   | 0.44 | M-v 4 | MPC   | 2007 TC <sub>213</sub>        |
| 2007 TD <sub>213</sub> | 17.5 | 0.15 | 20071007 | 119.91754 | 341.34601 | 282.38650 | 3.72439  | 0.1144134 | 2.2655076 | 19 | 1 | 32 days   | 0.24 |       | MPC   | 2007 TD <sub>213</sub>        |
| 2007 TE <sub>213</sub> | 15.5 | 0.15 | 20071027 | 325.86474 | 65.52226  | 17.56129  | 11.49529 | 0.1022604 | 3.1232427 | 32 | 1 | 56 days   | 0.62 |       | MPC   | 2007 TE <sub>213</sub>        |
| 2007 TG <sub>213</sub> | 17.2 | 0.15 | 20071027 | 346.20511 | 64.52917  | 353.61504 | 4.90530  | 0.1145463 | 2.5536752 | 71 | 3 | 2003–2007 | 0.48 | M-v 3 | MPC   | 128476 2007 TG <sub>213</sub> |
| 2007 TJ <sub>213</sub> | 17.6 | 0.15 | 20071007 | 333.85452 | 113.06362 | 313.16599 | 2.61777  | 0.1614184 | 2.4330297 | 24 | 1 | 44 days   | 0.55 |       | MPC   | 2007 TJ <sub>213</sub>        |
| 2007 TL <sub>213</sub> | 15.8 | 0.15 | 20071007 | 16.63696  | 0.49371   | 11.47592  | 9.24901  | 0.1393542 | 3.0701891 | 27 | 1 | 45 days   | 0.49 |       | MPC   | 2007 TL <sub>213</sub>        |
| 2007 TO <sub>213</sub> | 16.2 | 0.15 | 20071027 | 347.80831 | 189.48967 | 228.30386 | 10.36224 | 0.2178221 | 3.1176880 | 54 | 1 | 60 days   | 0.61 | M-v 4 | MPC   | 2007 TO <sub>213</sub>        |
| 2007 TP <sub>213</sub> | 16.9 | 0.15 | 20071007 | 0.76415   | 155.35155 | 236.83480 | 6.89324  | 0.2057700 | 3.0655032 | 24 | 1 | 33 days   | 0.27 |       | MPC   | 2007 TP <sub>213</sub>        |
| 2007 TQ <sub>213</sub> | 19.0 | 0.15 | 20070917 | 10.94975  | 337.78326 | 14.43268  | 7.86942  | 0.3729792 | 2.5888372 | 23 | 1 | 54 days   | 0.56 |       | MPC   | 2007 TQ <sub>213</sub>        |
| 2007 TR <sub>213</sub> | 15.5 | 0.15 | 20071027 | 14.75370  | 2.22882   | 19.10872  | 10.33824 | 0.1133518 | 3.0107443 | 61 | 3 | 1999–2007 | 0.41 | M-v 3 | MPC   | 128476 2007 TR <sub>213</sub> |
| 2007 TV <sub>213</sub> | 16.0 | 0.15 | 20071027 | 100.33029 | 257.64466 | 25.97435  | 13.26656 | 0.1470176 | 2.6868855 | 26 | 1 | 42 days   | 0.35 |       | MPC   | 2007 TV <sub>213</sub>        |
| 2007 TW <sub>213</sub> | 17.6 | 0.15 | 20071007 | 37.03388  | 1.74434   | 336.96436 | 2.43187  | 0.1765512 | 2.2050788 | 38 | 1 | 44 days   | 0.54 |       | MPC   | 2007 TW <sub>213</sub>        |
| 2007 TX <sub>213</sub> | 16.2 | 0.15 | 20071027 | 295.99115 | 166.21939 | 301.18354 | 2.80623  | 0.0350315 | 2.6064108 | 51 | 5 | 1994–2007 | 0.60 | M-v 0 | MPC   | 128477 2007 TX <sub>213</sub> |
| 2007 TY <sub>213</sub> | 16.3 | 0.15 | 20071027 | 83.28201  | 73.81533  | 230.41621 | 10.06984 | 0.1076971 | 2.6153672 | 32 | 1 | 60 days   | 0.43 | M-v 4 | MPC   | 2007 TY <sub>213</sub>        |
| 2007 TE <sub>214</sub> | 15.8 | 0.15 | 20071027 | 70.08328  | 294.28368 | 29.27922  | 14.57607 | 0.0700164 | 3.1018905 | 19 | 1 | 42 days   | 0.30 |       | MPC   | 2007 TE <sub>214</sub>        |
| 2007 TN <sub>214</sub> | 16.7 | 0.15 | 20071027 | 70.92812  | 70.09949  | 228.77596 | 11.83661 | 0.2648805 | 2.6655725 | 27 | 1 | 60 days   | 0.23 | M-v 4 | MPC   | 2007 TN <sub>214</sub>        |
| 2007 TQ <sub>214</sub> | 15.6 | 0.15 | 20071027 | 344.38212 | 15.96937  | 54.49885  | 19.76606 | 0.2828086 | 3.1675413 | 70 | 1 | 68 days   | 0.52 | M-v 4 | MPC   | 2007 TQ <sub>214</sub>        |
| 2007 TS <sub>214</sub> | 14.7 | 0.15 | 20071027 | 11.53175  | 328.15939 | 60.74910  | 15.99429 | 0.0572366 | 3.2059247 | 73 | 4 | 2001–2007 | 0.67 | M-v 1 | MPC   | 128477 2007 TS <sub>214</sub> |
| 2007 TY <sub>214</sub> | 17.4 | 0.15 | 20071027 | 358.04987 | 80.66139  | 324.05519 | 2.63409  | 0.2106652 | 2.7571217 | 19 | 1 | 43 days   | 0.28 |       | MPC   | 2007 TY <sub>214</sub>        |
| 2007 TZ <sub>214</sub> | 16.8 | 0.15 | 20071027 | 346.34654 | 173.61503 | 244.56796 | 5.96621  | 0.0879428 | 2.6118283 | 48 | 3 | 1996–2007 | 0.37 | M-v 3 | MPC   | 128478 2007 TZ <sub>214</sub> |
| 2007 TA <sub>215</sub> | 16.2 | 0.15 | 20071027 | 324.49597 | 224.41059 | 228.17149 | 18.75720 | 0.1819463 | 3.0562109 | 24 | 1 | 41 days   | 0.39 |       | MPC   | 2007 TA <sub>215</sub>        |
| 2007 TG <sub>215</sub> | 18.8 | 0.15 | 20071027 | 15.47379  | 38.75928  | 339.29964 | 2.86863  | 0.1839798 | 2.1975524 | 19 | 1 | 43 days   | 0.26 |       | MPC   | 2007 TG <sub>215</sub>        |
| 2007 TJ <sub>215</sub> | 18.0 | 0.15 | 20071027 | 16.03308  | 352.18505 | 17.79705  | 7.50701  | 0.3096195 | 2.5964197 | 42 | 1 | 69 days   | 0.35 | M-v 3 | MPC   | 2007 TJ <sub>215</sub>        |
| 2007 TK <sub>215</sub> | 17.1 | 0.15 | 20071027 | 358.52664 | 141.74010 | 261.92576 | 2.80234  | 0.1056737 | 2.3657598 | 66 | 4 | 2000–2007 | 0.46 | M-v 1 | MPC   | 128478 2007 TK <sub>215</sub> |
| 2007 TL <sub>215</sub> | 17.4 | 0.15 | 20071027 | 63.90479  | 100.31392 | 232.71517 | 8.44542  | 0.0445268 | 2.1797487 | 53 | 3 | 2004–2007 | 0.43 | M-v 2 | MPC   | 128478 2007 TL <sub>215</sub> |
| 2007 TQ <sub>215</sub> | 17.7 | 0.15 | 20071027 | 5.25736   | 27.03585  | 7.96791   | 4.63284  | 0.1442377 | 2.3206265 | 30 | 1 | 42 days   | 0.37 |       | MPC   | 2007 TQ <sub>215</sub>        |
| 2007 TV <sub>215</sub> | 15.5 | 0.15 | 20071027 | 20.65471  | 140.91251 | 239.08860 | 9.63746  | 0.1003887 | 3.1150444 | 40 | 1 | 43 days   | 0.49 |       | MPC   | 2007 TV <sub>215</sub>        |
| 2007 TZ <sub>215</sub> | 17.3 | 0.15 | 20071007 | 11.82831  | 350.48806 | 28.87382  | 13.67510 | 0.1587513 | 2.7197829 | 27 | 1 | 55 days   | 0.31 |       | MPC   | 2007 TZ <sub>215</sub>        |
| 2007 TB <sub>216</sub> | 15.3 | 0.15 | 20071027 | 10.23458  | 12.71968  | 17.40542  | 5.56989  | 0.1372616 | 3.1313997 | 34 | 1 | 43 days   | 0.38 |       | MPC   | 2007 TB <sub>216</sub>        |
| 2007 TH <sub>216</sub> | 16.9 | 0.15 | 20071027 | 271.67589 | 208.91141 | 298.63639 | 1.91151  | 0.1343696 | 2.4682102 | 26 | 1 | 43 days   | 0.38 |       | MPC   | 2007 TH <sub>216</sub>        |
| 2007 TJ <sub>216</sub> | 16.5 | 0.15 | 20071027 | 23.87364  | 341.67003 | 27.81650  | 10.08080 | 0.1815312 | 2.7288417 | 43 | 1 | 94 days   | 0.50 | M-v 4 | MPC   | 2007 TJ <sub>216</sub>        |
| 2007 TK <sub>216</sub> | 16.1 | 0.15 | 20071027 | 355.75345 | 13.41685  | 37.84400  | 27.81861 | 0.1366284 | 3.2056365 | 36 | 1 | 67 days   | 0.47 | M-v 3 | MPC   | 2007 TK <sub>216</sub>        |
| 2007 TM <sub>216</sub> | 16.5 | 0.15 | 20071027 | 27.84484  | 120.54463 | 240.00705 | 3.38728  | 0.2134939 | 2.6020744 | 44 | 1 | 59 days   | 0.43 |       | MPC   | 2007 TM <sub>216</sub>        |
| 2007 TO <sub>216</sub> | 17.0 | 0.15 | 20071027 | 310.00742 | 244.43561 | 228.67029 | 6.93745  | 0.1951101 | 2.3449194 | 59 | 1 | 59 days   | 0.47 |       | MPC   | 2007 TO <sub>216</sub>        |
| 2007 TP <sub>216</sub> | 17.2 | 0.15 | 20071027 | 19.63689  | 345.59180 | 30.13767  | 8.40581  | 0.1517483 | 2.2543237 | 49 | 2 | 2000–2007 | 0.46 | M-v 3 | MPC   | 128479 2007 TP <sub>216</sub> |
| 2007 TQ <sub>216</sub> | 16.7 | 0.15 | 20071027 | 1.19846   | 10.71488  | 31.88621  | 11.38453 | 0.2143598 | 2.8914331 | 28 | 1 | 71 days   | 0.26 | M-v 3 | MPC   | 2007 TQ <sub>216</sub>        |
| 2007 TR <sub>216</sub> | 17.1 | 0.15 | 20071027 | 23.71583  | 346.01830 | 29.92328  | 7.22838  | 0.0911973 | 2.5642788 | 19 | 1 | 43 days   | 0.37 |       | MPC   | 2007 TR <sub>216</sub>        |
| 2007 TS <sub>216</sub> | 18.2 | 0.15 | 20071027 | 5.85656   | 18.87332  | 15.47521  | 2.67496  | 0.1645796 | 2.2328365 | 27 | 1 | 39 days   | 0.37 |       | MPC   | 2007 TS <sub>216</sub>        |
| 2007 TT <sub>216</sub> | 16.0 | 0.15 | 20071027 | 71.28859  | 81.10340  | 226.43543 | 23.93760 | 0.2359867 | 3.1496839 | 29 | 1 | 44 days   | 0.33 |       | MPC   | 2007 TT <sub>216</sub>        |
| 2007 TU <sub>216</sub> | 16.7 | 0.15 | 20071027 | 347.20902 | 194.81296 | 225.86808 | 8.70028  | 0.0934033 | 2.7161550 | 34 | 1 | 59 days   | 0.48 |       | MPC   | 2007 TU <sub>216</sub>        |
| 2007 TV <sub>216</sub> | 15.3 | 0.15 | 20071027 | 56.49478  | 299.50336 | 39.45558  | 12.92224 | 0.1116211 | 3.0884722 | 84 | 3 | 2005–2007 | 0.42 | M-v 2 | MPC   | 128479 2007 TV <sub>216</sub> |
| 2007 TX <sub>216</sub> | 17.2 | 0.15 | 20071027 | 353.13624 | 183.25593 | 230.29416 | 14.02614 | 0.1246190 | 2.7616304 | 31 | 1 | 59 days   | 0.43 |       | MPC   | 2007 TX <sub>216</sub>        |
| 2007 TA <sub>217</sub> | 14.8 | 0.15 | 20071027 | 240.77876 | 299.48561 | 232.69841 | 15.36963 | 0.0677262 | 3.0564261 | 58 | 4 | 1996–2007 | 0.55 | M-v 2 | MPC   | 128479 2007 TA <sub>217</sub> |
| 2007 TB <sub>217</sub> | 15.3 | 0.15 | 20071027 | 292.24467 | 94.90005  | 26.94076  | 9.79231  | 0.0655499 | 3.1040967 | 47 | 2 | 2004–2007 | 0.56 | M-v 3 | MPC   | 128480 2007 TB <sub>217</sub> |
| 2007 TD <sub>217</sub> | 17.0 | 0.15 | 20071027 | 32.54395  | 121.62844 | 240.29412 | 5.32605  | 0.1403620 | 2.5918201 | 34 | 1 | 59 days   | 0.50 |       | MPC   | 2007 TD <sub>217</sub>        |
| 2007 TE <sub>217</sub> | 15.9 | 0.15 | 20071007 | 43.05433  | 85.63520  | 261.58371 | 4.39684  | 0.1401354 | 3.2413898 | 17 | 1 | 36 days   | 0.44 |       | D MPC | 2007 TE <sub>217</sub>        |
| 2007 TP <sub>217</sub> | 17.6 | 0.15 | 20071027 | 85.78051  | 35.49437  | 263.89732 | 2.69560  | 0.1763905 | 2.2665013 | 17 | 1 | 43 days   | 0.21 |       | MPC   | 2007 TP <sub>217</sub>        |
| 2007 TQ <sub>217</sub> | 16.4 | 0.15 | 20071027 | 93.11260  | 288.59087 | 21.05425  | 5.94258  | 0.0488729 | 2.9329879 | 42 | 3 | 2002–2007 | 0.26 | M-v 2 | MPC   | 128480 2007 TQ <sub>217</sub> |
| 2007 TR <sub>217</sub> | 15.8 | 0.15 | 20071027 | 33.91396  | 351.89360 | 12.34082  | 3.78161  | 0.1315167 | 3.0075787 | 19 | 1 | 59 days   | 0.31 |       | MPC   | 2007 TR <sub>217</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 TU <sub>217</sub> | 17.2 | 0.15 | 20071027 | 333.55868 | 45.84207  | 33.94990  | 10.52244 | 0.1013495 | 2.7726345 | 22 | 1 | 64 days   | 0.26 | M-v | 4 | MPC | 2007 TU <sub>217</sub>        |
| 2007 TV <sub>217</sub> | 15.6 | 0.15 | 20071027 | 132.07067 | 232.62153 | 36.05453  | 9.12889  | 0.1180779 | 3.2154390 | 27 | 1 | 59 days   | 0.20 |     |   | MPC | 2007 TV <sub>217</sub>        |
| 2007 TX <sub>217</sub> | 16.2 | 0.15 | 20071027 | 43.82142  | 109.73238 | 229.85419 | 15.53695 | 0.2490288 | 3.1483759 | 41 | 1 | 60 days   | 0.48 | M-v | 4 | MPC | 2007 TX <sub>217</sub>        |
| 2007 TB <sub>218</sub> | 15.9 | 0.15 | 20071027 | 291.33821 | 89.85681  | 38.08758  | 13.92941 | 0.1015311 | 2.5653877 | 55 | 4 | 2001–2007 | 0.62 | M-v | 1 | MPC | 128480 2007 TB <sub>218</sub> |
| 2007 TC <sub>218</sub> | 17.4 | 0.15 | 20071027 | 18.41127  | 349.29374 | 28.54082  | 5.90720  | 0.2124594 | 2.6027693 | 35 | 1 | 64 days   | 0.35 | M-v | 4 | MPC | 2007 TC <sub>218</sub>        |
| 2007 TD <sub>218</sub> | 16.8 | 0.15 | 20071027 | 6.41773   | 164.25733 | 235.52096 | 8.73608  | 0.1734768 | 3.0480911 | 38 | 1 | 59 days   | 0.37 |     |   | MPC | 2007 TD <sub>218</sub>        |
| 2007 TJ <sub>218</sub> | 16.5 | 0.15 | 20071027 | 20.25312  | 148.46803 | 232.69321 | 5.98595  | 0.1299082 | 2.7740388 | 35 | 1 | 59 days   | 0.45 |     |   | MPC | 2007 TJ <sub>218</sub>        |
| 2007 TK <sub>218</sub> | 16.1 | 0.15 | 20071027 | 325.51876 | 55.04622  | 38.41711  | 17.90303 | 0.1537472 | 2.5859875 | 65 | 1 | 74 days   | 0.42 | M-v | 4 | MPC | 2007 TK <sub>218</sub>        |
| 2007 TN <sub>218</sub> | 16.5 | 0.15 | 20071027 | 334.26361 | 212.33857 | 227.28201 | 9.06982  | 0.0923643 | 3.0116062 | 29 | 1 | 60 days   | 0.30 | M-v | 3 | MPC | 2007 TN <sub>218</sub>        |
| 2007 TO <sub>218</sub> | 17.6 | 0.15 | 20071027 | 333.69027 | 218.66315 | 223.70863 | 12.72830 | 0.1487834 | 2.5933735 | 22 | 1 | 44 days   | 0.28 |     |   | MPC | 2007 TO <sub>218</sub>        |
| 2007 TP <sub>218</sub> | 16.6 | 0.15 | 20071027 | 77.25411  | 277.73108 | 42.87996  | 4.62257  | 0.0885807 | 2.6506884 | 33 | 1 | 86 days   | 0.39 | M-v | 4 | MPC | 2007 TP <sub>218</sub>        |
| 2007 TR <sub>218</sub> | 16.7 | 0.15 | 20071027 | 27.58119  | 340.66781 | 31.15303  | 2.84045  | 0.1288668 | 2.6284518 | 48 | 3 | 2001–2007 | 0.44 | M-v | 3 | MPC | 128481 2007 TR <sub>218</sub> |
| 2007 TT <sub>218</sub> | 16.8 | 0.15 | 20071027 | 40.75903  | 308.45934 | 41.07746  | 10.61801 | 0.1934967 | 2.7719204 | 33 | 1 | 62 days   | 0.35 | M-v | 4 | MPC | 2007 TT <sub>218</sub>        |
| 2007 TU <sub>218</sub> | 18.4 | 0.15 | 20071027 | 36.11882  | 137.68716 | 218.78723 | 3.00166  | 0.1580352 | 2.1728274 | 54 | 3 | 2004–2007 | 0.48 | M-v | 3 | MPC | 128481 2007 TU <sub>218</sub> |
| 2007 TO <sub>220</sub> | 18.3 | 0.15 | 20071027 | 14.67089  | 136.21983 | 230.66081 | 5.96684  | 0.2158644 | 2.2510956 | 24 | 1 | 59 days   | 0.30 |     |   | MPC | 2007 TO <sub>220</sub>        |
| 2007 TA <sub>222</sub> | 15.9 | 0.15 | 20071027 | 313.52431 | 48.34571  | 31.41402  | 12.09904 | 0.0614440 | 3.1625588 | 27 | 1 | 64 days   | 0.47 | M-v | 4 | MPC | 2007 TA <sub>222</sub>        |
| 2007 TB <sub>222</sub> | 16.6 | 0.15 | 20071007 | 359.50803 | 348.25918 | 36.44214  | 6.58185  | 0.0434279 | 2.8499938 | 20 | 1 | 27 days   | 0.39 |     |   | MPC | 2007 TB <sub>222</sub>        |
| 2007 TH <sub>222</sub> | 17.1 | 0.15 | 20071007 | 243.76547 | 118.36797 | 43.28517  | 8.64971  | 0.2083495 | 2.3062129 | 16 | 1 | 6 days    | 0.43 |     |   | MPC | 2007 TH <sub>222</sub>        |
| 2007 TJ <sub>222</sub> | 16.0 | 0.15 | 20071027 | 97.95556  | 93.55436  | 186.37192 | 6.91893  | 0.1273289 | 3.0922339 | 39 | 3 | 2005–2007 | 0.27 | M-v | 3 | MPC | 128482 2007 TJ <sub>222</sub> |
| 2007 TN <sub>222</sub> | 17.0 | 0.15 | 20071007 | 3.96068   | 143.99539 | 228.32899 | 8.11927  | 0.1858608 | 2.8193711 | 17 | 1 | 5 days    | 0.76 |     | D | MPC | 2007 TN <sub>222</sub>        |
| 2007 TT <sub>222</sub> | 19.0 | 0.15 | 20071007 | 338.70724 | 199.61788 | 217.66270 | 22.13293 | 0.1314713 | 1.9072525 | 21 | 1 | 33 days   | 0.40 |     |   | MPC | 2007 TT <sub>222</sub>        |
| 2007 TN <sub>223</sub> | 16.1 | 0.15 | 20071027 | 17.09889  | 265.76405 | 110.69833 | 13.07191 | 0.1991068 | 2.6107831 | 27 | 1 | 57 days   | 0.45 |     |   | MPC | 2007 TN <sub>223</sub>        |
| 2007 TP <sub>223</sub> | 17.9 | 0.15 | 20071007 | 65.12263  | 197.07429 | 108.34330 | 4.71697  | 0.2000043 | 2.2393204 | 24 | 1 | 4 days    | 0.36 |     |   | MPC | 2007 TP <sub>223</sub>        |
| 2007 TE <sub>224</sub> | 17.6 | 0.15 | 20071027 | 346.79203 | 265.09305 | 155.53585 | 4.42433  | 0.1528967 | 2.3358210 | 26 | 2 | 2005–2007 | 0.32 | M-v | 3 | MPC | 128482 2007 TE <sub>224</sub> |
| 2007 TO <sub>224</sub> | 17.8 | 0.15 | 20071007 | 61.39647  | 235.51695 | 59.02573  | 4.74207  | 0.2547140 | 2.3225350 | 15 | 1 | 27 days   | 0.22 |     | D | MPC | 2007 TO <sub>224</sub>        |
| 2007 TK <sub>225</sub> | 17.7 | 0.15 | 20071027 | 27.79795  | 333.35531 | 19.01206  | 6.16265  | 0.2594209 | 2.5737490 | 36 | 1 | 45 days   | 0.52 |     |   | MPC | 2007 TK <sub>225</sub>        |
| 2007 TP <sub>225</sub> | 17.6 | 0.15 | 20071007 | 349.38399 | 40.23787  | 2.44750   | 3.04641  | 0.1675195 | 3.1360205 | 16 | 1 | 36 days   | 0.36 |     |   | MPC | 2007 TP <sub>225</sub>        |
| 2007 TV <sub>225</sub> | 17.9 | 0.15 | 20071027 | 48.72022  | 286.46829 | 30.86153  | 3.65624  | 0.2579596 | 2.3148123 | 23 | 1 | 41 days   | 0.19 |     |   | MPC | 2007 TV <sub>225</sub>        |
| 2007 TP <sub>226</sub> | 17.6 | 0.15 | 20071027 | 329.07501 | 25.96727  | 48.41558  | 4.18583  | 0.1168500 | 2.5916907 | 31 | 2 | 2003–2007 | 0.31 | M-v | 4 | MPC | 128483 2007 TP <sub>226</sub> |
| 2007 TQ <sub>226</sub> | 18.3 | 0.15 | 20071027 | 39.60758  | 141.98087 | 194.03624 | 3.88360  | 0.2173827 | 2.2053014 | 21 | 1 | 62 days   | 0.16 | M-v | 4 | MPC | 2007 TQ <sub>226</sub>        |
| 2007 TL <sub>227</sub> | 17.2 | 0.15 | 20071007 | 11.63747  | 145.18595 | 234.54121 | 3.38607  | 0.0879197 | 2.7476636 | 19 | 1 | 27 days   | 0.25 |     |   | MPC | 2007 TL <sub>227</sub>        |
| 2007 TU <sub>227</sub> | 16.9 | 0.15 | 20071027 | 24.19669  | 144.72627 | 218.49757 | 16.28586 | 0.1943571 | 2.6564550 | 28 | 1 | 37 days   | 0.41 |     |   | MPC | 2007 TU <sub>227</sub>        |
| 2007 TA <sub>228</sub> | 17.1 | 0.15 | 20071027 | 5.38401   | 152.71074 | 237.14729 | 1.46437  | 0.0877027 | 2.6768747 | 28 | 1 | 58 days   | 0.23 |     |   | MPC | 2007 TA <sub>228</sub>        |
| 2007 TC <sub>228</sub> | 17.5 | 0.15 | 20071027 | 242.01374 | 302.48126 | 219.59823 | 4.71527  | 0.0769036 | 2.5367490 | 37 | 4 | 1999–2007 | 0.31 | M-v | 3 | MPC | 128484 2007 TC <sub>228</sub> |
| 2007 TD <sub>228</sub> | 18.6 | 0.15 | 20071007 | 19.50843  | 347.76663 | 10.38793  | 2.69603  | 0.2088108 | 2.3700410 | 18 | 1 | 34 days   | 0.26 |     |   | MPC | 2007 TD <sub>228</sub>        |
| 2007 TF <sub>228</sub> | 16.5 | 0.15 | 20071027 | 352.25902 | 179.59112 | 225.67701 | 4.68147  | 0.0175874 | 2.7811257 | 40 | 3 | 2000–2007 | 0.42 | M-v | 3 | MPC | 128484 2007 TF <sub>228</sub> |
| 2007 TO <sub>228</sub> | 15.9 | 0.15 | 20071007 | 202.51982 | 331.64098 | 225.01534 | 4.78523  | 0.0854594 | 3.1952449 | 21 | 1 | 26 days   | 0.26 |     |   | MPC | 2007 TO <sub>228</sub>        |
| 2007 TR <sub>228</sub> | 17.7 | 0.15 | 20071007 | 30.82562  | 133.92689 | 216.05759 | 5.93270  | 0.1373987 | 2.3238238 | 29 | 1 | 32 days   | 0.37 |     |   | MPC | 2007 TR <sub>228</sub>        |
| 2007 TS <sub>228</sub> | 17.1 | 0.15 | 20071027 | 354.78649 | 176.39784 | 230.10272 | 0.86983  | 0.2280466 | 2.7446385 | 71 | 4 | 1998–2007 | 0.50 | M-v | 1 | MPC | 128484 2007 TS <sub>228</sub> |
| 2007 TU <sub>228</sub> | 15.8 | 0.15 | 20071027 | 150.50912 | 25.31433  | 218.20106 | 4.32188  | 0.0960526 | 2.7722150 | 30 | 1 | 40 days   | 0.38 |     |   | MPC | 2007 TU <sub>228</sub>        |
| 2007 TX <sub>228</sub> | 16.7 | 0.15 | 20071027 | 269.99102 | 285.68571 | 220.90192 | 2.49756  | 0.1570737 | 2.6923826 | 48 | 5 | 2000–2007 | 0.47 | M-v | 0 | MPC | 128485 2007 TX <sub>228</sub> |
| 2007 TE <sub>229</sub> | 15.7 | 0.15 | 20071007 | 159.49625 | 353.61471 | 242.24818 | 1.65056  | 0.0503640 | 3.1953253 | 18 | 1 | 34 days   | 0.28 |     |   | MPC | 2007 TE <sub>229</sub>        |
| 2007 TH <sub>229</sub> | 16.3 | 0.15 | 20071007 | 16.55733  | 339.75281 | 31.73256  | 4.29394  | 0.2053102 | 3.9527940 | 20 | 1 | 36 days   | 0.28 |     |   | MPC | 2007 TH <sub>229</sub>        |
| 2007 TJ <sub>229</sub> | 19.0 | 0.15 | 20071027 | 354.06434 | 189.13441 | 219.28485 | 3.14687  | 0.2345578 | 2.5523738 | 30 | 1 | 40 days   | 0.26 |     |   | MPC | 2007 TJ <sub>229</sub>        |
| 2007 TT <sub>229</sub> | 18.5 | 0.15 | 20071027 | 19.31853  | 357.35482 | 13.42701  | 0.97653  | 0.1850456 | 2.3918611 | 27 | 1 | 56 days   | 0.33 |     |   | MPC | 2007 TT <sub>229</sub>        |
| 2007 TU <sub>229</sub> | 18.4 | 0.15 | 20071027 | 331.27942 | 41.47708  | 35.90998  | 1.99423  | 0.1477757 | 2.2981918 | 32 | 1 | 63 days   | 0.39 | M-v | 4 | MPC | 2007 TU <sub>229</sub>        |
| 2007 TY <sub>229</sub> | 16.8 | 0.15 | 20071027 | 50.58797  | 278.75167 | 62.88352  | 0.78270  | 0.0944929 | 2.9939083 | 43 | 4 | 2000–2007 | 0.41 | M-v | 1 | MPC | 128485 2007 TY <sub>229</sub> |
| 2007 TG <sub>230</sub> | 16.4 | 0.15 | 20071007 | 28.35569  | 309.33881 | 49.54514  | 12.49144 | 0.1679526 | 3.0397716 | 32 | 1 | 30 days   | 0.28 |     |   | MPC | 2007 TG <sub>230</sub>        |
| 2007 TH <sub>230</sub> | 15.6 | 0.15 | 20071027 | 331.64363 | 30.23406  | 50.28666  | 13.09860 | 0.1665509 | 3.2085843 | 70 | 3 | 2001–2007 | 0.50 | M-v | 2 | MPC | 128486 2007 TH <sub>230</sub> |
| 2007 TK <sub>230</sub> | 17.9 | 0.15 | 20071027 | 30.23304  | 248.93452 | 105.09077 | 2.49246  | 0.2073866 | 2.3782226 | 23 | 1 | 37 days   | 0.52 |     |   | MPC | 2007 TK <sub>230</sub>        |
| 2007 TM <sub>230</sub> | 16.5 | 0.15 | 20071007 | 71.21649  | 266.44722 | 54.64657  | 10.12446 | 0.0496160 | 2.9643609 | 19 | 1 | 32 days   | 0.35 |     |   | MPC | 2007 TM <sub>230</sub>        |
| 2007 TQ <sub>230</sub> | 15.7 | 0.15 | 20071027 | 37.68204  | 277.70948 | 79.98385  | 3.61504  | 0.0919939 | 2.6817800 | 92 | 6 | 1998–2007 | 0.46 | M-v | 1 | MPC | 128486 2007 TQ <sub>230</sub> |
| 2007 TO <sub>231</sub> | 18.7 | 0.15 | 20071007 | 342.44665 | 21.98200  | 34.10642  | 7.42221  | 0.3294348 | 2.6094590 | 24 | 1 | 22 days   | 0.36 |     |   | MPC | 2007 TO <sub>231</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 TR <sub>231</sub> | 17.4 | 0.15 | 20071027 | 174.92994 | 168.93500 | 61.95266  | 1.95656  | 0.1292989 | 2.4609503 | 40 | 4 | 2001–2007 | 0.35 | M-v | 1 | MPC | 128487 2007 TR <sub>231</sub> |
| 2007 TS <sub>231</sub> | 16.5 | 0.15 | 20071027 | 324.65416 | 239.62419 | 216.98004 | 6.10860  | 0.1785590 | 2.9384351 | 37 | 1 | 67 days   | 0.46 | M-v | 4 | MPC | 2007 TS <sub>231</sub>        |
| 2007 TU <sub>231</sub> | 18.2 | 0.15 | 20071027 | 33.51583  | 171.54183 | 183.41532 | 1.30219  | 0.2018706 | 2.3530878 | 31 | 1 | 38 days   | 0.47 |     |   | MPC | 2007 TU <sub>231</sub>        |
| 2007 TV <sub>231</sub> | 16.8 | 0.15 | 20071027 | 60.79310  | 114.31801 | 220.85447 | 9.56372  | 0.1107476 | 2.9714618 | 22 | 1 | 58 days   | 0.24 |     |   | MPC | 2007 TV <sub>231</sub>        |
| 2007 TX <sub>231</sub> | 16.6 | 0.15 | 20071027 | 263.61505 | 293.97393 | 217.97457 | 6.83869  | 0.0786900 | 2.4289292 | 51 | 4 | 2003–2007 | 0.40 | M-v | 0 | MPC | 128487 2007 TX <sub>231</sub> |
| 2007 TZ <sub>231</sub> | 17.6 | 0.15 | 20071027 | 19.17203  | 170.26444 | 211.45506 | 3.45607  | 0.1214419 | 2.5319040 | 54 | 4 | 1999–2007 | 0.46 | M-v | 2 | MPC | 128487 2007 TZ <sub>231</sub> |
| 2007 TA <sub>232</sub> | 17.1 | 0.15 | 20071027 | 72.60268  | 83.22897  | 221.50200 | 12.08119 | 0.2574822 | 2.6086409 | 18 | 1 | 43 days   | 0.17 |     |   | MPC | 2007 TA <sub>232</sub>        |
| 2007 TB <sub>232</sub> | 17.0 | 0.15 | 20071027 | 33.65853  | 146.07730 | 213.98010 | 4.59269  | 0.1790371 | 2.9796226 | 22 | 1 | 65 days   | 0.20 | M-v | 4 | MPC | 2007 TB <sub>232</sub>        |
| 2007 TD <sub>232</sub> | 18.3 | 0.15 | 20071027 | 342.30553 | 295.40168 | 129.31808 | 0.80470  | 0.0439325 | 2.1638333 | 27 | 1 | 78 days   | 0.37 | M-v | 3 | MPC | 2007 TD <sub>232</sub>        |
| 2007 TE <sub>232</sub> | 16.9 | 0.15 | 20071007 | 40.13698  | 254.21332 | 101.30573 | 1.29489  | 0.1020693 | 2.9941142 | 19 | 1 | 28 days   | 0.26 |     |   | MPC | 2007 TE <sub>232</sub>        |
| 2007 TG <sub>232</sub> | 16.5 | 0.15 | 20071027 | 29.31598  | 169.41703 | 203.16743 | 2.37601  | 0.0910858 | 2.6941551 | 61 | 3 | 1993–2007 | 0.41 | M-v | 2 | MPC | 128487 2007 TG <sub>232</sub> |
| 2007 TH <sub>232</sub> | 17.5 | 0.15 | 20071027 | 40.16554  | 142.28770 | 208.96578 | 4.38900  | 0.1723596 | 2.5332750 | 26 | 1 | 63 days   | 0.32 | M-v | 4 | MPC | 2007 TH <sub>232</sub>        |
| 2007 TJ <sub>232</sub> | 15.8 | 0.15 | 20071027 | 34.75760  | 149.05957 | 219.65591 | 8.20902  | 0.0830655 | 3.1842953 | 30 | 1 | 63 days   | 0.36 | M-v | 4 | MPC | 2007 TJ <sub>232</sub>        |
| 2007 TK <sub>232</sub> | 17.0 | 0.15 | 20071007 | 16.98308  | 173.45612 | 208.40227 | 1.31459  | 0.1192096 | 2.9369409 | 18 | 1 | 48 days   | 0.23 |     |   | MPC | 2007 TK <sub>232</sub>        |
| 2007 TL <sub>232</sub> | 17.2 | 0.15 | 20071027 | 245.34212 | 338.08759 | 194.41061 | 2.24671  | 0.1069987 | 2.3044262 | 47 | 5 | 1995–2007 | 0.34 | M-v | 1 | MPC | 128487 2007 TL <sub>232</sub> |
| 2007 TN <sub>232</sub> | 16.0 | 0.15 | 20071027 | 326.94552 | 35.39774  | 56.21346  | 1.66909  | 0.1334067 | 2.9841862 | 88 | 4 | 1996–2007 | 0.39 | M-v | 1 | MPC | 128488 2007 TN <sub>232</sub> |
| 2007 TO <sub>232</sub> | 16.8 | 0.15 | 20071027 | 322.51166 | 239.53731 | 220.21463 | 8.39641  | 0.1738655 | 2.6761647 | 26 | 1 | 41 days   | 0.42 |     |   | MPC | 2007 TO <sub>232</sub>        |
| 2007 TQ <sub>232</sub> | 16.8 | 0.15 | 20071027 | 11.43331  | 345.72978 | 44.10575  | 12.96445 | 0.1995627 | 2.7314293 | 50 | 1 | 66 days   | 0.48 | M-v | 4 | MPC | 2007 TQ <sub>232</sub>        |
| 2007 TW <sub>232</sub> | 17.0 | 0.15 | 20071027 | 352.45062 | 201.21498 | 218.25601 | 9.51414  | 0.2057869 | 2.7649632 | 37 | 1 | 43 days   | 0.48 |     |   | MPC | 2007 TW <sub>232</sub>        |
| 2007 TY <sub>232</sub> | 17.5 | 0.15 | 20071027 | 13.97451  | 196.62257 | 194.48074 | 2.01163  | 0.1018422 | 2.6318524 | 30 | 1 | 59 days   | 0.25 |     |   | MPC | 2007 TY <sub>232</sub>        |
| 2007 TB <sub>233</sub> | 16.6 | 0.15 | 20071027 | 40.89827  | 291.61136 | 70.64373  | 3.04187  | 0.0821450 | 2.8542007 | 22 | 1 | 79 days   | 0.22 | M-v | 4 | MPC | 2007 TB <sub>233</sub>        |
| 2007 TC <sub>233</sub> | 16.0 | 0.15 | 20071027 | 40.32112  | 301.83842 | 58.35530  | 3.05551  | 0.1174018 | 2.9732204 | 33 | 1 | 66 days   | 0.42 | M-v | 5 | MPC | 2007 TC <sub>233</sub>        |
| 2007 TE <sub>233</sub> | 15.8 | 0.15 | 20071027 | 277.82633 | 80.84954  | 53.79184  | 9.21752  | 0.0431811 | 3.2465863 | 50 | 4 | 1995–2007 | 0.42 | M-v | 3 | MPC | 128488 2007 TE <sub>233</sub> |
| 2007 TF <sub>233</sub> | 17.2 | 0.15 | 20071027 | 348.99481 | 358.85296 | 60.64830  | 3.50778  | 0.1728467 | 3.2388958 | 75 | 3 | 1998–2007 | 0.38 | M-v | 2 | MPC | 128488 2007 TF <sub>233</sub> |
| 2007 TJ <sub>233</sub> | 17.4 | 0.15 | 20071027 | 44.63842  | 294.56589 | 56.46885  | 6.02392  | 0.1223161 | 2.6926388 | 15 | 1 | 41 days   | 0.20 |     |   | MPC | 2007 TJ <sub>233</sub>        |
| 2007 TO <sub>233</sub> | 16.8 | 0.15 | 20071007 | 48.38868  | 265.98376 | 82.34356  | 3.26536  | 0.0776366 | 2.8867790 | 17 | 1 | 52 days   | 0.22 |     |   | MPC | 2007 TO <sub>233</sub>        |
| 2007 TP <sub>233</sub> | 16.4 | 0.15 | 20071027 | 4.57528   | 351.82605 | 50.85342  | 12.17911 | 0.1093080 | 3.0012649 | 26 | 1 | 40 days   | 0.46 |     |   | MPC | 2007 TP <sub>233</sub>        |
| 2007 TS <sub>233</sub> | 15.9 | 0.15 | 20071027 | 320.37675 | 352.51870 | 107.39938 | 2.86759  | 0.1371987 | 3.1030401 | 27 | 1 | 80 days   | 0.50 | M-v | 5 | MPC | 2007 TS <sub>233</sub>        |
| 2007 TT <sub>233</sub> | 16.0 | 0.15 | 20071027 | 105.88220 | 64.84941  | 218.36476 | 14.77791 | 0.1932343 | 2.5870106 | 41 | 3 | 2003–2007 | 0.50 | M-v | 2 | MPC | 128488 2007 TT <sub>233</sub> |
| 2007 TU <sub>233</sub> | 16.1 | 0.15 | 20071027 | 19.83598  | 325.53162 | 61.14672  | 7.23682  | 0.0373693 | 2.6918268 | 54 | 1 | 82 days   | 0.46 | M-v | 4 | MPC | 2007 TU <sub>233</sub>        |
| 2007 TW <sub>233</sub> | 17.2 | 0.15 | 20071027 | 16.43794  | 308.84953 | 76.63210  | 3.05150  | 0.1600541 | 2.9835705 | 26 | 1 | 65 days   | 0.32 | M-v | 4 | MPC | 2007 TW <sub>233</sub>        |
| 2007 TX <sub>233</sub> | 16.0 | 0.15 | 20071027 | 306.47571 | 66.20404  | 57.90988  | 9.72389  | 0.2053922 | 2.9948878 | 68 | 3 | 2002–2007 | 0.44 | M-v | 2 | MPC | 128489 2007 TX <sub>233</sub> |
| 2007 TZ <sub>233</sub> | 15.9 | 0.15 | 20071027 | 286.01986 | 93.93516  | 51.37722  | 22.69102 | 0.1863011 | 3.1703162 | 42 | 4 | 2001–2007 | 0.35 | M-v | 0 | MPC | 128489 2007 TZ <sub>233</sub> |
| 2007 TA <sub>234</sub> | 15.7 | 0.15 | 20071027 | 198.70686 | 353.94456 | 221.12755 | 17.56021 | 0.0792016 | 3.1269273 | 16 | 1 | 43 days   | 0.27 |     |   | MPC | 2007 TA <sub>234</sub>        |
| 2007 TB <sub>234</sub> | 16.7 | 0.15 | 20071027 | 23.57382  | 257.09398 | 116.72262 | 2.13636  | 0.1714415 | 2.5758018 | 40 | 1 | 59 days   | 0.68 |     |   | MPC | 2007 TB <sub>234</sub>        |
| 2007 TE <sub>234</sub> | 16.7 | 0.15 | 20071027 | 289.59075 | 61.65446  | 59.32658  | 6.95086  | 0.0301676 | 2.2633104 | 49 | 2 | 2005–2007 | 0.46 | M-v | 4 | MPC | 128489 2007 TE <sub>234</sub> |
| 2007 TF <sub>234</sub> | 17.3 | 0.15 | 20071027 | 35.86032  | 278.93918 | 78.09443  | 3.37296  | 0.1838017 | 2.6687649 | 19 | 1 | 65 days   | 0.29 | M-v | 4 | MPC | 2007 TF <sub>234</sub>        |
| 2007 TH <sub>234</sub> | 17.0 | 0.15 | 20071027 | 295.39857 | 90.69491  | 45.91144  | 22.51407 | 0.2227899 | 2.2181278 | 42 | 3 | 2002–2007 | 0.52 | M-v | 3 | MPC | 128489 2007 TH <sub>234</sub> |
| 2007 TJ <sub>234</sub> | 15.6 | 0.15 | 20071027 | 223.08255 | 138.40293 | 56.76772  | 12.82989 | 0.1043051 | 2.9790795 | 21 | 1 | 59 days   | 0.35 |     |   | MPC | 2007 TJ <sub>234</sub>        |
| 2007 TK <sub>234</sub> | 17.7 | 0.15 | 20071027 | 263.47342 | 35.29401  | 121.11909 | 2.07583  | 0.1022379 | 2.3716438 | 35 | 4 | 2003–2007 | 0.40 | M-v | 1 | MPC | 128489 2007 TK <sub>234</sub> |
| 2007 TM <sub>234</sub> | 16.3 | 0.15 | 20071027 | 357.01771 | 342.72536 | 70.83079  | 4.19764  | 0.1320647 | 2.9878020 | 29 | 3 | 1991–2007 | 0.38 | M-v | 2 | MPC | 128490 2007 TM <sub>234</sub> |
| 2007 TQ <sub>234</sub> | 15.7 | 0.15 | 20071027 | 10.04497  | 335.03822 | 51.33697  | 9.55243  | 0.2194147 | 2.7648042 | 93 | 4 | 1996–2007 | 0.42 | M-v | 1 | MPC | 128490 2007 TQ <sub>234</sub> |
| 2007 TP <sub>235</sub> | 15.6 | 0.15 | 20071027 | 91.61163  | 219.58644 | 59.69209  | 3.95996  | 0.1666983 | 3.0190068 | 53 | 6 | 2000–2007 | 0.60 | M-v | 0 | MPC | 128490 2007 TP <sub>235</sub> |
| 2007 TZ <sub>235</sub> | 18.2 | 0.15 | 20071027 | 318.84839 | 342.28706 | 103.90192 | 2.10076  | 0.1650523 | 2.4096178 | 25 | 1 | 35 days   | 0.30 |     |   | MPC | 2007 TZ <sub>235</sub>        |
| 2007 TD <sub>236</sub> | 16.4 | 0.15 | 20071007 | 289.05678 | 343.03209 | 122.64175 | 2.52998  | 0.0713458 | 3.1257014 | 24 | 1 | 11 days   | 0.26 |     |   | MPC | 2007 TD <sub>236</sub>        |
| 2007 TE <sub>236</sub> | 17.8 | 0.15 | 20071007 | 32.45823  | 198.10092 | 138.74675 | 1.89244  | 0.1893064 | 2.3624671 | 35 | 1 | 29 days   | 0.38 |     |   | MPC | 2007 TE <sub>236</sub>        |
| 2007 TJ <sub>236</sub> | 16.4 | 0.15 | 20071007 | 350.38618 | 254.85099 | 142.18499 | 2.46198  | 0.0195749 | 3.0344348 | 16 | 1 | 11 days   | 0.38 |     |   | MPC | 2007 TJ <sub>236</sub>        |
| 2007 TU <sub>236</sub> | 16.0 | 0.15 | 20071007 | 311.72644 | 243.86675 | 199.11333 | 15.91691 | 0.0764470 | 3.0948534 | 23 | 1 | 28 days   | 0.38 |     |   | MPC | 2007 TU <sub>236</sub>        |
| 2007 TE <sub>237</sub> | 16.6 | 0.15 | 20071007 | 16.52077  | 309.07877 | 55.72239  | 5.70677  | 0.1240522 | 2.7225833 | 20 | 1 | 29 days   | 0.49 |     |   | MPC | 2007 TE <sub>237</sub>        |
| 2007 TP <sub>237</sub> | 17.2 | 0.15 | 20071027 | 35.33175  | 117.89378 | 242.56637 | 3.71748  | 0.1620366 | 2.7886743 | 17 | 1 | 41 days   | 0.31 |     |   | MPC | 2007 TP <sub>237</sub>        |
| 2007 TR <sub>237</sub> | 17.7 | 0.15 | 20071027 | 346.20244 | 189.35044 | 234.57738 | 5.85071  | 0.0789269 | 2.3574486 | 40 | 3 | 2002–2007 | 0.28 | M-v | 2 | MPC | 128491 2007 TR <sub>237</sub> |
| 2007 TJ <sub>238</sub> | 17.1 | 0.15 | 20071027 | 3.41697   | 353.67820 | 45.74819  | 8.79342  | 0.2121346 | 2.8421269 | 34 | 1 | 36 days   | 0.39 |     |   | MPC | 2007 TJ <sub>238</sub>        |
| 2007 TK <sub>238</sub> | 15.8 | 0.15 | 20071027 | 342.55996 | 13.40808  | 52.94586  | 5.84679  | 0.0802644 | 2.7703334 | 82 | 4 | 2002–2007 | 0.41 | M-v | 1 | MPC | 128491 2007 TK <sub>238</sub> |



|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 TM <sub>238</sub> | 17.2 | 0.15 | 20071027 | 5.31877   | 97.35797  | 288.29902 | 3.68085  | 0.2754557 | 2.6136179 | 43 | 1 | 65 days   | 0.63 |       | MPC | 2007 TM <sub>238</sub>        |
| 2007 TN <sub>238</sub> | 17.1 | 0.15 | 20071027 | 336.96487 | 21.35527  | 43.75916  | 2.63896  | 0.0544713 | 2.8718430 | 22 | 1 | 33 days   | 0.25 |       | MPC | 2007 TN <sub>238</sub>        |
| 2007 TZ <sub>238</sub> | 16.9 | 0.15 | 20071027 | 121.70916 | 103.71353 | 153.69559 | 3.14549  | 0.1169744 | 2.6036801 | 21 | 1 | 62 days   | 0.38 | M-v 4 | MPC | 2007 TZ <sub>238</sub>        |
| 2007 TN <sub>239</sub> | 16.4 | 0.15 | 20071027 | 282.52656 | 277.80239 | 219.48153 | 21.08468 | 0.1204527 | 2.5830934 | 23 | 1 | 36 days   | 0.57 |       | MPC | 2007 TN <sub>239</sub>        |
| 2007 TQ <sub>239</sub> | 17.3 | 0.15 | 20071027 | 36.15860  | 132.83542 | 234.44602 | 3.91717  | 0.0719836 | 2.6822332 | 31 | 1 | 87 days   | 0.39 | M-v 4 | MPC | 2007 TQ <sub>239</sub>        |
| 2007 TT <sub>239</sub> | 15.4 | 0.15 | 20071027 | 55.71490  | 304.66736 | 44.99863  | 15.66340 | 0.0528466 | 3.1244150 | 46 | 1 | 94 days   | 0.52 | M-v 4 | MPC | 2007 TT <sub>239</sub>        |
| 2007 TW <sub>239</sub> | 17.1 | 0.15 | 20071027 | 23.14246  | 132.87744 | 249.71732 | 1.06412  | 0.0796612 | 2.8743421 | 23 | 1 | 70 days   | 0.35 | M-v 4 | MPC | 2007 TW <sub>239</sub>        |
| 2007 TX <sub>239</sub> | 16.8 | 0.15 | 20071027 | 45.47221  | 290.17788 | 68.28273  | 7.37097  | 0.0641665 | 2.7637696 | 12 | 1 | 39 days   | 0.25 |       | MPC | 2007 TX <sub>239</sub>        |
| 2007 TZ <sub>239</sub> | 16.1 | 0.15 | 20071027 | 351.64479 | 216.44397 | 180.66385 | 2.08580  | 0.1932014 | 3.1582872 | 41 | 1 | 64 days   | 0.64 | M-v 5 | MPC | 2007 TZ <sub>239</sub>        |
| 2007 TE <sub>240</sub> | 16.6 | 0.15 | 20071007 | 355.22111 | 0.82157   | 31.45901  | 17.50653 | 0.2522414 | 3.1284113 | 35 | 1 | 31 days   | 0.51 |       | MPC | 2007 TE <sub>240</sub>        |
| 2007 TF <sub>240</sub> | 15.4 | 0.15 | 20071027 | 306.13712 | 52.58830  | 38.53170  | 10.59524 | 0.0540594 | 3.0634946 | 31 | 1 | 64 days   | 0.48 | M-v 5 | MPC | 2007 TF <sub>240</sub>        |
| 2007 TG <sub>240</sub> | 16.8 | 0.15 | 20071027 | 348.13444 | 359.35036 | 52.51258  | 5.46522  | 0.1674340 | 2.4071760 | 62 | 2 | 2003-2007 | 0.39 | M-v 3 | MPC | 128492 2007 TG <sub>240</sub> |
| 2007 TC <sub>241</sub> | 17.7 | 0.15 | 20071027 | 0.11121   | 180.29408 | 215.69533 | 2.66854  | 0.1578030 | 2.5982572 | 22 | 1 | 59 days   | 0.42 |       | MPC | 2007 TC <sub>241</sub>        |
| 2007 TL <sub>241</sub> | 16.5 | 0.15 | 20071027 | 295.68157 | 58.56560  | 44.52331  | 5.93418  | 0.0118355 | 2.7056117 | 27 | 1 | 59 days   | 0.25 |       | MPC | 2007 TL <sub>241</sub>        |
| 2007 TN <sub>241</sub> | 17.0 | 0.15 | 20071027 | 16.25892  | 332.17294 | 37.92556  | 9.19377  | 0.2821844 | 2.6708539 | 48 | 1 | 59 days   | 0.58 |       | MPC | 2007 TN <sub>241</sub>        |
| 2007 TP <sub>241</sub> | 17.3 | 0.15 | 20071027 | 308.75344 | 56.51915  | 52.43527  | 2.69131  | 0.1530911 | 2.6200293 | 52 | 1 | 60 days   | 0.34 | M-v 4 | MPC | 2007 TP <sub>241</sub>        |
| 2007 TR <sub>241</sub> | 16.7 | 0.15 | 20071027 | 285.15387 | 88.58305  | 43.02611  | 12.19022 | 0.1191308 | 2.7461968 | 32 | 1 | 42 days   | 0.23 |       | MPC | 2007 TR <sub>241</sub>        |
| 2007 TT <sub>241</sub> | 17.6 | 0.15 | 20071027 | 19.90262  | 324.26504 | 48.90864  | 3.24821  | 0.1717036 | 2.6664344 | 25 | 1 | 41 days   | 0.35 |       | MPC | 2007 TT <sub>241</sub>        |
| 2007 TU <sub>241</sub> | 17.5 | 0.15 | 20071007 | 17.99075  | 324.47690 | 41.27703  | 4.98151  | 0.2078359 | 2.5682783 | 42 | 1 | 58 days   | 0.39 |       | MPC | 2007 TU <sub>241</sub>        |
| 2007 TO <sub>242</sub> | 17.1 | 0.15 | 20071027 | 6.32421   | 15.75903  | 357.67539 | 10.86875 | 0.3249698 | 2.7489912 | 32 | 1 | 87 days   | 0.70 | M-v 4 | MPC | 2007 TO <sub>242</sub>        |
| 2007 TQ <sub>242</sub> | 14.8 | 0.15 | 20071027 | 295.84499 | 248.27455 | 228.67369 | 14.90044 | 0.2561366 | 3.1450193 | 58 | 3 | 2001-2007 | 0.65 | M-v 3 | MPC | 128493 2007 TQ <sub>242</sub> |
| 2007 TA <sub>243</sub> | 17.9 | 0.15 | 20071007 | 356.39165 | 73.44838  | 311.63162 | 5.19361  | 0.3200448 | 2.6084407 | 27 | 1 | 49 days   | 0.73 |       | MPC | 2007 TA <sub>243</sub>        |
| 2007 TO <sub>243</sub> | 16.8 | 0.15 | 20071007 | 28.11814  | 347.27573 | 349.43647 | 13.13053 | 0.2332851 | 2.3685844 | 26 | 1 | 55 days   | 0.37 |       | MPC | 2007 TO <sub>243</sub>        |
| 2007 TP <sub>243</sub> | 17.7 | 0.15 | 20071027 | 1.17514   | 70.25744  | 314.74250 | 7.87195  | 0.2247325 | 2.3217442 | 38 | 1 | 84 days   | 0.62 | M-v 4 | MPC | 128999 2007 TP <sub>243</sub> |
| 2007 TZ <sub>243</sub> | 16.2 | 0.15 | 20071007 | 306.13278 | 167.38186 | 275.19061 | 4.28193  | 0.0193753 | 2.6191240 | 16 | 1 | 28 days   | 0.45 |       | MPC | 2007 TZ <sub>243</sub>        |
| 2007 TC <sub>244</sub> | 15.8 | 0.15 | 20071007 | 357.15775 | 43.07913  | 346.38707 | 9.25101  | 0.1206232 | 3.0554595 | 32 | 1 | 31 days   | 0.64 |       | MPC | 2007 TC <sub>244</sub>        |
| 2007 TE <sub>244</sub> | 14.3 | 0.15 | 20071007 | 0.07261   | 112.87401 | 271.73292 | 7.40487  | 0.1861415 | 3.9759388 | 28 | 1 | 54 days   | 0.54 |       | MPC | 2007 TE <sub>244</sub>        |
| 2007 TO <sub>244</sub> | 15.8 | 0.15 | 20071027 | 326.36597 | 203.69017 | 231.04318 | 12.93904 | 0.1745218 | 2.7145219 | 62 | 3 | 1998-2007 | 0.54 | M-v 3 | MPC | 128495 2007 TO <sub>244</sub> |
| 2007 TC <sub>245</sub> | 15.8 | 0.15 | 20070917 | 319.10354 | 94.02908  | 336.83393 | 12.72083 | 0.1437379 | 2.5835734 | 32 | 1 | 57 days   | 0.54 |       | MPC | 2007 TC <sub>245</sub>        |
| 2007 TL <sub>245</sub> | 14.5 | 0.15 | 20071027 | 18.97086  | 278.54509 | 87.41587  | 4.06240  | 0.2885300 | 3.9222007 | 66 | 2 | 1999-2007 | 0.51 | M-v 4 | MPC | 128496 2007 TL <sub>245</sub> |
| 2007 TM <sub>245</sub> | 18.8 | 0.15 | 20071007 | 43.66947  | 285.31112 | 42.20577  | 6.84277  | 0.2271707 | 2.1915002 | 22 | 1 | 34 days   | 0.22 |       | MPC | 2007 TM <sub>245</sub>        |
| 2007 TQ <sub>245</sub> | 17.1 | 0.15 | 20071027 | 9.82294   | 312.97053 | 71.78388  | 6.77060  | 0.2072779 | 2.3448567 | 37 | 4 | 2000-2007 | 0.60 | M-v 2 | MPC | 128496 2007 TQ <sub>245</sub> |
| 2007 TY <sub>245</sub> | 17.0 | 0.15 | 20071027 | 348.67049 | 15.00581  | 11.89741  | 9.51790  | 0.2779871 | 2.6872315 | 29 | 1 | 67 days   | 0.42 | M-v 4 | MPC | 2007 TY <sub>245</sub>        |
| 2007 TD <sub>246</sub> | 16.6 | 0.15 | 20071027 | 339.47737 | 108.19582 | 307.90952 | 3.06992  | 0.0476841 | 2.5334008 | 33 | 2 | 2005-2007 | 0.31 | M-v 4 | MPC | 128497 2007 TD <sub>246</sub> |
| 2007 TM <sub>246</sub> | 16.1 | 0.15 | 20071027 | 24.17014  | 321.96976 | 45.21847  | 12.93350 | 0.0893191 | 2.8394773 | 41 | 1 | 57 days   | 0.65 |       | MPC | 2007 TM <sub>246</sub>        |
| 2007 TP <sub>246</sub> | 16.0 | 0.15 | 20071027 | 322.68166 | 189.28409 | 262.07246 | 12.95105 | 0.2125963 | 2.6357448 | 62 | 4 | 2000-2007 | 0.46 | M-v 2 | MPC | 128497 2007 TP <sub>246</sub> |
| 2007 TU <sub>246</sub> | 15.6 | 0.15 | 20071027 | 319.02634 | 128.28441 | 323.44537 | 12.41000 | 0.1504425 | 2.6179832 | 42 | 4 | 1998-2007 | 0.53 | M-v 2 | MPC | 128497 2007 TU <sub>246</sub> |
| 2007 TC <sub>247</sub> | 15.1 | 0.15 | 20071027 | 41.62442  | 284.79490 | 70.97761  | 10.69647 | 0.0929133 | 3.1202341 | 69 | 5 | 2001-2007 | 0.50 | M-v 0 | MPC | 128498 2007 TC <sub>247</sub> |
| 2007 TD <sub>247</sub> | 17.5 | 0.15 | 20071027 | 20.68123  | 239.28812 | 135.67248 | 4.85932  | 0.1243646 | 2.2307897 | 45 | 5 | 1999-2007 | 0.42 | M-v 0 | MPC | 128498 2007 TD <sub>247</sub> |
| 2007 TE <sub>247</sub> | 15.6 | 0.15 | 20071027 | 251.74830 | 30.13078  | 125.88512 | 5.30867  | 0.0202331 | 2.6816524 | 29 | 1 | 37 days   | 0.50 |       | MPC | 2007 TE <sub>247</sub>        |
| 2007 TG <sub>247</sub> | 15.9 | 0.15 | 20071027 | 355.02168 | 265.56890 | 145.89500 | 5.80481  | 0.0767977 | 2.7651084 | 50 | 5 | 1995-2007 | 0.42 | M-v 1 | MPC | 128498 2007 TG <sub>247</sub> |
| 2007 TL <sub>247</sub> | 18.7 | 0.15 | 20071027 | 346.14783 | 15.54962  | 18.45705  | 4.25787  | 0.2481696 | 2.3904666 | 25 | 1 | 77 days   | 0.30 | M-v 4 | MPC | 2007 TL <sub>247</sub>        |
| 2007 TH <sub>248</sub> | 17.4 | 0.15 | 20071027 | 14.99018  | 138.73322 | 228.14869 | 13.11104 | 0.2827988 | 2.5711881 | 54 | 1 | 56 days   | 0.61 |       | MPC | 2007 TH <sub>248</sub>        |
| 2007 TM <sub>248</sub> | 16.4 | 0.15 | 20071027 | 8.43186   | 323.19920 | 66.96329  | 10.75347 | 0.2367060 | 2.7373081 | 33 | 1 | 65 days   | 0.49 |       | MPC | 2007 TM <sub>248</sub>        |
| 2007 TO <sub>248</sub> | 17.7 | 0.15 | 20071027 | 9.52567   | 207.16814 | 184.47754 | 6.56401  | 0.1409351 | 2.2916056 | 19 | 1 | 36 days   | 0.23 |       | MPC | 2007 TO <sub>248</sub>        |
| 2007 TP <sub>248</sub> | 16.0 | 0.15 | 20071027 | 7.79573   | 228.62187 | 168.04282 | 5.55760  | 0.1343329 | 2.9925597 | 35 | 1 | 41 days   | 0.52 |       | MPC | 2007 TP <sub>248</sub>        |
| 2007 TR <sub>248</sub> | 16.8 | 0.15 | 20071007 | 309.60288 | 122.69564 | 314.20797 | 5.04044  | 0.0821786 | 2.4124019 | 13 | 1 | 22 days   | 0.44 |       | MPC | 2007 TR <sub>248</sub>        |
| 2007 TG <sub>249</sub> | 16.7 | 0.15 | 20071007 | 80.25452  | 45.66399  | 236.67102 | 4.56621  | 0.1469931 | 2.7524087 | 18 | 1 | 8 days    | 0.34 |       | MPC | 2007 TG <sub>249</sub>        |
| 2007 TR <sub>249</sub> | 17.8 | 0.15 | 20071007 | 274.49318 | 134.21091 | 351.33694 | 4.46816  | 0.1834123 | 2.3496128 | 15 | 1 | 8 days    | 0.29 |       | MPC | 2007 TR <sub>249</sub>        |
| 2007 TJ <sub>250</sub> | 16.9 | 0.15 | 20071007 | 300.58408 | 128.32893 | 326.37809 | 2.90616  | 0.1460819 | 2.6191308 | 19 | 1 | 2 days    | 0.34 |       | MPC | 2007 TJ <sub>250</sub>        |
| 2007 TL <sub>250</sub> | 15.9 | 0.15 | 20071007 | 329.23490 | 49.27937  | 6.34553   | 9.18807  | 0.0725375 | 3.1062109 | 22 | 1 | 9 days    | 0.52 |       | MPC | 2007 TL <sub>250</sub>        |
| 2007 TN <sub>250</sub> | 17.6 | 0.15 | 20071007 | 39.35258  | 88.14465  | 212.69953 | 10.64477 | 0.3756505 | 2.9013030 | 19 | 1 | 2 days    | 0.46 |       | MPC | 2007 TN <sub>250</sub>        |
| 2007 TO <sub>250</sub> | 16.0 | 0.15 | 20071007 | 315.74531 | 62.94652  | 5.41667   | 9.15667  | 0.0449378 | 2.9845466 | 18 | 1 | 5 days    | 0.38 |       | MPC | 2007 TO <sub>250</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|------------------------|
| 2007 TP <sub>250</sub> | 15.8 | 0.15 | 20071027 | 106.62120 | 46.28447  | 209.71999 | 17.42404 | 0.1994001 | 2.9071953 | 30 | 2 | 2002–2007 | 0.40 | M-v | 4 | MPC | 128499 | 2007 TP <sub>250</sub> |
| 2007 TN <sub>252</sub> | 18.1 | 0.15 | 20070917 | 19.78968  | 312.54714 | 36.50507  | 1.96267  | 0.1495286 | 2.6379193 | 22 | 1 | 49 days   | 0.28 |     |   | MPC |        | 2007 TN <sub>252</sub> |
| 2007 TQ <sub>252</sub> | 17.9 | 0.15 | 20071007 | 82.13892  | 84.07792  | 196.87885 | 3.52489  | 0.1675212 | 2.3696830 | 19 | 1 | 29 days   | 0.26 |     |   | MPC |        | 2007 TQ <sub>252</sub> |
| 2007 TS <sub>252</sub> | 16.9 | 0.15 | 20070917 | 355.24011 | 351.30534 | 33.23355  | 2.18456  | 0.0869187 | 3.0358399 | 19 | 1 | 49 days   | 0.29 |     |   | MPC |        | 2007 TS <sub>252</sub> |
| 2007 TC <sub>253</sub> | 16.8 | 0.15 | 20071027 | 324.58393 | 34.32092  | 39.68965  | 3.10615  | 0.1652992 | 2.6725693 | 52 | 3 | 2003–2007 | 0.41 | M-v | 3 | MPC | 128500 | 2007 TC <sub>253</sub> |
| 2007 TE <sub>253</sub> | 17.5 | 0.15 | 20071007 | 288.27940 | 64.89605  | 32.97147  | 4.91917  | 0.0516967 | 2.6995498 | 27 | 1 | 54 days   | 0.27 |     |   | MPC |        | 2007 TE <sub>253</sub> |
| 2007 TG <sub>253</sub> | 16.9 | 0.15 | 20071027 | 22.17762  | 295.67148 | 57.77366  | 1.89668  | 0.1793446 | 3.1219163 | 25 | 1 | 62 days   | 0.42 | M-v | 4 | MPC |        | 2007 TG <sub>253</sub> |
| 2007 TS <sub>253</sub> | 17.1 | 0.15 | 20071007 | 28.97142  | 158.86379 | 190.69553 | 6.19894  | 0.0422910 | 2.7449803 | 21 | 1 | 57 days   | 0.32 |     |   | MPC |        | 2007 TS <sub>253</sub> |
| 2007 TU <sub>253</sub> | 17.9 | 0.15 | 20071007 | 270.05183 | 91.83764  | 32.58862  | 6.67850  | 0.1237665 | 2.3141427 | 23 | 1 | 54 days   | 0.38 |     |   | MPC |        | 2007 TU <sub>253</sub> |
| 2007 TW <sub>253</sub> | 16.1 | 0.15 | 20071007 | 107.91649 | 236.16187 | 28.43242  | 11.51529 | 0.0774706 | 2.9858522 | 19 | 1 | 10 days   | 0.45 |     |   | MPC |        | 2007 TW <sub>253</sub> |
| 2007 TP <sub>254</sub> | 16.8 | 0.15 | 20071027 | 355.54588 | 356.53809 | 49.17888  | 10.88849 | 0.2645179 | 3.0384472 | 36 | 1 | 59 days   | 0.48 |     |   | MPC |        | 2007 TP <sub>254</sub> |
| 2007 TV <sub>254</sub> | 16.6 | 0.15 | 20071007 | 332.61343 | 22.23439  | 38.23718  | 7.05314  | 0.1371315 | 3.1443723 | 18 | 1 | 27 days   | 0.38 |     |   | MPC |        | 2007 TV <sub>254</sub> |
| 2007 TW <sub>254</sub> | 18.5 | 0.15 | 20071007 | 125.01330 | 229.14043 | 25.84181  | 21.71977 | 0.0216970 | 1.8963010 | 23 | 1 | 24 days   | 0.29 |     |   | MPC |        | 2007 TW <sub>254</sub> |
| 2007 TJ <sub>256</sub> | 17.2 | 0.15 | 20071027 | 63.97737  | 268.92407 | 37.62744  | 13.53422 | 0.2072254 | 2.4038901 | 25 | 1 | 39 days   | 0.44 |     |   | MPC |        | 2007 TJ <sub>256</sub> |
| 2007 TT <sub>256</sub> | 15.7 | 0.15 | 20071027 | 13.44357  | 336.65845 | 40.76555  | 17.29309 | 0.1692345 | 3.1098422 | 43 | 1 | 38 days   | 0.58 |     |   | MPC |        | 2007 TT <sub>256</sub> |
| 2007 TO <sub>257</sub> | 16.4 | 0.15 | 20071027 | 326.02777 | 39.97551  | 42.78145  | 3.23912  | 0.1393953 | 3.1253320 | 24 | 1 | 41 days   | 0.23 |     | D | MPC |        | 2007 TO <sub>257</sub> |
| 2007 TK <sub>258</sub> | 18.6 | 0.15 | 20071007 | 324.77914 | 124.04130 | 303.06530 | 1.48062  | 0.1870152 | 2.3387698 | 17 | 1 | 28 days   | 0.41 |     |   | MPC |        | 2007 TK <sub>258</sub> |
| 2007 TP <sub>258</sub> | 16.4 | 0.15 | 20071007 | 27.50293  | 328.60302 | 9.63494   | 10.28108 | 0.1846966 | 3.2039934 | 30 | 1 | 55 days   | 0.39 |     |   | MPC |        | 2007 TP <sub>258</sub> |
| 2007 TU <sub>258</sub> | 16.9 | 0.15 | 20071007 | 3.45472   | 3.16236   | 9.38268   | 10.17482 | 0.1818946 | 2.8207568 | 25 | 1 | 55 days   | 0.24 |     |   | MPC |        | 2007 TU <sub>258</sub> |
| 2007 TD <sub>259</sub> | 16.0 | 0.15 | 20071007 | 308.83129 | 70.71463  | 6.17637   | 8.78793  | 0.0738696 | 3.1518027 | 18 | 1 | 48 days   | 0.25 |     |   | MPC |        | 2007 TD <sub>259</sub> |
| 2007 TL <sub>259</sub> | 16.1 | 0.15 | 20071007 | 330.41769 | 69.22081  | 350.75304 | 2.25863  | 0.1603088 | 3.1577645 | 31 | 1 | 56 days   | 0.37 |     |   | MPC |        | 2007 TL <sub>259</sub> |
| 2007 TX <sub>259</sub> | 16.4 | 0.15 | 20071007 | 279.79390 | 106.80920 | 39.01966  | 27.40003 | 0.2635876 | 2.6336566 | 31 | 1 | 30 days   | 0.53 |     |   | MPC |        | 2007 TX <sub>259</sub> |
| 2007 TG <sub>260</sub> | 18.3 | 0.15 | 20071007 | 10.53580  | 137.78318 | 224.34879 | 1.19656  | 0.2099591 | 2.4198722 | 36 | 1 | 52 days   | 0.46 |     |   | MPC |        | 2007 TG <sub>260</sub> |
| 2007 TO <sub>260</sub> | 15.2 | 0.15 | 20071027 | 16.55875  | 309.88908 | 59.57516  | 3.54677  | 0.2609817 | 3.9502614 | 61 | 1 | 61 days   | 0.50 | M-v | 4 | MPC |        | 2007 TO <sub>260</sub> |
| 2007 TP <sub>260</sub> | 18.0 | 0.15 | 20071007 | 22.71171  | 323.10859 | 34.41809  | 12.99777 | 0.1591437 | 2.2634198 | 21 | 1 | 32 days   | 0.18 |     |   | MPC |        | 2007 TP <sub>260</sub> |
| 2007 TT <sub>260</sub> | 18.5 | 0.15 | 20071007 | 339.42025 | 294.60799 | 125.32219 | 1.53256  | 0.1864900 | 2.4000574 | 17 | 1 | 28 days   | 0.23 |     | D | MPC |        | 2007 TT <sub>260</sub> |
| 2007 TA <sub>261</sub> | 17.8 | 0.15 | 20071027 | 21.77785  | 231.61218 | 134.32407 | 2.00045  | 0.1873343 | 2.4159306 | 25 | 1 | 35 days   | 0.33 |     |   | MPC |        | 2007 TA <sub>261</sub> |
| 2007 TJ <sub>261</sub> | 17.8 | 0.15 | 20071027 | 63.34225  | 81.96966  | 231.26520 | 3.58517  | 0.2100317 | 2.2267667 | 57 | 4 | 1997–2007 | 0.51 | M-v | 1 | MPC | 128503 | 2007 TJ <sub>261</sub> |
| 2007 TK <sub>261</sub> | 16.4 | 0.15 | 20071027 | 312.16789 | 56.41929  | 36.45467  | 6.81551  | 0.0307178 | 2.8693055 | 28 | 1 | 39 days   | 0.40 |     |   | MPC |        | 2007 TK <sub>261</sub> |
| 2007 TM <sub>261</sub> | 18.7 | 0.15 | 20071027 | 1.49592   | 5.29779   | 32.76620  | 6.14361  | 0.2392598 | 2.5678140 | 22 | 1 | 35 days   | 0.25 |     |   | MPC |        | 2007 TM <sub>261</sub> |
| 2007 TN <sub>261</sub> | 16.4 | 0.15 | 20071007 | 324.73434 | 178.96614 | 259.47663 | 1.41203  | 0.0602473 | 3.0524997 | 23 | 1 | 26 days   | 0.32 |     |   | MPC |        | 2007 TN <sub>261</sub> |
| 2007 TO <sub>261</sub> | 17.2 | 0.15 | 20071007 | 25.47049  | 4.05640   | 357.69091 | 1.04023  | 0.1689061 | 3.0342230 | 13 | 1 | 20 days   | 0.17 |     |   | MPC |        | 2007 TO <sub>261</sub> |
| 2007 TP <sub>261</sub> | 16.6 | 0.15 | 20071027 | 61.97490  | 294.82648 | 35.70045  | 12.19226 | 0.0888204 | 2.5912989 | 28 | 1 | 64 days   | 0.48 | M-v | 4 | MPC |        | 2007 TP <sub>261</sub> |
| 2007 TT <sub>261</sub> | 16.9 | 0.15 | 20071027 | 15.76713  | 20.83510  | 4.55775   | 0.76539  | 0.0413051 | 2.6972950 | 40 | 2 | 2000–2007 | 0.39 | M-v | 4 | MPC | 128503 | 2007 TT <sub>261</sub> |
| 2007 TU <sub>261</sub> | 15.7 | 0.15 | 20071027 | 326.94010 | 215.89996 | 225.90059 | 8.54515  | 0.0722765 | 3.1653303 | 43 | 1 | 38 days   | 0.46 |     |   | MPC |        | 2007 TU <sub>261</sub> |
| 2007 TV <sub>261</sub> | 17.5 | 0.15 | 20071027 | 340.50961 | 33.52954  | 35.75383  | 9.47049  | 0.1677049 | 2.5690051 | 31 | 1 | 62 days   | 0.57 | M-v | 4 | MPC |        | 2007 TV <sub>261</sub> |
| 2007 TY <sub>261</sub> | 17.3 | 0.15 | 20071007 | 30.33689  | 119.27272 | 238.71786 | 1.81035  | 0.1291960 | 2.6386470 | 28 | 1 | 32 days   | 0.22 |     |   | MPC |        | 2007 TY <sub>261</sub> |
| 2007 TA <sub>262</sub> | 17.9 | 0.15 | 20071007 | 327.42833 | 223.20723 | 221.33415 | 2.88441  | 0.2144369 | 2.5576882 | 29 | 1 | 26 days   | 0.34 |     |   | MPC |        | 2007 TA <sub>262</sub> |
| 2007 TB <sub>262</sub> | 17.0 | 0.15 | 20071007 | 324.20933 | 211.86671 | 239.62285 | 0.68668  | 0.2036846 | 3.1383233 | 23 | 1 | 32 days   | 0.31 |     |   | MPC |        | 2007 TB <sub>262</sub> |
| 2007 TE <sub>262</sub> | 17.3 | 0.15 | 20071027 | 50.65558  | 115.82159 | 216.22211 | 3.11881  | 0.1808439 | 2.1832475 | 74 | 2 | 2006–2007 | 0.46 | M-v | 4 | MPC | 128504 | 2007 TE <sub>262</sub> |
| 2007 TG <sub>262</sub> | 17.3 | 0.15 | 20071007 | 312.71914 | 231.13295 | 220.37389 | 1.41039  | 0.0696553 | 2.6277122 | 23 | 1 | 26 days   | 0.29 |     |   | MPC |        | 2007 TG <sub>262</sub> |
| 2007 TJ <sub>262</sub> | 16.8 | 0.15 | 20071027 | 37.27900  | 322.45298 | 38.05620  | 7.02408  | 0.0744636 | 2.7316901 | 36 | 1 | 69 days   | 0.42 | M-v | 5 | MPC |        | 2007 TJ <sub>262</sub> |
| 2007 TL <sub>262</sub> | 18.5 | 0.15 | 20071027 | 359.32317 | 189.52951 | 214.25942 | 6.15566  | 0.2651405 | 2.6384939 | 17 | 1 | 39 days   | 0.31 |     |   | MPC |        | 2007 TL <sub>262</sub> |
| 2007 TM <sub>262</sub> | 17.2 | 0.15 | 20071027 | 11.60497  | 180.23625 | 203.48018 | 1.62577  | 0.2335303 | 2.6168617 | 58 | 1 | 81 days   | 0.52 | M-v | 4 | MPC |        | 2007 TM <sub>262</sub> |
| 2007 TP <sub>262</sub> | 18.2 | 0.15 | 20071027 | 36.70277  | 313.15700 | 35.82309  | 1.82242  | 0.2033287 | 2.3861342 | 41 | 4 | 1992–2007 | 0.39 | M-v | 2 | MPC | 128504 | 2007 TP <sub>262</sub> |
| 2007 TR <sub>262</sub> | 16.8 | 0.15 | 20071027 | 32.56495  | 142.64390 | 221.00596 | 6.40720  | 0.1228445 | 2.8327636 | 29 | 1 | 81 days   | 0.25 | M-v | 4 | MPC |        | 2007 TR <sub>262</sub> |
| 2007 TS <sub>262</sub> | 18.2 | 0.15 | 20071027 | 335.35040 | 217.82218 | 218.25402 | 0.70924  | 0.1427253 | 2.3565582 | 24 | 1 | 41 days   | 0.44 |     |   | MPC |        | 2007 TS <sub>262</sub> |
| 2007 TT <sub>262</sub> | 16.5 | 0.15 | 20071027 | 318.34487 | 66.89637  | 42.29210  | 16.01905 | 0.2312067 | 3.1601432 | 30 | 1 | 65 days   | 0.43 | M-v | 4 | MPC |        | 2007 TT <sub>262</sub> |
| 2007 TU <sub>262</sub> | 18.2 | 0.15 | 20071027 | 37.24376  | 128.84743 | 215.94793 | 4.47080  | 0.2354851 | 2.3280068 | 33 | 1 | 41 days   | 0.44 |     |   | MPC |        | 2007 TU <sub>262</sub> |
| 2007 TW <sub>262</sub> | 18.8 | 0.15 | 20071007 | 17.43920  | 164.79431 | 204.39404 | 1.81319  | 0.1929941 | 2.3420513 | 24 | 1 | 56 days   | 0.34 |     |   | MPC |        | 2007 TW <sub>262</sub> |
| 2007 TZ <sub>262</sub> | 17.8 | 0.15 | 20071027 | 55.54395  | 293.72619 | 34.08832  | 1.57438  | 0.1973337 | 2.4462926 | 41 | 3 | 2003–2007 | 0.31 | M-v | 2 | MPC | 128504 | 2007 TZ <sub>262</sub> |
| 2007 TD <sub>263</sub> | 16.3 | 0.15 | 20071027 | 118.75974 | 231.64267 | 41.18305  | 5.46343  | 0.1123831 | 2.7294775 | 44 | 1 | 34 days   | 0.33 |     |   | MPC |        | 2007 TD <sub>263</sub> |
| 2007 TE <sub>263</sub> | 17.7 | 0.15 | 20071027 | 304.55829 | 69.49714  | 43.87920  | 2.79680  | 0.1640212 | 2.3831285 | 48 | 1 | 55 days   | 0.39 |     |   | MPC |        | 2007 TE <sub>263</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |    |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|----|-----|-------------------------------|
| 2007 TH <sub>263</sub> | 17.2 | 0.15 | 20071027 | 284.56697 | 84.23028  | 44.08217  | 2.86294  | 0.1006597 | 2.3724103 | 45 | 1 | 84 days   | 0.46 | M-v | 4  | MPC | 2007 TH <sub>263</sub>        |
| 2007 TJ <sub>263</sub> | 16.5 | 0.15 | 20071027 | 165.84843 | 187.06202 | 46.59258  | 3.38965  | 0.1311260 | 2.4738200 | 40 | 4 | 1995–2007 | 0.42 | M-v | 3  | MPC | 128505 2007 TJ <sub>263</sub> |
| 2007 TK <sub>263</sub> | 15.9 | 0.15 | 20071027 | 39.05905  | 156.63224 | 201.94151 | 1.21594  | 0.0715734 | 2.9189574 | 45 | 1 | 35 days   | 0.31 |     |    | MPC | 2007 TK <sub>263</sub>        |
| 2007 TJ <sub>266</sub> | 17.0 | 0.15 | 20071027 | 13.50749  | 174.81940 | 203.10182 | 9.52972  | 0.1308679 | 2.8021317 | 48 | 3 | 1997–2007 | 0.40 | M-v | 2  | MPC | 128505 2007 TJ <sub>266</sub> |
| 2007 TK <sub>266</sub> | 18.0 | 0.15 | 20071027 | 6.90637   | 305.29760 | 83.94118  | 1.36166  | 0.2354509 | 2.3850279 | 66 | 3 | 1996–2007 | 0.47 | M-v | 2  | MPC | 128505 2007 TK <sub>266</sub> |
| 2007 TU <sub>266</sub> | 18.3 | 0.15 | 20071007 | 21.68615  | 117.38073 | 232.33801 | 0.48445  | 0.2026810 | 2.4226313 | 29 | 1 | 53 days   | 0.31 |     |    | MPC | 2007 TU <sub>266</sub>        |
| 2007 TZ <sub>266</sub> | 18.5 | 0.15 | 20071027 | 43.80095  | 295.98569 | 30.65856  | 1.60629  | 0.2043706 | 2.4070873 | 22 | 1 | 39 days   | 0.22 |     |    | MPC | 2007 TZ <sub>266</sub>        |
| 2007 TN <sub>267</sub> | 16.0 | 0.15 | 20071007 | 4.54025   | 177.34906 | 203.49650 | 9.15024  | 0.0810646 | 3.0514420 | 26 | 1 | 41 days   | 0.35 |     |    | MPC | 2007 TN <sub>267</sub>        |
| 2007 TY <sub>267</sub> | 16.3 | 0.15 | 20071007 | 100.10934 | 66.28810  | 201.51128 | 7.24654  | 0.1841500 | 2.7402101 | 16 | 1 | 29 days   | 0.34 |     |    | MPC | 2007 TY <sub>267</sub>        |
| 2007 TC <sub>268</sub> | 17.8 | 0.15 | 20071007 | 344.87089 | 14.51487  | 30.87239  | 5.06128  | 0.1574176 | 2.3550899 | 36 | 1 | 54 days   | 0.42 |     |    | MPC | 2007 TC <sub>268</sub>        |
| 2007 TD <sub>268</sub> | 16.7 | 0.15 | 20071027 | 296.36206 | 77.66447  | 32.67916  | 14.35014 | 0.1391136 | 2.7090142 | 21 | 1 | 40 days   | 0.40 |     |    | MPC | 2007 TD <sub>268</sub>        |
| 2007 TG <sub>268</sub> | 17.7 | 0.15 | 20071027 | 36.17716  | 308.68126 | 31.34293  | 6.35668  | 0.1922883 | 2.3272187 | 32 | 1 | 65 days   | 0.29 | M-v | 4  | MPC | 2007 TG <sub>268</sub>        |
| 2007 TK <sub>268</sub> | 15.8 | 0.15 | 20070917 | 270.37740 | 86.98809  | 30.74684  | 9.86359  | 0.0676967 | 3.0639285 | 29 | 1 | 48 days   | 0.42 |     |    | MPC | 2007 TK <sub>268</sub>        |
| 2007 TM <sub>268</sub> | 16.2 | 0.15 | 20071027 | 39.92402  | 297.82530 | 30.41352  | 10.30398 | 0.2183120 | 3.1615791 | 31 | 1 | 64 days   | 0.41 | M-v | 4  | MPC | 2007 TM <sub>268</sub>        |
| 2007 TX <sub>268</sub> | 16.4 | 0.15 | 20071027 | 9.71904   | 184.09783 | 191.68781 | 5.27981  | 0.1624063 | 3.1060891 | 20 | 1 | 35 days   | 0.31 |     |    | MPC | 2007 TX <sub>268</sub>        |
| 2007 TB <sub>269</sub> | 16.4 | 0.15 | 20071027 | 354.17599 | 348.77403 | 47.60855  | 3.20444  | 0.0916682 | 2.6834233 | 42 | 1 | 66 days   | 0.58 | M-v | 4  | MPC | 2007 TB <sub>269</sub>        |
| 2007 TC <sub>269</sub> | 16.0 | 0.15 | 20071027 | 163.08807 | 34.77332  | 190.88140 | 5.87427  | 0.0203180 | 3.0369166 | 50 | 5 | 2001–2007 | 0.41 | M-v | 0  | MPC | 128506 2007 TC <sub>269</sub> |
| 2007 TK <sub>269</sub> | 16.0 | 0.15 | 20071027 | 300.52820 | 69.42960  | 32.28346  | 15.43276 | 0.1174791 | 2.8333067 | 36 | 1 | 65 days   | 0.48 | M-v | 4  | MPC | 129002 2007 TK <sub>269</sub> |
| 2007 TN <sub>270</sub> | 17.8 | 0.15 | 20071027 | 30.54862  | 6.98161   | 341.05685 | 2.03471  | 0.2243802 | 2.3392156 | 20 | 1 | 44 days   | 0.43 |     |    | MPC | 2007 TN <sub>270</sub>        |
| 2007 TO <sub>270</sub> | 17.9 | 0.15 | 20071007 | 40.21164  | 327.52632 | 2.23943   | 2.98486  | 0.1990929 | 2.2171844 | 25 | 1 | 57 days   | 0.33 |     |    | MPC | 2007 TO <sub>270</sub>        |
| 2007 TP <sub>270</sub> | 16.1 | 0.15 | 20071027 | 2.91627   | 162.87715 | 229.21165 | 8.24914  | 0.2129960 | 3.1057915 | 41 | 1 | 57 days   | 0.60 |     |    | MPC | 2007 TP <sub>270</sub>        |
| 2007 TW <sub>270</sub> | 18.0 | 0.15 | 20071007 | 60.25387  | 65.19592  | 233.65213 | 4.70641  | 0.2466452 | 2.2827772 | 15 | 1 | 31 days   | 0.18 |     |    | MPC | 2007 TW <sub>270</sub>        |
| 2007 TG <sub>271</sub> | 17.4 | 0.15 | 20071007 | 19.14865  | 4.65983   | 0.83628   | 2.86741  | 0.0943959 | 2.6633779 | 20 | 1 | 33 days   | 0.27 |     |    | MPC | 2007 TG <sub>271</sub>        |
| 2007 TM <sub>271</sub> | 15.7 | 0.15 | 20070917 | 56.12455  | 298.24337 | 23.26012  | 9.54511  | 0.0976110 | 3.0830530 | 17 | 1 | 36 days   | 0.61 |     |    | MPC | 2007 TM <sub>271</sub>        |
| 2007 TQ <sub>271</sub> | 18.6 | 0.15 | 20071007 | 3.87829   | 44.40291  | 335.48500 | 1.22544  | 0.2508411 | 2.5396786 | 22 | 1 | 57 days   | 0.40 |     |    | MPC | 2007 TQ <sub>271</sub>        |
| 2007 TR <sub>271</sub> | 16.2 | 0.15 | 20071027 | 3.38050   | 160.42241 | 229.46898 | 2.63021  | 0.2153187 | 3.1041839 | 40 | 1 | 40 days   | 0.58 |     |    | MPC | 2007 TR <sub>271</sub>        |
| 2007 TW <sub>271</sub> | 16.1 | 0.15 | 20071027 | 289.73831 | 251.57110 | 221.04273 | 8.52042  | 0.0536393 | 3.1114730 | 21 | 1 | 57 days   | 0.34 |     |    | MPC | 2007 TW <sub>271</sub>        |
| 2007 TY <sub>271</sub> | 18.2 | 0.15 | 20071027 | 299.37362 | 195.74391 | 266.57352 | 1.07378  | 0.0566196 | 2.4235117 | 34 | 4 | 2000–2007 | 0.43 | M-v | 1  | MPC | 128507 2007 TY <sub>271</sub> |
| 2007 TZ <sub>271</sub> | 16.8 | 0.15 | 20071027 | 59.73802  | 77.90102  | 223.85497 | 3.55579  | 0.2988028 | 2.5857989 | 33 | 1 | 57 days   | 0.33 |     |    | MPC | 2007 TZ <sub>271</sub>        |
| 2007 TO <sub>272</sub> | 16.4 | 0.15 | 20071027 | 318.03003 | 37.74028  | 47.18432  | 14.44942 | 0.0711607 | 2.6194836 | 35 | 1 | 57 days   | 0.44 |     |    | MPC | 2007 TO <sub>272</sub>        |
| 2007 TY <sub>272</sub> | 16.7 | 0.15 | 20071027 | 31.47467  | 309.14262 | 50.19616  | 15.07046 | 0.1208536 | 3.1304444 | 18 | 1 | 58 days   | 0.42 |     |    | MPC | 2007 TY <sub>272</sub>        |
| 2007 TT <sub>273</sub> | 17.8 | 0.15 | 20071027 | 32.36594  | 114.57103 | 223.42971 | 9.13420  | 0.2826804 | 2.4542785 | 35 | 2 | 2003–2007 | 0.42 | M-v | 3  | MPC | 128507 2007 TT <sub>273</sub> |
| 2007 TA <sub>275</sub> | 15.5 | 0.15 | 20071007 | 350.61623 | 243.66172 | 147.75635 | 3.57350  | 0.2798360 | 3.9444217 | 31 | 1 | 50 days   | 0.61 |     |    | MPC | 2007 TA <sub>275</sub>        |
| 2007 TO <sub>275</sub> | 16.7 | 0.15 | 20071027 | 3.54983   | 341.47088 | 36.29296  | 13.51383 | 0.2743127 | 3.1563056 | 29 | 1 | 56 days   | 0.50 |     |    | MPC | 2007 TO <sub>275</sub>        |
| 2007 TJ <sub>276</sub> | 17.2 | 0.15 | 20071007 | 330.38941 | 48.99618  | 10.23909  | 10.72999 | 0.1686163 | 2.6178983 | 32 | 1 | 55 days   | 0.56 |     |    | MPC | 2007 TJ <sub>276</sub>        |
| 2007 TB <sub>277</sub> | 18.2 | 0.15 | 20071027 | 333.01352 | 184.55344 | 236.48052 | 4.01415  | 0.1484384 | 2.2634973 | 22 | 1 | 39 days   | 0.50 |     |    | MPC | 2007 TB <sub>277</sub>        |
| 2007 TE <sub>278</sub> | 17.5 | 0.15 | 20071007 | 343.28447 | 60.55486  | 342.47240 | 2.07288  | 0.1501585 | 2.9787965 | 17 | 1 | 56 days   | 0.29 |     |    | MPC | 2007 TE <sub>278</sub>        |
| 2007 TH <sub>278</sub> | 18.3 | 0.15 | 20071007 | 13.29766  | 23.61991  | 334.90236 | 2.02100  | 0.2090603 | 2.4292554 | 19 | 1 | 40 days   | 0.43 |     |    | MPC | 2007 TH <sub>278</sub>        |
| 2007 TK <sub>278</sub> | 17.3 | 0.15 | 20071007 | 348.53751 | 148.88225 | 247.94993 | 2.11598  | 0.1846814 | 2.7520774 | 22 | 1 | 42 days   | 0.36 |     |    | MPC | 2007 TK <sub>278</sub>        |
| 2007 TQ <sub>278</sub> | 16.3 | 0.15 | 20071007 | 46.15092  | 95.54924  | 219.74966 | 6.50822  | 0.1926716 | 3.1186235 | 16 | 1 | 27 days   | 0.37 |     |    | MPC | 2007 TQ <sub>278</sub>        |
| 2007 TW <sub>278</sub> | 17.4 | 0.15 | 20071027 | 6.36072   | 159.35602 | 217.55112 | 7.91362  | 0.1626788 | 2.7782428 | 27 | 1 | 77 days   | 0.51 | M-v | 3  | MPC | 2007 TW <sub>278</sub>        |
| 2007 TX <sub>278</sub> | 16.0 | 0.15 | 20071027 | 105.23855 | 58.11922  | 211.63208 | 13.37761 | 0.0849611 | 2.6422417 | 30 | 1 | 77 days   | 0.36 | M-v | 4  | MPC | 2007 TX <sub>278</sub>        |
| 2007 TM <sub>279</sub> | 16.4 | 0.15 | 20071007 | 359.02083 | 11.35138  | 319.30750 | 13.36469 | 0.2572227 | 3.2358288 | 23 | 1 | 4 days    | 0.51 |     |    | MPC | 2007 TM <sub>279</sub>        |
| 2007 TN <sub>279</sub> | 17.4 | 0.15 | 20071007 | 51.13763  | 328.58977 | 302.40801 | 4.73886  | 0.0977726 | 2.2891188 | 26 | 1 | 3 days    | 0.67 |     |    | MPC | 2007 TN <sub>279</sub>        |
| 2007 TP <sub>279</sub> | 17.1 | 0.15 | 20071007 | 7.67746   | 340.98328 | 49.24482  | 10.88805 | 0.0875865 | 3.0560818 | 24 | 1 | 29 days   | 0.40 |     |    | MPC | 2007 TP <sub>279</sub>        |
| 2007 TS <sub>279</sub> | 15.8 | 0.15 | 20071007 | 36.57269  | 240.28623 | 104.89497 | 6.04361  | 0.1766606 | 3.1899288 | 17 | 1 | 2 days    | 0.45 |     |    | MPC | 2007 TS <sub>279</sub>        |
| 2007 TU <sub>279</sub> | 15.5 | 0.15 | 20071007 | 102.45895 | 88.29062  | 196.09472 | 14.43558 | 0.0950724 | 2.6242647 | 23 | 1 | 2 days    | 0.24 |     |    | MPC | 2007 TU <sub>279</sub>        |
| 2007 TD <sub>280</sub> | 15.9 | 0.15 | 20070917 | 12.16333  | 149.88798 | 171.37049 | 27.85202 | 0.1842469 | 3.2227991 | 19 | 1 | 56 days   | 0.52 |     |    | MPC | 2007 TD <sub>280</sub>        |
| 2007 TJ <sub>281</sub> | 16.5 | 0.15 | 20071027 | 24.36646  | 137.71320 | 205.13325 | 9.88560  | 0.2029296 | 3.1821092 | 26 | 1 | 88 days   | 0.51 | M-v | 4D | MPC | 2007 TJ <sub>281</sub>        |
| 2007 TS <sub>281</sub> | 15.8 | 0.15 | 20071027 | 47.83050  | 278.64067 | 52.38791  | 12.70853 | 0.1637026 | 2.7217469 | 37 | 1 | 59 days   | 0.67 |     |    | MPC | 2007 TS <sub>281</sub>        |
| 2007 TH <sub>282</sub> | 16.1 | 0.15 | 20071027 | 337.09581 | 35.90689  | 3.34693   | 9.79592  | 0.1048219 | 3.0956249 | 20 | 1 | 62 days   | 0.29 | M-v | 5  | MPC | 2007 TH <sub>282</sub>        |
| 2007 TF <sub>283</sub> | 16.3 | 0.15 | 20071027 | 333.70844 | 13.55529  | 38.31816  | 5.73517  | 0.0351446 | 2.7337383 | 28 | 1 | 59 days   | 0.33 |     |    | MPC | 2007 TF <sub>283</sub>        |
| 2007 TJ <sub>283</sub> | 16.8 | 0.15 | 20071027 | 71.17727  | 111.16604 | 171.51961 | 4.11400  | 0.2596205 | 2.7047616 | 35 | 2 | 2006–2007 | 0.44 | M-v | 3  | MPC | 128508 2007 TJ <sub>283</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|------------------------|
| 2007 TP <sub>283</sub> | 16.7 | 0.15 | 20071027 | 45.31338  | 127.09735 | 194.91764 | 11.63982 | 0.1835475 | 2.7760755 | 50 | 3 | 2002-2007 | 0.35 | M-v | 1 | MPC | 128509 | 2007 TP <sub>283</sub> |
| 2007 TA <sub>286</sub> | 19.0 | 0.15 | 20071027 | 15.98485  | 297.23369 | 60.41366  | 2.75367  | 0.2656858 | 2.3183212 | 26 | 1 | 63 days   | 0.40 | M-v | 4 | MPC |        | 2007 TA <sub>286</sub> |
| 2007 TD <sub>286</sub> | 18.0 | 0.15 | 20071027 | 28.87775  | 301.38284 | 40.51143  | 6.54957  | 0.1927844 | 2.5727343 | 34 | 2 | 2003-2007 | 0.38 | M-v | 3 | MPC | 128509 | 2007 TD <sub>286</sub> |
| 2007 TG <sub>286</sub> | 16.7 | 0.15 | 20071007 | 338.20514 | 16.85230  | 35.04113  | 13.24901 | 0.1692059 | 3.1381023 | 18 | 1 | 31 days   | 0.63 |     |   | MPC |        | 2007 TG <sub>286</sub> |
| 2007 TV <sub>286</sub> | 15.8 | 0.15 | 20071027 | 354.94826 | 330.92597 | 71.31762  | 7.93934  | 0.1304882 | 3.1427056 | 27 | 1 | 33 days   | 0.54 |     |   | MPC |        | 2007 TV <sub>286</sub> |
| 2007 TY <sub>286</sub> | 15.9 | 0.15 | 20071027 | 46.92314  | 299.77972 | 54.67364  | 15.91560 | 0.0979951 | 2.6143683 | 89 | 3 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128509 | 2007 TY <sub>286</sub> |
| 2007 TS <sub>287</sub> | 16.7 | 0.15 | 20071027 | 46.49672  | 218.50632 | 100.08586 | 7.44289  | 0.1701187 | 2.2065006 | 28 | 1 | 60 days   | 0.66 | M-v | 5 | MPC |        | 2007 TS <sub>287</sub> |
| 2007 TU <sub>287</sub> | 16.3 | 0.15 | 20071027 | 1.64142   | 338.93457 | 39.94232  | 17.20073 | 0.2879021 | 2.6346124 | 40 | 1 | 107 days  | 0.44 | M-v | 3 | MPC |        | 2007 TU <sub>287</sub> |
| 2007 TD <sub>288</sub> | 18.2 | 0.15 | 20070917 | 344.59825 | 285.48183 | 106.72550 | 3.37278  | 0.1951551 | 2.4384711 | 21 | 1 | 41 days   | 0.41 |     |   | MPC |        | 2007 TD <sub>288</sub> |
| 2007 TF <sub>288</sub> | 18.3 | 0.15 | 20071007 | 5.81091   | 233.15128 | 136.06922 | 3.28628  | 0.1790429 | 2.2124923 | 22 | 1 | 57 days   | 0.53 |     |   | MPC |        | 2007 TF <sub>288</sub> |
| 2007 TA <sub>289</sub> | 16.5 | 0.15 | 20071027 | 31.80383  | 214.59210 | 123.01145 | 9.85766  | 0.1657107 | 2.7532486 | 33 | 2 | 2006-2007 | 0.72 | M-v | 3 | MPC | 128510 | 2007 TA <sub>289</sub> |
| 2007 TG <sub>289</sub> | 16.7 | 0.15 | 20071027 | 23.02685  | 276.55961 | 68.64299  | 9.77984  | 0.2367136 | 2.4307614 | 26 | 1 | 56 days   | 0.55 |     |   | MPC |        | 2007 TG <sub>289</sub> |
| 2007 TN <sub>289</sub> | 17.0 | 0.15 | 20071007 | 316.42195 | 173.56654 | 220.68680 | 2.82049  | 0.2347212 | 2.8724254 | 20 | 1 | 4 days    | 0.48 |     |   | MPC |        | 2007 TN <sub>289</sub> |
| 2007 TO <sub>289</sub> | 16.9 | 0.15 | 20071007 | 290.00495 | 101.86864 | 307.04357 | 5.86762  | 0.0673200 | 2.2036248 | 23 | 1 | 4 days    | 0.27 |     |   | MPC |        | 2007 TO <sub>289</sub> |
| 2007 TU <sub>289</sub> | 17.6 | 0.15 | 20070917 | 23.99866  | 208.14088 | 112.13159 | 3.63563  | 0.2535172 | 2.3450285 | 24 | 1 | 30 days   | 0.59 |     | D | MPC |        | 2007 TU <sub>289</sub> |
| 2007 TR <sub>290</sub> | 15.6 | 0.15 | 20071027 | 29.78772  | 282.38196 | 84.00290  | 6.78467  | 0.0635140 | 2.7241939 | 21 | 1 | 31 days   | 0.33 |     |   | MPC |        | 2007 TR <sub>290</sub> |
| 2007 TS <sub>290</sub> | 16.6 | 0.15 | 20071027 | 303.27125 | 50.62991  | 58.34023  | 11.21504 | 0.1278243 | 2.2951914 | 52 | 1 | 54 days   | 0.43 |     |   | MPC |        | 2007 TS <sub>290</sub> |
| 2007 TV <sub>290</sub> | 16.1 | 0.15 | 20071007 | 210.72621 | 130.25589 | 61.04002  | 16.59525 | 0.0757636 | 3.0735585 | 19 | 1 | 23 days   | 0.33 |     |   | MPC |        | 2007 TV <sub>290</sub> |
| 2007 TA <sub>292</sub> | 17.4 | 0.15 | 20071027 | 125.76573 | 239.37188 | 7.60010   | 6.96650  | 0.0794001 | 2.3272172 | 19 | 1 | 26 days   | 0.60 |     | D | MPC |        | 2007 TA <sub>292</sub> |
| 2007 TF <sub>292</sub> | 16.4 | 0.15 | 20071007 | 348.49406 | 199.23525 | 197.53375 | 8.14459  | 0.1696298 | 3.1560112 | 25 | 1 | 56 days   | 0.59 |     |   | MPC |        | 2007 TF <sub>292</sub> |
| 2007 TH <sub>292</sub> | 15.9 | 0.15 | 20071027 | 321.95571 | 245.13162 | 209.86070 | 14.68821 | 0.0909690 | 2.5298197 | 51 | 4 | 1999-2007 | 0.53 | M-v | 3 | MPC | 128510 | 2007 TH <sub>292</sub> |
| 2007 TT <sub>292</sub> | 16.6 | 0.15 | 20071007 | 1.63489   | 318.33211 | 58.74321  | 2.05200  | 0.1695994 | 3.2151530 | 23 | 1 | 53 days   | 0.42 |     |   | MPC |        | 2007 TT <sub>292</sub> |
| 2007 TB <sub>293</sub> | 18.7 | 0.15 | 20071007 | 2.30809   | 356.51939 | 22.30354  | 10.70701 | 0.1672950 | 2.3161617 | 22 | 1 | 39 days   | 0.25 |     |   | MPC |        | 2007 TB <sub>293</sub> |
| 2007 TW <sub>293</sub> | 17.0 | 0.15 | 20071027 | 346.92560 | 210.46297 | 217.87537 | 4.66002  | 0.0946841 | 2.2796562 | 24 | 1 | 71 days   | 0.55 | M-v | 4 | MPC |        | 2007 TW <sub>293</sub> |
| 2007 TD <sub>294</sub> | 15.8 | 0.15 | 20071027 | 64.05566  | 107.15199 | 226.16664 | 14.14297 | 0.1528464 | 2.5479422 | 63 | 3 | 2003-2007 | 0.43 | M-v | 1 | MPC | 128510 | 2007 TD <sub>294</sub> |
| 2007 TQ <sub>296</sub> | 18.0 | 0.15 | 20071027 | 355.62295 | 340.60246 | 68.32616  | 5.91445  | 0.2276708 | 2.3382014 | 31 | 1 | 56 days   | 0.46 |     |   | MPC |        | 2007 TQ <sub>296</sub> |
| 2007 TS <sub>296</sub> | 19.3 | 0.15 | 20071027 | 9.96497   | 337.92224 | 40.70253  | 11.72170 | 0.3185564 | 2.3089834 | 35 | 1 | 40 days   | 0.39 |     |   | MPC |        | 2007 TS <sub>296</sub> |
| 2007 TT <sub>296</sub> | 16.8 | 0.15 | 20071027 | 27.04711  | 303.95168 | 64.68581  | 5.36650  | 0.1559861 | 2.7992184 | 38 | 1 | 56 days   | 0.55 |     |   | MPC |        | 2007 TT <sub>296</sub> |
| 2007 TU <sub>296</sub> | 18.5 | 0.15 | 20071027 | 18.03411  | 316.76097 | 58.92897  | 5.53988  | 0.2179797 | 2.5354749 | 21 | 1 | 41 days   | 0.39 |     |   | MPC |        | 2007 TU <sub>296</sub> |
| 2007 TV <sub>296</sub> | 15.4 | 0.15 | 20071027 | 50.99324  | 294.50349 | 57.22686  | 11.62618 | 0.0546887 | 3.0863055 | 41 | 1 | 64 days   | 0.29 | M-v | 4 | MPC |        | 2007 TV <sub>296</sub> |
| 2007 TW <sub>296</sub> | 17.3 | 0.15 | 20071027 | 358.74668 | 357.53209 | 49.65119  | 15.51110 | 0.1784203 | 2.5978348 | 33 | 1 | 64 days   | 0.54 | M-v | 4 | MPC |        | 2007 TW <sub>296</sub> |
| 2007 TY <sub>296</sub> | 17.7 | 0.15 | 20071027 | 31.12434  | 298.14665 | 68.52133  | 5.12547  | 0.1235405 | 2.4287552 | 16 | 1 | 39 days   | 0.33 |     |   | MPC |        | 2007 TY <sub>296</sub> |
| 2007 TZ <sub>296</sub> | 16.6 | 0.15 | 20071027 | 53.61516  | 276.05166 | 56.85342  | 12.17580 | 0.2036169 | 2.6514087 | 25 | 1 | 56 days   | 0.22 |     | D | MPC |        | 2007 TZ <sub>296</sub> |
| 2007 TD <sub>297</sub> | 17.1 | 0.15 | 20071027 | 23.54402  | 221.20910 | 141.85141 | 4.48138  | 0.2899101 | 2.3518265 | 52 | 3 | 2005-2007 | 0.37 | M-v | 2 | MPC | 128510 | 2007 TD <sub>297</sub> |
| 2007 TH <sub>297</sub> | 17.8 | 0.15 | 20071007 | 2.83674   | 137.50025 | 238.30401 | 1.29852  | 0.2744511 | 2.4263762 | 34 | 1 | 32 days   | 0.47 |     |   | MPC |        | 2007 TH <sub>297</sub> |
| 2007 TC <sub>298</sub> | 17.1 | 0.15 | 20071007 | 42.72504  | 343.15707 | 353.22240 | 3.65069  | 0.0229485 | 2.5847339 | 19 | 1 | 34 days   | 0.32 |     |   | MPC |        | 2007 TC <sub>298</sub> |
| 2007 TD <sub>298</sub> | 16.0 | 0.15 | 20071027 | 314.89390 | 74.20707  | 13.53817  | 9.19886  | 0.1798444 | 3.0030376 | 31 | 1 | 62 days   | 0.37 | M-v | 4 | MPC |        | 2007 TD <sub>298</sub> |
| 2007 TJ <sub>298</sub> | 17.8 | 0.15 | 20071027 | 31.97983  | 259.99895 | 89.19995  | 1.73909  | 0.2475988 | 2.3041938 | 64 | 1 | 60 days   | 0.40 | M-v | 5 | MPC |        | 2007 TJ <sub>298</sub> |
| 2007 TN <sub>299</sub> | 16.2 | 0.15 | 20071027 | 127.06782 | 39.76552  | 218.48452 | 3.65588  | 0.0677271 | 2.6588511 | 56 | 5 | 1994-2007 | 0.42 | M-v | 1 | MPC | 128511 | 2007 TN <sub>299</sub> |
| 2007 TW <sub>299</sub> | 16.3 | 0.15 | 20071007 | 353.57528 | 184.37015 | 218.37007 | 2.09861  | 0.2647497 | 3.9507400 | 20 | 1 | 27 days   | 0.30 |     |   | MPC |        | 2007 TW <sub>299</sub> |
| 2007 TY <sub>299</sub> | 16.6 | 0.15 | 20071027 | 339.81239 | 64.67136  | 359.73678 | 0.89211  | 0.1688198 | 3.1773814 | 28 | 1 | 62 days   | 0.27 | M-v | 4 | MPC |        | 2007 TY <sub>299</sub> |
| 2007 TZ <sub>299</sub> | 17.7 | 0.15 | 20071027 | 41.29352  | 104.67002 | 226.64023 | 1.51532  | 0.2375916 | 2.3350970 | 36 | 1 | 45 days   | 0.44 |     |   | MPC |        | 2007 TZ <sub>299</sub> |
| 2007 TE <sub>300</sub> | 16.1 | 0.15 | 20071027 | 359.29384 | 355.68165 | 40.40619  | 5.89672  | 0.2213771 | 3.9105102 | 21 | 1 | 37 days   | 0.18 |     |   | MPC |        | 2007 TE <sub>300</sub> |
| 2007 TG <sub>300</sub> | 17.7 | 0.15 | 20071027 | 47.36074  | 288.11279 | 45.14015  | 4.03996  | 0.1455417 | 2.3918934 | 28 | 1 | 62 days   | 0.32 | M-v | 4 | MPC |        | 2007 TG <sub>300</sub> |
| 2007 TK <sub>300</sub> | 17.6 | 0.15 | 20071027 | 15.10966  | 335.74782 | 37.83660  | 9.97535  | 0.1727257 | 2.7240288 | 21 | 1 | 33 days   | 0.30 |     |   | MPC |        | 2007 TK <sub>300</sub> |
| 2007 TB <sub>301</sub> | 17.3 | 0.15 | 20071027 | 3.61903   | 167.12451 | 227.24052 | 6.09377  | 0.1389546 | 3.0162376 | 18 | 1 | 55 days   | 0.27 |     |   | MPC |        | 2007 TB <sub>301</sub> |
| 2007 TC <sub>301</sub> | 17.8 | 0.15 | 20071007 | 352.34578 | 26.96374  | 16.19126  | 2.90386  | 0.2269589 | 2.6153567 | 30 | 1 | 35 days   | 0.24 |     |   | MPC |        | 2007 TC <sub>301</sub> |
| 2007 TE <sub>301</sub> | 17.0 | 0.15 | 20071027 | 230.34337 | 307.78410 | 227.66412 | 5.61593  | 0.0811671 | 2.4616635 | 38 | 3 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128511 | 2007 TE <sub>301</sub> |
| 2007 TH <sub>301</sub> | 18.1 | 0.15 | 20071007 | 333.43756 | 58.22571  | 7.44639   | 2.62474  | 0.1382365 | 2.2451493 | 25 | 1 | 28 days   | 0.18 |     |   | MPC |        | 2007 TH <sub>301</sub> |
| 2007 TL <sub>301</sub> | 17.7 | 0.15 | 20071027 | 38.98079  | 123.83621 | 226.73254 | 5.03310  | 0.1129284 | 2.2567284 | 34 | 2 | 2006-2007 | 0.42 | M-v | 3 | MPC | 128512 | 2007 TL <sub>301</sub> |
| 2007 TN <sub>301</sub> | 16.8 | 0.15 | 20071027 | 322.41072 | 209.90424 | 230.09886 | 3.55658  | 0.0325106 | 2.7172045 | 26 | 1 | 36 days   | 0.28 |     |   | MPC |        | 2007 TN <sub>301</sub> |
| 2007 TO <sub>301</sub> | 17.5 | 0.15 | 20071007 | 348.59820 | 124.57025 | 283.89354 | 1.26140  | 0.1481205 | 2.5340164 | 23 | 1 | 44 days   | 0.41 |     |   | MPC |        | 2007 TO <sub>301</sub> |
| 2007 TP <sub>301</sub> | 19.0 | 0.15 | 20071007 | 352.83437 | 135.10935 | 267.06154 | 1.18724  | 0.2241547 | 2.4273904 | 16 | 1 | 22 days   | 0.21 |     |   | MPC |        | 2007 TP <sub>301</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |         |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|---------|-----|-------------------------------|
| 2007 TV <sub>301</sub> | 18.2 | 0.15 | 20071007 | 342.89473 | 22.44154  | 29.64859  | 5.23743  | 0.0564480 | 2.2244448 | 16 | 1 | 22 days   | 0.19 |         | MPC | 2007 TV <sub>301</sub>        |
| 2007 TX <sub>301</sub> | 19.3 | 0.15 | 20071007 | 356.09172 | 81.64107  | 311.59912 | 0.79955  | 0.1864702 | 2.3372833 | 17 | 1 | 26 days   | 0.19 |         | MPC | 2007 TX <sub>301</sub>        |
| 2007 TD <sub>302</sub> | 17.0 | 0.15 | 20071007 | 53.00055  | 105.36945 | 226.39619 | 4.56667  | 0.0848301 | 2.9612810 | 17 | 1 | 27 days   | 0.37 |         | MPC | 2007 TD <sub>302</sub>        |
| 2007 TE <sub>302</sub> | 16.2 | 0.15 | 20071007 | 315.40309 | 203.89001 | 240.45591 | 1.72877  | 0.0736628 | 3.0978929 | 17 | 1 | 23 days   | 0.36 |         | MPC | 2007 TE <sub>302</sub>        |
| 2007 TF <sub>302</sub> | 17.0 | 0.15 | 20071027 | 129.37652 | 235.53809 | 28.81185  | 8.41686  | 0.0398163 | 2.6458093 | 21 | 1 | 30 days   | 0.27 |         | MPC | 2007 TF <sub>302</sub>        |
| 2007 TP <sub>303</sub> | 16.8 | 0.15 | 20071027 | 5.16149   | 355.51388 | 36.65000  | 0.72108  | 0.1777288 | 3.0898018 | 45 | 1 | 69 days   | 0.33 | M-v 4 D | MPC | 2007 TP <sub>303</sub>        |
| 2007 TV <sub>303</sub> | 18.3 | 0.15 | 20071007 | 7.08533   | 303.11476 | 75.87255  | 5.70595  | 0.2047387 | 2.3239851 | 20 | 1 | 26 days   | 0.69 |         | MPC | 2007 TV <sub>303</sub>        |
| 2007 TJ <sub>304</sub> | 15.3 | 0.15 | 20071027 | 333.16138 | 11.99527  | 60.43388  | 12.00439 | 0.0307419 | 3.0943480 | 31 | 1 | 36 days   | 0.60 |         | MPC | 2007 TJ <sub>304</sub>        |
| 2007 TK <sub>304</sub> | 16.6 | 0.15 | 20071007 | 26.35198  | 311.31128 | 47.75426  | 27.76080 | 0.1982187 | 3.2238976 | 24 | 1 | 26 days   | 0.32 |         | MPC | 2007 TK <sub>304</sub>        |
| 2007 TE <sub>307</sub> | 16.7 | 0.15 | 20071007 | 20.56058  | 316.17467 | 36.69833  | 8.64476  | 0.1833043 | 3.1062189 | 22 | 1 | 53 days   | 0.31 |         | MPC | 2007 TE <sub>307</sub>        |
| 2007 TM <sub>307</sub> | 17.9 | 0.15 | 20071027 | 48.39139  | 262.03972 | 66.42975  | 1.75972  | 0.1290697 | 2.3524840 | 32 | 1 | 85 days   | 0.37 | M-v 4   | MPC | 2007 TM <sub>307</sub>        |
| 2007 TE <sub>308</sub> | 17.1 | 0.15 | 20071007 | 62.48270  | 183.47370 | 125.10718 | 2.30272  | 0.1434670 | 3.0907126 | 17 | 1 | 11 days   | 0.32 |         | MPC | 2007 TE <sub>308</sub>        |
| 2007 TO <sub>308</sub> | 15.8 | 0.15 | 20071027 | 264.04448 | 100.70739 | 38.30915  | 16.75511 | 0.1066682 | 3.2136071 | 26 | 1 | 57 days   | 0.38 |         | MPC | 2007 TO <sub>308</sub>        |
| 2007 TS <sub>309</sub> | 18.1 | 0.15 | 20071027 | 1.66318   | 4.15732   | 37.78023  | 9.56433  | 0.1590745 | 2.5597144 | 26 | 1 | 65 days   | 0.47 | M-v 4   | MPC | 2007 TS <sub>309</sub>        |
| 2007 TT <sub>309</sub> | 16.5 | 0.15 | 20071007 | 341.01524 | 23.00890  | 42.68574  | 9.62059  | 0.0863141 | 3.1761814 | 20 | 1 | 58 days   | 0.43 |         | MPC | 2007 TT <sub>309</sub>        |
| 2007 TU <sub>309</sub> | 17.3 | 0.15 | 20071027 | 293.28778 | 97.47906  | 34.42130  | 2.76770  | 0.1533592 | 2.3964701 | 28 | 1 | 56 days   | 0.39 |         | MPC | 2007 TU <sub>309</sub>        |
| 2007 TJ <sub>310</sub> | 18.0 | 0.15 | 20070917 | 32.27144  | 150.77135 | 178.47246 | 5.38532  | 0.1954935 | 2.2843696 | 16 | 1 | 39 days   | 0.40 |         | MPC | 2007 TJ <sub>310</sub>        |
| 2007 TP <sub>310</sub> | 17.4 | 0.15 | 20071027 | 357.76495 | 269.43029 | 123.16579 | 2.46135  | 0.1616433 | 2.6276824 | 29 | 1 | 34 days   | 0.40 |         | MPC | 2007 TP <sub>310</sub>        |
| 2007 TV <sub>310</sub> | 16.4 | 0.15 | 20071027 | 17.99129  | 203.77860 | 163.60406 | 4.48351  | 0.1086992 | 2.7352086 | 39 | 3 | 2002-2007 | 0.40 | M-v 3   | MPC | 128512 2007 TV <sub>310</sub> |
| 2007 TX <sub>310</sub> | 18.3 | 0.15 | 20071007 | 328.42574 | 323.99255 | 103.58359 | 2.83595  | 0.1662981 | 2.4750127 | 13 | 1 | 8 days    | 0.40 | D       | MPC | 2007 TX <sub>310</sub>        |
| 2007 TA <sub>311</sub> | 15.5 | 0.15 | 20071007 | 353.70833 | 338.80261 | 54.97191  | 9.04298  | 0.0668509 | 3.0634526 | 12 | 1 | 9 days    | 0.62 |         | MPC | 2007 TA <sub>311</sub>        |
| 2007 TK <sub>311</sub> | 17.8 | 0.15 | 20071007 | 28.91734  | 313.97233 | 20.35820  | 1.73316  | 0.2056628 | 2.3871354 | 22 | 1 | 21 days   | 0.43 |         | MPC | 2007 TK <sub>311</sub>        |
| 2007 TS <sub>312</sub> | 18.2 | 0.15 | 20071027 | 0.92483   | 313.06260 | 75.91984  | 3.39176  | 0.2001400 | 2.3849493 | 20 | 1 | 33 days   | 0.31 |         | MPC | 2007 TS <sub>312</sub>        |
| 2007 TX <sub>313</sub> | 16.2 | 0.15 | 20070917 | 54.02523  | 219.25864 | 96.34461  | 3.97101  | 0.1102317 | 2.9295909 | 20 | 1 | 40 days   | 0.26 |         | MPC | 2007 TX <sub>313</sub>        |
| 2007 TW <sub>314</sub> | 17.8 | 0.15 | 20071007 | 305.87363 | 189.50678 | 270.13720 | 0.54102  | 0.1366054 | 2.3524188 | 29 | 1 | 56 days   | 0.33 |         | MPC | 2007 TW <sub>314</sub>        |
| 2007 TZ <sub>314</sub> | 16.3 | 0.15 | 20071027 | 119.54516 | 55.17246  | 221.58303 | 6.21920  | 0.0373648 | 2.8106530 | 9  | 1 | 55 days   | 0.56 |         | MPC | 2007 TZ <sub>314</sub>        |
| 2007 TC <sub>315</sub> | 17.0 | 0.15 | 20071007 | 22.71313  | 348.63746 | 14.53970  | 0.59329  | 0.1698399 | 3.0919378 | 38 | 1 | 38 days   | 0.37 |         | MPC | 2007 TC <sub>315</sub>        |
| 2007 TF <sub>315</sub> | 16.2 | 0.15 | 20071007 | 314.23301 | 60.39565  | 34.46215  | 6.31396  | 0.1308563 | 3.2200399 | 20 | 1 | 40 days   | 0.32 |         | MPC | 2007 TF <sub>315</sub>        |
| 2007 TJ <sub>315</sub> | 15.6 | 0.15 | 20071027 | 12.51751  | 316.03545 | 68.64016  | 1.16243  | 0.1149752 | 3.0176283 | 84 | 7 | 1991-2007 | 0.45 | M-v 0   | MPC | 128513 2007 TJ <sub>315</sub> |
| 2007 TK <sub>315</sub> | 16.5 | 0.15 | 20071027 | 349.47428 | 198.11255 | 215.00581 | 1.82282  | 0.0691692 | 3.0579645 | 25 | 1 | 55 days   | 0.39 |         | MPC | 2007 TK <sub>315</sub>        |
| 2007 TL <sub>315</sub> | 16.2 | 0.15 | 20071027 | 10.95149  | 160.61932 | 222.93171 | 1.28766  | 0.2012018 | 2.9626615 | 55 | 1 | 63 days   | 0.45 | M-v 4 D | MPC | 2007 TL <sub>315</sub>        |
| 2007 TO <sub>315</sub> | 16.6 | 0.15 | 20071007 | 319.26222 | 236.85795 | 217.83993 | 20.19352 | 0.1979679 | 3.0664427 | 20 | 1 | 36 days   | 0.21 |         | MPC | 2007 TO <sub>315</sub>        |
| 2007 TS <sub>315</sub> | 15.7 | 0.15 | 20071027 | 4.13366   | 329.76830 | 65.68458  | 3.77454  | 0.1645392 | 3.0171561 | 71 | 4 | 1991-2007 | 0.44 | M-v 1   | MPC | 128513 2007 TS <sub>315</sub> |
| 2007 TU <sub>315</sub> | 18.2 | 0.15 | 20071007 | 24.45908  | 310.27132 | 42.17202  | 10.28837 | 0.2584957 | 2.7425766 | 16 | 1 | 27 days   | 0.26 |         | MPC | 2007 TU <sub>315</sub>        |
| 2007 TV <sub>315</sub> | 16.7 | 0.15 | 20071007 | 291.11509 | 86.75708  | 45.47525  | 17.17010 | 0.2149752 | 3.1878074 | 33 | 1 | 28 days   | 0.28 |         | MPC | 2007 TV <sub>315</sub>        |
| 2007 TW <sub>315</sub> | 18.4 | 0.15 | 20071007 | 2.82283   | 203.13405 | 184.11645 | 2.60177  | 0.1923733 | 2.3266683 | 40 | 1 | 58 days   | 0.48 |         | MPC | 2007 TW <sub>315</sub>        |
| 2007 TD <sub>316</sub> | 17.1 | 0.15 | 20071007 | 353.51831 | 205.27096 | 200.01656 | 5.50485  | 0.0201048 | 2.7296273 | 25 | 1 | 24 days   | 0.22 |         | MPC | 2007 TD <sub>316</sub>        |
| 2007 TG <sub>316</sub> | 17.7 | 0.15 | 20071027 | 57.81399  | 268.50035 | 51.53458  | 6.35236  | 0.2106802 | 2.2196117 | 42 | 1 | 59 days   | 0.45 |         | MPC | 2007 TG <sub>316</sub>        |
| 2007 TH <sub>316</sub> | 17.7 | 0.15 | 20071027 | 76.46745  | 251.75842 | 54.08300  | 6.62197  | 0.1659286 | 2.2189239 | 30 | 1 | 55 days   | 0.39 |         | MPC | 2007 TH <sub>316</sub>        |
| 2007 TK <sub>316</sub> | 15.4 | 0.15 | 20071027 | 0.50359   | 344.65011 | 58.74894  | 7.95273  | 0.1172591 | 3.2384756 | 50 | 2 | 2001-2007 | 0.46 | M-v 3   | MPC | 128513 2007 TK <sub>316</sub> |
| 2007 TN <sub>316</sub> | 16.9 | 0.15 | 20071027 | 14.70675  | 315.69418 | 60.94980  | 5.45556  | 0.2266395 | 2.9980417 | 28 | 1 | 61 days   | 0.38 | M-v 4   | MPC | 2007 TN <sub>316</sub>        |
| 2007 TU <sub>316</sub> | 17.5 | 0.15 | 20071007 | 340.71494 | 19.09912  | 45.28159  | 17.45734 | 0.2104235 | 2.9496012 | 29 | 1 | 36 days   | 0.26 |         | MPC | 2007 TU <sub>316</sub>        |
| 2007 TX <sub>316</sub> | 15.3 | 0.15 | 20071027 | 137.57671 | 197.07323 | 60.70420  | 10.22007 | 0.1027654 | 2.7955155 | 53 | 3 | 2005-2007 | 0.45 | M-v 3   | MPC | 128513 2007 TX <sub>316</sub> |
| 2007 TE <sub>317</sub> | 16.3 | 0.15 | 20071027 | 352.37662 | 217.55189 | 197.65670 | 8.80898  | 0.1553852 | 2.9774526 | 41 | 1 | 82 days   | 0.57 | M-v 3   | MPC | 2007 TE <sub>317</sub>        |
| 2007 TG <sub>317</sub> | 15.6 | 0.15 | 20071027 | 291.73142 | 59.35433  | 63.95377  | 9.62476  | 0.0836426 | 3.0061506 | 20 | 1 | 54 days   | 0.35 |         | MPC | 2007 TG <sub>317</sub>        |
| 2007 TH <sub>317</sub> | 16.8 | 0.15 | 20071027 | 315.39328 | 18.34186  | 82.09004  | 4.22912  | 0.1353294 | 2.3382924 | 40 | 1 | 54 days   | 0.55 |         | MPC | 2007 TH <sub>317</sub>        |
| 2007 TJ <sub>317</sub> | 18.4 | 0.15 | 20071027 | 349.11411 | 344.82499 | 74.18756  | 5.07499  | 0.2020013 | 2.3150837 | 27 | 1 | 54 days   | 0.50 |         | MPC | 2007 TJ <sub>317</sub>        |
| 2007 TO <sub>317</sub> | 16.8 | 0.15 | 20071007 | 28.90372  | 322.19784 | 44.56189  | 11.92002 | 0.1032245 | 2.9099091 | 16 | 1 | 23 days   | 0.29 |         | MPC | 2007 TO <sub>317</sub>        |
| 2007 TP <sub>317</sub> | 16.3 | 0.15 | 20071027 | 76.54071  | 274.49899 | 47.86361  | 3.34303  | 0.0724117 | 2.8202387 | 44 | 4 | 2002-2007 | 0.34 | M-v 0   | MPC | 128514 2007 TP <sub>317</sub> |
| 2007 TQ <sub>317</sub> | 18.3 | 0.15 | 20071027 | 295.15350 | 267.35459 | 212.58326 | 1.02471  | 0.0918018 | 2.2344065 | 35 | 2 | 2005-2007 | 0.37 | M-v 3   | MPC | 128514 2007 TQ <sub>317</sub> |
| 2007 TR <sub>317</sub> | 16.3 | 0.15 | 20071027 | 316.05171 | 51.28631  | 54.68804  | 6.21680  | 0.1559413 | 3.2065637 | 25 | 1 | 82 days   | 0.26 | M-v 4   | MPC | 2007 TR <sub>317</sub>        |
| 2007 TS <sub>317</sub> | 16.7 | 0.15 | 20071027 | 1.71594   | 207.19031 | 197.88746 | 2.28339  | 0.0411365 | 2.7205245 | 53 | 4 | 1996-2007 | 0.40 | M-v 1   | MPC | 128515 2007 TS <sub>317</sub> |
| 2007 TV <sub>317</sub> | 16.8 | 0.15 | 20071027 | 6.93422   | 185.02273 | 214.33211 | 5.10133  | 0.0279124 | 2.5410813 | 68 | 3 | 1999-2007 | 0.44 | M-v 3   | MPC | 128515 2007 TV <sub>317</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 TA <sub>318</sub> | 16.6 | 0.15 | 20071007 | 282.70750 | 272.16304 | 222.43854 | 7.91546  | 0.1181223 | 2.7659841 | 29 | 1 | 57 days   | 0.33 |     |   |     | 2007 TA <sub>318</sub>        |
| 2007 TE <sub>318</sub> | 18.7 | 0.15 | 20071027 | 17.97688  | 186.69303 | 192.16869 | 1.98756  | 0.1917851 | 2.4210967 | 39 | 2 | 2003–2007 | 0.36 | M-v | 3 | MPC | 128515 2007 TE <sub>318</sub> |
| 2007 TF <sub>318</sub> | 16.7 | 0.15 | 20071027 | 39.45610  | 185.04420 | 175.40574 | 1.81521  | 0.1044173 | 2.8453544 | 23 | 1 | 55 days   | 0.42 |     |   | MPC | 2007 TF <sub>318</sub>        |
| 2007 TG <sub>318</sub> | 17.2 | 0.15 | 20071027 | 90.98389  | 88.25190  | 209.59036 | 3.07239  | 0.1686403 | 2.3775900 | 45 | 3 | 2003–2007 | 0.35 | M-v | 2 | MPC | 128515 2007 TG <sub>318</sub> |
| 2007 TJ <sub>318</sub> | 16.3 | 0.15 | 20071027 | 336.33809 | 211.28664 | 222.55865 | 21.39956 | 0.0306146 | 2.6291210 | 19 | 1 | 39 days   | 0.53 |     |   | MPC | 2007 TJ <sub>318</sub>        |
| 2007 TK <sub>318</sub> | 18.2 | 0.15 | 20071027 | 6.93127   | 187.55228 | 207.38037 | 4.04094  | 0.1786234 | 2.2031042 | 32 | 1 | 69 days   | 0.46 | M-v | 4 | MPC | 2007 TK <sub>318</sub>        |
| 2007 TM <sub>318</sub> | 16.9 | 0.15 | 20071027 | 16.67003  | 335.78511 | 53.75347  | 10.31337 | 0.0922923 | 3.0172590 | 20 | 1 | 53 days   | 0.33 |     |   | MPC | 2007 TM <sub>318</sub>        |
| 2007 TO <sub>318</sub> | 17.3 | 0.15 | 20071027 | 317.78872 | 55.71491  | 52.06854  | 5.71317  | 0.1882124 | 2.6082095 | 33 | 1 | 83 days   | 0.36 | M-v | 4 | MPC | 2007 TO <sub>318</sub>        |
| 2007 TR <sub>318</sub> | 15.2 | 0.15 | 20071027 | 197.20615 | 352.48997 | 225.22586 | 13.97303 | 0.1028362 | 3.0216125 | 18 | 1 | 39 days   | 0.53 |     |   | MPC | 2007 TR <sub>318</sub>        |
| 2007 TS <sub>318</sub> | 17.7 | 0.15 | 20071027 | 274.57518 | 94.20472  | 50.92689  | 7.92860  | 0.1024694 | 2.2342121 | 23 | 1 | 66 days   | 0.27 | M-v | 4 | MPC | 2007 TS <sub>318</sub>        |
| 2007 TY <sub>318</sub> | 17.2 | 0.15 | 20071027 | 41.12246  | 310.22334 | 50.22570  | 12.46672 | 0.0498103 | 2.6533889 | 26 | 1 | 39 days   | 0.30 |     |   | MPC | 2007 TY <sub>318</sub>        |
| 2007 TB <sub>319</sub> | 19.0 | 0.15 | 20071027 | 350.71423 | 6.53240   | 50.62510  | 5.81068  | 0.1740016 | 2.3350175 | 20 | 1 | 33 days   | 0.31 |     |   | MPC | 2007 TB <sub>319</sub>        |
| 2007 TC <sub>319</sub> | 17.8 | 0.15 | 20071027 | 357.31016 | 350.21933 | 57.60536  | 5.18136  | 0.1294551 | 2.3508452 | 32 | 1 | 39 days   | 0.41 |     |   | MPC | 2007 TC <sub>319</sub>        |
| 2007 TD <sub>319</sub> | 16.1 | 0.15 | 20071027 | 68.55704  | 116.50904 | 213.63243 | 8.71069  | 0.0844192 | 3.1685977 | 16 | 1 | 39 days   | 0.28 |     |   | MPC | 2007 TD <sub>319</sub>        |
| 2007 TE <sub>319</sub> | 17.5 | 0.15 | 20071027 | 3.28738   | 240.48982 | 160.94620 | 2.35657  | 0.1211075 | 2.5942351 | 19 | 1 | 54 days   | 0.23 |     |   | MPC | 2007 TE <sub>319</sub>        |
| 2007 TF <sub>319</sub> | 17.3 | 0.15 | 20071027 | 27.46262  | 148.45489 | 215.86371 | 13.15266 | 0.2041665 | 2.6348799 | 20 | 1 | 39 days   | 0.30 |     |   | MPC | 2007 TF <sub>319</sub>        |
| 2007 TL <sub>319</sub> | 17.0 | 0.15 | 20071027 | 12.36109  | 180.53643 | 208.00856 | 8.56824  | 0.1659569 | 2.5686872 | 41 | 1 | 71 days   | 0.38 | M-v | 4 | MPC | 2007 TL <sub>319</sub>        |
| 2007 TM <sub>319</sub> | 19.1 | 0.15 | 20071027 | 21.55168  | 306.57096 | 65.91214  | 3.75967  | 0.1934683 | 2.2865394 | 23 | 1 | 54 days   | 0.40 |     |   | MPC | 2007 TM <sub>319</sub>        |
| 2007 TQ <sub>319</sub> | 16.9 | 0.15 | 20071027 | 312.08090 | 266.24486 | 199.57198 | 5.27859  | 0.1025761 | 2.7209494 | 14 | 1 | 39 days   | 0.26 |     |   | MPC | 2007 TQ <sub>319</sub>        |
| 2007 TR <sub>319</sub> | 17.7 | 0.15 | 20071027 | 8.89776   | 318.01589 | 74.75359  | 2.47401  | 0.1833383 | 2.3612490 | 28 | 1 | 82 days   | 0.27 | M-v | 3 | MPC | 2007 TR <sub>319</sub>        |
| 2007 TT <sub>319</sub> | 16.9 | 0.15 | 20071027 | 23.97902  | 306.29348 | 63.29796  | 5.79359  | 0.2219877 | 2.6752558 | 50 | 1 | 55 days   | 0.52 |     |   | MPC | 2007 TT <sub>319</sub>        |
| 2007 TU <sub>319</sub> | 17.1 | 0.15 | 20071027 | 24.35778  | 170.90106 | 204.23793 | 6.12546  | 0.1548432 | 2.6916272 | 20 | 1 | 71 days   | 0.22 | M-v | 4 | MPC | 2007 TU <sub>319</sub>        |
| 2007 TV <sub>319</sub> | 16.3 | 0.15 | 20071027 | 79.11217  | 116.24602 | 200.29022 | 4.38529  | 0.1314188 | 3.0350253 | 43 | 3 | 2005–2007 | 0.36 | M-v | 2 | MPC | 128515 2007 TV <sub>319</sub> |
| 2007 TX <sub>319</sub> | 16.6 | 0.15 | 20071027 | 45.14968  | 127.67286 | 212.61975 | 11.10021 | 0.2286743 | 2.6120346 | 51 | 2 | 2006–2007 | 0.56 | M-v | 3 | MPC | 128516 2007 TX <sub>319</sub> |
| 2007 TZ <sub>321</sub> | 18.2 | 0.15 | 20071007 | 2.90234   | 358.59483 | 12.07578  | 1.61815  | 0.1827190 | 2.4110552 | 19 | 1 | 26 days   | 0.48 |     |   | D   | 2007 TZ <sub>321</sub>        |
| 2007 TE <sub>322</sub> | 18.0 | 0.15 | 20071027 | 4.54917   | 305.08882 | 80.57622  | 3.63661  | 0.1341529 | 2.1621583 | 30 | 1 | 33 days   | 0.44 |     |   | MPC | 2007 TE <sub>322</sub>        |
| 2007 TY <sub>323</sub> | 15.2 | 0.15 | 20071007 | 308.82680 | 195.32518 | 253.70619 | 8.15291  | 0.0692738 | 3.1643923 | 37 | 1 | 53 days   | 0.54 |     |   | MPC | 2007 TY <sub>323</sub>        |
| 2007 TB <sub>324</sub> | 16.0 | 0.15 | 20071007 | 278.86688 | 202.08765 | 277.35197 | 6.18906  | 0.0574539 | 3.0027611 | 22 | 1 | 43 days   | 0.53 |     |   | MPC | 2007 TB <sub>324</sub>        |
| 2007 TG <sub>325</sub> | 17.0 | 0.15 | 20071007 | 19.63957  | 121.85280 | 237.14407 | 7.39351  | 0.1896571 | 2.7957140 | 23 | 1 | 27 days   | 0.62 |     |   | MPC | 2007 TG <sub>325</sub>        |
| 2007 TJ <sub>326</sub> | 15.7 | 0.15 | 20071027 | 30.89023  | 65.70027  | 294.45724 | 3.86183  | 0.0795798 | 2.7398236 | 32 | 2 | 1979–2007 | 0.57 | M-v | 5 | MPC | 128517 2007 TJ <sub>326</sub> |
| 2007 TP <sub>326</sub> | 18.3 | 0.15 | 20071007 | 359.50054 | 132.63933 | 255.97215 | 3.76411  | 0.2304045 | 2.5553667 | 20 | 1 | 35 days   | 0.33 |     |   | MPC | 2007 TP <sub>326</sub>        |
| 2007 TF <sub>327</sub> | 16.6 | 0.15 | 20071027 | 37.63417  | 35.88847  | 318.72011 | 4.62368  | 0.0668043 | 2.7250344 | 30 | 2 | 2000–2007 | 0.44 | M-v | 4 | MPC | 128517 2007 TF <sub>327</sub> |
| 2007 TQ <sub>327</sub> | 16.8 | 0.15 | 20071007 | 10.58994  | 97.76206  | 283.92521 | 4.79152  | 0.0276803 | 2.7003262 | 20 | 1 | 44 days   | 0.22 |     |   | MPC | 2007 TQ <sub>327</sub>        |
| 2007 TB <sub>328</sub> | 18.5 | 0.15 | 20071007 | 6.72763   | 122.37921 | 252.66216 | 4.77771  | 0.3321961 | 2.8545362 | 16 | 1 | 28 days   | 0.28 |     |   | MPC | 2007 TB <sub>328</sub>        |
| 2007 TG <sub>328</sub> | 17.9 | 0.15 | 20071027 | 28.45290  | 88.56450  | 267.72414 | 3.89317  | 0.1889801 | 2.3240156 | 28 | 1 | 38 days   | 0.42 |     |   | MPC | 2007 TG <sub>328</sub>        |
| 2007 TH <sub>328</sub> | 18.0 | 0.15 | 20071007 | 12.87247  | 359.93622 | 11.98740  | 8.78284  | 0.2160315 | 2.8036794 | 15 | 1 | 24 days   | 0.25 |     |   | MPC | 2007 TH <sub>328</sub>        |
| 2007 TO <sub>328</sub> | 16.4 | 0.15 | 20071027 | 15.54965  | 0.43021   | 19.71096  | 11.11359 | 0.1279369 | 2.9268144 | 20 | 1 | 38 days   | 0.28 |     |   | MPC | 2007 TO <sub>328</sub>        |
| 2007 TS <sub>328</sub> | 17.0 | 0.15 | 20071027 | 281.39136 | 121.13937 | 20.90623  | 11.83474 | 0.2007330 | 2.5373174 | 25 | 1 | 38 days   | 0.27 |     |   | MPC | 2007 TS <sub>328</sub>        |
| 2007 TH <sub>329</sub> | 16.6 | 0.15 | 20071027 | 15.16627  | 353.87524 | 21.93925  | 13.03242 | 0.1837903 | 2.8640942 | 27 | 1 | 69 days   | 0.43 | M-v | 4 | MPC | 2007 TH <sub>329</sub>        |
| 2007 TT <sub>329</sub> | 15.2 | 0.15 | 20071007 | 91.73813  | 48.90681  | 245.10615 | 6.33437  | 0.0917814 | 3.2055419 | 25 | 1 | 43 days   | 0.45 |     |   | MPC | 2007 TT <sub>329</sub>        |
| 2007 TE <sub>330</sub> | 16.5 | 0.15 | 20071027 | 319.35348 | 229.28871 | 224.42923 | 13.20020 | 0.1539066 | 2.6703587 | 58 | 2 | 2005–2007 | 0.35 | M-v | 4 | MPC | 128518 2007 TE <sub>330</sub> |
| 2007 TF <sub>330</sub> | 17.5 | 0.15 | 20071027 | 63.52433  | 355.25345 | 318.49884 | 1.57192  | 0.1941260 | 2.3097193 | 18 | 1 | 29 days   | 0.43 |     |   | D   | 2007 TF <sub>330</sub>        |
| 2007 TG <sub>330</sub> | 18.6 | 0.15 | 20071027 | 24.23960  | 2.34145   | 1.99348   | 3.84406  | 0.1761343 | 2.2688711 | 15 | 1 | 38 days   | 0.42 |     |   | MPC | 2007 TG <sub>330</sub>        |
| 2007 TL <sub>330</sub> | 16.2 | 0.15 | 20071027 | 39.81221  | 113.69528 | 242.22806 | 4.50251  | 0.0589513 | 2.6781812 | 20 | 1 | 35 days   | 0.47 |     |   | MPC | 2007 TL <sub>330</sub>        |
| 2007 TM <sub>330</sub> | 16.9 | 0.15 | 20071027 | 305.57534 | 243.24484 | 226.62049 | 14.09161 | 0.1484995 | 2.6140245 | 28 | 1 | 56 days   | 0.37 |     |   | MPC | 2007 TM <sub>330</sub>        |
| 2007 TP <sub>330</sub> | 17.3 | 0.15 | 20071027 | 22.29678  | 347.42731 | 22.55086  | 9.55558  | 0.1491321 | 2.5721696 | 15 | 1 | 38 days   | 0.29 |     |   | MPC | 2007 TP <sub>330</sub>        |
| 2007 TR <sub>330</sub> | 15.6 | 0.15 | 20071027 | 335.64214 | 227.77217 | 229.66924 | 11.36309 | 0.4015093 | 3.6356747 | 80 | 2 | 2000–2007 | 0.51 | M-v | 3 | MPC | 128518 2007 TR <sub>330</sub> |
| 2007 TS <sub>330</sub> | 17.8 | 0.15 | 20071027 | 33.46741  | 344.91736 | 10.09448  | 4.71323  | 0.1461964 | 2.2568949 | 31 | 1 | 42 days   | 0.39 |     |   | MPC | 2007 TS <sub>330</sub>        |
| 2007 TX <sub>330</sub> | 17.4 | 0.15 | 20071027 | 327.35558 | 219.77987 | 237.15441 | 6.51180  | 0.2734184 | 2.6467997 | 36 | 1 | 38 days   | 0.53 |     |   | MPC | 2007 TX <sub>330</sub>        |
| 2007 TY <sub>330</sub> | 17.9 | 0.15 | 20071027 | 344.93686 | 149.92732 | 272.81149 | 3.35866  | 0.1621407 | 2.5872409 | 20 | 1 | 34 days   | 0.31 |     |   | MPC | 2007 TY <sub>330</sub>        |
| 2007 TZ <sub>330</sub> | 17.3 | 0.15 | 20071027 | 8.13866   | 121.06743 | 264.47242 | 2.91810  | 0.2847920 | 2.5854792 | 43 | 1 | 39 days   | 0.32 |     |   | MPC | 2007 TZ <sub>330</sub>        |
| 2007 TE <sub>331</sub> | 17.2 | 0.15 | 20071027 | 341.25004 | 186.13838 | 240.32837 | 4.42706  | 0.1464676 | 2.3325292 | 55 | 1 | 38 days   | 0.48 |     |   | MPC | 2007 TE <sub>331</sub>        |
| 2007 TF <sub>331</sub> | 18.2 | 0.15 | 20071027 | 19.65955  | 337.18133 | 27.40174  | 14.88220 | 0.2964578 | 2.6327417 | 27 | 1 | 65 days   | 0.18 | M-v | 3 | MPC | 2007 TF <sub>331</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 TG <sub>331</sub> | 16.5 | 0.15 | 20071027 | 264.61260 | 286.12226 | 234.84021 | 11.57936 | 0.2053545 | 2.6430345 | 24 | 1 | 38 days   | 0.27 |       | MPC | 2007 TG <sub>331</sub>        |
| 2007 TJ <sub>331</sub> | 16.9 | 0.15 | 20071027 | 71.95660  | 43.67788  | 269.56401 | 4.06815  | 0.1568080 | 2.6666033 | 19 | 1 | 34 days   | 0.43 |       | MPC | 2007 TJ <sub>331</sub>        |
| 2007 TK <sub>331</sub> | 17.6 | 0.15 | 20071007 | 350.46594 | 80.21018  | 328.32413 | 2.92185  | 0.1570724 | 2.5223175 | 16 | 1 | 26 days   | 0.25 |       | MPC | 2007 TK <sub>331</sub>        |
| 2007 TL <sub>331</sub> | 16.8 | 0.15 | 20071027 | 34.60539  | 354.06280 | 8.02052   | 4.49763  | 0.0845557 | 2.5797729 | 40 | 4 | 2001–2007 | 0.33 | M-v 2 | MPC | 128518 2007 TL <sub>331</sub> |
| 2007 TO <sub>331</sub> | 17.3 | 0.15 | 20071027 | 35.62778  | 41.22297  | 308.08926 | 2.35654  | 0.2035470 | 2.4402057 | 24 | 1 | 34 days   | 0.45 |       | MPC | 2007 TO <sub>331</sub>        |
| 2007 TQ <sub>331</sub> | 14.7 | 0.15 | 20071027 | 27.25432  | 97.64306  | 263.51705 | 3.89077  | 0.2364436 | 3.9769317 | 57 | 5 | 1999–2007 | 0.46 | M-v 0 | MPC | 128519 2007 TQ <sub>331</sub> |
| 2007 TV <sub>331</sub> | 17.8 | 0.15 | 20071007 | 8.88187   | 150.65950 | 226.68819 | 10.02761 | 0.2501389 | 2.3969190 | 54 | 1 | 52 days   | 0.54 |       | MPC | 2007 TV <sub>331</sub>        |
| 2007 TX <sub>331</sub> | 16.0 | 0.15 | 20071027 | 25.91900  | 125.11952 | 252.16603 | 3.96485  | 0.0218885 | 2.6958603 | 45 | 4 | 1998–2007 | 0.52 | M-v 1 | MPC | 128519 2007 TX <sub>331</sub> |
| 2007 TA <sub>332</sub> | 18.3 | 0.15 | 20071027 | 1.95689   | 10.69796  | 28.15698  | 13.51925 | 0.2873318 | 2.6440477 | 28 | 1 | 40 days   | 0.31 |       | MPC | 2007 TA <sub>332</sub>        |
| 2007 TC <sub>332</sub> | 19.3 | 0.15 | 20071027 | 340.05326 | 167.23982 | 259.48378 | 1.94709  | 0.1472946 | 2.1694039 | 17 | 1 | 38 days   | 0.39 |       | MPC | 2007 TC <sub>332</sub>        |
| 2007 TF <sub>332</sub> | 16.9 | 0.15 | 20071027 | 344.65124 | 143.93176 | 277.81399 | 1.92988  | 0.1390580 | 2.5781778 | 28 | 1 | 38 days   | 0.32 |       | MPC | 2007 TF <sub>332</sub>        |
| 2007 TG <sub>332</sub> | 18.7 | 0.15 | 20071007 | 355.20326 | 34.27804  | 4.76159   | 2.78276  | 0.1602186 | 2.2663869 | 20 | 1 | 27 days   | 0.37 |       | MPC | 2007 TG <sub>332</sub>        |
| 2007 TH <sub>332</sub> | 17.6 | 0.15 | 20071007 | 357.31679 | 28.09231  | 11.51539  | 3.63630  | 0.0680253 | 2.5932597 | 16 | 1 | 24 days   | 0.44 |       | MPC | 2007 TH <sub>332</sub>        |
| 2007 TL <sub>332</sub> | 18.5 | 0.15 | 20071027 | 12.72142  | 33.65962  | 347.43541 | 1.85996  | 0.2021199 | 2.2935593 | 26 | 1 | 34 days   | 0.36 |       | MPC | 2007 TL <sub>332</sub>        |
| 2007 TO <sub>332</sub> | 16.8 | 0.15 | 20071027 | 72.85257  | 81.99338  | 243.81169 | 4.18415  | 0.0397078 | 2.7769490 | 25 | 1 | 38 days   | 0.26 |       | MPC | 2007 TO <sub>332</sub>        |
| 2007 TP <sub>332</sub> | 15.8 | 0.15 | 20071027 | 16.95148  | 127.31343 | 241.61237 | 3.25674  | 0.3283003 | 3.9220600 | 51 | 4 | 1991–2007 | 0.40 | M-v 2 | MPC | 128519 2007 TP <sub>332</sub> |
| 2007 TS <sub>332</sub> | 16.1 | 0.15 | 20071027 | 48.70181  | 101.45024 | 227.65426 | 14.48090 | 0.2431017 | 3.0925679 | 49 | 2 | 2001–2007 | 0.45 | M-v 3 | MPC | 128519 2007 TS <sub>332</sub> |
| 2007 TX <sub>332</sub> | 17.7 | 0.15 | 20071027 | 13.52826  | 15.69364  | 2.00678   | 2.31501  | 0.2599365 | 2.5434314 | 38 | 1 | 39 days   | 0.58 |       | MPC | 2007 TX <sub>332</sub>        |
| 2007 TY <sub>332</sub> | 17.6 | 0.15 | 20071027 | 290.85102 | 236.68301 | 249.55069 | 2.49249  | 0.1321129 | 2.3041234 | 21 | 1 | 38 days   | 0.32 |       | MPC | 2007 TY <sub>332</sub>        |
| 2007 TZ <sub>332</sub> | 18.6 | 0.15 | 20071007 | 22.21755  | 339.00082 | 28.07393  | 7.43982  | 0.1113865 | 2.2996892 | 20 | 1 | 24 days   | 0.41 |       | MPC | 2007 TZ <sub>332</sub>        |
| 2007 TB <sub>333</sub> | 17.6 | 0.15 | 20071027 | 16.82853  | 66.44521  | 309.26632 | 1.28729  | 0.2072987 | 2.3448950 | 42 | 1 | 39 days   | 0.42 |       | MPC | 2007 TB <sub>333</sub>        |
| 2007 TG <sub>333</sub> | 17.8 | 0.15 | 20071027 | 20.07275  | 345.82868 | 24.62469  | 4.14801  | 0.2330529 | 2.6313624 | 23 | 1 | 39 days   | 0.29 |       | MPC | 2007 TG <sub>333</sub>        |
| 2007 TM <sub>333</sub> | 17.4 | 0.15 | 20071027 | 340.95470 | 54.22331  | 21.10328  | 4.07603  | 0.2489408 | 2.5901485 | 42 | 1 | 92 days   | 0.56 | M-v 4 | MPC | 2007 TM <sub>333</sub>        |
| 2007 TO <sub>333</sub> | 16.9 | 0.15 | 20071027 | 10.08599  | 59.41897  | 328.21668 | 0.80434  | 0.1886947 | 2.3639124 | 81 | 7 | 1978–2007 | 0.46 | M-v 1 | MPC | 128520 2007 TO <sub>333</sub> |
| 2007 TP <sub>333</sub> | 17.1 | 0.15 | 20071027 | 4.21034   | 174.58203 | 224.41813 | 10.20911 | 0.1454947 | 2.8787070 | 26 | 1 | 55 days   | 0.32 |       | MPC | 2007 TP <sub>333</sub>        |
| 2007 TQ <sub>333</sub> | 17.4 | 0.15 | 20071027 | 318.45817 | 72.17976  | 28.28459  | 3.55299  | 0.1641807 | 2.6140621 | 20 | 1 | 39 days   | 0.29 |       | MPC | 2007 TQ <sub>333</sub>        |
| 2007 TR <sub>333</sub> | 17.4 | 0.15 | 20071027 | 15.75299  | 348.74241 | 32.75775  | 5.73012  | 0.1806873 | 2.8114865 | 27 | 1 | 70 days   | 0.36 | M-v 4 | MPC | 2007 TR <sub>333</sub>        |
| 2007 TS <sub>333</sub> | 17.2 | 0.15 | 20071027 | 359.57710 | 168.32445 | 236.53199 | 4.75465  | 0.1440422 | 2.6524417 | 33 | 1 | 40 days   | 0.53 |       | MPC | 2007 TS <sub>333</sub>        |
| 2007 TA <sub>334</sub> | 18.3 | 0.15 | 20071027 | 6.35334   | 8.80355   | 24.68769  | 8.25754  | 0.1952573 | 2.3239146 | 36 | 1 | 56 days   | 0.49 |       | MPC | 2007 TA <sub>334</sub>        |
| 2007 TB <sub>334</sub> | 16.9 | 0.15 | 20071027 | 345.46895 | 156.71413 | 266.05435 | 2.68956  | 0.0861775 | 2.7596952 | 22 | 1 | 39 days   | 0.29 |       | MPC | 2007 TB <sub>334</sub>        |
| 2007 TC <sub>334</sub> | 18.2 | 0.15 | 20071027 | 331.47932 | 201.81957 | 243.92498 | 4.40028  | 0.1940072 | 2.4013648 | 31 | 1 | 56 days   | 0.28 |       | MPC | 2007 TC <sub>334</sub>        |
| 2007 TD <sub>334</sub> | 18.6 | 0.15 | 20071027 | 5.62335   | 158.99768 | 236.84500 | 5.82957  | 0.1592311 | 2.3279855 | 24 | 1 | 40 days   | 0.30 |       | MPC | 2007 TD <sub>334</sub>        |
| 2007 TE <sub>334</sub> | 16.1 | 0.15 | 20071027 | 292.40710 | 249.55659 | 234.29745 | 11.88570 | 0.0887534 | 2.8485800 | 40 | 1 | 55 days   | 0.32 |       | MPC | 2007 TE <sub>334</sub>        |
| 2007 TG <sub>334</sub> | 17.3 | 0.15 | 20071027 | 103.69752 | 54.79459  | 237.65147 | 5.73926  | 0.0971631 | 2.5818013 | 17 | 1 | 40 days   | 0.26 |       | MPC | 2007 TG <sub>334</sub>        |
| 2007 TK <sub>334</sub> | 16.8 | 0.15 | 20071027 | 236.82486 | 307.09662 | 229.18308 | 14.12257 | 0.0729754 | 2.4233106 | 47 | 4 | 1992–2007 | 0.54 | M-v 1 | MPC | 128520 2007 TK <sub>334</sub> |
| 2007 TN <sub>334</sub> | 16.6 | 0.15 | 20071007 | 52.27728  | 283.75191 | 38.17647  | 15.60684 | 0.2723042 | 3.0674147 | 19 | 1 | 56 days   | 0.16 |       | MPC | 2007 TN <sub>334</sub>        |
| 2007 TS <sub>334</sub> | 16.4 | 0.15 | 20071027 | 56.02640  | 305.10963 | 34.44174  | 7.57685  | 0.1243966 | 2.7245490 | 36 | 3 | 2002–2007 | 0.47 | M-v 3 | MPC | 128520 2007 TS <sub>334</sub> |
| 2007 TW <sub>334</sub> | 16.6 | 0.15 | 20071027 | 319.99100 | 224.76854 | 225.44989 | 21.19733 | 0.0472234 | 2.6556306 | 34 | 1 | 38 days   | 0.30 |       | MPC | 2007 TW <sub>334</sub>        |
| 2007 TX <sub>334</sub> | 16.5 | 0.15 | 20071027 | 297.59338 | 81.43753  | 39.65383  | 8.52118  | 0.0967070 | 3.0509407 | 16 | 1 | 55 days   | 0.26 |       | MPC | 2007 TX <sub>334</sub>        |
| 2007 TD <sub>335</sub> | 15.9 | 0.15 | 20071027 | 23.27770  | 335.66661 | 45.02968  | 9.77123  | 0.0964114 | 3.1341178 | 32 | 1 | 86 days   | 0.36 | M-v 4 | MPC | 2007 TD <sub>335</sub>        |
| 2007 TE <sub>335</sub> | 17.8 | 0.15 | 20071027 | 340.02702 | 189.88779 | 244.44498 | 0.64429  | 0.1703799 | 2.4594441 | 64 | 6 | 1995–2007 | 0.40 | M-v 0 | MPC | 128521 2007 TE <sub>335</sub> |
| 2007 TJ <sub>335</sub> | 16.7 | 0.15 | 20071027 | 352.89898 | 25.94997  | 32.38301  | 2.21732  | 0.1566167 | 3.0478582 | 30 | 1 | 78 days   | 0.44 | M-v 3 | MPC | 2007 TJ <sub>335</sub>        |
| 2007 TM <sub>335</sub> | 18.5 | 0.15 | 20071027 | 24.76500  | 328.07059 | 36.30607  | 8.00392  | 0.2343821 | 2.1946137 | 36 | 1 | 65 days   | 0.40 | M-v 4 | MPC | 2007 TM <sub>335</sub>        |
| 2007 TN <sub>335</sub> | 17.0 | 0.15 | 20071027 | 40.72071  | 328.70721 | 30.79427  | 2.83314  | 0.1007145 | 2.7680600 | 20 | 1 | 55 days   | 0.28 |       | MPC | 2007 TN <sub>335</sub>        |
| 2007 TP <sub>335</sub> | 18.6 | 0.15 | 20071027 | 354.04910 | 20.62245  | 33.37629  | 5.12116  | 0.1770363 | 2.2175273 | 37 | 1 | 94 days   | 0.42 | M-v 3 | MPC | 2007 TP <sub>335</sub>        |
| 2007 TQ <sub>335</sub> | 16.6 | 0.15 | 20071027 | 65.75152  | 85.55812  | 225.86406 | 11.19101 | 0.2713843 | 2.6626405 | 32 | 1 | 40 days   | 0.35 |       | MPC | 2007 TQ <sub>335</sub>        |
| 2007 TD <sub>338</sub> | 16.6 | 0.15 | 20071027 | 354.39986 | 310.55989 | 94.51766  | 5.32457  | 0.1510854 | 2.3335422 | 43 | 3 | 2000–2007 | 0.56 | M-v 3 | MPC | 128521 2007 TD <sub>338</sub> |
| 2007 TH <sub>338</sub> | 18.0 | 0.15 | 20071027 | 24.59452  | 264.56726 | 97.35968  | 5.69639  | 0.2006000 | 2.2677674 | 17 | 1 | 36 days   | 0.69 |       | MPC | 2007 TH <sub>338</sub>        |
| 2007 TP <sub>338</sub> | 18.5 | 0.15 | 20071007 | 330.92080 | 274.12988 | 161.45697 | 1.65525  | 0.1666140 | 2.4370523 | 23 | 1 | 26 days   | 0.37 |       | MPC | 2007 TP <sub>338</sub>        |
| 2007 TA <sub>339</sub> | 16.6 | 0.15 | 20071027 | 27.17627  | 31.95949  | 340.18437 | 1.33091  | 0.0817582 | 2.8681638 | 31 | 1 | 34 days   | 0.41 |       | MPC | 2007 TA <sub>339</sub>        |
| 2007 TD <sub>339</sub> | 17.0 | 0.15 | 20071027 | 13.71514  | 348.04757 | 38.67101  | 0.93691  | 0.2088761 | 2.9174921 | 44 | 1 | 79 days   | 0.36 | M-v 4 | MPC | 2007 TD <sub>339</sub>        |
| 2007 TP <sub>343</sub> | 16.0 | 0.15 | 20071027 | 25.77975  | 259.38623 | 104.71684 | 4.60506  | 0.1075362 | 2.8084153 | 25 | 1 | 33 days   | 0.47 |       | MPC | 2007 TP <sub>343</sub>        |
| 2007 TJ <sub>346</sub> | 17.9 | 0.15 | 20071027 | 342.23316 | 4.16925   | 41.08081  | 7.95691  | 0.0918408 | 2.2480643 | 28 | 2 | 2006–2007 | 0.30 | M-v 3 | MPC | 128521 2007 TJ <sub>346</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-----|-------------------------------|
| 2007 TO <sub>346</sub> | 16.7 | 0.15 | 20071027 | 353.50793 | 214.38176 | 202.17339 | 17.49756 | 0.2634736 | 2.9794773 | 18 | 1 | 60 days   | 0.41 | M-v | 4   | MPC | 2007 TO <sub>346</sub>        |
| 2007 TV <sub>346</sub> | 16.2 | 0.15 | 20071027 | 34.63803  | 304.66995 | 53.05380  | 19.00687 | 0.0847627 | 3.0849753 | 24 | 1 | 32 days   | 0.25 |     |     | MPC | 2007 TV <sub>346</sub>        |
| 2007 TB <sub>347</sub> | 17.2 | 0.15 | 20071027 | 45.03275  | 201.65366 | 136.54303 | 5.71075  | 0.1807309 | 2.2149473 | 26 | 1 | 36 days   | 0.53 |     |     | MPC | 2007 TB <sub>347</sub>        |
| 2007 TD <sub>353</sub> | 17.5 | 0.15 | 20071027 | 35.84924  | 313.61263 | 25.63128  | 6.22693  | 0.1358816 | 2.3573438 | 46 | 3 | 2002–2007 | 0.36 | M-v | 2   | MPC | 128521 2007 TD <sub>353</sub> |
| 2007 TM <sub>353</sub> | 17.1 | 0.15 | 20071027 | 89.07602  | 251.87038 | 35.97037  | 7.06605  | 0.0863714 | 2.3884899 | 42 | 2 | 2006–2007 | 0.42 | M-v | 3   | MPC | 128522 2007 TM <sub>353</sub> |
| 2007 TW <sub>353</sub> | 16.3 | 0.15 | 20071027 | 355.91791 | 246.36132 | 162.72129 | 6.78229  | 0.1008102 | 2.5729317 | 33 | 1 | 58 days   | 0.47 |     |     | MPC | 2007 TW <sub>353</sub>        |
| 2007 TY <sub>353</sub> | 16.9 | 0.15 | 20071027 | 8.90997   | 341.93516 | 37.85758  | 5.09137  | 0.1740728 | 2.6865738 | 26 | 1 | 39 days   | 0.35 |     |     | MPC | 2007 TY <sub>353</sub>        |
| 2007 TA <sub>354</sub> | 16.4 | 0.15 | 20071007 | 348.93127 | 264.37265 | 133.15039 | 8.86457  | 0.2502355 | 3.1924507 | 24 | 1 | 51 days   | 0.66 |     |     | MPC | 2007 TA <sub>354</sub>        |
| 2007 TQ <sub>354</sub> | 17.1 | 0.15 | 20071027 | 26.44555  | 330.21200 | 38.22974  | 7.21444  | 0.1261202 | 2.3487417 | 54 | 1 | 81 days   | 0.44 | M-v | 4   | MPC | 2007 TQ <sub>354</sub>        |
| 2007 TR <sub>354</sub> | 15.3 | 0.15 | 20071027 | 40.43698  | 136.75072 | 221.79044 | 8.72873  | 0.0813550 | 3.1309550 | 84 | 5 | 2001–2007 | 0.55 | M-v | 1   | MPC | 128523 2007 TR <sub>354</sub> |
| 2007 TZ <sub>354</sub> | 18.3 | 0.15 | 20071007 | 25.38780  | 325.68440 | 15.14862  | 6.27282  | 0.2177791 | 2.2052551 | 35 | 1 | 55 days   | 0.41 |     |     | MPC | 2007 TZ <sub>354</sub>        |
| 2007 TE <sub>355</sub> | 16.8 | 0.15 | 20071027 | 12.83460  | 300.78588 | 62.40416  | 14.12822 | 0.2763234 | 2.7305990 | 20 | 1 | 37 days   | 0.59 |     |     | MPC | 2007 TE <sub>355</sub>        |
| 2007 TG <sub>355</sub> | 16.5 | 0.15 | 20071027 | 17.90956  | 226.88367 | 128.36223 | 9.39104  | 0.2968351 | 2.7391832 | 24 | 1 | 60 days   | 0.56 | M-v | 4   | MPC | 2007 TG <sub>355</sub>        |
| 2007 TS <sub>355</sub> | 17.0 | 0.15 | 20071027 | 24.25668  | 193.70546 | 159.38655 | 13.47484 | 0.2647164 | 2.3248974 | 26 | 1 | 38 days   | 0.49 |     |     | MPC | 2007 TS <sub>355</sub>        |
| 2007 TT <sub>355</sub> | 16.3 | 0.15 | 20071027 | 334.06517 | 283.04341 | 143.31096 | 15.61816 | 0.0568433 | 2.6175907 | 20 | 1 | 38 days   | 0.79 |     |     | MPC | 2007 TT <sub>355</sub>        |
| 2007 TW <sub>355</sub> | 16.1 | 0.15 | 20071027 | 345.90424 | 299.22740 | 119.03103 | 13.77762 | 0.2519576 | 2.6333810 | 27 | 1 | 67 days   | 0.42 | M-v | 4   | MPC | 129008 2007 TW <sub>355</sub> |
| 2007 TH <sub>356</sub> | 17.1 | 0.15 | 20070917 | 53.84172  | 262.89040 | 6.33655   | 23.88845 | 0.3201781 | 2.5651583 | 26 | 1 | 45 days   | 0.79 |     |     | MPC | 2007 TH <sub>356</sub>        |
| 2007 TD <sub>357</sub> | 18.0 | 0.15 | 20071027 | 18.88272  | 324.33547 | 40.87981  | 2.87351  | 0.2205691 | 2.4046478 | 34 | 1 | 71 days   | 0.63 | M-v | 5   | MPC | 2007 TD <sub>357</sub>        |
| 2007 TE <sub>357</sub> | 16.8 | 0.15 | 20071007 | 10.57584  | 333.57007 | 40.05153  | 6.94779  | 0.1519490 | 2.3866453 | 55 | 1 | 40 days   | 0.49 |     | D   | MPC | 2007 TE <sub>357</sub>        |
| 2007 TP <sub>357</sub> | 16.4 | 0.15 | 20071007 | 26.57115  | 126.89103 | 230.73132 | 4.12389  | 0.0933754 | 2.7146770 | 17 | 1 | 16 days   | 0.38 |     |     | MPC | 2007 TP <sub>357</sub>        |
| 2007 TQ <sub>357</sub> | 16.6 | 0.15 | 20071027 | 324.26583 | 159.55074 | 287.78906 | 0.91449  | 0.1995859 | 2.7898346 | 29 | 1 | 36 days   | 0.50 |     |     | MPC | 2007 TQ <sub>357</sub>        |
| 2007 TW <sub>358</sub> | 18.0 | 0.15 | 20071027 | 10.93576  | 329.69357 | 42.52688  | 5.76057  | 0.3203703 | 2.5893845 | 44 | 1 | 35 days   | 0.48 |     |     | MPC | 2007 TW <sub>358</sub>        |
| 2007 TY <sub>358</sub> | 16.3 | 0.15 | 20071027 | 284.06681 | 80.04090  | 46.91771  | 8.70701  | 0.1344343 | 2.6057738 | 55 | 3 | 2003–2007 | 0.43 | M-v | 2   | MPC | 128523 2007 TY <sub>358</sub> |
| 2007 TE <sub>359</sub> | 17.2 | 0.15 | 20071007 | 314.20089 | 49.76953  | 27.17990  | 9.74308  | 0.1264371 | 2.4080698 | 19 | 1 | 10 days   | 0.44 |     | D   | MPC | 2007 TE <sub>359</sub>        |
| 2007 TF <sub>359</sub> | 16.7 | 0.15 | 20071027 | 314.55370 | 257.20857 | 195.07316 | 8.77263  | 0.2151575 | 2.7622200 | 42 | 1 | 60 days   | 0.49 | M-v | 4 D | MPC | 2007 TF <sub>359</sub>        |
| 2007 TU <sub>359</sub> | 17.5 | 0.15 | 20071007 | 41.07625  | 296.33568 | 35.54545  | 7.33073  | 0.1754676 | 2.2452134 | 29 | 1 | 30 days   | 0.51 |     |     | MPC | 2007 TU <sub>359</sub>        |
| 2007 TM <sub>360</sub> | 16.4 | 0.15 | 20071027 | 102.72376 | 99.74591  | 203.61722 | 14.20467 | 0.0534922 | 2.6805509 | 41 | 3 | 1998–2007 | 0.42 | M-v | 3   | MPC | 128524 2007 TM <sub>360</sub> |
| 2007 TQ <sub>360</sub> | 17.6 | 0.15 | 20071027 | 3.03775   | 269.34830 | 132.51779 | 4.70105  | 0.2773908 | 2.5893056 | 23 | 1 | 52 days   | 0.41 |     |     | MPC | 2007 TQ <sub>360</sub>        |
| 2007 TY <sub>360</sub> | 16.9 | 0.15 | 20071027 | 47.78762  | 165.96908 | 184.75807 | 9.60914  | 0.1433400 | 2.5990949 | 16 | 1 | 36 days   | 0.26 |     |     | MPC | 2007 TY <sub>360</sub>        |
| 2007 TZ <sub>360</sub> | 15.9 | 0.15 | 20071027 | 55.41450  | 247.98418 | 80.59223  | 14.86001 | 0.2658630 | 3.1971031 | 32 | 1 | 38 days   | 0.28 |     |     | MPC | 2007 TZ <sub>360</sub>        |
| 2007 TA <sub>361</sub> | 15.4 | 0.15 | 20071027 | 320.92318 | 286.26988 | 186.44992 | 9.90010  | 0.2235921 | 2.9393044 | 33 | 1 | 52 days   | 0.34 |     |     | MPC | 2007 TA <sub>361</sub>        |
| 2007 TB <sub>361</sub> | 17.8 | 0.15 | 20071027 | 359.33019 | 280.01587 | 129.68986 | 5.35155  | 0.2218437 | 2.3273770 | 31 | 1 | 45 days   | 0.45 |     |     | MPC | 2007 TB <sub>361</sub>        |
| 2007 TG <sub>361</sub> | 16.1 | 0.15 | 20071027 | 49.70319  | 289.87419 | 51.49754  | 11.34078 | 0.2036653 | 2.6031383 | 42 | 1 | 57 days   | 0.45 |     |     | MPC | 2007 TG <sub>361</sub>        |
| 2007 TK <sub>361</sub> | 16.3 | 0.15 | 20071027 | 48.70846  | 284.20702 | 54.94944  | 15.70273 | 0.2468152 | 3.0815215 | 20 | 1 | 35 days   | 0.26 |     |     | MPC | 2007 TK <sub>361</sub>        |
| 2007 TN <sub>361</sub> | 17.4 | 0.15 | 20071027 | 358.39945 | 1.00464   | 53.01115  | 8.48898  | 0.1001817 | 2.5627384 | 17 | 1 | 35 days   | 0.36 |     |     | MPC | 2007 TN <sub>361</sub>        |
| 2007 TO <sub>361</sub> | 17.2 | 0.15 | 20071027 | 22.75747  | 327.81314 | 49.81825  | 16.46505 | 0.1873194 | 2.5320384 | 17 | 1 | 35 days   | 0.41 |     |     | MPC | 2007 TO <sub>361</sub>        |
| 2007 TP <sub>361</sub> | 16.6 | 0.15 | 20071027 | 49.78457  | 282.87113 | 52.22378  | 18.75301 | 0.2575837 | 2.6992953 | 22 | 1 | 60 days   | 0.42 | M-v | 4   | MPC | 2007 TP <sub>361</sub>        |
| 2007 TQ <sub>361</sub> | 17.4 | 0.15 | 20071027 | 45.44451  | 122.24964 | 225.21944 | 10.58312 | 0.2010279 | 2.6473796 | 15 | 1 | 37 days   | 0.29 |     |     | MPC | 2007 TQ <sub>361</sub>        |
| 2007 TS <sub>361</sub> | 17.0 | 0.15 | 20071027 | 5.87747   | 348.84348 | 50.33860  | 6.25699  | 0.2731798 | 2.6165240 | 39 | 1 | 87 days   | 0.40 | M-v | 4   | MPC | 2007 TS <sub>361</sub>        |
| 2007 TV <sub>361</sub> | 16.0 | 0.15 | 20071027 | 31.95195  | 316.75920 | 58.31640  | 7.14938  | 0.1149815 | 3.1570031 | 21 | 1 | 60 days   | 0.24 | M-v | 5   | MPC | 2007 TV <sub>361</sub>        |
| 2007 TX <sub>361</sub> | 16.2 | 0.15 | 20071027 | 105.34734 | 242.34683 | 55.89372  | 10.75695 | 0.0985736 | 2.6121753 | 20 | 1 | 35 days   | 0.18 |     |     | MPC | 2007 TX <sub>361</sub>        |
| 2007 TD <sub>362</sub> | 15.9 | 0.15 | 20071027 | 54.91812  | 285.68483 | 68.20808  | 3.05944  | 0.0667828 | 3.0093584 | 35 | 1 | 81 days   | 0.39 | M-v | 5   | MPC | 2007 TD <sub>362</sub>        |
| 2007 TM <sub>362</sub> | 16.3 | 0.15 | 20071027 | 349.91620 | 8.99312   | 58.61792  | 9.88064  | 0.0998760 | 3.0522489 | 21 | 1 | 50 days   | 0.37 |     |     | MPC | 2007 TM <sub>362</sub>        |
| 2007 TP <sub>362</sub> | 17.2 | 0.15 | 20071027 | 51.78589  | 289.37625 | 57.24673  | 7.31398  | 0.1415304 | 2.3943789 | 49 | 2 | 2006–2007 | 0.34 | M-v | 3   | MPC | 128524 2007 TP <sub>362</sub> |
| 2007 TQ <sub>362</sub> | 16.8 | 0.15 | 20071027 | 349.27920 | 12.42686  | 57.19456  | 8.87690  | 0.2105158 | 2.7764207 | 37 | 1 | 57 days   | 0.46 |     |     | MPC | 2007 TQ <sub>362</sub>        |
| 2007 TT <sub>362</sub> | 16.7 | 0.15 | 20071027 | 241.02502 | 117.00664 | 62.15405  | 7.75607  | 0.0600210 | 2.3968064 | 33 | 2 | 2005–2007 | 0.57 | M-v | 4   | MPC | 128524 2007 TT <sub>362</sub> |
| 2007 TV <sub>362</sub> | 17.0 | 0.15 | 20071027 | 356.51924 | 359.60069 | 58.68182  | 9.66885  | 0.1210080 | 2.6004303 | 17 | 1 | 35 days   | 0.18 |     |     | MPC | 2007 TV <sub>362</sub>        |
| 2007 TW <sub>362</sub> | 17.8 | 0.15 | 20071027 | 355.41250 | 220.14216 | 198.06463 | 2.06407  | 0.1663438 | 2.3294524 | 44 | 2 | 2005–2007 | 0.36 | M-v | 3   | MPC | 128525 2007 TW <sub>362</sub> |
| 2007 TX <sub>362</sub> | 18.6 | 0.15 | 20071027 | 11.75759  | 249.92561 | 133.92652 | 1.22516  | 0.3551040 | 2.6218632 | 16 | 1 | 38 days   | 0.45 |     |     | MPC | 2007 TX <sub>362</sub>        |
| 2007 TY <sub>362</sub> | 15.8 | 0.15 | 20071027 | 313.70209 | 246.70019 | 227.27488 | 9.63142  | 0.1166476 | 3.0311027 | 29 | 1 | 90 days   | 0.24 | M-v | 4   | MPC | 2007 TY <sub>362</sub>        |
| 2007 TZ <sub>362</sub> | 17.6 | 0.15 | 20071027 | 311.77503 | 48.65856  | 59.98254  | 6.15778  | 0.0811576 | 2.2230435 | 27 | 1 | 50 days   | 0.40 |     |     | MPC | 2007 TZ <sub>362</sub>        |
| 2007 TB <sub>363</sub> | 16.1 | 0.15 | 20071027 | 46.28531  | 293.22552 | 57.63073  | 12.91823 | 0.1796738 | 2.6399536 | 20 | 1 | 32 days   | 0.46 |     |     | MPC | 2007 TB <sub>363</sub>        |
| 2007 TG <sub>363</sub> | 17.1 | 0.15 | 20071027 | 38.97789  | 300.79809 | 57.46532  | 6.86222  | 0.1713711 | 2.1863146 | 64 | 3 | 2004–2007 | 0.42 | M-v | 2   | MPC | 128525 2007 TG <sub>363</sub> |



|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |         |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|---------|-----|-------------------------------|
| 2007 TK <sub>363</sub> | 15.1 | 0.15 | 20071027 | 99.45892  | 244.13197 | 67.13693  | 8.59889  | 0.0803067 | 3.2477346 | 18 | 1 | 52 days   | 0.38 |         | MPC | 2007 TK <sub>363</sub>        |
| 2007 TL <sub>363</sub> | 17.5 | 0.15 | 20071027 | 4.52259   | 334.78558 | 69.71996  | 3.51475  | 0.2187323 | 2.3429414 | 54 | 1 | 53 days   | 0.31 |         | MPC | 2007 TL <sub>363</sub>        |
| 2007 TM <sub>363</sub> | 16.1 | 0.15 | 20071027 | 353.41608 | 6.13823   | 60.25072  | 18.43190 | 0.1244952 | 3.1900659 | 21 | 1 | 35 days   | 0.39 |         | MPC | 2007 TM <sub>363</sub>        |
| 2007 TS <sub>363</sub> | 15.5 | 0.15 | 20071027 | 78.41328  | 271.20399 | 61.90632  | 12.61519 | 0.0781126 | 3.1029104 | 34 | 3 | 1996–2007 | 0.30 | M-v 1   | MPC | 128525 2007 TS <sub>363</sub> |
| 2007 TT <sub>363</sub> | 17.0 | 0.15 | 20071027 | 7.93698   | 343.08602 | 59.87079  | 5.02979  | 0.2093236 | 2.6161584 | 47 | 1 | 90 days   | 0.45 | M-v 4   | MPC | 2007 TT <sub>363</sub>        |
| 2007 TV <sub>363</sub> | 18.2 | 0.15 | 20071027 | 359.55197 | 198.24867 | 216.72646 | 1.90969  | 0.1853496 | 2.4618416 | 20 | 1 | 52 days   | 0.26 |         | MPC | 2007 TV <sub>363</sub>        |
| 2007 TW <sub>363</sub> | 16.0 | 0.15 | 20071027 | 276.23769 | 283.88040 | 231.53613 | 6.31512  | 0.0959361 | 3.1812942 | 20 | 1 | 35 days   | 0.23 |         | MPC | 2007 TW <sub>363</sub>        |
| 2007 TY <sub>363</sub> | 18.3 | 0.15 | 20071027 | 22.35992  | 161.74686 | 220.92865 | 6.49974  | 0.1589269 | 2.2433940 | 18 | 1 | 37 days   | 0.20 |         | MPC | 2007 TY <sub>363</sub>        |
| 2007 TP <sub>364</sub> | 16.6 | 0.15 | 20071007 | 16.01727  | 329.51604 | 34.86934  | 12.56578 | 0.1888657 | 2.6743942 | 37 | 1 | 40 days   | 0.53 |         | MPC | 2007 TP <sub>364</sub>        |
| 2007 TU <sub>364</sub> | 16.3 | 0.15 | 20071027 | 351.61605 | 19.24976  | 51.10112  | 10.06384 | 0.2566113 | 2.7507927 | 42 | 1 | 59 days   | 0.40 |         | MPC | 2007 TU <sub>364</sub>        |
| 2007 TD <sub>366</sub> | 15.6 | 0.15 | 20071027 | 351.31179 | 134.77764 | 260.86404 | 21.21048 | 0.0912769 | 2.5989718 | 29 | 3 | 2000–2007 | 0.63 | M-v 4   | MPC | 128525 2007 TD <sub>366</sub> |
| 2007 TJ <sub>366</sub> | 17.4 | 0.15 | 20071027 | 15.58873  | 58.15838  | 319.96634 | 4.95068  | 0.1932458 | 2.6071093 | 28 | 1 | 40 days   | 0.52 |         | MPC | 2007 TJ <sub>366</sub>        |
| 2007 TL <sub>366</sub> | 15.7 | 0.15 | 20071027 | 319.08200 | 161.46796 | 284.75787 | 5.30839  | 0.0473352 | 3.1722480 | 32 | 1 | 41 days   | 0.32 |         | MPC | 2007 TL <sub>366</sub>        |
| 2007 TP <sub>366</sub> | 17.3 | 0.15 | 20071007 | 357.28171 | 91.99820  | 304.67561 | 3.24541  | 0.1608318 | 2.3994286 | 45 | 1 | 53 days   | 0.49 |         | MPC | 2007 TP <sub>366</sub>        |
| 2007 TS <sub>366</sub> | 16.6 | 0.15 | 20071027 | 38.15397  | 346.49872 | 8.76449   | 7.28596  | 0.1159120 | 2.7846299 | 43 | 4 | 1993–2007 | 0.43 | M-v 2   | MPC | 128525 2007 TS <sub>366</sub> |
| 2007 TX <sub>366</sub> | 17.9 | 0.15 | 20071027 | 59.45705  | 80.52192  | 231.53968 | 12.83801 | 0.2697240 | 2.3537913 | 22 | 1 | 58 days   | 0.46 |         | MPC | 2007 TX <sub>366</sub>        |
| 2007 TB <sub>367</sub> | 15.0 | 0.15 | 20071027 | 346.42096 | 37.57793  | 26.09812  | 17.34495 | 0.1115147 | 3.1139067 | 52 | 4 | 1993–2007 | 0.50 | M-v 1   | MPC | 128526 2007 TB <sub>367</sub> |
| 2007 TC <sub>367</sub> | 17.9 | 0.15 | 20071027 | 28.85678  | 325.04045 | 39.08982  | 4.90202  | 0.2167544 | 2.2175933 | 26 | 1 | 71 days   | 0.35 | M-v 5   | MPC | 2007 TC <sub>367</sub>        |
| 2007 TD <sub>367</sub> | 17.6 | 0.15 | 20071027 | 81.07301  | 271.93853 | 43.07806  | 21.59702 | 0.1163563 | 1.8447346 | 29 | 1 | 43 days   | 0.28 |         | MPC | 2007 TD <sub>367</sub>        |
| 2007 TG <sub>367</sub> | 17.4 | 0.15 | 20071007 | 3.69584   | 63.68872  | 324.83906 | 3.23622  | 0.2151085 | 2.5843394 | 54 | 1 | 53 days   | 0.54 |         | MPC | 2007 TG <sub>367</sub>        |
| 2007 TH <sub>367</sub> | 16.9 | 0.15 | 20071027 | 333.10834 | 348.04198 | 82.19549  | 6.86944  | 0.1590075 | 2.4200924 | 35 | 1 | 39 days   | 0.70 |         | MPC | 2007 TH <sub>367</sub>        |
| 2007 TJ <sub>367</sub> | 16.9 | 0.15 | 20071027 | 337.34435 | 330.79183 | 92.82861  | 6.26199  | 0.1395962 | 2.4191657 | 32 | 1 | 39 days   | 0.52 |         | MPC | 2007 TJ <sub>367</sub>        |
| 2007 TK <sub>367</sub> | 17.7 | 0.15 | 20071027 | 354.66311 | 343.68269 | 60.62417  | 10.76350 | 0.2538475 | 2.4010796 | 42 | 1 | 56 days   | 0.57 |         | MPC | 2007 TK <sub>367</sub>        |
| 2007 TP <sub>367</sub> | 17.5 | 0.15 | 20071027 | 0.12404   | 307.61742 | 90.40890  | 6.86135  | 0.2815888 | 2.3347587 | 58 | 3 | 1982–2007 | 0.47 | M-v 2   | MPC | 128526 2007 TP <sub>367</sub> |
| 2007 TX <sub>367</sub> | 16.6 | 0.15 | 20071027 | 33.21103  | 316.01119 | 57.29085  | 5.25982  | 0.0809238 | 2.7954301 | 23 | 1 | 39 days   | 0.32 |         | MPC | 2007 TX <sub>367</sub>        |
| 2007 TE <sub>368</sub> | 15.3 | 0.15 | 20071027 | 98.95994  | 74.03994  | 236.54599 | 10.26907 | 0.0555143 | 3.1167579 | 55 | 4 | 2001–2007 | 0.54 | M-v 0   | MPC | 128527 2007 TE <sub>368</sub> |
| 2007 TL <sub>368</sub> | 17.2 | 0.15 | 20071027 | 15.66754  | 44.57697  | 330.98246 | 5.03112  | 0.2839319 | 2.3375984 | 47 | 1 | 75 days   | 0.50 | M-v 4   | MPC | 2007 TL <sub>368</sub>        |
| 2007 TM <sub>368</sub> | 17.8 | 0.15 | 20071027 | 8.16623   | 222.41259 | 147.06326 | 3.37821  | 0.1997394 | 2.2593865 | 30 | 1 | 72 days   | 0.48 | M-v 4 D | MPC | 2007 TM <sub>368</sub>        |
| 2007 TE <sub>369</sub> | 17.6 | 0.15 | 20071027 | 335.09782 | 49.52216  | 26.40662  | 15.31849 | 0.1485566 | 2.6128368 | 29 | 1 | 68 days   | 0.23 | M-v 3   | MPC | 2007 TE <sub>369</sub>        |
| 2007 TG <sub>369</sub> | 18.1 | 0.15 | 20071027 | 21.89339  | 3.29131   | 10.43897  | 6.20402  | 0.1219292 | 2.3291690 | 23 | 1 | 40 days   | 0.28 |         | MPC | 2007 TG <sub>369</sub>        |
| 2007 TJ <sub>369</sub> | 18.6 | 0.15 | 20071027 | 35.86449  | 328.51514 | 15.97422  | 6.64168  | 0.2505298 | 2.3312434 | 20 | 1 | 69 days   | 0.38 | M-v 4   | MPC | 2007 TJ <sub>369</sub>        |
| 2007 TK <sub>369</sub> | 17.2 | 0.15 | 20071027 | 42.31725  | 343.73498 | 2.27483   | 3.97240  | 0.1621525 | 2.3011404 | 19 | 1 | 43 days   | 0.23 |         | MPC | 2007 TK <sub>369</sub>        |
| 2007 TB <sub>370</sub> | 18.3 | 0.15 | 20071027 | 332.79805 | 7.43776   | 75.44953  | 2.11986  | 0.2132701 | 2.3212738 | 35 | 1 | 60 days   | 0.47 | M-v 4   | MPC | 2007 TB <sub>370</sub>        |
| 2007 TC <sub>370</sub> | 18.7 | 0.15 | 20071007 | 2.09638   | 333.76951 | 56.93431  | 3.72493  | 0.1753548 | 2.3815388 | 20 | 1 | 27 days   | 0.36 |         | MPC | 2007 TC <sub>370</sub>        |
| 2007 TH <sub>370</sub> | 16.7 | 0.15 | 20071027 | 49.00970  | 38.18203  | 289.36765 | 7.82917  | 0.2625799 | 2.2130691 | 57 | 1 | 115 days  | 0.45 | M-v 4   | MPC | 129010 2007 TH <sub>370</sub> |
| 2007 TV <sub>370</sub> | 15.1 | 0.15 | 20071027 | 20.00761  | 123.78308 | 251.00002 | 15.93008 | 0.1957204 | 3.0525851 | 60 | 1 | 62 days   | 0.40 | M-v 4   | MPC | 2007 TV <sub>370</sub>        |
| 2007 TX <sub>370</sub> | 17.7 | 0.15 | 20071027 | 2.53825   | 325.88807 | 68.58880  | 6.98670  | 0.3288960 | 2.5875407 | 45 | 1 | 54 days   | 0.39 |         | MPC | 2007 TX <sub>370</sub>        |
| 2007 TY <sub>370</sub> | 15.8 | 0.15 | 20071027 | 33.64329  | 290.61418 | 68.81643  | 11.81903 | 0.1282631 | 2.9870653 | 35 | 1 | 65 days   | 0.60 |         | MPC | 2007 TY <sub>370</sub>        |
| 2007 TK <sub>371</sub> | 15.2 | 0.15 | 20071027 | 44.16582  | 236.04258 | 92.84622  | 18.65966 | 0.2808889 | 3.0991943 | 35 | 1 | 57 days   | 0.69 |         | MPC | 2007 TK <sub>371</sub>        |
| 2007 TB <sub>372</sub> | 16.9 | 0.15 | 20071007 | 347.73275 | 40.83865  | 349.19524 | 4.72563  | 0.1307658 | 2.9087370 | 19 | 1 | 58 days   | 0.40 |         | MPC | 2007 TB <sub>372</sub>        |
| 2007 TN <sub>372</sub> | 16.3 | 0.15 | 20071027 | 40.98374  | 66.30563  | 259.24285 | 17.72525 | 0.2397870 | 2.6158367 | 40 | 2 | 2003–2007 | 0.44 | M-v 3   | MPC | 128527 2007 TN <sub>372</sub> |
| 2007 TS <sub>373</sub> | 16.3 | 0.15 | 20071027 | 356.27647 | 327.47148 | 79.50150  | 15.67791 | 0.0741093 | 2.5996540 | 31 | 2 | 2003–2007 | 0.50 | M-v 4   | MPC | 128527 2007 TS <sub>373</sub> |
| 2007 TT <sub>373</sub> | 16.1 | 0.15 | 20071027 | 63.42137  | 281.07619 | 35.03934  | 12.81066 | 0.2003127 | 2.6731645 | 38 | 1 | 66 days   | 0.52 | M-v 5   | MPC | 2007 TT <sub>373</sub>        |
| 2007 TU <sub>373</sub> | 17.4 | 0.15 | 20071027 | 354.57606 | 10.73607  | 37.91829  | 5.31915  | 0.1635233 | 2.2448039 | 58 | 1 | 79 days   | 0.44 | M-v 3   | MPC | 129010 2007 TU <sub>373</sub> |
| 2007 TV <sub>373</sub> | 15.2 | 0.15 | 20071027 | 15.05907  | 334.05134 | 45.09060  | 3.51788  | 0.2737838 | 3.9467249 | 58 | 1 | 87 days   | 0.43 | M-v 4   | MPC | 2007 TV <sub>373</sub>        |
| 2007 TA <sub>374</sub> | 17.8 | 0.15 | 20071027 | 28.66768  | 214.07093 | 144.95744 | 4.79984  | 0.2610570 | 2.3127761 | 24 | 1 | 35 days   | 0.38 |         | MPC | 2007 TA <sub>374</sub>        |
| 2007 TO <sub>374</sub> | 16.4 | 0.15 | 20071027 | 76.11785  | 290.29779 | 357.28475 | 4.71254  | 0.1372595 | 2.7295085 | 42 | 4 | 2002–2007 | 0.36 | M-v 1   | MPC | 128527 2007 TO <sub>374</sub> |
| 2007 TC <sub>376</sub> | 17.0 | 0.15 | 20071027 | 26.60084  | 198.46194 | 171.68133 | 1.87941  | 0.1086918 | 2.7351241 | 24 | 1 | 37 days   | 0.41 | D       | MPC | 2007 TC <sub>376</sub>        |
| 2007 TE <sub>376</sub> | 16.9 | 0.15 | 20071027 | 349.68836 | 48.44670  | 10.00947  | 6.46698  | 0.1956799 | 3.0534718 | 33 | 1 | 44 days   | 0.52 |         | MPC | 2007 TE <sub>376</sub>        |
| 2007 TF <sub>376</sub> | 18.9 | 0.15 | 20071027 | 32.21428  | 337.34812 | 11.65118  | 5.19032  | 0.2500390 | 2.2918239 | 16 | 1 | 36 days   | 0.30 |         | MPC | 2007 TF <sub>376</sub>        |
| 2007 TG <sub>376</sub> | 19.1 | 0.15 | 20071027 | 14.97801  | 352.47852 | 17.16686  | 2.99550  | 0.3835732 | 2.2192775 | 38 | 1 | 94 days   | 0.25 | M-v 3   | MPC | 2007 TG <sub>376</sub>        |
| 2007 TJ <sub>376</sub> | 17.1 | 0.15 | 20071027 | 78.93335  | 78.55744  | 238.91689 | 19.11143 | 0.0695300 | 1.8993073 | 37 | 1 | 51 days   | 0.56 |         | MPC | 2007 TJ <sub>376</sub>        |
| 2007 TR <sub>376</sub> | 16.0 | 0.15 | 20071027 | 9.29990   | 317.07600 | 58.56503  | 12.84377 | 0.2342971 | 3.0421984 | 33 | 1 | 39 days   | 0.48 |         | MPC | 2007 TR <sub>376</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|------------------------|
| 2007 TW <sub>376</sub> | 17.2 | 0.15 | 20071027 | 12.58653  | 302.22968 | 60.42471  | 7.65257  | 0.2144332 | 2.2301169 | 24 | 1 | 83 days   | 0.49 | M-v | 4 | MPC | 129010 | 2007 TW <sub>376</sub> |
| 2007 TH <sub>377</sub> | 16.9 | 0.15 | 20071027 | 348.48945 | 157.72667 | 243.52002 | 3.33804  | 0.1460038 | 3.0774252 | 15 | 1 | 35 days   | 0.24 |     |   | MPC |        | 2007 TH <sub>377</sub> |
| 2007 TN <sub>377</sub> | 16.1 | 0.15 | 20071027 | 160.98395 | 15.83127  | 231.35084 | 7.78881  | 0.0372616 | 2.7706718 | 30 | 1 | 38 days   | 0.28 |     |   | MPC |        | 2007 TN <sub>377</sub> |
| 2007 TS <sub>377</sub> | 17.1 | 0.15 | 20071027 | 127.55168 | 234.37488 | 41.56522  | 3.45319  | 0.0565917 | 2.3315195 | 24 | 1 | 78 days   | 0.27 | M-v | 4 | MPC |        | 2007 TS <sub>377</sub> |
| 2007 TU <sub>377</sub> | 16.8 | 0.15 | 20071027 | 314.40893 | 78.00591  | 30.67504  | 1.22609  | 0.1380322 | 3.0753397 | 19 | 1 | 38 days   | 0.28 |     |   | MPC |        | 2007 TU <sub>377</sub> |
| 2007 TL <sub>378</sub> | 17.2 | 0.15 | 20071027 | 339.72307 | 194.98895 | 217.20476 | 14.59953 | 0.0988815 | 2.5382863 | 40 | 3 | 1999-2007 | 0.31 | M-v | 3 | MPC | 128528 | 2007 TL <sub>378</sub> |
| 2007 TV <sub>378</sub> | 17.2 | 0.15 | 20071027 | 7.01763   | 351.59633 | 49.26126  | 11.60377 | 0.1195132 | 2.9655347 | 23 | 1 |           | 0.37 |     |   | MPC |        | 2007 TV <sub>378</sub> |
| 2007 TX <sub>378</sub> | 16.5 | 0.15 | 20071027 | 29.58779  | 317.76680 | 24.03596  | 14.85290 | 0.0991280 | 2.6407582 | 43 | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128528 | 2007 TX <sub>378</sub> |
| 2007 TB <sub>379</sub> | 17.1 | 0.15 | 20071007 | 16.94565  | 208.35641 | 142.38911 | 3.30669  | 0.2391490 | 2.7185644 | 18 | 1 | 54 days   | 0.47 |     |   | MPC |        | 2007 TB <sub>379</sub> |
| 2007 TM <sub>379</sub> | 16.6 | 0.15 | 20071027 | 39.26221  | 133.47653 | 202.66953 | 8.66262  | 0.1289721 | 3.0127468 | 27 | 1 | 60 days   | 0.43 | M-v | 4 | MPC |        | 2007 TM <sub>379</sub> |
| 2007 TN <sub>379</sub> | 16.5 | 0.15 | 20071027 | 27.51218  | 319.49348 | 34.64689  | 2.34070  | 0.0784877 | 2.8782223 | 27 | 1 | 65 days   | 0.44 | M-v | 4 | MPC |        | 2007 TN <sub>379</sub> |
| 2007 TF <sub>380</sub> | 17.4 | 0.15 | 20071027 | 33.85950  | 116.90961 | 220.22223 | 11.86975 | 0.2480464 | 2.6695376 | 22 | 1 | 52 days   | 0.53 |     |   | MPC |        | 2007 TF <sub>380</sub> |
| 2007 TS <sub>380</sub> | 17.1 | 0.15 | 20071027 | 332.17078 | 247.23863 | 190.48276 | 4.53097  | 0.2265543 | 2.5732896 | 39 | 1 | 67 days   | 0.54 | M-v | 4 | MPC |        | 2007 TS <sub>380</sub> |
| 2007 TU <sub>380</sub> | 19.0 | 0.15 | 20071007 | 341.26211 | 15.98284  | 39.00998  | 7.09385  | 0.2324292 | 2.2233308 | 18 | 1 | 21 days   | 0.34 |     |   | MPC |        | 2007 TU <sub>380</sub> |
| 2007 TY <sub>380</sub> | 17.2 | 0.15 | 20071027 | 68.02125  | 217.38136 | 88.99622  | 2.46186  | 0.1839616 | 2.3502836 | 47 | 5 | 2000-2007 | 0.43 | M-v | 1 | MPC | 128529 | 2007 TY <sub>380</sub> |
| 2007 TZ <sub>380</sub> | 16.7 | 0.15 | 20071007 | 338.34134 | 1.51061   | 53.95055  | 6.17417  | 0.0686177 | 2.6874625 | 17 | 1 | 32 days   | 0.32 |     |   | MPC |        | 2007 TZ <sub>380</sub> |
| 2007 TA <sub>381</sub> | 16.2 | 0.15 | 20071027 | 106.68027 | 245.06022 | 42.34733  | 15.07642 | 0.0176532 | 2.6772554 | 35 | 1 | 35 days   | 0.53 |     |   | MPC |        | 2007 TA <sub>381</sub> |
| 2007 TC <sub>381</sub> | 17.5 | 0.15 | 20071027 | 342.22404 | 302.17377 | 118.86420 | 2.10040  | 0.1701315 | 2.3640788 | 36 | 1 | 60 days   | 0.41 | M-v | 4 | MPC |        | 2007 TC <sub>381</sub> |
| 2007 TK <sub>382</sub> | 17.6 | 0.15 | 20071027 | 14.08741  | 298.40769 | 78.94440  | 8.64731  | 0.3573827 | 2.7689223 | 41 | 1 | 37 days   | 0.53 |     |   | MPC |        | 2007 TK <sub>382</sub> |
| 2007 TN <sub>382</sub> | 17.0 | 0.15 | 20071027 | 353.54125 | 289.59834 | 131.51221 | 5.85602  | 0.2381176 | 2.6178907 | 30 | 1 | 52 days   | 0.37 |     |   | MPC |        | 2007 TN <sub>382</sub> |
| 2007 TO <sub>382</sub> | 15.6 | 0.15 | 20071027 | 50.83600  | 262.26357 | 99.19344  | 10.53997 | 0.0411509 | 3.2013342 | 25 | 1 | 52 days   | 0.31 |     |   | MPC |        | 2007 TO <sub>382</sub> |
| 2007 TU <sub>382</sub> | 17.8 | 0.15 | 20071027 | 50.74883  | 306.71109 | 24.89030  | 1.36696  | 0.1793596 | 2.4402174 | 31 | 1 | 52 days   | 0.33 |     |   | MPC |        | 2007 TU <sub>382</sub> |
| 2007 TW <sub>382</sub> | 17.3 | 0.15 | 20071027 | 0.24385   | 26.28758  | 15.62064  | 2.35023  | 0.1457905 | 2.9458452 | 21 | 1 | 35 days   | 0.29 |     |   | MPC |        | 2007 TW <sub>382</sub> |
| 2007 TX <sub>382</sub> | 17.1 | 0.15 | 20071007 | 41.42591  | 308.49812 | 39.56744  | 10.39359 | 0.1090273 | 3.0016803 | 16 | 1 | 28 days   | 0.35 |     |   | MPC |        | 2007 TX <sub>382</sub> |
| 2007 TY <sub>382</sub> | 16.7 | 0.15 | 20071007 | 47.77606  | 303.69944 | 39.43224  | 13.54281 | 0.0695942 | 2.5781085 | 17 | 1 | 20 days   | 0.32 |     |   | MPC |        | 2007 TY <sub>382</sub> |
| 2007 TZ <sub>382</sub> | 15.0 | 0.15 | 20071027 | 23.71611  | 151.57338 | 208.65625 | 1.34820  | 0.2980813 | 3.9704776 | 91 | 3 | 1999-2007 | 0.44 | M-v | 1 | MPC | 128529 | 2007 TZ <sub>382</sub> |
| 2007 TA <sub>383</sub> | 16.7 | 0.15 | 20071027 | 186.95999 | 178.66978 | 39.80968  | 7.70375  | 0.1616219 | 2.4384399 | 33 | 1 | 69 days   | 0.29 | M-v | 5 | MPC |        | 2007 TA <sub>383</sub> |
| 2007 TB <sub>383</sub> | 17.5 | 0.15 | 20071027 | 319.64260 | 68.67449  | 32.00279  | 4.65607  | 0.1965421 | 2.6057205 | 33 | 1 | 61 days   | 0.55 | M-v | 5 | MPC |        | 2007 TB <sub>383</sub> |
| 2007 TC <sub>383</sub> | 19.0 | 0.15 | 20071007 | 27.42073  | 7.77117   | 328.91422 | 0.17682  | 0.3368478 | 2.3134130 | 31 | 1 | 32 days   | 0.48 |     |   | MPC |        | 2007 TC <sub>383</sub> |
| 2007 TF <sub>383</sub> | 15.5 | 0.15 | 20071027 | 352.60175 | 10.21553  | 44.15942  | 23.01485 | 0.0688994 | 3.1666073 | 38 | 1 | 60 days   | 0.41 | M-v | 4 | MPC |        | 2007 TF <sub>383</sub> |
| 2007 TG <sub>383</sub> | 16.7 | 0.15 | 20071027 | 346.25169 | 205.79843 | 215.36219 | 1.28258  | 0.0575447 | 2.8676113 | 39 | 3 | 2004-2007 | 0.47 | M-v | 4 | MPC | 128530 | 2007 TG <sub>383</sub> |
| 2007 TH <sub>383</sub> | 16.7 | 0.15 | 20071027 | 34.07687  | 318.41756 | 42.12029  | 12.84511 | 0.1347153 | 2.5826172 | 37 | 1 | 60 days   | 0.53 | M-v | 4 | MPC |        | 2007 TH <sub>383</sub> |
| 2007 TM <sub>383</sub> | 18.5 | 0.15 | 20071027 | 33.45702  | 308.97853 | 42.54343  | 2.24748  | 0.1940555 | 2.4562257 | 42 | 1 | 60 days   | 0.33 | M-v | 4 | MPC |        | 2007 TM <sub>383</sub> |
| 2007 TO <sub>383</sub> | 16.9 | 0.15 | 20071007 | 36.22170  | 143.52299 | 208.80383 | 3.29831  | 0.1065017 | 2.7841428 | 32 | 1 | 34 days   | 0.23 |     |   | MPC |        | 2007 TO <sub>383</sub> |
| 2007 TQ <sub>383</sub> | 19.2 | 0.15 | 20071027 | 345.41805 | 247.16631 | 174.28122 | 0.48301  | 0.1894903 | 2.2775657 | 22 | 1 | 26 days   | 0.25 |     |   | MPC |        | 2007 TQ <sub>383</sub> |
| 2007 TR <sub>383</sub> | 17.4 | 0.15 | 20071007 | 324.31205 | 227.46174 | 216.22609 | 11.86698 | 0.1530397 | 2.6431034 | 17 | 1 | 26 days   | 0.26 |     |   | MPC |        | 2007 TR <sub>383</sub> |
| 2007 TT <sub>383</sub> | 16.8 | 0.15 | 20071027 | 323.15108 | 228.47542 | 216.48100 | 15.60749 | 0.0664206 | 2.6614598 | 19 | 1 | 52 days   | 0.33 |     |   | MPC |        | 2007 TT <sub>383</sub> |
| 2007 TU <sub>383</sub> | 15.8 | 0.15 | 20071007 | 51.61506  | 106.80653 | 219.77288 | 25.67154 | 0.2049609 | 3.0391885 | 36 | 1 | 37 days   | 0.36 |     |   | MPC |        | 2007 TU <sub>383</sub> |
| 2007 TV <sub>383</sub> | 17.2 | 0.15 | 20071007 | 110.09075 | 224.76879 | 48.81069  | 7.19348  | 0.1495984 | 2.4052243 | 25 | 1 | 28 days   | 0.24 |     |   | MPC |        | 2007 TV <sub>383</sub> |
| 2007 TX <sub>383</sub> | 17.9 | 0.15 | 20071027 | 13.90138  | 329.69944 | 51.38989  | 2.18842  | 0.1926438 | 2.3624647 | 49 | 2 | 2005-2007 | 0.46 | M-v | 4 | MPC | 128530 | 2007 TX <sub>383</sub> |
| 2007 TC <sub>384</sub> | 17.6 | 0.15 | 20071027 | 49.35274  | 265.71959 | 64.32348  | 20.35966 | 0.2835369 | 2.7609681 | 21 | 1 | 37 days   | 0.42 |     |   | MPC |        | 2007 TC <sub>384</sub> |
| 2007 TV <sub>384</sub> | 15.5 | 0.15 | 20071027 | 302.73489 | 65.16588  | 65.48625  | 27.49872 | 0.1877572 | 3.0407940 | 32 | 1 | 52 days   | 0.34 |     |   | MPC |        | 2007 TV <sub>384</sub> |
| 2007 TB <sub>385</sub> | 17.6 | 0.15 | 20071027 | 52.64458  | 273.76761 | 62.29564  | 3.60023  | 0.1998399 | 2.2502809 | 42 | 3 | 2000-2007 | 0.52 | M-v | 3 | MPC | 128530 | 2007 TB <sub>385</sub> |
| 2007 TC <sub>385</sub> | 16.2 | 0.15 | 20071027 | 287.49208 | 80.04155  | 53.52702  | 17.01664 | 0.0667838 | 2.7780917 | 17 | 1 | 35 days   | 0.38 |     |   | MPC |        | 2007 TC <sub>385</sub> |
| 2007 TF <sub>385</sub> | 15.9 | 0.15 | 20071027 | 19.44732  | 341.34659 | 13.71259  | 12.55653 | 0.1387261 | 3.0900921 | 22 | 1 | 60 days   | 0.43 | M-v | 4 | MPC |        | 2007 TF <sub>385</sub> |
| 2007 TM <sub>385</sub> | 16.9 | 0.15 | 20071007 | 289.23859 | 88.95851  | 20.95802  | 6.28642  | 0.1594164 | 2.6614325 | 23 | 1 | 4 days    | 0.34 |     |   | MPC |        | 2007 TM <sub>385</sub> |
| 2007 TP <sub>385</sub> | 15.8 | 0.15 | 20071027 | 71.08951  | 287.00957 | 17.70166  | 13.51992 | 0.1028130 | 2.9057919 | 31 | 1 | 61 days   | 0.46 | M-v | 5 | MPC |        | 2007 TP <sub>385</sub> |
| 2007 TQ <sub>385</sub> | 16.1 | 0.15 | 20071007 | 38.15414  | 312.22105 | 10.55676  | 8.03411  | 0.2466859 | 3.0430589 | 18 | 1 | 29 days   | 0.31 |     |   | MPC |        | 2007 TQ <sub>385</sub> |
| 2007 TZ <sub>385</sub> | 16.2 | 0.15 | 20071027 | 355.20788 | 258.13410 | 140.66554 | 9.81922  | 0.2797098 | 3.0637799 | 32 | 1 | 61 days   | 0.67 | M-v | 4 | MPC |        | 2007 TZ <sub>385</sub> |
| 2007 TG <sub>386</sub> | 16.7 | 0.15 | 20071007 | 31.35399  | 139.38334 | 215.39259 | 4.70708  | 0.0800166 | 2.6797260 | 24 | 1 | 28 days   | 0.51 |     | D | MPC |        | 2007 TG <sub>386</sub> |
| 2007 TK <sub>386</sub> | 17.2 | 0.15 | 20071007 | 16.07830  | 155.11451 | 215.64821 | 12.09978 | 0.1969915 | 2.6924259 | 29 | 1 | 30 days   | 0.41 |     |   | MPC |        | 2007 TK <sub>386</sub> |
| 2007 TL <sub>386</sub> | 15.9 | 0.15 | 20071027 | 10.36835  | 166.52502 | 220.16630 | 15.48852 | 0.2057192 | 3.1256099 | 50 | 1 | 42 days   | 0.59 |     |   | MPC |        | 2007 TL <sub>386</sub> |
| 2007 TP <sub>386</sub> | 16.9 | 0.15 | 20071027 | 353.61253 | 11.54046  | 42.99954  | 8.63144  | 0.1044867 | 2.4022608 | 47 | 1 | 94 days   | 0.46 | M-v | 3 | MPC |        | 2007 TP <sub>386</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 TR <sub>386</sub> | 17.2 | 0.15 | 20071027 | 1.71469   | 16.39596  | 29.51107  | 0.97208  | 0.1765403 | 3.0097269 | 24 | 1 | 79 days   | 0.29 | M-v | 4 | MPC | 2007 TR <sub>386</sub>        |
| 2007 TS <sub>386</sub> | 17.9 | 0.15 | 20071027 | 67.56504  | 76.12233  | 240.58653 | 0.75762  | 0.2016535 | 2.3352433 | 20 | 1 | 51 days   | 0.34 |     |   | MPC | 2007 TS <sub>386</sub>        |
| 2007 TB <sub>387</sub> | 17.8 | 0.15 | 20071027 | 3.75549   | 103.54113 | 285.30415 | 4.91273  | 0.1334901 | 2.2243261 | 46 | 2 | 2002-2007 | 0.44 | M-v | 3 | MPC | 128531 2007 TB <sub>387</sub> |
| 2007 TC <sub>387</sub> | 17.9 | 0.15 | 20071007 | 325.02234 | 221.00694 | 201.03635 | 4.16625  | 0.1067136 | 2.7929045 | 26 | 1 | 23 days   | 0.35 |     |   | MPC | 2007 TC <sub>387</sub>        |
| 2007 TF <sub>387</sub> | 15.7 | 0.15 | 20071027 | 154.06603 | 208.70012 | 19.49553  | 10.51807 | 0.0420890 | 3.1275796 | 23 | 1 | 65 days   | 0.29 | M-v | 4 | MPC | 2007 TF <sub>387</sub>        |
| 2007 TQ <sub>388</sub> | 17.2 | 0.15 | 20071007 | 311.41406 | 312.13163 | 130.80719 | 2.15830  | 0.1636907 | 2.5753586 | 18 | 1 | 30 days   | 0.39 |     |   | MPC | 2007 TQ <sub>388</sub>        |
| 2007 TW <sub>388</sub> | 17.1 | 0.15 | 20071007 | 315.41805 | 337.79967 | 91.91376  | 2.96554  | 0.0677502 | 2.5514976 | 28 | 1 | 50 days   | 0.41 |     |   | MPC | 2007 TW <sub>388</sub>        |
| 2007 TK <sub>389</sub> | 17.3 | 0.15 | 20071007 | 0.59353   | 349.21229 | 28.76540  | 19.23219 | 0.2534493 | 3.1165101 | 23 | 1 | 23 days   | 0.53 |     |   | MPC | 2007 TK <sub>389</sub>        |
| 2007 TP <sub>389</sub> | 16.1 | 0.15 | 20071007 | 321.74088 | 33.28956  | 33.75897  | 15.54684 | 0.1128422 | 2.7061551 | 30 | 1 | 57 days   | 0.46 |     |   | MPC | 2007 TP <sub>389</sub>        |
| 2007 TR <sub>389</sub> | 17.8 | 0.15 | 20071007 | 10.44162  | 335.01354 | 22.06108  | 14.90022 | 0.2332478 | 2.6871510 | 32 | 1 | 45 days   | 0.42 |     |   | MPC | 2007 TR <sub>389</sub>        |
| 2007 TT <sub>389</sub> | 16.9 | 0.15 | 20071027 | 332.16098 | 221.34327 | 224.47289 | 7.75047  | 0.3009861 | 3.0472050 | 38 | 1 | 53 days   | 0.55 |     | D | MPC | 2007 TT <sub>389</sub>        |
| 2007 TA <sub>390</sub> | 17.7 | 0.15 | 20071007 | 290.26991 | 269.22203 | 190.22657 | 4.74586  | 0.0839780 | 2.7119714 | 15 | 1 | 10 days   | 0.26 |     | D | MPC | 2007 TA <sub>390</sub>        |
| 2007 TS <sub>390</sub> | 16.4 | 0.15 | 20071027 | 30.67279  | 158.44648 | 187.87420 | 3.81553  | 0.1220846 | 3.0234295 | 28 | 1 | 63 days   | 0.47 | M-v | 4 | MPC | 2007 TS <sub>390</sub>        |
| 2007 TW <sub>390</sub> | 16.7 | 0.15 | 20071007 | 328.97347 | 247.67466 | 178.82517 | 3.19794  | 0.2040523 | 3.0908526 | 35 | 1 | 58 days   | 0.32 |     |   | MPC | 2007 TW <sub>390</sub>        |
| 2007 TX <sub>390</sub> | 17.7 | 0.15 | 20071007 | 345.39420 | 352.14628 | 48.69147  | 2.11261  | 0.1613691 | 3.0718112 | 23 | 1 | 30 days   | 0.34 |     |   | MPC | 2007 TX <sub>390</sub>        |
| 2007 TY <sub>390</sub> | 17.3 | 0.15 | 20071007 | 229.63373 | 89.21275  | 71.03831  | 1.13237  | 0.1107541 | 2.4851101 | 24 | 1 | 55 days   | 0.20 |     | D | MPC | 2007 TY <sub>390</sub>        |
| 2007 TZ <sub>390</sub> | 15.4 | 0.15 | 20071027 | 97.03167  | 233.93889 | 27.22399  | 12.43951 | 0.2516690 | 3.0002305 | 28 | 1 | 38 days   | 0.37 |     |   | MPC | 2007 TZ <sub>390</sub>        |
| 2007 TL <sub>391</sub> | 17.9 | 0.15 | 20071007 | 333.29163 | 213.97394 | 205.65290 | 9.30268  | 0.1925664 | 2.5766367 | 23 | 1 | 40 days   | 0.44 |     |   | MPC | 2007 TL <sub>391</sub>        |
| 2007 TO <sub>391</sub> | 17.0 | 0.15 | 20071007 | 349.67471 | 194.01586 | 203.27516 | 7.79009  | 0.2229416 | 2.7748425 | 25 | 1 | 23 days   | 0.43 |     | D | MPC | 2007 TO <sub>391</sub>        |
| 2007 TQ <sub>391</sub> | 16.5 | 0.15 | 20071027 | 207.73673 | 159.75882 | 21.55497  | 7.53807  | 0.0373097 | 2.4003941 | 31 | 1 | 63 days   | 0.44 | M-v | 4 | MPC | 2007 TQ <sub>391</sub>        |
| 2007 TU <sub>391</sub> | 17.4 | 0.15 | 20071007 | 43.42006  | 281.44619 | 29.19545  | 12.86462 | 0.2760620 | 2.6630682 | 25 | 1 | 36 days   | 0.53 |     |   | MPC | 2007 TU <sub>391</sub>        |
| 2007 TY <sub>391</sub> | 19.2 | 0.15 | 20071007 | 20.16748  | 12.41152  | 332.22924 | 0.92580  | 0.2631553 | 2.2001271 | 24 | 1 | 31 days   | 0.45 |     |   | MPC | 2007 TY <sub>391</sub>        |
| 2007 TB <sub>392</sub> | 18.0 | 0.15 | 20071027 | 17.50703  | 218.81862 | 142.84080 | 1.95758  | 0.1749566 | 2.4378204 | 32 | 1 | 62 days   | 0.50 | M-v | 4 | MPC | 2007 TB <sub>392</sub>        |
| 2007 TG <sub>392</sub> | 16.6 | 0.15 | 20071027 | 9.23312   | 337.21205 | 38.88193  | 6.72321  | 0.0363866 | 2.6941216 | 47 | 4 | 2001-2007 | 0.41 | M-v | 1 | MPC | 128533 2007 TG <sub>392</sub> |
| 2007 TN <sub>392</sub> | 17.4 | 0.15 | 20071007 | 334.65123 | 25.72939  | 29.67266  | 7.94540  | 0.1838104 | 2.5895608 | 4  | 1 | 10 days   | 0.43 |     | D | MPC | 2007 TN <sub>392</sub>        |
| 2007 TP <sub>392</sub> | 15.8 | 0.15 | 20071007 | 352.87303 | 224.88138 | 168.98881 | 3.04667  | 0.2775746 | 3.9813258 | 29 | 1 | 54 days   | 0.36 |     |   | MPC | 2007 TP <sub>392</sub>        |
| 2007 TS <sub>392</sub> | 16.8 | 0.15 | 20071027 | 345.48355 | 206.90067 | 212.48033 | 1.10496  | 0.2385214 | 2.8548423 | 58 | 2 | 2002-2007 | 0.38 | M-v | 3 | MPC | 128533 2007 TS <sub>392</sub> |
| 2007 TU <sub>392</sub> | 17.5 | 0.15 | 20071027 | 33.63502  | 343.78389 | 7.22863   | 3.13241  | 0.1706156 | 2.1689205 | 54 | 1 | 41 days   | 0.66 |     |   | MPC | 2007 TU <sub>392</sub>        |
| 2007 TX <sub>392</sub> | 17.0 | 0.15 | 20071027 | 55.04569  | 111.56510 | 267.42463 | 6.34605  | 0.1004170 | 2.1817891 | 35 | 3 | 2000-2007 | 0.43 | M-v | 1 | MPC | 128534 2007 TX <sub>392</sub> |
| 2007 TY <sub>392</sub> | 17.6 | 0.15 | 20071007 | 324.24888 | 234.13777 | 208.27512 | 4.69589  | 0.2800140 | 2.5914360 | 21 | 1 | 26 days   | 0.37 |     |   | MPC | 2007 TY <sub>392</sub>        |
| 2007 TP <sub>393</sub> | 15.7 | 0.15 | 20071007 | 336.05328 | 104.42877 | 300.14508 | 14.55328 | 0.2126966 | 3.1193541 | 19 | 1 | 51 days   | 0.56 |     |   | MPC | 2007 TP <sub>393</sub>        |
| 2007 TN <sub>395</sub> | 16.0 | 0.15 | 20071007 | 31.19161  | 111.58002 | 242.98545 | 10.99308 | 0.0717869 | 2.9217252 | 19 | 1 | 43 days   | 0.52 |     |   | MPC | 2007 TN <sub>395</sub>        |
| 2007 TE <sub>397</sub> | 16.9 | 0.15 | 20070917 | 16.59258  | 153.73195 | 198.35416 | 11.99530 | 0.2227902 | 3.1153067 | 30 | 1 | 59 days   | 0.47 |     |   | MPC | 2007 TE <sub>397</sub>        |
| 2007 TZ <sub>397</sub> | 16.0 | 0.15 | 20071007 | 6.79338   | 9.57680   | 16.72819  | 10.31116 | 0.1068845 | 3.0532510 | 39 | 1 | 54 days   | 0.45 |     |   | MPC | 2007 TZ <sub>397</sub>        |
| 2007 TB <sub>398</sub> | 18.6 | 0.15 | 20071027 | 22.69838  | 74.65192  | 285.53192 | 2.96480  | 0.2418354 | 2.3049205 | 31 | 1 | 42 days   | 0.32 |     |   | MPC | 2007 TB <sub>398</sub>        |
| 2007 TC <sub>398</sub> | 17.0 | 0.15 | 20071027 | 350.86141 | 65.57272  | 344.14493 | 5.07789  | 0.0571553 | 2.7726080 | 18 | 1 | 34 days   | 0.20 |     |   | MPC | 2007 TC <sub>398</sub>        |
| 2007 TD <sub>398</sub> | 16.7 | 0.15 | 20071027 | 98.07752  | 38.86265  | 259.36082 | 5.59017  | 0.0270229 | 2.7521060 | 22 | 1 | 34 days   | 0.34 |     |   | MPC | 2007 TD <sub>398</sub>        |
| 2007 TJ <sub>398</sub> | 16.9 | 0.15 | 20071027 | 322.07922 | 300.30085 | 135.09141 | 4.29462  | 0.0769818 | 2.5351350 | 31 | 4 | 2001-2007 | 0.44 | M-v | 2 | MPC | 128534 2007 TJ <sub>398</sub> |
| 2007 TL <sub>398</sub> | 17.2 | 0.15 | 20071027 | 128.47176 | 264.65083 | 355.15469 | 4.42790  | 0.1405753 | 2.2447743 | 16 | 1 | 34 days   | 0.24 |     |   | MPC | 2007 TL <sub>398</sub>        |
| 2007 TP <sub>398</sub> | 17.9 | 0.15 | 20071027 | 328.12015 | 70.44995  | 8.50211   | 6.15707  | 0.1087295 | 2.2057707 | 18 | 1 | 34 days   | 0.48 |     |   | MPC | 2007 TP <sub>398</sub>        |
| 2007 TQ <sub>398</sub> | 17.0 | 0.15 | 20071027 | 343.58944 | 340.84075 | 76.64178  | 5.09396  | 0.1858942 | 2.6150219 | 27 | 3 | 1996-2007 | 0.43 | M-v | 4 | MPC | 128535 2007 TQ <sub>398</sub> |
| 2007 TE <sub>399</sub> | 18.6 | 0.15 | 20071027 | 13.56919  | 17.35005  | 3.62758   | 4.10887  | 0.1255209 | 2.3383345 | 19 | 1 | 34 days   | 0.30 |     |   | MPC | 2007 TE <sub>399</sub>        |
| 2007 TG <sub>399</sub> | 17.3 | 0.15 | 20071027 | 4.47804   | 14.46297  | 16.71389  | 6.18337  | 0.2398934 | 2.6716314 | 44 | 1 | 70 days   | 0.52 | M-v | 4 | MPC | 2007 TG <sub>399</sub>        |
| 2007 TL <sub>399</sub> | 16.0 | 0.15 | 20071007 | 316.37684 | 250.44662 | 199.56124 | 13.60832 | 0.2015762 | 3.1030727 | 33 | 1 | 57 days   | 0.47 |     |   | MPC | 2007 TL <sub>399</sub>        |
| 2007 TM <sub>399</sub> | 16.6 | 0.15 | 20071027 | 0.59292   | 143.02627 | 257.42775 | 5.41272  | 0.1508674 | 2.9956552 | 25 | 1 | 42 days   | 0.39 |     |   | MPC | 2007 TM <sub>399</sub>        |
| 2007 TP <sub>399</sub> | 16.7 | 0.15 | 20071027 | 3.22183   | 30.62693  | 7.18484   | 6.03575  | 0.0729576 | 2.7618201 | 15 | 1 | 42 days   | 0.27 |     |   | MPC | 2007 TP <sub>399</sub>        |
| 2007 TV <sub>399</sub> | 15.5 | 0.15 | 20071027 | 314.78009 | 228.66093 | 239.00736 | 9.26775  | 0.2069328 | 3.1355851 | 33 | 1 | 57 days   | 0.53 |     |   | MPC | 2007 TV <sub>399</sub>        |
| 2007 TX <sub>399</sub> | 17.9 | 0.15 | 20071027 | 35.15275  | 324.36138 | 19.49493  | 6.22560  | 0.2502789 | 2.3233060 | 34 | 1 | 67 days   | 0.47 | M-v | 4 | MPC | 2007 TX <sub>399</sub>        |
| 2007 TD <sub>400</sub> | 16.0 | 0.15 | 20071027 | 26.08656  | 319.11778 | 52.36225  | 15.29779 | 0.1978413 | 2.6199826 | 76 | 2 | 2003-2007 | 0.47 | M-v | 3 | MPC | 128536 2007 TD <sub>400</sub> |
| 2007 TG <sub>400</sub> | 17.6 | 0.15 | 20071027 | 34.22654  | 210.76068 | 117.71756 | 7.80239  | 0.3279669 | 2.2577342 | 37 | 1 | 68 days   | 0.67 | M-v | 4 | MPC | 2007 TG <sub>400</sub>        |
| 2007 TN <sub>400</sub> | 16.4 | 0.15 | 20071007 | 14.95535  | 340.34111 | 26.15203  | 13.83718 | 0.1113932 | 3.0546087 | 28 | 1 | 54 days   | 0.44 |     |   | MPC | 2007 TN <sub>400</sub>        |
| 2007 TO <sub>400</sub> | 15.8 | 0.15 | 20071027 | 268.47248 | 102.08408 | 32.89991  | 8.76800  | 0.1026855 | 3.0837007 | 14 | 1 | 36 days   | 0.21 |     |   | MPC | 2007 TO <sub>400</sub>        |
| 2007 TT <sub>400</sub> | 18.2 | 0.15 | 20071027 | 3.78489   | 243.02602 | 153.95903 | 0.39847  | 0.2060507 | 2.3177539 | 68 | 1 | 76 days   | 0.48 | M-v | 4 | MPC | 2007 TT <sub>400</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |    |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|----|-------------------------------|
| 2007 TY <sub>400</sub> | 17.3 | 0.15 | 20071027 | 335.16858 | 239.24153 | 208.83231 | 4.78663  | 0.1707477 | 2.2699849 | 37 | 1 | 85 days   | 0.31 | M-v | 3 | MP | 2007 TY <sub>400</sub>        |
| 2007 TZ <sub>400</sub> | 16.2 | 0.15 | 20071027 | 48.20869  | 120.07727 | 227.34539 | 11.89630 | 0.2335676 | 3.1279442 | 18 | 1 | 37 days   | 0.27 |     |   | MP | 2007 TZ <sub>400</sub>        |
| 2007 TO <sub>401</sub> | 18.4 | 0.15 | 20071027 | 349.59577 | 172.15904 | 233.31920 | 1.15196  | 0.1705777 | 2.4013172 | 28 | 1 | 45 days   | 0.61 |     |   | MP | 2007 TO <sub>401</sub>        |
| 2007 TZ <sub>402</sub> | 17.4 | 0.15 | 20071007 | 53.52038  | 129.88731 | 168.25215 | 7.06217  | 0.3171589 | 2.6259887 | 14 | 1 | 17 days   | 0.24 |     |   | MP | 2007 TZ <sub>402</sub>        |
| 2007 TO <sub>403</sub> | 15.8 | 0.15 | 20071027 | 5.19149   | 161.69601 | 237.14887 | 9.06476  | 0.0792752 | 3.1491702 | 21 | 1 | 34 days   | 0.32 |     |   | MP | 2007 TO <sub>403</sub>        |
| 2007 TP <sub>403</sub> | 18.3 | 0.15 | 20071007 | 353.92113 | 175.26070 | 228.02523 | 12.86925 | 0.1418406 | 2.3638610 | 19 | 1 | 20 days   | 0.31 |     |   | MP | 2007 TP <sub>403</sub>        |
| 2007 TS <sub>403</sub> | 17.9 | 0.15 | 20071027 | 329.03146 | 65.77274  | 25.80314  | 11.49096 | 0.2566032 | 2.6512238 | 24 | 2 | 1994-2007 | 0.31 | M-v | 4 | MP | 128536 2007 TS <sub>403</sub> |
| 2007 TT <sub>403</sub> | 16.2 | 0.15 | 20071027 | 305.71930 | 89.99489  | 23.74865  | 8.11193  | 0.1715253 | 3.0263862 | 19 | 1 | 34 days   | 0.24 |     |   | MP | 2007 TT <sub>403</sub>        |
| 2007 TW <sub>403</sub> | 15.3 | 0.15 | 20071027 | 286.08618 | 254.87665 | 234.45132 | 9.84831  | 0.1191105 | 3.0241981 | 43 | 3 | 2002-2007 | 0.29 | M-v | 3 | MP | 128536 2007 TW <sub>403</sub> |
| 2007 TD <sub>404</sub> | 17.8 | 0.15 | 20071007 | 14.40578  | 127.37988 | 241.13801 | 4.09957  | 0.2535368 | 2.7000389 | 25 | 1 | 35 days   | 0.45 |     |   | MP | 2007 TD <sub>404</sub>        |
| 2007 TG <sub>404</sub> | 15.7 | 0.15 | 20071027 | 59.78156  | 79.49570  | 258.99533 | 2.95636  | 0.0462788 | 3.2443863 | 14 | 1 | 34 days   | 0.20 |     |   | MP | 2007 TG <sub>404</sub>        |
| 2007 TH <sub>404</sub> | 16.4 | 0.15 | 20071027 | 14.50304  | 120.93290 | 256.51239 | 2.08892  | 0.2384172 | 3.0419048 | 29 | 1 | 42 days   | 0.54 |     |   | MP | 2007 TH <sub>404</sub>        |
| 2007 TK <sub>404</sub> | 17.6 | 0.15 | 20071027 | 300.81800 | 170.41432 | 306.99092 | 1.66780  | 0.1557382 | 2.3904349 | 20 | 1 | 34 days   | 0.23 |     |   | MP | 2007 TK <sub>404</sub>        |
| 2007 TL <sub>404</sub> | 18.3 | 0.15 | 20071027 | 3.87816   | 150.87644 | 242.84906 | 3.10509  | 0.2554246 | 2.5393167 | 32 | 1 | 42 days   | 0.46 |     |   | MP | 2007 TL <sub>404</sub>        |
| 2007 TP <sub>404</sub> | 17.6 | 0.15 | 20071027 | 10.21539  | 157.68569 | 229.41939 | 5.08665  | 0.1798347 | 2.2132714 | 43 | 1 | 51 days   | 0.40 |     |   | MP | 2007 TP <sub>404</sub>        |
| 2007 TQ <sub>404</sub> | 17.4 | 0.15 | 20071027 | 324.29677 | 56.10642  | 37.02132  | 12.61646 | 0.1703885 | 2.4471422 | 31 | 1 | 68 days   | 0.38 | M-v | 4 | MP | 2007 TQ <sub>404</sub>        |
| 2007 TW <sub>404</sub> | 17.0 | 0.15 | 20071027 | 78.81415  | 306.53550 | 4.72758   | 2.98931  | 0.1302953 | 2.5255138 | 16 | 1 | 35 days   | 0.43 |     |   | MP | 2007 TW <sub>404</sub>        |
| 2007 TB <sub>405</sub> | 17.4 | 0.15 | 20071007 | 69.31072  | 70.53976  | 240.39651 | 6.18179  | 0.1678286 | 2.2960279 | 19 | 1 | 28 days   | 0.24 |     |   | MP | 2007 TB <sub>405</sub>        |
| 2007 TE <sub>405</sub> | 16.1 | 0.15 | 20071027 | 219.55380 | 156.05689 | 37.60659  | 9.44692  | 0.0553191 | 3.0121940 | 15 | 1 | 51 days   | 0.24 |     |   | MP | 2007 TE <sub>405</sub>        |
| 2007 TF <sub>405</sub> | 15.5 | 0.15 | 20071027 | 313.98561 | 62.20289  | 39.05233  | 9.99777  | 0.0685357 | 3.1624428 | 44 | 2 | 2001-2007 | 0.42 | M-v | 4 | MP | 128537 2007 TF <sub>405</sub> |
| 2007 TG <sub>405</sub> | 17.8 | 0.15 | 20071027 | 57.74165  | 303.81358 | 21.28665  | 3.87887  | 0.2095637 | 2.2600588 | 18 | 1 | 55 days   | 0.30 |     |   | MP | 2007 TG <sub>405</sub>        |
| 2007 TJ <sub>405</sub> | 17.4 | 0.15 | 20071027 | 28.52886  | 132.68219 | 229.98940 | 12.86172 | 0.2165531 | 2.5495792 | 25 | 1 | 36 days   | 0.39 |     |   | MP | 2007 TJ <sub>405</sub>        |
| 2007 TK <sub>405</sub> | 17.3 | 0.15 | 20071027 | 341.79934 | 206.00568 | 229.48410 | 12.87329 | 0.2171843 | 2.6536658 | 35 | 1 | 50 days   | 0.49 |     |   | MP | 2007 TK <sub>405</sub>        |
| 2007 TL <sub>405</sub> | 16.0 | 0.15 | 20071027 | 53.81871  | 109.79293 | 231.71822 | 9.35803  | 0.1107071 | 3.0550969 | 25 | 1 | 44 days   | 0.26 |     |   | MP | 2007 TL <sub>405</sub>        |
| 2007 TM <sub>405</sub> | 18.7 | 0.15 | 20071027 | 43.91470  | 354.91440 | 338.95529 | 1.08198  | 0.2521572 | 2.2332404 | 18 | 1 | 64 days   | 0.36 | M-v | 5 | MP | 2007 TM <sub>405</sub>        |
| 2007 TN <sub>405</sub> | 15.9 | 0.15 | 20071027 | 75.39501  | 284.62946 | 38.12514  | 10.63563 | 0.0817954 | 3.0543799 | 22 | 1 | 51 days   | 0.35 |     |   | MP | 2007 TN <sub>405</sub>        |
| 2007 TP <sub>405</sub> | 18.7 | 0.15 | 20071027 | 339.63234 | 40.14707  | 34.37947  | 6.23466  | 0.2012030 | 2.3266692 | 19 | 1 | 35 days   | 0.28 |     |   | MP | 2007 TP <sub>405</sub>        |
| 2007 TS <sub>405</sub> | 17.6 | 0.15 | 20071027 | 46.26710  | 306.97601 | 30.37765  | 3.63154  | 0.2136636 | 2.3822018 | 34 | 1 | 70 days   | 0.36 | M-v | 4 | MP | 2007 TS <sub>405</sub>        |
| 2007 TV <sub>405</sub> | 16.0 | 0.15 | 20071027 | 27.42498  | 146.59011 | 225.14518 | 6.44742  | 0.1330633 | 3.0537181 | 63 | 4 | 2001-2007 | 0.44 | M-v | 1 | MP | 128537 2007 TV <sub>405</sub> |
| 2007 TW <sub>405</sub> | 17.0 | 0.15 | 20071007 | 334.98718 | 211.27973 | 228.86595 | 9.71011  | 0.2014973 | 3.1471335 | 13 | 1 | 19 days   | 0.22 |     |   | MP | 2007 TW <sub>405</sub>        |
| 2007 TG <sub>406</sub> | 15.6 | 0.15 | 20071027 | 351.98636 | 40.74565  | 357.68356 | 2.47808  | 0.2232515 | 3.9431484 | 24 | 1 | 31 days   | 0.58 |     |   | MP | 2007 TG <sub>406</sub>        |
| 2007 TU <sub>406</sub> | 17.8 | 0.15 | 20071027 | 9.66757   | 348.54772 | 38.81106  | 2.14333  | 0.1945358 | 2.3477782 | 50 | 1 | 79 days   | 0.43 | M-v | 4 | MP | 2007 TU <sub>406</sub>        |
| 2007 TV <sub>406</sub> | 15.9 | 0.15 | 20071027 | 39.03695  | 304.55856 | 48.44938  | 15.47836 | 0.1403453 | 2.6744177 | 55 | 4 | 1998-2007 | 0.40 | M-v | 1 | MP | 128537 2007 TV <sub>406</sub> |
| 2007 TR <sub>407</sub> | 18.1 | 0.15 | 20071027 | 5.27606   | 2.59252   | 28.08390  | 9.24819  | 0.2739958 | 2.3488027 | 36 | 1 | 57 days   | 0.53 |     |   | MP | 2007 TR <sub>407</sub>        |
| 2007 TH <sub>408</sub> | 17.1 | 0.15 | 20071027 | 41.59738  | 157.33246 | 210.72183 | 4.19884  | 0.0831484 | 2.7746848 | 19 | 1 | 37 days   | 0.23 |     |   | MP | 2007 TH <sub>408</sub>        |
| 2007 TL <sub>408</sub> | 15.6 | 0.15 | 20071027 | 34.49904  | 298.13328 | 77.39828  | 10.91655 | 0.0374121 | 3.0945582 | 48 | 5 | 1999-2007 | 0.48 | M-v | 0 | MP | 128538 2007 TL <sub>408</sub> |
| 2007 TU <sub>408</sub> | 17.3 | 0.15 | 20071027 | 8.40617   | 120.32500 | 263.54592 | 5.28319  | 0.2134307 | 2.1820239 | 78 | 3 | 1991-2007 | 0.45 | M-v | 3 | MP | 128538 2007 TU <sub>408</sub> |
| 2007 TO <sub>410</sub> | 17.5 | 0.15 | 20071027 | 15.74287  | 251.27951 | 121.50080 | 8.27650  | 0.1719671 | 2.3746153 | 41 | 1 | 40 days   | 0.51 |     |   | MP | 2007 TO <sub>410</sub>        |
| 2007 TK <sub>411</sub> | 18.0 | 0.15 | 20071007 | 140.52963 | 32.71313  | 203.18880 | 21.39559 | 0.0599399 | 1.9591049 | 34 | 1 | 56 days   | 0.50 |     |   | MP | 2007 TK <sub>411</sub>        |
| 2007 TM <sub>411</sub> | 16.1 | 0.15 | 20071027 | 44.87203  | 167.28701 | 180.43872 | 13.62443 | 0.1855496 | 2.5486973 | 28 | 1 | 53 days   | 0.64 |     |   | MP | 2007 TM <sub>411</sub>        |
| 2007 TR <sub>411</sub> | 18.4 | 0.15 | 20071007 | 350.17220 | 197.22084 | 194.00708 | 4.35636  | 0.1885273 | 2.3762736 | 26 | 1 | 53 days   | 0.66 |     |   | MP | 2007 TR <sub>411</sub>        |
| 2007 TE <sub>412</sub> | 16.5 | 0.15 | 20071027 | 30.34141  | 344.87234 | 4.57377   | 13.81153 | 0.1843202 | 2.6223194 | 25 | 1 | 26 days   | 0.65 |     |   | MP | 2007 TE <sub>412</sub>        |
| 2007 TF <sub>412</sub> | 16.1 | 0.15 | 20071027 | 343.89856 | 172.00878 | 238.86827 | 10.91493 | 0.0661763 | 2.6756283 | 62 | 3 | 2002-2007 | 0.51 | M-v | 2 | MP | 128539 2007 TF <sub>412</sub> |
| 2007 TM <sub>412</sub> | 17.1 | 0.15 | 20071027 | 352.45435 | 67.47915  | 332.43962 | 8.71650  | 0.2133277 | 2.5764943 | 31 | 1 | 84 days   | 0.60 | M-v | 4 | MP | 2007 TM <sub>412</sub>        |
| 2007 TP <sub>412</sub> | 17.2 | 0.15 | 20071027 | 25.44648  | 41.37394  | 300.49351 | 5.19362  | 0.3059253 | 2.6307106 | 21 | 1 | 25 days   | 0.64 |     |   | MP | 2007 TP <sub>412</sub>        |
| 2007 TD <sub>414</sub> | 16.2 | 0.15 | 20071027 | 2.13585   | 6.68398   | 30.93680  | 6.23254  | 0.2153747 | 3.0105840 | 57 | 1 | 60 days   | 0.55 | M-v | 4 | MP | 2007 TD <sub>414</sub>        |
| 2007 TF <sub>414</sub> | 15.4 | 0.15 | 20071027 | 47.23976  | 122.81141 | 232.72411 | 9.48904  | 0.1023623 | 3.0063356 | 70 | 5 | 2000-2007 | 0.54 | M-v | 1 | MP | 128539 2007 TF <sub>414</sub> |
| 2007 TG <sub>414</sub> | 16.2 | 0.15 | 20071027 | 33.36927  | 307.66850 | 55.26022  | 14.22577 | 0.2030874 | 2.5904144 | 61 | 1 | 59 days   | 0.41 |     |   | MP | 2007 TG <sub>414</sub>        |
| 2007 TL <sub>414</sub> | 16.9 | 0.15 | 20071027 | 344.47513 | 254.36490 | 179.50743 | 17.54029 | 0.2041845 | 3.1048775 | 24 | 1 | 42 days   | 0.64 |     |   | MP | 2007 TL <sub>414</sub>        |
| 2007 TN <sub>414</sub> | 15.9 | 0.15 | 20071027 | 20.28625  | 273.11298 | 95.31090  | 14.27089 | 0.1096826 | 3.0115827 | 23 | 1 | 39 days   | 0.61 |     |   | MP | 2007 TN <sub>414</sub>        |
| 2007 TO <sub>414</sub> | 15.7 | 0.15 | 20071027 | 14.56196  | 272.98845 | 101.32020 | 12.26173 | 0.1571619 | 3.0121696 | 30 | 1 | 57 days   | 0.63 |     |   | MP | 2007 TO <sub>414</sub>        |
| 2007 TR <sub>414</sub> | 16.6 | 0.15 | 20071027 | 40.22736  | 198.67432 | 153.57062 | 2.95608  | 0.1776541 | 2.2985361 | 80 | 6 | 1995-2007 | 0.47 | M-v | 1 | MP | 128539 2007 TR <sub>414</sub> |
| 2007 UA                | 16.6 | 0.15 | 20071027 | 9.34292   | 296.81817 | 72.21825  | 7.14676  | 0.2766394 | 2.7140260 | 78 | 4 | 1998-2007 | 0.58 | M-v | 1 | MP | 128539 2007 UA                |

|                      |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |         |                            |
|----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|---------|----------------------------|
| 2007 UE              | 16.5 | 0.15 | 20071007 | 31.78588  | 125.38221 | 212.83937 | 14.90911 | 0.2085224 | 3.2096242 | 47 | 1 | 44 days   | 0.53 |     | MPC | 2007 UE |                            |
| 2007 UL              | 16.9 | 0.15 | 20071027 | 345.87503 | 138.85186 | 266.30925 | 3.14139  | 0.1820518 | 2.3254223 | 70 | 6 | 1993–2007 | 0.57 | M-v | 1   | MPC     | 1290142007 UL              |
| 2007 UP              | 17.6 | 0.15 | 20071007 | 244.23997 | 108.56160 | 45.33442  | 6.51826  | 0.0741370 | 2.2142170 | 16 | 1 | 22 days   | 0.27 |     | MPC | 2007 UP |                            |
| 2007 UQ              | 15.6 | 0.15 | 20071027 | 308.63667 | 58.55736  | 44.22579  | 10.11657 | 0.1423186 | 3.0848198 | 68 | 3 | 1999–2007 | 0.51 | M-v | 2   | MPC     | 1285402007 UQ              |
| 2007 UR              | 23.9 | 0.15 | 20071027 | 355.58877 | 23.48624  | 30.54837  | 3.22802  | 0.6139233 | 2.8088030 | 44 | 1 | 59 days   | 0.51 | M-v | 5   | MPC     | 1290142007 UR              |
| 2007 UP <sub>1</sub> | 17.5 | 0.15 | 20071027 | 8.48106   | 357.07122 | 22.66251  | 4.51262  | 0.1544329 | 2.4442082 | 50 | 3 | 2003–2007 | 0.46 | M-v | 3   | MPC     | 1285422007 UP <sub>1</sub> |
| 2007 UQ <sub>1</sub> | 15.6 | 0.15 | 20071027 | 79.29846  | 52.94284  | 230.94496 | 3.83678  | 0.0360526 | 3.1215330 | 43 | 4 | 2000–2007 | 0.62 | M-v | 1   | MPC     | 1285422007 UQ <sub>1</sub> |
| 2007 UT <sub>1</sub> | 16.8 | 0.15 | 20071027 | 194.48589 | 171.47766 | 44.78058  | 6.89172  | 0.0785726 | 2.4313982 | 63 | 5 | 2001–2007 | 0.39 | M-v | 0   | MPC     | 1285422007 UT <sub>1</sub> |
| 2007 UU <sub>1</sub> | 17.3 | 0.15 | 20071027 | 347.27103 | 27.52916  | 37.85877  | 1.42726  | 0.1821780 | 2.5367093 | 63 | 2 | 2003–2007 | 0.45 | M-v | 3   | MPC     | 1285422007 UU <sub>1</sub> |
| 2007 UX <sub>1</sub> | 20.5 | 0.15 | 20071027 | 1.59240   | 321.60113 | 74.47774  | 9.82571  | 0.4832380 | 2.4443501 | 96 | 1 | 58 days   | 0.50 | M-v | 4   | MPC     | 1290142007 UX <sub>1</sub> |
| 2007 UY <sub>1</sub> | 22.8 | 0.15 | 20071027 | 121.65205 | 273.35869 | 338.20987 | 1.02241  | 0.1745528 | 0.9495224 | 64 | 1 | 44 days   | 0.44 | M-v | 6   | MPC     | 1290142007 UY <sub>1</sub> |
| 2007 UA <sub>2</sub> | 21.0 | 0.15 | 20071027 | 329.92424 | 79.05620  | 21.05986  | 1.00677  | 0.4344403 | 1.9734970 | 46 | 1 | 58 days   | 0.54 | M-v | 4   | MPC     | 1290142007 UA <sub>2</sub> |
| 2007 UE <sub>2</sub> | 17.3 | 0.15 | 20071027 | 21.16674  | 281.78213 | 71.00405  | 5.80054  | 0.2006484 | 2.2231936 | 71 | 3 | 2003–2007 | 0.52 | M-v | 2   | MPC     | 1285422007 UE <sub>2</sub> |
| 2007 UF <sub>2</sub> | 16.8 | 0.15 | 20071027 | 30.08315  | 259.80960 | 68.18515  | 12.39592 | 0.3132718 | 2.3186300 | 49 | 2 | 2003–2007 | 0.47 | M-v | 3   | MPC     | 1285432007 UF <sub>2</sub> |
| 2007 UG <sub>2</sub> | 16.1 | 0.15 | 20071027 | 30.43054  | 256.64974 | 70.70183  | 16.06277 | 0.3017028 | 2.5354981 | 55 | 3 | 2002–2007 | 0.45 | M-v | 2   | MPC     | 1285432007 UG <sub>2</sub> |
| 2007 UH <sub>2</sub> | 17.1 | 0.15 | 20071027 | 3.46660   | 294.41246 | 85.34411  | 7.15799  | 0.3174440 | 2.6241023 | 47 | 1 | 38 days   | 0.66 |     |     | MPC     | 2007 UH <sub>2</sub>       |
| 2007 UK <sub>2</sub> | 17.4 | 0.15 | 20071027 | 18.46749  | 290.80150 | 68.58623  | 6.55992  | 0.2652498 | 2.3347576 | 53 | 1 | 41 days   | 0.50 |     |     | MPC     | 2007 UK <sub>2</sub>       |
| 2007 UQ <sub>2</sub> | 17.0 | 0.15 | 20071007 | 13.07747  | 319.52992 | 43.91220  | 9.37254  | 0.2183731 | 3.1502413 | 19 | 1 | 9 days    | 0.55 |     | D   | MPC     | 2007 UQ <sub>2</sub>       |
| 2007 UR <sub>2</sub> | 19.5 | 0.15 | 20071027 | 356.10136 | 356.23220 | 40.75844  | 8.26150  | 0.0611896 | 1.5248490 | 53 | 1 | 42 days   | 0.52 | M-v | 5   | MPC     | 1290142007 UR <sub>2</sub> |
| 2007 UT <sub>2</sub> | 17.1 | 0.15 | 20071027 | 350.75348 | 219.58915 | 202.31476 | 33.10741 | 0.2959490 | 2.5998709 | 36 | 1 | 72 days   | 0.48 | M-v | 4   | MPC     | 2007 UT <sub>2</sub>       |
| 2007 UV <sub>2</sub> | 17.5 | 0.15 | 20071027 | 341.72760 | 358.20299 | 63.67750  | 7.77780  | 0.1262360 | 2.2982811 | 36 | 1 | 57 days   | 0.53 |     |     | MPC     | 2007 UV <sub>2</sub>       |
| 2007 UW <sub>2</sub> | 17.4 | 0.15 | 20071027 | 272.01877 | 59.13523  | 69.97399  | 3.26339  | 0.1105060 | 2.2825450 | 46 | 4 | 1995–2007 | 0.42 | M-v | 1   | MPC     | 1285432007 UW <sub>2</sub> |
| 2007 UX <sub>2</sub> | 15.7 | 0.15 | 20071007 | 72.37442  | 262.45306 | 29.58430  | 40.00108 | 0.1678609 | 3.2571067 | 17 | 1 | 8 days    | 0.74 |     |     | MPC     | 2007 UX <sub>2</sub>       |
| 2007 UY <sub>2</sub> | 17.9 | 0.15 | 20071027 | 348.85351 | 184.31709 | 232.16019 | 21.45209 | 0.4317700 | 2.6648733 | 24 | 1 | 49 days   | 0.41 |     | D   | MPC     | 2007 UY <sub>2</sub>       |
| 2007 UZ <sub>2</sub> | 17.5 | 0.15 | 20070917 | 359.42239 | 194.12358 | 181.49746 | 6.06259  | 0.1279785 | 2.2486724 | 32 | 1 | 49 days   | 0.57 |     |     | MPC     | 2007 UZ <sub>2</sub>       |
| 2007 UG <sub>3</sub> | 16.0 | 0.15 | 20071027 | 13.95687  | 240.17502 | 140.37327 | 5.35080  | 0.1661071 | 3.0605731 | 46 | 1 | 35 days   | 0.59 |     | D   | MPC     | 2007 UG <sub>3</sub>       |
| 2007 UK <sub>3</sub> | 15.5 | 0.15 | 20071116 | 296.68766 | 71.87683  | 55.96376  | 8.97063  | 0.0033501 | 3.0407202 | 25 | 1 | 57 days   | 0.29 |     |     | MPC     | 2007 UK <sub>3</sub>       |
| 2007 UR <sub>3</sub> | 21.3 | 0.15 | 20071027 | 310.14005 | 315.96748 | 156.21251 | 1.30943  | 0.2839104 | 1.5597423 | 45 | 1 | 53 days   | 0.28 | M-v | 4   | MPC     | 1290152007 UR <sub>3</sub> |
| 2007 UW <sub>3</sub> | 19.4 | 0.15 | 20071027 | 2.33245   | 175.80634 | 219.82064 | 23.09475 | 0.5087601 | 2.5718519 | 64 | 1 | 43 days   | 0.34 | M-v | 4   | MPC     | 1290152007 UW <sub>3</sub> |
| 2007 UZ <sub>3</sub> | 18.1 | 0.15 | 20071027 | 11.26617  | 151.74924 | 212.48295 | 13.73839 | 0.3708115 | 2.6480189 | 69 | 1 | 66 days   | 0.60 | M-v | 4   | MPC     | 2007 UZ <sub>3</sub>       |
| 2007 UJ <sub>4</sub> | 16.0 | 0.15 | 20071027 | 271.62697 | 260.01815 | 232.52793 | 7.94849  | 0.1025290 | 2.7457437 | 47 | 5 | 1998–2007 | 0.57 | M-v | 1   | MPC     | 1285452007 UJ <sub>4</sub> |
| 2007 UM <sub>4</sub> | 16.7 | 0.15 | 20071027 | 55.36351  | 298.91782 | 19.46903  | 15.54997 | 0.1764387 | 2.7193672 | 36 | 3 | 1998–2007 | 0.44 | M-v | 2   | MPC     | 1285452007 UM <sub>4</sub> |
| 2007 UO <sub>4</sub> | 17.4 | 0.15 | 20071027 | 332.33010 | 77.15923  | 351.61295 | 4.92283  | 0.1259597 | 2.3333639 | 55 | 3 | 1996–2007 | 0.51 | M-v | 2   | MPC     | 1285452007 UO <sub>4</sub> |
| 2007 UP <sub>4</sub> | 15.0 | 0.15 | 20071027 | 329.36025 | 84.75772  | 341.29847 | 11.13876 | 0.0669253 | 2.9660128 | 66 | 7 | 1999–2007 | 0.56 | M-v | 1   | MPC     | 1285462007 UP <sub>4</sub> |
| 2007 UR <sub>4</sub> | 16.0 | 0.15 | 20071027 | 300.68878 | 76.81336  | 14.63885  | 6.33751  | 0.0718622 | 2.7923379 | 51 | 3 | 2002–2007 | 0.45 | M-v | 2   | MPC     | 1285462007 UR <sub>4</sub> |
| 2007 US <sub>4</sub> | 17.2 | 0.15 | 20071007 | 326.26801 | 223.30858 | 205.88474 | 13.69947 | 0.2002369 | 2.6870633 | 36 | 1 | 26 days   | 0.54 |     |     | MPC     | 2007 US <sub>4</sub>       |
| 2007 UU <sub>4</sub> | 17.8 | 0.15 | 20071007 | 338.69483 | 99.09511  | 308.67305 | 1.72497  | 0.1856045 | 2.4031271 | 20 | 1 | 28 days   | 0.46 |     |     | MPC     | 2007 UU <sub>4</sub>       |
| 2007 UY <sub>4</sub> | 18.3 | 0.15 | 20071007 | 27.05986  | 265.51368 | 73.29216  | 2.85765  | 0.2349116 | 2.3062674 | 30 | 1 | 37 days   | 0.66 |     |     | MPC     | 2007 UY <sub>4</sub>       |
| 2007 UZ <sub>4</sub> | 15.0 | 0.15 | 20071027 | 33.21813  | 94.77650  | 240.98352 | 16.65129 | 0.2552360 | 3.1240379 | 61 | 2 | 2006–2007 | 0.53 | M-v | 3   | MPC     | 1285462007 UZ <sub>4</sub> |
| 2007 UC <sub>5</sub> | 17.9 | 0.15 | 20071007 | 45.30957  | 167.34024 | 149.29657 | 2.66407  | 0.2126879 | 2.2734512 | 23 | 1 | 31 days   | 0.48 |     | D   | MPC     | 2007 UC <sub>5</sub>       |
| 2007 UD <sub>5</sub> | 17.1 | 0.15 | 20071007 | 305.74614 | 62.37333  | 39.49611  | 5.93661  | 0.2003235 | 2.6285756 | 30 | 1 | 53 days   | 0.33 |     |     | MPC     | 2007 UD <sub>5</sub>       |
| 2007 UH <sub>5</sub> | 18.1 | 0.15 | 20071027 | 8.10477   | 10.85255  | 5.33696   | 21.27043 | 0.0595230 | 1.8545048 | 21 | 1 | 61 days   | 0.49 | M-v | 5   | MPC     | 2007 UH <sub>5</sub>       |
| 2007 UM <sub>5</sub> | 17.7 | 0.15 | 20071007 | 29.61350  | 273.82699 | 65.04155  | 3.29790  | 0.1958253 | 2.4066212 | 31 | 1 | 12 days   | 0.52 |     |     | MPC     | 2007 UM <sub>5</sub>       |
| 2007 UO <sub>5</sub> | 16.9 | 0.15 | 20071007 | 345.50603 | 322.02976 | 82.31142  | 2.57198  | 0.1689970 | 3.1122532 | 20 | 1 | 9 days    | 0.57 |     |     | MPC     | 2007 UO <sub>5</sub>       |
| 2007 UP <sub>5</sub> | 16.9 | 0.15 | 20071007 | 324.05808 | 238.62513 | 196.35515 | 4.59532  | 0.1655699 | 2.6717277 | 45 | 1 | 50 days   | 0.49 |     |     | MPC     | 2007 UP <sub>5</sub>       |
| 2007 UR <sub>5</sub> | 15.2 | 0.15 | 20071027 | 67.83337  | 264.66647 | 64.15205  | 25.37843 | 0.1525051 | 2.7889582 | 65 | 3 | 2001–2007 | 0.46 | M-v | 2   | MPC     | 1285472007 UR <sub>5</sub> |
| 2007 UT <sub>5</sub> | 15.0 | 0.15 | 20071027 | 281.58866 | 284.86582 | 240.51797 | 25.20146 | 0.2279511 | 3.1338300 | 35 | 2 | 2004–2007 | 0.54 | M-v | 4   | MPC     | 1285472007 UT <sub>5</sub> |
| 2007 UZ <sub>5</sub> | 15.6 | 0.15 | 20071027 | 2.06849   | 153.93968 | 229.18808 | 8.05171  | 0.0470867 | 3.1732276 | 34 | 1 | 37 days   | 0.33 |     |     | MPC     | 2007 UZ <sub>5</sub>       |
| 2007 UA <sub>6</sub> | 16.3 | 0.15 | 20071027 | 354.60925 | 64.00988  | 359.86076 | 9.48763  | 0.1988847 | 2.6320474 | 45 | 2 | 2003–2007 | 0.52 | M-v | 3   | MPC     | 1285472007 UA <sub>6</sub> |
| 2007 UB <sub>6</sub> | 19.7 | 0.15 | 20071027 | 69.00671  | 255.18163 | 56.92258  | 14.20174 | 0.1664091 | 1.4386671 | 89 | 1 | 55 days   | 0.45 | M-v | 4   | MPC     | 1290152007 UB <sub>6</sub> |
| 2007 UK <sub>6</sub> | 18.3 | 0.15 | 20071027 | 30.03945  | 319.59810 | 56.08646  | 23.79118 | 0.0473683 | 1.9000874 | 38 | 1 | 45 days   | 0.52 |     |     | MPC     | 2007 UK <sub>6</sub>       |
| 2007 UM <sub>6</sub> | 17.1 | 0.15 | 20071007 | 43.23963  | 141.17165 | 169.99877 | 18.04535 | 0.2799291 | 2.6860832 | 13 | 1 | 16 days   | 0.51 |     |     | MPC     | 2007 UM <sub>6</sub>       |
| 2007 UP <sub>6</sub> | 23.1 | 0.15 | 20071027 | 117.82258 | 236.48263 | 31.57456  | 9.59062  | 0.0943480 | 0.9685035 | 73 | 1 | 40 days   | 0.41 | M-v | 5   | MPC     | 1290152007 UP <sub>6</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |       |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-------|--------|-----------------------|
| 2007 UV <sub>6</sub>  | 18.1 | 0.15 | 20071027 | 0.14187   | 88.10568  | 312.01382 | 5.24666  | 0.3413388 | 2.6180878 | 49  | 2 | 2003–2007 | 0.56 | M-v | 3 | MPC   | 128548 | 2007 UV <sub>6</sub>  |
| 2007 UY <sub>6</sub>  | 17.8 | 0.15 | 20071027 | 334.51615 | 18.46441  | 51.77128  | 5.74124  | 0.2235077 | 2.5908757 | 29  | 1 | 56 days   | 0.45 |     |   | MPC   |        | 2007 UY <sub>6</sub>  |
| 2007 UZ <sub>6</sub>  | 17.9 | 0.15 | 20071027 | 27.60814  | 140.74835 | 219.73851 | 1.09708  | 0.2411546 | 2.3159596 | 74  | 1 | 82 days   | 0.43 | M-v | 4 | MPC   |        | 2007 UZ <sub>6</sub>  |
| 2007 UB <sub>7</sub>  | 17.2 | 0.15 | 20071027 | 358.22058 | 288.46795 | 107.34632 | 6.80055  | 0.3641485 | 2.6033856 | 62  | 2 | 2003–2007 | 0.51 | M-v | 2 | MPC   | 128548 | 2007 UB <sub>7</sub>  |
| 2007 UE <sub>7</sub>  | 16.9 | 0.15 | 20071027 | 354.60640 | 85.81540  | 309.22441 | 12.75101 | 0.2069814 | 2.7118850 | 28  | 1 | 63 days   | 0.67 | M-v | 4 | MPC   |        | 2007 UE <sub>7</sub>  |
| 2007 UJ <sub>7</sub>  | 15.4 | 0.15 | 20071027 | 15.52148  | 113.57844 | 244.71291 | 24.24815 | 0.2959628 | 3.1434260 | 24  | 1 | 55 days   | 0.51 |     |   | MPC   |        | 2007 UJ <sub>7</sub>  |
| 2007 UQ <sub>7</sub>  | 17.1 | 0.15 | 20071027 | 47.77820  | 85.88959  | 249.49224 | 19.67065 | 0.0606416 | 1.9081507 | 25  | 1 | 48 days   | 0.38 |     |   | MPC   |        | 2007 UQ <sub>7</sub>  |
| 2007 UX <sub>7</sub>  | 15.6 | 0.15 | 20071027 | 34.59348  | 95.74135  | 273.51414 | 8.79870  | 0.0895836 | 2.9816836 | 44  | 3 | 2002–2007 | 0.51 | M-v | 2 | MPC   | 128549 | 2007 UX <sub>7</sub>  |
| 2007 UY <sub>7</sub>  | 17.5 | 0.15 | 20071027 | 357.59858 | 105.12380 | 301.76759 | 4.53024  | 0.2421855 | 2.3162396 | 72  | 1 | 59 days   | 0.41 |     |   | MPC   |        | 2007 UY <sub>7</sub>  |
| 2007 UB <sub>8</sub>  | 16.5 | 0.15 | 20071027 | 313.68918 | 205.55821 | 255.64081 | 10.19399 | 0.1580112 | 2.4667623 | 41  | 1 | 58 days   | 0.54 |     |   | MPC   |        | 2007 UB <sub>8</sub>  |
| 2007 UC <sub>8</sub>  | 15.1 | 0.15 | 20071027 | 51.01283  | 72.79060  | 268.46556 | 7.71923  | 0.0950012 | 2.9778829 | 53  | 2 | 2002–2007 | 0.53 | M-v | 4 | MPC   | 128549 | 2007 UC <sub>8</sub>  |
| 2007 UF <sub>8</sub>  | 16.1 | 0.15 | 20071027 | 352.41640 | 76.38190  | 328.05678 | 10.96173 | 0.1252400 | 2.6323702 | 28  | 1 | 60 days   | 0.60 | M-v | 4 | MPC   |        | 2007 UF <sub>8</sub>  |
| 2007 UH <sub>8</sub>  | 15.5 | 0.15 | 20071027 | 347.46470 | 141.88208 | 268.09239 | 13.30187 | 0.0912436 | 3.2319318 | 25  | 1 | 35 days   | 0.63 |     |   | MPC   |        | 2007 UH <sub>8</sub>  |
| 2007 UE <sub>9</sub>  | 15.4 | 0.15 | 20071007 | 345.07898 | 302.12813 | 103.36730 | 4.47064  | 0.2722637 | 3.9219855 | 30  | 1 | 57 days   | 0.49 |     |   | MPC   |        | 2007 UE <sub>9</sub>  |
| 2007 UF <sub>9</sub>  | 16.0 | 0.15 | 20071007 | 328.70489 | 4.17364   | 54.03037  | 6.99460  | 0.1205078 | 2.7529974 | 25  | 1 | 48 days   | 0.56 |     |   | D MPC |        | 2007 UF <sub>9</sub>  |
| 2007 UJ <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 15.27784  | 192.71148 | 178.03697 | 9.89264  | 0.1013446 | 2.3318424 | 35  | 1 | 65 days   | 0.62 | M-v | 4 | MPC   |        | 2007 UJ <sub>9</sub>  |
| 2007 UP <sub>9</sub>  | 16.0 | 0.15 | 20071007 | 337.31451 | 313.56637 | 99.57570  | 6.63951  | 0.1326293 | 3.1840489 | 16  | 1 | 21 days   | 0.68 |     |   | MPC   |        | 2007 UP <sub>9</sub>  |
| 2007 US <sub>9</sub>  | 18.6 | 0.15 | 20071007 | 4.96604   | 309.18642 | 59.49544  | 6.48822  | 0.2495880 | 2.2120651 | 19  | 1 | 27 days   | 0.46 |     |   | MPC   |        | 2007 US <sub>9</sub>  |
| 2007 UO <sub>10</sub> | 16.9 | 0.15 | 20071027 | 339.18768 | 194.93097 | 233.21639 | 17.15979 | 0.1624287 | 2.6144780 | 33  | 1 | 46 days   | 0.52 |     |   | MPC   |        | 2007 UO <sub>10</sub> |
| 2007 UP <sub>10</sub> | 18.2 | 0.15 | 20071027 | 353.23493 | 142.02514 | 267.59092 | 5.26686  | 0.2660975 | 2.3219676 | 32  | 1 | 79 days   | 0.48 | M-v | 4 | MPC   |        | 2007 UP <sub>10</sub> |
| 2007 UR <sub>10</sub> | 17.9 | 0.15 | 20071027 | 7.17587   | 125.30224 | 264.44000 | 1.64355  | 0.2277224 | 2.3235793 | 58  | 3 | 2000–2007 | 0.58 | M-v | 3 | MPC   | 128549 | 2007 UR <sub>10</sub> |
| 2007 US <sub>10</sub> | 16.8 | 0.15 | 20071027 | 1.31510   | 176.12373 | 225.30429 | 6.56750  | 0.0896348 | 2.2818236 | 85  | 4 | 1999–2007 | 0.51 | M-v | 2 | MPC   | 128549 | 2007 US <sub>10</sub> |
| 2007 UT <sub>10</sub> | 17.3 | 0.15 | 20071027 | 330.07210 | 55.32977  | 22.92778  | 5.63421  | 0.1383339 | 2.2760442 | 56  | 4 | 2000–2007 | 0.48 | M-v | 1 | MPC   | 128550 | 2007 UT <sub>10</sub> |
| 2007 UU <sub>10</sub> | 15.9 | 0.15 | 20071027 | 56.00287  | 104.13478 | 233.38539 | 11.04225 | 0.0508307 | 2.9953030 | 50  | 4 | 1999–2007 | 0.52 | M-v | 0 | MPC   | 128550 | 2007 UU <sub>10</sub> |
| 2007 UV <sub>10</sub> | 16.2 | 0.15 | 20071027 | 28.26032  | 119.39452 | 221.83268 | 25.00879 | 0.3171559 | 3.0917662 | 44  | 1 | 48 days   | 0.54 |     |   | MPC   |        | 2007 UV <sub>10</sub> |
| 2007 UW <sub>10</sub> | 16.9 | 0.15 | 20071027 | 357.12328 | 89.00403  | 308.94339 | 5.34394  | 0.1324106 | 2.3991957 | 55  | 3 | 2003–2007 | 0.58 | M-v | 3 | MPC   | 128550 | 2007 UW <sub>10</sub> |
| 2007 UX <sub>10</sub> | 16.6 | 0.15 | 20071007 | 343.74587 | 180.56696 | 233.33912 | 13.01900 | 0.2396713 | 2.6614019 | 43  | 1 | 54 days   | 0.46 |     |   | MPC   |        | 2007 UX <sub>10</sub> |
| 2007 UB <sub>11</sub> | 17.2 | 0.15 | 20071027 | 327.64127 | 18.69479  | 66.39329  | 4.36595  | 0.1111272 | 2.2723398 | 65  | 3 | 1995–2007 | 0.50 | M-v | 2 | MPC   | 128551 | 2007 UB <sub>11</sub> |
| 2007 UC <sub>11</sub> | 15.9 | 0.15 | 20071116 | 35.82644  | 311.45943 | 66.25397  | 27.04239 | 0.0995102 | 2.6202115 | 44  | 1 | 56 days   | 0.53 |     |   | MPC   |        | 2007 UC <sub>11</sub> |
| 2007 UD <sub>11</sub> | 16.7 | 0.15 | 20071007 | 46.75708  | 182.63395 | 134.11958 | 11.27006 | 0.2410640 | 2.3383430 | 42  | 1 | 53 days   | 0.57 |     |   | MPC   |        | 2007 UD <sub>11</sub> |
| 2007 UF <sub>11</sub> | 17.1 | 0.15 | 20071027 | 12.57515  | 249.20991 | 128.58682 | 9.52707  | 0.2209060 | 2.3334608 | 33  | 1 | 39 days   | 0.50 |     |   | MPC   |        | 2007 UF <sub>11</sub> |
| 2007 UJ <sub>11</sub> | 16.2 | 0.15 | 20071027 | 28.90198  | 219.21511 | 137.22973 | 10.66833 | 0.2604692 | 2.5553145 | 52  | 1 | 86 days   | 0.54 | M-v | 4 | MPC   |        | 2007 UJ <sub>11</sub> |
| 2007 UK <sub>11</sub> | 16.4 | 0.15 | 20071027 | 20.90935  | 289.71886 | 86.56171  | 14.42050 | 0.1882346 | 2.5910822 | 78  | 2 | 2003–2007 | 0.51 | M-v | 3 | MPC   | 128551 | 2007 UK <sub>11</sub> |
| 2007 UO <sub>11</sub> | 17.1 | 0.15 | 20071027 | 17.96843  | 263.20507 | 108.31417 | 3.29927  | 0.2186371 | 2.3273181 | 73  | 4 | 2000–2007 | 0.57 | M-v | 2 | MPC   | 128551 | 2007 UO <sub>11</sub> |
| 2007 UP <sub>11</sub> | 16.9 | 0.15 | 20071027 | 31.28228  | 259.07452 | 89.29579  | 4.67858  | 0.2522795 | 2.3599377 | 51  | 1 | 41 days   | 0.45 |     |   | MPC   |        | 2007 UP <sub>11</sub> |
| 2007 UQ <sub>11</sub> | 17.0 | 0.15 | 20071027 | 23.41359  | 244.83408 | 110.51365 | 4.45826  | 0.3158828 | 2.2323219 | 86  | 3 | 1998–2007 | 0.43 | M-v | 3 | MPC   | 128551 | 2007 UQ <sub>11</sub> |
| 2007 UT <sub>11</sub> | 16.7 | 0.15 | 20071027 | 342.75507 | 359.12551 | 62.83527  | 7.40029  | 0.1367352 | 2.2392625 | 44  | 1 | 56 days   | 0.58 |     |   | MPC   |        | 2007 UT <sub>11</sub> |
| 2007 UV <sub>11</sub> | 16.3 | 0.15 | 20071027 | 15.96786  | 309.98079 | 68.00564  | 9.25774  | 0.1849906 | 2.6449385 | 66  | 1 | 59 days   | 0.56 |     |   | MPC   |        | 2007 UV <sub>11</sub> |
| 2007 UW <sub>11</sub> | 14.4 | 0.15 | 20071027 | 36.03706  | 278.55563 | 79.11463  | 16.92659 | 0.2371885 | 3.0654564 | 53  | 1 | 83 days   | 0.54 | M-v | 5 | MPC   |        | 2007 UW <sub>11</sub> |
| 2007 UM <sub>12</sub> | 21.6 | 0.15 | 20071027 | 10.10220  | 152.33905 | 208.58019 | 9.97543  | 0.3907714 | 1.7332456 | 55  | 1 | 40 days   | 0.33 | M-v | 5 | MPC   | 129016 | 2007 UM <sub>12</sub> |
| 2007 UN <sub>12</sub> | 28.7 | 0.15 | 20071027 | 39.70863  | 131.96236 | 216.54603 | 0.23737  | 0.0643006 | 1.0544130 | 120 | 1 | 25 days   | 0.44 | M-v | 3 | MPC   | 129016 | 2007 UN <sub>12</sub> |
| 2007 UP <sub>12</sub> | 17.5 | 0.15 | 20071027 | 6.05821   | 143.73597 | 246.84638 | 2.20998  | 0.1741398 | 2.4193354 | 66  | 4 | 1992–2007 | 0.56 | M-v | 1 | MPC   | 128552 | 2007 UP <sub>12</sub> |
| 2007 UR <sub>12</sub> | 16.3 | 0.15 | 20071027 | 32.62340  | 272.65347 | 70.73004  | 11.32155 | 0.2470939 | 3.1424930 | 32  | 1 | 39 days   | 0.74 |     |   | MPC   |        | 2007 UR <sub>12</sub> |
| 2007 US <sub>12</sub> | 22.0 | 0.15 | 20071027 | 84.70535  | 44.54353  | 211.20376 | 8.80849  | 0.5147419 | 0.9060839 | 48  | 1 | 31 days   | 0.48 | M-v | 7 | MPC   | 129016 | 2007 US <sub>12</sub> |
| 2007 UJ <sub>13</sub> | 16.3 | 0.15 | 20071007 | 23.70498  | 315.74637 | 56.01191  | 5.14633  | 0.0636591 | 2.7689362 | 37  | 1 | 54 days   | 0.33 |     |   | MPC   |        | 2007 UJ <sub>13</sub> |
| 2007 UM <sub>13</sub> | 18.4 | 0.15 | 20071027 | 13.56374  | 180.09164 | 202.93352 | 2.19262  | 0.1747940 | 2.2893237 | 30  | 1 | 50 days   | 0.40 |     |   | MPC   |        | 2007 UM <sub>13</sub> |
| 2007 UP <sub>13</sub> | 16.4 | 0.15 | 20071027 | 12.28629  | 262.57855 | 129.64135 | 14.30772 | 0.1900643 | 2.5951931 | 34  | 1 | 83 days   | 0.53 | M-v | 4 | MPC   |        | 2007 UP <sub>13</sub> |
| 2007 UQ <sub>13</sub> | 19.7 | 0.15 | 20071027 | 115.72112 | 29.36775  | 217.72744 | 29.30255 | 0.4252980 | 1.1651498 | 34  | 1 | 35 days   | 0.31 | M-v | 6 | MPC   | 129016 | 2007 UQ <sub>13</sub> |
| 2007 US <sub>13</sub> | 17.7 | 0.15 | 20071007 | 72.82667  | 242.04126 | 34.65648  | 7.25304  | 0.1125412 | 2.3624788 | 21  | 1 | 18 days   | 0.31 |     |   | MPC   |        | 2007 US <sub>13</sub> |
| 2007 UU <sub>13</sub> | 17.5 | 0.15 | 20071007 | 23.68044  | 296.59286 | 23.05773  | 12.50675 | 0.2928524 | 2.5947503 | 27  | 1 | 4 days    | 0.33 |     |   | MPC   |        | 2007 UU <sub>13</sub> |
| 2007 UJ <sub>14</sub> | 17.1 | 0.15 | 20071027 | 26.16131  | 258.40756 | 106.43261 | 2.10740  | 0.1524464 | 2.2821555 | 62  | 3 | 2005–2007 | 0.50 | M-v | 3 | MPC   | 128552 | 2007 UJ <sub>14</sub> |
| 2007 UP <sub>14</sub> | 17.6 | 0.15 | 20070917 | 15.54409  | 186.88869 | 154.62915 | 1.59617  | 0.1996247 | 2.4011244 | 27  | 1 | 55 days   | 0.49 |     |   | MPC   |        | 2007 UP <sub>14</sub> |
| 2007 UQ <sub>14</sub> | 18.2 | 0.15 | 20071027 | 18.16598  | 290.01696 | 67.78421  | 0.56261  | 0.2546625 | 3.1053082 | 15  | 1 | 31 days   | 0.24 |     |   | MPC   |        | 2007 UQ <sub>14</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |         |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|---------|-----|------------------------------|
| 2007 UE <sub>15</sub> | 18.1 | 0.15 | 20071007 | 341.18028 | 236.26982 | 163.47588 | 1.50447  | 0.1729635 | 2.4253236 | 24 | 1 | 54 days   | 0.20 |         | MPC | 2007 UE <sub>15</sub>        |
| 2007 UM <sub>15</sub> | 16.4 | 0.15 | 20070917 | 105.19643 | 236.02288 | 22.03034  | 10.65137 | 0.0690893 | 2.8066659 | 22 | 1 | 50 days   | 0.23 |         | MPC | 2007 UM <sub>15</sub>        |
| 2007 UL <sub>16</sub> | 17.3 | 0.15 | 20071007 | 226.58819 | 134.15827 | 26.84698  | 2.53240  | 0.1075912 | 2.4211315 | 15 | 1 | 12 days   | 0.24 |         | MPC | 2007 UL <sub>16</sub>        |
| 2007 UE <sub>17</sub> | 17.7 | 0.15 | 20071007 | 352.55457 | 165.54510 | 225.91457 | 0.13866  | 0.1726298 | 3.1742728 | 26 | 1 | 52 days   | 0.33 | D       | MPC | 2007 UE <sub>17</sub>        |
| 2007 US <sub>17</sub> | 16.2 | 0.15 | 20071007 | 94.12237  | 73.78075  | 202.76835 | 9.87727  | 0.0781849 | 2.8817386 | 25 | 1 | 16 days   | 0.27 |         | MPC | 2007 US <sub>17</sub>        |
| 2007 UY <sub>17</sub> | 15.4 | 0.15 | 20071027 | 310.53520 | 17.96350  | 73.39720  | 11.52006 | 0.0776648 | 3.1057848 | 25 | 1 | 33 days   | 0.76 |         | MPC | 2007 UY <sub>17</sub>        |
| 2007 UB <sub>18</sub> | 16.4 | 0.15 | 20071027 | 15.00602  | 216.00349 | 167.35061 | 2.67427  | 0.2087099 | 2.5689740 | 70 | 4 | 2001-2007 | 0.48 | M-v 2   | MPC | 128553 2007 UB <sub>18</sub> |
| 2007 UE <sub>18</sub> | 16.3 | 0.15 | 20071027 | 29.00951  | 174.18546 | 178.93089 | 12.19196 | 0.1328724 | 2.6385171 | 29 | 1 | 40 days   | 0.65 | M-v 5 D | MPC | 2007 UE <sub>18</sub>        |
| 2007 UG <sub>18</sub> | 17.7 | 0.15 | 20071027 | 349.60105 | 299.52482 | 108.33830 | 5.74009  | 0.2309976 | 2.3572791 | 33 | 1 | 38 days   | 0.56 |         | MPC | 2007 UG <sub>18</sub>        |
| 2007 UP <sub>18</sub> | 15.3 | 0.15 | 20071027 | 12.88779  | 172.37073 | 223.09138 | 5.92488  | 0.1165900 | 3.0159790 | 56 | 2 | 2005-2007 | 0.50 | M-v 3   | MPC | 128554 2007 UP <sub>18</sub> |
| 2007 UA <sub>19</sub> | 18.0 | 0.15 | 20071027 | 43.53830  | 324.00298 | 7.71326   | 1.34990  | 0.1247508 | 2.4482726 | 22 | 1 | 18 days   | 0.31 |         | MPC | 2007 UA <sub>19</sub>        |
| 2007 UN <sub>20</sub> | 16.1 | 0.15 | 20071027 | 350.30605 | 186.95458 | 229.98724 | 17.10568 | 0.2063843 | 3.1464261 | 43 | 1 | 57 days   | 0.58 |         | MPC | 2007 UN <sub>20</sub>        |
| 2007 UA <sub>21</sub> | 15.6 | 0.15 | 20071027 | 314.42409 | 237.30021 | 220.95728 | 9.14467  | 0.2105465 | 3.1386984 | 32 | 1 | 33 days   | 0.47 |         | MPC | 2007 UA <sub>21</sub>        |
| 2007 UF <sub>21</sub> | 16.1 | 0.15 | 20071027 | 359.44754 | 6.01139   | 30.14086  | 1.06172  | 0.0410048 | 2.9961741 | 50 | 4 | 2002-2007 | 0.44 | M-v 1   | MPC | 128555 2007 UF <sub>21</sub> |
| 2007 UN <sub>21</sub> | 16.3 | 0.15 | 20071027 | 316.41194 | 245.92630 | 201.54354 | 3.05802  | 0.1057358 | 3.1574092 | 21 | 1 | 58 days   | 0.27 |         | MPC | 2007 UN <sub>21</sub>        |
| 2007 UO <sub>21</sub> | 17.6 | 0.15 | 20071027 | 37.20690  | 298.65022 | 39.29805  | 5.62172  | 0.2218584 | 2.5439562 | 18 | 1 | 33 days   | 0.17 |         | MPC | 2007 UO <sub>21</sub>        |
| 2007 UQ <sub>21</sub> | 18.2 | 0.15 | 20071027 | 350.26200 | 190.74203 | 228.77758 | 5.93224  | 0.1446233 | 2.3824088 | 40 | 3 | 2003-2007 | 0.29 | M-v 2   | MPC | 128555 2007 UQ <sub>21</sub> |
| 2007 UT <sub>21</sub> | 16.6 | 0.15 | 20071007 | 113.12885 | 62.03093  | 210.66782 | 9.10375  | 0.1203063 | 2.7274855 | 18 | 1 | 33 days   | 0.21 |         | MPC | 2007 UT <sub>21</sub>        |
| 2007 UU <sub>21</sub> | 17.7 | 0.15 | 20071027 | 306.28183 | 60.30247  | 52.72155  | 5.52977  | 0.1856904 | 2.3769762 | 28 | 1 | 51 days   | 0.40 |         | MPC | 2007 UU <sub>21</sub>        |
| 2007 UB <sub>22</sub> | 18.5 | 0.15 | 20071007 | 48.66331  | 147.51319 | 178.08917 | 2.11175  | 0.1865527 | 2.1930091 | 20 | 1 | 33 days   | 0.20 |         | MPC | 2007 UB <sub>22</sub>        |
| 2007 UE <sub>22</sub> | 18.3 | 0.15 | 20071007 | 48.34701  | 123.67096 | 201.51559 | 5.47409  | 0.2048660 | 2.3350163 | 21 | 1 | 32 days   | 0.30 |         | MPC | 2007 UE <sub>22</sub>        |
| 2007 UQ <sub>22</sub> | 16.0 | 0.15 | 20071007 | 183.36550 | 167.30123 | 50.16510  | 18.42634 | 0.0722287 | 2.8718900 | 16 | 1 | 28 days   | 0.36 |         | MPC | 2007 UQ <sub>22</sub>        |
| 2007 UB <sub>23</sub> | 17.4 | 0.15 | 20071027 | 40.76063  | 260.34275 | 80.19151  | 3.02428  | 0.2009468 | 2.3593988 | 27 | 1 | 37 days   | 0.33 |         | MPC | 2007 UB <sub>23</sub>        |
| 2007 UD <sub>23</sub> | 16.7 | 0.15 | 20071027 | 61.28953  | 255.45106 | 63.17891  | 6.02191  | 0.1792542 | 2.3032316 | 44 | 1 | 58 days   | 0.49 |         | MPC | 2007 UD <sub>23</sub>        |
| 2007 UG <sub>23</sub> | 15.1 | 0.15 | 20071027 | 301.58102 | 51.94477  | 53.34398  | 10.16702 | 0.0486449 | 3.0468869 | 71 | 4 | 1991-2007 | 0.54 | M-v 0   | MPC | 128556 2007 UG <sub>23</sub> |
| 2007 UH <sub>23</sub> | 18.4 | 0.15 | 20071007 | 322.04763 | 344.80246 | 96.96527  | 2.12284  | 0.1467096 | 2.1598719 | 28 | 1 | 32 days   | 0.24 |         | MPC | 2007 UH <sub>23</sub>        |
| 2007 UM <sub>23</sub> | 17.3 | 0.15 | 20071007 | 168.19285 | 168.94731 | 58.11615  | 7.37321  | 0.0715030 | 2.4076338 | 20 | 1 | 32 days   | 0.25 |         | MPC | 2007 UM <sub>23</sub>        |
| 2007 UN <sub>23</sub> | 15.3 | 0.15 | 20071007 | 296.17412 | 43.91097  | 61.84144  | 8.85768  | 0.0257792 | 3.1960663 | 34 | 1 | 32 days   | 0.36 |         | MPC | 2007 UN <sub>23</sub>        |
| 2007 UQ <sub>23</sub> | 17.0 | 0.15 | 20071027 | 341.81724 | 23.70691  | 49.44552  | 15.80990 | 0.2642644 | 3.1713866 | 28 | 1 | 38 days   | 0.53 |         | MPC | 2007 UQ <sub>23</sub>        |
| 2007 UR <sub>23</sub> | 16.1 | 0.15 | 20071007 | 309.91119 | 307.30876 | 144.68493 | 2.67341  | 0.0383261 | 2.8558134 | 21 | 1 | 32 days   | 0.20 |         | MPC | 2007 UR <sub>23</sub>        |
| 2007 UT <sub>23</sub> | 16.4 | 0.15 | 20071007 | 121.29400 | 182.69019 | 77.00241  | 5.21270  | 0.2194688 | 2.5945116 | 18 | 1 | 32 days   | 0.33 |         | MPC | 2007 UT <sub>23</sub>        |
| 2007 UV <sub>23</sub> | 17.4 | 0.15 | 20071007 | 40.95158  | 204.62875 | 131.63407 | 2.22867  | 0.2025172 | 2.5882142 | 18 | 1 | 32 days   | 0.25 |         | MPC | 2007 UV <sub>23</sub>        |
| 2007 UD <sub>24</sub> | 16.4 | 0.15 | 20071007 | 35.01369  | 271.27105 | 86.06502  | 4.34161  | 0.0754555 | 2.6496094 | 21 | 1 | 31 days   | 0.43 |         | MPC | 2007 UD <sub>24</sub>        |
| 2007 UF <sub>24</sub> | 16.5 | 0.15 | 20071027 | 36.32037  | 291.37989 | 67.05970  | 6.79992  | 0.1038502 | 2.6131271 | 36 | 1 | 37 days   | 0.46 |         | MPC | 2007 UF <sub>24</sub>        |
| 2007 UG <sub>24</sub> | 17.3 | 0.15 | 20071027 | 292.02294 | 65.96475  | 61.10578  | 8.30637  | 0.1496075 | 2.3857397 | 25 | 1 | 37 days   | 0.43 |         | MPC | 2007 UG <sub>24</sub>        |
| 2007 UH <sub>24</sub> | 16.6 | 0.15 | 20071007 | 11.10644  | 277.29683 | 107.72030 | 3.23284  | 0.0982937 | 2.8774116 | 21 | 1 | 31 days   | 0.21 |         | MPC | 2007 UH <sub>24</sub>        |
| 2007 UN <sub>24</sub> | 17.6 | 0.15 | 20071007 | 40.62764  | 146.42577 | 192.78269 | 6.49017  | 0.1726378 | 2.2985655 | 29 | 1 | 59 days   | 0.39 |         | MPC | 2007 UN <sub>24</sub>        |
| 2007 UR <sub>24</sub> | 17.0 | 0.15 | 20071027 | 358.01973 | 227.45866 | 177.78203 | 4.45787  | 0.2106989 | 2.5399930 | 51 | 2 | 2003-2007 | 0.56 | M-v 3   | MPC | 128556 2007 UR <sub>24</sub> |
| 2007 UW <sub>24</sub> | 15.8 | 0.15 | 20071007 | 38.54558  | 280.60870 | 73.75474  | 6.83076  | 0.0977279 | 3.0784216 | 20 | 1 | 31 days   | 0.27 |         | MPC | 2007 UW <sub>24</sub>        |
| 2007 UG <sub>25</sub> | 18.3 | 0.15 | 20071007 | 189.27196 | 142.50281 | 67.79768  | 0.92664  | 0.0287587 | 2.1816465 | 17 | 1 | 20 days   | 0.22 |         | MPC | 2007 UG <sub>25</sub>        |
| 2007 UH <sub>25</sub> | 17.6 | 0.15 | 20071027 | 95.34859  | 73.22767  | 216.16374 | 5.65976  | 0.1881098 | 2.2684000 | 19 | 1 | 35 days   | 0.29 |         | MPC | 2007 UH <sub>25</sub>        |
| 2007 UK <sub>25</sub> | 16.8 | 0.15 | 20071027 | 284.44476 | 81.52552  | 47.48574  | 7.20360  | 0.0685958 | 2.3851238 | 46 | 2 | 2005-2007 | 0.39 | M-v 4   | MPC | 128556 2007 UK <sub>25</sub> |
| 2007 UL <sub>25</sub> | 17.3 | 0.15 | 20071027 | 97.11102  | 76.58882  | 221.53216 | 3.54275  | 0.0891953 | 2.1615834 | 44 | 3 | 1997-2007 | 0.41 | M-v 2   | MPC | 128557 2007 UL <sub>25</sub> |
| 2007 UM <sub>25</sub> | 17.9 | 0.15 | 20071027 | 55.65949  | 131.65807 | 197.46243 | 0.91340  | 0.1924762 | 2.3838466 | 23 | 1 | 39 days   | 0.43 |         | MPC | 2007 UM <sub>25</sub>        |
| 2007 UN <sub>25</sub> | 18.3 | 0.15 | 20071027 | 62.54390  | 265.82112 | 50.26943  | 4.56587  | 0.2398858 | 2.3808674 | 22 | 1 | 41 days   | 0.25 |         | MPC | 2007 UN <sub>25</sub>        |
| 2007 UO <sub>25</sub> | 15.2 | 0.15 | 20071027 | 301.45625 | 62.02105  | 50.00902  | 23.26096 | 0.0447368 | 3.2271433 | 36 | 1 | 58 days   | 0.51 |         | MPC | 2007 UO <sub>25</sub>        |
| 2007 UP <sub>25</sub> | 16.7 | 0.15 | 20071027 | 346.62083 | 21.36576  | 45.51753  | 14.66992 | 0.1916413 | 2.7661046 | 34 | 1 | 58 days   | 0.50 |         | MPC | 2007 UP <sub>25</sub>        |
| 2007 UU <sub>25</sub> | 16.0 | 0.15 | 20071027 | 63.75753  | 113.15912 | 223.69345 | 7.60103  | 0.0913534 | 3.0749277 | 23 | 1 | 88 days   | 0.24 | M-v 4   | MPC | 2007 UU <sub>25</sub>        |
| 2007 UY <sub>25</sub> | 17.6 | 0.15 | 20071027 | 229.93674 | 120.92136 | 60.85263  | 4.64925  | 0.0742039 | 2.3832214 | 45 | 3 | 2003-2007 | 0.38 | M-v 3   | MPC | 128557 2007 UY <sub>25</sub> |
| 2007 UZ <sub>25</sub> | 17.2 | 0.15 | 20071027 | 321.82456 | 36.64785  | 51.81168  | 7.31738  | 0.0790342 | 2.2001053 | 63 | 1 | 56 days   | 0.45 |         | MPC | 2007 UZ <sub>25</sub>        |
| 2007 UA <sub>26</sub> | 15.8 | 0.15 | 20071027 | 32.02137  | 154.91549 | 217.13349 | 8.39691  | 0.0591828 | 3.1017503 | 29 | 1 | 87 days   | 0.39 | M-v 4   | MPC | 2007 UA <sub>26</sub>        |
| 2007 UD <sub>26</sub> | 17.6 | 0.15 | 20071027 | 217.61318 | 133.82906 | 58.93908  | 7.98038  | 0.0552749 | 2.2722986 | 25 | 1 | 50 days   | 0.50 |         | MPC | 2007 UD <sub>26</sub>        |
| 2007 UK <sub>26</sub> | 16.3 | 0.15 | 20071007 | 42.18571  | 41.84198  | 303.32463 | 1.47377  | 0.1161917 | 3.0606600 | 16 | 1 | 30 days   | 0.42 |         | MPC | 2007 UK <sub>26</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|-----------------------|
| 2007 UL <sub>26</sub> | 16.5 | 0.15 | 20071027 | 17.60774  | 313.04340 | 68.50398  | 4.54372  | 0.1410891 | 2.5883255 | 66 | 2 | 2003–2007 | 0.55 | M-v | 4 | MPC | 128557 | 2007 UL <sub>26</sub> |
| 2007 UP <sub>28</sub> | 17.1 | 0.15 | 20071027 | 8.23403   | 139.30314 | 247.08239 | 1.51103  | 0.1955959 | 2.8145988 | 28 | 1 | 32 days   | 0.51 |     |   | MPC |        | 2007 UP <sub>28</sub> |
| 2007 UT <sub>28</sub> | 16.8 | 0.15 | 20071027 | 21.61764  | 331.97000 | 47.19239  | 15.65490 | 0.0931854 | 2.6411471 | 64 | 1 | 42 days   | 0.40 |     |   | MPC |        | 2007 UT <sub>28</sub> |
| 2007 UW <sub>28</sub> | 16.4 | 0.15 | 20071027 | 341.78909 | 208.99783 | 228.51858 | 8.76718  | 0.1887362 | 2.7454163 | 49 | 4 | 2002–2007 | 0.46 | M-v | 1 | MPC | 128558 | 2007 UW <sub>28</sub> |
| 2007 UD <sub>29</sub> | 16.4 | 0.15 | 20070917 | 27.61511  | 259.06543 | 39.80120  | 9.11345  | 0.3362068 | 2.4661850 | 28 | 1 | 45 days   | 0.35 |     |   | MPC |        | 2007 UD <sub>29</sub> |
| 2007 UF <sub>29</sub> | 16.8 | 0.15 | 20071027 | 1.84086   | 330.45400 | 52.63552  | 2.70746  | 0.0887764 | 2.7383486 | 30 | 1 | 85 days   | 0.33 | M-v | 4 | MPC |        | 2007 UF <sub>29</sub> |
| 2007 UL <sub>29</sub> | 17.2 | 0.15 | 20071027 | 327.79536 | 9.19797   | 69.80600  | 2.29696  | 0.1096882 | 2.3836559 | 46 | 4 | 1994–2007 | 0.44 | M-v | 2 | MPC | 128558 | 2007 UL <sub>29</sub> |
| 2007 UX <sub>29</sub> | 17.4 | 0.15 | 20071007 | 357.27934 | 348.91591 | 26.86667  | 15.75575 | 0.1899603 | 2.6004560 | 19 | 1 | 25 days   | 0.52 |     |   | MPC |        | 2007 UX <sub>29</sub> |
| 2007 UY <sub>29</sub> | 15.1 | 0.15 | 20071027 | 331.30306 | 21.93562  | 47.51147  | 19.26654 | 0.1680138 | 3.2095926 | 37 | 1 | 50 days   | 0.51 |     |   | MPC |        | 2007 UY <sub>29</sub> |
| 2007 UH <sub>30</sub> | 17.3 | 0.15 | 20071027 | 14.63057  | 315.97753 | 48.07875  | 14.69935 | 0.2884878 | 2.6390320 | 36 | 1 | 56 days   | 0.55 |     |   | MPC |        | 2007 UH <sub>30</sub> |
| 2007 UJ <sub>30</sub> | 15.7 | 0.15 | 20071027 | 10.53060  | 320.91229 | 53.46598  | 15.99918 | 0.2228120 | 3.2251766 | 37 | 1 | 39 days   | 0.68 |     |   | MPC |        | 2007 UJ <sub>30</sub> |
| 2007 UH <sub>31</sub> | 17.0 | 0.15 | 20071007 | 52.13262  | 177.37541 | 143.91806 | 7.43130  | 0.1348555 | 2.3062815 | 20 | 1 | 30 days   | 0.42 |     |   | MPC |        | 2007 UH <sub>31</sub> |
| 2007 UZ <sub>32</sub> | 15.9 | 0.15 | 20071027 | 17.70160  | 170.70864 | 220.08313 | 13.06220 | 0.1601086 | 2.5839225 | 42 | 1 | 103 days  | 0.48 | M-v | 4 | MPC |        | 2007 UZ <sub>32</sub> |
| 2007 UB <sub>33</sub> | 16.3 | 0.15 | 20071027 | 344.58326 | 174.75749 | 234.53508 | 24.47348 | 0.1918428 | 2.3603806 | 56 | 1 | 65 days   | 0.37 | M-v | 4 | MPC |        | 2007 UB <sub>33</sub> |
| 2007 UD <sub>33</sub> | 17.7 | 0.15 | 20071007 | 347.13184 | 77.79461  | 329.72982 | 13.01204 | 0.3344401 | 2.6271525 | 20 | 1 | 52 days   | 0.46 |     |   | MPC |        | 2007 UD <sub>33</sub> |
| 2007 UE <sub>33</sub> | 15.4 | 0.15 | 20071027 | 33.75637  | 70.02567  | 266.15513 | 16.38201 | 0.2127746 | 3.0498405 | 24 | 1 | 55 days   | 0.48 |     |   | MPC |        | 2007 UE <sub>33</sub> |
| 2007 UM <sub>33</sub> | 17.3 | 0.15 | 20071027 | 19.37616  | 111.56172 | 261.26414 | 5.08044  | 0.1467586 | 2.3161580 | 52 | 1 | 33 days   | 0.45 |     | D | MPC |        | 2007 UM <sub>33</sub> |
| 2007 UO <sub>33</sub> | 17.1 | 0.15 | 20071027 | 15.37367  | 128.20291 | 250.16304 | 9.42906  | 0.2603102 | 2.3941499 | 70 | 2 | 2003–2007 | 0.45 | M-v | 2 | MPC | 128558 | 2007 UO <sub>33</sub> |
| 2007 UP <sub>33</sub> | 15.7 | 0.15 | 20071027 | 317.88542 | 245.85825 | 230.87927 | 28.80138 | 0.3310978 | 2.6214234 | 56 | 1 | 62 days   | 0.37 | M-v | 4 | MPC |        | 2007 UP <sub>33</sub> |
| 2007 US <sub>33</sub> | 15.8 | 0.15 | 20071027 | 6.19220   | 145.16811 | 248.84664 | 13.24832 | 0.1449070 | 3.0744418 | 44 | 1 | 58 days   | 0.58 |     |   | MPC |        | 2007 US <sub>33</sub> |
| 2007 UT <sub>33</sub> | 16.1 | 0.15 | 20071027 | 39.59804  | 29.20162  | 326.23359 | 6.08557  | 0.1342449 | 2.3166605 | 67 | 4 | 1996–2007 | 0.41 | M-v | 1 | MPC | 128559 | 2007 UT <sub>33</sub> |
| 2007 UV <sub>33</sub> | 16.2 | 0.15 | 20071027 | 347.19139 | 109.07166 | 300.71224 | 11.84144 | 0.1530929 | 2.5411457 | 20 | 1 | 34 days   | 0.54 |     |   | MPC |        | 2007 UV <sub>33</sub> |
| 2007 UQ <sub>34</sub> | 17.5 | 0.15 | 20071027 | 39.59081  | 86.47186  | 247.70081 | 9.51967  | 0.2366614 | 2.3691003 | 34 | 1 | 40 days   | 0.60 |     |   | MPC |        | 2007 UQ <sub>34</sub> |
| 2007 UR <sub>34</sub> | 16.3 | 0.15 | 20071027 | 356.38153 | 171.49965 | 240.72872 | 16.34167 | 0.2244166 | 3.1748900 | 56 | 2 | 2001–2007 | 0.47 | M-v | 3 | MPC | 128559 | 2007 UR <sub>34</sub> |
| 2007 UT <sub>34</sub> | 17.6 | 0.15 | 20071027 | 355.64345 | 152.15125 | 256.15457 | 6.89404  | 0.1298996 | 2.2607369 | 40 | 3 | 2000–2007 | 0.60 | M-v | 3 | MPC | 128560 | 2007 UT <sub>34</sub> |
| 2007 UU <sub>34</sub> | 15.9 | 0.15 | 20071027 | 62.88969  | 293.66835 | 29.46650  | 18.25186 | 0.1853430 | 2.7450750 | 53 | 4 | 2001–2007 | 0.37 | M-v | 1 | MPC | 128560 | 2007 UU <sub>34</sub> |
| 2007 UW <sub>34</sub> | 17.1 | 0.15 | 20071027 | 2.48374   | 26.62445  | 15.98272  | 7.25821  | 0.1085525 | 2.3098554 | 39 | 1 | 43 days   | 0.42 |     |   | MPC |        | 2007 UW <sub>34</sub> |
| 2007 UY <sub>34</sub> | 16.8 | 0.15 | 20071027 | 19.99790  | 265.53559 | 103.28089 | 8.21047  | 0.2353592 | 2.7591788 | 31 | 1 | 48 days   | 0.59 |     |   | MPC |        | 2007 UY <sub>34</sub> |
| 2007 UD <sub>36</sub> | 17.9 | 0.15 | 20071027 | 13.52872  | 214.96852 | 146.76364 | 3.70061  | 0.1899743 | 2.2162328 | 23 | 1 | 72 days   | 0.56 | M-v | 4 | MPC | 129018 | 2007 UD <sub>36</sub> |
| 2007 US <sub>36</sub> | 16.0 | 0.15 | 20071007 | 61.98042  | 305.18075 | 19.22769  | 10.41652 | 0.0944906 | 3.0330351 | 31 | 1 | 54 days   | 0.46 |     |   | MPC |        | 2007 US <sub>36</sub> |
| 2007 UT <sub>36</sub> | 17.2 | 0.15 | 20071027 | 352.51346 | 34.98715  | 14.53936  | 7.51488  | 0.1711500 | 2.3042877 | 61 | 1 | 56 days   | 0.58 |     |   | MPC |        | 2007 UT <sub>36</sub> |
| 2007 UU <sub>36</sub> | 16.6 | 0.15 | 20071027 | 333.56094 | 91.63665  | 343.05966 | 3.98124  | 0.1397730 | 2.6057111 | 29 | 1 | 39 days   | 0.52 |     |   | MPC |        | 2007 UU <sub>36</sub> |
| 2007 UH <sub>37</sub> | 17.2 | 0.15 | 20071027 | 6.42806   | 310.31530 | 68.64992  | 8.04648  | 0.3285691 | 2.6451089 | 41 | 1 | 55 days   | 0.56 |     |   | MPC |        | 2007 UH <sub>37</sub> |
| 2007 UR <sub>37</sub> | 16.6 | 0.15 | 20071007 | 308.35184 | 251.99995 | 187.27670 | 21.59084 | 0.0520698 | 2.6754811 | 30 | 1 | 26 days   | 0.44 |     |   | MPC |        | 2007 UR <sub>37</sub> |
| 2007 UA <sub>38</sub> | 15.7 | 0.15 | 20071027 | 308.53605 | 247.86390 | 228.11006 | 25.06209 | 0.2102043 | 3.1622319 | 27 | 1 | 57 days   | 0.49 |     |   | MPC |        | 2007 UA <sub>38</sub> |
| 2007 UB <sub>38</sub> | 16.7 | 0.15 | 20071027 | 48.00065  | 303.47218 | 19.68256  | 6.50256  | 0.2926399 | 2.6459258 | 50 | 2 | 2006–2007 | 0.48 | M-v | 3 | MPC | 128560 | 2007 UB <sub>38</sub> |
| 2007 UC <sub>38</sub> | 17.3 | 0.15 | 20071027 | 65.09378  | 45.82169  | 271.12528 | 2.30424  | 0.1824605 | 2.3342154 | 20 | 1 | 35 days   | 0.33 |     |   | MPC |        | 2007 UC <sub>38</sub> |
| 2007 UD <sub>38</sub> | 17.7 | 0.15 | 20071027 | 9.95222   | 8.24684   | 21.35307  | 2.58841  | 0.1131812 | 2.1789566 | 66 | 5 | 1994–2007 | 0.52 | M-v | 1 | MPC | 128560 | 2007 UD <sub>38</sub> |
| 2007 UE <sub>38</sub> | 15.7 | 0.15 | 20071027 | 89.54279  | 264.81725 | 35.36807  | 14.88914 | 0.1350554 | 2.6130290 | 44 | 1 | 71 days   | 0.53 | M-v | 4 | MPC |        | 2007 UE <sub>38</sub> |
| 2007 UG <sub>38</sub> | 17.3 | 0.15 | 20071027 | 357.17234 | 6.64202   | 43.46799  | 3.49499  | 0.1502288 | 2.5239937 | 60 | 2 | 2003–2007 | 0.48 | M-v | 3 | MPC | 128561 | 2007 UG <sub>38</sub> |
| 2007 UV <sub>38</sub> | 17.0 | 0.15 | 20071027 | 13.67395  | 10.74147  | 6.55606   | 2.09730  | 0.1514869 | 2.6991581 | 31 | 1 | 43 days   | 0.50 |     |   | MPC |        | 2007 UV <sub>38</sub> |
| 2007 UE <sub>39</sub> | 16.1 | 0.15 | 20071007 | 9.64155   | 357.08682 | 20.42998  | 11.74700 | 0.1324055 | 3.0600253 | 21 | 1 | 53 days   | 0.47 |     |   | MPC |        | 2007 UE <sub>39</sub> |
| 2007 UF <sub>39</sub> | 18.5 | 0.15 | 20071027 | 49.28677  | 120.32140 | 215.78483 | 20.56641 | 0.0905155 | 1.9726519 | 20 | 1 | 38 days   | 0.41 |     |   | MPC |        | 2007 UF <sub>39</sub> |
| 2007 UY <sub>40</sub> | 17.7 | 0.15 | 20071007 | 353.16228 | 21.55595  | 19.91301  | 1.45638  | 0.1834288 | 2.4348393 | 28 | 1 | 42 days   | 0.48 |     |   | MPC |        | 2007 UY <sub>40</sub> |
| 2007 UY <sub>40</sub> | 15.0 | 0.15 | 20071007 | 160.74309 | 195.67554 | 33.30106  | 17.97734 | 0.1496911 | 3.0891185 | 20 | 1 | 35 days   | 0.24 |     |   | MPC |        | 2007 UY <sub>40</sub> |
| 2007 UZ <sub>40</sub> | 18.4 | 0.15 | 20071007 | 153.31264 | 236.65424 | 357.01326 | 1.72318  | 0.0721675 | 2.1250505 | 17 | 1 | 38 days   | 0.30 |     |   | MPC |        | 2007 UZ <sub>40</sub> |
| 2007 UJ <sub>41</sub> | 16.5 | 0.15 | 20071027 | 342.58632 | 28.77277  | 33.88969  | 9.48237  | 0.1598425 | 2.7694441 | 44 | 1 | 64 days   | 0.52 | M-v | 4 | MPC |        | 2007 UJ <sub>41</sub> |
| 2007 UP <sub>41</sub> | 16.2 | 0.15 | 20071027 | 286.10223 | 79.79530  | 48.07453  | 3.58094  | 0.1222329 | 2.6244994 | 56 | 1 | 60 days   | 0.41 | M-v | 4 | MPC |        | 2007 UP <sub>41</sub> |
| 2007 UW <sub>41</sub> | 17.6 | 0.15 | 20071027 | 51.05507  | 322.77900 | 358.57393 | 5.73970  | 0.2641449 | 2.5835748 | 23 | 1 | 33 days   | 0.29 |     |   | MPC |        | 2007 UW <sub>41</sub> |
| 2007 UZ <sub>41</sub> | 17.4 | 0.15 | 20071027 | 21.60998  | 352.95410 | 16.81551  | 9.72863  | 0.1928034 | 2.7246885 | 16 | 1 | 33 days   | 0.45 |     |   | MPC |        | 2007 UZ <sub>41</sub> |
| 2007 UA <sub>42</sub> | 16.1 | 0.15 | 20071027 | 79.21584  | 296.31972 | 16.04895  | 9.79073  | 0.1054879 | 3.0927223 | 20 | 1 | 35 days   | 0.31 |     |   | MPC |        | 2007 UA <sub>42</sub> |
| 2007 UD <sub>42</sub> | 16.5 | 0.15 | 20071027 | 358.32241 | 22.58868  | 22.99959  | 11.53488 | 0.0509607 | 3.0543291 | 23 | 1 | 44 days   | 0.26 |     |   | MPC |        | 2007 UD <sub>42</sub> |
| 2007 UE <sub>42</sub> | 18.9 | 0.15 | 20071027 | 359.37607 | 94.08746  | 306.81595 | 2.42450  | 0.2170072 | 2.2088923 | 16 | 1 | 34 days   | 0.24 |     |   | MPC |        | 2007 UE <sub>42</sub> |



|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |         |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|---------|-------|------------------------------|
| 2007 UJ <sub>42</sub> | 16.4 | 0.15 | 20071007 | 101.08768 | 343.70835 | 306.20181 | 3.72909  | 0.0818065 | 2.6754214 | 16 | 1 | 19 days   | 0.17 |         | MPC   | 2007 UJ <sub>42</sub>        |
| 2007 UO <sub>42</sub> | 17.6 | 0.15 | 20071027 | 356.10657 | 51.80780  | 357.22439 | 4.23550  | 0.1681707 | 2.6294280 | 27 | 1 | 44 days   | 0.58 |         | MPC   | 2007 UO <sub>42</sub>        |
| 2007 UQ <sub>42</sub> | 17.5 | 0.15 | 20071027 | 52.90594  | 31.53181  | 301.83569 | 2.93285  | 0.1587158 | 2.2937870 | 22 | 1 | 34 days   | 0.45 |         | MPC   | 2007 UQ <sub>42</sub>        |
| 2007 UR <sub>42</sub> | 16.1 | 0.15 | 20071007 | 41.30259  | 93.87116  | 252.03186 | 8.93967  | 0.1067420 | 2.9849427 | 24 | 1 | 54 days   | 0.37 |         | MPC   | 2007 UR <sub>42</sub>        |
| 2007 US <sub>42</sub> | 16.7 | 0.15 | 20071027 | 36.73978  | 161.78677 | 207.19021 | 8.39010  | 0.0443062 | 2.5759895 | 38 | 4 | 2002–2007 | 0.48 | M-v 1   | MPC   | 128561 2007 US <sub>42</sub> |
| 2007 UJ <sub>43</sub> | 16.9 | 0.15 | 20071027 | 261.92989 | 81.75625  | 54.77585  | 4.40697  | 0.0368225 | 2.6752199 | 34 | 5 | 1994–2007 | 0.53 | M-v 1   | MPC   | 128562 2007 UJ <sub>43</sub> |
| 2007 UL <sub>43</sub> | 16.1 | 0.15 | 20071007 | 343.65770 | 315.28752 | 98.87220  | 2.38682  | 0.1989868 | 3.1709463 | 25 | 1 | 39 days   | 0.55 |         | MPC   | 2007 UL <sub>43</sub>        |
| 2007 UQ <sub>43</sub> | 18.7 | 0.15 | 20071027 | 4.22022   | 332.00040 | 53.93277  | 4.35707  | 0.2345600 | 2.2778431 | 22 | 1 | 57 days   | 0.39 |         | MPC   | 2007 UQ <sub>43</sub>        |
| 2007 UV <sub>43</sub> | 18.6 | 0.15 | 20071007 | 15.18572  | 25.55869  | 329.89567 | 0.70457  | 0.2017733 | 2.3595047 | 24 | 1 | 52 days   | 0.30 |         | D MPC | 2007 UV <sub>43</sub>        |
| 2007 UW <sub>43</sub> | 16.1 | 0.15 | 20071027 | 12.44524  | 167.75652 | 203.86901 | 9.08561  | 0.0617979 | 3.0872824 | 37 | 1 | 60 days   | 0.36 | M-v 4   | MPC   | 2007 UW <sub>43</sub>        |
| 2007 UY <sub>43</sub> | 17.2 | 0.15 | 20071007 | 348.12307 | 11.83298  | 26.00119  | 14.98276 | 0.1467282 | 2.8609609 | 24 | 1 | 57 days   | 0.34 |         | MPC   | 2007 UY <sub>43</sub>        |
| 2007 UB <sub>44</sub> | 17.4 | 0.15 | 20071007 | 11.98124  | 339.54825 | 29.39937  | 10.51206 | 0.0981236 | 3.0288090 | 13 | 1 | 21 days   | 0.30 |         | MPC   | 2007 UB <sub>44</sub>        |
| 2007 UL <sub>44</sub> | 17.1 | 0.15 | 20071027 | 172.07756 | 193.11823 | 20.23525  | 6.11369  | 0.1127763 | 2.2200938 | 26 | 1 | 63 days   | 0.28 | M-v 4   | MPC   | 2007 UL <sub>44</sub>        |
| 2007 UN <sub>44</sub> | 16.3 | 0.15 | 20071027 | 55.00901  | 301.08908 | 20.02675  | 14.46228 | 0.1071827 | 2.7537122 | 37 | 1 | 68 days   | 0.39 | M-v 4 D | MPC   | 2007 UN <sub>44</sub>        |
| 2007 UB <sub>45</sub> | 17.8 | 0.15 | 20071007 | 22.71013  | 143.64813 | 207.82151 | 12.58636 | 0.1699300 | 2.6080833 | 18 | 1 | 32 days   | 0.28 |         | MPC   | 2007 UB <sub>45</sub>        |
| 2007 UT <sub>45</sub> | 17.8 | 0.15 | 20071027 | 23.81393  | 90.14996  | 274.93353 | 3.22469  | 0.1610201 | 2.4431137 | 17 | 1 | 20 days   | 0.39 |         | MPC   | 2007 UT <sub>45</sub>        |
| 2007 UU <sub>45</sub> | 15.4 | 0.15 | 20071007 | 11.44577  | 135.19806 | 246.57672 | 8.22086  | 0.0805204 | 3.1668002 | 37 | 1 | 54 days   | 0.38 |         | MPC   | 2007 UU <sub>45</sub>        |
| 2007 UW <sub>45</sub> | 17.2 | 0.15 | 20071007 | 45.78888  | 321.72759 | 17.03445  | 10.00286 | 0.1123771 | 2.7706146 | 15 | 1 | 28 days   | 0.24 |         | MPC   | 2007 UW <sub>45</sub>        |
| 2007 UC <sub>46</sub> | 17.0 | 0.15 | 20071007 | 0.09993   | 218.35372 | 167.32864 | 2.40305  | 0.1634121 | 2.6250224 | 27 | 1 | 43 days   | 0.57 |         | MPC   | 2007 UC <sub>46</sub>        |
| 2007 UH <sub>46</sub> | 18.0 | 0.15 | 20071007 | 359.59986 | 168.93603 | 221.56133 | 10.62765 | 0.1698548 | 2.2997209 | 35 | 1 | 53 days   | 0.54 |         | MPC   | 2007 UH <sub>46</sub>        |
| 2007 UN <sub>46</sub> | 16.9 | 0.15 | 20071027 | 12.63320  | 315.15705 | 73.24432  | 4.45831  | 0.1531053 | 2.3122282 | 70 | 4 | 2000–2007 | 0.44 | M-v 1   | MPC   | 128562 2007 UN <sub>46</sub> |
| 2007 UO <sub>46</sub> | 17.6 | 0.15 | 20071027 | 28.50603  | 252.40274 | 105.66347 | 2.51148  | 0.2262419 | 2.3988768 | 43 | 1 | 40 days   | 0.57 |         | MPC   | 2007 UO <sub>46</sub>        |
| 2007 UR <sub>46</sub> | 16.4 | 0.15 | 20071027 | 15.28475  | 175.32092 | 206.10917 | 7.95219  | 0.2016808 | 2.7521901 | 79 | 3 | 2002–2007 | 0.51 | M-v 2   | MPC   | 128562 2007 UR <sub>46</sub> |
| 2007 UV <sub>46</sub> | 16.8 | 0.15 | 20071027 | 327.09416 | 250.19437 | 193.70842 | 4.31274  | 0.1077836 | 2.3424671 | 69 | 4 | 1996–2007 | 0.54 | M-v 1   | MPC   | 128562 2007 UV <sub>46</sub> |
| 2007 UX <sub>46</sub> | 16.8 | 0.15 | 20071027 | 23.65162  | 307.21977 | 65.08251  | 5.80276  | 0.1980656 | 2.6321275 | 30 | 1 | 45 days   | 0.52 |         | MPC   | 2007 UX <sub>46</sub>        |
| 2007 UZ <sub>46</sub> | 16.8 | 0.15 | 20071027 | 358.67015 | 214.35488 | 195.16182 | 6.51137  | 0.1778339 | 2.7539557 | 35 | 2 | 2002–2007 | 0.47 | M-v 3   | MPC   | 128563 2007 UZ <sub>46</sub> |
| 2007 UA <sub>47</sub> | 17.2 | 0.15 | 20071027 | 44.57820  | 249.70463 | 93.32983  | 3.96096  | 0.1892182 | 2.2218820 | 42 | 3 | 1996–2007 | 0.52 | M-v 3   | MPC   | 128563 2007 UA <sub>47</sub> |
| 2007 UF <sub>47</sub> | 15.8 | 0.15 | 20071027 | 120.51280 | 50.91168  | 224.14213 | 5.18094  | 0.0266996 | 2.7627790 | 63 | 5 | 1998–2007 | 0.48 | M-v 1   | MPC   | 128563 2007 UF <sub>47</sub> |
| 2007 UL <sub>47</sub> | 16.0 | 0.15 | 20071027 | 57.96592  | 306.93453 | 28.56211  | 5.07969  | 0.2357172 | 2.5924883 | 42 | 1 | 56 days   | 0.59 |         | MPC   | 2007 UL <sub>47</sub>        |
| 2007 UO <sub>47</sub> | 15.5 | 0.15 | 20071027 | 37.60526  | 304.01585 | 60.66836  | 14.90999 | 0.1661630 | 2.6001563 | 53 | 1 | 52 days   | 0.50 |         | MPC   | 2007 UO <sub>47</sub>        |
| 2007 UQ <sub>47</sub> | 17.2 | 0.15 | 20071027 | 28.48462  | 287.23141 | 81.66173  | 5.01686  | 0.1941401 | 2.3070012 | 71 | 5 | 1993–2007 | 0.42 | M-v 1   | MPC   | 128563 2007 UQ <sub>47</sub> |
| 2007 US <sub>47</sub> | 16.7 | 0.15 | 20071027 | 25.63415  | 136.17561 | 230.09422 | 16.88115 | 0.2236655 | 2.9967990 | 31 | 1 | 47 days   | 0.46 |         | MPC   | 2007 US <sub>47</sub>        |
| 2007 UT <sub>47</sub> | 15.8 | 0.15 | 20071027 | 33.12826  | 166.41454 | 204.09799 | 7.67705  | 0.1331698 | 2.5968680 | 39 | 2 | 2003–2007 | 0.43 | M-v 4   | MPC   | 128564 2007 UT <sub>47</sub> |
| 2007 UV <sub>47</sub> | 17.2 | 0.15 | 20071116 | 294.64701 | 74.48132  | 57.46017  | 22.97883 | 0.0846247 | 1.9824837 | 49 | 1 | 55 days   | 0.36 |         | MPC   | 2007 UV <sub>47</sub>        |
| 2007 UY <sub>47</sub> | 17.8 | 0.15 | 20071027 | 54.54280  | 259.59523 | 76.32138  | 3.12565  | 0.1956920 | 2.4315548 | 34 | 1 | 45 days   | 0.41 |         | MPC   | 2007 UY <sub>47</sub>        |
| 2007 UA <sub>48</sub> | 17.0 | 0.15 | 20071027 | 351.81151 | 202.02127 | 225.02540 | 14.40439 | 0.2658746 | 3.1721988 | 20 | 1 | 36 days   | 0.20 |         | MPC   | 2007 UA <sub>48</sub>        |
| 2007 UN <sub>48</sub> | 16.2 | 0.15 | 20071027 | 21.70829  | 277.39823 | 113.62499 | 2.40854  | 0.0261033 | 2.4598942 | 17 | 1 | 45 days   | 0.50 |         | MPC   | 2007 UN <sub>48</sub>        |
| 2007 UO <sub>48</sub> | 15.4 | 0.15 | 20071027 | 312.49152 | 41.54357  | 72.55697  | 9.77038  | 0.0854222 | 3.0047430 | 39 | 1 | 46 days   | 0.44 |         | MPC   | 2007 UO <sub>48</sub>        |
| 2007 UP <sub>48</sub> | 15.0 | 0.15 | 20071027 | 42.51044  | 299.05638 | 67.93721  | 11.50771 | 0.1105882 | 3.0771630 | 27 | 1 | 47 days   | 0.43 |         | MPC   | 2007 UP <sub>48</sub>        |
| 2007 UQ <sub>48</sub> | 14.8 | 0.15 | 20071027 | 333.49660 | 17.51921  | 71.64308  | 11.36203 | 0.0698053 | 3.0150312 | 74 | 4 | 2001–2007 | 0.44 | M-v 1   | MPC   | 128564 2007 UQ <sub>48</sub> |
| 2007 US <sub>48</sub> | 17.0 | 0.15 | 20071027 | 11.39427  | 212.33284 | 188.00264 | 2.93935  | 0.1460197 | 2.5773625 | 51 | 4 | 1996–2007 | 0.49 | M-v 2   | MPC   | 128564 2007 US <sub>48</sub> |
| 2007 UT <sub>48</sub> | 17.1 | 0.15 | 20071027 | 55.86939  | 271.21387 | 72.37489  | 7.08865  | 0.1485643 | 2.3032689 | 24 | 1 | 32 days   | 0.24 |         | MPC   | 2007 UT <sub>48</sub>        |
| 2007 UV <sub>48</sub> | 17.8 | 0.15 | 20071027 | 50.09905  | 197.30631 | 143.64548 | 1.94244  | 0.2246732 | 2.2664066 | 24 | 1 | 30 days   | 0.34 |         | MPC   | 2007 UV <sub>48</sub>        |
| 2007 UW <sub>48</sub> | 16.0 | 0.15 | 20071027 | 292.76056 | 68.52793  | 67.10174  | 15.03715 | 0.0833782 | 2.7697001 | 28 | 1 | 46 days   | 0.41 |         | MPC   | 2007 UW <sub>48</sub>        |
| 2007 UY <sub>48</sub> | 16.9 | 0.15 | 20071116 | 15.73047  | 331.89006 | 64.06684  | 10.40003 | 0.2417424 | 2.3857812 | 40 | 1 | 55 days   | 0.24 |         | MPC   | 2007 UY <sub>48</sub>        |
| 2007 UZ <sub>48</sub> | 16.1 | 0.15 | 20071027 | 61.06814  | 265.48500 | 59.28616  | 14.61288 | 0.1792401 | 2.7200354 | 21 | 1 | 45 days   | 0.34 |         | MPC   | 2007 UZ <sub>48</sub>        |
| 2007 UA <sub>49</sub> | 17.5 | 0.15 | 20071027 | 350.91429 | 245.36750 | 171.89643 | 3.79304  | 0.1897385 | 2.3665640 | 40 | 1 | 66 days   | 0.51 | M-v 4   | MPC   | 2007 UA <sub>49</sub>        |
| 2007 UE <sub>49</sub> | 16.3 | 0.15 | 20071027 | 25.53153  | 173.99206 | 199.27836 | 9.00910  | 0.1437664 | 3.0410603 | 24 | 2 | 2005–2007 | 0.36 | M-v 4   | MPC   | 128564 2007 UE <sub>49</sub> |
| 2007 UF <sub>49</sub> | 17.2 | 0.15 | 20071116 | 345.57305 | 24.53939  | 57.47904  | 14.06718 | 0.2333974 | 2.6909294 | 36 | 1 | 50 days   | 0.47 |         | MPC   | 2007 UF <sub>49</sub>        |
| 2007 UG <sub>49</sub> | 17.4 | 0.15 | 20071116 | 13.06473  | 337.67613 | 60.22177  | 10.50073 | 0.2183740 | 2.7571267 | 29 | 1 | 47 days   | 0.42 |         | MPC   | 2007 UG <sub>49</sub>        |
| 2007 UR <sub>49</sub> | 16.3 | 0.15 | 20071027 | 58.03459  | 140.29569 | 191.15061 | 3.99882  | 0.2151871 | 2.5669391 | 34 | 1 | 41 days   | 0.51 |         | MPC   | 2007 UR <sub>49</sub>        |
| 2007 UV <sub>49</sub> | 16.1 | 0.15 | 20071027 | 26.68462  | 302.64792 | 73.87866  | 9.06784  | 0.1812559 | 3.0119095 | 23 | 1 | 42 days   | 0.43 |         | MPC   | 2007 UV <sub>49</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |       |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-------|------------------------------|
| 2007 UY <sub>49</sub> | 17.4 | 0.15 | 20071027 | 59.24327  | 214.08990 | 114.37357 | 3.73953  | 0.2091372 | 2.1468071 | 27 | 1 | 42 days   | 0.43 |       | MPC   | 2007 UY <sub>49</sub>        |
| 2007 UA <sub>50</sub> | 16.7 | 0.15 | 20071027 | 24.33362  | 309.16755 | 66.05605  | 12.72089 | 0.2012777 | 2.5796286 | 31 | 1 | 42 days   | 0.35 |       | MPC   | 2007 UA <sub>50</sub>        |
| 2007 UN <sub>50</sub> | 16.7 | 0.15 | 20071027 | 39.29131  | 307.00362 | 62.68490  | 22.57459 | 0.0278968 | 2.0177789 | 47 | 3 | 2004–2007 | 0.45 | M-v 3 | MPC   | 128565 2007 UN <sub>50</sub> |
| 2007 UQ <sub>50</sub> | 15.7 | 0.15 | 20071027 | 40.95616  | 160.45687 | 200.09825 | 9.85459  | 0.1583497 | 2.5920207 | 32 | 1 | 47 days   | 0.51 |       | MPC   | 2007 UQ <sub>50</sub>        |
| 2007 UX <sub>50</sub> | 16.4 | 0.15 | 20071027 | 62.18817  | 247.42671 | 87.83216  | 9.80046  | 0.1366390 | 2.2228382 | 28 | 1 | 41 days   | 0.34 |       | MPC   | 2007 UX <sub>50</sub>        |
| 2007 UG <sub>51</sub> | 14.9 | 0.15 | 20071027 | 45.75861  | 281.85527 | 71.90892  | 27.36339 | 0.1690172 | 3.1580588 | 27 | 1 | 42 days   | 0.42 |       | MPC   | 2007 UG <sub>51</sub>        |
| 2007 UH <sub>51</sub> | 15.2 | 0.15 | 20071027 | 341.60479 | 230.06581 | 209.62955 | 15.57417 | 0.0664042 | 3.0935871 | 39 | 4 | 2001–2007 | 0.56 | M-v 1 | MPC   | 128565 2007 UH <sub>51</sub> |
| 2007 UN <sub>51</sub> | 17.7 | 0.15 | 20071027 | 358.89929 | 347.42576 | 50.33690  | 22.91690 | 0.1053972 | 1.8897331 | 45 | 1 | 91 days   | 0.42 | M-v 4 | MPC   | 2007 UN <sub>51</sub>        |
| 2007 UP <sub>51</sub> | 17.0 | 0.15 | 20071027 | 24.96709  | 135.98684 | 236.97805 | 10.52210 | 0.1949714 | 2.5923015 | 51 | 1 | 52 days   | 0.41 |       | MPC   | 2007 UP <sub>51</sub>        |
| 2007 UQ <sub>51</sub> | 20.2 | 0.15 | 20071027 | 8.64548   | 142.69093 | 206.44956 | 3.43507  | 0.5115753 | 2.1425268 | 36 | 1 | 36 days   | 0.55 | M-v 6 | MPC   | 129020 2007 UQ <sub>51</sub> |
| 2007 UR <sub>51</sub> | 21.5 | 0.15 | 20071027 | 25.90699  | 72.70393  | 208.59168 | 7.26291  | 0.6908792 | 1.6448330 | 54 | 1 | 18 days   | 0.44 | M-v 7 | MPC   | 129020 2007 UR <sub>51</sub> |
| 2007 UV <sub>51</sub> | 17.2 | 0.15 | 20071027 | 44.12966  | 271.88326 | 67.13605  | 12.55439 | 0.1572280 | 2.2925512 | 34 | 1 | 35 days   | 0.54 |       | MPC   | 2007 UV <sub>51</sub>        |
| 2007 UY <sub>51</sub> | 16.4 | 0.15 | 20071027 | 48.24080  | 284.98100 | 59.37813  | 15.19661 | 0.2040996 | 2.8056438 | 32 | 1 | 40 days   | 0.49 |       | MPC   | 2007 UY <sub>51</sub>        |
| 2007 UA <sub>52</sub> | 17.5 | 0.15 | 20071027 | 10.98683  | 185.81196 | 210.10222 | 5.49988  | 0.1352230 | 2.2790018 | 30 | 1 | 41 days   | 0.55 |       | MPC   | 2007 UA <sub>52</sub>        |
| 2007 UC <sub>52</sub> | 17.1 | 0.15 | 20071027 | 348.91481 | 211.93795 | 218.76322 | 3.20306  | 0.2175559 | 2.5904051 | 62 | 1 | 86 days   | 0.46 | M-v 3 | MPC   | 2007 UC <sub>52</sub>        |
| 2007 UE <sub>52</sub> | 14.5 | 0.15 | 20071027 | 266.81636 | 276.96335 | 240.68252 | 14.86557 | 0.0528820 | 3.1846753 | 58 | 3 | 2001–2007 | 0.48 | M-v 3 | MPC   | 128565 2007 UE <sub>52</sub> |
| 2007 UH <sub>52</sub> | 17.0 | 0.15 | 20071027 | 50.44447  | 94.36578  | 238.53249 | 4.45798  | 0.2870161 | 2.6109073 | 27 | 1 | 51 days   | 0.45 |       | MPC   | 2007 UH <sub>52</sub>        |
| 2007 UJ <sub>52</sub> | 17.8 | 0.15 | 20071027 | 358.65446 | 10.50635  | 42.98063  | 2.90910  | 0.1842634 | 2.3234353 | 27 | 1 | 41 days   | 0.47 |       | MPC   | 2007 UJ <sub>52</sub>        |
| 2007 UQ <sub>52</sub> | 15.8 | 0.15 | 20071027 | 57.71372  | 259.31254 | 77.26195  | 12.18191 | 0.2225565 | 2.6144421 | 28 | 1 | 42 days   | 0.33 |       | MPC   | 2007 UQ <sub>52</sub>        |
| 2007 UB <sub>52</sub> | 17.3 | 0.15 | 20071027 | 313.01262 | 303.62709 | 165.40748 | 1.84648  | 0.1142743 | 2.2852600 | 17 | 1 | 41 days   | 0.47 |       | MPC   | 2007 UB <sub>52</sub>        |
| 2007 UB <sub>53</sub> | 18.0 | 0.15 | 20071027 | 325.27248 | 219.98595 | 224.64215 | 4.16703  | 0.1531956 | 2.4030953 | 22 | 1 | 32 days   | 0.31 |       | MPC   | 2007 UB <sub>53</sub>        |
| 2007 UH <sub>53</sub> | 18.2 | 0.15 | 20071007 | 348.32288 | 205.72527 | 203.19088 | 2.27083  | 0.1475205 | 2.4141114 | 30 | 1 | 33 days   | 0.27 |       | MPC   | 2007 UH <sub>53</sub>        |
| 2007 UJ <sub>53</sub> | 17.9 | 0.15 | 20071027 | 28.29616  | 320.93400 | 41.17651  | 14.14717 | 0.1837815 | 2.7024191 | 17 | 1 | 5 days    | 0.40 |       | MPC   | 2007 UJ <sub>53</sub>        |
| 2007 UL <sub>53</sub> | 18.0 | 0.15 | 20071027 | 10.00345  | 155.54402 | 234.18625 | 4.13086  | 0.1092526 | 2.3818258 | 38 | 1 | 22 days   | 0.33 |       | MPC   | 2007 UL <sub>53</sub>        |
| 2007 UM <sub>53</sub> | 17.8 | 0.15 | 20071027 | 67.30605  | 76.47177  | 238.27226 | 4.77767  | 0.1827821 | 2.3124817 | 27 | 1 | 38 days   | 0.24 |       | MPC   | 2007 UM <sub>53</sub>        |
| 2007 UN <sub>53</sub> | 17.8 | 0.15 | 20071027 | 350.94867 | 23.39998  | 29.23431  | 2.74726  | 0.1010071 | 2.1389000 | 69 | 4 | 2001–2007 | 0.40 | M-v 2 | MPC   | 128565 2007 UN <sub>53</sub> |
| 2007 UO <sub>53</sub> | 18.8 | 0.15 | 20071027 | 340.02838 | 226.65457 | 222.20074 | 34.01523 | 0.4122811 | 2.5627069 | 53 | 1 | 13 days   | 0.57 |       | MPC   | 2007 UO <sub>53</sub>        |
| 2007 UP <sub>53</sub> | 17.1 | 0.15 | 20071027 | 98.67049  | 239.35385 | 38.69122  | 5.46025  | 0.2617363 | 2.3803282 | 18 | 1 | 5 days    | 0.26 |       | MPC   | 2007 UP <sub>53</sub>        |
| 2007 UR <sub>53</sub> | 17.0 | 0.15 | 20071027 | 142.01104 | 14.87409  | 238.81479 | 5.57060  | 0.1354406 | 2.3241257 | 17 | 1 | 5 days    | 0.32 |       | MPC   | 2007 UR <sub>53</sub>        |
| 2007 US <sub>53</sub> | 16.9 | 0.15 | 20071027 | 134.35811 | 261.11944 | 358.36667 | 1.69038  | 0.1552863 | 2.6462060 | 22 | 1 | 19 days   | 0.33 |       | MPC   | 2007 US <sub>53</sub>        |
| 2007 UW <sub>53</sub> | 18.5 | 0.15 | 20071027 | 1.03133   | 2.37282   | 38.97334  | 7.51834  | 0.1340354 | 2.3788229 | 27 | 1 | 20 days   | 0.52 |       | MPC   | 2007 UW <sub>53</sub>        |
| 2007 UC <sub>54</sub> | 15.9 | 0.15 | 20071027 | 9.46617   | 347.92273 | 41.89675  | 10.40028 | 0.2071804 | 3.1412970 | 35 | 1 | 67 days   | 0.48 | M-v 4 | MPC   | 2007 UC <sub>54</sub>        |
| 2007 UF <sub>54</sub> | 17.4 | 0.15 | 20071027 | 345.12855 | 17.45110  | 42.61598  | 5.11930  | 0.0479670 | 2.3561267 | 28 | 1 | 36 days   | 0.42 |       | MPC   | 2007 UF <sub>54</sub>        |
| 2007 UJ <sub>54</sub> | 16.2 | 0.15 | 20071027 | 340.09756 | 58.21739  | 14.46955  | 1.67333  | 0.1582290 | 3.0470814 | 42 | 1 | 61 days   | 0.51 | M-v 4 | MPC   | 2007 UJ <sub>54</sub>        |
| 2007 UN <sub>54</sub> | 16.8 | 0.15 | 20071027 | 306.73670 | 66.47083  | 42.30761  | 1.93283  | 0.1058006 | 2.6837668 | 45 | 2 | 2005–2007 | 0.44 | M-v 3 | MPC   | 128566 2007 UN <sub>54</sub> |
| 2007 US <sub>54</sub> | 18.0 | 0.15 | 20071027 | 18.49747  | 331.21253 | 43.72469  | 1.99935  | 0.2011439 | 2.3700348 | 42 | 1 | 63 days   | 0.42 | M-v 4 | MPC   | 2007 US <sub>54</sub>        |
| 2007 UT <sub>54</sub> | 17.4 | 0.15 | 20071027 | 317.16309 | 227.43389 | 227.48283 | 4.27014  | 0.0887463 | 2.4292665 | 25 | 1 | 6 days    | 0.39 |       | MPC   | 2007 UT <sub>54</sub>        |
| 2007 UA <sub>55</sub> | 16.1 | 0.15 | 20071027 | 109.71603 | 46.59299  | 241.57794 | 1.44944  | 0.0962706 | 3.0081758 | 26 | 1 | 47 days   | 0.41 |       | MPC   | 2007 UA <sub>55</sub>        |
| 2007 UB <sub>55</sub> | 17.7 | 0.15 | 20071027 | 291.19907 | 260.70419 | 225.67412 | 7.32530  | 0.1361026 | 2.3810174 | 42 | 3 | 1996–2007 | 0.44 | M-v 4 | MPC   | 128566 2007 UB <sub>55</sub> |
| 2007 UD <sub>55</sub> | 16.3 | 0.15 | 20071027 | 63.62929  | 132.40437 | 187.79043 | 0.06723  | 0.1793509 | 3.2220400 | 17 | 1 | 6 days    | 0.32 |       | MPC   | 2007 UD <sub>55</sub>        |
| 2007 UH <sub>55</sub> | 17.2 | 0.15 | 20071027 | 326.99112 | 43.57563  | 43.44861  | 2.68449  | 0.1566248 | 2.5869550 | 26 | 1 | 12 days   | 0.27 |       | D MPC | 2007 UH <sub>55</sub>        |
| 2007 UJ <sub>55</sub> | 16.6 | 0.15 | 20071027 | 289.63407 | 266.66593 | 222.63636 | 10.11583 | 0.1372723 | 2.7112390 | 26 | 1 | 6 days    | 0.24 |       | MPC   | 2007 UJ <sub>55</sub>        |
| 2007 UL <sub>55</sub> | 15.4 | 0.15 | 20071027 | 232.83260 | 321.25594 | 226.10304 | 16.04088 | 0.1956350 | 2.9172304 | 23 | 1 | 6 days    | 0.32 |       | MPC   | 2007 UL <sub>55</sub>        |
| 2007 UP <sub>55</sub> | 16.4 | 0.15 | 20071027 | 321.68543 | 240.70760 | 224.25323 | 7.87734  | 0.2508653 | 2.9932148 | 35 | 1 | 60 days   | 0.59 | M-v 5 | MPC   | 2007 UP <sub>55</sub>        |
| 2007 UT <sub>55</sub> | 16.3 | 0.15 | 20071027 | 52.38078  | 296.81368 | 49.13669  | 5.83363  | 0.0659727 | 2.7572685 | 31 | 1 | 68 days   | 0.34 | M-v 5 | MPC   | 2007 UT <sub>55</sub>        |
| 2007 UU <sub>55</sub> | 16.5 | 0.15 | 20071027 | 332.41206 | 28.18610  | 53.14343  | 3.26544  | 0.1454647 | 2.9849867 | 29 | 1 | 71 days   | 0.39 | M-v 4 | MPC   | 2007 UU <sub>55</sub>        |
| 2007 UX <sub>55</sub> | 17.3 | 0.15 | 20071007 | 27.07127  | 136.14703 | 223.25742 | 12.46444 | 0.1855726 | 2.7433627 | 24 | 1 | 38 days   | 0.44 |       | MPC   | 2007 UX <sub>55</sub>        |
| 2007 UB <sub>56</sub> | 17.1 | 0.15 | 20071027 | 333.69353 | 219.39972 | 222.90560 | 12.90074 | 0.1774155 | 2.7764847 | 20 | 1 | 31 days   | 0.46 |       | MPC   | 2007 UB <sub>56</sub>        |
| 2007 UF <sub>56</sub> | 18.1 | 0.15 | 20071007 | 353.45067 | 356.66117 | 30.03650  | 22.45706 | 0.0700379 | 1.8953633 | 26 | 1 | 26 days   | 0.52 |       | MPC   | 2007 UF <sub>56</sub>        |
| 2007 UK <sub>56</sub> | 15.3 | 0.15 | 20071027 | 168.65631 | 191.47059 | 47.76774  | 16.83932 | 0.0578086 | 3.0173954 | 33 | 1 | 54 days   | 0.34 |       | MPC   | 2007 UK <sub>56</sub>        |
| 2007 UM <sub>56</sub> | 16.7 | 0.15 | 20071027 | 317.72985 | 242.86411 | 218.09100 | 13.01247 | 0.2318080 | 2.6782067 | 36 | 1 | 49 days   | 0.51 |       | MPC   | 2007 UM <sub>56</sub>        |
| 2007 UP <sub>56</sub> | 17.1 | 0.15 | 20071027 | 340.09548 | 192.21222 | 236.29374 | 4.24719  | 0.1837049 | 2.3597249 | 74 | 3 | 2003–2007 | 0.44 | M-v 2 | MPC   | 128566 2007 UP <sub>56</sub> |
| 2007 UR <sub>56</sub> | 17.2 | 0.15 | 20071007 | 31.35450  | 309.45214 | 38.58427  | 10.52924 | 0.1816349 | 3.1248919 | 34 | 1 | 28 days   | 0.27 |       | MPC   | 2007 UR <sub>56</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 UT <sub>56</sub> | 16.9 | 0.15 | 20071027 | 56.73976  | 270.57643 | 66.40536  | 1.35690  | 0.0795510 | 2.8201061 | 33 | 1 | 30 days   | 0.33 |     | D | MPC | 2007 UT <sub>56</sub>        |
| 2007 UU <sub>56</sub> | 15.2 | 0.15 | 20071027 | 290.32862 | 258.12568 | 221.03767 | 16.33734 | 0.0626771 | 3.1669994 | 71 | 1 | 58 days   | 0.55 |     |   | MPC | 2007 UU <sub>56</sub>        |
| 2007 UW <sub>56</sub> | 16.4 | 0.15 | 20071027 | 351.00175 | 192.39974 | 220.69162 | 11.80290 | 0.1223318 | 2.7616975 | 55 | 1 | 60 days   | 0.58 | M-v | 4 | MPC | 2007 UW <sub>56</sub>        |
| 2007 UY <sub>56</sub> | 18.9 | 0.15 | 20071027 | 45.57397  | 114.94913 | 212.76055 | 3.55100  | 0.2671664 | 2.4053528 | 18 | 1 | 3 days    | 0.61 |     |   | MPC | 2007 UY <sub>56</sub>        |
| 2007 UB <sub>57</sub> | 16.6 | 0.15 | 20071027 | 158.07578 | 200.60308 | 47.14569  | 7.15182  | 0.1050223 | 2.4648228 | 23 | 1 | 86 days   | 0.44 | M-v | 4 | MPC | 2007 UB <sub>57</sub>        |
| 2007 UC <sub>57</sub> | 18.3 | 0.15 | 20071027 | 25.18316  | 116.98588 | 239.66547 | 2.93768  | 0.3257693 | 2.5676160 | 29 | 1 | 54 days   | 0.36 |     |   | MPC | 2007 UC <sub>57</sub>        |
| 2007 UF <sub>57</sub> | 17.9 | 0.15 | 20071027 | 46.12769  | 102.71872 | 237.96142 | 2.51427  | 0.2005522 | 2.1842170 | 67 | 5 | 1997–2007 | 0.42 | M-v | 1 | MPC | 128567 2007 UF <sub>57</sub> |
| 2007 UK <sub>57</sub> | 17.8 | 0.15 | 20071027 | 307.58659 | 249.95924 | 217.42914 | 0.56295  | 0.1333309 | 2.4679576 | 28 | 1 | 57 days   | 0.30 |     |   | MPC | 2007 UK <sub>57</sub>        |
| 2007 UN <sub>57</sub> | 16.2 | 0.15 | 20071027 | 50.38975  | 124.17103 | 222.56796 | 4.62301  | 0.0627056 | 2.8629374 | 28 | 1 | 35 days   | 0.39 |     |   | MPC | 2007 UN <sub>57</sub>        |
| 2007 UP <sub>57</sub> | 16.8 | 0.15 | 20071007 | 334.76160 | 25.21831  | 44.29321  | 6.50913  | 0.1035896 | 3.0616135 | 30 | 1 | 35 days   | 0.32 |     |   | MPC | 2007 UP <sub>57</sub>        |
| 2007 UV <sub>57</sub> | 18.8 | 0.15 | 20071027 | 29.88155  | 133.56466 | 218.85455 | 4.29592  | 0.2507559 | 2.5440253 | 19 | 1 | 6 days    | 0.34 |     |   | MPC | 2007 UV <sub>57</sub>        |
| 2007 UZ <sub>57</sub> | 16.6 | 0.15 | 20071027 | 337.97002 | 215.33744 | 221.43831 | 7.28977  | 0.2047827 | 3.0694616 | 34 | 1 | 67 days   | 0.57 |     |   | MPC | 2007 UZ <sub>57</sub>        |
| 2007 UJ <sub>58</sub> | 17.6 | 0.15 | 20071027 | 69.31447  | 264.94813 | 52.90056  | 3.71341  | 0.1525407 | 2.3372776 | 17 | 1 | 6 days    | 0.29 |     |   | MPC | 2007 UJ <sub>58</sub>        |
| 2007 UP <sub>58</sub> | 17.4 | 0.15 | 20071027 | 246.67893 | 126.17701 | 32.78243  | 6.24129  | 0.1015365 | 2.2785513 | 20 | 1 | 15 days   | 0.49 |     | D | MPC | 2007 UP <sub>58</sub>        |
| 2007 UU <sub>58</sub> | 16.9 | 0.15 | 20071027 | 354.59676 | 17.94344  | 30.64872  | 2.29944  | 0.0544853 | 2.8430046 | 20 | 1 | 24 days   | 0.24 |     |   | MPC | 2007 UU <sub>58</sub>        |
| 2007 UZ <sub>58</sub> | 17.5 | 0.15 | 20071007 | 358.41737 | 356.60127 | 41.75907  | 6.63822  | 0.0926061 | 2.6028425 | 21 | 1 | 32 days   | 0.37 |     |   | MPC | 2007 UZ <sub>58</sub>        |
| 2007 UB <sub>59</sub> | 18.0 | 0.15 | 20071007 | 7.89017   | 343.98663 | 36.92179  | 3.19059  | 0.1977094 | 2.3925371 | 48 | 1 | 59 days   | 0.33 |     |   | MPC | 2007 UB <sub>59</sub>        |
| 2007 UF <sub>59</sub> | 16.5 | 0.15 | 20071027 | 347.12063 | 187.85612 | 231.92814 | 9.46680  | 0.0979863 | 3.1087942 | 22 | 1 | 5 days    | 0.33 |     |   | MPC | 2007 UF <sub>59</sub>        |
| 2007 UH <sub>59</sub> | 17.9 | 0.15 | 20071027 | 45.88638  | 105.13368 | 235.16577 | 4.42247  | 0.1763507 | 2.4564148 | 17 | 1 | 5 days    | 0.68 |     |   | MPC | 2007 UH <sub>59</sub>        |
| 2007 UJ <sub>59</sub> | 16.6 | 0.15 | 20071027 | 1.95219   | 0.47273   | 41.80016  | 12.83666 | 0.0850444 | 2.9789937 | 32 | 1 | 40 days   | 0.41 |     |   | MPC | 2007 UJ <sub>59</sub>        |
| 2007 UN <sub>59</sub> | 15.9 | 0.15 | 20071027 | 237.94690 | 133.11281 | 41.95099  | 4.48908  | 0.0728050 | 3.0040798 | 17 | 1 | 21 days   | 0.40 |     |   | MPC | 2007 UN <sub>59</sub>        |
| 2007 UQ <sub>59</sub> | 16.5 | 0.15 | 20071027 | 58.48538  | 320.01512 | 10.55622  | 1.28994  | 0.1606917 | 3.1158372 | 37 | 2 | 2001–2007 | 0.48 | M-v | 5 | MPC | 128567 2007 UQ <sub>59</sub> |
| 2007 US <sub>59</sub> | 16.2 | 0.15 | 20071027 | 39.38589  | 300.89237 | 46.41684  | 2.63137  | 0.2183411 | 3.3737144 | 18 | 1 | 6 days    | 0.50 |     |   | MPC | 2007 US <sub>59</sub>        |
| 2007 UU <sub>59</sub> | 16.3 | 0.15 | 20071027 | 21.94154  | 150.42377 | 225.95421 | 13.23872 | 0.1343075 | 2.6402995 | 62 | 2 | 1994–2007 | 0.43 | M-v | 3 | MPC | 128567 2007 UU <sub>59</sub> |
| 2007 UA <sub>60</sub> | 17.7 | 0.15 | 20071027 | 343.10608 | 205.54196 | 227.61689 | 14.46923 | 0.2609152 | 2.5924358 | 30 | 1 | 35 days   | 0.31 |     |   | MPC | 2007 UA <sub>60</sub>        |
| 2007 UB <sub>60</sub> | 16.5 | 0.15 | 20071027 | 330.95588 | 177.62520 | 264.44532 | 1.23634  | 0.1133455 | 2.5796956 | 57 | 3 | 2003–2007 | 0.49 | M-v | 3 | MPC | 128568 2007 UB <sub>60</sub> |
| 2007 UD <sub>60</sub> | 18.1 | 0.15 | 20071027 | 319.62472 | 138.66372 | 319.85296 | 0.72316  | 0.1451235 | 2.3731841 | 37 | 3 | 2000–2007 | 0.39 | M-v | 2 | MPC | 128568 2007 UD <sub>60</sub> |
| 2007 UF <sub>60</sub> | 16.8 | 0.15 | 20071027 | 60.95166  | 288.93817 | 43.44243  | 7.57557  | 0.1300283 | 2.4851424 | 26 | 1 | 78 days   | 0.29 | M-v | 4 | MPC | 2007 UF <sub>60</sub>        |
| 2007 UJ <sub>60</sub> | 16.5 | 0.15 | 20071116 | 318.37858 | 148.65302 | 310.75974 | 0.41656  | 0.0481223 | 2.9616707 | 16 | 1 | 37 days   | 0.26 |     |   | MPC | 2007 UJ <sub>60</sub>        |
| 2007 UL <sub>60</sub> | 16.9 | 0.15 | 20071027 | 346.48500 | 192.53651 | 230.99239 | 21.65796 | 0.0403743 | 2.6557853 | 13 | 1 | 19 days   | 0.29 |     |   | MPC | 2007 UL <sub>60</sub>        |
| 2007 UM <sub>60</sub> | 17.0 | 0.15 | 20071027 | 344.56393 | 24.22144  | 42.90631  | 3.19584  | 0.0805797 | 2.7399222 | 27 | 1 | 78 days   | 0.29 | M-v | 3 | MPC | 2007 UM <sub>60</sub>        |
| 2007 UN <sub>60</sub> | 15.9 | 0.15 | 20071116 | 330.56744 | 290.93162 | 162.50840 | 0.28306  | 0.1290102 | 3.1293336 | 31 | 1 | 37 days   | 0.37 |     |   | MPC | 2007 UN <sub>60</sub>        |
| 2007 UO <sub>60</sub> | 16.4 | 0.15 | 20071116 | 268.70178 | 100.20483 | 54.30609  | 7.22341  | 0.0710422 | 2.4071785 | 28 | 1 | 37 days   | 0.51 |     |   | MPC | 2007 UO <sub>60</sub>        |
| 2007 UP <sub>60</sub> | 17.3 | 0.15 | 20071027 | 345.88835 | 212.07531 | 216.86554 | 3.04631  | 0.1612998 | 2.7449871 | 28 | 1 | 62 days   | 0.39 | M-v | 4 | MPC | 2007 UP <sub>60</sub>        |
| 2007 UU <sub>60</sub> | 17.4 | 0.15 | 20071027 | 341.95292 | 212.21803 | 222.85479 | 4.12154  | 0.1929175 | 2.5323909 | 44 | 2 | 2003–2007 | 0.45 | M-v | 3 | MPC | 128568 2007 UU <sub>60</sub> |
| 2007 UW <sub>60</sub> | 16.4 | 0.15 | 20071027 | 32.63669  | 302.45859 | 57.74370  | 5.11952  | 0.2146923 | 2.7742254 | 38 | 2 | 2002–2007 | 0.47 | M-v | 4 | MPC | 128569 2007 UW <sub>60</sub> |
| 2007 UX <sub>60</sub> | 16.4 | 0.15 | 20071116 | 9.37342   | 329.19138 | 72.27415  | 2.64082  | 0.2058970 | 3.0740568 | 25 | 1 | 37 days   | 0.49 |     |   | MPC | 2007 UX <sub>60</sub>        |
| 2007 UG <sub>61</sub> | 16.2 | 0.15 | 20071027 | 23.21510  | 329.90003 | 54.99218  | 14.75971 | 0.0646507 | 3.1318834 | 17 | 1 | 41 days   | 0.28 |     |   | MPC | 2007 UG <sub>61</sub>        |
| 2007 UH <sub>61</sub> | 15.3 | 0.15 | 20071027 | 199.64739 | 347.63776 | 226.75397 | 9.59601  | 0.0555790 | 3.0079386 | 19 | 1 | 28 days   | 0.36 |     |   | MPC | 2007 UH <sub>61</sub>        |
| 2007 UM <sub>61</sub> | 16.6 | 0.15 | 20071007 | 282.45695 | 252.08382 | 224.88189 | 6.97889  | 0.1471425 | 2.7863572 | 23 | 1 | 16 days   | 0.25 |     |   | MPC | 2007 UM <sub>61</sub>        |
| 2007 UN <sub>61</sub> | 16.4 | 0.15 | 20071027 | 84.43482  | 50.46796  | 247.55912 | 3.40040  | 0.0404551 | 2.7549084 | 33 | 1 | 14 days   | 0.32 |     |   | MPC | 2007 UN <sub>61</sub>        |
| 2007 UP <sub>61</sub> | 15.7 | 0.15 | 20071027 | 212.11335 | 307.09503 | 229.48312 | 7.11256  | 0.0301136 | 3.1740723 | 41 | 1 | 14 days   | 0.31 |     |   | MPC | 2007 UP <sub>61</sub>        |
| 2007 UQ <sub>61</sub> | 17.8 | 0.15 | 20071007 | 62.25912  | 47.51797  | 245.20178 | 2.50801  | 0.2398326 | 2.3240552 | 38 | 1 | 39 days   | 0.50 |     |   | MPC | 2007 UQ <sub>61</sub>        |
| 2007 US <sub>61</sub> | 17.9 | 0.15 | 20071027 | 47.22308  | 302.38588 | 12.64432  | 6.13733  | 0.2567713 | 2.3827973 | 33 | 1 | 10 days   | 0.42 |     |   | MPC | 2007 US <sub>61</sub>        |
| 2007 UT <sub>61</sub> | 17.9 | 0.15 | 20071007 | 41.04330  | 340.33394 | 342.93663 | 1.98621  | 0.1925946 | 2.3774247 | 21 | 1 | 39 days   | 0.31 |     |   | MPC | 2007 UT <sub>61</sub>        |
| 2007 UU <sub>61</sub> | 15.9 | 0.15 | 20071116 | 317.15916 | 236.56821 | 219.45160 | 12.55486 | 0.2173265 | 3.0253900 | 28 | 1 | 37 days   | 0.37 |     |   | MPC | 2007 UU <sub>61</sub>        |
| 2007 UV <sub>61</sub> | 17.3 | 0.15 | 20071007 | 54.26856  | 318.22163 | 349.48768 | 2.86108  | 0.1946592 | 2.4325601 | 33 | 1 | 39 days   | 0.38 |     |   | MPC | 2007 UV <sub>61</sub>        |
| 2007 UW <sub>61</sub> | 17.8 | 0.15 | 20071027 | 330.77986 | 204.70570 | 227.75488 | 5.60944  | 0.2007949 | 2.3463117 | 19 | 1 | 8 days    | 0.68 |     |   | MPC | 2007 UW <sub>61</sub>        |
| 2007 UB <sub>63</sub> | 16.7 | 0.15 | 20071007 | 32.47441  | 166.42543 | 197.58672 | 0.80957  | 0.1026428 | 2.9635126 | 28 | 1 | 57 days   | 0.24 |     |   | MPC | 2007 UB <sub>63</sub>        |
| 2007 UU <sub>63</sub> | 16.8 | 0.15 | 20071027 | 28.47111  | 144.32566 | 215.82504 | 8.33200  | 0.0743898 | 3.1029081 | 19 | 1 | 54 days   | 0.38 |     |   | MPC | 2007 UU <sub>63</sub>        |
| 2007 UN <sub>64</sub> | 19.7 | 0.15 | 20071027 | 72.33657  | 99.14988  | 214.84328 | 20.74607 | 0.0755285 | 1.9068944 | 19 | 1 | 10 days   | 0.32 |     |   | MPC | 2007 UN <sub>64</sub>        |
| 2007 UB <sub>65</sub> | 18.6 | 0.15 | 20071027 | 324.44194 | 254.64183 | 217.19885 | 31.97613 | 0.3892448 | 2.8733885 | 20 | 1 | 10 days   | 0.70 |     |   | MPC | 2007 UB <sub>65</sub>        |
| 2007 UF <sub>65</sub> | 16.5 | 0.15 | 20071116 | 350.12099 | 28.00026  | 35.51636  | 8.39582  | 0.0649542 | 2.8741806 | 18 | 1 | 35 days   | 0.21 |     |   | MPC | 2007 UF <sub>65</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-------|------------------------------|
| 2007 UG <sub>65</sub> | 18.1 | 0.15 | 20071116 | 17.42105  | 147.56037 | 234.04845 | 12.54906 | 0.2662562 | 2.6785619 | 25 | 1 | 35 days   | 0.41 |     |     | MPC   | 2007 UG <sub>65</sub>        |
| 2007 UJ <sub>65</sub> | 16.7 | 0.15 | 20071027 | 100.37705 | 253.05845 | 38.84581  | 13.63028 | 0.1580307 | 2.6206242 | 22 | 1 | 69 days   | 0.30 | M-v | 4   | MPC   | 2007 UJ <sub>65</sub>        |
| 2007 UL <sub>65</sub> | 17.3 | 0.15 | 20071027 | 42.76541  | 167.69612 | 175.81147 | 3.35406  | 0.2620006 | 2.5957069 | 30 | 2 | 2006–2007 | 0.48 | M-v | 4   | MPC   | 128570 2007 UL <sub>65</sub> |
| 2007 UN <sub>65</sub> | 16.4 | 0.15 | 20071027 | 21.77117  | 288.70678 | 92.86540  | 6.04272  | 0.1073413 | 2.5584940 | 31 | 1 | 20 days   | 0.33 |     |     | MPC   | 2007 UN <sub>65</sub>        |
| 2007 UO <sub>65</sub> | 17.9 | 0.15 | 20071116 | 349.95978 | 221.15927 | 211.07870 | 6.66180  | 0.2274282 | 2.3521507 | 42 | 1 | 35 days   | 0.56 |     |     | MPC   | 2007 UO <sub>65</sub>        |
| 2007 UX <sub>65</sub> | 15.7 | 0.15 | 20071027 | 2.36823   | 168.58833 | 209.91294 | 16.82226 | 0.1579000 | 3.1229845 | 36 | 2 | 1996–2007 | 0.36 | M-v | 3   | MPC   | 128570 2007 UX <sub>65</sub> |
| 2007 UY <sub>65</sub> | 16.3 | 0.15 | 20071027 | 6.58836   | 140.61108 | 254.48638 | 4.10083  | 0.1788248 | 2.6293990 | 63 | 1 | 68 days   | 0.49 | M-v | 4   | MPC   | 2007 UY <sub>65</sub>        |
| 2007 UZ <sub>65</sub> | 18.0 | 0.15 | 20071027 | 20.73040  | 126.74072 | 234.32321 | 0.46253  | 0.1801084 | 2.3652496 | 49 | 2 | 2006–2007 | 0.47 | M-v | 3   | MPC   | 128570 2007 UZ <sub>65</sub> |
| 2007 UX <sub>66</sub> | 16.4 | 0.15 | 20071027 | 276.05258 | 121.62887 | 9.84710   | 4.02918  | 0.1816126 | 2.5615305 | 15 | 1 | 26 days   | 0.17 |     |     | MPC   | 2007 UX <sub>66</sub>        |
| 2007 UZ <sub>66</sub> | 16.9 | 0.15 | 20071116 | 11.19453  | 158.77478 | 217.27927 | 8.91037  | 0.1818602 | 3.0816071 | 16 | 1 | 37 days   | 0.28 |     |     | MPC   | 2007 UZ <sub>66</sub>        |
| 2007 UD <sub>67</sub> | 18.9 | 0.15 | 20071027 | 52.23109  | 250.49408 | 68.47502  | 3.39421  | 0.2658164 | 2.2063215 | 14 | 1 | 32 days   | 0.26 |     |     | D MPC | 2007 UD <sub>67</sub>        |
| 2007 UH <sub>67</sub> | 18.1 | 0.15 | 20071007 | 14.67272  | 146.91800 | 208.62442 | 16.85135 | 0.2368221 | 2.6076841 | 19 | 1 | 35 days   | 0.40 |     |     | MPC   | 2007 UH <sub>67</sub>        |
| 2007 UR <sub>67</sub> | 17.6 | 0.15 | 20071007 | 78.04442  | 75.61506  | 204.31943 | 5.70233  | 0.2019012 | 2.2427512 | 24 | 1 | 40 days   | 0.39 |     |     | MPC   | 2007 UR <sub>67</sub>        |
| 2007 US <sub>67</sub> | 17.7 | 0.15 | 20071027 | 29.64599  | 137.84097 | 207.35560 | 7.86070  | 0.1761231 | 2.5678011 | 21 | 1 | 26 days   | 0.28 |     |     | MPC   | 2007 US <sub>67</sub>        |
| 2007 UF <sub>68</sub> | 17.7 | 0.15 | 20071027 | 281.30901 | 100.31944 | 40.11648  | 1.88083  | 0.1320297 | 2.3721615 | 13 | 1 | 19 days   | 0.25 |     |     | MPC   | 2007 UF <sub>68</sub>        |
| 2007 UG <sub>68</sub> | 16.0 | 0.15 | 20071027 | 5.59880   | 327.79215 | 63.84667  | 6.68997  | 0.0905636 | 2.8130910 | 28 | 1 | 53 days   | 0.49 |     |     | MPC   | 2007 UG <sub>68</sub>        |
| 2007 UE <sub>70</sub> | 17.4 | 0.15 | 20071027 | 356.70621 | 3.44615   | 38.49570  | 17.53971 | 0.1391989 | 3.1231403 | 23 | 1 | 5 days    | 0.54 |     |     | MPC   | 2007 UE <sub>70</sub>        |
| 2007 UD <sub>71</sub> | 16.5 | 0.15 | 20071027 | 350.87107 | 191.14112 | 221.54545 | 12.34917 | 0.0982366 | 2.7115980 | 33 | 1 | 27 days   | 0.44 |     |     | MPC   | 2007 UD <sub>71</sub>        |
| 2007 UE <sub>71</sub> | 17.6 | 0.15 | 20071027 | 252.08246 | 298.96957 | 222.12276 | 9.91992  | 0.0957645 | 2.6368209 | 22 | 1 | 6 days    | 0.44 |     |     | MPC   | 2007 UE <sub>71</sub>        |
| 2007 UJ <sub>71</sub> | 18.4 | 0.15 | 20071027 | 351.52687 | 9.28831   | 43.09379  | 7.87749  | 0.1031662 | 2.3037385 | 37 | 1 | 64 days   | 0.30 | M-v | 3 D | MPC   | 2007 UJ <sub>71</sub>        |
| 2007 UN <sub>71</sub> | 17.0 | 0.15 | 20071116 | 349.07119 | 344.75917 | 84.42285  | 7.83207  | 0.1933572 | 2.2418384 | 42 | 1 | 36 days   | 0.43 |     |     | MPC   | 2007 UN <sub>71</sub>        |
| 2007 UP <sub>71</sub> | 16.9 | 0.15 | 20071027 | 1.85167   | 263.78934 | 139.55346 | 5.29156  | 0.1562043 | 2.2977023 | 48 | 3 | 2005–2007 | 0.52 | M-v | 3   | MPC   | 128571 2007 UP <sub>71</sub> |
| 2007 US <sub>71</sub> | 16.5 | 0.15 | 20071027 | 24.68070  | 164.69152 | 208.51153 | 15.24539 | 0.1542070 | 2.5885540 | 28 | 1 | 87 days   | 0.52 | M-v | 4   | MPC   | 2007 US <sub>71</sub>        |
| 2007 UZ <sub>71</sub> | 18.7 | 0.15 | 20071007 | 358.27098 | 197.08922 | 183.84853 | 1.32020  | 0.2027156 | 2.3259368 | 25 | 1 | 28 days   | 0.47 |     |     | MPC   | 2007 UZ <sub>71</sub>        |
| 2007 UA <sub>72</sub> | 17.8 | 0.15 | 20071007 | 307.56723 | 237.89566 | 227.58805 | 1.72523  | 0.1575802 | 2.5649644 | 26 | 1 | 32 days   | 0.34 |     |     | MPC   | 2007 UA <sub>72</sub>        |
| 2007 UY <sub>72</sub> | 17.0 | 0.15 | 20071027 | 40.94110  | 334.72072 | 6.70765   | 1.47399  | 0.1596370 | 3.0007416 | 18 | 1 | 17 days   | 0.22 |     |     | D MPC | 2007 UY <sub>72</sub>        |
| 2007 UJ <sub>74</sub> | 16.5 | 0.15 | 20071027 | 179.02757 | 359.97938 | 218.15594 | 8.52496  | 0.1617906 | 2.6640364 | 29 | 1 | 5 days    | 0.42 |     |     | MPC   | 2007 UJ <sub>74</sub>        |
| 2007 UQ <sub>74</sub> | 18.5 | 0.15 | 20071027 | 48.85401  | 109.96994 | 217.70304 | 6.30081  | 0.2005237 | 2.4468575 | 33 | 1 | 5 days    | 0.38 |     |     | MPC   | 2007 UQ <sub>74</sub>        |
| 2007 UY <sub>75</sub> | 17.3 | 0.15 | 20071027 | 281.15917 | 250.22833 | 235.76746 | 6.51422  | 0.0462617 | 2.2336054 | 28 | 1 | 56 days   | 0.52 |     |     | MPC   | 2007 UY <sub>75</sub>        |
| 2007 UH <sub>76</sub> | 16.1 | 0.15 | 20071027 | 95.67044  | 60.39736  | 235.63157 | 10.25007 | 0.1154910 | 2.9120783 | 25 | 1 | 18 days   | 0.50 |     |     | MPC   | 2007 UH <sub>76</sub>        |
| 2007 UK <sub>77</sub> | 16.9 | 0.15 | 20071027 | 344.08859 | 290.69825 | 130.96859 | 10.09434 | 0.1946504 | 2.5868793 | 26 | 1 | 57 days   | 0.77 |     |     | MPC   | 2007 UK <sub>77</sub>        |
| 2007 UL <sub>77</sub> | 17.3 | 0.15 | 20071116 | 9.65376   | 262.25257 | 125.52846 | 8.17997  | 0.2278104 | 2.4095445 | 20 | 1 | 36 days   | 0.72 |     |     | MPC   | 2007 UL <sub>77</sub>        |
| 2007 UN <sub>77</sub> | 16.1 | 0.15 | 20071027 | 12.14142  | 253.38221 | 140.76854 | 3.10131  | 0.1047493 | 3.0010605 | 18 | 1 | 20 days   | 0.48 |     |     | MPC   | 2007 UN <sub>77</sub>        |
| 2007 UT <sub>77</sub> | 18.8 | 0.15 | 20071027 | 44.27578  | 82.86237  | 238.08929 | 3.37700  | 0.2393539 | 2.1972800 | 23 | 1 | 14 days   | 0.37 |     |     | MPC   | 2007 UT <sub>77</sub>        |
| 2007 UU <sub>77</sub> | 18.3 | 0.15 | 20071007 | 344.57846 | 37.86634  | 6.78977   | 3.04521  | 0.2197137 | 2.3190599 | 30 | 1 | 40 days   | 0.36 |     |     | MPC   | 2007 UU <sub>77</sub>        |
| 2007 UY <sub>77</sub> | 17.5 | 0.15 | 20071027 | 340.16902 | 62.20876  | 349.90860 | 2.08358  | 0.0970526 | 2.6283164 | 22 | 1 | 26 days   | 0.34 |     |     | MPC   | 2007 UY <sub>77</sub>        |
| 2007 UH <sub>78</sub> | 16.5 | 0.15 | 20071027 | 342.80475 | 187.24067 | 226.39133 | 11.47271 | 0.1821534 | 2.6797331 | 28 | 1 | 32 days   | 0.37 |     |     | MPC   | 2007 UH <sub>78</sub>        |
| 2007 UJ <sub>78</sub> | 17.6 | 0.15 | 20071027 | 75.39053  | 263.37336 | 48.07859  | 22.50760 | 0.0929159 | 1.8729030 | 41 | 1 | 55 days   | 0.57 |     |     | MPC   | 2007 UJ <sub>78</sub>        |
| 2007 UO <sub>78</sub> | 17.3 | 0.15 | 20071027 | 357.34566 | 2.29368   | 39.57680  | 16.52526 | 0.2006745 | 3.1202897 | 20 | 1 | 5 days    | 0.73 |     |     | MPC   | 2007 UO <sub>78</sub>        |
| 2007 UY <sub>78</sub> | 17.7 | 0.15 | 20071027 | 342.58474 | 24.35621  | 44.30148  | 2.02225  | 0.1878835 | 2.3793317 | 48 | 4 | 1996–2007 | 0.42 | M-v | 1   | MPC   | 128571 2007 UY <sub>78</sub> |
| 2007 UB <sub>79</sub> | 17.6 | 0.15 | 20071027 | 321.23129 | 38.36084  | 51.32171  | 2.96986  | 0.0834760 | 2.3660540 | 19 | 1 | 21 days   | 0.28 |     |     | MPC   | 2007 UB <sub>79</sub>        |
| 2007 UK <sub>79</sub> | 16.0 | 0.15 | 20071027 | 3.28776   | 268.34333 | 128.74755 | 4.83085  | 0.1516926 | 2.9819906 | 28 | 1 | 39 days   | 0.50 |     |     | MPC   | 2007 UK <sub>79</sub>        |
| 2007 UR <sub>79</sub> | 16.9 | 0.15 | 20071027 | 226.12795 | 140.19898 | 44.41372  | 10.41262 | 0.0366441 | 2.6533256 | 26 | 1 | 47 days   | 0.40 |     |     | D MPC | 2007 UR <sub>79</sub>        |
| 2007 UY <sub>79</sub> | 18.0 | 0.15 | 20071027 | 57.47398  | 284.31094 | 38.66928  | 8.16773  | 0.1602965 | 2.2514446 | 19 | 1 | 5 days    | 0.16 |     |     | MPC   | 2007 UY <sub>79</sub>        |
| 2007 UD <sub>80</sub> | 15.7 | 0.15 | 20071027 | 179.77009 | 356.56156 | 222.12768 | 10.33068 | 0.2746387 | 2.5830335 | 19 | 1 | 4 days    | 0.57 |     |     | MPC   | 2007 UD <sub>80</sub>        |
| 2007 UF <sub>80</sub> | 15.4 | 0.15 | 20071027 | 180.08920 | 348.91239 | 229.70558 | 1.49072  | 0.2753673 | 2.7388196 | 20 | 1 | 4 days    | 0.61 |     |     | MPC   | 2007 UF <sub>80</sub>        |
| 2007 UG <sub>81</sub> | 16.8 | 0.15 | 20071027 | 33.43971  | 180.48140 | 165.98681 | 4.68917  | 0.0745354 | 2.7809958 | 28 | 1 | 62 days   | 0.32 | M-v | 4   | MPC   | 2007 UG <sub>81</sub>        |
| 2007 UL <sub>81</sub> | 16.2 | 0.15 | 20071027 | 356.06487 | 349.10138 | 40.72580  | 11.08762 | 0.1115166 | 3.0278609 | 19 | 1 | 21 days   | 0.35 |     |     | MPC   | 2007 UL <sub>81</sub>        |
| 2007 UT <sub>81</sub> | 18.2 | 0.15 | 20071027 | 40.25871  | 196.02113 | 136.67828 | 2.47950  | 0.1642554 | 2.1825084 | 16 | 1 | 35 days   | 0.22 |     |     | MPC   | 2007 UT <sub>81</sub>        |
| 2007 UE <sub>82</sub> | 16.7 | 0.15 | 20071027 | 19.75827  | 145.19861 | 230.52796 | 8.53987  | 0.1527781 | 2.7904812 | 46 | 3 | 2002–2007 | 0.45 | M-v | 2   | MPC   | 128572 2007 UE <sub>82</sub> |
| 2007 UH <sub>82</sub> | 16.9 | 0.15 | 20071027 | 38.76843  | 74.45499  | 283.75959 | 1.00631  | 0.0842862 | 2.8747651 | 17 | 1 | 19 days   | 0.31 |     |     | MPC   | 2007 UH <sub>82</sub>        |
| 2007 UK <sub>82</sub> | 16.7 | 0.15 | 20071027 | 21.75767  | 348.97996 | 26.64144  | 2.03881  | 0.1216696 | 2.9523004 | 32 | 1 | 19 days   | 0.25 |     |     | MPC   | 2007 UK <sub>82</sub>        |
| 2007 UN <sub>82</sub> | 16.9 | 0.15 | 20071027 | 45.17620  | 79.18261  | 274.75183 | 1.33089  | 0.0568068 | 2.8340737 | 24 | 1 | 38 days   | 0.31 |     |     | D MPC | 2007 UN <sub>82</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |         |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|---------|-----|------------------------------|
| 2007 UO <sub>82</sub> | 18.8 | 0.15 | 20071027 | 345.17036 | 66.92454  | 355.65666 | 1.25951  | 0.1733510 | 2.2708786 | 30 | 1 | 30 days   | 0.32 |         | MPC | 2007 UO <sub>82</sub>        |
| 2007 UP <sub>82</sub> | 15.6 | 0.15 | 20071027 | 303.06006 | 239.58790 | 229.09128 | 10.48693 | 0.0735246 | 3.0283038 | 47 | 1 | 27 days   | 0.38 | D       | MPC | 2007 UP <sub>82</sub>        |
| 2007 US <sub>82</sub> | 16.9 | 0.15 | 20071027 | 135.29290 | 239.54217 | 27.36621  | 2.13721  | 0.0245939 | 2.6846374 | 32 | 1 | 39 days   | 0.35 | D       | MPC | 2007 US <sub>82</sub>        |
| 2007 UT <sub>82</sub> | 17.7 | 0.15 | 20071027 | 323.73193 | 230.48220 | 232.17401 | 3.83983  | 0.2609420 | 2.7755424 | 25 | 1 | 31 days   | 0.28 |         | MPC | 2007 UT <sub>82</sub>        |
| 2007 UW <sub>82</sub> | 17.6 | 0.15 | 20071027 | 24.36435  | 135.74021 | 226.15263 | 13.24486 | 0.2791838 | 3.2037232 | 21 | 1 | 17 days   | 0.26 |         | MPC | 2007 UW <sub>82</sub>        |
| 2007 UZ <sub>82</sub> | 18.1 | 0.15 | 20071027 | 303.10066 | 286.86371 | 190.73724 | 0.65011  | 0.1708709 | 2.4380534 | 19 | 1 | 6 days    | 0.33 |         | MPC | 2007 UZ <sub>82</sub>        |
| 2007 UC <sub>83</sub> | 18.9 | 0.15 | 20071007 | 343.13451 | 216.01142 | 193.07383 | 2.52345  | 0.2677162 | 2.6542533 | 25 | 1 | 33 days   | 0.25 |         | MPC | 2007 UC <sub>83</sub>        |
| 2007 UG <sub>83</sub> | 16.6 | 0.15 | 20071027 | 44.89807  | 118.13750 | 228.56650 | 8.24793  | 0.1593843 | 2.7098522 | 24 | 1 | 51 days   | 0.34 |         | MPC | 2007 UG <sub>83</sub>        |
| 2007 UJ <sub>83</sub> | 17.0 | 0.15 | 20071027 | 34.80273  | 136.27200 | 225.30001 | 9.74166  | 0.1378984 | 2.8984840 | 12 | 1 | 19 days   | 0.15 |         | MPC | 2007 UJ <sub>83</sub>        |
| 2007 UO <sub>83</sub> | 17.7 | 0.15 | 20071027 | 351.70369 | 218.75216 | 198.08784 | 0.42710  | 0.1514890 | 2.5695629 | 27 | 1 | 78 days   | 0.31 | M-v 3   | MPC | 2007 UO <sub>83</sub>        |
| 2007 US <sub>83</sub> | 17.1 | 0.15 | 20071027 | 17.69941  | 155.34694 | 225.16601 | 8.10248  | 0.1724069 | 2.5761490 | 44 | 1 | 71 days   | 0.40 | M-v 4   | MPC | 2007 US <sub>83</sub>        |
| 2007 UV <sub>83</sub> | 15.7 | 0.15 | 20071027 | 291.92044 | 255.13951 | 229.03303 | 13.93152 | 0.0639413 | 3.2403534 | 26 | 1 | 21 days   | 0.26 |         | MPC | 2007 UV <sub>83</sub>        |
| 2007 UX <sub>83</sub> | 17.2 | 0.15 | 20071027 | 7.49587   | 171.64681 | 226.10769 | 7.45402  | 0.1375427 | 3.0887516 | 18 | 1 | 15 days   | 0.19 |         | MPC | 2007 UX <sub>83</sub>        |
| 2007 UD <sub>84</sub> | 16.7 | 0.15 | 20071116 | 172.52450 | 185.21715 | 54.17694  | 10.07185 | 0.0612721 | 2.7478102 | 20 | 1 | 36 days   | 0.38 |         | MPC | 2007 UD <sub>84</sub>        |
| 2007 UG <sub>84</sub> | 18.8 | 0.15 | 20071027 | 70.43720  | 95.54573  | 225.28411 | 18.23148 | 0.1206616 | 1.9087814 | 16 | 1 | 21 days   | 0.17 |         | MPC | 2007 UG <sub>84</sub>        |
| 2007 UH <sub>84</sub> | 18.0 | 0.15 | 20071007 | 61.74559  | 95.03518  | 222.34845 | 1.89083  | 0.1936855 | 2.2882174 | 29 | 1 | 57 days   | 0.33 |         | MPC | 2007 UH <sub>84</sub>        |
| 2007 UM <sub>84</sub> | 17.2 | 0.15 | 20071027 | 19.92973  | 160.85701 | 214.97368 | 2.22016  | 0.2311820 | 3.0104636 | 20 | 1 | 61 days   | 0.27 | M-v 5   | MPC | 2007 UM <sub>84</sub>        |
| 2007 UO <sub>84</sub> | 18.4 | 0.15 | 20071027 | 25.35576  | 269.28371 | 96.99380  | 0.21878  | 0.2233080 | 2.4215023 | 43 | 1 | 78 days   | 0.42 | M-v 4 D | MPC | 2007 UO <sub>84</sub>        |
| 2007 UQ <sub>84</sub> | 17.5 | 0.15 | 20071027 | 270.37088 | 103.07276 | 50.70021  | 1.98742  | 0.1340567 | 2.4587813 | 52 | 5 | 1995–2007 | 0.36 | M-v 1   | MPC | 128572 2007 UQ <sub>84</sub> |
| 2007 US <sub>84</sub> | 17.7 | 0.15 | 20071027 | 272.54969 | 278.17589 | 228.57862 | 4.69189  | 0.0925178 | 2.4177316 | 17 | 1 | 15 days   | 0.26 |         | MPC | 2007 US <sub>84</sub>        |
| 2007 UV <sub>84</sub> | 16.2 | 0.15 | 20071027 | 19.85885  | 149.15427 | 224.02725 | 4.19661  | 0.2732083 | 3.0624463 | 36 | 1 | 55 days   | 0.55 |         | MPC | 2007 UV <sub>84</sub>        |
| 2007 UW <sub>84</sub> | 16.6 | 0.15 | 20071027 | 277.42628 | 288.42222 | 224.56979 | 2.21900  | 0.1799963 | 2.6134426 | 35 | 1 | 79 days   | 0.40 | M-v 5   | MPC | 2007 UW <sub>84</sub>        |
| 2007 UX <sub>84</sub> | 15.7 | 0.15 | 20071027 | 278.79619 | 85.87232  | 56.30860  | 4.32952  | 0.0909794 | 2.8953563 | 58 | 4 | 1997–2007 | 0.46 | M-v 3   | MPC | 128573 2007 UX <sub>84</sub> |
| 2007 UZ <sub>84</sub> | 18.0 | 0.15 | 20071027 | 19.59252  | 324.61642 | 51.79467  | 8.83064  | 0.2296522 | 2.8012332 | 12 | 1 | 19 days   | 0.28 |         | MPC | 2007 UZ <sub>84</sub>        |
| 2007 UB <sub>85</sub> | 16.6 | 0.15 | 20071027 | 49.90683  | 284.09553 | 50.42772  | 15.00663 | 0.2353894 | 2.7131794 | 52 | 1 | 57 days   | 0.43 |         | MPC | 2007 UB <sub>85</sub>        |
| 2007 UD <sub>85</sub> | 18.6 | 0.15 | 20071027 | 358.32696 | 186.58797 | 203.69315 | 4.92922  | 0.1916283 | 2.5397167 | 18 | 1 | 20 days   | 0.29 |         | MPC | 2007 UD <sub>85</sub>        |
| 2007 UL <sub>85</sub> | 17.1 | 0.15 | 20071027 | 338.41766 | 224.16856 | 207.05269 | 1.31278  | 0.1006188 | 2.3005003 | 82 | 3 | 2000–2007 | 0.45 | M-v 2   | MPC | 128573 2007 UL <sub>85</sub> |
| 2007 UQ <sub>85</sub> | 16.5 | 0.15 | 20071027 | 342.23320 | 14.33168  | 53.71769  | 10.60087 | 0.0591525 | 3.1317912 | 12 | 1 | 19 days   | 0.14 |         | MPC | 2007 UQ <sub>85</sub>        |
| 2007 US <sub>85</sub> | 17.4 | 0.15 | 20071027 | 338.52648 | 221.34529 | 219.60643 | 9.93033  | 0.2182932 | 3.1337514 | 9  | 1 | 15 days   | 0.39 |         | MPC | 2007 US <sub>85</sub>        |
| 2007 UA <sub>86</sub> | 18.0 | 0.15 | 20071027 | 347.20233 | 233.60140 | 190.93702 | 2.10009  | 0.1934997 | 2.3728922 | 30 | 1 | 84 days   | 0.53 | M-v 4   | MPC | 2007 UA <sub>86</sub>        |
| 2007 UE <sub>86</sub> | 17.0 | 0.15 | 20071116 | 43.93527  | 285.92474 | 69.64011  | 5.23431  | 0.1518293 | 2.6250590 | 27 | 1 | 37 days   | 0.50 |         | MPC | 2007 UE <sub>86</sub>        |
| 2007 UJ <sub>86</sub> | 16.6 | 0.15 | 20071027 | 38.10267  | 261.85278 | 95.90915  | 2.67840  | 0.1658534 | 3.1330828 | 18 | 1 | 57 days   | 0.31 |         | MPC | 2007 UJ <sub>86</sub>        |
| 2007 UK <sub>86</sub> | 17.3 | 0.15 | 20071027 | 53.93767  | 117.94291 | 222.44378 | 13.59218 | 0.1400264 | 2.5663183 | 16 | 1 | 39 days   | 0.28 |         | MPC | 2007 UK <sub>86</sub>        |
| 2007 UN <sub>86</sub> | 17.4 | 0.15 | 20071027 | 339.93704 | 215.27769 | 220.66104 | 11.21868 | 0.1626079 | 2.5906533 | 29 | 1 | 35 days   | 0.48 |         | MPC | 2007 UN <sub>86</sub>        |
| 2007 UV <sub>86</sub> | 18.3 | 0.15 | 20071116 | 351.65385 | 4.91133   | 60.55026  | 6.91323  | 0.1177201 | 2.3673673 | 15 | 1 | 37 days   | 0.54 |         | MPC | 2007 UV <sub>86</sub>        |
| 2007 UA <sub>87</sub> | 16.7 | 0.15 | 20071027 | 83.56607  | 99.08719  | 218.60313 | 9.00510  | 0.0855837 | 2.6943951 | 37 | 3 | 2001–2007 | 0.34 | M-v 2   | MPC | 128573 2007 UA <sub>87</sub> |
| 2007 UE <sub>87</sub> | 16.7 | 0.15 | 20071116 | 16.89652  | 146.62662 | 247.80677 | 3.71169  | 0.1158765 | 2.7793642 | 41 | 1 | 37 days   | 0.54 |         | MPC | 2007 UE <sub>87</sub>        |
| 2007 UG <sub>87</sub> | 16.4 | 0.15 | 20071116 | 112.44414 | 244.72080 | 45.11270  | 12.52736 | 0.1436965 | 2.6790291 | 12 | 1 | 37 days   | 0.33 |         | MPC | 2007 UG <sub>87</sub>        |
| 2007 UK <sub>87</sub> | 17.6 | 0.15 | 20071027 | 28.13795  | 313.56476 | 42.36341  | 8.51481  | 0.3134722 | 2.7220145 | 43 | 1 | 77 days   | 0.49 | M-v 4   | MPC | 2007 UK <sub>87</sub>        |
| 2007 UL <sub>87</sub> | 15.9 | 0.15 | 20071027 | 70.54607  | 28.51269  | 303.71398 | 1.35918  | 0.0920474 | 3.0664450 | 15 | 1 | 19 days   | 0.37 |         | MPC | 2007 UL <sub>87</sub>        |
| 2007 UN <sub>87</sub> | 18.4 | 0.15 | 20071027 | 329.68678 | 69.74498  | 21.00734  | 1.61725  | 0.1615590 | 2.4506657 | 21 | 1 | 19 days   | 0.27 |         | MPC | 2007 UN <sub>87</sub>        |
| 2007 UO <sub>87</sub> | 15.5 | 0.15 | 20071027 | 222.09863 | 149.29344 | 43.76504  | 8.76107  | 0.0146304 | 3.1899685 | 18 | 1 | 11 days   | 0.30 |         | MPC | 2007 UO <sub>87</sub>        |
| 2007 UP <sub>87</sub> | 18.4 | 0.15 | 20071027 | 36.47864  | 322.33975 | 29.25011  | 2.95501  | 0.2277323 | 2.2505504 | 15 | 1 | 19 days   | 0.13 |         | MPC | 2007 UP <sub>87</sub>        |
| 2007 UQ <sub>87</sub> | 18.0 | 0.15 | 20071027 | 313.32093 | 204.66891 | 265.08940 | 2.01938  | 0.1459482 | 2.3153560 | 29 | 1 | 53 days   | 0.31 |         | MPC | 2007 UQ <sub>87</sub>        |
| 2007 US <sub>87</sub> | 17.9 | 0.15 | 20071116 | 341.14552 | 205.16577 | 240.10967 | 3.95274  | 0.2093409 | 2.3489557 | 47 | 1 | 36 days   | 0.45 |         | MPC | 2007 US <sub>87</sub>        |
| 2007 UT <sub>87</sub> | 18.2 | 0.15 | 20071027 | 338.55605 | 40.69650  | 37.91977  | 3.77549  | 0.1565110 | 2.3835626 | 15 | 1 | 19 days   | 0.28 |         | MPC | 2007 UT <sub>87</sub>        |
| 2007 UY <sub>87</sub> | 16.9 | 0.15 | 20071027 | 339.05749 | 202.92518 | 240.49327 | 4.36588  | 0.2281501 | 2.6257980 | 42 | 3 | 2003–2007 | 0.46 | M-v 3   | MPC | 128573 2007 UY <sub>87</sub> |
| 2007 UZ <sub>87</sub> | 18.1 | 0.15 | 20071027 | 18.95712  | 335.19691 | 41.97751  | 3.79856  | 0.2299947 | 2.2893965 | 32 | 1 | 71 days   | 0.38 | M-v 4   | MPC | 2007 UZ <sub>87</sub>        |
| 2007 UC <sub>88</sub> | 15.6 | 0.15 | 20071027 | 20.41845  | 152.30876 | 238.54716 | 14.99209 | 0.0739323 | 3.1676208 | 41 | 1 | 52 days   | 0.52 |         | MPC | 2007 UC <sub>88</sub>        |
| 2007 UF <sub>88</sub> | 17.7 | 0.15 | 20071027 | 147.49725 | 219.87780 | 41.99743  | 4.66710  | 0.0320720 | 2.1374751 | 19 | 1 | 33 days   | 0.21 |         | MPC | 2007 UF <sub>88</sub>        |
| 2007 UM <sub>88</sub> | 17.2 | 0.15 | 20071027 | 49.66436  | 349.08019 | 2.68282   | 1.16064  | 0.1185466 | 2.5194026 | 16 | 1 | 29 days   | 0.18 |         | MPC | 2007 UM <sub>88</sub>        |
| 2007 UN <sub>88</sub> | 15.8 | 0.15 | 20071027 | 345.72312 | 21.78951  | 52.61120  | 11.45098 | 0.1734499 | 3.0852023 | 36 | 1 | 65 days   | 0.52 | M-v 4   | MPC | 2007 UN <sub>88</sub>        |
| 2007 UQ <sub>88</sub> | 17.7 | 0.15 | 20071007 | 50.51154  | 102.34000 | 216.21010 | 5.28878  | 0.2665860 | 2.6421224 | 22 | 1 | 30 days   | 0.35 |         | MPC | 2007 UQ <sub>88</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|-----------------------|
| 2007 UX <sub>88</sub> | 16.2 | 0.15 | 20071027 | 92.80086  | 83.92002  | 227.17163 | 5.27177  | 0.0304022 | 2.7589207 | 48 | 4 | 1993–2007 | 0.42 | M-v | 0 | MPC | 128574 | 2007 UX <sub>88</sub> |
| 2007 UY <sub>88</sub> | 17.2 | 0.15 | 20071027 | 42.70319  | 311.33282 | 48.98794  | 6.75567  | 0.0497539 | 2.6768595 | 17 | 1 | 29 days   | 0.26 |     |   | MPC |        | 2007 UY <sub>88</sub> |
| 2007 UD <sub>89</sub> | 17.0 | 0.15 | 20071027 | 338.69636 | 16.78585  | 54.39483  | 0.55517  | 0.0332515 | 2.9672070 | 23 | 1 | 36 days   | 0.43 |     |   | MPC |        | 2007 UD <sub>89</sub> |
| 2007 UH <sub>89</sub> | 17.1 | 0.15 | 20071027 | 16.99474  | 330.53659 | 54.46949  | 1.53833  | 0.1639838 | 3.1600720 | 14 | 1 | 19 days   | 0.23 |     |   | MPC |        | 2007 UH <sub>89</sub> |
| 2007 UL <sub>89</sub> | 17.6 | 0.15 | 20071116 | 4.16098   | 336.54959 | 72.28217  | 0.29729  | 0.0920497 | 2.7636331 | 27 | 1 | 37 days   | 0.42 |     |   | MPC |        | 2007 UL <sub>89</sub> |
| 2007 UM <sub>89</sub> | 17.9 | 0.15 | 20071027 | 40.48109  | 123.31815 | 221.34282 | 1.77438  | 0.2339600 | 2.4822579 | 24 | 1 | 78 days   | 0.44 | M-v | 5 | MPC |        | 2007 UM <sub>89</sub> |
| 2007 UN <sub>89</sub> | 16.0 | 0.15 | 20071027 | 2.37566   | 179.89301 | 227.01038 | 10.58924 | 0.0647395 | 2.9594862 | 27 | 1 | 56 days   | 0.56 |     |   | MPC |        | 2007 UN <sub>89</sub> |
| 2007 UP <sub>89</sub> | 16.1 | 0.15 | 20071027 | 335.45622 | 32.77300  | 50.00238  | 18.87378 | 0.2160479 | 3.1854421 | 46 | 1 | 36 days   | 0.55 |     |   | MPC |        | 2007 UP <sub>89</sub> |
| 2007 UF <sub>90</sub> | 17.1 | 0.15 | 20071027 | 347.26027 | 46.68157  | 12.44974  | 0.92139  | 0.1787206 | 3.0837740 | 27 | 1 | 62 days   | 0.33 | M-v | 4 | MPC |        | 2007 UF <sub>90</sub> |
| 2007 UH <sub>90</sub> | 16.9 | 0.15 | 20071027 | 29.59438  | 113.07919 | 250.06701 | 1.02603  | 0.1265260 | 2.9272035 | 29 | 1 | 55 days   | 0.40 |     |   | MPC |        | 2007 UH <sub>90</sub> |
| 2007 UK <sub>90</sub> | 15.9 | 0.15 | 20071027 | 37.78860  | 130.79261 | 227.63167 | 4.59385  | 0.0650717 | 2.8002785 | 55 | 3 | 2005–2007 | 0.45 | M-v | 3 | MPC | 128574 | 2007 UK <sub>90</sub> |
| 2007 UM <sub>90</sub> | 15.7 | 0.15 | 20071027 | 278.46702 | 267.29618 | 224.89037 | 11.78600 | 0.0771810 | 3.0784147 | 37 | 1 | 63 days   | 0.37 | M-v | 4 | MPC |        | 2007 UM <sub>90</sub> |
| 2007 UN <sub>90</sub> | 17.2 | 0.15 | 20071027 | 189.29370 | 178.17189 | 35.59490  | 2.35010  | 0.1035639 | 2.4613772 | 22 | 1 | 14 days   | 0.29 |     |   | MPC |        | 2007 UN <sub>90</sub> |
| 2007 UP <sub>90</sub> | 17.0 | 0.15 | 20071027 | 306.96137 | 75.91522  | 37.16753  | 3.23074  | 0.1811338 | 2.8425766 | 30 | 1 | 61 days   | 0.26 | M-v | 5 | MPC |        | 2007 UP <sub>90</sub> |
| 2007 UT <sub>90</sub> | 17.6 | 0.15 | 20071027 | 279.16427 | 218.01152 | 279.11763 | 0.50108  | 0.1323482 | 2.3717989 | 22 | 1 | 14 days   | 0.25 |     |   | MPC |        | 2007 UT <sub>90</sub> |
| 2007 UO <sub>90</sub> | 17.3 | 0.15 | 20071027 | 9.05866   | 349.20319 | 40.87259  | 2.56758  | 0.1146629 | 2.8912387 | 26 | 1 | 24 days   | 0.39 |     |   | MPC |        | 2007 UO <sub>90</sub> |
| 2007 UV <sub>90</sub> | 18.0 | 0.15 | 20071116 | 319.49623 | 64.19537  | 37.54463  | 1.57147  | 0.1617850 | 2.4153046 | 45 | 1 | 37 days   | 0.25 |     |   | MPC |        | 2007 UV <sub>90</sub> |
| 2007 UK <sub>91</sub> | 16.4 | 0.15 | 20071027 | 87.14627  | 264.82126 | 51.42856  | 9.92099  | 0.0644821 | 3.1753506 | 13 | 1 | 19 days   | 0.24 |     |   | MPC |        | 2007 UK <sub>91</sub> |
| 2007 UL <sub>91</sub> | 17.8 | 0.15 | 20071027 | 36.63922  | 305.25724 | 48.08547  | 1.92414  | 0.2014837 | 2.4586084 | 43 | 2 | 2003–2007 | 0.43 | M-v | 3 | MPC | 128574 | 2007 UL <sub>91</sub> |
| 2007 UN <sub>91</sub> | 17.2 | 0.15 | 20071027 | 43.49109  | 303.89233 | 51.72682  | 6.34549  | 0.1207417 | 2.8791406 | 17 | 1 | 28 days   | 0.24 |     |   | MPC |        | 2007 UN <sub>91</sub> |
| 2007 UO <sub>91</sub> | 17.6 | 0.15 | 20071027 | 319.80906 | 59.42349  | 48.71371  | 13.91933 | 0.2164858 | 2.6374299 | 34 | 1 | 59 days   | 0.44 |     |   | MPC |        | 2007 UO <sub>91</sub> |
| 2007 UP <sub>91</sub> | 17.2 | 0.15 | 20071027 | 33.71923  | 143.10780 | 228.03810 | 4.31086  | 0.0684382 | 2.7174122 | 25 | 1 | 88 days   | 0.31 | M-v | 4 | MPC |        | 2007 UP <sub>91</sub> |
| 2007 UQ <sub>91</sub> | 16.1 | 0.15 | 20071027 | 61.60735  | 287.53008 | 49.72025  | 3.99703  | 0.1120405 | 3.0462991 | 28 | 1 | 85 days   | 0.36 | M-v | 4 | MPC |        | 2007 UQ <sub>91</sub> |
| 2007 UR <sub>91</sub> | 17.4 | 0.15 | 20071027 | 38.67441  | 123.60312 | 229.78771 | 5.92100  | 0.1927393 | 2.6227399 | 25 | 1 | 41 days   | 0.35 |     |   | MPC |        | 2007 UR <sub>91</sub> |
| 2007 UU <sub>91</sub> | 16.5 | 0.15 | 20071027 | 328.10094 | 43.45346  | 51.09345  | 1.27757  | 0.1569233 | 3.1527763 | 54 | 3 | 2001–2007 | 0.46 | M-v | 2 | MPC | 128574 | 2007 UU <sub>91</sub> |
| 2007 UE <sub>92</sub> | 16.1 | 0.15 | 20071007 | 302.21583 | 85.56842  | 26.61568  | 5.66497  | 0.1732272 | 3.1247616 | 21 | 1 | 27 days   | 0.33 |     |   | MPC |        | 2007 UE <sub>92</sub> |
| 2007 UF <sub>92</sub> | 17.1 | 0.15 | 20071007 | 343.09544 | 39.31674  | 19.41464  | 4.73471  | 0.1610716 | 3.1943844 | 24 | 1 | 31 days   | 0.36 |     | D | MPC |        | 2007 UF <sub>92</sub> |
| 2007 UE <sub>93</sub> | 18.2 | 0.15 | 20071027 | 6.86562   | 144.21935 | 238.39696 | 2.37368  | 0.3622795 | 2.7372706 | 40 | 1 | 40 days   | 0.57 |     |   | MPC |        | 2007 UE <sub>93</sub> |
| 2007 UG <sub>93</sub> | 17.4 | 0.15 | 20071027 | 92.22746  | 56.81409  | 233.44246 | 4.56691  | 0.1632875 | 2.5635566 | 18 | 1 | 32 days   | 0.26 |     |   | MPC |        | 2007 UG <sub>93</sub> |
| 2007 UP <sub>93</sub> | 15.5 | 0.15 | 20071027 | 44.91289  | 118.16246 | 225.50306 | 17.96263 | 0.1398740 | 3.2071536 | 30 | 1 | 41 days   | 0.28 |     |   | MPC |        | 2007 UP <sub>93</sub> |
| 2007 UY <sub>93</sub> | 17.1 | 0.15 | 20071027 | 11.16526  | 147.72421 | 240.46951 | 2.62056  | 0.0786330 | 2.8303817 | 28 | 2 | 2004–2007 | 0.38 | M-v | 4 | MPC | 128574 | 2007 UY <sub>93</sub> |
| 2007 UZ <sub>93</sub> | 15.9 | 0.15 | 20071027 | 30.45045  | 324.57717 | 39.37975  | 11.53627 | 0.1114743 | 3.1295055 | 15 | 1 | 15 days   | 0.46 |     |   | MPC |        | 2007 UZ <sub>93</sub> |
| 2007 UF <sub>94</sub> | 15.5 | 0.15 | 20071027 | 321.11386 | 50.98692  | 34.44257  | 11.71565 | 0.0630220 | 3.1953853 | 13 | 1 | 35 days   | 0.32 |     |   | MPC |        | 2007 UF <sub>94</sub> |
| 2007 UJ <sub>94</sub> | 16.9 | 0.15 | 20071027 | 348.94813 | 22.66742  | 35.02467  | 11.80865 | 0.1966250 | 3.1098624 | 24 | 1 | 64 days   | 0.57 | M-v | 4 | MPC |        | 2007 UJ <sub>94</sub> |
| 2007 UP <sub>94</sub> | 18.0 | 0.15 | 20071027 | 347.97971 | 27.54268  | 28.22624  | 5.61510  | 0.1283351 | 2.3375816 | 22 | 1 | 39 days   | 0.47 |     |   | MPC |        | 2007 UP <sub>94</sub> |
| 2007 UM <sub>95</sub> | 18.1 | 0.15 | 20071116 | 320.78457 | 212.86235 | 254.41648 | 1.41254  | 0.1651708 | 2.3216380 | 31 | 1 | 36 days   | 0.43 |     |   | MPC |        | 2007 UM <sub>95</sub> |
| 2007 UQ <sub>95</sub> | 17.0 | 0.15 | 20071027 | 6.54498   | 153.42229 | 228.81216 | 11.36105 | 0.1813253 | 2.6219016 | 29 | 1 | 41 days   | 0.61 |     |   | MPC |        | 2007 UQ <sub>95</sub> |
| 2007 UB <sub>96</sub> | 17.6 | 0.15 | 20071027 | 349.58478 | 97.25042  | 314.87680 | 1.95085  | 0.1799375 | 2.3768266 | 29 | 1 | 31 days   | 0.65 |     |   | MPC |        | 2007 UB <sub>96</sub> |
| 2007 UE <sub>96</sub> | 16.7 | 0.15 | 20071027 | 134.28340 | 31.13423  | 235.23539 | 5.06669  | 0.1183753 | 2.3812062 | 43 | 2 | 2003–2007 | 0.34 | M-v | 4 | MPC | 128574 | 2007 UE <sub>96</sub> |
| 2007 UH <sub>96</sub> | 15.8 | 0.15 | 20071027 | 95.03688  | 264.00242 | 49.35879  | 11.52689 | 0.0239355 | 3.0825713 | 35 | 1 | 87 days   | 0.36 | M-v | 4 | MPC |        | 2007 UH <sub>96</sub> |
| 2007 UN <sub>96</sub> | 17.8 | 0.15 | 20071116 | 39.73110  | 124.69213 | 228.22323 | 1.44838  | 0.2334467 | 2.3455694 | 42 | 1 | 37 days   | 0.54 |     |   | MPC |        | 2007 UN <sub>96</sub> |
| 2007 UP <sub>96</sub> | 18.4 | 0.15 | 20071027 | 321.46960 | 125.22887 | 333.64397 | 0.71084  | 0.1503725 | 2.3795582 | 42 | 5 | 1996–2007 | 0.28 | M-v | 0 | MPC | 128575 | 2007 UP <sub>96</sub> |
| 2007 US <sub>96</sub> | 18.6 | 0.15 | 20071027 | 356.84666 | 181.21031 | 229.85031 | 8.43818  | 0.1448669 | 2.2834066 | 17 | 1 | 12 days   | 0.25 |     |   | MPC |        | 2007 US <sub>96</sub> |
| 2007 UU <sub>96</sub> | 17.0 | 0.15 | 20071027 | 307.14532 | 63.40357  | 49.30943  | 5.50197  | 0.1046281 | 2.5917120 | 31 | 1 | 87 days   | 0.23 | M-v | 4 | MPC |        | 2007 UU <sub>96</sub> |
| 2007 UV <sub>96</sub> | 16.5 | 0.15 | 20071116 | 307.70454 | 66.75476  | 52.20244  | 23.20067 | 0.1147566 | 3.1569287 | 19 | 1 | 37 days   | 0.25 |     |   | MPC |        | 2007 UV <sub>96</sub> |
| 2007 UW <sub>96</sub> | 18.4 | 0.15 | 20071027 | 8.63457   | 167.33310 | 229.17407 | 6.00919  | 0.1164085 | 2.3160156 | 20 | 1 | 33 days   | 0.26 |     |   | MPC |        | 2007 UW <sub>96</sub> |
| 2007 UX <sub>96</sub> | 16.7 | 0.15 | 20071116 | 322.10175 | 217.97596 | 238.47686 | 8.80473  | 0.0418290 | 3.0526719 | 19 | 1 | 37 days   | 0.34 |     |   | MPC |        | 2007 UX <sub>96</sub> |
| 2007 UC <sub>97</sub> | 17.0 | 0.15 | 20071027 | 29.19786  | 333.14411 | 33.91378  | 2.20338  | 0.1779873 | 2.5414691 | 71 | 3 | 2003–2007 | 0.39 | M-v | 3 | MPC | 128575 | 2007 UC <sub>97</sub> |
| 2007 UH <sub>98</sub> | 15.9 | 0.15 | 20071116 | 274.19817 | 279.27979 | 235.86648 | 11.05273 | 0.1033766 | 3.1304664 | 20 | 1 | 35 days   | 0.25 |     |   | MPC |        | 2007 UH <sub>98</sub> |
| 2007 UK <sub>98</sub> | 16.3 | 0.15 | 20071027 | 267.97812 | 97.14484  | 54.11587  | 9.61343  | 0.0447523 | 3.1665327 | 12 | 1 | 19 days   | 0.24 |     |   | MPC |        | 2007 UK <sub>98</sub> |
| 2007 UN <sub>98</sub> | 16.7 | 0.15 | 20071027 | 172.23800 | 179.25362 | 58.52410  | 3.74239  | 0.1402925 | 2.2154210 | 47 | 4 | 1999–2007 | 0.47 | M-v | 2 | MPC | 128575 | 2007 UN <sub>98</sub> |
| 2007 UR <sub>98</sub> | 16.1 | 0.15 | 20071027 | 67.75820  | 270.83291 | 60.44547  | 2.78276  | 0.1240416 | 2.8362420 | 28 | 1 | 85 days   | 0.39 | M-v | 5 | MPC |        | 2007 UR <sub>98</sub> |
| 2007 US <sub>98</sub> | 18.0 | 0.15 | 20071027 | 31.00315  | 119.13552 | 240.64981 | 1.36788  | 0.2308890 | 2.3421174 | 32 | 1 | 88 days   | 0.33 | M-v | 4 | MPC |        | 2007 US <sub>98</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |                       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-----------------------|-------------------------------|
| 2007 UT <sub>98</sub>  | 16.8 | 0.15 | 20071027 | 316.70266 | 57.76620  | 53.80689  | 14.04433 | 0.1789811 | 2.7550155 | 15 | 1 | 19 days   | 0.25 |     | MPC | 2007 UT <sub>98</sub> |                               |
| 2007 UU <sub>98</sub>  | 15.9 | 0.15 | 20071027 | 71.35540  | 269.78957 | 55.32308  | 1.83797  | 0.1531800 | 3.0155145 | 24 | 1 | 85 days   | 0.34 | M-v | 5   | MPC                   | 2007 UU <sub>98</sub>         |
| 2007 UW <sub>98</sub>  | 16.6 | 0.15 | 20071027 | 338.14985 | 26.07952  | 55.28394  | 6.84194  | 0.1295396 | 3.0486751 | 19 | 1 | 28 days   | 0.28 |     |     | MPC                   | 2007 UW <sub>98</sub>         |
| 2007 UX <sub>98</sub>  | 15.9 | 0.15 | 20071027 | 24.71507  | 327.09584 | 53.39142  | 6.45109  | 0.1441990 | 3.1230924 | 31 | 1 | 85 days   | 0.50 | M-v | 4   | MPC                   | 2007 UX <sub>98</sub>         |
| 2007 UZ <sub>98</sub>  | 16.5 | 0.15 | 20071027 | 13.97473  | 280.04318 | 116.41623 | 0.41088  | 0.0772151 | 2.7720445 | 60 | 5 | 1995–2007 | 0.39 | M-v | 0   | MPC                   | 128575 2007 UZ <sub>98</sub>  |
| 2007 UA <sub>99</sub>  | 15.5 | 0.15 | 20071027 | 306.96892 | 242.11561 | 234.43266 | 10.63725 | 0.0900788 | 3.1384924 | 36 | 2 | 2001–2007 | 0.49 | M-v | 4   | MPC                   | 128575 2007 UA <sub>99</sub>  |
| 2007 UC <sub>99</sub>  | 16.9 | 0.15 | 20071027 | 322.88676 | 48.68090  | 57.77346  | 4.17770  | 0.2120335 | 2.5777164 | 39 | 3 | 1996–2007 | 0.44 | M-v | 3   | MPC                   | 128576 2007 UC <sub>99</sub>  |
| 2007 UE <sub>99</sub>  | 17.6 | 0.15 | 20071027 | 36.44035  | 224.73594 | 133.31594 | 0.06914  | 0.1814339 | 2.2148172 | 36 | 1 | 49 days   | 0.43 |     |     | MPC                   | 2007 UE <sub>99</sub>         |
| 2007 UF <sub>99</sub>  | 16.6 | 0.15 | 20071027 | 6.56637   | 350.21693 | 55.96064  | 6.77947  | 0.0910322 | 2.9402426 | 12 | 1 | 19 days   | 0.18 |     |     | MPC                   | 2007 UF <sub>99</sub>         |
| 2007 UJ <sub>99</sub>  | 18.6 | 0.15 | 20071027 | 15.96950  | 328.66082 | 59.47238  | 4.73584  | 0.1547833 | 2.3197429 | 20 | 2 | 2006–2007 | 0.27 | M-v | 4   | MPC                   | 128576 2007 UJ <sub>99</sub>  |
| 2007 UK <sub>99</sub>  | 16.1 | 0.15 | 20071027 | 288.81685 | 270.38206 | 233.40007 | 7.71310  | 0.1491755 | 3.0769634 | 15 | 1 | 19 days   | 0.19 |     |     | MPC                   | 2007 UK <sub>99</sub>         |
| 2007 UO <sub>99</sub>  | 15.1 | 0.15 | 20071027 | 16.76450  | 314.04660 | 69.29580  | 10.26796 | 0.0838149 | 3.0697259 | 51 | 3 | 2004–2007 | 0.53 | M-v | 3   | MPC                   | 128576 2007 UO <sub>99</sub>  |
| 2007 UR <sub>99</sub>  | 18.4 | 0.15 | 20071027 | 7.65205   | 352.02193 | 45.06570  | 6.18238  | 0.1993449 | 2.2445195 | 17 | 1 | 63 days   | 0.34 | M-v | 4   | MPC                   | 2007 UR <sub>99</sub>         |
| 2007 US <sub>99</sub>  | 16.9 | 0.15 | 20071027 | 337.00534 | 34.51229  | 49.26532  | 11.30608 | 0.1785457 | 2.3947743 | 48 | 1 | 60 days   | 0.43 | M-v | 4   | MPC                   | 2007 US <sub>99</sub>         |
| 2007 UV <sub>99</sub>  | 16.6 | 0.15 | 20071027 | 2.82600   | 150.43083 | 261.56530 | 1.61269  | 0.0570689 | 2.8198687 | 23 | 1 | 65 days   | 0.17 | M-v | 4   | MPC                   | 2007 UV <sub>99</sub>         |
| 2007 UW <sub>99</sub>  | 15.8 | 0.15 | 20071027 | 21.51481  | 145.05648 | 237.87497 | 15.45843 | 0.1907918 | 3.1020406 | 49 | 1 | 50 days   | 0.53 |     |     | MPC                   | 2007 UW <sub>99</sub>         |
| 2007 UX <sub>99</sub>  | 17.0 | 0.15 | 20071027 | 343.57226 | 180.17771 | 254.32463 | 1.09673  | 0.1206884 | 2.6446056 | 20 | 1 | 81 days   | 0.28 | M-v | 3   | MPC                   | 2007 UX <sub>99</sub>         |
| 2007 UY <sub>99</sub>  | 16.9 | 0.15 | 20071027 | 56.75211  | 94.00343  | 236.92061 | 4.59990  | 0.2374956 | 2.6052713 | 34 | 1 | 50 days   | 0.37 |     |     | MPC                   | 2007 UY <sub>99</sub>         |
| 2007 UJ <sub>100</sub> | 17.6 | 0.15 | 20071027 | 331.51401 | 39.14924  | 53.67354  | 16.86367 | 0.1624237 | 2.5388201 | 16 | 1 | 29 days   | 0.36 |     |     | MPC                   | 2007 UJ <sub>100</sub>        |
| 2007 UK <sub>100</sub> | 17.4 | 0.15 | 20071116 | 329.82058 | 239.10687 | 233.63558 | 4.47160  | 0.2841543 | 2.5592679 | 23 | 1 | 45 days   | 0.60 |     |     | MPC                   | 2007 UK <sub>100</sub>        |
| 2007 UU <sub>100</sub> | 16.9 | 0.15 | 20071027 | 340.48311 | 202.17029 | 242.66391 | 3.51686  | 0.2329732 | 2.5810352 | 49 | 4 | 1978–2007 | 0.51 | M-v | 1   | MPC                   | 128576 2007 UU <sub>100</sub> |
| 2007 UC <sub>101</sub> | 17.4 | 0.15 | 20071027 | 93.24293  | 244.89149 | 59.37306  | 3.43692  | 0.1722706 | 2.2467218 | 15 | 1 | 19 days   | 0.23 |     |     | MPC                   | 2007 UC <sub>101</sub>        |
| 2007 UH <sub>101</sub> | 18.1 | 0.15 | 20071116 | 65.80367  | 112.93624 | 225.47795 | 2.77953  | 0.1242316 | 2.2200779 | 16 | 1 | 35 days   | 0.32 |     |     | MPC                   | 2007 UH <sub>101</sub>        |
| 2007 UJ <sub>101</sub> | 18.3 | 0.15 | 20071027 | 10.90941  | 340.83777 | 48.40190  | 1.04902  | 0.2500411 | 2.2519952 | 39 | 1 | 95 days   | 0.41 | M-v | 4   | MPC                   | 2007 UJ <sub>101</sub>        |
| 2007 UM <sub>101</sub> | 17.2 | 0.15 | 20071027 | 68.87580  | 280.24836 | 53.32510  | 6.05098  | 0.0946980 | 2.3296594 | 16 | 1 | 64 days   | 0.14 | M-v | 4   | MPC                   | 2007 UM <sub>101</sub>        |
| 2007 UO <sub>101</sub> | 18.0 | 0.15 | 20071027 | 46.35964  | 288.98756 | 52.57174  | 3.20256  | 0.2265055 | 2.2109507 | 20 | 1 | 19 days   | 0.45 |     |     | MPC                   | 2007 UO <sub>101</sub>        |
| 2007 UP <sub>101</sub> | 17.5 | 0.15 | 20071027 | 2.31194   | 350.07646 | 57.13668  | 3.56621  | 0.2228830 | 2.5750367 | 26 | 1 | 69 days   | 0.42 | M-v | 4   | MPC                   | 2007 UP <sub>101</sub>        |
| 2007 UA <sub>102</sub> | 16.6 | 0.15 | 20071027 | 64.29207  | 150.02524 | 194.67089 | 1.53439  | 0.0731524 | 2.8300535 | 13 | 1 | 19 days   | 0.24 |     |     | MPC                   | 2007 UA <sub>102</sub>        |
| 2007 UD <sub>102</sub> | 15.3 | 0.15 | 20071027 | 82.18101  | 76.67542  | 237.74405 | 24.85919 | 0.1988165 | 3.2311382 | 25 | 1 | 36 days   | 0.21 |     |     | MPC                   | 2007 UD <sub>102</sub>        |
| 2007 UE <sub>102</sub> | 15.9 | 0.15 | 20071027 | 304.15119 | 244.81754 | 235.26647 | 9.62006  | 0.0577459 | 3.1505848 | 17 | 1 | 65 days   | 0.25 | M-v | 5   | MPC                   | 2007 UE <sub>102</sub>        |
| 2007 UG <sub>102</sub> | 17.7 | 0.15 | 20071027 | 57.87500  | 103.81375 | 226.57852 | 6.07903  | 0.2334325 | 2.3165651 | 17 | 1 | 21 days   | 0.29 |     |     | MPC                   | 2007 UG <sub>102</sub>        |
| 2007 UH <sub>102</sub> | 15.6 | 0.15 | 20071027 | 22.98185  | 156.09607 | 235.02032 | 6.29534  | 0.0845809 | 3.0361368 | 23 | 1 | 82 days   | 0.42 | M-v | 4   | MPC                   | 2007 UH <sub>102</sub>        |
| 2007 UN <sub>102</sub> | 17.5 | 0.15 | 20071027 | 36.46068  | 128.13899 | 229.86320 | 2.71365  | 0.1060886 | 2.7723282 | 29 | 2 | 2002–2007 | 0.23 | M-v | 2   | MPC                   | 128577 2007 UN <sub>102</sub> |
| 2007 UO <sub>102</sub> | 18.1 | 0.15 | 20071027 | 14.56162  | 141.91793 | 242.01570 | 1.93867  | 0.1114354 | 2.6287809 | 19 | 1 | 12 days   | 0.26 |     |     | MPC                   | 2007 UO <sub>102</sub>        |
| 2007 UQ <sub>102</sub> | 15.2 | 0.15 | 20071027 | 206.05235 | 342.41624 | 226.36821 | 19.22365 | 0.2470586 | 3.1019990 | 17 | 1 | 8 days    | 0.28 |     | D   | MPC                   | 2007 UQ <sub>102</sub>        |
| 2007 UC <sub>103</sub> | 16.3 | 0.15 | 20071027 | 336.10339 | 41.23228  | 39.48958  | 8.06641  | 0.1731899 | 3.1206908 | 27 | 1 | 62 days   | 0.48 | M-v | 4   | MPC                   | 2007 UC <sub>103</sub>        |
| 2007 UD <sub>103</sub> | 18.1 | 0.15 | 20071027 | 24.37439  | 317.66212 | 42.86962  | 14.12479 | 0.2860551 | 2.6390737 | 17 | 1 | 42 days   | 0.30 |     |     | MPC                   | 2007 UD <sub>103</sub>        |
| 2007 UH <sub>103</sub> | 19.4 | 0.15 | 20071027 | 16.34802  | 334.64548 | 40.18952  | 5.43730  | 0.2682759 | 2.4375732 | 13 | 1 | 5 days    | 0.22 |     | D   | MPC                   | 2007 UH <sub>103</sub>        |
| 2007 UO <sub>103</sub> | 18.7 | 0.15 | 20071027 | 16.88819  | 309.73158 | 69.99976  | 4.76125  | 0.2802768 | 2.3138273 | 15 | 1 | 19 days   | 0.10 |     |     | MPC                   | 2007 UO <sub>103</sub>        |
| 2007 UR <sub>103</sub> | 17.4 | 0.15 | 20071116 | 332.68860 | 264.45239 | 193.31126 | 2.25751  | 0.1333989 | 2.4427487 | 24 | 1 | 35 days   | 0.41 |     |     | MPC                   | 2007 UR <sub>103</sub>        |
| 2007 US <sub>103</sub> | 17.2 | 0.15 | 20071027 | 28.28271  | 308.49920 | 75.81285  | 7.54665  | 0.0871318 | 2.6871421 | 16 | 1 | 20 days   | 0.20 |     |     | MPC                   | 2007 US <sub>103</sub>        |
| 2007 UA <sub>104</sub> | 16.8 | 0.15 | 20071027 | 18.88589  | 251.31466 | 139.40504 | 2.22953  | 0.1992060 | 3.1494097 | 19 | 1 | 20 days   | 0.30 |     |     | MPC                   | 2007 UA <sub>104</sub>        |
| 2007 UB <sub>104</sub> | 17.8 | 0.15 | 20071116 | 29.69913  | 298.08355 | 81.46516  | 3.58718  | 0.1861145 | 2.3878894 | 19 | 1 | 35 days   | 0.14 |     |     | MPC                   | 2007 UB <sub>104</sub>        |
| 2007 UC <sub>104</sub> | 15.7 | 0.15 | 20071027 | 135.94110 | 53.60220  | 229.99500 | 8.31943  | 0.0430325 | 3.1652955 | 16 | 1 | 20 days   | 0.25 |     |     | MPC                   | 2007 UC <sub>104</sub>        |
| 2007 UD <sub>104</sub> | 16.8 | 0.15 | 20071116 | 47.50294  | 246.23261 | 108.55056 | 2.92464  | 0.2128454 | 2.6390071 | 18 | 1 | 36 days   | 0.24 |     |     | MPC                   | 2007 UD <sub>104</sub>        |
| 2007 UF <sub>104</sub> | 16.2 | 0.15 | 20071027 | 308.90204 | 2.32379   | 112.48051 | 3.14202  | 0.0361631 | 2.7660216 | 16 | 1 | 31 days   | 0.34 |     |     | MPC                   | 2007 UF <sub>104</sub>        |
| 2007 UH <sub>104</sub> | 16.4 | 0.15 | 20071116 | 171.82338 | 172.31874 | 78.85408  | 7.27147  | 0.0906775 | 2.3704886 | 19 | 1 | 36 days   | 0.31 |     |     | MPC                   | 2007 UH <sub>104</sub>        |
| 2007 UJ <sub>104</sub> | 16.2 | 0.15 | 20071027 | 306.73501 | 272.34080 | 219.07725 | 4.98480  | 0.1845550 | 2.6292396 | 28 | 1 | 51 days   | 0.47 |     |     | MPC                   | 2007 UJ <sub>104</sub>        |
| 2007 UM <sub>104</sub> | 17.1 | 0.15 | 20071027 | 352.87933 | 296.38346 | 129.51176 | 1.89132  | 0.1683760 | 2.4137892 | 33 | 1 | 52 days   | 0.37 |     |     | MPC                   | 2007 UM <sub>104</sub>        |
| 2007 UO <sub>104</sub> | 15.9 | 0.15 | 20071116 | 39.71269  | 267.33904 | 111.78207 | 3.52053  | 0.0847968 | 2.7938928 | 17 | 1 | 34 days   | 0.21 |     |     | MPC                   | 2007 UO <sub>104</sub>        |
| 2007 UU <sub>104</sub> | 17.8 | 0.15 | 20071116 | 33.11022  | 290.60264 | 68.99430  | 8.93241  | 0.3298041 | 2.3412059 | 33 | 1 | 45 days   | 0.48 |     |     | MPC                   | 2007 UU <sub>104</sub>        |
| 2007 UV <sub>104</sub> | 17.9 | 0.15 | 20071116 | 347.97911 | 356.95614 | 83.71762  | 5.55102  | 0.1516268 | 2.3847485 | 16 | 1 | 36 days   | 0.32 |     |     | MPC                   | 2007 UV <sub>104</sub>        |
| 2007 UD <sub>105</sub> | 15.0 | 0.15 | 20071027 | 64.47496  | 252.02940 | 77.09793  | 12.13113 | 0.2174444 | 2.6827126 | 65 | 5 | 1997–2007 | 0.47 | M-v | 1   | MPC                   | 128577 2007 UD <sub>105</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |       |        |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-------|--------|------------------------|
| 2007 UK <sub>105</sub> | 16.8 | 0.15 | 20071027 | 32.38225  | 219.72270 | 161.23806 | 3.06128  | 0.0522235 | 2.2562505 | 35 | 4 | 2000–2007 | 0.46 | M-v | 1 | MPC   | 128577 | 2007 UK <sub>105</sub> |
| 2007 UP <sub>105</sub> | 16.2 | 0.15 | 20071027 | 11.12117  | 190.25796 | 210.67382 | 7.28502  | 0.1889393 | 2.6122769 | 53 | 5 | 1996–2007 | 0.55 | M-v | 1 | MPC   | 128577 | 2007 UP <sub>105</sub> |
| 2007 US <sub>105</sub> | 16.2 | 0.15 | 20071116 | 61.68966  | 265.91550 | 73.77180  | 13.27354 | 0.2091491 | 2.5673387 | 27 | 1 | 36 days   | 0.36 |     |   | MPC   |        | 2007 US <sub>105</sub> |
| 2007 UT <sub>105</sub> | 15.6 | 0.15 | 20071027 | 346.57550 | 213.14248 | 228.47954 | 15.59692 | 0.2040580 | 3.1196035 | 22 | 1 | 102 days  | 0.40 | M-v | 3 | MPC   |        | 2007 UT <sub>105</sub> |
| 2007 UX <sub>105</sub> | 17.3 | 0.15 | 20071116 | 32.45660  | 281.89652 | 93.00728  | 4.45028  | 0.2127762 | 2.3273102 | 25 | 1 | 36 days   | 0.56 |     |   | MPC   |        | 2007 UX <sub>105</sub> |
| 2007 UB <sub>106</sub> | 18.1 | 0.15 | 20071027 | 348.67694 | 241.23830 | 179.18037 | 1.25705  | 0.1796629 | 2.4348420 | 26 | 1 | 28 days   | 0.53 |     |   | MPC   |        | 2007 UB <sub>106</sub> |
| 2007 UF <sub>106</sub> | 15.7 | 0.15 | 20071027 | 352.45576 | 70.74913  | 345.52433 | 1.60744  | 0.0965831 | 3.1578456 | 20 | 1 | 19 days   | 0.31 |     |   | MPC   |        | 2007 UF <sub>106</sub> |
| 2007 UL <sub>106</sub> | 17.8 | 0.15 | 20071027 | 46.55512  | 305.13853 | 36.70421  | 6.44965  | 0.1740346 | 2.3103917 | 30 | 1 | 86 days   | 0.32 | M-v | 4 | MPC   |        | 2007 UL <sub>106</sub> |
| 2007 UN <sub>106</sub> | 16.6 | 0.15 | 20071027 | 78.56318  | 287.90572 | 24.73436  | 3.30894  | 0.1467217 | 2.7971920 | 35 | 3 | 2000–2007 | 0.37 | M-v | 3 | MPC   | 128577 | 2007 UN <sub>106</sub> |
| 2007 UO <sub>106</sub> | 18.5 | 0.15 | 20071027 | 355.83124 | 153.38922 | 257.19413 | 1.68697  | 0.1653407 | 2.3721173 | 16 | 1 | 5 days    | 0.33 |     |   | MPC   |        | 2007 UO <sub>106</sub> |
| 2007 US <sub>106</sub> | 17.2 | 0.15 | 20071027 | 20.51136  | 15.26607  | 1.64193   | 1.05024  | 0.1747496 | 2.5531671 | 58 | 3 | 2003–2007 | 0.44 | M-v | 3 | MPC   | 128578 | 2007 US <sub>106</sub> |
| 2007 UT <sub>106</sub> | 17.8 | 0.15 | 20071027 | 342.16421 | 188.75720 | 241.94051 | 3.18075  | 0.1619526 | 2.4580134 | 31 | 1 | 47 days   | 0.56 |     |   | MPC   |        | 2007 UT <sub>106</sub> |
| 2007 UU <sub>106</sub> | 15.6 | 0.15 | 20071027 | 15.57878  | 345.69048 | 46.55991  | 17.41867 | 0.0532600 | 3.2055479 | 30 | 1 | 63 days   | 0.56 | M-v | 4 | MPC   |        | 2007 UU <sub>106</sub> |
| 2007 UE <sub>107</sub> | 18.2 | 0.15 | 20071116 | 32.42621  | 34.93843  | 329.69397 | 0.98201  | 0.2159994 | 2.3987139 | 31 | 1 | 35 days   | 0.47 |     |   | MPC   |        | 2007 UE <sub>107</sub> |
| 2007 UG <sub>107</sub> | 15.7 | 0.15 | 20071027 | 6.28437   | 261.57419 | 131.49622 | 13.53046 | 0.1846632 | 3.0429344 | 32 | 1 | 86 days   | 0.55 | M-v | 4 | MPC   |        | 2007 UG <sub>107</sub> |
| 2007 UH <sub>107</sub> | 17.6 | 0.15 | 20071027 | 336.92504 | 28.50320  | 51.91879  | 14.59186 | 0.1500532 | 2.5625088 | 22 | 1 | 57 days   | 0.42 |     |   | MPC   |        | 2007 UH <sub>107</sub> |
| 2007 UM <sub>107</sub> | 17.2 | 0.15 | 20071116 | 13.66045  | 331.40745 | 58.65223  | 14.43597 | 0.2637067 | 2.5955685 | 36 | 1 | 40 days   | 0.57 |     |   | MPC   |        | 2007 UM <sub>107</sub> |
| 2007 US <sub>107</sub> | 17.1 | 0.15 | 20071027 | 6.16451   | 47.63744  | 332.24928 | 1.49970  | 0.0898276 | 2.7092363 | 16 | 1 | 26 days   | 0.23 |     |   | MPC   |        | 2007 US <sub>107</sub> |
| 2007 UV <sub>107</sub> | 16.9 | 0.15 | 20071027 | 25.77069  | 61.66560  | 294.45225 | 1.45890  | 0.0950927 | 2.9481738 | 16 | 1 | 29 days   | 0.47 |     |   | MPC   |        | 2007 UV <sub>107</sub> |
| 2007 UG <sub>108</sub> | 17.0 | 0.15 | 20071027 | 11.27125  | 144.49694 | 246.51306 | 1.36260  | 0.0833897 | 2.7001504 | 32 | 2 | 2002–2007 | 0.43 | M-v | 4 | MPC   | 128578 | 2007 UG <sub>108</sub> |
| 2007 UT <sub>108</sub> | 16.5 | 0.15 | 20071027 | 309.59682 | 245.42994 | 226.21850 | 12.37156 | 0.1464899 | 2.9858315 | 24 | 1 | 30 days   | 0.43 |     |   | MPC   |        | 2007 UT <sub>108</sub> |
| 2007 UA <sub>109</sub> | 18.4 | 0.15 | 20071027 | 43.46300  | 133.83168 | 215.66349 | 2.26222  | 0.1119316 | 2.2829272 | 20 | 1 | 19 days   | 0.34 |     |   | MPC   |        | 2007 UA <sub>109</sub> |
| 2007 UG <sub>109</sub> | 16.4 | 0.15 | 20071027 | 49.28642  | 129.64482 | 222.76628 | 5.15929  | 0.0366039 | 2.6821492 | 27 | 1 | 35 days   | 0.47 |     |   | MPC   |        | 2007 UG <sub>109</sub> |
| 2007 UH <sub>109</sub> | 17.3 | 0.15 | 20071027 | 21.09005  | 327.49626 | 47.91376  | 2.30353  | 0.1519830 | 2.6604301 | 36 | 1 | 71 days   | 0.50 | M-v | 4 | MPC   |        | 2007 UH <sub>109</sub> |
| 2007 UJ <sub>109</sub> | 16.8 | 0.15 | 20071027 | 37.91348  | 289.92779 | 71.89174  | 3.05405  | 0.0810308 | 2.8694611 | 19 | 1 | 58 days   | 0.33 |     |   | MPC   |        | 2007 UJ <sub>109</sub> |
| 2007 UM <sub>110</sub> | 18.3 | 0.15 | 20071027 | 358.60345 | 351.30237 | 45.50806  | 4.11942  | 0.2058294 | 2.2644233 | 23 | 1 | 35 days   | 0.36 |     |   | MPC   |        | 2007 UM <sub>110</sub> |
| 2007 UD <sub>111</sub> | 18.1 | 0.15 | 20071027 | 35.26526  | 129.42088 | 211.14275 | 2.15948  | 0.2292488 | 2.5181009 | 12 | 1 | 18 days   | 0.20 |     |   | MPC   |        | 2007 UD <sub>111</sub> |
| 2007 UT <sub>112</sub> | 18.2 | 0.15 | 20071027 | 0.68475   | 180.38593 | 214.93124 | 2.83691  | 0.1712457 | 2.6124103 | 19 | 1 | 59 days   | 0.30 |     |   | D MPC |        | 2007 UT <sub>112</sub> |
| 2007 UX <sub>112</sub> | 16.1 | 0.15 | 20071027 | 15.03026  | 167.33347 | 214.05745 | 6.26776  | 0.0145234 | 2.6929023 | 26 | 1 | 48 days   | 0.62 |     |   | MPC   |        | 2007 UX <sub>112</sub> |
| 2007 UZ <sub>112</sub> | 17.3 | 0.15 | 20071027 | 350.83889 | 15.14719  | 45.98215  | 14.68945 | 0.1456292 | 2.6731466 | 43 | 1 | 66 days   | 0.47 | M-v | 4 | MPC   |        | 2007 UZ <sub>112</sub> |
| 2007 UC <sub>113</sub> | 15.0 | 0.15 | 20071027 | 73.17738  | 236.15645 | 69.61153  | 9.09478  | 0.1990226 | 2.8851184 | 57 | 4 | 2002–2007 | 0.58 | M-v | 1 | MPC   | 128578 | 2007 UC <sub>113</sub> |
| 2007 UE <sub>113</sub> | 15.3 | 0.15 | 20071027 | 39.50436  | 292.86338 | 82.64698  | 9.31799  | 0.0770596 | 3.1683615 | 33 | 1 | 45 days   | 0.37 |     |   | MPC   |        | 2007 UE <sub>113</sub> |
| 2007 UJ <sub>113</sub> | 17.2 | 0.15 | 20071027 | 38.38104  | 107.64514 | 241.32787 | 3.33525  | 0.2047978 | 2.9294998 | 19 | 1 | 40 days   | 0.19 |     |   | MPC   |        | 2007 UJ <sub>113</sub> |
| 2007 UB <sub>114</sub> | 16.9 | 0.15 | 20071027 | 282.20085 | 118.69639 | 30.93411  | 8.63265  | 0.2068353 | 2.7258804 | 28 | 2 | 2004–2007 | 0.50 | M-v | 4 | MPC   | 128578 | 2007 UB <sub>114</sub> |
| 2007 UC <sub>114</sub> | 16.6 | 0.15 | 20071027 | 34.06702  | 88.22398  | 262.84687 | 3.91913  | 0.2561379 | 3.0021954 | 19 | 1 | 50 days   | 0.38 |     |   | MPC   |        | 2007 UC <sub>114</sub> |
| 2007 UD <sub>114</sub> | 17.7 | 0.15 | 20071027 | 319.38446 | 56.91147  | 35.20800  | 10.09796 | 0.0647871 | 2.3660387 | 28 | 1 | 68 days   | 0.29 | M-v | 4 | MPC   |        | 2007 UD <sub>114</sub> |
| 2007 UJ <sub>114</sub> | 16.9 | 0.15 | 20071027 | 333.64662 | 83.93331  | 359.36042 | 2.90700  | 0.1641157 | 2.6315697 | 19 | 1 | 59 days   | 0.40 |     |   | MPC   |        | 2007 UJ <sub>114</sub> |
| 2007 UL <sub>114</sub> | 16.7 | 0.15 | 20071027 | 343.31085 | 174.39765 | 250.75133 | 5.74173  | 0.0420667 | 2.4132499 | 20 | 1 | 15 days   | 0.42 |     |   | MPC   |        | 2007 UL <sub>114</sub> |
| 2007 UP <sub>114</sub> | 17.0 | 0.15 | 20071116 | 321.83220 | 210.69630 | 260.34240 | 4.18218  | 0.2233049 | 2.6231528 | 26 | 1 | 44 days   | 0.50 |     |   | MPC   |        | 2007 UP <sub>114</sub> |
| 2007 UR <sub>114</sub> | 18.5 | 0.15 | 20071027 | 2.38843   | 150.97874 | 250.28111 | 4.39947  | 0.2007372 | 2.3760802 | 19 | 1 | 17 days   | 0.33 |     |   | MPC   |        | 2007 UR <sub>114</sub> |
| 2007 UW <sub>114</sub> | 16.5 | 0.15 | 20071027 | 300.65584 | 88.28217  | 40.50126  | 10.79986 | 0.1923783 | 2.6910549 | 29 | 1 | 86 days   | 0.46 | M-v | 4 | MPC   |        | 2007 UW <sub>114</sub> |
| 2007 UA <sub>115</sub> | 16.6 | 0.15 | 20071116 | 342.67109 | 187.83931 | 245.53097 | 8.77221  | 0.0599312 | 3.0052854 | 26 | 1 | 36 days   | 0.40 |     |   | MPC   |        | 2007 UA <sub>115</sub> |
| 2007 UB <sub>115</sub> | 17.2 | 0.15 | 20071116 | 14.42467  | 152.44047 | 243.90460 | 5.52756  | 0.1020961 | 2.3959836 | 24 | 1 | 36 days   | 0.32 |     |   | MPC   |        | 2007 UB <sub>115</sub> |
| 2007 UE <sub>115</sub> | 16.1 | 0.15 | 20071027 | 55.50261  | 300.98300 | 43.87351  | 11.59320 | 0.1038729 | 3.0347065 | 39 | 1 | 87 days   | 0.38 | M-v | 4 | MPC   |        | 2007 UE <sub>115</sub> |
| 2007 UJ <sub>115</sub> | 16.1 | 0.15 | 20071116 | 43.74315  | 117.08945 | 240.01629 | 8.28566  | 0.1566710 | 3.0381354 | 50 | 1 | 34 days   | 0.49 |     |   | MPC   |        | 2007 UJ <sub>115</sub> |
| 2007 UK <sub>115</sub> | 17.3 | 0.15 | 20071027 | 70.74279  | 274.91006 | 40.91657  | 7.96607  | 0.1915282 | 2.2329089 | 37 | 1 | 79 days   | 0.53 | M-v | 4 | MPC   |        | 2007 UK <sub>115</sub> |
| 2007 UM <sub>115</sub> | 17.3 | 0.15 | 20071027 | 80.81639  | 7.13108   | 301.73898 | 2.02115  | 0.1803037 | 2.5360988 | 16 | 1 | 53 days   | 0.23 |     |   | MPC   |        | 2007 UM <sub>115</sub> |
| 2007 UP <sub>115</sub> | 16.1 | 0.15 | 20071027 | 0.45306   | 121.24093 | 289.66312 | 1.42052  | 0.0853420 | 3.1339545 | 15 | 1 | 18 days   | 0.28 |     |   | MPC   |        | 2007 UP <sub>115</sub> |
| 2007 UW <sub>115</sub> | 17.8 | 0.15 | 20071116 | 14.32989  | 143.38711 | 249.35293 | 2.37028  | 0.1909309 | 2.6723684 | 34 | 1 | 36 days   | 0.39 |     |   | MPC   |        | 2007 UW <sub>115</sub> |
| 2007 UA <sub>116</sub> | 16.9 | 0.15 | 20071027 | 7.57700   | 176.51427 | 222.21291 | 11.56358 | 0.1953080 | 2.6587664 | 32 | 1 | 55 days   | 0.24 |     |   | MPC   |        | 2007 UA <sub>116</sub> |
| 2007 UB <sub>116</sub> | 16.9 | 0.15 | 20071027 | 82.51490  | 218.84968 | 90.09313  | 3.13022  | 0.1649286 | 2.1651978 | 29 | 1 | 51 days   | 0.46 |     |   | MPC   |        | 2007 UB <sub>116</sub> |
| 2007 UC <sub>116</sub> | 16.5 | 0.15 | 20071027 | 3.03683   | 302.91257 | 103.33819 | 3.11419  | 0.1679250 | 2.6207482 | 43 | 1 | 46 days   | 0.67 |     |   | MPC   |        | 2007 UC <sub>116</sub> |
| 2007 UE <sub>116</sub> | 16.4 | 0.15 | 20071027 | 50.67580  | 134.79566 | 212.98617 | 5.89755  | 0.1382630 | 2.5721825 | 33 | 1 | 31 days   | 0.37 |     |   | MPC   |        | 2007 UE <sub>116</sub> |



|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 UH <sub>116</sub> | 15.5 | 0.15 | 20071116 | 359.25655 | 351.70837 | 67.64785  | 11.67299 | 0.0927364 | 2.9918413 | 35 | 1 | 35 days   | 0.35 |       | MPC | 2007 UH <sub>116</sub>        |
| 2007 UM <sub>116</sub> | 17.3 | 0.15 | 20071027 | 1.52996   | 292.16020 | 106.16371 | 1.88165  | 0.2427969 | 3.0206317 | 14 | 1 | 6 days    | 0.42 | D     | MPC | 2007 UM <sub>116</sub>        |
| 2007 UN <sub>116</sub> | 16.5 | 0.15 | 20071007 | 88.96060  | 235.88641 | 55.08482  | 9.56297  | 0.1542707 | 2.5826565 | 23 | 1 | 32 days   | 0.34 | D     | MPC | 2007 UN <sub>116</sub>        |
| 2007 UO <sub>116</sub> | 16.8 | 0.15 | 20071007 | 8.39252   | 321.30019 | 65.90777  | 5.13412  | 0.0753225 | 2.7591355 | 25 | 1 | 32 days   | 0.24 |       | MPC | 2007 UO <sub>116</sub>        |
| 2007 UT <sub>116</sub> | 15.9 | 0.15 | 20071027 | 35.03608  | 279.84774 | 62.40825  | 16.93346 | 0.2355223 | 3.1038074 | 35 | 1 | 57 days   | 0.71 |       | MPC | 2007 UT <sub>116</sub>        |
| 2007 UC <sub>117</sub> | 17.6 | 0.15 | 20071027 | 321.87611 | 234.59912 | 221.83306 | 13.27507 | 0.1785526 | 2.9755070 | 27 | 1 | 8 days    | 0.33 |       | MPC | 2007 UC <sub>117</sub>        |
| 2007 UH <sub>117</sub> | 16.1 | 0.15 | 20071027 | 19.92024  | 242.53492 | 131.71357 | 10.03847 | 0.2065640 | 2.6722757 | 27 | 1 | 77 days   | 0.54 | M-v 4 | MPC | 2007 UH <sub>117</sub>        |
| 2007 UW <sub>117</sub> | 18.8 | 0.15 | 20071027 | 4.24045   | 335.72101 | 53.22247  | 0.03093  | 0.2110827 | 2.1355400 | 16 | 1 | 5 days    | 0.55 |       | MPC | 2007 UW <sub>117</sub>        |
| 2007 UQ <sub>118</sub> | 16.3 | 0.15 | 20071027 | 19.12273  | 131.35360 | 248.19193 | 1.94741  | 0.0940694 | 2.7293784 | 43 | 3 | 2002-2007 | 0.37 | M-v 3 | MPC | 128579 2007 UQ <sub>118</sub> |
| 2007 UR <sub>118</sub> | 15.9 | 0.15 | 20071116 | 342.21404 | 314.03489 | 117.45426 | 7.51394  | 0.2090352 | 3.0785005 | 21 | 1 | 36 days   | 0.63 |       | MPC | 2007 UR <sub>118</sub>        |
| 2007 UW <sub>118</sub> | 17.6 | 0.15 | 20071027 | 65.07934  | 301.03091 | 19.20131  | 5.36459  | 0.1798135 | 2.2417148 | 22 | 1 | 35 days   | 0.33 |       | MPC | 2007 UW <sub>118</sub>        |
| 2007 UT <sub>121</sub> | 15.7 | 0.15 | 20071027 | 50.30464  | 103.06689 | 218.51145 | 3.92134  | 0.1468104 | 3.1125289 | 28 | 1 | 33 days   | 0.42 | D     | MPC | 2007 UT <sub>121</sub>        |
| 2007 UE <sub>122</sub> | 16.9 | 0.15 | 20071027 | 334.37596 | 218.22165 | 224.70602 | 7.20211  | 0.1591559 | 3.0584249 | 29 | 1 | 29 days   | 0.50 |       | MPC | 2007 UE <sub>122</sub>        |
| 2007 UG <sub>122</sub> | 17.3 | 0.15 | 20071027 | 336.86188 | 19.47048  | 65.62207  | 1.27286  | 0.2431474 | 3.0631852 | 31 | 1 | 33 days   | 0.35 |       | MPC | 2007 UG <sub>122</sub>        |
| 2007 UK <sub>122</sub> | 18.2 | 0.15 | 20071027 | 346.75288 | 208.70183 | 217.24079 | 4.58225  | 0.2243259 | 2.6895437 | 19 | 1 | 50 days   | 0.35 |       | MPC | 2007 UK <sub>122</sub>        |
| 2007 UM <sub>122</sub> | 17.8 | 0.15 | 20071027 | 305.13540 | 255.26817 | 217.48236 | 5.65993  | 0.1145123 | 2.4638848 | 23 | 1 | 82 days   | 0.35 | M-v 4 | MPC | 2007 UM <sub>122</sub>        |
| 2007 UO <sub>122</sub> | 17.7 | 0.15 | 20071027 | 306.97673 | 43.62510  | 62.01309  | 3.47682  | 0.0700027 | 2.2020769 | 58 | 2 | 2004-2007 | 0.54 | M-v 4 | MPC | 128579 2007 UO <sub>122</sub> |
| 2007 UR <sub>122</sub> | 17.0 | 0.15 | 20071027 | 356.81728 | 4.77895   | 55.28932  | 14.66610 | 0.2319623 | 2.6767823 | 36 | 1 | 60 days   | 0.38 | M-v 4 | MPC | 2007 UR <sub>122</sub>        |
| 2007 UU <sub>122</sub> | 16.9 | 0.15 | 20071116 | 2.79741   | 347.16111 | 71.48501  | 1.74852  | 0.2318824 | 3.0484018 | 23 | 1 | 35 days   | 0.24 |       | MPC | 2007 UU <sub>122</sub>        |
| 2007 UV <sub>122</sub> | 16.7 | 0.15 | 20071027 | 293.15650 | 74.40000  | 57.39113  | 2.76456  | 0.0558226 | 2.6329223 | 16 | 1 | 19 days   | 0.20 |       | MPC | 2007 UV <sub>122</sub>        |
| 2007 UW <sub>122</sub> | 16.7 | 0.15 | 20071116 | 2.39334   | 243.12338 | 177.26315 | 0.30347  | 0.1847667 | 3.1166886 | 26 | 1 | 35 days   | 0.19 |       | MPC | 2007 UW <sub>122</sub>        |
| 2007 UT <sub>123</sub> | 17.3 | 0.15 | 20071027 | 14.00301  | 321.26244 | 40.61677  | 34.66429 | 0.2986385 | 2.5915444 | 27 | 1 | 34 days   | 0.63 |       | MPC | 2007 UT <sub>123</sub>        |
| 2007 VB                | 16.9 | 0.15 | 20071027 | 7.98588   | 345.19633 | 52.23226  | 3.09553  | 0.1934919 | 2.3469711 | 82 | 3 | 1960-2007 | 0.40 | M-v 2 | MPC | 128580 2007 VB                |
| 2007 VO                | 17.3 | 0.15 | 20071027 | 3.41029   | 29.38277  | 1.91389   | 5.42216  | 0.1812892 | 2.4135965 | 35 | 1 | 37 days   | 0.45 |       | MPC | 2007 VO                       |
| 2007 VR                | 16.7 | 0.15 | 20071027 | 23.83566  | 139.59797 | 237.70728 | 11.21356 | 0.1643298 | 2.6280102 | 58 | 1 | 52 days   | 0.39 |       | MPC | 2007 VR                       |
| 2007 VS                | 18.3 | 0.15 | 20071116 | 353.14326 | 188.82441 | 239.65781 | 7.79206  | 0.2681248 | 2.5416038 | 32 | 1 | 33 days   | 0.31 |       | MPC | 2007 VS                       |
| 2007 VT                | 18.9 | 0.15 | 20071027 | 23.62029  | 341.06475 | 6.26580   | 5.19640  | 0.2348431 | 2.3040797 | 19 | 1 | 8 days    | 0.61 |       | MPC | 2007 VT                       |
| 2007 VV                | 16.8 | 0.15 | 20071116 | 36.54648  | 6.70822   | 357.95974 | 10.09212 | 0.2461952 | 2.7366154 | 22 | 1 | 31 days   | 0.37 |       | MPC | 2007 VV                       |
| 2007 VW                | 14.9 | 0.15 | 20071027 | 325.70998 | 60.12823  | 321.98689 | 25.25183 | 0.2954953 | 3.2444828 | 23 | 1 | 12 days   | 0.22 |       | MPC | 2007 VW                       |
| 2007 VJ <sub>1</sub>   | 16.4 | 0.15 | 20071027 | 320.02572 | 286.16237 | 172.26050 | 12.61634 | 0.2419932 | 2.6431589 | 39 | 1 | 39 days   | 0.47 |       | MPC | 2007 VJ <sub>1</sub>          |
| 2007 VK <sub>1</sub>   | 15.7 | 0.15 | 20071116 | 252.97186 | 19.67266  | 131.04788 | 11.13844 | 0.0417274 | 3.0534020 | 21 | 1 | 29 days   | 0.43 |       | MPC | 2007 VK <sub>1</sub>          |
| 2007 VL <sub>1</sub>   | 17.2 | 0.15 | 20071007 | 308.51723 | 162.70893 | 274.52315 | 6.65015  | 0.0603717 | 2.2542005 | 22 | 1 | 31 days   | 0.42 |       | MPC | 2007 VL <sub>1</sub>          |
| 2007 VO <sub>1</sub>   | 17.0 | 0.15 | 20071027 | 321.68237 | 215.05831 | 245.66893 | 4.43253  | 0.0911167 | 2.2037432 | 61 | 4 | 2002-2007 | 0.45 | M-v 3 | MPC | 128580 2007 VO <sub>1</sub>   |
| 2007 VQ <sub>1</sub>   | 15.8 | 0.15 | 20071027 | 335.59355 | 282.61196 | 163.23362 | 4.04010  | 0.1711978 | 3.0319232 | 58 | 2 | 2002-2007 | 0.42 | M-v 4 | MPC | 128580 2007 VQ <sub>1</sub>   |
| 2007 VS <sub>1</sub>   | 17.0 | 0.15 | 20071027 | 90.63086  | 69.39677  | 225.36692 | 20.12417 | 0.0581820 | 1.9398845 | 35 | 1 | 76 days   | 0.53 | M-v 4 | MPC | 2007 VS <sub>1</sub>          |
| 2007 VT <sub>1</sub>   | 17.7 | 0.15 | 20071116 | 311.70071 | 230.92741 | 239.17514 | 20.62673 | 0.0879418 | 1.9089737 | 49 | 1 | 33 days   | 0.49 |       | MPC | 2007 VT <sub>1</sub>          |
| 2007 VV <sub>1</sub>   | 17.3 | 0.15 | 20071007 | 336.60109 | 159.66721 | 262.88627 | 2.47408  | 0.1590399 | 2.2887362 | 31 | 1 | 27 days   | 0.49 |       | MPC | 2007 VV <sub>1</sub>          |
| 2007 VY <sub>1</sub>   | 16.9 | 0.15 | 20071007 | 339.92161 | 163.88650 | 252.87661 | 7.04770  | 0.2174535 | 2.7673424 | 26 | 1 | 26 days   | 0.79 |       | MPC | 2007 VY <sub>1</sub>          |
| 2007 VA <sub>2</sub>   | 16.6 | 0.15 | 20071027 | 11.53613  | 198.19525 | 189.04436 | 4.83162  | 0.3386911 | 2.6000921 | 62 | 2 | 1990-2007 | 0.51 | M-v 3 | MPC | 128580 2007 VA <sub>2</sub>   |
| 2007 VF <sub>2</sub>   | 17.2 | 0.15 | 20071027 | 338.53357 | 142.25937 | 291.69285 | 5.02735  | 0.1855907 | 2.4159143 | 43 | 1 | 58 days   | 0.63 |       | MPC | 2007 VF <sub>2</sub>          |
| 2007 VH <sub>2</sub>   | 16.4 | 0.15 | 20071116 | 25.62694  | 44.04229  | 331.47859 | 5.92200  | 0.2209121 | 2.5486471 | 51 | 1 | 32 days   | 0.57 |       | MPC | 2007 VH <sub>2</sub>          |
| 2007 VJ <sub>2</sub>   | 16.5 | 0.15 | 20071116 | 353.15503 | 177.44963 | 248.66819 | 13.25920 | 0.2303348 | 2.6234231 | 45 | 1 | 38 days   | 0.51 |       | MPC | 2007 VJ <sub>2</sub>          |
| 2007 VN <sub>2</sub>   | 18.8 | 0.15 | 20071027 | 5.98590   | 230.18230 | 149.49188 | 6.65466  | 0.3891694 | 2.5859963 | 28 | 1 | 28 days   | 0.41 |       | MPC | 2007 VN <sub>2</sub>          |
| 2007 VP <sub>2</sub>   | 16.1 | 0.15 | 20071027 | 320.52877 | 57.99147  | 38.04425  | 10.48877 | 0.0809345 | 2.9705434 | 40 | 4 | 1994-2007 | 0.44 | M-v 1 | MPC | 128581 2007 VP <sub>2</sub>   |
| 2007 VQ <sub>2</sub>   | 16.3 | 0.15 | 20071116 | 7.41216   | 138.01376 | 265.41427 | 4.56357  | 0.1768090 | 3.0667412 | 35 | 1 | 35 days   | 0.49 |       | MPC | 2007 VQ <sub>2</sub>          |
| 2007 VR <sub>2</sub>   | 16.4 | 0.15 | 20071027 | 290.67845 | 228.98537 | 260.42583 | 5.24705  | 0.0232295 | 2.6825501 | 16 | 1 | 16 days   | 0.52 | E     | MPC | 2007 VR <sub>2</sub>          |
| 2007 VV <sub>2</sub>   | 17.8 | 0.15 | 20071116 | 17.95881  | 336.78669 | 48.86413  | 6.33963  | 0.2323529 | 2.4050996 | 45 | 1 | 37 days   | 0.46 |       | MPC | 2007 VV <sub>2</sub>          |
| 2007 VB <sub>3</sub>   | 25.1 | 0.15 | 20071027 | 348.88452 | 18.16393  | 38.52375  | 1.68757  | 0.3365456 | 1.6486530 | 24 | 1 | 32 days   | 0.44 | M-v 6 | MPC | 129029 2007 VB <sub>3</sub>   |
| 2007 VD <sub>3</sub>   | 22.1 | 0.15 | 20071027 | 155.50311 | 179.87046 | 53.86464  | 13.11932 | 0.1501741 | 0.9722149 | 64 | 1 | 34 days   | 0.47 | M-v 5 | MPC | 129029 2007 VD <sub>3</sub>   |
| 2007 VH <sub>3</sub>   | 22.5 | 0.15 | 20071027 | 333.53690 | 345.08031 | 120.33457 | 2.91839  | 0.4332111 | 1.9701016 | 37 | 1 | 44 days   | 0.40 | M-v 5 | MPC | 129029 2007 VH <sub>3</sub>   |
| 2007 VJ <sub>3</sub>   | 24.9 | 0.15 | 20071027 | 11.98550  | 299.39805 | 37.50586  | 12.61982 | 0.6156224 | 2.1324048 | 43 | 1 | 7 days    | 0.41 | M-v 7 | MPC | 129029 2007 VJ <sub>3</sub>   |
| 2007 VK <sub>3</sub>   | 21.9 | 0.15 | 20071027 | 261.36145 | 109.44815 | 38.38605  | 24.80657 | 0.1058627 | 1.1240426 | 27 | 1 | 29 days   | 0.44 | M-v 6 | MPC | 129029 2007 VK <sub>3</sub>   |
| 2007 VN <sub>3</sub>   | 21.4 | 0.15 | 20071027 | 10.39841  | 319.65241 | 22.25654  | 15.54420 | 0.5783000 | 2.2432392 | 52 | 1 | 30 days   | 0.47 | M-v 5 | MPC | 129029 2007 VN <sub>3</sub>   |

|                      |      |      |          |           |           |           |          |           |           |     |   |           |      |       |     |                             |
|----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-------|-----|-----------------------------|
| 2007 VP <sub>3</sub> | 16.0 | 0.15 | 20071116 | 343.66323 | 77.23285  | 3.56936   | 8.95701  | 0.2158661 | 2.5586279 | 30  | 1 | 31 days   | 0.44 |       | MPC | 2007 VP <sub>3</sub>        |
| 2007 VB <sub>4</sub> | 17.5 | 0.15 | 20071027 | 4.84944   | 94.39500  | 298.23752 | 4.34942  | 0.1668438 | 2.3972285 | 24  | 1 | 27 days   | 0.42 |       | MPC | 2007 VB <sub>4</sub>        |
| 2007 VG <sub>4</sub> | 15.1 | 0.15 | 20071027 | 16.85004  | 48.31199  | 325.50525 | 7.55911  | 0.2435736 | 3.9576769 | 13  | 1 | 16 days   | 0.36 |       | MPC | 2007 VG <sub>4</sub>        |
| 2007 VJ <sub>4</sub> | 15.8 | 0.15 | 20071027 | 337.51733 | 160.60908 | 273.65338 | 9.80316  | 0.1953298 | 3.0911257 | 29  | 1 | 31 days   | 0.47 |       | MPC | 2007 VJ <sub>4</sub>        |
| 2007 VK <sub>4</sub> | 15.5 | 0.15 | 20071027 | 28.30084  | 97.06322  | 266.50113 | 11.36454 | 0.1429947 | 3.0764631 | 36  | 1 | 47 days   | 0.50 |       | MPC | 2007 VK <sub>4</sub>        |
| 2007 VN <sub>4</sub> | 16.2 | 0.15 | 20071027 | 16.16892  | 241.36425 | 138.90505 | 7.97483  | 0.1744221 | 3.0966172 | 29  | 1 | 25 days   | 0.74 |       | MPC | 2007 VN <sub>4</sub>        |
| 2007 VP <sub>4</sub> | 16.9 | 0.15 | 20071027 | 80.87144  | 233.88058 | 49.46556  | 4.96906  | 0.2408023 | 2.7552273 | 22  | 1 | 8 days    | 0.77 |       | MPC | 2007 VP <sub>4</sub>        |
| 2007 VQ <sub>4</sub> | 15.9 | 0.15 | 20071027 | 330.06071 | 99.23318  | 59.59226  | 26.54574 | 0.5173859 | 2.6343102 | 151 | 1 | 44 days   | 0.36 | M-v 4 | MPC | 129029 2007 VQ <sub>4</sub> |
| 2007 VR <sub>4</sub> | 17.2 | 0.15 | 20071027 | 9.55720   | 72.00191  | 314.81951 | 7.54491  | 0.2710628 | 2.3597381 | 27  | 1 | 74 days   | 0.55 | M-v 4 | MPC | 2007 VR <sub>4</sub>        |
| 2007 VT <sub>4</sub> | 16.5 | 0.15 | 20071027 | 2.84248   | 133.18153 | 268.23936 | 10.05805 | 0.2431853 | 2.7546496 | 81  | 3 | 1998–2007 | 0.53 | M-v 1 | MPC | 128581 2007 VT <sub>4</sub> |
| 2007 VV <sub>4</sub> | 17.2 | 0.15 | 20071027 | 19.47401  | 348.41650 | 33.29641  | 24.19212 | 0.1586972 | 2.2066735 | 33  | 1 | 78 days   | 0.41 | M-v 4 | MPC | 2007 VV <sub>4</sub>        |
| 2007 VB <sub>5</sub> | 16.7 | 0.15 | 20071027 | 27.25130  | 104.72102 | 210.87918 | 27.39380 | 0.3901454 | 2.6092747 | 20  | 1 | 45 days   | 0.61 |       | MPC | 2007 VB <sub>5</sub>        |
| 2007 VF <sub>5</sub> | 16.1 | 0.15 | 20071027 | 330.41615 | 189.28921 | 240.88814 | 9.19716  | 0.1254061 | 2.7080485 | 18  | 1 | 35 days   | 0.50 |       | MPC | 2007 VF <sub>5</sub>        |
| 2007 VJ <sub>5</sub> | 16.9 | 0.15 | 20071027 | 316.57375 | 187.94656 | 261.75103 | 5.55200  | 0.0823901 | 2.3385893 | 28  | 1 | 33 days   | 0.51 |       | MPC | 2007 VJ <sub>5</sub>        |
| 2007 VN <sub>5</sub> | 16.1 | 0.15 | 20071116 | 337.23316 | 171.78449 | 272.22536 | 15.10741 | 0.1964817 | 3.1091703 | 16  | 1 | 36 days   | 0.44 |       | MPC | 2007 VN <sub>5</sub>        |
| 2007 VO <sub>5</sub> | 17.9 | 0.15 | 20071027 | 37.94845  | 307.04158 | 37.79659  | 5.45820  | 0.2065187 | 2.1523656 | 55  | 2 | 2004–2007 | 0.41 | M-v 3 | MPC | 128581 2007 VO <sub>5</sub> |
| 2007 VP <sub>5</sub> | 16.8 | 0.15 | 20071027 | 351.03437 | 146.25971 | 275.87484 | 11.59414 | 0.2988098 | 3.1070250 | 30  | 1 | 18 days   | 0.49 |       | MPC | 2007 VP <sub>5</sub>        |
| 2007 VQ <sub>5</sub> | 16.2 | 0.15 | 20071027 | 35.10049  | 334.23839 | 23.06326  | 6.07425  | 0.1359976 | 2.5811088 | 70  | 3 | 2001–2007 | 0.53 | M-v 3 | MPC | 128581 2007 VQ <sub>5</sub> |
| 2007 VR <sub>5</sub> | 15.0 | 0.15 | 20071116 | 338.46568 | 188.37032 | 251.92384 | 27.37760 | 0.1432267 | 3.1283609 | 37  | 1 | 30 days   | 0.39 |       | MPC | 2007 VR <sub>5</sub>        |
| 2007 VS <sub>5</sub> | 16.6 | 0.15 | 20071116 | 13.92708  | 64.71742  | 329.41302 | 8.12333  | 0.2113544 | 2.5267346 | 27  | 1 | 29 days   | 0.49 |       | MPC | 2007 VS <sub>5</sub>        |
| 2007 VT <sub>5</sub> | 18.0 | 0.15 | 20071027 | 318.26998 | 302.79599 | 159.23550 | 1.54808  | 0.2853212 | 2.7890362 | 14  | 1 | 6 days    | 0.49 |       | MPC | 2007 VT <sub>5</sub>        |
| 2007 VW <sub>5</sub> | 16.6 | 0.15 | 20071027 | 9.42367   | 322.88735 | 65.82228  | 17.29357 | 0.2718356 | 2.6846652 | 69  | 1 | 57 days   | 0.53 |       | MPC | 2007 VW <sub>5</sub>        |
| 2007 VX <sub>5</sub> | 16.8 | 0.15 | 20071027 | 1.91143   | 255.94364 | 147.92195 | 4.86586  | 0.2601599 | 2.5566791 | 48  | 1 | 52 days   | 0.52 |       | MPC | 2007 VX <sub>5</sub>        |
| 2007 VY <sub>5</sub> | 16.7 | 0.15 | 20071027 | 353.27687 | 355.12408 | 65.48963  | 9.68431  | 0.2847218 | 2.6754078 | 52  | 1 | 94 days   | 0.46 | M-v 3 | MPC | 2007 VY <sub>5</sub>        |
| 2007 VZ <sub>5</sub> | 16.5 | 0.15 | 20071116 | 25.22563  | 298.81712 | 78.05544  | 4.90222  | 0.2617482 | 2.5915727 | 35  | 1 | 41 days   | 0.59 |       | MPC | 2007 VZ <sub>5</sub>        |
| 2007 VD <sub>6</sub> | 18.0 | 0.15 | 20071116 | 44.27611  | 273.11091 | 83.10654  | 23.80524 | 0.0951876 | 1.8758812 | 15  | 1 | 33 days   | 0.52 |       | MPC | 2007 VD <sub>6</sub>        |
| 2007 VR <sub>6</sub> | 16.5 | 0.15 | 20071027 | 10.28203  | 124.09271 | 311.18905 | 68.60861 | 0.5856926 | 3.4215465 | 23  | 1 | 33 days   | 0.44 | M-v 6 | MPC | 2007 VR <sub>6</sub>        |
| 2007 VT <sub>6</sub> | 20.3 | 0.15 | 20071027 | 327.42366 | 293.33253 | 214.08133 | 7.35890  | 0.6424284 | 1.9503396 | 101 | 1 | 31 days   | 0.49 | M-v 7 | MPC | 129030 2007 VT <sub>6</sub> |
| 2007 VV <sub>6</sub> | 24.8 | 0.15 | 20071027 | 3.46949   | 149.59292 | 235.86972 | 3.79899  | 0.2802587 | 1.4155037 | 76  | 1 | 24 days   | 0.49 | M-v 6 | MPC | 129030 2007 VV <sub>6</sub> |
| 2007 VX <sub>6</sub> | 20.9 | 0.15 | 20071027 | 10.68419  | 119.81792 | 233.84052 | 41.11989 | 0.6141329 | 2.2676681 | 30  | 1 | 16 days   | 0.34 | M-v 7 | MPC | 129030 2007 VX <sub>6</sub> |
| 2007 VA <sub>7</sub> | 16.8 | 0.15 | 20071027 | 357.23828 | 19.47242  | 30.00212  | 12.94142 | 0.1676842 | 2.5625290 | 65  | 3 | 1997–2007 | 0.51 | M-v 2 | MPC | 128582 2007 VA <sub>7</sub> |
| 2007 VB <sub>7</sub> | 17.3 | 0.15 | 20071027 | 20.87919  | 81.55662  | 288.95498 | 3.98047  | 0.2406687 | 2.3235868 | 60  | 1 | 87 days   | 0.48 | M-v 4 | MPC | 2007 VB <sub>7</sub>        |
| 2007 VC <sub>7</sub> | 18.1 | 0.15 | 20071027 | 29.78734  | 66.00886  | 297.98344 | 3.40464  | 0.1635372 | 2.3478480 | 19  | 1 | 57 days   | 0.22 |       | MPC | 2007 VC <sub>7</sub>        |
| 2007 VE <sub>7</sub> | 16.0 | 0.15 | 20071027 | 1.55090   | 192.26629 | 219.16922 | 11.30250 | 0.0530678 | 2.7986138 | 51  | 4 | 2002–2007 | 0.37 | M-v 1 | MPC | 128582 2007 VE <sub>7</sub> |
| 2007 VF <sub>7</sub> | 16.8 | 0.15 | 20071027 | 18.95461  | 127.18467 | 253.55093 | 4.10602  | 0.2335858 | 2.3725768 | 57  | 1 | 78 days   | 0.39 | M-v 4 | MPC | 2007 VF <sub>7</sub>        |
| 2007 VK <sub>7</sub> | 16.3 | 0.15 | 20071116 | 41.79499  | 250.12615 | 94.88003  | 15.44968 | 0.0398034 | 2.7294012 | 32  | 1 | 31 days   | 0.50 |       | MPC | 2007 VK <sub>7</sub>        |
| 2007 VM <sub>7</sub> | 15.1 | 0.15 | 20071027 | 304.79388 | 351.24920 | 130.00396 | 10.24636 | 0.1492769 | 3.1024722 | 45  | 1 | 53 days   | 0.62 |       | MPC | 2007 VM <sub>7</sub>        |
| 2007 VN <sub>7</sub> | 18.7 | 0.15 | 20071116 | 19.80689  | 0.34360   | 25.23971  | 2.91050  | 0.2091638 | 2.3142316 | 33  | 1 | 45 days   | 0.38 |       | MPC | 2007 VN <sub>7</sub>        |
| 2007 VP <sub>7</sub> | 15.4 | 0.15 | 20071027 | 266.04995 | 278.31119 | 242.32553 | 21.20947 | 0.0570102 | 2.6166368 | 57  | 4 | 2001–2007 | 0.42 | M-v 1 | MPC | 128583 2007 VP <sub>7</sub> |
| 2007 VU <sub>7</sub> | 17.1 | 0.15 | 20071027 | 21.24627  | 39.64425  | 337.78111 | 5.42206  | 0.1561421 | 2.3402921 | 38  | 1 | 54 days   | 0.62 |       | MPC | 2007 VU <sub>7</sub>        |
| 2007 VX <sub>7</sub> | 19.5 | 0.15 | 20071027 | 18.62130  | 105.25503 | 244.02829 | 16.80641 | 0.3755891 | 1.8760701 | 71  | 1 | 32 days   | 0.40 | M-v 5 | MPC | 129030 2007 VX <sub>7</sub> |
| 2007 VA <sub>8</sub> | 13.2 | 0.15 | 20071027 | 185.94676 | 330.53954 | 162.06212 | 7.92843  | 0.0251090 | 5.2053777 | 39  | 4 | 2002–2007 | 0.36 | M-v 1 | MPC | 128583 2007 VA <sub>8</sub> |
| 2007 VH <sub>8</sub> | 21.8 | 0.15 | 20071027 | 347.78951 | 44.08342  | 41.12258  | 26.00242 | 0.5894461 | 2.7102478 | 27  | 1 | 23 days   | 0.53 | M-v 6 | MPC | 129031 2007 VH <sub>8</sub> |
| 2007 VJ <sub>8</sub> | 24.9 | 0.15 | 20071027 | 356.09071 | 176.64428 | 236.21601 | 0.35634  | 0.6037759 | 2.8224010 | 21  | 1 | 30 days   | 0.68 | M-v 7 | MPC | 129031 2007 VJ <sub>8</sub> |
| 2007 VL <sub>8</sub> | 21.2 | 0.15 | 20071027 | 108.22919 | 194.60746 | 62.47704  | 9.33919  | 0.3595233 | 0.9361353 | 40  | 1 | 30 days   | 0.42 | M-v 6 | MPC | 129031 2007 VL <sub>8</sub> |
| 2007 VM <sub>8</sub> | 17.1 | 0.15 | 20071116 | 31.47058  | 129.02486 | 251.42306 | 4.19024  | 0.0166070 | 2.3414663 | 26  | 1 | 35 days   | 0.53 |       | MPC | 2007 VM <sub>8</sub>        |
| 2007 VN <sub>8</sub> | 17.5 | 0.15 | 20071027 | 42.85485  | 265.83075 | 71.85272  | 3.00091  | 0.2273292 | 2.3115942 | 29  | 1 | 10 days   | 0.62 |       | MPC | 2007 VN <sub>8</sub>        |
| 2007 VQ <sub>8</sub> | 16.3 | 0.15 | 20071027 | 10.63377  | 221.16830 | 171.93247 | 3.93095  | 0.2421073 | 2.9850580 | 51  | 1 | 46 days   | 0.44 |       | MPC | 2007 VQ <sub>8</sub>        |
| 2007 VR <sub>8</sub> | 18.7 | 0.15 | 20071027 | 311.78424 | 33.85414  | 45.04021  | 22.75314 | 0.0421549 | 1.8764834 | 25  | 1 | 49 days   | 0.64 |       | MPC | 2007 VR <sub>8</sub>        |
| 2007 VU <sub>8</sub> | 18.1 | 0.15 | 20071027 | 351.24351 | 145.55983 | 278.43490 | 3.69788  | 0.2797995 | 2.5471219 | 32  | 2 | 2003–2007 | 0.34 | M-v 3 | MPC | 128583 2007 VU <sub>8</sub> |
| 2007 VV <sub>8</sub> | 17.6 | 0.15 | 20071027 | 348.98947 | 181.27293 | 238.62549 | 16.91450 | 0.0481150 | 1.9067287 | 39  | 1 | 47 days   | 0.62 |       | MPC | 2007 VV <sub>8</sub>        |
| 2007 VW <sub>8</sub> | 18.8 | 0.15 | 20071116 | 13.98970  | 123.75814 | 265.13512 | 3.87366  | 0.3144624 | 2.2566049 | 28  | 1 | 42 days   | 0.60 |       | MPC | 2007 VW <sub>8</sub>        |
| 2007 VY <sub>8</sub> | 16.4 | 0.15 | 20071116 | 17.45860  | 147.91834 | 250.33430 | 8.89082  | 0.0746453 | 3.0975171 | 19  | 1 | 31 days   | 0.69 |       | MPC | 2007 VY <sub>8</sub>        |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |       |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-------|-----|------------------------------|
| 2007 VZ <sub>8</sub>  | 17.1 | 0.15 | 20071116 | 31.09478  | 277.74707 | 65.39671  | 24.75351 | 0.4091489 | 2.6267108 | 32  | 1 | 32 days   | 0.37 |       | MPC | 2007 VZ <sub>8</sub>         |
| 2007 VA <sub>9</sub>  | 17.8 | 0.15 | 20071116 | 20.19808  | 192.81655 | 181.57297 | 6.04605  | 0.3243528 | 2.3882254 | 36  | 1 | 33 days   | 0.50 |       | MPC | 2007 VA <sub>9</sub>         |
| 2007 VB <sub>9</sub>  | 16.5 | 0.15 | 20071027 | 337.03212 | 347.36143 | 88.87932  | 7.43474  | 0.1082704 | 2.3797748 | 47  | 3 | 2003–2007 | 0.46 | M-v 2 | MPC | 128584 2007 VB <sub>9</sub>  |
| 2007 VC <sub>9</sub>  | 16.0 | 0.15 | 20071027 | 356.22267 | 223.70498 | 191.27013 | 9.39074  | 0.1830258 | 2.7392986 | 35  | 1 | 52 days   | 0.60 |       | MPC | 2007 VC <sub>9</sub>         |
| 2007 VD <sub>9</sub>  | 17.3 | 0.15 | 20071116 | 18.71657  | 305.61145 | 79.56322  | 9.30641  | 0.2203473 | 2.2909555 | 64  | 1 | 33 days   | 0.44 |       | MPC | 2007 VD <sub>9</sub>         |
| 2007 VE <sub>9</sub>  | 17.2 | 0.15 | 20071027 | 55.08153  | 218.77179 | 107.78943 | 6.55274  | 0.2504932 | 2.3290799 | 23  | 1 | 35 days   | 0.45 |       | MPC | 2007 VE <sub>9</sub>         |
| 2007 VF <sub>9</sub>  | 18.4 | 0.15 | 20071116 | 8.70305   | 318.58193 | 76.59048  | 8.35024  | 0.3739126 | 2.6163370 | 18  | 1 | 32 days   | 0.39 |       | MPC | 2007 VF <sub>9</sub>         |
| 2007 VG <sub>9</sub>  | 16.2 | 0.15 | 20071027 | 15.43263  | 239.49440 | 152.23303 | 5.97445  | 0.1374654 | 3.0758606 | 23  | 1 | 18 days   | 0.39 |       | MPC | 2007 VG <sub>9</sub>         |
| 2007 VH <sub>9</sub>  | 18.3 | 0.15 | 20071116 | 356.93461 | 348.43720 | 74.32024  | 10.71288 | 0.3902533 | 3.0051258 | 31  | 1 | 32 days   | 0.43 |       | MPC | 2007 VH <sub>9</sub>         |
| 2007 VJ <sub>9</sub>  | 17.0 | 0.15 | 20071027 | 326.51328 | 8.64595   | 94.66300  | 6.29489  | 0.2481518 | 2.5919170 | 44  | 1 | 46 days   | 0.63 |       | MPC | 2007 VJ <sub>9</sub>         |
| 2007 VK <sub>9</sub>  | 18.3 | 0.15 | 20071027 | 0.95447   | 234.62535 | 170.19270 | 4.08966  | 0.2300446 | 2.2501960 | 27  | 1 | 46 days   | 0.46 |       | MPC | 2007 VK <sub>9</sub>         |
| 2007 VM <sub>9</sub>  | 16.4 | 0.15 | 20071116 | 44.96958  | 87.10778  | 265.73487 | 7.53343  | 0.2017358 | 2.6307435 | 28  | 1 | 41 days   | 0.55 |       | MPC | 2007 VM <sub>9</sub>         |
| 2007 VN <sub>9</sub>  | 17.5 | 0.15 | 20071027 | 350.40231 | 145.70793 | 279.22448 | 5.40597  | 0.1873222 | 2.6628170 | 21  | 1 | 18 days   | 0.54 |       | MPC | 2007 VN <sub>9</sub>         |
| 2007 VP <sub>9</sub>  | 16.6 | 0.15 | 20071116 | 32.23476  | 133.42101 | 234.59022 | 7.22082  | 0.2026860 | 2.6199901 | 41  | 1 | 32 days   | 0.40 |       | MPC | 2007 VP <sub>9</sub>         |
| 2007 VQ <sub>9</sub>  | 15.7 | 0.15 | 20071027 | 74.08800  | 264.18644 | 54.34777  | 12.61785 | 0.1746551 | 2.7050622 | 46  | 1 | 54 days   | 0.47 |       | MPC | 2007 VQ <sub>9</sub>         |
| 2007 VR <sub>9</sub>  | 17.8 | 0.15 | 20071027 | 42.62393  | 114.80461 | 229.05196 | 7.97085  | 0.2357555 | 2.3092804 | 29  | 1 | 54 days   | 0.58 |       | MPC | 2007 VR <sub>9</sub>         |
| 2007 VS <sub>9</sub>  | 17.1 | 0.15 | 20071027 | 24.87277  | 318.23538 | 54.78819  | 15.10204 | 0.2106356 | 2.7236954 | 44  | 1 | 45 days   | 0.52 |       | MPC | 2007 VS <sub>9</sub>         |
| 2007 VW <sub>9</sub>  | 17.7 | 0.15 | 20071027 | 349.73654 | 300.18081 | 125.69786 | 2.59616  | 0.2376072 | 2.6094157 | 33  | 1 | 31 days   | 0.47 |       | MPC | 2007 VW <sub>9</sub>         |
| 2007 VX <sub>9</sub>  | 17.0 | 0.15 | 20071027 | 65.52883  | 212.59643 | 93.11504  | 7.56100  | 0.1368215 | 2.3665268 | 29  | 1 | 38 days   | 0.50 |       | MPC | 2007 VX <sub>9</sub>         |
| 2007 VY <sub>9</sub>  | 18.5 | 0.15 | 20071027 | 3.94724   | 346.26227 | 52.45511  | 12.15279 | 0.2418679 | 2.6958713 | 42  | 1 | 56 days   | 0.48 |       | MPC | 2007 VY <sub>9</sub>         |
| 2007 VZ <sub>9</sub>  | 18.7 | 0.15 | 20071027 | 349.76779 | 9.75761   | 52.56091  | 14.03824 | 0.2386576 | 2.6484949 | 42  | 1 | 35 days   | 0.42 |       | MPC | 2007 VZ <sub>9</sub>         |
| 2007 VA <sub>10</sub> | 16.4 | 0.15 | 20071027 | 24.63619  | 160.69429 | 219.10494 | 5.12883  | 0.0706620 | 2.8156541 | 48  | 1 | 58 days   | 0.48 |       | MPC | 2007 VA <sub>10</sub>        |
| 2007 VE <sub>10</sub> | 15.5 | 0.15 | 20071027 | 21.46496  | 133.14896 | 236.88786 | 14.02171 | 0.2328621 | 3.1941939 | 53  | 1 | 58 days   | 0.56 |       | MPC | 2007 VE <sub>10</sub>        |
| 2007 VH <sub>10</sub> | 18.0 | 0.15 | 20071116 | 85.96267  | 254.51524 | 56.03598  | 25.93021 | 0.1413885 | 1.9124275 | 31  | 1 | 38 days   | 0.42 |       | MPC | 2007 VH <sub>10</sub>        |
| 2007 VJ <sub>10</sub> | 17.9 | 0.15 | 20071116 | 2.92713   | 176.68316 | 238.05380 | 8.38452  | 0.3371283 | 2.6909508 | 37  | 1 | 29 days   | 0.34 |       | MPC | 2007 VJ <sub>10</sub>        |
| 2007 VK <sub>10</sub> | 17.1 | 0.15 | 20071027 | 60.75142  | 54.98091  | 278.70166 | 3.06927  | 0.1143121 | 2.5450356 | 26  | 1 | 50 days   | 0.34 |       | MPC | 2007 VK <sub>10</sub>        |
| 2007 VM <sub>10</sub> | 18.2 | 0.15 | 20071007 | 349.12035 | 127.69212 | 283.79321 | 2.35091  | 0.2145348 | 2.2821031 | 46  | 1 | 55 days   | 0.43 |       | MPC | 2007 VM <sub>10</sub>        |
| 2007 VO <sub>10</sub> | 18.2 | 0.15 | 20071116 | 48.20564  | 338.96180 | 13.62185  | 21.71196 | 0.0392311 | 1.8534557 | 10  | 1 | 32 days   | 0.42 |       | MPC | 2007 VO <sub>10</sub>        |
| 2007 VQ <sub>10</sub> | 16.1 | 0.15 | 20071027 | 57.68758  | 73.33294  | 206.73982 | 14.53761 | 0.4601038 | 3.4307362 | 15  | 1 | 6 days    | 0.50 |       | MPC | 2007 VQ <sub>10</sub>        |
| 2007 VR <sub>10</sub> | 18.1 | 0.15 | 20071027 | 329.24377 | 242.96854 | 199.98777 | 5.10966  | 0.2562217 | 2.9466154 | 12  | 1 | 6 days    | 0.68 |       | MPC | 2007 VR <sub>10</sub>        |
| 2007 VU <sub>10</sub> | 15.7 | 0.15 | 20071027 | 358.43945 | 315.08207 | 87.46443  | 6.09748  | 0.1963306 | 3.0587224 | 66  | 5 | 1996–2007 | 0.48 | M-v 1 | MPC | 128584 2007 VU <sub>10</sub> |
| 2007 VV <sub>10</sub> | 16.9 | 0.15 | 20071027 | 8.56624   | 269.16491 | 124.64750 | 7.68418  | 0.2517213 | 2.3234356 | 59  | 4 | 1996–2007 | 0.41 | M-v 1 | MPC | 128584 2007 VV <sub>10</sub> |
| 2007 VY <sub>10</sub> | 18.9 | 0.15 | 20071116 | 27.15314  | 287.61070 | 78.37194  | 5.82761  | 0.3043640 | 2.1643799 | 35  | 1 | 33 days   | 0.43 |       | MPC | 2007 VY <sub>10</sub>        |
| 2007 VA <sub>11</sub> | 15.3 | 0.15 | 20071027 | 359.22272 | 2.85196   | 53.96373  | 29.34693 | 0.1896346 | 3.1858845 | 47  | 1 | 46 days   | 0.52 |       | MPC | 2007 VA <sub>11</sub>        |
| 2007 VC <sub>11</sub> | 17.3 | 0.15 | 20071116 | 46.54125  | 57.32242  | 284.02089 | 5.14306  | 0.2971661 | 2.3411028 | 44  | 1 | 41 days   | 0.57 |       | MPC | 2007 VC <sub>11</sub>        |
| 2007 VD <sub>11</sub> | 15.5 | 0.15 | 20071116 | 22.66873  | 50.25319  | 325.76148 | 4.59766  | 0.3340920 | 3.9475522 | 23  | 1 | 41 days   | 0.62 |       | MPC | 2007 VD <sub>11</sub>        |
| 2007 VE <sub>11</sub> | 17.5 | 0.15 | 20071116 | 26.60092  | 277.92636 | 98.51291  | 7.23639  | 0.2052415 | 2.3047057 | 36  | 1 | 33 days   | 0.51 |       | MPC | 2007 VE <sub>11</sub>        |
| 2007 VF <sub>11</sub> | 16.7 | 0.15 | 20071027 | 355.46007 | 342.64921 | 72.75345  | 14.91702 | 0.2156734 | 2.4061602 | 63  | 1 | 55 days   | 0.41 |       | MPC | 2007 VF <sub>11</sub>        |
| 2007 VG <sub>11</sub> | 17.0 | 0.15 | 20071116 | 13.27769  | 336.84315 | 60.70725  | 33.28287 | 0.1541795 | 2.6064848 | 20  | 1 | 38 days   | 0.35 |       | MPC | 2007 VG <sub>11</sub>        |
| 2007 VK <sub>11</sub> | 15.3 | 0.15 | 20071027 | 52.54111  | 269.13594 | 73.20410  | 18.63237 | 0.1867028 | 3.2192014 | 76  | 3 | 2001–2007 | 0.49 | M-v 2 | MPC | 128585 2007 VK <sub>11</sub> |
| 2007 VM <sub>11</sub> | 17.0 | 0.15 | 20071027 | 22.02261  | 264.16064 | 117.60788 | 7.22609  | 0.1185773 | 2.3042036 | 33  | 3 | 2003–2007 | 0.51 | M-v 4 | MPC | 128585 2007 VM <sub>11</sub> |
| 2007 VO <sub>11</sub> | 15.1 | 0.15 | 20071116 | 30.91654  | 283.78126 | 91.10599  | 14.10735 | 0.1608596 | 3.1377501 | 27  | 1 | 33 days   | 0.45 |       | MPC | 2007 VO <sub>11</sub>        |
| 2007 VP <sub>11</sub> | 15.8 | 0.15 | 20071116 | 75.79251  | 268.09604 | 60.65539  | 15.52713 | 0.1343542 | 2.5811130 | 45  | 1 | 55 days   | 0.47 |       | MPC | 2007 VP <sub>11</sub>        |
| 2007 VT <sub>11</sub> | 17.9 | 0.15 | 20071116 | 23.47743  | 290.29942 | 89.14364  | 3.33057  | 0.2366127 | 2.3761013 | 34  | 1 | 31 days   | 0.54 |       | MPC | 2007 VT <sub>11</sub>        |
| 2007 VU <sub>11</sub> | 16.0 | 0.15 | 20071116 | 52.50117  | 286.94103 | 63.58017  | 15.49443 | 0.1633488 | 2.8619849 | 29  | 1 | 35 days   | 0.49 |       | MPC | 2007 VU <sub>11</sub>        |
| 2007 VV <sub>11</sub> | 15.9 | 0.15 | 20071027 | 72.13579  | 44.03812  | 280.42098 | 4.42087  | 0.1585071 | 2.5866092 | 45  | 1 | 74 days   | 0.54 | M-v 5 | MPC | 2007 VV <sub>11</sub>        |
| 2007 VW <sub>11</sub> | 16.4 | 0.15 | 20071116 | 30.17336  | 133.82490 | 238.24578 | 30.97332 | 0.2164739 | 2.6602402 | 40  | 1 | 34 days   | 0.49 |       | MPC | 2007 VW <sub>11</sub>        |
| 2007 VX <sub>11</sub> | 15.6 | 0.15 | 20071027 | 105.11417 | 199.08636 | 95.33062  | 14.71793 | 0.0977758 | 2.5714409 | 33  | 2 | 2003–2007 | 0.50 | M-v 5 | MPC | 128585 2007 VX <sub>11</sub> |
| 2007 VC <sub>12</sub> | 17.0 | 0.15 | 20071027 | 336.82781 | 197.09856 | 241.22888 | 13.88622 | 0.0758184 | 2.6671829 | 41  | 1 | 46 days   | 0.55 |       | MPC | 2007 VC <sub>12</sub>        |
| 2007 VD <sub>12</sub> | 20.0 | 0.15 | 20071027 | 286.82762 | 91.08405  | 62.77771  | 22.83308 | 0.3641630 | 1.1467049 | 197 | 1 | 19 days   | 0.31 | M-v 6 | MPC | 129032 2007 VD <sub>12</sub> |
| 2007 VE <sub>12</sub> | 16.3 | 0.15 | 20071027 | 323.94297 | 50.07759  | 57.85668  | 9.93502  | 0.2463279 | 2.7037592 | 66  | 2 | 2004–2007 | 0.46 | M-v 4 | MPC | 128585 2007 VE <sub>12</sub> |
| 2007 VF <sub>12</sub> | 17.5 | 0.15 | 20071027 | 20.54227  | 321.08434 | 54.40097  | 3.01060  | 0.2222415 | 2.3530048 | 61  | 2 | 2006–2007 | 0.39 | M-v 3 | MPC | 128585 2007 VF <sub>12</sub> |
| 2007 VL <sub>12</sub> | 16.1 | 0.15 | 20071027 | 180.33515 | 315.76534 | 251.49887 | 3.50027  | 0.0636351 | 2.6286382 | 39  | 1 | 12 days   | 0.35 |       | MPC | 2007 VL <sub>12</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |       |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-------|------------------------------|
| 2007 VN <sub>12</sub> | 17.5 | 0.15 | 20071027 | 14.77233  | 129.34531 | 244.96891 | 11.90648 | 0.2799211 | 2.6347888 | 38 | 1 | 43 days   | 0.62 |       | MPC   | 2007 VN <sub>12</sub>        |
| 2007 VO <sub>12</sub> | 17.8 | 0.15 | 20071027 | 16.79862  | 54.91679  | 323.79129 | 4.28900  | 0.1693494 | 2.2891661 | 19 | 1 | 42 days   | 0.38 |       | MPC   | 2007 VO <sub>12</sub>        |
| 2007 VP <sub>12</sub> | 16.3 | 0.15 | 20071027 | 35.78691  | 110.01249 | 247.94535 | 13.03513 | 0.1450082 | 2.5947963 | 30 | 1 | 35 days   | 0.60 |       | MPC   | 2007 VP <sub>12</sub>        |
| 2007 VS <sub>12</sub> | 16.8 | 0.15 | 20071027 | 17.93763  | 128.93167 | 245.17357 | 13.71502 | 0.2659084 | 3.0498735 | 32 | 1 | 42 days   | 0.58 |       | MPC   | 2007 VS <sub>12</sub>        |
| 2007 VU <sub>12</sub> | 17.0 | 0.15 | 20071027 | 45.72058  | 70.40625  | 268.42819 | 5.27968  | 0.2256585 | 2.2997720 | 45 | 1 | 54 days   | 0.45 |       | MPC   | 2007 VU <sub>12</sub>        |
| 2007 VV <sub>12</sub> | 16.4 | 0.15 | 20071027 | 14.07795  | 126.78135 | 257.31348 | 8.10846  | 0.2412539 | 2.7713976 | 65 | 2 | 2002–2007 | 0.34 | M-v 3 | MPC   | 128586 2007 VV <sub>12</sub> |
| 2007 VC <sub>13</sub> | 18.6 | 0.15 | 20071027 | 11.41468  | 354.68523 | 20.33374  | 2.70220  | 0.1977339 | 2.4087310 | 26 | 1 | 60 days   | 0.40 | M-v 4 | MPC   | 2007 VC <sub>13</sub>        |
| 2007 VW <sub>14</sub> | 15.5 | 0.15 | 20071116 | 8.62102   | 333.77133 | 71.72947  | 10.37228 | 0.0804222 | 3.1735713 | 25 | 1 | 33 days   | 0.29 |       | MPC   | 2007 VW <sub>14</sub>        |
| 2007 VX <sub>14</sub> | 17.1 | 0.15 | 20071027 | 317.60319 | 324.02458 | 133.70828 | 3.35299  | 0.0572191 | 2.7024088 | 16 | 1 | 19 days   | 0.25 |       | MPC   | 2007 VX <sub>14</sub>        |
| 2007 VZ <sub>14</sub> | 18.0 | 0.15 | 20071027 | 14.73446  | 295.67774 | 82.01153  | 4.43201  | 0.2830445 | 2.4188375 | 33 | 1 | 44 days   | 0.61 |       | MPC   | 2007 VZ <sub>14</sub>        |
| 2007 VA <sub>15</sub> | 16.7 | 0.15 | 20071027 | 50.24413  | 272.90372 | 65.03422  | 13.70395 | 0.1970399 | 2.6975181 | 22 | 1 | 55 days   | 0.28 |       | MPC   | 2007 VA <sub>15</sub>        |
| 2007 VB <sub>15</sub> | 16.5 | 0.15 | 20071027 | 51.81150  | 236.54098 | 113.22760 | 4.15845  | 0.0891542 | 2.9737953 | 16 | 1 | 17 days   | 0.37 |       | MPC   | 2007 VB <sub>15</sub>        |
| 2007 VC <sub>15</sub> | 17.3 | 0.15 | 20071027 | 10.44182  | 232.09058 | 163.84181 | 4.58969  | 0.1274314 | 2.2657624 | 44 | 2 | 2005–2007 | 0.41 | M-v 4 | MPC   | 128586 2007 VC <sub>15</sub> |
| 2007 VD <sub>15</sub> | 17.6 | 0.15 | 20071027 | 7.02826   | 25.53613  | 14.51410  | 3.29396  | 0.1552021 | 2.1985018 | 42 | 1 | 58 days   | 0.53 |       | MPC   | 2007 VD <sub>15</sub>        |
| 2007 VN <sub>15</sub> | 16.7 | 0.15 | 20071027 | 12.98891  | 138.43496 | 262.39885 | 5.77306  | 0.2290402 | 3.1265740 | 24 | 2 | 2003–2007 | 0.19 | M-v 3 | MPC   | 128586 2007 VN <sub>15</sub> |
| 2007 VP <sub>15</sub> | 17.8 | 0.15 | 20071007 | 286.76642 | 24.94711  | 99.33128  | 2.30141  | 0.1351428 | 2.4541207 | 25 | 1 | 32 days   | 0.46 |       | MPC   | 2007 VP <sub>15</sub>        |
| 2007 VD <sub>16</sub> | 18.9 | 0.15 | 20071027 | 340.13079 | 145.87373 | 266.55524 | 1.78131  | 0.0850340 | 2.2255515 | 10 | 1 | 2 days    | 0.53 |       | D MPC | 2007 VD <sub>16</sub>        |
| 2007 VQ <sub>16</sub> | 15.4 | 0.15 | 20071027 | 310.65233 | 54.20814  | 44.80489  | 12.55047 | 0.1316445 | 3.0584289 | 29 | 1 | 60 days   | 0.43 | M-v 4 | MPC   | 2007 VQ <sub>16</sub>        |
| 2007 VR <sub>19</sub> | 16.3 | 0.15 | 20071116 | 52.18832  | 176.34336 | 162.37742 | 4.86716  | 0.2387741 | 2.5751147 | 27 | 1 | 34 days   | 0.69 |       | MPC   | 2007 VR <sub>19</sub>        |
| 2007 VK <sub>23</sub> | 15.8 | 0.15 | 20071027 | 345.13309 | 309.91453 | 106.20729 | 13.70790 | 0.1944678 | 2.9844035 | 28 | 1 | 56 days   | 0.67 |       | MPC   | 2007 VK <sub>23</sub>        |
| 2007 VC <sub>25</sub> | 17.3 | 0.15 | 20071116 | 22.73520  | 298.16486 | 80.76805  | 9.85900  | 0.2322145 | 2.3307311 | 27 | 1 | 33 days   | 0.55 |       | MPC   | 2007 VC <sub>25</sub>        |
| 2007 VG <sub>25</sub> | 15.2 | 0.15 | 20071027 | 14.31294  | 3.87868   | 25.27882  | 18.16079 | 0.1834636 | 3.1493518 | 51 | 2 | 2001–2007 | 0.52 | M-v 3 | MPC   | 128586 2007 VG <sub>25</sub> |
| 2007 VJ <sub>25</sub> | 15.8 | 0.15 | 20071116 | 327.53731 | 263.24584 | 205.97252 | 12.56578 | 0.1732503 | 2.8003916 | 15 | 1 | 32 days   | 0.58 |       | MPC   | 2007 VJ <sub>25</sub>        |
| 2007 VL <sub>25</sub> | 15.0 | 0.15 | 20071027 | 24.51092  | 43.07561  | 336.03910 | 9.73112  | 0.1205859 | 3.0232137 | 24 | 1 | 55 days   | 0.62 |       | MPC   | 2007 VL <sub>25</sub>        |
| 2007 VR <sub>25</sub> | 15.6 | 0.15 | 20071007 | 287.53879 | 179.49884 | 287.95824 | 2.28301  | 0.0996514 | 3.0223130 | 27 | 1 | 35 days   | 0.35 |       | MPC   | 2007 VR <sub>25</sub>        |
| 2007 VH <sub>26</sub> | 15.9 | 0.15 | 20071027 | 345.71343 | 26.87268  | 32.11348  | 9.84978  | 0.0632119 | 3.1165876 | 26 | 1 | 30 days   | 0.49 |       | MPC   | 2007 VH <sub>26</sub>        |
| 2007 VO <sub>26</sub> | 15.5 | 0.15 | 20071007 | 302.10600 | 250.02443 | 230.54001 | 15.27089 | 0.2161082 | 3.1441611 | 36 | 1 | 50 days   | 0.59 |       | D MPC | 2007 VO <sub>26</sub>        |
| 2007 VQ <sub>26</sub> | 17.5 | 0.15 | 20071116 | 41.54290  | 241.79932 | 121.28785 | 6.07686  | 0.1288642 | 2.2398209 | 24 | 1 | 33 days   | 0.47 |       | MPC   | 2007 VQ <sub>26</sub>        |
| 2007 VX <sub>26</sub> | 17.7 | 0.15 | 20071027 | 327.31109 | 339.98694 | 137.79239 | 4.62704  | 0.4048931 | 2.2947370 | 62 | 2 | 2000–2007 | 0.43 | M-v 4 | MPC   | 128586 2007 VX <sub>26</sub> |
| 2007 VY <sub>26</sub> | 17.7 | 0.15 | 20071027 | 7.04276   | 186.38027 | 209.69723 | 14.46759 | 0.2704661 | 2.6406355 | 36 | 1 | 62 days   | 0.39 | M-v 4 | MPC   | 2007 VY <sub>26</sub>        |
| 2007 VF <sub>27</sub> | 16.5 | 0.15 | 20071027 | 282.06176 | 44.71010  | 87.24414  | 7.33825  | 0.0407028 | 2.4448096 | 58 | 4 | 1996–2007 | 0.60 | M-v 1 | MPC   | 128587 2007 VF <sub>27</sub> |
| 2007 VX <sub>27</sub> | 18.4 | 0.15 | 20071027 | 322.85014 | 33.67086  | 66.27817  | 6.19368  | 0.1913779 | 2.4097667 | 12 | 1 | 16 days   | 0.24 |       | MPC   | 2007 VX <sub>27</sub>        |
| 2007 VC <sub>28</sub> | 16.8 | 0.15 | 20071027 | 321.75277 | 12.57136  | 88.66047  | 3.40389  | 0.2124143 | 2.4727866 | 54 | 3 | 2003–2007 | 0.46 | M-v 2 | MPC   | 128587 2007 VC <sub>28</sub> |
| 2007 VG <sub>28</sub> | 16.4 | 0.15 | 20071027 | 9.59150   | 257.82327 | 129.56619 | 13.44089 | 0.1773839 | 2.6061974 | 24 | 1 | 40 days   | 0.52 |       | MPC   | 2007 VG <sub>28</sub>        |
| 2007 VN <sub>28</sub> | 16.3 | 0.15 | 20071027 | 332.45964 | 53.87391  | 28.30798  | 7.72831  | 0.1867691 | 2.9842472 | 31 | 2 | 2002–2007 | 0.51 | M-v 4 | MPC   | 128587 2007 VN <sub>28</sub> |
| 2007 VO <sub>29</sub> | 16.9 | 0.15 | 20071027 | 37.43127  | 320.54326 | 30.91916  | 7.08256  | 0.0291292 | 2.6908194 | 25 | 1 | 40 days   | 0.32 |       | MPC   | 2007 VO <sub>29</sub>        |
| 2007 VP <sub>29</sub> | 17.5 | 0.15 | 20071027 | 45.03220  | 323.51034 | 13.56201  | 4.10542  | 0.2540017 | 2.3252039 | 46 | 1 | 60 days   | 0.57 | M-v 4 | MPC   | 2007 VP <sub>29</sub>        |
| 2007 VQ <sub>29</sub> | 15.8 | 0.15 | 20071116 | 335.52356 | 28.85494  | 60.93363  | 22.65739 | 0.0372755 | 2.6417679 | 34 | 1 | 38 days   | 0.39 |       | MPC   | 2007 VQ <sub>29</sub>        |
| 2007 VR <sub>29</sub> | 24.5 | 0.15 | 20071027 | 343.60728 | 214.65085 | 222.14350 | 12.22161 | 0.4507334 | 1.8062103 | 21 | 1 | 14 days   | 0.54 | M-v 6 | MPC   | 129032 2007 VR <sub>29</sub> |
| 2007 VV <sub>29</sub> | 17.5 | 0.15 | 20071116 | 39.98492  | 260.60037 | 93.51515  | 3.48626  | 0.2412938 | 2.3301864 | 28 | 1 | 34 days   | 0.52 |       | MPC   | 2007 VV <sub>29</sub>        |
| 2007 VA <sub>30</sub> | 15.6 | 0.15 | 20071007 | 109.80439 | 24.92203  | 235.64033 | 5.93410  | 0.1156804 | 3.0298185 | 19 | 1 | 39 days   | 0.49 |       | MPC   | 2007 VA <sub>30</sub>        |
| 2007 VD <sub>30</sub> | 18.2 | 0.15 | 20071027 | 42.24103  | 112.48697 | 222.41427 | 5.71426  | 0.1129098 | 2.2467272 | 16 | 1 | 35 days   | 0.24 |       | MPC   | 2007 VD <sub>30</sub>        |
| 2007 VV <sub>30</sub> | 16.7 | 0.15 | 20071007 | 58.32849  | 52.76058  | 283.02150 | 5.53451  | 0.0120573 | 2.7212326 | 16 | 1 | 54 days   | 0.27 |       | MPC   | 2007 VV <sub>30</sub>        |
| 2007 VX <sub>30</sub> | 15.7 | 0.15 | 20071027 | 339.24349 | 184.35542 | 246.39248 | 9.71657  | 0.2062180 | 3.1311141 | 41 | 1 | 69 days   | 0.44 | M-v 4 | MPC   | 2007 VX <sub>30</sub>        |
| 2007 VA <sub>31</sub> | 18.6 | 0.15 | 20071116 | 358.87602 | 178.70935 | 229.40718 | 20.23998 | 0.0819117 | 1.7992632 | 35 | 1 | 32 days   | 0.66 |       | MPC   | 2007 VA <sub>31</sub>        |
| 2007 VE <sub>31</sub> | 17.2 | 0.15 | 20071027 | 12.28613  | 1.79222   | 19.18813  | 10.76833 | 0.2093526 | 3.1679084 | 22 | 1 | 38 days   | 0.35 |       | MPC   | 2007 VE <sub>31</sub>        |
| 2007 VF <sub>31</sub> | 16.4 | 0.15 | 20071027 | 295.93227 | 246.21987 | 243.51268 | 12.88423 | 0.2249671 | 3.0004148 | 19 | 1 | 16 days   | 0.25 |       | MPC   | 2007 VF <sub>31</sub>        |
| 2007 VH <sub>31</sub> | 15.2 | 0.15 | 20071027 | 137.92696 | 246.28679 | 15.37479  | 11.32315 | 0.0276558 | 3.0115718 | 21 | 1 | 27 days   | 0.47 |       | MPC   | 2007 VH <sub>31</sub>        |
| 2007 VJ <sub>31</sub> | 17.7 | 0.15 | 20071027 | 17.86424  | 43.28137  | 323.20712 | 4.36357  | 0.2947706 | 3.1513766 | 19 | 1 | 33 days   | 0.30 |       | MPC   | 2007 VJ <sub>31</sub>        |
| 2007 VO <sub>31</sub> | 15.7 | 0.15 | 20071027 | 301.00730 | 235.50313 | 240.64073 | 13.03209 | 0.1557360 | 2.7200280 | 60 | 4 | 1997–2007 | 0.44 | M-v 1 | MPC   | 128587 2007 VO <sub>31</sub> |
| 2007 VS <sub>31</sub> | 16.2 | 0.15 | 20071027 | 324.82783 | 195.72477 | 248.15556 | 8.68343  | 0.1070740 | 2.9884092 | 19 | 1 | 28 days   | 0.27 |       | MPC   | 2007 VS <sub>31</sub>        |
| 2007 VT <sub>31</sub> | 18.4 | 0.15 | 20071027 | 355.93704 | 115.40217 | 289.37836 | 3.85758  | 0.1321563 | 2.2127394 | 26 | 1 | 40 days   | 0.30 |       | MPC   | 2007 VT <sub>31</sub>        |
| 2007 VU <sub>31</sub> | 15.7 | 0.15 | 20071027 | 27.93177  | 340.99818 | 30.36516  | 18.56035 | 0.0509978 | 3.1808478 | 16 | 1 | 16 days   | 0.42 |       | MPC   | 2007 VU <sub>31</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|------------------------------|
| 2007 VW <sub>31</sub> | 17.0 | 0.15 | 20071007 | 9.14832   | 38.13183  | 342.78622 | 4.57860  | 0.1838906 | 2.7772817 | 40 | 1 | 53 days   | 0.48 | D     | MPC | 2007 VW <sub>31</sub>        |
| 2007 VX <sub>31</sub> | 16.4 | 0.15 | 20071116 | 28.43673  | 126.95306 | 230.46577 | 25.86115 | 0.2624852 | 3.1618157 | 31 | 1 | 34 days   | 0.40 |       | MPC | 2007 VX <sub>31</sub>        |
| 2007 VY <sub>31</sub> | 17.8 | 0.15 | 20071027 | 346.71480 | 172.24417 | 246.56822 | 9.31280  | 0.1670588 | 2.5842670 | 16 | 1 | 36 days   | 0.35 |       | MPC | 2007 VY <sub>31</sub>        |
| 2007 VC <sub>32</sub> | 15.6 | 0.15 | 20071027 | 252.34528 | 261.85618 | 254.51121 | 7.43929  | 0.0624374 | 3.0171689 | 21 | 1 | 16 days   | 0.58 |       | MPC | 2007 VC <sub>32</sub>        |
| 2007 VG <sub>32</sub> | 15.6 | 0.15 | 20071027 | 57.88180  | 91.34286  | 244.92493 | 10.89076 | 0.0781010 | 3.0132154 | 32 | 1 | 40 days   | 0.53 |       | MPC | 2007 VG <sub>32</sub>        |
| 2007 VK <sub>32</sub> | 17.1 | 0.15 | 20071027 | 14.25214  | 110.05805 | 272.87183 | 4.94050  | 0.0560842 | 2.7874602 | 19 | 1 | 38 days   | 0.34 |       | MPC | 2007 VK <sub>32</sub>        |
| 2007 VR <sub>32</sub> | 17.2 | 0.15 | 20071027 | 59.41011  | 16.71935  | 302.96232 | 3.35199  | 0.1851766 | 2.8616627 | 16 | 1 | 30 days   | 0.25 |       | MPC | 2007 VR <sub>32</sub>        |
| 2007 VT <sub>32</sub> | 19.1 | 0.15 | 20071007 | 354.44569 | 105.77211 | 291.40564 | 2.37006  | 0.2151688 | 2.2681196 | 19 | 1 | 38 days   | 0.39 |       | MPC | 2007 VT <sub>32</sub>        |
| 2007 VU <sub>32</sub> | 18.7 | 0.15 | 20071027 | 342.78739 | 68.79642  | 354.65611 | 3.10139  | 0.1887310 | 2.2909840 | 19 | 1 | 38 days   | 0.40 |       | MPC | 2007 VU <sub>32</sub>        |
| 2007 VW <sub>32</sub> | 15.9 | 0.15 | 20071027 | 66.58741  | 291.77441 | 27.43833  | 10.56125 | 0.1438378 | 2.9242159 | 26 | 1 | 43 days   | 0.47 |       | MPC | 2007 VW <sub>32</sub>        |
| 2007 VY <sub>32</sub> | 15.9 | 0.15 | 20071027 | 339.06250 | 59.49931  | 12.08403  | 6.64245  | 0.1694169 | 3.3822927 | 18 | 1 | 34 days   | 0.32 |       | MPC | 2007 VY <sub>32</sub>        |
| 2007 VB <sub>33</sub> | 17.7 | 0.15 | 20071027 | 12.76469  | 71.76352  | 315.68822 | 2.74458  | 0.0474172 | 2.5498453 | 15 | 1 | 30 days   | 0.31 |       | MPC | 2007 VB <sub>33</sub>        |
| 2007 VN <sub>33</sub> | 16.3 | 0.15 | 20071027 | 347.81815 | 43.73794  | 16.36050  | 5.51035  | 0.1703722 | 2.9860972 | 28 | 1 | 5 days    | 0.69 |       | MPC | 2007 VN <sub>33</sub>        |
| 2007 VZ <sub>33</sub> | 16.0 | 0.15 | 20071027 | 280.03660 | 231.32819 | 276.89946 | 7.76027  | 0.0652990 | 2.9970410 | 13 | 1 | 18 days   | 0.20 |       | MPC | 2007 VZ <sub>33</sub>        |
| 2007 VL <sub>34</sub> | 17.2 | 0.15 | 20071027 | 173.56770 | 336.16606 | 261.51395 | 3.30479  | 0.0313179 | 2.7491024 | 15 | 1 | 15 days   | 0.23 |       | MPC | 2007 VL <sub>34</sub>        |
| 2007 VM <sub>34</sub> | 16.6 | 0.15 | 20071027 | 20.08530  | 328.52572 | 48.94321  | 18.18896 | 0.2314514 | 3.1544286 | 23 | 1 | 59 days   | 0.48 |       | MPC | 2007 VM <sub>34</sub>        |
| 2007 VO <sub>34</sub> | 14.8 | 0.15 | 20071027 | 196.84339 | 154.74870 | 63.67520  | 17.10582 | 0.0249989 | 3.0762126 | 49 | 1 | 46 days   | 0.46 |       | MPC | 2007 VO <sub>34</sub>        |
| 2007 VQ <sub>34</sub> | 17.0 | 0.15 | 20071027 | 45.88605  | 230.23297 | 122.27089 | 2.18148  | 0.1790675 | 2.5206359 | 17 | 1 | 32 days   | 0.21 |       | MPC | 2007 VQ <sub>34</sub>        |
| 2007 VS <sub>34</sub> | 18.1 | 0.15 | 20071116 | 358.93663 | 354.67757 | 67.04298  | 7.59993  | 0.2205764 | 2.2728332 | 30 | 1 | 32 days   | 0.42 |       | MPC | 2007 VS <sub>34</sub>        |
| 2007 VT <sub>34</sub> | 15.7 | 0.15 | 20071027 | 291.37260 | 265.40705 | 228.37878 | 8.94446  | 0.0488174 | 3.0107621 | 19 | 1 | 16 days   | 0.19 |       | MPC | 2007 VT <sub>34</sub>        |
| 2007 VB <sub>35</sub> | 17.6 | 0.15 | 20071027 | 178.07915 | 75.52823  | 164.52637 | 3.09118  | 0.0697940 | 2.2756936 | 23 | 1 | 30 days   | 0.33 |       | MPC | 2007 VB <sub>35</sub>        |
| 2007 VF <sub>35</sub> | 15.7 | 0.15 | 20071027 | 15.63282  | 292.24833 | 101.34918 | 3.99305  | 0.1152990 | 3.1825229 | 29 | 1 | 30 days   | 0.43 |       | MPC | 2007 VF <sub>35</sub>        |
| 2007 VR <sub>35</sub> | 19.0 | 0.15 | 20071007 | 34.54951  | 288.64877 | 53.35279  | 3.11916  | 0.1501646 | 2.1941252 | 21 | 1 | 28 days   | 0.46 | D     | MPC | 2007 VR <sub>35</sub>        |
| 2007 VL <sub>36</sub> | 17.2 | 0.15 | 20071027 | 239.70149 | 298.91644 | 224.20428 | 6.10646  | 0.1171459 | 2.3868086 | 22 | 1 | 37 days   | 0.32 |       | MPC | 2007 VL <sub>36</sub>        |
| 2007 VM <sub>36</sub> | 15.7 | 0.15 | 20071027 | 25.78306  | 133.49259 | 224.90067 | 5.27657  | 0.1331182 | 3.1837353 | 20 | 1 | 45 days   | 0.32 | D     | MPC | 2007 VM <sub>36</sub>        |
| 2007 VQ <sub>36</sub> | 17.9 | 0.15 | 20071027 | 330.72598 | 40.50590  | 31.05129  | 13.88722 | 0.1458804 | 2.6074422 | 18 | 1 | 18 days   | 0.27 |       | MPC | 2007 VQ <sub>36</sub>        |
| 2007 VY <sub>36</sub> | 16.9 | 0.15 | 20071007 | 56.97385  | 91.03793  | 231.39861 | 2.48219  | 0.1791189 | 2.7955191 | 32 | 1 | 32 days   | 0.35 |       | MPC | 2007 VY <sub>36</sub>        |
| 2007 VB <sub>37</sub> | 16.4 | 0.15 | 20071027 | 328.36580 | 283.58626 | 154.38101 | 13.28702 | 0.1270910 | 2.5408865 | 24 | 1 | 34 days   | 0.53 |       | MPC | 2007 VB <sub>37</sub>        |
| 2007 VC <sub>37</sub> | 16.5 | 0.15 | 20071027 | 6.04591   | 248.65380 | 138.64568 | 12.12268 | 0.2051772 | 2.6381203 | 21 | 1 | 39 days   | 0.62 |       | MPC | 2007 VC <sub>37</sub>        |
| 2007 VE <sub>37</sub> | 17.5 | 0.15 | 20071027 | 353.40082 | 257.60639 | 149.23226 | 11.80303 | 0.1966963 | 2.5700806 | 20 | 1 | 23 days   | 0.62 |       | MPC | 2007 VE <sub>37</sub>        |
| 2007 VH <sub>37</sub> | 17.4 | 0.15 | 20071027 | 22.59522  | 321.82731 | 30.24070  | 15.08949 | 0.2812573 | 3.1965897 | 11 | 1 | 5 days    | 0.17 | D     | MPC | 2007 VH <sub>37</sub>        |
| 2007 VM <sub>38</sub> | 15.9 | 0.15 | 20071027 | 357.08164 | 106.77727 | 296.51857 | 8.92750  | 0.1127266 | 3.0214921 | 20 | 1 | 23 days   | 0.68 |       | MPC | 2007 VM <sub>38</sub>        |
| 2007 VN <sub>38</sub> | 15.6 | 0.15 | 20071027 | 37.34460  | 95.72263  | 256.09073 | 15.50606 | 0.1354559 | 3.0492378 | 23 | 1 | 31 days   | 0.51 |       | MPC | 2007 VN <sub>38</sub>        |
| 2007 VO <sub>38</sub> | 16.2 | 0.15 | 20071027 | 19.17836  | 107.34928 | 265.05348 | 10.73343 | 0.1843323 | 2.6684513 | 32 | 1 | 42 days   | 0.46 |       | MPC | 2007 VO <sub>38</sub>        |
| 2007 VW <sub>38</sub> | 16.2 | 0.15 | 20071027 | 31.04796  | 253.75357 | 121.65000 | 7.30142  | 0.1034875 | 2.5488521 | 20 | 1 | 32 days   | 0.37 |       | MPC | 2007 VW <sub>38</sub>        |
| 2007 VY <sub>38</sub> | 16.6 | 0.15 | 20071116 | 29.36092  | 248.72583 | 109.39276 | 6.63426  | 0.3609696 | 2.6173969 | 25 | 1 | 31 days   | 0.39 |       | MPC | 2007 VY <sub>38</sub>        |
| 2007 VK <sub>39</sub> | 17.6 | 0.15 | 20071027 | 46.66305  | 128.20698 | 215.00331 | 4.43337  | 0.1297296 | 2.3388619 | 27 | 1 | 3 days    | 0.27 |       | MPC | 2007 VK <sub>39</sub>        |
| 2007 VL <sub>39</sub> | 17.8 | 0.15 | 20071027 | 64.77694  | 258.71868 | 59.95111  | 2.97466  | 0.1698264 | 2.4267521 | 23 | 1 | 3 days    | 0.32 |       | MPC | 2007 VL <sub>39</sub>        |
| 2007 VM <sub>39</sub> | 16.3 | 0.15 | 20071027 | 193.39184 | 160.31006 | 53.66621  | 5.76542  | 0.1470668 | 2.7025201 | 24 | 1 | 3 days    | 0.34 |       | MPC | 2007 VM <sub>39</sub>        |
| 2007 VN <sub>39</sub> | 16.7 | 0.15 | 20071027 | 189.65228 | 166.48009 | 50.63857  | 7.79257  | 0.2162326 | 2.2172868 | 20 | 1 | 3 days    | 0.22 |       | MPC | 2007 VN <sub>39</sub>        |
| 2007 VP <sub>39</sub> | 18.7 | 0.15 | 20071027 | 346.77280 | 7.47560   | 52.09172  | 4.30622  | 0.1896030 | 2.0868663 | 27 | 1 | 4 days    | 0.66 |       | MPC | 2007 VP <sub>39</sub>        |
| 2007 VR <sub>39</sub> | 17.7 | 0.15 | 20071007 | 34.93428  | 284.47056 | 65.93190  | 2.17504  | 0.1374159 | 2.4158436 | 29 | 1 | 55 days   | 0.36 | D     | MPC | 2007 VR <sub>39</sub>        |
| 2007 VW <sub>39</sub> | 17.9 | 0.15 | 20071027 | 328.93242 | 233.22124 | 224.29330 | 11.21749 | 0.2590741 | 2.6474447 | 22 | 1 | 32 days   | 0.29 |       | MPC | 2007 VW <sub>39</sub>        |
| 2007 VX <sub>39</sub> | 17.2 | 0.15 | 20071027 | 330.38640 | 227.64708 | 226.64928 | 15.52759 | 0.2243604 | 3.1446178 | 16 | 1 | 17 days   | 0.27 |       | MPC | 2007 VX <sub>39</sub>        |
| 2007 VS <sub>40</sub> | 16.8 | 0.15 | 20071027 | 32.24948  | 184.42039 | 165.78303 | 4.85700  | 0.2218460 | 2.6123037 | 44 | 1 | 41 days   | 0.44 |       | MPC | 2007 VS <sub>40</sub>        |
| 2007 VA <sub>41</sub> | 17.4 | 0.15 | 20071027 | 339.59812 | 4.99578   | 62.60617  | 2.18809  | 0.0970937 | 2.9615087 | 17 | 1 | 2 days    | 0.56 |       | MPC | 2007 VA <sub>41</sub>        |
| 2007 VD <sub>41</sub> | 16.9 | 0.15 | 20071027 | 254.85959 | 300.42678 | 213.17389 | 3.58794  | 0.0480195 | 2.7565667 | 18 | 1 | 18 days   | 0.31 | D     | MPC | 2007 VD <sub>41</sub>        |
| 2007 VW <sub>41</sub> | 19.7 | 0.15 | 20071027 | 18.22039  | 309.52355 | 62.43561  | 4.98860  | 0.1998660 | 2.0485003 | 19 | 1 | 2 days    | 0.48 | D     | MPC | 2007 VW <sub>41</sub>        |
| 2007 VX <sub>42</sub> | 18.3 | 0.15 | 20071027 | 312.15574 | 7.60518   | 96.63728  | 8.05347  | 0.1115031 | 2.1891776 | 21 | 1 | 17 days   | 0.26 |       | MPC | 2007 VX <sub>42</sub>        |
| 2007 VZ <sub>42</sub> | 16.9 | 0.15 | 20071027 | 353.33303 | 331.25296 | 84.32058  | 11.36922 | 0.1300288 | 2.5788634 | 21 | 1 | 14 days   | 0.23 |       | MPC | 2007 VZ <sub>42</sub>        |
| 2007 VO <sub>43</sub> | 15.8 | 0.15 | 20071027 | 313.78338 | 167.08415 | 300.69987 | 6.14350  | 0.1768692 | 3.1503561 | 27 | 1 | 19 days   | 0.51 |       | MPC | 2007 VO <sub>43</sub>        |
| 2007 VP <sub>43</sub> | 16.9 | 0.15 | 20071027 | 294.53768 | 195.85897 | 291.16618 | 5.31985  | 0.1648467 | 2.3786006 | 50 | 5 | 1996-2007 | 0.46 | M-v 1 | MPC | 128588 2007 VP <sub>43</sub> |
| 2007 VQ <sub>43</sub> | 17.6 | 0.15 | 20071027 | 21.96143  | 119.36640 | 249.30531 | 13.44312 | 0.2210983 | 3.0184138 | 12 | 1 | 19 days   | 0.21 |       | MPC | 2007 VQ <sub>43</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 VR <sub>43</sub> | 17.5 | 0.15 | 20071027 | 65.22850  | 35.30033  | 279.82116 | 5.09970  | 0.1975129 | 2.2349848 | 39 | 4 | 1997–2007 | 0.44 | M-v | 1 | MPC | 128589 2007 VR <sub>43</sub> |
| 2007 VT <sub>43</sub> | 17.5 | 0.15 | 20071027 | 258.46473 | 274.37929 | 247.42157 | 12.32883 | 0.1545983 | 2.3920242 | 12 | 1 | 19 days   | 0.20 |     |   | MPC | 2007 VT <sub>43</sub>        |
| 2007 VW <sub>43</sub> | 17.5 | 0.15 | 20071027 | 318.11114 | 99.11838  | 357.85300 | 6.57408  | 0.1361354 | 2.3212555 | 17 | 1 | 29 days   | 0.51 |     |   | MPC | 2007 VW <sub>43</sub>        |
| 2007 VX <sub>43</sub> | 17.5 | 0.15 | 20071027 | 356.42599 | 102.43413 | 307.71933 | 4.92633  | 0.3028841 | 3.0881653 | 19 | 1 | 19 days   | 0.38 |     |   | MPC | 2007 VX <sub>43</sub>        |
| 2007 VA <sub>44</sub> | 17.8 | 0.15 | 20071027 | 2.73009   | 125.47877 | 273.39759 | 5.23202  | 0.1362166 | 2.2981583 | 27 | 1 | 35 days   | 0.61 |     |   | MPC | 2007 VA <sub>44</sub>        |
| 2007 VD <sub>44</sub> | 17.2 | 0.15 | 20071027 | 11.77602  | 128.34741 | 259.55419 | 8.70056  | 0.1668243 | 3.0827121 | 12 | 1 | 19 days   | 0.37 |     |   | MPC | 2007 VD <sub>44</sub>        |
| 2007 VE <sub>44</sub> | 15.9 | 0.15 | 20071027 | 284.45914 | 209.07115 | 281.85491 | 6.53792  | 0.0839357 | 3.1042143 | 28 | 1 | 61 days   | 0.32 | M-v | 4 | MPC | 2007 VE <sub>44</sub>        |
| 2007 VG <sub>44</sub> | 17.6 | 0.15 | 20071027 | 89.86240  | 327.50371 | 323.75872 | 5.21242  | 0.2147667 | 2.2809168 | 16 | 1 | 33 days   | 0.20 |     |   | MPC | 2007 VG <sub>44</sub>        |
| 2007 VK <sub>44</sub> | 16.1 | 0.15 | 20071027 | 226.73667 | 236.79174 | 308.99594 | 5.30226  | 0.0807608 | 2.7018866 | 16 | 1 | 19 days   | 0.35 |     |   | MPC | 2007 VK <sub>44</sub>        |
| 2007 VL <sub>44</sub> | 16.5 | 0.15 | 20071116 | 3.44129   | 165.95802 | 238.13088 | 20.47422 | 0.2508184 | 3.1176376 | 32 | 1 | 32 days   | 0.47 |     |   | MPC | 2007 VL <sub>44</sub>        |
| 2007 VO <sub>44</sub> | 17.6 | 0.15 | 20071027 | 306.05129 | 151.50504 | 324.01135 | 4.36114  | 0.1674512 | 2.3144239 | 32 | 2 | 2005–2007 | 0.46 | M-v | 3 | MPC | 128589 2007 VO <sub>44</sub> |
| 2007 VU <sub>44</sub> | 16.4 | 0.15 | 20071027 | 184.66534 | 205.12234 | 17.28750  | 8.51293  | 0.0847374 | 2.3352467 | 42 | 4 | 2002–2007 | 0.51 | M-v | 1 | MPC | 128589 2007 VU <sub>44</sub> |
| 2007 VV <sub>44</sub> | 17.4 | 0.15 | 20071027 | 21.27749  | 63.18368  | 300.72446 | 4.19416  | 0.3108826 | 3.0313734 | 21 | 1 | 57 days   | 0.45 |     |   | MPC | 2007 VV <sub>44</sub>        |
| 2007 VY <sub>44</sub> | 18.6 | 0.15 | 20071027 | 4.19996   | 41.02119  | 353.79723 | 4.00293  | 0.2663962 | 2.3221831 | 41 | 1 | 66 days   | 0.52 | M-v | 4 | MPC | 2007 VY <sub>44</sub>        |
| 2007 VZ <sub>44</sub> | 16.9 | 0.15 | 20071027 | 305.42231 | 139.63793 | 330.00671 | 4.10409  | 0.0866378 | 2.6107992 | 26 | 2 | 2005–2007 | 0.29 | M-v | 4 | MPC | 128589 2007 VZ <sub>44</sub> |
| 2007 VE <sub>45</sub> | 16.4 | 0.15 | 20071027 | 358.07015 | 159.18048 | 244.92846 | 11.06345 | 0.0894131 | 2.6065020 | 35 | 1 | 41 days   | 0.65 |     |   | MPC | 2007 VE <sub>45</sub>        |
| 2007 VG <sub>45</sub> | 16.5 | 0.15 | 20071027 | 38.67936  | 331.87941 | 16.87032  | 10.11480 | 0.1863814 | 3.1212579 | 21 | 1 | 42 days   | 0.50 |     |   | MPC | 2007 VG <sub>45</sub>        |
| 2007 VH <sub>45</sub> | 17.7 | 0.15 | 20071027 | 358.52491 | 133.21476 | 270.23732 | 5.75099  | 0.0917075 | 2.3443583 | 22 | 1 | 42 days   | 0.26 |     |   | MPC | 2007 VH <sub>45</sub>        |
| 2007 VJ <sub>45</sub> | 17.3 | 0.15 | 20071027 | 25.44389  | 121.19338 | 245.30622 | 10.38431 | 0.1630525 | 2.6193079 | 19 | 1 | 41 days   | 0.52 |     |   | MPC | 2007 VJ <sub>45</sub>        |
| 2007 VL <sub>45</sub> | 17.5 | 0.15 | 20071027 | 0.24802   | 51.38439  | 349.75656 | 4.45743  | 0.2089424 | 2.6008809 | 20 | 1 | 32 days   | 0.41 |     |   | MPC | 2007 VL <sub>45</sub>        |
| 2007 VQ <sub>45</sub> | 17.6 | 0.15 | 20071027 | 318.83802 | 88.69420  | 2.59392   | 6.58246  | 0.0846235 | 2.5964171 | 15 | 1 | 30 days   | 0.30 |     |   | MPC | 2007 VQ <sub>45</sub>        |
| 2007 VS <sub>45</sub> | 16.8 | 0.15 | 20071027 | 325.40376 | 102.47434 | 347.01702 | 5.41955  | 0.1504588 | 2.8589157 | 31 | 2 | 2004–2007 | 0.32 | M-v | 3 | MPC | 128589 2007 VS <sub>45</sub> |
| 2007 VU <sub>45</sub> | 18.0 | 0.15 | 20071027 | 54.94538  | 42.27661  | 291.35825 | 4.60070  | 0.1329783 | 2.2806557 | 19 | 1 | 35 days   | 0.42 |     |   | MPC | 2007 VU <sub>45</sub>        |
| 2007 VX <sub>45</sub> | 15.9 | 0.15 | 20071027 | 337.92953 | 180.02718 | 252.60188 | 9.63447  | 0.1339480 | 3.1403608 | 34 | 1 | 49 days   | 0.50 |     |   | MPC | 2007 VX <sub>45</sub>        |
| 2007 VY <sub>45</sub> | 16.5 | 0.15 | 20071027 | 19.31619  | 22.59116  | 358.84473 | 5.66016  | 0.0791287 | 2.8756323 | 24 | 3 | 2002–2007 | 0.37 | M-v | 4 | MPC | 128589 2007 VY <sub>45</sub> |
| 2007 VB <sub>46</sub> | 18.3 | 0.15 | 20071027 | 25.04730  | 26.52269  | 337.94347 | 3.76750  | 0.1986539 | 2.3355571 | 17 | 1 | 19 days   | 0.63 |     |   | MPC | 2007 VB <sub>46</sub>        |
| 2007 VC <sub>46</sub> | 16.8 | 0.15 | 20071027 | 22.61325  | 354.73251 | 22.20933  | 11.18439 | 0.1040918 | 3.0223147 | 12 | 1 | 19 days   | 0.14 |     |   | MPC | 2007 VC <sub>46</sub>        |
| 2007 VG <sub>46</sub> | 16.7 | 0.15 | 20071027 | 21.91628  | 63.20070  | 309.61340 | 3.89812  | 0.1604485 | 2.6061243 | 28 | 1 | 42 days   | 0.45 |     |   | MPC | 2007 VG <sub>46</sub>        |
| 2007 VH <sub>46</sub> | 16.8 | 0.15 | 20071027 | 46.83108  | 36.22850  | 302.04297 | 4.40458  | 0.1973046 | 3.0787214 | 15 | 1 | 42 days   | 0.22 |     |   | MPC | 2007 VH <sub>46</sub>        |
| 2007 VL <sub>46</sub> | 16.4 | 0.15 | 20071027 | 358.16756 | 112.91089 | 293.84291 | 4.03554  | 0.1508403 | 3.0662735 | 19 | 1 | 41 days   | 0.36 |     |   | MPC | 2007 VL <sub>46</sub>        |
| 2007 VM <sub>46</sub> | 17.1 | 0.15 | 20071027 | 212.30660 | 283.62561 | 271.20853 | 5.71174  | 0.0495394 | 2.3668975 | 18 | 1 | 33 days   | 0.36 |     |   | MPC | 2007 VM <sub>46</sub>        |
| 2007 VN <sub>46</sub> | 17.9 | 0.15 | 20071027 | 24.57614  | 0.48339   | 0.67874   | 5.16872  | 0.2604846 | 2.6156508 | 19 | 1 | 42 days   | 0.35 |     |   | MPC | 2007 VN <sub>46</sub>        |
| 2007 VU <sub>46</sub> | 16.7 | 0.15 | 20071027 | 285.57206 | 219.53182 | 273.98210 | 4.68150  | 0.1221809 | 2.6593383 | 16 | 1 | 41 days   | 0.28 |     |   | MPC | 2007 VU <sub>46</sub>        |
| 2007 VV <sub>46</sub> | 16.4 | 0.15 | 20071027 | 280.72474 | 233.18462 | 260.29056 | 6.61860  | 0.0774196 | 2.7184476 | 16 | 1 | 18 days   | 0.46 |     |   | MPC | 2007 VV <sub>46</sub>        |
| 2007 VA <sub>47</sub> | 17.2 | 0.15 | 20071027 | 30.10103  | 329.27522 | 31.74966  | 13.41900 | 0.1897721 | 2.5928281 | 26 | 1 | 83 days   | 0.40 | M-v | 4 | MPC | 2007 VA <sub>47</sub>        |
| 2007 VB <sub>47</sub> | 16.1 | 0.15 | 20071027 | 80.70910  | 316.93504 | 346.63456 | 4.19756  | 0.1887716 | 2.6177909 | 18 | 1 | 19 days   | 0.35 |     |   | MPC | 2007 VB <sub>47</sub>        |
| 2007 VE <sub>47</sub> | 16.3 | 0.15 | 20071027 | 3.39313   | 91.27744  | 309.71518 | 3.65819  | 0.1082481 | 2.6756514 | 15 | 1 | 17 days   | 0.55 |     |   | MPC | 2007 VE <sub>47</sub>        |
| 2007 VN <sub>47</sub> | 16.0 | 0.15 | 20071027 | 352.91075 | 164.07211 | 250.49525 | 10.92370 | 0.0470560 | 2.9190563 | 23 | 1 | 57 days   | 0.41 |     |   | MPC | 2007 VN <sub>47</sub>        |
| 2007 VQ <sub>47</sub> | 17.8 | 0.15 | 20071027 | 32.97584  | 19.16375  | 342.36626 | 4.91847  | 0.1605630 | 2.7176809 | 15 | 1 | 22 days   | 0.20 |     |   | MPC | 2007 VQ <sub>47</sub>        |
| 2007 VT <sub>47</sub> | 17.2 | 0.15 | 20071027 | 17.74046  | 31.17825  | 350.86800 | 4.53401  | 0.1428838 | 2.5699300 | 38 | 2 | 2005–2007 | 0.36 | M-v | 4 | MPC | 128590 2007 VT <sub>47</sub> |
| 2007 VY <sub>47</sub> | 16.6 | 0.15 | 20071027 | 27.92529  | 81.03209  | 289.33982 | 5.93466  | 0.1514621 | 3.2045125 | 21 | 1 | 39 days   | 0.21 |     |   | MPC | 2007 VY <sub>47</sub>        |
| 2007 VZ <sub>47</sub> | 17.5 | 0.15 | 20071116 | 334.50754 | 180.46156 | 259.99218 | 7.21162  | 0.0576873 | 2.5452130 | 18 | 1 | 34 days   | 0.21 |     |   | MPC | 2007 VZ <sub>47</sub>        |
| 2007 VA <sub>48</sub> | 16.7 | 0.15 | 20071027 | 271.00627 | 126.16965 | 17.08556  | 7.30889  | 0.0638578 | 2.3823785 | 43 | 4 | 1996–2007 | 0.48 | M-v | 1 | MPC | 128590 2007 VA <sub>48</sub> |
| 2007 VD <sub>48</sub> | 18.8 | 0.15 | 20071027 | 356.06341 | 68.84653  | 341.81052 | 3.70129  | 0.1432868 | 2.2826509 | 21 | 1 | 39 days   | 0.26 |     |   | MPC | 2007 VD <sub>48</sub>        |
| 2007 VE <sub>48</sub> | 16.5 | 0.15 | 20071027 | 265.55893 | 211.22205 | 297.24708 | 4.57773  | 0.0504217 | 2.5799865 | 33 | 1 | 31 days   | 0.55 |     |   | MPC | 2007 VE <sub>48</sub>        |
| 2007 VH <sub>48</sub> | 15.9 | 0.15 | 20071116 | 187.94371 | 326.09203 | 259.98997 | 9.02301  | 0.0705063 | 2.5984710 | 42 | 1 | 35 days   | 0.55 |     |   | MPC | 2007 VH <sub>48</sub>        |
| 2007 VJ <sub>48</sub> | 15.1 | 0.15 | 20071027 | 307.42691 | 151.76992 | 312.87651 | 5.14839  | 0.0227580 | 3.0660242 | 43 | 3 | 2004–2007 | 0.60 | M-v | 3 | MPC | 128590 2007 VJ <sub>48</sub> |
| 2007 VK <sub>48</sub> | 16.9 | 0.15 | 20071027 | 342.42457 | 109.94530 | 328.59833 | 4.23575  | 0.2725921 | 3.0042648 | 31 | 1 | 65 days   | 0.55 | M-v | 4 | MPC | 2007 VK <sub>48</sub>        |
| 2007 VL <sub>48</sub> | 15.9 | 0.15 | 20071027 | 14.64590  | 14.00317  | 15.66858  | 7.06512  | 0.1351398 | 3.0469635 | 27 | 1 | 33 days   | 0.48 |     |   | MPC | 2007 VL <sub>48</sub>        |
| 2007 VT <sub>48</sub> | 18.2 | 0.15 | 20071027 | 30.55529  | 36.22972  | 326.84506 | 3.30819  | 0.1895731 | 2.5909185 | 18 | 1 | 39 days   | 0.20 |     |   | MPC | 2007 VT <sub>48</sub>        |
| 2007 VV <sub>48</sub> | 16.8 | 0.15 | 20071027 | 35.98110  | 83.86655  | 285.01452 | 4.66426  | 0.0562070 | 2.6790086 | 27 | 1 | 58 days   | 0.30 |     |   | MPC | 2007 VV <sub>48</sub>        |
| 2007 VW <sub>48</sub> | 17.5 | 0.15 | 20071116 | 323.74619 | 106.95775 | 2.25016   | 4.35469  | 0.2243102 | 2.3687078 | 30 | 1 | 42 days   | 0.48 |     |   | MPC | 2007 VW <sub>48</sub>        |
| 2007 VE <sub>49</sub> | 17.7 | 0.15 | 20071027 | 352.98960 | 124.19679 | 292.14508 | 3.14375  | 0.2120426 | 2.3533495 | 59 | 1 | 89 days   | 0.55 | M-v | 3 | MPC | 2007 VE <sub>49</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|--------|-----------------------|
| 2007 VJ <sub>49</sub> | 16.4 | 0.15 | 20071027 | 93.04075  | 270.58850 | 27.68483  | 10.62549 | 0.1754988 | 2.6678705 | 16 | 1 | 19 days   | 0.21 |       | MPC |        | 2007 VJ <sub>49</sub> |
| 2007 VM <sub>49</sub> | 16.4 | 0.15 | 20071027 | 337.39181 | 61.81330  | 20.56265  | 6.89340  | 0.2014507 | 2.7062787 | 55 | 1 | 58 days   | 0.53 |       | MPC |        | 2007 VM <sub>49</sub> |
| 2007 VN <sub>49</sub> | 18.5 | 0.15 | 20071027 | 353.82860 | 55.09248  | 2.66550   | 4.09225  | 0.3023507 | 2.6278743 | 25 | 1 | 19 days   | 0.52 |       | MPC |        | 2007 VN <sub>49</sub> |
| 2007 VR <sub>49</sub> | 15.5 | 0.15 | 20071116 | 319.32537 | 211.82092 | 254.01055 | 12.12589 | 0.1225393 | 3.0931580 | 39 | 1 | 42 days   | 0.38 |       | MPC |        | 2007 VR <sub>49</sub> |
| 2007 VX <sub>49</sub> | 17.6 | 0.15 | 20071027 | 53.47759  | 311.25046 | 23.23481  | 7.56972  | 0.1671710 | 2.3048863 | 23 | 1 | 44 days   | 0.34 |       | MPC |        | 2007 VX <sub>49</sub> |
| 2007 VF <sub>50</sub> | 17.1 | 0.15 | 20071027 | 42.08834  | 43.17248  | 317.52344 | 3.72373  | 0.0581631 | 2.7889045 | 24 | 3 | 2004–2007 | 0.30 | M-v 3 | MPC | 128591 | 2007 VF <sub>50</sub> |
| 2007 VJ <sub>50</sub> | 17.8 | 0.15 | 20071027 | 6.25496   | 114.75995 | 283.18877 | 3.78294  | 0.1455838 | 2.7822322 | 15 | 1 | 16 days   | 0.31 |       | MPC |        | 2007 VJ <sub>50</sub> |
| 2007 VN <sub>50</sub> | 15.7 | 0.15 | 20071027 | 343.12018 | 179.28317 | 248.35116 | 12.02765 | 0.0725076 | 3.1775025 | 28 | 1 | 57 days   | 0.37 |       | MPC |        | 2007 VN <sub>50</sub> |
| 2007 VQ <sub>50</sub> | 16.3 | 0.15 | 20071027 | 327.88639 | 194.32968 | 251.83388 | 8.90663  | 0.0871420 | 3.0766374 | 21 | 1 | 57 days   | 0.30 |       | MPC |        | 2007 VQ <sub>50</sub> |
| 2007 VT <sub>50</sub> | 15.7 | 0.15 | 20071027 | 214.87798 | 165.64379 | 33.32340  | 11.01032 | 0.0658015 | 3.0748280 | 16 | 1 | 28 days   | 0.36 |       | MPC |        | 2007 VT <sub>50</sub> |
| 2007 VX <sub>50</sub> | 18.3 | 0.15 | 20071027 | 7.42786   | 70.54892  | 321.59009 | 2.13073  | 0.2184230 | 2.3033688 | 35 | 1 | 50 days   | 0.49 |       | MPC |        | 2007 VX <sub>50</sub> |
| 2007 VY <sub>50</sub> | 17.7 | 0.15 | 20071027 | 10.07941  | 144.51403 | 248.03633 | 9.00437  | 0.1561817 | 2.6334569 | 19 | 1 | 57 days   | 0.34 |       | MPC |        | 2007 VY <sub>50</sub> |
| 2007 VF <sub>51</sub> | 16.4 | 0.15 | 20071027 | 39.95978  | 349.08324 | 6.82399   | 4.21296  | 0.1429023 | 2.6831193 | 46 | 3 | 2002–2007 | 0.49 | M-v 4 | MPC | 128591 | 2007 VF <sub>51</sub> |
| 2007 VG <sub>51</sub> | 15.6 | 0.15 | 20071027 | 255.20896 | 269.66198 | 254.27446 | 7.60990  | 0.0930441 | 2.7624066 | 44 | 1 | 48 days   | 0.49 |       | MPC |        | 2007 VG <sub>51</sub> |
| 2007 VH <sub>51</sub> | 16.3 | 0.15 | 20071027 | 125.64455 | 324.07134 | 313.93190 | 3.30058  | 0.0681375 | 2.8109839 | 17 | 2 | 2005–2007 | 0.31 | M-v 4 | MPC | 128591 | 2007 VH <sub>51</sub> |
| 2007 VJ <sub>51</sub> | 17.8 | 0.15 | 20071027 | 341.44356 | 83.74999  | 348.45205 | 2.81524  | 0.1718915 | 2.3627615 | 18 | 1 | 16 days   | 0.37 |       | MPC |        | 2007 VJ <sub>51</sub> |
| 2007 VL <sub>51</sub> | 17.6 | 0.15 | 20071116 | 88.09566  | 42.42685  | 267.62226 | 4.43071  | 0.1323922 | 2.3378206 | 15 | 1 | 34 days   | 0.26 |       | MPC |        | 2007 VL <sub>51</sub> |
| 2007 VN <sub>51</sub> | 17.9 | 0.15 | 20071027 | 49.71688  | 304.00198 | 42.12049  | 21.59396 | 0.1016617 | 1.9242499 | 40 | 1 | 47 days   | 0.46 |       | MPC |        | 2007 VN <sub>51</sub> |
| 2007 VR <sub>51</sub> | 17.0 | 0.15 | 20071027 | 320.60594 | 188.18568 | 271.98192 | 4.10258  | 0.1565123 | 2.4285058 | 52 | 2 | 2003–2007 | 0.31 | M-v 3 | MPC | 128591 | 2007 VR <sub>51</sub> |
| 2007 VS <sub>51</sub> | 18.5 | 0.15 | 20071116 | 16.85494  | 85.20647  | 303.80854 | 2.56577  | 0.1909493 | 2.3029501 | 18 | 1 | 35 days   | 0.33 |       | MPC |        | 2007 VS <sub>51</sub> |
| 2007 VT <sub>51</sub> | 15.9 | 0.15 | 20071027 | 11.46793  | 30.74256  | 4.94369   | 4.06193  | 0.0935401 | 2.8321958 | 47 | 1 | 60 days   | 0.52 | M-v 4 | MPC |        | 2007 VT <sub>51</sub> |
| 2007 VW <sub>51</sub> | 18.3 | 0.15 | 20071027 | 12.01994  | 2.28850   | 25.87738  | 6.58062  | 0.2192461 | 2.6160076 | 21 | 1 | 41 days   | 0.25 |       | MPC |        | 2007 VW <sub>51</sub> |
| 2007 VZ <sub>51</sub> | 16.1 | 0.15 | 20071027 | 79.69475  | 315.13002 | 6.25292   | 4.39002  | 0.0929879 | 3.2025821 | 19 | 1 | 51 days   | 0.17 |       | MPC |        | 2007 VZ <sub>51</sub> |
| 2007 VA <sub>52</sub> | 17.7 | 0.15 | 20071116 | 6.89939   | 148.64984 | 255.95529 | 5.69475  | 0.1750270 | 2.6716854 | 33 | 1 | 33 days   | 0.46 |       | MPC |        | 2007 VA <sub>52</sub> |
| 2007 VB <sub>52</sub> | 17.3 | 0.15 | 20071116 | 32.05755  | 77.54934  | 297.37785 | 2.96450  | 0.1141288 | 2.8045558 | 15 | 1 | 33 days   | 0.23 |       | MPC |        | 2007 VB <sub>52</sub> |
| 2007 VE <sub>52</sub> | 16.7 | 0.15 | 20071027 | 21.20673  | 55.02441  | 327.97803 | 2.44954  | 0.1157236 | 2.7935993 | 42 | 1 | 53 days   | 0.32 |       | MPC |        | 2007 VE <sub>52</sub> |
| 2007 VH <sub>52</sub> | 16.0 | 0.15 | 20071027 | 333.34983 | 44.63479  | 38.80932  | 10.90229 | 0.0943121 | 3.0550333 | 30 | 1 | 95 days   | 0.35 | M-v 3 | MPC |        | 2007 VH <sub>52</sub> |
| 2007 VM <sub>52</sub> | 16.2 | 0.15 | 20071027 | 161.52353 | 83.36612  | 164.69430 | 3.52045  | 0.1106228 | 2.9871931 | 15 | 1 | 19 days   | 0.17 |       | MPC |        | 2007 VM <sub>52</sub> |
| 2007 VN <sub>52</sub> | 16.0 | 0.15 | 20071027 | 44.75334  | 284.97931 | 74.61490  | 9.67580  | 0.0840056 | 3.0853793 | 35 | 3 | 2004–2007 | 0.36 | M-v 2 | MPC | 128592 | 2007 VN <sub>52</sub> |
| 2007 VO <sub>52</sub> | 18.0 | 0.15 | 20071027 | 11.79425  | 321.48887 | 68.49231  | 8.07082  | 0.1756196 | 2.3220052 | 34 | 1 | 46 days   | 0.48 |       | MPC |        | 2007 VO <sub>52</sub> |
| 2007 VP <sub>52</sub> | 16.4 | 0.15 | 20071027 | 359.12974 | 348.89277 | 61.47523  | 16.95566 | 0.1148819 | 2.6315513 | 42 | 1 | 47 days   | 0.35 |       | MPC |        | 2007 VP <sub>52</sub> |
| 2007 VR <sub>52</sub> | 16.2 | 0.15 | 20071027 | 41.14678  | 156.50235 | 204.29812 | 7.80547  | 0.1179651 | 3.0291455 | 19 | 1 | 67 days   | 0.27 | M-v 4 | MPC |        | 2007 VR <sub>52</sub> |
| 2007 VT <sub>52</sub> | 16.5 | 0.15 | 20071027 | 253.67395 | 96.48826  | 67.85083  | 12.79079 | 0.0606350 | 2.7389062 | 19 | 1 | 30 days   | 0.22 |       | MPC |        | 2007 VT <sub>52</sub> |
| 2007 VY <sub>52</sub> | 17.7 | 0.15 | 20071027 | 346.63858 | 219.96028 | 210.50211 | 7.41852  | 0.2090990 | 2.8024506 | 19 | 1 | 63 days   | 0.16 | M-v 3 | MPC |        | 2007 VY <sub>52</sub> |
| 2007 VZ <sub>52</sub> | 16.3 | 0.15 | 20071027 | 1.30866   | 198.47222 | 212.64454 | 10.56827 | 0.0876411 | 3.1789204 | 41 | 4 | 2001–2007 | 0.72 | M-v 0 | MPC | 128592 | 2007 VZ <sub>52</sub> |
| 2007 VC <sub>53</sub> | 16.9 | 0.15 | 20071027 | 58.16639  | 244.36546 | 97.01986  | 5.20043  | 0.1133122 | 2.7521238 | 16 | 1 | 31 days   | 0.32 |       | MPC |        | 2007 VC <sub>53</sub> |
| 2007 VD <sub>53</sub> | 16.4 | 0.15 | 20071027 | 115.36560 | 188.29190 | 101.43678 | 5.25451  | 0.0734477 | 2.7898495 | 22 | 1 | 46 days   | 0.18 |       | MPC |        | 2007 VD <sub>53</sub> |
| 2007 VQ <sub>53</sub> | 16.7 | 0.15 | 20071027 | 325.73789 | 272.71476 | 186.23881 | 4.82381  | 0.1597756 | 3.0288736 | 22 | 1 | 24 days   | 0.23 |       | MPC |        | 2007 VQ <sub>53</sub> |
| 2007 VR <sub>53</sub> | 16.5 | 0.15 | 20071027 | 10.98371  | 232.06328 | 169.69741 | 3.40049  | 0.0327311 | 2.9965939 | 29 | 4 | 2001–2007 | 0.36 | M-v 1 | MPC | 128592 | 2007 VR <sub>53</sub> |
| 2007 VU <sub>53</sub> | 16.3 | 0.15 | 20071027 | 311.70737 | 255.25005 | 209.34944 | 8.55702  | 0.0212691 | 3.2017162 | 15 | 1 | 12 days   | 0.22 |       | MPC |        | 2007 VU <sub>53</sub> |
| 2007 VA <sub>54</sub> | 16.2 | 0.15 | 20071027 | 137.75402 | 154.57156 | 116.57413 | 4.48800  | 0.0644872 | 2.7521567 | 25 | 1 | 31 days   | 0.19 |       | MPC |        | 2007 VA <sub>54</sub> |
| 2007 VE <sub>54</sub> | 16.1 | 0.15 | 20071027 | 41.37985  | 137.02983 | 217.54829 | 12.91756 | 0.1745744 | 2.6111199 | 40 | 1 | 90 days   | 0.38 | M-v 4 | MPC |        | 2007 VE <sub>54</sub> |
| 2007 VG <sub>54</sub> | 16.2 | 0.15 | 20071027 | 15.39904  | 173.47251 | 219.16972 | 14.37613 | 0.1089248 | 2.6383568 | 42 | 1 | 46 days   | 0.50 |       | MPC |        | 2007 VG <sub>54</sub> |
| 2007 VJ <sub>54</sub> | 18.0 | 0.15 | 20071027 | 102.81601 | 198.26441 | 96.47746  | 4.76170  | 0.1229654 | 2.1344227 | 15 | 1 | 19 days   | 0.29 |       | MPC |        | 2007 VJ <sub>54</sub> |
| 2007 VK <sub>54</sub> | 18.1 | 0.15 | 20071027 | 338.20365 | 274.74868 | 166.43730 | 3.05669  | 0.1795536 | 2.4713211 | 19 | 1 | 31 days   | 0.32 |       | MPC |        | 2007 VK <sub>54</sub> |
| 2007 VL <sub>54</sub> | 16.6 | 0.15 | 20071027 | 308.95281 | 339.57296 | 139.73973 | 3.67006  | 0.1551142 | 2.8404900 | 39 | 3 | 1999–2007 | 0.35 | M-v 2 | MPC | 128592 | 2007 VL <sub>54</sub> |
| 2007 VO <sub>54</sub> | 15.8 | 0.15 | 20071027 | 322.58829 | 23.98621  | 74.39833  | 10.59682 | 0.0991170 | 3.0500856 | 16 | 1 | 19 days   | 0.28 |       | MPC |        | 2007 VO <sub>54</sub> |
| 2007 VQ <sub>54</sub> | 15.1 | 0.15 | 20071027 | 9.02586   | 326.12680 | 79.24908  | 9.67904  | 0.0314995 | 3.4103535 | 24 | 1 | 20 days   | 0.59 |       | MPC |        | 2007 VQ <sub>54</sub> |
| 2007 VS <sub>54</sub> | 17.3 | 0.15 | 20071027 | 339.10298 | 234.76361 | 213.14062 | 7.72907  | 0.2867741 | 2.7278034 | 48 | 1 | 87 days   | 0.33 | M-v 3 | MPC |        | 2007 VS <sub>54</sub> |
| 2007 VT <sub>54</sub> | 17.8 | 0.15 | 20071027 | 12.08672  | 277.04925 | 112.46600 | 3.09974  | 0.2114588 | 2.3650207 | 30 | 1 | 20 days   | 0.33 |       | MPC |        | 2007 VT <sub>54</sub> |
| 2007 VU <sub>54</sub> | 17.4 | 0.15 | 20071116 | 25.94605  | 219.98317 | 158.44988 | 3.00163  | 0.1967347 | 2.4004305 | 42 | 1 | 34 days   | 0.43 |       | MPC |        | 2007 VU <sub>54</sub> |
| 2007 VV <sub>54</sub> | 15.8 | 0.15 | 20071027 | 271.77094 | 77.72694  | 75.14633  | 12.66394 | 0.0871746 | 3.1415024 | 14 | 1 | 20 days   | 0.32 |       | MPC |        | 2007 VV <sub>54</sub> |
| 2007 VY <sub>54</sub> | 16.4 | 0.15 | 20071027 | 58.92209  | 142.46377 | 204.33993 | 7.50210  | 0.0791932 | 2.7731104 | 37 | 2 | 2005–2007 | 0.33 | M-v 3 | MPC | 128592 | 2007 VY <sub>54</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |        |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|--------|-----------------------|
| 2007 VA <sub>55</sub> | 16.7 | 0.15 | 20071027 | 357.59266 | 225.58734 | 188.25010 | 4.84444  | 0.2193580 | 2.5600967 | 62 | 4 | 1992–2007 | 0.44 | M-v | 2 | MPC | 128592 | 2007 VA <sub>55</sub> |
| 2007 VB <sub>55</sub> | 17.6 | 0.15 | 20071116 | 355.80361 | 343.70630 | 80.09206  | 6.40960  | 0.1942995 | 2.4673210 | 30 | 1 | 34 days   | 0.42 |     |   | MPC |        | 2007 VB <sub>55</sub> |
| 2007 VC <sub>55</sub> | 17.1 | 0.15 | 20071027 | 41.77785  | 161.20177 | 193.82859 | 4.35528  | 0.1588410 | 2.3181216 | 42 | 3 | 2003–2007 | 0.54 | M-v | 2 | MPC | 128593 | 2007 VC <sub>55</sub> |
| 2007 VE <sub>55</sub> | 16.9 | 0.15 | 20071116 | 270.09051 | 73.64496  | 79.00764  | 7.66387  | 0.0419348 | 2.3008403 | 20 | 1 | 34 days   | 0.30 |     |   | MPC |        | 2007 VE <sub>55</sub> |
| 2007 VG <sub>55</sub> | 17.7 | 0.15 | 20071027 | 291.20308 | 55.08041  | 76.20908  | 7.13449  | 0.1307653 | 2.3082002 | 13 | 1 | 19 days   | 0.21 |     |   | MPC |        | 2007 VG <sub>55</sub> |
| 2007 VL <sub>55</sub> | 16.2 | 0.15 | 20071007 | 150.12376 | 33.75444  | 218.30272 | 15.62581 | 0.0715471 | 2.4864826 | 16 | 1 | 35 days   | 0.29 |     |   | MPC |        | 2007 VL <sub>55</sub> |
| 2007 VM <sub>55</sub> | 16.3 | 0.15 | 20071116 | 6.89845   | 341.54753 | 64.22288  | 15.65225 | 0.0717549 | 2.6250865 | 40 | 1 | 35 days   | 0.38 |     |   | MPC |        | 2007 VM <sub>55</sub> |
| 2007 VN <sub>55</sub> | 15.7 | 0.15 | 20071027 | 38.91445  | 293.62408 | 67.66046  | 16.59910 | 0.1194300 | 3.1391206 | 19 | 1 | 35 days   | 0.28 |     |   | MPC |        | 2007 VN <sub>55</sub> |
| 2007 VP <sub>55</sub> | 15.8 | 0.15 | 20071027 | 218.73367 | 135.98238 | 64.46464  | 20.36901 | 0.1177019 | 3.1966120 | 13 | 1 | 19 days   | 0.25 |     |   | MPC |        | 2007 VP <sub>55</sub> |
| 2007 VQ <sub>55</sub> | 16.7 | 0.15 | 20071027 | 299.46154 | 339.07777 | 135.91750 | 3.42194  | 0.0455491 | 2.6122529 | 19 | 1 | 39 days   | 0.20 |     |   | MPC |        | 2007 VQ <sub>55</sub> |
| 2007 VT <sub>55</sub> | 17.1 | 0.15 | 20071027 | 345.00277 | 301.05839 | 126.05673 | 4.46576  | 0.0836974 | 2.7008276 | 19 | 1 | 19 days   | 0.26 |     |   | MPC |        | 2007 VT <sub>55</sub> |
| 2007 VV <sub>55</sub> | 17.0 | 0.15 | 20071116 | 25.70467  | 283.21088 | 96.33748  | 5.29202  | 0.1526096 | 2.5261067 | 32 | 1 | 34 days   | 0.48 |     |   | MPC |        | 2007 VV <sub>55</sub> |
| 2007 VX <sub>55</sub> | 16.6 | 0.15 | 20071027 | 243.80290 | 64.21202  | 104.46803 | 5.58117  | 0.0180467 | 2.7998679 | 19 | 1 | 19 days   | 0.44 |     |   | MPC |        | 2007 VX <sub>55</sub> |
| 2007 VY <sub>55</sub> | 17.2 | 0.15 | 20071027 | 50.99418  | 247.65817 | 103.70796 | 5.30729  | 0.0810330 | 2.7590700 | 15 | 1 | 19 days   | 0.26 |     |   | MPC |        | 2007 VY <sub>55</sub> |
| 2007 VZ <sub>55</sub> | 17.8 | 0.15 | 20071027 | 351.77837 | 349.16078 | 70.54286  | 11.16269 | 0.1132510 | 2.8057832 | 13 | 1 | 17 days   | 0.22 |     |   | MPC |        | 2007 VZ <sub>55</sub> |
| 2007 VD <sub>56</sub> | 15.9 | 0.15 | 20071027 | 207.79227 | 137.72799 | 69.96079  | 16.62449 | 0.0727685 | 3.2203711 | 15 | 1 | 19 days   | 0.17 |     |   | MPC |        | 2007 VD <sub>56</sub> |
| 2007 VG <sub>56</sub> | 18.1 | 0.15 | 20071027 | 324.74359 | 29.24271  | 69.48374  | 11.98181 | 0.1917182 | 2.5711724 | 20 | 1 | 35 days   | 0.23 |     |   | MPC |        | 2007 VG <sub>56</sub> |
| 2007 VH <sub>56</sub> | 15.6 | 0.15 | 20071116 | 356.32409 | 344.26675 | 75.41179  | 10.29404 | 0.0939543 | 3.1471335 | 35 | 1 | 34 days   | 0.48 |     |   | MPC |        | 2007 VH <sub>56</sub> |
| 2007 VL <sub>56</sub> | 15.4 | 0.15 | 20071027 | 66.04832  | 255.95541 | 80.95395  | 10.28306 | 0.0800356 | 3.1299177 | 52 | 5 | 2001–2007 | 0.59 | M-v | 0 | MPC | 128593 | 2007 VL <sub>56</sub> |
| 2007 VM <sub>56</sub> | 17.1 | 0.15 | 20071027 | 69.36554  | 233.81717 | 79.17416  | 8.72652  | 0.2391986 | 2.5364280 | 15 | 1 | 19 days   | 0.22 |     |   | MPC |        | 2007 VM <sub>56</sub> |
| 2007 VQ <sub>56</sub> | 17.5 | 0.15 | 20071027 | 338.02103 | 331.07999 | 109.36730 | 4.44558  | 0.1817291 | 2.6205356 | 20 | 1 | 19 days   | 0.53 |     |   | MPC |        | 2007 VQ <sub>56</sub> |
| 2007 VR <sub>56</sub> | 17.9 | 0.15 | 20071027 | 277.83670 | 26.73565  | 119.27057 | 3.90849  | 0.1291378 | 2.2068734 | 15 | 1 | 19 days   | 0.12 |     |   | MPC |        | 2007 VR <sub>56</sub> |
| 2007 VS <sub>56</sub> | 17.6 | 0.15 | 20071027 | 349.88044 | 216.64092 | 207.25616 | 8.38138  | 0.1453867 | 2.7618629 | 15 | 1 | 19 days   | 0.24 |     |   | MPC |        | 2007 VS <sub>56</sub> |
| 2007 VT <sub>56</sub> | 15.7 | 0.15 | 20071027 | 300.38645 | 45.96226  | 74.82882  | 11.26891 | 0.0896988 | 3.0395596 | 37 | 1 | 46 days   | 0.47 |     |   | MPC |        | 2007 VT <sub>56</sub> |
| 2007 VU <sub>56</sub> | 19.0 | 0.15 | 20071027 | 335.67838 | 293.18060 | 149.35592 | 3.20841  | 0.2005523 | 2.1636168 | 34 | 3 | 2002–2007 | 0.31 | M-v | 3 | MPC | 128593 | 2007 VU <sub>56</sub> |
| 2007 VX <sub>56</sub> | 17.2 | 0.15 | 20071027 | 55.22185  | 123.08494 | 216.32883 | 14.33569 | 0.1666710 | 2.8634087 | 21 | 1 | 29 days   | 0.35 |     |   | MPC |        | 2007 VX <sub>56</sub> |
| 2007 VY <sub>56</sub> | 16.5 | 0.15 | 20071027 | 47.31424  | 250.45982 | 103.79895 | 6.03570  | 0.1016607 | 2.6703645 | 34 | 1 | 31 days   | 0.44 |     |   | MPC |        | 2007 VY <sub>56</sub> |
| 2007 VA <sub>57</sub> | 17.4 | 0.15 | 20071027 | 35.84793  | 233.11270 | 122.81613 | 4.13068  | 0.1971713 | 2.3048111 | 41 | 1 | 45 days   | 0.38 |     |   | MPC |        | 2007 VA <sub>57</sub> |
| 2007 VB <sub>57</sub> | 18.3 | 0.15 | 20071116 | 332.71281 | 32.11585  | 56.11723  | 22.22746 | 0.1036370 | 1.9407286 | 21 | 1 | 33 days   | 0.35 |     |   | MPC |        | 2007 VB <sub>57</sub> |
| 2007 VD <sub>57</sub> | 17.3 | 0.15 | 20071027 | 343.28441 | 333.66034 | 98.51202  | 5.53930  | 0.1494156 | 2.5467226 | 19 | 1 | 46 days   | 0.35 |     |   | MPC |        | 2007 VD <sub>57</sub> |
| 2007 VF <sub>57</sub> | 16.6 | 0.15 | 20071027 | 4.06261   | 316.24100 | 89.55395  | 7.40426  | 0.1206068 | 2.8056985 | 28 | 1 | 45 days   | 0.35 |     |   | MPC |        | 2007 VF <sub>57</sub> |
| 2007 VG <sub>57</sub> | 16.1 | 0.15 | 20071027 | 305.65761 | 35.38799  | 78.83915  | 10.58720 | 0.0685012 | 3.1657468 | 16 | 1 | 24 days   | 0.18 |     |   | MPC |        | 2007 VG <sub>57</sub> |
| 2007 VO <sub>57</sub> | 16.4 | 0.15 | 20071027 | 250.58023 | 100.57160 | 71.29789  | 15.84710 | 0.0874144 | 2.8717222 | 18 | 1 | 19 days   | 0.30 |     |   | MPC |        | 2007 VO <sub>57</sub> |
| 2007 VR <sub>57</sub> | 16.4 | 0.15 | 20071116 | 44.04230  | 280.62244 | 69.00210  | 14.15312 | 0.2358469 | 2.7481181 | 43 | 1 | 34 days   | 0.54 |     |   | MPC |        | 2007 VR <sub>57</sub> |
| 2007 VS <sub>57</sub> | 16.8 | 0.15 | 20071116 | 330.70190 | 288.14452 | 169.01586 | 4.52069  | 0.1556500 | 2.6590392 | 31 | 1 | 33 days   | 0.39 |     |   | MPC |        | 2007 VS <sub>57</sub> |
| 2007 VT <sub>57</sub> | 18.8 | 0.15 | 20071027 | 14.93784  | 308.66367 | 76.52042  | 7.77638  | 0.1897089 | 2.1944166 | 19 | 1 | 19 days   | 0.44 |     |   | MPC |        | 2007 VT <sub>57</sub> |
| 2007 VV <sub>57</sub> | 15.4 | 0.15 | 20071027 | 103.27785 | 197.77813 | 112.53641 | 6.18304  | 0.0042097 | 2.9535979 | 52 | 4 | 2004–2007 | 0.42 | M-v | 1 | MPC | 128594 | 2007 VV <sub>57</sub> |
| 2007 VW <sub>57</sub> | 16.2 | 0.15 | 20071116 | 38.45255  | 215.97358 | 156.60696 | 4.77819  | 0.0865262 | 2.7912132 | 26 | 1 | 33 days   | 0.35 |     |   | MPC |        | 2007 VW <sub>57</sub> |
| 2007 VY <sub>57</sub> | 18.7 | 0.15 | 20071027 | 3.54443   | 210.72353 | 190.37010 | 5.21720  | 0.2432663 | 2.2920708 | 25 | 1 | 68 days   | 0.32 | M-v | 4 | MPC |        | 2007 VY <sub>57</sub> |
| 2007 VA <sub>58</sub> | 16.7 | 0.15 | 20071027 | 3.47076   | 231.86495 | 178.03008 | 5.55992  | 0.0302218 | 2.7201487 | 16 | 1 | 20 days   | 0.15 |     |   | MPC |        | 2007 VA <sub>58</sub> |
| 2007 VE <sub>58</sub> | 17.5 | 0.15 | 20071027 | 263.34343 | 10.54679  | 144.78868 | 4.09362  | 0.0577886 | 2.2808921 | 16 | 1 | 20 days   | 0.31 |     |   | MPC |        | 2007 VE <sub>58</sub> |
| 2007 VM <sub>58</sub> | 18.5 | 0.15 | 20071027 | 3.79907   | 103.30226 | 300.14359 | 2.04508  | 0.2093134 | 2.2885248 | 25 | 1 | 19 days   | 0.35 |     |   | MPC |        | 2007 VM <sub>58</sub> |
| 2007 VP <sub>58</sub> | 18.0 | 0.15 | 20071116 | 232.06694 | 309.10635 | 241.38652 | 19.51468 | 0.0529115 | 1.9463666 | 33 | 1 | 34 days   | 0.44 |     |   | MPC |        | 2007 VP <sub>58</sub> |
| 2007 VT <sub>58</sub> | 17.5 | 0.15 | 20071027 | 6.16945   | 3.47260   | 43.94829  | 13.05807 | 0.1256502 | 2.9166616 | 12 | 1 | 19 days   | 0.22 |     |   | MPC |        | 2007 VT <sub>58</sub> |
| 2007 VW <sub>58</sub> | 17.9 | 0.15 | 20071027 | 10.09825  | 18.09098  | 23.14133  | 4.84247  | 0.1186178 | 2.6485864 | 12 | 1 | 16 days   | 0.16 |     |   | MPC |        | 2007 VW <sub>58</sub> |
| 2007 VA <sub>59</sub> | 18.2 | 0.15 | 20071027 | 296.89548 | 210.06068 | 285.81586 | 2.80410  | 0.1757059 | 2.3455864 | 18 | 1 | 17 days   | 0.31 |     |   | MPC |        | 2007 VA <sub>59</sub> |
| 2007 VB <sub>59</sub> | 17.4 | 0.15 | 20071027 | 4.47379   | 0.96449   | 45.91727  | 14.27994 | 0.1596673 | 2.5774116 | 16 | 1 | 35 days   | 0.30 |     |   | MPC |        | 2007 VB <sub>59</sub> |
| 2007 VC <sub>59</sub> | 16.6 | 0.15 | 20071116 | 357.35261 | 65.58448  | 357.73744 | 3.13190  | 0.1286151 | 2.6204063 | 18 | 1 | 42 days   | 0.50 |     |   | MPC |        | 2007 VC <sub>59</sub> |
| 2007 VD <sub>59</sub> | 16.8 | 0.15 | 20071027 | 24.62236  | 120.90126 | 262.77488 | 6.44954  | 0.0941351 | 2.4198613 | 14 | 1 | 17 days   | 0.48 |     |   | MPC |        | 2007 VD <sub>59</sub> |
| 2007 VL <sub>59</sub> | 15.7 | 0.15 | 20071116 | 12.26335  | 36.16764  | 12.78335  | 3.43700  | 0.0577870 | 3.1996831 | 35 | 1 | 50 days   | 0.56 |     |   | MPC |        | 2007 VL <sub>59</sub> |
| 2007 VM <sub>59</sub> | 18.3 | 0.15 | 20071027 | 35.12392  | 98.46843  | 247.81419 | 5.90435  | 0.3137871 | 2.1706062 | 17 | 1 | 17 days   | 0.39 |     |   | MPC |        | 2007 VM <sub>59</sub> |
| 2007 VV <sub>59</sub> | 17.2 | 0.15 | 20071027 | 56.15212  | 306.88411 | 7.91724   | 6.18108  | 0.1625895 | 2.7070906 | 23 | 1 | 7 days    | 0.47 |     |   | MPC |        | 2007 VV <sub>59</sub> |
| 2007 VA <sub>60</sub> | 16.6 | 0.15 | 20071027 | 9.70191   | 120.20384 | 265.98507 | 6.27619  | 0.2227403 | 3.0304833 | 33 | 1 | 41 days   | 0.60 |     |   | MPC |        | 2007 VA <sub>60</sub> |



|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|------------------------------|
| 2007 VB <sub>60</sub> | 16.3 | 0.15 | 20071027 | 39.29985  | 93.46971  | 251.51831 | 12.01963 | 0.2106809 | 2.9129102 | 34 | 1 | 55 days   | 0.52 |       | MPC | 2007 VB <sub>60</sub>        |
| 2007 VC <sub>60</sub> | 16.7 | 0.15 | 20071027 | 18.70946  | 111.56182 | 257.36799 | 8.79741  | 0.2928317 | 3.1673892 | 31 | 1 | 30 days   | 0.67 |       | MPC | 2007 VC <sub>60</sub>        |
| 2007 VJ <sub>60</sub> | 15.5 | 0.15 | 20071116 | 257.05329 | 144.05498 | 45.13188  | 11.13408 | 0.2314885 | 2.5803070 | 33 | 1 | 50 days   | 0.48 |       | MPC | 2007 VJ <sub>60</sub>        |
| 2007 VK <sub>60</sub> | 16.1 | 0.15 | 20071027 | 315.77480 | 112.72928 | 2.79336   | 3.25597  | 0.1706985 | 2.5534144 | 34 | 1 | 111 days  | 0.44 | M-v 4 | MPC | 2007 VK <sub>60</sub>        |
| 2007 VL <sub>60</sub> | 18.0 | 0.15 | 20071116 | 339.29691 | 204.65390 | 238.95641 | 18.53894 | 0.0833554 | 1.9051599 | 26 | 1 | 35 days   | 0.40 |       | MPC | 2007 VL <sub>60</sub>        |
| 2007 VN <sub>60</sub> | 16.0 | 0.15 | 20071027 | 19.03172  | 358.30999 | 30.16860  | 4.59796  | 0.1684520 | 2.6257121 | 68 | 5 | 1994-2007 | 0.46 | M-v 1 | MPC | 128594 2007 VN <sub>60</sub> |
| 2007 VW <sub>60</sub> | 16.6 | 0.15 | 20071027 | 335.10692 | 202.09689 | 240.08109 | 21.43356 | 0.0697504 | 2.5865079 | 20 | 1 | 44 days   | 0.26 |       | MPC | 2007 VW <sub>60</sub>        |
| 2007 VC <sub>61</sub> | 17.7 | 0.15 | 20071027 | 344.59256 | 185.18584 | 249.15690 | 5.51500  | 0.1716132 | 2.5649275 | 20 | 1 | 14 days   | 0.38 |       | MPC | 2007 VC <sub>61</sub>        |
| 2007 VH <sub>61</sub> | 17.3 | 0.15 | 20071116 | 335.23086 | 206.63547 | 245.90216 | 10.70755 | 0.1424800 | 2.6100666 | 23 | 1 | 35 days   | 0.24 |       | MPC | 2007 VH <sub>61</sub>        |
| 2007 VJ <sub>61</sub> | 18.0 | 0.15 | 20071027 | 4.59824   | 130.02397 | 273.56527 | 1.82441  | 0.2155211 | 2.4647776 | 35 | 2 | 2003-2007 | 0.42 | M-v 4 | MPC | 128595 2007 VJ <sub>61</sub> |
| 2007 VN <sub>61</sub> | 17.5 | 0.15 | 20071116 | 19.11211  | 359.81629 | 30.33415  | 3.62704  | 0.2022164 | 2.3735959 | 22 | 1 | 33 days   | 0.49 |       | MPC | 2007 VN <sub>61</sub>        |
| 2007 VP <sub>61</sub> | 16.8 | 0.15 | 20071116 | 347.77932 | 195.15883 | 247.20456 | 5.43949  | 0.2915183 | 2.5859425 | 35 | 1 | 34 days   | 0.40 |       | MPC | 2007 VP <sub>61</sub>        |
| 2007 VQ <sub>61</sub> | 16.7 | 0.15 | 20071116 | 357.94151 | 122.70585 | 300.15491 | 1.42854  | 0.1221036 | 2.6070538 | 23 | 1 | 43 days   | 0.51 |       | MPC | 2007 VQ <sub>61</sub>        |
| 2007 VU <sub>61</sub> | 16.2 | 0.15 | 20071027 | 346.40008 | 60.99935  | 13.06031  | 2.38392  | 0.1131983 | 3.0706299 | 16 | 1 | 28 days   | 0.26 |       | MPC | 2007 VU <sub>61</sub>        |
| 2007 VV <sub>61</sub> | 16.7 | 0.15 | 20071027 | 283.64852 | 119.93456 | 40.53278  | 5.77411  | 0.2410950 | 2.5546072 | 18 | 1 | 65 days   | 0.25 | M-v 5 | MPC | 2007 VV <sub>61</sub>        |
| 2007 VW <sub>61</sub> | 17.3 | 0.15 | 20071027 | 337.68763 | 44.38230  | 51.94836  | 19.10471 | 0.3166839 | 2.8444450 | 36 | 2 | 2002-2007 | 0.34 | M-v 4 | MPC | 128595 2007 VW <sub>61</sub> |
| 2007 VY <sub>61</sub> | 18.4 | 0.15 | 20071027 | 16.75238  | 341.59233 | 47.28843  | 11.24761 | 0.1647034 | 2.3208185 | 15 | 1 | 19 days   | 0.22 |       | MPC | 2007 VY <sub>61</sub>        |
| 2007 VC <sub>62</sub> | 15.4 | 0.15 | 20071027 | 215.71965 | 314.16150 | 253.65121 | 8.94446  | 0.0593280 | 3.2206010 | 24 | 3 | 2004-2007 | 0.38 | M-v 3 | MPC | 128595 2007 VC <sub>62</sub> |
| 2007 VF <sub>62</sub> | 17.2 | 0.15 | 20071027 | 3.03113   | 358.09991 | 50.23256  | 17.60008 | 0.2561218 | 2.7677963 | 19 | 1 | 35 days   | 0.42 |       | MPC | 2007 VF <sub>62</sub>        |
| 2007 VK <sub>62</sub> | 18.1 | 0.15 | 20071027 | 5.56749   | 356.81451 | 50.24356  | 15.00049 | 0.1598476 | 2.5496273 | 16 | 1 | 19 days   | 0.29 |       | MPC | 2007 VK <sub>62</sub>        |
| 2007 VN <sub>62</sub> | 15.4 | 0.15 | 20071116 | 16.81668  | 345.46314 | 56.43429  | 23.80286 | 0.1172684 | 3.0846386 | 31 | 1 | 33 days   | 0.49 |       | MPC | 2007 VN <sub>62</sub>        |
| 2007 VX <sub>62</sub> | 17.8 | 0.15 | 20071027 | 20.63677  | 90.48696  | 293.71966 | 1.32911  | 0.1680639 | 2.2939499 | 19 | 1 | 16 days   | 0.50 |       | MPC | 2007 VX <sub>62</sub>        |
| 2007 VY <sub>62</sub> | 15.9 | 0.15 | 20071027 | 36.27846  | 128.49494 | 239.56113 | 6.82680  | 0.1850425 | 3.0491231 | 25 | 1 | 81 days   | 0.34 | M-v 5 | MPC | 2007 VY <sub>62</sub>        |
| 2007 VZ <sub>62</sub> | 16.1 | 0.15 | 20071116 | 92.67820  | 60.52728  | 254.20540 | 0.10623  | 0.1641053 | 3.1030579 | 20 | 1 | 33 days   | 0.34 |       | MPC | 2007 VZ <sub>62</sub>        |
| 2007 VA <sub>63</sub> | 16.6 | 0.15 | 20071027 | 85.21589  | 66.29025  | 244.33814 | 3.41561  | 0.2135846 | 2.5646624 | 23 | 1 | 64 days   | 0.24 | M-v 5 | MPC | 2007 VA <sub>63</sub>        |
| 2007 VB <sub>63</sub> | 16.1 | 0.15 | 20071027 | 219.11647 | 142.32727 | 62.67589  | 5.77195  | 0.0425358 | 2.7600668 | 39 | 3 | 2004-2007 | 0.33 | M-v 3 | MPC | 128595 2007 VB <sub>63</sub> |
| 2007 VC <sub>63</sub> | 16.8 | 0.15 | 20071027 | 49.57134  | 291.18917 | 58.00626  | 10.37631 | 0.1906607 | 2.5485980 | 20 | 1 | 33 days   | 0.19 |       | MPC | 2007 VC <sub>63</sub>        |
| 2007 VN <sub>63</sub> | 17.5 | 0.15 | 20071027 | 12.89070  | 235.14464 | 164.71644 | 1.09698  | 0.0916978 | 2.3946865 | 32 | 4 | 1999-2007 | 0.25 | M-v 2 | MPC | 128596 2007 VN <sub>63</sub> |
| 2007 VP <sub>63</sub> | 17.1 | 0.15 | 20071116 | 307.46503 | 49.12825  | 76.81838  | 4.35824  | 0.1115218 | 2.4037304 | 23 | 1 | 34 days   | 0.36 |       | MPC | 2007 VP <sub>63</sub>        |
| 2007 VS <sub>63</sub> | 16.3 | 0.15 | 20071027 | 11.52644  | 324.83965 | 81.10282  | 4.23048  | 0.0582105 | 2.7689165 | 63 | 4 | 2000-2007 | 0.38 | M-v 1 | MPC | 128596 2007 VS <sub>63</sub> |
| 2007 VT <sub>63</sub> | 16.4 | 0.15 | 20071116 | 79.41963  | 240.59031 | 98.81911  | 2.04614  | 0.0658458 | 2.6311674 | 15 | 1 | 34 days   | 0.18 |       | MPC | 2007 VT <sub>63</sub>        |
| 2007 VV <sub>63</sub> | 17.4 | 0.15 | 20071116 | 2.51943   | 211.20481 | 209.71176 | 2.90732  | 0.1437896 | 2.3145163 | 34 | 1 | 33 days   | 0.38 |       | MPC | 2007 VV <sub>63</sub>        |
| 2007 VW <sub>63</sub> | 15.7 | 0.15 | 20071116 | 29.19835  | 319.34145 | 67.10266  | 14.17676 | 0.1569422 | 2.7582754 | 19 | 1 | 43 days   | 0.31 |       | MPC | 2007 VW <sub>63</sub>        |
| 2007 VZ <sub>63</sub> | 16.4 | 0.15 | 20071116 | 252.31613 | 283.82358 | 257.48041 | 8.28833  | 0.0559410 | 2.4194095 | 33 | 1 | 43 days   | 0.34 |       | MPC | 2007 VZ <sub>63</sub>        |
| 2007 VQ <sub>64</sub> | 17.3 | 0.15 | 20071116 | 16.27609  | 17.78056  | 25.78892  | 1.21685  | 0.1600474 | 2.4127866 | 22 | 1 | 33 days   | 0.40 |       | MPC | 2007 VQ <sub>64</sub>        |
| 2007 VT <sub>64</sub> | 17.0 | 0.15 | 20071116 | 358.21793 | 9.94522   | 59.97708  | 15.35589 | 0.1594816 | 2.5550573 | 30 | 1 | 43 days   | 0.51 |       | MPC | 2007 VT <sub>64</sub>        |
| 2007 VN <sub>65</sub> | 15.3 | 0.15 | 20071027 | 182.50986 | 291.91276 | 291.16919 | 4.98133  | 0.0609305 | 3.1979488 | 21 | 1 | 19 days   | 0.45 |       | MPC | 2007 VN <sub>65</sub>        |
| 2007 VP <sub>65</sub> | 18.5 | 0.15 | 20071007 | 341.92187 | 215.22358 | 196.93907 | 8.33789  | 0.3069736 | 2.5558532 | 19 | 1 | 36 days   | 0.26 |       | MPC | 2007 VP <sub>65</sub>        |
| 2007 VF <sub>66</sub> | 17.6 | 0.15 | 20071027 | 11.71827  | 236.68364 | 156.31766 | 2.78814  | 0.1458129 | 2.5832554 | 16 | 1 | 16 days   | 0.43 |       | MPC | 2007 VF <sub>66</sub>        |
| 2007 VK <sub>66</sub> | 16.3 | 0.15 | 20071027 | 213.19357 | 132.97642 | 68.65552  | 14.73981 | 0.0906269 | 2.6427344 | 16 | 1 | 16 days   | 0.34 |       | MPC | 2007 VK <sub>66</sub>        |
| 2007 VN <sub>66</sub> | 16.0 | 0.15 | 20071027 | 21.07858  | 268.55612 | 101.25098 | 15.00586 | 0.1467127 | 2.6781877 | 24 | 1 | 57 days   | 0.51 |       | MPC | 2007 VN <sub>66</sub>        |
| 2007 VS <sub>66</sub> | 16.6 | 0.15 | 20071027 | 6.23793   | 146.61854 | 261.17597 | 7.90771  | 0.1144447 | 3.2068671 | 17 | 1 | 27 days   | 0.28 |       | MPC | 2007 VS <sub>66</sub>        |
| 2007 VE <sub>67</sub> | 17.8 | 0.15 | 20071116 | 313.46994 | 216.13031 | 297.94955 | 0.15667  | 0.3600122 | 2.5136984 | 10 | 1 | 33 days   | 0.46 |       | MPC | 2007 VE <sub>67</sub>        |
| 2007 VM <sub>67</sub> | 17.5 | 0.15 | 20071027 | 329.98693 | 23.05669  | 45.39453  | 6.59495  | 0.1683492 | 2.5612112 | 19 | 1 | 35 days   | 0.15 |       | MPC | 2007 VM <sub>67</sub>        |
| 2007 VO <sub>67</sub> | 17.4 | 0.15 | 20071027 | 322.26277 | 227.04233 | 219.68570 | 13.14319 | 0.2367264 | 2.6516719 | 32 | 1 | 55 days   | 0.29 |       | MPC | 2007 VO <sub>67</sub>        |
| 2007 VR <sub>68</sub> | 17.4 | 0.15 | 20071027 | 134.34528 | 46.00287  | 222.69060 | 3.76232  | 0.0369103 | 2.6337700 | 12 | 1 | 17 days   | 0.20 |       | MPC | 2007 VR <sub>68</sub>        |
| 2007 VS <sub>70</sub> | 16.6 | 0.15 | 20071027 | 335.60116 | 7.58986   | 64.41152  | 5.85194  | 0.1004899 | 2.7102247 | 29 | 1 | 58 days   | 0.44 |       | MPC | 2007 VS <sub>70</sub>        |
| 2007 VH <sub>71</sub> | 17.6 | 0.15 | 20071027 | 278.98113 | 257.42361 | 228.85127 | 19.01340 | 0.0859490 | 1.9544489 | 25 | 1 | 45 days   | 0.54 |       | MPC | 2007 VH <sub>71</sub>        |
| 2007 VJ <sub>71</sub> | 17.7 | 0.15 | 20071116 | 262.95567 | 275.78295 | 248.93530 | 14.83888 | 0.0899162 | 1.8601971 | 28 | 1 | 31 days   | 0.56 |       | MPC | 2007 VJ <sub>71</sub>        |
| 2007 VK <sub>71</sub> | 18.0 | 0.15 | 20071027 | 339.68320 | 186.69522 | 229.67109 | 21.03679 | 0.0609776 | 1.8667331 | 34 | 1 | 57 days   | 0.60 |       | MPC | 2007 VK <sub>71</sub>        |
| 2007 VO <sub>71</sub> | 18.0 | 0.15 | 20071027 | 34.64398  | 313.41578 | 47.68829  | 21.83853 | 0.0382107 | 1.8625289 | 31 | 1 | 33 days   | 0.41 |       | MPC | 2007 VO <sub>71</sub>        |
| 2007 VR <sub>71</sub> | 17.4 | 0.15 | 20071027 | 336.99280 | 31.39283  | 52.66912  | 34.99245 | 0.2729443 | 2.6511304 | 25 | 1 | 18 days   | 0.53 |       | MPC | 2007 VR <sub>71</sub>        |
| 2007 VV <sub>71</sub> | 16.8 | 0.15 | 20071027 | 357.37118 | 5.41459   | 44.24560  | 25.24986 | 0.2538525 | 3.1324695 | 38 | 1 | 57 days   | 0.45 |       | MPC | 2007 VV <sub>71</sub>        |

|                       |      |      |          |           |           |           |           |           |           |    |   |           |      |        |       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|-----------|-----------|-----------|----|---|-----------|------|--------|-------|------------------------------|
| 2007 VW <sub>71</sub> | 17.7 | 0.15 | 20071027 | 342.02660 | 201.25249 | 221.33162 | 22.30851  | 0.2507170 | 2.2728164 | 25 | 1 | 53 days   | 0.56 |        | MPC   | 2007 VW <sub>71</sub>        |
| 2007 VE <sub>72</sub> | 15.3 | 0.15 | 20071027 | 37.40356  | 133.97973 | 240.62620 | 10.83874  | 0.1122207 | 3.1355058 | 42 | 1 | 50 days   | 0.44 |        | MPC   | 2007 VE <sub>72</sub>        |
| 2007 VH <sub>72</sub> | 15.5 | 0.15 | 20071027 | 65.65348  | 267.55568 | 62.92113  | 26.57557  | 0.2248494 | 3.1321563 | 60 | 5 | 2001-2007 | 0.46 | M-v 0  | MPC   | 128596 2007 VH <sub>72</sub> |
| 2007 VK <sub>72</sub> | 16.5 | 0.15 | 20071027 | 14.40525  | 336.60768 | 56.53937  | 11.94074  | 0.2251178 | 2.6300181 | 28 | 1 | 60 days   | 0.42 | M-v 4  | MPC   | 2007 VK <sub>72</sub>        |
| 2007 VN <sub>72</sub> | 18.0 | 0.15 | 20071116 | 24.53654  | 317.41939 | 52.76440  | 8.06252   | 0.3567860 | 2.3421965 | 27 | 1 | 33 days   | 0.47 |        | MPC   | 2007 VN <sub>72</sub>        |
| 2007 VS <sub>72</sub> | 16.1 | 0.15 | 20071116 | 10.09141  | 289.48099 | 125.47953 | 0.36505   | 0.0651109 | 2.8040853 | 25 | 1 | 34 days   | 0.37 |        | MPC   | 2007 VS <sub>72</sub>        |
| 2007 VV <sub>72</sub> | 16.4 | 0.15 | 20071116 | 29.19260  | 320.87271 | 63.74738  | 5.07188   | 0.1741874 | 2.6623884 | 24 | 1 | 33 days   | 0.34 |        | MPC   | 2007 VV <sub>72</sub>        |
| 2007 VL <sub>73</sub> | 17.6 | 0.15 | 20071116 | 305.28551 | 263.13011 | 240.53334 | 21.83353  | 0.2374431 | 2.2457226 | 20 | 1 | 32 days   | 0.50 |        | MPC   | 2007 VL <sub>73</sub>        |
| 2007 VM <sub>73</sub> | 16.9 | 0.15 | 20071027 | 353.51020 | 175.50082 | 250.36552 | 2.65171   | 0.2669317 | 2.5672422 | 47 | 2 | 2003-2007 | 0.41 | M-v 3  | MPC   | 128596 2007 VM <sub>73</sub> |
| 2007 VS <sub>73</sub> | 16.4 | 0.15 | 20071116 | 298.08594 | 270.07774 | 244.86163 | 14.66555  | 0.2455890 | 2.6320500 | 24 | 1 | 33 days   | 0.39 |        | MPC   | 2007 VS <sub>73</sub>        |
| 2007 VU <sub>73</sub> | 17.4 | 0.15 | 20071027 | 331.64864 | 20.22972  | 58.52807  | 6.37591   | 0.1091873 | 2.2212419 | 41 | 1 | 56 days   | 0.54 |        | MPC   | 2007 VU <sub>73</sub>        |
| 2007 VA <sub>74</sub> | 17.0 | 0.15 | 20071027 | 281.86515 | 87.64323  | 38.72950  | 7.44593   | 0.1912693 | 2.6773000 | 28 | 1 | 61 days   | 0.31 | M-v 4  | MPC   | 2007 VA <sub>74</sub>        |
| 2007 VB <sub>74</sub> | 17.3 | 0.15 | 20071007 | 19.04126  | 321.94514 | 34.53394  | 8.35138   | 0.1371103 | 2.9857967 | 25 | 1 | 57 days   | 0.33 |        | MPC   | 2007 VB <sub>74</sub>        |
| 2007 VG <sub>74</sub> | 17.7 | 0.15 | 20071027 | 322.54100 | 20.77909  | 63.44375  | 2.00876   | 0.0590407 | 2.6845203 | 11 | 1 | 14 days   | 0.31 |        | MPC   | 2007 VG <sub>74</sub>        |
| 2007 VZ <sub>74</sub> | 16.1 | 0.15 | 20071116 | 297.70018 | 264.97484 | 217.77918 | 7.74749   | 0.1105534 | 2.7468027 | 31 | 1 | 32 days   | 0.51 |        | MPC   | 2007 VZ <sub>74</sub>        |
| 2007 VK <sub>75</sub> | 18.1 | 0.15 | 20071027 | 19.26988  | 309.89493 | 63.53899  | 3.98938   | 0.1896434 | 2.2418774 | 29 | 1 | 40 days   | 0.51 |        | MPC   | 2007 VK <sub>75</sub>        |
| 2007 VV <sub>75</sub> | 16.8 | 0.15 | 20071116 | 10.10707  | 319.25305 | 78.74595  | 3.19278   | 0.0863096 | 2.8939582 | 17 | 1 | 32 days   | 0.33 |        | MPC   | 2007 VV <sub>75</sub>        |
| 2007 VY <sub>75</sub> | 18.1 | 0.15 | 20071027 | 30.87838  | 298.24122 | 59.77531  | 5.37090   | 0.1921080 | 2.2912653 | 30 | 1 | 56 days   | 0.34 |        | MPC   | 2007 VY <sub>75</sub>        |
| 2007 VZ <sub>75</sub> | 15.8 | 0.15 | 20071027 | 321.55130 | 5.95744   | 89.62146  | 2.77949   | 0.1377956 | 3.1036892 | 35 | 1 | 81 days   | 0.63 | M-v 4  | MPC   | 2007 VZ <sub>75</sub>        |
| 2007 VJ <sub>76</sub> | 16.7 | 0.15 | 20071027 | 24.87168  | 313.90608 | 57.36986  | 10.91953  | 0.1595590 | 2.9844171 | 13 | 1 | 11 days   | 0.48 |        | MPC   | 2007 VJ <sub>76</sub>        |
| 2007 VM <sub>76</sub> | 17.5 | 0.15 | 20071027 | 20.82613  | 308.48055 | 63.77967  | 4.67540   | 0.1983134 | 2.4293931 | 36 | 1 | 56 days   | 0.61 |        | MPC   | 2007 VM <sub>76</sub>        |
| 2007 VD <sub>77</sub> | 17.8 | 0.15 | 20071027 | 355.80162 | 359.34143 | 53.09394  | 7.64112   | 0.1255871 | 2.6966426 | 23 | 1 | 36 days   | 0.32 |        | MPC   | 2007 VD <sub>77</sub>        |
| 2007 VG <sub>77</sub> | 17.3 | 0.15 | 20071116 | 270.86543 | 93.70720  | 55.72688  | 8.01069   | 0.0627648 | 2.5397231 | 16 | 1 | 32 days   | 0.30 |        | MPC   | 2007 VG <sub>77</sub>        |
| 2007 VB <sub>78</sub> | 18.7 | 0.15 | 20071116 | 345.74423 | 3.51812   | 68.51684  | 2.31825   | 0.1622793 | 2.3679323 | 16 | 1 | 32 days   | 0.25 |        | MPC   | 2007 VB <sub>78</sub>        |
| 2007 VE <sub>78</sub> | 15.5 | 0.15 | 20071027 | 352.12482 | 0.38050   | 56.21215  | 13.39940  | 0.0558269 | 3.0524289 | 55 | 1 | 64 days   | 0.60 | M-v 4  | MPC   | 2007 VE <sub>78</sub>        |
| 2007 VN <sub>78</sub> | 17.1 | 0.15 | 20071027 | 44.03605  | 120.72443 | 223.48650 | 11.99451  | 0.1959853 | 2.6948557 | 16 | 1 | 31 days   | 0.29 |        | MPC   | 2007 VN <sub>78</sub>        |
| 2007 VD <sub>79</sub> | 16.9 | 0.15 | 20071027 | 356.99882 | 247.77688 | 164.20327 | 0.87149   | 0.1518393 | 3.0366475 | 44 | 1 | 59 days   | 0.37 |        | MPC   | 2007 VD <sub>79</sub>        |
| 2007 VR <sub>79</sub> | 15.9 | 0.15 | 20071027 | 20.30663  | 330.10643 | 55.41387  | 22.22326  | 0.0770726 | 3.2293101 | 23 | 1 | 56 days   | 0.26 |        | MPC   | 2007 VR <sub>79</sub>        |
| 2007 VT <sub>79</sub> | 17.1 | 0.15 | 20071027 | 338.39786 | 24.27863  | 58.22787  | 14.49420  | 0.0739758 | 2.6971930 | 16 | 1 | 14 days   | 0.27 |        | MPC   | 2007 VT <sub>79</sub>        |
| 2007 VU <sub>79</sub> | 16.7 | 0.15 | 20071116 | 72.89521  | 101.09875 | 243.38351 | 5.49133   | 0.0508869 | 2.7752054 | 17 | 1 | 31 days   | 0.24 |        | MPC   | 2007 VU <sub>79</sub>        |
| 2007 VW <sub>79</sub> | 17.3 | 0.15 | 20071027 | 51.74886  | 100.09815 | 235.27717 | 1.72178   | 0.2718916 | 2.6221707 | 16 | 1 | 15 days   | 0.39 |        | MPC   | 2007 VW <sub>79</sub>        |
| 2007 VX <sub>79</sub> | 16.2 | 0.15 | 20071027 | 57.25639  | 91.68141  | 265.53674 | 1.43665   | 0.0517070 | 2.9626390 | 19 | 1 | 33 days   | 0.17 |        | MPC   | 2007 VX <sub>79</sub>        |
| 2007 VD <sub>80</sub> | 17.2 | 0.15 | 20071116 | 356.40849 | 186.93638 | 241.54427 | 15.45292  | 0.1954584 | 3.0931654 | 20 | 1 | 30 days   | 0.33 |        | MPC   | 2007 VD <sub>80</sub>        |
| 2007 VK <sub>80</sub> | 15.4 | 0.15 | 20071027 | 241.50089 | 315.83414 | 245.19355 | 4.48126   | 0.2541900 | 2.6227805 | 29 | 1 | 50 days   | 0.46 |        | MPC   | 2007 VK <sub>80</sub>        |
| 2007 VN <sub>80</sub> | 15.3 | 0.15 | 20071027 | 245.69823 | 338.35384 | 217.95198 | 0.65194   | 0.2106454 | 3.1615263 | 11 | 1 | 19 days   | 0.48 |        | MPC   | 2007 VN <sub>80</sub>        |
| 2007 VY <sub>81</sub> | 17.9 | 0.15 | 20071027 | 333.09159 | 30.41098  | 48.92640  | 3.22996   | 0.1567540 | 2.4178958 | 20 | 1 | 16 days   | 0.51 |        | MPC   | 2007 VY <sub>81</sub>        |
| 2007 VD <sub>82</sub> | 17.9 | 0.15 | 20071027 | 356.97870 | 346.95069 | 59.44686  | 2.27530   | 0.1733423 | 2.3578923 | 30 | 1 | 28 days   | 0.55 |        | MPC   | 2007 VD <sub>82</sub>        |
| 2007 VT <sub>82</sub> | 18.3 | 0.15 | 20071027 | 44.33496  | 284.53961 | 48.16641  | 23.68259  | 0.2630865 | 2.3500450 | 17 | 1 | 15 days   | 0.23 |        | MPC   | 2007 VT <sub>82</sub>        |
| 2007 VC <sub>83</sub> | 21.0 | 0.15 | 20071116 | 13.67626  | 264.38658 | 122.58784 | 1.26528   | 0.2349077 | 1.9867758 | 12 | 1 | 5 days    | 0.56 |        | D MPC | 2007 VC <sub>83</sub>        |
| 2007 VU <sub>83</sub> | 25.3 | 0.15 | 20071027 | 3.04400   | 269.23543 | 106.96459 | 0.59205   | 0.5823425 | 2.3467288 | 34 | 1 | 24 days   | 0.53 | M-v 7  | MPC   | 129039 2007 VU <sub>83</sub> |
| 2007 VW <sub>83</sub> | 24.1 | 0.15 | 20071027 | 198.05193 | 163.50577 | 39.31051  | 7.14091   | 0.2188242 | 0.9005237 | 20 | 1 | 23 days   | 0.60 | M-v 8  | MPC   | 129039 2007 VW <sub>83</sub> |
| 2007 VY <sub>83</sub> | 16.9 | 0.15 | 20071027 | 17.35142  | 321.85298 | 63.68804  | 5.99321   | 0.2046006 | 2.5571085 | 58 | 2 | 2003-2007 | 0.47 | M-v 4  | MPC   | 128596 2007 VY <sub>83</sub> |
| 2007 VZ <sub>83</sub> | 17.3 | 0.15 | 20071027 | 29.10068  | 290.75741 | 79.00380  | 2.34296   | 0.1839292 | 2.2360568 | 47 | 4 | 2002-2007 | 0.42 | M-v 2  | MPC   | 128597 2007 VZ <sub>83</sub> |
| 2007 VA <sub>84</sub> | 15.8 | 0.15 | 20071027 | 318.82979 | 331.36693 | 130.62237 | 10.12476  | 0.1208667 | 3.0019407 | 23 | 1 | 15 days   | 0.48 |        | MPC   | 2007 VA <sub>84</sub>        |
| 2007 VC <sub>84</sub> | 16.3 | 0.15 | 20071027 | 28.73978  | 11.72115  | 351.50721 | 2.90441   | 0.2707554 | 2.5723705 | 63 | 1 | 147 days  | 0.43 | M-v 3  | MPC   | 2007 VC <sub>84</sub>        |
| 2007 VD <sub>84</sub> | 16.8 | 0.15 | 20071027 | 8.07611   | 187.07008 | 218.13113 | 4.30748   | 0.3011775 | 2.5886296 | 39 | 1 | 114 days  | 0.38 | M-v 4  | MPC   | 2007 VD <sub>84</sub>        |
| 2007 VF <sub>84</sub> | 15.4 | 0.15 | 20071027 | 341.81250 | 143.83439 | 282.67108 | 8.81364   | 0.0390057 | 3.1884861 | 49 | 4 | 2001-2007 | 0.55 | M-v 1  | MPC   | 128597 2007 VF <sub>84</sub> |
| 2007 VT <sub>84</sub> | 18.0 | 0.15 | 20071027 | 57.21892  | 273.38818 | 59.09230  | 24.05291  | 0.1617461 | 1.8910796 | 48 | 1 | 65 days   | 0.49 | M-v 4  | MPC   | 2007 VT <sub>84</sub>        |
| 2007 VU <sub>84</sub> | 17.1 | 0.15 | 20071027 | 36.69509  | 114.31447 | 239.89436 | 1.67801   | 0.1515422 | 2.7343000 | 33 | 1 | 63 days   | 0.41 | M-v 4D | MPC   | 2007 VU <sub>84</sub>        |
| 2007 VW <sub>84</sub> | 15.6 | 0.15 | 20071116 | 2.76922   | 310.21313 | 114.01780 | 14.44489  | 0.1821993 | 2.7998496 | 15 | 1 | 27 days   | 0.28 |        | MPC   | 2007 VW <sub>84</sub>        |
| 2007 VX <sub>84</sub> | 17.6 | 0.15 | 20071027 | 358.41066 | 343.54467 | 58.37316  | 7.22449   | 0.2391819 | 2.3574921 | 48 | 2 | 2006-2007 | 0.80 | M-v 4  | MPC   | 128597 2007 VX <sub>84</sub> |
| 2007 VY <sub>84</sub> | 15.3 | 0.15 | 20071027 | 9.83532   | 9.60675   | 31.15560  | 8.08723   | 0.2264108 | 3.0467348 | 51 | 1 | 111 days  | 0.38 | M-v 3  | MPC   | 2007 VY <sub>84</sub>        |
| 2007 VA <sub>85</sub> | 15.1 | 0.15 | 20071027 | 10.58374  | 25.33408  | 115.34577 | 132.48355 | 0.7347157 | 4.1521088 | 74 | 1 | 27 days   | 0.44 | M-v 6  | MPC   | 129039 2007 VA <sub>85</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |     |                       |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|-----|-----------------------|------------------------------|
| 2007 VQ <sub>85</sub> | 16.7 | 0.15 | 20071027 | 15.86013  | 137.13482 | 230.30366 | 13.28527 | 0.1997167 | 2.6680884 | 61 | 1 | 41 days   | 0.46 | D   | MPC | 2007 VQ <sub>85</sub> |                              |
| 2007 VV <sub>86</sub> | 17.7 | 0.15 | 20071027 | 15.32004  | 71.26446  | 302.83698 | 3.68145  | 0.2363779 | 2.3316611 | 26 | 1 | 27 days   | 0.52 |     | MPC | 2007 VV <sub>86</sub> |                              |
| 2007 VW <sub>86</sub> | 15.8 | 0.15 | 20071027 | 326.80917 | 109.17906 | 340.96450 | 7.12619  | 0.1890639 | 3.0602393 | 62 | 4 | 1993–2007 | 0.46 | M-v | 2   | MPC                   | 128597 2007 VW <sub>86</sub> |
| 2007 VY <sub>86</sub> | 17.2 | 0.15 | 20071027 | 359.34063 | 130.20594 | 272.05321 | 6.30508  | 0.0970826 | 2.3246986 | 26 | 1 | 18 days   | 0.57 |     | MPC | 2007 VY <sub>86</sub> |                              |
| 2007 VA <sub>87</sub> | 16.6 | 0.15 | 20071027 | 6.46692   | 144.83830 | 248.77579 | 11.12269 | 0.1193245 | 2.6206536 | 24 | 1 | 17 days   | 0.71 |     | MPC | 2007 VA <sub>87</sub> |                              |
| 2007 VC <sub>87</sub> | 17.0 | 0.15 | 20071027 | 351.58096 | 174.77078 | 241.68583 | 12.18388 | 0.2727914 | 2.6432477 | 52 | 1 | 59 days   | 0.56 |     | MPC | 2007 VC <sub>87</sub> |                              |
| 2007 VH <sub>87</sub> | 18.3 | 0.15 | 20071116 | 6.23182   | 87.59637  | 315.16863 | 4.23205  | 0.2418333 | 2.3023809 | 31 | 1 | 32 days   | 0.52 |     | MPC | 2007 VH <sub>87</sub> |                              |
| 2007 VJ <sub>87</sub> | 14.9 | 0.15 | 20071027 | 4.26725   | 8.25604   | 36.54752  | 23.43037 | 0.1254939 | 3.0828974 | 44 | 1 | 85 days   | 0.36 | M-v | 3   | MPC                   | 2007 VJ <sub>87</sub>        |
| 2007 VK <sub>87</sub> | 15.4 | 0.15 | 20071027 | 352.25973 | 21.34482  | 39.85092  | 28.71290 | 0.1681799 | 3.1125314 | 32 | 1 | 84 days   | 0.51 | M-v | 4   | MPC                   | 2007 VK <sub>87</sub>        |
| 2007 VM <sub>87</sub> | 16.5 | 0.15 | 20071116 | 323.24018 | 217.75573 | 249.64804 | 12.20659 | 0.2039866 | 2.6253251 | 44 | 1 | 42 days   | 0.63 |     | MPC | 2007 VM <sub>87</sub> |                              |
| 2007 VP <sub>87</sub> | 14.8 | 0.15 | 20071116 | 101.82509 | 13.16986  | 292.24780 | 7.87565  | 0.0267711 | 3.0922255 | 23 | 1 | 30 days   | 0.52 |     | MPC | 2007 VP <sub>87</sub> |                              |
| 2007 VT <sub>87</sub> | 16.1 | 0.15 | 20071116 | 322.34146 | 86.33934  | 24.37900  | 10.07367 | 0.2157442 | 2.6114331 | 29 | 1 | 30 days   | 0.47 |     | MPC | 2007 VT <sub>87</sub> |                              |
| 2007 VW <sub>87</sub> | 15.9 | 0.15 | 20071116 | 32.62241  | 72.87824  | 285.54794 | 6.45162  | 0.2873402 | 3.0794744 | 46 | 1 | 41 days   | 0.58 |     | MPC | 2007 VW <sub>87</sub> |                              |
| 2007 VX <sub>87</sub> | 17.6 | 0.15 | 20071027 | 9.76497   | 91.18701  | 298.44218 | 4.23281  | 0.2287595 | 2.3940387 | 41 | 1 | 78 days   | 0.49 | M-v | 4   | MPC                   | 2007 VX <sub>87</sub>        |
| 2007 VZ <sub>87</sub> | 15.8 | 0.15 | 20071027 | 63.87793  | 357.93079 | 323.21968 | 6.53432  | 0.2262849 | 2.5609252 | 76 | 4 | 2003–2007 | 0.48 | M-v | 1   | MPC                   | 128597 2007 VZ <sub>87</sub> |
| 2007 VC <sub>88</sub> | 15.7 | 0.15 | 20071116 | 13.77308  | 102.77248 | 300.67367 | 5.36626  | 0.1136001 | 2.9718582 | 37 | 1 | 41 days   | 0.54 |     | MPC | 2007 VC <sub>88</sub> |                              |
| 2007 VH <sub>88</sub> | 17.6 | 0.15 | 20071116 | 13.21889  | 153.77395 | 250.49672 | 18.00373 | 0.0853168 | 1.9070422 | 37 | 1 | 32 days   | 0.55 |     | MPC | 2007 VH <sub>88</sub> |                              |
| 2007 VL <sub>88</sub> | 16.6 | 0.15 | 20071116 | 54.83007  | 64.51778  | 282.34368 | 6.76793  | 0.1383645 | 2.3187904 | 33 | 1 | 42 days   | 0.45 |     | MPC | 2007 VL <sub>88</sub> |                              |
| 2007 VM <sub>88</sub> | 15.0 | 0.15 | 20071116 | 133.53940 | 20.92597  | 260.23860 | 15.19709 | 0.0946221 | 2.6216163 | 41 | 1 | 41 days   | 0.51 |     | MPC | 2007 VM <sub>88</sub> |                              |
| 2007 VO <sub>88</sub> | 15.2 | 0.15 | 20071116 | 16.00799  | 138.50455 | 264.79340 | 16.77115 | 0.2431968 | 3.0439951 | 33 | 1 | 42 days   | 0.45 |     | MPC | 2007 VO <sub>88</sub> |                              |
| 2007 VY <sub>88</sub> | 15.1 | 0.15 | 20071116 | 305.09315 | 196.27590 | 279.76753 | 10.14503 | 0.0595392 | 3.0355525 | 33 | 1 | 32 days   | 0.58 |     | MPC | 2007 VY <sub>88</sub> |                              |
| 2007 VZ <sub>88</sub> | 16.5 | 0.15 | 20071027 | 353.20756 | 89.67007  | 337.39804 | 6.97842  | 0.4470598 | 3.1560761 | 27 | 1 | 55 days   | 0.31 |     | MPC | 2007 VZ <sub>88</sub> |                              |
| 2007 VA <sub>89</sub> | 15.1 | 0.15 | 20071116 | 19.17408  | 125.72544 | 261.39760 | 15.17022 | 0.2221276 | 3.0644158 | 28 | 1 | 40 days   | 0.49 |     | MPC | 2007 VA <sub>89</sub> |                              |
| 2007 VB <sub>89</sub> | 16.0 | 0.15 | 20071027 | 319.40690 | 218.05223 | 255.42237 | 23.01694 | 0.2086488 | 2.3212869 | 40 | 3 | 2001–2007 | 0.46 | M-v | 2   | MPC                   | 128598 2007 VB <sub>89</sub> |
| 2007 VE <sub>89</sub> | 17.3 | 0.15 | 20071027 | 321.48757 | 351.85902 | 96.45811  | 4.50799  | 0.1522438 | 2.4246216 | 21 | 1 | 33 days   | 0.46 |     | MPC | 2007 VE <sub>89</sub> |                              |
| 2007 VG <sub>89</sub> | 17.6 | 0.15 | 20071027 | 358.55900 | 318.98691 | 83.32762  | 3.66346  | 0.1905773 | 2.4502883 | 25 | 1 | 56 days   | 0.55 |     | MPC | 2007 VG <sub>89</sub> |                              |
| 2007 VH <sub>89</sub> | 16.0 | 0.15 | 20071027 | 5.83727   | 272.66581 | 119.99532 | 4.91741  | 0.2113456 | 3.0437822 | 31 | 1 | 37 days   | 0.52 |     | MPC | 2007 VH <sub>89</sub> |                              |
| 2007 VO <sub>89</sub> | 15.4 | 0.15 | 20071027 | 320.62342 | 38.30875  | 56.03768  | 18.73626 | 0.1544161 | 3.1943907 | 22 | 1 | 8 days    | 0.54 |     | MPC | 2007 VO <sub>89</sub> |                              |
| 2007 VP <sub>89</sub> | 17.0 | 0.15 | 20071027 | 321.79834 | 17.21638  | 74.95856  | 5.61818  | 0.1563596 | 2.3408464 | 20 | 1 | 57 days   | 0.42 |     | MPC | 2007 VP <sub>89</sub> |                              |
| 2007 VR <sub>89</sub> | 17.2 | 0.15 | 20071027 | 348.31835 | 357.47260 | 63.56172  | 8.16554  | 0.2565989 | 2.6661848 | 27 | 1 | 56 days   | 0.71 |     | MPC | 2007 VR <sub>89</sub> |                              |
| 2007 VT <sub>89</sub> | 15.8 | 0.15 | 20071027 | 345.57821 | 0.10924   | 61.26171  | 10.64523 | 0.0833468 | 3.0729433 | 20 | 1 | 9 days    | 0.82 |     | MPC | 2007 VT <sub>89</sub> |                              |
| 2007 VU <sub>89</sub> | 17.6 | 0.15 | 20071027 | 359.68428 | 255.55092 | 147.42843 | 2.35651  | 0.2758331 | 2.7169169 | 43 | 1 | 36 days   | 0.77 |     | MPC | 2007 VU <sub>89</sub> |                              |
| 2007 VW <sub>89</sub> | 15.0 | 0.15 | 20071116 | 340.91648 | 2.18419   | 70.18123  | 9.46246  | 0.0358426 | 3.0101698 | 36 | 1 | 34 days   | 0.55 |     | MPC | 2007 VW <sub>89</sub> |                              |
| 2007 VX <sub>89</sub> | 16.5 | 0.15 | 20071027 | 319.12346 | 232.46185 | 222.27285 | 21.19645 | 0.0814548 | 2.5512120 | 38 | 1 | 39 days   | 0.56 |     | MPC | 2007 VX <sub>89</sub> |                              |
| 2007 VY <sub>89</sub> | 15.3 | 0.15 | 20071027 | 282.63810 | 77.52964  | 72.39736  | 11.06425 | 0.1984803 | 3.1383336 | 21 | 1 | 16 days   | 0.45 |     | MPC | 2007 VY <sub>89</sub> |                              |
| 2007 VB <sub>90</sub> | 17.8 | 0.15 | 20071027 | 8.57204   | 196.90425 | 199.90896 | 4.08683  | 0.1700282 | 2.2250228 | 70 | 5 | 1997–2007 | 0.54 | M-v | 1   | MPC                   | 128598 2007 VB <sub>90</sub> |
| 2007 VC <sub>90</sub> | 16.1 | 0.15 | 20071027 | 350.17721 | 352.86003 | 72.95454  | 10.62602 | 0.1632454 | 2.8064934 | 38 | 1 | 47 days   | 0.50 |     | MPC | 2007 VC <sub>90</sub> |                              |
| 2007 VG <sub>90</sub> | 16.3 | 0.15 | 20071027 | 315.79202 | 23.64802  | 75.88210  | 6.83575  | 0.0960901 | 2.7066819 | 51 | 1 | 57 days   | 0.62 |     | MPC | 2007 VG <sub>90</sub> |                              |
| 2007 VH <sub>90</sub> | 17.4 | 0.15 | 20071027 | 350.72676 | 246.28038 | 170.63530 | 2.80244  | 0.0714703 | 2.2965947 | 23 | 1 | 16 days   | 0.40 |     | MPC | 2007 VH <sub>90</sub> |                              |
| 2007 VK <sub>90</sub> | 17.8 | 0.15 | 20071027 | 346.48108 | 342.40385 | 87.57854  | 4.14788  | 0.2025549 | 2.3393806 | 23 | 1 | 41 days   | 0.46 |     | MPC | 2007 VK <sub>90</sub> |                              |
| 2007 VL <sub>90</sub> | 15.2 | 0.15 | 20071116 | 71.90093  | 253.50766 | 84.90003  | 10.71342 | 0.1036832 | 3.0205041 | 24 | 1 | 30 days   | 0.57 |     | MPC | 2007 VL <sub>90</sub> |                              |
| 2007 VN <sub>90</sub> | 15.8 | 0.15 | 20071027 | 15.85678  | 330.53712 | 57.27892  | 12.11382 | 0.0530893 | 3.0031557 | 39 | 2 | 2005–2007 | 0.53 | M-v | 4   | MPC                   | 128598 2007 VN <sub>90</sub> |
| 2007 VP <sub>90</sub> | 15.0 | 0.15 | 20071027 | 321.85277 | 34.66107  | 55.26081  | 17.58285 | 0.0713734 | 3.1001052 | 56 | 1 | 56 days   | 0.41 |     | MPC | 2007 VP <sub>90</sub> |                              |
| 2007 VR <sub>90</sub> | 16.0 | 0.15 | 20071027 | 337.50565 | 14.49077  | 62.76785  | 2.73478  | 0.1047083 | 2.9499647 | 64 | 3 | 2002–2007 | 0.41 | M-v | 2   | MPC                   | 128598 2007 VR <sub>90</sub> |
| 2007 VU <sub>90</sub> | 15.8 | 0.15 | 20071027 | 346.71396 | 228.46846 | 204.27540 | 8.97839  | 0.2219198 | 3.1618242 | 38 | 1 | 65 days   | 0.47 | M-v | 4   | MPC                   | 2007 VU <sub>90</sub>        |
| 2007 VV <sub>90</sub> | 17.6 | 0.15 | 20071116 | 352.05518 | 298.90883 | 128.10857 | 3.89669  | 0.1184642 | 2.3278422 | 23 | 1 | 29 days   | 0.67 |     | MPC | 2007 VV <sub>90</sub> |                              |
| 2007 VW <sub>90</sub> | 17.6 | 0.15 | 20071027 | 10.72357  | 147.22303 | 231.78666 | 8.85729  | 0.2150077 | 2.5813063 | 31 | 1 | 25 days   | 0.52 |     | MPC | 2007 VW <sub>90</sub> |                              |
| 2007 VZ <sub>90</sub> | 16.2 | 0.15 | 20071116 | 44.07982  | 91.60298  | 257.93085 | 6.20559  | 0.2079800 | 2.6410645 | 73 | 1 | 56 days   | 0.48 |     | MPC | 2007 VZ <sub>90</sub> |                              |
| 2007 VA <sub>91</sub> | 17.8 | 0.15 | 20071116 | 345.67322 | 198.70553 | 235.28296 | 22.35477 | 0.1752804 | 2.2343632 | 53 | 1 | 34 days   | 0.45 |     | MPC | 2007 VA <sub>91</sub> |                              |
| 2007 VE <sub>91</sub> | 18.0 | 0.15 | 20071027 | 23.38172  | 206.06633 | 163.51402 | 7.33581  | 0.1219455 | 2.4415617 | 31 | 1 | 50 days   | 0.45 |     | MPC | 2007 VE <sub>91</sub> |                              |
| 2007 VJ <sub>91</sub> | 16.6 | 0.15 | 20071027 | 38.83774  | 332.42847 | 22.93450  | 8.31932  | 0.1650048 | 2.6450313 | 27 | 1 | 12 days   | 0.73 |     | MPC | 2007 VJ <sub>91</sub> |                              |
| 2007 VK <sub>91</sub> | 15.5 | 0.15 | 20071116 | 315.30922 | 216.06834 | 252.94723 | 20.74741 | 0.0621823 | 2.6513389 | 21 | 1 | 33 days   | 0.33 |     | MPC | 2007 VK <sub>91</sub> |                              |
| 2007 VL <sub>91</sub> | 16.7 | 0.15 | 20071027 | 38.44892  | 313.30231 | 40.86558  | 8.25911  | 0.2035107 | 2.6122620 | 38 | 1 | 86 days   | 0.39 | M-v | 4   | MPC                   | 2007 VL <sub>91</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                              |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|------------------------------|
| 2007 VN <sub>91</sub> | 17.2 | 0.15 | 20071027 | 339.97926 | 126.37758 | 306.05713 | 4.71418  | 0.1363443 | 2.2999421 | 31 | 1 | 54 days   | 0.46 |     | D | MPC | 2007 VN <sub>91</sub>        |
| 2007 VP <sub>91</sub> | 17.5 | 0.15 | 20071027 | 12.35180  | 35.73319  | 352.54611 | 2.39207  | 0.1863953 | 2.3422505 | 79 | 4 | 1996–2007 | 0.33 | M-v | 0 | MPC | 128599 2007 VP <sub>91</sub> |
| 2007 VQ <sub>91</sub> | 17.2 | 0.15 | 20071027 | 343.80940 | 83.53510  | 345.06298 | 2.73216  | 0.0765995 | 2.6422820 | 26 | 1 | 53 days   | 0.43 |     |   | MPC | 2007 VQ <sub>91</sub>        |
| 2007 VV <sub>91</sub> | 15.9 | 0.15 | 20071027 | 50.57363  | 115.11916 | 241.76349 | 10.67929 | 0.0607789 | 2.9298331 | 32 | 1 | 52 days   | 0.45 |     |   | MPC | 2007 VV <sub>91</sub>        |
| 2007 VW <sub>91</sub> | 15.3 | 0.15 | 20071027 | 167.97005 | 198.49761 | 46.95190  | 12.51879 | 0.0413372 | 3.1434505 | 26 | 1 | 85 days   | 0.43 | M-v | 4 | MPC | 2007 VW <sub>91</sub>        |
| 2007 VA <sub>92</sub> | 15.0 | 0.15 | 20071027 | 113.39641 | 45.04470  | 239.73473 | 28.68145 | 0.1661096 | 3.0957774 | 42 | 1 | 46 days   | 0.32 |     | D | MPC | 2007 VA <sub>92</sub>        |
| 2007 VB <sub>92</sub> | 17.7 | 0.15 | 20071027 | 355.31190 | 229.62411 | 187.43611 | 8.72065  | 0.1522418 | 2.5713200 | 25 | 1 | 27 days   | 0.38 |     |   | MPC | 2007 VB <sub>92</sub>        |
| 2007 VL <sub>92</sub> | 17.6 | 0.15 | 20071027 | 336.97067 | 60.53302  | 23.05321  | 10.43215 | 0.2158294 | 2.3990712 | 45 | 1 | 13 days   | 0.50 |     |   | MPC | 2007 VL <sub>92</sub>        |
| 2007 VM <sub>92</sub> | 16.4 | 0.15 | 20071116 | 30.50610  | 104.17049 | 257.39814 | 13.97384 | 0.2874883 | 2.7570748 | 40 | 1 | 41 days   | 0.56 |     |   | MPC | 2007 VM <sub>92</sub>        |
| 2007 VF <sub>93</sub> | 16.1 | 0.15 | 20071027 | 16.39739  | 103.37679 | 272.69725 | 10.37517 | 0.2127351 | 2.6433910 | 28 | 1 | 47 days   | 0.49 |     |   | MPC | 2007 VF <sub>93</sub>        |
| 2007 VJ <sub>93</sub> | 15.0 | 0.15 | 20071027 | 51.46605  | 51.38695  | 288.36964 | 11.27937 | 0.1449364 | 3.1018430 | 20 | 1 | 13 days   | 0.56 |     |   | MPC | 2007 VJ <sub>93</sub>        |
| 2007 VL <sub>93</sub> | 18.1 | 0.15 | 20071116 | 357.02522 | 169.19857 | 251.02532 | 13.76054 | 0.3851567 | 2.6091884 | 46 | 1 | 41 days   | 0.39 |     |   | MPC | 2007 VL <sub>93</sub>        |
| 2007 VN <sub>93</sub> | 14.4 | 0.15 | 20071116 | 315.25927 | 217.23231 | 271.05125 | 21.21385 | 0.1788109 | 3.1635468 | 20 | 1 | 31 days   | 0.44 |     |   | MPC | 2007 VN <sub>93</sub>        |
| 2007 VV <sub>93</sub> | 16.4 | 0.15 | 20071027 | 41.38068  | 86.49046  | 237.14177 | 23.07108 | 0.3197258 | 2.2889098 | 33 | 1 | 42 days   | 0.49 |     |   | MPC | 2007 VV <sub>93</sub>        |
| 2007 VX <sub>93</sub> | 18.4 | 0.15 | 20071027 | 13.45353  | 46.84776  | 336.89868 | 2.48052  | 0.2070567 | 2.4011476 | 32 | 1 | 33 days   | 0.48 |     |   | MPC | 2007 VX <sub>93</sub>        |
| 2007 VY <sub>93</sub> | 16.9 | 0.15 | 20071027 | 37.82914  | 131.91233 | 217.02818 | 1.86232  | 0.3076291 | 2.6041507 | 39 | 1 | 82 days   | 0.55 | M-v | 5 | MPC | 2007 VY <sub>93</sub>        |
| 2007 VZ <sub>93</sub> | 15.0 | 0.15 | 20071027 | 296.72325 | 182.31780 | 286.41805 | 8.86597  | 0.0596670 | 3.2012843 | 18 | 1 | 11 days   | 0.54 |     |   | MPC | 2007 VZ <sub>93</sub>        |
| 2007 VE <sub>94</sub> | 17.3 | 0.15 | 20071027 | 301.28504 | 213.55450 | 260.66120 | 4.49729  | 0.0762644 | 2.2138932 | 46 | 1 | 51 days   | 0.44 |     |   | MPC | 2007 VE <sub>94</sub>        |
| 2007 VF <sub>94</sub> | 15.2 | 0.15 | 20071027 | 2.11851   | 152.88837 | 255.11313 | 8.63515  | 0.0990546 | 3.2137403 | 79 | 4 | 2001–2007 | 0.37 | M-v | 1 | MPC | 128599 2007 VF <sub>94</sub> |
| 2007 VJ <sub>94</sub> | 17.3 | 0.15 | 20071116 | 24.99368  | 130.57050 | 251.79280 | 5.28873  | 0.1231929 | 2.7922719 | 18 | 1 | 30 days   | 0.44 |     |   | MPC | 2007 VJ <sub>94</sub>        |
| 2007 VP <sub>94</sub> | 16.9 | 0.15 | 20071027 | 4.34719   | 58.35221  | 345.41979 | 2.00396  | 0.1278234 | 2.5814197 | 37 | 2 | 2003–2007 | 0.55 | M-v | 5 | MPC | 128599 2007 VP <sub>94</sub> |
| 2007 VR <sub>94</sub> | 18.2 | 0.15 | 20071116 | 45.86702  | 324.08425 | 28.00681  | 1.36284  | 0.1782332 | 2.1537740 | 25 | 1 | 31 days   | 0.42 |     |   | MPC | 2007 VR <sub>94</sub>        |
| 2007 VY <sub>94</sub> | 16.9 | 0.15 | 20071027 | 346.13707 | 62.61659  | 4.89142   | 8.41836  | 0.2135399 | 2.7644933 | 32 | 1 | 67 days   | 0.49 | M-v | 4 | MPC | 2007 VY <sub>94</sub>        |
| 2007 VA <sub>95</sub> | 15.5 | 0.15 | 20071027 | 22.94830  | 71.09460  | 296.06628 | 8.24229  | 0.3196633 | 3.9651311 | 31 | 1 | 9 days    | 0.50 |     |   | MPC | 2007 VA <sub>95</sub>        |
| 2007 VC <sub>95</sub> | 15.2 | 0.15 | 20071027 | 206.69754 | 268.44298 | 288.46517 | 8.34845  | 0.0107914 | 3.0504619 | 27 | 1 | 10 days   | 0.55 |     |   | MPC | 2007 VC <sub>95</sub>        |
| 2007 VF <sub>95</sub> | 16.2 | 0.15 | 20071116 | 331.89405 | 142.28083 | 313.12635 | 5.83965  | 0.1151616 | 2.4264631 | 19 | 1 | 26 days   | 0.46 |     |   | MPC | 2007 VF <sub>95</sub>        |
| 2007 VH <sub>95</sub> | 16.7 | 0.15 | 20071027 | 333.37316 | 81.27509  | 1.06336   | 4.69443  | 0.1304814 | 2.7066971 | 29 | 1 | 15 days   | 0.57 |     |   | MPC | 2007 VH <sub>95</sub>        |
| 2007 VP <sub>95</sub> | 17.0 | 0.15 | 20071116 | 74.74686  | 290.79749 | 46.59988  | 21.30274 | 0.1037646 | 1.9463697 | 19 | 1 | 25 days   | 0.54 |     |   | MPC | 2007 VP <sub>95</sub>        |
| 2007 VR <sub>95</sub> | 15.9 | 0.15 | 20071116 | 18.93830  | 128.60734 | 265.60854 | 13.93656 | 0.1484817 | 2.8732516 | 29 | 1 | 35 days   | 0.65 |     |   | MPC | 2007 VR <sub>95</sub>        |
| 2007 VS <sub>95</sub> | 17.7 | 0.15 | 20071027 | 343.89291 | 190.43428 | 219.56027 | 12.82281 | 0.2234714 | 2.6300439 | 27 | 1 | 56 days   | 0.44 |     |   | MPC | 2007 VS <sub>95</sub>        |
| 2007 VT <sub>95</sub> | 18.7 | 0.15 | 20071027 | 2.24162   | 152.28944 | 247.74872 | 5.11397  | 0.3386301 | 2.5945436 | 36 | 1 | 56 days   | 0.39 |     |   | MPC | 2007 VT <sub>95</sub>        |
| 2007 VW <sub>95</sub> | 17.4 | 0.15 | 20071027 | 357.49106 | 267.03579 | 143.48221 | 5.94362  | 0.1449752 | 2.2357772 | 28 | 1 | 12 days   | 0.35 |     |   | MPC | 2007 VW <sub>95</sub>        |
| 2007 VY <sub>95</sub> | 18.1 | 0.15 | 20071116 | 334.56548 | 203.78528 | 250.44881 | 4.59954  | 0.2233791 | 2.6059990 | 18 | 1 | 32 days   | 0.40 |     |   | MPC | 2007 VY <sub>95</sub>        |
| 2007 VZ <sub>95</sub> | 17.8 | 0.15 | 20071027 | 35.15457  | 353.54375 | 0.84476   | 2.17474  | 0.2216465 | 2.5368738 | 13 | 1 | 11 days   | 0.43 |     |   | MPC | 2007 VZ <sub>95</sub>        |
| 2007 VA <sub>96</sub> | 17.8 | 0.15 | 20071027 | 47.75860  | 296.16414 | 43.76171  | 5.63250  | 0.1945587 | 2.2107516 | 51 | 2 | 2006–2007 | 0.46 | M-v | 4 | MPC | 128599 2007 VA <sub>96</sub> |
| 2007 VB <sub>96</sub> | 17.2 | 0.15 | 20071027 | 337.75041 | 47.95918  | 16.61574  | 13.89093 | 0.2905484 | 3.1689350 | 24 | 1 | 64 days   | 0.40 | M-v | 4 | MPC | 2007 VB <sub>96</sub>        |
| 2007 VC <sub>96</sub> | 17.4 | 0.15 | 20071116 | 352.99011 | 181.28511 | 217.17223 | 14.30103 | 0.1287115 | 2.6549184 | 19 | 1 | 29 days   | 0.27 |     |   | MPC | 2007 VC <sub>96</sub>        |
| 2007 VE <sub>96</sub> | 18.4 | 0.15 | 20071027 | 24.00178  | 279.39019 | 82.06890  | 4.69850  | 0.2386459 | 2.2871711 | 47 | 1 | 65 days   | 0.42 |     |   | MPC | 2007 VE <sub>96</sub>        |
| 2007 VF <sub>96</sub> | 16.4 | 0.15 | 20071027 | 9.03881   | 315.64461 | 77.14547  | 6.91522  | 0.0552677 | 2.6953223 | 36 | 1 | 61 days   | 0.43 | M-v | 4 | MPC | 2007 VF <sub>96</sub>        |
| 2007 VH <sub>96</sub> | 16.7 | 0.15 | 20071027 | 3.17361   | 23.81320  | 50.54539  | 15.34107 | 0.4271177 | 2.6934125 | 17 | 1 | 16 days   | 0.55 |     |   | MPC | 2007 VH <sub>96</sub>        |
| 2007 VL <sub>96</sub> | 17.6 | 0.15 | 20071007 | 350.48881 | 138.73171 | 267.67422 | 4.23473  | 0.2178572 | 2.3074730 | 33 | 1 | 55 days   | 0.52 |     |   | MPC | 2007 VL <sub>96</sub>        |
| 2007 VQ <sub>96</sub> | 16.8 | 0.15 | 20071027 | 344.14693 | 188.08883 | 242.64028 | 17.06842 | 0.1919056 | 3.1546553 | 31 | 1 | 56 days   | 0.34 |     |   | MPC | 2007 VQ <sub>96</sub>        |
| 2007 VR <sub>96</sub> | 18.2 | 0.15 | 20071116 | 14.50575  | 105.56258 | 288.76842 | 3.94294  | 0.1133228 | 2.2350483 | 18 | 1 | 34 days   | 0.17 |     |   | MPC | 2007 VR <sub>96</sub>        |
| 2007 VS <sub>96</sub> | 18.1 | 0.15 | 20071007 | 2.17996   | 45.73794  | 347.15998 | 4.07093  | 0.1732474 | 2.2336888 | 23 | 1 | 53 days   | 0.43 |     |   | MPC | 2007 VS <sub>96</sub>        |
| 2007 VM <sub>97</sub> | 16.5 | 0.15 | 20071027 | 73.42014  | 272.50990 | 39.55267  | 16.98991 | 0.2088562 | 3.0968100 | 15 | 1 | 37 days   | 0.22 |     |   | MPC | 2007 VM <sub>97</sub>        |
| 2007 VP <sub>97</sub> | 16.4 | 0.15 | 20071027 | 59.02946  | 306.40959 | 17.48968  | 4.88373  | 0.2312514 | 2.6217429 | 57 | 5 | 1960–2007 | 0.46 | M-v | 0 | MPC | 128599 2007 VP <sub>97</sub> |
| 2007 VR <sub>97</sub> | 19.7 | 0.15 | 20071027 | 356.74455 | 22.92705  | 28.59528  | 6.60649  | 0.3350912 | 2.6120325 | 16 | 1 | 19 days   | 0.21 |     |   | MPC | 2007 VR <sub>97</sub>        |
| 2007 VS <sub>97</sub> | 18.5 | 0.15 | 20071027 | 335.92139 | 182.59821 | 255.41465 | 5.17589  | 0.1254364 | 2.3254834 | 19 | 1 | 18 days   | 0.37 |     |   | MPC | 2007 VS <sub>97</sub>        |
| 2007 VV <sub>97</sub> | 15.9 | 0.15 | 20071116 | 27.25739  | 127.80596 | 251.47341 | 9.37448  | 0.1356559 | 3.1253384 | 19 | 1 | 35 days   | 0.42 |     |   | MPC | 2007 VV <sub>97</sub>        |
| 2007 VX <sub>97</sub> | 16.2 | 0.15 | 20071027 | 97.57586  | 37.74159  | 270.60396 | 4.40699  | 0.0517357 | 2.9251791 | 16 | 1 | 53 days   | 0.29 |     |   | MPC | 2007 VX <sub>97</sub>        |
| 2007 VA <sub>98</sub> | 17.6 | 0.15 | 20071027 | 34.55265  | 97.11647  | 237.75398 | 26.59641 | 0.4275321 | 2.5887456 | 21 | 1 | 27 days   | 0.38 |     |   | MPC | 2007 VA <sub>98</sub>        |
| 2007 VC <sub>98</sub> | 14.9 | 0.15 | 20071116 | 195.40580 | 348.38071 | 245.55648 | 12.69900 | 0.0349308 | 2.7086826 | 20 | 1 | 34 days   | 0.39 |     |   | MPC | 2007 VC <sub>98</sub>        |
| 2007 VK <sub>98</sub> | 16.7 | 0.15 | 20071027 | 316.64264 | 75.08830  | 16.12955  | 5.59410  | 0.0780580 | 2.5308728 | 23 | 1 | 30 days   | 0.41 |     |   | MPC | 2007 VK <sub>98</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 VN <sub>98</sub>  | 18.1 | 0.15 | 20071027 | 348.51906 | 179.67307 | 238.02075 | 11.72167 | 0.1824503 | 2.3856108 | 18 | 1 | 41 days   | 0.32 |       | MPC | 2007 VN <sub>98</sub>         |
| 2007 VP <sub>98</sub>  | 17.9 | 0.15 | 20071027 | 4.94004   | 147.34303 | 247.36375 | 5.38145  | 0.1851250 | 2.2601158 | 36 | 1 | 68 days   | 0.47 | M-v 4 | MPC | 2007 VP <sub>98</sub>         |
| 2007 VF <sub>99</sub>  | 17.5 | 0.15 | 20071027 | 318.96897 | 282.58369 | 168.08737 | 2.95128  | 0.1196851 | 2.2271588 | 30 | 3 | 2002-2007 | 0.50 | M-v 4 | MPC | 128600 2007 VF <sub>99</sub>  |
| 2007 VJ <sub>99</sub>  | 16.9 | 0.15 | 20071027 | 326.03119 | 205.40458 | 256.81272 | 14.76984 | 0.1852395 | 2.8069823 | 16 | 1 | 17 days   | 0.16 |       | MPC | 2007 VJ <sub>99</sub>         |
| 2007 VK <sub>99</sub>  | 16.4 | 0.15 | 20071027 | 343.43101 | 102.42122 | 333.08741 | 4.86361  | 0.1404649 | 2.5889975 | 21 | 1 | 18 days   | 0.43 |       | MPC | 2007 VK <sub>99</sub>         |
| 2007 VN <sub>99</sub>  | 17.1 | 0.15 | 20071116 | 343.26862 | 192.96279 | 255.02764 | 13.59793 | 0.2204607 | 2.6217483 | 27 | 1 | 42 days   | 0.42 |       | MPC | 2007 VN <sub>99</sub>         |
| 2007 VR <sub>99</sub>  | 17.4 | 0.15 | 20071027 | 356.81808 | 237.70314 | 175.42773 | 8.34034  | 0.1683711 | 3.1083610 | 21 | 1 | 15 days   | 0.19 |       | MPC | 2007 VR <sub>99</sub>         |
| 2007 VW <sub>99</sub>  | 16.9 | 0.15 | 20071116 | 9.75276   | 158.62829 | 246.47873 | 11.97037 | 0.2598492 | 2.5588829 | 34 | 1 | 33 days   | 0.32 |       | MPC | 2007 VW <sub>99</sub>         |
| 2007 VZ <sub>99</sub>  | 15.9 | 0.15 | 20071116 | 58.29878  | 305.87953 | 41.90918  | 7.30585  | 0.1693709 | 2.5862127 | 35 | 1 | 50 days   | 0.46 |       | MPC | 2007 VZ <sub>99</sub>         |
| 2007 VK <sub>100</sub> | 15.6 | 0.15 | 20071116 | 14.10305  | 157.04671 | 251.83965 | 16.79442 | 0.1033818 | 3.1700860 | 20 | 1 | 42 days   | 0.47 |       | MPC | 2007 VK <sub>100</sub>        |
| 2007 VN <sub>100</sub> | 16.0 | 0.15 | 20071116 | 8.92102   | 1.72483   | 53.46101  | 14.32792 | 0.0786726 | 2.6259098 | 22 | 1 | 41 days   | 0.30 |       | MPC | 2007 VN <sub>100</sub>        |
| 2007 VR <sub>100</sub> | 18.1 | 0.15 | 20071116 | 21.19429  | 10.97885  | 28.66850  | 3.12923  | 0.0699482 | 2.1733702 | 12 | 1 | 28 days   | 0.16 |       | MPC | 2007 VR <sub>100</sub>        |
| 2007 VX <sub>100</sub> | 16.5 | 0.15 | 20071116 | 62.82849  | 307.06286 | 42.65652  | 5.61600  | 0.1310407 | 2.7278620 | 12 | 1 | 38 days   | 0.36 |       | MPC | 2007 VX <sub>100</sub>        |
| 2007 VX <sub>101</sub> | 18.5 | 0.15 | 20071116 | 11.29062  | 137.06379 | 269.33602 | 2.25552  | 0.2336790 | 2.5326703 | 16 | 1 | 33 days   | 0.19 |       | MPC | 2007 VX <sub>101</sub>        |
| 2007 VY <sub>101</sub> | 16.1 | 0.15 | 20071116 | 23.71689  | 330.42319 | 75.31725  | 15.28919 | 0.2589188 | 2.6585895 | 22 | 1 | 38 days   | 0.25 |       | MPC | 2007 VY <sub>101</sub>        |
| 2007 VB <sub>102</sub> | 16.2 | 0.15 | 20071027 | 357.66080 | 202.12504 | 226.07122 | 1.97207  | 0.1595926 | 3.1069128 | 24 | 1 | 81 days   | 0.43 | M-v 4 | MPC | 2007 VB <sub>102</sub>        |
| 2007 VG <sub>102</sub> | 15.9 | 0.15 | 20071116 | 313.56751 | 73.60629  | 70.83545  | 11.34147 | 0.2536652 | 3.1426407 | 15 | 1 | 42 days   | 0.32 |       | MPC | 2007 VG <sub>102</sub>        |
| 2007 VM <sub>102</sub> | 17.7 | 0.15 | 20071116 | 1.42107   | 2.35827   | 60.99113  | 22.70538 | 0.0837205 | 1.8892516 | 20 | 1 | 32 days   | 0.40 |       | MPC | 2007 VM <sub>102</sub>        |
| 2007 VP <sub>102</sub> | 16.1 | 0.15 | 20071116 | 324.75007 | 6.43988   | 84.73292  | 3.29402  | 0.0768043 | 3.1079592 | 21 | 1 | 33 days   | 0.52 |       | MPC | 2007 VP <sub>102</sub>        |
| 2007 VU <sub>102</sub> | 18.6 | 0.15 | 20071027 | 65.81355  | 260.35927 | 44.57646  | 4.73942  | 0.1484259 | 2.2638730 | 28 | 3 | 2000-2007 | 0.40 | M-v 2 | MPC | 128600 2007 VU <sub>102</sub> |
| 2007 VU <sub>103</sub> | 18.8 | 0.15 | 20071027 | 11.08473  | 253.00733 | 130.03678 | 1.58161  | 0.2172487 | 2.2369672 | 21 | 1 | 60 days   | 0.33 | M-v 4 | MPC | 2007 VU <sub>103</sub>        |
| 2007 VV <sub>103</sub> | 17.7 | 0.15 | 20071027 | 310.45846 | 340.05076 | 128.07253 | 2.00800  | 0.1521705 | 2.3043700 | 19 | 1 | 15 days   | 0.48 |       | MPC | 2007 VV <sub>103</sub>        |
| 2007 VX <sub>103</sub> | 16.7 | 0.15 | 20071027 | 36.50312  | 314.23300 | 52.58473  | 11.48912 | 0.0974967 | 3.2256804 | 19 | 1 | 65 days   | 0.29 | M-v 5 | MPC | 2007 VX <sub>103</sub>        |
| 2007 VB <sub>104</sub> | 17.9 | 0.15 | 20071027 | 356.57789 | 173.33110 | 241.91062 | 7.36594  | 0.2684008 | 3.1216962 | 12 | 1 | 15 days   | 0.35 |       | MPC | 2007 VB <sub>104</sub>        |
| 2007 VD <sub>104</sub> | 16.5 | 0.15 | 20071116 | 45.52756  | 36.65046  | 307.62848 | 1.13234  | 0.2571309 | 3.0655766 | 16 | 1 | 33 days   | 0.23 |       | MPC | 2007 VD <sub>104</sub>        |
| 2007 VF <sub>104</sub> | 17.3 | 0.15 | 20071027 | 313.07323 | 224.75067 | 236.56160 | 21.20575 | 0.0402442 | 2.6634121 | 12 | 1 | 15 days   | 0.22 |       | MPC | 2007 VF <sub>104</sub>        |
| 2007 VJ <sub>104</sub> | 16.7 | 0.15 | 20071027 | 298.05311 | 267.51204 | 235.52179 | 25.53486 | 0.2705788 | 2.5919756 | 49 | 1 | 43 days   | 0.41 |       | MPC | 2007 VJ <sub>104</sub>        |
| 2007 VO <sub>104</sub> | 16.8 | 0.15 | 20071027 | 39.57655  | 115.28722 | 244.83302 | 9.16891  | 0.1458886 | 3.0449673 | 16 | 1 | 35 days   | 0.22 |       | MPC | 2007 VO <sub>104</sub>        |
| 2007 VR <sub>104</sub> | 17.0 | 0.15 | 20071027 | 271.84470 | 290.04677 | 234.91427 | 21.29382 | 0.2293072 | 2.4087894 | 16 | 1 | 36 days   | 0.30 |       | MPC | 2007 VR <sub>104</sub>        |
| 2007 VU <sub>104</sub> | 17.2 | 0.15 | 20071027 | 304.39945 | 70.86309  | 45.48196  | 6.63272  | 0.1000491 | 2.4186142 | 16 | 1 | 63 days   | 0.24 | M-v 5 | MPC | 2007 VU <sub>104</sub>        |
| 2007 VV <sub>104</sub> | 16.6 | 0.15 | 20071027 | 10.19169  | 162.04388 | 237.58914 | 15.25945 | 0.1171422 | 3.1577766 | 16 | 1 | 35 days   | 0.30 |       | MPC | 2007 VV <sub>104</sub>        |
| 2007 VZ <sub>104</sub> | 16.0 | 0.15 | 20071116 | 36.99635  | 125.23487 | 244.80388 | 2.90585  | 0.1264980 | 2.7654347 | 39 | 1 | 40 days   | 0.46 |       | MPC | 2007 VZ <sub>104</sub>        |
| 2007 VH <sub>105</sub> | 17.6 | 0.15 | 20071116 | 337.19948 | 67.70286  | 20.05582  | 1.51781  | 0.1497529 | 2.3556437 | 17 | 1 | 30 days   | 0.61 |       | MPC | 2007 VH <sub>105</sub>        |
| 2007 VM <sub>105</sub> | 18.9 | 0.15 | 20071116 | 21.78032  | 346.94770 | 31.52509  | 1.47735  | 0.2700094 | 2.3332866 | 8  | 1 | 30 days   | 0.60 |       | MPC | 2007 VM <sub>105</sub>        |
| 2007 VK <sub>106</sub> | 17.8 | 0.15 | 20071027 | 345.76507 | 38.97394  | 26.80501  | 1.90928  | 0.0706725 | 2.7169456 | 12 | 1 | 15 days   | 0.23 |       | MPC | 2007 VK <sub>106</sub>        |
| 2007 VN <sub>106</sub> | 16.9 | 0.15 | 20071116 | 53.08889  | 121.84233 | 232.56729 | 11.87328 | 0.0720476 | 2.7312225 | 20 | 1 | 35 days   | 0.31 |       | MPC | 2007 VN <sub>106</sub>        |
| 2007 VO <sub>106</sub> | 15.9 | 0.15 | 20071027 | 270.09248 | 102.09769 | 52.57643  | 22.85406 | 0.1181370 | 3.1230864 | 24 | 1 | 19 days   | 0.40 |       | MPC | 2007 VO <sub>106</sub>        |
| 2007 VS <sub>106</sub> | 16.3 | 0.15 | 20071027 | 111.05268 | 265.68079 | 26.88598  | 1.87148  | 0.0790427 | 3.0248017 | 16 | 1 | 32 days   | 0.21 |       | MPC | 2007 VS <sub>106</sub>        |
| 2007 VT <sub>106</sub> | 17.3 | 0.15 | 20071027 | 23.75418  | 347.55866 | 28.20062  | 1.54783  | 0.1822542 | 3.1002141 | 12 | 1 | 15 days   | 0.29 |       | MPC | 2007 VT <sub>106</sub>        |
| 2007 VZ <sub>106</sub> | 16.9 | 0.15 | 20071027 | 48.21434  | 308.78884 | 37.30325  | 2.82936  | 0.1574183 | 2.6068047 | 40 | 1 | 87 days   | 0.27 | M-v 4 | MPC | 2007 VZ <sub>106</sub>        |
| 2007 VB <sub>107</sub> | 17.5 | 0.15 | 20071027 | 284.24395 | 277.90021 | 236.31601 | 3.52934  | 0.2395692 | 2.7128166 | 9  | 1 | 15 days   | 0.20 |       | MPC | 2007 VB <sub>107</sub>        |
| 2007 VE <sub>107</sub> | 16.0 | 0.15 | 20071027 | 317.77262 | 225.06443 | 234.71353 | 8.08245  | 0.0681786 | 3.1691454 | 25 | 1 | 50 days   | 0.44 |       | MPC | 2007 VE <sub>107</sub>        |
| 2007 VH <sub>107</sub> | 17.8 | 0.15 | 20071027 | 294.65674 | 82.36511  | 52.71212  | 3.19662  | 0.1748143 | 2.5696139 | 12 | 1 | 15 days   | 0.23 |       | MPC | 2007 VH <sub>107</sub>        |
| 2007 VN <sub>107</sub> | 17.1 | 0.15 | 20071027 | 31.95984  | 315.23797 | 54.39896  | 2.76856  | 0.1212261 | 2.6725260 | 32 | 1 | 61 days   | 0.45 | M-v 5 | MPC | 2007 VN <sub>107</sub>        |
| 2007 VS <sub>107</sub> | 15.9 | 0.15 | 20071027 | 142.68010 | 35.42204  | 233.54995 | 8.99706  | 0.0157049 | 3.0512334 | 19 | 1 | 87 days   | 0.20 | M-v 4 | MPC | 2007 VS <sub>107</sub>        |
| 2007 VU <sub>107</sub> | 18.3 | 0.15 | 20071027 | 37.80468  | 290.85855 | 59.42057  | 1.29096  | 0.2221941 | 2.2895572 | 47 | 3 | 1993-2007 | 0.61 | M-v 3 | MPC | 128600 2007 VU <sub>107</sub> |
| 2007 VX <sub>107</sub> | 17.6 | 0.15 | 20071116 | 354.08658 | 179.60134 | 244.58204 | 1.61044  | 0.1740885 | 2.4132097 | 25 | 1 | 33 days   | 0.51 |       | MPC | 2007 VX <sub>107</sub>        |
| 2007 VY <sub>107</sub> | 17.5 | 0.15 | 20071027 | 6.71928   | 348.79264 | 50.12956  | 4.29179  | 0.1830456 | 2.5769404 | 20 | 1 | 50 days   | 0.25 |       | MPC | 2007 VY <sub>107</sub>        |
| 2007 VB <sub>108</sub> | 16.4 | 0.15 | 20071116 | 21.88339  | 150.80316 | 237.85827 | 7.34355  | 0.1204820 | 2.9717754 | 17 | 1 | 31 days   | 0.31 |       | MPC | 2007 VB <sub>108</sub>        |
| 2007 VE <sub>108</sub> | 17.3 | 0.15 | 20071027 | 163.47363 | 192.73017 | 52.35042  | 2.00866  | 0.1298450 | 2.3767314 | 12 | 1 | 15 days   | 0.26 |       | MPC | 2007 VE <sub>108</sub>        |
| 2007 VG <sub>108</sub> | 16.4 | 0.15 | 20071027 | 46.56551  | 290.42814 | 57.73927  | 3.95502  | 0.1782691 | 2.9070225 | 33 | 1 | 87 days   | 0.30 | M-v 4 | MPC | 2007 VG <sub>108</sub>        |
| 2007 VQ <sub>108</sub> | 16.9 | 0.15 | 20071116 | 328.13253 | 218.69344 | 239.61951 | 3.85439  | 0.1312788 | 2.7945932 | 19 | 1 | 31 days   | 0.47 |       | MPC | 2007 VQ <sub>108</sub>        |
| 2007 VR <sub>108</sub> | 17.3 | 0.15 | 20071027 | 359.10583 | 2.77287   | 49.02631  | 4.40181  | 0.1498198 | 2.6221204 | 16 | 1 | 32 days   | 0.24 |       | MPC | 2007 VR <sub>108</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |        |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|--------|-----|-------------------------------|
| 2007 VZ <sub>108</sub> | 18.2 | 0.15 | 20071116 | 341.52263 | 31.82802  | 51.04699  | 2.96622  | 0.1691520 | 2.4165515 | 17 | 1 | 33 days   | 0.38 |        | MPC | 2007 VZ <sub>108</sub>        |
| 2007 VD <sub>109</sub> | 15.9 | 0.15 | 20071027 | 104.29559 | 247.52784 | 59.82989  | 6.49286  | 0.0187963 | 2.7817262 | 31 | 1 | 48 days   | 0.41 |        | MPC | 2007 VD <sub>109</sub>        |
| 2007 VO <sub>109</sub> | 17.8 | 0.15 | 20071116 | 19.16976  | 156.62792 | 237.70709 | 11.85548 | 0.1162086 | 2.6513215 | 16 | 1 | 31 days   | 0.16 |        | MPC | 2007 VO <sub>109</sub>        |
| 2007 VQ <sub>109</sub> | 18.6 | 0.15 | 20071027 | 359.77809 | 1.57695   | 47.64930  | 5.95280  | 0.2284539 | 2.3629653 | 13 | 1 | 14 days   | 0.34 |        | MPC | 2007 VQ <sub>109</sub>        |
| 2007 VS <sub>109</sub> | 16.5 | 0.15 | 20071027 | 7.94796   | 163.41982 | 240.40511 | 9.90485  | 0.1352069 | 2.9516827 | 30 | 1 | 51 days   | 0.36 |        | MPC | 2007 VS <sub>109</sub>        |
| 2007 VT <sub>109</sub> | 17.8 | 0.15 | 20071027 | 9.52484   | 161.75648 | 236.13626 | 11.02227 | 0.1789866 | 2.5826756 | 12 | 1 | 15 days   | 0.13 |        | MPC | 2007 VT <sub>109</sub>        |
| 2007 VU <sub>109</sub> | 17.4 | 0.15 | 20071027 | 23.99065  | 351.70112 | 35.90088  | 2.53910  | 0.0462151 | 2.5172849 | 27 | 2 | 2005–2007 | 0.33 | M-v 4  | MPC | 128600 2007 VU <sub>109</sub> |
| 2007 VV <sub>109</sub> | 17.3 | 0.15 | 20071027 | 58.90700  | 84.92080  | 238.82505 | 13.11948 | 0.2672393 | 2.3956363 | 38 | 2 | 2003–2007 | 0.39 | M-v 3  | MPC | 128600 2007 VV <sub>109</sub> |
| 2007 VX <sub>109</sub> | 17.5 | 0.15 | 20071027 | 302.91931 | 251.54250 | 237.05987 | 12.90883 | 0.1662066 | 2.6014557 | 12 | 1 | 15 days   | 0.10 |        | MPC | 2007 VX <sub>109</sub>        |
| 2007 VC <sub>110</sub> | 18.4 | 0.15 | 20071027 | 19.02798  | 330.85834 | 48.13867  | 1.64904  | 0.2271917 | 2.2725228 | 32 | 2 | 2000–2007 | 0.44 | M-v 4  | MPC | 128600 2007 VC <sub>110</sub> |
| 2007 VG <sub>110</sub> | 17.2 | 0.15 | 20071027 | 32.38566  | 91.90777  | 286.02531 | 1.00162  | 0.0884275 | 2.8751754 | 12 | 1 | 15 days   | 0.26 |        | MPC | 2007 VG <sub>110</sub>        |
| 2007 VM <sub>110</sub> | 15.8 | 0.15 | 20071027 | 24.19568  | 332.78412 | 48.12622  | 5.01799  | 0.1838390 | 3.0044990 | 36 | 1 | 81 days   | 0.35 | M-v 4  | MPC | 129042 2007 VM <sub>110</sub> |
| 2007 VO <sub>110</sub> | 17.9 | 0.15 | 20071027 | 26.54895  | 124.78938 | 251.72792 | 2.20539  | 0.1454983 | 2.2229026 | 23 | 2 | 2006–2007 | 0.22 | M-v 3  | MPC | 128601 2007 VO <sub>110</sub> |
| 2007 VX <sub>110</sub> | 17.5 | 0.15 | 20071027 | 21.34728  | 106.99104 | 270.31969 | 0.76610  | 0.2555628 | 2.6535931 | 19 | 1 | 82 days   | 0.17 | M-v 4  | MPC | 2007 VX <sub>110</sub>        |
| 2007 VB <sub>111</sub> | 15.2 | 0.15 | 20071027 | 13.25382  | 345.39464 | 59.72244  | 6.29682  | 0.0683186 | 3.4976143 | 19 | 1 | 65 days   | 0.15 | M-v 4  | MPC | 2007 VB <sub>111</sub>        |
| 2007 VE <sub>111</sub> | 16.9 | 0.15 | 20071027 | 77.57758  | 252.92947 | 65.40126  | 3.74404  | 0.1966098 | 2.6872872 | 16 | 1 | 34 days   | 0.34 |        | MPC | 2007 VE <sub>111</sub>        |
| 2007 VP <sub>111</sub> | 16.4 | 0.15 | 20071116 | 346.28701 | 9.58968   | 70.09894  | 1.61058  | 0.1948897 | 3.1405386 | 20 | 1 | 35 days   | 0.27 |        | MPC | 2007 VP <sub>111</sub>        |
| 2007 VS <sub>111</sub> | 16.4 | 0.15 | 20071027 | 314.29861 | 239.26775 | 235.59578 | 7.48277  | 0.1625054 | 2.7975985 | 15 | 1 | 33 days   | 0.16 |        | MPC | 2007 VS <sub>111</sub>        |
| 2007 VA <sub>112</sub> | 16.9 | 0.15 | 20071027 | 50.42339  | 286.67933 | 61.38855  | 5.34726  | 0.1522541 | 2.6186195 | 16 | 1 | 34 days   | 0.42 |        | MPC | 2007 VA <sub>112</sub>        |
| 2007 VR <sub>112</sub> | 16.2 | 0.15 | 20071027 | 22.71920  | 321.20805 | 63.57857  | 9.99308  | 0.1524128 | 3.0742916 | 22 | 1 | 46 days   | 0.43 |        | MPC | 2007 VR <sub>112</sub>        |
| 2007 VW <sub>112</sub> | 19.5 | 0.15 | 20071027 | 347.66421 | 12.37381  | 61.04429  | 6.62357  | 0.2939465 | 2.5922611 | 12 | 1 | 15 days   | 0.19 |        | MPC | 2007 VW <sub>112</sub>        |
| 2007 VZ <sub>112</sub> | 16.6 | 0.15 | 20071027 | 331.48770 | 26.96860  | 62.96971  | 5.50208  | 0.0863754 | 2.7748306 | 20 | 1 | 79 days   | 0.42 | M-v 4  | MPC | 2007 VZ <sub>112</sub>        |
| 2007 VA <sub>113</sub> | 17.9 | 0.15 | 20071027 | 41.78357  | 281.99603 | 62.50892  | 6.59858  | 0.2663893 | 2.3497047 | 12 | 1 | 15 days   | 0.17 |        | MPC | 2007 VA <sub>113</sub>        |
| 2007 VE <sub>113</sub> | 16.0 | 0.15 | 20071027 | 27.84476  | 136.07344 | 236.93137 | 15.91137 | 0.2258198 | 3.1904335 | 27 | 1 | 49 days   | 0.30 |        | MPC | 2007 VE <sub>113</sub>        |
| 2007 VN <sub>113</sub> | 16.4 | 0.15 | 20071116 | 353.20044 | 244.39776 | 185.86345 | 2.43199  | 0.0600128 | 2.7925559 | 17 | 1 | 30 days   | 0.40 |        | MPC | 2007 VN <sub>113</sub>        |
| 2007 VT <sub>113</sub> | 16.5 | 0.15 | 20071027 | 58.82565  | 117.29581 | 229.89718 | 10.02517 | 0.1254944 | 2.9083605 | 16 | 1 | 35 days   | 0.29 |        | MPC | 2007 VT <sub>113</sub>        |
| 2007 VU <sub>113</sub> | 16.3 | 0.15 | 20071116 | 27.07459  | 258.19883 | 118.44574 | 2.53729  | 0.2647600 | 3.0766441 | 29 | 1 | 31 days   | 0.53 |        | MPC | 2007 VU <sub>113</sub>        |
| 2007 VV <sub>113</sub> | 17.0 | 0.15 | 20071027 | 289.54818 | 26.98473  | 114.12255 | 2.05740  | 0.1249582 | 2.3647722 | 20 | 1 | 42 days   | 0.31 |        | MPC | 2007 VV <sub>113</sub>        |
| 2007 VY <sub>113</sub> | 16.6 | 0.15 | 20071027 | 79.50571  | 175.11504 | 139.09219 | 2.36787  | 0.2290784 | 2.7907959 | 20 | 1 | 30 days   | 0.29 |        | MPC | 2007 VY <sub>113</sub>        |
| 2007 VZ <sub>113</sub> | 17.1 | 0.15 | 20071027 | 81.79080  | 101.01451 | 212.55459 | 4.23464  | 0.2064070 | 2.5600845 | 16 | 1 | 16 days   | 0.32 |        | MPC | 2007 VZ <sub>113</sub>        |
| 2007 VA <sub>114</sub> | 17.0 | 0.15 | 20071027 | 82.47593  | 82.37446  | 232.01953 | 14.79336 | 0.1911414 | 2.4746796 | 13 | 1 | 17 days   | 0.35 |        | MPC | 2007 VA <sub>114</sub>        |
| 2007 VC <sub>114</sub> | 17.1 | 0.15 | 20071027 | 21.41232  | 300.50866 | 90.65942  | 5.04215  | 0.1164305 | 2.7285637 | 13 | 1 | 16 days   | 0.15 |        | MPC | 2007 VC <sub>114</sub>        |
| 2007 VL <sub>114</sub> | 17.9 | 0.15 | 20071027 | 7.84216   | 283.25534 | 119.36623 | 2.51839  | 0.2815587 | 3.0056922 | 13 | 1 | 16 days   | 0.21 |        | MPC | 2007 VL <sub>114</sub>        |
| 2007 VP <sub>114</sub> | 16.2 | 0.15 | 20071027 | 306.08833 | 50.73337  | 78.00365  | 10.38959 | 0.1268672 | 3.1013684 | 13 | 1 | 16 days   | 0.13 |        | MPC | 2007 VP <sub>114</sub>        |
| 2007 VQ <sub>114</sub> | 16.9 | 0.15 | 20071027 | 83.57747  | 117.71758 | 195.40522 | 3.65180  | 0.2115147 | 2.5326666 | 13 | 1 | 16 days   | 0.24 |        | MPC | 2007 VQ <sub>114</sub>        |
| 2007 VS <sub>114</sub> | 15.2 | 0.15 | 20071116 | 85.67288  | 256.27580 | 77.57275  | 9.74977  | 0.0643630 | 3.1753652 | 24 | 1 | 32 days   | 0.49 |        | MPC | 2007 VS <sub>114</sub>        |
| 2007 VV <sub>114</sub> | 16.0 | 0.15 | 20071027 | 274.91768 | 327.96729 | 186.63660 | 2.63945  | 0.0611696 | 2.8751859 | 16 | 1 | 16 days   | 0.26 |        | MPC | 2007 VV <sub>114</sub>        |
| 2007 VW <sub>114</sub> | 17.7 | 0.15 | 20071027 | 54.41459  | 243.44190 | 98.57919  | 4.33792  | 0.2111894 | 2.5280278 | 16 | 1 | 16 days   | 0.29 |        | MPC | 2007 VW <sub>114</sub>        |
| 2007 VZ <sub>114</sub> | 16.6 | 0.15 | 20071027 | 173.36300 | 30.58109  | 217.53848 | 5.97603  | 0.0360377 | 2.5772258 | 13 | 1 | 16 days   | 0.23 |        | MPC | 2007 VZ <sub>114</sub>        |
| 2007 VB <sub>115</sub> | 17.9 | 0.15 | 20071116 | 358.71369 | 351.73825 | 73.60358  | 7.64939  | 0.1511150 | 2.2868128 | 23 | 1 | 32 days   | 0.33 |        | MPC | 2007 VB <sub>115</sub>        |
| 2007 VN <sub>115</sub> | 15.5 | 0.15 | 20071027 | 99.77272  | 238.03036 | 76.52714  | 15.40384 | 0.0458480 | 2.6905811 | 59 | 5 | 2002–2007 | 0.55 | M-v 1  | MPC | 128601 2007 VN <sub>115</sub> |
| 2007 VB <sub>117</sub> | 16.3 | 0.15 | 20071027 | 10.95653  | 34.60835  | 16.47137  | 3.23314  | 0.0662926 | 2.5655526 | 13 | 1 | 17 days   | 0.13 |        | MPC | 2007 VB <sub>117</sub>        |
| 2007 VM <sub>117</sub> | 16.6 | 0.15 | 20071116 | 32.39612  | 277.34500 | 76.43587  | 11.66292 | 0.2853876 | 2.6693230 | 37 | 1 | 35 days   | 0.53 |        | MPC | 2007 VM <sub>117</sub>        |
| 2007 VO <sub>117</sub> | 16.3 | 0.15 | 20071116 | 36.13518  | 244.57617 | 123.81243 | 3.62559  | 0.2149118 | 2.6382494 | 37 | 1 | 31 days   | 0.80 |        | MPC | 2007 VO <sub>117</sub>        |
| 2007 VQ <sub>117</sub> | 15.9 | 0.15 | 20071027 | 27.09666  | 113.41475 | 249.31057 | 8.30669  | 0.1519622 | 3.1161996 | 40 | 2 | 2001–2007 | 0.43 | M-v 2  | MPC | 128601 2007 VQ <sub>117</sub> |
| 2007 VS <sub>117</sub> | 15.3 | 0.15 | 20071027 | 270.83399 | 79.76669  | 54.44337  | 14.55258 | 0.0262944 | 3.0729492 | 27 | 1 | 38 days   | 0.47 |        | MPC | 2007 VS <sub>117</sub>        |
| 2007 VZ <sub>117</sub> | 16.8 | 0.15 | 20071027 | 39.97866  | 23.47593  | 341.63468 | 1.39128  | 0.0752371 | 2.8658029 | 12 | 1 | 14 days   | 0.24 |        | MPC | 2007 VZ <sub>117</sub>        |
| 2007 VJ <sub>118</sub> | 15.7 | 0.15 | 20071027 | 12.40255  | 330.33985 | 51.53436  | 18.54244 | 0.2120738 | 3.1390397 | 39 | 1 | 65 days   | 0.65 | M-v 4  | MPC | 2007 VJ <sub>118</sub>        |
| 2007 VB <sub>119</sub> | 17.5 | 0.15 | 20071027 | 20.87618  | 37.35710  | 353.97467 | 3.03663  | 0.1901887 | 2.9670729 | 13 | 1 | 16 days   | 0.23 |        | MPC | 2007 VB <sub>119</sub>        |
| 2007 VG <sub>119</sub> | 14.5 | 0.15 | 20071116 | 313.32210 | 65.77576  | 96.50920  | 26.50631 | 0.1812016 | 3.1773468 | 41 | 1 | 40 days   | 0.51 |        | MPC | 2007 VG <sub>119</sub>        |
| 2007 VK <sub>119</sub> | 16.6 | 0.15 | 20071027 | 4.81666   | 226.65063 | 173.77404 | 8.92509  | 0.1638198 | 2.5799328 | 28 | 1 | 53 days   | 0.77 |        | MPC | 2007 VK <sub>119</sub>        |
| 2007 VC <sub>120</sub> | 17.0 | 0.15 | 20071027 | 359.54859 | 235.89931 | 149.47741 | 2.46761  | 0.0929372 | 2.6697169 | 27 | 1 | 64 days   | 0.28 | M-v 4D | MPC | 2007 VC <sub>120</sub>        |
| 2007 VN <sub>120</sub> | 17.1 | 0.15 | 20071027 | 302.75780 | 210.30857 | 261.97070 | 9.10005  | 0.0794055 | 2.8142075 | 18 | 1 | 35 days   | 0.28 |        | MPC | 2007 VN <sub>120</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |         |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|---------|-------|-------------------------------|
| 2007 VU <sub>120</sub> | 18.7 | 0.15 | 20071027 | 36.03727  | 42.43887  | 311.18015 | 3.29691  | 0.1825973 | 2.2086501 | 18 | 1 | 35 days   | 0.22 |         | MPC   | 2007 VU <sub>120</sub>        |
| 2007 VX <sub>120</sub> | 17.2 | 0.15 | 20071027 | 325.01327 | 183.52222 | 268.49329 | 7.66595  | 0.1203728 | 2.9971969 | 16 | 1 | 34 days   | 0.27 |         | MPC   | 2007 VX <sub>120</sub>        |
| 2007 VY <sub>120</sub> | 17.6 | 0.15 | 20071027 | 124.28497 | 262.73675 | 10.05643  | 6.56794  | 0.1225995 | 2.2385350 | 15 | 1 | 39 days   | 0.27 |         | MPC   | 2007 VY <sub>120</sub>        |
| 2007 VB <sub>121</sub> | 16.2 | 0.15 | 20071027 | 85.43704  | 290.89067 | 25.72628  | 10.56286 | 0.0692562 | 3.1264824 | 15 | 1 | 12 days   | 0.38 |         | MPC   | 2007 VB <sub>121</sub>        |
| 2007 VF <sub>121</sub> | 17.4 | 0.15 | 20071116 | 355.91854 | 139.68516 | 280.49781 | 3.98444  | 0.1875090 | 2.6387221 | 30 | 1 | 29 days   | 0.44 |         | MPC   | 2007 VF <sub>121</sub>        |
| 2007 VO <sub>121</sub> | 18.0 | 0.15 | 20071116 | 356.01622 | 51.95455  | 5.80613   | 4.77349  | 0.1427242 | 2.6058164 | 15 | 1 | 30 days   | 0.31 |         | MPC   | 2007 VO <sub>121</sub>        |
| 2007 VP <sub>121</sub> | 17.6 | 0.15 | 20071027 | 23.81670  | 124.44732 | 250.44227 | 9.00539  | 0.1436473 | 2.7815201 | 24 | 1 | 57 days   | 0.28 |         | MPC   | 2007 VP <sub>121</sub>        |
| 2007 VS <sub>121</sub> | 17.0 | 0.15 | 20071027 | 320.50758 | 93.51973  | 1.40725   | 3.82737  | 0.1042256 | 2.6618415 | 34 | 1 | 50 days   | 0.49 |         | MPC   | 2007 VS <sub>121</sub>        |
| 2007 VX <sub>121</sub> | 15.9 | 0.15 | 20071027 | 119.79837 | 22.51765  | 254.17138 | 9.09694  | 0.1604291 | 3.0166037 | 18 | 1 | 39 days   | 0.21 |         | MPC   | 2007 VX <sub>121</sub>        |
| 2007 VJ <sub>122</sub> | 17.5 | 0.15 | 20071027 | 199.64863 | 318.35695 | 256.76804 | 6.05422  | 0.1532959 | 2.1392171 | 17 | 1 | 8 days    | 0.38 |         | MPC   | 2007 VJ <sub>122</sub>        |
| 2007 VM <sub>122</sub> | 16.8 | 0.15 | 20071027 | 62.26439  | 55.34047  | 278.99717 | 3.45891  | 0.1201012 | 2.4812390 | 20 | 1 | 53 days   | 0.48 |         | MPC   | 2007 VM <sub>122</sub>        |
| 2007 VP <sub>122</sub> | 18.7 | 0.15 | 20071027 | 16.89176  | 124.51236 | 255.09630 | 3.93998  | 0.2091288 | 2.1863068 | 36 | 1 | 14 days   | 0.43 |         | MPC   | 2007 VP <sub>122</sub>        |
| 2007 VR <sub>122</sub> | 16.1 | 0.15 | 20071027 | 332.82916 | 70.67793  | 18.36449  | 4.74157  | 0.1613354 | 3.2130124 | 16 | 1 | 30 days   | 0.20 |         | MPC   | 2007 VR <sub>122</sub>        |
| 2007 VP <sub>123</sub> | 17.4 | 0.15 | 20071027 | 18.66720  | 208.28973 | 163.65912 | 12.19186 | 0.1956327 | 2.3664961 | 31 | 1 | 24 days   | 0.50 |         | MPC   | 2007 VP <sub>123</sub>        |
| 2007 VY <sub>123</sub> | 18.0 | 0.15 | 20071027 | 348.16221 | 225.99194 | 198.32658 | 2.62678  | 0.2808786 | 2.7763252 | 23 | 1 | 48 days   | 0.62 |         | MPC   | 2007 VY <sub>123</sub>        |
| 2007 VE <sub>124</sub> | 16.2 | 0.15 | 20071027 | 45.56696  | 288.12247 | 61.31771  | 7.04165  | 0.2288715 | 2.9261681 | 21 | 1 | 34 days   | 0.19 |         | MPC   | 2007 VE <sub>124</sub>        |
| 2007 VZ <sub>124</sub> | 16.5 | 0.15 | 20071027 | 15.52736  | 341.66524 | 60.61946  | 17.32632 | 0.1969592 | 3.1122534 | 16 | 1 | 19 days   | 0.35 |         | MPC   | 2007 VZ <sub>124</sub>        |
| 2007 VD <sub>125</sub> | 17.1 | 0.15 | 20071116 | 38.47789  | 107.55516 | 240.43592 | 3.21714  | 0.3043291 | 2.5766285 | 39 | 1 | 37 days   | 0.42 |         | MPC   | 2007 VD <sub>125</sub>        |
| 2007 VG <sub>125</sub> | 16.6 | 0.15 | 20071027 | 357.08157 | 6.35168   | 46.99637  | 3.74686  | 0.1337510 | 2.2978495 | 71 | 3 | 2000-2007 | 0.43 | M-v 3   | MPC   | 128602 2007 VG <sub>125</sub> |
| 2007 VS <sub>125</sub> | 18.3 | 0.15 | 20071027 | 43.80051  | 92.20871  | 255.41633 | 3.77335  | 0.1775937 | 2.1958603 | 20 | 1 | 35 days   | 0.27 |         | MPC   | 2007 VS <sub>125</sub>        |
| 2007 VV <sub>125</sub> | 17.2 | 0.15 | 20071027 | 287.19238 | 273.30142 | 231.55108 | 3.90156  | 0.1904205 | 2.4023853 | 26 | 1 | 7 days    | 0.57 |         | MPC   | 2007 VV <sub>125</sub>        |
| 2007 VW <sub>125</sub> | 17.1 | 0.15 | 20071116 | 320.97744 | 295.14638 | 131.51131 | 12.53028 | 0.2398103 | 2.6137068 | 8  | 1 | 21 days   | 0.45 |         | MPC   | 2007 VW <sub>125</sub>        |
| 2007 VX <sub>125</sub> | 16.7 | 0.15 | 20071027 | 313.74854 | 235.67638 | 239.26085 | 22.27153 | 0.2561949 | 2.3845556 | 35 | 1 | 12 days   | 0.47 |         | MPC   | 2007 VX <sub>125</sub>        |
| 2007 VZ <sub>125</sub> | 15.6 | 0.15 | 20071027 | 48.83528  | 346.28123 | 19.40126  | 10.07718 | 0.0886990 | 3.0404912 | 21 | 1 | 8 days    | 0.68 |         | MPC   | 2007 VZ <sub>125</sub>        |
| 2007 VH <sub>126</sub> | 18.8 | 0.15 | 20071027 | 34.08719  | 302.46448 | 46.70409  | 4.30904  | 0.2738110 | 2.3264510 | 27 | 1 | 83 days   | 0.42 | M-v 4 D | MPC   | 2007 VH <sub>126</sub>        |
| 2007 VJ <sub>126</sub> | 17.3 | 0.15 | 20071027 | 295.21047 | 192.82812 | 308.50192 | 0.95614  | 0.2331348 | 2.5159046 | 16 | 1 | 6 days    | 0.53 |         | MPC   | 2007 VJ <sub>126</sub>        |
| 2007 VN <sub>126</sub> | 17.5 | 0.15 | 20071027 | 359.06298 | 171.79285 | 236.12912 | 3.18977  | 0.2325894 | 2.5715283 | 48 | 1 | 51 days   | 0.41 |         | MPC   | 2007 VN <sub>126</sub>        |
| 2007 VO <sub>126</sub> | 18.1 | 0.15 | 20071116 | 4.43700   | 168.05615 | 238.63637 | 13.35435 | 0.2476498 | 2.6951632 | 27 | 1 | 34 days   | 0.47 |         | MPC   | 2007 VO <sub>126</sub>        |
| 2007 VP <sub>126</sub> | 17.7 | 0.15 | 20071027 | 0.90407   | 3.98989   | 42.07576  | 3.21535  | 0.1920111 | 2.3906367 | 40 | 1 | 84 days   | 0.40 | M-v 4   | MPC   | 2007 VP <sub>126</sub>        |
| 2007 VQ <sub>126</sub> | 16.1 | 0.15 | 20071027 | 215.35000 | 319.19468 | 251.66229 | 3.05504  | 0.2624706 | 2.4951003 | 17 | 1 | 6 days    | 0.59 |         | MPC   | 2007 VQ <sub>126</sub>        |
| 2007 VR <sub>126</sub> | 16.9 | 0.15 | 20071027 | 21.08067  | 320.92407 | 54.64438  | 2.80416  | 0.2197313 | 2.6511303 | 49 | 1 | 79 days   | 0.42 | M-v 4   | MPC   | 2007 VR <sub>126</sub>        |
| 2007 VT <sub>126</sub> | 17.2 | 0.15 | 20071116 | 28.86061  | 61.63054  | 296.05095 | 3.49102  | 0.3512765 | 2.6559443 | 46 | 1 | 53 days   | 0.52 |         | MPC   | 2007 VT <sub>126</sub>        |
| 2007 VU <sub>126</sub> | 17.1 | 0.15 | 20071027 | 319.63202 | 65.20098  | 39.55609  | 11.00456 | 0.1695533 | 2.3143058 | 56 | 1 | 85 days   | 0.44 | M-v 4   | MPC   | 2007 VU <sub>126</sub>        |
| 2007 VV <sub>126</sub> | 17.4 | 0.15 | 20071027 | 33.19320  | 329.26236 | 24.73272  | 6.07444  | 0.2569614 | 2.3297187 | 47 | 1 | 95 days   | 0.36 | M-v 4   | MPC   | 2007 VV <sub>126</sub>        |
| 2007 VW <sub>126</sub> | 15.4 | 0.15 | 20071116 | 336.54301 | 175.30538 | 269.66530 | 9.17606  | 0.0907900 | 3.1106715 | 45 | 1 | 31 days   | 0.42 |         | MPC   | 2007 VW <sub>126</sub>        |
| 2007 VX <sub>126</sub> | 18.5 | 0.15 | 20071027 | 56.37383  | 97.28195  | 243.34742 | 20.38308 | 0.0973987 | 1.8656550 | 29 | 1 | 17 days   | 0.45 |         | MPC   | 2007 VX <sub>126</sub>        |
| 2007 VK <sub>131</sub> | 16.8 | 0.15 | 20071027 | 31.26170  | 125.99640 | 225.29424 | 5.06046  | 0.1350667 | 3.0448262 | 21 | 1 | 45 days   | 0.22 |         | D MPC | 2007 VK <sub>131</sub>        |
| 2007 VD <sub>132</sub> | 17.1 | 0.15 | 20071027 | 294.71774 | 99.42421  | 24.19954  | 4.23267  | 0.1934562 | 2.9679069 | 14 | 1 | 26 days   | 0.36 |         | D MPC | 2007 VD <sub>132</sub>        |
| 2007 VO <sub>132</sub> | 16.2 | 0.15 | 20071027 | 188.52950 | 250.55241 | 318.88316 | 1.36142  | 0.0559082 | 3.0639116 | 17 | 1 | 26 days   | 0.39 |         | D MPC | 2007 VO <sub>132</sub>        |
| 2007 VO <sub>133</sub> | 15.8 | 0.15 | 20071027 | 40.05504  | 61.72903  | 290.35869 | 7.42172  | 0.1299314 | 3.0657087 | 18 | 1 | 17 days   | 0.45 |         | MPC   | 2007 VO <sub>133</sub>        |
| 2007 VQ <sub>133</sub> | 16.7 | 0.15 | 20071116 | 13.86497  | 108.99492 | 282.01259 | 6.40755  | 0.1460365 | 2.7100732 | 22 | 1 | 30 days   | 0.38 |         | MPC   | 2007 VQ <sub>133</sub>        |
| 2007 VS <sub>133</sub> | 16.2 | 0.15 | 20071027 | 349.04224 | 36.07901  | 34.74009  | 17.66009 | 0.2609924 | 3.1185691 | 40 | 1 | 85 days   | 0.48 | M-v 3   | MPC   | 2007 VS <sub>133</sub>        |
| 2007 VP <sub>135</sub> | 17.0 | 0.15 | 20071116 | 279.43537 | 252.99899 | 244.27126 | 19.57167 | 0.0514682 | 1.8723092 | 22 | 1 | 41 days   | 0.40 |         | MPC   | 2007 VP <sub>135</sub>        |
| 2007 VW <sub>135</sub> | 15.2 | 0.15 | 20071116 | 37.41976  | 128.84815 | 286.26418 | 15.78146 | 0.0862003 | 3.0700808 | 15 | 1 | 31 days   | 0.23 |         | MPC   | 2007 VW <sub>135</sub>        |
| 2007 VF <sub>136</sub> | 18.1 | 0.15 | 20071027 | 17.08658  | 302.53787 | 68.48167  | 4.42110  | 0.2386427 | 2.2940688 | 32 | 1 | 57 days   | 0.49 |         | MPC   | 2007 VF <sub>136</sub>        |
| 2007 VW <sub>137</sub> | 18.1 | 0.15 | 20071027 | 315.95168 | 244.64387 | 300.08581 | 5.95704  | 0.7370006 | 2.2312269 | 84 | 1 | 37 days   | 0.45 | M-v 5   | MPC   | 129043 2007 VW <sub>137</sub> |
| 2007 VX <sub>137</sub> | 18.5 | 0.15 | 20071027 | 34.21573  | 327.20810 | 7.68178   | 6.15426  | 0.4276740 | 2.2085973 | 55 | 1 | 19 days   | 0.47 | M-v 6   | MPC   | 129043 2007 VX <sub>137</sub> |
| 2007 VD <sub>138</sub> | 24.5 | 0.15 | 20071027 | 355.22685 | 333.05192 | 84.34300  | 1.63425  | 0.6432311 | 2.7987984 | 58 | 1 | 35 days   | 0.42 | M-v 4   | MPC   | 129043 2007 VD <sub>138</sub> |
| 2007 VE <sub>138</sub> | 25.8 | 0.15 | 20071027 | 316.80195 | 73.34475  | 50.37150  | 19.39747 | 0.4174610 | 1.3572349 | 42 | 1 | 2 days    | 0.43 | M-v 6   | MPC   | 129043 2007 VE <sub>138</sub> |
| 2007 VL <sub>138</sub> | 16.7 | 0.15 | 20071027 | 16.62746  | 143.63049 | 238.34897 | 10.52529 | 0.1746471 | 2.9926781 | 11 | 1 | 13 days   | 0.35 |         | MPC   | 2007 VL <sub>138</sub>        |
| 2007 VP <sub>138</sub> | 18.6 | 0.15 | 20071027 | 6.43540   | 120.18334 | 277.65303 | 4.81468  | 0.3572177 | 2.7524258 | 17 | 1 | 18 days   | 0.20 |         | MPC   | 2007 VP <sub>138</sub>        |
| 2007 VQ <sub>138</sub> | 15.4 | 0.15 | 20071027 | 100.22607 | 257.47980 | 54.00766  | 19.11531 | 0.1016979 | 3.2450909 | 17 | 1 | 66 days   | 0.18 | M-v 4   | MPC   | 2007 VQ <sub>138</sub>        |
| 2007 VY <sub>139</sub> | 15.5 | 0.15 | 20071027 | 99.69926  | 66.03667  | 232.22511 | 10.66214 | 0.1732075 | 2.5566818 | 23 | 1 | 80 days   | 0.47 | M-v 5   | MPC   | 2007 VY <sub>139</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-------------------------------|
| 2007 VJ <sub>141</sub> | 17.1 | 0.15 | 20071116 | 302.06580 | 111.95713 | 15.70511  | 3.30084  | 0.1465760 | 2.5491082 | 12 | 1 | 30 days   | 0.39 |     |   | MPC | 2007 VJ <sub>141</sub>        |
| 2007 VK <sub>141</sub> | 17.1 | 0.15 | 20071027 | 328.14064 | 81.14985  | 7.12149   | 1.81828  | 0.1082107 | 2.6788979 | 30 | 1 | 88 days   | 0.39 | M-v | 4 | MPC | 2007 VK <sub>141</sub>        |
| 2007 VM <sub>141</sub> | 17.9 | 0.15 | 20071027 | 355.03995 | 151.38420 | 261.02092 | 1.38509  | 0.2058718 | 2.3894149 | 39 | 2 | 2005-2007 | 0.46 | M-v | 3 | MPC | 128602 2007 VM <sub>141</sub> |
| 2007 VT <sub>141</sub> | 15.3 | 0.15 | 20071027 | 234.28342 | 122.74813 | 64.10470  | 15.86567 | 0.0887390 | 2.8615312 | 17 | 1 | 45 days   | 0.35 |     |   | MPC | 2007 VT <sub>141</sub>        |
| 2007 VX <sub>141</sub> | 16.6 | 0.15 | 20071027 | 2.00723   | 348.24120 | 60.20991  | 19.03361 | 0.1943239 | 3.1135540 | 23 | 1 | 47 days   | 0.38 |     |   | MPC | 2007 VX <sub>141</sub>        |
| 2007 VY <sub>141</sub> | 16.7 | 0.15 | 20071027 | 288.39264 | 278.63825 | 212.76381 | 4.77932  | 0.0788539 | 2.3228593 | 18 | 1 | 30 days   | 0.34 |     |   | MPC | 2007 VY <sub>141</sub>        |
| 2007 VA <sub>142</sub> | 16.6 | 0.15 | 20071027 | 9.32191   | 314.40171 | 81.98266  | 3.79789  | 0.1935791 | 2.7423311 | 16 | 1 | 30 days   | 0.52 |     |   | MPC | 2007 VA <sub>142</sub>        |
| 2007 VH <sub>142</sub> | 17.2 | 0.15 | 20071027 | 12.67615  | 201.17556 | 190.19935 | 3.41187  | 0.2029618 | 2.7405759 | 23 | 1 | 31 days   | 0.33 |     |   | MPC | 2007 VH <sub>142</sub>        |
| 2007 VN <sub>142</sub> | 17.9 | 0.15 | 20071116 | 9.91568   | 332.16822 | 71.39144  | 6.64191  | 0.1394040 | 2.2948701 | 20 | 1 | 30 days   | 0.59 |     |   | MPC | 2007 VN <sub>142</sub>        |
| 2007 VS <sub>142</sub> | 17.8 | 0.15 | 20071027 | 340.41140 | 238.89012 | 196.68913 | 3.81582  | 0.1391228 | 2.2587629 | 34 | 1 | 77 days   | 0.36 | M-v | 3 | MPC | 2007 VS <sub>142</sub>        |
| 2007 VU <sub>142</sub> | 15.1 | 0.15 | 20071116 | 20.45535  | 220.85992 | 161.58715 | 2.80357  | 0.2814632 | 3.9416554 | 10 | 1 | 30 days   | 0.36 |     |   | MPC | 2007 VU <sub>142</sub>        |
| 2007 VA <sub>143</sub> | 16.6 | 0.15 | 20071027 | 27.42773  | 272.08224 | 99.38794  | 2.90290  | 0.2346063 | 2.8416558 | 29 | 1 | 46 days   | 0.38 |     |   | MPC | 2007 VA <sub>143</sub>        |
| 2007 VR <sub>143</sub> | 17.2 | 0.15 | 20071116 | 27.28672  | 286.68343 | 69.83127  | 7.02020  | 0.4034557 | 2.9084330 | 13 | 1 | 31 days   | 0.44 |     |   | MPC | 2007 VR <sub>143</sub>        |
| 2007 VV <sub>143</sub> | 15.5 | 0.15 | 20071027 | 207.91043 | 118.72975 | 99.30547  | 4.96593  | 0.1502808 | 3.1655287 | 14 | 1 | 16 days   | 0.19 |     |   | MPC | 2007 VV <sub>143</sub>        |
| 2007 VX <sub>143</sub> | 16.9 | 0.15 | 20071027 | 339.24432 | 234.93995 | 214.67439 | 5.70397  | 0.2599267 | 2.9961679 | 30 | 1 | 85 days   | 0.44 | M-v | 4 | MPC | 2007 VX <sub>143</sub>        |
| 2007 VC <sub>144</sub> | 16.6 | 0.15 | 20071027 | 355.27829 | 333.13537 | 86.66627  | 5.09523  | 0.1794513 | 2.5841934 | 50 | 2 | 2003-2007 | 0.45 | M-v | 3 | MPC | 128602 2007 VC <sub>144</sub> |
| 2007 VD <sub>144</sub> | 18.0 | 0.15 | 20071116 | 62.91362  | 196.23169 | 133.45307 | 2.63349  | 0.2355240 | 2.1921212 | 23 | 1 | 30 days   | 0.47 |     |   | MPC | 2007 VD <sub>144</sub>        |
| 2007 VE <sub>144</sub> | 16.2 | 0.15 | 20071027 | 39.05884  | 236.73600 | 119.35520 | 3.27856  | 0.2316583 | 3.0502712 | 14 | 1 | 17 days   | 0.27 |     |   | MPC | 2007 VE <sub>144</sub>        |
| 2007 VL <sub>144</sub> | 17.5 | 0.15 | 20071027 | 320.26855 | 280.80165 | 190.86129 | 3.27309  | 0.1983419 | 2.5741969 | 14 | 1 | 17 days   | 0.26 |     |   | MPC | 2007 VL <sub>144</sub>        |
| 2007 VM <sub>144</sub> | 17.4 | 0.15 | 20071116 | 29.77992  | 282.10915 | 86.32916  | 3.87363  | 0.2766939 | 2.5971178 | 17 | 1 | 31 days   | 0.44 |     |   | MPC | 2007 VM <sub>144</sub>        |
| 2007 VN <sub>144</sub> | 17.9 | 0.15 | 20071027 | 310.54641 | 335.47719 | 142.38689 | 2.39471  | 0.1441522 | 2.4181420 | 14 | 1 | 17 days   | 0.19 |     |   | MPC | 2007 VN <sub>144</sub>        |
| 2007 VQ <sub>144</sub> | 16.3 | 0.15 | 20071027 | 140.30763 | 189.92687 | 80.11456  | 9.80536  | 0.1347320 | 2.8571270 | 14 | 1 | 17 days   | 0.24 |     |   | MPC | 2007 VQ <sub>144</sub>        |
| 2007 VR <sub>144</sub> | 18.4 | 0.15 | 20071027 | 31.25074  | 287.34080 | 79.88262  | 5.62052  | 0.1800625 | 2.1830087 | 14 | 1 | 17 days   | 0.21 |     |   | MPC | 2007 VR <sub>144</sub>        |
| 2007 VU <sub>144</sub> | 16.8 | 0.15 | 20071116 | 25.13235  | 298.62609 | 84.16656  | 5.21036  | 0.1974757 | 2.3188605 | 23 | 1 | 31 days   | 0.44 |     |   | MPC | 2007 VU <sub>144</sub>        |
| 2007 VY <sub>144</sub> | 16.3 | 0.15 | 20071027 | 23.31382  | 239.56984 | 148.59531 | 2.65235  | 0.1215363 | 2.9273679 | 10 | 1 | 14 days   | 0.12 |     |   | MPC | 2007 VY <sub>144</sub>        |
| 2007 VO <sub>145</sub> | 17.1 | 0.15 | 20071116 | 43.15495  | 88.67369  | 279.60999 | 6.50154  | 0.1407293 | 2.2490207 | 29 | 1 | 39 days   | 0.44 |     |   | MPC | 2007 VO <sub>145</sub>        |
| 2007 VP <sub>145</sub> | 16.8 | 0.15 | 20071116 | 26.82271  | 124.71713 | 260.08276 | 10.87768 | 0.1969248 | 2.5839452 | 16 | 1 | 36 days   | 0.24 |     |   | MPC | 2007 VP <sub>145</sub>        |
| 2007 VT <sub>145</sub> | 15.4 | 0.15 | 20071027 | 232.46286 | 281.76878 | 274.02464 | 8.02612  | 0.0833063 | 3.0161019 | 12 | 1 | 16 days   | 0.41 |     |   | MPC | 2007 VT <sub>145</sub>        |
| 2007 VV <sub>145</sub> | 16.5 | 0.15 | 20071027 | 6.14583   | 24.70621  | 27.09037  | 5.70604  | 0.0739672 | 2.7986688 | 13 | 1 | 16 days   | 0.19 |     |   | MPC | 2007 VV <sub>145</sub>        |
| 2007 VA <sub>146</sub> | 16.8 | 0.15 | 20071027 | 80.50390  | 325.50796 | 346.43432 | 3.43861  | 0.2395947 | 2.5763505 | 13 | 1 | 16 days   | 0.26 |     |   | MPC | 2007 VA <sub>146</sub>        |
| 2007 VB <sub>146</sub> | 16.9 | 0.15 | 20071027 | 35.38483  | 37.87986  | 337.38975 | 3.49271  | 0.1137034 | 2.7528919 | 13 | 1 | 16 days   | 0.38 |     |   | MPC | 2007 VB <sub>146</sub>        |
| 2007 VD <sub>146</sub> | 15.9 | 0.15 | 20071027 | 64.36735  | 71.02608  | 259.16465 | 9.92434  | 0.2157405 | 2.6258131 | 20 | 1 | 38 days   | 0.40 |     |   | MPC | 2007 VD <sub>146</sub>        |
| 2007 VE <sub>146</sub> | 15.7 | 0.15 | 20071027 | 242.47017 | 153.78984 | 42.64004  | 10.02396 | 0.1612491 | 3.1886710 | 14 | 1 | 16 days   | 0.19 |     |   | MPC | 2007 VE <sub>146</sub>        |
| 2007 VJ <sub>146</sub> | 16.8 | 0.15 | 20071027 | 333.85869 | 112.37461 | 338.09985 | 3.45317  | 0.0712105 | 2.7792149 | 13 | 1 | 16 days   | 0.21 |     |   | MPC | 2007 VJ <sub>146</sub>        |
| 2007 VN <sub>146</sub> | 16.4 | 0.15 | 20071027 | 356.50194 | 23.15496  | 43.74838  | 10.18216 | 0.0916551 | 3.1672181 | 13 | 1 | 16 days   | 0.23 |     |   | MPC | 2007 VN <sub>146</sub>        |
| 2007 VZ <sub>146</sub> | 15.3 | 0.15 | 20071116 | 339.23831 | 16.58715  | 76.54498  | 18.04475 | 0.0765739 | 3.1073676 | 18 | 1 | 31 days   | 0.32 |     |   | MPC | 2007 VZ <sub>146</sub>        |
| 2007 VF <sub>147</sub> | 17.4 | 0.15 | 20071116 | 328.25689 | 233.42678 | 234.29000 | 13.13911 | 0.1136066 | 2.5508222 | 19 | 1 | 31 days   | 0.39 |     |   | MPC | 2007 VF <sub>147</sub>        |
| 2007 VK <sub>147</sub> | 16.5 | 0.15 | 20071116 | 34.58422  | 278.50843 | 107.94575 | 3.42332  | 0.1061953 | 2.6556749 | 14 | 1 | 31 days   | 0.25 |     |   | MPC | 2007 VK <sub>147</sub>        |
| 2007 VW <sub>147</sub> | 17.5 | 0.15 | 20071116 | 335.94050 | 284.50553 | 181.23185 | 3.14527  | 0.2068648 | 2.6361863 | 12 | 1 | 32 days   | 0.15 |     |   | MPC | 2007 VW <sub>147</sub>        |
| 2007 VG <sub>148</sub> | 16.9 | 0.15 | 20071116 | 294.05802 | 47.01654  | 95.81161  | 8.00292  | 0.0760550 | 2.3885906 | 27 | 1 | 31 days   | 0.33 |     |   | MPC | 2007 VG <sub>148</sub>        |
| 2007 VH <sub>148</sub> | 16.2 | 0.15 | 20071116 | 328.57336 | 1.37782   | 108.15781 | 6.06982  | 0.1194867 | 2.7258558 | 14 | 1 | 30 days   | 0.17 |     |   | MPC | 2007 VH <sub>148</sub>        |
| 2007 VN <sub>148</sub> | 17.6 | 0.15 | 20071116 | 15.77331  | 316.10991 | 75.68630  | 3.54005  | 0.1911937 | 2.3357735 | 24 | 1 | 35 days   | 0.39 |     |   | MPC | 2007 VN <sub>148</sub>        |
| 2007 VQ <sub>148</sub> | 17.8 | 0.15 | 20071027 | 18.03478  | 317.34270 | 67.31808  | 4.82957  | 0.1416796 | 2.1981966 | 44 | 1 | 46 days   | 0.43 |     |   | MPC | 2007 VQ <sub>148</sub>        |
| 2007 VR <sub>148</sub> | 17.7 | 0.15 | 20071027 | 28.25548  | 285.96908 | 82.46172  | 2.27281  | 0.1914897 | 2.3868710 | 34 | 1 | 45 days   | 0.27 |     |   | MPC | 2007 VR <sub>148</sub>        |
| 2007 VS <sub>148</sub> | 17.3 | 0.15 | 20071027 | 355.67355 | 329.15165 | 86.11437  | 2.40153  | 0.1734313 | 2.4384363 | 36 | 1 | 82 days   | 0.43 | M-v | 4 | MPC | 2007 VS <sub>148</sub>        |
| 2007 VT <sub>148</sub> | 16.8 | 0.15 | 20071027 | 25.57063  | 154.43091 | 221.42606 | 7.14754  | 0.1453403 | 2.3401604 | 54 | 1 | 57 days   | 0.56 |     |   | MPC | 2007 VT <sub>148</sub>        |
| 2007 VC <sub>149</sub> | 15.4 | 0.15 | 20071027 | 30.73914  | 308.47296 | 67.50499  | 7.27951  | 0.1337730 | 3.0562017 | 68 | 5 | 2001-2007 | 0.49 | M-v | 0 | MPC | 128602 2007 VC <sub>149</sub> |
| 2007 VF <sub>149</sub> | 16.9 | 0.15 | 20071027 | 354.34479 | 346.21521 | 64.90591  | 7.50199  | 0.2342862 | 2.6374842 | 25 | 1 | 54 days   | 0.49 |     |   | MPC | 2007 VF <sub>149</sub>        |
| 2007 VT <sub>150</sub> | 17.2 | 0.15 | 20071027 | 4.53833   | 250.86318 | 157.02540 | 2.00148  | 0.1208477 | 2.3270345 | 13 | 1 | 14 days   | 0.28 |     |   | MPC | 2007 VT <sub>150</sub>        |
| 2007 VX <sub>150</sub> | 16.8 | 0.15 | 20071027 | 222.81688 | 128.79563 | 72.01003  | 7.79375  | 0.0970042 | 2.2266333 | 14 | 1 | 14 days   | 0.17 |     |   | MPC | 2007 VX <sub>150</sub>        |
| 2007 VY <sub>150</sub> | 16.9 | 0.15 | 20071027 | 37.25766  | 291.38364 | 68.78871  | 13.66043 | 0.2120815 | 2.6843642 | 13 | 1 | 14 days   | 0.34 |     |   | MPC | 2007 VY <sub>150</sub>        |
| 2007 VG <sub>151</sub> | 17.6 | 0.15 | 20071027 | 16.19615  | 105.74151 | 274.17623 | 1.17071  | 0.1871346 | 2.3940891 | 26 | 1 | 82 days   | 0.32 | M-v | 4 | MPC | 2007 VG <sub>151</sub>        |
| 2007 VH <sub>151</sub> | 17.4 | 0.15 | 20071027 | 308.15642 | 221.50338 | 238.54159 | 5.92702  | 0.0311914 | 2.1966962 | 16 | 1 | 15 days   | 0.38 |     |   | MPC | 2007 VH <sub>151</sub>        |



|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-------------------------------|
| 2007 VJ <sub>151</sub> | 16.4 | 0.15 | 20071116 | 358.22080 | 334.19898 | 90.09115  | 6.30993  | 0.1005704 | 2.4808446 | 24 | 1 | 27 days   | 0.42 | MP    | 2007 VJ <sub>151</sub>        |
| 2007 VD <sub>152</sub> | 15.4 | 0.15 | 20071027 | 160.19407 | 41.61016  | 209.45335 | 8.17923  | 0.0429774 | 3.1518255 | 13 | 1 | 16 days   | 0.26 | MP    | 2007 VD <sub>152</sub>        |
| 2007 VJ <sub>152</sub> | 16.2 | 0.15 | 20071027 | 0.13100   | 19.65401  | 35.74696  | 7.30437  | 0.0485056 | 2.9245044 | 20 | 1 | 58 days   | 0.39 | MP    | 2007 VJ <sub>152</sub>        |
| 2007 VM <sub>152</sub> | 16.0 | 0.15 | 20071027 | 19.99486  | 134.35735 | 246.06050 | 9.32667  | 0.2383852 | 3.0495611 | 51 | 1 | 52 days   | 0.45 | MP    | 2007 VM <sub>152</sub>        |
| 2007 VN <sub>152</sub> | 17.8 | 0.15 | 20071027 | 29.81938  | 109.50845 | 255.25924 | 7.52207  | 0.2332726 | 2.3334827 | 24 | 1 | 41 days   | 0.40 | MP    | 2007 VN <sub>152</sub>        |
| 2007 VO <sub>152</sub> | 17.6 | 0.15 | 20071116 | 337.94373 | 205.85155 | 239.89905 | 20.72130 | 0.0485852 | 1.9160156 | 36 | 1 | 33 days   | 0.66 | MP    | 2007 VO <sub>152</sub>        |
| 2007 VS <sub>152</sub> | 18.0 | 0.15 | 20071027 | 313.48840 | 33.48124  | 81.40851  | 9.11499  | 0.1924052 | 2.3223691 | 13 | 1 | 18 days   | 0.23 | MP    | 2007 VS <sub>152</sub>        |
| 2007 VV <sub>152</sub> | 16.5 | 0.15 | 20071116 | 10.97472  | 349.15250 | 64.63642  | 9.56774  | 0.1516366 | 2.6615573 | 19 | 1 | 42 days   | 0.49 | MP    | 2007 VV <sub>152</sub>        |
| 2007 VY <sub>152</sub> | 17.8 | 0.15 | 20071116 | 7.20704   | 149.50354 | 251.18557 | 9.93281  | 0.2214078 | 2.3516422 | 31 | 1 | 33 days   | 0.51 | MP    | 2007 VY <sub>152</sub>        |
| 2007 VH <sub>153</sub> | 17.5 | 0.15 | 20071027 | 18.38300  | 322.51651 | 68.98751  | 7.36769  | 0.1230022 | 2.3074262 | 26 | 1 | 46 days   | 0.38 | MP    | 2007 VH <sub>153</sub>        |
| 2007 VB <sub>154</sub> | 18.2 | 0.15 | 20071027 | 18.00611  | 331.71767 | 37.95988  | 8.74513  | 0.3400277 | 3.0075092 | 20 | 1 | 38 days   | 0.37 | MP    | 2007 VB <sub>154</sub>        |
| 2007 VD <sub>154</sub> | 17.8 | 0.15 | 20071027 | 26.09261  | 159.19497 | 208.89844 | 5.60905  | 0.2280018 | 2.3567572 | 23 | 1 | 77 days   | 0.44 | M-v 4 | 2007 VD <sub>154</sub>        |
| 2007 VE <sub>154</sub> | 15.9 | 0.15 | 20071116 | 19.26894  | 314.52486 | 78.68912  | 4.28658  | 0.2029677 | 3.0351057 | 33 | 1 | 31 days   | 0.50 | MP    | 2007 VE <sub>154</sub>        |
| 2007 VJ <sub>154</sub> | 16.1 | 0.15 | 20071027 | 39.13434  | 312.07914 | 37.87707  | 19.07516 | 0.2165843 | 3.1763953 | 12 | 1 | 8 days    | 0.72 | MP    | 2007 VJ <sub>154</sub>        |
| 2007 VN <sub>154</sub> | 17.2 | 0.15 | 20071027 | 55.62174  | 5.08993   | 341.38738 | 4.89355  | 0.0588419 | 2.5981659 | 15 | 1 | 39 days   | 0.21 | MP    | 2007 VN <sub>154</sub>        |
| 2007 VP <sub>154</sub> | 16.0 | 0.15 | 20071027 | 77.59796  | 319.52235 | 8.52859   | 6.57083  | 0.0416051 | 3.2507081 | 18 | 1 | 39 days   | 0.24 | MP    | 2007 VP <sub>154</sub>        |
| 2007 VB <sub>155</sub> | 16.6 | 0.15 | 20071027 | 103.72186 | 317.85210 | 330.98907 | 3.84839  | 0.1733756 | 2.5895991 | 28 | 3 | 2002-2007 | 0.27 | M-v 3 | 128602 2007 VB <sub>155</sub> |
| 2007 VE <sub>155</sub> | 17.6 | 0.15 | 20071116 | 35.39281  | 107.94118 | 252.95284 | 10.14131 | 0.2177528 | 2.6588251 | 15 | 1 | 29 days   | 0.25 | MP    | 2007 VE <sub>155</sub>        |
| 2007 VL <sub>155</sub> | 18.1 | 0.15 | 20071116 | 322.85716 | 213.25703 | 257.45326 | 5.58252  | 0.2404381 | 2.5757494 | 21 | 1 | 30 days   | 0.44 | MP    | 2007 VL <sub>155</sub>        |
| 2007 VM <sub>155</sub> | 18.6 | 0.15 | 20071027 | 45.35853  | 306.35769 | 27.46294  | 6.49086  | 0.2601859 | 2.3159768 | 19 | 1 | 60 days   | 0.22 | M-v 4 | 2007 VM <sub>155</sub>        |
| 2007 VN <sub>155</sub> | 18.3 | 0.15 | 20071116 | 10.05318  | 136.82647 | 262.92892 | 5.31377  | 0.1258952 | 2.4632273 | 15 | 1 | 30 days   | 0.40 | MP    | 2007 VN <sub>155</sub>        |
| 2007 VO <sub>155</sub> | 16.8 | 0.15 | 20071116 | 272.02453 | 155.17202 | 2.55425   | 3.86584  | 0.1490779 | 2.6341197 | 18 | 1 | 31 days   | 0.37 | MP    | 2007 VO <sub>155</sub>        |
| 2007 VP <sub>155</sub> | 16.3 | 0.15 | 20071116 | 71.52236  | 316.57619 | 19.14833  | 5.96987  | 0.0530553 | 2.6839417 | 15 | 1 | 31 days   | 0.53 | MP    | 2007 VP <sub>155</sub>        |
| 2007 VQ <sub>155</sub> | 16.4 | 0.15 | 20071027 | 42.48581  | 324.24813 | 33.27195  | 11.72535 | 0.1092699 | 3.0630871 | 18 | 1 | 42 days   | 0.27 | MP    | 2007 VQ <sub>155</sub>        |
| 2007 VR <sub>155</sub> | 15.9 | 0.15 | 20071116 | 73.73855  | 80.55525  | 250.22667 | 9.56929  | 0.0750263 | 3.1511687 | 18 | 1 | 29 days   | 0.42 | MP    | 2007 VR <sub>155</sub>        |
| 2007 VU <sub>155</sub> | 18.4 | 0.15 | 20071116 | 13.69603  | 92.02795  | 301.46584 | 2.08972  | 0.1721087 | 2.2574197 | 18 | 1 | 30 days   | 0.41 | MP    | 2007 VU <sub>155</sub>        |
| 2007 VA <sub>156</sub> | 16.8 | 0.15 | 20071027 | 146.35101 | 297.84617 | 324.02525 | 3.47073  | 0.0247419 | 2.7454351 | 29 | 3 | 2003-2007 | 0.26 | M-v 3 | 128603 2007 VA <sub>156</sub> |
| 2007 VC <sub>156</sub> | 18.0 | 0.15 | 20071116 | 19.10637  | 88.47536  | 299.17192 | 2.86868  | 0.1563293 | 2.5238790 | 15 | 1 | 29 days   | 0.28 | MP    | 2007 VC <sub>156</sub>        |
| 2007 VE <sub>156</sub> | 16.2 | 0.15 | 20071027 | 70.19529  | 303.65927 | 9.02612   | 4.18562  | 0.2305565 | 2.6276859 | 21 | 1 | 35 days   | 0.47 | MP    | 2007 VE <sub>156</sub>        |
| 2007 VG <sub>156</sub> | 17.8 | 0.15 | 20071027 | 24.43156  | 23.74231  | 357.26436 | 3.36918  | 0.0414493 | 2.1819467 | 19 | 1 | 53 days   | 0.24 | MP    | 2007 VG <sub>156</sub>        |
| 2007 VJ <sub>156</sub> | 16.9 | 0.15 | 20071116 | 322.11029 | 66.45468  | 37.50617  | 9.47342  | 0.1322871 | 3.1182232 | 12 | 1 | 31 days   | 0.26 | MP    | 2007 VJ <sub>156</sub>        |
| 2007 VW <sub>156</sub> | 17.2 | 0.15 | 20071027 | 268.40594 | 352.59876 | 158.62505 | 2.84921  | 0.0727794 | 2.6855366 | 16 | 1 | 17 days   | 0.36 | MP    | 2007 VW <sub>156</sub>        |
| 2007 VZ <sub>156</sub> | 17.8 | 0.15 | 20071027 | 357.38205 | 211.22607 | 200.41188 | 4.53723  | 0.2653736 | 2.5948372 | 36 | 1 | 85 days   | 0.48 | M-v 3 | 2007 VZ <sub>156</sub>        |
| 2007 VC <sub>157</sub> | 17.9 | 0.15 | 20071027 | 302.32229 | 14.75489  | 98.18721  | 3.95310  | 0.0653529 | 2.2049820 | 16 | 1 | 15 days   | 0.25 | MP    | 2007 VC <sub>157</sub>        |
| 2007 VE <sub>157</sub> | 17.6 | 0.15 | 20071027 | 43.84195  | 274.34137 | 71.45619  | 7.54966  | 0.1897460 | 2.2076360 | 18 | 1 | 25 days   | 0.54 | MP    | 2007 VE <sub>157</sub>        |
| 2007 VJ <sub>157</sub> | 16.7 | 0.15 | 20071027 | 323.56257 | 30.73585  | 72.01885  | 10.88074 | 0.1847566 | 3.1597618 | 16 | 1 | 31 days   | 0.25 | MP    | 2007 VJ <sub>157</sub>        |
| 2007 VP <sub>157</sub> | 18.5 | 0.15 | 20071027 | 26.95154  | 245.27884 | 117.94982 | 3.04391  | 0.2440926 | 2.3689399 | 13 | 1 | 31 days   | 0.22 | MP    | 2007 VP <sub>157</sub>        |
| 2007 VX <sub>157</sub> | 17.9 | 0.15 | 20071027 | 30.74804  | 252.45024 | 109.91618 | 2.71562  | 0.2065221 | 2.3806112 | 16 | 1 | 31 days   | 0.14 | MP    | 2007 VX <sub>157</sub>        |
| 2007 VA <sub>158</sub> | 18.1 | 0.15 | 20071027 | 337.95229 | 335.14396 | 103.89457 | 3.36555  | 0.1709627 | 2.2996755 | 29 | 1 | 45 days   | 0.22 | MP    | 2007 VA <sub>158</sub>        |
| 2007 VD <sub>158</sub> | 16.7 | 0.15 | 20071027 | 60.70167  | 261.28036 | 83.72617  | 7.44459  | 0.0616547 | 2.7720688 | 16 | 1 | 31 days   | 0.26 | MP    | 2007 VD <sub>158</sub>        |
| 2007 VH <sub>158</sub> | 17.0 | 0.15 | 20071027 | 34.22202  | 255.37181 | 104.27971 | 4.36333  | 0.2100810 | 2.7534572 | 23 | 1 | 45 days   | 0.38 | MP    | 2007 VH <sub>158</sub>        |
| 2007 VL <sub>158</sub> | 16.2 | 0.15 | 20071027 | 42.99627  | 281.77528 | 73.57665  | 11.85258 | 0.1612700 | 3.2120437 | 16 | 1 | 31 days   | 0.22 | MP    | 2007 VL <sub>158</sub>        |
| 2007 VQ <sub>158</sub> | 15.7 | 0.15 | 20071027 | 72.92867  | 253.69725 | 78.96076  | 10.97023 | 0.0836951 | 3.4672976 | 20 | 1 | 16 days   | 0.30 | MP    | 2007 VQ <sub>158</sub>        |
| 2007 VU <sub>158</sub> | 18.1 | 0.15 | 20071027 | 299.84687 | 307.17911 | 189.78996 | 4.64908  | 0.2215503 | 2.5282008 | 12 | 1 | 15 days   | 0.23 | MP    | 2007 VU <sub>158</sub>        |
| 2007 VW <sub>158</sub> | 15.7 | 0.15 | 20071027 | 242.86069 | 98.23347  | 77.94224  | 11.89915 | 0.0443065 | 2.9859621 | 16 | 1 | 16 days   | 0.27 | MP    | 2007 VW <sub>158</sub>        |
| 2007 VX <sub>158</sub> | 16.4 | 0.15 | 20071027 | 281.65098 | 60.86174  | 79.59869  | 10.32716 | 0.0610949 | 3.1361468 | 12 | 1 | 15 days   | 0.23 | MP    | 2007 VX <sub>158</sub>        |
| 2007 VY <sub>158</sub> | 18.6 | 0.15 | 20071027 | 348.38557 | 298.19805 | 126.54632 | 3.52987  | 0.0978242 | 2.2993910 | 12 | 1 | 15 days   | 0.23 | MP    | 2007 VY <sub>158</sub>        |
| 2007 VA <sub>159</sub> | 17.0 | 0.15 | 20071027 | 309.71138 | 272.12931 | 217.48272 | 10.60656 | 0.2516146 | 2.6420669 | 28 | 1 | 72 days   | 0.39 | M-v 4 | 2007 VA <sub>159</sub>        |
| 2007 VR <sub>159</sub> | 17.0 | 0.15 | 20071027 | 281.05437 | 70.02255  | 76.95206  | 10.03191 | 0.1569619 | 2.7067638 | 13 | 1 | 15 days   | 0.18 | MP    | 2007 VR <sub>159</sub>        |
| 2007 VT <sub>159</sub> | 18.8 | 0.15 | 20071027 | 354.14047 | 293.95232 | 122.84699 | 3.37910  | 0.2199273 | 2.6359163 | 12 | 1 | 15 days   | 0.21 | MP    | 2007 VT <sub>159</sub>        |
| 2007 VY <sub>159</sub> | 18.0 | 0.15 | 20071027 | 59.36884  | 232.66726 | 91.31428  | 5.45443  | 0.2282498 | 2.3138090 | 16 | 1 | 31 days   | 0.27 | MP    | 2007 VY <sub>159</sub>        |
| 2007 VZ <sub>159</sub> | 16.3 | 0.15 | 20071027 | 209.28103 | 114.85219 | 87.95524  | 7.19561  | 0.0101148 | 2.7665594 | 16 | 1 | 31 days   | 0.18 | MP    | 2007 VZ <sub>159</sub>        |
| 2007 VB <sub>160</sub> | 16.5 | 0.15 | 20071027 | 62.88213  | 120.10386 | 216.03592 | 14.11356 | 0.1197829 | 2.8169456 | 21 | 1 | 32 days   | 0.15 | MP    | 2007 VB <sub>160</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 VF <sub>160</sub> | 16.0 | 0.15 | 20071027 | 34.42209  | 164.42215 | 208.67436 | 10.39598 | 0.0776111 | 3.1351717 | 20 | 1 | 24 days   | 0.29 |       | MPC | 2007 VF <sub>160</sub>        |
| 2007 VJ <sub>160</sub> | 17.0 | 0.15 | 20071027 | 38.53835  | 170.55385 | 178.85394 | 4.78759  | 0.2397294 | 2.5902171 | 16 | 1 | 31 days   | 0.16 |       | MPC | 2007 VJ <sub>160</sub>        |
| 2007 VM <sub>160</sub> | 16.4 | 0.15 | 20071027 | 26.04310  | 280.36192 | 101.12010 | 6.28365  | 0.0762306 | 2.7671432 | 16 | 1 | 31 days   | 0.15 |       | MPC | 2007 VM <sub>160</sub>        |
| 2007 VW <sub>160</sub> | 17.1 | 0.15 | 20071027 | 205.70859 | 88.65410  | 122.21854 | 5.47885  | 0.0790641 | 2.5246213 | 12 | 1 | 15 days   | 0.33 |       | MPC | 2007 VW <sub>160</sub>        |
| 2007 VX <sub>160</sub> | 16.7 | 0.15 | 20071027 | 293.73032 | 46.23855  | 126.53643 | 5.10952  | 0.4507036 | 2.9251178 | 12 | 1 | 15 days   | 0.35 |       | MPC | 2007 VX <sub>160</sub>        |
| 2007 VC <sub>161</sub> | 17.0 | 0.15 | 20071027 | 355.08372 | 279.91867 | 139.11962 | 4.35834  | 0.0858756 | 2.8096568 | 13 | 1 | 16 days   | 0.17 |       | MPC | 2007 VC <sub>161</sub>        |
| 2007 VJ <sub>161</sub> | 17.2 | 0.15 | 20071027 | 318.47844 | 161.27006 | 305.46271 | 2.94129  | 0.1483680 | 2.4185602 | 32 | 1 | 30 days   | 0.47 |       | MPC | 2007 VJ <sub>161</sub>        |
| 2007 VO <sub>161</sub> | 15.8 | 0.15 | 20071027 | 275.93734 | 121.18273 | 23.26045  | 5.89416  | 0.0252510 | 3.1030298 | 19 | 1 | 30 days   | 0.21 |       | MPC | 2007 VO <sub>161</sub>        |
| 2007 VY <sub>161</sub> | 16.5 | 0.15 | 20071027 | 43.23452  | 100.24448 | 249.42319 | 15.56899 | 0.2544964 | 3.2160212 | 15 | 1 | 16 days   | 0.36 |       | MPC | 2007 VY <sub>161</sub>        |
| 2007 VC <sub>162</sub> | 17.6 | 0.15 | 20071027 | 62.68341  | 296.13855 | 35.89543  | 6.16818  | 0.1872135 | 2.3251870 | 12 | 1 | 15 days   | 0.19 |       | MPC | 2007 VC <sub>162</sub>        |
| 2007 VJ <sub>162</sub> | 17.5 | 0.15 | 20071027 | 320.47300 | 230.06526 | 242.34089 | 14.45064 | 0.2205643 | 2.6897387 | 12 | 1 | 13 days   | 0.18 |       | MPC | 2007 VJ <sub>162</sub>        |
| 2007 VK <sub>162</sub> | 16.6 | 0.15 | 20071027 | 325.82117 | 164.02146 | 289.19582 | 1.74902  | 0.0622981 | 2.6998057 | 57 | 6 | 2000-2007 | 0.59 | M-v 0 | MPC | 128603 2007 VK <sub>162</sub> |
| 2007 VM <sub>162</sub> | 17.1 | 0.15 | 20071027 | 43.80972  | 102.55526 | 262.56654 | 4.83858  | 0.0759437 | 2.7982608 | 15 | 1 | 16 days   | 0.33 |       | MPC | 2007 VM <sub>162</sub>        |
| 2007 VT <sub>162</sub> | 17.6 | 0.15 | 20071027 | 11.80897  | 18.92999  | 20.95332  | 2.96611  | 0.1167414 | 2.6789491 | 15 | 1 | 16 days   | 0.25 |       | MPC | 2007 VT <sub>162</sub>        |
| 2007 VA <sub>163</sub> | 16.6 | 0.15 | 20071027 | 23.41514  | 144.86471 | 248.08510 | 13.33546 | 0.0420382 | 3.1323977 | 15 | 1 | 16 days   | 0.34 |       | MPC | 2007 VA <sub>163</sub>        |
| 2007 VF <sub>163</sub> | 16.6 | 0.15 | 20071027 | 59.19787  | 65.74005  | 257.10114 | 5.85543  | 0.2986875 | 2.5484460 | 16 | 1 | 24 days   | 0.22 |       | MPC | 2007 VF <sub>163</sub>        |
| 2007 VW <sub>163</sub> | 16.1 | 0.15 | 20071027 | 306.07368 | 231.55313 | 249.04297 | 9.70291  | 0.0669422 | 3.2135678 | 20 | 1 | 49 days   | 0.35 |       | MPC | 2007 VW <sub>163</sub>        |
| 2007 VD <sub>164</sub> | 16.8 | 0.15 | 20071027 | 43.49498  | 315.05862 | 42.49059  | 2.75490  | 0.1716700 | 2.5537461 | 20 | 1 | 92 days   | 0.31 |       | MPC | 2007 VD <sub>164</sub>        |
| 2007 VO <sub>164</sub> | 15.9 | 0.15 | 20071116 | 333.91395 | 39.81559  | 61.81771  | 28.47005 | 0.1792780 | 3.1095755 | 24 | 1 | 38 days   | 0.47 |       | MPC | 2007 VO <sub>164</sub>        |
| 2007 VQ <sub>164</sub> | 17.3 | 0.15 | 20071027 | 335.32103 | 22.61735  | 63.49655  | 9.68051  | 0.0448752 | 2.6871171 | 15 | 1 | 13 days   | 0.23 |       | MPC | 2007 VQ <sub>164</sub>        |
| 2007 VR <sub>164</sub> | 17.9 | 0.15 | 20071027 | 323.09843 | 206.17341 | 260.05608 | 1.37983  | 0.1590567 | 2.4486420 | 16 | 1 | 13 days   | 0.24 |       | MPC | 2007 VR <sub>164</sub>        |
| 2007 VU <sub>164</sub> | 17.7 | 0.15 | 20071027 | 54.18134  | 124.69164 | 232.34385 | 1.70808  | 0.0559197 | 2.2288930 | 16 | 1 | 9 days    | 0.36 |       | MPC | 2007 VU <sub>164</sub>        |
| 2007 VV <sub>164</sub> | 17.4 | 0.15 | 20071116 | 23.81774  | 136.65041 | 241.97468 | 6.31161  | 0.3059107 | 3.0218348 | 27 | 1 | 29 days   | 0.36 |       | MPC | 2007 VV <sub>164</sub>        |
| 2007 VY <sub>164</sub> | 17.3 | 0.15 | 20071116 | 68.35433  | 290.93742 | 59.55892  | 6.43975  | 0.0452747 | 2.3923239 | 13 | 1 | 26 days   | 0.18 |       | MPC | 2007 VY <sub>164</sub>        |
| 2007 VZ <sub>164</sub> | 17.2 | 0.15 | 20071116 | 305.05885 | 247.10364 | 249.74793 | 2.10112  | 0.1710012 | 2.5534941 | 20 | 1 | 29 days   | 0.22 |       | MPC | 2007 VZ <sub>164</sub>        |
| 2007 VC <sub>165</sub> | 17.5 | 0.15 | 20071027 | 21.38953  | 133.56301 | 236.46374 | 10.81513 | 0.3528115 | 2.7069003 | 38 | 1 | 49 days   | 0.35 |       | MPC | 2007 VC <sub>165</sub>        |
| 2007 VH <sub>165</sub> | 14.8 | 0.15 | 20071027 | 350.07655 | 1.96068   | 70.31573  | 10.95485 | 0.0648531 | 3.5685542 | 21 | 1 | 41 days   | 0.28 |       | MPC | 2007 VH <sub>165</sub>        |
| 2007 VM <sub>165</sub> | 18.2 | 0.15 | 20071027 | 49.94791  | 145.94992 | 198.89390 | 1.98063  | 0.2011536 | 2.3387338 | 13 | 1 | 14 days   | 0.18 |       | MPC | 2007 VM <sub>165</sub>        |
| 2007 VQ <sub>165</sub> | 16.0 | 0.15 | 20071027 | 23.45717  | 158.22694 | 234.37616 | 5.84717  | 0.0686274 | 2.8851521 | 26 | 1 | 103 days  | 0.40 | M-v 4 | MPC | 2007 VQ <sub>165</sub>        |
| 2007 VR <sub>165</sub> | 17.3 | 0.15 | 20071116 | 22.13652  | 166.09901 | 223.78901 | 3.88998  | 0.2058399 | 2.9999192 | 18 | 1 | 30 days   | 0.43 |       | MPC | 2007 VR <sub>165</sub>        |
| 2007 VU <sub>165</sub> | 15.8 | 0.15 | 20071027 | 293.70869 | 283.90683 | 240.56278 | 22.35383 | 0.3166136 | 3.1641481 | 17 | 1 | 34 days   | 0.23 |       | MPC | 2007 VU <sub>165</sub>        |
| 2007 VV <sub>165</sub> | 16.1 | 0.15 | 20071116 | 227.62729 | 125.32124 | 73.98348  | 4.67052  | 0.0257952 | 2.8934133 | 17 | 1 | 30 days   | 0.43 |       | MPC | 2007 VV <sub>165</sub>        |
| 2007 VW <sub>165</sub> | 16.1 | 0.15 | 20071116 | 272.40295 | 8.85295   | 154.17370 | 1.25439  | 0.0891027 | 3.1261310 | 19 | 1 | 29 days   | 0.30 |       | MPC | 2007 VW <sub>165</sub>        |
| 2007 VD <sub>166</sub> | 15.8 | 0.15 | 20071116 | 105.20585 | 147.80051 | 160.93932 | 1.44389  | 0.0971150 | 2.5219020 | 14 | 1 | 30 days   | 0.37 |       | MPC | 2007 VD <sub>166</sub>        |
| 2007 VE <sub>166</sub> | 17.5 | 0.15 | 20071027 | 21.42557  | 158.14265 | 231.89136 | 8.31992  | 0.1247375 | 2.5649095 | 13 | 1 | 14 days   | 0.30 |       | MPC | 2007 VE <sub>166</sub>        |
| 2007 VH <sub>166</sub> | 15.2 | 0.15 | 20071116 | 87.16246  | 244.67013 | 68.07296  | 14.21773 | 0.2204388 | 2.6065746 | 31 | 1 | 55 days   | 0.53 |       | MPC | 2007 VH <sub>166</sub>        |
| 2007 VP <sub>166</sub> | 17.1 | 0.15 | 20071116 | 72.47713  | 264.90066 | 72.98356  | 10.08862 | 0.1365491 | 2.5538892 | 19 | 1 | 29 days   | 0.26 |       | MPC | 2007 VP <sub>166</sub>        |
| 2007 VW <sub>166</sub> | 16.2 | 0.15 | 20071027 | 36.74825  | 322.20452 | 56.62364  | 9.72564  | 0.0482796 | 2.8598362 | 27 | 2 | 2005-2007 | 0.30 | M-v 4 | MPC | 128603 2007 VW <sub>166</sub> |
| 2007 VZ <sub>166</sub> | 17.6 | 0.15 | 20071116 | 3.42523   | 0.31248   | 56.69779  | 16.23283 | 0.2003936 | 2.6035374 | 31 | 1 | 38 days   | 0.48 |       | MPC | 2007 VZ <sub>166</sub>        |
| 2007 VF <sub>167</sub> | 16.0 | 0.15 | 20071027 | 86.73168  | 248.94338 | 59.70195  | 4.19985  | 0.2413297 | 3.0430099 | 16 | 1 | 13 days   | 0.30 |       | MPC | 2007 VF <sub>167</sub>        |
| 2007 VJ <sub>167</sub> | 16.3 | 0.15 | 20071027 | 346.43597 | 18.74809  | 56.22709  | 4.05653  | 0.1663018 | 2.5715944 | 48 | 2 | 2005-2007 | 0.39 | M-v 3 | MPC | 128603 2007 VJ <sub>167</sub> |
| 2007 VK <sub>167</sub> | 18.2 | 0.15 | 20071027 | 62.85908  | 266.20984 | 63.35924  | 3.21431  | 0.2115767 | 2.2512916 | 12 | 1 | 9 days    | 0.22 |       | MPC | 2007 VK <sub>167</sub>        |
| 2007 VL <sub>167</sub> | 17.1 | 0.15 | 20071027 | 10.93715  | 49.95335  | 353.18695 | 2.24139  | 0.1986507 | 2.6997343 | 16 | 1 | 15 days   | 0.42 |       | MPC | 2007 VL <sub>167</sub>        |
| 2007 VT <sub>167</sub> | 15.6 | 0.15 | 20071116 | 25.30457  | 340.38246 | 61.90104  | 15.16551 | 0.0626770 | 2.9986480 | 18 | 1 | 38 days   | 0.55 |       | MPC | 2007 VT <sub>167</sub>        |
| 2007 VM <sub>168</sub> | 17.5 | 0.15 | 20071027 | 348.73833 | 162.57511 | 273.28615 | 1.60706  | 0.1536402 | 2.3677615 | 40 | 3 | 2003-2007 | 0.48 | M-v 3 | MPC | 128603 2007 VM <sub>168</sub> |
| 2007 VP <sub>168</sub> | 15.4 | 0.15 | 20071116 | 88.27834  | 253.55179 | 68.31085  | 13.94912 | 0.1906392 | 2.6621808 | 18 | 1 | 31 days   | 0.32 |       | MPC | 2007 VP <sub>168</sub>        |
| 2007 VQ <sub>168</sub> | 16.4 | 0.15 | 20071116 | 289.52512 | 101.45137 | 68.11952  | 28.19943 | 0.2397148 | 2.6439240 | 14 | 1 | 40 days   | 0.55 |       | MPC | 2007 VQ <sub>168</sub>        |
| 2007 VZ <sub>168</sub> | 16.3 | 0.15 | 20071116 | 55.77235  | 109.18177 | 233.67013 | 3.42019  | 0.2978504 | 2.5857595 | 16 | 1 | 30 days   | 0.43 |       | MPC | 2007 VZ <sub>168</sub>        |
| 2007 VF <sub>169</sub> | 15.4 | 0.15 | 20071027 | 136.43886 | 210.35073 | 77.64540  | 21.23250 | 0.1481330 | 2.0832608 | 12 | 1 | 13 days   | 0.19 |       | MPC | 2007 VF <sub>169</sub>        |
| 2007 VM <sub>169</sub> | 15.4 | 0.15 | 20071116 | 58.84137  | 119.06245 | 253.53840 | 14.49049 | 0.0566191 | 3.0223254 | 13 | 1 | 29 days   | 0.19 |       | MPC | 2007 VM <sub>169</sub>        |
| 2007 VN <sub>169</sub> | 16.8 | 0.15 | 20071116 | 4.63176   | 346.97777 | 76.50667  | 6.62145  | 0.1084632 | 2.3516137 | 27 | 1 | 30 days   | 0.28 |       | MPC | 2007 VN <sub>169</sub>        |
| 2007 VC <sub>170</sub> | 15.7 | 0.15 | 20071027 | 19.66049  | 313.28263 | 74.27657  | 10.93913 | 0.1076489 | 3.0227194 | 28 | 1 | 57 days   | 0.49 |       | MPC | 2007 VC <sub>170</sub>        |
| 2007 VD <sub>170</sub> | 15.6 | 0.15 | 20071116 | 138.98494 | 224.05016 | 62.77559  | 10.35693 | 0.0437321 | 3.0239879 | 13 | 1 | 38 days   | 0.34 |       | MPC | 2007 VD <sub>170</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 VG <sub>170</sub> | 17.8 | 0.15 | 20071116 | 324.68941 | 50.03520  | 62.07046  | 7.23857  | 0.1389141 | 2.3058185 | 24 | 1 | 38 days   | 0.41 |       | MPC | 2007 VG <sub>170</sub>        |
| 2007 VH <sub>170</sub> | 17.9 | 0.15 | 20071116 | 44.82981  | 310.07840 | 63.19128  | 22.56381 | 0.0935430 | 1.9539775 | 24 | 1 | 28 days   | 0.46 |       | MPC | 2007 VH <sub>170</sub>        |
| 2007 VX <sub>170</sub> | 16.4 | 0.15 | 20071027 | 243.01718 | 262.53750 | 268.59460 | 7.63970  | 0.0687695 | 2.6757021 | 21 | 1 | 39 days   | 0.32 |       | MPC | 2007 VX <sub>170</sub>        |
| 2007 VB <sub>171</sub> | 16.8 | 0.15 | 20071027 | 13.23459  | 16.22251  | 12.37445  | 7.21802  | 0.1846235 | 3.1968065 | 18 | 1 | 39 days   | 0.16 |       | MPC | 2007 VB <sub>171</sub>        |
| 2007 VJ <sub>171</sub> | 16.2 | 0.15 | 20071027 | 109.67680 | 322.57049 | 328.81296 | 3.97907  | 0.1016421 | 3.0361986 | 35 | 4 | 2001-2007 | 0.28 | M-v 0 | MPC | 128603 2007 VJ <sub>171</sub> |
| 2007 VR <sub>171</sub> | 16.8 | 0.15 | 20071116 | 10.87065  | 55.74838  | 344.60598 | 3.10091  | 0.1198823 | 3.0551245 | 15 | 1 | 29 days   | 0.18 |       | MPC | 2007 VR <sub>171</sub>        |
| 2007 VS <sub>171</sub> | 16.3 | 0.15 | 20071027 | 333.63494 | 61.19280  | 20.66242  | 5.83399  | 0.1185962 | 2.6358920 | 47 | 3 | 2003-2007 | 0.47 | M-v 3 | MPC | 128604 2007 VS <sub>171</sub> |
| 2007 VU <sub>171</sub> | 18.5 | 0.15 | 20071027 | 38.01654  | 330.15997 | 16.87178  | 4.48964  | 0.2396058 | 2.2642804 | 19 | 1 | 34 days   | 0.36 |       | MPC | 2007 VU <sub>171</sub>        |
| 2007 VV <sub>171</sub> | 17.0 | 0.15 | 20071027 | 64.88744  | 14.22857  | 306.16480 | 2.75419  | 0.2217694 | 2.9180433 | 11 | 1 | 2 days    | 0.41 |       | MPC | 2007 VV <sub>171</sub>        |
| 2007 VA <sub>172</sub> | 15.7 | 0.15 | 20071116 | 19.31088  | 140.24997 | 252.80731 | 8.07273  | 0.0717127 | 3.1073050 | 20 | 1 | 29 days   | 0.49 |       | MPC | 2007 VA <sub>172</sub>        |
| 2007 VE <sub>173</sub> | 16.6 | 0.15 | 20071027 | 22.77209  | 253.34582 | 122.60749 | 5.69423  | 0.1554861 | 2.5330004 | 21 | 1 | 15 days   | 0.44 |       | MPC | 2007 VE <sub>173</sub>        |
| 2007 VU <sub>173</sub> | 15.6 | 0.15 | 20071027 | 359.61076 | 134.44186 | 276.07535 | 7.93256  | 0.1293181 | 3.0207790 | 51 | 3 | 2001-2007 | 0.48 | M-v 3 | MPC | 128604 2007 VU <sub>173</sub> |
| 2007 VW <sub>173</sub> | 15.6 | 0.15 | 20071116 | 12.75192  | 276.95048 | 123.63946 | 9.68873  | 0.2092896 | 2.9284297 | 34 | 1 | 32 days   | 0.44 |       | MPC | 2007 VW <sub>173</sub>        |
| 2007 VG <sub>174</sub> | 16.6 | 0.15 | 20071027 | 15.25946  | 316.66141 | 51.21535  | 10.80209 | 0.2511820 | 2.9414947 | 35 | 1 | 59 days   | 0.52 |       | MPC | 2007 VG <sub>174</sub>        |
| 2007 VZ <sub>174</sub> | 17.4 | 0.15 | 20071027 | 51.56884  | 295.78292 | 43.29535  | 6.23524  | 0.0536840 | 2.7538500 | 12 | 1 | 14 days   | 0.27 |       | MPC | 2007 VZ <sub>174</sub>        |
| 2007 VQ <sub>177</sub> | 17.5 | 0.15 | 20071027 | 352.77973 | 246.03772 | 175.88072 | 3.64176  | 0.3125916 | 2.5959758 | 46 | 1 | 82 days   | 0.47 | M-v 3 | MPC | 2007 VQ <sub>177</sub>        |
| 2007 VM <sub>178</sub> | 16.1 | 0.15 | 20071027 | 36.41323  | 148.08805 | 205.66630 | 11.24363 | 0.0950644 | 3.0740175 | 15 | 1 | 7 days    | 0.59 |       | MPC | 2007 VM <sub>178</sub>        |
| 2007 VS <sub>178</sub> | 16.3 | 0.15 | 20071027 | 304.13869 | 69.12246  | 50.62806  | 13.94120 | 0.2203862 | 2.6382868 | 35 | 1 | 59 days   | 0.59 |       | MPC | 2007 VS <sub>178</sub>        |
| 2007 VU <sub>179</sub> | 17.4 | 0.15 | 20071027 | 23.95814  | 205.12042 | 157.34376 | 1.85909  | 0.2204209 | 2.5730163 | 30 | 1 | 63 days   | 0.44 | M-v 5 | MPC | 2007 VU <sub>179</sub>        |
| 2007 VM <sub>180</sub> | 17.8 | 0.15 | 20071027 | 36.06702  | 271.73987 | 67.19332  | 4.90490  | 0.2762324 | 2.5641834 | 13 | 1 | 28 days   | 0.24 | D     | MPC | 2007 VM <sub>180</sub>        |
| 2007 VP <sub>180</sub> | 17.0 | 0.15 | 20071027 | 309.80828 | 29.55211  | 72.95880  | 4.35311  | 0.1619939 | 2.4004207 | 30 | 1 | 57 days   | 0.44 |       | MPC | 2007 VP <sub>180</sub>        |
| 2007 VU <sub>180</sub> | 16.2 | 0.15 | 20071116 | 39.86960  | 305.58100 | 48.95389  | 9.62560  | 0.1326439 | 2.7316383 | 35 | 1 | 36 days   | 0.48 |       | MPC | 2007 VU <sub>180</sub>        |
| 2007 VV <sub>180</sub> | 15.7 | 0.15 | 20071027 | 332.60398 | 23.67320  | 50.24459  | 12.14248 | 0.1013920 | 3.0629886 | 26 | 1 | 61 days   | 0.49 | M-v 4 | MPC | 2007 VV <sub>180</sub>        |
| 2007 VX <sub>180</sub> | 17.6 | 0.15 | 20071027 | 29.74799  | 295.96585 | 62.87247  | 5.20388  | 0.1640191 | 2.3006951 | 33 | 1 | 37 days   | 0.42 |       | MPC | 2007 VX <sub>180</sub>        |
| 2007 VZ <sub>180</sub> | 17.9 | 0.15 | 20071027 | 17.90000  | 330.95280 | 40.97999  | 2.41479  | 0.1927365 | 2.4289399 | 25 | 1 | 13 days   | 0.33 |       | MPC | 2007 VZ <sub>180</sub>        |
| 2007 VD <sub>181</sub> | 17.3 | 0.15 | 20071027 | 33.13343  | 283.94154 | 47.20595  | 7.75141  | 0.3702512 | 2.4338186 | 40 | 1 | 67 days   | 0.47 | M-v 4 | MPC | 2007 VD <sub>181</sub>        |
| 2007 VE <sub>181</sub> | 18.3 | 0.15 | 20071027 | 308.31320 | 67.29636  | 42.52511  | 3.33136  | 0.1775348 | 2.2044766 | 31 | 1 | 6 days    | 0.37 |       | MPC | 2007 VE <sub>181</sub>        |
| 2007 VF <sub>181</sub> | 15.5 | 0.15 | 20071027 | 249.41276 | 291.33025 | 229.10071 | 5.17044  | 0.0734159 | 3.0497094 | 20 | 1 | 5 days    | 0.48 |       | MPC | 2007 VF <sub>181</sub>        |
| 2007 VB <sub>183</sub> | 16.3 | 0.15 | 20071027 | 353.07525 | 51.74829  | 5.85869   | 7.62657  | 0.1906078 | 2.7647550 | 39 | 1 | 54 days   | 0.48 |       | MPC | 2007 VB <sub>183</sub>        |
| 2007 VK <sub>183</sub> | 17.3 | 0.15 | 20071116 | 323.42328 | 171.33617 | 295.35517 | 5.27509  | 0.1908767 | 2.3307288 | 25 | 1 | 35 days   | 0.56 |       | MPC | 2007 VK <sub>183</sub>        |
| 2007 VR <sub>183</sub> | 17.3 | 0.15 | 20071027 | 328.31628 | 297.09481 | 221.63887 | 23.29094 | 0.6230363 | 2.6821021 | 68 | 1 | 83 days   | 0.48 | M-v 4 | MPC | 2007 VR <sub>183</sub>        |
| 2007 VS <sub>183</sub> | 17.1 | 0.15 | 20071027 | 268.84906 | 99.86375  | 96.64429  | 3.83221  | 0.0374101 | 2.0377211 | 20 | 1 | 11 days   | 0.22 |       | MPC | 2007 VS <sub>183</sub>        |
| 2007 VD <sub>184</sub> | 23.3 | 0.15 | 20071027 | 341.91591 | 204.16621 | 239.84910 | 1.24327  | 0.5009355 | 1.9306303 | 25 | 1 | 12 days   | 0.41 | M-v 8 | MPC | 129046 2007 VD <sub>184</sub> |
| 2007 VG <sub>184</sub> | 17.4 | 0.15 | 20071027 | 10.12069  | 155.76544 | 147.05164 | 16.06100 | 0.6700330 | 2.3879697 | 43 | 1 | 35 days   | 0.38 | M-v 6 | MPC | 129046 2007 VG <sub>184</sub> |
| 2007 VH <sub>184</sub> | 21.9 | 0.15 | 20071027 | 0.20966   | 246.85106 | 139.44371 | 3.87517  | 0.5980785 | 2.5534639 | 40 | 1 | 24 days   | 0.42 | M-v 6 | MPC | 129046 2007 VH <sub>184</sub> |
| 2007 VJ <sub>184</sub> | 21.2 | 0.15 | 20071027 | 330.28632 | 62.21575  | 41.59135  | 18.13178 | 0.4598967 | 1.6811076 | 36 | 1 | 16 days   | 0.45 | M-v 7 | MPC | 129046 2007 VJ <sub>184</sub> |
| 2007 VK <sub>184</sub> | 22.0 | 0.15 | 20071027 | 15.80514  | 72.99191  | 254.09503 | 1.22169  | 0.5698876 | 1.7262653 | 93 | 1 | 34 days   | 0.43 | M-v 5 | MPC | 129046 2007 VK <sub>184</sub> |
| 2007 VL <sub>184</sub> | 24.1 | 0.15 | 20071027 | 357.23901 | 347.99927 | 48.28127  | 27.60700 | 0.2063507 | 1.2926115 | 44 | 1 | 6 days    | 0.53 | M-v 5 | MPC | 129046 2007 VL <sub>184</sub> |
| 2007 VM <sub>184</sub> | 21.0 | 0.15 | 20071027 | 282.83812 | 110.10419 | 65.85167  | 23.26636 | 0.5229616 | 1.1813852 | 69 | 1 | 22 days   | 0.59 | M-v 7 | MPC | 129046 2007 VM <sub>184</sub> |
| 2007 VS <sub>184</sub> | 17.7 | 0.15 | 20071027 | 58.68729  | 273.89766 | 49.19919  | 22.80761 | 0.1345331 | 1.9363111 | 17 | 1 | 5 days    | 0.72 |       | MPC | 2007 VS <sub>184</sub>        |
| 2007 VT <sub>184</sub> | 16.6 | 0.15 | 20071116 | 11.94958  | 131.47568 | 255.09459 | 31.39832 | 0.3358364 | 2.6111856 | 25 | 1 | 27 days   | 0.49 |       | MPC | 2007 VT <sub>184</sub>        |
| 2007 VV <sub>184</sub> | 16.7 | 0.15 | 20071027 | 77.82588  | 243.08381 | 62.41616  | 22.82646 | 0.1881656 | 2.2648498 | 31 | 1 | 18 days   | 0.60 |       | MPC | 2007 VV <sub>184</sub>        |
| 2007 VY <sub>184</sub> | 17.4 | 0.15 | 20071027 | 85.60943  | 246.84039 | 55.37726  | 8.48981  | 0.1980664 | 2.2529188 | 16 | 1 | 7 days    | 0.92 |       | MPC | 2007 VY <sub>184</sub>        |
| 2007 VZ <sub>184</sub> | 17.9 | 0.15 | 20071027 | 22.62249  | 180.01821 | 196.42859 | 0.85995  | 0.1729016 | 2.4035270 | 16 | 1 | 8 days    | 0.48 |       | MPC | 2007 VZ <sub>184</sub>        |
| 2007 VB <sub>185</sub> | 18.0 | 0.15 | 20071116 | 20.39153  | 35.22648  | 353.32597 | 4.81253  | 0.1534973 | 2.2342945 | 25 | 1 | 21 days   | 0.53 |       | MPC | 2007 VB <sub>185</sub>        |
| 2007 VC <sub>185</sub> | 16.1 | 0.15 | 20071116 | 351.62122 | 45.74518  | 20.90397  | 6.74404  | 0.0416744 | 2.8370248 | 31 | 1 | 32 days   | 0.53 |       | MPC | 2007 VC <sub>185</sub>        |
| 2007 VF <sub>185</sub> | 17.3 | 0.15 | 20071027 | 16.91526  | 90.50988  | 297.61549 | 2.08510  | 0.2051055 | 2.3369991 | 37 | 2 | 2005-2007 | 0.42 | M-v 4 | MPC | 128604 2007 VF <sub>185</sub> |
| 2007 VH <sub>185</sub> | 15.1 | 0.15 | 20071027 | 355.55701 | 7.19840   | 59.32606  | 17.39754 | 0.0825027 | 3.0482123 | 39 | 2 | 2003-2007 | 0.54 | M-v 3 | MPC | 128604 2007 VH <sub>185</sub> |
| 2007 VK <sub>185</sub> | 15.8 | 0.15 | 20071027 | 356.89311 | 255.40533 | 160.26667 | 9.48992  | 0.2234816 | 3.1532620 | 64 | 3 | 2001-2007 | 0.48 | M-v 3 | MPC | 128605 2007 VK <sub>185</sub> |
| 2007 VN <sub>185</sub> | 17.2 | 0.15 | 20071027 | 8.16480   | 154.85880 | 240.12462 | 1.05968  | 0.0811262 | 2.8328949 | 21 | 1 | 21 days   | 0.27 |       | MPC | 2007 VN <sub>185</sub>        |
| 2007 VR <sub>185</sub> | 16.6 | 0.15 | 20071027 | 105.27086 | 312.85263 | 351.02796 | 2.39435  | 0.0536022 | 2.4288710 | 66 | 4 | 1999-2007 | 0.46 | M-v 2 | MPC | 128605 2007 VR <sub>185</sub> |
| 2007 VT <sub>185</sub> | 15.8 | 0.15 | 20071027 | 102.89300 | 66.13161  | 224.81184 | 8.74974  | 0.0640427 | 3.1621076 | 23 | 1 | 18 days   | 0.27 |       | MPC | 2007 VT <sub>185</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |          |      |        |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|----------|------|--------|-------------------------------|
| 2007 VU <sub>185</sub> | 18.5 | 0.15 | 20071027 | 357.76588 | 234.75558 | 171.21825 | 6.36633  | 0.3499458 | 2.5921124 | 39 | 1 | 34 days  | 0.63 | MP     | 2007 VU <sub>185</sub>        |
| 2007 VV <sub>185</sub> | 18.0 | 0.15 | 20071027 | 343.26483 | 328.11388 | 103.57879 | 9.69648  | 0.1974619 | 2.4706042 | 11 | 1 | 10 days  | 0.80 | MP     | 2007 VV <sub>185</sub>        |
| 2007 VW <sub>185</sub> | 17.8 | 0.15 | 20071027 | 48.57072  | 114.80506 | 228.86410 | 13.27155 | 0.1543282 | 2.6059247 | 28 | 1 | 18 days  | 0.42 | MP     | 2007 VW <sub>185</sub>        |
| 2007 VZ <sub>185</sub> | 17.2 | 0.15 | 20071116 | 33.39651  | 333.40403 | 34.10771  | 4.10504  | 0.1982671 | 2.5527601 | 17 | 1 | 38 days  | 0.27 | MP     | 2007 VZ <sub>185</sub>        |
| 2007 VA <sub>186</sub> | 16.5 | 0.15 | 20071027 | 356.75087 | 92.48422  | 315.63189 | 11.51085 | 0.2736162 | 2.6909326 | 13 | 1 | 8 days   | 0.41 | MP     | 2007 VA <sub>186</sub>        |
| 2007 VB <sub>186</sub> | 15.7 | 0.15 | 20071027 | 19.64615  | 59.21396  | 307.18710 | 10.12708 | 0.2936001 | 2.6634436 | 6  | 1 | 3 days   | 0.29 | MP     | 2007 VB <sub>186</sub>        |
| 2007 VG <sub>186</sub> | 16.0 | 0.15 | 20071027 | 18.83382  | 103.09251 | 272.04327 | 26.71030 | 0.4264622 | 2.6184148 | 72 | 1 | 178 days | 0.54 | M-v 3D | 2007 VG <sub>186</sub>        |
| 2007 VH <sub>186</sub> | 20.1 | 0.15 | 20071027 | 333.19619 | 15.09177  | 51.53632  | 19.24033 | 0.1969972 | 1.5741393 | 22 | 1 | 35 days  | 0.43 | M-v 5  | 129047 2007 VH <sub>186</sub> |
| 2007 VK <sub>186</sub> | 18.0 | 0.15 | 20071027 | 338.40409 | 308.14079 | 168.99687 | 11.89054 | 0.5120903 | 2.7185019 | 25 | 1 | 24 days  | 0.36 | M-v 6  | 129047 2007 VK <sub>186</sub> |
| 2007 VM <sub>186</sub> | 16.7 | 0.15 | 20071116 | 24.97165  | 328.55190 | 55.28470  | 14.96534 | 0.1144870 | 2.6010105 | 30 | 1 | 36 days  | 0.47 | MP     | 2007 VM <sub>186</sub>        |
| 2007 VO <sub>186</sub> | 18.0 | 0.15 | 20071027 | 26.45617  | 308.84287 | 54.58389  | 7.99596  | 0.2598834 | 2.5414961 | 17 | 1 | 7 days   | 0.76 | MP     | 2007 VO <sub>186</sub>        |
| 2007 VR <sub>186</sub> | 18.4 | 0.15 | 20071116 | 27.02345  | 18.53933  | 354.84029 | 4.23117  | 0.2254736 | 2.2151560 | 28 | 1 | 31 days  | 0.50 | MP     | 2007 VR <sub>186</sub>        |
| 2007 VS <sub>186</sub> | 16.2 | 0.15 | 20071027 | 136.28185 | 278.16603 | 349.08570 | 6.20910  | 0.1377635 | 2.4879004 | 32 | 1 | 12 days  | 0.58 | MP     | 2007 VS <sub>186</sub>        |
| 2007 VW <sub>187</sub> | 16.9 | 0.15 | 20071116 | 15.18884  | 334.12121 | 90.98251  | 37.16119 | 0.3395924 | 2.5634021 | 36 | 1 | 22 days  | 0.55 | MP     | 2007 VW <sub>187</sub>        |
| 2007 VA <sub>188</sub> | 19.5 | 0.15 | 20071027 | 0.60728   | 333.10208 | 38.54919  | 20.27312 | 0.6335859 | 2.9909342 | 40 | 1 | 21 days  | 0.45 | M-v 6  | 129047 2007 VA <sub>188</sub> |
| 2007 VC <sub>188</sub> | 16.1 | 0.15 | 20071027 | 347.35490 | 184.52797 | 227.53583 | 14.98370 | 0.0383466 | 3.2367382 | 18 | 1 | 57 days  | 0.47 | MP     | 2007 VC <sub>188</sub>        |
| 2007 VD <sub>188</sub> | 16.3 | 0.15 | 20071116 | 26.94905  | 119.31709 | 278.35411 | 28.93858 | 0.3641138 | 2.6177327 | 16 | 1 | 21 days  | 0.36 | MP     | 2007 VD <sub>188</sub>        |
| 2007 VE <sub>188</sub> | 15.5 | 0.15 | 20071027 | 322.12880 | 8.19401   | 82.54919  | 18.80215 | 0.0615648 | 3.0507983 | 11 | 1 | 3 days   | 0.49 | MP     | 2007 VE <sub>188</sub>        |
| 2007 VG <sub>188</sub> | 17.0 | 0.15 | 20071027 | 335.30220 | 344.98603 | 111.13962 | 10.66806 | 0.2918653 | 2.7915558 | 24 | 1 | 6 days   | 0.63 | MP     | 2007 VG <sub>188</sub>        |
| 2007 VJ <sub>188</sub> | 16.9 | 0.15 | 20071027 | 31.44811  | 148.82175 | 231.43660 | 3.41207  | 0.0248676 | 2.5880724 | 24 | 1 | 80 days  | 0.34 | M-v 4  | 2007 VJ <sub>188</sub>        |
| 2007 VK <sub>188</sub> | 15.7 | 0.15 | 20071027 | 272.00753 | 290.12177 | 232.26375 | 2.74599  | 0.1631787 | 3.0528564 | 12 | 1 | 5 days   | 0.49 | MP     | 2007 VK <sub>188</sub>        |
| 2007 VO <sub>188</sub> | 16.4 | 0.15 | 20071027 | 14.65431  | 347.00799 | 42.03410  | 9.08127  | 0.1873826 | 3.1878700 | 40 | 1 | 94 days  | 0.38 | M-v 4  | 2007 VO <sub>188</sub>        |
| 2007 VQ <sub>188</sub> | 17.7 | 0.15 | 20071116 | 343.87866 | 154.31094 | 282.10802 | 4.41505  | 0.1166813 | 2.2517812 | 25 | 1 | 31 days  | 0.61 | MP     | 2007 VQ <sub>188</sub>        |
| 2007 VU <sub>188</sub> | 16.8 | 0.15 | 20071116 | 51.90075  | 185.97238 | 155.97030 | 3.78100  | 0.2366591 | 2.1749821 | 31 | 1 | 26 days  | 0.43 | MP     | 2007 VU <sub>188</sub>        |
| 2007 VX <sub>188</sub> | 17.7 | 0.15 | 20071116 | 22.52241  | 76.08529  | 303.49104 | 1.02126  | 0.2132041 | 2.2973414 | 28 | 1 | 36 days  | 0.55 | MP     | 2007 VX <sub>188</sub>        |
| 2007 VA <sub>189</sub> | 18.2 | 0.15 | 20071027 | 3.06650   | 119.08106 | 283.83503 | 1.37071  | 0.1383096 | 2.2790340 | 20 | 1 | 15 days  | 0.43 | MP     | 2007 VA <sub>189</sub>        |
| 2007 VB <sub>189</sub> | 18.2 | 0.15 | 20071116 | 359.52962 | 141.74872 | 279.51978 | 2.19960  | 0.1978001 | 2.2202851 | 33 | 1 | 42 days  | 0.52 | MP     | 2007 VB <sub>189</sub>        |
| 2007 VG <sub>189</sub> | 19.2 | 0.15 | 20071027 | 37.16131  | 70.61781  | 250.62860 | 6.03948  | 0.5131184 | 2.1489150 | 34 | 1 | 21 days  | 0.42 | M-v 6  | 129047 2007 VG <sub>189</sub> |
| 2007 VH <sub>189</sub> | 23.2 | 0.15 | 20071027 | 8.98435   | 250.27770 | 75.33911  | 6.00300  | 0.7356099 | 2.7293240 | 23 | 1 | 6 days   | 0.44 | M-v 8  | 129047 2007 VH <sub>189</sub> |
| 2007 VO <sub>189</sub> | 16.4 | 0.15 | 20071116 | 12.79018  | 92.26924  | 280.11267 | 19.96155 | 0.3812032 | 2.4102925 | 54 | 1 | 27 days  | 0.42 | MP     | 2007 VO <sub>189</sub>        |
| 2007 VU <sub>189</sub> | 15.3 | 0.15 | 20071116 | 175.26678 | 198.25533 | 34.14867  | 10.26749 | 0.2647558 | 2.5994672 | 15 | 1 | 5 days   | 0.84 | MP     | 2007 VU <sub>189</sub>        |
| 2007 VV <sub>189</sub> | 15.5 | 0.15 | 20071027 | 4.73945   | 161.95569 | 240.48430 | 15.24367 | 0.0991640 | 3.1523960 | 26 | 1 | 48 days  | 0.43 | MP     | 2007 VV <sub>189</sub>        |
| 2007 VZ <sub>189</sub> | 16.9 | 0.15 | 20071116 | 19.40430  | 304.45442 | 84.47197  | 4.22453  | 0.2143794 | 2.3655166 | 51 | 1 | 32 days  | 0.46 | MP     | 2007 VZ <sub>189</sub>        |
| 2007 VB <sub>190</sub> | 15.4 | 0.15 | 20071116 | 16.97994  | 326.80782 | 64.37758  | 19.36677 | 0.2061039 | 3.1961240 | 48 | 1 | 35 days  | 0.47 | MP     | 2007 VB <sub>190</sub>        |
| 2007 VC <sub>190</sub> | 16.3 | 0.15 | 20071027 | 12.59414  | 148.72252 | 236.69835 | 15.81978 | 0.3161315 | 3.0664615 | 44 | 1 | 47 days  | 0.43 | MP     | 2007 VC <sub>190</sub>        |
| 2007 VE <sub>190</sub> | 17.5 | 0.15 | 20071027 | 0.71526   | 25.54618  | 22.84627  | 6.94066  | 0.1162095 | 2.2996640 | 30 | 1 | 30 days  | 0.45 | MP     | 2007 VE <sub>190</sub>        |
| 2007 VF <sub>190</sub> | 17.2 | 0.15 | 20071027 | 30.85911  | 319.78987 | 50.36129  | 11.24081 | 0.1400549 | 2.7979019 | 21 | 1 | 65 days  | 0.37 | M-v 5  | 2007 VF <sub>190</sub>        |
| 2007 VG <sub>190</sub> | 18.7 | 0.15 | 20071116 | 19.27574  | 175.16498 | 211.10228 | 0.91715  | 0.1920216 | 2.0677507 | 13 | 1 | 6 days   | 0.81 | MP     | 2007 VG <sub>190</sub>        |
| 2007 VK <sub>190</sub> | 16.0 | 0.15 | 20071027 | 305.50452 | 89.73081  | 28.62329  | 9.40243  | 0.1119536 | 2.8090203 | 52 | 1 | 111 days | 0.45 | M-v 4  | 2007 VK <sub>190</sub>        |
| 2007 VL <sub>190</sub> | 16.8 | 0.15 | 20071116 | 68.30804  | 91.18054  | 250.34615 | 5.13436  | 0.0456173 | 2.7262815 | 23 | 1 | 36 days  | 0.48 | MP     | 2007 VL <sub>190</sub>        |
| 2007 VO <sub>190</sub> | 16.8 | 0.15 | 20071116 | 55.63336  | 261.93512 | 76.04692  | 9.44563  | 0.2108310 | 2.6849996 | 15 | 1 | 29 days  | 0.22 | MP     | 2007 VO <sub>190</sub>        |
| 2007 VP <sub>190</sub> | 16.5 | 0.15 | 20071027 | 283.01192 | 72.15245  | 67.17280  | 14.40210 | 0.0891673 | 2.6998289 | 16 | 1 | 30 days  | 0.35 | MP     | 2007 VP <sub>190</sub>        |
| 2007 VA <sub>191</sub> | 18.5 | 0.15 | 20071116 | 64.80404  | 258.95467 | 81.01758  | 20.16563 | 0.1079150 | 1.8306865 | 21 | 1 | 3 days   | 0.65 | MP     | 2007 VA <sub>191</sub>        |
| 2007 VB <sub>191</sub> | 25.1 | 0.15 | 20071027 | 345.01615 | 46.26288  | 54.47061  | 2.94834  | 0.6183693 | 2.4008079 | 34 | 1 | 11 days  | 0.71 | M-v 6  | 129048 2007 VB <sub>191</sub> |
| 2007 VE <sub>191</sub> | 23.6 | 0.15 | 20071027 | 331.34897 | 253.40691 | 244.97306 | 5.41047  | 0.6271469 | 1.9087825 | 66 | 1 | 13 days  | 0.59 | M-v 6  | 129048 2007 VE <sub>191</sub> |
| 2007 VF <sub>191</sub> | 22.4 | 0.15 | 20071027 | 4.33287   | 318.58386 | 67.22815  | 10.97926 | 0.4094046 | 1.9084135 | 20 | 1 | 15 days  | 0.44 | M-v 7  | 129048 2007 VF <sub>191</sub> |
| 2007 VG <sub>191</sub> | 18.3 | 0.15 | 20071027 | 337.75282 | 201.17300 | 228.02831 | 7.17956  | 0.1136895 | 2.4609872 | 10 | 1 | 7 days   | 0.36 | MP     | 2007 VG <sub>191</sub>        |
| 2007 VJ <sub>194</sub> | 19.6 | 0.15 | 20071027 | 8.44445   | 331.98390 | 50.75272  | 6.90415  | 0.3446104 | 2.2427304 | 21 | 1 | 55 days  | 0.35 | MP     | 2007 VJ <sub>194</sub>        |
| 2007 VZ <sub>195</sub> | 18.3 | 0.15 | 20071027 | 36.30648  | 121.16925 | 225.42535 | 9.26322  | 0.1536073 | 2.2642788 | 18 | 1 | 26 days  | 0.29 | MP     | 2007 VZ <sub>195</sub>        |
| 2007 VA <sub>197</sub> | 17.1 | 0.15 | 20071027 | 39.72358  | 108.10769 | 227.89372 | 5.51294  | 0.2635015 | 2.6882600 | 35 | 1 | 17 days  | 0.55 | MP     | 2007 VA <sub>197</sub>        |
| 2007 VG <sub>199</sub> | 17.0 | 0.15 | 20071027 | 34.64490  | 126.45619 | 227.25372 | 4.77592  | 0.1515314 | 2.9990988 | 32 | 1 | 18 days  | 0.38 | MP     | 2007 VG <sub>199</sub>        |
| 2007 VH <sub>199</sub> | 17.5 | 0.15 | 20071027 | 333.95121 | 212.50890 | 226.22210 | 0.94000  | 0.2044533 | 2.8964140 | 34 | 1 | 8 days   | 0.27 | MP     | 2007 VH <sub>199</sub>        |
| 2007 VR <sub>199</sub> | 17.5 | 0.15 | 20071027 | 327.37545 | 215.07995 | 224.56931 | 4.18858  | 0.1044969 | 2.5737035 | 35 | 1 | 55 days  | 0.25 | MP     | 2007 VR <sub>199</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 VC <sub>200</sub> | 16.0 | 0.15 | 20071027 | 172.74201 | 185.82334 | 41.07334  | 3.43230  | 0.2962003 | 2.8454088 | 20 | 1 | 4 days    | 0.30 |       | MPC | 2007 VC <sub>200</sub>        |
| 2007 VD <sub>200</sub> | 15.7 | 0.15 | 20071027 | 172.08726 | 197.43483 | 30.13354  | 0.73417  | 0.2648469 | 2.9208094 | 20 | 1 | 3 days    | 0.69 |       | MPC | 2007 VD <sub>200</sub>        |
| 2007 VE <sub>200</sub> | 16.6 | 0.15 | 20071027 | 200.40892 | 166.51927 | 43.18138  | 6.31773  | 0.2576308 | 2.2390573 | 27 | 1 | 4 days    | 0.43 |       | MPC | 2007 VE <sub>200</sub>        |
| 2007 VO <sub>200</sub> | 16.8 | 0.15 | 20071027 | 30.99421  | 311.13548 | 44.14660  | 17.59811 | 0.1882717 | 3.1875592 | 24 | 1 | 8 days    | 0.28 |       | MPC | 2007 VO <sub>200</sub>        |
| 2007 VY <sub>200</sub> | 17.6 | 0.15 | 20071027 | 260.34837 | 288.96947 | 222.17992 | 4.86655  | 0.1087505 | 2.3198614 | 35 | 1 | 18 days   | 0.22 |       | MPC | 2007 VY <sub>200</sub>        |
| 2007 VA <sub>201</sub> | 17.6 | 0.15 | 20071027 | 21.73631  | 313.18514 | 45.38245  | 5.33795  | 0.2916150 | 2.6604455 | 42 | 1 | 42 days   | 0.22 |       | MPC | 2007 VA <sub>201</sub>        |
| 2007 VC <sub>201</sub> | 16.0 | 0.15 | 20071027 | 267.46293 | 294.93183 | 217.30746 | 0.45839  | 0.1718568 | 3.2005026 | 32 | 1 | 8 days    | 0.26 |       | MPC | 2007 VC <sub>201</sub>        |
| 2007 VF <sub>201</sub> | 17.9 | 0.15 | 20071027 | 40.81061  | 306.59243 | 44.27076  | 12.75867 | 0.1089261 | 2.5349263 | 22 | 1 | 4 days    | 0.28 |       | MPC | 2007 VF <sub>201</sub>        |
| 2007 VH <sub>201</sub> | 16.8 | 0.15 | 20071027 | 282.73497 | 111.11643 | 21.65917  | 1.20353  | 0.1179546 | 3.0408129 | 27 | 1 | 4 days    | 0.42 |       | MPC | 2007 VH <sub>201</sub>        |
| 2007 VJ <sub>201</sub> | 17.8 | 0.15 | 20071027 | 166.72012 | 4.82409   | 225.99342 | 2.45420  | 0.2084571 | 2.2283986 | 28 | 1 | 4 days    | 0.58 |       | MPC | 2007 VJ <sub>201</sub>        |
| 2007 VK <sub>201</sub> | 17.7 | 0.15 | 20071027 | 35.80354  | 133.18134 | 228.90295 | 5.30569  | 0.0510966 | 2.6867362 | 30 | 1 | 10 days   | 0.34 |       | MPC | 2007 VK <sub>201</sub>        |
| 2007 VA <sub>202</sub> | 16.8 | 0.15 | 20071027 | 313.44665 | 297.61092 | 164.59064 | 13.71586 | 0.1560845 | 2.5805545 | 16 | 1 | 7 days    | 0.52 |       | MPC | 2007 VA <sub>202</sub>        |
| 2007 VE <sub>202</sub> | 16.6 | 0.15 | 20071116 | 21.14874  | 113.04566 | 262.91119 | 8.44741  | 0.3162926 | 3.0730086 | 38 | 1 | 38 days   | 0.56 |       | MPC | 2007 VE <sub>202</sub>        |
| 2007 VF <sub>202</sub> | 15.8 | 0.15 | 20071027 | 349.91417 | 34.10857  | 33.36020  | 12.38307 | 0.1381202 | 3.0600116 | 36 | 3 | 1996–2007 | 0.36 | M-v 3 | MPC | 128605 2007 VF <sub>202</sub> |
| 2007 VJ <sub>202</sub> | 15.8 | 0.15 | 20071027 | 33.39014  | 11.93091  | 359.86571 | 5.76153  | 0.1580140 | 3.1909937 | 19 | 1 | 14 days   | 0.18 |       | MPC | 2007 VJ <sub>202</sub>        |
| 2007 VR <sub>202</sub> | 15.6 | 0.15 | 20071027 | 35.76514  | 195.11748 | 165.37587 | 4.59950  | 0.0849379 | 2.7191367 | 16 | 1 | 56 days   | 0.45 |       | MPC | 2007 VR <sub>202</sub>        |
| 2007 VT <sub>202</sub> | 18.2 | 0.15 | 20071027 | 27.33668  | 104.59084 | 251.36950 | 5.42542  | 0.2253997 | 2.2356758 | 33 | 1 | 40 days   | 0.51 |       | MPC | 2007 VT <sub>202</sub>        |
| 2007 VX <sub>202</sub> | 18.4 | 0.15 | 20071116 | 19.24058  | 168.90356 | 214.92706 | 5.46360  | 0.2330062 | 2.3336746 | 20 | 1 | 27 days   | 0.38 |       | MPC | 2007 VX <sub>202</sub>        |
| 2007 VQ <sub>203</sub> | 17.2 | 0.15 | 20071027 | 15.20254  | 199.85209 | 189.72990 | 3.42099  | 0.1128309 | 2.3319062 | 62 | 3 | 1996–2007 | 0.47 | M-v 2 | MPC | 128605 2007 VQ <sub>203</sub> |
| 2007 VU <sub>203</sub> | 16.9 | 0.15 | 20071027 | 40.83902  | 273.47632 | 81.85246  | 8.30921  | 0.1467060 | 2.7757219 | 16 | 1 | 11 days   | 0.24 |       | MPC | 2007 VU <sub>203</sub>        |
| 2007 VX <sub>203</sub> | 16.3 | 0.15 | 20071027 | 269.60417 | 90.68240  | 74.33806  | 12.14188 | 0.2224337 | 2.6937835 | 13 | 1 | 11 days   | 0.33 |       | MPC | 2007 VX <sub>203</sub>        |
| 2007 VC <sub>204</sub> | 16.3 | 0.15 | 20071027 | 77.77441  | 237.56909 | 76.94109  | 11.91875 | 0.1649340 | 3.1597329 | 13 | 1 | 11 days   | 0.28 |       | MPC | 2007 VC <sub>204</sub>        |
| 2007 VF <sub>204</sub> | 18.1 | 0.15 | 20071027 | 359.42468 | 203.19051 | 203.60465 | 6.78181  | 0.3034521 | 2.6113294 | 19 | 1 | 12 days   | 0.44 |       | MPC | 2007 VF <sub>204</sub>        |
| 2007 VU <sub>204</sub> | 18.5 | 0.15 | 20071027 | 5.61054   | 163.12032 | 227.55688 | 5.26941  | 0.2254208 | 2.6639361 | 35 | 1 | 51 days   | 0.40 |       | MPC | 2007 VU <sub>204</sub>        |
| 2007 VZ <sub>204</sub> | 17.9 | 0.15 | 20071027 | 79.27793  | 232.91017 | 58.65135  | 0.57559  | 0.2690280 | 2.4757886 | 20 | 1 | 8 days    | 0.43 |       | MPC | 2007 VZ <sub>204</sub>        |
| 2007 VB <sub>205</sub> | 17.0 | 0.15 | 20071027 | 17.20013  | 322.81592 | 51.61932  | 4.21806  | 0.1833258 | 2.9293998 | 31 | 1 | 49 days   | 0.33 |       | MPC | 2007 VB <sub>205</sub>        |
| 2007 VF <sub>205</sub> | 18.3 | 0.15 | 20071027 | 57.23710  | 247.77192 | 58.34383  | 1.65883  | 0.3158020 | 2.1723025 | 37 | 1 | 41 days   | 0.24 |       | MPC | 2007 VF <sub>205</sub>        |
| 2007 VT <sub>206</sub> | 17.5 | 0.15 | 20071027 | 21.02553  | 179.19489 | 194.03821 | 6.41271  | 0.1927026 | 2.3703576 | 28 | 1 | 30 days   | 0.52 |       | MPC | 2007 VT <sub>206</sub>        |
| 2007 VA <sub>207</sub> | 16.5 | 0.15 | 20071027 | 19.59934  | 201.93854 | 172.47865 | 4.30111  | 0.2187556 | 2.6000542 | 50 | 4 | 2001–2007 | 0.41 | M-v 2 | MPC | 128605 2007 VA <sub>207</sub> |
| 2007 VD <sub>207</sub> | 17.4 | 0.15 | 20071027 | 355.86165 | 234.28603 | 176.45534 | 4.80232  | 0.0746085 | 2.1891307 | 22 | 1 | 41 days   | 0.39 |       | MPC | 2007 VD <sub>207</sub>        |
| 2007 VE <sub>207</sub> | 19.4 | 0.15 | 20071027 | 326.10119 | 54.78997  | 36.29988  | 1.91350  | 0.2149855 | 2.2837979 | 19 | 1 | 4 days    | 0.49 |       | MPC | 2007 VE <sub>207</sub>        |
| 2007 VG <sub>207</sub> | 15.6 | 0.15 | 20071116 | 78.41208  | 199.27464 | 124.63153 | 4.86034  | 0.1814722 | 2.5714616 | 28 | 1 | 26 days   | 0.63 |       | MPC | 2007 VG <sub>207</sub>        |
| 2007 VT <sub>207</sub> | 16.6 | 0.15 | 20071027 | 232.91872 | 314.39751 | 223.92569 | 11.69393 | 0.1306731 | 2.7032169 | 27 | 1 | 7 days    | 0.48 |       | MPC | 2007 VT <sub>207</sub>        |
| 2007 VY <sub>207</sub> | 16.6 | 0.15 | 20071027 | 1.98145   | 183.90305 | 213.96951 | 1.39803  | 0.0730118 | 2.8674902 | 31 | 1 | 36 days   | 0.30 |       | MPC | 2007 VY <sub>207</sub>        |
| 2007 VV <sub>208</sub> | 17.8 | 0.15 | 20071027 | 284.56523 | 62.90154  | 65.19730  | 23.67948 | 0.0882425 | 1.9504796 | 9  | 1 | 10 days   | 0.69 |       | MPC | 2007 VV <sub>208</sub>        |
| 2007 VM <sub>209</sub> | 16.9 | 0.15 | 20071116 | 8.86233   | 122.29233 | 277.26092 | 5.06611  | 0.2265451 | 2.9248486 | 29 | 1 | 36 days   | 0.62 |       | MPC | 2007 VM <sub>209</sub>        |
| 2007 VS <sub>209</sub> | 17.1 | 0.15 | 20071116 | 56.78012  | 340.99673 | 355.22860 | 3.11109  | 0.1814288 | 2.5482532 | 16 | 1 | 28 days   | 0.45 |       | MPC | 2007 VS <sub>209</sub>        |
| 2007 VP <sub>210</sub> | 18.1 | 0.15 | 20071027 | 6.76565   | 85.26935  | 310.12621 | 3.52051  | 0.1455475 | 2.2605521 | 18 | 1 | 57 days   | 0.32 |       | MPC | 2007 VP <sub>210</sub>        |
| 2007 VX <sub>210</sub> | 16.2 | 0.15 | 20071116 | 30.90181  | 116.52109 | 261.55619 | 6.92357  | 0.0408293 | 3.2001370 | 15 | 1 | 34 days   | 0.18 |       | MPC | 2007 VX <sub>210</sub>        |
| 2007 VA <sub>211</sub> | 16.1 | 0.15 | 20071027 | 352.41701 | 168.76908 | 248.72884 | 10.49543 | 0.1085202 | 3.1035093 | 31 | 1 | 48 days   | 0.51 |       | MPC | 2007 VA <sub>211</sub>        |
| 2007 VB <sub>211</sub> | 17.5 | 0.15 | 20071027 | 347.16213 | 88.25418  | 335.92549 | 2.80827  | 0.1939144 | 2.3868646 | 29 | 1 | 71 days   | 0.32 | M-v 3 | MPC | 2007 VB <sub>211</sub>        |
| 2007 VP <sub>211</sub> | 17.5 | 0.15 | 20071027 | 297.62179 | 104.55434 | 15.72582  | 3.48681  | 0.0826915 | 2.2500025 | 19 | 1 | 53 days   | 0.45 |       | MPC | 2007 VP <sub>211</sub>        |
| 2007 VQ <sub>211</sub> | 17.3 | 0.15 | 20071027 | 195.10396 | 181.58705 | 36.43040  | 8.43677  | 0.0528127 | 2.5235294 | 16 | 1 | 53 days   | 0.22 |       | MPC | 2007 VQ <sub>211</sub>        |
| 2007 VE <sub>212</sub> | 15.5 | 0.15 | 20071116 | 48.07409  | 266.05461 | 70.66766  | 11.25146 | 0.2961697 | 3.0038150 | 41 | 1 | 54 days   | 0.44 |       | MPC | 2007 VE <sub>212</sub>        |
| 2007 VL <sub>212</sub> | 17.0 | 0.15 | 20071027 | 130.02254 | 195.15320 | 78.30721  | 7.91926  | 0.1173904 | 2.4117712 | 14 | 1 | 18 days   | 0.31 |       | MPC | 2007 VL <sub>212</sub>        |
| 2007 VO <sub>212</sub> | 16.8 | 0.15 | 20071027 | 224.21798 | 94.45385  | 98.56029  | 5.19206  | 0.0429326 | 2.7809874 | 20 | 1 | 20 days   | 0.32 |       | MPC | 2007 VO <sub>212</sub>        |
| 2007 VQ <sub>212</sub> | 17.2 | 0.15 | 20071027 | 299.09183 | 31.62378  | 91.80675  | 6.05679  | 0.0941177 | 2.6400638 | 16 | 1 | 20 days   | 0.29 |       | MPC | 2007 VQ <sub>212</sub>        |
| 2007 VR <sub>212</sub> | 17.1 | 0.15 | 20071027 | 84.29373  | 118.81705 | 193.13937 | 4.60608  | 0.1556348 | 2.7291081 | 14 | 1 | 12 days   | 0.19 |       | MPC | 2007 VR <sub>212</sub>        |
| 2007 VU <sub>212</sub> | 17.9 | 0.15 | 20071027 | 22.85530  | 292.45994 | 91.04805  | 5.45063  | 0.1205327 | 2.7581888 | 14 | 1 | 12 days   | 0.20 |       | MPC | 2007 VU <sub>212</sub>        |
| 2007 VV <sub>212</sub> | 17.9 | 0.15 | 20071116 | 38.00704  | 243.08178 | 119.48668 | 3.38787  | 0.1894357 | 2.1766111 | 18 | 1 | 34 days   | 0.39 |       | MPC | 2007 VV <sub>212</sub>        |
| 2007 VZ <sub>212</sub> | 18.1 | 0.15 | 20071027 | 52.03644  | 211.24845 | 121.01414 | 3.56155  | 0.2516567 | 2.3774113 | 10 | 1 | 12 days   | 0.25 |       | MPC | 2007 VZ <sub>212</sub>        |
| 2007 VE <sub>213</sub> | 15.4 | 0.15 | 20071027 | 19.26880  | 180.58855 | 191.43774 | 5.48634  | 0.3223653 | 3.9703588 | 23 | 1 | 67 days   | 0.15 | M-v 4 | MPC | 2007 VE <sub>213</sub>        |
| 2007 VF <sub>213</sub> | 15.5 | 0.15 | 20071027 | 338.62976 | 358.08134 | 78.33725  | 9.50158  | 0.1100813 | 3.0732222 | 14 | 1 | 9 days    | 0.36 |       | MPC | 2007 VF <sub>213</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-------|-----|-------------------------------|
| 2007 VJ <sub>213</sub> | 16.3 | 0.15 | 20071027 | 62.44193  | 258.53041 | 65.26796  | 17.83613 | 0.2078214 | 2.7772530 | 20 | 1 | 37 days   | 0.29 |       | MPC | 2007 VJ <sub>213</sub>        |
| 2007 VK <sub>213</sub> | 18.3 | 0.15 | 20071027 | 338.25690 | 305.24346 | 132.88572 | 2.89429  | 0.1836630 | 2.3317706 | 16 | 1 | 19 days   | 0.16 |       | MPC | 2007 VK <sub>213</sub>        |
| 2007 VZ <sub>214</sub> | 17.1 | 0.15 | 20071027 | 346.43641 | 310.07515 | 118.45308 | 5.32405  | 0.0469152 | 2.8011755 | 13 | 1 | 12 days   | 0.27 |       | MPC | 2007 VZ <sub>214</sub>        |
| 2007 VL <sub>215</sub> | 15.9 | 0.15 | 20071027 | 62.53982  | 90.80365  | 248.58726 | 16.77090 | 0.1246272 | 2.6772720 | 19 | 1 | 11 days   | 0.28 |       | MPC | 2007 VL <sub>215</sub>        |
| 2007 VO <sub>215</sub> | 18.4 | 0.15 | 20071027 | 336.59477 | 55.38138  | 45.36480  | 9.08939  | 0.3648155 | 2.6140597 | 27 | 1 | 49 days   | 0.47 |       | MPC | 2007 VO <sub>215</sub>        |
| 2007 VR <sub>215</sub> | 16.1 | 0.15 | 20071027 | 245.82879 | 272.29212 | 274.86877 | 4.20117  | 0.1609979 | 2.5549931 | 16 | 1 | 16 days   | 0.56 |       | MPC | 2007 VR <sub>215</sub>        |
| 2007 VS <sub>215</sub> | 16.3 | 0.15 | 20071027 | 15.02788  | 83.50457  | 308.19065 | 2.31274  | 0.2223453 | 3.0769427 | 14 | 1 | 14 days   | 0.23 |       | MPC | 2007 VS <sub>215</sub>        |
| 2007 VW <sub>215</sub> | 15.4 | 0.15 | 20071027 | 341.06808 | 32.67273  | 49.54320  | 11.42588 | 0.1162017 | 3.1965233 | 40 | 2 | 2001–2007 | 0.48 | M-v 3 | MPC | 128605 2007 VW <sub>215</sub> |
| 2007 VZ <sub>215</sub> | 14.9 | 0.15 | 20071027 | 163.98410 | 203.59356 | 51.68336  | 15.34416 | 0.0672528 | 3.1169827 | 29 | 1 | 66 days   | 0.39 | M-v 4 | MPC | 2007 VZ <sub>215</sub>        |
| 2007 VL <sub>216</sub> | 17.6 | 0.15 | 20071027 | 28.50275  | 74.50896  | 295.42797 | 1.73402  | 0.1947193 | 2.3088565 | 20 | 1 | 19 days   | 0.38 |       | MPC | 2007 VL <sub>216</sub>        |
| 2007 VN <sub>216</sub> | 18.1 | 0.15 | 20071027 | 330.79423 | 90.70634  | 5.61215   | 2.08762  | 0.1940065 | 2.5683940 | 12 | 1 | 9 days    | 0.15 |       | MPC | 2007 VN <sub>216</sub>        |
| 2007 VV <sub>216</sub> | 16.7 | 0.15 | 20071116 | 287.23408 | 250.08268 | 250.88977 | 6.24843  | 0.0655469 | 2.2072724 | 30 | 1 | 51 days   | 0.54 |       | MPC | 2007 VV <sub>216</sub>        |
| 2007 VC <sub>217</sub> | 16.5 | 0.15 | 20071116 | 3.37210   | 79.19443  | 336.86540 | 1.14480  | 0.2570582 | 3.0295634 | 25 | 1 | 31 days   | 0.40 |       | MPC | 2007 VC <sub>217</sub>        |
| 2007 VK <sub>217</sub> | 17.2 | 0.15 | 20071027 | 341.43979 | 99.63646  | 342.20482 | 1.46103  | 0.1644496 | 2.5810651 | 43 | 3 | 2000–2007 | 0.62 | M-v 2 | MPC | 128606 2007 VK <sub>217</sub> |
| 2007 VR <sub>217</sub> | 17.5 | 0.15 | 20071027 | 353.48261 | 187.38699 | 241.19517 | 11.81921 | 0.1544427 | 3.0838708 | 12 | 1 | 9 days    | 0.30 |       | MPC | 2007 VR <sub>217</sub>        |
| 2007 VY <sub>217</sub> | 16.6 | 0.15 | 20071116 | 14.21567  | 180.59672 | 221.27990 | 1.44731  | 0.2135528 | 3.1916523 | 20 | 1 | 26 days   | 0.34 |       | MPC | 2007 VY <sub>217</sub>        |
| 2007 VR <sub>218</sub> | 17.5 | 0.15 | 20071027 | 123.38775 | 240.83180 | 44.72693  | 4.13807  | 0.1669507 | 2.2140589 | 9  | 1 | 8 days    | 0.14 |       | MPC | 2007 VR <sub>218</sub>        |
| 2007 VH <sub>219</sub> | 16.2 | 0.15 | 20071116 | 41.42485  | 124.68859 | 258.77298 | 1.05460  | 0.0720294 | 2.8619811 | 17 | 1 | 26 days   | 0.16 |       | MPC | 2007 VH <sub>219</sub>        |
| 2007 VL <sub>219</sub> | 15.5 | 0.15 | 20071116 | 10.64885  | 164.22716 | 254.65032 | 9.16994  | 0.0893398 | 3.1663868 | 27 | 1 | 26 days   | 0.40 |       | MPC | 2007 VL <sub>219</sub>        |
| 2007 VW <sub>219</sub> | 17.4 | 0.15 | 20071116 | 29.83825  | 150.75180 | 235.86676 | 2.68381  | 0.1961989 | 2.5448486 | 10 | 1 | 26 days   | 0.44 |       | MPC | 2007 VW <sub>219</sub>        |
| 2007 VL <sub>220</sub> | 17.7 | 0.15 | 20071027 | 15.50606  | 153.56590 | 237.14913 | 10.80003 | 0.2651641 | 2.3527521 | 32 | 3 | 1996–2007 | 0.52 | M-v 1 | MPC | 128606 2007 VL <sub>220</sub> |
| 2007 VG <sub>221</sub> | 16.2 | 0.15 | 20071027 | 337.24932 | 224.26325 | 217.02493 | 14.40876 | 0.1320697 | 3.0139868 | 18 | 1 | 20 days   | 0.37 |       | MPC | 2007 VG <sub>221</sub>        |
| 2007 VO <sub>221</sub> | 19.1 | 0.15 | 20071116 | 1.39935   | 5.30738   | 48.55015  | 8.99824  | 0.3459912 | 2.2628869 | 42 | 1 | 55 days   | 0.45 |       | MPC | 2007 VO <sub>221</sub>        |
| 2007 VQ <sub>221</sub> | 16.8 | 0.15 | 20071027 | 31.24996  | 106.77563 | 272.98933 | 4.80546  | 0.0678940 | 2.7300276 | 22 | 1 | 17 days   | 0.49 |       | MPC | 2007 VQ <sub>221</sub>        |
| 2007 VS <sub>221</sub> | 17.2 | 0.15 | 20071027 | 348.23357 | 238.32288 | 193.86406 | 4.99627  | 0.3025272 | 2.5777440 | 36 | 1 | 82 days   | 0.39 | M-v 4 | MPC | 129049 2007 VS <sub>221</sub> |
| 2007 VT <sub>221</sub> | 15.2 | 0.15 | 20071007 | 33.65789  | 105.01739 | 253.87119 | 8.18295  | 0.0792965 | 3.1721038 | 35 | 1 | 53 days   | 0.50 |       | MPC | 2007 VT <sub>221</sub>        |
| 2007 VW <sub>221</sub> | 17.9 | 0.15 | 20071116 | 12.60742  | 144.09331 | 244.82544 | 12.31092 | 0.3093815 | 2.6963180 | 18 | 1 | 31 days   | 0.66 |       | MPC | 2007 VW <sub>221</sub>        |
| 2007 VX <sub>221</sub> | 16.9 | 0.15 | 20071027 | 342.73375 | 349.40578 | 76.96017  | 15.69911 | 0.0351182 | 2.6919840 | 28 | 1 | 12 days   | 0.20 |       | MPC | 2007 VX <sub>221</sub>        |
| 2007 VZ <sub>221</sub> | 16.6 | 0.15 | 20071116 | 334.80172 | 221.16707 | 248.69724 | 11.98086 | 0.2074929 | 2.6867922 | 24 | 1 | 21 days   | 0.27 |       | MPC | 2007 VZ <sub>221</sub>        |
| 2007 VA <sub>222</sub> | 16.7 | 0.15 | 20071027 | 15.69767  | 337.58734 | 51.54873  | 10.32172 | 0.1857055 | 2.6325661 | 72 | 3 | 2001–2007 | 0.46 | M-v 3 | MPC | 128606 2007 VA <sub>222</sub> |
| 2007 VB <sub>222</sub> | 15.8 | 0.15 | 20071116 | 19.58153  | 301.02048 | 90.44437  | 12.69877 | 0.1302356 | 2.9773199 | 31 | 1 | 29 days   | 0.54 |       | MPC | 2007 VB <sub>222</sub>        |
| 2007 VX <sub>223</sub> | 16.7 | 0.15 | 20071027 | 76.55930  | 208.47667 | 100.92503 | 9.42866  | 0.1961177 | 2.7552143 | 27 | 1 | 13 days   | 0.32 |       | MPC | 2007 VX <sub>223</sub>        |
| 2007 VK <sub>224</sub> | 16.2 | 0.15 | 20071027 | 338.72330 | 179.60497 | 249.23582 | 15.28425 | 0.0559179 | 3.1188002 | 14 | 1 | 12 days   | 0.40 |       | MPC | 2007 VK <sub>224</sub>        |
| 2007 VL <sub>224</sub> | 16.5 | 0.15 | 20071116 | 25.25106  | 118.26176 | 254.77846 | 10.44139 | 0.3160363 | 2.6439638 | 25 | 1 | 36 days   | 0.55 |       | MPC | 2007 VL <sub>224</sub>        |
| 2007 VG <sub>226</sub> | 17.7 | 0.15 | 20071027 | 10.20872  | 306.25005 | 81.78187  | 8.82887  | 0.2157658 | 2.4294812 | 30 | 1 | 18 days   | 0.58 |       | MPC | 2007 VG <sub>226</sub>        |
| 2007 VJ <sub>226</sub> | 16.7 | 0.15 | 20071027 | 26.33676  | 212.05402 | 151.47443 | 6.19806  | 0.2575169 | 2.6441234 | 27 | 2 | 2006–2007 | 0.41 | M-v 4 | MPC | 128606 2007 VJ <sub>226</sub> |
| 2007 VQ <sub>226</sub> | 15.7 | 0.15 | 20071027 | 304.69713 | 106.91234 | 3.65823   | 7.45656  | 0.1209481 | 3.0734106 | 24 | 1 | 57 days   | 0.39 |       | MPC | 2007 VQ <sub>226</sub>        |
| 2007 VU <sub>226</sub> | 16.2 | 0.15 | 20071027 | 92.55797  | 47.92006  | 253.31137 | 1.02288  | 0.1276282 | 2.5997040 | 22 | 1 | 7 days    | 0.59 |       | MPC | 2007 VU <sub>226</sub>        |
| 2007 VV <sub>226</sub> | 18.9 | 0.15 | 20071027 | 304.50285 | 239.10055 | 229.38705 | 20.54422 | 0.0816012 | 1.9091410 | 22 | 1 | 16 days   | 0.40 |       | MPC | 2007 VV <sub>226</sub>        |
| 2007 VH <sub>227</sub> | 16.9 | 0.15 | 20071116 | 338.41960 | 13.77656  | 71.44999  | 5.63364  | 0.1686110 | 2.4161619 | 28 | 1 | 33 days   | 0.50 |       | MPC | 2007 VH <sub>227</sub>        |
| 2007 VJ <sub>227</sub> | 16.1 | 0.15 | 20071116 | 0.34055   | 342.20259 | 72.56882  | 7.41571  | 0.1905222 | 3.0613250 | 31 | 1 | 33 days   | 0.45 |       | MPC | 2007 VJ <sub>227</sub>        |
| 2007 VM <sub>227</sub> | 16.4 | 0.15 | 20071116 | 343.81114 | 305.49257 | 141.90455 | 3.98440  | 0.1811110 | 2.5461363 | 17 | 1 | 22 days   | 0.45 |       | MPC | 2007 VM <sub>227</sub>        |
| 2007 VB <sub>228</sub> | 16.2 | 0.15 | 20071116 | 33.53369  | 92.48655  | 276.52049 | 6.08709  | 0.2019489 | 2.6148824 | 34 | 1 | 41 days   | 0.41 |       | MPC | 2007 VB <sub>228</sub>        |
| 2007 VE <sub>228</sub> | 16.4 | 0.15 | 20071116 | 13.66129  | 119.91418 | 273.65856 | 8.08702  | 0.2726181 | 3.1573794 | 12 | 1 | 8 days    | 0.48 |       | MPC | 2007 VE <sub>228</sub>        |
| 2007 VF <sub>228</sub> | 15.4 | 0.15 | 20071116 | 65.21736  | 69.32426  | 258.54242 | 15.04590 | 0.2177223 | 3.0613549 | 29 | 1 | 31 days   | 0.50 |       | MPC | 2007 VF <sub>228</sub>        |
| 2007 VG <sub>228</sub> | 17.1 | 0.15 | 20071027 | 8.36012   | 223.30313 | 164.29072 | 13.98226 | 0.2619753 | 2.6222363 | 23 | 1 | 37 days   | 0.44 |       | MPC | 2007 VG <sub>228</sub>        |
| 2007 VO <sub>228</sub> | 15.9 | 0.15 | 20071027 | 359.07910 | 2.39226   | 94.51713  | 22.99609 | 0.2635233 | 3.1607666 | 16 | 1 | 6 days    | 0.33 |       | MPC | 2007 VO <sub>228</sub>        |
| 2007 VA <sub>229</sub> | 16.0 | 0.15 | 20071027 | 6.97164   | 355.42291 | 48.92948  | 9.26275  | 0.0736518 | 3.0505230 | 13 | 1 | 32 days   | 0.21 |       | MPC | 2007 VA <sub>229</sub>        |
| 2007 VF <sub>229</sub> | 15.6 | 0.15 | 20071027 | 302.52840 | 234.78788 | 242.11196 | 8.59906  | 0.0595463 | 3.0969865 | 31 | 1 | 55 days   | 0.47 |       | MPC | 2007 VF <sub>229</sub>        |
| 2007 VQ <sub>229</sub> | 18.0 | 0.15 | 20071027 | 345.59137 | 25.58129  | 46.73986  | 2.91295  | 0.1910442 | 2.6690331 | 15 | 1 | 15 days   | 0.41 |       | MPC | 2007 VQ <sub>229</sub>        |
| 2007 VR <sub>229</sub> | 17.0 | 0.15 | 20071027 | 353.47347 | 179.42121 | 240.75065 | 12.30789 | 0.1506582 | 2.6138565 | 26 | 1 | 45 days   | 0.48 |       | MPC | 2007 VR <sub>229</sub>        |
| 2007 VV <sub>229</sub> | 16.4 | 0.15 | 20071116 | 294.36334 | 87.98242  | 49.21720  | 9.98441  | 0.1524239 | 3.1662503 | 19 | 1 | 37 days   | 0.47 |       | MPC | 2007 VV <sub>229</sub>        |
| 2007 VB <sub>230</sub> | 18.1 | 0.15 | 20071116 | 323.29186 | 230.93375 | 233.19612 | 4.48452  | 0.1582955 | 2.3088269 | 16 | 1 | 29 days   | 0.40 |       | MPC | 2007 VB <sub>230</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |          |      |     |   |       |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|----------|------|-----|---|-------|------------------------|
| 2007 VD <sub>230</sub> | 18.0 | 0.15 | 20071027 | 37.23488  | 295.37589 | 51.38000  | 11.33316 | 0.2662493 | 2.5558616 | 20 | 1 | 55 days  | 0.25 |     |   | MPC   | 2007 VD <sub>230</sub> |
| 2007 VJ <sub>230</sub> | 18.5 | 0.15 | 20071027 | 26.67902  | 316.09230 | 51.08968  | 1.86271  | 0.1923329 | 2.1381978 | 25 | 1 | 61 days  | 0.26 | M-v | 4 | MPC   | 2007 VJ <sub>230</sub> |
| 2007 VV <sub>230</sub> | 17.4 | 0.15 | 20071027 | 19.14300  | 322.43659 | 57.91382  | 4.94049  | 0.2087003 | 2.6004250 | 21 | 1 | 81 days  | 0.41 | M-v | 4 | MPC   | 2007 VV <sub>230</sub> |
| 2007 VW <sub>230</sub> | 17.0 | 0.15 | 20071027 | 0.16253   | 179.59060 | 233.80470 | 8.30508  | 0.0916169 | 3.0803563 | 20 | 1 | 48 days  | 0.36 |     |   | MPC   | 2007 VW <sub>230</sub> |
| 2007 VX <sub>230</sub> | 17.4 | 0.15 | 20071027 | 28.13606  | 315.14550 | 55.29513  | 2.47931  | 0.1821333 | 2.5656428 | 28 | 1 | 48 days  | 0.42 |     |   | MPC   | 2007 VX <sub>230</sub> |
| 2007 VF <sub>231</sub> | 18.5 | 0.15 | 20071027 | 356.90181 | 178.20290 | 238.26263 | 16.17196 | 0.2186139 | 2.7622330 | 9  | 1 | 11 days  | 0.37 |     |   | MPC   | 2007 VF <sub>231</sub> |
| 2007 VK <sub>231</sub> | 15.9 | 0.15 | 20071027 | 36.35762  | 307.50007 | 52.12202  | 6.12160  | 0.2227241 | 3.1552074 | 21 | 1 | 19 days  | 0.24 |     |   | MPC   | 2007 VK <sub>231</sub> |
| 2007 VL <sub>231</sub> | 18.1 | 0.15 | 20071027 | 31.46480  | 95.95761  | 264.76362 | 1.75115  | 0.2282389 | 2.2285746 | 17 | 1 | 8 days   | 0.45 |     |   | MPC   | 2007 VL <sub>231</sub> |
| 2007 VN <sub>231</sub> | 17.0 | 0.15 | 20071116 | 354.65420 | 184.89482 | 241.14593 | 15.64654 | 0.0726888 | 2.8024609 | 16 | 1 | 35 days  | 0.30 |     |   | MPC   | 2007 VN <sub>231</sub> |
| 2007 VO <sub>231</sub> | 18.3 | 0.15 | 20071027 | 33.23483  | 316.96219 | 46.55795  | 4.31423  | 0.1826990 | 2.2225671 | 26 | 1 | 40 days  | 0.24 |     |   | MPC   | 2007 VO <sub>231</sub> |
| 2007 VL <sub>232</sub> | 16.1 | 0.15 | 20071027 | 301.44895 | 243.40488 | 238.45361 | 9.40925  | 0.0711202 | 3.0503834 | 36 | 1 | 51 days  | 0.40 |     |   | MPC   | 2007 VL <sub>232</sub> |
| 2007 VN <sub>232</sub> | 16.1 | 0.15 | 20071116 | 28.34802  | 325.64014 | 59.31563  | 3.11241  | 0.1111459 | 3.1752903 | 16 | 1 | 37 days  | 0.23 |     |   | MPC   | 2007 VN <sub>232</sub> |
| 2007 VE <sub>233</sub> | 15.6 | 0.15 | 20071027 | 67.70969  | 71.22075  | 252.11189 | 8.56716  | 0.0974792 | 3.1138448 | 20 | 1 | 39 days  | 0.41 |     |   | MPC   | 2007 VE <sub>233</sub> |
| 2007 VJ <sub>233</sub> | 17.6 | 0.15 | 20071116 | 55.61922  | 279.73996 | 71.34975  | 2.23786  | 0.1038553 | 2.6944161 | 13 | 1 | 26 days  | 0.33 |     |   | MPC   | 2007 VJ <sub>233</sub> |
| 2007 VK <sub>233</sub> | 17.6 | 0.15 | 20071027 | 347.76173 | 1.24309   | 65.59289  | 3.63301  | 0.1630270 | 2.3918239 | 43 | 1 | 82 days  | 0.38 | M-v | 3 | MPC   | 2007 VK <sub>233</sub> |
| 2007 VC <sub>234</sub> | 17.1 | 0.15 | 20071116 | 115.72347 | 27.65835  | 271.02774 | 2.96477  | 0.0269210 | 2.7791201 | 9  | 1 | 20 days  | 0.37 |     |   | MPC   | 2007 VC <sub>234</sub> |
| 2007 VE <sub>234</sub> | 18.0 | 0.15 | 20071116 | 33.59626  | 139.46619 | 237.87651 | 20.80830 | 0.1021310 | 1.9094466 | 23 | 1 | 33 days  | 0.46 |     |   | MPC   | 2007 VE <sub>234</sub> |
| 2007 VG <sub>234</sub> | 16.3 | 0.15 | 20071027 | 8.89123   | 342.52989 | 62.36205  | 23.04683 | 0.0887685 | 2.5759995 | 31 | 1 | 14 days  | 0.45 |     |   | MPC   | 2007 VG <sub>234</sub> |
| 2007 VM <sub>234</sub> | 15.9 | 0.15 | 20071027 | 47.47919  | 219.80342 | 132.59189 | 0.71195  | 0.1858856 | 3.0097641 | 26 | 1 | 82 days  | 0.28 | M-v | 4 | MPC   | 2007 VM <sub>234</sub> |
| 2007 VU <sub>234</sub> | 15.4 | 0.15 | 20071116 | 121.07363 | 214.23717 | 76.21810  | 6.58129  | 0.1588582 | 3.2027702 | 16 | 1 | 25 days  | 0.29 |     |   | MPC   | 2007 VU <sub>234</sub> |
| 2007 VD <sub>235</sub> | 17.9 | 0.15 | 20071116 | 15.41292  | 172.12054 | 228.59104 | 3.55530  | 0.1652821 | 2.2904761 | 13 | 1 | 26 days  | 0.36 |     |   | MPC   | 2007 VD <sub>235</sub> |
| 2007 VJ <sub>235</sub> | 16.2 | 0.15 | 20071027 | 7.19572   | 174.30803 | 232.06291 | 7.03755  | 0.1869617 | 2.6066054 | 37 | 1 | 102 days | 0.40 | M-v | 4 | MPC   | 2007 VJ <sub>235</sub> |
| 2007 VP <sub>235</sub> | 16.3 | 0.15 | 20071116 | 3.13997   | 194.43319 | 226.80997 | 3.21298  | 0.1217615 | 2.6355869 | 24 | 1 | 26 days  | 0.53 |     |   | MPC   | 2007 VP <sub>235</sub> |
| 2007 VR <sub>235</sub> | 17.4 | 0.15 | 20071027 | 38.59951  | 276.97589 | 84.05993  | 4.62388  | 0.2406871 | 3.0435236 | 9  | 1 | 9 days   | 0.35 |     |   | MPC   | 2007 VR <sub>235</sub> |
| 2007 VT <sub>236</sub> | 16.2 | 0.15 | 20071116 | 315.89053 | 227.35175 | 234.32804 | 4.97051  | 0.0577197 | 2.9445009 | 22 | 1 | 36 days  | 0.45 |     |   | MPC   | 2007 VT <sub>236</sub> |
| 2007 VB <sub>237</sub> | 16.7 | 0.15 | 20071116 | 355.03721 | 14.77072  | 45.01264  | 1.92598  | 0.1452855 | 2.8390514 | 22 | 1 | 24 days  | 0.86 |     |   | MPC   | 2007 VB <sub>237</sub> |
| 2007 VH <sub>237</sub> | 17.9 | 0.15 | 20071027 | 355.96376 | 182.67649 | 230.51051 | 4.17256  | 0.1116848 | 2.6828299 | 19 | 1 | 52 days  | 0.25 |     |   | MPC   | 2007 VH <sub>237</sub> |
| 2007 VO <sub>237</sub> | 17.5 | 0.15 | 20071116 | 265.03564 | 109.37133 | 52.80569  | 5.31662  | 0.1143334 | 2.3945175 | 17 | 1 | 35 days  | 0.25 |     |   | MPC   | 2007 VO <sub>237</sub> |
| 2007 VQ <sub>237</sub> | 14.9 | 0.15 | 20071027 | 184.08113 | 174.03276 | 55.53034  | 23.76439 | 0.2129594 | 3.0430881 | 14 | 1 | 7 days   | 0.40 |     |   | MPC   | 2007 VQ <sub>237</sub> |
| 2007 VR <sub>237</sub> | 18.4 | 0.15 | 20071027 | 46.45949  | 281.93299 | 53.85728  | 3.09492  | 0.2463576 | 2.3066835 | 10 | 1 | 7 days   | 0.47 |     |   | E MPC | 2007 VR <sub>237</sub> |
| 2007 VX <sub>237</sub> | 17.6 | 0.15 | 20071027 | 320.99486 | 230.06864 | 218.80680 | 5.78296  | 0.0338764 | 2.1617738 | 17 | 1 | 15 days  | 0.45 |     |   | MPC   | 2007 VX <sub>237</sub> |
| 2007 VF <sub>238</sub> | 17.7 | 0.15 | 20071027 | 337.84821 | 21.07010  | 57.72711  | 4.21152  | 0.1983060 | 2.3830022 | 42 | 1 | 63 days  | 0.50 | M-v | 4 | MPC   | 2007 VF <sub>238</sub> |
| 2007 VG <sub>238</sub> | 16.0 | 0.15 | 20071116 | 359.68245 | 184.13708 | 230.01567 | 26.51502 | 0.1332057 | 3.0942625 | 17 | 1 | 7 days   | 0.55 |     |   | E MPC | 2007 VG <sub>238</sub> |
| 2007 VH <sub>238</sub> | 15.2 | 0.15 | 20071116 | 179.70686 | 32.34053  | 199.83278 | 1.83881  | 0.0896453 | 2.8346722 | 22 | 1 | 5 days   | 0.46 |     |   | MPC   | 2007 VH <sub>238</sub> |
| 2007 VL <sub>238</sub> | 17.0 | 0.15 | 20071116 | 32.79334  | 305.79132 | 66.74514  | 3.83024  | 0.2260518 | 2.9285074 | 12 | 1 | 16 days  | 0.46 |     |   | MPC   | 2007 VL <sub>238</sub> |
| 2007 VN <sub>238</sub> | 18.1 | 0.15 | 20071116 | 18.93542  | 155.94546 | 240.16668 | 4.38905  | 0.1455062 | 2.1862406 | 26 | 1 | 30 days  | 0.45 |     |   | MPC   | 2007 VN <sub>238</sub> |
| 2007 VQ <sub>238</sub> | 16.1 | 0.15 | 20071116 | 317.70049 | 58.35709  | 64.83532  | 14.72468 | 0.1669892 | 3.0973539 | 9  | 1 | 5 days   | 0.33 |     |   | MPC   | 2007 VQ <sub>238</sub> |
| 2007 VU <sub>238</sub> | 16.2 | 0.15 | 20071116 | 354.89133 | 188.70281 | 243.57801 | 17.62490 | 0.0955300 | 3.0393233 | 16 | 1 | 28 days  | 0.42 |     |   | MPC   | 2007 VU <sub>238</sub> |
| 2007 VB <sub>239</sub> | 15.9 | 0.15 | 20071116 | 15.58016  | 340.50730 | 68.06200  | 8.73661  | 0.0534184 | 2.7088687 | 34 | 1 | 35 days  | 0.54 |     |   | MPC   | 2007 VB <sub>239</sub> |
| 2007 VG <sub>239</sub> | 17.3 | 0.15 | 20071116 | 47.05640  | 116.18040 | 238.35441 | 17.53444 | 0.2153833 | 2.6807077 | 13 | 1 | 6 days   | 0.21 |     |   | MPC   | 2007 VG <sub>239</sub> |
| 2007 VO <sub>239</sub> | 18.5 | 0.15 | 20071027 | 14.77393  | 151.36777 | 233.16403 | 6.70560  | 0.2996033 | 2.5213171 | 19 | 1 | 33 days  | 0.29 |     |   | MPC   | 2007 VO <sub>239</sub> |
| 2007 VP <sub>239</sub> | 16.5 | 0.15 | 20071116 | 23.50483  | 276.00071 | 109.62112 | 1.76909  | 0.2379458 | 2.9831026 | 25 | 1 | 30 days  | 0.35 |     |   | MPC   | 2007 VP <sub>239</sub> |
| 2007 VT <sub>239</sub> | 16.8 | 0.15 | 20071116 | 44.79210  | 287.13090 | 80.86288  | 5.50820  | 0.1372244 | 2.6039785 | 16 | 1 | 36 days  | 0.23 |     |   | MPC   | 2007 VT <sub>239</sub> |
| 2007 VU <sub>239</sub> | 17.5 | 0.15 | 20071116 | 24.43091  | 315.09357 | 68.08857  | 8.40871  | 0.2443713 | 2.4192167 | 25 | 1 | 36 days  | 0.54 |     |   | MPC   | 2007 VU <sub>239</sub> |
| 2007 VV <sub>239</sub> | 16.4 | 0.15 | 20071116 | 5.66936   | 286.70976 | 130.42245 | 1.34910  | 0.2085545 | 3.1146476 | 21 | 1 | 30 days  | 0.41 |     |   | MPC   | 2007 VV <sub>239</sub> |
| 2007 VJ <sub>240</sub> | 16.0 | 0.15 | 20071027 | 276.16072 | 66.89326  | 66.55034  | 21.55947 | 0.0583888 | 2.6540727 | 12 | 1 | 8 days   | 0.60 |     |   | MPC   | 2007 VJ <sub>240</sub> |
| 2007 VT <sub>240</sub> | 17.0 | 0.15 | 20071116 | 8.01502   | 324.54675 | 77.77278  | 14.96062 | 0.2558001 | 2.5902387 | 36 | 1 | 33 days  | 0.64 |     |   | MPC   | 2007 VT <sub>240</sub> |
| 2007 VW <sub>240</sub> | 17.1 | 0.15 | 20071116 | 26.23097  | 274.55887 | 93.47917  | 12.50792 | 0.3096262 | 2.5691410 | 24 | 1 | 32 days  | 0.56 |     |   | MPC   | 2007 VW <sub>240</sub> |
| 2007 VB <sub>241</sub> | 16.4 | 0.15 | 20071027 | 3.44031   | 270.39604 | 117.33413 | 9.24396  | 0.1098002 | 2.6470887 | 12 | 1 | 4 days   | 0.73 |     |   | MPC   | 2007 VB <sub>241</sub> |
| 2007 VD <sub>241</sub> | 18.3 | 0.15 | 20071116 | 11.97033  | 215.97943 | 175.61889 | 8.02063  | 0.3515073 | 2.5514006 | 30 | 1 | 33 days  | 0.45 |     |   | MPC   | 2007 VD <sub>241</sub> |
| 2007 VM <sub>241</sub> | 16.7 | 0.15 | 20071027 | 21.00142  | 288.63427 | 79.39820  | 14.22885 | 0.2308644 | 2.6189195 | 40 | 1 | 57 days  | 0.65 |     |   | MPC   | 2007 VM <sub>241</sub> |
| 2007 VJ <sub>242</sub> | 17.3 | 0.15 | 20071027 | 357.69680 | 254.91471 | 156.30034 | 7.91434  | 0.2388219 | 2.6729726 | 16 | 1 | 15 days  | 0.41 |     |   | MPC   | 2007 VJ <sub>242</sub> |
| 2007 VK <sub>242</sub> | 16.2 | 0.15 | 20071027 | 358.92718 | 340.62797 | 76.17622  | 15.55769 | 0.2360269 | 2.6498385 | 32 | 1 | 83 days  | 0.50 | M-v | 4 | MPC   | 2007 VK <sub>242</sub> |

|                        |      |      |          |           |           |           |          |           |           |    |   |         |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-------|-----|-------------------------------|
| 2007 VC <sub>243</sub> | 16.9 | 0.15 | 20071116 | 17.50963  | 234.33992 | 154.80777 | 8.67186  | 0.2780332 | 2.5450885 | 36 | 1 | 25 days | 0.57 |       | MPC | 2007 VC <sub>243</sub>        |
| 2007 VL <sub>243</sub> | 17.8 | 0.15 | 20071027 | 250.59572 | 91.32188  | 114.97194 | 42.33182 | 0.7103947 | 0.9448653 | 15 | 1 | 13 days | 0.40 | M-v 9 | MPC | 129050 2007 VL <sub>243</sub> |
| 2007 VM <sub>243</sub> | 21.0 | 0.15 | 20071027 | 207.11366 | 210.20264 | 353.62043 | 12.24284 | 0.3375255 | 1.0723545 | 26 | 1 | 15 days | 0.48 | M-v 8 | MPC | 129050 2007 VM <sub>243</sub> |
| 2007 VN <sub>243</sub> | 22.3 | 0.15 | 20071027 | 329.38559 | 51.90585  | 91.04549  | 4.45377  | 0.6126122 | 2.1496140 | 27 | 1 | 15 days | 0.62 | M-v 7 | MPC | 129050 2007 VN <sub>243</sub> |
| 2007 VO <sub>243</sub> | 19.4 | 0.15 | 20071027 | 38.34585  | 230.42789 | 96.00106  | 9.63589  | 0.4008136 | 1.8436972 | 45 | 1 | 21 days | 0.48 | M-v 6 | MPC | 129050 2007 VO <sub>243</sub> |
| 2007 VP <sub>243</sub> | 21.4 | 0.15 | 20071027 | 19.52827  | 311.78650 | 14.12261  | 5.64027  | 0.5844790 | 2.2563335 | 28 | 1 | 16 days | 0.42 | M-v 7 | MPC | 129050 2007 VP <sub>243</sub> |
| 2007 VQ <sub>243</sub> | 18.0 | 0.15 | 20071116 | 20.59009  | 316.10862 | 71.44708  | 1.80885  | 0.1570552 | 2.4236008 | 24 | 1 | 28 days | 0.61 |       | MPC | 2007 VQ <sub>243</sub>        |
| 2007 VR <sub>243</sub> | 15.4 | 0.15 | 20071116 | 179.97003 | 16.51171  | 223.39938 | 1.94098  | 0.1082391 | 3.0256714 | 13 | 1 | 22 days | 0.25 |       | MPC | 2007 VR <sub>243</sub>        |
| 2007 VT <sub>243</sub> | 14.6 | 0.15 | 20071116 | 58.48665  | 286.17440 | 67.74251  | 10.03667 | 0.0896181 | 3.0825298 | 14 | 1 | 22 days | 0.48 |       | MPC | 2007 VT <sub>243</sub>        |
| 2007 VU <sub>243</sub> | 16.1 | 0.15 | 20071027 | 351.98114 | 175.90397 | 252.34954 | 4.40748  | 0.2372977 | 3.0915553 | 15 | 1 | 17 days | 0.31 |       | MPC | 2007 VU <sub>243</sub>        |
| 2007 VV <sub>243</sub> | 15.6 | 0.15 | 20071027 | 346.90857 | 163.80677 | 267.83731 | 4.03138  | 0.0526533 | 2.7964780 | 26 | 1 | 41 days | 0.43 |       | MPC | 2007 VV <sub>243</sub>        |
| 2007 VW <sub>243</sub> | 16.3 | 0.15 | 20071116 | 340.33070 | 205.42451 | 246.47731 | 16.95190 | 0.2640485 | 3.0149039 | 38 | 1 | 31 days | 0.54 |       | MPC | 2007 VW <sub>243</sub>        |
| 2007 VX <sub>243</sub> | 16.6 | 0.15 | 20071116 | 42.79367  | 0.87925   | 2.60766   | 3.38579  | 0.1432462 | 2.8365367 | 19 | 1 | 6 days  | 0.51 |       | MPC | 2007 VX <sub>243</sub>        |
| 2007 VY <sub>243</sub> | 17.8 | 0.15 | 20071116 | 339.66051 | 67.99278  | 18.90483  | 3.36524  | 0.1707370 | 2.4714356 | 18 | 1 | 4 days  | 0.54 |       | MPC | 2007 VY <sub>243</sub>        |
| 2007 VB <sub>244</sub> | 17.6 | 0.15 | 20071116 | 329.91157 | 203.40962 | 248.99644 | 5.99731  | 0.0684850 | 2.2746232 | 24 | 1 | 32 days | 0.59 |       | MPC | 2007 VB <sub>244</sub>        |
| 2007 VD <sub>244</sub> | 20.3 | 0.15 | 20071116 | 21.96681  | 313.83339 | 66.20614  | 3.49486  | 0.2413911 | 2.1574186 | 11 | 1 | 4 days  | 0.59 |       | MPC | 2007 VD <sub>244</sub>        |
| 2007 VF <sub>244</sub> | 19.4 | 0.15 | 20071116 | 1.72548   | 44.71010  | 3.03902   | 2.49770  | 0.2323204 | 2.3265562 | 11 | 1 | 4 days  | 0.55 |       | MPC | 2007 VF <sub>244</sub>        |
| 2007 VG <sub>244</sub> | 16.4 | 0.15 | 20071116 | 169.03052 | 198.33803 | 38.67968  | 14.32885 | 0.2031865 | 2.5614250 | 8  | 1 | 4 days  | 0.64 |       | MPC | 2007 VG <sub>244</sub>        |
| 2007 VH <sub>244</sub> | 15.9 | 0.15 | 20071027 | 256.64907 | 264.82267 | 249.21181 | 7.55426  | 0.0472940 | 3.0045793 | 22 | 1 | 41 days | 0.58 |       | MPC | 2007 VH <sub>244</sub>        |
| 2007 VK <sub>244</sub> | 17.7 | 0.15 | 20071116 | 51.66907  | 96.13696  | 242.69810 | 10.44420 | 0.1867976 | 2.6220960 | 10 | 1 | 4 days  | 0.88 |       | MPC | 2007 VK <sub>244</sub>        |
| 2007 VL <sub>244</sub> | 17.2 | 0.15 | 20071116 | 338.98067 | 176.49431 | 263.22784 | 4.11293  | 0.1713018 | 2.7426775 | 9  | 1 | 4 days  | 0.52 |       | MPC | 2007 VL <sub>244</sub>        |
| 2007 VM <sub>244</sub> | 17.2 | 0.15 | 20071027 | 303.46573 | 92.23230  | 41.27955  | 14.14614 | 0.2855146 | 2.6954085 | 25 | 1 | 19 days | 0.69 |       | MPC | 2007 VM <sub>244</sub>        |
| 2007 VO <sub>244</sub> | 17.0 | 0.15 | 20071116 | 69.81696  | 78.77231  | 237.45924 | 6.22751  | 0.2638248 | 2.2154539 | 22 | 1 | 21 days | 0.42 |       | MPC | 2007 VO <sub>244</sub>        |
| 2007 VR <sub>244</sub> | 15.8 | 0.15 | 20071027 | 350.43431 | 314.58137 | 102.90376 | 25.17086 | 0.2133158 | 2.3245000 | 14 | 1 | 8 days  | 0.67 |       | MPC | 2007 VR <sub>244</sub>        |
| 2007 VS <sub>244</sub> | 16.8 | 0.15 | 20071027 | 357.44465 | 341.75432 | 70.23502  | 3.00089  | 0.2010251 | 2.6307251 | 39 | 1 | 83 days | 0.39 | M-v 3 | MPC | 2007 VS <sub>244</sub>        |
| 2007 VT <sub>244</sub> | 17.2 | 0.15 | 20071027 | 343.61358 | 199.54845 | 227.68491 | 5.51478  | 0.0699463 | 2.2567263 | 25 | 1 | 47 days | 0.41 |       | MPC | 2007 VT <sub>244</sub>        |
| 2007 VW <sub>244</sub> | 18.0 | 0.15 | 20071027 | 308.68969 | 120.09149 | 358.49965 | 1.29288  | 0.1451118 | 2.4089359 | 19 | 1 | 19 days | 0.42 |       | MPC | 2007 VW <sub>244</sub>        |
| 2007 VX <sub>244</sub> | 16.5 | 0.15 | 20071116 | 341.47034 | 78.70445  | 3.93107   | 1.28398  | 0.1034194 | 2.8477701 | 28 | 1 | 41 days | 0.40 |       | MPC | 2007 VX <sub>244</sub>        |
| 2007 VZ <sub>244</sub> | 17.9 | 0.15 | 20071116 | 337.84449 | 196.08677 | 253.82891 | 3.92446  | 0.1727617 | 2.2978913 | 34 | 1 | 39 days | 0.51 |       | MPC | 2007 VZ <sub>244</sub>        |
| 2007 VA <sub>245</sub> | 18.8 | 0.15 | 20071116 | 352.78245 | 188.44121 | 240.81456 | 2.92128  | 0.2362311 | 2.5694032 | 23 | 1 | 32 days | 0.41 |       | MPC | 2007 VA <sub>245</sub>        |
| 2007 VC <sub>245</sub> | 17.0 | 0.15 | 20071027 | 338.27134 | 23.45186  | 57.60257  | 4.27515  | 0.1339022 | 2.6072994 | 23 | 1 | 11 days | 0.43 |       | MPC | 2007 VC <sub>245</sub>        |
| 2007 VE <sub>245</sub> | 15.6 | 0.15 | 20071027 | 277.62480 | 80.81177  | 66.95725  | 7.15413  | 0.0922743 | 3.1661175 | 30 | 1 | 46 days | 0.40 |       | MPC | 2007 VE <sub>245</sub>        |
| 2007 VF <sub>245</sub> | 17.7 | 0.15 | 20071027 | 333.75993 | 9.76577   | 72.96196  | 3.86166  | 0.0918106 | 2.1999328 | 28 | 1 | 46 days | 0.49 |       | MPC | 2007 VF <sub>245</sub>        |
| 2007 VG <sub>245</sub> | 17.1 | 0.15 | 20071116 | 321.79191 | 7.93604   | 103.07253 | 3.24930  | 0.1592545 | 2.3256241 | 34 | 1 | 21 days | 0.34 |       | MPC | 2007 VG <sub>245</sub>        |
| 2007 VJ <sub>245</sub> | 17.2 | 0.15 | 20071116 | 20.33137  | 322.59041 | 72.85902  | 6.24555  | 0.0819993 | 2.2490120 | 27 | 1 | 26 days | 0.46 |       | MPC | 2007 VJ <sub>245</sub>        |
| 2007 VL <sub>245</sub> | 16.9 | 0.15 | 20071116 | 10.51578  | 321.47216 | 84.16858  | 4.51089  | 0.1761634 | 3.0542023 | 12 | 1 | 6 days  | 0.31 |       | MPC | 2007 VL <sub>245</sub>        |
| 2007 VO <sub>245</sub> | 17.9 | 0.15 | 20071027 | 5.64325   | 150.83648 | 244.12259 | 24.51310 | 0.1607398 | 2.2930945 | 20 | 1 | 10 days | 0.28 |       | MPC | 2007 VO <sub>245</sub>        |
| 2007 VR <sub>245</sub> | 15.2 | 0.15 | 20071116 | 27.40809  | 86.34373  | 287.85582 | 8.42161  | 0.1414922 | 3.4601142 | 16 | 1 | 24 days | 0.58 |       | MPC | 2007 VR <sub>245</sub>        |
| 2007 VU <sub>245</sub> | 17.6 | 0.15 | 20071116 | 9.08197   | 85.64633  | 314.96742 | 6.17463  | 0.1116524 | 2.3876368 | 19 | 1 | 27 days | 0.21 |       | MPC | 2007 VU <sub>245</sub>        |
| 2007 VV <sub>245</sub> | 16.6 | 0.15 | 20071027 | 29.50397  | 95.66837  | 268.32597 | 10.10887 | 0.1809182 | 2.7523640 | 20 | 1 | 9 days  | 0.87 |       | MPC | 2007 VV <sub>245</sub>        |
| 2007 VF <sub>247</sub> | 16.0 | 0.15 | 20071027 | 328.29771 | 195.32579 | 256.58475 | 18.46592 | 0.1272521 | 3.1946082 | 10 | 1 | 11 days | 0.09 |       | MPC | 2007 VF <sub>247</sub>        |
| 2007 VG <sub>247</sub> | 16.3 | 0.15 | 20071116 | 26.43117  | 18.02959  | 10.14725  | 10.25475 | 0.0486775 | 3.2458744 | 18 | 1 | 38 days | 0.38 |       | MPC | 2007 VG <sub>247</sub>        |
| 2007 VS <sub>247</sub> | 16.2 | 0.15 | 20071027 | 258.82457 | 322.70571 | 191.01825 | 10.21905 | 0.0314366 | 3.1009722 | 16 | 1 | 15 days | 0.26 |       | MPC | 2007 VS <sub>247</sub>        |
| 2007 VU <sub>247</sub> | 15.4 | 0.15 | 20071027 | 216.17274 | 349.86827 | 208.15480 | 16.91758 | 0.0689272 | 3.0857898 | 28 | 1 | 36 days | 0.20 |       | MPC | 2007 VU <sub>247</sub>        |
| 2007 VY <sub>247</sub> | 17.1 | 0.15 | 20071027 | 354.08784 | 234.77810 | 178.38647 | 6.70578  | 0.0779782 | 2.2953170 | 16 | 1 | 8 days  | 0.69 |       | MPC | 2007 VY <sub>247</sub>        |
| 2007 VZ <sub>247</sub> | 16.1 | 0.15 | 20071027 | 356.30967 | 222.82279 | 190.56224 | 9.46004  | 0.1493808 | 3.0771402 | 23 | 1 | 39 days | 0.33 |       | MPC | 2007 VZ <sub>247</sub>        |
| 2007 VB <sub>248</sub> | 15.7 | 0.15 | 20071116 | 23.18639  | 293.28508 | 91.70427  | 10.79290 | 0.0835577 | 3.0319813 | 24 | 1 | 7 days  | 0.19 |       | MPC | 2007 VB <sub>248</sub>        |
| 2007 VF <sub>248</sub> | 17.1 | 0.15 | 20071027 | 344.75476 | 305.11518 | 122.59056 | 7.20532  | 0.1193586 | 2.9810401 | 16 | 1 | 15 days | 0.16 |       | MPC | 2007 VF <sub>248</sub>        |
| 2007 VG <sub>248</sub> | 16.8 | 0.15 | 20071027 | 289.56185 | 298.61824 | 189.36265 | 10.16699 | 0.0684301 | 3.0092891 | 12 | 1 | 4 days  | 0.47 |       | MPC | 2007 VG <sub>248</sub>        |
| 2007 VP <sub>248</sub> | 15.8 | 0.15 | 20071116 | 16.81133  | 129.00599 | 263.91041 | 12.26724 | 0.1845543 | 2.6417009 | 21 | 1 | 30 days | 0.28 |       | MPC | 2007 VP <sub>248</sub>        |
| 2007 VG <sub>250</sub> | 15.6 | 0.15 | 20071027 | 34.83284  | 283.41485 | 80.79248  | 18.06180 | 0.1252631 | 3.1324493 | 20 | 1 | 27 days | 0.54 |       | MPC | 2007 VG <sub>250</sub>        |
| 2007 VK <sub>250</sub> | 18.0 | 0.15 | 20071116 | 26.44886  | 181.04723 | 189.11888 | 8.04205  | 0.2333165 | 2.6883682 | 15 | 1 | 2 days  | 0.21 |       | MPC | 2007 VK <sub>250</sub>        |
| 2007 VL <sub>250</sub> | 19.9 | 0.15 | 20071116 | 6.71656   | 34.90662  | 4.72671   | 6.48351  | 0.2910176 | 2.4367174 | 27 | 1 | 5 days  | 0.71 |       | MPC | 2007 VL <sub>250</sub>        |



|                        |      |      |          |           |           |           |          |           |           |    |   |          |      |          |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|----------|------|----------|------------------------|
| 2007 VM <sub>250</sub> | 18.3 | 0.15 | 20071027 | 50.89674  | 29.33173  | 299.27095 | 5.98698  | 0.2369584 | 2.1520443 | 33 | 1 | 12 days  | 0.40 | MP       | 2007 VM <sub>250</sub> |
| 2007 VN <sub>250</sub> | 16.5 | 0.15 | 20071116 | 6.63623   | 36.16983  | 7.95144   | 10.53139 | 0.0905359 | 3.0175889 | 19 | 1 | 5 days   | 0.28 | MP       | 2007 VN <sub>250</sub> |
| 2007 VO <sub>250</sub> | 16.0 | 0.15 | 20071116 | 250.55306 | 242.74860 | 291.59470 | 8.91384  | 0.1360348 | 3.1146698 | 37 | 1 | 20 days  | 0.30 | MP       | 2007 VO <sub>250</sub> |
| 2007 VT <sub>250</sub> | 15.5 | 0.15 | 20071027 | 359.09474 | 59.68207  | 343.07438 | 8.14967  | 0.0813901 | 3.1859771 | 17 | 1 | 8 days   | 0.58 | MP       | 2007 VT <sub>250</sub> |
| 2007 VU <sub>250</sub> | 16.4 | 0.15 | 20071027 | 264.54663 | 213.45313 | 288.88908 | 7.91417  | 0.0439610 | 2.7175349 | 15 | 1 | 10 days  | 0.22 | MP       | 2007 VU <sub>250</sub> |
| 2007 VV <sub>250</sub> | 18.3 | 0.15 | 20071116 | 0.84048   | 171.32980 | 234.90836 | 24.74885 | 0.2386918 | 2.3202612 | 22 | 1 | 26 days  | 0.63 | MP       | 2007 VV <sub>250</sub> |
| 2007 VX <sub>250</sub> | 15.9 | 0.15 | 20071027 | 0.11441   | 49.62131  | 353.14713 | 8.46487  | 0.1183016 | 3.0407632 | 23 | 1 | 9 days   | 0.33 | MP       | 2007 VX <sub>250</sub> |
| 2007 VY <sub>250</sub> | 16.7 | 0.15 | 20071027 | 67.62701  | 3.22329   | 317.45467 | 6.38510  | 0.1247434 | 2.3911995 | 22 | 1 | 9 days   | 0.38 | MP       | 2007 VY <sub>250</sub> |
| 2007 VD <sub>251</sub> | 15.5 | 0.15 | 20071027 | 30.46178  | 295.36628 | 72.32196  | 12.19181 | 0.1264778 | 3.1208188 | 27 | 1 | 39 days  | 0.47 | MP       | 2007 VD <sub>251</sub> |
| 2007 VP <sub>251</sub> | 17.1 | 0.15 | 20071116 | 352.00818 | 49.97178  | 18.50302  | 8.45035  | 0.2206595 | 2.7622185 | 22 | 1 | 28 days  | 0.42 | MP       | 2007 VP <sub>251</sub> |
| 2007 VV <sub>251</sub> | 15.1 | 0.15 | 20071116 | 14.43720  | 298.15785 | 105.96114 | 11.09363 | 0.2291672 | 3.1306980 | 15 | 1 | 24 days  | 0.43 | MP       | 2007 VV <sub>251</sub> |
| 2007 VY <sub>251</sub> | 17.0 | 0.15 | 20071027 | 317.10683 | 359.37107 | 98.79480  | 5.58622  | 0.1039153 | 2.3370135 | 20 | 1 | 18 days  | 0.32 | MP       | 2007 VY <sub>251</sub> |
| 2007 VZ <sub>251</sub> | 15.2 | 0.15 | 20071116 | 73.24711  | 238.81431 | 77.84885  | 10.69240 | 0.1873092 | 3.1174237 | 15 | 1 | 8 days   | 0.50 | MP       | 2007 VZ <sub>251</sub> |
| 2007 VB <sub>252</sub> | 17.9 | 0.15 | 20071027 | 351.49288 | 277.60484 | 138.59711 | 1.39734  | 0.1578141 | 2.2443577 | 12 | 1 | 3 days   | 0.81 | MP       | 2007 VB <sub>252</sub> |
| 2007 VD <sub>252</sub> | 15.4 | 0.15 | 20071116 | 165.82905 | 117.58646 | 127.12468 | 4.69103  | 0.0931309 | 2.7881310 | 15 | 1 | 8 days   | 0.26 | MP       | 2007 VD <sub>252</sub> |
| 2007 VE <sub>252</sub> | 16.3 | 0.15 | 20071027 | 358.49745 | 346.89321 | 62.09352  | 11.65648 | 0.1652571 | 2.7187879 | 40 | 1 | 56 days  | 0.52 | MP       | 2007 VE <sub>252</sub> |
| 2007 VP <sub>252</sub> | 16.8 | 0.15 | 20071027 | 34.97628  | 230.03894 | 126.20541 | 14.85505 | 0.1583630 | 2.6212276 | 12 | 1 | 6 days   | 0.72 | MP       | 2007 VP <sub>252</sub> |
| 2007 VW <sub>252</sub> | 17.0 | 0.15 | 20071116 | 1.09688   | 260.66184 | 147.88752 | 4.25972  | 0.2555912 | 2.6220291 | 18 | 1 | 6 days   | 0.48 | MP       | 2007 VW <sub>252</sub> |
| 2007 VA <sub>253</sub> | 16.4 | 0.15 | 20071027 | 18.17549  | 200.88877 | 177.48626 | 8.31267  | 0.2530072 | 3.0343252 | 20 | 1 | 15 days  | 0.50 | MP       | 2007 VA <sub>253</sub> |
| 2007 VF <sub>253</sub> | 14.8 | 0.15 | 20071027 | 134.07530 | 189.79866 | 79.48984  | 21.17649 | 0.1192169 | 3.0398165 | 12 | 1 | 4 days   | 0.58 | MP       | 2007 VF <sub>253</sub> |
| 2007 VJ <sub>253</sub> | 15.2 | 0.15 | 20071116 | 317.28442 | 199.70205 | 260.23176 | 10.46589 | 0.1082256 | 3.0898085 | 33 | 1 | 53 days  | 0.51 | MP       | 2007 VJ <sub>253</sub> |
| 2007 VH <sub>254</sub> | 15.8 | 0.15 | 20071116 | 35.16769  | 172.31351 | 199.24571 | 10.01516 | 0.1499392 | 3.0467223 | 12 | 1 | 3 days   | 0.40 | MP       | 2007 VH <sub>254</sub> |
| 2007 VK <sub>254</sub> | 15.4 | 0.15 | 20071116 | 309.41052 | 33.47023  | 98.87343  | 16.39338 | 0.2097677 | 2.9726519 | 35 | 1 | 26 days  | 0.62 | MP       | 2007 VK <sub>254</sub> |
| 2007 VL <sub>254</sub> | 15.9 | 0.15 | 20071116 | 40.87811  | 258.51993 | 108.43382 | 13.48087 | 0.1459635 | 3.0004158 | 34 | 1 | 19 days  | 0.59 | MP       | 2007 VL <sub>254</sub> |
| 2007 VV <sub>254</sub> | 16.6 | 0.15 | 20071027 | 359.76238 | 320.16335 | 84.80351  | 5.37093  | 0.2742630 | 3.0749141 | 29 | 1 | 53 days  | 0.63 | MP       | 2007 VV <sub>254</sub> |
| 2007 VZ <sub>255</sub> | 17.2 | 0.15 | 20071027 | 319.13347 | 54.81289  | 45.63331  | 7.89533  | 0.0868279 | 2.3459735 | 29 | 1 | 49 days  | 0.56 | MP       | 2007 VZ <sub>255</sub> |
| 2007 VW <sub>256</sub> | 16.9 | 0.15 | 20071027 | 86.08966  | 122.84145 | 189.35262 | 10.31051 | 0.1000195 | 3.0131315 | 15 | 1 | 18 days  | 0.33 | MP       | 2007 VW <sub>256</sub> |
| 2007 VY <sub>256</sub> | 16.5 | 0.15 | 20071027 | 266.99270 | 73.09194  | 82.70376  | 13.88319 | 0.1310373 | 2.7422892 | 30 | 1 | 13 days  | 0.27 | MP       | 2007 VY <sub>256</sub> |
| 2007 VC <sub>257</sub> | 18.1 | 0.15 | 20071027 | 333.91024 | 266.37018 | 172.49816 | 6.67705  | 0.1071125 | 2.3652215 | 16 | 1 | 18 days  | 0.44 | MP       | 2007 VC <sub>257</sub> |
| 2007 VE <sub>257</sub> | 17.2 | 0.15 | 20071027 | 331.06363 | 333.65840 | 111.60292 | 6.47864  | 0.1606733 | 2.3187897 | 27 | 1 | 13 days  | 0.25 | MP       | 2007 VE <sub>257</sub> |
| 2007 VG <sub>257</sub> | 16.2 | 0.15 | 20071027 | 124.11318 | 196.18258 | 80.81744  | 15.16146 | 0.0808743 | 2.6781385 | 24 | 1 | 13 days  | 0.28 | MP       | 2007 VG <sub>257</sub> |
| 2007 VL <sub>257</sub> | 18.4 | 0.15 | 20071027 | 42.02656  | 312.83843 | 38.28017  | 21.57219 | 0.1024995 | 1.9171908 | 18 | 1 | 31 days  | 0.31 | MP       | 2007 VL <sub>257</sub> |
| 2007 VM <sub>257</sub> | 17.1 | 0.15 | 20071027 | 26.77237  | 347.01446 | 25.05362  | 5.06539  | 0.1914939 | 2.5786028 | 23 | 1 | 60 days  | 0.32 | M-v 4 MP | 2007 VM <sub>257</sub> |
| 2007 VQ <sub>257</sub> | 15.5 | 0.15 | 20071027 | 28.11224  | 16.24566  | 1.44979   | 4.02794  | 0.1414874 | 2.9831893 | 38 | 1 | 111 days | 0.50 | M-v 4 MP | 2007 VQ <sub>257</sub> |
| 2007 VT <sub>257</sub> | 18.5 | 0.15 | 20071116 | 8.83099   | 308.03836 | 86.25566  | 8.03201  | 0.2895386 | 2.3385692 | 12 | 1 | 3 days   | 0.71 | MP       | 2007 VT <sub>257</sub> |
| 2007 VY <sub>257</sub> | 18.9 | 0.15 | 20071116 | 12.96272  | 187.59013 | 200.09162 | 8.59091  | 0.3153054 | 2.6325460 | 14 | 1 | 4 days   | 0.20 | MP       | 2007 VY <sub>257</sub> |
| 2007 VA <sub>258</sub> | 17.3 | 0.15 | 20071116 | 35.32353  | 199.16311 | 170.65981 | 6.38978  | 0.1110864 | 2.4429776 | 16 | 1 | 5 days   | 0.25 | MP       | 2007 VA <sub>258</sub> |
| 2007 VO <sub>258</sub> | 16.4 | 0.15 | 20071116 | 107.11849 | 130.83687 | 160.66560 | 6.63468  | 0.1415191 | 2.4332048 | 18 | 1 | 5 days   | 0.25 | MP       | 2007 VO <sub>258</sub> |
| 2007 VV <sub>258</sub> | 15.1 | 0.15 | 20071116 | 227.16424 | 109.52329 | 82.73162  | 13.73143 | 0.1083828 | 2.8743540 | 18 | 1 | 4 days   | 0.37 | MP       | 2007 VV <sub>258</sub> |
| 2007 VX <sub>258</sub> | 17.6 | 0.15 | 20071027 | 20.15496  | 261.79707 | 82.26697  | 10.11822 | 0.4868655 | 2.9622273 | 27 | 1 | 40 days  | 0.70 | MP       | 2007 VX <sub>258</sub> |
| 2007 VZ <sub>259</sub> | 17.6 | 0.15 | 20071116 | 165.56680 | 300.76929 | 301.74007 | 7.31126  | 0.1352341 | 2.2261136 | 19 | 1 | 4 days   | 0.30 | MP       | 2007 VZ <sub>259</sub> |
| 2007 VA <sub>260</sub> | 18.3 | 0.15 | 20071027 | 357.36812 | 40.19108  | 8.95213   | 8.24172  | 0.2746197 | 2.7824164 | 32 | 1 | 42 days  | 0.32 | MP       | 2007 VA <sub>260</sub> |
| 2007 VD <sub>260</sub> | 16.7 | 0.15 | 20071027 | 335.47085 | 248.00256 | 189.77383 | 8.49020  | 0.1587936 | 2.3257466 | 27 | 1 | 57 days  | 0.52 | MP       | 2007 VD <sub>260</sub> |
| 2007 VG <sub>260</sub> | 15.6 | 0.15 | 20071027 | 316.71506 | 30.87691  | 62.90669  | 22.60751 | 0.0814363 | 2.6750521 | 27 | 1 | 58 days  | 0.60 | MP       | 2007 VG <sub>260</sub> |
| 2007 VR <sub>260</sub> | 18.1 | 0.15 | 20071027 | 6.42900   | 129.32781 | 262.67937 | 5.96344  | 0.1948880 | 2.3066136 | 27 | 1 | 30 days  | 0.55 | MP       | 2007 VR <sub>260</sub> |
| 2007 VW <sub>260</sub> | 16.5 | 0.15 | 20071116 | 9.77947   | 145.72550 | 255.97771 | 11.39986 | 0.0534499 | 2.6201311 | 11 | 1 | 5 days   | 0.65 | MP       | 2007 VW <sub>260</sub> |
| 2007 VJ <sub>261</sub> | 16.9 | 0.15 | 20071027 | 354.38279 | 168.75377 | 245.90857 | 12.09911 | 0.1219225 | 2.7717228 | 24 | 1 | 57 days  | 0.40 | MP       | 2007 VJ <sub>261</sub> |
| 2007 VR <sub>261</sub> | 15.8 | 0.15 | 20071116 | 69.04946  | 227.20750 | 78.83233  | 4.14003  | 0.1933251 | 2.7051125 | 10 | 1 | 5 days   | 0.38 | MP       | 2007 VR <sub>261</sub> |
| 2007 VT <sub>261</sub> | 19.0 | 0.15 | 20071116 | 345.97834 | 241.43196 | 191.21836 | 5.17655  | 0.3790396 | 3.1889814 | 14 | 1 | 5 days   | 0.35 | E MP     | 2007 VT <sub>261</sub> |
| 2007 VC <sub>262</sub> | 16.4 | 0.15 | 20071116 | 72.37556  | 266.53391 | 51.25109  | 12.75607 | 0.0633905 | 2.6955581 | 10 | 1 | 5 days   | 0.13 | MP       | 2007 VC <sub>262</sub> |
| 2007 VR <sub>262</sub> | 18.1 | 0.15 | 20071116 | 7.54615   | 316.85608 | 72.17812  | 4.80867  | 0.1877629 | 2.4431702 | 10 | 1 | 5 days   | 0.18 | MP       | 2007 VR <sub>262</sub> |
| 2007 VV <sub>262</sub> | 18.7 | 0.15 | 20071116 | 33.90700  | 212.16079 | 140.60811 | 2.45391  | 0.1693500 | 2.3811680 | 9  | 1 | 5 days   | 0.42 | MP       | 2007 VV <sub>262</sub> |
| 2007 VB <sub>263</sub> | 14.9 | 0.15 | 20071116 | 204.30013 | 179.25398 | 46.40289  | 12.34926 | 0.1910311 | 2.9492338 | 8  | 1 | 5 days   | 0.21 | MP       | 2007 VB <sub>263</sub> |

|                        |      |      |          |           |           |           |           |           |           |    |   |         |      |       |     |                               |
|------------------------|------|------|----------|-----------|-----------|-----------|-----------|-----------|-----------|----|---|---------|------|-------|-----|-------------------------------|
| 2007 VE <sub>263</sub> | 16.0 | 0.15 | 20071116 | 359.17275 | 164.17666 | 258.18141 | 6.91680   | 0.1357551 | 3.0626396 | 20 | 1 | 33 days | 0.57 |       | MPC | 2007 VE <sub>263</sub>        |
| 2007 VM <sub>263</sub> | 16.4 | 0.15 | 20071027 | 267.99809 | 256.99081 | 264.51706 | 5.03605   | 0.0997184 | 2.6572981 | 9  | 1 | 4 days  | 0.41 |       | MPC | 2007 VM <sub>263</sub>        |
| 2007 VB <sub>264</sub> | 17.3 | 0.15 | 20071027 | 20.38280  | 344.33807 | 46.07717  | 3.92127   | 0.0763522 | 2.2435582 | 23 | 1 | 81 days | 0.48 | M-v 4 | MPC | 2007 VB <sub>264</sub>        |
| 2007 VH <sub>265</sub> | 16.1 | 0.15 | 20071027 | 18.01862  | 338.01945 | 54.51809  | 4.80394   | 0.2516571 | 3.0171920 | 35 | 1 | 87 days | 0.43 | M-v 4 | MPC | 2007 VH <sub>265</sub>        |
| 2007 VS <sub>265</sub> | 15.8 | 0.15 | 20071116 | 334.08894 | 204.82118 | 254.49199 | 3.84857   | 0.1266298 | 3.0861588 | 27 | 1 | 42 days | 0.52 |       | MPC | 2007 VS <sub>265</sub>        |
| 2007 VW <sub>265</sub> | 15.5 | 0.15 | 20071116 | 313.52341 | 52.65727  | 68.02738  | 8.78754   | 0.0389707 | 3.1016008 | 18 | 1 | 23 days | 0.48 |       | MPC | 2007 VW <sub>265</sub>        |
| 2007 VB <sub>266</sub> | 15.4 | 0.15 | 20071027 | 278.70030 | 273.19038 | 255.27164 | 12.90947  | 0.1559503 | 3.0437039 | 10 | 1 | 4 days  | 0.45 |       | MPC | 2007 VB <sub>266</sub>        |
| 2007 VE <sub>266</sub> | 17.2 | 0.15 | 20071116 | 27.15568  | 292.94025 | 92.02852  | 3.20827   | 0.2248786 | 2.3763345 | 22 | 1 | 33 days | 0.44 |       | MPC | 2007 VE <sub>266</sub>        |
| 2007 VS <sub>266</sub> | 17.5 | 0.15 | 20071116 | 15.10309  | 119.12588 | 270.42608 | 4.70477   | 0.1514161 | 2.4325255 | 12 | 1 | 3 days  | 0.62 |       | MPC | 2007 VS <sub>266</sub>        |
| 2007 VW <sub>266</sub> | 15.0 | 0.15 | 20071027 | 335.85951 | 225.16920 | 276.51090 | 108.02335 | 0.3683567 | 5.3020961 | 57 | 1 | 7 days  | 0.44 | M-v 7 | MPC | 129050 2007 VW <sub>266</sub> |
| 2007 VF <sub>267</sub> | 17.4 | 0.15 | 20071116 | 71.32045  | 123.56897 | 210.74165 | 20.66083  | 0.1257553 | 1.8820548 | 21 | 1 | 20 days | 0.48 |       | MPC | 2007 VF <sub>267</sub>        |
| 2007 VK <sub>267</sub> | 15.3 | 0.15 | 20071116 | 317.39699 | 197.91284 | 319.84441 | 8.05096   | 0.0771354 | 4.0331366 | 16 | 1 | 21 days | 0.34 |       | MPC | 2007 VK <sub>267</sub>        |
| 2007 VQ <sub>267</sub> | 17.9 | 0.15 | 20071116 | 70.54610  | 337.99439 | 347.01273 | 2.33584   | 0.1549403 | 2.2045190 | 10 | 1 | 6 days  | 0.84 |       | MPC | 2007 VQ <sub>267</sub>        |
| 2007 VU <sub>267</sub> | 17.6 | 0.15 | 20071027 | 13.37801  | 54.69360  | 324.64793 | 6.28549   | 0.3047787 | 2.7133011 | 31 | 1 | 28 days | 0.52 |       | MPC | 2007 VU <sub>267</sub>        |
| 2007 VY <sub>267</sub> | 15.9 | 0.15 | 20071027 | 46.05228  | 176.74379 | 161.02629 | 7.45684   | 0.1255207 | 2.8066544 | 34 | 1 | 41 days | 0.69 |       | MPC | 2007 VY <sub>267</sub>        |
| 2007 VA <sub>268</sub> | 17.6 | 0.15 | 20071027 | 356.29555 | 281.89182 | 120.30015 | 5.58029   | 0.2276607 | 2.5891050 | 17 | 1 | 7 days  | 0.46 |       | MPC | 2007 VA <sub>268</sub>        |
| 2007 VM <sub>268</sub> | 15.8 | 0.15 | 20071027 | 346.48202 | 352.09738 | 72.49517  | 9.14688   | 0.1774341 | 3.1534918 | 21 | 1 | 9 days  | 0.73 |       | MPC | 2007 VM <sub>268</sub>        |
| 2007 VR <sub>268</sub> | 15.9 | 0.15 | 20071027 | 321.27056 | 306.72141 | 152.12424 | 3.01270   | 0.1521371 | 3.0121620 | 20 | 1 | 9 days  | 0.73 |       | MPC | 2007 VR <sub>268</sub>        |
| 2007 VS <sub>268</sub> | 16.9 | 0.15 | 20071116 | 28.35491  | 167.58735 | 202.79849 | 9.42510   | 0.2111488 | 2.7304381 | 19 | 1 | 8 days  | 0.77 |       | MPC | 2007 VS <sub>268</sub>        |
| 2007 VT <sub>268</sub> | 17.1 | 0.15 | 20071116 | 36.04664  | 189.36917 | 175.15932 | 5.26998   | 0.1639632 | 2.1744087 | 25 | 1 | 34 days | 0.45 |       | MPC | 2007 VT <sub>268</sub>        |
| 2007 VX <sub>268</sub> | 16.4 | 0.15 | 20071116 | 353.43099 | 338.29047 | 93.88279  | 8.74802   | 0.1245185 | 2.5814698 | 27 | 1 | 22 days | 0.53 |       | MPC | 2007 VX <sub>268</sub>        |
| 2007 VB <sub>269</sub> | 15.8 | 0.15 | 20071116 | 77.08768  | 97.32997  | 233.47068 | 11.62572  | 0.1805821 | 2.5664404 | 20 | 1 | 22 days | 0.45 |       | MPC | 2007 VB <sub>269</sub>        |
| 2007 VF <sub>269</sub> | 14.9 | 0.15 | 20071027 | 46.63596  | 261.61529 | 92.61792  | 8.29420   | 0.0670110 | 3.0850068 | 28 | 1 | 55 days | 0.57 |       | MPC | 2007 VF <sub>269</sub>        |
| 2007 VJ <sub>269</sub> | 18.1 | 0.15 | 20071116 | 334.57166 | 17.97466  | 67.98612  | 3.87361   | 0.1513032 | 2.2641822 | 11 | 1 | 4 days  | 0.63 |       | MPC | 2007 VJ <sub>269</sub>        |
| 2007 VT <sub>269</sub> | 16.1 | 0.15 | 20071027 | 240.72047 | 301.68336 | 236.49996 | 14.00806  | 0.0706823 | 2.5676666 | 37 | 1 | 52 days | 0.63 |       | MPC | 2007 VT <sub>269</sub>        |
| 2007 VU <sub>269</sub> | 15.8 | 0.15 | 20071116 | 9.39046   | 168.59967 | 236.94087 | 8.68820   | 0.0914044 | 3.0508912 | 31 | 1 | 32 days | 0.49 |       | MPC | 2007 VU <sub>269</sub>        |
| 2007 VC <sub>270</sub> | 17.1 | 0.15 | 20071116 | 347.59397 | 32.12431  | 44.03424  | 5.33977   | 0.0345378 | 2.2599046 | 26 | 1 | 25 days | 0.37 |       | MPC | 2007 VC <sub>270</sub>        |
| 2007 VE <sub>270</sub> | 17.5 | 0.15 | 20071116 | 16.47637  | 139.21638 | 259.06333 | 6.41143   | 0.2062496 | 2.3272315 | 13 | 1 | 5 days  | 0.55 |       | MPC | 2007 VE <sub>270</sub>        |
| 2007 VJ <sub>270</sub> | 16.3 | 0.15 | 20071116 | 30.90362  | 332.01936 | 51.69039  | 9.42120   | 0.1477393 | 2.6674733 | 11 | 1 | 3 days  | 0.57 |       | MPC | 2007 VJ <sub>270</sub>        |
| 2007 VK <sub>270</sub> | 17.0 | 0.15 | 20071116 | 355.34687 | 24.13537  | 47.86216  | 6.15889   | 0.1438999 | 2.2518550 | 18 | 1 | 28 days | 0.45 |       | MPC | 2007 VK <sub>270</sub>        |
| 2007 VT <sub>270</sub> | 15.7 | 0.15 | 20071116 | 298.06980 | 198.45103 | 290.52567 | 8.08169   | 0.0948870 | 3.0347261 | 13 | 1 | 18 days | 0.31 |       | MPC | 2007 VT <sub>270</sub>        |
| 2007 VA <sub>273</sub> | 16.7 | 0.15 | 20071116 | 335.26027 | 3.28224   | 77.34969  | 6.64897   | 0.0535831 | 2.5601745 | 16 | 1 | 34 days | 0.39 |       | MPC | 2007 VA <sub>273</sub>        |
| 2007 VC <sub>273</sub> | 18.7 | 0.15 | 20071116 | 1.37260   | 195.11425 | 215.68482 | 6.25558   | 0.3155616 | 2.4640621 | 15 | 1 | 8 days  | 0.36 |       | MPC | 2007 VC <sub>273</sub>        |
| 2007 VE <sub>273</sub> | 17.8 | 0.15 | 20071116 | 27.28645  | 301.39480 | 62.85518  | 13.12063  | 0.2901765 | 2.5907020 | 20 | 1 | 34 days | 0.46 |       | MPC | 2007 VE <sub>273</sub>        |
| 2007 VG <sub>273</sub> | 17.5 | 0.15 | 20071116 | 0.29408   | 316.42815 | 96.98306  | 3.13958   | 0.0655369 | 2.2024985 | 11 | 1 | 8 days  | 0.21 |       | MPC | 2007 VG <sub>273</sub>        |
| 2007 VK <sub>273</sub> | 16.2 | 0.15 | 20071027 | 350.30431 | 343.17373 | 80.85328  | 5.99115   | 0.1839468 | 3.1942369 | 22 | 1 | 56 days | 0.49 |       | MPC | 2007 VK <sub>273</sub>        |
| 2007 VV <sub>273</sub> | 17.7 | 0.15 | 20071027 | 0.84008   | 273.16935 | 133.07981 | 3.97261   | 0.1766599 | 2.3708398 | 20 | 1 | 32 days | 0.51 |       | MPC | 2007 VV <sub>273</sub>        |
| 2007 VX <sub>273</sub> | 15.8 | 0.15 | 20071027 | 358.76838 | 305.58127 | 95.31358  | 16.68110  | 0.2362630 | 3.1632391 | 14 | 1 | 7 days  | 0.55 |       | MPC | 2007 VX <sub>273</sub>        |
| 2007 VN <sub>274</sub> | 16.4 | 0.15 | 20071027 | 18.93590  | 311.20021 | 74.20163  | 11.02701  | 0.1259254 | 3.0396342 | 16 | 1 | 15 days | 0.28 |       | MPC | 2007 VN <sub>274</sub>        |
| 2007 VZ <sub>275</sub> | 16.8 | 0.15 | 20071116 | 19.08643  | 329.38254 | 72.81802  | 6.16157   | 0.1124179 | 2.6983336 | 19 | 1 | 27 days | 0.35 |       | MPC | 2007 VZ <sub>275</sub>        |
| 2007 VH <sub>278</sub> | 16.8 | 0.15 | 20071027 | 25.83672  | 313.49879 | 67.20522  | 7.53413   | 0.0428814 | 2.7452622 | 22 | 1 | 57 days | 0.28 |       | MPC | 2007 VH <sub>278</sub>        |
| 2007 VK <sub>278</sub> | 18.8 | 0.15 | 20071116 | 348.10119 | 14.25086  | 61.32804  | 10.34934  | 0.2780653 | 2.7230026 | 12 | 1 | 22 days | 0.26 |       | MPC | 2007 VK <sub>278</sub>        |
| 2007 VQ <sub>279</sub> | 15.4 | 0.15 | 20071027 | 203.68387 | 334.96965 | 236.75928 | 25.02731  | 0.0902861 | 3.1572066 | 19 | 1 | 53 days | 0.17 |       | MPC | 2007 VQ <sub>279</sub>        |
| 2007 VE <sub>282</sub> | 16.3 | 0.15 | 20071116 | 2.10323   | 357.93524 | 62.31194  | 19.36123  | 0.0891663 | 2.6389723 | 25 | 1 | 55 days | 0.17 |       | MPC | 2007 VE <sub>282</sub>        |
| 2007 VD <sub>283</sub> | 17.7 | 0.15 | 20071027 | 348.06734 | 195.88381 | 236.83878 | 17.56172  | 0.2551028 | 2.6070843 | 26 | 1 | 18 days | 0.18 |       | MPC | 2007 VD <sub>283</sub>        |
| 2007 VG <sub>283</sub> | 17.6 | 0.15 | 20071116 | 349.97738 | 200.93780 | 236.06464 | 2.37083   | 0.1730085 | 2.4586167 | 21 | 1 | 30 days | 0.26 |       | MPC | 2007 VG <sub>283</sub>        |
| 2007 VM <sub>284</sub> | 15.6 | 0.15 | 20071027 | 349.21235 | 196.46934 | 235.63338 | 9.01605   | 0.1213691 | 3.0032436 | 27 | 1 | 68 days | 0.58 | M-v 4 | MPC | 2007 VM <sub>284</sub>        |
| 2007 VO <sub>285</sub> | 16.9 | 0.15 | 20071116 | 311.11496 | 58.57535  | 79.33313  | 4.98297   | 0.2325717 | 2.6982223 | 10 | 1 | 21 days | 0.46 |       | MPC | 2007 VO <sub>285</sub>        |
| 2007 VT <sub>285</sub> | 17.4 | 0.15 | 20071116 | 6.13757   | 347.82435 | 68.96169  | 14.89245  | 0.1406469 | 2.6611967 | 12 | 1 | 33 days | 0.48 |       | MPC | 2007 VT <sub>285</sub>        |
| 2007 VF <sub>286</sub> | 16.1 | 0.15 | 20071116 | 220.23156 | 309.30376 | 274.01224 | 6.38950   | 0.1619224 | 2.6152874 | 10 | 1 | 30 days | 0.35 |       | MPC | 2007 VF <sub>286</sub>        |
| 2007 VG <sub>286</sub> | 16.9 | 0.15 | 20071116 | 24.46385  | 137.55552 | 263.03520 | 8.91006   | 0.1071536 | 2.5529079 | 21 | 1 | 30 days | 0.44 |       | MPC | 2007 VG <sub>286</sub>        |
| 2007 VJ <sub>286</sub> | 17.1 | 0.15 | 20071116 | 63.45894  | 290.02761 | 63.00532  | 7.68489   | 0.1377593 | 2.3196580 | 9  | 1 | 26 days | 0.19 |       | MPC | 2007 VJ <sub>286</sub>        |
| 2007 VR <sub>286</sub> | 16.7 | 0.15 | 20071116 | 351.77404 | 195.25459 | 251.84642 | 15.88404  | 0.3060392 | 3.0720569 | 10 | 1 | 15 days | 0.14 |       | MPC | 2007 VR <sub>286</sub>        |

|                        |      |      |          |           |           |           |          |           |           |    |   |           |      |          |                        |
|------------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|----------|------------------------|
| 2007 VT <sub>286</sub> | 15.5 | 0.15 | 20071116 | 336.26115 | 217.07810 | 256.12692 | 13.87423 | 0.2591562 | 3.1663555 | 12 | 1 | 32 days   | 0.37 | MP       | 2007 VT <sub>286</sub> |
| 2007 VY <sub>286</sub> | 15.0 | 0.15 | 20071116 | 104.03687 | 227.51175 | 65.66937  | 9.96134  | 0.1198198 | 2.9965078 | 12 | 1 | 3 days    | 0.45 | MP       | 2007 VY <sub>286</sub> |
| 2007 VZ <sub>286</sub> | 18.2 | 0.15 | 20071116 | 10.12633  | 312.13621 | 83.44517  | 4.66330  | 0.2444579 | 2.4600098 | 15 | 1 | 5 days    | 0.54 | MP       | 2007 VZ <sub>286</sub> |
| 2007 VD <sub>287</sub> | 16.1 | 0.15 | 20071027 | 4.98347   | 201.99146 | 201.57256 | 8.94024  | 0.1336261 | 3.0216131 | 22 | 1 | 41 days   | 0.41 | MP       | 2007 VD <sub>287</sub> |
| 2007 VH <sub>287</sub> | 16.3 | 0.15 | 20071116 | 355.99509 | 226.50412 | 197.73331 | 13.96429 | 0.1012726 | 2.6279686 | 12 | 1 | 4 days    | 0.40 | MP       | 2007 VH <sub>287</sub> |
| 2007 VJ <sub>287</sub> | 15.6 | 0.15 | 20071116 | 291.05293 | 354.45880 | 158.39738 | 11.32765 | 0.2089593 | 3.1510549 | 12 | 1 | 3 days    | 0.57 | MP       | 2007 VJ <sub>287</sub> |
| 2007 VP <sub>287</sub> | 14.9 | 0.15 | 20071116 | 217.01849 | 315.86760 | 255.61775 | 17.11569 | 0.1339550 | 3.2065510 | 10 | 1 | 8 days    | 0.21 | MP       | 2007 VP <sub>287</sub> |
| 2007 VT <sub>287</sub> | 16.3 | 0.15 | 20071027 | 140.79234 | 1.37184   | 272.65142 | 8.27164  | 0.0481721 | 3.1681742 | 13 | 1 | 18 days   | 0.17 | MP       | 2007 VT <sub>287</sub> |
| 2007 VV <sub>287</sub> | 16.9 | 0.15 | 20071116 | 69.95216  | 70.70388  | 262.33402 | 10.62315 | 0.1576774 | 2.9615535 | 13 | 1 | 8 days    | 0.23 | MP       | 2007 VV <sub>287</sub> |
| 2007 VW <sub>287</sub> | 15.6 | 0.15 | 20071027 | 254.72449 | 258.86767 | 274.23075 | 8.12076  | 0.0883032 | 3.2129175 | 13 | 1 | 18 days   | 0.32 | MP       | 2007 VW <sub>287</sub> |
| 2007 VZ <sub>287</sub> | 18.1 | 0.15 | 20071027 | 349.12146 | 54.61821  | 11.83520  | 5.29292  | 0.1035473 | 2.3544740 | 13 | 1 | 18 days   | 0.15 | MP       | 2007 VZ <sub>287</sub> |
| 2007 VC <sub>288</sub> | 18.3 | 0.15 | 20071116 | 21.46781  | 33.44956  | 347.90569 | 4.09305  | 0.2786743 | 2.7688795 | 10 | 1 | 8 days    | 0.28 | MP       | 2007 VC <sub>288</sub> |
| 2007 VD <sub>288</sub> | 17.0 | 0.15 | 20071116 | 334.85203 | 143.18421 | 310.99985 | 4.47757  | 0.1591982 | 2.4083849 | 12 | 1 | 31 days   | 0.30 | MP       | 2007 VD <sub>288</sub> |
| 2007 VE <sub>288</sub> | 18.3 | 0.15 | 20071027 | 359.97998 | 97.61320  | 313.19033 | 3.83204  | 0.2952291 | 2.7162522 | 13 | 1 | 18 days   | 0.11 | MP       | 2007 VE <sub>288</sub> |
| 2007 VL <sub>288</sub> | 18.8 | 0.15 | 20071116 | 330.26676 | 102.10683 | 358.77752 | 4.24199  | 0.1765680 | 2.2631975 | 10 | 1 | 8 days    | 0.18 | MP       | 2007 VL <sub>288</sub> |
| 2007 VM <sub>288</sub> | 16.0 | 0.15 | 20071116 | 329.05155 | 205.58373 | 250.41576 | 23.56827 | 0.0831328 | 2.8827267 | 10 | 1 | 8 days    | 0.34 | E MP     | 2007 VM <sub>288</sub> |
| 2007 VF <sub>290</sub> | 17.3 | 0.15 | 20071116 | 26.02279  | 314.71692 | 73.52235  | 5.24471  | 0.1852318 | 2.5545484 | 15 | 1 | 21 days   | 0.29 | MP       | 2007 VF <sub>290</sub> |
| 2007 VL <sub>290</sub> | 15.0 | 0.15 | 20071116 | 291.89282 | 271.45177 | 246.68808 | 14.68807 | 0.1804037 | 3.1498347 | 15 | 1 | 21 days   | 0.33 | MP       | 2007 VL <sub>290</sub> |
| 2007 VR <sub>291</sub> | 16.1 | 0.15 | 20071116 | 94.21060  | 80.76422  | 242.29269 | 8.96867  | 0.1139345 | 3.1301291 | 14 | 1 | 21 days   | 0.29 | MP       | 2007 VR <sub>291</sub> |
| 2007 VX <sub>291</sub> | 17.4 | 0.15 | 20071116 | 209.10762 | 151.86985 | 68.24570  | 24.86983 | 0.0624372 | 1.9278238 | 17 | 1 | 31 days   | 0.40 | MP       | 2007 VX <sub>291</sub> |
| 2007 VA <sub>292</sub> | 15.8 | 0.15 | 20071116 | 62.93601  | 275.60918 | 75.53340  | 10.61125 | 0.1329271 | 2.6564632 | 25 | 1 | 42 days   | 0.37 | MP       | 2007 VA <sub>292</sub> |
| 2007 VJ <sub>292</sub> | 15.9 | 0.15 | 20071116 | 315.09136 | 234.13049 | 245.57790 | 16.16067 | 0.0455300 | 3.0071650 | 13 | 1 | 21 days   | 0.28 | MP       | 2007 VJ <sub>292</sub> |
| 2007 VL <sub>292</sub> | 15.8 | 0.15 | 20071116 | 196.28101 | 156.70475 | 81.74583  | 9.19681  | 0.1139271 | 2.8145902 | 17 | 1 | 33 days   | 0.25 | MP       | 2007 VL <sub>292</sub> |
| 2007 VZ <sub>292</sub> | 16.8 | 0.15 | 20071116 | 1.79873   | 247.93221 | 160.53806 | 9.94459  | 0.2010341 | 2.6128019 | 12 | 1 | 5 days    | 0.57 | MP       | 2007 VZ <sub>292</sub> |
| 2007 VA <sub>293</sub> | 16.0 | 0.15 | 20071116 | 109.46592 | 123.49864 | 172.28848 | 7.09352  | 0.0789012 | 2.7787410 | 11 | 1 | 5 days    | 0.20 | MP       | 2007 VA <sub>293</sub> |
| 2007 VF <sub>293</sub> | 16.3 | 0.15 | 20071116 | 60.51213  | 247.90516 | 98.33916  | 13.91137 | 0.1062612 | 2.6249508 | 13 | 1 | 4 days    | 0.39 | MP       | 2007 VF <sub>293</sub> |
| 2007 VU <sub>293</sub> | 17.7 | 0.15 | 20071027 | 306.03362 | 6.86534   | 110.70240 | 3.57292  | 0.1229257 | 2.3637542 | 17 | 1 | 16 days   | 0.18 | MP       | 2007 VU <sub>293</sub> |
| 2007 VV <sub>293</sub> | 17.5 | 0.15 | 20071027 | 5.95903   | 279.88213 | 121.89350 | 3.27175  | 0.1990452 | 2.7354671 | 17 | 1 | 16 days   | 0.21 | MP       | 2007 VV <sub>293</sub> |
| 2007 VW <sub>293</sub> | 15.6 | 0.15 | 20071116 | 21.27453  | 319.39234 | 72.78070  | 14.96751 | 0.1006355 | 3.5198161 | 14 | 1 | 8 days    | 0.41 | MP       | 2007 VW <sub>293</sub> |
| 2007 VJ <sub>294</sub> | 17.0 | 0.15 | 20071027 | 348.35338 | 254.52608 | 175.63514 | 5.20948  | 0.1909980 | 3.0598241 | 13 | 1 | 16 days   | 0.22 | MP       | 2007 VJ <sub>294</sub> |
| 2007 VA <sub>295</sub> | 17.0 | 0.15 | 20071116 | 3.25523   | 337.95409 | 71.74963  | 6.34517  | 0.1284091 | 2.3729100 | 20 | 1 | 34 days   | 0.41 | MP       | 2007 VA <sub>295</sub> |
| 2007 VB <sub>295</sub> | 17.4 | 0.15 | 20071027 | 358.15210 | 331.82045 | 79.68525  | 10.18925 | 0.1735879 | 2.5551483 | 32 | 1 | 49 days   | 0.59 | MP       | 2007 VB <sub>295</sub> |
| 2007 VM <sub>295</sub> | 17.3 | 0.15 | 20071116 | 20.50600  | 99.00686  | 290.86294 | 5.73043  | 0.1444199 | 2.3792135 | 16 | 1 | 30 days   | 0.44 | MP       | 2007 VM <sub>295</sub> |
| 2007 VD <sub>296</sub> | 15.8 | 0.15 | 20071116 | 161.95751 | 157.18061 | 88.09360  | 11.13847 | 0.1926373 | 2.5764635 | 11 | 1 | 5 days    | 0.36 | MP       | 2007 VD <sub>296</sub> |
| 2007 VH <sub>296</sub> | 15.9 | 0.15 | 20071027 | 11.85298  | 229.05091 | 158.02706 | 4.59128  | 0.2253045 | 2.5972038 | 28 | 1 | 89 days   | 0.47 | M-v 4 MP | 2007 VH <sub>296</sub> |
| 2007 VE <sub>298</sub> | 17.0 | 0.15 | 20071027 | 21.39990  | 230.47376 | 142.49379 | 13.61669 | 0.1592970 | 2.5926923 | 12 | 1 | 8 days    | 0.71 | MP       | 2007 VE <sub>298</sub> |
| 2007 VU <sub>298</sub> | 15.2 | 0.15 | 20071027 | 10.37883  | 295.55943 | 92.25924  | 27.18374 | 0.2881831 | 3.1792697 | 15 | 1 | 8 days    | 0.37 | MP       | 2007 VU <sub>298</sub> |
| 2007 VX <sub>298</sub> | 17.4 | 0.15 | 20071116 | 16.94136  | 309.58049 | 84.68903  | 23.52658 | 0.1010669 | 1.9588923 | 21 | 1 | 41 days   | 0.57 | MP       | 2007 VX <sub>298</sub> |
| 2007 VF <sub>299</sub> | 15.8 | 0.15 | 20071116 | 11.61496  | 340.97473 | 103.61040 | 25.34500 | 0.1740357 | 2.3471284 | 18 | 1 | 32 days   | 0.48 | MP       | 2007 VF <sub>299</sub> |
| 2007 VJ <sub>299</sub> | 16.5 | 0.15 | 20071027 | 24.77016  | 301.10812 | 65.92319  | 9.14578  | 0.2577747 | 3.0429733 | 28 | 1 | 56 days   | 0.52 | MP       | 2007 VJ <sub>299</sub> |
| 2007 VL <sub>299</sub> | 16.8 | 0.15 | 20071027 | 333.34870 | 262.05221 | 187.80915 | 12.46691 | 0.2293974 | 2.6117217 | 20 | 1 | 59 days   | 0.58 | MP       | 2007 VL <sub>299</sub> |
| 2007 VY <sub>299</sub> | 15.4 | 0.15 | 20071027 | 357.57390 | 139.87860 | 263.98533 | 15.63468 | 0.2064240 | 3.1411087 | 20 | 1 | 55 days   | 0.60 | MP       | 2007 VY <sub>299</sub> |
| 2007 VP <sub>300</sub> | 17.7 | 0.15 | 20071027 | 5.54788   | 285.57220 | 114.95368 | 5.94689  | 0.3491493 | 2.6334374 | 27 | 1 | 69 days   | 0.52 | M-v 5 MP | 2007 VP <sub>300</sub> |
| 2007 VQ <sub>301</sub> | 17.5 | 0.15 | 20071116 | 287.72668 | 97.30584  | 40.10301  | 3.40757  | 0.0856146 | 2.3180317 | 19 | 1 | 33 days   | 0.40 | MP       | 2007 VQ <sub>301</sub> |
| 2007 VR <sub>301</sub> | 17.8 | 0.15 | 20071027 | 347.09616 | 43.18115  | 17.06641  | 33.09792 | 0.3493092 | 2.5309699 | 12 | 1 | 1 days    | 0.49 | E MP     | 2007 VR <sub>301</sub> |
| 2007 VS <sub>301</sub> | 14.8 | 0.15 | 20071027 | 19.08164  | 267.79487 | 109.86366 | 28.17496 | 0.0674970 | 3.1265331 | 14 | 1 | 15 days   | 0.58 | MP       | 2007 VS <sub>301</sub> |
| 2007 WA                | 24.7 | 0.15 | 20071027 | 266.09199 | 276.40369 | 229.77937 | 6.21131  | 0.1520707 | 1.0361400 | 46 | 1 | 8 days    | 0.44 | M-v 6 MP | 129050 2007 WA         |
| 2007 WB                | 18.8 | 0.15 | 20071027 | 37.61283  | 203.62855 | 83.17513  | 13.74818 | 0.7095102 | 1.6692736 | 34 | 1 | 18 days   | 0.43 | M-v 7 MP | 129050 2007 WB         |
| 2007 WD                | 16.0 | 0.15 | 20071027 | 359.02322 | 302.81348 | 111.15124 | 8.99771  | 0.1902694 | 2.5969682 | 43 | 2 | 2003-2007 | 0.51 | M-v 4 MP | 128606 2007 WD         |
| 2007 WF                | 17.1 | 0.15 | 20071116 | 8.88889   | 163.89131 | 250.20961 | 3.24442  | 0.1449672 | 2.6057143 | 22 | 1 | 29 days   | 0.39 | MP       | 2007 WF                |
| 2007 WG                | 16.7 | 0.15 | 20071116 | 309.01098 | 118.15395 | 4.24079   | 9.68846  | 0.1890889 | 3.0976211 | 36 | 1 | 5 days    | 0.31 | MP       | 2007 WG                |
| 2007 WH                | 18.9 | 0.15 | 20071116 | 3.97576   | 224.47543 | 176.10484 | 2.05109  | 0.2052922 | 2.3935987 | 14 | 1 | 21 days   | 0.52 | MP       | 2007 WH                |
| 2007 WJ                | 17.1 | 0.15 | 20071116 | 31.75064  | 11.37913  | 1.51560   | 1.37606  | 0.1864475 | 2.5716822 | 32 | 1 | 31 days   | 0.57 | MP       | 2007 WJ                |

|                      |      |      |          |           |           |           |          |           |           |    |   |         |      |       |     |                             |
|----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-------|-----|-----------------------------|
| 2007 WK              | 17.3 | 0.15 | 20071116 | 354.54887 | 170.07391 | 246.09278 | 23.76758 | 0.0823548 | 1.9051375 | 26 | 1 | 28 days | 0.60 |       | MPC | 2007 WK                     |
| 2007 WM              | 17.5 | 0.15 | 20071116 | 6.83944   | 57.69974  | 0.21970   | 6.89300  | 0.2139111 | 2.3025525 | 17 | 1 | 26 days | 0.51 |       | MPC | 2007 WM                     |
| 2007 WQ              | 16.3 | 0.15 | 20071116 | 249.17035 | 310.75933 | 230.13726 | 5.29286  | 0.1162475 | 3.0455218 | 16 | 1 | 20 days | 0.35 |       | MPC | 2007 WQ                     |
| 2007 WV              | 14.8 | 0.15 | 20071027 | 10.88508  | 333.42696 | 62.43101  | 7.42894  | 0.2167994 | 3.9404208 | 38 | 1 | 56 days | 0.34 |       | MPC | 2007 WV                     |
| 2007 WW              | 17.6 | 0.15 | 20071116 | 0.72464   | 355.94398 | 57.69404  | 17.49617 | 0.2538261 | 2.7724903 | 23 | 1 | 34 days | 0.41 |       | MPC | 2007 WW                     |
| 2007 WE <sub>1</sub> | 16.2 | 0.15 | 20071116 | 11.37335  | 138.22579 | 249.64736 | 13.20736 | 0.2487217 | 2.9358491 | 11 | 1 | 5 days  | 0.34 |       | MPC | 2007 WE <sub>1</sub>        |
| 2007 WH <sub>1</sub> | 19.2 | 0.15 | 20071116 | 23.37537  | 308.86023 | 64.57033  | 3.22286  | 0.3056687 | 2.5532711 | 12 | 1 | 4 days  | 0.58 |       | MPC | 2007 WH <sub>1</sub>        |
| 2007 WJ <sub>1</sub> | 18.3 | 0.15 | 20071116 | 14.23506  | 155.51604 | 240.17263 | 19.36274 | 0.1032868 | 1.9266810 | 31 | 1 | 22 days | 0.51 |       | MPC | 2007 WJ <sub>1</sub>        |
| 2007 WK <sub>1</sub> | 16.0 | 0.15 | 20071116 | 337.80807 | 67.04798  | 9.82850   | 4.83756  | 0.0227351 | 2.7437918 | 17 | 1 | 5 days  | 0.60 |       | MPC | 2007 WK <sub>1</sub>        |
| 2007 WR <sub>1</sub> | 18.1 | 0.15 | 20071116 | 9.35319   | 350.94720 | 55.38003  | 2.39934  | 0.1611918 | 2.2842351 | 12 | 1 | 4 days  | 0.60 |       | MPC | 2007 WR <sub>1</sub>        |
| 2007 WZ <sub>1</sub> | 16.4 | 0.15 | 20071116 | 212.60060 | 144.51717 | 63.81233  | 13.42241 | 0.0455229 | 2.9720189 | 18 | 1 | 2 days  | 0.46 | E     | MPC | 2007 WZ <sub>1</sub>        |
| 2007 WA <sub>2</sub> | 16.4 | 0.15 | 20071116 | 184.79940 | 173.15087 | 61.35265  | 22.20152 | 0.1903500 | 2.9309434 | 11 | 1 | 2 days  | 0.44 | E     | MPC | 2007 WA <sub>2</sub>        |
| 2007 WD <sub>2</sub> | 18.0 | 0.15 | 20071027 | 33.81457  | 114.17361 | 235.08347 | 20.91999 | 0.2825151 | 2.3936009 | 20 | 1 | 28 days | 0.36 |       | MPC | 2007 WD <sub>2</sub>        |
| 2007 WG <sub>2</sub> | 15.6 | 0.15 | 20071116 | 354.65334 | 256.60974 | 171.25827 | 12.11461 | 0.1596170 | 3.1706301 | 12 | 1 | 2 days  | 0.39 |       | MPC | 2007 WG <sub>2</sub>        |
| 2007 WO <sub>2</sub> | 17.7 | 0.15 | 20071116 | 333.94249 | 87.18897  | 356.35682 | 7.03957  | 0.1494343 | 2.3610570 | 16 | 1 | 2 days  | 0.22 |       | MPC | 2007 WO <sub>2</sub>        |
| 2007 WP <sub>2</sub> | 16.8 | 0.15 | 20071116 | 243.91038 | 175.12584 | 8.79357   | 11.44727 | 0.2253646 | 2.5583467 | 12 | 1 | 2 days  | 0.31 | E     | MPC | 2007 WP <sub>2</sub>        |
| 2007 WT <sub>2</sub> | 18.0 | 0.15 | 20071116 | 53.13176  | 64.05663  | 261.17351 | 11.93752 | 0.2661272 | 2.5998459 | 16 | 1 | 2 days  | 0.26 |       | MPC | 2007 WT <sub>2</sub>        |
| 2007 WU <sub>2</sub> | 17.4 | 0.15 | 20071116 | 336.41919 | 56.64015  | 20.04339  | 13.15220 | 0.0919750 | 2.6006335 | 16 | 1 | 2 days  | 0.38 |       | MPC | 2007 WU <sub>2</sub>        |
| 2007 WV <sub>2</sub> | 17.9 | 0.15 | 20071116 | 31.89642  | 11.39034  | 350.79180 | 7.12257  | 0.1921473 | 2.5228825 | 15 | 1 | 2 days  | 0.34 |       | MPC | 2007 WV <sub>2</sub>        |
| 2007 WZ <sub>2</sub> | 17.4 | 0.15 | 20071116 | 314.89836 | 218.51579 | 260.80418 | 11.06663 | 0.2625485 | 2.6772761 | 19 | 1 | 3 days  | 0.22 |       | MPC | 2007 WZ <sub>2</sub>        |
| 2007 WC <sub>3</sub> | 16.6 | 0.15 | 20071116 | 314.22473 | 214.18909 | 257.34897 | 13.62045 | 0.1910135 | 2.7679217 | 19 | 1 | 2 days  | 0.25 |       | MPC | 2007 WC <sub>3</sub>        |
| 2007 WD <sub>3</sub> | 16.7 | 0.15 | 20071116 | 47.32339  | 85.21884  | 262.22263 | 11.98562 | 0.1303881 | 2.9543758 | 14 | 1 | 2 days  | 0.19 |       | MPC | 2007 WD <sub>3</sub>        |
| 2007 WE <sub>3</sub> | 16.2 | 0.15 | 20071116 | 193.75613 | 291.44813 | 283.92804 | 8.75633  | 0.0733855 | 2.7097811 | 23 | 1 | 2 days  | 0.31 |       | MPC | 2007 WE <sub>3</sub>        |
| 2007 WG <sub>3</sub> | 15.8 | 0.15 | 20071027 | 353.52433 | 53.79056  | 357.54623 | 8.43467  | 0.0767806 | 3.0085567 | 22 | 1 | 17 days | 0.43 |       | MPC | 2007 WG <sub>3</sub>        |
| 2007 WH <sub>3</sub> | 15.8 | 0.15 | 20071116 | 198.87140 | 292.60308 | 277.81454 | 9.06774  | 0.0585060 | 3.0758984 | 10 | 1 | 3 days  | 0.20 |       | MPC | 2007 WH <sub>3</sub>        |
| 2007 WJ <sub>3</sub> | 26.2 | 0.15 | 20071027 | 30.35968  | 91.33196  | 235.40518 | 6.16017  | 0.3724304 | 1.1926521 | 44 | 1 | 4 days  | 0.57 | M-v 5 | MPC | 129050 2007 WJ <sub>3</sub> |
| 2007 WK <sub>3</sub> | 26.2 | 0.15 | 20071027 | 340.80997 | 202.62185 | 233.73776 | 9.98732  | 0.3889342 | 1.6446718 | 50 | 1 | 3 days  | 0.43 | M-v 6 | MPC | 129051 2007 WK <sub>3</sub> |
| 2007 WM <sub>3</sub> | 23.1 | 0.15 | 20071027 | 91.76353  | 204.02511 | 55.58192  | 6.42961  | 0.4282398 | 0.7941999 | 68 | 1 | 29 days | 0.42 | M-v 7 | MPC | 129051 2007 WM <sub>3</sub> |
| 2007 WN <sub>3</sub> | 21.4 | 0.15 | 20071027 | 8.06022   | 289.86613 | 54.60826  | 8.58688  | 0.6261752 | 2.5292752 | 40 | 1 | 15 days | 0.50 | M-v 7 | MPC | 129051 2007 WN <sub>3</sub> |
| 2007 WP <sub>3</sub> | 23.5 | 0.15 | 20071027 | 16.29102  | 115.27123 | 229.27843 | 10.67148 | 0.4456138 | 1.4811654 | 58 | 1 | 27 days | 0.40 | M-v 6 | MPC | 129051 2007 WP <sub>3</sub> |
| 2007 WQ <sub>3</sub> | 20.9 | 0.15 | 20071027 | 309.79001 | 248.54897 | 216.62754 | 17.22563 | 0.1799996 | 1.3706825 | 32 | 1 | 50 days | 0.41 | M-v 7 | MPC | 129051 2007 WQ <sub>3</sub> |
| 2007 WS <sub>3</sub> | 15.4 | 0.15 | 20071116 | 141.88905 | 199.94142 | 125.71626 | 29.45408 | 0.2143655 | 2.1588767 | 30 | 1 | 3 days  | 0.60 |       | MPC | 2007 WS <sub>3</sub>        |
| 2007 WT <sub>3</sub> | 24.2 | 0.15 | 20071027 | 7.76464   | 102.77797 | 227.19629 | 5.17671  | 0.7226788 | 2.3665919 | 18 | 1 | 12 days | 0.24 | M-v 7 | MPC | 129051 2007 WT <sub>3</sub> |
| 2007 WV <sub>3</sub> | 19.6 | 0.15 | 20071027 | 17.52277  | 107.64108 | 261.47661 | 12.65656 | 0.4523169 | 1.6681014 | 28 | 1 | 25 days | 0.38 | M-v 6 | MPC | 129051 2007 WV <sub>3</sub> |
| 2007 WX <sub>3</sub> | 18.9 | 0.15 | 20071116 | 122.10999 | 255.51751 | 27.75007  | 11.12693 | 0.1476296 | 1.6484225 | 29 | 1 | 15 days | 0.32 |       | MPC | 2007 WX <sub>3</sub>        |
| 2007 WY <sub>3</sub> | 18.2 | 0.15 | 20071027 | 15.25818  | 50.56989  | 286.42498 | 11.94446 | 0.7684122 | 2.7941863 | 43 | 1 | 29 days | 0.36 | M-v 5 | MPC | 2007 WY <sub>3</sub>        |
| 2007 WZ <sub>3</sub> | 15.7 | 0.15 | 20071027 | 277.44466 | 100.87994 | 36.99080  | 16.72934 | 0.0738346 | 3.2093392 | 32 | 1 | 51 days | 0.43 |       | MPC | 2007 WZ <sub>3</sub>        |
| 2007 WB <sub>4</sub> | 16.7 | 0.15 | 20071116 | 338.68048 | 44.06218  | 40.51509  | 12.40779 | 0.1939966 | 2.9166073 | 22 | 1 | 5 days  | 0.63 |       | MPC | 2007 WB <sub>4</sub>        |
| 2007 WC <sub>4</sub> | 17.2 | 0.15 | 20071116 | 340.47405 | 16.03879  | 68.83181  | 3.44130  | 0.1912299 | 2.5956561 | 28 | 1 | 36 days | 0.34 |       | MPC | 2007 WC <sub>4</sub>        |
| 2007 WF <sub>4</sub> | 17.4 | 0.15 | 20071116 | 53.23884  | 76.81051  | 261.99735 | 5.61596  | 0.2811553 | 2.1725508 | 15 | 1 | 27 days | 0.47 |       | MPC | 2007 WF <sub>4</sub>        |
| 2007 WK <sub>4</sub> | 15.4 | 0.15 | 20071116 | 14.99403  | 190.14650 | 262.63176 | 32.71159 | 0.1830666 | 2.5580977 | 22 | 1 | 2 days  | 0.36 |       | MPC | 2007 WK <sub>4</sub>        |
| 2007 WL <sub>4</sub> | 17.2 | 0.15 | 20071116 | 55.98341  | 90.58656  | 290.74989 | 29.04833 | 0.2751645 | 2.0429970 | 25 | 1 | 2 days  | 0.49 |       | MPC | 2007 WL <sub>4</sub>        |
| 2007 WN <sub>4</sub> | 16.8 | 0.15 | 20071116 | 97.67086  | 45.55866  | 256.44277 | 19.49922 | 0.1401304 | 1.9423319 | 19 | 1 | 1 days  | 0.29 |       | MPC | 2007 WN <sub>4</sub>        |
| 2007 WO <sub>4</sub> | 17.1 | 0.15 | 20071116 | 285.52595 | 115.71169 | 43.06274  | 30.35901 | 0.2423098 | 2.1747236 | 15 | 1 | 1 days  | 0.42 |       | MPC | 2007 WO <sub>4</sub>        |
| 2007 WP <sub>4</sub> | 19.7 | 0.15 | 20071116 | 286.24475 | 95.42149  | 52.40660  | 28.64963 | 0.1517466 | 1.8004670 | 12 | 1 | 1 days  | 0.27 | E     | MPC | 2007 WP <sub>4</sub>        |
| 2007 WQ <sub>4</sub> | 15.6 | 0.15 | 20071116 | 338.32972 | 328.87400 | 167.12489 | 27.41030 | 0.1489834 | 2.3454554 | 21 | 1 | 2 days  | 0.49 |       | MPC | 2007 WQ <sub>4</sub>        |
| 2007 WR <sub>4</sub> | 17.8 | 0.15 | 20071116 | 170.31228 | 81.38801  | 167.54460 | 19.47658 | 0.2555976 | 1.8073580 | 15 | 1 | 1 days  | 0.35 | E     | MPC | 2007 WR <sub>4</sub>        |
| 2007 WS <sub>4</sub> | 19.1 | 0.15 | 20071116 | 85.12229  | 33.44754  | 275.96215 | 5.41331  | 0.1843149 | 1.7582473 | 12 | 1 | 1 days  | 0.17 | E     | MPC | 2007 WS <sub>4</sub>        |
| 2007 WT <sub>4</sub> | 22.5 | 0.15 | 20071027 | 348.32124 | 201.57991 | 228.75568 | 7.02710  | 0.4224600 | 2.2378751 | 28 | 1 | 27 days | 0.50 | M-v 5 | MPC | 2007 WT <sub>4</sub>        |
| 2007 WU <sub>4</sub> | 18.9 | 0.15 | 20071027 | 20.03641  | 283.25151 | 67.09464  | 29.16561 | 0.5064396 | 2.5479084 | 21 | 1 | 15 days | 0.37 | M-v 6 | MPC | 2007 WU <sub>4</sub>        |
| 2007 WV <sub>4</sub> | 19.2 | 0.15 | 20071027 | 276.57857 | 297.63462 | 249.96707 | 38.30965 | 0.4406235 | 1.4849586 | 52 | 1 | 24 days | 0.38 | M-v 6 | MPC | 2007 WV <sub>4</sub>        |
| 2007 WW <sub>4</sub> | 19.5 | 0.15 | 20071027 | 10.09190  | 134.94926 | 185.32670 | 10.44417 | 0.7166647 | 2.0968641 | 31 | 1 | 22 days | 0.25 | M-v 6 | MPC | 2007 WW <sub>4</sub>        |
| 2007 WX <sub>4</sub> | 20.0 | 0.15 | 20071027 | 18.94879  | 95.08697  | 254.49963 | 28.15669 | 0.3014066 | 1.7738418 | 22 | 1 | 10 days | 0.40 | M-v 7 | MPC | 2007 WX <sub>4</sub>        |

|                       |      |      |          |           |           |           |          |           |           |    |   |         |      |     |   |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-----|---|-----------------------|
| 2007 WY <sub>4</sub>  | 19.4 | 0.15 | 20071116 | 70.64630  | 291.58127 | 41.66567  | 21.29596 | 0.1098559 | 1.8365542 | 19 | 1 | 6 days  | 0.43 |     |   | 2007 WY <sub>4</sub>  |
| 2007 WZ <sub>4</sub>  | 24.3 | 0.15 | 20071027 | 6.31309   | 315.72345 | 63.05042  | 2.91585  | 0.2805681 | 1.3597180 | 76 | 1 | 26 days | 0.43 | M-v | 6 | 2007 WZ <sub>4</sub>  |
| 2007 WA <sub>5</sub>  | 18.9 | 0.15 | 20071116 | 103.55680 | 27.70636  | 254.64475 | 21.75867 | 0.2568209 | 1.9321236 | 14 | 1 | 1 days  | 0.53 |     | E | 2007 WA <sub>5</sub>  |
| 2007 WB <sub>5</sub>  | 18.9 | 0.15 | 20071027 | 294.15623 | 153.25150 | 38.75440  | 18.84603 | 0.6756471 | 1.7663981 | 32 | 1 | 13 days | 0.36 | M-v | 8 | 2007 WB <sub>5</sub>  |
| 2007 WC <sub>5</sub>  | 27.3 | 0.15 | 20071027 | 65.90252  | 66.54856  | 236.88800 | 8.49211  | 0.2108597 | 0.9743872 | 14 | 1 | 1 days  | 0.40 | M-v | 8 | 2007 WC <sub>5</sub>  |
| 2007 WD <sub>5</sub>  | 24.3 | 0.15 | 20071027 | 2.06835   | 312.73981 | 67.48207  | 2.36073  | 0.5991770 | 2.5196217 | 21 | 1 | 15 days | 0.49 | M-v | 7 | 2007 WD <sub>5</sub>  |
| 2007 WK <sub>5</sub>  | 18.2 | 0.15 | 20071116 | 145.94087 | 205.02699 | 59.60031  | 7.26479  | 0.1574388 | 2.3096684 | 10 | 1 | 6 days  | 0.63 |     |   | 2007 WK <sub>5</sub>  |
| 2007 WR <sub>5</sub>  | 15.7 | 0.15 | 20071116 | 328.05095 | 88.24668  | 10.28959  | 10.16543 | 0.1880011 | 3.1539283 | 17 | 1 | 3 days  | 0.56 |     |   | 2007 WR <sub>5</sub>  |
| 2007 WU <sub>5</sub>  | 17.7 | 0.15 | 20071116 | 355.64476 | 138.41950 | 282.89112 | 5.36568  | 0.1476782 | 2.2314449 | 32 | 1 | 26 days | 0.42 |     |   | 2007 WU <sub>5</sub>  |
| 2007 WX <sub>5</sub>  | 15.6 | 0.15 | 20071116 | 35.15978  | 8.64184   | 10.76380  | 10.36311 | 0.0759811 | 2.8103406 | 17 | 1 | 2 days  | 0.38 |     |   | 2007 WX <sub>5</sub>  |
| 2007 WZ <sub>5</sub>  | 18.5 | 0.15 | 20071116 | 330.64261 | 201.07983 | 248.41037 | 18.48098 | 0.0951739 | 1.9348056 | 21 | 1 | 27 days | 0.51 |     |   | 2007 WZ <sub>5</sub>  |
| 2007 WC <sub>6</sub>  | 17.2 | 0.15 | 20071116 | 10.02625  | 24.05044  | 22.15160  | 6.24220  | 0.2013522 | 2.3115124 | 30 | 1 | 32 days | 0.47 |     |   | 2007 WC <sub>6</sub>  |
| 2007 WG <sub>6</sub>  | 17.7 | 0.15 | 20071116 | 12.33886  | 71.15961  | 327.55064 | 3.67342  | 0.2758325 | 2.3015127 | 11 | 1 | 26 days | 0.48 |     |   | 2007 WG <sub>6</sub>  |
| 2007 WQ <sub>6</sub>  | 17.1 | 0.15 | 20071116 | 2.34857   | 18.73982  | 30.54643  | 7.09660  | 0.2194050 | 2.3439370 | 17 | 1 | 28 days | 0.29 |     |   | 2007 WQ <sub>6</sub>  |
| 2007 WS <sub>6</sub>  | 17.1 | 0.15 | 20071116 | 20.36810  | 42.76356  | 343.39446 | 3.19696  | 0.1641516 | 2.2114454 | 17 | 1 | 25 days | 0.74 |     |   | 2007 WS <sub>6</sub>  |
| 2007 WT <sub>6</sub>  | 15.2 | 0.15 | 20071116 | 34.95381  | 342.21132 | 33.24361  | 10.14852 | 0.0731858 | 3.1048130 | 24 | 1 | 42 days | 0.40 |     |   | 2007 WT <sub>6</sub>  |
| 2007 WU <sub>6</sub>  | 16.4 | 0.15 | 20071027 | 358.15880 | 15.92685  | 36.59065  | 9.23388  | 0.1372573 | 2.6151873 | 44 | 1 | 94 days | 0.62 | M-v | 3 | 2007 WU <sub>6</sub>  |
| 2007 WY <sub>6</sub>  | 17.5 | 0.15 | 20071027 | 35.63483  | 320.68827 | 33.28962  | 6.44416  | 0.2191483 | 2.1973043 | 28 | 1 | 61 days | 0.38 | M-v | 4 | 2007 WY <sub>6</sub>  |
| 2007 WD <sub>7</sub>  | 16.4 | 0.15 | 20071116 | 169.92216 | 209.95224 | 37.37814  | 6.98752  | 0.1190240 | 2.2348443 | 16 | 1 | 17 days | 0.41 |     |   | 2007 WD <sub>7</sub>  |
| 2007 WF <sub>7</sub>  | 16.6 | 0.15 | 20071116 | 23.66954  | 355.35829 | 23.60801  | 5.37378  | 0.2586603 | 2.5932637 | 29 | 1 | 30 days | 0.69 |     |   | 2007 WF <sub>7</sub>  |
| 2007 WG <sub>7</sub>  | 15.1 | 0.15 | 20071116 | 200.64534 | 187.62081 | 38.58056  | 8.91338  | 0.1617244 | 2.5244181 | 11 | 1 | 2 days  | 0.47 |     | E | 2007 WG <sub>7</sub>  |
| 2007 WJ <sub>7</sub>  | 16.3 | 0.15 | 20071116 | 51.89791  | 99.38099  | 255.81057 | 15.77647 | 0.1375824 | 2.6345484 | 17 | 1 | 7 days  | 0.67 |     |   | 2007 WJ <sub>7</sub>  |
| 2007 WL <sub>7</sub>  | 17.1 | 0.15 | 20071116 | 30.83395  | 20.95704  | 355.18600 | 2.65376  | 0.1797573 | 2.1465374 | 38 | 1 | 42 days | 0.49 |     |   | 2007 WL <sub>7</sub>  |
| 2007 WM <sub>7</sub>  | 16.1 | 0.15 | 20071116 | 319.72046 | 206.52240 | 260.82188 | 8.40373  | 0.0615064 | 2.5643297 | 12 | 1 | 3 days  | 0.44 |     |   | 2007 WM <sub>7</sub>  |
| 2007 WN <sub>7</sub>  | 15.6 | 0.15 | 20071116 | 3.05078   | 162.14525 | 255.39506 | 12.29227 | 0.1506254 | 2.6150217 | 19 | 1 | 26 days | 0.48 |     |   | 2007 WN <sub>7</sub>  |
| 2007 WO <sub>7</sub>  | 16.5 | 0.15 | 20071027 | 11.66188  | 352.93763 | 44.13310  | 9.13817  | 0.2032255 | 2.5715097 | 42 | 1 | 90 days | 0.43 | M-v | 4 | 2007 WO <sub>7</sub>  |
| 2007 WQ <sub>7</sub>  | 17.0 | 0.15 | 20071116 | 20.86675  | 46.69729  | 344.69623 | 3.54353  | 0.2003832 | 2.5257878 | 21 | 1 | 25 days | 0.33 |     |   | 2007 WQ <sub>7</sub>  |
| 2007 WR <sub>7</sub>  | 17.6 | 0.15 | 20071116 | 22.57068  | 6.10929   | 20.81627  | 3.59808  | 0.2102596 | 2.1695209 | 21 | 1 | 2 days  | 0.53 |     |   | 2007 WR <sub>7</sub>  |
| 2007 WX <sub>7</sub>  | 18.0 | 0.15 | 20071027 | 21.08651  | 63.75029  | 305.72050 | 3.64894  | 0.3216819 | 2.5468442 | 21 | 1 | 18 days | 0.68 |     |   | 2007 WX <sub>7</sub>  |
| 2007 WY <sub>7</sub>  | 17.6 | 0.15 | 20071116 | 23.13301  | 29.24972  | 350.82561 | 3.79246  | 0.2624371 | 2.3837319 | 30 | 1 | 28 days | 0.59 |     |   | 2007 WY <sub>7</sub>  |
| 2007 WA <sub>8</sub>  | 15.6 | 0.15 | 20071116 | 249.72047 | 258.86084 | 289.09454 | 5.59106  | 0.1362669 | 2.5623099 | 11 | 1 | 2 days  | 0.20 |     |   | 2007 WA <sub>8</sub>  |
| 2007 WB <sub>8</sub>  | 15.7 | 0.15 | 20071116 | 261.60734 | 240.26263 | 288.05931 | 6.28094  | 0.0436427 | 2.4861609 | 16 | 1 | 2 days  | 0.49 |     |   | 2007 WB <sub>8</sub>  |
| 2007 WC <sub>8</sub>  | 15.5 | 0.15 | 20071116 | 6.37893   | 157.07992 | 258.27414 | 17.62130 | 0.1910336 | 3.2587518 | 14 | 1 | 2 days  | 0.50 |     |   | 2007 WC <sub>8</sub>  |
| 2007 WD <sub>8</sub>  | 16.8 | 0.15 | 20071116 | 17.74003  | 72.80910  | 320.70766 | 3.76859  | 0.2534771 | 2.5767972 | 20 | 1 | 2 days  | 0.36 |     |   | 2007 WD <sub>8</sub>  |
| 2007 WH <sub>8</sub>  | 16.4 | 0.15 | 20071116 | 340.43331 | 56.11176  | 31.50745  | 8.30382  | 0.1933509 | 3.0218344 | 11 | 1 | 3 days  | 0.44 |     |   | 2007 WH <sub>8</sub>  |
| 2007 WK <sub>8</sub>  | 16.2 | 0.15 | 20071116 | 309.44640 | 225.67207 | 272.65595 | 6.85294  | 0.2310046 | 2.5187882 | 19 | 1 | 2 days  | 0.81 |     |   | 2007 WK <sub>8</sub>  |
| 2007 WL <sub>8</sub>  | 16.3 | 0.15 | 20071116 | 339.05443 | 160.55558 | 292.35593 | 3.92053  | 0.1591729 | 2.6042964 | 23 | 1 | 35 days | 0.40 |     |   | 2007 WL <sub>8</sub>  |
| 2007 WM <sub>8</sub>  | 16.6 | 0.15 | 20071116 | 303.44737 | 131.43217 | 21.04025  | 4.06247  | 0.2765796 | 2.3358978 | 17 | 1 | 2 days  | 0.64 |     |   | 2007 WM <sub>8</sub>  |
| 2007 WP <sub>8</sub>  | 15.2 | 0.15 | 20071116 | 358.95560 | 168.65908 | 259.76754 | 16.81863 | 0.2238732 | 3.1198137 | 21 | 1 | 26 days | 0.52 |     |   | 2007 WP <sub>8</sub>  |
| 2007 WZ <sub>8</sub>  | 16.6 | 0.15 | 20071116 | 25.32357  | 114.47411 | 260.03228 | 13.37276 | 0.2368624 | 3.1030733 | 14 | 1 | 25 days | 0.42 |     |   | 2007 WZ <sub>8</sub>  |
| 2007 WE <sub>9</sub>  | 18.0 | 0.15 | 20071116 | 51.80726  | 346.06142 | 355.75969 | 7.09992  | 0.1447217 | 2.3183731 | 11 | 1 | 3 days  | 0.22 |     |   | 2007 WE <sub>9</sub>  |
| 2007 WF <sub>9</sub>  | 18.0 | 0.15 | 20071116 | 34.67105  | 354.06348 | 9.62240   | 8.57488  | 0.1347634 | 2.3005947 | 15 | 1 | 3 days  | 0.38 |     |   | 2007 WF <sub>9</sub>  |
| 2007 WJ <sub>9</sub>  | 17.0 | 0.15 | 20071116 | 144.18299 | 252.05912 | 4.43217   | 9.79536  | 0.1122817 | 2.6112288 | 15 | 1 | 3 days  | 0.40 |     |   | 2007 WJ <sub>9</sub>  |
| 2007 WL <sub>9</sub>  | 16.4 | 0.15 | 20071027 | 76.83098  | 3.89462   | 304.42694 | 6.89769  | 0.1540146 | 2.7824016 | 18 | 1 | 10 days | 0.51 |     |   | 2007 WL <sub>9</sub>  |
| 2007 WG <sub>10</sub> | 16.2 | 0.15 | 20071116 | 159.19239 | 310.07993 | 291.03881 | 7.65459  | 0.2056798 | 2.5552559 | 19 | 1 | 2 days  | 0.44 |     |   | 2007 WG <sub>10</sub> |
| 2007 WH <sub>10</sub> | 15.4 | 0.15 | 20071116 | 153.55745 | 237.46523 | 11.39428  | 11.85182 | 0.1166720 | 2.9503668 | 15 | 1 | 2 days  | 0.23 |     |   | 2007 WH <sub>10</sub> |
| 2007 WN <sub>10</sub> | 17.1 | 0.15 | 20071116 | 335.41134 | 91.98967  | 358.19036 | 7.70684  | 0.2591117 | 3.2210412 | 11 | 1 | 2 days  | 0.30 |     |   | 2007 WN <sub>10</sub> |
| 2007 WQ <sub>10</sub> | 16.1 | 0.15 | 20071116 | 29.41839  | 77.64358  | 292.00975 | 7.13757  | 0.1291411 | 2.9854525 | 18 | 1 | 2 days  | 0.29 |     |   | 2007 WQ <sub>10</sub> |
| 2007 WY <sub>10</sub> | 16.5 | 0.15 | 20071116 | 327.57273 | 33.17994  | 76.58328  | 14.41390 | 0.2703939 | 2.6904816 | 32 | 1 | 30 days | 0.49 |     |   | 2007 WY <sub>10</sub> |
| 2007 WA <sub>11</sub> | 17.9 | 0.15 | 20071116 | 37.63336  | 231.38557 | 136.00214 | 4.32310  | 0.1317170 | 2.1026713 | 12 | 1 | 4 days  | 0.82 |     |   | 2007 WA <sub>11</sub> |
| 2007 WF <sub>11</sub> | 16.9 | 0.15 | 20071116 | 5.09257   | 200.59118 | 211.76082 | 14.22031 | 0.1230534 | 2.5076996 | 12 | 1 | 3 days  | 0.62 |     |   | 2007 WF <sub>11</sub> |
| 2007 WG <sub>11</sub> | 17.4 | 0.15 | 20071027 | 337.35213 | 314.73183 | 129.17951 | 5.55787  | 0.1976478 | 2.3302746 | 26 | 1 | 52 days | 0.38 |     |   | 2007 WG <sub>11</sub> |
| 2007 WP <sub>11</sub> | 16.3 | 0.15 | 20071116 | 20.17745  | 253.53621 | 135.54149 | 5.82963  | 0.2263345 | 2.6068847 | 23 | 1 | 32 days | 0.39 |     |   | 2007 WP <sub>11</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |         |      |       |     |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-------|-----|-----------------------|
| 2007 WX <sub>11</sub> | 14.9 | 0.15 | 20071116 | 35.56607  | 330.41025 | 94.97497  | 21.84467 | 0.0810794 | 3.2315508 | 23 | 1 | 2 days  | 0.24 | E     | MPC | 2007 WX <sub>11</sub> |
| 2007 WC <sub>12</sub> | 16.0 | 0.15 | 20071027 | 12.32631  | 270.57182 | 115.64569 | 16.59847 | 0.2545931 | 3.1526199 | 19 | 1 | 56 days | 0.53 |       | MPC | 2007 WC <sub>12</sub> |
| 2007 WD <sub>12</sub> | 17.0 | 0.15 | 20071116 | 1.06668   | 294.28943 | 119.04667 | 6.94405  | 0.1515403 | 2.2950489 | 24 | 1 | 29 days | 0.51 |       | MPC | 2007 WD <sub>12</sub> |
| 2007 WM <sub>12</sub> | 16.2 | 0.15 | 20071027 | 10.00471  | 298.69078 | 98.78997  | 10.99109 | 0.1170642 | 2.6912366 | 24 | 1 | 13 days | 0.48 |       | MPC | 2007 WM <sub>12</sub> |
| 2007 WP <sub>12</sub> | 16.0 | 0.15 | 20071116 | 66.28077  | 139.79911 | 181.98009 | 7.23642  | 0.2580923 | 2.9161710 | 16 | 1 | 2 days  | 0.43 |       | MPC | 2007 WP <sub>12</sub> |
| 2007 WQ <sub>12</sub> | 18.1 | 0.15 | 20071116 | 9.42281   | 320.51409 | 71.68633  | 16.61162 | 0.4316846 | 2.5977686 | 27 | 1 | 35 days | 0.48 |       | MPC | 2007 WQ <sub>12</sub> |
| 2007 WC <sub>13</sub> | 17.5 | 0.15 | 20071116 | 264.08529 | 327.37834 | 182.12646 | 10.21604 | 0.0378760 | 2.5995343 | 17 | 1 | 6 days  | 0.34 |       | MPC | 2007 WC <sub>13</sub> |
| 2007 WG <sub>13</sub> | 16.5 | 0.15 | 20071116 | 72.57981  | 247.97137 | 85.75783  | 12.53092 | 0.0913756 | 2.9090414 | 11 | 1 | 12 days | 0.31 |       | MPC | 2007 WG <sub>13</sub> |
| 2007 WS <sub>13</sub> | 15.0 | 0.15 | 20071027 | 20.21936  | 279.65981 | 87.58201  | 26.30172 | 0.2455724 | 3.2089837 | 34 | 1 | 39 days | 0.41 |       | MPC | 2007 WS <sub>13</sub> |
| 2007 WW <sub>13</sub> | 16.2 | 0.15 | 20071116 | 196.49518 | 6.25006   | 226.33018 | 6.84472  | 0.2284386 | 2.5226261 | 11 | 1 | 3 days  | 0.21 | E     | MPC | 2007 WW <sub>13</sub> |
| 2007 WL <sub>14</sub> | 16.2 | 0.15 | 20071116 | 325.74620 | 241.05818 | 231.48739 | 9.26415  | 0.1812236 | 3.1236472 | 11 | 1 | 16 days | 0.38 |       | MPC | 2007 WL <sub>14</sub> |
| 2007 WN <sub>14</sub> | 17.4 | 0.15 | 20071116 | 16.17044  | 206.06663 | 190.41568 | 2.08092  | 0.2214019 | 2.6266427 | 14 | 1 | 31 days | 0.19 |       | MPC | 2007 WN <sub>14</sub> |
| 2007 WB <sub>15</sub> | 17.1 | 0.15 | 20071027 | 17.24341  | 198.53692 | 188.01873 | 1.89973  | 0.2163450 | 2.3537151 | 34 | 1 | 80 days | 0.36 | M-v 4 | MPC | 2007 WB <sub>15</sub> |
| 2007 WC <sub>15</sub> | 16.8 | 0.15 | 20071116 | 357.61915 | 191.81067 | 236.09359 | 14.57511 | 0.2614743 | 3.1627759 | 18 | 1 | 26 days | 0.44 |       | MPC | 2007 WC <sub>15</sub> |
| 2007 WE <sub>15</sub> | 15.8 | 0.15 | 20071027 | 347.23980 | 345.48464 | 89.83595  | 4.78512  | 0.0751169 | 3.0324260 | 29 | 1 | 42 days | 0.50 |       | MPC | 2007 WE <sub>15</sub> |
| 2007 WJ <sub>15</sub> | 17.4 | 0.15 | 20071116 | 358.48051 | 329.90120 | 94.82379  | 3.59152  | 0.1760863 | 2.4497810 | 28 | 1 | 32 days | 0.41 |       | MPC | 2007 WJ <sub>15</sub> |
| 2007 WO <sub>15</sub> | 18.2 | 0.15 | 20071116 | 20.83277  | 192.24944 | 187.45649 | 1.55778  | 0.3309323 | 2.5010740 | 10 | 1 | 17 days | 0.20 |       | MPC | 2007 WO <sub>15</sub> |
| 2007 WR <sub>15</sub> | 17.2 | 0.15 | 20071116 | 2.30770   | 337.93479 | 81.14923  | 5.59518  | 0.1509281 | 2.2312530 | 25 | 1 | 36 days | 0.33 |       | MPC | 2007 WR <sub>15</sub> |
| 2007 WJ <sub>16</sub> | 15.2 | 0.15 | 20071116 | 333.07885 | 221.97313 | 234.27036 | 8.87021  | 0.0428301 | 2.9917685 | 14 | 1 | 25 days | 0.27 |       | MPC | 2007 WJ <sub>16</sub> |
| 2007 WQ <sub>19</sub> | 17.6 | 0.15 | 20071116 | 12.04082  | 256.10544 | 149.33343 | 2.68625  | 0.2126385 | 2.5966551 | 18 | 1 | 27 days | 0.50 |       | MPC | 2007 WQ <sub>19</sub> |
| 2007 WX <sub>19</sub> | 16.6 | 0.15 | 20071116 | 271.23231 | 6.96755   | 144.68277 | 5.79901  | 0.0497771 | 2.6518751 | 11 | 1 | 2 days  | 0.13 |       | MPC | 2007 WX <sub>19</sub> |
| 2007 WN <sub>20</sub> | 17.1 | 0.15 | 20071116 | 98.51803  | 74.75676  | 290.88685 | 21.48091 | 0.0384670 | 2.0793147 | 15 | 1 | 2 days  | 0.38 |       | MPC | 2007 WN <sub>20</sub> |
| 2007 WX <sub>20</sub> | 16.0 | 0.15 | 20071116 | 318.53112 | 48.16159  | 115.35550 | 10.04833 | 0.0479883 | 2.6802548 | 22 | 1 | 3 days  | 0.56 |       | MPC | 2007 WX <sub>20</sub> |
| 2007 WY <sub>20</sub> | 16.9 | 0.15 | 20071116 | 293.80362 | 83.76734  | 108.18058 | 5.85544  | 0.1029576 | 2.3061692 | 12 | 1 | 2 days  | 0.30 | E     | MPC | 2007 WY <sub>20</sub> |
| 2007 WB <sub>21</sub> | 15.7 | 0.15 | 20071116 | 354.16483 | 201.80618 | 291.98447 | 10.40081 | 0.2161122 | 3.9659982 | 16 | 1 | 3 days  | 0.52 |       | MPC | 2007 WB <sub>21</sub> |
| 2007 WC <sub>21</sub> | 16.6 | 0.15 | 20071116 | 297.53743 | 47.33198  | 144.56707 | 5.40682  | 0.1253324 | 2.2909520 | 19 | 1 | 3 days  | 0.45 |       | MPC | 2007 WC <sub>21</sub> |
| 2007 WJ <sub>25</sub> | 16.4 | 0.15 | 20071116 | 28.82968  | 283.99493 | 86.62716  | 5.22255  | 0.2161636 | 2.7808338 | 36 | 1 | 33 days | 0.54 |       | MPC | 2007 WJ <sub>25</sub> |
| 2007 WU <sub>25</sub> | 17.0 | 0.15 | 20071116 | 50.06053  | 269.47178 | 77.98442  | 6.40790  | 0.1686348 | 2.5282805 | 11 | 1 | 5 days  | 0.33 |       | MPC | 2007 WU <sub>25</sub> |
| 2007 WS <sub>26</sub> | 15.8 | 0.15 | 20071116 | 297.21361 | 154.33486 | 4.50252   | 3.40462  | 0.2353798 | 2.9958854 | 14 | 1 | 16 days | 0.39 |       | MPC | 2007 WS <sub>26</sub> |
| 2007 WO <sub>27</sub> | 16.7 | 0.15 | 20071116 | 313.54654 | 153.27621 | 334.48307 | 2.47417  | 0.1259382 | 2.5893331 | 10 | 1 | 26 days | 0.34 |       | MPC | 2007 WO <sub>27</sub> |
| 2007 WU <sub>27</sub> | 16.4 | 0.15 | 20071116 | 59.74489  | 11.87424  | 340.88481 | 3.61944  | 0.1657373 | 2.5265561 | 30 | 1 | 36 days | 0.57 |       | MPC | 2007 WU <sub>27</sub> |
| 2007 WW <sub>30</sub> | 15.8 | 0.15 | 20071116 | 338.72232 | 185.17013 | 259.83193 | 13.85009 | 0.0541134 | 2.7977332 | 13 | 1 | 24 days | 0.26 |       | MPC | 2007 WW <sub>30</sub> |
| 2007 WX <sub>30</sub> | 15.8 | 0.15 | 20071116 | 349.31879 | 153.84268 | 282.39588 | 5.60587  | 0.1471337 | 3.1129492 | 18 | 1 | 24 days | 0.48 |       | MPC | 2007 WX <sub>30</sub> |
| 2007 WN <sub>31</sub> | 16.5 | 0.15 | 20071116 | 285.44951 | 305.77231 | 201.75185 | 10.51901 | 0.1318008 | 3.1906060 | 11 | 1 | 2 days  | 0.24 |       | MPC | 2007 WN <sub>31</sub> |
| 2007 WP <sub>31</sub> | 16.1 | 0.15 | 20071116 | 220.55832 | 30.28345  | 177.58480 | 3.61726  | 0.1567897 | 2.7349185 | 10 | 1 | 2 days  | 0.11 |       | MPC | 2007 WP <sub>31</sub> |
| 2007 WU <sub>31</sub> | 16.7 | 0.15 | 20071116 | 17.58759  | 121.43174 | 270.67111 | 7.25082  | 0.2357079 | 2.7822427 | 16 | 1 | 24 days | 0.33 |       | MPC | 2007 WU <sub>31</sub> |
| 2007 WN <sub>32</sub> | 17.3 | 0.15 | 20071116 | 13.44206  | 103.63921 | 300.31789 | 3.51403  | 0.1347160 | 2.3773129 | 20 | 1 | 25 days | 0.53 |       | MPC | 2007 WN <sub>32</sub> |
| 2007 WS <sub>32</sub> | 17.4 | 0.15 | 20071116 | 20.79566  | 112.94756 | 269.33538 | 6.86158  | 0.3017352 | 2.6653997 | 11 | 1 | 15 days | 0.35 |       | MPC | 2007 WS <sub>32</sub> |
| 2007 WP <sub>33</sub> | 14.9 | 0.15 | 20071116 | 84.38475  | 65.59309  | 257.92272 | 17.14406 | 0.1495694 | 3.1163059 | 16 | 1 | 40 days | 0.30 |       | MPC | 2007 WP <sub>33</sub> |
| 2007 WB <sub>34</sub> | 16.6 | 0.15 | 20071116 | 356.13209 | 152.97136 | 274.82731 | 5.51362  | 0.1041809 | 2.3126929 | 17 | 1 | 25 days | 0.19 |       | MPC | 2007 WB <sub>34</sub> |
| 2007 WS <sub>34</sub> | 17.0 | 0.15 | 20071116 | 41.14893  | 340.94837 | 19.42514  | 4.12486  | 0.2522123 | 3.0009078 | 11 | 1 | 15 days | 0.76 |       | MPC | 2007 WS <sub>34</sub> |
| 2007 WQ <sub>38</sub> | 16.5 | 0.15 | 20071116 | 0.78461   | 34.98909  | 32.40543  | 6.54796  | 0.1066975 | 2.7387399 | 16 | 1 | 25 days | 0.42 |       | MPC | 2007 WQ <sub>38</sub> |
| 2007 WF <sub>39</sub> | 17.0 | 0.15 | 20071116 | 330.33172 | 55.08323  | 110.57646 | 5.73119  | 0.3017123 | 2.6912489 | 10 | 1 | 2 days  | 0.38 | E     | MPC | 2007 WF <sub>39</sub> |
| 2007 WG <sub>39</sub> | 16.7 | 0.15 | 20071116 | 295.52269 | 82.94440  | 110.46324 | 7.06416  | 0.1551429 | 2.1580559 | 21 | 1 | 2 days  | 0.52 |       | MPC | 2007 WG <sub>39</sub> |
| 2007 WH <sub>39</sub> | 15.3 | 0.15 | 20071027 | 25.55209  | 257.49846 | 115.50243 | 12.70927 | 0.2347296 | 2.9779362 | 34 | 1 | 95 days | 0.52 | M-v 4 | MPC | 2007 WH <sub>39</sub> |
| 2007 WA <sub>40</sub> | 19.4 | 0.15 | 20071116 | 13.36907  | 351.17973 | 36.77726  | 7.35942  | 0.3329565 | 2.4391991 | 16 | 1 | 4 days  | 0.25 |       | MPC | 2007 WA <sub>40</sub> |
| 2007 WH <sub>40</sub> | 14.6 | 0.15 | 20071116 | 61.74116  | 69.27712  | 278.88785 | 15.14488 | 0.0889379 | 3.0129497 | 13 | 1 | 15 days | 0.22 |       | MPC | 2007 WH <sub>40</sub> |
| 2007 WN <sub>41</sub> | 16.9 | 0.15 | 20071116 | 339.37848 | 20.73988  | 70.00881  | 17.24236 | 0.2697224 | 2.9060549 | 33 | 1 | 33 days | 0.68 |       | MPC | 2007 WN <sub>41</sub> |
| 2007 WT <sub>41</sub> | 16.4 | 0.15 | 20071116 | 232.65614 | 329.94741 | 230.35606 | 9.14871  | 0.1281672 | 2.7749363 | 16 | 1 | 3 days  | 0.24 | E     | MPC | 2007 WT <sub>41</sub> |
| 2007 WN <sub>42</sub> | 17.8 | 0.15 | 20071116 | 8.20999   | 251.67034 | 148.48946 | 16.13850 | 0.3929496 | 3.0248082 | 20 | 1 | 3 days  | 0.30 |       | MPC | 2007 WN <sub>42</sub> |
| 2007 WP <sub>42</sub> | 17.4 | 0.15 | 20071116 | 1.07092   | 192.19294 | 232.85100 | 12.10006 | 0.1419083 | 2.5604317 | 11 | 1 | 15 days | 0.20 |       | MPC | 2007 WP <sub>42</sub> |
| 2007 WK <sub>43</sub> | 16.5 | 0.15 | 20071027 | 299.99438 | 250.70575 | 227.86486 | 6.28508  | 0.0289663 | 2.2476454 | 25 | 1 | 81 days | 0.60 | M-v 5 | MPC | 2007 WK <sub>43</sub> |
| 2007 WB <sub>44</sub> | 16.1 | 0.15 | 20071116 | 251.53506 | 305.76888 | 303.23783 | 10.10555 | 0.2336205 | 2.3310672 | 16 | 1 | 2 days  | 0.27 |       | MPC | 2007 WB <sub>44</sub> |

|                       |      |      |          |           |           |           |          |           |           |    |   |         |      |       |     |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-------|-----|-----------------------|
| 2007 WD <sub>44</sub> | 16.6 | 0.15 | 20071116 | 213.22889 | 121.36527 | 147.44044 | 4.92280  | 0.0380961 | 2.3999805 | 19 | 1 | 2 days  | 0.28 |       | MPC | 2007 WD <sub>44</sub> |
| 2007 WE <sub>44</sub> | 16.7 | 0.15 | 20071116 | 171.61220 | 185.83445 | 118.01313 | 30.22285 | 0.1989211 | 2.1797335 | 12 | 1 | 2 days  | 0.44 |       | MPC | 2007 WE <sub>44</sub> |
| 2007 WV <sub>47</sub> | 16.5 | 0.15 | 20071116 | 79.64459  | 305.60448 | 24.14346  | 8.40444  | 0.0681636 | 2.6284611 | 34 | 1 | 31 days | 0.52 |       | MPC | 2007 WV <sub>47</sub> |
| 2007 WV <sub>48</sub> | 15.8 | 0.15 | 20071027 | 337.19702 | 221.91573 | 221.79146 | 8.43118  | 0.0694217 | 3.1556401 | 18 | 1 | 45 days | 0.39 |       | MPC | 2007 WV <sub>48</sub> |
| 2007 WL <sub>49</sub> | 14.9 | 0.15 | 20071116 | 114.48672 | 185.56496 | 116.12432 | 3.36646  | 0.0562315 | 3.0200179 | 18 | 1 | 26 days | 0.20 |       | MPC | 2007 WL <sub>49</sub> |
| 2007 WO <sub>49</sub> | 15.3 | 0.15 | 20071116 | 114.96584 | 218.90543 | 82.26186  | 9.65922  | 0.0556399 | 3.0902948 | 11 | 1 | 14 days | 0.30 |       | MPC | 2007 WO <sub>49</sub> |
| 2007 WJ <sub>50</sub> | 15.3 | 0.15 | 20071116 | 299.82679 | 44.79195  | 79.75790  | 10.37013 | 0.0224138 | 3.0785211 | 16 | 1 | 27 days | 0.24 |       | MPC | 2007 WJ <sub>50</sub> |
| 2007 WK <sub>50</sub> | 15.4 | 0.15 | 20071116 | 317.32078 | 34.86422  | 73.40668  | 17.25769 | 0.0481504 | 3.0306460 | 12 | 1 | 15 days | 0.36 |       | MPC | 2007 WK <sub>50</sub> |
| 2007 WT <sub>50</sub> | 16.5 | 0.15 | 20071027 | 90.50813  | 227.05685 | 90.33219  | 5.67055  | 0.0761685 | 2.4281636 | 18 | 1 | 45 days | 0.28 |       | MPC | 2007 WT <sub>50</sub> |
| 2007 WO <sub>54</sub> | 17.2 | 0.15 | 20071116 | 44.43961  | 350.62232 | 11.87954  | 4.17277  | 0.1807936 | 2.1923950 | 24 | 1 | 24 days | 0.40 |       | MPC | 2007 WO <sub>54</sub> |
| 2007 WD <sub>55</sub> | 16.9 | 0.15 | 20071116 | 350.43723 | 349.33000 | 89.60111  | 3.47999  | 0.1907268 | 2.3430365 | 17 | 1 | 16 days | 0.37 |       | MPC | 2007 WD <sub>55</sub> |
| 2007 WE <sub>55</sub> | 20.1 | 0.15 | 20071027 | 323.68148 | 205.65190 | 304.04478 | 11.49837 | 0.5716256 | 1.9062352 | 40 | 1 | 18 days | 0.41 | M-v 7 | MPC | 2007 WE <sub>55</sub> |
| 2007 WF <sub>55</sub> | 19.0 | 0.15 | 20071027 | 1.00462   | 111.59917 | 280.95479 | 19.68890 | 0.5273743 | 2.4038115 | 74 | 1 | 17 days | 0.35 | M-v 7 | MPC | 2007 WF <sub>55</sub> |
| 2007 WK <sub>55</sub> | 18.0 | 0.15 | 20071116 | 320.34617 | 112.93390 | 1.79536   | 2.27190  | 0.1564259 | 2.4011650 | 17 | 1 | 6 days  | 0.38 |       | MPC | 2007 WK <sub>55</sub> |
| 2007 WL <sub>55</sub> | 14.9 | 0.15 | 20071116 | 8.13091   | 343.09706 | 101.77306 | 31.14162 | 0.1144677 | 3.1433470 | 18 | 1 | 5 days  | 0.34 |       | MPC | 2007 WL <sub>55</sub> |
| 2007 WM <sub>55</sub> | 16.6 | 0.15 | 20071116 | 328.83790 | 334.63350 | 138.59852 | 11.40726 | 0.2335182 | 3.0070614 | 15 | 1 | 4 days  | 0.46 |       | MPC | 2007 WM <sub>55</sub> |
| 2007 WN <sub>55</sub> | 16.3 | 0.15 | 20071027 | 144.26855 | 195.10531 | 63.04068  | 7.56514  | 0.0775052 | 2.2771981 | 30 | 1 | 64 days | 0.56 | M-v 4 | MPC | 2007 WN <sub>55</sub> |
| 2007 WP <sub>55</sub> | 15.6 | 0.15 | 20071206 | 50.42087  | 313.48182 | 54.34140  | 13.77316 | 0.1683032 | 2.6487412 | 12 | 1 | 15 days | 0.24 |       | MPC | 2007 WP <sub>55</sub> |
| 2007 WQ <sub>55</sub> | 17.9 | 0.15 | 20071116 | 336.74244 | 214.92041 | 242.40328 | 9.02287  | 0.2352287 | 2.2883493 | 13 | 1 | 6 days  | 0.72 |       | MPC | 2007 WQ <sub>55</sub> |
| 2007 WR <sub>55</sub> | 18.4 | 0.15 | 20071116 | 5.82462   | 166.88943 | 242.83319 | 2.89803  | 0.2365587 | 2.1770566 | 12 | 1 | 6 days  | 0.82 |       | MPC | 2007 WR <sub>55</sub> |
| 2007 WT <sub>55</sub> | 16.0 | 0.15 | 20071116 | 356.13979 | 352.14981 | 78.47142  | 7.42351  | 0.2203479 | 2.9916180 | 16 | 1 | 6 days  | 0.29 |       | MPC | 2007 WT <sub>55</sub> |
| 2007 WU <sub>55</sub> | 15.2 | 0.15 | 20071116 | 95.64593  | 227.16713 | 72.60698  | 19.35770 | 0.2964671 | 2.6981989 | 16 | 1 | 6 days  | 0.41 |       | MPC | 2007 WU <sub>55</sub> |
| 2007 WY <sub>55</sub> | 17.2 | 0.15 | 20071206 | 12.11514  | 146.19098 | 267.56188 | 1.72362  | 0.1864228 | 2.3837684 | 26 | 1 | 14 days | 0.42 |       | MPC | 2007 WY <sub>55</sub> |
| 2007 WC <sub>56</sub> | 14.6 | 0.15 | 20071116 | 114.78330 | 226.05244 | 77.81363  | 12.92760 | 0.0733207 | 2.9632931 | 12 | 1 | 5 days  | 0.29 |       | MPC | 2007 WC <sub>56</sub> |
| 2007 WD <sub>56</sub> | 16.2 | 0.15 | 20071116 | 51.40709  | 241.20684 | 102.51623 | 1.42453  | 0.2813000 | 2.5289030 | 14 | 1 | 5 days  | 0.50 |       | MPC | 2007 WD <sub>56</sub> |
| 2007 WF <sub>56</sub> | 16.9 | 0.15 | 20071116 | 19.84657  | 136.77138 | 268.82338 | 6.75854  | 0.3223503 | 2.5650473 | 14 | 1 | 5 days  | 0.34 |       | MPC | 2007 WF <sub>56</sub> |
| 2007 WN <sub>56</sub> | 17.6 | 0.15 | 20071027 | 7.16728   | 9.69009   | 26.63914  | 10.39115 | 0.2557371 | 2.7106881 | 14 | 1 | 43 days | 0.27 |       | MPC | 2007 WN <sub>56</sub> |
| 2007 XA               | 17.1 | 0.15 | 20071116 | 29.66605  | 272.47106 | 107.99843 | 5.46213  | 0.2154828 | 2.3500568 | 17 | 1 | 3 days  | 0.31 |       | MPC | 2007 XA               |
| 2007 XB               | 17.5 | 0.15 | 20071116 | 18.55894  | 210.59982 | 188.98904 | 3.69397  | 0.1809811 | 2.3158719 | 18 | 1 | 3 days  | 0.39 |       | MPC | 2007 XB               |
| 2007 XC               | 17.1 | 0.15 | 20071116 | 34.56817  | 265.97251 | 115.40847 | 5.55349  | 0.1583257 | 2.5284339 | 14 | 1 | 3 days  | 0.37 |       | MPC | 2007 XC               |
| 2007 XD               | 19.2 | 0.15 | 20071116 | 23.67318  | 239.30124 | 143.97474 | 2.68189  | 0.2602517 | 2.0969840 | 12 | 1 | 3 days  | 0.75 |       | MPC | 2007 XD               |
| 2007 XF               | 17.6 | 0.15 | 20071116 | 336.22657 | 174.61764 | 292.10267 | 13.77321 | 0.2486818 | 2.6550843 | 10 | 1 | 2 days  | 0.76 | E     | MPC | 2007 XF               |
| 2007 XJ               | 17.0 | 0.15 | 20071116 | 349.35160 | 356.15766 | 88.26958  | 10.73899 | 0.1873189 | 3.0443710 | 13 | 1 | 3 days  | 0.45 |       | MPC | 2007 XJ               |
| 2007 XK               | 18.2 | 0.15 | 20071116 | 3.59391   | 227.95639 | 192.83062 | 4.04677  | 0.1454578 | 2.2123116 | 25 | 1 | 3 days  | 0.44 |       | MPC | 2007 XK               |
| 2007 XL               | 18.1 | 0.15 | 20071116 | 18.11567  | 221.45886 | 178.23881 | 4.02768  | 0.2018812 | 2.5993615 | 19 | 1 | 3 days  | 0.63 |       | MPC | 2007 XL               |
| 2007 XM               | 16.7 | 0.15 | 20071116 | 354.26330 | 334.49208 | 102.19052 | 9.12838  | 0.1538954 | 3.0379195 | 17 | 1 | 3 days  | 0.48 |       | MPC | 2007 XM               |
| 2007 XN               | 19.9 | 0.15 | 20071027 | 340.37081 | 215.26548 | 256.70476 | 24.68615 | 0.5641413 | 2.1922281 | 44 | 1 | 3 days  | 0.42 | M-v 8 | MPC | 2007 XN               |
| 2007 XO               | 25.6 | 0.15 | 20071116 | 301.50105 | 106.67031 | 69.78560  | 7.54302  | 0.5159623 | 1.1953586 | 13 | 1 | 0 days  | 0.71 |       | MPC | 2007 XO               |
| 2007 XP               | 23.7 | 0.15 | 20071116 | 64.27406  | 64.73083  | 255.67829 | 7.66778  | 0.2714227 | 0.9867170 | 16 | 1 | 2 days  | 0.69 |       | MPC | 2007 XP               |
| 2007 XQ               | 14.9 | 0.15 | 20071116 | 81.15179  | 210.80445 | 110.58748 | 11.70709 | 0.1620971 | 3.0549065 | 12 | 1 | 3 days  | 0.35 |       | MPC | 2007 XQ               |
| 2007 XT               | 16.8 | 0.15 | 20071206 | 35.43279  | 112.78943 | 264.57711 | 24.58849 | 0.2518566 | 2.2436132 | 18 | 1 | 13 days | 0.43 |       | MPC | 2007 XT               |
| 2007 XX               | 16.9 | 0.15 | 20071206 | 350.79282 | 347.43434 | 92.07849  | 8.21106  | 0.1443632 | 3.1596775 | 10 | 1 | 12 days | 0.20 |       | MPC | 2007 XX               |
| 2007 XB <sub>1</sub>  | 17.4 | 0.15 | 20071206 | 13.38445  | 129.79405 | 281.55950 | 1.87607  | 0.1513923 | 2.3147275 | 15 | 1 | 12 days | 0.49 |       | MPC | 2007 XB <sub>1</sub>  |
| 2007 XF <sub>1</sub>  | 17.1 | 0.15 | 20071116 | 2.18470   | 342.72800 | 70.31709  | 7.70379  | 0.2341526 | 2.7358607 | 16 | 1 | 2 days  | 0.66 |       | MPC | 2007 XF <sub>1</sub>  |
| 2007 XG <sub>1</sub>  | 17.9 | 0.15 | 20071116 | 24.51991  | 302.77560 | 75.27702  | 5.25275  | 0.2250011 | 2.2710817 | 13 | 1 | 2 days  | 0.61 |       | MPC | 2007 XG <sub>1</sub>  |
| 2007 XH <sub>1</sub>  | 18.0 | 0.15 | 20071116 | 342.34905 | 22.77734  | 62.01686  | 10.27199 | 0.2630916 | 2.5530624 | 11 | 1 | 2 days  | 0.30 |       | MPC | 2007 XH <sub>1</sub>  |
| 2007 XK <sub>1</sub>  | 15.1 | 0.15 | 20071116 | 101.77733 | 73.38800  | 234.42933 | 7.16675  | 0.0847154 | 3.0883244 | 13 | 1 | 2 days  | 0.61 |       | MPC | 2007 XK <sub>1</sub>  |
| 2007 XL <sub>1</sub>  | 17.7 | 0.15 | 20071116 | 5.33912   | 168.67337 | 240.85551 | 5.55921  | 0.1974905 | 2.2483964 | 13 | 1 | 2 days  | 0.25 |       | MPC | 2007 XL <sub>1</sub>  |
| 2007 XM <sub>1</sub>  | 17.1 | 0.15 | 20071206 | 16.56675  | 333.50249 | 71.51130  | 25.64419 | 0.2036618 | 2.3012908 | 20 | 1 | 11 days | 0.38 |       | MPC | 2007 XM <sub>1</sub>  |
| 2007 XO <sub>1</sub>  | 17.2 | 0.15 | 20071116 | 351.13131 | 193.59910 | 243.93352 | 1.64299  | 0.1269421 | 2.3878521 | 12 | 1 | 2 days  | 0.37 |       | MPC | 2007 XO <sub>1</sub>  |
| 2007 XP <sub>1</sub>  | 19.2 | 0.15 | 20071116 | 350.62525 | 350.22071 | 86.66118  | 1.86326  | 0.1753060 | 2.0429933 | 12 | 1 | 2 days  | 0.71 |       | MPC | 2007 XP <sub>1</sub>  |
| 2007 XR <sub>1</sub>  | 15.3 | 0.15 | 20071116 | 341.22813 | 211.95069 | 236.49087 | 2.34219  | 0.0442068 | 2.5959446 | 13 | 1 | 2 days  | 0.44 |       | MPC | 2007 XR <sub>1</sub>  |
| 2007 XS <sub>1</sub>  | 15.3 | 0.15 | 20071116 | 172.47713 | 177.70877 | 74.63837  | 5.44029  | 0.2256042 | 2.3546826 | 11 | 1 | 2 days  | 0.46 |       | MPC | 2007 XS <sub>1</sub>  |

|                       |      |      |          |           |           |           |          |           |           |    |   |         |      |       |       |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-------|-------|-----------------------|
| 2007 XT <sub>1</sub>  | 17.6 | 0.15 | 20071116 | 357.58420 | 185.97157 | 242.33224 | 1.96940  | 0.1964604 | 2.5954878 | 12 | 1 | 2 days  | 0.56 |       | MPC   | 2007 XT <sub>1</sub>  |
| 2007 XU <sub>1</sub>  | 16.4 | 0.15 | 20071116 | 323.48236 | 50.54948  | 79.50438  | 4.54123  | 0.3154551 | 2.8831430 | 13 | 1 | 2 days  | 0.56 |       | MPC   | 2007 XU <sub>1</sub>  |
| 2007 XV <sub>1</sub>  | 14.9 | 0.15 | 20071116 | 170.88791 | 4.12113   | 248.07987 | 19.80902 | 0.2478341 | 2.6338756 | 12 | 1 | 2 days  | 0.45 |       | MPC   | 2007 XV <sub>1</sub>  |
| 2007 XW <sub>1</sub>  | 17.2 | 0.15 | 20071116 | 348.95249 | 356.76367 | 84.36618  | 1.82638  | 0.2297090 | 2.7048228 | 13 | 1 | 2 days  | 0.28 |       | MPC   | 2007 XW <sub>1</sub>  |
| 2007 XX <sub>1</sub>  | 15.6 | 0.15 | 20071206 | 69.84191  | 268.86963 | 72.00273  | 11.39179 | 0.1689365 | 2.9329986 | 15 | 1 | 11 days | 0.43 |       | MPC   | 2007 XX <sub>1</sub>  |
| 2007 XY <sub>1</sub>  | 15.1 | 0.15 | 20071116 | 172.40614 | 180.72933 | 71.40949  | 11.61480 | 0.2320683 | 2.6642648 | 12 | 1 | 2 days  | 0.55 |       | MPC   | 2007 XY <sub>1</sub>  |
| 2007 XZ <sub>1</sub>  | 17.7 | 0.15 | 20071116 | 318.05282 | 63.35406  | 70.01916  | 1.96881  | 0.2968653 | 2.5643104 | 11 | 1 | 2 days  | 0.63 |       | MPC   | 2007 XZ <sub>1</sub>  |
| 2007 XA <sub>2</sub>  | 14.2 | 0.15 | 20071116 | 167.55083 | 185.24532 | 66.65603  | 5.92922  | 0.2668884 | 2.7492808 | 12 | 1 | 2 days  | 0.37 |       | MPC   | 2007 XA <sub>2</sub>  |
| 2007 XB <sub>2</sub>  | 16.3 | 0.15 | 20071116 | 28.21299  | 163.63732 | 227.64773 | 1.50395  | 0.0691561 | 2.8417562 | 12 | 1 | 2 days  | 0.33 |       | MPC   | 2007 XB <sub>2</sub>  |
| 2007 XC <sub>2</sub>  | 18.4 | 0.15 | 20071116 | 343.77892 | 13.08735  | 69.88080  | 27.09589 | 0.1525816 | 2.0968602 | 13 | 1 | 2 days  | 0.38 |       | MPC   | 2007 XC <sub>2</sub>  |
| 2007 XJ <sub>2</sub>  | 18.4 | 0.15 | 20071116 | 336.11505 | 201.77803 | 253.21725 | 1.84910  | 0.1167118 | 2.3799932 | 15 | 1 | 2 days  | 0.36 |       | MPC   | 2007 XJ <sub>2</sub>  |
| 2007 XK <sub>2</sub>  | 17.9 | 0.15 | 20071116 | 359.60653 | 176.16774 | 249.31354 | 3.99039  | 0.0788568 | 2.2629189 | 11 | 1 | 2 days  | 0.53 |       | MPC   | 2007 XK <sub>2</sub>  |
| 2007 XL <sub>2</sub>  | 16.0 | 0.15 | 20071116 | 171.72306 | 5.61913   | 249.43567 | 7.19625  | 0.0534996 | 2.7383588 | 11 | 1 | 2 days  | 0.32 |       | MPC   | 2007 XL <sub>2</sub>  |
| 2007 XM <sub>2</sub>  | 16.7 | 0.15 | 20071116 | 156.10379 | 193.42882 | 72.30883  | 4.12718  | 0.1671918 | 2.7826946 | 14 | 1 | 2 days  | 0.35 | E     | MPC   | 2007 XM <sub>2</sub>  |
| 2007 XX <sub>2</sub>  | 17.6 | 0.15 | 20071206 | 46.93933  | 307.62409 | 91.56363  | 24.33803 | 0.0706606 | 1.8640417 | 18 | 1 | 11 days | 0.56 |       | MPC   | 2007 XX <sub>2</sub>  |
| 2007 XA <sub>3</sub>  | 16.2 | 0.15 | 20071116 | 333.17476 | 217.09044 | 281.94143 | 11.65654 | 0.1862095 | 2.6291655 | 19 | 1 | 4 days  | 0.59 |       | MPC   | 2007 XA <sub>3</sub>  |
| 2007 XB <sub>3</sub>  | 14.6 | 0.15 | 20071206 | 65.95488  | 273.14727 | 65.69237  | 11.58177 | 0.1371724 | 3.1644551 | 21 | 1 | 10 days | 0.65 |       | MPC   | 2007 XB <sub>3</sub>  |
| 2007 XC <sub>3</sub>  | 18.4 | 0.15 | 20071116 | 8.90396   | 159.31673 | 243.31733 | 6.13790  | 0.2696475 | 2.2526718 | 13 | 1 | 2 days  | 0.72 |       | MPC   | 2007 XC <sub>3</sub>  |
| 2007 XD <sub>3</sub>  | 16.0 | 0.15 | 20071116 | 337.18157 | 206.82847 | 241.51649 | 12.43182 | 0.0726317 | 2.6526517 | 13 | 1 | 2 days  | 0.40 |       | MPC   | 2007 XD <sub>3</sub>  |
| 2007 XE <sub>3</sub>  | 16.0 | 0.15 | 20071116 | 47.46427  | 252.54097 | 82.49318  | 7.94965  | 0.3553509 | 2.7979569 | 13 | 1 | 2 days  | 0.54 |       | MPC   | 2007 XE <sub>3</sub>  |
| 2007 XJ <sub>3</sub>  | 17.5 | 0.15 | 20071206 | 30.06042  | 253.56441 | 110.06628 | 7.54195  | 0.2505558 | 2.5562817 | 11 | 1 | 13 days | 0.21 |       | MPC   | 2007 XJ <sub>3</sub>  |
| 2007 XK <sub>3</sub>  | 16.8 | 0.15 | 20071116 | 58.18402  | 95.30183  | 300.50189 | 13.03843 | 0.0693816 | 2.6516550 | 9  | 1 | 16 days | 0.21 |       | MPC   | 2007 XK <sub>3</sub>  |
| 2007 XM <sub>3</sub>  | 18.6 | 0.15 | 20071206 | 32.42401  | 177.02372 | 210.55548 | 20.63270 | 0.0936492 | 1.9227140 | 12 | 1 | 14 days | 0.27 |       | MPC   | 2007 XM <sub>3</sub>  |
| 2007 XN <sub>3</sub>  | 20.5 | 0.15 | 20071027 | 0.03149   | 109.12484 | 270.57923 | 6.51926  | 0.5858285 | 2.5758148 | 18 | 1 | 5 days  | 0.40 | M-v 9 | MPC   | 2007 XN <sub>3</sub>  |
| 2007 XO <sub>3</sub>  | 22.8 | 0.15 | 20071027 | 347.54853 | 200.25394 | 244.03256 | 13.38579 | 0.5549248 | 2.5128113 | 18 | 1 | 7 days  | 0.54 | M-v 9 | MPC   | 2007 XO <sub>3</sub>  |
| 2007 XP <sub>3</sub>  | 18.9 | 0.15 | 20071027 | 4.58942   | 212.08721 | 94.61619  | 15.95320 | 0.9218305 | 2.7137829 | 19 | 1 | 11 days | 0.37 | M-v 9 | MPC   | 2007 XP <sub>3</sub>  |
| 2007 XQ <sub>3</sub>  | 21.9 | 0.15 | 20071027 | 328.52727 | 233.04381 | 254.17988 | 6.61755  | 0.4238923 | 1.9875052 | 14 | 1 | 7 days  | 0.29 | M-v 7 | MPC   | 2007 XQ <sub>3</sub>  |
| 2007 XR <sub>3</sub>  | 17.0 | 0.15 | 20071116 | 19.19837  | 129.67914 | 270.93351 | 9.70228  | 0.3816194 | 2.7955982 | 14 | 1 | 2 days  | 0.42 |       | MPC   | 2007 XR <sub>3</sub>  |
| 2007 XS <sub>3</sub>  | 15.7 | 0.15 | 20071116 | 320.47352 | 19.48594  | 98.64197  | 3.22295  | 0.2415951 | 3.1654937 | 18 | 1 | 3 days  | 0.53 |       | MPC   | 2007 XS <sub>3</sub>  |
| 2007 XT <sub>3</sub>  | 21.4 | 0.15 | 20071027 | 333.21843 | 54.01441  | 77.36844  | 20.85722 | 0.5831549 | 2.2685480 | 31 | 1 | 9 days  | 0.48 | M-v 7 | MPC   | 2007 XT <sub>3</sub>  |
| 2007 XV <sub>5</sub>  | 16.8 | 0.15 | 20071116 | 59.99844  | 237.94473 | 108.46192 | 7.13896  | 0.1807162 | 2.4816827 | 11 | 1 | 2 days  | 0.54 |       | E MPC | 2007 XV <sub>5</sub>  |
| 2007 XN <sub>6</sub>  | 14.8 | 0.15 | 20071206 | 49.93977  | 112.07334 | 261.49871 | 17.09874 | 0.1385816 | 3.1427416 | 20 | 1 | 10 days | 0.34 |       | MPC   | 2007 XN <sub>6</sub>  |
| 2007 XO <sub>6</sub>  | 14.5 | 0.15 | 20071206 | 228.96135 | 146.86192 | 76.14313  | 10.20676 | 0.1820154 | 3.0182831 | 21 | 1 | 10 days | 0.49 |       | MPC   | 2007 XO <sub>6</sub>  |
| 2007 XQ <sub>6</sub>  | 16.9 | 0.15 | 20071206 | 353.35963 | 181.28016 | 266.27927 | 2.95105  | 0.1850663 | 2.3299896 | 21 | 1 | 10 days | 0.35 |       | MPC   | 2007 XQ <sub>6</sub>  |
| 2007 XE <sub>7</sub>  | 19.0 | 0.15 | 20071116 | 36.02371  | 19.66725  | 347.03419 | 0.68349  | 0.2558611 | 2.3140765 | 20 | 1 | 2 days  | 0.27 |       | MPC   | 2007 XE <sub>7</sub>  |
| 2007 XH <sub>7</sub>  | 17.3 | 0.15 | 20071206 | 28.66509  | 326.37328 | 66.82120  | 5.11285  | 0.1673055 | 2.5560995 | 10 | 1 | 10 days | 0.36 |       | MPC   | 2007 XH <sub>7</sub>  |
| 2007 XN <sub>7</sub>  | 16.6 | 0.15 | 20071116 | 336.44247 | 257.36317 | 199.04992 | 6.34252  | 0.0698663 | 2.5424454 | 19 | 1 | 1 days  | 0.38 |       | E MPC | 2007 XN <sub>7</sub>  |
| 2007 XU <sub>8</sub>  | 17.7 | 0.15 | 20071206 | 18.90121  | 152.34479 | 273.00248 | 18.48639 | 0.0896817 | 1.8965793 | 14 | 1 | 6 days  | 0.71 |       | MPC   | 2007 XU <sub>8</sub>  |
| 2007 XC <sub>9</sub>  | 15.6 | 0.15 | 20071206 | 354.18668 | 176.59396 | 283.05533 | 13.70448 | 0.0883310 | 2.7053197 | 19 | 1 | 10 days | 0.47 |       | MPC   | 2007 XC <sub>9</sub>  |
| 2007 XL <sub>9</sub>  | 15.4 | 0.15 | 20071116 | 279.66893 | 139.50138 | 75.71140  | 7.61690  | 0.3854859 | 3.1915148 | 9  | 1 | 1 days  | 0.24 |       | E MPC | 2007 XL <sub>9</sub>  |
| 2007 XS <sub>9</sub>  | 15.6 | 0.15 | 20071206 | 141.59006 | 215.74376 | 79.25101  | 6.85912  | 0.0074692 | 2.7445749 | 16 | 1 | 7 days  | 0.67 |       | MPC   | 2007 XS <sub>9</sub>  |
| 2007 XT <sub>9</sub>  | 13.7 | 0.15 | 20071206 | 180.69774 | 179.16761 | 77.91849  | 26.91791 | 0.1612237 | 2.9832973 | 27 | 1 | 10 days | 0.71 |       | MPC   | 2007 XT <sub>9</sub>  |
| 2007 XU <sub>9</sub>  | 15.7 | 0.15 | 20071116 | 45.73780  | 113.85948 | 256.92744 | 23.44073 | 0.1751398 | 2.9617378 | 21 | 1 | 2 days  | 0.72 |       | MPC   | 2007 XU <sub>9</sub>  |
| 2007 XV <sub>9</sub>  | 15.4 | 0.15 | 20071116 | 321.05046 | 301.49094 | 196.31301 | 0.49899  | 0.2661324 | 3.2149622 | 13 | 1 | 2 days  | 0.34 |       | MPC   | 2007 XV <sub>9</sub>  |
| 2007 XW <sub>9</sub>  | 17.6 | 0.15 | 20071206 | 108.28217 | 246.78273 | 74.43873  | 22.45343 | 0.0648950 | 1.9133239 | 35 | 1 | 10 days | 0.45 |       | MPC   | 2007 XW <sub>9</sub>  |
| 2007 XX <sub>9</sub>  | 16.9 | 0.15 | 20071206 | 107.01003 | 241.25505 | 84.50327  | 25.09169 | 0.0443180 | 1.9436453 | 22 | 1 | 1 days  | 0.39 |       | MPC   | 2007 XX <sub>9</sub>  |
| 2007 XY <sub>9</sub>  | 21.0 | 0.15 | 20071027 | 1.41372   | 126.86188 | 234.42684 | 3.33344  | 0.6187155 | 2.0454927 | 28 | 1 | 11 days | 0.50 | M-v 7 | MPC   | 2007 XY <sub>9</sub>  |
| 2007 XZ <sub>9</sub>  | 24.8 | 0.15 | 20071027 | 0.77558   | 125.74372 | 247.99302 | 3.04135  | 0.5868298 | 2.0424387 | 38 | 1 | 12 days | 0.47 | M-v 5 | MPC   | 2007 XZ <sub>9</sub>  |
| 2007 XA <sub>10</sub> | 22.9 | 0.15 | 20071027 | 1.90618   | 314.89716 | 75.54491  | 19.90740 | 0.3553460 | 1.6094239 | 20 | 1 | 8 days  | 0.38 | M-v 8 | MPC   | 2007 XA <sub>10</sub> |
| 2007 XB <sub>10</sub> | 17.3 | 0.15 | 20071027 | 62.14033  | 37.17857  | 261.16647 | 43.40536 | 0.6103941 | 2.2497950 | 19 | 1 | 11 days | 0.39 | M-v 8 | MPC   | 2007 XB <sub>10</sub> |
| 2007 XC <sub>10</sub> | 19.4 | 0.15 | 20071027 | 27.34405  | 112.80557 | 254.08070 | 48.01688 | 0.2272075 | 1.6230297 | 38 | 1 | 11 days | 0.39 | M-v 8 | MPC   | 2007 XC <sub>10</sub> |
| 2007 XD <sub>10</sub> | 20.8 | 0.15 | 20071027 | 9.87493   | 79.79502  | 270.57392 | 18.43081 | 0.6625474 | 2.1431934 | 14 | 1 | 9 days  | 0.59 | M-v 7 | MPC   | 2007 XD <sub>10</sub> |
| 2007 XM <sub>10</sub> | 17.9 | 0.15 | 20071206 | 96.52283  | 237.89663 | 70.08544  | 5.07642  | 0.1661556 | 2.1452374 | 9  | 1 | 14 days | 0.20 |       | MPC   | 2007 XM <sub>10</sub> |



|                       |      |      |          |           |           |           |          |           |           |    |   |         |      |     |   |    |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|---------|------|-----|---|----|-----------------------|
| 2007 XN <sub>10</sub> | 17.8 | 0.15 | 20071027 | 332.09500 | 16.55133  | 77.87129  | 2.26387  | 0.2368464 | 2.6143587 | 15 | 1 | 78 days | 0.58 | M-v | 7 | MP | 2007 XN <sub>10</sub> |
| 2007 XQ <sub>10</sub> | 17.3 | 0.15 | 20071116 | 314.41409 | 147.57445 | 334.14366 | 2.20054  | 0.1447575 | 2.6061739 | 24 | 1 | 41 days | 0.38 |     |   | MP | 2007 XQ <sub>10</sub> |
| 2007 XR <sub>10</sub> | 16.9 | 0.15 | 20071206 | 293.93682 | 166.48013 | 341.02501 | 2.25444  | 0.1180932 | 2.4540015 | 15 | 1 | 8 days  | 0.43 |     |   | MP | 2007 XR <sub>10</sub> |
| 2007 XS <sub>10</sub> | 18.3 | 0.15 | 20071206 | 333.90097 | 95.55428  | 9.53139   | 2.70229  | 0.1635873 | 2.3007307 | 17 | 1 | 9 days  | 0.23 |     |   | MP | 2007 XS <sub>10</sub> |
| 2007 XT <sub>10</sub> | 16.0 | 0.15 | 20071116 | 20.25082  | 129.10730 | 257.72527 | 14.23135 | 0.2713763 | 3.9645239 | 19 | 1 | 25 days | 0.19 |     |   | MP | 2007 XT <sub>10</sub> |
| 2007 XW <sub>10</sub> | 16.6 | 0.15 | 20071116 | 7.15626   | 317.11228 | 92.76198  | 0.12446  | 0.2413454 | 2.9749463 | 9  | 1 | 2 days  | 0.52 |     |   | MP | 2007 XW <sub>10</sub> |
| 2007 XF <sub>11</sub> | 16.8 | 0.15 | 20071116 | 31.17178  | 297.29602 | 76.26842  | 14.82933 | 0.1674900 | 2.6282461 | 17 | 1 | 14 days | 0.34 |     |   | MP | 2007 XF <sub>11</sub> |
| 2007 XJ <sub>11</sub> | 16.7 | 0.15 | 20071027 | 346.43507 | 234.21584 | 206.39122 | 11.39766 | 0.2666392 | 2.5890289 | 18 | 1 | 48 days | 0.56 |     |   | MP | 2007 XJ <sub>11</sub> |
| 2007 XK <sub>11</sub> | 19.2 | 0.15 | 20071027 | 2.92836   | 197.54333 | 167.16658 | 3.44978  | 0.6287622 | 2.8401649 | 37 | 1 | 10 days | 0.51 | M-v | 8 | MP | 2007 XK <sub>11</sub> |
| 2007 XN <sub>11</sub> | 15.1 | 0.15 | 20071027 | 170.81815 | 191.65044 | 58.22932  | 17.42554 | 0.0612685 | 3.1132090 | 27 | 1 | 83 days | 0.37 | M-v | 4 | MP | 2007 XN <sub>11</sub> |
| 2007 XJ <sub>13</sub> | 14.9 | 0.15 | 20071206 | 203.93379 | 333.58139 | 266.45660 | 13.86976 | 0.1122870 | 2.9142589 | 23 | 1 | 10 days | 0.86 |     |   | MP | 2007 XJ <sub>13</sub> |
| 2007 XK <sub>13</sub> | 14.9 | 0.15 | 20071206 | 345.13612 | 193.88258 | 267.05727 | 8.18172  | 0.2240157 | 3.1761691 | 17 | 1 | 10 days | 0.48 |     |   | MP | 2007 XK <sub>13</sub> |
| 2007 XL <sub>13</sub> | 15.8 | 0.15 | 20071206 | 73.50871  | 269.91071 | 72.44749  | 15.26609 | 0.1833189 | 2.5992070 | 25 | 1 | 10 days | 0.50 |     |   | MP | 2007 XL <sub>13</sub> |
| 2007 XE <sub>14</sub> | 14.9 | 0.15 | 20071206 | 101.98334 | 259.98405 | 69.55353  | 10.17733 | 0.0493596 | 2.9930583 | 16 | 1 | 9 days  | 0.38 |     |   | MP | 2007 XE <sub>14</sub> |
| 2007 XF <sub>14</sub> | 16.4 | 0.15 | 20071206 | 27.87241  | 341.93817 | 65.41098  | 7.12411  | 0.0401671 | 2.7222531 | 18 | 1 | 4 days  | 0.42 |     |   | MP | 2007 XF <sub>14</sub> |
| 2007 XF <sub>15</sub> | 15.8 | 0.15 | 20071206 | 327.97985 | 78.21326  | 39.98076  | 9.76009  | 0.1964427 | 2.9905062 | 12 | 1 | 6 days  | 0.28 |     |   | MP | 2007 XF <sub>15</sub> |
| 2007 XQ <sub>15</sub> | 16.0 | 0.15 | 20071206 | 357.72245 | 17.88879  | 62.71647  | 5.61396  | 0.1183070 | 2.6749056 | 23 | 1 | 8 days  | 0.86 |     |   | MP | 2007 XQ <sub>15</sub> |
| 2007 XS <sub>15</sub> | 18.2 | 0.15 | 20071206 | 56.97248  | 309.03021 | 63.60051  | 5.34581  | 0.0907228 | 2.2686250 | 7  | 1 | 6 days  | 0.36 |     |   | MP | 2007 XS <sub>15</sub> |
| 2007 XT <sub>15</sub> | 16.2 | 0.15 | 20071206 | 32.52954  | 71.74690  | 322.51223 | 5.16493  | 0.1326138 | 2.8165001 | 13 | 1 | 4 days  | 0.46 |     |   | MP | 2007 XT <sub>15</sub> |
| 2007 XV <sub>15</sub> | 17.1 | 0.15 | 20071206 | 34.69028  | 341.04852 | 44.98610  | 5.94525  | 0.1934210 | 2.3427490 | 12 | 1 | 4 days  | 0.79 |     |   | MP | 2007 XV <sub>15</sub> |
| 2007 XW <sub>15</sub> | 17.2 | 0.15 | 20071206 | 10.65453  | 144.97089 | 273.14677 | 11.76813 | 0.2392226 | 2.5957285 | 13 | 1 | 4 days  | 0.44 |     |   | MP | 2007 XW <sub>15</sub> |
| 2007 XX <sub>15</sub> | 17.1 | 0.15 | 20071206 | 16.71795  | 5.38782   | 43.90584  | 5.85074  | 0.2806407 | 2.6127110 | 13 | 1 | 7 days  | 0.53 |     |   | MP | 2007 XX <sub>15</sub> |
| 2007 XY <sub>15</sub> | 17.6 | 0.15 | 20071116 | 26.06722  | 91.39378  | 304.48031 | 4.39470  | 0.1588849 | 2.2748404 | 18 | 1 | 33 days | 0.42 |     |   | MP | 2007 XY <sub>15</sub> |
| 2007 XZ <sub>15</sub> | 17.5 | 0.15 | 20071206 | 337.40703 | 52.59264  | 57.04243  | 7.51209  | 0.1485749 | 2.2094885 | 13 | 1 | 7 days  | 0.68 |     |   | MP | 2007 XZ <sub>15</sub> |
| 2007 XA <sub>16</sub> | 14.5 | 0.15 | 20071206 | 279.28131 | 263.27820 | 277.57065 | 14.91144 | 0.1455959 | 3.1339598 | 13 | 1 | 4 days  | 0.75 |     |   | MP | 2007 XA <sub>16</sub> |
| 2007 XB <sub>16</sub> | 17.0 | 0.15 | 20071206 | 359.83583 | 330.94608 | 105.38139 | 22.62565 | 0.0391447 | 1.9192579 | 16 | 1 | 3 days  | 0.53 |     | E | MP | 2007 XB <sub>16</sub> |
| 2007 XD <sub>16</sub> | 18.0 | 0.15 | 20071206 | 25.30654  | 336.14415 | 60.28130  | 5.96971  | 0.1825901 | 2.2577410 | 15 | 1 | 10 days | 0.39 |     |   | MP | 2007 XD <sub>16</sub> |
| 2007 XH <sub>16</sub> | 19.4 | 0.15 | 20071027 | 277.63352 | 58.38291  | 91.34306  | 27.41236 | 0.2335991 | 1.1852109 | 30 | 1 | 4 days  | 0.24 | M-v | 7 | MP | 2007 XH <sub>16</sub> |
| 2007 XJ <sub>16</sub> | 18.9 | 0.15 | 20071027 | 28.14262  | 33.81985  | 311.46449 | 5.87850  | 0.5613012 | 2.3234891 | 18 | 1 | 9 days  | 0.63 | M-v | 8 | MP | 2007 XJ <sub>16</sub> |
| 2007 XL <sub>16</sub> | 16.9 | 0.15 | 20071206 | 40.72235  | 329.38182 | 47.82104  | 6.81537  | 0.1996950 | 2.6416910 | 20 | 1 | 7 days  | 0.53 |     |   | MP | 2007 XL <sub>16</sub> |
| 2007 XM <sub>16</sub> | 15.9 | 0.15 | 20071206 | 346.47125 | 38.49277  | 105.75398 | 33.17736 | 0.2077877 | 2.6221878 | 25 | 1 | 6 days  | 0.42 |     |   | MP | 2007 XM <sub>16</sub> |
| 2007 XN <sub>16</sub> | 25.5 | 0.15 | 20071027 | 352.16740 | 161.88281 | 258.15582 | 4.17865  | 0.6009019 | 2.4550406 | 12 | 1 | 2 days  | 0.32 | M-v | 6 | MP | 2007 XN <sub>16</sub> |
| 2007 XP <sub>16</sub> | 17.8 | 0.15 | 20071206 | 353.62358 | 163.23898 | 281.73185 | 4.84273  | 0.1961033 | 2.2819419 | 19 | 1 | 4 days  | 0.62 |     |   | MP | 2007 XP <sub>16</sub> |
| 2007 XS <sub>16</sub> | 18.2 | 0.15 | 20071206 | 35.26309  | 327.68110 | 61.18961  | 3.22731  | 0.1750059 | 2.4926056 | 15 | 1 | 6 days  | 0.29 |     |   | MP | 2007 XS <sub>16</sub> |
| 2007 XT <sub>16</sub> | 16.8 | 0.15 | 20071206 | 180.73807 | 339.55692 | 279.20601 | 4.27020  | 0.2465426 | 2.6325311 | 9  | 1 | 2 days  | 0.56 |     |   | MP | 2007 XT <sub>16</sub> |
| 2007 XV <sub>16</sub> | 16.2 | 0.15 | 20071206 | 189.84947 | 74.66398  | 180.05272 | 5.85134  | 0.2066854 | 2.2197539 | 8  | 1 | 2 days  | 0.71 |     |   | MP | 2007 XV <sub>16</sub> |
| 2007 XW <sub>16</sub> | 16.5 | 0.15 | 20071206 | 21.44372  | 110.21642 | 304.27241 | 8.92974  | 0.2828251 | 3.0885262 | 13 | 1 | 5 days  | 0.37 |     |   | MP | 2007 XW <sub>16</sub> |
| 2007 XB <sub>17</sub> | 16.4 | 0.15 | 20071116 | 331.68182 | 210.70331 | 262.31289 | 16.39741 | 0.1847216 | 2.5966022 | 19 | 1 | 38 days | 0.36 |     |   | MP | 2007 XB <sub>17</sub> |
| 2007 XD <sub>17</sub> | 14.9 | 0.15 | 20071206 | 335.80572 | 203.78850 | 259.86538 | 12.16411 | 0.0582638 | 3.2203307 | 11 | 1 | 9 days  | 0.46 |     |   | MP | 2007 XD <sub>17</sub> |
| 2007 XF <sub>17</sub> | 16.2 | 0.15 | 20071206 | 11.30775  | 144.12312 | 283.66108 | 8.73407  | 0.2715523 | 2.7927375 | 16 | 1 | 9 days  | 0.43 |     |   | MP | 2007 XF <sub>17</sub> |
| 2007 XG <sub>17</sub> | 17.5 | 0.15 | 20071206 | 3.70391   | 6.70276   | 73.64787  | 6.55106  | 0.2924492 | 2.5943069 | 8  | 1 | 6 days  | 0.33 |     |   | MP | 2007 XG <sub>17</sub> |
| 2007 XH <sub>17</sub> | 16.2 | 0.15 | 20071206 | 32.56811  | 316.73895 | 78.10451  | 9.09739  | 0.2832659 | 2.6407865 | 19 | 1 | 10 days | 0.53 |     |   | MP | 2007 XH <sub>17</sub> |
| 2007 XJ <sub>17</sub> | 16.2 | 0.15 | 20071206 | 10.81832  | 346.05754 | 88.75864  | 14.59972 | 0.2579499 | 2.7068279 | 12 | 1 | 7 days  | 0.34 |     |   | MP | 2007 XJ <sub>17</sub> |
| 2007 XK <sub>17</sub> | 16.5 | 0.15 | 20071116 | 337.13442 | 40.37233  | 78.71251  | 6.10624  | 0.0951981 | 2.2580337 | 11 | 1 | 19 days | 0.25 |     |   | MP | 2007 XK <sub>17</sub> |
| 2007 XO <sub>17</sub> | 18.6 | 0.15 | 20071206 | 327.89499 | 75.56055  | 47.43172  | 3.01224  | 0.1778067 | 2.3605607 | 12 | 1 | 8 days  | 0.38 |     |   | MP | 2007 XO <sub>17</sub> |
| 2007 XP <sub>17</sub> | 15.2 | 0.15 | 20071206 | 244.04801 | 137.45556 | 70.74644  | 13.51171 | 0.1852470 | 2.5676721 | 15 | 1 | 8 days  | 0.65 |     |   | MP | 2007 XP <sub>17</sub> |
| 2007 XQ <sub>17</sub> | 17.2 | 0.15 | 20071206 | 359.20964 | 146.39144 | 290.11701 | 3.66961  | 0.2275543 | 2.8114718 | 11 | 1 | 4 days  | 0.38 |     |   | MP | 2007 XQ <sub>17</sub> |
| 2007 XU <sub>17</sub> | 16.8 | 0.15 | 20071116 | 330.63768 | 202.66793 | 270.61400 | 8.68946  | 0.1917154 | 2.4018374 | 21 | 1 | 25 days | 0.47 |     |   | MP | 2007 XU <sub>17</sub> |
| 2007 XV <sub>17</sub> | 15.7 | 0.15 | 20071206 | 239.79148 | 296.25805 | 265.29525 | 14.93266 | 0.0264442 | 2.6501279 | 14 | 1 | 8 days  | 0.68 |     |   | MP | 2007 XV <sub>17</sub> |
| 2007 XW <sub>17</sub> | 16.8 | 0.15 | 20071206 | 49.69991  | 287.23278 | 74.14593  | 6.74876  | 0.2630170 | 2.4198992 | 18 | 1 | 3 days  | 0.41 |     |   | MP | 2007 XW <sub>17</sub> |
| 2007 XX <sub>17</sub> | 17.6 | 0.15 | 20071206 | 354.60202 | 176.02309 | 270.57527 | 3.25356  | 0.1688556 | 2.3188272 | 14 | 1 | 9 days  | 0.45 |     |   | MP | 2007 XX <sub>17</sub> |
| 2007 XY <sub>17</sub> | 18.3 | 0.15 | 20071206 | 359.46484 | 172.20553 | 265.97879 | 9.19049  | 0.2170014 | 2.4015967 | 17 | 1 | 2 days  | 0.63 |     |   | MP | 2007 XY <sub>17</sub> |
| 2007 XB <sub>18</sub> | 16.2 | 0.15 | 20071206 | 323.51953 | 10.89297  | 101.19064 | 10.52651 | 0.0288477 | 3.1931317 | 16 | 1 | 5 days  | 0.51 |     |   | MP | 2007 XB <sub>18</sub> |

|                       |      |      |          |           |           |           |          |           |           |     |   |           |      |     |   |       |                       |
|-----------------------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----|---|-----------|------|-----|---|-------|-----------------------|
| 2007 XC <sub>18</sub> | 16.7 | 0.15 | 20071206 | 99.99091  | 158.61189 | 169.48614 | 4.42944  | 0.0536542 | 2.8018247 | 14  | 1 | 4 days    | 0.45 |     |   | MPC   | 2007 XC <sub>18</sub> |
| 2007 XD <sub>18</sub> | 15.5 | 0.15 | 20071206 | 304.20803 | 69.97276  | 110.07906 | 13.04685 | 0.2570493 | 3.1815693 | 13  | 1 | 4 days    | 0.65 |     |   | MPC   | 2007 XD <sub>18</sub> |
| 2007 XF <sub>18</sub> | 20.6 | 0.15 | 20071027 | 14.73673  | 266.67856 | 76.19257  | 58.97258 | 0.4736856 | 1.4488423 | 20  | 1 | 4 days    | 0.37 | M-v | 8 | MPC   | 2007 XF <sub>18</sub> |
| 2007 XG <sub>18</sub> | 15.2 | 0.15 | 20071206 | 334.33155 | 48.57391  | 66.32400  | 8.47274  | 0.0337755 | 2.8776963 | 13  | 1 | 3 days    | 0.50 |     |   | E MPC | 2007 XG <sub>18</sub> |
| 2007 XH <sub>18</sub> | 15.3 | 0.15 | 20071206 | 56.37810  | 294.45792 | 79.20937  | 14.44083 | 0.1511605 | 2.7043038 | 15  | 1 | 2 days    | 0.40 |     |   | MPC   | 2007 XH <sub>18</sub> |
| 2007 XJ <sub>18</sub> | 17.2 | 0.15 | 20071206 | 10.85160  | 149.66617 | 279.77355 | 11.03718 | 0.2488228 | 2.6259877 | 9   | 1 | 3 days    | 0.39 |     |   | MPC   | 2007 XJ <sub>18</sub> |
| 2007 XL <sub>18</sub> | 21.7 | 0.15 | 20071116 | 0.64376   | 339.62268 | 86.04299  | 10.30604 | 0.4025159 | 2.1776364 | 10  | 1 | 1 days    | 0.81 |     |   | E MPC | 2007 XL <sub>18</sub> |
| 2007 XM <sub>18</sub> | 18.1 | 0.15 | 20071206 | 358.93895 | 348.62250 | 92.21375  | 24.83539 | 0.2107785 | 2.3900953 | 11  | 1 | 6 days    | 0.25 |     |   | MPC   | 2007 XM <sub>18</sub> |
| 2007 XN <sub>18</sub> | 17.8 | 0.15 | 20071206 | 21.01171  | 150.44091 | 261.55713 | 19.73881 | 0.0998151 | 1.8976693 | 13  | 1 | 1 days    | 0.84 |     |   | MPC   | 2007 XN <sub>18</sub> |
| 2007 XP <sub>18</sub> | 16.0 | 0.15 | 20071206 | 204.74924 | 165.75562 | 70.96253  | 4.96875  | 0.0368969 | 2.5847568 | 15  | 1 | 10 days   | 0.49 |     |   | MPC   | 2007 XP <sub>18</sub> |
| 2007 XQ <sub>18</sub> | 15.8 | 0.15 | 20071206 | 308.74564 | 90.61644  | 76.35740  | 10.81553 | 0.3230054 | 3.0555785 | 12  | 1 | 2 days    | 0.73 |     |   | E MPC | 2007 XQ <sub>18</sub> |
| 2007 XE <sub>20</sub> | 15.7 | 0.15 | 20071206 | 28.68278  | 140.69597 | 263.06856 | 4.05990  | 0.0453841 | 2.6762335 | 28  | 1 | 12 days   | 0.70 |     |   | MPC   | 2007 XE <sub>20</sub> |
| 2007 XG <sub>20</sub> | 15.8 | 0.15 | 20071206 | 317.88091 | 70.72317  | 58.24294  | 9.88291  | 0.1869940 | 2.7050986 | 9   | 1 | 3 days    | 0.44 |     |   | E MPC | 2007 XG <sub>20</sub> |
| 2007 XH <sub>20</sub> | 14.9 | 0.15 | 20071206 | 312.18362 | 224.93881 | 256.51776 | 24.32020 | 0.0524710 | 2.6199572 | 9   | 1 | 3 days    | 0.39 |     |   | MPC   | 2007 XH <sub>20</sub> |
| 2007 XJ <sub>20</sub> | 18.8 | 0.15 | 20071027 | 286.53446 | 148.90899 | 55.03967  | 9.61750  | 0.6112873 | 1.7883713 | 13  | 1 | 1 days    | 0.30 | M-v | 9 | MPC   | 2007 XJ <sub>20</sub> |
| 2007 XK <sub>20</sub> | 16.2 | 0.15 | 20071206 | 75.72050  | 81.78397  | 255.38448 | 4.20232  | 0.2243874 | 2.5857373 | 12  | 1 | 10 days   | 0.27 |     |   | MPC   | 2007 XK <sub>20</sub> |
| 2007 XM <sub>20</sub> | 17.0 | 0.15 | 20071206 | 45.09444  | 130.08099 | 248.89827 | 1.78372  | 0.1550896 | 2.2518573 | 9   | 1 | 10 days   | 0.40 |     |   | MPC   | 2007 XM <sub>20</sub> |
| 2007 XR <sub>20</sub> |      |      | 20071206 | 318.93948 | 57.40835  | 98.43354  | 22.25730 | 0.1974337 | 2.7712126 | 16  | 1 | 3 days    | 0.65 |     |   | MPC   | 2007 XR <sub>20</sub> |
| 2007 XW <sub>20</sub> | 17.9 | 0.15 | 20071206 | 320.99267 | 205.68876 | 273.92137 | 16.93343 | 0.0162464 | 1.8040306 | 23  | 1 | 2 days    | 0.45 |     |   | E MPC | 2007 XW <sub>20</sub> |
| 2007 XY <sub>20</sub> | 17.6 | 0.15 | 20071206 | 8.50966   | 348.46441 | 76.09152  | 1.96140  | 0.1771143 | 2.2773229 | 13  | 1 | 11 days   | 0.31 |     |   | MPC   | 2007 XY <sub>20</sub> |
| 2007 XA <sub>21</sub> | 18.1 | 0.15 | 20071206 | 350.43724 | 182.93013 | 269.99636 | 16.58719 | 0.0725650 | 1.8317931 | 12  | 1 | 2 days    | 0.47 |     |   | MPC   | 2007 XA <sub>21</sub> |
| 2007 XC <sub>21</sub> | 17.9 | 0.15 | 20071206 | 308.24813 | 219.31517 | 271.54044 | 5.79956  | 0.1063249 | 2.2450666 | 14  | 1 | 6 days    | 0.27 |     |   | MPC   | 2007 XC <sub>21</sub> |
| 2007 XD <sub>21</sub> | 16.0 | 0.15 | 20071206 | 67.74751  | 296.94380 | 52.77849  | 11.39161 | 0.0937077 | 2.9156101 | 15  | 1 | 6 days    | 0.46 |     |   | E MPC | 2007 XD <sub>21</sub> |
| 2007 XE <sub>21</sub> | 17.1 | 0.15 | 20071206 | 59.15193  | 355.87446 | 0.83216   | 3.24222  | 0.1136601 | 2.7674972 | 13  | 1 | 6 days    | 0.61 |     |   | E MPC | 2007 XE <sub>21</sub> |
| 2007 XT <sub>22</sub> | 17.2 | 0.15 | 20071206 | 351.17425 | 26.44486  | 89.19066  | 9.52108  | 0.4373769 | 2.8768975 | 13  | 1 | 5 days    | 0.18 |     |   | MPC   | 2007 XT <sub>22</sub> |
| 2007 XA <sub>23</sub> | 23.2 | 0.15 | 20071027 | 310.00346 | 62.13393  | 79.07414  | 8.47725  | 0.3812267 | 1.6212918 | 12  | 1 | 1 days    | 0.48 | M-v | 9 | MPC   | 2007 XA <sub>23</sub> |
| 2007 XB <sub>23</sub> | 27.1 | 0.15 | 20071027 | 44.72374  | 84.01318  | 260.88474 | 8.45255  | 0.0288549 | 0.9829816 | 10  | 1 | 1 days    | 0.44 | M-v | 6 | MPC   | 2007 XB <sub>23</sub> |
| 2007 XD <sub>23</sub> | 13.2 | 0.15 | 20071206 | 68.21523  | 221.05482 | 80.71540  | 13.33439 | 0.4691768 | 3.4739085 | 8   | 1 | 2 days    | 0.26 |     |   | E MPC | 2007 XD <sub>23</sub> |
| 2007 XE <sub>23</sub> | 15.7 | 0.15 | 20071206 | 40.75117  | 128.11144 | 239.06030 | 13.17079 | 0.2072246 | 2.6787672 | 9   | 1 | 2 days    | 0.37 |     |   | E MPC | 2007 XE <sub>23</sub> |
| 2007 XF <sub>23</sub> | 15.5 | 0.15 | 20071206 | 338.53607 | 331.50733 | 134.82734 | 1.98085  | 0.3024684 | 3.4440001 | 9   | 1 | 2 days    | 0.32 |     |   | E MPC | 2007 XF <sub>23</sub> |
| 2007 XT <sub>23</sub> | 22.5 | 0.15 | 20071027 | 355.18781 | 332.16368 | 78.97722  | 17.21013 | 0.6185550 | 2.8193671 | 22  | 1 | 1 days    | 0.35 | M-v | 8 | MPC   | 2007 XT <sub>23</sub> |
| 2007 XU <sub>23</sub> | 18.1 | 0.15 | 20071206 | 348.81194 | 322.31368 | 127.11715 | 4.82957  | 0.1593606 | 2.6481116 | 9   | 1 | 4 days    | 0.46 |     |   | MPC   | 2007 XU <sub>23</sub> |
| 2007 XV <sub>23</sub> | 25.0 | 0.15 | 20071027 | 352.34433 | 346.73162 | 81.10022  | 5.35954  | 0.6463104 | 2.8294325 | 18  | 1 | 2 days    | 0.42 | M-v | 7 | MPC   | 2007 XV <sub>23</sub> |
| 2007 XW <sub>23</sub> | 25.8 | 0.15 | 20071027 | 359.95466 | 299.26667 | 81.60786  | 7.83629  | 0.3867924 | 1.4527200 | 14  | 1 | 1 days    | 0.42 | M-v | 8 | MPC   | 2007 XW <sub>23</sub> |
| 2007 YA               | 12.5 | 0.15 | 20071206 | 274.70912 | 213.65475 | 224.17624 | 25.92306 | 0.1912069 | 5.1738178 | 9   | 1 | 1 days    | 0.39 |     |   | E MPC | 2007 YA               |
| 2007 YC               | 16.6 | 0.15 | 20071206 | 132.11888 | 17.49777  | 281.75631 | 18.74286 | 0.0559199 | 1.9590291 | 15  | 1 | 1 days    | 0.36 |     |   | E MPC | 2007 YC               |
| 2619 P-L              | 14.8 | 0.15 | 20071027 | 93.47693  | 332.85016 | 10.94283  | 7.51073  | 0.0460712 | 3.2069443 | 87  | 7 | 1960-2007 | 0.51 | M-v | 0 | MPC   | 110561 2619 P-L       |
| 2697 P-L              | 17.2 | 0.15 | 20071027 | 48.28363  | 213.95399 | 147.62734 | 2.77592  | 0.2035226 | 2.3435568 | 57  | 5 | 1960-2007 | 0.51 | M-v | 1 | MPC   | 77911 2697 P-L        |
| 2806 P-L              | 16.7 | 0.15 | 20071027 | 59.52515  | 332.70060 | 11.00397  | 7.59204  | 0.1809017 | 2.4721457 | 38  | 5 | 1960-2007 | 0.48 | M-v | 2 | MPC   | 58138 2806 P-L        |
| 2858 P-L              | 17.7 | 0.15 | 20071027 | 35.58186  | 180.53215 | 161.14457 | 2.63508  | 0.1873557 | 2.2389625 | 31  | 3 | 1960-2007 | 0.37 | M-v | 2 | MPC   | 128607 2858 P-L       |
| 4091 P-L              | 16.2 | 0.15 | 20071027 | 51.53526  | 142.15603 | 224.34429 | 2.82098  | 0.2582967 | 2.6128921 | 81  | 5 | 1960-2007 | 0.65 | M-v | 1 | MPC   | 77911 4091 P-L        |
| 4178 P-L              | 15.3 | 0.15 | 20071027 | 154.66362 | 357.84483 | 340.85817 | 8.69497  | 0.0921296 | 2.9331624 | 78  | 5 | 1960-2007 | 0.52 | M-v | 1 | MPC   | 113025 4178 P-L       |
| 4219 P-L              | 16.0 | 0.15 | 20071027 | 60.80431  | 149.71691 | 204.83836 | 6.32925  | 0.1218392 | 2.7828313 | 38  | 5 | 1960-2007 | 0.44 | M-v | 1 | MPC   | 129051 4219 P-L       |
| 5581 P-L              | 16.3 | 0.15 | 20071027 | 31.51423  | 328.93623 | 40.07657  | 4.82471  | 0.2327130 | 2.6218401 | 37  | 3 | 1960-2007 | 0.52 | M-v | 3 | MPC   | 77274 5581 P-L        |
| 6010 P-L              | 17.4 | 0.15 | 20071027 | 75.65519  | 339.13083 | 335.70222 | 3.83659  | 0.2054083 | 2.3435478 | 43  | 4 | 1960-2007 | 0.48 | M-v | 2 | MPC   | 129051 6010 P-L       |
| 6344 P-L              | 20.5 | 0.15 | 20071027 | 355.41991 | 234.05015 | 183.67510 | 4.73029  | 0.6671345 | 2.8057315 | 105 | 3 | 1960-2007 | 0.43 | M-v | 1 | MPC   | 126546 6344 P-L       |
| 6379 P-L              | 17.2 | 0.15 | 20071027 | 94.93288  | 65.73111  | 262.29475 | 1.41104  | 0.2056200 | 2.4612025 | 23  | 5 | 1960-2007 | 0.57 | M-v | 1 | MPC   | 87829 6379 P-L        |
| 6770 P-L              | 17.8 | 0.15 | 20071027 | 38.68557  | 231.00806 | 156.45687 | 1.84250  | 0.1735990 | 2.2280680 | 52  | 6 | 1960-2007 | 0.53 | M-v | 2 | MPC   | 77912 6770 P-L        |
| 6823 P-L              | 16.9 | 0.15 | 20071027 | 63.84140  | 217.37364 | 140.30851 | 1.78119  | 0.1942274 | 2.4653026 | 33  | 7 | 1960-2007 | 0.32 | M-v | 1 | MPC   | 77912 6823 P-L        |
| 1312 T-2              | 15.2 | 0.15 | 20071027 | 64.69175  | 28.57643  | 3.63134   | 15.32600 | 0.1779583 | 3.0958224 | 64  | 5 | 1973-2007 | 0.68 | M-v | 2 | MPC   | 110563 1312 T-2       |
| 1408 T-2              | 16.9 | 0.15 | 20071027 | 32.60281  | 49.97052  | 340.05464 | 4.93666  | 0.2156221 | 2.4047237 | 77  | 4 | 1973-2007 | 0.56 | M-v | 1 | MPC   | 129051 1408 T-2       |
| 1579 T-2              | 18.1 | 0.15 | 20071027 | 56.48400  | 149.52893 | 191.70760 | 5.02659  | 0.2758149 | 2.2461828 | 37  | 5 | 1973-2007 | 0.54 | M-v | 1 | MPC   | 48389 1579 T-2        |
| 2299 T-2              | 16.8 | 0.15 | 20071027 | 30.45954  | 333.22662 | 358.31461 | 2.34292  | 0.2036779 | 2.4257912 | 109 | 7 | 1973-2007 | 0.55 | M-v | 1 | MPC   | 129051 2299 T-2       |

|          |      |      |          |           |           |           |          |           |           |    |   |           |      |     |   |     |                 |
|----------|------|------|----------|-----------|-----------|-----------|----------|-----------|-----------|----|---|-----------|------|-----|---|-----|-----------------|
| 4107 T-2 | 17.5 | 0.15 | 20071027 | 164.60400 | 114.43437 | 129.41532 | 3.08114  | 0.0476634 | 2.5989594 | 16 | 3 | 1973-2005 | 0.63 | M-v | 4 | MPC | 77277 4107 T-2  |
| 1014 T-3 | 16.2 | 0.15 | 20071027 | 46.62937  | 8.73334   | 346.85639 | 11.55973 | 0.1876253 | 2.6201125 | 55 | 6 | 1977-2007 | 0.71 | M-v | 1 | MPC | 77914 1014 T-3  |
| 1169 T-3 | 17.0 | 0.15 | 20071027 | 349.17720 | 65.33603  | 346.97226 | 8.63666  | 0.2082432 | 2.4095281 | 51 | 3 | 1977-2007 | 0.68 | M-v | 3 | MPC | 128608 1169 T-3 |
| 1174 T-3 | 15.9 | 0.15 | 20071027 | 0.04857   | 116.89591 | 271.36869 | 6.62051  | 0.2279487 | 2.9220173 | 88 | 3 | 1977-2007 | 0.54 | M-v | 3 | MPC | 129051 1174 T-3 |
| 2130 T-3 | 16.5 | 0.15 | 20071027 | 32.14514  | 167.49006 | 232.72398 | 4.58445  | 0.1599074 | 2.2116176 | 74 | 5 | 1977-2007 | 0.76 | M-v | 1 | MPC | 77914 2130 T-3  |
| 2233 T-3 | 17.5 | 0.15 | 20071027 | 40.08820  | 72.70695  | 313.06609 | 2.13356  | 0.2272508 | 2.3913788 | 75 | 5 | 1977-2007 | 0.58 | M-v | 1 | MPC | 57616 2233 T-3  |
| 2259 T-3 | 17.4 | 0.15 | 20071027 | 100.92655 | 96.82576  | 231.35975 | 5.01481  | 0.2049569 | 2.2036761 | 46 | 4 | 1977-2007 | 0.58 | M-v | 2 | MPC | 53872 2259 T-3  |
| 2397 T-3 | 15.8 | 0.15 | 20071027 | 343.86114 | 185.20070 | 214.18135 | 13.83351 | 0.0681364 | 2.6404334 | 76 | 3 | 1977-2007 | 0.67 | M-v | 2 | MPC | 129051 2397 T-3 |
| 3259 T-3 | 17.2 | 0.15 | 20071027 | 28.73666  | 217.94706 | 175.39845 | 1.97576  | 0.1955905 | 2.3946713 | 70 | 4 | 1977-2007 | 0.58 | M-v | 1 | MPC | 87830 3259 T-3  |
| 3306 T-3 | 17.6 | 0.15 | 20071027 | 35.04491  | 274.66760 | 107.12728 | 0.73493  | 0.2408433 | 2.2167683 | 47 | 4 | 1977-2007 | 0.65 | M-v | 1 | MPC | 129051 3306 T-3 |
| 3318 T-3 | 17.2 | 0.15 | 20071027 | 28.16087  | 302.69241 | 50.83502  | 3.30484  | 0.2108547 | 2.4094454 | 76 | 3 | 1977-2007 | 0.72 | M-v | 2 | MPC | 129051 3318 T-3 |
| 3397 T-3 | 16.7 | 0.15 | 20071027 | 71.35335  | 296.36148 | 46.94893  | 3.92728  | 0.1705027 | 2.3904645 | 98 | 6 | 1977-2007 | 0.72 | M-v | 1 | MPC | 57617 3397 T-3  |
| 4260 T-3 | 15.8 | 0.15 | 20071027 | 72.88492  | 273.91690 | 40.06046  | 13.58391 | 0.1917921 | 2.6233612 | 58 | 2 | 1977-2007 | 0.46 | M-v | 3 | MPC | 128609 4260 T-3 |
| 4307 T-3 | 16.8 | 0.15 | 20071027 | 124.48578 | 172.01596 | 137.48737 | 5.90708  | 0.1942003 | 2.3755175 | 59 | 5 | 1977-2007 | 0.59 | M-v | 1 | MPC | 111443 4307 T-3 |
| 4539 T-3 | 16.8 | 0.15 | 20071027 | 105.14191 | 216.55862 | 86.61741  | 6.35385  | 0.2339921 | 2.6053871 | 42 | 6 | 1977-2007 | 0.68 | M-v | 1 | MPC | 104419 4539 T-3 |

2002 RL<sub>146</sub> = 2002 UE<sub>63</sub> (Minor Planet Center, *MPO* 129051)  
 2007 PZ<sub>22</sub> = 2007 TX<sub>187</sub> (Minor Planet Center, *MPO* 129052)  
 2007 QY<sub>5</sub> = 2007 RY<sub>2</sub> (Minor Planet Center, *MPO* 129052)  
 2007 QU<sub>8</sub> = 2007 TE<sub>297</sub> (Minor Planet Center)  
 2007 RP<sub>42</sub> = 2007 TO<sub>298</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RE<sub>48</sub> = 2007 VF<sub>138</sub> (Minor Planet Center)  
 2007 RT<sub>84</sub> = 2007 PB<sub>45</sub> (Minor Planet Center)  
 2007 RU<sub>90</sub> = 2007 TB<sub>281</sub> (Minor Planet Center)  
 2007 RW<sub>92</sub> = 2007 TS<sub>187</sub> (Minor Planet Center)  
 2007 RD<sub>95</sub> = 2007 TT<sub>285</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RH<sub>128</sub> = 2007 TS<sub>284</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RV<sub>130</sub> = 2007 TL<sub>283</sub> (Minor Planet Center)  
 2007 RX<sub>139</sub> = 2007 TR<sub>338</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RF<sub>149</sub> = 2007 TM<sub>306</sub> (Minor Planet Center)  
 2007 RD<sub>154</sub> = 2007 TZ<sub>416</sub> (Minor Planet Center)  
 2007 RU<sub>179</sub> = 2007 VD<sub>88</sub> (Minor Planet Center)  
 2007 RK<sub>203</sub> = 2007 TA<sub>417</sub> (Minor Planet Center)  
 2007 RM<sub>211</sub> = 2007 RS<sub>282</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RW<sub>242</sub> = 2007 TJ<sub>356</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RF<sub>245</sub> = 2007 TO<sub>288</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RX<sub>257</sub> = 2007 VO<sub>20</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RO<sub>260</sub> = 2007 TX<sub>317</sub> (Minor Planet Center, *MPO* 129052)  
 2007 RD<sub>266</sub> = 2007 TM<sub>336</sub> (Minor Planet Center)  
 2007 RC<sub>278</sub> = 2007 TK<sub>356</sub> (Minor Planet Center)  
 2007 ST<sub>7</sub> = 2007 TX<sub>285</sub> (Minor Planet Center, *MPO* 129052)  
 2007 SE<sub>8</sub> = 2007 TP<sub>320</sub> (Minor Planet Center, *MPO* 129052)  
 2007 SM<sub>8</sub> = 2007 TT<sub>340</sub> (Minor Planet Center, *MPO* 129052)  
 2007 SY<sub>10</sub> = 2007 TL<sub>292</sub> (Minor Planet Center, *MPO* 129052)  
 2007 SJ<sub>15</sub> = 2007 TT<sub>353</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TK = 2007 TE<sub>19</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TF<sub>8</sub> = 2007 XM<sub>9</sub> (Minor Planet Center)  
 2007 TO<sub>24</sub> = 2007 TG<sub>188</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TH<sub>27</sub> = 2007 VW<sub>122</sub> (Minor Planet Center)  
 2007 TL<sub>28</sub> = 2007 TO<sub>299</sub> (Minor Planet Center)  
 2007 TE<sub>30</sub> = 2007 TX<sub>305</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TT<sub>33</sub> = 2007 TD<sub>415</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TX<sub>34</sub> = 2007 TG<sub>296</sub> (Minor Planet Center)

2007 TL<sub>39</sub> = 2007 TQ<sub>315</sub> (Minor Planet Center)  
 2007 TC<sub>43</sub> = 2007 TB<sub>337</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TM<sub>43</sub> = 2007 TW<sub>318</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TZ<sub>43</sub> = 2007 TW<sub>323</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TT<sub>44</sub> = 2007 TB<sub>406</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TJ<sub>45</sub> = 2007 VJ<sub>37</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TU<sub>47</sub> = 2007 TU<sub>298</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TV<sub>53</sub> = 2007 TH<sub>300</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TX<sub>54</sub> = 2007 TP<sub>300</sub> (Minor Planet Center)  
 2007 TE<sub>55</sub> = 2007 VB<sub>141</sub> (Minor Planet Center)  
 2007 TA<sub>56</sub> = 2007 TH<sub>417</sub> (Minor Planet Center)  
 2007 TE<sub>56</sub> = 2007 UY<sub>73</sub> (Minor Planet Center)  
 2007 TM<sub>57</sub> = 2007 TO<sub>303</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TL<sub>59</sub> = 2007 TT<sub>308</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TR<sub>61</sub> = 2007 TV<sub>299</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TZ<sub>61</sub> = 2007 US<sub>66</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TY<sub>63</sub> = 2007 TY<sub>315</sub> (Minor Planet Center)  
 2007 TC<sub>64</sub> = 2007 VP<sub>271</sub> = 2007 VY<sub>271</sub> (Minor Planet Center)  
 2007 TK<sub>64</sub> = 2007 TA<sub>316</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TD<sub>72</sub> = 2007 TE<sub>16</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TH<sub>73</sub> = 2007 TR<sub>121</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TM<sub>75</sub> = 2007 TU<sub>415</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TY<sub>75</sub> = 2007 VR<sub>271</sub> (Minor Planet Center)  
 2007 TQ<sub>76</sub> = 2007 TD<sub>337</sub> (Minor Planet Center)  
 2007 TT<sub>80</sub> = 2007 TK<sub>415</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TQ<sub>82</sub> = 2007 TB<sub>306</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TG<sub>84</sub> = 2007 TM<sub>387</sub> (Minor Planet Center)  
 2007 TO<sub>91</sub> = 2007 VN<sub>271</sub> (Minor Planet Center)  
 2007 TU<sub>95</sub> = 2007 TT<sub>334</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TC<sub>99</sub> = 2007 UH<sub>125</sub> (Minor Planet Center)  
 2007 TV<sub>99</sub> = 2007 TS<sub>314</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TQ<sub>102</sub> = 2007 UE<sub>66</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TX<sub>104</sub> = 2007 TZ<sub>208</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TP<sub>105</sub> = 2007 TL<sub>50</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TT<sub>105</sub> = 2007 TO<sub>144</sub> (Minor Planet Center, *MPO* 126834)  
 2007 TK<sub>120</sub> = 2007 TB<sub>313</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TU<sub>129</sub> = 2007 TR<sub>415</sub> (Minor Planet Center, *MPO* 129052)

2007 TF<sub>131</sub> = 2007 UA<sub>81</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TL<sub>132</sub> = 2007 UJ<sub>66</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TR<sub>133</sub> = 2007 TT<sub>146</sub> = 2007 TF<sub>306</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TH<sub>144</sub> = 2007 SF<sub>18</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TX<sub>145</sub> = 2007 TH<sub>306</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TY<sub>146</sub> = 2007 TO<sub>165</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TM<sub>152</sub> = 2007 TH<sub>416</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TS<sub>153</sub> = 2007 TJ<sub>415</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TQ<sub>154</sub> = 2007 TA<sub>377</sub> (Minor Planet Center, *MPO* 129052)  
 2007 TM<sub>164</sub> = 2007 TL<sub>253</sub> = 2007 TQ<sub>415</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TP<sub>167</sub> = 2007 TU<sub>305</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TS<sub>172</sub> = 2007 TA<sub>175</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TK<sub>174</sub> = 2007 TA<sub>22</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TF<sub>200</sub> = 2007 UL<sub>10</sub> (Minor Planet Center)  
 2007 TT<sub>200</sub> = 2007 TU<sub>51</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TH<sub>202</sub> = 2007 UU<sub>66</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TK<sub>202</sub> = 2007 UQ<sub>28</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TF<sub>207</sub> = 2007 TL<sub>415</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TF<sub>210</sub> = 2007 TB<sub>415</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TE<sub>217</sub> = 2007 VL<sub>126</sub> (Minor Planet Center)  
 2007 TN<sub>222</sub> = 2007 TW<sub>153</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TO<sub>224</sub> = 2007 TT<sub>184</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TO<sub>257</sub> = 2007 TC<sub>417</sub> (Minor Planet Center)  
 2007 TT<sub>260</sub> = 2007 VT<sub>271</sub> (Minor Planet Center)  
 2007 TJ<sub>281</sub> = 2007 TG<sub>416</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TU<sub>289</sub> = 2007 RK<sub>243</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TA<sub>292</sub> = 2007 VZ<sub>270</sub> (Minor Planet Center)  
 2007 TZ<sub>296</sub> = 2007 TA<sub>209</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TP<sub>303</sub> = 2007 TM<sub>229</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TX<sub>310</sub> = 2007 TE<sub>313</sub> (Minor Planet Center)  
 2007 TL<sub>315</sub> = 2007 TE<sub>58</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TZ<sub>321</sub> = 2007 TO<sub>106</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TF<sub>330</sub> = 2007 VD<sub>271</sub> (Minor Planet Center)  
 2007 TE<sub>357</sub> = 2007 TQ<sub>12</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TE<sub>359</sub> = 2007 TX<sub>253</sub> = 2007 TN<sub>415</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TF<sub>359</sub> = 2007 TK<sub>253</sub> = 2007 TP<sub>415</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TM<sub>368</sub> = 2007 UC<sub>36</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TC<sub>376</sub> = 2007 UJ<sub>45</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TG<sub>386</sub> = 2007 TE<sub>416</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TT<sub>389</sub> = 2007 UW<sub>38</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TA<sub>390</sub> = 2007 TA<sub>253</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TY<sub>390</sub> = 2007 TF<sub>353</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TO<sub>391</sub> = 2007 TU<sub>414</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TN<sub>392</sub> = 2007 TJ<sub>416</sub> (Minor Planet Center, *MPO* 129053)  
 2007 TR<sub>411</sub> = 2007 TE<sub>164</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UQ<sub>2</sub> = 2007 TP<sub>312</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UY<sub>2</sub> = 2007 UG<sub>7</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UG<sub>3</sub> = 2007 UL<sub>2</sub> = 2007 UT<sub>66</sub> (Minor Planet Center, *MPO* 129053)

2007 UC<sub>5</sub> = 2007 TF<sub>177</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UF<sub>9</sub> = 2007 TE<sub>377</sub> (Minor Planet Center)  
 2007 UE<sub>17</sub> = 2007 VA<sub>66</sub> (Minor Planet Center)  
 2007 UE<sub>18</sub> = 2007 UA<sub>37</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UM<sub>33</sub> = 2007 UN<sub>124</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UV<sub>43</sub> = 2007 TD<sub>416</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UN<sub>44</sub> = 2007 TW<sub>391</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UH<sub>55</sub> = 2007 VV<sub>33</sub> = 2007 VE<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UT<sub>56</sub> = 2007 UW<sub>71</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UP<sub>58</sub> = 2007 VK<sub>136</sub> (Minor Planet Center)  
 2007 UD<sub>67</sub> = 2007 VZ<sub>271</sub> (Minor Planet Center)  
 2007 UJ<sub>71</sub> = 2007 VF<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UY<sub>72</sub> = 2007 VX<sub>270</sub> (Minor Planet Center)  
 2007 UR<sub>79</sub> = 2007 VH<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UN<sub>82</sub> = 2007 UL<sub>79</sub> = 2007 VR<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UP<sub>82</sub> = 2007 VW<sub>193</sub> (Minor Planet Center)  
 2007 US<sub>82</sub> = 2007 VJ<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UO<sub>84</sub> = 2007 VO<sub>94</sub> (Minor Planet Center)  
 2007 UF<sub>92</sub> = 2007 TP<sub>227</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UQ<sub>102</sub> = 2007 VQ<sub>184</sub> (Minor Planet Center)  
 2007 UH<sub>103</sub> = 2007 VJ<sub>42</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UT<sub>112</sub> = 2007 TD<sub>241</sub> (Minor Planet Center)  
 2007 UM<sub>116</sub> = 2007 VT<sub>35</sub> (Minor Planet Center, *MPO* 129053)  
 2007 UN<sub>116</sub> = 2007 VP<sub>177</sub> (Minor Planet Center)  
 2007 UT<sub>121</sub> = 2007 TK<sub>162</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VC<sub>12</sub> = 2007 VM<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VD<sub>16</sub> = 2007 VE<sub>153</sub> (Minor Planet Center)  
 2007 VO<sub>26</sub> = 2007 TB<sub>215</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VW<sub>31</sub> = 2007 UO<sub>124</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VR<sub>35</sub> = 2007 VX<sub>271</sub> (Minor Planet Center)  
 2007 VO<sub>36</sub> = 2007 TD<sub>417</sub> (Minor Planet Center)  
 2007 VH<sub>37</sub> = 2007 VW<sub>270</sub> (Minor Planet Center)  
 2007 VR<sub>39</sub> = 2007 TA<sub>138</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VD<sub>41</sub> = 2007 VQ<sub>271</sub> (Minor Planet Center)  
 2007 VW<sub>41</sub> = 2007 VT<sub>187</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VC<sub>83</sub> = 2007 VF<sub>271</sub> (Minor Planet Center)  
 2007 VU<sub>84</sub> = 2007 TH<sub>262</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VQ<sub>85</sub> = 2007 TV<sub>142</sub> (Minor Planet Center)  
 2007 VN<sub>91</sub> = 2007 VR<sub>87</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VA<sub>92</sub> = 2007 VA<sub>12</sub> (Minor Planet Center, *MPO* 129053)  
 2007 VC<sub>120</sub> = 2007 VW<sub>271</sub> (Minor Planet Center)  
 2007 VH<sub>126</sub> = 2007 RG<sub>260</sub> (Minor Planet Center)  
 2007 VK<sub>131</sub> = 2007 TM<sub>49</sub> (Minor Planet Center)  
 2007 VD<sub>132</sub> = 2007 TG<sub>417</sub> (Minor Planet Center)  
 2007 VO<sub>132</sub> = 2007 TY<sub>301</sub> (Minor Planet Center)  
 2007 VM<sub>180</sub> = 2007 TV<sub>316</sub> (Minor Planet Center)  
 2007 VG<sub>186</sub> = 2007 MH<sub>6</sub> (Minor Planet Center)